GEOTECHNICAL AND HYDROGEOLOGICAL INVESTIGATION

AMHERSTVIEW SECONDARY PLAN, LOYALIST TOWNSHIP, ONTARIO

LOYALIST TOWNSHIP

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February 10, 2022

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Attention: **Bohdan Wynnyckyj, RPP**

Subject: **Geotechnical and Hydrogeological Investigation, Amerherstview Secondary Plan, Loyalist Township, Ontario**

We are pleased to submit our Geotechnical and Hydrogeological Investigation Report to provide subsurface information as input to the design of the Amherstview Secondary Plan, Kingston, Ontario.

The report is based on information obtained from WSP's borehole investigation, well monitoring and laboratory testing programs completed in July 2021. A summary of our completed field and laboratory work, subsurface findings, recommendations and construction considerations is included herein.

We trust that this report meets your present requirements. Please contact us if you have any questions.

Yours truly,

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Senior Project Engineer

Lisa Gardiner, B.Sc., A.Sc.T.
Groundwater Specialist

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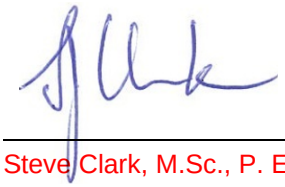

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1 INTRODUCTION

WSP Canada Inc. (WSP) was retained by the Loyalist Township (the Client) to complete a geotechnical and hydrogeological investigation for the proposed Amherstview Secondary Plan (the Site) in Loyalist Township, Ontario. The location of the Site is shown on **Figure 1**.

The Site generally consists of open agricultural fields and forested areas with a residential street (Parrot's Bay Lane) running north to south on the west side of the Site. It is crossed by a few small water courses with associated wetlands. The Site is bounded by Taylor Kidd Boulevard to the north, County Road 6 to the east, Bath Road (Highway 33) to the south and a wetlands and water course to the west.

A total of fifteen (15) borehole locations were staked in late May 2021. Twelve (12) boreholes were advanced across the Site from June 1st to 3rd, 2021 at various locations to provide information on subsurface conditions at the Site, including surficial soil, shallow bedrock and groundwater conditions. Three (3) borehole locations that were staked were not accessed due to objections from local residents when the drill rig was on site. Eight (8) of the twelve (12) boreholes that were advanced were further developed as monitoring wells. WSP also conducted a ground penetrating radar (GPR) survey in the vicinity of the boreholes to provide additional information beyond the immediate location of the boreholes in order to develop a sense of potential overburden thickness. WSP attended the Site on June 15, 2021 to develop the wells and measure groundwater conditions. Based on the investigation findings, WSP has provided recommendations for consideration during the layout and preliminary design of the Site.

2 SITE DESCRIPTION

2.1 PHYSIOGRAPHY

The Site is located in the Napanee Plain Physiographic Region (Chapman and Putnam, 1984), which is comprised of shallow overburden overlying limestone bedrock. A map of the regional physiography is shown in **Figure 3**.

2.2 TOPOGRAPHY AND DRAINAGE

The topography of the Site is generally flat to undulating, sloping gently towards the south and towards a surface water feature that bisects the Site and drains southerly towards Parrott's Bay on the north shore of Lake Ontario immediately west of Amherstview. Elevations at the Site range between 95 meters above sea level (masl) in the central area of the Site to about 80 masl in the south and west (**Figure 1**). The normal water level of Lake Ontario immediately south of the site is approximately 75 masl.

Drainage is generally good with moderately-sized open areas of agricultural land, primarily used for cattle grazing and small scale farming activities. Numerous treed areas are present and several small seasonal water courses cross the Site, particularly in the south and west portion of the Site. Local shallow depressions are seasonally wet.

3 GEOLOGY AND HYDROGEOLOGY

The geological and hydrogeological properties of the subsurface were investigated using the following publicly available resources, in addition to boreholes installed across the Site and the GPR survey previously mentioned. The following publicly available resources were used to develop the information immediately below. The boreholes and GPR data are discussed in a following section.

- Existing geological mapping.
- Well records from the MECP Water Well Information System (WWIS).
- Records from the MECP PTTW and EASR databases.
- Drinking water source protection policy areas.

This information is discussed in the following sections.

3.1 EXISTING GEOLOGICAL MAPPING

3.1.1 SURFICIAL GEOLOGY

The surficial geology in the vicinity of the Site consists of generally flat-lying Paleozoic limestone bedrock, with a thin layer of overburden consisting of topsoil and fine-textured glaciolacustrine deposits consisting of silt and clay, minor sand and gravel pockets throughout the Site as shown in **Figure 4**. One borehole intersected approximately 5 m of glaciolacustrine (silt and clay) material in a potential karst. The GPR data indicates that deposits greater than 1 m thick will be rare.

3.2 WATER WELL RECORDS

One-hundred and twelve (112) records were found in the Ministry of the Environment, Conservation and Parks (MECP) water well database for wells within 500 m of the Site (**Figure 6**). Among all the records, there are:

- Eighty-eight (88) records listed as water supply wells, of which:
- Seventy-nine (79) are used for domestic purposes;
- Four (4) are used for municipal purposes; and
- Five (5) is used for livestock;
- Three (3) records were listed as observation well;
- One (1) record was listed as a monitor and test well;
- Eighteen (18) record was listed as an abandonment record; and
- Two records had no data.

The soil materials described in the well records generally indicate shallow topsoil, clay, sand, gravel, stones or fill overlying shale and/or limestone bedrock. This is consistent with the regional understanding and observations from the fieldwork. Well depths ranged between 48.4 m below ground surface (mbgs) to 95.1 mbgs, water found ranged between 0.5 mbgs to 53.3 mbgs and static water levels ranged between 0.9 mbgs to 41.1 mbgs. The water well locations are shown on **Figure 6**. A tabulated summary of the well records is provided in **Appendix C**.

3.3 MECP PTTW AND EASR DATABASES

No active permits were identified in the MECP Permit to Take Water (PTTW) database within a 500 m radius of the Site, except for one construction dewatering PTTW for Leighton Lands, located east of the Site. The PTTW has maximum of 3,270,240 L per day. No active Environmental Activity and Sector Registry (EASR) for construction dewatering were identified in the MECP Access Environment web portal within 500 m for takings between 50,000 and 400,000 L/day.

4 WORK PROGRAM

4.1 FIELD INVESTIGATION

WSP geotechnical staff attended the Site in mid-May 2021 to stake borehole locations. Ontario One Call and a private locate service were used to identify potential underground utilities at each proposed borehole location. No utility conflicts were identified.

A drilling program was carried out at the Site from June 1st to 3rd, 2021, with twelve (12) boreholes, designated as BH21-01 to BH21-15, being advanced to the depths ranging from 5.0 to 6.6 m below ground surface (mBGS). Three (3) boreholes (BH21-05, BH21-10 and BH21-13) were not drilled due to complaints from local residents. Monitoring wells were installed in eight (8) of the boreholes. WSP field personnel supervised the drilling operations and recorded the subsurface conditions encountered in the boreholes. The boreholes were advanced using a tracked drill rig equipped with a down-the-hole hammer. Representative samples of rock cuttings were recovered from the boreholes and placed in moisture proof bags and transported to our CCIL-certified laboratory for subsequent review by the project team. Bedrock cores were obtained with a diamond core bit at three (3) locations to recover undisturbed samples of the bedrock. The boreholes were checked for groundwater seepage and general stability prior to backfilling.

GPR was used to evaluate the depth of overburden at various locations about the Site and specifically in the vicinity of the boreholes. The objective of the GPR investigation was to expand on the pin point data from the boreholes in order to develop a better sense of the potential for karsts in the area.

Groundwater monitoring was undertaken on June 4th and 15th to provide initial data for the assessment of the hydrogeological parameters of the Site. Of the eight (8) wells installed, four (4) were dry during the two monitoring events and one (1) was not accessible on June 15th as the well (BH21-12) had been locked and a No Trespassing sign installed. The other three (3) wells were measured and a slug test was performed on each well.

4.2 LABORATORY TESTING

4.2.1 PHYSICAL EXAMINATION

Upon completion of drilling, recovered soil and rock samples were transported to the WSP geotechnical laboratory for more detailed visual examination and engineering classifications by the Project Team. The rock chips and core samples were examined by a geological engineer.

The borehole logs are included in **Appendix A**.

4.2.2 ANALYTICAL LABORATORY TESTING

Analytical laboratory testing (chemical analysis) was performed on samples from the three (3) wells which contained a sufficient volume of groundwater. The environmental laboratory results are provided in **Appendix D**.

5 SUBSURFACE FINDINGS

Based on the data collected during field investigations, borehole information, the subsurface profile at the Site generally consists of a thin layer of overburden overlying limestone bedrock. The layers encountered in the boreholes are described as follows.

5.1 TOPSOIL

Topsoil was encountered at the surface at most borehole locations. The topsoil was described as organic-rich, brown, and moist at the time of the investigation. The topsoil thickness ranged from 0.0 m to 0.9 m with a typical thickness of 0.6 m. GPR was used to assess overburden thickness in the vicinity of the boreholes and at other select locations and yielded broadly similar results with most areas < 1 m thick. Broadly speaking, the GPR data indicates the overburden is marginally thicker in the northeast quadrant when compared to the northwest, central and southwest areas.

5.2 SILTY CLAY

A 0.6 m thick layer of silty clay was identified in BH21-02 between the topsoil and top of limestone. The silty clay was brown, moist, and About the Plastic Limit (APL) at the time of the inspection.

BH21-03 intersected a 2.5 m thick unit of silty clay that was brown to brownish grey from about 0.6 mBGS to 3.1 mBGS. The silty clay was described as moist. The silty clay transitioned into a clayey silt at about 3.1 mBGS.

Two particle size distribution analyses were completed on the silty clay in these two boreholes. The two plots are presented in **Appendix B**.

5.3 CLAYEY SILT

BH21-03 intersected a layer of brownish grey clayey silt underlying the silty clay from about 3.1 mBGS to bedrock at about 5.0 mBGS. The silty clay was described as wet. The clayey silt was resting directly on limestone bedrock, which was confirmed by coring from 5.0 mBGS to 6.1 mBGS in BH21-03.

One particle size distribution analysis was completed on the clayey silt. The plot is presented in **Appendix B**.

5.4 LIMESTONE

Bedrock was intersected in all boreholes, typically within 0.6 m of the surface, with the exception of BH21-03, which likely intersected a karst feature with limestone at 5.0 mBGS.

The bedrock is typically flat-lying, gray, lithographic to fine-crystalline limestone with thin shaley laminations. The rock is strong with occasional fractures and only slightly weathered. The rock is typical of the Gull River Formation and may contain silty dolostone, shale and fine-grained calcareous quartz sandstone.

5.5 GROUNDWATER

Eight (8) monitoring wells were installed on Site and only four (4) contained a measurable quantity of groundwater. Groundwater levels were measured manually from each monitoring well on two occasions, June 4 and June 15, 2021. Eight wells were installed at the site and four of the wells were dry on both monitoring occasions. BH21-12 was only measured on June 4, 2021 as the property owner had locked the well and placed a Do Not Trespass sign up

prior to the June 15, 2021 event. Groundwater levels the remaining three wells ranged between 0.9 mBGS to below 2.0 mBGS in the wells. This corresponds to a range in elevations of 78.9 masl to 91.4 masl. Water levels are shown in **Table 5-1** below. A summary of water levels and well construction details is provided in **Appendix C**.

Given the large property size and limit of wells with a measurable quantity of groundwater, preparation of groundwater flow direction maps is problematic. Overall groundwater flow will be driven by local topography and surface water features. Groundwater is expected to flow in a southerly to southwesterly direction towards the lake. The competent limestone bedrock has a very low hydraulic conductivity and groundwater flow will be largely dependent on fractures and potentially shaly bedding planes, neither of which were identified in any significant quantity in the core samples. If required, additional wells may be installed to greater depths to obtain the shallow groundwater flow.

Table 5-1 Manual Water Measurements

Location	Elevation Ground (mASL)	Elevation of Top of Pipe (mASL)	Water Levels			
			June 4, 2021		June 15, 2021	
			m bgs	mASL	m bgs	mASL
BH21-03	92.87	93.48	1.42	91.4	1.44	91.4
BH21-09	90.74	91.76	2.01	88.7	1.43	89.3
BH21-11	80.17	80.98	0.89	79.3	1.27	78.9
BH21-12	96.78	97.62	6.37	90.4	---	---

Note: --- the water level was not obtained during this visit.

5.6 GROUNDWATER QUALITY SAMPLING

Three (3) of the installed wells (BH21-03, BH21-09 and BH21-11) were accessible and contained a sufficient volume of water for sampling. The monitoring wells were purged of a minimum of three well volumes using dedicated Waterra® tubing and inertial lift foot valves on June 4, 2021. Samples were obtained and collected on June 15 and 16, 2021 and placed into laboratory-supplied bottles (with chemical preservatives as required) and stored according to chain of custody procedures until received at the laboratory. Groundwater samples were submitted for analysis of general chemistry parameters, including metals and inorganics and were compared to the Provincial Water Quality Objectives (PWQO), as indicated in **Table 5-2**. The Laboratory Certificates of Analysis for the groundwater samples are provided in **Appendix D**.

Laboratory analysis indicated that all samples analyzed met the PWQOS, except Boron, Cobalt, Copper, Iron, Nickel, Selenium, Silver, Thallium, Uranium, Vanadium, Zinc and Zirconium. The exceedances are summarized in **Table 5-2**.

Table 5-2 PWQO Exceedances

Parameter	PWQO	Units	BH21-03	BH21-09	BH21-116
Boron	0.2	mg/L	**0.236**	**1.66**	**0.229**
Cobalt	0.0009	mg/L	**0.354**	**0.0123**	**0.013**

Parameter	PWQO	Units	BH21-03	BH21-09	BH21-116
Copper	0.005	mg/L	**0.8**	**0.039**	**0.028**
Iron	0.3	mg/L	**920**	**34.9**	**29.1**
Nickel	0.025	mg/L	**0.862**	**0.041**	**0.041**
Selenium	0.1	mg/L	**0.111**	**-**	**-**
Silver	0.0001	mg/L	**0.0019**	**0.0023**	**-**
Thallium	0.0003	mg/L	**0.0087**	**0.0014**	**0.0021**
Uranium	0.005	mg/L	**0.019**	**-**	**-**
Vanadium	0.006	mg/L	**1.32**	**0.043**	**0.036**
Zinc	0.030	mg/L	**2.17**	**0.157**	**0.045**
Zirconium	0.004	mg/L	**0.088**	**-**	**0.007**

Bold text indicates an exceedance of the PWQO. Dash means parameter was within the PWQOs.

It is noted that the groundwater samples had high turbidity and that at least some of the elevated parameters may be related to elevated total suspended solids in the samples. It is inferred that during dewatering, if the quantity of sediment is reduced, then these parameters will also be reduced. Additional sampling will be required during dewatering to confirm that groundwater meets applicable standards.

5.7 HYDRAULIC TESTING

Single well hydraulic tests (slug tests) were completed for the three monitoring wells with water (BH21-03, BH21-09, and BH21-11) on this site on June 15, 2021. Wells were purged of three well volumes using Waterra® tubing and foot valves and allowed to recover. Water level recovery measurements were obtained through manual readings. Electronic dataloggers were used on two of the wells. Tests were analyzed using the Hvorslev method for slug test recovery. Hydraulic conductivity (K) estimates ranged between 2.0x10-7 and 3.8x10-8 m/s, which is within the expected range of results for fractured limestone (Freeze and Cherry, 1978). The overburden rates may be slightly high for the types of material that have been encountered at the Site, while the values for fractured bedrock may be within the literature expected values. The results are provided in **Table 5-3** and Slug Test calculations are provided in **Appendix E**.

Table 5-3 Hydraulic conductivity Estimates from Hydraulic Testing

Well	Analysis	Material Screened	Estimated Hydraulic Conductivity (m/s)
BH21-03	Hvorslev	Clayey Silt to Silty Clay	$2.5x10^{-7}$
BH21-09	Hvorslev	Limestone	$3.8x10^{-8}$
BH21-11	Hvorslev	Limestone	$2.0x10^{-7}$

5.8 GROUNDWATER PENETRATING RADAR

The GPR survey was conducted on April 5th and 6th, 2021 in the general vicinity of the boreholes and for selected areas beyond the limit of the boreholes. Approximately 25% of the entire site was scanned and with approximately 18 km of profile data being generated.

Data from the GPR work indicates the overburden thickness averages less than 0.75 m thick and ranges up to 1.75 m thick with a few relatively small pockets of thicker overburden. These results correlate well with the borehole data which suggests overburden thickness from 0.3 m to 0.9 m, with the exception of BH21-03 where the unconsolidated overburden is 5 m thick.

The data indicate the south and west half of the Site has generally less overburden than the north and east half. There are a few areas in the northeast quadrant of the Site that suggest potential karst development. Most notably, analysis of the data indicates a potential 5 m wide dipping feature trending generally east to west in the vicinity of BH21-02 and BH21-04. The data could indicate a karst feature although it is not certain. No other significant features were identified within the coverage area. The GPR report is attached as **Appendix F**. It is noted that the feature detected by GPR corresponds with the heavily treed area in the northeast quadrant suggesting the ground conditions are not conducive to agriculture.

6 RECOMMENDATIONS

Overburden thickness at the Site is typically < 1 m with a few deeper pockets that will be encountered during construction activities. Topsoil is generally 0.3- 0.6 m thick with the balance of the unconsolidated material consisting of glaciolacustrine silty clay or clayey silt. Topsoil may be stripped and stockpiled for later reuse. The silty clay and clayey silt is not suitable for reuse as structural or trench backfill due to the high percentage of fine material, but could potentially be used for backfill of landscaped areas. Limestone bedrock encountered in all boreholes is competent rock and will present a challenge during construction. Bedrock removal by mechanical methods or blasting will be required for all below grade infrastructure work. Sound bedrock will be suitable for shallow foundations.

One borehole in the northeast quadrant intersected approximately 5 m of glaciolacustrine material and GPR data in the area suggests a large fissure may be present in the vicinity of BH21-2 and BH21-4. No other significant anomalies were detected. WSP recommends a few test pits be excavated in the vicinity of these three boreholes to confirm the nature and extent of the GPR anomaly.

6.1 EXCAVATIONS AND DEWATERING

It is expected that most of the infrastructure and building work will require rock excavation. Excavations should be constructed in accordance with the most recent version (O. Reg. 123/08) of the Occupational Health and Safety Act (OHSA). In general, the Site soils are thin and consist predominantly of silty clay or clayey silt.

It is expected that most of the bedrock excavations will be relatively shallow and that stable vertical or near vertical walls can be readily achieved within the limestone. Based on the recovered core, it is expected that the shallow limestone can be removed by a large excavator equipped with a toothed bucket. Deeper or more competent bedrock can likely be removed with a hydraulic rock breaker although blasting may be required. It is recommended that once the design is advanced to the point where road and utility trench alignments have been determined, that test excavations be completed to determine the most cost-effective way to remove the rock. Having this knowledge prior to final design and tendering will allow for a better cost estimate to be made.

The native site soils, above the groundwater table, may be considered a Type 2 soil, and excavation sidewalls should be sloped at a maximum of 1H:1V to within 1.2 m of the base of the excavation;

The existing fill soils, above the groundwater table, may be considered a Type 3 soil, and excavation sidewalls should be sloped at a maximum of 1H:1V to the base of the excavation; and

Any soils below the groundwater tables should be considered a Type 4 soil, and excavation sidewalls should be sloped at a maximum of 3H:1V to the base of the excavation.

Excavations should be protected from exposure to precipitation and associated ground surface runoff, and should be inspected regularly for signs of instability. If localized instability is noted during excavation, or if wet conditions are encountered, side slopes should be flattened as required to maintain safe working conditions. If excavation side slopes cannot be achieved due to site confinement, shoring should be designed and installed.

Relatively minor seepage into open cut excavations above the groundwater table may be controlled using filtered sumps and pumps. Surface water inflow can also be controlled in this manner, but preferably it should be directed away from the excavations. For service trenches, to minimize potential problems, backfilling operations should follow closely after excavation and pipe installation so that only minimal lengths of trench are exposed at any given time.

It is expected that the majority of dewatering activities can be completed using filtered sumps, however depending of final installation depth, advance dewatering systems may be required when excavations extend below the groundwater table. All dewatering shall be completed according to OPSS 518 and shall be completed using submersible pumps and sumps, well points or diversions as required.

Trench dimensions (length, width and depths) as well as dewatering methods and techniques can greatly affect the volume of dewatering that will be required for excavation operations. Based on the hydraulic conductivity calculations completed to date, it is not expected that significant dewatering due to groundwater infiltration will be required. If dewatering activities exceed 50,000 L/day, the project would either need to be registered under the ESAR program by the MOECC for up to 400,000 L/day or require a PTTW if anticipated volume exceeds 400,000 L/day. Both an EASR or a PTTW application should be done in advance of construction, by a Qualified Person, and consider the pumping rates, drawdown, water quality for discharge, ground effects, and monitoring requirements.

6.2 MATERIAL REUSE, BACKFILL AND COMPACTION

The native soils contain significant amounts of fine grained material which limit where this material can be reused. It is anticipated that the relatively small volume of native soil will be reused for landscaping and not placed as structural or trench backfill where freeze-thaw and insufficient compaction would be a concern.

Material used as trench backfill should be free of all deleterious matter (e.g. topsoil, organic matter, etc.). Materials used for trench backfill should be placed in 150 mm maximum loose lifts and compacted to 98 percent of the Standard Proctor Maximum Dry Density (SPMDD) beneath roadways and structural components, and 95 percent of the SPMDD in general fill areas. Compaction operations should be completed using a self-propelled vibratory compactor or jumping-jack plate tamper where access is limited. Backfill loose lift thicknesses may need to be reduced to achieve the above noted compaction values based on compaction equipment utilized.

Special considerations should be made for backfill and compaction operations during cold weather conditions. Reused native soils and granular soils (Granular A and B) tend not to achieve adequate compaction in below freezing temperatures and thus other backfill materials such as 19 mm Clear Stone Bedding or High-Performance Bedding Stone (HPBS) wrapped in a geotextile (Terrafix 270R or approved equivalent) may need to be utilized.

If soils are to be exported from the site, confirmatory field screening and chemical soil analyses should be completed at the time of export to verify acceptance for the receiving Site.

6.3 BEDDING AND COVER MATERIAL

It is likely that all buried infrastructure will be installed in excavated bedrock trenches. A normal Class B bedding is recommended for all underground services. Bedding materials can be well graded, granular fill, such as Granular A (OPSS MUNI 1010), 19 mm crushed Clear Stone Bedding (OPSS MUNI 1010) or HPBS (OPSS MUNI 1010) with a minimum compacted thickness of 150 mm. Pipe bedding and cover materials should be compacted to at least 98 percent of SPMDD for Granular Materials.

6.4 FROST PENETRATION DEPTH

Based on professional experience, soil types, and proposed structures, the proposed services should be provided with at least 1.5 m of earth cover for frost protection, or an equivalent thickness of insulation installed according to manufacturer's specifications. Municipal and/or Ontario Parks standards may supersede this recommended minimal frost penetration depth.

6.5 LIFT STATION

It is assumed that an underground lift station will require an excavation to at least 4 m below existing grade. This will require the excavation of limestone.

The excavation for the construction of the lift station should be carried out in a manner that limits peripheral damage to the surrounding bedrock in order to maintain the integrity of the rock and avoid opening up fractures or other conduits that could increase dewatering requirements.

Upon approval of the exposed base by the Geotechnical engineer, and removal of any standing water that may accumulate as of result of seepage and infiltration, a geotextile fabric (such as Terrafix 360R, or equivalent) (if required) and high performance bedding stone may be placed on the base of the excavation if required to facilitate the work. Subject to the conditions in the excavation at the time of construction, bedding thickness should be at least 300 mm. Groundwater seepage control may be required to place bedding.

Backfilling materials and methods should be carried out in accordance with the Manufacturer's Specifications, or as directed by the Engineer. The lift station shall be designed for sufficient uplift resistance to maintain stability and prevent flotation under all operating conditions.

6.6 DESIGN COMMENTS

Geotechnical inspection and review of excavations and compaction procedures during construction must be carried out by a qualified geotechnical engineer, or qualified technician working under the direct supervision of a geotechnical engineer, to ensure compliance with our recommendations.

Recommendations for design and construction are based on the borehole information provided above. While we believe our findings are fairly representative, conditions may vary between and beyond the investigated locations. If significant differences in the subsurface conditions described above are found at a later time, WSP should be contacted immediately to revise our findings and recommendations, as necessary.

Recommendations are intended for Designers and are not intended as instructions to Contractors, who should perform their own investigations to confirm any conditions that may affect them. Recommendations in this report must not be used by third parties without the express written consent of WSP.

7 INSPECTIONS, MATERIAL TESTING AND LIMITATIONS

The data, conclusions and recommendations which are presented in this geotechnical report, and the quality thereof, are based on the scope of work authorized by the Client. While we believe the information to be representative of site conditions, subsurface conditions between and beyond the test locations may vary. If significant differences in the subsurface conditions described above are found, we should be contacted immediately to revise our findings and recommendations, if necessary.

The design recommendations provided in this report are intended for designers and should not be construed as providing instructions to contractors, who should form their own opinions about site conditions for tendering, construction procedures and general planning. WSP accepts no liability for use of or reliance on the report information by third parties, without express written consent. WSP should be contacted to review and comment on the pavement details and overall design to confirm that the geotechnical requirements stated in this report are addressed. If WSP is not given the opportunity to review the design prior to commencing of work of the above recommendations we cannot be held liable for any misinterpretation of the recommendations.

During construction, qualified personnel working under the direct supervision of the Geotechnical Engineer should be contacted to complete inspections of the bedrock excavations, subgrade, granular fill compaction and to oversee all phases of infrastructure construction. Geotechnical inspections are critical during construction operations for quality control and assurance (QA/QC). Inspection and testing services should include verification of subgrade soil conditions below placed granular fills, monitoring of the placement of engineered fill, and general testing of geotechnical materials including compaction testing of engineered fill and asphalt.

FIGURE

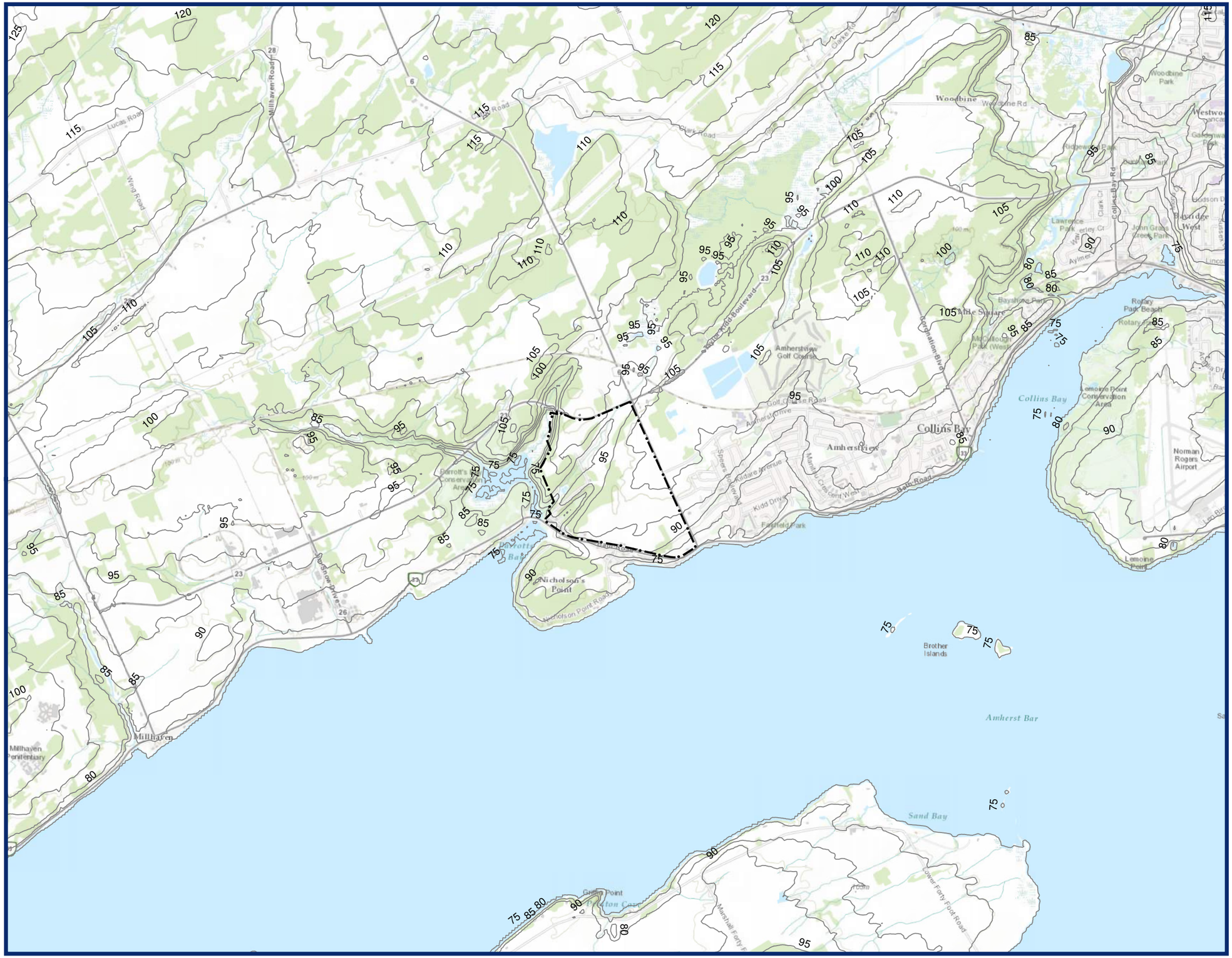

Figure 1
Site Location

Geotechnical Investigation & Hydrogeological Assessment
Amherstview West Secondary Plan

SITE BOUNDARY

5 m TOPOGRAPHIC CONTOUR

N

0 500 1,000 1,500 2,000 m

June 2021

Source: Loyalist Township; LIO

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Canada
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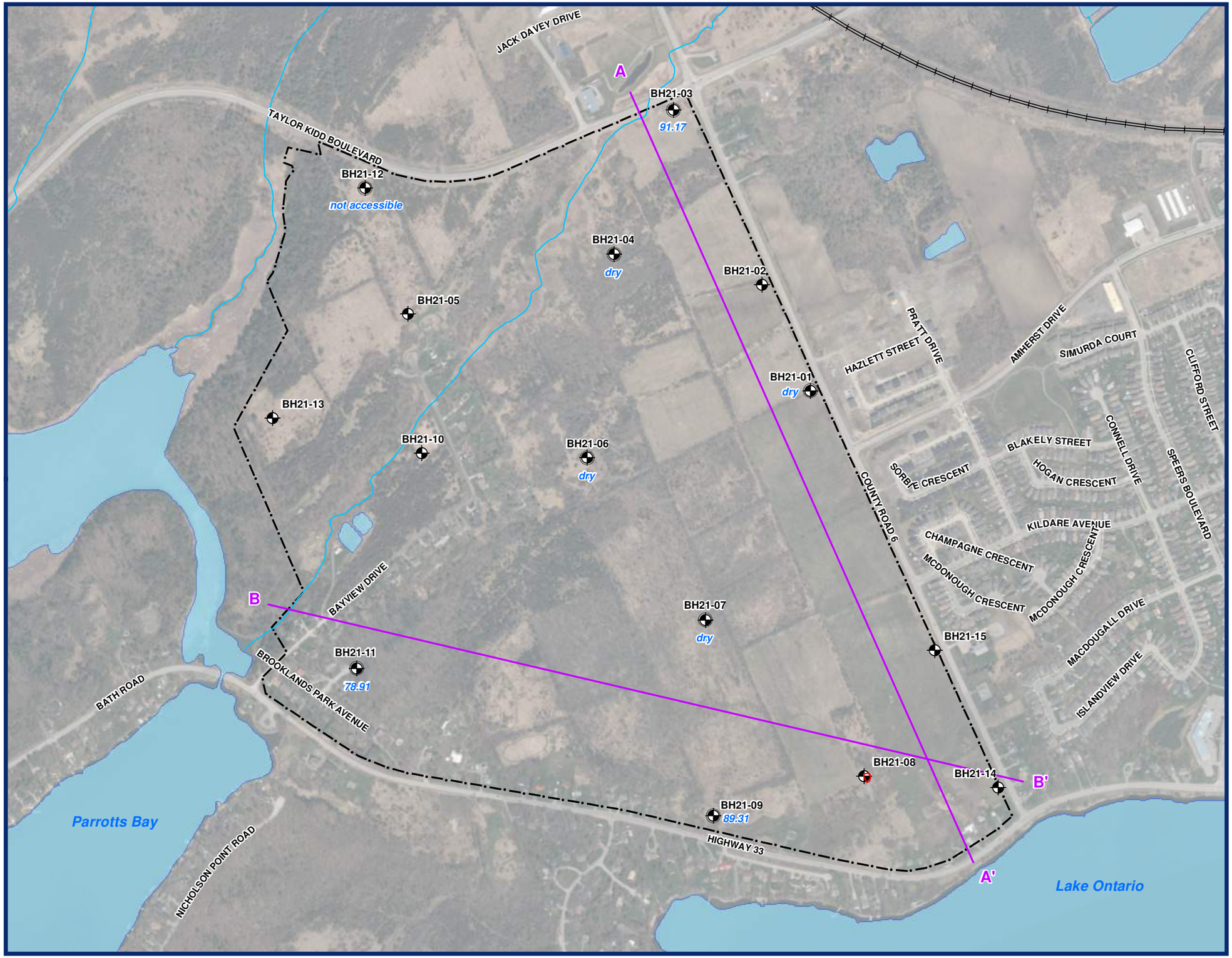

Figure 2
Site Plan

Geotechnical Investigation & Hydrogeological Assessment
Amherstview West Secondary Plan

- SITE BOUNDARY
- RAILWAY
- WATERCOURSE
- WATERBODY
- POTENTIAL CONTAMINATED AREA
- CROSS SECTION LOCATION
- BOREHOLE LOCATIONS
- MONITORING WELL

N

0 100 200 300 400 m

July 2021

Source: Loyalist Township; LIO

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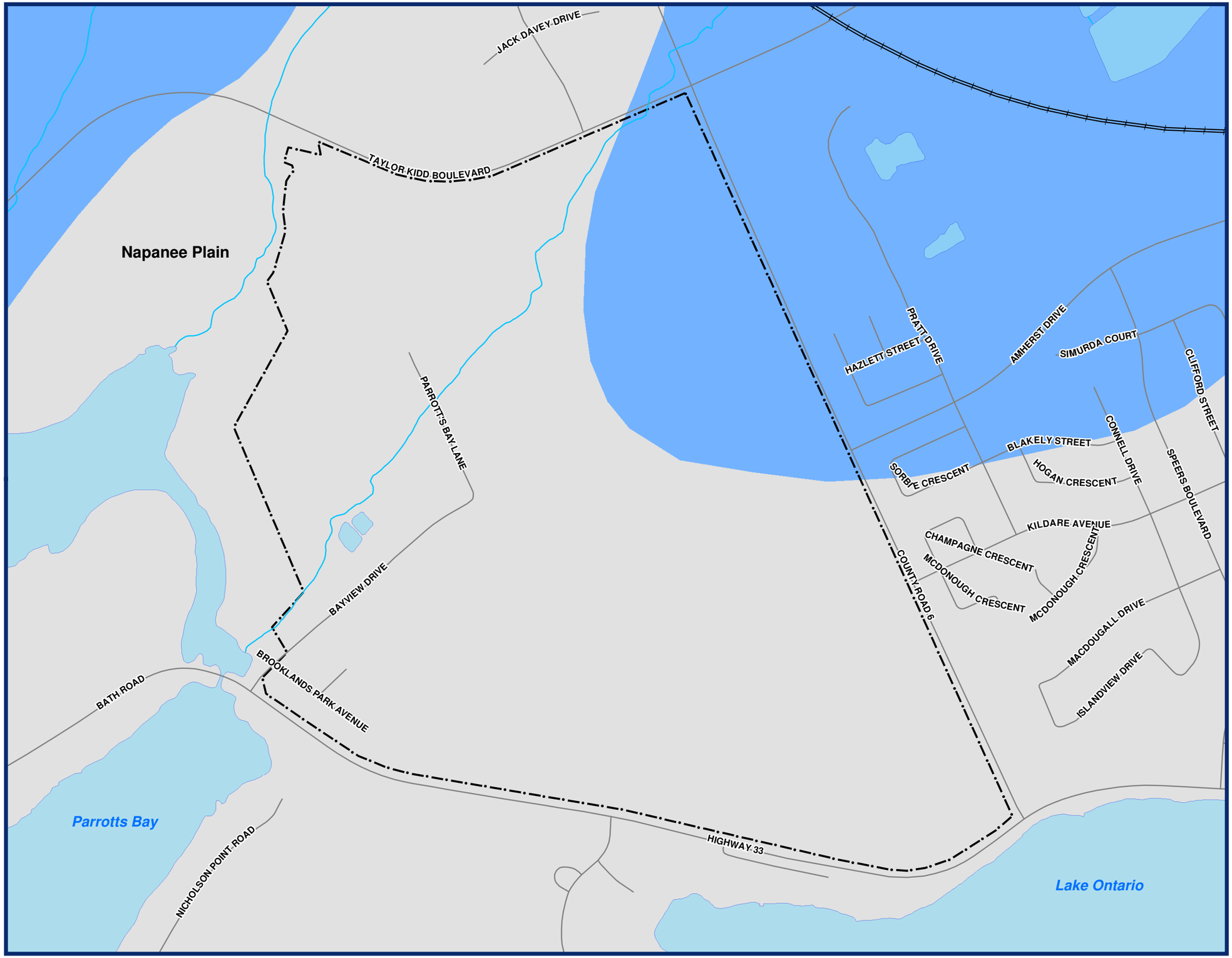

Loyalist Township

Figure 3
Physiography

Geotechnical Investigation & Hydrogeological Assessment
Amherstview West Secondary Plan

- SITE BOUNDARY
- RAILWAY
- WATERCOURSE
- WATERBODY
- PHYSIOGRAPHIC REGION BOUNDARY
- CLAY PLAINS
- LIMESTONE PLAINS

N

0 100 200 300 400 m

June 2021

Source: Loyalist Township; LIO; Chapman, L.J. and Putnam, D.F. 2007. Physiography of southern Ontario; Ontario Geological Survey, Miscellaneous Release—Data 228.

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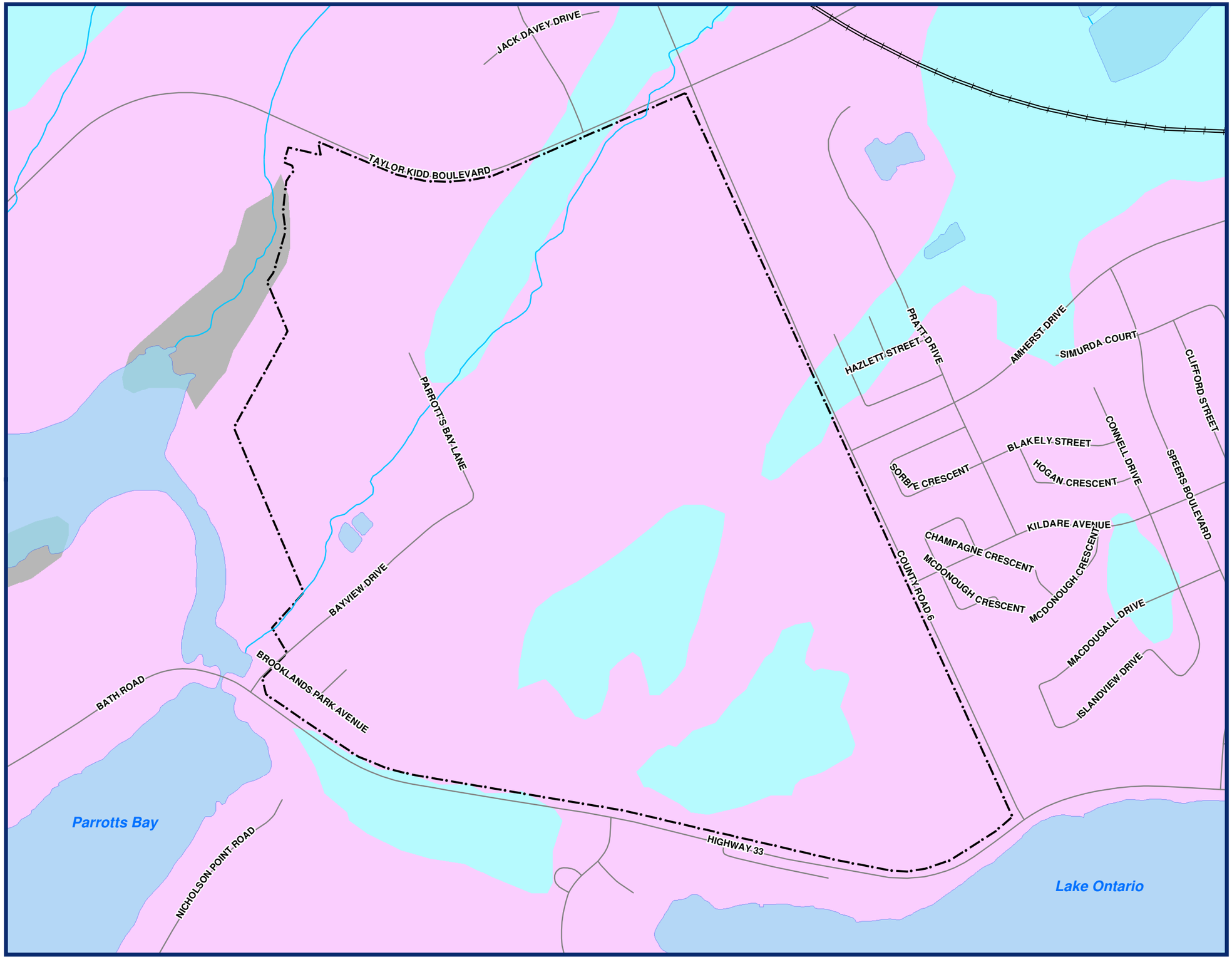

Loyalist Township

Figure 4
Surficial Geology

Geotechnical Investigation & Hydrogeological Assessment
Amherstview West Secondary Plan

- SITE BOUNDARY
- RAILWAY
- WATERCOURSE
- WATERBODY
- PALEOZOIC BEDROCK
- MASSIVE-WELL LAMINATED
- ORGANIC DEPOSITS

N

0 100 200 300 400 m

June 2021

Source: Loyalist Township; LIO; Chapman, L.J. and Surficial Geology of Southern Ontario, MRD 128, Ministry of Northern Development and Mines.

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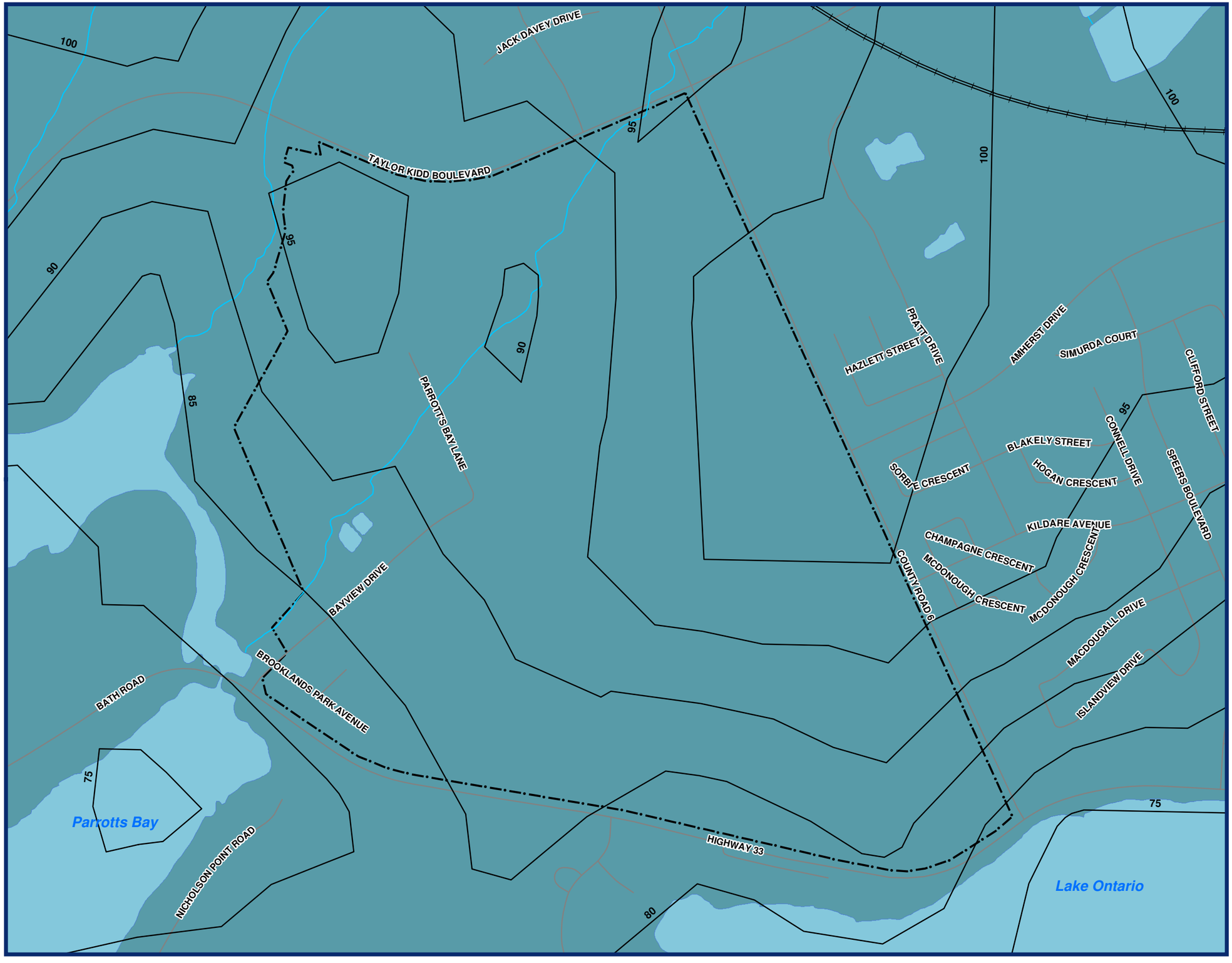

Loyalist Township

Figure 5
Bedrock Geology & Bedrock Topography

Geotechnical Investigation & Hydrogeological Assessment
Amherstview West Secondary Plan

- SITE BOUNDARY
- RAILWAY
- WATERCOURSE
- WATERBODY
- GULL RIVER FORMATION
- BEDROCK ELEVATION (mASL) (5m INTERVAL)

N

0 100 200 300 400 m

June 2021

Source: Loyalist Township; LIO; Bedrock Topography and Overburden Thickness Mapping, Southern Ontario, MRD 207, Ministry of Northern Development and Mines. Ontario Geological Survey 2011. Paleozoic Geology of Southern Ontario, MRD 219, Ministry of Northern Development and Mines.

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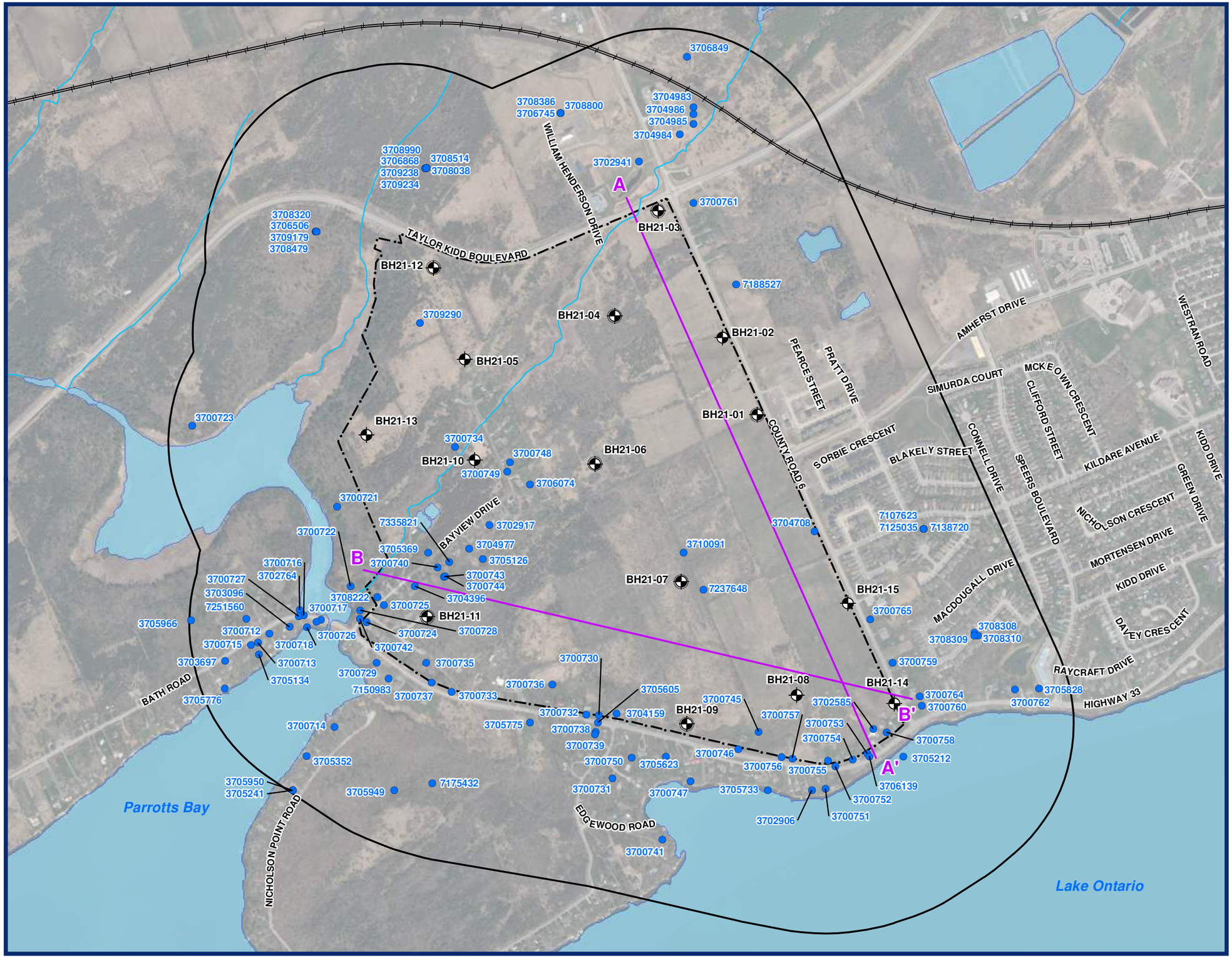

Loyalist Township

Figure 6
MECP Water Well Locations

Geotechnical Investigation & Hydrogeological Assessment
Amherstview West Secondary Plan

- SITE BOUNDARY
- RAILWAY
- 500 m STUDY AREA
- WATERCOURSE
- WATERBODY
- MECP WATER WELL LOCATIONS
- CROSS SECTION LOCATION
- BOREHOLE LOCATIONS
- MONITORING WELL

N

0 150 300 450 600 m

July 2021

Source: Loyalist Township; LIO

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North

South

TAYLOR CREEK BOULEVARD

SITE BOUNDARY CREEK

BH21-03

topsoil

silty clay

clayey silt

3700761

clay

limestone

BH21-04

topsoil

limestone and shale

BH21-02

topsoil

silty clay

limestone

BH21-01

topsoil

limestone and shale

3704708

topsoil

limestone

BH21-15

topsoil

limestone and shale

3700765

topsoil

limestone

3700759

limestone

BH21-08

topsoil

limestone

BH21-14

topsoil

limestone and shale

3702585 SITE BOUNDARY HIGHWAY 33

topsoil

limestone

ELEVATION (mASL)

105
100
95
90
85
80
75
70
65
60
55
50
45
40
35

0 100 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 1500 1600 1700

DISTANCE (m)

LEGEND

BH21-03 — WELL ID

GROUND SURFACE

WATER LEVEL / WELL SCREEN

CHANGE IN STRATIGRAPHY

END OF BORING (mBGL)

NOTE:
THE ACTUAL SOIL STRATIFICATION HAS BEEN VERIFIED FROM DATA OBTAINED AT THE WELL LOCATIONS ONLY. THE INFERRED CONTACTS SHOWN ARE BASED ON GEOLOGICAL EVIDENCE AND THESE MAY VARY FROM THOSE SHOWN BETWEEN BORINGS. WELL DATA IS PROJECTED ONTO THE SECTION WHICH ALSO MAY CREATE SOME IRREGULARITIES IN CONTACT DEPTHS.

CROSS SECTION A-A'

GEOTECHNICAL INVESTIGATION &
HYDROGEOLOGICAL ASSESSMENT
AMHERSTVIEW WEST SECONDARY PLAN

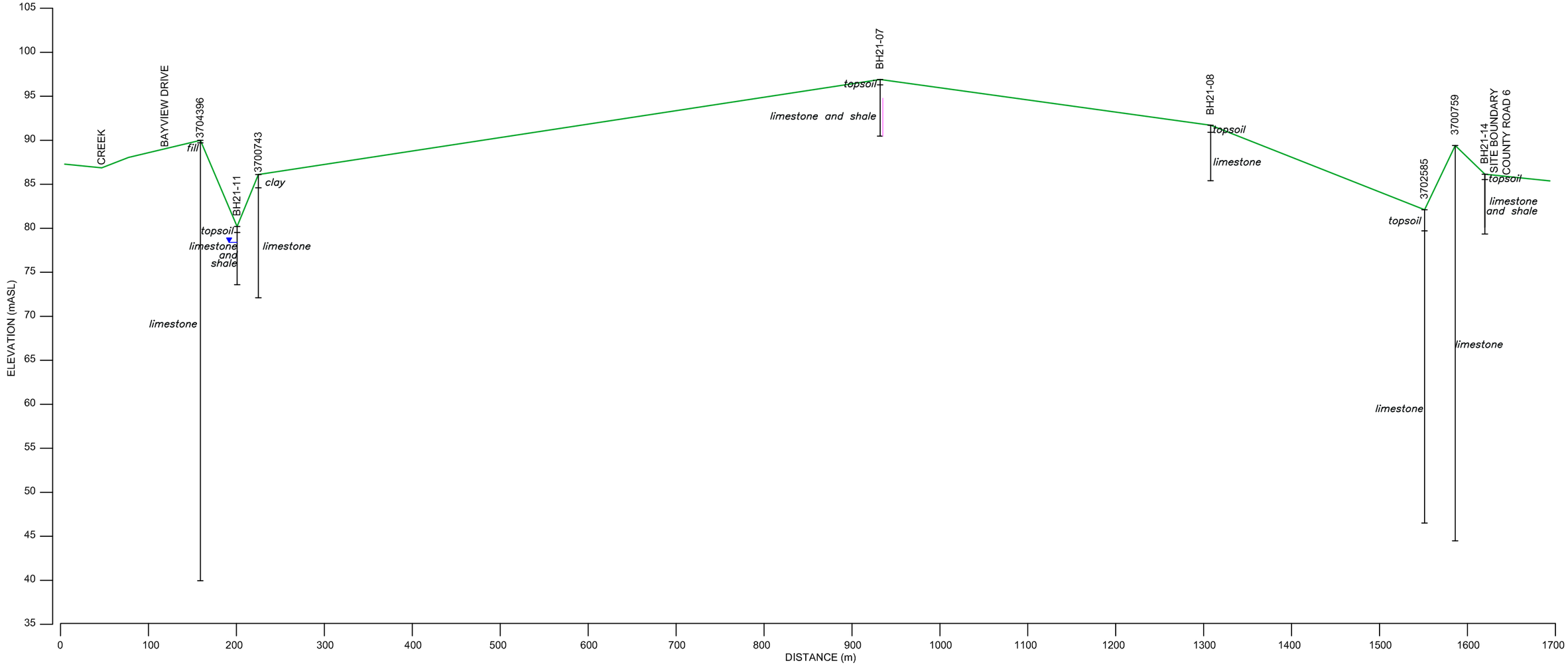
DATE: JULY 2021	SCALES: AS SHOWN
PROJECT: 211-01353-00	FILE NO.: 211-01353-00 F7 CR

wsp

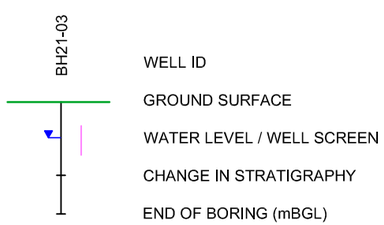
FIGURE 7

North West

South East



LEGEND



NOTE:
THE ACTUAL SOIL STRATIFICATION HAS BEEN VERIFIED FROM DATA OBTAINED AT THE WELL LOCATIONS ONLY. THE INFERRED CONTACTS SHOWN ARE BASED ON GEOLOGICAL EVIDENCE AND THESE MAY VARY FROM THOSE SHOWN BETWEEN BORINGS. WELL DATA IS PROJECTED ONTO THE SECTION WHICH ALSO MAY CREATE SOME IRREGULARITIES IN CONTACT DEPTHS.

CROSS SECTION B-B'

GEOTECHNICAL INVESTIGATION &
HYDROGEOLOGICAL ASSESSMENT
AMHERSTVIEW WEST SECONDARY PLAN

DATE: JULY 2021	SCALES: AS SHOWN
PROJECT: 211-01353-00	FILE NO.: 211-01353-00 F8 CR

wsp

FIGURE **8**

APPENDIX

A BOREHOLE LOGS

LOG OF BOREHOLE BH21-01

PROJECT: Loyalist Secondary Plan
REF. NO.: 211-01353-00
CLIENT: Township of Loyalist
Method: solid stem
ENCL NO.: 1
PROJECT LOCATION:
Diameter: 160mm O.D
DATUM: Geodetic
Date: Jun-01-2021
BH LOCATION: N 44.222354 E -76.671411

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
102.1	Ground Surface					
0.0	**TOPSOIL** Brown, moist, some organics	1	AS		102	
101.5						
0.6	**LIMESTONE and SHALE** Grey, competent bedrock	2	CORE		101	Water level at 6.4 mBTOP measured on June 4, 2021
		3	CORE		100	
		4	CORE		99	
		5	CORE		98	
					97	
					96	
95.7						
6.4	Borehole terminated at 6.4 mBGS in LIMESTONE and SHALE bedrock					

STRATA PLOT
GROUND WATER CONDITIONS
STANDARD PENETRATION TEST RESISTANCE PLOT 20 40 60 80 100
SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100
PLASTIC LIMIT w_P NATURAL MOISTURE CONTENT w LIQUID LIMIT w_L
WATER CONTENT (%) 10 20 30
POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
$+^3$, $\times^3$: Numbers refer to Sensitivity
ε_f=3% Strain at Failure

LOG OF BOREHOLE BH21-02

PROJECT: Loyalist Secondary Plan
REF. NO.: 211-01353-00
CLIENT: Township of Loyalist
Method: solid stem
ENCL NO.: 2
PROJECT LOCATION:
Diameter: 160mm O.D
DATUM: Geodetic
Date: Jun-01-2021
BH LOCATION: N 44.22436 E -76.672758

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: "N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	STANDARD PENETRATION TEST RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
101.2	Ground Surface											
0.0	**TOPSOIL** Brown, moist, some organics						101					
100.3												
1 0.9	**SILTY CLAY** Brown, APL						100					
99.7												
1.5	**LIMESTONE** Grey, shale beds, thinnely laminated, fine grained, moderate fractures, moderately strong, freshly weathered						99					
2												
3							98					
4							97					
5							96					
6 95.1												
6.1												

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

LOG OF BOREHOLE BH21-03

PROJECT: Loyalist Secondary Plan
REF. NO.: 211-01353-00
CLIENT: Township of Loyalist
Method: solid stem
ENCL NO.: 3
PROJECT LOCATION:
Diameter: 160mm O.D
DATUM: Geodetic
Date: Jun-01-2021
BH LOCATION: N 4898527 E 366206

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	STANDARD PENETRATION TEST RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
92.9	Ground Surface											
0.0	**TOPSOIL** Brown, moist, some organics		1	AS								
92.3												
0.6	**SILTY CLAY** Brown to greyish brown, moist		2	AS			92					
1												
2			3	AS			91					Water level at 2.03 mBTOP measured on June 4, 2021 Water level at 2.05 mBTOP measured on June 16, 2021
3 89.8												
3.0	**CLAYEY SILT** Greyish brown, wet		4	AS			90					
4							89					
5 87.8							88					
5.0	Borehole terminated at 5.0 mBGS in CLAYEY SILT											

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
$+^3$, $\times^3$: Numbers refer to Sensitivity
○ $^{\varepsilon}$=3% Strain at Failure

LOG OF BOREHOLE BH21-04

PROJECT: Loyalist Secondary Plan
REF. NO.: 211-01353-00
CLIENT: Township of Loyalist
Method: solid stem
ENCL NO.: 4
PROJECT LOCATION:
Diameter: 160mm O.D
DATUM: Geodetic
Date: Jun-01-2021
BH LOCATION: N 44.224896 E -76.676717

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS "N" 0.3 m	GROUND WATER CONDITIONS	ELEVATION	STANDARD PENETRATION TEST RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
92.9	Ground Surface										
0.0	**TOPSOIL** Brown, moist, some organics		1	AS							
92.6											
0.3	**LIMESTONE and SHALE** Grey, competent bedrock		2	CORE			92				Water level at 6.4 mBTOP measured on June 4, 2021
			3	CORE			91				
			4	CORE			90				
			5	CORE			89				
							88				
							87				
86.5											
6.4	Borehole terminated at 6.4 mBGS in LIMESTONE and SHALE bedrock										

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

LOG OF BOREHOLE BH21-06

PROJECT: Loyalist Secondary Plan
REF. NO.: 211-01353-00
CLIENT: Township of Loyalist
Method: solid stem
ENCL NO.: 5
PROJECT LOCATION:
Diameter: 160mm O.D
DATUM: Geodetic
Date: Jun-01-2021
BH LOCATION: N 44.220927 E -76.677255

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	STANDARD PENETRATION TEST RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
96.1	Ground Surface											
0.0	**LIMESTONE and SHALE** Grey, competent bedrock		1	CORE			96					
			2	CORE			95					Water level at 6.4 mBTOP measured on June 4, 2021
			3	CORE			94					
			4	CORE			93					
			5	CORE			92					
							91					
							90					
89.7												
6.4	Borehole terminated at 6.4 mBGS in LIMESTONE and SHALE bedrock											

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

LOG OF BOREHOLE BH21-07

PROJECT: Loyalist Secondary Plan
REF. NO.: 211-01353-00
CLIENT: Township of Loyalist
Method: solid stem
ENCL NO.: 6
PROJECT LOCATION:
Diameter: 160mm O.D
DATUM: Geodetic
Date: May-31-2021
BH LOCATION: N 44.217885 E -76.674102

(m) ELEV / DEPTH	DESCRIPTION	NUMBER	TYPE	BLOWS 0.3 m "N"	ELEVATION	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
96.8	Ground Surface					
0.0	**TOPSOIL** Brown, moist, some organics	1	AS			
96.2						
0.6	**LIMESTONE and SHALE** Grey, competent bedrock	2	CORE		96	Water level at 6.4 mBTOP measured on June 4, 2021
		3	CORE		95	
		4	CORE		94	
		5	CORE		93	
					92	
					91	
90.4						
6.4	Borehole terminated at 6.4 mBGS in LIMESTONE and SHALE bedrock					

STANDARD PENETRATION TEST RESISTANCE PLOT
20 40 60 80 100

SHEAR STRENGTH (kPa)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE
20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%)
10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
$+^3$, $\times^3$: Numbers refer to Sensitivity
○ $^{\varepsilon_f}$=3% Strain at Failure

LOG OF BOREHOLE BH21-08

PROJECT: Loyalist Secondary Plan
REF. NO.: 211-01353-00
CLIENT: Township of Loyalist
Method: solid stem
ENCL NO.: 7
PROJECT LOCATION:
Diameter: 160mm O.D
DATUM: Geodetic
Date: May-31-2021
BH LOCATION: N 44.214942 E -76.669737

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	STANDARD PENETRATION TEST RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
91.7	Ground Surface										
0.0	**TOPSOIL** Brown, moist, some organics		1	AS							
91.0							91				
0.8	**LIMESTONE** Grey, shale beds, thinnely laminated, fine grained, moderate fractures, moderately strong, freshly weathered		1	CORE							
			2	CORE			90				
							89				
			3	CORE			88				
							87				
			4	CORE			86				
85.4											
6.3	Borehole terminated at 6.3 mBGS in LIMESTONE bedrock										

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

LOG OF BOREHOLE BH21-09

PROJECT: Loyalist Secondary Plan
REF. NO.: 211-01353-00
CLIENT: Township of Loyalist
Method: solid stem
ENCL NO.: 8
PROJECT LOCATION:
Diameter: 160mm O.D
DATUM: Geodetic
Date: May-31-2021
BH LOCATION: N 44.214117 E -76.673795

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS "N" 0.3 m	GROUND WATER CONDITIONS	ELEVATION	STANDARD PENETRATION TEST RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
90.7	Ground Surface										
0.0	**TOPSOIL** Brown, moist, some organics		1	AS							
90.1											
0.6	**LIMESTONE** Grey, shale bedding, moderate fractures, slightly weathered, medium strong		2	CORE			90				
			3	CORE			89				Water level at 2.45 mBTOP measured on June 15, 2021
			4	CORE			88				Water level at 3.03 mBTOP measured on June 4, 2021
			5	CORE			87				
							86				
							85				
84.6											
6.1	Borehole terminated at 6.1 mBGS in LIMESTONE bedrock										

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

LOG OF BOREHOLE BH21-11

PROJECT: Loyalist Secondary Plan
REF. NO.: 211-01353-00
CLIENT: Township of Loyalist
Method: solid stem
ENCL NO.: 9
PROJECT LOCATION:
Diameter: 160mm O.D
DATUM: Geodetic
Date: Jun-03-2021
BH LOCATION: N 44.216944 E -76.683888

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
80.2	Ground Surface							
0.0	**TOPSOIL** Brown, moist, some organics		1	AS			80	
79.6								
0.6	**LIMESTONE and SHALE** Grey, competent bedrock		2	CORE			79	
			3	CORE			78	Water level at 1.7 mBTOP measured on June 4, 2021 Water level at 2.08 mBTOP measured on June 15, 2021
			4	CORE			77	
			5	CORE			76	
							75	
							74	
73.8								
6.4	Borehole terminated at 6.4 mBGS in LIMESTONE and SHALE bedrock							

STANDARD PENETRATION TEST RESISTANCE PLOT (20 40 60 80 100)

SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%) (10 20 30)

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
$+^3$, $\times^3$: Numbers refer to Sensitivity
○ ε_f=3% Strain at Failure

LOG OF BOREHOLE BH21-12

PROJECT: Loyalist Secondary Plan
REF. NO.: 211-01353-00
CLIENT: Township of Loyalist
Method: solid stem
ENCL NO.: 10
PROJECT LOCATION:
Diameter: 160mm O.D
DATUM: Geodetic
Date: Jun-03-2021
BH LOCATION: N 44.22611 E -76.683333

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS "N" 0.3 m	GROUND WATER CONDITIONS	ELEVATION	STANDARD PENETRATION TEST RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
96.8	Ground Surface											
0.0	**TOPSOIL** Brown, moist, some organics		1	AS								
96.0							96					
0.8	**SILTSTONE**		2	CORE								
95.0							95					
1.8	**SHALE** Limestone beds, weak		3	CORE								
							94					
			4	CORE								
							93					
							92					
			5	CORE								
							91					
90.4												
6.4	Borehole terminated at 6.4 mBGS in SHALE bedrock											

Continued Next Page

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

LOG OF BOREHOLE BH21-12

PROJECT: Loyalist Secondary Plan
REF. NO.: 211-01353-00
CLIENT: Township of Loyalist
Method: solid stem
ENCL NO.: 10
PROJECT LOCATION:
Diameter: 160mm O.D
DATUM: Geodetic
Date: Jun-03-2021
BH LOCATION: N 44.22611 E -76.683333

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION	STANDARD PENETRATION TEST RESISTANCE PLOT	PLASTIC LIMIT / NATURAL MOISTURE CONTENT / LIQUID LIMIT	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%)
(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m			SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE	WATER CONTENT (%) w_P w w_L			GR SA SI CL
	Continued							20 40 60 80 100	10 20 30			
												Water level at 7.21 mBTOP measured on June 4, 2021

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ 8=3% Strain at Failure

LOG OF BOREHOLE BH21-14

PROJECT: Loyalist Secondary Plan
REF. NO.: 211-01353-00
CLIENT: Township of Loyalist
Method: solid stem
ENCL NO.: 11
PROJECT LOCATION:
Diameter: 160mm O.D
DATUM: Geodetic
Date: Jun-03-2021
BH LOCATION: N 44.215 E -76.66583

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	STANDARD PENETRATION TEST RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0	Ground Surface **TOPSOIL** Brown, moist, some organics		1	AS								
0.6	**LIMESTONE and SHALE** Grey, competent bedrock		2	CORE								Water level at 6.4 mBTOP measured on June 4, 2021
			3	CORE								
			4	CORE								
			5	CORE								
6.4	Borehole terminated at 6.4 mBGS in LIMESTONE and SHALE bedrock											

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

LOG OF BOREHOLE BH21-15

PROJECT: Loyalist Secondary Plan
REF. NO.: 211-01353-00
CLIENT: Township of Loyalist
Method: solid stem
ENCL NO.: 12
PROJECT LOCATION:
Diameter: 160mm O.D
DATUM: Geodetic
Date: Jun-03-2021
BH LOCATION: N 44.218333 E -76.668055

ELEV (m) / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLE NUMBER	SAMPLE TYPE	"N" BLOWS/0.3 m	GROUND WATER CONDITIONS	ELEVATION	SPT / SHEAR STRENGTH (kPa)	WATER CONTENT (%)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	Ground Surface											
0.0	**TOPSOIL** Brown, moist, some organics		1	AS								
0.6	**LIMESTONE and SHALE** Grey, moderate fractures, slightly weathered, medium strong		2	CORE								
			3	CORE								
			4	CORE								
			5	CORE								
6.6	Borehole terminated at 6.6 mBGS in LIMESTONE and SHALE bedrock											

STANDARD PENETRATION TEST RESISTANCE PLOT: 20 40 60 80 100
SHEAR STRENGTH (kPa): ○ UNCONFINED, ● QUICK TRIAXIAL, + FIELD VANE & Sensitivity, × LAB VANE; 20 40 60 80 100
PLASTIC LIMIT w_P, NATURAL MOISTURE CONTENT w, LIQUID LIMIT w_L; WATER CONTENT (%) 10 20 30

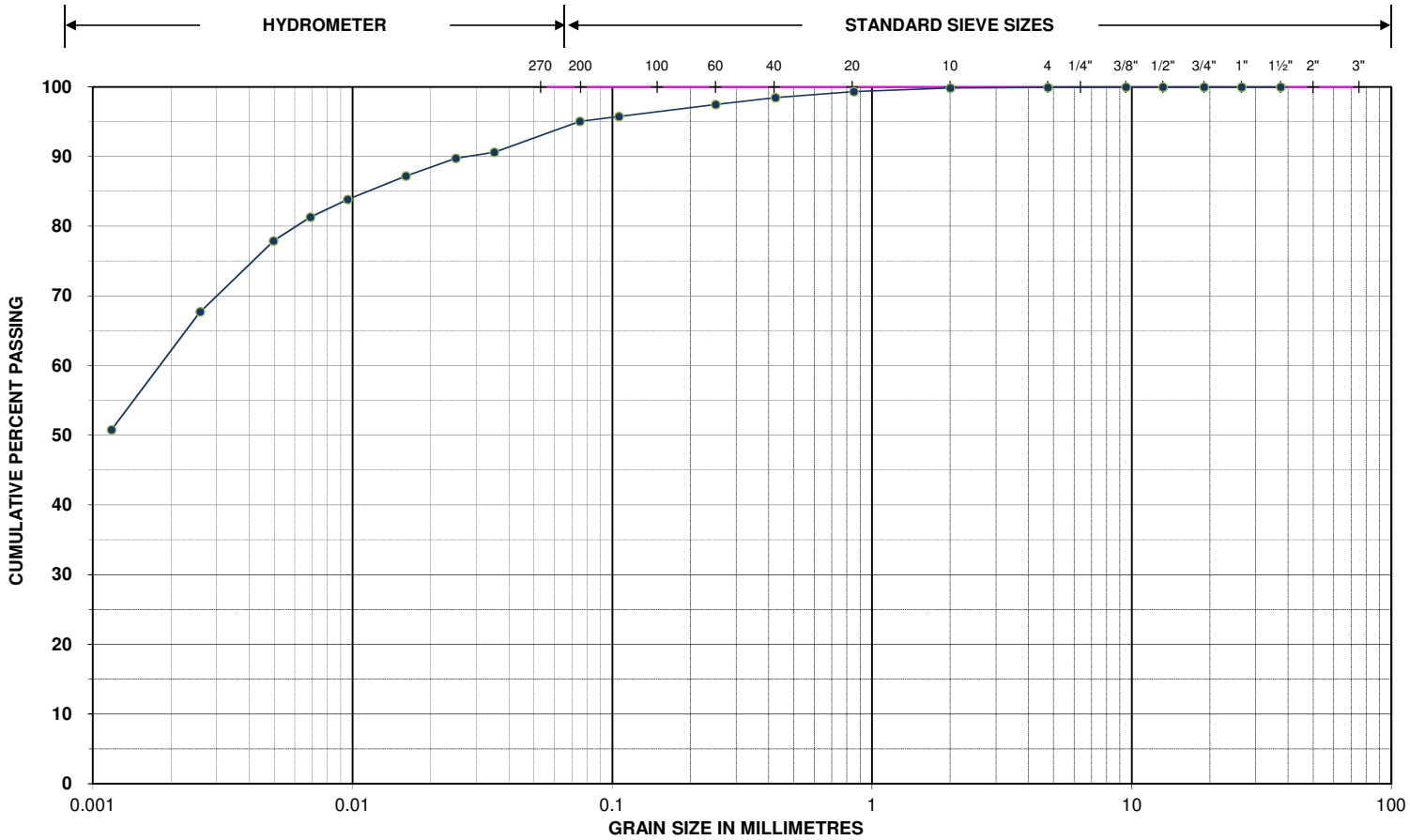
GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3, \times^3$: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

APPENDIX

B PHYSICAL LABORATORY DATA

PARTICLE SIZE DISTRIBUTION ASTM D422



Unified Classification System

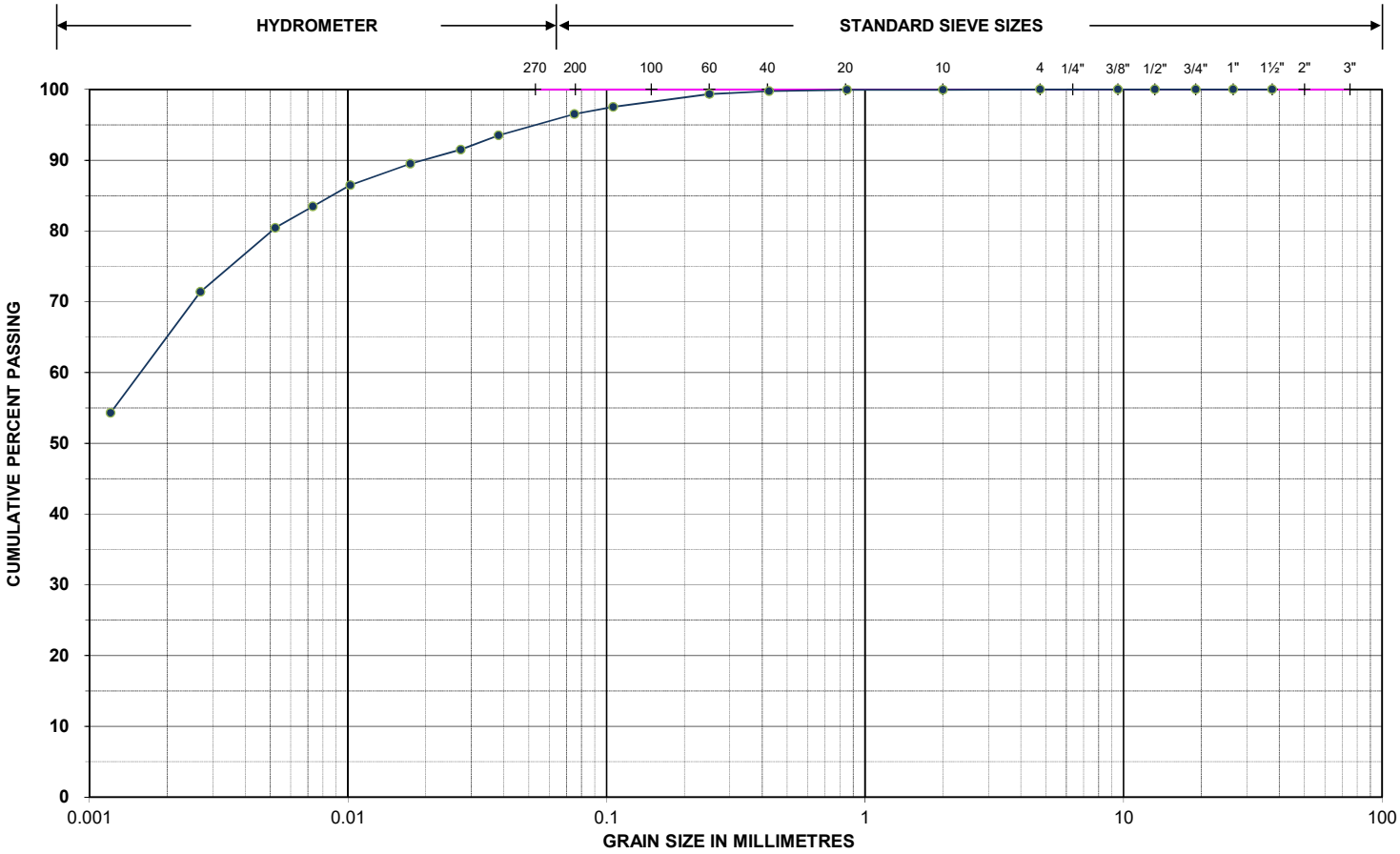
SILT AND CLAY	SAND	GRAVEL

Project Name: Loyalist Secondary Plan **Project No.:** 211-01353-00

Location ID.: BH21-2 **Sample No./Depth:** AS2

Sieve Size	% Passing Coarse	Sieve Size	% Passing Fine	Hydrometer (mm)	% Passing
37.5 mm	100.0	**2.00 mm**	99.9	**0.035**	90.6
26.5 mm	100.0	**0.850 mm**	99.3	**0.016**	87.2
19.0 mm	100.0	**0.425 mm**	98.5	**0.007**	81.3
13.2 mm	100.0	**0.250 mm**	97.5	**0.003**	67.8
9.50 mm	100.0	**0.106 mm**	95.7	**0.001**	50.8
4.75 mm	99.9	**0.075 mm**	95.1		

PARTICLE SIZE DISTRIBUTION ASTM D421



Unified Classification System

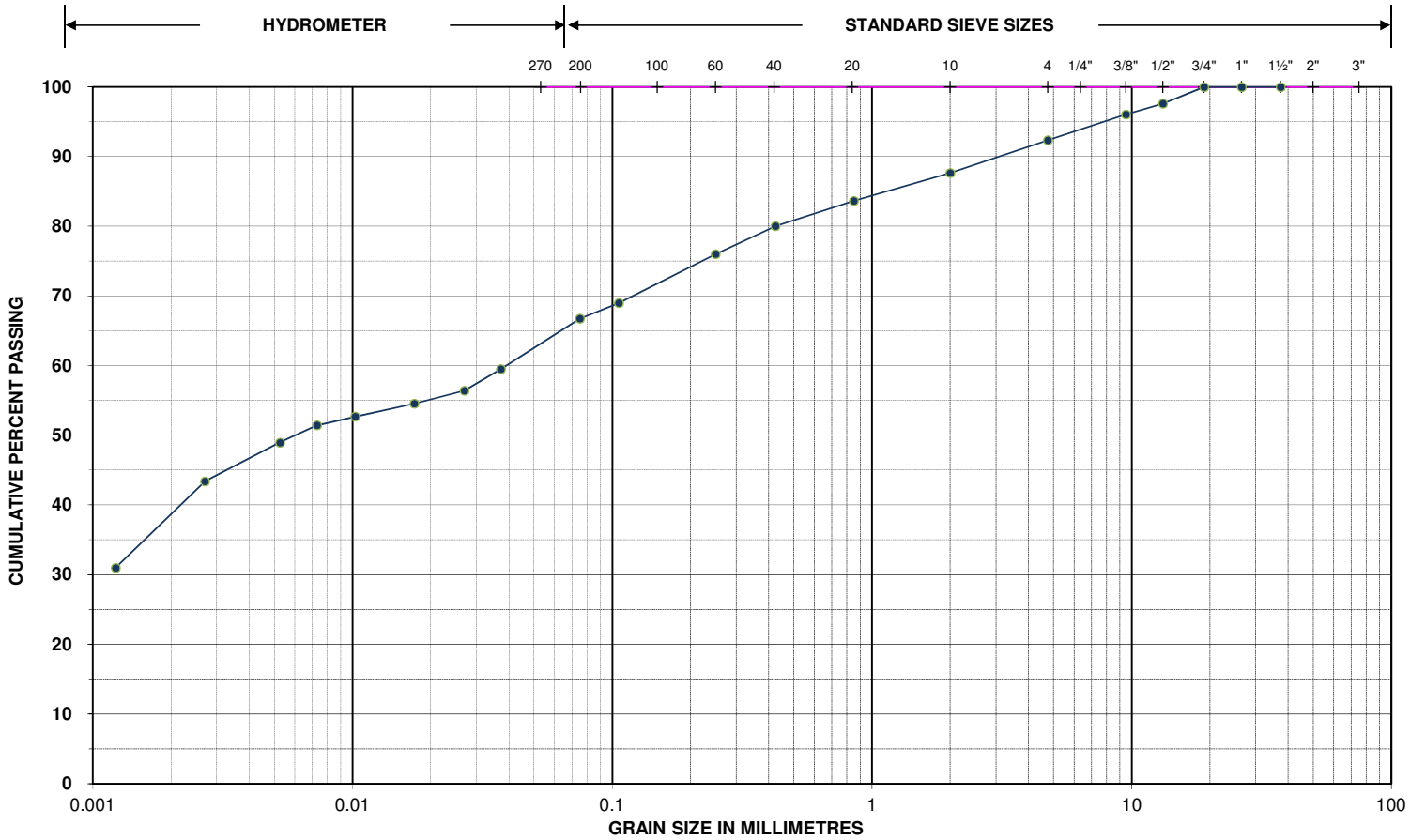
SILT AND CLAY	SAND	GRAVEL

Project Name: Loyalist Secondary Plan **Project No.:** 211-01353-00

Location ID.: BH21-03 **Sample No./Depth:** AS2 & AS3

Sieve Size	% Passing Coarse	Sieve Size	% Passing Fine	Hydrometer (mm)	% Passing
37.5 mm	100.0	**2.00 mm**	100.0	**0.038**	93.5
26.5 mm	100.0	**0.850 mm**	100.0	**0.017**	89.5
19.0 mm	100.0	**0.425 mm**	99.8	**0.007**	83.5
13.2 mm	100.0	**0.250 mm**	99.4	**0.003**	71.4
9.50 mm	100.0	**0.106 mm**	97.5	**0.001**	54.3
4.75 mm	100.0	**0.075 mm**	96.5		

PARTICLE SIZE DISTRIBUTION ASTM D422



Unified Classification System

SILT AND CLAY	SAND	GRAVEL

Project Name: Loyalist Secondary Plan **Project No.:** 211-01353-00

Location ID.: BH21-03 **Sample No./Depth:** AS4

Sieve Size	% Passing Coarse	Sieve Size	% Passing Fine	Hydrometer (mm)	% Passing
37.5 mm	100.0	**2.00 mm**	87.7	**0.037**	59.5
26.5 mm	100.0	**0.850 mm**	83.7	**0.017**	54.5
19.0 mm	100.0	**0.425 mm**	80.0	**0.007**	51.4
13.2 mm	97.6	**0.250 mm**	76.0	**0.003**	43.4
9.50 mm	96.1	**0.106 mm**	69.0	**0.001**	31.0
4.75 mm	92.4	**0.075 mm**	66.7		

ATTERBERG LIMITS

ASTM D4318

Date:	18-Jun-21	Job No.:	211-01353-00
Project Name:	Loyalist Secondary Plan	Tech.:	LEK
Borehole/Sample No.:	BH21-03 / AS2 & AS3 / 0.6-3.0m		

Liquid Limit Test

Number of Shocks	19	25	35
Tin No.			
Tin + Wet soil	38.2	38.3	28.2
Tin + Dry soil	34.6	34.7	25.3
Wt. of Water	3.6	3.65	2.9
Wt. of Tin	28.3	28.2	19.9
Wt. of Dry Soil	6.3	6.5	5.4
Water Content	57	56	54

Plastic Limit Test

Tin No.		
Tin + Wet soil	34.5	26.6
Tin + Dry soil	33.2	25.1
Wt. of Water	1.3	1.5
Wt. of Tin	28.4	19.8
Wt. of Dry Soil	4.8	5.3
Water Content	27	29

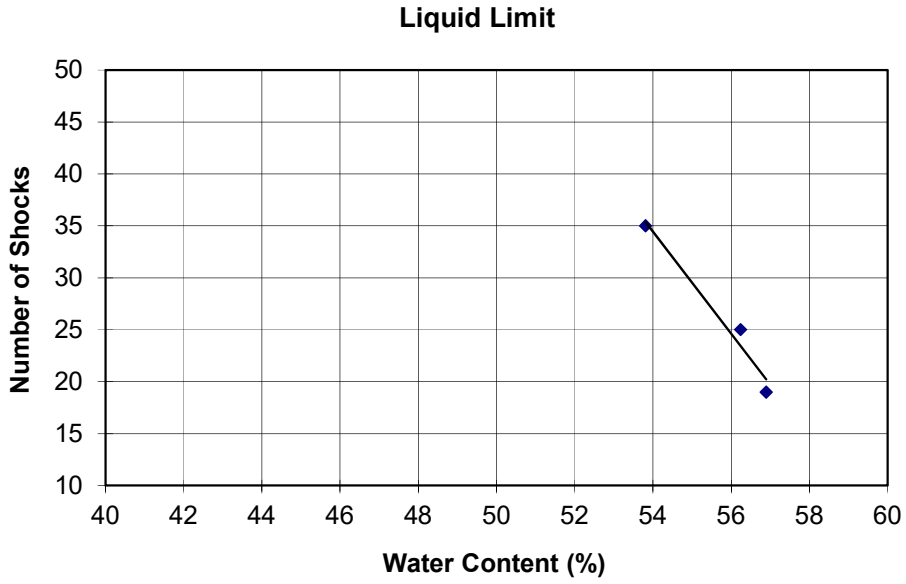
Natural Water Content

KA
98.4
70.1
28.3
15.6
54.5
51.9

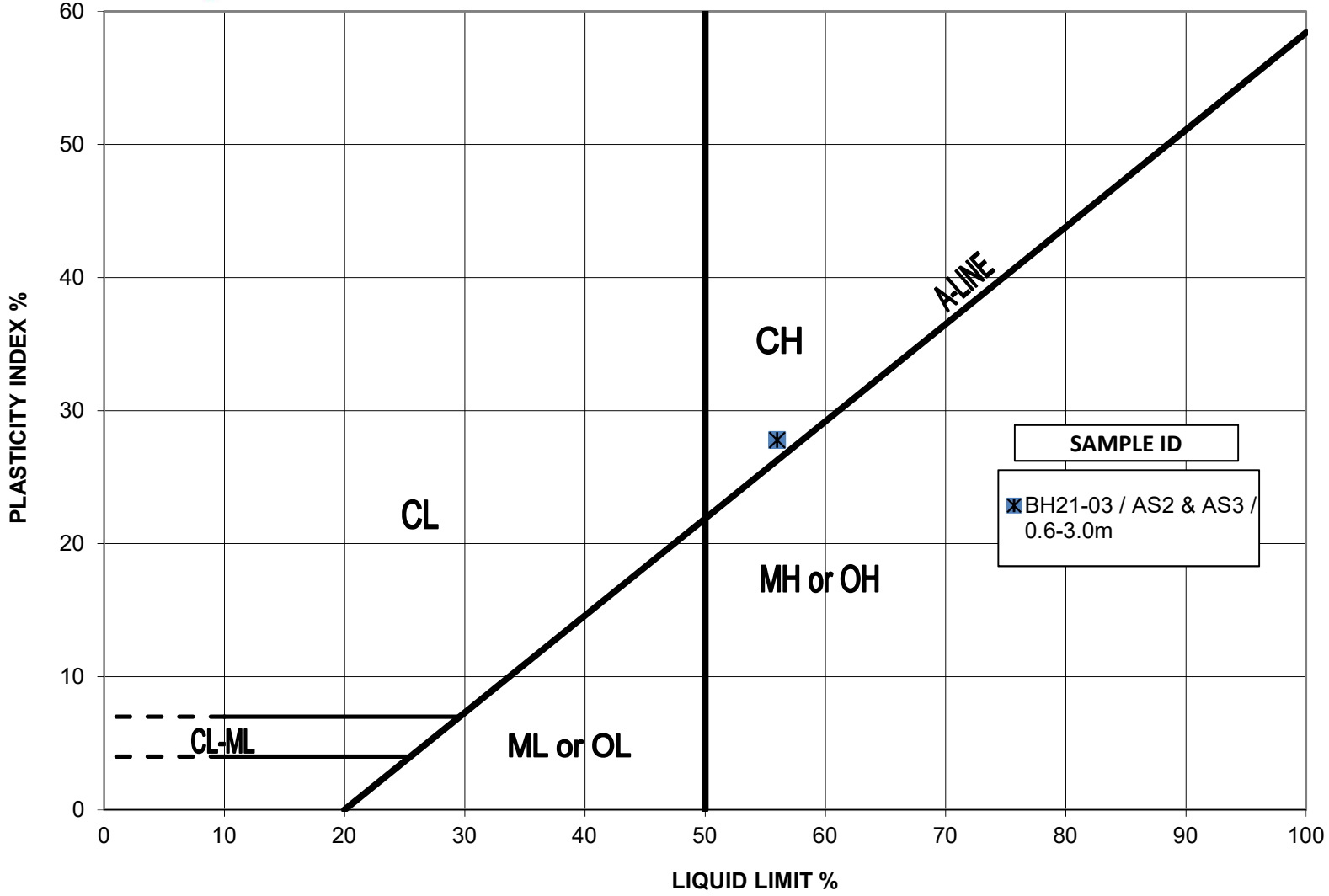
Liquid Limit, (W_L)	56
Plastic Limit, (WP)	28
Plasticity Index ($I_P=W_L-W_P$)	28
Natural Water Content, W	52
Liquidity Index ($I_L=W-W_P/W_L-W_P$)	1

Control Results

Liquid Limit, (W_L)	31
Plastic Limit, (WP)	19
Plasticity Index ($I_P=W_L-W_P$)	12



Atterberg Limits Plasticity Chart
Loyalist Secondary Plan
211-01353-00



MOISTURE CONTENTS

Project Location: Loyalist Secondary Plan
File No.: 211-01353-00
Tech: LEK
Date: 15-Jun-21

TIN NO.	HL-20	LB6			
BOREHOLE NO.	BH21-02	BH21-03			
SAMPLE & DEPTH	AS2 / 0.6-1.5m	AS4 / 3.0-5.0m			
WT of TIN & WET SOIL (g)	100.8	142.4			
WT of TIN & DRY SOIL (g)	82.9	105.3			
WT of WATER (g)	17.9	37.1			
TARE WT (g)	16.8	15.0			
WT of DRY SOIL (g)	66.1	90.3			
MOISTURE CONTENT	27.1%	41.0%			

TIN NO.					
BOREHOLE NO.					
SAMPLE & DEPTH					
WT of TIN & WET SOIL (g)					
WT of TIN & DRY SOIL (g)					
WT of WATER (g)					
TARE WT (g)					
WT of DRY SOIL (g)					
MOISTURE CONTENT					

TIN NO.					
BOREHOLE NO.					
SAMPLE & DEPTH					
WT of TIN & WET SOIL (g)					
WT of TIN & DRY SOIL (g)					
WT of WATER (g)					
TARE WT (g)					
WT of DRY SOIL (g)					
MOISTURE CONTENT					

TIN NO.					
BOREHOLE NO.					
SAMPLE & DEPTH					
WT of TIN & WET SOIL (g)					
WT of TIN & DRY SOIL (g)					
WT of WATER (g)					
TARE WT (g)					
WT of DRY SOIL (g)					
MOISTURE CONTENT					

TIN NO.					
BOREHOLE NO.					
SAMPLE & DEPTH					
WT of TIN & WET SOIL (g)					
WT of TIN & DRY SOIL (g)					
WT of WATER (g)					
TARE WT (g)					
WT of DRY SOIL (g)					
MOISTURE CONTENT					

MOISTURE CONTENTS

Project Location: Loyalist Secondary Plan **Tech:** LEK
File No.: 211-01353-00 **Date:** 18-Jun-21

TIN NO.	AR8	KA	RE		
BOREHOLE NO.	BH21-03	BH21-03	BH21-03		
SAMPLE & DEPTH		AS2	AS3		
WT of TIN & WET SOIL (g)	98.4	65.9	59.5		
WT of TIN & DRY SOIL (g)	70.1	47.4	43.3		
WT of WATER (g)	28.2	18.6	16.3		
TARE WT (g)	15.6	10.2	10.2		
WT of DRY SOIL (g)	54.5	37.2	33.1		
MOISTURE CONTENT	51.8%	49.9%	49.2%		

TIN NO.					
BOREHOLE NO.					
SAMPLE & DEPTH					
WT of TIN & WET SOIL (g)					
WT of TIN & DRY SOIL (g)					
WT of WATER (g)					
TARE WT (g)					
WT of DRY SOIL (g)					
MOISTURE CONTENT					

TIN NO.					
BOREHOLE NO.					
SAMPLE & DEPTH					
WT of TIN & WET SOIL (g)					
WT of TIN & DRY SOIL (g)					
WT of WATER (g)					
TARE WT (g)					
WT of DRY SOIL (g)					
MOISTURE CONTENT					

TIN NO.					
BOREHOLE NO.					
SAMPLE & DEPTH					
WT of TIN & WET SOIL (g)					
WT of TIN & DRY SOIL (g)					
WT of WATER (g)					
TARE WT (g)					
WT of DRY SOIL (g)					
MOISTURE CONTENT					

TIN NO.					
BOREHOLE NO.					
SAMPLE & DEPTH					
WT of TIN & WET SOIL (g)					
WT of TIN & DRY SOIL (g)					
WT of WATER (g)					
TARE WT (g)					
WT of DRY SOIL (g)					
MOISTURE CONTENT					

APPENDIX

C GROUNDWATER MEASUREMENTS

Table 1 Monitoring Well Installation and Groundwater Levels

Monitoring Well ID			BH21-01	BH21-03	BH21-04	BH21-06	BH21-07	BH21-09	BH21-11	BH21-12
Installed By			WSP	WSP	WSP	WSP	WSP	WSP	WSP	WSP
Installation Date			1-Jun-21	2-Jun-21	1-Jun-21	1-Jun-21	31-May-21	31-May-21	3-Jun-21	3-Jun-21
Well Status			Active	Active	Active	Active	Active	Active	Active	Active
Well Inner Diameter		(mm)	51	51	51	51	51	51	51	51
Casing Type (Flushmount / Monument)			Monument	Monument	Monument	Monument	Monument	Monument	Monument	Monument
Top of Pipe Elevation		(masl)	102.84	93.48	93.50	96.92	97.68	91.76	80.98	97.62
Ground Surface Elevation		(masl)	102.08	92.87	92.89	96.11	96.84	90.74	80.17	96.78
Bottom of Concrete Seal/Top of Bentonite Seal		(mbgs)	1.22	1.22	1.22	1.22	1.22	0.9	0.9	0.9
		(masl)	100.9	91.6	91.7	94.9	95.6	89.8	79.3	95.9
Bottom of Bentonite Seal/Top of Sand Pack		(mbgs)	1.5	1.5	1.5	1.5	1.5	1.2	1.2	1.2
		(masl)	100.6	91.3	91.4	94.6	95.3	89.5	79.0	95.6
Top of Well Screen		(mbgs)	1.8	2.0	2.0	1.8	2.0	1.8	1.6	1.7
		(masl)	100.3	90.9	90.9	94.3	94.9	89.0	78.6	95.1
Screen Length		(m)	4.6	3.0	4.6	4.6	4.6	4.6	4.6	4.6
Bottom of Screen		(mbgs)	6.4	5.0	6.6	6.4	6.6	6.3	6.2	6.3
		(masl)	95.7	87.8	86.3	89.7	90.3	84.4	74.0	90.5
4-Jun-21	Depth of GW	(mbtop)	7.4	2.0	7.5	7.5	7.3	3.0	1.7	7.2
	GW Elevation	(masl)	95.4	91.4	86.0	89.4	90.4	88.7	79.3	90.4
	GWL above Well Screen		No (dry)	Yes	No (dry)	No (dry)	No (dry)	Yes	Yes	No
15-Jun-21	Depth of GW	(mbtop)	-	2.1	-	-	-	2.5	2.1	N/A
	GW Elevation	(masl)	-	91.4	-	-	-	89.3	78.9	N/A
	GWL above Well Screen		-	Yes	-	-	-	Yes	Yes	Well Locked

Notes:
Bold: Parameter exceeds the PWQOs.

MECP Water Well Records

Well Record #

3700712 — Lot 030 Conc 01 — ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON

Date 9/11/1951 (DD/MM/YYYY) / Domestic

Elev 81.5 (masl) Easting 365060 Northing 4897282 UTM RC 9 unknown UTM

Water Found 9.1 (mbgs) 72.4 (masl) FRESH

Casing Diameter 6 inch Casing Material: STEEL

Top of Screen (mbgs) Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL 5.5 (mbgs) 76.1 (masl)

Pumping WL (mbgs) (masl)

Pump Rate 18.2 (LPM) /

Spec. Cap. (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	81.5		
0.9	80.6		SHALE / /
16.8	64.8		LIMESTONE / /

3700713 — Lot 030 Conc 01 — ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON

Date 7/10/1953 (DD/MM/YYYY) / Domestic

Elev 81.5 (masl) Easting 365027 Northing 4897255 UTM RC 9 unknown UTM

Water Found 12.2 (mbgs) 69.3 (masl) FRESH

Casing Diameter 6 inch Casing Material: STEEL

Top of Screen (mbgs) Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL 6.1 (mbgs) 75.4 (masl)

Pumping WL 6.1 (mbgs) 75.4 (masl)

Pump Rate 45.5 (LPM) 1 / 0

Spec. Cap. 9,999.99 (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	81.5		
2.7	78.8		SHALE / /
13.7	67.8		LIMESTONE / /

3700714 — Lot 030 Conc 01 — ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON

Date 11/15/1953 (DD/MM/YYYY) / Domestic

Elev 79.1 (masl) Easting 365252 Northing 4897008 UTM RC 9 unknown UTM

Water Found 12.2 (mbgs) 66.9 (masl) FRESH

Casing Diameter 6 inch Casing Material: STEEL

Top of Screen (mbgs) Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL 3.4 (mbgs) 75.8 (masl)

Pumping WL 9.8 (mbgs) 69.4 (masl)

Pump Rate 59.1 (LPM) 2 / 0

Spec. Cap. 9.23 (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	79.1		
0.9	78.2		TOPSOIL / MEDIUM SAND /
13.7	65.4	BLUE	LIMESTONE / /

3700715 — Lot 030 Conc 01 — ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON

Date 4/19/1955 (DD/MM/YYYY) / Domestic

Elev 81.3 (masl) Easting 365006 Northing 4897249 UTM RC 9 unknown UTM

Water Found 24.4 (mbgs) 56.9 (masl) FRESH

Casing Diameter 6 inch Casing Material: STEEL

Top of Screen (mbgs) Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL 5.5 (mbgs) 75.8 (masl)

Pumping WL 12.2 (mbgs) 69.1 (masl)

Pump Rate (LPM) /

Spec. Cap. (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	81.3		
0.6	80.7		CLAY / /
25.6	55.7		LIMESTONE / /

3700716 — Lot 030 Conc 01 — ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON

Date 6/29/1956 (DD/MM/YYYY) / Domestic

Elev 77.6 (masl) Easting 365162 Northing 4897336 UTM RC 9 unknown UTM

Water Found 10.4 (mbgs) 67.3 (masl) FRESH

Casing Diameter 6 inch Casing Material: STEEL

Top of Screen (mbgs) Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL 5.5 (mbgs) 72.1 (masl)

Pumping WL 15.2 (mbgs) 62.4 (masl)

Pump Rate 18.2 (LPM) 1 / 0

Spec. Cap. 1.86 (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	77.6		

Well Record #

0.9	76.7		MEDIUM SAND /	STONES	/
15.2	62.4	BLUE	LIMESTONE /		/
25.9	51.7	WHITE	LIMESTONE /		/

3700717 — **Lot 030 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 6/30/1956 (DD/MM/YYYY) — Elev 76.9 (masl) — Easting 365212 — Northing 4897322 — / Domestic — Water Supply — UTM RC 9 unknown UTM

Water Found 24.7 (mbgs) 52.2 (masl) FRESH

Casing Diameter 6 inch — Casing Material: STEEL

Top of Screen (mbgs) — Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	11.6	(mbgs)	65.3	(masl)
Pumping WL	25.9	(mbgs)	51.0	(masl)
Pump Rate	13.6	(LPM)	2 / 0	
Spec. Cap.	0.95	(LPM/m)	Hour / Minute	

Depth (m)	Elev (masl)	Color	Soil Descriptions		
0.0	76.9				
25.9	51.0	BLUE	LIMESTONE /		/

3700718 — **Lot 030 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 8/16/1962 (DD/MM/YYYY) — Elev 75.5 (masl) — Easting 365171 — Northing 4897301 — / Domestic — Water Supply — UTM RC 5 margin of error : 100 m - 300 m

Water Found 14.6 (mbgs) 60.9 (masl) FRESH

Casing Diameter 6 inch — Casing Material: STEEL

Top of Screen (mbgs) — Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	4.9	(mbgs)	70.7	(masl)
Pumping WL	18.9	(mbgs)	56.6	(masl)
Pump Rate	18.2	(LPM)	1 / 0	
Spec. Cap.	1.30	(LPM/m)	Hour / Minute	

Depth (m)	Elev (masl)	Color	Soil Descriptions		
0.0	75.5				
0.6	74.9		TOPSOIL /	SHALE	/
6.1	69.4		SHALE /		/
18.9	56.6	GREY	LIMESTONE /		/

3700721 — **Lot 031 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 5/27/1957 (DD/MM/YYYY) — Elev 86.4 (masl) — Easting 365260 — Northing 4897657 — / Domestic — Water Supply — UTM RC 9 unknown UTM

Water Found 13.7 (mbgs) 72.7 (masl) FRESH

Casing Diameter 6 inch — Casing Material: STEEL

Top of Screen (mbgs) — Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	4.6	(mbgs)	81.8	(masl)
Pumping WL	15.2	(mbgs)	71.2	(masl)
Pump Rate	31.8	(LPM)	1 / 0	
Spec. Cap.	2.98	(LPM/m)	Hour / Minute	

Depth (m)	Elev (masl)	Color	Soil Descriptions		
0.0	86.4				
2.4	84.0	BLUE	CLAY /		/
18.3	68.1	BLUE	LIMESTONE /		/

3700722 — **Lot 031 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 10/13/1959 (DD/MM/YYYY) — Elev 80.5 (masl) — Easting 365300 — Northing 4897422 — / Domestic — Water Supply — UTM RC 5 margin of error : 100 m - 300 m

Water Found 11.6 (mbgs) 68.9 (masl) FRESH

Casing Diameter 6 inch — Casing Material: STEEL

Top of Screen (mbgs) — Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	6.1	(mbgs)	74.4	(masl)
Pumping WL	11.6	(mbgs)	68.9	(masl)
Pump Rate	45.5	(LPM)	1 / 0	
Spec. Cap.	8.29	(LPM/m)	Hour / Minute	

Depth (m)	Elev (masl)	Color	Soil Descriptions		
0.0	80.5				
11.3	69.2		CLAY /	MEDIUM SAND	/ BOULDERS
11.6	68.9		GRAVEL /		/

Well Record #

3700723 **Lot 031 Conc 01** **ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 11/5/1960 DD/MM/YYYY

Elev 86.2 (masl) Easting 364833 Northing 4897893
/ Livestock Water Supply UTM RC 9 unknown UTM
Water Found 18.9 (mbgs) 67.3 (masl) FRESH
Casing Diameter 6 inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N

SWL	17.1	(mbgs)	69.1	(masl)
Pumping WL	36.3	(mbgs)	49.9	(masl)
Pump Rate	0.0	(LPM)	1 / 0	
Spec. Cap.	0.00	(LPM/m)	Hour / Minute	

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	86.2		
1.2	84.9		SHALE / /
36.3	49.9	BLUE	LIMESTONE / /

3700724 **Lot 031 Conc 01** **ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 7/18/1961 DD/MM/YYYY

Elev 83.1 (masl) Easting 365347 Northing 4897316
/ Livestock Water Supply UTM RC 5 margin of error : 100 m - 300 m
Water Found 24.7 (mbgs) 58.4 (masl) FRESH
Casing Diameter 6 inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N

SWL	19.8	(mbgs)	63.2	(masl)
Pumping WL	28.3	(mbgs)	54.7	(masl)
Pump Rate	13.6	(LPM)	1 / 0	
Spec. Cap.	1.60	(LPM/m)	Hour / Minute	

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	83.1		
0.3	82.8		TOPSOIL / /
2.4	80.6		SHALE / LIMESTONE /
29.6	53.5	BLUE	LIMESTONE / /

3700725 **Lot 031 Conc 01** **ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 4/23/1962 DD/MM/YYYY

Elev 87.3 (masl) Easting 365398 Northing 4897367
/ Domestic Water Supply UTM RC 5 margin of error : 100 m - 300 m
Water Found 28.0 (mbgs) 59.3 (masl) FRESH
Casing Diameter 6 inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N

SWL	6.1	(mbgs)	81.3	(masl)
Pumping WL	31.4	(mbgs)	56.0	(masl)
Pump Rate	4.5	(LPM)	1 / 0	
Spec. Cap.	0.18	(LPM/m)	Hour / Minute	

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	87.3		
5.8	81.6		SHALE / /
31.4	56.0	BLUE	LIMESTONE / /

3700726 **Lot 031 Conc 01** **ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 1/5/1963 DD/MM/YYYY

Elev 77.7 (masl) Easting 365199 Northing 4897318
/ Domestic Water Supply UTM RC 5 margin of error : 100 m - 300 m
Water Found 21.3 (mbgs) 56.4 (masl) FRESH
Casing Diameter 6 inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N

SWL	4.3	(mbgs)	73.5	(masl)
Pumping WL	20.7	(mbgs)	57.0	(masl)
Pump Rate	31.8	(LPM)	1 / 30	
Spec. Cap.	1.93	(LPM/m)	Hour / Minute	

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	77.7		
0.3	77.4		CLAY / /
5.5	72.2		LIMESTONE / /
25.0	52.7	BLUE	LIMESTONE / /

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3700727 — Lot 031 Conc 01 — ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON

Date 5/1/1964 (DD/MM/YYYY) / Domestic
Elev 78.4 (masl) Easting 365147 Northing 4897334
Water Supply UTM RC 5 margin of error : 100 m - 300 m
Water Found 7.0 (mbgs) 71.3 (masl) FRESH
Casing Diameter 6 inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N

SWL	7.9	(mbgs)	70.4	(masl)
Pumping WL	27.4	(mbgs)	50.9	(masl)
Pump Rate	9.1	(LPM)	1 / 0	
Spec. Cap.	0.47	(LPM/m)	Hour / Minute	

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	78.4		
0.3	78.1		TOPSOIL / /
28.7	49.7	BLUE	LIMESTONE / /

3700728 — Lot 031 Conc 01 — ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON

Date 10/5/1965 (DD/MM/YYYY) / Domestic
Elev 81.5 (masl) Easting 365328 Northing 4897351
Water Supply UTM RC 5 margin of error : 100 m - 300 m
Water Found 22.6 (mbgs) 59.0 (masl) FRESH
Casing Diameter 6 inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N

SWL	12.8	(mbgs)	68.7	(masl)
Pumping WL	22.6	(mbgs)	59.0	(masl)
Pump Rate	27.3	(LPM)	1 / 0	
Spec. Cap.	2.80	(LPM/m)	Hour / Minute	

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	81.5		
2.1	79.4		SHALE / LIMESTONE /
23.8	57.7	BLUE	LIMESTONE / /

3700729 — Lot 031 Conc 01 — ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON

Date 4/18/1967 (DD/MM/YYYY) / Municipal
Elev 77.4 (masl) Easting 365376 Northing 4897197
Water Supply UTM RC 5 margin of error : 100 m - 300 m
Water Found 6.7 (mbgs) 70.7 (masl) FRESH
Casing Diameter 6 inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N

SWL	0.9	(mbgs)	76.5	(masl)
Pumping WL	32.0	(mbgs)	45.4	(masl)
Pump Rate	477.3	(LPM)	3 / 0	
Spec. Cap.	15.35	(LPM/m)	Hour / Minute	

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	77.4		
2.4	75.0	BLUE	CLAY / /
15.2	62.2	BLUE	LIMESTONE / /

3700730 — Lot 032 Conc 01 — ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON

Date 7/2/1953 (DD/MM/YYYY) / Domestic
Elev 93.0 (masl) Easting 366032 Northing 4897043
Water Supply UTM RC 9 unknown UTM
Water Found 38.1 (mbgs) 54.9 (masl) FRESH
Casing Diameter 6 inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N

SWL	12.2	(mbgs)	80.8	(masl)
Pumping WL	15.2	(mbgs)	77.8	(masl)
Pump Rate	45.5	(LPM)	1 / 0	
Spec. Cap.	14.91	(LPM/m)	Hour / Minute	

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	93.0		
4.3	88.7		SHALE / /
41.1	51.9		LIMESTONE / /

3700731 — Lot 032 Conc 01 — ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON

Date 10/28/1953 (DD/MM/YYYY) / Domestic
Elev 82.7 (masl) Easting 366072 Northing 4896857
Water Supply UTM RC 9 unknown UTM
Water Found 24.4 (mbgs) 58.3 (masl) FRESH
Casing Diameter 6 inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N

SWL	7.6	(mbgs)	75.1	(masl)
Pumping WL	10.7	(mbgs)	72.0	(masl)
Pump Rate	45.5	(LPM)	1 / 0	
Spec. Cap.	14.91	(LPM/m)	Hour / Minute	

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	82.7		
3.7	79.0		SHALE / /

Depth (m)	Elev (masl)	Color	Soil Descriptions		
26.8	55.9		LIMESTONE /		/

3700732 Lot 032 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON

Date 4/13/1954 DD/MM/YYYY
Elev 93.6 (masl) / Domestic
Easting 365995 Water Supply
Northing 4897045 UTM RC 9 unknown UTM
Water Found 41.1 (mbgs) 52.5 (masl) FRESH
Casing Diameter 6 inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N
SWL 24.4 (mbgs) 69.2 (masl)
Pumping WL 35.1 (mbgs) 58.6 (masl)
Pump Rate 36.4 (LPM) 2 / 0
Spec. Cap. 3.41 (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions		
0.0	93.6				
1.2	92.4	BLUE	CLAY /		/
41.8	51.9	BLUE	LIMESTONE /		/

3700733 Lot 032 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON

Date 6/28/1954 DD/MM/YYYY
Elev 87.2 (masl) / Domestic
Easting 365598 Water Supply
Northing 4897112 UTM RC 9 unknown UTM
Water Found 38.1 (mbgs) 49.1 (masl) FRESH
Casing Diameter 6 inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N
SWL 24.4 (mbgs) 62.8 (masl)
Pumping WL 25.9 (mbgs) 61.2 (masl)
Pump Rate 77.3 (LPM) 2 / 0
Spec. Cap. 50.71 (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions		
0.0	87.2				
0.9	86.2		CLAY /		/
39.3	47.8	BLUE	LIMESTONE /		/

3700734 Lot 032 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON

Date 10/16/1956 DD/MM/YYYY
Elev 90.6 (masl) / Domestic
Easting 365608 Water Supply
Northing 4897831 UTM RC 9 unknown UTM
Water Found 18.9 (mbgs) 71.7 (masl) FRESH
Casing Diameter 6 inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N
SWL 9.1 (mbgs) 81.5 (masl)
Pumping WL 36.0 (mbgs) 54.6 (masl)
Pump Rate 9.1 (LPM) 1 / 30
Spec. Cap. 0.34 (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions		
0.0	90.6				
3.4	87.2	BLUE	CLAY /		/
36.0	54.6	BLUE	LIMESTONE /		/

3700735 Lot 032 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON

Date 5/30/1957 DD/MM/YYYY
Elev 89.7 (masl) / Domestic
Easting 365523 Water Supply
Northing 4897197 UTM RC 9 unknown UTM
Water Found 37.5 (mbgs) 52.2 (masl) FRESH
Casing Diameter 6 inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N
SWL 12.2 (mbgs) 77.5 (masl)
Pumping WL 18.3 (mbgs) 71.4 (masl)
Pump Rate 22.7 (LPM) 1 / 0
Spec. Cap. 3.73 (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions		
0.0	89.7				
0.3	89.4		TOPSOIL /		/
38.1	51.6	BLUE	LIMESTONE /		/

3700736 Lot 032 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON

Date 1/15/1958 DD/MM/YYYY
Elev 96.5 (masl) / Domestic
Easting 365895 Water Supply
Northing 4897133 UTM RC 5 margin of error : 100 m - 300 m
Water Found 14.6 (mbgs) 81.9 (masl) FRESH
Casing Diameter 6 inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N
SWL 6.1 (mbgs) 90.4 (masl)
Pumping WL 30.2 (mbgs) 66.3 (masl)
Pump Rate 9.1 (LPM) 1 / 0
Spec. Cap. 0.38 (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	96.5		

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0.9	95.6		LIMESTONE /		/
30.2	66.3	GREY	LIMESTONE /		/

3700737 **Lot 032 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 4/27/1961 DD/MM/YYYY

Elev 86.3 (masl) Easting 365539 Northing 4897139

/ Domestic Water Supply UTM RC 5 margin of error : 100 m - 300 m

Water Found 23.8 (mbgs) 62.5 (masl) FRESH

Casing Diameter 6 inch Casing Material: STEEL

Top of Screen (mbgs) Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	16.5	(mbgs)	69.8	(masl)	
Pumping WL	43.3	(mbgs)	43.0	(masl)	
Pump Rate	4.5	(LPM)	1 / 0		
Spec. Cap.	0.17	(LPM/m)	Hour / Minute		

Depth (m)	Elev (masl)	Color	Soil Descriptions		
0.0	86.3				
1.5	84.7	BLUE	CLAY /		/
5.2	81.1		SHALE /		/
43.3	43.0	BLUE	LIMESTONE /		/

3700738 **Lot 032 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 9/22/1962 DD/MM/YYYY

Elev 90.8 (masl) Easting 366023 Northing 4896994

/ Domestic Water Supply UTM RC 5 margin of error : 100 m - 300 m

Water Found 36.9 (mbgs) 53.9 (masl) SULPHUR

Casing Diameter 6 inch Casing Material: STEEL

Top of Screen (mbgs) Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	14.6	(mbgs)	76.2	(masl)	
Pumping WL	36.6	(mbgs)	54.2	(masl)	
Pump Rate	22.7	(LPM)	2 / 0		
Spec. Cap.	1.04	(LPM/m)	Hour / Minute		

Depth (m)	Elev (masl)	Color	Soil Descriptions		
0.0	90.8				
0.3	90.5		TOPSOIL /		/
39.0	51.8	BLUE	LIMESTONE /		/

3700739 **Lot 032 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 12/20/1962 DD/MM/YYYY

Elev 90.3 (masl) Easting 366021 Northing 4896986

/ Domestic Water Supply UTM RC 5 margin of error : 100 m - 300 m

Water Found 42.7 (mbgs) 47.6 (masl) SULPHUR

Casing Diameter 6 inch Casing Material: STEEL

Top of Screen (mbgs) Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	18.3	(mbgs)	72.0	(masl)	
Pumping WL	39.6	(mbgs)	50.6	(masl)	
Pump Rate	22.7	(LPM)	2 / 0		
Spec. Cap.	1.07	(LPM/m)	Hour / Minute		

Depth (m)	Elev (masl)	Color	Soil Descriptions		
0.0	90.3				
1.2	89.1		CLAY /		/
44.2	46.1	BLUE	LIMESTONE /		/

3700740 **Lot 032 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 8/8/1963 DD/MM/YYYY

Elev 90.3 (masl) Easting 365557 Northing 4897477

/ Domestic Water Supply UTM RC 5 margin of error : 100 m - 300 m

Water Found 21.3 (mbgs) 69.0 (masl) SULPHUR

Casing Diameter 6 inch Casing Material: STEEL

Top of Screen (mbgs) Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	9.1	(mbgs)	81.2	(masl)	
Pumping WL	32.6	(mbgs)	57.7	(masl)	
Pump Rate	4.5	(LPM)	1 / 0		
Spec. Cap.	0.19	(LPM/m)	Hour / Minute		

Depth (m)	Elev (masl)	Color	Soil Descriptions		
0.0	90.3				
3.0	87.3		SHALE /	LIMESTONE	/
32.6	57.7	BLUE	LIMESTONE /		/

Well Record #

3700741 — **Lot 032 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 8/27/1963 (DD/MM/YYYY) | Elev 78.4 (masl) | Easting 366219 | Northing 4896677 | / Municipal | Water Supply | UTM RC 5 margin of error : 100 m - 300 m

Water Found 17.7 (mbgs) 60.7 (masl) FRESH

Casing Diameter 6 inch | Casing Material: STEEL

Top of Screen (mbgs) | Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	6.1	(mbgs)	72.3	(masl)
Pumping WL	29.0	(mbgs)	49.4	(masl)
Pump Rate	136.4	(LPM)	2 / 0	
Spec. Cap.	5.97	(LPM/m)	Hour / Minute	

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	78.4		
2.4	76.0		SHALE / LIMESTONE /
36.6	41.8	BLUE	LIMESTONE / /

3700742 — **Lot 032 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 2/26/1964 (DD/MM/YYYY) | Elev 81.9 (masl) | Easting 365327 | Northing 4897326 | / Domestic | Water Supply | UTM RC 5 margin of error : 100 m - 300 m

Water Found 20.7 (mbgs) 61.1 (masl) FRESH

Casing Diameter 6 inch | Casing Material: STEEL

Top of Screen (mbgs) | Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	9.1	(mbgs)	72.7	(masl)
Pumping WL	18.3	(mbgs)	63.6	(masl)
Pump Rate	22.7	(LPM)	1 / 0	
Spec. Cap.	2.49	(LPM/m)	Hour / Minute	

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	81.9		
0.6	81.3		TOPSOIL / /
3.7	78.2		SHALE / LIMESTONE /
22.3	59.6	BLUE	LIMESTONE / /

3700743 — **Lot 032 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 8/10/1964 (DD/MM/YYYY) | Elev 86.1 (masl) | Easting 365576 | Northing 4897449 | / Municipal | Water Supply | UTM RC 5 margin of error : 100 m - 300 m

Water Found 12.8 (mbgs) 73.3 (masl) FRESH

Casing Diameter 6 inch | Casing Material: STEEL

Top of Screen (mbgs) | Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	2.7	(mbgs)	83.4	(masl)
Pumping WL	7.6	(mbgs)	78.5	(masl)
Pump Rate	113.7	(LPM)	2 / 0	
Spec. Cap.	23.30	(LPM/m)	Hour / Minute	

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	86.1		
1.5	84.6	BLUE	CLAY / /
14.0	72.1	BLUE	LIMESTONE / /

3700744 — **Lot 032 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 8/12/1964 (DD/MM/YYYY) | Elev 86.1 (masl) | Easting 365579 | Northing 4897451 | / Municipal | Water Supply | UTM RC 5 margin of error : 100 m - 300 m

Water Found 13.4 (mbgs) 72.6 (masl) FRESH

Casing Diameter 6 inch | Casing Material: STEEL

Top of Screen (mbgs) | Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	2.4	(mbgs)	83.6	(masl)
Pumping WL	8.5	(mbgs)	77.5	(masl)
Pump Rate	113.7	(LPM)	2 / 0	
Spec. Cap.	18.64	(LPM/m)	Hour / Minute	

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	86.1		
2.7	83.3	BLUE	CLAY / /
14.0	72.0	BLUE	LIMESTONE / /

3700745 — **Lot 033 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 12/16/1949 (DD/MM/YYYY) | Elev 91.4 (masl) | Easting 366502 | Northing 4896994 | / Domestic | Water Supply | UTM RC 9 unknown UTM

Water Found 14.6 (mbgs) 76.8 (masl) FRESH

Casing Diameter 6 inch | Casing Material: STEEL

Top of Screen (mbgs) | Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	4.9	(mbgs)	86.5	(masl)
Pumping WL	9.8	(mbgs)	81.7	(masl)
Pump Rate	45.5	(LPM)	3 / 0	
Spec. Cap.	9.32	(LPM/m)	Hour / Minute	

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	91.4		

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12.2	79.2	BLUE	CLAY / MEDIUM SAND	/ GRAVEL	
15.8	75.6	BLUE	LIMESTONE /	/	

3700746 — **Lot 033 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 1/15/1954 (DD/MM/YYYY) — Elev 90.1 (masl) — Easting 366443 — Northing 4896943 — / Domestic — Water Supply — UTM RC 9 unknown UTM

Water Found 39.6 (mbgs) 50.5 (masl) FRESH

Casing Diameter 6 inch — Casing Material: STEEL

Top of Screen (mbgs) — Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	9.1	(mbgs)	80.9	(masl)
Pumping WL	42.7	(mbgs)	47.4	(masl)
Pump Rate	31.8	(LPM)	1	/ 0
Spec. Cap.	0.95	(LPM/m)	Hour	/ Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions	
0.0	90.1			
1.2	88.9		CLAY /	/
42.7	47.4	BLUE	LIMESTONE /	/

3700747 — **Lot 033 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 5/20/1954 (DD/MM/YYYY) — Elev 77.8 (masl) — Easting 366302 — Northing 4896847 — / Domestic — Water Supply — UTM RC 9 unknown UTM

Water Found 32.9 (mbgs) 44.9 (masl) FRESH

Casing Diameter 6 inch — Casing Material: STEEL

Top of Screen (mbgs) — Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	7.3	(mbgs)	70.5	(masl)
Pumping WL	33.8	(mbgs)	44.0	(masl)
Pump Rate	31.8	(LPM)		/
Spec. Cap.	1.20	(LPM/m)	Hour	/ Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions	
0.0	77.8			
0.3	77.5		TOPSOIL /	/
4.6	73.3		SHALE /	/
33.8	44.0		LIMESTONE /	/

3700748 — **Lot 033 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 9/23/1961 (DD/MM/YYYY) — Elev 93.0 (masl) — Easting 365770 — Northing 4897786 — / Domestic — Water Supply — UTM RC 5 margin of error : 100 m - 300 m

Water Found 35.1 (mbgs) 58.0 (masl) FRESH

Casing Diameter 6 inch — Casing Material: STEEL

Top of Screen (mbgs) — Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	12.2	(mbgs)	80.8	(masl)
Pumping WL	30.5	(mbgs)	62.5	(masl)
Pump Rate	22.7	(LPM)	1	/ 0
Spec. Cap.	1.24	(LPM/m)	Hour	/ Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions	
0.0	93.0			
0.3	92.7		TOPSOIL /	/
37.5	55.5	BLUE	LIMESTONE /	/

3700749 — **Lot 033 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 5/28/1962 (DD/MM/YYYY) — Elev 93.9 (masl) — Easting 365762 — Northing 4897759 — / Livestock — Water Supply — UTM RC 5 margin of error : 100 m - 300 m

Water Found 33.5 (mbgs) 60.4 (masl) FRESH

Casing Diameter 6 inch — Casing Material: STEEL

Top of Screen (mbgs) — Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	9.1	(mbgs)	84.8	(masl)
Pumping WL	33.5	(mbgs)	60.4	(masl)
Pump Rate	18.2	(LPM)	1	/ 0
Spec. Cap.	0.75	(LPM/m)	Hour	/ Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions	
0.0	93.9			
0.9	93.0	BLUE	CLAY /	/
35.4	58.5	BLUE	LIMESTONE /	/

Well Record #

3700750 — **Lot 033 Conc 01** — **ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 8/5/1964 (DD/MM/YYYY)
Elev 87.1 (masl) Easting 366129 Northing 4896918
/ Domestic Water Supply UTM RC 5 margin of error : 100 m - 300 m
Water Found 21.0 (mbgs) 66.0 (masl) FRESH
Casing Diameter 6 inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N
SWL 2.7 (mbgs) 84.3 (masl)
Pumping WL 22.3 (mbgs) 64.8 (masl)
Pump Rate 90.9 (LPM) 1 / 0
Spec. Cap. 4.66 (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	87.1		
0.9	86.1		CLAY / /
5.2	81.9		SHALE / /
22.3	64.8	BLUE	LIMESTONE / /

3700751 — **Lot 034 Conc 01** — **ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 12/2/1957 (DD/MM/YYYY)
Elev 78.3 (masl) Easting 366700 Northing 4896827
/ Domestic Water Supply UTM RC 9 unknown UTM
Water Found 10.7 (mbgs) 67.6 (masl) FRESH
Casing Diameter 6 inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N
SWL 4.9 (mbgs) 73.4 (masl)
Pumping WL 10.7 (mbgs) 67.6 (masl)
Pump Rate 45.5 (LPM) 1 / 0
Spec. Cap. 7.85 (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	78.3		
4.9	73.4	GREY	SHALE / LIMESTONE /
12.5	65.8	GREY	LIMESTONE / /

3700752 — **Lot 034 Conc 01** — **ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 12/31/1957 (DD/MM/YYYY)
Elev 82.1 (masl) Easting 366729 Northing 4896891
Domestic / Livestock Water Supply UTM RC 9 unknown UTM
Water Found 27.4 (mbgs) 54.7 (masl) FRESH
Casing Diameter 6 inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N
SWL 6.7 (mbgs) 75.4 (masl)
Pumping WL 28.7 (mbgs) 53.5 (masl)
Pump Rate 9.1 (LPM) 1 / 0
Spec. Cap. 0.41 (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	82.1		
0.9	81.2		CLAY / /
3.7	78.5		SHALE / LIMESTONE /
28.7	53.5	GREY	LIMESTONE / /

3700753 — **Lot 034 Conc 01** — **ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 10/8/1958 (DD/MM/YYYY)
Elev 82.5 (masl) Easting 366823 Northing 4896929
/ Abandoned-Supply UTM RC 5 margin of error : 100 m - 300 m
Water Found (mbgs) (masl)
Casing Diameter 8 inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing?
SWL (mbgs) (masl)
Pumping WL (mbgs) (masl)
Pump Rate (LPM) /
Spec. Cap. (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	82.5		
13.7	68.8		LIMESTONE / /

3700754 — **Lot 034 Conc 01** — **ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 4/23/1960 (DD/MM/YYYY)
Elev 82.7 (masl) Easting 366780 Northing 4896912
/ Livestock Water Supply UTM RC 5 margin of error : 100 m - 300 m
Water Found 29.0 (mbgs) 53.8 (masl) FRESH
Casing Diameter 6 inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N
SWL 8.5 (mbgs) 74.2 (masl)
Pumping WL 25.9 (mbgs) 56.8 (masl)
Pump Rate 22.7 (LPM) 1 / 0
Spec. Cap. 1.31 (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	82.7		

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Depth (m)	Elev (masl)	Color	Soil Descriptions
3.4	79.4		SHALE / LIMESTONE /
30.5	52.3	BLUE	LIMESTONE / /

3700755 Lot 034 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON

Date 5/20/1960 DD/MM/YYYY
Elev 83.6 (masl) /
Easting 366707 Abandoned-Supply
Northing 4896910 UTM RC 5 margin of error : 100 m - 300 m
Water Found (mbgs) (masl)
Casing Diameter 6 inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing?
SWL (mbgs) (masl)
Pumping WL (mbgs) (masl)
Pump Rate (LPM) /
Spec. Cap. (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	83.6		
0.3	83.2		TOPSOIL / /
50.3	33.3	BLUE	LIMESTONE / /

3700756 Lot 034 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON

Date 9/13/1961 DD/MM/YYYY
Elev 86.4 (masl) / Domestic
Easting 366570 Water Supply
Northing 4896919 UTM RC 5 margin of error : 100 m - 300 m
Water Found 3.7 (mbgs) 82.7 (masl) FRESH
Casing Diameter 6 inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N
SWL 6.1 (mbgs) 80.3 (masl)
Pumping WL 6.7 (mbgs) 79.7 (masl)
Pump Rate 4.5 (LPM) 0 / 15
Spec. Cap. 7.46 (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	86.4		
0.6	85.8		TOPSOIL / /
7.3	79.1	GREY	LIMESTONE / /

3700757 Lot 034 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON

Date 9/11/1963 DD/MM/YYYY
Elev 85.6 (masl) / Domestic
Easting 366602 Water Supply
Northing 4896915 UTM RC 5 margin of error : 100 m - 300 m
Water Found 10.7 (mbgs) 74.9 (masl) FRESH
Casing Diameter 6 inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N
SWL 11.9 (mbgs) 73.7 (masl)
Pumping WL (mbgs) (masl)
Pump Rate (LPM) /
Spec. Cap. (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	85.6		
3.0	82.5		SHALE / LIMESTONE /
28.3	57.2	GREY	LIMESTONE / /

3700758 Lot 034 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON

Date 5/1/1964 DD/MM/YYYY
Elev 83.3 (masl) / Domestic
Easting 366880 Water Supply
Northing 4896992 UTM RC 5 margin of error : 100 m - 300 m
Water Found 11.6 (mbgs) 71.8 (masl) FRESH
Casing Diameter 6 inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N
SWL 9.4 (mbgs) 73.9 (masl)
Pumping WL 11.3 (mbgs) 72.1 (masl)
Pump Rate 45.5 (LPM) 1 / 0
Spec. Cap. 24.86 (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	83.3		
1.5	81.8	BLUE	CLAY / /
7.6	75.7		SHALE / LIMESTONE /
13.1	70.2	BLUE	LIMESTONE / /

Well Record #

3700759 **Lot 035 Conc 01** **ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 4/14/1954 DD/MM/YYYY

Elev 89.6 (masl) Easting 366897 Northing 4897197
/ Domestic Abandoned-Quality UTM RC 9 unknown UTM
Water Found 41.1 (mbgs) 48.4 (masl) SALTY
Casing Diameter 6 inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N
SWL 41.1 (mbgs) 48.4 (masl)
Pumping WL (mbgs) (masl)
Pump Rate (LPM) /
Spec. Cap. (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	89.6		
45.1	44.5	BLUE	LIMESTONE / /

3700760 **Lot 035 Conc 01** **ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 5/18/1959 DD/MM/YYYY

Elev 83.4 (masl) Easting 366983 Northing 4897071
/ Domestic Water Supply UTM RC 5 margin of error : 100 m - 300 m
Water Found 9.8 (mbgs) 73.7 (masl) FRESH
Casing Diameter 6 inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N
SWL 7.3 (mbgs) 76.1 (masl)
Pumping WL 27.1 (mbgs) 56.3 (masl)
Pump Rate 0.0 (LPM) 1 / 0
Spec. Cap. 0.00 (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	83.4		
5.5	77.9		SHALE / /
27.1	56.3		LIMESTONE / /

3700761 **Lot 035 Conc 01** **ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 8/8/1959 DD/MM/YYYY

Elev 96.5 (masl) Easting 366310 Northing 4898549
/ Abandoned-Supply UTM RC 5 margin of error : 100 m - 300 m
Water Found (mbgs) (masl)
Casing Diameter 6 inch Casing Material:
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing?
SWL (mbgs) (masl)
Pumping WL (mbgs) (masl)
Pump Rate (LPM) /
Spec. Cap. (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	96.5		
0.9	95.6		CLAY / /
40.8	55.6		LIMESTONE / /

3700762 **Lot 035 Conc 01** **ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 6/29/1960 DD/MM/YYYY

Elev 80.8 (masl) Easting 367258 Northing 4897118
/ Domestic Water Supply UTM RC 5 margin of error : 100 m - 300 m
Water Found 12.2 (mbgs) 68.6 (masl) FRESH
Casing Diameter 6 inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N
SWL 4.3 (mbgs) 76.5 (masl)
Pumping WL 14.9 (mbgs) 65.9 (masl)
Pump Rate 9.1 (LPM) 1 / 0
Spec. Cap. 0.85 (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	80.8		
2.4	78.4		SHALE / LIMESTONE /
14.9	65.9	BLUE	LIMESTONE / /

3700764 **Lot 035 Conc 01** **ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 9/12/1963 DD/MM/YYYY

Elev 84.2 (masl) Easting 366977 Northing 4897099
/ Domestic Water Supply UTM RC 5 margin of error : 100 m - 300 m
Water Found 28.3 (mbgs) 55.9 (masl) SULPHUR
Casing Diameter 6 inch Casing Material:
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N
SWL 15.2 (mbgs) 69.0 (masl)
Pumping WL 29.0 (mbgs) 55.3 (masl)
Pump Rate 31.8 (LPM) 1 / 0
Spec. Cap. 2.32 (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	84.2		
24.7	59.6		PREV. DRILLED / /
29.0	55.3		LIMESTONE / /

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3700765 — **Lot 035 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 8/3/1965 DD/MM/YYYY | Elev 95.0 (masl) | Easting 366831 | Northing 4897324 | / Domestic | Water Supply | UTM RC 5 | margin of error : 100 m - 300 m

Water Found 30.5 (mbgs) 64.5 (masl) SULPHUR

Casing Diameter 6 inch | Casing Material: STEEL

Top of Screen (mbgs) | Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	3.7	(mbgs)	91.3	(masl)
Pumping WL	33.5	(mbgs)	61.5	(masl)
Pump Rate	0.0	(LPM)	0 / 30	
Spec. Cap.	0.00	(LPM/m)	Hour / Minute	

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	95.0		
2.1	92.9		TOPSOIL / /
33.5	61.5	GREY	LIMESTONE / /

3702585 — **Lot 034 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 10/7/1968 DD/MM/YYYY | Elev 84.6 (masl) | Easting 366840 | Northing 4897002 | / Domestic | Water Supply | UTM RC 4 | margin of error : 30 m - 100 m

Water Found 18.3 (mbgs) 66.3 (masl) FRESH

Casing Diameter 6 inch | Casing Material: STEEL

Top of Screen (mbgs) | Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	19.8	(mbgs)	64.7	(masl)
Pumping WL	38.1	(mbgs)	46.5	(masl)
Pump Rate	0.0	(LPM)	0 / 20	
Spec. Cap.	0.00	(LPM/m)	Hour / Minute	

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	84.6		
2.4	82.1		TOPSOIL / /
38.1	46.5	GREY	LIMESTONE / /

3702764 — **Lot 031 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 12/23/1969 DD/MM/YYYY | Elev 76.0 (masl) | Easting 365150 | Northing 4897352 | / Domestic | Water Supply | UTM RC 4 | margin of error : 30 m - 100 m

Water Found 8.2 (mbgs) 67.8 (masl) FRESH

Casing Diameter 6 inch | Casing Material: STEEL

Top of Screen (mbgs) | Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	2.1	(mbgs)	73.9	(masl)
Pumping WL	9.1	(mbgs)	66.9	(masl)
Pump Rate	13.6	(LPM)	2 / 0	
Spec. Cap.	1.95	(LPM/m)	Hour / Minute	

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	76.0		
2.7	73.3	BLUE	CLAY / /
9.4	66.6	BLUE	LIMESTONE / /

3702906 — **Lot 034 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 1/29/1970 DD/MM/YYYY | Elev 79.4 (masl) | Easting 366660 | Northing 4896822 | / Domestic | Water Supply | UTM RC 4 | margin of error : 30 m - 100 m

Water Found 12.8 (mbgs) 66.6 (masl) FRESH

Casing Diameter 6 inch | Casing Material: STEEL

Top of Screen (mbgs) | Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	3.7	(mbgs)	75.7	(masl)
Pumping WL	5.2	(mbgs)	74.2	(masl)
Pump Rate	136.4	(LPM)	1 / 0	
Spec. Cap.	89.49	(LPM/m)	Hour / Minute	

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	79.4		
0.6	78.8	BROWN	TOPSOIL / /
13.7	65.7	BLUE	LIMESTONE / /

3702917 — **Lot 031 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 8/20/1970 DD/MM/YYYY | Elev 90.3 (masl) | Easting 365710 | Northing 4897602 | / Domestic | Water Supply | UTM RC 4 | margin of error : 30 m - 100 m

Water Found 13.1 (mbgs) 77.2 (masl) FRESH

Casing Diameter 6 inch | Casing Material: STEEL

Top of Screen (mbgs) | Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	5.2	(mbgs)	85.2	(masl)
Pumping WL	12.2	(mbgs)	78.2	(masl)
Pump Rate	31.8	(LPM)	2 / 0	
Spec. Cap.	4.54	(LPM/m)	Hour / Minute	

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	90.3		
1.2	89.1	BROWN	TOPSOIL / /

14.3	76.0	BLUE	LIMESTONE / /

3702941 Lot 034 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON

Date 8/11/1969 DD/MM/YYYY
Elev 93.6 (masl) / Domestic
Easting 366150 Water Supply
Northing 4898672 UTM RC 4 margin of error : 30 m - 100 m
Water Found 6.1 (mbgs) 87.5 (masl) FRESH
Casing Diameter 6 inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N
SWL 3.0 (mbgs) 90.5 (masl)
Pumping WL 6.7 (mbgs) 86.9 (masl)
Pump Rate 9.1 (LPM) 0 / 20
Spec. Cap. 2.49 (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	93.6		
1.8	91.8		TOPSOIL / /
7.3	86.3	GREY	LIMESTONE / /

3703096 Lot 030 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON

Date 11/23/1970 DD/MM/YYYY
Elev 78.6 (masl) / Domestic
Easting 365120 Water Supply
Northing 4897302 UTM RC 4 margin of error : 30 m - 100 m
Water Found 21.9 (mbgs) 56.7 (masl) FRESH
Casing Diameter 6 inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N
SWL 5.5 (mbgs) 73.1 (masl)
Pumping WL 25.0 (mbgs) 53.6 (masl)
Pump Rate 18.2 (LPM) 2 / 0
Spec. Cap. 0.93 (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	78.6		
0.3	78.3	BROWN	TOPSOIL / /
26.8	51.8	BLUE	LIMESTONE / /

3703697 Lot 030 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON

Date 10/30/1973 DD/MM/YYYY
Elev 82.8 (masl) / Domestic
Easting 364930 Water Supply
Northing 4897202 UTM RC 4 margin of error : 30 m - 100 m
Water Found 5.5 (mbgs) 77.3 (masl) FRESH
Casing Diameter 6 inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N
SWL 2.1 (mbgs) 80.6 (masl)
Pumping WL 2.1 (mbgs) 80.6 (masl)
Pump Rate 113.7 (LPM) 1 / 0
Spec. Cap. 9,999.99 (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	82.8		
1.2	81.5	BROWN	CLAY / SHALE /
13.4	69.3	BLUE	LIMESTONE / /

3704159 Lot 032 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON

Date 5/2/1974 DD/MM/YYYY
Elev 93.2 (masl) / Domestic
Easting 366084 Water Supply
Northing 4897048 UTM RC 4 margin of error : 30 m - 100 m
Water Found 39.0 (mbgs) 54.2 (masl) MINERIAL
Casing Diameter 6 inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N
SWL 14.6 (mbgs) 78.6 (masl)
Pumping WL 39.9 (mbgs) 53.3 (masl)
Pump Rate 27.3 (LPM) 2 / 0
Spec. Cap. 1.08 (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	93.2		
0.6	92.6	BROWN	TOPSOIL / /
1.2	92.0	GREY	SHALE / /
39.9	53.3	GREY	LIMESTONE / /

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3704396 — Lot 032 Conc 01 — ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON

Date 10/3/1975 (DD/MM/YYYY) | Elev 90.2 (masl) | Easting 365490 | Northing 4897422 | UTM RC 4 | margin of error : 30 m - 100 m

/ Domestic | Water Supply

Water Found 48.8 (mbgs) 41.5 (masl) SULPHUR

Casing Diameter 6 inch | Casing Material: STEEL

Top of Screen (mbgs) | Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	13.7	(mbgs)	76.5 (masl)
Pumping WL	45.7	(mbgs)	44.5 (masl)
Pump Rate	45.5	(LPM)	2 / 0
Spec. Cap.	1.42	(LPM/m)	Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	90.2		
0.3	89.9	BROWN	FILL / /
2.4	87.8	BLUE	LIMESTONE / SHALE /
50.3	39.9	BLUE	LIMESTONE / /

3704708 — Lot 034 Conc 01 — ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON

Date 6/18/1976 (DD/MM/YYYY) | Elev 101.4 (masl) | Easting 366667 | Northing 4897583 | UTM RC 4 | margin of error : 30 m - 100 m

/ Abandoned-Supply

Water Found (mbgs) (masl)

Casing Diameter 6 inch | Casing Material:

Top of Screen (mbgs) | Bottom of Screen (mbgs)

Screen Interval (m)

Flowing?

SWL		(mbgs)	(masl)
Pumping WL		(mbgs)	(masl)
Pump Rate		(LPM)	/
Spec. Cap.		(LPM/m)	Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	101.4		
0.3	101.0	BROWN	TOPSOIL / /
53.3	48.0	BLUE	LIMESTONE / /

3704977 — Lot 032 Conc 01 — ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON

Date 7/4/1977 (DD/MM/YYYY) | Elev 87.9 (masl) | Easting 365650 | Northing 4897532 | UTM RC 4 | margin of error : 30 m - 100 m

/ Abandoned-Quality

Water Found 53.3 (mbgs) 34.5 (masl) SALTY

Casing Diameter 6 inch | Casing Material: STEEL

Top of Screen (mbgs) | Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	15.2	(mbgs)	72.6 (masl)
Pumping WL	47.2	(mbgs)	40.6 (masl)
Pump Rate	136.4	(LPM)	2 / 0
Spec. Cap.	4.26	(LPM/m)	Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	87.9		
0.6	87.3	BROWN	TOPSOIL / /
54.9	33.0	BLUE	LIMESTONE / /

3704983 — Lot 035 Conc 01 — ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON

Date 7/11/1977 (DD/MM/YYYY) | Elev 95.3 (masl) | Easting 366310 | Northing 4898832 | UTM RC 4 | margin of error : 30 m - 100 m

/ Abandoned-Supply

Water Found (mbgs) (masl)

Casing Diameter 6 inch | Casing Material: OPEN HOLE

Top of Screen (mbgs) | Bottom of Screen (mbgs)

Screen Interval (m)

Flowing?

SWL		(mbgs)	(masl)
Pumping WL		(mbgs)	(masl)
Pump Rate		(LPM)	/
Spec. Cap.		(LPM/m)	Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	95.3		
1.2	94.1		TOPSOIL / /
22.9	72.5		LIMESTONE / /

3704984 — Lot 035 Conc 01 — ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON

Date 7/14/1977 (DD/MM/YYYY) | Elev 93.0 (masl) | Easting 366270 | Northing 4898752 | UTM RC 4 | margin of error : 30 m - 100 m

/ Abandoned-Supply

Water Found (mbgs) (masl)

Casing Diameter 6 inch | Casing Material:

Top of Screen (mbgs) | Bottom of Screen (mbgs)

Screen Interval (m)

Flowing?

SWL		(mbgs)	(masl)
Pumping WL		(mbgs)	(masl)
Pump Rate		(LPM)	/
Spec. Cap.		(LPM/m)	Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	93.0		

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Depth (m)	Elev (masl)	Color	Soil Descriptions
0.9	92.1		TOPSOIL / /
25.9	67.1		LIMESTONE / /

3704985 Lot 035 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON

Date 7/18/1977 DD/MM/YYYY
Elev 93.3 (masl) / Domestic
Easting 366310 Water Supply
Northing 4898782 UTM RC 4 margin of error : 30 m - 100 m
Water Found 15.2 (mbgs) 78.1 (masl) SULPHUR
Casing Diameter 6 inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N
SWL 4.6 (mbgs) 88.8 (masl)
Pumping WL 30.5 (mbgs) 62.9 (masl)
Pump Rate 9.1 (LPM) 0 / 30
Spec. Cap. 0.35 (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	93.3		
0.9	92.4		TOPSOIL / /
30.5	62.9		LIMESTONE / /

3704986 Lot 035 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON

Date 7/30/1977 DD/MM/YYYY
Elev 94.4 (masl) /
Easting 366310 Abandoned-Supply
Northing 4898812 UTM RC 4 margin of error : 30 m - 100 m
Water Found (mbgs) (masl)
Casing Diameter 6 inch Casing Material:
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing?
SWL (mbgs) (masl)
Pumping WL (mbgs) (masl)
Pump Rate (LPM) /
Spec. Cap. (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	94.4		
0.9	93.5		TOPSOIL / /
42.7	51.8		LIMESTONE / /

3705126 Lot 032 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON

Date 8/12/1977 DD/MM/YYYY
Elev 84.1 (masl) / Domestic
Easting 365690 Water Supply
Northing 4897502 UTM RC 4 margin of error : 30 m - 100 m
Water Found 20.7 (mbgs) 63.4 (masl) FRESH
Casing Diameter 6 inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N
SWL 2.1 (mbgs) 82.0 (masl)
Pumping WL 21.6 (mbgs) 62.5 (masl)
Pump Rate 18.2 (LPM) 2 / 0
Spec. Cap. 0.93 (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	84.1		
2.7	81.4	BLUE	CLAY / /
3.7	80.5	BROWN	SAND / /
23.2	61.0	BLUE	LIMESTONE / /

3705134 Lot 030 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON

Date 11/22/1977 DD/MM/YYYY
Elev 79.0 (masl) / Domestic
Easting 365030 Water Supply
Northing 4897222 UTM RC 4 margin of error : 30 m - 100 m
Water Found 20.4 (mbgs) 58.6 (masl) FRESH
Casing Diameter 6 inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N
SWL 5.2 (mbgs) 73.8 (masl)
Pumping WL 28.0 (mbgs) 51.0 (masl)
Pump Rate 9.1 (LPM) 2 / 0
Spec. Cap. 0.40 (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	79.0		
0.3	78.7		TOPSOIL / /
0.9	78.1		LIMESTONE / FRACTURED /
29.0	50.1	BLUE	LIMESTONE / /

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3705212 — **Lot 034 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 5/3/1978 DD/MM/YYYY | Elev 73.8 (masl) | Easting 366929 | Northing 4896921 | / Domestic | Water Supply | UTM RC 4 | margin of error : 30 m - 100 m

Water Found 8.2 (mbgs) 65.5 (masl) FRESH

Casing Diameter 6 inch | Casing Material: STEEL

Top of Screen (mbgs) | Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	2.7	(mbgs)	71.0 (masl)
Pumping WL	7.9	(mbgs)	65.8 (masl)
Pump Rate	68.2	(LPM)	2 / 0
Spec. Cap.	13.16	(LPM/m)	Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	73.8		
0.6	73.2	BROWN	TOPSOIL / /
9.1	64.6	BLUE	LIMESTONE / /

3705241 — **Lot 029 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 6/28/1978 DD/MM/YYYY | Elev 81.9 (masl) | Easting 365129 | Northing 4896821 | / Domestic | Water Supply | UTM RC 4 | margin of error : 30 m - 100 m

Water Found 7.0 (mbgs) 74.9 (masl) FRESH

Casing Diameter 6 inch | Casing Material: STEEL

Top of Screen (mbgs) | Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	4.6	(mbgs)	77.3 (masl)
Pumping WL	6.1	(mbgs)	75.8 (masl)
Pump Rate	45.5	(LPM)	1 / 0
Spec. Cap.	29.83	(LPM/m)	Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	81.9		
0.3	81.6		TOPSOIL / /
8.5	73.3		LIMESTONE / /

3705352 — **Lot 031 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 4/15/1978 DD/MM/YYYY | Elev 78.4 (masl) | Easting 365170 | Northing 4896922 | / Domestic | Water Supply | UTM RC 4 | margin of error : 30 m - 100 m

Water Found 19.8 (mbgs) 58.6 (masl) Not stated

Casing Diameter 6 inch | Casing Material:

Top of Screen (mbgs) | Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	2.1	(mbgs)	76.3 (masl)
Pumping WL	21.9	(mbgs)	56.5 (masl)
Pump Rate	22.7	(LPM)	1 / 0
Spec. Cap.	1.15	(LPM/m)	Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	78.4		
0.3	78.1		TOPSOIL / /
21.9	56.5	BLUE	LIMESTONE / /

3705369 — **Lot 032 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 5/11/1979 DD/MM/YYYY | Elev 92.7 (masl) | Easting 365529 | Northing 4897521 | / Domestic | Water Supply | UTM RC 4 | margin of error : 30 m - 100 m

Water Found 18.3 (mbgs) 74.4 (masl) FRESH

Casing Diameter 6 inch | Casing Material: STEEL

Top of Screen (mbgs) | Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	10.4	(mbgs)	82.3 (masl)
Pumping WL	27.4	(mbgs)	65.2 (masl)
Pump Rate	9.1	(LPM)	1 / 0
Spec. Cap.	0.53	(LPM/m)	Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	92.7		
0.3	92.4	BROWN	TOPSOIL / STONES / LOOSE
30.5	62.2	GREY	LIMESTONE / LAYERED /

3705605 — **Lot 032 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 7/14/1980 DD/MM/YYYY | Elev 92.4 (masl) | Easting 366029 | Northing 4897021 | / Domestic | Water Supply | UTM RC 4 | margin of error : 30 m - 100 m

Water Found 39.0 (mbgs) 53.4 (masl) SULPHUR

Casing Diameter 6 inch | Casing Material: STEEL

Top of Screen (mbgs) | Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	18.3	(mbgs)	74.1 (masl)
Pumping WL	39.0	(mbgs)	53.4 (masl)
Pump Rate	22.7	(LPM)	2 / 0
Spec. Cap.	1.10	(LPM/m)	Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	92.4		
1.8	90.6	BLUE	CLAY / /

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2.4	90.0	BROWN	LIMESTONE /	SHALE /
38.1	54.3	BLUE	LIMESTONE /	/
41.1	51.3	GREEN	LIMESTONE /	/

3705623 — **Lot 033 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 12/4/1980 (DD/MM/YYYY)

Elev 87.9 (masl) Easting 366229 Northing 4896921

/ Domestic Water Supply UTM RC 4 margin of error : 30 m - 100 m

Water Found 28.3 (mbgs) 59.5 (masl) SULPHUR

Casing Diameter 6 inch Casing Material: STEEL

Top of Screen (mbgs) Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	15.2	(mbgs)	72.6	(masl)
Pumping WL	26.2	(mbgs)	61.7	(masl)
Pump Rate	36.4	(LPM)	2 / 0	
Spec. Cap.	3.31	(LPM/m)	Hour / Minute	

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	87.9		
0.6	87.3	BLUE	CLAY / /
29.3	58.6	BLUE	LIMESTONE / /

3705733 — **Lot 033 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 6/8/1981 (DD/MM/YYYY)

Elev 75.4 (masl) Easting 366529 Northing 4896821

/ Abandoned-Supply UTM RC 4 margin of error : 30 m - 100 m

Water Found (mbgs) (masl)

Casing Diameter Casing Material:

Top of Screen (mbgs) Bottom of Screen (mbgs)

Screen Interval (m)

Flowing?

SWL		(mbgs)		(masl)
Pumping WL		(mbgs)		(masl)
Pump Rate		(LPM)	/	
Spec. Cap.		(LPM/m)	Hour / Minute	

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	75.4		
0.6	74.8	BROWN	TOPSOIL / /
53.0	22.4	BLUE	LIMESTONE / /
59.4	16.0	RED	GRANITE / /

3705775 — **Lot 032 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 6/29/1981 (DD/MM/YYYY)

Elev 89.5 (masl) Easting 365829 Northing 4897021

/ Domestic Water Supply UTM RC 4 margin of error : 30 m - 100 m

Water Found 37.8 (mbgs) 51.7 (masl) Not stated

Casing Diameter 6 inch Casing Material: STEEL

Top of Screen (mbgs) Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	12.5	(mbgs)	77.0	(masl)
Pumping WL	39.3	(mbgs)	50.2	(masl)
Pump Rate	13.6	(LPM)	1 / 0	
Spec. Cap.	0.51	(LPM/m)	Hour / Minute	

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	89.5		
0.3	89.2		TOPSOIL / /
39.3	50.2	BLUE	LIMESTONE / /

3705776 — **Lot 029 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 8/8/1981 (DD/MM/YYYY)

Elev 76.6 (masl) Easting 364929 Northing 4897121

/ Domestic Water Supply UTM RC 4 margin of error : 30 m - 100 m

Water Found 6.1 (mbgs) 70.5 (masl) Not stated

Casing Diameter 6 inch Casing Material: STEEL

Top of Screen (mbgs) Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	6.1	(mbgs)	70.5	(masl)
Pumping WL	18.9	(mbgs)	57.7	(masl)
Pump Rate	22.7	(LPM)	1 / 0	
Spec. Cap.	1.78	(LPM/m)	Hour / Minute	

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	76.6		
0.3	76.3		TOPSOIL / /
18.9	57.7		LIMESTONE / /

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3705828 — **Lot 035 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 10/14/1982 (DD/MM/YYYY) — Elev 81.7 (masl) — Easting 367329 — Northing 4897121 — UTM RC 4 — margin of error : 30 m - 100 m

/ Domestic — Water Supply

Water Found 12.8 (mbgs) 68.9 (masl) SULPHUR

Casing Diameter 6 inch — Casing Material: STEEL

Top of Screen (mbgs) — Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	10.7	(mbgs)	71.0	(masl)
Pumping WL	28.7	(mbgs)	53.0	(masl)
Pump Rate	13.6	(LPM)	3 / 0	
Spec. Cap.	0.76	(LPM/m)	Hour / Minute	

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	81.7		
0.3	81.4	BLUE	CLAY / /
0.9	80.8	BROWN	LIMESTONE / /
25.9	55.8	BLUE	LIMESTONE / /
26.5	55.2	GREEN	LIMESTONE / /
29.6	52.1	BLUE	LIMESTONE / /

3705949 — **Lot 031 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 11/14/1983 (DD/MM/YYYY) — Elev 88.8 (masl) — Easting 365429 — Northing 4896821 — UTM RC 4 — margin of error : 30 m - 100 m

/ Domestic — Water Supply

Water Found 6.1 (mbgs) 82.7 (masl) Not stated

Casing Diameter 6 inch — Casing Material:

Top of Screen (mbgs) — Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	0.9	(mbgs)	87.9	(masl)
Pumping WL	7.6	(mbgs)	81.2	(masl)
Pump Rate	45.5	(LPM)	1 / 0	
Spec. Cap.	6.78	(LPM/m)	Hour / Minute	

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	88.8		
7.6	81.2	BLUE	LIMESTONE / /

3705950 — **Lot 030 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 12/13/1983 (DD/MM/YYYY) — Elev 81.9 (masl) — Easting 365129 — Northing 4896821 — UTM RC 4 — margin of error : 30 m - 100 m

/ Domestic — Water Supply

Water Found (mbgs) (masl)

Casing Diameter 6 inch — Casing Material: STEEL

Top of Screen (mbgs) — Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	3.0	(mbgs)	78.8	(masl)
Pumping WL	27.7	(mbgs)	54.1	(masl)
Pump Rate	136.4	(LPM)	1 / 0	
Spec. Cap.	5.52	(LPM/m)	Hour / Minute	

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	81.9		
0.3	81.6		TOPSOIL / /
27.7	54.1		LIMESTONE / /

3705966 — **Lot 029 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 10/18/1983 (DD/MM/YYYY) — Elev 84.3 (masl) — Easting 364829 — Northing 4897321 — UTM RC 4 — margin of error : 30 m - 100 m

/ Domestic — Water Supply

Water Found 7.0 (mbgs) 77.3 (masl) FRESH

Casing Diameter 6 inch — Casing Material: STEEL

Top of Screen (mbgs) — Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	3.7	(mbgs)	80.7	(masl)
Pumping WL	13.1	(mbgs)	71.2	(masl)
Pump Rate	68.2	(LPM)	2 / 0	
Spec. Cap.	7.22	(LPM/m)	Hour / Minute	

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	84.3		
0.3	84.0	BROWN	TOPSOIL / /
4.9	79.4	BROWN	LIMESTONE / SHALE /
14.9	69.4	BLUE	LIMESTONE / /

Well Record #

3706074 — **Lot 033 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 6/9/1984 (DD/MM/YYYY) | Elev 92.3 (masl) | Easting 365829 | Northing 4897721 | / Domestic | Water Supply | UTM RC 4 | margin of error : 30 m - 100 m

Water Found 40.8 (mbgs) 51.5 (masl) SULPHUR

Casing Diameter 6 inch | Casing Material: STEEL

Top of Screen (mbgs) | Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	17.7	(mbgs)	74.6	(masl)
Pumping WL	40.8	(mbgs)	51.5	(masl)
Pump Rate	27.3	(LPM)	2 / 0	
Spec. Cap.	1.18	(LPM/m)	Hour / Minute	

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	92.3		
0.9	91.4	BLUE	CLAY / /
1.2	91.1	BROWN	SHALE / /
40.5	51.8	BLUE	LIMESTONE / /
41.5	50.9	BLACK	LIMESTONE / /

3706139 — **Lot 034 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 7/22/1984 (DD/MM/YYYY) | Elev 81.5 (masl) | Easting 366829 | Northing 4896921 | / Domestic | Water Supply | UTM RC 4 | margin of error : 30 m - 100 m

Water Found 22.9 (mbgs) 58.7 (masl) FRESH

Casing Diameter 6 inch | Casing Material: STEEL

Top of Screen (mbgs) | Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	6.1	(mbgs)	75.4	(masl)
Pumping WL	24.4	(mbgs)	57.2	(masl)
Pump Rate		(LPM)	/	
Spec. Cap.		(LPM/m)	Hour / Minute	

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	81.5		
0.9	80.6	RED	SAND / TOPSOIL /
24.4	57.2	BLUE	LIMESTONE / /

3706506 — **Lot 032 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 4/28/1987 (DD/MM/YYYY) | Elev 100.0 (masl) | Easting 365199 | Northing 4898464 | / Domestic | Water Supply | UTM RC 9 | unknown UTM

Water Found 21.9 (mbgs) 78.0 (masl) SULPHUR

Casing Diameter 6 inch | Casing Material: STEEL

Top of Screen (mbgs) | Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	12.2	(mbgs)	87.8	(masl)
Pumping WL	32.9	(mbgs)	67.0	(masl)
Pump Rate	27.3	(LPM)	2 / 0	
Spec. Cap.	1.32	(LPM/m)	Hour / Minute	

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	100.0		
0.9	99.0	BROWN	SHALE / /
27.7	72.2	BLUE	LIMESTONE / /
28.7	71.3	GREEN	LIMESTONE / /
34.4	65.5	GREY	LIMESTONE / /

3706745 — **Lot 034 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 8/20/1988 (DD/MM/YYYY) | Elev 98.0 (masl) | Easting 365919 | Northing 4898814 | / Domestic | Water Supply | UTM RC 9 | unknown UTM

Water Found 21.3 (mbgs) 76.7 (masl) SULPHUR

Casing Diameter 6 inch | Casing Material: STEEL

Top of Screen (mbgs) | Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL	9.1	(mbgs)	88.9	(masl)
Pumping WL	28.7	(mbgs)	69.4	(masl)
Pump Rate	9.1	(LPM)	1 / 0	
Spec. Cap.	0.47	(LPM/m)	Hour / Minute	

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	98.0		
1.8	96.2		TOPSOIL / SOFT / LIMESTONE
15.2	82.8	GREY	UNKNOWN TYPE / HARD /
21.3	76.7	GREY	LIMESTONE / /
29.6	68.4	GREY	LIMESTONE / SOFT /

Well Record #

3706849 — **Lot 035 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 7/12/1988 (DD/MM/YYYY)
Elev 96.4 (masl) Easting 366292 Northing 4898980
/ Domestic Water Supply UTM RC 9 unknown UTM
Water Found 29.3 (mbgs) 67.1 (masl) Not stated
Casing Diameter 6 inch Casing Material:
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N
SWL 7.6 (mbgs) 88.7 (masl)
Pumping WL 30.8 (mbgs) 65.6 (masl)
Pump Rate 27.3 (LPM) 1 / 0
Spec. Cap. 1.18 (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	96.4		
0.6	95.7		TOPSOIL / /
30.8	65.6	BLUE	LIMESTONE / /

3706868 — **Lot 033 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 11/19/1987 (DD/MM/YYYY)
Elev 95.1 (masl) Easting 365524 Northing 4898653
/ Domestic Water Supply UTM RC 9 unknown UTM
Water Found 29.9 (mbgs) 65.2 (masl) Not stated
Casing Diameter 6 inch Casing Material:
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N
SWL 14.0 (mbgs) 81.0 (masl)
Pumping WL 45.7 (mbgs) 49.3 (masl)
Pump Rate 22.7 (LPM) 1 / 0
Spec. Cap. 0.72 (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	95.1		
0.9	94.1		TOPSOIL / /
45.7	49.3		LIMESTONE / /

3708038 — **Lot 033 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 7/1/1992 (DD/MM/YYYY)
Elev 95.1 (masl) Easting 365524 Northing 4898653
/ Domestic Water Supply UTM RC 9 unknown UTM
Water Found 32.6 (mbgs) 62.4 (masl) FRESH
Casing Diameter 6 inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N
SWL 14.3 (mbgs) 80.7 (masl)
Pumping WL 31.4 (mbgs) 63.7 (masl)
Pump Rate 31.8 (LPM) 2 / 0
Spec. Cap. 1.86 (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	95.1		
0.6	94.5	BROWN	TOPSOIL / /
32.6	62.4	BLUE	LIMESTONE / /
33.5	61.5	BROWN	LIMESTONE / /

3708222 — **Lot 031 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 7/16/1993 (DD/MM/YYYY)
Elev 85.1 (masl) Easting 365379 Northing 4897390
/ Domestic Water Supply UTM RC 5 margin of error : 100 m - 300 m
Water Found 18.9 (mbgs) 66.2 (masl) FRESH
Casing Diameter 6 inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N
SWL 11.3 (mbgs) 73.8 (masl)
Pumping WL 22.6 (mbgs) 62.6 (masl)
Pump Rate 27.3 (LPM) 2 / 0
Spec. Cap. 2.42 (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	85.1		
0.3	84.8	BROWN	TOPSOIL / /
3.4	81.8	BROWN	LIMESTONE / /
17.7	67.4	BLUE	LIMESTONE / /
21.0	64.1	BROWN	LIMESTONE / /
22.9	62.3	BLUE	LIMESTONE / /
24.1	61.0	BROWN	LIMESTONE / /

Well Record #

3708308 — **Lot 034 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 1/25/1994 (DD/MM/YYYY) | Elev 86.4 (masl) | Easting 367138 | Northing 4897276
/ Not Used | Observation Wells | UTM RC 5 | margin of error : 100 m - 300 m
Water Found (mbgs) (masl)
Casing Diameter 6 inch | Casing Material: STEEL
Top of Screen 7.6 (mbgs) | Bottom of Screen 10.7 (mbgs)
Screen Interval 3.0 (m)

Flowing?
SWL (mbgs) (masl)
Pumping WL (mbgs) (masl)
Pump Rate (LPM) /
Spec. Cap. (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	86.4		
1.5	84.9	BROWN	GRAVEL / CLAY / FILL
10.7	75.7	GREY	LIMESTONE / HARD /

3708309 — **Lot 034 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 2/3/1994 (DD/MM/YYYY) | Elev 86.7 (masl) | Easting 367139 | Northing 4897285
Not Used / Domestic | Observation Wells | UTM RC 5 | margin of error : 100 m - 300 m
Water Found (mbgs) (masl)
Casing Diameter 6 inch | Casing Material: STEEL
Top of Screen 45.7 (mbgs) | Bottom of Screen 48.8 (mbgs)
Screen Interval 3.0 (m)

Flowing?
SWL (mbgs) (masl)
Pumping WL (mbgs) (masl)
Pump Rate (LPM) /
Spec. Cap. (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	86.7		
1.5	85.1	BROWN	GRAVEL / CLAY / FILL
14.3	72.3	GREY	LIMESTONE / HARD /
48.8	37.9	GREY	LIMESTONE / HARD /

3708310 — **Lot 035 Conc 09 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 2/4/1994 (DD/MM/YYYY) | Elev 86.2 (masl) | Easting 367149 | Northing 4897277
Not Used / Domestic | Observation Wells | UTM RC 5 | margin of error : 100 m - 300 m
Water Found (mbgs) (masl)
Casing Diameter 6 inch | Casing Material: STEEL
Top of Screen 39.6 (mbgs) | Bottom of Screen 44.2 (mbgs)
Screen Interval 4.6 (m)

Flowing?
SWL (mbgs) (masl)
Pumping WL (mbgs) (masl)
Pump Rate (LPM) /
Spec. Cap. (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	86.2		
0.6	85.6	BLACK	TOPSOIL / SOFT /
44.2	42.0	GREY	LIMESTONE / HARD /

3708320 — **Lot 032 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 3/2/1994 (DD/MM/YYYY) | Elev 100.0 (masl) | Easting 365199 | Northing 4898464
/ Domestic | Water Supply | UTM RC 9 | unknown UTM
Water Found 31.1 (mbgs) 68.9 (masl) SULPHUR
Casing Diameter 6 inch | Casing Material: STEEL
Top of Screen (mbgs) | Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N
SWL 12.5 (mbgs) 87.5 (masl)
Pumping WL 31.1 (mbgs) 68.9 (masl)
Pump Rate 27.3 (LPM) 2 / 0
Spec. Cap. 1.47 (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	100.0		
0.3	99.7	BROWN	TOPSOIL / /
21.9	78.0	BLUE	LIMESTONE / /
23.8	76.2	GREEN	LIMESTONE / /
30.5	69.5	BLUE	LIMESTONE / /
31.1	68.9	GREEN	LIMESTONE / /
32.9	67.0	BLUE	LIMESTONE / /

Well Record #

3708386 **Lot 034 Conc 01** **ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 10/6/1994 DD/MM/YYYY

Elev 98.0 (masl) Easting 365919 Northing 4898814

/ Abandoned-Supply UTM RC 9 unknown UTM

Water Found (mbgs) (masl)

Casing Diameter Casing Material:

Top of Screen (mbgs) Bottom of Screen (mbgs)

Screen Interval (m)

Flowing?

SWL (mbgs) (masl)

Pumping WL (mbgs) (masl)

Pump Rate (LPM) /

Spec. Cap. (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	98.0		
0.9	97.1	BROWN	TOPSOIL / /
26.2	71.8	BLUE	LIMESTONE / /

3708479 **Lot 032 Conc 01** **ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 7/7/1993 DD/MM/YYYY

Elev 100.0 (masl) Easting 365199 Northing 4898464

/ Domestic Water Supply UTM RC 9 unknown UTM

Water Found 36.3 (mbgs) 63.7 (masl) FRESH

Casing Diameter 6 inch Casing Material: STEEL

Top of Screen (mbgs) Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL 15.8 (mbgs) 84.1 (masl)

Pumping WL 36.3 (mbgs) 63.7 (masl)

Pump Rate 45.5 (LPM) 3 / 0

Spec. Cap. 2.23 (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	100.0		
0.6	99.4	BROWN	SAND / GRAVEL / FILL
2.4	97.5	BROWN	LIMESTONE / FRACTURED /
17.1	82.9	BLUE	LIMESTONE / /
18.3	81.7	GREEN	LIMESTONE / /
36.0	64.0	BLUE	LIMESTONE / /
38.7	61.3	GREEN	LIMESTONE / /

3708514 **Lot 033 Conc 01** **ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 9/29/1995 DD/MM/YYYY

Elev 95.1 (masl) Easting 365524 Northing 4898653

/ Domestic Water Supply UTM RC 9 unknown UTM

Water Found 12.2 (mbgs) 82.9 (masl) FRESH

Casing Diameter 6 inch Casing Material: STEEL

Top of Screen (mbgs) Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL 4.3 (mbgs) 90.8 (masl)

Pumping WL 18.9 (mbgs) 76.2 (masl)

Pump Rate 22.7 (LPM) 2 / 0

Spec. Cap. 1.55 (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	95.1		
3.4	91.7	BLUE	CLAY / /
4.0	91.1	BROWN	SHALE / /
12.2	82.9	BLUE	LIMESTONE / /
12.8	82.3	BROWN	LIMESTONE / /
21.3	73.7	BLUE	LIMESTONE / /

3708800 **Lot 034 Conc 01** **ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 4/21/1998 DD/MM/YYYY

Elev 98.0 (masl) Easting 365919 Northing 4898814

/ Domestic Water Supply UTM RC 9 unknown UTM

Water Found 8.5 (mbgs) 89.5 (masl) FRESH

Casing Diameter 6 inch Casing Material: STEEL

Top of Screen (mbgs) Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL 5.2 (mbgs) 92.8 (masl)

Pumping WL 15.8 (mbgs) 82.2 (masl)

Pump Rate 45.5 (LPM) 2 / 0

Spec. Cap. 4.26 (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	98.0		
0.6	97.4	BROWN	CLAY / /
1.5	96.5	BROWN	SHALE / /
3.0	95.0	BLUE	LIMESTONE / /
20.1	77.9	BLUE	LIMESTONE / /

Well Record #

3708990 — **Lot 033 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 5/20/1999 (DD/MM/YYYY) | Elev 95.0 (masl) | Easting 365523 | Northing 4898651 | / Domestic | Water Supply | UTM RC 9 unknown UTM

Water Found 47.5 (mbgs) 47.4 (masl) SULPHUR

Casing Diameter 6 inch | Casing Material: STEEL

Top of Screen (mbgs) | Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N
SWL 15.8 (mbgs) 79.1 (masl)
Pumping WL 15.8 (mbgs) 79.1 (masl)
Pump Rate 200.0 (LPM) 1 / 30
Spec. Cap. 9,999.99 (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	95.0		
0.3	94.7		TOPSOIL / /
47.2	47.7	GREY	LIMESTONE / /
58.2	36.8	GREY	LIMESTONE / GRANITE /

3709179 — **Lot 032 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 8/3/2000 (DD/MM/YYYY) | Elev 100.2 (masl) | Easting 365196 | Northing 4898465 | / | Abandoned-Quality | UTM RC 9 unknown UTM

Water Found (mbgs) (masl)

Casing Diameter | Casing Material:

Top of Screen (mbgs) | Bottom of Screen (mbgs)

Screen Interval (m)

Flowing?
SWL (mbgs) (masl)
Pumping WL (mbgs) (masl)
Pump Rate (LPM) /
Spec. Cap. (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	100.2		
2.1	98.1	BROWN	CLAY / /
3.0	97.2	GREY	SHALE / /
7.3	92.9	BLUE	LIMESTONE / /
12.8	87.4	BLACK	LIMESTONE / /
29.6	70.7	BLUE	LIMESTONE / /
33.8	66.4	GREY	LIMESTONE / /
41.8	58.5	BLUE	LIMESTONE / /
42.7	57.6	BLACK	LIMESTONE / /

3709234 — **Lot 033 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 10/23/2000 (DD/MM/YYYY) | Elev 94.6 (masl) | Easting 365520 | Northing 4898652 | / Not Used | Abandoned-Supply | UTM RC 9 unknown UTM

Water Found (mbgs) (masl)

Casing Diameter | Casing Material:

Top of Screen (mbgs) | Bottom of Screen (mbgs)

Screen Interval (m)

Flowing?
SWL (mbgs) (masl)
Pumping WL (mbgs) (masl)
Pump Rate (LPM) /
Spec. Cap. (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	94.6		
1.5	93.1	BROWN	CLAY / STONES / PACKED
18.6	76.0	GREY	LIMESTONE / HARD /

3709238 — **Lot 033 Conc 01 ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 10/20/2000 (DD/MM/YYYY) | Elev 94.6 (masl) | Easting 365520 | Northing 4898652 | / Not Used | Abandoned-Quality | UTM RC 9 unknown UTM

Water Found (mbgs) (masl)

Casing Diameter | Casing Material:

Top of Screen (mbgs) | Bottom of Screen (mbgs)

Screen Interval (m)

Flowing?
SWL (mbgs) (masl)
Pumping WL (mbgs) (masl)
Pump Rate (LPM) /
Spec. Cap. (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	94.6		
2.7	91.8	BROWN	CLAY / STONES / PACKED
44.2	50.4	GREY	LIMESTONE / HARD /

Well Record #

3709290 — Lot 032 Conc 01 — ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON

Date 6/8/2001 DD/MM/YYYY

Elev 98.2 (masl) Easting 365505 Northing 4898196

/ Domestic Water Supply UTM RC 3 margin of error : 10 - 30 m

Water Found 35.1 (mbgs) 63.1 (masl) Not stated

Casing Diameter 6 inch Casing Material: STEEL

Top of Screen (mbgs) Bottom of Screen (mbgs)

Screen Interval (m)

Flowing? N

SWL 6.4 (mbgs) 91.8 (masl)

Pumping WL 22.6 (mbgs) 75.6 (masl)

Pump Rate 63.6 (LPM) 2 /

Spec. Cap. 3.94 (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	98.2		
0.3	97.9		TOPSOIL / /
37.2	61.0	GREY	LIMESTONE / /

3710091 — Lot 001 Conc 01 — ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON

Date 9/19/2005 DD/MM/YYYY

Elev 99.6 (masl) Easting 366282 Northing 4897521

/ Domestic Water Supply UTM RC 4 margin of error : 30 m - 100 m

Water Found 5.7 (mbgs) 93.9 (masl) FRESH

Casing Diameter 91 cm Casing Material: CONCRETE

Top of Screen (mbgs) Bottom of Screen (mbgs)

Screen Interval (m)

Flowing?

SWL 4.5 (mbgs) 95.1 (masl)

Pumping WL 4.6 (mbgs) 95.0 (masl)

Pump Rate 22.7 (LPM) 1 / 0

Spec. Cap. 151.53 (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	99.6		
0.2	99.4	BROWN	TOPSOIL / /
1.8	97.8	BROWN	CLAY / PACKED /
6.0	93.6	GREY	LIMESTONE / HARD /

7107623 — Lot 035 Conc 01 — ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON

Date 5/15/2008 DD/MM/YYYY

Elev 97.6 (masl) Easting 366989 Northing 4897591

/ Abandoned-Other UTM RC 3 margin of error : 10 - 30 m

Water Found (mbgs) (masl)

Casing Diameter Casing Material:

Top of Screen (mbgs) Bottom of Screen (mbgs)

Screen Interval (m)

Flowing?

SWL (mbgs) (masl)

Pumping WL (mbgs) (masl)

Pump Rate (LPM) /

Spec. Cap. (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	97.6		
			/ /

7125035 — Lot 035 Conc 01 — ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON

Date 6/30/2009 DD/MM/YYYY

Elev 97.6 (masl) Easting 366989 Northing 4897591

/ Abandoned-Other UTM RC 3 margin of error : 10 - 30 m

Water Found (mbgs) (masl) Untested

Casing Diameter Casing Material:

Top of Screen (mbgs) Bottom of Screen (mbgs)

Screen Interval (m)

Flowing?

SWL (mbgs) (masl)

Pumping WL (mbgs) (masl)

Pump Rate (LPM) /

Spec. Cap. (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	97.6		
			/ /
			/ /

7138720 — Lot 035 Conc 01 — ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON

Date 1/20/2010 DD/MM/YYYY

Elev 97.6 (masl) Easting 366989 Northing 4897591

/ Abandoned-Other UTM RC 4 margin of error : 30 m - 100 m

Water Found 0.5 (mbgs) 97.1 (masl) Untested

Casing Diameter Casing Material:

Top of Screen (mbgs) Bottom of Screen (mbgs)

Screen Interval (m)

Flowing?

SWL (mbgs) (masl)

Pumping WL (mbgs) (masl)

Pump Rate (LPM) /

Spec. Cap. (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	97.6		
			/ /

Well Record #

7150983 — **Lot 003 Conc 01** — **ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 7/30/2010 (DD/MM/YYYY)
Elev 80.0 (masl) Easting 365413 Northing 4897150
/ Domestic Water Supply UTM RC 4 margin of error : 30 m - 100 m
Water Found 15.2 (mbgs) 64.7 (masl) Untested
Casing Diameter 6 inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N
SWL 6.1 (mbgs) 73.9 (masl)
Pumping WL 6.2 (mbgs) 73.8 (masl)
Pump Rate 54.6 (LPM) 1 /
Spec. Cap. 1,789.76 (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	80.0		
1.5	78.5	BROWN	CLAY / /
2.4	77.5	GREY	SHALE / /
10.7	69.3	BLUE	LIMESTONE / /
14.3	65.7	BLACK	LIMESTONE / /
20.4	59.6	GREEN	LIMESTONE / /
24.4	55.6	BLUE	LIMESTONE / /

7175432 — **Lot 031 Conc 01** — **ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 1/4/2012 (DD/MM/YYYY)
Elev 88.0 (masl) Easting 365541 Northing 4896843
/ Domestic Water Supply UTM RC 4 margin of error : 30 m - 100 m
Water Found 7.6 (mbgs) 80.4 (masl) Untested
Casing Diameter 6 inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing? N
SWL 4.0 (mbgs) 84.0 (masl)
Pumping WL 5.9 (mbgs) 82.1 (masl)
Pump Rate 54.6 (LPM) 1 /
Spec. Cap. 28.41 (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	88.0		
0.3	87.7	BROWN	CLAY / /
9.8	78.3	BLUE	LIMESTONE / /
17.1	71.0	GREEN	LIMESTONE / /
30.5	57.6	BLACK	LIMESTONE / /

7188527 — **Lot Conc** — **ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 4/5/2012 (DD/MM/YYYY)
Elev 103.0 (masl) Easting 366436 Northing 4898311
/ UTM RC 4 margin of error : 30 m - 100 m
Water Found (mbgs) (masl)
Casing Diameter Casing Material:
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing?
SWL (mbgs) (masl)
Pumping WL (mbgs) (masl)
Pump Rate (LPM) /
Spec. Cap. (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	103.0		
			/ /

7237648 — **Lot 034 Conc 01** — **ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 11/13/2014 (DD/MM/YYYY)
Elev 98.1 (masl) Easting 366340 Northing 4897412
/ Monitoring and Te Test Hole UTM RC 4 margin of error : 30 m - 100 m
Water Found (mbgs) (masl)
Casing Diameter 2 inch Casing Material: PLASTIC
Top of Screen 2.3 (mbgs) Bottom of Screen 3.8 (mbgs)
Screen Interval 1.5 (m)

Flowing?
SWL (mbgs) (masl)
Pumping WL (mbgs) (masl)
Pump Rate (LPM) /
Spec. Cap. (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	98.1		
3.8	94.3	BROWN	CLAY / FILL /

Well Record #

7251560 — **Lot 030 Conc 01** — **ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date 7/23/2015 (DD/MM/YYYY)
Elev 84.2 (masl) Easting 364993 Northing 4897325
/ Not Used Abandoned-Other UTM RC 4 margin of error : 30 m - 100 m
Water Found (mbgs) (masl)
Casing Diameter 6 inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing?
SWL (mbgs) (masl)
Pumping WL (mbgs) (masl)
Pump Rate (LPM) /
Spec. Cap. (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0	84.2		
14.3	69.9		

/ /

7335821 — **Lot 032 Conc 01** — **ERNESTOWN TOWNSHIP / LENNOX & ADDINGTON**

Date (DD/MM/YYYY)
Elev (masl) Easting 365592 Northing 4897493
/ UTM RC 4 margin of error : 30 m - 100 m
Water Found (mbgs) (masl)
Casing Diameter 6 Inch Casing Material: STEEL
Top of Screen (mbgs) Bottom of Screen (mbgs)
Screen Interval (m)

Flowing?
SWL (mbgs) (masl)
Pumping WL (mbgs) (masl)
Pump Rate (LPM) /
Spec. Cap. (LPM/m) Hour / Minute

Depth (m)	Elev (masl)	Color	Soil Descriptions
0.0			

/ /

APPENDIX

D GROUNDWATER LABORATORY DATA

Table 2 Ground Water Analytical Results

Parameter	Units	Provincial Water Quality Objectives	BH21-03	BH21-09	BH21-11
Date of Collection			Jun 15, 2021	Jun 15, 2021	Jun 15, 2021
Date Reported			Jun 25, 2021	Jun 25, 2021	Jun 25, 2021
Analytical Report Reference No.			21P761978	21P761978	21P761978
Electrical Conductivity	µS/cm		936	779	651
pH	pH Units	6.5-8.5	7.33	7.59	7.25
Saturation pH (Calculated)			5.86	6.14	5.59
Langelier Index (Calculated)			1.47	1.45	1.66
Hardness (as CaCO3) (Calculated)	mg/L		4070	1220	5670
Total Dissolved Solids	mg/L		576	434	378
Alkalinity (as CaCO3)	mg/L		265	435	326
Bicarbonate (as CaCO3)	mg/L		265	435	326
Carbonate (as CaCO3)	mg/L		<5	<5	<5
Hydroxide (as CaCO3)	mg/L		<5	<5	<5
Fluoride	mg/L		<0.05	0.83	0.17
Chloride	mg/L		124	6.76	21
Nitrate as N	mg/L		<0.05	<0.05	<0.05
Nitrite as N	mg/L		<0.05	<0.05	<0.05
Bromide	mg/L		<0.05	<0.05	<0.05
Sulphate	mg/L		85.3	40.5	31.1
Ortho Phosphate as P	mg/L		<0.10	<0.10	<0.10
Ammonia as N	mg/L		0.09	0.24	<0.02
Ammonia-Un-ionized (Calculated)	mg/L	0.02	0.00109	0.00534	<0.000002
Total Phosphorus	mg/L	*	40.3	0.61	1.52
Total Organic Carbon	mg/L		40.4	30.7	37.4
True Colour	TCU		<5	<5	<5
Turbidity	NTU		7870	329	30500
Total Calcium	mg/L		936	400	2190
Total Magnesium	mg/L		422	53.1	49
Total Potassium	mg/L		167	17.4	10.3
Total Sodium	mg/L		73.4	67.7	9.9
Aluminum-dissolved	mg/L	*	<0.004	0.005	<0.004
Total Aluminum	mg/L		778	34.5	20.5
Total Antimony	mg/L	0.020	<0.001	0.001	<0.001
Total Arsenic	mg/L	0.1	0.069	0.005	0.009
Total Barium	mg/L		7.9	0.396	0.231
Total Beryllium	mg/L	*	0.0258	0.0013	0.001
Total Boron	mg/L	0.2	**0.236**	**1.66**	**0.229**
Total Cadmium	mg/L	0.0002	0.0023	0.0003	0.0001
Total Chromium	mg/L		1.14	0.047	0.039
Total Cobalt	mg/L	0.0009	**0.354**	**0.0123**	**0.013**
Total Copper	mg/L	0.005	**0.8**	**0.039**	**0.028**
Total Iron	mg/L	0.3	**920**	**34.9**	**29.1**
Total Lead	mg/L	*	0.21	0.082	0.058
Total Manganese	mg/L		12.6	0.69	1.33
Dissolved Mercury	mg/L	0.0002	<0.0001	<0.0001	<0.0001
Total Mercury	mg/L		<0.0001	<0.0001	<0.0001
Total Molybdenum	mg/L	0.040	0.005	0.005	0.004
Total Nickel	mg/L	0.025	**0.862**	**0.041**	**0.041**
Total Selenium	mg/L	0.1	**0.111**	<0.002	<0.002
Total Silver	mg/L	0.0001	**0.0019**	**0.0023**	<0.0001
Total Strontium	mg/L		2.66	4.06	5.92
Total Thallium	mg/L	0.0003	**0.0087**	**0.0014**	**0.0021**
Total Tin	mg/L		0.008	0.004	<0.002
Total Titanium	mg/L		50.9	1.11	0.136
Total Tungsten	mg/L	0.030	<0.010	0.011	<0.010
Total Uranium	mg/L	0.005	**0.019**	0.002	0.004
Total Vanadium	mg/L	0.006	**1.32**	**0.043**	**0.036**
Total Zinc	mg/L	0.030	**2.17**	**0.157**	**0.045**
Total Zirconium	mg/L	0.004	**0.088**	<0.004	**0.007**

Notes:
Bold: Parameter exceeds the PWQOs.

APPENDIX

E HYDRAULIC CONDUCTIVITY TESTING

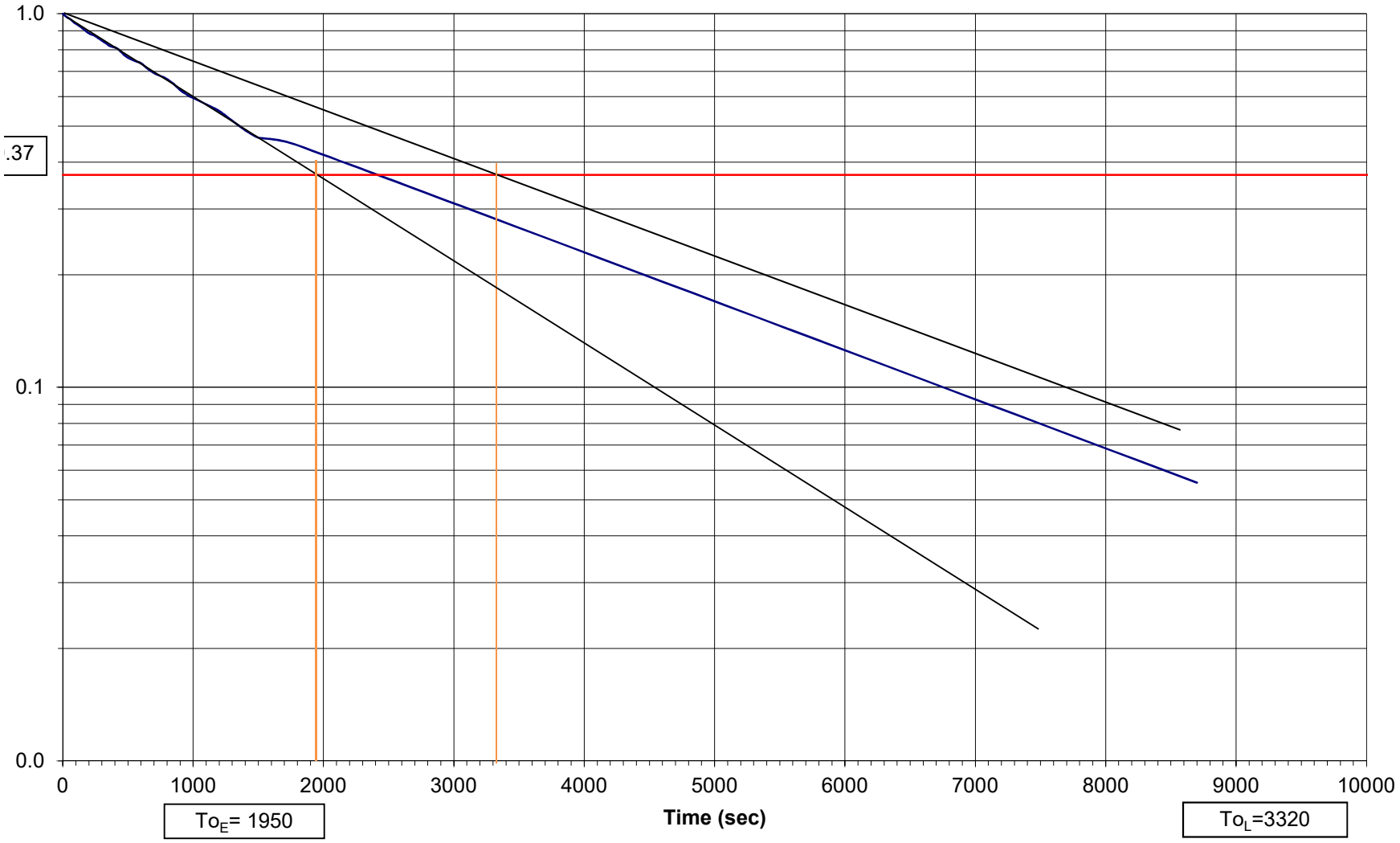
Hvorslev Testing: BH21-03

Project No.:	211-01353-00		H =	Static Water Level	mbg	
Project Name:	Loyalist Secondary Plan		Ho =	Head at time = 0	mbg	
Date:	15-Jun-21		h =	Water Level at time t	mbg	
Conducted by:	LG/DAY		To_E =	1950	sec	
Well Number:	BH21-03		To_L =	3320	sec	
Well Depth:	5.00	mbgs	Screen Length (L) =	152.4	cm	
Top of Pipe:	0.61	mag	Hole Radius (R) =	15.2	cm	
Well Diameter:	51	mm	Well Radius (r) =	2.55	cm (measured)	
Well Elevation:	93.50	masl				
Static Water Level:	2.31	mbtop	$K_E = r^2\ln(L/R)/(2LTo)$ =	2.52E-05	cm/s	
Ground Elevation:	92.90	masl	$K_L = r^2\ln(L/R)/(2LTo)$ =	1.48E-05	cm/s	

Time t (sec)	Water Level (mbtop)	Water Level Elevation (masl)
0	3.75	89.75
30	3.72	89.78
60	3.7	89.80
90	3.67	89.83
120	3.65	89.85
150	3.625	89.88
180	3.6	89.90
210	3.58	89.92
240	3.57	89.93
270	3.55	89.95
330	3.51	89.99
360	3.49	90.01
420	3.47	90.03
480	3.42	90.08
540	3.39	90.11
600	3.37	90.13
660	3.33	90.17
720	3.3	90.20
780	3.28	90.22
840	3.25	90.25
900	3.21	90.29
960	3.18	90.32
1020	3.16	90.34
1080	3.14	90.36
1140	3.12	90.38
1200	3.1	90.40
1500	2.98	90.52
1800	2.95	90.55
8700	2.39	91.11

Time t (sec)	H-h	H-Ho	(H-h)/(H-Ho)
0	1.440	1.440	1.000
30	1.410	1.440	0.979
60	1.390	1.440	0.965
90	1.360	1.440	0.944
120	1.340	1.440	0.931
150	1.315	1.440	0.913
180	1.290	1.440	0.896
210	1.270	1.440	0.882
240	1.260	1.440	0.875
270	1.240	1.440	0.861
330	1.200	1.440	0.833
360	1.180	1.440	0.819
420	1.160	1.440	0.806
480	1.110	1.440	0.771
540	1.080	1.440	0.750
600	1.060	1.440	0.736
660	1.020	1.440	0.708
720	0.990	1.440	0.688
780	0.970	1.440	0.674
840	0.940	1.440	0.653
900	0.900	1.440	0.625
960	0.870	1.440	0.604
1020	0.850	1.440	0.590
1080	0.830	1.440	0.576
1140	0.810	1.440	0.563
1200	0.790	1.440	0.549
1500	0.670	1.440	0.465
1800	0.640	1.440	0.444
8700	0.080	1.440	0.056

Hvorslev Testing: BH21-03



Hvorslev Testing: BH21-09

Project No.:	211-01353-00		H =	Static Water Level	mbg
Project Name:	Loyalist Secondary Plan		Ho =	Head at time = 0	mbg
Date:	15-Jun-21		h =	Water Level at time t	mbg
Conducted by:	LG/DAY		To_E =	12800	sec
Well Number:	BH21-09		To_L =	72,200	sec
Well Depth:	6.34	mbgs	Screen Length (L) =	152.4	cm
Top of Pipe:	1.02	mag	Hole Radius (R) =	15.2	cm
Well Diameter:	51	mm	Well Radius (r) =	2.55	cm (measured)
Well Elevation:	91.85	masl			
Static Water Level:	2.45	mbtop	$K_E = r^2\ln(L/R)/(2LTo)$ =	3.84E-06	cm/s
Ground Elevation:	90.74	masl	$K_L = r^2\ln(L/R)/(2LTo)$ =	6.81E-07	cm/s

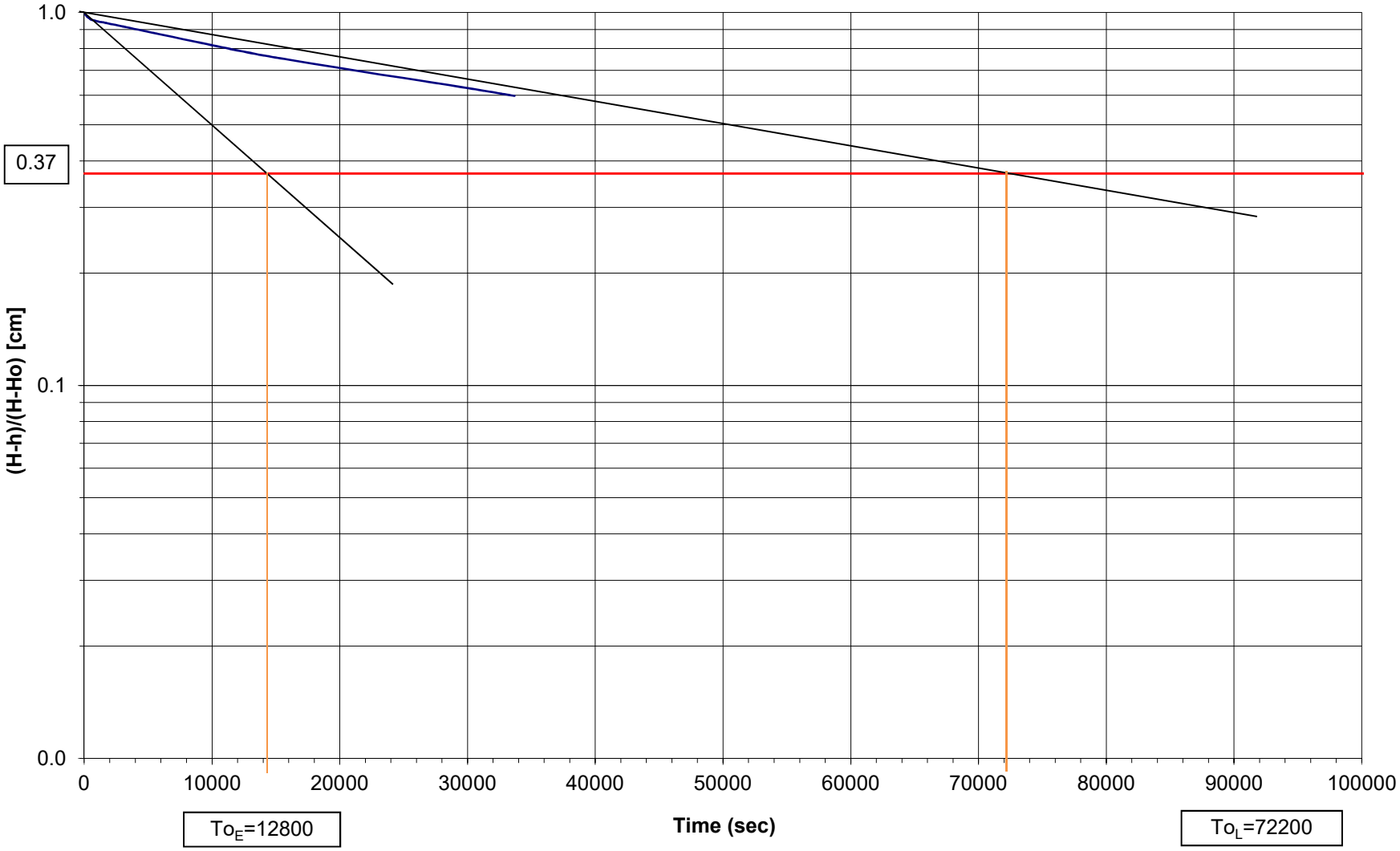
Time t (sec)	Water Level (mbtop)	Water Level Elevation (masl)
0	6.63	85.25
35	6.6	85.25
60	6.57	85.28
90	6.545	85.31
120	6.53	85.32
150	6.52	85.33
180	6.51	85.34
210	6.495	85.36
240	6.49	85.36
270	6.48	85.37
300	6.47	85.38
360	6.46	85.39
420	6.445	85.41
480	6.43	85.42
540	6.42	85.43
600	6.415	85.44
660	6.41	85.44
720	6.405	85.45
780	6.4	85.45
840	6.395	85.46
900	6.39	85.46
960	6.385	85.47
1020	6.38	85.47
1080	6.375	85.48
1140	6.37	85.48
1200	6.365	85.49

Time t (sec)	H-h	H-Ho	(H-h)/(H-Ho)
0	4.180	4.150	1.007
35	4.150	4.150	1.000
60	4.120	4.150	0.993
90	4.095	4.150	0.987
120	4.080	4.150	0.983
150	4.070	4.150	0.981
180	4.060	4.150	0.978
210	4.045	4.150	0.975
240	4.040	4.150	0.973
270	4.030	4.150	0.971
300	4.020	4.150	0.969
360	4.010	4.150	0.966
420	3.995	4.150	0.963
480	3.980	4.150	0.959
540	3.970	4.150	0.957
600	3.965	4.150	0.955
660	3.960	4.150	0.954
720	3.955	4.150	0.953
780	3.950	4.150	0.952
840	3.945	4.150	0.951
900	3.940	4.150	0.949
960	3.935	4.150	0.948
1020	3.930	4.150	0.947
1080	3.925	4.150	0.946
1140	3.920	4.150	0.945
1200	3.915	4.150	0.943

Time t (sec)	Water Level (mbtop)	Water Level Elevation (masl)
1500	6.355	85.50
1800	6.335	85.52
12440	5.71	86.14
16022	5.55	86.30
19604	5.41	86.44
23186	5.28	86.57
26769	5.16	86.69
30369	5.04	86.81
33675	4.93	86.92

Time t (sec)	H-h	H-Ho	(H-h)/(H-Ho)
1500	3.905	4.150	0.941
1800	3.885	4.150	0.936
12440	3.260	4.150	0.786
16022	3.100	4.150	0.747
19604	2.960	4.150	0.713
23186	2.830	4.150	0.682
26769	2.710	4.150	0.653
30369	2.590	4.150	0.624
33675	2.480	4.150	0.598

Hvorslev Testing: BH21-09



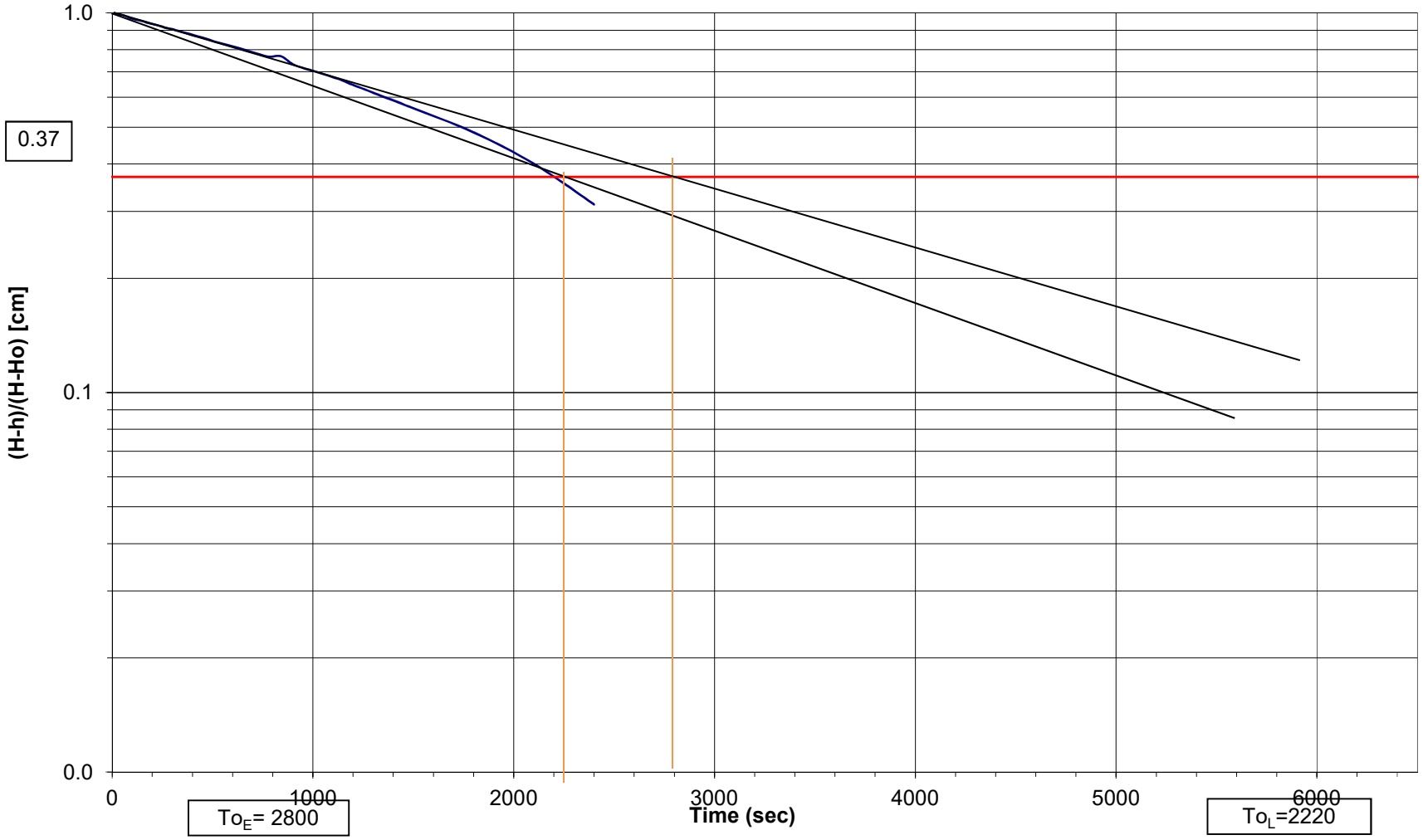
Hvorslev Testing: MW20-4

Project No.:	211-01353-00		H =	Static Water Level	mbg
Project Name:	Loyalist Secondary Plan		Ho =	Head at time = 0	mbg
Date:	15-Jun-21		h =	Water Level at time t	mbg
Conducted by:	LG/DAY		To_E =	2800	sec
Well Number:	MW20-4		To_L =	2220	sec
Well Depth:	2.64	mbgs	Screen Length (L) =	152.4	cm
Top of Pipe:	0.89	mag	Hole Radius (R) =	10.414	cm
Well Diameter:	51	mm	Well Radius (r) =	2.55	cm (measured)
Well Elevation:	127.54	masl			
Static Water Level:	2.08	mbtop	$K_E = r^2\ln(L/R)/(2LTo)$ =	2.04E-05	cm/s
Ground Elevation:	126.50	masl	$K_L = r^2\ln(L/R)/(2LTo)$ =	2.58E-05	cm/s

Time t (sec)	Water Level (mbtop)	Water Level Elevation (masl)
0	4.7	122.84
25	4.68	122.86
60	4.66	122.88
90	4.62	122.92
120	4.595	122.94
150	4.575	122.96
180	4.545	122.99
240	4.5	123.04
270	4.47	123.07
300	4.455	123.08
360	4.405	123.13
420	4.36	123.18
480	4.31	123.23
540	4.26	123.28
600	4.22	123.32
660	4.175	123.36
720	4.13	123.41
780	4.09	123.45
840	4.095	123.44
900	4	123.54
960	3.95	123.59
1020	3.91	123.63
1080	3.868	123.67
1140	3.825	123.71
1200	3.773	123.76
1500	3.55	123.99
1800	3.35	124.19
2100	3.13	124.41
2400	2.9	124.64

Time t (sec)	H-h	H-Ho	(H-h)/(H-Ho)
0	2.620	2.620	1.000
25	2.600	2.620	0.992
60	2.580	2.620	0.985
90	2.540	2.620	0.969
120	2.515	2.620	0.960
150	2.495	2.620	0.952
180	2.465	2.620	0.941
240	2.420	2.620	0.924
270	2.390	2.620	0.912
300	2.375	2.620	0.906
360	2.325	2.620	0.887
420	2.280	2.620	0.870
480	2.230	2.620	0.851
540	2.180	2.620	0.832
600	2.140	2.620	0.817
660	2.095	2.620	0.800
720	2.050	2.620	0.782
780	2.010	2.620	0.767
840	2.015	2.620	0.769
900	1.920	2.620	0.733
960	1.870	2.620	0.714
1020	1.830	2.620	0.698
1080	1.788	2.620	0.682
1140	1.745	2.620	0.666
1200	1.693	2.620	0.646
1500	1.470	2.620	0.561
1800	1.270	2.620	0.485
2100	1.050	2.620	0.401
2400	0.820	2.620	0.313

Hvorslev Testing: MW20-4



APPENDIX

F GROUND PENETRATING RADAR STUDY

TECHNICAL NOTE

TO:

FROM: Milan Situm

SUBJECT: Bedrock Mapping via geophysical methods

PROJECT No.: 211-01353-00

DATE: May 14,2021

1 INTRODUCTION

WSP Canada Inc. (WSP) was retained to provide geophysical services for the developing land beginning at the corner of Taylor Kidd Blvd and County Road 6, west of Amherstview (see Figure 1). The purpose of this investigation was to use geophysics to create a contour map which predicts the depth of the underlying bedrock at each of the borehole locations. A secondary study was to look for evidence of karst as this could heavily reduce the cost of development. The geophysical method used was Ground Penetrating Radar (GPR).

This technical note will outline the background of the geophysical method, data collection procedures and walk through the results of the data set.

2 FIELD STUDY SUMMARY

Ground Penetrating Radar (GPR) is a geophysical method that uses short duration electromagnetic pulses focused into the ground to produce images of the subsurface by measuring the reflected pulses. The properties of the reflected waves give information about the objects lying within the subsurface as well as the soils themselves. There are two key pieces of information that are measured, the amplitude of the wave and the arrival time, which corresponds to the difference in permittivity between two materials and depth, respectively. More details on the background behind the GPR can be found in Section 2.1.

The survey began on April 5th and was completed on April 6th. Figure 1 shows the boundary area (blue) of interest that is looking to be developed as well as the borehole locations overlaid on a Google Earth image. The operator gathered a total of 56 data files. The device that was used to complete the survey was the Mala GX (Ground Explorer) with the 450MHz antenna, which is linked directly to the Global Positioning System (GPS). A fact sheet has been attached in Appendix A. The device was set in time-mode which simply means the device is always recording, regardless if the operator is moving or not. A conservative estimate of the total amount of linear profiles covered was 18.0 kilometers.

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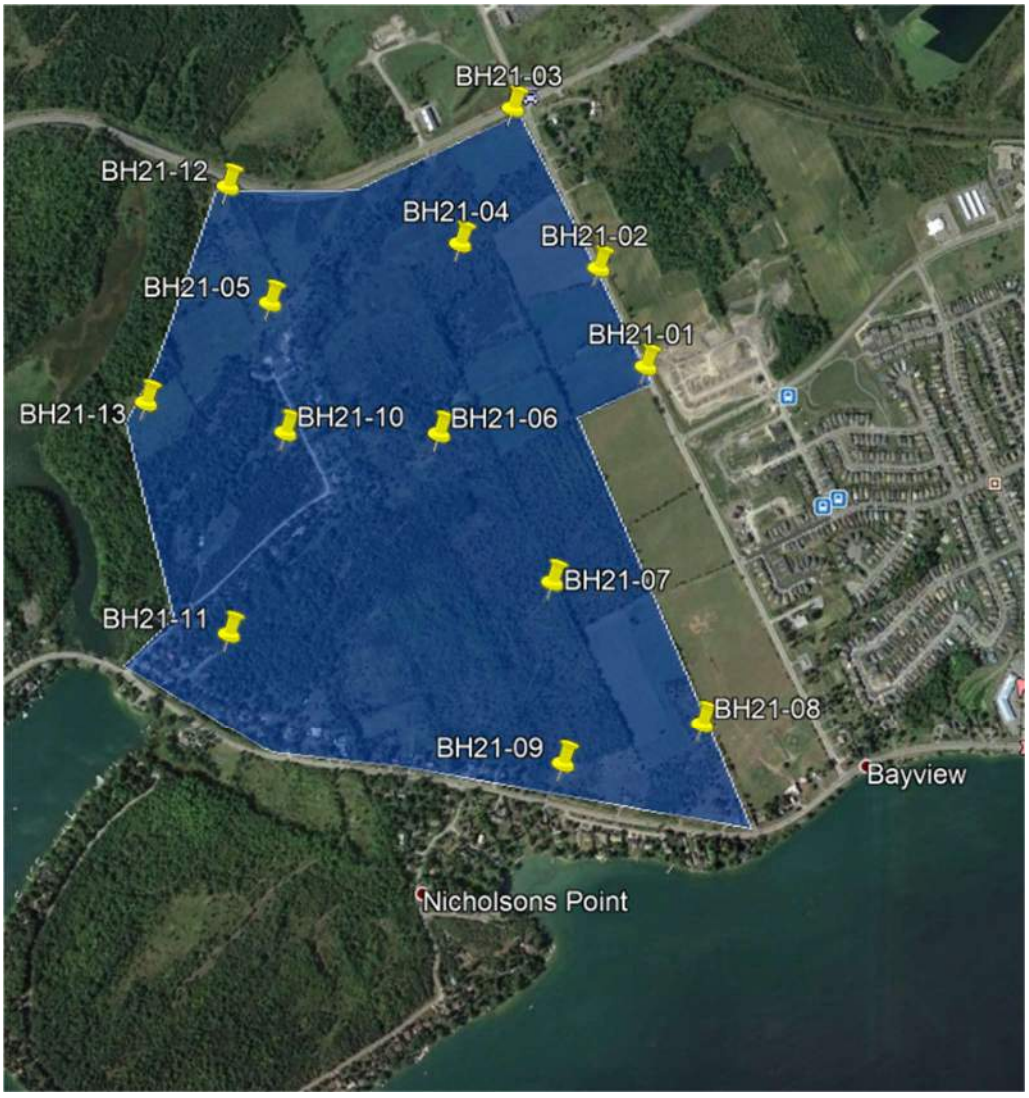

Figure 1: Survey Area with borehole locations marked

2.1 GPR BACKGROUND

The principal of ground-penetrating radar (GPR) is to emit an electromagnetic pulse into the ground which propagates into the earth and reflects on a variety of materials where there is a contrast in dielectric permittivity. Examples of a dielectric contrast include; earth / concrete (electrical caisson or concrete pads), earth / water (bathymetry surveys), earth / air (void mapping) or earth / metal (tank or watermain locating). When the radiation interacts with the boundary it can either reflect and return to the surface or refract and continue further into the subsurface. The properties of the returning wave, measured by the receiver, contains information about the material under the subsurface. The two measurables that provide useful information are the corresponding arrival time and amplitude. The amplitude of the wave gives information about the electrical property of the boundary between the two materials, a large amplitude implies a large difference in permittivity's between two materials, hence the

speed of the EM wave through the material can be determined. The corresponding arrival time is associated with the depth of the target. Using the speed of the wave, measured by the amplitude, the depth of the target can be calculated from the measured time it takes for a wave to return.

GPR has a variety of applications, including the following:

- Mapping buried infrastructure (utilities, foundations, etc.)
- Mapping sub-surface geology
- Studying bedrock, soil and groundwater
- Mapping archeology features
- Mapping unexploded ordnance and detecting tunnels for the military

The effective depth of GPR is dependent on the electric conductivity of the ground as well as the frequency of the transmitter. A subsurface with higher electric conductivity will attenuate the wave, essentially it decreases the penetration depth of the wave. The frequency and depth have an inversely proportional relationship: as the frequency increases the effective depth decreases. However, there is a trade-off; higher frequency waves offer higher resolution to images; therefore, you can use lower frequency waves to produce images, but at the expense of their clarity. It is best to use the highest frequency possible to ensure that the operator can make the most accurate diagnosis of the data.

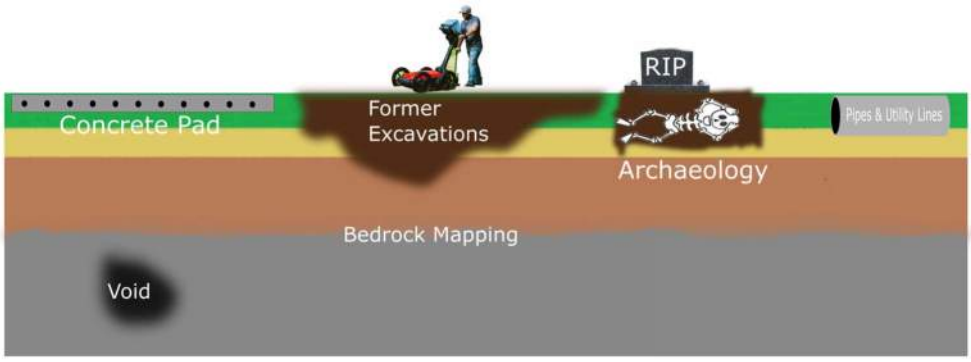

Figure 2: GPR Applications

3 RESULTS

The data was processed using the RadExplorer Software, which involves the operator interpreting the bedrock line along each profile. Each "pick" file is then exported and was used to create a contour map of the underlying bedrock, as shown in Figure 3. Each colour is associated to a 0.25m depth interval of the underlying bedrock. This contour map can also be found in Appendix B and shows scale for colour to depth. Table 1 summarizes the predicted rock depth interval at each of the borehole locations. The contour map suggests that the majority of the bedrock is within 1-meter from surface. However, interpreting bedrock depth can be difficult as the moisture content of the overburden changes throughout the site, which directly affects the speed of the EM-waves and therefore the interpreted depth. For example, in the northeast end of the property the soils appeared fairly dry which suggests a dielectric of

roughly 6-7. On the west side, near BH21-13 and BH21-05, the overburden was very lumpy and contained much higher moisture content. This causes 1) the EM wave to travel much slower and therefore the depth of the bedrock could be overestimated 2) as the conductivity of the ground increases the penetration depth of the EM-waves decreases. In other words, soils with high moisture content cause EM waves to attenuate which can make interpreting bedrock much more difficult. For this site BH21-05, BH21-07 and BH21-13 were in highly saturated zones.

During the interpretation there were a few zones that had interesting features. Figure 4 shows the approximate location of each of the anomalies and Table 2 summarizes location with depth. These anomalies will require some explanation:

Possible Dip #1 + Exposed Fissure in Rock – These anomalies are located within the same general area and may possibly be related to each other. As shown on the contour map, in this area there was a large hill of exposed rock. Observable from surface is a substantial fissure. The depth most likely exceeds one meter. It is unclear if there is an open void extending away from this feature. However, the operator while on site observed a very strong dipping feature that appears roughly 5-meters wide with some evidence of a ground radar image characteristic called 'ringing'. Ringing could be key evidence of karst formation as there may be an open void. This area appeared to be the most promising evidence for karst-like features.

Possible Utility – At the very northeast side of the property the operator noticed a very consistent anomaly that extends from the northeast corner, roughly 45 degrees away from Taylor Kidd Rd that has the appearance of a pipe. The possible utility does not appear to be a live wire as the signal would have most likely been stronger.

Possible Dipping/Evidence of Dipping – Remaining dipping bedrock features and zones did not show a large amount of ringing which reduces the likelihood of karst-like features. However, these are areas where the bedrock could dip below 1.5-meters which appears to be rare for this particular site.

Possible Large Boulders – Located at the central east part of the property it was observed from surface that there was a dipping feature that extended roughly 5-meters from west to east. The GPR data suggests that there is a possibility of large boulders that may have purposefully placed.

Possible Loosened Rock / Forecasted Void – In the northwest corner of the site there was evidence of loosened rock / collective of small voids. It in unclear whether this is naturally occurring or induced by the blasting that would have taken place to create the road.

Possible Buried Metal Area – While on site the operator and ESA team came across dumping of metal. From scanning the area, it appears that there is evidence of buried metal surrounding the area. It in unclear how many objects there were or how deep, metal almost always attenuates EM-waves due to their higher conductivity value.

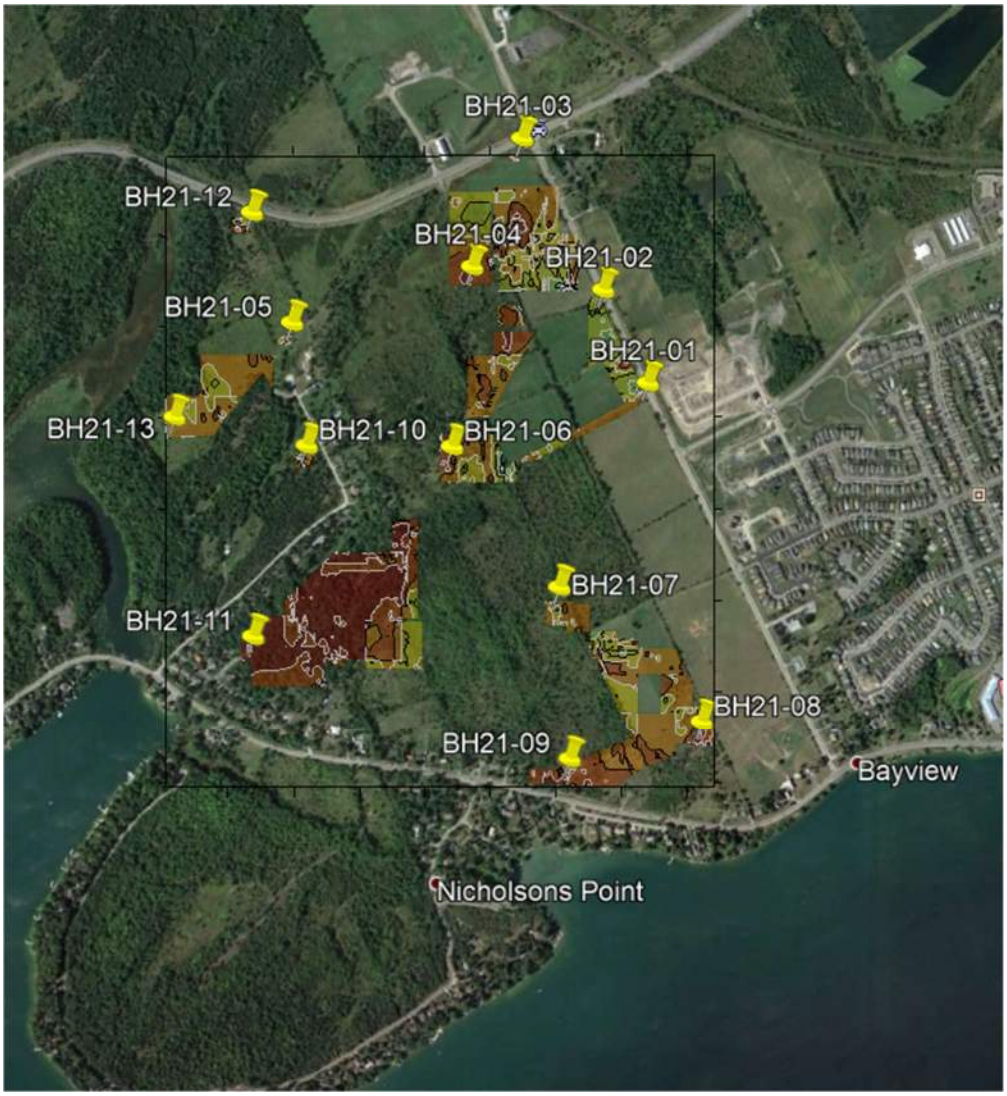

Figure 3 : Contour Map overlaid on Google Earth Image

BH21-#	Depth Interval (m)
01	0.5 – 0.75
02	0.75 - 1
03	0.5 – 0.75
04	0.25 – 0.5
05	0.5 – 0.75
06	0 – 0.25
07	0.5 – 0.75
08	0 – 0.25
09	0.25 – 0.5
10	0.25 – 0.5
11	0 – 0.25
12	0.5 – 0.75
13	0.75 - 1

Table 1: Summary of approximate rock depth at each borehole location

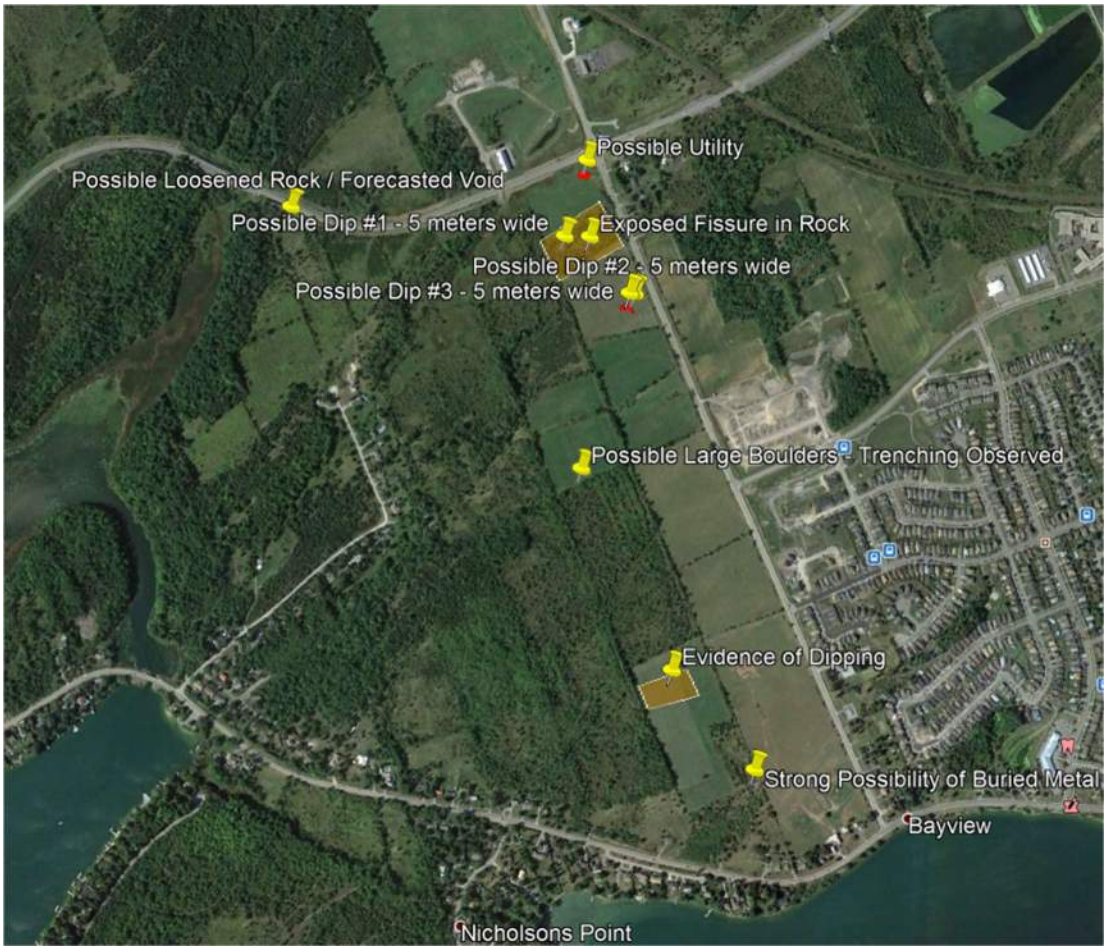

Figure 4: Anomaly Map

Anomaly Name	Easting (m) +/- 1m	Northing (m) +/- 1m	Approximate Depth (m)
Possible Loosened Rock / Forecasted Void	365521	4898392	2
Possible Utility	366213	4898519	0.5
Possible Dip #1	366165	4898337	2
Exposed Fissure in Rock	366224	4898338	0
Possible Dip #2	366333	4898208	2.5
Possible Dip #3	366321	4898207	2.5
Possible Large Boulders / Trenching Observed	366218	4897795	1.5 - 2
Evidence of Dipping Zone	366372 - 366517	4897277 - 4897367	1.5 - 2
Strong Possibility of Buried Metal (Area)	366638	4897108	NA

Table 2: Summary of Anomaly locations

4 CONCLUSIONS

The survey took place on April 5th and concluded on April 6th. Figure 1 shows the approximate boundaries of the property with the boreholes marked. The purpose of the survey was to create a contour map of the bedrock as well as investigate any anomalous features with a focus on karst like features. Ground penetrating radar was used to complete this task, a fact sheet has been attached in Appendix A.

Figure 3 and again in Appendix B is the resulting contour map from combining 56 data files. The majority of the bedrock appears to be within the upper 1-meter. However, there were high moisture areas which can cause problems with interpretation and are described in Section 3. Table 1 summarizes the predicted depth interval at each of the borehole locations.

Figure 4 is an anomaly map; a map of interesting features that are were not part of the general pattern/geology. In addition, it is not quite clear exactly what each of the features are related to but there is a strong idea. Each anomaly has been described in detail in Section 3. Table 2 summarizes the location and approximate depth. Some of the features are related to a modest amount of karstic erosion in the form of vertical fissures and others are related to broken rock being moved and regraded in other areas.

Prepared by: Milan Situm, P.Geo.

Milan Situm, P.Geo.
Senior Geophysicist

APPENDIX A
EQUIPMENT SHEETS

GPR ANTENNAS WITH 4 DIFFERENT FREQUENCIES

MALÅ GX is an integrated GPR solution with four MALÅ GX antenna options: GX80, GX160, GX450 and GX750.

MALÅ GX can be optimized for specific measurements and applications by adding different antennas. For the GX-series of antennas, there are four options to choose from using center-frequencies of 80, 160, 450 or 750MHz. The choice of antenna frequency will be governed by your application and the desired depth penetration and resolution. All new MALÅ GX antennas are app-enabled, and comes with WiFi connection per default. This enables full integration with MALÅ Controller app and MALÅ Vision.

Geological

Geological applications are usually both longer and deeper (lower frequency antennas) surveys and sometimes performed in boreholes. Work includes, Layer detection, Rock fracture analysis, general and more detailed Site investigations, Pre-mining studies, Exploration work, Bathymetry, Earthquake prediction, Landslide investigations, Volume estimations, Ore lineage mapping, Nuclear waste repository studies, Tunnelling work, etc.

APPENDIX B

BEDROCK CONTOUR MAP