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HYDROGEOLOGICAL INVESTIGATION REPORT

BROCCOLINI AIRPORT ROAD

TOWN OF CALEDON

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CROZIER

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TABLE OF CONTENTS

1.0 INTRODUCTION 1

1.1 Existing Land Use 1
1.2 Proposed Land Use 1

2.0 GEOLOGY 1

2.1 Physiography, Topography, & Drainage 1
2.2 Regional Geology 2
2.3 Local Geology 3
2.4 Source Water Protection Information 3

3.0 HYDROGEOLOGY 5

3.1 MECP Well Records 5
3.2 Hydrostratigraphy 5
3.3 Regional Groundwater Levels 6
3.4 Regional Groundwater Quality 6

4.0 FIELD WORK 7

4.1 Monitoring Well Installation 7
4.2 Groundwater Monitoring 7
4.3 Piezometer Installation 8
4.4 Surface Water Monitoring 8

5.0 RESULTS 9

5.1 Groundwater Conditions 9
5.2 Surface Water Conditions 11
5.3 Groundwater Sampling 12

6.0 DESIGN CONSIDERATIONS 13

6.1 Construction Dewatering & Long-Term Dewatering 13
6.2 Site-Wide Balance 15

7.0 FEATURE BASED WATER BALANCE 18

8.0 CONCLUSIONS & RECOMMENDATIONS 19

LIST OF TABLES

Table 1: Hydrostratigraphy of the Humber River Watershed (TRCA, 2008)
Table 2: Monitoring Well Details
Table 3: Groundwater Levels (2022-2026)
Table 4: Groundwater Elevation (2022-2026)
Table 5: Peak Groundwater Measurements
Table 6: Expected Groundwater During Excavation (masl)
Table 7: Surface Water Levels
Table 8: Construction Dewatering Parameters
Table 9: Summary of Water Balance
Table 10: Climate Data (1991 – 2020) for Toronto Buttonville (Airport) Climate Station

LIST OF APPENDICES

Appendix A: Borehole Logs
Appendix B: MECP Well Summary Table
Appendix C: Door-to-Door Survey Questionnaire
Appendix D: Hydrographs
Appendix E: Groundwater Sampling Results
Appendix F: Door-to-Door Survey Results
Appendix G: Dewatering Calculations
Appendix H: Site-Wide Water Balance
Appendix I: Feature Based Water Balance

LIST OF FIGURES

Figure 1: Site Location Plan
Figure 2: Physiography
Figure 3: Bedrock Geology
Figure 4: Surficial Geology
Figure 5: Drift Thickness
Figure 6: Bedrock Elevation
Figure 7: MECP Well Location Plan
Figure 8: Well Location Plan
Figure 9: Interpreted Groundwater Flow Direction

1.0 Introduction

C.F. Crozier & Associates Inc. (Crozier) was retained by Broccolini Airport Road LP (Broccolini) to complete a Hydrogeological Investigation in support of the Zoning By-Law Amendment (ZBA) and Site Plan Application (SPA) for Phase 1 of the property known as Broccolini Airport Road, in the Town of Caledon (Town). The following report has been prepared to characterize the existing hydrogeological conditions of the property and provide insight into the potential impact of the proposed development on the hydrogeological regime. The following report has been prepared in accordance with the Region of Peel Guidelines for Hydrogeologic Assessments and the Toronto and Region Conservation Authority (TRCA) Standards.

1.1 Existing Land Use

The subject property (herein referred to as the Site) is bound by Airport Road to the east and agricultural lands to the north, west and south. The property consists of a total area of 24.25 ha, of which 5.18 ha is proposed to be redeveloped as part of Phase 1. The portion of the Site that is proposed to be redeveloped currently consists of agricultural land. Salt Creek, a tributary of the Humber River flows from northwest to southeast across the property. Salt Creek is a regulated tributary of the TRCA jurisdiction. Please refer to **Figure 1**.

Stretching 90,300 acres, the Humber River Watershed is the largest watershed within the TRCA jurisdiction and is subdivided into 5 subwatersheds—the Main, East, West and Lower Humber and the Black Creek Subwatersheds. The Site is located within the West Humber River Subwatershed (TRCA, 2008).

1.2 Proposed Development

As shown in the Site Plan prepared by Powers Brown Architecture, the developable area is proposed to be phased, Phase 1 and future Phase 2. Each parcel will have its own servicing and stormwater management. Only Phase 1, which is within the north portion of the property, is proposed to be redeveloped at this time. The proposed development includes one (1) one-storey industrial building (herein referred to as Building A) with a total area of 23,117 m^2 with associated parking and two (2) vehicular access points from Airport Road.

2.0 Geology

The following sections below outline the existing conditions of the Site based on literature review and field observations.

2.1 Physiography, Topography, & Drainage

According to Chapman and Putnam (1984), the study area is located within the South Slope physiographic region (**Figure 2**). The South Slope resides on the southern slope of the Oak Ridges Moraine which includes the strip of lands located south of the Peel Plain. The study area is located in the central portion of the South Slope and is equidistant between the Peel Plain and the Niagara Escarpment physiographic regions. The South Slope region is distinguished by low-lying, fine-grained, undulating moraines and knolls (Region of Peel, 2009). The central section of the South Slope has many scattered drumlins with long, narrow, and pointed slopes. Due to this topography, surface water flows through streams down the slope, forming gullies and shallow ravines.

The Site is located in the West Humber River Watershed, which originates in Caledon and flows for over 45 km across the Peel Plain before merging with the Main Humber Watershed in Toronto. A surface water feature, a tributary of the Humber River known as Salt Creek flows southeastward through the Site, eventually joining the main branch of Salt Creek, the West Humber River, and ultimately reaching Lake Ontario.

According to the Ontario Digital Elevation Model, regional topography ranges from approximately 270 meters above sea level (masl) in the northwest close to Old School Road to 230 masl at Salt Creek in the southeast.

2.2 Regional Geology

According to Ontario Geological Survey (OGS) mapping, the study area sits atop a bedrock basement of the Queenston Formation and the Georgian Bay Formation. The Queenston Formation is characterized by brick-red shale and grey-green shale interbeds. The rocks of the Queenston Formation are mapped primarily on the west side of Salt Creek. The Georgian Bay Formation is stratigraphically older than the Queenston Formation and is composed of blue-grey shale and limestone interbeds (**Figure 3**). The rocks of the Georgian Bay Formation are mapped as the primary bedrock underlying the Site.

Surficial mapping indicates that the soils within the Site are primarily glacial and fluvial in origin (**Figure 4**). A blanket of fine-grained glacial till covers the Site known as the Halton Till. The Halton Till is a sandy silt to clayey silt till that covers a large portion of the Peel Region. As described in the Settlement Area Boundary Expansion Scoped Subwatershed Study, the Halton Till can be subdivided into three (3) main units—the Upper, Middle and Lower Halton Till. The units of the Halton Till are summarized below:

- Upper Till: generally sandy silty clay to clayey silt with sand, massive and weathered. Total thickness is roughly 5 m.
- Middle Till Complex: sandy silt clay to clayey silt till with interbeds of stratified silt, sand and gravel. The interbeds are discontinuous and the base of the Middle Till includes stratified glaciolacustrine clays and silts.
- Lower Till Complex: similar to Middle Till Complex with abundant gravel.

According to the Oak Ridges Moraine Groundwater Mapping Program, the Halton Till is the most surficial unit on the Site and extents from 10 m thick at Airport Road to 2 m thick at Salt Creek.

Below the Halton Till, roughly at an elevation of 240 masl (10 meters below ground surface)(mbgs)) is mapped as the Oak Ridges Moraine. Deposits of the Oak Ridges Moraine Complex are generally sands and silts and are generally discontinuous close to Mayfield Road. The Oak Ridges Moraine Mapping Program shows the complex is thin (< 5 m) across the Site.

The remaining hydrostratigraphic units of the Humber Watershed—described below in Section 3.0—are notably absent in regional cross sections and mapping including the Channel Deposits, Newmarket Till, Thorncliffe Formation, Sunnybrook Drift and the Scarborough Formation. Bedrock is estimated to be encountered at an elevation of 235 masl or approximately 15 mbgs. Drift thickness and depth to bedrock is shown in **Figures 5** and **6**.

2.3 Local Geology

A Geotechnical Investigation was completed by A & A Environmental Consultants Inc. (A & A) to characterize the onsite soils and aid in providing geotechnical recommendations for the proposed development at the Site. In April 2022, thirteen (13) boreholes and six (6) test pits were advanced. Five (5) boreholes were converted to monitoring wells for future monitoring purposes. According to the Geotechnical Investigation, the following stratigraphy was encountered:

- 0.0 – 0.2 m of topsoil
- 0.2 - 0.8 m of stiff and weathered clay and silt with trace topsoil and organics
- 0.8 – 6.1 m of stiff and moist clayey silt to silty clay with trace sand and gravel

The results of the Geotechnical Investigation performed by A & A generally align with the materials noted in OGS Mapping. For further details regarding the Geotechnical Investigation, please refer to the borehole and test pit logs prepared by A & A, which are provided in **Appendix A**.

Additional drilling was supervised by MTE Consultants in 2025 to supplement the existing monitoring network. Two (2) wells were extended to approximately 9.3 mbgs on the Site. Borehole logs are provided in **Appendix A**. The following stratigraphy was encountered:

- 0.0 – 0.25 m of topsoil
- 0.25 – 5.80 m of compact, moist, clayey, silt glacial till
- 5.80 – 9.30 m of dense, wet to saturated silt and sand

The glacial till or silty clay to clayey silt material encountered are interpreted to be representative of the Halton Till. The texture, inclusions and depth correspond to regional mapping, OGS data and local well records. The saturated sands and silts encountered during the MTE investigation are interpreted to be representative of the Oak Ridges Moraine Complex sediments. The two (2) advanced boreholes were located closer to Salt Creek where the Halton Till is thinner and agree with Oak Ridges Moraine depth and texture.

2.4 Source Water Protection Information

According to the Ministry of Environment, Conservation, and Parks (MECP) Source Water Protection Information Atlas, the Site is located within the Toronto and Region Source Protection Area which is governed by the CTC (Credit Valley-Toronto and Region-Central Lake Ontario) Source Protection Plan. The Site is located atop a Highly Vulnerable Aquifer (HVA) with a vulnerability score of 6. No significant drinking water threats and source protection policies related to the HVA are identified for the Study area under Ontario's Clean Drinking Water Act (2006).

Despite no *significant* drinking water threats being identified for the Site Area, there are numerous activities identified in the CTC Source Protection Plan that pose low to moderate threats to future drinking water use, including the following:

- The establishment, operation or maintenance of a waste disposal site
- The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.
- The application, management or storage of agricultural source material to land.
- The application, handling or storage of non-agricultural source material to land.
- The application, handling or storage of commercial fertilizer to land.
- The application, handling or storage of pesticide to land.
- The application, handling or storage of road salt.
- The storage of snow.
- The handling and storage of fuel.
- The handling and storage of a dense non-aqueous phase liquid (DNAPL).
- The handling and storage of an organic solvent.
- The management of runoff that contains chemicals used in the de-icing of aircraft.
- An activity that takes water from an aquifer or a surface water body without returning the water taken to the same aquifer or surface water body.
- An activity that reduces the recharge of an aquifer.
- The use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard.
- Establishment and operation of a liquid hydrocarbon pipeline.

The proposed land use for the Site is industrial and there is potential that DNAPLs, commercial grade fertilizers, pesticides, solvents and/or fuels may be handled or stored on the property. Based on the parking lot proposed and the general climate of the Site, snow storage and salt application are likely. It is recommended that if any of the above activities are to occur, a risk management plan and/or winter maintenance plan should be prepared for the proposed development to the satisfaction of the Town and/or Region's Risk Management Official. The plans should outline the low to moderate source protection risks and mitigation measures and strategies to prevent significant drinking water threats from the activities in the future.

3.0 Hydrogeology

The following sections below detail the existing hydrogeological conditions of the study area based on regional studies, local studies, and field investigation.

3.1 MECP Well Records

Within 500 m of the Study Area, there are 45 well records identified on the Ministry of Environment, Conservation and Parks (MECP) well record database. A detailed summary table of the wells is provided in **Appendix B** and their locations are shown on **Figure 7**.

In general, the following can be noted from the identified well records:

- Total depth of wells ranges from approximately 5 mbgs to 50 mbgs. Most wells are installed within "shale" bedrock and installed deeper than 20 mbgs.
- Majority of well records are noted to be for domestic purposes or monitoring purposes. There is one well record identified—4908152—for municipal purposes. This well is noted to supply the Mayfield Golf Club and is likely misidentified as a municipal well.
- Static water levels range from less than 1 mbgs to approximately 6 mbgs.

3.2 Hydrostratigraphy

The hydrostratigraphic framework of the Humber River Watershed has been outlined in the Humber River Watershed, Scenario Modelling and Analysis Report prepared by the TRCA. There are eight (8) hydrostratigraphic units in the Humber River Watershed. The hydrostratigraphic units are summarized in **Table 1** below.

Table 1: Hydrostratigraphy of the Humber River Watershed (TRCA, 2008)

Unit	Name	Function	System
Youngest – 1	Halton Aquitard	Aquitard	Overburden
2	Oak Ridges Aquifer	Aquifer	Overburden
3	Newmarket Aquitard	Aquitard	Overburden
4	Meltwater Channel Aquifers	Aquifer	Overburden
5	Thorncliffe Aquifer	Aquifer	Overburden
6	Sunnybrook Aquitard	Aquitard	Overburden
7	Scarborough Aquifer	Aquifer	Overburden
8	Upper Bedrock Aquitard	Aquitard	Bedrock Contact Zone

The majority of municipal water within the Toronto and Region Source Protection Area is supplied by Lake Ontario. However, north of Highway 407, groundwater serves as the primary water supply. Within the Region of Peel, there are two (2) municipal drinking water systems—the Palgrave-Caledon East Drinking Water System and the Caledon East Drinking Water System. Both systems rely on three (3) wells each, drawing from the Oak Ridges Moraine and Thorncliffe Aquifer. According to MECP Well Records, private rural well users primarily depend on the bedrock contact zone.

3.3 Regional Groundwater Levels

Regional shallow and deep groundwater flow direction is interpreted to follow surface and bedrock topography and flow south towards the West Humber River and Lake Ontario. According to the Oak Ridges Moraine Groundwater Program Mapping, regional groundwater elevations range approximately from 245 meters above sea level (masl) at the Site to 75 masl at Lake Ontario.

At the Site, shallow groundwater modelling predicts the groundwater tables is within 2 m of ground surface. Based on how the model was created, the water elevations indicated in the mapping only represent the static water levels reported for wells less than 20 mbgs and could indicate levels taken from different geologic units. As indicated by developers of model, the surface represents a "temporal average" and is an interpolated surface; actual onsite conditions may vary from the surface. Based on the geological conditions of the Site and surrounding areas, it is likely that the groundwater surface is representative of a potentiometric surface rather than true groundwater conditions.

Additional layers indicate that Salt Creek may be an area of potential groundwater discharge and contradictory, an area of downward vertical gradient. The model suggests that discharge is discontinuous along the stream based on the potentiometric surface and ground elevation.

The regional mapping is compared to local conditions on Site in Section 5.

3.4 Regional Groundwater Quality

Groundwater quality within the Humber River Watershed is obtained from monitoring wells within the Provincial Groundwater Monitoring Network (PGMN) and municipal data. Groundwater sampling results are compared to the Ontario Drinking Water Quality Standards (ODWQS) and any exceedances are flagged and investigated to determine the potential source and impact of the exceedance. According to the Humber River Watershed Report Card (2018), groundwater quality within the Humber River Watershed received an overall grading of "C" meaning the groundwater quality is fair. In general, exceedance of the guideline for chloride is noted in areas where excessive road salt application is occurring.

Local groundwater quality sampling was conducted on Site and is discussed further in Section 5.

4.0 Field Work

The following section outlines the field investigation conducted by Crozier staff and others to characterize the existing conditions.

4.1 Monitoring Well Installation

Five (5) monitoring wells were installed by A & A for both Geotechnical and Hydrogeological purposes in April 2022. To further expand the hydrogeological and geotechnical network, an additional two (2) monitoring wells were installed in January 2025 by MTE Consultants Inc. (MTE). Please see **Figure 8** for the location of monitoring wells.

Table 2 below provides a summary of the monitoring well construction details.

Table 2: Monitoring Well Details

2022				
Monitoring Well Name	**Existing Grade (masl)[1]**	**Total Depth (m)**	**Screened Interval (m)**	**Material**
MW1	252.16	6.10	2.90 – 6.10	Brown to grey clayey silt to silty clay till with trace sand and gravel. Very stiff.
MW3	250.05			
MW4	248.53	5.30	2.10 – 5.30	
MW5	250.60	6.10	3.00 - 6.10	
MW9	250.59		2.90 – 6.10	
2025				
MW201-25	249.41	9.30	7.60 – 9.30	Very dense grey silt and sand, trace clay. Very moist.
MW202-25	250.44		5.80 – 9.30	Very dense brown to grey silt, silty sand and sandy silt.

1. Existing grade elevations are estimated based on the available Region of Peel Digital Elevation Model (*DEM*) data.

For detailed borehole logs, please refer to **Appendix A**.

4.2 Groundwater Monitoring

Manual groundwater measurements were collected using an electronic water level meter and automatic level loggers were installed in select wells across the Site set to measure water levels on an hourly basis to collect a more comprehensive dataset for a greater understanding of the shallow groundwater system. Results of groundwater monitoring to date is covered in Section 5 below.

4.3 Piezometer Installation

On May 2, 2023, Crozier staff installed two (2) piezometers to assess the vertical gradient at the stream to Cold Creek through the study area. One (1) piezometer was placed in the northern reach of the tributary near the accessible land boundary, while the other was installed near the southern accessible land boundary. The locations of the piezometers are also shown in **Figure 8**. Please note that as of Summer 2025, the piezometers have been damaged due to weather conditions and variable stream flow. The piezometers will be re-established by the Crozier team in the Spring of 2026.

4.4 Surface Water Monitoring

Manual surface water measurements were collected using an electronic water level meter. Measurements were taken from the inside and outside of the piezometer to compare water levels and determine vertical gradients. Results of surface water monitoring to date is covered in Section 5 below.

4.5 Groundwater Quality Sampling

Localized groundwater quality sampling was conducted in September 2025 at MW9. The sample was collected using low flow sampling procedures. Three (3) well volumes were removed prior to sampling. The groundwater sample was sent to a third-party laboratory for analysis. The resultant concentrations were compared to the Region of Peel Sewer Use By-Law parameters. Results of the groundwater quality sampling is covered in Section 5 below.

4.6 Door-to-Door Survey

A door-to-door survey was completed to confirm the locations and details of nearby water supply wells within 500 m of the Site area. The door-to-door survey was conducted in January 2026 and remained opened until February 2026. A questionnaire was used to address the following about the wells on adjacent properties:

- Property address
- Existence of a well on the property
- Well use, age, depth
- History of water quantity and quality

A copy of the questionnaire is provided in **Appendix C**. Only one (1) response was received.

5.0 Results

The following sections outline the results of the investigation at the time of this report. Note that groundwater monitoring is ongoing, and this report will be updated as additional results are obtained.

5.1 Groundwater Conditions

Manual groundwater measurements have been collected in all wells since November 2022. **Table 3** below summarizes the manual groundwater measurements collected to date.

Table 3: Groundwater Levels (mbgs) (2022-2026)

Well Name	Water Level (mbgs)									
	Nov. 28, 2022	Dec. 14, 2022	Feb. 27, 2023	Mar. 28, 2023	May 2, 2023	May 27, 2023	Dec. 20, 2024	Feb. 27, 2025	Sept. 5, 2025	Mar. 24, 2026
MW1[1]	3.11	3.01	2.54	2.20	2.36	1.59	2.34	-[3]	-	-
MW3	3.41	3.57	3.37	3.01	2.71	3.79	3.98	-	3.94	4.84
MW4	3.38	3.47	2.49	1.81	2.09	3.31	4.09	4.35	4.09	4.85
MW5	-	4.04	1.14	0.47	0.91	1.72	5.71	5.79	4.84	-[3]
MW9	1.64	1.55	0.80	0.41	0.54	1.16	1.28	2.09	1.49	0.46
MW201-25[2]	-	-	-	-	-	-	-	3.23	4.30	2.73
MW202-25	-	-	-	-	-	-	-	7.29	7.20	7.79

1. Loggers were removed on March 27, 2024, and reinstalled in December 2024.
2. MW201-25 and MW202-25 were installed in January 2025. Loggers were installed in February 2025.
3. Monitoring well damaged; unable to capture accurate measurement.

As shown in **Table 3**, water levels across the field study area vary seasonally with the lowest water levels captured in the Fall of 2022 and the highest water levels captured in Spring of 2023. Peak manual water level was captured at MW9, the well closest to Airport Road at 0.54 mbgs. Table 4 below displays the manual water levels in masl with values in bold representing the highest measured elevation during each round of monitoring.

Table 4: Groundwater Elevation (masl) (2022-2026)

Name	Water Level (masl)									
	Nov. 28, 2022	**Dec.14, 2022**	**Feb. 27, 2023**	**Mar. 28, 2023**	**May 2, 2023**	**May 27, 2024**	**Dec. 20, 2024**	**Feb. 27, 2025**	**Sept. 5, 2025**	**Mar. 24, 2026**
MW1	249.05	249.15	249.62	249.96	249.80	**250.57**	249.82	-	-	-
MW3	246.64	246.48	246.68	247.04	**247.34**	246.26	246.07	-	246.11	245.21
MW4	245.15	245.06	246.04	**246.72**	246.44	245.22	244.44	244.18	244.44	243.68
MW5	-	246.56	249.46	**250.13**	249.69	248.88	244.90	244.81	245.76	-
MW9	248.95	249.04	249.79	**250.18**	250.05	249.43	249.31	248.49	249.10	250.13
MW201-25	-	-	-	-	-	-	-	246.18	245.11	**246.68**
MW202-25	-	-	-	-	-	-	-	243.15	**243.24**	242.65

Automatic level loggers were installed at all monitoring well locations with the exception of MW1 due to the absence of a casing and previous damage to the well associated with farming equipment. Crozier recommends that MW1 should be decommissioned per Ontario Regulation 903 to prevent contaminants from surface from entering the groundwater.

Hydrographs of all monitored wells are displayed in **Appendix D**. From the graphs, water levels appear to respond gradually to seasonal change and no significant fluctuations due to precipitation are observed. Peak groundwater levels at MW3, MW4, MW5 and MW9 were observed in the spring of 2023 with the exception of a large spike in groundwater level in November 2023 and July 2025 when a 50 mm storm event occurred. Highest water levels captured at each well are shown in Table 5 below.

Table 5: Peak Groundwater Measurements (masl)

Well	Peak Automatic Elevation (masl)	Peak Manual Elevation (masl)
MW1	-	250.57
MW3	247.34	247.34
MW4	246.74	246.72
MW5	250.19	250.13
MW9	250.41	250.18
MW201-25	247.3	246.68
MW202-25	243.8	243.24

The water levels captured in March 2023 are interpreted to be representative of seasonally high groundwater conditions. Groundwater is interpreted to flow towards Salt Creek, from the west to the southeast and from the east to the southwest across the Site (**Figure 9**). It is noted that all monitoring wells were installed within the first water bearing unit encountered during drilling. In all cases, the first water bearing unit was a clayey silt to silty clay till. It is interpreted that water is held within silty seams within the till and the aquifer unit is considered semi-confined in nature. This is supported by minimal aquifer response to precipitation. Given the fine-grained nature of the overburden materials, lateral and vertical groundwater flow is restricted by the low permeability of the soils.

Given the confined nature of the shallow system, it is interpreted that the groundwater levels above are representative of a potentiometric surface rather than where groundwater would be encountered during excavation; groundwater is expected below the confining, fine-grained layer. The expected elevation where groundwater would be encountered is shown in **Table 6** below.

Table 6: Expected Groundwater Elevation During Excavation (masl)

Well	Anticipated Groundwater Elevation (masl)
MW1	249.06
MW3	246.25
MW4	245.43
MW5	246.00
MW9	245.99
MW201-25	243.50
MW202-25	244.20

The groundwater elevations above represent the highest expected groundwater elevations to be encountered during excavation. It is Crozier's opinion that the levels in Table 6 above are suitable for design purposes.

5.2 Surface Water Conditions

At the time of this report, two (2) measurements have been collected at the surface water piezometers. Field visits were paused for a portion of 2024 hence no measurements were collected in 2024. Water levels are shown in **Table 7** below.

Table 7: Surface Water Levels

Piezometer	*May 2023*			*March 2025*		
	In (mags)	Out (mags)	Gradient	In (mags)	Out (mags)	Gradient
P1	0.37	0.35	0.02	0.26	0.20	0.06
P2	0.29	0.31	-0.02	0.28	0.28	0.00

No significant trend is noted within the surface water levels captured, however, according to literature, baseflow of Salt Creek may be supplemented by the Oak Ridges Moraine deposit beneath the glacial till or from perched groundwater within the till. Modelling and mapping completed as a part of the SABE study (Wood, January 2022) show minor discharge along Salt Creek. Seeps are interpreted to occur where the stream elevation intersects the Oak Ridges Moraine deposits or water bearing seams of the glacial till.

According to the Environmental Impact Study (EIS) completed by NRSI (2022), meadow marsh (MAM) community is located along the Salt Creek corridor. Vascular flora species such as *Impatiens capensis* (spotted jewelweed) were mapped within the wetland community. This species thrives in poorly drained, wet soils. These conditions on Site may be due to the fine-grained nature of the soils, limiting infiltration and/or minor groundwater contribution to the wetland community.

Please note that the piezometers were damaged or removed by others between sometime after the March 2025 measurement and the locations are no longer established. Crozier staff will revise the monitoring plan and reinstate monitoring in Spring 2026 to continue assessing the surface water feature.

5.3 Groundwater Quality

As noted above in Section 4.5, one (1) representative groundwater sample was collected from MW9 and submitted to a third-party laboratory for analysis. Groundwater results were compared to the Region of Peel Sewer Use By-Law parameters (please refer to **Appendix E**). The following exceedances were observed:

- Total Suspended Solids (TSS): 1190 mg/L (Sanitary/Storm)
- Total Kjeldahl Nitrogen (TKN): <5.0 mg/L (Storm)
- Total Phosphorus: 1.74 mg/L (Storm)
- Coliforms: 240 CFU/100 mL (Storm)

The presence of total suspended solids is not uncommon for the type of sampling used. Removing water for sampling purpose—even at low flow rates—can pull fine grained materials into the water column, increasing the presence of solids in the sample. The exceedances of TKN, total phosphorus and coliforms is likely as a result of sample contamination from recently placed manure and fertilizers on the field. The exceedances above are interpreted to be representative of sampling and environmental conditions rather than true groundwater quality.

It is recommended that additional groundwater sampling be conducted prior to groundwater discharge for dewatering purposes. Results should be compared to the regulatory standards for the desired discharge outlet.

5.4 Door-to-Door Survey Results

As mentioned in Section 4.6, only one (1) response was received after distributing the survey to properties within 500 m of the Study Area.

The respondent reported having two (2) dug wells on the property that supply drinking water. Both wells are approximately 10.06 m (33 ft) deep and were installed in the 1990s. The owner indicated that minor coliform detections have been reported in the groundwater in the past, and that a water softener is used as part of the household water system.

Bacteria contamination is not uncommon for shallow dug wells. Dug wells are more vulnerable to surface contamination and contamination from nearby septic systems. The issues reported by this property owner are not interpreted to be representative of the groundwater quality at the Study Area.

The results of the door-to-door survey are provided in **Appendix F**.

6.0 Design Considerations

The following sections outline potential design constraints and considerations that may be required to be addressed in the development process.

6.1 Construction Dewatering

Based on the groundwater levels observed across the Site, construction dewatering is anticipated to be required to support the development. Areas where groundwater levels are less than 1 mbgs are expected to require construction dewatering.

Dewatering estimates are calculated based on the maximum excavation size for the proposed industrial building and a safety factor of 2 was applied to account for precipitation during construction and variability in hydraulic conductivity.

The input parameters used to calculate construction dewatering rates for the proposed Industrial Building A are presented in **Table 8** below. Please see **Appendix G** for detailed construction dewatering calculations.

Table 8: Construction Dewatering Parameters

Input Parameter	Input	Notes
	Industrial Building	
Hydraulic Conductivity (K)	1.00 x 10^{-7} m/s	Estimated based on preliminary borehole information and literature values.
Groundwater Elevation	250.18 masl	High groundwater level measured by Crozier March 2023.
Extent of Excavation	250.50 masl	Final floor elevation as indicated on the Site Plan prepared by Powers Brown Architecture, less an assumed 1.2 m to estimate the underside of footing elevation.
Dewatering Elevation Target	249.50 masl	Assumed to be 1.0 m below the extent of excavation for safe construction conditions.
Base of the Water Bearing Zone	244.90 masl	Assumed to be at the base of the till unit.
Excavation Area	23,117 m^2	Area of Industrial Building A stated in the Site Plan prepared by Powers Brown Architecture.

It should be noted that groundwater elevations are estimated based on the measured water level in March 2023 and the topographic survey.

6.1.1 Methodology

Construction dewatering rates were estimated using the Dupuit equation as described in Construction Dewatering and Groundwater Control: New Methods and Applications by Powers et al. 2007. The Dupuit equation assumes a steady linear flow from all four sides of an excavation and is described by the following equation:

$$Q_w = \frac{\pi K(H^2 - h_w^2)}{ln\frac{R_0}{r_w}}$$

Where:

Q_w	=	discharge rate in m^3/s
K	=	hydraulic conductivity in m/s
H	=	static groundwater elevation in masl
h_w	=	head above base of the excavation at maximum dewatering in masl
R_0	=	radius of influence of point source from the center of excavation in m
r_w	=	equivalent radius of the well in m

The radius of influence (R_0) is approximated using the Sichardt Equation as follows:

$$R_0 = r_w + 3000(H - h_w)\sqrt{K}$$

And the equivalent radius of the well (r_w) is calculated as follows:

$$r_w = \sqrt{\frac{A}{\pi}}$$

Where:

A	=	excavation area

6.1.2 Results

Using the Dupuit equation, the total estimated discharge rate for one building is approximated as follows:

- Industrial Building A: 25,526 L/day or 51,052 L/day with a safety factor of 2

Crozier anticipates the initial dewatering rate will be at peak to remove perched water from the upper formation. The dewatering rates are expected to decrease once the dewatering target elevation has been achieved in the excavation area, resulting in lower seepage rates into the excavation footprint. Since the anticipated dewatering volume is greater than 50,000 L/day registration with the Environmental Activity Sector Registry (EASR) is required.

6.2 Long-Term Dewatering

As shown on the Site Plan the proposed Industrial Building A will be a slab-on-grade structure and therefore, long-term dewatering is not anticipated to be required. However, given the high groundwater conditions identified within the Site area (less than 1.0 mbgs), it is recommended that a sub-drainage layer be included as part of the foundation design. Please note that the design of long-term dewatering systems, drainage layers and foundations is outside the scope of this report.

6.3 Site-Wide Water Balance

A water balance assessment was conducted to assess potential impacts of the proposed development on the local groundwater conditions. The water balance was conducted under existing (pre-development) and proposed (post-development) conditions. The water balance assessment was conducted in accordance with accepted site condition values from Table 6.3 of the Urban Storm Drainage Criteria Manual: Volume 1 (Urban Drainage and Flood Control District, 2016) and Table 3.1 of the MECP Stormwater Management Planning and Design Manual (MECP, 2003). The appropriate reference tables are provided in **Appendix H**.

The results of the water balance assessment are presented in **Table 9** below.

Table 9: Summary of Site Wide Water Balance

Pre-Development Infiltration (mm/yr)	Post-Development Infiltration without Mitigation (mm/yr)	Infiltration Deficit (mm/yr)
168	75	94

6.3.1 Methodology

The water balance on a site can be estimated from the following equation described in Thornthwaite and Mather 1957:

$$P = S + R + I + ET$$

Where: P = precipitation

S = change in groundwater storage

R = surface water runoff

I = infiltration

ET = evapotranspiration/evaporation

The components of the water balance equation can be estimated using field observations of drainage conditions, land cover, soil types, groundwater conditions and local climate records.

6.3.2 Precipitation (P)

The nearest climate station to the Subject Lands with recent climate records is the is Toronto Buttonville (Airport) Climate Station, located approximately 33.62 km away from the Site. The station has a Climate ID of 6158409 and is situated at 43°51'39.000" N, 79°22'07.000" W, with an elevation of 198.1 masl. Monthly average precipitation and climate data from 1991 – 2020 was used to complete the water balance calculations. The long-term monthly average for precipitation and climate is shown in **Table 10** below.

Table 10: Climate Data (1991 – 2020) for Toronto Buttonville (Airport) Climate Station

Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Precipitation (mm)	63.5	51.1	52.3	78.9	80.0	86.7	85.2	71.9	83.1	70.6	76.7	62.5	**862.5**[1]
Temperature (°C)	-6	-5.6	-0.2	6.5	13.4	18.8	21.5	20.6	16.2	9.4	3.3	-2.2	**8.0**[2]

1. Total average annual precipitation from 1991-2020.
2. Average annual temperature from 1991-2020.

Therefore, based on the data above, the long-term annual average precipitation for the area is 862.5 mm/year and the long-term average temperature for the Site area is 8.0 °C.

6.3.3 Storage (S)

Long-term groundwater storage (S) is assumed to be negligible as no evidence of groundwater impact on significant groundwater pumping or withdrawal is noted in regional studies of the area. The seasonal changes in water levels are expected to balance annually.

6.3.4 Evapotranspiration (ET)

The rate of evapotranspiration is a function of the water holding capacity of the soil, soil and vegetation type and land cover. Through the Thornthwaite and Mather method or a soil moisture balance approach and local climate data, the Potential Evapotranspiration (PET) and the Actual Evapotranspiration (AET) can be calculated (see **Appendix H**) using the following equations:

$$PET = 16 \times \left(\frac{10Ta}{H_i}\right)^a$$

Where: Ta = average daily temperature, 0 degrees for negative temperature months

Hi = heat index value, assuming 12 hours per day, 30 days a month of daylight

The average heat index value is estimated using the following equation:

$$Hi = \sum_{i=1}^{12} \left(\frac{10Ta}{5}\right)^{1.514}$$

The evapotranspiration factor (α) is determined using the following equation:

$$\alpha = 0.49 + (0.0179 \times H_i) - (0.0000771 \times H_i^2) + (0.000000675 \times H_i^3)$$

PET is adjusted to account for the average number of hours of daylight per month for a given location. The adjustment factor is dependent on the subject property's latitude and is presented in Appendix E (Thornthwaite and Mather, 1957). The PET is multiplied by the adjustment factor per month to determine the Adjusted Potential Evapotranspiration (PET_{adj}).

The Actual Evapotranspiration (AET) is determined using the following equation:

$$AET = PET_{adj} - \Delta S$$

The Change in Soil Storage (ΔS) is depended on the types of soil on the property and the Accumulated Potential Water Loss (APWL) per month. The Change in Soil Storage and Accumulated Potential Water Loss can be calculated using the following equations:

$$\Delta S = S_{mc}\,\mathrm{APWL}$$

Where: S_{mc} = soil moisture capacity

APWL = accumulated potential water loss

$$\text{For } \Delta P < 0\text{: } APWL = -\Sigma_{i=0}^{12} PET_i$$

$$\text{For } \Delta P < 0\text{: } APWL = \frac{ln\left(\frac{|AET-PET|}{S_{mc}}\right)}{S_{mc}}$$

The soils on the property were determined to be silty sands and silty clays. Using the Ministry Environment, Conservation and Parks (MECP) Stormwater Management and Design Manual Table 3.1. (2003), the soil moisture capacity was estimated to be 200 mm for silt loam soils in moderately rooted crops and 125 mm for silt loam in urban lawn areas.

6.3.5 Water Surplus (R+I)

The difference between mean annual P and mean annual ET outputs the amount of water surplus for the Site. The water surplus either infiltrates (I) into the soil or travels across the site as runoff (R).

The distribution of water that infiltrates into the soil is a function of an infiltration factor as described in Table 3.1 of the MECP Stormwater Management Planning and Design Manual (MECP, 2003). The infiltration factor for the Site is assumed to be 0.6 based on topographic factor of 0.3 for flat land, a soils factor of 0.2 for silt loam and a land cover factor of 0.1 for open areas.

The water balance components were used to estimate the pre-development and post-development water balance scenarios. Detailed water balance calculations for the subject property can be seen in **Appendix H.**

6.3.6 Pre-Development Infiltration

The pre-development water balance calculations are presented in **Appendix H**. Under existing conditions, the infiltration for the subject lands is calculated to be 168 mm/yr.

6.3.7 Post-Development Infiltration

To complete the post-development infiltration calculation, the proposed development was separated by land use and assigned a percent imperviousness. Based on the water balance components, the calculated post-development infiltration volumes are estimated to be 75 mm/yr. In comparing the pre and post development infiltration volumes, the proposed development has the potential to decrease by 56%.

6.3.8 Water Balance Impact Assessment

Based on the results of the water balance, the proposed development has the potential to decrease infiltration by 94 mm/yr (**Appendix H**). Low impact development (LID) features should be designed to infiltrate 94 mm/yr to achieve site-wide water balance. The design of proposed LID features can be found in the Functional Servicing and Stormwater Management Report by Crozier, submitted under separate cover.

The on-site soils exhibit an estimated hydraulic conductivity ranging from 8.07×10^{-9} m/s to 1×10^{-11} m/s, based on grain size analyses completed by MTE and A & A (see Appendix A). In accordance with the CVC LID Design Guide (Appendix C), this corresponds to an approximate infiltration rate of 12.7 mm/hr. A safety factor of 1.5 was applied to derive an effective infiltration rate of 8.5 mm/hr for the deign of all infiltration galleries. As noted in Table 2 of this report, the geology was consistent across the entirety of the site with all the monitoring wells encountering a grey silt or clayey silt material. Crozier selected a safety factor of 1.5 since we do not anticipate a lot of variability across the site given the consistent nature of the site conditions.

It should be noted that localized infiltration testing within the proposed LID areas has not yet been conducted due to saturated ground conditions at the time of this report. Crozier plans to undertake in-situ infiltration testing in Summer 2026 to better characterize site-specific conditions and support the detailed design process.

7.0 Feature Based Water Balance

A feature-based water balance assessment was undertaken to estimate the potential impact on the proposed development on Salt Creek and its surrounding wetland. A Thornthwaite and Mather assessment was conducted using the catchment areas directed to the wetland in the pre and post development scenarios. From pre- to post-, the area directed to the wetland is to increase roughly 16%.

Runoff from the proposed development to Salt Creek is maintained under post-development conditions. Given that Salt Creek appears to be primarily fed by surface water with periodic groundwater inputs in the spring, no negative impacts to Salt Creek are anticipated from a water balance perspective. Groundwater infiltration rates will be maintained post-development via proposed LID features as described in the Functional Servicing and Stormwater Management Report prepared by Crozier (submitted under separate cover). Please refer to **Appendix I** for details.

8.0 Conclusions & Recommendations

Based on the above study and field work results, Crozier is prepared to make the following conclusions:

- The surficial soils encountered during drilling are primarily clayey silt to silty clay till with trace sand and gravel.
- The water levels captured in March 2023 are interpreted to be representative of seasonally high potentiometric surface. Due to the fine-grained nature of the onsite soils, groundwater is not expected until approximately an elevation of 243.50 masl to 249.06 masl.
- Groundwater is interpreted to flow towards Salt Creek, from the west to the southeast and from the east to the southwest across the Site.
- Groundwater sampling revealed exceedances of the Region of Peel Sewer Use By-Law for total suspended solids, total coliforms, TKN, and total phosphorus. It is interpreted that the exceedances are due to sampling methods rather than true groundwater quality. It is recommended that groundwater sampling be conducted prior to discharge of any groundwater.
- Construction dewatering estimates were calculated to be 25,526 L/day or 51,052 L/day with a safety factor of 2 for the proposed building. For volumes over 50,000 L/day to 400,000 L/day, Environmental Activity Sector Registration (EASR) with the MECP is required. Long-term dewatering is not anticipated since the proposed building will be slab on grade.
- From pre-development to post-development the infiltration deficit is determined to be 94 mm/yr. Mitigation strategies are outlined in the Functional Servicing and Stormwater Management Report prepared by Crozier (under separate cover).
- From pre-development to post-development, the area directed to the wetland is anticipated to increase by 16%. Mitigation strategies are outlined in the Functional Servicing and Stormwater Management Report prepared by Crozier (under separate cover).

Respectfully submitted,

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VM/tc

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APPENDIX A

Borehole Logs

ID No.: MW201-25

Project Name: Airport Road - Geotechnical Investigation

MTE File No.: 56106-100

Client: Broccolini

Site Location: Airport Road, Caledon, ON

Date Completed: 1/14/2025

Drilling Contractor: Direct Environmental Drilling Inc

Drill Rig: Mobi Drill B57 Track Mount

Drill Method: Hollow Stem Augers

Protective Cover: Monument Casing

Depth (ft / m)	Soil Description	Elevation (masl) / Depth (m)	Sample Number	Sample Type	Standard Penetration (Dynamic Cone)	Shear Strength (PP) kPa / Shear Strength (FV) kPa	Water Content %
0 / 0	Ground Surface	249.6					
0	**TOPSOIL** dark brown silty clayey topsoil, with organics (150mm)	0.0	1	SS	12		32
2	**SILT TILL** compact brown silt, some clay, trace sand and gravel, with rootlets, very mosit		2	SS	21		23
4		248.1					
6 / 2	grey and brown, some sand, very moist to moist	1.5	3	SS	22		19
8			4	SS	29		17
10		246.6					
10	**CLAYEY SILT TILL** hard brown clayey silt, trace sand and gravel	3.0	5	SS	30		17
12 / 4							
14		245.0					
14	some sand, with cobbles	4.6	6	SS	32		12
16							
18							
20 / 6		243.5					
20	**SILT AND SAND** very dense grey silt and sand, trace clay, very moist	6.1	7	SS	50/100mm		6
22							

Groundwater Observations and Standpipe Details: Concrete; Bentonite; 51mm PVC Riser

Field Technician: A. Challis

Drafted by: B. Ehgoetz

Reviewed by: B. Thorner

ID No.: MW201-25

Project Name: Airport Road - Geotechnical Investigation

MTE File No.: 56106-100

Client: Broccolini

Site Location: Airport Road, Caledon, ON

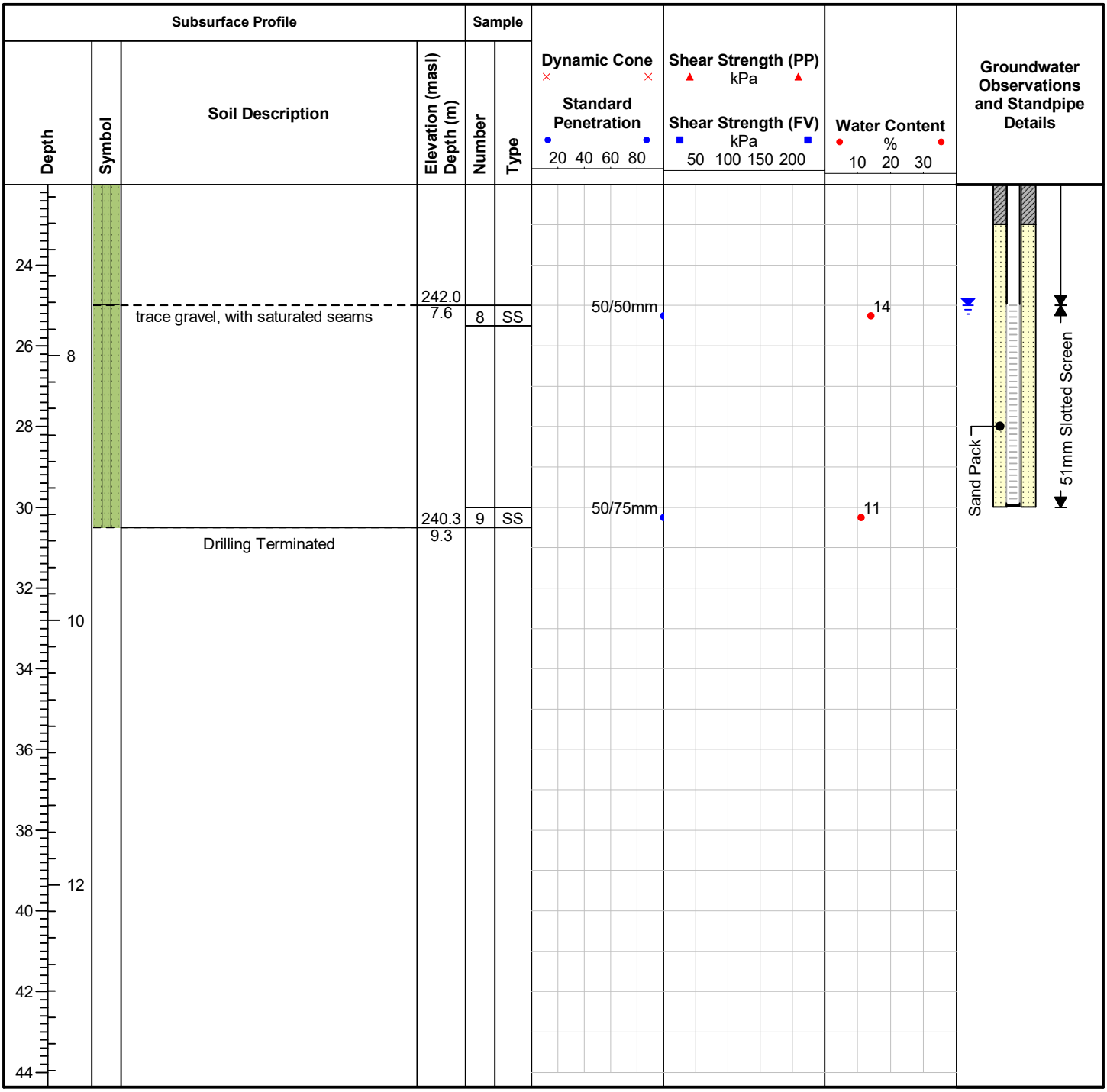
Date Completed: 1/14/2025

Drilling Contractor: Direct Environmental Drilling Inc

Drill Rig: Mobi Drill B57 Track Mount

Drill Method: Hollow Stem Augers

Protective Cover: Monument Casing



Field Technician: A. Challis

Drafted by: B. Ehgoetz

Reviewed by: B. Thorner

MTE

ID No.: MW202-25

Project Name: Airport Road - Geotechnical Investigation

MTE File No.: 56106-100

Client: Broccolini

Site Location: Airport Road, Caledon, ON

Date Completed: 1/17/2025

Drilling Contractor: Direct Environmental Drilling Inc

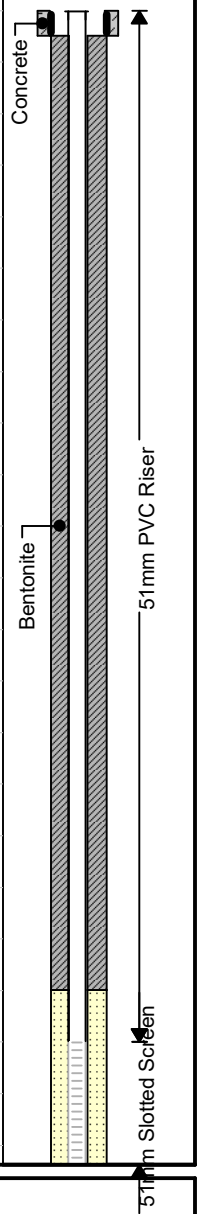
Drill Rig: Mobi Drill B57 Track Mount

Drill Method: Hollow Stem Augers

Protective Cover: Monument Casing

Depth (ft / m)	Soil Description	Elevation (masl) / Depth (m)	Sample Number	Sample Type
0 / 0	Ground Surface	250.6		
	TOPSOIL dark brown silty clayey topsoil, with organics (250mm)	0.0 / 250.3 / 0.3		
	SILT TILL compact to dense brown silt, some clay, trace sand and gravel, very moist		1	SS
		249.1 / 1.5		
	mottled light brown and brown, with cobbles		2	SS
		248.2 / 2.4		
	CLAYEY SILT TILL hard brown clayey silt, some sand, trace gravel, with cobbles and silt layers		3	SS
			4	SS
		246.3 / 4.3		
	SILT TILL dense brown silt, some clay and sand, trace gravel, very moist		5	SS
		245.7 / 4.9		
	SANDY SILT TILL very dense brown sandy silt, some clay, trace gravel, with silt seams, very moist	244.8 / 5.8		
	SILT very dense brown to grey silt, some clay and sand, trace gravel, moist		6	SS
		244.2 / 6.4		

Depth (ft / m)	Dynamic Cone Penetration (20 40 60 80)	Shear Strength (PP) kPa / Shear Strength (FV) kPa (50 100 150 200)	Water Content % (10 20 30)
0 / 0			
2 /	17		15
4 /	35		15
6 / 2	25		16
8 /	37		13
10 /	68		8
12 / 4	86		15
14 /			
16 /			
18 /			
20 / 6			
22 /			



Field Technician: B. Ehgoetz

Drafted by: B. Ehgoetz

Reviewed by: B. Thorner

MTE

ID No.: MW202-25

Project Name: Airport Road - Geotechnical Investigation

MTE File No.: 56106-100

Client: Broccolini

Site Location: Airport Road, Caledon, ON

Date Completed: 1/17/2025

Drilling Contractor: Direct Environmental Drilling Inc

Drill Rig: Mobi Drill B57 Track Mount

Drill Method: Hollow Stem Augers

Protective Cover: Monument Casing

Depth	Symbol	Soil Description	Elevation (masl) / Depth (m)	Sample Number	Sample Type	Dynamic Cone / Standard Penetration	Shear Strength (PP) kPa / Shear Strength (FV) kPa	Water Content %	Groundwater Observations and Standpipe Details
24		**SILTY SAND** very dense brown silty sand, wet to saturated	243.0						
		some to trace gravel, saturated	7.6	7	SS	50/125mm		9	Sand Pack; 51mm Slotted Screen
26	8								
28			242.1						
		SANDY SILT very dense grey sandy silt, moist	8.5	7B	AS				
30			241.3	8	SS	50/50mm			
		Drilling Terminated	9.3						
32									
	10								
34									
36									
38									
	12								
40									
42									
44									

Field Technician: B. Ehgoetz

Drafted by: B. Ehgoetz

Reviewed by: B. Thorner

MTE

ID No.: BH203-25

Project Name: Airport Road - Geotechnical Investigation

MTE File No.: 56106-100

Client: Broccolini

Site Location: Airport Road, Caledon, ON

Date Completed: 1/14/2025

Drilling Contractor: Direct Environmental Drilling Inc

Drill Rig: Mobi Drill B57 Track Mount

Drill Method: Hollow Stem Augers

Protective Cover: N/A

Depth (ft / m)	Soil Description	Elevation (masl) / Depth (m)	Sample Number	Sample Type	Standard Penetration (Dynamic Cone)	Shear Strength (PP) kPa / Shear Strength (FV) kPa	Water Content %
0 / 0	Ground Surface	249.9					
	TOPSOIL dark brown silty clayey topsoil, with organics (300mm)	0.0 / 249.6 / 0.3	1	SS	8		30
2 /	**SILT TILL** loose to compact brown silt, some clay and sand, trace gravel, very moist		2	SS	13		21
4 /		248.4					
6 / 2	dense, some sand, trace gravel and clay, with cobbles	1.5 / 247.6	3	SS	34		24
8 /	**SANDY SILT TILL** compact brown sandy silt, some to trace clay and gravel, very moist	2.3	4	SS	20		15
10 /			5	SS	20		11
12 / 4		245.3					
14 /	**SILT TILL** dense brown silt, some clay and sand, trace gravel, very moist	4.6	6	SS	47		12
16 /							
18 /		243.8					
20 / 6	**SILT AND SAND** very dense grey silt and sand, trace clay and gravel, very moist	6.1 / 243.5 / 6.4	7	SS	90		4
22 /	Drilling Terminated						

Groundwater Observations and Standpipe Details: Bentonite and Cuttings; Dry Cave

Field Technician: A. Challis

Drafted by: B. Ehgoetz

Reviewed by: B. Thorner

MTE

ID No.: BH204-25

Project Name: Airport Road - Geotechnical Investigation

MTE File No.: 56106-100

Client: Broccolini

Site Location: Airport Road, Caledon, ON

Date Completed: 1/14/2025

Drilling Contractor: Direct Environmental Drilling Inc

Drill Rig: Mobi Drill B57 Track Mount

Drill Method: Hollow Stem Augers

Protective Cover: N/A

Depth (ft / m)	Symbol	Soil Description	Elevation (masl) / Depth (m)	Sample Number	Sample Type	Dynamic Cone / Standard Penetration (20 40 60 80)	Shear Strength (PP) kPa / Shear Strength (FV) kPa (50 100 150 200)	Water Content % (10 20 30)	Groundwater Observations and Standpipe Details
0 ft / 0 m		Ground Surface	251.7						
0		**TOPSOIL** dark brown silty clayey topsoil, with organics (250mm)	0.0 / 251.4 / 0.3	1	SS	8		21	
2		**SILT TILL** loose to compact brown silt, some clay and sand, trace gravel, very moist		2	SS	19		20	
4				3	SS	21		20	
6 / 2			249.4						
8		**CLAYEY SILT TILL** very stiff brown clayey silt, trace sand and gravel, very moist	2.3	4	SS	20		25	
10				5	SS	17			← Bentonite and Cuttings
12 / 4			247.1						
14		**CLAY AND SILT TILL** stiff grey clay and silt, trace sand and gravel	4.6	6	SS	10		26	
16									
18									← Dry Cave
20 / 6		with wet layers, APL	245.6 / 6.1	7	SS	20		21	
22		Drilling Terminated	245.1 / 6.6						

Field Technician: A. Challis

Drafted by: B. Ehgoetz

Reviewed by: B. Thorner

MTE

ID No.: BH205-25

Project Name: Airport Road - Geotechnical Investigation

MTE File No.: 56106-100

Client: Broccolini

Site Location: Airport Road, Caledon, ON

Date Completed: 1/17/2025

Drilling Contractor: Direct Environmental Drilling Inc

Drill Rig: Mobi Drill B57 Track Mount

Drill Method: Hollow Stem Augers

Protective Cover: N/A

Depth (ft / m)	Soil Description	Elevation (masl) / Depth (m)	Sample Number	Sample Type	Standard Penetration (Dynamic Cone)	Shear Strength (PP) kPa / Shear Strength (FV) kPa	Water Content %	Groundwater Observations and Standpipe Details
	Ground Surface	251.7						
0	**TOPSOIL** dark brown silty clayey topsoil, with organics (225mm)	0.0	1	SS	6		22	
2	**CLAYEY SILT TILL** stiff mottled brown and grey clayey silt, trace sand and gravel, trace rootlets, DTPL	250.8 / 0.9	2	SS	20		20	
4	hard, turning grey, rootlets cease		3	SS	22		19	
6		249.4						
8	**SILTY CLAY TILL** hard grey silty clay, trace sand and gravel, DTPL	2.3	4	SS	20		22	
10		248.7						
12	**CLAYEY SILT TILL** very stiff mottled brown and grey clayey silt, trace sand and gravel, DTPL	3.0	5	SS	16		23	
14	grey	247.1 / 4.6	6	SS	12		27	
16								
18		245.6						
20	**CLAY AND SILT TILL** stiff to very stiff grey clay and silt, trace sand, DTPL to APL	6.1	7	SS	11		14	
22		245.0 / 6.7						

Bentonite and Cuttings

Dry Cave

Field Technician: B. Ehgoetz

Drafted by: B. Ehgoetz

Reviewed by: B. Thorner

MTE

Sheet: 1 of 1

ID No.: BH206-25

Project Name: Airport Road - Geotechnical Investigation

MTE File No.: 56106-100

Client: Broccolini

Site Location: Airport Road, Caledon, ON

Date Completed: 1/15/2025

Drilling Contractor: Direct Environmental Drilling Inc

Drill Rig: Mobi Drill B57 Track Mount

Drill Method: Hollow Stem Augers

Protective Cover: N/A

Depth (ft / m)	Symbol	Soil Description	Elevation (masl) / Depth (m)	Sample Number	Sample Type	Dynamic Cone – Standard Penetration (20 40 60 80)	Shear Strength (PP) kPa / Shear Strength (FV) kPa (50 100 150 200)	Water Content % (10 20 30)	Groundwater Observations and Standpipe Details
0 / 0		Ground Surface	249.9						
0		**TOPSOIL** dark brown silty clayey topsoil, with organics (125mm)	0.0	1	SS	8		21	
2		**SILT TILL** loose to compact brown silt, some clay, trace sand and gravel, trace rootlets, very moist		2	SS	20		17	
4				3	SS	28		16	
6 / 2			247.6						
8		**CLAYEY SILT TILL** hard brown clayey silt, trace sand and gravel, with cobbles	2.3	4	SS	32		16	
10				5	SS	51		12	Bentonite and Cuttings
12 / 4			245.3						
14		**SANDY SILT** very dense brown sandy silt, some clay and gravel, with cobbles, moist	4.6	6	SS	71		4	
16									
18									
20 / 6		grey, trace gravel	243.8	7	SS	50/125mm		4	Dry Cave
22			6.1						

Field Technician: A. Challis

Drafted by: B. Ehgoetz

Reviewed by: B. Thorner

MTE

ID No.: BH206-25

Project Name: Airport Road - Geotechnical Investigation

MTE File No.: 56106-100

Client: Broccolini

Site Location: Airport Road, Caledon, ON

Date Completed: 1/15/2025

Drilling Contractor: Direct Environmental Drilling Inc

Drill Rig: Mobi Drill B57 Track Mount

Drill Method: Hollow Stem Augers

Protective Cover: N/A

Subsurface Profile				Sample		Dynamic Cone / Standard Penetration (20 40 60 80)	Shear Strength (PP) kPa / Shear Strength (FV) kPa (50 100 150 200)	Water Content % (10 20 30)	Groundwater Observations and Standpipe Details
Depth	Symbol	Soil Description	Elevation (masl) Depth (m)	Number	Type				
24									
26			242.0	8	SS	50/50mm		5	
8		Drilling Terminated	7.9						
28									
30									
32									
10									
34									
36									
38									
12									
40									
42									
44									

Field Technician: A. Challis

Drafted by: B. Ehgoetz

Reviewed by: B. Thorner

MTE

A&A ENVIRONMENTAL CONSULTANTS INC.

LOG OF BOREHOLE BH/MW1

PROJECT: Geotechnial Investigation for the Proposed Development
CLIENT: BVD Petroleum Inc.
PROJECT LOCATION: 0 Airport Road, Caledon, ON
DATUM: Geodetic
BH LOCATION: N 7978274 E 4380565

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 0.2m
Date: May-03-2022

PROJECT NO.: 6903

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION
0.0	**Topsoil:** 200mm						
0.2	**Clay and Silt:** weathered/disturbed, trace sand, with trace topsoil, brown, moist, stiff		1	SS	10		
0.8	**Clayey Silt to Silty Clay Till:** trace sand and gravel, brown, moist, very stiff		2	SS	20		
			3	SS	18		
						▽	W. L. 2.2 mBGL Apr 05, 2022
	stiff below 2.3m		4	SS	10		
	grey, wet below 3.1m		5	SS	10		
			6	SS	13		
	hard below 4.6m		7	SS	37		
			8	SS	49		
6.1	**End of Borehole:**						

DYNAMIC CONE PENETRATION 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)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)

GR SA SI CL

Notes:
Water Levels:
(i) During Drilling: 3.1m
(ii) At Completion (50mm monitoring was installed)

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

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

A&A ENVIRONMENTAL CONSULTANTS INC.

LOG OF BOREHOLE BH2

PROJECT: Geotechnial Investigation for the Proposed Development
CLIENT: BVD Petroleum Inc.
PROJECT LOCATION: 0 Airport Road, Caledon, ON
DATUM: Geodetic
BH LOCATION: N 7978192 E 4380633

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 0.2m
Date: May-03-2022

PROJECT NO.: 6903

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION 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	**Topsoil:** 200mm										
0.2	**Clay and Silt:** weathered/disturbed, trace sand, with trace topsoil, brown, moist, stiff		1	SS	8						
0.8	**Clayey Silt to Silty Clay Till:** trace sand and gravel, brown, moist, very stiff		2	SS	19						
			3	SS	17						
			4	SS	19						
			5	SS	18						
	stiff below 3.8m		6	SS	11						
	grey, wet below 4.6m		7	SS	7						
			8	SS	6						
6.1	**End of Borehole:**										

Notes:
Water Levels:
(i) During Drilling: 4.6m
(ii) At Completion (50mm monitoring was installed)

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

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

A&A ENVIRONMENTAL CONSULTANTS INC.

LOG OF BOREHOLE BH/MW3

PROJECT: Geotechnial Investigation for the Proposed Development
CLIENT: BVD Petroleum Inc.
PROJECT LOCATION: 0 Airport Road, Caledon, ON
DATUM: Geodetic
BH LOCATION: N 4850824 E 597885

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 0.2m
Date: May-03-2022

PROJECT NO.: 6903

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION 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	**Topsoil:** 200mm											
0.2	**Clay and Silt:** weathered/disturbed, trace sand, with trace topsoil, brown, moist, stiff		1	SS	12							
0.8	**Clayey Silt to Silty Clay Till:** trace sand and gravel, brown, moist, very stiff		2	SS	21							
			3	SS	24							
			4	SS	20							
	hard below 3.8m		5	SS	18							
			6	SS	32		W. L. 4.5 mBGL Apr 05, 2022					
	grey below 5.3m		7	SS	34							
			8	SS	23							
6.1	**End of Borehole:**											

Notes:
Water Levels:
(i) During Drilling: -
(ii) At Completion (50mm monitoring was installed)

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

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

A&A ENVIRONMENTAL CONSULTANTS INC.

LOG OF BOREHOLE BH/MW4

PROJECT: Geotechnial Investigation for the Proposed Development
CLIENT: BVD Petroleum Inc.
PROJECT LOCATION: 0 Airport Road, Caledon, ON
DATUM: Geodetic
BH LOCATION: N 7978214 E 438027

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 0.2m
Date: May-03-2022

PROJECT NO.: 6903

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES "N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION 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 / NATURAL MOISTURE CONTENT / LIQUID LIMIT (w_P w 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	**Topsoil:** 200mm											
0.2	**Clay and Silt:** weathered/disturbed, trace sand, with trace topsoil and organic, brown, moist, stiff		1	SS	8							
0.8	**Clayey Silt to Silty Clay Till:** trace sand and gravel, brown, moist, very stiff		2	SS	21							
			3	SS	13							
	stiff below 2.3m		4	SS	12							
	hard below 3.1m		5	SS	30							
			6	SS	36	▽	W. L. 4.3 mBGL Apr 05, 2022					
	grey below 4.6m		7	SS	22							
5.3	**End of Borehole:**											

Notes:
Auger refusal at 5.3m
Water Levels:
(i) During Drilling: -
(ii) At Completion (50mm monitoring was installed)

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

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

A&A ENVIRONMENTAL CONSULTANTS INC.

LOG OF BOREHOLE BH/MW5

PROJECT: Geotechnial Investigation for the Proposed Development
CLIENT: BVD Petroleum Inc.
PROJECT LOCATION: 0 Airport Road, Caledon, ON
DATUM: Geodetic
BH LOCATION: N 7978059 E 4389033

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 0.2m
Date: May-03-2022

PROJECT NO.: 6903

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION 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	**Topsoil:** 200mm											
0.2	**Clay and Silt:** weathered/disturbed, trace sand, with trace topsoil, brown, moist, stiff		1	SS	5							
0.8	**Clayey Silt to Silty Clay Till:** trace sand and gravel, brown, moist, very stiff		2	SS	22							
			3	SS	21							
			4	SS	20							
	stiff below 3.1m		5	SS	14							
	grey below 3.8m		6	SS	13							
	wet below 4.6m		7	SS	13							
			8	SS	9							
6.1	**End of Borehole:**											

Notes:
Water Levels:
(i) During Drilling: 4.6m
(ii) At Completion (50mm monitoring was installed)

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

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

LOG OF BOREHOLE BH6

PROJECT: Geotechnial Investigation for the Proposed Development
CLIENT: BVD Petroleum Inc.
PROJECT LOCATION: 0 Airport Road, Caledon, ON
DATUM: Geodetic
BH LOCATION: N 4850854 E 597910

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 0.2m
Date: May-03-2022

PROJECT NO.: 6903

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION 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	**Topsoil:** 200mm											
0.2	**Clay and Silt:** weathered/disturbed, trace sand, with trace topsoil, brown, moist, stiff		1	SS	13							
0.8	**Clayey Silt to Silty Clay Till:** trace sand and gravel, brown, moist, very stiff		2	SS	23							
			3	SS	20							
	stiff below 2.3m		4	SS	12							
			5	SS	14							
	very stiff below 3.8m		6	SS	23							
	grey below 4.6m		7	SS	17							
			8	SS	18							
6.1	**End of Borehole:**											

Notes:
Water Levels:
(i) During Drilling: -
(ii) At Completion (50mm monitoring was installed)

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

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

A&A ENVIRONMENTAL CONSULTANTS INC.

LOG OF BOREHOLE BH7

PROJECT: Geotechnial Investigation for the Proposed Development
CLIENT: BVD Petroleum Inc.
PROJECT LOCATION: 0 Airport Road, Caledon, ON
DATUM: Geodetic
BH LOCATION: N 7978134 E 4380360

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 0.2m
Date: May-03-2022

PROJECT NO.: 6903

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION 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	**Topsoil:** 200mm											
0.2	**Clay and Silt:** weathered/disturbed, trace sand, with trace topsoil and organics, brown, moist, stiff		1	SS	10							
0.8	**Clayey Silt to Silty Clay Till:** trace sand and gravel, brown, moist, very stiff to stiff		2	SS	21							
			3	SS	14							
			4	SS	14							
			5	SS	14							
	grey, wet below 4.6m		6	SS	12							
			7	SS	10							
	very stiff below 5.3m		8	SS	21							
6.1	**End of Borehole:**											

Notes:
Water Levels:
(i) During Drilling: 4.6m

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

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

A&A ENVIRONMENTAL CONSULTANTS INC.

LOG OF BOREHOLE BH8

PROJECT: Geotechnial Investigation for the Proposed Development
CLIENT: BVD Petroleum Inc.
PROJECT LOCATION: 0 Airport Road, Caledon, ON
DATUM: Geodetic
BH LOCATION: N 7972136 E 430606

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 0.2m
Date: May-03-2022

PROJECT NO.: 6903

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION 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	**Topsoil:** 200mm											
0.2	**Clay and Silt:** weathered/disturbed, trace sand, with trace topsoil, brown, moist, stiff		1	SS	10							
0.8	**Clayey Silt to Silty Clay Till:** trace sand and gravel, brown, moist, very stiff to stiff		2	SS	20							
			3	SS	14							
			4	SS	14							
			5	SS	10							
	grey, wet below 4.6m		6	SS	9							
			7	SS	9							
			8	SS	10							
6.1	**End of Borehole:**											

Notes:
Water Levels:
(i) During Drilling: 4.6m
(ii) At Completion (50mm monitoring was installed)

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

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

LOG OF BOREHOLE BH/MW9

PROJECT: Geotechnial Investigation for the Proposed Development
CLIENT: BVD Petroleum Inc.
PROJECT LOCATION: 0 Airport Road, Caledon, ON
DATUM: Geodetic
BH LOCATION: N 7978106 E 438056

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 0.2m
Date: May-03-2022

PROJECT NO.: 6903

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
0.0	**Topsoil:** 200mm						
0.2	**Clay and Silt:** weathered/disturbed, trace sand, with trace topsoil, brown, moist, stiff		1	SS	11		
0.8	**Clayey Silt to Silty Clay Till:** trace sand and gravel, brown, moist, very stiff		2	SS	18		
			3	SS	18		
			4	SS	18		
	stiff below 3.8m		5	SS	15		
			6	SS	7		
	wet, grey below 4.6m		7	SS	8		
			8	SS	8		
6.1	**End of Borehole:**						

Notes:
Water Levels:
(i) During Drilling: 4.6m
(ii) At Completion (50mm monitoring was installed)

DYNAMIC CONE PENETRATION 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)
REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

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

A&A ENVIRONMENTAL CONSULTANTS INC.

LOG OF BOREHOLE BH10

PROJECT: Geotechnial Investigation for the Proposed Development
CLIENT: BVD Petroleum Inc.
PROJECT LOCATION: 0 Airport Road, Caledon, ON
DATUM: Geodetic
BH LOCATION: N 7977977 E 4320430

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 0.2m
Date: May-03-2022

PROJECT NO.: 6903

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION 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	**Topsoil:** 200mm										
0.2	**Clay and Silt:** weathered/disturbed, trace sand, with trace topsoil, brown, moist, stiff		1	SS	7						
0.8	**Clayey Silt to Silty Clay Till:** trace sand and gravel, brown, moist, very stiff		2	SS	9						
			3	SS	15						
			4	SS	18						
	stiff below 3.1m		5	SS	13						
			6	SS	8						
	grey, wet below 4.6m		7	SS	7						
			8	SS	6						
6.1	**End of Borehole:**										

Notes:
Water Levels:
(i) During Drilling: 4.6m
(ii) At Completion (50mm monitoring was installed)

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ε_{50}=3% Strain at Failure

A&A ENVIRONMENTAL CONSULTANTS INC.

LOG OF BOREHOLE BH11

PROJECT: Geotechnial Investigation for the Proposed Development
CLIENT: BVD Petroleum Inc.
PROJECT LOCATION: 0 Airport Road, Caledon, ON
DATUM: Geodetic
BH LOCATION: N 7978153 E 438028

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 0.2m
Date: May-03-2022

PROJECT NO.: 6903

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION 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	**Topsoil:** 200mm											
0.2	**Clay and Silt:** weathered/disturbed, trace sand, with trace topsoil, brown, moist, stiff		1	SS	13							
0.8	**Clayey Silt to Silty Clay Till:** trace sand and gravel, brown, moist, very stiff		2	SS	21							
			3	SS	17							
	stiff below 2.3m		4	SS	10							
			5	SS	10							
			6	SS	13							
	grey, very stiff to hard below 4.6m		7	SS	19							
			8	SS	44							
6.1	**End of Borehole:**											

Notes:
Water Levels:
(i) During Drilling: -
(ii) At Completion (50mm monitoring was installed)

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

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

LOG OF BOREHOLE BH12

PROJECT: Geotechnial Investigation for the Proposed Development
CLIENT: BVD Petroleum Inc.
PROJECT LOCATION: 0 Airport Road, Caledon, ON
DATUM: Geodetic
BH LOCATION: N4850734 E597896

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 0.2m
Date: May-03-2022

PROJECT NO.: 6903

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION
0.0	**Topsoil:** 200mm						
0.2	**Clay and Silt:** weathered/disturbed, trace sand, with trace topsoil and organic, brown, moist, stiff		1	SS	12		
0.8	**Clayey Silt to Silty Clay Till:** trace sand and gravel, brown, moist, very stiff		2	SS	20		
			3	SS	23		
	hard below 2.3m		4	SS	44		
	very stiff below 3.1m		5	SS	23		
	hard below 3.8m		6	SS	51		
			7	SS	34		
5.3	**End of Borehole:**						

Notes:
Auger refusal at 5.3m

DYNAMIC CONE PENETRATION 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)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

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

A&A ENVIRONMENTAL CONSULTANTS INC.

LOG OF BOREHOLE BH13

PROJECT: Geotechnial Investigation for the Proposed Development
CLIENT: BVD Petroleum Inc.
PROJECT LOCATION: 0 Airport Road, Caledon, ON
DATUM: Geodetic
BH LOCATION: N 4850931 E 597893

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 0.2m
Date: May-03-2022

PROJECT NO.: 6903

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: "N" BLOWS / 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION 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	**Topsoil:** 200mm											
0.2	**Clay and Silt:** weathered/disturbed, trace sand, with trace topsoil and organics, brown, moist, stiff		1	SS	14							
0.8	**Clayey Silt to Silty Clay Till:** trace sand and gravel, brown, moist, very stiff to hard		2	SS	22							
			3	SS	16							
			4	SS	36							
			5	SS	66							
3.8	**End of Borehole:**											

Notes:
Auger refusal at 3.8m

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

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

APPENDIX B

MECP Well Record Summary

Key Number	Well ID	Completion Data	Total Depth	Depth to Bedrock	Static Water Level	Use
1	7338302	2019-07-12	24.40	-	-	Abandoned
2	7338301	2019-07-12	13.10	-	-	Abandoned
3	4903640	1971-07-15	12.80	-	2.10	Domestic
4	4908178	1997-01-15	10.70	10.70	-	Monitoring
5	4903332	1969-09-10	20.40	-	0.60	Domestic
6	4905023	1976-11-26	11.60	-	4.60	Domestic
7	4903114	1968-08-13	15.50	12.80	2.40	Domestic
8	4908179	1997-01-14	4.60	-	-	Monitoring
9	4908180	1997-01-15	11.00	11.00	-	Monitoring
10	7116736	2008-10-02	6.10	-	-	Testhole
11	4901542	1949-07-13	7.60	7.00	-	Domestic
12	4908388	1998-11-21	18.60	17.10	4.60	Domestic
13	4909902	2005-09-19	12.84	-	2.10	Abandoned
14	4903822	1972-05-20	13.40	13.40	6.10	Domestic
15	4907173	1989-09-18	15.80	15.20	3.00	Domestic
16	7336381	2019-07-03	6.10	-	-	Monitoring
17	4901543	1967-08-11	21.30	15.80	9.10	Domestic
18	4901473	1961-11-02	20.40	-	9.10	Stock
19	4904226	1973-05-20	15.80	-	10.70	Domestic
20	4908073	1995-11-10	19.50	15.80	-	Abandoned
21	4904809	1975-12-24	15.20	13.40	6.10	Municipal
22	4905428	1978-08-03	10.10	-	2.40	Domestic
23	4903469	1970-03-23	26.80	19.80	3.00	Domestic
24	4909650	2004-05-18	12.50	-	-	Testhole
25	4903045	1968-06-28	31.10	17.40	5.50	Domestic
26	7117883	2008-04-28	5.50	-	-	Testhole
27	4904120	1973-06-02	15.80	-	10.70	Domestic
28	4900009	1966-08-02	41.10	15.80	15.50	Farm
29	4909901	2005-09-19	16.40	-	2.30	Abandoned
30	4904739	1975-09-06	12.80	-	4.60	Domestic
31	4901544	1966-08-06	10.70	-	7.60	Domestic
32	4908181	1997-01-13	10.70	10.70	-	Monitoring
33	4903033	1968-05-21	55.80	10.70	11.60	Domestic
34	4908183	1997-01-14	11.30	11.30	-	Domestic
35	4909812	2005-06-15	12.10	-	0.80	Abandoned
36	4900006	1963-04-26	12.20	10.70	6.10	Domestic
37	4900005	1962-08-04	11.30	9.10	4.90	Domestic
38	4903841	1972-06-06	10.40	-	5.50	Domestic
39	4909900	2005-09-19	6.00	-	1.70	Abandoned
40	7118693	2009-01-20	-	-	1.70	Abandoned
41	7248954	2015-09-10	55.70	-	-	Abandoned
42	4905464	1978-06-14	17.40	-	12.20	Domestic
43	4908182	1997-01-13	9.10	7.00	-	Monitoring
44	4906285	1984-08-12	17.40	-	3.00	Domestic
45	4908152	1996-05-24	12.80	-	4.60	Domestic

APPENDIX C

Door-to-Door Survey Questionnaire

JANUARY 21, 2026

PROJECT NO: 2278-7228

SENT VIA: HAND DELIVERED

Attention: **Property Owner/Tenant**

RE: **DOOR TO DOOR WELL AND SEPTIC SURVEY**
TOWN OF CALEDON, ONTARIO

To whom it may concern,

C.F. Crozier & Associates Inc. (Crozier) has been retained to complete a detailed study of the nearby area to assess groundwater conditions and potential impacts occurring to the shallow groundwater system. Hence, Crozier is conducting a door-to-door survey to determine the location of any water supply wells, cisterns and private sewage systems in your area. We would appreciate participation in this survey to assist us in our study.

Attached is a questionnaire concerning your property and any private well, cistern, and/or septic system, if applicable. Please review the questionnaire and provide your responses via email to vmazur@cfcrozier.ca. Alternatively, please feel free to contact our office by phone to provide your responses verbally. If possible, we kindly ask that you submit your response by February 18, 2026. Rest assured, we will not share your contact information with any third parties and the information provided in this questionnaire will only be used for the purposes of this study.

Should you have any questions or require any further information, please do not hesitate to contact the undersigned.

Sincerely,

C.F. CROZIER & ASSOCIATES INC.

Victoria Mazur, Engineering Intern
Hydrogeology, Land Development

SS:CM/cj

Enclosure

J:\2200\2278- Broccolini\7228 - Broccolini Secondary Plan\Design\Hydrogeology\Door-to-Door Survey\2026.01.21 _(2278-7228) _Door -to-Door Survey_Tullamore Lands _Final.docx

DOOR TO DOOR WELL & SEPTIC SURVEY QUESTIONNAIRE

1. What is your address?

The following questions 2 – 9 pertain to private water supply wells. If you do not have a well on your property, you may skip to question 10.

2. Do you have a private well on your property?

3. Where is your well located (i.e., front of your home, backyard etc.)?

4. Does your well supply your drinking water?

5. What is the age of your well?

6. Is it a dug or drilled well?

7. How deep is your well?

8. Have you had any quantity or quality issues with your well? Briefly describe any issues.

9. Would you be willing to allow us to collect a sample of your water for laboratory analysis at no cost to you? All results will be provided to you for your records.

The following questions 10 - 11 pertain to cisterns. If you do not have a cistern on your property, you may skip to question 12.

10. Do you have a cistern on your property?

11. Does the cistern supply your drinking water?

12. Do you have a surface water intake on your property?

13. Do you have any water treatment systems (e.g., water softener, chlorinator etc.)?

14. Do you have a septic system on your property?

15. Where is your sewage system located (i.e., front of your home, side yard etc.)?

16. What type of sewage system is it (i.e., septic tan with a leaching bed or holding tank)?

17. What is the age of your septic system?

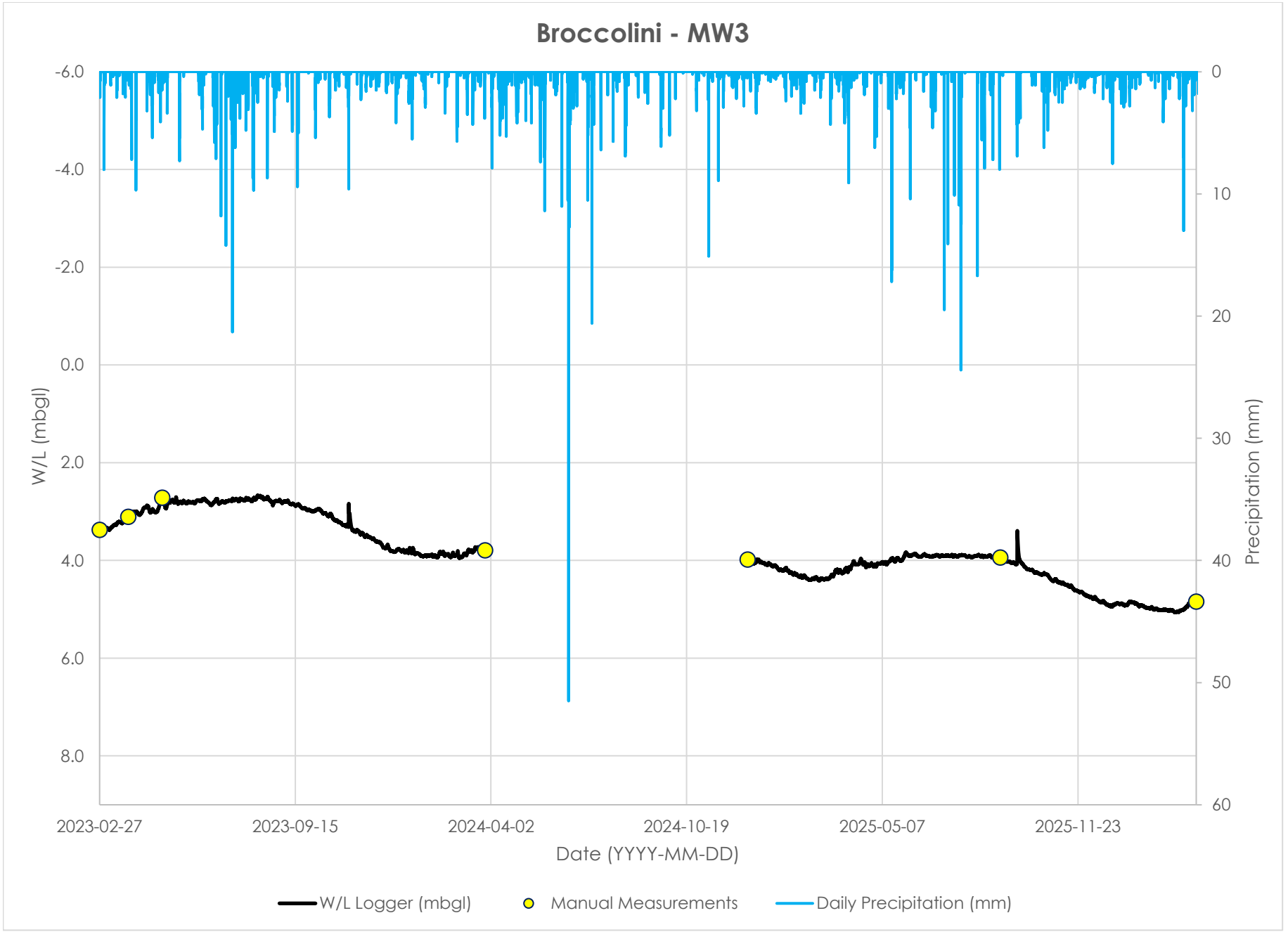
If you are willing, please provide your contact information for any follow up questions we may have. If you answered **YES** to **Question 9**, please provide your preferred method of contact so we may coordinate sampling:

If you have any questions or concerns concerning this survey, please let us know.

NOTE: *Your contact information will not be shared with any third parties.*

APPENDIX D

Hydrographs


Broccolini - MW3
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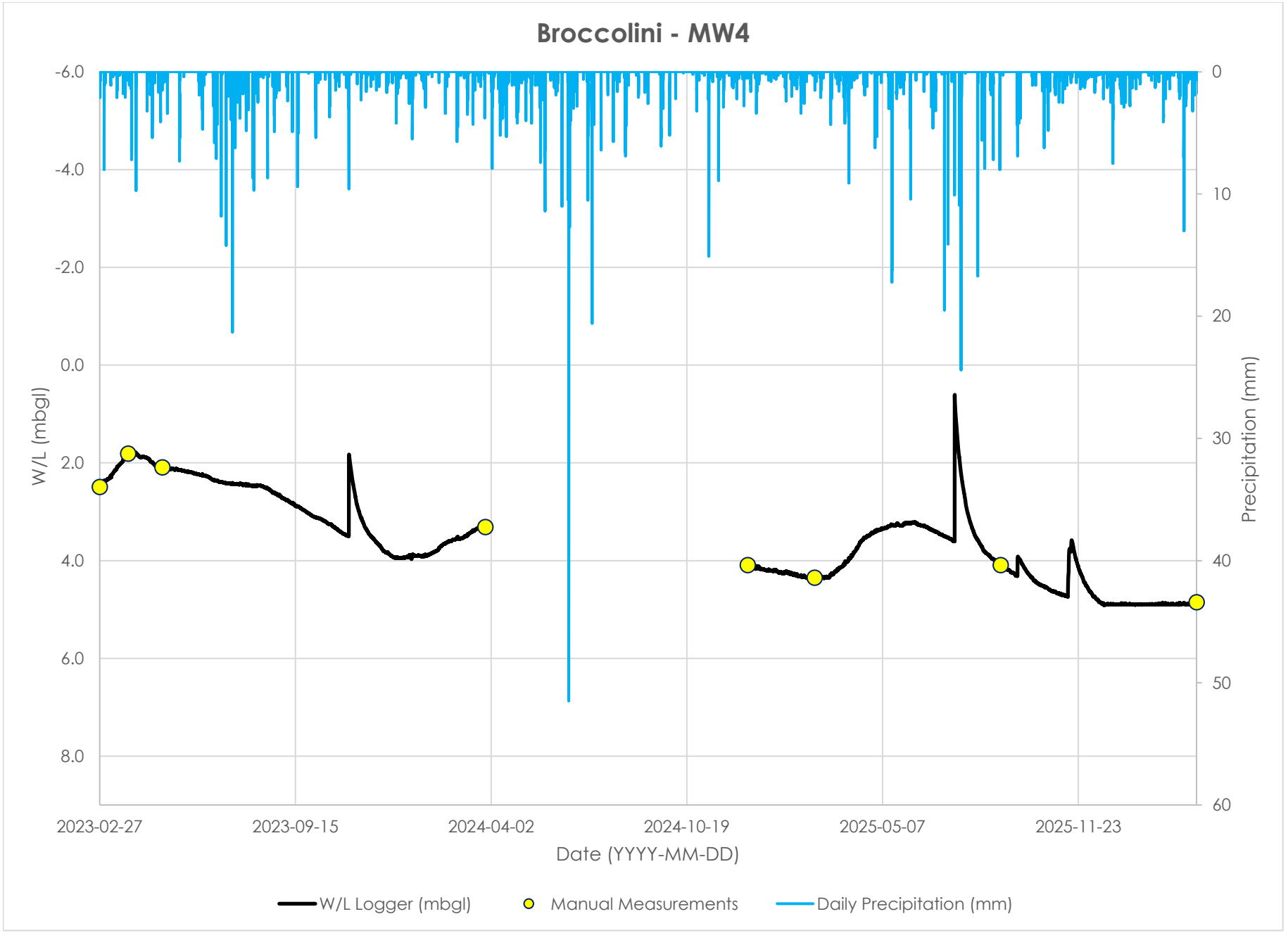
-2.0
0.0
2.0
4.0
6.0
8.0
W/L (mbgl)
0
10
20
30
40
50
60
Precipitation (mm)
2023-02-27
2023-09-15
2024-04-02
2024-10-19
2025-05-07
2025-11-23
Date (YYYY-MM-DD)
W/L Logger (mbgl)
Manual Measurements
Daily Precipitation (mm)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6.0
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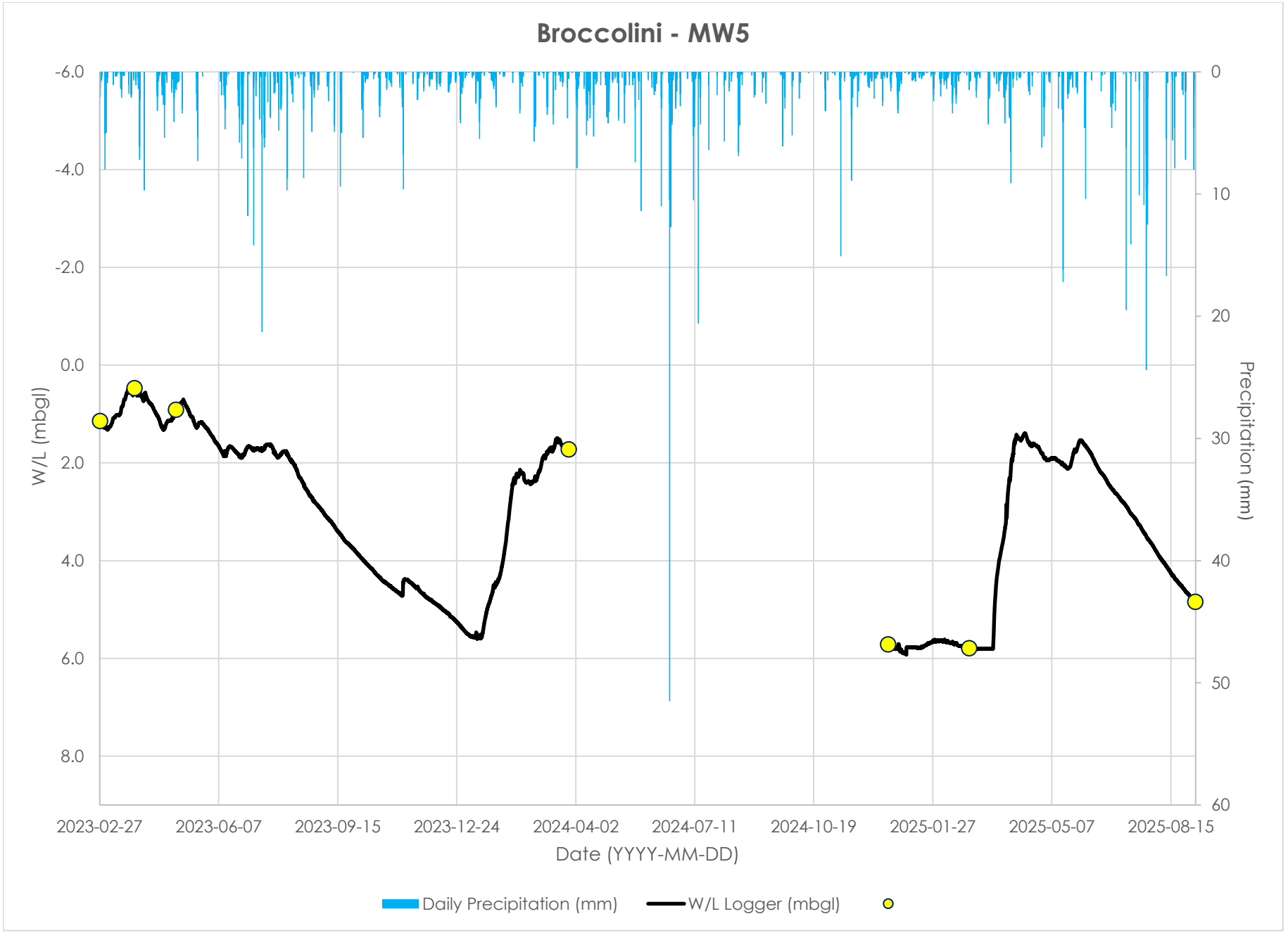
W/L (mbgl)
0
10
20
30
40
50
60
Precipitation (mm)
2023-02-27
2023-09-15
2024-04-02
2024-10-19
2025-05-07
2025-11-23
Date (YYYY-MM-DD)
W/L Logger (mbgl)
Manual Measurements
Daily Precipitation (mm)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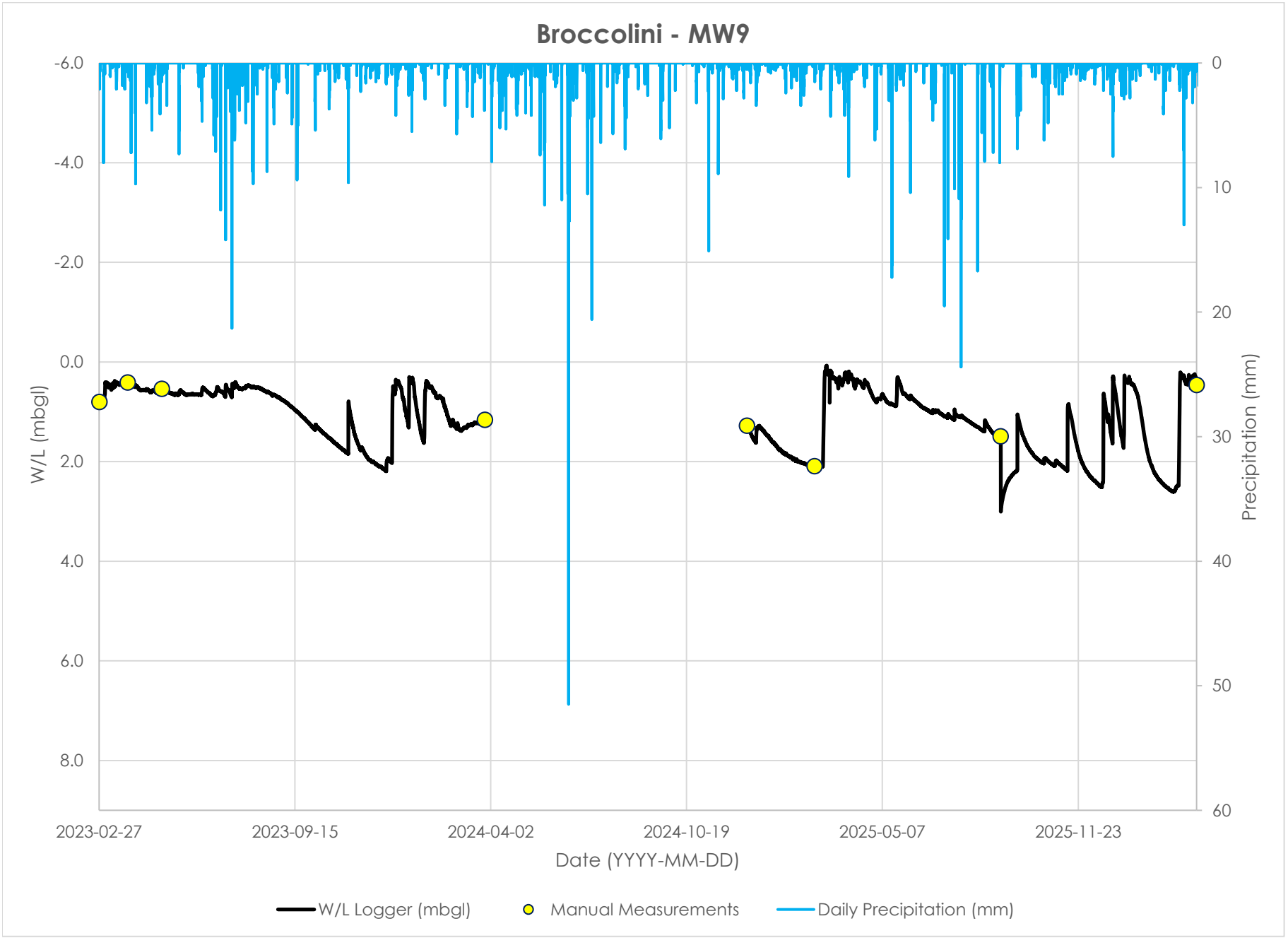
0.0
2.0
4.0
6.0
8.0
W/L (mbgl)
0
10
20
30
40
50
60
Precipitation (mm)
2023-02-27
2023-06-07
2023-09-15
2023-12-24
2024-04-02
2024-07-11
2024-10-19
2025-01-27
2025-05-07
2025-08-15
Date (YYYY-MM-DD)
Daily Precipitation (mm)
W/L Logger (mbgl)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2.0
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6.0
8.0
W/L (mbgl)
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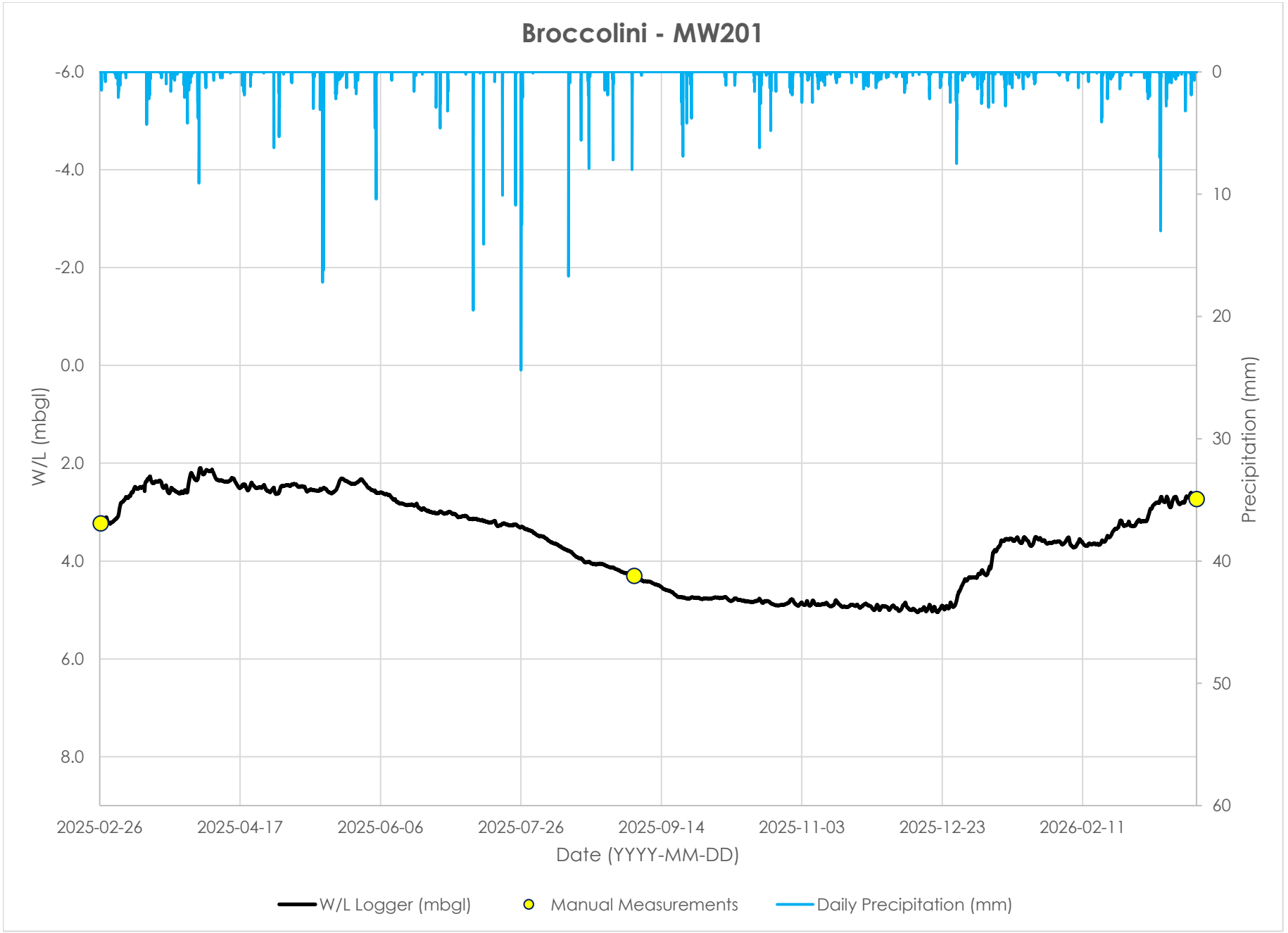
10
20
30
40
50
60
Precipitation (mm)
2023-02-27
2023-09-15
2024-04-02
2024-10-19
2025-05-07
2025-11-23
Date (YYYY-MM-DD)
W/L Logger (mbgl)
Manual Measurements
Daily Precipitation (mm)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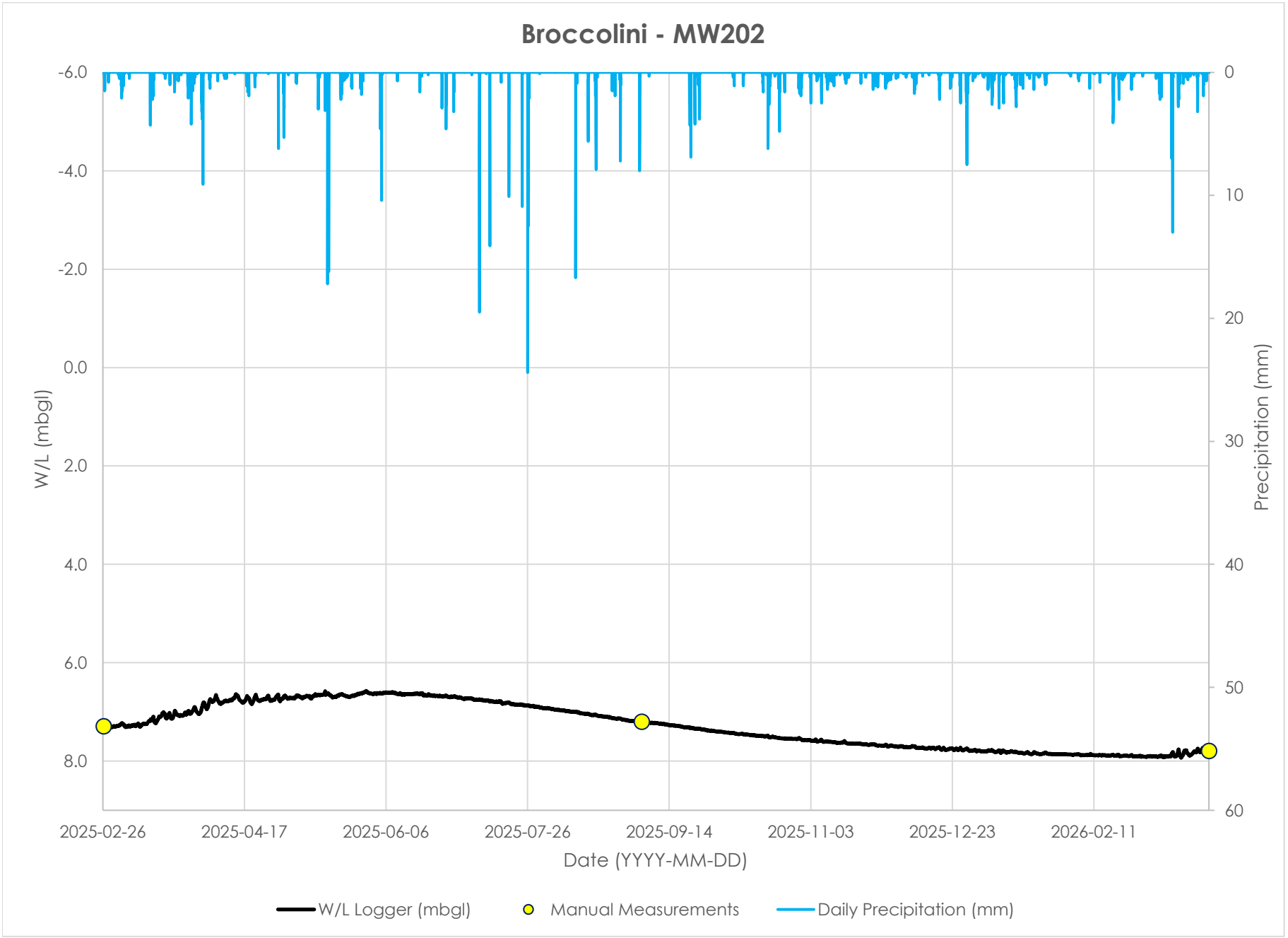
0.0
2.0
4.0
6.0
8.0
W/L (mbgl)
0
10
20
30
40
50
60
Precipitation (mm)
2025-02-26
2025-04-17
2025-06-06
2025-07-26
2025-09-14
2025-11-03
2025-12-23
2026-02-11
Date (YYYY-MM-DD)
W/L Logger (mbgl)
Manual Measurements
Daily Precipitation (mm)


Broccolini - MW202
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0.0
2.0
4.0
6.0
8.0
W/L (mbgl)
0
10
20
30
40
50
60
Precipitation (mm)
2025-02-26
2025-04-17
2025-06-06
2025-07-26
2025-09-14
2025-11-03
2025-12-23
2026-02-11
Date (YYYY-MM-DD)
W/L Logger (mbgl)
Manual Measurements
Daily Precipitation (mm)

APPENDIX E

Groundwater Sampling Results

ALS Canada Ltd.

right solutions.
right partner.

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	:	**WT2524915**			
Amendment	:	**1**			
Client	:	**C.F. Crozier & Associates Inc.**	Laboratory	:	ALS Environmental - Waterloo
Contact	:	Victoria Mazur	Account Manager	:	Colby Coutu
Address	:	2800 High Point Drive Milton Ontario Canada L9T 6P4	Address	:	60 Northland Road, Unit 1 Waterloo ON Canada N2V 2B8
Telephone	:	(548) 708-0039	Telephone	:	+1 519 886 6910
Project	:	2278-6368	Date Samples Received	:	05-Sep-2025 11:20
PO	:	----	Date Analysis Commenced	:	06-Sep-2025
C-O-C number	:	20-1050694	Issue Date	:	07-Oct-2025 13:48
Sampler	:	CLIENT			
Site	:	----			
Quote number	:	2024/2025 SOA			
No. of samples received	:	1			
No. of samples analysed	:	1			

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Guideline Comparison

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Danielle Gravel	Supervisor - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
David Tremblett	VOC Section Supervisor	VOC, Waterloo, Ontario
Hannah Lewis	Inorganics Analyst	Inorganics, Waterloo, Ontario
Johanna Vargas	Analyst	Microbiology, Waterloo, Ontario
Jon Fisher	Laboratory Manager - Environmental	Metals, Waterloo, Ontario
Parth Goswami	Team Leader - LCMS	LCMS, Waterloo, Ontario
Rachel Cameron	Supervisor - Semi-Volatile Extractions	Organics, Waterloo, Ontario
Walt Kippenhuck	Supervisor - Inorganic	Inorganics, Waterloo, Ontario
Walt Kippenhuck	Supervisor - Inorganic	Metals, Waterloo, Ontario

Summary of Guideline Breaches by Sample

SampleID/Client ID	Matrix	Analyte	Analyte Summary	Guideline	Category	Result	Limit
MW9 ----	Water	Solids, total suspended [TSS]		RMPSUB	SAN	1190 mg/L	350 mg/L
	Water	Solids, total suspended [TSS]		RMPSUB	STM	1190 mg/L	15 mg/L
	Water	Kjeldahl nitrogen, total [TKN]		RMPSUB	STM	<5.00 mg/L	1 mg/L
	Water	Phosphorus, total		RMPSUB	STM	1.74 mg/L	0.4 mg/L
	Water	Coliforms, thermotolerant [fecal]		RMPSUB	STM	240 CFU/100mL	1 CFU/100mL

Key:

RMPSUB	Ontario Reg.Mun. of Peel Sewer Bylaw #53-2010 (APR, 2019)
SAN	Peel Sanitary Sewer (53-2010)
STM	Peel Storm Sewer (53-2010)

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guidelines are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Key: CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.

LOR: Limit of Reporting (detection limit).

Unit	*Description*
CFU/100mL	colony forming units per hundred millilitres
mg/L	milligrams per litre
MPN/100mL	most probable number per hundred millilitres
pH units	pH units
µg/L	micrograms per litre

>: greater than.
<: less than.

Red shading is applied where the result or the LOR is greater than the Guideline Upper Limit (or lower than the Guideline Lower Limit, if applicable).
For drinking water samples, Red shading is applied where the result for E.coli, fecal or total coliforms is greater than or equal to the Guideline Upper Limit.

Lavender shading is applied where the LOR itself is greater than the Guideline Upper Limit (or Lower than the Guideline Lower Limit, if applicable).

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Workorder Comments

<1 or Not Detected with LOR of 1 equals Zero (0).

Not Detected = Absent; Detected = Present.

Amendment (07/10/2025): This report has been amended to include requested guideline(s). All analysis results are as per the previous report.

Qualifiers

Qualifier	Description
BODL	Limit of Reporting for BOD was increased to account for the largest volume of sample tested.
DLB	Detection Limit Raised. Analyte detected at comparable level in Method Blank.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
SUR-ND	Surrogate recovery marginally exceeded ALS DQO. Reported non-detect results for associated samples were deemed to be unaffected.

Analytical Results

SubMatrix: Groundwater
(Matrix: Water)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID: MW9 ----		RMPSUB SAN	RMPSUB STM	---- ----	---- ----	---- ----	---- ----
					Client sampling date / time: 05-Sep-2025 00:00							
					WT2524915-001							
Physical Tests												
pH	----	E108/WT	0.10	pH units	7.95		5.5 - 10 pH units	6 - 9 pH units	----	----	----	----
Solids, total suspended [TSS]	----	E160/WT	3.0	mg/L	1190	DLHC	350 mg/L	15 mg/L	----	----	----	----
Anions and Nutrients												
Fluoride	16984-48-8	E235.F/WT	0.020	mg/L	0.215	DLDS	10 mg/L	----	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318/WT	0.050	mg/L	<5.00	DLM	100 mg/L	1 mg/L	----	----	----	----
Phosphorus, total	7723-14-0	E372-U/WT	0.0020	mg/L	1.74		10 mg/L	0.4 mg/L	----	----	----	----
Sulfate (as SO4)	14808-79-8	E235.SO4/WT	0.30	mg/L	366	DLDS	1500 mg/L	----	----	----	----	----
Cyanides												
Cyanide, strong acid dissociable (Total)	----	E333/WT	0.0020	mg/L	<0.0020		2 mg/L	0.02 mg/L	----	----	----	----
Microbiological Tests												
Coliforms, thermotolerant [fecal]	----	E012.FC/WT	1	CFU/100mL	240	DLM	----	1 CFU/100mL	----	----	----	----
Coliforms, Escherichia coli [E. coli]	----	E010.QT97/WT	1	MPN/100mL	<10	DLM	----	200 MPN/100mL	----	----	----	----
Total Metals												
Aluminum, total	7429-90-5	E420/WT	0.0030	mg/L	<0.0300	DLHC	50 mg/L	----	----	----	----	----
Antimony, total	7440-36-0	E420/WT	0.00010	mg/L	<0.00100	DLHC	5 mg/L	----	----	----	----	----
Arsenic, total	7440-38-2	E420/WT	0.00010	mg/L	<0.00100	DLHC	1 mg/L	0.02 mg/L	----	----	----	----
Cadmium, total	7440-43-9	E420/WT	0.0000050	mg/L	<0.0000500	DLHC	0.7 mg/L	0.008 mg/L	----	----	----	----
Chromium, total	7440-47-3	E420/WT	0.00050	mg/L	<0.00500	DLHC	5 mg/L	0.08 mg/L	----	----	----	----
Cobalt, total	7440-48-4	E420/WT	0.00010	mg/L	<0.00100	DLHC	5 mg/L	----	----	----	----	----
Copper, total	7440-50-8	E420/WT	0.00050	mg/L	0.0101	DLHC	3 mg/L	0.05 mg/L	----	----	----	----
Lead, total	7439-92-1	E420/WT	0.000050	mg/L	<0.000500	DLHC	3 mg/L	0.12 mg/L	----	----	----	----
Manganese, total	7439-96-5	E420/WT	0.00010	mg/L	0.0486	DLHC	5 mg/L	0.05 mg/L	----	----	----	----
Mercury, total	7439-97-6	E508/WT	0.0000050	mg/L	0.0000065		0.01 mg/L	0.0004 mg/L	----	----	----	----
Molybdenum, total	7439-98-7	E420/WT	0.000050	mg/L	0.00117	DLHC	5 mg/L	----	----	----	----	----
Nickel, total	7440-02-0	E420/WT	0.00050	mg/L	<0.00500	DLHC	3 mg/L	0.08 mg/L	----	----	----	----
Selenium, total	7782-49-2	E420/WT	0.000050	mg/L	<0.000500	DLHC	1 mg/L	0.02 mg/L	----	----	----	----
Silver, total	7440-22-4	E420/WT	0.000010	mg/L	<0.000100	DLHC	5 mg/L	0.12 mg/L	----	----	----	----
Tin, total	7440-31-5	E420/WT	0.00010	mg/L	<0.00100	DLHC	5 mg/L	----	----	----	----	----
Titanium, total	7440-32-6	E420/WT	0.00030	mg/L	<0.00300	DLHC	5 mg/L	----	----	----	----	----
Zinc, total	7440-66-6	E420/WT	0.0030	mg/L	<0.0300	DLHC	3 mg/L	0.04 mg/L	----	----	----	----
Aggregate Organics												
Carbonaceous biochemical oxygen demand [CBOD]	----	E555/WT	2.0	mg/L	<3.0	BODL	300 mg/L	15 mg/L	----	----	----	----
Oil & grease (gravimetric)	----	E567/WT	5.0	mg/L	<5.0		----	----	----	----	----	----
Oil & grease, animal/vegetable (gravimetric)	----	EC567A.SG/WT	5.0	mg/L	<5.0		150 mg/L	----	----	----	----	----
Oil & grease, mineral (gravimetric)	----	E567SG/WT	5.0	mg/L	<5.0		15 mg/L	----	----	----	----	----
Phenols, total (4AAP)	----	E562/WT	0.0010	mg/L	0.0074		1 mg/L	0.008 mg/L	----	----	----	----
Volatile Organic Compounds												
Benzene	71-43-2	E611D/WT	0.50	µg/L	<0.50		10 µg/L	2 µg/L	----	----	----	----

SubMatrix: Groundwater
(Matrix: Water)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID: MW9 ---- / Client sampling date / time: 05-Sep-2025 00:00 — WT2524915-001	RMPSUB SAN	RMPSUB STM	----	----	----	----
Volatile Organic Compounds											
Chloroform	67-66-3	E611D/WT	0.50	µg/L	<0.50	40 µg/L	2 µg/L	----	----	----	----
Dichlorobenzene, 1,2-	95-50-1	E611D/WT	0.50	µg/L	<0.50	50 µg/L	5.6 µg/L	----	----	----	----
Dichlorobenzene, 1,4-	106-46-7	E611D/WT	0.50	µg/L	<0.50	80 µg/L	6.8 µg/L	----	----	----	----
Dichloroethylene, cis-1,2-	156-59-2	E611D/WT	0.50	µg/L	<0.50	4000 µg/L	5.6 µg/L	----	----	----	----
Dichloromethane	75-09-2	E611D/WT	1.0	µg/L	<1.0	2000 µg/L	5.2 µg/L	----	----	----	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D/WT	0.30	µg/L	<0.30	140 µg/L	5.6 µg/L	----	----	----	----
Ethylbenzene	100-41-4	E611D/WT	0.50	µg/L	<0.50	160 µg/L	2 µg/L	----	----	----	----
Methyl ethyl ketone [MEK]	78-93-3	E611D/WT	20	µg/L	<20	8000 µg/L	----	----	----	----	----
Styrene	100-42-5	E611D/WT	0.50	µg/L	<0.50	200 µg/L	----	----	----	----	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D/WT	0.50	µg/L	<0.50	1400 µg/L	17 µg/L	----	----	----	----
Tetrachloroethylene	127-18-4	E611D/WT	0.50	µg/L	<0.50	1000 µg/L	4.4 µg/L	----	----	----	----
Toluene	108-88-3	E611D/WT	0.50	µg/L	<0.50	270 µg/L	2 µg/L	----	----	----	----
Trichloroethylene	79-01-6	E611D/WT	0.50	µg/L	<0.50	400 µg/L	8 µg/L	----	----	----	----
Xylene, m+p-	179601-23-1	E611D/WT	0.40	µg/L	<0.40	----	----	----	----	----	----
Xylene, o-	95-47-6	E611D/WT	0.30	µg/L	<0.30	----	----	----	----	----	----
Xylenes, total	1330-20-7	E611D/WT	0.50	µg/L	<0.50	1400 µg/L	4.4 µg/L	----	----	----	----
Volatile Organic Compounds Surrogates											
Bromofluorobenzene, 4-	460-00-4	E611D/WT	1.0	%	97.1	----	----	----	----	----	----
Difluorobenzene, 1,4-	540-36-3	E611D/WT	1.0	%	97.0	----	----	----	----	----	----
Phthalate Esters											
bis(2-Ethylhexyl) phthalate [DEHP]	117-81-7	E625A/WT	0.60	µg/L	<3.60 DLB	12 µg/L	8.8 µg/L	----	----	----	----
Di-n-butyl phthalate	84-74-2	E625A/WT	1.0	µg/L	<1.0	80 µg/L	15 µg/L	----	----	----	----
Semi-Volatile Organics Surrogates											
Fluorobiphenyl, 2-	321-60-8	E625A/WT	1.0	%	67.6	----	----	----	----	----	----
Nitrobenzene-d5	4165-60-0	E625A/WT	1.0	%	82.2	----	----	----	----	----	----
Terphenyl-d14, p-	1718-51-0	E625A/WT	1.0	%	57.1 SUR-ND	----	----	----	----	----	----
Phenolics Surrogates											
Tribromophenol, 2,4,6-	118-79-6	E625A/WT	0.50	%	109	----	----	----	----	----	----
Nonylphenols											
Nonylphenol [NP]	84852-15-3	E749A/WT	0.40	µg/L	<0.40	20 µg/L	----	----	----	----	----
Nonylphenol diethoxylate [NP2EO]	20427-84-3	E749B/WT	0.10	µg/L	<0.10	----	----	----	----	----	----
Nonylphenol ethoxylates, mono+di	n/a	E749B/WT	2.0	µg/L	<2.0	200 µg/L	----	----	----	----	----
Nonylphenol monoethoxylate [NP1EO]	27986-36-3	E749B/WT	0.40	µg/L	<0.40	----	----	----	----	----	----
Polychlorinated Biphenyls											
Aroclor 1016	12674-11-2	E687/WT	0.020	µg/L	<0.020	----	----	----	----	----	----
Aroclor 1221	11104-28-2	E687/WT	0.020	µg/L	<0.020	----	----	----	----	----	----
Aroclor 1232	11141-16-5	E687/WT	0.020	µg/L	<0.020	----	----	----	----	----	----
Aroclor 1242	53469-21-9	E687/WT	0.020	µg/L	<0.020	----	----	----	----	----	----
Aroclor 1248	12672-29-6	E687/WT	0.020	µg/L	<0.020	----	----	----	----	----	----
Aroclor 1254	11097-69-1	E687/WT	0.020	µg/L	<0.020	----	----	----	----	----	----

SubMatrix: Groundwater
(Matrix: Water **)**

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID: MW9 ---- / Client sampling date / time: 05-Sep-2025 00:00 WT2524915-001	RMPSUB SAN	RMPSUB STM	---- ----	---- ----	---- ----	---- ----
Polychlorinated Biphenyls											
Aroclor 1260	11096-82-5	E687/WT	0.020	µg/L	<0.020	----	----	----	----	----	----
Aroclor 1262	37324-23-5	E687/WT	0.020	µg/L	<0.020	----	----	----	----	----	----
Aroclor 1268	11100-14-4	E687/WT	0.020	µg/L	<0.020	----	----	----	----	----	----
Polychlorinated biphenyls [PCBs], total	n/a	E687/WT	0.060	µg/L	<0.060	1 µg/L	0.4 µg/L	----	----	----	----
Polychlorinated Biphenyls Surrogates											
Decachlorobiphenyl	2051-24-3	E687/WT	0.1	%	83.6	----	----	----	----	----	----
Tetrachloro-m-xylene	877-09-8	E687/WT	0.1	%	96.5	----	----	----	----	----	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

APPENDIX F

Door-to-Door Survey Results

DOOR TO DOOR WELL & SEPTIC SURVEY QUESTIONNAIRE

1. What is your address?

CONFIDENTIAL

The following questions 2 – 9 pertain to private water supply wells. If you do not have a well on your property, you may skip to question 10.

2. Do you have a private well on your property?

YES – 2

3. Where is your well located (i.e., front of your home, backyard etc.)?

ONE IN FRONT YARD, THE OTHER IN SIDE YARD

4. Does your well supply your drinking water?

YES

5. What is the age of your well?

31 years

6. Is it a dug or drilled well?

dug (bored)

7. How deep is your well?

33 feet

8. Have you had any quantity or quality issues with your well? Briefly describe any issues.

Just minor reports of coliforms.

9. Would you be willing to allow us to collect a sample of your water for laboratory analysis at no cost to you? All results will be provided to you for your records.

YES

The following questions 10 - 11 pertain to cisterns. If you do not have a cistern on your property, you may skip to question 12.

10. Do you have a cistern on your property?

11. Does the cistern supply your drinking water?

12. Do you have a surface water intake on your property?

NO

13. Do you have any water treatment systems (e.g., water softener, chlorinator etc.)?

WATER SOFTENER

14. Do you have a septic system on your property?

YES

15. Where is your sewage system located (i.e., front of your home, side yard etc.)?

BACK YARD

16. What type of sewage system is it (i.e., septic tan with a leaching bed or holding tank)?

SEPTIC TANK WITH LEACHING BED

17. What is the age of your septic system?

31 years.

If you are willing, please provide your contact information for any follow up questions we may have. If you answered **YES** to **Question 9**, please provide your preferred method of contact so we may coordinate sampling:

CONFIDENTIAL

If you have any questions or concerns concerning this survey, please let us know.

NOTE: *Your contact information will not be shared with any third parties.*

APPENDIX G

Dewatering Calculations

Project:	0 Airport Road
Project No.:	2278-7228
Date:	2026-04-29
Created By:	VM
Checked By:	CG

TABLE 1

ESTIMATE CONSTRUCTION DEWATERING VOLUME CALCULATIONS (BUILDING A)

Based on Dupuit Equation for Radial Flow to a Well or Point Source Excavation in an Unconfined Aquifer

Component	Variable	Units	Value	Note
Hydraulic Conductivity of Soil	K	m/s	1.10E-07	Estimated based on preliminary borehole materials and literature values.
Base of Aquifer		masl	244.90	Assumed to be at the base of the sand unit/top of bedrock unit.
Groundwater Elevation		masl	250.18	High groundwater level (0.41 mbgs) in MW9 as measured by Crozier in March 2023.
Elevation Requiring Dewatering		masl	249.50	Assumed to be 1.0 m below the extent of excavation to accommodate safe construction conditions.
Extent of Excavation		masl	250.50	Final floor elevation as indicated on the Site Plan prepared by Powers Brown Architecture (November 2025), less an assumed 1.2 m to estimate the underside of footing elevation.
Equivalent Radius of the Well	r_w	m	85.80	Squareroot of excavation area divided by pi.
Excavation Area		m^2	23,117	Area of Industrial Building A stated in the Site Plan prepared by Powers Brown Architecture dated November 2025.
Calculations				
Hydraulic Head of Water Table	H	m	5.28	
Hydraulic Head at Max. Dewatering	h	m	4.60	
Radius of Influence	R_0	m	86.48	
Pumping Rate	Q	m^3/s	2.95E-04	
Dewatering Volume per Day	Q	L/day	25525.76	

TOTAL ESTIMATED CONSTRUCTION DEWATERING VOLUME	**Q =**	**25526 L/day**
TOTAL ESTIMATED CONSTRUCTION DEWATERING VOLUME W/ SAFETY FACTOR OF 2.0	**Q =**	**51052 L/day**

APPENDIX H

Site-Wide Water Balance Assessment

LEGEND

- PROPERTY LINE
- EXISTING CONTOUR
- EXISTING CONTOUR
- EXISTING WATERCOURSE
- EXISTING STORM DRAINAGE AREA CATCHMENT
- EXISTING OVERLAND FLOW DIRECTION
- x 160.00 — EXISTING GRADE
- CATCHMENT I.D.
- AREA (ha) | SCS CURVE NUMBER | RUNOFF COEFFICIENT

ID		
A	CN	RC

EXT1		
1.93	86	0.25

101		
4.25	86	0.25

103		
0.98	86	0.25

SALT CREEK

WOODLAND LIMIT

WOODLAND + 10m

AIRPORT ROAD

SCALE: 1:1000

1. THIS DRAWING IS THE EXCLUSIVE PROPERTY OF C.F. CROZIER & ASSOCIATES INC. AND THE MODIFICATION AND/OR REPRODUCTION OF ANY PART OF THIS DRAWING IS STRICTLY PROHIBITED WITHOUT WRITTEN AUTHORIZATION FROM THIS OFFICE.
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3. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, LEVELS, AND DATUMS ON SITE AND REPORT ANY DISCREPANCIES OR OMISSIONS TO C.F. CROZIER & ASSOCIATES INC. PRIOR TO CONSTRUCTION.
4. THIS DRAWING IS TO BE READ AND UNDERSTOOD IN CONJUNCTION WITH ALL OTHER PLANS AND DOCUMENTS APPLICABLE TO THIS PROJECT.
5. ALL EXISTING UNDERGROUND UTILITIES TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
6. DO NOT SCALE DRAWINGS.

BENCHMARKS

ELEVATIONS ARE GEODETIC AND ARE REFERRED TO CITY OF BRAMPTON VERTICAL BENCHMARK NUMBER 042200365 HAVING AN ORTHOMETRIC ELEVATION OF 242.135 METRES. ELEVATIONS ARE REFERENCED TO THE CANADIAN GEODETIC VERTICAL DATUM OF 1928, 1978 ADJUSTMENT (CGVD-1928:1978 ADJ.).

BRASS CAP SET IN CONCRETE, 72.80 METERS SOUTH OF THE CENTRELINE OF MAYFIELD ROAD AND 19.81 METERS EAST OF THE CENTRELINE OF TORBRAM ROAD.

SURVEY COMPLETED BY R-PE SURVEYING LTD. (2022/DEC/12)
REFERENCE NO. 22-317

SITE PLAN NOTES

DESIGN ELEMENTS ARE BASED ON SITE PLAN PROVIDED BY POWERS BROWN ARCHITECTURE PROJECT NO: 255025, DRAWING NO: AS101 (2025/09/09)

Town: TOWN OF CALEDON

No.	ISSUE	DATE: YYYY/MM/DD
1	ISSUED FOR FIRST ZBA/SPA SUBMISSION	2025/10/30
1A	ISSUED FOR COORDINATION	2026.04.17

Engineer

Engineer

Project: BROCCOLINI SITE PLAN
TOWN OF CALEDON

Drawing: PRE-DEVELOPMENT DRAINAGE AREA PLAN

CROZIER

Drawn By	Design By	Scale	Project
K.W./V.M.	K.W./V.M.	1:1000	2278-7228
Check By	Check By	Sheet	Drawing
J.S.	J.S.	19 OF 20	FIG 3

LEGEND

- PROPERTY LINE
- EXISTING CONTOUR
- EXISTING CONTOUR
- EXISTING WATERCOURSE
- x160.00 EXISTING GRADE
- EXISTING STORM DRAINAGE AREA CATCHMENT
- PROPOSED STORM DRAINAGE AREA CATCHMENT
- PROPOSED MAJOR OVERLAND FLOW DIRECTION
- EXISTING OVERLAND FLOW DIRECTION
- PROPOSED RETAINING WALL
- PROPOSED LANDSCAPE

ID		
A	CN	RC

CATCHMENT I.D.
AREA (ha) | SCS CURVE NUMBER | RUNOFF COEFFICIENT

NOTE: CN VALUES FOR STANDHYDs ARE CALCULATED FOR THE PERVIOUS AREAS OF THE CATCHMENTS

EXT1		
1.93	86	0.25

UC1		
0.08	81	0.25

203		
0.64	50	0.25

201		
2.31	81	0.90

202		
2.20	81	0.76

ROOFTOP RELEASE RATE = 42 L/s/ha (0.097 m^3/s)
STORAGE REQUIRED (100-YEAR STORM) = 909 m^3

SALT CREEK

WOODLAND LIMIT

WOODLAND + 10m

AIRPORT ROAD (REGIONAL ROAD No. 50) KNOWN AS AIRPORT ROAD ROAD ALLOWANCE BETWEEN TOWNSHIPS OF CHINGUACOUSY AND ALBION)

PART 1, PLAN 43R-19787

PART 1, PLAN 43R-40054

PART 1, PLAN 43R-39378

CROZIER

Project Information

Thornthwaite & Mather Method

Project: 0 Airport Road
Project No.: 2278-7228
Created By: VM
Checked By: CG
Date: 2026-04-23

Project Name: **0 Airport Road**
Location: **Town of Caledon**

Pre-Development Conditions

Catchment ID	**EX1**	**101**	**103**			
Catchment Area (m^2)	19300	42500	9800			
Pervious Area (m^2)	19300	42500	9800			
Impervious Area (m^2)	0	0	0			
Percent Imperviousness (%)	0%	0%	0%			
Infiltration Factors						
Topography - Description	Flat	Flat	Flat			
Topography - Infiltration Factor	0.30	0.30	0.30			
Soil - Description	Silt Loam	Silt Loam	Silt Loam			
Soil - Infiltration Factor	0.20	0.20	0.20			
Cover - Description	Moderately Rooted Crops	Moderately Rooted Crops	Moderately Rooted Crops			
Cover - Infiltration Factor	0.10	0.10	0.10			
Total Infiltration Factor	0.60	0.60	0.60			
Soil Moisture Capacity (mm)	200	200	200			

Post-Development Conditions

Catchment ID	**EX1**	**201**	**202**	**203**	**UC1**	
Catchment Area (m^2)	19300	23100	22000	6400	800	
Pervious Area (m^2)	19300	0	4620	6400	800	
Impervious Area (m^2)	0	23100	17380	0	0	
Percent Imperviousness (%)	0%	100%	79%	0%	0%	
Infiltration Factors						
Topography - Description	Flat	Flat	Flat	Flat	Flat	
Topography - Infiltration Factor	0.30	0.30	0.30	0.30	0.30	
Soil - Description	Silt Loam	Silt Loam	Silt Loam	Silt Loam	Silt Loam	
Soil - Infiltration Factor	0.20	0.20	0.20	0.20	0.20	
Cover - Description	Moderately Rooted Crops	Urban Lawns	Urban Lawns	Urban Lawns	Urban Lawns	
Cover - Infiltration Factor	0.10	0.10	0.10	0.10	0.10	
Total Infiltration Factor	0.60	0.60	0.60	0.60	0.60	
Soil Moisture Capacity (mm)	200	125	125	125	125	

CROZIER

Climate Parameters

Thornthwaite & Mather Method

Project: 0 Airport Road
Project No.: 2278-7228
Created By: VM
Checked By: CG
Date: 2026-04-23

PROJECT LOCATION Old School Road & Airport Road, Town of Caledon
PROJECT LATITUDE ° **43**

Month	Mean Temperature (C°)[1]	Heat Index [i =(t/5)$^{1.514}$]	α	Potential Evapotranspiration (PET) (mm)	Correction Factor[2]	Adjusted Potential Evapotranspiration (APET) (mm)	Precipitation (P) (mm)[1]
January	-6.0	0.00		0.0	1.37	0.0	63.5
February	-5.6	0.00		0.0	0.82	0.0	51.1
March	-0.2	0.00		0.0	1.02	0.0	52.3
April	6.5	1.49		27.6	1.12	31.0	78.9
May	13.4	4.45		62.6	1.26	78.9	80.0
June	18.8	7.43		91.8	1.28	117.5	86.7
July	21.5	9.10		106.8	1.29	137.8	85.2
August	20.6	8.53		101.8	1.2	122.1	71.9
September	16.2	5.93		77.6	1.04	80.7	83.1
October	9.4	2.60		41.9	0.95	39.8	70.6
November	3.3	0.53		12.9	0.81	10.4	76.7
December	-2.2	0.00		0.0	0.77	0.0	62.5
TOTAL	8.0	**40.1**	**1.1**	**523.0**		**618.2**	**862.5**

NOTES: 1. Precipitation and temperature data referenced from Environment Canada (Toronto Buttonville (Airport) Weather Station).
2. Latitude adjustment/correction factors determined based on site location assuming 12 hours of sunlight per day for 30 days

CROZIER

Pre-Development Water Balance

Thornthwaite & Mather Method

Project: 0 Airport Road
Project No.: 2278-7228
Created By: VM
Checked By: CG
Date: 2026-04-23

Project Name: **0 Airport Road**
Location: **Town of Caledon**

Catchment ID	**EX1**												
Catchment Parameters	**Pervious Area**			1.93 ha	**Impervious Area**			0.00 ha	**Total Area**			1.93 ha	
	Soil Moisture Holding Capacity			200 mm	**Infiltration Factor**			0.60	**% Impervious Evaporation**			15%	
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Precipitation	64	51	52	79	80	87	85	72	83	71	77	63	**863**
Pervious Area Water Balance													
Evapotranspiration (mm)	0	0	0	31	79	115	125	101	81	40	10	0	**582**
Storage (mm)	200	200	200	200	200	171	132	103	105	136	200	200	
Water Surplus (mm)	64	51	52	48	1	0	0	0	0	0	2	63	**280**
Infiltration (mm)	38	31	31	29	1	0	0	0	0	0	1	38	**168**
Surface Water Runoff (mm)	25	20	21	19	0	0	0	0	0	0	1	25	**112**
Impervious Area Water Balance													
Evaporation (mm)	10	8	8	12	12	13	13	11	12	11	12	9	**129**
Surface Water Runoff (mm)	54	43	44	67	68	74	72	61	71	60	65	53	**733**
Combined Water Balance													
Pervious ET (m^3)	0	0	0	598	1,523	2,224	2,410	1,953	1,557	769	201	0	**11,234**
Impervious ET (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Pervious Infiltration (m^3)	735	592	606	555	13	0	0	0	0	0	23	724	**3,247**
Impervious Infiltration (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Pervious Runoff (m^3)	490	394	404	370	9	0	0	0	0	0	15	483	**2,165**
Impervious Runoff (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**

Pre-Development Water Balance Summary: Catchment EX1				
Pre-Development Evapotranspiration	11234	m^3/yr	582.1	mm/yr
Pre-Development Infiltration	3247	m^3/yr	168.3	mm/yr
Pre-Development Runoff	2165	m^3/yr	112.2	mm/yr

NOTES: 1.The infiltration factor is determined using the MECP methodology outlined in the Stormwater Management Planning and Design Manual 2003.
2. Assumptions:
- Evapotranspiration does not occur when average temperature is below zero.
- Infiltration does not occur when average temperature is below zero.
- Approximately 15% of the precipitation on impervious surfaces will evaporate.
- When calculating the water balance, evaporation is subtracted from precipitation, then soil storage is replenished. If any precipitation remains it is considered surplus and divided between infiltration and runoff

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Pre-Development Water Balance

Thornthwaite & Mather Method

Project: 0 Airport Road
Project No.: 2278-7228
Created By: VM
Checked By: CG
Date: 2026-04-23

Project Name: **0 Airport Road**
Location: **Town of Caledon**

Catchment ID	**101**												
Catchment Parameters	**Pervious Area**			4.25 ha	**Impervious Area**			0.00 ha	**Total Area**			4.25 ha	
	Soil Moisture Holding Capacity			200 mm	**Infiltration Factor**			0.60	**% Impervious Evaporation**			15%	
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Precipitation	64	51	52	79	80	87	85	72	83	71	77	63	**863**
Pervious Area Water Balance													
Evapotranspiration (mm)	0	0	0	31	79	115	125	101	81	40	10	0	**582**
Storage (mm)	200	200	200	200	200	171	132	103	105	136	200	200	
Water Surplus (mm)	64	51	52	48	1	0	0	0	0	0	2	63	**280**
Infiltration (mm)	38	31	31	29	1	0	0	0	0	0	1	38	**168**
Surface Water Runoff (mm)	25	20	21	19	0	0	0	0	0	0	1	25	**112**
Impervious Area Water Balance													
Evaporation (mm)	10	8	8	12	12	13	13	11	12	11	12	9	**129**
Surface Water Runoff (mm)	54	43	44	67	68	74	72	61	71	60	65	53	**733**
Combined Water Balance													
Pervious ET (m^3)	0	0	0	1316	3353	4898	5306	4300	3429	1694	442	0	**24738**
Impervious ET (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Pervious Infiltration (m^3)	1619	1303	1334	1222	28	0	0	0	0	0	50	1594	**7151**
Impervious Infiltration (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Pervious Runoff (m^3)	1080	869	889	815	19	0	0	0	0	0	34	1063	**4767**
Impervious Runoff (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**

Pre-Development Water Balance Summary: Catchment 101				
Pre-Development Evapotranspiration	24738	m^3/yr	582	mm/yr
Pre-Development Infiltration	7151	m^3/yr	168	mm/yr
Pre-Development Runoff	4767	m^3/yr	112	mm/yr

NOTES: 1.The infiltration factor is determined using the MECP methodology outlined in the Stormwater Management Planning and Design Manual 2003.

2. Assumptions:

- Surplus water is unavailable for runoff and recharge in months where water losses from APET exceed precipitation inputs.
- Evapotranspiration does not occur when average temperature is below zero.
- Approximately 15% of the precipitation on impervious surfaces will evaporate.
- When calculating the water balance, evaporation is subtracted from precipitation, then soil storage is replenished. If any precipitation remains it is considered surplus and divided between infiltration and runoff

CROZIER

Pre-Development Water Balance

Thornthwaite & Mather Method

Project: 0 Airport Road
Project No.: 2278-7228
Created By: VM
Checked By: CG
Date: 2026-04-23

Project Name: **0 Airport Road**
Location: **Town of Caledon**

Catchment ID	**103**												
Catchment Parameters	**Pervious Area**			0.98 ha	**Impervious Area**			0.00 ha	**Total Area**			0.98 ha	
	Soil Moisture Holding Capacity			200 mm	**Infiltration Factor**			0.60	**% Impervious Evaporation**			15%	
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Precipitation	64	51	52	79	80	87	85	72	83	71	77	63	**863**
Pervious Area Water Balance													
Evapotranspiration (mm)	0	0	0	31	79	115	125	101	81	40	10	0	**582**
Storage (mm)	200	200	200	200	200	171	132	103	105	136	200	200	
Water Surplus (mm)	64	51	52	48	1	0	0	0	0	0	2	63	**280**
Infiltration (mm)	38	31	31	29	1	0	0	0	0	0	1	38	**168**
Surface Water Runoff (mm)	25	20	21	19	0	0	0	0	0	0	1	25	**112**
Impervious Area Water Balance													
Evaporation (mm)	10	8	8	12	12	13	13	11	12	11	12	9	**129**
Surface Water Runoff (mm)	54	43	44	67	68	74	72	61	71	60	65	53	**733**
Combined Water Balance													
Pervious ET (m^3)	0	0	0	303	773	1129	1224	992	791	391	102	0	**5704**
Impervious ET (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Pervious Infiltration (m^3)	373	300	308	282	7	0	0	0	0	0	12	368	**1649**
Impervious Infiltration (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Pervious Runoff (m^3)	249	200	205	188	4	0	0	0	0	0	8	245	**1099**
Impervious Runoff (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**

Pre-Development Water Balance Summary: Catchment 103				
Pre-Development Evapotranspiration	5704	m^3/yr	582	mm/yr
Pre-Development Infiltration	1649	m^3/yr	168	mm/yr
Pre-Development Runoff	1099	m^3/yr	112	mm/yr

NOTES: 1.The infiltration factor is determined using the MECP methodology outlined in the Stormwater Management Planning and Design Manual 2003.

2. Assumptions:

- Surplus water is unavailable for runoff and recharge in months where water losses from APET exceed precipitation inputs.
- Evapotranspiration does not occur when average temperature is below zero.
- Approximately 15% of the precipitation on impervious surfaces will evaporate.
- When calculating the water balance, evaporation is subtracted from precipitation, then soil storage is replenished. If any precipitation remains it is considered surplus and divided between infiltration and runoff

Project: 0 Airport Road
Project No.: 2278-7228
Created By: VM
Checked By: CG
Date: 2026-04-23

Post-Development Water Balance

Thornthwaite & Mather Method

Project Name: **0 Airport Road**
Location: **Town of Caledon**

Catchment ID	**EX1**					
Catchment Parameters	**Pervious Area**	1.93 ha	**Impervious Area**	0.00 ha	**Total Area**	1.93 ha
	Soil Moisture Holding Capacity	200 mm	**Infiltration Factor**	0.60	**% Impervious Evaporation**	15%

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Precipitation	64	51	52	79	80	87	85	72	83	71	77	63	**863**
Pervious Area Water Balance													
Evapotranspiration (mm)	0	0	0	31	79	115	125	101	81	40	10	0	**582**
Storage	200	200	200	200	200	171	132	103	105	136	200	200	
Water Surplus (mm)	64	51	52	48	1	0	0	0	0	0	2	63	**280**
Infiltration (mm)	38	31	31	29	1	0	0	0	0	0	1	38	**168**
Surface Water Runoff (mm)	25	20	21	19	0	0	0	0	0	0	1	25	**112**
Impervious Area Water Balance													
Evaporation (mm)	10	8	8	12	12	13	13	11	12	11	12	9	**129**
Surface Water Runoff (mm)	54	43	44	67	68	74	72	61	71	60	65	53	**733**
Combined Water Balance													
Pervious ET (m^3)	0	0	0	598	1523	2224	2410	1953	1557	769	201	0	**11234**
Impervious ET (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Pervious Infiltration (m^3)	735	592	606	555	13	0	0	0	0	0	23	724	**3247**
Impervious Infiltration (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Pervious Runoff (m^3)	490	394	404	370	9	0	0	0	0	0	15	483	**2165**
Impervious Runoff (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**

Post-Development Water Balance Summary: Catchment EX1				
Post-Development Evapotranspiration	11234.1	m^3/yr	582.1	mm/yr
Post-Development Infiltration	3247.3	m^3/yr	168.3	mm/yr
Post-Development Runoff	2164.8	m^3/yr	112.2	mm/yr

NOTES: 1.The infiltration factor is determined using the MECP methodology outlined in the Stormwater Management Planning and Design Manual 2003.
2. Assumptions:
- Surplus water is unavailable for runoff and recharge in months where water losses from APET exceed precipitation inputs.
- Evapotranspiration does not occur when average temperature is below zero.
- Approximately 15% of the precipitation on impervious surfaces will evaporate.
- When calculating the water balance, evaporation is subtracted from precipitation, then soil storage is replenished. If any precipitation remains it is considered surplus and divided between infiltration and runoff

Project: 0 Airport Road
Project No.: 2278-7228
Created By: VM
Checked By: CG
Date: 2026-04-23

Post-Development Water Balance

Thornthwaite & Mather Method

Project Name: **0 Airport Road**
Location: **Town of Caledon**

Catchment ID	**201**												
Catchment Parameters	**Pervious Area**			0.00 ha	**Impervious Area**			2.31 ha	**Total Area**			2.31 ha	
	Soil Moisture Holding Capacity			125 mm	**Infiltration Factor**			0.60	**% Impervious Evaporation**			15%	
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Precipitation	64	51	52	79	80	87	85	72	83	71	77	63	**863**
Pervious Area Water Balance													
Evapotranspiration (mm)	0	0	0	31	79	114	119	93	81	40	10	0	**567**
Storage	125	125	125	125	125	98	64	43	45	76	125	125	
Water Surplus (mm)	64	51	52	48	1	0	0	0	0	0	17	63	**296**
Infiltration (mm)	38	31	31	29	1	0	0	0	0	0	10	38	**177**
Surface Water Runoff (mm)	25	20	21	19	0	0	0	0	0	0	7	25	**118**
Impervious Area Water Balance													
Evaporation (mm)	10	8	8	12	12	13	13	11	12	11	12	9	**129**
Surface Water Runoff (mm)	54	43	44	67	68	74	72	61	71	60	65	53	**733**
Combined Water Balance													
Pervious ET (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Impervious ET (m^3)	220	177	181	273	277	300	295	249	288	245	266	217	**2989**
Pervious Infiltration (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Impervious Infiltration (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Pervious Runoff (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Impervious Runoff (m^3)	1247	1003	1027	1549	1571	1702	1673	1412	1632	1386	1506	1227	**16935**

Post-Development Water Balance Summary: Catchment 201				
Post-Development Evapotranspiration	2988.6	m^3/yr	129.4	mm/yr
Post-Development Infiltration	0.0	m^3/yr	0.0	mm/yr
Post-Development Runoff	16935.2	m^3/yr	733.1	mm/yr

NOTES: 1.The infiltration factor is determined using the MECP methodology outlined in the Stormwater Management Planning and Design Manual 2003.

2. Assumptions:

- Surplus water is unavailable for runoff and recharge in months where water losses from APET exceed precipitation inputs.
- Evapotranspiration does not occur when average temperature is below zero.
- Approximately 15% of the precipitation on impervious surfaces will evaporate.
- When calculating the water balance, evaporation is subtracted from precipitation, then soil storage is replenished. If any precipitation remains it is considered surplus and divided between infiltration and runoff

Project: 0 Airport Road
Project No.: 2278-7228
Created By: VM
Checked By: CG
Date: 2026-04-23

Post-Development Water Balance

Thornthwaite & Mather Method

Project Name: **0 Airport Road**
Location: **Town of Caledon**

Catchment ID	**202**						
Catchment Parameters	**Pervious Area**	0.46 ha	**Impervious Area**	1.74 ha	**Total Area**	2.20 ha	
	Soil Moisture Holding Capacity	125 mm	**Infiltration Factor**	0.60	**% Impervious Evaporation**	15%	

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Precipitation	64	51	52	79	80	87	85	72	83	71	77	63	**863**
Pervious Area Water Balance													
Evapotranspiration (mm)	0	0	0	31	79	114	119	93	81	40	10	0	**567**
Storage	125	125	125	125	125	98	64	43	45	76	125	125	
Water Surplus (mm)	64	51	52	48	1	0	0	0	0	0	17	63	**296**
Infiltration (mm)	38	31	31	29	1	0	0	0	0	0	10	38	**177**
Surface Water Runoff (mm)	25	20	21	19	0	0	0	0	0	0	7	25	**118**
Impervious Area Water Balance													
Evaporation (mm)	10	8	8	12	12	13	13	11	12	11	12	9	**129**
Surface Water Runoff (mm)	54	43	44	67	68	74	72	61	71	60	65	53	**733**
Combined Water Balance													
Pervious ET (m^3)	0	0	0	143	364	527	549	430	373	184	48	0	**2618**
Impervious ET (m^3)	166	133	136	206	209	226	222	187	217	184	200	163	**2249**
Pervious Infiltration (m^3)	176	142	145	133	3	0	0	0	0	0	48	173	**820**
Impervious Infiltration (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Pervious Runoff (m^3)	117	94	97	89	2	0	0	0	0	0	32	116	**547**
Impervious Runoff (m^3)	938	755	773	1166	1182	1281	1259	1062	1228	1043	1133	923	**12742**

Post-Development Water Balance Summary: Catchment 202				
Post-Development Evapotranspiration	4866.7	m^3/yr	221.2	mm/yr
Post-Development Infiltration	820.0	m^3/yr	37.3	mm/yr
Post-Development Runoff	13288.4	m^3/yr	604.0	mm/yr

NOTES: 1.The infiltration factor is determined using the MECP methodology outlined in the Stormwater Management Planning and Design Manual 2003.

2. Assumptions:

- Surplus water is unavailable for runoff and recharge in months where water losses from APET exceed precipitation inputs.
- Evapotranspiration does not occur when average temperature is below zero.
- Approximately 15% of the precipitation on impervious surfaces will evaporate.
- When calculating the water balance, evaporation is subtracted from precipitation, then soil storage is replenished. If any precipitation remains it is considered surplus and divided between infiltration and runoff

Project: 0 Airport Road
Project No.: 2278-7228
Created By: VM
Checked By: CG
Date: 2026-04-23

Post-Development Water Balance

Thornthwaite & Mather Method

Project Name: **0 Airport Road**
Location: **Town of Caledon**

Catchment ID	**203**						
Catchment Parameters	**Pervious Area**	0.64 ha	**Impervious Area**	0.00 ha	**Total Area**	0.64 ha	
	Soil Moisture Holding Capacity	125 mm	**Infiltration Factor**	0.60	**% Impervious Evaporation**	15%	

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Precipitation	64	51	52	79	80	87	85	72	83	71	77	63	**863**
Pervious Area Water Balance													
Evapotranspiration (mm)	0	0	0	31	79	114	119	93	81	40	10	0	**567**
Storage	125	125	125	125	125	98	64	43	45	76	125	125	
Water Surplus (mm)	64	51	52	48	1	0	0	0	0	0	17	63	**296**
Infiltration (mm)	38	31	31	29	1	0	0	0	0	0	10	38	**177**
Surface Water Runoff (mm)	25	20	21	19	0	0	0	0	0	0	7	25	**118**
Impervious Area Water Balance													
Evaporation (mm)	10	8	8	12	12	13	13	11	12	11	12	9	**129**
Surface Water Runoff (mm)	54	43	44	67	68	74	72	61	71	60	65	53	**733**
Combined Water Balance													
Pervious ET (m^3)	0	0	0	198	505	730	760	596	516	255	67	0	**3627**
Impervious ET (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Pervious Infiltration (m^3)	244	196	201	184	4	0	0	0	0	0	67	240	**1136**
Impervious Infiltration (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Pervious Runoff (m^3)	163	131	134	123	3	0	0	0	0	0	44	160	**757**
Impervious Runoff (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**

Post-Development Water Balance Summary: Catchment 203				
Post-Development evapotranspiration	3626.8	m^3/yr	566.7	mm/yr
Post-Development Infiltration	1135.9	m^3/yr	177.5	mm/yr
Post-Development Runoff	757.3	m^3/yr	118.3	mm/yr

NOTES: 1.The infiltration factor is determined using the MECP methodology outlined in the Stormwater Management Planning and Design Manual 2003.
2. Assumptions:
- Surplus water is unavailable for runoff and recharge in months where water losses from APET exceed precipitation inputs.
- Evapotranspiration does not occur when average temperature is below zero.
- Approximately 15% of the precipitation on impervious surfaces will evaporate.
- When calculating the water balance, evaporation is subtracted from precipitation, then soil storage is replenished. If any precipitation remains it is considered surplus and divided between infiltration and runoff

Project: 0 Airport Road
Project No.: 2278-7228
Created By: VM
Checked By: CG
Date: 2026-04-23

Post-Development Water Balance

Thornthwaite & Mather Method

Project Name: **0 Airport Road**
Location: **Town of Caledon**

Catchment ID	**UC1**												
Catchment Parameters	**Pervious Area**			0.08 ha	**Impervious Area**			0.00 ha	**Total Area**			0.08 ha	
	Soil Moisture Holding Capacity			125 mm	**Infiltration Factor**			0.60	**% Impervious Evaporation**			15%	
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Precipitation	64	51	52	79	80	87	85	72	83	71	77	63	**863**
Pervious Area Water Balance													
Evapotranspiration (mm)	0	0	0	31	79	114	119	93	81	40	10	0	**567**
Storage	125	125	125	125	125	98	64	43	45	76	125	125	
Water Surplus (mm)	64	51	52	48	1	0	0	0	0	0	17	63	**296**
Infiltration (mm)	38	31	31	29	1	0	0	0	0	0	10	38	**177**
Surface Water Runoff (mm)	25	20	21	19	0	0	0	0	0	0	7	25	**118**
Impervious Area Water Balance													
Evaporation (mm)	10	8	8	12	12	13	13	11	12	11	12	9	**129**
Surface Water Runoff (mm)	54	43	44	67	68	74	72	61	71	60	65	53	**733**
Combined Water Balance													
Pervious ET (m^3)	0	0	0	25	63	91	95	75	65	32	8	0	**453**
Impervious ET (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Pervious Infiltration (m^3)	30	25	25	23	1	0	0	0	0	0	8	30	**142**
Impervious Infiltration (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Pervious Runoff (m^3)	20	16	17	15	0	0	0	0	0	0	6	20	**95**
Impervious Runoff (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**

Post-Development Water Balance Summary: Catchment UC1				
Post-Development evapotranspiration	453.4	m^3/yr	566.7	mm/yr
Post-Development Infiltration	142.0	m^3/yr	177.5	mm/yr
Post-Development Runoff	94.7	m^3/yr	118.3	mm/yr

NOTES: 1.The infiltration factor is determined using the MECP methodology outlined in the Stormwater Management Planning and Design Manual 2003.
2. Assumptions:
- Surplus water is unavailable for runoff and recharge in months where water losses from APET exceed precipitation inputs.
- Evapotranspiration does not occur when average temperature is below zero.
- Approximately 15% of the precipitation on impervious surfaces will evaporate.
- When calculating the water balance, evaporation is subtracted from precipitation, then soil storage is replenished. If any precipitation remains it is considered surplus and divided between infiltration and runoff

Project: 0 Airport Road
Project No.: 2278-7228
Created By: VM
Checked By: CG
Date: 2026-04-23

Site Water Balance Summary

Thornthwaite & Mather Method

Pre-Development Water Balance							
Catchment ID	Area	Evapotranspiration		Infiltration		Runoff	
	(ha)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)
EX1	1.93	11,234	582	3,247	168	2,165	112
101	4.25	24,738	582	7,151	168	4,767	112
103	0.98	5,704	582	1,649	168	1,099	112
Total	**7.16**	**41,677**	**582**	**12,047**	**168**	**8,031**	**112**

Post-Development Water Balance							
Catchment ID	Area	Evapotranspiration		Infiltration		Runoff	
	(ha)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)
EX1	1.93	11234	582	3247	168	2165	112
201	2.31	2989	129	0	0	16935	733
202	2.20	4867	221	820	37	13288	604
203	0.64	3627	567	1136	177	757	118
UC1	0.08	453	567	142	177	95	118
Total	**7.16**	**23,170**	**324**	**5345**	**75**	**33,240**	**464**

Site Water Balance Summary (Without Mitigation)							
Scenario	Area	Evapotranspiration		Infiltration		Runoff	
	(ha)	(m^3)	(mm)	(m^3)	(mm)	(m^3)	(mm)
Pre-Dev.	7.16	41677	582	12047	168	8031	112
Post-Dev.	7.16	23170	324	5345	75	33240	464
Difference	0	-18507	-258	-6702	-94	25209	352
% Difference	0%	-44%	-44%	-56%	-56%	314%	314%

Annual Infiltration Deficit **6702 m^3**
94 mm

APPENDIX I

Feature-based Water Balance Assessment

Project: 0 Airport Road
Project No.: 2278-7228
Created By: VM
Checked By: CG
Date: 2026-04-23

Project Information

Thornthwaite & Mather Method

Project Name: **0 Airport Road**
Location: **Town of Caledon**

Pre-Development Conditions

Catchment ID	**EX1**	**101**				
Catchment Area (m^2)	19300	42500				
Pervious Area (m^2)	19300	42500				
Impervious Area (m^2)	0	0				
Percent Imperviousness (%)	0%	0%				
Infiltration Factors						
Topography - Description	Flat	Flat				
Topography - Infiltration Factor	0.30	0.30				
Soil - Description	Silt Loam	Silt Loam				
Soil - Infiltration Factor	0.20	0.20				
Cover - Description	Moderately Rooted Crops	Moderately Rooted Crops				
Cover - Infiltration Factor	0.10	0.10				
Total Infiltration Factor	0.60	0.60				
Soil Moisture Capacity (mm)	200	200				

Post-Development Conditions

Catchment ID	**EX1**	**201**	**202**	**203**	**UC1**	
Catchment Area (m^2)	19300	23100	22000	6400	800	
Pervious Area (m^2)	19300	0	4620	6400	800	
Impervious Area (m^2)	0	23100	17380	0	0	
Percent Imperviousness (%)	0%	100%	79%	0%	0%	
Infiltration Factors						
Topography - Description	Flat	Flat	Flat	Flat	Flat	
Topography - Infiltration Factor	0.30	0.30	0.30	0.30	0.30	
Soil - Description	Silt Loam	Silt Loam	Silt Loam	Silt Loam	Silt Loam	
Soil - Infiltration Factor	0.20	0.20	0.20	0.20	0.20	
Cover - Description	Moderately Rooted Crops	Urban Lawns	Urban Lawns	Urban Lawns	Urban Lawns	
Cover - Infiltration Factor	0.10	0.10	0.10	0.10	0.10	
Total Infiltration Factor	0.60	0.60	0.60	0.60	0.60	
Soil Moisture Capacity (mm)	200	125	125	125	125	

CROZIER

Climate Parameters

Thornthwaite & Mather Method

Project: 0 Airport Road
Project No.: 2278-7228
Created By: VM
Checked By: CG
Date: 2026-04-23

PROJECT LOCATION Old School Road & Airport Road, Town of Caledon
PROJECT LATITUDE ° **43**

Month	Mean Temperature (C°)[1]	Heat Index [i =(t/5)$^{1.514}$]	α	Potential Evapotranspiration (PET) (mm)	Correction Factor[2]	Adjusted Potential Evapotranspiration (APET) (mm)	Precipitation (P) (mm)[1]
January	-6.0	0.00		0.0	1.37	0.0	63.5
February	-5.6	0.00		0.0	0.82	0.0	51.1
March	-0.2	0.00		0.0	1.02	0.0	52.3
April	6.5	1.49		27.6	1.12	31.0	78.9
May	13.4	4.45		62.6	1.26	78.9	80.0
June	18.8	7.43		91.8	1.28	117.5	86.7
July	21.5	9.10		106.8	1.29	137.8	85.2
August	20.6	8.53		101.8	1.2	122.1	71.9
September	16.2	5.93		77.6	1.04	80.7	83.1
October	9.4	2.60		41.9	0.95	39.8	70.6
November	3.3	0.53		12.9	0.81	10.4	76.7
December	-2.2	0.00		0.0	0.77	0.0	62.5
TOTAL	8.0	**40.1**	**1.1**	**523.0**		**618.2**	**862.5**

NOTES: 1. Precipitation and temperature data referenced from Environment Canada (Toronto Buttonville (Airport) Weather Station).
2. Latitude adjustment/correction factors determined based on site location assuming 12 hours of sunlight per day for 30 days

CROZIER

Pre-Development Water Balance

Thornthwaite & Mather Method

Project: 0 Airport Road
Project No.: 2278-7228
Created By: VM
Checked By: CG
Date: 2026-04-23

Project Name: **0 Airport Road**
Location: **Town of Caledon**

Catchment ID	**EX1**												
Catchment Parameters	**Pervious Area**			1.93 ha	**Impervious Area**			0.00 ha	**Total Area**			1.93 ha	
	Soil Moisture Holding Capacity			200 mm	**Infiltration Factor**			0.60	**% Impervious Evaporation**			15%	
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Precipitation	64	51	52	79	80	87	85	72	83	71	77	63	**863**
Pervious Area Water Balance													
Evapotranspiration (mm)	0	0	0	31	79	115	125	101	81	40	10	0	**582**
Storage (mm)	200	200	200	200	200	171	132	103	105	136	200	200	
Water Surplus (mm)	64	51	52	48	1	0	0	0	0	0	2	63	**280**
Infiltration (mm)	38	31	31	29	1	0	0	0	0	0	1	38	**168**
Surface Water Runoff (mm)	25	20	21	19	0	0	0	0	0	0	1	25	**112**
Impervious Area Water Balance													
Evaporation (mm)	10	8	8	12	12	13	13	11	12	11	12	9	**129**
Surface Water Runoff (mm)	54	43	44	67	68	74	72	61	71	60	65	53	**733**
Combined Water Balance													
Pervious ET (m^3)	0	0	0	598	1,523	2,224	2,410	1,953	1,557	769	201	0	**11,234**
Impervious ET (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Pervious Infiltration (m^3)	735	592	606	555	13	0	0	0	0	0	23	724	**3,247**
Impervious Infiltration (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Pervious Runoff (m^3)	490	394	404	370	9	0	0	0	0	0	15	483	**2,165**
Impervious Runoff (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**

Pre-Development Water Balance Summary: Catchment EX1				
Pre-Development Evapotranspiration	11234	m^3/yr	582.1	mm/yr
Pre-Development Infiltration	3247	m^3/yr	168.3	mm/yr
Pre-Development Runoff	2165	m^3/yr	112.2	mm/yr

NOTES: 1.The infiltration factor is determined using the MECP methodology outlined in the Stormwater Management Planning and Design Manual 2003.
2. Assumptions:
- Evapotranspiration does not occur when average temperature is below zero.
- Infiltration does not occur when average temperature is below zero.
- Approximately 15% of the precipitation on impervious surfaces will evaporate.
- When calculating the water balance, evaporation is subtracted from precipitation, then soil storage is replenished. If any precipitation remains it is considered surplus and divided between infiltration and runoff

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Pre-Development Water Balance

Thornthwaite & Mather Method

Project: 0 Airport Road
Project No.: 2278-7228
Created By: VM
Checked By: CG
Date: 2026-04-23

Project Name: **0 Airport Road**
Location: **Town of Caledon**

Catchment ID	**101**												
Catchment Parameters	**Pervious Area**			4.25 ha	**Impervious Area**			0.00 ha	**Total Area**			4.25 ha	
	Soil Moisture Holding Capacity			200 mm	**Infiltration Factor**			0.60	**% Impervious Evaporation**			15%	
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Precipitation	64	51	52	79	80	87	85	72	83	71	77	63	**863**
Pervious Area Water Balance													
Evapotranspiration (mm)	0	0	0	31	79	115	125	101	81	40	10	0	**582**
Storage (mm)	200	200	200	200	200	171	132	103	105	136	200	200	
Water Surplus (mm)	64	51	52	48	1	0	0	0	0	0	2	63	**280**
Infiltration (mm)	38	31	31	29	1	0	0	0	0	0	1	38	**168**
Surface Water Runoff (mm)	25	20	21	19	0	0	0	0	0	0	1	25	**112**
Impervious Area Water Balance													
Evaporation (mm)	10	8	8	12	12	13	13	11	12	11	12	9	**129**
Surface Water Runoff (mm)	54	43	44	67	68	74	72	61	71	60	65	53	**733**
Combined Water Balance													
Pervious ET (m^3)	0	0	0	1316	3353	4898	5306	4300	3429	1694	442	0	**24738**
Impervious ET (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Pervious Infiltration (m^3)	1619	1303	1334	1222	28	0	0	0	0	0	50	1594	**7151**
Impervious Infiltration (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Pervious Runoff (m^3)	1080	869	889	815	19	0	0	0	0	0	34	1063	**4767**
Impervious Runoff (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**

Pre-Development Water Balance Summary: Catchment 101				
Pre-Development Evapotranspiration	24738	m^3/yr	582	mm/yr
Pre-Development Infiltration	7151	m^3/yr	168	mm/yr
Pre-Development Runoff	4767	m^3/yr	112	mm/yr

NOTES: 1.The infiltration factor is determined using the MECP methodology outlined in the Stormwater Management Planning and Design Manual 2003.

2. Assumptions:

- Surplus water is unavailable for runoff and recharge in months where water losses from APET exceed precipitation inputs.
- Evapotranspiration does not occur when average temperature is below zero.
- Approximately 15% of the precipitation on impervious surfaces will evaporate.
- When calculating the water balance, evaporation is subtracted from precipitation, then soil storage is replenished. If any precipitation remains it is considered surplus and divided between infiltration and runoff

Project: 0 Airport Road
Project No.: 2278-7228
Created By: VM
Checked By: CG
Date: 2026-04-23

Post-Development Water Balance

Thornthwaite & Mather Method

Project Name: **0 Airport Road**
Location: **Town of Caledon**

Catchment ID	**EX1**					
Catchment Parameters	**Pervious Area**	1.93 ha	**Impervious Area**	0.00 ha	**Total Area**	1.93 ha
	Soil Moisture Holding Capacity	200 mm	**Infiltration Factor**	0.60	**% Impervious Evaporation**	15%

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Precipitation	64	51	52	79	80	87	85	72	83	71	77	63	**863**
Pervious Area Water Balance													
Evapotranspiration (mm)	0	0	0	31	79	115	125	101	81	40	10	0	**582**
Storage	200	200	200	200	200	171	132	103	105	136	200	200	
Water Surplus (mm)	64	51	52	48	1	0	0	0	0	0	2	63	**280**
Infiltration (mm)	38	31	31	29	1	0	0	0	0	0	1	38	**168**
Surface Water Runoff (mm)	25	20	21	19	0	0	0	0	0	0	1	25	**112**
Impervious Area Water Balance													
Evaporation (mm)	10	8	8	12	12	13	13	11	12	11	12	9	**129**
Surface Water Runoff (mm)	54	43	44	67	68	74	72	61	71	60	65	53	**733**
Combined Water Balance													
Pervious ET (m^3)	0	0	0	598	1523	2224	2410	1953	1557	769	201	0	**11234**
Impervious ET (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Pervious Infiltration (m^3)	735	592	606	555	13	0	0	0	0	0	23	724	**3247**
Impervious Infiltration (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Pervious Runoff (m^3)	490	394	404	370	9	0	0	0	0	0	15	483	**2165**
Impervious Runoff (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**

Post-Development Water Balance Summary: Catchment EX1				
Post-Development Evapotranspiration	11234.1	m^3/yr	582.1	mm/yr
Post-Development Infiltration	3247.3	m^3/yr	168.3	mm/yr
Post-Development Runoff	2164.8	m^3/yr	112.2	mm/yr

NOTES: 1.The infiltration factor is determined using the MECP methodology outlined in the Stormwater Management Planning and Design Manual 2003.
2. Assumptions:
- Surplus water is unavailable for runoff and recharge in months where water losses from APET exceed precipitation inputs.
- Evapotranspiration does not occur when average temperature is below zero.
- Approximately 15% of the precipitation on impervious surfaces will evaporate.
- When calculating the water balance, evaporation is subtracted from precipitation, then soil storage is replenished. If any precipitation remains it is considered surplus and divided between infiltration and runoff

Project: 0 Airport Road
Project No.: 2278-7228
Created By: VM
Checked By: CG
Date: 2026-04-23

Post-Development Water Balance

Thornthwaite & Mather Method

Project Name: **0 Airport Road**
Location: **Town of Caledon**

Catchment ID	**201**												
Catchment Parameters	**Pervious Area**			0.00 ha	**Impervious Area**			2.31 ha	**Total Area**			2.31 ha	
	Soil Moisture Holding Capacity			125 mm	**Infiltration Factor**			0.60	**% Impervious Evaporation**			15%	
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Precipitation	64	51	52	79	80	87	85	72	83	71	77	63	**863**
Pervious Area Water Balance													
Evapotranspiration (mm)	0	0	0	31	79	114	119	93	81	40	10	0	**567**
Storage	125	125	125	125	125	98	64	43	45	76	125	125	
Water Surplus (mm)	64	51	52	48	1	0	0	0	0	0	17	63	**296**
Infiltration (mm)	38	31	31	29	1	0	0	0	0	0	10	38	**177**
Surface Water Runoff (mm)	25	20	21	19	0	0	0	0	0	0	7	25	**118**
Impervious Area Water Balance													
Evaporation (mm)	10	8	8	12	12	13	13	11	12	11	12	9	**129**
Surface Water Runoff (mm)	54	43	44	67	68	74	72	61	71	60	65	53	**733**
Combined Water Balance													
Pervious ET (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Impervious ET (m^3)	220	177	181	273	277	300	295	249	288	245	266	217	**2989**
Pervious Infiltration (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Impervious Infiltration (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Pervious Runoff (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Impervious Runoff (m^3)	1247	1003	1027	1549	1571	1702	1673	1412	1632	1386	1506	1227	**16935**

Post-Development Water Balance Summary: Catchment 201				
Post-Development Evapotranspiration	2988.6	m^3/yr	129.4	mm/yr
Post-Development Infiltration	0.0	m^3/yr	0.0	mm/yr
Post-Development Runoff	16935.2	m^3/yr	733.1	mm/yr

NOTES: 1.The infiltration factor is determined using the MECP methodology outlined in the Stormwater Management Planning and Design Manual 2003.

2. Assumptions:

- Surplus water is unavailable for runoff and recharge in months where water losses from APET exceed precipitation inputs.
- Evapotranspiration does not occur when average temperature is below zero.
- Approximately 15% of the precipitation on impervious surfaces will evaporate.
- When calculating the water balance, evaporation is subtracted from precipitation, then soil storage is replenished. If any precipitation remains it is considered surplus and divided between infiltration and runoff

Project: 0 Airport Road
Project No.: 2278-7228
Created By: VM
Checked By: CG
Date: 2026-04-23

Post-Development Water Balance

Thornthwaite & Mather Method

Project Name: **0 Airport Road**
Location: **Town of Caledon**

Catchment ID	**202**						
Catchment Parameters	**Pervious Area**	0.46 ha	**Impervious Area**	1.74 ha	**Total Area**	2.20 ha	
	Soil Moisture Holding Capacity	125 mm	**Infiltration Factor**	0.60	**% Impervious Evaporation**	15%	

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Precipitation	64	51	52	79	80	87	85	72	83	71	77	63	**863**
Pervious Area Water Balance													
Evapotranspiration (mm)	0	0	0	31	79	114	119	93	81	40	10	0	**567**
Storage	125	125	125	125	125	98	64	43	45	76	125	125	
Water Surplus (mm)	64	51	52	48	1	0	0	0	0	0	17	63	**296**
Infiltration (mm)	38	31	31	29	1	0	0	0	0	0	10	38	**177**
Surface Water Runoff (mm)	25	20	21	19	0	0	0	0	0	0	7	25	**118**
Impervious Area Water Balance													
Evaporation (mm)	10	8	8	12	12	13	13	11	12	11	12	9	**129**
Surface Water Runoff (mm)	54	43	44	67	68	74	72	61	71	60	65	53	**733**
Combined Water Balance													
Pervious ET (m^3)	0	0	0	143	364	527	549	430	373	184	48	0	**2618**
Impervious ET (m^3)	166	133	136	206	209	226	222	187	217	184	200	163	**2249**
Pervious Infiltration (m^3)	176	142	145	133	3	0	0	0	0	0	48	173	**820**
Impervious Infiltration (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Pervious Runoff (m^3)	117	94	97	89	2	0	0	0	0	0	32	116	**547**
Impervious Runoff (m^3)	938	755	773	1166	1182	1281	1259	1062	1228	1043	1133	923	**12742**

Post-Development Water Balance Summary: Catchment 202				
Post-Development Evapotranspiration	4866.7	m^3/yr	221.2	mm/yr
Post-Development Infiltration	820.0	m^3/yr	37.3	mm/yr
Post-Development Runoff	13288.4	m^3/yr	604.0	mm/yr

NOTES: 1.The infiltration factor is determined using the MECP methodology outlined in the Stormwater Management Planning and Design Manual 2003.

2. Assumptions:

- Surplus water is unavailable for runoff and recharge in months where water losses from APET exceed precipitation inputs.
- Evapotranspiration does not occur when average temperature is below zero.
- Approximately 15% of the precipitation on impervious surfaces will evaporate.
- When calculating the water balance, evaporation is subtracted from precipitation, then soil storage is replenished. If any precipitation remains it is considered surplus and divided between infiltration and runoff

Project: 0 Airport Road
Project No.: 2278-7228
Created By: VM
Checked By: CG
Date: 2026-04-23

Post-Development Water Balance

Thornthwaite & Mather Method

Project Name: **0 Airport Road**
Location: **Town of Caledon**

Catchment ID	**203**						
Catchment Parameters	**Pervious Area**	0.64 ha	**Impervious Area**	0.00 ha	**Total Area**	0.64 ha	
	Soil Moisture Holding Capacity	125 mm	**Infiltration Factor**	0.60	**% Impervious Evaporation**	15%	

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Precipitation	64	51	52	79	80	87	85	72	83	71	77	63	**863**
Pervious Area Water Balance													
Evapotranspiration (mm)	0	0	0	31	79	114	119	93	81	40	10	0	**567**
Storage	125	125	125	125	125	98	64	43	45	76	125	125	
Water Surplus (mm)	64	51	52	48	1	0	0	0	0	0	17	63	**296**
Infiltration (mm)	38	31	31	29	1	0	0	0	0	0	10	38	**177**
Surface Water Runoff (mm)	25	20	21	19	0	0	0	0	0	0	7	25	**118**
Impervious Area Water Balance													
Evaporation (mm)	10	8	8	12	12	13	13	11	12	11	12	9	**129**
Surface Water Runoff (mm)	54	43	44	67	68	74	72	61	71	60	65	53	**733**
Combined Water Balance													
Pervious ET (m^3)	0	0	0	198	505	730	760	596	516	255	67	0	**3627**
Impervious ET (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Pervious Infiltration (m^3)	244	196	201	184	4	0	0	0	0	0	67	240	**1136**
Impervious Infiltration (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Pervious Runoff (m^3)	163	131	134	123	3	0	0	0	0	0	44	160	**757**
Impervious Runoff (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**

Post-Development Water Balance Summary: Catchment 203				
Post-Development evapotranspiration	3626.8	m^3/yr	566.7	mm/yr
Post-Development Infiltration	1135.9	m^3/yr	177.5	mm/yr
Post-Development Runoff	757.3	m^3/yr	118.3	mm/yr

NOTES: 1.The infiltration factor is determined using the MECP methodology outlined in the Stormwater Management Planning and Design Manual 2003.
2. Assumptions:
- Surplus water is unavailable for runoff and recharge in months where water losses from APET exceed precipitation inputs.
- Evapotranspiration does not occur when average temperature is below zero.
- Approximately 15% of the precipitation on impervious surfaces will evaporate.
- When calculating the water balance, evaporation is subtracted from precipitation, then soil storage is replenished. If any precipitation remains it is considered surplus and divided between infiltration and runoff

Project: 0 Airport Road
Project No.: 2278-7228
Created By: VM
Checked By: CG
Date: 2026-04-23

Post-Development Water Balance

Thornthwaite & Mather Method

Project Name: **0 Airport Road**
Location: **Town of Caledon**

Catchment ID	**UC1**												
Catchment Parameters	**Pervious Area**			0.08 ha	**Impervious Area**			0.00 ha	**Total Area**			0.08 ha	
	Soil Moisture Holding Capacity			125 mm	**Infiltration Factor**			0.60	**% Impervious Evaporation**			15%	
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Precipitation	64	51	52	79	80	87	85	72	83	71	77	63	**863**
Pervious Area Water Balance													
Evapotranspiration (mm)	0	0	0	31	79	114	119	93	81	40	10	0	**567**
Storage	125	125	125	125	125	98	64	43	45	76	125	125	
Water Surplus (mm)	64	51	52	48	1	0	0	0	0	0	17	63	**296**
Infiltration (mm)	38	31	31	29	1	0	0	0	0	0	10	38	**177**
Surface Water Runoff (mm)	25	20	21	19	0	0	0	0	0	0	7	25	**118**
Impervious Area Water Balance													
Evaporation (mm)	10	8	8	12	12	13	13	11	12	11	12	9	**129**
Surface Water Runoff (mm)	54	43	44	67	68	74	72	61	71	60	65	53	**733**
Combined Water Balance													
Pervious ET (m^3)	0	0	0	25	63	91	95	75	65	32	8	0	**453**
Impervious ET (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Pervious Infiltration (m^3)	30	25	25	23	1	0	0	0	0	0	8	30	**142**
Impervious Infiltration (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Pervious Runoff (m^3)	20	16	17	15	0	0	0	0	0	0	6	20	**95**
Impervious Runoff (m^3)	0	0	0	0	0	0	0	0	0	0	0	0	**0**

Post-Development Water Balance Summary: Catchment UC1				
Post-Development evapotranspiration	453.4	m^3/yr	566.7	mm/yr
Post-Development Infiltration	142.0	m^3/yr	177.5	mm/yr
Post-Development Runoff	94.7	m^3/yr	118.3	mm/yr

NOTES: 1.The infiltration factor is determined using the MECP methodology outlined in the Stormwater Management Planning and Design Manual 2003.
2. Assumptions:
- Surplus water is unavailable for runoff and recharge in months where water losses from APET exceed precipitation inputs.
- Evapotranspiration does not occur when average temperature is below zero.
- Approximately 15% of the precipitation on impervious surfaces will evaporate.
- When calculating the water balance, evaporation is subtracted from precipitation, then soil storage is replenished. If any precipitation remains it is considered surplus and divided between infiltration and runoff

Project: 0 Airport Road
Project No.: 2278-7228
Created By: VM
Checked By: CG
Date: 2026-04-23

Feature-based Water Balance Summary

Thornthwaite & Mather Method

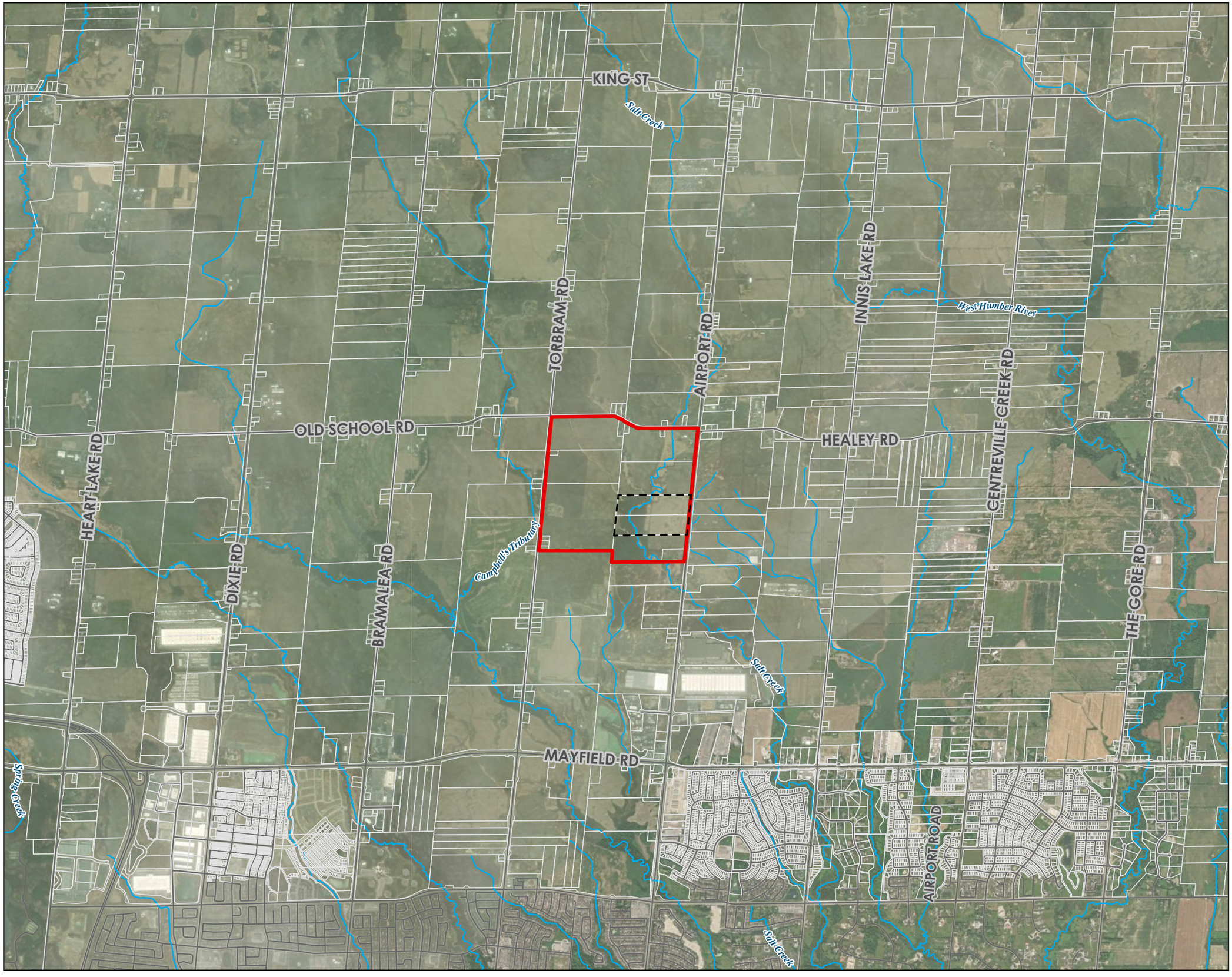
Pre-Development Feature-based Water Balance							
Catchment ID	Area	Evapotranspiration		Infiltration		Runoff	
	(ha)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)
EX1	1.93	11,234	582	3,247	168	2,165	112
101	4.25	24,738	582	7,151	168	4,767	112
Total	**6.18**	**35,973**	**582**	**10,398**	**168**	**6,932**	**112**

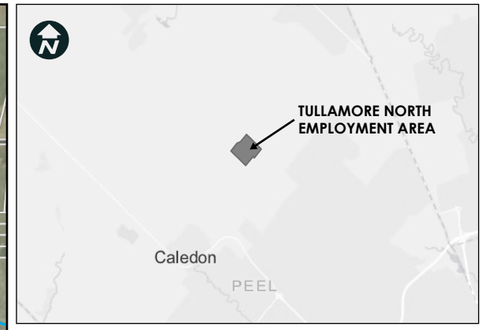
Post-Development Feature-based Water Balance							
Catchment ID	Area	Evapotranspiration		Infiltration		Runoff	
	(ha)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)
EX1	1.93	11234	582	3247	168	2165	112
201	2.31	2989	129	0	0	16935	733
202	2.20	4867	221	820	37	13288	604
203	0.64	3627	567	1136	177	757	118
UC1	0.08	453	567	142	177	95	118
Total	**7.16**	**23,170**	**324**	**5345**	**75**	**33,240**	**464**

Feature-based Water Balance Summary (Without Mitigation)							
Scenario	Area	Evapotranspiration		Infiltration		Runoff	
	(ha)	(m^3)	(mm)	(m^3)	(mm)	(m^3)	(mm)
Pre-Dev.	6.18	35973	582	10398	168	6932	112
Post-Dev.	7.16	23170	324	5345	75	33240	464
Difference	1	-12803	-258	-5053	-94	26308	352
% Difference	16%	-36%	-44%	-49%	-56%	380%	314%

Annual Infiltration Deficit **5053 m^3**
94 mm

FIGURES





LEGEND

- Broccolini Lands
- Primary Study Area (Secondary Plan Limits)
- Assessment Parcel (Peel)
- Watercourse

0 475 950 1,900 Metres

Source: Peel Region, Maxar, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, Esri, © OpenStreetMap contributors, HERE, Garmin, USGS, EPA, NPS, NRCan

0 AIRPORT ROAD

FIGURE 1: SITE LOCATION PLAN

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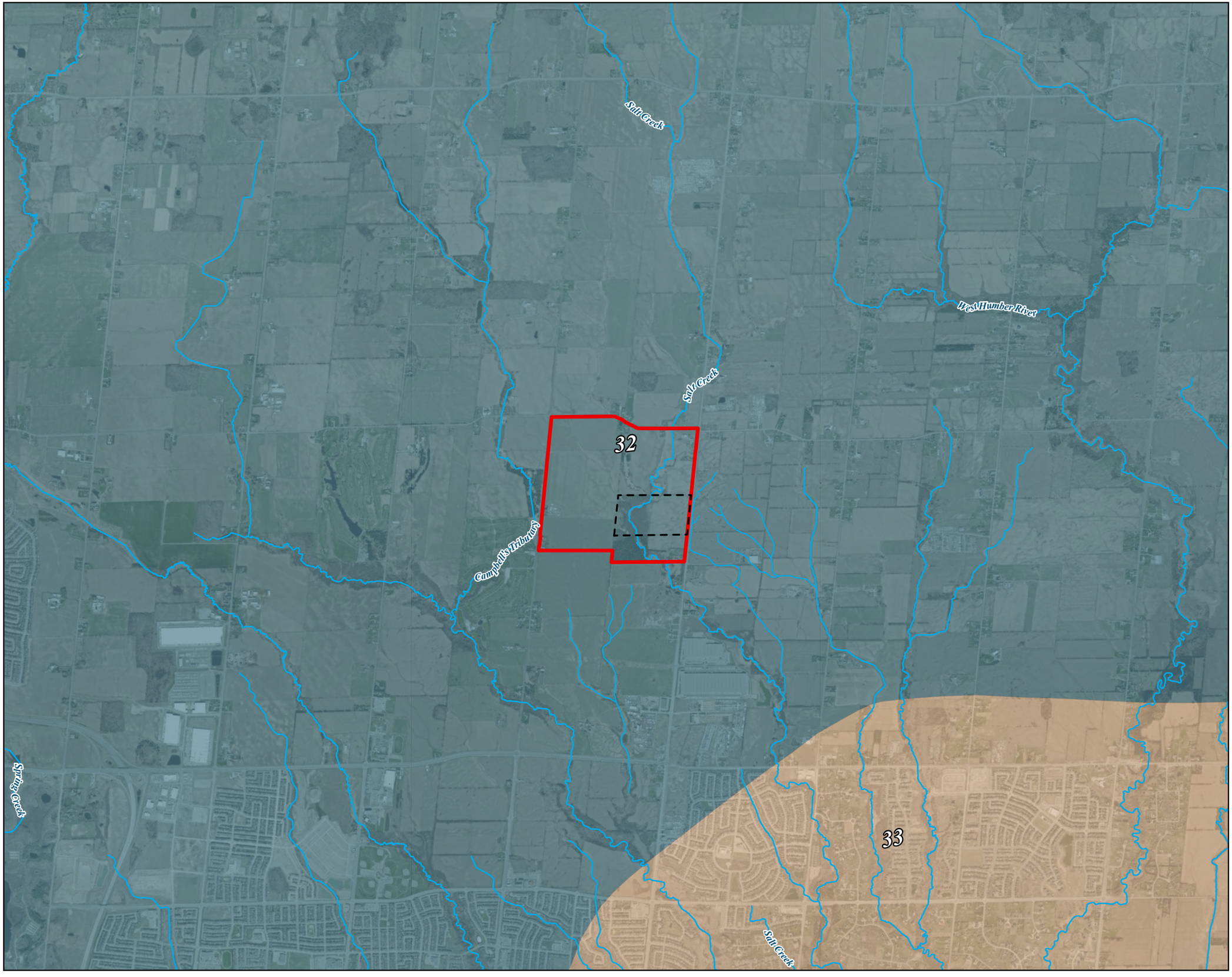

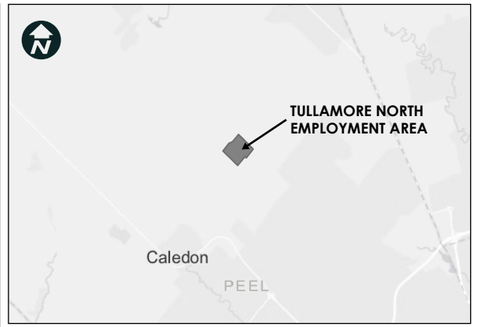

LEGEND

- Broccolini Lands
- Primary Study Area (Secondary Plan Limits)
- Watercourse

Physiographic Region

- 32: South Slope
- 33: Peel Plain

0 75 150 300 Metres

Source: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, Esri, © OpenStreetMap contributors, HERE, Garmin, USGS, EPA, NPS, NRCan

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FIGURE 2: PHYSIOGRAPHY

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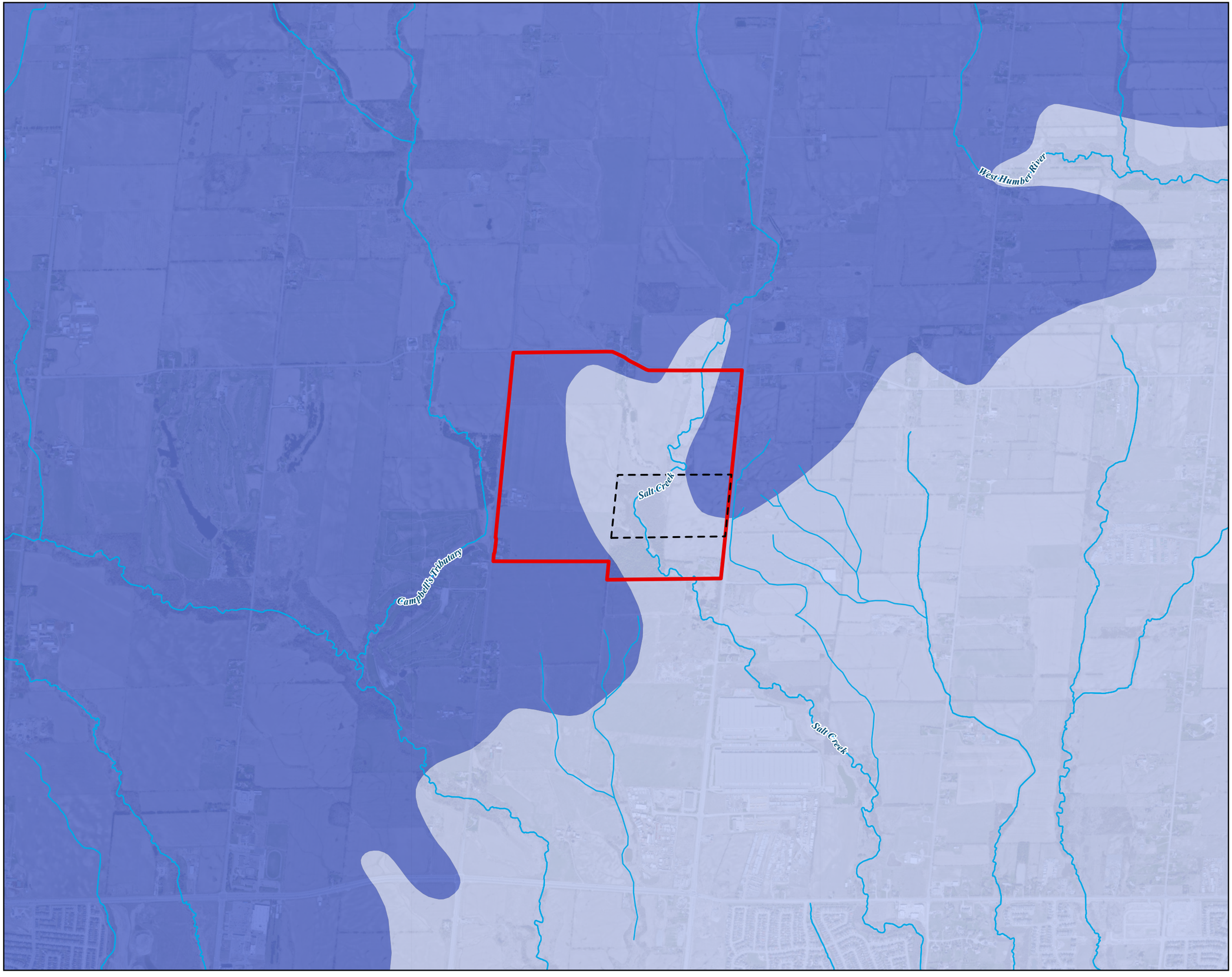

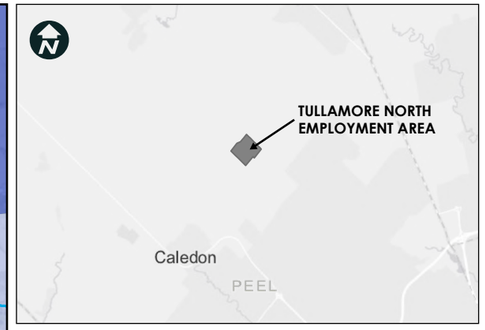

LEGEND

- Broccolini Lands
- Primary Study Area (Secondary Plan Limits)
- Watercourse

Bedrock Geology

- 14: Georgian Bay - grey-green shale, siltstone, limestone
- 16: Queenston Formation - red shale, siltstone, minor limestone

0 75 150 300 Metres

Source: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, Esri, © OpenStreetMap contributors, HERE, Garmin, USGS, EPA, NPS, NRCan

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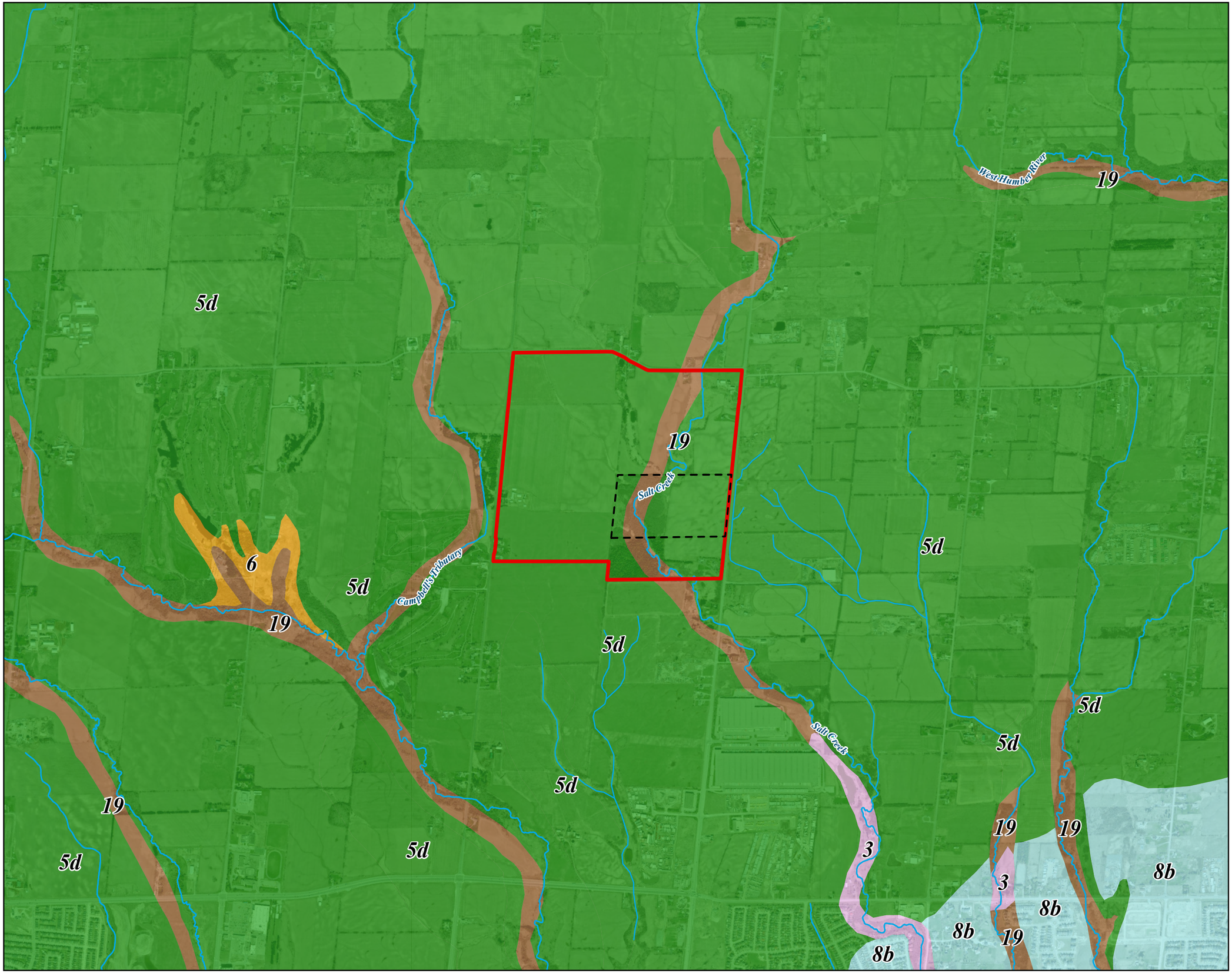
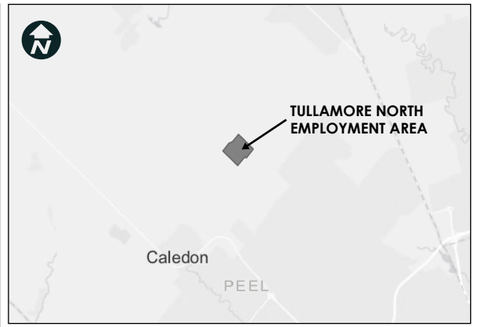
FIGURE 3: BEDROCK GEOLOGY

CROZIER





LEGEND

- Broccolini Lands
- Primary Study Area (Secondary Plan Limits)
- Watercourse

Surficial Geology

- 20: Organic deposits
- 19: Modern fluvial silt, clay, sand
- 9c: Glaciolacustrine sand
- 8b: Glaciolacustrine silt, clay
- 6: Ice-contact sand
- 5d: Clayey silt to silty clay till
- 3: Paleozoic bedrock

0 75 150 300 Metres

Source: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, Esri, © OpenStreetMap contributors, HERE, Garmin, USGS, EPA, NPS, NRCan

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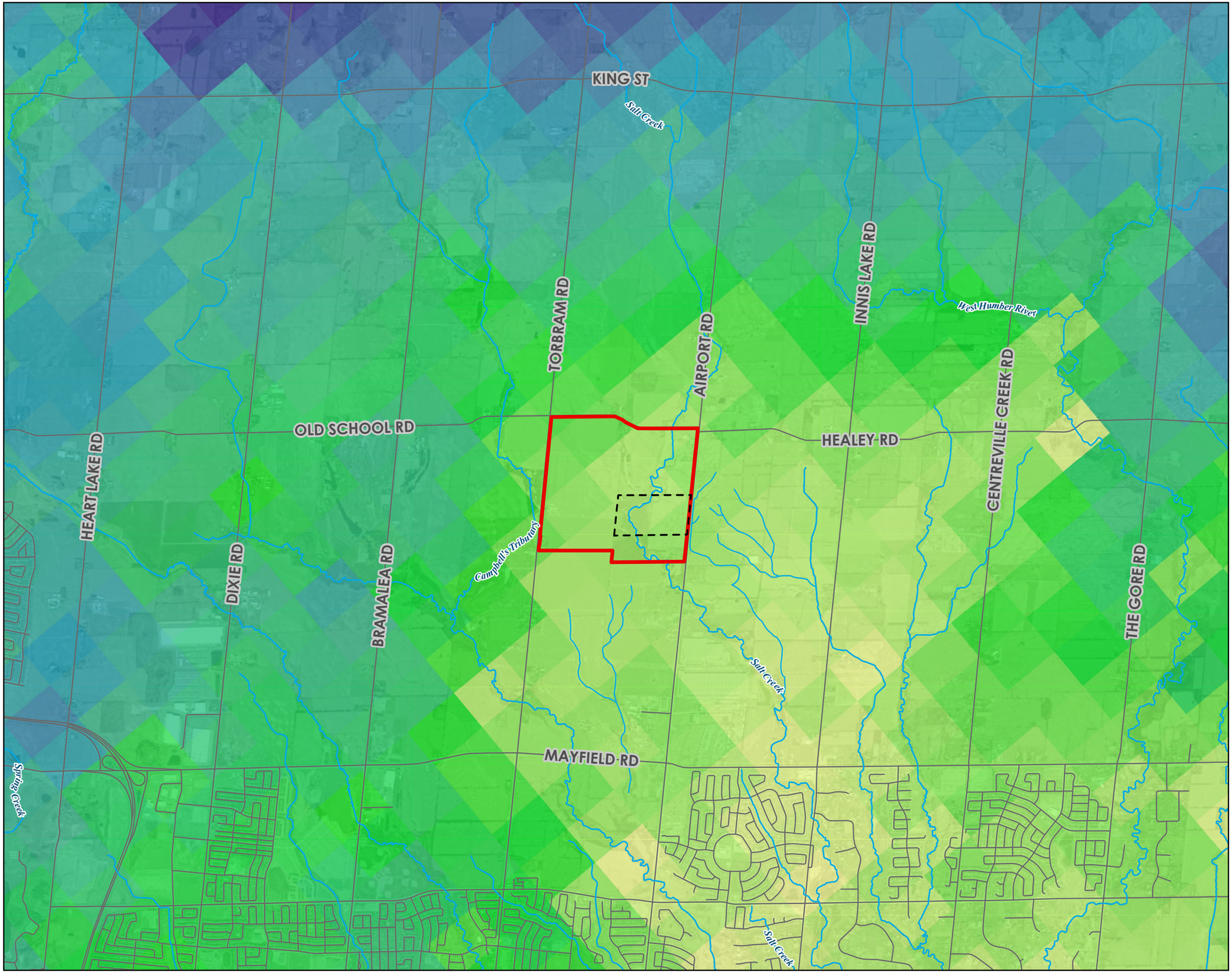
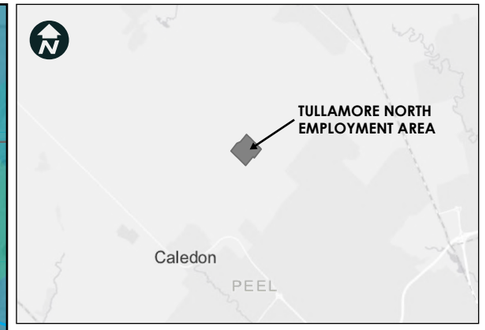
FIGURE 4: SURFICIAL GEOLOGY

CROZIER





LEGEND

- Broccolini Lands
- Primary Study Area (Secondary Plan Limits)
- Watercourse

Drift Thickness

Thickness in m

262

0

0 75 150 300 Metres

Source: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, Esri, © OpenStreetMap contributors, HERE, Garmin, USGS, EPA, NPS, NRCan

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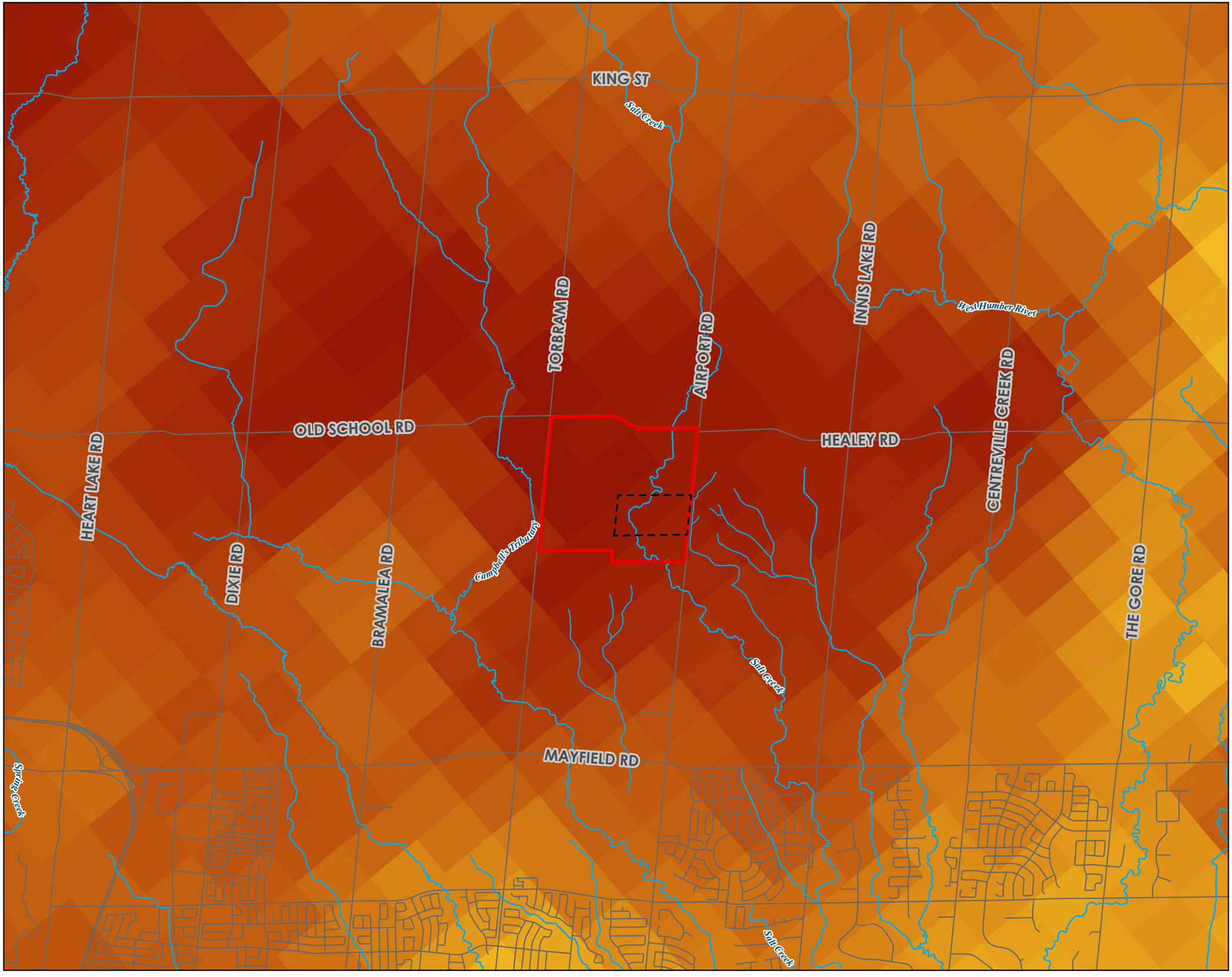
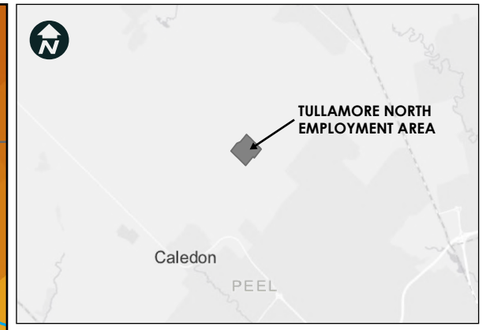
FIGURE 5: DRIFT THICKNESS

CROZIER





LEGEND

- Broccolini Lands
- Primary Study Area (Secondary Plan Limits)
- Watercourse

Bedrock Topography

masl

587

-50

0 75 150 300 Metres

Source: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, Esri, © OpenStreetMap contributors, HERE, Garmin, USGS, EPA, NPS, NRCan

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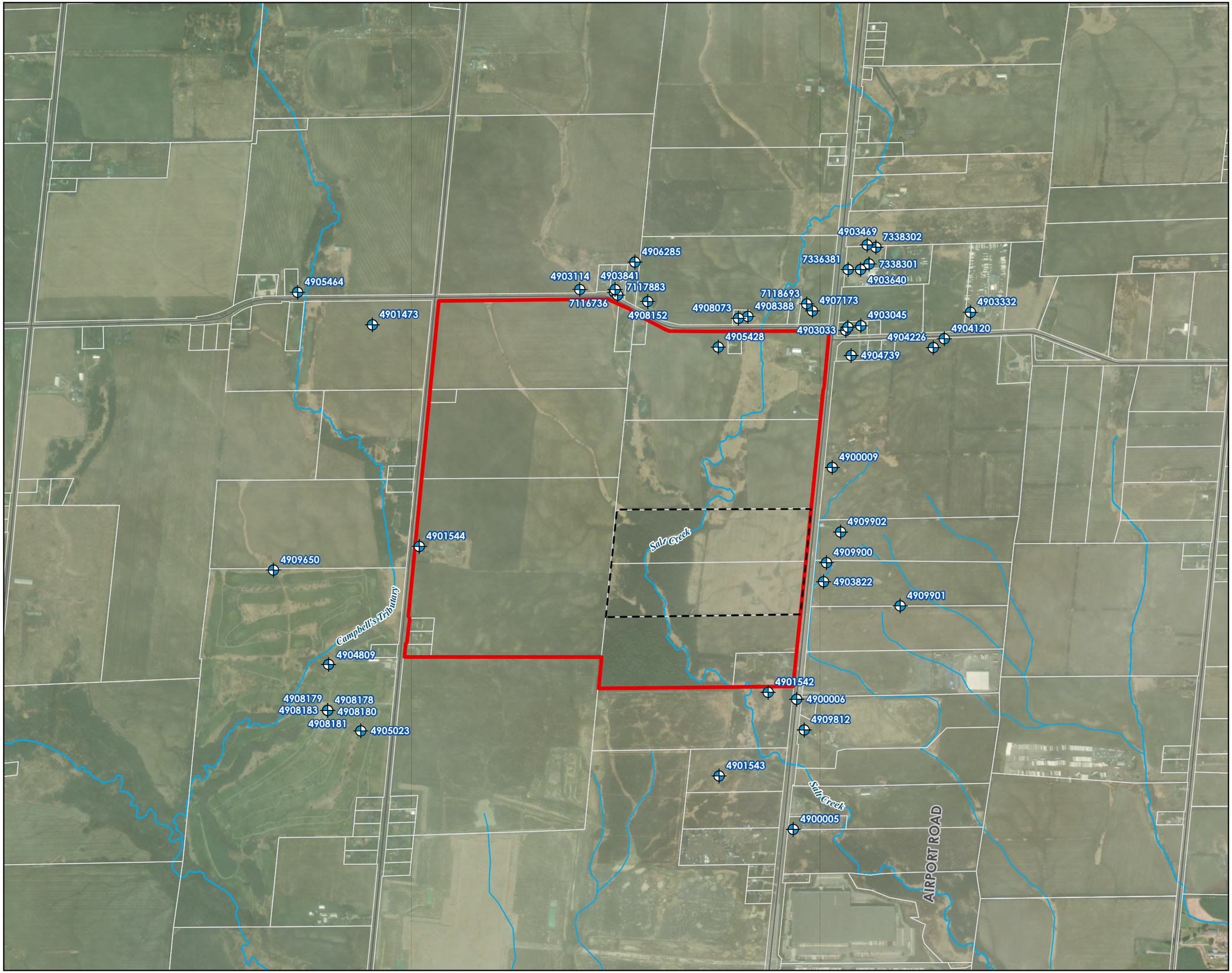
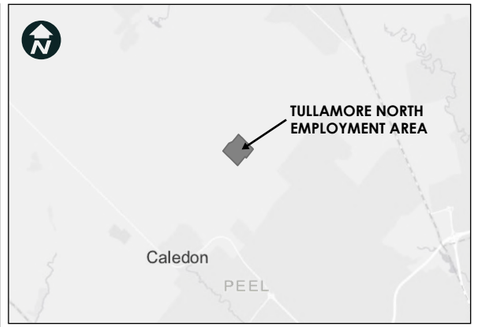
FIGURE 6: BEDROCK TOPOGRAPHY

CROZIER





LEGEND

- MECP Well
- Broccolini Lands
- Primary Study Area (Secondary Plan Limits)
- Assessment Parcel (Peel)
- Watercourse

0 180 360 720 Metres

Source: Peel Region, Maxar, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, Esri, © OpenStreetMap contributors, HERE, Garmin, USGS, EPA, NPS, NRCan

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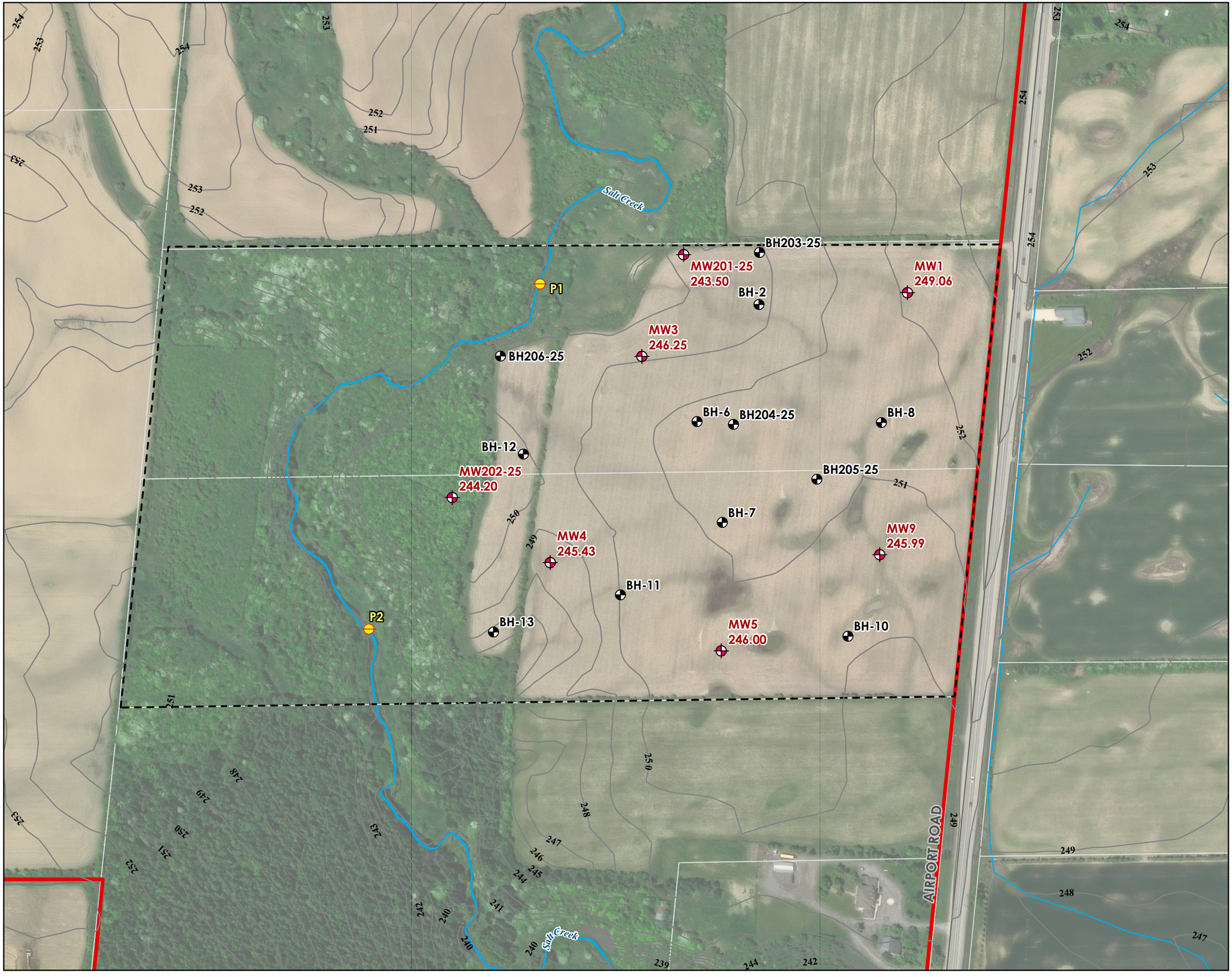
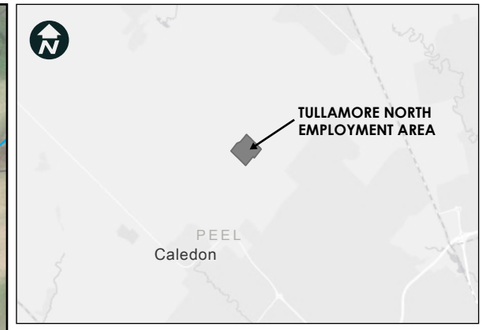
FIGURE 7: MECP WELL LOCATION PLAN

CROZIER





LEGEND

- Broccolini Lands
- Primary Study Area (Secondary Plan Limits)
- Assessment Parcel (Peel)
- Watercourse
- Monitoring Well
- Piezometer
- Borehole by MTE
- Contours

0 40 80 160 Metres

Source: City of Brampton, Microsoft, Vantor, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, Esri, © OpenStreetMap contributors, HERE, Garmin, USGS, EPA, NPS, NRCan

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FIGURE 8: WELL LOCATION PLAN

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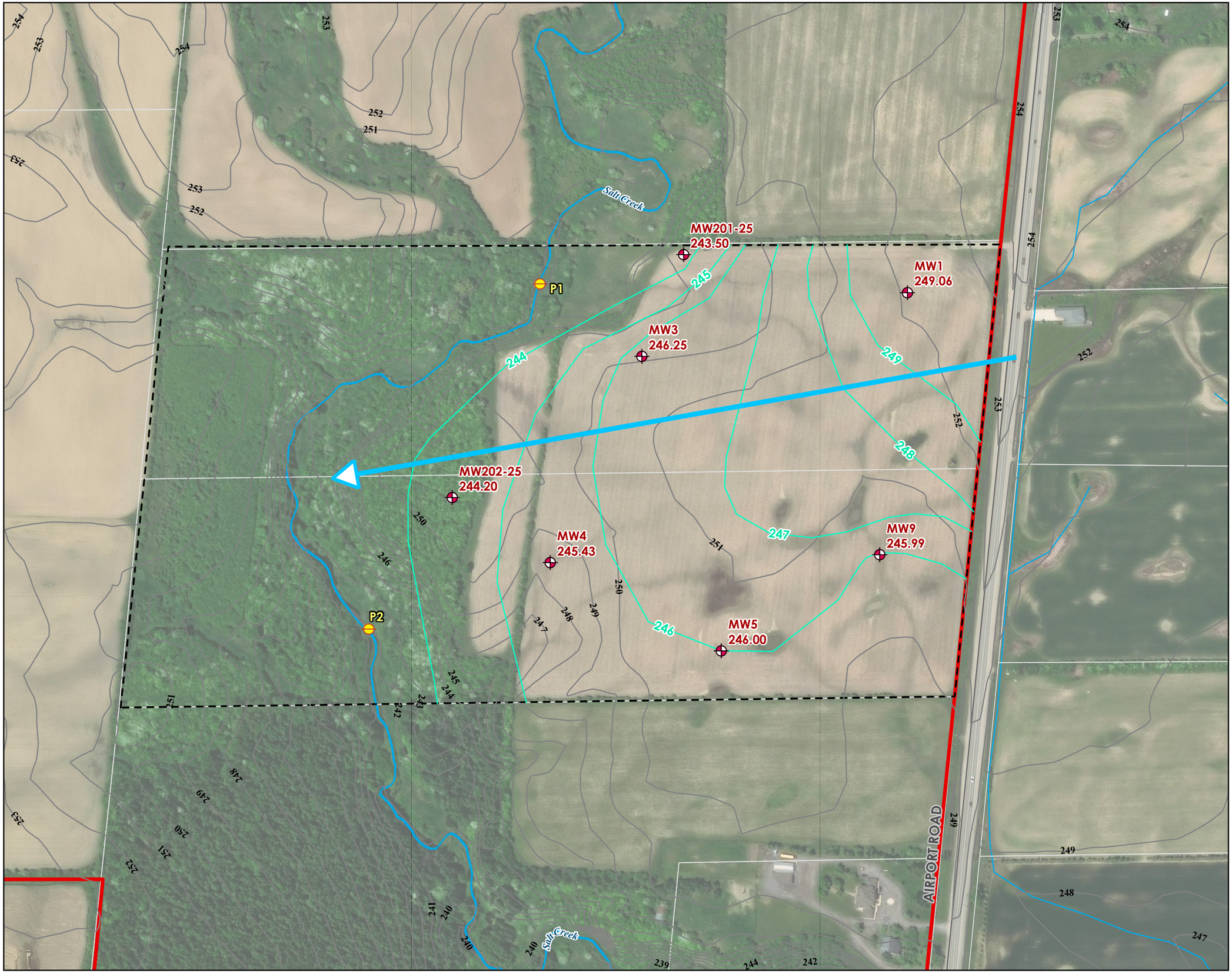

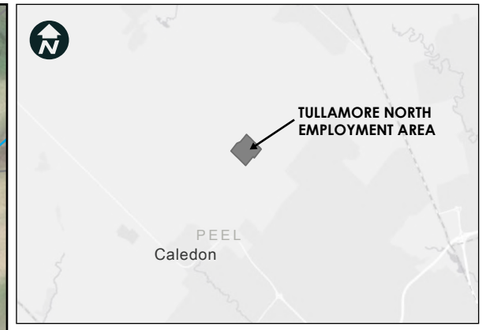

LEGEND

- Broccolini Lands
- Primary Study Area (Secondary Plan Limits)
- Assessment Parcel (Peel)
- Watercourse
- Monitoring Well
- Piezometer
- Contours
- Interpreted Potentiometric Contour
- Interpreted Groundwater Flow Direction

0 40 80 160 Metres

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FIGURE 9: INTERPRETED GROUNDWATER FLOW DIRECTION

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