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A REPORT TO
SORBARA DEVELOPMENT GROUP.

HYDROGEOLOGICAL ASSESSMENT
PROPOSED RESIDENTIAL DEVELOPMENT

6490 FIRST LINE AND 8076 WELLINGTON 19
TOWNSHIP OF CENTRE WELLINGTON (FERGUS)

REFERENCE NO. 2603-W021

JULY 6, 2026

DISTRIBUTION

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ISSUES AND REVISIONS REGISTRY

SEL Reference No.	Report Description	Date	Description of Issued and/or Revision
2603-W021	Draft	April 24, 2026	Preliminary Draft Hydrogeological Assessment Report
2603-W021	Draft	July 6, 2026	Draft Hydrogeological Assessment Report
2603-W021	Final	July 6, 2026	Final Hydrogeological Assessment Report

1.0 EXECUTIVE SUMMARY

Soil Engineers Ltd. (SEL) was retained by Sobara Development Group to conduct a preliminary hydrogeological assessment for the property with a municipal address of 6490 First Line, in the Township of Centre Wellington (Fergus), Ontario (the Subject Site).

The Subject Site is located on the northwest of the intersection of First Line and Wellington Road 19. The Subject Site is bounded by industrial properties grassland to the north, First Line and vacant land to the east, Belwood Road and residential properties to the south, and residential properties to the west. Location of the Subject Site is shown on **Drawing 1**.

The Subject Site currently comprises agricultural land and wooded area within the northwest to west portions. Furthermore, a residential building and associated access road and garage present at the Subject Site.

Based on the Draft Plan of Subdivision prepared by Weston Consulting dated June 23, 2026, the proposed development of the residential subdivision at the Subject Site includes the construction of forty-five (45) residential blocks, with an assumed 1-level basement, associated roads, underground services, parks and a Stormwater Management (SWM) pond within the developable portions. Additionally, external services are proposed along Garafraxa Street East (Belwood Road).

The current investigation revealed that:

- The subsoil investigation has revealed that beneath the topsoil, the Subject Site mainly comprises of silt, silty sand, sandy silt, and sandy silt till deposits extending to the maximum termination depth of investigated at 8.0 metres below ground surface (mbgs).
- The findings of the current study confirms that the groundwater level elevations in the monitoring wells range from El. 426.2 masl at BH/MW 2 and 417.8 masl at BH/MW 10.
- As a conservative approach, hydraulic conductivity of 1.6 x 10^{-7} m/sec (in situ hydraulic conductivity testing from BH/MW 9) was considered for the sandy silt till unit within the footprint of the proposed external sewer service. Furthermore, Hydraulic conductivities of 8.1 x 10^{-7} m/sec (in situ hydraulic conductivity testing from BH/MW 1), 3.6 x 10^{-7} m/sec (geomean of in situ hydraulic conductivity testing from BH/MWs 3, 5, and 8), and 3.0 x 10^{-6} m/sec (geomean of in situ hydraulic conductivity testing from BH/MWs 2, 4, and 6) were considered for the silt, sandy silt till, and sandy silt units.
- Total preliminary anticipated construction (short-term) dewatering flow rates including groundwater seepage with a safety factor of 1.5 and storm even, during the construction of the proposed SWMP, external underground services (considering 50.0 m/day length of the active trench), and residential blocks could reach up to 633,800.0 L/day, 22,650.0 L/day, and 540,400.0 L/day, respectively. As such, filing an EASR with the MECP is required, for the excavation and construction of the SWMP and the residential blocks, but it is not required for the installation of the proposed external underground services considering the assumption made in this report and the

water taking is kept below the 50,000.0 L/day. Additionally, applying for a discharge permit with the Township of Centre Wellington is required if the collected water during construction is proposed to be conveyed to the sewer system.

- The preliminary estimated maximum total long-term foundation drainage flow rate reaches 238,300.0 L/day, including infiltration and groundwater with a safety factor of 1.5, which does not exceed 379,000 L/day for the proposed residential blocks. As such, filing PTTW with MECP is not required. However, obtaining a discharge agreement from the Township of Centre Wellington is required if long-term foundation drainage effluent is proposed to be conveyed to the sewer system.
- Groundwater quality exceeds the Township of Centre Wellington Storm Sewer By-Law standards for TSS, but it meets the Township of Centre Wellington Sanitary Sewer Use By-Law standards for the unfiltered groundwater samples. The results suggest that any short-term construction dewatering, or long-term foundation drainage discharge would not be acceptable for disposal to the Township of Centre Wellington storm sewer without pre-treatment to lower the elevated TSS, but should be acceptable for disposal management to the Township of Centre Wellington sanitary sewer without any significant pre-treatment being required.
- The conceptual ZOI for dewatering at the proposed SWMP, external underground services, and residential block development reaches 14.3 m, 6.1 m, and 20.8 m away from dewatering areas, respectively.
    - There are existing roads within the conceptual ZOI for construction. As such, potential risk for ground settlement for the nearby structures is expected due to dewatering. If conventional sump and pump is used, the impacts will be minimal. However, if active dewatering approach is proposed, it is recommended a professional geotechnical engineer is consulted in advance of excavation and construction. Since the current assailment is considered preliminary, potential impact assessment to the nearby structures should be revised when further details become available for review.
    - Record review, including a review of Draft Plan of Subdivision prepared by Weston Consulting dated June 23, 2026, indicates that wetland features, not evaluated per Ontario Wetland Evaluation System (OWES), wooded areas and a watercourse are located on the west and south west portions of the Subject Site. The watercourse is located within the ZOI for the excavation of the proposed SWMP, as such a monitoring and mitigation plan is proposed for the watercourse. The wetland is located outside the ZOI, as such no impacts to the wetland are anticipated pertaining to the proposed development.
    - A review of the MECP well records confirmed that there are one hundred thirteen (113) records for water supply wells that are registered within 500 m of the Subject Site. There are records for water supply wells that fall within the conceptual ZoI for dewatering, and one water supply well located at the Subject Site. As such, a private water supply well

study for the water supply well records located within the 500 m radius of the Subject Site should be conducted a few weeks before construction.

2.0 INTRODUCTION

2.1 Site Location and Project Description

Soil Engineers Ltd. (SEL) was retained by Sorbara Development Group to conduct a preliminary hydrogeological assessment for the property with a municipal address of 6490 First Line, in the Township of Centre Wellington (Fergus), Ontario (the Subject Site).

The Subject Site is located on the northwest of the intersection of First Line and Wellington Road 19. The Subject Site is bounded by industrial properties to the north, First Line and vacant land to the east, Garafaxa Street East (Belwood Road) and residential properties to the south, and residential properties to the west. Location of the Subject Site is shown on **Drawing 1**.

The Subject Site currently comprises agricultural land and wooded area within the northwest to west portions. Furthermore, a residential building and associated access road and garage present at the Subject Site.

Based on the Draft Plan of Subdivision prepared by Weston Consulting dated June 23, 2026, the proposed development of the residential subdivision at the Subject Site includes the construction of forty-five (45) residential blocks, with an assumed 1-level basement, associated roads, underground services, parks and a Stormwater Management (SWM) pond within the developable portions. Additionally, external services are proposed along Garafraxa Street East (Belwood Road).

2.2 Project Objectives

The current hydrogeological assessment report presents regional and local setting of the Subject Site. The findings of the fieldwork, including subsoil investigation, groundwater level monitoring, groundwater quality assessment, and hydraulic conductivity testing are presented in the report. Potential needs for short-term dewatering and long-term foundation drainage control are assessed, and hydrogeological impacts of the proposed development to the nearby groundwater receptors including water supply wells, natural heritage features, and structures are assessed.

This report provides comments on needs for mitigating the potential impacts of the proposed development to the groundwater receptors, and structures. Comments and recommendations are provided on any needs for applying for a Permit to Take Water (PTTW), or posting Environmental Activity and Sector Registry (EASR) with the Ministry of the Environment, Conservation and Parks (MECP). However, considering the early stage of the project, the estimated flow rates and comments and recommendation are considered preliminary.

2.3 Scope of Work

The scope of work for the preliminary hydrogeological assessment is summarized below:

- *Background Review:* Available background geological and hydrogeological information for the Subject Site including topographic mapping, surface geological, natural heritage features databases, Township of Centre Wellington (Fergus) official plans, Grand River Conservation Authority (GRCA) regulated area plans, and MECP water well records were reviewed.
- *Fieldwork:* Fieldwork includes inspecting the Subject Site and surrounding properties with respect to the natural features, groundwater receptors, and structures, as well as installing and developing the monitoring wells. Additionally, groundwater levels within the installed monitoring wells were monitored over four (4). In-situ hydraulic conductivity testing was completed within the installed monitoring wells. One (1) set of groundwater samples was collected and submitted to a CALA laboratory to characterize groundwater quality in comparison with the Township of Centre Wellington Sanitary and Storm Sewer Use By-Law (By-Law No. 2022_66) parameters.
- *Preliminary Short-Term Dewatering Needs:* Based on a review of the available design drawings and findings of the current subsurface investigation, preliminary short-term dewatering flow rates including groundwater seepage, and anticipated water that should be collected over potential storm events were calculated. Potential needs for preparation of a mitigation plan was discussed to mitigate potential short-term dewatering impacts to the nearby groundwater receptors (including natural heritage features and water supply wells), and structures, if applicable. However, the provided comments and recommendations are considered preliminary and should be updated, when further details become available for review.
- *Preliminary Long-term foundation Drainage Control Requirement:* Based on a review of the available design drawings, findings of the current subsurface investigation, and recommendations provided in the geotechnical investigation report, preliminary total long-term foundation drainage flow rate including groundwater seepage, and anticipated flow from infiltration source was estimated, if required.
- *Preliminary Permit Requirements:* Considering the estimated preliminary short-term construction dewatering and preliminary long-term foundation drainage flow rates, recommendations were provided on any need for applying for a PTTW or posting on the EASR with the MECP, and the Township of Centre Wellington, if required. However, the provided comments and recommendations are considered preliminary and should be updated, when further details become available for review.

3.0 APPLICABLE REGULATIONS AND OFFICIAL PLANS

The regulations and policies relevant to this preliminary hydrogeological assessment and the location of the Subject Site within the official plans are summarized below.

3.1 Grand River Conservation Authority (GRCA) Policies and Regulation (O. Reg. 41/24)

Under Section 28 of the Conservation Authorities Act, local conservation authorities are mandated to protect the health and integrity of the regional greenspace system, and to maintain or improve the hydrological and ecological functions performed by valley and stream corridors. The GRCA, through its regulatory mandate, is responsible for issuing permits under Ontario Regulation (O. Reg.) 41/24, Development, Interference with Wetlands and Alterations to Shorelines and Watercourses for development proposal or Site alteration work to shorelines and watercourses within the regulated areas.

GRCA Online Mapping Tool was reviewed on June 29, 2026. It is our understanding that the watercourse which traverses through the southwest boundary of the Subject Site and in its vicinity are located within GRCA Regulated Area. As such, it is anticipated that obtaining a permit from the GRCA under O. Reg. 41/24 will be required for the proposed development.

3.2 Clean Water Act

The MECP mandates the protection of existing and future sources of drinking water under the Clean Water Act, 2006 (CWA). Initiatives under the CWA include the delineation of Wellhead Protection Areas (WHPAs), significant groundwater recharge areas (SGRAs) and Highly Vulnerable Aquifers (HVAs) as well as the assessment of drinking water quality and quantity threats within Source Protection Regions. Source Protection Plans are developed under the CWA and include the restriction and prohibition of certain types of activities and land uses within WHPAs.

Based on a regional-scale source water protection mapping (Source Water Protection Information atlas) provided by the MECP reviewed on June 29, 2026, the Subject Site is located within the following policy area:

- It is located within wellhead Protection Areas B and C with scores of 8 and 6, respectively. It is anticipated, that Source Water Impact Assessment and Mitigation Plan (SWIAMP) will be required for proposed Residential Subdivision Development.
- It is located in Wellhead Protection Area Q1 and Wellhead Protection Area Q2 with a stress level classified as “Significant”.
- It is located in a Significant Groundwater Recharge Area, with a score classified as “N/A” and an Issue Contributing Area, with a contaminant classified as “Chloride Trichloroethylene”.
- It is partially located within Intake Protection Zone 3 with a score of 3.6.

- The Subject Site is not located in an Intake Protection Zone Q, Highly Vulnerable Aquifer, and Event Based Area.

3.3 Township of Centre Wellington Official Plan

The Township of Centre Wellington Official Plan sets up policies that deal with legislative and administrative concerns, guides physical growth, and addresses social, economic, and environmental concerns. The Official Plan provides land use planning designations and identifies areas of environmental significance where more stringent policies may apply for development applications.

Township of Centre Wellington Official Plan maps were reviewed for the current study with the results summarized as below:

- Schedule A1 (Land Use Plan) - A review of the map, dated March 2025, indicates that the Subject Site is located outside the Urban Boundary.
- Schedule C (Groundwater Management Plan) - A review of the map, dated April 2003, shows that the Subject Site is located within a Potential Recharge Area and is partially within a Highly Vulnerable Aquifer.

4.0 METHODOLOGY

4.1 Borehole Advancement and Monitoring Well Installation

Borehole drilling and monitoring well construction were performed between March 25 and 27, 2026. The program consisted of the drilling of ten (10) boreholes (BH) and the installation of nine (9) monitoring wells (MW). The approximated boreholes/monitoring well locations are shown on **Drawing 2**.

The borehole drilling and monitoring well construction were completed by a licensed water well contractor, under the full-time supervision of a geotechnical technician from SEL, who also logged the subsoil strata, encountered during borehole advancement, and collected representative subsoil samples for textural classification. The boreholes were drilled using continuous flight, solid-stem augers. Detailed descriptions of the encountered subsoil strata and groundwater conditions are presented on the boreholes, showing the monitoring well construction details, on the enclosed A**ppendix A**.

The monitoring wells were constructed using 50-mm diameter Trilock pipes and 1.5 m long 10-slot well screens, which were installed in each of the boreholes in accordance with Ontario Regulation (O. Reg.) 903. All of the monitoring wells were provided with the monument-type, protective steel casings at and above the ground surface.

The UTM coordinates and ground surface elevations at the monitoring wells' locations, as well as the monitoring well construction details, are presented in **Table 4-1**. The ground surface elevations and horizontal coordinates at the monitoring well locations were surveyed by SEL at the time of the investigation, using a handheld Global Navigation Satellite System survey equipment (Trimble Geoexplorer unit TSC3) which has an accuracy of ±0.10 m.

Table 4-1- Monitoring Well Installation Details

Monitoring Well ID	Installation Date	UTM Coordinates (m)		Ground El. (masl)	Screen Interval (mbgs)	Soil in the Screen Interval	Casing Dia. (mm)	Protective Casing Type
		Easting	Northing					
BH/MW 1	March 26, 2026	550863	4841501	425.5	4.6 – 6.1	Silt	50	Monument
BH/MW 2	March 26, 2026	551077	4841294	427.0	3.1 – 4.6	Sandy silt	50	Monument
BH/MW 3	March 25, 2026	550658	4841385	423.8	4.6 – 6.1	Sandy silt till	50	Monument
BH/MW 4	March 26, 2026	550885	4841206	424.3	3.5 – 5.0	Sandy silt	50	Monument
BH/MW 5	March 25, 2026	550632	4841147	420.5	4.6 – 6.1	Sandy silt till	50	Monument
BH/MW 6	March 26, 2026	550929	4840951	425.7	4.6 – 6.1	Sandy silt	50	Monument
BH/MW 8	March 25, 2026	550767	4840759	419.4	6.1 – 7.6	Sandy silt till	50	Monument
BH/MW 9	March 27, 2026	550882	4840817	421.9	6.1 – 7.6	Sandy silt till	50	Flush mount
BH/MW 10	March 27, 2026	550798	4840698	419.8	6.1 – 7.6	Sandy silt till	50	Flush mount

Notes:
mbgs metres below ground surface
masl metres above sea level

4.2 MECP Water Well Records Review

MECP Water Well Records (WWRs) were reviewed for the registered wells located at the Subject Site and within 500 m radius of the Subject Site boundaries (Study Area). The water well records indicate that one hundred ninety-five (195) wells are located within the 500 m zone of influence Study Area relative to the Subject Site. The findings of the MECP well records are summarized in the **Section 5.6** of the current report.

4.3 Groundwater Monitoring

All nine (9) installed monitoring wells were utilized to measure and monitor groundwater levels. Monitoring wells were developed, and the groundwater monitoring program confirmed the stabilized groundwater level beneath the Subject Site. The stabilized groundwater levels were manually measured over four (4) monitoring events from March 31 to June 5, 2026, with the results presented in **Section 7.1**.

4.4 In-Situ Hydraulic Conductivity Test

SEL has conducted in-situ hydraulic conductivity tests (falling head or rising head) at all BH/MW locations. The in-situ hydraulic conductivity test (falling head and rising head) provides estimated hydraulic conductivity (K) for subsoil strata at the depths of the well screens. The monitoring wells were developed in advance of the tests. Well development involves the purging and removal of groundwater from each monitoring well to remove remnants of clay, silt and other debris introduced into the monitoring well during construction, and to induce the flow of formation groundwater through the well screens, thereby improving the transmissivity of the subsoil strata formation at the well screen depths.

The in-situ falling head hydraulic conductivity test involves the placement of a slug of known volume into the monitoring well, below the water table, to displace the groundwater level upward. The in-situ rising head hydraulic conductivity test involves removing a volume of water from the monitoring well to displace the groundwater level downward. The rate at which the water level recovers to static conditions (rising head/falling head) is tracked manually using a water level tape and a data logger. Slug tests in the monitoring wells with partially submerged screens may exhibit double straight-line effect due to the filter pack drainage. Therefore, the data that represent the filter pack around the screen is eliminated during the interpretation of the slug test. The rate at which the water table recovers to static conditions is used to estimate the K value for the water-bearing strata formation at the well screen depth using the Bouwer and Rice method (1976). The findings for the hydraulic conductivity testing will be presented in **Section 7.3** of the updated report.

4.5 Groundwater Quality Assessment

Groundwater quality assessment was completed by SEL on May 8, 2026. One (1) set of groundwater samples was collected from one (1) selected monitoring well (BH/MW 8) to characterize its quality for

evaluation against the Township of Centre Wellington Sanitary and Storm Sewer Use By-Law (BL_2022_66) parameters. This is performed to assess whether any anticipated dewatering effluent or long-term foundation drainage flow can be disposed of into the town's sewer system during construction, or following site development for any long-term foundation drainage.

4.6 Review of Regional Data and Available Reports for the Subject Site

The maps, data, and documents provided by the MECP, Ontario Geological Survey (OGS), Ministry of Natural Resource (MNR), and GRCA were reviewed, with the findings summarized in S**ections 5** and **6**.

5.0 REGIONAL AND LOCAL SITE SETTING

5.1 Regional Geology

The current understanding of the surface geological setting of the Subject Site is based on scientific work conducted by the OGS (OGS, 2003). A review of the map indicates that the Subject Site is located primarily within an area mapped as glaciofluvial deposits (7a), consisting of river deposits and delta topset facies and sandy deposits. The west and east portions of the Subject Site are mapped within the ice-contact stratified deposits (6), consisting of sand and gravel, minor silt, clay, and till. **Drawing 3** illustrates the mapped surficial geology for the Subject Site and the surrounding area.

5.2 Regional Physiography

The Subject Site is mainly located within a regional physiography of Southern Ontario known as Guelph Drumlin Field. The Guelph Drumlin Field within the vicinity of the Subject Site comprises of Till Plans (Drumlinized) (Chapman and Putnam, 1984). **Drawing 4** shows the location of the Subject Site within the regional physiography map.

5.3 Regional Topography and Drainage

A review of a regional topography map presented on **Drawing 5** indicates that topography of the Subject Site slopes in a southeast direction. The ground surface elevation ranges approximately between 419.1 metres above sea level (masl) to 428.3 masl based on ground surface elevations measured at the borehole and monitoring wells' locations.

5.4 Watershed Setting

The Subject Site is located within the West Montrose-Grand River subwatershed that falls in the GRCA jurisdiction.

5.5 Local Surface Water and Natural Heritage Features

MNR database was reviewed for any natural heritage features including, watercourses, bodies of water, wetland features, Area of Natural and Scientific Interest (ANSI) and wooded areas. **Drawing 6** shows the location of the Subject Site within the surrounding Natural Heritage Features.

Record review indicates that wetland features, not evaluated per Ontario Wetland Evaluation System (OWES), wooded areas and a watercourse are located on the west and south west portions of the Subject Site.

Record review also indicated the same above noted features extending beyond the property boundary along the northwest and southwest boundaries of the Subject Site. Additionally, Grand River is located approximately 620 m south of the Subject Site.

5.6 Ground Water Resources (MECP Well Records)

MECP well record database was reviewed for records located within a radius of 500 m from the approximate Site boundary (Study Area). The records indicate that one hundred and ninety-five (195) well records are located within the Study Area relative to the Subject Site boundaries. A summary of data obtained from records review is presented in **Appendix B**.

The locations of the well records, based on the UTM coordinates provided by the records, are shown on **Drawing 7**. Details of the MECP water well records that were reviewed are provided in **Appendix B**. The first and final status of the reviewed records are summarized in **Table 5-1**.

Table 5-1 - MECP Well Record Summary

Water Use (Final Status)	
Status	**Number of Records**
Water Supply	113
Test Hole	24
Abandoned-Other	22
Observation Wells	20
Unknown	13
Abandoned-Supply	3

A summary indicates that one hundred and thirteen (113) water supply wells are listed in close proximity of the Subject Site.

5.7 Active Permit to Take Water Application Record Review

MECP website was reviewed for any active PTTW application records within 1.0 km radius of the Subject Site on April 17, 2026. Record review indicates there are three (3) record for active PTTW within the Study Area. A summary of PTTW applications obtained from records review is presented in **Table 5-2**.

Table 5-2 – Active PTTW Applications

Permit Number	Permit Holder	Purpose	Maximum L/day	Source Type	Distance from the Study Alignment (km)
1546-DG8JAY	The Corporation of the Township of Centre Wellington	Water Supply	17,280,000.0	Surface and Groundwater	0.95
5587-9Y2QMX	Fergus Mill Power Company Ltd.	Industrial	578,888,000.0	Surface Water	1.0
1546-DG8JAY	The Corporation of the Township of Centre Wellington	Water Supply	17,280,000.0	Surface and Groundwater	1.0

6.0 SOIL LITHOLOGY AND SUBSURFACE INVESTIGATION

The subsoil investigation has revealed that beneath the topsoil, the Subject Site mainly comprises of silt, silty sand, sandy silt, and sandy silt till deposits extending to the maximum termination depth of investigation at 8.0 metres below ground surface (mbgs). Information regarding borehole logs is presented in **Appendix A**. The approximate locations of boreholes are shown on **Drawing 2**. Additionally, a subsurface profile key plan and geological subsurface profile are presented on **Drawings 8-1**, **8-2A** and **8-2B**, respectively. Based on a review of the borehole logs prepared by SEL, the stratigraphy beneath the investigated areas of the Subject Site generally consists of the followings:

6.1 Top Soil and Pavement

The topsoil veneer, which was approximately 150 mm to 300 mm in thickness, was contacted in all BH/MW, except for BH/MWs 9 and 10. It should be noted that a layer of asphalt pavement was found at BH/MW 9 and 10, which was approximately 175 mm and 50 mm thick, respectively.

6.2 Earth Fill

A layer of earth fill comprising of sandy silt and organic inclusions was found to be approximately 0.8 m in thickness, in BH/MW 9. A layer of earth fill comprising of gravelly sand and organic inclusions was found to be 0.9 m in thickness, in BH/MW 10.

6.3 Silt

Silt was identified at BH/MWs 1, 3, 4, and 5. The silt is very loose to compact, in relative density. The moisture contents for the retrieved subsoil samples indicate generally very moist to wet conditions. Grain size analyses were performed on three (3) subsoil samples, and the gradation is plotted in **Appendix A** (**Figures 11, 12, and 13)**.

6.4 Sandy Silt

Sandy silt was contacted at various parts of the soil stratigraphy at all BH/MW locations with the exception on BH/MWs 9 and 10. The sandy silt is very loose to compact, in relative density. The moisture contents for the retrieved subsoil samples generally indicate moist to wet conditions. Grain size analysis was performed on one (1) subsoil sample, and the gradation is plotted in **Appendix A** (**Figures 14)**.

6.5 Silty Sand

The silty sand unit was encountered at various parts of the soil stratigraphy at BH/MWs 2, 4, and 6. The silty sand consists of traces of clay. The silty sand is loose to compact in consistency. The moisture contents

for the retrieved subsoil samples generally indicate, very moist to wet conditions. Grain size analysis was performed on one (1) subsoil sample, and the gradation is plotted in **Appendix A (Figure 15)**.

6.6 Sandy Silt Till

The sandy silt till unit was encountered at BH/MWs 3, 5, 8, 9, and 10 and BH 7. The sandy silt till consists of traces of clay and gravel. The sandy silt till is compact to very dense, generally compacted in consistency. The moisture contents for the retrieved subsoil samples indicate generally damp to very moist conditions. Grain size analyses were performed on two (2) subsoil samples, and the gradation is plotted in **Appendix A (Figures 16** and **17)**.

7.0 LOCAL HYDROGEOLOGICAL STUDY

7.1 Monitoring Well Development and Groundwater Level Monitoring

The groundwater levels in the monitoring wells were measured, manually between March 31 and June 5, 2026 to record the fluctuation of the shallow groundwater table beneath the Subject Site.

SEL measured the groundwater levels using an interface probe (Heron Water Tape Series #1900). A summary of the groundwater level observations and their corresponding elevations are provided in **Table 7-1**.

Table 7-1- A Summary of Groundwater Monitoring

MW ID	Unit	Groundwater Level			
		March 31, 2026	April 17, 2026	May 8, 2026	June 5, 2026
BH/MW 1	mbgs	0.3	0.2	0.8	1.3
	masl	425.2	425.3	424.7	424.2
BH/MW 2	mbgs	1.1	0.8	1.9	1.8
	masl	425.9	**426.2**	425.1	425.2
BH/MW 3	mbgs	0.9	0.2	0.9	1.2
	masl	422.9	423.6	422.9	422.6
BH/MW 4	mbgs	0.0	-0.1	0.6	1.1
	masl	424.3	424.4	423.7	423.2
BH/MW 5	mbgs	0.4	0.2	0.5	0.6
	masl	420.1	420.3	420.0	419.9
BH/MW 6	mbgs	2.8	2.0	2.4	2.7
	masl	422.9	423.7	423.3	423.0
BH/MW 8	mbgs	0.4	0.5	0.7	1.3
	masl	419.0	418.9	418.7	418.1
BH/MW 9	mbgs	0.9	0.9	1.0	1.5
	masl	421.0	421.0	420.9	420.4
BH/MW 10	mbgs	1.4	1.3	1.3	2.0
	Masl	418.4	418.5	418.5	**417.8**

Notes:
mbgs metres below ground surface
masl metres above sea level

As shown in **Table 7-1**, the highest and lowest stabilized shallow groundwater levels within the monitoring wells were measured at El. 426.2 masl at BH/MW 2 and 417.8 masl at BH/MW 10, respectively.

7.2 Groundwater Flow Pattern

The shallow groundwater flow pattern at the Subject Aite is shown on **Drawing 9**. The recorded groundwater levels measured on April 17, 2026 at the selected monitoring wells was considered for the interpretation of the shallow groundwater flow direction beneath the Subject Site. A review of the interpreted shallow groundwater flow pattern indicates that shallow groundwater flows in a westerly/southwesterly direction towards a tributary of Grand review crossing the west portion of the Subject Site.

7.3 Single Well Response Test

The nine (9) BH/MWs underwent a single well response testing (SWRTs) to assess the hydraulic conductivity (K) for saturated shallow aquifer or water bearing unit at the depths of the well screens. Each monitoring well was equipped with a digital transducer to record the fluctuation made to complete the SWRT. The results of the SWRT tests are presented in **Appendix C**, with a summary of the findings provided in **Table 7-2**.

Table 7-1- A Summary of Falling Head Hydraulic Conductivity Testing

Well ID	Ground El. (masl)	Monitoring Well Depth (mbgs)	Screen Interval (mbgs)	Screened Soil Strata	Hydraulic Conductivity (K in m/s)	Test Method
BH/MW 1	425.5	6.1	4.6 – 6.1	Silt	8.1×10^{-7}	Falling Head Test
BH/MW 2	427.0	4.6	3.1 – 4.6	Sandy silt	9.7×10^{-7}	Falling Head Test
BH/MW 3	423.8	6.1	4.6 – 6.1	Sandy silt till	2.0×10^{-6}	Falling Head Test
BH/MW 4	424.3	5.0	3.5 – 5.0	Sandy silt	9.2×10^{-6}	Falling Head Test
BH/MW 5	420.5	6.1	4.6 – 6.1	Sandy silt till	3.5×10^{-8}	Falling Head Test
BH/MW 6	425.7	6.1	4.6 – 6.1	Sandy silt	3.0×10^{-6}	Falling Head Test
BH/MW 8	419.4	7.6	6.1 – 7.6	Sandy silt till	6.5×10^{-7}	Falling Head Test
BH/MW 9	421.9	7.6	6.1 – 7.6	Sandy silt till	1.6×10^{-7}	Rising Head Test
BH/MW 10	419.8	7.6	6.1 – 7.6	Sandy silt till	7.0×10^{-8}	Falling Head Test

Notes:
mbgs metres below ground surface
masl metres above sea level

7.4 Groundwater Quality

Groundwater quality assessment was completed by SEL on May 8, 2026. One (1) set of groundwater samples was collected from one (1) selected monitoring well (BH/MW 8) to characterize its quality for evaluation against the Township of Centre Wellington Sanitary and Storm Sewer Use By-Law (By-Law No. 2022_66) parameters. Upon sampling, all of the bottles were placed in a cooler for shipment to the analytical laboratory. Sample analysis was performed by SGS Canada Inc., which is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA). Results of the analysis are provided in **Appendix D**, with a discussion of the findings provided below. The chain of custody number for the submitted samples that underwent analysis is 041051.

As per the protocols for the Township of Centre Wellington Sewer Use analysis, a complete set of unfiltered groundwater samples were submitted to the laboratory with the results being presented as totals for various analyzed parameters.

The results of analysis for the unfiltered groundwater indicate one (1) exceedance when compared and evaluated against the Township of Centre Wellington Storm Sewer Use By-Law parameters, but meet the Township of Centre Wellington Sanitary Sewer Use By-Law parameters. The exceedances, together with the storm and sanitary standards criteria, are presented in **Table 7-4**.

Table 7-2 - Groundwater Quality Results compared to Township of Centre Wellington Storm and Sanitary By-Law

BH/MW	Exceeded Parameter	Groundwater Quality Results (mg/L)	Township of Centre Wellington Sanitary Sewer Use Limits (mg/L)	Township of Centre Wellington Storm Sewer Use Limits (mg/L)	Detection Limit (mg/L)
BH/MW 8	Total Suspended Solids (TSS)	**35**	350	15	2

These results suggest that any short-term construction dewatering or long-term foundation drainage flow would not be acceptable for disposal to the Township of Centre Wellington storm sewer without any pre-treatment.

The assessment above is provided solely for comparing groundwater quality against the limits set by the Township of Centre Wellington Sewer Use By-Law Standards. Any discharge should adhere to the respective policies of the jurisdiction. The final design for any dewatering effluent pre-treatment system is the responsibility of the contractors responsible for construction, or of the water treatment system design specialist.

8.0 DISCHARGE WATER CONTROL

8.1 A review of Proposed Development Plans

Based on the Draft Plan of Subdivision prepared by Weston Consulting dated June 23, 2026, the proposed development of the residential subdivision at the Subject Site includes the construction of forty-five (45) residential blocks, with an assumed 1-level basement, associated roads, underground services, parks and a Stormwater Management (SWM) pond within the developable portions. Additionally, external services are proposed along Garafraxa Street East (Belwood Road). The reviewed plans are enclosed in **Appendix E**.

8.2 Review of Geotechnical Report

The following report was reviewed in preparation of this hydrogeological study, "A Report to RBS & EJS Fergus G.P. Inc., A Geotechnical Investigation for Proposed Residential Development, 6410 First Line and 8076 Wellington Road 19, Township of Centre Wellington", (Reference No. 2603-S021), dated May 2026. Report review indicates that:

- The topsoil must be removed from the area of construction. It can be stockpiled and reused in landscaping areas only. Any surplus will have to be disposed off-site.
- The cavity of any demolished structure must be properly backfilled with compacted inorganic soil prior to site grading. All debris must be removed off-site.
- The existing earth fill and weathered soils, in their present state, are not suitable to support any structure sensitive to moment. It must be subexcavated, sorted free of organics and other deleterious material before reusing for structural backfill or engineered fill construction. If they cannot be sorted, they must be removed off site.
- Where the site will be graded with additional fill, the earth fill can be constructed in an engineered manner for foundation, site services and pavement construction.
- The proposed structures can be constructed on conventional spread and strip footings founded on the undisturbed native soils or on engineered fill.
- A Class 'B' bedding, consisting of compacted 19-mm Crusher Run Limestone (CRL) or equivalent, is recommended for the construction of the underground services, where erodible soils or extensive dewatering is required, a Class 'A' concrete bedding can be considered.
- Any excavation must be carried out in accordance with the O. Reg. 213/91.

8.3 Short-Term Construction Dewatering Needs

Based on the Draft Plan of Subdivision prepared by Weston Consulting dated June 23, 2026, the proposed development of the residential subdivision at the Subject Site includes the construction of forty-five (45)

residential blocks, with an assumed 1-level basement, associated roads, underground services, parks and a Stormwater Management (SWM) pond within the developable portions. The Subject Site will be provided with municipal services and paved roadways meeting urban standards. Additionally, external services are proposed along Garafraxa Street East (Belwood Road).

The Draft Plan of Subdivision indicates that the bottom elevation of the proposed SWMP is set at El. 415.5 masl. As recommended by the geotechnical engineer, a clay liner with a thickness of 1.5 m was assumed for the current assessment.

The proposed depths of the external services and residential blocks were not available for review at the time of preparing the current report. As such, the depth of the 1-level basements and external underground services were assumed to be 3 and 5 mbgs, respectively.

The following sections present short-term dewatering flow rates estimated for the excavation and construction of the proposed SWMP, external services, and residential blocks, and long-term foundation drainage flow rate, if applicable estimated for the residential blocks. Details regarding the services and the proposed blocks within the proposed subdivision were not available for review at the time of preparing the report. As such, the discharge water control assessment is considered preliminary.

8.3.1 Methodology

Short-Term Dewatering Calculation: The pumping rate calculation for the construction for the proposed development was performed based on the assumption with each excavation acting as trench considering the dimensions of the proposed excavation boxes. The calculation was based on the equations provided by Powers et al. (2007). For the purposes of this analysis, steady state flow into an open excavation is assumed. Additionally, the equations of radial flow have the following assumptions:

- Ideal aquifer conditions (homogeneous, isotropic, uniform thickness and has infinite areal extent)
- Fully penetrating pumping well
- Only lateral flow to the pumping well

The following equation was used for open trenches and is based on unconfined aquifer conditions (Powers et. al., 2007):

$$Q = \frac{\pi K (H^2 - h^2)}{\ln(R_0 / r_s)} + 2\left[\frac{xK(H^2 - h^2)}{2L}\right]$$

where;

Q = Anticipated pumping Rate (m3/day)
K = Hydraulic Conductivity (m/day)
H = Distance from the static water level to the bottom of the saturated aquifer (m)
h = Depth of water in the well while pumping (m)
R_o = Distance from a point of greatest drawdown to a point where there is zero drawdown (radius of influence) (m)

r_s = Distance to the wellpoints from the centre of the trench, assumed to be half of the trench width (m) for Trench base calculation.

X = Trench Length (m)

L = Distance from a line source to the trench, Ro (m)/2

The calculated pumping rate was multiplied by a factor of safety of 1.5 to account for uncertainties and natural variability in the range of hydraulic conductivity.

Zone of Influence for Dewatering: Furthermore, the conceptual Zone of Influence (ZOI) for dewatering, also known as Radius of Influence (R0), was calculated based on the anticipated maximum drawdown required and the recorded hydraulic conductivity using Sichardt's relationship. The equation used is shown as:

$$R_0 = 3000 \times dH \times K^{0.5}$$

where,

$R_\circ$ = Zone of Influence (m), beyond which there is negligible drawdown

dH= Distance from initial static water level to the dewatering target (m)

K = Hydraulic Conductivity (m/s)

Stormwater flow Estimate: The amount of runoff that could accumulate in the excavation box was also considered for any construction dewatering needs assessment. Therefore, the dewatering flow rates at the Subject Site should also include removing stormwater from the excavation. Additionally, the anticipated flow through infiltration after storm event for the post-development site should be considered.

A review of intensity duration frequency curve (IDF curve) for the year 2010 for the coordinates 43° 43' 15" N, 80° 22' 14" W, the rainfall depth considering 2-year storm event over a 3-hour period per day is approximately 32.3 mm, and a 100-year storm event over a 12-hour period per day is 108 mm. The data was taken from the Ministry of Transportation's (MTO) website.

The accumulated runoff associated with rainfall events during construction within the anticipated excavations for the proposed development was calculated using the estimated rainfall depth multiplied by the estimated area of the proposed excavation footprint of the proposed development. The anticipated flow from infiltration source for the post-construction bocks was also calculated considering the perimeter of the proposed basement multiplied by 0.5 m (catchment area).

8.3.2 Construction Dewatering Flow Rate Calculation

The proposed development comprises of the construction of a SWMP, residential blocks, and installation of external underground services.

The geotechnical investigation report suggests that the structures to be supported on conventional strip or spread footings founded on either engineered fill or native soils. Based on this recommendation, the dewatering flow calculations are performed assuming conventional footings for the residential blocks.

The following preliminary short-term dewatering and long-term foundation drainage flow rates, are based on the groundwater tables measured in the installed monitoring wells at the Subject Site.

Please note that the dewatering flow rates do not include any potential groundwater seepage that may be encountered during the grading program. The following sections present the estimated dewatering flow rates for the construction of the single detached residential lots and the underground services separately, post grading.

8.3.3 Preliminary Short-Term Dewatering - Proposed SWM Pond

The following assumptions are considered for the dewatering assessment for the construction of the proposed SWM pond:

- The BH/MW locations were utilized as the reference point for the dewatering assessment. Additionally, the actual measured groundwater elevations from the nearby monitoring wells were considered.
- The Draft Plan of Subdivision prepared by Weston Consulting dated June 23, 2026 indicates that the bottom elevation of the proposed SWMP is set at El. 415.5 masl. The plan was reviewed and considered for the current assessment.
- As per the plan, the area of the SWMP was 15,600 m^2. As such, an excavation box with dimensions of 185.7 m x 84.0 m was considered.
- Hydraulic conductivity of 6.5 x 10^{-7} m/sec (in situ hydraulic conductivity testing from BH/MW 8) was considered for the sandy silt till unit.
- The storm event of 2 years was also considered for the short-term construction dewatering flow rate estimates.
- A clay liner with a thickness of 1.5 m was assumed for the current assessment, as recommended by the geotechnical engineer.
- The dewatering target for the proposed excavation was considered 1.0 m below the deepest excavation to facilitate excavation and construction in dry and stable subsoil conditions.

Based on a review of the Draft Plan of Subdivision prepared by Weston Consulting dated June 23, 2026, and the above stated assumptions, and comparing the shallow groundwater table of BH/MW 8, it is observed that the SWMP will be constructed below the shallow groundwater table. As such, short-term construction dewatering from the groundwater source is expected. The summary of construction dewatering flow rates for the proposed SWMF and a summary of the calculations is presented in **Table 8-1** below. Detailed information for the dewatering calculations computed for the SWMP can be reviewed in **Appendix E (Page 1)**.

Table 8-1 – Preliminary Short-Term Construction Dewatering Flow Rates - Proposed SWM Pond

Bottom of SWM Pond and Clay Liner	BH/MW References	Highest Measured Shallow Groundwater Table	Drawdown (m)	ZOI (m)	Groundwater Flow L/day-1.5 S.F.	Anticipated Storm Flow L/day (2-year 3 Hr)	Total Estimated Short-Term Dewatering Flow Rates – 1.5 S.F.
414.0	BH/MW 8	418.9	5.9	14.3	129,900.0	503,900.0	633,800.0

S.F. Safety Factor

The anticipated dewatering flow rates, including groundwater seepage with a safety factor of 1.5 during storm events with a duration of 3 hr/day for the proposed SWMP, can reach 633,800.0 L/day.

Additionally, a potential 100-year storm event with a duration of 12 hours is expected to reach up to 1,684,700.0 L/day for the proposed SWMP, considering the active excavation area dimensions mentioned in the above assumptions.

8.3.4 Preliminary Short-Term Dewatering - Proposed External Services

The following assumptions are considered for the dewatering assessment for the installation of the external underground services:

- The BH/MW locations were utilized as the reference point for the dewatering assessment. Additionally, the actual measured groundwater elevations from the nearby monitoring wells were considered.
- The depth of the proposed external underground services was not available for review. As such, a depth of 5 m was considered for the current assessment.
- The length of the active trench for underground services was considered to be 50 meters at a time (per day), and the width of the trench for the underground service installation was considered to be 2 meters.
- As a conservative approach, hydraulic conductivity of 1.6 x 10^{-7} m/sec (in situ hydraulic conductivity testing from BH/MW 9) was considered for the sandy silt till unit within the footprint of the proposed external sewer service.
- The storm event of 2 years was also considered for the short-term construction dewatering flow rate estimates.
- The dewatering target for the proposed excavation was considered 1.0 m below the deepest excavation to facilitate excavation and construction in dry and stable subsoil conditions.

The summary of construction dewatering flow rates for the proposed external underground services and a summary of the calculations is presented in **Table 8-2** below, indicates the estimated dewatering flow rates for the assumed 50 m length sections of the underground services. Detailed information for the dewatering calculations computed for the external underground services can be reviewed in **Appendix E (Page 2)**.

Table 8-2 – Preliminary Short-Term Construction Dewatering Flow Rates - Proposed External Underground Services

BH/MW References	Drawdown (m)	ZOI (m)	Groundwater Flow L/day – 1.5 SF	Anticipated Storm Flow L/day (2-year 3 Hr)	Total Estimated Short-Term Dewatering Flow Rates
BH/MW 9	5.1	6.1	19,350.0	3,300.0	22,650.0
BH/MW 10	4.7	5.6	16,600.0	3,300.0	21,900.0

S.F. Safety Factor

The anticipated dewatering flow rates, including groundwater seepage with a safety factor of 1.5 during storm events with a duration of 3 hr/day for the proposed external underground service installation, can range from 21,900.0 L/day to 22,650.0 L/day.

Additionally, a potential 100-year storm event with a duration of 12 hours is expected to reach up to 10,800.0 L/day, considering an active trench with dimensions as mentioned in the above tables (50 x 2.0 m).

8.3.5 Preliminary Short-Term Dewatering - Residential Blocks with 1-Level Basement

The following sections present the estimated dewatering flow rates for the construction of the residential blocks. The details of the residential units were not available for review. As such, the entire blocks were utilized for the current assessment.

The following are the assumptions and proposed development details for the preliminary short-term construction dewatering assessment:

- The proposed residential development will include residential blocks as indicated in the Draft Plan.
- The measured elevations at the BH/MWs located within the Subject Site were considered as the ground surface elevation (grading elevation) for the nearby blocks.
- The BH/MW locations were utilized as the reference point for the preliminary dewatering assessment. Additionally, the actual measured groundwater elevations from the nearby monitoring wells were considered.
- As design details of the residential blocks were not available, the dewatering assessment was prepared based on the vicinity of each BH/MW to the selected referenced blocks.
- The base of excavation for the construction of the residential basements was assumed 3.0 m below the assumed ground floor elevation, which includes 3.0 m as the underside of the Basement Finish Floor Elevation (FFE) resting on conventional footings as mentioned in the geotechnical assessment report.
- Hydraulic conductivities of 8.1 x 10^{-7} m/sec (in situ hydraulic conductivity testing from BH/MW 1), 3.6 x 10^{-7} m/sec (geomean of in situ hydraulic conductivity testing from BH/MWs 3, 5, and 8), and 3.0 x 10^{-6} m/sec (geomean of in situ hydraulic conductivity testing from BH/MWs 2, 4, and 6) were considered for the silt, sandy silt till, and sandy silt units.

- The storm event of 2 years -3 hr. was also considered for the short-term construction dewatering.
- The dewatering target for the proposed excavation was considered 1.0 m below the deepest excavation to facilitate excavation and construction in dry and stable subsoil conditions.

Based on a review of the Draft Plan of Subdivision prepared by Weston Consulting dated June 23, 2026, and the above stated assumptions, and comparing the shallow groundwater table, it is observed that all the residential blocks within the Subject Site will be constructed below the shallow ground water table. As such, short-term construction dewatering from the groundwater source is expected. A summary of the assumption and total estimated short-term dewatering flow rate for the construction of proposed residential blocks are presented in **Tables 8-3**. Detailed information for the dewatering calculations computed for the residential blocks can be reviewed in **Appendix E (Page 3)**.

Table 8-3 – Preliminary Short-Term Construction Dewatering Flow Rates – Residential Blocks

BH/MW References	Reference Block	Ground Surface El. at BH/MW (masl)	Assumed Underside of Basement El.* (masl)	Highest Groundwater Level measured at the MW (masl)	ZOI (m)	Groundwater Flow (L/day) – 1.5 S.F.	Anticipated Storm Flow (L/day)- 2-year 3 Hr	Total Estimated Short-term Dewatering Flow Rates
BH/MW 1	Block 27	425.5	422.5	425.3	10.3	79,950.0	183,600.0	263,550.0
BH/MW 2	Block 35	427.0	424.0	426.2	16.6	343,200.0	197,200.0	540,400.0
BH/MW 3	Block 12	423.8	420.8	423.6	6.8	44,850.0	139,800.0	184,650.0
BH/MW 4	Block 25	424.3	421.3	424.3	20.8	254,250.0	144,800.0	399,050.0
BH/MW 5	Block 15	420.5	417.5	420.3	6.8	58.200.0	162,800.0	221,000.0
BH/MW 6	Block 45	425.7	422.7	423.7	10.4	93,300.0	170,600.0	263,900.0

Notes:
mbgs - meters below ground surface
masl - meters above sea level
**Assuming 3.0 m below the existing ground surface elevation*
S.F. Safety Factor

The anticipated dewatering flow rates including groundwater seepage with a safety factor of 1.5 during storm events for active excavation area for the proposed residential blocks development, can range from 184,650.0 L/day to 540,400.0 L/day considering a 2-year storm event with a duration of 3 hr/day.

Additionally, a potential 100-year storm event with a duration of 12 hours is expected to reach 659,300.0 L/day, considering the assumed active excavation area dimensions.

The above preliminary short-term dewatering assessment for the proposed SWM pond, external services and the residential blocks is based on the seasonally high shallow groundwater table. As such, if the excavation and construction is completed during the dry seasons of a year, the anticipated groundwater seepage will be less. Furthermore, the above preliminary estimated dewatering flow rates should be revised when further details become available for review.

Considering the early stage of the project and un available profiles and design drawings for the construction and installation of the internal underground services, the short-term dewatering flow rate estimate has not been completed for the potential underground services.

8.4 Preliminary Long-Term Foundation Drainage

The same equation used to estimate the groundwater flow rates for short-term dewatering was utilized to estimate the long-term foundation drainage flow rates from groundwater sources. Long-term foundation drainage is expected for the proposed residential development as the residential blocks will be constructed below the shallow groundwater table.

The following assumptions were used to estimate potential needs for the long-term foundation drainage flow control for the residential blocks:

- The BH/MW locations were utilized as the reference point for the dewatering assessment. Additionally, the actual measured groundwater elevations from the nearby monitoring wells were considered.
- As design details of the residential blocks were not available, the dewatering assessment was completed based on the vicinity of each BH/MW.
- Hydraulic conductivities of 8.1 x 10^{-7} m/sec (in situ hydraulic conductivity testing from BH/MW 1), 3.6 x 10^{-7} m/sec (geomean of in situ hydraulic conductivity testing from BH/MWs 3, 5, and 8), and 3.0 x 10^{-6} m/sec (geomean of in situ hydraulic conductivity testing from BH/MWs 2, 4, and 6) were considered for the silt, sandy silt till, and sandy silt units
- The storm event of 2 years -3 hr was also considered to estimate the infiltration around the perimeter of the proposed residential blocks to estimate the total long-term foundation drainage, where the lowest assumed FFE extends below the shallow groundwater table.

Long-term foundation flow from groundwater source is expected for the proposed residential blocks, as it is expected that the basements will be constructed below shallow groundwater table. The summary of preliminary long-term foundation drainage flow rates for the proposed residential blocks and a summary of the calculations are presented in **Appendix E (Page 4)**. **Table 8-4** below, indicates the preliminary estimated long-term foundation drainage flow rates for the proposed residential blocks.

Table 8-4 – Preliminary Long-Term Estimated Foundation Drainage Flow Rates – Residential Blocks

BH/MW References	Reference Block	Ground Surface El. at BH/MW (masl)	Assumed Underside of Basement El* (masl)	Highest Groundwater Level measured at the MW (masl)	ZOI (m)	Groundwater Flow (L/day) – 1.5 S.F.	Anticipated Infiltration (L/day)	Total Estimated Long-term Foundation Drainage Flow Rates
BH/MW 1	Block 27	425.5	422.5	425.3	7.6	54,300.0	7,500.0	61,800.0
BH/MW 2	Block 35	427.0	424.0	426.2	11.4	100,800.0	8,000.0	108,800.0
BH/MW 3	Block 12	423.8	420.8	423.6	5.0	40,050.0	5,600.0	45,650.0
BH/MW 4	Block 25	424.3	421.3	424.3	15.6	232,200.0	6,100.0	238,300.0
BH/MW 5	Block 15	420.5	417.5	420.3	5.0	51,900.0	6,800.0	58,700.0
BH/MW 6	Block 45	425.7	422.7	423.7	5.2	91,650.0	6,300.0	97,950.0

Notes:

mbgs-metres below ground surface
masl-metres above sea level
**Assuming 3.0 m below the existing ground surface elevation*
S.F. Safety Factor

The anticipated long-term foundation drainage flow rates, including groundwater seepage with a safety factor of 1.5 and infiltration due to storm events for the proposed residential blocks range from 45,650.0 L/day to 238,300.0 L/day.

The above estimated long-term foundation drainage flow rates are considered preliminary as the details of the proposed development are not available for review. As such, the estimated flow rates should be revised when further details become available for review. Furthermore, the estimated flow rates are based on the seasonally high shallow groundwater table, and it is expected that the groundwater seepage will be lower during dry seasons of a year.

8.5 Preliminary Permit Requirements

Preliminary Short -Term Construction Dewatering: As per the recent amendment to O.Reg. 63/16 that came into effect on July 1, 2025, EASR registration with the MECP will be required for water takings, including groundwater seepage and precipitation, of more than 50,000 L/day.

A review of the total estimated dewatering flow rates presented in **Tables 8-1, 8-2, and 8-3** indicates that the maximum total estimated dewatering flow rates during the construction of the proposed SWMP, external underground services (considering 50.0 m/day length of the active trench), and residential blocks could reach up to 633,800.0 L/day, 22,650.0 L/day, and 540,400.0 L/day, respectively. As such, filing an EASR with the MECP is required, for the excavation and construction of the SWMP and residential blocks, but is not required for the installation of the proposed external underground services considering the assumption made in this report and the water taking is kept below the 50,000.0 L/day.

Furthermore, applying for a discharge permit with the Township of Centre Wellington is required if the collected water during construction is proposed to be conveyed to the sewer system.

Preliminary Long-Term Foundation Drainage: As per the recent amendment to O.Reg. 387/04 that came into effect on July 1, 2025, PTTW registration will be required if long-term foundation drainage flow rates exceed 379,000.0 L/day.

A review of the maximum total estimated long-term foundation flow rates presented in **Table 8-4** indicates that the maximum total estimated long-term foundation drainage flow rate reaches 238,300.0 L/day, including infiltration and groundwater with a safety factor of 1.5, which does not exceed 379,000 L/day for the proposed residential blocks. As such, filing PTTW with MECP is not required.

However, obtaining a discharge agreement from the Township of Centre Wellington is required if long-term foundation drainage effluent is proposed to be conveyed to the sewer system.

8.6 Potential Dewatering Impacts and Mitigation Plan-Preliminary

8.6.1 Short-Term Discharge Water Quality

The dewatering system must be appropriately filtered in order to prevent the pumping of fines and loss of ground during the dewatering activities.

A review of the groundwater quality test results suggests groundwater quality exceeds the Township of Centre Wellington Storm Sewer Use By-Laws, but meets the Township of Centre Wellington Sanitary Sewer Use By-Law. As such, short-term construction dewatering effluent can be directed to the Town's sanitary sewer system without significant pre-treatment. However, it would not be acceptable for disposal to the Township of Centre Wellington storm sewer system without pre-treatment for the exceeded parameter. Implementing specific pre-treatment to lower the exceeded parameters to meet the Township of Centre Wellington Storm Sewer Use By-Law standards should permit disposal of the dewatering effluent to the Town's storm sewer system. As previously mentioned, applying for a discharge permit with the Township of Centre Wellington is required if the collected water during construction is proposed to be conveyed to the sewer system.

8.6.2 Ground Settlement

The conceptual ZOI for dewatering at the proposed SWMP, external underground services, and residential block development reaches 14.3 m, 6.1 m, and 20.8 m away from dewatering areas, respectively. There are existing roads within the conceptual ZOI for construction. As such, potential risk for ground settlement for the nearby structures is expected due to dewatering.

If conventional sump and pump is used, the impacts will be minimal. However, if active dewatering approach is proposed, it is recommended a professional geotechnical engineer is consulted in advance of excavation and construction. Since the current assailment is considered preliminary, potential impact assessment to the nearby structures should be revised when further details become available for review.

8.6.3 Surface Water, Wetlands and Areas of Natural Significance

Record review, including a review of Draft Plan of Subdivision prepared by Weston Consulting dated June 23, 2026, indicates that wetland features, not evaluated per Ontario Wetland Evaluation System (OWES), wooded areas and a watercourse are located on the west and south west portions of the Subject Site.

The watercourse is located within the ZOI for the excavation of the proposed SWMP, as such a monitoring and mitigation plan is required for the watercourse and wetland feature. The wetland feature is located outside the ZOI, as such no significant impacts to the wetland are anticipated pertaining to the proposed development.

8.6.4 Water Supply Wells and Zone of Influence

A review of the MECP well records confirmed that there are one hundred thirteen (113) records for water supply wells that are registered within 500 m of the Subject Site. There are records for water supply wells that fall within the conceptual ZOI for dewatering, and one water supply well located at the Subject Site (MECP Well ID: 6704630 Record ID 27, on **Drawing 7**). As such, a private water supply well study for the water supply well records located within the 500 m radius of the Subject Site should be conducted a few weeks before construction.

9.0 CONCLUSIONS AND RECOMMENDATIONS

- The Subject Site is mainly located within a regional physiography of Southern Ontario known as Guelph Drumlin Field. The Guelph Drumlin Field within the vicinity of the Subject Site comprises of Till Plains (Drumlinized).
- A review of the map indicates that the Subject Site is located primarily within an area mapped as glaciofluvial deposits (7a), consisting of river deposits and delta topset facies and sandy deposits. The west and east portions of the Subject Site are mapped within the ice-contact stratified deposits (6), consisting of sand and gravel, minor silt, clay, and till.
- The Subject Site is located within the West Montrose-Grand River subwatershed that falls in the GRCA jurisdiction.
- Record review indicates that wetland features, not evaluated per Ontario Wetland Evaluation System (OWES), wooded areas and a watercourse are located on the west and southwest portions of the Subject Site. Record review also indicated the same above noted features extending beyond the property boundary along the northwest and southwest boundaries of the Subject Site. Additionally, Grand River is located approximately 620 m south of the Subject Site.
- The subsoil investigation has revealed that beneath the topsoil, the Subject Site mainly comprises of silt, silty sand, sandy silt, and sandy silt till deposits extending to the maximum termination depth of investigated at 8.0 metres below ground surface (mbgs).
- The findings of the current study confirms that the groundwater level elevations in the monitoring wells range from El. 426.2 masl at BH/MW 2 and 417.8 masl at BH/MW 10.
- Based on the Draft Plan of Subdivision prepared by Weston Consulting dated June 23, 2026, the proposed development of the residential subdivision at the Subject Site includes the construction of forty-five (45) residential blocks, with an assumed 1-level basement, associated roads, underground services, parks and a Stormwater Management (SWM) pond within the developable portions. Additionally, external services are proposed along Garafraxa Street East (Belwood Road).
- As a conservative approach, hydraulic conductivity of 1.6 x 10^{-7} m/sec (in situ hydraulic conductivity testing from BH/MW 9) was considered for the sandy silt till unit within the footprint of the proposed external sewer service. Furthermore, Hydraulic conductivities of 8.1 x 10^{-7} m/sec (in situ hydraulic conductivity testing from BH/MW 1), 3.6 x 10^{-7} m/sec (geomean of in situ hydraulic conductivity testing from BH/MWs 3, 5, and 8), and 3.0 x 10^{-6} m/sec (geomean of in situ hydraulic conductivity testing from BH/MWs 2, 4, and 6) were considered for the silt, sandy silt till, and sandy silt units.
- Total preliminary anticipated construction (short-term) dewatering flow rates including groundwater seepage with a safety factor of 1.5 and storm even, during the construction of the proposed SWMP, external underground services (considering 50.0 m/day length of the active

trench), and residential blocks could reach up to 633,800.0 L/day, 22,650.0 L/day, and 540,400.0 L/day, respectively. As such, filing an EASR with the MECP is required, for the excavation and construction of the SWMP and the residential blocks, but it is not required for the installation of the proposed external underground services considering the assumption made in this report and the water taking is kept below the 50,000.0 L/day. Additionally, applying for a discharge permit with the Township of Centre Wellington is required if the collected water during construction is proposed to be conveyed to the sewer system.

- The preliminary estimated maximum total long-term foundation drainage flow rate reaches 238,300.0 L/day, including infiltration and groundwater with a safety factor of 1.5, which does not exceed 379,000 L/day for the proposed residential blocks. As such, filing PTTW with MECP is not required. However, obtaining a discharge agreement from the Township of Centre Wellington is required if long-term foundation drainage effluent is proposed to be conveyed to the sewer system.
- Groundwater quality exceeds the Township of Centre Wellington Storm Sewer By-Law standards for TSS, but it meets the Township of Centre Wellington Sanitary Sewer Use By-Law standards for the unfiltered groundwater samples. The results suggest that any short-term construction dewatering, or long-term foundation drainage discharge would not be acceptable for disposal to the Township of Centre Wellington storm sewer without pre-treatment to lower the elevated TSS, but should be acceptable for disposal management to the Township of Centre Wellington sanitary sewer without any significant pre-treatment being required.
- The conceptual ZOI for dewatering at the proposed SWMP, external underground services, and residential block development reaches 14.3 m, 6.1 m, and 20.8 m away from dewatering areas, respectively.
    - There are existing roads within the conceptual ZOI for construction. As such, potential risk for ground settlement for the nearby structures is expected due to dewatering. If conventional sump and pump is used, the impacts will be minimal. However, if active dewatering approach is proposed, it is recommended a professional geotechnical engineer is consulted in advance of excavation and construction. Since the current assailment is considered preliminary, potential impact assessment to the nearby structures should be revised when further details become available for review.
    - Record review, including a review of Draft Plan of Subdivision prepared by Weston Consulting dated June 23, 2026, indicates that wetland features, not evaluated per Ontario Wetland Evaluation System (OWES), wooded areas and a watercourse are located on the west and south west portions of the Subject Site. The watercourse is located within the ZOI for the excavation of the proposed SWMP, as such a monitoring and mitigation plan is proposed for the watercourse. The wetland is located outside the ZOI, as such no impacts to the wetland are anticipated pertaining to the proposed development.
    - A review of the MECP well records confirmed that there are one hundred thirteen (113) records for water supply wells that are registered within 500 m of the Subject Site. There

are records for water supply wells that fall within the conceptual ZoI for dewatering, and one water supply well located at the Subject Site. As such, a private water supply well study for the water supply well records located within the 500 m radius of the Subject Site should be conducted a few weeks before construction.

10.0 CLOSURE

We trust that the above-noted information is suitable for your review. If you have any questions regarding this information, please do not hesitate to contact the undersigned.

Yours truly,
SOIL ENGINEERS LTD.

Tarek Agha, P.Eng., PMP.
Senior Project Manager-Hydrogeological Services

Narjes Alijani, M.Sc., P.Geo.
Department Manager-Hydrogeological Services

11.0 REFERENCES

1. Chapman, L.J. and D.F. Putnam, 1984. The Physiography of Southern Ontario. Ontario.
2. Freeze, A. and Cherry, J., 1979. Groundwater, Prentice-Hall Inc., New Jersey.
3. Geological Survey. Ontario Geological Survey (OGS), 2003. Surficial Geology of Southern Ontario. Miscellaneous Release – Data 128 – revised.
4. Geological Survey. Ontario Geological Survey (OGS), 2007. Bedrock Geology of Ontario. Miscellaneous Release – MRD 219.
5. Grand River Region Conservation Authority, 2026, Online Regulated Area Map.
6. Ministry of the Environment, Conservation and Parks, 2026, Source Protection Information Atlas Interactive Map.
7. Ministry of Natural Recourses, 2026. Natural Heritage Interactive Map.
8. Township of Centre Wellington Official Plan – 2026.

Soil Engineers Ltd.
CONSULTING ENGINEERS
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BARRIE	MISSISSAUGA	OSHAWA	NEWMARKET	MUSKOKA	HAMILTON
TEL: (705) 721-7863	TEL: (905) 542-7605	TEL: (905) 440-2040	TEL: (905) 853-0647	TEL: (705) 684-4242	TEL: (905) 777-7956
FAX: (705) 721-7864	FAX: (905) 542-2769	FAX: (905) 725-1315	FAX: (905) 881-8335	FAX: (705) 684-8522	FAX: (905) 542-2769

DRAWINGS 1 to 9

REFERENCE NO. 2603-W021

549500 550000 550500 551000 551500 552000

4842000 4841500 4841000 4840500

1ST LINE
WELLINGTON ROAD 19
GLENGARRY CRESCENT
DICKSON DRIVE
GORDON STREET
GARISHORE STREET
GZOWSKI STREET
BELLAMY CRESCENT
FORFAR STREET EAST
HILL STREET EAST
TOM STREET
BELWOOD ROAD
DIANNE CRESCENT
ANDERSON STREET NORTH
SUNNYBRAE CRESCENT
GOW STREET
ST GEORGE STREET EAST
HIGHSON LANE
BARKER STREET
ST ANDREW STREET EAST
LAMOND STREET
Grand River

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References: Ontario Ministry of Natural Resources and Forestry

Key Map

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community
Source: Esri, Vantor, Earthstar Geographics, and the GIS User Community

Legend

- Approximate Boundary Of Subject Site
- External Services
- Major Road
- Local Road
- Waterbody
- Watercourse

Soil Engineers Ltd.

Site Location Plan

Hydrogeological Assessment
Proposed Residential Development
6410 First Line and 8076 Wellington Road 19
Township of Centre Wellington (Fergus)

Reference No. 2603-W021

Date: April 20, 2026

Scale:
0 50 100 200 300 400 500
Metres

Drawing No. 1

550500

551000

4841500

4841000

1ST LINE

FIRST LINE

ROAD 19

BELWOOD ROAD

ANDERSON STREET

DIANNE CRESCENT

GOW STREET

STREET EAST

RE STREET

BH/MW 1

BH/MW 2

BH/MW 3

BH/MW 4

BH/MW 5

BH/MW 6

BH 7

BH/MW 8

BH/MW 9

BH/MW 10

BLK. 47
PARK
1.504 ha

BLK. 48
ENVIRONMENTAL LANDS
2.714 ha

BLK. 49
ENVIRONMENTAL LANDS
6.094 ha

BLK. 50
SWMP
1.560 ha

INDUSTRIAL

SIDENTIAL

McFARLANE CRESCENT

AVENUE

EXISTIN

COUNTY ROAD 7

WELLINGTON

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References: Ontario Ministry of Natural Resources and Forestry
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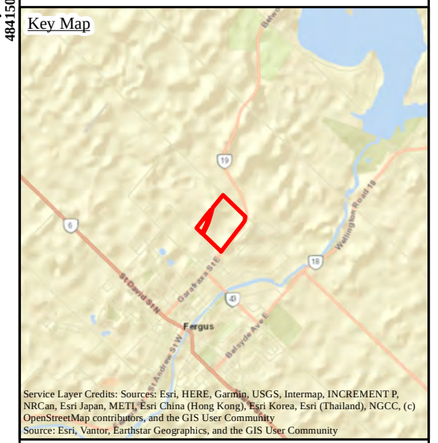
Key Map



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Source: Esri, Vantor, Earthstar Geographics, and the GIS User Community

Legend

- Approximate Boundary Of Subject Site
- External Services
- Major Road
- Local Road
- Waterbody
- Watercourse
- Borehole (1)
- Borehole With Monitoring Well (9)

Soil Engineers Ltd.

Borehole and Monitoring Well Location Plan

Hydrogeological Assessment
Proposed Residential Development
6410 First Line and 8076 Wellington Road 19
Township of Centre Wellington (Fergus)

Reference No. 2603-W021

Date: June 30, 2026

Scale:
0 20 40 80 120 160 200
Metres

Drawing No. 2

549500 550000 550500 551000 551500 552000

4842000 4841500 4841000 4840500

SIDEROAD 10
1ST LINE
WELLINGTON ROAD 19
GLENGARRY CRESCENT
GARTSHORE STREET
DICKSON DRIVE
HARPER CRESCENT
GORDON STREET
PEGLAR CRESCENT
GZOWSKI STREET
KELSOWOOD LANE
STRATHALLAN STREET
BELLAMY CRESCENT
VICTORIA TERRACE
PARKSIDE DRIVE EAST
FORFAR STREET EAST
DOUGLAS CRESCENT
GARAFRAXA STREET EAST
HILL STREET EAST
ST PATRICK STREET EAST
TOM STREET
BELWOOD ROAD
BARKER STREET
ST ANDREW STREET EAST
LAMOND STREET
WELLINGTON ROAD 18
ANDERSON STREET NORTH
SUNNYBRAE CRESCENT
DIANNE CRESCENT
ST GEORGE STREET EAST
GOW STREET
ATCHISON LANE
ANDERSON STREET SOUTH

20
6
7a
5b
7b
3
19

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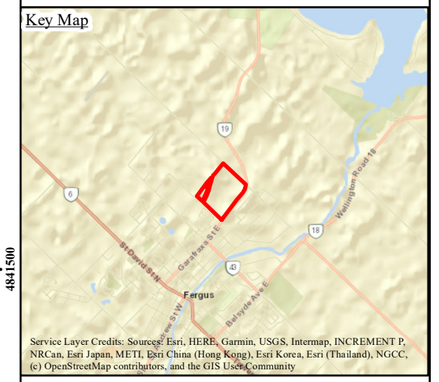
Key Map



Legend

- Approximate Boundary of Subject Site
- External Services
- Major Road
- Local Road
- 19: Modern alluvium: Consisting of silt, sand, gravel: modern floodplain
- 20: Swamps and bogs: Consisting of organic deposits
- 3: Guelph Formation; Amabel Formation: Consisting of Paleozoic Bedrock
- 5b: Wentworth Till: Consisting of diamicton
- 6: Kames and eskers: Consisting of sand, gravel: ice-contact
- 7a: Lacustrine, kame, and outwash: Consisting of sand: proglacial outwash
- 7b: Outwash: Consisting of gravel: proglacial outwash

Soil Engineers Ltd.

Surface Geology Map

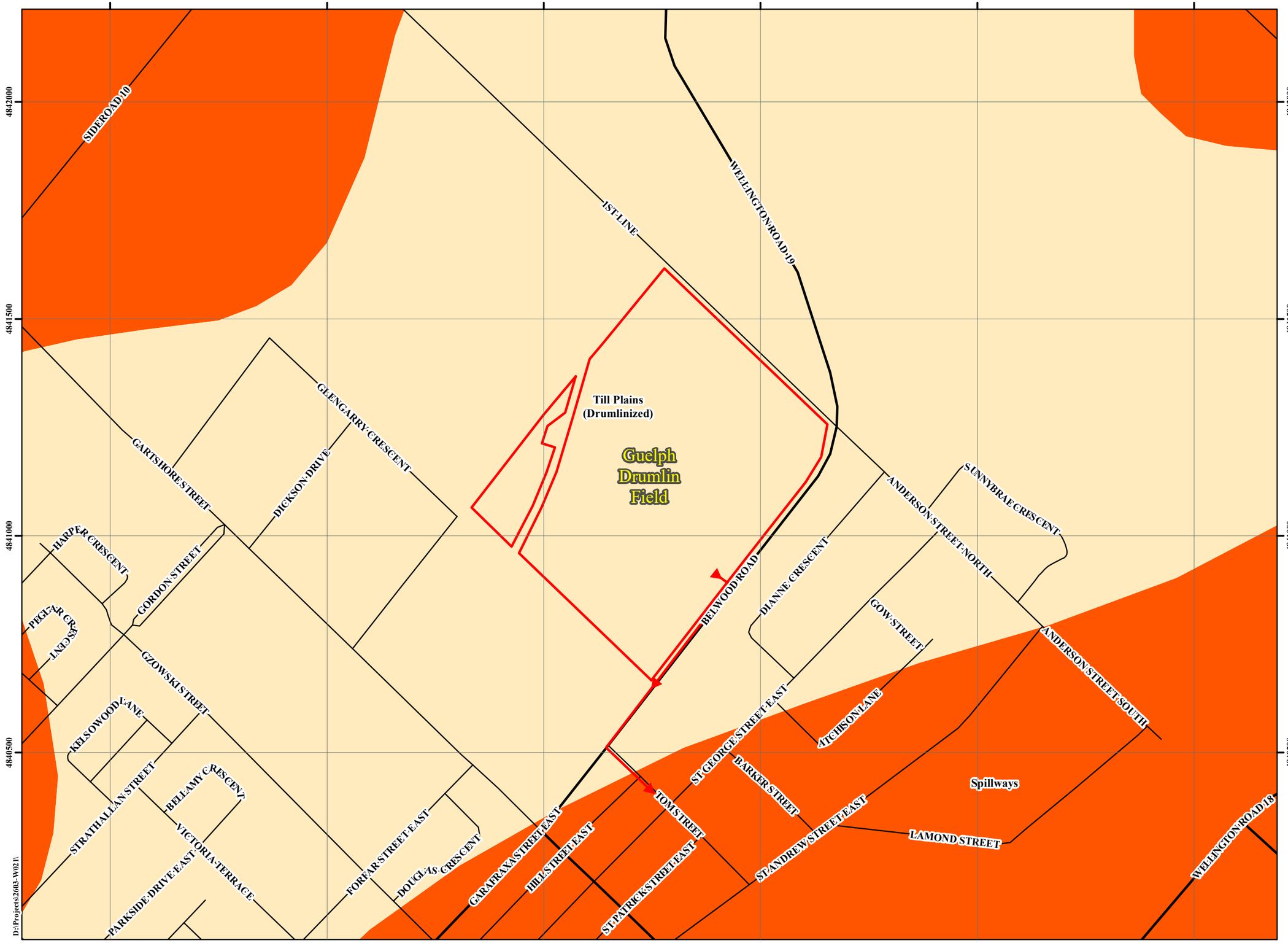
Hydrogeological Assessment
Proposed Residential Development
6410 First Line and 8076 Wellington Road 19
Township of Centre Wellington (Fergus)

Reference No. 2603-W021

Date: April 15, 2026

Scale:
0 100 200 300 400 500
Metres

Drawing No. 3



Source: Chapman, L.J. and Putnam, D.F. 2007. Physiography of Southern Ontario; Ontario Geological Survey, Miscellaneous Release--Data 228 ISBN 978-1-4249-5158-1

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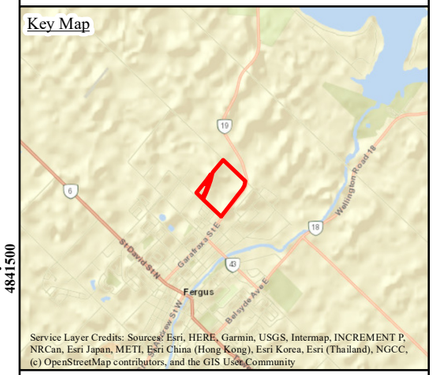
References: © Physiography Map was Produced by Soil Engineers Ltd. under license from the Ministry of North Development and Mines (MNDM). Copyright (c) is hold by the King's Printer for Ontario, 2026. Physiography of Southern Ontario, 2007, Ontario Geological Survey, Miscellaneous Release — Date 228.

Key Map



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Legend

- Approximate Boundary of Subject Site
- External Services
- Major Road
- Local Road
- Region Boundary
- Till Plains (Drumlinized)
- Spillways

Soil Engineers Ltd.

Physiographic Map

Hydrogeological Assessment
Proposed Residential Development
6410 First Line and 8076 Wellington Road 19
Township of Centre Wellington (Fergus)

Reference No. 2603-W021

Date: April 15, 2026

Scale:
0 50 100 200 300 400 500
Metres

Drawing No. 4

549500 550000 550500 551000 551500 552000

4842000 4841500 4841000 4840500

SIDEROAD 10
1ST LINE
WELLINGTON ROAD 19
GARTSHORE STREET
DICKSON DRIVE
GLENGARRY CRESCENT
HARPER CRESCENT
GORDON STREET
PEGLAR CRESCENT
GZOWSKI STREET
KELSOWOOD LANE
STRATHALLAN STREET
BELLAMY CRESCENT
VICTORIA TERRACE
PARKSIDE DRIVE EAST
FORFAR STREET EAST
DOUGLAS CRESCENT
GARAFRAXA STREET EAST
HILL STREET EAST
ST PATRICK STREET EAST
TOM STREET
BELWOOD ROAD
ST GEORGE STREET EAST
BARKER STREET
ST ANDREW STREET EAST
LAMOND STREET
ATCHISON LANE
DIANNE CRESCENT
GOW STREET
ANDERSON STREET NORTH
ANDERSON STREET SOUTH
SUNNYBRAE CRESCENT
WELLINGTON ROAD 18
Grand River

430 425 420 415 410 405 400 435 440

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References: Ontario Ministry of Natural Resources and Forestry
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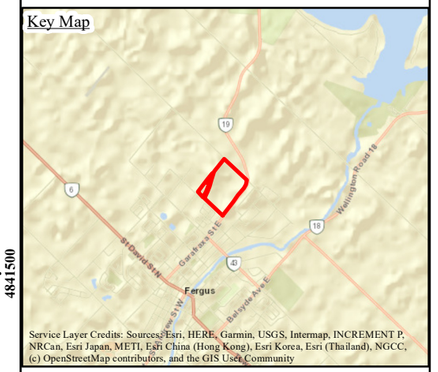
Key Map



Legend

- Approximate Boundary of Subject Site
- External Services
- Major Road
- Local Road
- Waterbody
- Watercourse
- Ontario - 5 m

Soil Engineers Ltd.

Topographic Map

Hydrogeological Assessment
Proposed Residential Development
6410 First Line and 8076 Wellington Road 19
Township of Centre Wellington (Fergus)

Reference No. 2603-W021

Date: April 15, 2026

Scale:

0 50 100 200 300 400 500
Metres

Drawing No. 5

549500 550000 550500 551000 551500 552000

4842000 4841500 4841000 4840500

SIDEROAD 10
1ST LINE
WELLINGTON ROAD 19
GLENGARRY CRESCENT
GARTSHORE STREET
DICKSON DRIVE
HARPER CRESCENT
GORDON STREET
PEGLAR CRESCENT
GZOWSKI STREET
KELSOWOOD LANE
STRATHALLAN STREET
BELLAMY CRESCENT
VICTORIA TERRACE
PARKSIDE DRIVE EAST
FOREAR STREET EAST
DOUGLAS CRESCENT
GARAFRAXA STREET EAST
HILL STREET EAST
TOM STREET
ST PATRICK STREET EAST
BELWOOD ROAD
DIANNE CRESCENT
GOW STREET
ATCHISON LANE
ST GEORGE STREET EAST
BARKER STREET
ST ANDREW STREET EAST
LAMOND STREET
ANDERSON STREET NORTH
SUNNYBRAE CRESCENT
ANDERSON STREET SOUTH
WELLINGTON ROAD 18
Grand River

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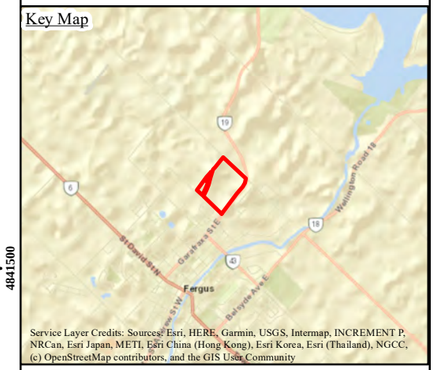

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Legend

- Approximate Boundary of Subject Site
- External Services
- Major Road
- Local Road
- Watercourse
- Waterbody
- Wooded Area *Wooded Area*
- Wetland (classified as Provincial)
- Wetland (Not evaluated per OWES)

Soil Engineers Ltd.

Natural Features and Protection Area Plan

Hydrogeological Assessment
Proposed Residential Development
6410 First Line and 8076 Wellington Road 19
Township of Centre Wellington (Fergus)

Reference No. 2603-W021

Date: April 15, 2026

Scale:

0 100 200 300 400 500

Metres

Drawing No. 6

549500 550000 550500 551000 551500 552000

4842000 4841500 4841000 4840500

SIDEROAD 10
1ST LINE
WELLINGTON ROAD 19
GLENGARRY CRESCENT
DICKSON DRIVE
GARTSHORE STREET
HARPER CRESCENT
GORDON STREET
KELSOWOOD LANE
ANNANDALE LANE
STRATHALLAN STREET
PARKSIDE DRIVE EAST
VICTORIA TERRACE
GZOWSKI STREET
FORFAR STREET EAST
DOUGLAS CRESCENT
HILL STREET EAST
ST PATRICK STREET EAST
TOM STREET
BELWOOD ROAD
DIANNE CRESCENT
ANDERSON STREET NORTH
SUNNYBRAE CRESCENT
GOW STREET
ATCHISON LANE
ST GEORGE STREET EAST
BARKER STREET
ST ANDREW STREET EAST
ANDERSON STREET SOUTH
LAMOND STREET
WELLINGTON ROAD 18
Grand River

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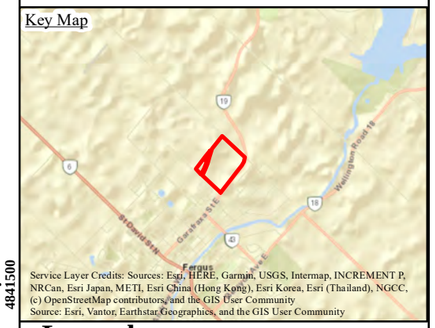
Key Map



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Source: Esri, Vantor, Earthstar Geographics, and the GIS User Community

Legend

- Approximate Boundary of Subject Site
- 500 Metres From Subject Site Boundary
- External Services
- Major Road
- Local Road
- Waterbody
- Watercourse
- Unknown (13)
- Abandoned-Other (22)
- Abandoned-Supply (3)
- Observation Wells (20)
- Test Hole (24)
- Water Supply (113)

Soil Engineers Ltd.

MECP Well Location Plan

Hydrogeological Assessment
Proposed Residential Development
6410 First Line and 8076 Wellington Road 19
Township of Centre Wellington (Fergus)

Reference No. 2603-W021

Date: April 15, 2026

Scale:
0 50 100 200 300 400 500
Metres

Drawing No. 7

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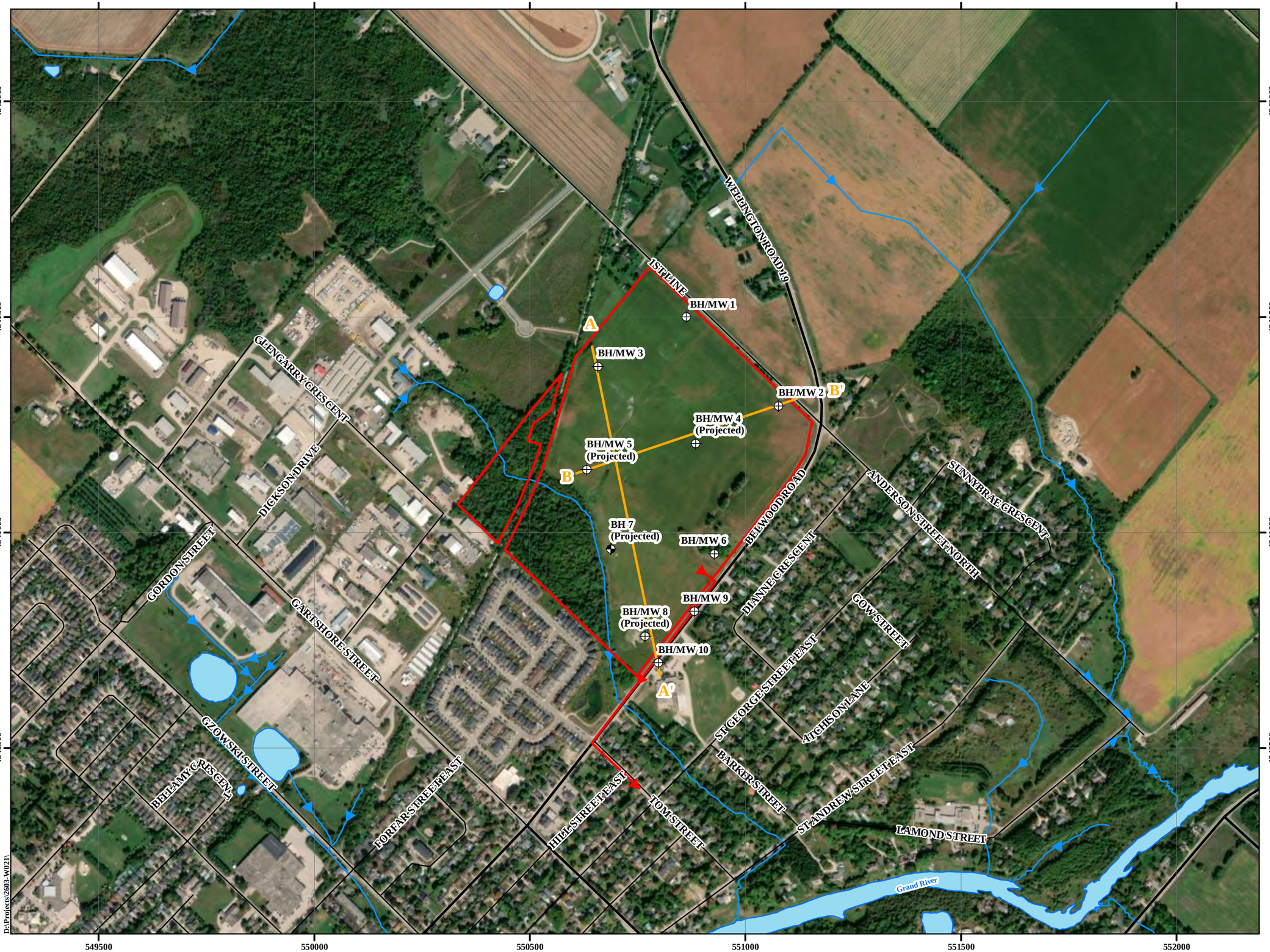
4842000 4841500 4841000 4840500



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Key Map

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Source: Esri, Vantor, Earthstar Geographics, and the GIS User Community

Legend

- Cross Section
- Approximate Boundary Of Subject Site
- External Services
- Major Road
- Local Road
- Waterbody
- Watercourse
- Borehole (1)
- Borehole With Monitoring Well (9)

Soil Engineers Ltd.

Subsurface Profile Cross-Section Key Plan

Hydrogeological Assessment
Proposed Residential Development
6410 First Line and 8076 Wellington Road 19
Township of Centre Wellington (Fergus)

Reference No. 2603-W021

Date: April 20, 2026

Scale:
0 50 100 200 300 400 500
Metres

Drawing No. 8-1

Soil Engineers Ltd.
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GEOTECHNICAL | ENVIRONMENTAL | HYDROGEOLOGICAL | BUILDING SCIENCE

SUBSURFACE PROFILE
CROSS SECTION A-A'
DRAWING NO. 8-2A
SCALE: AS SHOWN

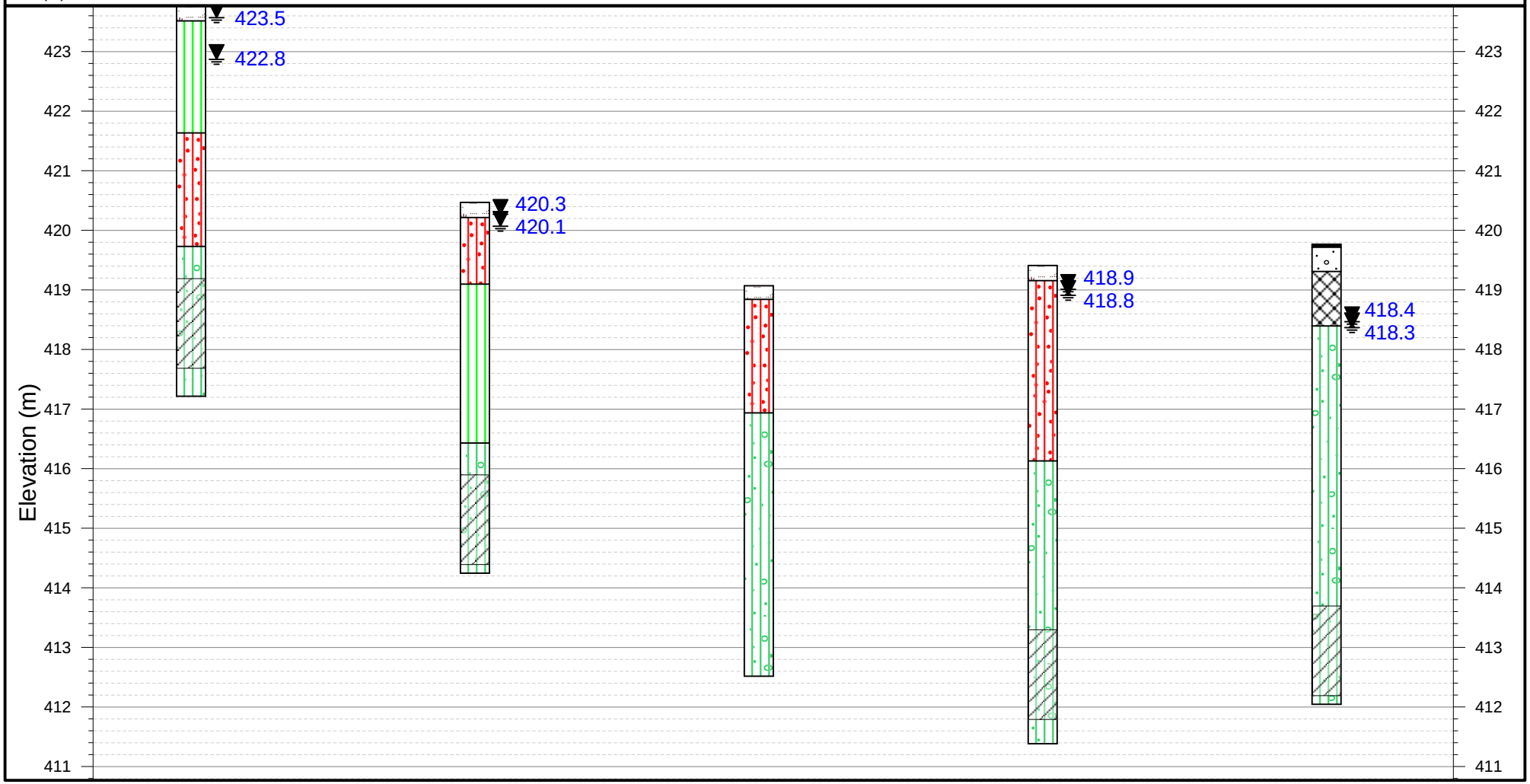
JOB NO.: 2603-W021
REPORT DATE: April 2026
PROJECT DESCRIPTION: Proposed Residential Development

PROJECT LOCATION: 6410 First Line and 8076 Wellington Road 19
Township of Centre Wellington (Fergus)

LEGEND

ASPHALT | GRANULAR | SANDY SILT TILL | TOPSOIL
FILL | SANDY SILT | SILT | SCREEN

WATER LEVEL (STABILIZED)



Soil Engineers Ltd.
CONSULTING ENGINEERS
GEOTECHNICAL | ENVIRONMENTAL | HYDROGEOLOGICAL | BUILDING SCIENCE

SUBSURFACE PROFILE
CROSS SECTION B-B'
DRAWING NO. 8-2B
SCALE: AS SHOWN

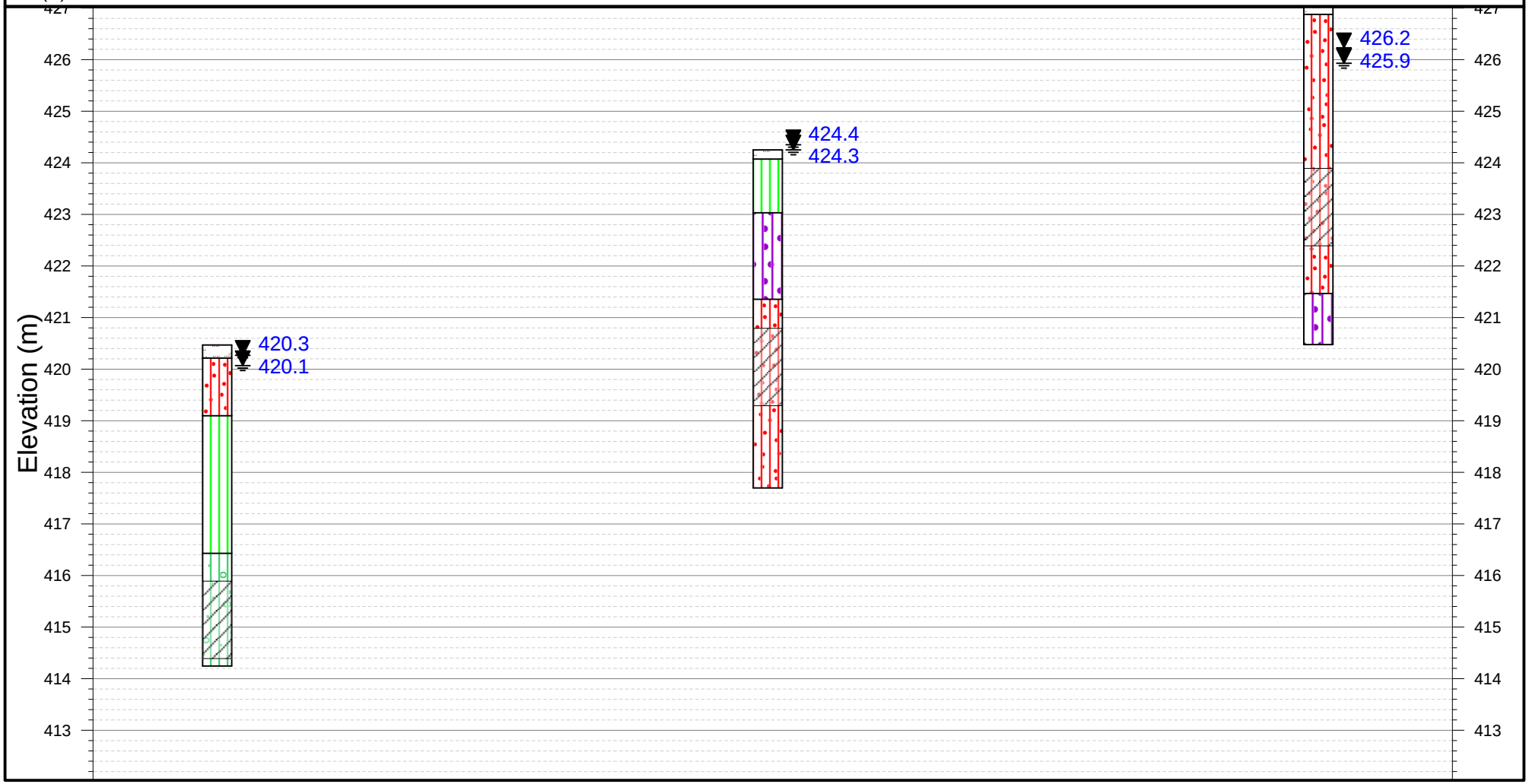
JOB NO.: 2603-W021
REPORT DATE: April 2026
PROJECT DESCRIPTION: Proposed Residential Development

PROJECT LOCATION: 6410 First Line and 8076 Wellington Road 19
Township of Centre Wellington (Fergus)

LEGEND

SANDY SILT | SILT | SILTY SAND | TOPSOIL
SANDY SILT TILL | SCREEN

WATER LEVEL (STABILIZED)



550400
550800
551200
4841600
4841200
4840800

WELLINGTON ROAD 19
1ST LINE
BELWOOD ROAD
GLENGARRY CRESCENT
GARTSHORE STREET
ANDERSON STREET NORTH
SUNNYBRAE CRESCENT
ST GEORGE STREET EAST
GOW STREET
DIANNE CRESCENT
AITCHISON LANE

BH/MW 1 (425.3)
BH/MW 2 (426.2)
BH/MW 3 (423.6)
BH/MW 4 (424.4)
BH/MW 5 (420.3)
BH/MW 6 (423.7)
BH/MW 8 (418.9)

430
425
420
440
426.0
425.0
424.0
423.0
422.0
421.0
420.0
419.0

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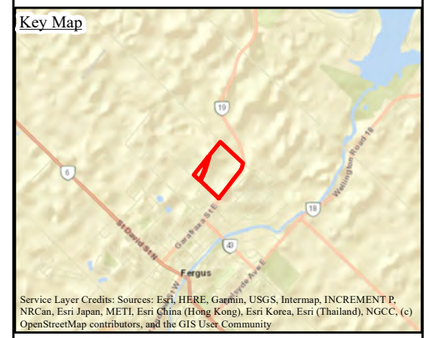
References: Ontario Ministry of Natural Resources and Forestry
Ⓒ King's Printer for Ontario, 2026

Key Map



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Legend

- Approximate Boundary of Subject Site
- Waterbody
- Watercourse
- Borehole with Monitoring Well
- Major Road
- Local Road
- Ontario - 5 m
- Highest Interpreted Shallow Groundwater Elevation Contour
- Highest Inferred Shallow Groundwater Elevation Contour
- Interpreted Shallow Groundwater Flow Direction
- (426.2) Highest Shallow Groundwater Level Measured on April 17, 2026

Soil Engineers Ltd.

Shallow Groundwater Flow Pattern Plan

Hydrogeological Assessment
Proposed Residential Development
6410 First Line and 8076 Wellington Road 19
Township of Centre Wellington (Fergus)

Reference No. 2603-W021

Date: July 03, 2026

Scale:

0 20 40 80 120 160 200
Metres

Drawing No. 9

Soil Engineers Ltd.
CONSULTING ENGINEERS
GEOTECHNICAL • ENVIRONMENTAL • HYDROGEOLOGICAL • BUILDING SCIENCE
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FAX: (705) 721-7864	FAX: (905) 542-2769	FAX: (905) 725-1315	FAX: (905) 881-8335	FAX: (705) 684-8522	FAX: (905) 542-2769

APPENDIX 'A'

BOREHOLE LOGS/MONITORING WELL LOGS
AND
GRAIN SIZE DISTRIBUTION GRAPH

REFERENCE NO. 2603-W021

LIST OF ABBREVIATIONS AND DESCRIPTION OF TERMS

The abbreviations and terms commonly employed on the borehole logs and figures, and in the text of the report, are as follows:

SAMPLE TYPES

AS Auger sample
CS Chunk sample
DO Drive open (split spoon)
DS Denison type sample
FS Foil sample
RC Rock core (with size and percentage recovery)
ST Slotted tube
TO Thin-walled, open
TP Thin-walled, piston
WS Wash sample

PENETRATION RESISTANCE

Dynamic Cone Penetration Resistance:

A continuous profile showing the number of blows for each foot of penetration of a 2-inch diameter, 90° point cone driven by a 140-pound hammer falling 30 inches.

Plotted as '—●—'

Standard Penetration Resistance or 'N' Value:

The number of blows of a 140-pound hammer falling 30 inches required to advance a 2-inch O.D. drive open sampler one foot into undisturbed soil.

Plotted as '○'

WH Sampler advanced by static weight
PH Sampler advanced by hydraulic pressure
PM Sampler advanced by manual pressure
NP No penetration

SOIL DESCRIPTION

Cohesionless Soils:

'N' (blows/ft)	Relative Density
0 to 4	very loose
4 to 10	loose
10 to 30	compact
30 to 50	dense
over 50	very dense

Cohesive Soils:

Undrained Shear Strength (ksf)	'N' (blows/ft)	Consistency
less than 0.25	0 to 2	very soft
0.25 to 0.50	2 to 4	soft
0.50 to 1.0	4 to 8	firm
1.0 to 2.0	8 to 16	stiff
2.0 to 4.0	16 to 32	very stiff
over 4.0	over 32	hard

Method of Determination of Undrained Shear Strength of Cohesive Soils:

x 0.0 Field vane test in borehole; the number denotes the sensitivity to remoulding

△ Laboratory vane test

☐ Compression test in laboratory

For a saturated cohesive soil, the undrained shear strength is taken as one half of the undrained compressive strength

METRIC CONVERSION FACTORS

1 ft = 0.3048 metres
1lb = 0.454 kg
1 inch = 25.4 mm
1ksf = 47.88 kPa

JOB NO.: 2603-W021

LOG OF BOREHOLE:BH/MW 1

FIGURE NO.: 1

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Solid Stem Augers

PROJECT LOCATION: 6410 First Line and 8076 Wellington Road 19
Township of Centre Wellington (Fergus)

DRILLING DATE: March 26, 2026

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
425.5	Ground Surface							
0.0	**18 cm TOPSOIL**				0			
	Brown, very loose to compact **SILT** traces of clay and sand — weathered	1	DO	4			28	
		2	DO	12	1		19	
	— wet	3	DO	8			28	
423.4					2			
2.1	Brown, compact, moist **SANDY SILT** a trace of clay	4	DO	11			19	
		5	DO	18	3		19	
421.5					4			
4.0	Compact, wet **SILT** traces of clay and sand	6	DO	15	5		24	
	— brown — grey	7	DO	15	6		18	
418.9								
6.6	**END OF BOREHOLE**				7			
	Installed 50 mm Ø PVC monitoring well to 6.1 m with 1.5 m screen Sand backfill from 4.3 to 6.1 m Bentonite seal from 0.0 m to 4.3 m Provided with monument casing **Water Level Readings:** W.L @ 425.2 masl on Mar 31, 2026 W.L @ 425.3 masl on Apr 17, 2026				8			
					9			
					10			

Soil Engineers Ltd.

JOB NO.: 2603-W021

LOG OF BOREHOLE:BH/MW 2

FIGURE NO.: 2

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Solid Stem Augers

PROJECT LOCATION: 6410 First Line and 8076 Wellington Road 19
Township of Centre Wellington (Fergus)

DRILLING DATE: March 26, 2026

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
427.0	Ground Surface							
0.0	**15 cm TOPSOIL**				0			
	Very loose to compact **SANDY SILT** a trace of clay wet	1	DO	5			17	
		2	DO	16	1		18	
		3	DO	16			26	
		4	DO	2	2		27	
	brown grey	5	DO	0	3		22	
	disturbed above							
		6	DO	7	4		17	
421.4					5			
5.6	Grey, compact, wet **SILTY SAND** a trace of clay	7	DO	16	6		15	
420.4								
6.6	**END OF BOREHOLE**				7			
	Installed 50 mm Ø PVC monitoring well to 4.6 m with 1.5 m screen Sand backfill from 2.7 to 4.6 m Bentonite seal from 0.0 m to 2.7 m Provided with monument casing **Water Level Readings:** W.L @ 426.0 masl on Mar 31, 2026 W.L @ 426.3 masl on Apr 17, 2026				8			
					9			
					10			

Soil Engineers Ltd.

JOB NO.: 2603-W021

LOG OF BOREHOLE:BH/MW 3

FIGURE NO.: 3

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Solid Stem Augers

PROJECT LOCATION: 6410 First Line and 8076 Wellington Road 19
Township of Centre Wellington (Fergus)

DRILLING DATE: March 25, 2026

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
423.8	Ground Surface							
0.0	**25 cm TOPSOIL**				0			
	Brown, loose to compact, very moist **SILT** traces of clay and sand	1	DO	8			20	
		2	DO	12	1		19	
		3	DO	21			20	
421.7					2			
2.1	Brown, compact, wet **SANDY SILT** a trace of clay	4	DO	15			16	
		5	DO	29	3		17	
419.8								
4.0	Grey, very dense **SANDY SILT TILL** traces of clay and gravel	6	DO	50/13	4		8	
					5			
		7	DO	85	6		9	
417.2								
6.6	**END OF BOREHOLE**				7			
	Installed 50 mm Ø PVC monitoring well to 6.1 m with 1.5 m screen Sand backfill from 4.3 to 6.1 m Bentonite seal from 0.0 m to 4.3 m Provided with monument casing **Water Level Readings:** W.L @ 422.8 masl on Mar 31, 2026 W.L @ 423.5 masl on Apr 17, 2026				8			
					9			
					10			

Soil Engineers Ltd.

JOB NO.: 2603-W021

LOG OF BOREHOLE:BH/MW 4

FIGURE NO.: 4

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Solid Stem Augers

PROJECT LOCATION: 6410 First Line and 8076 Wellington Road 19
Township of Centre Wellington (Fergus)

DRILLING DATE: March 26, 2026

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
424.3	Ground Surface							
0.0	**18 cm TOPSOIL**				0			
	Brown, very loose to compact **SILT** traces of clay and sand — weathered	1	DO	4			18	
423.1		2	DO	19	1		21	
1.2	Brown, loose to compact, wet **SILTY SAND** a trace of clay	3	DO	16	2		19	
		4	DO	8			20	
421.4								
2.9	Compact, wet **SANDY SILT** a trace of clay	5	DO	15	3		19	
					4			
		6	DO	15	5		16	
	— brown grey							
		7	DO	25	6		14	
417.7								
6.6	**END OF BOREHOLE**				7			
	Installed 50 mm Ø PVC monitoring well to 5.0 m with 1.5 m screen Sand backfill from 3.2 to 5.0 m Bentonite seal from 0.0 m to 3.2 m Provided with monument casing **Water Level Readings:** W.L @ 424.3 masl on Mar 31, 2026 W.L @ 424.4 masl on Apr 17, 2026				8			
					9			
					10			

Soil Engineers Ltd.

JOB NO.: 2603-W021

LOG OF BOREHOLE:BH/MW 5

FIGURE NO.: 5

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Solid Stem Augers

PROJECT LOCATION: 6410 First Line and 8076 Wellington Road 19
Township of Centre Wellington (Fergus)

DRILLING DATE: March 25, 2026

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
420.5	Ground Surface							
0.0	**25 cm TOPSOIL**				0			
	Brown, compact, wet **SANDY SILT** a trace of clay	1	DO	15			22	
		2	DO	15	1		22	
	ploughed							
419.1								
1.4	Compact, wet **SILT** traces of clay and sand	3	DO	17	2		20	
		4	DO	14			17	
	brown grey				3			
		5	DO	12			16	
416.5					4			
4.0	Grey, very dense **SANDY SILT TILL** traces of clay and gravel	6	DO	74			10	
					5			
414.3		7	DO	50/13	6		8	
6.2	**END OF BOREHOLE**							
	Installed 50 mm Ø PVC monitoring well to 6.1 m with 1.5 m screen Sand backfill from 4.3 to 6.1 m Bentonite seal from 0.0 m to 4.3 m Provided with monument casing **Water Level Readings:** W.L @ 420.1 masl on Mar 31, 2026 W.L @ 420.3 masl on Apr 17, 2026				7			
					8			
					9			
					10			

Soil Engineers Ltd.

JOB NO.: 2603-W021

LOG OF BOREHOLE:BH/MW 6

FIGURE NO.: 6

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Solid Stem Augers

PROJECT LOCATION: 6410 First Line and 8076 Wellington Road 19
Township of Centre Wellington (Fergus)

DRILLING DATE: March 26, 2026

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
425.7	Ground Surface							
0.0	**30 cm TOPSOIL**	1	DO	5	0		15	
	Brown, loose to compact **SILTY SAND** a trace of clay	2	DO	8	1		18	
	ploughed	3	DO	8	2		20	
		4	DO	14			19	
	wet	5	DO	28	3		20	
424.3								
4.0	Compact, moist **SANDY SILT** a trace of clay	6	DO	24	4 5		15	
		7	DO	17	6		14	
421.7								
6.6	**END OF BOREHOLE**				7 8 9 10			

Installed 50 mm Ø PVC monitoring well
to 6.1 m with 1.5 m screen
Sand backfill from 4.3 to 6.1 m
Bentonite seal from 0.0 m to 4.3 m
Provided with monument casing

Water Level Readings:
W.L @ 422.9 masl on Mar 31, 2026
W.L @ 423.7 masl on Apr 17, 2026

JOB NO.: 2603-W021

LOG OF BOREHOLE:BH 7

FIGURE NO.: 7

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Solid Stem Augers

PROJECT LOCATION: 6410 First Line and 8076 Wellington Road 19
Township of Centre Wellington (Fergus)

DRILLING DATE: March 26, 2026

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
419.1	Ground Surface							
0.0	**23 cm TOPSOIL**				0			
	Brown, very loose to compact, wet **SANDY SILT** a trace of clay ploughed	1	DO	4			24	
		2	DO	18	1		21	
		3	DO	15			21	
417.0					2			
2.1	Brown, compact to dense **SANDY SILT TILL** traces of clay and gravel	4	DO	20			11	
		5	DO	18	3		12	
	brown / grey				4			
		6	DO	22	5		10	
		7	DO	47	6		9	
412.5								
6.6	**END OF BOREHOLE**				7			
					8			
					9			
					10			

Soil Engineers Ltd.

JOB NO.: 2603-W021

LOG OF BOREHOLE:BH/MW 8

FIGURE NO.: 8

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Solid Stem Augers

PROJECT LOCATION: 6410 First Line and 8076 Wellington Road 19
Township of Centre Wellington (Fergus)

DRILLING DATE: March 25, 2026

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
419.4	Ground Surface							
0.0	**25 cm TOPSOIL**				0			
	Brown, loose to dense, moist **SANDY SILT** a trace of clay	1	DO	5			18	
	ploughed	2	DO	24	1		19	
		3	DO	17	2		16	
		4	DO	24			16	
416.1		5	DO	33	3		10	
3.3	Grey, very dense **SANDY SILT TILL** traces of clay and gravel				4			
		6	DO	50/13	5		9	
		7	DO	57	6		13	
					7			
411.4		8	DO	75/25	8		13	
8.0	**END OF BOREHOLE**							
	Installed 50 mm Ø PVC monitoring well to 7.6 m with 1.5 m screen Sand backfill from 5.8 to 7.6 m Bentonite seal from 0.0 m to 5.8 m Provided with monument casing **Water Level Readings:** W.L @ 418.9 masl on Mar 31, 2026 W.L @ 418.8 masl on Apr 17, 2026				9			
					10			

Soil Engineers Ltd.

JOB NO.: 2603-W021

LOG OF BOREHOLE:BH/MW 9

FIGURE NO.: 9

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Solid Stem Augers

PROJECT LOCATION: 6410 First Line and 8076 Wellington Road 19
Township of Centre Wellington (Fergus)

DRILLING DATE: March 27, 2026

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
421.9	Pavement Structure							
0.0	**175 mm ASPHALT**	1	DO	43	0		5	
	GRANULAR FILL							
0.7	Dark brown **EARTH FILL** sandy silt organics inclusion	2	DO	22	1		14	
420.4								
1.5	Compact to very dense **SANDY SILT TILL** traces of clay and gravel	3	DO	15	2		13	
		4	DO	16			13	
		5	DO	33	3		8	
	brown grey				4			
	seepage	6	DO	46	5		16	
		7	DO	50/10	6		8	
414.0		8	DO	50/13	7		10	
7.9	**END OF BOREHOLE** Installed 50 mm Ø PVC monitoring well to 7.6 m with 1.5 m screen Sand backfill from 5.8 to 7.6 m Bentonite seal from 0.0 m to 5.8 m Provided with flushmount cover **Water Level Readings:** W.L @ 421.0 masl on Mar 31, 2026 W.L @ 421.0 masl on Apr 17, 2026				8 9 10			

Soil Engineers Ltd.

JOB NO.: 2603-W021

LOG OF BOREHOLE:BH/MW 10

FIGURE NO.: 10

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Solid Stem Augers

PROJECT LOCATION: 6410 First Line and 8076 Wellington Road 19
Township of Centre Wellington (Fergus)

DRILLING DATE: March 27, 2026

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
419.8	Pavement Structure							
0.0	**50 mm ASPHALT** **400 mm GRANULAR FILL**	1	DO	57	0		5	
0.5	Dark brown **EARTH FILL** gravelly sand organics inclusion	2	DO	16	1		6	
418.4								
1.4	Compact to very dense **SANDY SILT TILL** traces of clay and gravel	3	DO	16	2		16	
		4	DO	41			11	
	brown / grey	5	DO	56	3		9	
		6	DO	50/15	4		9	
		7	DO	53	5		11	
412.1		8	DO	50/10	6		8	
7.7	**END OF BOREHOLE** Installed 50 mm Ø PVC monitoring well to 7.6 m with 1.5 m screen Sand backfill from 5.8 to 7.6 m Bentonite seal from 0.0 m to 5.8 m Provided with flushmount cover **Water Level Readings:** W.L @ 418.3 masl on Mar 31, 2026 W.L @ 418.4 masl on Apr 17, 2026				7 8 9 10			

Soil Engineers Ltd.

Soil Engineers Ltd.

GRAIN SIZE DISTRIBUTION

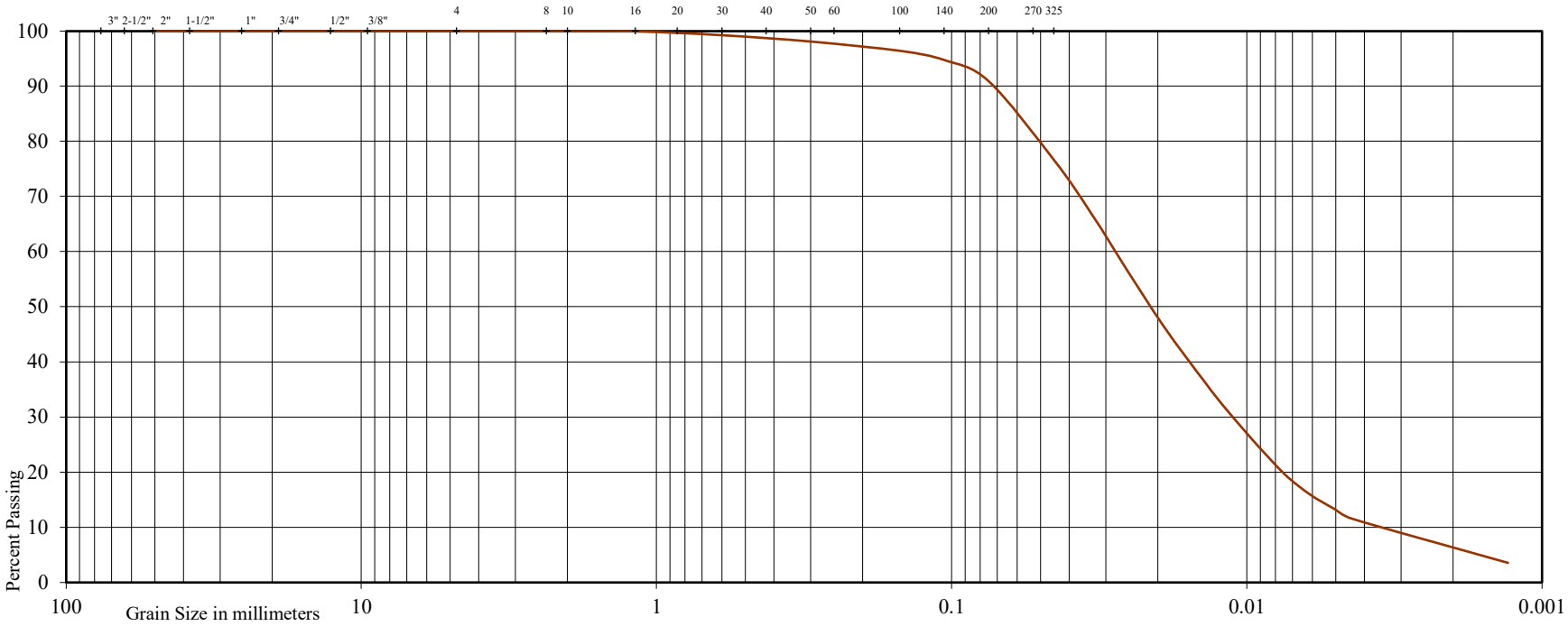
Reference No: 2603-W021

U.S. BUREAU OF SOILS CLASSIFICATION

GRAVEL		SAND				SILT	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	V. FINE		

UNIFIED SOIL CLASSIFICATION

GRAVEL		SAND			SILT & CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	



Project: Hydrogeological Assessment for Proposed Development

Location: 6410 First Line and 8076 Wellington 19, Township Centre of Wellington (Fergus)

Borehole No: 1

Sample No: 3

Depth (m): 1.5

Elevation (m): 424

Liquid Limit (%) = -

Plastic Limit (%) = -

Plasticity Index (%) = -

Moisture Content (%) = -

Estimated Permeability (cm./sec.) = 10^{-5}

Classification of Sample [& Group Symbol]: SILT

traces of clay and sand

Figure 11

Soil Engineers Ltd.

GRAIN SIZE DISTRIBUTION

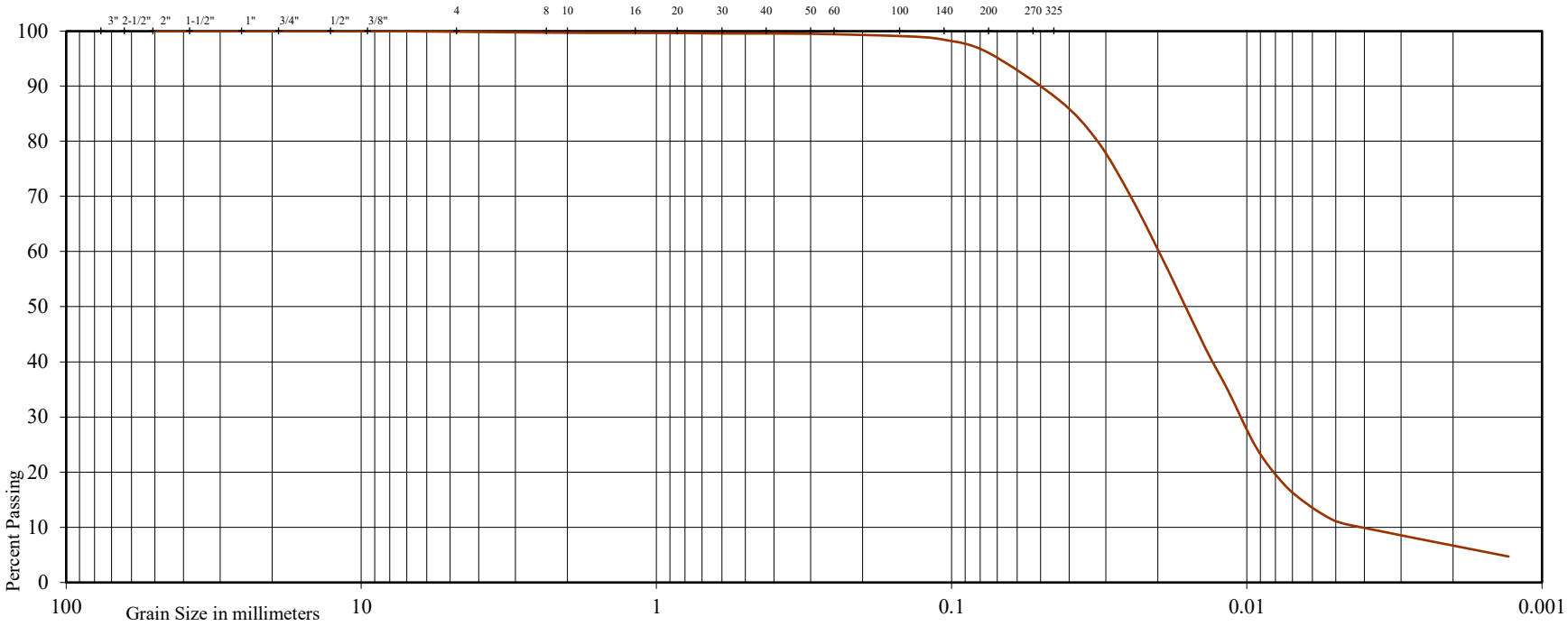
Reference No: 2603-W021

U.S. BUREAU OF SOILS CLASSIFICATION

GRAVEL		SAND				SILT	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	V. FINE		

UNIFIED SOIL CLASSIFICATION

GRAVEL		SAND			SILT & CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	



Project: Hydrogeological Assessment for Proposed Development

Location: 6410 First Line and 8076 Wellington 19, Township Centre of Wellington (Fergus)

Borehole No: 3

Sample No: 3

Depth (m): 1.5

Elevation (m): 422.3

Liquid Limit (%) = -

Plastic Limit (%) = -

Plasticity Index (%) = -

Moisture Content (%) = -

Estimated Permeability (cm./sec.) = 10^{-5}

Classification of Sample [& Group Symbol]: SILT

traces of clay and fine sand

Figure 12

Soil Engineers Ltd.

GRAIN SIZE DISTRIBUTION

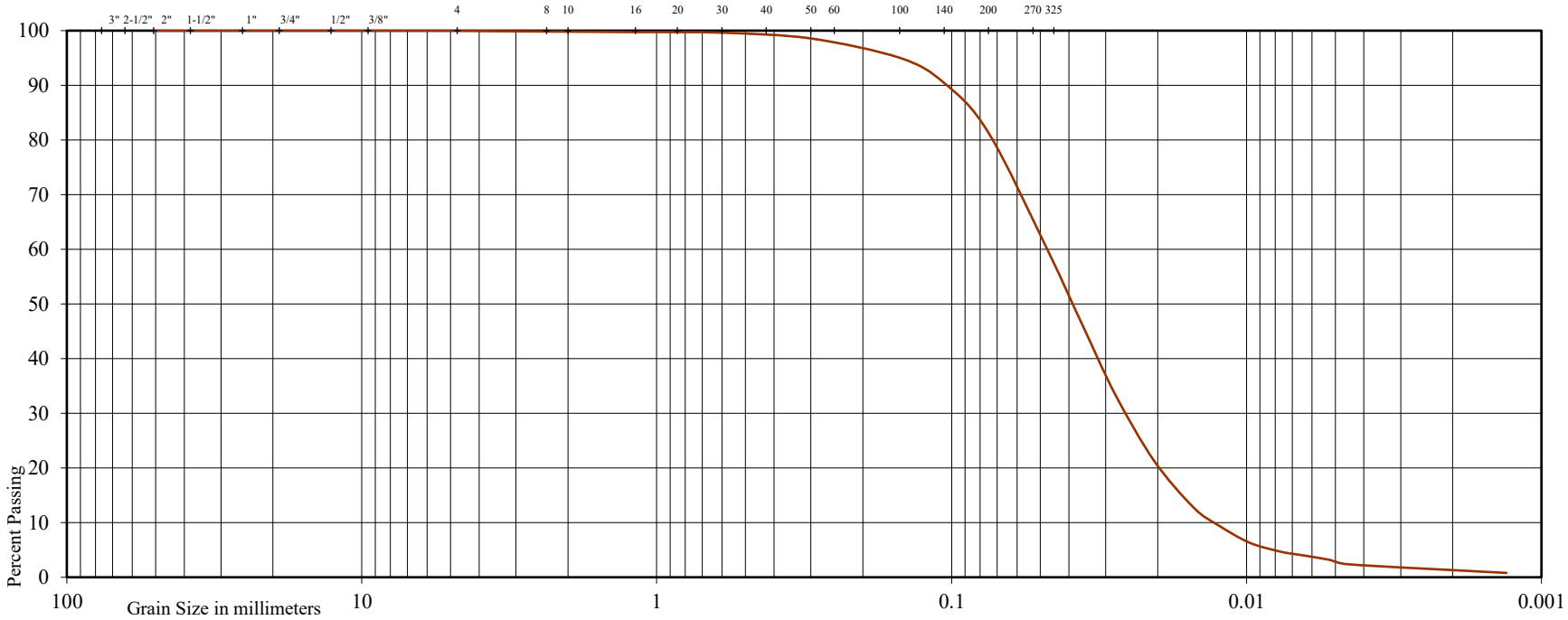
Reference No: 2603-W021

U.S. BUREAU OF SOILS CLASSIFICATION

GRAVEL		SAND				SILT	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	V. FINE		

UNIFIED SOIL CLASSIFICATION

GRAVEL		SAND			SILT & CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	



Project: Hydrogeological Assessment for Proposed Development

Location: 6410 First Line and 8076 Wellington 19, Township Centre of Wellington (Fergus)

Borehole No: 5

Sample No: 5

Depth (m): 3

Elevation (m): 417.5

Liquid Limit (%) = -

Plastic Limit (%) = -

Plasticity Index (%) = -

Moisture Content (%) = -

Estimated Permeability (cm./sec.) = 10^{-4}

Classification of Sample [& Group Symbol]: SILT

some fine sand, a trace of clay

Figure 13

Soil Engineers Ltd.

GRAIN SIZE DISTRIBUTION

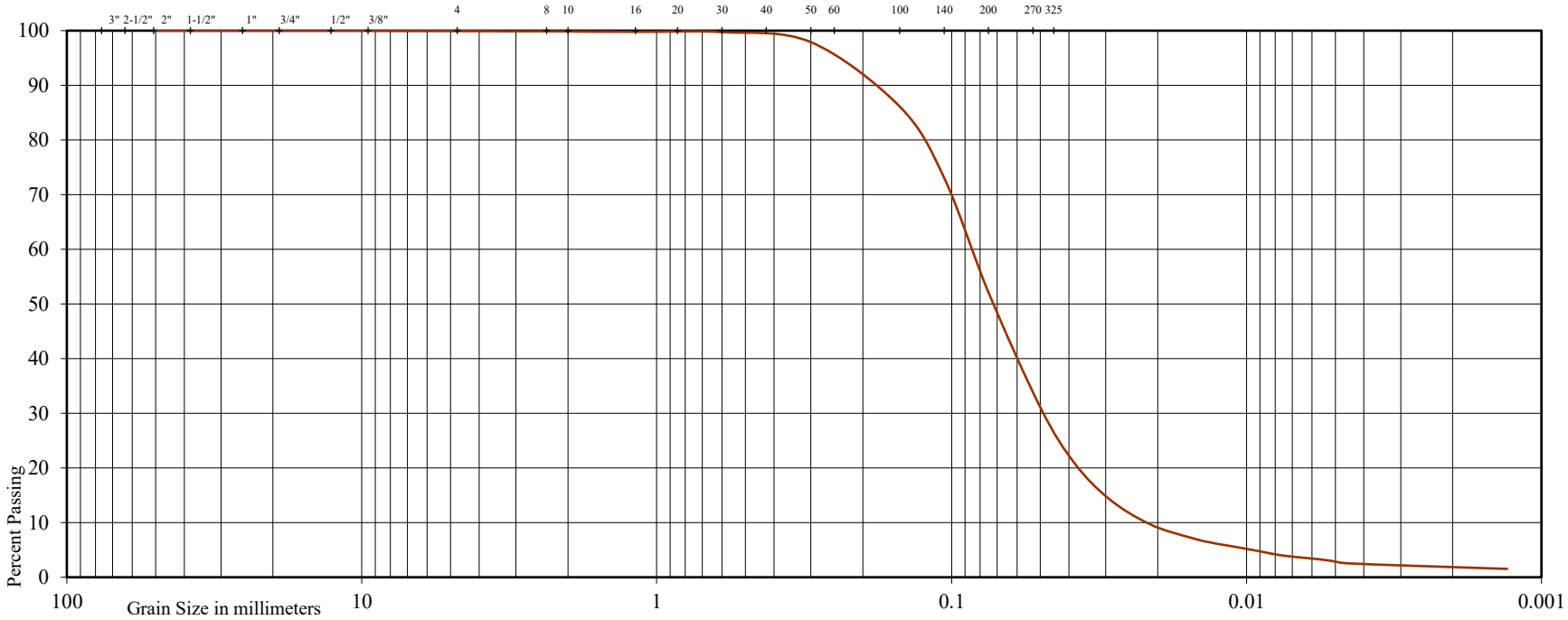
Reference No: 2603-W021

U.S. BUREAU OF SOILS CLASSIFICATION

GRAVEL		SAND				SILT	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	V. FINE		

UNIFIED SOIL CLASSIFICATION

GRAVEL		SAND			SILT & CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	



Project: Hydrogeological Assessment for Proposed Development

Location: 6410 First Line and 8076 Wellington 19, Township Centre of Wellington (Fergus)

Borehole No: 4

Sample No: 6

Depth (m): 4.6

Elevation (m): 419.7

Liquid Limit (%) = -

Plastic Limit (%) = -

Plasticity Index (%) = -

Moisture Content (%) = -

Estimated Permeability (cm./sec.) = 10^{-3}

Classification of Sample [& Group Symbol]: SANDY SILT
a trace of clay

Figure 14

Soil Engineers Ltd.

GRAIN SIZE DISTRIBUTION

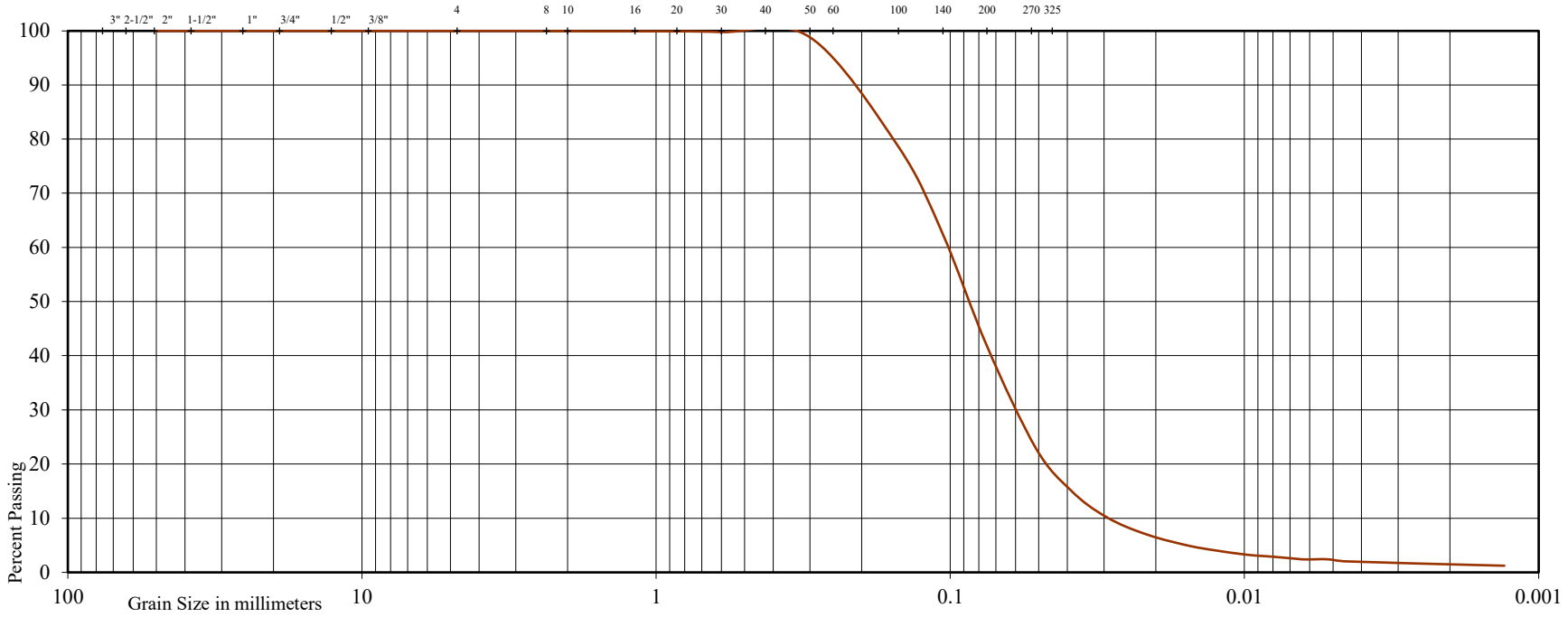
Reference No: 2603-W021

U.S. BUREAU OF SOILS CLASSIFICATION

GRAVEL		SAND				SILT	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	V. FINE		

UNIFIED SOIL CLASSIFICATION

GRAVEL		SAND			SILT & CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	



Project: Hydrogeological Assessment for Proposed Development

Location: 6410 First Line and 8076 Wellington 19, Township Centre of Wellington (Fergus)

Borehole No: 6

Sample No: 5

Depth (m): 3

Elevation (m): 422.7

Liquid Limit (%) = -

Plastic Limit (%) = -

Plasticity Index (%) = -

Moisture Content (%) = -

Estimated Permeability (cm./sec.) = 10^{-3}

Classification of Sample [& Group Symbol]: SILTY FINE SAND
a trace of clay

Figure 15

Soil Engineers Ltd.

GRAIN SIZE DISTRIBUTION

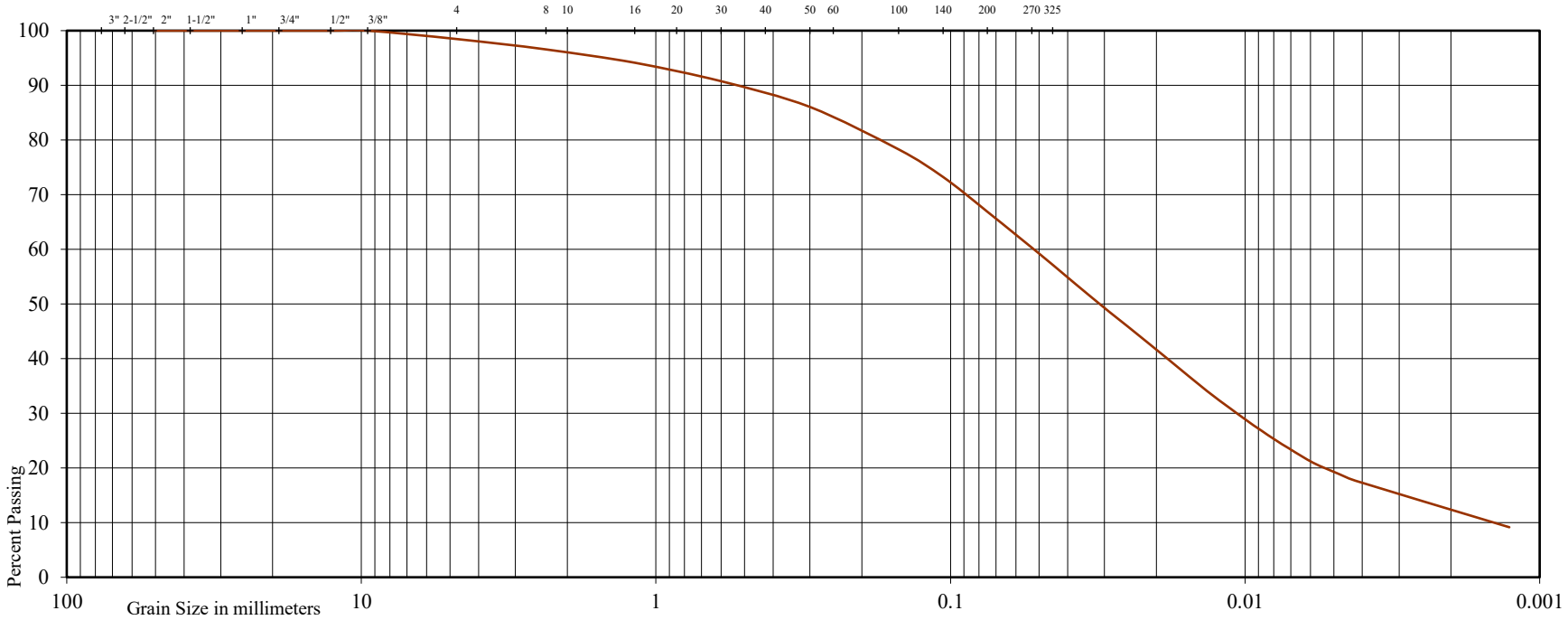
Reference No: 2603-W021

U.S. BUREAU OF SOILS CLASSIFICATION

GRAVEL		SAND				SILT	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	V. FINE		

UNIFIED SOIL CLASSIFICATION

GRAVEL		SAND			SILT & CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	



Project: Hydrogeological Assessment for Proposed Development

Location: 6410 First Line and 8076 Wellington 19, Township Centre of Wellington (Fergus)

Borehole No: 8

Sample No: 6

Depth (m): 4.6

Elevation (m): 414.8

Liquid Limit (%) = -

Plastic Limit (%) = -

Plasticity Index (%) = -

Moisture Content (%) = -

Estimated Permeability (cm./sec.) = 10^{-6}

Classification of Sample [& Group Symbol]: SANDY SILT, TILL
some clay, a trace of gravel

Figure 16

Soil Engineers Ltd.

GRAIN SIZE DISTRIBUTION

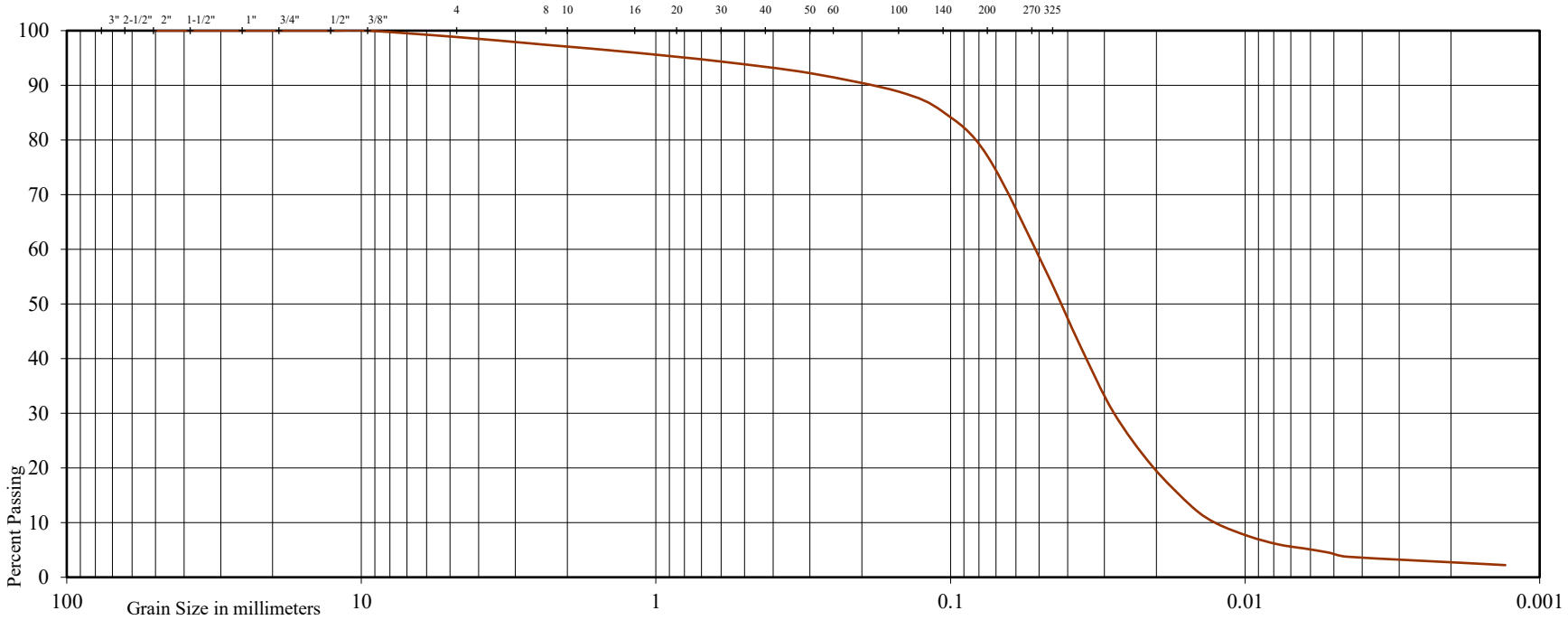
Reference No: 2603-W021

U.S. BUREAU OF SOILS CLASSIFICATION

GRAVEL		SAND				SILT	CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	V. FINE		

UNIFIED SOIL CLASSIFICATION

GRAVEL		SAND			SILT & CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	



Project: Hydrogeological Assessment for Proposed Development

Location: 6410 First Line and 8076 Wellington 19, Township Centre of Wellington (Fergus)

Borehole No: 9

Sample No: 6

Depth (m): 4.6

Elevation (m): 417.3

Liquid Limit (%) = -

Plastic Limit (%) = -

Plasticity Index (%) = -

Moisture Content (%) = -

Estimated Permeability (cm./sec.) = 10^{-4}

Classification of Sample [& Group Symbol]: SANDY SILT, TILL
traces of clay and gravel

Figure 17

Soil Engineers Ltd.
CONSULTING ENGINEERS
GEOTECHNICAL • ENVIRONMENTAL • HYDROGEOLOGICAL • BUILDING SCIENCE
90 WEST BEAVER CREEK ROAD, SUITE 100, RICHMOND HILL, ONTARIO L4B 1E7 · TEL: (416) 754-8515 · FAX: (905) 881-8335

BARRIE	MISSISSAUGA	OSHAWA	NEWMARKET	MUSKOKA	HAMILTON
TEL: (705) 721-7863	TEL: (905) 542-7605	TEL: (905) 440-2040	TEL: (905) 853-0647	TEL: (705) 684-4242	TEL: (905) 777-7956
FAX: (705) 721-7864	FAX: (905) 542-2769	FAX: (905) 725-1315	FAX: (905) 881-8335	FAX: (705) 684-8522	FAX: (905) 542-2769

APPENDIX 'B'

MECP WATER WELL RECORDS SUMMARY

REFERENCE NO. 2603-W021

MECP Well Records Summary

WELL ID	MECP* WWR ID	Construction Method	Well Depth (m)**	Well Usage		Static Water Level (m)**	Top of Screen Depth (m)**	Bottom of Screen Depth (m)**	Date Completed
				Final Status	First Use				
1	6712459	Rotary(Convemt.) (Reverse)	58.5	Water Supply	Domestic	16.8	-	-	1997-12-11
2	6712460	Rotary(Convemt.) (Reverse)	59.4	Water Supply	Domestic	18.9	-	-	1997-11-17
3	6712461	Rotary(Convemt.) (Reverse)	59.1	Water Supply	Domestic	16.8	-	-	1997-11-17
4	6708593	Rotary(Convemt.) (Reverse)	76.2	Water Supply	Domestic	29.6	-	-	1986-06-25
5	6702866	Cable Tool	22.9	Water Supply	Commercial	9.1	21.6	22.9	1960-08-15
6	6702858	Cable Tool	41.1	Water Supply	Domestic	12.2	-	-	1955-04-24
7	6702859	Cable Tool	38.1	Water Supply	Domestic	23.5	-	-	1955-07-27
8	6702861	Cable Tool	21.3	Water Supply	Domestic	4.6	-	-	1957-08-16
9	6702862	Cable Tool	36.6	Water Supply	Domestic	12.2	-	-	1958-06-04
10	6702864	Cable Tool	21.0	Water Supply	Domestic	12.5	-	-	1960-05-23
11	6702870	Cable Tool	30.5	Water Supply	Domestic	19.2	-	-	1963-10-28
12	6702872	Cable Tool	16.2	Water Supply	Domestic	2.7	-	-	1967-01-16
13	6702873	Cable Tool	32.0	Water Supply	Domestic	4.6	-	-	1967-06-12
14	6702874	Cable Tool	26.8	Water Supply	Domestic	13.7	-	-	1967-11-02
15	6702895	Cable Tool	44.8	Water Supply	Domestic	5.2	-	-	1964-10-19
16	6703280	Cable Tool	45.7	Water Supply	Domestic	18.3	-	-	1968-07-20
17	6704106	Cable Tool	54.6	Water Supply	Domestic	30.5	-	-	1971-12-22
18	6712467	Rotary(Air)	85.3	Water Supply	-	25.9	-	-	1997-12-24
19	6703374	Cable Tool	18.3	Water Supply	Domestic	11.6	-	-	1969-05-19
20	6703376	Cable Tool	37.8	Water Supply	Domestic	11.0	-	-	1969-05-06
21	6703416	Cable Tool	38.7	Water Supply	Domestic	21.3	-	-	1969-08-05
22	6703481	Cable Tool	25.6	Water Supply	Domestic	13.7	-	-	1969-11-27
23	6703660	Cable Tool	35.1	Water Supply	Domestic	2.4	-	-	1970-04-25
24	6703979	Cable Tool	47.2	Water Supply	Domestic	5.2	-	-	1971-07-02
25	6703947	Cable Tool	22.9	Water Supply	Domestic	2.1	-	-	1971-06-21
26	6704214	Cable Tool	129.5	Water Supply	Municipal	19.2	-	-	1972-03-08
27	6704630	Cable Tool	39.6	Water Supply	Domestic	9.1	-	-	1973-05-31
28	6704812	Cable Tool	34.4	Water Supply	Domestic	9.1	-	-	1973-08-20
29	6704878	Rotary(Convemt.) (Reverse)	30.5	Water Supply	Domestic	4.6	-	-	1973-10-15
30	6704886	Rotary(Convemt.) (Reverse)	76.2	Water Supply	Domestic	18.3	-	-	1973-08-15
31	6705173	Rotary(Air)	50.3	Water Supply	Domestic	16.5	-	-	1974-05-31
32	6705247	Rotary(Air)	54.9	Water Supply	Domestic	11.9	-	-	1974-08-15
33	6705518	Cable Tool	61.6	Water Supply	Domestic	15.2	-	-	1975-04-07
34	6705526	Cable Tool	45.7	Water Supply	Domestic	7.3	-	-	1975-05-18
35	6705575	Rotary(Air)	65.5	Water Supply	Domestic	13.1	-	-	1975-06-27
36	6705706	Cable Tool	57.9	Water Supply	Domestic	26.5	-	-	1975-09-08
37	6705800	Cable Tool	48.5	Water Supply	Domestic	13.7	-	-	1975-10-24
38	6705842	Rotary(Convemt.) (Reverse)	75.6	Water Supply	Domestic	22.9	-	-	1975-12-08
39	6705846	Rotary(Air)	36.6	Water Supply	Domestic	12.2	-	-	1975-10-17

MECP Well Records Summary

WELL ID	MECP* WWR ID	Construction Method	Well Depth (m)**	Well Usage		Static Water Level (m)**	Top of Screen Depth (m)**	Bottom of Screen Depth (m)**	Date Completed
				Final Status	First Use				
40	6706006	Cable Tool	69.2	Water Supply	Domestic	24.4	-	-	1976-05-11
41	6706355	Rotary(Convemt.) (Reverse)	45.7	Water Supply	Domestic	10.1	-	-	1976-06-15
42	6706872	Cable Tool	58.8	Water Supply	Domestic	16.8	-	-	1978-10-28
43	6707026	Cable Tool	40.2	Water Supply	Domestic	15.8	-	-	1979-06-04
44	6707174	Cable Tool	53.0	Water Supply	Domestic	18.9	-	-	1979-10-21
45	6707213	Cable Tool	35.7	Water Supply	Domestic	5.5	-	-	1979-10-01
46	6707270	Rotary(Convemt.) (Reverse)	75.9	Water Supply	Domestic	27.1	-	-	1980-04-21
47	6707318	Rotary(Convemt.) (Reverse)	76.2	Water Supply	Domestic	8.5	-	-	1980-08-11
48	6707485	Rotary(Convemt.) (Reverse)	42.7	Water Supply	Domestic	26.5	-	-	1981-06-18
49	6708434	Rotary(Convemt.) (Reverse)	70.1	Water Supply	Domestic	11.9	-	-	1986-05-05
50	6708122	Cable Tool	52.7	Water Supply	Domestic	20.1	-	-	1984-06-13
51	6708209	Rotary(Convemt.) (Reverse)	52.4	Water Supply	Domestic	29.0	-	-	1985-04-18
52	6708249	Cable Tool	65.8	Water Supply	Domestic	25.9	-	-	1985-09-02
53	6708270	Cable Tool	55.8	Water Supply	Domestic	22.9	-	-	1985-07-25
54	6708271	Cable Tool	65.8	Water Supply	Domestic	28.0	-	-	1985-07-15
55	6708422	Rotary(Convemt.) (Reverse)	68.6	Water Supply	Domestic	23.8	-	-	1986-04-28
56	6708742	Rotary(Convemt.) (Reverse)	38.1	Water Supply	Public	9.1	-	-	1986-11-24
57	6708838	Rotary(Convemt.) (Reverse)	70.1	Water Supply	Domestic	15.2	-	-	1987-04-21
58	6709077	Rotary(Convemt.) (Reverse)	114.3	Water Supply	Domestic	19.8	-	-	1987-09-25
59	6709078	Rotary(Convemt.) (Reverse)	101.2	Water Supply	Domestic	29.6	-	-	1987-09-28
60	6709079	Rotary(Convemt.) (Reverse)	89.9	Water Supply	Domestic	24.4	-	-	1987-08-17
61	6709080	Rotary(Convemt.) (Reverse)	89.9	Water Supply	Domestic	28.0	-	-	1987-08-11
62	6709081	Rotary(Convemt.) (Reverse)	53.3	Water Supply	Domestic	15.2	-	-	1987-06-20
63	6709082	Rotary(Convemt.) (Reverse)	121.9	Water Supply	Domestic	19.8	-	-	1987-08-13
64	6709083	Rotary(Convemt.) (Reverse)	126.5	Water Supply	Domestic	22.9	-	-	1987-06-18
65	6709084	Rotary(Convemt.) (Reverse)	71.6	Water Supply	Domestic	26.5	-	-	1987-10-29
66	6709389	Rotary(Convemt.) (Reverse)	64.9	Water Supply	Domestic	22.9	-	-	1988-09-16
67	6709486	Rotary(Air)	24.4	Water Supply	Domestic	12.5	-	-	1988-11-09
68	6709628	Rotary(Convemt.) (Reverse)	67.1	Water Supply	Domestic	23.5	-	-	1988-03-16
69	6709632	Rotary(Convemt.) (Reverse)	66.4	Water Supply	Domestic	24.4	-	-	1988-05-12
70	6709656	Rotary(Air)	37.8	Water Supply	Domestic	12.2	-	-	1988-06-03
71	6709925	Cable Tool	50.9	Water Supply	Domestic	21.3	-	-	1989-06-01
72	6710029	Rotary(Convemt.) (Reverse)	90.8	Water Supply	Domestic	34.1	-	-	1989-10-27
73	6710089	Rotary(Air)	73.5	Water Supply	Domestic	29.9	-	-	1989-10-25
74	6710296	Cable Tool	55.8	Water Supply	Domestic	31.1	-	-	1990-04-02
75	6711090	Rotary(Air)	85.3	Water Supply	Domestic	29.6	-	-	1992-12-06
76	6711091	Rotary(Convemt.) (Reverse)	108.2	Water Supply	Domestic	27.1	-	-	1991-12-11
77	6711327	Rotary(Convemt.) (Reverse)	59.4	Water Supply	Domestic	19.5	-	-	1993-09-24

MECP Well Records Summary

WELL ID	MECP* WWR ID	Construction Method	Well Depth (m)**	Well Usage		Static Water Level (m)**	Top of Screen Depth (m)**	Bottom of Screen Depth (m)**	Date Completed
				Final Status	First Use				
78	6711424	Rotary(Air)	86.9	Water Supply	Domestic	25.3	-	-	1994-02-04
79	6711708	Rotary(Convemt.) (Reverse)	70.1	Water Supply	Domestic	19.2	-	-	1995-04-12
80	6711709	Rotary(Convemt.) (Reverse)	68.6	Water Supply	Domestic	20.1	-	-	1995-04-19
81	6711718	Rotary(Air)	85.3	Water Supply	-	21.0	-	-	1995-05-16
82	6711783	Rotary(Convemt.) (Reverse)	76.2	Water Supply	Domestic	25.9	-	-	1995-07-26
83	6711828	Rotary(Air)	103.6	Water Supply	Domestic	26.5	-	-	1995-09-26
84	6712180	Rotary(Air)	34.7	Water Supply	Commercial	17.4	-	-	1995-09-29
85	6712268	Rotary(Convemt.) (Reverse)	74.7	Water Supply	Domestic	20.1	-	-	1997-05-01
86	6712311	Rotary(Air)	51.2	Water Supply	Industrial	22.9	-	-	1996-11-08
87	6712377	Rotary(Air)	57.0	Water Supply	Industrial	41.8	-	-	1997-10-02
88	6712449	Rotary(Convemt.) (Reverse)	83.5	Water Supply	Domestic	39.6	-	-	1997-12-02
89	6712523	Rotary(Air)	103.6	Water Supply	Domestic	25.9	-	-	1998-04-06
90	6712546	Rotary(Air)	103.6	Water Supply	Domestic	30.8	-	-	1998-05-07
91	6713474	Rotary(Convemt.) (Reverse)	82.3	Water Supply	Domestic	40.5	-	-	2000-09-06
92	6714060	Rotary(Air)	74.7	Water Supply	Domestic	20.1	-	-	2002-04-22
93	6714229	AirPercussion	54.9	Water Supply	Domestic	19.8	-	-	2002-08-12
94	6714912	Rotary(Convemt.) (Reverse)	47.3	Water Supply	Domestic	16.7	-	-	2004-03-11
95	6715201	Rotary(Air)	73.2	Water Supply	Domestic	29.0	-	-	2004-06-04
96	6715090	Boring	3.8	Observation Wells	Not Used	-	0.8	3.8	2004-08-18
97	6715007	Boring	3.0	Water Supply	-	-	0.6	3.0	2004-06-07
98	6715297	Rotary(Air)	37.2	Water Supply	Domestic	9.4	-	-	2005-04-08
99	6715317	Rotary(Convemt.) (Reverse)	70.1	Water Supply	Industrial	42.7	-	-	2005-02-01
100	6715522	Rotary(Convemt.) (Reverse)	47.3	Water Supply	Domestic	24.9	-	-	2005-08-18
101	6715678	Other Method	4.6	Observation Wells	-	-	1.2	4.3	2005-10-15
102	7041522	Boring	4.5	Observation Wells	-	-	3.0	4.5	2007-01-19
103	7047184	Rotary(Air)	65.5	Water Supply	Domestic	26.2	-	-	2007-06-20
104	7047185	-	-	Abandoned-Supply	-	-	-	-	2007-06-22
105	7049324	Rotary(Convemt.) (Reverse)	4.5	Observation Wells	-	-	1.5	4.5	2007-08-21
106	7049325	Rotary(Convemt.) (Reverse)	4.5	Observation Wells	-	-	1.5	4.5	2007-08-22
107	7050296	Rotary(Air)	56.7	Water Supply	Domestic	21.2	-	-	2007-07-28
108	7050304	Rotary(Air)	58.0	Water Supply	Domestic	28.5	-	-	2007-08-21
109	7051830	Rotary(Air)	36.6	Water Supply	Domestic	17.7	-	-	2007-10-16
110	7113218	Rotary(Convemt.) (Reverse)	60.4	Water Supply	Domestic	29.1	-	-	2008-07-23
111	7122427	-	-	Water Supply	Domestic	-	-	-	2009-03-17
112	7127526	-	3.6	Test Hole	Monitoring	-	1.2	3.4	2007-10-30
113	7127526	-	-	Test Hole	Monitoring	-	1.2	3.4	2007-10-30
114	7127526	-	-	Test Hole	Monitoring	-	1.2	3.4	2007-10-30
115	7127526	-	-	Test Hole	Monitoring	-	1.2	3.4	2007-10-30

MECP Well Records Summary

WELL ID	MECP* WWR ID	Construction Method	Well Depth (m)**	Well Usage		Static Water Level (m)**	Top of Screen Depth (m)**	Bottom of Screen Depth (m)**	Date Completed
				Final Status	First Use				
116	7127526	-	-	Test Hole	Monitoring	-	1.2	3.4	2007-10-30
117	7127726	-	-	Test Hole	Monitoring	-	1.5	4.5	2009-04-24
118	7127726	-	-	Test Hole	Monitoring	-	1.5	4.5	2009-04-24
119	7127726	-	-	Test Hole	Monitoring	-	1.5	4.5	2009-04-24
120	7145162	-	5.8	Test Hole	Monitoring	-	1.2	5.8	2010-03-31
121	7145927	-	-	Abandoned-Supply	-	-	-	-	2010-05-26
122	7145928	Rotary(Convemt.) (Reverse)	55.5	Water Supply	Domestic	23.8	-	-	2010-05-24
123	7148046	-	4.3	Test Hole	Monitoring	0.9	1.2	4.3	2010-06-17
124	7145162	-	-	Test Hole	Monitoring	-	1.2	5.8	2010-03-31
125	7145162	-	-	Test Hole	Monitoring	-	1.2	5.8	2010-03-31
126	7145162	-	-	Test Hole	Monitoring	-	1.2	5.8	2010-03-31
127	7145162	-	-	Test Hole	Monitoring	-	1.2	5.8	2010-03-31
128	7145162	-	-	Test Hole	Monitoring	-	1.2	5.8	2010-03-31
129	7145162	-	-	Test Hole	Monitoring	-	1.2	5.8	2010-03-31
130	7145162	-	-	Test Hole	Monitoring	-	1.2	5.8	2010-03-31
131	7148046	-	-	Test Hole	Monitoring	0.9	1.2	4.3	2010-06-17
132	7148046	-	-	Test Hole	Monitoring	0.9	1.2	4.3	2010-06-17
133	7148046	-	-	Test Hole	Monitoring	0.9	1.2	4.3	2010-06-17
134	7148046	-	-	Test Hole	Monitoring	0.9	1.2	4.3	2010-06-17
135	7148046	-	-	Test Hole	Monitoring	0.9	1.2	4.3	2010-06-17
136	7155562	-	-	-	-	-	-	-	-
137	7158387	Rotary(Convemt.) (Reverse)	84.7	Water Supply	Domestic	29.8	-	-	2010-06-30
138	7158388	-	-	-	-	-	-	-	2010-06-30
139	7164055	-	-	-	-	-	-	-	2011-03-21
140	7164056	-	-	-	-	-	-	-	2011-03-21
141	7175391	H.S.A.	9.6	Observation Wells	Monitoring	-	6.4	9.6	2011-12-14
142	7175610	Other Method	7.2	-	Monitoring	-	4.0	7.2	2011-12-14
143	7175609	Other Method	2.9	Observation Wells	Monitoring	-	1.6	2.9	2011-12-13
144	7175611	Other Method	6.2	Observation Wells	Monitoring	-	3.0	6.2	2011-12-13
145	7192057	-	-	Water Supply	Domestic	-	-	-	2012-11-12
146	7200884	-	-	-	-	-	-	-	2013-03-21
147	7201866	Boring	4.6	Observation Wells	Monitoring	-	3.0	4.6	2013-01-23
148	7204364	Rotary(Convemt.) (Reverse)	112.8	Water Supply	Domestic	25.3	-	-	2013-05-02
149	7205611	-	-	-	-	-	-	-	2013-06-07
150	7225058	Rotary(Convemt.) (Reverse)	48.2	Water Supply	Domestic	11.3	-	-	2014-07-24
151	7228914	Rotary(Convemt.) (Reverse)	4.6	-	Monitoring	-	4.6	1.5	2014-07-16
152	7228915	Rotary(Convemt.) (Reverse)	4.6	Observation Wells	Monitoring	-	4.6	1.5	2014-07-16
153	7228916	Rotary(Convemt.) (Reverse)	4.6	Observation Wells	Monitoring	-	4.6	1.5	2014-07-16

MECP Well Records Summary

WELL ID	MECP* WWR ID	Construction Method	Well Depth (m)**	Well Usage		Static Water Level (m)**	Top of Screen Depth (m)**	Bottom of Screen Depth (m)**	Date Completed
				Final Status	First Use				
154	7249479	-	-	Abandoned-Supply	-	1.8	-	-	2015-08-26
155	7260644	-	-	-	-	-	-	-	2014-12-12
156	7266669	-	-	Abandoned-Other	-	-	-	-	2016-06-08
157	7268878	Rotary(Convemt.) (Reverse)	60.4	-	Domestic	24.4	-	-	2016-07-06
158	7280324	Rotary(Convemt.) (Reverse)	56.7	Water Supply	Domestic	25.4	-	-	2016-09-21
159	7285260	Rotary(Convemt.) (Reverse)	108.2	Water Supply	Domestic	26.2	-	-	2016-12-13
160	7288225	-	-	Water Supply	Domestic	24.4	-	-	2016-05-15
161	7295072	Boring	-	Abandoned-Other	Monitoring	-	-	-	2017-07-13
162	7295073	Boring	-	Abandoned-Other	Monitoring	-	-	-	2017-07-13
163	7295083	Boring	-	Abandoned-Other	Monitoring	-	-	-	2017-07-13
164	7300372	-	-	Abandoned-Other	Not Used	-	-	-	2017-10-19
165	7300373	-	-	Abandoned-Other	Not Used	-	-	-	2017-10-19
166	7300374	-	-	Abandoned-Other	Not Used	-	-	-	2017-10-19
167	7300375	-	-	Abandoned-Other	Not Used	-	-	-	2017-10-19
168	7300376	-	-	Abandoned-Other	Not Used	-	-	-	2017-10-19
169	7300377	-	-	Abandoned-Other	Not Used	-	-	-	2017-10-19
170	7313844	Driving	4.5	Observation Wells	Test Hole	-	1.5	4.5	2018-05-14
171	7313845	Boring	-	Abandoned-Other	Test Hole	-	-	-	2018-05-14
172	7313846	Driving	4.5	Test Hole	Test Hole	-	1.5	4.5	2018-05-14
173	7313847	Boring	-	Abandoned-Other	Test Hole	-	-	-	2018-05-14
174	7313848	Driving	5.8	Test Hole	Test Hole	-	2.2	5.1	2018-05-14
175	7313849	Boring	-	Abandoned-Other	Test Hole	-	-	-	2018-05-14
176	7332765	-	-	-	-	-	-	-	2018-07-18
177	7335159	Boring	8.1	Observation Wells	Monitoring	-	6.6	8.1	2019-04-25
178	7335178	Boring	7.0	Observation Wells	Monitoring	-	5.5	7.0	2019-04-25
179	7339497	-	-	Abandoned-Other	-	-	-	-	2019-04-05
180	7339498	-	-	Abandoned-Other	-	-	-	-	2019-04-05
181	7390689	H.S.A.	7.6	Observation Wells	Monitoring	-	6.1	7.6	2021-05-20
182	7390690	Direct Push	6.1	Observation Wells	Monitoring	-	4.6	6.1	2021-05-20
183	7390691	Direct Push	4.6	Observation Wells	Monitoring	-	3.0	4.6	2021-05-20
184	7398969	-	-	Abandoned-Other	Domestic	-	-	-	2021-08-05
185	7434321	Direct Push	-	Abandoned-Other	Monitoring	-	-	-	2022-10-27
186	7434322	Direct Push	-	Abandoned-Other	Monitoring	-	-	-	2022-10-27
187	7434323	Direct Push	-	Abandoned-Other	Monitoring	-	-	-	2022-10-27
188	7459660	Rotary(Convemt.) (Reverse)	4.6	Observation Wells	Monitoring	-	3.0	4.6	2023-09-25
189	7459672	Rotary(Convemt.) (Reverse)	4.6	Observation Wells	Monitoring	-	3.0	4.6	2023-09-25
190	7459673	Rotary(Convemt.) (Reverse)	3.8	Observation Wells	Monitoring	-	2.3	3.8	2023-09-25
191	7469955	-	-	-	-	-	-	-	2023-12-01

MECP Well Records Summary

WELL ID	MECP* WWR ID	Construction Method	Well Depth (m)**	Well Usage		Static Water Level (m)**	Top of Screen Depth (m)**	Bottom of Screen Depth (m)**	Date Completed
				Final Status	First Use				
192	7469962	-	-	-	-	-	-	-	2023-12-15
193	7471049	-	-	Abandoned-Other	-	-	-	-	2023-11-01
194	7471057	-	-	Abandoned-Other	-	-	-	-	2023-11-01
195	7471062	-	-	Abandoned-Other	-	-	-	-	2023-11-01

Notes:
*MECP WWID: Ministry of the Environment, Conservation and Parks Water Well Records Identification
**Metres below ground surface

Soil Engineers Ltd.
CONSULTING ENGINEERS
GEOTECHNICAL • ENVIRONMENTAL • HYDROGEOLOGICAL • BUILDING SCIENCE
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BARRIE	MISSISSAUGA	OSHAWA	NEWMARKET	MUSKOKA	HAMILTON
TEL: (705) 721-7863	TEL: (905) 542-7605	TEL: (905) 440-2040	TEL: (905) 853-0647	TEL: (705) 684-4242	TEL: (905) 777-7956
FAX: (705) 721-7864	FAX: (905) 542-2769	FAX: (905) 725-1315	FAX: (905) 881-8335	FAX: (705) 684-8522	FAX: (905) 542-2769

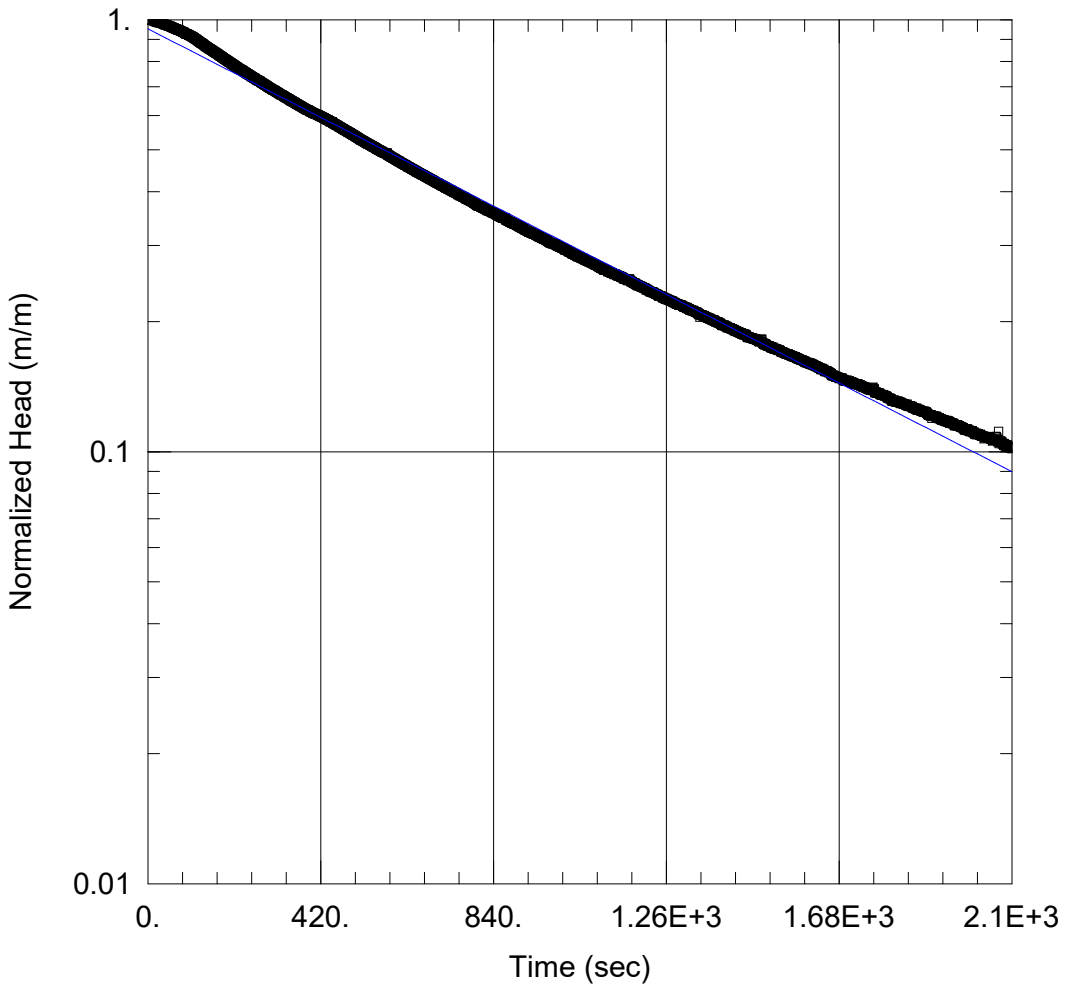
APPENDIX 'C'

IN-SITU HYDRAULIC CONDUCTIVITY TESTING

REFERENCE NO. 2603-W021

Falling Head SWRT of BHMW 1

Prepared By:	Prepared For:
Soil Engineers Ltd.	Sorbara Development Group
Project:	**Location:**
2603-W021	6410 First Line and 8076 Wellington 19, Town of Centre Wellington



SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 8.078E-7 m/sec y0 = 0.3794 m

AQUIFER DATA

Saturated Thickness: 5.7 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BHMW 1)

Initial Displacement: 0.3983 m
Static Water Column Height: 5.7 m
Total Well Penetration Depth: 5.7 m
Screen Length: 1.5 m
Casing Radius: 0.0254 m
Well Radius: 0.0508 m

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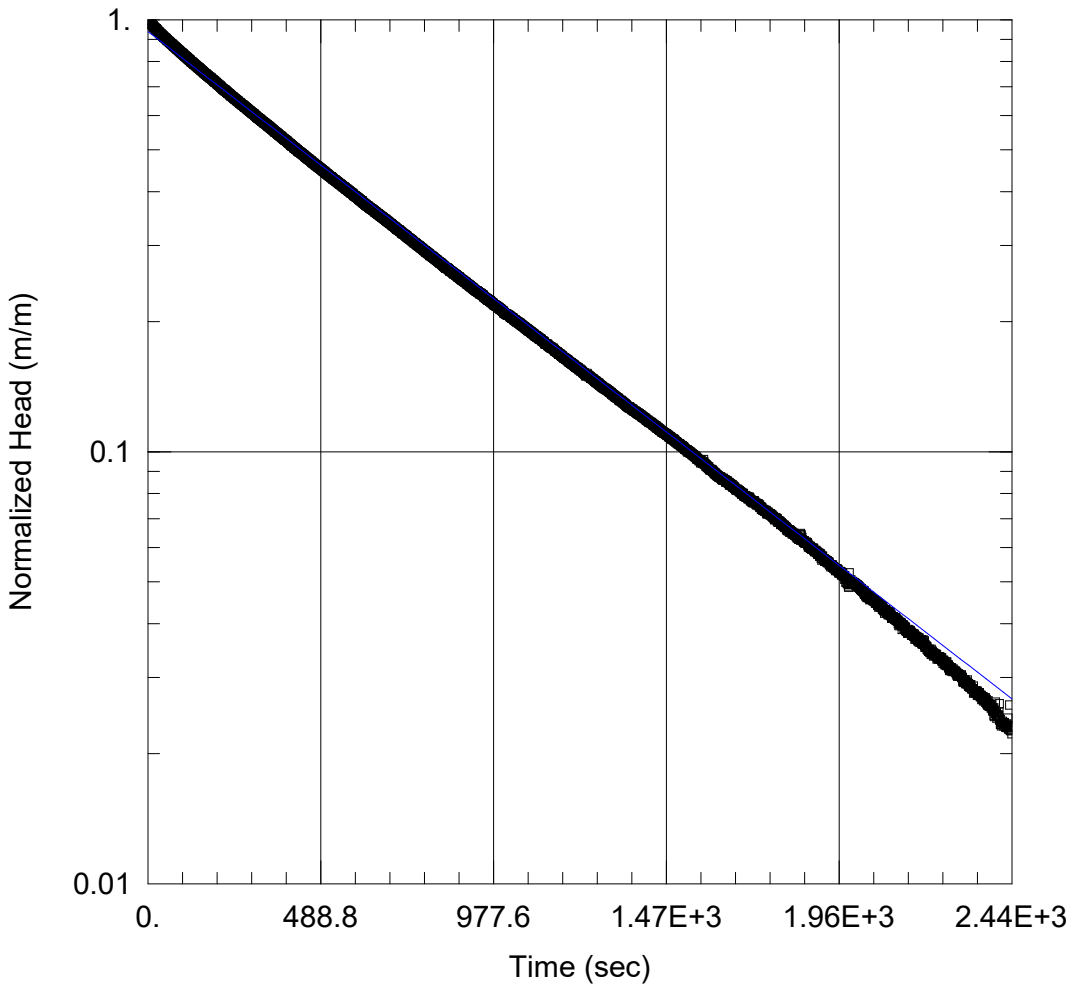
Falling Head SWRT of BHMW 2

Prepared By:	Prepared For:
Soil Engineers Ltd.	Sorbara Development Group
Project:	**Location:**
2603-W021	6410 First Line and 8076 Wellington 19, Town of Centre Wellington



SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 9.697E-7 m/sec y0 = 0.4816 m

AQUIFER DATA

Saturated Thickness: 3.7 m Anisotropy Ratio (Kz/Kr): 1.

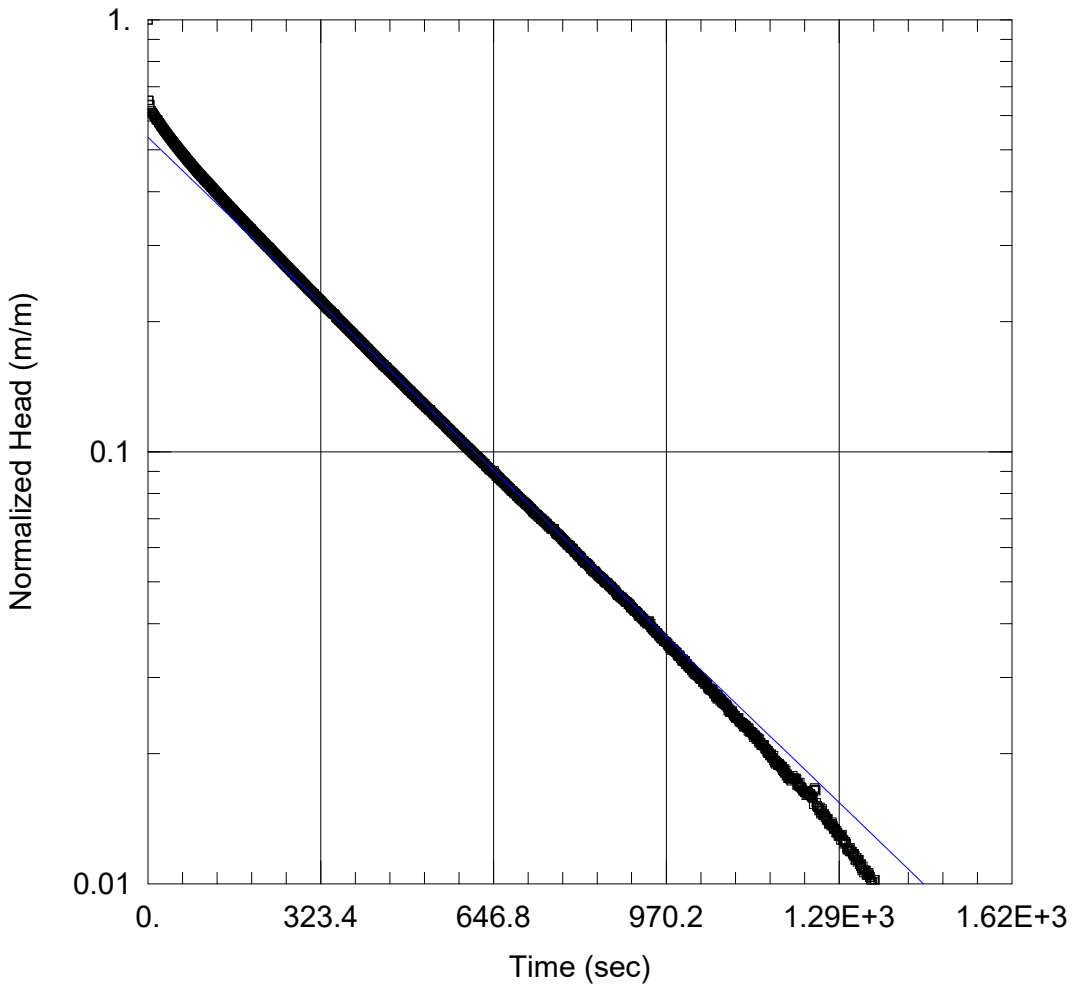
WELL DATA (BHMW 2)

Initial Displacement: 0.513 m
Static Water Column Height: 3.7 m
Total Well Penetration Depth: 3.7 m
Screen Length: 1.5 m
Casing Radius: 0.0254 m
Well Radius: 0.0508 m

Soil Engineers Ltd.

Falling Head SWRT of BHMW 3

Prepared By:	Prepared For:
Soil Engineers Ltd.	Sorbara Development Group
Project:	**Location:**
2603-W021	6410 First Line and 8076 Wellington 19, Town of Centre Wellington



SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 1.958E-6 m/sec y0 = 0.423 m

AQUIFER DATA

Saturated Thickness: 5.5 m Anisotropy Ratio (Kz/Kr): 1.

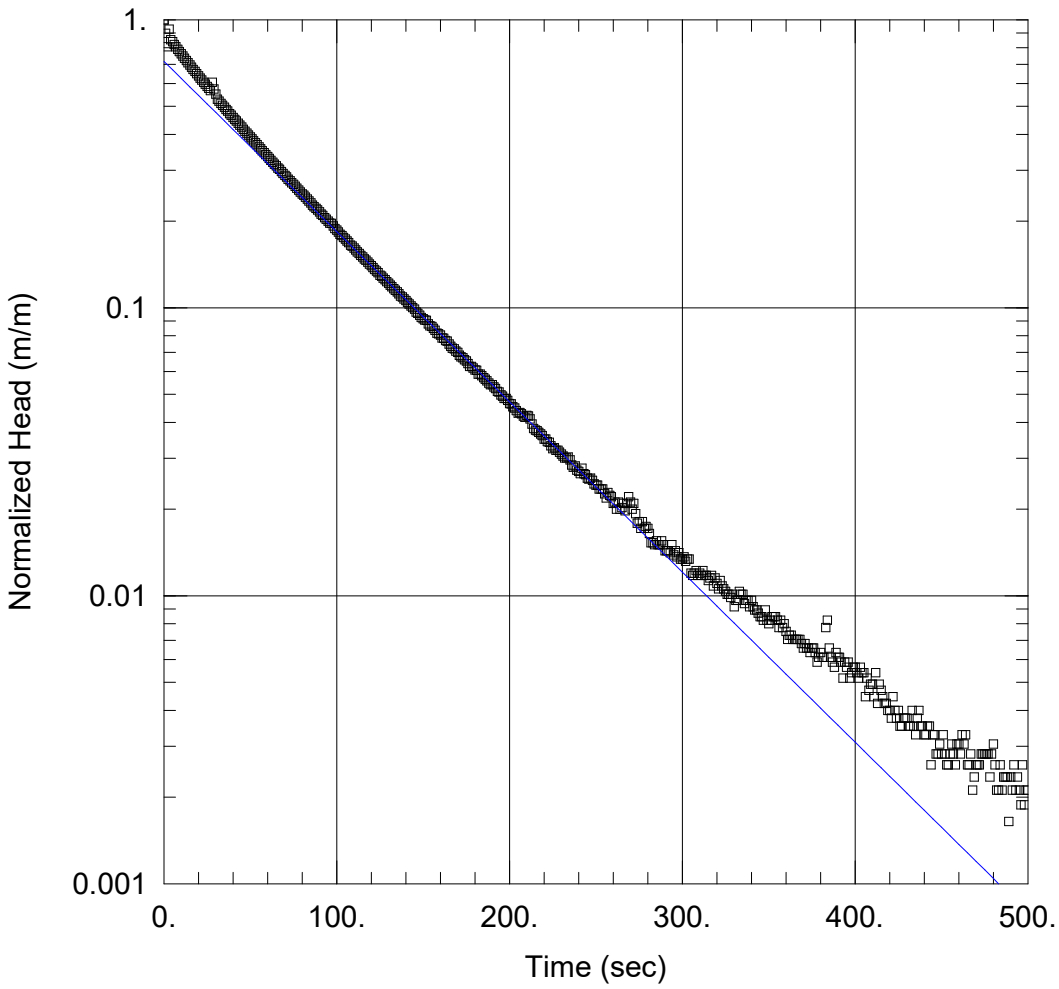
WELL DATA (BHMW 3)

Initial Displacement: 0.7923 m
Static Water Column Height: 5.5 m
Total Well Penetration Depth: 5.5 m
Screen Length: 1.5 m
Casing Radius: 0.0254 m
Well Radius: 0.0508 m

Soil Engineers Ltd.

Falling Head SWRT of BHMW 4

Prepared By:	Prepared For:
Soil Engineers Ltd.	Sorbara Development Group
Project:	**Location:**
2603-W021	6410 First Line and 8076 Wellington 19, Town of Centre Wellington



SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 9.241E-6 m/sec y0 = 0.3049 m

AQUIFER DATA

Saturated Thickness: 4.1 m Anisotropy Ratio (Kz/Kr): 1.

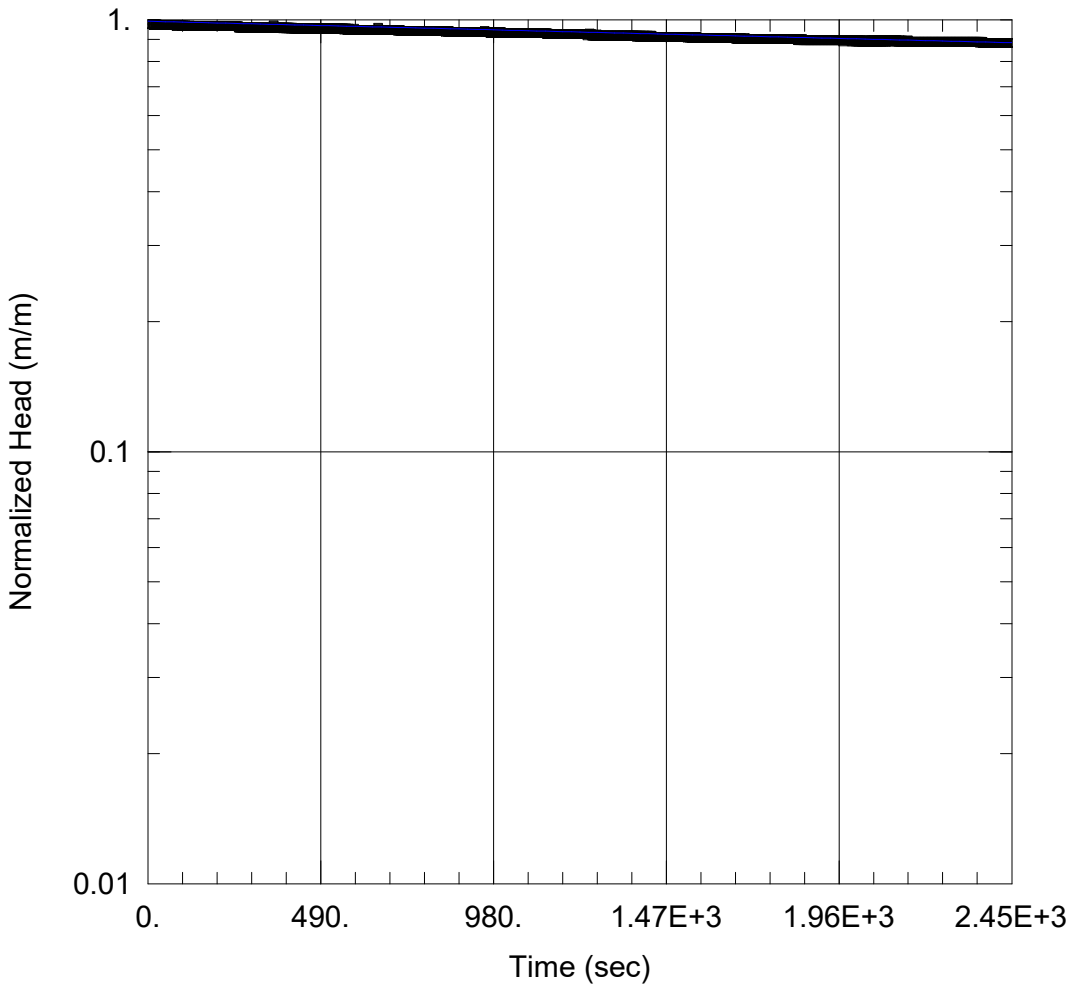
WELL DATA (BHMW 4)

Initial Displacement: 0.4255 m
Static Water Column Height: 4.1 m
Total Well Penetration Depth: 4.1 m
Screen Length: 1.5 m
Casing Radius: 0.0254 m
Well Radius: 0.0508 m

Soil Engineers Ltd.

Falling Head SWRT of BHMW 5

Prepared By:	Prepared For:
Soil Engineers Ltd.	Sorbara Development Group
Project:	**Location:**
2603-W021	6410 First Line and 8076 Wellington 19, Town of Centre Wellington



SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 3.456E-8 m/sec y0 = 0.5148 m

AQUIFER DATA

Saturated Thickness: 6.8 m Anisotropy Ratio (Kz/Kr): 1.

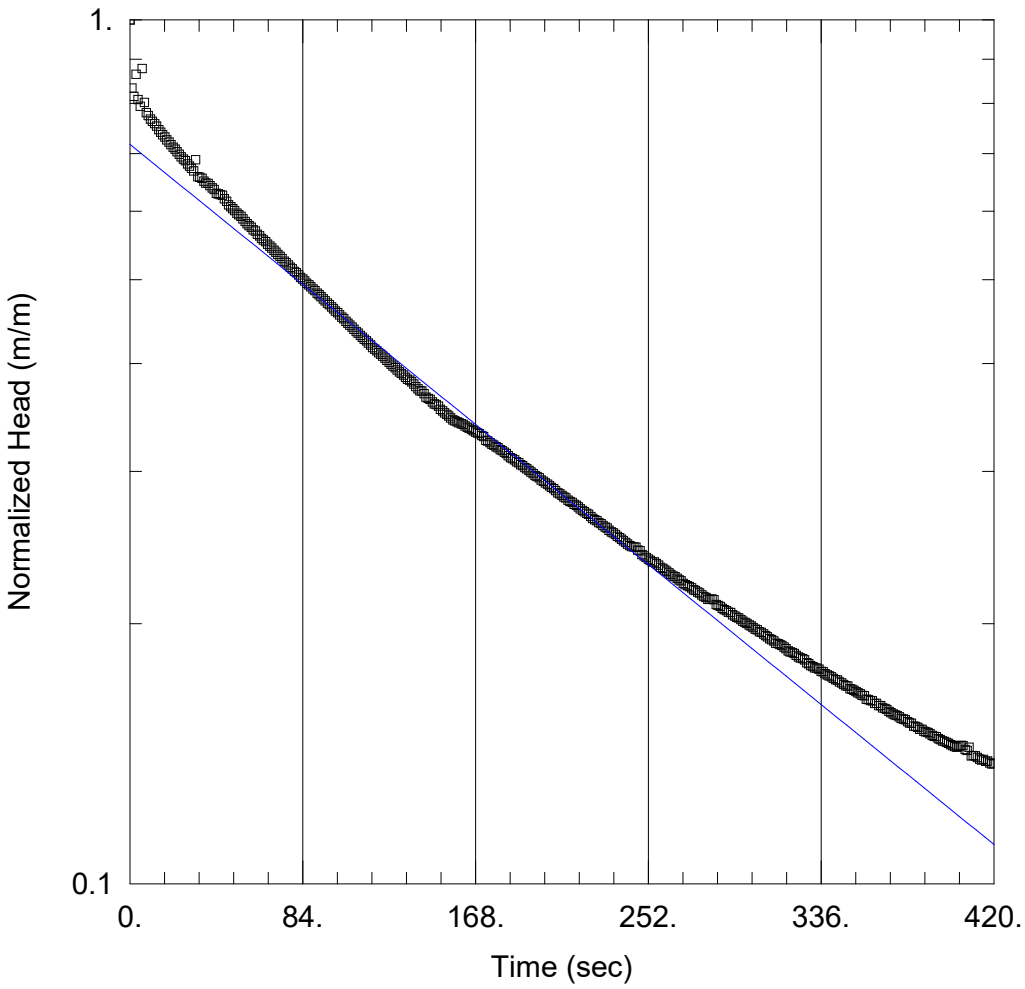
WELL DATA (BHMW 5)

Initial Displacement: 0.519 m
Static Water Column Height: 6.8 m
Total Well Penetration Depth: 6.8 m
Screen Length: 1.5 m
Casing Radius: 0.0254 m
Well Radius: 0.0508 m

Soil Engineers Ltd.

Falling Head SWRT of BHMW 6

Prepared By:	Prepared For:
Soil Engineers Ltd.	Sorbara Development Group
Project:	**Location:**
2603-W021	6410 First Line and 8076 Wellington 19, Town of Centre Wellington



SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 2.959E-6 m/sec y0 = 0.3868 m

AQUIFER DATA

Saturated Thickness: 3.7 m Anisotropy Ratio (Kz/Kr): 1.

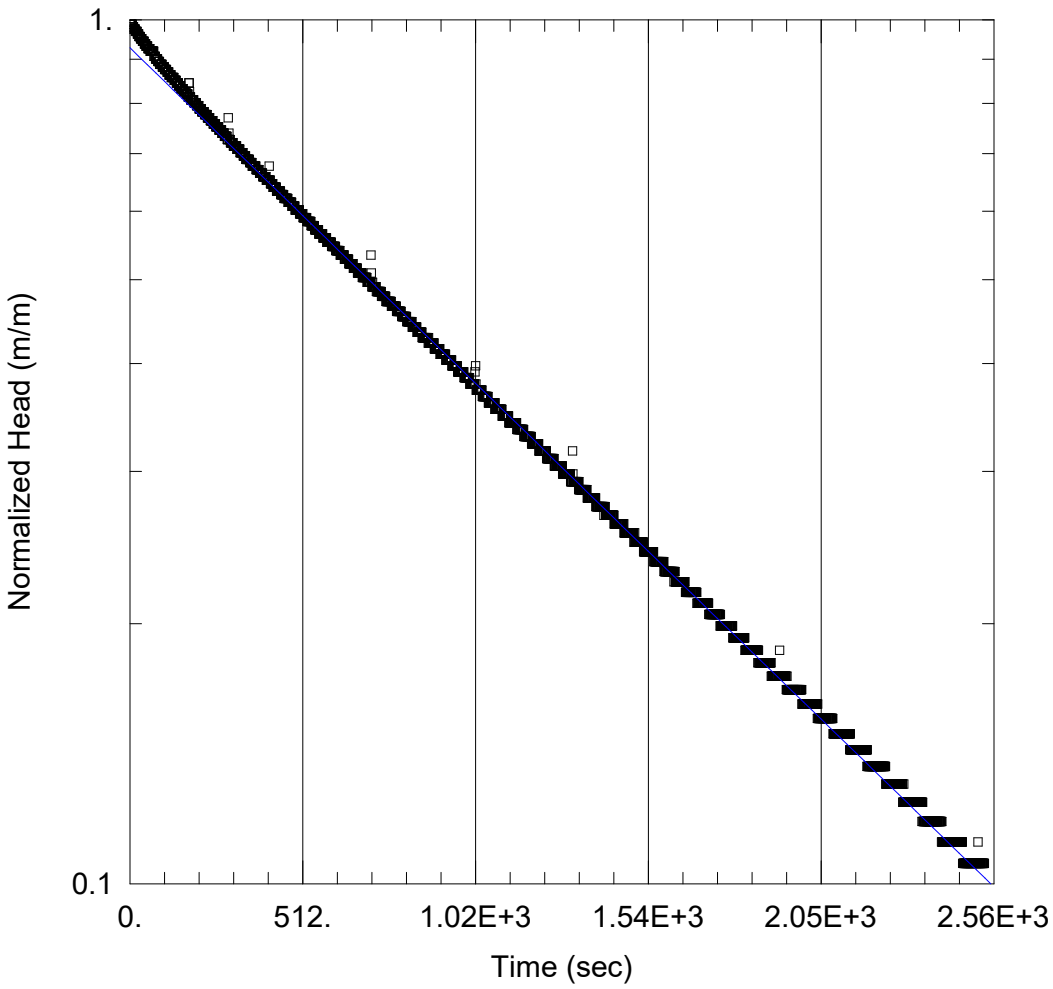
WELL DATA (BHMW 6)

Initial Displacement: 0.5393 m
Static Water Column Height: 3.7 m
Total Well Penetration Depth: 3.7 m
Screen Length: 1.5 m
Casing Radius: 0.0254 m
Well Radius: 0.0508 m

Soil Engineers Ltd.

Falling Head SWRT of BHMW 8

Prepared By:	Prepared For:
Soil Engineers Ltd.	Sorbara Development Group
Project:	**Location:**
2603-W021	6410 First Line and 8076 Wellington 19, Town of Centre Wellington



SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 6.457E-7 m/sec y0 = 0.4481 m

AQUIFER DATA

Saturated Thickness: 6.8 m Anisotropy Ratio (Kz/Kr): 1.

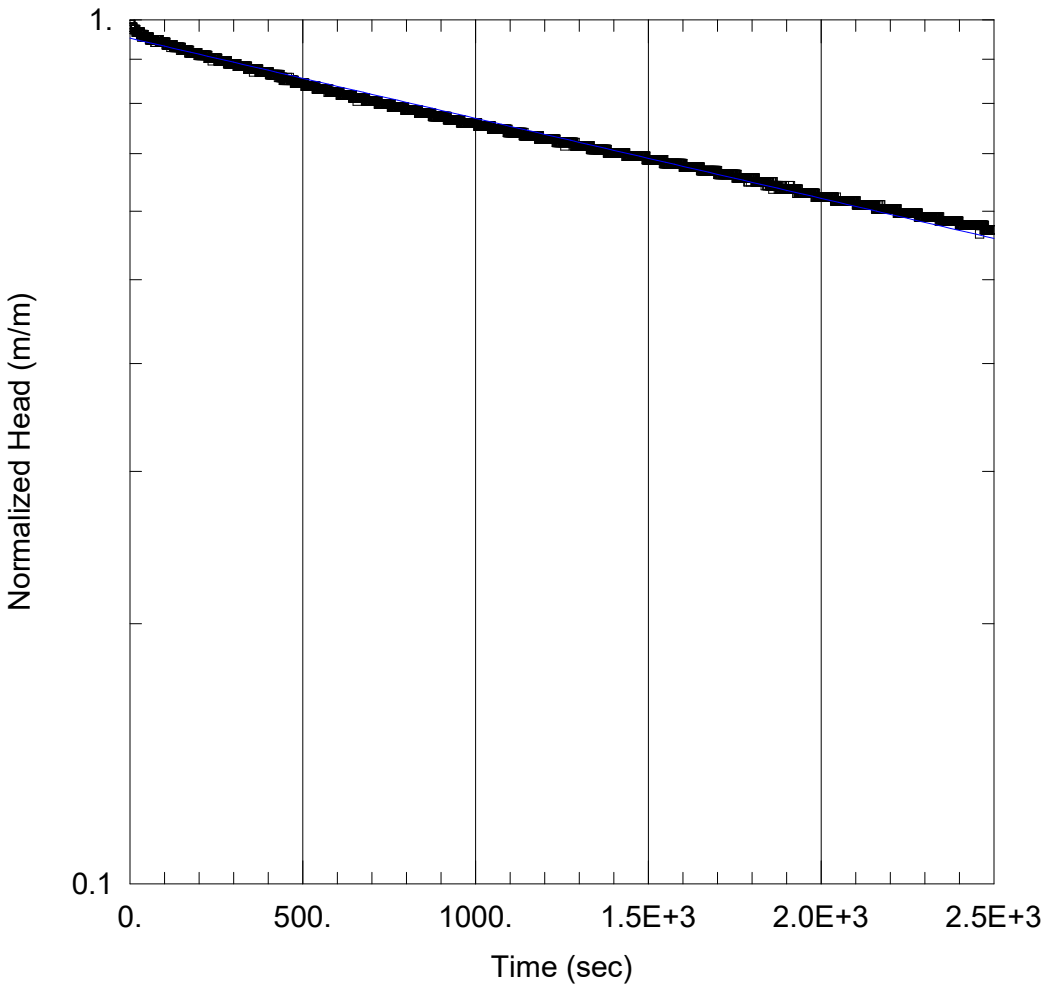
WELL DATA (BHMW 8)

Initial Displacement: 0.483 m
Static Water Column Height: 6.8 m
Total Well Penetration Depth: 6.8 m
Screen Length: 1.5 m
Casing Radius: 0.0254 m
Well Radius: 0.0508 m

Soil Engineers Ltd.

Rising Head SWRT of BHMW 9

Prepared By:	Prepared For:
Soil Engineers Ltd.	Sorbara Development Group
Project:	**Location:**
2603-W021	6410 First Line and 8076 Wellington 19, Town of Centre Wellington



SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 1.574E-7 m/sec y0 = 0.4397 m

AQUIFER DATA

Saturated Thickness: 6.7 m Anisotropy Ratio (Kz/Kr): 1.

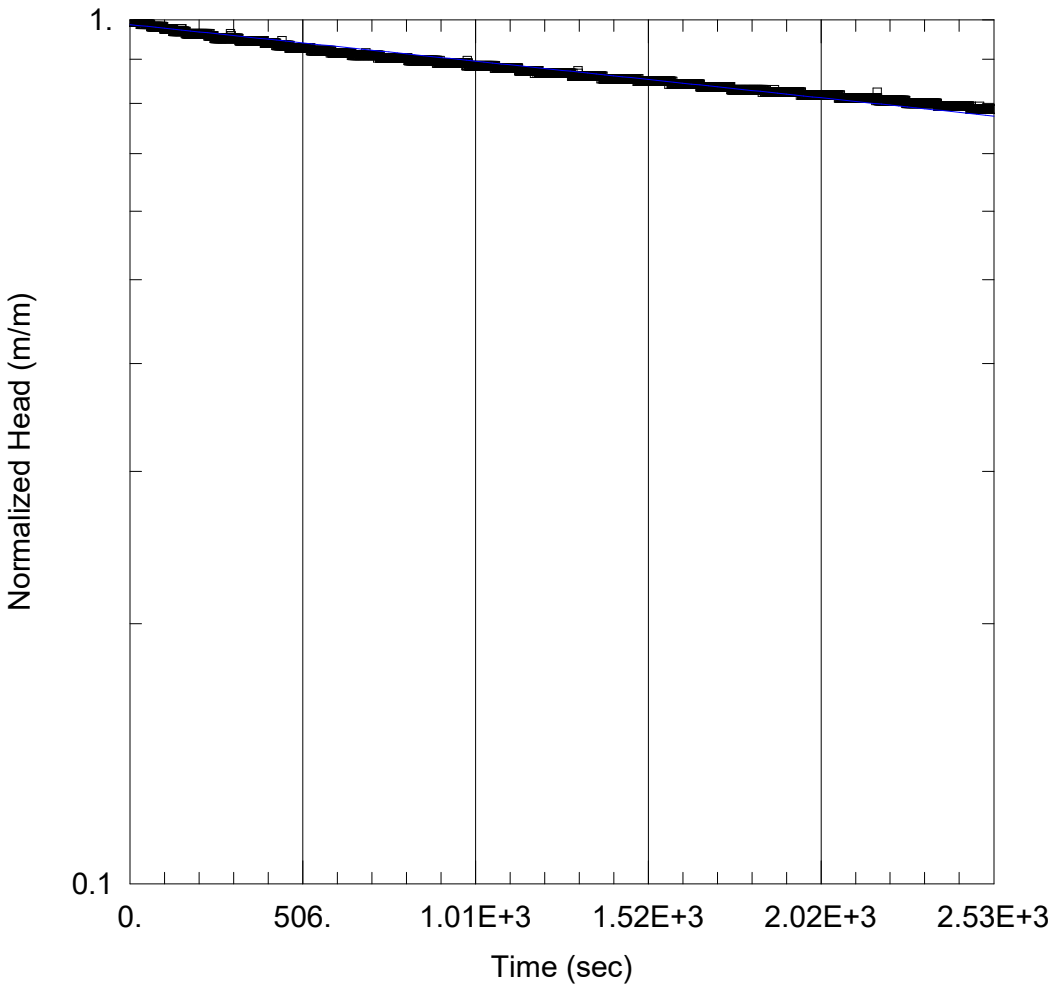
WELL DATA (BHMW 9)

Initial Displacement: 0.462 m
Static Water Column Height: 6.7 m
Total Well Penetration Depth: 6.7 m
Screen Length: 1.5 m
Casing Radius: 0.0254 m
Well Radius: 0.0508 m

Soil Engineers Ltd.

Falling Head SWRT of BHMW 10

Prepared By:	Prepared For:
Soil Engineers Ltd.	Sorbara Development Group
Project:	**Location:**
2603-W021	6410 First Line and 8076 Wellington 19, Town of Centre Wellington



SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 7.041E-8 m/sec y0 = 0.4886 m

AQUIFER DATA

Saturated Thickness: 6.3 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BHMW 10)

Initial Displacement: 0.495 m
Static Water Column Height: 6.3 m
Total Well Penetration Depth: 6.3 m
Screen Length: 1.5 m
Casing Radius: 0.0254 m
Well Radius: 0.0508 m

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FAX: (705) 721-7864	FAX: (905) 542-2769	FAX: (905) 725-1315	FAX: (905) 881-8335	FAX: (705) 684-8522	FAX: (905) 542-2769

APPENDIX 'D'

GROUNDWATER QUALITY RESULTS

REFERENCE NO. 2603-W021

FINAL REPORT

CA14053-MAY26 R1

2603-WO21, 8076 Wellington Rd. 19. Fergus

Prepared for

Soil Engineers Ltd.

FINAL REPORT

CA14053-MAY26 R1

First Page

CLIENT DETAILS		LABORATORY DETAILS	
Client	Soil Engineers Ltd.	Project Specialist	Jill Campbell, B.Sc.,GISAS
Address	90 West Beaver Creek Rd Richmond Hill, ON M1S 3A7. Canada	Laboratory	SGS Canada Inc.
		Address	185 Concession St., Lakefield ON, K0L 2H0
Contact	Karim Salib		
Telephone	416-754-8515	Telephone	2165
Facsimile		Facsimile	705-652-6365
Email	karim.salib@soilengineersltd.com	Email	jill.campbell@sgs.com
Works #		SGS Reference	CA14053-MAY26
Project	2603-WO21, 8076 Wellington Rd. 19. Fergus	Received	2026-05-08
Reference		Approved	05/19/2026
Batch		Report Number	CA14053-MAY26 R1
Samples	WATER (1)	Date Reported	05/19/2026

COMMENTS

Temperature of Sample upon Receipt: 9.0 degrees C
Cooling Agent Present:Yes
Custody Seal Present:Yes

Chain of Custody Number:041051

SIGNATORIES

Jill Campbell, B.Sc.,GISAS

TABLE OF CONTENTS

FINAL REPORT

CA14053-MAY26 R1

Client: Soil Engineers Ltd.
Project: 2603-WO21, 8076 Wellington Rd. 19. Fergus
Project Manager: Karim Salib
Samplers: Naeim Rafati

MATRIX: WATER

Sample Number 8
Sample Name BH/MW8
Sample Matrix Ground Water
Sample Date 2026-05-08 00:00

L1 = SANSEW / WATER / - - Centre Wellington Sewer Discharge By Law - Sanitary Sewer Discharge - BL_2022_66

L2 = SANSEW / WATER / - - Centre Wellington Sewer Discharge By Law - Storm Sewer Discharge - BL_2022_66

Parameter	Units	RL	L1	L2	Result
General Chemistry					
Biochemical Oxygen Demand (BOD5)	mg/L	2	300	15	< 4 ↑
Total Suspended Solids	mg/L	2	350	15	35
Temperature @ pH	°C	0			19.2
Chemical Oxygen Demand	mg/L	8	600		< 8
Total Kjeldahl Nitrogen	as N mg/L	0.5	50		0.5
Metals and Inorganics					
Fluoride	mg/L	0.06	10		0.24
Sulphate	mg/L	1	1500		35
Sulphide	mg/L	0.02	1		< 0.02
Cyanide (total)	mg/L	0.01	1.2		< 0.01
Aluminum (total)	mg/L	0.001	50		0.082
Silver (total)	mg/L	0.00005	1		< 0.00005
Arsenic (total)	mg/L	0.0002	1		0.0023
Antimony (total)	mg/L	0.0005	5		< 0.0005
Bismuth (total)	mg/L	0.00001	5		< 0.00001
Cadmium (total)	mg/L	0.000003	0.7	0.001	0.000024
Cobalt (total)	mg/L	0.000004	5		0.000091
Chromium (total)	mg/L	0.00008	3	0.08	0.00032
Copper (total)	mg/L	0.001	2	0.005	0.001
Iron (total)	mg/L	0.007	50		0.076

Client: Soil Engineers Ltd.
Project: 2603-WO21, 8076 Wellington Rd. 19. Fergus
Project Manager: Karim Salib
Samplers: Naeim Rafati

MATRIX: WATER

L1 = SANSEW / WATER / - - Centre Wellington Sewer Discharge By Law - Sanitary Sewer Discharge - BL_2022_66

L2 = SANSEW / WATER / - - Centre Wellington Sewer Discharge By Law - Storm Sewer Discharge - BL_2022_66

Sample Number 8
Sample Name BH/MW8
Sample Matrix Ground Water
Sample Date 2026-05-08 00:00

Parameter	Units	RL	L1	L2	Result
Metals and Inorganics (continued)					
Manganese (total)	mg/L	0.00001	5		0.0229
Molybdenum (total)	mg/L	0.0004	5		0.0039
Nickel (total)	mg/L	0.0001	2	0.03	0.0006
Phosphorus (total)	mg/L	0.003	10		0.009
Lead (total)	mg/L	0.00009	0.7	0.03	0.00020
Selenium (total)	mg/L	0.00004	2		0.00009
Tin (total)	mg/L	0.00006	5		0.00029
Titanium (total)	mg/L	0.0001	5		0.0026
Vanadium (total)	mg/L	0.00001	5		0.00102
Zinc (total)	mg/L	0.002	2	0.03	0.015
Oil and Grease					
Oil & Grease (total)	mg/L	2			< 2
Oil & Grease (animal/vegetable)	mg/L	4	150		< 4
Oil & Grease (mineral/synthetic)	mg/L	4	15		< 4

Client: Soil Engineers Ltd.
Project: 2603-WO21, 8076 Wellington Rd. 19. Fergus
Project Manager: Karim Salib
Samplers: Naeim Rafati

MATRIX: WATER

Sample Number 8
Sample Name BH/MW8
Sample Matrix Ground Water
Sample Date 2026-05-08 00:00

L1 = SANSEW / WATER / - - Centre Wellington Sewer Discharge By Law - Sanitary Sewer Discharge - BL_2022_66

L2 = SANSEW / WATER / - - Centre Wellington Sewer Discharge By Law - Storm Sewer Discharge - BL_2022_66

Parameter	Units	RL	L1	L2	Result
Other (ORP)					
pH	No unit	0.05	8.5	8.5	8.08
Chloride	mg/L	1	1500		160
Mercury (total)	mg/L	0.00001	0.1		< 0.00001
PCBs					
Polychlorinated Biphenyls (PCBs) - Total	mg/L	0.0001	0.004		< 0.0001
Phenols					
4AAP-Phenolics	mg/L	0.001	0.1		< 0.001
SVOCs					
Hexachlorobenzene	mg/L	0.0001	0.0001		< 0.0001
VOCs					
1,2-Dichlorobenzene	mg/L	0.0005	0.05		< 0.0005
1,4-Dichlorobenzene	mg/L	0.0005	0.08		< 0.0005
Methylene Chloride	mg/L	0.0005	0.09		< 0.0005
1,1,2,2-Tetrachloroethane	mg/L	0.0005	0.06		< 0.0005
Trichloroethylene	mg/L	0.0005	0.05		< 0.0005

Client: Soil Engineers Ltd.
Project: 2603-WO21, 8076 Wellington Rd. 19. Fergus
Project Manager: Karim Salib
Samplers: Naeim Rafati

MATRIX: WATER

Sample Number 8
Sample Name BH/MW8
Sample Matrix Ground Water
Sample Date 2026-05-08 00:00

L1 = SANSEW / WATER / - - Centre Wellington Sewer Discharge By Law - Sanitary Sewer Discharge - BL_2022_66

L2 = SANSEW / WATER / - - Centre Wellington Sewer Discharge By Law - Storm Sewer Discharge - BL_2022_66

Parameter	Units	RL	L1	L2	Result
VOCs - BTEX					
Benzene	mg/L	0.0005	0.01		< 0.0005
Ethylbenzene	mg/L	0.0005	0.06		< 0.0005
Toluene	mg/L	0.0005	0.02		< 0.0005

EXCEEDANCE SUMMARY

Parameter	Method	Units	Result	SANSEW / WATER / - - Centre Wellington Sewer Discharge By Law - Sanitary Sewer Discharge - BL_2022_66 L1	SANSEW / WATER / - - Centre Wellington Sewer Discharge By Law - Storm Sewer Discharge - BL_2022_66 L2
BH/MW8					
Total Suspended Solids	SM 2540D	mg/L	35		15

QC SUMMARY

Anions by discrete analyzer

Method: US EPA 325.2 | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-026

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Chloride	DIO5020-MAY26	mg/L	1	<1	1	20	103	70	130	85	70	130
Sulphate	DIO5020-MAY26	mg/L	1	<2	ND	20	103	80	120	102	75	125

Biochemical Oxygen Demand

Method: SM 5210 | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-007

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Biochemical Oxygen Demand (BOD5)	BOD0016-MAY26	mg/L	2	< 2	5	30	119	70	130	75	70	130

Chemical Oxygen Demand

Method: HACH 8000 | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-009

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Chemical Oxygen Demand	EWL0287-MAY26	mg/L	8	<8	13	20	100	80	120	97	75	125

QC SUMMARY

Cyanide by SFA

Method: SM 4500 I Internal ref.: ME-CA-IENVISFA-LAK-AN-005

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Cyanide (total)	SKA0100-MAY26	mg/L	0.01	<0.01	ND	10	93	90	110	96	75	125

Fluoride by Specific Ion Electrode

Method: SM 4500 I Internal ref.: ME-CA-IENVIEWL-LAK-AN-014

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Fluoride	EWL0314-MAY26	mg/L	0.06	<0.06	ND	10	108	90	110	110	75	125

Mercury by CVAAS

Method: EPA 7471A/SM 3112B I Internal ref.: ME-CA-IENVISPE-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Mercury (total)	EHG0026-MAY26	mg/L	0.00001	< 0.00001	ND	20	99	80	120	116	70	130

QC SUMMARY

Metals in aqueous samples - ICP-MS

Method: SM 3030/EPA 200.8 | Internal ref.: ME-CA-IENVISPE-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Silver (total)	EMS0127-MAY26	mg/L	0.00005	<0.00005	ND	20	100	90	110	NV	70	130
Aluminum (total)	EMS0127-MAY26	mg/L	0.001	<0.001	0	20	100	90	110	102	70	130
Arsenic (total)	EMS0127-MAY26	mg/L	0.0002	<0.0002	0	20	104	90	110	102	70	130
Bismuth (total)	EMS0127-MAY26	mg/L	0.00001	<0.00001	3	20	97	90	110	78	70	130
Cadmium (total)	EMS0127-MAY26	mg/L	0.000003	<0.000003	0	20	105	90	110	92	70	130
Cobalt (total)	EMS0127-MAY26	mg/L	0.000004	<0.000004	0	20	98	90	110	86	70	130
Chromium (total)	EMS0127-MAY26	mg/L	0.00008	<0.00008	1	20	102	90	110	109	70	130
Copper (total)	EMS0127-MAY26	mg/L	0.001	<0.001	0	20	100	90	110	95	70	130
Iron (total)	EMS0127-MAY26	mg/L	0.007	<0.007	0	20	107	90	110	75	70	130
Manganese (total)	EMS0127-MAY26	mg/L	0.00001	<0.00001	0	20	101	90	110	97	70	130
Molybdenum (total)	EMS0127-MAY26	mg/L	0.0004	<0.0004	ND	20	97	90	110	100	70	130
Nickel (total)	EMS0127-MAY26	mg/L	0.0001	<0.0001	0	20	103	90	110	78	70	130
Lead (total)	EMS0127-MAY26	mg/L	0.00009	<0.00009	0	20	102	90	110	81	70	130
Phosphorus (total)	EMS0127-MAY26	mg/L	0.003	<0.003	1	20	105	90	110	NV	70	130
Antimony (total)	EMS0127-MAY26	mg/L	0.0005	<0.0005	0	20	105	90	110	104	70	130
Selenium (total)	EMS0127-MAY26	mg/L	0.00004	<0.00004	2	20	100	90	110	102	70	130
Tin (total)	EMS0127-MAY26	mg/L	0.00006	<0.00006	1	20	100	90	110	NV	70	130
Titanium (total)	EMS0127-MAY26	mg/L	0.0001	<0.0001	1	20	98	90	110	NV	70	130
Vanadium (total)	EMS0127-MAY26	mg/L	0.00001	<0.00001	1	20	98	90	110	99	70	130
Zinc (total)	EMS0127-MAY26	mg/L	0.002	<0.002	0	20	102	90	110	83	70	130

QC SUMMARY

Oil & Grease

Method: MOE E3401 | Internal ref.: ME-CA-IENVIGC-LAK-AN-019

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Oil & Grease (total)	GCM0210-MAY26	mg/L	2	<2	NSS	20	100	75	125			

Oil & Grease-AV/MS

Method: MOE E3401/SM 5520F | Internal ref.: ME-CA-IENVIGC-LAK-AN-019

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Oil & Grease (animal/vegetable)	GCM0210-MAY26	mg/L	4	< 4	NSS	20	NA	70	130			
Oil & Grease (mineral/synthetic)	GCM0210-MAY26	mg/L	4	< 4	NSS	20	NA	70	130			

QC SUMMARY

pH

Method: SM 4500 I Internal ref.: ME-CA-[ENVIEWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
pH	EWL0279-MAY26	No unit	0.05	NA	0		99			NA		

Phenols by SFA

Method: SM 5530B-D I Internal ref.: ME-CA-[ENVISFA-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
4AAP-Phenolics	SKA0104-MAY26	mg/L	0.001	<0.001	ND	10	101	80	120	96	75	125

Polychlorinated Biphenyls

Method: MOE E3400/EPA 8082A I Internal ref.: ME-CA-[ENVIGC-LAK-AN-001

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Polychlorinated Biphenyls (PCBs) - Total	GCM0197-MAY26	mg/L	0.0001	<0.0001	NSS	30	103	60	140	NSS	60	140

QC SUMMARY

Semi-Volatile Organics

Method: EPA 3510C/8270D | Internal ref.: ME-CA-[ENV]GC-LAK-AN-005

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Hexachlorobenzene	GCM0235-MAY26	mg/L	0.0001	< 0.0001	NSS	30	85	50	140	NSS	50	140

Sulphide by SFA

Method: SM 4500 | Internal ref.: ME-CA-[ENV]SFA-LAK-AN-008

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Sulphide	SKA0129-MAY26	mg/L	0.02	<0.02	ND	20	98	80	120	NA	75	125

Suspended Solids

Method: SM 2540D | Internal ref.: ME-CA-[ENV]EWL-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Suspended Solids	EWL0262-MAY26	mg/L	2	< 2	0	10	97	90	110	NA		

QC SUMMARY

Total Nitrogen

Method: SM 4500-N C/4500-NO3- F | Internal ref.: ME-CA-[ENV]SFA-LAK-AN-002

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Total Kjeldahl Nitrogen	SKA0127-MAY26	as N mg/L	0.5	<0.5	3	10	100	90	110	94	75	125

Volatile Organics

Method: EPA 5030B/8260C | Internal ref.: ME-CA-[ENV]GC-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
1,1,2,2-Tetrachloroethane	GCM0195-MAY26	mg/L	0.0005	<0.0005	ND	30	102	60	130	92	50	140
1,2-Dichlorobenzene	GCM0195-MAY26	mg/L	0.0005	<0.0005	ND	30	96	60	130	97	50	140
1,4-Dichlorobenzene	GCM0195-MAY26	mg/L	0.0005	<0.0005	ND	30	96	60	130	96	50	140
Benzene	GCM0195-MAY26	mg/L	0.0005	<0.0005	ND	30	99	60	130	103	50	140
Ethylbenzene	GCM0195-MAY26	mg/L	0.0005	<0.0005	ND	30	98	60	130	102	50	140
Methylene Chloride	GCM0195-MAY26	mg/L	0.0005	<0.0005	ND	30	85	60	130	90	50	140
Toluene	GCM0195-MAY26	mg/L	0.0005	<0.0005	ND	30	99	60	130	102	50	140
Trichloroethylene	GCM0195-MAY26	mg/L	0.0005	<0.0005	ND	30	99	60	130	100	50	140

QC SUMMARY

Method Blank: a blank matrix that is carried through the entire analytical procedure. Used to assess laboratory contamination.

Duplicate: Paired analysis of a separate portion of the same sample that is carried through the entire analytical procedure. Used to evaluate measurement precision.

LCS/Spike Blank: Laboratory control sample or spike blank refer to a blank matrix to which a known amount of analyte has been added. Used to evaluate analyte recovery and laboratory accuracy without sample matrix effects.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate laboratory accuracy with sample matrix effects.

Reference Material: a material or substance matrix matched to the samples that contains a known amount of the analyte of interest. A reference material may be used in place of a matrix spike.

RL: Reporting limit

RPD: Relative percent difference

AC: Acceptance criteria

Multielement Scan Qualifier: as the number of analytes in a scan increases, so does the chance of a limit exceedance by random chance as opposed to a real method problem. Thus, in multielement scans, for the LCS and matrix spike, up to 10% of the analytes may exceed the quoted limits by up to 10% absolute and the spike is considered acceptable.

Duplicate Qualifier: for duplicates as the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Matrix Spike Qualifier: for matrix spikes, as the concentration of the native analyte increases, the uncertainty of the matrix spike recovery increases. Thus, the matrix spike acceptance limits apply only when the concentration of the matrix spike is greater than or equal to the concentration of the native analyte.

LEGEND

FOOTNOTES

NSS	Insufficient sample for analysis.
RL	Reporting Limit.
↑	Reporting limit raised.
↓	Reporting limit lowered.
NA	The sample was not analysed for this analyte
ND	Non Detect

Results relate only to the sample tested.

Data reported represent the sample as submitted to SGS.

Test method information available upon request.

"Temperature Upon Receipt" is representative of the whole shipment and may not reflect the temperature of individual samples.

SGS Canada Inc. statement of conformity decision rule does not consider uncertainty when analytical results are compared to a specified standard or regulation.

-- End of Analytical Report --

Request for Laboratory Services and CHAIN OF CUSTODY

SGS Industries & Environment - Lakefield: 185 Concession St., Lakefield, ON K0L 2H0 Phone: 705-652-2000 Fax: 705-652-6365 Web: www.sgs.com/environment
- London: 657 Consortium Court, London, ON, N6E 2S8 Phone: 519-672-4500 Toll Free: 877-848-8060 Fax: 519-672-0361

No: 041051 Page ____ of ____

Laboratory Information Section - Lab use only

Received By: Seth Ren
Received Date: 05/08/2026 (mm/dd/yy)
Received Time: 16 : 00 (hr : min)
Received By (signature):
Custody Seal Present: Yes ☐ No ☐
Custody Seal Intact: Yes ☑ No ☐
Cooling Agent Present: Yes ☑ No ☐ Type: Ice
Temperature Upon Receipt (°C): 9.0°C ck 3
LAB LIMS #: CA-14053-May 26 AP

REPORT INFORMATION

Company: Soil engineering Ltd
Contact: Karim Salib
Address: 90 west Beaver Creek Richmond Hill
Phone: 4167548515
Fax:
Email: karim.salib@soilengineersltd.com

INVOICE INFORMATION

☐ (same as Report Information)
Company:
Contact:
Address:
Phone:
Email:

Quotation #:
P.O. #:
Project #: 2603-W02
Site Location/ID: 8076 Wellington Rd 19, Fergus

TURNAROUND TIME (TAT) REQUIRED

☐ Client Regular TAT ☑ Regular TAT (5-7days)

TAT's are quoted in business days (exclude statutory holidays & weekends). Samples received after 6pm or on weekends: TAT begins next business day

RUSH TAT (Additional Charges May Apply): ☐ 1 Day ☐ 2 Days ☐ 3 Days ☐ 4 Days

PLEASE CONFIRM RUSH FEASIBILITY WITH SGS REPRESENTATIVE PRIOR TO SUBMISSION

Specify Due Date:

*NOTE: DRINKING (POTABLE) WATER SAMPLES FOR HUMAN CONSUMPTION MUST BE SUBMITTED WITH SGS DRINKING WATER CHAIN OF CUSTODY

REGULATIONS

☐ O.Reg 153/04 ☐ O.Reg 406/19

☐ Table 1 ☐ Res/Park Soil Texture:
☐ Table 2 ☐ Ind/Com ☐ Coarse
☐ Table 3 ☐ Agri/Other ☐ Medium/Fine
☐ Table ____ Appx. ____
Soil Volume ☐ <350m3 ☐ >350m3

Other Regulations:
☐ Reg 347/558 (3 Day min TAT)
☐ PWQO ☐ MMER
☐ CCME ☐ Other:
☐ MISA
☐ ODWS Not Reportable *See note

Sewer By-Law:
☑ Sanitary
☑ Storm
Municipality: township of Centre Wellington

RECORD OF SITE CONDITION (RSC) ☐ YES ☐ NO

ANALYSIS REQUESTED

	SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	# OF BOTTLES	MATRIX	M&I: Field Filtered (Y/N)	M&I: Metals & Inorganics (incl CrVI, CN,Hg pH,(B(HWS),EC,SAR–soil) (Cl, Na–water))	M&I: Full Metals Suite (ICP metals plus B(HWS-soil only) Hg, CrVI)	M&I: ICP Metals only (Sb,As,Ba,Be,B,Cd, Cr,Co,Cu,Pb,Mo,Ni,Se,Ag,Tl,U,V,Zn)	SVOC: PAHs only	SVOC: SVOCs all incl PAHs, ABNs, CPs	PCB: PCBs Total ☐ Aroclor ☐	PHC: F1-F4 + BTEX	PHC: F1-F4 only no BTEX	VOC: VOCs all incl BTEX	VOC: BTEX only	Pest: Pesticides Organochlorine or specify other	Other: Sewer Use: township of Centre Wellington, SWM + STM Specify pkg: Sewer	Other: Water Characterization Pkg General ☐ Extended ☐	SPLP: Specify tests ☐ Metals ☐ VOC ☐ 1,4-Dioxane ☐ OCP ☐ ABN	TCLP: Specify tests ☐ M&I ☐ VOC ☐ PCB ☐ B(a)P ☐ ABN ☐ Ignit.	COMMENTS:
1	BH/MW8	5.8.26	12:00	18	GW	N												X				
2																						
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

Observations/Comments/Special Instructions

Sampled By (NAME): Naeim Rafati Signature: Naeim Rafati Date: 5/8/2026 (mm/dd/yy)
Relinquished by (NAME): Naeim Rafati Signature: Naeim Rafati Date: 5/8/2026 (mm/dd/yy)

Pink Copy - Client
Yellow & White Copy - SGS

Revision #: 1.8
Date of Issue: 06 SEP 2024

Soil Engineers Ltd.
CONSULTING ENGINEERS
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BARRIE	MISSISSAUGA	OSHAWA	NEWMARKET	MUSKOKA	HAMILTON
TEL: (705) 721-7863	TEL: (905) 542-7605	TEL: (905) 440-2040	TEL: (905) 853-0647	TEL: (705) 684-4242	TEL: (905) 777-7956
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APPENDIX 'E'

SHORT-TERM DEWATERING AND LONG-TERM FOUNDATION DRAINAGE FLOW RATE ESTIMATES AND REVIEWED PLANS

REFERENCE NO. 2603-W021

PRELIMINARY DEWATERING CALCULATION FOR CONSTRUCTION OF SWMP

Dewatering Rate Formula for an Unconfined Aquifer (Powers et al., 2007):

$$Q = \frac{\pi K (H^2 - h^2)}{\ln(R_0 / r_s)} + 2\left[\frac{xK(H^2 - h^2)}{2L}\right]$$

Where:

Q = Anticipated pumping rate (m^3/day)
K = Hydraulic Conductivity (m/day)
H = Initial Hight of static groundwater level to bottom of the saturated aquifer (m)
h = Depth of water in the well while pumping (m)
R_0 = Distance from a point of greatest drawdown to a point where there is no drawdown (Radius of influence) (m)
r_s = Distance to the wellpoints from the centre of the trench (m), assumed to be half of the trench width
x = Trench Length (m)
L = Distance from a line source to the trench, R_o (m)/2

Radius of Influence Formula (Sichardt Equation):

$$R_0 = 3000 * D * K^{0.5}$$

Where:

R_0 = Radius of Influence (m), beyond which there is negligible drawdown
D = Distance from the initial static water level to the dewatering target
K = Hydraulic conductivity (m/s)

Parameter	Units	SWMP
Total Anticipated Short-Term Dewatering Flow including Storm Event and Groundwater Seepage with Safety Factor:	L/day	**633,800.0**
Anticipated Storm Flow:		
Anticipated Storm Flow (2Year-3Hr event)	L/day	503,900.0
Storm Event (2Year-3Hr event)	m	0.0323
Groundwater Seepage Estimate:		
Q s.f. 1.5	L/day	129,900.0
Q	L/day	86,600.0
Q	m^3/day	86.6
K	m/day	0.0562
H	m	8.6
h	m	2.7
R_0	m	14.3
Trench width (b)	m	84.0
r_s	m	42.0
x (a)	m	185.7
L	m	7.1
	a/b	2.2
Conceptual Zone of Influence:		
R_0	m	14.3
D	m	5.9
K	m/s	6.50E-07
Empirical constant (conservative)		3000
Assumptions:		
Proposed Grading Elevation	masl	419.4
Highest Interpreted Groundwater Elevation	masl	418.9
Proposed Invert Elevation for the Excavation	masl	414.0
Trench Width	m	84.0
Trench Length	m	185.7
Area	m^2	15,598.8
Perimeter	m	539.4

PRELIMINARY DEWATERING CALCULATION FOR EXTERNAL SERVICES INSTALLATION

Dewatering Rate Formula for an Unconfined Aquifer (Powers et al., 2007):

$$Q = \frac{\pi K (H^2 - h^2)}{\ln(R_0 / r_s)} + 2\left[\frac{xK(H^2 - h^2)}{2L}\right]$$

Where:

Q = Anticipated pumping rate (m^3/day)
K = Hydraulic Conductivity (m/day)
H = Initial Hight of static groundwater level to bottom of the saturated aquifer (m)
h = Depth of water in the well while pumping (m)
R_0 = Distance from a point of greatest drawdown to a point where there is no drawdown (Radius of influence) (m)
r_s = Distance to the wellpoints from the centre of the trench (m), assumed to be half of the trench width
x = Trench Length (m)
L = Distance from a line source to the trench, R_o (m)/2

Radius of Influence Formula (Sichardt Equation):

$$R_0 = 3000 * D * K^{0.5}$$

Where:

R_0 = Radius of Influence (m), beyond which there is negligible drawdown
D = Distance from the initial static water level to the dewatering target
K = Hydraulic conductivity (m/s)

Parameter	Units	BH/MW 9	BH/MW 10
Total Anticipated Short-Term Dewatering Flow including Storm Event and Groundwater Seepage with Safety Factor:	L/day	**22,650.0**	**21,900.0**
Anticipated Storm Flow:			
Anticipated Storm Flow (2Year-3Hr event)	L/day	3,300.0	3,300.0
Storm Event (2Year-3Hr event)	m	0.0323	0.0323
Groundwater Seepage Estimate:			
Q s.f. 1.5	L/day	19,350.0	18,600.0
Q	L/day	12,900.0	12,400.0
Q	m^3/day	12.9	12.3
K	m/day	0.0138	0.0138
H	m	7.6	7.2
h	m	2.5	2.5
R_0	m	6.1	5.6
Trench width (b)	m	2.0	2.0
r_s	m	1.0	1.0
x (a)	m	50.0	50.0
L	m	3.1	2.8
	a/b	25.0	25.0
Conceptual Zone of Influence:			
R_0	m	6.1	5.6
D	m	5.1	4.7
K	m/s	1.60E-07	1.60E-07
Empirical constant (conservative)		3000	3000
Assumptions:			
Proposed Grading Elevation	masl	421.9	419.8
Highest Interpreted Groundwater Elevation	masl	421.0	418.5
Proposed Invert Elevation for the Excavation	masl	416.9	414.8
Trench Width	m	2.0	2.0
Trench Length	m	50.0	50.0
Area	m^2	100.0	100.0
Perimeter	m	104.0	104.0

PRELIMINARY DEWATERING CALCULATION FOR CONSTRUCTION OF RESIDENTIAL BLOCKS

Dewatering Rate Formula for an Unconfined Aquifer (Powers et al., 2007):

$$Q = \frac{\pi K (H^2 - h^2)}{\ln(R_0 / r_s)} + 2\left[\frac{xK(H^2 - h^2)}{2L}\right]$$

Where:

Q = Anticipated pumping rate (m^3/day)
K = Hydraulic Conductivity (m/day)
H = Initial Hight of static groundwater level to bottom of the saturated aquifer (m)
h = Depth of water in the well while pumping (m)
R_0 = Distance from a point of greatest drawdown to a point where there is no drawdown (Radius of influence) (m)
r_s = Distance to the wellpoints from the centre of the trench (m), assumed to be half of the trench width
x = Trench Length (m)
L = Distance from a line source to the trench, R_o (m)/2

Radius of Influence Formula (Sichardt Equation):

$$R_0 = 3000 * D * K^{0.5}$$

Where:

R_0 = Radius of Influence (m), beyond which there is negligible drawdown
D = Distance from the initial static water level to the dewatering target
K = Hydraulic conductivity (m/s)

		BH/MW 1	BH/MW 2	BH/MW 3	BH/MW 4	BH/MW 5	BH/MW 6
Parameter	**Units**	**Block 27**	**Block 35**	**Block 12**	**Block 25**	**Block 15**	**Block 45**
Total Anticipated Short-Term Dewatering Flow including Storm Event and Groundwater Seepage with Safety Factor:	L/day	**263,550.0**	**540,400.0**	**184,650.0**	**399,050.0**	**221,000.0**	**263,900.0**
Anticipated Storm Flow:							
Anticipated Storm Flow (2Year-3Hr event)	L/day	183,600.0	197,200.0	139,800.0	144,800.0	162,800.0	170,600.0
Storm Event (2Year-3Hr event)	m	0.0323	0.0323	0.0323	0.0323	0.0323	0.0323
Groundwater Seepage Estimate:							
Q s.f. 1.5	L/day	79,950.0	343,200.0	44,850.0	254,250.0	58,200.0	93,300.0
Q	L/day	53,300.0	228,800.0	29,900.0	169,500.0	38,800.0	62,200.0
Q	m^3/day	53.3	228.8	29.8	169.4	38.8	62.2
K	m/day	0.0700	0.2592	0.0311	0.2592	0.0311	0.2592
H	m	5.3	4.7	5.3	5.5	5.3	3.5
h	m	1.5	1.5	1.5	1.5	1.5	1.5
R_0	m	10.3	16.6	6.8	20.8	6.8	10.4
Trench width (b)	m	28.0	28.0	30.9	28.0	28.0	33.0
r_s	m	14.0	14.0	15.5	14.0	14.0	16.5
x (a)	m	203.0	218.0	140.0	160.0	180.0	160.0
L	m	5.1	8.3	3.4	10.4	3.4	5.2
	a/b	7.3	7.8	4.5	5.7	6.4	4.8
Conceptual Zone of Influence:							
R_0	m	10.3	16.6	6.8	20.8	6.8	10.4
D	m	3.8	3.2	3.8	4.0	3.8	2.0
K	m/s	8.10E-07	3.00E-06	3.60E-07	3.00E-06	3.60E-07	3.00E-06
Empirical constant (conservative)		3000	3000	3000	3000	3000	3000
Assumptions:							
Proposed Grading Elevation	masl	425.5	427.0	423.8	424.3	420.5	425.7
Highest Interpreted Groundwater Elevation	masl	425.3	426.2	423.6	424.3	420.3	423.7
Proposed Invert Elevation for the Excavation	masl	422.5	424.0	420.8	421.3	417.5	422.7
Trench Width	m	28.0	28.0	30.9	28.0	28.0	33.0
Trench Length	m	203.0	218.0	140.0	160.0	180.0	160.0
Area	m^2	5,684.0	6,104.0	4,326.0	4,480.0	5,040.0	5,280.0
Perimeter	m	462.0	492.0	341.8	376.0	416.0	386.0

PRELIMINARY LONG-TERM FOUNDATION DRAINAGE CALCULATION FOR RESIDENTIAL BLOCKS

Dewatering Rate Formula for an Unconfined Aquifer (Powers et al., 2007):

$$Q = \frac{\pi K (H^2 - h^2)}{\ln(R_0 / r_s)} + 2\left[\frac{xK(H^2 - h^2)}{2L}\right]$$

Where:

Q = Anticipated pumping rate (m^3/day)
K = Hydraulic Conductivity (m/day)
H = Initial Hight of static groundwater level to bottom of the saturated aquifer (m)
h = Depth of water in the well while pumping (m)
R_0 = Distance from a point of greatest drawdown to a point where there is no drawdown (Radius of influence) (m)
r_s = Distance to the wellpoints from the centre of the trench (m), assumed to be half of the trench width
x = Trench Length (m)
L = Distance from a line source to the trench, R_0 (m)/2

Radius of Influence Formula (Sichardt Equation):

$$R_0 = 3000 * D * K^{0.5}$$

Where:

R_0 = Radius of Influence (m), beyond which there is negligible drawdown
D = Distance from the initial static water level to the dewatering target
K = Hydraulic conductivity (m/s)

		BH/MW 1	BH/MW 2	BH/MW 3	BH/MW 4	BH/MW 5	BH/MW 6
Parameter	**Units**	**Block 27**	**Block 35**	**Block 12**	**Block 25**	**Block 15**	**Block 45**
Total Anticipated Long- Term Foundation Drainage Flow including Infiltration and Groundwater Seepage with Safety Factor:	L/day	61,800.0	108,800.0	45,650.0	238,300.0	58,700.0	97,950.0
Anticipated Infiltration:							
Anticipated Infiltration (2Year-3Hr event)	L/day	7,500.0	8,000.0	5,600.0	6,100.0	6,800.0	6,300.0
Storm Event (2Year-3Hr event)	m	0.0323	0.0323	0.0323	0.0323	0.0323	0.0323
Groundwater Seepage Estimate:							
Q s.f. 1.5	L/day	54,300.0	100,800.0	40,050.0	232,200.0	51,900.0	91,650.0
Q	L/day	36,200.0	67,200.0	26,700.0	154,800.0	34,600.0	61,100.0
Q	m^3/day	36.2	67.1	26.6	154.8	34.5	61.0
K	m/day	0.0700	0.2592	0.0311	0.2592	0.0311	0.2592
H	m	3.3	3.7	4.3	3.5	4.3	2.5
h	m	0.5	1.5	1.5	0.5	1.5	1.5
R_0	m	7.6	11.4	5.0	15.6	5.0	5.2
Trench width (b)	m	28.0	28.0	30.9	28.0	28.0	33.0
r_s	m	14.0	14.0	15.5	14.0	14.0	16.5
x (a)	m	203.0	218.0	140.0	160.0	180.0	160.0
L	m	3.8	5.7	2.5	7.8	2.5	2.6
	a/b	7.3	7.8	4.5	5.7	6.4	4.8
Conceptual Zone of Influence:							
R_0	m	7.6	11.4	5.0	15.6	5.0	5.2
D	m	2.8	2.2	2.8	3.0	2.8	1.0
K	m/s	8.10E-07	3.00E-06	3.60E-07	3.00E-06	3.60E-07	3.00E-06
Empirical constant (conservative)		3000	3000	3000	3000	3000	3000
Assumptions:							
Proposed Grading Elevation	masl	425.5	427.0	423.8	424.3	420.5	425.7
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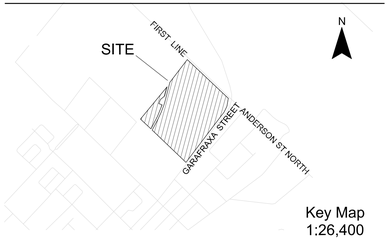
Perimeter	m	462.0	492.0	341.8	376.0	416.0	386.0

DRAFT PLAN OF SUBDIVISION

PT LT 8 CON 1 WEST GARAFRAXA
PT 1, 61R11802 TOWNSHIP OF CENTRE WELLINGTON
WELLINGTON COUNTY



Key Map
1:26,400

OWNER'S CERTIFICATE:

I authorize Weston Consulting Group Inc. to prepare and submit this plan for draft approval.

Date: June 23, 2026

RBS & EJS FERGUS G.P. INC.
3700 STEELES AVENUE WEST, SUITE 800
VAUGHAN, ON L4L 8M9
905-850-6154

SURVEYOR'S CERTIFICATE:

I hereby certify that the boundaries of the lands being subdivided and their correct relationship to the adjacent lands are accurately and correctly shown on this plan.

Date: June 23, 2026

GRANT T. STIDWILL, O.L.S.
J.D. BARNES LTD.
401 WHEELABRATOR WAY, SUITE A
MILTON, ON L9T 3C1
PHONE: (905) 875-9955
www.jdbarnes.com

ADDITIONAL INFORMATION:

[Section 51(17) of the Planning Act, R.S.O. 1990, c. P.13], as amended to June 16, 2026.
a), b), e), f), g), j) & l) - on plan.
c) - on key plan
d) - see statistics
h) - piped water to be installed by developer
i) - sandy silt till, silt & sandy silt
k) - all services to be made available by developer

DEVELOPMENT STATISTICS:

BLOCKS	UNITS	AREA(HA)
Residential Blocks [Blks. 1-45]:	674-694	18.874 ha
Heritage House [Blk. 46]:	1	0.143 ha
Park [Blk. 47]:		1.504 ha
Environmental Protection Area [Blks. 48,49]:		8.798 ha
SWMP [Blk. 50]:		1.560 ha
Walkway and Servicing [Blk. 51]:		0.018 ha
Sight Triangle [Blk. 52]:		0.010 ha
Roads:		8.152 ha
Total:	675-695	39.059 ha

WESTON CONSULTING
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Vaughan: 201 Millway Ave, Suite 19 Vaughan, Ontario L4K 5K8 T. 905.738.8080 F. 905.738.6637
Toronto: 268 Berkeley St, Toronto, Ontario M5A 2X1 T. 416.640.9917 F. 905.738.6637

DRAWN / REVISED

23 JUN 2026	1st Draft

File Number: 11630
Date: 2026-06-22
Drawn By: SM
Planner: RG
CAD: 2026-06-23_Wellington_Draft Plan D1_11630.dwg

Drawing D1

LEGEND
- Subject Lands
- Watercourse - June 2026 (EnVision)
- Watercourse 15m setback - June 2026 (EnVision)
- Staked Wetland -June 9, 2026 (EnVision)
- Staked Woodland -June 9, 2026 (EnVision)
- Woodland Setback - June 2026 (EnVision)
- Development Limits - June 2026 (EnVision)

SCALE
0 25 50 75 100m