PATERSON GROUP

Geotechnical Investigation

Proposed Residential Development & Off-Site Sewer Installation

4850 Bank Street
Ottawa, Ontario

Prepared for Regional Group

Report PG6912-1 Rev. 7 dated June 2, 2026

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1.0 Introduction

Paterson Group (Paterson) was commissioned by Regional Group to conduct a geotechnical investigation for the proposed residential development and off-site sewer installation be located at 4850 Bank Street in the City of Ottawa (refer to Figure 1 - Key Plan in Appendix 2 of this report for the general site location).

The objectives of the geotechnical investigation were to:

- Determine the subsoil and groundwater conditions at this site by means of boreholes, and to
- Provide geotechnical recommendations pertaining to the design of the proposed development including construction considerations which may affect the design.

This report has been prepared specifically and solely for the aforementioned project which is described herein. It contains our findings and includes geotechnical recommendations pertaining to the design and construction of the subject development as they are understood at the time of writing this report.

2.0 Proposed Development

Based on the available drawings, it is understood that the proposed development at the subject site will consist of single-family residential dwellings and/or townhouse blocks with associated roadways. A proposed dry pond stormwater management facility (SWMF) will be located within the northeast corner of the subject site, and a wetland SWMF in the northwest corner of the site.

It is understood that the proposed development will be municipally serviced, including a connection to the existing sewer located underlying Bank Street, several hundred metres north of the site.

3.0 Method of Investigation

3.1 Field Investigation

Field Program

The field program for the recent geotechnical investigation was carried out on February 19th and 20th, 2026, consisting of 4 boreholes (BH 1-26 through BH 4-26) advanced to a maximum depth of 5.2 m below the existing ground surface.

Previous geotechnical investigations were conducted at this site on June 18th and 20th, and July 7th, 2025, consisting of 10 boreholes (BH 1-25 through BH 10-25) advanced to a maximum depth of 8.5 m below existing grade, and on December 11, 12 and 14, 2023, consisting of 10 boreholes (BH 1-23 through BH 10-23) to a maximum depth of 5.9 m.

The borehole locations were distributed in a manner to provide general coverage of the subject site and the proposed service connection along Bank Street, taking into consideration underground utilities and site features. The borehole locations are presented on Drawings PG6912-1 - Test Hole Location Plans in Appendix 2.

The boreholes were advanced using a track-mounted auger drill rig operated by a two-person crew. The drilling procedure consisted of augering and rock coring to the required depths at the selected borehole locations, and sampling and testing the soil and bedrock. All fieldwork was conducted under the full-time supervision of our personnel under the direction of a senior engineer.

Sampling and In Situ Testing

The soil samples were recovered from the auger flights and using a 50 mm diameter split-spoon sampler. Rock cores were obtained using 47.6 mm inside diameter coring equipment. All soil samples were visually inspected and initially classified on site. The auger and split-spoon samples were placed in sealed plastic bags. Rock cores were placed in cardboard boxes.

All samples were transported to our laboratory for further examination and classification. The depths at which the auger, split spoon, and rock core samples were recovered from the boreholes are shown as AU, SS, and RC, respectively, on the Soil Profile and Test Data sheets presented in Appendix 1.

The Standard Penetration Test (SPT) was conducted in conjunction with the recovery of the split-spoon samples. The SPT results are recorded as "N" values on the Soil Profile and Test Data sheets. The "N" value is the number of blows required to drive the split-spoon sampler 300 mm into the soil after a 150 mm initial penetration using a 63.5 kg hammer falling from a height of 760 mm.

The subsurface conditions observed in the boreholes were recorded in detail in the field. The soil profiles are logged on the Soil Profile and Test Data sheets in Appendix 1 of this report.

Groundwater

Groundwater monitoring wells were installed in boreholes BH 1A-26, BH 2-26, BH 3-26, BH 4-26, BH 1-23, BH 2A-23, BH 6C-23, BH 10-23, BH 1-25, and BH 3-25 to permit long-term groundwater measurement subsequent to the field investigation.

Typical monitoring well construction details are described below:

- 1.5 m of slotted 32 mm or 51 mm diameter PVC screen at the base of the boreholes.
- 51 mm diameter PVC riser pipe from the top of the screen to the ground surface.
- No. 3 silica sand backfill within annular space around screen.
- 300 mm thick bentonite hole plug directly above PVC slotted screen.
- Clean backfill from top of bentonite plug to the ground surface.

Refer to the Soil Profile and Test Data sheets in Appendix 1 for groundwater level observations and specific well construction details.

3.2 Field Survey

The borehole locations, and ground surface elevation at each borehole location, were surveyed by Paterson using a handheld GPS, referenced to a geodetic datum, and are presented on Drawing PG6912 - Test Hole Location Plan in Appendix 2.

3.3 Laboratory Testing

Soil samples were recovered from the subject site and visually examined in our laboratory to review the results of the field logging. Sieve analyses were conducted on 7 samples of the glacial till, and the results are attached in Appendix 1. Samples from the recent investigation will be stored in the laboratory for a period of 1 month, unless we are otherwise directed.

3.4 Analytical Testing

Two (2) soil samples were submitted for analytical testing to assess the corrosion potential for exposed ferrous metals and the potential of sulphate attacks against subsurface concrete structures, by determining the concentration of sulphate and chloride, the resistivity, and the pH. The results are presented in Appendix 1 and are discussed further in Section 6.7.

4.0 Observations

4.1 Surface Conditions

The subject site is currently undeveloped and heavily forested. The site fronts onto Bank Street to the east and is bordered to the north by an existing residential subdivision, and to the west and south by undeveloped, forested areas.

The site generally slopes downwards to the east and west from the central area, which is at approximate geodetic elevation of 109 m. The grade slopes down to about geodetic elevation 103 m at the western end of the site, and about geodetic elevation 101 m at the eastern end of the site.

4.2 Subsurface Profile

Overburden Soils at 4850 Bank Street

Generally, the subsurface profile encountered at the test hole locations consists of an approximate 0.1 to 0.3 m thick layer of topsoil which is underlain by glacial till.

The glacial till was generally observed to consist of a compact to very dense, brown to grey clayey silt to silty sand with varying amounts of gravel, cobbles, and boulders.

Practical refusal to augering was encountered at depths ranging from about 0.7 to 5.9 m below the existing ground surface, with the exception of boreholes BH 3-25 and BH 5-23 where refusal was not encountered to depths of about 6 m.

Overburden Soils underlying Bank Street

Generally, the existing asphalt surface was observed to have a thickness of approximately 50 mm. About 1.2 to 2.2 m of fill was encountered underlying the asphalt. The fill was observed to consist of loose to compact silty sand with crushed stone and gravel. Within boreholes BH 4-25 through BH 6-25, a layer of topsoil was encountered underlying the fill.

A compact to very dense glacial till was observed directly beneath the fill and/or topsoil at approximate depths of 1.4 to 2.4 m below the existing ground surface. The glacial till consists of compact to very dense, brown silty sand with gravel, cobbles and occasional boulders. The boreholes were terminated within the glacial till deposit due to practical auger refusal at depths ranging between 2.1 to 4.9 m below the existing ground surface.

Reference should be made to the Soil Profile and Test Data sheets in Appendix 1 for details of soil profiles encountered at each borehole location.

Table 1 – Grain Size Distribution Results

Sample	Depth (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
BH 4-25 AU1	0.0 – 0.6	47.9	38.0	14.1	
BH 7-25 AU1	0.05 – 0.6	48.6	41.1	10.3	
BH 10-25 AU1	0.76 – 1.37	28.1	44.3	27.6	
BH 1-26 SS3	3.05 – 3.65	29.8	34.6	30.6	5.0
BH 2-26 SS2	1.52 – 2.13	12.1	34.3	41.6	12.0
BH 3-26 G3	2.43 – 2.95	23.2	39.9	29.9	7.0
BH 4-26 SS3	2.43 – 2.95	25.6	36.0	29.9	8.5

Note: The ground surface elevation at each borehole location was surveyed using a handheld GPS using a geodetic datum.

Bedrock

The bedrock was cored in boreholes BH 1-25 and BH 2-25, commencing at approximate depths of 4.9 and 5.2 m, respectively. The bedrock was observed to consist of sandstone, and based on the recovered bedrock cores, was generally weathered and of poor to excellent in the upper 1 to 2 m. Based on available geological mapping, the bedrock in the subject area consists of interbedded sandstone and dolomite of the March Formation.

4.3 Groundwater

The groundwater levels were measured in the installed piezometers and groundwater monitoring wells following completion of the respective investigations. The measured groundwater levels are provided in Table 2 below and are also provided on the Soil Profile and Test Data sheets included in Appendix 1.

The long-term groundwater levels can also be estimated based on the observed colour, moisture content and consistency of the recovered soil samples. Based on these observations, the long-term groundwater level is expected to range between approximately **0.5 to 1.5 m** below the existing ground surface. However, it should be noted that groundwater levels are subject to seasonal fluctuations. Therefore, the groundwater levels could vary at the time of construction.

The long-term groundwater monitoring program began in the summer of 2025 and continued through the capture of the spring high water levels in 2026. The results to date of the long-term groundwater monitoring program are included in Table 2 and Appendix 1.

Table 2 – Summary of Manual Groundwater Level Measurements

Borehole ID	Ground Surface Elevation (m asl)	Manual Groundwater Level Measurement		Date Recorded
		Depth (m bgs)	Elevation (m asl)	
BH 1A-26*	100.90	0.72	100.18	May 21, 2026
BH 2-26*	102.50	0.66	101.84	May 21, 2026
BH 3-26*	102.62	0.34	102.28	May 21, 2026
BH 4-26*	103.35	1.255	102.095	May 21, 2026
BH 3-25*	109.30	0.06	109.24	May 21, 2026
BH 1-23*	102.56	1.52	101.04	May 21, 2026
BH 6C-23*	101.59	0.935	100.655	May 21, 2026
BH 10-23*	103.35	0.51	102.84	May 21, 2026
BH 1A-26*	100.9	1.01	99.90	March 20, 2026
BH 2-26*	102.50	0.73	101.77	March 20, 2026
BH 3-26*	102.62	0.51	102.11	March 20, 2026
BH 4-26*	103.35	0.86	102.49	March 20, 2026
BH 3-25*	109.30	0.72	108.58	March 20, 2026
BH 1-23*	102.56	0.80	101.76	March 20, 2026
BH 6C-23*	101.59	0.68	100.91	March 20, 2026
BH 10-23*	103.35	0.29	103.06	March 20, 2026
BH 1A-26*	100.90	1.58	99.32	February 26, 2026
BH 2-26*	102.50	0.96	101.54	February 26, 2026
BH 3-26*	102.62	0.57	102.05	February 26, 2026
BH 4-26*	103.35	1.67	101.68	February 26, 2026
BH 3-25*	109.30	1.67	107.63	February 26, 2026
BH 1-23*	102.56	1.96	100.60	February 26, 2026
BH 6C-23*	101.59	1.19	100.40	February 26, 2026
BH 10-23*	103.35	0.68	102.67	February 26, 2026
BH 1-25*	101.45	1.74	99.71	July 3, 2025
BH 2-25	103.07	2.18	100.89	July 3, 2025
BH 3-25*	109.30	1.99	107.31	July 3, 2025
BH 1-23*	102.56	2.47	100.09	July 3, 2025
BH 2A-23*	102.25	2.09	100.16	July 3, 2025
BH 6C-23*	101.59	1.21	100.38	July 3, 2025
BH 10-23*	103.35	1.25	102.10	July 3, 2025
BH 1-23*	102.56	1.40	101.16	January 29, 2024
BH 2A-23*	102.25	0.94	101.31	January 29, 2024
BH 10-23*	103.35	0.26	103.09	January 29, 2024
BH 1-23*	102.56	1.30	101.26	December 15, 2023
BH 2A-23*	102.25	0.80	101.45	December 15, 2023
BH 3-23	105.46	1.23	104.23	December 15, 2023
BH 4-23	106.70	Dry	-	December 15, 2023

Table 2 – Summary of Manual Groundwater Level Measurements - Continued

Borehole ID	Ground Surface Elevation (m asl)	Manual Groundwater Level Measurement		Date Recorded
		Depth (m bgs)	Elevation (m asl)	
BH 5-23	107.88	0.40	107.48	December 15, 2023
BH 6C-23*	101.59	0.76	100.83	December 15, 2023
BH 7-23	109.28	0.66	108.62	December 15, 2023
BH 8A-23	107.22	0.27	106.95	December 15, 2023
BH 9-23	106.87	0.13	106.74	December 15, 2023
BH 10-23*	103.35	0.39	102.96	December 15, 2023

Note: The ground surface elevation at each borehole location was surveyed by Paterson using a handheld GPS and was referenced to a geodetic datum.
*Borehole instrumented with groundwater monitoring well.

5.0 Discussion

5.1 Geotechnical Assessment

From a geotechnical perspective, the subject site is considered suitable for the proposed development. It is recommended that the proposed buildings be founded on conventional spread footings bearing on the undisturbed, compact to very dense glacial till.

Based on the results of the geotechnical investigation, boulder removal is anticipated to be required to complete the basement levels and/or site servicing works. Depending on the servicing depths, bedrock removal may also be required. All contractors should be prepared for oversized boulder and bedrock removal.

Nonetheless, the subsurface conditions are compatible with sewer installation down Bank Street and connecting to the subject site.

The topographic plans for this site indicate that there are no significant slopes present. The worst-case slope profile within the site and adjacent area is approximately 11H:1V, which does not require a slope stability analysis as per the City of Ottawa's Slope Stability Guidelines for Development Applications.

Further, tree planting setbacks are not required, from a geotechnical perspective, as a silty clay deposit was not encountered at this site.

The above and other considerations are further discussed in the following sections.

5.2 Site Grading and Preparation

Stripping Depth

Topsoil and deleterious fill, such as those containing organic or deleterious materials, should be completely stripped from under any buildings, paved areas, pipe bedding and other settlement sensitive structures.

Boulder & Bedrock Removal

Boulder removal will likely be required at the subject site and can be accomplished by hoe ramming the boulders into smaller fragments, which then can be excavated and handled the same as other soils.

Deep service installations may encounter bedrock. Where required, bedrock removal can be accomplished by hoe ramming where the bedrock is weathered, and/or where only small quantities of the bedrock need to be removed. Sound bedrock may be removed by line drilling in conjunction with controlled blasting and/or hoe ramming.

Prior to considering blasting operations, the blasting effects on the existing services, buildings, and other structures should be addressed. A pre-blast or pre-construction survey of the existing structures located in the proximity of the blasting operations should be carried out prior to commencing site activities.

The extent of the survey should be determined by the blasting consultant and should be sufficient to respond to any inquiries or claims related to the blasting operations.

Vibration Considerations

Construction operations are also the cause of vibrations, and possibly, sources of nuisance to the community. Therefore, means to reduce the vibration levels should be incorporated into the construction operations to maintain, as much as possible, a cooperative environment with the residents.

The following construction equipment could be a source of vibrations: piling rig, hoe ram, compactor, dozer, crane, truck traffic, etc. Vibrations, whether caused by blasting operations or by others construction operations, could be the source of detrimental vibrations on the nearby buildings and structures. Therefore, it is recommended that all vibrations be limited.

Two parameters are used to determine the permissible vibrations, namely, the maximum peak particle velocity and the frequency. For low frequency vibrations, the maximum allowable peak particle velocity is less than that for high frequency vibrations. As a guideline, the peak particle velocity should be less than 15 mm/s between frequencies of 4 to 12 Hz, and 50 mm/s above a frequency of 40 Hz (interpolate between 12 and 40 Hz).

It should be noted that these guidelines are for today's construction standards. Considering that these guidelines are above perceptible human level and, in some cases, could be very disturbing to some people, it is recommended that a pre-construction survey be completed to minimize the risks of claims during or following the construction of the proposed buildings.

Fill Placement

Fill placed for grading beneath the building areas should consist, unless otherwise specified, of clean imported granular fill, such as Ontario Provincial Standard Specifications (OPSS) Granular A or Granular B Type II. The imported fill material should be tested and approved prior to delivery.

The fill, where required, should be placed in maximum 300 mm thick loose lifts and compacted by suitable compaction equipment. Fill placed beneath the buildings should be compacted to a minimum of 98% of the standard Proctor maximum dry density (SPMDD).

Non-specified existing fill along with site-excavated soil could be placed as general landscaping fill where settlement of the ground surface is of minor concern. These materials should be spread in lifts with a maximum thickness of 300 mm and compacted by the tracks of the spreading equipment to minimize voids.

5.3 Foundation Design

Footings bearing on the undisturbed, compact to very dense glacial till, or on compacted engineered fill which is placed directly over the undisturbed, compact to very dense glacial till, can be designed using a bearing resistance value at serviceability limit states (SLS) of **200 kPa** and a factored bearing resistance value at ultimate limit states (ULS) of **300 kPa**. A geotechnical resistance factor of 0.5 was applied to the bearing resistance value at ULS.

An undisturbed soil bearing surface consists of one from which all topsoil and deleterious materials, such as loose, frozen, or disturbed soil, whether in-situ or not, have been removed prior to the placement of concrete for footings.

Footings placed on an undisturbed, compact to very dense glacial till bearing surface, and designed using the bearing resistance value at SLS provided above, will be subjected to potential post-construction total and differential settlement of 25 and 20 mm, respectively.

Lateral Support

The bearing medium under footing-supported structures is required to be provided with adequate lateral support with respect to excavations and different foundation levels. Adequate lateral support is provided to a glacial till or engineered fill bearing surface when a plane extending down and out from the bottom edges of the footing, at a minimum of 1.5H:1V, passes only through in situ soil or engineered fill of the same or higher capacity as that of the bearing medium.

5.4 Design for Earthquakes

The site class for seismic site response can be taken as **Class X_C** for the foundations considered at this site.

A higher site class, such as Class X_A or X_B, may be achievable for foundations placed within 3 m of the bedrock surface. However, a site-specific shear wave velocity test is required to be completed to confirm these seismic site classifications.

The soils underlying the subject site are not susceptible to liquefaction. Reference should be made to the latest revision of the Ontario Building Code 2024 for a full discussion of the earthquake design requirements.

5.5 Slab on Grade Construction

With the removal of all topsoil and deleterious fill from within the footprints of the proposed buildings, the glacial till or approved engineered fill surface will be considered an acceptable subgrade on which to commence backfilling for floor slab construction.

Any soft areas should be removed and backfilled with appropriate backfill material prior to placing any fill. OPSS Granular B Type II, with a maximum particle size of 50 mm, is recommended for backfilling below the floor slabs. All backfill material within the footprints of the proposed buildings should be placed in maximum 300 mm thick loose layers and compacted to a minimum of 98% of the SPMDD.

For slab-on-grade construction, it is recommended that the upper 200 mm of sub-slab fill consist of OPSS Granular A crushed stone. All backfill material within the footprint of the proposed structure should be placed in maximum 300 mm thick loose layers and compacted to a minimum of 98% of the material's SPMDD.

5.6 Pavement Design

Flexible Pavement Structure

The pavement structures in the following tables are recommended for the design of car only parking areas, access lanes and heavy loading parking areas.

Table 3 – Recommended Pavement Structure – Driveways and At-grade Car Parking Areas	
Thickness (mm)	**Material Description**
50	**Wear Course –** HL-3 or Superpave 12.5 Asphaltic Concrete
150	**BASE –** OPSS Granular A Crushed Stone
300	**SUBBASE –** OPSS Granular B Type II
Subgrade – Either fill, in-situ soil, or OPSS Granular B Type I or II material placed over in-situ soil or fill.	

Table 4 – Recommended Pavement Structure – Access Lanes and Heavy Loading Parking Areas	
Thickness (mm)	**Material Description**
40	**Wear Course –** HL-3 or Superpave 12.5 Asphaltic Concrete
50	**Binder Course –** HL-8 or Superpave 19.0 Asphaltic Concrete
150	**BASE –** OPSS Granular A Crushed Stone
450	**SUBBASE –** OPSS Granular B Type II
Subgrade – Either fill, in-situ soil, or OPSS Granular B Type I or II material placed over in-situ soil or fill.	

Minimum Performance Graded (PG) 58-34 asphalt cement should be used for the subject site.

If soft spots develop in the subgrade during compaction or due to construction traffic, the affected areas should be excavated and replaced with OPSS Granular B Type II material. The pavement granular base and subbase should be placed in maximum 300 mm thick lifts and compacted to a minimum of 99% of the SPMDD using suitable vibratory equipment.

Reinstatement of Bank Street

Where a section of Bank Street needs to be reinstated after the installation of the sewer connection, the following pavement structure is recommended:

Table 5 – Recommended Pavement Structure – Bank Street	
Thickness (mm)	**Material Description**
40	**Wear Course –** HL-3 or Superpave 12.5 Asphaltic Concrete
50	**Binder Course –** HL-8 or Superpave 19.0 Asphaltic Concrete
50	**Binder Course –** HL-8 or Superpave 19.0 Asphaltic Concrete
150	**BASE –** OPSS Granular A Crushed Stone
650	**SUBBASE –** OPSS Granular B Type II
Subgrade – Either fill, in-situ soil, or OPSS Granular B Type I or II material placed over in-situ soil or fill.	

Minimum Performance Graded (PG) 64-34 asphalt cement should be used for Bank Street. The pavement granular base and subbase should be placed in maximum 300 mm thick lifts and compacted to a minimum of 100% of the material's SPMDD.

6.0 Design and Construction Precautions

6.1 Foundation Drainage and Backfill

Foundation Drainage

A perimeter foundation drainage system is recommended for the proposed structures. The system should consist of a 150 mm diameter perforated and corrugated plastic pipe which is surrounded on all sides by 150 mm of 19 mm clear crushed stone, and which is placed at the footing level around the exterior perimeter of each structure. The clear crushed stone should be wrapped in a non-woven geotextile. The pipe should have a positive outlet, such as a gravity connection to the storm sewer.

Foundation Drainage Board

A geocomposite drainage board, such as Delta Drain 6000, should be installed over the exterior below-grade foundation walls and connected to the perimeter drainage system.

The exterior foundation walls can then be backfilled with the site excavated materials, provided that they are maintained in an unfrozen state and at a suitable moisture content for compaction. Imported granular materials, such as clean sand or OPSS Granular B Type II granular material, should otherwise be used for this purpose.

6.2 Protection Against Frost Action

Perimeter footings of heated structures are recommended to be insulated against the deleterious effects of frost action. A minimum 1.5 m thick soil cover, or an equivalent combination of soil cover and foundation insulation, should be provided in this regard.

Exterior unheated footings, such as isolated piers, are more prone to deleterious movement associated with frost action than the exterior walls of the structure, and require additional protection, such as soil cover of 2.1 m, or an equivalent combination of soil cover and foundation insulation.

The sewer service pipe underlying Bank Street should be installed at a depth of 2.1 m below finished grade in order to provide sufficient protection against frost action.

6.3 Excavation Side Slopes

The side slopes of excavations at this site should either be cut back at acceptable slopes or should be retained by temporary shoring systems from the start of the excavation until the structure is backfilled. It is anticipated that sufficient room will be available for the greater part of the excavation to be undertaken by open-cut methods (i.e. unsupported excavations). For the sewer installation underlying Bank Street, is expected that cut and cover methods will be used.

The excavation side slopes above the groundwater level extending to a maximum depth of 3 m should be cut back at 1H:1V or flatter. The flatter slope is required for excavation below groundwater level. The subsoil at this site is considered to be mainly Type 2 and 3 soil according to the Occupational Health and Safety Act and Regulations for Construction Projects.

Excavated soil should not be stockpiled directly at the top of excavations and heavy equipment should be kept away from the excavation sides.

Slopes in excess of 3 m in height should be periodically inspected by the geotechnical consultant in order to detect if the slopes are exhibiting signs of distress.

It is recommended that a trench box is used to protect personnel working in trenches with steep or vertical sides. It is expected that services will be installed by “cut and cover” methods and excavations will not be left open for extended periods of time.

6.4 Pipe Bedding and Backfill

Bedding and backfill materials should be in accordance with the most recent Material Specifications and Standard Detail Drawings from the Department of Public Works and Services, Infrastructure Services Branch of the City of Ottawa.

The pipe bedding for sewer and water pipes should consist of at least 150 mm of OPSS Granular A material for areas over a soil subgrade. However, the bedding thickness should be increased to 300 mm for areas over a bedrock subgrade, if encountered. The material should be placed in maximum 300 mm thick lifts and compacted to a minimum of 99% of its SPMDD. The bedding material should extend at a minimum to the spring line of the pipe.

The cover material, which should consist of OPSS Granular A crushed stone, should extend from the spring line of the pipe to a minimum of 300 mm above the obvert of the pipe. The material should be placed in maximum 300 mm thick lifts and compacted to a minimum of 99% of its SPMDD.

Generally, it should be possible to re-use the moist (not wet) glacial till above the cover material if the excavation and filling operations are carried out in dry weather conditions. Wet sub-excavated soil should be given a sufficient drying period to decrease its moisture content to an acceptable level to make compaction possible prior to being re-used. All stones greater than 300 mm in their greatest dimension should be removed prior to reuse of site-generated glacial till.

Where hard surface areas are considered above the trench backfill, the trench backfill material within the frost zone (about 1.8 m below finished grade) should consist of the soils exposed at the trench walls to minimize differential frost heaving. The trench backfill should be placed in maximum 300 mm thick loose lifts and compacted to a minimum of 95% of the SPMDD.

6.5 Groundwater Control

It is anticipated that groundwater infiltration into the excavations should be controllable using open sumps. The contractor should be prepared to direct water away from all bearing surfaces and subgrades, regardless of the source, to prevent disturbance to the founding medium.

Groundwater Control for Building Construction

Under the current regulations enacted by the Ministry of Environment, Conservation and Parks (MECP), any dewatering in excess of 50,000 L/day requires a registration on the Environmental Activity and Sector Registry (EASR), provided that dewatering is related to construction. If the dewatering is not related to construction, a Permit to Take Water obtained from the MECP will be required.

In the event that an EASR is required to facilitate dewatering of the proposed development, a minimum of 3 to 4 weeks should be allotted for completion of the EASR registration and the Water Taking and Discharge Plan, to be prepared by a Qualified Person as stipulated under O.Reg. 63/16. Should a Permit to Take Water be required, a minimum of 5 to 6 months should be allotted for completion of the permit, due to the minimum review period imposed by the MECP.

Impacts on Neighbouring Properties

Due to the relatively shallow depth of the compact to very dense glacial till deposit, it is anticipated that neighbouring structures are bearing on this strata, which is not susceptible to settlement from dewatering. Therefore, no adverse effects from short-term or long-term dewatering are expected for surrounding structures. The short-term dewatering during the excavation program will be managed by the excavation contractor.

6.6 Winter Construction

Precautions must be taken if winter construction is considered for this project. The subsoil conditions at this site consist of frost susceptible materials. In the presence of water and freezing conditions, ice could form within the soil mass. Heaving and settlement upon thawing could occur.

In the event of construction during below zero temperatures, the founding stratum should be protected from freezing temperatures using straw, propane heaters and tarpaulins or other suitable means. In this regard, the base of the excavations should be insulated from sub-zero temperatures immediately upon exposure and until such time as heat is adequately supplied to the building and the footings are protected with sufficient soil cover to prevent freezing at founding level.

Trench excavations and pavement construction are also difficult activities to complete during freezing conditions without introducing frost into the subgrade or in the excavation walls and bottoms. Precautions should be taken if such activities are to be carried out during freezing conditions. Additional information could be provided, if required.

6.7 Corrosion Potential and Sulphate

The results of analytical testing indicate that the sulphate content is less than 0.1%. This result is indicative that Type 10 Portland cement (normal cement) would be appropriate for this site. The chloride content and the pH of the sample indicate that they are not significant factors in creating a corrosive environment for exposed ferrous metals at this site, whereas the resistivity is indicative of a slightly aggressive corrosive environment.

6.8 Stormwater Management Pond and Wetland Pond

As noted above, it is understood that a proposed dry pond SWMF will be located within the northeast corner of the subject site, and a wetland SWMF in the northwest corner of the site. Based on the boreholes completed within the vicinity of these facilities, it is anticipated that the proposed structures will be founded within the glacial till.

For the northwestern wetland SWMF, a liner is not recommended in order to mimic wetland conditions.

For the eastern dry pond SWMF, if the invert elevation is above the seasonal-high groundwater level, then a pond liner and/or ballast is not considered to be required. However, if the invert elevation is below the seasonal high groundwater level, a pond liner is recommended. The pond liner may consist of one of the following:

- A 500 mm thick layer of workable, brown silty clay which is compacted with several passes of a sheepsfoot roller, and placed directly over the glacial till, or a

- 150 mm thick layer of 19 mm clear crushed stone placed over the glacial till subgrade, followed by a scrim-reinforced geosynthetic clay liner (such as the Bentofix Thermal Lock SRNWL Series Geosynthetic Clay Liner.

A granular ballast material should be placed over the liners for protection against damage and in order to resist buoyancy forces. The thickness of the granular ballast will be specified once the finalized depth of the SWMF is known. Each liner and ballast would be capped with a suitable layer of topsoil and seeded to facilitate maintenance operations.

7.0 Recommendations

It is a requirement for the foundation design data provided herein to be applicable that the following material testing and observation program be performed by the geotechnical consultant.

- ❒ Observation of all bearing surfaces prior to the placement of concrete.
- ❒ Sampling and testing of the concrete and fill materials.
- ❒ Periodic observation of the condition of unsupported excavation side slopes in excess of 3 m in height, if applicable.
- ❒ Observation of all subgrades prior to backfilling materials.
- ❒ Field density tests to determine the level of compaction achieved.
- ❒ Sampling and testing of the bituminous concrete including mix design reviews.

A report confirming that these works have been conducted in general accordance with our recommendations could be issued upon the completion of a satisfactory inspection program by the geotechnical consultant.

All excess soils must be handled as per *Ontario Regulation 406/19: On-Site and Excess Soil Management*.

8.0 Statement of Limitations

The recommendations provided are in accordance with the present understanding of the project. Paterson requests permission to review the recommendations when the drawings and specifications are completed.

A soils investigation is a limited sampling of a site. Should any conditions at the site be encountered which differ from those at the test locations, Paterson requests immediate notification to permit reassessment of our recommendations.

The recommendations provided herein should only be used by the design professionals associated with this project. They are not intended for contractors bidding on or undertaking the work. The latter should evaluate the factual information provided in this report and determine the suitability and completeness for their intended construction schedule and methods. Additional testing may be required for their purposes.

The present report applies only to the project described in this document. Use of this report for purposes other than those described herein or by person(s) other than Regional Group, or their agents, is not authorized without review by Paterson for the applicability of our recommendations to the alternative use of the report.

Paterson Group Inc.



Nicholas F. R. Versolato, P.Eng., ing.





Faisal I. Abou-Seido, P.Eng.

Report Distribution:

- ❑ Regional Group (1 digital copy)
- ❑ Paterson Group (1 copy)

APPENDIX 1

SOIL PROFILE AND TEST DATA SHEETS

SYMBOLS AND TERMS

SIEVE ANALYSIS RESULTS

ANALYTICAL TESTING RESULTS

GROUNDWATER MONITORING RESULTS

SOIL PROFILE AND TEST DATA

Geotechnical Investigation

4850 Bank Street, Ottawa, Ontario

COORD. SYS.: MTM ZONE 9 **EASTING:** 375605.85 **NORTHING:** 5018610.34 **ELEVATION:** 100.10

PROJECT: Proposed Development

ADVANCED BY: Track Mounted Drill Rig

REMARKS: Datum: NAD1983 (Canada) Geoid: HT2-2010 **DATE:** February 19, 2026

FILE NO. : **PG6912**

HOLE NO. : **BH 1-26**

SAMPLE DESCRIPTION	STRATA PLOT	DEPTH (m)	SAMPLE TYPE AND NO.	SAMPLE RECOVERY (%)	SAMPLE N OR RQD	WATER CONTENT (%)	PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH (kPa) / UNDRAINED SHEAR STRENGTH (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80	PIEZOMETER CONSTRUCTION	ELEVATION (m)
GROUND SURFACE									
TOPSOIL 0.46m [99.64m]									100
GLACIAL TILL: Very dense, brown silty sand, with gravel, trace clay, occasional cobbles		1	SS 1	25	1-1-3-4 4				99
		2	SS 2	100	20-36-50-/ 86/0.18				98
- Grey by 3.0 m depth		3	SS 3	50	15-41-33-30 74/0.3				97
3.84m [96.26m]									96
End of Borehole		4							95
Practical refusal to augering at 3.84 m depth		5							94
		6							93
		7							
		8							

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation

4850 Bank Street, Ottawa, Ontario

COORD. SYS.: MTM ZONE 9 **EASTING:** 375614.75 **NORTHING:** 5018618.75 **ELEVATION:** 100.90

PROJECT: Proposed Development

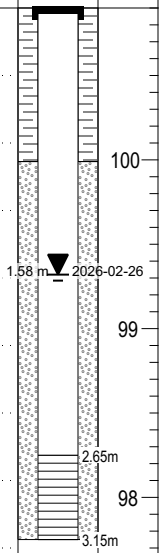
ADVANCED BY: Track Mounted Drill Rig

REMARKS: Datum: NAD1983 (Canada) Geoid: HT2-2010 **DATE:** February 19, 2026

FILE NO. : **PG6912**

HOLE NO. : **BH 1A-26**

SAMPLE DESCRIPTION	STRATA PLOT	DEPTH (m)	SAMPLE: TYPE AND NO.	SAMPLE: RECOVERY (%)	SAMPLE: N OR RQD	SAMPLE: WATER CONTENT (%)	PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80	REMOULDED SHEAR STRENGTH (kPa) / UNDRAINED SHEAR STRENGTH (kPa) 20 40 60 80	PL (%) WATER CONTENT (%) LL (%) 20 40 60 80	MONITORING WELL CONSTRUCTION	ELEVATION (m)
GROUND SURFACE											
Refer to BH 1-26 for soil profile											
3.15m [97.75m]											
End of Borehole											
Practical refusal to augering at 3.15 m depth											
(GWL at 1.58 m depth - February 26, 2026)											



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SOIL PROFILE AND TEST DATA

Geotechnical Investigation

4850 Bank Street, Ottawa, Ontario

COORD. SYS.: MTM ZONE 9 **EASTING:** 375667.72 **NORTHING:** 5018650.43 **ELEVATION:** 102.50

PROJECT: Proposed Development

ADVANCED BY: Track Mounted Drill Rig

REMARKS: Datum: NAD1983 (Canada) Geoid: HT2-2010 **DATE:** February 20, 2026

FILE NO. : **PG6912**

HOLE NO. : **BH 2-26**

SAMPLE DESCRIPTION	STRATA PLOT	DEPTH (m)	SAMPLE TYPE AND NO.	SAMPLE RECOVERY (%)	SAMPLE N OR RQD	WATER CONTENT (%)	PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH (kPa) / UNDRAINED SHEAR STRENGTH (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80	MONITORING WELL CONSTRUCTION	ELEVATION (m)
GROUND SURFACE									
TOPSOIL 0.46m [102.04m]									102
GLACIAL TILL: Very dense, brown sandy silt, with gravel, some clay		1	SS 1	17	2-2-3-3 5			0.96 m 2026-02-26	101
		2	SS 2	85	18-42-50-/ 92/0.2				100
		3	SS 3	99	43-50-/-/ 50/0.03				99
- Grey by 4.0 m depth		4	G 5 G 4					3.89m	98
4.39m [98.11m]								4.39m	
End of Borehole		5							97
Practical refusal to augering at 4.39 m depth		6							96
(GWL at 0.96 m depth - February 26, 2026)		7							95
		8							

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation

4850 Bank Street, Ottawa, Ontario

COORD. SYS.: MTM ZONE 9 **EASTING:** 375732.61 **NORTHING:** 5018689.73 **ELEVATION:** 102.62

PROJECT: Proposed Development

ADVANCED BY: Track Mounted Drill Rig

REMARKS: Datum: NAD1983 (Canada) Geoid: HT2-2010 **DATE:** February 20, 2026

FILE NO. : **PG6912**

HOLE NO. : **BH 3-26**

SAMPLE DESCRIPTION	STRATA PLOT	DEPTH (m)	SAMPLE TYPE AND NO.	SAMPLE RECOVERY (%)	SAMPLE N OR RQD	WATER CONTENT (%)	PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH (kPa) ▲ UNDRAINED SHEAR STRENGTH (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80	MONITORING WELL CONSTRUCTION	ELEVATION (m)
GROUND SURFACE									
TOPSOIL 0.51m [102.11m]									102
GLACIAL TILL: Dense, brown silty sand, with gravel, trace clay, occasional cobbles and boulders		1	SS 1	8	1-2-2-1 4			0.57 m 2026-02-26	
		2	SS 2	74	39-50-/-/ 50/0.15				101
2.95m [99.67m]		3	G 3					2.45m 2.95m	100
End of Borehole									99
Practical refusal to augering at 2.95 m depth		4							98
(GWL at 0.57 m depth - February 26, 2026)		5							97
		6							96
		7							95
		8							

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation

4850 Bank Street, Ottawa, Ontario

COORD. SYS.: MTM ZONE 9 **EASTING:** 375730.93 **NORTHING:** 5018693.49 **ELEVATION:** 102.54

PROJECT: Proposed Development

ADVANCED BY: Track Mounted Drill Rig

REMARKS: Datum: NAD1983 (Canada) Geoid: HT2-2010 **DATE:** February 20, 2026

FILE NO. : **PG6912**

HOLE NO. : **BH 3A-26**

SAMPLE DESCRIPTION	STRATA PLOT	DEPTH (m)	SAMPLE: TYPE AND NO.	SAMPLE: RECOVERY (%)	SAMPLE: N OR RQD	SAMPLE: WATER CONTENT (%)	PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / △ REMOULDED SHEAR STRENGTH (kPa) / ▲ UNDRAINED SHEAR STRENGTH (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80	PIEZOMETER CONSTRUCTION	ELEVATION (m)
GROUND SURFACE									
Refer to BH 3-26 for soil profile		0							102
		1							101
		2							100
2.92m [99.62m]		3							99
End of Borehole		4							98
Practical refusal to augering at 2.92 m depth		5							97
		6							96
		7							95
		8							

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation

4850 Bank Street, Ottawa, Ontario

COORD. SYS.: MTM ZONE 9 **EASTING:** 376270.05 **NORTHING:** 5019013.74 **ELEVATION:** 103.35

PROJECT: Proposed Development

ADVANCED BY: Track Mounted Drill Rig

REMARKS: Datum: NAD1983 (Canada) Geoid: HT2-2010 **DATE:** February 20, 2026

FILE NO. : **PG6912**

HOLE NO. : **BH 4-26**

SAMPLE DESCRIPTION	STRATA PLOT	DEPTH (m)	SAMPLE TYPE AND NO.	SAMPLE RECOVERY (%)	SAMPLE N OR RQD	SAMPLE WATER CONTENT (%)	PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH (kPa) / UNDRAINED SHEAR STRENGTH (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80	MONITORING WELL CONSTRUCTION	ELEVATION (m)
GROUND SURFACE									
TOPSOIL 0.53m [102.82m]			SS 1	8	2-5-4-6 9				103
GLACIAL TILL: Dense, brown sandy silt, some gravel 1.83m [101.52m]		1	SS 2	92	13-24-21-18 45			1.67 m 2026-02-26	102
GLACIAL TILL: Dense, brown silty sand, some gravel 2.74m [100.61m]		2							101
GLACIAL TILL: Dense, grey sandy silt, with gravel, some clay, occasional cobbles and boulders 5.18m [98.17m]		3	SS 3	87	20-25-18-26 43			3.05m	100
		4							99
		5	SS 4	92	14-18-29-35 47			4.57m	98
End of Borehole (GWL at 1.67 m depth - February 26, 2026)		6							97
		7							96
		8							

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation

4850 Bank Street, Ottawa, ON

COORD. SYS.: MTM ZONE 9 **EASTING:** 376393.34 **NORTHING:** 5019077.45 **ELEVATION:** 101.45

PROJECT: Proposed Residential Development

ADVANCED BY: CME-55 Low Clearance Drill

REMARKS:

DATE: June 18, 2025

FILE NO. : PG6912

HOLE NO. : BH 1-25

SAMPLE DESCRIPTION	STRATA PLOT	DEPTH (m)	SAMPLE TYPE AND NO.	SAMPLE RECOVERY (%)	SAMPLE N OR RQD	WATER CONTENT (%)	PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH (kPa) / UNDRAINED SHEAR STRENGTH (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80	MONITORING WELL CONSTRUCTION	ELEVATION (m)
GROUND SURFACE									
FILL: Compact, brown silty sand with gravel and crushed stone			AU 1						
0.61m [100.84m]									
FILL: Compact, brown silty sand, trace gravel									
0.91m [100.55m]									
GLACIAL TILL: Very dense, brown silty fine sand with gravel, trace clay, occasional cobbles and boulders		1	SS 2	58	2-5-12-10 17				
		2	SS 3	85	9-24-50-/ 74/0.05				
			SS 4	63	50-/-/-/ 50/0.13				
3.20m [98.25m]		3	SS 5	46	14-45-50-/ 95/0.03				
GLACIAL TILL: Very dense, grey silty fine sand with gravel, cobbles and boulders		4	RC 1	71					
4.95m [96.50m]		5	RC 2	100	RQD 65				
BEDROCK: Poor quality bedrock									
- Vertical fractures from 5.94 m to 6.96 m depth		6	RC 3	100	RQD 31				
- Excellent quality bedrock below 6.96 m depth		7							
		8	RC 4	100	RQD 90				
8.46m [93.00m]								6.76m / 8.28m	
End of Borehole		9							
		10							

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation

4850 Bank Street, Ottawa, ON

COORD. SYS.: MTM ZONE 9 **EASTING:** 376313.61 **NORTHING:** 5018920.17 **ELEVATION:** 103.07

PROJECT: Proposed Residential Development

ADVANCED BY: CME-55 Low Clearance Drill

REMARKS:

DATE: June 18, 2025

FILE NO. : **PG6912**

HOLE NO. : **BH 2-25**

SAMPLE DESCRIPTION	STRATA PLOT	DEPTH (m)	SAMPLE TYPE AND NO.	SAMPLE RECOVERY (%)	SAMPLE N OR RQD	SAMPLE WATER CONTENT (%)	PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH (kPa) / UNDRAINED SHEAR STRENGTH (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80	PIEZOMETER CONSTRUCTION	ELEVATION (m)
GROUND SURFACE									103
TOPSOIL: with organics 0.18m [102.89m]		0	AU 1						
GLACIAL TILL: Very dense, brown silty fine sand with gravel, trace clay, occasional cobbles and boulders		1	SS 2	74	12-25-50-/ 75/0.1				102
			SS 3	73	29-50-/-/ 50/0.05				
1.98m [101.09m]		2	SS 4	76	32-50-/-/ 50/0.05				101
GLACIAL TILL: Very dense, grey silty fine sand with gravel, cobbles and boulders			SS 5	0	50-/-/-/ 50/0.03				
		3	RC 1	89					100
		4							99
5.21m [97.86m]		5	RC 2	100	RQD 57				98
BEDROCK: Excellent quality bedrock		6							97
7.06m [96.01m]		7	RC 3	100	RQD 100				96
End of Borehole		8							95
		9							94
		10							

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation

4850 Bank Street, Ottawa, ON

COORD. SYS.: MTM ZONE 9 **EASTING:** 376106.17 **NORTHING:** 5018786.90 **ELEVATION:** 109.30

PROJECT: Proposed Residential Development

ADVANCED BY: CME-55 Low Clearance Drill

REMARKS:

DATE: June 20, 2025

FILE NO. : PG6912

HOLE NO. : BH 3-25

SAMPLE DESCRIPTION	STRATA PLOT	DEPTH (m)	SAMPLE TYPE AND NO.	SAMPLE RECOVERY (%)	SAMPLE N OR RQD	SAMPLE WATER CONTENT (%)	PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80	REMOULDED SHEAR STRENGTH (kPa) / UNDRAINED SHEAR STRENGTH (kPa) 20 40 60 80	PL (%) WATER CONTENT (%) LL (%) 20 40 60 80	MONITORING WELL CONSTRUCTION	ELEVATION (m)
GROUND SURFACE											
TOPSOIL: with organics 0.20m [109.10m]											109
GLACIAL TILL: Very dense, brown silty fine sand, some gravel, cobbles and boulders		1	AU 1								108
			SS 2	90	12-15-51-50 66/0.05						
		2	SS 3	66	19-50-/-/ 50/0.08						107
			SS 4	90	49-50-/-/ 50/0.03						
		3	SS 5	109	50-/-/-/ 50/0.08						106
		4	SS 6	66	14-50-/-/ 50/0.08						
- Grey by 4.57 m depth			SS 7	60	42-50-/-/ 50/0.05						105
		5								4.63m	
- Cobbles and boulders decreasing with depth			SS 8	8	15-24-18-17 42						104
		6								6.15m	
- Silty fine to medium sand by 6.10 m depth			SS 9	92	10-16-21-20 37						103
6.71m [102.59m]											
End of Borehole		7									102
		8									101
		9									100
		10									

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation

4850 Bank Street, Ottawa, ON

COORD. SYS.: MTM ZONE 9 **EASTING:** 376203.99 **NORTHING:** 5019601.65 **ELEVATION:** 96.09

PROJECT: Proposed Residential Development

ADVANCED BY: CME-55 Low Clearance Drill

REMARKS:

DATE: July 7, 2025

FILE NO. : **PG6912**

HOLE NO. : **BH 4-25**

SAMPLE DESCRIPTION	STRATA PLOT	DEPTH (m)	SAMPLE TYPE AND NO.	SAMPLE RECOVERY (%)	SAMPLE N OR RQD	SAMPLE WATER CONTENT (%)	PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH (kPa) / UNDRAINED SHEAR STRENGTH (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80	PIEZOMETER CONSTRUCTION	ELEVATION (m)
GROUND SURFACE									96
FILL: Brown silty sand with gravel and crushed stone			AU 1						
0.69m [95.40m]									
FILL: Compact, brown silty sand with gravel, trace clay		1	SS 2	50	2-8-7-5 15				95
1.52m [94.57m]									
TOPSOIL: with organics, trace sand			SS 3	58	5-5-5-11 10				
1.83m [94.26m]		2							94
GLACIAL TILL: Very dense, brown silty fine sand, occasional cobbles			SS 4	83	14-25-24-30 49				
2.97m [93.12m]		3	SS 5	73	15-50-/-/ 50/0.13				93
GLACIAL TILL: Very dense, grey silty sand with gravel, cobbles and boulders									
3.23m [92.86m]									
End of Borehole		4							92
Practical refusal to augering at 3.23 m depth on inferred boulders		5							91
		6							90
		7							89
		8							88
		9							87
		10							

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation

4850 Bank Street, Ottawa, ON

COORD. SYS.: MTM ZONE 9 **EASTING:** 376242.76 **NORTHING:** 5019509.68 **ELEVATION:** 96.49

PROJECT: Proposed Residential Development

ADVANCED BY: CME-55 Low Clearance Drill

REMARKS:

DATE: July 7, 2025

FILE NO. : PG6912

HOLE NO. : BH 5-25

SAMPLE DESCRIPTION	STRATA PLOT	DEPTH (m)	SAMPLE TYPE AND NO.	SAMPLE RECOVERY (%)	SAMPLE N OR RQD	SAMPLE WATER CONTENT (%)	PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80	REMOULDED SHEAR STRENGTH (kPa) ▲ UNDRAINED SHEAR STRENGTH (kPa) 20 40 60 80	PL (%) WATER CONTENT (%) LL (%) 20 40 60 80	PIEZOMETER CONSTRUCTION	ELEVATION (m)
GROUND SURFACE											96
FILL: Compact, brown silty sand with gravel and crushed stone			AU 1								
1.07m [95.42m]		1	SS 2	33	3-8-4-3 12						
TOPSOIL: with organics with sand, trace grass											95
1.37m [95.12m]											
GLACIAL TILL: Compact to dense, brown silty fine sand with gravel, occasional cobbles, trace clay		2	SS 3	83	2-10-14-9 24						
			SS 4	92	19-22-19-22 41						94
3.15m [93.34m]		3	SS 5	0	50-/-/-/ 50/0.05						
End of Borehole											93
Practical refusal to augering at 3.15 m depth on inferred boulders		4									92
		5									91
		6									90
		7									89
		8									88
		9									87
		10									

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation

4850 Bank Street, Ottawa, ON

COORD. SYS.: MTM ZONE 9 **EASTING:** 376283.28 **NORTHING:** 5019413.06 **ELEVATION:** 97.68

PROJECT: Proposed Residential Development

ADVANCED BY: CME-55 Low Clearance Drill

REMARKS:

DATE: July 7, 2025

FILE NO. : PG6912

HOLE NO. : BH 6-25

SAMPLE DESCRIPTION	STRATA PLOT	DEPTH (m)	SAMPLE TYPE AND NO.	RECOVERY (%)	N OR RQD	WATER CONTENT (%)	PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH (kPa) / UNDRAINED SHEAR STRENGTH (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80	PIEZOMETER CONSTRUCTION	ELEVATION (m)
GROUND SURFACE									
ASPHALT 0.05m [97.63m]			AU 1						97
FILL: Granular, crushed stone, some sand 0.61m [97.07m]									
FILL: Compact, brown silty sand with gravel 1.22m [96.46m]		1	SS 2	42	5-7-3-6 10				
TOPSOIL: with organics, sand, trace clay and gravel 1.52m [96.16m]									96
GLACIAL TILL: Dense to very dense, brown silty fine sand with gravel, cobbles and boulders		2	SS 3	67	7-16-14-13 30				
			SS 4	85	50-/-/-/ 50/0.13				95
3.51m [94.17m]		3	SS 5	92	30-48-51-42 99				
GLACIAL TILL: Very dense, grey silty fine sand with gravel, cobbles and boulders 4.50m [93.18m]		4	SS 6	79	20-26-21-50 47/0.13				94
End of Borehole		5							93
Practical refusal to augering at 4.50 m depth		6							92
		7							91
		8							90
		9							89
		10							88

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation

4850 Bank Street, Ottawa, ON

COORD. SYS.: MTM ZONE 9 **EASTING:** 376306.21 **NORTHING:** 5019357.57 **ELEVATION:** 98.42

PROJECT: Proposed Residential Development

ADVANCED BY: CME-55 Low Clearance Drill

REMARKS:

DATE: July 7, 2025

FILE NO. : PG6912

HOLE NO. : BH 7-25

SAMPLE DESCRIPTION	STRATA PLOT	DEPTH (m)	SAMPLE TYPE AND NO.	SAMPLE RECOVERY (%)	SAMPLE N OR RQD	SAMPLE WATER CONTENT (%)	PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH (kPa) ▲ UNDRAINED SHEAR STRENGTH (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80	PIEZOMETER CONSTRUCTION	ELEVATION (m)
GROUND SURFACE									
ASPHALT 0.05m [98.37m]									98
FILL: Granular, crushed stone and gravel, some sand 0.61m [97.81m]									
FILL: Dense, brown silty sand with gravel, trace topsoil and clay 1.83m [96.59m]		1	AU 1						97
			SS 2	42	16-29-18-10 47				
GLACIAL TILL: Compact to very dense, brown silty fine sand with gravel, cobbles and boulders		2	SS 3	100	4-8-6-15 14				96
			SS 4	67	13-30-28-42 58				
		3	SS 5	54	14-50-/-/ 50/0.13				95
4.14m [94.28m]		4	SS 6	77	26-52-50-/ 102/0.03				94
End of Borehole Practical refusal to augering at 4.14 m depth		5							93
		6							92
		7							91
		8							90
		9							89
		10							

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation

4850 Bank Street, Ottawa, ON

COORD. SYS.: MTM ZONE 9 **EASTING:** 376361.10 **NORTHING:** 5019231.96 **ELEVATION:** 100.48

PROJECT: Proposed Residential Development

ADVANCED BY: CME-55 Low Clearance Drill

REMARKS:

DATE: July 7, 2025

FILE NO. : PG6912

HOLE NO. : BH 8-25

SAMPLE DESCRIPTION	STRATA PLOT	DEPTH (m)	SAMPLE TYPE AND NO.	SAMPLE RECOVERY (%)	SAMPLE N OR RQD	WATER CONTENT (%)	PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80 / REMOULDED SHEAR STRENGTH (kPa) / UNDRAINED SHEAR STRENGTH (kPa) 20 40 60 80 / PL (%) WATER CONTENT (%) LL (%) 20 40 60 80	PIEZOMETER CONSTRUCTION	ELEVATION (m)
GROUND SURFACE									
ASPHALT 0.05m [100.43m]			AU 1						100
FILL: Granular, crushed stone, some sand 0.61m [99.87m]									
FILL: Dense, brown silty sand, trace gravel 1.45m [99.03m]		1	SS 2	33	8-26-21-17 47				99
GLACIAL TILL: Dense, brown silty fine sand with gravel, cobbles and boulders 2.34m [98.14m]		2	SS 3	75	8-12-24-29 36				98
			SS 4	0	50-/-/-/ 50/0.03				
End of Borehole		3							97
Practical refusal to augering at 2.34 m depth		4							96
		5							95
		6							94
		7							93
		8							92
		9							91
		10							

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation

4850 Bank Street, Ottawa, ON

COORD. SYS.: MTM ZONE 9 **EASTING:** 376401.58 **NORTHING:** 5019136.66 **ELEVATION:** 101.22

PROJECT: Proposed Residential Development

ADVANCED BY: CME-55 Low Clearance Drill

REMARKS:

DATE: July 7, 2025

FILE NO. : PG6912

HOLE NO. : BH 9-25

SAMPLE DESCRIPTION	STRATA PLOT	DEPTH (m)	SAMPLE TYPE AND NO.	SAMPLE RECOVERY (%)	SAMPLE N OR RQD	SAMPLE WATER CONTENT (%)	PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80	REMOULDED SHEAR STRENGTH (kPa) ▲ UNDRAINED SHEAR STRENGTH (kPa) 20 40 60 80	PL (%) WATER CONTENT (%) LL (%) 20 40 60 80	PIEZOMETER CONSTRUCTION	ELEVATION (m)
GROUND SURFACE											101
ASPHALT 0.05m [101.17m]											
FILL: Granular, crushed stone, some sand 0.61m [100.61m]											
FILL: Compact, brown silty sand with gravel, trace clay and topsoil 1.45m [99.77m]		1	AU 1								100
			SS 2	33	8-5-4-9 9						
GLACIAL TILL: Dense, brown silty fine sand with gravel, cobbles and boulders 2.11m [99.11m]		2	SS 3	66	12-16-24-50 40/0.05						99
End of Borehole											
Practical refusal to augering at 2.11 m depth		3									98
		4									97
		5									96
		6									95
		7									94
		8									93
		9									92
		10									

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SOIL PROFILE AND TEST DATA

Geotechnical Investigation

4850 Bank Street, Ottawa, ON

COORD. SYS.: MTM ZONE 9 **EASTING:** 376435.21 **NORTHING:** 5019057.96 **ELEVATION:** 101.23

PROJECT: Proposed Residential Development

ADVANCED BY: CME-55 Low Clearance Drill

REMARKS:

DATE: July 7, 2025

FILE NO. : **PG6912**

HOLE NO. : **BH10-25**

SAMPLE DESCRIPTION	STRATA PLOT	DEPTH (m)	SAMPLE TYPE AND NO.	SAMPLE RECOVERY (%)	SAMPLE N OR RQD	SAMPLE WATER CONTENT (%)	PEN. RESIST. (BLOWS/0.3m) DCPT (50mm DIA. CONE) 20 40 60 80	REMOULDED SHEAR STRENGTH (kPa) / UNDRAINED SHEAR STRENGTH (kPa) 20 40 60 80	PL (%) WATER CONTENT (%) LL (%) 20 40 60 80	PIEZOMETER CONSTRUCTION	ELEVATION (m)
GROUND SURFACE											101
FILL: Compact, brown silty sand with gravel 0.61m [100.62m]			AU 1								
FILL: Compact, brown silty sand with asphalt, some gravel 1.45m [99.78m]		1	SS 2	33	8-7-25-14 32						100
FILL: Loose to compact, brown silty sand with gravel, trace clay and topsoil 2.21m [99.02m]		2	SS 3	42	4-4-4-6 8						99
Compact, grey, medium **SAND**, some gravel 2.44m [98.79m]			SS 4	58	6-9-26-32 35						98
GLACIAL TILL: Dense, grey silty fine sand with gravel 2.95m [98.28m]		3									97
End of Borehole Practical refusal to augering at 2.95 m depth		4									96
		5									95
		6									94
		7									93
		8									92
		9									
		10									

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SOIL PROFILE AND TEST DATA

GEOTECHNICAL INVESTIGATION

4850 Bank Street, Ottawa, Ontario

DATUM: Geodetic **EASTING:** 376352.245 **NORTHING:** 5019009.799 **ELEVATION:** 102.56

PROJECT: Proposed Development

BORINGS BY: CME 55 Track-Mounted Mechanical Auger

REMARKS:

DATE: December 11, 2023

FILE NO. **PG6912**

HOLE NO. BH 1-23

SAMPLE DESCRIPTION	STRATA PLOT	Sample No.	SAMPLE % RECOVERY	N VALUE or RQD	WATER CONTENT %	DEPTH (m)	Remoulded Shear Strength (kPa) 0 50 100	Peak Shear Strength (kPa) 0 50 100	Pen. Resist. Blows/0.3m (50 mm Dia. Cone) 0 50 100	Monitoring Well Construction
Ground Surface EL 102.56 m										
TOPSOIL with organics, trace clay 0.15 m EL 102.41 m		AU 1				0				
GLACIAL TILL: Very dense, brown silty sand to sandy silt, some gravel and boulders, occasional cobble		SS 2	83	50		1				
- silt content increasing with depth		SS 3	100	+50		2				
- grey by 2.2m depth - compact between 2.3m to 2.9m depth		SS 4	83	18		3				
		SS 5	100	+50						
3.76 m EL 98.8 m		SS 6		+50		4				
End of Test Hole Practical refusal to augering at 3.76m depth (GWL @ 1.30 m - Dec. 15, 2023)						5				
						6				
						7				

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SOIL PROFILE AND TEST DATA

GEOTECHNICAL INVESTIGATION

4850 Bank Street, Ottawa, Ontario

DATUM: Geodetic **EASTING:** 376358.876 **NORTHING:** 5018986.132 **ELEVATION:** 102.25

PROJECT: Proposed Development

BORINGS BY: CME 55 Track-Mounted Mechanical Auger

REMARKS:

DATE: December 11, 2023

FILE NO. **PG6912**

HOLE NO. BH 2-23

SAMPLE DESCRIPTION	STRATA PLOT	Sample No.	SAMPLE % RECOVERY	N VALUE or RQD	WATER CONTENT %	DEPTH (m)	Remoulded Shear Strength (kPa) 0 50 100	Peak Shear Strength (kPa) 0 50 100	Pen. Resist. Blows/0.3m (50 mm Dia. Cone) 0 50 100	Monitoring Well Construction
Ground Surface EL 102.25 m										
GLACIAL TILL: Brown clayey silt with gravel and occasional cobble, trace organics		AU 1				0				
0.46 m EL 101.79 m										
GLACIAL TILL: Dense, brown silty sand to sandy silt with gravel and boulders, occasional cobble		SS 2	63	48		1				
- very dense by 1.2m depth		SS 3	76	+50		2				
2.08 m EL 100.17 m										
End of Test Hole						3				
Practical refusal to augering at 2.08m depth						4				
						5				
						6				
						7				

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SOIL PROFILE AND TEST DATA

GEOTECHNICAL INVESTIGATION

4850 Bank Street, Ottawa, Ontario

DATUM: Geodetic **EASTING:** 376356.813 **NORTHING:** 5018986.889 **ELEVATION:** 102.32

PROJECT: Proposed Development

BORINGS BY: CME 55 Track-Mounted Mechanical Auger

REMARKS:

DATE: December 11, 2023

FILE NO. **PG6912**

HOLE NO. BH 2A-23

SAMPLE DESCRIPTION	STRATA PLOT	Sample No.	SAMPLE % RECOVERY	N VALUE or RQD	WATER CONTENT %	DEPTH (m)	Remoulded Shear Strength (kPa) 0 50 100	Peak Shear Strength (kPa) 0 50 100	Pen. Resist. Blows/0.3m (50 mm Dia. Cone) 0 50 100	Monitoring Well Construction
Ground Surface EL 102.32 m										
Overburden						0				
Augered to 2.18 m depth						1				
2.18 m EL 100.14 m						2				
GLACIAL TILL: Very dense, grey silty sand to sandy silt with gravel and boulders, occasional cobble		SS 1	86	+50						
		SS 2	100	+50		3				
- trace clay by 3.0m depth										
3.25 m EL 99.07 m										
End of Test Hole						4				
Practical refusal to augering at 3.25m depth										
(GWL @ 0.80 m - Dec. 15, 2023)						5				
						6				
						7				

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SOIL PROFILE AND TEST DATA

GEOTECHNICAL INVESTIGATION

4850 Bank Street, Ottawa, Ontario

DATUM: Geodetic **EASTING:** 376284.113 **NORTHING:** 5018877.194 **ELEVATION:** 105.46 m

PROJECT: Proposed Development

BORINGS BY: CME 55 Track-Mounted Mechanical Auger

REMARKS:

DATE: December 11, 2023

FILE NO. **PG6912**

HOLE NO. BH 3-23

SAMPLE DESCRIPTION	STRATA PLOT	Sample No.	SAMPLE % RECOVERY	N VALUE or RQD	WATER CONTENT %	DEPTH (m)	Remoulded Shear Strength (kPa) 0 50 100	Peak Shear Strength (kPa) 0 50 100	Pen. Resist. Blows/0.3m (50 mm Dia. Cone) 0 50 100	Piezometer Construction
Ground Surface EL 105.46 m										
TOPSOIL with organics 0.25 m EL 105.21 m						0				
GLACIAL TILL: Compact, brown silty sand to sandy silt, trace gravel		AU 1								
		SS 2	42	12		1				
- no gravel by 1.5m depth		SS 3	83	19		2				
2.21 m EL 103.25 m										
GLACIAL TILL: Very dense, grey silty sand to sandy silt with gravel and boulders, occasional cobble		SS 4	75	+50		3				
		SS 5	100	+50						
- trace clay by 3.8m depth		SS 6	78	+50		4				
4.45 m EL 101.01 m										
End of Test Hole						5				
Practical refusal to augering at 4.45m depth										
(GWL @ 1.23 m - Dec. 15, 2023)						6				
						7				

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SOIL PROFILE AND TEST DATA

GEOTECHNICAL INVESTIGATION

4850 Bank Street, Ottawa, Ontario

DATUM: Geodetic **EASTING:** 376162.967 **NORTHING:** 5018907.818 **ELEVATION:** 106.7 m

PROJECT: Proposed Development

BORINGS BY: CME 55 Track-Mounted Mechanical Auger

REMARKS:

DATE: December 11, 2023

FILE NO. **PG6912**

HOLE NO. BH 4-23

SAMPLE DESCRIPTION	STRATA PLOT	Sample No.	SAMPLE % RECOVERY	N VALUE or RQD	WATER CONTENT %	DEPTH (m)	Remoulded Shear Strength (kPa) 0 50 100	Peak Shear Strength (kPa) 0 50 100	Pen. Resist. Blows/0.3m (50 mm Dia. Cone) 0 50 100	Piezometer Construction
Ground Surface EL 106.7 m						0				
TOPSOIL with organics 0.1 m EL 106.6 m		AU 1								
GLACIAL TILL: Brown clayey silt, some gravel and boulders, occasional cobble 0.46 m EL 106.24 m		SS 2	100	46		1				
GLACIAL TILL: Dense to very dense, brown silty sand to sandy silt with gravel and boulders, occasional cobble		SS 3	88	+50		2				
		SS 4	67	+50		3				
2.72 m EL 103.98 m						4				
End of Test Hole						5				
Practical refusal to augering at 2.72m depth						6				
(Dried Borehole - Dec. 15, 2023)						7				

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SOIL PROFILE AND TEST DATA

GEOTECHNICAL INVESTIGATION

4850 Bank Street, Ottawa, Ontario

DATUM: Geodetic **EASTING:** 376165.452 **NORTHING:** 5018810.785 **ELEVATION:** 107.88 m

PROJECT: Proposed Development

BORINGS BY: CME 55 Track-Mounted Mechanical Auger

REMARKS:

DATE: December 11, 2023

FILE NO. **PG6912**

HOLE NO. BH 5-23

SAMPLE DESCRIPTION	STRATA PLOT	Sample No.	SAMPLE % RECOVERY	N VALUE or RQD	WATER CONTENT %	DEPTH (m)	Remoulded Shear Strength (kPa) 0 50 100	Peak Shear Strength (kPa) 0 50 100	Pen. Resist. Blows/0.3m (50 mm Dia. Cone) 0 50 100	Piezometer Construction
Ground Surface EL 107.88 m						0				
TOPSOIL with organics 0.3 m EL 107.58 m		AU 1								
GLACIAL TILL: Brown clayey silt with gravel, occasional cobble 0.61 m EL 107.27 m						1				
GLACIAL TILL: Dense to very dense, brown silty sand to sandy silt with gravel and boulders, occasional cobble		SS 2	83	43						
		SS 3	100	+50		2				
		SS 4	100	+50						
- grey by 3.0m depth		SS 5	100	+50		3				
		SS 6	100	+50		4				
- dense by 4.6m depth		SS 7	100	46		5				
		SS 8	75	34						
5.94 m EL 101.94 m End of Test Hole						6				
(GWL @ 0.40 m - Dec. 15, 2023)						7				

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SOIL PROFILE AND TEST DATA

GEOTECHNICAL INVESTIGATION

4850 Bank Street, Ottawa, Ontario

DATUM: Geodetic **EASTING:** 376381.101 **NORTHING:** 5018941.64 **ELEVATION:** 101.53

PROJECT: Proposed Development

BORINGS BY: CME 55 Track-Mounted Mechanical Auger

REMARKS:

DATE: December 13, 2023

FILE NO. **PG6912**

HOLE NO. BH 6-23

SAMPLE DESCRIPTION	STRATA PLOT	Sample No.	SAMPLE % RECOVERY	N VALUE or RQD	WATER CONTENT %	DEPTH (m)	Remoulded Shear Strength (kPa) 0 50 100	Peak Shear Strength (kPa) 0 50 100	Pen. Resist. Blows/0.3m (50 mm Dia. Cone) 0 50 100	Monitoring Well Construction
Ground Surface EL 101.53 m										
TOPSOIL with organics 0.25 m EL 101.28 m						0				
GLACIAL TILL: Brown clayey silt, trace gravel 0.61 m EL 100.92 m		AU 1								
GLACIAL TILL: Compact, brown silty sand to sandy silt with gravel and boulders, occasional cobble		SS 2	75	19		1				
- very dense by 1.5m depth 1.88 m EL 99.65 m		SS 3	89	+50		2				
End of Test Hole						3				
Practical refusal to augering at 1.88m depth						4				
						5				
						6				
						7				

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SOIL PROFILE AND TEST DATA

GEOTECHNICAL INVESTIGATION

4850 Bank Street, Ottawa, Ontario

DATUM: Geodetic **EASTING:** 376380 **NORTHING:** 5018939.186 **ELEVATION:** 101.45

PROJECT: Proposed Development

BORINGS BY: CME 55 Track-Mounted Mechanical Auger

REMARKS:

DATE: December 13, 2023

FILE NO. **PG6912**

HOLE NO. BH 6A-23

SAMPLE DESCRIPTION	STRATA PLOT	Sample No.	SAMPLE % RECOVERY	N VALUE or RQD	WATER CONTENT %	DEPTH (m)	Remoulded Shear Strength (kPa) 0 50 100	Peak Shear Strength (kPa) 0 50 100	Pen. Resist. Blows/0.3m (50 mm Dia. Cone) 0 50 100	Monitoring Well Construction
Ground Surface EL 101.45 m										
Overburden Augered to 1.98 m depth						0				
						1				
1.98 m EL 99.47 m						2				
End of Test Hole Practical refusal to augering at 1.98m depth						3				
						4				
						5				
						6				
						7				

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SOIL PROFILE AND TEST DATA

GEOTECHNICAL INVESTIGATION

4850 Bank Street, Ottawa, Ontario

DATUM: Geodetic **EASTING:** 376380.758 **NORTHING:** 5018936.262 **ELEVATION:** 101.44

PROJECT: Proposed Development

BORINGS BY: CME 55 Track-Mounted Mechanical Auger

REMARKS:

DATE: December 13, 2023

FILE NO. **PG6912**

HOLE NO. BH 6B-23

SAMPLE DESCRIPTION	STRATA PLOT	Sample No.	SAMPLE % RECOVERY	N VALUE or RQD	WATER CONTENT %	DEPTH (m)	Remoulded Shear Strength (kPa) 0 50 100	Peak Shear Strength (kPa) 0 50 100	Pen. Resist. Blows/0.3m (50 mm Dia. Cone) 0 50 100	Monitoring Well Construction
Ground Surface EL 101.44 m										
Overburden						0				
Augered to 0.86 m depth						1				
0.86 m EL 100.58 m										
End of Test Hole						2				
Practical refusal to augering at 0.86m depth						3				
						4				
						5				
						6				
						7				

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SOIL PROFILE AND TEST DATA

GEOTECHNICAL INVESTIGATION

4850 Bank Street, Ottawa, Ontario

DATUM: Geodetic **EASTING:** 376378.444 **NORTHING:** 5018942.565 **ELEVATION:** 101.59

PROJECT: Proposed Development

BORINGS BY: CME 55 Track-Mounted Mechanical Auger

REMARKS:

DATE: December 13, 2023

FILE NO. **PG6912**

HOLE NO. BH 6C-23

SAMPLE DESCRIPTION	STRATA PLOT	Sample No.	SAMPLE % RECOVERY	N VALUE or RQD	WATER CONTENT %	DEPTH (m)	Remoulded Shear Strength (kPa) 0 50 100	Peak Shear Strength (kPa) 0 50 100	Pen. Resist. Blows/0.3m (50 mm Dia. Cone) 0 50 100	Monitoring Well Construction
Ground Surface EL 101.59 m										
TOPSOIL with organics 0.25 m EL 101.34 m						0				
GLACIAL TILL: Brown clayey silt, trace gravel and boulders 0.61 m EL 100.98 m										
GLACIAL TILL: Compacto to dense, brown silty sand with gravel, cobble and boulders						1				
- grey by 2.1m depth 2.21 m EL 99.38 m		SS 1	67	43		2				
GLACIAL TILL: Dense to very dense, grey silty sand with gravel, cobble and boulders, trace clay		SS 2	0	+50		3				
- boulders by 3.4m depth		RC 1	35			4				
4.62 m EL 96.97 m										
End of Test Hole						5				
(GWL @ 0.76 m - Dec. 15, 2023)						6				
						7				

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SOIL PROFILE AND TEST DATA

GEOTECHNICAL INVESTIGATION

4850 Bank Street, Ottawa, Ontario

DATUM: Geodetic **EASTING:** 376042.873 **NORTHING:** 5018770.725 **ELEVATION:** 109.28 m

PROJECT: Proposed Development

BORINGS BY: CME 55 Track-Mounted Mechanical Auger

REMARKS:

DATE: December 13, 2023

FILE NO. **PG6912**

HOLE NO. BH 7-23

SAMPLE DESCRIPTION	STRATA PLOT	Sample No.	SAMPLE % RECOVERY	N VALUE or RQD	WATER CONTENT %	DEPTH (m)	Remoulded Shear Strength (kPa) 0 50 100	Peak Shear Strength (kPa) 0 50 100	Pen. Resist. Blows/0.3m (50 mm Dia. Cone) 0 50 100	Piezometer Construction
Ground Surface EL 109.28 m						0				
TOPSOIL with organics 0.18 m EL 109.1 m		AU 1								
GLACIAL TILL: Brown clayey silt with gravel 0.51 m EL 108.77 m						1				
GLACIAL TILL: Dense, brown silty sand to sandy silt with gravel and boulders, occasional cobble		SS 2	75	30						
- very dense by 1.5m depth		SS 3		+50		2				
		SS 4	50	+50						
3.28 m EL 106 m		SS 5	100	+50		3				
End of Test Hole										
Practical refusal to augering at 3.28m depth						4				
(GWL @ 0.66 m - Dec. 15, 2023)						5				
						6				
						7				

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SOIL PROFILE AND TEST DATA

GEOTECHNICAL INVESTIGATION

4850 Bank Street, Ottawa, Ontario

DATUM: Geodetic **EASTING:** 375921.34 **NORTHING:** 5018806.672 **ELEVATION:** 106.96 m

PROJECT: Proposed Development

BORINGS BY: CME 55 Track-Mounted Mechanical Auger

REMARKS:

DATE: December 13, 2023

FILE NO. **PG6912**

HOLE NO. BH 8-23

SAMPLE DESCRIPTION	STRATA PLOT	Sample No.	SAMPLE % RECOVERY	N VALUE or RQD	WATER CONTENT %	DEPTH (m)	Remoulded Shear Strength (kPa) 0 50 100	Peak Shear Strength (kPa) 0 50 100	Pen. Resist. Blows/0.3m (50 mm Dia. Cone) 0 50 100	Piezometer Construction
Ground Surface EL 106.96 m										
TOPSOIL with organics 0.15 m EL 106.81 m						0				
GLACIAL TILL: Brown clayey silt with gravel 0.69 m EL 106.27 m		AU 1								
GLACIAL TILL: Very dense, brown silty sand to sandy silt with gravel and boulders, occasional cobble, trace clay 1.24 m EL 105.72 m		SS 2	100	+50		1				
End of Test Hole						2				
Practical refusal to augering at 1.24m depth						3				
						4				
						5				
						6				
						7				

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SOIL PROFILE AND TEST DATA

GEOTECHNICAL INVESTIGATION

4850 Bank Street, Ottawa, Ontario

DATUM: Geodetic **EASTING:** 375924.947 **NORTHING:** 5018803.173 **ELEVATION:** 107.22 m

PROJECT: Proposed Development

BORINGS BY: CME 55 Track-Mounted Mechanical Auger

REMARKS:

DATE: December 13, 2023

FILE NO. **PG6912**

HOLE NO. BH 8A-23

SAMPLE DESCRIPTION	STRATA PLOT	Sample No.	SAMPLE % RECOVERY	N VALUE or RQD	WATER CONTENT %	DEPTH (m)	Remoulded Shear Strength (kPa) 0 50 100	Peak Shear Strength (kPa) 0 50 100	Pen. Resist. Blows/0.3m (50 mm Dia. Cone) 0 50 100	Piezometer Construction
Ground Surface EL 107.22 m										
Overburden Augered to 0.69 m depth						0				
0.69 m EL 106.54 m										
GLACIAL TILL: Very dense, brown silty sand to sandy silt with gravel and boulders, occasional cobble		SS 1	100	+50		1				
2.18 m EL 105.04 m						2				
End of Test Hole Practical refusal to augering at 2.18m depth (GWL @ 0.27 m - Dec. 15, 2023)						3				
						4				
						5				
						6				
						7				

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SOIL PROFILE AND TEST DATA

GEOTECHNICAL INVESTIGATION

4850 Bank Street, Ottawa, Ontario

DATUM: Geodetic **EASTING:** 375914.663 **NORTHING:** 5018651.441 **ELEVATION:** 106.87 m

PROJECT: Proposed Development

BORINGS BY: CME 55 Track-Mounted Mechanical Auger

REMARKS:

DATE: December 13, 2023

FILE NO. **PG6912**

HOLE NO. BH 9-23

SAMPLE DESCRIPTION	STRATA PLOT	Sample No.	SAMPLE % RECOVERY	N VALUE or RQD	WATER CONTENT %	DEPTH (m)	Remoulded Shear Strength (kPa) 0 50 100	Peak Shear Strength (kPa) 0 50 100	Pen. Resist. Blows/0.3m (50 mm Dia. Cone) 0 50 100	Piezometer Construction
Ground Surface EL 106.87 m										
TOPSOIL with organics 0.13 m EL 106.74 m		AU 1				0				
GLACIAL TILL: Brown clayey silt with gravel 0.48 m EL 106.39 m										
GLACIAL TILL: Very dense, brown silty sand to sandy silt with gravel and boulders, occasional cobble		SS 2	100	+50		1				
		SS 3	100	+50		2				
- grey by 2.2m depth 2.49 m EL 104.38 m		SS 4	80	+50		3				
End of Test Hole						4				
Practical refusal to augering at 2.49m depth						5				
(GWL @ 0.13 m - Dec. 15, 2023)						6				
						7				

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SOIL PROFILE AND TEST DATA

GEOTECHNICAL INVESTIGATION

4850 Bank Street, Ottawa, Ontario

DATUM: Geodetic **EASTING:** 375787.732 **NORTHING:** 5018720.138 **ELEVATION:** 103.35

PROJECT: Proposed Development

BORINGS BY: CME 55 Track-Mounted Mechanical Auger

REMARKS:

DATE: December 13, 2023

FILE NO. **PG6912**

HOLE NO. BH10-23

SAMPLE DESCRIPTION	STRATA PLOT	Sample No.	SAMPLE % RECOVERY	N VALUE or RQD	WATER CONTENT %	DEPTH (m)	Remoulded Shear Strength (kPa) 0 50 100	Peak Shear Strength (kPa) 0 50 100	Pen. Resist. Blows/0.3m (50 mm Dia. Cone) 0 50 100	Monitoring Well Construction
Ground Surface EL 103.35 m										
TOPSOIL with organics						0				
0.33 m EL 103.02 m		AU 1								
GLACIAL TILL: Compact, brown silty sand to sandy silt with gravel, occasional cobble		SS 2	46	10		1				
		SS 3	67	24		2				
2.21 m EL 101.14 m		SS 4A	60	+50						
GLACIAL TILL: Dense to very dense, grey silty sand with gravel, cobble, and boulders		SS 4B				3				
		SS 5	88	48						
		SS 6	63	37		4				
		SS 7	58	+50		5				
5.08 m EL 98.27 m										
End of Test Hole						6				
Practical refusal to augering on inferred boulder or bedrock at 5.08m depth										
(GWL @ 0.39 m - Dec. 15, 2023)						7				

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SYMBOLS AND TERMS

SOIL DESCRIPTION

Behavioural properties, such as structure and strength, take precedence over particle gradation in describing soils. Terminology describing soil structure are as follows:

Desiccated	-	having visible signs of weathering by oxidation of clay minerals, shrinkage cracks, etc.
Fissured	-	having cracks, and hence a blocky structure.
Varved	-	composed of regular alternating layers of silt and clay.
Stratified	-	composed of alternating layers of different soil types, e.g. silt and sand or silt and clay.
Well-Graded	-	Having wide range in grain sizes and substantial amounts of all intermediate particle sizes (see Grain Size Distribution).
Uniformly-Graded	-	Predominantly of one grain size (see Grain Size Distribution).

The standard terminology to describe the relative strength of cohesionless soils is the compactness condition, usually inferred from the results of the Standard Penetration Test (SPT) 'N' value. The SPT N value is the number of blows of a 63.5 kg hammer, falling 760 mm, required to drive a 51 mm O.D. split spoon sampler 300 mm into the soil after an initial penetration of 150 mm. An SPT N value of "P" denotes that the split-spoon sampler was pushed 300 mm into the soil without the use of a falling hammer.

Compactness Condition	'N' Value	Relative Density %
Very Loose	<4	<15
Loose	4-10	15-35
Compact	10-30	35-65
Dense	30-50	65-85
Very Dense	>50	>85

The standard terminology to describe the strength of cohesive soils is the consistency, which is based on the undisturbed undrained shear strength as measured by the in situ or laboratory shear vane tests, unconfined compression tests, or occasionally by the Standard Penetration Test (SPT). Note that the typical correlations of undrained shear strength to SPT N value (tabulated below) tend to underestimate the consistency for sensitive silty clays, so Paterson reviews the applicable split spoon samples in the laboratory to provide a more representative consistency value based on tactile examination.

Consistency	Undrained Shear Strength (kPa)	'N' Value
Very Soft	<12	<2
Soft	12-25	2-4
Firm	25-50	4-8
Stiff	50-100	8-15
Very Stiff	100-200	15-30
Hard	>200	>30

SYMBOLS AND TERMS (continued)

SOIL DESCRIPTION (continued)

Cohesive soils can also be classified according to their "sensitivity". The sensitivity, S_t, is the ratio between the undisturbed undrained shear strength and the remoulded undrained shear strength of the soil. The classes of sensitivity may be defined as follows:

Low Sensitivity:	$S_t < 2$
Medium Sensitivity:	$2 < S_t < 4$
Sensitive:	$4 < S_t < 8$
Extra Sensitive:	$8 < S_t < 16$
Quick Clay:	$S_t > 16$

ROCK DESCRIPTION

The structural description of the bedrock mass is based on the Rock Quality Designation (RQD).

The RQD classification is based on a modified core recovery percentage in which all pieces of sound core over 100 mm long are counted as recovery. The smaller pieces are considered to be a result of closely-spaced discontinuities (resulting from shearing, jointing, faulting, or weathering) in the rock mass and are not counted. RQD is ideally determined from NQ or larger size core. However, it can be used on smaller core sizes, such as BQ, if the bulk of the fractures caused by drilling stresses (called "mechanical breaks") are easily distinguishable from the normal in situ fractures.

RQD %	**ROCK QUALITY**
90-100	Excellent, intact, very sound
75-90	Good, massive, moderately jointed or sound
50-75	Fair, blocky and seamy, fractured
25-50	Poor, shattered and very seamy or blocky, severely fractured
0-25	Very poor, crushed, very severely fractured

SAMPLE TYPES

SS	-	Split spoon sample (obtained in conjunction with the performing of the Standard Penetration Test (SPT))
TW	-	Thin wall tube or Shelby tube, generally recovered using a piston sampler
G	-	"Grab" sample from test pit or surface materials
AU	-	Auger sample or bulk sample
WS	-	Wash sample
RC	-	Rock core sample (Core bit size BQ, NQ, HQ, etc.). Rock core samples are obtained with the use of standard diamond drilling bits.

SYMBOLS AND TERMS (continued)

PLASTICITY LIMITS AND GRAIN SIZE DISTRIBUTION

WC%	-	Natural water content or water content of sample, %
LL	-	Liquid Limit, % (water content above which soil behaves as a liquid)
PL	-	Plastic Limit, % (water content above which soil behaves plastically)
PI	-	Plasticity Index, % (difference between LL and PL)
Dxx	-	Grain size at which xx% of the soil, by weight, is of finer grain sizes These grain size descriptions are not used below 0.075 mm grain size
D10	-	Grain size at which 10% of the soil is finer (effective grain size)
D60	-	Grain size at which 60% of the soil is finer
Cc	-	Concavity coefficient = $(D30)^2 / (D10 \times D60)$
Cu	-	Uniformity coefficient = D60 / D10

Cc and Cu are used to assess the grading of sands and gravels:
Well-graded gravels have: $1 < Cc < 3$ and $Cu > 4$
Well-graded sands have: $1 < Cc < 3$ and $Cu > 6$
Sands and gravels not meeting the above requirements are poorly-graded or uniformly-graded.
Cc and Cu are not applicable for the description of soils with more than 10% silt and clay (more than 10% finer than 0.075 mm or the #200 sieve)

CONSOLIDATION TEST

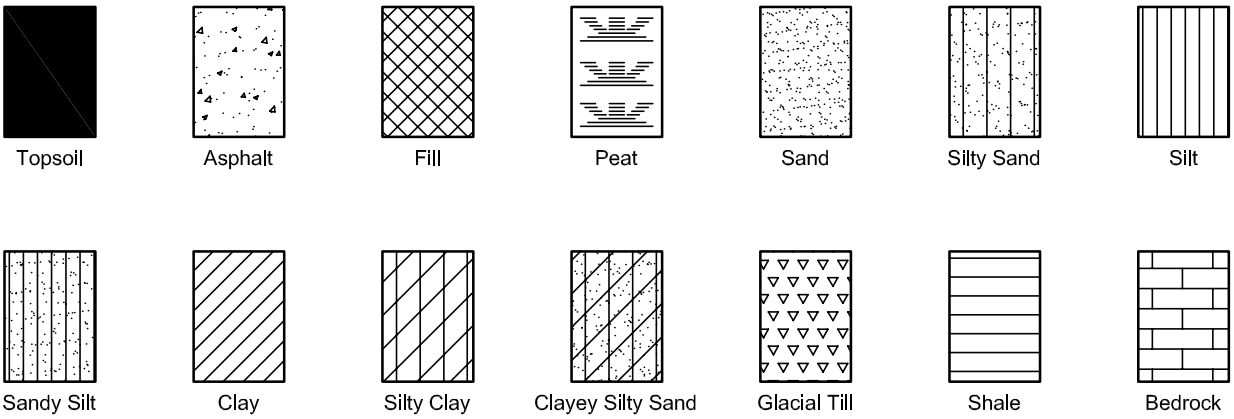
p'_o	-	Present effective overburden pressure at sample depth
p'_c	-	Preconsolidation pressure of (maximum past pressure on) sample
Ccr	-	Recompression index (in effect at pressures below p'_c)
Cc	-	Compression index (in effect at pressures above p'_c)
OC Ratio		Overconsolidaton ratio = p'_c / p'_o
Void Ratio		Initial sample void ratio = volume of voids / volume of solids
Wo	-	Initial water content (at start of consolidation test)

PERMEABILITY TEST

k	-	Coefficient of permeability or hydraulic conductivity is a measure of the ability of water to flow through the sample. The value of k is measured at a specified unit weight for (remoulded) cohesionless soil samples, because its value will vary with the unit weight or density of the sample during the test.

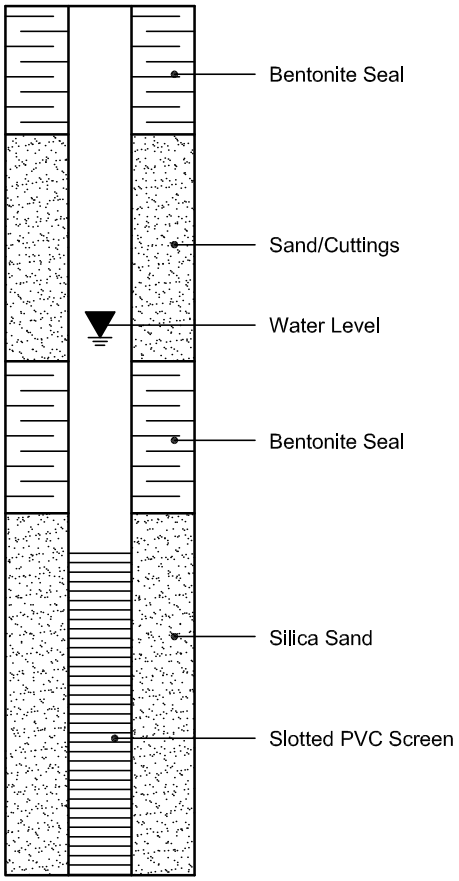
SYMBOLS AND TERMS (continued)

STRATA PLOT

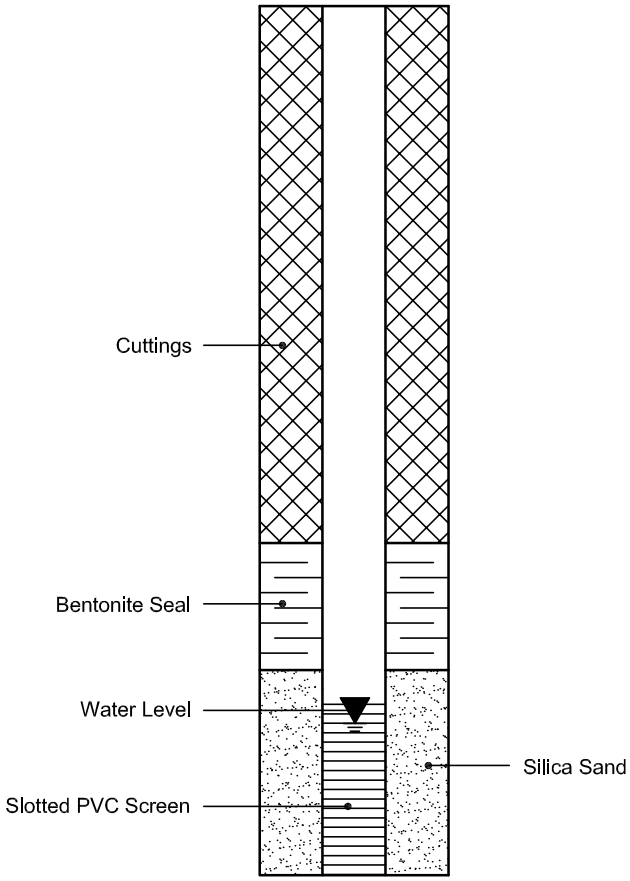


MONITORING WELL AND PIEZOMETER CONSTRUCTION

MONITORING WELL CONSTRUCTION



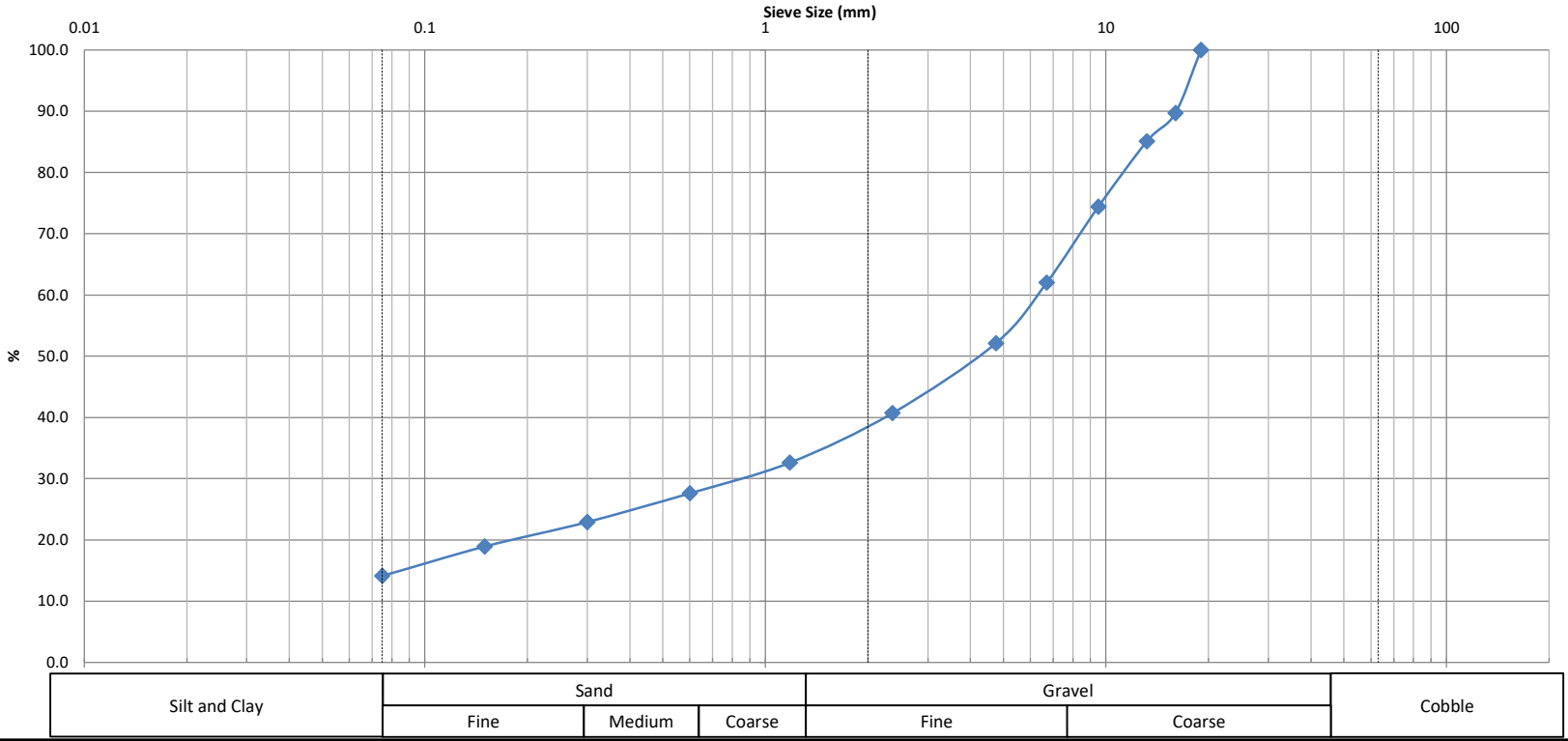
PIEZOMETER CONSTRUCTION



PATERSON GROUP

SIEVE ANALYSIS
ASTM C136

CLIENT:	Regional Group	DESCRIPTION:	Silty Sand w Cobbles	FILE NO:	PG6912
CONTRACT NO.:	-	SPECIFICATION:	**Granular Fill**	LAB NO:	60824
PROJECT:	4858 Bank Street, Ottawa, ON	INTENDED USE:	-	DATE RECEIVED:	8-Jul-25
		PIT OR QUARRY:	-	DATE TESTED:	9-Jul-25
DATE SAMPLED:	7-Jul-25	SOURCE LOCATION:	BH4-25 AU1	DATE REPORTED:	14-Jul-25
SAMPLED BY:	-	SAMPLE LOCATION:	0 - 2'	TESTED BY:	AG/HK



Identification	Soil Classification					MC(%)	LL	PL	PI	Cc	Cu
										3.28	180.0
	D100	D60	D30	D10	Gravel (%)	Sand (%)		Silt (%)		Clay (%)	
	19	6.3	0.85	0.035	47.9	38.0		14.1			

Comments:

REVIEWED BY:	Curtis Beadow	Joe Fosyth, P. Eng.

PATERSON GROUP

SIEVE ANALYSIS
ASTM C136

CLIENT:	Regional Group	DESCRIPTION:	Silty Sand w Cobbles	FILE NO.:	PG6912
CONTRACT NO.:	-	SPECIFICATION:	**Granular Fill**	LAB NO.:	60824
PROJECT:	4858 Bank Street, Ottawa, ON	INTENDED USE:	-	DATE REC'D:	8-Jul-25
		PIT OR QUARRY:	-	DATE TESTED:	9-Jul-25
DATE SAMPLED:	07-Jul	SOURCE LOCATION:	BH4-25 AU1	DATE REP'D:	14-Jul-25
SAMPLED BY:	-	SAMPLE LOCATION:	0 - 2'	TESTED BY:	AG/HK

WEIGHT BEFORE WASH	514.2
WEIGHT AFTER WASH	444.1

SIEVE SIZE (mm)	WEIGHT RETAINED	PERCENT RETAINED	PERCENT PASSING	LOWER SPEC	UPPER SPEC	REMARK
150						
106						
75						
63						
53						
37.5						
26.5						
19	**0.0**	0.0	**100.0**			
16	**53.2**	10.3	**89.7**			
13.2	**76.7**	14.9	**85.1**			
9.5	**131.8**	25.6	**74.4**			
6.7	**195.6**	38.0	**62.0**			
4.75	**246.5**	47.9	**52.1**			
2.36	**305.0**	59.3	**40.7**			
1.18	**346.5**	67.4	**32.6**			
0.6	**372.2**	72.4	**27.6**			
0.3	**396.2**	77.1	**22.9**			
0.15	**417.2**	81.1	**18.9**			
0.075	**441.9**	85.9	**14.1**			
PAN	**443.7**	86.3	13.7			
SIEVE CHECK FINE		0.09	0.3% max.			**REFERENCE MATERIAL**

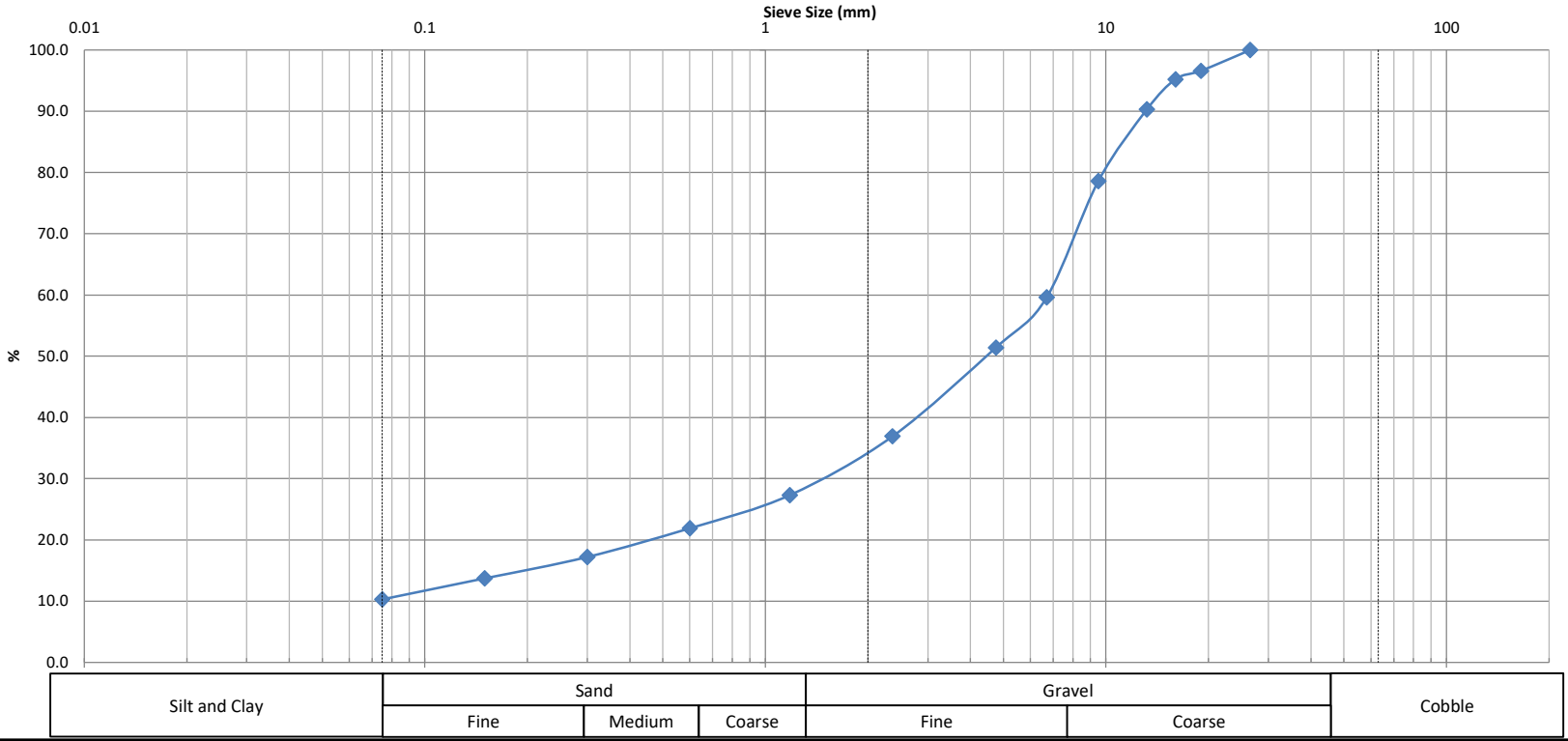
OTHER TESTS	**RESULT**	**LAB NO.**	**RESULT**

REVIEWED BY:	**Curtis Beadow**	**Joe Forsyth, P. Eng.**
		

PATERSON GROUP

SIEVE ANALYSIS
ASTM C136

CLIENT:	Regional Group	DESCRIPTION:	Silty Sand w Cobbles	FILE NO:	PG6912
CONTRACT NO.:	-	SPECIFICATION:	**Granular Fill**	LAB NO:	60825
PROJECT:	4858 Bank Street, Ottawa, ON	INTENDED USE:	-	DATE RECEIVED:	8-Jul-25
		PIT OR QUARRY:	-	DATE TESTED:	9-Jul-25
DATE SAMPLED:	7-Jul-25	SOURCE LOCATION:	BH7-25 AU1	DATE REPORTED:	14-Jul-25
SAMPLED BY:	-	SAMPLE LOCATION:	2" - 2'	TESTED BY:	AG/HK



Identification	Soil Classification					MC(%)	LL	PL	PI	Cc	Cu
										4.98	91.3
	D100	D60	D30	D10	Gravel (%)	Sand (%)		Silt (%)		Clay (%)	
	26.5	6.85	1.6	0.075	48.6	41.1		10.3			

Comments:

REVIEWED BY:	Curtis Beadow	Joe Fosyth, P. Eng.

PATERSON GROUP

SIEVE ANALYSIS
ASTM C136

CLIENT:	Regional Group	DESCRIPTION:	Silty Sand w Cobbles	FILE NO.:	PG6912
CONTRACT NO.:	-	SPECIFICATION:	**Granular Fill**	LAB NO.:	60825
PROJECT:	4858 Bank Street, Ottawa, ON	INTENDED USE:	-	DATE REC'D:	8-Jul-25
		PIT OR QUARRY:	-	DATE TESTED:	9-Jul-25
DATE SAMPLED:	07-Jul	SOURCE LOCATION:	BH7-25 AU1	DATE REP'D:	14-Jul-25
SAMPLED BY:	-	SAMPLE LOCATION:	2" - 2'	TESTED BY:	AG/HK

WEIGHT BEFORE WASH	671.4
WEIGHT AFTER WASH	606.3

SIEVE SIZE (mm)	WEIGHT RETAINED	PERCENT RETAINED	PERCENT PASSING	LOWER SPEC	UPPER SPEC	REMARK
150						
106						
75						
63						
53						
37.5						
26.5	**0.0**	0.0	**100.0**			
19	**22.6**	3.4	**96.6**			
16	**32.4**	4.8	**95.2**			
13.2	**65.3**	9.7	**90.3**			
9.5	**143.4**	21.4	**78.6**			
6.7	**271.3**	40.4	**59.6**			
4.75	**326.2**	48.6	**51.4**			
2.36	**423.9**	63.1	**36.9**			
1.18	**487.9**	72.7	**27.3**			
0.6	**524.5**	78.1	**21.9**			
0.3	**555.6**	82.8	**17.2**			
0.15	**579.3**	86.3	**13.7**			
0.075	**602.1**	89.7	**10.3**			
PAN	**605.3**	90.2	9.8			
SIEVE CHECK FINE		0.16	0.3% max.			**REFERENCE MATERIAL**

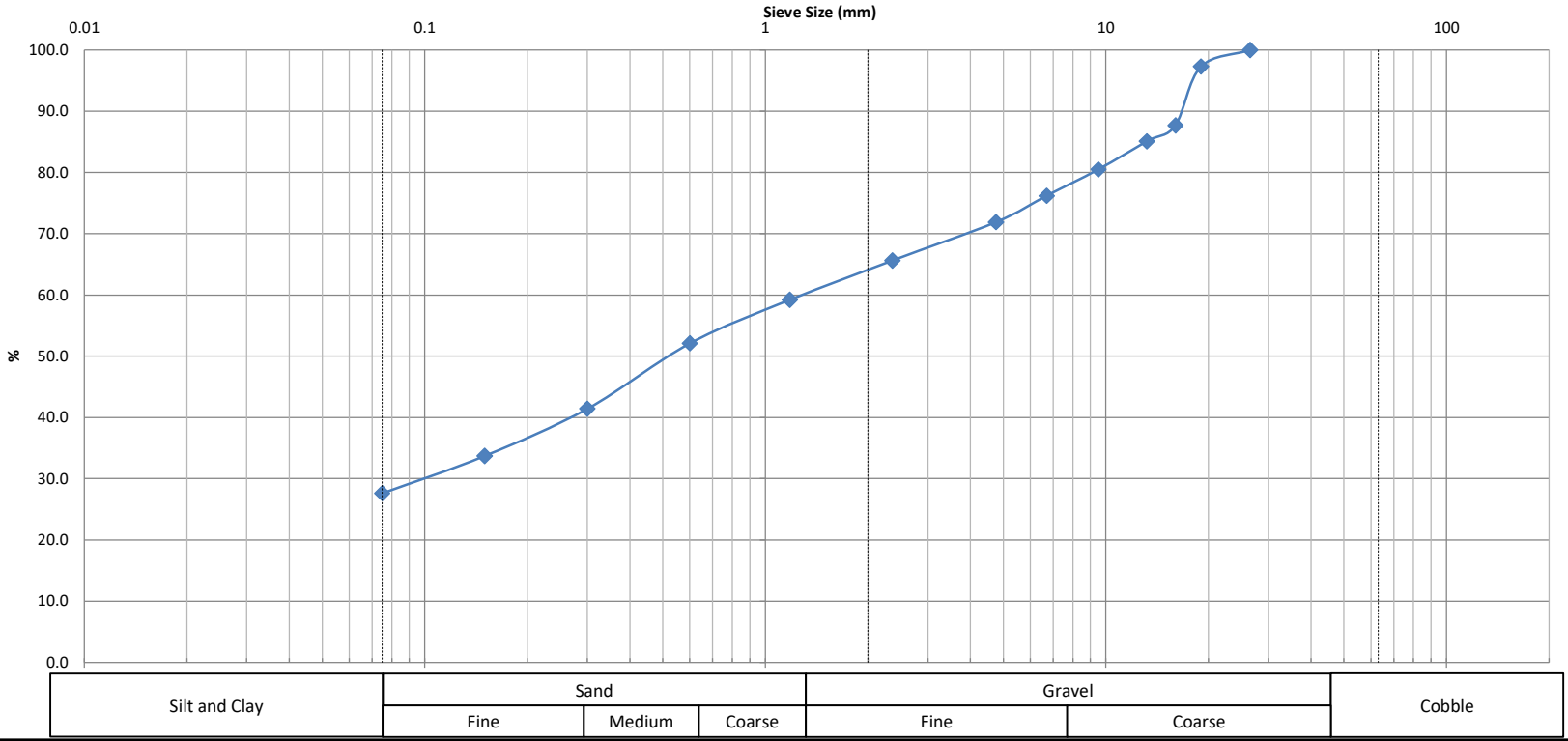
OTHER TESTS	**RESULT**	**LAB NO.**	**RESULT**

REVIEWED BY:	**Curtis Beadow**	**Joe Forsyth, P. Eng.**
		

PATERSON GROUP

SIEVE ANALYSIS
ASTM C136

CLIENT:	Regional Group	DESCRIPTION:	Silty Sand w Cobbles	FILE NO:	PG6912
CONTRACT NO.:	-	SPECIFICATION:	**Granular Fill**	LAB NO:	60826
PROJECT:	4858 Bank Street, Ottawa, ON	INTENDED USE:	-	DATE RECEIVED:	8-Jul-25
		PIT OR QUARRY:	-	DATE TESTED:	9-Jul-25
DATE SAMPLED:	7-Jul-25	SOURCE LOCATION:	BH10-25 SS2	DATE REPORTED:	14-Jul-25
SAMPLED BY:	-	SAMPLE LOCATION:	2'6" - 4'6"	TESTED BY:	AG/HK



Identification	Soil Classification					MC(%)	LL	PL	PI	Cc	Cu
										0.76	145.0
	D100	D60	D30	D10	Gravel (%)	Sand (%)		Silt (%)		Clay (%)	
	26.5	1.45	0.105	0.01	28.1	44.3		27.6			

Comments:

REVIEWED BY:	Curtis Beadow	Joe Fosyth, P. Eng.

PATERSON GROUP

SIEVE ANALYSIS
ASTM C136

CLIENT:	Regional Group	DESCRIPTION:	Silty Sand w Cobbles	FILE NO.:	PG6912
CONTRACT NO.:	-	SPECIFICATION:	**Granular Fill**	LAB NO.:	60826
PROJECT:	4858 Bank Street, Ottawa, ON	INTENDED USE:	-	DATE REC'D:	8-Jul-25
		PIT OR QUARRY:	-	DATE TESTED:	9-Jul-25
DATE SAMPLED:	07-Jul	SOURCE LOCATION:	BH10-25 SS2	DATE REP'D:	14-Jul-25
SAMPLED BY:	-	SAMPLE LOCATION:	2'6" - 4'6"	TESTED BY:	AG/HK

WEIGHT BEFORE WASH	396.5
WEIGHT AFTER WASH	293.7

SIEVE SIZE (mm)	WEIGHT RETAINED	PERCENT RETAINED	PERCENT PASSING	LOWER SPEC	UPPER SPEC	REMARK
150						
106						
75						
63						
53						
37.5						
26.5	**0.0**	0.0	**100.0**			
19	**10.6**	2.7	**97.3**			
16	**48.7**	12.3	**87.7**			
13.2	**59.0**	14.9	**85.1**			
9.5	**77.3**	19.5	**80.5**			
6.7	**94.3**	23.8	**76.2**			
4.75	**111.5**	28.1	**71.9**			
2.36	**136.5**	34.4	**65.6**			
1.18	**161.7**	40.8	**59.2**			
0.6	**189.9**	47.9	**52.1**			
0.3	**232.5**	58.6	**41.4**			
0.15	**262.9**	66.3	**33.7**			
0.075	**287.0**	72.4	**27.6**			
PAN	**293.4**					
SIEVE CHECK FINE		0.10	0.3% max.			**REFERENCE MATERIAL**

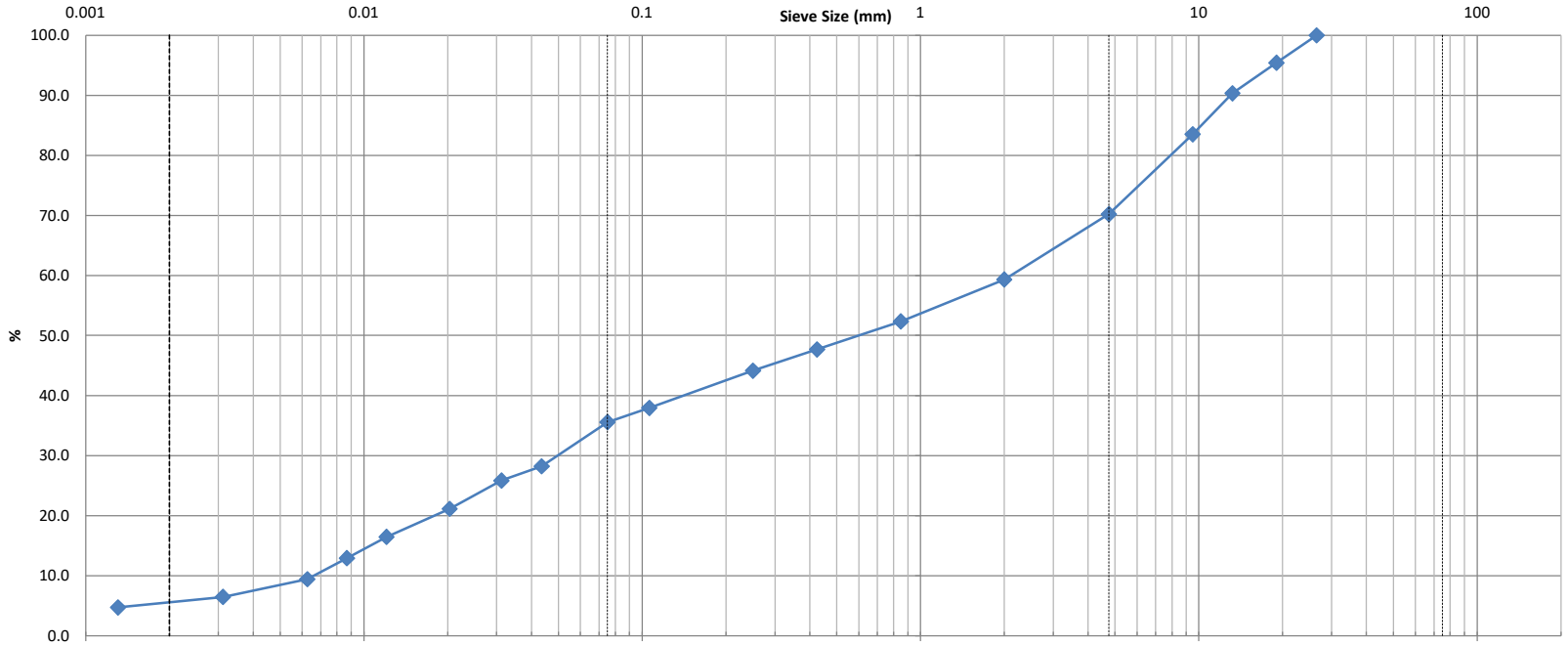
OTHER TESTS	**RESULT**	**LAB NO.**	**RESULT**

REVIEWED BY:	**Curtis Beadow**	**Joe Forsyth, P. Eng.**
		

PATERSON GROUP

SIEVE ANALYSIS
ASTM C136

CLIENT:	Regional Group	DEPTH:	10' - 12'	FILE NO:	PG6912
CONTRACT NO.:		BH OR TP No.:	BH1-26 SS3	LAB NO:	65532
PROJECT:	4850 Bank Street			DATE RECEIVED:	18-Mar-26
				DATE TESTED:	19-Mar-26
DATE SAMPLED:	19-Feb-26			DATE REPORTED:	26-Mar-26
SAMPLED BY:	-			TESTED BY:	C.M



Clay	Silt	Sand			Gravel		Cobble
		Fine	Medium	Coarse	Fine	Coarse	

Identification	Soil Classification					MC(%)	LL	PL	PI	Cc	Cu
						9.5%					
	D100	D60	D30	D10	Gravel (%)	Sand (%)		Silt (%)		Clay (%)	
					29.8	34.6		30.6		5.0	

Comments:

REVIEWED BY:

Curtis Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

HYDROMETER
LS-702 ASTM-422

CLIENT:	Regional Group	DEPTH:	10' - 12'	FILE NO.:	PG6912
PROJECT:	4850 Bank Street	BH OR TP No.:	BH1-26 SS3	DATE SAMPLED:	19-Feb-26
LAB No. :	65532	TESTED BY:	C.M	DATE RECEIVED:	18-Mar-26
SAMPLED BY:	-	DATE REPT'D:	March 26, 2026	DATE TESTED:	19-Mar-26

SAMPLE INFORMATION

SAMPLE MASS	SPECIFIC GRAVITY
507.4	2.700

INITIAL WEIGHT	50.00	**HYGROSCOPIC MOISTURE**		
WEIGHT CORRECTED	49.91	TARE WEIGHT	0.00	ACTUAL WEIGHT
WT. AFTER WASH BACK SIEVE	20.23	AIR DRY	508.30	508.30
SOLUTION CONCENTRATION	40 g/L	OVEN DRY	507.40	507.40
		CORRECTED	0.998	

GRAIN SIZE ANALYSIS

SIEVE DIAMETER (mm)	WEIGHT RETAINED (g)	PERCENT RETAINED	PERCENT PASSING
26.5	**0.0**	0.0	**100.0**
19	**23.15**	4.6	**95.4**
13.2	**49.05**	9.7	**90.3**
9.5	**83.52**	16.5	**83.5**
4.75	**151.15**	29.8	**70.2**
2.0	**206.42**	40.7	**59.3**
Pan	**301.00**	59.3	**40.7**
0.850	**5.87**	47.6	**52.4**
0.425	**9.81**	52.3	**47.7**
0.250	**12.79**	55.9	**44.1**
0.106	**18.00**	62.0	**38.0**
0.075	**20.01**	64.4	**35.6**
Pan	**20.23**		
SIEVE CHECK 0.0	MAX = 0.3%		

HYDROMETER DATA

ELAPSED	TIME (24 hours)	Hs	Hc	Temp. (°C)	DIAMETER	(P)	TOTAL PERCENT PASSING
1	11:35	30.0	6.0	23.0	0.0435	47.5	**28.2**
2	11:36	28.0	6.0	23.0	0.0312	43.6	**25.9**
5	11:39	24.0	6.0	23.0	0.0203	35.7	**21.2**
15	11:49	20.0	6.0	23.0	0.0121	27.7	**16.5**
30	12:04	17.0	6.0	23.0	0.0087	21.8	**12.9**
60	12:34	14.0	6.0	23.0	0.0063	15.8	**9.4**
250	15:44	11.5	6.0	23.0	0.0031	10.9	**6.5**
1440	11:34	10.0	6.0	23.0	0.0013	7.9	**4.7**

COMMENTS:

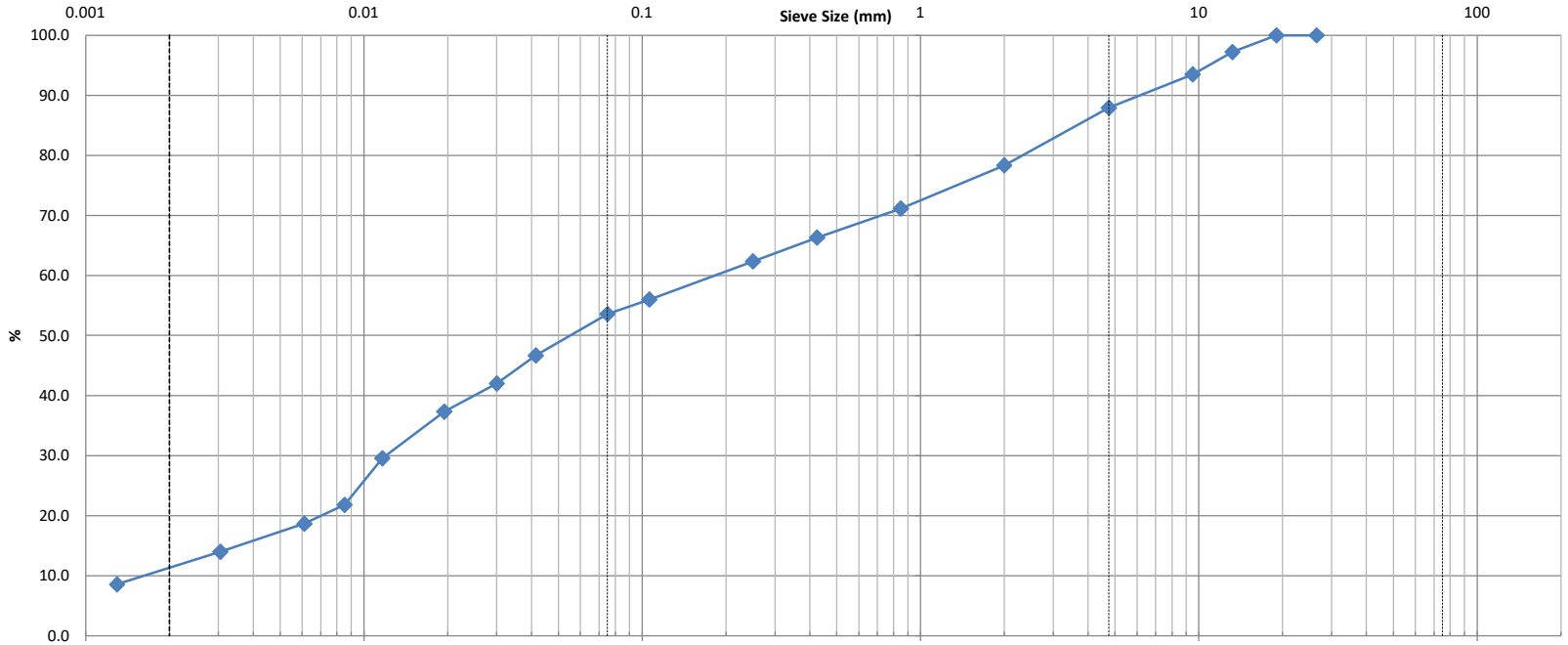
Moisture Content = 9.5%

REVIEWED BY:	C. Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

SIEVE ANALYSIS
ASTM C136

CLIENT:	Regional Group	DEPTH:	5' - 7'	FILE NO:	PG6912
CONTRACT NO.:		BH OR TP No.:	BH2-26 SS2	LAB NO:	65533
PROJECT:	4850 Bank Street			DATE RECEIVED:	18-Mar-26
				DATE TESTED:	19-Mar-26
DATE SAMPLED:	20-Feb-26			DATE REPORTED:	26-Mar-26
SAMPLED BY:	-			TESTED BY:	C.M



Clay	Silt	Sand			Gravel		Cobble
		Fine	Medium	Coarse	Fine	Coarse	

Identification	Soil Classification					MC(%)	LL	PL	PI	Cc	Cu
						12.0%					
	D100	D60	D30	D10	Gravel (%)	Sand (%)		Silt (%)		Clay (%)	
					12.1	34.3		41.6		12.0	

Comments:

REVIEWED BY:	Curtis Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

HYDROMETER
LS-702 ASTM-422

CLIENT:	Regional Group	DEPTH:	5' - 7'	FILE NO.:	PG6912
PROJECT:	4850 Bank Street	BH OR TP No.:	BH2-26 SS2	DATE SAMPLED:	20-Feb-26
LAB No. :	65533	TESTED BY:	C.M	DATE RECEIVED:	18-Mar-26
SAMPLED BY:	-	DATE REPT'D:	March 26, 2026	DATE TESTED:	19-Mar-26

SAMPLE INFORMATION

SAMPLE MASS	SPECIFIC GRAVITY
560.3	2.700

INITIAL WEIGHT	50.00	**HYGROSCOPIC MOISTURE**		
WEIGHT CORRECTED	49.80	TARE WEIGHT	0.00	ACTUAL WEIGHT
WT. AFTER WASH BACK SIEVE	15.97	AIR DRY	562.60	562.60
SOLUTION CONCENTRATION	40 g/L	OVEN DRY	560.30	560.30
		CORRECTED	0.996	

GRAIN SIZE ANALYSIS

SIEVE DIAMETER (mm)	WEIGHT RETAINED (g)	PERCENT RETAINED	PERCENT PASSING
26.5	**0.0**	0.0	**100.0**
19	**0.00**	0.0	**100.0**
13.2	**15.57**	2.8	**97.2**
9.5	**36.50**	6.5	**93.5**
4.75	**67.68**	12.1	**87.9**
2.0	**121.39**	21.7	**78.3**
Pan	**438.91**	78.3	**21.7**
0.850	**4.58**	28.8	**71.2**
0.425	**7.67**	33.7	**66.3**
0.250	**10.20**	37.6	**62.4**
0.106	**14.25**	44.0	**56.0**
0.075	**15.79**	46.4	**53.6**
Pan	**15.97**		
SIEVE CHECK 0.0	MAX = 0.3%		

HYDROMETER DATA

ELAPSED	TIME (24 hours)	Hs	Hc	Temp. (°C)	DIAMETER	(P)	TOTAL PERCENT PASSING
1	11:39	36.0	6.0	23.0	0.0415	59.6	**46.7**
2	11:40	33.0	6.0	23.0	0.0300	53.6	**42.0**
5	11:43	30.0	6.0	23.0	0.0194	47.7	**37.3**
15	11:53	25.0	6.0	23.0	0.0116	37.7	**29.6**
30	12:08	20.0	6.0	23.0	0.0085	27.8	**21.8**
60	12:38	18.0	6.0	23.0	0.0061	23.8	**18.7**
250	15:48	15.0	6.0	23.0	0.0030	17.9	**14.0**
1440	11:38	11.5	6.0	23.0	0.0013	10.9	**8.6**

COMMENTS:

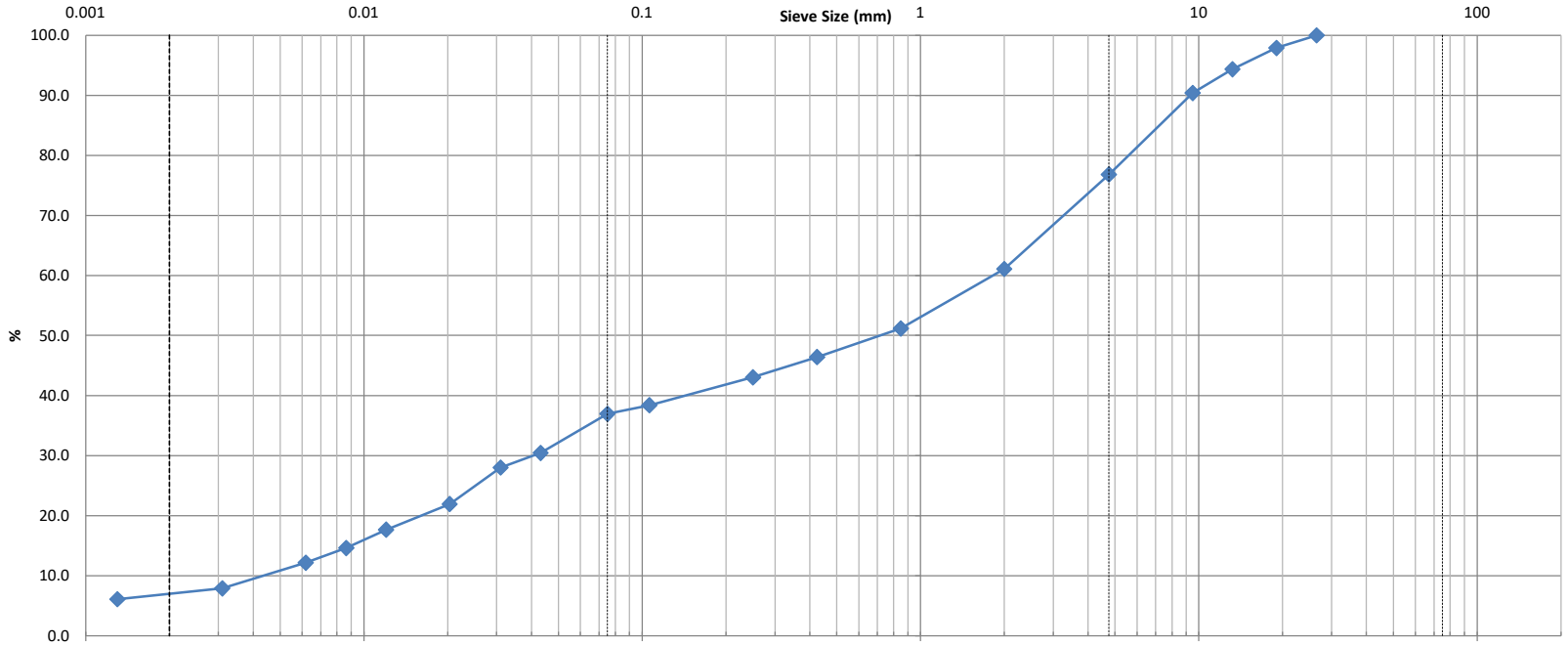
Moisture Content = 12.0%

REVIEWED BY:	C. Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

SIEVE ANALYSIS
ASTM C136

CLIENT:	Regional Group	DEPTH:	8' - 9'8"	FILE NO:	PG6912
CONTRACT NO.:		BH OR TP No.:	BH3-26 G3	LAB NO:	65534
PROJECT:	4850 Bank Street			DATE RECEIVED:	18-Mar-26
				DATE TESTED:	19-Mar-26
DATE SAMPLED:	20-Feb-26			DATE REPORTED:	26-Mar-26
SAMPLED BY:	-			TESTED BY:	C.M



Identification	Soil Classification					MC(%)	LL	PL	PI	Cc	Cu
						7.0%					
	D100	D60	D30	D10	Gravel (%)	Sand (%)		Silt (%)		Clay (%)	
					23.2	39.9		29.9		7.0	

Comments:

REVIEWED BY:	Curtis Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

HYDROMETER
LS-702 ASTM-422

CLIENT:	Regional Group	DEPTH:	8' - 9'8"	FILE NO.:	PG6912
PROJECT:	4850 Bank Street	BH OR TP No.:	BH3-26 G3	DATE SAMPLED:	20-Feb-26
LAB No. :	65534	TESTED BY:	C.M	DATE RECEIVED:	18-Mar-26
SAMPLED BY:	-	DATE REPT'D:	March 26, 2026	DATE TESTED:	19-Mar-26

SAMPLE INFORMATION

SAMPLE MASS	SPECIFIC GRAVITY
1270.9	2.700

INITIAL WEIGHT	50.00	**HYGROSCOPIC MOISTURE**		
WEIGHT CORRECTED	49.59	TARE WEIGHT	0.00	ACTUAL WEIGHT
WT. AFTER WASH BACK SIEVE	19.80	AIR DRY	1281.40	1281.40
SOLUTION CONCENTRATION	40 g/L	OVEN DRY	1270.90	1270.90
		CORRECTED	0.992	

GRAIN SIZE ANALYSIS

SIEVE DIAMETER (mm)	WEIGHT RETAINED (g)	PERCENT RETAINED	PERCENT PASSING
26.5	**0.0**	0.0	**100.0**
19	**26.54**	2.1	**97.9**
13.2	**71.63**	5.6	**94.4**
9.5	**121.84**	9.6	**90.4**
4.75	**294.41**	23.2	**76.8**
2.0	**494.51**	38.9	**61.1**
Pan	**776.39**	61.1	**38.9**
0.850	**8.12**	48.8	**51.2**
0.425	**12.01**	53.6	**46.4**
0.250	**14.78**	57.0	**43.0**
0.106	**18.58**	61.6	**38.4**
0.075	**19.76**	63.1	**36.9**
Pan	**19.80**		
SIEVE CHECK 0.0	MAX = 0.3%		

HYDROMETER DATA

ELAPSED	TIME (24 hours)	Hs	Hc	Temp. (°C)	DIAMETER	(P)	TOTAL PERCENT PASSING
1	11:52	31.0	6.0	23.0	0.0431	49.8	**30.5**
2	11:53	29.0	6.0	23.0	0.0310	45.9	**28.0**
5	11:56	24.0	6.0	23.0	0.0203	35.9	**21.9**
15	12:06	20.5	6.0	23.0	0.0120	28.9	**17.7**
30	12:21	18.0	6.0	23.0	0.0086	23.9	**14.6**
60	12:51	16.0	6.0	23.0	0.0062	19.9	**12.2**
250	16:01	12.5	6.0	23.0	0.0031	13.0	**7.9**
1440	11:51	11.0	6.0	23.0	0.0013	10.0	**6.1**

COMMENTS:

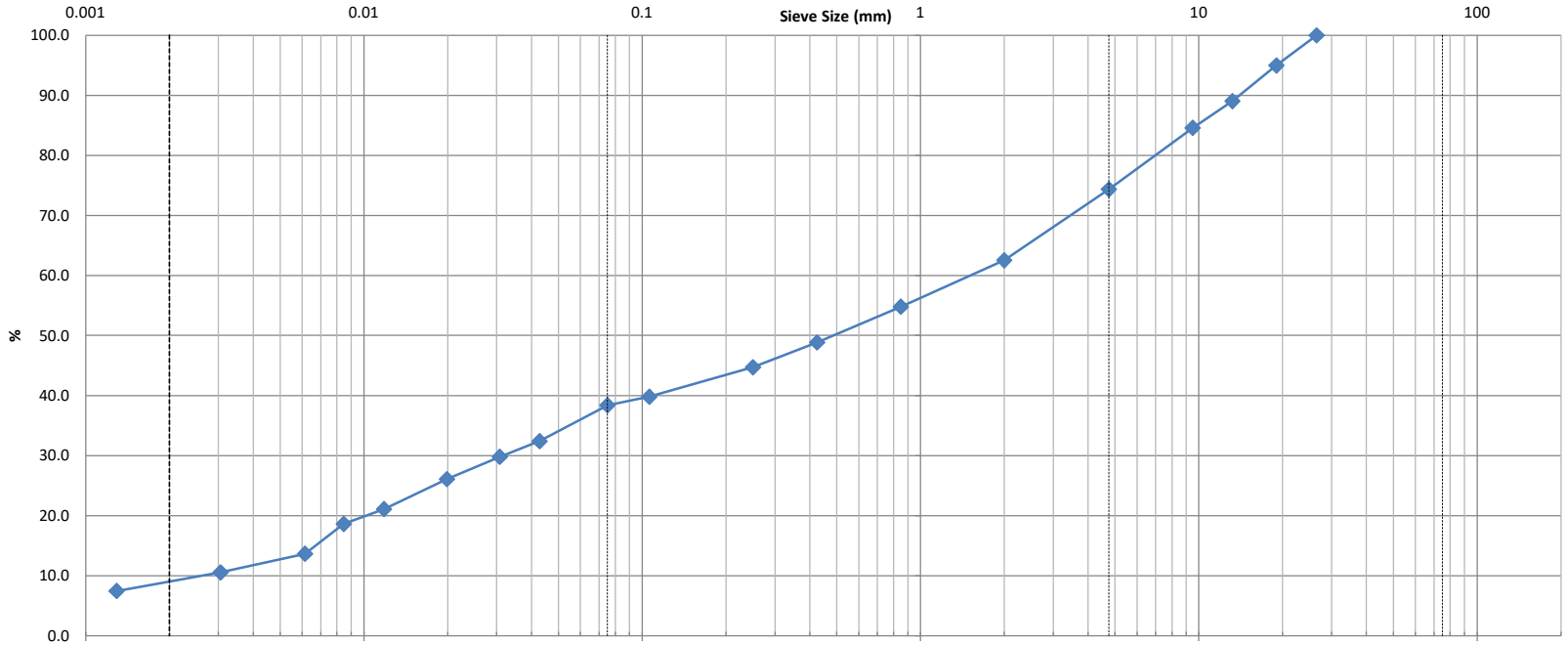
Moisture Content = 7.0%

REVIEWED BY:	C. Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

SIEVE ANALYSIS
ASTM C136

CLIENT:	Regional Group	DEPTH:	8' - 9'8"	FILE NO:	PG6912
CONTRACT NO.:		BH OR TP No.:	BH4-26 SS3	LAB NO:	65535
PROJECT:	4850 Bank Street			DATE RECEIVED:	18-Mar-26
				DATE TESTED:	19-Mar-26
DATE SAMPLED:	20-Feb-26			DATE REPORTED:	26-Mar-26
SAMPLED BY:	-			TESTED BY:	C.M



Clay	Silt	Sand			Gravel		Cobble
		Fine	Medium	Coarse	Fine	Coarse	

Identification	Soil Classification					MC(%)	LL	PL	PI	Cc	Cu
						5.9%					
	D100	D60	D30	D10	Gravel (%)	Sand (%)		Silt (%)		Clay (%)	
					25.6	36.0		29.9		8.5	

Comments:

REVIEWED BY:	Curtis Beadow	Joe Forsyth, P. Eng.

PATERSON GROUP

HYDROMETER
LS-702 ASTM-422

CLIENT:	Regional Group	DEPTH:	8' - 9'8"	FILE NO.:	PG6912
PROJECT:	4850 Bank Street	BH OR TP No.:	BH4-26 SS3	DATE SAMPLED:	20-Feb-26
LAB No. :	65535	TESTED BY:	C.M	DATE RECEIVED:	18-Mar-26
SAMPLED BY:	-	DATE REPT'D:	March 26, 2026	DATE TESTED:	19-Mar-26

SAMPLE INFORMATION

SAMPLE MASS	SPECIFIC GRAVITY
1183.4	2.700

INITIAL WEIGHT	50.00	**HYGROSCOPIC MOISTURE**		
WEIGHT CORRECTED	49.79	TARE WEIGHT	0.00	ACTUAL WEIGHT
WT. AFTER WASH BACK SIEVE	19.35	AIR DRY	1188.40	1188.40
SOLUTION CONCENTRATION	40 g/L	OVEN DRY	1183.40	1183.40
		CORRECTED	0.996	

GRAIN SIZE ANALYSIS

SIEVE DIAMETER (mm)	WEIGHT RETAINED (g)	PERCENT RETAINED	PERCENT PASSING
26.5	**0.0**	0.0	**100.0**
19	**59.36**	5.0	**95.0**
13.2	**129.60**	11.0	**89.0**
9.5	**182.15**	15.4	**84.6**
4.75	**303.40**	25.6	**74.4**
2.0	**443.51**	37.5	**62.5**
Pan	**739.90**	62.5	**37.5**
0.850	**6.19**	45.2	**54.8**
0.425	**10.94**	51.2	**48.8**
0.250	**14.24**	55.3	**44.7**
0.106	**18.18**	60.2	**39.8**
0.075	**19.29**	61.6	**38.4**
Pan	**19.35**		
SIEVE CHECK 0.0	MAX = 0.3%		

HYDROMETER DATA

ELAPSED	TIME (24 hours)	Hs	Hc	Temp. (°C)	DIAMETER	(P)	TOTAL PERCENT PASSING
1	11:56	32.1	6.0	23.0	0.0428	51.8	**32.4**
2	11:57	30.0	6.0	23.0	0.0307	47.7	**29.8**
5	12:00	27.0	6.0	23.0	0.0199	41.7	**26.1**
15	12:10	23.0	6.0	23.0	0.0118	33.8	**21.1**
30	12:25	21.0	6.0	23.0	0.0085	29.8	**18.6**
60	12:55	17.0	6.0	23.0	0.0061	21.8	**13.7**
250	16:05	14.5	6.0	23.0	0.0031	16.9	**10.6**
1440	11:55	12.0	6.0	23.0	0.0013	11.9	**7.5**

COMMENTS:

Moisture Content = 5.9%

REVIEWED BY:	C. Beadow	Joe Forsyth, P. Eng.

	Client ID:	BH5-23-SS3	-	-	-		
	Sample Date:	12-Dec-23 09:00	-	-	-	-	-
	Sample ID:	2350192-01	-	-	-		
	Matrix:	Soil	-	-	-		
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	93.2	-	-	-	-	-
General Inorganics							
pH	0.05 pH Units	7.56	-	-	-	-	-
Resistivity	0.1 Ohm.m	72.9	-	-	-	-	-
Anions							
Chloride	10 ug/g	<10	-	-	-	-	-
Sulphate	10 ug/g	<10	-	-	-	-	-

Certificate of Analysis

Report Date: 14-Jul-2025

Client: Paterson Group Consulting Engineers (Ottawa)

Order Date: 8-Jul-2025

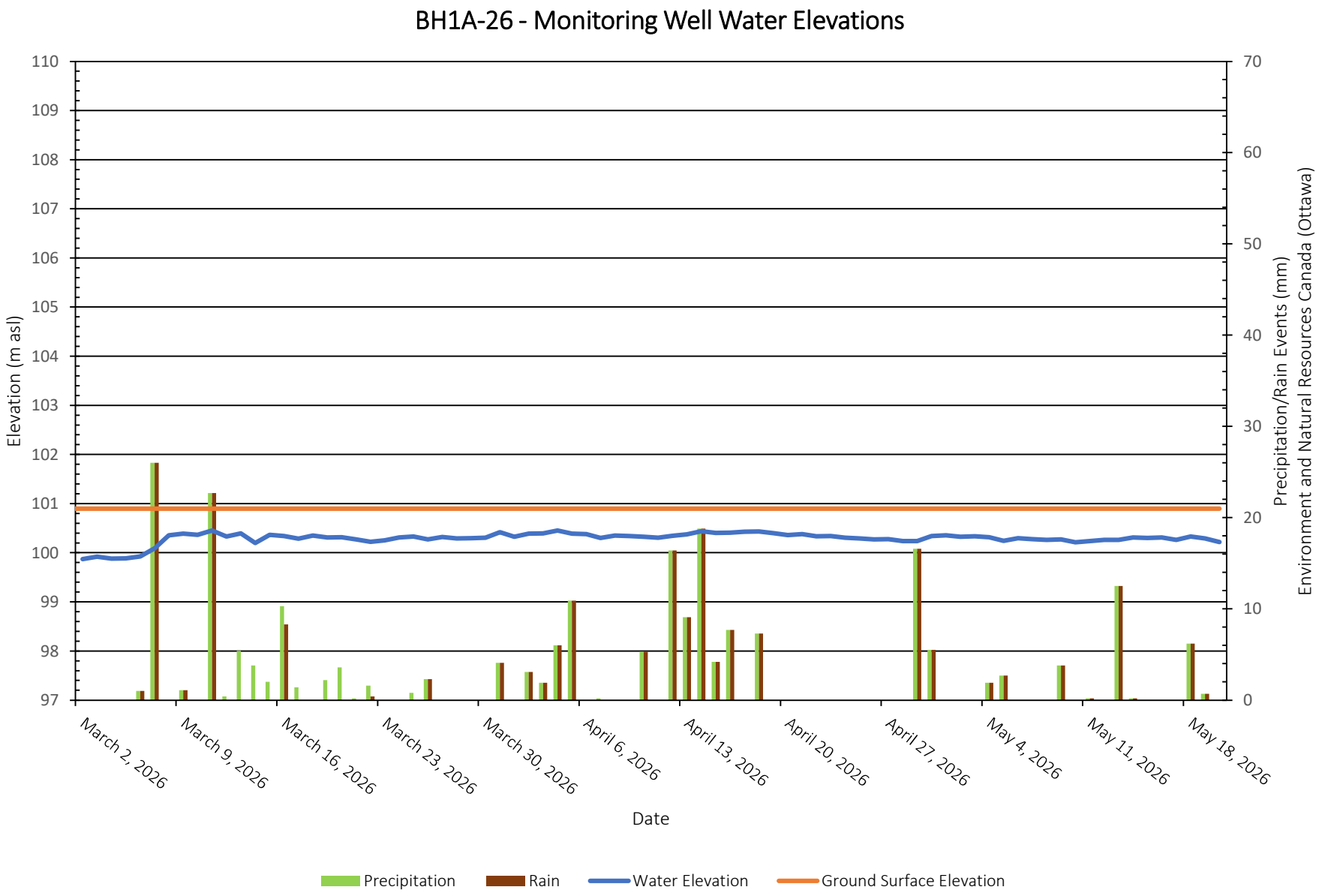
Client PO: 63514

Project Description: PG6912

	Client ID:	BH1-25-SS3	-	-	-	-	-
	Sample Date:	18-Jun-25 00:00	-	-	-	-	-
	Sample ID:	2528221-01	-	-	-		
	Matrix:	Soil	-	-	-		
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	92.0	-	-	-	-	-
General Inorganics							
pH	0.05 pH Units	7.89	-	-	-	-	-
Resistivity	0.1 Ohm.m	42.0	-	-	-	-	-
Anions							
Chloride	10 ug/g	22	-	-	-	-	-
Sulphate	10 ug/g	97	-	-	-	-	-

File: PH5087

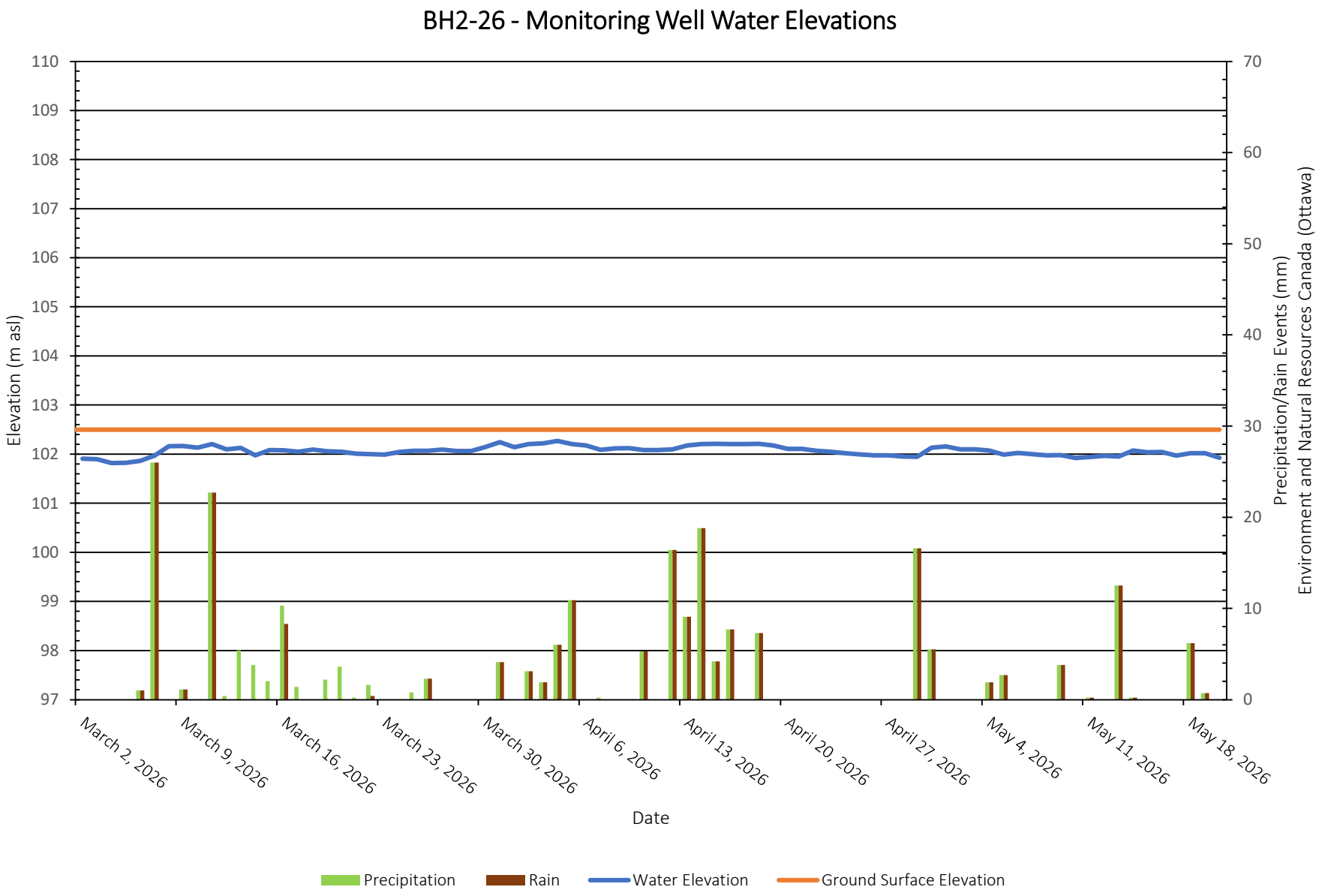
Regional Group
4850 Bank Street, Ottawa, Ontario
Monitoring Well Water Elevations



PATERSON GROUP

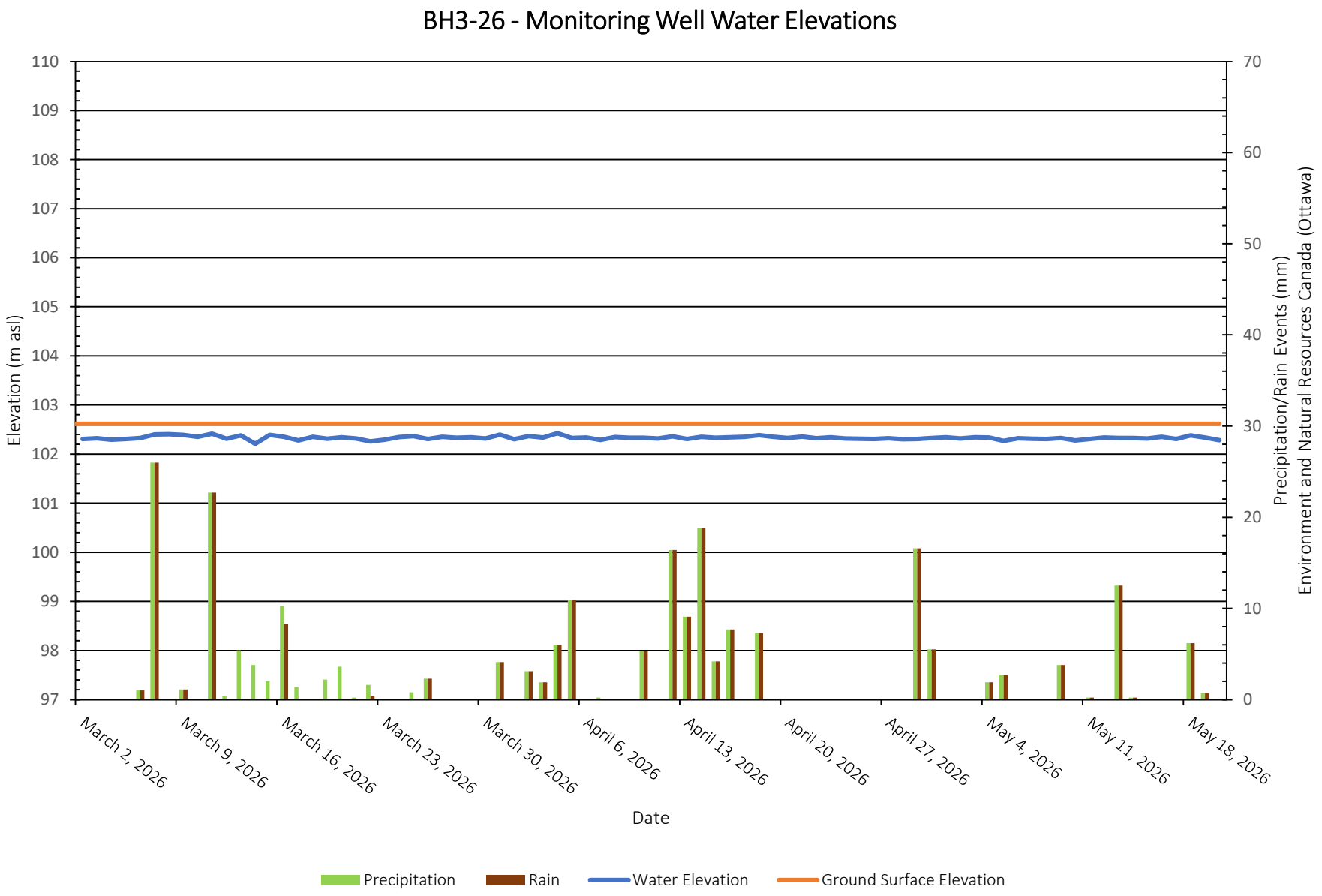
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Regional Group
4850 Bank Street, Ottawa, Ontario
Monitoring Well Water Elevations



File: PH5087

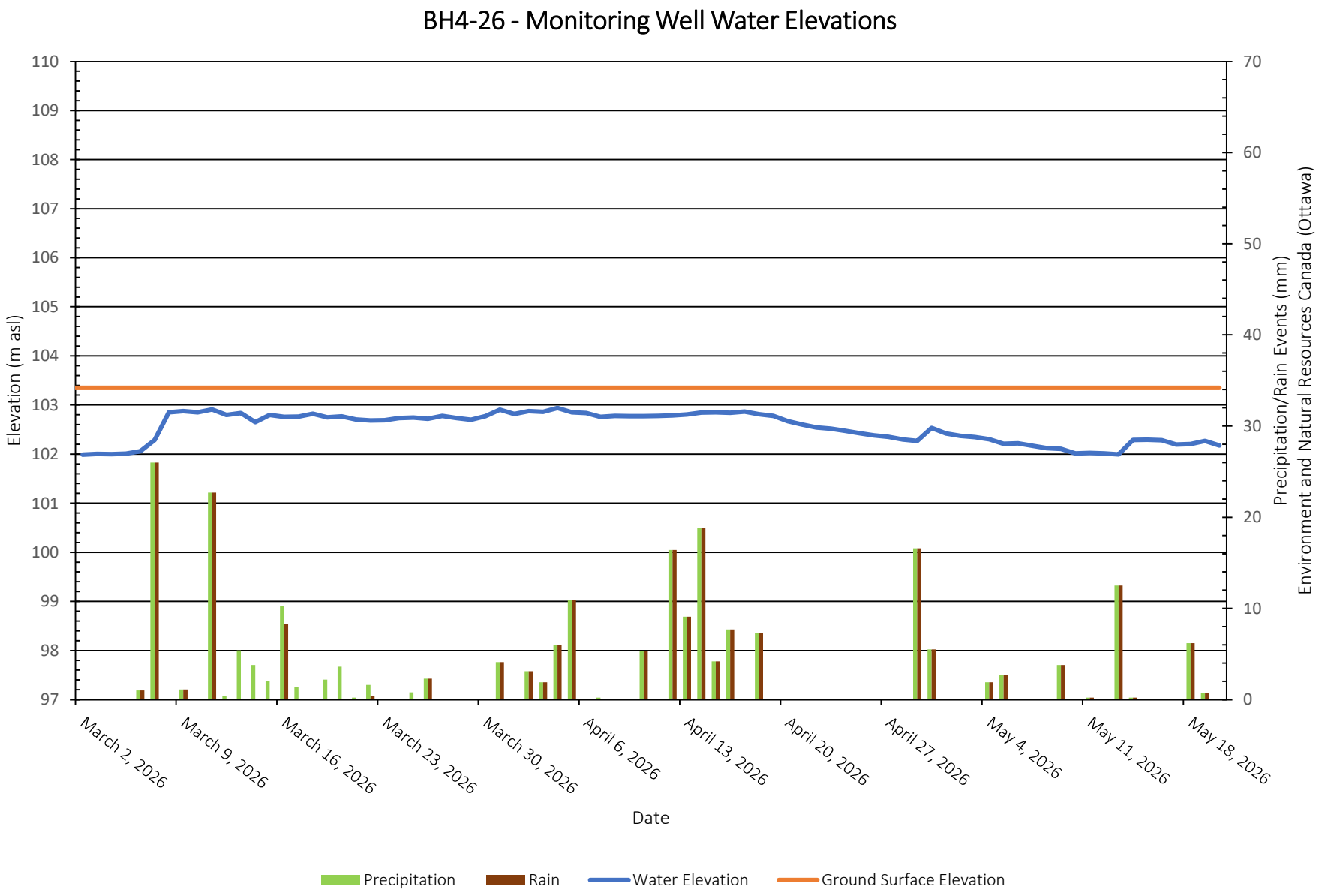
Regional Group
4850 Bank Street, Ottawa, Ontario
Monitoring Well Water Elevations



PATERSON GROUP

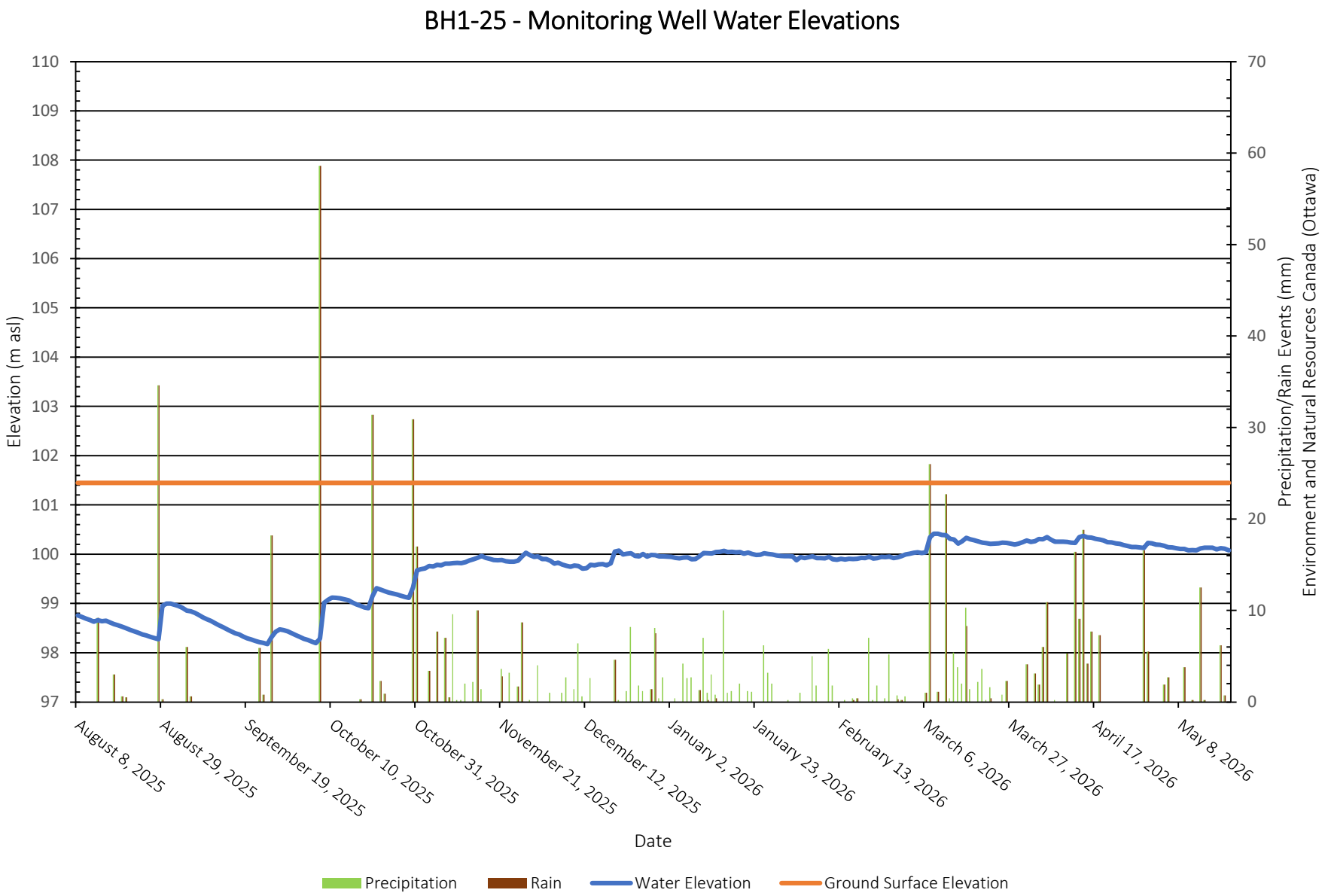
File: PH5087

Regional Group
4850 Bank Street, Ottawa, Ontario
Monitoring Well Water Elevations



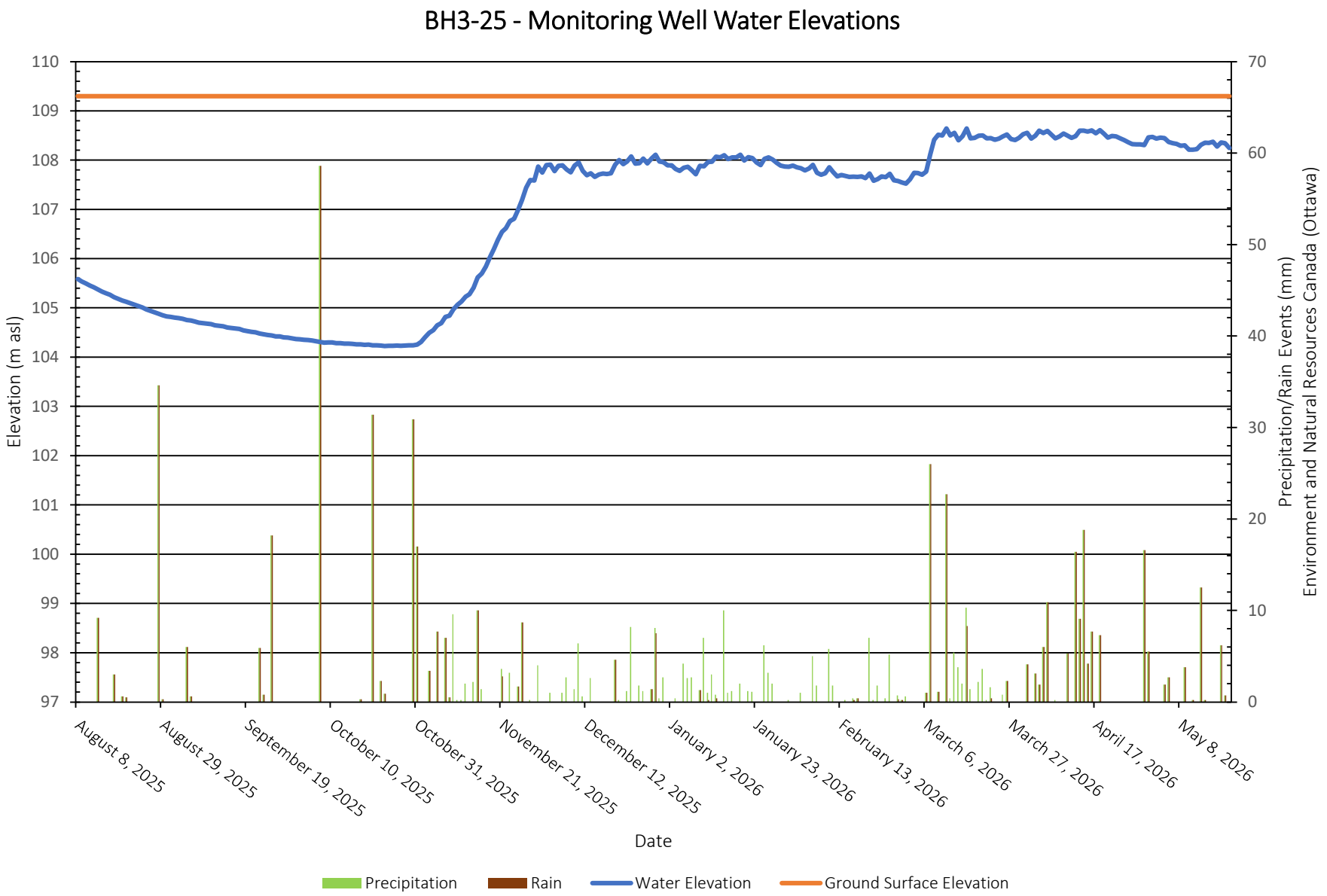
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Regional Group
4850 Bank Street, Ottawa, Ontario
Monitoring Well Water Elevations

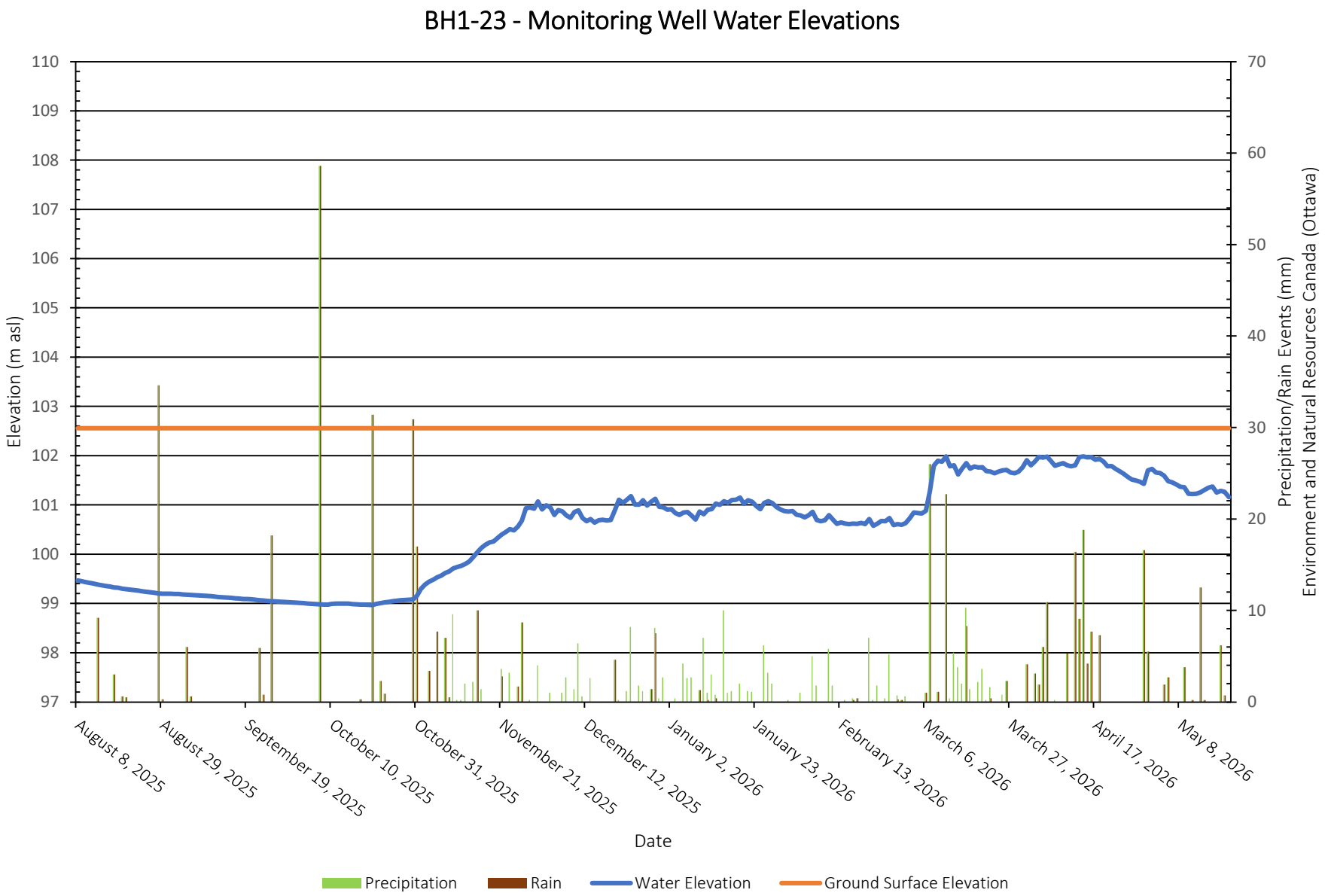


File: PH5087

Regional Group
4850 Bank Street, Ottawa, Ontario
Monitoring Well Water Elevations



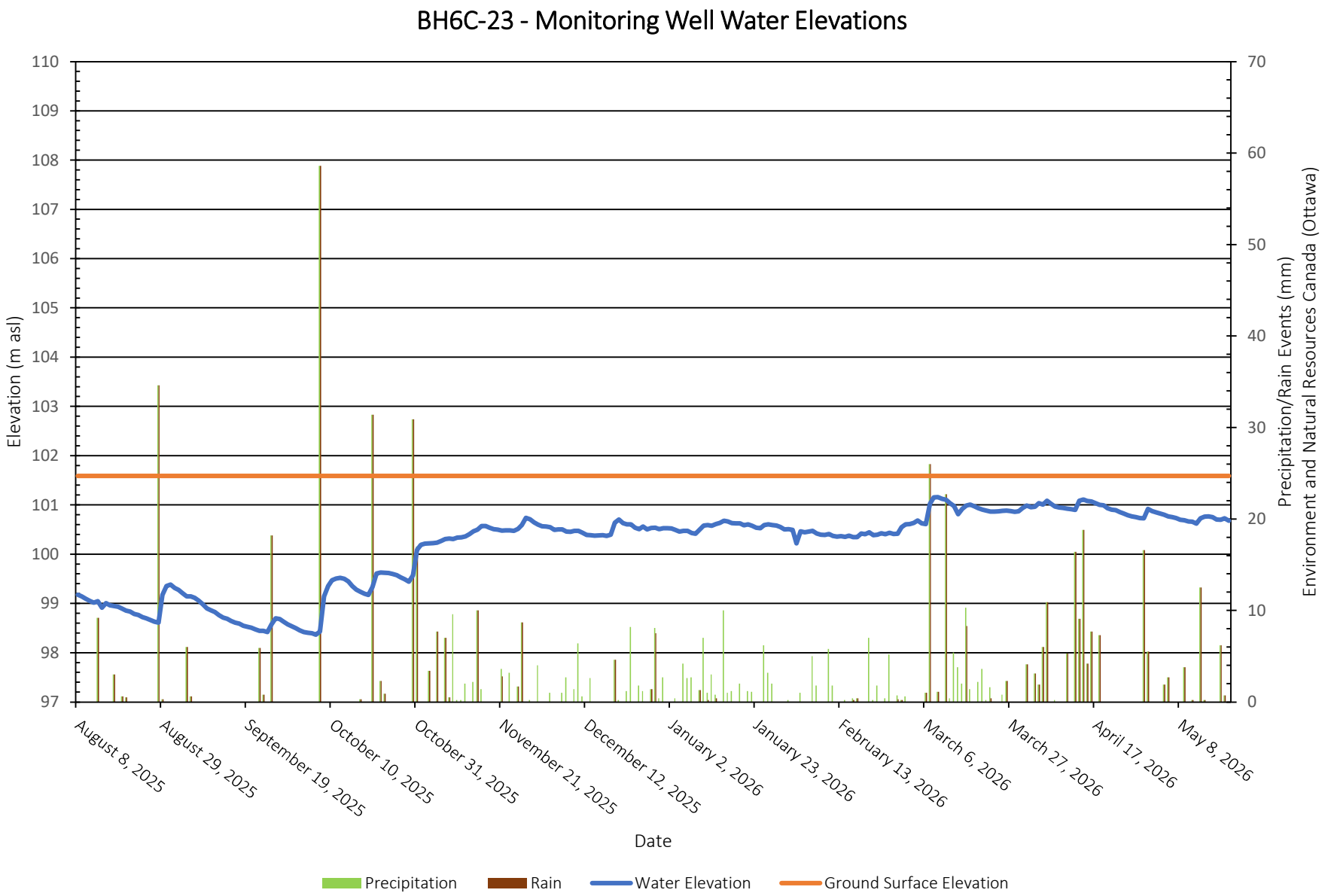
Regional Group
4850 Bank Street, Ottawa, Ontario
Monitoring Well Water Elevations



PATERSON GROUP

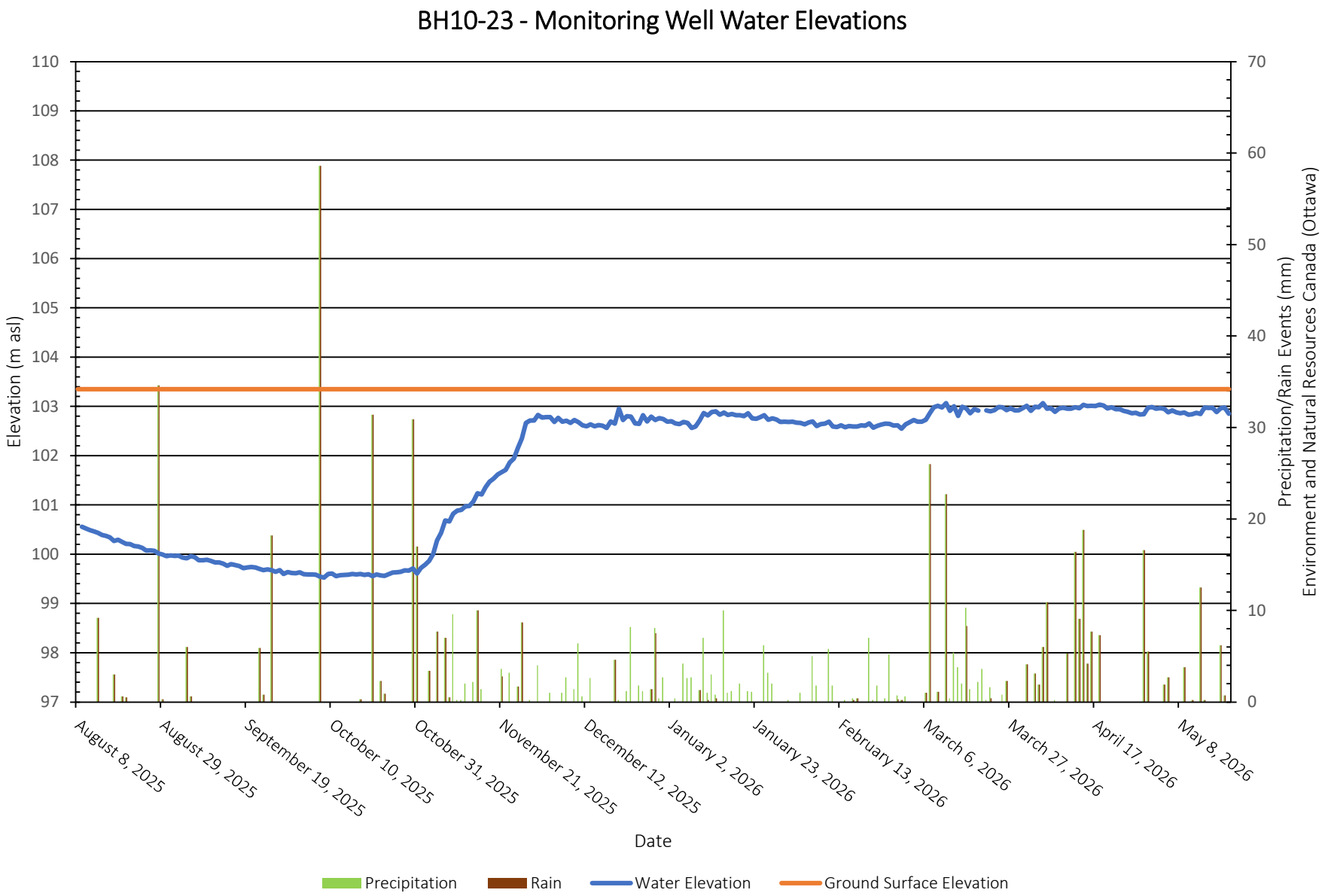
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Regional Group
4850 Bank Street, Ottawa, Ontario
Monitoring Well Water Elevations



PATERSON GROUP

Regional Group
4850 Bank Street, Ottawa, Ontario
Monitoring Well Water Elevations



PATERSON GROUP

APPENDIX 2

FIGURE 1 – KEY PLAN

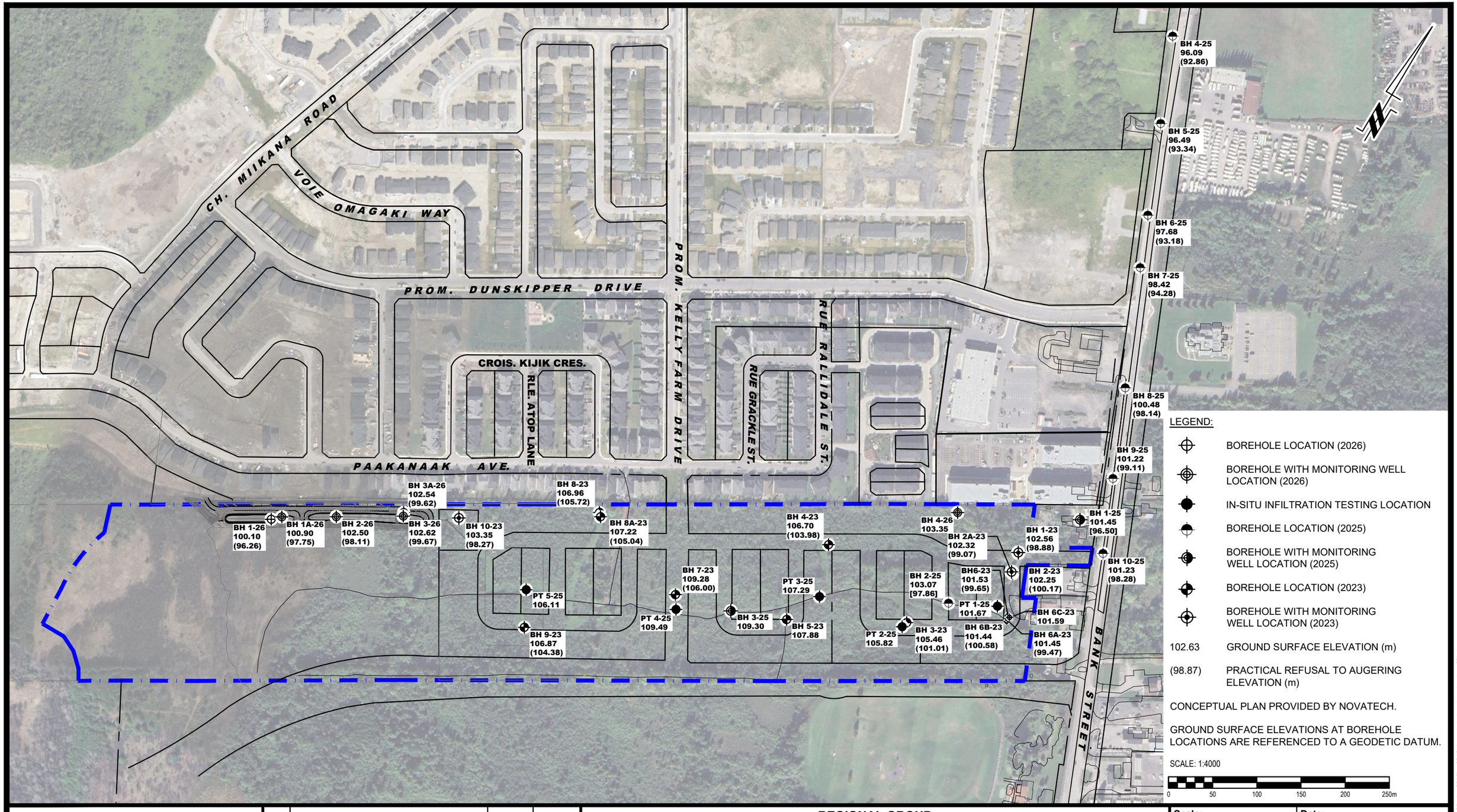
DRAWING PG6912-1 – TEST HOLE LOCATION PLAN



FIGURE 1

KEY PLAN

PATERSON GROUP



LEGEND:

- BOREHOLE LOCATION (2026)
- BOREHOLE WITH MONITORING WELL LOCATION (2026)
- IN-SITU INFILTRATION TESTING LOCATION
- BOREHOLE LOCATION (2025)
- BOREHOLE WITH MONITORING WELL LOCATION (2025)
- BOREHOLE LOCATION (2023)
- BOREHOLE WITH MONITORING WELL LOCATION (2023)
- 102.63 GROUND SURFACE ELEVATION (m)
- (98.87) PRACTICAL REFUSAL TO AUGERING ELEVATION (m)

CONCEPTUAL PLAN PROVIDED BY NOVATECH.

GROUND SURFACE ELEVATIONS AT BOREHOLE LOCATIONS ARE REFERENCED TO A GEODETIC DATUM.

SCALE: 1:4000

0 50 100 150 200 250m

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7T9
TEL: (613) 226-7381

NO.	REVISIONS	DD/MM/YYYY	INITIAL
3	ADDED 2026 BOREHOLES BH 1-26 to BH 4-26	02/03/2026	JP
2	ADDED 2025 IN-SITU INFILTRATION TESTING TO PLAN	08/08/2025	ZB
1	ADDED 2025 BOREHOLES BH 1-25 TO BH 10-25	09/07/2025	PB

REGIONAL GROUP

GEOTECHNICAL INVESTIGATION
PROPOSED RESIDENTIAL DEVELOPMENT
4850 BANK STREET

OTTAWA, ONTARIO

Title:

TEST HOLE LOCATION PLAN

Scale: 1:4000	Date: 12/2023
Drawn by: GK	Report No.: PG6912-1
Checked by: DR	Dwg. No.: PG6912-1
Approved by: SD	Revision No.: 3

11x17

p:\autocad drawings\geotechnical\pg6912\pg6912-1 test hole location plan (rev 03).dwg