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Hydrogeological Investigation Report
Proposed Residential Development
666, 668, 672, 678 and 682 Liverpool Road
Pickering, Ontario

GEMTEC Project: 104161.0011

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Submitted to:

Plaza 6 Inc.
23 Automatic Road
Brampton, Ontario
L6S 4K6

Hydrogeological Investigation Report
Proposed Residential Development
666, 668, 672, 678 and 682 Liverpool Road
Pickering, Ontario

May 7, 2025
GEMTEC Project: 104161.001

GEMTEC Consulting Engineers and Scientists Limited
850 Champlain Avenue, Suite 101
Oshawa, ON, Canada
L1J 8C3

May 7, 2025

File: 104161.001 – Rev0

Plaza 6 Inc.
23 Automatic Road
Brampton, Ontario

Attention: Milan Shah

Re: Hydrogeological Investigation Report
Proposed Residential Redevelopment at 666, 668, 672, 678, and 682 Liverpool Road
Pickering, Ontario

Please find enclosed the Hydrogeological Investigation Report for the proposed residential development to be located at 666, 668, 672, 678 and 682 Liverpool Road in Pickering, Ontario. This report was prepared by Andy Weatherson, M.Env.Sc., P.Geo., and reviewed by Kimberly Gilder, P.Geo.

Regards,

GEMTEC Consulting Engineers and Scientists Limited

Andy Weatherson, M.Env.Sc., P.Geo.
Hydrogeologist

Kimberly Gilder, P.Geo.
Senior Hydrogeologist

AW/KG/sv

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1.0 INTRODUCTION

GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) has been retained by Plaza 6 Inc. (Plaza 6), to carry out a preliminary hydrogeological investigation in support of the proposed residential development located at 666, 668, 672, 678 and 682 Liverpool Road in Pickering, Ontario, herein referred to as the site.

The purpose of the hydrogeological investigation is to characterize the general subsurface soils and groundwater conditions at the site by means of a limited number of boreholes and monitoring wells and based on the information obtained, to estimate short-term (i.e., construction) dewatering needs.

This report is subject to the Conditions and Limitations of This Report, which are provided in Appendix A, and which are considered an integral part of the report.

2.0 PROJECT DESCRIPTION AND SETTING

2.1 Project Location and Description

The site is located on the west side of Liverpool Road, south of Commerce Street and north of Annland Street between suburban residences in Pickering, Ontario. The site is currently occupied by five suburban residences (Figure B-1, *Site Plan*, Appendix B).

Based on the concept plan prepared by Cassidy + Company and dated May 27, 2024, the proposed development will consist of 21 units of four buildings each consisting of 3-storey slab-on-grade townhouses, parking lots, and internal roadways (fire route and light duty pavement areas). The existing slab-on-grade will be removed prior to construction of the new townhouses.

2.2 Topography, Drainage, and Natural Heritage

The ground surface Elevation (El.) at the site ranges from about 81 m above mean sea level (m amsl) to 82.5 m amsl, gently sloping from west to east towards Liverpool Road based on the available topographic survey completed by Richmond Surveying Inc. on October 29, 2023. Topography is presented on Figure B-2, *Topography and Natural Heritage*, Appendix B.

There are no surface water features mapped within the site boundaries. Frenchman's Bay is located approximately 200 m west of the site and the Frenchman's Bay Coastal Provincially Significant Wetland (PSW) Complex is mapped approximately 240 m west and southeast of the site (see Figure B-2, Appendix B).

2.3 Surficial Geology and Physiography

According to published physiographic mapping (*L.J. Chapman and Putnam, 1984; The Physiography of Southern Ontario, Third Edition*) the site is located within the physiographic region known as the Iroquois Plain. The Iroquois Plain consists of both granular soils (silt and

sand) and finer-grained silt and clay soils. At this location, clay plains are the dominant physiographic landform (Chapman and Putnam, 1984).

Published surficial geology mapping (Ontario Geological Survey, 2010) indicates that the site is underlain by silt to sand textured till (Newmarket Till). Overlying fine-textured glaciolacustrine deposits of silt and clay with minor sand and gravel are mapped nearby south of the site (Figure B-3, *Surficial Geology*, Appendix B).

Paleozoic bedrock geology mapping (Armstrong and Dodge, 2007) indicates that the bedrock underlying the overburden consists of shale and minor limestone of the Blue Mountain Formation. Based on the review of the online Oak Ridges Moraine Groundwater Program (ORMGP, 2024), the depth to bedrock is about 24 m below ground surface (bgs).

2.4 MECP Water Well Records

A review of the Ministry of the Environment, Conservation, and Parks (MECP) water well records (WWR) (MECP, 2024a) indicates that there are 38 WWR located within approximately 500 m of the site limits (Figure B-4, *MECP Well Records within 500 metres*, Appendix B), including five domestic supply wells, 20 monitoring wells / test holes, and 13 wells no longer in use or the use is not indicated. A summary of the information provided on the water supply well records is presented in Table 2.1 below.

Table 2.1 – MECP Water Well Records Review, Supply Well Summary

Well Type	Depth (m)			Overburden Source	Bedrock Source	Well Use	
	min	max	avg			DO	Other
Shallow Dug or Bored (<10 m)	5.8	8.2	6.6	3	1	4	0
Drilled	9.8	9.8	9.8	0	1	1	0
Totals	**-**	**-**	**-**	**3**	**2**	**5**	**0**

Notes:
- min = minimum
- max = maximum
- avg = arithmetic mean
- DO = Domestic

None of the well records plot within the site boundaries. The subsurface conditions reported in the WWR within the search area were in general agreement with the published geological mapping. The reported water sources used by the water supply wells were unconfined clay or inferred glacial till units (3 of 5 wells) and shale bedrock (2 of 5 wells). The dates of construction for supply wells ranged from 1961 to 1985. The City of Pickering receives its water from a surface water intake in Lake Ontario. As such, it is expected that the water supply wells are no longer in use and have likely been decommissioned.

Recorded groundwater levels in the shallow wells (i.e., <10 m) ranged from 1.2 m to 4.0 m bgs, with an average of 2.2 m bgs (n=5).

Typically, shallow dug and bored wells can be more susceptible to large water level fluctuations and surficial sources of contamination. Records for four shallow dug or bored wells were identified within 500 m of the site, located at distances ranging from approximately 100 m to 480 m. A shallow bedrock well was also noted to be located approximately 330 m northwest of the site. If these wells were present and still used, GEMTEC expects they would have a greater chance of being impacted by dewatering activities at the site.

2.5 Source Water Protection

The MECP Source Protection Information Atlas (MECP, 2023) was reviewed to assess the presence of source water protection areas including: Wellhead Protection Areas (WHPA) associated with municipal groundwater supplies, Intake Protection Zones (IPZ) associated with municipal surface water supplies, Significant Groundwater Recharge Areas (SGRA), and Highly Vulnerable Aquifers (HVA).

The nearest WHPA is located about 19 km northwest of the site, associated with the Stouffville municipal supply wells. The nearest IPZ-3 is located approximately 800 m southeast of the site, associated with Ajax surface water intake in Lake Ontario. The western portion of the site is mapped as a HVA and there are no SGRA within 500 m of the site.

2.6 Registered Water Takings

The Environmental Approvals and Registrations database (MECP, 2024b) was reviewed for nearby registered water takings. No active Permits to Take Water (PTTWs) or Environmental Activity Sector Registrations (EASRs) were identified within 500 m of the site at the time of preparation of this report.

3.0 SITE INVESTIGATION METHODOLOGY

3.1 Site Instrumentation

The borehole drilling for the concurrent geotechnical investigation was carried out on February 14, 2025. Three boreholes (BH25-1 to BH25-3) were advanced to approximately 6.6 m bgs (from Elev. 74.7 m to Elev. 75.5 m amsl).

Monitoring wells were installed at two of the borehole locations (BH25-1 and BH25-3). The monitoring wells were constructed using nominal 50 mm diameter, Schedule 40 polyvinyl chloride (PVC) pipe with a No. 10 machine slotted screen (0.01-inch slot). The annular space between the monitoring well screen and surrounding soils was backfilled with a silica sand filter to a maximum of 0.6 m above the top of the screen, and the remainder of the annular space was sealed with bentonite. Both monitoring wells were completed with flush-mounted protective aluminum casings set in concrete.

Approximately one week following installation, the monitoring wells were developed. The monitoring wells were purged using dedicated 16 mm inside diameter low density polyethylene (LDPE) tubing and a D-25 Waterra™ foot valve. The monitoring wells were developed by removing three casing volumes or until dry, whichever came first.

Descriptions of the subsurface conditions logged in the boreholes are provided on the Record of Borehole sheets in Appendix C.

3.2 Groundwater Level Monitoring

Details of the monitoring well installations are summarized in Table D-1, Appendix D. Groundwater levels were measured in the monitoring wells on three events (February 24, March 4, and March 12, 2025). The water level data are provided in Table D-2, Appendix D. The groundwater levels were measured using an electronic water level tape relative to the top of the PVC standpipe at each monitoring well location.

3.3 Hydraulic Response Testing

In-situ hydraulic response testing was carried out in the two monitoring wells (i.e. BH25-1 and BH25-3) to estimate the bulk horizontal hydraulic conductivity (K_b) of the overburden materials adjacent to the screened intervals. The testing consisted of creating a near instantaneous change in the water column height through rapid purging of the well by removing a known volume of water, followed by the recording of water level recovery (i.e., rising head test). The change in water level was recorded using an automatic data logger supplemented with manual readings using an electronic water level tape at frequent intervals.

The data was analyzed using industry standard software (Aqtesolv Pro, version 4.50 by HydroSolve Inc.) and applying the Bouwer and Rice (1976) unconfined solution. The output from Aqtesolv including the analysis parameters, resulting curve and estimated bulk hydraulic conductivity for each test are provided in Appendix E. The hydraulic conductivity values estimated from the rising head tests are presented in Table D-3, Appendix D by monitoring well.

3.4 Groundwater Sampling

To evaluate potential disposal options for pumped groundwater during potential future dewatering activities, one groundwater sample was collected from Borehole BH25-1 on March 5, 2025. Prior to collecting the groundwater sample, the monitoring well was developed in general accordance with industry standards (see Section 3.1) to obtain a representative groundwater sample. Following purging, the groundwater was sampled with the use of a dedicated bailer and poured directly into laboratory-supplied sample bottles.

The sample was analyzed for the list of parameters included in the Durham Region Sewer Use By-Law (55-2013), *Table 1 – Limits for Sanitary Sewer Discharge* (Table 1 Limits), *Table 2* –

Limits for Sewer Discharge (Table 2 Limits) as provided as Table F-1, Appendix F, and the laboratory Certificate of Analysis is provided in Appendix F.

The sample obtained during this investigation was packed into a cooler with ice for transit to the analytical laboratory. The sample was picked up and delivered the day after collection to Bureau Veritas (BV) of Mississauga, Ontario.

4.0 HYDROGEOLOGICAL ASSESSMENT

4.1 Subsurface Conditions

As previously indicated, the soil and groundwater conditions identified in the boreholes as part of the current study are presented on the Record of Borehole sheets in Appendix C. The Record of Borehole sheets indicate the subsurface conditions at the specific borehole locations only. Boundaries between zones on the Record of Borehole sheets are often not distinct, but rather are transitional and have been interpreted from discontinuous drilling observations. The precision with which subsurface conditions are indicated depends on the method of drilling, the frequency and recovery of samples, the method of sampling, and the uniformity of the subsurface conditions. Subsurface conditions at locations other than the boreholes may vary from the conditions encountered in the boreholes, both laterally and with depth.

The soil descriptions in this report are based on commonly accepted methods of classification and identification employed in geotechnical practice. Classification and identification of soil and rock involves judgement and GEMTEC does not guarantee descriptions as exact but infers accuracy to the extent that is common in current geotechnical/hydrogeological practice.

Generally, the subsurface conditions encountered over the site consist of the following:

- Surficial topsoil that was 0.6 m thick was encountered at ground surface in Borehole BH25-2;
- Surficial asphalt was encountered at Boreholes BH25-1 and BH25-3, with a thickness of about 0.1 m. The asphalt was underlain by;
- Sandy silty clay fill to silty clay fill at Boreholes BH25-1 and BH25-3. The fill ranged in thickness from about 1.3 m 2.1 m. The topsoil or fill material was underlain by;
- Gravelly silty sand till to sandy silty clay till. Borehole BH25-1 was terminated in gravelly sandy silty clay till. In Boreholes BH25-2 and BH25-3, the tills extended to approximately 5.6 m in each borehole. The till was underlain by;
- A silty clay at Boreholes BH25-2 and BH25-3. The silty clay was about 1 m thick in each borehole and both boreholes were terminated in the silty clay.

4.2 Groundwater Depths and Elevations

Groundwater levels were manually measured in the monitoring wells on February 24, March 4, and March 12, 2025. The groundwater depth and elevation data are provided in Table D-2, Appendix D. The groundwater levels were measured relative to the top of the PVC standpipe at each monitoring well location. The groundwater conditions described in this report refer only to those measured at the place and time of observation. The ground surface elevation of each monitoring well was estimated from a topographic survey plan of the site conducted by Richmond Surveying Inc. The corresponding elevation of the top of each PVC standpipe was estimated by measuring the stick-up distance by hand. Accordingly, the groundwater elevations should be considered as approximate only and are to be interpreted with caution. Seasonal and annual fluctuations should be anticipated, with higher elevations anticipated during the spring freshet months (commonly March through June).

On March 12, 2025, the depth to groundwater in monitoring wells across the site ranged from about 2.00 m bgs (BH25-3) to 2.07 m bgs (BH25-1), and from El. 79.20 m amsl (BH25-3) to El. 79.93 m amsl (BH25-1). The shallow groundwater is inferred to follow local topography and flow south or southwest towards Frenchman's Bay or Lake Ontario.

4.3 Hydraulic Response Test Results

The results of the hydraulic response testing carried out in the monitoring wells are presented in Appendix E. The hydraulic conductivity values estimated from the rising head tests are presented in Table D-3, Appendix D by monitoring well. Table 4.1 provides a summary of the test results.

Table 4.1 – Summary Hydraulic Conductivity Estimates

Borehole Location	Unit	K_b [m/s]
BH25-1	(SM) Gravelly Silty Sand Till; (CL) Gravelly Sandy Silty Clay Till	2×10^{-8}
BH25-3	(SM) Gravelly Silty Sand Till; (CL) Silty Clay	3×10^{-8}

Notes:
1. K_b = bulk hydraulic conductivity; m/s = metres per second

The estimated hydraulic conductivities of the glacial till and/or silty clay range from approximately 2×10^{-8} m/s to 3×10^{-8} m/s, with a geometric mean of 2×10^{-8} m/s (n=2). These hydraulic conductivity values are within the expected literature range for till of 10^{-8} m/s to 10^{-6} m/s and slightly above the expected literature range for clay of 10^{-11} m/s to 10^{-8} m/s (Fetter, 1994).

4.4 Groundwater Quality Results

A summary of the analytical results for the groundwater samples with comparison to the Durham Region Sewer Use By-Law (55-2013) Table 1 and 2 Limits is presented in Table F-1 in Appendix F for the monitoring well installed in BH25-1. The laboratory Certificate of Analysis is also provided in Appendix F.

For discussion purposes, parameters in groundwater with concentrations exceeding the Table 1 (sanitary sewer) Limits, Table 2 (storm) Limits from BH25-1 are summarized in Table 5.3 below.

Table 5.3 – Summary of Parameters Exceeding Table 1 Limits and/or Table 2 Limits

Parameter	BH25-1 Water Quality Result	Table 1 Limits	Table 2 Limits
Total Suspended Solids	150 mg/L	350 mg/L	15 mg/L

The concentration of all sampled parameters met the Table 1 Limits. The concentration of all sampled parameters met the Table 2 Limits with the exception of total suspended solids (TSS). The elevated TSS is considered to be due to the difficulty of developing a monitoring well partially screened in cohesive material to a sediment-free condition prior to sampling.

5.0 WATER TAKING

This section provides a preliminary estimate of temporary construction dewatering needs and potential permitting requirements for underground services. No design details were available at the time of report preparation.

5.1 Temporary Construction Dewatering Assumptions

GEMTEC has estimated construction dewatering needs based on the conceptual plan provided by Cassidy + Company. The analytical model assumptions and daily water taking volumes presented are for identifying dewatering permitting requirements only and do not constitute dewatering design recommendations.

Using a number of assumptions, the following subsections provide a preliminary assessment of construction dewatering rates and associated permitting needs.

Details of the proposed underground servicing design were not available at the time of this report. For preliminary construction dewatering rate estimation purposes, the following were assumed:

- The bottom of the excavation is assumed to be 3.0 m bgs. The dewatering is assumed to be required to draw the water table down to 1 m below the bottom of the excavation, or 4.0 m bgs.

- Trenches for the underground services would proceed in sequential segments using a daily cut and cover method. Trench segments are assumed to be 30 m in length with a width of 5 m.
- The groundwater level was estimated to be 2.0 m bgs based on the groundwater elevation at BH25-3 on March 12, 2025. Seasonal fluctuations should be anticipated as groundwater levels have only been collected during the fall and did not encounter the anticipated seasonal high condition. For the purposes of this assessment, a seasonal high groundwater level of 0.5 m higher than the March 12, 2025, measurement was assumed, or a level of 1.5 m bgs.
- A hydraulic conductivity of 3 x 10^{-8} m/s was assumed, which is the highest hydraulic conductivity of monitoring wells tested at the site as described in Section 4.3.

Based on the above, the steady state groundwater inflow rate for a typical length of linear servicing trench is not expected to exceed 50,000 L/day, depending on the soil conditions and groundwater levels at the time of construction. Accounting for higher dewatering rates when groundwater is first removed from storage, groundwater inflow rates are still expected to remain below 50,000 L/day and then decline toward the steady state rate.

The use of trench plugs is recommended to limit the potential long-term movement of groundwater in coarse-textured bedding materials below the pipe inverts.

Once design details are known, dewatering needs should be re-assessed to confirm the applicability of the assumptions and recommendations provided here.

5.2 Estimated Total Temporary Dewatering Rate and Permitting Requirements

Water takings in excess of 50,000 L/day are regulated by the MECP. Certain takings of groundwater and stormwater for construction dewatering purposes with a combined total of less than 400,000 L/day qualify for self-registration on the MECP's Environmental Activity and Sector Registry (EASR). A Water Taking Plan and a Discharge Plan prepared by a qualified professional are required by the MECP if water is taken under the EASR process. A Category 3 PTTW application, submitted to the MECP for review (90-day review service standard) and approval is required for water takings in excess of 400,000 L/day, accompanied by a hydrogeological investigation report.

It is recommended to anticipate construction dewatering rates of less than 50,000 L/day for permitting purposes. Water takings for construction dewatering of less than 50,000 L/day would not result in the need for an EASR or PTTW. However, a Discharge Plan would still be required to be prepared by a qualified person to assess suitable discharge location(s) during construction dewatering. In addition, the daily water takings would need to be recorded by the selected dewatering contractor during the dewatering activities.

These findings are based on estimated excavation dimensions and should be re-evaluated as site designs progress and construction plans are developed.

Construction dewatering activities should be carried out by a specialist dewatering contractor who is a MECP-licensed Water Well Contractor. It is emphasised that the determination of the dewatering method(s) and dewatering system design are the responsibility of the specialist dewatering contractor. Contractors bidding on or undertaking the works should examine the factual results of the investigations, satisfy themselves as to the adequacy of the information for construction and dewatering, and make their own interpretation of the factual data as it affects their construction and dewatering techniques, schedule, safety and equipment capabilities. The contractor should take care that surface runoff is diverted away from open excavations during construction.

A combination of dewatering methods may be used depending on the specialist dewatering contractor's preferences, equipment and their assessment of field conditions at the time of construction. In any event, dewatering should take place from properly filtered sumps and/or wellpoints/eductors to prevent loss of ground.

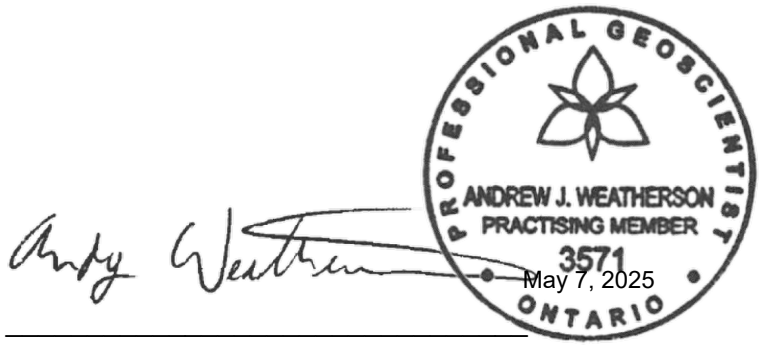
Treatment of pumped water from construction excavations for sediment removal to meet the applicable limits for TSS at the point(s) of discharge should be anticipated at a minimum. Treatment measures may include sediment or weir tanks, filter bags or cannisters, and the like. Prior to any groundwater discharge to a sewer system, necessary approvals are required from the Region of Durham and/or the City of Pickering, as applicable.

6.0 CLOSURE

We trust this report provides sufficient information for your present purposes. If you have any questions concerning this report, please do not hesitate to contact our office.

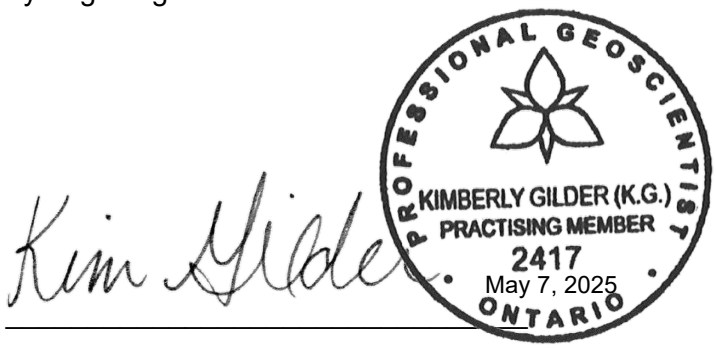
Regards,

GEMTEC Consulting Engineers and Scientists Limited



May 7, 2025

Andy Weatherson, M.Env.Sc., P.Geo.
Hydrogeologist



May 7, 2025

Kimberly Gilder, P.Geo.
Senior Hydrogeologist

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APPENDIX A

Conditions and Limitations of This Report

Conditions and Limitations of This Report

1. **Standard of Care:** GEMTEC has prepared this report in a manner consistent with generally accepted engineering or environmental consulting practice in the jurisdiction in which the services are provided at the time of the report. No other warranty, expressed or implied is made.
2. **Copyright:** The contents of this report are subject to copyright owned by GEMTEC, save to the extent that copyright has been legally assigned by us to another party or is used by GEMTEC under license. To the extent that GEMTEC owns the copyright in this report, it may not be copied without our prior written agreement for any purpose other than the purpose indicated in this report. The methodology (if any) contained in this report is provided to the Client in confidence and must not be disclosed or copied to third parties without the prior written agreement of GEMTEC. Disclosure of that information may constitute an actionable breach of confidence or may otherwise prejudice our commercial interests.
3. **Complete Report:** This report is of a summary nature and is not intended to stand alone without reference to the instructions given to GEMTEC by the Client, communications between GEMTEC and the Client and to any other reports prepared by GEMTEC for the Client relative to the specific site described in the report. In order to properly understand the suggestions, recommendations and opinions expressed in this report, reference must be made to the whole of the report. GEMTEC can not be responsible for use of portions of the report without reference to the entire report.
4. **Basis of Report:** This Report has been prepared for the specific site, development, design objectives and purposes that were described to GEMTEC by the Client. The factual data, interpretations and recommendations pertain to a specific project as described in this report and are not applicable to any other project or site location. The applicability and reliability of any of the findings, recommendations, suggestions, or opinions expressed in the document, subject to the limitations provided herein, are only valid to the extent that this report expressly addresses the proposed development, design objectives and purposes. Any change of site conditions, purpose or development plans may alter the validity of the report and GEMTEC cannot be responsible for use of this report, or portions thereof, unless GEMTEC is requested to review any changes and, if necessary, revise the report.
5. **Time Dependence:** If the proposed project is not undertaken by the Client within 18 months following the issuance of this report, or within the timeframe understood by GEMTEC to be contemplated by the Client, the guidance and recommendations within the report should not be considered valid unless reviewed and amended or validated by GEMTEC in writing.
6. **Use of This Report:** The information, recommendations and opinions expressed in this report are for the sole benefit of the Client. No other party may use or rely on this report or any portion thereof without GEMTEC's express written consent. If the report was prepared to be included for a specific permit application process, then upon the reasonable request of the client, GEMTEC may authorize in writing the use of this report by the regulatory agency as an Approved User for the specific and identified purpose of the applicable permit review process.

   Contractors bidding on, or undertaking the work, should rely on their own investigations, as well as their own interpretations of the factual data presented in the report, as to how subsurface conditions may affect their work, including but not limited to proposed construction techniques, schedule, safety and equipment capabilities.
7. **No Legal Representations:** GEMTEC makes no representations whatsoever concerning the legal significance of its findings, or as to other legal matters touched on in this report, including but not limited to, ownership of any property, or the application of any law to the facts set forth herein. With respect to regulatory compliance issues, regulatory statutes are subject to interpretation and change. Such interpretations and regulatory changes should be reviewed with legal counsel.

8. **Decrease in property value:** GEMTEC shall not be responsible for any decrease, real or perceived, of the property or site's value or failure to complete a transaction, as a consequence of the information contained in this report.
9. **Reliance on Provided Information:** The evaluation and conclusions contained in this report have been prepared on the basis of conditions in evidence at the time of site inspections and on the basis of information provided to us. We have relied in good faith upon representations. information and instructions provided by the Client and others concerning the site. Accordingly, we cannot accept responsibility for any deficiency, misstatement or inaccuracy contained in this report as a result of misstatements, omissions, misrepresentations. or fraudulent acts of the Client or other persons providing information relied on by us. We are entitled to rely on such representations, information and instructions and are not required to carry out investigations to determine the truth or accuracy of such representations, information and instructions.
10. **Investigation Limitations:** Site investigation programs are a professional estimate of the scope of investigation required to provide a general profile of subsurface conditions but even a comprehensive investigation, sampling and testing program may fail to detect all or certain subsurface conditions.

    The data derived from the site investigation program and subsequent laboratory testing are interpreted by trained personnel and extrapolated across the site to form an inferred geological representation and an engineering opinion is rendered about overall subsurface conditions and their likely behaviour with regard to the proposed development. Conditions between and beyond the borehole/test hole locations may differ from those encountered at the borehole/test hole locations and the actual conditions at the site might differ from those inferred to exist, since no subsurface exploration program, no matter how comprehensive, can reveal all subsurface details and anomalies. Accordingly, GEMTEC does not warrant or guarantee the exactness of of the subsurface descriptions.

    Soil and groundwater conditions shown in the factual data and described in the report are the observed conditions at the time of their determination-or measurement. Unless otherwise noted, those conditions form the basis of the recommendations in the report. Groundwater conditions may vary between and beyond reported locations and can be affected by annual, seasonal and meteorological conditions. The condition of the soil, rock and groundwater may be significantly altered by construction activities (traffic, excavation, groundwater level lowering, pile driving, blasting, etc.) on the site or on adjacent sites. Excavation may expose the soils to changes due to wetting, drying or frost. Unless otherwise indicated the soil must be protected from these changes during construction.

    In addition, fill of variable physical and chemical composition can be present over portions of the site or on adjacent properties. The professional services retained for this project include only the geotechnical aspects of the subsurface conditions at the site, unless otherwise specifically stated and identified in the report. The presence or implication(s) of possible surface and/or subsurface contamination resulting from previous activities or uses of the site and/or resulting from the introduction onto the site of materials from off-site sources are outside the terms of reference for this project and have not been investigated or addressed.
11. **Sample Disposal:** GEMTEC will dispose of all uncontaminated soil and/or rock samples 60 days following issue of this report or, upon written request of the Client, will store uncontaminated samples and materials at the Client's expense. In the event that actual contaminated soils, fills or groundwater are encountered or are inferred to be present, all contaminated samples shall remain the property and responsibility of the Client for proper disposal.
12. **Follow-Up and Construction Services:** All details of the design were not known at the time of submission of GEMTEC's report. GEMTEC should be retained to review the final design, project plans and documents prior to construction, to confirm that they are consistent with the intent of GEMTEC's report.

    During construction, GEMTEC should be retained to perform sufficient and timely observations of encountered conditions to confirm and document that the subsurface conditions do not

materially differ from those interpreted conditions considered in the preparation of GEMTEC's report and to confirm and document that construction activities do not adversely affect the suggestions, recommendations and opinions contained in GEMTEC's report. Adequate field review, observation and testing during construction are necessary for GEMTEC to be able to provide letters of assurance, in accordance with the requirements of many regulatory authorities. In cases where this recommendation is not followed, GEMTEC's responsibility is limited to interpreting accurately the information encountered at the borehole locations, at the time of their initial determination or measurement during the preparation of the Report.

13. **Changed Conditions:** Where conditions encountered at the site differ significantly from those anticipated in this report, either due to natural variability of subsurface conditions or construction activities, it is a condition of this report that GEMTEC be notified of any changes and be provided with an opportunity to review or revise the recommendations within this report. Recognition of changed soil and rock conditions requires experience and it is recommended that GEMTEC be employed to visit the site with sufficient frequency to detect if conditions have changed significantly.
14. **Drainage:** Drainage of subsurface water is commonly required either for temporary or permanent installations for the project. Improper design or construction of drainage or dewatering can have serious consequences. GEMTEC takes no responsibility for the effects of drainage unless specifically involved in the detailed design and construction monitoring of the system.

APPENDIX B

Figures

Legend

BH # BOREHOLE ID
XX.XX GROUNDWATER ELEVATION (m amsl), (MARCH 12, 2025)

BOREHOLE LOCATION

MONITORING WELL LOCATION

SITE BOUNDARY

NOTES:

1. All locations approximate
2. Coordinate system: NAD 1983 UTM Zone 17N
3. Geographic dataset source: Ontario GeoHub.
4. Contains information licensed under the Open Government Licence – Ontario.
5. "Site Boundary" provided by RICHMOND SURVEYING INC., October 24, 2023.
6. m amsl = metres above mean sea level.
7. Service Layer Credits: World Street Map: Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community
World Imagery: Maxar, Microsoft

Scale:

1:400

0 5 10 20 30 Meters

Drawing: SITE PLAN

Client: PLAZA 6 INC.

Project: HYDROGEOLOGICAL INVESTIGATION
PROPOSED RESIDENTIAL DEVELOPMENT
666, 668, 672, 678, AND 682 LIVERPOOL ROAD,
PICKERING, ONTARIO

Drwn By:	S.J.	Chkd By:	A.W.
Project No.	104161.001	Revision No.	0
Date	MARCH 2025	**FIGURE B-1**	

GEMTEC
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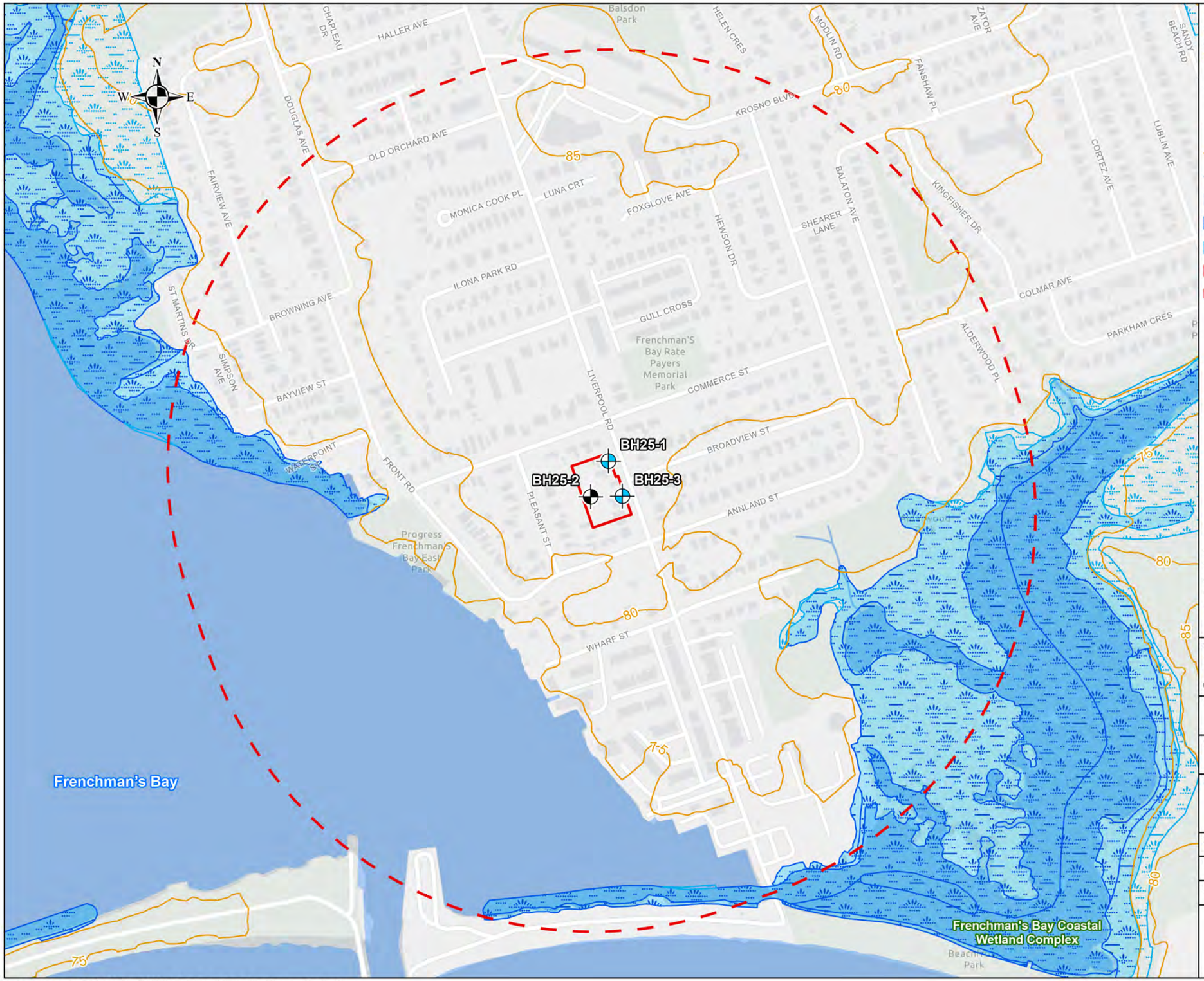
850 Champlain Ave Suite 101,
Oshawa, ON L1J 8R2
T: (289) 274-8476
www.gemtec.ca

Folder: N:\Projects\104100\104161.001\06_Civil Drafting\Design\HydroG\



Legend

BH # BOREHOLE ID
XX.XX GROUND SURFACE ELEVATIONS (m amsl)

- BOREHOLE LOCATION
- MONITORING WELL LOCATION
- ELEVATION CONTOUR (m amsl)
- WATERCOURSE
- WATERBODY
- PROVINCIALLY SIGNIFICANT WETLAND
- UNEVALUATED WETLAND
- SITE BOUNDARY
- 500 m RADIUS FROM SITE BOUNDARY

NOTES:
1. All locations approximate
2. Coordinate system: NAD 1983 UTM Zone 17N
3. Geographic dataset source: Ontario GeoHub.
4. Contains information licensed under the Open Government Licence – Ontario.
5. "Site Boundary" provided by RICHMOND SURVEYING INC., October 24, 2023.
6. m amsl = metres above mean sea level
7. Service Layer Credits: Light Grey Canvas Background.

Scale:
1:4,750
0 50 100 200 300 400 Meters

Drawing
TOPOGRAPHY AND NATURAL HERITAGE

Client:
PLAZA 6 INC.

Project
HYDROGEOLOGICAL INVESTIGATION
PROPOSED RESIDENTIAL DEVELOPMENT
666, 668, 672, 678, AND 682 LIVERPOOL ROAD,
PICKERING, ONTARIO

Drwn By:	S.J.	Chkd By:	A.W.
Project No.	104161.001	Revision No.	0
Date	MARCH 2025		**FIGURE B-2**

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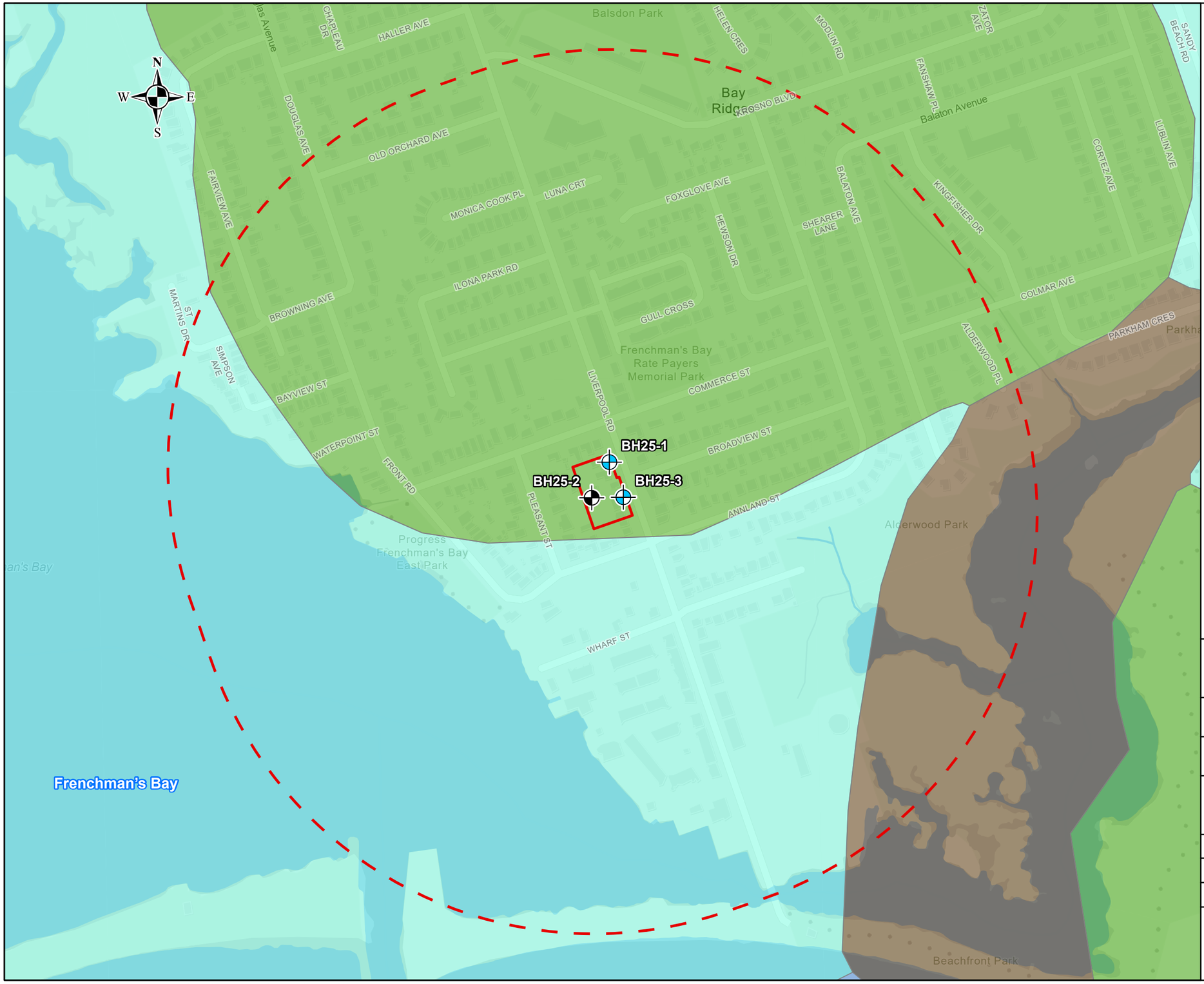

Legend

BH # BOREHOLE ID

- BOREHOLE LOCATION
- MONITORING WELL LOCATION
- WATERCOURSE
- WATERBODY
- SITE BOUNDARY
- 500 m RADIUS FROM SITE BOUNDARY

SURFICIAL GEOLOGY

- MODERN ALLUVIAL DEPOSITS (CLAY, SILT, SAND, GRAVEL, MAY CONTAIN ORGANIC REMAINS)
- NEWMARKET TILL (STONE-POOR, SANDY SILT TO SILTY SAND-TEXTURED TILL ON PALEOZOIC TERRAIN)
- FINE-TEXTURED GLACIOLACUSTRINE DEPOSITS (SILT AND CLAY, MINOR SAND AND GRAVEL, MASSIVE TO WELL LAMINATED)

NOTES:

1. All locations approximate
2. Coordinate system: NAD 1983 UTM Zone 17N
3. Geographic dataset source: Ontario GeoHub.
4. Contains information licensed under the Open Government Licence – Ontario.
5. "Site Boundary" provided by RICHMOND SURVEYING INC., October 24, 2023.
6. Service Layer Credits: Light Grey Canvas Background:

Scale: 1:4,750

0 50 100 200 300 400 Meters

Drawing: SURFICIAL GEOLOGY

Client: PLAZA 6 INC.

Project: HYDROGEOLOGICAL INVESTIGATION
PROPOSED RESIDENTIAL DEVELOPMENT
666, 668, 672, 678, AND 682 LIVERPOOL ROAD,
PICKERING, ONTARIO

Drwn By:	S.J.	Chkd By:	A.W.
Project No.	104161.001	Revision No.	0
Date	MARCH 2025		**FIGURE B-3**

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Legend

BH # BOREHOLE ID
7242170 WELL ID

- WATERCOURSE
- WATERBODY
- SITE BOUNDARY
- 500 m RADIUS FROM SITE BOUNDARY

WELL TYPE

- SHALLOW (<10 M) DUG/BORED
- MONITORING WELL / TEST HOLE
- DRILLED BEDROCK
- OTHER USE
- NO INFORMATION / ALTERATION

WELL USE

- DOMESTIC, STOCK WATERING, A/C, WATER SUPPLY
- OTHER USE (DEWATERING, RECHARGE, NOT USED, UNKNOWN USE)
- ABANDONED

NOTES:
1. All locations approximate
2. Coordinate system: NAD 1983 UTM Zone 17N
3. Geographic dataset source: Ontario GeoHub.
4. Contains information licensed under the Open Government Licence – Ontario.
5. "Site Boundary" provided by RICHMOND SURVEYING INC., October 24, 2023.
6. m amsl = metres above mean sea level
7. Service Layer Credits: Light Grey Canvas Background:

Scale:
1:4,750
0 50 100 200 300 400 Meters

Drawing
MECP WATER WELL RECORDS WITHIN 500 m

Client:
PLAZA 6 INC.

Project
HYDROGEOLOGICAL INVESTIGATION
PROPOSED RESIDENTIAL DEVELOPMENT
666, 668, 672, 678, AND 682 LIVERPOOL ROAD,
PICKERING, ONTARIO

Drwn By:	S.J.	Chkd By:	A.W.
Project No.	104161.001	Revision No.	0
Date	MARCH 2025		**FIGURE B-4**

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APPENDIX C

Record of Borehole Logs

ABBREVIATIONS AND TERMINOLOGY USED ON RECORDS OF BOREHOLES AND TEST PITS

SAMPLE TYPES	
AS	Auger sample
CA	Casing sample
CS	Chunk sample
BS	Borros piston sample
GS	Grab sample
MS	Manual sample
RC	Rock core
SS	Split spoon sampler
ST	Slotted tube
TO	Thin-walled open shelby tube
TP	Thin-walled piston shelby tube
WS	Wash sample

SOIL TESTS	
w	Water content
PL, w_p	Plastic limit
LL, w_L	Liquid limit
C	Consolidation (oedometer) test
D_R	Relative density
DS	Direct shear test
G_S	Specific gravity
M	Sieve analysis for particle size
MH	Combined sieve and hydrometer (H) analysis
MPC	Modified Proctor compaction test
SPC	Standard Proctor compaction test
OC	Organic content test
UC	Unconfined compression test
γ	Unit weight

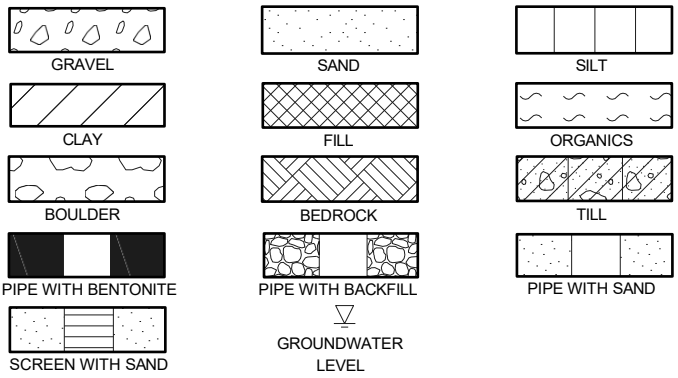
PENETRATION RESISTANCE

Standard Penetration Resistance, N
The number of blows by a 63.5 kg (140 lb) hammer dropped 760 millimetres (30 in.) required to drive a 50 mm split spoon sampler for a distance of 300 mm (12 in.). For split spoon samples where less than 300 mm of penetration was achieved, the number of blows is reported over the sampler penetration in mm.

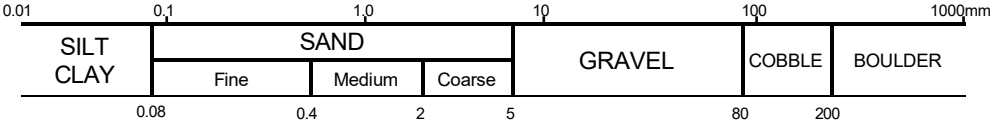
Dynamic Penetration Resistance
The number of blows by a 63.5 kg (140 lb) hammer dropped 760 mm (30 in.) to drive a 50 mm (2 in.) diameter 60° cone attached to 'A' size drill rods for a distance of 300 mm (12 in.).

WH	Sampler advanced by static weight of hammer and drill rods
WR	Sampler advanced by static weight of drill rods
PH	Sampler advanced by hydraulic pressure from drill rig
PM	Sampler advanced by manual pressure

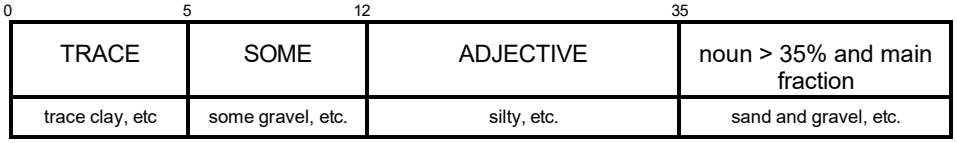
COHESIONLESS SOIL Compactness		COHESIVE SOIL Consistency	
SPT N-Values	**Description**	**Cu, kPa**	**Description**
0-4	Very Loose	0-12	Very Soft
4-10	Loose	12-25	Soft
10-30	Compact	25-50	Firm
30-50	Dense	50-100	Stiff
>50	Very Dense	100-200	Very Stiff
		>200	Hard



GRAIN SIZE



DESCRIPTIVE TERMINOLOGY



RECORD OF BOREHOLE : BH25-1

CLIENT: Plaza 6 Inc.
PROJECT: Proposed Residential Development Between 668 and 682 Liverpool Road, Pickering, Ontario
JOB#: 104161.001
LOCATION: See Borehole Location Plan

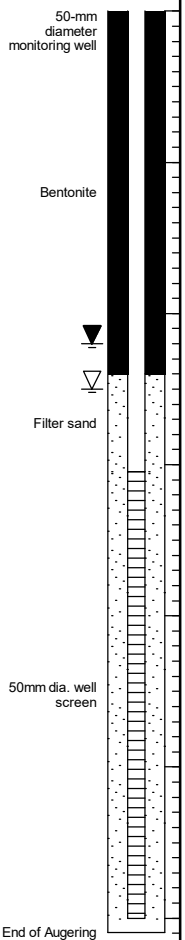
SHEET: 1 OF 1
DATUM: CGVD28
BORING DATE: Feb 14 2025

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	NUMBER	TYPE	RECOVERY, mm	BLOWS/0.3m
		Ground Surface		82.00				
0		ASPHALT (~76.2 mm thick)		81.92 / 0.08				
		FILL - (CL) SILTY CLAY, some sand, trace gravel; brown and grey; cohesive, w>PL, hard to firm			1	SS	607	35
1					2	SS	457	8
					3	SS	305	10
2				79.87				
	Power Auger / Solid Stem Auger (152mm OD)	(SM) gravelly SILTY SAND; grey (TILL); non-cohesive, moist, compact to very dense		2.13	4	SS	457	17
3		- auger grinding between 3.0 m to 3.8 m			5	SS	254	50 /0.1
4		- grey at 4.6 m			6	SS	457	44
5				76.44				
		(CL) gravelly sandy SILTY CLAY; grey (TILL); cohesive, w~PL, hard		5.56				
6					7	SS	457	35
				75.45				
		End of Borehole		6.55				
7								
8								
9								
10								

PENETRATION RESISTANCE (N), BLOWS/0.3m
DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m
SHEAR STRENGTH (Cu), kPA: NATURAL, REMOULDED
WATER CONTENT, %: W_P, W, W_L
10 20 30 40 50 60 70 80 90

ADDITIONAL LAB. TESTING

PIEZOMETER OR STANDPIPE INSTALLATION



Notes:

1. Due to auger refusal at 3.0 m, borehole location was shifted approximately 0.7 m south of original location.

2. Unstabilized groundwater level was measured in open borehole at approximately 4.7 m below ground surface upon completion of drilling.

3. Monitoring well installed as shown upon completion of drilling.

4. Stabilized groundwater levels measured in the monitoring well are as follows:

Date	Depth (m bgs)	Elev. (m)
02/24/2025	2.5	79.5
03/04/2025	2.2	79.8

GROUNDWATER OBSERVATIONS

DATE	DEPTH (m)	ELEV. (m)
25/02/24	2.5 ▽	79.5
25/03/04	2.2 ▼	79.8

GEMTEC
Consulting Engineers and Scientists

LOGGED: PB
CHECKED: TO

GEO - BOREHOLE LOG 104161.001.GPJ GEMTEC 2018.GDT 3/5/25

RECORD OF BOREHOLE : BH25-2

CLIENT: Plaza 6 Inc.
PROJECT: Proposed Residential Development Between 668 and 682 Liverpool Road, Pickering, Ontario
JOB#: 104161.001
LOCATION: See Borehole Location Plan

SHEET: 1 OF 1
DATUM: CGVD28
BORING DATE: Feb 14 2025

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	RECOVERY, mm	BLOWS/0.3m	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0	Power Auger; Solid Stem Auger (152mm OD)	Ground Surface		81.80						
		TOPSOIL		81.19	1	SS	607	5		
		(CL) sandy SILTY CLAY, some gravel; brown; oxidation stains (TILL); cohesive, w~PL, very stiff		0.61	2	SS	457	15		
1										
					3	SS	457	15		
2										
		(SM) gravelly SILTY SAND; brown (TILL); non-cohesive, moist, dense		79.67 2.13	4	SS	457	35	MH	
3					5	SS	457	43		Backfilled with Bentonite
4		(CL) gravelly sandy SILTY CLAY; grey (TILL); cohesive, w<PL, very stiff		77.76 4.04	6	SS	457	22		
5										
		(CL) SILTY CLAY, some sand, silt and sand seams; grey; cohesive, w~PL, very stiff		76.24 5.56	7	SS	457	15		
6										
		End of Borehole		75.25 6.55						
7		Notes: 1. Borehole was dry upon completion of drilling. 2. Borehole was backfilled with bentonite upon completion of drilling.								
8										
9										
10										

PENETRATION RESISTANCE (N), BLOWS/0.3m
DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m
SHEAR STRENGTH (Cu), kPA: NATURAL, REMOULDED
WATER CONTENT, %: W_P, W, W_L
10 20 30 40 50 60 70 80 90

GEMTEC
Consulting Engineers and Scientists

LOGGED: PB
CHECKED: TO

GEO - BOREHOLE LOG 104161.001.GPJ GEMTEC 2018.GDT 3/5/25

RECORD OF BOREHOLE : BH25-3

CLIENT: Plaza 6 Inc.
PROJECT: Proposed Residential Development Between 668 and 682 Liverpool Road, Pickering, Ontario
JOB#: 104161.001
LOCATION: See Borehole Location Plan

SHEET: 1 OF 1
DATUM: CGVD28
BORING DATE: Feb 14 2025

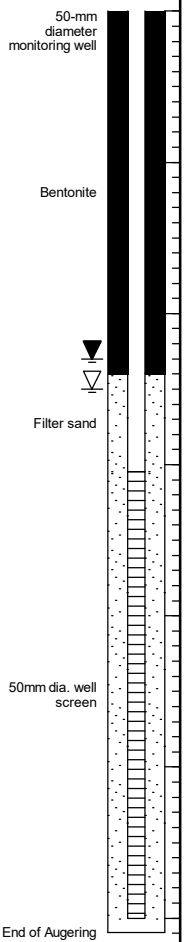
DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	NUMBER	TYPE	RECOVERY, mm	BLOWS/0.3m
		Ground Surface		81.20				
0	Power Auger / Solid Stem Auger (152mm OD)	ASPHALT (~76.2 mm thick)		81.12 / 0.08				
		FILL - (CL) sandy SILTY CLAY, some gravel; brown; cohesive, w<PL, very stiff to stiff			1	SS	607	27
1					2	SS	102	11
		(CL) sandy SILTY CLAY, some gravel; brown (TILL); cohesive, w<PL, very stiff		79.83 / 1.37	3	SS	457	15
2		(SM) gravelly SILTY SAND; brown to grey (TILL); non-cohesive, moist, very dense to dense		79.07 / 2.13	4a	SS	457	
					4b	SS	457	52
		- grey at 2.67 m			5	SS	457	68
3								
4					6	SS	457	40
5								
		(CL) SILTY CLAY, some sand, some gravel; grey, shale fragments; cohesive, w<PL, hard		75.64 / 5.56	7	SS	457	30
6								
		End of Borehole		74.65 / 6.55				
7								
8								
9								
10								

SAMPLES

PENETRATION RESISTANCE (N), BLOWS/0.3m
DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m
SHEAR STRENGTH (Cu), kPA: + NATURAL ⊕ REMOULDED
WATER CONTENT, %: W_P — W — W_L
10 20 30 40 50 60 70 80 90

ADDITIONAL LAB. TESTING

PIEZOMETER OR STANDPIPE INSTALLATION



Notes:

1. Unstabilized groundwater level was measured in open borehole at approximately 5.9 m below ground surface upon completion of drilling.

2. Monitoring well installed as shown upon completion of drilling.

3. Stabilized groundwater levels measured in the monitoring well are as follows:

Date	Depth (m bgs)	Elev. (m)
02/24/2025	2.5	78.7
03/04/2025	2.3	78.9

GROUNDWATER OBSERVATIONS

DATE	DEPTH (m)	ELEV. (m)
25/02/24	2.5 ▽	78.7
25/03/04	2.3 ▼	78.9

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Consulting Engineers and Scientists

LOGGED: PB
CHECKED: TO

GEO - BOREHOLE LOG 104161.001.GPJ GEMTEC 2018.GDT 3/5/25

APPENDIX D

Tables

Table D-1: Monitoring Well Construction Information - Proposed Proposed Residential Development at 666, 668, 672, 678, and 682 Liverpool Road, Pickering, Ontario

Well Name	UTM Coordinates (approximate)		Installation Date	Ground Surface Elevation	Top of Casing Elevation	Measured Stick up	Top of Screen	Bottom of Screen	Top of Screen	Bottom of Screen	Screened Lithology
	Easting	Northing		(m amsl)	(m amsl)	(m)	(m bgs)	(m bgs)	(m amsl)	(m amsl)	
BH25-1	654189	4853417	14-Feb-25	82.00	81.84	-0.16	3.05	6.10	78.95	75.90	(SP-SM) Gravelly Sand and Silt Till, (CL) Gravelly Sandy Silty Clay Till
BH25-3	654206	4853374	14-Feb-25	81.20	81.08	-0.12	3.05	6.10	78.15	75.10	(SP-SM) Gravelly Sand and Silt Till, (CL) Silty Clay

Notes:

m - metre
m amsl - metres above mean sea level
m bgs - metres below ground surface
UTM - Universal Transverse Mercator, Zone 17T
Locations and elevations extrapolated from a topographical survey drawing. All locations and elevations are approximate.

Table D-2: Groundwater Depths and Elevations - Proposed Proposed Residential Development at 666, 668, 672, 678, and 682 Liverpool Road, Pickering, Ontario

Well Name	Ground Surface Elevation	Top of Casing Elevation	Measured Stick up	Top of Screen	Bottom of Screen	Screened Lithology	February 24, 2025		March 4, 2025		March 12, 2025	
							WL Below Ground	Approximate WL Elev.	WL Below Ground	Approximate WL Elev.	WL Below Ground	Approximate WL Elev.
	(m amsl)	(m amsl)	(m)	(m amsl)	(m amsl)		(m bgs)	(m amsl)	(m bgs)	(m amsl)	(m bgs)	(m amsl)
BH25-1	82.00	81.84	-0.16	78.95	75.90	(SP-SM) Gravelly Sand and Silt Till, (CL) Gravelly Sandy Silty Clay Till	2.52	79.49	2.23	79.77	2.07	79.93
BH25-3	81.20	81.08	-0.12	78.15	75.10	(SP-SM) Gravelly Sand and Silt Till, (CL) Silty Clay	2.54	78.66	2.27	78.94	2.00	79.20

Notes:

- - Not Measured
Elev. - Elevation
m - metre
m amsl - metres above mean sea level
m bgs - metres below ground surface
m toc - metres below top of casing
WL - Water Level
N/A - Not available/applicable
N/I - Not installed
Locations and elevations extrapolated from a topographical survey drawing. All locations and elevations are approximate.

Table D-3: Summary of Hydraulic Conductivity Values - Single Well Response Tests - Proposed Proposed Residential Development at 666, 668, 672, 678, and 682 Liverpool Road, Pickering, Ontario

Well Name	Date of Test	Ground Surface Elevation (m amsl)	Top of Screen (m bgs)	Bottom of Screen (m bgs)	Top of Screen (m amsl)	Bottom of Screen (m amsl)	Screened Lithology	Type of Test	Hydraulic Conductivity Estimate (m/s)
BH25-1	25-Jul-24	82.00	3.05	6.10	78.95	75.90	(SP-SM) Gravelly Sand and Silt Till, (CL) Gravelly Sandy Silty Clay Till	Rising Head	2E-08
BH25-3	25-Jul-24	81.20	3.05	6.10	78.15	75.10	(SP-SM) Gravelly Sand and Silt Till, (CL) Silty Clay	Rising Head	3E-08

Notes:

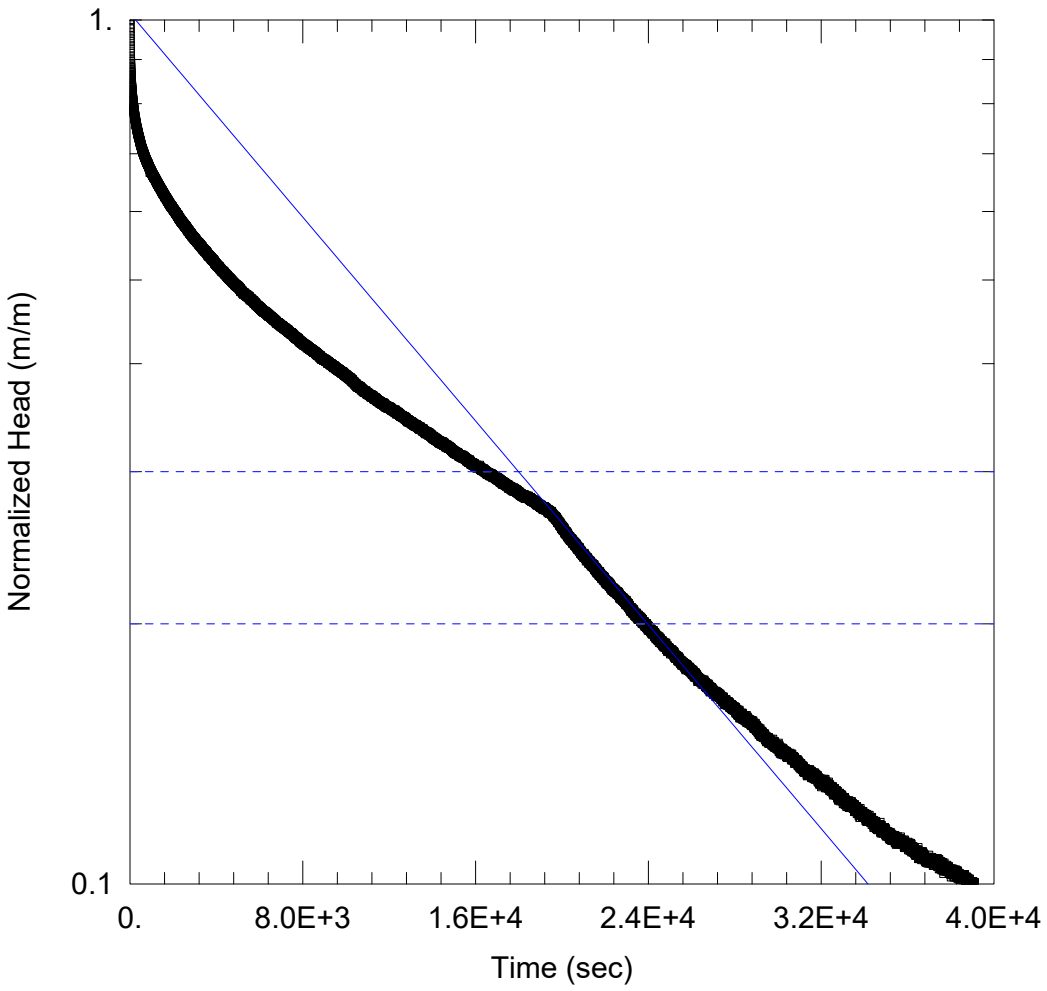
All test were analysed using Bouwer and Rice (1976)

m amsl - metres above mean sea level
m bgs - meters below groundsurface
m/s - meters per second
Locations and elevations extrapolated from a topographical survey drawing. All locations and elevations are approximate.

Bouwer, H. and R.C. Rice, 1976. A slug test method for determining hydraulic conductivity of unconfined aquifers with completely or partially penetrating wells, Water Resources Research, vol. 12, no. 3, pp. 423-428.

APPENDIX E

Hydraulic Conductivity Test Results



BH25-1 RISING HEAD TEST

Data Set: N:\Projects\104100\104161.001\05_Technical Work\HydroG\Analysis\BH25-1_K-Test.aqt
Date: 03/13/25 Time: 10:41:11

PROJECT INFORMATION

Company: GEMTEC
Client: Plaza 6 Inc.
Project: 104161.001
Location: Pickering, ON
Test Well: BH25-1
Test Date: March 12, 2025

AQUIFER DATA

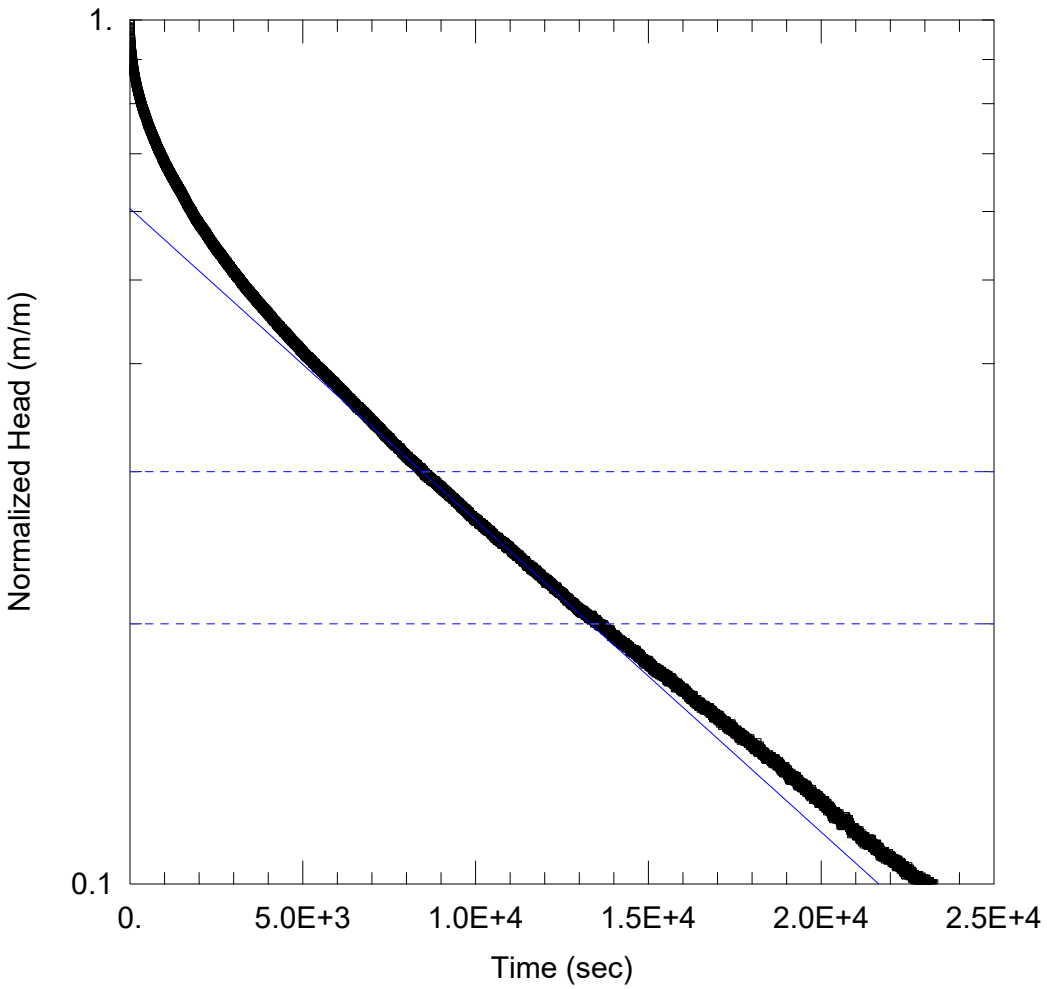
Saturated Thickness: 4.03 m
Anisotropy Ratio (Kz/Kr): 0.2

WELL DATA (BH25-1)

Initial Displacement: 2.881 m
Total Well Penetration Depth: 4.03 m
Casing Radius: 0.0254 m
Static Water Column Height: 4.03 m
Screen Length: 3.65 m
Well Radius: 0.076 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 2.2E-8 m/sec
y0 = 2.933 m



BH25-3 RISING HEAD TEST

Data Set: N:\Projects\104100\104161.001\05_Technical Work\HydroG\Analysis\BH25-3_K-Test.aqt
Date: 03/13/25 Time: 10:54:13

PROJECT INFORMATION

Company: GEMTEC
Client: Plaza 6 Inc.
Project: 104161.001
Location: Pickering, ON
Test Well: BH25-3
Test Date: March 12, 2025

AQUIFER DATA

Saturated Thickness: 4.1 m
Anisotropy Ratio (Kz/Kr): 0.2

WELL DATA (BH25-3)

Initial Displacement: 2.949 m
Total Well Penetration Depth: 4.1 m
Casing Radius: 0.0254 m
Static Water Column Height: 4.1 m
Screen Length: 3.65 m
Well Radius: 0.076 m

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 2.7E-8 m/sec
y0 = 1.783 m

APPENDIX F

Water Quality Results

Report to: Plaza 6 Inc.
GEMTEC Project: 104161.001 (May 7, 2025)

Table F-1
Summary of Groundwater Quality Analytical Results
Proposed Residential Development at 666, 668, 672, 678, and 682 Liverpool Road, Pickering, Ontario

Sample Location				Liverpool Road
Sample Date				5-Mar-25
Sample ID				MW25-1
Sampling Company				GEMTEC
Laboratory				BV
Laboratory Work Order				C524027
Laboratory Sample ID		Table 1	Table 2	AOQJ35
Sample Matrix	Units	Sanitary	Storm	Groundwater
General Chemistry				
Biochemical Oxygen Demand	mg/L	300	15	<2
Cyanide	mg/L	2	0.02	<0.005
Fluoride	mg/L	10	n/v	0.22
pH, lab	pH	6.0-10.5	6.0-9.0	7.81
Phenols-4AAP	mg/L	1	0.008	<0.001
Phosphorus	mg/L	10	0.4	<0.1
Sulphate, Dissolved	mg/L	1,500	n/v	58
Total Animal/Vegetable Oil and Grease, Calculated	mg/L	150	n/v	<0.5
Total Kjeldahl Nitrogen	mg/L	100	1	0.64
Total Suspended Solids	mg/L	350	15	150
Petroleum Hydrocarbons				
Total Oil & Grease, Mineral/Synthetic	mg/L	15	n/v	<0.5
Total Oil & Grease	mg/L	n/v	n/v	<0.5
Total Metals				
Aluminum	mg/L	50	n/v	1.2
Antimony	mg/L	5	n/v	<0.0005
Arsenic	mg/L	1	0.02	0.0011
Cadmium	mg/L	0.7	0.008	<0.00009
Chromium	mg/L	2	0.08	0.0057
Cobalt	mg/L	5	n/v	0.0014
Copper	mg/L	3	0.05	0.0045
Lead	mg/L	1	0.12	0.0015
Manganese	mg/L	5	0.15	0.14
Mercury	mg/L	0.01	0.0004	<0.0001
Molybdenum	mg/L	5	n/v	0.0083
Nickel	mg/L	2	0.08	0.0045
Selenium	mg/L	1	0.02	<0.002
Silver	mg/L	5	0.12	0.00018
Tin	mg/L	5	n/v	0.0021
Titanium	mg/L	5	n/v	0.028
Zinc	mg/L	2	0.04	0.0085
Microbiological Analysis				
Escherichia coli (E.Coli)	cfu/100mL	n/v	200	<10
Miscellaneous Parameters				
Nonylphenol Ethoxylate (Total)	mg/L	0.2	n/v	<0.025
Nonylphenol (Total)	mg/L	0.02	n/v	<0.001
Polychlorinated Biphenyls				
Polychlorinated Biphenyls (PCBs)	mg/L	0.001	0.0004	<0.00005
Semi-Volatile Organic Compounds				
Bis(2-ethylhexyl)phthalate	mg/L	0.012	0.0088	<0.002
Di-N-butyl phthalate	mg/L	0.08	0.015	<0.002
Volatile Organic Compounds				
Benzene	mg/L	0.01	0.002	<0.0002
Chloroform	mg/L	0.04	0.002	<0.0002
Dichlorobenzene, 1,2-	mg/L	0.05	0.0056	<0.0004
Dichlorobenzene, 1,4-	mg/L	0.08	0.0068	<0.0004
Dichloroethylene, cis-1,2-	mg/L	4	0.0056	<0.0005
Dichloropropene, trans-1,3-	mg/L	0.14	0.0056	<0.0004
Ethylbenzene	mg/L	0.16	0.002	<0.0002
Methylene Chloride (Dichloromethane)	mg/L	2	0.0052	<0.002
Methyl Ethyl Ketone (2-Butanone)	mg/L	8	n/v	<0.01
Styrene	mg/L	0.2	n/v	<0.0004
Tetrachloroethane, 1,1,2,2-	mg/L	1.4	0.017	<0.0004
Tetrachloroethylene (PCE)	mg/L	1	0.0044	<0.0002
Toluene	mg/L	0.27	0.002	<0.0002
Trichloroethylene (TCE)	mg/L	0.4	0.008	<0.0002
Xylene, p+m-	mg/L	n/v	n/v	0.00021
Xylene, o-	mg/L	n/v	n/v	<0.0002
Total Xylenes	mg/L	1.4	0.0044	0.00021

Notes:

Table 1 Sanitary	Durham Region Sewer Use By-Law No. 55-2013, *Table 1 - Limits for Sanitary Sewer Discharge* .
Table 2 Storm	Durham Region Sewer Use By-Law No. 55-2013, *Table 2 - Limits for Storm Sewer Discharge* .
6.5	Bold font = concentration greater than Table 1 Sanitary Sewer Discharge Limit.
6.5	italicized, underlined font = concentration greater than Table 2 Storm Sewer Discharge Limit.
<	Concentration less than the accompanying reportable detection limit.
n/v	No value.

Your Project #: 104161.001(2)
Your C.O.C. #: C#1035386-01-01

Attention: Matt Frendo-Cumbo

GEMTEC LIMITED
850 Champlain Ave
Unit 101
Oshawa, ON
Canada L1J8C3

Report Date: 2025/03/12
Report #: R8501665
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C524027
Received: 2025/03/06, 13:39

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
ABN Compounds in Water by GC/MS	1	2025/03/07	2025/03/10	CAM SOP-00301	EPA 8270 m
Biochemical Oxygen Demand (BOD)	1	2025/03/07	2025/03/12	CAM SOP-00427	SM 24 5210B m
Total Cyanide	1	2025/03/07	2025/03/07	CAM SOP-00457	OMOE E3015 5 m
Fluoride	1	2025/03/07	2025/03/07	CAM SOP-00449	SM 24 4500-F C m
Mercury in Water by CVAA	1	2025/03/07	2025/03/10	CAM SOP-00453	EPA 7470A m
Total Metals Analysis by ICPMS	1	2025/03/10	2025/03/11	CAM SOP-00447	EPA 6020B m
E.coli, (CFU/100mL)	1	N/A	2025/03/06	CAM SOP-00552	SM9222B, MECP E3371
Total Nonylphenol in Liquids by HPLC	1	2025/03/11	2025/03/12	CAM SOP-00313	In-house Method
Nonylphenol Ethoxylates in Liquids: HPLC	1	2025/03/11	2025/03/12	CAM SOP-00313	Bureau Veritas
Animal and Vegetable Oil and Grease	1	N/A	2025/03/11	CAM SOP-00326	EPA1664B m,SM5520B m
Total Oil and Grease	1	2025/03/11	2025/03/11	CAM SOP-00326	EPA1664B m,SM5520B m
Polychlorinated Biphenyl in Water	1	2025/03/07	2025/03/08	CAM SOP-00309	EPA 8082A m
Phenols (4AAP)	1	N/A	2025/03/11	CAM SOP-00444	OMOE E3179 m
pH	1	2025/03/07	2025/03/07	CAM SOP-00413	SM 24th-4500H+ B
Sulphate by Automated Turbidimetry	1	N/A	2025/03/10	CAM SOP-00464	SM 24 4500-SO42- E m
Total Kjeldahl Nitrogen in Water	1	2025/03/07	2025/03/10	CAM SOP-00938	SM 4500-N B m
Mineral/Synthetic O & G (TPH Heavy Oil) (1)	1	2025/03/11	2025/03/11	CAM SOP-00326	EPA1664B m,SM5520F m
Total Suspended Solids	1	2025/03/10	2025/03/12	CAM SOP-00428	SM 24 2540D m
Volatile Organic Compounds in Water	1	N/A	2025/03/09	CAM SOP-00228	EPA 8260D

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, EPA, APHA or the Quebec Ministry of Environment.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or

Your Project #: 104161.001(2)
Your C.O.C. #: C#1035386-01-01

Attention: Matt Frendo-Cumbo

GEMTEC LIMITED
850 Champlain Ave
Unit 101
Oshawa, ON
Canada L1J8C3

Report Date: 2025/03/12
Report #: R8501665
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C524027

Received: 2025/03/06, 13:39

implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Note: TPH (Heavy Oil) is equivalent to Mineral / Synthetic Oil & Grease

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:
Katherine Szozda, Project Manager
Email: Katherine.Szozda@bureauveritas.com
Phone# (613)274-0573 Ext:7063633

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This report has been generated and distributed using a secure automated process.
Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID				AOQJ35			
Sampling Date				2025/03/05 12:00			
COC Number				C#1035386-01-01			
	UNITS	Criteria	Criteria-2	MW25-1	RDL	MDL	QC Batch
Calculated Parameters							
Total Animal/Vegetable Oil and Grease	mg/L	150	-	<0.50	0.50	0.10	9886075
Inorganics							
Total BOD	mg/L	300	15	<2	2	0.5	9886765
Fluoride (F-)	mg/L	10	-	0.22	0.10	0.014	9887074
Total Kjeldahl Nitrogen (TKN)	mg/L	100	1	0.64	0.10	0.060	9887182
pH	pH	6.0:10.5	6.0:9.0	7.81			9887059
Phenols-4AAP	mg/L	1	0.008	<0.0010	0.0010	0.00040	9888609
Total Suspended Solids	mg/L	350	15	**150**	10	9.6	9887882
Dissolved Sulphate (SO4)	mg/L	1500	-	58	1.0	0.49	9887443
Total Cyanide (CN)	mg/L	2	0.02	<0.0050	0.0050	0.00028	9887045
Petroleum Hydrocarbons							
Total Oil & Grease	mg/L	-	-	<0.50	0.50	0.10	9888446
Total Oil & Grease Mineral/Synthetic	mg/L	15	-	<0.50	0.50	0.10	9888450

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Durham Municipality Sanitary Sewer Discharge. BY-LAW No.55-2013
Criteria-2: Durham Municipality Storm Sewer Discharge. By-Law No. 55-2013

Bureau Veritas ID				AOQJ35			
Sampling Date				2025/03/05 12:00			
COC Number				C#1035386-01-01			
	UNITS	Criteria	Criteria-2	MW25-1 Lab-Dup	RDL	MDL	QC Batch
Inorganics							
Total BOD	mg/L	300	15	<2	2	0.5	9886765

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Durham Municipality Sanitary Sewer Discharge. BY-LAW No.55-2013
Criteria-2: Durham Municipality Storm Sewer Discharge. By-Law No. 55-2013

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NONYL PHENOL AND NONYL PHENOL ETHOXYLATE (WATER)

Bureau Veritas ID			AOQJ35			
Sampling Date			2025/03/05 12:00			
COC Number			C#1035386-01-01			
	UNITS	Criteria	MW25-1	RDL	MDL	QC Batch
Miscellaneous Parameters						
Nonylphenol Ethoxylate (Total)	mg/L	0.2	<0.025	0.025	0.005	9888800
Nonylphenol (Total)	mg/L	0.02	<0.001	0.001	0.0002	9888798

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Durham Municipality Sanitary Sewer Discharge. BY-LAW No.55-2013

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ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID				AOQJ35			
Sampling Date				2025/03/05 12:00			
COC Number				C#1035386-01-01			
	UNITS	Criteria	Criteria-2	MW25-1	RDL	MDL	QC Batch
Metals							
Mercury (Hg)	mg/L	0.01	0.0004	<0.00010	0.00010	0.000050	9887139
Total Aluminum (Al)	ug/L	50000	-	1200	4.9	3.0	9887987
Total Antimony (Sb)	ug/L	5000	-	<0.50	0.50	0.20	9887987
Total Arsenic (As)	ug/L	1000	20	1.1	1.0	0.10	9887987
Total Cadmium (Cd)	ug/L	700	8	<0.090	0.090	0.050	9887987
Total Chromium (Cr)	ug/L	2000	80	5.7	5.0	0.40	9887987
Total Cobalt (Co)	ug/L	5000	-	1.4	0.50	0.080	9887987
Total Copper (Cu)	ug/L	3000	50	4.5	0.90	0.80	9887987
Total Lead (Pb)	ug/L	1000	120	1.5	0.50	0.060	9887987
Total Manganese (Mn)	ug/L	5000	150	140	2.0	0.60	9887987
Total Molybdenum (Mo)	ug/L	5000	-	8.3	0.50	0.10	9887987
Total Nickel (Ni)	ug/L	2000	80	4.5	1.0	0.40	9887987
Total Phosphorus (P)	ug/L	10000	400	<100	100	20	9887987
Total Selenium (Se)	ug/L	1000	20	<2.0	2.0	0.20	9887987
Total Silver (Ag)	ug/L	5000	120	0.18	0.090	0.020	9887987
Total Tin (Sn)	ug/L	5000	-	2.1	1.0	0.30	9887987
Total Titanium (Ti)	ug/L	5000	-	28	5.0	2.0	9887987
Total Zinc (Zn)	ug/L	2000	40	8.5	5.0	1.0	9887987

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Durham Municipality Sanitary Sewer Discharge. BY-LAW No.55-2013
Criteria-2: Durham Municipality Storm Sewer Discharge. By-Law No. 55-2013

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SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

Bureau Veritas ID				AOQJ35			
Sampling Date				2025/03/05 12:00			
COC Number				C#1035386-01-01			
	UNITS	Criteria	Criteria-2	MW25-1	RDL	MDL	QC Batch
Semivolatile Organics							
Bis(2-ethylhexyl)phthalate	ug/L	12	8.8	<2.0	2.0	0.10	9887192
Di-N-butyl phthalate	ug/L	80	15	<2.0	2.0	0.10	9887192
Surrogate Recovery (%)							
2,4,6-Tribromophenol	%	-	-	63			9887192
2-Fluorobiphenyl	%	-	-	53			9887192
2-Fluorophenol	%	-	-	21			9887192
D14-Terphenyl	%	-	-	96			9887192
D5-Nitrobenzene	%	-	-	53			9887192
D5-Phenol	%	-	-	16			9887192

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Durham Municipality Sanitary Sewer Discharge. BY-LAW No.55-2013
Criteria-2: Durham Municipality Storm Sewer Discharge. By-Law No. 55-2013

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VOLATILE ORGANICS BY GC/MS (WATER)

Bureau Veritas ID				AOQJ35			
Sampling Date				2025/03/05 12:00			
COC Number				C#1035386-01-01			
	UNITS	Criteria	Criteria-2	MW25-1	RDL	MDL	QC Batch
Volatile Organics							
Benzene	ug/L	10	2	<0.20	0.20	0.020	9886477
Chloroform	ug/L	40	2	<0.20	0.20	0.050	9886477
1,2-Dichlorobenzene	ug/L	50	5.6	<0.40	0.40	0.050	9886477
1,4-Dichlorobenzene	ug/L	80	6.8	<0.40	0.40	0.050	9886477
cis-1,2-Dichloroethylene	ug/L	4000	5.6	<0.50	0.50	0.050	9886477
trans-1,3-Dichloropropene	ug/L	140	5.6	<0.40	0.40	0.050	9886477
Ethylbenzene	ug/L	160	2	<0.20	0.20	0.010	9886477
Methylene Chloride(Dichloromethane)	ug/L	2000	5.2	<2.0	2.0	0.10	9886477
Methyl Ethyl Ketone (2-Butanone)	ug/L	8000	-	<10	10	0.50	9886477
Styrene	ug/L	200	-	<0.40	0.40	0.050	9886477
1,1,2,2-Tetrachloroethane	ug/L	1400	17	<0.40	0.40	0.050	9886477
Tetrachloroethylene	ug/L	1000	4.4	<0.20	0.20	0.050	9886477
Toluene	ug/L	270	2	<0.20	0.20	0.010	9886477
Trichloroethylene	ug/L	400	8	<0.20	0.20	0.050	9886477
p+m-Xylene	ug/L	-	-	0.21	0.20	0.010	9886477
o-Xylene	ug/L	-	-	<0.20	0.20	0.010	9886477
Total Xylenes	ug/L	1400	4.4	0.21	0.20	0.010	9886477
Surrogate Recovery (%)							
4-Bromofluorobenzene	%	-	-	98			9886477
D4-1,2-Dichloroethane	%	-	-	111			9886477
D8-Toluene	%	-	-	100			9886477

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Durham Municipality Sanitary Sewer Discharge. BY-LAW No.55-2013
Criteria-2: Durham Municipality Storm Sewer Discharge. By-Law No. 55-2013

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POLYCHLORINATED BIPHENYLS BY GC-ECD (WATER)

Bureau Veritas ID				AOQJ35			
Sampling Date				2025/03/05 12:00			
COC Number				C#1035386-01-01			
	UNITS	Criteria	Criteria-2	MW25-1	RDL	MDL	QC Batch
PCBs							
Total PCB	ug/L	1	0.4	<0.05	0.05	0.01	9887171
Surrogate Recovery (%)							
Decachlorobiphenyl	%	-	-	111			9887171

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Durham Municipality Sanitary Sewer Discharge. BY-LAW No.55-2013
Criteria-2: Durham Municipality Storm Sewer Discharge. By-Law No. 55-2013

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MICROBIOLOGY (WATER)

Bureau Veritas ID			AOQJ35			
Sampling Date			2025/03/05 12:00			
COC Number			C#1035386-01-01			
	UNITS	Criteria	MW25-1	RDL	MDL	QC Batch
Microbiological						
Escherichia coli	CFU/100mL	200	<10	10	N/A	9886667

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Durham Municipality Storm Sewer Discharge. By-Law No. 55-2013
N/A = Not Applicable

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	5.0°C

Results relate only to the items tested.

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9886477	NGH	Matrix Spike	4-Bromofluorobenzene	2025/03/08		97	%	70 - 130
			D4-1,2-Dichloroethane	2025/03/08		114	%	70 - 130
			D8-Toluene	2025/03/08		101	%	70 - 130
			Benzene	2025/03/08		101	%	70 - 130
			Chloroform	2025/03/08		99	%	70 - 130
			1,2-Dichlorobenzene	2025/03/08		102	%	70 - 130
			1,4-Dichlorobenzene	2025/03/08		99	%	70 - 130
			cis-1,2-Dichloroethylene	2025/03/08		106	%	70 - 130
			trans-1,3-Dichloropropene	2025/03/08		98	%	70 - 130
			Ethylbenzene	2025/03/08		97	%	70 - 130
			Methylene Chloride(Dichloromethane)	2025/03/08		107	%	70 - 130
			Methyl Ethyl Ketone (2-Butanone)	2025/03/08		109	%	60 - 140
			Styrene	2025/03/08		94	%	70 - 130
			1,1,2,2-Tetrachloroethane	2025/03/08		99	%	70 - 130
			Tetrachloroethylene	2025/03/08		99	%	70 - 130
			Toluene	2025/03/08		95	%	70 - 130
			Trichloroethylene	2025/03/08		100	%	70 - 130
			p+m-Xylene	2025/03/08		94	%	70 - 130
			o-Xylene	2025/03/08		102	%	70 - 130
9886477	NGH	Spiked Blank	4-Bromofluorobenzene	2025/03/08		95	%	70 - 130
			D4-1,2-Dichloroethane	2025/03/08		109	%	70 - 130
			D8-Toluene	2025/03/08		101	%	70 - 130
			Benzene	2025/03/08		98	%	70 - 130
			Chloroform	2025/03/08		96	%	70 - 130
			1,2-Dichlorobenzene	2025/03/08		100	%	70 - 130
			1,4-Dichlorobenzene	2025/03/08		99	%	70 - 130
			cis-1,2-Dichloroethylene	2025/03/08		102	%	70 - 130
			trans-1,3-Dichloropropene	2025/03/08		95	%	70 - 130
			Ethylbenzene	2025/03/08		96	%	70 - 130
			Methylene Chloride(Dichloromethane)	2025/03/08		102	%	70 - 130
			Methyl Ethyl Ketone (2-Butanone)	2025/03/08		100	%	60 - 140
			Styrene	2025/03/08		92	%	70 - 130
			1,1,2,2-Tetrachloroethane	2025/03/08		90	%	70 - 130
			Tetrachloroethylene	2025/03/08		97	%	70 - 130
			Toluene	2025/03/08		94	%	70 - 130
			Trichloroethylene	2025/03/08		98	%	70 - 130
			p+m-Xylene	2025/03/08		93	%	70 - 130
			o-Xylene	2025/03/08		101	%	70 - 130
9886477	NGH	Method Blank	4-Bromofluorobenzene	2025/03/08		95	%	70 - 130
			D4-1,2-Dichloroethane	2025/03/08		106	%	70 - 130
			D8-Toluene	2025/03/08		101	%	70 - 130
			Benzene	2025/03/08	<0.20		ug/L	
			Chloroform	2025/03/08	<0.20		ug/L	
			1,2-Dichlorobenzene	2025/03/08	<0.40		ug/L	
			1,4-Dichlorobenzene	2025/03/08	<0.40		ug/L	
			cis-1,2-Dichloroethylene	2025/03/08	<0.50		ug/L	
			trans-1,3-Dichloropropene	2025/03/08	<0.40		ug/L	
			Ethylbenzene	2025/03/08	<0.20		ug/L	
			Methylene Chloride(Dichloromethane)	2025/03/08	<2.0		ug/L	
			Methyl Ethyl Ketone (2-Butanone)	2025/03/08	<10		ug/L	
			Styrene	2025/03/08	<0.40		ug/L	
			1,1,2,2-Tetrachloroethane	2025/03/08	<0.40		ug/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Tetrachloroethylene	2025/03/08	<0.20		ug/L	
			Toluene	2025/03/08	<0.20		ug/L	
			Trichloroethylene	2025/03/08	<0.20		ug/L	
			p+m-Xylene	2025/03/08	<0.20		ug/L	
			o-Xylene	2025/03/08	<0.20		ug/L	
			Total Xylenes	2025/03/08	<0.20		ug/L	
9886477	NGH	RPD	Benzene	2025/03/08	NC		%	30
			1,4-Dichlorobenzene	2025/03/08	NC		%	30
			Ethylbenzene	2025/03/08	NC		%	30
			Methylene Chloride(Dichloromethane)	2025/03/08	NC		%	30
			Toluene	2025/03/08	NC		%	30
			p+m-Xylene	2025/03/08	NC		%	30
			o-Xylene	2025/03/08	NC		%	30
			Total Xylenes	2025/03/08	NC		%	30
9886765	A2A	QC Standard	Total BOD	2025/03/12		96	%	80 - 120
9886765	A2A	Method Blank	Total BOD	2025/03/12	<2		mg/L	
9886765	A2A	RPD [AOQJ35-08]	Total BOD	2025/03/12	NC		%	30
9887045	GYA	Matrix Spike	Total Cyanide (CN)	2025/03/07		80	%	80 - 120
9887045	GYA	Spiked Blank	Total Cyanide (CN)	2025/03/07		93	%	80 - 120
9887045	GYA	Method Blank	Total Cyanide (CN)	2025/03/07	<0.0050		mg/L	
9887045	GYA	RPD	Total Cyanide (CN)	2025/03/07	NC		%	20
9887059	NGI	Spiked Blank	pH	2025/03/07		102	%	98 - 103
9887059	NGI	RPD	pH	2025/03/07	0.049		%	N/A
9887074	NGI	Matrix Spike	Fluoride (F-)	2025/03/07		104	%	80 - 120
9887074	NGI	Spiked Blank	Fluoride (F-)	2025/03/07		105	%	80 - 120
9887074	NGI	Method Blank	Fluoride (F-)	2025/03/07	<0.10		mg/L	
9887074	NGI	RPD	Fluoride (F-)	2025/03/07	5.2		%	20
9887139	MPJ	Matrix Spike	Mercury (Hg)	2025/03/10		103	%	75 - 125
9887139	MPJ	Spiked Blank	Mercury (Hg)	2025/03/10		103	%	80 - 120
9887139	MPJ	Method Blank	Mercury (Hg)	2025/03/10	<0.00010		mg/L	
9887139	MPJ	RPD	Mercury (Hg)	2025/03/10	NC		%	20
			Mercury (Hg)	2025/03/10	NC		%	20
			Mercury (Hg)	2025/03/10	NC		%	20
9887171	DS1	Matrix Spike	Decachlorobiphenyl	2025/03/08		130	%	60 - 130
			Total PCB	2025/03/08		121	%	60 - 130
9887171	DS1	Spiked Blank	Decachlorobiphenyl	2025/03/08		120	%	60 - 130
			Total PCB	2025/03/08		91	%	60 - 130
9887171	DS1	Method Blank	Decachlorobiphenyl	2025/03/08		120	%	60 - 130
			Total PCB	2025/03/08	<0.05		ug/L	
9887171	DS1	RPD	Total PCB	2025/03/08	NC		%	40
9887182	KJP	Matrix Spike	Total Kjeldahl Nitrogen (TKN)	2025/03/10		NC	%	80 - 120
9887182	KJP	QC Standard	Total Kjeldahl Nitrogen (TKN)	2025/03/10		99	%	80 - 120
9887182	KJP	Spiked Blank	Total Kjeldahl Nitrogen (TKN)	2025/03/10		98	%	80 - 120
9887182	KJP	Method Blank	Total Kjeldahl Nitrogen (TKN)	2025/03/10	<0.10		mg/L	
9887182	KJP	RPD	Total Kjeldahl Nitrogen (TKN)	2025/03/10	4.5		%	20
9887192	AHI	Matrix Spike	2,4,6-Tribromophenol	2025/03/08		105	%	10 - 130
			2-Fluorobiphenyl	2025/03/08		74	%	30 - 130
			2-Fluorophenol	2025/03/08		44	%	10 - 130
			D14-Terphenyl	2025/03/08		105	%	30 - 130
			D5-Nitrobenzene	2025/03/08		79	%	30 - 130
			D5-Phenol	2025/03/08		30	%	10 - 130
			Bis(2-ethylhexyl)phthalate	2025/03/08		106	%	30 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Di-N-butyl phthalate	2025/03/08		108	%	30 - 130
9887192	AHI	Spiked Blank	2,4,6-Tribromophenol	2025/03/07		86	%	10 - 130
			2-Fluorobiphenyl	2025/03/07		69	%	30 - 130
			2-Fluorophenol	2025/03/07		39	%	10 - 130
			D14-Terphenyl	2025/03/07		101	%	30 - 130
			D5-Nitrobenzene	2025/03/07		72	%	30 - 130
			D5-Phenol	2025/03/07		27	%	10 - 130
			Bis(2-ethylhexyl)phthalate	2025/03/07		96	%	30 - 130
			Di-N-butyl phthalate	2025/03/07		98	%	30 - 130
9887192	AHI	Method Blank	2,4,6-Tribromophenol	2025/03/07		61	%	10 - 130
			2-Fluorobiphenyl	2025/03/07		66	%	30 - 130
			2-Fluorophenol	2025/03/07		33	%	10 - 130
			D14-Terphenyl	2025/03/07		99	%	30 - 130
			D5-Nitrobenzene	2025/03/07		74	%	30 - 130
			D5-Phenol	2025/03/07		21	%	10 - 130
			Bis(2-ethylhexyl)phthalate	2025/03/07	<2.0		ug/L	
			Di-N-butyl phthalate	2025/03/07	<2.0		ug/L	
9887192	AHI	RPD	Di-N-butyl phthalate	2025/03/08	NC		%	40
9887443	ADB	Matrix Spike	Dissolved Sulphate (SO4)	2025/03/10		NC	%	75 - 125
9887443	ADB	Spiked Blank	Dissolved Sulphate (SO4)	2025/03/10		94	%	80 - 120
9887443	ADB	Method Blank	Dissolved Sulphate (SO4)	2025/03/10	<1.0		mg/L	
9887443	ADB	RPD	Dissolved Sulphate (SO4)	2025/03/10	0.59		%	20
9887882	RTB	Spiked Blank	Total Suspended Solids	2025/03/12		96	%	80 - 120
9887882	RTB	Method Blank	Total Suspended Solids	2025/03/12	<10		mg/L	
9887882	RTB	RPD	Total Suspended Solids	2025/03/12	0		%	20
9887987	IHP	Matrix Spike	Total Aluminum (Al)	2025/03/10		NC	%	80 - 120
			Total Antimony (Sb)	2025/03/10		109	%	80 - 120
			Total Arsenic (As)	2025/03/10		101	%	80 - 120
			Total Cadmium (Cd)	2025/03/10		103	%	80 - 120
			Total Chromium (Cr)	2025/03/10		95	%	80 - 120
			Total Cobalt (Co)	2025/03/10		101	%	80 - 120
			Total Copper (Cu)	2025/03/10		102	%	80 - 120
			Total Lead (Pb)	2025/03/10		95	%	80 - 120
			Total Manganese (Mn)	2025/03/10		100	%	80 - 120
			Total Molybdenum (Mo)	2025/03/10		101	%	80 - 120
			Total Nickel (Ni)	2025/03/10		95	%	80 - 120
			Total Phosphorus (P)	2025/03/10		109	%	80 - 120
			Total Selenium (Se)	2025/03/10		102	%	80 - 120
			Total Silver (Ag)	2025/03/10		97	%	80 - 120
			Total Tin (Sn)	2025/03/10		104	%	80 - 120
			Total Titanium (Ti)	2025/03/10		102	%	80 - 120
			Total Zinc (Zn)	2025/03/10		100	%	80 - 120
9887987	IHP	Spiked Blank	Total Aluminum (Al)	2025/03/10		104	%	80 - 120
			Total Antimony (Sb)	2025/03/10		106	%	80 - 120
			Total Arsenic (As)	2025/03/10		101	%	80 - 120
			Total Cadmium (Cd)	2025/03/10		103	%	80 - 120
			Total Chromium (Cr)	2025/03/10		95	%	80 - 120
			Total Cobalt (Co)	2025/03/10		102	%	80 - 120
			Total Copper (Cu)	2025/03/10		101	%	80 - 120
			Total Lead (Pb)	2025/03/10		97	%	80 - 120
			Total Manganese (Mn)	2025/03/10		100	%	80 - 120
			Total Molybdenum (Mo)	2025/03/10		96	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Nickel (Ni)	2025/03/10		97	%	80 - 120
			Total Phosphorus (P)	2025/03/10		104	%	80 - 120
			Total Selenium (Se)	2025/03/10		104	%	80 - 120
			Total Silver (Ag)	2025/03/10		97	%	80 - 120
			Total Tin (Sn)	2025/03/10		102	%	80 - 120
			Total Titanium (Ti)	2025/03/10		103	%	80 - 120
			Total Zinc (Zn)	2025/03/10		104	%	80 - 120
9887987	IHP	Method Blank	Total Aluminum (Al)	2025/03/10	<4.9		ug/L	
			Total Antimony (Sb)	2025/03/10	<0.50		ug/L	
			Total Arsenic (As)	2025/03/10	<1.0		ug/L	
			Total Cadmium (Cd)	2025/03/10	<0.090		ug/L	
			Total Chromium (Cr)	2025/03/10	<5.0		ug/L	
			Total Cobalt (Co)	2025/03/10	<0.50		ug/L	
			Total Copper (Cu)	2025/03/10	<0.90		ug/L	
			Total Lead (Pb)	2025/03/10	<0.50		ug/L	
			Total Manganese (Mn)	2025/03/10	<2.0		ug/L	
			Total Molybdenum (Mo)	2025/03/10	<0.50		ug/L	
			Total Nickel (Ni)	2025/03/10	<1.0		ug/L	
			Total Phosphorus (P)	2025/03/10	<100		ug/L	
			Total Selenium (Se)	2025/03/10	<2.0		ug/L	
			Total Silver (Ag)	2025/03/10	<0.090		ug/L	
			Total Tin (Sn)	2025/03/10	<1.0		ug/L	
			Total Titanium (Ti)	2025/03/10	<5.0		ug/L	
			Total Zinc (Zn)	2025/03/10	<5.0		ug/L	
9887987	IHP	RPD	Total Aluminum (Al)	2025/03/11	13		%	20
			Total Antimony (Sb)	2025/03/11	8.4		%	20
			Total Arsenic (As)	2025/03/11	8.0		%	20
			Total Cadmium (Cd)	2025/03/11	NC		%	20
			Total Chromium (Cr)	2025/03/11	NC		%	20
			Total Cobalt (Co)	2025/03/11	1.6		%	20
			Total Copper (Cu)	2025/03/11	6.8		%	20
			Total Lead (Pb)	2025/03/11	8.1		%	20
			Total Manganese (Mn)	2025/03/11	2.4		%	20
			Total Molybdenum (Mo)	2025/03/11	2.8		%	20
			Total Nickel (Ni)	2025/03/11	2.6		%	20
			Total Phosphorus (P)	2025/03/11	NC		%	20
			Total Selenium (Se)	2025/03/11	NC		%	20
			Total Silver (Ag)	2025/03/11	NC		%	20
			Total Tin (Sn)	2025/03/11	NC		%	20
			Total Titanium (Ti)	2025/03/11	NC		%	20
			Total Zinc (Zn)	2025/03/11	NC		%	20
9888446	NSG	Spiked Blank	Total Oil & Grease	2025/03/11		99	%	80 - 110
9888446	NSG	RPD	Total Oil & Grease	2025/03/11	0.51		%	25
9888446	NSG	Method Blank	Total Oil & Grease	2025/03/11	<0.50		mg/L	
9888450	NSG	Spiked Blank	Total Oil & Grease Mineral/Synthetic	2025/03/11		97	%	65 - 130
9888450	NSG	RPD	Total Oil & Grease Mineral/Synthetic	2025/03/11	1.0		%	25
9888450	NSG	Method Blank	Total Oil & Grease Mineral/Synthetic	2025/03/11	<0.50		mg/L	
9888609	SPC	Matrix Spike	Phenols-4AAP	2025/03/11		100	%	80 - 120
9888609	SPC	Spiked Blank	Phenols-4AAP	2025/03/11		98	%	80 - 120
9888609	SPC	Method Blank	Phenols-4AAP	2025/03/11	<0.0010		mg/L	
9888609	SPC	RPD	Phenols-4AAP	2025/03/11	0		%	20
9888798	FKU	Matrix Spike	Nonylphenol (Total)	2025/03/11		97	%	50 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9888798	FKU	Spiked Blank	Nonylphenol (Total)	2025/03/11		96	%	50 - 130
9888798	FKU	Method Blank	Nonylphenol (Total)	2025/03/11	<0.001		mg/L	
9888798	FKU	RPD	Nonylphenol (Total)	2025/03/11	NC		%	40
9888800	FKU	Matrix Spike	Nonylphenol Ethoxylate (Total)	2025/03/11		85	%	50 - 130
9888800	FKU	Spiked Blank	Nonylphenol Ethoxylate (Total)	2025/03/11		87	%	50 - 130
9888800	FKU	Method Blank	Nonylphenol Ethoxylate (Total)	2025/03/11	<0.025		mg/L	
9888800	FKU	RPD	Nonylphenol Ethoxylate (Total)	2025/03/12	NC		%	40

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

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

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

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VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Jessica (Ya Ping) Qiang, Analyst II

Louise Harding, Scientific Specialist

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

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Exceedance Summary Table – Durham Sanitary Sewer

Result Exceedances

Sample ID	Bureau Veritas ID	Parameter	Criteria	Result	DL	UNITS
No Exceedances						

The exceedance summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

Exceedance Summary Table – Durham Storm Sewer

Result Exceedances

Sample ID	Bureau Veritas ID	Parameter	Criteria	Result	DL	UNITS
MW25-1	AOQJ35-06	Total Suspended Solids	15	150	10	mg/L

The exceedance summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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2025/03/06 13:39

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NONT-2025-03-982

C#1035386-01-01

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:	
Company Name:	#35525 GEMTEC LIMITED	Company Name:	#32770 GEMTEC LIMITED	Quotation #:	C45526
Attention:	Invoicing	Attention:	Matt Frendo-Cumbo	P.O. #:	
Address:	32 Steacie Drive Ottawa ON K2K 2A9	Address:	850 Champlain Ave Unit 101 Oshawa ON L1J8C3	Project:	104161.001(2)
Tel:	(613) 836-1422 Fax: (613) 836-9731	Tel:	Fax:	Project Name:	
Email:	accountspayable@gemtec.ca	Email:	matt.frendo-cumbo@gemtec.ca	Site #:	
				Sampled By:	MFC

Only:

Bottle Order #: 1035386

Project Manager: Katherine Szozda

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)
- ☐ Table 1 ☐ Res/Park ☐ Medium/Fine
- ☐ Table 2 ☐ Ind/Comm ☐ Coarse
- ☐ Table 3 ☐ Agri/Other ☐ For RSC
- ☐ Table ___

Other Regulations
- ☐ CCME ☑ Sanitary Sewer Bylaw
- ☐ Reg 558. ☑ Storm Sewer Bylaw
- ☐ MISA Municipality Durham Region
- ☐ PWQO ☐ Reg 406 Table
- ☐ Other

Special Instructions

Include Criteria on Certificate of Analysis (Y/N)? Y

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT: ☑
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests..
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___ ☐
Rush Confirmation Number: ___ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	Durham Sanitary & Storm Bylaw (55-2013)									# of Bottles	Comments
1		MW25-1	Mar.5/25	12:00pm	GW	N	X									17	
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Matt Frendo-Cumbo	25/03/05	1:30 pm	SUSAN SALVATI	2025/03/06	13:39	

Laboratory Use Only

Time Sensitive	Temperature (°C) on Recei	Custody Seal	Yes	No
	4 / 6 / 5	Present		
		Intact		

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/ENVIRONMENTAL-LABORATORIES/RESOURCES/COC-TERMS-AND-CONDITIONS.

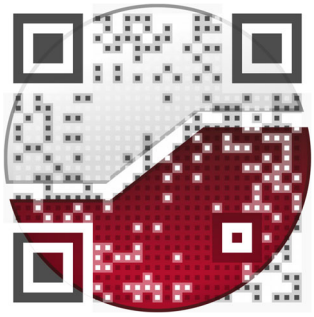
* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

** SAMPLE CONTAINER, PRESERVATION, HOLD TIME AND PACKAGE INFORMATION CAN BE VIEWED AT WWW.BVNA.COM/ENVIRONMENTAL-LABORATORIES/RESOURCES/...

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

White: Bureau Veritas Yellow: Client

experience • knowledge • integrity



civil	civil
geotechnical	géotechnique
environmental	environnementale
field services	surveillance de chantier
materials testing	service de laboratoire des matériaux

expérience • connaissance • intégrité