PRELIMINARY GEOTECHNICAL INVESTIGATION REPORT
PROPOSED RESIDENTIAL & INDUSTRIAL / COMMERCIAL DEVELOPMENT
1520, 1540, 1580 REACH STREET
PORT PERRY, ONTARIO
REDSTONE PROJECT NO. 25R121

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1.0 INTRODUCTION

This report describes the results of a preliminary geotechnical investigation performed in support of preliminary design of a proposed residential and industrial / commercial development (the Development) on lands identified with current civic addresses 1520, 1540, and 1580 Reach Street, Port Perry, also identified as Part of Lot 15 & 16, Concession 6 (Reach), in the Township of Scugog, Regional Municipality of Durham, Ontario.

Redstone Engineering Inc. (Redstone) was retained by Rick Wannop Developments (1064021 Ontario Limited, the Client) to support their work on this project and generate this preliminary geotechnical report. This report is based on project information provided by the Client and by Oakridge Environmental Limited (ORE), as well as field and laboratory data obtained by ORE during their work performing other studies for the Client.

The work performed by Redstone as part of this investigation was carried out under the authorization of Mr. Rick Wannop representing Rick Wannop Developments (1064021 Ontario Limited, the Client) in accordance with Redstone's proposal #P1430-1 dated October 27 2025. It is Redstone's understanding that ORE is performing other site studies for the Client, including but not necessarily limited to a preliminary hydrogeological study, excess soil characterization per O.Reg.406/19, and a Guideline D-4 landfill assessment.

The following information was provided to Redstone for this study:

- by ORE email September 15 2025:
    - a Gibson & Associates Ltd. (GA) letter report titled "Phase 1 Letter Report – Hydrogeologic Assessment – Proposed Residential and Industrial Development – Part of Lots 15 and 16, Concession 8 – Township of Scugog, Regional Municipality of Durham", their Reference No. F-825, dated January 1991 (herein referred to as the 1991 GA Report);
    - a Malone Given Parsons (MGP) drawing titled "Conceptual Development Plan – 1520, 1540 and 1580 Reach Street, Port Perry, Ontario", under their File No. 24-3401, dated February 11 2025 (herein referred to as the Concept Plan, attached in Appendix A);
    - a Sabourin Kimble & Associates Ltd (SKA) drawing titled "Reach Street Lands Grading Plan", Figure No 1.0, under their Project No. 24-478, undated (herein referred to as the Grading Plan, attached in Appendix A); and
    - a Township of Scugog Preconsultation letter dated March 4 2025.

- by ORE email November 18 2025:
    - a link to digital photographs taken of the site by ORE on November 14 2025.
- by ORE email December 19 2025:
    - an ORE drawing titled "D-4 Land Use On or Near Landfills and Dumps Study - Proposed Residential and Industrial/Commercial Development Port Perry, Ontario - Part of Lot 15 & 16, Concession 6 (Reach), Township of Scugog, Regional Municipality of Durham – Site Features", Figure No. 4, dated December 2025, under ORE's Project # 25-3614 (herein referred to as the Features Plan, attached in Appendix B);
    - ORE logs for mechanically-drilled boreholes and manually-augered handholes (boreholes and handholes are referred to herein in combination as Testholes), their logs are attached in Appendix B; and
    - Laboratory results for soil gradation tests ORE had performed on selected samples (attached in Appendix B).

Based on information shown on the Concept Plan and Grading Plan (see Appendix A), it is Redstone's understanding that the proposed Development will include designing and constructing residential and industrial/commercial lots with associated roads, utility servicing and stormwater management ponds (SWPs). The Grading Plan shows existing contours peaking around 282m elev, and proposed grades in that location of 274.69m elev, equating to a difference (proposed grade cut) on the order of about 7.3m in this location. Other areas of the Grading Plan (including westerly and northwesterly areas) suggest the site's grade will be raised on the order of up to 3m to 4m. The proposed final invert grades of the new utility servicing were not available to Redstone; for the purposes of this report Redstone has assumed the service utility piping will be installed using open trench methods at no greater than 3m to 5m below final proposed final grade. It is also Redstones assumption for the basis of this report that new site structures will consist of buildings no greater than two storeys in height, with or without basements.

This report is considered preliminary due to the preliminary/conceptual nature of the Development's design, and because this report is based on a limited number of Testholes performed by ORE as part of their hydrogeological study. Once the Development's site plan layout and related project specifications/parameters are finalized (including final surface and utility service grades, location and structural parameters for buildings), further geotechnical work should be performed to confirm geotechnical design details. Section 6.10.1 herein provides detailed recommendations regarding further geotechnical work for this project's detailed design.

2.0 PURPOSE & SCOPE

The purpose of this work is to assess the soil and groundwater conditions at the Testhole locations as reported in ORE's logs and lab data, and based on those findings, provide preliminary geotechnical engineering opinions and recommendations relevant to design (including commentary regarding construction only as it may impact the design) for earthworks construction including excavations and backfill, groundwater control during construction, building foundations, slabs-on-grade, utility installations (open trench bedding and backfill), stormwater pond berms, and roadway construction (including pavement structure).

Redstone's work does not include any assessment of existing structures, stormwater infiltration testing, slope stability analysis, life-cycle costing analysis, hydrogeological or environmental site assessments or opinions, chemical testing or any O.Reg.406/19 work, or any type of recommendations not specifically noted in the preceding paragraph. This report and its contents are preliminary - further geotechnical work is recommended pending progression of the project and its design into more detailed stages.

The following scope of work was performed as part of this geotechnical investigation.

1. By ORE:
    a. Testholes were laid out onsite as identified on the attached Figure 1 (Testhole Location Plan).
    b. soil and groundwater conditions were explored by advancing, sampling and logging a total of twenty-five (25) Testholes as follows:
        i. ten (10) mechanically-drilled boreholes (note that one borehole was drilled twice; borehole BH25-4 also has a separately drilled and logged BH25-4a) to depths ranging from 2.90 to 12.80m below existing grade (mbeg); and
        ii. fifteen (15) manually-augered handholes to depths ranging from 0.38 to 1.22mbeg.
    c. Testhole conditions observed were recorded, and representative samples of the soils were obtained. Observations related to any groundwater and Testhole cave-in were obtained from the open Testholes.
    d. groundwater monitoring wells were installed in six (6) boreholes.
    e. the ground at the Testholes was reinstated as close as possible to its original condition upon completion of the fieldwork.
    f. groundwater level measurements were obtained from monitoring wells on two (2) separate dates at least 24 hours following their installation.
    g. laboratory analyses of representative soil samples were performed, consisting of moisture content testing on recovered soil samples, and grain size distribution testing on four (4) soil samples.

h. see the attached Testhole logs (Appendix B) for the UTM coordinates and ground surface elevation obtained by ORE at each Testhole.

2. By Redstone:

   a. geotechnical engineering analysis of the field and laboratory data provided by ORE, and preparation of this report summarizing ORE's findings and providing Redstone's preliminary geotechnical discussion and recommendations.

3.0 FIELD & LABORATORY PROCEDURES

ORE performed a field investigation under the supervision of their staff between November 14 2025 and December 17 2025. The work performed consisted of subsurface exploration by means of advancing, sampling and logging a total of twenty-five (25) Testholes consisting of ten (10) mechanically-drilled boreholes (note that one borehole was drilled twice; borehole BH25-4 also has a separately drilled and logged BH25-4a) to depths ranging from 2.74 to 12.80mbeg, and fifteen (15) manually-augered handholes to depths ranging from 0.38 to 1.22mbeg; groundwater depth measurements were obtained via monitoring wells up to and including December 17 2025.

The Testholes are identified herein as follows: the mechanically-drilled boreholes and manually-augered handholes are identified using the nomenclatures "BH25-" and "HA25-", respectively. Test pits advanced by GA in 1990 are identified herein using the nomenclature "T-". Four (4) existing (previously-installed) monitoring wells in the site's northwesterly area are identified herein using nomenclature "MW-".

ORE maintained detailed logs of the Testholes and obtained representative samples of the materials encountered in them. The attached Figure 1 (Testhole Location Plan) and Features Plan (Appendix B) show the location of the Testholes, as well as the test pits advanced by GA in 1990 and the existing (previously-installed) monitoring wells.

The mechanically-drilled boreholes were advanced using a track-mounted Geoprobe 3126GT drill rig equipped with both solid stem and hollow augers. Representative, disturbed samples of the strata penetrated were obtained either directly off the augers, or using a split-barrel, 50mm OD split spoon sampler advanced by a 63.5kg hammer dropping approximately 760mm. The results of these standard penetration tests (SPT's) are reported as "N values" on the borehole logs at the corresponding depths. Shear vane tests were performed within the silty clay in two boreholes (BH25-7 and BH25-9). The manually-augered handholes were advanced by ORE using a manual (hand) auger, and soil samples were obtained directly from the auger.

ORE's staff supervised the drilling and augering, including logging and sampling the Testholes. Soil samples were recovered, retained in labeled air-tight containers, and secured for subsequent review and submission for laboratory testing. Logs of the Testholes advanced by ORE are provided in Appendix B. The depth to groundwater and any cave-in of the Testhole walls was measured in the open Testholes following drilling completion. The boreholes were backfilled with a mixture of bentonite pellets and soil cuttings, the handholes were backfilled using the augered soil cuttings.

ORE installed groundwater monitoring wells in six (6) of the above-noted boreholes, using 50mm OD PVC casing and slot 10 screens. Monitoring well installation details are presented graphically on the borehole logs (Appendix B). ORE obtained groundwater depth measurements from these monitoring wells on December 3 and 17 2025. It is Redstone's understanding that these wells remain in place as of writing this report (see Section 6.10.5 herein regarding maintenance and/or decommissioning of site wells).

The UTM coordinates and geodetic ground surface elevation at each of the Testholes is provided by ORE on the Testhole logs. The Testhole coordinates and elevations contained in this report are strictly for engineering analytical purposes only and must be considered approximate only; they should be verified prior to finalizing any design or construction parameters upon which they are based.

ORE commissioned physical laboratory testing of soil samples consisting of moisture content testing of selected samples, and grain size distribution analyses of four (4) soil samples. The results of the moisture content and grain size distribution testing are incorporated into the Testhole logs (Appendix B), grain size distribution lab charts are also attached (Appendix B).

4.0 SITE LOCATION & SURFACE CONDITIONS

The project site is located on the south side of Reach Street, between North Port Road and Sherrington Drive, and consists of lands having municipal civic addresses 1520, 1540, and 1580 Reach Street, Port Perry, Ontario.

The site consists primarily of agricultural fields, with some tree-lines and existing structures. At the time of ORE's fieldwork the site exhibited topographic relief on the order of about 19m, with a peak located in the site's south-central area, and an associated ridge running somewhat northeast-southwest, exhibiting topography dropping from the peak/ridge down to the approximate west and east, with a lower area also evident in the site's northeast area.

To the west of the subject site are lands being used as an industrial / commercial subdivision; north of the site (across Reach St) are lands being used for agriculturee, a possible small pit operation, and a municipal waste transfer facility; to the south are lands being used for agricultural purposes; to the east are lands being used for residential purposes.

5.0 SUBSURFACE CONDITIONS

5.1 GENERAL

The subject property is in the physiographic region of the Schomberg Clay Plains (The Physiography of Southern Ontario, Chapman and Putnam, 1984), in an area described as Clay Plains.

As noted in the Introduction to this report, ORE provided Redstone a copy of a 1991 letter report by Gibson & Associates Ltd. (GA) titled "Phase 1 Letter Report – Hydrogeologic Assessment – Proposed Residential and Industrial Development – Part of Lots 15 and 16, Concession 8 – Township of Scugog, Regional Municipality of Durham", their Reference No. F-825, dated January 1991 (herein referred to as the 1991 GA Report). This 1991 GA Report summarized the results of a hydrogeological assessment that GA performed at that time, including advancement of fifteen (15) test pits in December 1990. The 1991 GA Report does not provide logs or a description of ground conditions encountered in individual test pits, but does provide an overall summary of the site conditions and test pit results, as follows: "Based on the test pit explorations, the upland area occupied by the proposed residential development consists of a thick deposit of sand and silt till. A 1.2m thick layer of aeolian silty sand overrides the till deposit at the north-west corner of the residential development area. On the industrial portion of the proposed development, discontinuous deposits of aeolian silty sand were encountered, directly overlying lacustrine silty clays." The approximate location of these 1990 GA test pits is indicated on Figure 1 (Testhole Location Plan). Note that the development layout proposed at that time (ie, as the basis for GA's 1991 Report) was not included in the 1991 GA Report and was not available to Redstone.

Details of the subsurface conditions encountered at the site by ORE's Testholes are presented graphically on the logs (Appendix B). It should be noted that the boundaries between the strata have been inferred from Testhole observations and non-continuous samples. They generally represent a transition from one soil type to another and should not be inferred to represent an exact plane of geological change. Further, conditions may vary between and beyond the Testholes. Following is a summarized account of the subsurface conditions encountered in ORE's Testholes.

Generally in the site's central areas and sporadically to the east areas the subsurface conditions consist of surficial topsoil over till. In the site's westerly areas the till was typically overlain with deposits of sand, silt or clay; the site's easterly areas exhibited layered silt and clay overlying the till. Groundwater was encountered in most of the Testholes with stabilized levels in the monitoring wells as shallow as 1.18mbeg. Most Testholes remained open to their full depth, with the exception of three (3) boreholes where caving of the Testholes walls was recorded by ORE.

The following sections describe the major soil strata and groundwater conditions encountered during this investigation in more detail.

5.2 TOPSOIL

A surficial layer of topsoil was encountered in all the Testholes, with its thickness ranging from about 0.10m (BH25-5 and HA25-12) to 1.21m (BH25-2). The topsoil generally consisted of brown / dark brown / black sandy organic topsoil with abundant rootlets and occasional gravel particles, in a typically dry to moist loose in-situ state. The topsoil is considered devoid of any structural properties. No testing was performed on this soil to confirm its organic/nutrient or fertility-related properties as part of this study.

5.3 SAND / SILTY SAND / SANDY SILT

Layers of native soil described as either sand, silty sand, or sandy silt were observed in eleven (11) of the Testholes, immediately beneath the topsoil. These soils were first observed at depths ranging from 0.10mbeg (HA25-12) to 0.53mbeg (HA25-7) and extended to depths ranging from 0.53mbeg (HA25-6 and HA25-9) to 1.83mbeg (BH25-9).

These soils were generally brown (occasional mottling) with laminations observed, to grey (occasionally mottled), consisting of varying proportions of sand and silt with little (trace to no) gravel, and poorly graded. These soils typically existed in a damp to moist in-situ state. N-counts of 10 to 12 blows per 0.3m suggest they exist in a compact in-situ state of relative compactness. These soils are described as having no plasticity and weakly cohesive when wetted.

Moisture content tests performed on samples of these soils yielded values ranging from 12% to 27% moisture by dry weight. A grain size distribution test performed on a sample of the sand from BH25-9 suggests the following composition: 1% gravel, 82% sand, 9% silt, and 18% clay (clay being less than 2um in size).

5.4 CLAYEY SILT / SILTY CLAY

Layers of soil described as either clayey silt or silty clay were encountered in boreholes BH25-6, BH25-7, BH25-8 and BH25-9 immediately beneath either the sand or silty sand. These soils were first observed at depths ranging from about 0.76mbeg (BH25-8) to 3.05mbeg (BH25-7), and extended to depths ranging from about 4.88mbeg (BH25-8) to the full depth of investigation (6.71mbeg) in BH25-6, BH25-7, and BH25-9.

The clayey silt and silty clay soils observed in the boreholes are generally cohesive in nature, appeared brown grading to grey with depth, and consisted primarily of silt and clay with trace sand exhibiting a medium plasticity based on ORE's visual-tactile examination. These soils are described as ranging from stiff to soft (typically grading softer with depth and increased wetness/saturation below the groundwater). A sand seam was noted within these soils in BH25-6 at a depth of about 3.35mbeg. N-counts of 3 to 20 blows per 0.3m obtained within these soils suggest they possess a soft to stiff to occasionally very stiff in-situ state of consistency; field vane tests performed within the silty clay in BH25-7 (at about 3.81mbeg) and BH25-9 (at about 2.44mbeg) suggest initial/remoulded shear strength values of 90/30kPa (BH25-7) to 150/90kPa

(BH25-9) corresponding to sensitivity ratios of about 1.7 and 3.0 indicating slight to medium sensitivity.

Moisture content tests performed on samples of the clayey silt and silty clay yielded values ranging from about 13% to 26% moisture by dry weight. A grain size distribution analysis performed on a sample of the clayey silt (BH25-6) suggests the following composition: 0% gravel, 1% sand, 60% silt, and 39% clay.

5.5 TILL

A layer of soil described as till was encountered in sixteen (16) of the Testholes as the underlying layer. Within the Testholes that encountered it, the till was first observed at depths ranging from 0.10mbeg (BH25-5) to 4.88mbeg (BH25-8) and extended to depths of 3.05mbeg (BH25-7) to the full depth of investigation (0.38 to 12.80mbeg). It is noted that practical refusal to further augering was encountered within the till in BH25-2 at 8.23mbeg where the presence of very dense till and/or a boulder was inferred but not confirmed, and in BH25-4 at 2.74mbeg, where this borehole was relocated about 3m north and re-drilled past this depth.

The till typically exhibited a brown to grey-brown to grey colouration and generally consists of soils ranging from a poorly-sorted sand with gravel, to silty sand with gravel, to sandy silt with gravel. The presence of cobbles and/or boulders is inferred from the occasional refusal to further auger advancement. Seams of sand were noted within the till in some boreholes (see BH25-2, BH25-3, and BH25-5). Based on N-counts of 3 to greater than 50 blows per 0.3m, the till exists in a loose to very dense in-situ state of relative compactness; generally the loose zones were in the till's upper/shallower zones, and it graded denser with increasing depth. The till is described as being in a damp to moist to wet (saturated) in-situ state.

Moisture content tests conducted on samples of the till yielded values ranging from approximately 4% to 28% moisture by dry weight. Grain size distribution tests performed on samples of the till suggest the following compositional ranges: 4 to 8% gravel, 40 to 59% sand, 26 to 39% silt, and 7 to 17% clay.

5.6 GROUNDWATER & CAVE-IN

While advancing and sampling the Testholes, ORE performed visual-tactile examination of the soils encountered and noted their relative moisture level through descriptions including dry, moist, or saturated. Upon completion of advancing each Testhole and extraction of the augers, the depth to any evident cave-in (sloughing) of the Testhole walls was recorded.

Groundwater monitoring wells were installed in six (6) of the boreholes. ORE also noted the presence of four (4) existing (previously-installed) monitoring wells (identified herein as "MW-") in the site's northwesterly area – well records appearing to coincide with these monitoring wells (this was not confirmed as part of this study) were obtained from the Ministry of Environment Conservation and Parks (MECP) publicly-available well database, and are included in Appendix C

for reference. Groundwater levels were obtained on December 3 and 17 from the six (6) monitoring wells installed by ORE, and from the four (4) previously-installed monitoring wells.

The following Table summarizes groundwater-related conditions observed in each Testhole and monitoring well:

Table 1: Depths to Moist / Saturated Soil, and Groundwater

TESTHOLE	DEPTH (mbeg)			
	SOIL DESCRIPTION		GROUNDWATER (IN MONITORING WELL)	
	MOIST	SATURATED	DEC 3, 2025	DEC 17, 2025
BH25-1	3.05	8.53	5.65	5.60
BH25-2	4.57	-	n/a	
BH25-3	3.05	4.27	1.99	1.92
BH25-4a	-	3.96	4.00	3.94
BH25-5	0.76	1.83	1.07	1.11
BH25-6	1.52	4.88	n/a	
BH25-7	1.52	4.57	3.84	1.72
BH25-8	0.91	4.57	1.18	0.90
BH25-9	1.37	4.57	n/a	
BH25-10	1.83	-		
HA25-1	-	-		
HA25-2	0.10	-		
HA25-3	0.36	-		
HA25-4	-	-		
HA25-5	-	-		
HA25-6	-	-		
HA25-7	1.12	-		
HA25-8	-	-		
HA25-9	-	-		
HA25-10	-	-		
HA25-11	-	-		
HA25-12	1.0	-		
HA25-13	-	-		
HA25-14	0.80	-		
HA25-15	-	-		
MW-1	-	-	0.24	0.09
MW-2	-	-	0.48	0.28
MW-3	-	-	0.28	0.23
MW-4	-	-	0.64	0.48

(1) "-": not noted on log or record
(2) "n/a": no monitoring well installed

Upon completion of drilling and extraction of the augers, all the Testholes remained open to their full depth (ie, no caving of the Testhole walls), with the exception of the following boreholes: BH25-1 (cave at 10.7mbeg), BH25-4a (cave at 2.1mbeg), and BH25-6 (cave at 3.5mbeg).

It must be noted that groundwater levels (and any related cave-in) are subject to seasonal fluctuations and in response to weather events, and at any point in time may differ from those presented herein. Also, the tendency for soils to cave-in (or slough or otherwise collapse) is a function of factors including its gradation, its density or consistency, presence and any movement of groundwater, as well as the slope and area of the exposed soil face.

5.7 PRACTICAL REFUSAL

Practical refusal to further borehole advancement was encountered in BH25-2 (at 8.23mbeg) and in BH25-4 (at 2.74mbeg). The refusal in BH25-2 was inferred to have been caused by a boulder and/or increasingly very dense till (but this was not confirmed through advancement of a test pit or diamond coring as part of this study). The refusal in BH25-4 was inferred to have been caused by cobbles and/or a boulder; upon terminating BH25-4 at this refusal depth, this borehole was relocated about 3m north of BH25-4 and re-drilled past this depth to a final depth of 8.23mbeg (see log for BH25-4a).

6.0 DISCUSSION & PRELIMINARY RECOMMENDATIONS

6.1 GENERAL

Supporting data upon which these recommendations are based have been provided by ORE and summarized in the foregoing sections of this report. The following recommendations are governed by the physical properties of the subsurface materials that were encountered at the site and assume that they are representative of the overall site conditions. It should be noted that these conclusions and recommendations are intended for use by the designers only. Contractors bidding on or undertaking any work at the site should examine the factual results of the assessment, satisfy themselves as to the adequacy of the information for construction, and make their own interpretation of this factual data as it affects their proposed construction techniques, equipment capabilities, costs, sequencing, and the like. Comments, techniques, or recommendations pertaining to construction must not be construed as instructions to the contractor.

Note that the term “till” on the Testhole logs and described herein indicates that the material originates from a geological process associated with glaciation. Because of this geological process the till must be considered heterogeneous in composition and as such may contain pockets and/or seams of material such as sand, gravel, silt or clay. Till also often contains cobbles (60 to 200mm) or boulders (over 200mm). Contractors should expect to encounter such materials during excavation within the till, even if they are not indicated by the Testhole logs. It should be appreciated that normal Testhole sampling equipment cannot differentiate the size or

type of obstructions tat may be encountered. Because of the horizontal and vertical variability of till, the sample description may be applicable to a very limited zone; caution is therefore essential when dealing with sensitive excavations or dewatering programs in till materials.

These recommendations are based on the project understandings outlined in Section 1 of this report. These recommendations are also considered preliminary; prior to finalizing the Development's design, further geotechnical work is recommended (see Section 6.10.1).

Details regarding Redstone conclusions and recommendations are outlined in the following sections.

6.2 SITE PREPARATION, EXCAVATION, & BACKFILL

6.2.1 General

Prior to commencing earthwork construction, any and all topsoil, vegetation, asphalt, existing fill, existing structures (including foundations, slabs, and utilities as may remain from previous structures), disturbed earth, organics and organic-bearing materials must be stripped and removed from all proposed new structural areas including foundation and floor slab areas, roads and parking areas, and from beneath utility servicing elements such as piping, chambers, and/or tanks. In all cases the subexcavated surfaces must be inspected and approved by a qualified geotechnical engineer's representative familiar with the site's ground conditions, prior to placement of any fill, formwork, or foundations.

Once exposed, the subgrade will be susceptible to strength loss resulting from disturbances once exposed (particularly where excavations have advanced close to or below the groundwater table). The Contractor must protect the subgrade soils at the base of excavations from disturbances, as may be caused by construction equipment, exposure to weather, and/or groundwater upwelling. Tracking of equipment across subgrade must be avoided until it is suitably protected. Once foundation subgrade has been achieved and pending geotechnical approval of the subgrade, the Contractor may consider placing a 75mm thick lean concrete mudmat on the approved subgrade to protect it from subsequent construction traffic and exposure to inclement weather.

Excavations should be carried out to conform to the manner specified in Ontario Regulation 213/91 and the Occupational Health and Safety Act and Regulations for Construction Projects (OHSA). All excavations above the water table not exceeding 1.2 m in depth may be constructed with unsupported slopes. Below the groundwater the native soils will lose strength, could exhibit caving/sloughing upon being disturbed, and are classed by OHSA as Type 3 soil requiring excavations to be sloped at 1H:1V or flatter to the excavation base. Note that any pockets of trapped groundwater contained within materials located above the groundwater table may cause such materials to collapse and temporarily behave similarly to a Type 4 soil upon being opened by excavations, in which case suitable localized excavation/shoring or other treatments

will be necessary to stabilize. Type 4 soils require unsupported walls of excavations to be sloped at 3H:1V or flatter to the base of the excavation.

The stability of surrounding existing structures (including but not limited to any neighbouring buildings, roads, or infrastructure) must be always maintained. No excavations shall extend below a theoretical line drawn from the closest underside edge of any existing foundations downwards at 1H:1V without adequate alternate support being provided. Where space is restricted such that side slopes of excavations cannot be safely cut back in accordance with OHSA, and/or sloughing and cave-in are encountered in the excavations, and/or where the excavations are near an existing structure, temporary shoring must be provided. To avoid overstressing of any shoring, the excavated materials must be placed away from the excavation perimeter at a minimum distance equalling 2 times the excavation's depth. Materials must not be stockpiled near open excavations, and construction traffic must avoid being in proximity to open excavations. To protect against the adverse effects of erosion during construction, all ground surface drainage runoff should be directed away from the excavation area(s). Appropriate design and installation of any shoring is the responsibility of the Contractor.

Prior to any excavated soils being taken offsite for reuse and/or disposal during construction, the proponent should consult with an environmental specialist regarding any works required by O.Reg. 406/19 (regarding excess soils). It is Redstone's understanding that ORE is performing excess soil assessment work per O.Reg.406/19 for this project.

From a geotechnical perspective only; the site's existing native soil materials could generally be reused onsite as backfill in non-structural (eg: landscaped) areas, and some existing materials may be suitable to reuse as onsite backfill for pavement subgrade and/or trench backfill, pending approval at the time of construction. The native soils recorded on the Testhole logs typically range from a sand and silt till, to a silt and clay; such finer-grained soils can be challenging to work with as backfill materials, including having an increased sensitivity to changes in moisture content (as can be induced by precipitation or other weather extremes) and potential difficulties achieving suitable compaction levels. Where the soils contain organic material or are overly fine-grained and/or wet to saturated they are not considered suitable for reuse below any structural areas. From a geotechnical perspective, the reuse of any excavated material onsite is conditional on it being workable, at a suitable moisture content, containing no organics, debris or other unsuitable / deleterious materials, and receiving final review and approval for such reuse at the time of construction. Soils that are otherwise acceptable but overly wet, will require prior processing (such as aeration) to lower their moisture content before being considered for approval as backfill material.

6.2.2 Consolidation Settlement in Grade Raise Areas

It is Redstone's understanding that the current grading plan proposes to raise the grade (ie, fill) up to approximately 3m to 4m in the site's current lower-lying areas (including the site's westerly and northwesterly areas). It is noted that based on the Testholes, the soils in these areas can consist of finer-grained cohesive soils (silt and clay).

The weight of material forming the proposed grade-raise fill will cause a surcharge load on the underlying soils, resulting in consolidation of those underlying soils and corresponding settlement of the overlying soils (and any Development features placed on or within such soils including but not necessarily limited to buildings, service utilities, and roads). As a preliminary estimate, in the areas of the greatest (thickest) proposed grade raise this could potentially cause consolidation settlements on the order of 50 to 100mm or more. Buildings (foundations and slabs), utility services, road surfaces, and any other Development aspects in these grade raise areas would correspondingly experience settlements of the same magnitude.

To minimize or eliminate such consolidation settlements occurring in these areas once the Development features are constructed, it is recommended that prior to constructing any Development features in these grade raise areas, they be subjected to preload surcharging and settlement monitoring to cause the consolidation settlement to reach substantial completion before commencing construction of buildings, utility services, and any other settlement-sensitive features. Such a process would generally consist of placing the grade raise fill as early as possible, accompanied by installation and monitoring of settlement monitoring points, allowing time for sufficient consolidation settlement of the underlying soils to occur before commencing with construction of buildings, utility services, and any other settlement-sensitive elements in these areas. Preliminary estimates suggest settlements of up to 50 to 100mm or more, requiring a surcharge/settlement program of at least 6 to 9 months or more. Additional geotechnical work should be performed to further define relevant properties of the site's existing settlement-prone soils beneath the targeted grade raise areas, and confirm the resulting magnitude of consolidation settlements and timelines expected. Pending such further work and analytical results, a suitable preload surcharge and settlement monitoring program can be created for the grade raise areas.

6.3 GROUNDWATER CONTROL DURING CONSTRUCTION

See Section 5.6 of this report for the depth to cave-in and groundwater encountered in the Testholes and monitoring wells. As noted, groundwater levels are subject to seasonal fluctuations and in response to weather events, and at any point in time may differ from those presented herein. Where the groundwater table is present, it is cautioned that soils will be easily disturbed, loosened, and may exhibit sloughing and flowing characteristics unless properly managed including lowering of the groundwater to at least 1m below the base of all excavations, and protection of the exposed final excavation subgrades from weather, construction traffic, and other potential sources of disturbances including groundwater upwelling.

Excavations remaining above the groundwater table are not expected to encounter significant groundwater infiltration, and in such excavations, any groundwater is expected to be controlled by pumping from collection sumps to an acceptable outlet.

Excavations extending below the groundwater table will require more intensive dewatering and/or groundwater control, including the use of filtered sumps, and/or other suitable methods of dewatering such as well points, eductors, and/or sheet piling or other suitable shoring. In all cases, any groundwater must be lowered and controlled at least 1m below the base of all excavations. Where excavations will extend into the groundwater table, it is recommended the Contractor retain an experienced and qualified groundwater control specialist for this project.

If short-term (construction) pumping of groundwater at volumes greater than 50,000 L/day is required during the construction stage, an Environmental Activity Sector Registry (EASR) is required per Ministry of Environment Conservation and Parks (MECP) regulations. Note that permanent (primarily residential) foundation drainage in excess of 379,000 L/day requires a Permit to Take Water (PTTW) from the MECP. Detailed guidance regarding any EASR and/or PTTW requirements should be obtained from ORE's hydrogeological specialists. In addition to the MECP requirements, pumping discharges must also conform to any requirements from the local municipalities, conservation agencies and any other jurisdictional agencies.

The preceding comments are intended for general reference and information only. The volume of any water-taking will be dependent on the final design as well as the contractor's sequencing, equipment, techniques and overall methods. The Contractor is solely responsible for the design and implementation of any required unwatering and/or dewatering, including requirements for withdrawal, handling, treatment, and discharge.

It is recommended that a hydrogeological assessment / investigation be conducted in support of this Development including its construction dewatering, long-term drainage requirements, and any impacts to groundwater and local wells; it is Redstone's understanding that ORE is currently performing a preliminary hydrogeological investigation for this project.

6.4 FOUNDATIONS

The recommendations provided herein are based on the information obtained by ORE during their field and laboratory work and are considered preliminary. Further geotechnical work is recommended – see Section 6.10.1. Updates to the comments and recommendations can be on-going as new information of the underground conditions becomes available.

In all cases, prior to placement of any concrete mudmats, fill, formwork, or foundations, all excavations must be inspected and approved by a qualified geotechnical engineer's representative to ensure that the foundation bearing material has been prepared properly at the foundation subgrade level and that the founding subgrade materials exposed are similar to those encountered during this investigation. Under no circumstances should the foundations be placed

directly on organic materials, loose, frozen subgrade, construction debris, or within ponded water.

Structural loading for new one to two (1 to 2) storey buildings may be supported on reinforced strip and spread concrete footings placed on the suitably competent and approved native soil subgrade, or on engineered fill placed on such soils; also see Section 6.2.2 for recommendations regarding a preload surcharge and settlement monitoring program being performed prior to construction of foundations in areas where the grade will be raised (ie, filled).

The following Table summarizes, at each borehole, the current grade, proposed grade, the proposed grade's corresponding approximate depth below or height above the current grade, and relevant soil conditions as they relate to footings:

Table 2: Footings: Soil Conditions at Each Borehole

BOREHOLE	GROUND SURFACE GRADE (m)		PROPOSED SURFACE GRADE'S DEPTH BELOW (-) OR HEIGHT ABOVE (+) CURRENT GRADE (m)	RELATIVE COMPACTNESS OR CONSISTENCY OF SOIL AT AND BELOW 1.2m BELOW PROPOSED SURFACE GRADE
	EXISTING(1)	PROPOSED(2)		
BH25-1	281.63	274.69	- 6.94(3)	dense to very dense
BH25-2	276.66	272.04	- 4.62	dense to very dense
BH25-3	270.63	270.72	+ 0.09	competent soils (compact) present at and below 268.3m (2.3m depth below existing grade) – will require subexcavation of existing soils down to this depth, and replacement with engineered fill
BH25-4	272.35	269.69	- 2.66	compact to very dense
BH25-5	268.57	n/d(4)		
BH25-6	264.74	268.21	+ 3.47	grade raise (fill) area
BH25-7	260.00	263.50	+ 3.50	grade raise (fill) area
BH25-8	260.44	262.50	+ 2.06	grade raise (fill) area
BH25-9	257.39	n/d		
BH25-10	274.46	270.66	- 3.80	proposed grade below depth of this borehole's termination. Based on nearby BH25-4: compact to very dense

(1) From ORE's borehole logs
(2) interpolated from SKA's Grading Plan
(3) "-" is a proposed grade cut (depth below the current grade), "+" is a proposed grade raise (height above the current grade)
(4) proposed grade not available on SKA's Grading Plan

For preliminary design purposes, based on the Testhole information and depths outlined in Table 2, it is recommended that footing foundations placed directly on suitably competent native soils or on engineered fill (placed on suitably competent native soils) be proportioned using the parameters outlined in the following table (next page):

Table 3: Bearing Capacity Pressures / Geotechnical Resistances for Footings

PARAMETER (kPa)	UNDISTURBED, COMPACT TO VERY DENSE NATIVE TILL	ENGINEERED FILL
Bearing Capacity Pressure (SLS)	180	120
Geotechnical Resistance (ULS), resistance factor Φ = 0.5 applied	270	180

The following is recommended for the construction of any engineered fill:

1. Prepare the subgrade in accordance with preceding Sections of this report. This includes removing any and all vegetation, topsoil, asphalt, fill, disturbed earth, any existing structures (including foundations, slabs, and utilities), construction debris, organics, and organic-bearing soils to the competent, undisturbed native soil from within the area of the proposed engineered fill.
2. The area of the engineered fill should extend horizontally 1m beyond the outside edge of the proposed foundations and then extend downward at a 1:1 slope to the suitably competent soil.
3. The base of the engineered fill area must be approved by a qualified geotechnical engineer's representative prior to placement of any fill, to ensure that all unsuitable materials have been removed, that the materials encountered are similar to those observed during this investigation, and that the subgrade is suitable for the engineered fill.
4. Engineered fill materials should consist of either a Granular or Rock-based material, with corresponding design bearing values per Table 3 above. Granular material should consist of Granular B Type II material (or otherwise approved). If lower zones of the excavation are overly wet, the use of a clear rock-based fill (eg: 100mm to 150mm clear crushed stone) may be required to bring the fill level up out of any such wetter areas, in which case such clear (ie, free of fine-grained particles) rock-based fill must be encapsulated with filter fabric to minimize migration of fine-grained particles from surrounding soils into the clear rock-fill voids. Any consideration of reusing native soils as engineered fill must be reviewed and approved at the time of construction.
5. Prior to its use, all engineered fill material is to be approved by a qualified geotechnical engineer's representative at the time of construction.
6. Place approved engineered fill, in maximum 200mm loose lifts, compacted to 100% of its SPMDD.
7. Full time testing and inspection of the engineered fill will be required, to ensure compliance with material and compaction specifications.

Engineered fill upon which the footings are placed must be a minimum thickness of 300mm, and the quality of any material considered for engineered fill must be approved prior to its use. Rock-based fill that is sufficiently free of fine-grained particles must be completely encapsulated with

suitable filter fabric to minimize any migration of fines from surrounding soils into the rock fill voids. Footings and foundation walls placed on engineered fill must be suitably reinforced; as a minimum, and unless specified otherwise on the structural drawings, such reinforcement should consist of 2 continuous runs of 15M rebar throughout the footings, and 2 continuous runs of 15M rebar throughout the top and bottom of the foundation walls.

For frost protection purposes, the footings must be covered by at least 1.2m of earth (or equivalent) in all directions. Backfill to foundations should be accomplished using non-frost susceptible Granular B material.

For preliminary design purposes this site is classed as Site Class D for Seismic Site Response, in accordance with the Ontario Building Code (OBC). If desired by the designers, this seismic site classification may be confirmed (possibly upgraded) pending further subsurface works including a Multichannel Analysis of Surface Wave (MASW) survey.

To assist in managing surficial drainage water and any infiltration of groundwater towards the building, water-proofing of subgrade walls and footings, and an appropriately-outletted perimeter foundation drainage system around the building's perimeter footings is recommended, with sumps installed where gravity drainage is not feasible or permitted.

6.5 BASEMENT & EARTH RETAINING WALLS

Subsurface structures retaining earth (including basement foundation walls and/or retaining walls) that are located above the groundwater table may be designed for lateral (horizontal) earth pressures using the following equation:

- $p = k (w\ h + q)$, where:
    - p = the lateral earth pressure in kPa acting on the subsurface structure at depth h;
    - k_a = the coefficient of active earth pressure;
        - = 0.3 for walls restrained from the bottom only;
        - = 0.5 for walls restrained at the top and bottom. (This value is recommended for rigid walls retaining compacted backfill);
    - k_p = the coefficient of passive earth pressure, (= 3.0);
    - w = the granular or native soil bulk density in kN/m^3;
        - = 21 kN/m^3 for well compacted, OPSS-approved Granular "B";
        - = 19 kN/m^3 for native soils;
    - h = the depth (in metres) below the exterior grade at which the earth pressure is being calculated; and
    - q = the equivalent value of any surcharge (in kN/m^3) acting on the ground surface adjacent to the structure.

The recommended value for the coefficient for sliding friction between the soil and the concrete is 0.4. In addition to the above, hydrostatic forces must be taken into account in the design where

the retaining structure extend below the groundwater table. Also, any additional surcharge loading that will influence the retaining structure must be taken into account in its design.

6.6 SLAB ON GRADE

These recommendations assume that some buildings will have maximum one (1) basement level.

The building slabs may be constructed as normal slabs-on-grade, over 200mm thickness of:

- where the floor slab is at least 0.3m above the adjacent final grade: Granular A (per OPSS 1010) compacted to 100% SPMDD; or
- where the floor slab is less than 0.3m above the adjacent final grade (including basement and crawl-space area floor slabs): 19mm crushed clearstone, suitably compacted and separated from the underlying/surrounding soils by suitable filter fabric.

The fill materials noted above must be placed over native, inorganic subsoils, prepared in accordance with Section 6.2 herein, or over engineered fill constructed as per Section 6.4 herein. All fill placed as engineered fill must be inspected, approved and compaction verified by a qualified geotechnical engineer's representative.

Where basement and/or crawl-space slab areas are located at or beneath the groundwater:

- install subdrains in the subgrade consisting of minimum 100mm diameter perforated subdrain pipe wrapped with knitted sock geotextile placed in a trench excavated 300mm by 300mm into the subgrade, with the trench backfilled with 19mm crushed clearstone, and a geotextile filter fabric wrapping fully surrounding the stone. Subdrains must be suitably drained to a frost-free outlet; and
- install vapour barrier beneath the slabs.

6.7 SERVICE INSTALLATION (BEDDING & COVER)

This report assumes that service piping inverts will be a maximum of 3m to 5m below final grade. Based on the results of this investigation, proposed new service pipes for the development are expected to be founded in the native soil deposits, or within fill (in proposed grade-raise areas). Where the bedding subgrade consists of native soil or an approved and inspected engineered fill, the bedding thickness can generally be 150mm. Where the bedding subgrade is overly wet or weak, the minimum bedding thickness should be increased to 250mm. Where crossings of existing underground utilities are encountered along the proposed pipe alignment, the bedding thickness should be increased to at least 300mm.

No pipe support issues are anticipated where the piping will be bedded within the native soils provided all the recommendations contained in this report are adhered to. It is recommended that further inspections be carried out at the time of construction to verify that the subgrade soils exposed at the trench base are consistent with the findings in this report. A soft, unstable foundation may result in unequal settlement of the pipe causing broken backs or broken bellies.

Low density soils may collapse upon wetting. Very wet, unstable soils must be removed and a stable foundation created that will maintain grade and provide uniform support for the pipe. Any overly loose, soft, and/or wet materials are recommended to be sub-excavated down to competent soils and be replaced under the guidance of the geotechnical engineering's representative, or alternative treatments as per the geotechnical engineer's guidance at the time of construction. Also, any bedding materials disturbed during construction must be removed. The disturbed material may be compacted back in place or imported material may be used to replace the disturbed material and then compacted.

With consideration for the above, the generally-expected bedding subgrade soils will provide adequate support for the proposed utility pipes, and will allow the use of normal Class B type bedding. Clearstone as bedding material should be used only if it is completely wrapped in a non-woven geotextile filter fabric and only with prior consent of the Municipality and geotechnical engineer.

The bedding subgrade must be inspected and approved by a qualified geotechnical engineer's representative prior to placement of bedding material to confirm that the subgrade conditions are consistent with those on which the recommendations contained herein are based on. Where unsuitable subgrade conditions are observed, efforts should be made to establish remedial procedures in the field so as to minimize construction delays. Embedment, bedding, and cover materials must be placed in thin lifts not more than 150mm thick and compacted to at least 98% SPMDD. Attention should be given to ensure material placed beneath the pipe haunches is adequately compacted. Backfill within a 600mm thick zone above the pipe should be compacted with light equipment to avoid damaging the pipes.

The utility trenches should be designed and constructed with trench plugs at appropriate locations/spacings, to minimize the migration of groundwater along the trench and bedding materials.

6.8 STORMWATER MANAGEMENT PONDS

As shown on the Concept Plan and Grading Plan, Stormwater Management Ponds (SWPs) are proposed in the site's northwesterly and northeasterly portions. The northwesterly SWP is proposed in the area of borehole BH25-9 and the four previously-installed monitoring wells (MW-1 to MW-4). The northeasterly SWP is proposed in the area of borehole BH25-5, which had a monitoring well installed into it during ORE's fieldwork. As of writing this report, no information was available regarding the Development's proposed final grades in the area of these SWPs, including their base elevations.

In the area of the northwest SWP; the existing grade at BH25-9 is approximately 257.39m elev. The log for this borehole describes 0.35m of topsoil over sand with some silt extending to 1.83mbeg (255.56m elev) over a brown to grey silty clay with trace sand extending to the full depth of this borehole (6.71mbeg, 250.68m elev). The silty sand is described as having some laminations and is in a compact in-situ state of relative compactness, with a gradation of 1%

gravel, 82% sand, 9% silt and 8% clay. The silty clay is brown grading to grey around 5.4.57mbeg (252.82m elev), and is described as stiff becoming soft with depth, with the grey silty clay (below 4.57mbeg) being saturated and soft. Laboratory testing of the silty clay samples from BH25-9 exhibited moisture contents between 20 to 25% moisture by dry weight. See the log for BH25-9 (Appendix B) for details. Previously-installed monitoring wells MW-1 to MW-4 in this area were used to measure depth to groundwater on December 3 and 17 2025; these groundwater depths ranged between 0.09mbeg and 0.64mbeg (see Appendix C for the well records associated with these monitoring wells).

In the area of the northeast SWP; the existing grade at BH25-5 is approximately 268.57m elev. The log for this borehole describes 0.10m of topsoil over silty sand till extending to 0.76mbeg (267.81m elev) over sandy to clayey silt till extending to 6.10mbeg (262.47m elev) underlain by sandy silt till extending to the full depth of this borehole (8.23mbeg, 260.34m elev). The silty sand till is described as mottled red-brown with some gravel, in a slightly moist and loose in-situ state, with some mixing with the overlying organics. The sandy to clayey silt till is described as grey and containing gravel, in a stiff to hard in-situ state, and exhibited a saturated sand seam at about 1.83mbeg (266.74m elev). The underlying sandy silt till is described as grey and containing gravel, sand content decreasing with depth, very moist and stiff, with cobbles. Laboratory testing of the till from BH25-5 exhibited moisture contents between 7 to 12% moisture by dry weight. See the log for BH25-5 (Appendix B) for details.

Based on the ground conditions observed, Redstone's preliminary geotechnical opinion is that it appears that construction of SWPs in these areas may be feasible, pending a review of the proposed SWP grading at each location once available. In general, excavation for the SWPs is expected to be straightforward, provided that appropriate measures are taken during construction to minimize any overland or near-surficial flow of water into the area, and groundwater is managed appropriately. It is noted that other areas of the site also encountered groundwater (see Section 5.6 herein), with indicators that the till contains hydraulically conductive sand seams or lenses, which when intersected can become a potential conduit or source for groundwater infiltration. If the final grading of the SWP will lower the existing grade, groundwater and surficial water inflow into the open SWP excavation should be expected; this may be controlled during construction by pumping from within the excavation, along with further measures if required including upgradient cutoff trenching with appropriate drainage outletting.

After removal of the organic-bearing materials from throughout all SWP (including any berm) areas, it is recommended that the SWP subgrade surfaces be proof rolled, and a geotechnical engineer's representative approve the subgrade prior to construction of SWP berms/slopes. It is expected that built-up SWP berms/slopes will be constructed of fill, which may consist of the existing on-site inorganic soils (pending approval at the time of construction) provided they are not overly wet and/or unworkable. The soils being used as fill should be placed in maximum 150mm thick layers, at or near (+/-2%) their optimum moisture content for compaction, and each layer should be compacted to at least 95% SPMDD. The excavated soils may require

reconditioning (e.g., wetting or drying) prior to reuse. Unsuitable materials such as organic soils, boulders, cobbles, frozen soils, etc., should not be reused for SWP backfilling purposes.

The till's generally homogeneous gradation (ie, including sand, gravel, as well as likely cobbles and boulders), will not allow it to be a candidate for use as an impermeable barrier for a wet pond. If a wet pond is desired then a compacted clay liner or geosynthetic clay liner will be required. The site's clayey silt or silty clay soils may be suitable for use as a liner; any clay materials considered for a compacted clay liner should have a consistent in-situ hydraulic conductivity of 10^{-7}cm/s or less.

An inspection of the excavated SWPs surfaces should be performed at the time of construction, to assess where areas of increased hydraulic conductivity are present within the exposed soils, so that such areas may be lined with a more suitable (ie, less hydraulically conductive) material. It is expected that this can be accomplished using either the site's clay soils, or imported clay soils. In either case, the materials being considered must be inspected and approved by a geotechnical engineer's representative at the time of construction. It is recommended that construction of a clay liner using such approved material be at least 600mm thick, and must be placed under full time geotechnical inspections.

For the purpose of the proposed SWPs, the soils observed should be stable from slip circle failure if sloped at 3 horizontal to 1 vertical (3H:1V) or flatter in the long term both above and below the water table. Between the stable water level and the expected high water level, it is recommended that the slopes be lessened to 5H:1V (or flatter) to guard against erosion by wavelet action. The till material will require vegetative root mass (or otherwise suitable erosion protection) to minimize erosional forces on exposed slopes.

Slopes and berms of the SWP should be constructed so as to reduce or eliminate the effects of surficial erosion. Features to do so may include slope vegetation, installation of erosion or gabion mats, rip rap, and/or other acceptable stabilizing features.

It is recommended that a regular maintenance program for the SWP include monitoring of it for any potential slope erosion, degradation, or otherwise undesirable structural conditions. Should any such conditions become evident, immediate mitigative actions must be performed.

6.9 PAVEMENT

This section contains recommendations regarding design and construction of new paved roads, access and parking areas for the Development. These recommendations are based on the expectation that the vehicles will typically be passenger vehicles, with only occasional heavier/commercial trucks (snow clearing, emergency, delivery, etc).

The following recommendations are provided for such new pavement areas.

1. Per Section 6.2, remove unsuitable materials including existing topsoil, fill, organics and organic-bearing materials, any other obviously deleterious materials to their full depth, any existing structures (including foundations, slabs, and utilities), as well as frozen earth and

boulders larger than 150mm in diameter encountered at subgrade elevation for the full width of construction.

2. Carefully proof-roll the subgrade in the presence of the geotechnical engineer's representative. Any overly soft or wet areas or other obviously deleterious materials must be excavated and properly replaced with suitable, approved backfill material.
3. Backfilling of sub-excavated areas and fine grading may be carried out using OPSS 1010 Granular B Type I or Select Subgrade Material (SSM). Organics, organic-bearing materials, and overly wet or silty/clayey soils are not suitable for reuse as backfill. All subgrade backfill materials should be placed in uniform lifts not exceeding 200mm loose thickness and compacted to at least 98% SPMDD.
4. Adequate drainage must be achieved throughout the pavement areas. Ensure positive slopes (combined with subdrains if necessary) within the pavement subgrade, to allow drainage and avoid any water accumulation. All such features must appropriately drain either to a storm sewer system or daylight to roadside ditches.
5. In any areas where the subgrade exhibits excessive amounts of moisture or groundwater accumulation, maximize the subgrade drainage by installing subdrains in the subgrade, consisting of 150mm diameter perforated subdrain pipe wrapped with knitted sock geotextile placed in a trench excavated 300mm by 300mm into the subgrade. The trench should be backfilled with 19mm clear stone. A geotextile filter fabric wrapping surrounding the stone is required.
6. To minimize the effects of frost on differing subgrade materials, construct transitions between varying depths of granular base materials at a rate of 1:10 or flatter.
7. Granular materials should consist of Granular A and B conforming to the requirements of OPSS Form 1010 or equivalent. All granular materials should have an in-situ moisture content within 2% of their respective optimal moisture content, to assist in achieving appropriate compaction. Granular A and B materials must be in accordance with OPSS Form 1010 or equivalent. The granular courses should be compacted to a minimum 100% of their respective SPMDDs.
8. All asphaltic concrete layers should be placed, spread, and compacted confirming to OPSS Form 310 or equivalent. All asphaltic concrete should be compacted to a minimum 92.0% of their respective laboratory Maximum Relative Densities (MRDs).

The pavement subgrade soils at this site are expected to generally consist of either native soils (comprised mainly of sand and silts), or fill placed to raise grade in the lower-lying areas. The following table (next page) outlines recommendations for the Development's pavement structures in both light duty and heavy duty settings:

Table 4: Pavement Structures

Profile	Material	Minimum Thickness (mm)		Per OPSS
		Light Duty (Local Roads)	Heavy Duty (Collector Roads & Employment Areas)	
Asphalt Surface	H.L.3	40		1150
Asphalt Base	H.L.8	50		
Granular Base	Granular A	150		1010
Granular Subbase	Granular B Type I	300	450	

The above-recommended pavement structures are for the end use of the project. During construction of the project, the recommended granular depths may not be sufficient to support loadings encountered including construction traffic and equipment.

The foregoing design considers that construction is carried out during dry periods, at the appropriate above-freezing temperatures, and that the subgrade is stable under construction equipment loadings. If construction is carried out during wet weather and heaving or rolling of the subgrade is experienced from the proof-rolling program, additional thickness of granular materials, geo-grids reinforcement or a combination of the two may be required.

The requirement for additional granular materials and / or utilization of geotextiles is best determined during construction under the direction of the geotechnical engineer. However, in view of the above, it is recommended that contingency items be included in the contract for subgrade stabilization using either technique so that such methods are contractually available, if and when needed during construction.

All asphaltic concrete layers should be placed, spread, and compacted confirming to OPSS Form 310 or equivalent. All asphaltic concrete should be compacted to a minimum 92.0% of their respective laboratory Maximum Relative Densities (MRDs).

6.10 GENERAL RECOMMENDATIONS

6.10.1 Further Geotechnical Work

Once the Development's site plan layout and related project specifications/parameters are finalized (including final surface, SWP, and utility service grades, location and structural parameters for buildings), further geotechnical work should be performed to confirm geotechnical design details including but not necessarily limited to:

- additional geotechnical work to further define the extent and consolidation (settlement) related parameters of the site's settlement-prone soils (clayey silt and silty clay) beneath the targeted grade raise areas. This should identify the expected timeline and magnitude of the expected consolidation settlement beneath the proposed grade raised areas. Pending such

analytical results, a suitable preload surcharge and settlement monitoring program can be created for the proposed grade raise areas;

- preliminary bearing capacity values (see Table 3 herein) can be refined by advancement of additional boreholes targeting representative locations and grades; and
- once the Development's detailed plans are finalized, a geotechnical engineer must review the proposed Development's parameters to assess if any additional geotechnical work may be required to address new and/or updated design details available at that time.

6.10.2 Subsoil Sensitivity

The native subgrade soils are susceptible to strength loss or deformation if saturated or disturbed by construction traffic. Where the subgrade consists of approved soil, care must be taken to protect the exposed subgrade from excess moisture and from construction traffic. If there is site work carried out during periods of wet weather and/or elevated groundwater levels, then it can be expected that the subgrade will be disturbed unless a suitable working surface is provided to protect the integrity of the subgrade soils from construction traffic. Subgrade soil preparation work cannot be adequately accomplished during overly wet weather, and the project must be scheduled accordingly.

6.10.3 Test Pits During Tendering

The proponent may consider excavating test pits at representative locations of this site during the construction tendering phase, with mandatory attendance of bidding Contractors. This will allow them to make their own assessments of the soil and groundwater conditions, and how these will affect their proposed construction methods, techniques and schedules.

6.10.4 Winter Construction

The subsoils encountered at the site can be frost-susceptible and freezing conditions could cause problems to preparations for foundation, sidewalks and/or pavement subgrades. As preventive measures, the following is recommended:

1. Exposed surfaces intended to support foundations must be protected against freezing by means of loose straw and tarpaulins, heating, etc.
2. Care must be exercised so that any sidewalks and/or asphalt pavements do not interfere with the opening of doors during the winter when the soils are subject to frost heave. This problem may be minimized by any one of several means including (but not necessarily limited to) keeping the doors well above outside grade, installing structural slabs at the doors, and/or by using well graded backfill and positive drainage.
3. Because of the potential for soils to experience frost heave during winter, it is recommended that exterior service trenches be excavated with shallow transition slopes to minimize the

abrupt change in density and frost-susceptibility between the granular backfill (relatively non-frost susceptible) and native soils (generally more frost-susceptible).

6.10.5 Wells

Wells that exist on site (including the monitoring wells installed by ORE as part of this investigation) are the property of the site owner. The monitoring wells can be maintained, for the time being, to facilitate groundwater monitoring that can lead up to construction, and/or in support of any EASR or PTTW applications. Should such monitoring become unnecessary and the wells become inactive and/or unmaintained, and in any case prior to or during initial stages of site construction, the wells must be decommissioned by an appropriately-licensed well contractor in compliance with O.Reg. 903.

6.10.6 Design Review & Construction Inspections

Due to the preliminary nature of the design details at the time of this report, Redstone must be allowed to review the design and proposed grading plans prior to their finalization, and provide updated recommendations if necessary at that time. In addition, it is strongly recommended that Redstone be retained to review the related earthworks specifications when they are available.

During construction, experienced geotechnical staff must observe construction activities and ensure geotechnical recommendations are carried out.

7.0 CLOSURE & STATEMENT OF LIMITATIONS

The recommendations made in this report are in accordance with our present understanding of the project. The subsurface investigation was performed in accordance with current, generally accepted guidelines. However, should any conditions at the site be encountered which differ from those at the Testhole locations, it is requested that Redstone be notified immediately in order to permit a reassessment of our recommendations in light of the changed conditions and exact project details. Redstone requests that they be permitted to review the recommendations of this report after the drawings and specifications are complete, or if the final project details should differ from that mentioned in this report.

The attached Statement of Limitations is an integral part of this report. Should questions arise regarding any aspect of this report, please contact our office.

Sincerely yours,



Garnet Brenchley, P.Eng.
Principal Engineer

STATEMENT OF LIMITATIONS

This report is intended solely for Rick Wannop Developments (1064021 Ontario Limited) and is prohibited for use by others without Redstone's prior written consent. This report is considered Redstone's professional work product and shall remain the sole property of Redstone. Any unauthorized reuse, redistribution of or reliance on the report shall be at the Client and recipient's sole risk, without liability to Redstone. Client shall defend, indemnify and hold Redstone harmless from any liability arising from or related to Client's unauthorized distribution of the report. No portion of this report may be used as a separate entity; it is to be read in its entirety and shall include all supporting drawings and appendices.

The recommendations made in this report are in accordance with our present understanding of the project, the current site use, ground surface elevations and conditions, and are based on the work scope approved by the Client and described in the report. The services were performed in a manner consistent with that level of care and skill ordinarily exercised by members of geotechnical engineering professions currently practicing under similar conditions in the same locality. No other representations, and no warranties or representations of any kind, either expressed or implied, are made. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties.

All details of design and construction are rarely known at the time of completion of a geotechnical study. The recommendations and comments made in the study report are based on project information provided by the Client and subsurface investigation information provided by ORE, and Redstone's resulting understanding of the project as defined at the time of the study. Redstone should be retained to review our recommendations when the drawings and specifications are complete. Without this review, Redstone will not be liable for any misunderstanding of our recommendations or their application and adaptation into the final design.

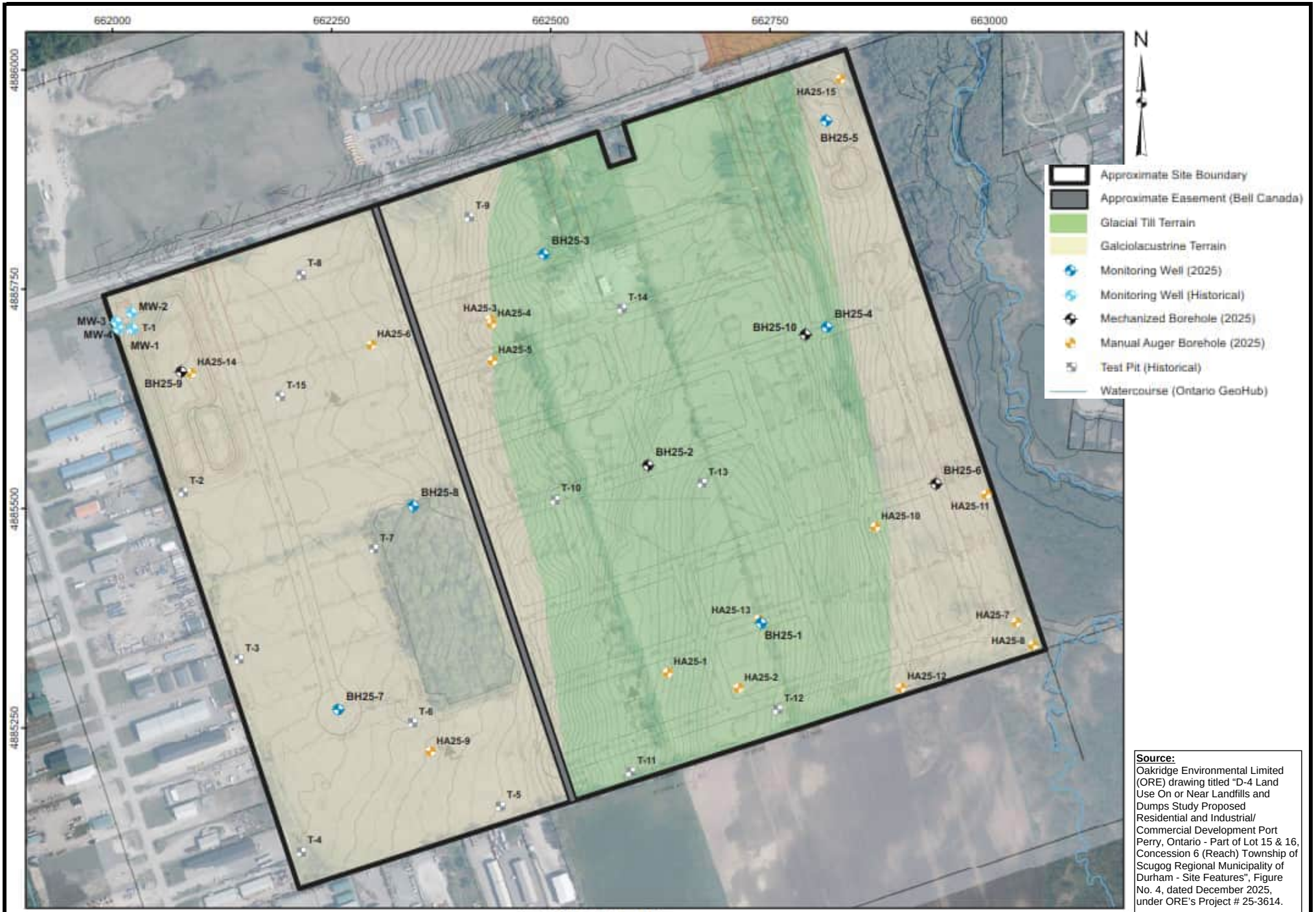
The evaluation, conclusions and recommendations contained in this report have been prepared on the basis of conditions in evidence at the time of site inspections and/or on the basis of information provided to Redstone. Redstone has relied in good faith upon representations, information and instructions provided by the Client and others (including ORE) concerning the site. Accordingly, Redstone does not accept responsibility for any deficiency, misstatement or inaccuracy contained in the report as a result of misstatements, omissions, misrepresentations, or fraudulent acts of the Client or other persons and/or entities providing information relied on by Redstone. Redstone is entitled to rely on such representations, information (including field and laboratory data), and instructions, and is not required to carry out investigations of its own to determine the truth or accuracy of such representations, information and instructions.

By issuing this report, Redstone is the geotechnical engineer of record. It is recommended that Redstone be retained during construction of any and all foundations, and during earthwork operations to confirm the conditions of the subsoil are actually similar to those observed during our study. The intent of this requirement is to verify that conditions encountered during construction are consistent with the findings in the report and that inherent knowledge developed as part of our study is correctly carried forward to the construction phases.

It is important to emphasize that a soil investigation is, in fact, a random sampling of a site and the comments included in this report are based on the results obtained at the ten (10) boreholes and fifteen (15) handhole locations only. The subsurface conditions confirmed at these locations may vary at other locations. The subsurface conditions can also be significantly modified by construction activities on site (ex. excavation, dewatering and drainage, blasting, pile driving, etc.). These conditions can also be modified by exposure of soils or bedrock to humidity, dry periods or frost. Soil and groundwater conditions between and beyond the test locations may differ both horizontally and vertically from those encountered at the test locations and conditions may become apparent during construction which could not be detected or anticipated at the time of our investigation. Should any conditions at the site be encountered which differ from those found at the test locations, we request that we be notified immediately in order to permit a reassessment of our recommendations. If changed conditions are identified during construction, no matter how minor, the recommendations in this report shall be considered invalid until sufficient review and written assessment of said conditions by Redstone is completed.

FIGURES

- Testhole Location Plan ..... 1 pg



Source:
Oakridge Environmental Limited (ORE) drawing titled "D-4 Land Use On or Near Landfills and Dumps Study Proposed Residential and Industrial/ Commercial Development Port Perry, Ontario - Part of Lot 15 & 16, Concession 6 (Reach) Township of Scugog Regional Municipality of Durham - Site Features", Figure No. 4, dated December 2025, under ORE's Project # 25-3614.

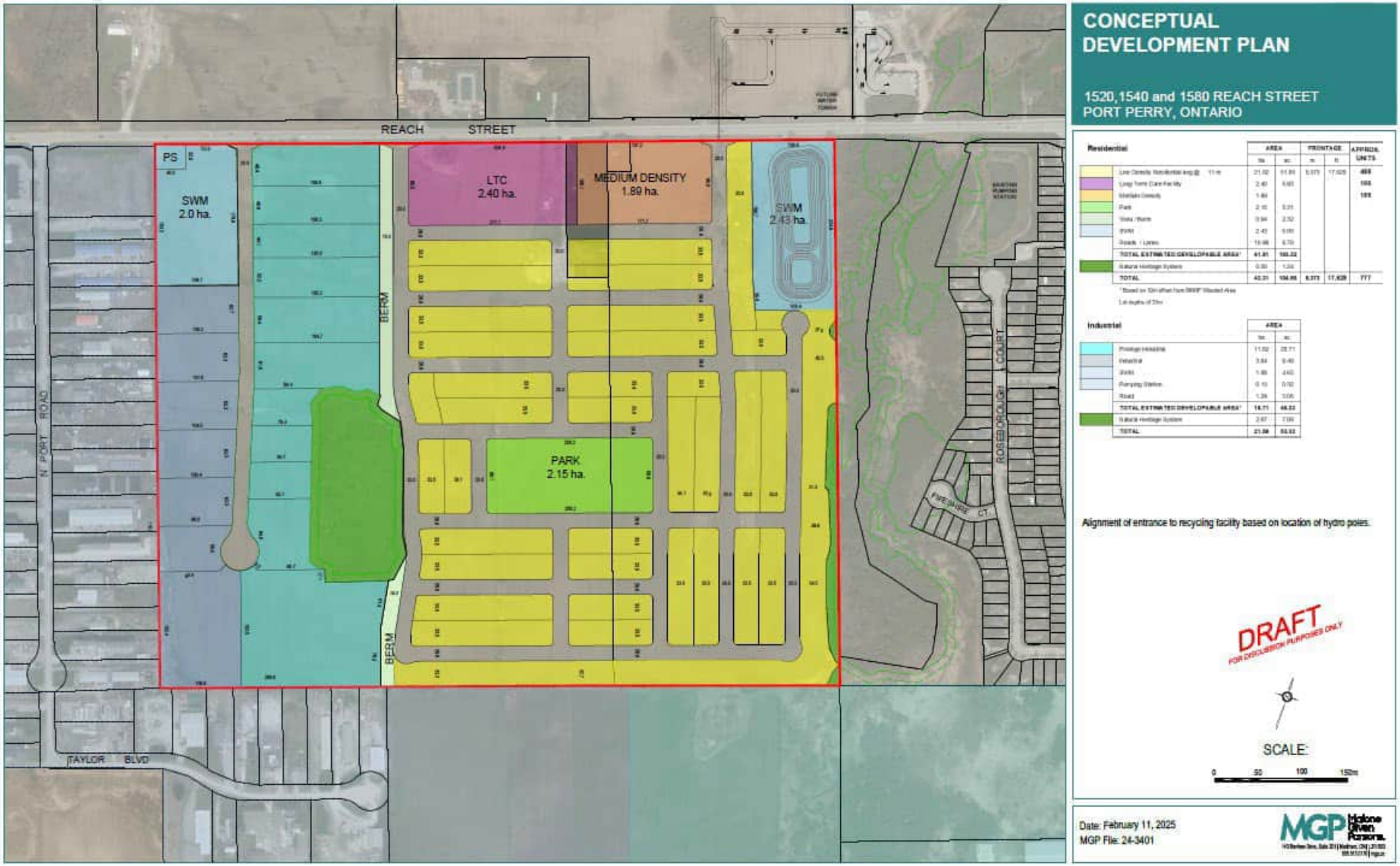
Redstone Engineering 143 - 171A Rink St Peterborough, ON 705-768-9042 www.redstoneeng.ca	Drawing Title TESTHOLE LOCATION PLAN PRELIMINARY GEOTECHNICAL REPORT PROPOSED RESIDENTIAL & INDUSTRIAL/COMMERCIAL DEVELOPMENT 1520, 1540, 1580 REACH STREET, PORT PERRY, ONTARIO	Orientation see North arrow (above)	Scale see scale bar (above)	Date January 13, 2026 By GB	Project #: 25R121 Figure #: 1

APPENDIX A

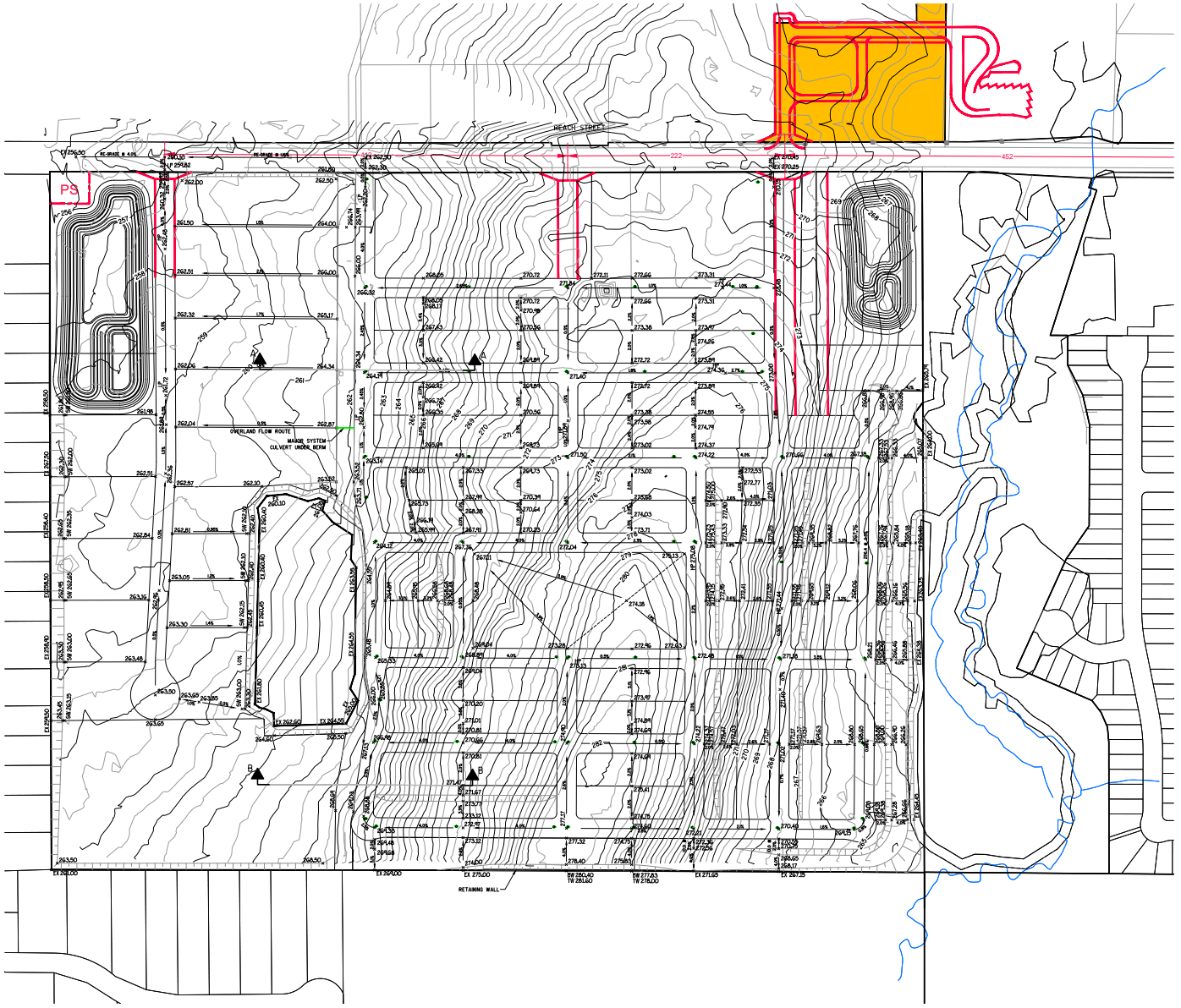
CONCEPT PLAN, GRADING PLAN

- Malone Given Parsons drawing: “Conceptual Development Plan – 1520, 1540 and 1580 Reach Street, Port Perry, Ontario”, their File No. 24-3401, dated February 11 2025..... 1 pg
- Sabourin Kimble & Associates Ltd drawing: “Reach Street Lands Grading Plan”, Figure No 1.0, their Project No. 24-478, undated ..... 1 pg

PROPOSED PLAN:



Redstone Engineering note: this page excerpted from Township of Scugog Preconsultation letter dated March 4 2025



1:2000

REACH STREET LANDS
GRADING PLAN

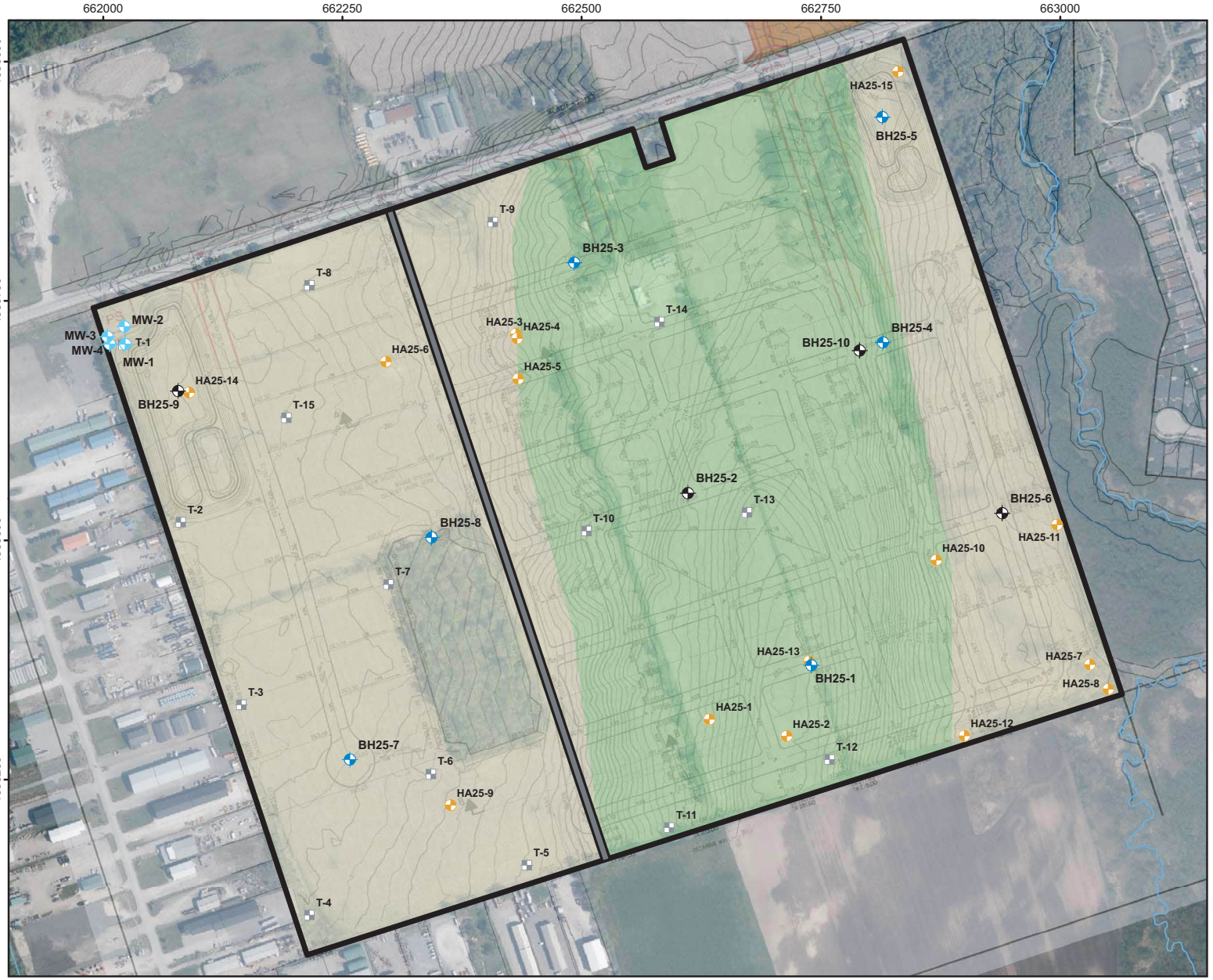
SABOURIN KIMBLE & ASSOCIATES LTD.
CONSULTING ENGINEERS

PROJECT NUMBER	FIGURE NUMBER
24:478	1.0

APPENDIX B

OAKRIDGE ENVIRONMENTAL LIMITED DOCUMENTS

- Plan drawing titled "D-4 Land Use On or Near Landfills and Dumps Study - Proposed Residential and Industrial/Commercial Development Port Perry, Ontario - Part of Lot 15 & 16, Concession 6 (Reach), Township of Scugog, Regional Municipality of Durham – Site Features", Figure No. 4, dated December 2025, under ORE's Project # 25-3614 ..... 1 pg
- Testhole Logs.....28 pgs
- Laboratory Results (Particle Size Distribution) .....4 pgs



NAD 1983 UTM Zone 17N

D-4 Land Use On or Near Landfills and Dumps Study
Proposed Residential and Industrial/Commercial Development
Port Perry, Ontario

Part of Lot 15 & 16, Concession 6 (Reach)
Township of Scugog
Regional Municipality of Durham

- Approximate Site Boundary
- Approximate Easement (Bell Canada)
- Glacial Till Terrain
- Galciolacustrine Terrain
- Monitoring Well (2025)
- Monitoring Well (Historical)
- Mechanized Borehole (2025)
- Manual Auger Borehole (2025)
- Test Pit (Historical)
- Watercourse (Ontario GeoHub)

Scale: 1:4,000

0 50 100 200 m

Notes: Imagery and base map features provided by Ontario GeoHub (SCOOP, 2023)

Base plan provided by Sabourin Kimble & Associates Ltd. (2025)

Historical test pit locations after Gibson & Associates (1991)

Optimized for printing by Oakridge Environmental Ltd.

TITLE

Site Features

ORE Oakridge Environmental Ltd.
Environmental and Hydrogeological Services

PROJECT #	FIGURE NO.
25-3614	**4**
DATE: December 2025	

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BOREHOLE NO. **BH25-1**

TOTAL DEPTH (m): **12.80 m**

UTM Coordinates :	Elevation (masl) :
662740, 4885369	281.63

PROJECT INFORMATION

PROJECT NO: **25-3614**

SITE LOCATION: **Reach Street, Port Perry**

LOGGED BY: **DC & DB**

DATES ASSESSED: **November 25, 2025**

CONTRACTOR INFORMATION

CONTRACTOR: **Ace Environmental Drilling Ltd.**

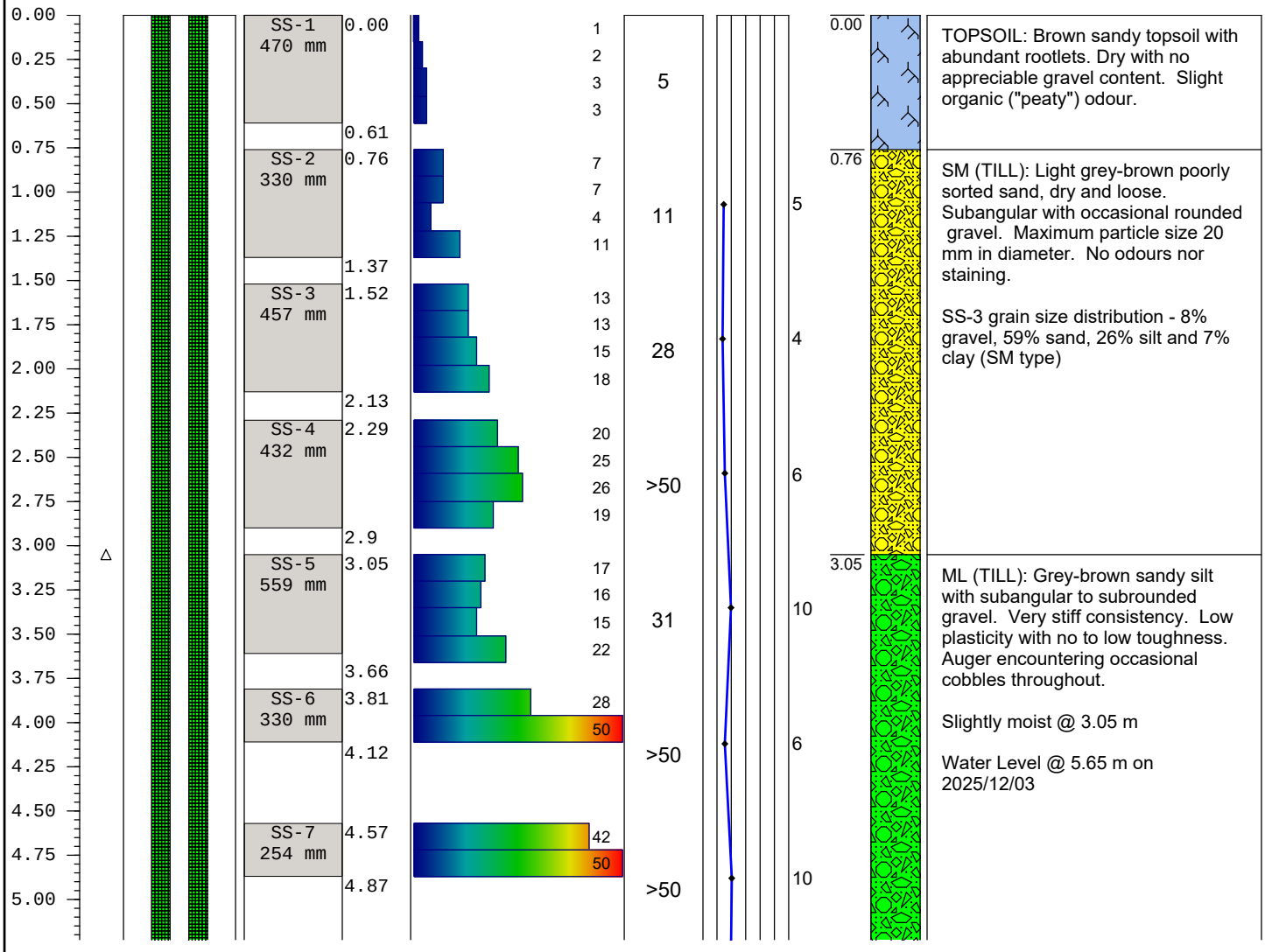
EQUIPMENT: **GEOPROBE 3126GT**

DRILLING METHOD: **Solid Stem Auger**

SAMPLING METHODS: **Split Spoon**

▽ Wet (saturated) ▼ Water Level △ Moist

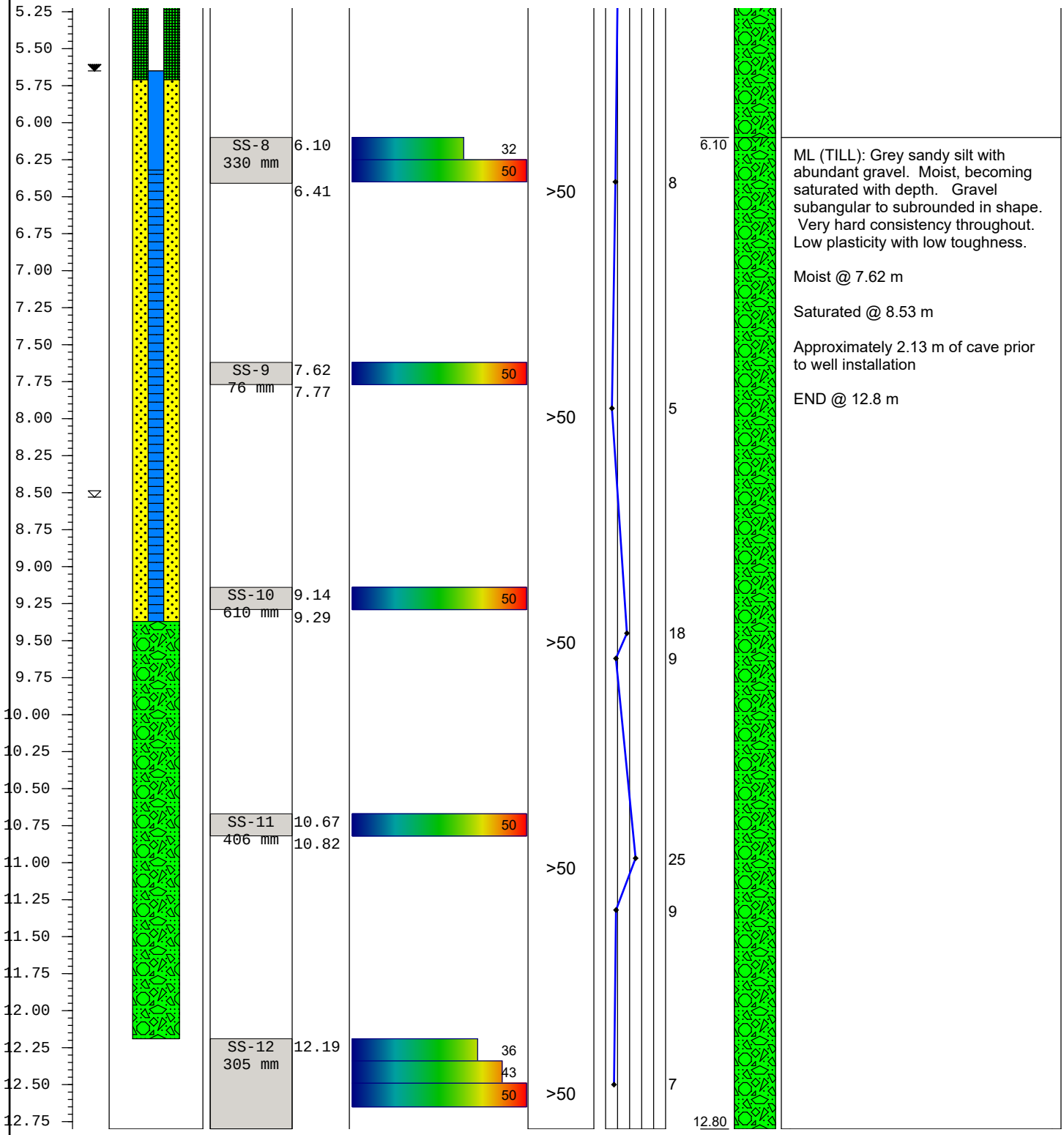
FIELD BOREHOLE LOG



NOTES: 5 Celsius / 5 mm rain starting in afternoon. SPT cave discarded prior to measurements.

FIELD BOREHOLE LOG

Depth	Piezometer Installation	Sample # Recovery	Blow Counts	N Value	Moisture %	Soil Symbol	Soil Description



NOTES: 5 Celsius / 5 mm rain starting in afternoon. SPT cave discarded prior to measurements.

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BOREHOLE NO. **BH25-2**

TOTAL DEPTH (m): **8.23 m**

UTM Coordinates :	Elevation (masl) :
662611,4885549	276.66

PROJECT INFORMATION

PROJECT NO: **25-3614**

SITE LOCATION: **Reach Street, Port Perry**

LOGGED BY: **DC**

DATES ASSESSED: **November 25/26, 2025**

CONTRACTOR INFORMATION

CONTRACTOR: **Ace Environmental Drilling Ltd.**

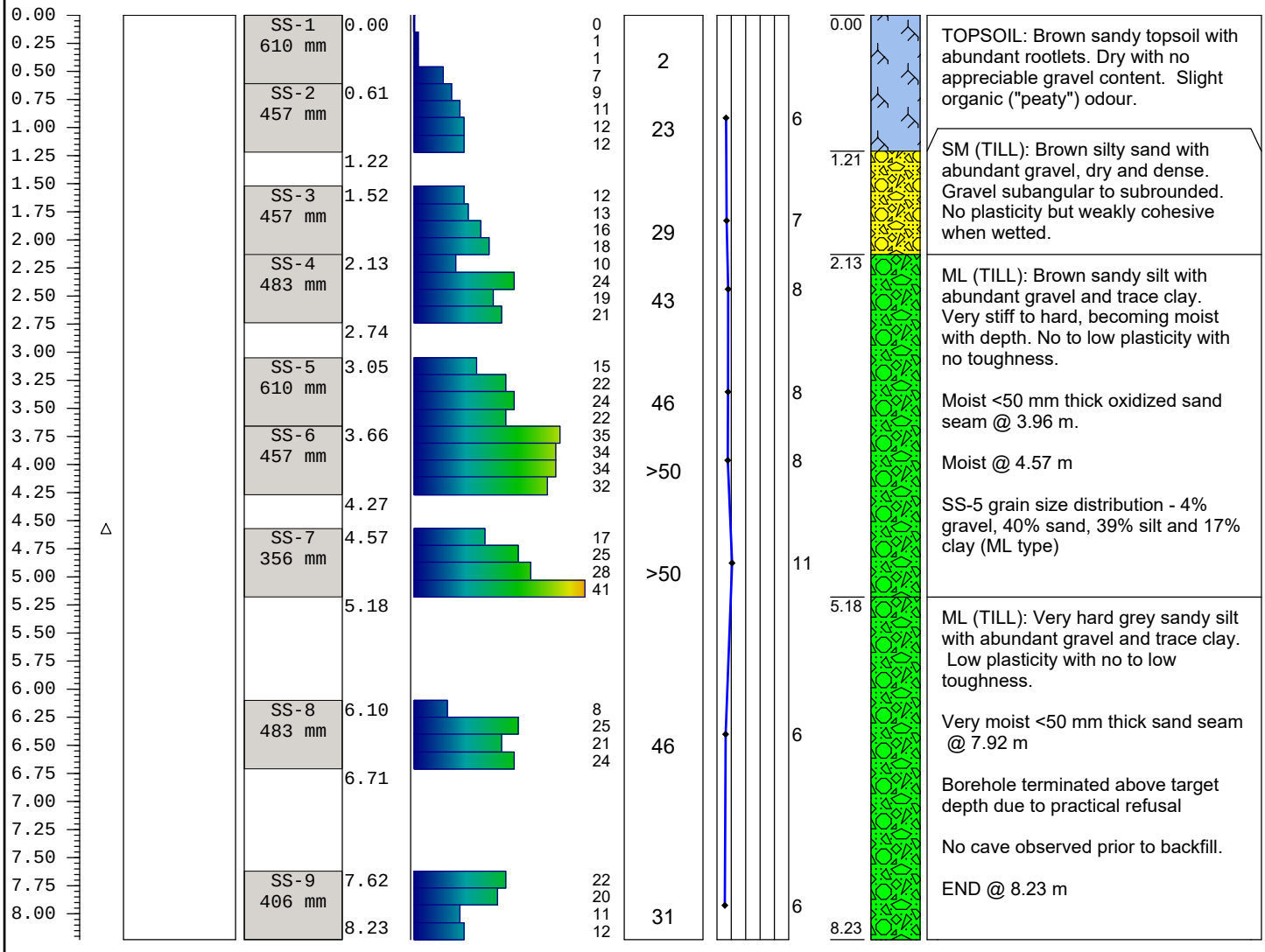
EQUIPMENT: **GEOPROBE 3126GT**

DRILLING METHOD: **Hollow Stem Auger**

SAMPLING METHODS: **Split Spoon**

▽ Wet (saturated) ▼ Water Level △ Moist

FIELD BOREHOLE LOG



NOTES: 5 Celsius / rain on and off throughout day. SPT cave discarded prior to measurements.

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BOREHOLE NO. **BH25-3**

TOTAL DEPTH (m): **8.23 m**

UTM Coordinates :	Elevation (masl) :
662492,4885790	270.63

PROJECT INFORMATION

PROJECT NO: **25-3614**

SITE LOCATION: **Reach Street, Port Perry**

LOGGED BY: **DM**

DATES ASSESSED: **November 25, 2025**

CONTRACTOR INFORMATION

CONTRACTOR: **Ace Environmental Drilling Ltd.**

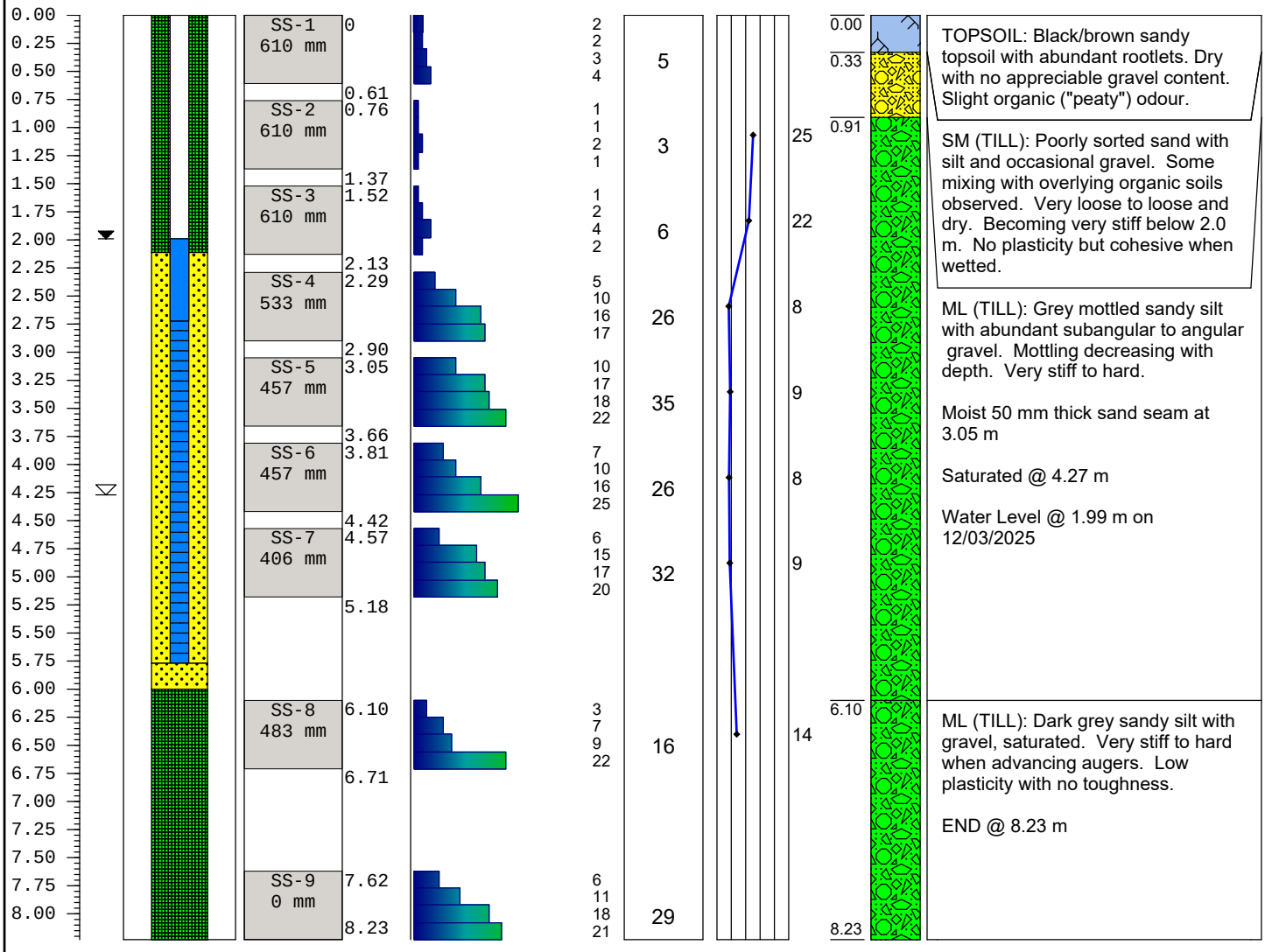
EQUIPMENT: **GEOPROBE 3126GT**

DRILLING METHOD: **Hollow Stem Auger**

SAMPLING METHODS: **Split Spoon**

▽ Wet (saturated) ▼ Water Level △ Moist

FIELD BOREHOLE LOG



NOTES: 5 Celsius / 5 mm rain starting in afternoon. SPT cave discarded prior to measurements.

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BOREHOLE NO. **BH25-4**

TOTAL DEPTH (m): **2.74 m**

UTM Coordinates :	Elevation (masl) :
662492,4885790	272.35

PROJECT INFORMATION

PROJECT NO: **25-3614**

SITE LOCATION **Reach Street, Port Perry**

LOGGED BY: **DM**

DATES ASSESSED: **November 25, 2025**

CONTRACTOR INFORMATION

CONTRACTOR: **Ace Environmental Drilling Ltd.**

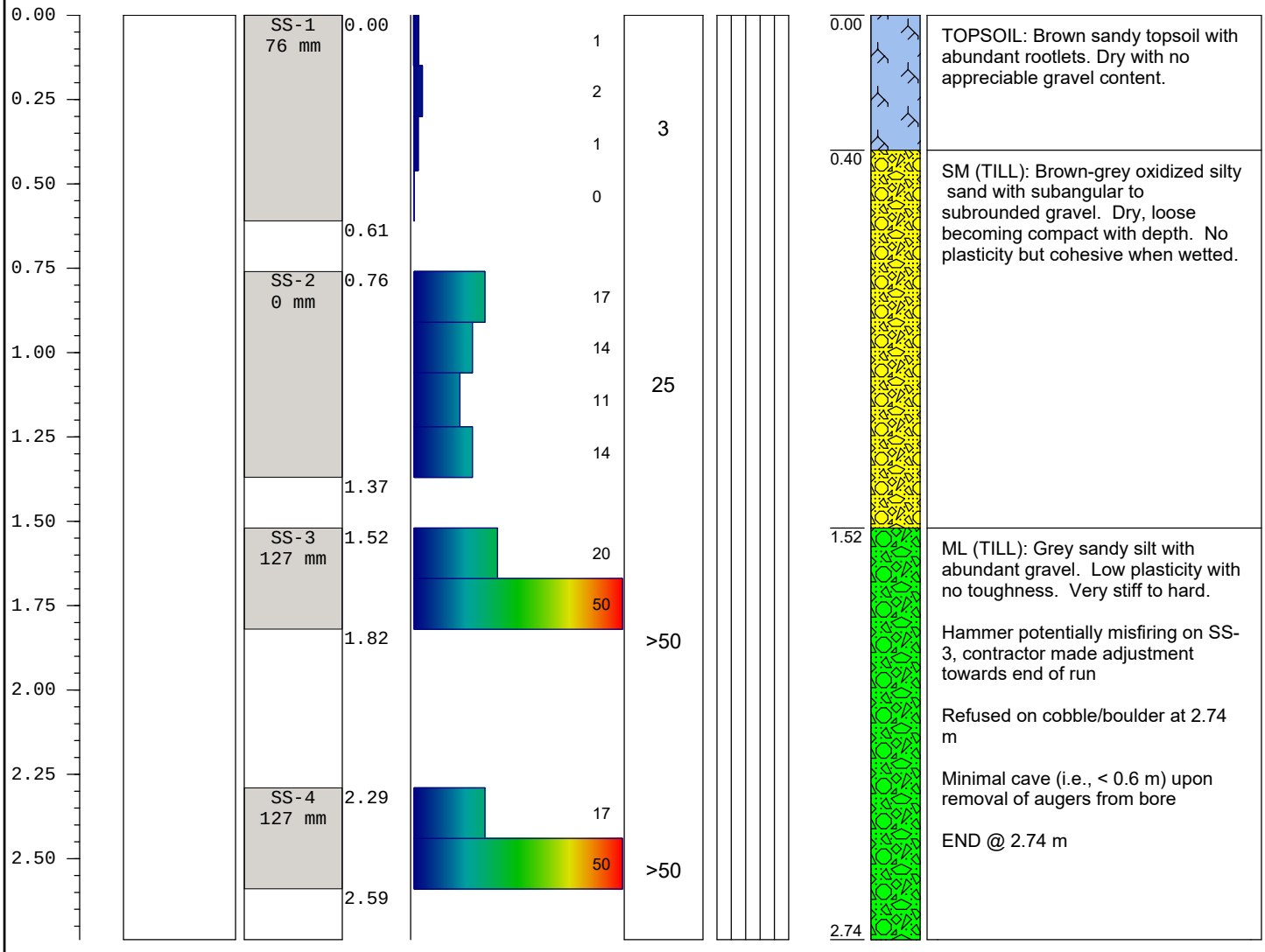
EQUIPMENT: **GEOPROBE 3126GT**

DRILLING METHOD: **Solid Stem Auger**

SAMPLING METHODS: **Split Spoon**

▽ Wet (saturated) ▼ Water Level △ Moist

FIELD BOREHOLE LOG



NOTES: 5 Celsius, 5 mm rain starting in afternoon. Moved to BH25-4a, 3 metres north of BH25-4 location.

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BOREHOLE NO. **BH25-4a**

TOTAL DEPTH (m): **8.23 m**

UTM Coordinates :	Elevation (masl) :
662815,4885707	272.35

PROJECT INFORMATION

PROJECT NO: **25-3614**

SITE LOCATION: **Reach Street, Port Perry**

LOGGED BY: **DM**

DATES ASSESSED: **November 25, 2025**

CONTRACTOR INFORMATION

CONTRACTOR: **Ace Environmental Drilling Ltd.**

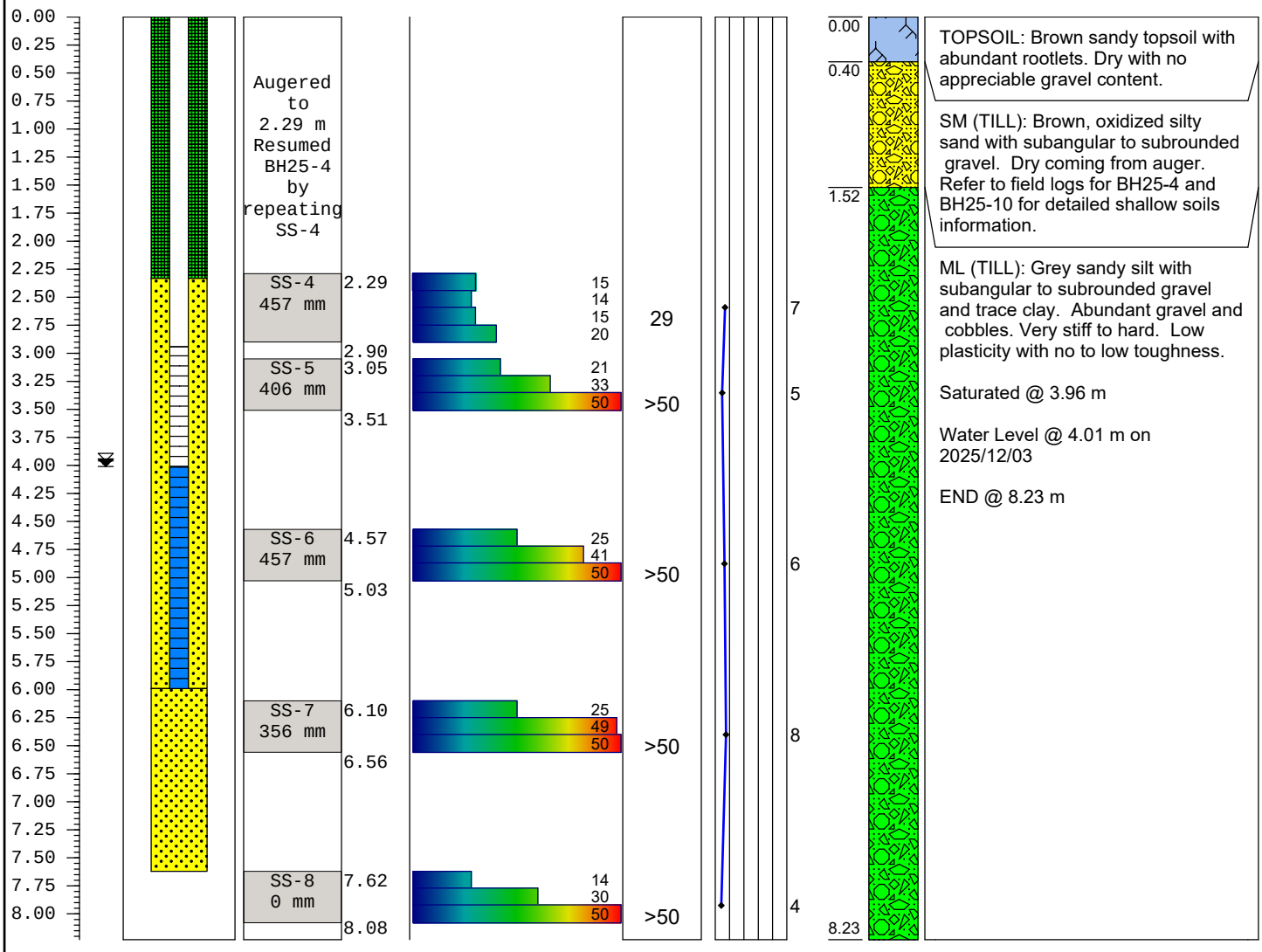
EQUIPMENT: **GEOPROBE 3126GT**

DRILLING METHOD: **Hollow Stem Auger**

SAMPLING METHODS: **Split Spoon**

▽ Wet (saturated) ▼ Water Level △ Moist

FIELD BOREHOLE LOG



NOTES: 5 Celsius, 5mm rain starting in afternoon, refer to BH25-4 and BH25-10 for shallow soil lithology

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BOREHOLE NO. **BH25-5**

TOTAL DEPTH (m): **8.23 m**

UTM Coordinates :	Elevation (masl) :
662814,4885942	268.57

PROJECT INFORMATION

PROJECT NO: **25-3614**

SITE LOCATION: **Reach Street, Port Perry**

LOGGED BY: **DC**

DATES ASSESSED: **November 27, 2025**

CONTRACTOR INFORMATION

CONTRACTOR: **Ace Environmental Drilling Ltd.**

EQUIPMENT: **GEOPROBE 3126GT**

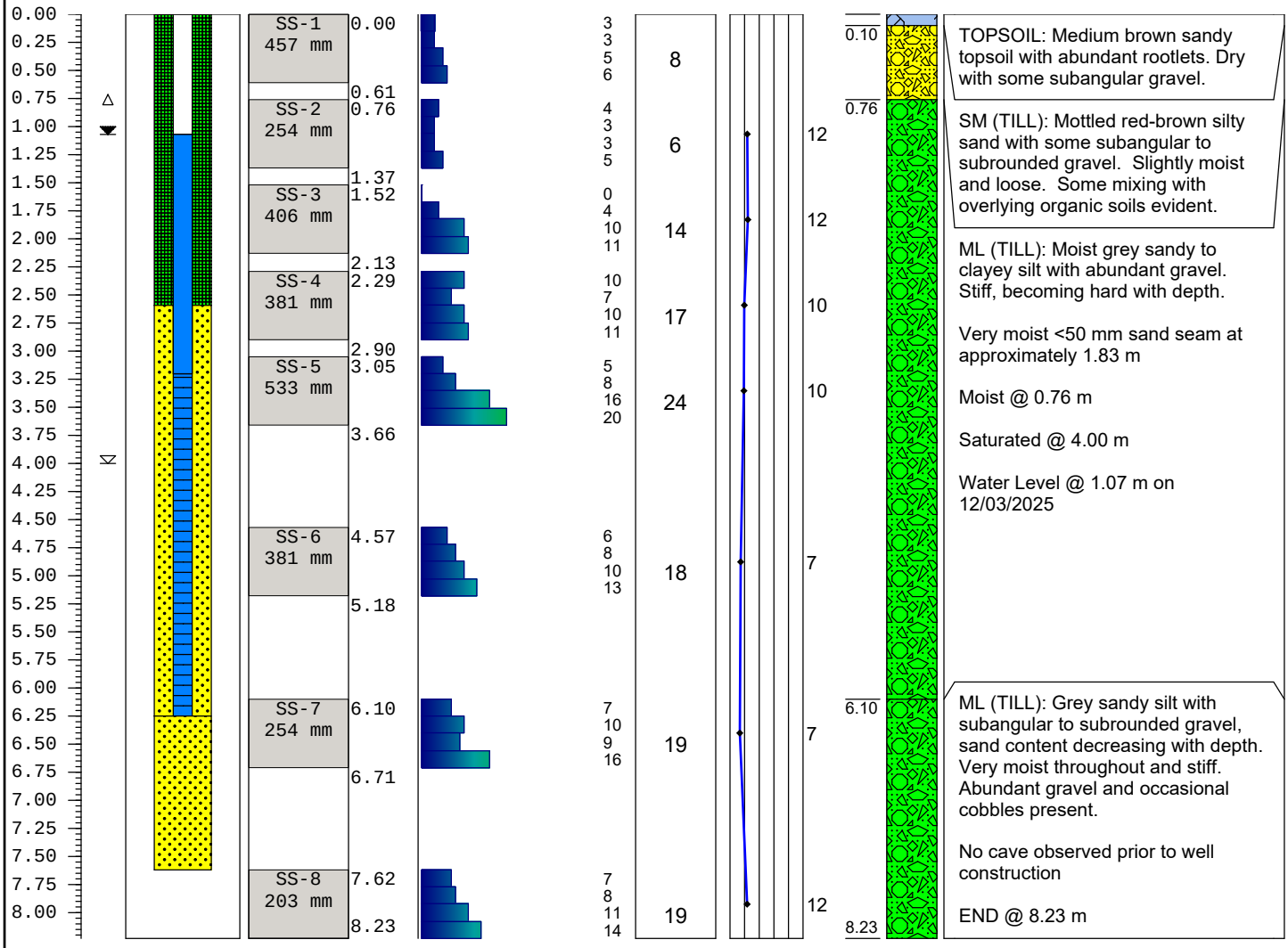
DRILLING METHOD: **Hollow Stem Auger**

SAMPLING METHODS: **Split Spoon**

▽ Wet (saturated) ▼ Water Level △ Moist

FIELD BOREHOLE LOG

Depth	Piezometer Installation	Sample # Recovery	Blow Counts	Field N Value	Moisture %	Soil Symbol	Soil Description



TOPSOIL: Medium brown sandy topsoil with abundant rootlets. Dry with some subangular gravel.

SM (TILL): Mottled red-brown silty sand with some subangular to subrounded gravel. Slightly moist and loose. Some mixing with overlying organic soils evident.

ML (TILL): Moist grey sandy to clayey silt with abundant gravel. Stiff, becoming hard with depth.

Very moist <50 mm sand seam at approximately 1.83 m

Moist @ 0.76 m

Saturated @ 4.00 m

Water Level @ 1.07 m on 12/03/2025

ML (TILL): Grey sandy silt with subangular to subrounded gravel, sand content decreasing with depth. Very moist throughout and stiff. Abundant gravel and occasional cobbles present.

No cave observed prior to well construction

END @ 8.23 m

NOTES: 0 Celsius, windy with snow starting in the afternoon. SPT cave discarded prior to measurements.

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BOREHOLE NO. **BH25-6**

TOTAL DEPTH (m): **6.71 m**

UTM Coordinates :	Elevation (masl) :
662939,4885528	264.74

PROJECT INFORMATION

PROJECT NO: **25-3614**

SITE LOCATION: **Reach Street, Port Perry**

LOGGED BY: **DC**

DATES ASSESSED: **November 27, 2025**

CONTRACTOR INFORMATION

CONTRACTOR: **Ace Environmental Drilling Ltd.**

EQUIPMENT: **GEOPROBE 3126GT**

DRILLING METHOD: **Soild Stem Auger**

SAMPLING METHODS: **Split Spoon**

▽ Wet (saturated) ▼ Water Level △ Moist

FIELD BOREHOLE LOG

Depth	Piezometer Installation	Sample # Recovery	Blow Counts	Field N Value	Moisture %	Soil Symbol	Soil Description
0.00		SS-1 610 mm	2 2 4 5	6		0.00	TOPSOIL: Dark brown sandy topsoil with abundant rootlets. Dry with no appreciable gravel content.
0.35						0.35	
0.61		SS-2 457 mm	5 6 5 5	11	27		SM/SP: Mottled brown poorly graded silty sand with no appreciable gravel content and some lamination present. Compact with no plasticity. Weakly cohesive when wetted.
1.37		SS-3 457 mm	3 5 5 7	10	25	1.52	Moist @ 1.52 m
2.13		SS-4 584 mm	5 8 10 10	18	22		ML/CL: Brown clayey silt to silty clay with trace sand and no appreciable gravel content. Medium plasticity with low toughness.
2.90		SS-5 610 mm	4 6 7 8	13	25		Moist <50 mm oxidized sand seam at 3.35 m
3.66							SS-3 grain size distribution - 60% silt, 39% clay and 1% sand (ML type). Composition may vary still vary between ML and CL based on field observations.
4.57	▽	SS-6 559 mm	3 3 4 4	7	26	4.57	ML/CL: Grey silty clay to clayey silt with no appreciable gravel content and trace sand. Soft becoming firm with depth. Medium plasticity with low toughness.
5.18							Saturated @ 4.88 m
6.10		SS-7 610 mm	3 5 4 5	9	24		Following auger removal, apparent cave to approximately 3.5 m
6.71						6.71	END @ 6.71 m

NOTES: 0 Celsius, windy with snow starting in the afternoon. SPT cave discarded prior to measurements.

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BOREHOLE NO. **BH25-7**

TOTAL DEPTH (m): **6.71 m**

UTM Coordinates :	Elevation (masl) :
662258,4885271	260.00

PROJECT INFORMATION

PROJECT NO: **25-3614**

SITE LOCATION: **Reach Street, Port Perry**

LOGGED BY: **DC & DM**

DATES ASSESSED: **November 26, 2025**

CONTRACTOR INFORMATION

CONTRACTOR: **Ace Environmental Drilling Ltd.**

EQUIPMENT: **GEOPROBE 3126GT**

DRILLING METHOD: **Hollow Stem Auger**

SAMPLING METHODS: **Split Spoon**

▽ Wet (saturated) ▼ Water Level △ Moist

FIELD BOREHOLE LOG

Depth	Piezometer Installation	Sample # Recovery	Blow Counts	Field N Value	Moisture %	Soil Symbol	Soil Description
0.00–0.76		SS-1 610 mm	2 3 3 3	6	16	0.00–0.76	TOPSOIL: Medium brown sandy topsoil with abundant rootlets. Dry with no appreciable gravel content.
0.76–3.05		SS-2 356 mm SS-3 559 mm SS-4 279 mm	3 2 6 9 5 6 9 0 4 7 15 8	8 15 22	28 23 22	0.76–3.05	SM/SP: Mottled brown silty sand, decreasing sand with depth. Dry with no appreciable gravel content. Loose becoming compact with depth. No plasticity but cohesive when wetted.
3.05–6.10	△ ▼ ▽	SS-5 356 mm SS-6 305 mm	5 4 5 7 0 3 3 7	9 6	22 26	3.05–6.10	ML/CL: Grey silty clay with trace sand and no appreciable gravel content. Stiff but becoming soft when very moist to saturated. Vane shear testing completed at 3.81 m. Initial torque = 60 ft/lbs. After 3 revolutions = 20 ft/lbs. Moist @ 1.52 m Saturated @ 4.57 m
6.10–6.71		SS-7 356 mm	6 5 8 8	13	21	6.10–6.71	ML/CL: Grey silty clay with trace gravel and sand. Medium plasticity with low to medium toughness and stiff. Water Level @ 3.84 m on 2025/12/03 END @ 6.71 m

NOTES: 5 Celsius / rain on and off throughout day. SPT cave discarded prior to measurements.

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BOREHOLE NO. **BH25-8**

TOTAL DEPTH (m): **6.71 m**

UTM Coordinates :	Elevation (masl) :
662343,4885503	260.44

PROJECT INFORMATION

PROJECT NO: **25-3614**

SITE LOCATION: **Reach Street, Port Perry**

LOGGED BY: **DC**

DATES ASSESSED: **November 26, 2025**

CONTRACTOR INFORMATION

CONTRACTOR: **Ace Environmental Drilling Ltd.**

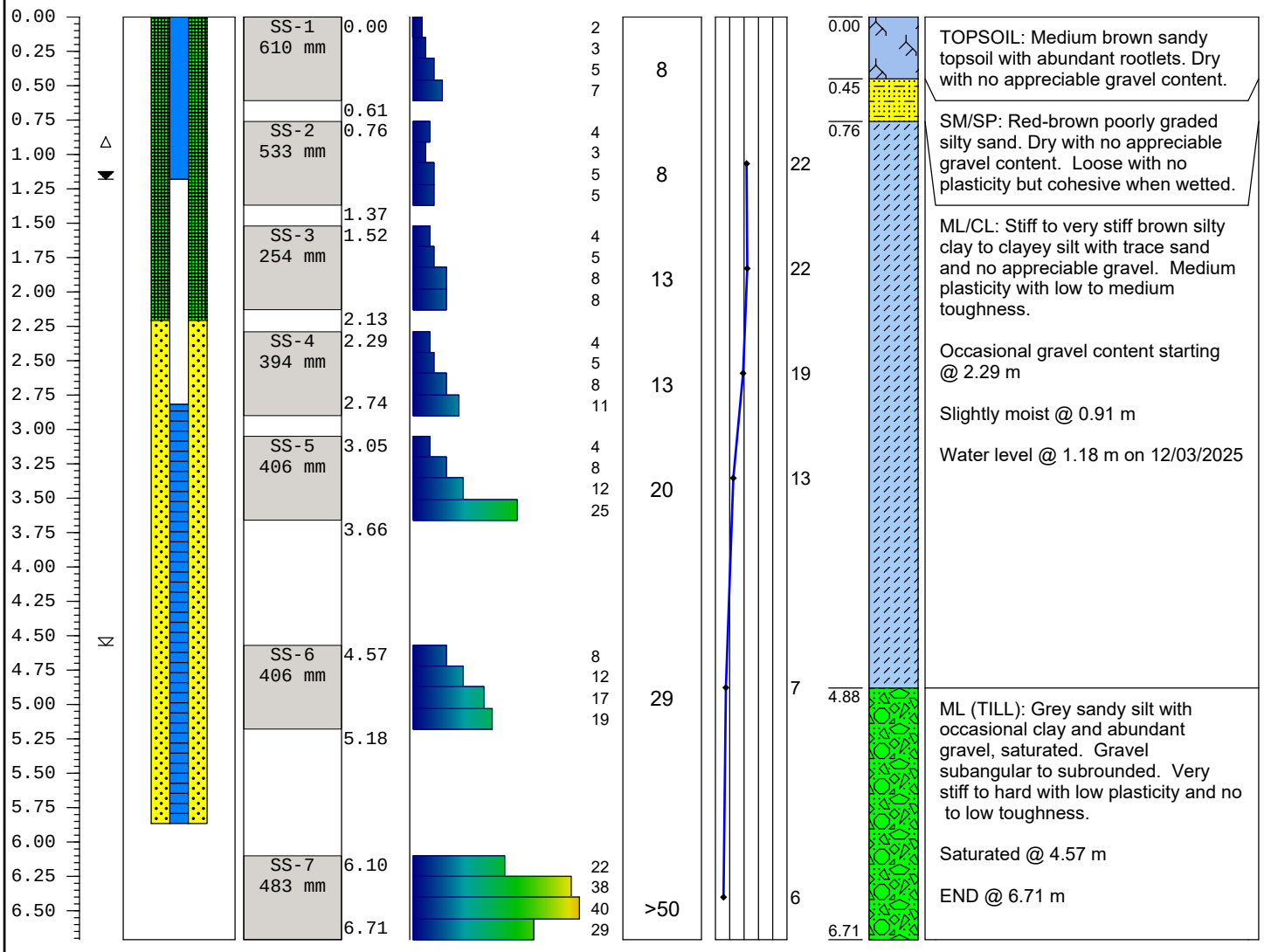
EQUIPMENT: **GEOPROBE 3126GT**

DRILLING METHOD: **Hollow Stem Auger**

SAMPLING METHODS: **Split Spoon**

▽ Wet (saturated) ▼ Water Level △ Moist

FIELD BOREHOLE LOG



NOTES: 5 Celsius / rain on and off throughout day. SPT cave discarded prior to measurements.

ORE
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Environmental and Hydrogeological Services
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BOREHOLE NO. **BH25-9**

TOTAL DEPTH (m): **6.71 m**

UTM Coordinates :	Elevation (masl) :
662078,4885656	257.39

PROJECT INFORMATION

PROJECT NO: **25-3614**

SITE LOCATION: **Reach Street, Port Perry**

LOGGED BY: **DM & DB**

DATES ASSESSED: **November 25, 2025**

CONTRACTOR INFORMATION

CONTRACTOR: **Ace Environmental Drilling Ltd.**

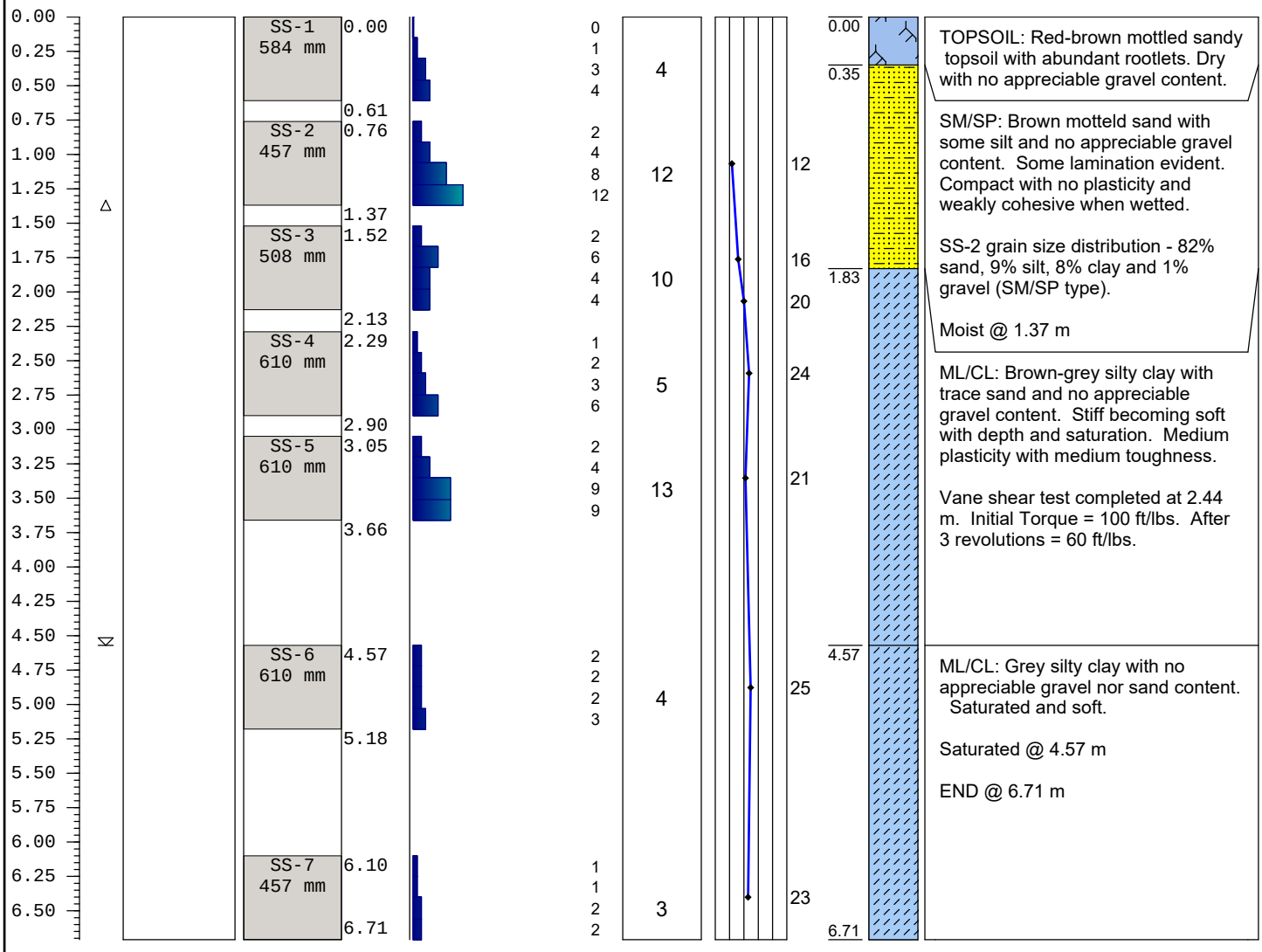
EQUIPMENT: **GEOPROBE 3126GT**

DRILLING METHOD: **Hollow Stem Auger**

SAMPLING METHODS: **Split Spoon**

▽ Wet (saturated) ▼ Water Level △ Moist

FIELD BOREHOLE LOG



NOTES: 5 Celsius, 5 mm rain starting in the afternoon. SPT cave discarded prior to measurements.

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BOREHOLE NO. **BH25-10**

TOTAL DEPTH (m): **2.90 m**

UTM Coordinates :	Elevation (masl) :
662790,4885698	274.46

PROJECT INFORMATION

PROJECT NO: **25-3614**

SITE LOCATION: **Reach Street, Port Perry**

LOGGED BY: **DC**

DATES ASSESSED: **November 27, 2025**

CONTRACTOR INFORMATION

CONTRACTOR: **Ace Environmental Drilling Ltd.**

EQUIPMENT: **GEOPROBE 3126GT**

DRILLING METHOD: **Solid Stem Auger**

SAMPLING METHODS: **Split Spoon**

▽ Wet (saturated) ▼ Water Level △ Moist

FIELD BOREHOLE LOG

Depth	Piezometer Installation	Sample # Recovery	Blow Counts	Field N Value	Moisture %	Soil Symbol	Soil Description
0.00 – 0.61		SS-1 610 mm	0 1 3 3	4	12		TOPSOIL: Red-brown sandy topsoil with abundant rootlets. Slightly moist with no appreciable gravel content.
0.61 – 1.52		SS-2 305 mm	4 4 9 13	13	16		SM (TILL): Brown silty sand with some gravel. Slightly moist and compact. No plasticity but cohesive when wetted.
1.52 – 2.90	△	SS-3 610 mm SS-4 508 mm	14 20 21 25 16 23 42 23	41 >50	20 24		ML (TILL): Brown sandy silt with abundent subangular to subrounded gravel and trace clay. Very hard, with low plasticity and no toughness. Becoming moist with depth. Moist @ 1.83 m END @ 2.90 m

NOTES: 0 Celcius, windy with snow starting in the afternoon. Intended to re-test shallow soils near BH25-4.

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HAND AUGER I.D.: **HA25-1**

TOTAL DEPTH: **0.50 m**

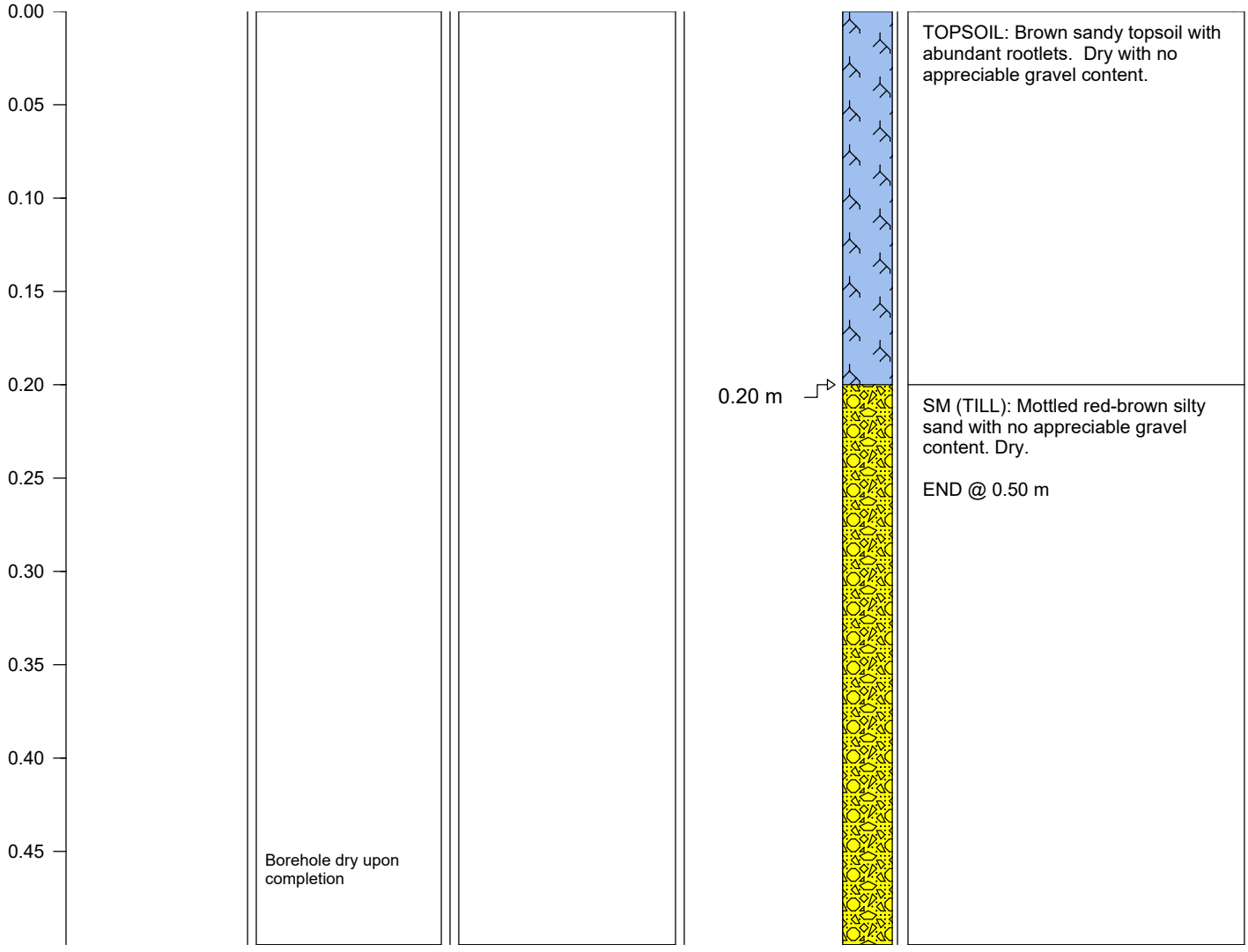
UTM Coordinates:	Elevation (masl):
662633, 4885313	276.89

PROJECT INFORMATION	CONTRACTOR INFORMATION
PROJECT NO: **25-3614**	CONTRACTOR: **Oakridge Environmental Ltd.**
SITE LOCATION: **Reach Street, Port Perry**	EQUIPMENT: **Manual (Hand) Auger**
LOGGED BY: **DC**	STANDPIPE/PIEZOMETERS: **N/A**
DATES ASSESSED: **November 25, 2025**	SAMPLING METHODS: **Composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD AUGER LOG

Depth (cm)	Water	Piezometer Installation	Special Notes	Sample #	Depth	Soil Symbol	Soil Description



TOPSOIL: Brown sandy topsoil with abundant rootlets. Dry with no appreciable gravel content.

SM (TILL): Mottled red-brown silty sand with no appreciable gravel content. Dry.

END @ 0.50 m

NOTES: 5 Celsius, 5 mm rain starting in afternoon. Used to complete infiltration test 1 & 2.

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HAND AUGER I.D.: **HA25-2**

TOTAL DEPTH: **0.48 m**

UTM Coordinates:	Elevation (masl):
662714, 4885295	281.44

PROJECT INFORMATION

PROJECT NO: **25-3614**
SITE LOCATION: **Reach Street, Port Perry**
LOGGED BY: **DC**
DATES ASSESSED: **November 25, 2025**

CONTRACTOR INFORMATION

CONTRACTOR: **Oakridge Environmental Ltd.**
EQUIPMENT: **Manual (Hand) Auger**
STANDPIPE/PIEZOMETERS: **N/A**
SAMPLING METHODS: **Composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD AUGER LOG

Depth (cm)	Water	Piezometer Installation	Special Notes	Sample #	Depth	Soil Symbol	Soil Description
0.00							TOPSOIL: Dark brown sandy topsoil with abundant rootlets. Slightly moist with occasional sub-rounded gravel. .
0.05							
0.10	△						
0.15							
0.18 m							SM (TILL): Mottled brown, oxidized silty sand with subangular to subrounded gravel. Slightly moist.
0.20							END @ 0.48 m
0.25							
0.30							
0.35							
0.40							
0.45			Borehole dry upon completion				

NOTES: 5 Celsius, 5 mm rain starting in afternoon

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HAND AUGER I.D.: **HA25-3**

TOTAL DEPTH: **0.69 m**

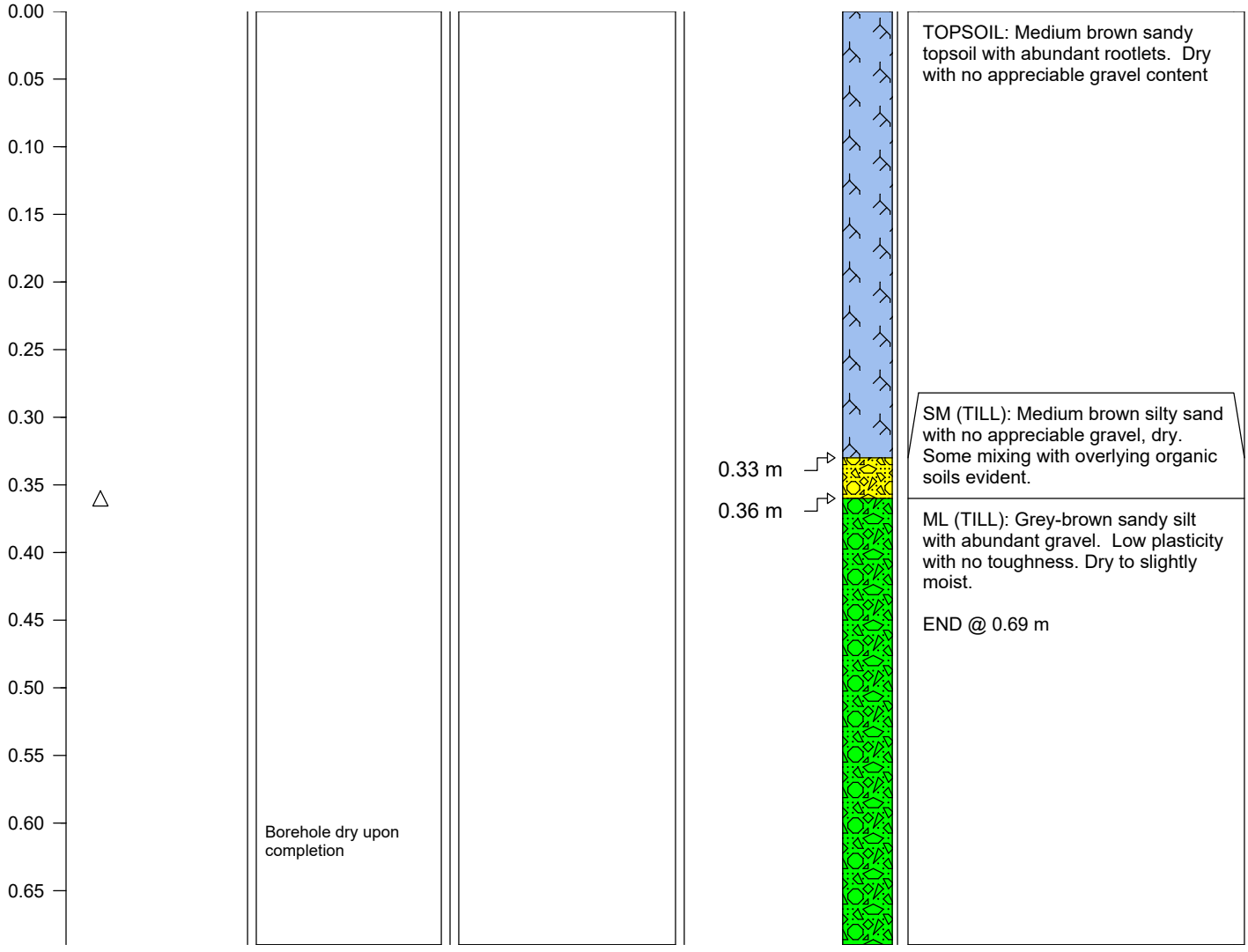
UTM Coordinates:	Elevation (masl):
662431, 4885716	266.75

PROJECT INFORMATION	CONTRACTOR INFORMATION
PROJECT NO: **25-3614**	CONTRACTOR: **Oakridge Environmental Ltd.**
SITE LOCATION: **Reach Street, Port Perry**	EQUIPMENT: **Manual (Hand) Auger**
LOGGED BY: **DM**	STANDPIPE/PIEZOMETERS: **N/A**
DATES ASSESSED: **November 26, 2025**	SAMPLING METHODS: **Composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD AUGER LOG

Depth (cm)	Water	Piezometer Installation	Special Notes	Sample #	Depth	Soil Symbol	Soil Description



NOTES: 5 Celsius, rain on and off throughout day. Used to complete infiltration test 3.

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HAND AUGER I.D.: **HA25-4**

TOTAL DEPTH: **0.38 m**

UTM Coordinates:	Elevation (masl):
662432, 4885711	267.13

PROJECT INFORMATION

PROJECT NO: **25-3614**
SITE LOCATION: **Reach Street, Port Perry**
LOGGED BY: **DM**
DATES ASSESSED: **November 26, 2025**

CONTRACTOR INFORMATION

CONTRACTOR: **Oakridge Environmental Ltd.**
EQUIPMENT: **Manual (Hand) Auger**
STANDPIPE/PIEZOMETERS: **N/A**
SAMPLING METHODS: **Composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD AUGER LOG

Depth (cm)	Water	Piezometer Installation	Special Notes	Sample #	Depth	Soil Symbol	Soil Description
0.00							TOPSOIL: Medium brown sandy topsoil with abundant rootlets. Dry with no appreciable gravel content
0.05							
0.10							
0.15							
0.20							
0.25					0.25 m		SM (TILL): Brown silty sand with abundant gravel, dry and dense. Gravel subangular to subrounded.
0.30			Borehole dry upon completion				END @ 0.38 m
0.35							

NOTES: 5 Celsius, rain on and off throughout day

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HAND AUGER I.D.: **HA25-5**

TOTAL DEPTH: **0.77 m**

UTM Coordinates:	Elevation (masl):
662433, 4885668	265.55

PROJECT INFORMATION

PROJECT NO: **25-3614**
SITE LOCATION: **Reach Street, Port Perry**
LOGGED BY: **DM**
DATES ASSESSED: **November 26, 2025**

CONTRACTOR INFORMATION

CONTRACTOR: **Oakridge Environmental Ltd.**
EQUIPMENT: **Manual (Hand) Auger**
STANDPIPE/PIEZOMETERS: **N/A**
SAMPLING METHODS: **Composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD AUGER LOG

Depth (cm)	Water	Piezometer Installation	Special Notes	Sample #	Depth	Soil Symbol	Soil Description
0.00 – 0.11							TOPSOIL: Medium brown sandy topsoil with abundant rootlets. Dry with no appreciable gravel content
0.11 – 0.33					0.11 m		SM (TILL): Mottled grey silty sand with occasional gravel.
0.33 – 0.77			Borehole dry upon completion	HA25-5 (0.70 m)	0.33 m		ML (TILL): Mottled grey sandy silt with abundant gravel. Low plasticity with no toughness. Dry. Refused on gravel/cobble @ 0.77 m

0.00 0.05 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.45 0.50 0.55 0.60 0.65 0.70 0.75

NOTES: 5 Celsius, rain on and off throughout day

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HAND AUGER I.D.: **HA25-6**

TOTAL DEPTH: **0.53 m**

UTM Coordinates:	Elevation (masl):
662295, 4885687	260.90

PROJECT INFORMATION

PROJECT NO: **25-3614**
SITE LOCATION: **Reach Street, Port Perry**
LOGGED BY: **DM**
DATES ASSESSED: **November 26, 2025**

CONTRACTOR INFORMATION

CONTRACTOR: **Oakridge Environmental Ltd.**
EQUIPMENT: **Manual (Hand) Auger**
STANDPIPE/PIEZOMETERS: **N/A**
SAMPLING METHODS: **Composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD AUGER LOG

Depth (cm)	Water	Piezometer Installation	Special Notes	Sample #	Depth	Soil Symbol	Soil Description
0.00							TOPSOIL: Medium grey-brown sandy topsoil with abundant rootlets. Dry with no appreciable gravel content
0.05							
0.10							
0.15							
0.20							
0.25							
0.28 m					0.28 m		SM/SP: Mottled grey silty sand with no appreciable gravel content, dry. Some lamination evident.
0.30							
0.35							END @ 0.53 m
0.40							
0.45			Borehole dry upon completion				
0.50							

NOTES: 5 Celsius, rain on and off throughout day. Used to completed infiltration test 4

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HAND AUGER I.D.: **HA25-7**

TOTAL DEPTH: **1.22 m**

UTM Coordinates:	Elevation (masl):
663031, 4885370	263.83

PROJECT INFORMATION

PROJECT NO: **25-3614**
SITE LOCATION: **Reach Street, Port Perry**
LOGGED BY: **DM**
DATES ASSESSED: **November 26, 2025**

CONTRACTOR INFORMATION

CONTRACTOR: **Oakridge Environmental Ltd.**
EQUIPMENT: **Manual (Hand) Auger**
STANDPIPE/PIEZOMETERS: **N/A**
SAMPLING METHODS: **Composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD AUGER LOG

Depth (cm)	Water	Piezometer Installation	Special Notes	Sample #	Depth	Soil Symbol	Soil Description
0.00–1.20	△		Borehole dry upon completion	HA25-7 (0.81-0.86 m) HA25-7 (0.86-1.12 m)	0.53 m 1.12 m		TOPSOIL: Brown-grey sandy topsoil with abundant rootlets. Dry with no appreciable gravel content SP: Oxidized well sorted (poorly graded) sand with no appreciable gravel content and occasional silt. Decreasing oxidation with depth and dry. ML (TILL): Brown-grey sandy silt with abundant gravel. Low plasticity with no toughness. Moist. End at length of auger @ 1.22 m

NOTES: 5 Celsius, rain on and off throughout day

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HAND AUGER I.D.: **HA25-8**

TOTAL DEPTH: **1.22 m**

UTM Coordinates:	Elevation (masl):
663050, 4885344	262.92

PROJECT INFORMATION

PROJECT NO: **25-3614**
SITE LOCATION: **Reach Street, Port Perry**
LOGGED BY: **DM**
DATES ASSESSED: **November 26, 2025**

CONTRACTOR INFORMATION

CONTRACTOR: **Oakridge Environmental Ltd.**
EQUIPMENT: **Manual (Hand) Auger**
STANDPIPE/PIEZOMETERS: **N/A**
SAMPLING METHODS: **Composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD AUGER LOG

Depth (cm)	Water	Piezometer Installation	Special Notes	Sample #	Depth	Soil Symbol	Soil Description
0.00 – 1.20			Borehole dry upon completion		0.30 m		TOPSOIL: Brown-grey sandy topsoil with abundant rootlets. Dry with no appreciable gravel content SM/SP: Grey well sorted (poorly graded) sand with silt and no appreciable gravel content, dry. End at length of auger @ 1.22 m

NOTES: 5 Celsius, rain on and off throughout day

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HAND AUGER I.D.: **HA25-9**

TOTAL DEPTH: **0.53 m**

UTM Coordinates:	Elevation (masl):
662363, 4885223	262.66

PROJECT INFORMATION

PROJECT NO: **25-3614**
SITE LOCATION: **Reach Street, Port Perry**
LOGGED BY: **DM**
DATES ASSESSED: **November 26, 2025**

CONTRACTOR INFORMATION

CONTRACTOR: **Oakridge Environmental Ltd.**
EQUIPMENT: **Manual (Hand) Auger**
STANDPIPE/PIEZOMETERS: **N/A**
SAMPLING METHODS: **Composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD AUGER LOG

Depth (cm)	Water	Piezometer Installation	Special Notes	Sample #	Depth	Soil Symbol	Soil Description
0.00							TOPSOIL: Grey-brown sandy topsoil with abundant rootlets. Dry with no appreciable gravel content
0.05							
0.10							
0.15							
0.20							
0.25							
0.28 m					0.28 m		SM/SP: Mottled grey silty sand with no appreciable gravel content, dry.
0.30							
0.35							END @ 0.53 m
0.40							
0.45			Borehole dry upon completion				
0.50							

NOTES: 5 Celsius, rain on and off throughout day. Used to completed infiltration test 5

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HAND AUGER I.D.: **HA25-10**

TOTAL DEPTH: **1.22 m**

UTM Coordinates:	Elevation (masl):
662870, 4885479	268.09

PROJECT INFORMATION

PROJECT NO: **25-3614**
SITE LOCATION: **Reach Street, Port Perry**
LOGGED BY: **DM**
DATES ASSESSED: **November 26, 2025**

CONTRACTOR INFORMATION

CONTRACTOR: **Oakridge Environmental Ltd.**
EQUIPMENT: **Manual (Hand) Auger**
STANDPIPE/PIEZOMETERS: **N/A**
SAMPLING METHODS: **Composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD AUGER LOG

Depth (cm)	Water	Piezometer Installation	Special Notes	Sample #	Depth	Soil Symbol	Soil Description
0.00 – 1.20			Borehole dry upon completion		0.76 m		TOPSOIL: grey sandy topsoil with abundant rootlets. Slightly moist with occasional sub-rounded gravel. Dry. SM (TILL): Mottled grey silty sand with subangular to subrounded gravel, dry. END @ 1.22 m

NOTES: 5 Celsius, 5 mm rain starting in afternoon

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HAND AUGER I.D.: **HA25-11**

TOTAL DEPTH: **0.56 m**

UTM Coordinates:	Elevation (masl):
662996, 4885516	264.20

PROJECT INFORMATION

PROJECT NO: **25-3614**
SITE LOCATION: **Reach Street, Port Perry**
LOGGED BY: **DM**
DATES ASSESSED: **November 26, 2025**

CONTRACTOR INFORMATION

CONTRACTOR: **Oakridge Environmental Ltd.**
EQUIPMENT: **Manual (Hand) Auger**
STANDPIPE/PIEZOMETERS: **N/A**
SAMPLING METHODS: **Composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD AUGER LOG

Depth (cm)	Water	Piezometer Installation	Special Notes	Sample #	Depth	Soil Symbol	Soil Description
0.00 – 0.29 m			Borehole dry upon completion		0.29 m		TOPSOIL: Brown sandy topsoil with abundant rootlets. Dry with no appreciable gravel content.
0.29 – 0.56 m							SM/SP: Oxidixed red-brown well sorted (poorly graded) sand, decreasing oxidation with depth. Dry with no appreciable gravel content. END @ 0.56 m

0.00 0.05 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.45 0.50 0.55

NOTES: 5 Celsius, 5 mm rain starting in afternoon. Used to completed infiltration test 6.

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HAND AUGER I.D.: **HA25-12**

TOTAL DEPTH: **1.14 m**

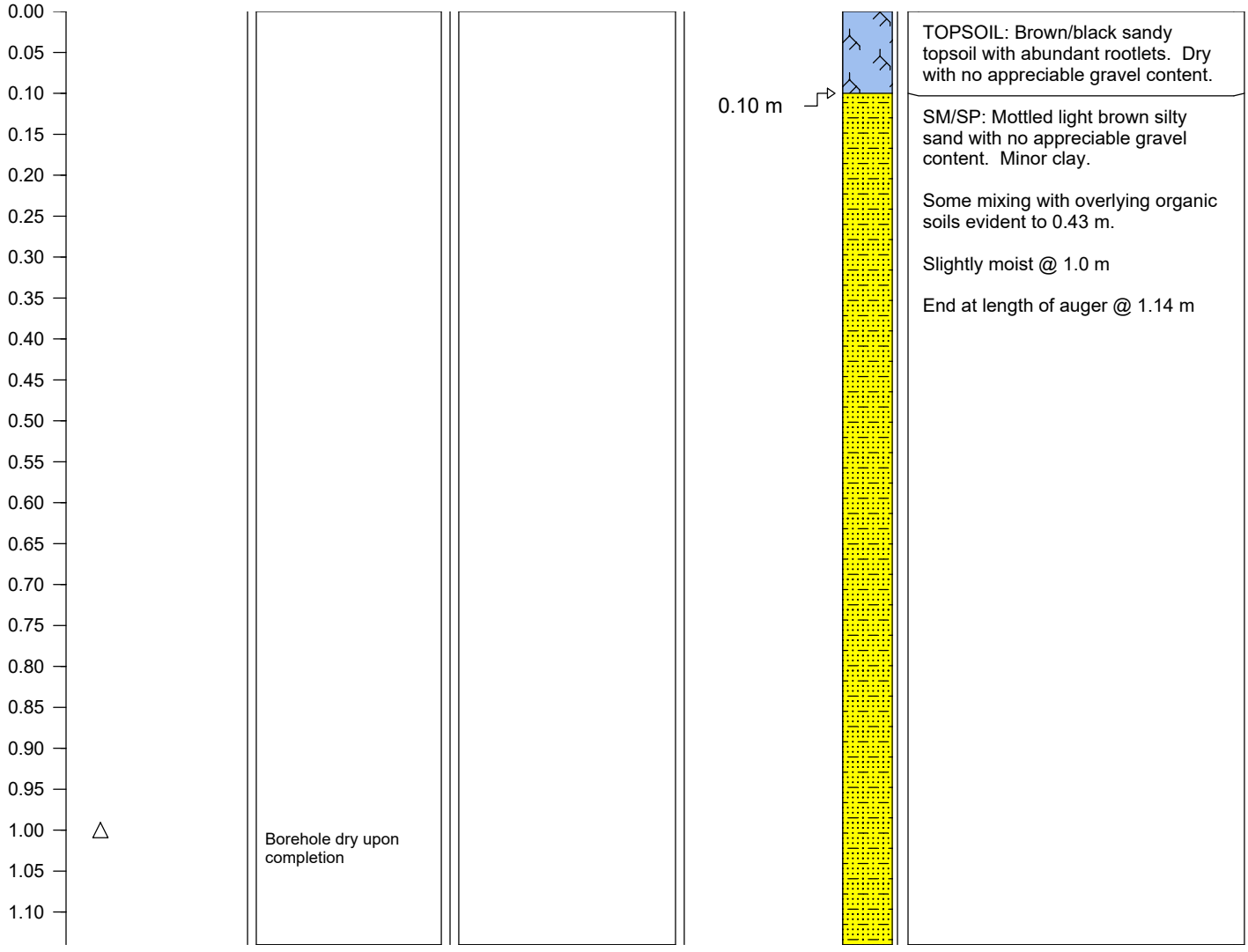
UTM Coordinates:	Elevation (masl):
662900, 4885296	267.63

PROJECT INFORMATION	CONTRACTOR INFORMATION
PROJECT NO: **25-3614**	CONTRACTOR: **Oakridge Environmental Ltd.**
SITE LOCATION: **Reach Street, Port Perry**	EQUIPMENT: **Manual (Hand) Auger**
LOGGED BY: **DM**	STANDPIPE/PIEZOMETERS: **N/A**
DATES ASSESSED: **November 14, 2025**	SAMPLING METHODS: **Composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD AUGER LOG

Depth (cm)	Water	Piezometer Installation	Special Notes	Sample #	Depth	Soil Symbol	Soil Description



NOTES: 6 Celsius, overcast

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HAND AUGER I.D.: **HA25-13**

TOTAL DEPTH: **1.20 m**

UTM Coordinates:	Elevation (masl):
662737, 4885373	281.54

PROJECT INFORMATION	CONTRACTOR INFORMATION
PROJECT NO: **25-3614**	CONTRACTOR: **Oakridge Environmental Ltd.**
SITE LOCATION: **Reach Street, Port Perry**	EQUIPMENT: **Manual (Hand) Auger**
LOGGED BY: **DC**	STANDPIPE/PIEZOMETERS: **N/A**
DATES ASSESSED: **December 15, 2025**	SAMPLING METHODS: **Composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD AUGER LOG

Depth (cm)	Water	Piezometer Installation	Special Notes	Sample #	Depth	Soil Symbol	Soil Description
0.00 – 1.15			Borehole dry upon completion	HA25-13 (1.07-1.20 m)	0.20 m 0.90 m		TOPSOIL: Medium brown sandy topsoil with abundant rootlets. Dry with occasional gravel. SM (TILL): Oxidized brown silty sand with no appreciable gravel content. Dry. ML (TILL): Brown sandy silt with subangular to subrounded gravel, dry. End at length of auger @ 1.20 m

NOTES: - 5 Celsius, windy, overcast

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HAND AUGER I.D.: **HA25-14**

TOTAL DEPTH: **1.20 m**

UTM Coordinates:	Elevation (masl):
662090, 4885654	257.61

PROJECT INFORMATION

PROJECT NO: **25-3614**
SITE LOCATION: **Reach Street, Port Perry**
LOGGED BY: **DC**
DATES ASSESSED: **December 15, 2025**

CONTRACTOR INFORMATION

CONTRACTOR: **Oakridge Environmental Ltd.**
EQUIPMENT: **Manual (Hand) Auger**
STANDPIPE/PIEZOMETERS: **N/A**
SAMPLING METHODS: **Composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD AUGER LOG

Depth (cm)	Water	Piezometer Installation	Special Notes	Sample #	Depth	Soil Symbol	Soil Description
0.00 – 0.30					0.30 m		TOPSOIL: Dark-medium brown sandy topsoil with abundant rootlets. Dry with occasional small gravel.
0.30 – 1.00							SM/SP: Oxidized brown silty sand with no appreciable gravel content. Oxidation decreasing with depth.
0.80	△						Moist @ 0.80 m
1.00			Borehole dry upon completion		1.0 m		ML: Light brown-grey sandy silt with minor clay. Occasional small subangular to subrounded gravel, moist.
1.20							End at length of auger @ 1.20 m

NOTES: - 5 Celsius, windy, overcast

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HAND AUGER I.D.: **HA25-15**

TOTAL DEPTH: **0.60 m**

UTM Coordinates:	Elevation (masl):
662830, 4885990	266.60

PROJECT INFORMATION

PROJECT NO: **25-3614**
SITE LOCATION: **Reach Street, Port Perry**
LOGGED BY: **DM**
DATES ASSESSED: **December 17, 2025**

CONTRACTOR INFORMATION

CONTRACTOR: **Oakridge Environmental Ltd.**
EQUIPMENT: **Manual (Hand) Auger**
STANDPIPE/PIEZOMETERS: **N/A**
SAMPLING METHODS: **Composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD AUGER LOG

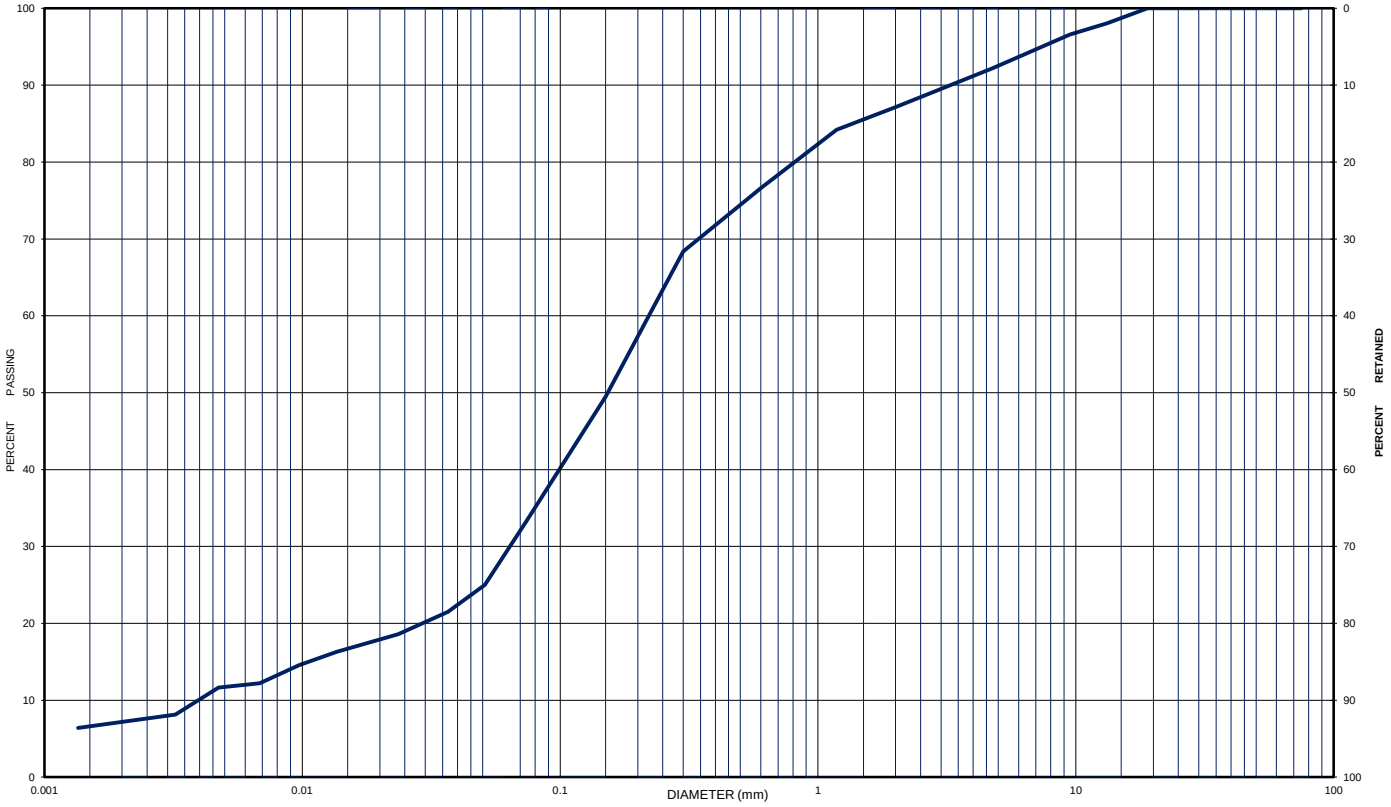
Depth (cm)	Water	Piezometer Installation	Special Notes	Sample #	Depth	Soil Symbol	Soil Description
0.00 – 0.25					0.25 m		TOPSOIL: Medium brown silty-sandy topsoil with abundant rootlets.
0.25 – 0.46					0.46 m		SM/SP: Brown silty sand with trace gravel/cobble. Some mixing with with overlying organic soils observed.
0.46 – 0.55			Borehole dry upon completion				ML: Brown sandy silt with minor clay and trace gravel. Refused on cobble @ 0.61 m

NOTES: - 5 Celsius, windy, overcast

GRAIN SIZE DISTRIBUTION CHART

Client:	*Oakridge Envionmental Limited*	Project No.:	*25-3614*
Project:	*Reach Street*	Location:	--
Sampled By:	*Oakridge Environmental Limited*	Date:	*December 3, 2025*
Sample No.:	*BH-25-1 SS-3*	Depth:	--

UNIFIED SOIL CLASSIFICATION SYSTEM					
CLAY & SILT (<0.075mm)	SAND (<4.75 to 0.075mm)			GRAVEL (>4.75mm)	
	FINE	MEDIUM	COARSE	FINE	COARSE



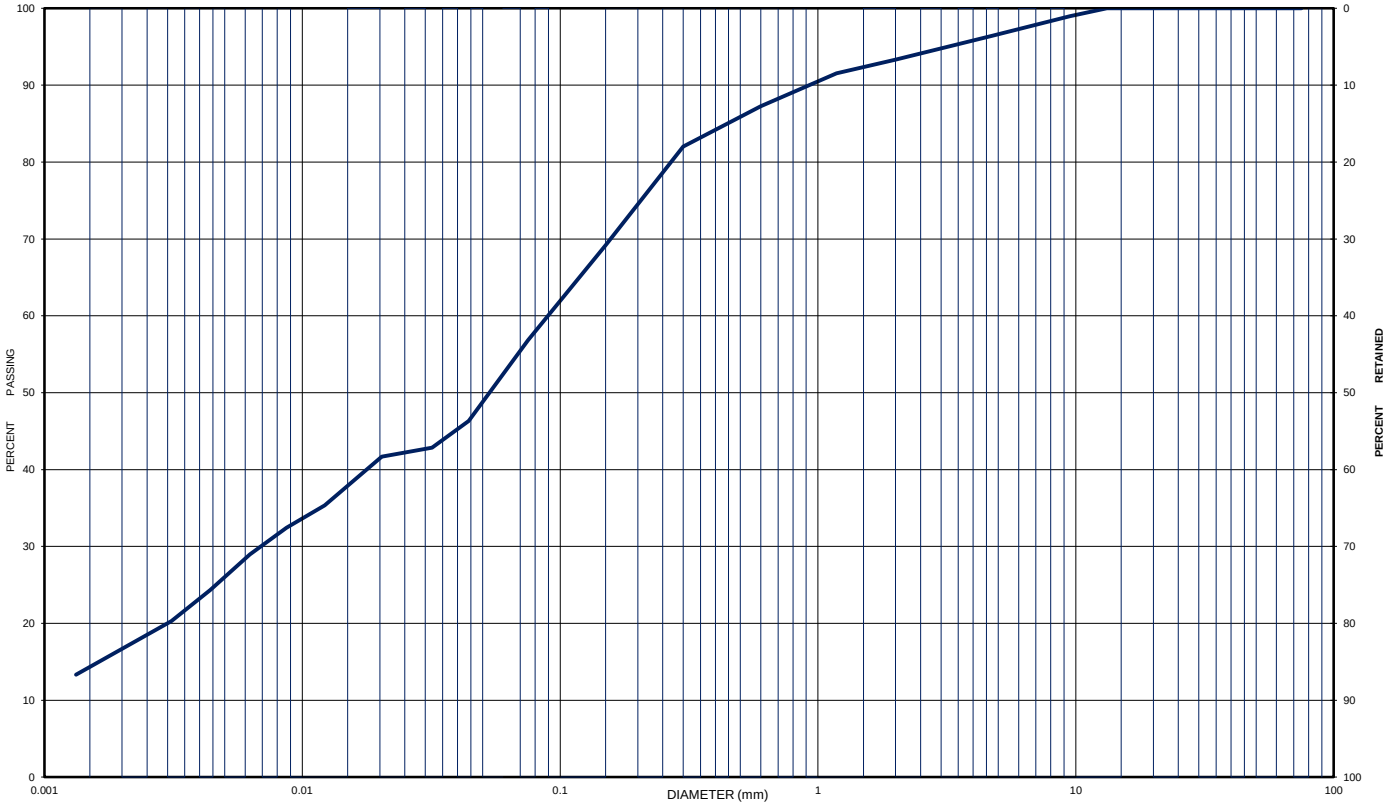
CLAY	SILT	SAND				FINE GRAVEL	GRAVEL
		VERY FINE	FINE	MEDIUM	COARSE		
U.S. BUREAU OF SOILS CLASSIFICATION							

Sample No.	Depth	Description	Moisture Content	Gravel	Sand	Silt	Clay	Class.
BH-25-1 SS-3	--	*Silty SAND trace of gravel and clay*	*3.9*	*8*	*59*	*26*	*7*	*SM*

GRAIN SIZE DISTRIBUTION CHART

Client:	*Oakridge Envionmental Limited*	Project No.:	*25-3614*
Project:	*Reach Street*	Location:	--
Sampled By:	*Oakridge Environmental Limited*	Date:	*December 3, 2025*
Sample No.:	*BH-25-2 SS-5*	Depth:	--

UNIFIED SOIL CLASSIFICATION SYSTEM					
CLAY & SILT (<0.075mm)	SAND (<4.75 to 0.075mm)			GRAVEL (>4.75mm)	
	FINE	MEDIUM	COARSE	FINE	COARSE



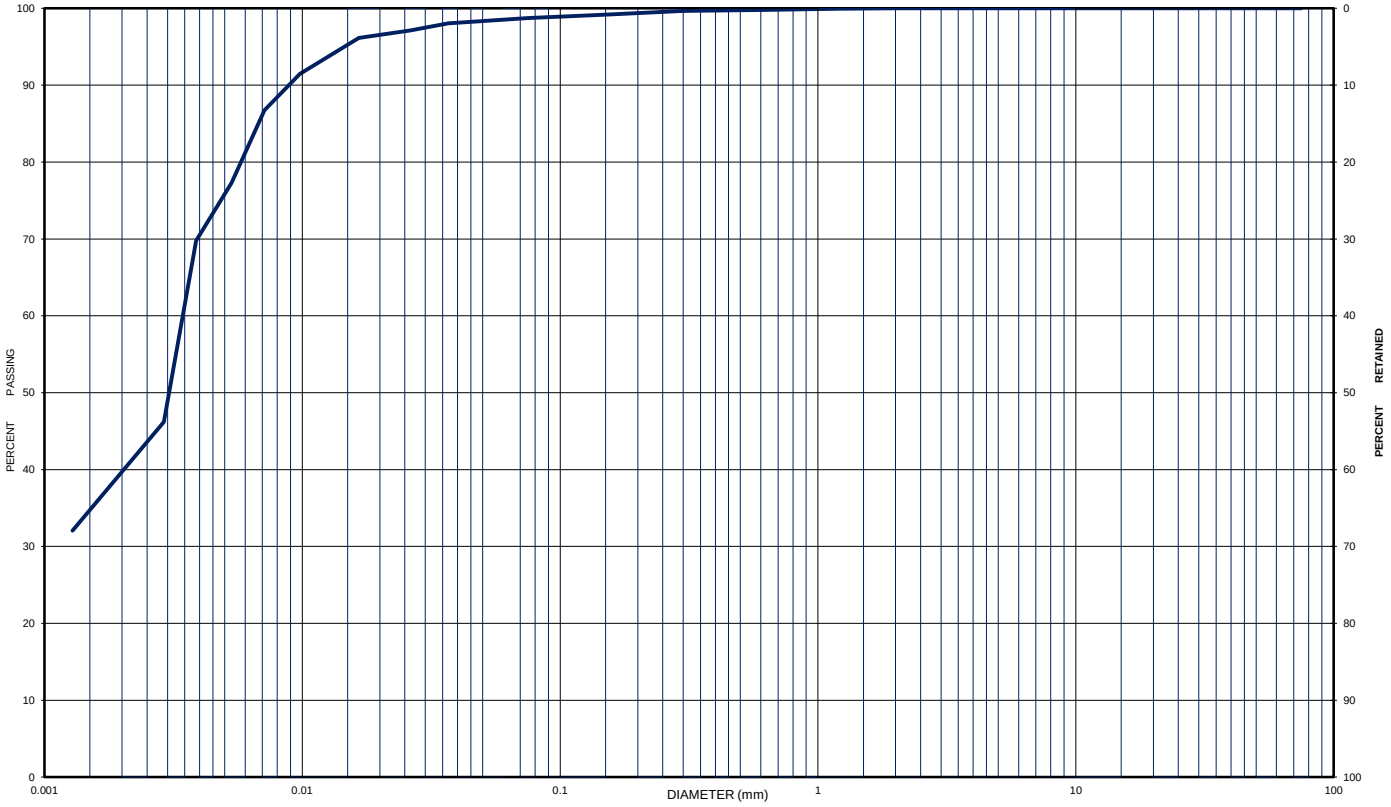
CLAY	SILT	SAND				FINE GRAVEL	GRAVEL
		VERY FINE	FINE	MEDIUM	COARSE		
U.S. BUREAU OF SOILS CLASSIFICATION							

Sample No.	Depth	Description	Moisture Content	Gravel	Sand	Silt	Clay	Class.
BH-25-2 SS-5	--	*SILT & SAND some clay trace of gravel*	*7.7*	*4*	*40*	*39*	*17*	*ML*

GRAIN SIZE DISTRIBUTION CHART

Client:	*Oakridges Envionmental*	Project No.:	*25-3614*
Project:	*Reach Street*	Location:	--
Sampled By:	*Oakridges Environmental*	Date:	*December 3, 2025*
Sample No.:	*BH-25-6 SS-3*	Depth:	--

UNIFIED SOIL CLASSIFICATION SYSTEM					
CLAY & SILT (<0.075mm)	SAND (<4.75 to 0.075mm)			GRAVEL (>4.75mm)	
	FINE	MEDIUM	COARSE	FINE	COARSE



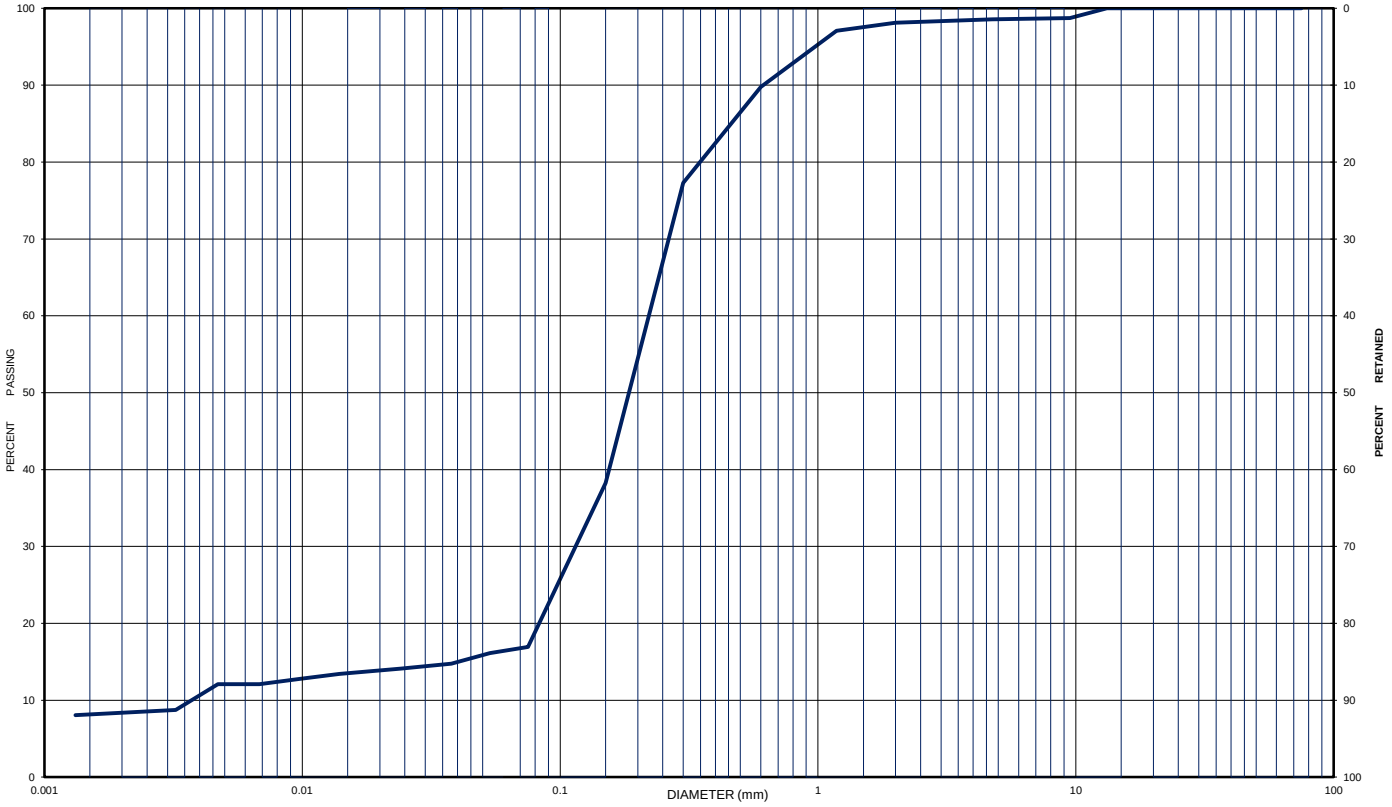
CLAY	SILT	SAND				FINE GRAVEL	GRAVEL
		VERY FINE	FINE	MEDIUM	COARSE		
U.S. BUREAU OF SOILS CLASSIFICATION							

Sample No.	Depth	Description	Moisture Content	Gravel	Sand	Silt	Clay	Class.
BH-25-6 SS-3	--	*Clayey SILT*	*24.9*	*0*	*1*	*60*	*39*	*ML*

GRAIN SIZE DISTRIBUTION CHART

Client:	*Oakridge Envionmental Limited*	Project No.:	*OE-25-01*
Project:	*Reach Street*	Location:	--
Sampled By:	*Oakridge Environmental Limited*	Date:	*December 3, 2025*
Sample No.:	*BH-25-9 SS-2*	Depth:	

UNIFIED SOIL CLASSIFICATION SYSTEM					
CLAY & SILT (<0.075mm)	SAND (<4.75 to 0.075mm)			GRAVEL (>4.75mm)	
	FINE	MEDIUM	COARSE	FINE	COARSE



CLAY	SILT	SAND				FINE GRAVEL	GRAVEL
		VERY FINE	FINE	MEDIUM	COARSE		
U.S. BUREAU OF SOILS CLASSIFICATION							

Sample No.	Depth	Description	Moisture Content	Gravel	Sand	Silt	Clay	Class.
BH-25-9 SS-2	--	*SAND, poorly graded trace of silt and clay*	*11.6*	*1*	*82*	*9*	*8*	*SP-SM*

APPENDIX C

MINISTRY OF ENVIRONMENT CONSERVATION AND PARKS (MECP) WELL RECORDS

- Well Records (MW-1 to MW-4) .....20 pgs

Notice of Collection of Personal Information

Personal information contained on this form is collected pursuant to sections 35-50 and 75(2) of the *Ontario Water Resources Act* and section 16.3 of the Wells Regulation. This information will be used for the purpose of maintaining a public record of wells in Ontario. This form and the information contained on the form will be stored in the Ministry's well record database and made publicly available. Questions about this collection should be directed to the Water Well Customer Service Representative at the Wells Help Desk, 125 Resources Road, Toronto Ontario M9P 3V6, at 1-888-396-9355 or wellshelpdesk@ontario.ca.

Fields marked with an asterisk (*) are mandatory.

Well Tag Number *
A 394699

Type *

☑ Construction ☐ Abandonment

Measurement recorded in: *

☐ Metric ☑ Imperial

1. Well Owner's Information

Last Name and First Name, or Organization is mandatory. *

Last Name	First Name

Organization	Email Address
Richard and Susan Wannop	

Current Address

Unit Number	Street Number *	Street Name *	City/Town/Village
	47	Katherine Crescent	Stouffville

Country	Province	Postal Code	Telephone Number
Canada	Ontario	L4A 1K4	

2. Well Location

Address of Well Location

Unit Number	Street Number *	Street Name *	Township
	1551	Reach Street	

Lot	Concession	County/District/Municipality

City/Town	Province	Postal Code
Port Perry	Ontario	

UTM Coordinates	Zone *	Easting *	Northing *		Municipal Plan and Sublot Number
NAD 83	17	662017	4885704	Test UTM in Map	

Other

3. Overburden and Bedrock Material *

Well Depth * 25 (ft)

General Colour	Most Common Material	Other Materials	General Description	Depth From	Depth To

				(ft)	(ft)
Brown	Fill	Sand	Loose	0	6
Grey	Silt	Sand	Loose	6	13
Grey	Silt	Clay	Loose	13	25

4. Annular Space *

Depth From (ft)	Depth To (ft)	Type of Sealant Used (Material and Type)	Volume Placed (cubic feet)
0	13	Hole Plug	4.251

5. Method of Construction *

☐ Cable Tool ☐ Rotary (Conventional) ☐ Rotary (Reverse) ☐ Boring ☐ Air percussion ☐ Diamond
☐ Jetting ☐ Driving ☐ Digging ☐ Rotary (Air) ☑ Augering ☐ Direct Push
☐ Other (specify) _____

6. Well Use *

☐ Public ☐ Industrial ☐ Cooling & Air Conditioning
☐ Domestic ☐ Commercial ☐ Not Used
☐ Livestock ☐ Municipal ☑ Monitoring
☐ Irrigation ☑ Test Hole ☐ Dewatering
☐ Other (specify) _____

7. Status of Well *

☐ Water Supply ☐ Replacement Well ☑ Test Hole
☐ Recharge Well ☐ Dewatering Well ☑ Observation and/or Monitoring Hole
☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality
☐ Abandoned, other (specify) _____
☐ Other (specify) _____

8. Construction Record - Casing * (use negative number(s) to indicate depth above ground surface)

Inside Diameter (in)	Open Hole **or** Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness	Depth From (ft)	Depth To (ft)
2	Plastic	0.38	0	15

9. Construction Record - Screen

Outside Diameter (in)	Material (Plastic, Galvanized, Steel)	Slot Number	Depth From (ft)	Depth To (ft)
2.38	Plastic	10	15	25

10. Water Details

Water found at Depth (ft)	☐ Gas	Kind of water ☐ Fresh	☑ Untested	☐ Other

11. Hole Diameter

Depth From (ft)	Depth To (ft)	Diameter (in)
0	25	8.25

12. Results of Well Yield Testing

☐ Pumping Discontinued

Explain _____

If flowing give rate

☐ Flowing _____ (GPM)

Draw down

Time (min)	Static Level	1	2	3	4	5	10	15	20	25	30	40	50	60
Water Level (ft)														

Recovery

Time (min)	1	2	3	4	5	10	15	20	25	30	40	50	60
Water Level (ft)													

After test of well yield, water was

☐ Clear and sand free ☐ Other (specify)

Pump intake set at (ft)	Pumping rate (GPM)	Duration of pumping hrs + min	Final water level end of pumping (ft)	Disinfected? * ☐ Yes ☑ No

Recommended pump depth (ft)	Recommended pump rate (GPM)	Well production (GPM)

13. Map of Well Location *

Map 1. Please Click the map area below to import an image file to use as the map. ☑ Make map area bigger



14. Information

Well owner's information package delivered	Date Package Delivered (yyyy/mm/dd)	Date Work Completed (yyyy/mm/dd) *
☐ Yes ☑ No		2024/02/23

Comments

15. Well Contractor and Well Technician Information

Business Name of Well Contractor *	Well Contractor's License Number *
3D Drilling Inc.	7739

Business Address

Unit Number	Street Number	Street Name *
		PO Box 10038

City/Town/Village *	Province	Postal Code *
Uxbridge RPO Elgin Park	ON	L9P 0B5

Business Telephone Number	Business Email Address
289-808-5710	

Last Name of Well Technician *	First Name of Well Technician *	Well Technician's License Number *
Diels	Dustin	4397

16. Declaration *

☑ I hereby confirm that I am the person who constructed the well and I hereby confirm that the information on the form is correct and accurate.

Last Name	First Name	Email Address
Diels	Dustin	dustind@3ddrill.com

Signature	Date Submitted (yyyy/mm/dd)
Dustin Diels Digitally signed by Dustin Diels Date: 2024.03.21 08:57:43 -04'00'	2024/03/21

17. Ministry Use Only

Audit Number

XR2B BGA6

Ontario

Ministry of the Environment, Conservation and Parks

Well Record - Regulation 903

Ontario Water Resources Act

Notice of Collection of Personal Information

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Fields marked with an asterisk (*) are mandatory.

Well Tag Number *
A 394697

Type *

☑ Construction ☐ Abandonment

Measurement recorded in: *

☐ Metric ☑ Imperial

1. Well Owner's Information

Last Name and First Name, or Organization is mandatory. *

Last Name	First Name

Organization	Email Address
Richard and Susan Wannop	

Current Address

Unit Number	Street Number *	Street Name *	City/Town/Village
	47	Katherine Crescent	Stouffville

Country	Province	Postal Code	Telephone Number
Canada	Ontario	L4A 1K4	

2. Well Location

Address of Well Location

Unit Number	Street Number *	Street Name *	Township
	1151	Reach Street	

Lot	Concession	County/District/Municipality

City/Town	Province	Postal Code
Port Perry	Ontario	

UTM Coordinates	Zone *	Easting *	Northing *		Municipal Plan and Sublot Number
NAD 83	17	662022	4885725	Test UTM in Map	

Other

3. Overburden and Bedrock Material *

Well Depth * 65 (ft)

General Colour	Most Common Material	Other Materials	General Description	Depth From	Depth To

				(ft)	(ft)
Brown	Fill	Sand		0	6
Grey	Silt	Sand		6	14
Grey	Silt	Clay		14	29
Grey	Clay	Silt		29	65

4. Annular Space *

Depth From (ft)	Depth To (ft)	Type of Sealant Used (Material and Type)	Volume Placed (cubic feet)
0	53	Hole Plug	5.85

5. Method of Construction *

☐ Cable Tool ☑ Rotary (Conventional) ☐ Rotary (Reverse) ☐ Boring ☐ Air percussion ☐ Diamond
☐ Jetting ☐ Driving ☐ Digging ☐ Rotary (Air) ☑ Augering ☐ Direct Push
☐ Other (specify) _____

6. Well Use *

☐ Public ☐ Industrial ☐ Cooling & Air Conditioning
☐ Domestic ☐ Commercial ☐ Not Used
☐ Livestock ☐ Municipal ☑ Monitoring
☐ Irrigation ☑ Test Hole ☐ Dewatering
☐ Other (specify) _____

7. Status of Well *

☐ Water Supply ☐ Replacement Well ☑ Test Hole
☐ Recharge Well ☐ Dewatering Well ☑ Observation and/or Monitoring Hole
☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality
☐ Abandoned, other (specify) _____
☐ Other (specify) _____

8. Construction Record - Casing * (use negative number(s) to indicate depth above ground surface)

Inside Diameter (in)	Open Hole **or** Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness	Depth From (ft)	Depth To (ft)
2	Plastic	0.38	0	55

9. Construction Record - Screen

Outside Diameter (in)	Material (Plastic, Galvanized, Steel)	Slot Number	Depth From (ft)	Depth To (ft)
2.38	Plastic	10	55	65

10. Water Details

Water found at Depth (ft)	☐ Gas	Kind of water ☐ Fresh	☑ Untested	☐ Other

11. Hole Diameter

Depth From (ft)	Depth To (ft)	Diameter (in)
0	10	8.25
10	65	3.87

12. Results of Well Yield Testing

☐ Pumping Discontinued

Explain _____

If flowing give rate

☐ Flowing _____ (GPM)

Draw down

Time (min)	Static Level	1	2	3	4	5	10	15	20	25	30	40	50	60
Water Level (ft)														

Recovery

Time (min)	1	2	3	4	5	10	15	20	25	30	40	50	60
Water Level (ft)													

After test of well yield, water was

☐ Clear and sand free ☐ Other (specify)

Pump intake set at (ft)	Pumping rate (GPM)	Duration of pumping hrs + min	Final water level end of pumping (ft)	Disinfected? * ☐ Yes ☑ No

Recommended pump depth (ft)	Recommended pump rate (GPM)	Well production (GPM)

13. Map of Well Location *

Map 1. Please Click the map area below to import an image file to use as the map. ☑ Make map area bigger



14. Information

Well owner's information package delivered	Date Package Delivered (yyyy/mm/dd)	Date Work Completed (yyyy/mm/dd) *
☐ Yes ☑ No		2024/02/23

Comments

15. Well Contractor and Well Technician Information

Business Name of Well Contractor *	Well Contractor's License Number *
3D Drilling Inc.	7739

Business Address

Unit Number	Street Number	Street Name *
		PO Box 10038

City/Town/Village *	Province	Postal Code *
Uxbridge RPO Elgin Park	ON	L9P 0B5

Business Telephone Number	Business Email Address
289-808-5710	

Last Name of Well Technician *	First Name of Well Technician *	Well Technician's License Number *
Diels	Dustin	4397

16. Declaration *

☑ I hereby confirm that I am the person who constructed the well and I hereby confirm that the information on the form is correct and accurate.

Last Name	First Name	Email Address
Diels	Dustin	dustind@3ddrill.com

Signature	Date Submitted (yyyy/mm/dd)
Dustin Diels Digitally signed by Dustin Diels Date: 2024.03.21 08:49:58 -04'00'	2024/03/21

17. Ministry Use Only

Audit Number

NSII EWRR

Ontario

Ministry of the Environment, Conservation and Parks

Well Record - Regulation 903

Ontario Water Resources Act

Notice of Collection of Personal Information

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Fields marked with an asterisk (*) are mandatory.

Well Tag Number *
A 394700

Type *

☑ Construction ☐ Abandonment

Measurement recorded in: *

☐ Metric ☑ Imperial

1. Well Owner's Information

Last Name and First Name, or Organization is mandatory. *

Last Name	First Name

Organization	Email Address
Richard and Susan Wannop	

Current Address

Unit Number	Street Number *	Street Name *	City/Town/Village
	47	Katherine Crescent	Stouffville

Country	Province	Postal Code	Telephone Number
Canada	Ontario	L4A 1K4	

2. Well Location

Address of Well Location

Unit Number	Street Number *	Street Name *	Township
	1511	Reach Street	

Lot	Concession	County/District/Municipality

City/Town	Province	Postal Code
Port Perry	Ontario	

UTM Coordinates	Zone *	Easting *	Northing *		Municipal Plan and Sublot Number
NAD 83	17	662007	4885719	Test UTM in Map	

Other

3. Overburden and Bedrock Material *

Well Depth * 25 (ft)

General Colour	Most Common Material	Other Materials	General Description	Depth From	Depth To

				(ft)	(ft)
Brown	Fill	Sand	Loose	0	6
Grey	Silt	Sand	Loose	6	13
Grey	Silt	Clay	Loose	13	25

4. Annular Space *

Depth From (ft)	Depth To (ft)	Type of Sealant Used (Material and Type)	Volume Placed (cubic feet)
0	13	Hole Plug	4.251

5. Method of Construction *

☐ Cable Tool ☐ Rotary (Conventional) ☐ Rotary (Reverse) ☐ Boring ☐ Air percussion ☐ Diamond
☐ Jetting ☐ Driving ☐ Digging ☐ Rotary (Air) ☑ Augering ☐ Direct Push
☐ Other (specify) _____

6. Well Use *

☐ Public ☐ Industrial ☐ Cooling & Air Conditioning
☐ Domestic ☐ Commercial ☐ Not Used
☐ Livestock ☐ Municipal ☑ Monitoring
☐ Irrigation ☑ Test Hole ☐ Dewatering
☐ Other (specify) _____

7. Status of Well *

☐ Water Supply ☐ Replacement Well ☑ Test Hole
☐ Recharge Well ☐ Dewatering Well ☑ Observation and/or Monitoring Hole
☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality
☐ Abandoned, other (specify) _____
☐ Other (specify) _____

8. Construction Record - Casing * (use negative number(s) to indicate depth above ground surface)

Inside Diameter (in)	Open Hole **or** Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness	Depth From (ft)	Depth To (ft)
2	Plastic	0.38	0	15

9. Construction Record - Screen

Outside Diameter (in)	Material (Plastic, Galvanized, Steel)	Slot Number	Depth From (ft)	Depth To (ft)
2.38	Plastic	10	15	25

10. Water Details

Water found at Depth (ft)	☐ Gas	Kind of water ☐ Fresh	☑ Untested	☐ Other

11. Hole Diameter

Depth From (ft)	Depth To (ft)	Diameter (in)
0	25	8.25

12. Results of Well Yield Testing

☐ Pumping Discontinued

Explain _____

If flowing give rate

☐ Flowing _____ (GPM)

Draw down

Time (min)	Static Level	1	2	3	4	5	10	15	20	25	30	40	50	60
Water Level (ft)														

Recovery

Time (min)	1	2	3	4	5	10	15	20	25	30	40	50	60
Water Level (ft)													

After test of well yield, water was

☐ Clear and sand free ☐ Other (specify)

Pump intake set at (ft)	Pumping rate (GPM)	Duration of pumping hrs + min	Final water level end of pumping (ft)	Disinfected? * ☐ Yes ☑ No

Recommended pump depth (ft)	Recommended pump rate (GPM)	Well production (GPM)

13. Map of Well Location *

Map 1. Please Click the map area below to import an image file to use as the map. ☑ Make map area bigger



14. Information

Well owner's information package delivered	Date Package Delivered (yyyy/mm/dd)	Date Work Completed (yyyy/mm/dd) *
☐ Yes ☑ No		2024/02/23

Comments

15. Well Contractor and Well Technician Information

Business Name of Well Contractor *	Well Contractor's License Number *
3D Drilling Inc.	7739

Business Address

Unit Number	Street Number	Street Name *
		PO Box 10038

City/Town/Village *	Province	Postal Code *
Uxbridge RPO Elgin Park	ON	L9P 0B5

Business Telephone Number	Business Email Address
289-808-5710	

Last Name of Well Technician *	First Name of Well Technician *	Well Technician's License Number *
Diels	Dustin	4397

16. Declaration *

☑ I hereby confirm that I am the person who constructed the well and I hereby confirm that the information on the form is correct and accurate.

Last Name	First Name	Email Address
Diels	Dustin	dustind@3ddrill.com

Signature	Date Submitted (yyyy/mm/dd)
Dustin Diels Digitally signed by Dustin Diels Date: 2024.03.21 08:42:47 -04'00'	2024/03/21

17. Ministry Use Only

Audit Number

5ZO8 A452

Notice of Collection of Personal Information

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Fields marked with an asterisk (*) are mandatory.

Well Tag Number *
A 394688

Type *

☑ Construction ☐ Abandonment

Measurement recorded in: *

☐ Metric ☑ Imperial

1. Well Owner's Information

Last Name and First Name, or Organization is mandatory. *

Last Name	First Name

Organization	Email Address
Richard and Susan Wannop	

Current Address

Unit Number	Street Number *	Street Name *	City/Town/Village
	47	Katherine Crescent	Stouffville

Country	Province	Postal Code	Telephone Number
Canada	Ontario	L4A 1K4	

2. Well Location

Address of Well Location

Unit Number	Street Number *	Street Name *	Township
	1511	Reach Street	

Lot	Concession	County/District/Municipality

City/Town	Province	Postal Code
Port Perry	Ontario	

UTM Coordinates	Zone *	Easting *	Northing *		Municipal Plan and Sublot Number
NAD 83	17	662001	4885704	Test UTM in Map	

Other

3. Overburden and Bedrock Material *

Well Depth * 25 (ft)

General Colour	Most Common Material	Other Materials	General Description	Depth From	Depth To

				(ft)	(ft)
Brown	Fill	Sand	Loose	0	7
Grey	Silt	Sand	Loose	7	13
Grey	Silt	Clay	Loose	13	25

4. Annular Space *

Depth From (ft)	Depth To (ft)	Type of Sealant Used (Material and Type)	Volume Placed (cubic feet)
0	13	Hole Plug	4.251

5. Method of Construction *

☐ Cable Tool ☐ Rotary (Conventional) ☐ Rotary (Reverse) ☐ Boring ☐ Air percussion ☐ Diamond
☐ Jetting ☐ Driving ☐ Digging ☐ Rotary (Air) ☑ Augering ☐ Direct Push
☐ Other (specify) _____

6. Well Use *

☐ Public ☐ Industrial ☐ Cooling & Air Conditioning
☐ Domestic ☐ Commercial ☐ Not Used
☐ Livestock ☐ Municipal ☑ Monitoring
☐ Irrigation ☑ Test Hole ☐ Dewatering
☐ Other (specify) _____

7. Status of Well *

☐ Water Supply ☐ Replacement Well ☑ Test Hole
☐ Recharge Well ☐ Dewatering Well ☑ Observation and/or Monitoring Hole
☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality
☐ Abandoned, other (specify) _____
☐ Other (specify) _____

8. Construction Record - Casing * (use negative number(s) to indicate depth above ground surface)

Inside Diameter (in)	Open Hole **or** Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness	Depth From (ft)	Depth To (ft)
2	Plastic	0.38	0	15

9. Construction Record - Screen

Outside Diameter (in)	Material (Plastic, Galvanized, Steel)	Slot Number	Depth From (ft)	Depth To (ft)
2.38	Plastic	10	15	25

10. Water Details

Water found at Depth (ft)	☐ Gas	Kind of water ☐ Fresh	☑ Untested	☐ Other

11. Hole Diameter

Depth From (ft)	Depth To (ft)	Diameter (in)
0	25	8.25

12. Results of Well Yield Testing

☐ Pumping Discontinued

Explain _____

If flowing give rate

☐ Flowing _____ (GPM)

Draw down

Time (min)	Static Level	1	2	3	4	5	10	15	20	25	30	40	50	60
Water Level (ft)														

Recovery

Time (min)	1	2	3	4	5	10	15	20	25	30	40	50	60
Water Level (ft)													

After test of well yield, water was

☐ Clear and sand free ☐ Other (specify)

Pump intake set at (ft)	Pumping rate (GPM)	Duration of pumping hrs + min	Final water level end of pumping (ft)	Disinfected? * ☐ Yes ☑ No

Recommended pump depth (ft)	Recommended pump rate (GPM)	Well production (GPM)

13. Map of Well Location *

Map 1. Please Click the map area below to import an image file to use as the map. ☑ Make map area bigger



14. Information

Well owner's information package delivered	Date Package Delivered (yyyy/mm/dd)	Date Work Completed (yyyy/mm/dd) *
☐ Yes ☑ No		2024/02/21

Comments

15. Well Contractor and Well Technician Information

Business Name of Well Contractor *	Well Contractor's License Number *
3D Drilling Inc.	7739

Business Address

Unit Number	Street Number	Street Name *
		PO Box 10038

City/Town/Village *	Province	Postal Code *
Uxbridge RPO Elgin Park	ON	L9P 0B5

Business Telephone Number	Business Email Address
289-808-5710	

Last Name of Well Technician *	First Name of Well Technician *	Well Technician's License Number *
Diels	Dustin	4397

16. Declaration *

☑ I hereby confirm that I am the person who constructed the well and I hereby confirm that the information on the form is correct and accurate.

Last Name	First Name	Email Address
Diels	Dustin	dustind@3ddrill.com

Signature	Date Submitted (yyyy/mm/dd)
Dustin Diels Digitally signed by Dustin Diels Date: 2024.03.21 08:31:38 -04'00'	2024/03/21

17. Ministry Use Only

Audit Number

JTCK QWXT