Aggregate Resource Assessment

County Road 4, Peterborough, Ontario

Leahy Excavations Inc.

02 April 2025

→ The Power of Commitment

Contents

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1. Introduction

GHD Limited (GHD) was retained by Leahy Excavation Inc. (the Client) to complete an aggregate resource assessment for the proposed pit located on Part 3, Concession 9 Douro, County Road 4, in Peterborough, Ontario (herein referred to as "the Site"). The Site location map is presented as **Figure 1** in this report. The following report details the findings, through both field and laboratory analysis, for this project. The investigation was completed to determine the characteristics and viability of the native soils for continued use as a commercial aggregate source.

2. Purpose and Scope

The purpose of the study was to determine the characteristics and viability of the native soil for consideration for granular production.

The scope of the project included:

– Field investigation conducted by a GHD field technician. Testing locations were spaced out to provide representative data for the remaining soil deposits to be pit mined.
– Subsurface conditions were explored by excavation of test pits using on-site excavation equipment, supplied by the Client. A total of nine (9) test pits were excavated to depths ranging from 1.6 to 4.6 metres below ground surface (mbgs). The 4.6 m depth represents the maximum depth that could be obtained with the excavation equipment.
– The ground at the test pits was reinstated as close as possible to its original condition upon completion of the fieldwork.
– Laboratory analysis of sampled material to determine the properties of the soil for granular production
– Geotechnical engineering analysis of the acquired field and laboratory data, and the preparation of a factual report outlining our findings and recommendations.

3. Background Information

It is understood that historically the Site was used as a wayside pit for construction of County Road 4 in the early to mid-1900's. The original owners conducted a high-grading operation stripping the land of all viable aggregates immediately to support the construction of County Road 4. The Client was not the original owner of the pit.

Currently, the Site is used to receive topsoil and other soils excavated from construction projects as well as asphalt and concrete material. The topsoil is stockpiled, screened, and reused offsite. Granular materials are stockpiled, screened, and reused offsite or where the fines content are excessive are used onsite for rehabilitating the slopes of the wayside pit area. Non-granular materials, generally described as higher in silt and clay content, are used for rehabilitating the wayside pit area. Asphalt and concrete are crushed and sorted into piles and sold as recycled aggregate material.

GHD previously completed a Hydrogeological Assessment for the Site, and the report dated October 5, 2023, was used to support the recommendations in this report. The investigative locations and borehole records from the Hydrogeological Assessment have been included in **Appendix A** which demonstrates the shallow bedrock in the north area of the Site.

4. Field and Laboratory Procedures

A field investigation was conducted under the supervision of GHD staff on September 9, 2024. The work consisted of subsurface exploration by means of test pit excavation, logging, and sampling of nine (9) test pits identified as test pits TP-A to TP-I as shown on **Figure 2**. Test pits were excavated to depths ranging from 1.6 to 4.6 mbgs. A detailed log of each test pit was maintained, and representative samples of the materials encountered in the test pits were obtained. The detailed results of the examination are recorded on the test pit records in **Appendix B**.

Representative, disturbed samples of the soils encountered were obtained using an OPSS approved sampling shovel and sampled from the spoil pile of the excavation. Observations of the soil characteristics were noted and logged as per the Unified Soil Classification System (ASTM D2488). Groundwater observations were taken from the open test pits. The groundwater data is presented on the individual logs, which are attached as **Appendix B**.

All test pits were backfilled, and the ground was reinstated as close as possible to its original condition upon completion of the fieldwork. All soil samples were sealed in clean plastic bags and transported to the GHD laboratory for further visual-tactile examination, and to select appropriate samples for laboratory analyses.

Geotechnical laboratory testing was completed in accordance with the latest editions of the ASTM standards. The geotechnical laboratory testing consisted of moisture content tests on recovered soil samples as well as grain size distribution analyses (sieve and hydrometer testing) on seven (7) selected soil samples.

The results of the moisture content and grain size distribution analysis are recorded at their corresponding depths on the individual test pit records provided in **Appendix B**. The associated laboratory test results are provided in **Appendix C**. The soil testing program and soil classification conformed to the latest edition of the following standards:

ASTM D2216	Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass Scope
ASTM D6913	Standard Test Method for Particle Size Distribution (Gradation) of Soils using Sieve Analysis
MTO LS-702	Standard Test Method for Particle Size Analysis of Soils (Hydrometer Analysis)
ASTM D2487	Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System-USCS)

5. Surface Conditions

The proposed pit is located on Part 3, Concession 9 Douro, County Road 4, in Peterborough, Ontario. Site is irregular in shape covering an area of approximately 35.7 hectares (88.2 acres). There is variable relief in the topography ranging by 5 metres generally sloping towards the creek and tributary and generally in a south-westerly direction. Locally, the site is within a drumlin feature, a drumlinized till plain and an esker.

6. Subsurface Conditions

Details of the subsurface conditions encountered at the site are presented graphically on the test pit logs (see **Appendix B**). Following is a summarized account of the subsurface conditions encountered in the test pits.

The test pits conducted within the Site generally encountered a surficial layer of topsoil over the various layers of other soil types. Due to the size of the property, the investigation focused on identifying the features that would yield the

most suitable product for granular production. The following is a summary of the subsurface conditions encountered during the test pit excavations.

6.1 Topsoil

A surficial topsoil layer was encountered in all test pits except for test pit TP-I. This layer was predominately a mixture of topsoil and loam with rootlets and organics. The topsoil/loam layer was measured and ranged in thickness from 0.2 to 0.3 m. The topsoil/loam was observed to be in a moist, very loose state. Due to the high silt content and high organic presence with rootlets, this soil is unsuitable for use as granular fill and devoid of any structural engineering properties.

6.2 Sandy Silt / Silty Sand

Most of the site contains a deposit of sandy silt to silty sand. The sandy silt / silty sand generally appeared to be light brown to dark brown and typically consisted of varying amounts of gravel, sand, and silt with occasional cobbles. The native sandy silt / silty sand appeared to exist in a compact to dense in-situ state of relative density.

Due to the composition of the sandy silt / silty sand, the soil has no potential value for granular production. Based on the laboratory results, the native sandy silt / silty sand is too fine in nature to produce any of the desired granular products.

6.3 Silt

A layer of silt material was encountered in Test Pit TP-G within the south area of the esker at the Site. This material was encountered immediately beneath the surficial topsoil and extended to the termination depth of the test pit (2.3 mbgs). The silt generally appeared to be brown to grey and consisted of some sand and clay, trace amounts of gravel, and occasional cobbles.

Due to the composition of the silt material, the soil has no potential value for granular production. The native silt is too fine in nature to produce any of the desired granular products.

6.4 Sand and Gravel

This soil type was found mainly in the southeast / south portion of the esker and is catalogued in Test Pits TP-E, TP-F, and TP-H, as shown on **Figure 3**. The sand and gravel material were initially encountered at depths ranging between approximately 0.7 mbgs to 1.2 mbgs and extended to depths of approximately 3.8 mbgs to 4.6 mbgs (termination depths of the test pits). The esker in this area was composed of interbedded sand and gravel with cobbles containing trace amounts of fines (hereafter referred to as the sand and gravel esker deposits). The sand and gravel appeared to exist in a compact to dense in-situ state of relative density.

Based on the laboratory results, combined with visual-tactile examination of the soils, the sand and gravel deposits are expected to be suitable for all types of granular production. More discussion about the potential for granular production is outlined in Section 6.

6.5 Sandy Silt Till

This soil type was found in the northern end of the esker (near the existing gravel entranceway) and is catalogued in Test Pits TP-C and TP-D. This sandy silt till was encountered initially at depths ranging between approximately 0.6 mbgs to 0.9 mbgs and extended to a depth of 2.1 mbgs. The till material was generally light brown to grey and predominantly consisted of sand and silt with some gravel. The sandy silt till material appeared to exist in a compact to dense in-situ state of relative density.

Due to the composition of the sandy silt till material, the soil has no potential value for granular production. The till is too fine in nature to produce any of the desired granular products.

7. Discussion and Recommendations

7.1 General

Supporting data on which our recommendations are based have been presented 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.

In general, the sand and gravel esker deposits are the only soil type encountered that are suitable for all types of granular production. As previously stated, the fine, silty sand/sandy silt, and till deposits are not suitable for granular production.

Through the focus of the investigation, it was concluded that the only suitable materials were contained within the southeast / south portion of the eskers on the site. Based on the Hydrogeological Assessment, monitoring well MW5-22 is slightly southeast to the area where the suitable materials were encountered with a static water level elevation ranging between 207.3 m to 206.0 m. It should be noted that the extraction of materials must be at least 1 m above the water table.

7.2 Site Preparation

The site contains topsoil overburden in all areas of the property. This topsoil/loam layer needs to be stripped from all areas that are to be mined for granular production. The high silt content and rootlets found in this layer are unsuitable for granular production.

7.3 Granular Production

Purely for quick analysis, all lab results attached in **Appendix C** have compared the soil samples to Granular 'B' Type I.

Based upon the lab results, the sand and gravel esker deposits (Samples AG-24-242, AG-24-243, and AG-24-244) are suitable for all types of granular production, considering the specific crushing and screening requirements for the various granulars. Granular 'A' and Granular 'B' Type I have a maximum limit of 8% silt content. Sieve results for the sand and gravel deposits indicate silt contents below the threshold for all requested granular types. There is a high amount of gravel and cobble particles larger than 26.5 mm (approximately 20 – 32 % of the soil by weight) suitable for crushing for Granular 'A' production. Based on the three (3) lab results tested of the sand and gravel deposit, the material is suitable for Granular 'B' production as it meets the OPS Specifications.

Based upon the grain size results, the other deposits encountered in this investigation were too fine in nature to produce any of the desired granulars (approximately 17 – 83% of the soil by weight), exceeding the maximum limit of 8% silt content.

7.4 Pit Limitations

The sand and gravel band encountered and discussed in **Section 7.3** is estimated to be approximately 3% of the property by volume of overburden material. Based on the subsurface information obtained from Test Pits TP-E, TP-F, and TP-H, the suitable material for granular production was encountered at depths ranging from 0.7 to 1.2 mbgs. The limit of excavation based on 1 m above the elevation of the water table in the general area is approximately 207.0 m. The estimated elevations of the ground surface at the three (3) test pits range between 210.0 m to 208.0 m. Therefore,

the maximum total depth of material that can be excavated is 0.3 to 1.8 m. **Figure 4** illustrates a profile of the suitable granular material at the location encountered.

Based on the overburden and water table restrictions and the estimated volume of suitable material, the production of enough granular material may not be profitable for the Client.

8. Statement of Limitations

The report is intended for the guidance of Leahy Excavations Inc. From a development standpoint, the owner must make their own assessments of the groundwater and aggregate source at the site and how these would best fill their needs given their proposed extraction methods, techniques and schedules. GHD's responsibility is limited to interpreting accurately the information encountered at the test holes.

The conclusions and recommendations in this report are based on information determined at the test hole locations and on geological data of a general nature, which may be available for the area investigated. Soil and groundwater conditions between and beyond the test holes may differ from those encountered at the test hole locations and conditions may become apparent during mining, which could not be detected or anticipated at the time of the investigation.

This report is applicable only to the project described in the introduction. This report has been prepared for the sole use of Leahy Excavations Inc. 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. GHD accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

All of Which is Respectfully Submitted,

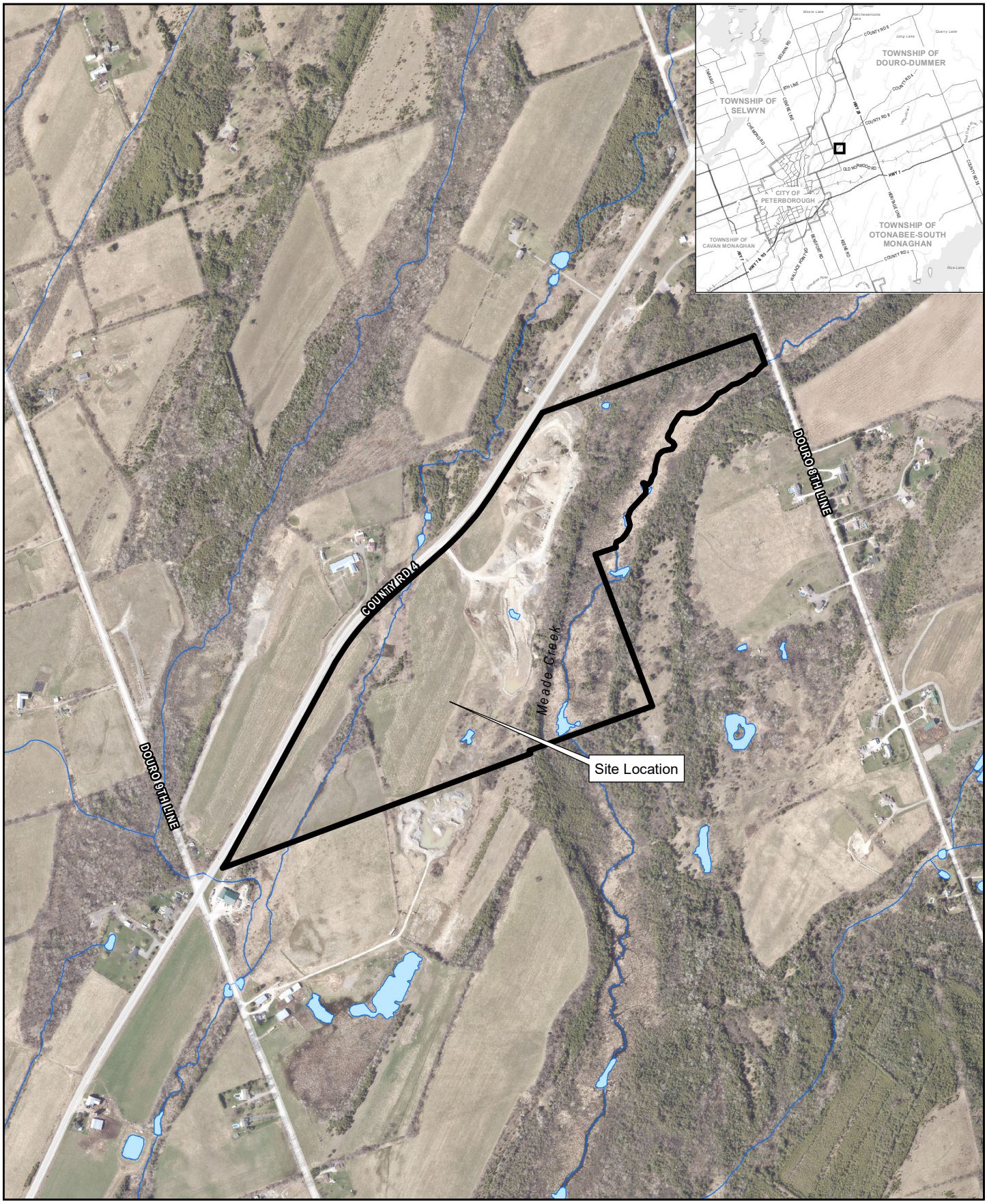
GHD

Michael Nieukirk, P. Eng.

Adam Bonner, C.E.T., HBSc.

Andy Fawcett, P. Eng.

Figures



1 cm = 100 meters

0 70 140 210 280

Metres

Map Projection: Transverse Mercator
Horizontal Datum: North American 1983
Grid: NAD 1983 UTM Zone 17N

N

GHD

Leahy Excavations Inc.
County Road 4, Douro, ON
Pt Lot 3, Con 9, Douro Township
Township of Douro-Dummer
County of Peterborough

Aggregate Assessment

Site Location Plan

Project No. 12583956
Revision No.
Date Jan 31, 2025

Figure 1

O:\GIS\PROJECTS\12583000s\12583956\Layouts\202501_AggregateAssessment\12583956_202501_AGG001_GIS001 - Site Location Plan.mxd
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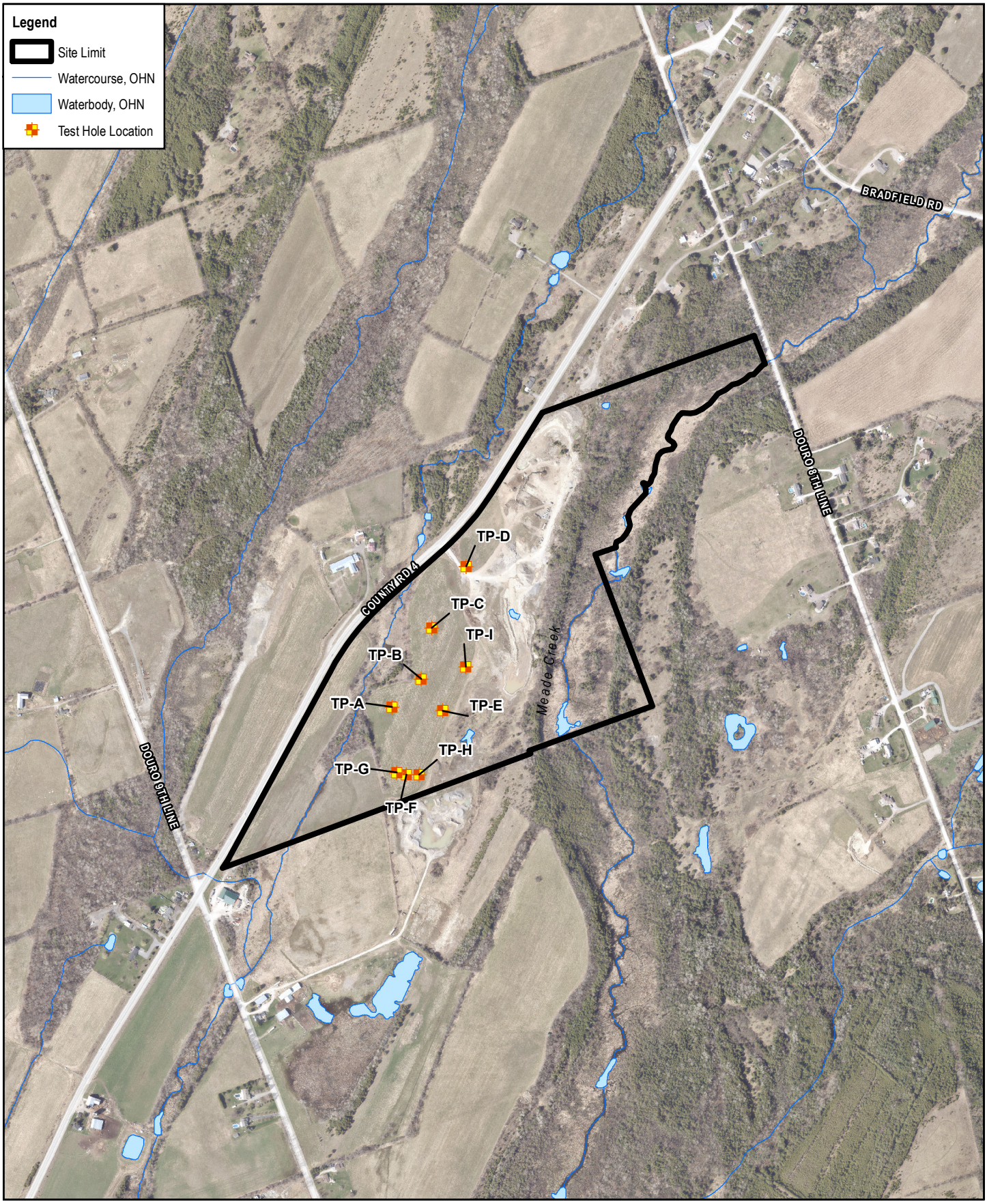

1 cm = 100 meters

0 70 140 210 280

Metres

Map Projection: Transverse Mercator
Horizontal Datum: North American 1983
Grid: NAD 1983 UTM Zone 17N

N

GHD

Leahy Excavations Inc.
County Road 4, Douro, ON
Pt Lot 3, Con 9, Douro Township
Township of Douro-Dummer
County of Peterborough

Aggregate Assessment

Test Hole Location Plan

Project No. 12583956
Revision No.
Date Jan 31, 2025

Figure 2

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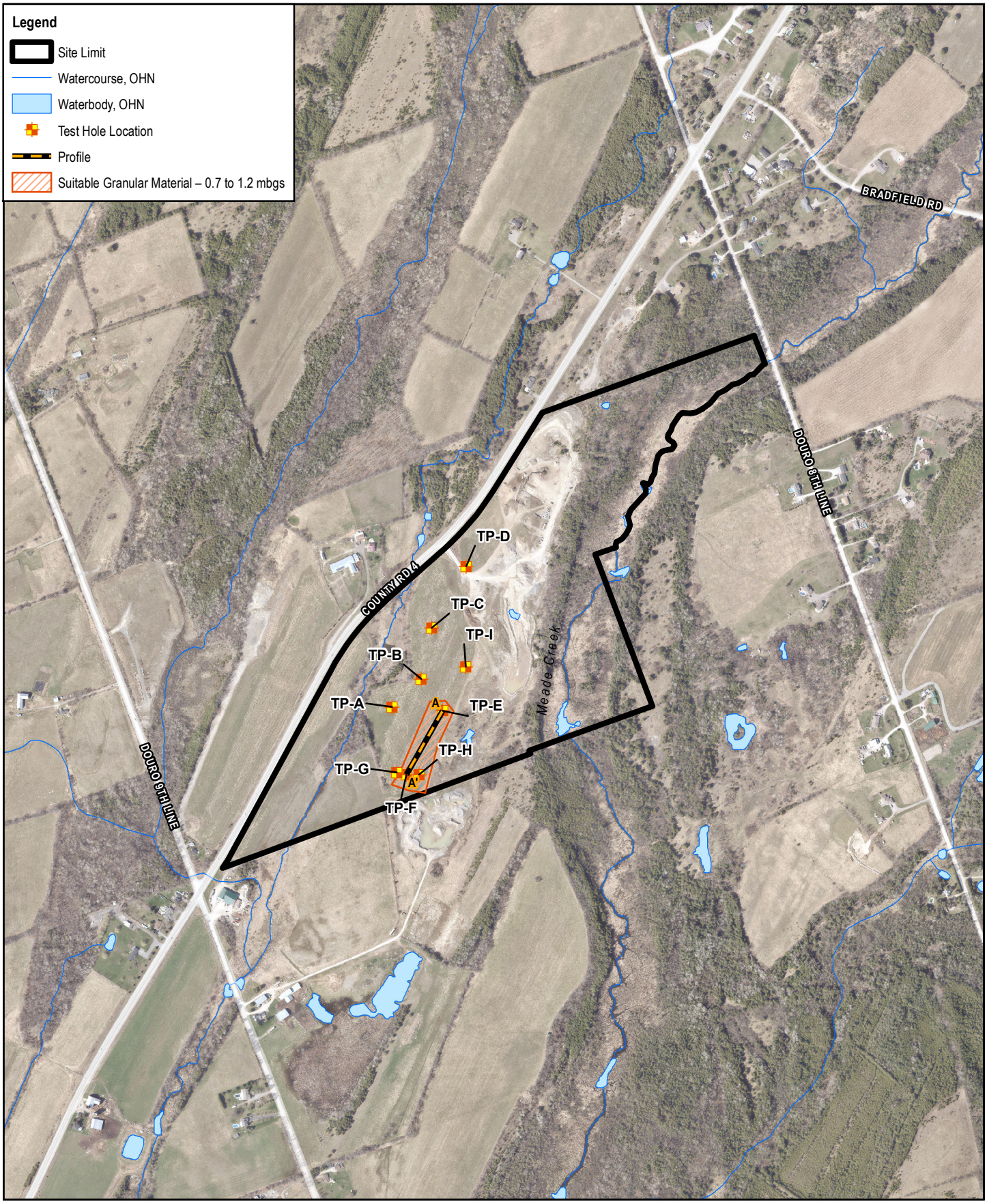


1 cm = 100 meters

0 70 140 210 280

Metres

Map Projection: Transverse Mercator
Horizontal Datum: North American 1983
Grid: NAD 1983 UTM Zone 17N

N

GHD

Leahy Excavations Inc.
County Road 4, Douro, ON
Pt Lot 3, Con 9, Douro Township
Township of Douro-Dummer
County of Peterborough

Aggregate Assessment

Suitable Granular Material Location

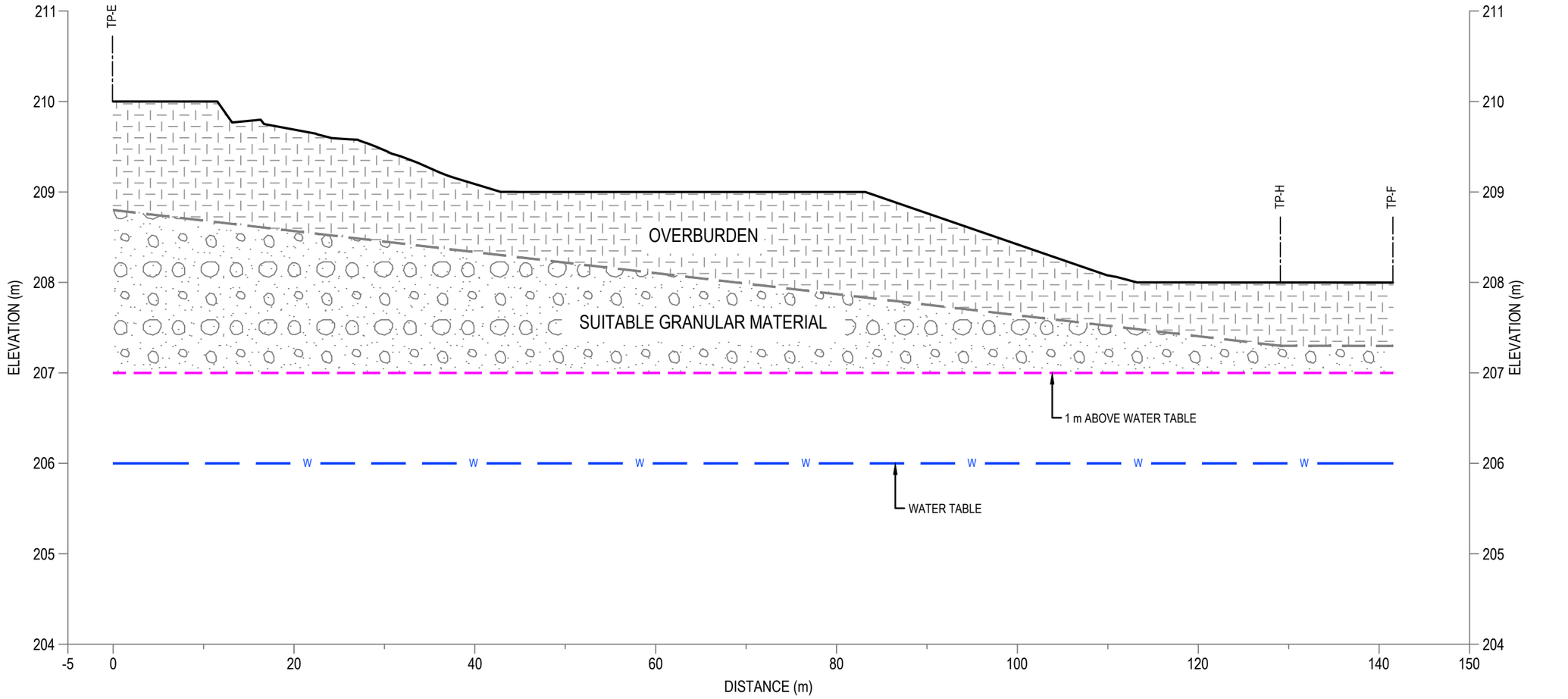
Project No. 12583956
Revision No.
Date Feb 27, 2025

Figure 3

O:\GIS\PROJECTS\12583000s\12583956\Layouts\202501_AggregateAssessment\12583956_202501_AGG001_GIS003 - Suitable Granular Material Location.mxd
Print date: 27 Feb 2025 - 14:50

A
NORTH

A'
SOUTH



HORIZONTAL
1:500
0 5 10 15

VERTICAL
1:50
0 0.5 1 1.5

GHD

LEAHY EXCAVATIONS INC.
COUNTY ROAD 4, DOURO, ONTARIO
PT LOT 3, CON9, DOURO TOWNSHIP
TOWNSHIP OF DOURO-DUMMER
COUNTY OF PETERBOROUGH

CROSS SECTION A-A'

Project No. **12583956**
Date **February 2025**

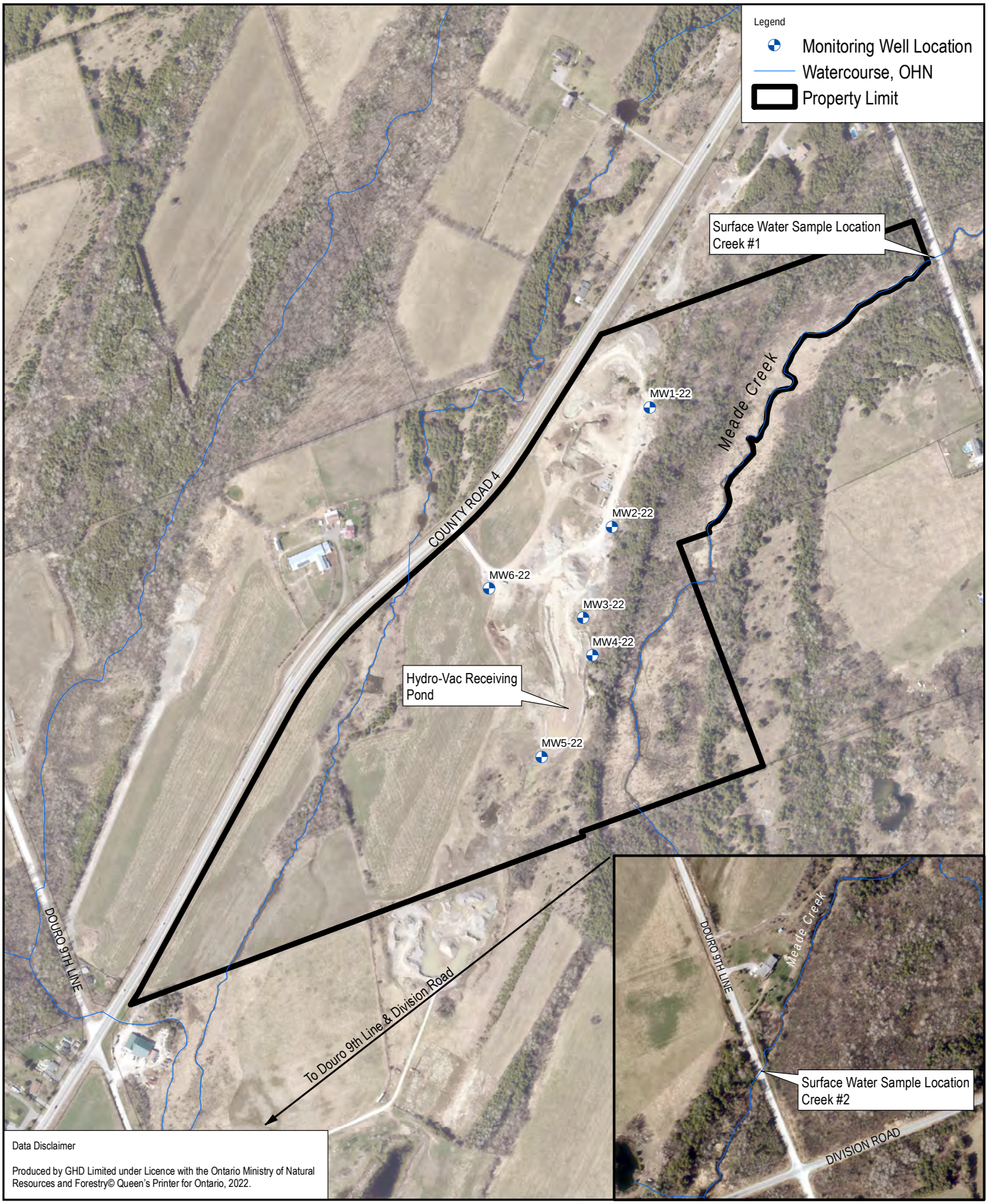
FIGURE 4

Filename: C:\ADSK\ACCDocs\GHD Services Pty Ltd\11230862-Enviro Projs\Project Files\12583956\01 WIP\Env\Figures\RPT-Geotech001\12583956-GHD-00-00-RPT-EN-D101_WA-Geotech001.dwg
Plot Date: 28 February 2025 11:56 AM

Appendices

Appendix A

Investigative Locations and Borehole Records from 2023 Hydrogeological Assessment



Data Disclaimer

Produced by GHD Limited under Licence with the Ontario Ministry of Natural Resources and Forestry© Queen's Printer for Ontario, 2022.

1 cm = 68 meters

0 40 80 120 160

Metres

Map Projection: Transverse Mercator
Horizontal Datum: North American 1983
Grid: NAD 1983 UTM Zone 17N

N

GHD

Leahy Excavations Inc.
County Road 4, Douro, ON
Pt Lot 3, Con 9, Douro Township
Township of Douro-Dummer
County of Peterborough

Hydrogeological Assessment

Investigative Locations

Project No. 12583956
Revision No.
Date Dec 2, 2022

Figure 2

Image Source: © City of Peterborough, 2022.

REFERENCE No.: 12583956-01 ENCLOSURE No.: B-1

BOREHOLE No.: MW1-22

ELEVATION: 209.78 m

BOREHOLE LOG

Page: 1 of 1

CLIENT: Leahy Excavations Inc.

PROJECT: Environmental Compliance Approval for Soil Bank

LOCATION: Part lot 3, Concession 9, County Road 4, Peterborough, Ontario

DESCRIBED BY: J. Scott CHECKED BY: W. Moore

DATE (START): 8 August 2022 DATE (FINISH): 8 August 2022

LEGEND

- SS Split Spoon
- ST Shelby Tube
- RC Rock Core
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		MONITOR WELL	SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK		State	Type and Number	Recovery	PID	Penetration Index / RQD %	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa
metres	209.78		GROUND SURFACE				%	ppm	N	10 20 30 40 50 60 70 80 90
			GRAVELLY SAND - Brown, Very Dense, Moist	0.9 — Riser packed in Bentonite; 0.3 — 0.5 — Screen packed in Sand; 1.2 —		SS-1	78		50+	
0.5										
						SS-2	100		50+	
1.0										
	208.53		**NOTES:** - Inferred bedrock at 1.24 mbgs.							
1.5										
2.0										
2.5										
3.0										
3.5										
4.0										
4.5										

NOTES:

File: \\GHDNET\GHD\CA\PETERBOROUGH\PROJECTS\662\12583956\WORKSHARE\FIELD\12583956-FLD-22-08-12 BOREHOLE LOGS.GPJ Library File: GHD_GEOTECH_V10.GLB Report: BOREHOLE LOG Date: 1/12/22

REFERENCE No.: 12583956-01 ENCLOSURE No.: B-2

BOREHOLE No.: MW2-22

ELEVATION: 209.48 m

BOREHOLE LOG

Page: 1 of 1

CLIENT: Leahy Excavations Inc.

PROJECT: Environmental Compliance Approval for Soil Bank

LOCATION: Part lot 3, Concession 9, County Road 4, Peterborough, Ontario

DESCRIBED BY: J. Scott CHECKED BY: W. Moore

DATE (START): 8 August 2022 DATE (FINISH): 8 August 2022

LEGEND

- SS Split Spoon
- ST Shelby Tube
- RC Rock Core
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		MONITOR WELL	SAMPLE DATA				
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK		State	Type and Number	Recovery	PID	Penetration Index / RQD %
metres	209.48		GROUND SURFACE	0.9			%	ppm	N
0.5			**GRAVELLY SAND** - Light Brown, Compact, Moist	Riser packed in Bentonite		SS-1	67		25
1.0	208.72		Sand coarsens slightly	1.2 Riser packed in Sand		SS-2	83		31
1.5				1.5 WL 1.7 8/17/2022					
2.0	207.50		Wet	Screen packed in Sand		SS-3	67		37
2.5	207.19		**TILL** - Gravelly Sand, Trace Silt and Clay, Very Dense			SS-4	92		97
3.0	206.43		**NOTES:** - Auger Refusal, inferred bed rock at 3.05 mbgs.	3.0					
3.5									
4.0									
4.5									

SCALE FOR TEST RESULTS
50kPa 100kPa 150kPa 200kPa
10 20 30 40 50 60 70 80 90

NOTES:

File: \\GHDNET\GHD\CA\PETERBOROUGH\PROJECTS\662\12583956\WORKSHARE\FIELD\12583956-FLD-22-08-12 BOREHOLE LOGS.GPJ Library File: GHD_GEOTECH_V10.GLB Report: BOREHOLE LOG Date: 1/12/22

REFERENCE No.: 12583956-01 ENCLOSURE No.: B-3

BOREHOLE No.: MW3-22

ELEVATION: 210.57 m

BOREHOLE LOG

Page: 1 of 1

CLIENT: Leahy Excavations Inc.

PROJECT: Environmental Compliance Approval for Soil Bank

LOCATION: Part lot 3, Concession 9, County Road 4, Peterborough, Ontario

DESCRIBED BY: J. Scott CHECKED BY: W. Moore

DATE (START): 8 August 2022 DATE (FINISH): 8 August 2022

LEGEND

- SS Split Spoon
- ST Shelby Tube
- RC Rock Core
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	MONITOR WELL	State	Type and Number	Recovery	PID	Penetration Index / RQD %
metres	210.57		GROUND SURFACE	0.9			%	ppm	N
0.5			**GRAVELLY SAND** - Brown, Dense, Moist	Riser packed in Bentonite		SS-1	83		32
	209.81		Silty						
1.0	209.66		Grading Grey			SS-2A	88		4
	209.51		Moist-Wet						
	209.35		**SANDY SILT** - Trace Gravel and Clay, Compact, Trace Organics	1.2 Riser packed in Sand		SS-2B			
1.5				1.5					
	209.05		**GRAVELLY SAND** - Brown, Compact, Moist	Screen packed in Sand		SS-3	96		29
2.0									
	208.29		**TILL** - Gravelly Sand, Trace Silt, Brown, Dense, Moist-Wet			SS-4	100		50+
2.5				WL 2.8 8/22/2022					
3.0				3.0					
	207.53		**NOTES:** - Augered to 3.05 mbgs for monitoring well install. (Inferred Bedrock)						
3.5									
4.0									
4.5									

SCALE FOR TEST RESULTS
50kPa 100kPa 150kPa 200kPa
10 20 30 40 50 60 70 80 90

NOTES:

File: \\GHDNET\GHD\CA\PETERBOROUGH\PROJECTS\662\12583956\WORKSHARE\FIELD\12583956-FLD-22-08-12 BOREHOLE LOGS.GPJ Library File: GHD_GEOTECH_V10.GLB Report: BOREHOLE LOG Date: 1/12/22

REFERENCE No.: 12583956-01 ENCLOSURE No.: B-4

BOREHOLE No.: MW4-22

ELEVATION: 211.21 m

BOREHOLE LOG

Page: 1 of 1

CLIENT: Leahy Excavations Inc.

PROJECT: Environmental Compliance Approval for Soil Bank

LOCATION: Part lot 3, Concession 9, County Road 4, Peterborough, Ontario

DESCRIBED BY: J. Scott CHECKED BY: W. Moore

DATE (START): 8 August 2022 DATE (FINISH): 8 August 2022

LEGEND

- SS Split Spoon
- ST Shelby Tube
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- Water Level
- Water content (%)
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- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		MONITOR WELL	SAMPLE DATA				
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK		State	Type and Number	Recovery	PID	Penetration Index / RQD %
metres	211.21		GROUND SURFACE				%	ppm	N
			GRAVELLY SAND - Brown, Compact, Moist	0.7 Riser packed in Bentonite; 0.6 Riser packed in Sand; 0.9 Screen packed in Sand; 1.8		SS-1	67		10
0.5									
1.0						SS-2	83		27
1.5									
2.0						SS-3	67		29
	208.92		Dense						
2.5						SS-4	100		34
3.0	208.31		**NOTES:** - Auger Refusal, inferred bed rock at 2.90 mbgs. - Borehole caved to 1.83 mbgs.						
3.5									
4.0									
4.5									

SCALE FOR TEST RESULTS: 50kPa 100kPa 150kPa 200kPa; 10 20 30 40 50 60 70 80 90

NOTES:

File: \\GHDNET\GHD\CA\PETERBOROUGH\PROJECTS\662\12583956\WORKSHARE\FIELD\12583956-FLD-22-08-12 BOREHOLE LOGS.GPJ Library File: GHD_GEOTECH_V10.GLB Report: BOREHOLE LOG Date: 1/12/22

REFERENCE No.: 12583956-01 ENCLOSURE No.: B-5

BOREHOLE No.: MW5-22

ELEVATION: 207.51 m

BOREHOLE LOG

Page: 1 of 1

CLIENT: Leahy Excavations Inc.

PROJECT: Environmental Compliance Approval for Soil Bank

LOCATION: Part lot 3, Concession 9, County Road 4, Peterborough, Ontario

DESCRIBED BY: J. Scott CHECKED BY: W. Moore

DATE (START): 8 August 2022 DATE (FINISH): 8 August 2022

LEGEND

- SS Split Spoon
- ST Shelby Tube
- RC Rock Core
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
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- Shear Strength based on Pocket Penetrometer

SCALE		STRATIGRAPHY		MONITOR WELL	SAMPLE DATA					
Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK		State	Type and Number	Recovery	PID	Penetration Index / RQD %	SCALE FOR TEST RESULTS 50kPa 100kPa 150kPa 200kPa
metres	207.51		GROUND SURFACE	0.9			%	ppm	N	10 20 30 40 50 60 70 80 90
			GRAVELLY SAND - Brown, Very Dense, Moist	WL 0.2 8/22/2022		SS-1	84		50+	
0.5				0.6 Riser packed in Sand						
	206.90		**TILL** - Silty Sand, With Gravel, Brown, Very Dense, Moist	0.9		SS-2	100		50+	
1.0				Screen packed in Sand						
1.5				1.5						
	205.99		**NOTES:** - Auger Refusal, inferred bed rock at 1.52 mbgs.							
2.0										
2.5										
3.0										
3.5										
4.0										
4.5										

NOTES:

File: \\GHDNET\GHD\CA\PETERBOROUGH\PROJECTS\662\12583956\WORKSHARE\FIELD\12583956-FLD-22-08-12 BOREHOLE LOGS.GPJ Library File: GHD_GEOTECH_V10.GLB Report: BOREHOLE LOG Date: 1/12/22

REFERENCE No.: 12583956-01 ENCLOSURE No.: B-6

BOREHOLE No.: MW6-22

ELEVATION: 213.43 m

BOREHOLE LOG

Page: 1 of 1

CLIENT: Leahy Excavations Inc.

PROJECT: Environmental Compliance Approval for Soil Bank

LOCATION: Part lot 3, Concession 9, County Road 4, Peterborough, Ontario

DESCRIBED BY: J. Scott CHECKED BY: W. Moore

DATE (START): 8 August 2022 DATE (FINISH): 8 August 2022

LEGEND

- SS Split Spoon
- ST Shelby Tube
- RC Rock Core
- Water Level
- Water content (%)
- Atterberg limits (%)
- N Penetration Index based on Split Spoon sample
- N Penetration Index based on Dynamic Cone sample
- Cu Shear Strength based on Field Vane
- Cu Shear Strength based on Lab Vane
- S Sensitivity Value of Soil
- Shear Strength based on Pocket Penetrometer

Depth BGS	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	MONITOR WELL	State	Type and Number	Recovery	PID	Penetration Index / RQD %
metres	213.43		GROUND SURFACE	0.9			%	ppm	N
	213.40		**TOPSOIL** - (25 mm)						
	213.27		**GRAVELLY SAND** - Brown, Compact, Moist						
0.5			**SAND** - Trace Silt, Compact, Moist	Riser packed in Bentonite		SS-1			15
	212.67		**SILTY SAND** - Compact, Moist						
1.0						SS-2			10
1.5	211.90		**TILL** - Silty Sand, With Gravel, Trace Clay, Compact, Moist						
						SS-3	63		11
2.0				2.0 Riser packed in Sand					
	211.14		Very Dense	2.3		SS-4	84		50+
2.5				Screen packed in Sand					
3.0				WL 2.9 8/17/2022					
	210.38		Wet						
3.5						SS-5			52
	209.62		**NOTES:** - Auger Refusal, inferred bed rock at 3.81 mbgs.	3.8					
4.0									
4.5									

SCALE FOR TEST RESULTS

50kPa 100kPa 150kPa 200kPa

10 20 30 40 50 60 70 80 90

NOTES:

File: \\GHDNET\GHD\CA\PETERBOROUGH\PROJECTS\662\12583956\WORKSHARE\FIELD\12583956-FLD-22-08-12 BOREHOLE LOGS.GPJ Library File: GHD_GEOTECH_V10.GLB Report: BOREHOLE LOG Date: 1/12/22

REFERENCE No.: 12583956 ENCLOSURE No.:

BOREHOLE No.: MW2D-23
ELEVATION: 209.44 m

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Leahy Excavating
PROJECT: Excess Soil Management
LOCATION: County Road 4, Peterborough, ON
DESCRIBED BY: J. Scott CHECKED BY: W. Moore
DATE (START): 12 June 2023 DATE (FINISH): 12 June 2023

NORTHING: 4913991 EASTING: 718639

LEGEND

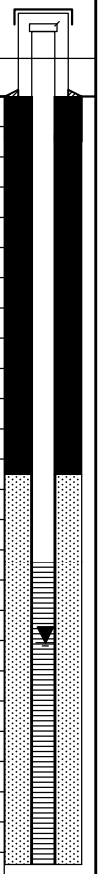
- SS - SPLIT SPOON
- ST - SHELBY TUBE
- RC - ROCK CORE
- ▼ - WATER LEVEL

Depth Feet	Depth Metres	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery/ TCR(%)	Moisture Content	Blows per 15cm/ RQD(%)	'N' Value/ SCR(%)
		209.44		GROUND SURFACE				%		
0				**FILL:**						
1				**GRAVELLY SAND**, compact, brown, moist						
2				Coarse						
3	1.0									
4										
5										
6										
7	2.0			Wet						
8		207.15		**TILL:**						
9				**GRAVELLY SAND**, with silt, trace clay, very dense						
10	3.0	206.54		**BEDROCK:**						
11				**LIMESTONE** with shale partings, grey						
12										
13	4.0					RC-1	107	--	60	--
14										
15										
16	5.0									
17										
18						RC-2	97	--	85	--
19										
20	6.0									
21										
22										
23	7.0					RC-3	100	--	67	--
24										
25				Vertical fracture (approx. 12" long)						
26	8.0	201.67		**END OF BOREHOLE**						
27				**NOTES:**						
28				- End of borehole at 7.7 mbgs						
29				- Groundwater seepage encountered at 3.0 mbgs (206.4 masl)						
30	9.0			- mbgs denotes 'metres below ground surface'						
31										
32				**WATER LEVELS:**						
33	10.0			06/19/23 - 5.51 mbgs						
34										
35										
36	11.0									
37										
38										
39	12.0									
40										
41										
42										
43	13.0									
44										

Shear test (Cu) △ Field
Sensitivity (S) □ Lab
○ Water content (%)
W_p W_l Atterberg limits (%)
● "N" Value (blows / 12 in.-30 cm)

10 20 30 40 50 60 70 80 90

m
m
m
3.81 m
4.69 m
6/19/2023
7.74 m



File: N:\CA\PETERBOROUGH\PROJECTS\66211258395 6\WORKSHARE\FIELD\125883956-23-06-19 LEAHY EXCAVATING BOREHOLE LOGS RS.GPJ Library File: GHD_GEOTECH_V05.GLB Report: SOIL LOG WITH GRAPH+WELL Date: 3/10/23

REFERENCE No.: 12583956 ENCLOSURE No.:

BOREHOLE No.: MW3D-23
ELEVATION: 210.51 m

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Leahy Excavating
PROJECT: Excess Soil Management
LOCATION: County Road 4, Peterborough, ON
DESCRIBED BY: J. Scott CHECKED BY: W. Moore
DATE (START): 16 June 2023 DATE (FINISH): 16 June 2023

NORTHING: 4913868 EASTING: 718602

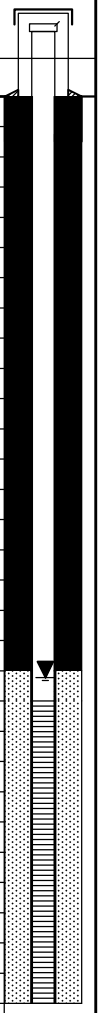
LEGEND

- SS - SPLIT SPOON
- ST - SHELBY TUBE
- RC - ROCK CORE
- ▼ - WATER LEVEL

Depth Feet	Depth Metres	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery/ TCR(%)	Moisture Content	Blows per 15cm/ RQD(%)	'N' Value/ SCR(%)
		210.51		GROUND SURFACE				%		
0				**FILL:**						
1				**GRAVELLY SAND**, dense, brown, moist						
2				Silty						
3	1.0			Grey						
4		209.29		**SANDY SILT**, trace gravel, trace clay, trace organics, soft, brown, moist						
5		208.99		**GRAVELLY SAND**, compact, brown, moist						
6										
7	2.0									
8		208.22		**TILL:**						
9				**GRAVELLY SAND**, with silt, brown, moist to wet						
10	3.0			Cobbles, very dense						
11										
12						RC-1	35	--	0	--
13	4.0									
14										
15										
16	5.0									
17						RC-2	67	--	8	--
18										
19		204.82		**BEDROCK:**						
20	6.0			**LIMESTONE**, with shale partings, grey						
21										
22										
23	7.0					RC-3	98	--	68	--
24										
25										
26	8.0									
27										
28						RC-4	100	--	82	--
29										
30	9.0	201.37		**END OF BOREHOLE**						
31				**NOTES:**						
32				- End of borehole at 9.1 m bgs						
33	10.0			- Groundwater seepage encountered at 3.0 m bgs (207.5 masl)						
34				- mbgs denotes 'metres below ground surface'						
35										
36	11.0			**WATER LEVELS:**						
37				06/19/23 - 5.86 m bgs						
38										
39										
40	12.0									
41										
42										
43	13.0									
44										

Shear test (Cu) △ Field
Sensitivity (S) □ Lab
○ Water content (%)
W_p W_l Atterberg limits (%)
● "N" Value (blows / 12 in.-30 cm)

10 20 30 40 50 60 70 80 90



File: N:\CA\PETERBOROUGH\PROJECTS\66211258395 6\WORKSHARE\FIELD\125883956-23-06-19 LEAHY EXCAVATING BOREHOLE LOGS RS.GPJ Library File: GHD_GEOTECH_V05.GLB Report: SOIL LOG WITH GRAPH+WELL Date: 3/10/23

REFERENCE No.: 12583956 ENCLOSURE No.:

BOREHOLE No.: MW5B-23
ELEVATION: 207.51 m

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Leahy Excavating
PROJECT: Excess Soil Management
LOCATION: County Road 4, Peterborough, ON
DESCRIBED BY: J. Scott CHECKED BY: W. Moore
DATE (START): 12 June 2023 DATE (FINISH): 12 June 2023

NORTHING: 4913688 EASTING: 718545

LEGEND

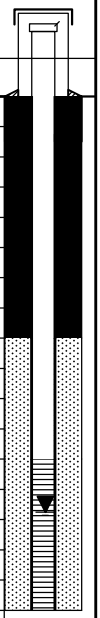
- SS - SPLIT SPOON
- ST - SHELBY TUBE
- RC - ROCK CORE
- ▼ - WATER LEVEL

Depth Feet	Depth Metres	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery/ TCR(%)	Moisture Content	Blows per 15cm/ RQD(%)	'N' Value/ SCR(%)
		207.51		GROUND SURFACE				%		
0				**FILL:**						
1				**GRAVELLY SAND**, very dense, brown,						
2		206.90		moist, rootlets in top inch						
3	1.0			**TILL:**						
4				**SILTY SAND**, with gravel, trace clay,						
5				very dense, brown, moist	☒	SS-1	100	--	50/6"	50+
6										
7	2.0									
8										
9										
10	3.0			Auger grinding	=	SS-2	100	--	50/2"	50+
11										
12										
13	4.0									
14										
15										
16					☒	SS-3	100	--	37-42-50/4"	92+
17	5.0	202.33				SS-4	0	--	50/0	50+
18				**END OF BOREHOLE**						
19				**NOTES:**						
20	6.0			- End of borehole at 5.2 m bgs						
21				- mbgs denotes 'metres below ground						
22				surface'						
23	7.0									
24				**WATER LEVELS:**						
25				06/19/23 - 4.19 m bgs						
26	8.0									
27										
28										
29	9.0									
30										
31										
32										
33	10.0									
34										
35										
36	11.0									
37										
38										
39	12.0									
40										
41										
42										
43	13.0									
44										

Shear test (Cu) △ Field
Sensitivity (S) □ Lab
○ Water content (%)
W_p W_l Atterberg limits (%)
● "N" Value (blows / 12 in.-30 cm)

10 20 30 40 50 60 70 80 90

m
2.44 m
3.66 m
6/19/2023
5.18 m



File: N:\CA\PETERBOROUGH\PROJECTS\66211258395 6\WORKSHARE\FIELD\125883956-23-06-19 LEAHY EXCAVATING BOREHOLE LOGS RS.GPJ Library File: GHD_GEOTECH_V05.GLB Report: SOIL LOG WITH GRAPH+WELL Date: 3/10/23

REFERENCE No.: 12583956 ENCLOSURE No.:

GHD

BOREHOLE No.: MW5D-23
ELEVATION: 207.56 m

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Leahy Excavating
PROJECT: Excess Soil Management
LOCATION: County Road 4, Peterborough, ON
DESCRIBED BY: J. Scott CHECKED BY: W. Moore
DATE (START): 12 June 2023 DATE (FINISH): 12 June 2023

LEGEND

- SS - SPLIT SPOON
- ST - SHELBY TUBE
- RC - ROCK CORE
- ▼ - WATER LEVEL

NORTHING: 4913687 EASTING: 718546

Depth Feet	Depth Metres	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery/ TCR(%)	Moisture Content	Blows per 15cm/ RQD(%)	'N' Value/ SCR(%)
		207.56		GROUND SURFACE				%		
0				**FILL:**						
1				**GRAVELLY SAND**, brown, moist						
2		206.95		**TILL:**						
3	1.0			**SILTY SAND**, with gravel, trace clay, very dense, brown, moist						
4										
5										
6	2.0									
7										
8										
9						AS-1		--	--	--
10	3.0			Wet						
11										
12										
13	4.0									
14						AS-2		--	--	--
15										
16	5.0					AS-3		--	--	--
17										
18										
19						AS-4		--	--	--
20	6.0	201.61		**BEDROCK:**						
21		201.51		**LIMESTONE**, weathered, grey						
22				Fresh		RC-1	95	--	49	--
23	7.0									
24										
25										
26	8.0					RC-2	97	--	64	--
27										
28										
29	9.0									
30										
31										
32	10.0					RC-3	100	--	84	--
33										
34										
35		196.91		**END OF BOREHOLE**						
36	11.0			**NOTES:**						
37				- End of borehole at 10.6 m bgs						
38				- Groundwater seepage encountered at 3.0 mbgs (204.6 masl)						
39	12.0			- mbgs denotes 'metres below ground surface'						
40										
41				**WATER LEVELS:**						
42				06/19/23 - 3.87 m bgs						
43	13.0									
44										

Shear test (Cu) △ Field
Sensitivity (S) □ Lab
○ Water content (%)
Atterberg limits (%) w_p w_l
● "N" Value (blows / 12 in.-30 cm)

10 20 30 40 50 60 70 80 90

m
m
m
6/19/2023
6.40 m
7.59 m
10.64 m

File: N:\CA\PETERBOROUGH\PROJECTS\62\12583956\WORKSHARE\FIELD\125883956-23-06-19 LEAHY EXCAVATING BOREHOLE LOGS RS.GPJ Library File: GHD_GEOTECH_V05.GLB Report: SOIL LOG WITH GRAPH+WELL Date: 3/10/23

REFERENCE No.: 12583956 ENCLOSURE No.:

GHD

BOREHOLE No.: MW6D-23
ELEVATION: 213.28 m

BOREHOLE REPORT

Page: 1 of 1

CLIENT: Leahy Excavating
PROJECT: Excess Soil Management
LOCATION: County Road 4, Peterborough, ON
DESCRIBED BY: J. Scott CHECKED BY: W. Moore
DATE (START): 16 June 2023 DATE (FINISH): 16 June 2023

NORTHING: 4913907 EASTING: 718473

LEGEND

- SS - SPLIT SPOON
- ST - SHELBY TUBE
- RC - ROCK CORE
- WATER LEVEL

Depth Feet	Depth Metres	Elevation (m)	Stratigraphy	DESCRIPTION OF SOIL AND BEDROCK	State	Type and Number	Recovery/ TCR(%)	Moisture Content	Blows per 15cm/ RQD(%)	'N' Value/ SCR(%)
		213.28		GROUND SURFACE				%		
0		213.26		**TOPSOIL** - 30mm						
1		213.13		**FILL:**						
2				**GRAVELLY SAND**, compact, brown, moist						
3	1.0	212.52		**SAND**, with silt, compact, brown, moist						
4				**SILTY SAND**, compact, brown, moist						
5		211.76		**TILL:**						
6				**SANDY SILT**, with gravel, compact, brown, trace clay						
7	2.0			Very dense						
8										
9				Wet						
10	3.0									
11										
12										
13	4.0									
14										
15										
16	5.0					SS-1	92	--	--	91
17										
18										
19										
20	6.0									
21						SS-2	100	--	--	54
22										
23	7.0									
24										
25						SS-3	100	--	--	50+
26	8.0									
27										
28										
29										
30	9.0					SS-4	100	--	--	50+
31		203.99		**END OF BOREHOLE**						
32				**NOTES:**						
33	10.0			- End of borehole at 9.3 m bgs						
34				- Groundwater seepage encountered at 3.0 mbgs (210.3 masl)						
35				- mbgs denotes 'metres below ground surface'						
36	11.0									
37				**WATER LEVELS:**						
38				06/19/23 - 3.81 m bgs						
39										
40	12.0									
41										
42										
43	13.0									
44										

Shear test (Cu) △ Field
Sensitivity (S) □ Lab
○ Water content (%)
Atterberg limits (%) w_p w_l
● "N" Value (blows / 12 in.-30 cm)

10 20 30 40 50 60 70 80 90

m
m
m

6/19/2023
6.71 m
7.62 m
9.14 m

File: N:\CA\PETERBOROUGH\PROJECTS\66211258395\6\WORKSHARE\FIELD\125883956-23-06-19 LEAHY EXCAVATING BOREHOLE LOGS RS.GPJ Library File: GHD_GEOTECH_V05.GLB Report: SOIL LOG WITH GRAPH+WELL Date: 3/10/23

Appendix B

Test Pit Records

REFERENCE No.: 12583956

ENCLOSURE No.:

TEST PIT No.: TP-A

ELEVATION: N/M

TEST PIT REPORT

CLIENT: Leahy Excavation Inc.

PROJECT: County Road 4, Excess Soil Management

LOCATION: 317 County Road 4, Peterborough, Ontario

DESCRIBED BY: C. Baggesen DATE: 9 September 2024

CHECKED BY: M. Nieukirk DATE:

LEGEND

GSE - GRAB SAMPLE (environmental)
GS - GRAB SAMPLE (geotechnical)
Cu - SHEAR TEST
CHEM - CHEMICAL ANALYSIS
OVC - ORGANIC VAPOR CONCENTRATION
INF - INFILTRATION
▼ - WATER LEVEL

Depth Feet	Depth Metres	Elevation (m) BGS	Symbol	STRATIGRAPHY	Sample Type & Number	WC %	Tests GR-SN-SI-CL %	▼ INF
	0.2	0.2		TOPSOIL (203 mm)				
1	0.4	0.4		SANDY SILT, some gravel, occasional cobbles, dark brown, moist				
	0.5			SILTY SAND, some gravel, occasional cobbles, light brown, moist				
2								
3	1.0							
4								
5	1.5				A	3	19-44-28-9	
	1.6	1.6		END OF TEST PIT:				
6				NOTE: - Test pit terminated at 1.6 m bgs. - bgs denotes 'below ground surface'.				
	2.0							
7								
8	2.5							
9								
10	3.0							
11								
	3.5							
12								
13	4.0							
14								
	4.5							
15								
16								

REFERENCE No.: 12583956 ENCLOSURE No.:

TEST PIT No.: TP-B
ELEVATION: N/M

TEST PIT REPORT

CLIENT: Leahy Excavation Inc.
PROJECT: County Road 4, Excess Soil Management
LOCATION: 317 County Road 4, Peterborough, Ontario
DESCRIBED BY: C. Baggesen DATE: 9 September 2024
CHECKED BY: M. Nieukirk DATE:

LEGEND

GSE - GRAB SAMPLE (environmental)
GS - GRAB SAMPLE (geotechnical)
Cu - SHEAR TEST
CHEM - CHEMICAL ANALYSIS
OVC - ORGANIC VAPOR CONCENTRATION
INF - INFILTRATION
▼ - WATER LEVEL

Depth Feet	Depth Metres	Elevation (m) BGS	Symbol	STRATIGRAPHY	Sample Type & Number	WC %	Tests GR-SN-SI-CL %	▼ INF
	0.2	0.2		TOPSOIL (203 mm)				
1				SANDY SILT, some gravel, occasional cobbles, light brown, grey, moist				
	0.5							
2								
3								
	1.0							
4								
5								
	1.5							
6								
	1.9	1.9		END OF TEST PIT:	B		---	
	2.0			NOTE: - Test pit terminated at 1.9 m bgs. - bgs denotes 'below ground surface'.				
7								
8								
	2.5							
9								
10								
	3.0							
11								
	3.5							
12								
13								
	4.0							
14								
	4.5							
15								
16								

File: \\GHDNET\GHD\CA\PETERBOROUGH\PROJECTS\662\12583956\WORKSHARE\FIELD\GINT LOG_2024\12583956 LOG_GEOTECH.GPJ Library File: 12583956 GHD_GEOTECH_V10.GLB
Report: 12583956 TEST PIT LOG_LAB RESULT Date: 1/12/24

REFERENCE No.: 12583956 ENCLOSURE No.:

TEST PIT REPORT

TEST PIT No.: TP-C
ELEVATION: N/M

CLIENT: Leahy Excavation Inc.
PROJECT: County Road 4, Excess Soil Management
LOCATION: 317 County Road 4, Peterborough, Ontario
DESCRIBED BY: C. Baggesen DATE: 9 September 2024
CHECKED BY: M. Nieukirk DATE:

LEGEND

GSE - GRAB SAMPLE (environmental)
GS - GRAB SAMPLE (geotechnical)
Cu - SHEAR TEST
CHEM - CHEMICAL ANALYSIS
OVC - ORGANIC VAPOR CONCENTRATION
INF - INFILTRATION
▼ - WATER LEVEL

Depth Feet	Depth Metres	Elevation (m) BGS	Symbol	STRATIGRAPHY	Sample Type & Number	WC %	Tests GR-SN-SI-CL %	▼ INF
				TOPSOIL (305 mm)				
1	0.3	0.3		SANDY SILT, reddish brown	C		---	
	0.5							
2	0.6	0.6		SANDY SILT TILL, some gravel, light brown, moist, caving sidewalls, no water seepage				
3	1.0							
4								
5	1.5							
6					C2		---	
	2.0							
7	2.1	2.1		END OF TEST PIT:				
				NOTE: - Test pit terminated at 2.1 m bgs. - bgs denotes 'below ground surface'.				
8	2.5							
9								
10	3.0							
11								
	3.5							
12								
13	4.0							
14								
	4.5							
15								
16								

File: \\GHDNET\GHD\CA\PETERBOROUGH\PROJECTS\662\12583956\WORKSHARE\FIELD\GINT LOG_2024\12583956 LOG_GEOTECH.GPJ Library File: 12583956 GHD_GEOTECH_V10.GLB
Report: 12583956 TEST PIT LOG_LAB RESULT Date: 1/12/24

REFERENCE No.: 12583956 ENCLOSURE No.:

TEST PIT No.: TP-D
ELEVATION: N/M

TEST PIT REPORT

CLIENT: Leahy Excavation Inc.
PROJECT: County Road 4, Excess Soil Management
LOCATION: 317 County Road 4, Peterborough, Ontario
DESCRIBED BY: C. Baggesen DATE: 9 September 2024
CHECKED BY: M. Nieukirk DATE:

LEGEND

GSE - GRAB SAMPLE (environmental)
GS - GRAB SAMPLE (geotechnical)
Cu - SHEAR TEST
CHEM - CHEMICAL ANALYSIS
OVC - ORGANIC VAPOR CONCENTRATION
INF - INFILTRATION
▼ - WATER LEVEL

Depth Feet	Depth Metres	Elevation (m) BGS	Symbol	STRATIGRAPHY	Sample Type & Number	WC %	Tests GR-SN-SI-CL %	▼ / INF
	0.2	0.2		TOPSOIL (191 mm)				
1				SILTY SAND, reddish brown, moist				
	0.5							
2					D		---	
3	0.9	0.9						
	1.0			SANDY SILT TILL, some gravel, light brown to grey, moist				
4								
5	1.5							
6								
	2.0				D2	1	16-36-39-9	
7	2.1	2.1		END OF TEST PIT:				
				NOTE: - Test pit terminated at 2.1 m bgs. - bgs denotes 'below ground surface'.				
8	2.5							
9								
10	3.0							
11								
	3.5							
12								
13	4.0							
14								
	4.5							
15								
16								

File: \\GHDNET\GHD\CA\PETERBOROUGH\PROJECTS\662\12583956\WORKSHARE\FIELD\GINT LOG_2024\12583956 LOG_GEOTECH.GPJ Library File: 12583956 GHD_GEOTECH_V10.GLB
Report: 12583956 TEST PIT LOG_LAB RESULT Date: 1/12/24

REFERENCE No.: 12583956 ENCLOSURE No.:

TEST PIT No.: TP-E
ELEVATION: N/M

TEST PIT REPORT

CLIENT: Leahy Excavation Inc.
PROJECT: County Road 4, Excess Soil Management
LOCATION: 317 County Road 4, Peterborough, Ontario
DESCRIBED BY: C. Baggesen DATE: 9 September 2024
CHECKED BY: M. Nieukirk DATE:

LEGEND

GSE - GRAB SAMPLE (environmental)
GS - GRAB SAMPLE (geotechnical)
Cu - SHEAR TEST
CHEM - CHEMICAL ANALYSIS
OVC - ORGANIC VAPOR CONCENTRATION
INF - INFILTRATION
▼ - WATER LEVEL

Depth Feet	Depth Metres	Elevation (m) BGS	Symbol	STRATIGRAPHY	Sample Type & Number	WC %	Tests GR-SN-SI-CL %	▼ INF
				TOPSOIL (305 mm)				
1	0.3	0.3		SANDY SILT, some gravel, light brown to reddish, moist				
	0.5							
2								
3								
	1.0							
4	1.2	1.2		SANDY and GRAVEL, ocarse sand, occasional cobbles, moist				
5	1.5							
6					E1A		---	
	2.0							
7								
8								
	2.5							
9								
10	3.0							
11								
	3.5							
12								
13	4.0	4.0		END OF TEST PIT:	E1B		56-39-(5)	
	4.0			NOTE: - Test pit terminated at 4.0 m bgs. - bgs denotes 'below ground surface'.				
14								
	4.5							
15								
16								

File: \\GHDNET\GHD\CA\PETERBOROUGH\PROJECTS\662\12583956\WORKSHARE\FIELD\GINT LOG_2024\12583956 LOG_GEOTECH.GPJ Library File: 12583956 GHD_GEOTECH_V10.GLB
Report: 12583956 TEST PIT LOG_LAB RESULT Date: 1/12/24

REFERENCE No.: 12583956 ENCLOSURE No.:

TEST PIT No.: TP-F
ELEVATION: N/M

TEST PIT REPORT

CLIENT: Leahy Excavation Inc.
PROJECT: County Road 4, Excess Soil Management
LOCATION: 317 County Road 4, Peterborough, Ontario
DESCRIBED BY: C. Baggesen DATE: 9 September 2024
CHECKED BY: M. Nieukirk DATE:

LEGEND

GSE - GRAB SAMPLE (environmental)
GS - GRAB SAMPLE (geotechnical)
Cu - SHEAR TEST
CHEM - CHEMICAL ANALYSIS
OVC - ORGANIC VAPOR CONCENTRATION
INF - INFILTRATION
▼ - WATER LEVEL

Depth Feet	Depth Metres	Elevation (m) BGS	Symbol	STRATIGRAPHY	Sample Type & Number	WC %	Tests GR-SN-SI-CL %	▼ INF
	0.2	0.2		TOPSOIL (203 mm)				
1				SILTY SAND, some gravel, light brown, moist				
	0.5							
2	0.7	0.7		SAND and GRAVEL, occasional cobbles, brown, moist				
3	1.0							
4								
5	1.5				F1A		---	
6								
	2.0							
7								
8	2.5							
9								
10	3.0							
11								
	3.5							
12					F1B		57-40-(3)	
	3.8	3.8		END OF TEST PIT:				
13	4.0			NOTE: - Test pit terminated at 3.8 m bgs. - bgs denotes 'below ground surface'.				
14								
	4.5							
15								
16								

File: \\GHDNET\GHD\CA\PETERBOROUGH\PROJECTS\662\12583956\WORKSHARE\FIELD\GINT LOG_2024\12583956 LOG_GEOTECH.GPJ Library File: 12583956 GHD_GEOTECH_V10.GLB
Report: 12583956_TEST PIT LOG_LAB RESULT Date: 1/12/24

REFERENCE No.: 12583956 ENCLOSURE No.:

TEST PIT No.: TP-G
ELEVATION: N/M

TEST PIT REPORT

CLIENT: Leahy Excavation Inc.
PROJECT: County Road 4, Excess Soil Management
LOCATION: 317 County Road 4, Peterborough, Ontario
DESCRIBED BY: C. Baggesen DATE: 9 September 2024
CHECKED BY: M. Nieukirk DATE:

LEGEND

GSE - GRAB SAMPLE (environmental)
GS - GRAB SAMPLE (geotechnical)
Cu - SHEAR TEST
CHEM - CHEMICAL ANALYSIS
OVC - ORGANIC VAPOR CONCENTRATION
INF - INFILTRATION
▼ - WATER LEVEL

Depth Feet	Depth Metres	Elevation (m) BGS	Symbol	STRATIGRAPHY	Sample Type & Number	WC %	Tests GR-SN-SI-CL %	▼ INF
	0.2	0.2		TOPSOIL (203 mm)				
1				SILT, some sand, some clay, trace gravel, occasional cobbles, brown to grey, moist				
	0.5							
2								
3								
	1.0							
4								
5								
	1.5							
6								
	2.0							
7					G	12	1-16-71-12	
	2.3	2.3		END OF TEST PIT:				
8	2.5			NOTE: - Test pit terminated at 2.3 m bgs. - bgs denotes 'below ground surface'.				
9								
10	3.0							
11								
	3.5							
12								
13	4.0							
14								
	4.5							
15								
16								

File: \\GHDNET\GHD\CA\PETERBOROUGH\PROJECTS\662\12583956\WORKSHARE\FIELD\GINT LOG_2024\12583956 LOG_GEOTECH.GPJ Library File: 12583956 GHD_GEOTECH_V10.GLB
Report: 12583956 TEST PIT LOG_LAB RESULT Date: 1/12/24

REFERENCE No.: 12583956 ENCLOSURE No.:

TEST PIT REPORT

TEST PIT No.: TP-H
ELEVATION: N/M

CLIENT: Leahy Excavation Inc.
PROJECT: County Road 4, Excess Soil Management
LOCATION: 317 County Road 4, Peterborough, Ontario
DESCRIBED BY: C. Baggesen DATE: 9 September 2024
CHECKED BY: M. Nieukirk DATE:

LEGEND

GSE - GRAB SAMPLE (environmental)
GS - GRAB SAMPLE (geotechnical)
Cu - SHEAR TEST
CHEM - CHEMICAL ANALYSIS
OVC - ORGANIC VAPOR CONCENTRATION
INF - INFILTRATION
▼ - WATER LEVEL

Depth Feet	Depth Metres	Elevation (m) BGS	Symbol	STRATIGRAPHY	Sample Type & Number	WC %	Tests GR-SN-SI-CL %	▼ INF
	0.2	0.2		TOPSOIL (203 mm)				
1				SILTY SAND, some gravle, light brown to grey, moist				
	0.5							
2								
	0.7	0.7		SAND and GRAVEL, occasional cobbles, brown, moist				
3								
	1.0							
4								
5	1.5							
6								
	2.0							
7								
8	2.5				H1A		---	
9								
10	3.0							
11								
	3.5							
12								
13	4.0							
14					H1B		48-50-(2)	
	4.5							
15	4.6	4.6		END OF TEST PIT:				
16				NOTE: - Test pit terminated at 4.6 m bgs. - bgs denotes 'below ground surface'				

File: \\GHDNET\GHD\CA\PETERBOROUGH\PROJECTS\662\12583956\WORKSHARE\FIELD\GINT LOG_2024\12583956 LOG_GEOTECH.GPJ Library File: 12583956 GHD_GEOTECH_V10.GLB
Report: 12583956 TEST PIT LOG_LAB RESULT Date: 1/12/24

REFERENCE No.: 12583956 ENCLOSURE No.:

TEST PIT REPORT

TEST PIT No.: TP-I
ELEVATION: N/M

CLIENT: Leahy Excavation Inc.
PROJECT: County Road 4, Excess Soil Management
LOCATION: 317 County Road 4, Peterborough, Ontario
DESCRIBED BY: C. Baggesen DATE: 9 September 2024
CHECKED BY: M. Nieukirk DATE:

LEGEND

GSE - GRAB SAMPLE (environmental)
GS - GRAB SAMPLE (geotechnical)
Cu - SHEAR TEST
CHEM - CHEMICAL ANALYSIS
OVC - ORGANIC VAPOR CONCENTRATION
INF - INFILTRATION
▼ - WATER LEVEL

Depth Feet	Depth Metres	Elevation (m) BGS	Symbol	STRATIGRAPHY	Sample Type & Number	WC %	Tests GR-SN-SI-CL %	▼ INF
1	0.5			SANDY SILT, some gravel, light brown, moist				
2	0.8	0.8		dark brown				
3	1.0			SILTY SAND, trace gravel, light brown, moist				
4								
5	1.5							
6								
7	2.0							
8								
9	2.5							
10	3.0				I		4-79-(17)	
11	3.4	3.4		END OF TEST PIT:				
12	3.5			NOTE: - Test pit terminated at 3.4 m bgs. - Water table, caving sides at 3.4 m bgs. - bgs denotes 'below ground surface'.				
13	4.0							
14								
15	4.5							
16								

File: \\GHDNET\GHD\CA\PETERBOROUGH\PROJECTS\662\12583956\WORKSHARE\FIELD\GINT LOG_2024\12583956 LOG_GEOTECH.GPJ Library File: 12583956 GHD_GEOTECH_V10.GLB
Report: 12583956 TEST PIT LOG_LAB RESULT Date: 1/12/24

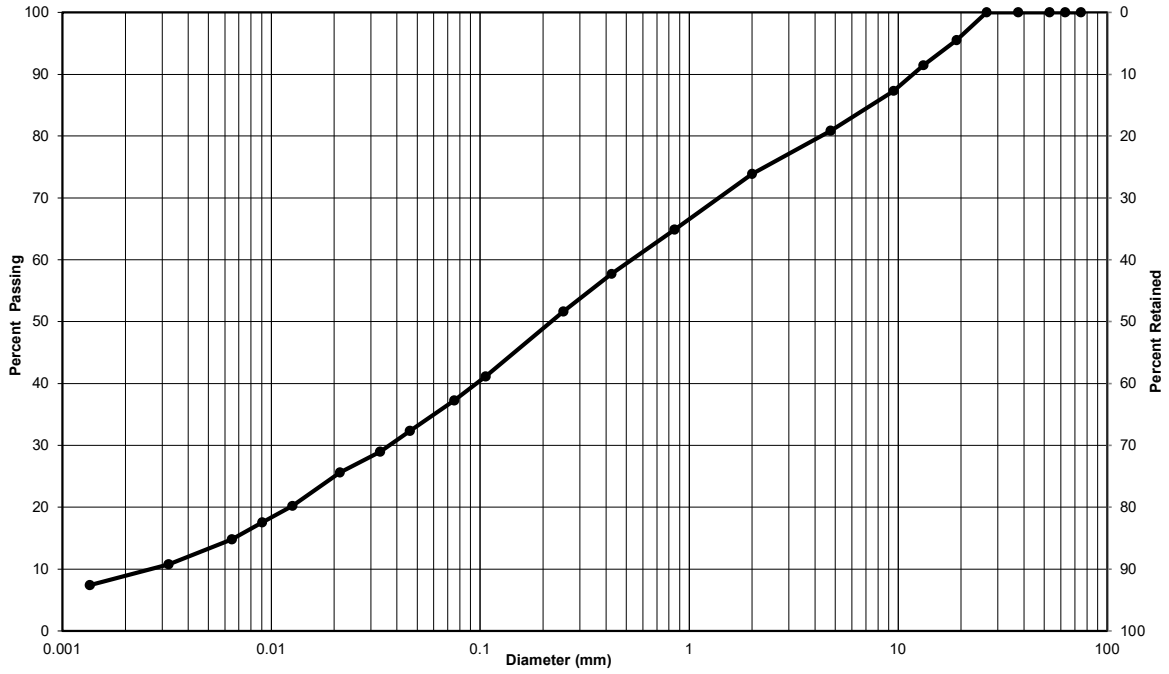
Appendix C

Geotechnical Laboratory Test Results

Particle-Size Analysis of Soils

MTO LS-702/ASTM D422 (Geotechnical)

Client:	Leahy Excavating	**Lab No.:**	AG-24-246
Project/Site:	County Road 4 Pit Investigation	**Project No.:**	12583956
Material:	Native Soil	Sample No.:	A
Sample Location:	Test Pit	Enclosure:	-



Clay & Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse
Particle-Size Limits as per USCS (ASTM D-2487)					

Soil Description	Gravel (%)	Sand (%)	Clay & Silt (%)
Silty sand, some gravel, trace clay	19	44	37
Silt-size particles (%) :	28		
Clay-size particles (%) (<0.002 mm):	9		

Additional laboratory reporting information available upon request.

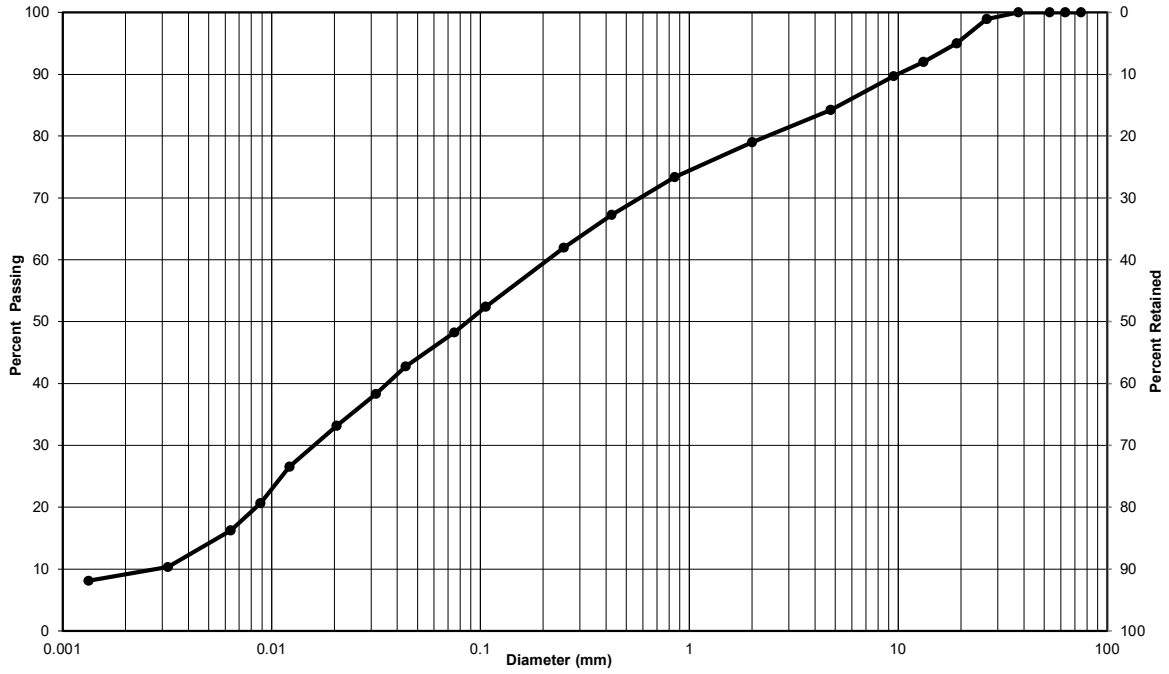
Remarks:

Performed by:	Josh Sullivan	**Date:**	October 31, 2024
Verified by:	Joe Sullivan	**Date:**	October 31, 2024
Laboratory Location:	GHD Limited - 347 Pido Road, Unit 29, Peterborough, ON		

Particle-Size Analysis of Soils

MTO LS-702/ASTM D422 (Geotechnical)

Client:	Leahy Excavating	**Lab No.:**	AG-24-247
Project/Site:	County Road 4 Pit Investigation	**Project No.:**	12583956
Material:	Native Soil	Sample No.:	D2
Sample Location:	Test Pit	Enclosure:	-



Clay & Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse
Particle-Size Limits as per USCS (ASTM D-2487)					

Soil Description	Gravel (%)	Sand (%)	Clay & Silt (%)
Sand and silt, some gravel, trace clay	16	36	48
Silt-size particles (%) :	39		
Clay-size particles (%) (<0.002 mm):	9		

Additional laboratory reporting information available upon request.

Remarks:

Performed by:	Josh Sullivan	**Date:**	October 31, 2024
Verified by:	Joe Sullivan	**Date:**	October 31, 2024
Laboratory Location:	GHD Limited - 347 Pido Road, Unit 29, Peterborough, ON		

Investigative Soil Gradation Analysis

LS-602

Client: Leahy Excavating
Project: County Road 4 Pit Investigation
Project No.: 12583956
Laboratory No.: AG-24-242

Sample Identification

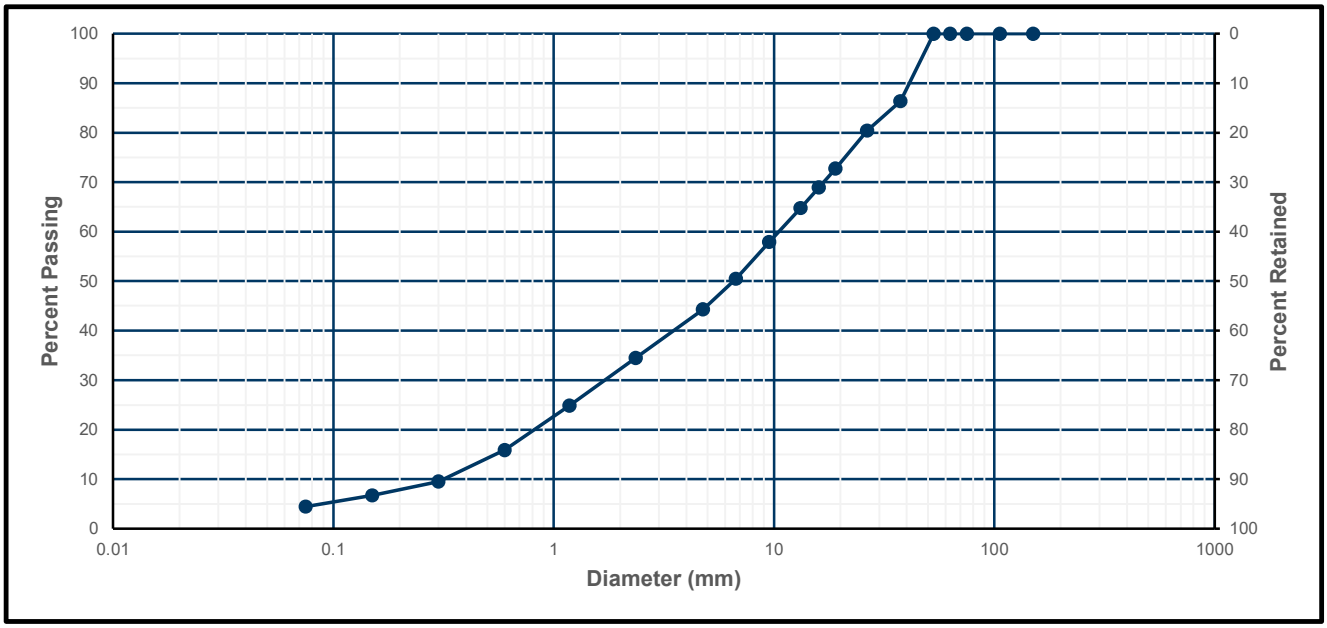
Soil Type: Aggregate (Pit)
Type of Material: Native Soil
Proposed Use: Various
Sampled By: GHD Limited
Sample Date: September 9, 2024
Sample Source: Pit
Sample Location: Test Pit
Test Pad: No
Agg.Supplier / Source: Leahy Excavating - CR 4 Pit
Sample Location Remarks: E1B
ASTM Soil Classification: GW

Laboratory Testing

Sieve Size (mm)	Sample Passing (%)	OPS.MUNI1010 Specifications Minimum % - Maximum %	Sieve Size (mm)	Sample Passing (%)	OPS.MUNI1010 Specifications Minimum % - Maximum %
150	100.0		9.5	57.9	
106	100.0		6.7	50.5	
75	100.0		4.75	44.3	
63	100.0		2.36	34.5	
53	100.0		1.18	24.9	
37.5	86.4		0.600	15.9	
26.5	80.4		0.300	9.5	
19.0	72.7		0.150	6.7	
16.0	68.9		0.075	4.5	
13.2	64.7				

Remarks

Example text: The sample was tested and results were produced in accordance to typical methods of LS-602.



Performed By:	Josh Sullivan	Verified By:	Joe Sullivan
Date:	October 24, 2024	Date:	October 25, 2024
Testing Laboratory	GHD Limited - 347 Pido Road, Unit 29, Peterborough, Ontario		

Investigative Soil Gradation Analysis

LS-602

Client: Leahy Excavating
Project: County Road 4 Pit Investigation
Project No.: 12583956
Laboratory No.: AG-24-244

Sample Identification

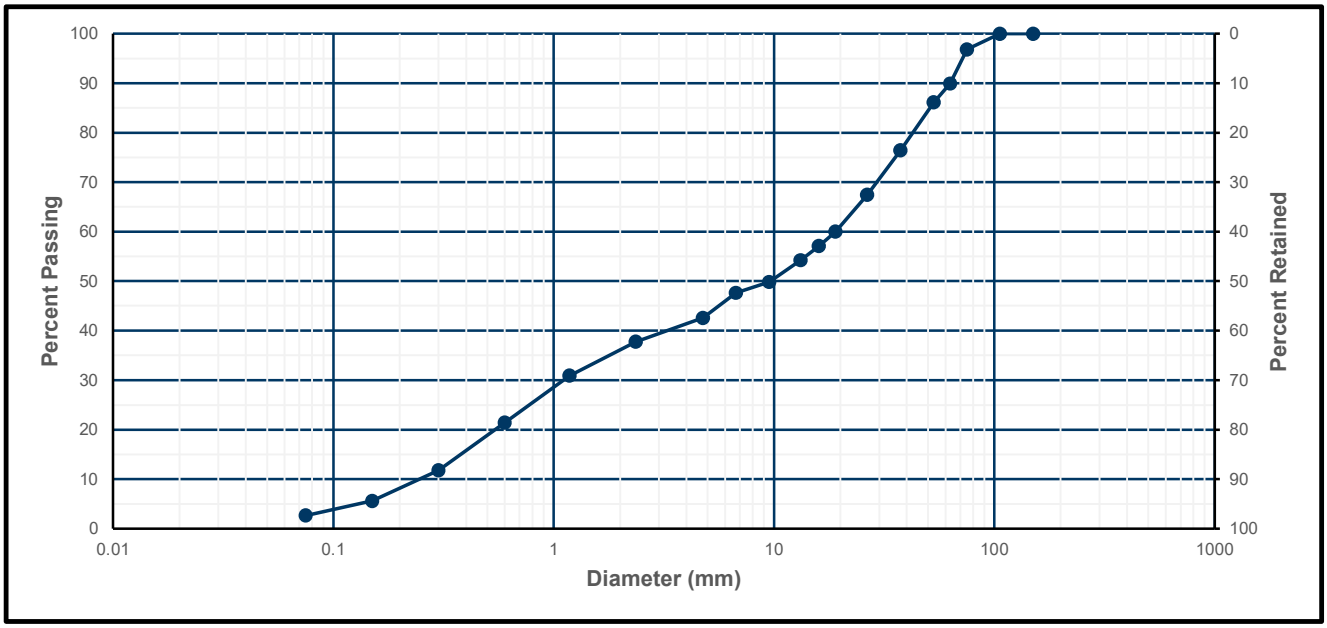
Soil Type: Aggregate (Pit)
Type of Material: Native Soil
Proposed Use: Various
Sampled By: GHD Limited
Sample Date: September 9, 2024
Sample Source: Pit
Sample Location: Test Pit
Test Pad: No
Agg.Supplier / Source: Leahy Exccavating - CR 4 Pit
Sample Location Remarks: F1B
ASTM Soil Classification: GW

Laboratory Testing

Sieve Size (mm)	Sample Passing (%)	OPS.MUNI1010 Specifications Minimum % - Maximum %	Sieve Size (mm)	Sample Passing (%)	OPS.MUNI1010 Specifications Minimum % - Maximum %
150	100.0		9.5	49.9	
106	100.0		6.7	47.6	
75	96.8		4.75	42.6	
63	89.9		2.36	37.8	
53	86.1		1.18	30.9	
37.5	76.4		0.600	21.4	
26.5	67.5		0.300	11.8	
19.0	60.0		0.150	5.6	
16.0	57.1		0.075	2.6	
13.2	54.2				

Remarks

Example text: The sample was tested and results were produced in accordance to typical methods of LS-602.

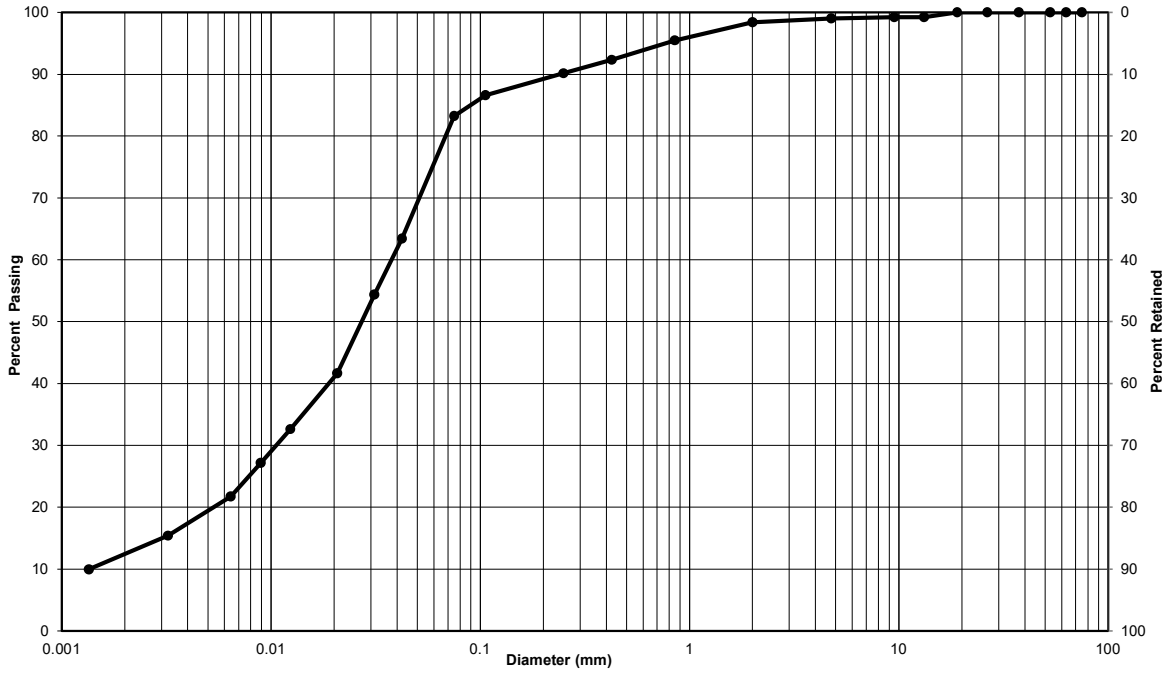


Performed By:	Josh Sullivan	Verified By:	Joe Sullivan
Date:	October 24, 2024	Date:	October 25, 2024
Testing Laboratory	GHD Limited - 347 Pido Road, Unit 29, Peterborough, Ontario		

Particle-Size Analysis of Soils

MTO LS-702/ASTM D422 (Geotechnical)

Client:	Leahy Excavating	**Lab No.:**	AG-24-245
Project/Site:	County Road 4 Pit Investigation	**Project No.:**	12583956
Material:	Native Soil	Sample No.:	G
Sample Location:	Test Pit	Enclosure:	-



Clay & Silt	Sand			Gravel	
	Fine	Medium	Coarse	Fine	Coarse
Particle-Size Limits as per USCS (ASTM D-2487)					

Soil Description	Gravel (%)	Sand (%)	Clay & Silt (%)
Silt, some sand and clay, trace gravel	1	16	83
Silt-size particles (%) :	71		
Clay-size particles (%) (<0.002 mm):	12		

Additional laboratory reporting information available upon request.

Remarks:

Performed by:	Josh Sullivan	**Date:**	October 31, 2024
Verified by:	Joe Sullivan	**Date:**	October 31, 2024
Laboratory Location:	GHD Limited - 347 Pido Road, Unit 29, Peterborough, ON		

Investigative Soil Gradation Analysis

LS-602

Client: Leahy Excavating
Project No.: 12583956
Project: County Road 4 Pit Investigation
Laboratory No.: AG-24-243

Sample Identification

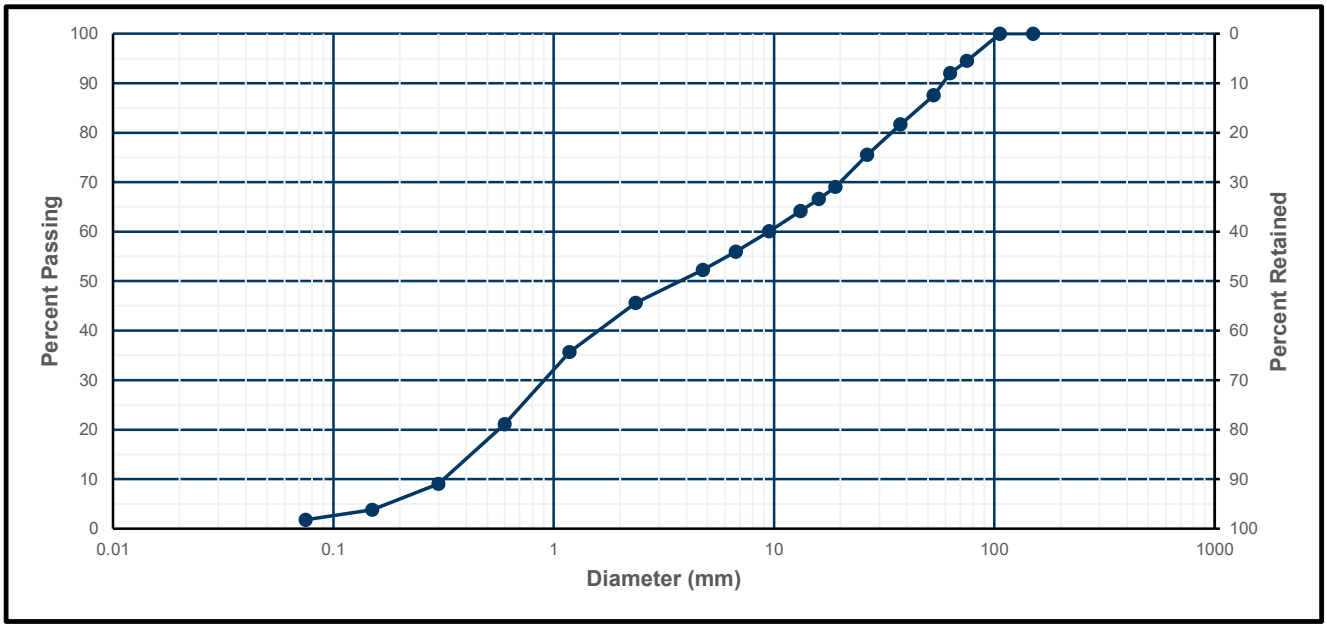
Soil Type: Aggregate (Pit)
Sample Source: Pit
Type of Material: Native Soil
Sample Location: Test Pit
Test Pad: No
Proposed Use: Various
Agg.Supplier / Source: Leahy Excavating - CR 4 Pit
Sampled By: GHD Limited
Sample Location Remarks: H1B
Sample Date: September 9, 2024
ASTM Soil Classification: SW

Laboratory Testing

Sieve Size (mm)	Sample Passing (%)	OPS.MUNI1010 Specifications Minimum % - Maximum %	Sieve Size (mm)	Sample Passing (%)	OPS.MUNI1010 Specifications Minimum % - Maximum %
150	100.0		9.5	60.1	
106	100.0		6.7	56.0	
75	94.5		4.75	52.3	
63	92.0		2.36	45.6	
53	87.6		1.18	35.7	
37.5	81.7		0.600	21.1	
26.5	75.5		0.300	9.0	
19.0	69.1		0.150	3.8	
16.0	66.6		0.075	1.8	
13.2	64.2				

Remarks

Example text: The sample was tested and results were produced in accordance to typical methods of LS-602.



Performed By:	Josh Sullivan	Verified By:	Joe Sullivan
Date:	October 24, 2024	Date:	October 25, 2024
Testing Laboratory	GHD Limited - 347 Pido Road, Unit 29, Peterborough, Ontario		

Investigative Soil Gradation Analysis

LS-602

Client: Leahy Excavating
Project: County Road 4 Pit Investigation
Project No.: 12583956
Laboratory No.: AG-24-241

Sample Identification

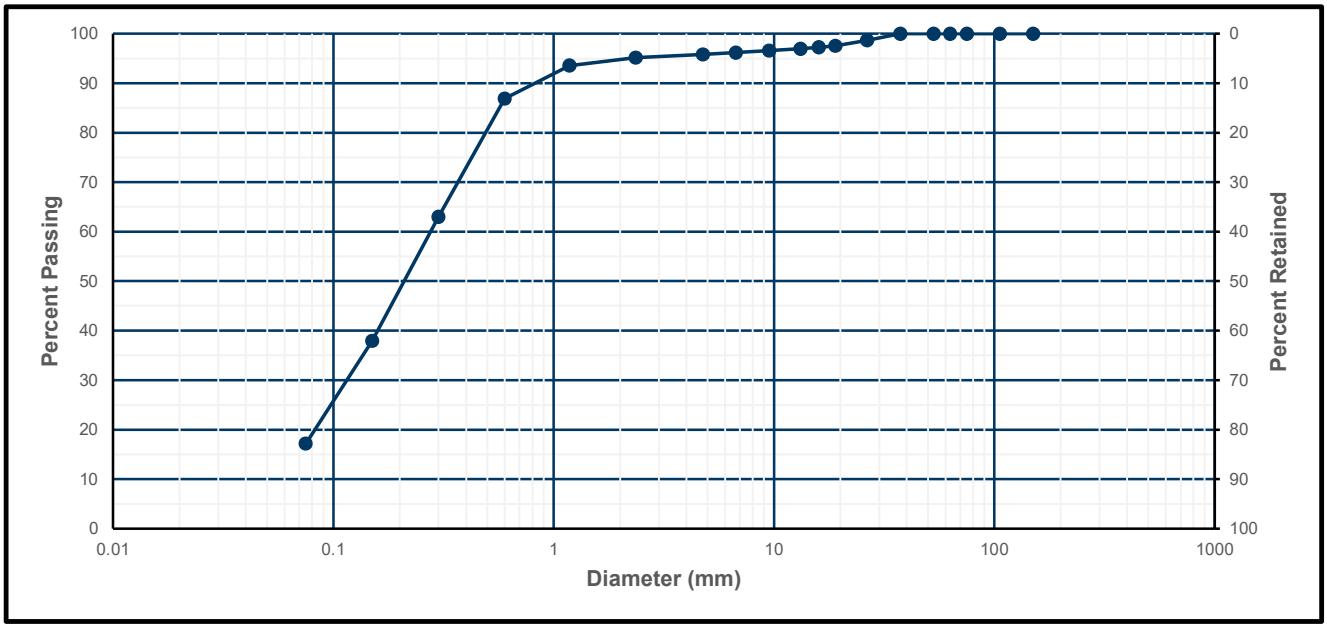
Soil Type: Aggregate (Pit)
Type of Material: Native Soil
Proposed Use: Various
Sampled By: GHD Limited
Sample Date: September 9, 2024
Sample Source: Pit
Sample Location: Test Pit
Test Pad: No
Agg.Supplier / Source: Leahy Excavating - CR 4 Pit
Sample Location Remarks: I
ASTM Soil Classification: SM

Laboratory Testing

Sieve Size (mm)	Sample Passing (%)	OPS.MUNI1010 Specifications Minimum % - Maximum %	Sieve Size (mm)	Sample Passing (%)	OPS.MUNI1010 Specifications Minimum % - Maximum %
150	100.0		9.5	96.6	
106	100.0		6.7	96.2	
75	100.0		4.75	95.8	
63	100.0		2.36	95.1	
53	100.0		1.18	93.6	
37.5	100.0		0.600	86.9	
26.5	98.7		0.300	63.0	
19.0	97.5		0.150	37.9	
16.0	97.2		0.075	17.2	
13.2	97.0				

Remarks

Example text: The sample was tested and results were produced in accordance to typical methods of LS-602.



Performed By:	Josh Sullivan	Verified By:	Joe Sullivan
Date:	October 24, 2024	Date:	October 25, 2024
Testing Laboratory	GHD Limited - 347 Pido Road, Unit 29, Peterborough, Ontario		

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