

June 14, 2023

TR Dillon Logging, Inc.
Attn: Sean Hutchinson
144 Main St.
Madison, ME 04950

**Re: Borrow/Gravel Resource Evaluation | Old School House Road | Tax Map 25, Lot 6
| Norridgewock, Maine**

Dear Mr. Hutchinson:

We have enclosed the *Borrow/Gravel Resource Evaluation (GRE) Report* for the property located on Old School House Road in Norridgewock, Maine (the Site). The Site is identified by the Town of Norridgewock as Map 25, Lot 6. The Site is approximately 72 acres and is currently predominantly woodland with a portion having been recently cut.

This evaluation is based on findings from eight test boring explorations completed on May 22, 2023, at the Site.

If you have any questions regarding this report, please feel free to contact us at (207) 989-4824.

Sincerely,
Haley Ward, Inc.



Jeff W. McElroy
Project Geologist



Jacalyn A. Gorczynski, L.G.
Senior Project Geologist/Project Manager

JWM/JAG/lmb
Enc.



HALEY WARD

ENGINEERING | ENVIRONMENTAL | SURVEYING

BORROW/GRAVEL RESOURCE EVALUATION

**Old School House Road
Norridgewock, Maine**

Prepared for:
TR Dillon Logging, Inc.
144 Main St. | Madison, Maine 04950

Corporate Office
One Merchants Plaza
Suite 701
Bangor, ME 04401
T: 207.989.4824
F: 207.989.4881

HALEYWARD.COM

JUNE 14, 2023
JN: 14283.001

Report Prepared By:
Haley Ward, Inc.

One Merchants Plaza, Suite 701 | Bangor, Maine 04401



TABLE OF CONTENTS

SECTION	PAGE
SECTION 1 INTRODUCTION	1
1.1 Purpose.....	1
1.2 Special Terms and Conditions.....	1
1.3 Limitations and Exceptions	1
1.4 Limiting Conditions and Methodology	1
SECTION 2 SCOPE OF WORK.....	1
SECTION 3 SETTING.....	2
SECTION 4 EXPLORATIONS AND TESTING	2
SECTION 5 VOLUME CALCULATIONS.....	4
SECTION 6 DISCUSSION OF FINDINGS AND RECOMMENDATIONS.....	4
SECTION 7 REFERENCES.....	6
 APPENDICES	
Appendix A Location Map	
Appendix B Site Sketch	
Appendix C Test Boring Logs	
Appendix D MeDOT Aggregate Comparison Sheets	
Appendix E Grain-Size Testing Results	



**BORROW/GRAVEL RESOURCE EVALUATION
OLD SCHOOL HOUSE ROAD
NORRIDGEWOCK, MAINE**

SECTION 1 | INTRODUCTION

1.1 Purpose

The purpose of this Borrow/Gravel Resource Evaluation (GRE) was to evaluate the quality and approximate quantity of borrow currently present at the Site.

1.2 Special Terms and Conditions

Special terms and conditions were not noted regarding this report.

1.3 Limitations and Exceptions

Our evaluation does not include an appraisal of potential value for the Site and does not include an evaluation of groundwater quality.

1.4 Limiting Conditions and Methodology

Limiting conditions existed in the form of access to the entire Site. Although most of the Site is a recently cut woodlands, portions of the Site were not readily accessible due to mature tree growth and/or steep grades. In addition, a portion of the Site located west of Martin Stream was not accessible.

This gravel/borrow evaluation focused on the accessible areas of the Site. Limitations on the accuracy of our interpretation include limited topographic data and potential variations in the deposition of the glaciomarine sediments that could not be characterized with the limited number of the test borings.

SECTION 2 | SCOPE OF WORK

In accordance with our Proposal, we implemented a Scope of Work that included:

- Review of published information for the Site, including sand and gravel aquifer maps, and surficial geological maps.
- A Site visit to review current Site conditions and to plan excavation locations.
- Observation of one day of test boring explorations at eight locations.
- Grain-size analyses of two¹ borrow samples.
- Preparation of this report, which includes:
 - Map of the test boring locations;
 - Grain-size analysis data;
 - Estimate of borrow volume based on landforms and projected depth to groundwater (staying five feet above the groundwater table to avoid variance requirements); and

¹ Haley Ward collected one soil sample for grain size analyses and was supplied one Report of Gradation by the clients' representative that was previously collected at the Site from a test pit exploration.



- Review of borrow quality based on a comparison to Maine Department of Transportation (MeDOT) Aggregate standards.

SECTION 3 | SETTING

The Site is located in Norridgewock, Maine at the western end of Old School House Road. A Location Map of the property is included as **Appendix A**. A Site Sketch for the property is included as **Appendix B**. The Site was predominately woodland with a portion of the Site recently cut for timber harvesting at the time of our investigation. The western portion of the Site, on both sides of Martin Stream, is mapped by the Maine Geological Survey (MGS) as a significant sand and gravel aquifer (Neil and Lock, 2000). MGS Surficial mapping (Weddle, 1987) lists the surficial soils at the Site as "till" (eastern portion of the Site), "glacial marine deposits" (western portion of the Site), and "swamp" (along the southern Site property line near Martin Stream). MGS describes till as a "heterogeneous mixture of sand, silt, clay, and stones." Glacial marine deposits are described as "silt, clay, and sand" and are referred to as the Presumpscot Formation. The specific surficial mapping unit (Qps) for the Site further describes the soils as being "mostly sand, but may be underlain by silt and clay."

It is our understanding that there have been previous excavator test pit explorations at the Site by the owner to assess the soils.

SECTION 4 | EXPLORATIONS AND TESTING

On May 22, 2023, Haley Ward personnel observed the making of eight test borings (B-1 through B-8) at the Site by S.W. Cole Explorations, LLC of Bangor, Maine, to depths of between 10 feet and 30 feet at the locations shown on the Site Sketch. The test borings were conducted using a tracked drill rig. Hollow stem augers (HSA) were used to drill into the soils to achieve the desired drilling depths. Soil observations were made from the soils brought to the surface of the auger flights of the HSA, rather than using the conventional method of split spoon sampling at most locations, unless a change in the soil was detected. This methodology was utilized to maximize field time in order to increase the total number of boring locations drilled in one field day. Subsurface sampling using the split spoon was attempted in boring B-7 at a depth of 15 feet below the ground surface (bgs) to identify the change in soil, but no sample was recovered due to split spoon refusal on a cobble. The soils encountered in the borings throughout the Site generally consisted of fine sand with varying small amounts of silt, over clay (B-1 and B-4) or over till (B-5, B-6, B-7, and B-8). At borings B-2 and B-3, deeper exploration was discontinued due to encountering groundwater. Groundwater was encountered within boring B-2 at 7.5 feet bgs and within boring B-3 at 2.2 feet bgs. HSA refusal was encountered at borings B-5, B-6, B-7, and B-8 at depths ranging from 17.5 feet bgs to 24.8 feet bgs. We interpret the HSA refusal to be on the surface of bedrock within these borings. Till with cobbles was additionally encountered above the bedrock at these locations.



A summarization of our findings from the subsurface test boring explorations are presented in **Table 1** below. Boring logs are included in **Appendix C**.

TABLE 1 | TEST BORING SUMMARY OF FINDINGS

Boring Number	Depth to Groundwater (ft bgs)	Depth of Sand (ft bgs)	Depth of Available ¹ Sand (ft bgs)	Restrictive Layer ² Depth (ft bgs)
B-1	>15	10	10	Clay - 10
B-2	7.5	6	2.5	Groundwater - 7.5
B-3	2.2	>10	0	Groundwater - 2.2
B-4	15	15	10	Groundwater & Clay - 15
B-5	>18.3	17.8	17.8	Till - 17.8 & Bedrock - 18.3
B-6	>24.8	23.2	23.2	Till – 23.2 & Bedrock – 24.8
B-7	>20	14.3	14.3	Till – 14.3 & Bedrock – 20.0
B-8	>17.5	15	15	Till – 15.0 & Bedrock – 17.5

Notes:

All depth measurements in Table 1 are listed as below the ground surface.

Groundwater levels reflect Site conditions at the time of measurement. Actual conditions will vary.

¹ "Available" is material between the ground surface and 5 feet above the observed groundwater table, or depth of refusal.

² "Restrictive Layer" is groundwater, clay, till, and/or bedrock.

Note that in **Table 1**, a greater than (>) symbol in the depth to groundwater column indicates that a restrictive layer (clay, till, or bedrock) was encountered prior to the groundwater table. A greater than (>) symbol in the depth of sand column indicates that the boring was discontinued, while still encountering sand, but below the groundwater table.

We collected only one borrow sample in association with our Site evaluation as it appeared that the predominate surface soils consisted of fine sand with only minor variations of silt. We submitted a sample from B-8 for grain-size analyses to the S.W. Cole Engineering, Inc. materials testing laboratory in Bangor, Maine. The grain-size testing was performed in accordance with ASTM C-117 and C-136 procedures. Grain-size distributions were compared to MeDOT specifications² for Base and Sub-Base aggregate Types A through E and specifications for gravel borrow. Haley Ward was provided with a *Report of Gradation* prepared by S.W. Cole Engineering, Inc. in 2022 by the owner's representative from a test pit exploration soil sample that had previously been collected at the Site. We also compared the grain-size distributions results of that sample to MeDOT specifications. These results are summarized in **Appendix D**, with grain-size distribution curve data sheets included as **Appendix E**. Note that the soil descriptions listed throughout this report are not solely based on the grain-size testing (*Report of Gradation* in **Appendix E**), but instead are a combination of the grain-size and field observations to

² MeDOT requires 50% by weight of the material retained on the No. 4 sieve have at least one fractured face (crushed stone) as tested by AASHTO 335. Therefore, "bank run" gravel alone cannot classify as Type A, B, or C aggregate.



account for clay and/or larger soil fractions (cobbles and boulders), which were not always sampled.

As noted on the boring logs and confirmed by the grain-size analysis, the soil encountered in the test borings was predominately sand (82.3%) with some silt (17.7%). No gravel ($> \frac{3}{4}$ " sieve size) was reported in either of the two grain-size analyses.

SECTION 5 | VOLUME CALCULATIONS

We have applied conservative estimates to calculate the volume of available borrow resource within the Site boundary. We concentrated our volume estimate on the higher elevation ridge between borings B-1, B-3, B-4, B-5, B-6, and B-8, in the shape of a rectangle approximately 1,750 feet (north to south) by approximately 460 feet (east to west); see **Appendix B** Site Sketch. There may be additional sand deposits south and west of this area, but shallow groundwater encountered in borings B-2 (7.5 feet bgs) and B-3 (2 feet bgs), and clay encountered in borings B-1 (10 feet bgs) and B-4 (15 feet bgs), may not allow practical excavation of the sand.

To calculate the amount of sand borrow resource at the Site, we used an average of the depth of available sand (see **Table 1**) from the borings along the eastern boundary line (B-4, B-5, B-6, and B-8). The average depth of available sand from these borings is 18 feet bgs. We assumed the depth of available sand to be 0 feet at the western side of the rectangle, primarily based on the shallow groundwater at B-3 and some volume loss within the rectangle as the topography drops in elevation at the northern and southern ends of the rectangle. Our calculated sand borrow volume is estimated to be approximately 268,000 cubic yards³ for the area of concern (rectangle) described above at the Site.

It should be noted that this volume is an estimate based on limited information. Variations in subsurface conditions and limited topographic control make it likely that the estimates will vary from actual conditions. As groundwater levels may fluctuate seasonally, the resulting borrow thickness is our interpretative estimate for depth to groundwater and presumed bedrock based on our observations.

SECTION 6 | DISCUSSION OF FINDINGS AND RECOMMENDATIONS

Using what we interpret to be conservative values for area and thickness, we have estimated the total in place sand borrow reserve above the water table at the Site to be 268,000 cubic yards. This calculated volume is likely to vary from actual volumes due to the lack of detailed topographic control, limited subsurface data, and variability of the sand, silt, and clay observed within some of the borings conducted at the Site. Additional

³ All volume estimates are in-place volumes rounded off to the nearest 100 cubic yards, with average thickness based on estimates from available topography. Estimates do not account for the expansion of material that may occur with excavation.



reserves may be present should the operator choose to file for a variance to excavate below the water table, and/or excavate soils in the areas not used for our calculation.

The borrow quality, based on a comparison to MeDOT grain-size distributions, was compared for Base (Types A through C) and Sub-Base aggregate (Types D, E, and gravel borrow) resulting in the sample report of gradation submitted by the client meeting the grain-size distribution specifications for Type E sub-base aggregate specification. The sample we submitted from B-8 did not meet any of the grain-size distribution specifications.

Although some of the soils tested did not meet all MeDOT aggregate specifications, the sand borrow may be applicable for uses other than MeDOT aggregate.

To allow for more accurate volume estimates if needed in the future, we recommend that the Site be surveyed to establish the current topographic conditions. In addition, if excavation proceeds near boring B-3, or west of it, the installation of a monitoring well to evaluate depth to groundwater is recommended.



SECTION 7 | REFERENCES

The following sources of information and published references were relied upon in preparing this Report:

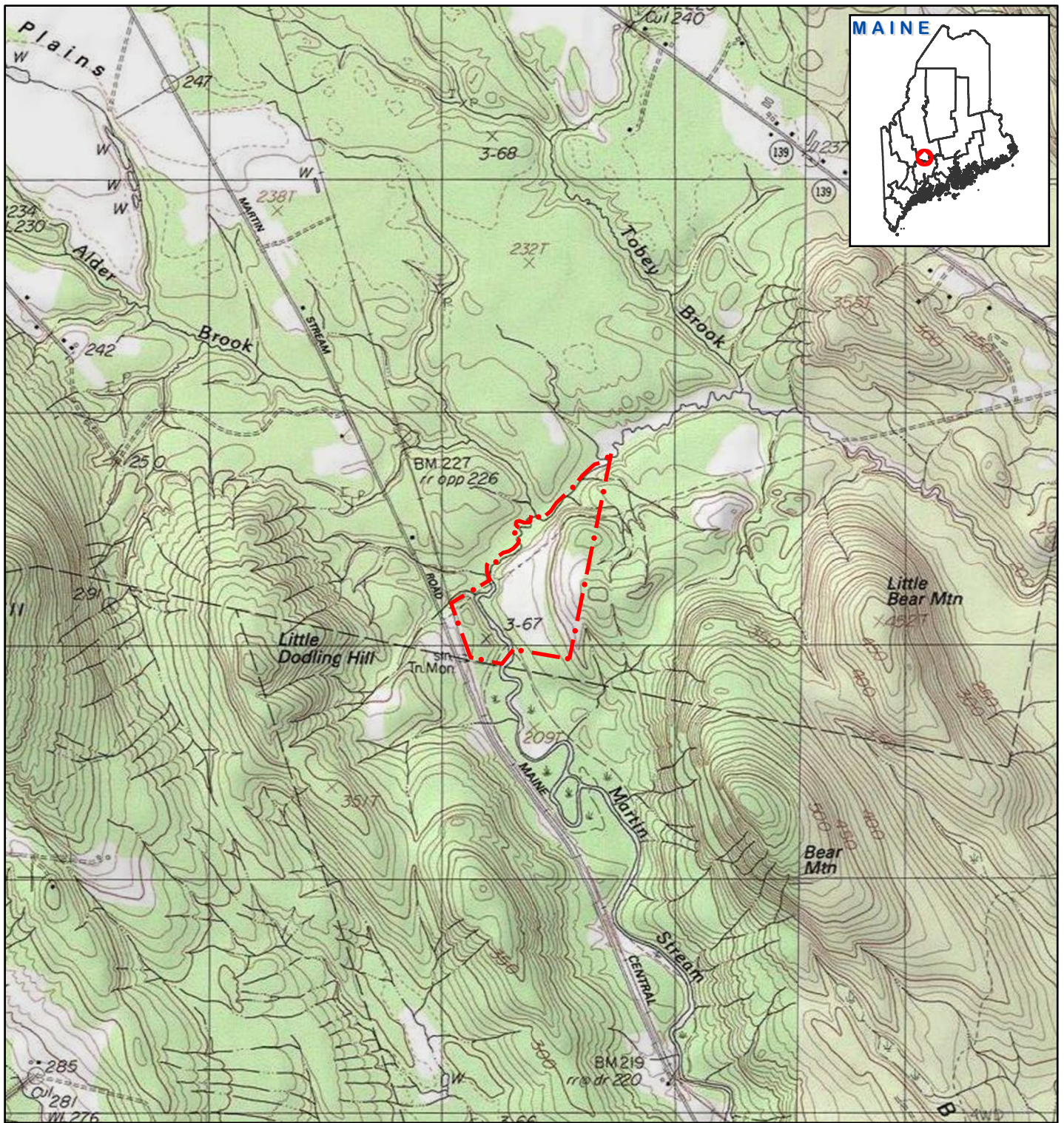
Significant Sand and Gravel Aquifers, Norridgewock Quadrangle, Maine, Maine Geological Survey, Open File No. 00-26, 2000, Neil, Craig D, Locke, Daniel B.

Reconnaissance Surficial Geology of the Norridgewock Quadrangle, Maine, Maine Geological Survey, Open File No. 87-23, Weddle, Thomas, K.



APPENDIX A

LOCATION MAP



Legend

--- Subject Property



0 500 1,000 2,000
Feet

MAP NOTES:

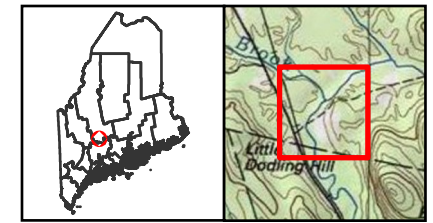
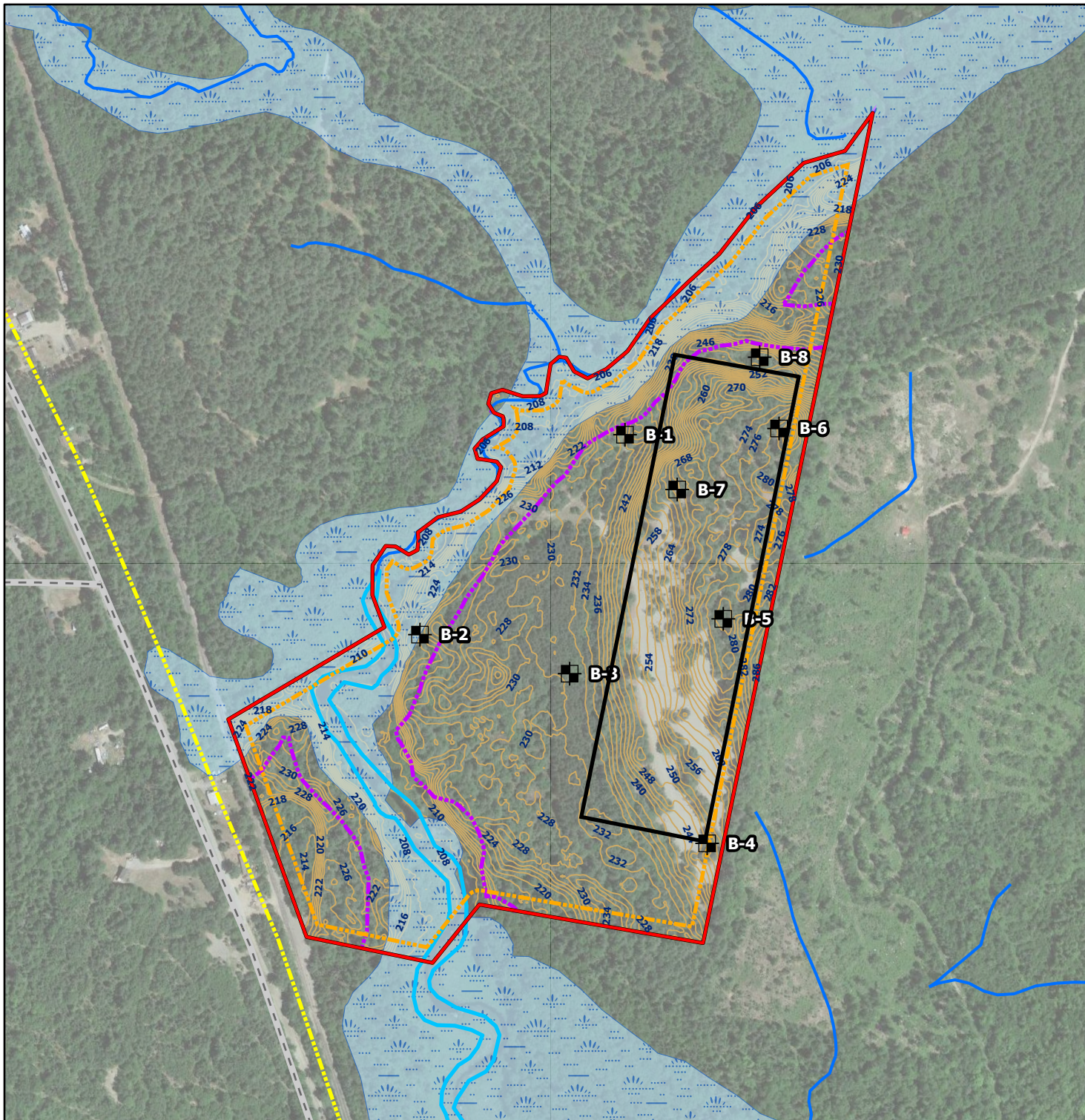
1. MAP IS PROJECTED USING UTM ZONE 19 COORDINATES, AND REFERENCES THE NORTH AMERICAN DATUM OF 1983 (NAD83).
2. NORTH ARROW IS ORIENTED TO GRID NORTH IN ALL MAP EXTENTS DEPICTED HEREIN.
3. SITE FEATURES ARE APPROXIMATE.
4. BASE MAP CREDITS:
Copyright: © 2013 National Geographic Society, I-cubed

 HALEY WARD ENGINEERING ENVIRONMENTAL SURVEYING 1 Merchants Plaza, Suite 701 Bangor, ME 04401 207-989-4824	
CLIENT	
TR DILLON LOGGING, INC.	
PROJECT	
GRAVEL RESOURCE EVALUATION OLD SCHOOL HOUSE ROAD, NORRIDGEWOCK, ME	
TITLE	
LOCATION MAP	
DATE	PROJECT No.
6/8/2023	14283.001
DRAWN BY	SCALE
NASHFORD	1" = 2,000'



APPENDIX B

SITE SKETCH

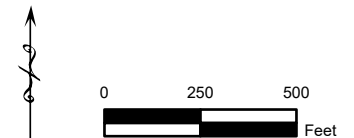


Legend

- Subject Property
- 50Ft Property Line Setback
- Boring Location
- Road
- 100Ft Roadway Setback
- USGS Stream
- USGS River
- NWI Wetland
- Stream, River and Wetland 75Ft Setback
- 2Ft Contours
- Borrow Volume Calculation Area (Rectangle)

MAP NOTES:

1. MAP IS PROJECTED USING UTM ZONE19 COORDINATES, AND REFERENCES THE NORTH AMERICAN DATUM OF 1983 (NAD83).
2. NORTH ARROW IS ORIENTED TO GRID NORTH IN ALL MAP EXTENTS DEPICTED HEREIN.
3. SITE FEATURES ARE APPROXIMATE.



 HALEY WARD ENGINEERING ENVIRONMENTAL SURVEYING 1 Merchants Plaza, Suite 701 Bangor, ME 04401 207-989-4824 WWW.HALEYWARD.COM	
CLIENT	TR DILLON LOGGING, INC.
PROJECT	GRAVEL RESOURCE EVALUATION OLD SCHOOL HOUSE ROAD, NORRIDGEWOCK, ME
TITLE	SITE SKETCH
DATE	PROJECT No. 6/8/2023 14283.001
DRAWN BY	SCALE NASHFORD 1" = 500'



APPENDIX C

TEST BORING LOGS

 HALEY WARD ENGINEERING ENVIRONMENTAL SURVEYING					SOIL BORING LOG		Boring #: B-1			
Project: Gravel Resource Evaluation Client: TR Dillon Logging, Inc. Location: Old School House Road Norridgewock, ME					Project #: 14283.001 Sheet: 1 of 1 Chkd by: JAG					
Drilling Firm: S.W. Cole Explorations Driller: Kevin Hanscom & Dillion HW Staff: Jeff W. McElroy					Location: 44.6801283, -69.7631576 Elevation: 236 ft. +/- (based on elevation ground contours of attached Plan) Date started: 05/22/23 Date Completed: 05/22/23					
DRILLING METHOD		SAMPLER		ESTIMATED GROUND WATER DEPTH						
Vehicle:	Track Rig	Type:	SS	Date	Depth (ft)	Reference	Groundwater Elevation (ft)			
Model:	Diedrich	Hammer:	140 lbs	5/22/2023	No Free Groundwater Observed					
Method:	HSA	Fall:	30"							
Depth (ft.)	SAMPLE (SEE NOTES)				STRATA		LAB TEST DATA			
	No.	Pen/Rec (in)	Depth (ft)	Blows/6 in.	Depth (ft)	Description				
1					0 - 10	Brown fine SAND, some silt.				
2										
3										
4										
5										
6										
7										
8										
9										
10										
11					10 - 15	Gray CLAY (moist)				
12										
13										
14										
15										
16					Borehole bottom = 15.0' No Refusal					
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										
Granular Soils		Cohesive Soils		Soil Description		NOTES: No samples were collected during drilling. Soil descriptions are based on cuttings exposed at the surface. - - - ▴ = Estimated groundwater table based on field observations. Soil Description lines are approximate boundary between soil types, which may vary.				
Blows/ft.	Density	Blows/ft.	Consistency	% by weight						
0-4	V. Loose	<2	V. soft							
4-10	Loose	2-4	Soft	<5%	trace					
10-30	Compact	4-8	Firm	5-15	little					
30-50	Dense	8-15	Stiff	15-25	some					
>50	V. Dense	15-30	V. Stiff	>25	and					
		>30	Hard							

 HALEY WARD ENGINEERING ENVIRONMENTAL SURVEYING					SOIL BORING LOG			Boring #: B-2		
Project: Gravel Resource Evaluation Client: TR Dillon Logging, Inc. Location: Old School House Road Norridgewock, ME					Project #: 14283.001 Sheet: 1 of 1 Chkd by: JAG					
Drilling Firm: S.W. Cole Explorations Driller: Kevin Hanscom & Dillion HW Staff: Jeff W. McElroy					Location: 44.678218, -69.7662783 Elevation: 222 ft. +/- (based on elevation ground contours of attached Plan) Date started: 05/22/23 Date Completed: 05/22/23					
DRILLING METHOD		SAMPLER		ESTIMATED GROUND WATER DEPTH						
Vehicle: Track Rig		Type: SS		Date	Depth (ft)	Reference	Groundwater Elevation (ft)			
Model: Diedrich		Hammer: 140 lbs		5/22/2023	7.5	Attached Plan	214.5 +/-			
Method: HSA		Fall: 30"								
Depth (ft.)	SAMPLE (SEE NOTES)				STRATA		LAB TEST DATA			
	No.	Pen/Rec (in)	Depth (ft)	Blows/6 in.	Depth (ft)	Description				
1					0 - 6	Brown fine SAND, some silt.				
2										
3										
4										
5										
6										
7					6 - 10	Brown/Gray SILT				
8										
9										
10										
11					Borehole bottom = 10.0' No Refusal					
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										
Granular Soils		Cohesive Soils		Soil Description		NOTES: No samples were collected during drilling. Soil descriptions are based on cuttings exposed at the surface.  = Estimated groundwater table based on field observations. Soil Description lines are approximate boundary between soil types, which may vary.				
Blows/ft.	Density	Blows/ft.	Consistency	% by weight						
0-4	V. Loose	<2	V. soft							
4-10	Loose	2-4	Soft	<5% trace						
10-30	Compact	4-8	Firm	5-15 little						
30-50	Dense	8-15	Stiff	15-25 some						
>50	V. Dense	15-30	V. Stiff	>25 and						
		>30	Hard							

 HALEY WARD ENGINEERING ENVIRONMENTAL SURVEYING					SOIL BORING LOG		Boring #: B-3	
Drilling Firm: S.W. Cole Explorations Driller: Kevin Hanscom & Dillion HW Staff: Jeff W. McElroy					Project: Gravel Resource Evaluation Client: TR Dillon Logging, Inc. Location: Old School House Road Norridgewock, ME		Project #: 14283.001 Sheet: 1 of 1 Chkd by: JAG	
Location: 44.6778206, -69.7638747 Elevation: 231 ft. +/- (based on elevation ground contours of attached Plan) Date started: 05/22/23 Date Completed: 05/22/23								
DRILLING METHOD		SAMPLER		ESTIMATED GROUND WATER DEPTH				
Vehicle: Track Rig Model: Diedrich Method: HSA		Type: SS Hammer: 140 lbs Fall: 30"		Date 5/22/2023	Depth (ft) 2.2	Reference Attached Plan	Groundwater Elevation (ft) 228.8 +/-	
Depth (ft.)	SAMPLE (SEE NOTES)				STRATA		LAB TEST DATA	
	No.	Pen/Rec (in)	Depth (ft)	Blows/6 in.	Depth (ft)	Description		
1					0 - 10	Brown fine SAND, some silt.		
2								
3								
4								
5								
6								
7								
8								
9								
10								
11					Borehole bottom = 10.0' No Refusal			
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
Granular Soils		Cohesive Soils		Soil Description	NOTES: No samples were collected during drilling. Soil descriptions are based on cuttings exposed at the surface. --- ▴ --- = Estimated groundwater table based on field observations. Soil Description lines are approximate boundary between soil types, which may vary.			
Blows/ft.	Density	Blows/ft.	Consistency	% by weight				
0-4	V. Loose	<2	V. soft					
4-10	Loose	2-4	Soft	<5% trace				
10-30	Compact	4-8	Firm	5-15 little				
30-50	Dense	8-15	Stiff	15-25 some				
>50	V. Dense	15-30	V. Stiff	>25 and				
		>30	Hard					

 HALEY WARD ENGINEERING ENVIRONMENTAL SURVEYING					SOIL BORING LOG			Boring #: B-4	
Project: Gravel Resource Evaluation Client: TR Dillon Logging, Inc. Location: Old School House Road Norridgewock, ME					Project #: 14283.001 Sheet: 1 of 1 Chkd by: JAG				
Drilling Firm: S.W. Cole Explorations Driller: Kevin Hanscom & Dillion HW Staff: Jeff W. McElroy					Location: 44.6761992, -69.7619967 Elevation: 248 ft. +/- (based on elevation ground contours of attached Plan) Date started: 05/22/23 Date Completed: 05/22/23				
DRILLING METHOD		SAMPLER		ESTIMATED GROUND WATER DEPTH					
Vehicle: Track Rig		Type: SS		Date	Depth (ft)	Reference	Groundwater Elevation (ft)		
Model: Diedrich		Hammer: 140 lbs		5/22/2023	5.0	Attached Plan	243 +/-		
Method: HSA		Fall: 30"							
Depth (ft.)	SAMPLE (SEE NOTES)				STRATA		LAB TEST DATA		
	No.	Pen/Rec (in)	Depth (ft)	Blows/6 in.	Depth (ft)	Description			
1					0 - 15	Brown fine SAND, some silt.			
2									
3									
4									
5									
6									
7									
8									
9									
10									
11					15 - 30	Gray soft CLAY			
12									
13									
14									
15									
16									
17									
18									
19									
20									
21					Borehole bottom = 30.0' No Refusal				
22									
23									
24									
25									
26									
27									
28									
29									
30									
Granular Soils		Cohesive Soils		Soil Description	NOTES: No samples were collected during drilling. Soil descriptions are based on cuttings exposed at the surface. --- ▴ --- = Estimated groundwater table based on field observations. Soil Description lines are approximate boundary between soil types, which may vary.				
Blows/ft.	Density	Blows/ft.	Consistency	% by weight					
0-4	V. Loose	<2	V. soft						
4-10	Loose	2-4	Soft	<5% trace					
10-30	Compact	4-8	Firm	5-15 little					
30-50	Dense	8-15	Stiff	15-25 some					
>50	V. Dense	15-30	V. Stiff	>25 and					
		>30	Hard						

 HALEY WARD ENGINEERING ENVIRONMENTAL SURVEYING					SOIL BORING LOG		Boring #: B-5		
Project: Gravel Resource Evaluation Client: TR Dillon Logging, Inc. Location: Old School House Road Norridgewock, ME					Project #: 14283.001 Sheet: 1 of 1 Chkd by: JAG				
Drilling Firm: S.W. Cole Explorations Driller: Kevin Hanscom & Dillion HW Staff: Jeff W. McElroy					Location: 44.6783627, -69.7618076 Elevation: 280 ft. +/- (based on elevation ground contours of attached Plan) Date started: 05/22/23 Date Completed: 05/22/23				
DRILLING METHOD		SAMPLER		ESTIMATED GROUND WATER DEPTH					
Vehicle: Track Rig Model: Diedrich Method: HSA		Type: SS Hammer: 140 lbs Fall: 30"		Date: 5/22/2023		Depth (ft): Reference: Groundwater Elevation (ft):		No Free Groundwater Observed	
Depth (ft.)		SAMPLE (SEE NOTES)			STRATA		LAB TEST DATA		
No. Pen/Rec (in) Depth (ft) Blows/6 in.		Depth (ft) Description							
1				0 - 17.8		Brown fine SAND, some silt.			
2									
3									
4									
5									
6									
7									
8									
9									
10									
11				17.8 - 18.3		Brown fine SAND and COBBLES, some silt. (Glacial Till)			
12									
13									
14									
15									
16				Borehole bottom =18.3' HSA Refusal - Probable Bedrock					
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									
Granular Soils		Cohesive Soils		Soil Description		NOTES: No samples were collected during drilling. Soil descriptions are based on cuttings exposed at the surface.  = Estimated groundwater table based on field observations. Soil Description lines are approximate boundary between soil types, which may vary.			
Blows/ft. Density		Blows/ft. Consistency		% by weight					
0-4 V. Loose		<2 V. soft		<5% trace					
4-10 Loose		2-4 Soft		5-15 little					
10-30 Compact		4-8 Firm		15-25 some					
30-50 Dense		8-15 Stiff		>25 and					
>50 V. Dense		15-30 V. Stiff							
		>30 Hard							

 HALEY WARD ENGINEERING ENVIRONMENTAL SURVEYING					SOIL BORING LOG			Boring #: B-6	
Project: Gravel Resource Evaluation Client: TR Dillon Logging, Inc. Location: Old School House Road Norridgewock, ME					Project #: 14283.001 Sheet: 1 of 1 Chkd by: JAG				
Drilling Firm: S.W. Cole Explorations Driller: Kevin Hanscom & Dillion HW Staff: Jeff W. McElroy					Location: 44.6802016, -69.7610782 Elevation: 280 ft. +/- (based on elevation ground contours of attached Plan) Date started: 05/22/23 Date Completed: 05/22/23				
DRILLING METHOD		SAMPLER		ESTIMATED GROUND WATER DEPTH					
Vehicle: Track Rig Model: Diedrich Method: HSA		Type: SS Hammer: 140 lbs Fall: 30"		Date: 5/22/2023		Depth (ft):		Reference: No Free Groundwater Observed Groundwater Elevation (ft):	
Depth (ft.)		SAMPLE (SEE NOTES)			STRATA		LAB TEST DATA		
No. Pen/Rec (in) Depth (ft) Blows/6 in.		Depth (ft) Description							
1				0 - 23.2		Brown fine SAND, some silt.			
2									
3									
4									
5									
6									
7									
8									
9									
10									
11				23.2 - 24.8		Brown fine SAND and COBBLES, some silt. (Glacial Till)			
12									
13									
14									
15									
16									
17									
18									
19									
20									
21				Borehole bottom =24.8' HSA Refusal - Probable Bedrock					
22									
23									
24									
25									
26									
27									
28									
29									
30									
Granular Soils Blows/ft. Density		Cohesive Soils Blows/ft. Consistency		Soil Description % by weight		NOTES: No samples were collected during drilling. Soil descriptions are based on cuttings exposed at the surface. --- ▴ --- = Estimated groundwater table based on field observations. Soil Description lines are approximate boundary between soil types, which may vary.			
0-4 V. Loose		<2 V. soft		<5% trace					
4-10 Loose		2-4 Soft		5-15 little					
10-30 Compact		4-8 Firm		15-25 some					
30-50 Dense		8-15 Stiff		>25 and					
>50 V. Dense		15-30 V. Stiff							
		>30 Hard							

 HALEY WARD ENGINEERING ENVIRONMENTAL SURVEYING					SOIL BORING LOG		Boring #: B-7			
Project: Gravel Resource Evaluation Client: TR Dillon Logging, Inc. Location: Old School House Road Norridgewock, ME					Project #: 14283.001 Sheet: 1 of 1 Chkd by: JAG					
Drilling Firm: S.W. Cole Explorations Driller: Kevin Hanscom & Dillion HW Staff: Jeff W. McElroy					Location: 44.6796053, -69.7624458 Elevation: 268 ft. +/- (based on elevation ground contours of attached Plan) Date started: 05/22/23 Date Completed: 05/22/23					
DRILLING METHOD		SAMPLER		ESTIMATED GROUND WATER DEPTH						
Vehicle: Track Rig		Type: SS		Date		Depth (ft)		Reference		
Model: Diedrich		Hammer: 140 lbs		5/22/2023		No Free Groundwater Observed		Groundwater Elevation (ft)		
Method: HSA		Fall: 30"								
SAMPLE (SEE NOTES)					STRATA			LAB TEST DATA		
Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	Blows/6 in.	Depth (ft)	Description				
1					0 - 14.3	Brown fine SAND, some silt.				
2										
3										
4										
5										
6										
7										
8										
9										
10										
11					14.3 - 20	Brown fine SAND and COBBLES, some silt. (Glacial Till)				
12										
13										
14										
15										
16	1D	12 / 0	15 - 16	34 - 47						
17										
18										
19										
20										
21					Borehole bottom = 20.0' HSA Refusal - Probable Bedrock					
22										
23										
24										
25										
26										
27										
28										
29										
30										
Granular Soils		Cohesive Soils		Soil Description	NOTES: No samples were collected during drilling. Soil descriptions are based on cuttings exposed at the surface.  = Estimated groundwater table based on field observations. Soil Description lines are approximate boundary between soil types, which may vary.					
Blows/ft.	Density	Blows/ft.	Consistency	% by weight						
0-4	V. Loose	<2	V. soft							
4-10	Loose	2-4	Soft	<5% trace						
10-30	Compact	4-8	Firm	5-15 little						
30-50	Dense	8-15	Stiff	15-25 some						
>50	V. Dense	15-30	V. Stiff	>25 and						
		>30	Hard							

 HALEY WARD ENGINEERING ENVIRONMENTAL SURVEYING					SOIL BORING LOG		Boring #: B-8	
Project: Gravel Resource Evaluation Client: TR Dillon Logging, Inc. Location: Old School House Road Norridgewock, ME					Project #: 14283.001 Sheet: 1 of 1 Chkd by: JAG			
Drilling Firm: S.W. Cole Explorations Driller: Kevin Hanscom & Dillion HW Staff: Jeff W. McElroy					Location: 44.6808871, -69.7613485 Elevation: 248 ft. +/- (based on elevation ground contours of attached Plan) Date started: 05/22/23 Date Completed: 05/22/23			
DRILLING METHOD		SAMPLER		ESTIMATED GROUND WATER DEPTH				
Vehicle: Track Rig Model: Diedrich Method: HSA		Type: SS Hammer: 140 lbs Fall: 30"		Date: 5/22/2023 Depth (ft): Reference: No Free Groundwater Observed Groundwater Elevation (ft):				
Depth (ft.)		SAMPLE (SEE NOTES)			STRATA		LAB TEST DATA	
No. Pen/Rec (in) Depth (ft) Blows/6 in.		Depth (ft) Description		TEST DATA				
1				0 - 15 Brown fine SAND, some silt.		GRAIN SIZE TEST (5'-10') 0.0% Gravel 82.3% Sand 17.7% Fines		
2								
3								
4								
5								
6								
7								
8								
9								
10								
11				15 - 17.5 Brown fine SAND and COBBLES, some silt, trace clay. (Glacial Till)				
12								
13								
14								
15								
16								
17								
18								
19								
20								
21				Borehole bottom = 17.5' HSA Refusal - Probable Bedrock				
22								
23								
24								
25								
26								
27								
28								
29								
30								
Granular Soils Blows/ft. Density		Cohesive Soils Blows/ft. Consistency		Soil Description % by weight		NOTES: No samples were collected during drilling. Soil descriptions are based on cuttings exposed at the surface. --- ▴ --- = Estimated groundwater table based on field observations. Soil Description lines are approximate boundary between soil types, which may vary.		
0-4 V. Loose 4-10 Loose 10-30 Compact 30-50 Dense >50 V. Dense		<2 V. soft 2-4 Soft 4-8 Firm 8-15 Stiff 15-30 V. Stiff >30 Hard		<5% trace 5-15 little 15-25 some >25 and				



APPENDIX D

MeDOT AGGREGATE COMPARISON SHEETS

Client: TR Dillon Logging, Inc.
Location: Old School House Road, Norridgewock, Maine
Project #: 14283.001
Soil Description: SAND, some silt

Exploration: B-8
Sample #: S-1
Depth: 5' - 10'

AGGREGATE TESTING RESULT¹: Does not pass

SUBBASE TESTING RESULT: Does not pass

		AGGREGATE FOR BASE									AGGREGATE FOR SUBBASE								
		TYPE A = FAIL			TYPE B = FAIL			TYPE C = FAIL			TYPE D = FAIL			TYPE E = FAIL			Gravel Borrow = FAIL		
Sieve Size	Percent Passing	Specifications - Type A Aggregate		Passes Spec?	Specifications - Type B Aggregate		Passes Spec?	Specifications - Type C Aggregate		Passes Spec?	Specifications - Type D Aggregate		Passes Spec?	Specifications - Type E Aggregate		Passes Spec?	Specifications - Type E Aggregate		Passes Spec?
		From	To		From	To		From	To		From	To		From	To		From	To	
6"	100.0	100	100	Yes	100	100	Yes	100	100	Yes	100	100	Yes	100	100	Yes	100	100	Yes
5"	100.0	100	100	Yes	100	100	Yes												
4"	100.0	100	100	Yes	100	100	Yes	100	100	Yes									
3"	100.0	100	100	Yes				90	100	Yes	100	100	Yes	100	100	Yes	100	100	Yes
2"	100.0	100	100	Yes				75	100	Yes									
1.5"	100.0																		
1"	100.0							50	80	No									
.75"	100.0																		
.5"	100.0	45	70	No	35	75	No	30	60	No	35	80	No						
.25"	100.0	30	55	No	25	60	No				25	65	No	25	100	Yes	0	70	No
No. 4	100.0							15	40	No									
No. 10	100.0																		
No. 20	97.0																		
No. 40	78.0	0	20	No	0	25	No	0	30	No	0	30	No	0	50	No			
No. 60	44.0																		
No. 100	24.0																		
No. 200	17.7	0	6	No	0	6	No	0	6	No	0	7	No	0	7	No	0	10	No
Passes Spec?				No			No			No			No			No			No

Notes:

¹MeDOT requires 50% by weigh of the material retained on the No. 4 sieve have at least one fractured face (crushed stone) as tested by AASHTO 335. Therefore, "bank run" gravel alone can not classify as Type A, B, or C aggregate.

Client: TR Dillon Logging, Inc.
Location: Old School House Road, Norridgewock, Maine
Project #: 14283.001
Soil Description: SAND, little silt

Exploration: Test Pit
Sample #: SW Cole Lab ID: 28149B
Depth: Unknown

AGGREGATE TESTING RESULT¹: Does not pass

SUBBASE TESTING RESULT: Passes for Type E

Sieve Size	Percent Passing	AGGREGATE FOR BASE									AGGREGATE FOR SUBBASE								
		TYPE A = FAIL			TYPE B = FAIL			TYPE C = FAIL			TYPE D = FAIL			TYPE E = PASS			Gravel Borrow = FAIL		
		Specifications - Type A Aggregate	Passes Spec?		Specifications - Type B Aggregate	Passes Spec?		Specifications - Type C Aggregate	Passes Spec?		Specifications - Type D Aggregate	Passes Spec?		Specifications - Type E Aggregate	Passes Spec?		Specifications - Type E Aggregate	Passes Spec?	
		From	To		From	To		From	To		From	To		From	To		From	To	
6"	100.0	100	100	Yes	100	100	Yes	100	100	Yes	100	100	Yes	100	100	Yes	100	100	Yes
5"	100.0	100	100	Yes	100	100	Yes												
4"	100.0	100	100	Yes	100	100	Yes	100	100	Yes									
3"	100.0	100	100	Yes				90	100	Yes	100	100	Yes	100	100	Yes	100	100	Yes
2"	100.0	100	100	Yes				75	100	Yes									
1.5"	100.0																		
1"	100.0							50	80	No									
.75"	100.0																		
.5"	100.0	45	70	No	35	75	No	30	60	No	35	80	No						
.25"	100.0	30	55	No	25	60	No				25	65	No	25	100	Yes	0	70	No
No. 4	100.0							15	40	No									
No. 10	99.0																		
No. 20	75.0																		
No. 40	44.0	0	20	No	0	25	No	0	30	No	0	30	No	0	50	Yes			
No. 60	19.0																		
No. 100	7.0																		
No. 200	1.7	0	6	Yes	0	6	Yes	0	6	Yes	0	7	Yes	0	7	Yes	0	10	Yes
Passes Spec?				No			No			No			No			Yes			No

Notes:

¹MeDOT requires 50% by weight of the material retained on the No. 4 sieve have at least one fractured face (crushed stone) as tested by AASHTO 335. Therefore, "bank run" gravel alone can not classify as Type A, B, or C aggregate.



APPENDIX E

GRAIN-SIZE TESTING RESULTS



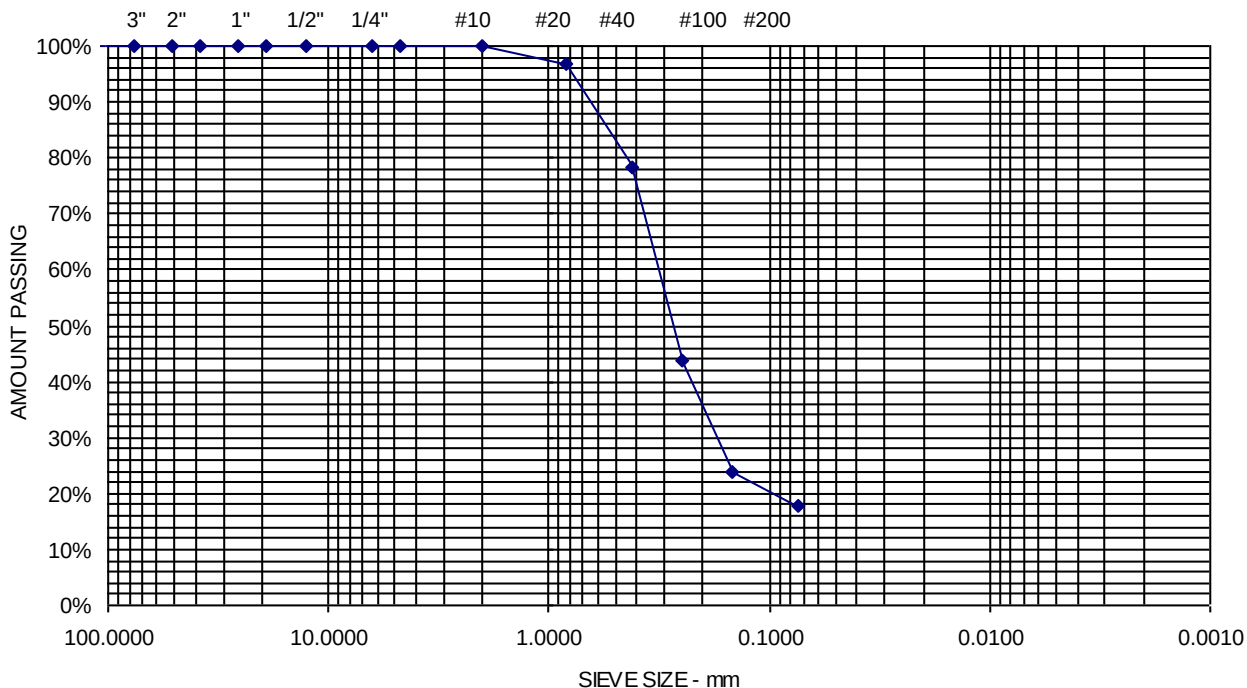
Report of Gradation

ASTM C-117 & C-136

Project Name NORRIDGEWOCK GRE PROJECT 14283.001 - CONSTRUCTION
MATERIALS TESTING SERVICES
Client HALEY WARD, INC.
Exploration **B-8**
Material Source **5'-10'**

Project Number 23-1096
Lab ID 29236B
Date Received 5/25/2023
Date Completed 5/26/2023
Tested By SHARON CUEVAS-STANTON

<u>STANDARD</u> <u>DESIGNATION (mm/μm)</u>	<u>SIEVE SIZE</u>	<u>AMOUNT PASSING (%)</u>	
150	6"	100	
125	5"	100	
100	4"	100	
75	3"	100	
50	2"	100	
38.1	1-1/2"	100	
25.0	1"	100	
19.0	3/4"	100	
12.5	1/2"	100	
6.3	1/4"	100	
4.75	No. 4	100	0% Gravel
2.00	No. 10	100	
850	No. 20	97	
425	No. 40	78	82.3% Sand
250	No. 60	44	
150	No. 100	24	
75	No. 200	17.7	17.7% Fines



Comments:

TH

Project Name WINTERPORT ME - 2022 SOURCE TESTING SERVICES

Project Number 22-0634

Client ROCK MAPLE LAND & FOREST, LLC

Lab ID 28149B

Material Type SAND

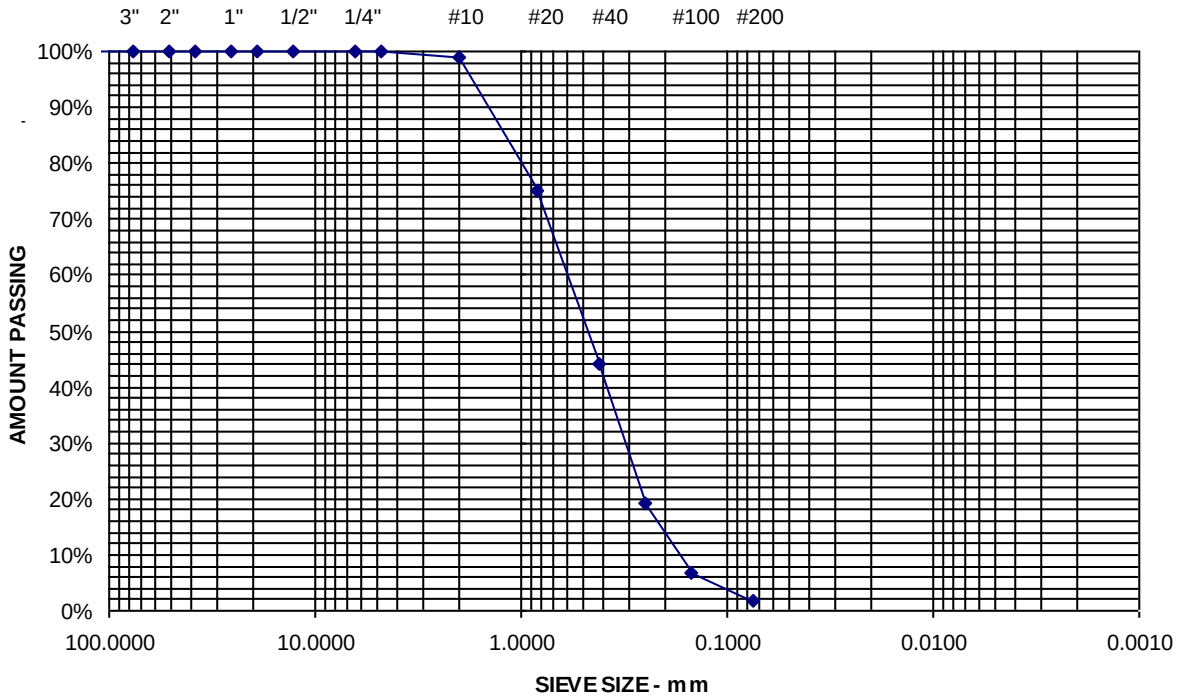
Date Received 5/13/2022

Material Source NORRIDGEWOCK - MARTIN STREAM

Date Completed 5/16/2022

Tested By LIZA DEWITT

<u>STANDARD</u> <u>DESIGNATION (mm/μm)</u>	<u>SIEVE SIZE</u>	<u>AMOUNT PASSING (%)</u>	<u>SPECIFICATIONS (%)</u>
150	6"	100	
125	5"	100	
100	4"	100	
75	3"	100	
50	2"	100	
38.1	1-1/2"	100	
25.0	1"	100	
19.0	3/4"	100	
12.5	1/2"	100	
6.3	1/4"	100	
4.75	No. 4	100	
2.00	No. 10	99	
850	No. 20	75	
425	No. 40	44	
250	No. 60	19	
150	No. 100	7	
75	No. 200	1.7	



Comments

TH
 Thomas J. Higgins