

APPENDIX A

**Gemtec
Factual Report for Geotechnical Investigation,
Kouchibouguac North Road**



**Factual Report
Kouchibouguac North Road**

Kouchibouguac, New Brunswick
July 17, 2015

Prepared for Public Works and Government Services
Canada
Project No. 4735.64 – R01





GEMTEC

CONSULTING ENGINEERS
AND SCIENTISTS

GEMTEC Limited tel: 506.453.1025
191 Doak Road fax: 506.453.9470
Fredericton, NB fredericton@gemtec.ca
E3C 2E6 www.gemtec.ca

17 July 2015

File: 4735.64 – R01

Public Works and Government Services Canada
1045 Main Street
Moncton, NB
E1C 1H1

Attention: Jean Girouard, P.Eng.

**Re: Factual Report, Kouchibouguac North Road
Kouchibouguac, New Brunswick**

Please find enclosed our factual report for the geotechnical investigation at the Kouchibouguac North Road in the village of Kouchibouguac, New Brunswick.

Corey Keats, M.Sc.E., P.Eng.

Neil Gillis, MIT

CK/ng

Enclosures

4735.64-R01 (Factual Report, Geotechnical Investigation).doc



**Factual Report,
Kouchibouguac North Road
Kouchibouguac, New Brunswick**

Table of Contents

Table of Contents.....	ii
Appendices	iii
List of Tables	iii
1.0 Introduction	1
2.0 Site Description	2
3.0 Subsurface Soil Description.....	3
3.1 Overburden Soils.....	4
3.2 Bedrock	4
4.0 Closure.....	5
5.0 References.....	6

**Factual Report,
Kouchibouguac North Road
Kouchibouguac, New Brunswick**

Appendices

- A Borehole Location Plan
- B Descriptive Terms and Detailed Borehole Logs
- C Moisture Content Analyses
- D Soils Sieve Analyses

List of Tables

Table 1 Summary of Subsurface Soil Conditions3

**Factual Report,
Kouchibouguac North Road
Kouchibouguac, New Brunswick**

1.0 Introduction

Public Works and Government Services Canada (PWGSC) retained GEMTEC Limited to conduct a geotechnical investigation for proposed road improvements on a 1.5 kilometre section of Kouchibouguac North Road in Kouchibouguac National Park, New Brunswick. This investigation was conducted according to the requirements of the Standing Offer Contract (EC373-152028/A) between PWGSC and GEMTEC Limited.

The purpose of this investigation was to characterize the soil conditions in the area of the existing roadway. It is our understanding that the roadway will be reconstructed along the 1.5 kilometre section. The scope of work included drilling seventeen boreholes, put down in 100 metre increments on alternating sides of the road. See Appendix A for borehole layout on site and Appendix B for descriptive terms and borehole logs.

On June 18, 2015 the boreholes were advanced at the site using track-mounted drill rig. GEMTEC personnel were onsite to log the soil conditions encountered at the borehole locations during the investigation.

During borehole advancement, SPT N¹-values were recorded throughout soil sampling and soil samples were collected for laboratory testing. Moisture content and sieve analyses of soil particle sizes were conducted on the subgrade soils (Appendices C and D, respectively). Boreholes were terminated in soils that consisted of glacial till, silty sand, or sandstone at depths of 1.65 to 2.40 metres below existing surface grade (elevation +13.0 metres to +19.6 metres, geodetic datum).

The subgrade soils at the site generally consist of glacial till interspersed with sand layers with varying quantities of silty, gravel, and/or clay. Possible bedrock was encountered at four borehole locations: one at the westernmost borehole and three on the eastern portion of the roadway (BH.

¹ The number of blows of a 475 Joule free fall hammer required to advance a 50 mm ø split spoon sampler a distance of 300 mm

2.0 Site Description

The North Kouchibouguac Road is located in the village of Kouchibouguac, New Brunswick. The road section proposed for reconstruction is located within the Kouchibouguac National Park. The section begins at the Kouchibouguac North Road and New Brunswick Highway 117 intersection and ends 1.5 kilometres westward.

Kouchibouguac North extends a further one kilometre westward and intersects with New Brunswick Highway 11. The roadway is currently asphalt with a shoulder on either side, is approximately 0.5 metres wide. Residential dwellings adjoin the westernmost 400 metre investigated portion of the roadway. The remainder of the investigated area is within the National Park. See Appendix A for a borehole location plan with a plan view of the site.

It is our understanding that reconstruction is proposed for the investigated portion of the roadway.

3.0 Subsurface Soil Description

The subsurface soil conditions at the site generally consist of silty sand interspersed with varying amounts of gravel and clay. The natural soils are overlain by approximately 0.15 metres of sand and gravel, which in turn is overlain by 0.05 to 0.1 metres of asphalt. Spoon refusal was encountered at four borehole locations indicating possible bedrock; spoon samples at these locations indicate the bedrock may be sedimentary sandstone rock.

See Appendix A for borehole location plan; Appendix B for detailed borehole logs, and Appendices C and D for laboratory results.

Table 1 Summary of Subsurface Soil Conditions

Borehole	Surface Elevation (m)	Borehole Depth (m)	Overburden Drilled (m)		Bedrock Elevation (m)
			Asphalt and Fill	Glacial Till	
BH1	14.60	1.65	0.3	1.2	13.10
BH2	19.03	1.80	0.3	1.8	-
BH3	21.10	2.40	0.3	2.1	-
BH4	21.22	1.80	0.2	1.6	-
BH5	21.69	2.40	0.2	2.2	-
BH6	21.93	2.40	0.2	2.2	-
BH7	21.02	2.40	0.2	2.2	-
BH8	19.26	2.40	0.3	2.1	-
BH9	18.44	2.40	0.2	2.2	-
BH10	20.31	2.40	0.2	2.2	-
BH11	21.47	2.40	0.2	2.2	-
BH12	22.03	2.40	0.2	2.2	19.63
BH13	21.45	2.40	0.3	1.8	19.35
BH14	20.78	2.40	1.1	1.1	18.38
BH15	19.79	2.40	0.3	1.8	17.79
BH16	18.02	2.40	0.2	2.2	-
BH17	15.85	2.40	0.3	2.1	-

3.1 Overburden Soils

At the surfaces of all boreholes 0.05 to 0.1 metres of asphalt was encountered above 0.1 to 0.25 metres of sand and gravel fill. The fill soils are underlain by native silty sand with trace to some gravel, and trace clay (glacial till). The composition of the glacial till varies between gravelly silty sand and silt with trace to some sand and gravel. Based on the SPT N-values (ranging from 1 to 56, with an average of 19), the compactness of the glacial till can be described as medium dense. Soils sieve and moisture content analyses conducted on representative samples reveal that it is composed of approximately 53% to 79% sand, 1% to 21% cobbles and gravel, and 19% to 36% silt and clay, with a moisture content ranging from 8% to 22%.

The lab results and field observations confirm the soil is relatively consistent at all borehole locations.

3.2 Bedrock

Bedrock samples were not cored at the site; however, spoon samples of the possible bedrock indicate weathered sandstone was present.

Geological mapping indicates that the overburden soils in the Kouchibouguac area rest on Pennsylvanian-aged or younger red to grey sandstone, conglomerate, and siltstone.

4.0 Closure

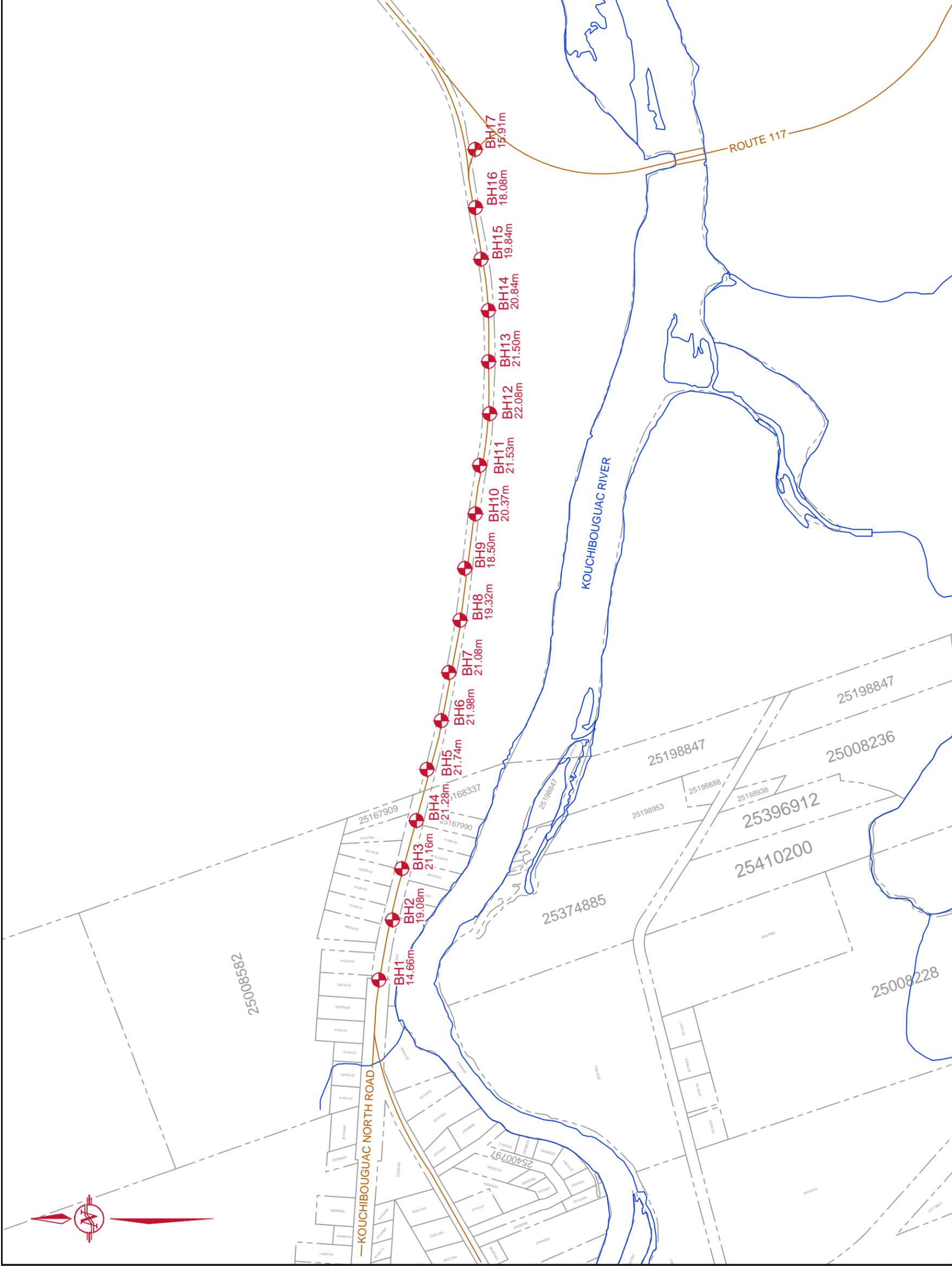
The boreholes put down at this site are widely scattered and soil and bedrock conditions may vary from those determined at the borehole locations. Although representative samples were taken, GEMTEC Limited personnel should be contacted immediately if the soils encountered during excavations are different than those encountered in our geotechnical investigation.

The investigation outlined in this report is strictly geotechnical in nature and should not be viewed as an environmental assessment of the site.

5.0 References

- (1) New Brunswick Department of Natural Resources and Energy, 2000. Bedrock Geology of New Brunswick. Minerals and Energy Division. Map NR-1 (2000 Edition). Scale 1:500 000.
- (2) Fyffe, L.R. and Richard, D.M. 2007. Lithological map of New Brunswick. New Brunswick Department of Natural Resources: Minerals, Policy and Planning Division: Plate 2007 – 18.

Appendix A
Borehole Location Plan



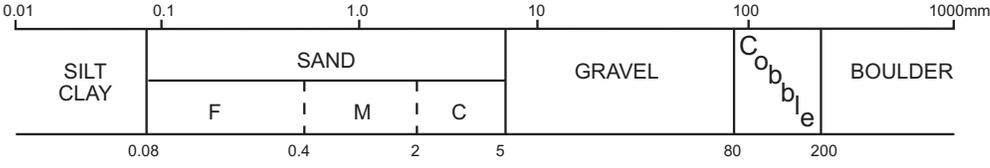
Drawn By	CHG	Checked By	AT
Calculations By	---	Checked By	----
Date	JULY 2015		
Project	GEOTECHNICAL INVESTIGATION KOUCHIBOUGUAC NORTH ROAD, NB		
Drawing	BOREHOLE LOCATION PLAN		
Scale	1:7500		
File No.	47356401	Drawing	FIGURE 1
		Revision No.	0



Appendix B

Descriptive Terms and Detailed Borehole Logs

DESCRIPTIVE TERMS- BOREHOLE/TEST PIT LOG

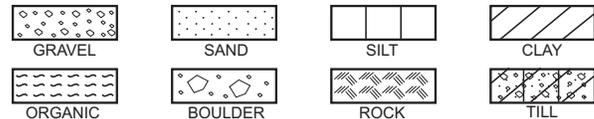
SOILS	GRAIN SIZE																
	DESCRIPTIVE TERMINOLOGY	<table border="1"> <tr> <td>TRACE</td> <td>SOME</td> <td>ADJECTIVE</td> <td colspan="2">and > 35% noun > 35% and main fraction</td> </tr> <tr> <td>trace clay, etc.</td> <td>some gravel, etc.</td> <td>silty, etc.</td> <td colspan="2">sand and gravel, etc.</td> </tr> </table>					TRACE	SOME	ADJECTIVE	and > 35% noun > 35% and main fraction		trace clay, etc.	some gravel, etc.	silty, etc.	sand and gravel, etc.		
	TRACE	SOME	ADJECTIVE	and > 35% noun > 35% and main fraction													
	trace clay, etc.	some gravel, etc.	silty, etc.	sand and gravel, etc.													
COMPACTNESS gravels, sands, tills	<table border="1"> <tr> <td>N, RANGE</td> <td>0 - 4</td> <td>4 - 10</td> <td>10 - 30</td> <td>30 - 50</td> <td>> 50</td> </tr> <tr> <td>DENSITY</td> <td>V. LOOSE</td> <td>LOOSE</td> <td>MEDIUM</td> <td>DENSE</td> <td>V. DENSE</td> </tr> </table>					N, RANGE	0 - 4	4 - 10	10 - 30	30 - 50	> 50	DENSITY	V. LOOSE	LOOSE	MEDIUM	DENSE	V. DENSE
N, RANGE	0 - 4	4 - 10	10 - 30	30 - 50	> 50												
DENSITY	V. LOOSE	LOOSE	MEDIUM	DENSE	V. DENSE												
CONSISTENCY silt, clay	<table border="1"> <tr> <td>S, KPa</td> <td>< 12.5</td> <td>12.5 - 25</td> <td>25 - 50</td> <td>50 - 100</td> <td>100 - 200</td> </tr> <tr> <td>CONSISTENCY</td> <td>V. SOFT</td> <td>SOFT</td> <td>MEDIUM</td> <td>STIFF</td> <td>V. STIFF</td> </tr> </table>					S, KPa	< 12.5	12.5 - 25	25 - 50	50 - 100	100 - 200	CONSISTENCY	V. SOFT	SOFT	MEDIUM	STIFF	V. STIFF
S, KPa	< 12.5	12.5 - 25	25 - 50	50 - 100	100 - 200												
CONSISTENCY	V. SOFT	SOFT	MEDIUM	STIFF	V. STIFF												

ROCK	RQD	OVERALL QUALITY			FRACTURE SPACING	
	0 - 25	VERY POOR			VERY CLOSE 20 - 60 mm	
	25 - 50	POOR			CLOSE 60 - 200 mm	
	50 - 75	FAIR			MODERATE 200 - 600 mm	
	75 - 90	GOOD			WIDE 600 - 2000 mm	
	90 - 100	EXCELLENT			VERY WIDE 2 - 6 m	
COMP. STR. MPa	1 - 5	5 - 25	25 - 50	50 - 100	100 - 250	
DESCRIPTION	V. WEAK	WEAK	MODERATE	STRONG	V. STRONG	

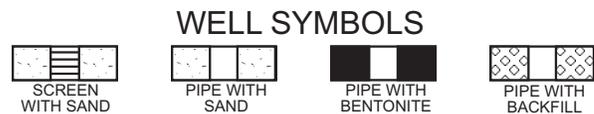
SAMPLE TYPES (location to scale on log)

S SPLIT TUBE G SHOVEL
T SHELBY TUBE H CARVED BLOCK
P PISTON K SLOTTED
F AUGER V IN SITU VANE
W WASH NR NO RECOVERY

LOG SYMBOLS



ROCK CORES A(30mm); B(41mm); N(54mm)



- N - standard penetration test; blows by 475 J drop hammer to advance Std. 50mm O.D. split tube sampler 0.3m
RQD - percent of core consisting of hard, sound pieces in excess of 100mm long (excluding machine breaks)
RECOVERY - sample recovery expressed as percent or length
S - shear strength, kPa; vane \oplus ; penetrometer \blacksquare ; unconfined \circ ; U_c unconfined compressive strength
 S_r - shear strength, remoulded; vane \otimes ; penetrometer \square
Dd - dry density; t/m^3
W - natural moisture content, percent *
PL - plastic limit, percent ---
LL - liquid limit, percent ---
ND - non detect, total petroleum hydrocarbons (TPH) not detected in soil
Groundwater Level ∇ ; Seepage ∇

Client Public Works & Government Services Canada

Proj No. 473564

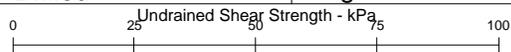
BOREHOLE BH1

Project Geotechnical Investigation

Date Drilled 18 June 2015

Page 1 of 1

Location Kouchibouguac North Road, Kouchibouguac, New Brunswick



Ground Level, m 14.60

Datum: Geodetic

Logged By NG

Unconfined Compression Pocket Penetrometer
 Field Vane Test Remoulded
 Water Content & Atterburg Limits
 Dynamic Penetration Test, blows/0.3m
 Standard Penetration Test, blows/0.3m



DEPTH m	SAMPLE				LOG	DESCRIPTION
	No	TYPE	N (RQD)	REC (mm)		
0					0.05 ASPHALT	14.55
	1	S	20	450	Brown SAND and GRAVEL	
					0.30	14.30
					Brown silty sand, some gravel, trace clay (TILL)	
	2	S	13	520		
1					- silt and sand, trace gravel (AASHTO A-4 to A-7)	
	3	S	100	330		
					1.50	13.10
					Grey SANDSTONE	
					1.65	12.95
					End of borehole at 1.65 mbgs	

Client Public Works & Government Services Canada

Proj No. 473564

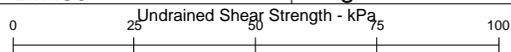
BOREHOLE BH2

Project Geotechnical Investigation

Date Drilled 18 June 2015

Page 1 of 1

Location Kouchibouguac North Road, Kouchibouguac, New Brunswick

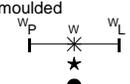


Ground Level, m 19.03

Datum: Geodetic

Logged By NG

Unconfined Compression Pocket Penetrometer
 Field Vane Test Remoulded
 Water Content & Atterburg Limits
 Dynamic Penetration Test, blows/0.3m
 Standard Penetration Test, blows/0.3m



DEPTH m	SAMPLE				LOG	DESCRIPTION	
	No	TYPE	N (RQD)	REC (mm)			
0					0.05 ASPHALT	18.98	
	1	S	18	450	Brown SAND and GRAVEL	18.73	
					0.30 Brown silty sand, some gravel, trace clay (TILL)	18.43	●
	2	S	7	510	Brown silty SAND, trace gravel		
1					- sand, some gravel, some silt (AASHTO A-2-4)		● *
	3	S	18	480	1.30 Brown silty sand, some gravel, trace clay (TILL)	17.73	
					1.80	17.23	●
					End of borehole at 1.8 mbgs Groundwater encountered at 1.3 mbgs		

Client: Public Works & Government Services Canada

Proj No.: 473564

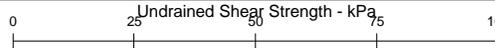
BOREHOLE BH3

Project: Geotechnical Investigation

Date Drilled: 18 June 2015

Page 1 of 1

Location: Kouchibouguac North Road, Kouchibouguac, New Brunswick

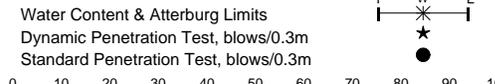


Ground Level, m: 21.10

Datum: Geodetic

Logged By: NG

- Unconfined Compression
- ⊕ Field Vane Test
- Pocket Penetrometer
- ⊗ Remoulded



DEPTH m	SAMPLE				LOG	DESCRIPTION
	No	TYPE	N (RQD)	REC (mm)		
0					0.05 ASPHALT	21.05
	1	S	22	450	Brown SAND and GRAVEL	
					0.30	20.80
					Brown silty sand, some gravel, trace clay with sand seams (TILL)	
	2	S	11	520		
1					- silty sand, some gravel (AASHTO A-2-4)	
	3	S	9	450		
					1.40	19.70
					Brown silty SAND, trace gravel	
	4	S	16	500		
2					2.00	19.10
					Brown silty sand, some gravel, trace clay (TILL)	
					2.40	18.70
					End of borehole at 2.4 mbgs	

Client: Public Works & Government Services Canada

Proj No.: 473564

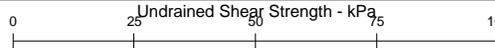
BOREHOLE BH4

Project: Geotechnical Investigation

Date Drilled: 18 June 2015

Page 1 of 1

Location: Kouchibouguac North Road, Kouchibouguac, New Brunswick

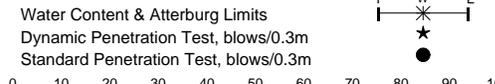


Ground Level, m: 21.22

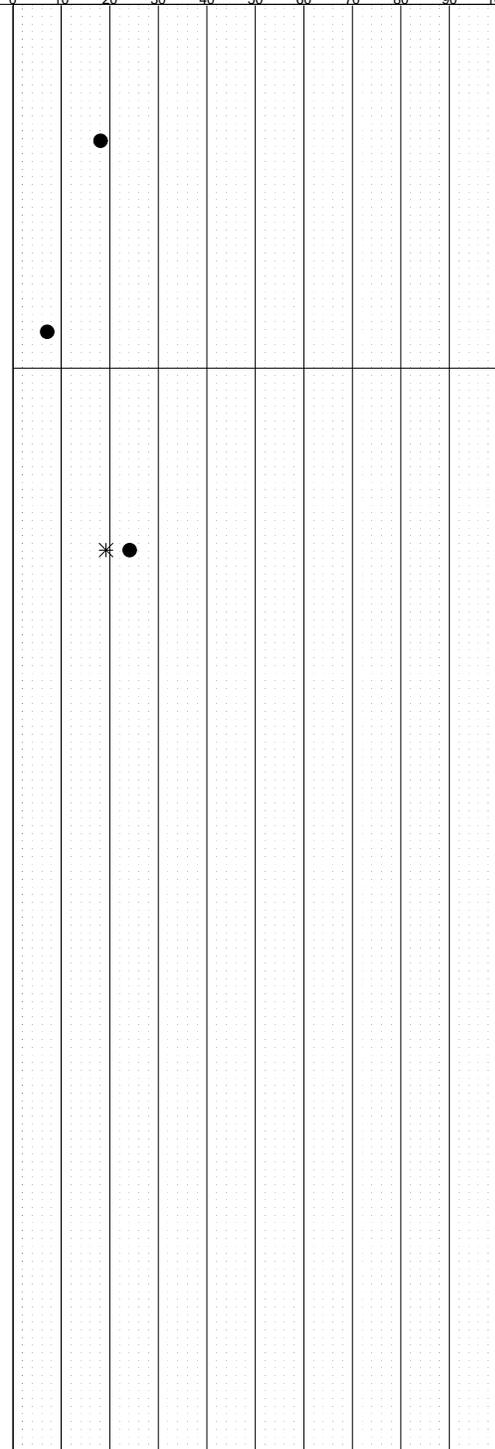
Datum: Geodetic

Logged By: NG

- Unconfined Compression
- ⊕ Field Vane Test
- Pocket Penetrometer
- ⊗ Remoulded



DEPTH m	SAMPLE				LOG	DESCRIPTION
	No	TYPE	N (RQD)	REC (mm)		
0					0.05 ASPHALT	21.17
	1	S	18	450	Brown SAND and GRAVEL	21.02
					Brown silty sand, some gravel, trace clay (TILL)	
	2	S	7	550		
1						
	3	S	24	500	- silt, trace gravel, trace sand (AASHTO A-4 to A-7)	
						1.80
						19.42



End of borehole at 1.8 mbgs

Client: Public Works & Government Services Canada

Proj No.: 473564

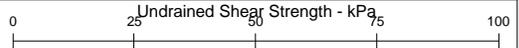
BOREHOLE BH5

Project: Geotechnical Investigation

Date Drilled: 18 June 2015

Page 1 of 1

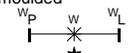
Location: Kouchibouguac North Road, Kouchibouguac, New Brunswick



Ground Level, m: 21.69

Datum: Geodetic

Logged By: NG

- Unconfined Compression
 - ⊕ Field Vane Test
 - Pocket Penetrometer
 - ⊗ Remoulded
- Water Content & Atterburg Limits
 Dynamic Penetration Test, blows/0.3m
 Standard Penetration Test, blows/0.3m
- 

DEPTH m	SAMPLE				LOG	DESCRIPTION															
	No	TYPE	N (RQD)	REC (mm)																	
0					0.05	ASPHALT	21.64														
	1	S	25	400	0.20	Brown SAND and GRAVEL	21.49														
	2	S	6	300		Brown silty sand, some gravel, trace clay (TILL)															
1																					
	3	S	21	480		- silt, some sand, trace gravel (AASHTO A-4 to A-7)															
2																					
	4	S	42	600																	
					2.40	End of borehole at 2.4 mbgs	19.29														

Client: Public Works & Government Services Canada

Proj No.: 473564

BOREHOLE BH6

Project: Geotechnical Investigation

Date Drilled: 18 June 2015

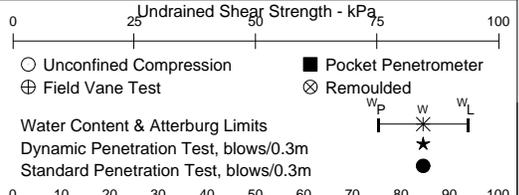
Page 1 of 1

Location: Kouchibouguac North Road, Kouchibouguac, New Brunswick

Ground Level, m: 21.93

Datum: Geodetic

Logged By: NG



DEPTH m	SAMPLE				LOG	DESCRIPTION
	No	TYPE	N (RQD)	REC (mm)		
0					0.10 ASPHALT	21.83
	1	S	24	450	0.20 Brown SAND and GRAVEL	21.73
					Brown silty sand, some gravel, trace clay (TILL)	
	2	S	11	500		
1					1.10 Brown SAND, some silt and gravel, trace clay	20.83
	3	S	20	510		
					1.50 Brown SAND, some silt	20.43
					1.60 Brown SAND, some silt and gravel, trace clay	20.33
2	4	S	25	600		
					- gravelly silty sand (AASHTO A-2-4)	
					2.40	19.53
					End of borehole at 2.4 mbgs	

Client Public Works & Government Services Canada

Proj No. 473564

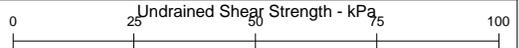
BOREHOLE BH7

Project Geotechnical Investigation

Date Drilled 18 June 2015

Page 1 of 1

Location Kouchibouguac North Road, Kouchibouguac, New Brunswick

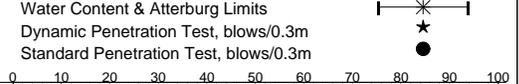


Ground Level, m 21.02

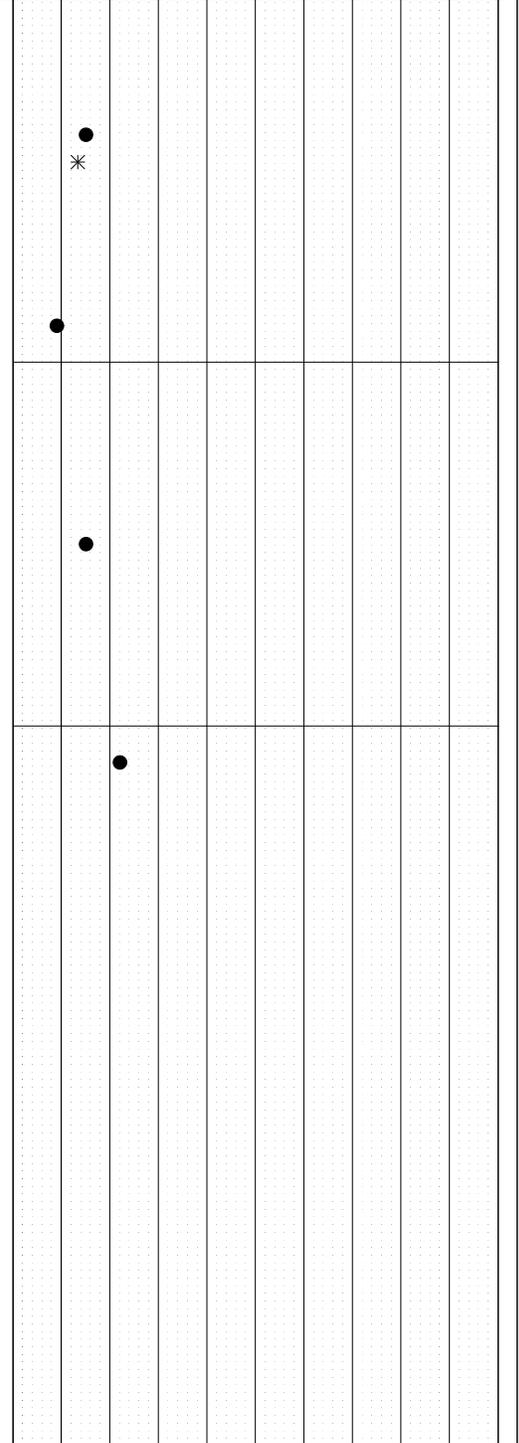
Datum: Geodetic

Logged By NG

- Unconfined Compression
- ⊕ Field Vane Test
- Pocket Penetrometer
- ⊗ Remoulded



DEPTH m	SAMPLE				LOG	DESCRIPTION
	No	TYPE	N (RQD)	REC (mm)		
0					0.10 ASPHALT 20.92	
	1	S	15	450	0.20 Brown SAND and GRAVEL - gravelly silty sand (AASHTO A-2-4) Brown silty sand, some gravel, trace clay (TILL) 20.82	
					0.60 20.42	
	2	S	9	550	1.10 Brown SAND, some silt and gravel, trace clay 19.92	
					1.20 Brown silty sand, some gravel, trace clay (TILL) 19.82	
1						
	3	S	15	550	2.20 Brown silty SAND, some gravel 18.82	
					2.40 18.62	
2						
					End of borehole at 2.4 mbgs	



Client Public Works & Government Services Canada

Proj No. 473564

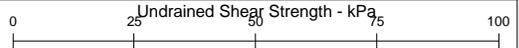
BOREHOLE BH8

Project Geotechnical Investigation

Date Drilled 18 June 2015

Page 1 of 1

Location Kouchibouguac North Road, Kouchibouguac, New Brunswick

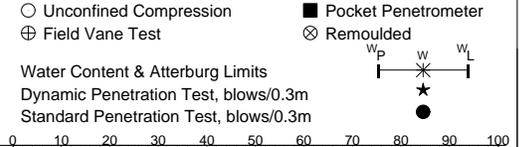


Ground Level, m 19.26

Datum: Geodetic

Logged By NG

Unconfined Compression Pocket Penetrometer
 Field Vane Test Remoulded
 Water Content & Atterburg Limits
 Dynamic Penetration Test, blows/0.3m
 Standard Penetration Test, blows/0.3m



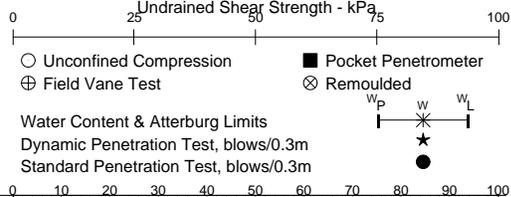
DEPTH m	SAMPLE				LOG	DESCRIPTION	TEST RESULTS
	No	TYPE	N (RQD)	REC (mm)			
0					0.10 ASPHALT	19.16	
	1	S	16	400	Brown SAND and GRAVEL		
					0.30 Brown SAND, some silt and gravel, trace clay	18.96	
	2	S	3	560	- silty sand, some gravel (AASHTO A-2-4)		*
1					1.10 Brown silty sand, some gravel, trace clay (TILL)	18.16	
	3	S	20	500			
					1.80 Brown silty SAND, some gravel	17.46	
2	4	S	18	510			
					2.40	16.86	
					End of borehole at 2.4 mbgs		

Client: Public Works & Government Services Canada
 Proj No.: 473564
 BOREHOLE: BH9

Project: Geotechnical Investigation
 Date Drilled: 18 June 2015
 Page 1 of 1

Location: Kouchibouguac North Road, Kouchibouguac, New Brunswick

Ground Level, m: 18.44
 Datum: Geodetic
 Logged By: NG



DEPTH m	SAMPLE				LOG	DESCRIPTION
	No	TYPE	N (RQD)	REC (mm)		
0					0.10 ASPHALT	18.34
	1	S	31	450	0.20 Brown SAND and GRAVEL	18.24
					Brown silty sand, some gravel, trace clay, occasional cobble (TILL)	
	2	S	18	500		
1					1.00 - silty sand, some gravel (AASHTO A-2-4)	17.44
					Brown SAND, some silt and gravel, trace clay	
	3	S	1	550		
					1.40 Brown SAND, some silt, trace gravel	17.04
					- silty sand, trace gravel (AASHTO A-2-4)	
	4	S	34	400	1.80 Brown silty SAND	16.64
2					- silty sand, trace gravel (AASHTO A-2-4)	
					2.40	16.04
					End of borehole at 2.4 mbgs	

Client Public Works & Government Services Canada

Proj No. 473564

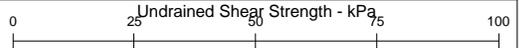
BOREHOLE BH10

Project Geotechnical Investigation

Date Drilled 18 June 2015

Page 1 of 1

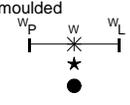
Location Kouchibouguac North Road, Kouchibouguac, New Brunswick



Ground Level, m 20.31

Datum: Geodetic

Logged By NG

- Unconfined Compression
 - ⊕ Field Vane Test
 - Pocket Penetrometer
 - ⊗ Remoulded
- Water Content & Atterburg Limits
 Dynamic Penetration Test, blows/0.3m
 Standard Penetration Test, blows/0.3m
- 

DEPTH m	SAMPLE				LOG	DESCRIPTION
	No	TYPE	N (RQD)	REC (mm)		
0					0.10	ASPHALT 20.21
	1	S	11	450	0.20	Brown SAND and GRAVEL 20.11
						Brown silty sand, some gravel, trace clay (TILL)
	2	S	10	500		
1					1.00	Brown SAND, some silt and gravel, trace clay 19.31
	3	S	16	480		- silty sand, trace gravel (AASHTO A-2-4)
	4	S	17	500		
2					2.10	Brown silty SAND, trace gravel 18.21
					2.40	17.91
						End of borehole at 2.4 mbgs

Client Public Works & Government Services Canada

Proj No. 473564

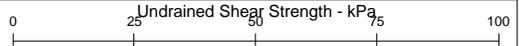
BOREHOLE BH11

Project Geotechnical Investigation

Date Drilled 18 June 2015

Page 1 of 1

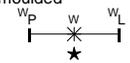
Location Kouchibouguac North Road, Kouchibouguac, New Brunswick



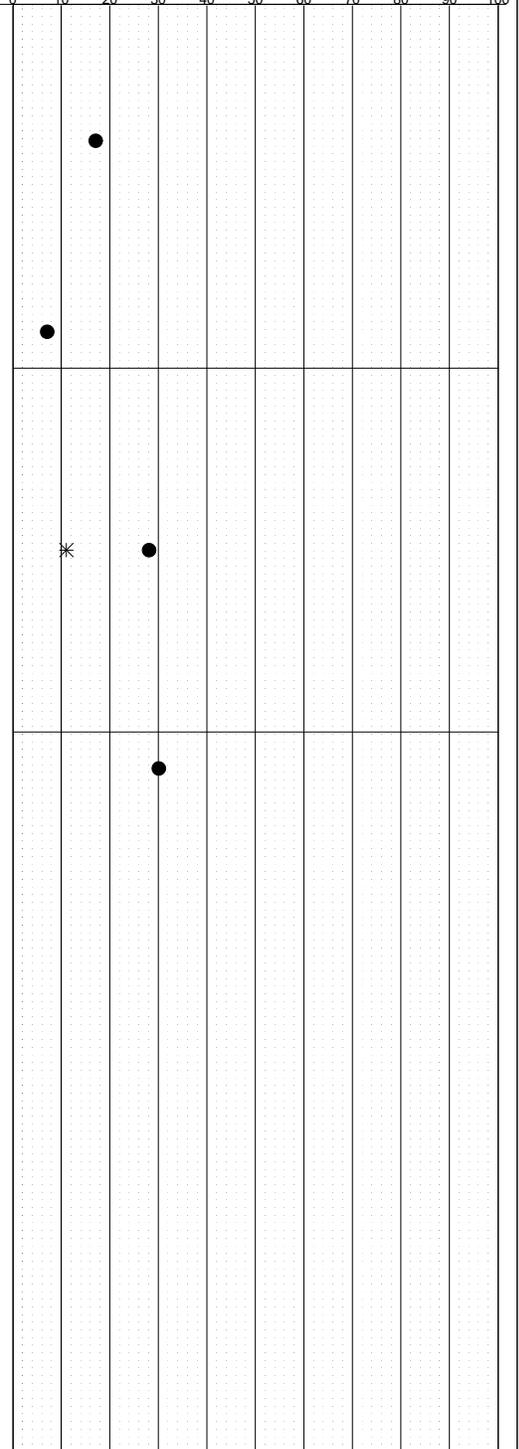
Ground Level, m 21.47

Datum: Geodetic

Logged By NG

- Unconfined Compression
 - ⊕ Field Vane Test
 - Pocket Penetrometer
 - ⊗ Remoulded
- Water Content & Atterburg Limits
 Dynamic Penetration Test, blows/0.3m
 Standard Penetration Test, blows/0.3m
- 

DEPTH m	SAMPLE				LOG	DESCRIPTION
	No	TYPE	N (RQD)	REC (mm)		
0					0.10	ASPHALT 21.37
	1	S	17	450	0.20	Brown SAND and GRAVEL 21.27
						Brown silty sand, some gravel, trace clay (TILL)
	2	S	7	530		
1						
	3	S	28	600		
						- sand and silt, some gravel (AASHTO A-4 to A-7)
2						
	4	S	30	500		
					2.40	19.07
						End of borehole at 2.4 mbgs



Client Public Works & Government Services Canada

Proj No. 473564

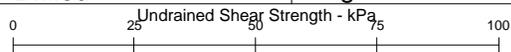
BOREHOLE BH12

Project Geotechnical Investigation

Date Drilled 18 June 2015

Page 1 of 1

Location Kouchibouguac North Road, Kouchibouguac, New Brunswick

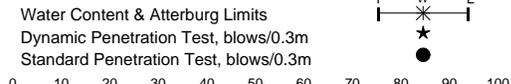


Ground Level, m 22.03

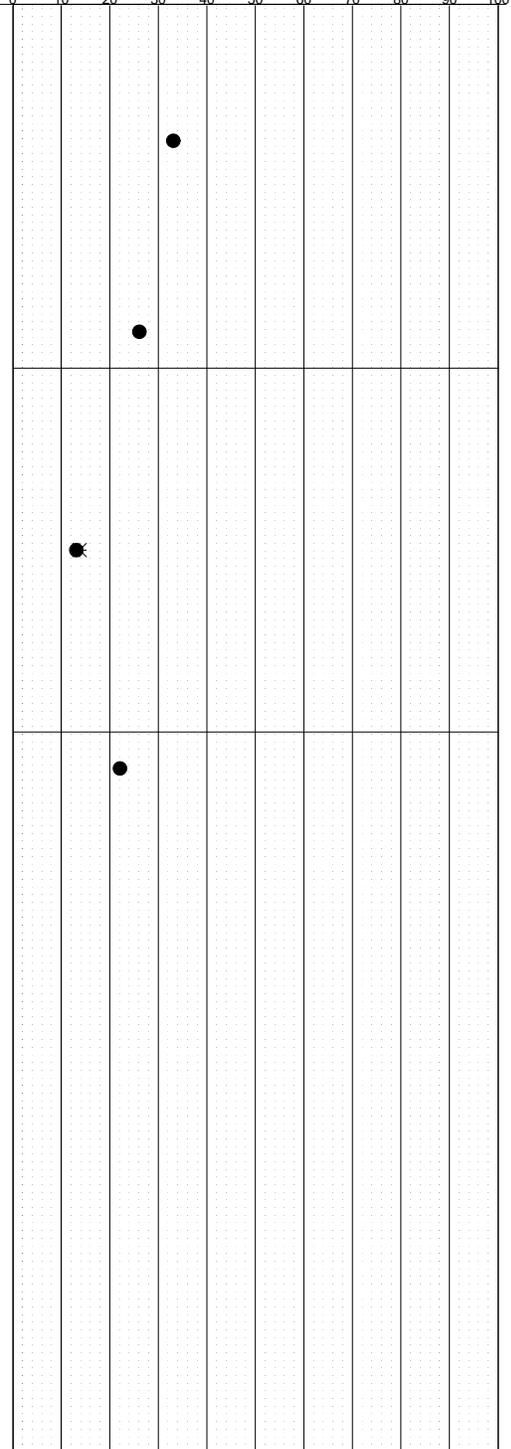
Datum: Geodetic

Logged By NG

- Unconfined Compression
- ⊕ Field Vane Test
- Pocket Penetrometer
- ⊗ Remoulded



DEPTH m	SAMPLE				LOG	DESCRIPTION
	No	TYPE	N (RQD)	REC (mm)		
0					0.10	ASPHALT 21.93
	1	S	33	450	0.20	Brown SAND and GRAVEL 21.83
						Brown silty sand, some gravel, trace clay (TILL)
	2	S	26	550		
1						
	3	S	13	600		- sand and silt, trace gravel (AASHTO A-4 to A-7)
	4	S	22	600		
2					2.00	Brown SAND, some silt and gravel, trace clay 20.03
					2.20	Brown SANDSTONE (possible bedrock) 19.83
					2.40	19.63
						End of borehole at 2.4 mbgs



Client Public Works & Government Services Canada

Proj No. 473564

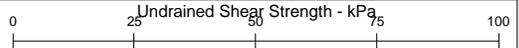
BOREHOLE BH13

Project Geotechnical Investigation

Date Drilled 18 June 2015

Page 1 of 1

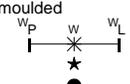
Location Kouchibouguac North Road, Kouchibouguac, New Brunswick



Ground Level, m 21.45

Datum: Geodetic

Logged By NG

- Unconfined Compression
 - ⊕ Field Vane Test
 - Water Content & Atterburg Limits
 - Dynamic Penetration Test, blows/0.3m
 - Standard Penetration Test, blows/0.3m
 - Pocket Penetrometer
 - ⊗ Remoulded
- 

DEPTH m	SAMPLE				LOG	DESCRIPTION														
	No	TYPE	N (RQD)	REC (mm)																
0					0.05 ASPHALT	21.40														
	1	S	27	450	Brown SAND and GRAVEL															
					0.30	21.15														
					Brown silty sand, some gravel, trace clay (TILL)															
	2	S	20	450																
1					- silty sand, trace gravel (AASHTO A-2-4)															
	3	S	27	600																
	4	S	55	510																
2					2.10	19.35														
					Brown SANDSTONE (possible bedrock)															
					2.40	19.05														
					End of borehole at 2.4 mbgs															

Client Public Works & Government Services Canada

Proj No. 473564

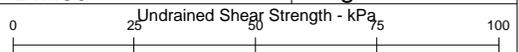
BOREHOLE BH14

Project Geotechnical Investigation

Date Drilled 18 June 2015

Page 1 of 1

Location Kouchibouguac North Road, Kouchibouguac, New Brunswick

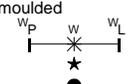


Ground Level, m 20.78

Datum: Geodetic

Logged By NG

Unconfined Compression Pocket Penetrometer
 Field Vane Test Remoulded
 Water Content & Atterburg Limits
 Dynamic Penetration Test, blows/0.3m
 Standard Penetration Test, blows/0.3m



DEPTH m	SAMPLE				LOG	DESCRIPTION															
	No	TYPE	N (RQD)	REC (mm)																	
0					0.05 ASPHALT	20.73															
	1	S	19	450	Brown SAND and GRAVEL																
	2	S	4	550																	
1					- silty sand, trace gravel (AASHTO A-2-4)																
	3	S	15	600	1.10 Brown SAND, some silt and gravel, trace clay	19.68															
	4	S	56	600	1.60 Brown silty sand, some gravel, trace clay (TILL)	19.18															
2					2.20 Brown SANDSTONE (possible bedrock)	18.58															
					2.40	18.38															
					End of borehole at 2.4 mbgs																

Client Public Works & Government Services Canada

Proj No. 473564

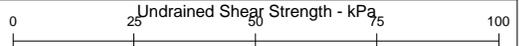
BOREHOLE BH15

Project Geotechnical Investigation

Date Drilled 18 June 2015

Page 1 of 1

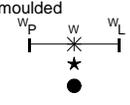
Location Kouchibouguac North Road, Kouchibouguac, New Brunswick



Ground Level, m 19.79

Datum: Geodetic

Logged By NG

- Unconfined Compression
 - ⊕ Field Vane Test
 - Pocket Penetrometer
 - ⊗ Remoulded
- Water Content & Atterburg Limits
 Dynamic Penetration Test, blows/0.3m
 Standard Penetration Test, blows/0.3m
- 

DEPTH m	SAMPLE				LOG	DESCRIPTION										
	No	TYPE	N (RQD)	REC (mm)												
0					0.05 ASPHALT	19.74										
	1	S	17	450	Brown SAND and GRAVEL	19.54										
					0.25	19.54										
	2	S	21	520	Brown silty sand, some gravel, trace clay, occasional cobble (TILL)											
1																
	3	S	44	600	- gravelly silty sand (AASHTO A-2-4)											
2																
	4	S	85	500	Brown SANDSTONE (possible bedrock)	17.79										
					2.00	17.79										
					2.40	17.39										
					End of borehole at 2.4 mbgs											

Client: Public Works & Government Services Canada

Proj No.: 473564

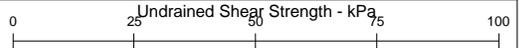
BOREHOLE BH16

Project: Geotechnical Investigation

Date Drilled: 18 June 2015

Page 1 of 1

Location: Kouchibouguac North Road, Kouchibouguac, New Brunswick

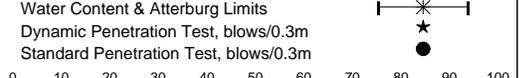


Ground Level, m: 18.02

Datum: Geodetic

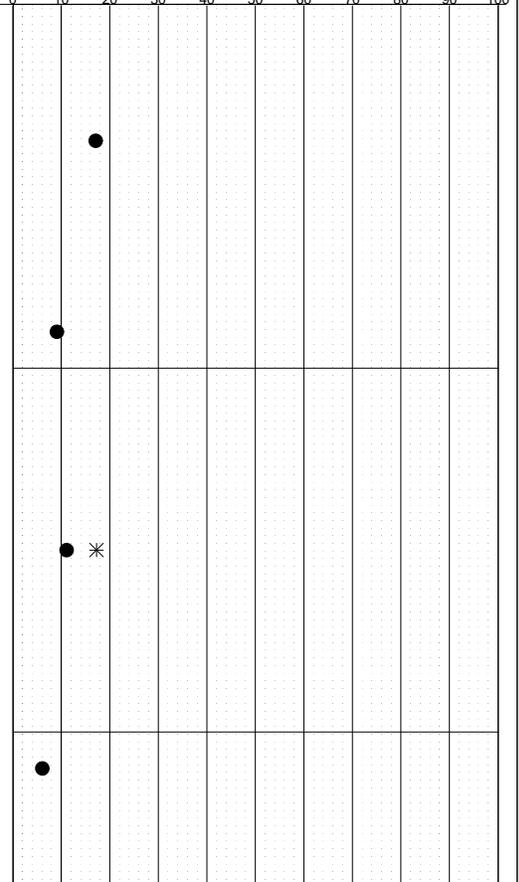
Logged By: NG

- Unconfined Compression
- ⊕ Field Vane Test
- Pocket Penetrometer
- ⊗ Remoulded



DEPTH (m) | SAMPLE (No, TYPE, N (RQD), REC (mm)) | LOG | DESCRIPTION

DEPTH (m)	SAMPLE				LOG	DESCRIPTION
	No	TYPE	N (RQD)	REC (mm)		
0					0.05 ASPHALT	17.97
					Brown SAND and GRAVEL	
	1	S	17	450	0.20	17.82
					Brown silty sand, some gravel, trace clay (TILL)	
	2	S	9	520		
1					1.00	17.02
					Brown SAND, some silt and gravel, trace clay	
	3	S	11	600		
					1.40	16.62
					Brown SAND, some silt, trace gravel - silty sand, trace gravel (AASHTO A-2-4)	
					1.70	16.32
	4	S	6	600		
					1.90	16.12
2					Brown silty SAND, trace clay and gravel	
					2.40	15.62



End of borehole at 2.4 mbgs

Client Public Works & Government Services Canada

Proj No. 473564

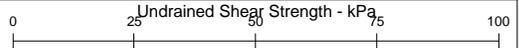
BOREHOLE BH17

Project Geotechnical Investigation

Date Drilled 18 June 2015

Page 1 of 1

Location Kouchibouguac North Road, Kouchibouguac, New Brunswick

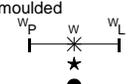


Ground Level, m 15.85

Datum: Geodetic

Logged By NG

Unconfined Compression Pocket Penetrometer
 Field Vane Test Remoulded
 Water Content & Atterburg Limits
 Dynamic Penetration Test, blows/0.3m
 Standard Penetration Test, blows/0.3m



DEPTH m	SAMPLE				LOG	DESCRIPTION														
	No	TYPE	N (RQD)	REC (mm)																
0					0.05	ASPHALT	15.80													
	1	S	18	450		Brown SAND and GRAVEL														
					0.30	Brown SAND, some silt and gravel, trace clay	15.55													
	2	S	4	400																
1					1.00	Brown silty sand, some gravel, trace clay (TILL)	14.85													
	3	S	20	450																
	4	S	42	400		- silt, some sand, trace gravel (AASHTO A-4 to A-7)														
2					2.40	End of borehole at 2.4 mbgs	13.45													

Appendix C
Moisture Content Analyses

**GEMTEC**CONSULTING ENGINEERS
AND SCIENTISTS

Client Public Works & Government Services Canada

Project: Geotechnical Investigation, Kouchibouguac North Road,

Project #: 0473564

**Moisture Content
and Density**

Borehole: 1	Date/Time Sampled: 15/07/13 1:59:00 PM	Mass of Cont. + Wet Soil, g:	908.80
Depth: 0.6-1.2m	Date/Time Tested: 15/07/15 2:00:19 PM	Mass of Cont. + Dry Soil, g:	838.30
Sample: 2		Mass of Container, g:	205.30
Description:		Moisture Content, %:	11.14
		Sample Length, mm:	
		Sample Diameter, mm:	
		Sample Mass, g:	
		Sample Volume, mm ³	
		Wet Density, kg/m ³	
		Dry Density, kg/m ³	
Borehole: 6	Date/Time Sampled: 15/07/13 2:59:00 PM	Mass of Cont. + Wet Soil, g:	840.80
Depth: 1.8-2.4m	Date/Time Tested: 15/07/15 3:00:48 PM	Mass of Cont. + Dry Soil, g:	776.40
Sample: 4		Mass of Container, g:	172.05
Description:		Moisture Content, %:	10.66
		Sample Length, mm:	
		Sample Diameter, mm:	
		Sample Mass, g:	
		Sample Volume, mm ³	
		Wet Density, kg/m ³	
		Dry Density, kg/m ³	
Borehole: 2	Date/Time Sampled: 15/07/15 2:00:19 PM	Mass of Cont. + Wet Soil, g:	720.20
Depth: 0.6-1.2m	Date/Time Tested: 15/07/15 2:00:19 PM	Mass of Cont. + Dry Soil, g:	649.80
Sample: 2		Mass of Container, g:	166.50
Description:		Moisture Content, %:	14.57
		Sample Length, mm:	
		Sample Diameter, mm:	
		Sample Mass, g:	
		Sample Volume, mm ³	
		Wet Density, kg/m ³	
		Dry Density, kg/m ³	

**GEMTEC**CONSULTING ENGINEERS
AND SCIENTISTS

Client	Public Works & Government Services Canada
Project:	Geotechnical Investigation, Kouchibouguac North Road,
Project #:	0473564

**Moisture Content
and Density**

Borehole: 3	Date/Time Sampled: 15/07/15 2:00:19 PM	Mass of Cont. + Wet Soil, g:	732.40
Depth: 0.6-1.2m	Date/Time Tested: 15/07/15 2:00:19 PM	Mass of Cont. + Dry Soil, g:	672.30
Sample: 2		Mass of Container, g:	177.20
Description:		Moisture Content, %:	12.14
		Sample Length, mm:	
		Sample Diameter, mm:	
		Sample Mass, g:	
		Sample Volume, mm ³	
		Wet Density, kg/m ³	
		Dry Density, kg/m ³	
Borehole: 4	Date/Time Sampled: 15/07/15 2:00:19 PM	Mass of Cont. + Wet Soil, g:	815.70
Depth: 1.2-1.8m	Date/Time Tested: 15/07/15 2:00:19 PM	Mass of Cont. + Dry Soil, g:	717.20
Sample: 3		Mass of Container, g:	202.39
Description:		Moisture Content, %:	19.13
		Sample Length, mm:	
		Sample Diameter, mm:	
		Sample Mass, g:	
		Sample Volume, mm ³	
		Wet Density, kg/m ³	
		Dry Density, kg/m ³	
Borehole: 5	Date/Time Sampled: 15/07/15 2:00:19 PM	Mass of Cont. + Wet Soil, g:	884.40
Depth: 1.2-1.8m	Date/Time Tested: 15/07/15 2:00:19 PM	Mass of Cont. + Dry Soil, g:	777.20
Sample: 3		Mass of Container, g:	172.50
Description:		Moisture Content, %:	17.73
		Sample Length, mm:	
		Sample Diameter, mm:	
		Sample Mass, g:	
		Sample Volume, mm ³	
		Wet Density, kg/m ³	
		Dry Density, kg/m ³	

**GEMTEC**CONSULTING ENGINEERS
AND SCIENTISTS

Client Public Works & Government Services Canada

Project: Geotechnical Investigation, Kouchibouguac North Road,

Project #: 0473564

**Moisture Content
and Density**

Borehole: 7	Date/Time Sampled: 15/07/15 3:00:48 PM	Mass of Cont. + Wet Soil, g:	1136.30
Depth: 0.3-0.6m	Date/Time Tested: 15/07/15 3:00:48 PM	Mass of Cont. + Dry Soil, g:	1023.00
Sample: 1		Mass of Container, g:	171.72
Description:		Moisture Content, %:	13.31
		Sample Length, mm:	
		Sample Diameter, mm:	
		Sample Mass, g:	
		Sample Volume, mm ³	
		Wet Density, kg/m ³	
		Dry Density, kg/m ³	
Borehole: 8	Date/Time Sampled: 15/07/15 3:00:48 PM	Mass of Cont. + Wet Soil, g:	812.60
Depth: 0.6-1.2m	Date/Time Tested: 15/07/15 3:00:48 PM	Mass of Cont. + Dry Soil, g:	724.20
Sample: 2		Mass of Container, g:	170.76
Description:		Moisture Content, %:	15.97
		Sample Length, mm:	
		Sample Diameter, mm:	
		Sample Mass, g:	
		Sample Volume, mm ³	
		Wet Density, kg/m ³	
		Dry Density, kg/m ³	
Borehole: 9	Date/Time Sampled: 15/07/15 3:00:48 PM	Mass of Cont. + Wet Soil, g:	758.60
Depth: 1.2-1.8m	Date/Time Tested: 15/07/15 3:00:48 PM	Mass of Cont. + Dry Soil, g:	651.10
Sample: 3		Mass of Container, g:	107.72
Description:		Moisture Content, %:	19.78
		Sample Length, mm:	
		Sample Diameter, mm:	
		Sample Mass, g:	
		Sample Volume, mm ³	
		Wet Density, kg/m ³	
		Dry Density, kg/m ³	

**GEMTEC**CONSULTING ENGINEERS
AND SCIENTISTS

Client Public Works & Government Services Canada

Project: Geotechnical Investigation, Kouchibouguac North Road,

Project #: 0473564

**Moisture Content
and Density**

Borehole: 9	Date/Time Sampled: 15/07/15 3:00:48 PM	Mass of Cont. + Wet Soil, g:	812.70
Depth: 0.6-1.2m	Date/Time Tested: 15/07/15 3:00:48 PM	Mass of Cont. + Dry Soil, g:	743.50
Sample: 2		Mass of Container, g:	122.88
Description:		Moisture Content, %:	11.15
		Sample Length, mm:	
		Sample Diameter, mm:	
		Sample Mass, g:	
		Sample Volume, mm ³	
		Wet Density, kg/m ³	
		Dry Density, kg/m ³	
Borehole: 9	Date/Time Sampled: 15/07/15 3:00:48 PM	Mass of Cont. + Wet Soil, g:	1837.10
Depth: 0.15-0.6m	Date/Time Tested: 15/07/15 3:00:48 PM	Mass of Cont. + Dry Soil, g:	1709.20
Sample: 1		Mass of Container, g:	171.98
Description:		Moisture Content, %:	8.32
		Sample Length, mm:	
		Sample Diameter, mm:	
		Sample Mass, g:	
		Sample Volume, mm ³	
		Wet Density, kg/m ³	
		Dry Density, kg/m ³	
Borehole: 9	Date/Time Sampled: 15/07/15 3:00:48 PM	Mass of Cont. + Wet Soil, g:	839.80
Depth: 1.8-2.4m	Date/Time Tested: 15/07/15 3:00:48 PM	Mass of Cont. + Dry Soil, g:	726.10
Sample: 4		Mass of Container, g:	163.28
Description:		Moisture Content, %:	20.20
		Sample Length, mm:	
		Sample Diameter, mm:	
		Sample Mass, g:	
		Sample Volume, mm ³	
		Wet Density, kg/m ³	
		Dry Density, kg/m ³	

**GEMTEC**CONSULTING ENGINEERS
AND SCIENTISTS

Client Public Works & Government Services Canada

Project: Geotechnical Investigation, Kouchibouguac North Road,

Project #: 0473564

**Moisture Content
and Density**

Borehole: 10	Date/Time Sampled: 15/07/15 3:00:48 PM	Mass of Cont. + Wet Soil, g:	840.60
Depth: 1.2-1.8m	Date/Time Tested: 15/07/15 3:00:48 PM	Mass of Cont. + Dry Soil, g:	776.90
Sample: 3		Mass of Container, g:	171.47
Description:		Moisture Content, %:	10.52
		Sample Length, mm:	
		Sample Diameter, mm:	
		Sample Mass, g:	
		Sample Volume, mm ³	
		Wet Density, kg/m ³	
		Dry Density, kg/m ³	
Borehole: 11	Date/Time Sampled: 15/07/15 3:00:48 PM	Mass of Cont. + Wet Soil, g:	898.20
Depth: 1.2-1.8m	Date/Time Tested: 15/07/15 3:00:48 PM	Mass of Cont. + Dry Soil, g:	826.20
Sample: 3		Mass of Container, g:	168.57
Description:		Moisture Content, %:	10.95
		Sample Length, mm:	
		Sample Diameter, mm:	
		Sample Mass, g:	
		Sample Volume, mm ³	
		Wet Density, kg/m ³	
		Dry Density, kg/m ³	
Borehole: 12	Date/Time Sampled: 15/07/15 3:26:00 PM	Mass of Cont. + Wet Soil, g:	950.00
Depth: 1.2-1.8m	Date/Time Tested: 15/07/15 3:27:56 PM	Mass of Cont. + Dry Soil, g:	855.60
Sample: 3		Mass of Container, g:	165.37
Description:		Moisture Content, %:	13.68
		Sample Length, mm:	
		Sample Diameter, mm:	
		Sample Mass, g:	
		Sample Volume, mm ³	
		Wet Density, kg/m ³	
		Dry Density, kg/m ³	

**GEMTEC**CONSULTING ENGINEERS
AND SCIENTISTS

Client	Public Works & Government Services Canada
Project:	Geotechnical Investigation, Kouchibouguac North Road,
Project #:	0473564

**Moisture Content
and Density**

Borehole: 13	Date/Time Sampled: 15/07/15 3:27:56 PM	Mass of Cont. + Wet Soil, g:	766.00
Depth: 0.6-1.2m	Date/Time Tested: 15/07/15 3:27:56 PM	Mass of Cont. + Dry Soil, g:	695.00
Sample: 2		Mass of Container, g:	106.51
Description:		Moisture Content, %:	12.06
		Sample Length, mm:	
		Sample Diameter, mm:	
		Sample Mass, g:	
		Sample Volume, mm ³	
		Wet Density, kg/m ³	
		Dry Density, kg/m ³	
Borehole: 14	Date/Time Sampled: 15/07/15 3:27:56 PM	Mass of Cont. + Wet Soil, g:	814.30
Depth: 0.6-1.2m	Date/Time Tested: 15/07/15 3:27:56 PM	Mass of Cont. + Dry Soil, g:	696.70
Sample: 2		Mass of Container, g:	170.57
Description:		Moisture Content, %:	22.35
		Sample Length, mm:	
		Sample Diameter, mm:	
		Sample Mass, g:	
		Sample Volume, mm ³	
		Wet Density, kg/m ³	
		Dry Density, kg/m ³	
Borehole: 15	Date/Time Sampled: 15/07/15 3:27:56 PM	Mass of Cont. + Wet Soil, g:	1199.30
Depth: 1.2-1.8m	Date/Time Tested: 15/07/15 3:27:56 PM	Mass of Cont. + Dry Soil, g:	1111.30
Sample: 3		Mass of Container, g:	170.42
Description:		Moisture Content, %:	9.35
		Sample Length, mm:	
		Sample Diameter, mm:	
		Sample Mass, g:	
		Sample Volume, mm ³	
		Wet Density, kg/m ³	
		Dry Density, kg/m ³	



GEMTEC

CONSULTING ENGINEERS
AND SCIENTISTS

Client Public Works & Government Services Canada

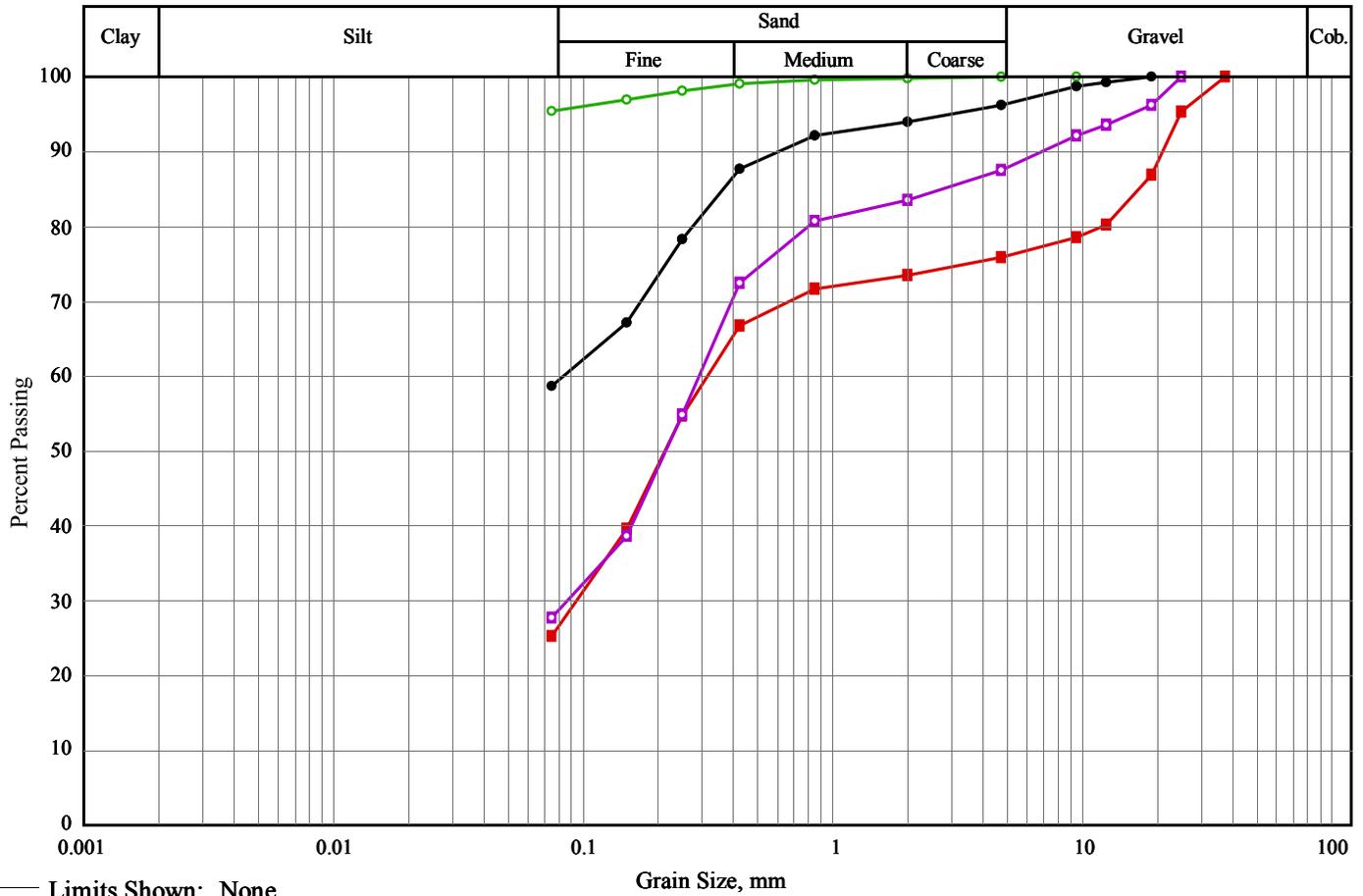
Project: Geotechnical Investigation, Kouchibouguac North Road,

Project #: 0473564

Moisture Content and Density

Borehole: 16	Date/Time Sampled: 15/07/15 3:27:56 PM	Mass of Cont. + Wet Soil, g:	959.20
Depth: 1.2-1.8m	Date/Time Tested: 15/07/15 3:27:56 PM	Mass of Cont. + Dry Soil, g:	834.30
Sample: 3		Mass of Container, g:	106.87
Description:		Moisture Content, %:	17.17
		Sample Length, mm:	
		Sample Diameter, mm:	
		Sample Mass, g:	
		Sample Volume, mm ³	
		Wet Density, kg/m ³	
		Dry Density, kg/m ³	
Borehole: 17	Date/Time Sampled: 15/07/15 3:27:56 PM	Mass of Cont. + Wet Soil, g:	1292.50
Depth: 1.8-2.4m	Date/Time Tested: 15/07/15 3:27:56 PM	Mass of Cont. + Dry Soil, g:	1149.40
Sample: 4		Mass of Container, g:	301.00
Description:		Moisture Content, %:	16.87
		Sample Length, mm:	
		Sample Diameter, mm:	
		Sample Mass, g:	
		Sample Volume, mm ³	
		Wet Density, kg/m ³	
		Dry Density, kg/m ³	

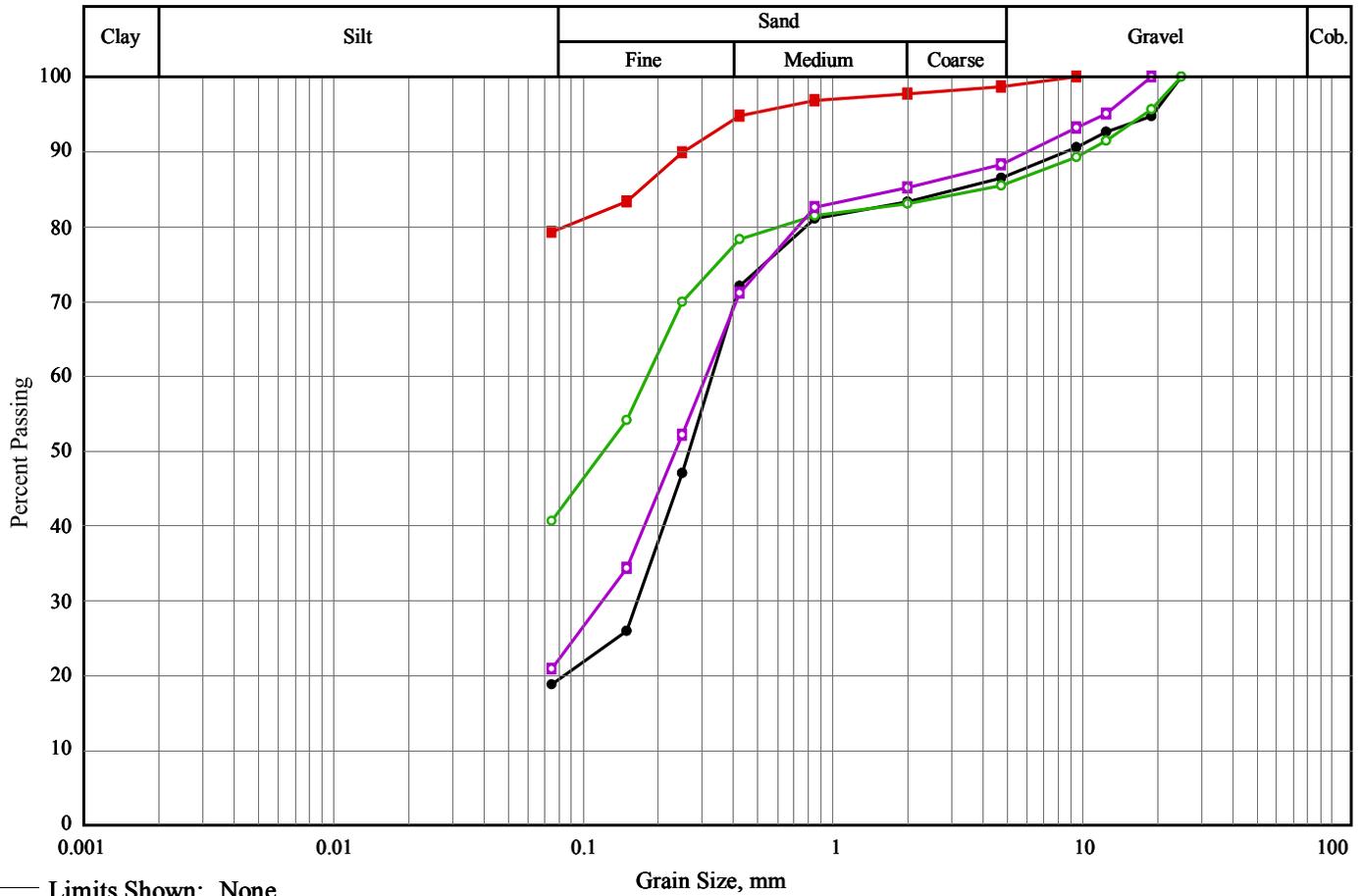
Appendix D
Soils Sieve Analyses



Limits Shown: None

Line Symbol	Description	Borehole/ Test Pit	Sample Number	Depth	% Cob.+ Gravel	% Sand	% Silt	% Clay	Date Sampled
—●—		1	2	0.6-1.2m	3.8	37.5	58.7		15/07/13
—■—		6	4	1.8-2.4m	24.1	50.6	25.2		15/07/13
—○—		4	3	1.2-1.8m	0.0	4.6	95.4		15/07/15
—□—		3	2	0.6-1.2m	12.5	59.8	27.7		15/07/15

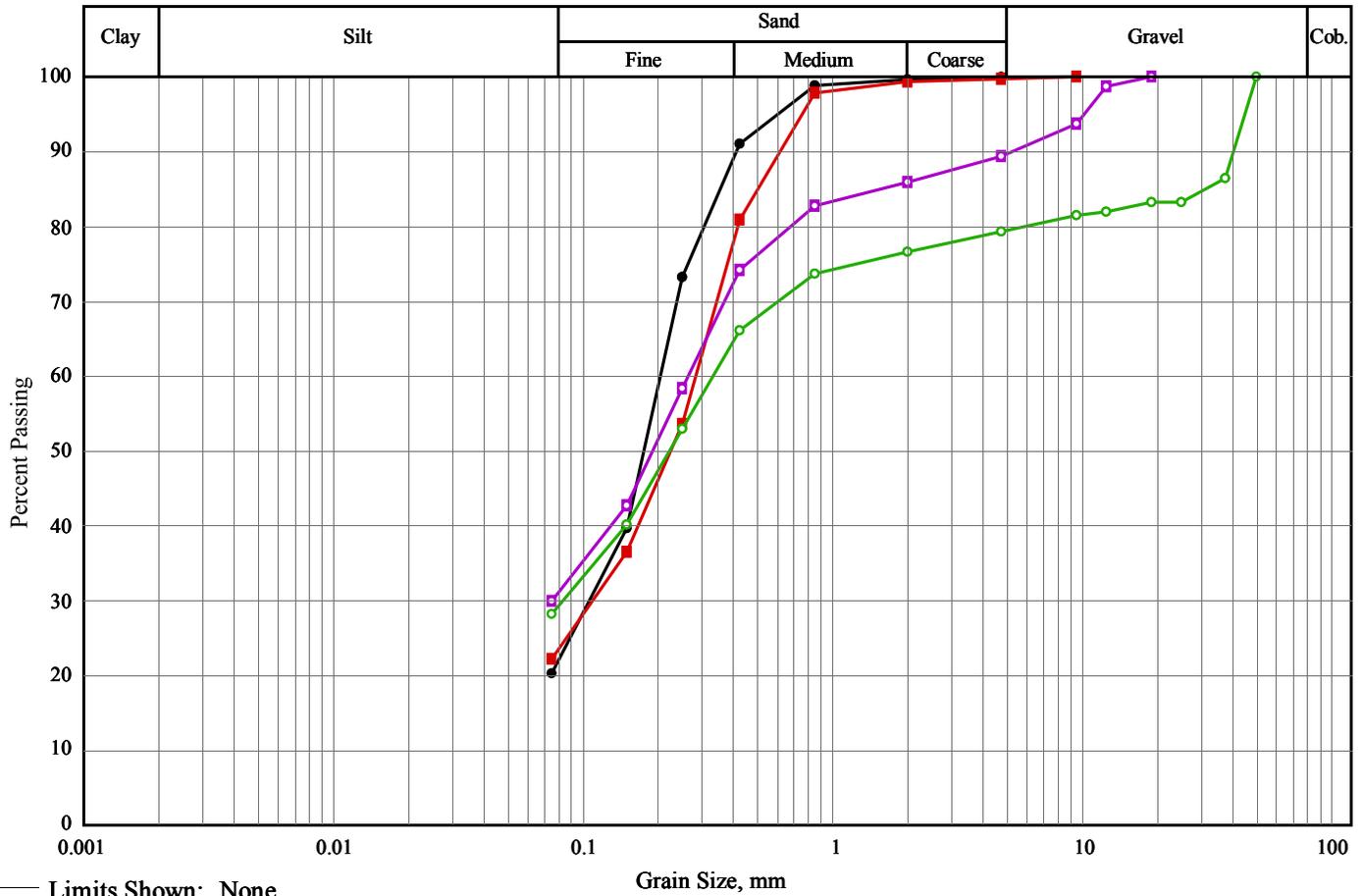
Line Symbol	Sample Description	AASHTO	D ₁₀	D ₁₅	D ₅₀	D ₈₅	% 5-75µm
—●—	Silt and sand , trace gravel	A-4 to A-7	---	---	---	0.37	---
—■—	Gravelly silty sand	A-2-4	---	---	0.21	16.90	---
—○—	Silt , trace gravel, trace sand	A-4 to A-7	---	---	---	---	---
—□—	Silty sand , some gravel	A-2-4	---	---	0.21	2.76	---



Limits Shown: None

Line Symbol	Description	Borehole/ Test Pit	Sample Number	Depth	% Cob.+ Gravel	% Sand	% Silt	% Clay	Date Sampled
—●—		2	2	0.6-1.2m	13.5	67.7	18.8		15/07/15
—■—		5	3	1.2-1.8m	1.3	19.4	79.2		15/07/15
—○—		11	3	1.2-1.8m	14.6	44.8	40.6		15/07/15
—□—		9	2	0.6-1.2m	11.7	67.4	20.9		15/07/15

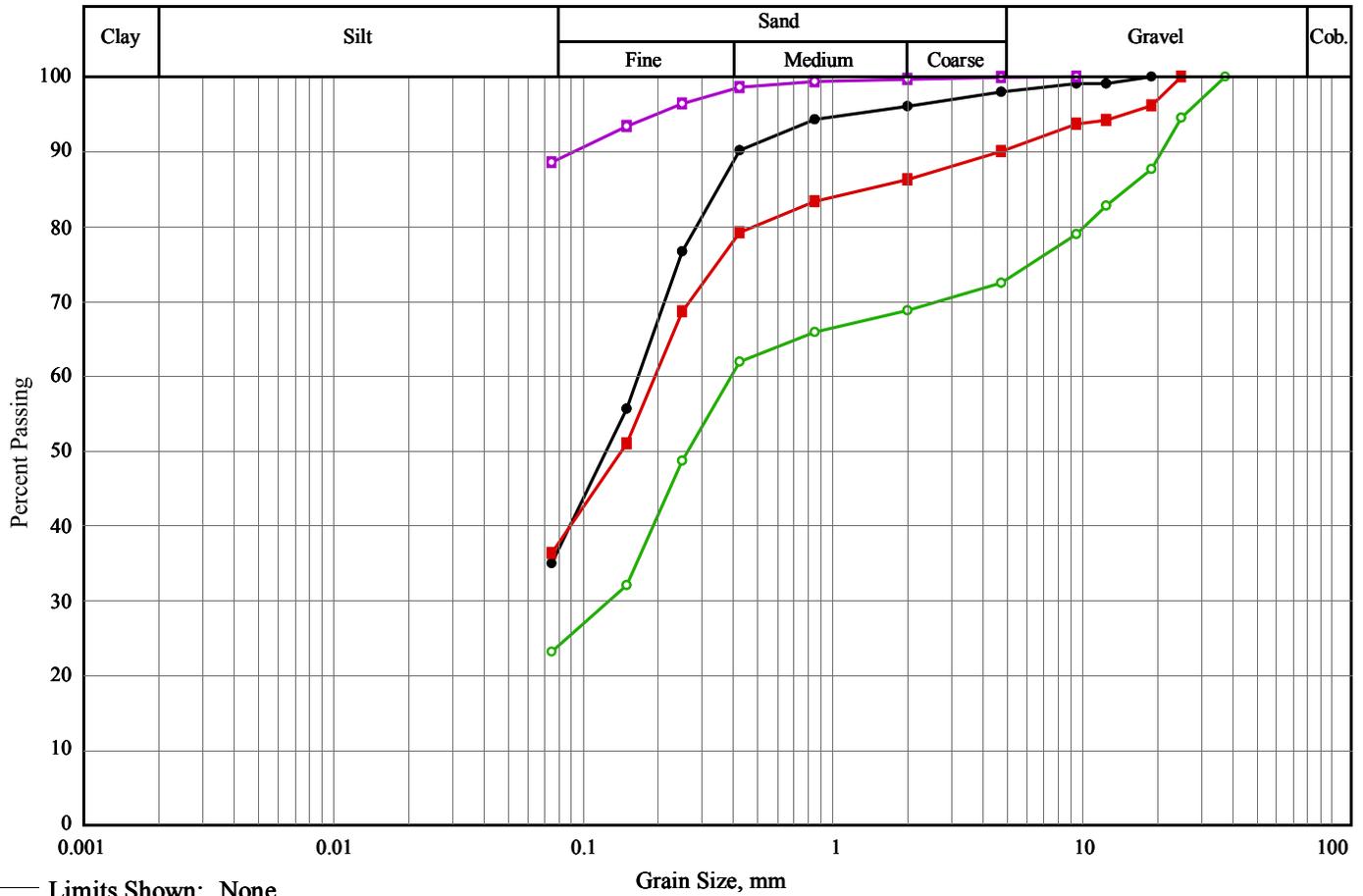
Line Symbol	Sample Description	AASHTO	D ₁₀	D ₁₅	D ₅₀	D ₈₅	% 5-75µm
—●—	Sand , some gravel, some silt	A-2-4	---	---	0.27	3.19	---
—■—	Silt , some sand , trace gravel	A-4 to A-7	---	---	---	0.17	---
—○—	Sand and silt , some gravel	A-4 to A-7	---	---	0.12	4.05	---
—□—	Silty sand , some gravel	A-2-4	---	---	0.24	1.89	---



Limits Shown: None

Line Symbol	Description	Borehole/ Test Pit	Sample Number	Depth	% Cob.+ Gravel	% Sand	% Silt	% Clay	Date Sampled
—●—		9	4	1.8-2.4m	0.1	79.7	20.3		15/07/15
—■—		9	3	1.2-1.8m	0.3	77.5	22.2		15/07/15
—○—		7	1	0.3-0.6m	20.7	51.1	28.2		15/07/15
—□—		8	2	0.6-1.2m	10.6	59.4	29.9		15/07/15

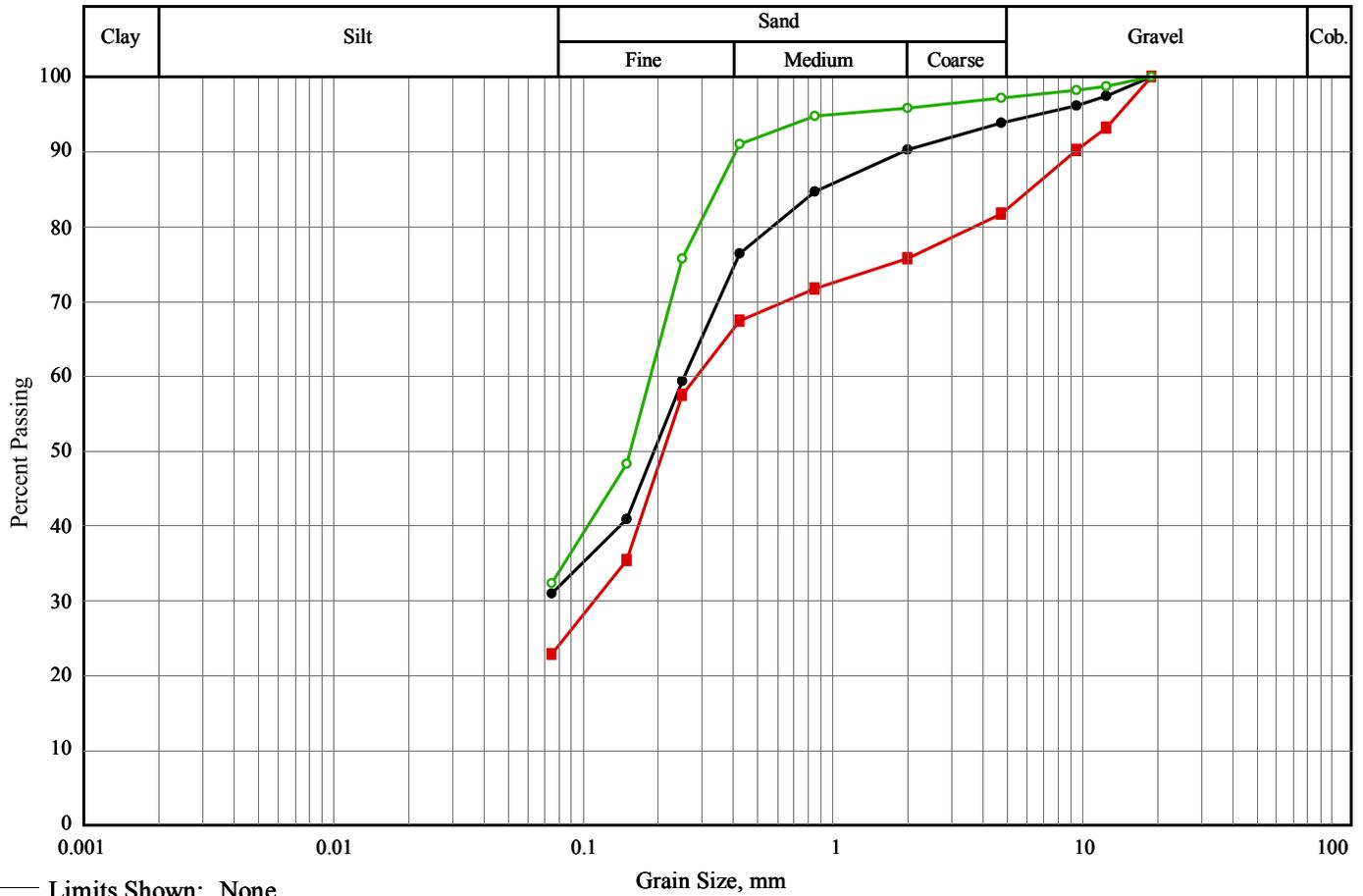
Line Symbol	Sample Description	AASHTO	D ₁₀	D ₁₅	D ₅₀	D ₈₅	% 5-75µm
—●—	Silty sand , trace gravel	A-2-4	---	---	0.18	0.36	---
—■—	Silty sand , trace gravel	A-2-4	---	---	0.22	0.50	---
—○—	Gravelly silty sand	A-2-4	---	---	0.22	31.30	---
—□—	Silty sand , some gravel	A-2-4	---	---	0.19	1.57	---



Limits Shown: None

Line Symbol	Description	Borehole/ Test Pit	Sample Number	Depth	% Cob.+ Gravel	% Sand	% Silt	% Clay	Date Sampled
—●—		10	3	1.2-1.8m	2.0	63.0	35.0		15/07/15
—■—		12	3	1.2-1.8m	10.0	53.7	36.3		15/07/15
—○—		15	3	1.2-1.8m	27.5	49.3	23.2		15/07/15
—□—		17	4	1.8-2.4m	0.1	11.4	88.6		15/07/15

Line Symbol	Sample Description	AASHTO	D ₁₀	D ₁₅	D ₅₀	D ₈₅	% 5-75µm
—●—	Silty sand , trace gravel	A-2-4	---	---	0.12	0.35	---
—■—	Sand and silt , trace gravel	A-4 to A-7	---	---	0.14	1.39	---
—○—	Gravelly silty sand	A-2-4	---	---	0.26	15.13	---
—□—	Silt , some sand , trace gravel	A-4 to A-7	---	---	---	---	---



Limits Shown: None

Line Symbol	Description	Borehole/ Test Pit	Sample Number	Depth	% Cob.+ Gravel	% Sand	% Silt	% Clay	Date Sampled
—●—		14	2	0.6-1.2m	6.2	62.9	30.9		15/07/15
—■—		13	2	0.6-1.2m	18.3	58.8	22.8		15/07/15
—○—		16	3	1.2-1.8m	2.8	64.9	32.3		15/07/15

Line Symbol	Sample Description	AASHTO	D ₁₀	D ₁₅	D ₅₀	D ₈₅	% 5-75µm
—●—	Silty sand , trace gravel	A-2-4	---	---	0.19	0.90	---
—■—	Silty sand , some gravel	A-2-4	---	---	0.21	6.23	---
—○—	Silty sand , trace gravel	A-2-4	---	---	0.15	0.35	---