

Hooksett Sewer Commission  
June 18, 2018  
Minutes

INITIAL	COMMENTS
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FK	

The meeting was called to order at 12:00pm. Present were Chairman Sidney Baines, Commissioner Frank Kotowski, Jeff Burd (University Heights), Superintendent Bruce Kudrick, John Clark, John Jackman, Don Winterton, Jeff Larabee, David Scarpetti, Alden Beauchemin, Dan Tatem, Rene Labranch and Kim Langlois

*It is with a heavy heart that we have to announce the passing of our beloved Commissioner Roger Bergeron on Monday June 11, 2018. He will be missed.*

**Approve and Sign Manifests**

**Approve minutes of June 4, 2018 meeting:** Commissioner Frank Kotowski made motion to accept the minutes as read, Chairman Sidney Baines seconded. The motion was carried unanimously.

**Read Correspondence**

**Financial Report:** None

**Scheduled Appointments:** 12:15pm Jeff Burd RE: University Heights  
1:00pm Stantec RE: Rte 3A Pump Station and River Crossing

**University Heights:** Jeff Burd from the University Heights project came in to touch base with the commission regarding the remaining phases of this project. Jeff showed the commissioner a set of plans with 12 lots that are going to be developed. There are 6 lots on Crawford and 6 lots on University circle, that are on schedule to be completed this year. There are 59 lots total, including the above mentioned 12 that can still be developed. Jeff came in to discuss how the board would like to proceed with this project. Chairman Sidney Baines voiced his concern with how long it is taking to complete the sewer portion of this project. Chairman Baines would like to see the sewer completed sooner rather than later. The University Heights project still owes the Sewer Commission for 8 lots that have been sewer completed. The commissioners would like the remaining 12 lots that are scheduled for completion this year paid for together not individually like in the past and they would like to have Jeff Burd take a bond out in the amount of \$25,000 to cover remainder of the project. It was mentioned to Jeff that after the twelve lots are completed, if they wish to go any further the remainder of the sewer needs to be completed. Commissioner Frank Kotowski made motion that the 12 lots due to be completed this year at University Heights be bonded in the amount of \$25,000, the 12 lots need to be paid for together and if any lots are done beyond the 12 lots then the whole sewer needs to be completed. Chairman Sidney Baines seconded. The motion was carried unanimously.

**Stantec:** Dan Tatem handed out the results of the boring test that was done for the Route 3A pump station and river crossing (see attached). No ledge or boulders were found but there is a lot of sand and other coarse media. The results were “pretty good, not horrible, not great.” Stantec has produced a list of nine contractors that they are going to contact regarding this project. It was discussed that they would ask for pricing from at least 6 of them and ask for bids to be in, in two weeks. The results of this will be discussed at the next commissioners meeting. Chairman Sidney Baines asked Jeff Larabee that if the two million that we are willing to spend on this project only gets us so far in connecting 3A to sewer how far is he willing to go. Jeff would like to have his hotel built and running by Memorial Day next year. He did not have a definitive answer and tossed around the idea of putting in a septic and waiting for the rest of the money to be raised elsewhere in order to connect to the sewer.

**Superintendent’s Report:** Bruce went out to SNHU last week and met with the President of SNHU and the contractor doing the work on the sewer lines at the school. There was an air leak in the sewer lines and it was discovered that one of the gaskets in the 10 inch main line had rolled and this is what was causing the line to fail the air test. To ensure the gasket was fixed properly it was decided upon to replace the whole pipe rather than just the effected section. This meant having to dig up 60 feet of pipe. Bruce was content with the schools decision.

Thursday June 21<sup>st</sup> the DES is coming out to meet with the sewer commission to go over the Energy Audit.

Saturday June 23<sup>rd</sup> Bruce is participating in the touch a truck day in Hooksett

John Clark from the plant will be handling the TV hookup in the commissioner’s office, this week the plant employees will be working on cleaning tanks 1 and 2.

Bruce told the commissioners that he spoke with Commissioner Roger Bergeron’s daughter at his services on Saturday and that he told her that we would help her in any way that we could with her father’s passing.

**Old Business:** None

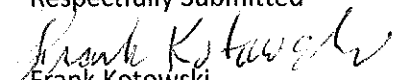
**New Business:** Chairman Sidney Baines and Commissioner Frank Kotowski made a decision on whom they would like to appoint as the new commissioner to fill Roger Bergeron’s place. They decided on Richard Bairam. Commissioner Frank Kotowski made motion to appoint Richard Bairam as the new commissioner, to fill Roger Bergeron’s place. Chairman Sidney Baines seconded. The motion was carried unanimously.

**Non Public Session:** None

**Public Input:** None

**Adjournment:** Commissioner Frank Kotowski made motion to adjourn at 1:41pm. Chairman Sidney Baines seconded. The motion was carried unanimously.

Respectfully Submitted

  
Frank Kotowski

Clerk

## Route 3A Pump Station HDD Design Phase

June 18, 2018

### Status

1. Soil boring program completed
2. HDD designer selected
3. HDD contractor list developed
4. Engineering design fees updated

### Soil Boring Memo

1. General descriptions of soils encountered
2. Depths of borings
3. Full Geotech report completed by end of July

### Survey

1. Detailed topographic survey for the HDD design only - completed by July 6<sup>th</sup>
2. Remainder of project area survey – completed by the end of July

### HDD Design

1. Process Pipeline Services selected for HDD design
2. Significant experience with similar designs
3. Design to include river and RR track crossings and temporary access on both sides of the river
4. Preliminary design by June 29<sup>th</sup>
5. Final HDD design completed a week after the survey is complete, by July 13<sup>th</sup>

### Easements

1. Develop easements for pump station, force main, and gravity sewer on Tri-Town, Pan Am, and NHDOT properties
2. Easement plan and written easements
3. Not included in original fee estimate

### Pan Am Railways

1. Immediately begin process to obtain permission/permit to work on the Pan Am property

2. HDD Contractor to provide RR protective insurance policy and execute permit

#### HDD Bidding Phase Services

1. Prepare basic front-end bid documents with HDD design
  - a. Bonds
  - b. Insurances
  - c. Pan Am requirements
2. Notify HDD Contractors of upcoming bid request
3. Send bid package to 8-10 HDD Contractors
4. 2-week bid period – Bid opening on July 26<sup>th</sup>
5. Award recommendation on July 30<sup>th</sup>

#### HDD Construction Phase Engineering Services

1. Work to start by August 20<sup>th</sup> (45 days)
2. Construction Administration
3. Construction Monitoring
4. As-built plans

#### Pump Station Design

1. Pump station design can begin immediately (does not need to follow HDD design)
2. Design to include PS, connections to FM and interceptor, and gravity sewer to Rte. 3A
3. Design and permitting estimated to take 120 days

#### HDD Design, Geotech & Bidding Services Cost

1. HDD design and specs - \$21,670
2. Preliminary and final Geotech report - \$6,182.80
3. Pan Am Coordination and permit - \$4,669.20
4. Bid services and award recommendation - \$5,728.72
5. Field Survey - \$13,200
6. Shoreland Permit and NHDES Coord - \$1,500
7. Total HDD design, Pan Am permitting, survey, and bidding services -  
**\$52,950.72**

Pump Station Design & Bidding Services Cost

8. Pump Station HDD design and specs - \$99,442.28

Items not included in the original design fee:

1. Temporary and permanent easements
2. Bidding Phase Services

Original design fee - \$222,393

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To:	Daniel Tatem Auburn, NH	From:	Trey Dykstra Auburn, NH
File:	195113295	Date:	June 18, 2018

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**Reference: Route 3A Pump Station and Merrimack River Crossing  
Hooksett, New Hampshire**

## PROJECT DESCRIPTION

As part of the Hooksett Sewer Commission's proposed expansion of the municipal sewer system along Route 3A in Hooksett, New Hampshire, a new pump station and river crossing is planned. The pump station will be located in the parking lot of the Tri-Town Ice Arena and will convey sewage from the west side of the Merrimack River, under the river and the Pan Am railroad tracks to an existing sewer interceptor on the east side of the river. The conceptual layout is shown on the attached plan. It is anticipated that the force mains between the pump station and the interceptor will consist of two 8-inch diameter HDPE pipes. We anticipate the force mains will be installed using the Horizontal Direction Drilling (HDD) method, below the Merrimack River. It is anticipated that the two lines will be installed in a single HDD operation. Below the railroad tracks the force mains must be installed in two separate HDD operations. Therefore, the HDD operation will be a two-step process, one will cross the Merrimack River and one will cross under the railroad tracks.

In support of the HDD design Stantec has recently conducted eleven test borings on the proposed alignment. The draft borehole logs are attached. Laboratory soil testing and survey will be conducted in the future. The ground surface presented on the attached profile should be considered approximate.

## EXPLORATION PROGRAM

The subsurface investigation program consisted of eleven test borings drilled by Geologic, Inc. between May 22 and May 29, 2018. The soil borings, designated B-1 through B-11, were observed and logged by a Stantec personnel. Soil samples at the boring locations were generally obtained at the ground surface and then at 5-foot intervals to the bottom of the boring. The borings were generally terminated at a depth of 40 feet below the ground surface. In an effort to locate bedrock, selected borings were continued without sampling to a maximum depth of 59 feet below the ground surface.

Soil samples were obtained by driving a 24-inch long, 2-inch outside diameter split spoon sampler with a 140-pound safety hammer falling 30 inches, in substantial accordance with ASTM D1586, the Standard Penetration Test (SPT). The blows for each 6-inches of penetration are recorded for a total of 24-inches. The sum of the blows required to drive the sampler from 6-inches to 18-inches penetration is referred to as the Standard Penetration Resistance, or N-value, which is an index of measure of in-situ soil density or consistency. For granular soils N values less than 4 are considered to very loose, between 4 and 10 loose; between 10 and 30 medium dense; between 30 and 50 dense; and greater than 50 very dense.

## SUBSURFACE CONDITIONS

The subsurface conditions encountered at the boring locations are presented on the attached draft borehole logs prepared by Stantec. In general, the soil conditions along the proposed HDD alignment consist of either fine sand with trace silt to some silt or coarse to medium sand with trace silt. Based on the N-values the soil consistency generally ranges from loose to medium dense, with some areas being very loose. The presence of cobbles was noted in two of the borings. Trace amounts of organics were noted in B-8 drilled in the eastern



June 18, 2018  
Daniel Tatem  
Page 2 of 2

**Reference:     Route 3A Pump Station and Merrimack River Crossing  
                  Hooksett, New Hampshire**

side of the river. Laboratory testing will consist of grain size distribution analysis and will be used to verify the field descriptions presented on the draft borehole logs. The laboratory test results will also be used to develop engineering parameters for the HDD analysis.

**PRELIMINARY CONCLUSIONS**

Based on a preliminary assessment of the subsurface conditions encountered in the test borings, it is feasible to install the proposed sewer lines using HDD. We anticipate the proposed HDD will be at least 25 feet below the river channel and will likely encounter deposits of sand for the entire length of the alignment. Isolated cobbles may also be encountered along the alignment. It is unlikely that bedrock will be encountered along the alignment.

**Stantec Consulting Services Inc.**

**Trey Dykstra, PE**  
Associate/Geotechnical Engineer

Phone: (603) 206-7552  
Fax:  
Trey.Dykstra@stantec.com

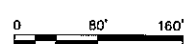
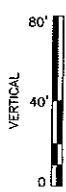
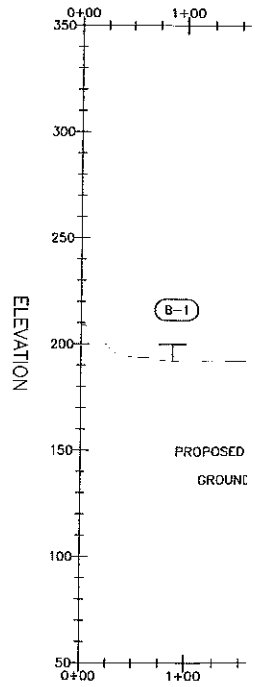
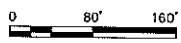
Attachment:     Draft Plan and Profile  
                  Draft Borehole Logs

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C  
B  
A



C:\Users\Nashua\OneDrive\Documents\Projects\195113295\195113295.dwg  
 10/11/2017 10:00:00 AM

ORIGINAL SHEET - ARCHIVED

**Stantec**  
 Stantec Consulting Services Inc.  
 400 Water Street, Suite 101  
 Andover, NH 03023-3984  
 Tel: (603) 469-8672  
 www.stantec.com

The Consultant shall not be responsible for any omissions, errors, or inaccuracies in this drawing. The Consultant shall not be responsible for any omissions, errors, or inaccuracies in this drawing. The Consultant shall not be responsible for any omissions, errors, or inaccuracies in this drawing.

Consultant

ISSUED

By: \_\_\_\_\_ Appd: YYY-MAJDB

Permit/Seal

**PRELIMINARY  
 NOT FOR  
 CONSTRUCTION**

Not for permits, pricing or other official purposes. This document has not been completed or checked and is for general information or comment only.

Client/Project  
 TOWN OF HOOKSETT, NEW HAMPSHIRE

ROUTE 3A SEWER PUMPING STATION

HOOKSETT, NH

Project No. 195113295

File Name: \_\_\_\_\_  
 Scale: AS NOTED

ENR	ID	3/18/2017
Dwn	Chkd	YYY-MAJDB

Title  
**CONCEPTUAL FORCE  
 MAIN LAYOUT**

Revision: \_\_\_\_\_ Sheet: 1 of 1

Drawing No. **G-001**

CLIENT Town of Hooksett Sewer Commission

PROJECT No. 195113295

LOCATION Merrimack River HDD, Hooksett, NH

EXPLORATION No. B-1

EXPLORATION DATE 5/29/2018 to 5/29/2018 WATER LEVEL \_\_\_\_\_

DATUM N/A

DEPTH (ft)	ELEVATION (ft)	MATERIAL DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES					PID Reading (PPM)	Undrained Shear Strength - tsf								
					TYPE	NUMBER	RECOVERY	SPT blows / 6"	SPT N-Value		1	2	3	4					
0	190.0																		
	189.7	3 inches of topsoil																	
		Loose, light brown fine sand, some silt			SS	1	10		4 4 4 4	8									
	188.0																		
	186.0	Loose, light brown fine sand, some silt																	
5					SS	2	6		4 4 4 4	8									
	184.0																		
	181.0	Loose, light brown fine sand, some silt, layer of coarse Brown sand below sample			SS	3	8		8 15 16 14	31									
10	179.0																		
	176.0	Medium dense light brown coarse sand, little silt			SS	4	4		22 11 7 6	18									
15	174.0																		
	171.0	Loose, light brown coarse sand, little silt																	
20																			

# DRAFT

Driller: Seaboard Drilling, CME 45 track mounted 140 lb auto hammer, drive and wash 4" casing;  
Supervisor: Robert Nothnagle

△ Unconfined Compression Test  
 □ Field Vane Test      ■ Remolded  
 ✕ Pocket Penetrometer / Torvane  
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STN13-SEC-VOC-B1 TO B11.GPJ JW NHP.GDT 6/7/18

CLIENT Town of Hooksett Sewer Commission  
 LOCATION Merrimack River HDD, Hooksett, NH  
 EXPLORATION DATE 5/29/2018 to 5/29/2018 WATER LEVEL \_\_\_\_\_

PROJECT No. 195113295  
 EXPLORATION No. B-1  
 DATUM N/A

DEPTH (ft)	ELEVATION (ft)	MATERIAL DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES					PID Reading (PPM)	Undrained Shear Strength - tsf				
					TYPE	NUMBER	RECOVERY	SPT blows / 6"	SPT N-Value		1	2	3	4	
20	169.0	Loose, light brown fine sand, little silt and fine gravel	[SS]	[ ]	SS	5	1	5	9	[ ]	●	[ ]	[ ]	[ ]	[ ]
25	164.0	Loose, light brown coarse sand, trace silt	[SS]	[ ]	SS	6	1	6	11	[ ]	●	[ ]	[ ]	[ ]	[ ]
30	159.0	Loose, light brown fine sand, trace silt, layer of gravel below sample	[SS]	[ ]	SS	7	12	5	12	[ ]	●	[ ]	[ ]	[ ]	[ ]
35	154.0	Loose, light brown fine to medium sand, trace silt	[SS]	[ ]	SS	8	6	4	11	[ ]	●	[ ]	[ ]	[ ]	[ ]
40	151.0							3			●	[ ]	[ ]	[ ]	[ ]
								4				[ ]	[ ]	[ ]	[ ]

# DRAFT

Driller: Seaboard Drilling, CME 45 track mounted 140 lb auto hammer, drive and wash 4" casing;  
 Supervisor: Robert Nothnagle

Unconfined Compression Test  
 Field Vane Test       Remolded  
 Pocket Penetrometer / Torvane  
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# BOREHOLE LOG

# B-2

CLIENT Town of Hooksett Sewer Commission  
 LOCATION Merrimack River HDD, Hooksett, NH  
 EXPLORATION DATE 5/29/2018 to 5/29/2018 WATER LEVEL \_\_\_\_\_

PROJECT No. 195113295  
 EXPLORATION No. B-2  
 DATUM N/A

DEPTH (ft)	ELEVATION (ft)	MATERIAL DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES					PID Reading (PPM)	Undrained Shear Strength - tsf							
					TYPE	NUMBER	RECOVERY	SPT blows / 6"	SPT N-Value		1	2	3	4				
0	190.0	4 inches of topsoil																
	189.7	Very loose, light brown fine sand, some silt			SS	1	24		2 3 2 3	5								
	188.0																	
	186.0	Loose, light brown fine sand, some silt			SS	2	12		3 4 6 8	10								
5	184.0																	
	181.0	Medium dense, dark brown coarse sand, little silt			SS	3	9		7 8 7 10	15								
10	179.0																	
	176.0	Loose, dark brown coarse sand, little silt, trace fine gravel			SS	4	6		3 2 3 3	5								
15	174.0																	
	171.0	Medium dense, light brown fine sand, little silt, 4" layer of red coarse sand							7 7									
20																		

# DRAFT

Driller: Seaboard Drilling, CME 45 track mounted 140 lb auto hammer, drive and wash 4" casing;  
 Supervisor: Robert Notnagle

△ Unconfined Compression Test  
 □ Field Vane Test      ■ Remolded  
 ✕ Pocket Penetrometer / Torvane  
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STN13-GEO-HOC 13295- B1 TO B11.GPJ JW NHP.GDT 6/7/18



# BOREHOLE LOG

# B-2

CLIENT Town of Hooksett Sewer Commission  
 LOCATION Merrimack River HDD, Hooksett, NH  
 EXPLORATION DATE 5/29/2018 to 5/29/2018 WATER LEVEL \_\_\_\_\_

PROJECT No. 195113295  
 EXPLORATION No. B-2  
 DATUM N/A

DEPTH (ft)	ELEVATION (ft)	MATERIAL DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES					PID Reading (PPM)	Undrained Shear Strength - tsf							
					TYPE	NUMBER	RECOVERY	SPT blows / 6"	SPT N-Value		1	2	3	4				
20	169.0				SS	5	14	in.	12	19								
									18									
	166.0	Medium dense, light brown fine to medium sand, little silt																
25	164.0				SS	6	12		8	15								
									6									
									9									
	161.0	No Recovery							9									
30	159.0				SS	7	0		3	9								
									4									
									5									
									5									
	156.0	Medium dense, light brown fine to medium sand, little silt																
35	154.0				SS	8	5		6	14								
									7									
									7									
									6									
	151.0	No Recovery																
40									2									
									5									

# DRAFT

Driller: Seaboard Drilling, CME 45 track mounted 140 lb auto hammer, drive and wash 4" casing;  
 Supervisor: Robert Nothnagle

△ Unconfined Compression Test  
 □ Field Vane Test      ■ Remolded  
 ✕ Pocket Penetrometer / Torvane  
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STN15-GEO-HVOC-13295-B1 TO B11.GPJ JW ANP.GDT 6/7/18



# BOREHOLE LOG

# B-2

CLIENT Town of Hooksett Sewer Commission

PROJECT No. 195113295

LOCATION Merrimack River HDD, Hooksett, NH

EXPLORATION No. B-2

EXPLORATION DATE 5/29/2018 to 5/29/2018 WATER LEVEL \_\_\_\_\_

DATUM N/A

DEPTH (ft)	ELEVATION (ft)	MATERIAL DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES					PID Reading (PPM)	Undrained Shear Strength - tsf								
					TYPE	NUMBER	RECOVERY	SPT blows / 6"	SPT N-Value		1	2	3	4					
40	149.0	Bottom of boring at 41 feet. No refusal			SS	9	0	5 7	10										
45																			
50																			
55																			
60																			

# DRAFT

Driller: Seaboard Drilling, CME 45 track mounted 140 lb auto hammer, drive and wash 4" casing;  
Supervisor: Robert Nothnagle

- △ Unconfined Compression Test
- Field Vane Test      ■ Remolded
- ✕ Pocket Penetrometer / Torvane

STN13-GEO-1VOC\_13295-B1 TO B11.GPJ JW NHP.GDT 8/7/18

CLIENT Town of Hooksett Sewer Commission  
 LOCATION Merrimack River HDD, Hooksett, NH  
 EXPLORATION DATE 5/22/2018 to 5/22/2018 WATER LEVEL \_\_\_\_\_

PROJECT No. 195113295  
 EXPLORATION No. B-3  
 DATUM N/A

DEPTH (ft)	ELEVATION (ft)	MATERIAL DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES					PID Reading (PPM)	Undrained Shear Strength - tsf							
					TYPE	NUMBER	RECOVERY	SPT blows / 6"	SPT N-Value		1	2	3	4				
0	167.9	No Recovery						in.										
	165.9	Very loose, dark brown fine sand, some silt, trace gravel			SS	1	0	WOH/24" 0										
	163.9	Medium dense, dark brown fine sand, some silt, trace gravel			SS	2	6	1 1 1 10	2									
5	161.9				SS	3	2	9 10 11 18	21									
	159.9	Medium dense, light brown fine sand, some silt			SS			9 8 11 12	19									
10	157.9																	
	154.9	Medium dense, light brown fine sand, some silt			SS	5	18	7 9 9 10	18									
15	152.9																	
	149.9	Medium dense, light brown fine sand, some silt			SS	6	18	6 6 7 10	13									
20	147.9																	

# DRAFT

Driller: Seaboard Drilling, CME 55 Skid mounted 140 lb doughnut hammer, drive and wash 4" casing;  
 Supervisor: Robert Nothnagle

- △ Unconfined Compression Test
- Field Vane Test    ■ Remolded
- ✕ Pocket Penetrometer / Torvane

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STN13-GEO-HVOC 13295- B1 TO B11.GPJ JW NHP.GDT 6/7/18





# BOREHOLE LOG

# B-3

CLIENT Town of Hooksett Sewer Commission  
 LOCATION Merrimack River HDD, Hooksett, NH  
 EXPLORATION DATE 5/22/2018 to 5/22/2018 WATER LEVEL \_\_\_\_\_

PROJECT No. 195113295  
 EXPLORATION No. B-3  
 DATUM N/A

DEPTH (ft)	ELEVATION (ft)	MATERIAL DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES					PID Reading (PPM)	Undrained Shear Strength - tsf								
					TYPE	NUMBER	RECOVERY	SPT blows / 6"	SPT N-Value		1	2	3	4					
20																			
	144.9	Medium dense, light brown fine sand, some silt			SS	7	16		9 16 18 13	34									
25	142.9																		
	139.9	Medium dense, light brown fine sand, some silt			SS				12 11 10 10	21									
30	137.9																		
	134.9	Medium dense, light brown fine sand, some silt			SS	9	12		6 7 8 10	15									
35	132.9																		
	129.9	Medium dense, light brown fine sand, some silt			SS	10	18		8 13 19 24	32									
40	127.9																		

DRAFT

Driller: Seaboard Drilling, CME 55 Skid mounted 140 lb doughnut hammer, drive and wash 4" casing;  
 Supervisor: Robert Nothnagle

Unconfined Compression Test  
 Field Vane Test     Remolded  
 Pocket Penetrometer / Torvane  
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STN:13-GEO-VOC 13295-81 TO 811.GPJ JW NHP.GDT 6/7/18



# BOREHOLE LOG

# B-3

CLIENT Town of Hooksett Sewer Commission

PROJECT No. 195113295

LOCATION Merrimack River HDD, Hooksett, NH

EXPLORATION No. B-3

EXPLORATION DATE 5/22/2018 to 5/22/2018 WATER LEVEL \_\_\_\_\_

DATUM N/A

DEPTH (ft)	ELEVATION (ft)	MATERIAL DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES					PID Reading (PPM)	Undrained Shear Strength - tsf								
					TYPE	NUMBER	RECOVERY	SPT blows / 6"	SPT N-Value		1	2	3	4					
40		Advanced roller bit as a probe from 40 to 59 feet.																	
45																			
50																			
55																			
60	108.9	Bottom of boring at 59 feet. No Refusal.																	
Driller: Seaboard Drilling, CME 55 Skid mounted 140 lb doughnut hammer, drive and wash 4" casing; Supervisor: Robert Nothnagle											△ Unconfined Compression Test □ Field Vane Test      ■ Remolded ✕ Pocket Penetrometer / Torvane								

# DRAFT

STN13-GEO-HVOC 13295- B1 TO B11.GPJ JW NHP.GDT 6/7/18



# BOREHOLE LOG

# B-4

CLIENT Town of Hooksett Sewer Commission

PROJECT No. 195113295

LOCATION Merrimack River HDD, Hooksett, NH

EXPLORATION No. B-4

EXPLORATION DATE 5/23/2018 to 5/23/2018 WATER LEVEL \_\_\_\_\_

DATUM N/A

DEPTH (ft)	ELEVATION (ft)	MATERIAL DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES					PID Reading (PPM)	Undrained Shear Strength - tsf								
					TYPE	NUMBER	RECOVERY	SPT blows / 6"	SPT N-Value		1	2	3	4					
0	162.7	No Recovery						in.											
	160.7				SS	1	0		6 3 2 4	5									
5	155.7	Medium dense, brown fine sand, trace silt			SS	2			8 11 12	20									
	153.7	Roller bit grinding from 9 to 12 feet, possible cobbles																	
10	150.7	Loose, grey fine sand, trace silt, layer of brown fine sand			SS	3	12		6 5 5 6	10									
15	145.7	Loose, grey fine sand, trace silt, layer of brown fine sand			SS	4	18		5 5 5 7	10									
	143.7																		
20																			

DRAFT

Driller: Seaboard Drilling, CME 55 Skid mounted 140 lb doughnut hammer, drive and wash 4" casing;  
Supervisor: Robert Nothnagle

- △ Unconfined Compression Test
  - Field Vane Test
  - Remolded
  - ✕ Pocket Penetrometer / Torvane
- Continued Next Page

STN13-GEO-VOC 13295- B1 TO B11.GPJ JW NHR.GDT 6/7/18



# BOREHOLE LOG

# B-4

CLIENT Town of Hooksett Sewer Commission

PROJECT No. 195113295

LOCATION Merrimack River HDD, Hooksett, NH

EXPLORATION No. B-4

EXPLORATION DATE 5/23/2018 to 5/23/2018 WATER LEVEL \_\_\_\_\_

DATUM N/A

DEPTH (ft)	ELEVATION (ft)	MATERIAL DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES					PID Reading (PPM)	Undrained Shear Strength - tsf			
					TYPE	NUMBER	RECOVERY	SPT blows / 6"	SPT N-value		1	2	3	4
20	140.7	Medium dense, light brown fine sand, trace silt			SS	5	14	6	11					
	138.7							6						
								5						
								5						
25	135.7	Medium dense, light brown fine sand, trace silt			SS	6		7	14					
	133.7							7						
								7						
								8						
30	130.7	Medium dense, light brown fine sand, trace silt			SS	7	14	7	13					
	128.7							7						
								6						
								5						
35	125.7	Medium dense, brown coarse sand layer above light brown fine sand, trace silt, layer of coarse brown sand			SS	8	24	7	20					
	123.7							8						
								12						
								13						
40		Bottom of boring at 39 feet. No refusal.												

DRAFT

Driller: Seaboard Drilling, CME 55 Skid mounted 140 lb doughnut hammer, drive and wash 4" casing;  
 Supervisor: Robert Nothnagle

- △ Unconfined Compression Test
- Field Vane Test
- Remolded
- ✱ Pocket Penetrometer / Torvane

STN13-GEO-VOC-13285-B1 TO B11.GPJ JW NHP.GDT 6/7/18



# BOREHOLE LOG

# B-5

CLIENT Town of Hooksett Sewer Commission  
 LOCATION Merrimack River HDD, Hooksett, NH  
 EXPLORATION DATE 5/23/2018 to 5/23/2018 WATER LEVEL \_\_\_\_\_

PROJECT No. 195113295  
 EXPLORATION No. B-5  
 DATUM N/A

DEPTH (ft)	ELEVATION (ft)	MATERIAL DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES					PID Reading (PPM)	Undrained Shear Strength - tsf							
					TYPE	NUMBER	RECOVERY	SPT blows / 6"	SPT N-Value		1	2	3	4				
0	162.7	No Recovery					in.											
	160.7				SS	1	0	WH	0									
	155.7	Loose, grey fine sand, trace silt			SS	2			10	10								
	153.7								5									
	150.7	Loose, grey fine sand, trace silt			SS	3	8		10	19								
	148.7								9									
	145.7	Medium dense, light brown fine sand, trace silt			SS	4	5		8									
	143.7								7									
20																		

# DRAFT

Driller: Seaboard Drilling, CME 55 Skid mounted 140 lb doughnut hammer, drive and wash 4" casing;  
 Supervisor: Robert Nothnagle

△ Unconfined Compression Test  
 □ Field Vane Test      ■ Remolded  
 ✕ Pocket Penetrometer / Torvane  
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STN13-GEO-LVCC 13285- B1 TO B11.GPJ JW NHP.GDT 6/7/18



# BOREHOLE LOG

# B-5

CLIENT Town of Hooksett Sewer Commission

PROJECT No. 195113295

LOCATION Merrimack River HDD, Hooksett, NH

EXPLORATION No. B-5

EXPLORATION DATE 5/23/2018 to 5/23/2018 WATER LEVEL \_\_\_\_\_

DATUM N/A

DEPTH (ft)	ELEVATION (ft)	MATERIAL DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES					PID Reading (PPM)	Undrained Shear Strength - tsf							
					TYPE	NUMBER	RECOVERY	SPT blows / 6" in.	SPT N-Value		1	2	3	4				
20	140.7	Medium dense, light brown fine sand, trace silt			SS	5	6	6 6 7 9	13									
25	135.7	Medium dense, light brown fine sand, trace silt			SS	6		8 11 13	21									
30	130.7	Medium dense, light brown fine sand, trace silt, layer of orange fine sand			SS	7	18	7 8 12 14	20									
35	125.7	Medium dense, light brown fine sand, trace silt			SS	8	18	10 11 9 9	20									
40	123.7	Advanced roller bit as a probe from 39 to 47 feet.																

# DRAFT

Driller: Seaboard Drilling, CME 55 Skid mounted 140 lb doughnut hammer, drive and wash 4" casing;  
 Supervisor: Robert Nothnagle

△ Unconfined Compression Test  
 □ Field Vane Test      ■ Remolded  
 ✕ Pocket Penetrometer / Torvane  
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STN13-GEO-VOC 13285- B1 TO B11.GPJ JW NHP.GDT 6/7/18





# BOREHOLE LOG

# B-6

CLIENT Town of Hooksett Sewer Commission  
 LOCATION Merrimack River HDD, Hooksett, NH  
 EXPLORATION DATE 5/24/2018 to 5/24/2018 WATER LEVEL \_\_\_\_\_

PROJECT No. 195113295  
 EXPLORATION No. B-6  
 DATUM N/A

DEPTH (ft)	ELEVATION (ft)	MATERIAL DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES					PID Reading (PPM)	Undrained Shear Strength - tsf							
					TYPE	NUMBER	RECOVERY	SPT blows / 6"	SPT N-Value		1	2	3	4				
0	165.7	Very loose, dark brown medium sand, trace silt																
	163.7				SS	1	5	WH	0									
5	159.7	Roller bit heavy grinding from 6 to 7 feet, possible cobbles																
	158.7	Very loose, dark brown medium to coarse sand, trace silt																
	156.7				SS	3	6		4									
	153.7	Loose, dark brown coarse sand with fine gravel, trace silt																
	152.7	Rock in tip of spoon																
	151.7	Roller bit heavy grinding from 13 to 17 feet, possible cobbles			SS	4	1		7									
15	148.7	Very loose, dark brown fine gravel																
	146.7	Roller bit heavy grinding from 19 to 21 feet, possible cobbles																
20																		

# DRAFT

Driller: Seaboard Drilling, CME 55 Skid mounted 140 lb doughnut hammer, drive and wash 4" casing;  
 Supervisor: Robert Nothnagle

Unconfined Compression Test  
 Field Vane Test       Remolded  
 Pocket Penetrometer / Torvane  
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STW15-GEO-LVOC 13295-B1 TO B11.GPJ JV NHP.GDT 6/7/18



CLIENT Town of Hooksett Sewer Commission  
 LOCATION Merrimack River HDD, Hooksett, NH  
 EXPLORATION DATE 5/24/2018 to 5/24/2018 WATER LEVEL \_\_\_\_\_

PROJECT No. 195113295  
 EXPLORATION No. B-6  
 DATUM N/A

DEPTH (ft)	ELEVATION (ft)	MATERIAL DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES					PID Reading (PPM)	Undrained Shear Strength - tsf			
					TYPE	NUMBER	RECOVERY	SPT blows / 6"	SPT N-Value		1	2	3	4
20					SS	5	1	2	4					
	143.7	Medium dense, light brown fine sand, trace silt												
	141.7													
25					SS	6	7	6	11					
	138.7	Medium dense, light brown fine sand, trace silt												
	136.7													
30					SS	7	8	10	25					
								12						
								13						
								7						
	133.7	Medium dense, light brown fine to medium sand, trace silt												
	131.7													
35					SS	8	20	11	22					
								8						
								14						
								19						
	128.7	Medium dense, light brown fine to medium sand, trace silt												
	126.7	Advanced roller bit as a probe from 39 to												
40								16						
								11						

# DRAFT

Driller: Seaboard Drilling, CME 55 Skid mounted 140 lb doughnut hammer, drive and wash 4" casing;  
 Supervisor: Robert Nothnagle

△ Unconfined Compression Test  
 □ Field Vane Test      ■ Remolded  
 ✕ Pocket Penetrometer / Torvane  
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STN13-GEO-LVOC 13295-B1 TO B11.GPJ JW NHP.GDT 6/7/18





# BOREHOLE LOG

# B-7

CLIENT Town of Hooksett Sewer Comission

PROJECT No. 195113295

LOCATION Merrimack River HDD, Hooksett, NH

EXPLORATION No. B-7

EXPLORATION DATE 5/24/2018 to 5/24/2018 WATER LEVEL \_\_\_\_\_

DATUM N/A

DEPTH (ft)	ELEVATION (ft)	MATERIAL DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES					PID Reading (PPM)	Undrained Shear Strength - tsf							
					TYPE	NUMBER	RECOVERY	SPT blows / 6"	SPT N-Value		1	2	3	4				
0	166.2	No recovery						in.										
	164.2					SS	1	0	WH	0								
	159.2	Medium dense, dark brown fine gravel and coarse sand				SS	2			12								
	157.2																	
	154.2	No recovery, drove second spoon. Medium dense, grey fine sand, trace silt				SS	3	2		14								
	152.2																	
	149.2	Loose, grey fine sand, trace silt and fine black particulate				SS	4	12		9								
	147.2																	
20		Driller: Seaboard Drilling, CME 55 Skid mounted 140 lb doughnut hammer, drive and wash 4" casing; Supervisor: Robert Nothnagle										△ Unconfined Compression Test □ Field Vane Test      ■ Remolded ✕ Pocket Penetrometer / Torvane						

# DRAFT

STN13-GEO-HVOC 13285- B1 TO B11.GPJ JW NHP.GDT 8/7/16

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CLIENT Town of Hooksett Sewer Commission  
 LOCATION Merrimack River HDD, Hooksett, NH  
 EXPLORATION DATE 5/24/2018 to 5/24/2018 WATER LEVEL \_\_\_\_\_

PROJECT No. 195113295  
 EXPLORATION No. B-7  
 DATUM N/A

DEPTH (ft)	ELEVATION (ft)	MATERIAL DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES					PID Reading (PPM)	Undrained Shear Strength - tsf							
					TYPE	NUMBER	RECOVERY	SPT blows / 6"	SPT N-Value		1	2	3	4				
20																		
	144.2	Medium dense, light brown fine sand, trace silt			SS	5	16		6 7 8 9	15								
	142.2																	
25																		
	139.2	Medium dense, light brown fine sand, trace silt			SS	6			8 9 10 11	21								
	137.2																	
30																		
	134.2	Dense, light brown coarse to medium sand, trace silt			SS	7	20		8 13 23 29	26								
	132.2																	
35																		
	129.2	Dense, light brown medium sand, trace silt			SS	8	24		19 20 26 25	46								
	127.2	Advanced roller bit as a probe from 39 to 45 feet.																
40																		

# DRAFT

Driller: Seaboard Drilling, CME 55 Skid mounted 140 lb doughnut hammer, drive and wash 4" casing;  
 Supervisor: Robert Nothnagle

Unconfined Compression Test  
 Field Vane Test       Remolded  
 Pocket Penetrometer / Torvane  
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STN15-GEO-LVCC-13295-B1 TO B11.GPJ JW.NHP.GDT 9/7/18





# BOREHOLE LOG

# B-8

CLIENT Town of Hooksett Sewer Comission  
 LOCATION Merrimack River HDD, Hooksett, NH  
 EXPLORATION DATE 5/24/2018 to 5/25/2018 WATER LEVEL \_\_\_\_\_

PROJECT No. 195113295  
 EXPLORATION No. B-8  
 DATUM N/A

DEPTH (ft)	ELEVATION (ft)	MATERIAL DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES					PID Reading (PPM)	Undrained Shear Strength - tsf											
					TYPE	NUMBER	RECOVERY	SPT blows / 6"	SPT N-Value		1	2	3	4								
0	172.2	Very loose, black fine sand trace silt			SS	1	8	WH	0		Water Content & Atterberg Limits $W_p$ $W$ $W_L$ Dynamic Penetration Test, blows/foot * Standard Penetration Test, blows/foot ●											
	170.2																					
10	162.2	Very loose, black fine sand trace silt			SS	3	12	WH-6"	2		10 20 30 40 50 60 70 80 90											
	160.2																					
15	157.2	Loose, grey fine sand, trace silt			SS	4	18		7													
	155.2																					
	152.2																					

# DRAFT

Driller: Seaboard Drilling, CME 55 Skid mounted 140 lb doughnut hammer, drive and wash 4" casing;  
 Supervisor: Robert Nothnagle

Unconfined Compression Test  
 Field Vane Test     Remolded  
 Pocket Penetrometer / Torvane  
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STN13-GEO-NOVOC 13285-B1 TO B11.GPJ JW NHP.GDT 6/7/18



# BOREHOLE LOG

# B-8

CLIENT Town of Hooksett Sewer Commission

PROJECT No. 195113295

LOCATION Merrimack River HDD, Hooksett, NH

EXPLORATION No. B-8

EXPLORATION DATE 5/24/2018 to 5/25/2018 WATER LEVEL \_\_\_\_\_

DATUM N/A

DEPTH (ft)	ELEVATION (ft)	MATERIAL DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES					PID Reading (PPM)	Undrained Shear Strength - tsf								
					TYPE	NUMBER	RECOVERY	SPT blows / 6"	SPT N-Value		1	2	3	4					
20								in.											
	150.2	Loose, grey fine sand, trace silt			SS	5	18		3 4 5 5	9									
	147.2																		
25																			
	145.2	Medium dense, grey fine sand, trace silt			SS	6	18		5 7 7 6	14									
	142.2																		
30																			
	140.2	Loose, grey fine sand, trace silt			SS	7	12		3 3 5 6	8									
	137.2																		
35																			
	135.2	Medium dense, grey fine sand, trace silt			SS	8	18		5 6 7 7	13									
	132.2																		
40																			

# DRAFT

Driller: Seaboard Drilling, CME 55 Skid mounted 140 lb doughnut hammer, drive and wash 4" casing;  
Supervisor: Robert Nothnagle

Unconfined Compression Test  
 Field Vane Test       Remolded  
 Pocket Penetrometer / Torvane  
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STN13-GEO-VOC 13295- B1 TO B11.GPJ-JW NHP.GDT 6/7/18











# BOREHOLE LOG

# B-9

CLIENT Town of Hooksett Sewer Commission  
 LOCATION Merrimack River HDD, Hooksett, NH  
 EXPLORATION DATE 5/21/2018 to 5/21/2018 WATER LEVEL \_\_\_\_\_

PROJECT No. 195113295  
 EXPLORATION No. B-9  
 DATUM N/A

DEPTH (ft)	ELEVATION (ft)	MATERIAL DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES					PID Reading (PPM)	Undrained Shear Strength - tsf										
					TYPE	NUMBER	RECOVERY	SPT blows / 6"	SPT N-value		1	2	3	4							
40	149.0	Advanced roler bit as a probe from 41 to 59 feet.			SS	7	is.	13 14													
45																					
50																					
55																					
60	131.0	Bottom of boring 59 feet. No refusal.																			
Driller: Seaboard Drilling, CME 45 track mounted 140 lb auto hammer, drive and wash 4" casing; Supervisor: Robert Nothnagle											△ Unconfined Compression Test □ Field Vane Test      ■ Remolded ✕ Pocket Penetrometer / Torvane										

# DRAFT

STN15-GEOL-VOC 13295-B1 TO B11.GPJ JW NHP.GDT 6/7/18



# BOREHOLE LOG

# B-10

CLIENT Town of Hooksett Sewer Commission  
 LOCATION Merrimack River HDD, Hooksett, NH  
 EXPLORATION DATE 5/21/2018 to 5/22/2018 WATER LEVEL \_\_\_\_\_

PROJECT No. 195113295  
 EXPLORATION No. B-10  
 DATUM N/A

DEPTH (ft)	ELEVATION (ft)	MATERIAL DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES					PID Reading (PPM)	Undrained Shear Strength - tsf							
					TYPE	NUMBER	RECOVERY	SPT blows / 6"	SPT N-Value		1	2	3	4				
0	190.0																	
	189.7	4 inches of topsoil																
		Very loose, brown fine sand, trace silt			SS	1	18		1 1 1 1	2								
	188.0																	
	186.0	Very loose, brown fine sand, trace silt																
5					SS	2	15		2 2 3 2	5								
	184.0																	
	181.0	Very loose, brown fine sand, trace silt																
10					SS	3	14		4 1 2 4	3								
	179.0																	
	176.0	Medium dense, light brown fine sand, trace silt, 5" layer red fine sand			SS	4	18		5 6 11 8	17								
15																		
	174.0																	
	171.0	Medium dense, light brown fine sand, trace silt																
20																		

# DRAFT

Driller: Seaboard Drilling, CME 45 track mounted 140 lb auto hammer, drive and wash 4" casing;  
 Supervisor: Robert Nothnagle, Brian Foley

Unconfined Compression Test  
 Field Vane Test     Remolded  
 Pocket Penetrometer / Torvane  
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STN13-GECH-VOC 13295-B1 TO B11.GPJ JW NHP\_GDT 6/7/18

CLIENT Town of Hooksett Sewer Commission  
 LOCATION Merrimack River HDD, Hooksett, NH  
 EXPLORATION DATE 5/21/2018 to 5/22/2018 WATER LEVEL \_\_\_\_\_

PROJECT No. 195113295  
 EXPLORATION No. B-10  
 DATUM N/A

DEPTH (ft)	ELEVATION (ft)	MATERIAL DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES					PID Reading (PPM)	Undrained Shear Strength - tsf							
					TYPE	NUMBER	RECOVERY	SPT blows / 6"	SPT N-Value		1	2	3	4				
20	169.0				SS	5	1	14	25									
25	164.0	Medium dense, grey fine sand, trace silt			SS	6	8	9 8 8 8	16									
30	159.0	Medium dense, light brown fine sand, trace silt			SS	7	13	14 9 10 10	19									
35	154.0	Medium dense, grey fine sand, trace silt			SS	8	12	8 6 8 6	14									
40	151.0	Medium dense, light brown fine sand, trace silt Rock in tip of spoon						17 16										

# DRAFT

Driller: Seaboard Drilling, CME 45 track mounted 140 lb auto hammer, drive and wash 4" casing;  
 Supervisor: Robert Nothnagle, Brian Foley

△ Unconfined Compression Test  
 □ Field Vane Test      ■ Remolded  
 ✕ Pocket Penetrometer / Torvane  
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STN13-GE0-I-VOC 13285- B1 TO B11.GPJ JW NHP.GDT 6/7/18



CLIENT Town of Hooksett Sewer Commission  
 LOCATION Merrimack River HDD, Hooksett, NH  
 EXPLORATION DATE 5/22/2018 to 5/22/2018 WATER LEVEL \_\_\_\_\_

PROJECT No. 195113295  
 EXPLORATION No. B-11  
 DATUM N/A

DEPTH (ft)	ELEVATION (ft)	MATERIAL DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES					PID Reading (PPM)	Undrained Shear Strength - tsf				
					TYPE	NUMBER	RECOVERY	SPT blows / 6"	SPT N-Value		1	2	3	4	
0	190.0	Very loose, brown fine sand, trace silt			SS	1	24	in.	WP 2 1 2	3	●	Water Content & Atterberg Limits Wp ○ W WL			
	188.0														
5	186.0	Loose, light brown fine sand, trace silt			SS	2	17		3 2 3 5	5	●	Dynamic Penetration Test, blows/foot ★			
	184.0														
10	181.0	Medium dense, light brown fine sand, trace silt			SS	3	0		10 10 10	22	●	Standard Penetration Test, blows/foot ●			
	179.0														
15	176.0	No Recovery			SS	4	0		6 10 10 11	20	●	10 20 30 40 50 60 70 80 90			
	174.0														
20	171.0	Medium dense, light brown fine sand							5 5		●				

# DRAFT

Driller: Seaboard Drilling, CME 45 track mounted 140 lb auto hammer, drive and wash 4" casing;  
 Supervisor: Brian Foley

- △ Unconfined Compression Test
- Field Vane Test      ■ Remolded
- ✕ Pocket Penetrometer / Torvane

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# BOREHOLE LOG

# B-11

CLIENT Town of Hooksett Sewer CommissionPROJECT No. 195113295LOCATION Merrimack River HDD, Hooksett, NHEXPLORATION No. B-11EXPLORATION DATE 5/22/2018 to 5/22/2018 WATER LEVEL \_\_\_\_\_DATUM N/A

DEPTH (ft)	ELEVATION (ft)	MATERIAL DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES					PID Reading (PPM)	Undrained Shear Strength - tsf								
					TYPE	NUMBER	RECOVERY	SPT blows / 6"	SPT N-value		1	2	3	4					
20	169.0	Medium dense, light brown fine sand, 1/2" Clay layer			SS	5	12	in.	9	14									
									10										
25	164.0	Medium dense, light brown fine sand, 1/2" Clay layer			SS	6	14		8 9 11	20									
									WH										
30	159.0	No Recovery			SS	7	0		9 8 13	21									
									9										
35	154.0	Medium dense, brown fine sand, trace silt, silt lenses			SS	8	17		9 8 11	19									
									13										
40	151.0	Medium dense, brown fine sand, trace silt, some red sand layering							6										
									6										

# DRAFT

Driller: Seaboard Drilling, CME 45 track mounted 140 lb auto hammer, drive and wash 4" casing;  
 Supervisor: Brian Foley

- △ Unconfined Compression Test
  - Field Vane Test
  - Remolded
  - ✕ Pocket Penetrometer / Torvane
- Continued Next Page

STM13-GE0-1-VCC 13295- B1 TO B11.GPJ JW NHP.GDT 6/7/18





# BOREHOLE LOG

# B-11

CLIENT Town of Hooksett Sewer Commission  
 LOCATION Merrimack River HDD, Hooksett, NH  
 EXPLORATION DATE 5/22/2018 to 5/22/2018 WATER LEVEL \_\_\_\_\_

PROJECT No. 195113295  
 EXPLORATION No. B-11  
 DATUM N/A

DEPTH (ft)	ELEVATION (ft)	MATERIAL DESCRIPTION	STRATA PLOT	WATER LEVEL	SAMPLES					PID Reading (PPM)	Undrained Shear Strength - tsf										
					TYPE	NUMBER	RECOVERY	SPT blows / 6"	SPT N-Value		1	2	3	4							
40	149.0	Advanced roller bit as a probe 41 to 59 feet			SS	9	17	8 8	14												
45																					
50																					
55																					
60	131.0	Bottom of boring at 59 feet. No refusal																			
Driller: Seaboard Drilling, CME 45 track mounted 140 lb auto hammer, drive and wash 4" casing; Supervisor: Brian Foley											△ Unconfined Compression Test □ Field Vane Test      ■ Remolded ✕ Pocket Penetrometer / Torvane										

# DRAFT