GEOTECHNICAL ENGINEERING STUDY LOT C

for

Hudson Logistics Center Hudson, New Hampshire

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EXECUTIVE SUMMARY

Langan Project No. 151010101

In support of the proposed industrial park development in Hudson, New Hampshire, Langan conducted a geotechnical subsurface exploration and prepared a geotechnical engineering study to provide geotechnical design and construction recommendations. Specifically, this report addresses Lot C within the overall development. The remaining two lots (Lots A and B) are addressed in separate reports.

Existing grades on the 111 acre lot generally slope down from the southwest to the east (about el +175 to +125). The design concept includes the construction of a distribution warehouse having a footprint of about 530,000 square feet (sf) and a proposed finished floor elevation (FFE) of about el +149. Proposed site grades generally range from about el +125 to +175. The remaining development includes new access roads, parking areas, loading docks, utilities, and stormwater features.

At this time, the site grading has not been finalized. As such, the recommendations provided here are subject to change when the revised site grading is complete. If the grading approach changes, a revised geotechnical engineering report may be required as the grading affects our recommendations.

Our subsurface exploration was performed between June and July, 2020 and consisted of borings (60), test pits (31), observation wells (4), laboratory testing, and infiltration tests (2).

The general subsurface conditions across the entire lot consisted of a surficial layer of topsoil (about 2 to 24 inches thick), underlain by discontinuous layers of fill (about 1 to 3 feet thick), sand/silt (about 1 to up to 24 feet thick), glacial till (about 2 to up to 23 feet thick), and bedrock (top of about el +108 to +143). Groundwater was encountered or observed across the site (about el +120 to +151). Within the proposed building footprint, bedrock was encountered from about el +108 to +151 and groundwater was encountered or observed from about el +125 to +149.

The proposed warehouse building can be supported on a conventional shallow foundation system using an allowable bearing pressure of 3,000 pounds per square foot (psf) bearing on the natural sand/silt, glacial till, bedrock, or compacted structural fill. Total and differential settlements are estimated to be 1 inch and ½ inch or less, respectively. The proposed slab areas can be constructed as conventional slab-on-grade bearing on the natural sands, glacial till, or proof-rolled existing fill.

Site Class D and Seismic Design Category B may be used in design.



The following design and construction premiums were identified:

- The natural sand is generally poorly graded and both the sand and glacial till materials have a fines contents ranging from 4% to 23%. Mixing the sand and glacial till with a more granular material may be required such that the materials are well graded to meet the specifications for structural fill and so that the material are not as sensitive to moisture.
- Groundwater was encountered across the site from about 4 to 20 feet below grade (about el +120 to +151).
 - o Temporary groundwater dewatering will be required throughout construction where excavations extend to below groundwater.
 - o Groundwater was encountered within 4 feet and above proposed select paved areas. Permanent dewatering (underdrains) will be required at the western side of the lot for up to 250,000 square feet of paved areas.
 - o Groundwater was encountered one foot below the proposed slab elevation for the building. Permanent dewatering (sub-slab underdrains) will be required for up to 10,000 square feet of the building area.
- Bedrock was encountered across the site from about 12 to 36 feet below grade (about el +108 to +151).
 - Bedrock was encountered in one test pit within the proposed building in the asphalt paved areas. If bedrock is encountered within the building, rock removal will be required.
 - o Rock removal will be required for site areas to the west.
- Select wetlands are proposed for filling as part of the development. All unsuitable materials (i.e. water, organic materials, etc.) must be removed prior to filling. Dewatering activities should be expected in these areas.
- The foundations for the proposed water towers have not been designed yet as they are a delegated design. Ground improvement may be required for the water towers; however this should be determined by the water tower design engineer of record.
- Topsoil will need to be segregated, as it is not suitable for re-use beneath structural areas (pavements, buildings, retaining walls, etc.). Topsoil may be re-used in landscaped areas, pending approval.



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INTRODUCTION

This report presents our geotechnical engineering study for the proposed industrial park development in Hudson, New Hampshire. Specifically, this report addresses Lot C within the overall development. The remaining two lots (Lots A and B) are addressed in separate reports.

The purposes of this study were to explore subsurface conditions, evaluate feasible foundation options, and develop geotechnical engineering recommendations. Services were performed in accordance with our authorized proposal (19 September 2019 and revised 1 July 2020).

Our approach and recommendations were developed considering the following plans, design criteria, preliminary loads, and design bulletin. Any changes to the design scheme must be reviewed by Langan for effects on our recommendations.

- Site development plans prepared by Langan (August 2020 progress print).
- "Design Criteria and Outline Specification for the Development of 2019-2020 NA Traditional Non-Sort Facility, Version 7.0" prepared by Ford & Associates Architects, Inc. (10 September 2019).
- Column Loading Map prepared by HSA & Associates, Inc. (received 20 July 2020).
- Design bulletin DB-0088 NACF Pavement Design Criteria and Guidelines (3 March 2020).

At this time, the site grading is still progressing. As such, the recommendations provided here are subject to change with the revised site grading.

Elevations are referenced from a "Topographic Subdivision Plan, Hudson Logistics Center" (21 April 2020) prepared by Hayner/Swanson, Inc. referencing the National Geodetic Vertical Datum of 1929 (NGVD29).

SITE DESCRIPTION

Overall

The overall about 320-acre site is occupied by the Green Meadow Golf Club at 59 Steele Road in Hudson, New Hampshire. The site is bounded by Sagamore Bridge Road to the north, commercial properties, streams/wetlands and New Hampshire Route 3A to the east, residential neighborhoods to the south along Fairway and Eagle Drives, and the Merrimack River to the west. Figure 1 shows the site location and surrounding properties.

The golf club consists of a 39-hole golf course including wooded areas, open fairways, water features, and sand traps. Structures include a two-story clubhouse, one-story maintenance



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building, and pump houses. Grades generally slope up from the east to the center of the site and slope down from the center to the west towards the Merrimack River.

Multiple utilities run throughout the site to support the existing golf course (irrigation, electric, stormwater, etc.).

Lot C

Lot C is about 111 acres and is located on the southeast part of the overall site. Site grades generally slope down from the southwest to east (about el +175 to +125). High points (between about el +160 and +175) exist in the southwestern part of the lot. Elevations typically vary in the north part of the lot between about el +135 and +150, and at the center and south parts of the lot between about el +145 and +160. Low areas exist along the eastern part of the lot (about el +125 to +135). Wetlands exists along the western part of the site with grades typically below about el +125.

PROPOSED DEVELOPMENT

Overall

The overall proposed development will include demolition of the existing club golf course and ancillary structures, and the construction of three distribution warehouses on separate lots. No basement levels are proposed. Each proposed warehouse will have associated parking stalls, loading docks, access roads, landscaped areas, and stormwater basins. Additionally, one aboveground water tank is proposed for each lot (to be designed by others).

Several fill retaining walls up to about 10 feet high are proposed throughout the overall site.

Two new access roadways are proposed (Walmart Boulevard to the north and Green Meadow Drive to the south) to connect the three lots to Route 3A to the east. Walmart Boulevard will extend towards Route 3A from the northeast corner of Lot A and Green Meadow Drive will extend towards Route 3A from the east between Lots A and C. The roadways will traverse the existing wetlands and streams using a pipe culvert.

A boat ramp is being contemplated at the Merrimack River adjacent to Lot B. Explorations and associated recommendations for this area and the boat ramp are beyond the scope of this study.



Lot C

Though the building has not been engineered at this time per the structural engineer, the structural engineer had provided the general proposal building information here. Table 1 details the proposed building information. No internal mezzanine areas are proposed.

Proposed grades vary between about el +125 to +175. The proposed FFE is about el +149 with an about 4 foot drop to adjacent grades at the loading docks to the west, where the pavement grades generally slope away from the building. Pavement areas vary between about el +132 and +147. Proposed infiltration basins are located at the north, east and west of the lot (about el +128 to +143). A proposed soil berm to the south varies between about el +125 and +175. The proposed roadway runs along the eastern part of the lot and typically varies between about el +132 and +140.

Table 1. Proposed Site Development

Proposed Building		Estimated Grades Within the Proposed Building Footprint		Proposed Structural Loads		
Stories (#)	Footprint (SF)	Existing	Proposed FFE	Resulting Cuts/Fills (ft)	Building Column (kips)	Wall Loads (kips/foot)
One	530,000	el +133 to +169	el +149	Cut =19 Fill = 16	190 to 220	9 to 11

REVIEW OF AVAILABLE INFORMATION

Regional Geology

The surficial geology map from the United States Department of Agriculture (Figure 2) indicates the overburden is loamy sand. The bedrock geology map from the United State Geologic Survey (Figure 3) indicates the bedrock below the site is granofels.

Federal Emergency Management Agency Flood Map

We reviewed the Flood Insurance Rate Map (FIRM) for the town of Hudson, New Hampshire, published by the Federal Emergency Management Agency (FEMA), Map No. 33011C0656D and 33011C0658D effective 25 September 2009 (Figure 4). Table 2 gives a summary of the findings.



Table 2. Flood Mapping

Flood Mapping ^{1,2}				
Building Area Site and Roadway Areas				
Zone X (not shaded)	Eastern Edge: Zone X (not shaded) & Zone A			

Available Historic Information

We reviewed historic topographic maps (1893 to 2012) and aerial photographs (1938 to 2016) for the overall site. Historic information provided in Appendix A.

<u>Pre-1893</u> – The site is shown as undeveloped with an unnamed stream running through the southeast part of the site. The surrounding areas also appear to be undeveloped.

<u>Late 1910s to 1920s</u> – The site is shown as mostly undeveloped, with unidentified structures and an access road in the eastern part of the site.

<u>1930s to 1950s</u> – The unknown structures from the late 1910s and 1920s are no longer shown on the topographic maps. Parts of the southeast and northern areas of the site are developed as agricultural fields with associated structures and access roads.

<u>Early 1960s to Present</u> – The site is developed as a golf course with a residential building in the east. Site development features include a clubhouse, maintenance building, access roads, asphalt-paved parking, and water features. Topographic maps show existing gravel pits in the western part of the site from 1965 through 1987. Aerial maps show similar gravel pits to the west and northwest of the maintenance building from 1963 through 1995. The site has remained similar to its current state since about 1965.

Available Geotechnical Report

We have reviewed a geotechnical engineering report titled "Preliminary Geotechnical Engineering Study" prepared by GZA GeoEnvironmental, Inc. (May 2006). Relevant information is attached in Appendix B. The report includes 21 borings, 22 test pits, and 3 field permeability tests performed around the site. Identified design and construction premiums for the overall site included shallow groundwater reported to the west, shallow refusal on bedrock reported to the north, and potentially liquefiable soils reported to the east.

¹ Zone X (not shaded), "areas of minimal flood hazard" (i.e. outside the 500-year flood)

² Zone A, "1% annual chance flood, base flood elevations determined," (i.e. 100-year flood)

SUBSURFACE EXPLORATION

Langan performed a subsurface exploration consisting of borings, observation wells, test pits, and infiltration tests throughout the proposed development area. All work was overseen by a Langan field engineer. An exploration location plan is shown in Figure 5.

Borings

Standard Penetration Test (SPT) N-values³ were documented and soil samples were generally obtained continuously to a depth of 12 feet and every 5 feet thereafter. Disturbed soil samples were obtained using a standard 2-inch-outer-diameter split-spoon sampler driven by a 140-pound automatic or safety hammer in accordance with ASTM D1586, Standard Penetration Test. See Tables 3 and 4 for additional information regarding the boring program.

Recovered soil samples were visually examined and classified in the field in general accordance with the Unified Soil Classification System (USCS). Soil classifications, N-values, and other field observations were recorded on our field logs provided in Appendix C.

Bedrock was cored in selected borings using a 2-1/s-inch NQ core barrel. The core barrel was equipped with a diamond cutting bit in accordance with ASTM D2113, Rock Core Drilling. Rock type, percent recovery (REC)⁴ and Rock Quality Designation (RQD)⁵ were determined for each the core run.

Table 3. Summary of Boring Subcontractors

Date Range	Drilling Companies	Drilling Equipment	
	SoilTesting, Inc.	CME 550X ATV Rig, CME55 Truck-	
		mounted Rig, Deidrich D50 Steel Track Rig	
1 June to	Seaboard Geotechnical &	Diedrich D50 Track Rig, Mobile Drill B52	
2 July, 2020*	Environmental Drilling Services	Truck-mounted Rig	
	Atlantic Testing Laboratories	CME75 Track Rig, (2) Geoprobe 7720DT	
	Limited	CiviE75 Hack hig, (2) deoptobe 7720D1	

^{*}Dates reflect duration of the overall exploration program (i.e. Lots A, B, and C)

⁵ The RQD is defined as the ratio of the summation of each rock piece greater than 4 inches long (for NX cores) to total core run length, expressed as a percent.



³ The Standard Penetration Test (SPT) is an in situ testing technique used to infer soil density and consistency. The SPT N-value is defined as the number of blows required to drive a 2-inch-diameter split-barrel sampler 12 inches after an initial penetration of 6-inches using a 140-pound hammer falling freely from 30 inches.

⁴ Rock Core Recovery (REC) is defined as the ratio of the total length of rock recovered to the total core run length, expressed as a percent.

Table 4. Summary of Borings

Total (#)	Subtotal (#)	Boring Locations	Boring ID's	Depth Range (ft)	Elevation Range (Bottom of Boring)
	30	Proposed Building Areas	C-B-BOR-01, C-B-BOR-01A, C-B-BOR-02 to C-B-BOR-29	14 to 34	el +140 to +108
60	6	Proposed Roadway Areas	C-R-BOR-01 to C-R-BOR-04, C-R-BOR-06, C-R-BOR-06A	17 to 22	el +117 to +107
	24	Proposed Site Areas	C-S-BOR-01 to C-S-BOR-24	13 to 22	el +153 to +110

Test Pits

Test pit were excavated throughout the site to further observe the subsurface soils and to perform infiltration testing. See Tables 5 and 6 for additional information regarding the exploration program. Test Pit logs are provided in Appendix D, and photographs are provided in Appendix E.

Table 5. Summary of Test Pit Subcontractor

Date Range	Test Pit Company	Test Pit Equipment	
29 May to 30 June, 2020*	Polster Industries, LLC	CAT 304E, CAT 305E, Takeuchi TB260	

^{*}Dates reflect duration of the overall exploration program (i.e. Lots A, B, and C)

Table 6. Summary of Test Pits

Total (#)	Subtotal (#)	Test Pit Locations	Test Pit ID's	Depth Range (ft)	Elevation Range (Bottom of Test Pit)
	14	Proposed Building Areas	C-B-TP-01 to C-B-TP-10, C-B-TP-10A, C-B-TP-10B, C-B-TP-11 to C-B-TP-12	4 to 9	el +128 to +155
31	3	Proposed Roadway Areas	C-R-TP-01 to C-R-TP-03	7 to 8	el +123 to +124
	14	Proposed Site Areas	C-S-TP-01 to C-S-TP-08, C-S-TP-11, C-S-TP-13 to C-S-TP-17	5 to 8	el +120 to +157

Groundwater Observation Wells

Groundwater observation wells were installed throughout the site. See Table 7 for a summary of observation wells installed. Well construction logs are provided in Appendix F.

Table 7. Summary of Observation Wells

Total (#)	ID	Depth (ft)	Bottom of Observation Well Elevation
	C-B-BOR-02(OW)	10	el +122
4	C-B-BOR-16(OW)	25	el +133
4	C-B-BOR-20(OW)	20	el + 137
	C-S-BOR-04(OW)	10	el +121

Lab Testing

Selected samples were sent to a testing laboratory to confirm visual classifications and to determine index properties (physical and mechanical). Testing for chlorides and sulfates was performed at the structural engineer's request. See Table 8 for a summary of the completed laboratory tests. Laboratory results are provided in Appendix G.



Table 8. Laboratory Testing Summary

Test Description	ASTM Standard	Quantity
Grain Size	ASTM D-6913	9
Moisture	ASTM D-2216	12
Percent Passing No. 200	ASTM D-1140	1
Organic Matter	ASTM D2974	1
Chlorides	ASTM D-512	2
Sulfates	ASTM D-516	2

SUBSURFACE CONDITIONS

Subsurface Materials

The subsurface conditions generally consist of a surficial layer of topsoil underlain by layers of discontinuous fill, sand/silt, glacial till, and finally bedrock. A summary of subsurface materials is provided in Table 9. A description of subsurface materials encountered is provided below in order of increasing depth.

Table 9. Subsurface Conditions

Layer	Thickness (feet)	Top Elevation Range	N-Value Range	Average Density	Fines Content (%)	Moisture Content (%)
Topsoil	2-inches to 24-inches	el +170 to +127	2 to 28	Loose	N/A	N/A
Fill	1 to 3	el +127 to +125	7	Loose	N/A	N/A
Sand/Silt	1 up to 24	el +169 to +107	3 to Refusal ⁶	M. Dense	Sand: 4 to 23 Silt: 60 to 91	Sand: 2 to 11 Silt: 18 to 48
Glacial Till	2 up to 23	el +165 to +108	20 to Refusal	V. Dense	23 to 31	9 to 13
Bedrock	See Table 10					

<u>Topsoil</u> – A layer of topsoil was encountered in 54 borings and 31 test pits. The topsoil generally consists of brown to dark brown fine to medium sand with varying proportions of gravel, roots,

⁶ Refusal defined as 50 blows per 6-inches or greater.

and silt. In the remaining 6 borings, the surficial material was consistent with the fill or natural sand material.

<u>Fill</u> – Below the topsoil, a layer of fill was encountered in one boring and five test pits. The fill is generally composed of light brown to dark brown fine to medium sand with varying amounts of gravel, roots, debris, and silt. Note an abandoned rubble well was encountered in one test pits (C-B-TP-10B) to a depth of about 9 feet. The fill layer is generally classified as poorly graded sand (SP) in accordance with the USCS.

<u>Sand/Silt</u> – Below the fill or topsoil, a layer of sand, with some silty sand and silt pockets, was encountered in all borings. The sand is generally composed of light brown to brown fine to coarse sand with varying amounts of gravel and silt. The silt, which was limited to discrete and discontinuous areas, is generally composed of light brown to brown silt with varying amounts of fine sand and gravel. Note that higher SPT N-values (Table 9) within the sand/silt layer are likely the result of obstructions (boulders, cobbles, or gravel) blocking the sampler. The sand layer, and silty layers within, are generally classified as poorly graded sand (SP), silty sand (SM), and silt (ML) in accordance with the USCS.

<u>Glacial Till</u> – Below the sand/silt, a layer of glacial till was encountered. The glacial till is generally composed of brown to grayish brown fine to coarse sand with varying amounts of gravel, silt, and weathered rock fragments. Note that higher SPT N-values (Table 9) within the glacial till layer are likely the result of obstructions (boulders, cobbles, or gravel) blocking the sampler. The glacial till layer is generally classified as silty sand (SM) in accordance with the USCS.

<u>Bedrock</u> – Below the glacial till, a layer of bedrock was inferred or cored in 21 borings. A summary of encountered bedrock is provided in Table 10. The bedrock consists of gray schist, fine to medium grained, moderately weathered, close to very close fractures, and moderate dipping and horizontal fractures. Up to five-foot-long rock cores were taken in nine borings during our exploration. The REC and RQD of the rock core samples ranged from about 35% to 100% and 0% to 91%, respectively. Though not encountered in the borings or test pits, the lower REC and RQD values may be indicative of weathered bedrock.



Table 10. Summary Bedrock Information

	Bedrock Depth					
Location	С	ored	Inferred			
	Depth (ft)	Elevation	Depth (ft)	Elevation		
Proposed Building Areas	12 to 34	el +112 to +130	15 to 36	el +108 to +140 (Bedrock was foundation up to el +151 in one test pit: C-B-TP-10)		
Proposed Roadway Areas	Not Performed	Not Performed	20	el +116		
Proposed Site Areas	Not Performed	Not Performed	16 to 22	el +122 to +143		

<u>Groundwater</u> – A summary of groundwater is provided in Table 11. Groundwater, if encountered, should be expected to fluctuate with seasons, precipitation, construction activities, irrigation activities, etc.

Table 11. Summary Groundwater Information

	Groundwater Depth				
Location	Observation \	Nells/Test Pits	Inferred in Borings		
	Depth (ft)	Elevation	Depth (ft)	Elevation	
Proposed		el +126		el +125	
Building	6 to 14	to	4 to 20	to	
Areas		+144		+149	
Proposed				el +123	
Roadway	6	el +124	4 to 8	to	
Areas				+129	
Proposed		el +120		el +121	
Site	4 to 7	to	4 to 18	to	
Areas		+135		+151	

Infiltration Testing

Infiltration rates were measured in the proposed stormwater systems as specified by the civil engineer. Infiltration tests were performed in accordance with the New Hampshire Code of Administrative Rules (Env-Wq 1500). A summary of average infiltration rates at each location is presented in Table 12. A detailed summary of infiltration tests is provided in Appendix H. Generally, the measured infiltration rates are higher than the rates in the available geotechnical



report. Final design infiltration rates should be selected by the civil engineer based on the stormwater system design and allowable infiltration rates.

Table 12. Infiltration Test Results Summary

Location	Surface Elev.	Test Depth (ft)	Test Elev.	Measured Infiltration Rate (in/hr)	Material Type
C-S-TP-01	el +128	4	el +124	11	Light brown silty fine SAND, about 2-inch-thick fine to medium lenses
C-S-TP-17	el +133	3	el +130	79	Light brown silty fine SAND

Sulfate & Chloride Testing

Chemical analyses were performed on select samples generally obtained from soils within 5 feet of both proposed grades and the finished floor elevation. The soluble sulfate and chloride concentrations were both less than 10 parts-per-million. A summary of laboratory testing is provided in Appendix G. Based on the laboratory testing, the sulfate exposure class⁷ is S0 and the chloride exposure class⁷ is C1 given the presence of groundwater. Consideration could be given to using chloride exposure class C0 for building slabs as a vapor barrier is proposed below.

GEOTECHNICAL DESIGN RECOMMENDATIONS

Additional Explorations & Analysis

As the design progresses, we recommend the following additional exploration and analysis work be performed to advance the geotechnical design and construction recommendations:

- Test pits should be completed along the northern part of Green Meadow Drive as access was not provided during our exploration program.
- Groundwater levels should be obtained throughout design for additional measurements and potential refinements to recommendations for permanent water controls. Additionally, groundwater readings should be collected when watering of the course has stopped and after the site irrigation system is decommissioned as leaks in the system or surface-level infiltration from the system may affect groundwater levels.
- Additional design and coordination work should be performed with respect to site and sub-slab underdrain systems.

⁷ Exposure class from ACI 318-14.

- The retaining walls will need to be designed by a design engineer registered in New Hampshire. Design should include all internal and external stability checks.
- The water tower foundations will need to be designed by others as this is a delegated design.
- Temporary works for pre-cast/tilt-up wall panels will need to be designed by others as this is a delegated design.

Liquefaction

We evaluated the liquefaction potential of non-cohesive soil below the groundwater table and up to 50 feet below the ground surface (as required by the New Hampshire Building Code) using the procedure outlined by Youd et. al (2001). The Youd et. al method is considered to be the state-of-practice procedure as recommended by the National Earthquake Hazard Reduction Program. The method presents an empirical relationship between the earthquake demand represented by the Cyclic Stress Ratio (CSR), and the soil resistance to dynamic loading represented by the Cyclic Resistance Ratio (CRR). Field N-values are converted to $N_{1,60,cs}$ by applying corrections for hammer energy efficiency, soil overburden pressure, borehole diameter, rod length, sampler lining, and fines content.

The available geotechnical engineering report indicated a potentially liquefiable area to the east (in the vicinity of GZA boring B-18). As part of our subsurface exploration and evaluation, we performed borings in the vicinity of boring B-18 and analyzed the results.

Our analysis was performed on a sample set of borings that were potentially liquefiable across the lot.

Input parameters included a peak ground acceleration of 0.200g (from USGS). Our analysis indicates an adequate factor of safety for liquefaction for explorations advanced within the building and roadway/site areas. We concluded that liquefaction need not be considered in the design. Plots showing factors of safety versus depth are provided as Figures 6 and 7 for the building and roadway/site areas, respectively.

Seismic Design

This section presents seismic design recommendation, in accordance with the 2019 New Hampshire State Building Code (International Building Code 2015). We have considered the soil conditions encountered in the borings to be consistent and representative of the soil conditions in the top 100 feet of soil at this lot.



Table 13. Seismic Design Values

Description	Parameter	Recommended Value
Mapped Spectral Acceleration for short periods ¹⁰ :	S _s	0.238 g
Mapped Spectral Acceleration for 1-sec period ¹¹ :	S ₁	0.075 g
Site Class:		D – Stiff Soil Profile
Site Coefficient:	F _a	1.6
Site Coefficient:	F _v	2.4
5% damped design spectral response acceleration at	S _{DS}	0.254 g
short periods:	J _{DS}	0.254 g
5% damped design spectral response acceleration at	S _{D1}	0.120 g
1-sec period:	J _{D1}	0.120 g
Anticipated Risk Category		II
Seismic Design Category		В

Based on the above spectral accelerations and the anticipated risk category, we have estimated the Seismic Design Category (SDC). The structural engineer is responsible for confirming the appropriate use group, occupancy category, and final SDC for the proposed structure.

Building Foundations

The materials encountered at the anticipated footing elevation consist of fill, sand/silt, and glacial. Bedrock was encountered in one test pit within the building footprint and to the west of the proposed building in the truck court/parking area; as such, bedrock may be encountered at the bottom of footing elevation as well. The existing fill and silt are not suitable for foundation support. The proposed structure and guard house can be supported on shallow foundations bearing on structural fill, sand/silt, glacial till, weathered rock, or bedrock using an allowable bearing pressure of 3,000 psf. If desired, a higher bearing pressure for footings bearing on weathered rock or bedrock could be provided. Footing subgrades should be prepared in accordance with the Subgrade Preparation section of this report.

All exterior footings should be constructed 48 inches or deeper below the lowest adjacent grade for frost protection. Interior footings in heated spaces may be constructed at a convenient depth below the slab; however, all bottoms of footings should be at least 1.5 feet below the finished-floor elevation. Interior footings in non-heated spaces, or where frost protection is not provided

¹⁰ Value obtained from AT Council Hazards by Location as provided by the USGS.

¹¹ Value obtained from AT Council Hazards by Location as provided by the USGS.

throughout construction, should be protected from frost (e.g., lowering footings, backfilling, heaters/blankets, etc.).

Isolated column footings should have a minimum dimension of 3 feet, and strip footings should have a minimum width of 2 feet even if smaller dimensions can be justified using the recommended allowable bearing pressure.

Foundations should not be located so that one foundation is within the zone of influence of an adjacent foundation. The zone of influence is taken as a 1H:1V projection extending outward and downward from the edge of the foundation.

Building Settlement

Total settlement of the structure is estimated to be on the order of 1 inch or less, provided the bearing pressure recommended here is used and the subgrade preparation work described here is performed. Differential settlements of adjacent new structure columns are expected to be about ½ inch. The majority of the settlement is expected to take place during construction.

Water Tower

The design engineer of record should confirm that the bearing capacity and calculated settlements (based on the water tower loads) are acceptable for use with a shallow foundation design. If not, the water tower design engineer of record should determine if supplemental foundation recommendations are required. Ground improvement to achieve higher bearing capacities may be required.

Given the design of the water tower is not finalized, we recommend that an allowance for ground improvement (stone columns up to 25 feet long) be provided for initial cost estimating until a final design can be prepared by others.

Building Floor Slabs

We recommend that ground-floor slabs be constructed as a slab-on-grade bearing on natural soils, structural fill, or compacted existing fill prepared in accordance with the recommendations here. Additional recommendations for sub-slab underdrains are provided below. If bedrock or weathered rock is encountered, it should be over-excavated a minimum of 2 feet below the proposed bottom of slab elevation and replaced with structural fill or gravel; additional rock removal may be required for sub-slab utilities and should be coordinated as the design progresses. The slab-on-grade supporting short-term loads over smaller areas (e.g., vehicle wheel



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loads)¹² should be designed for a modulus of subgrade reaction of 125 pounds per cubic inch (pci). The slab-on-grade supporting long-term loads over larger areas (e.g., uniform or rack loading) should be designed for a reduced modulus of subgrade reaction of 80 pci.

We recommend a minimum 6-inch-thick layer of ¾-inch clean crushed stone be included beneath the slabs to protect the prepared subgrade and to serve as a capillary break. Additional assessment is on-going regarding recommendations for a permanent drainage design.

A vapor barrier should be used below the ground-floor slab to limit transmission of water vapor through the slab. We recommend a vapor barrier with a minimum thickness of 20 mils. Omission of a vapor barrier can lead to floor-covering problems including delamination and mold. Additional waterproofing measures may be required pending the on-going recommendations for permanent drainage design. The contractor may elect to place up to 4-inches of a fine to medium sand (i.e., stone dust) above the vapor barrier for slab constructability considerations. The sand layer should have a maximum particle diameter of 3/16-inch and should consist of hard durable sand free from ice and snow, roots, sod and other deleterious matter. The vapor barrier should be coordinated with the environmental requirements for the development.

Permanent Groundwater Control

Building Areas

Perimeter wall and footing drains should be installed to divert groundwater flow away from the structure during prolonged precipitation, snowmelt, or utility breaks. Manufactured geocomposite drainage panels or a 12-inch-wide layer of ¾-inch washed crushed stone should be installed against the outside of all perimeter walls and should extend to within 1 foot of adjacent surface grade. In the truck-court areas, gravel should be used. The drainage panels (or crushed stone) should connect to a perforated footing drain at the base of the footing having a minimum diameter of 6 inches. The footing drains should be connected to the site stormwater system and where possible drain by gravity. Where used, drainage panels should be secured in place and the filter-fabric side must face the soil. If washed crushed stone is used, it should be wrapped with a geotextile filter fabric.

As noted, the grading plans are currently being finalized. We recommend modeling anticipated post construction groundwater elevations to determine if permanent dewatering measures for site features (sub-slab underdrain, pavement underdrains, etc.) are required.

¹² "Engineering Bulletin, Modulus of Subgrade Reaction – Which One Should be Used?" by Structural Services, Inc. (8 April 2016).



Groundwater levels (el +125 to +149) are up to within 1 foot of the proposed top of slab elevation (el +150) within about 10,000 square feet of the proposed building (generally on the western side of the building). We propose modeling these areas further, but as the grading plans are still being finalized, we recommend that allowances and unit rates be carried for permanent dewatering measures at this point in the design (i.e. sub-slab underdrains).

A preliminary design groundwater elevation of el +153 should be used (i.e. 4 feet above the highest recorded groundwater levels to date). Underdrains should consist of a minimum of a 12-inch-thick gravel layer (3/4-inch washed, crush stone) beneath the slab. Geotextile filter fabric should be placed between the soil subgrade and the stone. Within the stone, an inter-connected grid network of 6-inch diameter SCH-80 PVC pipes should be placed. The pipes should be spaced at 15 feet on-center. The pipes should be routed to internal sump pits and connected to the site stormwater system to discharge via gravity. A minimum of one sump pit per 5,000 square-foot (or tributary area) of underdrain area should be assumed at this time.

Additionally, we recommend a perforated pipe, having a minimum diameter of 6 inches, be located on the in-board side of the truck-court foundation wall (western side of the building) at the bottom of footing elevation. The pipe should be routed to the site stormwater system. A 12-inch thick gravel (3/4-inch washed, crushed stone) trench wrapped in filter fabric should encapsulate the perforated pipe and extend from the bottom of footing to bottom of slab elevation.

Site Areas

Groundwater was encountered to the west of the building above and within 4 feet of the proposed pavement and truck court grades for about 250,000 square feet of the overall pavement footprint. We recommend that allowances and unit rates be carried for permanent dewatering measures at this point in the design (i.e. pavement underdrains). The pavement underdrain design will be included on the civil plans.

Underdrains should consist of a minimum of a 12-inch-thick gravel layer (3/4-inch washed, crush stone) beneath the pavement. Filter fabric should be placed between the soil subgrade and the stone. Within the stone, an inter-connected grid network of 6-inch diameter SCH-80 PVC pipes should be placed. The pipes should be spaced at 20 feet on-center. The pipes should be routed to the site stormwater system to discharge via gravity.

Pavement Design

We have provided recommendations for minimum asphalt-pavement sections using 115% of the daily traffic loading provided by the traffic engineer (Langan) detailed in Table 14. The pavement



sections were designed using a California Bearing Ratio (CBR) of 10 for proofrolled site soils or properly placed compacted fill. CBR testing must be performed in pavement areas at the start of construction to confirm the design assumptions. A life expectancy of 20 years was used for flexible pavements and 30 years for rigid pavements. Pavement design calculations are provided in Appendix I. Refer to subsequent sections for subgrade preparation procedures.

We have prepared the following site-wide (i.e. all three lots) pavement design recommendations for the overall site.

Table 14: Proposed Daily Traffic Loading

Area	Passenger Cars (#)		Light Trucks (#)		Tractor Trailers (#)	
	Proposed	115%	Proposed	115%	Proposed	115%
Lot A:	651	749	n/a	n/a	131	151
Lot B:	326	375	25	29	40	46
Lot C:	354	407	n/a	n/a	60	69
Northern Access Roadway (Walmart Blvd.):	390	449	n/a	n/a	131	151
Southern Access Roadway (Green Meadow Drive):	941	1,082	25	29	100	115

Table 15: Standard & Heavy Duty Flexible Pavement Sections (Site Areas)

Matarial	Thickness (in)			
Material	Standard Duty	Heavy Duty		
Aron	Passenger car drive aisles	Access drives & truck		
Area:	& parking stalls	courts		
Top (Finish) Course:	2.0 inches	2.0 inches		
Asphalt Pavement Binder Course:	2.0 inches	3.0 inches		
Processed Aggregate and Gravel (NH DOT Item No. 304.3):	8.0 inches	12.0 inches		

One pavement design provided for all three lots. Lots A and C control the pavement design. Traffic loading for Lot A used in the pavement calculations.

Processed aggregate and gravel course has been increased by 2 inches from the minimum calculated pavement sections given the anticipated underlying loose fine sands.



Table 16: Standard, Heavy, Extra Heavy Duty Rigid Pavement Sections (Site Areas)

	Thickness (in) / Materials			
Material	Standard Duty	Heavy Duty	Extra Heavy Duty	
Area:	Passenger car drive aisles & parking stalls	Access drives & truck courts	Dolly pads & loading/unloading aprons	
Concrete (4,500 psi 28-day strength, 6% air-entrained, chloride resistant):	5.0	8.0	8.0*	
Processed Aggregate and Gravel (NH DOT Item No. 304.3):	6.0	8.0	8.0	
Continuous Reinforcing Each Way:	#3 bar at 22-inch on-center	#3 bar at 16-inch on-center	#3 bar at 16-inch on-center	

Per the design criteria, dowels are to be used at construction joints.

Minimum calculated design heavy and extra heavy duty rigid pavement sections increased to match the design criteria minimum cross-section (8.0 inches of concrete and 6.0 inches of processed aggregate and gravel).

Processed aggregate and gravel course has been increased by 2 inches from the minimum calculated/design criteria pavement sections given the anticipated underlying loose fine sands.

Table 17. Heavy Duty Flexible Pavement Section (Roadways)

	Thickness (in)			
Material	Northern Access Roadway	Southern Access Roadway		
	(Walmart Blvd.)	(Green Meadow Drive)		
Top (Finish) Course:	1.5	1.5		
Asphalt Pavement Binder Course:	2.5	2.5		
Crushed Gravel (NH DOT Item No. 304.2):	6.0	6.0		
Gravel (NH DOT Item No. 304.3):	12.0	12.0		

Minimum calculated design pavement section increased to match the Town of Hudson minimum typical cross-section for subdivision streets (commercial/industrial) Town of Hudson Engineering Department, Engineering Technical Guidelines & Typical Details, Detail R-1 (revised February 2020) (4 inches of hot bituminous pavement, 6 inches of crushed gravel, and 12 inches of gravel).

Retaining Walls

Site fill-retaining walls may be designed as geogrid reinforced modular block walls (such as Mesa, Keystone, Versa-lok, or Redi-Rock type walls) or gravity-type retaining walls, depending on the location and size of the proposed wall.



^{*}Extra heavy duty rigid pavement shall be enhanced with a minimum of 7.5 pounds of synthetic macrofibers per cubic yard of concrete.

Retaining walls can be designed using a moist unit weight of 130 pounds per cubic foot and a drained angle of internal friction of 30°. Site retaining walls, where movement is acceptable, can be designed using active earth pressures. Walls where movement cannot be tolerated should be designed for at-rest earth pressures. The parameters described above presume (1) the wall backfill materials (i.e., within the reinforced zones) are select imported granular soils, (2) full drainage is provided behind the reinforced zone and wall facing to prevent the buildup of hydrostatic pressure, (3) that surface loads at the top of the retaining walls will consist of parking and driving areas and vehicles, and (4) the slope at the top of the retaining wall is level. Presuming the aforementioned fill, fill placement, and compaction requirements are adhered to, a coefficient of active earth pressure (Ka = 0.33) or a coefficient of at-rest earth pressure (Ko = 0.50) can be used as appropriate. The fill used may consist of imported materials that satisfy the minimum strength parameters specified here and gradation requirements specified by the wall designer. Design parameters should be confirmed during construction via laboratory testing on the actual proposed backfill materials, and adjustment of the pressures should be made by the designer where appropriate to consider these factors.

Retaining-wall foundations should bear on natural soils (if fill or silt is encountered it should be fully removed and replaced) or well-compacted structural/engineered fill compacted with at least six coverages of a minimum 5-ton static-drum-weight vibratory roller. Soft or otherwise unsuitable natural or fill identified by the geotechnical engineer in the field during proofrolling and compaction should be removed and replaced with approved compacted structural/engineered fill. Backfill behind the walls should be placed as discussed in the Fill Materials, Placement and Compaction Criteria section of this report. Over-compaction should be avoided behind the walls.

The proposed retaining wall design (including calculations and global stability and groundwater mounding analyses) and construction means and methods should be provided and signed and sealed by a Professional Engineer licensed in the State of New Hampshire.

GEOTECHNICAL CONSTRUCTION RECOMMENDATIONS

Site Preparation

All existing foundations, floor slabs, and utilities should be completely removed within 10 feet of the proposed footprint. Given the current use of the site, we expect below-grade irrigation infrastructure to be encountered throughout the lot. Below grade structures outside the building footprint can be abandoned in place provided they are removed to at least 3 feet below finished subgrade levels, 2 feet below proposed utilities, and to eliminate conflicts with new utilities or structures. Slabs left in place should be sufficiently broken up to allow water to drain and so that a geotechnical engineer can observe whether voids exist beneath the slab. Existing asphalt pavement and concrete walkways should be completely removed.



Existing utilities within the building footprint should be completely removed. Existing utilities outside of the proposed building footprint should be removed or abandoned in place by completely filling with grout.

Excavations made to remove below grade elements should be backfilled with approved, compacted fill in accordance with the Excavation, Fill, Placement, and Compaction Criteria section of this report and any environmental requirements.

Clearing and grubbing of trees and vegetation designated for removal (including root systems) should be performed. Buried debris should be completely removed beneath proposed building slab, footing, and pavement locations. Given the former and current uses of the site, bury holes with topsoil, tree stumps, or similar unknown objects should be expected throughout. Topsoil should be stripped from the proposed building and pavement areas and should be stockpiled and protected from erosion. Topsoil will be evaluated by the landscape architect (Langan) for reuse in landscape areas and coordinated with the environmental engineer (Langan). All clearing and stripping activities should be performed in strict accordance with the approved soil-erosion and sediment-control plan and the environmental reports prepared for the project.

Existing wetlands slated for removal should be completely dewatered at the on-set and maintained dry during backfilling activities. Once dewatered, all organic and silty materials should be completely removed to the top of natural granular soils, weathered rock, or bedrock. A choker 2-foot-thick layer of 3- to 6-inch diameter stone should be placed at the subgrade. A layer of filter fabric should be placed above the stone. The resulting excavation should be backfilled with structural fill as described here.

All demolition and site-clearing work should be performed in accordance with any environmental requirements established for the site, and all local, state, and federal regulations. All debris and trees and other vegetation should be properly disposed of off-site in accordance with applicable regulations. All construction work should be performed so as not to adversely impact the neighboring buildings, off site structures or utilities, including the existing utilities and trees that are to remain. Protection of these elements should be provided as necessary. Before beginning grading or placing fill, any miscellaneous trash, debris, or other unsuitable materials should be removed from the site.

Subgrade Preparation

All soil footing and utility-trench subgrades, except bedrock, should be proofrolled with six overlapping coverages of a double-drum 1-ton walk-behind vibratory roller (such as a Bomag BW75 or equivalent).

Along the western edge of the building, footings for the truck-court may bear on bedrock. If a footing or adjacent footings will bear on rock and soil, a transition zone should be created. For



adjacent footings, the rock should be over-excavated a minimum of 12 inches and replaced with ¾ inch crushed gravel. For strip footings, rock should be over-excavated a minimum of 12 inches for 5 horizontal feet in either direction (total of 10 feet) from the point of bearing material transition and replaced with ¾-inch gravel. The specific requirements will be based on the field conditions observed at the subject location and the geotechnical engineer's subsequent recommendations.

All slab subgrade areas should be proofrolled with six overlapping coverages of a vibratory drum roller having a minimum static drum weight of 10 tons. Once the slab is fully compacted, a proofroll with a fully loaded dump truck should be performed. The maximum acceptable depression under the fully loaded dump truck is ½ inch. If depressions greater than a ½ inch are observed, corrective action must be taken by the contractor.

Soft areas identified during proofrolling should be excavated and replaced with approved structural fill. The actual extent of necessary removal and replacement should be determined by a qualified Langan geotechnical engineer. Care should be taken when proofrolling near any existing underground utilities that are to remain.

Soil footing subgrades should be excavated level and if any cobbles or boulders are encountered at the footing subgrade level such that a relatively level subgrade is not achieved, the cobbles or boulders should be removed and replaced with compacted structural fill, compacted ¾-inch crushed stone, or lean concrete. All soil subgrades for footings or slabs should be compacted to the project specified compaction criteria.

If foundations are not poured in a timely manner, the subgrade should be protected with a leanconcrete mud mat to protect the footing subgrades.

Steps should be taken by the contractor to control and remove surface-water runoff and precipitation. When soil is wet and subjected to construction traffic, previously acceptable subgrades can soften and become unacceptable. A smooth-drum roller should be used to seal the surface and provide for better drainage. We also recommend crowning or sloping the subgrade to provide positive drainage off the subgrades.

Removal/Replacement

If encountered beneath foundations, a minimum of 3-feet of the miscellaneous fill, or otherwise deleterious material, should be removed within the foundation zone of influence (i.e. 1H to 1V downward projection from the edge). The resulting material should be proofrolled in accordance with the Subgrade Preparation section outlined herein. The resulting excavation should be backfilled with structural fill in compacted lifts.

An abandoned rubble well was encountered in one test pits (C-B-TP-10B) to a depth of about 9 feet. The well and any surrounding unsuitable fill should be completely removed and the resulting excavation backfilled with structural fill as outlined here.



Placement of additional fill materials in foundation areas, if required, should be performed in accordance with the Excavation, Fill, Placement, and Compaction Criteria recommendations outlined herein.

Excavation, Fill, Placement, and Compaction Criteria

Excavation through the fill and the underlying sand/silt and glacial till can likely be performed using conventional earthmoving equipment (e.g., backhoes, excavators, dozers, etc.). Excavations made for footings and utilities should be conducted to minimize disturbance to the subgrade (i.e., backhoe with a smooth-edge bucket). Larger equipment may be required for removal of obstructions such as boulders, etc.

Within the proposed building footprint, the top of competent rock (either refusal of the drilling equipment or rock coring) was encountered from about el +108 to el +140. Though at one test pit location (C-B-TP-10), bedrock was inferred at el +151). Given a proposed finished floor elevation of el +150, rock removal within the proposed building is anticipated.

Within the proposed roadway and site areas, the top of competent rock (either refusal of the drilling equipment or rock coring) was encountered from about el +116 to el +143. Based on the current site grading, rock removal may be required to the west of the proposed building in the truck court and parking areas.

- Bedrock should be removed to a minimum of 6 inches below the proposed pavement section a minimum of 10 feet horizontal feet beyond. The resulting excavation should be backfilled with compacted ¾-inch stone. A layer of filter fabric should be placed between the ¾-inch stone and the pavement section.
- In truck court and parking areas where utilities that are sensitive to settlement transition from bearing on rock to bearing on soil, rock should be over-excavated a minimum of 12 inches for 5 horizontal feet in either direction (total of 10 feet) from the point of bearing material transition and replaced with ¾-inch gravel to reduce the potential for differential settlements. The specific requirements will be based on the field conditions observed at the subject location, the geotechnical engineer's subsequent recommendations, and the sensitivity of the utility to differential settlement.

Rock excavation techniques will be required to excavate to the required elevations. Blasting may be required. The actual means and methods required for rock excavation should be selected by the contractor based upon experience and capabilities. All blasting should be performed in accordance with the applicable state and local regulations and in a manner such than no on-site or off-site structures or features are adversely impacted.



All excavations should be properly sloped or braced and conform with applicable OSHA regulations including, but not limited to, temporary shoring, trench boxes, temporary rock stabilization, or proper benching or both.

All excavation and backfilling must be performed in accordance with the project environmental engineer's recommendations.

The following types of fill can be used.

<u>Structural Fill</u> – Structural fill should be well-graded sand and gravel having a maximum particle size of 3 inches and no more than 10% passing the No. 200 sieve. Additionally, the structural fill should be free of organics, clay, roots, concrete, other non-soil constituents, and other deleterious or compressible materials. Any approved imported structural fill should be "certified clean fill" free of hazardous substances and meeting all local, state, federal and the New Hampshire Department Environmental Services regulations.

Material Reuse – The contractor may reuse the on-site granular fill, sand, or glacial till as structural fill provided the soils meet the requirements for structural fill outlined above and is approved by the environmental engineer. The silt may not be used as structural fill. Note that samples obtained within the fill, sand, and glacial till layers have a fines content (material passing the No. 200 sieve) ranging from about 6% to 48%; therefore, select soils will be sensitive to moisture. The overall amount of soil that can be reused will be dependent on the amount of fines present within the soil, the contractor's ability to add stone, the time of year the earthwork is carried out (e.g., potentially inclement weather), and the ability of the earthwork contractor to stage, aerate and process the material to facilitate placement and compaction. The existing shallow sand generally has a uniform gradation and low silt content (poorly graded) which may be difficult to compact to specifications without systematic application of water to each layer or blending the material to create a well-graded fill. In addition, the contractor may need to place the material in thinner lifts to achieve the compaction requirements specified herein.

<u>General Fill</u> – On-site soils not meeting the requirements for structural fill can be used as general fill for site landscape and other nonstructural areas (e.g., landscaped areas) if environmentally suitable for reuse. The fill and silt layers may be used as general fill, if required.

<u>Compaction Criteria</u> – All fill should be placed in uniform 12-inch-thick loose lifts and compacted. Fill in landscaped areas should be compacted to 90% of its maximum dry unit weight as determined by ASTM D1557; all other fill should be compacted to at least 95%. In restricted areas where only hand-operated compactors can be used, the maximum lift



thickness should be limited to 8 inches. The appropriate water content at the time of compaction should be plus or minus 2% points of optimum as determined by the laboratory compaction tests of proposed fill. No backfill should be placed on areas where free water is standing or on frozen subsoil areas.

Groundwater Control

Across the lot, groundwater was encountered from about el +120 to +151. Based on the proposed grades, we expect that groundwater will be encountered along the western part of the building. Temporary groundwater control in this area, and potentially throughout the site, will be required.

We anticipate that dewatering will be required during construction. Water infiltration to the foundation excavation can likely be controlled using gravity-fed sump pumps via gravel trenches or sumps assisted with collector trenches. Deeper systems such as well points may be required. The final dewatering measures required should be evaluated and designed by the contractor. The dewatering measures implemented should adequately dewater all foundation-related excavations such that compaction of footing subgrades is feasible.

Collection of rainwater runoff will also be needed during the excavation of the removal and replacement program and during the subgrade preparation work. Water runoff is expected to be controlled with the use of gravel-lined collection trenches, pits and submersible pumps. Care should be taken to ensure that drainage is provided during all phases of excavation work. Environmental pretreatment of groundwater, if necessary, is beyond the scope of this study. Collected water should be discharged in accordance with applicable regulations and any environmental requirements.

SERVICES DURING DESIGN, CONSTRUCTION DOCUMENTS AND CONSTRUCTION QUALITY ASSURANCE

During final design, Langan should be retained to consult with the design team as geotechnical questions arise. Technical specifications and design drawings should incorporate our recommendations. When authorized, we will assist the design team in preparing specification sections related to geotechnical issues such as earthwork, shallow foundations, backfill, retaining walls, and excavation support. Langan should also, when authorized, review the project plans and contractor submittals relating to materials and construction procedures for geotechnical work to confirm the designs incorporate the intent of our recommendations.

Langan has explored and interpreted the site subsurface conditions and developed the foundation design recommendations contained here, and is therefore best suited to perform quality-assurance observation and testing of geotechnical-related work during construction. The work



requiring quality-assurance confirmation or special inspections per the Building Code includes, but is not limited to, earthwork, shallow foundations, backfill, retaining walls, and excavation support.

Recognizing that construction observation is the final stage of geotechnical design, quality-assurance observation during construction by Langan is necessary to confirm the design assumptions and design elements, to maintain our continuity of responsibility on this project, and allow us to make changes to our recommendations, as necessary. The foundation system and general geotechnical construction methods recommended herein are predicated upon Langan's assisting with the final design and providing construction observation services for the owner. If Langan is not retained for these services, we cannot assume the role of geotechnical engineer of record, and the entity providing the final design and construction observation services must serve as the engineer of record.

LIMITATIONS

The conclusions and recommendations provided in this report result from our interpretation of the geotechnical conditions existing at the site inferred from a limited number of borings and test pits, and information provided by Hillwood. Actual subsurface conditions may vary. Recommendations provided are dependent upon one another and no recommendation should be followed independent of the others.

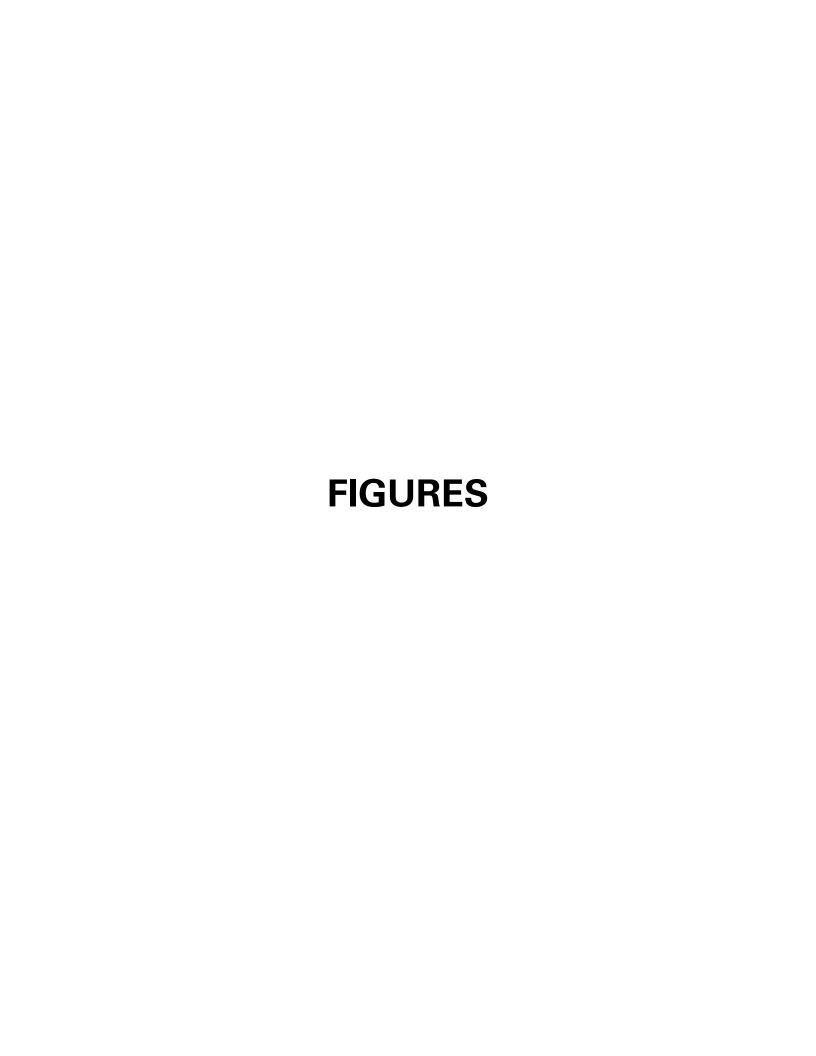
Any proposed changes in structures or their locations should be brought to Langan's attention as soon as possible so we can determine whether such changes affect our recommendations. Information on subsurface strata and groundwater levels shown on the logs represent conditions encountered only at the locations indicated and at the time of our exploration. If different conditions are encountered during construction, they should immediately be brought to Langan's attention for evaluation because they might affect our recommendations.

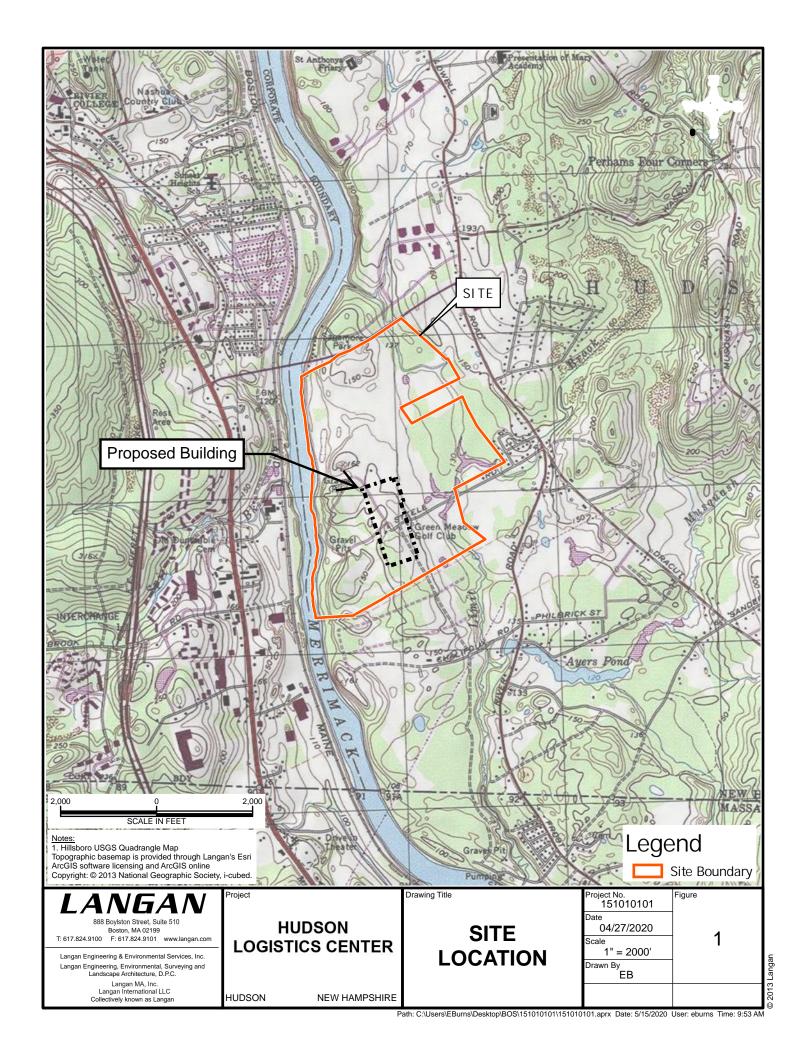
This report has been prepared to assist the owner, architect, and structural engineer in the design process and is only applicable to the design of the specific project identified. The information in this report cannot be used or depended on by engineers or contractors involved in evaluations or designs of facilities (including underpinning, grouting, stabilization, etc.) on adjacent properties beyond the limits of that which is the specific subject of this report.

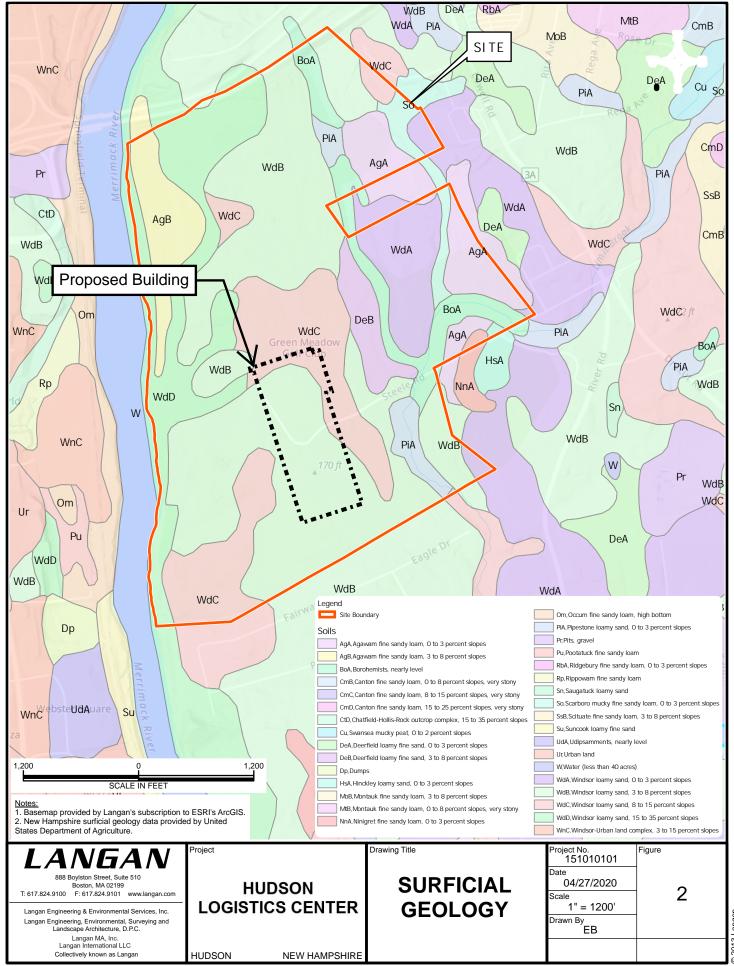
Environmental issues (such as permitting or potentially contaminated soil and groundwater) are outside the scope of this study and are addressed in a separate Langan evaluation.

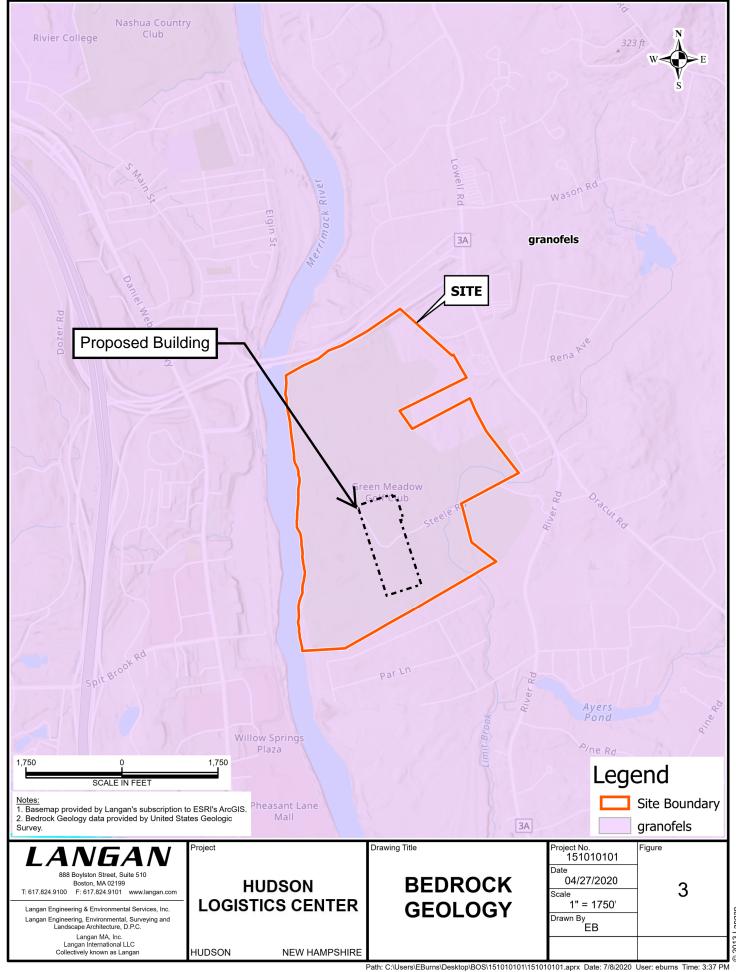


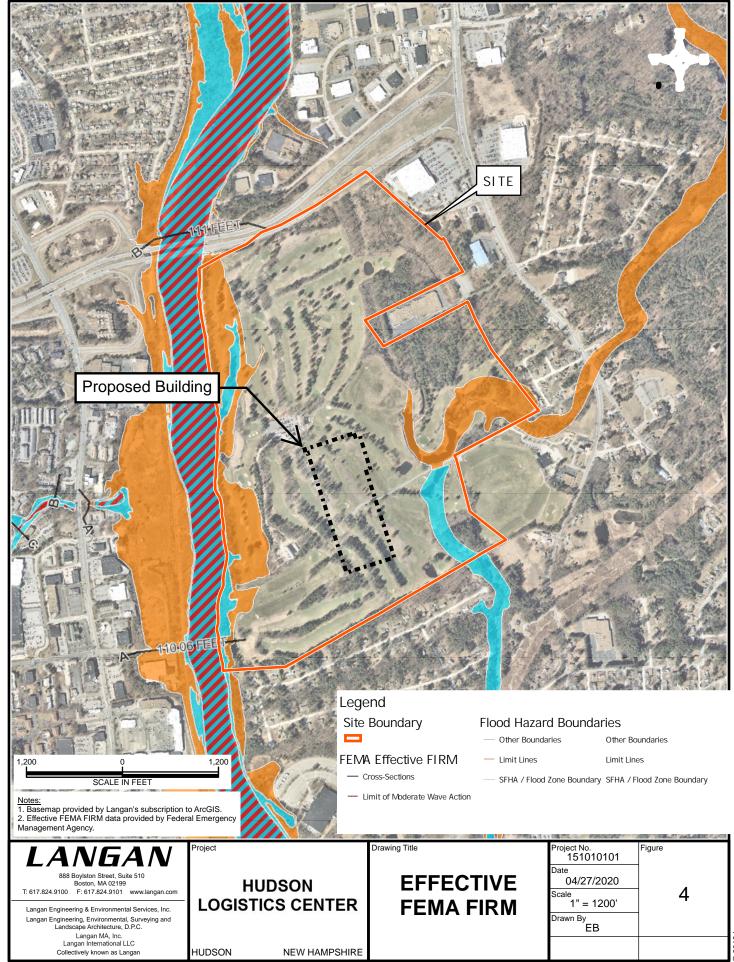


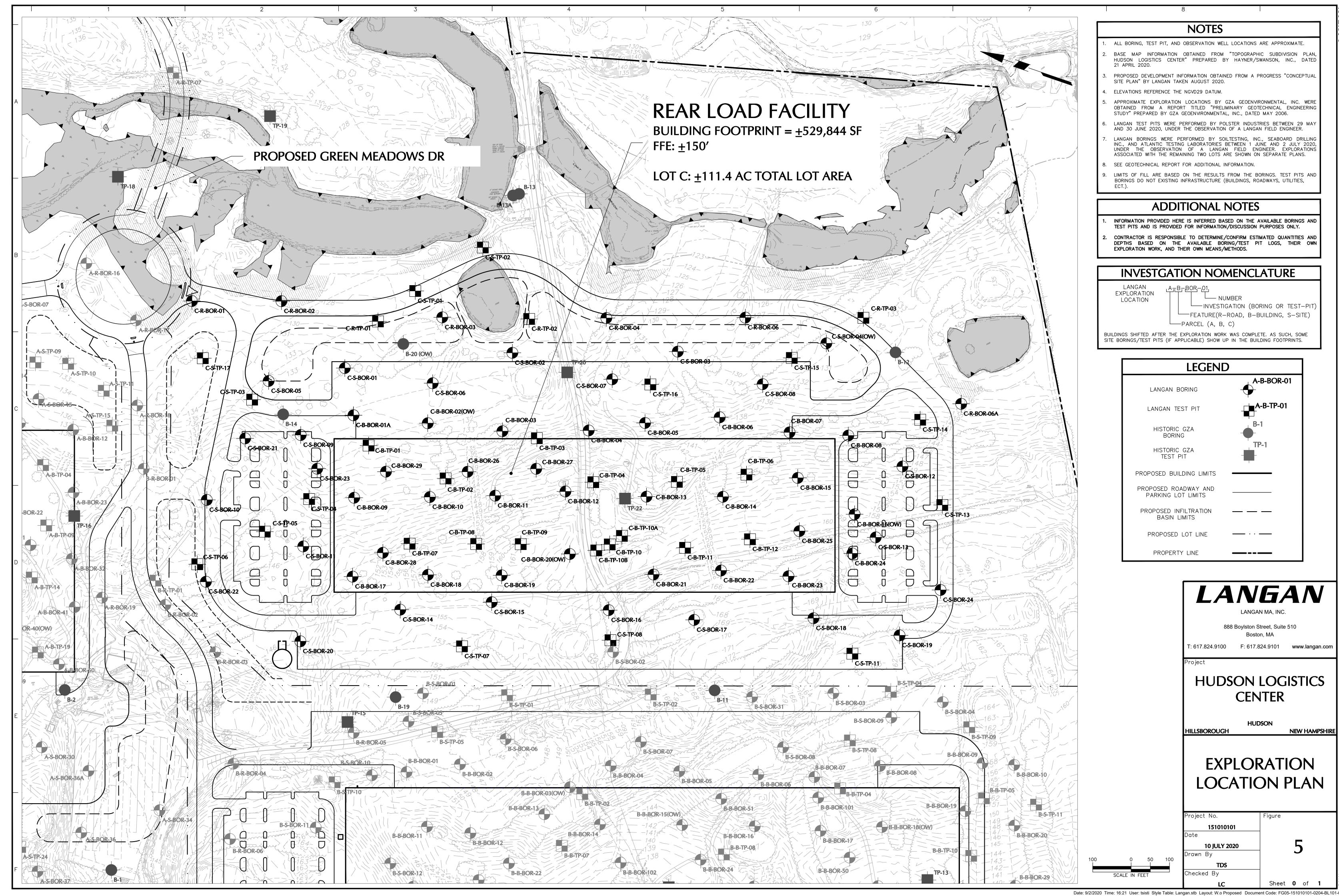


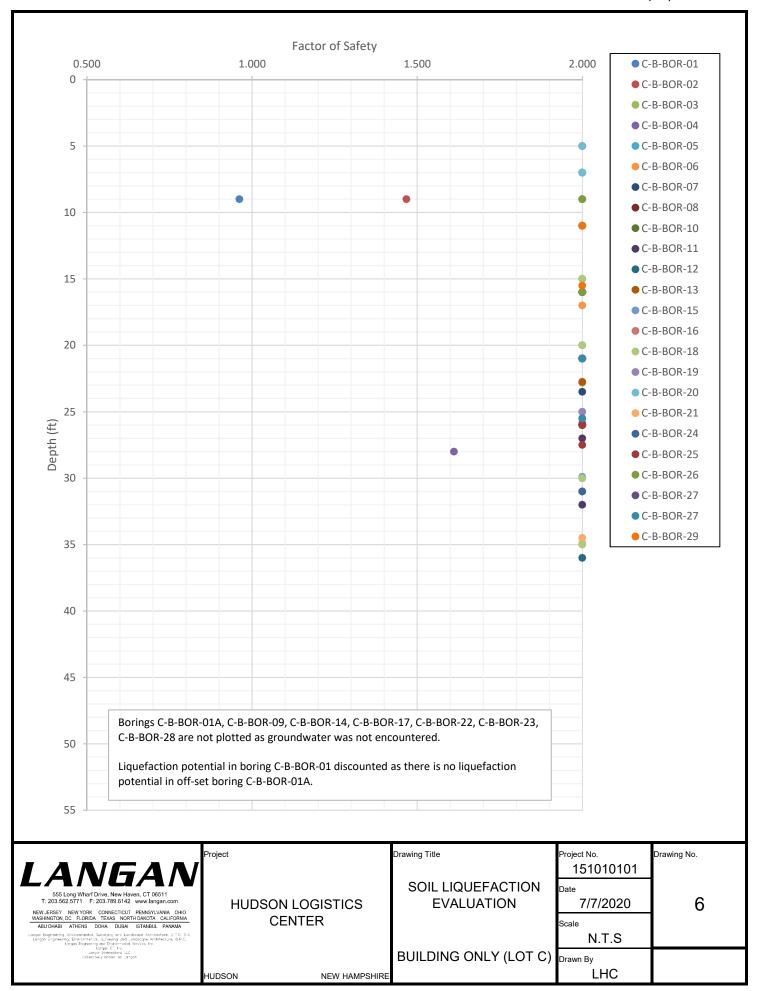


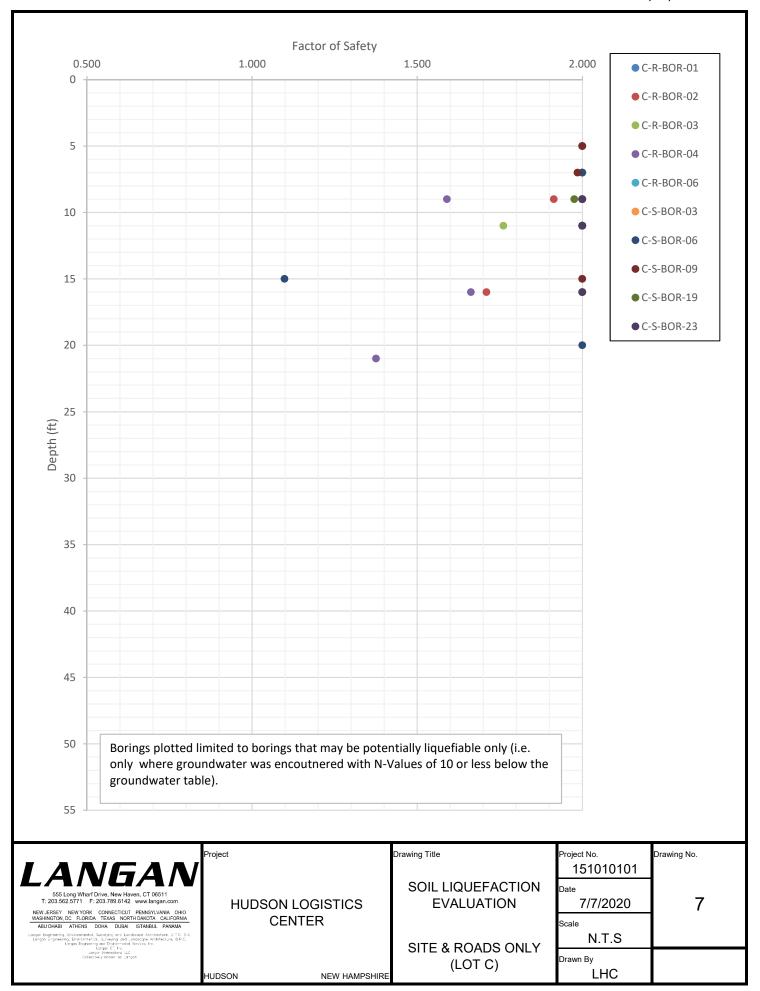




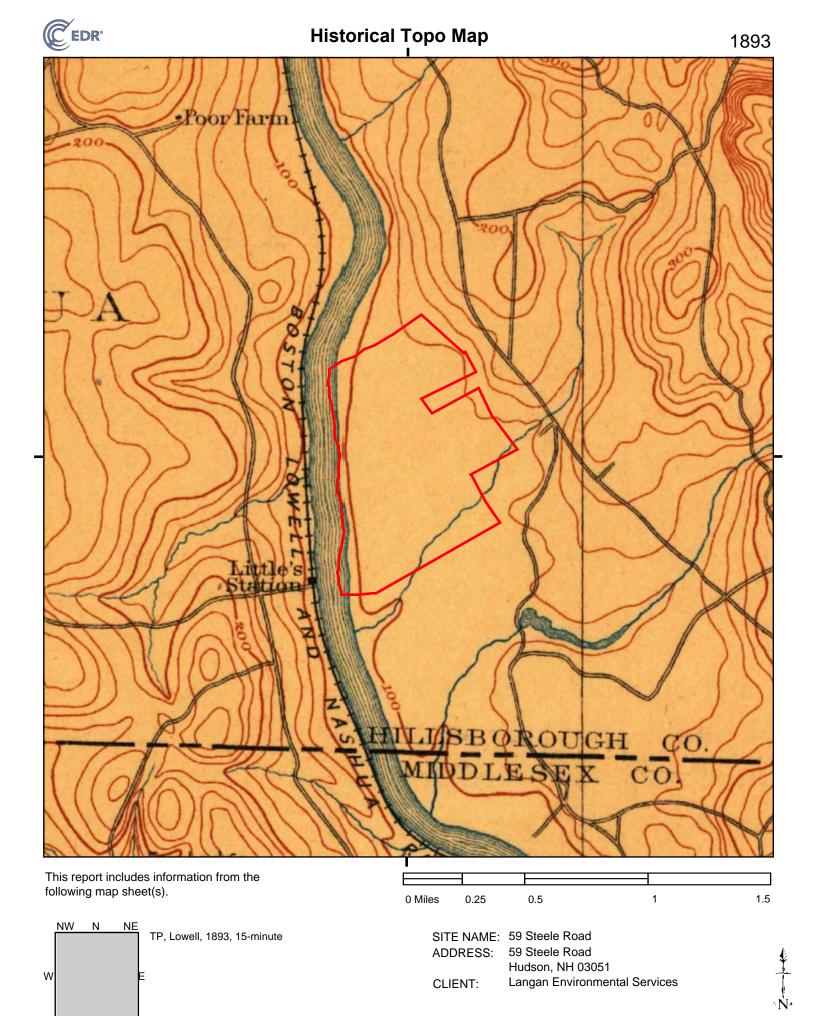


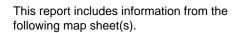


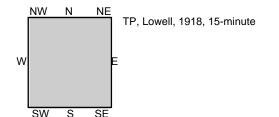




APPENDIX A HISTORIC INFORMATION







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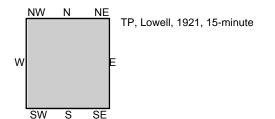
Hudson, NH 03051

Langan Environmental Services CLIENT:

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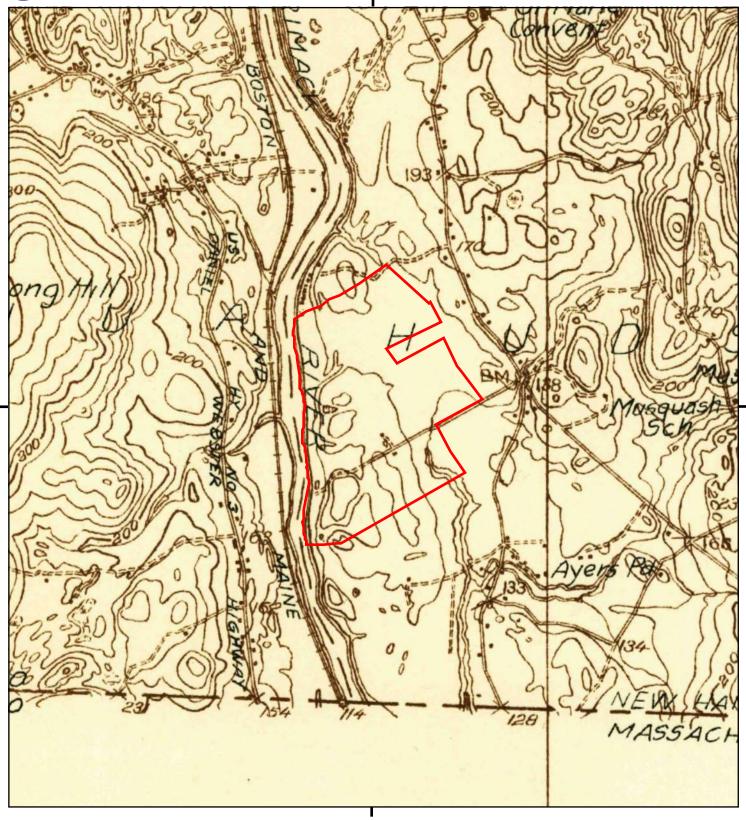
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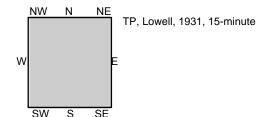
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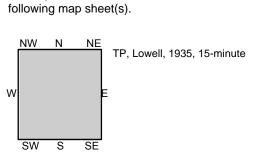


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Hudson, NH 03051



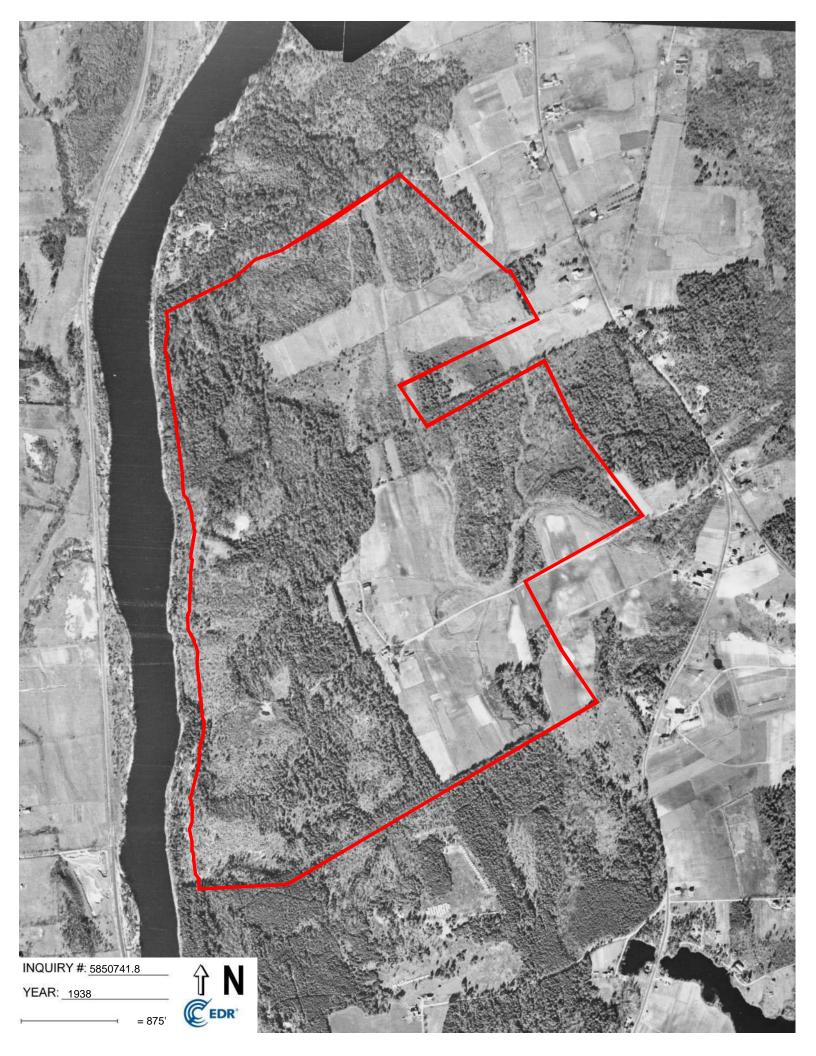


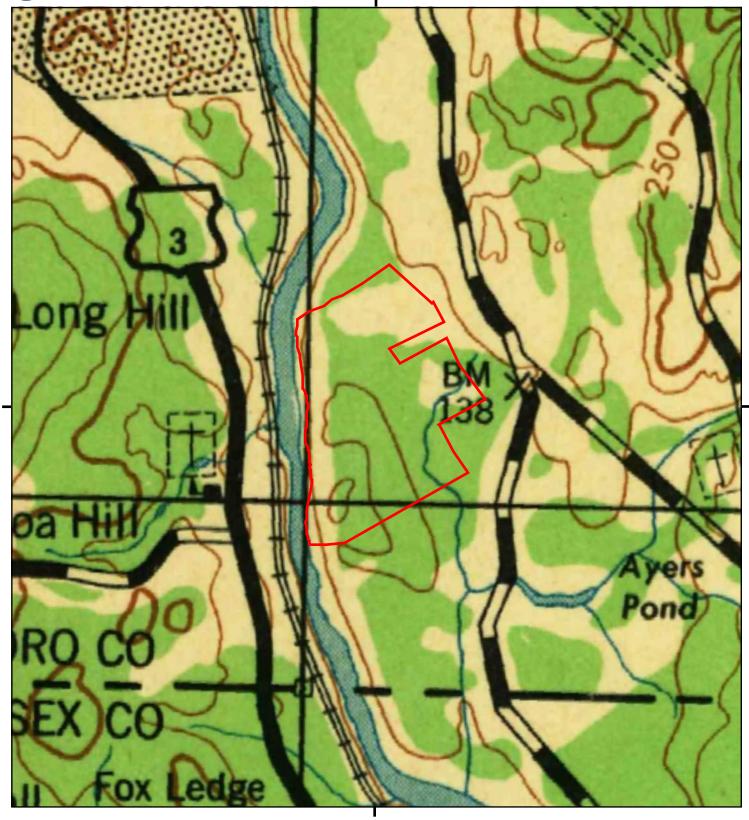
0 Miles 0.25 0.5 1 1.5

SITE NAME: 59 Steele Road ADDRESS: 59 Steele Road

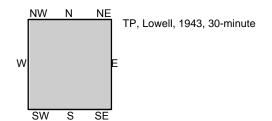
Hudson, NH 03051







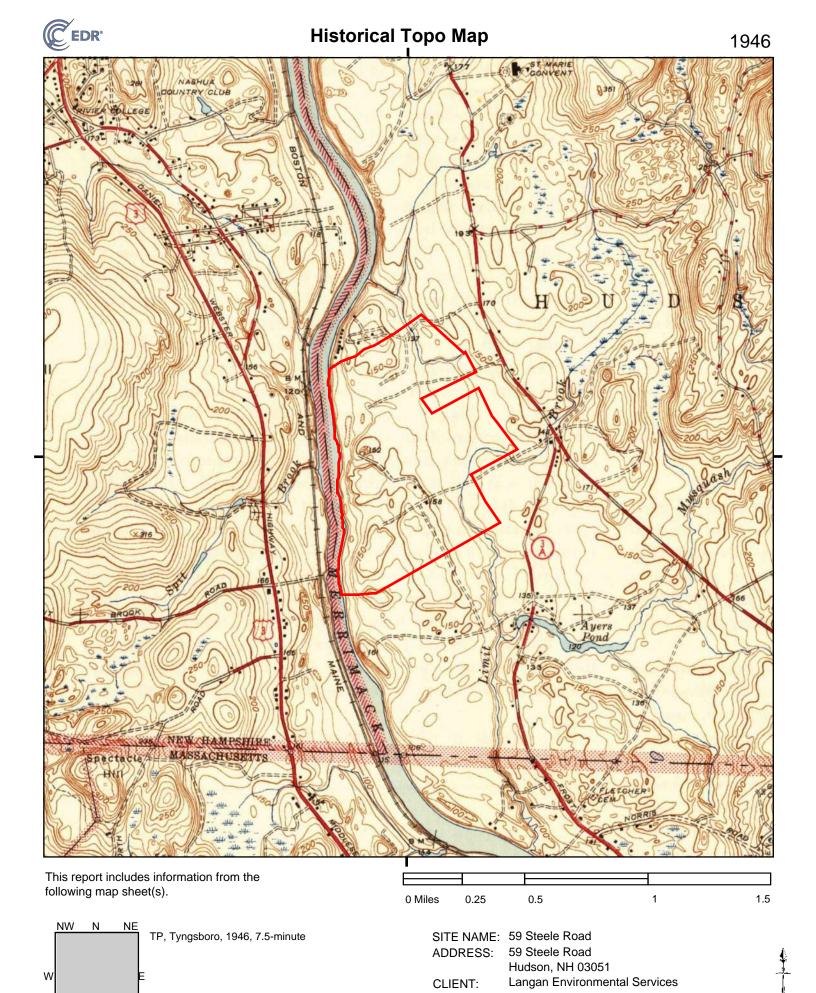
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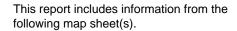
0 Miles 0.25 0.5 1 1.5

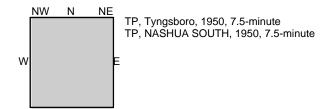
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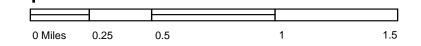
Hudson, NH 03051



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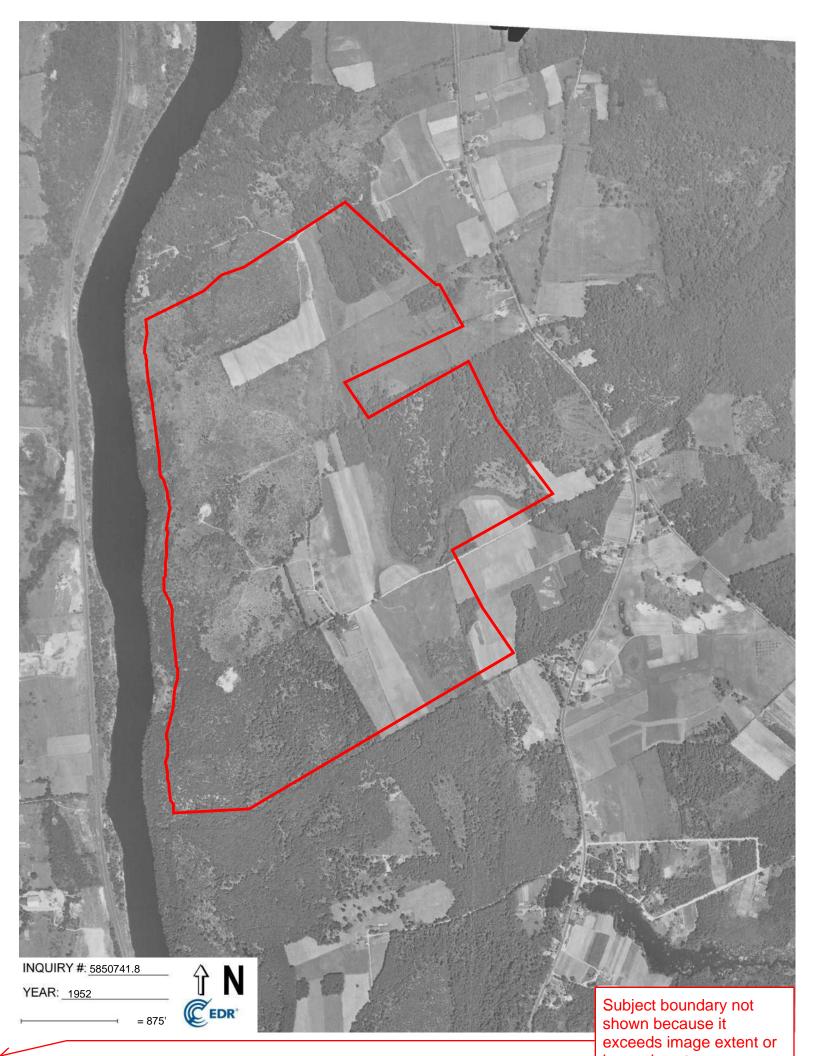


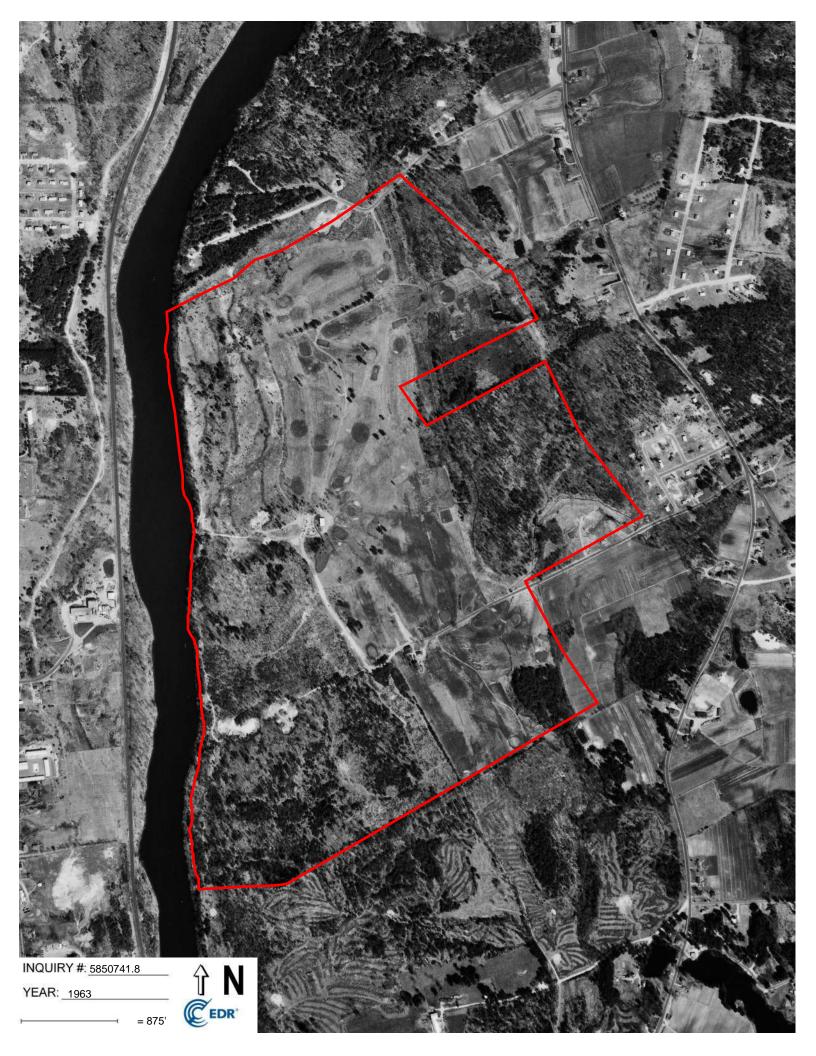


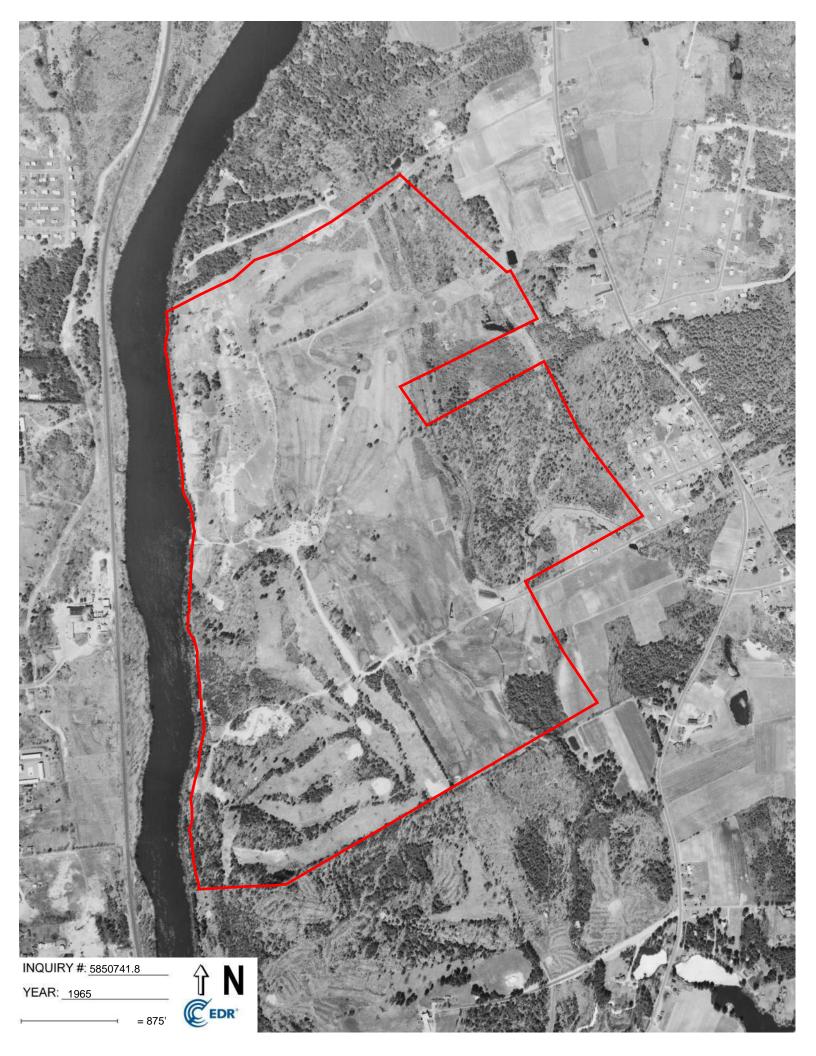
SITE NAME: 59 Steele Road ADDRESS: 59 Steele Road

Hudson, NH 03051

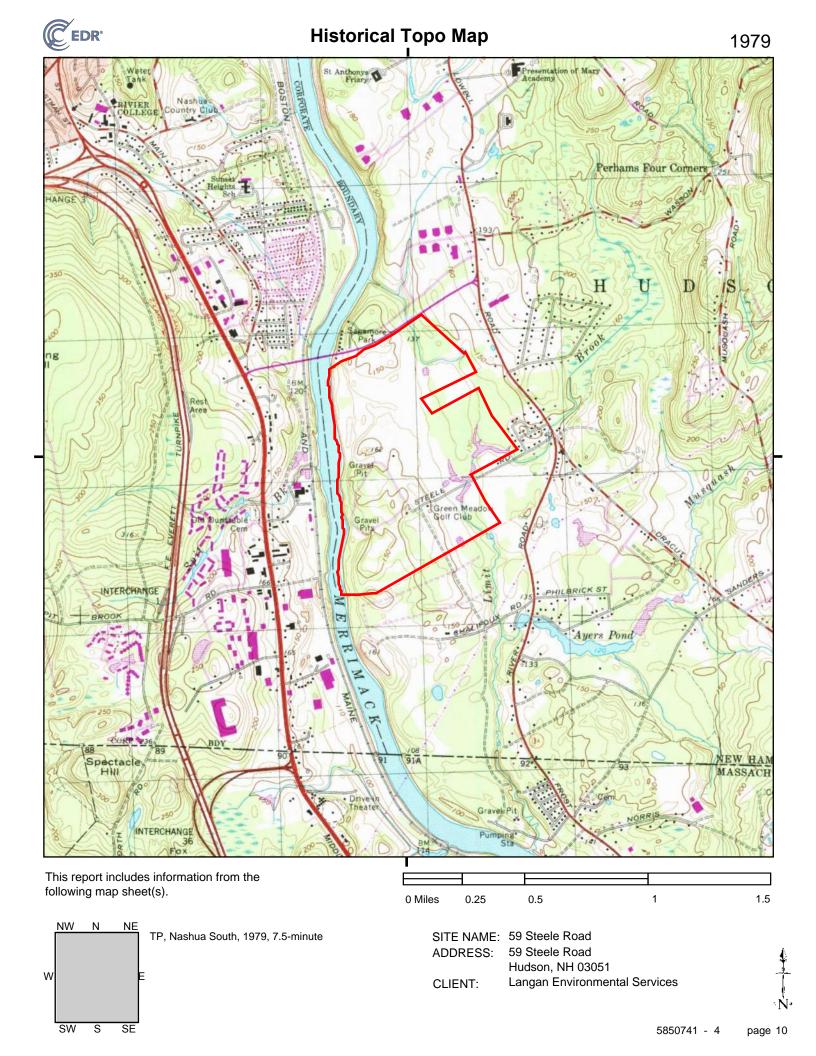


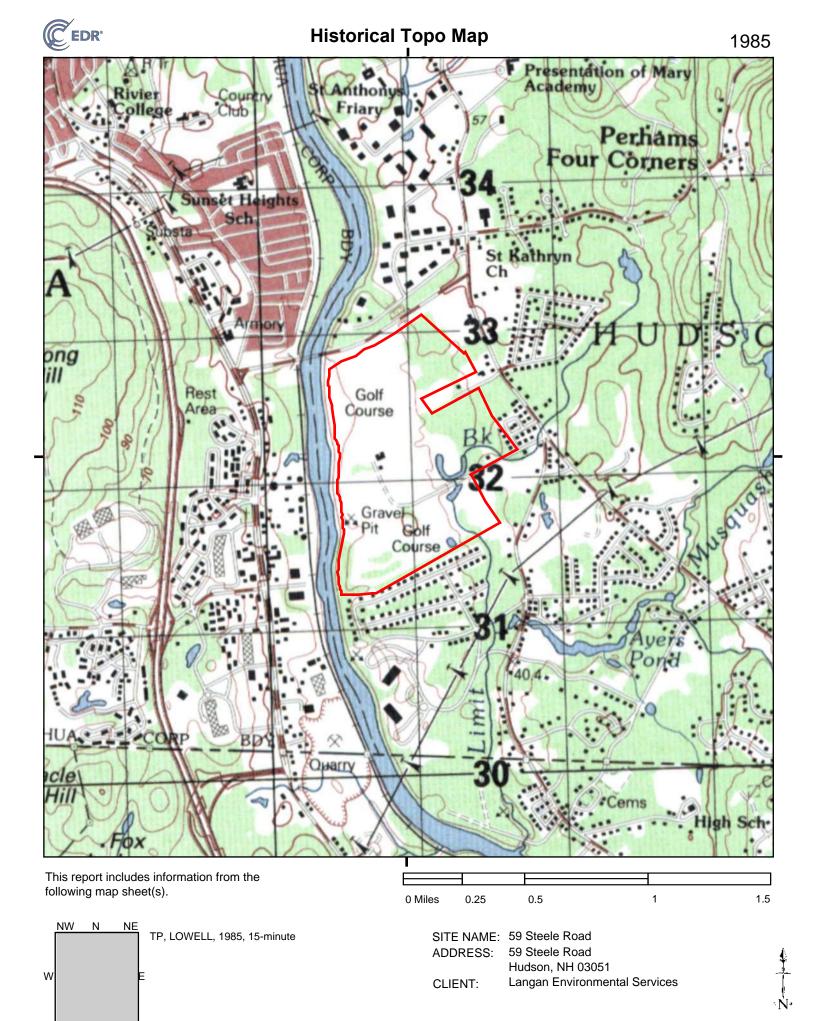




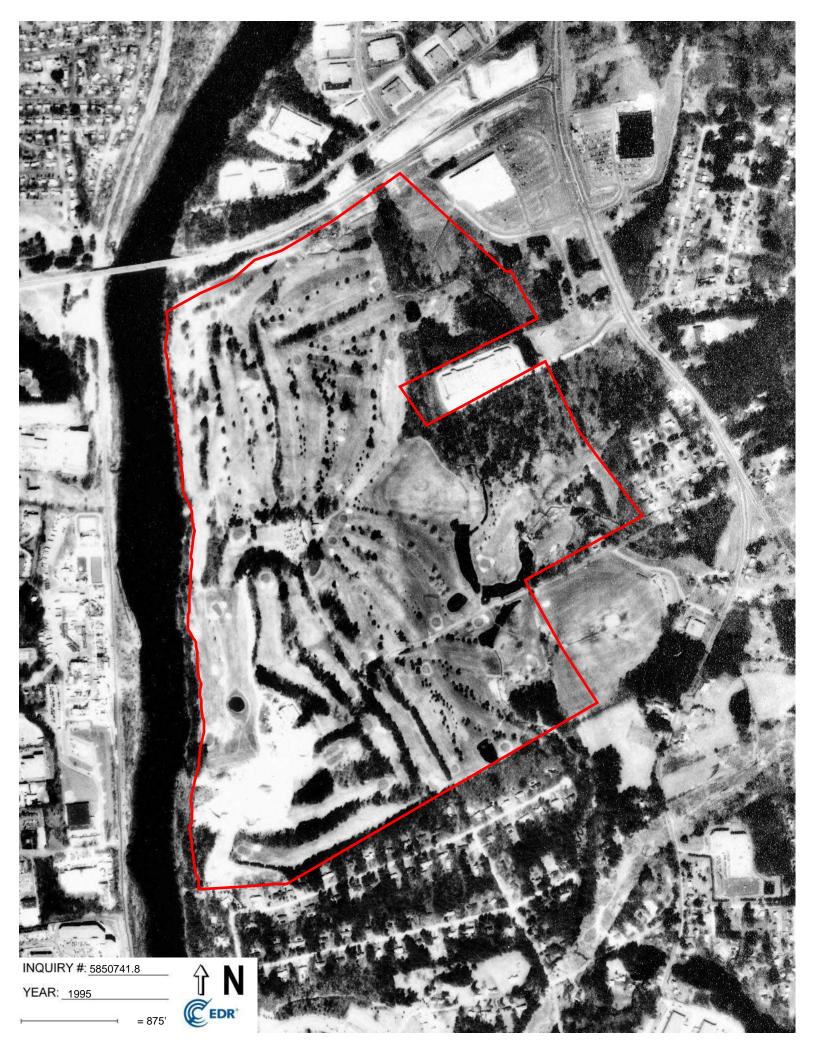


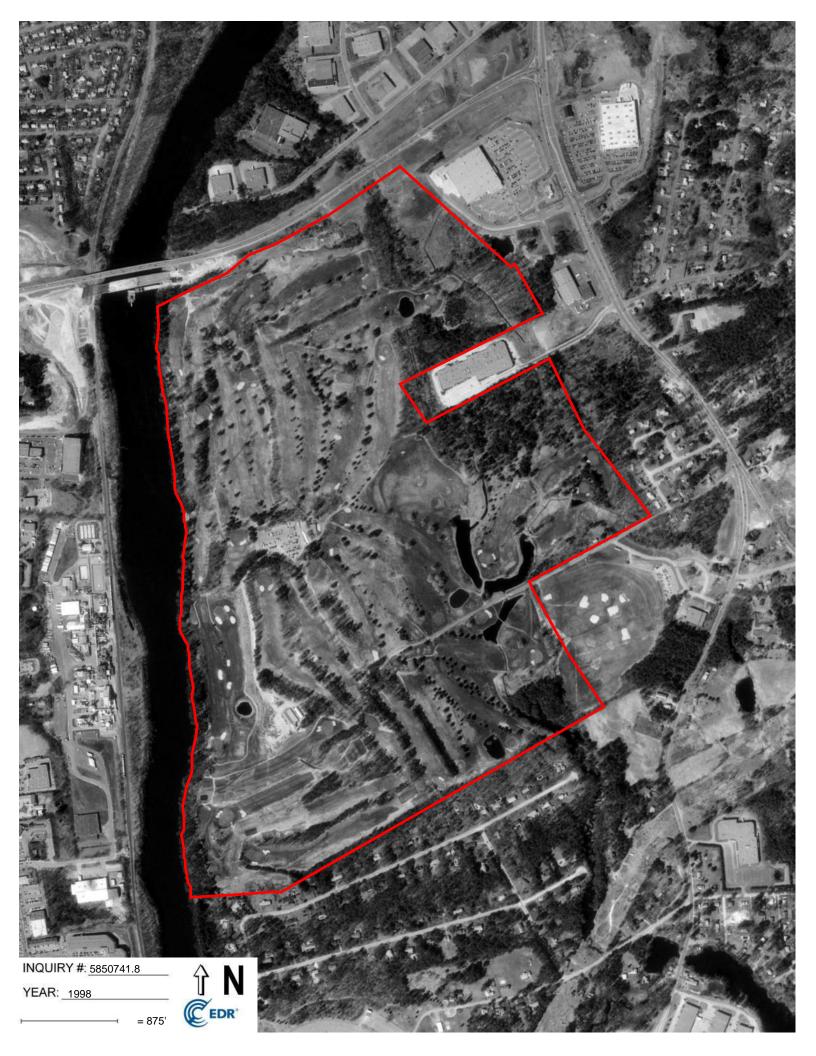




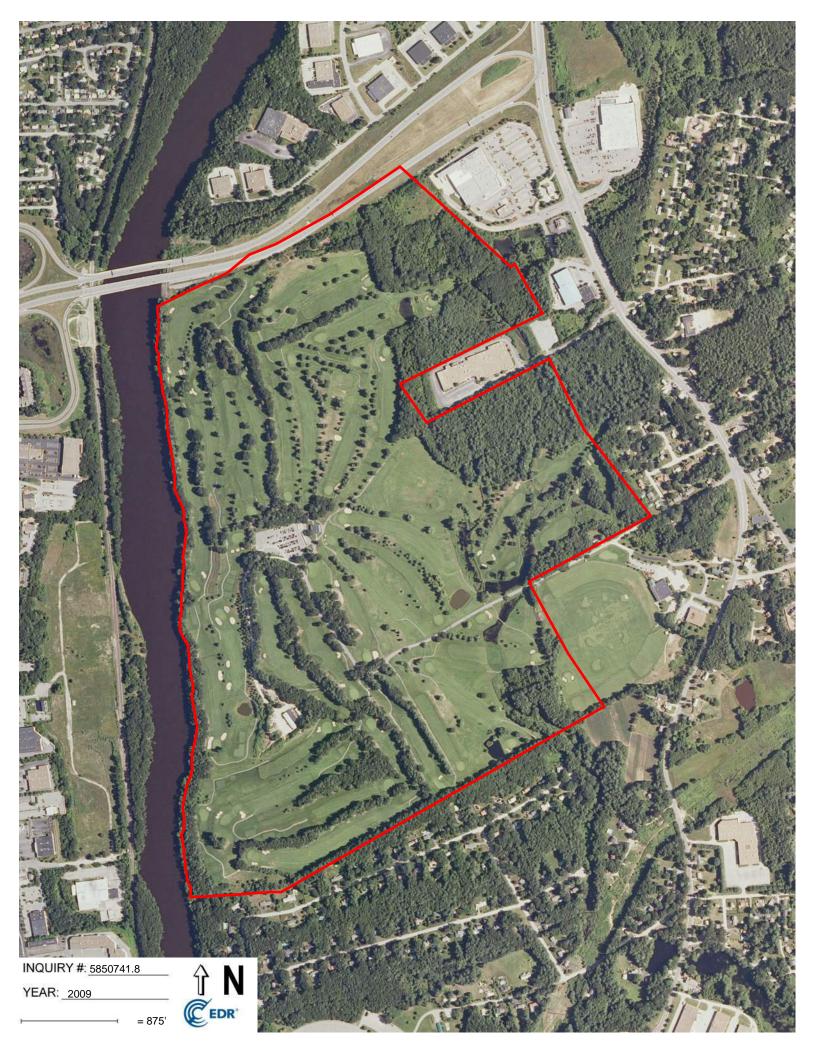


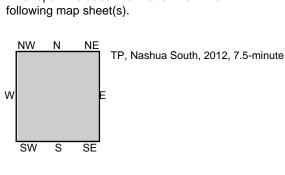












SITE NAME: 59 Steele Road ADDRESS: 59 Steele Road

Hudson, NH 03051

CLIENT: Langan Environmental Services

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APPENDIX B AVAILABLE GEOTECHNICAL REPORT

TABLE 1 SUMMARY OF TEST BORINGS AND TEST PITS

River Place Hudson, New Hampshire

	Notes	Ground	Exploration	Groundwater ³		Thickness of Deposit (feet)							Ref	usal
Test Boring Designation ¹		Surface Elev. +/-(feet) 2	Depth (feet)	Depth to (feet)	Elev. of (feet)	Topsoil	Subsoil	Silit	Sand	Silty Sand	Gravelly Sand	Peat	Depth to	Elev. of
B-1	6	136.0	30.2	NA					29.7				30.2	105.8
B-2		150.6	22.0	NA		0.2			>21.5				NE	
B-3		138.7	22.0	NA		1.0	1.0	>13.5	6.5				NE	1
B-4		132.8	22,0	NA		1.0	1.5	3.5	>16				NE	
B-5	6	153.9	13.2	NA		1.0			11.2				13.2	140.7
B-6	-	119.8	22.0	15.0	104.8	0.5	1.5			>20			NE	
B-7		111.2	22.0	6,0	105.2	0.5	2.0	>13.5	6.5				NE	
B-8		116.6	27.0	21.0	95.6	0.3	2.2			>24.5			NE	
B-9		147.5	37.0	25.0	122.5				8,5	>28.5			NE	
B-10 (OW)	4	112.9	25.0	19.6	93.3	2.0			>23	1			NE	
B-11	6	169,6	10.5	NA		1.0	1.0			8,0	0.5		10.5	159.1
B-12	6	132.1	20.8	3.0	129,1	2.0				18.8			20.8	111.3
B-13	6	127.8	15.1	NA		0.5				14.6			15.1	112,7
B-13A	6	128.1	19.1	5.6	122.5	0.5				15,0	3.6		19.1	109.0
B-14		133,3	11.0	3.6	129.7	1.2	1.3		>8.5				NE	
B-15		133.7	12.0	3.7	130.0	0.5	1.5		>11,5				NE	
B-16	5	129.7	12.0	6.0	123.7	1,0	1.0		>6	4.0			NE	
B-17 (OW)	5	132.6	19.0	10.3	122.3	0.5	1.0	7.0	>11.5	1.0			NE	
B-18	- 5	132.4	12.0	5.5	126.9	1.0	1.0		>10				NE	
B-19	6	149.2	16.5	15.0	134.2	1.0	1.0		9.9	2,1	2.5	-	16.5	132.7
B-20 (OW)		133.1	11.0	3,8	129.3	0.7	1.3		>3.5	5,5			NE	
TP-1		146.6	7.0	NE	125.5	0.5	1.5		3.5	>3			NE	
TP-2		135.1	7.0	NE		0.3			5.5	>6.7			NE	
TP-3		138.5	7.0	NE		0.5				>6.5			NE	
TP-4		157.7	6.5	NE		0.5				0.5	>6		NE	_
TP-5	6	136.7	2.5	NE		0.5				1	>2.5		2.5	134.2
TP-5A	6	136.7	2.5	NE					2,5	-	- 2,5		2,5	134.2
TP-6		131,3	7.0	7.0	124.3	1.5			4,3	>5.5		22	NE.	154,2
TP-7		138.5	7.0	NE NE		0.5	_			>6.5			NE	-
TP-8		119,1	7.0	NE		0.5	0.8			>5.7		-	NE	
TP-9		137.2	7.0	NE		0.7	0.0			>6.3			NE	\vdash
TP-10		119.0	7.0	NE		0.7				>6.5			NE	
TP-11		109.6	7.0	NE		1.5		>5.5		- 0.5			NE	
TP-12		134.1	7.0	NE		0.5		4.0	>2,5	+			NE	-
TP-13		139.9	6.5	NE		0.4		1.0	>5	1,1			NE	
TP-14		138.1	6.0	NE		0.4			>4.5	1,1			NE	
TP-15	7	150.0	6.5	NE		0.5			>2.2	3.8			NE	†
TP-16		142,5	7.0	NE NE		0.8			>4.8	1,4			NE NE	
TP-17		135.8	7.0	NE		0.5			>5	1,5			NE	—
TP-17		126,5	6,5	5.4	121,1	0.3			-5	4.0		>2,5	NE NE	1
TP-19		120,3	7.0	NE	177.55	0.2				>6.2		- 4,3	NE NE	
TP-19 TP-20		133.2	7.0	4.8	128,4	0.8				>6.2			NE NE	1
TP-21		127.7	6.8	6.7	121.0	0.7				>6.3			NE NE	†
TP-21		146.3	7.0	NE	121.0	0.5	-	>0.8	5.8	70.3			NE NE	

Notes:

- 1. Refer to Appendix B for test boring logs and Appendix C for test pit logs.
- Approximate ground surface elevation information was interpolated from survey information presented on a plan entitled "Boring/Test Pit/Observation Well Location Plan, 59 Steele Road, Hudson, New Hampshire," prepared by Hayner/Swanson, Inc. of Nashua, New Hampshire, dated April 2006.
- Groundwater readings shown for test borings with observation wells installed were measured in groundwater observation wells on April 14, 2006. Italicized groundwater readings represent groundwater readings taken during drilling or test pit excavation and do not represent stabilized levels.
- 4. Cobble layer encountered from 15 to 15.5 feet below ground surface. Sand deposit thickness shown does not include cobble layer thickness.
- 5. Boring terminated due to running sands.
- 6. Refusal encountered due to boulders or bedrock.

04.0024050.01 Boring & Test Pit Summary.xls

7. Approximate ground surface elevation was interpolated from topography site plan provided by Hayner Swanson.

Abbreviations: NA = Not Available NE = Not Encountered

OW = Observation Well Installed

GZA GeoEnvironmental, Inc.

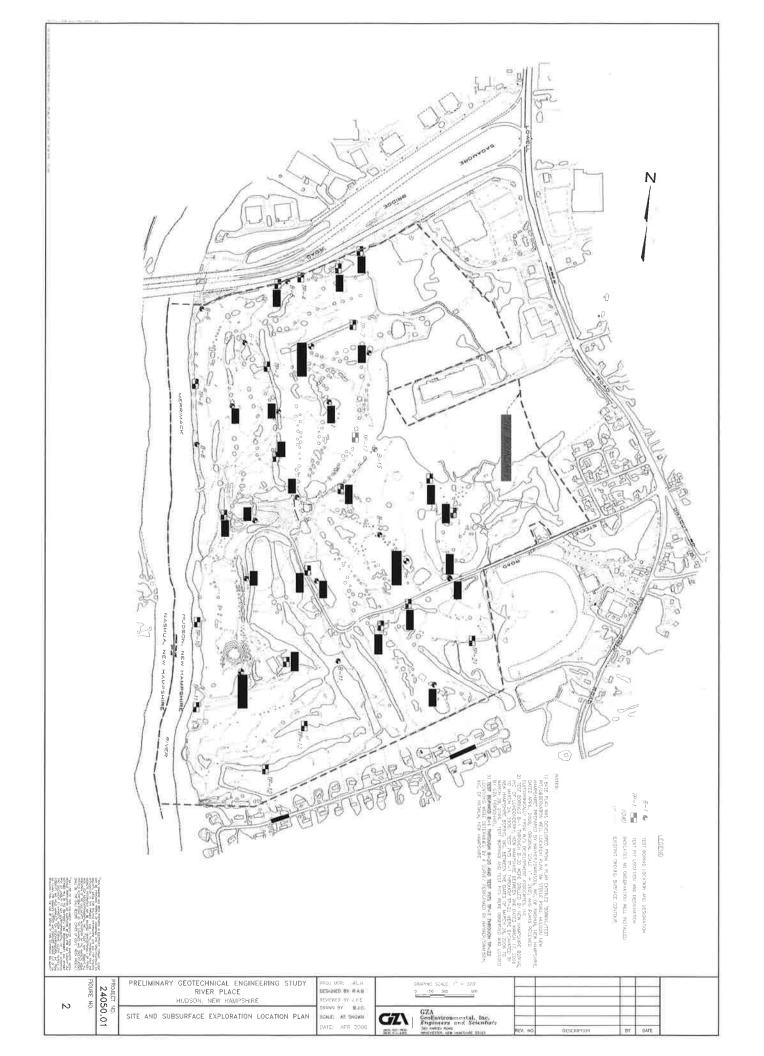
TABLE 2 SUMMARY OF LABORATORY TESTING

River Place Hudson, New Hampshire

Boring / Test Pit	Sample	Depth	Soil Description		Grain Size Distribution				
No.	No.	(feet)	**************************************	Gravel	Sand	Silt	Water Content (%)		
B-1	S-3	10-12	Fine to coarse SAND, some Gravel, trace Silt	21.0	73.7	5.3	4.4		
B-2	S-2	5-7	Medium to coarse SAND, little Gravel, trace Silt	15.0	80.0	5.0	3.1		
B-3	S-2	5-7	Medium to coarse SAND and Gravel, trace Silt	36.9	60.4	2.7	3.3		
B-4	S-2A	5-6.8	SILT and fine Sand	0.1	48.8	51.1	20.4		
B-5	S-3	10-12	Fine to medium SAND, some Gravel, little Silt	33.9	46.3	19.8	5.0		
B-8	S-2	5-7	Fine to medium SAND, some Silt	0.0	73.4	26.6	7.5		
B-9	S-2	5-7	Fine to medium SAND, trace Silt	0.2	95.9	3.9	5.8		
B-11	S-2	4-6	Fine to medium SAND, some Silt	0.1	79.4	20.5	7.0		
B-15	S-2	5-7	Fine to coarse SAND, little Silt, trace Gravel	7.5	75.9	16.6	24.3		
B-16	S-1B	0-2	SILT, trace fine Sand	0.0	4.8	95.2	33.7		
B-17(OW)	S-2	4-6	SILT, some fine Sand	0.2	30.0	69.8	25.4		
B-18	S-3	10-12	Fine to medium SAND, trace Silt	0.0	93.2	6.8	26.4		
TP-1	S-3	3.5	Medium to coarse SAND, little Gravel, trace Silt	10.8	85.6	3.6	4.0		
TP-2	S-2	1.5	SILT and fine Sand	0.0	44.1	55.9	13.3		
TP-4	S-1	2	GRAVEL and medium to coarse Sand, trace Silt	51.3	44.0	4.7	4.4		
TP-5A	S-1	11	Fine to coarse SAND, some Silt, little Gravel	19.6	55.5	24.9	7.6		
TP-6	S-2	2-3	Fine to medium SAND, some Silt	0.0	68.0	32.0	14.1		
TP-9	S-2	2	Fine to medium SAND and Silt, trace Gravel	5.3	59.3	35.4	10.2		
TP-13	S-3	3	Medium to coarse SAND, trace Silt	0.5	97.5	2.0	4.4		

Notes:

^{1.} Refer to Appendix D for laboratory results.



		C	ZA				Rive	er Place			Boring No	. В	-1
	74	Ğ	oEnviron	mental, Ind Scientists	e.		Hudson, N	ew Hampshi	ire		Page:	1 of _	1
											File No.:		
	tractor:			hire Boring Smith	I, Inc.	-	Auger/	Sampler			Check:		
	eman: _		Chri			Type	Casing HSA	SS	Date	GROUN Time	DWATER RE		Stab
	e Start/F			8-06 / 3-18-	-06			1.38 in	Date	mile	Depth	Casing	Stati
						Hammer Wt.:							
GS	Elev.: _	136.0	ft Dat	tum:N	IGVD	_ Hammer Fail: _		30 in					
		Sar	nple Infor	mation		Rig Type:Die	etrich D50 Truc	ck Mounted Rig	» <u></u>				
출프					Fleid					92	Feeder		.114
Depth (ft)	No.	Pen./ Rec. (In)	Depth (ft)	Blows (/6")	Test Data (ppm)	Descriptio	Sample on & Classifica		Stratum Desc.	Ë	Equipr	nent Insta	illed
									ASPHALT	1		No	
									0.5 11			quipment nstalled	
											'	Hatalieu	
5-													
	S-2	24/	5.0- 7.0	16-10 12-19	ND	No Recovery Auger cuttings des	scription:			2			
			'	12-10		Brown, fine to med		tle Gravel,					
-						little Silt.							
0.2													
10-	S-3	24/	10.0-	9-12	ND	 Medium dense, lig	iht brown foo						
-		16	12.0	15-16		SAND, some Grav		to coarse		- 91-4			
										- 1 1			
:-										- 1 1			
2													
15-	S-4	24/	15.0-	17-36	ND	Very dense, light b	prown, fine to d	coarse SAND.	SAND				
ंड		22	17.0	33-53		little Gravel, trace	Silt.						
-													
1													
20													
20-	S-5	24/	20.0-	14-15	ND	Medium dense, lig	ht brown, fine	to medium					
		14	22.0	19-47		SAND, trace Silt.							
2													
25-													
	S-6	3/ D	25.0- 25.3	100/4"	NA	No Recovery							
12			20.0										
S.													
-													
30-	S-7	2/	30.0-	100/2"	NA /	No Recovery - spo	on refugal	١,					
-	<u> </u>	0	30.2	100/2		Bottom of boring a	t 30.2 feet bel	ow ground	30.2 ft				
-						surface. Split spore	on and auger i	refusal					
-						encountered.							
-													
	1 0-11-	omel-			Antonio d	L	1- 0/05 :						
r I	ı. Soli s İsobu	iampies itylene-i	were scre n-air stand	ened for to lard. Total	otal volati VOCs de	le organic compour etected are reporte	nds (VOCs) us d in parts per r	sing a TEI Mode million (ppm) in	I 580B orga the "Field T	nic vapo est Data	r meter refei " column " ^p	enced to a	an tes no
E	VOC	s detect	ed.				p=to poi i		rioju i	Data	Joigitiff. 1	munca	
A R	≤. Mece	or Asp	hait in spo	on tip.									
R K													
ŝ													<i>1</i> 00

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

SOIL BL WELL BORING LOGS GPJ GZA_NH.GDT 4/18/06

		102	7.4				Riv	er Place				Boring No	.: B	-2
	7 A	Ge	oEnviron	mental, Ind	04	1	Hudson, N	lew Hampshi	re		Page:1			1
		En	gineers an	d Scientists								File No.:	04.00240	50.01
Con	tractor:	Ne	w Hamps	hire Boring	, Inc.	2	Auger/					Check: _	RAB	
				Smith			Casing	Sampler		GRO	OUNC	WATER R	EADINGS	
Log	ged by:			is Melby		Type:	HSA	SS	Date	Ti	me	Depth	Casing	Stab
		inish: _		7-06 / 3-17-			2.25 in							
Bor	ing Loca		_			_ Hammer Wt.:								
GS	Elev.: _	150.6	ft Dat	tum:N	IGVD	_ Hammer Fall:		30 in		_		_		
		San	nple Infon	mation		Rig Type:	rich D50 Tru	ick Mounted Rig	l	_				
£_			1		Field	<u> </u>			,1		9	Fouin	ment Insta	llod
Depth (ft)	No.	Pen./ Rec.	Depth	Blows	Test		Sample		Stratum	۱	<u> </u>	Equip	ment insta	illeu
-	110.	(in)	(ft)	(/6")	Data (ppm)	Description	n & Člassific	cation	Desc.		Remarks			
	S-1	24/	0.0-	8-7	ND	S-1A: Medium den	se, dark bro	wn, fine to	3.3 n ASPHAL O.5 n TOPSOII	-	4		No	
-		12	2.0	9-8		medium SAND, littl		little Silt.	0.5 ft TOPSOII	4			quipment	
_						Topsoil S-1B: Medium den	ee light hro	wn fine to					Installed	
						medium SAND, littl	le Silt.	WII, IIIIC LO						
		1												
Ī	-	1												
5-	S-2	24/	5.0-	7-7	ND	Medium dense, ligh	nt brown, me	dium to coarse						
		12	7.0	9-10		SAND, little Gravel								
										- 1				
Ī														
Ī														
10-	S-3	24/	10.0-	7-7	ND	Medium dense, ligh	at brown fin	e to coarse						
-		14	12.0	7-6	'''	SAND, trace Silt.	it brown, inc	2 10 000130	SAND					
					l				SAND					
-														
15-	S-4	24/	15.0-	29-6	ND-	Medium dense, ligh	at brown fin	e to coarse						
	J-4	13	17.0	9-10	ND	SAND, trace Silt.		e to coarse						
Ī														
-														
-														
20-	S-5	24/	20.0-	6-7	ND	Medium dense, ligi	ht brown 5-	o to cooree						
	3-5	20	22.0	8-10	ן אינו	SAND, trace Silt.								
								·						
Ĭ						Bottom of boring at			22.0 ft					
)	1	I	I		1	surface. No refusa	u encountere	ea.	I					

Soil samples were screened for total volatile organic compounds (VOCs) using a TEI Model 580B organic vapor meter referenced to an
isobutylene-in-air standard. Total VOCs detected are reported in parts per million (ppm) in the "Field Test Data" column. "ND" indicates no
VOCs detected.

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

25-

SOIL BL WELL BORING LOGS.GPJ GZA NH.GDT 4/18/06

REMARKS

· -		GZ	'A			River Place Boring No.: B-3 Hudson, New Hampshire Page: 1 of 1								
C	74	Ge	oEnviron	mental, Inc d Scientists	8	Hudson, New	Hudson, New Hampshire							
-	(_			File No.; 04.0024050.01 Check: RAB					
	tractor:			hire Boring	, Inc.	Auger/		000III						
				Smith s Melby		_ Casing _ Type: <u>HSA</u>	SS	Date	GROU		R READINGS n Casing	Stab		
Logged by: Chris Melby Date Start/Finish: 3-17-06 / 3-17-06 Boring Location: See Exploration Location Plan						I.D.: 2.25 in	1.38 in	Date	Time	Dept	Cashig	Juli		
						Hammer Wt.								
			ft Dat		IGVD	_ Hammer Fall:	30 in							
						Rig Type: Dietrich D	50							
_		San	pte Infor	mation										
Depth (ft)	No.	Pen./ Rec. (in)	Depth (ft)	Blows (/6")	Field Test Data (ppm)	Sample Description & Classificatio	Stratum Desc.		Equipment Installed					
-	S-1	24/ 12	0.0- 2.0	3-9 6-4	ND	S1A: Medium dense, brown, fine to SAND, some Silt, little Organics. T S1B: Medium dense, light brown, fi medium SAND, some Silt, trace Ro Subsoil	opsoil ine to	TOPSOIL 1.0 ft SUBSOIL 2.0 ft — —	1		No Equipment Installed			
5- -	S-2	24/ 10	5.0- 7.0	3-3 10-7	ND	Medium dense, brown, medium to o SAND and Gravel, trace Silt.	coarse	SAND				,		
. 5								8.5 ft — — —						
10	S-3	24/ 21	10.0- 12.0	10-14 13-16	ND	Very stiff, light brown, SILT, some f	ine Sand.					z		
15-	S-4	24/ 16	15.0- 17.0	5 -9 13-12	ND	Very stiff, light brown, SILT, some f Wet	fine Sand.	SILT						
20 – -	S-5	24/ 19	20.0- 22.0	7-7 11-10	ND	Very stiff, light brown, SILT, little fir Wet	ne Sand.							
- -						Bottom of boring at 22 feet below g surface. No refusal encountered.	round	22.0 ft						
25-														
R E M A R K S All de Water prese	isob VO0	utyle'ne-i Ss detec	in-air stan ted.	dard. Tota	I VOCs	ile organic compounds (VOCs) using letected are reported in parts per mile	llion (ppm) in	the "Field 1	est Da	por meter ta" colum	referenced to	o an cates no		
Water prese	r level rea	idings hav	are approxir e been mad urements w	e at times and	allon lines d under col	represent approximate boundary between so ditions stated. Fluctuations of groundwater n	nay occur due t	o other factors	idual. (han tho:	e Borir	ı g No. : B-3			

		GZ				River Place Boring No.: B-4								
C	74	Ge	oEnviron	mental, Inc d Scientists			Hudson, N	New Hampsh	ire		Page:1 of File No.:04.0024	1		
Contractor: New Hampshire Boring, Inc. Foreman: Ken Smith Logged by: Chris Melby Date Start/Finish: 3-17-06 / 3-17-06 Boring Location: See Exploration Location Plan					, Inc. -06 tion Plan	_ I.D.: . _ Hammer Wt.: .	Auger/ Casing Type: HSA SS I.D.: 2.25 in 1.38 in Hammer Wt.: 140 lb Hammer Fall: 30 in		Date	GROUNI Time	Check: RAI OWATER READINGS Depth Casing	B		
	_164					Rig Type:		ch D50						
Depth (ft)	No. Pen./ Depth Blows Test Data (ppm)					Descript	cation	Stratun Desc.	Remarks	Equipment Inst	Equipment Installed			
-	S-1	24/ 16	0.0- 2.0	8-4 1-2	ND	S-1A (Top 12 inc to medium SANI Topsoil S-1B (Bottom 4 i little fine Sand, to	D, some Silt, lit inches): Light	ttle Organics. brown, SILT,	TOPSOII TOTE SUBSOII 2.511 SILT AND F SAND		No Equipment Installed			
5-	S-2	24/ 20	5.0- 7.0	3-5 7-8	ND	S-2A: Stiff, light S-2B: Brown, fir	brown, SILT a ne to coarse S	and fine Sand. AND, trace Silt.	60 N					
10-	S-3	24/ 14	10.0- 12.0	5-8 12-15	ND	Medium dense, I SAND, trace Silt		n to coarse	SAND					
15-	S-4	24/ 18	15.0- 17.0	4-5 9-9	ND	Medium dense, SAND, trace Silt		n to coarse						
20-	S-5	24/ 21	20.0- 22.0	5-10 11-16	ND	Medium dense, SAND, trace Silt		n to coarse						
25-				ę.	<	Bottom of boring surface. No refu	j at 22 feet bel isal encounter	ow ground ed.	22.0 ft					
REMARKS All determined the state of the stat	isob	samples utylene- is detec	in-air stan	eened for t	otal vola Il VOCs d	ile organic compo letected are repor	ounds (VOCs) ted in parts pe	using a TEI Mod ir million (ppm) ii	lel 580B org	anic vapo Test Data	or meter referenced to " column. "ND" indic	o an cates no		
All de Water prese	level rea	dings hav	are approxir e been mad urements wi	e at times and	ation lines I under cor	represent approximate ditions stated. Fluctu	e boundary betwe ations of groundw	en soil types, transit ater may occur due l	ions may be g to other factors	radual. s than those	Boring No.: B-4			

		102	7.A.				Riv	er Place			Boring No.:	3-5	
	7/	GZ Ge	oEnviron	mental, Inc	: .			New Hampsh		F	Page:1 of	_1_	
				d Scientists		-					File No.: <u>04.0024</u> Check: RA		
	ntractor:			hire Boring	, Inc.	_	Augeri	Sampler			-1100111		
	reman:			Smith s Melby		-	Casing Auger	SS	Date	GROUNDY	WATER READINGS Depth Casing	Stab	
	gged by: te Start/F			7-06 / 3-17-	-06	_ Type: _ I.D.:		1.38 in	Date	Time	Depth Cashig	Jean	
						Hammer Wt.:							
	Elev.:				IGVD	Hammer Fall:		30 in					
\vdash	T	Sen	nple Infor			Rig Type:	Dietri	ch D50					
_ ۾ ا		San	ihia iiiioti	nauon	Eigle				1	100	Favilament Inc.	halla d	
Depth	No.	Pen./ Rec. (in)	Depth (ft)	Blows (/6")	Field Test Data (ppm)	Descrip	Sample tion & Classifi	cation	Stratum Desc.	Remarks	Equipment Ins	called .	
	S-1	24/	0.0-	5-6	ND	S-1A (Top 9 inch			TOPSOIL	. 1	No		
		18	2.0	5-7		brown, fine to me little Silt. S-1B (Bottom 9	inches): Light	_	1.0 ft		Equipmen Installed	τ	
						medium SAND,	iittie Siit.						
5-		04/		40.44	N/D	No di una danas	Kahi haassa <i>Ga</i>		SAND	2		25	
	S-2	24/ 12	5.0- 7.0	12-14 9-18	ND	Medium dense, SAND, trace Gra							
]								8.0 ft COBBLES	3			
	-								9.0 ft	4			
10	S-3	24/ 18	10.0- 12.0	41-51 52-87	ND	Very dense, bro some Gravel, litt	wn, fine to med tle Silt.	dium SAND,	SAND AN GRAVEL				
	S-4	0/	13.2-	50/0"	 	No Recovery			13.2 ft				
15		0_	13.2			Auger and spoo feet below grour	n refusal enco nd surface.	untered at 13.2					
	-		¥										
20	_												
	-												
	-												
25	-												
4/18/06	1												
H GDT	-	-											
eza L	1										W 30 A22		
SOIL BL WELL BORING LOGS, GPJ GZA NH.GDT 4/18/06	VOCs detected. M 2. Rock lodged in spoon tip. A 3. Auger encountered cobbles at 8 to 9 feet below ground surface.												
WELL BORIN	4. Add perf 5. Add	itional be ormed.	oring drille Cobbles	ed approximence	nately 10 ed at app	feet south. Auge roximately 9 feet	ers advanced to below ground :	surface			race. No sampling ground surface. No	sampling	
All o	ter level rea	ıdings hav	are approxir e been mad urements we	e at times and	cation lines d under co	represent approximat aditions stated. Fluctu	te boundary between the bounda	en soil types, transi vater may occur due	tions may be gr to other factors	adual. than those	Boring No.: B-5		

performed.

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual.

Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

		GZ	r.A.				Riv	er Place				Boring No	.: B	-6
	7	Ge	oEnviron	mental, Inc d Scientists	:•	47	Hudson, I	New Hampshi	re		-	Page:	1 of _	_1_
		Eng	gineers an	d Scientists		5 7	-	•				File No.:		
Con	tractor:	Ne	w Hamps	hire Boring	, Inc.	=	Auger/					Check: _	RAE	
Fore	man:	X	Matt	Stone		== <u>==</u>	Casing	Sampler		GRO	UNE	WATER R	EADINGS	
	ged by:		Chri	s Melby		Type:		SS	Date	Tir	me	Depth	Casing	Stab
Date	Start/F	inish: _	3-20	0-06 / 3-20-	-06	I.D.:	2.25 in	1.38 in						
Bor	ing Loca			ration Loca	tion Plan	L Hammer Wt.:								
GS	Elev.:	119.8	ftDat	tum:N	IGVD	_ Hammer Fall:		30 in						
_	ľ	San	nple Infor	mation		Rig Type:	Dietri	ch D50			_			
_ ء ا		الفح	hpte ilitori	IIIauoii	E1.1.1				ļ	L	us I	<u> </u>		l
Depth (ft)	No.	Pen./ Rec. (in)	Depth (ft)	Blows (/6")	Field Test Data	Descript	Sample tion & Classifi	cation	Stratum Desc.		Remarks	Equip	ment Insta	alled
⊢	S-1	24/	0.0-	4-5	(ppm) ND	S-1A: Medium d	iense, dark bri	own, fine to	TOPSOIL		1		No	
-	٠.	18	2.0	7-6		medium SAND,			0.5 ft				quipment	
						Topsoil			SUBSOIL				Installed	
1 -						S-1B: Medium d	lense, light bro	own, SILT, some	2.0 ft	7				
- 2						line Sand.				- 1				
2														
-										- 1				
5-	1									- 1				
·														
	S-2	24/	7.0-	6-5	ND	Medium dense, I	light brown, SI	LT, some fine						
15	1	20	9.0	6-7	1	Sand.								
-														
10-														
l '°	S-3	24/	10.0-	5-4	ND	Loose, light brov	vn, fine SAND	, some Silt.						
-		18	12.0	5-4										
12	ł								FINE SANE /	AND				
Ι.									GIL!					
٠	İ													
15-	S-4	24/	450	5-4	ND	Loose, light brov	un fine CAND	nama Cili			2			
	3-4	24/	15.0- 17.0	6-8	IND	Loose, light brow	טוו, וווי	, some one.			-			
· ·	ĺ				1									
	1				1					- 1				
	ļ				l					- 1	1			
										- 1				
	l									- 1				
20-	S-5	24/	20.0-	21-24	ND	Dense, light brow	wn, SILT and i	fine Sand.						
-		19	22.0	20-10	1									
						Bottom of boring	at 22 feet be	low ground	22,0 ft		3			
-	†					surface. No refu	ısai encountei	ed.						
	1													
25-]													
25-	1													
-	1													
	-				1									
]													
	l													
	1													
-														
	1. Soil	samples	s were scr	eened for t	otal vola	tile organic compo	ounds (VOCs)	using a TEI Mod	el 580B org	anic v	vapo	r meter ref	erenced to	an
R	isob	utylene-i	in-air stan	dard. Tota	l VOCs o	letected are repor	ted in parts pe	er million (ppm) ir	the "Field"	Test I	Data	" column.	"ND" indic	ates no
E M		is detect		arad at ann	ravimata	ly 15 feet below g	round eu d oco	hased on soil on	molee reco	verod				
A			countered.		A OVIIIIS (6	iy io idet below g	round Sulface	vascu vii SVII Sä	mpios reco	*eieu	•.			
R														
K														
S														

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

	/	162	'.Δ				Riv	er Place			Boring No	o.:B	-7
C	71	Ge	oEnviron	mental, Ind	c.		Hudson, N	lew Hampsh	ire		Page:	of _	
Fore	man: 🖢	Ne	w Hamps Matt	hire Boring Stone		-	Auger/ Casing	Sampler		GROUNI	Check: _	04.00240 RAB	
			Chri	is Melby		_ Type:	HSA	SS	Date	Time	Depth	Casing	Stab
		inish:		0-06 / 3-20			2.25 in	1.38 in	-				
		ation: 🗈 111.2			NGVD	Hammer Wt.: Hammer Fall:							
33	_16V	111.2	L Dai	,um	-	Rig Type:	Dietric	h D50					
_		San	nple Infor	mation	r	9 .,,,							
Depth (#)	No.	Pen./ Rec. (In)	Depth (ft)	Blows (/6")	Field Test Data (ppm)		Sample tion & Classific		Stratum Desc.	Rem	Equip	oment Insta	alled
	S-1	24/ 14	0.0-	5-5 5-3	ND	S1A: Medium de			TOPSOIL 0.5 ft	1		No Equipment	
		14	2.0	J-3		medium SAND, : S-1B: Medium d			SUBSOIL	.		Installed	
Ī						Sand.		,	~				
-									2.5 ft				
5-	S-2	24/ 24	5.0- 7.0	6-6 6-8	ND	Medium dense, l Silt. Damp	light brown, fin	e SAND, some	SILTY SAM	(D 2			
-									8.5 ft				
10 -	S-3	24/ 20	10.0- 12.0	6-7 6-5	ND	Stiff, light brown	e Sand. Wet						
15-	S-4	24/ 24	15.0- 17.0	7-7 6-5	ND	Stiff, light brown	, SILT, little Sa	ınd. Wet	ŞILT				
20-	S-5	24/ 24	20.0- 22.0	8-7 7-7	ND	Stiff, light brown seams, trace, fir	ne Sand. Wet						
25-						Bottom of boring surface. No refu			22.0 ft				
5 5													
RE MARKS	isob VO(utylene- Cs detec	in-air stan ted.	idard. Tota	al VOCs o	I ile organic compo letected are repor ground surface b	rted in parts pe	r million (ppm) i	n the "Field"	anic vapo Test Data	or meter re	ferenced to "ND" indic	an ates no
All de Wate	r level rea	adings hav	are approxir e been mad urements we	le at times an	cation lines d under con	represent approximat ditions stated. Fluctu	e boundary betwe lations of groundw	en soil types, transit ater may occur due	tions may be gr to other factors	adual. than those	Boring	No.: B-7	

GZ\	GZA GeoEnvironmental, Inc. Engineers and Scientists
Contractor: _	New Hampshire Boring, Inc.
Foreman:	Matt Stone

Logged by:

Date Start/Finish: _

Chris Melby

Boring Location: See Exploration Location Plan

3-20-06 / 3-20-06

River Place Hudson, New Hampshire

B-8 **Boring No.:** Page: ___1 of. File No.: 04.0024050.01

Check: Auger/ Sampler Casing **GROUNDWATER READINGS**

SS Date Stab Auger Depth Type: 2.25 in 1.38 in I.D.: 140 lb

Hammer Wt.: 30 in Hammer Falls

		Sam	ple Infor	nation		Rig Type: Dietrich D50			
(£)	No.	Pen./ Rec. (In)	Depth (ft)	Blows (/6")	Field Test Data (ppm)	Sample Description & Classification	Stratum Desc.	Remarks	Equipment Installed
-	S-1	24/ 14	0.0- 2.0	5-3 3-3	ND	S-1A: Loose, dark brown, fine to medium SAND, some Organics, little Silt. S-1B: Medium stiff, light brown, SILT, some fine Sand.	SUBSOIL 2.5 ft	1	No Equipment Installed
5-	S-2	24/ 16	5.0- 7.0	4-3 4-4	ND	Loose, light brown, fine to medium SAND, some Silt.			
0-	S-3	24/ 18	10.0- 12.0	6-5 5-6	ND	Medium dense, light brown, fine to medium SAND and Silt. Moist			
5-	S-4	24/ 20	15.0- 17.0	13-12 15-13	ND	Medium dense, light brown, fine SAND and Silt.	SILTY SAND		
20 -	S-5	24/ 17	20.0- 22.0	10-12 14-13	ŊD	Medium dense, light brown, fine SAND and SILT. Moist		2	
25-	S-6	24/ 17	25.0- 27.0	7-7 7- 7	ND	Medium dense, light brown, SILT and fine Sand. Wet			
						Bottom of boring at 27 feet below ground surface. No refusal encountered.	27.0 ft		

1. Soil samples were screened for total volatile organic compounds (VOCs) using a TEI Model 580B organic vapor meter referenced to an isobutylene-in-air standard. Total VOCs detected are reported in parts per million (ppm) in the "Field Test Data" column. "ND" indicates no VOCs detected.

2. Groundwater encountered at approximately 21 feet below ground surface based on soil samples recovered.

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

Boring No.: B-8

REMARKS

		GZ	Α.				Riv	ver Place				Boring No	o.:B	-9
	7 🗛	Ge	oEnviron:	mental, Inc	·.		Hudson, I	New Hampsh	ire			Page:	of _	1
Fore		Ne	w Hamps Matt Chri		, Inc.	- - _ Type: .	Auger/ Casing Auger	Sampler SS	Date	GRO Tir		Check: _ DWATER R		3
		inish: _)-06 / 3-20-		I.D.: ,		1.38 in						
			ft Date		<u>tion Plan</u> IGVD	Hammer Wt.:		140 lb 30 in	-		_			
GS	=1ev.: _	147.5	u Dat	um:	IGVD	Hammer Fall: .	Dietri							
_		San	ple Infor	nation		rag Type:								
Depth (ft)	No.	Pen./ Rec. (in)	Depth (ft)	Blows (/6")	Field Test Data (ppm)	Descript	Sample tion & Classifi	ication	Stratum Desc.		Remarks	Equip	ment Inst	alled
-	S-1	24/ 12	0.0- 2.0	2-11 16-10	ND	Medium dense, I SAND, little Grav	ight brown, fin el, trace Silt.	e to coarse	100		1	E	No Equipment Installed	
5-	S-2	24/ 15	5.0- 7.0	12-7 9-13	ND	Medium dense, I SAND, trace Silt		ne to medium	SAND					
10-	S-3	24/ 14	10.0- 12.0	6-9 14-12	ND	Medium dense, I SAND, little Grav		ne to medium	8.5 ft — — —	.=.				
15-	S-4	24/ 18	15.0- 17.0	9-9 9-10	ND	Medium dense, I SAND, some Sill		ne to medium						
20-	S-5	24/ 22	20.0- 22.0	6-10 11-6	ND	Medium dense, SAND, some Sil		ne to medium	SILTY SAM	ND.				
25-	S-6	24/ 24	25.0- 27.0	6-7 13-15	ND:	Medium dense, SILT. Dry	light brown, fir	ne SAND and			2			
30-	S-7	24/ 20	30.0- 32.0	13-16 13-11	ND	Medium dense,	light brown, fii	ne SAND and						

Soil samples were screened for total volatile organic compounds (VOCs) using a TEI Model 580B organic vapor meter referenced to an
isobutylene-in-air standard. Total VOCs detected are reported in parts per million (ppm) in the "Field Test Data" column. "ND" indicates no
VOCs detected.

Dense, light brown, fine SAND and SILT. Wet

Bottom of boring at 37 feet below ground surface. No refusal encountered.

37.0 ft

2. Groundwater encountered at 25 feet below ground surface based on soil samples recovered.

ND

12-15

19-23

SOIL BL WELL BORING LOGS.GPJ GZA, NH.GDT 4/18/06

REMARKS

35

S-8

24/

22

35.0-

37.0

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

	7-	GZ	7.A				Riv	er Place			Boring No	o.: B.	-10
	74	Ge	oEnviron	mental, Inc	č.		Hudson, N	lew Hampsh	ire		Page:	1 of .	_1_
		En	gineers an	d Scientists				•				04.00240	
Con	tractor:	Ne	w Hamps	hire Boring	, Inc.	_	Auger/				Check:	RAE	3
			Matt			-	Casing	Sampler		GROUN	DWATER R	EADINGS	
Log	ged by:		Chr	is Melby		_ Type: _	Auger	SS	Date	Time	Depth	Casing	Stab
				1-06 / 3-22		I.D.:	4.25 in	1.38 in	3/21/06	1600	20.7 ft	GS	5 minute
Bor	ing Loca	ation: 📑	See Explo	ration Loca	tion Plan	Hammer Wt.:		140 lb	3/22/06	0700	18.9 ft	GS	1 day
GS	Elev.: _	112.9	ft Dat	tum:1	IGVD	_ Hammer Fall: _		30_in	3/22/06	0830		Top PVC	
		San	nple Infor	mation		Rig Type: _	Dietrio	h D50	3/22/06 4/14/06	1520 0930	18.8 ft 19.6 ft		
Depth (ft)		Pen./			Field							GS ment Insta	23 days
De C	No.	Rec. (in)	Depth (ft)	Blows (/6")	Test Data (ppm)	Description	Sample on & Classific	ation	Stratum Desc.	Remarks		Road Bo	
	S-1	24/	0.0-	5-4	ND	Dense, dark brown	n, fine to med	ium SAND,		1			
		14	2.0	10-16		some Organics, lit	ttle Silt. Tops	oil	TOPSQIL		≫	Cemer	ıt
- 3									707				
									20 ft				
												40 PV	olid Sch
-												Riser	J 11011
5-	S-2	24/	5.0-	21-14	ND	Dense, dark brown	n finn to mad	ium CAND					
-	0-2	12	7.0	9-6	ND	little Silt, trace Gra	n, me to med ivel	ium sano,					
						,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					- -	Cutting	s/Backfill
15													
-7									SAND				
10-													
''	S-3	24/	10.0-	11-12	ND	Medium dense, gr	ay, fine to me	dium SAND,					
1		20	12.0	30-37		trace Silt. Moist				1		—11'	
- 4												Benton	ite
												13'	
_												Sand	
												14.5'	
15-	S-4	3/	15.0-	100/3"		No Recovery			15.0 ft BOULD	ERS 2			
-		0	15.3						15.5 ft				
J										1 1			
										1 1			
-													
177													
20-	S-5	24/	20.0	0.40	, up							2" ID S Sch 40	
	3-3	20	20.0- 22.0	9-10 12-20	ND	Dense, brown, fine Wet	e to coarse SA	AND, little Silt.	SAND			Well S	creen
			-2.0	12.20		1101						(0.01"	
1													
=													
-													
25											₩	-24.5	
20-						Bottom of boring a			25 0 ft	3		25'	A.
- =						surface. No refusa	al encountere	d.					
-													
1													

 Soil samples were screened for total volatile organic compounds (VOCs) using a TEI Model 580B organic vapor meter referenced to an isobutylene-in-air standard. Total VOCs detected are reported in parts per million (ppm) in the "Field Test Data" column. "ND" indicates no VOCs detected.

Probable boulder layer encountered at 15 feet below ground surface.
 Blow in sands encountered overnight at bottom of borehole.

SOIL BL WELL BORING LOGS.GPJ GZA_NH.GDT 4/18/06

REMARKS

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

	4	G2 Ge	SA oFruing	mantal In-		-		er Place	iro		Boring No.: _		
	JL	En	oEnviron gineers an	mental, Inc. Id Scientists	•		Hudson, N	lew Hampsh	ııre		Page:1 File No.:04		
For	ntractor: reman: _ gged by:		Matt	shire Boring, Stone is Melby	Inc.	Type:	Auger/ Casing HSA	Sampler SS	Date		Check:	RAB DINGS	
Da	te Start/F	inish: _		2-06 / 3-22-0	06			1.38 in					
Bo	ring Loca	ation: 🚨	See Explo	ration Locat		Hammer Wt.:		140 lb					
GS	Elev.:	169.6	ft Dat	tum: N	GVD	_ Hammer Fall:_		30 in					
	Î	San	nple Infor	mation		Rig Type: .	Dietric	n D50	e	-			
ے چا		T			Field				1	1 2	Equipme	at lacto	llod
Depth (#)	No.	Pen./ Rec. (in)	Depth (ft)	Blows (/6")	Test Data (ppm)	Descript	Sample Ion & Classific	cation	Stratum Desc.	Remarks	Equipmen	iit iiista	neu
	S-1	24/ 12	0.0- 2.0	3-3 3-3	ND	S-1A: Loose, da			TOPSOI	. 1		Vo nmont	
	1	12	2.0	3-3		SAND, little Orga S-1B: Loose, bro	own, fine to me	dium SAND.	1.0 ft SUBSOII			pment talled	
	1					little Silt, trace ro			2.0 ft				
5-	\$-2	24/ 16	5.0- 7.0	4-4 3-5	ND	Loose, light brow some Silt. Dry	n, fine to medi	ium SAND,	SILTY SAM	ND			
10-	S-3	8/	10.0- \ 10.7	19-100/2"	ND	Very dense, gray Gravel, trace Silt Bottom of boring surface. Split sp encountered.	. Dry at 10.5 feet be	elow ground	10.0 tgravet	2			
15-	-												
	_												
20-													
:	-												
25-													
	-												
	-												
R E M A R K S	isob VOC	utylene-i S detecl	n-air stan led.	dard. Total	VOCs o	ile organic compo letected are report outhwest. Split sp	ed in parts per	million (ppm) i	n the "Field"	Test Data'	column. "ND	nced to " indica	an ates no
All d Water	er level rea	idings havi		e at times and		represent approximate ditions stated. Fluctua					Boring No.:	B-11	

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

		G	ZA	W100 44		-		er Place			Boring No	o.:B	-12
C	7L	G	eoEnviron	mental, Inc		-	Hudson, N	New Hampsh	ire		Page:	1 of	1
		N	ew Hamp	shire Boring		→ a	Auger/	Sampler			File No.:	RAI	В
				t Stone ris Melby		T.	Casing Auger	SS			DWATER R		
		- Finish: _		2-06 / 3-22-		Type:	2.25 in	1.38 in	3/22/06	Time 1445	Depth 3.0 ft	Casing GS	Stab 10 minu
						Hammer Wt.:			JJZZ/00	1440	J.0 It	Go	10 minu
			ft Da		IGVD	_ Hammer Fall:							
_		Con				Rig Type:	Dietric	ch D50					
2		San	nple Infor	mauon					1	1.61			
Depth (ft)	No.	Pen./ Rec. (in)	Depth (ft)	Blows (/6")	Field Test Data (ppm)	Descrip	Sample tion & Classific	cation	Stratum Desc.	Remarks	Equip	ment Inst	alled
	S-1	24/	0.0-	3-6	ND	Medium dense,				1		No	
- 2.7	1	'2	2.0	5-5		SAND, some Sil	t, little Organic	s. Moist	TOPSOIL	1.1		quipment Installed	
3									2.0 ft			motanco	
5-	S-2	24/ 10	5.0- 7.0	5-7 10-9	ND	Medium dense, I SAND. Moist	iight brown, Sil	LT, some, fine					
10-	S-3	24/ 20	10.0- 12.0	14-17 13-16	ND	Medium dense, medium SAND a	gray, fine to ravel. Wet	SILTY SAN	D				
15-	S-4	24/ 24	15.0- 17.0	5-6 7-12	ND	Medium dense, I fine SAND, trace	ight brown, Cla Gravel. Wet	ayey SILT and					
20-	S-5	9/	20.0- 20.8	83-50/3"	ND	Very dense, light SAND, and Clay Bottom of boring surface. Split re	ey SILT, little C at 20.75 feet b	Gravel. Wet below ground	20.8 ft	2			
25 – -													
E	VOC	utylene-i is detect	n-air stan	dard. Total	etal volati VOCs d	ile organic compo etected are report	unds (VOCs) u led in parts per	ısing a TEI Mod r million (ppm) in	el 580B orga I the "Field T	nic vaporest Data	r meter refe " column. "	renced to	an ates no
vvate	tevel read	aings nave	are approximate been made irements we	at times and	ition lines r under cond	epresent approximate	boundary betwee	n soil types, transiti ter may occur due to	ons may be gra o other factors t	dual. han those	Boring N	o.; B-12	

		G	ZA				Riv	er Place			Boring No.	· E	J-13
	7L	G	oEnviron	mental, Ind Scientists	c.	-	Hudson, N	lew Hampsh	ire		Page:	1 of	1
_											File No.; _		
	tractor	Ne		shire Boring Stone	I, Inc.	_	Auger/	Sampler			Check:		
			Chri			Type: _	Casing HSA	SS	Date	GROUN	DWATER RE Depth	ADINGS Casing	Stab
	_	inish: _		3-06 / 3-23	-06			1.38 in	3/23/06	0720	12.3 ft	GS	0 minut
Bor	ing Loc	ation: 🕹	See Explo	ration Loca		L Hammer Wt.: _		140 lb	3/23/06	0825	5.6 ft	GS	1.25 hou
GS	Elev.: _	127.8	ft Dat	tum:	IGVD	_ Hammer Fall: _		30 in					
		San	nple Infon	mation		Rig Type: _	Dietric	n Dau	× ——				-
Depth (ft)	No.	Pen./ Rec. (in)	Depth (ft)	Blows (/6")	Fleid Test Data (ppm)	Descripti	Sample on & Classific		Stratum Desc.	<u>E</u>	Equipn	nent Inst	alled
1.	S-1	24/ 10	0.0- 2.0	2-3 3-4	ND	S-1A: Loose, dar SAND, some Org S-1B: Loose, ligh SAND, some Silt.	anics, some S it brown, fine t	o medium iilt. Topsoil o medium	TOPSOIL 0.5 ft	1		No juipment nstalled	
5	S-2	24/ 22	5.0- 7.0	4-5 5-5	ND	Medium dense, lig Silt. Moist	ght brown, fine	SAND and	SILTY SAN	n			
10-	S-3	24/ 24	10.0- 12.0	8-11 10-12	ND	Medium dense, gr some Silt. Wet	ray, fine to me	dium SAND,	SILTY SAN				
15-	S-4 /	1/	15.0- 15.1	\ <u>100/1"</u>	\ <u>ND</u>	Bottom of boring a surface. Split spo encountered.	No Recovery at 15.1 feet be oon and Auger	low ground refusal	15.1 11	2			
20-													
25-													
E	VOC	ityiene-ir s detecte	1-air stand ed.	lard. I otal	VOCs de	le organic compour etected are reporte tely 10 feet north.	nds (VOCs) us d in parts per	sing a TEI Mode million (ppm) in	el 580B orga the "Field T	nic vapor est Data	r meter refer ' column. "N	enced to	an ates no

SOIL BL WELL BORING LOGS GPJ GZA NH GDT 4/18/05

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

		G	ZA			:	Riv	er Place			Boring No	o.:B-	-13A
C	<i>3L</i> ,	Go	eoEnviron	mental, Ind Scientists	P.	-	Hudson, I	New Hampsh	ire		Page:	1 of	1
Co	ntractor:			shire Boring			August				File No.: _ Check:		
For	eman: _		Mat	Stone	i iiio.	.	Auger/ Casing	Sampler		GROUN	DWATER R		
			Chr			Туре:	HSA	SS	Date	Time	Depth	Casing	Stab
	e Start/F			3-06 / 3-23- ration Loca		I.D.:		1,38 in 140 lb	3/23/06	0720 0825	12.3 ft	GS	10 minute:
			ft Dat		IGVD	Hammer Wt.: Hammer Fall:			3/23/06	U023	5.6 ft	GS	1.25 hour
			nple Infor			Rig Type:		ch D50					
[환꼬					Field					lσ		4.0.4	
Depth (ff)	No.	Pen./ Rec. (in)	Depth (ft)	Blows (/6")	Test Data (ppm)	Descript	Sample tion & Classific	cation	Stratum Desc.	Rem	Equip	ment inst	alled
									0.5 ft	1	E	No quipment	
												Installed	
						Con B 12 for any	.4						
						See B-13 for soil	descriptions.						
5-													
-													
1									SILTY SAN	D			
2)													
10-									41				:=
::													
•				l)									
- 19													
70													
15	S-1	24/	15.0-	25-22	ND	Dense, gray to be	rown fine to co	Sarce SAND					•
-		14	17.0	22-35		and Gravel, little	Silt. Wet	Zarac OAND	15.5 ft				
:=									SAND AND	,			
27									GRAVEL				
-	S-2 /	1/	19.0-	100/1"		No Recovery.		7	19.1 ft				
20-		_0_/	19.1			Bottom of boring	at 19.1 feet be	elow ground	10.7 11				-
17						surface. Split speed encountered,	oon and Augei	retusal					
-													
-													
72													
25													-
-													
-													
-													
=													
T	1 Soil a	amelac	Wore see	opped for the	tal ! - t"		-1-0100						
R	isobu	ylene-ir	were scre n-air stand	ened for to lard. Total	vocs de	e organic compou etected are reporte	ınds (VOCs) u ed in parts per	sing a TEI Mode million (ppm) in	el 580B orga the "Field To	nic vapoi est Data'	' meter refe ' column. "I	renced to	an ates no
м	VOCs	detect	ed.			110000000000000000000000000000000000000	•						
A R													I
K													
													- 1
All dep Water	th measur level readi	ements a	re approxim been made	ate. Stratifica	tion lines re	present approximate itions stated. Fluctuat	boundary between	n soil types, transitio	ons may be grad	iual.	D	. 6 4==	
preser	t at the tim	e measu	rements wer	e made.	- In at Maritu		w groundwal	or may occur due to	outer factors tr	an (1056	Boring No	D.: B-13A	

SOIL BL WELL BORING LOGS GPJ GZA NH.GDT 4/18/06

		G2	Z.A			River Place	9			Boring No.:	B-	14
	7	Go	oEnviron	mental, In	c.	Hudson, New Han	npshire			Page:1	of _	_1_
		Lin	gineers an	nd Scientists	5					File No.: _0	4.00240	50.01
Con	tractor:	Ne		shire Boring	g, Inc.	Auger/				Check:	RAB	
				t Stone		Casing Samp			GROUN	DWATER REA	DINGS	
Log	ged by:		Chr	is Melby	N/2001	Type: HSA SS		Date	Time	Depth C	asing	Stab
				3-06 / 3-23		I.D.: 2.25 in 1.38						
Вол	ing Loca	ation:	see Explo	ration Loca	ation Plan	Hammer Wt.:140						
G\$	Elev.: _	133.3	π Dat	tum:	NGVD	Hammer Fall:30 ir	n					
		San	nple Infor	mation		Rig Type: Dietrich D50						
£.			r e		Field				l s			<u></u>
Depth (ft)	No.	Pen./ Rec.	Depth (ft)	Blows (/6")	Test Data	Sample Description & Classification		Stratum Desc.	Remarks	Equipme	nt Insta	lied
		(In)			(ppm)			Desc.	[윤			
	S-1	24/ 16	0.0- 2.0	2-2 3-5	ND	S-1A: Loose, dark brown, fine to medium SAND, some Organics, some Silt. Topso		TOPSOIL	1		No ipment	
_						S-1B: Loose, light brown, fine SAND and	Silt. 1.2	SUBSOIL			talled	
							2.5					
									- 11 1			
-7									11			
5-	S-2	24/	5.0-	5-6	ND	Modium donne light brown fire to accelium			- 1			
-	0-2	19	7.0	8-7	ן אט	Medium dense, light brown, fine to mediur SAND, little Silt. Wet	m					
- 5							- 1	SAND	- 1 1			
							- 1	orms	- 1 1			
1												
	S-3	24/	9.0-	4-6	ND	Medium dense, brown, fine to medium SA	MD		- 1 1			
10-		24	11.0	6-4	110	little Silt. Wet	AND,		11.1			
						-						
						Bottom of boring at 11 feet below ground surface. No refusal encountered.	11.0	0 ft	2			
						surface. No felusal encountered.			11			
1												
-									- 1 1			
15-												
					1				- 1			
=				i i	1							
-												
20-												
7												
+												
14												
25-												
7												
+												
1-												
-												
\perp												
_ 1	. Soil s	amples	were scre	ened for to	otal volati	e organic compounds (VOCs) using a TEI	Model 5	80B orga	nic vanor	meter referen	ced to s	an
R E M 2 A R K	ISODU	tylene-ir	i-air stand	fard. Total	VOCs de	tected are reported in parts per million (pp	om) in the	Field To	est Data	column. "ND	" indical	tes no
м ₂	VOC	s detecte	a.	to blow in/r								
A T		-				· · · · ·						
ŔĹ												
s												

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

SOIL BL WELL BORING LOGS.GPJ GZA NH.GDT 4/18/06

	4.1	G	ZA .					ver Place			Boring No		
6	JL,	Ge	oEnviron	mental, In ad Scientists	c.	-	Hudson, I	New Hampsh	ire		Page:		
For	eman: ,	Ne	ew Hamps Mat	shire Boring t Stone	, Inc.		Auger/ Casing	Sampler		GROUN	File No.: . Check: _ DWATER R	RA	В
				is Melby		Type:	HSA	SS	Date	Time	Depth	Casing	Stab
				3-06 / 3-23		I.D.: , ∟. Hammer Wt, ;	2.25 in	1.38 in	3/23/06	1115	3.7 ft	GS	5 minut
GS	Flev.:	133.7	ft Dat	him: N	IGVD	_ Hammer vvt.;			-				
						Ria Type:	Dietri	ch D50					
_		San	nple Infor	mation		3 71							
Depth (#)		Pen./ Rec. (in)	Depth (ft)	Blows (/6")	Field Test Data (ppm)	Descript	Sample tion & Classifi	cation	Stratum Desc.	Remarks	Equip	ment Inst	alled
8	S-1	24/ 18	0.0- 2.0	6-5 4-5	ND	S-1A: Loose, da SAND, some Sill S-1B: Loose, lig SAND, some Sill	t, little Organic ht brown, fine	s. Topsoil	TOPSOIL 0.5 ft			No Equipment Installed	
5-	S-2	24/ 18	5.0- 7.0	5-4 4-8	ND	Loose, brown, fir trace Gravel. Bottom 1 inch: L and Silt.			SAND				
- -10 -	S-3	24/ 24	10.0- 12.0	7-9 8 - 11	ND	Medium dense, t trace Silt. Wet Bottom of boring			12.0 R				
- 5-						surface.	at 12 loot ball	on giodila		2			
- -0:													
377 387 38 38													
25 - -												iz.	
N	1. Soil :	samples	were scre	eened for to	tal volati	le organic compoi	unds (VOCs) u	using a TEI Mode	el 580B orga	nic vapor	meter refe	renced to	an
E M A R K S	VUU	s detecti	ea.	to blow in/i			and the first part of the firs		and I rold II	or Dala	ooiunii i.	HUIG	aige IIU
AAstei	tevel teat	ungs nave	re approxim been made rements wer	at times and	ation lines r under cond	epresent approximate litions stated. Fluctua	boundary betwee tions of groundwa	n soil types, transitio	ons may be grad o other factors th	fual. nan those	Boring N	o.: B-15	

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

	<i></i>	G2	7.4			Ri	ver Place		_	Boring No.	. B.	16
	7/	Ğe	oEnviron	mental, Inda Scientists	e.	Hudson,	New Hampsh	nire		Page:		
Com				d Scientists shire Boring					_	File No.: _	04.00240	50.01
	tractor:		Matt		I, IIIC.	Auger/	Sampler	_				
				is Melby		Casing Type: HSA	SS	Date	ROUN	DWATER RE		Stab
Date	start/F	inish:	3-2	3-06 / 3-23	-06	I.D.: 2.25 in	1.38 in	Date	Tillie	Deptil	Casing	Stab
						Hammer Wt.:	140 lb					
GS I	Elev.: _	129.7	ft Dat	tum:h	IGVD	Hammer Fail:						
		San	nple Infor	mation		Rig Type:						
Depth (ft)	No.	Pen./ Rec. (in)	Depth (ft)	Blows (/6")	Field Test Data	Sample Description & Classifi	cation	Stratum Desc.	Remarks	Equip	nent Insta	illed
	\$-1	24/	0.0-	2-5	(ppm)	S-1A: Loose, dark brown, fine	to medium	7000011	až 1		No	
-		12	2.0	4-4		SAND, little Organics, trace Si	t. Topsoil	TOPSOIL		Ed	quipment	
2						S-1B: Loose, light brown, SIL Sand.	f, trace fine	1.0 ft SUBSOIL	-		nstalled	
5-								SAND AND SIL	т			
9	S-2	24/ 16	5.0- 7.0	6-9 6-7	ND	S-2A: Medium dense, light bro	wn, fine SAND					
3		10	,.0	0-1		and SILT. Dry S-2B: Medium dense, brown, SAND, trace Silt. Wet	fine to coarse	6.0 ft	2			
40								SAND				
10-	S-3	24/ 20	10.0- 12.0	6-9 5-6	ND	Medium dense, brown, fine to trace Silt. Wet	coarse SAND,					
						Bottom of boring at 12 feet bel- surface.	ow ground	12.0 ft	3			
15												
20-												
20-												
-												
25-												
-												
-												
R 1	Soil s	amples	were scre	ened for to	ital volatil	e organic compounds (VOCs) u	ising a TEI Mode	el 580B organi	c vapo	meter refer	enced to a	 an

isobutylene-in-air standard. Total VOCs detected are reported in parts per million (ppm) in the "Field Test Data" column. "ND" indicates no VOCs detected.

Groundwater encountered approximately 6 feet below ground surface based on soil samples recovered.
 Boring terminated due to blow in/running sands.

SOIL BL WELL BORING LOGS.GPJ GZA NH.GDT 4/18/06

MARKS

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

River Place GZA GeoEnvironmental, Inc. Boring No.: _ **B-17** Hudson, New Hampshire Page: ___1 of _ Engineers and Scientists File No.: __04.0024050.01 Contractor: New Hampshire Boring, Inc. **RAB** Check: _ Auger/ Matt Stone Sampler Foreman: Casing **GROUNDWATER READINGS** Chris Melby Logged by: HSA SS Type: __ Date Time Depth Casing 3-24-06 / 3-24-06 Date Start/Finish: 4.25 in I.D.: __ 1.38 in 3/24/06 0830 12.0 ft GS 5 minute Boring Location: See Exploration Location Plan Hammer Wt.: 140 lb 3/24/06 0930 9.7 ft Top PVC 45 minute: GS Elev.: 132.6 ft _ Datum: _ NGVD Hammer Fall: 4/14/06 30 in 1030 10.3 ft GS 21 days Dietrich D50 Rig Type: Sample Information Depth (ft) Field Pen./ Remarks **Equipment Installed** Depth Blows Test No. Sample Stratum Rec. (ft) (/6") Data Description & Classification Road box (in) Desc. (ppm) S-1 24/ ND 0.0-3-6 S-1A: Medium dense, dark brown, fine to 0.5 ft 20 6-5 2.0 medium SAND, and Silt, trace Organics. 2" ID Solid Sch Topsoil 40 PVC Well S-1B: Stiff, light brown, SILT, some fine Sand. Riser S-2 SILT Cuttings 24/ Stiff, brown, SILT, some fine Sand. 4.0-6-6 ND 20 5 6.0 5-8 6.2 **Bentonite** 7.5 ft 7.7 Filter Sand S-3 24/ 9.0-10-11 ND Medium dense, brown, fine to coarse SAND, 18 11.0 10 13-10 trace Silt. SAND 2" ID Slotted **S-4** 24/ 14.0-8-8 ND S-4A: Medium dense, brown, fine to coarse Sch 40 PVC 24 15 16.0 6-8 SAND, little Silt. Wet Well Screen S-4B: Brown, medium to coarse SAND, trace (0.01" Slot) Gravel, trace Silt. 19 Bottom of boring at 19 feet below ground 2 20 surface. 25 REMARKS

Soil samples were screened for total volatile organic compounds (VOCs) using a TEI Model 580B organic vapor meter referenced to an isobutylene-in-air standard. Total VOCs detected are reported in parts per million (ppm) in the "Field Test Data" column. "ND" indicates no VOCs detected.

2. Boring terminated due to blow in/running sands.

WELL BORING LOGS.GPJ GZA_NH.GDT 4/18/06

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

							Div	er Place		_	_			
C	41	GZ	ZA oFmiron	mental, Inc d Scientists		-			-		_	Boring No Page:		
		En	gineers an	d Scientists	i•		Hudson, N	lew Hampshi	re	_	-	File No.:	or _ _04.00240	50.01
Con	tractor:	Ne	w Hamps	hire Boring	. inc.		Auger/					Check:		
Fore	man: _		Matt	Stone		-	Casing	Sampler		GRO	OUNI	WATER R	EADINGS	
Log	ged by:		Chri	s Melby		Type: _	HSA	<u>ss</u>	Date	Ti	me	Depth	Casing	Stab
Date	Start/F	inish: _	3-2	<u>3-06 / 3-23-</u>	-06		2.25 in		-	_				
				um: Loca		L Hammer Wt.: _ _ Hammer Fall: _			-	_				
001	_164					rammer ram 1 Rig Type: _	Dietric	h D50						
_		Şan	nple Infor	mation										
Depth (ft)	No.	Pen./ Rec. (in)	Depth (ft)	Blows (/6")	Field Test Data (ppm)	Description	Sample on & Classific	ation	Stratum Desc.	ı	Remarks	Equip	ment Insta	iled
	S-1	24/ 20	0.0- 2.0	3-5 4-4	ND	Loose, light brown Silt and Organics.	n, fine to medi . Topsoil		1.0 ft SUBSOIL		1		No quipment Installed	
	S-2	24/ 20	2.0- 4.0	4-5 4-6	ND	Loose, gray, medi Silt. Wet	ium to coarse	SAND, fittle	20 ft					
5-											2			
-									SAND		-			
_														
10-	S-3	24/ 22	10.0- 12.0	3-6 6-8	ND	Medium dense, bi trace Silt.	rown, fine to n	nedium SAND,					Đ	
						Bottom of boring a surface.	at 12 feet belo	w ground	12.0 ft		3			
15-														
_														ü
-									7					
20-										22				
25-		- 2												

Soil samples were screened for total volatile organic compounds (VOCs) using a TEI Model 580B organic vapor meter referenced to an
isobutylene-in-air standard. Total VOCs detected are reported in parts per million (ppm) in the "Field Test Data" column. "ND" indicates no
VOCs detected.

2. Groundwater encountered at approximately 5.5 feet below ground surface based on soil samples recovered.

3. Boring terminated due to blow in/running sands.

SOIL BL WELL BORING LOGS.GPJ GZA NH.GDT 4/18/06

REMARKS

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

							Rive	er Place						10
	7 🛦	GZ Ge	ZA oEnviron	mental, Inc d Scientists		-		ew Hampshi	re			Boring No Page:	1 of _	1
Con	tractor:		w Hamps	hire Boring		_	Auger/	Sampler				File No.: _		
				Stone		_	Casing	•		GRO	JUNE	WATER R	EADINGS	
Log	ged by:		Chri	s Melby		Туре:		SS	Date	Ti	me	Depth	Casing	Stab
Date	Start/F	inish: _	3-22	<u>2-06 / 3-22-</u>		I.D.:		1.38 in						
Bori	ng Loca	ition: 📑	See Explo	ration Loca	tion Plan	L Hammer Wt.: _		140 lb						
GSI	Elev.: _	149.2	ft Dat	um:N	GVD	_ Hammer Fall: _		30 in						
						Rig Type: _	Dietrici	n D50						
_		San	ple Infor	mation										
Depth (ft)	No.	Pen./ Rec. (In)	Depth (ft)	Blows (/6")	Field Test Data (ppm)	Description	Sample on & Classific	ation	Stratum Desc.		Remarks	Equip	ment insta	lled
	S-1	24/	0.0-	2-4	ND	S-1A: Loose, dark	k brown, fine to	o medium	TOPSOIL		1		No	
-		12	2.0	3-3	1	SAND, some Silt,	little Organics	. Topsoil	1.0 ft SUBSOIL				quipment	
-						S-1B: Loose, light SAND, some Silt.	t brown, fine to	medium	SUBŞOIL		.		Installed	
1-						SAND, SOME SILL			2.0 ft					
5- -	S-2	24/ 20	5.0- 7.0	12-15 16-18	ND	Medium dense, gr medium SAND, tra	ay to light brov ace Silt. Dry	wn, fine to						
-									SAND					
10-	S-3	24/ 18	10.0- 12.0	13-14 23-28	ND	S-3A: Medium de to medium SAND, S-3B: Hard, light	little SILT. D	ry						
-						Dry			11.9 ft SILT AND FI SAND	NE -				
15-	S-4	19/ 12	15.0÷ 16.6	11-42 28-50/1"	ND	Very dense, brown and Gravel, little S		coarse SAND	SAND AND GRAVEL		2			
-						Bottom of boring a surface. Split spo encountered.	at 16.5 feet be on and Auger	low ground refusal	16.5 ft					
20-														
-														
- 6														
-														
1														
25-						1								
1 34														
1														

 Soil samples were screened for total volatile organic compounds (VOCs) using a TEI Model 580B organic vapor meter referenced to an isobutylene-in-air standard. Total VOCs detected are reported in parts per million (ppm) in the "Field Test Data" column. "ND" indicates no VOCs detected.

2. Groundwater encountered at approximately 15 below ground surface based on soil samples recovered.

REMARKS

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

	7	GZ	.A			Řiv	er Place			Boring No	o.:B	-20
	7L	Ge	oEnviron:	mental, Inc	: ,	Hudson, N	New Hampsh	ire		Page:	1 of	1
		Eng	gineers an	d Scientists						File No.:		
Con	tractor:	Ne		hire Boring	, Inc.	Auger/	Sampler			Check: _		3'
				Stone		Casing	•			WATER R		
Log	ged by:	X		s Melby	n¢.	Type: HSA	SS	Date	Time	Depth	Casing	Stab 15 minute
				1-06 / 3-24		I.D.:4.25 in	1.38 in	3/24/06 4/14/06	1145 1130	3.8 ft	GS GS	21 days
				um: N		Hammer Wt.:		4/14/00	1100	9.0 K	- 55	Z I GBy
63	EI84	_					ch D50					
		San	ple infor	mation		Mg Type:			line and the			
Depth (ft)		Pen./	D45	D1	Field	Comula		Charten	\%	Equip	ment Inst	talled
Pg `	No.	Rec. (in)	Depth (ft)	Blows (/6")	Test Data (ppm)	Sample Description & Classific	cation	Stratum Desc.	Remarks		Road bo	
	S-1	24/	0.0-	3-2	ND	S-1A: Loose, dark brown, fine		TOPSOIL	_ 1		Cuttin	gs Solid Sch
7.5		14	2.0	3-4		SAND, some Silt, little Organic S-1B: Loose, light brown, SILT	s. Topsoil Little fine	0.7 ft SUBSOIL				C Well
-						Sand, trace root fibers.	, maio into	2.0 ft			Riser	
- 54										300 L	2' Bento	nite
											73'	11110
ا ۔	S-2	24/	4.0- 6.0	4-3 3-4	ND	Loose, brown, fine SAND and S	SILT. Wet	SILTY SAN	D D		\4' Filter	Cond
5-		'0	0.0	J-4							riller	Sanu
I ⁻											2" (D)	Slotted
-											Sch 4	0 PVC
-								7.5 ft	- 1		Well 8	Screen
											g'	Sioty
40	S-3	24/	9.0- 11.0	5-5 6-5	ND	Medium dense, brown, fine to detrace Silt. Wet	coarse SAND,	SAND			,	
10-		20	11.0	0-3		liace ont. wet						
1						Bottom of boring at 11 feet belo	ow ground	11,0 ft			11'	
-						surface. No refusal encountered	ed.					
_												
_									1.1			
								l				
15-												
- ا					1							
-								1				
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20~									- 1-1			
*	1											
2	1											
2	1											
25-												
25-					1							
Ι,	1											
	1	1										
] -												
	1. Soil	samples	were scr	eened for t	otal vola	tile organic compounds (VOCs)	using a TEI Mod	del 580B ora	anic vapo	r meter ref	ferenced t	o an
R	isob	utylene-i	in-air stan	dard. Tota	VOCs	letected are reported in parts pe	r million (ppm) i	n the "Field"	Test Data	" column.	"ND" indi	cates no
R E M A R K S	VO	Os detect	led.									
Ā												
R K												
ŝ												
Ш			175									
All de	pth meas	urements :	are approxin	nate. Stratific e at times and	ation lines	represent approximate boundary betwee iditions stated. Fluctuations of groundware.	en soil types, transit ater may occur due	tions may be gr to other factors	adual. than those	Borles	No.: B-20	
prese			rements we			1 Mondations of Broating		The state of the s	20001167676	aoring i	11U D-ZU	

All depth measurements are approximate. Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

APPENDIX C

TEST PIT LOGS

GZA GeoEnvironme	ntal, Inc.					Test Pit No		TP-1	
Engineers/Scientists			River Place			Page No.	1	of	1
		Hudson	n, New Hampsh	ire		File No.		04.002405	0.01
380 Harvey Road						Checked By	y:	RAB	
Manchester, New Ha	mpshire 03 103		Excavation Eq	uinment					
GZA Rep.	C. Melby	Contractor	New Ham	-	ing, Inc.	Date		3/26	/2006
		Operator		fatt Stone		Ground Ele	v.		6 feet
Weather	Sunny, 50s	Make	Komatsu	Model	PC 27	Time Starte		08	300
4		Capacity	1.5 feet ³	Reach	10 feet	Time Comp	oleted	30	330
Depth		oil Description			Sample	PID		Boulders:	
Бериг	5	on Description			No.	Reading	Excav.	Count/	Note
						(ppm)	Effort	Class	No.
0.61	fine to medium SAND, little Sill				S-1	ND	E		1
	o coarse SAND, little Gravel, tra	ice Silt, trace Root	Fibers.		S-2	IND			
- 1,						ND	E		
2' —							Е		
- 3' —	S	AND			S-3	ND	Ē		
- 4' - Light brown	to gray, fine SAND and Silt.						Е		
- 5' —									
- 6' —	SILT	Y SAND					Е		
71							Е		
	ttom of test pit at 7 feet below gr	round surface. No	refusal encount	ered.					
- 8, —									
- 9'									
- 10' -									
- 11' -									
- 12' -									
- 13' -									
	screened for total volatile organ S detected are reported in parts								e-in-air
Test Pit Plan	Boulder C		Propos	tions Used		bbreviations	GROUN	DWATER	
1.5	Letter Designation Size R A B	ange Classification 6" - 17" 18" - 36"	TRACE (TR.)	0 - 10%	F = Finc M = Mediu C = Coarse		() (X)	Encountered Not Encountered	
A		6" and Larger	LITTLE (LI.)	10 - 20%	V = Very F/M = Fine	to medium	[I Time to	D7 :
NORTH Volume = <u>3.1</u> cu. yd.	Excavation EEi MM	nsy	SOME (SO.)	20 - 35% 35 - 50%	F/C = Fine GR = Gray BN = Brow	to coarse		I Time to g (Hours)	Depth to Groundwater

GZA GeoEnvironmental, Inc

GZA GeoEnvironmental,	Inc.					Test Pit No		TP-2	
ngineers/Scientists	_		River Place			Page No.	1	of	1
		Hudson	n, New Hampsh	ire		File No.		04.002405	0.01
30 Harvey Road Ianchester, New Hamps	him 03102					Checked By	y:	RAB	
lanchester, New Hamps	nire U31U3		Excavation Eq	uinment					
ZA Rep.	C. Melby	Contractor	_	pshire Bori	ing, Inc.	Date		3/26	/2006
		Operator		latt Stone		Ground Ele	v.		l feet
Veather	Sunny, 50s	Make	Komatsu	Model	PC 27	Time Starte	d	08	340
		Capacity	1.5 feet ³	Reach	10 feet	Time Comp	oleted	09	000
Depth	So	oil Description			Sample	PID	Euggu	Boulders:	Mata
					No.	Reading	Excav. Effort	Count/ Class	Note No.
O 3. Dark brown Organics.	little SAND and Silt, TOPSOIL.				S-1	(ppm)		Ciass	140.
Light brown to a	ray, SILT and fine Sand.					ND	Е		1
1' -	•				\$-2	ND	Е		
2' —							E		
3' —							E		
4' —							E		
5' —	SILT	Y SAND					Е		
6' —							Е		
7' Botton	n of test pit at 7 feet below gr	ound surface. No	refusal encoun	tered.					
8' —									
9' —									
10'									
11' -									
12' -									
13' —									
otes:						1		l.	
. Soil samples were scr	eened for total volatile organ etected are reported in parts	ic compounds (VO per million (ppm) i	CS) using a TI n the "Field Te	EI Model 5 st Data" co	80b organic va Iumn. "ND" i	apor meter re ndicates no \	ferenced to VOCS dete	an isobutyler cted.	e-in-air
Test Pit Plan	Boulder C Letter Designation Size R	lass ange Classification	Propos	tions Used	F = Fine	bbreviations	GROUN	DWATER	
1.5	A B	6" - 17" 18" - 36" 6" and Larger	TRACE (TR.)	0 - 10% 10 - 20%	M = Mediu C = Coarse V = Very		() (X)	Encountered Not Encountered	
↑	Excavation	_	SOME (SO.)	20 - 35%	F/M = Fine F/C = Fine			Time to	Depth to Groundwate
NORTH	EEs	sv			GR = Gray		I Ke dunig	(crours)	Olouliawate

C. Melby Sunny, 50s Dark brown, fi	Contractor Operator Make Capacity Soil Description	Komatsu 1.5 feet ³	uipment pshire Bori Aatt Stone Model Reach	PC 27 10 feet Sample No.	Page No. File No. Checked By Date Ground Ele Time Starte Time Comp PID Reading (ppm) ND ND	v. d	Boulders: Count/ Class	/2006 5 feet 000 030 Note No.
C. Melby Sunny, 50s Dark brown, fi	Contractor Operator Make Capacity Soil Description	Excavation Eq New Ham N Komatsu 1.5 feet ³	uipment pshire Bori Aatt Stone Model Reach	PC 27 10 feet Sample No. SOIL S-1 0.9'	Date Ground Ele Time Starte Time Comp	v. d bleted Excav. Effort	3/26/ 138. 09 09 Boulders: Count/ Class	/2006 5 feet 200 230 Note No.
C. Melby Sunny, 50s Dark brown, fi	Contractor Operator Make Capacity Soil Description	New Ham Komatsu 1.5 feet ³	pshire Bori fatt Stone Model Reach	PC 27 10 feet Sample No. SOIL S-1 0.9'	Date Ground Ele Time Starte Time Comp PID Reading (ppm) ND	v. d bleted Excav. Effort	3/26/ 138 09 09 Boulders: Count/ Class	5 feet 2000 230 Note No.
C. Melby Sunny, 50s Dark brown, fi	Contractor Operator Make Capacity Soil Description	New Ham Komatsu 1.5 feet ³	pshire Bori fatt Stone Model Reach	PC 27 10 feet Sample No. SOIL S-1 0.9'	Ground Ele Time Starte Time Comp PID Reading (ppm) ND	d eleted Excav. Effort	Boulders: Count/ Class	5 feet 2000 230 Note No.
Sunny, 50s Dark brown, fi	Contractor Operator Make Capacity Soil Description	New Ham Komatsu 1.5 feet ³	pshire Bori fatt Stone Model Reach	PC 27 10 feet Sample No. SOIL S-1 0.9'	Ground Ele Time Starte Time Comp PID Reading (ppm) ND	d eleted Excav. Effort	Boulders: Count/ Class	5 feet 2000 230 Note No.
Sunny, 50s Dark brown, fi	Operator Make Capacity Soil Description	Komatsu 1.5 feet ³	Model Model Reach	PC 27 10 feet Sample No. SOIL S-1 0.9'	Ground Ele Time Starte Time Comp PID Reading (ppm) ND	d eleted Excav. Effort	Boulders: Count/ Class	5 feet 2000 230 Note No.
Dark brown, fi	Make Capacity Soil Description	Komatsu 1.5 feet ³	Model Reach	Sample No. SOIL S-1	Time Starte Time Comp PID Reading (ppm) ND	d eleted Excav. Effort	Boulders: Count/ Class	Note No.
	Soil Description	nie Organics, litti	•	Sample No.	PID Reading (ppm)	Excav. Effort	Boulders: Count/ Class	Note No.
	ine to medium SAND, lit		e Şilt, TOPS	No. SOIL S-1	Reading (ppm) ND	Effort E	Count/ Class	No.
	ine to medium SAND, lit		e Şilt. TOPS	No. SOIL S-1	Reading (ppm) ND	Effort E	Count/ Class	No.
			e Şilt, TOPS	OIL S-1	(ppm) ND	Effort E	Class	No.
			e Şilt, TOPS	0.9'	ND	Е		
				0.9'			2/1	II.
				S-2	ND	Е	ا ا	
							3/A.	
						Е	2/A	
						Е	10/ A	
						M	5/A 2/C	
SII	LTY SAND					M	3/A	
						D	2/C	
of test pit at 7 feet below	w ground surface, No	refusal encoun	tered					
								e-in-air
		Propor	tions Used		bbreviations	GROUN	DWATER	
Letter Designation Siz A B	ze Range Classification 6" - 17" 18" - 36"	TRACE (TR.)	0 - 10%	C = Coarse		() (X)	Encountered Not Encountered	
C	36" and Larger	LITTLE (LI.)	10 - 20%	The state of the s		Elansed	Time to	Depth to
E M	Easy Moderate	SOME (SO.)	20 - 35% 35 - 50%	GR = Gray BN = Brow	'n			Groundwate
	of test pit at 7 feet belowed and for total volatile or ected are reported in particular total and the control of the control	Letter Designation A B B B B B B B B B B B B B B B B B B	of test pit at 7 feet below ground surface. No refusal encount med for total volatile organic compounds (VOCS) using a TRected are reported in parts per million (ppm) in the "Field Tested are reported in parts per mi	of test pit at 7 feet below ground surface. No refusal encountered med for total volatile organic compounds (VOCS) using a TEI Model 53 ected are reported in parts per million (ppm) in the "Field Test Data" co Letter Designation Size Range Classification A 6"-17" B 18"-36" C 36" and Larger LITTLE (LI.) 10-20% Excavation Effort SOME (SO.) 20-35% E	of test pit at 7 feet below ground surface. No refusal encountered and for total volatile organic compounds (VOCS) using a TEI Model 580b organic value or total volatile organic compounds (VOCS) using a TEI Model 580b organic value or total volatile organic value or total volatile organic value or total volatile organic value or total volatile organic value or total volatile organic value o	ned for total volatile organic compounds (VOCS) using a TEI Model 580b organic vapor meter reserved are reported in parts per million (ppm) in the "Field Test Data" column. "ND" indicates no volumn are reserved are reported in parts per million (ppm) in the "Field Test Data" column. "ND" indicates no volumn are reserved are reported in parts per million (ppm) in the "Field Test Data" column. "ND" indicates no volumn are reserved are reported in parts per million (ppm) in the "Field Test Data" column. "ND" indicates no volumn are reported in parts per million (ppm) in the "Field Test Data" column. "ND" indicates no volumn are reported in parts per million (ppm) in the "Field Test Data" column. "ND" indicates no volumn are reported in parts per million (ppm) in the "Field Test Data" column. "ND" indicates no volumn are reported in parts per million (ppm) in the "Field Test Data" column. "ND" indicates no volumn are reported in parts per million (ppm) in the "Field Test Data" column. "ND" indicates no volumn are reported in parts per million (ppm) in the "Field Test Data" column. "ND" indicates no volumn are reported in parts per million (ppm) in the "Field Test Data" column. "ND" indicates no volumn are reported in parts per million (ppm) in the "Field Test Data" column. "ND" indicates no volumn are reported in parts per million (ppm) in the "Field Test Data" column. "ND" indicates no volumn are reported in parts per million (ppm) in the "Field Test Data" column. "ND" indicates no volumn are reported in parts per million (ppm) in the "Field Test Data" column. "ND" indicates no volumn are reported in parts per million (ppm) in the "Field Test Data" column. "ND" indicates no volumn are reported in parts per million (ppm) in the "Field Test Data" column. "ND" indicates no volumn are reported in parts per million (ppm) in the "Field Test Data" column. "ND" indicates no volumn are reported in parts per million (ppm) in the "Field Test Data" column. "ND" indicates no volumn are reported in parts per million (ppm) in th	ned for total volatile organic compounds (VOCS) using a TEI Model 580b organic vapor meter referenced to ected are reported in parts per million (ppm) in the "Field Test Data" column. "ND" indicates no VOCS dete Boulder Class	ned for total volatile organic compounds (VOCS) using a TEI Model 580b organic vapor meter referenced to an isobutyler ected are reported in parts per million (ppm) in the "Field Test Data" column. "ND" indicates no VOCS detected. Letter Designation Size Range Classification F = Fine M = Medium
-							man a material	
-----------------	---------------------------------------	---	-------------------------------------	--------------------------	-------------	--------------------------	--------------------------	-------------
52	eoEnvironmental, In ers/Scientists	c.	ī	River Place			Test Pit No. Page No.	: <u>-</u>
Enginee	as ocientists	-		, New Hampsh	ire		File No.	
	vey Road	_					Checked By	/:
Manche	ster, New Hampshir	e 03103		D 2 T				
GZA Re	en.	C. Melby	Contractor	Excavation Eq New Ham	•	rine. Inc.	Date	
GEAL IN	ър.	O. Meloj	Operator		fatt Stone		Ground Ele	v.
Weather	·	Sunny, 50s	Make	Komatsu	Model	PC 27	Time Starte	
			Capacity	1.5 feet ³	Reach	10 feet	Time Comp	leted
Depth			Soil Description			Sample	PID	
Бории			Son Duonprion			No.	Reading	Excav.
- 0 -							(ppm)	Effort
0.4		medium SAND, little vn, GRAVEL and med						E
- 11 -	Brown to right brov	vn, GRAVEL and med	ium to coarse SAND, i	trace Sitt,			-	
						S-1	ND	E
- 2' -	ı							Е
– ن3 –	2							E
- 4' -		GRA'	VEL and SAND					
- 5' -								E
								E
- 6' -	Bottom of	test pit at 6.5 feet belo	w ground surface. No	refusal encour	itered.			М
- _{7'}		•						
- 8,								
- 91								
- 10' -	Y							
- 11' -	Ę.							
- 12'	{							
- 13'	1							
Notes:	samples were coron	ned for total volatile or	ognic comnounds (VO	(CS) using a Ti	I Model 5	580h organic ve	nor meter re	ferenced to
standard	d. Total VOCS dete	cted are reported in pa	rts per million (ppm) i	n the "Field Te	st Data" co	olumn. "ND" i	ndicates no \	OCS dete
	Test Pit Plan	l .	ler Class	Propor	tions Used	45.2	obreviations	GROUN
1	8	٨	ze Range Classification 6" - 17"	TRACE (TR.)	0 - 10%	F = Fine M = Mediu	m	()
,		B C	18" - 36" 36" and Larger	LITTLE (LI.)	10 - 20%	C = Coarse		(X)
-	→	I	ation Effort	SOME (SO.)	20 - 35%	F/M = Fine F/C = Fine		
	NORTH 	м	Easy Moderate	AND	35 - 50%	GR = Gray BN = Brow		
	1	D	Difficult			YEL = Yell	ow	

GZA GeoEn	vironmental, Inc.					Test Pit No.		TP-5	
Engineers/Sc	ientists		River Place			Page No.	t	of	1
20011	201	Hudso	n, New Hampsh	ire		File No.		04.0024050 RAB	0.01
380 Harvey F	New Hampshire 03103					Checked By	/· ₋	ICAD	
			Excavation Equ						
GZA Rep.	C. Melby	Contractor		oshire Boring	, Inc.	Date			/2006
Weather	Sunny, 50s	Operator Make	Komatsu	Iatt Stone Model I	PC 27	Ground Ele Time Starte			7 feet 005
weatter	Suinty, 505	Capacity	1.5 feet ³		0 feet	Time Comp			30
			1,5 1001						
Depth	Soil I	Description			Sample	PID		Boulders:	
					No.	Reading	Excav.	Count/	Note
- 0 -	6.115	A11.				(ppm)	Effort	Class	No,
Brow	vn, fine to coarse SAND, some Gravel, little	Silt.			S-1	ND	D	5/A	1
- 1' -	CANTO & C	D 43/DI					D	10/A	
- 2' -	SAND & G						D		
- 31 - Botto	om of test pit at 2.5 feet below ground surface	e. Refusal enc	countered on pro	bable Bedroc	k.	-			
- 4'									
- 5'					1				
- 6' -									
- _{7'} -									
- 8'									
– 9' –									
- 10'									
- 11' -									
- 12'									
- 13' —									
Notes:						1			<u> </u>
	oles were screened for total volatile organic c	ompounds (V	OCS) using a TE	I Model 580l	organic va	apor meter re	ferenced to	an isobutyler	e-in-air
standard. To	otal VOCS detected are reported in parts per	million (ppm)	in the "Field Te	st Data" colur	nn, "ND" i	ndicates no 🎙	VOCS dete	cted.	
	Pit Plan Boulder Class	Classifi 4:	Propor	tions Used	F = Fine	bbreviations	GROUN	DWATER	
		Classification - 17"	TRACE (TR.)	0 - 10%	M = Mediu		(_)	Encountered	
	B 18"	- 36" d Larger	LITTLE (LI.)	10 - 20%	C = Coarse V = Very		(X)	Not Encountered	
	Excavation Effo	_	SOME (SO.)	20 - 35%	F/M = Fine F/C = Fine			Time to	Depth to
NORT	TH E Easy		AND	35 - 50%	GR = Gray BN = Brow		Keading	(Hours)	Groundwater
Volume = 1.1	cu, yd. MModers DDifficu		note.	پر <u>ەن - بر</u> ر	YEL = Yel				
GZN)	GZA GeoEnvironmental, Inc.	milOdiobelOd DO	74050 00\ 04 0074850	i Olifinino vielim:	Sa.				

GZA GeoEnvironme	ental Inc					Test Pit No		TP-5A	
Engineers/Scientists			River Place			Page No.	1	of	1
		Hudsor	n, New Hampsh	ire		File No.		04.002405	0.01
380 Harvey Road						Checked By	y:	RAB	
Manchester, New Ha	ampshire 03103		Excavation Equ	inmant					
GZA Rep.	C. Melby	Contractor	New Ham		ng Inc	Date		3/27	/2006
CZA Rep.	07110105	Operator		fatt Stone		Ground Ele	v.		.7 feet
Weather	Sunny, 50s	Make	Komatsu	Model	PC 27	Time Starte		10	005
		Capacity	1.5 feet ³	Reach	10 feet	Time Comp	oleted	10)30
5 4		0.110			T 6I-	I DID		Boulders:	·
Depth		Soil Description			Sample No.	PID Reading	Excav	Count/	Note
_					""	(ppm)	Effort	Class	No.
Gray, fine to	coarse SAND, some Silt, little	Gravel,			S-1	ND	М	5/A	1
- 1' -					3-1	ND	141	J/A	
1 1		a					D	3/C	
- 2'		SAND							
Bottom of te	est pit at 2.5 feet below ground s	urface. Refusal ence	ountered on pro	bable Bedr	rock				
- 3' — Doublin of to									
- 4'									
7									
- 5' -									
- 6' 							0.		
					1				
- 7' —									
- 8' -									
- 9'									
- 10'									
- 11' -	G.								
- 12'									
- 13'									
Notes:									
	e screened for total volatile orga CS detected are reported in parts								e-in-air
Similandi, 10th 10th	oo addoord me reported in part	s por minion (ppm) 1	11010 10.			indicates its		••••	
		~~~							
Test Pit Plan 8	Boulder Letter Designation Size	Class Range Classification	Proport	ions Used	F = Fine	obreviations	GROUN	DWATER	
1.5	A B	6" - 17" 18" - 36"	TRACE (TR.)	0 - 10%	M = Medius C = Coarse	n	(X)	Encountered Not Encountered	
	- c	36" and Larger	LITTLE (LI.)	10 - 20%	V = Very F/M = Fine	to medium			P 4
MODELL	Excavati		SOME (SO.)	20 - 35%	F/C = Fine			Time to (Hours)	Depth to Groundwater
NORTH Volume = <u>1.1</u> cu. yd.		Moderate	AND	35 - 50%	GR = Gray BN = Brow				
	D	Difficult			YEL = Yell	uw	L		
CTA CA	Environmental Inc								

GZA GeoEnviro	nmental, Inc.					Test Pit No		TP-6	
Engineers/Scient	ists		River Place			Page No.	1		1
eau		Hudson	, New Hampsh	ire		File No.		04.002405	
380 Harvey Road						Checked By	y:	RAB	
Manchester, Nev	v Hampshire 03103		Excavation Eq	uinment					
GZA Rep.	C. Melby	Contractor	New Ham	_	ing. Inc.	Date		3/27	//2006
-		Operator		latt Stone		Ground Ele	ev.		.3 feet
Weather	Sunny, 50s	Make	Komatsu	Model	PC 27	Time Starte		10	030
		Capacity	1.5 feet ³	Reach	10 feet	Time Comp	oleted	1	100
					1				
Depth		Soil Description			Sample	PID		Boulders:	
					No.	Reading	Excav. Effort	Count/ Class	Note No,
0 Brown	ine to medium SAND, little Silt, l	ittle Organics TOPS	OII.		_	(ppm)	Ellon	Class	NO,
Diown, i	me to medium print, mae om, i	ittie Organies. 1015	JIL .		S-1	ND	E		l
- 1' -						<b>—</b>			
Gray, fir	e to medium SAND, some Silt.						Е		
- 2' -					S-2	ND	Е		
- 3' —					3-2	140			
							E		
- 4' —									
							М	I/B	
- 5' —									
	SI	LTY SAND					E	I/B	
- 6' -							Б		
- 01							Е		
7'	Bottom of test pit at 7 feet below	v ground surface. No i	refusal encount	ered.					
- 8'									
•									
- 9' —									
10' -									
11' -									
12' -									
12									
13' -									
Notes:								l	
	were screened for total volatile or	zanic compounds (VO	CS) using a TF	El Model 58	80h organic va	mor meter re	ferenced to	an isobutyler	ne-in-air
	VOCS detected are reported in part								10 111 412
							¥2.		
Test Pit Pi 8		er Class te Range Classification	Propor	tions Used	F = Fine	bbreviations	GROUN	DWATER	
	1.5 A B	6" + 17" 18" - 36"	TRACE (TR.)	0 - 10%	M = Medius C = Coarse	m	(X)	Encountered Not Encountered	
	c c	36" and Larger	LITTLE (LI.)	10 - 20%	V = Very	ta analitira	,	1 - A1 THANKIIA16A	
	F	tion Effort	SOME (SO.)	20 - 35%	F/M = Fine F/C = Fine			Time to	Depth to Groundwater
			- Table (				Kwatthuu		
NORTH Volume =3.1 cu. y	E	Easy Moderate	AND	35 - 50%	GR = Gray BN = Brow	n	Reading 5 mi	nutes	7 feet

GZA GeoEnvironmental,	Inc.					Test Pit No		TP-7	
Engineers/Scientists		I	River Place			Page No.	1	of	1
		Hudson	ı, New Hampsl	nire		File No.		04.002405	0.01
380 Harvey Road						Checked By	y:	RAB	
Manchester, New Hampsl	nire 03103		P P						
CZA Dan	C Malley		Excavation Eq	uipment pshire Bori	ing Ing	Data		2/17	/2006
GZA Rep.	C. Melby	Contractor Operator	·	Matt Stone	ing, inc.	Date Ground Ele	37		.5 feet
Weather	Sunny, 50s	Make	Komatsu	Model	PC 27	Time Starte			110
-	7,1	Capacity	1.5 feet ³	Reach	10 feet	Time Comp			140
	5			•					
Depth	S	oil Description			Sample	PID		Boulders:	
					No.	Reading	Excav.	Count/	Note
- 0 - 5 11 - 6	P CAND Pol Cit	. 1: 0 1 0	ODGOIL		D.1	(ppm)	Effort	Class	No.
0.5	to medium SAND, little Sil- ray, fine SAND, little Silt.	t, little Organics. 1	OPSOIL		S-1	ND	E		l
- I, - Figur prown to gr	ay, fille SAND, fille Sile.				F 2	ND.	E		
- 2'					S-2	ND	E		
- 3'							Е		
- 4' —							Е		
					ia i		Е		
- 5'	SILT	Y SAND					Е		
- 6' -							Е		
- 7' Bottom	of test pit at 7 feet below g	round surface. No	refusal encoun	tered.					
- 8'									
- 9 ¹ -									
- 10' -									
- 11' -						-			
- 12' -									-
- 13' -									
	eened for total volatile organ etected are reported in parts								ne-in-air
Test Pit Plan	Boulder C	Class	Propo	rtions Used	A	bbreviations	GROUN	DWATER	
8	Letter Designation Size R	ange Classification 6" - 17" 18" - 36"	TRACE (TR.)	0 - 10%	F = Fine M = Mediu C = Coarse	m	( ) (X)	Encountered Not Encountered	
1.5	1 5		COURT DATE	10 - 20%	V = Very		F '		
1.5	B C 3	6" and Larger	LITTLE (LI.)	10 - 2074		to medium		-	
NORTH Volume =		n Effort asy	SOME (SO.)	20 - 35%				Time to (Hours)	Depth to Groundwater

GZA GeoEnvironmen	tal, Inc.					Test Pit No.		TP-8	
ingineers/Scientists		1	River Place			Page No.	1	of	1
		Hudsor	ı, New Hampsh	ire		File No.		04.002405	0.01
80 Harvey Road	-					Checked By	:	RAB	
fanchester, New Har	npshire 03103								
17 A. D	C. Malha		Excavation Equ	-	ino ina	Data		3/27	/2006
SZA Rep.	C. Melby	Contractor Operator	New Ham	fatt Stone	ing, inc.	Date Ground Ele	, g		l feet
Veather	Sunny, 50s	Make	Komatsu	Model	PC 27	Time Starte			240
reatter	buiniy, 503	Capacity	1.5 feet ³	Reach	10 feet	Time Comp			305
		4-17	115 1001						
Depth		Soil Description			Sample	PID		Boulders:	
					No	Reading	Excav.	Count/	Note
0						(ppm)	Effort	Class	No.
Dark brown, 1	ine to medium SAND, some				S-1	ND	Е		1
Light brown,	silt, some, fine Sand, trace R	oot Fibers. SUBSOIL	•						
					S-2	ND	Е		
2' —									
							E		
3' —									
							E		
4' —							E		
5'									
3 7	SI	LTY SAND					E		
6'									
							E		
7' - Bot	tom of test pit at 7 feet belov	u annual auriforna. No	andreal ananym	anad .		-			
Boi	iom of test pit at 7 feet belov	y ground surface. No	retusat encoun	ereu.					
· 8' —									
9' —									
101									
10' -									
11' -									
``									
12' -					1				
							*		
13' —					, ,		-		
/									
lotes:									
	screened for total volatile or	ganic compounds (VC	CS) using a TI	EI Model 5	80b organic va	por meter re	ferenced to	an isobutyler	e-in-air
tandard. Total VOC	S detected are reported in pa	rts per million (ppm) i	n the "Field Te	st Data" co	olumn. "ND" i	ndicates no V	OCS dete	cted.	
		les Class	1 5	dans Vis-1		Manufation -	Chora	DWATER	
Test Pit Plan 8		ier Class ze Range Classification	Jest Control	tions Used	F = Fine	bbreviations		DWATER	
1.5	A B	6" - 17" 18" - 36"	TRACE (TR.)	0 - 10%	M = Mediu C = Coarse		(X)	Encountered Not Encountered	
	c	36" and Larger	LITTLE (LI.)	10 - 20%	V = Very				
1	Excave	ation Effort	SOME (SO.)	20 - 35%	F/M = Fine F/C = Fine	to coarse		Time to (Hours)	Depth to Groundwater
					lan a		I wearing	\$ \$ 1 EV 41 2 7	~ LOURING MARKET
NORTH /olume =3.1 cu. yd.		Easy Moderate	AND	35 - 50%	GR = Gray BN = Brow		-		

Hudson, New Hampshire   File No.   Checked By:   RAB	ZA GeoEnvironment	al, Inc.		Diver Di-			Test Pit No.		TP-9	
Arrey Road	gineers/Scientists	_		River Place	ire		Page No.		of 04 002405	0.01
Rep.   C, Melby   Contractor   New Hampshire Boring, Inc.   Date   3/21/2006	) Harvey Road	÷	1100301	i, ivew manipsi	iii ¢					0.01
Excavation Equipment   Excavation Equipment   Sunny, 50s   Operator   Nation   Sunny, 50s   Make   Nation   N		pshire 03103					Cilcolled Dy	-		
her Sunny, 50s Make Capacity 1.5 feet Make Capacity 1.5 feet Make Capacity 1.5 feet Make Capacity 1.5 feet Make Capacity 1.5 feet Model 1.6 feet Time Started 1.340  It Soil Description Sample No. Reading (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (ppm) Effort Class No. (p		* Haranica		Excavation Eq	uipment					
the Sunny, 50s Make Capacity 1.5 feet Paper   Reach   PC 27   Time Started   Time Completed   ZA Rep.	C, Melby	Contractor			ing, Inc.	Date		3/27	/2006	
Capacity 1.5 feet Reach 10 feet Time Completed 1340    Soil Description   Sample No.   Reading (ppm)   Excav.   Count/ Not Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Class No.   Cla			•							
Boulders: No. Reading (count/ (ppm)) Effort Class No. (ppm) Effort Class No. (ppm) (ppm) Effort Class No. (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (ppm) (p	eather	Sunny, 50s								
No.   Reading   Excav.   Count/   Note   No.   Reading   Excav.   Effort   Class   No.   No.   No.   Reading   Excav.   Effort   Class   No.			Capacity	1.5 feet	Reach	IV rect	Time Compi	eted		940
No.   Reading   Excav.   Count/   Note   No.   Reading   Excav.   Effort   Class   No.   No.   No.   Reading   Excav.   Effort   Class   No.	epth	-	Soil Description			Sample	PID		Boulders:	
Dark brown, fine to medium SAND, little Organics, little Silt. TOPSOIL  Light brown, fine SAND and Silt, trace Gravel.  S-2  RD  Effort Class No.  1  ND  E  E  E  E  E  Bottom of test pit at 7 feet below ground surface. No refusal encountered.	-pa.							Excav.		Not
Dark brown, fine to medium SAND, little Organics, little Silt. TOPSOIL  Light brown, fine SAND and Silt, trace Gravel.  S-2  ND  E  Light brown, fine SAND and Silt, trace Gravel.  S-2  E  E  E  Bottom of test pit at 7 feet below ground surface. No refusal encountered.	.						1	Effort	Class	No
Light brown, fine SAND and Silt, trace Gravel.  S-2  ND  E  E  E  Bottom of test pit at 7 feet below ground surface. No refusal encountered.		ne to medium SAND, little O	rganics, little Silt. 7	OPSOIL				E		,
S-2  ND  E  E  E  Bottom of test pit at 7 feet below ground surface. No refusal encountered.	0.7'					0.7	עא	E		
S:2  E  E  SILTY SAND  E  Bottom of test pit at 7 feet below ground surface. No refusal encountered.	Light brown, f	ine SAND and Silt, trace Gra	vel.				ND	Е		
E  E  SILTY SAND  E  Bottom of test pit at 7 feet below ground surface. No refusal encountered.	, <u> </u>					S-2				
SILTY SAND  E  Bottom of test pit at 7 feet below ground surface. No refusal encountered.								E		
SILTY SAND  E  Bottom of test pit at 7 feet below ground surface. No refusal encountered.	3' —							100		
SILTY SAND  E  Bottom of test pit at 7 feet below ground surface. No refusal encountered.								E		
SILTY SAND  E  Bottom of test pit at 7 feet below ground surface. No refusal encountered.	4' —							E.		
Bottom of test pit at 7 feet below ground surface. No refusal encountered.	5' —									
Bottom of test pit at 7 feet below ground surface. No refusal encountered.	· –	SII.	TY SAND					Е		
Bottom of test pit at 7 feet below ground surface. No refusal encountered.	s' —	5.2								
								E		
	7' Rott	om of test nit at 7 feet helow	ground surface. No.	refusal encount	erad		<del></del>			
	Bott	ont of test pit at 7 feet below	ground surface. No	terusar encoun	ereu.					
	3' —									
	)' <del>-</del>									
	10' -									
	·									
	ur e						-			
	2' -						-			
	3' -									
	12' -									
										e-in-air
oil samples were screened for total volatile organic compounds (VOCS) using a TEI Model 580b organic vapor meter referenced to an isobutylene-in-air	ndard. Total VOCS	detected are reported in parts	s per million (ppm) i	n the "Field Te	st Data" co	lumn. "ND" i	ndicates no V	OCS dete	cted.	
oil samples were screened for total volatile organic compounds (VOCS) using a TEI Model 580b organic vapor meter referenced to an isobutylene-in-air				X						
oil samples were screened for total volatile organic compounds (VOCS) using a TEI Model 580b organic vapor meter referenced to an isobutylene-in-air	Test Pit Plan	Boulder	Class	Propor	tions Used	1 4	breviations	GROUN	DWATER	
oil samples were screened for total volatile organic compounds (VOCS) using a TEI Model 580b organic vapor meter referenced to an isobutylene-in-air ard. Total VOCS detected are reported in parts per million (ppm) in the "Field Test Data" column. "ND" indicates no VOCS detected.	6	Letter Designation Size	Range Classification	V-25-1		F = Fine				
bil samples were screened for total volatile organic compounds (VOCS) using a TEI Model 580b organic vapor meter referenced to an isobutylene-in-air ard. Total VOCS detected are reported in parts per million (ppm) in the "Field Test Data" column. "ND" indicates no VOCS detected.  Test Pit Plan  Boulder Class Proportions Used Abbreviations GROUNDWATER F - Fine	1.5	В	18" - 36"			C = Coarse	m	(x)	Not Encountered	
Test Pit Plan  Letter Designation  A  B  Boulder Class  A  B  Boulder Class  A  B  Boulder Class  A  B  Boulder Class  Broportions Used  F - Fine  M - Medium  C - Coarse  (X) Not Encountered	<u></u>	С	36" and Larger	LITTLE (LI.)	10 - 20%	V = Very F/M = Fine	to medium	, m	T! .	<b>.</b>
Test Pit Plan  A Boulder Class  Boulder Class  Froportions Used  A Abbreviations  F = Fine  A G G - 17"  B 1.5  B 18" - 36"  C 36" and Larger  C 36" and Larger  LITTLE (LI.) 10 - 20%  FM = Electro partium  TEST Model 580b organic vapor meter referenced to an isobutylene-in-air vapor meter referenced to an isobutylene-in-air vapor meter referenced to an isobutylene-in-air vapor meter referenced to an isobutylene-in-air vapor meter referenced to an isobutylene-in-air vapor meter referenced to an isobutylene-in-air vapor meter referenced to an isobutylene-in-air vapor meter referenced to an isobutylene-in-air vapor meter referenced to an isobutylene-in-air vapor meter referenced to an isobutylene-in-air vapor meter referenced to an isobutylene-in-air vapor meter referenced to an isobutylene-in-air vapor meter referenced to an isobutylene-in-air vapor meter referenced to an isobutylene-in-air vapor meter referenced to an isobutylene-in-air vapor meter referenced to an isobutylene-in-air vapor meter referenced to an isobutylene-in-air vapor meter referenced to an isobutylene-in-air vapor meter referenced to an isobutylene-in-air vapor meter referenced to an isobutylene-in-air vapor meter referenced to an isobutylene-in-air vapor meter referenced to an isobutylene-in-air vapor meter referenced to an isobutylene-in-air vapor meter referenced to an isobutylene-in-air vapor meter referenced to an isobutylene-in-air vapor meter referenced to an isobutylene-in-air vapor meter referenced to an isobutylene-in-air vapor meter referenced to an isobutylene-in-air vapor meter vapo				SOME (SO.)	20 - 35%	F/C = Fine				
Test Pit Plan  A 6°-17" B 1.5  B 18°-36° C 36" and Larger Excavation Effort  Excavation Effort  Boulder Class  C 36" and Larger  Excavation Effort  Boulder Class  Proportions Used  Abbreviations  Proportions Used  Abbreviations  F - Fine  M - Medium  C - Coarse  C 36" and Larger  Excavation Effort  B 0.18°-36"  C 36" and Larger  Excavation Effort  B 0.18°-36"  C 0.17"  B 0.18°-36"  C 0.20%  B 0.18°-36"  C 0.20%  B 0.18°-36"  C 0.20%  B 0.20°-35%  B 0.20°-3	NORTH			ANID	16 600/			-		_
Test Pit Plan  Letter Designation  A 6°-17"  B 1.5  B 18°-36°  C 36" and Larger  Excavation Effort.  Excav	umc = 2.3 cu, yd.	Jy1	Moderate	MINU	33 - 30%	DIV = BIOW	11	and the second		

001.0	7 1 11						Tr. 4 D's N.		TP-10	
	eoEnvironmental, Inc.			n' bl			Test Pit No.	-		-
Enginee	rs/Scientists	<del>-</del>		River Place	1		Page No.		of 04.002405	0.01
200 11	n and		Hudson	n, New Hampsh	ire		File No.		04.002403 RAB	0.01
	vey Road	02102					Checked By	/:	KAD	
Manche	ster, New Hampshire	03103		Excavation Equ	inment					
GZA Re	en.	C. Melby	Contractor	_	oshire Boring,	Inc	Date		3/27	/2006
U2A 10		C. Micioy	Operator		latt Stone	THO.	Ground Ele	v		0 feet
Weather	. 9	Sunny, 50s	Make	Komatsu		C 27	Time Starte			345
			Capacity	1.5 feet ³		0 feet	Time Comp			105
			, ,	110.1001	-		•			
Depth		Soil	Description			Sample	PID		Boulders:	
						No.	Reading	Excav,	Count/	Note
- 0 -							(ppm)	Effort	Class	No.
		edium SAND, some Silt, l				S-1	ND	Е		1
[	Light brown, SILT, so	ome fine Sand.	SU	BSOIL			110	L		·
÷ 1' =						S-2	ND	E		
- 2' -										
-								Е		
- 3' -										
								Е		
- 4' -										
							2	E		
- 5' -										
								Е		
- 6' -		SILTY	SAND					Г		
-, -								E		
- 7' -	Bottom of to	est pit at 7 feet below grou	nd surface. No	refusal encount	ered.					
- 81 -										
°										
- 9' -										
- 10' -										
- 11' -										
- 12'										
- 13'										
15										
Notes:									1 1 1	
		d for total volatile organic ed are reported in parts per								ne-in-air
Standart	i. Total VOCS detecte	ed are reported in parts per	ининон (фрин) і	iii die Tield Le	st Data Colum	III. 14D 1	iluicates no	VOCS delle	cica.	
	Test Pit Plan	Boulder Class		Propor	tions Used	1.00	breviations	GROUN	DWATER	
i			Classification ' - 17"	TRACE (TR.)	0 - 10%	F = Fine M = Medius	n	()	Encountered	
	1.3	В 18	" - 36" nd Larger	LITTLE (LI.)	10 - 20%	C = Coarse V = Very		(x)	Not Encountered	
	<b>↓</b>		-			F/M = Finc		Elapsed	Time to	Depth to
	NORTH	Excavation Eff EEasy	ort	SOME (SO.)	20 - 35%	F/C = Fine : GR = Gray	to coarse	Reading		Groundwater
Volume =		MMode D Diffic		AND	35 - 50%	BN = Brow YEL = Yell				
		D ······Diffic	un			True - ren	4111			
GZ\	GZA GeoEnvironme	ental, Inc.	m\04iobe\04.003	4050 0004 0024050	Militerios vieito-i					

GZA Ge	eoEnvironmental, Inc.						Test Pit No		TP-11	
	rs/Scientists		]	River Place			Page No.	1	of	1
			Hudson	ı, New Hampsh	ire		File No.		04.002405	0.01
	vey Road	-					Checked By	y:	RAB	
Manches	ster, New Hampshire	03103								
GG 4 D		C Mall		Excavation Eq	_	tur tur	D		2/27	2006
GZA Re	ър.	C. Melby	- Contractor Operator	New Ham	fatt Stone	ing, inc.	Date Ground Ele			/2006 6 feet
Weather		Sunny, 50s	Make	Komatsu	Model	PC 27	Time Starte			05
TT OUUT TO		3.11.9, 0.00	Capacity	1.5 feet ³	Reach	10 feet	Time Comp			35
Depth		Soi	l Description			Sample	PID		Boulders:	
						No.	Reading	Excav.	Count/	Note
0 -							(ppm)	Effort	Class	No.
ŀ	Dark brown, fine to m	nedium SAND, some Orga	nics, some Silt.	TOPSOIL			ND	M		1
- p -						S-1				
1.5	Light brown, SILT, li	ttle fine Sand						M		
- 2' '	Light blown, SiL 1, in	the file Balla.					_			
						S-2	ND	M		
- 3'								14		
- 4'								М		
"								М		
- 51 -										
								M		
- 6' -		SII	LT				-			
								M		
- 7' -	Bottom of t	est pit at 7 feet below gro	und surface. No	refusal encount	ered.					
		,								
- 8, -										
- 9' -										
_ , _										
- 10' -										
- 11' -										
- 12' -										
. 121										
- 13'										
Notes:	_									
		d for total volatile organic ed are reported in parts pe								e-in-air
stanuaru	i. Total VOCS detecti	ed are reported in parts pe	i minion (ppin) i	it tile Tield Te.	st Data Co	rumi. ND i	idicates no	roes dele	oted.	
	Test Pit Plan	Boulder Clas		Propor	tions Used	CIV.	breviations	GROUN	DWATER	
Γ	1.5	A	ge Classification 5" - 17"	TRACE (TR.)	0 - 10%	F = Fine M = Medius	n	(_)	Encountered	
L			8" - 36" and Larger	LITTLE (LI.)	10 - 20%	C = Coarse V = Very		(X)	Not Encountered	
	←	Excavation E		SOME (SO.)	20 - 35%	F/M = Fine F/C = Fine			Time to	Depth to
	NORTH	EEasy				GR = Gray		Reading	(Hours)	Groundwater
volume =_	3.1 eu. yd.	MMod DDiffi		AND	35 - 50%	BN = Brown YEL = Yell				
CAN	GZA GeoEnvironme	ental Ina								

GZA Ge	oEnvironmental, Inc	Z.						Test Pit No		TP-12	
	rs/Scientists				River Place			Page No.		of	1
8					n, New Hampsh	ire		File No.		04.002405	0.01
380 Har	vey Road		-					Checked By	/: ——	RAB	
	ster, New Hampshire	03103							-		
					Excavation Eq	uipment					
GZA Re	p	C. Melby		Contractor		pshire Boria	ng, Inc.	Date		3/27	/2006
				Operator		fatt Stone	<u> </u>	Ground Ele	ν.		l feet
Weather		Sunny, 50s		Make	Komatsu	Model	PC 27	Time Starte		14	140
		•		Capacity	1.5 feet ³	Reach	10 feet	Time Comp			505
				1		-		•		-	
Depth			Soil D	escription			Sample	PID		Boulders:	
·				•			No.	Reading	Excav.	Count/	Note
								(ppm)	Effort	Class	No.
- 0 -	Dark brown, fine to	medium SAND, I	ittle Silt, litt	le Organics.	TOPSOIL		S-1				
0.5'L	Light brown, SILT,							ND			1
- 1		7									
							S-2	ND			
- 2' -											
- 3'											
_ (											
- 4' -			SILT								
4.5	Light gray, fine to m	edium SAND, lit	tle Silt.				S-3	ND			
- 5' -	00.7,										
- 6' -			SANI	)				-			
- 7' -	Bottom of	test pit at 7 feet b	elow groun	d surface. No	refusal encount	ered.	-				
											)
- 8, —									-		
- 9' <del>-</del>											
- 10' -											
- 11' -											
- 12' -									-		
- 13' <del>-</del>											
Notes:											
	samples were screen	ed for total volatil	le organic co	ompounds (VC	CS) using a TE	I Model 58	Ob organic va	por meter re	ferenced to	an isobutyler	e-in-air
	. Total VOCS detec										
		·		41 /							
	Test Pit Plan		Boulder Class		Proport	ions Used		breviations	GROUN	DWATER	
· ·	8	Letter Designation		Classification	TRACE (TRA	0 - 10%	F = Fine M = Mediur	m		Encountered	
	1.5	A B	18" -	- 36"	TRACE (TR.)		C = Coarse		(x)	Not Encountered	
		C	36" and	Larger	LITTLE (LI.)	10 - 20%	V = Very F/M = Fine	to medium			
	▼	E	Excavation Effor	t	SOME (SO.)	20 - 35%	F/C = Fine t		Elapsed Reading		Depth to Groundwater
	NORTH 3.1 cu. yd.		EEasy MModerate	e	AND	35 - 50%	GR = Gray BN = Brown	n			
			DDifficul		E99577500		YEL = Yell				
	STA CONTO										

	eoEnvironmental, Inc rs/Scientists								TP-13	
	10.0011111010		F	River Place			Test Pit No Page No.	1	of	1
		-	Hudson	, New Hampsh	ire		File No.		04.002405	0.01
	vey Road	12					Checked B	y:	RAB	
Manche	ster, New Hampshire	03103		F	*******					
GZA Re	***	C. Melby	Contractor	Excavation Equal New Ham	-	ing Inc	Date		3/27	/2006
UZA KO		C. Mciby	Operator		latt Stone	ing, inc.	Ground Ele	v		9 feet
Weather	•	Sunny, 50s	Make	Komatsu	Model	PC 27	Time Starte			110
			Capacity	1.5 feet ³	Reach	10 feet	Time Comp			525
Depth		Sc	oil Description			Sample	PID		Boulders:	
						No.	Reading	Excav.	Count/	Note
- 0 -	Dorle brown fine to	medium SAND, some Silt	Little Organies T	COBCOIL		C 1	(ppm)	Effort	Class	No.
		medium SAND and SILT		OPSOIL		0.4° S-1	ND	Е		1
- 1' -	Digit of our it, the to		Y SAND			S-2				
1.5	Brown, medium to c	oarse SAND, trace Silt.				1.5	ND	Е		
- 2' <b>-</b>						S-3	ND	E		
- 3' -						3-5	IND	15		
,								E		
- 4'										
								E		
- 5'								_		
		SA	AND					E		
- 6'								E		
_ 71 _	Bottom of t	est pit at 6.5 feet below g	round surface. No	refusal encoun	tered.			E		
- 7'										
- 8'										
- 91										
- 10' -										
111										
- 11' -										
- 12'										
· 13' -										
Notes:										
		ed for total volatile organi								e-in-air
standard	. Total VOCS detec	ted are reported in parts p	er million (ppm) ir	the "Field Te	t Data" co	lumn. "ND" i	ndicates no 🎙	OCS dete	cted.	
	Test Pit Plan	Boulder Cl	255	Propor	ions Used		bbreviations	GROUN	DWATER	
r	8		nge Classification 6" - 17"	TRACE (TR.)	0 - 10%	F = Fine M = Medius		( )	Encountered	
l	1.5	В	18" - 36"			C = Coarse	••	(x)	Not Encountered	
4			and Larger	LITTLE (LI.)	10 - 20%	V = Very F/M = Fine		Elapsed	Time to	Depth to
	NORTH	Excavation EEas		SOME (SO.)	20 - 35%	F/C = Fine GR = Gray		Reading		Groundwater
		ММо	derate	AND	35 - 50%	BN = Brow				
Volume =_		D Di	fficult			YEL - Yell	OW			Υ

GZA GeoE	Environmental, Inc						Test Pit No.		TP-14	
Engineers/	Scientists			River Place			Page No.	1	of	1
			Hudsor	ı, New Hampsh	ire		File No.		04.0024050	0.01
380 Harvey							Checked By	:	RAB	
Mancheste	r, New Hampshire	03103								
L		76 C M N		Excavation Eq	-				2/27	2006
GZA Rep.		C. Melby	Contractor		pshire Borir Iatt Stone	ig, inc.	Date Ground Elev	. 75		/2006 1 feet
W-adha-		Sunny, 50s	Operator Make	Komatsu	Model	PC 27	Time Started			30
Weather		Suthly, Jos	Capacity	1.5 feet ³	Reach	10 feet	Time Comp			100
			Сириску	1.5 (00)			rano comp			
Depth		Soi	l Description			Sample	PID		Boulders:	
-						No.	Reading	Excav.	Count/	Note
							(ppm)	Effort	Class	No.
0 _{0.3} . Dar	rk brown, fine to med	lium SAND, some Silt, little (	Gravel TOPSOIL			0.3' S-1		16		1
Ora	ange brown, fine to n	nedium SAND and SILT.				S-2	ND	E		1
- ı' —		SILTY	SAND			3-2	ND	Е		
- 2' Gr	ray, fine to medium	n SAND, little Silt.					1,10	, Li		
4 ]						S-3	ND	Е		
- 3' —								_		
								E		
- 4'										
								E		
- 51 —		SA	ND				-	_		
							1	E		
- 6' -	Bottom of	test pit at 6 feet below gro	und surface No.	refisal encoun	tered	-				
	DOROM OF	test pit at o reet below gre	and surface. 140	1010501 01100011	iorea.					
- 7' <del></del>										
- 8' -										
							1			
- 9' -										
10' -										
11' -										
12'										
12										
13' -										
Notes:		10 marks 1 at 1		VOD) - '	71 Marsh 1 60	Mh arrainte		Canana di	انجارهم	a in ci-
i. Soil san	mples were screens	ed for total volatile organic ted are reported in parts p	compounds (VC	n the "Field Te	st Deta" ool	our organic vi	apor meter ret Indicates no V	ierencea (d OCS dete	i an isoputyien ected.	ic-III-8IF
siai iudi'U.	TOTAL YOUS DETEC	are reported in parts p	v munou (bhm) i	nie Tielu IC	, Date VII	17D I	Y	550 000		
To	est Pit Plan	Boulder Cla		Propo	rtions Used	1920	bbreviations	GROUN	DWATER	
	8		ge Classification 6" - 17"	TRACE (TR.)	0 - 10%	F = Fine M = Mediu	m	( )	Encountered	
	1.5	В	18" - 36"			C = Coarse		(x)	Not Encountered	
			and Larger	LITTLE (LI.)	10 - 20%	V = Very F/M = Fine	to medium	II		
	<u> </u>	C 30		1				Elanced	Time to	Denth to
NO	<u>†</u>	Excavation I		SOME (SO.)	20 - 35%	F/C = Fine	to coarse		l Time to 3 (Hours)	Depth to Groundwater
NO Volume =	DRTH		y Ierate	SOME (SO.)	20 - 35% 35 - 50%		to coarse			

GZA Ge	eoEnvironmental, Inc	<u>.                                    </u>					Test Pit No.		TP-15	
	rs/Scientists		1	River Place			Page No.	1	of	1
			Hudsor	ı, New Hampsh	ilre		File No.		04.0024050	).01
	vey Road ster, New Hampshire	02102					Checked By	": —	RAB	
Manche	ster, New Hampshire	2 03103		Excavation Eq	uipment					
GZA Re	ep.	C. Melby	Contractor	•	pshi <b>re B</b> orii	ng, Inc.	Date		3/28/	2006
			Operator	N	latt Stone		Ground Ele			) feet
Weather		Sunny, 50s	– Make	Komatsu	Model _	PC 27	Time Starte			115
			Capacity	1.5 feet ³	Reach -	10 feet	Time Comp	leted	- 07	35
Depth		So	il Description			Sample	PID		Boulders:	
.						No.	Reading	Excav.	Count/	Note
- 0 -							(ppm)	Effort	Class	No.
Ť	Dark bro	wn, fine to medium SAND	), some Silt, little	Organics. Top	soil	S-1	ND	Е		1
- ı'	Light brown, fine SA	AND and Silt				S-2				
	Digital Drowing time Dr						ND	Е		
- 2' —								E		
- 3' -		SILTY	SAND					_		
- 4' _{4,3'}								E		
	Gray, fine to medium	n SAND, some SILT.				4.3° S-3	ND	Е		
		SA	ND					E		
- 6' -								Е		
- 7' -	Bottom of	test pit at 6.5 feet below gr	ound surface. No	refusal encour	ntered.					
						15				
- 8, -										
- 9 [,]										
- 10' -							-			
- 11'								-		
- 12'										
121										
- 13'										
Notes:					+		1			
1. Soil		ed for total volatile organi								e-in-air
standard	1. Total VOCS detec	ted are reported in parts po	er million (ppm) i	n the "Field Te	sī Data" col	umn. "ND" ii	ndicates no \	OCS dete	ctea.	
	Test Pit Plan	Boulder Cla Letter Designation Size Ran	iss ige Classification	Propos	tions Used	F = Fine	breviations	GROUN	DWATER	
	1.5	A B	6" - 17" 18" - 36"	TRACE (TR.)	0 - 10%	M = Mediu C = Coarse	π	(x)	Encountered Not Encountered	
			and Larger	LITTLE (LI.)	10 - 20%	V = Very F/M = Fine F/C = Fine			Time to	Depth to
	NORTH	Excavation I EEas		SOME (SO.)	20 - 35%	GR = Gray	∪ CUMISC	Reading	(Hours)	Groundwater
	2.8 cu. yd.	MMoo		AND	35 - 50%	BN = Brow	_	-		

GZA G	eoEnvironmental, Inc						Test Pit No.		TP-16	
Enginee	ers/Scientists			River Place			Page No.	1	of	1
ellers.			Hudson	ı, New Hampsh	ire		File No.		04.002405	0.01
	vey Road						Checked By	:	RAB	
Manche	ster, New Hampshire	03103								
		0.14.11		Excavation Eq	•	· ·			2.00	/200 <i>c</i>
GZA R	ер.	C. Melby	Contractor		pshire Boriz	ng, Inc.	Date			/2006
11 t 4 l	_	Common 60a	Operator		fatt Stone	DC 27	Ground Elev			5 feet 73.5
Weather	1	Sunny, 50s	Make Capacity	Komatsu 1.5 feet ³	Model _ Reach	PC 27 10 feet	Time Started			300
			Capacity		Keacii -	10 1001	Time Comp	leteu		100
Depth		So	il Description			Sample	PID		Boulders:	
						No	Reading	Excav.	Count/	Note
							(ppm)	Effort	Class	No.
- 0 -	Dark brown, fine to	medium SAND, some Silt	, little Organics.	TOPSOIL		S-1		Е		1.1
0.8'						0,81	ND	E		1, 2
יו –	Light brown, fine SA	AND and SILT.				S-2	ND	Е		
- 2' _{2.2} '		SILTY	SAND				110			
						2.2*		Е		
- 31 -	Light brown, fine to	medium SAND, little Silt	•							
								·Ε		
- 4' -										
						S-3	ND	E		
- 5' -										
								Е		
- 6' -										
								E		
7' -	Bottom of	test pit at 7 feet below gro	ound surface. No	refusal encoun	ered.					
- 8, -										
<b>-</b> 9' <b>-</b>										
7										
- 10' -										
- 11' -							$\vdash$			
- 12' -							-			
- 13'										
Notes:					_		:t:			
1. Frost	t encountered.									
		ed for total volatile organi								e-in-air
standaro	<ol> <li>Total VOCS detect</li> </ol>	ted are reported in parts p	er million (ppm) i	n the "Field Te	st Data" col	umn. "ND" i	ndicates no V	OCS dete	cted.	
	Test Pit Plan	Boulder Cla	164	Bronor	tions Used	1 41	breviations	GROUN	DWATER	
	8	Letter Designation Size Rai	nge Classification			F = Fine				
	1.5	A	6" - 17" 18" - 36"	TRACE (TR.)	0 - 10%	M = Medius C = Coarse	n	( ) (X)	Encountered Not Encountered	
	<b></b>		and Larger	LITTLE (LI.)	10 - 20%	V = Very F/M = Fine	to medium			
	1	Excavation 1		SOME (SO.)	20 - 35%	F/C = Fine t			Time to (Hours)	Depth to Groundwater
	NORTH 3.1 cu. yd.	EEas MMo		AND	35 - 50%	GR = Gray BN = Brown	n			
		DDif		00x383		YEL = Yell				
GZ	GZA GeoEnvironn	nental, Inc.								

GZA GeoEnvironme	ental, Inc.					Test Pit No		TP-17	
Engineers/Scientists		1	River Place			Page No.	1	of	1
		Hudsor	n, New Hampsl	nire		File No.	-	04.002405	0.01
380 Harvey Road Manchester, New Ha	umpehira 03103					Checked B	y:	RAB	
Manchester, New Ha	impshire 03103		Excavation Eq	ninment					
GZA Rep.	C. Melby	Contractor		pshire Bori	ng, Inc.	Date		3/28	/2006
	· · · · · · · · · · · · · · · · · · ·	Operator		latt Stone		Ground Ele	v,	135.	8 feet
Weather	Sunny, 50s	Make	Komatsu	Model	PC 27	Time Starte			315
		Capacity	1.5 feet ³	Reach .	10 feet	Time Comp	oleted	0	345
Depth		oil Description			Sample	PID		Boulders:	
John.	•				No.	Reading	Excav.	Count/	Note
0 -						(ppm)	Effort	Class	No.
0.5' Dark brown,	fine to medium SAND, little Sile	t, little Organics. T	OPSOIL		0.5' S-1	ND	Е		1
Light brown	, fine SAND and Silt.								
	SILT	Y SAND			S-2	ND	Е		
- 2' - Gray, fine to	medium SAND, little Silt.				-				
1	,						E		
. 3, —						ND	E		
4' —									
					S-3		Е		
- 51 —									
		ANTS.					E		
6' —	5	AND					Е		
- 7' - B									
' Bo	ottom of test pit at 7 feet below gr	round surface. No	refusal encoun	tered.					
- 8' —									
9' —									
10'									
11' -									
12'									
13' -									
.									
Notes:						L			
	e screened for total volatile organ	nic compounds (VO	CS) using a Tl	EI Model 5	ROb organic va	por meter re	ferenced to	an isobutyler	ıe-in-air
	CS detected are reported in parts								
Test Pit Plan	Boulder C	Class	Propo	rtions Used	I Al	breviations	GROUN	DWATER	
6		ange Classification 6" - 17"	TRACE (TR.)	0 - 10%	F = Fine M = Medius	n	( )	Encountered	
1.5	В	18" - 36"	LITTLE (LI.)	10 - 20%	C = Coarse V = Very		$(\mathbf{x})$	Not Encountered	
<b></b>		6" and Larger			F/M = Fine		Elapsed	Time to	Depth to
	Excavation EE		SOME (SO.)	20 - 35%	F/C = Fine ( GR = Gray	o coarse	Reading	(Hours)	Groundwate
NORTH /olume = 2.3 cu. yd.	ММ		AND	35 - 50%	BN = Brow				

GZA G	eoEnvironmental, Inc						Test Pit No.		TP-18			
55	ers/Scientists	Χ	]	River Place			Page No. 1 of 1					
		i :	Hudson	n, New Hampsh	ire		File No. 04.0024050.01					
	vey Road						Checked By	'i	RAB			
Manche	ster, New Hampshire	03103		Excavation Equ	vinment							
GZA R	ep.	C. Melby	Contractor	New Ham	-	ing, Inc.	Date		3/28	/2006		
	()		Operator		fatt Stone		Ground Ele	v.	126.	5 feet		
Weather	8	Sunny, 50s	Make	Komatsu	Model	PC 27	Time Starte			345		
			Capacity	1.5 feet ³	Reach	10 feet	Time Comp	leted	09	20		
Depth		Sc	oil Description			Sample	PID		Boulders:			
Dopui	=		2 45477711011			No.	Reading	Excav.	Count/	Note		
- 0 -	Dark brown, fine to	medium SAND, little Silt	, little Organics. T	OPSOIL			(ppm)	Effort	Class	No.		
								Е		1		
- 11 <del>-</del>	Brown, fine to media	um SAND, some Silt.										
						S-1	ND	Е				
- 2'	): 							E				
- 3'		SILT	Y SAND					<u> </u>				
J								E				
- 4' <del></del>	Black, Organic Peat,	trace Root Fibers										
	Diner, Olganie i eur	, made record records.						M				
- 5,		p	EAT			S-2	ND	М				
- 6'			DAI				ND	141				
	Pottom to	st pit at 6.5 feet below gro	and surface. No.	reflect encount	arad	_		M				
- 7' -	Bottom te	ng worse reer c.o is nd re	Juliu Sullace. INO I	erusar encount	cicu.							
01												
- 8'												
- 91 —												
- 10'												
- 11 ² -	0											
11	5											
- 12'	1											
- 13'												
Notes:	,	16. 4.43 . 1.421	4- (2/0	voevi Tr	T M - J - L &	DOL		Caramand to	on icohustulan	- i- 4i-		
		ed for total volatile organicted are reported in parts p								IC-111-811		
	Test Pit Pian	Boulder C	nee	Depres	tions Used	1 41	breviations	GROUN	DWATER			
i	7	Letter Designation Size Ra	nge Classification	77		F = Fine						
	1.5	A B	6" - 17" 18" - 36"	TRACE (TR.)	0 - 10%	M = Mediur C = Coarse	n	(X)	Encountered Not Encountered			
	<b>←</b>		i" and Larger	LITTLE (LL.)	10 - 20%	V = Very F/M = Fine		Elansed	Time to	Depth to		
	NORTH	Excavation E Et		SOME (SO.)	20 - 35%	F/C = Fine t GR = Gray		Reading	(Ношз)	Groundwater		
Volume =	2.5 cu. yd.	MMo DDi	oderate	AND	35 - 50%	BN = Brown YEL = Yell		5 mi	nutes	5.4 feet		
	GZA GeoEnvirone											

GZA Geol	Environmental, Inc.							Test Pit No		TP-19		
Engineers/		250		River Place				Page No.	1	of	1	
		_	Hudson, New Hampshire					File No.		04.0024050.01		
380 Harve	•	00100						Checked By: RAB				
Mancheste	er, New Hampshire	03103		Evenyetion	Equipment							
GZA Rep.		C. Melby	Contrac		Equipment Sampshire B			Date		3/28	/2006	
ОВИТОР			Operato		Matt Stor		_	Ground Ele	v.	127.	7 feet	
Weather	S	lunny, 50s	Make	Komats	u Model	PC 27		Time Starte	ed	09	920	
	Capacity 1.5 feet ³ Reach						t	Time Comp	leted	10	1010	
						La						
Depth			Soil Descriptio	n			imple No.	PID Reading	Excav.	Boulders: Count/	Note	
1						- 1 '	140.	(ppm)	Effort	Class	No.	
- 0 - Da	ark brown, fine to m	edium SAND, littl	e Silt, little Organi	cs. TOPSOIL			S-1					
0.8'						0.8		ND	E		1	
- 1' - Gr	ray and brown, fine	SAND and Silt. M	loist					ND	Е			
- 2'							S-2	110	ь			
-									E			
- 3'								-				
									E			
- 4'									r.			
_ =:									E			
- 5' -			SILTY SAND						E			
- 6' -												
				19.1		- 1			E			
- 7' -	Bottom of te	est nit at 7 feet hel	ow ground surface.	No refusal enc	nuntered.	_			_			
		<b>,</b>	<b>.</b>									
- 8'												
- 91 -												
1												
- 10'												
- 11' -												
12/												
- 12' -												
- 13' -						- 1						
Notes:										1		
	mples were screened	for total volatile	organic compounds	s (VOCS) using	a TEI Mode	l 580b orga	anic va	por meter re	ferenced to	an isobutyler	ıe-in-air	
	Total VOCS detecte											
rp.	est Pit Plan	no	ulder Class		oportions Used	· 1	Al	breviations	GROUN	DWATER		
		Letter Designation	Size Range Classification	n	ra emperarina venna	F=	Fine					
	1,5	A B	6" - 17" 18" - 36"	TRACE (T		c =	Mediur Coarse	п	(x)	Encountered Not Encountered		
	<b>†</b>	С	36" and Larger	LITTLE (L	l.) 10 – 20%	F/M		to medium	Planeed	Time to	Depth to	
NC	I ORTH		avation Effort	SOME (SC	.) 20 - 35%		= Fine ( = Gray	o coarse		(Hours)	Groundwater	
	3.1 cu, yd.	N	Moderate	AND	35 - 50%	6 BN	= Brown L = Yello					
_			Difficult			102						

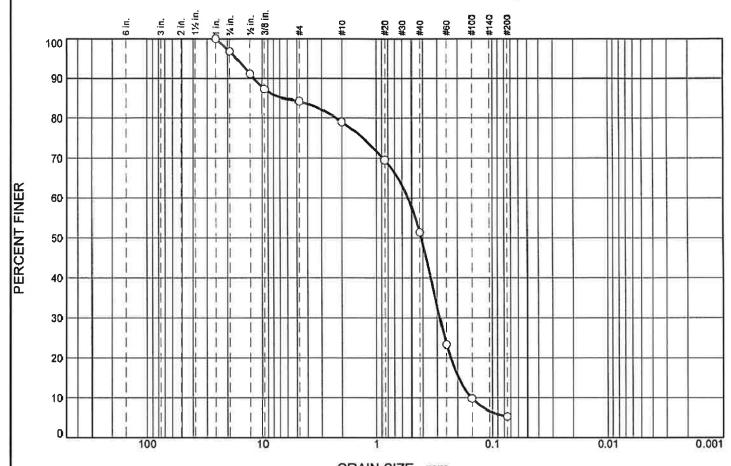
OZA Gast	Environmental, Inc						Test Pit No.		TP-20	
Engineers/		•	I	River Place			Page No. 1 of			
		_	Hudson	ı, New Hampsh	ire		File No. 04.00240			).01
380 Harve	100000	00100						Checked By: RAB		
Mancheste	er, New Hampshire	: 03103		Excavation Eq	uinment					
GZA Rep.		C. Melby	Contractor	-	pshire Bori	ng, Inc.	Date		3/28/	2006
	-	•	Operator		fatt Stone		Ground Elev.		133.2	2 feet
Weather	4	Sunny, 50s	Make	Komatsu	Model	PC 27	Time Started			15
			Capacity	1.5 feet ³	Reach	10 feet	Time Comp	leted	11	40
Depth			Soil Description			Sample	PID		Boulders:	
J 0,			1			No.	Reading	Excav.	Count/	Note
- 0 -							(ppm)	Effort	Class	No.
0.7' Da	ark brown, fine to	medium SAND, little	Silt, little Organics. T	OPSOIL		S-1	ND	E		1
- l' - Li	ght brown to gray,	, fine SAND and Silt.	Moist					E		
- 2' -								E		
- 3' - - 4' -								E		
- 5'		SI	LTY SAND			S-2	ND	E		
								E		
- 6' <b>-</b>								E		
7'	Bottom of	test pit at 7 feet belov	v ground surface. No	refusal encoun	tered.					
- 8, -										
- 9¹										
- 10' -										
- 11'				3						
- 12'										
- 13'										
Notes:										
I. Soil sa	mples were screen Total VOCS detec	ed for total volatile or sted are reported in pa	ganic compounds (VC rts per million (ppm) i	OCS) using a TI n the "Field Te	EI Model 5 st Data" co	80b organic va Ilumn. "ND" i	ipor meter re indicates no	ferenced to VOCS dete	an isobutylen ected.	e-in-air
Т	est Pit Plan		ler Class	Propor	rtions Used		bbreviations	OROUN	DWATER	
	1.5	Letter Designation Siz A B	ze Range Classification 6" - 17" 18" - 36"	TRACE (TR.)	0 - 10%	F = Fine M = Medius C = Coarse	m	(X)	Encountered Not Encountered	
	<u> </u>	C Excave	36" and Larger	SOME (SO.)	10 - 20% 20 - 35%	V = Very F/M = Fine F/C = Fine			Time to	Depth to Groundwater
Volume =	ORTH 2.7 cu. yd.	E M	Easy Moderate Difficult	AND	35 - 50%	GR = Gray BN = Brow YEL = Yell			nutes	4.8 feet
	GZA GooFaviron		Dimeur			11.55-161				

GZA GeoEnvironme	ntal Inc					Test Pit No.		TP-21	
Engineers/Scientists	mai, mc.		River Place			Page No.	<u> </u>	of	1
5	<del></del>		n, New Hampsh	ire		File No. 04.0024050.01			
880 Harvey Road						Checked By	) <del>-</del>	RAB	
Manchester, New Ha	mpshire 03103								
			Excavation Eq	-					
GZA Rep.	C. Melby	Contractor	New Ham		ing, Inc.	Date			2006
		Operator	-	latt Stone	70.00	Ground Elev			7 feet
Weather	Sunny, 50s	Make	Komatsu	Model	PC 27	Time Started			15
		Capacity	1.5 feet ³	Reach	10 feet	Time Compl	etea	- 10	50
Depth		Soil Description			Sample	PID		Boulders:	
Dept.ii	•	oon Description			No.	Reading	Excav.	Count/	Note
						(ppm)	Effort	Class	No.
O Dark brown,	fine to medium SAND, little Si	It, little Organics. T	TOPSOIL		0.5° S-1				
0.5		·			0.5	ND	E		1
Light brown,	SILT, some fine Sand. Moist						Е	1C	
2'							1.4	10	
4							Е		
3'									
					S-2	ND	E		
· 4' —					3-2				
							E		
5' —		SILT							
							Е		
6' —							D.		
6.8					6.8'		E		
7' - Bot	tom of test pit at 6.8 feet below	ground surface. No	refusal encour	itered.					
8' —									
91 —									
10' -									
11' -									
12' -									
13' -									
lotes:									
	screened for total volatile orga S detected are reported in parts								e-in-air
ianuaru. Total VOC	o detected are reported in parts	рег илинон (ррш) і	n die Field (e	פו המומ הס	ոպուս, ND 11	idicates NO A	OCD GEIG	oiou,	
Test Pit Plan	Boulder		Propor	tions Used		breviations	GROUN	DWATER	
8	Letter Designation Size I	Range Classification 6" - 17"	TRACE (TR.)	0 - 10%	F = Fine M = Medium	n	(X)	Encountered	
L	В	18" - 36" 36" and Larger	LITTLE (LL.)	10 - 20%	C = Coarsc V = Very		( )	Not Encountered	
<b>↑</b>		_			F/M = Fine		Elapsed	Time to	Depth to
NORTH	Excavation E		SOME (SO.)	20 - 35%	F/C = Fine t GR = Gray		Reading	(Hours)	Groundwater
olume = 3.0 cu. yd.	MI	Moderate Difficult	AND	35 - 50%	BN = Brown YEL = Yelk		5 mi	nutes	6.7 feet
	D	tut		- 5	Trab-Tem	WAY!	-		

GZA Ge	eoEnvironmental, Inc.						Test Pit No.		TP-22		
	rs/Scientists			River Place			Page No. 1 of 1				
			Hudsor	ı, New Hampsh	ire		File No.		04.0024050	).01	
	vey Road						Checked By	"	RAB		
Manche	ster, New Hampshire	03103		Excavation Equ	.!						
GZA Re	un.	C. Melby	Contractor	New Hamp	•	ng Inc	Date		3/28/	2006	
uza ke	.р.	C. Meloy	Operator		latt Stone		Ground Ele	v		3 feet	
Weather	•	Sunny, 50s	Make	Komatsu	Model	PC 27	Time Starte			15	
	•		— Capacity	1.5 feet ³	Reach	10 feet	Time Comp	leted	11	40	
				() <del></del> )							
Depth		So	oil Description			Sample	PID		Boulders:		
- 1						No.	Reading	Excav.	Count/	Note	
0	Deals bearing fine to a	nedium SAND, little Silt,	little Organica T	OBCOLL		8.1	(ppm)	Effort	Class	No.	
	Brown fine to mediu		Intie Cirganies 1	CIPSCIII		0,4'S-1	ND			1	
- 1' -	Diowii filic to filedidi	ii 3AND, iitile 5iit									
							ND		1/C	2	
- 2' 🚽		SA	AND						1		
,											
3' -						3.4'	ND				
4' -	Dark brown, fine to r	nedium SAND, little Silt,	, trace Organics (V	Vood pieces).	S.	AN S-2	,,,,				
4.3'			Color cha	unge		$\dashv$					
· 5' —	Brown, fine to mediu	CAND arrow Cile		Ü					-		
	Brown, fine to medic	·	AND				ND				
6'6.2'			11115			6,2'					
1	Gray, SILT, little, fir	e Sand. Moist		SILT			ND				
7' -	Bottom of	test pit at 7 feet below gro	ound surface. No	refusal encount	ered.						
- 8' -											
ا بو .											
.											
10' -											
11' -											
12' -											
13' -											
'3 ]											
Notes:											
		d for total volatile organi ted are reported in parts p								e-in-air	
		at approximately 2 feet b			st Data Col	iutilii. ND 1	nutcates no v	OCS dete	eteu,		
. ivieta	ii debris encountered	at approximately 2 feet o	elow ground surfa	ce.							
	Test Pit Plan	Boulder Cl		Propor	ions Used		bbreviations	GROUN	NDWATER		
-	8	Letter Designation Size Ra A	inge Classification 6" - 17"	TRACE (TR.)	0 - 10%	F = Fine M = Mediu		( )	Encountered		
			18" - 36"			C = Coarse V = Very		(X)	Not Encountered		
]	3	B C 36		LITTLE	10 - 20%	V = Verv					
	3	C 36	" and Larger	LITTLE (LL.)	10 - 20%	F/M = Fine			d Time to	Depth to	
	NORTH 6.2 cu. yd.		i" and Larger Effort sy	SOME (SO.)	20 - 35%		to coarse		d Time to g (Hours)	Depth to Groundwater	

#### APPENDIX D

LABORATORY TESTING



				SKAIN OF	<u> ∠⊏ - mm.</u>		
9/ 4911	% Gravel			% Sand			0/ Eines
% +3"	Coarse	Medium	Fine	Coarse	Medium	Fine	% Fines
0.0	0.0	12.8	8.2	15.8	39.9	18.0	5.3

	SIEVE	PERCENT	SPEC.*	PASS?
	SIZE	FINER	PERCENT	(X=NO)
1	1	100.0		
	3/4	96.7		
	1/2	91.0		
	3/8	87.2		
	#4	84.3		
	#10	79.0		
	#20	69.5		
	#40	51.4		
	#60	23.3		
	#100	9.8		
	#200	5.3		
			1	
	ľ			
	ı			
	l l			

Material Description  Brown, fine to coarse SAND, some Gravel, trace Silt.								
PL=	Atterberg Limits LL=	PI=						
D ₈₅ = 6.5298 D ₃₀ = 0.2865 C _u = 3.50	Coefficients D ₆₀ = 0.5332 D ₁₅ = 0.1971 C _c = 1.01	D ₅₀ = 0.4127 D ₁₀ = 0.1525						
USCS= SP-SN	Classification AASHTO	)= A-3						
	Remarks							

(no specification provided)

Sample Number: S-3 Source of Sample: B-1

Depth: 10-12 ft.

Date:

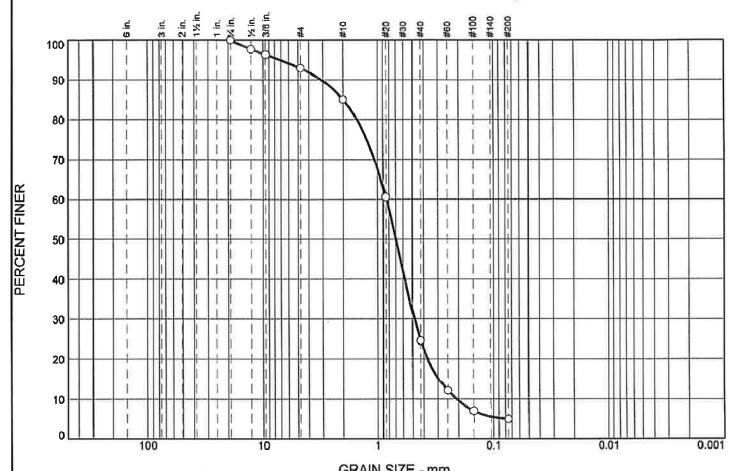
GZA GeoEnvironmental, Inc.

Client: W/S Development Associates, LLC

Project: River Place Hudson, NH

Manchester, NH

Project No: 24050.01



				JKAIN SI	<u> </u>		
97 - 211	% Gravel			% Sand			% Fines
% +3"	Coarse	Medium	Fine	Coarse	Medium	Fine	% Fines
0.0	0.0	3.7	11.3	43.3	29.5	7.2	5.0

ĺ	SIEVE	PERCENT	SPEC.*	PASS?
	SIZE	FINER	PERCENT	(X=NO)
	3/4	100.0		
	1/2	97.6		
	3/8	96.3		
	#4	92.9		
	#10	85.0		
	#20	60.5		
	#40	24.6		
	#60	12.2		
	#100	7.0		
	#200	5.0		

	aterial Description o coarse SAND, little	- C
PL=	Atterberg Limits	PI=
D ₈₅ = 1.9957 D ₃₀ = 0.4810 C _u = 4.02	Coefficients D ₆₀ = 0.8406 D ₁₅ = 0.2993 C _c = 1.32	D ₅₀ = 0.6956 D ₁₀ = 0.2091
USCS= SP-SM	Classification AASHTC	)= A-1-b
	Remarks	

(no specification provided)

Sample Number: S-2 Source of Sample: B-2

Depth: 5-7 ft.

Date:

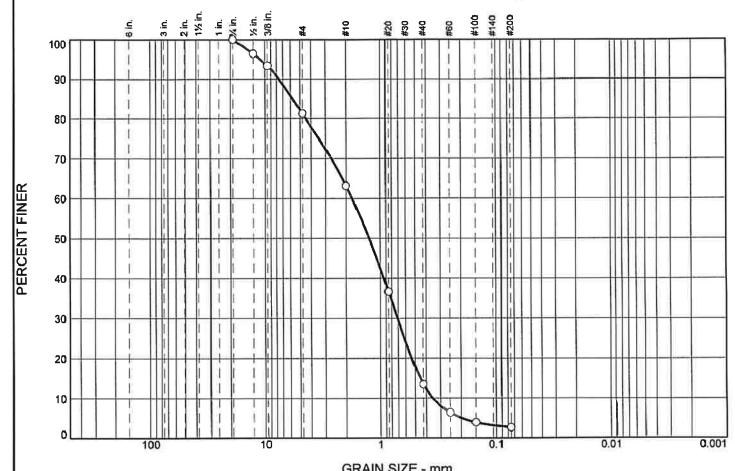
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Client: W/S Development Associates, LLC

Project: River Place Hudson, NH

Manchester, NH

Project No: 24050.01



				SIC VIIM DIS	111111		
0/ .20	% Gravel			% Sand			% Fines
% +3"	Coarse	Medium	Fine	Coarse	Medium	Fine	/o Filles
0.0	0.0	6.7	30.2	39.2	17.6	3.6	2.7

SIEVE	PERCENT	SPEC.*	PASS?
ŞIZE	FINER	PERCENT	(X=NO)
3/4	100.0		
1/2	96.3		
3/8	93.3		
#4	81.3		
#10	63.1		
#20	36.7		
#40	13.5		
#60	6.3		
#100	3.9		
#200	2.7		

	Material Description Brown, medium to coarse SAND and Gravel, trace Silt.						
PL=	Atterberg Limits LL=	PI=					
D ₈₅ = 5.7652 D ₃₀ = 0.7099 C _u = 5.01	Coefficients D ₆₀ = 1.7718 D ₁₅ = 0.4515 C _c = 0.80	D ₅₀ = 1,2577 D ₁₀ = 0.3539					
USCS= SP	Classification AASHT	O= A-1-b					
	Remarks						

(no specification provided)

Sample Number: S-2 Source of Sample: B-3

Depth: 5-7 ft.

Date:

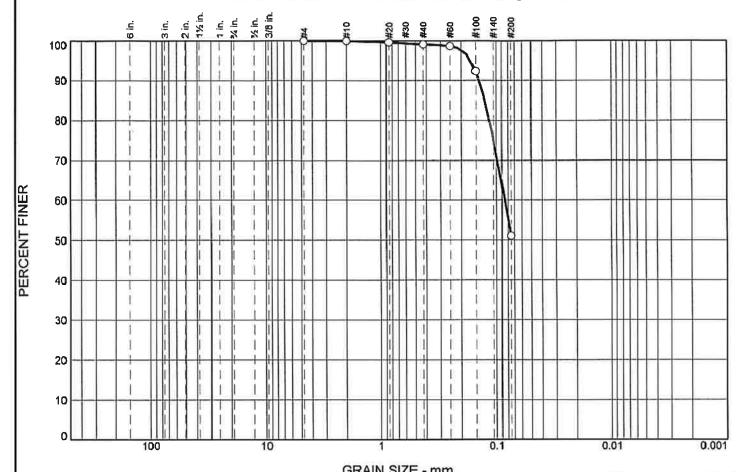
GZA GeoEnvironmental, Inc.

Client: W/S Development Associates, LLC

Project: River Place Hudson, NH

Manchester, NH

Project No: 24050.01



				DIVAIN OF	LL - 111111	-2	
0/ .70	% Gravel			% Sand		- 1	% Fines
% +3"	Coarse	Medium	Fine	Coarse	Medium	Fine	% Filles
0.0	0.0	0.0	0.1	0.6	0.7	47.5	51.1

SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT	(X=NO)
#4	100.0		
#10	99.9		
#20	99.6		
#40	99.0		
#60	98.6		
#100	92.1		
#200	51.1		

	Material Description Brown, SILT and fine Sand.						
PL= .	Atterberg Limits	! P =					
D ₈₅ = 0.1265 D ₃₀ = C _u =	<u>Coefficients</u> D ₆₀ = 0.0849 D ₁₅ = C _c =	D ₅₀ = D ₁₀ =					
USCS= ML		O= A-4(0)					
	<u>Remarks</u>						

(no specification provided)

Sample Number: S-2A Source of Sample: B-4

Depth: 5-6.8 ft.

Date:

GZA GeoEnvironmental, Inc.

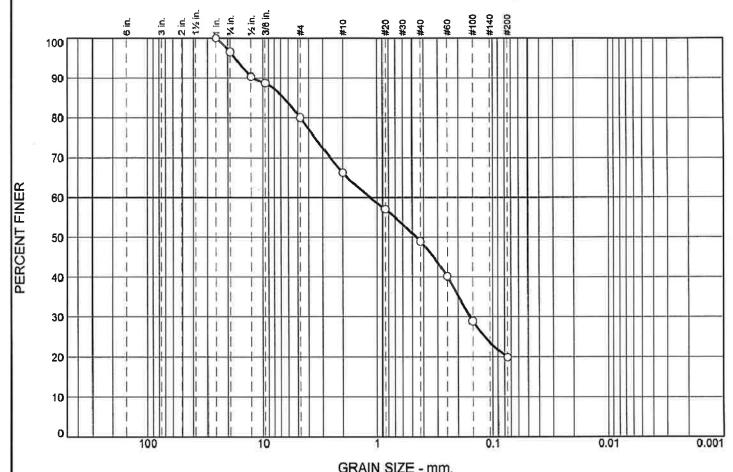
Client: W/S Development Associates, LLC

Project: River Place Hudson, NH

Manchester, NH

Project No: 24050.01





07 (40)		% Gravel			% Sand		0/ Flace
% +3"	Coarse	Medium	Fine	Coarse	Medium	Fine	% Fines
0.0	0.0	11.3	22.6	12.9	13.1	20.3	19.8

	SIEVE	PERCENT	SPEC.*	PASS?
	SIZE	FINER	PERCENT	(X=NO)
i	1	100.0		1
	3/4	96.5		
	1/2	90.3		
	3/8	88.7		
	#4	80.0		
	#10	66.1		
	#20	57.0		
	#40	48.9		
	#60	40.1		
	#100	28.9		
	#200	19.8		
	i i			

	Material Description  Brown, fine to medium Sand, some Gravel, little Silt.					
Brown, fine to n	nedium Sand, some G	ravel, little Silt.				
PL=	Atterberg Limits	PI=				
D ₈₅ = 6.5879 D ₃₀ = 0.1587 C _u =	Coefficients D60= 1.1538 D15= Cc=	D ₅₀ = 0.4621 D ₁₀ =				
USCS= SM	Classification AASHT	O= A-1-b				
	<u>Remarks</u>					

(no specification provided)

Sample Number: S-3A Source of Sample: B-5

Depth: 10-12 ft.

Date:

GZA GeoEnvironmental, Inc.

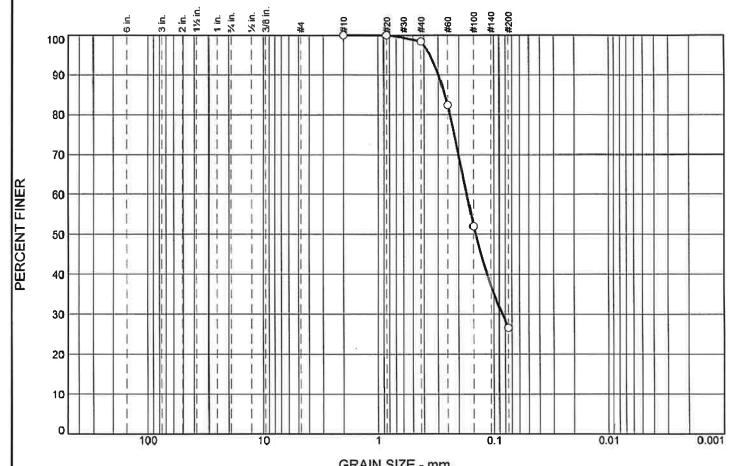
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Project: River Place Hudson, NH

Manchester, NH

Project No: 24050.01





				SIVAIIN OIL			
0/ 1011	% Gravel				% Sand		9/ Fines
% +3"	Coarse	Medium	Fine	Coarse	Medium	Fine	% Fines
0.0	0.0	0.0	0.0	0.7	16.9	55.8	26.6

SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT	(X=NO)
#10	100.0		
#20	100.0		
	98.3		
	82.4		
#200	26.6		
	<b>SIZE</b> #10	#10 100.0 #20 100.0 #40 98.3 #60 82.4 #100 52.0	#10 100.0 #20 100.0 #40 98.3 #60 82.4 #100 52.0

	Material Description Brown, fine to medium SAND, some Silt.					
PL=	Atterberg Limits	PI=				
D ₈₅ = 0.2641 D ₃₀ = 0.0846 C _u =	Coefficients D60= 0.1721 D15= C _c =	D ₅₀ = 0.1445 D ₁₀ =				
USCS= SM	Classification AASHT	O= A-2-4(0)				
	Remarks					

(no specification provided)

Sample Number: S-2 Source of Sample: B-8

Depth: 5-7 ft.

Date:

GZA GeoEnvironmental, Inc.

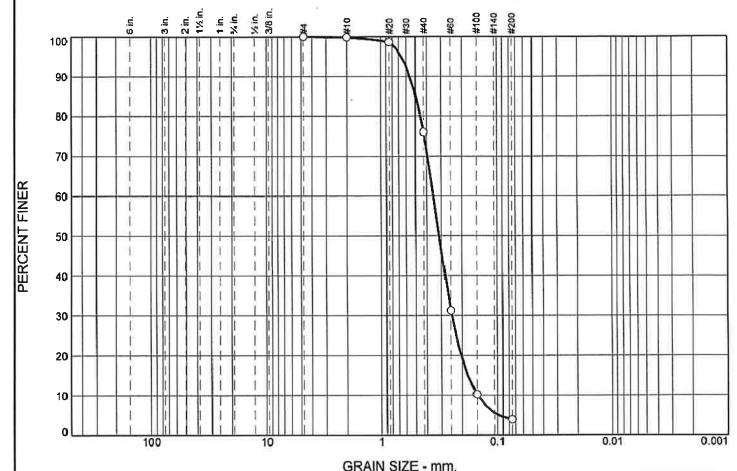
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Project: River Place Hudson, NH

Manchester, NH

Project No: 24050.01





0/ + 211		% Gravel		% Sand			% Fines
% +3"	Coarse	Medium	Fine	Coarse	Medium	Fine	% Filles
0.0	0.0	0.0	0.2	7.2	61.4	27.3	3.9

SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT	(X=NO)
#4 #10	100.0 99.8		
#20 #40	98.6 75.9		
#60 #100	31.2 10.1		
#200	3.9		
			R

Material Description Brown, fine to medium SAND, trace Silt.						
PL=	Atterberg Limits	PI=				
D ₈₅ = 0.4944 D ₃₀ = 0.2456 C _u = 2.35	Coefficients D60= 0.3500 D15= 0.1809 Cc= 1.16	D ₅₀ = 0.3134 D ₁₀ = 0.1489				
USCS= SP	Classification AASHTO	)= A-3				
	Remarks					

(no specification provided)

Sample Number: S-2 Source of Sample: B-9

Depth: 5-7 ft.

Date:

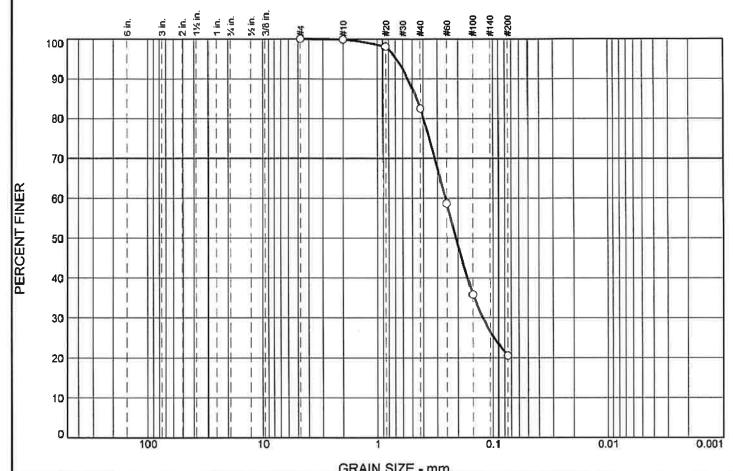
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Client: W/S Development Associates, LLC

Project: River Place Hudson, NH

Manchester, NH

Project No: 24050.01



% +3"		% Gravel		% Sand			0/ Eleca
	Coarse	Medium	Fine	Coarse	Medium	Fine	% Fines
0.0	0.0	0.0	0.1	7.5	33.7	38.2	20.5

SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT	(X=NO)
#4	100.0		
#10	99.9		
#20	98.0		
#40	82.4		
#60	58.7		
#100	35.8		
#200	20.5		

	<b>Material Descriptior</b> nedium SAND, some S	
PL=	Atterberg Limits LL=	PI=
D ₈₅ = 0.4579 D ₃₀ = 0.1237 C _u =	Coefficients D ₆₀ = 0.2567 D ₁₅ = C _c =	D ₅₀ = 0.2092 D ₁₀ =
USCS= SM	Classification AASHTC	)= A-2-4(0)
	Remarks	

* (no specification provided)

Sample Number: S-2 Source of Sample: B-11

**Depth:** 4-6 ft.

Date:

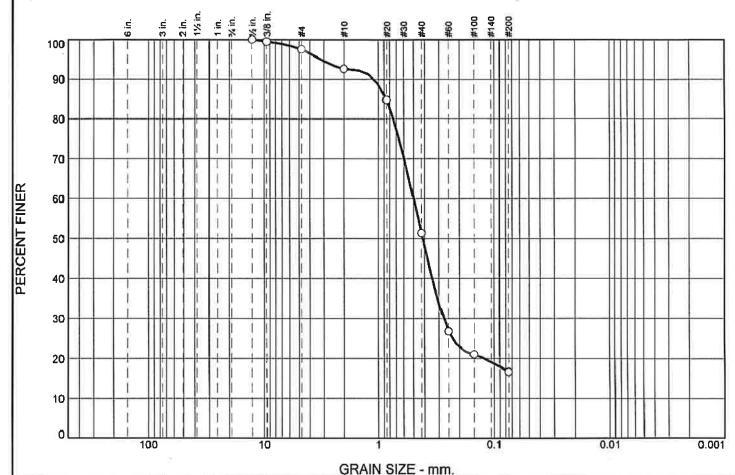
GZA GeoEnvironmental, Inc.

Client: W/S Development Associates, LLC

Project: River Place Hudson, NH

Manchester, NH

Project No: 24050.01



% +3"		% Grav	el % Sand		9/ Filmon		
	Coarse	Medium	Fine	Coarse	Medium	Fine	% Fines
0.0	0.0	0.5	7.0	22.3	43.4	10.2	16.6

	SIEVE	PERCENT	SPEC.*	PASS?
	SIZE	FINER	PERCENT	(X≃NO)
	1/2	100.0		
	3/8	99.5		
	#4	97.5		
	#10	92.5		
	#20	84.7		
	#40	51.3		
	#60	26.8		
	#100	21.1		
Ш	#200	16.6		
Ы				
	}	į.		
Ш				

Material Description  Brown, fine to coarse SAND, little Silt, trace Gravel.								
PL=	Atterberg Limits	PI≃						
D ₈₅ = 0.8574 D ₃₀ = 0.2756 C _u =	Coefficients D ₆₀ = 0.4958 D ₁₅ = C _c =	D ₅₀ = 0.4150 D ₁₀ =						
USCS= SM	<u>Classification</u> AASHT	O= A-2-4(0)						
	Remarks							

(no specification provided)

Sample Number: S-2 Source of Sample: B-15

**Depth:** 5-7 ft.

Date:

GZA GeoEnvironmental, Inc.

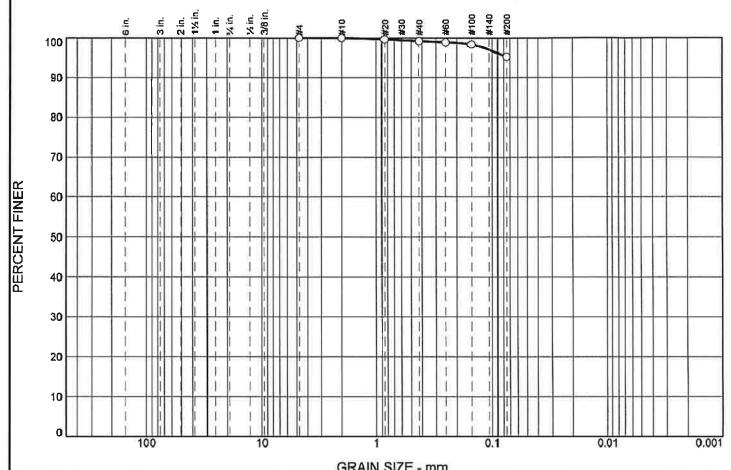
Client: W/S Development Associates, LLC

Project: River Place Hudson, NH

Manchester, NH

Project No: 24050.01





ONAIN SIZE - IIIII.								
% +3"	% Gravel		% Sand			% Fines		
	Coarse	Medium	Fine	Coarse	Medium	Fine	% Fines	
0.0	0.0	0.0	0.0	0.6	0.6	3.6	95.2	

ĺ	SIEVE	PERCENT	SPEC.*	PASS?
	SIZE	FINER	PERCENT	(X=NO)
	#4 #10 #20 #40 #60 #100 #200	99.6 99.2 98.8 98.3 95.2	PERCENT	(X=NO)

Material Description Brown, SILT, trace fine Sand.								
PL=	Atterberg Li	mits PI=						
D ₈₅ = D ₃₀ = C _u =	Coefficien D ₆₀ = D ₁₅ = C _c =	D ₅₀ = D ₁₀ =						
USCS= ML	<u>Classificati</u> AA	i <u>on</u> SHTO= A-4(0)						
<u>Remarks</u>								

* (no specification provided)

Sample Number: S-1B Source of Sample: B-16

Depth: 0-2 ft.

Date:

GZA GeoEnvironmental, Inc.

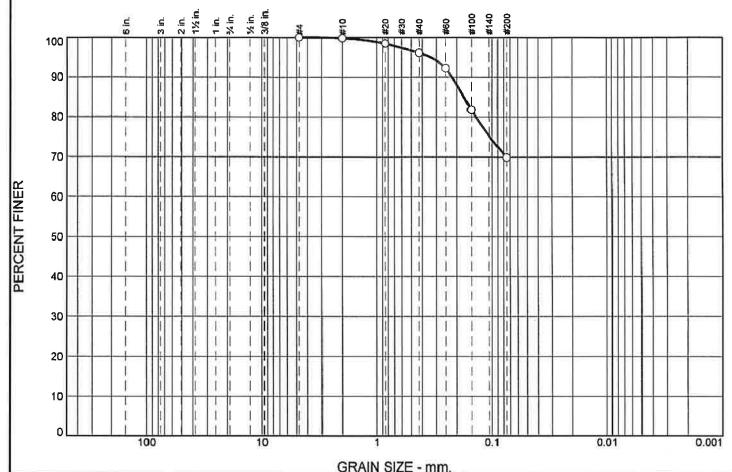
Client: W/S Development Associates, LLC

Project: River Place Hudson, NH

Manchester, NH

Project No: 24050.01





% +3"		% Grave		% Sand			0/ Finns
	Coarse	Medium	Fine	Coarse	Medlum	Fine	% Fines
0.0	0.0	0.0	0.2	2.5	5.1	22.4	69.8

S	IEVE	PERCENT	SPEC.*	PASS?		
\$	SIZE	FINER	PERCENT	(X=NO)		
	#4	100.0				
	#10	99.8				
1 1	#20	98.4				
;	#40	96.0				
,	#60	92.2				
	[‡] 100	81.6				
#	200	69.8				
ŀ						
1						

Material Description Brown, SILT, some fine Sand.					
PL=	Atterberg Limit	ts. Pl=			
D ₈₅ = 0.1747 D ₃₀ = C _u =	Coefficients D ₆₀ = D ₁₅ = C _c =	D ₅₀ = D ₁₀ =			
USCS= ML	Classification AASh	I ITO= A-4(0)			
<u>Remarks</u>					

* (no specification provided)

Sample Number: S-2B Source of Sample: B-17

Depth: 4-6 ft.

Date:

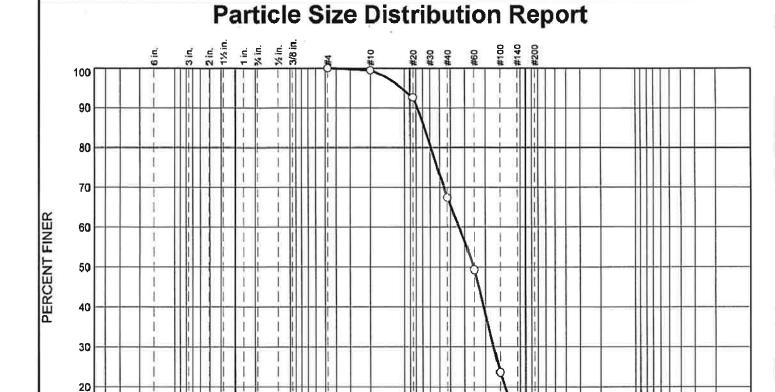
GZA GeoEnvironmental, Inc.

Client: W/S Development Associates, LLC

Project: River Place Hudson, NH

Manchester, NH

Project No: 24050.01



GRAIN SIZE - mm

OTANI OIZE TIIII.								
0/ . 20	% G	% Gravel		% Sand		% Fines		
% +3"	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay	
0.0	0.0	0.0	0.5	32.1	60.6	6.8		

SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT	(X≃NO)
#4	100.0		
#10	99.5		
#20	92.6		
#40	67.4		
#60	49.3		
#100	23.6		
#200	6.8		

Material Description additional SAND, trace S	
Atterberg Limits	Pl≕
Coefficients D ₆₀ = 0.3367 D ₁₅ = 0.1167 C _c = 0.95	D ₅₀ = 0.2538 D ₁₀ = 0.0922
Classification AASHT0	)=
<u>Remarks</u>	
	Atterberg Limits LL= Coefficients D60= 0.3367 D15= 0.1167 Cc= 0.95 Classification AASHTO

(no specification provided)

Sample Number: S-3 Source of Sample: B-18

10

Depth: 10-12 ft

Date:

GZA GeoEnvironmental, Inc.

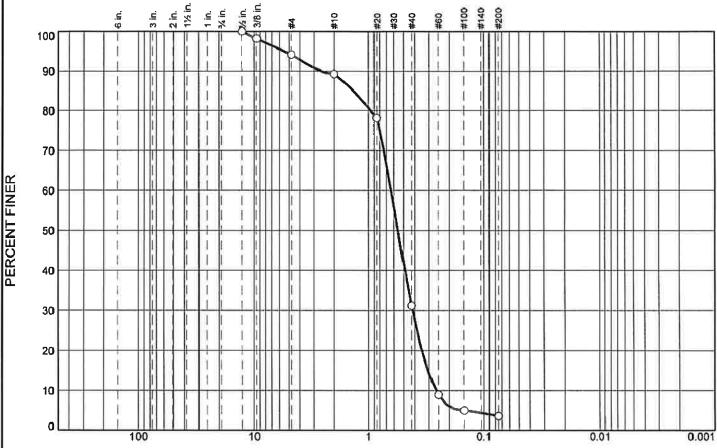
Client: W/S Development Associates, LLC

Project: River Place Hudson, NH

Manchester, NH

Project No: 24050.01





				GRAIN SI	ZE - mm.			
0/ . 51		% Grave	1	% Sand			0/ Fi	
% +3"	Coarse	Medium	Fine	Coarse	Medium	Fine	% Fines	
0.0	0.0	1.9	8.9	33.2	47.1	5.3	3.6	

	SIEVE	PERCENT	SPEC.*	PASS?
	SIZE	FINER	PERCENT	(X=NO)
	1/2	100.0		
	3/8	98.1		
	#4	94.1		
	#10	89.2		
	#20	78.2		
	#40	31.2		
	#60	8.9		
	#100	5.0		
	#200	3.6		
ı	*			

Material Description Brown, medium to coarse SAND, little Gravel, trace Silt.						
PL=	Atterberg Limits LL=	PI=				
D ₈₅ = 1.3608 D ₃₀ = 0.4167 C _u = 2.42	Coefficients D ₆₀ = 0.6336 D ₁₅ = 0.3082 C _c = 1.05	D ₅₀ = 0.5535 D ₁₀ = 0.2623				
USCS= SP	USCS= SP AASHTO= A-1-b					
<u>Remarks</u>						

* (no specification provided)

Sample Number: S-3 Source of Sample: TP-1

**Depth:** 3.5 ft.

Date:

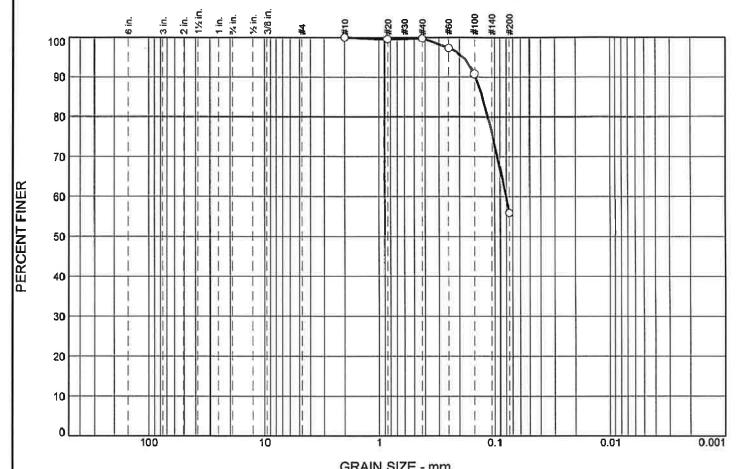
GZA GeoEnvironmental, Inc.

Client: W/S Development Associates, LLC

Project: River Place Hudson, NH

Manchester, NH

Project No: 24050.01



GNAIN SIZE - IIIII.							
9/ . 211	% Gravel			% Sand		9/ Fines	
% +3"	Coarse	Medium	Fine	Coarse	Medlum	Fine	% Fines
0.0	0.0	0.0	0.0	0.4	2.4	41.3	55.9

Γ	SIEVE	PERCENT	SPEC.*	PASS?
	SIZE	FINER	PERCENT	(X=NO)
	#10	100.0		
	#20	99.6		
- 1	#40	99.7		
	#60	97.2		
	#100	90.7		
	#200	55.9		
-1				
L				

Material Description SILT and fine Sand.					
PL=	Atterberg Limits LL=	PI=			
D ₈₅ = 0.1277 D ₃₀ = C _u =	Coefficients D ₆₀ = 0.0802 D ₁₅ = C _c =	D ₅₀ = D ₁₀ =			
USCS= ML	Classification AASHT	O= A-4(0)			
	<u>Remarks</u>				
		3E			

(no specification provided)

Sample Number: S-2 Source of Sample: TP-2

**Depth:** 1.5 ft.

Date:

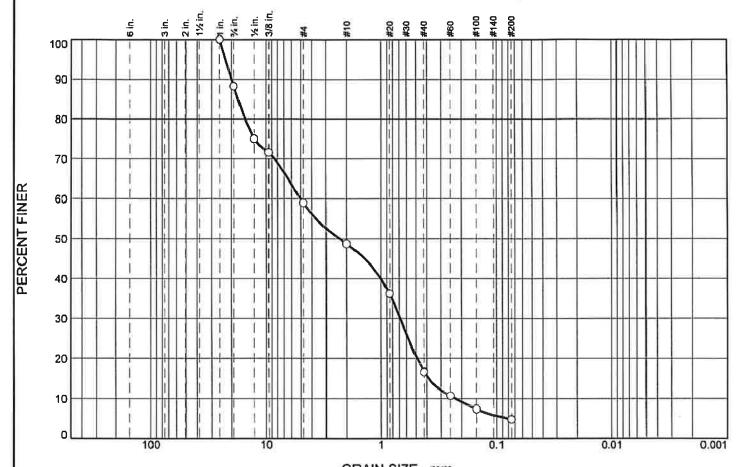
GZA GeoEnvironmental, Inc.

Client: W/S Development Associates, LLC

Project: River Place Hudson, NH

Manchester, NH

Project No: 24050.01



GRAIN SIZE - mm. % Gravel % Sand % +3" % Fines Coarse Medium Fine Coarse Medium Fine 0.0 22.9 4.7 0.0 28.4 22.8 15.2 6.0

SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT	(X=NO)
3/4 1/2 3/8 #4 #10 #20 #40 #60	100.0 88.2 75.0 71.6 59.0 48.7 36.2 16.6 10.7	PERGENI	(X=NO)
#100 #200	7.4 4.7		

Material Description  Brown, GRAVEL and medium to coarse Sand, trace Silt.							
PL=	Atterberg Limits LL=	PI=					
D ₈₅ = 17.5571 D ₃₀ = 0.6841 C _u = 22.16	Coefficients D ₆₀ = 5.0270 D ₁₅ = 0.3886 C _c = 0.41	D ₅₀ = 2.3135 D ₁₀ = 0.2269					
USCS= SP	USCS= SP AASHTO= A-1-a						
Remarks							

(no specification provided)

Sample Number: S-1 Source of Sample: TP-4

Depth: 0.5-6.5 ft.

Date:

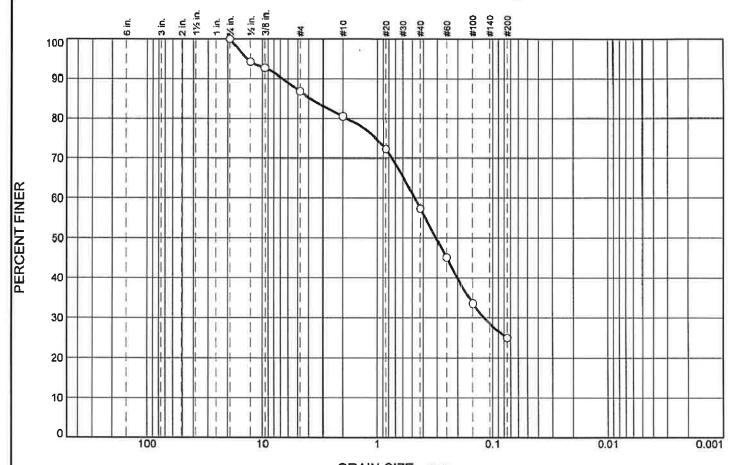
GZA GeoEnvironmental, Inc.

Client: W/S Development Associates, LLC

Project: River Place Hudson, NH

Manchester, NH

Project No: 24050.01



**GRAIN SIZE - mm** % Gravel % Sand % +3" % Fines Medium Medium Coarse Fine Coarse Fine 0.0 12.2 24.9 0.07.4 15.0 20.4 20.1

SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT	(X=NO)
3/4	100.0		
1/2	94.1	ya	
3/8	92.6		
#4	86.7		
#10	80.4		
#20	72.2		
#40	57.3		
#60	45.0		
#100	33.6		
#200	24.9		
			=

Material Description  Brown, fine to coarse SAND, some Silt, little Gravel.							
PL=	Atterberg Limits	PI=					
D ₈₅ = 3.9077 D ₃₀ = 0.1192 C _u =	Coefficients D ₆₀ = 0.4758 D ₁₅ = C _c =	D ₅₀ = 0.3098 D ₁₀ =					
USCS= SM	USCS= SM Classification AASHTO= A-2-4(0)						
Remarks							

(no specification provided)

Sample Number: S-1 Source of Sample: TP-5A

Depth: 0-2.5 ft.

Date:

GZA GeoEnvironmental, Inc.

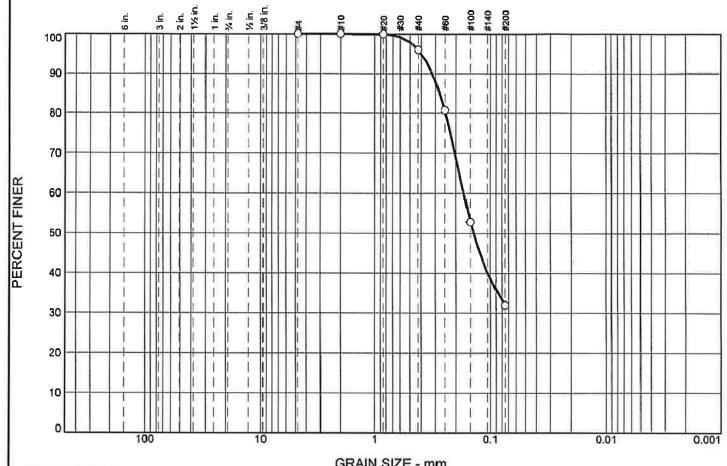
Client: W/S Development Associates, LLC

Project: River Place Hudson, NH

Manchester, NH

Project No: 24050.01





% +3"		% Gravel % Sand		% Gravel		% Sand		9/ Fines
76 TJ	Coarse	Medium	Fine	Coarse	Medium	Fine	% Fines	
0.0	0.0	0.0	0.0	0.8	18.5	48.7	32.0	

	SIEVE	PERCENT	SPEC.*	PASS?
	SIZE	FINER	PERCENT	(X=NO)
	#4	100.0		
	#10	100.0		
	#20	99.9		
	#40	96.0		
	#60	80.7		
	#100	52.8		
	#200	32.0		
- 3	*			

Material Description Brown, fine to medium SAND, some Silt.							
PL=	Atterberg Limits	Pl=					
D ₈₅ = 0.2762 D ₃₀ = C _u =	Coefficients D ₆₀ = 0.1719 D ₁₅ = C _c =	D ₅₀ = 0.1410 D ₁₀ =					
USCS= SM	USCS= SM Classification AASHTO= A-2-4(0)						
<u>Remarks</u>							

* (no specification provided)

Sample Number: S-2 Source of Sample: TP-6

Depth: 2-3 ft.

Date:

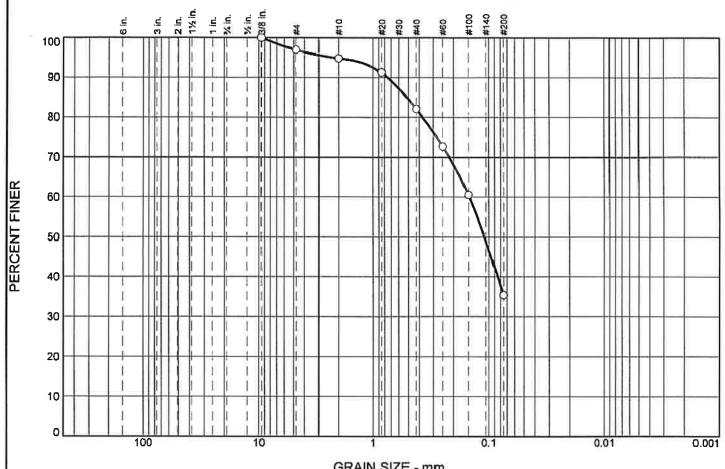
GZA GeoEnvironmental, Inc.

Client: W/S Development Associates, LLC

Project: River Place Hudson, NH

Manchester, NH

Project No: 24050.01



				SICKIN OF	<u> </u>			
0/		% Grav	el	% Sand		% Sand		0/ F:
% +3"	Coarse	Medium	Fine	Coarse	Medium	Fine	% Fines	
0.0	0.0	0.0	5.3	7.5	14.5	37.3	35.4	

SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT	(X=NO)
3/8 #4 #10 #20 #40 #60 #100 #200	96.9 94.7 91.2 82.0 72.7 60.5 35.4	PERCENT	(X=NO)

Material Description  Brown, fine to medium SAND and Silt, trace Gravel.							
PL=	Atterberg Limits	PI=					
D ₈₅ = 0.5149 D ₃₀ = C _u =	Coefficients D ₆₀ = 0.1474 D ₁₅ = C _c =	D ₅₀ = 0.1095 D ₁₀ =					
USCS= SM	USCS= SM Classification AASHTO= A-2-4(0)						
<u>Remarks</u>							

(no specification provided)

Sample Number: S-2 Source of Sample: TP-9

Depth: 0.7-7 ft.

Date:

GZA GeoEnvironmental, Inc.

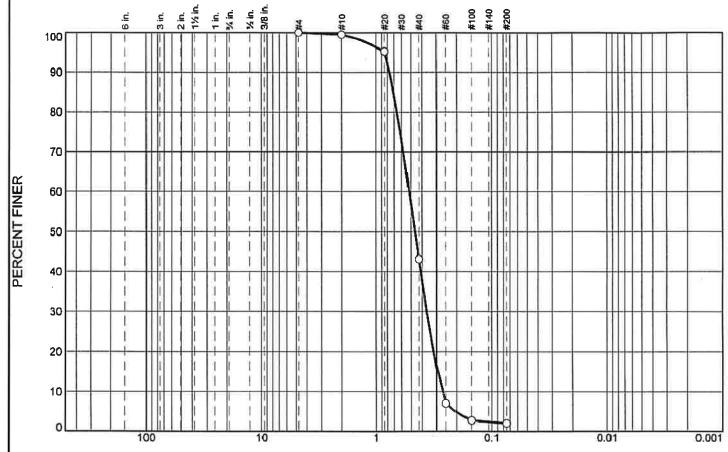
Client: W/S Development Associates, LLC

Project: River Place Hudson, NH

Manchester, NH

Project No: 24050.01





26.7

65.7

GRAIN SIZE - mm.

% Sand
Fine Coarse Medium Fine

% Fines

5.1

SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT	(X=NO)
#4	100.0		
#10	99.5		
#20	95.2		
#40	43.1		
#60 #100	7.1 2.8		
#200	2.0		
11200	2.0		

Coarse

0.0

Material Description Brown, medium to coarse SAND, trace Silt.							
PL=	Atterberg Limits LL=	PI=					
D ₈₅ = 0.7078 D ₃₀ = 0.3638 C _u = 1.92	Coefficients D ₆₀ = 0.5155 D ₁₅ = 0.2944 C _c = 0.96	D ₅₀ = 0.4600 D ₁₀ = 0.2681					
USCS= SP	Classification AASHT	O= A-1-b					
<u>Remarks</u>							

(no specification provided)

Sample Number: S-3 Source of Sample: TP-13

% +3"

0.0

Depth: 1.5-6.5 ft.

% Gravel

0.5

Medium

0.0

Date:

2.0

GZA GeoEnvironmental, Inc.

Client: W/S Development Associates, LLC

Project: River Place Hudson, NH

Manchester, NH

Project No: 24050.01

# APPENDIX C BORING LOGS

# LANGAN

C-B-BOR-01 Log of Boring Sheet of 2 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 132 (NGVD29) **Drilling Company** Date Started Date Finished 6/13/20 6/13/20 Atlantic Testing Laboraties **Drilling Equipment** Completion Depth Rock Depth Geoprobe 7720 DT 24 ft 19 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3-7/8in Tricone Roller Bit Casing Diameter (in) 24 HR. Casing Depth (ft) Completion Water Level (ft.) 4in N/A 19 Casing HammerAutomatic Weight (lbs) Drop (in) Drilling Foreman 140 Scott McGregor Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) 140 30 Automatic Olivia Chasse Sample Data MATERIAL SYMBOL Remarks Depth Recov. (in) Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) Scale 132. 10 20 30 40 Started Drilling on 6/13/2020 13" Dark brown fine-medium SAND, some silt, trace S-1 at 0.5ft (dry) [TOPSOIL] 130.8 13 1A S Light brown fine SAND, some silt SS S-2 at 2ft Light brown fine-medium SAND, some silt 3 23 (moist) 3 8  $\nabla$ Drive casing to 4.0ft Light brown fine-coarse SAND, trace silt SS 13 ENTERPRISE S-3 at 4ft (wet) 8 S-3 12 5 8 6 GEOTECHNICAL\GINTLOGS\151010101 S-4 at 6ft Light brown fine-coarse SAND, trace silt SS (wet) S-4 10 17 8 Drive casing to 8.0ft Light brown fine-coarse SAND, trace silt S-5 at 8ft (wet) WOH SS S-5 9 ω WOH S-6 at 10ft Grayish brown fine-medium SAND, some silt, some 16 fine gravel SS 40 S-6 (wet) [TILL] 12 38 26 12 13 Drive casing to 14.0ft Grayish brown fine-medium SAND, some silt, some SS 65 2 Ś S-7 at 14ft fine gravel (wet) [TILL] 15 16 18 No Recovery. Drive casing to 19ft Mottled gray SCHIST; fine to medium grained; slightly Roller bit to 19ft, hard drilling weathered; wide to very wide fracture spacing; S-8 at 19ft



Log of Boring C-B-BOR-01 Sheet 2 of 2 Project Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 132 (NGVD29) Sample Data Coring (min) Remarks Elev (ft) Depth N-Value (Blows/ft) Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Scale 10 20 30 40 112.0 20 C-1 at 19ft fractures shallow dipping; [BEDROCK] 3:22 REC=54"/60" =90% 21 4:34 RQD=50"/60" <u>۲</u> 22 2:50 23 2:25 108.0 NLANGAN.COMDATA/BOSIDATA1/151010101/PPROJECT DATA_DISCIPLINE/GEOTECHNICAL/GINTLOGS/151010101_ENTERPRISE_BORINGS_USE.GPJ... 7/22/2020 5:30:08 PM Bottom of boring on 6/13/2020 24 Bottom of Boring Boring backfilled with soil 25 cuttings. 26 28 29 30 31 32 33 34 35 36 37 38 39 43

LANGAN

Log of Boring C-B-BOR-01A Sheet of 1 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum Elev. + 132 (NGVD29) 59 Steele Road, Hudson NH **Drilling Company** Date Started Date Finished Atlantic Testing Laboraties 6/18/20 6/18/20 **Drilling Equipment** Completion Depth Rock Depth Geoprobe 7822 DT 17 ft 17 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3-7/8in Tricone Roller Bit Casing Diameter (in) Casing Depth (ft) 24 HR. Completion Water Level (ft.) 4in N/E N/A Casing Hammer Automatic Weight (lbs) Drop (in) Drilling Foreman 30 140 Scott McGregor Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) Automatic 140 30 Reid Balkind Sample Data MATERIAL SYMBOL Remarks Depth Penetr. resist BL/6in Recov. (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) 132. 10 20 30 40 Started Drilling on 6/18/2020 8" Dark brown fine-medium SAND, trace silt, trace roots S-1 at 0ft 131.3 (moist) [TOPSOIL] Light brown Sandy SILT 8 SS (moist) USE.GPJ SS S-2 at 2ft Light brown SILT 3 (moist) 5 23 3 Brown fine-medium SAND, trace silt 8 (moist) 6 S-3 at 4ft Brown fine-medium SAND, trace silt 8 (wet) 7 S-3 SS 12 5 Drive casing to 4ft and 4 washout boring 6 151010101 S-4 at 6ft Brown fine-medium SAND, trace silt, trace fine gravel 9 125 5 52 SS 8 133 Brownish gray fine SAND, some silt, trace weathered 81 gravel 47 (moist) [TILL] 8 S-5 at 8ft 23 Brownish gray fine SAND, some silt, trace coarse gravel, trace weathered gravel 16 S-5 SS 4 (moist) [TILL] 9 Drive casing to 8ft and 34 washout boring 41 Brownish gray fine SAND, some silt, trace coarse gravel, trace weathered gravel S-6 at 10ft 16 SS 18 S-6 (moist) [TILL] 16 36 18 20 12 S-7 at 12ft Brownish gray fine SAND, trace silt, trace coarse gravel, SS 15 some weathered gravel Ś 45 (moist) [TILL] 13 50/3 Drive casing to 12ft and washout boring 14 15 Drill roller bit to 15ft. Medium Brownish gray fine SAND, trace silt, trace coarse gravel, chatter and moderate some weathered gravel drilling. S-8 at 15ft SS (moist) [TILL] 19 S-8 Inferred Top of Bedrock 27 -114.9 17 Auger refusal at 17.1 ft Bottom of boring on Bottom of Boring 6/18/2020 18 Boring backfilled with soil cuttings 19



Log of Boring C-B-BOR-02(OW) Sheet of 1 Project Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 132 (NGVD29) Drilling Company Date Started Date Finished SoilTesting, Inc. 6/13/20 6/13/20 **Drilling Equipment** Completion Depth Rock Depth CME Truck-Mounted Drill Rig 14 ft N/E Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.)  $\mathbf{V}$ N/A N/A 5 Casing Hammer N/A Drop (in) N/A Weight (lbs) Drilling Foreman N/A Sam Deangelis Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) 140 30 Safety Jack Berritt Sample Data MATERIAL SYMBOL Remarks Depth Recov. (in)
Penetr. resist (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) Scale 132. 10 20 30 40 Started Drilling on 6/13/2020 2' Brown silty fine SAND, trace root 2 S-1 at 0ft (moist) [TOPSOIL] SS 3 S-1 16 3 -130.0 S-2 at 2ft Brown silty fine SAND SS (moist) 5 13 3 Auger to 4 ft  $\nabla$ S-3 at 4ft Brown silty fine-medium SAND 6 ENTERPRISE (wet) 5 S-3 SS 5 48 5 5 6 DISCIPLINE/GEOTECHNICAL\GINTLOGS\151010101 S-4 at 6ft Brown fine SAND, trace silt (wet) SS S-4 12 Auger to 8 ft 9 13 8 S-5 at 8ft Brown fine SAND, trace silt 3 (wet) SS S-5 9 2 6 10 S-6 at 10ft Brown fine-coarse SAND, trace silt, trace fine gravel 12 (wet) 20 SS S-6 24 29 30 12 Auger to 14ft (LANGAN.COM/DATA/BOS/DATA1/151010101/PROJECT DATA) Refusal at 14 ft 13 -118.0 Bottom of boring on Bottom of Boring 6/13/2020 Observation well installed. 15 Refer to well construction log. 16 18 19

**LANGAN** 

C-B-BOR-03 Log of Boring Sheet of 2 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum Elev. + 134.5 (NGVD29) 59 Steele Road, Hudson NH **Drilling Company** Date Started Date Finished SoilTesting, Inc. 6/12/20 6/12/20 **Drilling Equipment** Completion Depth Rock Depth Truck Mounted Diedrich D-50 26 ft 21.8 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) N/A N/A 10 N/A Drop (in) N/A Casing HammerN/A Drilling Foreman Weight (lbs) N/A Sam DeAngelis Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) 140 30 Safety Justin Hall Sample Data MATERIAL SYMBOL Remarks Depth Recov. (in)
Penetr. resist Coring ( (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) Scale 134 10 20 30 40 Started Drilling at 6/12/2020 8" Dark brown fine-coarse SAND, some silt, some SS 3 S-1 at 0ft 133.8 3 (moist) [TOPSOIL] 12 Dark brown fine-medium SAND, some silt, trace roots 3 USE.GPJ SS S-2 at 2ft Tannish brown fine-coarse SAND, some silt, trace fine 3 gravel 3 (moist) 4 3 5 Light brown medium-fine SAND, trace silt (dry) 5 Auger to 4ft Light brown medium-fine SAND, trace silt, trace fine 4 ENTERPRISE S-3 at 4ft gravel SS 5 S-3 (dry) 16 5 8 14 6 S-4 at 6ft \GINTLOGS\151010101 Light grayish brown fine-coarse SAND, trace silt, trace 26 f-c gravel 32 SS S-4 (moist) 21 32 126.5 8 Auger to 8ft Light grayish brown fine-coarse SAND, some silt, trace 31 S-5 at 8ft f-c gravel 28 SS S-5 (moist) [TILL] 18 9 29 35 S-6 at 10ft Light grayish brown fine-coarse SAND, some silt, trace SS 24 S-6 f-c gravel 10 34 (wet) [TILL] 100/3 100/3 12 13 Auger to 15ft SS Light grayish brown fine-coarse SAND, some silt, trace 25 S-7 at 15ft 26 (wet) [TILL] 8 S-7 36 51 17 18 19



Log of Boring C-B-BOR-03 Sheet 2 of 2 Project Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 134.5 (NGVD29) Sample Data Coring (min) Remarks N-Value (Blows/ft) Elev Depth Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Scale (ft) 10 20 30 40 114. 20 SS SS Auger to 20ft Light brown fine-coarse SAND, some silt, trace fine 37 S-8 at 20ft 8-8 33 (wet) [TILL] 21 104 71 100/4 C-1 at 21.83ft Gray SCHIST; fine to medium grained; slightly to 22 3:07 moderately weathered; close to moderate fracture spacing; fractures moderately dipping to shallow dipping; strong; rock quality fair [BEDROCK] REC=51"/54" =94% 23 4:10 RQD=30.5"/54" 24 4:03 25 4:15 26 4:10 Bottom of boring at NLANGAN, COMIDATA\BOS\DATA1/1510101011PROJECT DATA|_DISCIPLINE\GEOTECHNICAL\GINTLOGS\151010101_ENTERPRISE_BORINGS_USE.GPJ 6/12/2020 Bottom of Boring Boring backfilled with auger 28 29 30 31 32 33 34 35 36 37 38 39 43

LANGAN

USE.GPJ

ENTERPRISE

GEOTECHNICAL\GINTLOGS\151010101

C-B-BOR-04 Log of Boring Sheet of 2 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum Elev. + 139 (NGVD29) 59 Steele Road, Hudson NH Date Started **Drilling Company** Date Finished Seaboard Drilling, Inc. 6/8/20 6/8/20 **Drilling Equipment** Completion Depth Rock Depth Diedrich D50 32 ft 27 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3-7/8in Roller Bit Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) 4in 8 N/A 19 Casing Hammer Automatic Drilling Foreman Weight (lbs) Drop (in) 140 Jeff Nitsch Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) Automatic 140 30 Taylor Sisti Sample Data MATERIAL SYMBOL Remarks Depth (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) 139. 10 20 30 40 Started Drilling at 6/8/2020 18" Dark brown fine-medium SAND, some silt, trace 2 S-1 at 0ft fine gravel, some roots (dry) [TOPSOIL] 16 SS 16 Brown fine-medium SAND, some f-c gravel, trace silt S-2 at 2ft Brown fine-coarse SAND, some silt, some fine gravel SS (moist) 3 13 Drive casing to 4ft, drill to 4ft 14 S-3 at 4ft Brown fine-medium SAND, some silt, trace f-c gravel 8 (moist) 11 S-3 SS 7 5 11 14 6 S-4 at 6ft Brown fine-medium SAND, some silt, some f-c gravel 8 (moist) 18 SS S-4 8 16 Drive casing to 8ft, drill to 8ft 8 S-5 at 8ft Brown fine-medium SAND, some silt, trace f-c gravel 12 (wet) 14 S-5 SS 12 9 16 15 129. S-6 at 10ft Brown fine-medium SAND, some silt, trace f-c gravel 14 (wet) [TILL] SS 17 S-6 10 21 47 12 13 Drive casing to 14ft, drill to 14ft, easy drilling S-7 at 14ft Brown fine-medium SAND, some silt, trace f-c gravel 21 (wet) [TILL] 22 SS S-7 16 22 21 16 17 18 Drill to 19ft, moderate drilling, some light rig chatter S-8 at 19ft Brown fine-coarse SAND, some silt, trace f-c gravel 22 လူ 10 Gray platey rock fragments (wet) [TILL] in spoon tip



Log of Boring C-B-BOR-04 Sheet 2 of 2 Project Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum Elev. + 139 (NGVD29) 59 Steele Road, Hudson NH Sample Data Coring (min) Remarks Depth N-Value (Blows/ft) Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) (ft) Scale 10 20 30 40 -119.0 20 S-8 SS 10 50/3 21 22 Drive casing to 19ft, drill to 25ft, moderate drilling 23 24 25 S-9 at 25ft Brown fine-coarse SAND, some silt, some fine gravel S-9 SS 2 50/2 (wet) [TILL] 26 Drill to 27ft, hard drilling, some light rig chatter Roller bit refusal at 27ft Light gray SCHIST; medium to coarse grained; fresh to C-1 at 27ft 2:20 moderately weathered; very close to close fracture spacing; fractures near vertical to moderately dipping, 28 =21% strong [BEDROCK] REC=56"/60" =93% 2:54 29 RQD=34"/60" 5 2:57 30 2:39 31 VILANGAN.COMIDATA\BOS\DATA1\151010101\PROJECT DATA_DISCIPLINE\GEOTECHNICAL\GINTLOGS\151010101 3:34 32 Bottom of boring at 6/8/2020 Bottom of Boring Boring backfilled with soil cuttings 33 34 35 36 37 38 39 43

LANGAN

C-B-BOR-05 Log of Boring Sheet of 2 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 135 (NGVD29) **Drilling Company** Date Started Date Finished Seaboard Drilling, Inc 6/16/20 6/16/20 **Drilling Equipment** Completion Depth Rock Depth Diedrich D50 27 ft 27 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) N/A N/A 7.5 N/A Casing Hammer N/A Drop (in) N/A Drilling Foreman Weight (lbs) N/A Jeff Nitsch Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Aut<u>omatic/Safety</u> Weight (lbs) Drop (in) 140 30 Reid Balkind Sample Data MATERIAL SYMBOL Remarks Depth Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) 135. 10 20 30 40 Started Drilling on 8" Dark brown fine-medium SAND, some silt, trace roots 6/16/2020. (moist)[TOPSOIL] 2 Orangish brown fine-medium SAND, trace silt S-1 at 0ft 22 SS (moist) 2 USE.GPJ S-2 at 2ft Orangish brown fine-medium SAND, trace silt (moist) SS 48 3 Auger to 4ft 6 S-3 at 4ft Light brown fine-coarse SAND, trace silt, trace fine gravel 2 ENTERPRISE (moist) 3 S-3 SS 24 5 5 129.0 6 COMDATA/BOS/DATA1/151010101/PROJECT DATA/ DISCIPLINE/GEOTECHNICAL/GINTLOGS/151010101 S-4 at 6ft Grayish gray to brown SILT, trace clay, trace fine sand 5 (wet) SS S-4 24 6 Auger to 8ft 8 S-5 at 8ft Grayish brown SILT, trace clay, trace fine sand 5 (wet) SS 22 6 S-6 at 10ft Light brown SILT, trace clay, trace fine sand 4 (wet) SS 5 S-6 20 6 5 12 13 Augur to 15ft. Moderate drilling S-7 at 15ft SS Brown to orangish brown fine-coarse SAND, some silt, 12 trace clay, trace f-c gravel 12 (wet) 16 S-7 Augur to 20ft. Moderate 12 drilling 16 17 18 Autohammer breaks, switch 116. to safety hammer for 20 ft sample 19



Log of Boring C-B-BOR-05 Sheet 2 of 2 Project Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum Elev. + 135 (NGVD29) 59 Steele Road, Hudson NH Sample Data Remarks Elev (ft) Depth N-Value (Blows/ft) Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Scale 10 20 30 40 -115. S-8 at 20ft Brown fine-medium SAND, some silt, trace f-c gravel 8-S SS 10 (moist)[TILL] 70/4 70/4 21 22 Augur to 25ft. Hard drilling 23 24 25 S-9 at 25ft Brown silty fine-coarse SAND, some coarse gravel, trace 35 clay, some weathered gravel SS (moist)[TILL] 23 26 75 Inferred Top of Bedrock 100/5 NLANGAN.COMIDATA\BOS\DATA1/15101011/PROJECT DATAL_DISCIPLINE\GEOTECHNICAL\GINTLOGS\151010101_ENTERPRISE_BORINGS_USE.GR. 108. Bottom of boring on 6/16/2020. Augur and spoon refusal encountered at 27 ft. Bottom of Boring 28 End of boring at 27ft. Backfilled with auger cuttings to grade 29 30 31 32 33 34 35 36 37 38 39 43

C-B-BOR-06 Log of Boring Sheet of 1 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 137 (NGVD29) Date Started **Drilling Company** Date Finished Seaboard Drilling, Inc 6/17/20 6/17/20 **Drilling Equipment** Completion Depth Rock Depth Diedrich D50 16 ft 16 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) N/A N/A 9 N/A Casing Hammer N/A Drop (in) N/A Drilling Foreman Weight (lbs) N/A Jeff Nitsch Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) 140 30 Safety Reid Balkind Sample Data MATERIAL SYMBOL Remarks Depth Recov. (in) Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) 137. 10 20 30 40 Started Drilling at 6/17/2020 13" Dark brown fine-medium SAND, trace silt, trace fine S-1 at 0ft gravel, trace roots 4 (dry)[TOPSOIL] 15 135.9 3 Light brown fine-coarse SAND, trace silt S-2 at 2ft Light brown fine-coarse SAND, trace silt 3 SS 3 S-2 12 3 Auger to 4ft 3 S-3 at 4ft Light brown fine-coarse SAND, trace silt, trace fine gravel 3 (moist) S-3 SS 20 5 17 24 131.0 6 50/3 S-4 at 6ft Light brown fine-coarse SAND, trace silt 50/3 S-4 at on Heavy chatter at 6ft (moist) [TILL] 7 Auger to 8ft 8 S-5 at 8ft Grayish brown fine SAND, some silt, trace fine gravel SS 19 (wet) [TILL] 24 13 9 က် Auger to 10ft. Heavy chatter. 40 Perched water at 9ft 50/5 10 S-6 at 10ft Grayish brown fine SAND, some silt, trace fine gravel 14 (wet) [TILL] 21 ss S-6 15 23 23 12 Auger to 15 ft 13 14 Switch to Autohammer 15 (LANGAN.COM/DATA/BOS/DATA1/151010 S-7 SS 0 50/3 S-7 at 15ft. No Recovery Drive second spoon. Refusal No Recovery Inferred Top of Bedrock encountered and no 16 S-8 SS 0 50/3 -120.8 recovery S-8 at 16ft 17 Auger and spoon refusal Bottom of Boring encountered at 16ft. Bottom of boring at 18 6/17/2020 Boring backfilled with soil to grade. 19



C-B-BOR-07 Log of Boring Sheet of 2 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum Elev. + 141.5 (NGVD29) 59 Steele Road, Hudson NH Drilling Company Date Started Date Finished SoilTesting, Inc. 6/16/20 6/16/20 **Drilling Equipment** Completion Depth Rock Depth Truck Mounted Diedrich D-50 22.5 ft 22.5 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) N/A N/A 12 N/A Drop (in) N/A Casing HammerN/A Drilling Foreman Weight (lbs) N/A Sam DeAngelis Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) 140 30 Automatic Justin Hall Sample Data MATERIAL SYMBOL Remarks Depth Penetr. resist BL/6in Recov. (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description /22/2020 5:30:28 (ft) 141. 10 20 30 40 Started Drilling on 6" Dark brown fine-coarse SAND, some silt, trace roots SS 5 6/16/2020. (moist) [TOPSOIL] 4 S-1 at 0ft 16 Light brown fine-medium SAND, trace silt 3 (dry) 3 USE.GPJ SS S-2 at 2ft Light brown fine-medium SAND, trace silt 12 3 5 5 S-3 at 4ft Light brown fine-coarse SAND, trace silt, trace fine gravel 8 ENTERPRISE (dry) 5 S-3 SS 16 5 8 18 6 DISCIPLINE/GEOTECHNICAL\GINTLOGS\151010101 S-4 at 6ft Light brown fine-coarse SAND, some fine gravel 28 SS 20 7 Medium rig chattering at 6'-8' Light grayish brown fine-coarse SAND, some silt, trace fine 36 gravel 27 (dry) S-5 at 8ft 13 Light grayish brown fine-coarse SAND, some silt, trace fine gravel 19 10 (dry) 9 24 23 S-6 at 10ft Light brown fine-coarse SAND, some silt, trace fine gravel 14 (moist) SS 18 S-6 20 20 16 12 -ANGAN.COM/DATA/BOS/DATA1/151010101/PROJECT DATA/ 13 S-7 at 15ft SS Light brown fine-coarse SAND, some silt, trace fine gravel (wet) 13 S-7 10 17 20 17 18 19



Log of Boring C-B-BOR-07 Sheet 2 of 2 Project Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum Elev. + 141.5 (NGVD29) 59 Steele Road, Hudson NH Sample Data Remarks Elev (ft) Depth Scale N-Value (Blows/ft) Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 10 20 30 40 121. 20 S-8 at 20ft Light brown fine-coarse SAND, some silt, trace fine gravel 25 (wet) [TILL] SS 67 S-8 4 21 123 56 60 No Recovery 22 Inferred Top of Bedrock 100/0 S-9 at 22.5ft. Auger and . Report: 23 spoon refusal at 22.5ft Bottom of Boring Bottom of boring on NLANGAN.COMIDATA/BOSIDATA1/151010101/PROJECT DATAL_DISCIPLINE/GEOTECHNICAL/GINTLOGS/15101010_ENTERPRISE_BORINGS_USE.GPJ... 7/22/2020 5:30:29 PM... 6/16/2020. 24 Boring backfilled with auger cuttings. 25 26 28 29 30 31 32 33 34 35 36 37 38 39 40 43

C-B-BOR-08 Log of Boring Sheet of 2 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum Elev. + 141.5 (NGVD29) 59 Steele Road, Hudson NH **Drilling Company** Date Started Date Finished Atlantic Testing Laboraties 6/17/20 6/17/20 **Drilling Equipment** Completion Depth Rock Depth Geoprobe 7822 DT 30 ft 25 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3-7/8in Tricone Roller Bit Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) 4in 15 N/A Casing HammerAutomatic Drilling Foreman Weight (lbs) Drop (in) 30 140 Ben Crary Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) Automatic 140 30 Justin Hall Sample Data MATERIAL SYMBOL Remarks Depth Recov. (in)
Penetr. resist (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) Scale 141. 10 20 30 40 Started Drilling at 6/17/2020 12" Dark brown fine-medium SAND, trace silt, trace 2 S-1 at 0ft 2 (moist) [TOPSOIL] 20 3 Brown fine SAND, trace silt, trace roots (dry) S-2 at 2ft Light brown fine SAND, trace silt 2 SS 3 15 3 Drive casing to 4.0ft 5 Drill to 4.0ft, Easy drilling S-3 at 4ft Light brown fine-medium SAND, trace silt 4 ENTERPRISE (moist) S-3 SS 10 5 5 5 6 \GINTLOGS\151010101 S-4 at 6ft Light brown fine-coarse SAND, trace silt, trace fine 6 gravel SS (moist) S-4 13 Drive casing to 8.0ft 15 Drill to 8.0ft, Easy drilling 16 8 S-5 at 8ft Grayish brown fine-coarse SAND, some silt, trace fine 36 gravel (moist)[TILL] 30 SS S-5 9  $\sim$ 26 29 S-6 at 10ft Grayish brown fine-coarse SAND, some silt, trace fine 25 gravel SS 34 S-6 (moist) [TILL] 16 31 29 12 Drive casing to 15.0ft Drill to 15.0ft, Light rig chatter 13 S-7 at 15ft Grayish brown fine-coarse SAND, some silt, some fine SS 44 20 (wet) [TILL] S-7 63 31 17 Drive casing to 20.0ft Drill to 20.0ft, Moderate rig chatter 18 4inch casing refusal Continue drilling with roller bit. 19



Log of Boring C-B-BOR-08 Sheet 2 of 2 Project Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum Elev. + 141.5 (NGVD29) 59 Steele Road, Hudson NH Sample Data Coring (min) Remarks Elev (ft) Depth N-Value (Blows/ft) Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Scale 10 20 30 40 121. 20 S-8 at 20ft No Recovery 0 50/4 21 22 23 24 S-9 at 25ft Rollerbit and spoon refusal 25 50/0 No Recovery Light gray SCHIST; fine to medium grained; fresh to 10:04 at 25ft. slightly weathered; very close to moderate fracture 26 spacing; fractures near horizontal to shallow dipping; strong; fair quality [BEDROCK] C-1 at 25ft REC=49"/60" =82% =52% 5:37 RQD=31"/60" 7 5:10 28 2:36 29 VILANGAN.COMIDATA\BOS\DATA1V51010101VPROJECT DATAL_DISCIPLINE\GEOTECHNICAL\GINTLOGS\151010101_ENTERPRISE_ 2:29 30 Bottom of boring at Bottom of Boring 6/17/2020 Boring backfilled with soil 31 cuttings. 32 33 34 35 36 37 38 39 43

C-B-BOR-09 Log of Boring Sheet of 1 Proiect Project No. 151010101 **Hudson Logistics Center** Location Elevation and Datum Elev. + 141.5 (NGVD29) 59 Steele Road, Hudson NH Date Started **Drilling Company** Date Finished Seaboard Drilling, Inc. 6/13/20 6/13/20 **Drilling Equipment** Completion Depth Rock Depth Diedrich D50 17 ft 12 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger 6 Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) N/A N/A N/E N/A Drop (in) N/A Casing HammerN/A Weight (lbs) Drilling Foreman N/A Jeff Nitch Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) Automatic 140 30 Kenneth Idem Sample Data MATERIAL SYMBOL Remarks Depth Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) Scale 141. 10 20 30 40 Started Drilling on 6/13/2020 2" Brown fine-medium SAND, trace silt, fine medium 141. 2 S-1 at 0ft gravel, trace roots 2 (dry) [TOPSOIL] SS 2 Brown fine-medium SAND, trace silt, dry granite 2 2 S-2 at 2ft Brown fine-medium SAND, trace silt, fine medium 3 gravel SS 5 (dry) S-2 8 3 15 99 137. Auger to 4ft ,Moderate Brown fine-medium SAND, some fine gravel, trace silt 20 Augering, Medium Chatter (dry) [TILL] 64 S-3 at 4ft S-3 SS 16 5 30 23 6 S-4 at 6ft SS Brown fine-medium SAND, some fine gravel, trace silt 17 (dry) [TILL] S-4 63 100/4 Auger to 8ft, Easy Augering 8 S-5 at 8ft Brown fine-medium SAND, some silt, trace fine gravel 22 (dry) [TILL] 28 S-5 18 9 26 30 S-6 at 10ft Brown fine-coarse SAND, some silt, trace fine gravel 30 (dry) [TILL] 22 S-6 18 100/4 Auger to 12ft, Hard Gray SCHIST; fine to medium grained; slightly 12 Augering, Heavy Chattering 2.29 weathered; close fracture spacing; fractures C-1 at 11.8ft moderately dipping; strong; =24% 13 REC=21"/60" =35% [BEDROCK] 2:28 RQD=14.5"/60" NO COR 7 3:07 (LANGAN.COM/DATA/BOS/DATA1/15101010 15 2:55 16 3:02 124.7 Bottom of boring on 17 6/13/2020 Bottom of Boring Boring backfilled with auger 18 cuttings. Observation well installed. refer to well construction log. 19

C-B-BOR-10 Log of Boring Sheet of 1 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 142.5 (NGVD29) Date Started **Drilling Company** Date Finished Seaboard Drilling, Inc 6/13/20 6/13/20 **Drilling Equipment** Completion Depth Rock Depth Diedrich D50 17 ft N/E Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) N/A N/A 17 N/A Casing Hammer N/A Drop (in) N/A Drilling Foreman Weight (lbs) N/A Jeff Nitch Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) Automatic 140 30 Kenneth Idem Sample Data MATERIAL SYMBOL Remarks Depth Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) Scale 142. 10 20 30 40 0 Started Drilling at 6/13/2020 3" Brown fine SAND, trace silt, trace roots 142. 2 (dry) [TOPSOIL] S-1 at 0ft 2 SS 6 2 SS S-2 at 2ft Brown fine-medium SAND, trace silt, trace fine gravel 2 2 10 3 Auger to 4ft, Easy Augering Brown fine-medium SAND, trace silt, trace fine gravel 4 ENTERPRISE S-3 at 4ft (dry) 5 S-3 SS 12 5 6 8 6 \GINTLOGS\151010101 S-4 at 6ft Brown fine-medium SAND, trace silt, trace fine gravel 8 (moist) 13 SS S-4 20 29 8 Auger to 8ft, Moderate Brown gravelly fine-coarse SAND, some silt 80 Augering, Medium Chatter (wet) [TILL] 30 SS S-5 S-5 at 8ft 19 9 22 22 S-6 at 10ft Brown fine-coarse SAND, some silt, some fine gravel SS 28 S-6 12 (moist) [TILL] 100 Auger to 15ft, Moderate Augering, Medium Chatter 12 13 14 S-7 at 15ft SS Brown gravelly fine-coarse SAND, some silt 10 (moist) [TILL] 32 S-7 4 16 29 25 17 Auger to 20ft, Hard Augering 18 Auger Refusal at 18.5ft Bottom of boring at 19 6/13/2020 Bottom of Boring Boring backfilled with auger cuttings.

C-B-BOR-11 Log of Boring Sheet of 2 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum Elev. + 148 (NGVD29) 59 Steele Road, Hudson NH **Drilling Company** Date Started Date Finished Seaboard Drilling, Inc. 6/12/20 6/12/20 **Drilling Equipment** Completion Depth Rock Depth Diedrich D50 34 ft 26 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 2-7/8in Tricone Roller Bit Casing Diameter (in) Casing Depth (ft) 24 HR. Completion Water Level (ft.) 4in 15 N/A 15 Casing HammerAutomatic Drilling Foreman Weight (lbs) Drop (in) 140 Jeff Nitsch Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) Automatic 140 30 Taylor Sisti Sample Data MATERIAL SYMBOL Remarks Depth Recov. (in) Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) Scale 148. 10 20 30 40 Started Drilling on 6/12/2020 11" Brown to grayish fine-medium SAND, some silt, S-1 at 0ft (moist)[TOPSOIL] 8 Brown to grayish fine-medium SAND, some silt, trace 2 (moist) SS S-2 at 2ft 2 145.5 Brown to grayish fine-medium SAND, some silt 3 (moist) 3 Brown to grayish fine-medium SAND, trace silt, trace 3 Drive casing to 4ft, drill to 4ft (dry) 4 S-3 at 4ft Brown to grayish fine-coarse SAND, some f-c gravel, 4 ENTERPRISE trace silt 11 S-3 SS 12 5 (moist) 12 14 6 \GINTLOGS\151010101 S-4 at 6ft Brown to grayish fine-medium SAND, trace silt, trace 13 f-c gravel 15 SS S-4 (moist) 36 7 21 Drive casing to 8ft, drill to 8ft 19 140.0 8 Brown to grayish gravelly fine-coarse SAND, some silt S-5 at 8ft 12 (moist) [TĬLL] 15 SS S-5 15 9 17 21 Brown to grayish brown fine-coarse SAND, some silt, S-6 at 10ft SS 16 S-6 trace f-c gravel, trace weathered cobble fragments 20 57 (moist) [TILL] 100/3 100/3 12 13 Drill to 15ft, hard drilling 11.5-13.5ft - inferred boulder. Drive casing to 15ft, clean out casing S-7 at 15ft Brown to grayish brown fine-medium SAND, some silt, SS 13 trace f-c gravel, trace weathered cobble fragments 19 (wet) [TILL] S-7 16 27 38 17 18 Drill to 20ft, moderate drilling 19



C-B-BOR-11 Log of Boring Sheet of 2 2 Project Project No. 151010101 **Hudson Logistics Center** Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 148 (NGVD29) Sample Data Remarks N-Value (Blows/ft) Elev Depth Sample Description Coring ( (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) (ft) Scale 128.0 10 20 30 40 20 S-8 at 20ft Brown to grayish brown gravelly fine-medium SAND, some silt, some weathered cobble fragments SS S-8 78 (wet) [TILL] 4 21 117 39 28 22 23 Auger to 25ft, moderate 24 Brown to grayish brown fine-medium SAND, some silt, trace fine gravel, some weathered cobble fragments 25 S-9 at 25ft SS 63 9 (wet) [TILL] Roller bit refusal at 26ft 26 C-1 at 26ft 1:02 Gray to black SCHIST; fine to medium grained; highly weathered; extremely close to close fracture spacing; fractures shallow dipping, strong REC=24"/60" =40% 1:08 [BEDROCK] 28 RQD=0"/60" 5 1:56 29 2:15 30 2:18 31 C-2 at 31ft Gray to black SCHIST; fine to medium grained quartz intrusion; highly weathered; extremely close to close fracture spacing; fractures shallow dipping, strong 2:38 REC=47% RQD=14% 32 [BEDROCK] C-5 2:38 33 \\LANGAN.COMIDATA\BOS\DATA1\151010101\PROJECT DATA_DISCIPLINE\GEOTECHNICAL\GINTL 7:25 34 Barrel clogged at 34ft, Bottom of Boring remove rock from core barrel, attempt to put core 35 barrel back down and hole collapsed. Bottom of boring on 36 6/12/2020. Boring backfilled with soil 37 cuttings. 38 39 43



C-B-BOR-12 Log of Boring Sheet of 2 Project Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 152 (NGVD29) Date Started **Drilling Company** Date Finished 6/8/20 6/8/20 SoilTesting, Inc. **Drilling Equipment** Completion Depth Rock Depth CME Truck-Mounted Drill Rig 36 ft 36 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger 11 Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) N/A N/A 19 N/A Casing Hammer N/A Drop (in) N/A Weight (lbs) Drilling Foreman N/A John Knepple Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) 140 30 Automatic Kenneth Idem Sample Data MATERIAL SYMBOL Remarks Depth Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) Scale 152. 10 20 30 40 0 Started Drilling at 6/8/2020 Brown fine-medium SAND, trace silt, trace roots 151. S-1 at 0ft (dry) [TOPSOIL] SS 3 <u>۲</u> 10 3 S-2 at 2ft Brown fine-medium SAND, trace fine gravel, trace silt SS S-2 3 10 BORINGS 3 50/3 Auger to 4ft Brown fine-medium SAND, trace silt, trace fine gravel 5 S-3 at 4ft ENTERPRISE (dry) 11 S-3 SS 19 5 13 20 6 DISCIPLINE/GEOTECHNICAL/GINTLOGS/151010101 S-4 at 6ft Brown fine SAND, trace silt, trace fine gravel 25 (dry) SS 53 S-4 61 56 8 Auger to 8ft Brown silty fine-coarse SAND, trace fine gravel 19 S-5 at 8ft (dry) 36 S-5 SS 9 2 47 73 S-6 at 10... Auger to 15ft Brown fine-medium SAND, some silt, trace fine gravel S-6 SS 50/2 11 12 BOS\DATA1\151010101\PROJECT DATA\ 13 14 137.0 S-7 at 15ft Brown fine SAND, some silt, trace fine gravel SS (moist) [TILL] 19 S-7 16 16 29 33 17 Auger to 20ft 18 19



Log of Boring C-B-BOR-12 Sheet 2 of 2 Project Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 152 (NGVD29) Sample Data Remarks Elev (ft) N-Value (Blows/ft) Depth Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Scale 10 20 30 40 132. 20 S-8 at 20ft Brown fine-medium SAND, some silt, trace fine gravel SS 16 (wet) [TILL] S-8 42 10 21 48 Auger to 25ft 22 23 24 25 S-9 at 25ft Brown fine-medium SAND, some silt, trace fine gravel 41 10 (wet) [TILL] 26 Auger to 30ft 27 28 29 30 S-10 at 30ft Brown fine-medium SAND, some silt, trace fine gravel, 27 trace clay (wet) [TILL] 50/4 50/4 31 32 33 34 Brown gravelly fine-medium SAND, some silt, trace clay (wet) [TILL] \\LANGAN.COM\DATA\BOS\DATA1\151010101\PROJECT DATA_DISCIPLINE\GEOTECH 35 Auger to 35ft Inferred Top of Bedrock SS 65 ω S-11 at 35ft 116.3 50/3 Split spoon and auger 36 refusal Bottom of boring at 6/8/2020 Boring backfilled with auger Bottom of Boring 37 cuttings. 38 39 43

C-B-BOR-13 Log of Boring Sheet of 2 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum Elev. + 146.5 (NGVD29) 59 Steele Road, Hudson NH Date Started **Drilling Company** Date Finished Seaboard Drilling, Inc 6/16/20 6/16/20 **Drilling Equipment** Completion Depth Rock Depth Diedrich D50 22 ft 22 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) N/A N/A 18 N/A Drop (in) N/A Casing HammerN/A Drilling Foreman Weight (lbs) N/A Jeff Nitsch Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) Automatic 140 30 Reid Balkind Sample Data MATERIAL SYMBOL Remarks Depth Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) 146. 10 20 30 40 Started Drilling on 6/16/2020 12" Orangish brown fine-medium SAND, some silt, trace f-c 3 S-1 at 0ft gravel, trace roots 4 (dry) [TOPSOIL] 8 Orangish brown fine-medium SAND, some silt, trace f-c gravel, trace roots (dry) S-2 at 2ft Orangish brown fine-medium SAND, trace silt SS 5 (dry) 16 3 3 4 S-3 at 4ft Light brown fine-medium SAND, trace silt SS 3 ENTERPRISE (moist) 3 S-3 8 5 Auger to 4ft 4 6 GEOTECHNICAL\GINTLOGS\151010101 Auger to 8ft. Medium chatter Light brown fine-coarse SAND, trace silt, trace fine gravel 6 at 6ft. S-4 at 6ft (moist) 5 SS S-4 20 6 S-5 at 8ft Light gray fine-coarse SAND, some fine gravel, trace silt 27 (dry) 19 SS Grayish brown fine-medium SAND, some fine gravel, trace 9 ω Auger to 12ft. Heavy chatter 13 at 9 ft (moist) 13 136. S-6 at 10ft Brown fine-medium SAND, some silt, trace fine gravel 11 (wet) [TILL] SS 9 S-6 Medium chatter at 11ft 11 17 12 Auger to 15ft. Hard drilling 13 14 S-7 at 15ft SS Grayish brown silty fine-medium SAND, trace fine gravel 28 (moist) [TILL] 16 16 S-7 16 25 15 17 Auger to 20ft. Moderate 18 drilling 19



C-B-BOR-13 Log of Boring Sheet 2 of 2 Project Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 146.5 (NGVD29) Sample Data Remarks N-Value (Blows/ft) Elev Depth Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Scale (ft) 10 20 30 40 126. 20 SS S-8 at 20ft Grayish brown fine-coarse SAND, trace silt, trace fine 19 gravel, trace weathered gravel fragments S-8 20 21 Light gray fine-coarse GRAVEL, trace silt, trace f-c sand (moist) [TILL] Inferred Top of Bedrock 41 Hard drilling and heavy chatter. Auger and split SS 76 50/1 spoon refusal encountered Bottom of Boring at 22 ft. S-9 at 21.5ft 23 ·Bottom of boring on 6/16/2020. Backfilled boring NLANGAN.COMIDATA/BOSIDATA1/1510101010/PROJECT DATA|_DISCIPLINE/GEOTECHNICAL/GINTLOGS/15101010_ENTERPRISE_BORINGS_USE.GPJ ... 7/22/2020 5:30:48 PM ... with auger cuttings to grade 24 25 26 28 29 30 31 32 33 34 35 36 37 38 39 43

C-B-BOR-14 Log of Boring Sheet of 2 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 152 (NGVD29) **Drilling Company** Date Started Date Finished Atlantic Testing Laboraties 6/16/20 6/16/20 **Drilling Equipment** Completion Depth Rock Depth Geoprobe 7822 DT 31 ft 26 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3-7/8in Drag Bit Casing Diameter (in) Casing Depth (ft) 24 HR. Completion Water Level (ft.) 4in N/E N/A 25 Casing HammerAutomatic Drilling Foreman Weight (lbs) Drop (in) 30 140 Ben Crary Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) Automatic 140 30 Jack Berritt Sample Data MATERIAL SYMBOL Remarks Depth Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) 152. 10 20 30 40 Started Drilling at 6/16/2020 6" Dark brown fine-medium SAND, some silt, trace SS 151. S-1 at 0ft (moist) [TOPSOIL] 4 Brown fine SAND, trace silt (dry) 2 USE.GPJ S-2 at 2ft Brown fine SAND, trace silt 2 (dry) SS 4 3 Drive casing to 4.0ft. 3 Drill to 4.0ft, Easy drilling 3 S-3 at 4ft Brown fine-coarse SAND, trace silt, trace fine gravel ENTERPRISE (moist) 9 S-3 SS 10 5 10 11 6 DISCIPLINE/GEOTECHNICAL/GINTLOGS/151010101 S-4 at 6ft Brown fine-coarse SAND, trace silt, trace fine gravel 18 (moist) 22 SS S-4 12 Drive casing to 8.0ft 28 Drill to 8.0ft, Light rig 26 chattering 8 Brown fine-coarse SAND, trace silt, trace fine gravel S-5 at 8ft 11 (moist) 13 SS S-5 9 6 10 9 S-6 at 10ft Brown fine-coarse SAND, some silt, trace fine gravel (moist) 13 SS S-6 8 11 12 12 Drive casing to 15.0ft, Light rig chattering A1/151010101/PROJECT DATA\ Drill to 15.0ft 13 137.0 S-7 at 15ft SS Light brown fine-coarse SAND, some silt, some fine 24 25 (moist) [TILL] 16 S-7 18 17 Drive casing to 20.0ft, Moderate rig chatter Drill to 20.0ft 18



Log of Boring C-B-BOR-14 Sheet 2 of 2 Project Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 152 (NGVD29) Sample Data Coring (min) Remarks Elev (ft) N-Value (Blows/ft) Depth Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Scale 10 20 30 40 132.0 20 S-8 at 20ft Light brown fine-coarse SAND, some silt, trace fine SS 15 S-8 (moist) [TILL] 10 21 14 7 22 Drive casing to 25.0ft, Moderate rig chatter Drill to 25.0ft 23 24 25 S-9 SS 0 S-9 at 25ft 50/0 No Recovery Drill to 26ft, Heavy rig chatter 26 C-1 at 26ft Light gray GRANITE; fine to coarse grained; fresh to 8:46 slightly weathered; close to moderate fracture spacing; fractures shallow dipping to near horizontal; rock REC=60"/60" =100% quality good 6:03 [BEDŔŎCK] 28 RQD=46"/60" 5 8:07 29 7:10 30 7:36 -121.0 31 VILANGAN.COMIDATA\BOS\DATA1\151010101\PROJECT DATA_DISCIPLINE\GEOTECHNICAL\GINTLOGS\151010101 Bottom of boring at Bottom of Boring 6/16/2020 Boring backfilled with soil 32 cuttings. 33 34 35 36 37 38 39 43

C-B-BOR-15 Log of Boring Sheet of 2 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 152 (NGVD29) **Drilling Company** Date Started Date Finished Atlantic Testing Laboraties 6/17/20 6/17/20 **Drilling Equipment** Completion Depth Rock Depth Geoprobe 7822 DT 34 ft 29 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3-7/8in Tricone Roller Bit 10 Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) 4in 30 15 N/A Casing HammerAutomatic Drilling Foreman Weight (lbs) Drop (in) 30 140 Ben Crary Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) Automatic 140 30 Jack Berritt Sample Data MATERIAL SYMBOL Remarks Depth Recov. (in)
Penetr. resist (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) Scale 152. 10 20 30 40 Started Drilling at 6/17/2020 3" Dark brown fine-medium SAND, trace silt, trace +151.8 S-1 at 0ft SS (moist) [TOPSOIL] 15 Light brown fine SAND, trace silt, trace roots 2 S-2 at 2ft Light brown fine SAND, trace silt 2 (dry) SS 2 13 3 Drive casing to 4.0ft, Easy 3 drilling Drill to 4.0ft Grayish brown fine-coarse SAND, trace silt, trace fine S-3 at 4ft 7 gravel 9 S-3 SS (moist) 16 5 17 20 146.0 6 S-4 at 6ft Grayish brown fine-coarse SAND, some silt, trace fine 28 gravel 21 ls 🗏 (moist) [TILL] S-4 20 Drive casing to 8.0ft, Light rig 25 chatter 30 Drill to 8.0ft 8 Grayish brown fine-coarse SAND, some silt, trace fine S-5 at 8ft 25 gravel 30 S-5 SS (moist) [TILL] 12 9 33 31 S-6 at 10ft Grayish brown fine-coarse SAND, some silt, trace fine 34 gravel 26 SS S-6 (moist) [TILL] 12 33 26 12 Drive casing to 15.0ft, Moderate rig chatter Drill to 15.0ft 13 S-7 at 15ft Grayish brown fine-coarse SAND, some silt, trace fine SS 32 26 (wet) [TILL] S-7 3 17 17 Drive casing to 20.0ft, Moderate rig chatter Drill to 20.0ft 18 19



Log of Boring C-B-BOR-15 Sheet of 2 2 Project Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 152 (NGVD29) Sample Data Coring (min) Remarks N-Value (Blows/ft) Elev Depth Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Scale (ft) 10 20 30 40 132.0 20 S-8 at 20ft Grayish brown fine-coarse SAND, some silt, trace fine 45 SS 36 S-8 (wet) [TILL] 16 87 21 51 61 22 Drill to 25.0ft, Moderate rig 23 24 25 S-9 at 25ft Grayish brown fine-coarse SAND, some silt, trace fine S-9 SS 4 100/5 100/5 gravel (wet) [TILL] 26 Drill to 30.0ft, Heavy rig chatter at 29.0ft 28 50/0 No Recovery 29 S-10 at 29ft Light gray GRANITE; fine to medium grained; fresh to slightly weathered; very close to moderate fracture 7:26 C-1 at 29ft 30 spacing; fractures moderately dipping to near REC=51"/60" =85% horizontal; rock quality fair 5:21 [BEDROCK] 31 RQD=32"/60" 6:23 32 6:39 33 \\LANGAN.COMIDATA\BOS\DATA1\151010101\PROJECT DATA_DISCIPLINE\GEOTECHNICAL\GINTL 5:18 34 Bottom of boring at Bottom of Boring 6/17/2020 Boring backfilled with soil 35 cuttings. 36 37 38 39 43



Log of Boring C-B-BOR-16(OW) Sheet of 2 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 158 (NGVD29) **Drilling Company** Date Started Date Finished SoilTesting, Inc. 6/17/20 6/17/20 **Drilling Equipment** Completion Depth Rock Depth CME Truck-Mounted Drill Rig 26 ft 26 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. Completion Water Level (ft.) N/A N/A 15 14.3 Drop (in) N/A Casing HammerN/A Drilling Foreman Weight (lbs) N/A Mike Kennedy Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) 140 30 Safety Olivia Chasse Sample Data /22/2020 5:30:59 PM MATERIAL SYMBOL Remarks Depth Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) 158. 10 20 30 40 Started Drilling at 6/17/2020 6" Dark brown fine-medium SAND, trace silt, some roots SS 157. (dry) [TOPSOIL] S-1 at 0ft 4 Light brown fine SAND, some silt 4 3 (dry) 5 USE.GPJ SS S-2 at 2ft Light brown fine-coarse SAND, some silt, trace fine gravel 6 15 3 13 Auger to 4ft, easy drilling Light brown fine-medium SAND, trace silt, trace fine gravel 8 ENTERPRISE S-3 at 4ft (dry) 12 SS Brown fine-coarse SAND, trace silt, trace fine gravel 5 <u>∞</u> (moist) 16 14 6 DISCIPLINE/GEOTECHNICAL\GINTLOGS\151010101 S-4 at 6ft Brown fine-coarse SAND, trace silt, trace fine gravel 16 (moist) SS 18 S-4 4 7 29 29 8 Auger to 8ft, easy drilling Grayish brown fine-medium SAND, some silt, some fine 24 S-5 at 8ft gravel 24 S-5 SS (moist) 4 9 29 21 S-6 at 10ft Brown fine-medium SAND, some silt, some fine gravel 22 (moist) 25 SS S-6 16 26 31 12 -ANGAN.COM/DATA/BOS/DATA1/151010101/PROJECT DATA/ 13 Auger to 15ft, easy to SS Brown fine-coarse SAND, some silt, some fine gravel 25 moderate drilling (wet) 27 S-7 at 15ft S-7 16 35 16 17 18 19



Log of Boring C-B-BOR-16(OW) Sheet 2 of 2 Project Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 158 (NGVD29) Sample Data Remarks Elev (ft) N-Value (Blows/ft) Depth Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Scale 10 20 30 40 -138.0 20 Gray fine-medium SAND, some silt, some fine gravel Auger to 20ft, easy to S-8 SS moderate drilling ω (wet)[TILL] 50/5 S-8 at 20ft 21 22 23 24 Gray fine-medium SAND, some silt, some fine gravel 25 (wet)[TILL] Auger to 25ft, easy to moderate drilling S-9 SS 50 12 Inferred Top of Bedrock 50/4 132.2 S-9 at 25ft 26 Bottom of boring at 6/17/2020 NLANGAN, COMIDATA\BOS\DATA1/1510101011PROJECT DATA_DISCIPLINE\GEOTECHNICAL\GINTLOGS\151010101_ENTERPRISE_BORINGS_USE.GPJ Observation well installed. 27 Bottom of Boring Refer to well construction log. 28 29 30 31 32 33 34 35 36 37 38 39 43

C-B-BOR-17 Log of Boring Sheet of 1 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 151.5 (NGVD29) **Drilling Company** Date Started Date Finished SoilTesting, Inc. 6/12/20 6/12/20 **Drilling Equipment** Completion Depth Rock Depth CME Truck-Mounted Drill Rig 19.5 ft 19.5 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) N/A N/A N/E N/A Drop (in) N/A Casing HammerN/A Weight (lbs) Drilling Foreman N/A John Knepple Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) 140 30 Automatic Kenneth Idem Sample Data /22/2020 5:31:02 PM MATERIAL SYMBOL Remarks Depth Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) Scale 151. 10 20 30 40 0 Started Drilling at 6/12/2020 3" Brown fine SAND, trace silt, trace roots -151.2 3 S-1 at 0ft (dry) [TOPSOIL] SS <u>۲</u> 9 6 USE.GPJ S-2 at 2ft Brown fine-coarse SAND, some fine gravel, trace silt SS 8 BORINGS 13 3 10 Auger to 4ft, easy augering Brown fine SAND, trace silt 5 ENTERPRISE S-3 at 4ft (dry) 6 S-3 SS 12 5 11 13 6 DISCIPLINE/GEOTECHNICAL\GINTLOGS\151010101 S-4 at 6ft Brown fine-coarse SAND, some fine gravel, trace silt 19 (dry) 29 SS S-4 8 38 35 8 Auger to 8ft, moderate Gray fine-coarse SAND, some fine gravel, trace silt SS 20 augering, medium chatter (dry) S-5 26 13 S-5 at 8ft 9 33 10 S-6 at 10ft Gray gravelly fine-coarse SAND, trace silt 38 (dry) SS S-6 49 19 129 80 Auger to 15ft, hard augering, 12 heavy chatter |LANGAN.COM|DATA|BOS|DATA1/151010101/PROJECT DATA| 13 14 S-7 at 15ft SS Brown fine-coarse SAND, some silt, trace fine gravel 31 (moist) 2 22 S-7 16 17 Auger to 20ft, hard augering, 17 heavy chatter 18 Auger refusal at 19.5ft Inferred Top of Bedrock Bottom of Boring at 6/12/2020 19 Bottom of Boring Boring backfilled with auger 132. cuttings.

**C-B-BOR-18** Log of Boring Sheet of 2 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 158.5 (NGVD29) **Drilling Company** Date Started Date Finished Atlantic Testing Laboraties 6/12/20 6/12/20 **Drilling Equipment** Completion Depth Rock Depth CME75 Track Rig 39 ft 34 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3-7/8in Tricone Roller Bit Casing Diameter (in) Casing Depth (ft) 24 HR. Completion Water Level (ft.) 4in 10 N/A 25 Casing HammerAutomatic Drilling Foreman Weight (lbs) Drop (in) 30 140 Mark Childes Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) Automatic 140 30 Olivia Chasse Sample Data /22/2020 5:31:05 PM MATERIAL SYMBOL Remarks Depth Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) 158. 10 20 30 40 Started Drilling at 6/12/2020 Dark brown fine-medium SAND, trace silt, trace fine 158. S-1 at 0ft gravel, trace roots SS 2 (dry) [TOPSOIL] 3 Light brown fine-medium SAND, trace silt, trace fine USE.GPJ SS S-2 at 2ft Light brown fine-medium SAND, trace silt, trace fine gravel 12 BORINGS 3 (dry) Drive casing to 4.0ft Brown fine-coarse SAND, some fine gravel, trace silt SS 4 ENTERPRISE S-3 at 4ft (moist) 6 S-3 5 14 6 DISCIPLINE/GEOTECHNICAL/GINTLOGS/151010101 S-4 at 6ft Brown fine-coarse SAND, some fine gravel, trace silt 13 (moist) SS 18 S-4 16 22 Drive casing to 8.0ft No Recovery S-5 SS S-5 at 8ft Possible Obstruction 9  $\nabla$ Roller bit to 10ft Brown fine SAND, some silt, some fine gravel 30 S-6 at 10ft SS 18 S-6 ω 18 23 12 1010101/PROJECT DATA\ 13 SS Drive casing to 14.0ft Brown fine-medium SAND, some silt, some fine gravel 30 S-7 at 14ft (wet) [TILL] 9 67 က် 85 16 17 18 S-8 at 19ft Brown fine-coarse SAND, some silt, some fine gravel S-8 SS 2 (wet) [TILL]



Log of Boring C-B-BOR-18 Sheet of 2 Project Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 158.5 (NGVD29) Sample Data Coring (min) Remarks Depth N-Value (Blows/ft) Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) (ft) Scale 10 20 30 40 138. 20 21 22 23 24 SS Drive casing to 24.0ft Brown fine-medium SAND, some silt, some fine gravel 15 S-9 at 24ft (wet) [TILL] S-9 25 ω 9 50/5 26 28 S-10 SS 0 50/0 S-10 at 29ft No Recovery 30 31 32 33 No Recovery 50/0 S-11 at 34ft Mottled gray SCHIST; fine grained; slightly weathered; 5:58 C-1 at 34ft moderate to wide fracture spacing; fractures shallow '=91% 35 dipping; rock quality good [BEDROCK] REC=59"/60" =98% 2:43 36 RQD=54.5"/60" NO CORE 5 3:51 37 3:56 38 \\LANGAN.COM\DATA\BOS\DATA11510101011\PROJECT 6:12 119.5 39 Bottom of boring at 6/12/2020 Bottom of Boring Boring backfilled with soil 40 cuttings. 43

**C-B-BOR-19** Log of Boring Sheet of 2 Proiect Project No. 151010101 **Hudson Logistics Center** Location Elevation and Datum Elev. + 160 (NGVD29) 59 Steele Road, Hudson NH Date Started **Drilling Company** Date Finished Seaboard Drilling, Inc 6/12/20 6/12/20 **Drilling Equipment** Completion Depth Rock Depth Diedrich D50 24 ft 24.1 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) N/A N/A 20 N/A Drop (in) N/A Casing HammerN/A Drilling Foreman Weight (lbs) N/A Jeff Nitsch Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) Automatic 140 30 Taylor Sisti Sample Data /22/2020 5:31:09 PM MATERIAL SYMBOL Remarks Depth Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) 160. 10 20 30 40 Started Drilling on 6" Brown fine-medium SAND, some silt, trace f-c gravel, SS 159. 6/12/2020. 2 (dry) [TOPSOIL] S-1 at 0ft Brown fine-coarse SAND, trace silt, trace f-c gravel USE.GPJ S-2 at 2ft Brown fine-coarse SAND, trace silt, trace f-c gravel 2 SS 2 13 3 3 Auger to 4ft 3 S-3 at 4ft Brown to brown fine-coarse SAND, trace silt, trace f-c 2 ENTERPRISE gravel 2 S-3 SS (dry) 15 5 5 6 SS DISCIPLINE/GEOTECHNICAL\GINTLOGS\151010101 S-4 at 6ft, spoon bouncing Brown fine-coarse SAND, trace silt, trace f-c gravel 8 (dry) S-4 8 50/5 Auger to 8ft, light rig chatter 8 S-5 at 8ft Brown fine-coarse SAND, some f-c gravel, trace silt, trace weathered gravel fragments 16 SS S-5 (dry) 17 9 23 S-6 at 10ft Brown fine-coarse SAND, some f-c gravel, trace silt, trace 42 weathered gravel fragments SS 45 S-6 16 (dry) 32 34 12 ANGAN.COM/DATA/BOS/DATA1/151010101/PROJECT DATA/ 13 Auger to 15ft, moderate drilling, some light rig chatter S-7 at 15ft SS Brown fine-coarse SAND, some f-c gravel, trace silt, trace 12 weathered gravel fragments 34 (dry) S-7 4 37 39 17 18 Auger to 20ft, easy-moderate drilling 19



Log of Boring **C-B-BOR-19** Sheet 2 of 2 Project Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum Elev. + 160 (NGVD29) 59 Steele Road, Hudson NH Sample Data Remarks Elev Depth N-Value (Blows/ft) Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) (ft) Scale 10 20 30 40 140.0 Brown fine-coarse SAND, some silt, trace fine gravel, trace weathered gravel fragments 20 S-8 at 20ft SS 5 (wet) 13 21 8 16 22 Auger to 24ft, hard drilling 23 and light rig chatter at 23ft Gray fine-coarse GRAVEL, trace silt, trace weathered rock fragments (wet) Inferred Top of Bedrock NLANGAN.COMIDATA/BOS/DATA1/151010101/PROJECT DATA|_DISCIPLINE/GEOTECHNICAL/GINTLOGS/151010101_ENTERPRISE_BORINGS_USE.GPJ....7/22/2020 5:31:09 PM 135.9 24 S-9 at 24ft, auger and split spoon refusal at 24ft S-9 SS 1 100/1 Bottom of boring on 25 6/12/2020 Boring backfilled with auger Bottom of Boring 26 cuttings. 28 29 30 31 32 33 34 35 36 37 38 39 43



Log of Boring C-B-BOR-20(OW) Sheet of 2 Project Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 156.5 (NGVD29) Date Started **Drilling Company** Date Finished SoilTesting, Inc. 6/5/20 6/5/20 **Drilling Equipment** Completion Depth Rock Depth CME Truck-Mounted Drill Rig 22 ft 22 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger 10 Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) N/A N/A 10 5.6 Casing Hammer N/A Drop (in) N/A Weight (lbs) Drilling Foreman N/A Sam Deangelis Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) 140 30 Automatic Jack Berritt Sample Data MATERIAL SYMBOL Remarks Depth Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) 156. 10 20 30 40 S-1 at 0ft Light brown fine SAND, some silt (dry) SS S-1 4 +154.5 S-2 at 2ft Light brown fine SAND, trace silt SS 5 13 3 Auger to 4 ft 8 4 S-3 at 4ft Light brown gravelly fine-coarse SAND, trace silt 5 ENTERPRISE (dry) 11 S-3 SS 4 5 16 25 6 \GINTLOGS\151010101 S-4 at 6ft SS Brown silty fine SAND 29 S-4 (dry) 6 50/2 Auger to 8ft 8 S-5 at 8ft Brown fine-medium SAND, some silt, trace fine gravel 10 (dry) [TILL] 19 SS S-5 12 9 29 46 10 S-6 at 10ft Brown fine-medium SAND, some silt, trace fine gravel (moist) [TILL] SS 37 S-6 15 41 41 12 Auger to 15ft 13 14 S-7 at 15ft SS Brown fine-coarse SAND, some silt, trace fine gravel 14 (moist) [TILL] 21 15 S-7 36 14 17 18 19



Log of Boring C-B-BOR-20(OW) Sheet 2 of 2 Project Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum Elev. + 156.5 (NGVD29) 59 Steele Road, Hudson NH Sample Data Remarks Depth Scale Elev N-Value (Blows/ft) Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) (ft) 10 20 30 40 136. 20 Brown fine-coarse SAND, some silt, trace fine gravel SS S-8 10 (moist) [TILL] Auger refusal at 22ft 74 21 50/2 Inferred Top of Bedrock 134.5 22 Bottom of boring at NLANGAN.COMDATA/BOSIDATA1/151010101/IPROJECT DATA_DISCIPLINE/GEOTECHNICAL/GINTLOGS/151010101_ENTERPRISE_BORINGS_USE.GPJ....7/22/2020 5:31:13 PM ... Report: Log 6/05/2020 Observation well installed. 23 Refer to well construction Bottom of Boring 24 25 26 28 29 30 31 32 33 34 35 36 37 38 39 40 43



C-B-BOR-21 Log of Boring Sheet of 2 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum Elev. + 160 (NGVD29) 59 Steele Road, Hudson NH **Drilling Company** Date Started Date Finished SoilTesting, Inc. 6/16/20 6/16/20 **Drilling Equipment** Completion Depth Rock Depth ATV Mounted CME 550X 33.5 ft 33.5 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger 10 Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) N/A N/A 15 N/A Drop (in) N/A Casing HammerN/A Drilling Foreman Weight (lbs) N/A Sam DeAngelis Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) 140 30 Automatic Justin Hall Sample Data MATERIAL SYMBOL Remarks Depth Penetr. resist BL/6in Recov. (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) Scale 160. 10 20 30 40 0 Started Drilling on 6/16/2020 5" Dark brown fine-coarse SAND, some silt, trace roots 159. 3 S-1A at 0ft S-1B at 5" (moist) [TOPSOIL] SS 4 Light brown medium-fine SAND, some silt 24 5 (dry) USE.GPJ SS S-2 at 2ft Light brown medium-coarse SAND, trace silt, trace fine 8 15 (dry) 13 3 16 31 S-3 at 4ft Light grayish brown fine-coarse SAND, some silt, trace fine 5 ENTERPRISE gravel 14 S-3 SS (dry) 19 5 32 35 6 DISCIPLINE/GEOTECHNICAL/GINTLOGS/151010101 S-4 at 6ft Light grayish brown fine-coarse SAND, trace silt, trace fine 38 gravel 46 SS (dry) S-4 16 50 8 S-5 at 8ft Light grayish brown fine-coarse SAND, some silt, trace fine gravel 21 SS S-5 (dry) 17 9 19 25 S-6 at 10ft Light grayish brown fine-coarse SAND, some silt, trace fine 27 gravel (dry) SS 22 S-6 15 38 16 22 12 |LANGAN.COM|DATA|BOS|DATA1/151010101/|PROJECT DATA| 13 S-7 at 15ft Light grayish brown fine-coarse SAND, trace silt, trace fine SS 8 18 (wet) 15 S-7 16 11 17 18 19



Log of Boring C-B-BOR-21 Sheet 2 of 2 Project Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum Elev. + 160 (NGVD29) 59 Steele Road, Hudson NH Sample Data Remarks Elev (ft) N-Value (Blows/ft) Depth Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Scale 10 20 30 40 140.0 20 S-8 at 20ft Light grayish brown fine-coarse SAND, trace silt, trace fine SS 15 (wet) [TILL] 18 21 15 16 22 23 24 25 S-9 at 25ft Light grayish brown fine-coarse SAND, some silt, trace fine SS 65 S-9 gravel (wet) [TILL] 100/5 100/5 26 27 28 29 30 S-10 at 30ft Light grayish brown fine-coarse SAND, some silt, trace f-m 14 gravel, Grey (wet) [TILL] S-10 86 31 100/5 100/5 32 VILANGAN.COM/DATA/BOS/DATA1/151010101/PROJECT DATA_DISCIPLINE/GEOTECHNICAL/GINTLOGS/15 No Recovery 33 Inferred Top of Bedrock +126.5 S-11 SS 0 100/0 S-11 at 33.5ft. Auger and 34 spoon refusal at 33.5ft Bottom of Boring Bottom of boring on 6/16/2020. 35 Boring backfilled with auger cuttings 36 37 38 39 43

C-B-BOR-22 Log of Boring Sheet of 2 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 164.5 (NGVD29) Date Started **Drilling Company** Date Finished SoilTesting, Inc. 6/16/20 6/16/20 **Drilling Equipment** Completion Depth Rock Depth Diedrich D50 25 ft 25 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) N/A N/A N/E N/A Drop (in) N/A Casing HammerN/A Drilling Foreman Weight (lbs) N/A Michael Kennedy Sampler 2-inch-diameter split spoon Field Engineer Drop (in) 30 Sampler Hammer Weight (lbs) 140 Safety Kenneth Idem Sample Data MATERIAL SYMBOL Remarks Depth Penetr. resist BL/6in Coring ( (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) Scale 164. 10 20 30 40 Started Drilling at 6/16/2020 8" Dark brown fine-medium SAND, trace silt, trace SS 3 S-1 at 0ft -163.8 4 (dry) [TOPSOIL] 15 Light brown fine SAND, trace silt (dry) USE.GPJ SS S-2 at 2ft Light brown fine SAND, trace silt 6 16 3 3 Auger to 4ft, Easy Augering 2 S-3 at 4ft Light brown fine-coarse SAND, trace silt, trace fine SS 7 ENTERPRISE gravel 9 S-3 (dry) 7 5 12 14 6 \GINTLOGS\151010101 S-4 at 6ft Light brown fine-coarse SAND, trace silt, trace fine 17 gravel (dry) SS 16 S-4 15 19 Auger to 8ft, Easy Augering 21 156.5 8 Light brown fine-medium SAND, some silt, some fine 25 41 SS S-5 (dry) [TILL] 12 9 42 38 10 S-6 at 10ft Light brown fine-coarse SAND, some silt, trace fine 50 gravel SS 33 S-6 (moist) [TILL] 40 31 12 Auger to 15ft, Hard Augering, Heavy Chattering 13 Inferred Cobble from 13ft to 13.5ft **Gray BOULDER** C-1 at 13.5ft 4:51 REC=28"/60" =47% 15 RQD=14.5"/60" 5 16 1:30 17 1:24 18 C-2 at 18.5ft Gray f-c GRAVEL 19 [TILL] 1:32



Log of Boring C-B-BOR-22 Sheet 2 of 2 Project Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum Elev. + 164.5 (NGVD29) 59 Steele Road, Hudson NH Coring (min) Sample Data Remarks Elev Depth N-Value (Blows/ft) Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) (ft) Scale 10 20 30 40 144. 20 REC=4"/60" =7% 0:33 21 RQD=0"/60" C-5 1:01 22 2:00 23 S-7 at 23.5ft Light brown silty fine-coarse SAND, some fine gravel, 36 24 some silt (moist) [TILL] S-7 2 74 NLANGAN.COMDATA/BOS/DATA1/151010101/PROJECT DATA_DISCIPLINE/GEOTECHNICAL/GINTLOGS/151010101_ENTERPRISE_BORINGS_USE.GPJ....7/22/2020 5:31:20 Inferred Top of Bedrock 139.8 50/3 Bottom of boring at 25 6/16/2020 Boring backfilled with auger 26 cuttings Bottom of Boring 28 29 30 31 32 33 34 35 36 37 38 39 43

**C-B-BOR-23** Log of Boring Sheet of 2 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 165 (NGVD29) Date Started **Drilling Company** Date Finished SoilTesting, Inc. 6/27/20 6/27/20 **Drilling Equipment** Completion Depth Rock Depth CME Truck-Mounted Drill Rig 27 ft N/E Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. Completion Water Level (ft.) N/A N/A N/E N/A Casing Hammer N/A Drop (in) N/A Drilling Foreman Weight (lbs) N/A John Knepple Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) 140 30 Automatic Kenneth Idem Sample Data MATERIAL SYMBOL Remarks Depth Recov. (in) Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) Scale 165. 10 20 30 40 0 Started Drilling at 6/27/2020 Dark brown fine SAND, trace silt, trace roots -164.8 S-1 at 0ft (dry) [TOPSOIL] SS 3 12 Light brown fine SAND, trace silt (dry) 3 SS S-2 at 2ft Light brown fine-medium SAND, trace silt 3 3 16 3 3 Auger to 4ft, Easy Augering S-3 at 4ft Light brown fine-medium SAND, trace silt 2 ENTERPRISE (dry) S-3 SS 13 5 3 5 6 \GINTLOGS\151010101 S-4 at 6ft Light brown fine-medium SAND, trace silt 5 (dry) 6 SS S-4 19 9 Auger to 8ft, Easy Augering 8 S-5 at 8ft Light brown fine-medium SAND, some silt, trace fine gravel 10 (dry) [TILL] 36 SS S-5 13 9 33 29 S-6 at 10ft Light brown fine-medium SAND, some silt, some fine 22 gravel SS 39 S-6 (dry) [TILL] 8 44 31 12 Auger to 15ft, Moderate Augering, Medium Chattering 13 14 S-7 at 15ft SS Light brown fine-medium SAND, some silt, some fine 13 20 (moist) [TILL] 16 S-7 18 17 Auger to 20ft, Moderate Augering, Medium Chattering 18 19



Log of Boring C-B-BOR-23 Sheet 2 of 2 Project Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum Elev. + 165 (NGVD29) 59 Steele Road, Hudson NH Sample Data Remarks Elev (ft) Depth Scale N-Value (Blows/ft) Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 10 20 30 40 145.0 20 S-8 at 20ft Light brown fine-medium SAND, some silt, some fine SS 20 25 S-8 (moist) [TILL] 16 21 36 40 22 Auger to 25ft, Moderate Augering, Medium Chattering 23 24 25 S-9 at 25ft Light brown silty fine-coarse SAND, some fine gravel 27 (moist) [TILL] SS 38 22 26 40 56 NLANGAN, COMIDATA\BOS\DATA1/15101011\PROJECT DATA_DISCIPLINE\GEOTECHNICAL\GINTLOGS\151010101_ENTERPRISE_BORINGS_USE. GPJ **2** 138.0 Bottom of boring at Bottom of Boring 6/27/2020 Boring backfilled with auger 28 cuttings. 29 30 31 32 33 34 35 36 37 38 39 43

C-B-BOR-24 Log of Boring Sheet of 2 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 162 (NGVD29) Date Started **Drilling Company** Date Finished SoilTesting, Inc. 6/27/20 6/27/20 **Drilling Equipment** Completion Depth Rock Depth CME Truck-Mounted Drill Rig 30 ft 30 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger 10 Casing Diameter (in) Casing Depth (ft) 24 HR. Completion Water Level (ft.) N/A N/A 15 N/A Casing Hammer N/A Drop (in) N/A Drilling Foreman Weight (lbs) N/A John Knepple Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) 140 30 Automatic Kenneth Idem Sample Data /22/2020 5:31:26 PM MATERIAL SYMBOL Remarks Depth Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) 162. 10 20 30 40 Started Drilling at 6/27/2020 8" Dark brown fine SAND, trace silt, trace roots 3 S-1 at 0ft -161.3 (dry) [TOPSOIL] 3 Light brown fine-medium SAND, some silt 17 3 (dry) USE.GPJ SS S-2 at 2ft Light brown fine-medium SAND, some silt 3 3 3 3 Auger to 4ft, Easy Augering 3 S-3 at 4ft Light brown fine-medium SAND, some silt SS ENTERPRISE (dry) S-3 2 5 2 156.0 6 ANGAN.COM/DATA/BOS/DATA1/151010101/PROJECT DATA/ DISCIPLINE/GEOTECHNICAL/GINTLOGS/151010101 S-4 at 6ft Light brown silty fine SAND 3 SS 16 Light brown fine-medium SAND, trace silt 10 Auger to 8ft, Easy Augering 8 S-5 at 8ft Light brown fine-coarse SAND, trace silt, trace fine gravel 3 (dry) SS S-5 9 10 12 S-6 at 10ft Light brown fine-coarse SAND, trace silt 11 (dry) SS 8 S-6 16 9 12 12 Auger to 15ft, Moderate Augering, Medium Chattering 13 14 S-7 at 15ft Light brown fine-medium SAND, some silt, trace fine gravel SS 12 13 S-7 4 16 17 17 17 Auger to 20ft, Moderate Augering, Medium Chattering 18 19



Log of Boring C-B-BOR-24 Sheet 2 of 2 Project Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum Elev. + 162 (NGVD29) 59 Steele Road, Hudson NH Sample Data Remarks Elev (ft) Depth N-Value (Blows/ft) Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Scale 10 20 30 40 142.0 S-8 S-8 at 20ft Light brown silty fine-medium SAND, trace fine gravel SS (wet) [TILL] 50/3 Auger to 25ft, Moderate 21 Augering, Medium Chattering 22 23 24 25 S-9 at 25ft Light brown silty fine-medium SAND, trace fine gravel SS 65 6 (wet) [TILL] Auger to 30ft, Moderate 26 Augering, Medium Chattering 27 28 29 VILANGAN.COMIDATA\BOS\DATA1V51010101VPROJECT DATAL_DISCIPLINE\GEOTECHNICAL\GINTLOGS\151010101_ENTERPRISE Light brown silty fine-medium SAND, trace fine gravel (wet) [TILL] S-10 at 30ft Inferred Top of Bedrock S-10SS 3 50/3 ·Bottom of boring at 6/27/2020 31 Boring backfilled with auger Bottom of Boring cuttings 32 33 34 35 36 37 38 39 43

Log of Boring C-B-BOR-25 Sheet of 2 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 160.5 (NGVD29) Drilling Company Date Started Date Finished Seaboard Drilling, Inc. 6/15/20 6/15/20 **Drilling Equipment** Completion Depth Rock Depth Diedrich D50 27 ft 27 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. Completion Water Level (ft.) N/A N/A 20 N/A Drop (in) N/A Casing HammerN/A Drilling Foreman Weight (lbs) N/A Jeff Nitsch Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) 140 30 Automatic Taylor Sisti Sample Data /22/2020 5:31:31 PM MATERIAL SYMBOL Remarks Depth Recov. (in) Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) 160. 10 20 30 40 Started Drilling on 6/15/2020 12" Light brown to orangish fine-medium SAND, some silt, 2 S-1 at 0ft 2 (moist) [TOPSOIL] 10 3 Light brown to orangish fine-medium SAND, trace silt, trace f-c gravel 3 (moist) S-2 at 2ft 3 Light brown to orangish fine-medium SAND, trace silt, trace SS 3 fine gravel 3 (dry) 3 Auger to 4ft S-3 at 4ft Light brown fine-coarse SAND, some f-c gravel, trace silt ENTERPRISE (dry) 7 S-3 SS 10 5 8 10 6 OGS\151010101 S-4 at 6ft Light brown fine-coarse SAND, some f-c gravel, trace silt, 10 some weathered rock fragments 16 (dry) 15 7 SS 58 152.8 Auger to 8ft 41 White to gray gravelly fine-coarse SAND, trace silt S-5 at 8ft 34 Brown fine-medium SAND, some silt, trace weathered rock 24 15 fragments SS 19 (dry) [TILL] Brown fine-medium SAND, some silt 17 (dry) [TILL] SS S-6 at 10ft 29 Brown fine-medium SAND, some silt S-6 6 23 (dry) [TILL] 50/2 50/2 12 Auger to 15ft, Easy Augering 13 Auger to 15ft, hard drilling 14 S-7 at 15ft SS Brown fine-coarse SAND, some f-c gravel, trace silt, trace weathered gravel fragments 39 (dry) [TILL] S-7 17 42 75 17 Auger to 20ft, Moderate Augering, Medium Chattering 18 ·Auger to 20ft, moderate to hard drilling 19



Log of Boring C-B-BOR-25 Sheet 2 of 2 Project Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum Elev. + 160.5 (NGVD29) 59 Steele Road, Hudson NH Sample Data Remarks Elev Depth N-Value (Blows/ft) Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) (ft) Scale 10 20 30 40 140. 20 S-8 at 20ft Brown fine-medium SAND, some silt, trace f-c gravel, trace SS weathered rock fragments 13 (wet) [TILL] 21 37 24 23 22 23 24 25 S-9 at 25ft Light brown silty fine SAND, some f-m gravel 55 6 (wet) [TILL] 50/3 26 Light brown silty fine SAND, some f-m gravel (wet) [TILL] Inferred Top of Bedrock Auger Refusal at 26.5ft. S-10 -10SS 3 100/5 at 26.5ft NLANGAN, COMIDATANBOS/DATA1/15101011/PROJECT DATAI, DISCIPLINE/GEOTECHNICAL/GINTLOGS/151010101_ENTERPRISE_BORINGS_USE. Bottom of boring on Bottom of Boring 6/16/2020 28 Boring backfilled with auger cuttings 29 30 31 32 33 34 35 36 37 38 39 43

C-B-BOR-26 Log of Boring Sheet of 1 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum Elev. + 140 (NGVD29) 59 Steele Road, Hudson NH Date Started **Drilling Company** Date Finished 6/15/20 6/15/20 SoilTesting, Inc. **Drilling Equipment** Completion Depth Rock Depth **DIEDRICH D-50** 15.5 ft 15.5 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) N/A N/A 9 N/A Casing Hammer N/A Drop (in) N/A Drilling Foreman Weight (lbs) N/A Michael Kennedy Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) 140 30 Safety Kenneth Idem Sample Data MATERIAL SYMBOL Remarks Depth Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) Scale 140. 10 20 30 40 Started Drilling on 6/15/2020 8" Dark brown fine SAND, trace silt, trace root 3 S-1 at 0ft (dry) [TOPSOIL] SS 4 S-1 ω 8 10 138. S-2 at 2ft Brown fine-coarse SAND, some silt, trace fine gravel 15 SS 13 S-2 3 15 17 136. Auger to 4ft, Easy Augering. Gray fine-coarse SAND, some silt, trace fine gravel 20 S-3 at 4ft (dry) [TILL] 21 S-3 SS 16 5 32 21 6 S-4 at 6ft Brown fine to coarse SAND, some silt, trace fine gravel 23 (moist) [TILL] 20 SS S-4 15 20 8 Auger to 8ft, Moderate Brown fine to coarse SAND, some silt, trace f gravel 17 Augering, Light Chattering. (wet) [TILL] 20 SS S-5 at 8ft 4 9 23 19 10 S-6 at 10ft Brown fine to coarse SAND, some silt, trace fine gravel 17 (wet) [TILL] SS 17 S-6 12 35 18 19 12 Auger to 15ft, Moderate Augering, Light Chattering 13 14 \\LANGAN.COM\DATA\BOS\DATA1\151010101\P No Recovery 15 Inferred Top of Bedrock 50/0 S-7 at 15ft 124.5 Auger Refusal at 15.5ft 16 Bottom of boring on Bottom of Boring 6/15/2020 Boring backfilled with auger 17 cuttings 18 19



C-B-BOR-27 Log of Boring Sheet of 2 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum Elev. + 144.5 (NGVD29) 59 Steele Road, Hudson NH Date Started **Drilling Company** Date Finished SoilTesting, Inc. 6/15/20 6/15/20 **Drilling Equipment** Completion Depth Rock Depth **DIEDRICH D-50** 24.5 ft 24.5 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. Completion Water Level (ft.) N/A N/A 20 N/A Drop (in) N/A Casing HammerN/A Drilling Foreman Weight (lbs) N/A Michael Kennedy Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) 140 30 Safety Kenneth Idem Sample Data /22/2020 5:31:37 PM MATERIAL SYMBOL Remarks Depth Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) 144. 10 20 30 40 Started Drilling on 6/15/2020 8" Brown fine SAND, trace silt, trace roots 2 S-1 at 0ft (dry) [TOPSOIL] 3 8 Orangy brown fine-medium SAND, trace silt 3 3 USE.GPJ S-2 at 2ft Brown fine-medium SAND, some silt, trace fine gravel 5 15 3 12 12 Auger to 4ft, Easy Augering . Brown fine-medium SAND, some fine gravel, trace silt 19 ENTERPRISE S-3 at 4ft (dry) 23 S-3 SS 16 5 43 52 138. 6 S-4 at 6ft Brown fine-medium SAND, some silt, trace fine gravel 32 (moist) [TILL] 27 SS S-4 16 27 27 8 Auger to 8ft, Hard Augering, Brown fine-medium SAND, some silt, trace fine gravel 24 Medium Chattering . S-5 at (moist) [TILL] 29 S-5 SS 18 9 31 27 S-6 at 10ft Brown fine-medium SAND, some silt, trace fine gravel 34 (moist) [TILL] SS 33 S-6 16 32 24 12 Auger to 15ft, Moderate Augering, Medium Chattering 13 S-7 at 15ft SS Brown fine-coarse SAND, some silt, trace fine gravel 21 (moist) [TILL] 27 16 S-7 53 48 17 Auger to 20ft, Moderate Augering, Medium Chattering 18 19



Log of Boring C-B-BOR-27 Sheet 2 of 2 Project Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 144.5 (NGVD29) Sample Data Remarks Elev (ft) Depth Scale N-Value (Blows/ft) Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 10 20 30 40 124. 20 S-8 at 20ft Brown fine-medium SAND, some silt SS (wet) [TILL] 8-8 4 90 21 100/5 100/5 Auger to 25ft, Hard Augering, Medium 22 Chattering 23 No Recovery 24 Inferred Top of Bedrock VLANGAN.COMDATA/BOSIDATA1/151010101/PPROJECT DATA_DISCIPLINE/GEOTECHNICAL/GINTLOGS/151010101_ENTERPRISE_BORINGS_USE.GPJ... 7/22/2020 5:31:37 **2**+120.0 S-9 at 24.5ft 25 Auger and Spoon refusal at Bottom of Boring 24.5ft. Bottom of boring on 26 6/15/2020. Boring backfilled with auger cuttings 28 29 30 31 32 33 34 35 36 37 38 39 40 43

Log of Boring **C-B-BOR-28** Sheet of 1 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum Elev. + 151 (NGVD29) 59 Steele Road, Hudson NH Date Started **Drilling Company** Date Finished Seaboard Drilling, Inc. 6/15/20 6/15/20 **Drilling Equipment** Completion Depth Rock Depth Diedrich D50 17 ft 17 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. Completion Water Level (ft.) N/A N/A N/E N/A Drop (in) N/A Casing HammerN/A Drilling Foreman Weight (lbs) N/A Jeff Nitsch Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) 140 30 Automatic Taylor Sisti Sample Data MATERIAL SYMBOL Remarks Depth (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) 151. 10 20 30 40 Started Drilling at 6/15/2020 8" Brown to grayish fine-medium SAND, some silt, some 3 S-1 at 0ft 150.3 3 (dry) [TOPSOIL] 16 Brown fine-medium SAND, some silt, trace fine gravel, S-2 at 2ft 3 Brown fine-coarse SAND, trace silt, trace fine gravel SS 3 (dry) 3 ω Auger to 4ft S-3 at 4ft Brown fine-medium SAND, some f-c gravel, trace silt 8 (dry) 8 S-3 SS 5 က 9 24 145.0 S-4 at 6ft Brown fine-medium SAND, some f-c gravel, trace silt  $\parallel$ s $\parallel$ S-4 18  $^{\circ}$ (dry) [TILL] 60/3 7 Auger to 8ft, moderate to hard drilling 8 S-5 at 8ft Brown fine-medium SAND, some f-c gravel, trace silt, trace 21 weathered gravel fragments 22 SS S-5 19 (dry) [TILL] 9 25 19 Brown gravelly fine-medium SAND, trace silt, trace S-6 at 10ft 28 weathered gravel fragments 24 SS S-6 (dry) [TILL] 20 30 27 12 13 Auger to 13ft, moderate drilling S-7 at 15ft Brown gravelly fine-medium SAND, trace silt, trace SS 8 weathered gravel fragments Ś 11 (dry) [TILL] 16 \\LANGAN.COM\DATA\BOS\DATA1 Auger to 17ft, hard drilling 100/4 Gray fine-medium SAND, trace fine gravel, trace silt 100/4 (dry) [TILL] Inferred Top of Bedrock +133.9 S-8 SS S-8 at 17ft, auger and split 50/1 spoon refusal at 17ft Bottom of Boring Bottom of boring on 18 6/15/2020 Boring backfilled with auger cuttings 19

**C-B-BOR-29** Log of Boring Sheet of 1 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum Elev. + 138 (NGVD29) 59 Steele Road, Hudson NH Date Started **Drilling Company** Date Finished 6/15/20 6/15/20 SoilTesting, Inc. **Drilling Equipment** Completion Depth Rock Depth **DIEDRICH D-50** 14.5 ft 14.5 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) N/A N/A 11 N/A Drop (in) N/A Casing Hammer N/A Drilling Foreman Weight (lbs) N/A Michael Kennedy Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) 140 30 Safety Kenneth Idem Sample Data MATERIAL SYMBOL Remarks Depth Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) Scale 138. 10 20 30 40 Started Drilling on 12" Brown fine SAND, trace silt, trace fine gravel, trace 2 6/15/2020. SS 2 (dry) [TOPSOIL] S-1 at 0ft <u>۲</u> 2 136.0 S-2 at 2ft Brown fine-medium SAND, trace silt, trace fine gravel SS 8 S-2 3  $\sim$ 5 5 Auger to 4ft, Easy Augering . Brown fine-coarse SAND, trace silt, trace fine gravel 8 ENTERPRISE S-3 at 4ft (dry) 6 S-3 SS 16 5 10 27 132.0 6 S-4 at 6ft Brown to gray fine to coarse SAND, some silt, trace fine 39 gravel 29 SS (moist) [TILL] S-4 12 24 28 8 Auger to 18ft, Moderate Brown to gray fine to coarse SAND, some silt, trace fine 21 Augering, Medium gravel 22 SS Chattering . S-5 at 8ft S-5 (moist) [TILL] 4 9 21 17 10 S-6 at 10ft Brown to gray fine to coarse SAND, some silt, some fine 41 gravel 37 SS S-6 (wet) [TILL] 16 11 39 49 12 Auger to 12ft, Hard Augering, Medium Chattering 13 No Recovery Inferred Top of Bedrock S-7 at 14.5ft. Auger and 0 50/0 (LANGAN.COM/DATA/BOS/DATA1/15101010 123.0 Spoon refusal at 14.5ft 15 Bottom of boring at Bottom of Boring 6/15/2020. 16 Boring backfilled with auger cuttings 17 18 19

C-R-BOR-01 Log of Boring Sheet of 1 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 129 (NGVD29) **Drilling Company** Date Started Date Finished **Atlantic Testing Laboraties** 6/4/20 6/4/20 **Drilling Equipment** Completion Depth Rock Depth CME75 Track Rig 16 ft N/E Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3-7/8in Tricone Roller Bit Casing Diameter (in) 24 HR. Casing Depth (ft) First Completion Water Level (ft.) 4in 8 5.8 N/A Casing HammerAutomatic Weight (lbs) Drop (in) Drilling Foreman 140 **Brad Perry** Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) Automatic 140 30 Olivia Chasse Sample Data MATERIAL SYMBOL Remarks Depth Recov. (in) Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) Scale 129. 10 20 30 40 0 Started Drilling at 6/4/2020 4" Dark brown fine-medium SAND, trace silt, some roots SS 128. S-1 at 0ft (dry) [TOPSOIL] 2 Light brown fine-medium SAND, trace silt 20 3 (dry) 3 SS S-2 at 2ft Light brown fine SAND, trace silt 2 3 8 BORINGS 3 3 4 Drive casing to 4.0ft Light brown fine SAND, some silt SS 2 ENTERPRISE S-3 at 4ft (dry) S-3 17 5 6 DISCIPLINE/GEOTECHNICAL/GINTLOGS/151010101 S-4 at 6ft SS Light brown fine SAND, some silt 3 (dry) 5 S-4 22 3 8 Drill to 8ft, easy drilling Light brown fine SAND, some silt 2 S-5 at 8ft (wet) 8 SS S-5 15 9 10 8 S-6 at 10ft Light brown fine-coarse SAND, some silt, some fine gravel 12 (wet) SS 15 S-6 20 21 21 12 \\LANGAN.COM\DATA\BOS\DATA1\151010101\\PROJECT DATA\ 13 Drill to 14ft, easy drilling Gray fine-medium SAND, some silt, some fine gravel 16 S-7 at 14ft (wet) [TILL] 25 SS S-7 ω 15 40 41 -113.0 16 Bottom of boring at 6/4/2020 Bottom of Boring Boring backfilled with soil cuttings. 17 18 19

C-R-BOR-02 Log of Boring Sheet of 1 Project Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 132 (NGVD29) Date Started Date Finished **Drilling Company** 6/14/20 6/14/20 SoilTesting, Inc. **Drilling Equipment** Completion Depth Rock Depth CME Truck-Mounted Drill Rig 17 ft N/E Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) V N/A N/A N/A Casing Hammer N/A Drop (in) N/A Weight (lbs) Drilling Foreman N/A Sam Deangelis Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) 140 30 Safety Jack Berritt Sample Data MATERIAL SYMBOL Remarks Depth Penetr. resist BL/6in Recov. (in) (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) Scale 132. 10 20 30 40 Started Drilling on 6/14/2020 Brown fine SAND, some silt 3 S-1 at 0ft (dry) SS 2 S-1 10 USE.GPJ 2 SS S-2 at 2ft Light brown silty fine SAND (moist) 15 BORINGS 3 Auger to 4 ft  $\nabla$ SS S-3 at 4ft Light brown silty fine SAND 12 ENTERPRISE (wet) S-3 15 5 17 10 8 6 DISCIPLINE/GEOTECHNICAL/GINTLOGS/151010101 S-4 at 6ft SS Light brown silty fine SAND 4 (wet) 6 S-4 24 7 Auger to 8 ft 5 8 S-5 at 8ft Light brown silty fine SAND (wet) SS S-5 16 9 6 7 10 S-6 at 10ft SS Light brown silty fine SAND 6 (wet) 8 S-6 20 9 11 12 Auger to 15 ft "ILANGAN.COMIDATA/BOS/DATA1/151010101/PROJECT DATA 13 14 S-7 at 15ft SS Light brown fine-coarse SAND, some silt, trace fine gravel 3 (wet) 5 S-7 8 16 12• 8 17 Bottom of Boring Bottom of boring on 6/14/2020 Boring backfilled with auger 18 cuttings 19



C-R-BOR-03 Log of Boring Sheet of 2 Project Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 129.5 (NGVD29) Drilling Company Date Started Date Finished 6/14/20 6/14/20 SoilTesting, Inc. **Drilling Equipment** Completion Depth Rock Depth Geoprobe 7822 DT 22 ft N/E Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger 8 Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) V N/A N/A 6 N/A Casing Hammer N/A Drop (in) N/A Weight (lbs) Drilling Foreman N/A Sam Deangelis Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) Automatic 140 30 Jack Berritt Sample Data MATERIAL SYMBOL 7/22/2020 5:31:50 PM Remarks Depth Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) Scale 129. 10 20 30 40 Started Drilling on 6/14/2020 Brown fine SAND, some silt 3 S-1 at 0ft (dry) SS <u>۲</u> 22 5 USE.GPJ 2 SS S-2 at 2ft Brownish black fine SAND, some silt, trace organics 6 BORINGS 20 3 Auger to 4 ft 5 5 4 S-3 at 4ft Light brown silty fine SAND, some silt, trace organics SS ENTERPRISE (moist) 3 S-3 5 20 3  $\nabla$ 6 DISCIPLINE/GEOTECHNICAL/GINTLOGS/151010101 S-4 at 6ft SS Light brown fine SAND, some silt, trace organics (wet) S-4 4 7 12 Auger to 8 ft 6 8 SS S-5 at 8ft Light brown fine SAND, some silt, trace organics 5 (wet) S-5 10 9 5 10 S-6 at 10ft SS Brown silty fine SAND 2 (wet) 4 S-6 4 3 4 12 Auger to 15 ft _ANGAN.COM/DATA\BOS\DATA1\151010101\PROJECT DATA\ 13 14 S-7 at 15ft SS Brown silty fine-medium SAND 5 (wet) 6 16 S-7 16 5 17 Auger to 20 ft 18 19



Log of Boring C-R-BOR-03 Sheet 2 of 2 Project Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 129.5 (NGVD29) Sample Data Remarks Elev (ft) Depth Scale N-Value (Blows/ft) Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 10 20 30 40 109.5 20 S-8 at 20ft Brown fine-coarse SAND, trace silt, trace fine gravel SS (wet) S-8 NLANGAN.COMIDATA/BOSIDATA1/151010101/PROJECT DATA_DISCIPLINE/GEOTECHNICAL/GINTLOGS/151010101_ENTERPRISE_BORINGS_USE.GPJ...7/22/2020 5:31:50 PM ... Report: Log - LANGAN 21 4 107. 22 Bottom of boring on Bottom of Boring 6/14/2020 Boring backfilled with auger 23 cuttings 24 25 26 28 29 30 31 32 33 34 35 36 37 38 39 40 43

C-R-BOR-04 Log of Boring Sheet of 2 Project Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 128.5 (NGVD29) **Drilling Company** Date Started Date Finished SoilTesting, Inc. 6/17/20 6/17/20 **Drilling Equipment** Completion Depth Rock Depth ATV Mounted CME 550X 22 ft N/E Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. Completion Water Level (ft.) N/A N/A 6 N/A Casing Hammer N/A Drop (in) N/A Drilling Foreman Weight (lbs) N/A Sam DeAngelis Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) 140 30 Automatic Justin Hall Sample Data MATERIAL SYMBOL Remarks Depth Penetr. resist BL/6in Recov. (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) 128. 10 20 30 40 Started Drilling on 6/17/2020 18" Dark brown fine-coarse SAND, some silt, trace roots S-1 at 0ft (moist)[TOPSOIL] SS 2 20 Light grayish brown fine-medium SAND, some silt, trace 3 roots S-2 at 2ft (moist) [FILL] SS Light grayish brown fine-medium SAND, some silt 5 13 3 (moist) [FILL] 3 Light brown to black organic SILT, trace fine sand S-3 at 4ft 5 ENTERPRISE Light brown to black organic SILT, trace fine sand 20 5 (moist) 6 Light brown silty fine-medium SAND 6 DISCIPLINE/GEOTECHNICAL\GINTLOGS\151010101 S-4 at 6ft Light brown silty fine-medium SAND (wet) SS S-4 8 7 17 8 8 S-5 at 8ft Light brown fine-medium SAND, some silt 3 (wet) SS 4 9 3 S-6 at 10ft Light brown silty fine-medium SAND 6 (wet) SS 8 S-6 15 9 10 12 |LANGAN.COM|DATA|BOS|DATA1/151010101/|PROJECT DATA| 13 14 S-7 at 15ft SS Light brown fine-medium SAND, trace silt 2 (wet) 5 8 S-7 8 17 18 19



Log of Boring C-R-BOR-04 Sheet 2 of 2 Project Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 128.5 (NGVD29) Sample Data Remarks Elev (ft) Depth Scale N-Value (Blows/ft) Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 10 20 30 40 108.5 20 S-8 at 20ft Light brown fine-medium SAND, trace silt SS (wet) 5 S-8 20 NLANGAN.COMIDATA/BOSIDATA1/151010101/PROJECT DATA_DISCIPLINE/GEOTECHNICAL/GINTLOGS/151010101_ENTERPRISE_BORINGS_USE.GPJ...7/22/2020 5:31:54 PM ... Report: Log - LANGAN 21 6 8 106.5 22 Bottom of boring on Bottom of Boring 6/17/2020 Boring backfilled with auger 23 cuttings 24 25 26 28 29 30 31 32 33 34 35 36 37 38 39 40 43

C-R-BOR-06 Log of Boring Sheet of 1 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 128 (NGVD29) Drilling Company Date Started Date Finished Seaboard Drilling, Inc 6/17/20 6/17/20 **Drilling Equipment** Completion Depth Rock Depth Diedrich D50 17 ft N/E Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) N/A N/A 4.5 N/A Casing Hammer N/A Drop (in) N/A Drilling Foreman Weight (lbs) N/A Jeff Nitsch Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) 140 30 Safety Reid Balkind Sample Data /22/2020 5:31:57 PM MATERIAL SYMBOL Remarks Depth Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) 128. 10 20 30 40 4" Dark brown fine SAND, trace silt, trace roots (dry) [TOPSOIL] 0 Started Drilling at 6/17/2020 127.7 2 S-1 at 0ft SS 2 16 Brown fine-medium SAND, some silt 3 3 2 SS S-2 at 2ft Brown fine-medium SAND, some silt 3 (dry) 19 BORINGS 3 S-3 at 4ft Brown silty fine-medium SAND SS 4 ENTERPRISE  $\nabla$ (wet) S-3 8 5 Auger to 4ft 5 6 6 DISCIPLINE/GEOTECHNICAL/GINTLOGS/151010101 S-4 at 6ft Brown silty fine-medium SAND 6 (wet) SS 24 11 13 8 S-5 at 8ft Brown fine-coarse SAND, some silt 10 (wet) 14 SS 16 9 Auger to 8ft 12 12 S-6 at 10ft Brown fine-coarse SAND, trace silt, trace fine gravel 13 (wet) SS 13 S-6 9 16 17 12 S-7 at 12ft \\LANGAN.COM\DATA\BOS\DATA1\151010101\\PROJECT DATA\ Auger to 15ft. Easy drilling 13 14 Grayish brown fine-coarse SAND, some fine gravel, some SS 36 silt, trace weathered gravel 34 (wet) [TILL] S-7 20 16 50 52 17 Bottom of boring at Bottom of Boring 6/17/2020 Boring backfilled with auger 18 cuttings. 19

C-R-BOR-06A Log of Boring Sheet of 1 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 136.5 (NGVD29) Date Started **Drilling Company** Date Finished SoilTesting, Inc. 6/17/20 6/24/20 **Drilling Equipment** Completion Depth Rock Depth CME Truck-Mounted Drill Rig 20 ft 20.4 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) N/A N/A 8 N/A Casing Hammer N/A Drop (in) N/A Weight (lbs) Drilling Foreman N/A Mike Kennedy Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) 140 30 Safety Olivia Chasse Sample Data MATERIAL SYMBOL Remarks Depth Number Recov. (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) Scale 136 10 20 30 40 Started Drilling on 6/17/2020 24" Brown fine-medium SAND, some silt, some roots (dry)[TOPSOIL] S-1 at 0.5ft SS 1 S-1 5 134. 2 S-2 at 2ft Brown fine-medium SAND, some silt, trace fine gravel 6 (dry) SS 13 S-2 15 3 14 12 Brown fine-medium SAND, some silt, some fine gravel Auger to 4ft, easy to SS moderate drilling (dry)[TILL] 10 S-3 12 5 S-3 at 4ft 14 11 6 S-4 at 6ft SS Brown fine-medium SAND, some silt, some fine gravel 15 (dry)[TILL] 9 S-4 14 30  $\nabla$ 8 Auger to 8ft, easy drilling Brown fine-medium SAND, some silt, some fine gravel 39 S-5 at 8ft (wet)[TILL] SS 34 S-5 q က 16 15 10 S-6 at 10ft Brown fine-medium SAND, some silt, some fine gravel 16 (wet)[TILL] 11 S-6 SS 2 10 12 12 13 15 Auger to 15ft, easy drilling Brown fine-medium SAND, some silt, some fine gravel SS S-7 at 15ft (wet)[TILL] 12 S-7 16 11 13 17 18 19 Brown fine GRAVEL, some silt, some f-m sand (wet) [WEATHERED ROCK] 20 50/2 S-8 at 20ft \\LANGAN.COM\DATA\ S-8 SS 2 2+116.° 50/2 Bottom of boring on 21 6/24/2020. Auger refusal at Bottom of Boring 20.4ft. Boring backfilled with auger 22 cuttings

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C-S-BOR-01 Log of Boring Sheet of 1 Project Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 132 (NGVD29) Drilling Company Date Started Date Finished SoilTesting, Inc. 6/14/20 6/14/20 **Drilling Equipment** Completion Depth Rock Depth Geoprobe 7822 DT 17 ft N/E Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) N/A N/A 6 N/A Casing Hammer N/A Weight (lbs) Drop (in) Drilling Foreman 30 140 Sam Deangelis Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) Automatic 140 30 Jack Berritt Sample Data MATERIAL SYMBOL Remarks Depth Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) Scale 132. 10 20 30 40 Started Drilling at 6/14/2020 Brown fine SAND, some silt 2 S-1 at 0ft (dry) SS 2 S-1 12 3 3 USE.GPJ 2 S-2 at 2ft Brown fine SAND, some silt SS (dry) 8 3 Auger to 4 ft 4 S-3 at 4ft Brown fine SAND, some silt SS 4 ENTERPRISE (moist) 5 S-3 15 5  $\nabla$ 6 DISCIPLINE/GEOTECHNICAL/GINTLOGS/151010101 S-4 at 6ft Brown fine SAND, some silt 6 SS (wet) 6 S-4 7 Auger to 8 ft 5 8 S-5 at 8ft Brown fine-coarse SAND, trace silt 3 (wet) SS 9 8 10 S-6 at 10ft Brown fine-coarse SAND, trace silt 5 (wet) SS 7 S-6 20 6 10 12 Auger to 15 ft \\LANGAN.COM\DATA\BOS\DATA1\151010101\\PROJECT DATA\ 13 14 S-7 at 15ft SS Brown fine-coarse SAND, trace silt, trace fine gravel 14 (wet) 19 S-7 16 16 40 17 Bottom of boring at 6/14/2020 Bottom of Boring Boring backfilled with auger 18 cuttings. 19

C-S-BOR-02 Log of Boring Sheet of 1 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 132 (NGVD29) Date Started Date Finished **Drilling Company** 6/13/20 6/13/20 SoilTesting, Inc. **Drilling Equipment** Completion Depth Rock Depth CME Truck-Mounted Drill Rig N/E 17 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) N/A N/A 8 N/A Casing Hammer N/A Drop (in) N/A Weight (lbs) Drilling Foreman N/A Sam Deangelis Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) 140 30 Safety Jack Berritt Sample Data MATERIAL SYMBOL Remarks Depth Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) Scale 132. 10 20 30 40 Started Drilling on Grayish brown fine SAND, some silt 6/13/2020. (dry) SS 5 S-1 at 0ft <u>۲</u> 4 USE.GPJ 2 SS S-2 at 2ft Grayish brown silty fine SAND (moist) 15 3 Auger to 4 ft S-3 at 4ft Grayish brown silty fine SAND SS 4 ENTERPRISE (moist) 5 S-3 4 5 6 6 6 DISCIPLINE/GEOTECHNICAL/GINTLOGS/151010101 S-4 at 6ft Grayish brown silty fine SAND 6 SS (moist) S-4 20 Auger to 8 ft 8 SS SS S-5 at 8ft Grayish brown fine SAND, some silt (wet) S-5 15 9 6 6 10 S-6 at 10ft Grayish brown fine-medium SAND, trace silt 5 SS (wet) 7 S-6 20 10 12 12 Auger to 15 ft \\LANGAN.COM\DATA\BOS\DATA1\151010101\\PROJECT DATA\ 13 14 S-7 at 15ft Grayish brown fine SAND, trace silt, trace fine gravel SS 12 (wet) [TILL] 17 S-7 16 16 30 34 17 Bottom of Boring Bottom of boring on 6/13/2020 Boring backfilled with auger 18 cuttings. 19

C-S-BOR-03 Log of Boring Sheet of 1 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 130 (NGVD29) Date Started **Drilling Company** Date Finished SoilTesting, Inc. 6/17/20 6/17/20 **Drilling Equipment** Completion Depth Rock Depth ATV Mounted CME 550X N/E 17 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) N/A N/A N/A Drop (in) N/A Casing HammerN/A Drilling Foreman Weight (lbs) N/A Sam DeAngelis Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) 140 30 Automatic Justin Hall Sample Data MATERIAL SYMBOL Remarks Depth Penetr. resist BL/6in Recov. (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description /22/2020 5:32:08 (ft) Scale 130. 10 20 30 40 Started Drilling on 8" Dark brown fine-coarse SAND, some silt, trace fine 2 129. 6/17/2020. gravel, trace root 3 (moist) [TOPSOIL] S-1 at 0ft 16 Light brown fine-medium SAND, some silt 3 USE.GPJ 2 SS S-2 at 2ft Light brown silty fine-medium SAND, some silt 3 3 8 3 3  $\nabla$ S-3 at 4ft Light brown silty fine-medium SAND SS 4 ENTERPRISE (wet) 5 S-3 16 5 5 6 6 INE/GEOTECHNICAL/GINTLOGS/151010101 S-4 at 6ft Light brown fine-medium SAND, some silt 5 (wet) 13 SS 15 Light brown fine-coarse SAND, trace silt 12 8 S-5 at 8ft 5 Light brown fine-medium SAND, trace silt (wet) SS 12 9 8 9 10 S-6 at 10ft Light brown fine-medium SAND, trace silt SS 9 (wet) 21 119 16 Light grayish brown fine-coarse SAND, some silt, trace fine 24 gravel 27 (wet) [TILL] 12 13 14 S-7 at 15ft SS Light grayish brown fine-coarse SAND, some silt, trace fine 21 19 (wet) [TILL] \\LANGAN.COM\DATA\BOS\DATA\\ S-7 12 16 20 12 17 Bottom of Boring Bottom of boring on 6/17/2020 Boring backfilled with auger 18 cuttings 19



Log of Boring C-S-BOR-04(OW) Sheet of 1 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 130.5 (NGVD29) Date Started **Drilling Company** Date Finished SoilTesting, Inc. 6/18/20 6/18/20 **Drilling Equipment** Completion Depth Rock Depth ATV Mounted CME 550X 14 ft N/E Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) N/A N/A 7.5 6.9 Casing Hammer N/A Drop (in) N/A Drilling Foreman Weight (lbs) N/A Sam DeAngelis Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) 140 30 Automatic Justin Hall Sample Data /22/2020 5:32:11 PM MATERIAL SYMBOL Remarks Depth Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) 130. 10 20 30 40 Started Drilling on 6/18/2020 8" Dark brown fine SAND, some silt, trace roots 3 S-1A at 0ft 129.8 (moist) [TOPSOIL] 2 Orange brown fine SAND, some silt, trace roots 17 2 (moist) 2 USE.GPJ S-2 at 2ft Light brown fine-medium SAND, some silt 3 SS 4 16 3 3 S-3 at 4ft Light brown fine-medium SAND, some silt SS 3 ENTERPRISE (moist) 3 S-3 16 5 3 6 DISCIPLINE/GEOTECHNICAL\GINTLOGS\151010101 S-4 at 6ft Light brown fine-medium SAND, some silt 6 (moist) 4 SS Light brown fine-coarse SAND, some silt 8 S-5 at 8ft 8 Light brown fine-medium SAND, some silt 12 (wet) SS 18 25 13 19 S-6 at 10ft Light brown fine-medium SAND, some silt 4 (wet) SS 9 S-6 4 18 12 12 SS S-7 at 12ft Light brown fine-coarse SAND, trace silt 3 \\LANGAN.COM\DATA\BOS\DATA1\151010101\\PROJECT DATA\ 8 S-7 17 13 10 -116.5 Bottom of boring on Bottom of Boring 6/18/2020 Observation well installed. 15 Refer to well construction log. 16 17 18 19

C-S-BOR-05 Log of Boring Sheet of 1 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 133 (NGVD29) Date Started **Drilling Company** Date Finished Atlantic Testing Laboraties 6/14/20 6/14/20 **Drilling Equipment** Completion Depth Rock Depth Geoprobe 7720 DT 16 ft N/E Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3-7/8in Tricone Roller Bit Casing Diameter (in) Casing Depth (ft) 24 HR. Completion Water Level (ft.) 4in 4ft N/E 8.5 N/A Casing HammerAutomatic Drilling Foreman Weight (lbs) Drop (in) 140 Scott McGregor Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) Automatic 140 30 Olivia Chasse Sample Data MATERIAL SYMBOL Remarks Depth Recov. (in)
Penetr. resist (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) Scale 133. 10 20 30 40 Started Drilling on 6/14/2020 6" Dark brown fine-medium SAND, some silt, some roots 132. (dry)[TOPSOIL] S-1 at 0.5ft Light brown fine SAND, some silt, trace roots 12 (dry) SS S-2 at 2ft Light brown fine SAND, some silt 2 8 3 6 SS Drive casing to 4.0ft. S-3 at Light brown fine-medium SAND, some silt, trace fine gravel 10 (dry) 9 S-3 5 12 8 8 127.0 6 S-4 at 6ft. Some Brown fine-medium SAND, some silt, some gravel 32 (wet)[TILL] decomposed rock SS S-4 31 42 8 Open hole to 8ft Brown fine-medium SAND, some silt, some gravel 9 S-5 at 8ft (wet)[TILL] 16 SS S-5 9 ω 33 • 17 20 S-6 at 10ft Brown fine-medium SAND, some silt, some gravel 39 (wet)[TILL] SS 50 S-6 12 100 50 40 12 13 Open hole to 14ft. S-7 at 14ft Brown fine-coarse SAND, some silt, some gravel (wet)[TILL] (LANGAN.COM/DATA/BOS/DATA1/15101010 SS S-7 13 44 51 **117.**0 Bottom of boring on Bottom of Boring 6/14/2020 Boring backfilled with soil 17 cuttings. 18 19



C-S-BOR-06 Log of Boring Sheet of 2 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 130.5 (NGVD29) **Drilling Company** Date Started Date Finished Atlantic Testing Laboraties 6/13/20 6/13/20 **Drilling Equipment** Completion Depth Rock Depth Geoprobe 7822 DT 21 ft N/E Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3-7/8in Tricone Roller Bit Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) 4in 4ft N/E 3.5 N/A Casing HammerAutomatic Drilling Foreman Weight (lbs) Drop (in) 30 140 Scott McGregor Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) Automatic 140 30 Olivia Chasse Sample Data MATERIAL SYMBOL Remarks Depth Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) Scale 130. 10 20 30 40 Started Drilling on 6/13/2020 6" Brown fine-medium SAND, some silt, some roots 3 130.0 (dry) [TOPSOIL] S-1 at 0.5ft SS 2 <u>۲</u> Light brown fine-medium SAND, some silt 19 3 (dry) USE.GPJ 2 S-2 at 2ft SS Light brown fine-medium SAND, some silt 3 3 4 3 10 10 4 Drive casing to 4.0ft. Light brown fine-medium SAND, some silt SS 13 ENTERPRISE S-3 at 4ft (wet) 5 S-3 9 5 4 5 6 DISCIPLINE/GEOTECHNICAL\GINTLOGS\151010101 S-4 at 6ft Light brown fine-medium SAND, some silt 4 (wet) SS 12 10 Brown fine-coarse SAND, trace silt Open hole to 8ft (wet) S-5 at 8ft Brown fine-coarse SAND, trace silt SS 13 9 (wet) 9 S-6 at 10ft Brown fine-coarse SAND, trace silt 4 (wet) SS 9 S-6 13 8 8 12 COM/DATA/BOS/DATA1/151010101/PROJECT DATA/ 13 Open hole to 14ft Brown fine-coarse SAND, trace silt, trace fine gravel 4 S-7 at 14ft (wet) 2 SS S-7 19 15 5 8 16 17 18 Open hole to 19ft Brown fine-coarse SAND, trace silt, trace fine gravel 11 22 S-8 at 19ft (wet) 22



Log of Boring C-S-BOR-06 Sheet 2 of 2 Project Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 130.5 (NGVD29) Sample Data Remarks Elev (ft) Depth Scale N-Value (Blows/ft) Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) 10 20 30 40 -110.5 20 Brown fine-medium SAND, some silt, some fine gravel 22 (wet) [TILL] 37 109.5 NLANGAN.COMIDATA/BOSIDATA1/151010101/PROJECT DATA_DISCIPLINE/GEOTECHNICAL/GINTLOGS/151010101_ENTERPRISE_BORINGS_USE.GPJ...7/22/2020 5:32:16 PM ... Report: Log - LANGAN 21 Bottom of boring on Bottom of Boring 6/13/2020 Boring backfilled with soil 22 cuttings. 23 24 25 26 28 29 30 31 32 33 34 35 36 37 38 39 40 43

C-S-BOR-07 Log of Boring Sheet of 1 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 133 (NGVD29) **Drilling Company** Date Started Date Finished Seaboard Drilling, Inc 6/17/20 6/17/20 **Drilling Equipment** Completion Depth Rock Depth Diedrich D50 17 ft N/E Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) N/A N/A 6.5 N/A Drop (in) N/A Casing HammerN/A Drilling Foreman Weight (lbs) N/A Jeff Nitsch Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) 140 30 Safety Reid Balkind Sample Data MATERIAL SYMBOL Remarks Depth Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) Scale 133 10 20 30 40 Started Drilling on 6/17/2020 10" Dark brown fine SAND, trace silt, trace roots 2 (moist) [TOPSOIL] S-1 at 0ft 132.2 4 4 3 Light brown fine-medium SAND, some silt, trace roots 3 USE.GPJ (moist) SS S-2 at 2ft Light brown fine-medium SAND, some silt, trace roots 2 (moist) 3 48 BORINGS 3 3 Auger to 4ft, Easy Augering 3 S-3 at 4ft Light brown sandy SILT 3 ENTERPRISE (moist) 3 S-3 SS 20 5 5 5 6 DISCIPLINE/GEOTECHNICAL/GINTLOGS/151010101 S-4 at 6ft SS Light brown sandy SILT  $\nabla$ (wet) 14 8 35 Brown fine-coarse SAND, trace silt, trace fine gravel 21 Auger to 8ft, Easy Augering 20 S-5 at 8ft Brown fine-coarse SAND, trace silt, trace fine gravel 10 (wet) 13 S-5 SS 22 9 15 14 S-6 at 10ft Brown fine-coarse SAND, trace silt, trace fine gravel (wet) 11 12 Auger to 15ft. Medium chattering at 10.5ft. \\LANGAN.COM\DATA\BOS\DATA1\151010101\\PROJECT DATA\ Moderate drilling 13 14 15 S-7 at 15ft SS Brown fine-coarse SAND, trace silt, trace fine gravel 25 49 16 16 Grey fine-coarse SAND, some silt, trace fine gravel 50 (wet) [TILL] 79 Bottom of Boring Bottom of boring at 6/17/2020 Boring backfilled with auger 18 cuttings. 19

Log of Boring C-S-BOR-08 Sheet of 1 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 132.5 (NGVD29) Drilling Company Date Started Date Finished 6/17/20 6/17/20 SoilTesting, Inc. **Drilling Equipment** Completion Depth Rock Depth ATV Mounted CME 550X 17 ft N/E Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) N/A N/A 10 N/A Casing Hammer N/A Drop (in) N/A Drilling Foreman Weight (lbs) N/A Sam DeAngelis Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) Automatic 140 30 Justin Hall Sample Data MATERIAL SYMBOL Remarks Depth Recov. (in)
Penetr. resist (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) Scale 132. 10 20 30 40 Started Drilling on 6" Dark brown fine-coarse SAND, some silt, trace roots 3 132.0 6/17/2020. (moist) [TOPSOIL] S SS 2 S-1A at 0ft S-1B at 0.5ft 16 Light brown fine-coarse SAND, trace silt, trace fine gravel 3 3 USE.GPJ SS S-2 at 2ft Light brown fine-medium SAND, some silt 3 10 3 3 S-3 at 4ft Light brown fine-coarse SAND, some silt, trace fine gravel SS 6 ENTERPRISE (dry) 7 S-3 48 5 8 6 \GINTLOGS\151010101 7 8 S-5 at 8ft Light brown fine-coarse SAND, some silt, trace f-c gravel, SS 22 trace weathered rock S-5A 14 (moist) [TILL] 13 9 76 30 S-6 at 10ft Light brown fine-coarse SAND, some silt, trace fine gravel, 20 trace weathered rock SS 20 S-6 (wet) [TILL] 20 Heavy Rig Chatter 11-15' 27 25 12 13 14 S-7 at 15ft Light gray GRAVEL SS 16 (wet) [TILL] 17 (\LANGAN.COM\DATA\BOS\DATA1\) S-7 16 34 17 22 17 Bottom of Boring Bottom of boring on 6/17/2020 Boring backfilled with auger 18 cuttings 19



C-S-BOR-09 Log of Boring Sheet of 1 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 135 (NGVD29) Date Started **Drilling Company** Date Finished Atlantic Testing Laboraties 6/13/20 6/13/20 **Drilling Equipment** Completion Depth Rock Depth Geoprobe 7720 DT 16 ft N/E Size and Type of Bit Disturbed Undisturbed Core Number of Samples 3-7/8in Tricone Roller Bit Casing Diameter (in) Casing Depth (ft) 24 HR. Completion Water Level (ft.) 4in 4ft N/E N/A Casing HammerAutomatic Drilling Foreman Weight (lbs) Drop (in) 140 Scott McGregor Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) Automatic 140 30 Olivia Chasse Sample Data MATERIAL SYMBOL Remarks Depth Recov. (in) Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) Scale 135. 10 20 30 40 Started Drilling on 6/13/2020 S-1 at 0.5ft 2' Dark brown fine-medium SAND, trace silt, trace fine SS S-1 12 (dry)[TOPSOIL] 2 S-2 at 2ft Brown fine-coarse SAND, trace silt SS (dry) 2 S-2 16 3 5 8 4 SS , Drive casing to 4.0ft. S-3 at Brown fine-coarse SAND, trace silt 13 ENTERPRISE (wet) 8 S-3 12 5 6 6 GEOTECHNICAL\GINTLOGS\151010101 S-4 at 6ft SS Brown fine-coarse SAND, trace silt, trace fine gravel (wet) S-4 5 8 S-5 at 8ft Brown fine-coarse SAND, trace silt, trace fine gravel 2 (wet) SS S-5 9 6 8 10 125. Change to mud rotary Brown fine-medium SAND, some silt, some fine gravel 14 technique . S-6 at 10ft (wet) [TILL] SS 18 S-6 ω 22 18 12 13 S-7 at 14ft Brown fine-medium SAND, some silt, some fine gravel 32 (wet) [TILL] (LANGAN.COM/DATA/BOS/DATA1/151010101 31 SS S-7 15 26 37 +119.0 16 Bottom of boring on Bottom of Boring 6/13/2020 Boring backfilled with soil 17 cuttings. 18 19



C-S-BOR-10 Log of Boring Sheet of 2 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum Elev. + 143.5 (NGVD29) 59 Steele Road, Hudson NH Date Started **Drilling Company** Date Finished Seaboard Drilling, Inc 6/14/20 6/14/20 **Drilling Equipment** Completion Depth Rock Depth Diedrich D50 21.5 ft 21.5 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) N/A N/A 18 N/A Casing Hammer N/A Drop (in) N/A Drilling Foreman Weight (lbs) N/A Jeff Nitch Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) Automatic 140 30 Kenneth Idem Sample Data MATERIAL SYMBOL Remarks Depth Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) 143 10 20 30 40 Started Drilling on 6/14/2020 7" Brown fine SAND, trace silt, trace root 2 S-1 at 0ft (dry) [TOPSOIL] 3 Orange brown, fine SAND, some silt 10 (moist) USE.GPJ S-2 at 2ft Brown fine-medium SAND, trace silt, trace fine gravel 2 SS 3 12 BORINGS 3 5 Auger to 4ft, Easy Augering . Brown fine-medium SAND, trace silt, trace fine gravel 11 ENTERPRISE S-3 at 4ft (moist) 15 S-3 SS 5 12 11 6 DISCIPLINE/GEOTECHNICAL/GINTLOGS/151010101 S-4 at 6ft Brown fine-coarse SAND, trace silt, trace fine gravel 15 (moist) 12 SS S-4 4 25 13 8 Auger to 8ft, Easy Augering . Brown fine-coarse SAND, trace silt, trace fine gravel S-5 at 8ft (moist) 6 SS S-5 17 9 16 26 S-6 at 10ft Brown fine-coarse SAND, some silt, trace fine gravel 32 (moist) 21 SS S-6 13 18 17 12 Auger to 15ft, Easy Augering 1010101/PROJECT DATA\ 13 129. S-7 at 14ft Brown fine-medium SAND, some silt, trace fine gravel 39 (moist) [TILL] 29 SS S-7 16 32 31 16 Auger to 19ft, Moderate Augering, Light Chattering 17 18 S-8 at 19ft Brown fine-medium SAND, some silt, trace fine gravel 46 လူ 7 (wet) [TILL]



Log of Boring C-S-BOR-10 Sheet 2 of 2 Project Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 143.5 (NGVD29) Sample Data Remarks Depth Scale Elev N-Value (Blows/ft) Sample Description (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) (ft) 10 20 30 40 123. 20 SS S-8 2 36 NLANGAN.COMDATA/BOSIDATA1/151010101/PROJECT DATAL DISCIPLINE/GEOTECHNICAL/GINTLOGS/151010101_ENTERPRISE_BORINGS_USE.GPJ ... 7/22/2020 5:32:27 PM ... Report. Log - LANGAN 21 Auger to 24ft, Hard Inferred Top of Bedrock **2000** 122.0 Augering, Heavy Chattering Bottom of boring on 22 6/14/2020. Auger Refusal at Bottom of Boring 23 Boring backfilled with auger cuttings. 24 25 26 28 29 30 31 32 33 34 35 36 37 38 39 40 43

C-S-BOR-11 Log of Boring Sheet of 1 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum Elev. + 144.5 (NGVD29) 59 Steele Road, Hudson NH Date Started **Drilling Company** Date Finished Seaboard Drilling, Inc 6/13/20 6/13/20 **Drilling Equipment** Completion Depth Rock Depth Diedrich D50 17 ft N/E Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) N/A N/A N/E N/A Casing Hammer N/A Drop (in) N/A Drilling Foreman Weight (lbs) N/A Jeff Nitch Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) Automatic 140 30 Kenneth Idem Sample Data MATERIAL SYMBOL Remarks Depth Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) Scale 144. 10 20 30 40 0 Started Drilling on 6/13/2020 3" Brown fine SAND, trace silt, trace root 2 (dry) [TOPSOIL] S-1 at 0ft SS 3 12 S-1B Light brown fine to medium sand, trace silt 5 (moist) USE.GPJ 2 SS S-2 at 2ft Brown fine SAND, some silt 3 (moist) 3 12 BORINGS 3 2 3 Auger to 4ft, Easy Augering. Brown fine-coarse SAND, some silt, some fine gravel 16 ENTERPRISE S-3 at 4ft (moist) 27 S-3 SS 7 5 12 10 6 GEOTECHNICAL\GINTLOGS\151010101 S-4 at 6ft Brown medium-coarse SAND, trace silt, trace fine gravel (moist) SS S-4 16 8 8 Auger to 8ft, Easy Augering. Brown fine-coarse SAND, trace silt, some fine gravel 3 S-5 at 8ft (moist) 5 SS S-5 15 9 14 19 S-6 at 10ft Brown fine-coarse SAND, some silt, some fine gravel 18 (moist) [TILL] SS 19 S-6 16 26 26 12 Auger to 15ft, Hard Augering, Heavy Chattering 13 14 S-7 at 15ft SS Brown fine-coarse SAND, some silt, some fine gravel 68 (moist) [TILL] 49 \\LANGAN.COM\DATA\BOS\DATA\\ S-7 17 16 21 22 17 Bottom of Boring Bottom of boring on 6/13/2020 Boring backfilled with auger 18 cuttings. 19

C-S-BOR-12 Log of Boring Sheet of 1 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum Elev. + 148.5 (NGVD29) 59 Steele Road, Hudson NH Date Started **Drilling Company** Date Finished 6/18/20 6/18/20 SoilTesting, Inc. **Drilling Equipment** Completion Depth Rock Depth ATV Mounted CME 550X N/E 17 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) N/A N/A 9 N/A Drop (in) N/A Casing HammerN/A Weight (lbs) Drilling Foreman N/A Sam DeAngelis Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) 140 30 Automatic Justin Hall Sample Data MATERIAL SYMBOL Remarks Depth Penetr. resist BL/6in Recov. (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) Scale 148. 10 20 30 40 Started Drilling on 6/18/2020 6" Dark brown fine-coarse SAND, some silt, trace roots SS 2 148. (dry) [TOPSOIL] S-1 at 0ft 3 16 Orange fine SAND, some silt 3 (dry) 2 S-2 at 2ft Light brown fine-coarse SAND, some silt 5 10 3 Light grayish brown fine-coarse SAND, some silt, trace f-c 16 12 4 S-3 at 4ft 19 Light grayish brown fine-coarse SAND, some silt, trace f-c gravel S-3 12 SS 5 8 (moist) [TILL] 33 21 16 6 S-4 at 6ft Light grayish brown fine-coarse SAND, some silt, trace f-c 33 gravel 30 SS (moist) [TILL] S-4 20 46 30 8 S-5 at 8ft Light grayish brown fine-coarse SAND, some silt, trace f-c gravel 22 S-5 SS (wet) [TILL] 13 9 58 13 10 S-6 at 10ft. Light to medium Light grayish brown fine-coarse SAND, some silt, trace f-c 18 rig chatter 8-15ft gravel 18 S-6 (wet) [TILL] 11 17 12 13 14 S-7 at 15ft SS Light grayish brown fine-coarse SAND, some silt, trace f-c 14 22 (wet) [TILL] \\LANGAN.COM\DATA\BOS\DATA\\ S-7 10 16 37 17 Bottom of Boring Bottom of boring at 6/18/2020 Boring backfilled with auger 18 cuttings 19

**C-S-BOR-13** Log of Boring Sheet of 1 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 159.5 (NGVD29) **Drilling Company** Date Started Date Finished SoilTesting, Inc. 6/26/20 6/26/20 **Drilling Equipment** Completion Depth Rock Depth CME Truck-Mounted Drill Rig 17 ft N/E Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) N/A N/A N/E N/A Drop (in) N/A Casing HammerN/A Drilling Foreman Weight (lbs) N/A John Knepple Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) Automatic 140 30 Kenneth Idem Sample Data MATERIAL SYMBOL Remarks Depth Penetr. resist BL/6in Recov. (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) Scale 159. 10 20 30 40 Started Drilling at 6/26/2020 6" Dark brown fine SAND, trace silt, trace roots SS 159. S-1 at 0ft (dry) [TOPSOIL] 14 15 Light brown fine-medium SAND, trace silt, trace fine gravel 14 (dry) 10 USE.GPJ SS S-2 at 2ft Light brown fine-coarse SAND, trace silt, trace fine gravel 6 (moist) 6 13 3 Auger to 4ft, Easy Augering 5 S-3 at 4ft Light brown fine-coarse SAND, trace silt, trace fine gravel SS 17 ENTERPRISE (moist) S-3 13 12 5 9 6 S-4 at 6ft OGS\151010101 Light brown fine-coarse SAND, some fine gravel, trace silt 22 (moist) 22 37 152. 50/3 Light brown silty fine SAND Auger to 8ft, Moderate (moist) [TILL] Augering, Medium 8 Chattering Light brown silty fine SAND, trace fine gravel 15 S-5 at 8ft (moist) [TILL] 22 SS S-5 4 9 30 45 S-6 at 10ft Light brown silty fine SAND, some fine gravel 42 (moist) [TILL] 45 SS S-6 24 30 50 12 Auger to 15ft, Moderate Augering, Medium Chattering 13 14 S-7 at 15ft SS Light brown silty fine-medium SAND, some fine gravel 16 (moist) [TILL] 25 \\LANGAN.COM\DATA\BOS\DATA\\ 15 S-7 16 30 30 17 Bottom of boring at Bottom of Boring 6/26/2020 Boring backfilled with auger 18 cuttings. 19

C-S-BOR-14 Log of Boring Sheet of 1 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 156 (NGVD29) Date Started **Drilling Company** Date Finished 6/12/20 6/12/20 SoilTesting, Inc. **Drilling Equipment** Completion Depth Rock Depth CME Truck-Mounted Drill Rig 17 ft N/E Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) N/E N/A N/A N/A Casing Hammer N/A Drop (in) N/A Drilling Foreman Weight (lbs) N/A John Knepple Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) Automatic 140 30 Kenneth Idem Sample Data MATERIAL SYMBOL Remarks Depth Penetr. resist BL/6in Number Recov. (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) Scale 156. 10 20 30 40 0 Started Drilling on 6/12/2020 2" Brown fine SAND, trace silt, trace root 155. 3 S-1 at 0ft (dry) [TOPSOIL] SS 2 12 Light brown, fine to medium sand, trace silt 3 (moist) 5 USE.GPJ 2 SS S-2 at 2ft Brown fine-medium SAND, trace silt 6 (dry) 8 12 BORINGS 3 Auger to 4ft, Easy Augering. Brown fine-medium SAND, trace silt SS 7 ENTERPRISE S-3 at 4ft (dry) 12 S-3 12 5 10 17 6 DISCIPLINE/GEOTECHNICAL\GINTLOGS\151010101 S-4 at 6ft Brown fine-medium SAND, trace silt 11 SS (dry) 10 S-4 24 10 8 Auger to 8ft, Easy Augering. Brown fine-medium SAND, some fine gravel, trace silt S-5 at 8ft (dry) 10 SS S-5 12 9 11 16 10 S-6 at 10ft Brown fine-coarse SAND, trace silt, trace fine gravel 17 (dry) SS 16 S-6 15 36 20 20 12 Auger to 15ft, Hard Augering, Moderate \\LANGAN.COM\DATA\BOS\DATA1\151010101\\PROJECT DATA\ Chattering 13 14 S-7 at 15ft SS Brown fine to medium SAND, some silt, trace fine gravel 21 (dry) 20 S-7 3 16 21 17 Bottom or Boring Bottom of boring on 6/12/2020 Boring backfilled with auger 18 cuttings. 19

C-S-BOR-15 Log of Boring Sheet of 1 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 157 (NGVD29) Date Started **Drilling Company** Date Finished 6/12/20 6/12/20 SoilTesting, Inc. **Drilling Equipment** Completion Depth Rock Depth CME Truck-Mounted Drill Rig 17 ft N/E Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) N/E N/A N/A N/A Casing Hammer N/A Drop (in) N/A Drilling Foreman Weight (lbs) N/A John Knepple Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) Automatic 140 30 Kenneth Idem Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in Recov. (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) Scale 157. 10 20 30 40 0 Started Drilling on 6/12/2020 2" Brown fine SAND, trace silt, trace root 156. 2 S-1 at 0ft (dry) [TOPSOIL] SS 2 Light brown fine-medium SAND, trace silt 12 2 (moist) 2 USE.GPJ SS S-2 at 2ft Brown fine to coarse SAND, trace fine gravel, trace silt 2 5 10 BORINGS 3 5 11 4 Auger to 4ft, Easy Augering Brown fine-coarse SAND, fine gravel, trace silt 9 ENTERPRISE S-3 at 4ft (dry) 14 S-3 SS 20 5 18 35 6 DISCIPLINE/GEOTECHNICAL\GINTLOGS\151010101 S-4 at 6ft Brown fine-medium SAND, some silt, trace fine gravel 15 SS (dry) 30 S-4 4 27 39 8 Auger to 8ft, Easy Augering Brown fine-coarse SAND, trace silt, trace fine gravel 15 . S-5 at 8ft (dry) 22 SS S-5 15 9 26 26 10 S-6 at 10ft Brown fine-medium SAND, trace silt, trace fine gravel 19 (dry) 33 S-6 4 33 36 12 Auger to 15ft, Easy Augering \\LANGAN.COM\DATA\BOS\DATA1\151010101\\PROJECT DATA\ 13 14 S-7 at 15ft SS Brown fine-medium SAND, some silt, trace fine gravel (moist) 11 S-7 16 16 23 12 10 17 Bottom of Boring Bottom of boring on 6/12/2020 Boring backfilled with auger 18 cuttings. 19

C-S-BOR-16 Log of Boring Sheet of 1 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum Elev. + 160 (NGVD29) 59 Steele Road, Hudson NH **Drilling Company** Date Started Date Finished SoilTesting, Inc. 6/8/20 6/8/20 **Drilling Equipment** Completion Depth Rock Depth CME Truck-Mounted Drill Rig 17 ft N/E Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. Completion Water Level (ft.) N/A N/A 16.5 N/A Casing Hammer N/A Drop (in) N/A Weight (lbs) Drilling Foreman N/A John Knepple Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) 140 30 Automatic Kenneth Idem Sample Data MATERIAL SYMBOL Remarks Depth Number Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) Scale 160. 10 20 30 40 0 Started Drilling on 6/8/2020 2" Brown fine SAND, some silt, trace root 159. S-1 at 0ft (dry) [TOPSOIL] 4 8 Brown fine to medium SAND, some silt SS 3 (moist) USE.GPJ SS S-2 at 2ft Brown fine to coarse SAND, trace silt, trace fine gravel 3 5 BORINGS 12 3 6 13 Auger to 4ft Brown fine to coarse SAND, trace silt, trace fine gravel 8 ENTERPRISE S-3 at 4ft (dry) 23 S-3 SS 4 5 24 29 6 DISCIPLINE/GEOTECHNICAL/GINTLOGS/151010101 S-4 at 6ft Brown fine to medium SAND, trace silt, trace fine gravel 27 (dry) 35 SS S-4 19 31 27 8 Auger to 8ft Brown fine to medium SAND, trace silt, trace fine gravel 15 S-5 at 8ft (dry) 27 SS S-5 19 9 23 19 S-6 at 10ft Brown fine to medium SAND, trace silt, trace fine gravel 17 (dry) 21 SS S-6 8 28 36 12 Auger to 15ft \\LANGAN.COM\DATA\BOS\DATA1\151010101\\PROJECT DATA\ 13 14 S-7 at 15ft SS Brown fine to coarse SAND, trace silt, trace fine gravel 14 (wet) 23 S-7 19 16 25 29 Bottom of Boring Bottom of boring on 6/8/2020 Boring backfilled with auger cuttings. 18 19

C-S-BOR-17 Log of Boring Sheet of 1 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 169 (NGVD29) Date Started **Drilling Company** Date Finished SoilTesting, Inc. 6/27/20 6/27/20 **Drilling Equipment** Completion Depth Rock Depth CME Truck-Mounted Drill Rig 17 ft N/E Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. Completion Water Level (ft.) N/E N/A N/A N/A Casing Hammer N/A Drop (in) N/A Drilling Foreman Weight (lbs) N/A John Knepple Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) Automatic 140 30 Kenneth Idem Sample Data MATERIAL SYMBOL Remarks Depth Penetr. resist BL/6in Recov. (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) 169. 10 20 30 40 Started Drilling at 6/27/2020 10" Dark brown fine SAND, trace silt, trace roots 2 S-1 at 0ft (dry) [TOPSOIL] 168.2 4 22 Light brown fine SAND, some silt (dry) 5 S-2 at 2ft Light brown fine SAND, some silt 4 SS 4 3 Auger to 4ft, Easy Augering 5 165. S-3 at 4ft Light brown fine-coarse SAND, trace silt 6 (dry) [TILL] 6 S-3 SS 7 5 50 37 6 S-4 at 6ft Light brown fine-coarse SAND, some silt, trace fine gravel 13 (dry) [TILL] 20 SS S-4 15 26 Auger to 8ft, Moderate 35 8 Augering, Medium Light brown fine-coarse SAND, some silt, trace fine gravel 12 Chattering (dry) [TILL] ·S-5 at 8ft 24 SS S-5 12 9 30 40 S-6 at 10ft Light brown fine-coarse SAND, some silt, trace fine gravel 31 (dry) [TILL] 20 SS S-6 24 25 25 12 Auger to 15ft, Moderate Augering, Medium Chattering 13 14 S-7 at 15ft Light brown fine-coarse SAND, some silt 22 (dry) SS 30 S-7 6 (\LANGAN.COM\DATA\BOS\DATA1\) 16 38 Bottom of boring at 6/27/2020 Bottom of Boring Boring backfilled with auger cuttings. 18 19

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Project Hudson Logistics Center						Project No.												
Hudson Logistics Center Location							151010101 Elevation and Datum											
Daillia a Ca	Elev. + 169.5 (NGVD29)  Date Started   Date Finished																	
Drilling Company SoilTesting, Inc.								6/26/20 Date Finished 6/26/20										
Drilling Equipment								Completion Depth Rock Depth										
CME Truck-Mounted Drill Rig Size and Type of Bit								17 ft N/E Disturbed Undisturbed Core										
4in Hollow Stem Auger								Number of Samples 7										
Casing Diameter (in) N/A Casing Depth (ft) N/A N/A							Water Level (ft.)			First	rst ☑ N/E			Con	npletion N/A	24 HR.	N/A	
Casing Hammer VA Veight (lbs)							Drilling Foreman											
Sampler Sampler F		2-inch-diameter split	John Knepple Field Engineer															
Sampler Hammer Automatic Weight (lbs) 140 Drop (in) 30							Kenneth Idem											
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		Light brown fine-medium SAND, some silt, trace fine grav					_ 10	+			19 44				S-6 at 10ft			
		(dry) [TILL]						‡ ‡   <b>‡</b>   ^{***}										
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**C-S-BOR-19** Log of Boring Sheet of 1 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 159 (NGVD29) Date Started **Drilling Company** Date Finished SoilTesting, Inc. 6/26/20 6/26/20 **Drilling Equipment** Completion Depth Rock Depth CME Truck-Mounted Drill Rig 16 ft 16 ft Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. Completion Water Level (ft.) N/A N/A 8 N/A Drop (in) N/A Casing HammerN/A Drilling Foreman Weight (lbs) N/A John Knepple Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) 140 30 Automatic Kenneth Idem Sample Data MATERIAL SYMBOL Remarks Depth Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) 159. 10 20 30 40 Started Drilling at 6/26/2020 6" Dark brown fine SAND, trace silt, trace roots SS 2 158. S-1 at 0ft (dry) [TOPSOIL] 2 Light brown fine-medium SAND, trace silt 24 3 (dry) 6 USE.GPJ SS S-2 at 2ft Light brown fine-medium SAND, trace silt, trace fine gravel 3 3 6 5 Auger to 4ft, Easy Augering 6 S-3 at 4ft Light brown fine-medium SAND, trace silt 1 ENTERPRISE (dry) S-3 SS 5 က 10 6 DISCIPLINE/GEOTECHNICAL/GINTLOGS/151010101 S-4 at 6ft Brown fine-coarse SAND, some fine gravel, trace silt 14 (moist) SS S-4 10 11 Auger to 8ft, Easy Augering 10 S-5 at 8ft Brown fine-coarse SAND, trace silt, trace fine gravel 3 (wet) 5 SS S-5 22 9 5 11 S-6 at 10ft Brown fine-coarse SAND, trace silt, trace fine gravel (wet) 24 SS S-6 24 20 26 12 Auger to 15ft, Moderate Augering, Medium 1010101/PROJECT DATA\ Chattering 13 14 S-7 at 15ft Light brown fine-medium SAND, some silt, trace fine gravel S-7 ss 24 10 (wet) [TILL] Inferred Top of Bedrock 50/3 (\LANGAN.COM\DATA\BOS\DATA1\15 Bottom of boring at 16 6/26/2020 Boring backfilled with auger Bottom of Boring 17 cuttings. 18 19

C-S-BOR-20 Log of Boring Sheet of 1 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum Elev. + 147.5 (NGVD29) 59 Steele Road, Hudson NH Date Started **Drilling Company** Date Finished Seaboard Drilling, Inc 6/14/20 6/14/20 **Drilling Equipment** Completion Depth Rock Depth Diedrich D50 16 ft N/E Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) N/A N/A N/E N/A Casing Hammer N/A Drop (in) N/A Drilling Foreman Weight (lbs) N/A Jeff Nitch Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) Automatic 140 30 Kenneth Idem Sample Data MATERIAL SYMBOL Remarks Depth Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) 147. 10 20 30 40 Started Drilling on 6/14/2020 8" Brown fine SAND, some silt, trace root 2 S-1 at 0ft 146.8 (dry) [TOPSOIL] 3 S-1B brown fine-medium sand, trace silt 2 (moist) 3 USE.GPJ S-2 at 2ft Brown fine-medium SAND, trace fine gravel, trace silt 3 SS 6 BORINGS 3 4 9 10 Auger to 4ft, Easy Augering Brown fine-coarse SAND, trace fine gravel, trace silt 6 ENTERPRISE S-3 at 4ft (dry) 9 S-3 SS 12 5 9 6 DISCIPLINE/GEOTECHNICAL\GINTLOGS\151010101 S-4 at 6ft Brown fine-coarse SAND, trace fine gravel, trace silt 11 (dry) SS 16 S-4 4 16 8 Auger to 8ft, Easy Augering Brown fine-coarse SAND, trace silt, some fine gravel 5 S-5 at 8ft (dry) 26 S-5 SS 9 2 47 52 S-6 at 10ft Brown fine-coarse SAND, trace silt, some fine gravel 60 (dry) SS 44 S-6 22 46 42 12 Auger to 15ft, Moderate Augering, Medium \\LANGAN.COM\DATA\BOS\DATA1\151010101\\PROJECT DATA\ Chattering 13 No Recovery Brown fine-medium SAND, trace silt, some fine gravel S-7 at 15ft SS 11 (drv) S-7 ω Inferred Top of Bedrock 47 131 16 Auger Refusal at 16ft Bottom of boring on 6/14/2020 17 Bottom of Boring Boring backfilled with auger cuttings. 18 19

C-S-BOR-21 Log of Boring Sheet of 1 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum Elev. + 141.5 (NGVD29) 59 Steele Road, Hudson NH **Drilling Company** Date Started Date Finished SoilTesting, Inc. 6/15/20 6/15/20 **Drilling Equipment** Completion Depth Rock Depth CME Truck-Mounted Drill Rig 15.3 ft N/E Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) N/A N/A N/E N/A Drop (in) N/A Casing HammerN/A Drilling Foreman Weight (lbs) N/A Sam Deangelis Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) 140 30 Safety Jack Berritt Sample Data MATERIAL SYMBOL Remarks Depth Penetr. resist BL/6in Recov. (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) Scale 141 10 20 30 40 Started Drilling on 6/15/2020 2' Light brown fine SAND, trace silt, trace roots 3 S-1 at 0ft (dry) [TOPSOIL] SS 2 <u>۲</u> 4 3 S-2 at 2ft Light brown fine to medium SAND, some fine gravel, trace SS 27 (dry) S-2 3 က Auger to 4 ft 30 28 S-3 at 4ft Light brown fine to medium SAND, some fine gravel, trace 5 ENTERPRISE 19 S-3 SS (dry) 13 5 26 135. S-4 at 6ft -S-4SS Light brown fine to medium SAND, some fine gravel, trace 2 100/5 100/5 (dry) [TILL] 7 Auger to 8 ft 8 S-5 at 8ft Light brown fine to medium SAND, some fine gravel, trace 18 silt. trace weathered gravel 36 SS (dry) [TILL] S-5 12 9 30 25 S-6 at 10ft Light brown fine coarse SAND, some fine gravel, trace silt 45 (dry) [TILL] 37 SS S-6 12 32 24 12 Auger to 15 ft 13 14 (LANGAN.COM/DATA/BOS/DATA1/151010101/PRO 15 **2** 126.3 S-7 SS 1 100/3 S-7 at 15ft, auger refusal at Light brown gravelly fine to medium SAND, trace silt, trace weathered gravel ·Bottom of boring on (dry) [TILL] 16 6/15/2020 Bottom of Boring Boring backfilled with auger 17 cuttings 18 19

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C-S-BOR-22 Log of Boring Sheet of 1 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 142 (NGVD29) Date Started **Drilling Company** Date Finished SoilTesting, Inc. 6/15/20 6/15/20 **Drilling Equipment** Completion Depth Rock Depth CME Truck-Mounted Drill Rig 17 ft N/E Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) N/E N/A N/A N/A Casing Hammer N/A Drop (in) N/A Drilling Foreman Weight (lbs) N/A Sam Deangelis Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) 140 30 Safety Jack Berritt Sample Data MATERIAL SYMBOL Remarks Depth Penetr. resist BL/6in (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) Scale 142. 10 20 30 40 Started Drilling on 6/15/2020 Brown to orange fine to medium SAND, trace silt, trace 3 S-1 at 0ft SS (dry) [TOPSOIL] 5 <u>۲</u> 10 2 S-2 at 2ft Brown fine-coarse SAND, trace silt SS 6 4 3 Auger to 4 ft 5 S-3 at 4ft Brown fine-coarse SAND, trace silt, trace fine gravel 10 ENTERPRISE (dry) 9 S-3 SS 5 6 12 12 136.0 6 S-4 at 6ft Brown to grey fine-coarse SAND, trace silt, trace fine 13 gravel SS 29 (dry) [TILL] S-4 13 Auger to 8 ft 47 36 8 S-5 at 8ft Brown to grey fine-coarse SAND, trace silt, trace fine 24 gravel 34 SS (dry) [TILL] S-5 9 ω 31 30 10 S-6 at 10ft Brown to grey fine-coarse SAND, trace silt, trace fine 23 S-6 gravel 13 24 (dry) [TILL] 11 50/3 12 Auger to 15 ft 13 14 S-7 at 15ft SS Brown fine-coarse SAND, some silt, trace fine gravel 41 (moist) [TILL] 20 \\LANGAN.COM\DATA\BOS\DATA\\ S-7 4 16 32 17 Bottom of Boring Bottom of boring at 6/15/2020 Boring backfilled with auger 18 cuttings 19



C-S-BOR-23 Log of Boring Sheet of 1 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum 59 Steele Road, Hudson NH Elev. + 136.5 (NGVD29) Date Started **Drilling Company** Date Finished Seaboard Drilling, Inc 6/15/20 6/15/20 **Drilling Equipment** Completion Depth Rock Depth Diedrich D50 17 ft N/E Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) N/A N/A 8 N/A Casing Hammer N/A Drop (in) N/A Drilling Foreman Weight (lbs) N/A Jeff Nitsch Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) Automatic 140 30 Reid Balkind Sample Data /22/2020 5:33:00 PM MATERIAL SYMBOL Remarks Depth Elev Penetr. resist BL/6in Recov. (in) (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) Scale 136 10 20 30 40 Started Drilling on 6/15/2020 12" Dark brown fine-medium SAND, some silt, trace roots 2 S-1 at 0ft (moist) [TOPSOIL] 135.5 8 Orangish brown fine-medium SAND, some silt 2 SS S-2 at 2ft Light brown fine-coarse SAND, trace silt 2 (moist) 2 16 3 2 3 S-3 at 4ft Light brown fine-coarse SAND, trace silt, trace fine gravel SS 3 ENTERPRISE (moist) 3 S-3 8 5 3 3 6 DISCIPLINE/GEOTECHNICAL/GINTLOGS/151010101 S-4 at 6ft Light brown fine-coarse SAND, trace silt SS (wet) S-4 16 8 S-5 at 8ft Light brown to grayish brown fine-coarse SAND, trace silt 5 (wet) SS S-5 20 9 10 12 Light brown to grayish brown fine-coarse SAND, some silt, S-6 at 10ft 3 SS trace fine gravel 6 S-6 (wet) 8 10 10 12 \\LANGAN.COM\DATA\BOS\DATA1\151010101\\PROJECT DATA\ 13 Rig Chattering 14 121. Brown silty fine-coarse SAND, trace fine gravel, Trace SS 21 weathered rock 19 (wet) [TILL] S-7 12 16 15 15 17 Bottom of Boring Bottom of boring on 6/15/2020 Boring backfilled with auger 18 cuttings. 19

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C-S-BOR-24 Log of Boring Sheet of 1 Proiect Project No. **Hudson Logistics Center** 151010101 Location Elevation and Datum Elev. + 147.5 (NGVD29) 59 Steele Road, Hudson NH Date Started **Drilling Company** Date Finished SoilTesting, Inc. 6/30/20 7/1/20 **Drilling Equipment** Completion Depth Rock Depth Mobile Drill B53 13.3 ft N/E Size and Type of Bit Disturbed Undisturbed Core Number of Samples 4in Hollow Stem Auger Casing Diameter (in) Casing Depth (ft) 24 HR. First Completion Water Level (ft.) N/A N/A N/E N/A Drop (in) N/A Casing HammerN/A Drilling Foreman Weight (lbs) N/A Mike Kennedy Sampler 2-inch-diameter split spoon Field Engineer Sampler Hammer Weight (lbs) Drop (in) 140 30 Safety Reid Balkind Sample Data MATERIAL SYMBOL Remarks Depth Recov. (in) (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.) Sample Description (ft) Scale 147 10 20 30 40 Started Drilling at 6/30/2020 24" Dark brown fine-medium SAND, trace silt, trace roots 3 S-1 at 0ft (dry) [TOPSOIL] SS 10 <u>۲</u> က 16 S-2 at 2ft Light brown fine-coarse SAND, trace silt, trace fine gravel 13 SS 19 S-2 3 ω 19 15 Auger to 4ft Light brown fine-coarse SAND, trace silt, trace fine gravel 14 ENTERPRISE S-3 at 4ft (dry) 14 S-3 SS 22 5 33 19 27 141. 6 S-4 at 6ft Grayish brown fine-medium SAND, some silt, trace fine 30 gravel, trace weathered rock fragments SS (moist) [TILL] S-4 16 29 32 8 Auger to 8ft Grayish brown fine-medium SAND, some silt, trace fine S-5 at 8ft gravel, trace weathered rock fragments (moist) [TILL] 9 Auger to 13ft. Hard drilling No Recovery S-6 SS 0 50/2 and heavy chatter from 8.5ft to 13ft 11 S-6 at 10ft 12 No Recovery Inferred Top of Bedrock 13 S-7 SS 0 50/3 S-7 at 13ft **28/22**+134.3 \\LANGAN.COM\DATA\BOS\DATA1\15101010101\PROJECT Auger and spoon refusal encountered at 13ft. 14 Bottom of boring at 6/30/2020 Boring backfilled with auger 15 cuttings. 16 18 19

## APPENDIX D TEST PIT LOGS

LOG OF TEST PIT C-B-TP-01 Sheet 1 of 1 PROJECT NAME Hudson Logistics Center 151010101 6/17/2020 12:34:00 PM

T ELEV (133.8 -	dustries	- - - - -	Depth Scale  0 —			olster	LEVEL - First 7.2 ft  LANGAN PERSO	Taylor Sisti	
Teuchi ELEV (feet) 135.0	DESCRIPTION  16" Dark brown fine-medium SAND, some silt, some roots (dry)[TOPSOIL]  Orangish brown fine-medium SAND, some silt, trace fine gravel trace roots		Depth Scale	SAN	Pat P		LANGAN PERSO	Taylor Sisti	
135.0 133.8	DESCRIPTION  16" Dark brown fine-medium SAND, some silt, some roots (dry)[TOPSOIL]  Orangish brown fine-medium SAND, some silt, trace fine gravel trace roots	- - - - -	<b>Scale</b> - 0 —	SAN	IPLE			ARKS	
135.0	16" Dark brown fine-medium SAND, some silt, some roots (dry)[TOPSOIL]  Orangish brown fine-medium SAND, some silt, trace fine gravel trace roots	- - - - -	<b>Scale</b> - 0 —	Number	Туре	Vertical			
133.8 -	Orangish brown fine-medium SAND, some silt, trace fine gravel trace roots					Vertical	l sidewalls modera	ately maintained.	
	trace roots	II,	1 - -	1	Vertical sidewalls moder				
132.8 -			1 - - - - 2 -						
+132.8 —	Light brown fine-coarse SAND, trace silt, trace f-c gravel (dry)	-	3 .	-					
		- - - - - - -	4 .	-					
127.8 -		- - - - - - -	6 .			Ground	dwater encountere	nd at 7.2ft	
127.5	(wet)								
	DOLOTH OF TEST FIL at 7.311	-	8 -			Surface	e restored with gra		
		-	9 -						
		-	10						
		-							
1:	27.5	Light brown fine-coarse SAND, trace silt, trace f-c gravel	Light brown fine-coarse SAND, trace silt, trace f-c gravel (wet)	Light brown fine-coarse SAND, trace silt, trace f-c gravel (wet)  Bottom of Test Pit at 7.5ft  7  9	27.8  Light brown fine-coarse SAND, trace silt, trace f-c gravel  (wet)  Bottom of Test Pit at 7.5ft  8  9  9	Light brown fine-coarse SAND, trace silt, trace f-c gravel (wet)  Bottom of Test Pit at 7.5ft	Light brown fine-coarse SAND, trace silt, trace f-c gravel (wet)  Bottom of Test Pit at 7.5ft  Bottom of Test Pit at 7.5ft  Ground  Ground  4	27.8  Light brown fine-coarse SAND, trace slit, trace f-c gravel  (wet)  Bottom of Test Pit at 7.5ft  Bottom of Test Pit at 7.5ft  Groundwater encountere  Bottom of Test Pit at 7.5ft	

**LOG OF TEST PIT C-B-TP-02** Sheet of 1 PROJECT NAME **Hudson Logistics Center** 1510101₀₁ 6/18/2020 10:11:00 AM LOCATION ELEVATION 59 Steele Road, Hudson, NH Elev. + 139 (NGVD29) EXCAVATION CONTRACTOR DEPTH WATER LEVEL - First WATER LEVEL - Completion Polster Industries 7.5 ft N/E N/E EQUIPMENT FOREMAN LANGAN PERSONNEL Takeuchi TB260 Pat Polster Taylor Sisti SAMPLE Depth Symbol ELEV (feet) **DESCRIPTION REMARKS** Scale 0 139.0 ±139.0 9-11" Dark brown fine-medium SAND, some silt, some roots Vertical sidewalls mostly maintained. No redox. (dry)[TOPSOIL] 1 Orangish brown fine SAND, some silt, trace roots (dry) 2 Light brown fine-medium SAND, trace silt (dry) 3 4 NLANGAN.COM/DATA/BOS/DATA1/151010101/PROJECT DATA_DISCIPLINE\GEOTECHNICAL\GINTLOGS\151010101_ENTERPRISE_ 5 6 7 Bottom of Test Pit at 7.5ft Bottom of Test Pit at 7.5ft, no groundwater encountered. Test pit backfilled with excavated 8 soils in compacted lifts to grade. Surface restored with grass removed prior to excavation. 9 10

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**LOG OF TEST PIT C-B-TP-03** 

Sheet 1 of PROJECT NAME **Hudson Logistics Center** 151010101 6/18/2020 9:25:00 AM LOCATION ELEVATION 59 Steele Road, Hudson, NH Elev. + 139 (NGVD29) EXCAVATION CONTRACTOR DEPTH WATER LEVEL - First WATER LEVEL - Completion Polster Industries 6.5 ft N/E N/E EQUIPMENT FOREMAN LANGAN PERSONNEL Takeuchi TB260 Pat Polster Taylor Sisti SAMPLE Depth Symbol ELEV (feet) **DESCRIPTION REMARKS** Scale 0 +139.0 10-12" Dark brown fine-medium SAND, some silt, some roots Vertical sidewalls mostly maintained. No redox. (dry)[TOPSOIL] 1 Light brown fine-medium SAND, some silt, trace roots (moist) 2 Light brown fine-medium SAND, trace silt, trace f-c gravel (dry) 3 4 Light brown fine-coarse SAND, some f-c gravel, trace silt, trace Slight excavator resistance at 4.8ft 5 cobbles up to 8 inches (moist) 6 +132.5 Bottom of Test Pit at 6.5ft Bottom of Test Pit at 6.5ft, no groundwater encountered. Test pit backfilled with excavated 7 soils in compacted lifts to grade. Surface restored with grass removed prior to excavation. 8 9 10 LANGAN

7/13/2020 1:57:47 PM

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**LOG OF TEST PIT C-B-TP-04** Sheet of 1 PROJECT NAME DATE **Hudson Logistics Center** 151010101 6/16/2020 9:45:00 AM LOCATION ELEVATION 59 Steele Road, Hudson, NH Elev. + 150.5 (NGVD29) EXCAVATION CONTRACTOR DEPTH WATER LEVEL - First WATER LEVEL - Completion Polster Industries 5 ft N/E N/E EQUIPMENT FOREMAN LANGAN PERSONNEL Takeuchi TB260 Pat Polster Taylor Sisti SAMPLE Depth Symbol ELEV (feet) **DESCRIPTION REMARKS** Scale 0 +150.5 9-14" dark brown fine-medium SAND, some silt, some roots Vertical sidewalls maintained. No redox. (dry)[TOPSOIL] Light brown fine-medium SAND, some silt, trace f-c gravel, trace 1 roots, trace boulders up to 12 inches (dry) 2 Light brown fine-medium SAND, trace silt, trace f-c gravel (dry) 1:57:48 PM 3 Light brown fine-medium SAND, some silt, trace f-c gravel, trace weathered cobbles, trace boulders up to 6 inches (dry)[TILL] 4 Hard excavation at 5ft 5 145.5 Bottom of Test Pit at 5ft Bottom of Test Pit at 5ft, no groundwater encountered. Test pit backfilled with excavated soils in compacted lifts to grade. Surface restored with grass removed prior to excavation. 6 7 8

9

10

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**LOG OF TEST PIT C-B-TP-05** Sheet of 1 PROJECT NAME **Hudson Logistics Center** 151010101 6/16/2020 1:55:00 PM LOCATION ELEVATION 59 Steele Road, Hudson, NH Elev. + 146 (NGVD29) EXCAVATION CONTRACTOR DEPTH WATER LEVEL - First WATER LEVEL - Completion Polster Industries 6 ft N/E N/E EQUIPMENT FOREMAN LANGAN PERSONNEL **CAT 305E** Pat Polster Taylor Sisti SAMPLE Depth Symbol ELEV (feet) **DESCRIPTION REMARKS** Scale 0 +146.0 11" Dark brown fine-medium SAND, some silt, some roots Vertical sidewalls mostly maintained. No redox. (dry)[TOPSOIL] +145.° 1 2 Light brown fine-medium SAND, trace silt, trace f-c gravel, trace cobbles up to 3 inches (moist) 3 4 ALANGAN.COM/DATA/BOS/DATA1/151010101/PROJECT DATA\ DISCIPLINE/GEOTECHNICAL/GINTLOGS/151010101 ENTERPRISE. 5 6 +140.0 Bottom of Test Pit at 6ft Bottom of Test Pit at 6ft, no groundwater encountered. Test pit backfilled with excavated soils in compacted lifts to grade. Surface restored with grass removed prior to excavation. 7 8 9 10

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**LOG OF TEST PIT C-B-TP-06** Sheet of 1 PROJECT NAME DATE **Hudson Logistics Center** 1510101₀₁ 6/16/2020 1:08:00 PM LOCATION ELEVATION 59 Steele Road, Hudson, NH Elev. + 149 (NGVD29) EXCAVATION CONTRACTOR DEPTH WATER LEVEL - First WATER LEVEL - Completion Polster Industries 7 ft N/E N/E EQUIPMENT FOREMAN LANGAN PERSONNEL **CAT 305E** Pat Polster Olivia Chasse SAMPLE Depth Symbol ELEV (feet) **DESCRIPTION REMARKS** Scale 0 +149.0 9" Brown fine-medium SAND, some roots, trace silt Vertical walls mostly maintained. No redox (dry)[TOPSOIL] +148.3 1 Roots to 1ft 2 Light brown fine-medium SAND, some f-c gravel, trace silt (dry) 3 G-1 at 3ft. Environmental sample from 3ft to 4ft Sample name: C-B-TP-06 (3'-4') Ģ 4 5 \LANGAN.COMIDATA\BOS\DATA1\15101011\PROJECT DATA\ DISCIPLINE\GEOTECHNICAL\GINTLOGS\151010101 6 7 Bottom of Test Pit at 7ft Bottom of Test Pit at 7ft, no groundwater encountered. Test pit backfilled with excavated soils in compacted lifts to grade. Surface restored with grass removed prior to excavation. 8 9 10 LANGAN

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LOG OF TEST PIT C-B-TP-07

Sheet 1 of PROJECT NAME **Hudson Logistics Center** 151010101 6/18/2020 11:33:00 AM LOCATION ELEVATION 59 Steele Road, Hudson, NH Elev. + 151.5 (NGVD29) EXCAVATION CONTRACTOR DEPTH WATER LEVEL - First WATER LEVEL - Completion Polster Industries 7.2 ft N/E EQUIPMENT FOREMAN LANGAN PERSONNEL **CAT 305E** Taylor Sisti Wanderley Docarno SAMPLE Depth Symbol ELEV (feet) **DESCRIPTION REMARKS** Scale 0 +151.5 11-13" Dark brown fine-medium SAND, some silt, some roots Vertical walls mostly maintained. (dry)[TOPSOIL] 1 Orangish brown fine-medium SAND, trace silt, trace roots (dry) 2 3 Light brown fine-coarse SAND, some f-c gravel, trace silt (dry) Light brown fine-coarse SAND, trace silt, trace f-c gravel 4 (dry) 5 Mottled orangish brown to light brown fine SAND, some silt 6 (moist) 7 Bottom of Test Pit at 7.2ft Bottom of Test Pit at 7.2ft, no groundwater encountered. Test pit backfilled with excavated soils in compacted lifts to grade. Surface restored with grass removed prior to excavation. 8 9 10 LANGAN

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LOG OF TEST PIT C-B-TP-08 Sheet 1

LOG OF TEST	PIT	C-B	-TF	<b>P-0</b> 8	<b>Sheet</b> 1 of 1
	PROJEC	CT NUMBER	₹		DATE
	ELEVAT	ION	]	15101	10101 6/18/2020 9:04:00 AM
le Road, Hudson, NH					Elev. + 155.5 (NGVD29)
Polster Industries EQUIPMENT				t	WATER LEVEL - First WATER LEVEL - Completion N/E ✓ N/E ✓
5F	FOREM	MAN			carno LANGAN PERSONNEL Taylor Sisti
					Taylor distr
DESCRIPTION		Scale	Number	Туре	REMARKS
11-13" Light brown fine-medium SAND, some silt, some roots (dry)[TOPSOIL]  Light brown fine-medium SAND, some silt, trace roots	-	   - 1 -	-		Vertical walls mostly maintained. No redox
(dry)	<u> </u>	   - 2 -			
roots (dry)	e -	- 3			
Light brown fine-coarse SAND, some f-c gravel, trace silt, trace cobbles and boulders up to 12 inches (dry)		5			Some excavator resistance at 4.5ft
Bottom of Test Pit at 6.5ft		- 7			Bottom of Test Pit at 6.5ft, no groundwater encountered. Test pit backfilled with excavated soils in compacted lifts to grade. Surface restored with grass removed prior to excavation.
	Logistics Center  le Road, Hudson, NH ONTRACTOR Industries  5E  DESCRIPTION  11-13" Light brown fine-medium SAND, some silt, some roots (dry)[TOPSOIL]  Light brown fine-medium SAND, some silt, trace roots (dry)  Light brown fine-medium SAND, trace silt, trace f-c gravel, trace roots (dry)  Light brown fine-coarse SAND, some f-c gravel, trace silt, trace cobbles and boulders up to 12 inches (dry)	Logistics Center  le Road, Hudson, NH ONTRACTOR Industries  DESCRIPTION  11-13" Light brown fine-medium SAND, some silt, some roots (dry)[TOPSOIL]  Light brown fine-medium SAND, trace silt, trace roots (dry)  Light brown fine-medium SAND, trace silt, trace f-c gravel, trace roots (dry)  Light brown fine-coarse SAND, some f-c gravel, trace silt, trace cobbles and boulders up to 12 inches (dry)	Expanding to the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of the property of t	Expanding the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content of the content	Logistics Center

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LOG OF TEST PIT C-B-TP-09

Sheet

of 1

PROJECT NAME **Hudson Logistics Center** 151010101 6/18/2020 10:29:00 AM LOCATION ELEVATION 59 Steele Road, Hudson, NH Elev. + 160.5 (NGVD29) EXCAVATION CONTRACTOR DEPTH WATER LEVEL - First WATER LEVEL - Completion Polster Industries N/E 7.5 ft N/E EQUIPMENT FOREMAN LANGAN PERSONNEL **CAT 305E** Taylor Sisti Wanderley Docarno SAMPLE Depth Symbol ELEV (feet) **DESCRIPTION REMARKS** Scale 0 +160.5 10-11" Dark brown fine-medium SAND, some silt, some roots Vertical walls mostly maintained. No redox (dry)[TOPSOIL] 1 Orangish brown fine-coarse SAND, some f-c gravel, trace silt, trace roots (dry) Light brown fine-coarse SAND, some f-c gravel, trace silt, trace 2 cobbles up to 6 inches (dry) 3 4 Light brown fine-medium SAND, trace silt, trace f-c gravel, trace cobbles and boulders up to 18 inches 5 (dry) 6 7 Bottom of Test Pit at 7.5ft Bottom of Test Pit at 7.5ft, no groundwater encountered. Test pit backfilled with excavated 8 soils in compacted lifts to grade. Surface restored with grass removed prior to excavation. 9 10 LANGAN

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**LOG OF TEST PIT C-B-TP-10** Sheet 1 of PROJECT NAME **Hudson Logistics Center** 151010101 6/16/2020 8:31:00 AM LOCATION ELEVATION 59 Steele Road, Hudson, NH Elev. + 156 (NGVD29) **EXCAVATION CONTRACTOR** DEPTH WATER LEVEL - First WATER LEVEL - Completion Polster Industries N/E 6 ft N/E EQUIPMENT FOREMAN LANGAN PERSONNEL Takeuchi TB260 Pat Polster Taylor Sisti SAMPLE Depth Symbol ELEV (feet) **DESCRIPTION REMARKS** Scale 0 +156.0 7-14" Dark brown fine-medium SAND, some silt, trace roots Vertical walls maintained. No redox. (dry)[TOPSOIL] 155 4 Light brown to black fine-coarse SAND, trace silt, trace organics, trace boulders up to 18 inches, with pockets of wood, metal, brick, 1 glass, and asphalt single pieces (dry)[FILL] 2 G-1 at 2ft GRAB 9-1 3 Light brown fine-medium SAND, some silt, trace roots (moist) 4 +151.3 Light brown fine-medium SAND, trace silt, trace f-c gravel 5 (moist) Inferred rock surface sloping down toawrd south at 5.5ft. Excavator refusal at 5.5ft at north edge of test pit. 6 +150.0 Bottom of Test Pit at 6ft, no groundwater Bottom of Test Pit at 6ft encountered. Test pit backfilled with excavated soils in compacted lifts to grade. Surface restored with grass removed prior to excavation. 7 8 9 10

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**LOG OF TEST PIT C-B-TP-10A** Sheet of 1 PROJECT NAME **Hudson Logistics Center** 151010101 6/16/2020 10:40:00 AM LOCATION ELEVATION 59 Steele Road, Hudson, NH Elev. + 155 (NGVD29) EXCAVATION CONTRACTOR DEPTH WATER LEVEL - First WATER LEVEL - Completion Polster Industries 3.5 ft N/E N/E EQUIPMENT FOREMAN LANGAN PERSONNEL **CAT 305E** Pat Polster Olivia Chasse SAMPLE Depth Symbol ELEV (feet) **DESCRIPTION REMARKS** Scale 0 +155.0 9" Dark brown fine-medium SAND, some silt, trace fine gravel, Vertical sidewalls maintained. No redox. some roots (dry)[TOPSOIL] Dark brown fine-medium SAND, some silt, some organics, trace 1 Roots to 1ft asphalt shingles (dry)[FILL] 2 3 Light brown fine-medium SAND, some silt, trace roots (moist) +151.5 Bottom of Test Pit at 3.5ft Bottom of Test Pit at 3.5ft, no groundwater encountered. Test pit backfilled with excavated 4 soils in compacted lifts to grade. Surface restored with grass removed prior to excavation. 5 6 7 8 9 10

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LOG OF TEST PIT C-B-TP-10B Sheet 1 of PROJECT NAME DATE **Hudson Logistics Center** 151010101 6/16/2020 11:15:00 AM LOCATION ELEVATION 59 Steele Road, Hudson, NH Elev. + 156 (NGVD29) **EXCAVATION CONTRACTOR** DEPTH WATER LEVEL - First WATER LEVEL - Completion Polster Industries N/E 9 ft N/E EQUIPMENT FOREMAN LANGAN PERSONNEL **CAT 305E** Pat Polster Olivia Chasse SAMPLE Depth Symbol ELEV (feet) **DESCRIPTION REMARKS** Scale 0 +156.0 6" Dark brown fine-medium SAND, some roots, trace silt (dry)[TOPSOIL] Light brown fine-medium SAND, trace silt, trace f-c gravel (dry)[FILL] Report: Log - LANGANTP 1 Historic rubble well, about 4ft diameter, bottom of well about 9ft About 6-inch-thick concrete cap on top of rubble well. Well about 8 feet deep from cap. below grade 2 3 ILANGAN.COMIDATAIBOSIDATA1/151010101/PROJECT DATA! DISCIPLINE/GEOTECHNICAL/GINTLOGS/151010101_ENTERPRISE_TEST PITS.GPJ 4 5 6 7 8 ? Inferred bottom of well at 9ft below grade. 9 Measuring tape extended to obstruction at Bottom of Test Pit at 9ft bottom. Bottom of Test Pit at 9ft, no groundwater encountered. Test pit backfilled with excavated soils in compacted lifts to grade. Surface 10 restored with grass removed prior to excavation. LANGAN

**LOG OF TEST PIT C-B-TP-11** Sheet 1 of PROJECT NAME **Hudson Logistics Center** 151010101 6/16/2020 11:48:00 AM LOCATION ELEVATION 59 Steele Road, Hudson, NH Elev. + 158.5 (NGVD29) EXCAVATION CONTRACTOR DEPTH WATER LEVEL - First WATER LEVEL - Completion Polster Industries 6 ft N/E N/E EQUIPMENT FOREMAN LANGAN PERSONNEL **CAT 305E** Pat Polster Olivia Chasse SAMPLE Depth Symbol ELEV (feet) **DESCRIPTION REMARKS** Scale 0 +158.5 6" Brown fine-medium SAND, some silt, some roots Vertical sidewalls maintained. No redox. (dry)[TOPSOIL] Light brown fine-medium SAND, some f-c gravel, trace silt (dry) 1 2 1:58:00 PM 3 Brown fine-coarse SAND, some f-c gravel, trace silt (dry) 4 5 Grayish brown fine-medium SAND, some silt, some f-c gravel (dry)[TILL] 6 152.5 Bottom of Test Pit at 6ft Bottom of Test Pit at 6ft, no groundwater encountered. Test pit backfilled with excavated soils in compacted lifts to grade. Surface restored with grass removed prior to excavation. 7 8

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**LOG OF TEST PIT C-B-TP-12** Sheet of 1 PROJECT NAME **Hudson Logistics Center** 151010101 6/16/2020 12:25:00 PM LOCATION ELEVATION 59 Steele Road, Hudson, NH Elev. + 160.5 (NGVD29) EXCAVATION CONTRACTOR DEPTH WATER LEVEL - First WATER LEVEL - Completion Polster Industries 6 ft N/E N/E EQUIPMENT FOREMAN LANGAN PERSONNEL **CAT 305E** Pat Polster Olivia Chasse SAMPLE Depth Symbol ELEV (feet) **DESCRIPTION REMARKS** Scale 0 +160.5 9" Brown fine-medium SAND, some silt, some roots, trace fine Vertical walls maintained. No redox. (dry)[TOPSOIL] +159.8 Brown fine-medium SAND, some f-c gravel, trace silt 1 (dry) 2 3 Roots to 3.5ft 4 Grayish brown fine-medium SAND, some silt, some f-c gravel (dry)[TILL] 5 //LANGAN.COM/DATA/BOS/DATA1/15101011/PROJECT DATA_DISCIPLINE\GEOTECHNICAL\GINTLOGS\ 6 Bottom of Test Pit at 6ft Bottom of Test Pit at 6ft, no groundwater encountered. Test pit backfilled with excavated soils in compacted lifts to grade. Surface restored with grass removed prior to excavation. 7 8 9 10

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LOG OF TEST PIT C-R-TP-01

Sheet

of 1

PROJECT NAME **Hudson Logistics Center** 151010101 6/17/2020 12:00:00 PM LOCATION ELEVATION 59 Steele Road, Hudson, NH Elev. + 129 (NGVD29) EXCAVATION CONTRACTOR DEPTH WATER LEVEL - First WATER LEVEL - Completion Polster Industries 6.5 ft N/E EQUIPMENT FOREMAN LANGAN PERSONNEL **CAT 305E** Pat Polster Olivia Chasse SAMPLE Depth Symbol ELEV (feet) **DESCRIPTION REMARKS** Scale 0 +129.0 12" Dark brown fine-medium SAND, some silt, some roots Vertical walls maintained. No redox. (dry)[TOPSOIL] 1 Light brown fine-medium SAND, some silt, trace fine gravel (dry) Roots to 1.8ft 2 3 Gray fine-medium SAND, some silt, some f-c gravel 4 (moist)[TILL] 5 6 +122.5 Bottom of Test Pit at 6.5ft Bottom of Test Pit at 6.5ft, no groundwater encountered. Test pit backfilled with excavated 7 soils in compacted lifts to grade. Surface restored with grass removed prior to excavation. 8 9 10 LANGAN

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LOG OF TEST PIT C-R-TP-02

PROJECT NUMBER Sheet 1 of PROJECT NAME **Hudson Logistics Center** 151010101 6/17/2020 10:33:00 AM LOCATION ELEVATION 59 Steele Road, Hudson, NH Elev. + 130 (NGVD29) EXCAVATION CONTRACTOR DEPTH WATER LEVEL - First WATER LEVEL - Completion Polster Industries 6.7 ft 6.4 ft 6.4 ft EQUIPMENT FOREMAN LANGAN PERSONNEL **CAT 305E** Taylor Sisti Wanderley Docarno SAMPLE Depth Symbol ELEV (feet) **DESCRIPTION REMARKS** Scale 0 +130.0 6" Dark brown fine-medium SAND, some silt, some roots Vertical sidewalls maintained. (dry)[TOPSOIL] +129.5 Dark brown fine SAND, some silt, trace roots (moist)[FILL] 1 2 Dark brown to black fine-medium SAND, some silt, trace fine G-1 at 2.7ft 3 gravel, trace organics, trace roots 9 (moist) 4 ALANGAN.COM/DATA/BOS/DATA1/151010101/PROJECT DATA\ DISCIPLINE/GEOTECHNICAL/GINTLOGS/151010101 ENTERPRISE. 5 +124.3 G-2 at 5.7ft Mottled organish brown to light brown silty fine SAND 6 9 Ā Slight seepage from wall at 6.4ft +123.3 Bottom of Test Pit at 6.7ft Bottom of Test Pit at 6.7ft. Test pit backfilled 7 with excavated soils in compacted lifts to grade. Surface restored with grass removed prior to excavation. 8 9 10

**LOG OF TEST PIT C-R-TP-03** Sheet of 1 PROJECT NAME **Hudson Logistics Center** 1510101₀₁ 6/17/2020 8:49:00 AM LOCATION ELEVATION 59 Steele Road, Hudson, NH Elev. + 132 (NGVD29) EXCAVATION CONTRACTOR DEPTH WATER LEVEL - First WATER LEVEL - Completion Polster Industries 8 ft N/E N/E EQUIPMENT FOREMAN LANGAN PERSONNEL Takeuchi TB260 Pat Polster Taylor Sisti SAMPLE Depth Symbol ELEV (feet) **DESCRIPTION REMARKS** Scale 0 +132.0 12-14" Dark brown fine-medium SAND, some silt, some roots Vertical sidewalls maintained. (moist)[TOPSOIL] 1 Orangish brown fine SAND, some silt, trace roots (moist) 2 Light brown silty fine SAND G-1 at 2.1ft (moist) 9 3 4 ALANGAN.COM/DATA/BOS/DATA1/151010101/PROJECT DATA\ DISCIPLINE/GEOTECHNICAL/GINTLOGS/151010101 ENTERPRISE. 5 6 7 Mottling 7-8ft 8 Bottom of Test Pit at 8ft Bottom of Test Pit at 8ft, no groundwater encountered. Test pit backfilled with excavated soils in compacted lifts to grade. Surface restored with grass removed prior to excavation. 9 10

LOG OF TEST PIT C-S-TP-01 Sheet 1 of PROJECT NAME **Hudson Logistics Center** 151010101 6/18/2020 12:11:00 PM LOCATION ELEVATION 59 Steele Road, Hudson, NH Elev. + 127.5 (NGVD29) EXCAVATION CONTRACTOR DEPTH WATER LEVEL - First WATER LEVEL - Completion Polster Industries 7.3 ft 7.1 ft 7.1 ft EQUIPMENT FOREMAN LANGAN PERSONNEL Takeuchi TB260 Pat Polster Taylor Sisti SAMPLE Depth Symbol ELEV (feet) **DESCRIPTION REMARKS** Scale 0 +127.5 10-11" LDark brown fine-medium SAND, some silt, some roots Vertical sidewalls maintained. (moist)[TOPSOIL] 1 Orangish brown silty fine SAND, trace roots (moist) 2 3 Light brown silty fine SAND (moist) /LANGAN.COM/DATA/BOS/DATA1/151010101/PROJECT DATA/_DISCIPLINE/GEOTECHNICAL/GINTLOGS/151010101_ENTERPRISE_TEST PITS.GPJ 4 G-1 at 4ft. Infiltration test C-IT-01 at 4ft, see infiltration log for details. GRAB 9 Mottling 4.5-6ft 5 6 7  $\blacksquare$ Groundwater encountered at 7.1ft +120.2 Bottom of Test Pit at 7.3ft Bottom of Test Pit at 7.3ft. Test pit backfilled with excavated soils in compacted lifts to grade. Surface restored with grass removed prior to 8 excavation. 9 10

**LOG OF TEST PIT C-S-TP-02** Sheet 1 of PROJECT NAME **Hudson Logistics Center** 151010101 6/17/2020 10:30:00 AM LOCATION ELEVATION 59 Steele Road, Hudson, NH Elev. + 127 (NGVD29) EXCAVATION CONTRACTOR DEPTH WATER LEVEL - First WATER LEVEL - Completion Polster Industries 6 ft 4 ft 4 ft EQUIPMENT FOREMAN LANGAN PERSONNEL Takeuchi TB260 Pat Polster Taylor Sisti SAMPLE Depth Symbol ELEV (feet) **DESCRIPTION REMARKS** Scale 0 +127.0 3" Light brown fine-medium SAND, some silt, some roots Vertical sidewalls maintained. (moist)[TOPSOIL] Orangish brown fine-medium SAND, some silt, trace roots 1 Light brown fine SAND, some silt (moist) 2 3 Mottling 3-4ft 4 Light brown fine SAND, trace silt Slight seepage 4-5ft. (wet) 5 +122.0 Light brown fine-medium SAND, trace silt (wet) 6 Bottom of Test Pit at 6ft Bottom of Test Pit at 6ft. Test pit backfilled with excavated soils in compacted lifts to grade. Surface restored with grass removed prior to excavation. 7 8 9 10

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LOG OF TEST PIT C-S-TP-03

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Sheet 1 PROJECT NAME **Hudson Logistics Center** 151010101 6/18/2020 7:47:00 AM LOCATION ELEVATION 59 Steele Road, Hudson, NH Elev. + 133.5 (NGVD29) EXCAVATION CONTRACTOR DEPTH WATER LEVEL - First WATER LEVEL - Completion Polster Industries N/E 6.5 ft N/E EQUIPMENT FOREMAN LANGAN PERSONNEL Takeuchi TB260 Pat Polster Taylor Sisti SAMPLE Depth Symbol ELEV (feet) **DESCRIPTION REMARKS** Scale 0 +133.5 11-13" Dark brown fine-medium SAND, some silt, some roots Vertical sidewalls maintained. No redox. (moist)[TOPSOIL] 1 Orangish brown silty fine-medium SAND, trace roots (moist) 2 Light brown fine-coarse SAND, trace silt, trace f-c gravel (moist) 3 130.4 Light brown fine-coarse SAND, some f-c gravel, trace silt, trace Slight excavator resistance at 3.1ft cobbles and boulders up to 24 inches (moist)[TILL] 4 5 6 +127.0 Bottom of Test Pit at 6.5ft Bottom of Test Pit at 6.5ft, no groundwater encountered. Test pit backfilled with excavated 7 soils in compacted lifts to grade. Surface restored with grass removed prior to excavation. 8 9 10 LANGAN

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LOG OF TEST PIT C-S-TP-04 Sheet

PROJECT NAME			PROJEC	CT NUMBER			-	DATE			
Hue LOCATION	dson L	ogistics Center		TON	1	5101	0101	6/17/2020 12:57:00 PM			
59 Steele Road, Hudson, NH			Elev. + 141 (NO							VD29)	
EXCAVATION CONTRACTOR Polster Industries					6.5 ft	ŀ	WATER LE	VEL - First N/E	WATER LEVE N/I	EL - Completion	
EQUIPMENT CAT305E			FOREM	AN			•	LANGAN PERSO	NNEL	_	
CA	1305	:		vvan	SAM	y Doo	carno		ı ayıc	or Sisti	
Symbol	ELEV (feet)	DESCRIPTION		Depth Scale	Number	Type		REMA			
	+141.0 +140.0 +139.2 +134.5	9-12" Dark brown fine-medium SAND, some silt, some roots (dry)[TOPSOIL]  Light brown fine-medium SAND, trace silt, trace roots (dry)  Light brown fine-medium SAND, trace silt, trace f-c gravel, trace cobbles up to 4 inches (dry)  Bottom of Test Pit at 6.5ft		0 — 1 — 2 — 3 — 4 — 5 — 6 — 6 — 6 — 6 — 6 — 6 — 7 — 7 — 7 — 7 — 7 — 7 — 7 — 7 — 7 — 7	NO.	F		idewalls mostly i			
			-	- 7			encounte soils in co	f Test Pit at 6.5fi red. Test pit bac ompacted lifts to with grass remov	kfilled with e grade. Surfa	excavated ace	
LA	W	<i>GAN</i>									

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**LOG OF TEST PIT C-S-TP-05** 

Sheet of 1 PROJECT NAME 1510101₀₁ **Hudson Logistics Center** 6/17/2020 1:51:00 PM LOCATION ELEVATION 59 Steele Road, Hudson, NH Elev. + 144.5 (NGVD29) EXCAVATION CONTRACTOR DEPTH WATER LEVEL - First WATER LEVEL - Completion Polster Industries 6.6 ft N/E N/E EQUIPMENT FOREMAN LANGAN PERSONNEL **CAT 305E** Olivia Chasse Wanderley SAMPLE Depth Symbol ELEV (feet) **DESCRIPTION REMARKS** Scale 0 1/ 1/1/ +144.5 6" Brown fine-medium SAND, trace silt, some roots Vertical sidewalls mostly maintained. No redox. (dry)[TOPSOIL] +144.0 1 2 Light brown fine-medium SAND, some f-c gravel, some cobbles, trace silt, trace boulders (dry) 3 Roots to 3.5ft 4 5 6 +137.9 Bottom of Test Pit at 6.6ft Bottom of Test Pit at 6.6ft, no groundwater encountered. Test pit backfilled with excavated 7 soils in compacted lifts to grade. Surface restored with grass removed prior to excavation. 8 9 10 LANGAN

TEST PITS.GPJ

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**LOG OF TEST PIT C-S-TP-06** Sheet 1 of PROJECT NAME **Hudson Logistics Center** 151010101 6/17/2020 1:56:00 PM LOCATION ELEVATION 59 Steele Road, Hudson, NH Elev. + 143 (NGVD29) EXCAVATION CONTRACTOR DEPTH WATER LEVEL - First WATER LEVEL - Completion Polster Industries 5 ft N/E N/E EQUIPMENT FOREMAN LANGAN PERSONNEL Takeuchi TB260 Pat Polster Taylor Sisti SAMPLE Depth Symbol ELEV (feet) **DESCRIPTION REMARKS** Scale 0 +143.0 6-7" Dark brown fine-medium SAND, some silt, some roots Vertical sidewalls not maintained. (moist)[TOPSOIL] Orangish brown fine-coarse SAND, trace silt, trace f-c gravel (moist) 1 Light brown fine-coarse SAND, some f-c gravel, trace silt, trace 2 cobbles up to 6 inches (dry) 3 Light brown fine-coarse SAND, trace silt, trace f-c gravel (dry) 4 ALANGAN.COM/DATA/BOS/DATA1/151010101/PROJECT DATA\ DISCIPLINE/GEOTECHNICAL/GINTLOGS/151010101 ENTERPRISE. 5 +138.0 Bottom of Test Pit at 5ft Wall collapsing at 5ft. Bottom of Test Pit at 5ft, no groundwater encountered. Test pit backfilled with excavated soils in compacted lifts to grade. Surface restored with grass removed prior to excavation. 6 7 8 9 10

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LOG OF TEST PIT C-S-TP-07 Sheet 1 of PROJECT NAME **Hudson Logistics Center** 151010101 6/18/2020 12:49:00 PM LOCATION ELEVATION 59 Steele Road, Hudson, NH Elev. + 153 (NGVD29) EXCAVATION CONTRACTOR DEPTH WATER LEVEL - First WATER LEVEL - Completion Polster Industries 7.5 ft N/E N/E EQUIPMENT FOREMAN LANGAN PERSONNEL **CAT 305E** Taylor Sisti Wanderley Docarno SAMPLE Depth Symbol ELEV (feet) **DESCRIPTION REMARKS** Scale 0 +153.0 9-10" Dark brown fine-medium SAND, some silt, some roots Vertical sidewalls mostly maintained. No redox. (dry)[TOPSOIL] Light brown fine-medium SAND, some silt, some roots 1 (dry) 2 3 Light brown fine-coarse SAND, some f-c gravel, trace silt, trace cobbles up to 8 inches (moist) 4 5 6 7 Bottom of Test Pit at 7.5ft Bottom of Test Pit at 7.5ft, no groundwater encountered. Test pit backfilled with excavated 8 soils in compacted lifts to grade. Surface restored with grass removed prior to excavation. 9

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TEST PITS.GPJ ALANGAN.COM/DATA/BOS/DATA1/151010101/PROJECT DATA\ DISCIPLINE/GEOTECHNICAL/GINTLOGS/151010101 ENTERPRISE.

LOG OF TEST PIT C-S-TP-08 Sheet 1 of 1

PROJECT			PROJE	CT NUM	IBER				DATE				
Hudson Logistics Center LOCATION			ELEVA	TION		1	15101	0101	101 6/18/2020 11:14:00 AM				
59 Steele Road, Hudson, NH									Elev. + 162 (NGVD29)				
EXCAVATION CONTRACTOR Polster Industries			DEPTH			5.5 f	t	WATER LE	VEL - First N/E	WATER LEVEL	- Completion		
EQUIPMENT Takeuchi TB260				IAN				alatar	LANGAN PERSO	NNEL			
ı ar	Reuchi	1B20U				SAN	Pat Po	oister		Taylo	r Sisti		
Symbol	ELEV (feet)	DESCRIPTION	DESCRIPTION			Number	Type	REMARKS					
<u> </u>	+162.0	5" Dark brown fine-medium SAND, some silt, some roots		— o	_	z		Vertical s	sidewalls maintai	ined. No redo	ıY		
<u> </u>	+161.6	(moist)[TOPSOIL]		_	_			Vortioare	nacwano mama	1100.1101000	Λ.		
XXX	+101.0	Light brown fine-coarse SAND, trace silt, trace roots		_									
XXXX		(moist)[FILL]		_	_								
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XXXX	+160.7			-	_								
		Dark brown fine-medium SAND, some silt, trace larger roots		_		]							
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	+159.2			_									
	. 100.2	Light brown fine-medium SAND, trace silt		- 3	_								
		(moist)		_	_								
				_	-								
				_	_								
	+158.2	Light brown fine-coarse SAND, trace silt, trace f-c gravel		- - 4	_								
		(moist)		- '	_								
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;	+157.6	Little C. CAND.		_	_								
		Light brown fine-coarse SAND, some f-c gravel, trace silt (moist)[TILL]		_	-			Hard exc	avation at 4.4ft				
		(moist)[Titt]		- - 5	_								
				- J -		]							
				_	_								
VV-57/02.75# 1	+156.5	Bottom of Test Pit at 5.5ft		- -	-			Bottom o	f Test Pit at 5.5f	t, no groundy	vater		
				-	-	-			ered. Test pit bac				
				- 6 -					ompacted lifts to				
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LOG OF TEST PIT C-S-TP-11 Sheet of 1 PROJECT NAME 1510101₀₁ **Hudson Logistics Center** 6/30/2020 12:59:00 PM LOCATION ELEVATION 59 Steele Road, Hudson, NH Elev. + 162 (NGVD29) EXCAVATION CONTRACTOR DEPTH WATER LEVEL - First WATER LEVEL - Completion Polster Industries 7.5 ft N/E N/E EQUIPMENT FOREMAN LANGAN PERSONNEL Takeuchi TB260 Olivia Chasse Wanderley Docarno SAMPLE Symbol ELEV (feet) Depth **DESCRIPTION REMARKS** Scale 0 1/2 1/2 +162.0 6" Brown fine-medium SAND, trace silt, trace roots Vertical sidewalls mostly maintained. No redox. (dry)[TOPSOIL] +161.5 1 2 Light brown fine-medium SAND, some f-c gravel, trace silt, trace boulders (dry) 3 4 5 Roots to 5ft 6 7 Bottom of Test Pit at 7.5ft Bottom of Test Pit at 7.5ft, no groundwater encountered. Test pit backfilled with excavated 8 soils in compacted lifts to grade. Surface restored with grass removed prior to excavation. 9 10 LANGAN

TEST PITS.GPJ

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LOG OF TEST PIT C-S-TP-13

Sheet 1 of PROJECT NAME **Hudson Logistics Center** 151010101 6/17/2020 8:32:00 AM LOCATION ELEVATION 59 Steele Road, Hudson, NH Elev. + 155.5 (NGVD29) **EXCAVATION CONTRACTOR** DEPTH WATER LEVEL - First WATER LEVEL - Completion Polster Industries N/E 5.5 ft N/E EQUIPMENT FOREMAN LANGAN PERSONNEL **CAT 305E** Wanderley Docarno Taylor Sisti SAMPLE Depth Symbol ELEV (feet) **DESCRIPTION REMARKS** Scale 0 +155.5 8" Light brown fine-medium SAND, some silt, some roots Vertical sidewalls maintained. No redox. (dry)[TOPSOIL] Light brown fine-medium SAND, some silt, trace f-c gravel, trace 1 roots, trace cobbles up to 4 inches (dry) Light brown fine-coarse SAND, trace silt, trace f-c gravel, trace cobbles up to 4 inches 2 (dry) 3 Light brown fine-coarse SAND, trace silt, trace f-c gravel, trace Hard excavation at 3.8ft. 4 cobbles up to 8 inches, trace weathered cobbles (dry) [TILL] 5 +150.0 Bottom of Test Pit at 5.5ft Bottom of Test Pit at 5.5ft, no groundwater encountered. Test pit backfilled with excavated 6 soils in compacted lifts to grade. Surface restored with grass removed prior to excavation. 7 8 9 10 LANGAN

PITS.GPJ

\LANGAN.COMIDATA\BOS\DATA1\15101011\PROJECT DATA\ DISCIPLINE\GEOTECHNICAL\GINTLOGS\151010101

LOG OF TEST PIT C-S-TP-14 Sheet 1 of PROJECT NAME **Hudson Logistics Center** 151010101 6/17/2020 7:27:00 AM LOCATION ELEVATION 59 Steele Road, Hudson, NH Elev. + 139.5 (NGVD29) **EXCAVATION CONTRACTOR** DEPTH WATER LEVEL - First WATER LEVEL - Completion Polster Industries 5.5 ft 4.8 ft 5.4 ft EQUIPMENT FOREMAN LANGAN PERSONNEL Takeuchi TB260 Taylor Sisti Pat Polster SAMPLE Depth Symbol ELEV (feet) **DESCRIPTION REMARKS** Scale 0 +139.5 7-8" Dark brown fine-medium SAND, some silt, some Vertical sidewalls mostly maintained. No redox. roots(dry)[TOPSOIL] +138.8 Orangish brown fine-medium SAND, some silt, trace roots 1 (dry) +138.3 Light brown fine-medium SAND, trace silt, trace fine gravel, trace roots (dry) 2 3 4 Brown fine-coarse SAND, some f-c gravel, trace silt, trace boulders Some excavator resistance at 4.5ft up to 20 inches Water seeping in from wall at 4.8ft 5 (moist) \LANGAN.COMIDATA\BOS\DATA1\15101011\PROJECT DATA\ DISCIPLINE\GEOTECHNICAL\GINTLOGS\151010101 Heavy seepage from wall at 5.4ft +134.0 Bottom of Test Pit at 5.5ft Bottom of Test Pit at 5.5ft. Test pit backfilled with excavated soils in compacted lifts to grade. 6 Surface restored with grass removed prior to excavation. 7 8 9 10

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ENTERPRISE

**LOG OF TEST PIT C-S-TP-15** Sheet of 1 PROJECT NAME **Hudson Logistics Center** 151010101 6/17/2020 9:23:00 AM LOCATION ELEVATION 59 Steele Road, Hudson, NH Elev. + 130 (NGVD29) EXCAVATION CONTRACTOR DEPTH WATER LEVEL - First WATER LEVEL - Completion Polster Industries 7.2 ft 7 ft 7 ft EQUIPMENT FOREMAN LANGAN PERSONNEL Takeuchi TB260 Pat Polster Taylor Sisti SAMPLE Depth Symbol ELEV (feet) **DESCRIPTION REMARKS** Scale 0 x¹/₂ x¹/₂ +130.0 7-8" Dark brown fine-medium SAND, some silt, some roots Vertical sidewalls maintained. (moist)[TOPSOIL] Orangish brown silty fine SAND, trace roots 1 (moist) 2 Light brown fine SAND, some silt (moist) 3 Mottling 3.5-4.5ft 4 Light brown fine-medium SAND, some silt, trace fine gravel ILANGAN.COM/DATA/BOS/DATA1/151010101/PROJECT DATA\ DISCIPLINE/GEOTECHNICAL/GINTLOGS/151010101 ENTERPRISE (moist) 5 6 Light brown silty fine SAND (moist) Ţ 7 Slight seepage from wall at 7ft Bottom of Test Pit at 7.2ft Bottom of Test Pit at 7.2ft. Test pit backfilled with excavated soils in compacted lifts to grade. Surface restored with grass removed prior to excavation. 8 9 10

**LOG OF TEST PIT C-S-TP-16** Sheet 1 of PROJECT NAME **Hudson Logistics Center** 151010101 6/17/2020 9:45:00 AM LOCATION ELEVATION 59 Steele Road, Hudson, NH Elev. + 131.5 (NGVD29) **EXCAVATION CONTRACTOR** DEPTH WATER LEVEL - First WATER LEVEL - Completion Polster Industries 6.5 ft 5.8 ft 5.8 ft EQUIPMENT FOREMAN LANGAN PERSONNEL **CAT 305E** Taylor Sisti Wanderley Docarno SAMPLE Depth Symbol ELEV (feet) **DESCRIPTION REMARKS** Scale 0 +131.5 11" Dark brown fine-medium SAND, some silt, some roots Vertical sidewalls maintained. (moist) [TOPSOIL] 1 Light brown SILT, some fine sand, trace roots (moist) 2 NLANGAN.COMIDATAIBOSIDATA1151010101/PROJECT DATA, DISCIPLINE(GEOTECHNICAL/GINTLOGS\1510101010 ENTERPRISE TEST PITS.GPJ... 7/13/2020 1:58:26 PM. Mottled light brown SILT, some fine sand (moist) 3 4 Light brown fine-coarse SAND, some silt, trace f-c gravel, trace boulders up to 18inches, trace weathered boulder and cobble pieces (moist) 5 Slight seepage from wall at 5.8ft 6 +125.0 Bottom of Test Pit at 6.5ft Bottom of Test Pit at 6.5ft. Test pit backfilled with excavated soils in compacted lifts to grade. 7 Surface restored with grass removed prior to excavation. 8 9 10

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Report: Log - LANGANTP

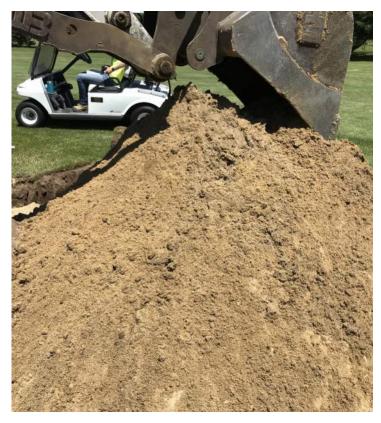
LOG OF TEST PIT C-S-TP-17 Sheet of 1 PROJECT NAME **Hudson Logistics Center** 151010101 6/18/2020 1:28:00 PM LOCATION ELEVATION 59 Steele Road, Hudson, NH Elev. + 133 (NGVD29) **EXCAVATION CONTRACTOR** DEPTH WATER LEVEL - First WATER LEVEL - Completion Polster Industries 7.5 ft 7 ft N/E EQUIPMENT FOREMAN LANGAN PERSONNEL Takeuchi TB260 Pat Polster Taylor Sisti SAMPLE Depth Symbol ELEV (feet) **DESCRIPTION REMARKS** Scale 0 133.0 ±133.0 7" Dark brown fine-medium SAND, some silt, some roots Vertical sidewalls maintained. (moist)[TOPSOIL] +132.4 Light brown silty fine SAND, trace roots (moist) 1 Light brown silty fine SAND, some about 2-inch-thick f-m sand lenses (moist) 2 G-1 at 2.5ft. Infiltration test C-IT-17 at 2.5ft below grade, see log for details. 9 3 4 Mottling 3.8-4.5ft ALANGAN.COM/DATA/BOS/DATA1/151010101/PROJECT DATA\ DISCIPLINE/GEOTECHNICAL/GINTLOGS/151010101 ENTERPRISE. 5 6 7 Light brown silty fine SAND Material wet, no seepage into test pit (wet) Bottom of Test Pit at 7.5ft Bottom of Test Pit at 7.5ft. Test pit backfilled with excavated soils in compacted lifts to grade. 8 Surface restored with grass removed prior to excavation. 9 10

## APPENDIX E TEST PIT PHOTOGRAPHS









151010101 Hudson Logistics Center Hudson, NH

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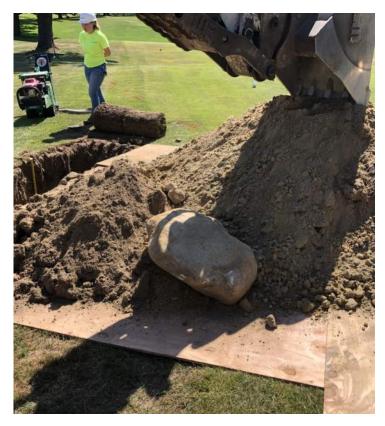
151010101 Hudson Logistics Center Hudson, NH

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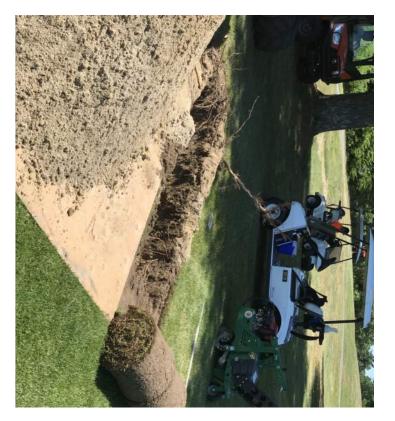




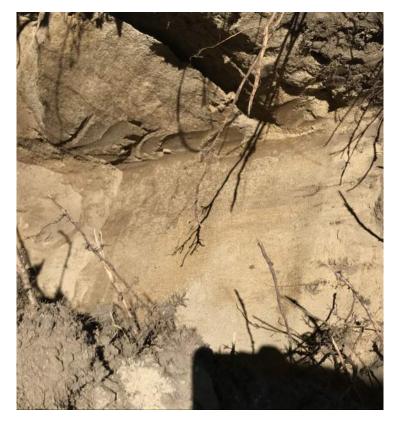


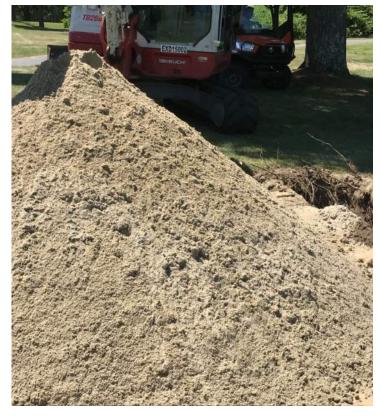


151010101 Hudson Logistics Center Hudson, NH

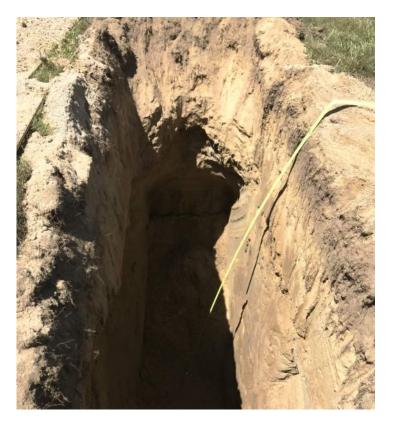








151010101 Hudson Logistics Center Hudson, NH







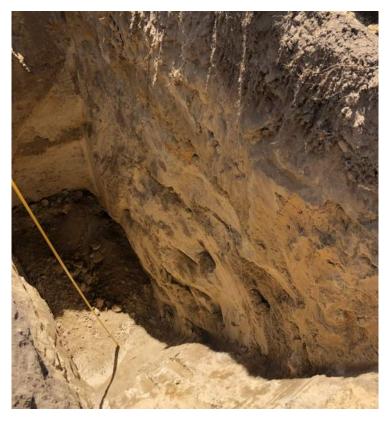


151010101 Hudson Logistics Center Hudson, NH

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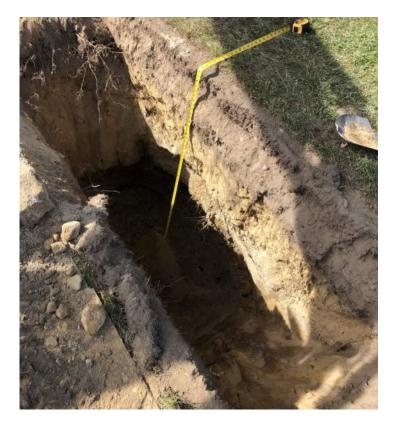






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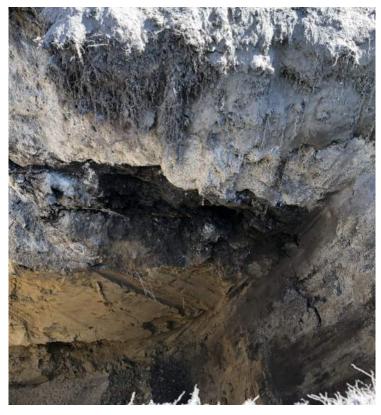


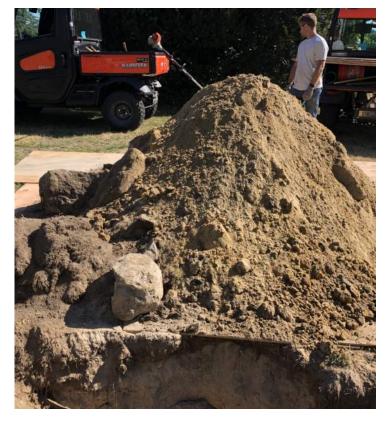


151010101 Hudson Logistics Center Hudson, NH





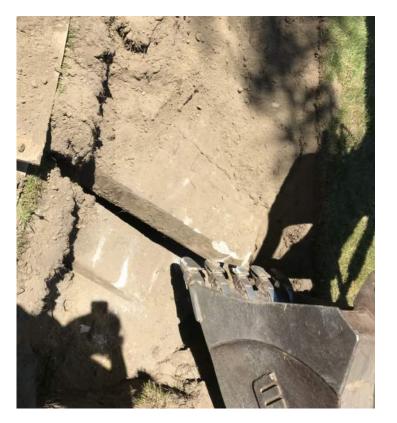




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## C-B-TP-10A









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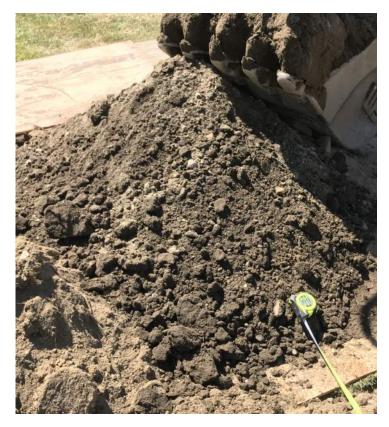
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## C-B-TP-10B









151010101 Hudson Logistics Center Hudson, NH

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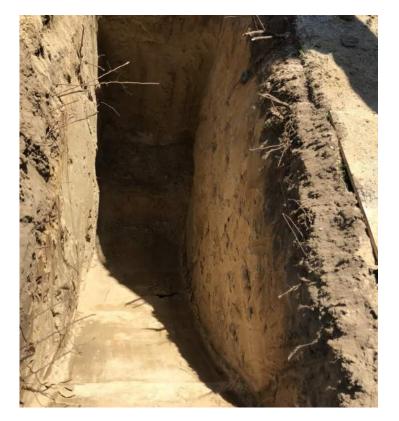




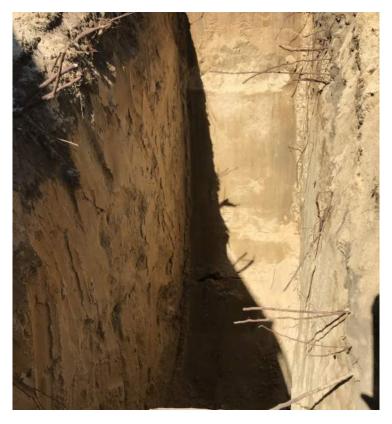


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## **C-R-TP-01**









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## **C-R-TP-02**





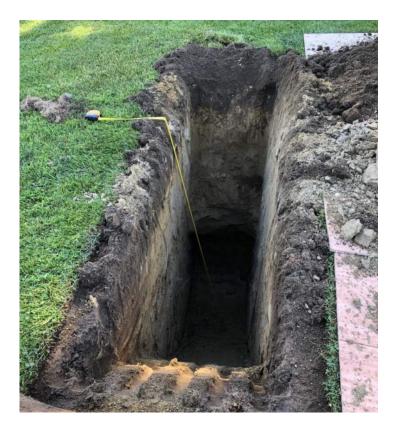




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## **C-R-TP-03**









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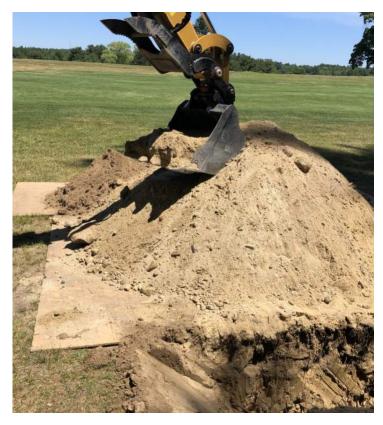
151010101 Hudson Logistics Center Hudson, NH

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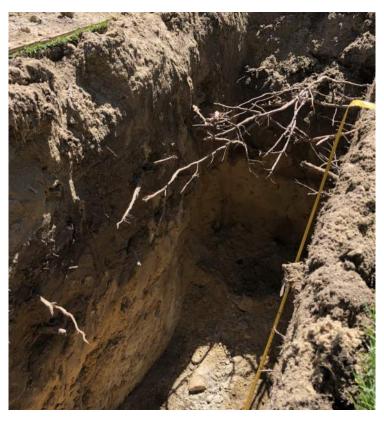


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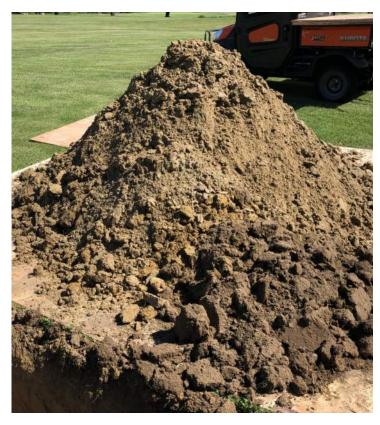
151010101 Hudson Logistics Center Hudson, NH

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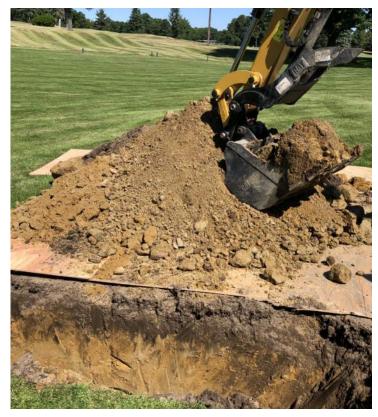
151010101 Hudson Logistics Center Hudson, NH

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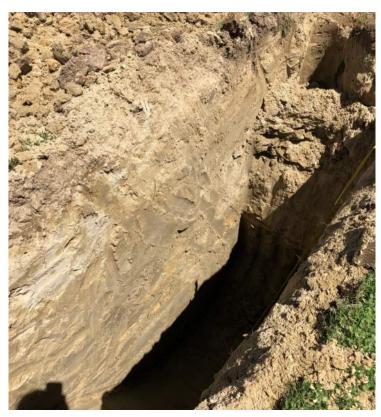


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# APPENDIX F WELL CONSTRUCTION LOGS & READINGS

#### Lot C Summary of Groundwater Elevations Hudson, New Hampshire

Langan Project No.: 151010101

Monitoring Well Lot ID		С						
Monitoring Well ID	C-B-BOR-02(OW)	C-S-BOR-04(OW)	C-B-BOR-16(OW)	C-B-BOR-20(OW)				
Ground Surface Elevation (feet)	132.0	130.5	158.0	156.5				
Installation Date	6/13/2020	6/18/2020	6/17/2020	6/8/2020				
Reference Point	Ground Surface	Ground Surface	Ground Surface	Ground Surface				
June 20, 2020								
Depth to Groundwater (feet)	5.0	NM	13.9	12.8				
Groundwater Elevation (feet)	127.0	NA	144.1	143.7				
June 30, 2020								
Depth to Groundwater (feet)	5.0	6.9	14.3	NM				
Groundwater Elevation (feet)	127.0	123.6	143.7	NA				
July 1, 2020								
Depth to Groundwater (feet)	NM	NM	NM	NM				
Groundwater Elevation (feet)	NA	NA	NA	NA				
July 19, 2020								
Depth to Groundwater (feet)	5.7	NM	NM	NM				
Groundwater Elevation (feet)	126.3	NA	NA	NA				
July 20, 2020	•							
Depth to Groundwater (feet)	6.5	7.5	14.9	13.7				
Groundwater Elevation (feet)	125.5	123.0	143.1	142.8				
July 29, 2020								
Depth to Groundwater (feet)	6.6	7.6	15.0	13.9				
Groundwater Elevation (feet)	125.4	122.9	143.0	142.6				

#### Notes:

- 1. "Depth to Groundwater" results are shown in feet below ground surface. "Groundwater Elevation" is given in feet and references the National Geodetic Vertical Datum of 1929 (NGVD 1929).
- 2. Ground surface elevations were estimated by Langan by interpolating between the ground surface contours shown on the existing conditions plan provided by Hayner/Swanson, Inc. (HSI) of Nashua, New Hampshire. As such, the elevations should be considered approximate.

#### 3. Abbreviations

NI = Not Installed

NA = Not Applicable

NM = Not Measured

	WELL CONSTRUCTION SUMMARY Well No. C-B-BOR-02(OW)					
PROJECT	Project Hudson	PROJECT NO.	151010101			
LOCATION	59 Steele Road, Hudson, NH	ELEVATION AND DA	<b>тим</b> Арр	orox.	132	NGVD29
DRILLING AGENCY	SoilTesting, Inc.	DATE STARTED 6/13/	2020	DATE FI	<b>NISHED</b> 6/13/2020	
DRILLING EQUIPMENT	CME Truck-Mounted Drill Rig	DRILLER	Sam Deange	elis		
SIZE AND TYPE OF BIT	4" Hollow Stem Auger	INSPECTOR	Jack Berritt			

#### METHOD OF INSTALLATION

Boring C-B-BOR-02(OW) was advance to about 14ft with 4" HSA. The boring was backfilled with soil cuttings to about 10ft. The screen and riser for the well was placed into the borehole. A 1-foot seal of 3/8" Bentonite Chips was placed above the filter sand. The remaining augers were removed and the remainder of the borehole was backfilled with auger cuttings. A curb box was installed at grade.

#### METHOD OF WELL DEVELOPMENT

N/A

TYPE OF CASING	PVC	DIAMETER	2in.	TYPE OF BACKFILL MATERIAL	Auger cuttings		
TYPE OF SCREEN	PVC	DIAMETER	2in.	TYPE OF SEAL MATERIAL	3/8" Bentonite Chips		
BOREHOLE DIAMETER	4"			TYPE OF FILTER MATERIAL	FilPro #2 sand		
TOP OF CASING	ELEVATION		DEPTH (ft)	WELL DETAILS	SUMMARY SOIL	DEPTH	
	132		0		CLASSIFICATION	(FT)	
TOP OF BACKFILL	ELEVATION		DEPTH (ft)	Cover	Ground Surface	0.0	
	131.5		0.5				
TOP OF SEAL	ELEVATION		DEPTH (ft)		eal		
	131.5		0.5	Screen			
TOP OF FILTER	ELEVATION		DEPTH (ft)				
el.	130.5		1.5				
TOP OF SCREEN	ELEVATION		DEPTH (ft)				
el.	. 132		0				
BOTTOM OF BORING	ELEVATION		DEPTH (ft)	<b>│</b>	Brown fine SAND, trace silt	0.0	
el.	. 118		14		trace fine gravel		
SCREEN LENGTH	10ft						
SLOT SIZE	0.1in						
GROUN	DWATER EL	EVATIONS					
DATE	ELEVATION	DEPTH TO WATER (ft)		Sa Sa	ind		
6/20/2020	127.00	5.00		Pa Pa	ack		
DATE	ELEVATION	DEPTH TO WATER (ft)					
6/30/2020	127.00	5.00				10.0	
DATE	ELEVATION	DEPTH TO WATER (ft)					
7/29/2020	126.30	5.70					
DATE	ELEVATION	DEPTH TO WATER (ft)					
7/20/2020	125.50	6.50					
DATE	ELEVATION	DEPTH TO WATER (ft)					
7/29/2020	125.40	6.60					
DATE	ELEVATION	DEPTH TO WATER (ft)		1	1		

	WELL CONSTRUCTION SUMMARY Well No. C-S-BOR-04(OW)					
PROJECT	Project Hudson	PROJECT NO.	151010101			
LOCATION	59 Steele Road, Hudson, NH	ELEVATION AND DA	тим Арр	orox.	130.5	NGVD29
DRILLING AGENCY	SoilTesting, Inc.	DATE STARTED 6/18/	2020	DATE FII	<b>NISHED</b> 6/18/2020	
DRILLING EQUIPMENT	ATV Mounted CME 550X	DRILLER	Sam DeAng	elis		
SIZE AND TYPE OF BIT	4" Hollow Stem Auger	INSPECTOR	Justin Hall			

#### METHOD OF INSTALLATION

Boring C-S-BOR-04(OW) was advance to about 14ft with 4" HSA. The boring was backfilled with soil cuttings to about 10ft. The screen and riser for the well was placed into the borehole. #2 filter sand was poured around the pipe to 2ft above the screen as the augers were removed. A 1-foot seal of 3/8" Bentonite Chips was placed above the filter sand. The remaining augers were removed and the remainder of the borehole was backfilled with auger cuttings. A curb box was installed at grade.

#### METHOD OF WELL DEVELOPMENT

N/A

TYPE OF GAGING	DVC	DIAMETER	2:	TVDE OF DAGVEUL MATERIAL	A		
TYPE OF CASING	PVC	DIAMETER	2in.	TYPE OF BACKFILL MATERIAL	Auger cuttings		
TYPE OF SCREEN	PVC	DIAMETER	2in.	TYPE OF SEAL MATERIAL	3/8" Bentonite Chips		
BOREHOLE DIAMETER	4"			TYPE OF FILTER MATERIAL	FilPro #2 sand		
TOP OF CASING	ELEVATION		DEPTH (ft)	WELL DETAILS	SUMMARY SOIL	DEPTH	
el.	130.5		0	<u></u>	CLASSIFICATION	(FT)	
TOP OF BACKFILL	ELEVATION		DEPTH (ft)	Cover	Ground Surface	0.0	
el.	130		0.5				
TOP OF SEAL	ELEVATION		DEPTH (ft)	2" PVC			
el.	128.5		2	Riser →			
TOP OF FILTER	ELEVATION		DEPTH (ft)				
el.	127.5		3				
TOP OF SCREEN	ELEVATION		DEPTH (ft)	<b>→</b> Backfil			
el.	125.5		5		Light brown fine SAND,		
BOTTOM OF BORING	ELEVATION		DEPTH (ft)	<b>←</b> Sea	some silt		
el.	116.5		14				
SCREEN LENGTH	5ft						
SLOT SIZE	0.1in			PVC			
GROUNI	OWATER EL	EVATIONS		Screen			
DATE	ELEVATION	DEPTH TO WATER (ft)		Sand			
6/30/2020	123.60	6.90		Pack	1		
DATE	ELEVATION	DEPTH TO WATER (ft)					
7/20/2020	123.00	7.50				10.0	
DATE	ELEVATION	DEPTH TO WATER (ft)					
7/29/2020	122.90	7.60					
DATE	ELEVATION	DEPTH TO WATER (ft)					
DATE	ELEVATION	DEPTH TO WATER (ft)					
DATE	ELEVATION	DEPTH TO WATER (ft)					

	WELL CONSTRUCTION SUMMARY Well No. C-B-BOR-16(OW)						
PROJECT	Project Hudson	PROJECT NO.	151010	101			
LOCATION	59 Steele Road, Hudson, NH	ELEVATION AND DA	TUM	Approx.	158	NGVD29	
DRILLING AGENCY	SoilTesting, Inc.	DATE STARTED 6/17/	/2020		<b>DATE FINISHED</b> 6/17/2020		
DRILLING EQUIPMENT	CME Truck-Mounted Drill Rig	DRILLER	Mike Ke	ennedy			
SIZE AND TYPE OF BIT	4" Hollow Stem Auger	INSPECTOR	Olivia C	hasse			

#### METHOD OF INSTALLATION

Boring C-B-BOR-16(OW) was advance to about 25.8ft with 4" HSA. The screen and riser for the well was placed into the borehole. #2 filter sand was poured around the pipe to 2ft above the screen as the augers were removed. A 1-foot seal of 3/8" Bentonite Chips was placed above the filter sand. The remaining augers were removed and the remainder of the borehole was backfilled with auger cuttings. A curb box was installed at grade.

#### METHOD OF WELL DEVELOPMENT

N/A

TYPE OF CASING	PVC	DIAMETER	2in.	TYPE OF BACKFILL MATERIAL	Auger cuttings	
TYPE OF SCREEN	PVC	DIAMETER	2in.	TYPE OF SEAL MATERIAL	3/8" Bentonite Chips	
BOREHOLE DIAMETER	4"			TYPE OF FILTER MATERIAL	FilPro #2 sand	
TOP OF CASING	ELEVATION		DEPTH (ft)	WELL DETAILS	SUMMARY SOIL	DEPTH
	158 ELEVATION		0 DEPTH (ft)		CLASSIFICATION	(FT)
TOP OF BACKFILL				Cover	Ground Surface	0.0
	157.5 ELEVATION		0.5	ON DVC		
TOP OF SEAL	151		<b>DEPTH (ft)</b> 7	Riser -		
TOP OF FILTER	ELEVATION		DEPTH (ft)	nisei – – – – – – – – – – – – – – – – – – –	Light brown fine SAND,	
	150		8		some silt	
TOP OF SCREEN	ELEVATION		DEPTH (ft)	Backf		
el.	148		10			
BOTTOM OF BORING	ELEVATION		DEPTH (ft)	<b>↓</b> Se	al	
el.	132.2		25.8			
SCREEN LENGTH	15ft					
SLOT SIZE	0.1in			PVC		20.0
GROUNI	OWATER EL	EVATIONS		Screen		20.0
DATE	ELEVATION	DEPTH TO WATER (ft)		Sar	nd .	
6/20/2020	144.10	13.90		Pac		
DATE	ELEVATION	DEPTH TO WATER (ft)				
6/30/2020	143.70	14.30				25.0
DATE	ELEVATION	DEPTH TO WATER (ft)				
7/20/2020	143.10	14.90				
DATE	ELEVATION	DEPTH TO WATER (ft)				
7/29/2020	143.00	15.00				
DATE	ELEVATION	DEPTH TO WATER (ft)				
DATE	ELEVATION	DEPTH TO WATER (ft)				

WELL CONSTRUCTION SUMMARY Well No. C-B-BOR-20(OW)			
PROJECT	Project Hudson	<b>PROJECT NO.</b> 151010101	
LOCATION	59 Steele Road, Hudson, NH	ELEVATION AND DATUM Approx. 156.5 NGVD	)29
DRILLING AGENCY	SoilTesting, Inc.	<b>DATE STARTED</b> 6/5/2020 <b>DATE FINISHED</b> 6/5/2020	
DRILLING EQUIPMENT	CME Truck-Mounted Drill Rig	DRILLER Sam Deangelis	
SIZE AND TYPE OF BIT	4" Hollow Stem Auger	INSPECTOR Jack Berritt	

#### METHOD OF INSTALLATION

Boring C-B-BOR-20(OW) was advance to about 22ft with 4" HSA. The boring was backfilled with soil cuttings to about 20ft. The screen and riser for the well was placed into the borehole. #2 filter sand was poured around the pipe to 1ft above the screen as the augers were removed. A 1-foot seal of 3/8" Bentonite Chips was placed above the filter sand. The remaining augers were removed and the remainder of the borehole was backfilled with auger cuttings. A curb box was installed at grade.

#### METHOD OF WELL DEVELOPMENT

N/A

TYPE OF CASING	PVC	DIAMETER	2in.	TYPE OF BACKFILL MATERIAL	Auger cuttings	
TYPE OF SCREEN	PVC	DIAMETER	2in.	TYPE OF SEAL MATERIAL	3/8" Bentonite Chips	
BOREHOLE DIAMETER	4"			TYPE OF FILTER MATERIAL	FilPro #2 sand	
TOP OF CASING	ELEVATION 156.5		<b>DEPTH (ft)</b>	WELL DETAILS	SUMMARY SOIL CLASSIFICATION	DEPTH (FT)
TOP OF BACKFILL el.	ELEVATION 156		DEPTH (ft) 0.5	Cover	Ground Surface	0.0
TOP OF SEAL	ELEVATION 148.5		DEPTH (ft) 8	2" PVC		
TOP OF FILTER	ELEVATION 147.5		DEPTH (ft)		Light brown fine SAND trace silt	
TOP OF SCREEN el.	<b>ELEVATION</b> 146.5		DEPTH (ft) 10	Backfill		8.0
BOTTOM OF BORING	ELEVATION 134.5		DEPTH (ft) 22	Seal		
SCREEN LENGTH	10ft		22			
SLOT SIZE	0.1in			PVC Screen	TILL	
GROUN	DWATER EL	EVATIONS			1166	
<b>DATE</b> 6/20/2020	ELEVATION 144.10	DEPTH TO WATER (ft) 12.80		Sand Pack		
<b>DATE</b> 7/20/2020	ELEVATION 142.80	DEPTH TO WATER (ft) 13.70				20.0
<b>DATE</b> 7/29/2020	ELEVATION 142.60	DEPTH TO WATER (ft) 13.90				
DATE	ELEVATION	DEPTH TO WATER (ft)				
DATE	ELEVATION	DEPTH TO WATER (ft)				
DATE	ELEVATION	DEPTH TO WATER (ft)				

# APPENDIX G LABORATORY TESTING RESULTS



Location:Hudson, NHProject No:GTX-311848Boring ID:---Sample Type:---Tested By:ckgSample ID:---Test Date:06/29/20Checked By:jsc

Depth: --- Test Id: 561432

# Moisture Content of Soil and Rock - ASTM D2216

Boring ID	Sample ID	Depth	Description	Moisture Content,%
C-B-BOR-04	S- 2	2-4 ft	Moist, light olive brown silty sand with gravel	8.5
C-B-BOR-08	S- 4	6-8 ft	Moist, light yellowish brown sand with silt	9.1
C-B-BOR-11	S- 5	8-10 ft	Moist, light olive brown silty sand with gravel	9.2
C-B-TP-02	G- 1	3-4 ft	Moist, dark olive brown silt with organics	48.3
C-B-TP-06	S- 1	0-5 ft	Moist, olive yellow sand	4.7
C-B-TP-07	S- 1	0-5 ft	Moist, light olive brown silty sand	3.6
C-S-BOR-09	S- 6	10-12 ft	Moist, dark grayish brown silty sand	10.3
C-S-BOR-12	S- 5	8-10 ft	Moist, light brownish gray silty sand	11.4
C-S-BOR-20	S- 3	4-6 ft	Moist, olive yellow sand with gravel	2.0
C-S-BOR-22	S- 7	15-17 ft	Moist, olive brown silty sand	13.2

Notes: Temperature of Drying: 110° Celsius



Location:Hudson, NHProject No:GTX-311848Boring ID:C-S-BOR-23Sample Type: jarTested By:ckgSample ID:S-5Test Date:06/29/20Checked By:jsc

Depth: 8-10 ft Test Id: 561426

Test Comment: ---

Visual Description: Moist, olive brown sand with gravel

Sample Comment: ---

### Moisture Content of Soil and Rock - ASTM D2216

Boring ID	Sample ID	Depth	Description	Moisture Content,%
C-S-BOR-23	S- 5	8-10 ft	Moist, olive brown sand with gravel	11.1
C-S-TP-01	G- 1	4 ft	Moist, light olive brown sandy silt	31.7
C-S-TP-17	G- 1	2.5 ft	Moist, light yellowish brown sandy silt	18.4

Notes: Temperature of Drying: 110° Celsius



Client: Langan Engineering Project: Project Hudson Hudson, NH Location:

Project No: GTX-311848 Boring ID: ---Sample Type: ---Tested By: ckg Sample ID: ---Test Date: 08/05/20 Checked By: bfs

Depth: Test Id: 567302

# Amount of Material Passing #200 Sieve - ASTM D1140

Boring ID	Sample ID	Depth	Visual Description	Fines, %
C-B-BOR-05	S-5	8-10 ft	Moist, olive brown silt	90.6

Notes: Tests performed using Method B - washing using a wetting agent Dry mass of test specimen was determined directly



Location:Hudson, NHProject No:GTX-311848Boring ID:C-B-TP-02Sample Type: jarTested By:camSample ID:G-1Test Date:06/26/20Checked By:jsc

Sample ID: G-1 Test Date: 06/26/2
Depth: 3-4 ft Test Id: 561437

Visual Description: Moist, dark olive brown silt with organics

Sample Comment: ---

Test Comment:

# Moisture, Ash, and Organic Matter - ASTM D2974

Boring ID	Sample ID	Depth	Description	Moisture Content,%	Ash Content,%	Organic Matter,%
C-B-TP-02	G-1	3-4 ft	Moist, dark olive brown silt with organics	48	93.3	6.7

Notes: Moisture content determined by Method A and reported as a percentage of oven-dried mass; dried to a constant mass at temperature of 105° C

Ash content and organic matter determined by Method C; dried to constant mass at temperature 440° C



Location:Hudson, NHProject No:GTX-311848Boring ID:C-B-BOR-04Sample Type: jarTested By:ckgSample ID:S-2Test Date:06/30/20Checked By:bfs

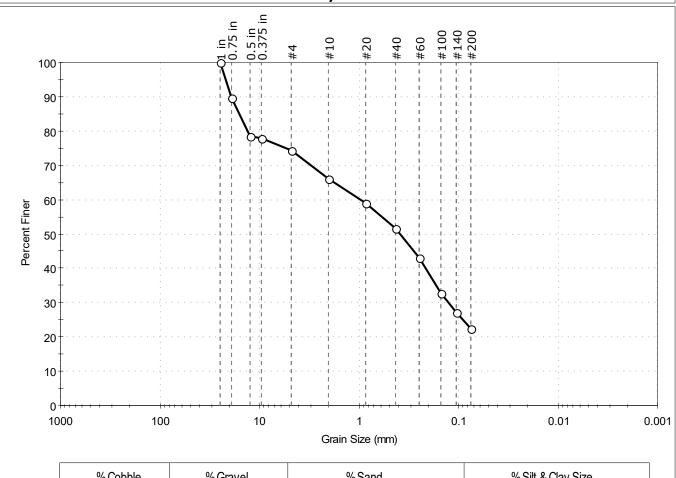
Depth: 2-4 ft Test Id: 561420

Test Comment: ---

Visual Description: Moist, light olive brown silty sand with gravel

Sample Comment: ---

# Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	25.8	51.9	22.3

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1 in	25.00	100		
0.75 in	19.00	90		
0.5 in	12.50	78		
0.375 in	9.50	78		
#4	4.75	74		
#10	2.00	66		
#20	0.85	59		
#40	0.42	51		
#60	0.25	43		
#100	0.15	33		
#140	0.11	27		
#200	0.075	22		

<u>Coefficients</u>				
D ₈₅ = 15.9418 mm	$D_{30} = 0.1264 \text{ mm}$			
D ₆₀ = 0.9730 mm	$D_{15} = N/A$			
D ₅₀ = 0.3869 mm	$D_{10} = N/A$			
C _{II} =N/A	$C_c = N/A$			

ASTM N/A

 $\underline{\mathsf{AASHTO}} \quad \mathsf{Silty} \; \mathsf{Gravel} \; \mathsf{and} \; \mathsf{Sand} \; (\mathsf{A-2-4} \; (\mathsf{0}))$ 

<u>Sample/Test Description</u> Sand/Gravel Particle Shape: ANGULAR

 ${\sf Sand/Gravel\; Hardness: HARD}$ 



Location:Hudson, NHProject No:GTX-311848Boring ID:C-B-BOR-08Sample Type: jarTested By:ckgSample ID:S-4Test Date:06/30/20Checked By:bfs

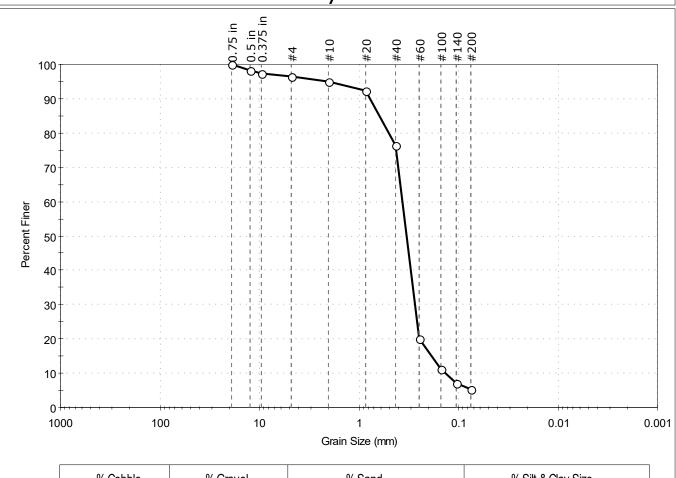
Depth: 6-8 ft Test Id: 561421

Test Comment: --

Visual Description: Moist, light yellowish brown sand with silt

Sample Comment: ---

# Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
	3.6	91.2	5.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
0.5 in	12.50	98		
0.375 in	9.50	97		
#4	4.75	96		
#10	2.00	95		
#20	0.85	92		
#40	0.42	76		
#60	0.25	20		
#100	0.15	11		
#140	0.11	7		
#200	0.075	5.2		

<u>Coefficients</u>					
D ₈₅ = 0.6184 mm	$D_{30} = 0.2748 \text{ mm}$				
D ₆₀ = 0.3644 mm	D ₁₅ =0.1876 mm				
D ₅₀ = 0.3317 mm	$D_{10} = 0.1360 \text{ mm}$				
Cu =2.679	$C_c = 1.524$				

ASTM N/A Classification

AASHTO Fine Sand (A-3 (1))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---



Location:Hudson, NHProject No:CBoring ID:C-B-BOR-11Sample Type: jarTested By:ckgSample ID:S-5Test Date:06/30/20Checked By:bfs

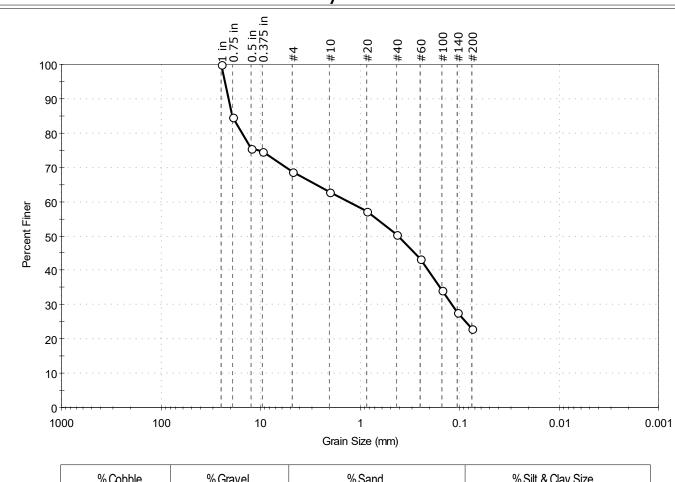
Depth: 8-10 ft Test Id: 561419

Test Comment: ---

Visual Description: Moist, light olive brown silty sand with gravel

Sample Comment: ---

# Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	31.3	45.6	23.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1 in	25.00	100		
0.75 in	19.00	85		
0.5 in	12.50	75		
0.375 in	9.50	75		
#4	4.75	69		
#10	2.00	63		
#20	0.85	57		
#40	0.42	50		
#60	0.25	43		
#100	0.15	34		
#140	0.11	28		
#200	0.075	23		

<u>Coefficients</u>				
D ₈₅ = 19.1226 mm	$D_{30} = 0.1198 \text{ mm}$			
D ₆₀ = 1.3039 mm	$D_{15} = N/A$			
D ₅₀ = 0.4105 mm	$D_{10} = N/A$			
$C_u = N/A$	$C_c = N/A$			

GTX-311848

ASTM N/A Classification

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description
Sand/Gravel Particle Shape: ANGULAR
Sand/Gravel Hardness: HARD



Location:Hudson, NHProject No:GTX-311848Boring ID:C-S-BOR-09Sample Type: jarTested By:ckgSample ID:S-6Test Date:06/30/20Checked By:bfs

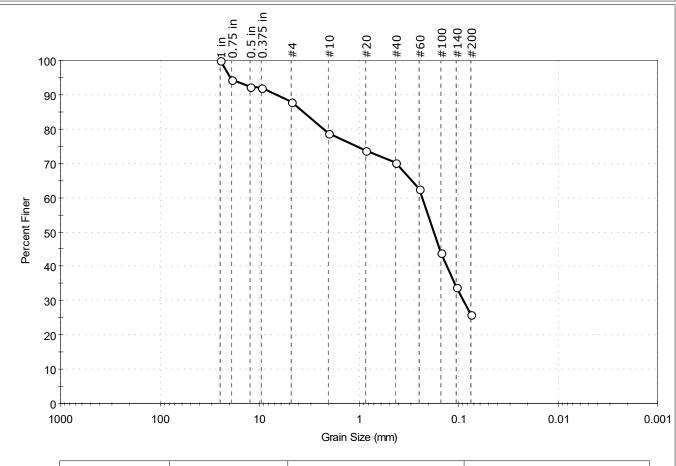
Depth: 10-12 ft Test Id: 561423

Test Comment: ---

Visual Description: Moist, dark grayish brown silty sand

Sample Comment: ---

# Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	12.1	61.9	26.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1 in	25.00	100		
0.75 in	19.00	94		
0.5 in	12.50	92		
0.375 in	9.50	92		
#4	4.75	88		
#10	2.00	79		
#20	0.85	74		
#40	0.42	70		
#60	0.25	62		
#100	0.15	44		
#140	0.11	34		
#200	0.075	26		

<u>Coeffic</u>	<u>cients</u>
D ₈₅ = 3.5958 mm	$D_{30} = 0.0892 \text{ mm}$
D ₆₀ = 0.2336 mm	$D_{15} = N/A$
D ₅₀ = 0.1768 mm	$D_{10} = N/A$
Cu =N/A	$C_c = N/A$

ASTM N/A Classification

AASHTO Silty Gravel and Sand (A-2-4 (0))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness: HARD



Location:Hudson, NHProject No:GTX-311848Boring ID:C-S-BOR-12Sample Type: jarTested By:ckgSample ID:S-5Test Date:06/30/20Checked By:bfs

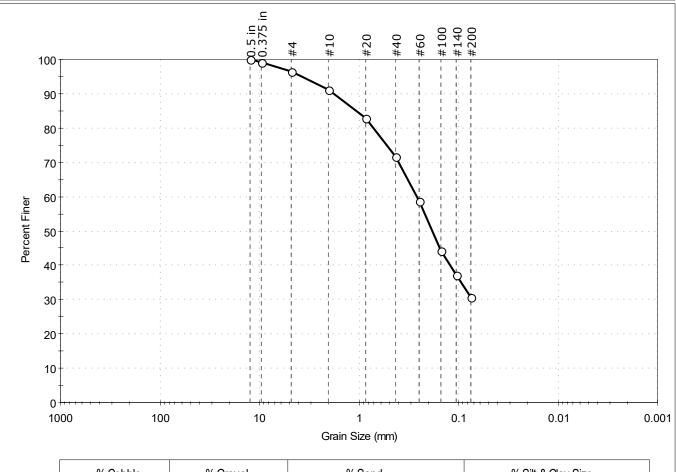
Depth: 8-10 ft Test Id: 561425

Test Comment: ---

Visual Description: Moist, light brownish gray silty sand

Sample Comment: ---

# Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	%Sand	% Silt & Clay Size
	3.6	65.7	30.7

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.5 in	12.50	100		
0.375 in	9.50	99		
#4	4.75	96		
#10	2.00	91		
#20	0.85	83		
#40	0.42	72		
#60	0.25	59		
#100	0.15	44		
#140	0.11	37		
#200	0.075	31		

<u>Coefficients</u>				
D ₈₅ = 1.0653 mm	$D_{30} = N/A$			
D ₆₀ = 0.2636 mm	$D_{15} = N/A$			
D ₅₀ = 0.1833 mm	$D_{10} = N/A$			
$C_u = N/A$	$C_C = N/A$			

<u>Classification</u>

AASHTO Silty Gravel and Sand (A-2-4 (0))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness: HARD

N/A

**ASTM** 



Location:Hudson, NHProject No:CBoring ID:C-S-BOR-20Sample Type: jarTested By:ckgSample ID:S-3Test Date:06/30/20Checked By:bfs

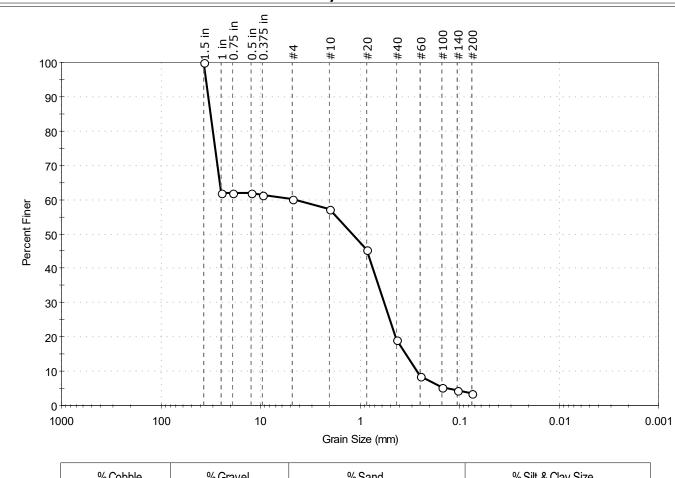
Depth: 4-6 ft Test Id: 561422

Test Comment: ---

Visual Description: Moist, olive yellow sand with gravel

Sample Comment: ---

# Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	39.9	56.5	3.6

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.5 in	37.50	100		
1 in	25.00	62		
0.75 in	19.00	62		
0.5 in	12.50	62		
0.375 in	9.50	61		
#4	4.75	60		
#10	2.00	57		
#20	0.85	46		
#40	0.42	19		
#60	0.25	8		
#100	0.15	5		
#140	0.11	4		
#200	0.075	3.6		

<u>Coefficients</u>				
D ₈₅ = 31.9765 mm	$D_{30} = 0.5657 \text{ mm}$			
D ₆₀ =4.6338 mm	D ₁₅ =0.3467 mm			
D ₅₀ = 1.1764 mm	$D_{10} = 0.2702 \text{ mm}$			
C ₁₁ =17.150	$C_c = 0.256$			

GTX-311848

<u>Classification</u>

<u>ASTM</u> Poorly graded SAND with Gravel (SP)

Sample/Test Description
Sand/Gravel Particle Shape : ANGULAR
Sand/Gravel Hardness : HARD



Project No: Boring ID: C-S-BOR-22 Sample Type: jar Tested By: ckg Test Date: 06/30/20 Checked By: bfs Sample ID: S-7

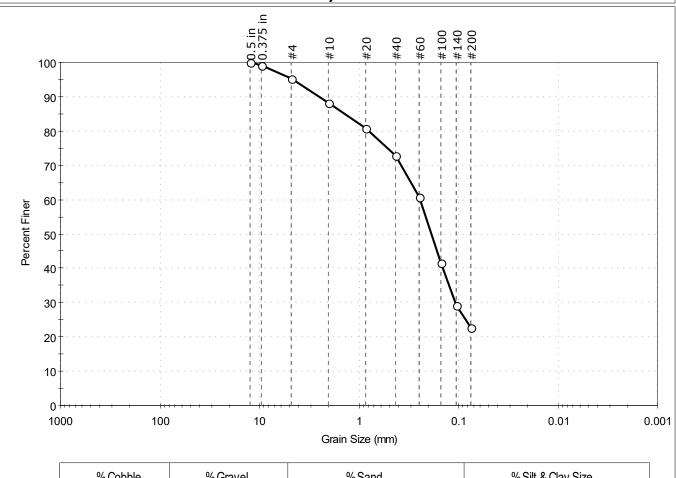
Depth: 15-17 ft Test Id: 561424

Test Comment:

Moist, olive brown silty sand Visual Description:

Sample Comment:

# Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	4.8	72.5	22.7

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.5 in	12.50	100		
0.375 in	9.50	99		
#4	4.75	95		
#10	2.00	88		
#20	0.85	81		
#40	0.42	73		
#60	0.25	61		
#100	0.15	41		
#140	0.11	29		
#200	0.075	23		

<u>Coefficients</u>				
D ₈₅ = 1.3944 mm	$D_{30} = 0.1083 \text{ mm}$			
D ₆₀ = 0.2453 mm	$D_{15} = N/A$			
D ₅₀ = 0.1881 mm	$D_{10} = N/A$			
C _u =N/A	$C_c = N/A$			

GTX-311848

Classification <u>ASTM</u> N/A AASHTO Silty Gravel and Sand (A-2-4 (0))

<u>Sample/Test Description</u> Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness: HARD



Location:Hudson, NHProject No:CBoring ID:C-S-BOR-23Sample Type: jarTested By:ckgSample ID:S-5Test Date:06/30/20Checked By:bfs

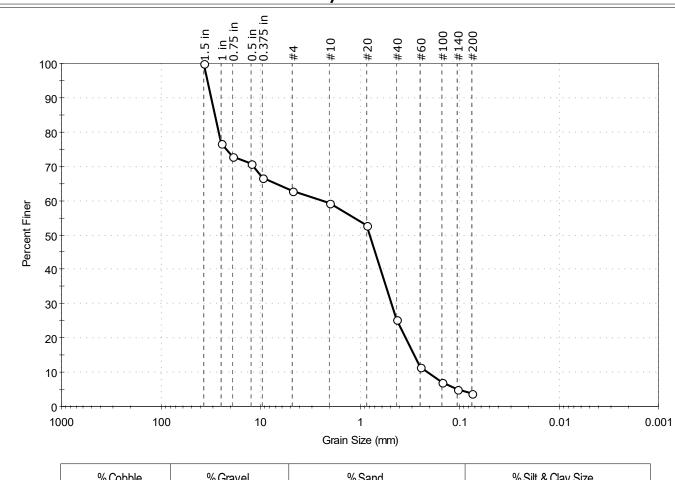
Depth: 8-10 ft Test Id: 561418

Test Comment: ---

Visual Description: Moist, olive brown sand with gravel

Sample Comment: ---

# Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	37.0	59.1	3.9

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.5 in	37.50	100		
1 in	25.00	77		
0.75 in	19.00	73		
0.5 in	12.50	71		
0.375 in	9.50	67		
#4	4.75	63		
#10	2.00	59		
#20	0.85	53		
#40	0.42	25		
#60	0.25	11		
#100	0.15	7		
#140	0.11	5		
#200	0.075	3.9		

<u>Coefficients</u>				
D ₈₅ = 28.9099 mm	$D_{30} = 0.4776 \text{ mm}$			
D ₆₀ = 2.3319 mm	D ₁₅ = 0.2864 mm			
D ₅₀ = 0.7926 mm	D ₁₀ = 0.2120 mm			
$C_{11} = 11.000$	$C_c = 0.461$			

GTX-311848

ASTM Poorly graded SAND with Gravel (SP)

AASHTO Stone Fragments, Gravel and Sand (A-1-b (1))

Sample/Test Description
Sand/Gravel Particle Shape: ANGULAR
Sand/Gravel Hardness: HARD



Location:Hudson, NHProject No:GTX-311848Boring ID:C-S-TP-01Sample Type:bagTested By:ckgSample ID:G-1Test Date:08/03/20Checked By:bfs

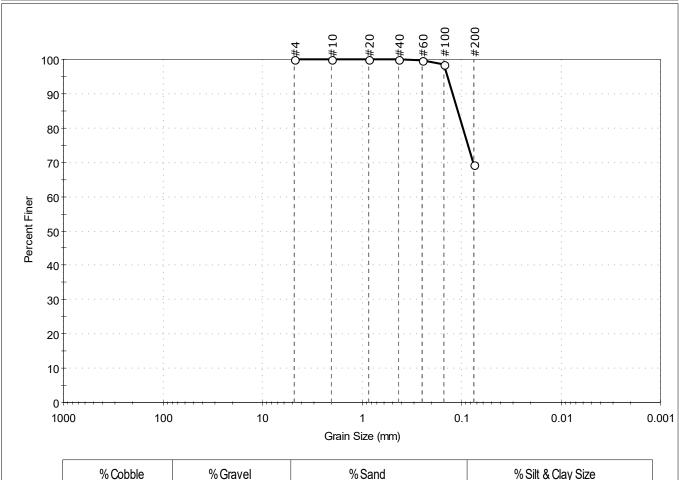
Depth: 4 ft Test Id: 567307

Test Comment: ---

Visual Description: Moist, light olive brown sandy silt

Sample Comment: ---

### Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.0	30.7	69.3

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	100		
#60	0.25	100		
#100	0.15	98		
#200	0.075	69		

<u>Coefficients</u>			
D ₈₅ = 0.1091 mm	$D_{30} = N/A$		
D ₆₀ = N/A	$D_{15} = N/A$		
D ₅₀ = N/A	$D_{10} = N/A$		
C _u =N/A	$C_c = N/A$		
Classification			

ASTM N/A

AASHTO Silty Soils (A-4 (0))

Sample/Test Description
Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---



Location:Hudson, NHProject No:CBoring ID:C-S-TP-17Sample Type:bagTested By:ckgSample ID:G-1Test Date:08/03/20Checked By:bfs

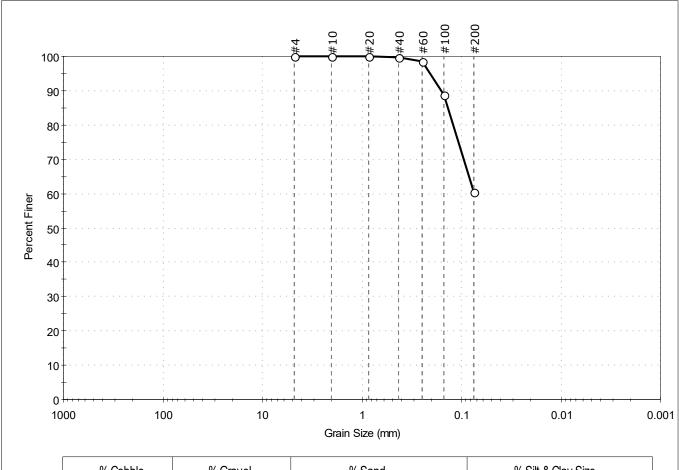
Depth: 2.5 ft Test Id: 567308

Test Comment: ---

Visual Description: Moist, light yellowish brown sandy silt

Sample Comment: ---

## Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
_	0.1	39.5	60.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	100		
#60	0.25	99		
#100	0.15	89		
#200	0.075	60		

<u>Coefficients</u>			
D ₈₅ = 0.1367 mm	$D_{30} = N/A$		
$D_{60} = N/A$	$D_{15} = N/A$		
$D_{50} = N/A$	$D_{10} = N/A$		
$C_u = N/A$	$C_{c} = N/A$		

GTX-311848

ASTM N/A Classification

AASHTO Silty Soils (A-4 (0))

Sample/Test Description
Sand/Gravel Particle Shape: --Sand/Gravel Hardness: ---





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Analysis No. TS-A2008783

Report Date 01 July 2020

Date Sampled 25 June 2020

Date Received 29 June 2020

Where Sampled Acton, MA USA

Sampled By Client

This is to attest that we have examined: Soil for Project Name: Project Hudson; Site Location Hudson, NH; Job Number: GTX-311848

When examined to the applicable requirements of:

ASTM D 512 - 12 "Standard Test Methods for Chloride Ion in Water" Method B

ASTM D 516 -16 "Standard Test Method for Sulfate Ion in Water"

#### Results:

#### ASTM D 512 - Chloride Method B

Sample		Res	Detection Limit		
		ppm (mg/kg)	% ¹	Detection Limit	
C-B-T	C-B-TP-06		0.0022		
S-1	0 – 5'	22.	0.0022	10	
C-B-TP-07		1.1	0.0014	10.	
S-1	0 – 5'	14.	0.0014		

NOTE: ¹Percent by weight as received.

#### ASTM D 516 - Sulfates (Soluble)

Sample		Res	Detection Limit		
		ppm (mg/kg)	% ¹	Detection Limit	
C-B-TP-06		<10.	-0.0010		
S-1	0 – 5'	<10.	<0.0010	10	
C-B-TP-07		-10	-0.0010	10.	
S-1	0 – 5'	<10.	<0.0010		

NOTE: ¹Percent by weight as received

**END OF ANALYSIS** 

USEPA Laboratory ID UT00930

Merrill Gee P.E. - Engineer in Charge

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# APPENDIX H<br/>INFILTRATION TEST LOGS

#### LANGAN INFILTRATION TESTS C-IT-01 performed in C-S-TP-01 PROJECT PROJECT NO. Project Hudson 151010101 LOCATION DATE 59 Steele Road, Hudson, NH 6/17/2020 to 6/18/2020 INSPECTOR WEATHER Taylor Sisti Sunny, 80s°F DEPTH OF WATER IN HOLE (INCH) PRESOAK TIME **ELEVATION AND DATUM** 11:44 Surface Elevation Approx. 127.5 (NGVD29) Star Top of Hole Elevation Approx. End 13:00 1.5 125.5 (NGVD29) Bottom of Hole Elevation Approx. (NGVD29) *presoak allowed to continue overnight 123.5 METHOD OF INFILTRATION TEST C-S-TP-01 was advanced to a depth of about 2 feet below existing grade. An about 6-inch diameter, 24-inch deep hole was dug by hand with a post hole digger. The circumfrence of the hole was then lined with a 6-inch diameter, 30-inch long PVC pipe. Before running infiltration tests, the hole was presoaked with 24 inches of water and allowed to drain overnight. The infiltration testing hole was free of water the following morning prior to starting infiltration testing. For each infiltration test, the hole was filled with water to a predetermined depth of 24 inches. Then, the time was recorded after one hour or the time for the water to drain 24 inches was recorded. The tables below outline the calculations for determining the average rate in which the water dissipated. Test pit C-S-TP-01 was advanced to to termination depth following completion of the infiltration test. Groundwater was encountered at about 7.1ft below grade. TIME **DEPTH OF** RATE RATE TIME (SEC) INTERVAL **SOIL CONDITIONS** WATER (IN) (IN/MIN) (IN/HOUR) (SEC) 24 TEST 1 Light brown sandy SILT 3600 12.75 3600 0.19 11.25 Average Rate: 11.3 inches/hour TIME **DEPTH OF** RATE RATE TIME (SEC) **SOIL CONDITIONS** INTERVAL WATER (IN) (IN/MIN) (IN/HOUR) (SEC) 24 0 TEST 2 Light brown sandy SILT 3600 3600 12 0.20 12.00 Average Rate: 12.0 inches/hour **DEPTH OF** RATE RATE **SOIL CONDITIONS** TIME (SEC) INTERVAL WATER (IN) (IN/MIN) (IN/HOUR) (SEC) TEST 3 Light brown sandy SILT 3600 12.5 3600 0.19 11.50 Average Rate: 11.5 inches/hour TIME **DEPTH OF** RATE RATE SOIL CONDITIONS TIME (SEC) INTERVAL (IN/HOUR) WATER (IN) (IN/MIN) (SEC) 24 TEST 4 Light brown sandy SILT 3600 12 3600 0.20 12.00 Average Rate: 12.0 inches/hour

Lowest Average Rate:

11.3

inches/hour

#### LANGAN **INFILTRATION TESTS** C-IT-17 performed in C-S-TP-17 PROJECT NO. PROJECT Project Hudson 151010101 LOCATION DATE 59 Steele Road, Hudson, NH 6/17/2020 WEATHER INSPECTOR Taylor Sisti Sunny, 80s°F PRESOAK TIME DEPTH OF WATER IN HOLE (INCH) **ELEVATION AND DATUM** Surface Elevation Approx. (NGVD29) Start 14:59 24 133 Top of Hole Elevation Approx. 15:13 0 132.5 (NGVD29) End Bottom of Hole Elevation Approx. (NGVD29) 130.5 METHOD OF INFILTRATION TEST C-S-TP-01 was advanced to a depth of about 0.5 feet below existing grade. An about 6-inch diameter, 24-inch deep hole was dug by hand with a post hole digger. The circumfrence of the hole was then lined with a 6-inch diameter, 30-inch long PVC pipe. Before running infiltration tests, the hole was presoaked with 24 inches of water and allowed to drain. For each infiltration test, the hole was filled with water to a predetermined depth of 24 inches. Then, the time was recorded after one hour or the time for the water to drain 24 inches was recorded. The tables below outline the calculations for determining the average rate in which the water dissipated. Test pit C-S-TP-17 was advanced to to termination depth following completion of the infiltration test. TIME **DEPTH OF** RATE RATE TIME (SEC) SOIL CONDITIONS INTERVAL WATER (IN) (IN/MIN) (IN/HOUR) (SEC) 0 24 TEST 1 Light brown sandy SILT 711 0 711 2.03 121.52 Average Rate 121.5 inches/hour TIME DEPTH OF RATE RATE TIME (SEC) **SOIL CONDITIONS** INTERVAL WATER (IN) (IN/MIN) (IN/HOUR) (SEC) 0 24 TEST 2 Light brown sandy SILT 957 0 957 1.50 90.28 Average Rate: 90.3 inches/hour TIME **DEPTH OF** RATE RATE SOIL CONDITIONS TIME (SEC) INTERVAL WATER (IN) (IN/MIN) (IN/HOUR) (SEC) 24 0 TEST 3 Light brown sandy SILT 1082 0 1082 79.85 1.33 Average Rate: 79.9 inches/hour TIME **DEPTH OF** RATE RATE TIME (SEC) INTERVAL SOIL CONDITIONS WATER (IN) (IN/MIN) (IN/HOUR) (SEC) 0 24 TEST 4 Light brown sandy SILT 1091 1091 1.32 79.19 Average Rate: 79.2 inches/hour **Lowest Average Rate:** 79.2 inches/hour

# APPENDIX I PAVEMENT DESIGN

# APPENDIX I.1 FLEXIBLE PAVEMENT DESIGN SITE AREAS (LOTS A, B, C)

#### **Project Information:**

Project Title: Hudson Logistic Center Project No.: 151010101

Project Town: Hudson Performed By: NA

Project State: New Hampshire Date: 6/16/2020

Client: Hudson Logistic Center Location: Site Areas (All Lots)

#### **Design Information:**

O Design Life: 20 years

Initial Servicibility (Po): 4.2

• Terminal Servicibility Index (TSI): 2.5

Servicibility (Po - TSI): 1.7

O Soil Description: FILL & SP/SM

USCS Symbol: SP/SM

O California Bearing Ratio (CBR): 10

• Resilent Modulus (MR): 15000 PSI

• Reliability Factor (R): 0.90

Standard Deviation (Sd): 0.45

O Direction Distribution Factor (Do): 1.00

Lane Distribution Factor (DI):

CBR Based on: Estimated Value

*MR = CBR*1,500 5 <= CBR <= 10

*MR = 3000*CBR^0.65 CBR > 10

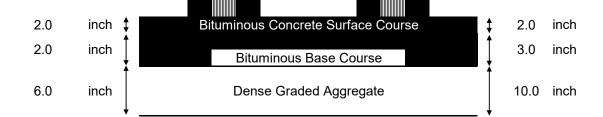
#### **Summary of Results**

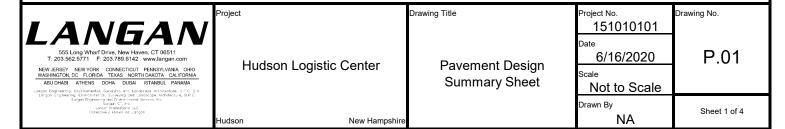
#### **Standard Section**

**Heavy Duty Section** 

1.00

Design ESAL: 11,422 Design ESAL: 2,177,920





#### Calculate Equivalent 18-kip Single Axle Loading (ESALs)

#### **Equivalent Single Axle Loads per Vehicle**

Load Equivalency

o Typical Car: Factors: Calculated ESALs

(S) Front Single Axle: 2 kips  $\overline{\text{LEF}} = 0.001045$  (1 axle)(0.001045)+(1 axle)(0.001044 **0.00209 /car** 

(S) Rear Single Axle: 2 kips LEF = 0.001045

• Typical Delivery Van: Calculated ESALs

(S) Front Single Axle: 8 kips LEF = 0.0343 (1 axle)(0.0343)+(1 axle)(0.0343) = **0.0686 /truck** 

(S) Truck Rear Axle: 8 kips LEF = 0.0343

• Typical Truck and Trailer (HS20): Calculated ESALs

(S) Front Single Axle: 12 kips LEF = 0.189 ((Front axle)(0.189)+(Rear axle)(0.8905)

(T) Truck Rear Axle: 32 kips LEF = 0.8905 +(Trailer Tandem)(0.8905)) = **1.97 /truck** 

(T) Trailer Axle: 32 kips LEF = 0.8905

(S) = single axle, (T) = Tandem, (3) = Triple Axles

**Traffic Loading** • Design Life: 20 years (From Sheet P.01)

#### Standard Pavement Section

Vehicle Types	Current Traffic	% Increase	Design Traffic	ESAL Factor	Design ESAL
Passenger Cars	651	115%	5,465,145	0.00209	11,422
Light Trucks	0	115%	0	0.0686	0

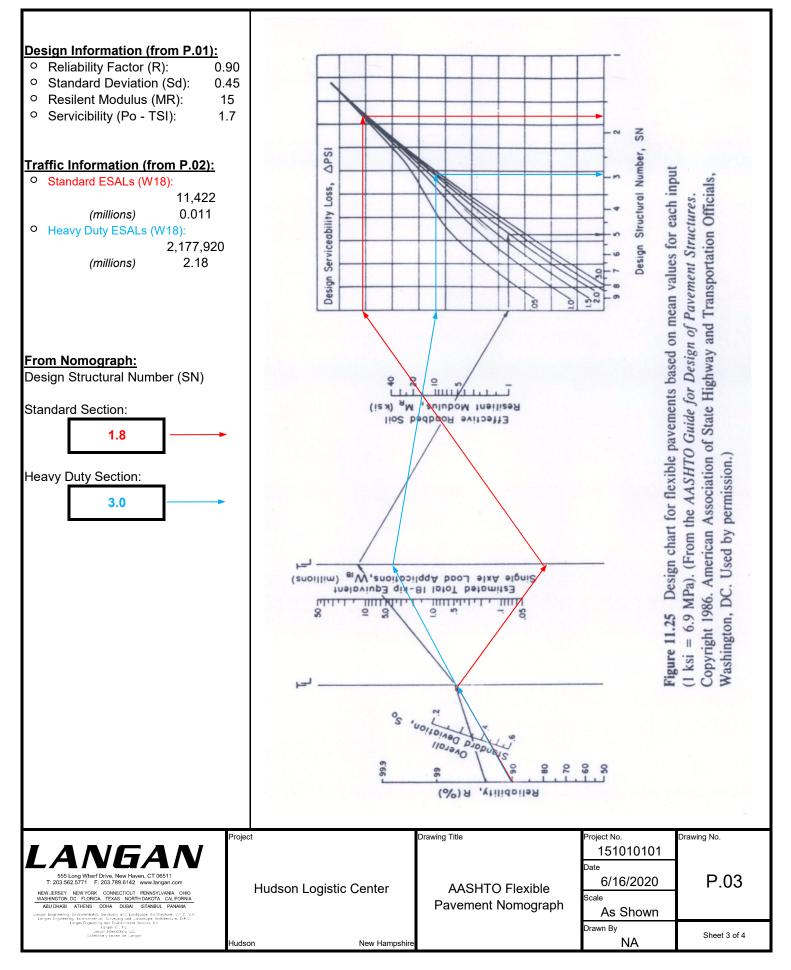
Standard Design ESAL: 11,422

#### Heavy Duty Pavement Section

Vehicle Types		Growth Factors	Design Traffic	ESAL Factor	Design ESAL
	054	4450/	5 405 445	0.00000	44.400
Passenger Cars	651	115%	5,465,145	0.00209	11,422
Light Trucks	0	115%	0	0.0686	0
Heavy Trucks	131	115%	1,099,745	1.97	2,166,498

Heavy Duty Design ESAL: 2,177,920

	Project	Drawing Title	Project No.	Drawing No.
LANGAN			151010101	
LAIVUAIV			Date	
555 Long Wharf Drive, New Haven, CT 06511 T: 203.562.5771 F: 203.789.6142 www.langan.com	Uudaan Lagistia Cantar		6/16/2020	P.02
NEW JERSEY NEW YORK CONNECTICUT PENNSYLVANIA OHIO WASHINGTON, DC FLORIDA TEXAS NORTH DAKOTA CALIFORNIA	Hudson Logistic Center	ESAL Calculation	Scale	
ABU DHABI ATHENS DOHA DUBAI ISTANBUL PANAMA Langar Engineering, Environmental, Surveying and Landsdape Architecture, 2,7.0, S.A. Langar Engineering, Environmental, Surveying and Landsdape Architecture, 0,7.0, S.A. Langar Engineering, Environmental, Surveying and Landsdape Architecture, D.P.C.			Not to Scale	
Langun Engineering and Enricon-mortal Services, Inc. Langua C. The Langua C. The Langua Marenationa LLC Collective V Inform as Langua			Drawn By	Chart 2 of 4
Consciency with the Congon	Hudson New Hampshire		NA	Sheet 2 of 4



#### **Flexible Pavement Section Calculation:**

#### **Standard Section:**

Structural Number:

SN = D1(a1)+D2(a2)+D3(a3)

				( )
		Thickness		
Material	Spec	(inch)	TDS	SN
Bituminuous Concrete Surface Course	Class 2	D1 2.0	a1 0.44	0.88
Bituminuous Concrete Binder Course	Class 1	D2 2.0	a2 0.44	0.88
Dense Graded Aggregate	Subbase	D3 6.0	a3 0.11	0.66

Calculated Structural Number for Section: 2.42

Check Calculated SN is > Design SN: OK

Design Light Duty Structural Number SN: 1.8 (from P.03)

#### **Heavy Duty Section:**

- iouvy Buly Coolion.		Thickness	Layer	7
Material	Spec	(inch)	Strength	SN
Bituminuous Concrete Surface Course	Class 2	D1 2.0	a1 0.44	0.88
Bituminuous Concrete Binder Course	Class 1	D2 3.0	a2 0.44	1.32
Dense Graded Aggregate	Subbase	D3 10.0	a3 0.11	1.10

Calculated Structural Number for Section: 3.30

Check Calculated SN is > Design SN: OK

Design Heavy Duty Structural Number SN: 3.0 (from P.03)

#### Minimum Pavement Section

	Thickness	
Material	Spec	(inch)
Bituminuous Concrete (Total)		4.0
Dense Graded Aggregate	Subbase	6.0

	Project	Drawing Title	Project No.	Drawing No.
LANGAN			151010101	
			Date	
555 Long Wharf Drive, New Haven, CT 06511 T: 203.562.5771 F: 203.789.6142 www.langan.com	Hudoon Logistic Contor	Flexible Pavement Section	6/16/2020	P.04
NEW JERSEY NEW YORK CONNECTICUT PENNSYLVANIA OHIO WASHINGTON, DC FLORIDA TEXAS NORTH DAKOTA CALIFORNIA	Hudson Logistic Center		Scale	
ABU DHABI ATHENS DOHA DUBAI ISTANBUL PANAMA Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C. S.A.		Calculation	As Shown	
Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C. Langan Engineering and Environmental Serverus, Irc. Langan C.T. Irc. Langan Environmental C. Irc. Langan Environmental C. Langan Environment			Drawn By	
Collectively known az Eangan	Hudson New Hampshire		NA	Sheet 4 of 4

# APPENDIX I.2 RIGID PAVEMENT DESIGN SITE AREAS (LOTS A, B, C)



#### **DESIGN SUMMARY REPORT FOR**

#### JOINTED-PLAIN CONCRETE PAVEMENT (JPCP)

#### **DATE CREATED:**

Wed Sep 02 2020 17:41:11 GMT-0400 (Eastern Daylight Time)

#### **Project Description**

Project Name: Lot C - SD Owner: Zip Code:

Designer's Name: Route:

Project Description:

#### **Design Summary**

Doweled Undoweled

Doweled Undoweled

Recommended Design Thickness: Calculated Minimum Thickness:

5.00 in. 5.00 in. 4.84 in. 4.84 in.

Maximum Joint Spacing: 8 ft. 8 ft.

#### Pavement Structure

#### **SUBBASE**

Calculated Composite K-Value of Substructure:

467 psi/in

Minimum Pavement Section: 5-inches of concrete over 4-inches of aggregate base

Layer Layer Type Resilient Modulus Thickness



#### CONCRETE

Compressive Strength: 4500 psi Modulus of Elasticity: 4000000 psi Calculated Flexural Strength: 627 psi

Spectrum Type:

Edge Support: Yes
Macrofibers in Concrete: No

#### **SUBGRADE**

CBR: 10 %
Calculated MRSG Value 9,389 psi

#### **Project Level**

TRAFFIC

ACI 330 Traffic Spectrum A Re

Design Life: 30 years

**USER DEFINED TRAFFIC** 

Trucks Per Day: 69
Traffic Growth Rate %: 0 % per year
Directional Distribution: 100 %

Design Lane Distribution: 100 %

#### GLOBAL

Reliability: 95 % % Slabs Cracked at End of Design Life: 5 %

Avg Trucks/Day in Design Lane Over the Design Life: 69

Total Trucks in Design Lane Over the Design Life: 756,068

#### **Design Method**



#### **DESIGN SUMMARY REPORT FOR**

#### JOINTED-PLAIN CONCRETE PAVEMENT (JPCP)

#### **DATE CREATED:**

Mon Jul 13 2020 13:17:57 GMT-0400 (Eastern Daylight Time)

#### **Project Description**

Project Name: Lot C - HD Owner: Zip Code:

Designer's Name: Route:

Project Description:

#### **Design Summary**

Doweled Undoweled Doweled

Undoweled

Recommended Design Thickness: Calculated Minimum Thickness:

5.75 in. 5.75 in. 5.63 in. 5.63 in.

Maximum Joint Spacing:

9 ft.

9 ft.

#### Pavement Structure

#### **SUBBASE**

Calculated Composite K-Value of Substructure:

490 psi/in

Minimum Pavement Section: 8-inches of concrete over 6-inches of aggregate base





#### CONCRETE

Compressive Strength: 4000 psi Modulus of Elasticity: 4000000 psi Calculated Flexural Strength: 580 psi Edge Support: Yes Macrofibers in Concrete: No

#### **SUBGRADE**

CBR: 10 % Calculated MRSG Value 9,389 psi

#### **Project Level**

**TRAFFIC** 

Spectrum Type: ACI 330 Traffic Spectrum D

Design Life: 30 years

**USER DEFINED TRAFFIC** 

Trucks Per Day: 69 Traffic Growth Rate %: 0 % per year **Directional Distribution:** 100 %

Design Lane Distribution: 100 %

#### **GLOBAL**

Reliability: 95 % % Slabs Cracked at End of Design Life:

Avg Trucks/Day in Design Lane Over the Design Life: 69 Total Trucks in Design Lane Over the Design Life:

#### **Design Method**

# APPENDIX I.3 FLEXIBLE PAVEMENT DESIGN ROADWAYS

#### **Project Information:**

Project Title: Hudson Logistic Center

Project Town: Hudson

**Project State:** New Hampshire

Client: Hudson Logistic Center

Project No.: 151010101

Performed By: NA **Date:** 6/16/2020

**Location:** Roadways (Walmart Blvd. & Green Meadow Drive)

#### **Design Information:**

Design Life: 20 years

Initial Servicibility (Po):

 Terminal Servicibility Index (TSI): 2.5

Servicibility (Po - TSI): 1.7

O Soil Description: FILL & SP/SM

SP/SM O USCS Symbol:

 California Bearing Ratio (CBR): 10

 Resilient Modulus (MR): 15000 PSI Reliability Factor (R):

Standard Deviation (Sd): 0.45

Direction Distribution Factor (Do): 1.00

Lane Distribution Factor (DI):

1.00

CBR Based on: Estimated Value

*MR = CBR*1.5005 <= CBR <= 10

*MR = 3000*CBR^0.65

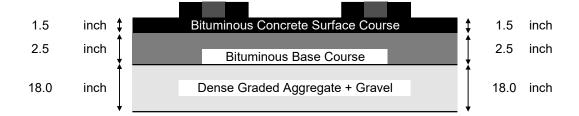
**CBR > 10** 

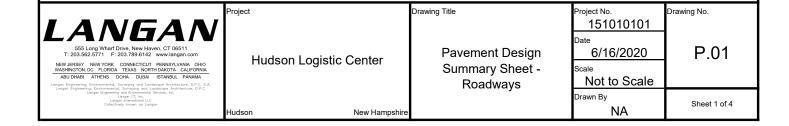
#### **Summary of Results**

#### Northern Access Roadway (Walmart Blvd.)

#### Southern Access Roadway (Green Meadow Drive)

Design ESAL: 2,173,340 Design ESAL: 1,684,723





#### Calculate Equivalent 18-kip Single Axle Loading (ESALs)

#### **Equivalent Single Axle Loads per Vehicle**

Load Equivalency
 Typical Car: Factors: Calculated ESALs

(S) Front Single Axle: 2 kips  $\overline{\text{LEF} = 0.001045}$  (1 axle)(0.001045)+(1 axle)(0.001044 **0.00209** /car

(S) Rear Single Axle: 2 kips LEF = 0.001045

• Typical Delivery Van: Calculated ESALs

(S) Front Single Axle: 8 kips LEF = 0.0343 (1 axle)(0.0343)+(1 axle)(0.0343) = **0.0686 /truck** 

(S) Truck Rear Axle: 8 kips LEF = 0.0343

• Typical Truck and Trailer (HS20): Calculated ESALs

(S) Front Single Axle: 12 kips LEF = 0.189 ((Front axle)(0.189)+(Rear axle)(0.8905)

(T) Truck Rear Axle: 32 kips LEF = 0.8905 +(Trailer Tandem)(0.8905)) = 1.97 /truck

(T) Trailer Axle: 32 kips LEF = 0.8905

(S) = single axle, (T) = Tandem, (3) = Triple Axles

**Traffic Loading** • Design Life: 20 years (From Sheet P.01)

#### Northern Access Roadway (Walmart Blvd.)

Vehicle Types	Current Traffic	% Increase	Design Traffic	ESAL Factor	Design ESAL
	000	4450/	0.074.050	0.00000	0.040
Passenger Cars	390	115%	3,274,050	0.00209	6,843
Light Trucks	0	115%	0	0.0686	0
Heavy Trucks	131	115%	1,099,745	1.97	2,166,498

Heavy Duty Design ESAL: 2,173,340

#### Southern Access Roadway (Green Meadown Drive)

Vehicle Types	Current Traffic	% Increase	Design Traffic	ESAL Factor	Design ESAL
Passenger Cars	941	115%	7,899,695	0.00209	16,510
Light Trucks	25	115%	209,875	0.0686	14,397
Heavy Trucks	100	115%	839,500	1.97	1,653,815

Heavy Duty Design ESAL: 1,684,723

	Project	Drawing Litle	Project No.	Drawing No.
LANGAN			151010101	
	Lludeen Legistic Conton		Date	
555 Long Wharf Drive, New Haven, CT 06511 T: 203.562.5771 F: 203.789.6142 www.langan.com			6/16/2020	P.02
NEW JERSEY NEW YORK CONNECTICUT PENNSYLVANIA OHIO WASHINGTON, DC FLORIDA TEXAS NORTH DAKOTA CALIFORNIA	Hudson Logistic Center	ESAL Calculation	Scale	
ABU DHABI ATHENS DOHA DUBAI ISTANBUL PANAMA Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C. S.A.			Not to Scale	
Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C. S.A.  Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C.  Langan Engineering and Environmental Services, Inc.			Not to ocaic	
Langan CT, Inc. Langan International LLC			Drawn By	01 10 11
Collectively known as Langan	Hudson New Hampshire		NA	Sheet 2 of 4

#### **Design Information (from P.01):** O Reliability Factor (R): 0.90 Standard Deviation (Sd): 0.45 O Resilent Modulus (MR): 15 Servicibility (Po - TSI): 1.7 Design Structural Number, **DPSI** Traffic Information (from P.02): igure 11.25 Design chart for flexible pavements based on mean values for each input O Northern ESALs (W18) Association of State Highway and Transportation Officials, Loss, 2,173,340 (1 ksi = 6.9 MPa). (From the AASHTO Guide for Design of Pavement Structures. (millions) 2.173 Serviceability O Southern ESALs (W18): 1,684,723 (millions) 1.68 Design From Nomograph: Design Structural Number (SN) 20 ME (KSI) Resilient Modulus, N. Roadway (Walmart Blvd.): Effective Roadbed Soil 2.9 S. Roadway (Green Meadow Dr.): 2.9 American Estimoted Total 18/ ip Equivalent Single Axle Load Applications, Wig (millions) IIIII יויויויווווו Deviotion, 2 8 8 Reliability, R(%) Project Drawing Title roject No. Drawing No. 151010101 P.03 6/16/2020 **Hudson Logistic Center AASHTO Flexible** Pavement Nomograph As Shown Drawn By Sheet 3 of 4 NA New Hampshire

#### **Flexible Pavement Section Calculation:**

Northern Access Roadway (Walmart Blvd.) Section:

Structural Number:

SN = D1(a1)+D2(a2)+D3(a3)

	<del> </del>	Thic	kness			
Material	Spec	(i	nch)		TDS	SN
Bituminuous Concrete Surface Course		D1	1.5	a1	0.44	0.66
Bituminuous Concrete Binder Course		D2	2.5	a2	0.44	1.10
Gravel		D3	6.0	а3	0.11	0.66
Dense Graded Aggregate	Subbase	D4	12.0	a4	0.11	1.32

Calculated Structural Number for Section: 3.74

Check Calculated SN is > Design SN: OK

Design Structural Number SN: 2.9 (from P.03)

Southern Access Roadway (Green Meadow Drive) Section:

		Inic	ckness		Layer	
Material	Spec	(iı	nch)	S	trength	SN
Bituminuous Concrete Surface Course		D1	1.5	a1	0.44	0.66
Bituminuous Concrete Binder Course		D2	2.5	a2	0.44	1.10
Gravel		D3	6.0	а3	0.11	0.66
Dense Graded Aggregate	Subbase	D4	12.0	a4	0.11	1.32

Calculated Structural Number for Section: 3.74

Check Calculated SN is > Design SN: OK

Design Structural Number SN: 2.9 (from P.03)

#### Minimum Pavement Section

		Thickness
Material	Spec	(inch)
Bituminuous Concrete (Total)		4.0
Gravel		6.0
Dense Graded Aggregate	Subbase	12.0

	Project	Drawing Title	Project No.	Drawing No.
LANGAN			151010101	
555 Long Wharf Drive, New Haven, CT 06511	Hudson Logistic Center	Flexible Pavement Section Calculation	Date	
T: 203.562.5771 F: 203.789.6142 www.langan.com			6/16/2020	P.04
NEW JERSEY NEW YORK CONNECTICUT PENNSYLVANIA OHIO WASHINGTON, DC FLORIDA TEXAS NORTH DAKOTA CALIFORNIA			Scale	
ABU DHABI ATHENS DOHA DUBAI ISTANBUL PANAMA  Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C. S.A.  Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C. S.A.			As Shown	
Langan Engineering and Environmental Services, Inc. Langan CT, Inc. Langan CT, Inc. Langan International LLC			Drawn By	Sheet 4 of 4
Collectively known as Langan	Hudson New Hampshire		NA	Sneet 4 of 4