



October 23, 2019

Mr. Mitch Neitzey
ECH - Vint Hill Associates, LLC
21 Dupont Circle
Washington D. C. 20036

Re: Soil Boring Data
Vint Hill Lots 8 and 9
Fauquier County, Virginia
Project No. 7258

Mr. Neitzey:

As requested, Dominion Engineering Associates, Inc. (DEA) drilled six (6) soil borings, three (3) in each lot as shown on the attached boring location diagram to evaluate Engineered Fill soils previously placed on these lots. It is our understanding the Engineered Fill was placed in the Spring of 2018 and monitored for lift thickness and tested for degree of compaction.

Based on our boring data, the Engineered Fill soils placed on these lots is consistent with natural soil types in and around the Vint Hill area classified as a sandy Silt (ML), trace mica and gravel. The soils encountered in our borings exhibited STP N-values between 7 blows per foot (bpf) and 50 blows in 1 inch of penetration. These SPT N-values correspond to densities of medium stiff to hard for fine grained cohesive soils. Natural soils below the Engineered Fill soils also classified as sandy Silt (ML), trace mica and gravel and transitioned to Partially Weathered Siltstone with SPT N-values exceeding 50 bpf at boring termination depths.

These soils encountered at the locations drilled in this limited evaluation would be considered suitable to support one to three-story buildings bearing on standard shallow foundations. With that said, additional soil borings should be performed specific to proposed development with respect to the building location on the site and its structural loading.

We have enjoyed being of service to ECH - Vint Hill Associates, LLC. on this project. The report has been prepared in accordance with generally acceptable geotechnical engineering practices and no other warranties, either expressed or implied, are made. If you should have any questions regarding the information presented, or if we can be of further assistance, please do not hesitate to contact us.

Respectfully,
Dominion Engineering Associates, Inc.

A handwritten signature in blue ink, appearing to read "KLP", is written over the printed name of Kevin L. Parris.

Kevin L. Parris
President

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS		
			GRAPH	LETTER			
<p>COARSE GRAINED SOILS</p> <p>MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE</p>	<p>GRAVEL AND GRAVELLY SOILS</p>	<p>CLEAN GRAVELS</p>		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES		
		<p>(LITTLE OR NO FINES)</p>		GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES		
		<p>GRAVELS WITH FINES</p>		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES		
		<p>(APPRECIABLE AMOUNT OF FINES)</p>		GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES		
	<p>SAND AND SANDY SOILS</p>	<p>CLEAN SANDS</p>	<p>(LITTLE OR NO FINES)</p>		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES	
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES		
		<p>SANDS WITH FINES</p>	<p>(APPRECIABLE AMOUNT OF FINES)</p>		SM	SILTY SANDS, SAND - SILT MIXTURES	
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES		
			<p>SILTS AND CLAYS</p>	<p>LIQUID LIMIT LESS THAN 50</p>		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
						CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
<p>SILTS AND CLAYS</p>	<p>LIQUID LIMIT GREATER THAN 50</p>		OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY			
			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS			
			CH	INORGANIC CLAYS OF HIGH PLASTICITY			
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS			
<p>HIGHLY ORGANIC SOILS</p>				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS		

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

Reference Notes for Boring Logs/Test Pits

I. Drilling and Sampling Symbols:

SS – Split Spoon Sampler	RB – Rock Bit Drilling
ST- Shelby Tube Sampler	BS – Bulk Sample of Cuttings
RC – Rock Core: NQ, NX, BX, AX	PA – Power Auger (no sample)
PM - Pressuremeter	HSA – Hollow Stem Auger
DC – Dutch Cone Penetrometer	WS – Wash Sample

Standard Penetration (Blows/Ft) refers to the blows per foot of a 140 lb. hammer falling 30 inches on a 2-inch O.D. split spoon sampler, as specified in ASTM D-1586. The blow count is commonly referred to as the N-value.

II. Correlation of Penetration Resistances to Soil Properties:

Density of Coarse-Grained Soils

Consistency of Fine-Grained Soils

<u>SPT-N</u>	<u>Descriptive Term</u>	<u>SPT-N</u>	<u>Description of Consistency</u>	<u>Unconfined Compressive Strength, Qp, psf</u>
0 - 4	Very loose	< 2	Very soft	Less than 250
5 - 10	Loose	2 – 4	Soft	250-500
11 - 30	Medium dense	5 – 8	Medium stiff	500-1000
31 - 50	Dense	9 – 15	Stiff	1000-2000
51 and over	Very dense	16 – 30	Very Stiff	2000-4000
		31 and greater	Hard	4000+

III. Unified Soil Classification Symbols: Reference ASTM D2488

GP	Poorly Graded Gravel	SC	Clayey Sand
GW	Well-Graded Gravel	ML	Low Plasticity Silt
GM	Silty Gravel	MH	High Plasticity Silt
GC	Clayey Gravel	CL	Low Plasticity Clay
SP	Poorly Graded Sand	CH	High Plasticity Clay
SW	Well-Graded Sand	OL	Low Plasticity Organic Soil
SM	Silty Sand	OH	High Plasticity Organic Soil

IV. Water Level Measurement Symbols:

WL	Water Level	BCR	Before Casing Removal
WS	While Sampling	ACR	After Casing Removal
WD	While Drilling	WCI	Wet Cave In
		DCI	Dry Cave In

The water levels are those water levels actually measured at the time of the exploration after cave-in has occurred (removing auger bits from borehole) in the borehole/test pit exploration indicated by the symbol. The measurements are relatively reliable when augering, without adding fluids, in granular soils, but fine grained soils may require several days, or even longer, for the water levels to stabilize. The position of the ground water table or perched water condition is anticipated to fluctuate depending on variability in the amount of precipitation, surface runoff, evaporation, and similar factors. To obtain accurate water level readings, a water observation well would need to be installed to measure the ground water levels over a period of time, typically this is beyond the scope of services provided by a geotechnical exploration.



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 8511 Indian Hills Court Suite 202
 Fredericksburg, VA 22407
 Telephone: 5407109339

BORING NUMBER B-1

PAGE 1 OF 1

CLIENT <u>ECH-Vint Hill Assoc. LLC.</u>	PROJECT NAME <u>Vint Hill Lots 8 & 9</u>
PROJECT NUMBER <u>7258</u>	PROJECT LOCATION <u>Fauquier County, Virginia</u>
DATE STARTED <u>10/15/19</u> COMPLETED <u>10/15/19</u>	GROUND ELEVATION _____ HOLE SIZE <u>2.25"</u>
DRILLING CONTRACTOR <u>Northern Virginia Drilling Inc.</u>	GROUND WATER LEVELS:
DRILLING METHOD <u>Hollow Stem Auger</u>	AT TIME OF DRILLING <u>Dry</u>
LOGGED BY <u>Matthew Kline</u> CHECKED BY <u>Kevin Parris</u>	AT END OF DRILLING <u>Dry</u>
NOTES <u>Cave in at 1.9 ft</u>	AFTER DRILLING <u>Dry</u>

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲						
								20	40	60	80			
								PL	MC	LL	LL			
0.0		Topsoil												
		Stiff to Hard, Brown to Dark Brown, Sandy SILT (ML), Trace Mica and Gravel, Moist	SS 1	72	7-10-12 (22)									
2.5			SS 2	67	6-7-5 (12)									
5.0			SS 3	83	3-5-15 (20)									
7.5			SS 4	0	35-50/3"									
10.0		Bottom of hole at 10.0 feet.												

GEOTECH BH PLOTS 7258 VINT HILL LOTS 8 & 9.GPJ GINT US LAB.GDT 10/23/19



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BORING NUMBER B-2

CLIENT <u>ECH-Vint Hill Assoc. LLC.</u>	PROJECT NAME <u>Vint Hill Lots 8 & 9</u>
PROJECT NUMBER <u>7258</u>	PROJECT LOCATION <u>Fauquier County, Virginia</u>
DATE STARTED <u>10/17/19</u> COMPLETED <u>10/17/19</u>	GROUND ELEVATION _____ HOLE SIZE <u>2.25"</u>
DRILLING CONTRACTOR <u>Northern Virginia Drilling Inc.</u>	GROUND WATER LEVELS:
DRILLING METHOD <u>Hollow Stem Auger</u>	AT TIME OF DRILLING <u>Dry</u>
LOGGED BY <u>Matthew Kline</u> CHECKED BY <u>Kevin Parris</u>	AT END OF DRILLING <u>Dry</u>
NOTES <u>Cave in at 5.0 ft</u>	AFTER DRILLING <u>Dry</u>

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲						
								20	40	60	80			
								PL		MC	LL			
0.0		Topsoil												
		Stiff to Hard, Brown to Grayish Brown, Sandy SILT (ML), Trace Mica and Gravel, Moist	SS 1	89	3-5-6 (11)									
2.5														
			SS 2	67	22-16-16 (32)									
5.0														
			SS 3	56	21-16-9 (25)									
7.5														
			SS 4	94	15-26- 50/5"									
10.0		Bottom of hole at 10.0 feet.												

GEOTECH BH PLOTS 7258 VINT HILL LOTS 8 & 9.GPJ GINT US.LAB.GDT 10/23/19



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BORING NUMBER B-3

CLIENT ECH-Vint Hill Assoc. LLC. **PROJECT NAME** Vint Hill Lots 8 & 9
PROJECT NUMBER 7258 **PROJECT LOCATION** Fauquier County, Virginia
DATE STARTED 10/17/19 **COMPLETED** 10/17/19 **GROUND ELEVATION** _____ **HOLE SIZE** 2.25"
DRILLING CONTRACTOR Northern Virginia Drilling Inc. **GROUND WATER LEVELS:**
DRILLING METHOD Hollow Stem Auger **AT TIME OF DRILLING** Dry
LOGGED BY Matthew Kline **CHECKED BY** Kevin Parris **AT END OF DRILLING** Dry
NOTES Cave in at 5.0 ft **AFTER DRILLING** Dry

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲						
								20	40	60	80			
0.0		Topsoil												
2.5		Medium Stiff to Hard, Brown to Grayish Brown, Sandy SILT (ML), With Mica and Gravel, Moist	SS 1	100	4-8-8 (16)									
5.0			SS 2	100	6-3-4 (7)									
7.5			SS 3	94	33-15-6 (21)									
10.0			SS 4	100	18-16-16 (32)									
		Bottom of hole at 10.0 feet.												

GEOTECH BH PLOTS 7258 VINT HILL LOTS 8 & 9.GPJ GINT US.LAB.GDT 10/23/19



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BORING NUMBER B-4

CLIENT <u>ECH-Vint Hill Assoc. LLC.</u>	PROJECT NAME <u>Vint Hill Lots 8 & 9</u>
PROJECT NUMBER <u>7258</u>	PROJECT LOCATION <u>Fauquier County, Virginia</u>
DATE STARTED <u>10/17/19</u> COMPLETED <u>10/17/19</u>	GROUND ELEVATION _____ HOLE SIZE <u>2.25"</u>
DRILLING CONTRACTOR <u>Northern Virginia Drilling Inc.</u>	GROUND WATER LEVELS:
DRILLING METHOD <u>Hollow Stem Auger</u>	AT TIME OF DRILLING <u>Dry</u>
LOGGED BY <u>Matthew Kline</u> CHECKED BY <u>Kevin Parris</u>	AT END OF DRILLING <u>Dry</u>
NOTES <u>Cave in at 6.8 ft</u>	AFTER DRILLING <u>Dry</u>

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲						
								20	40	60	80			
								PL		MC	LL			
0.0		Topsoil												
		Medium Stiff to Hard, Brown and Grayish Brown, Sandy SILT (ML), With Mica and Gravel, Moist	SS 1	100	2-16-14 (30)									
2.5			SS 2	100	10-8-6 (14)									
5.0			SS 3	100	4-4-4 (8)									
7.5			SS 4	67	7-8-4 (12)									
10.0		Bottom of hole at 10.0 feet.												

GEOTECH BH PLOTS 7258 VINT HILL LOTS 8 & 9.GPJ GINT US.LAB.GDT 10/23/19



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BORING NUMBER B-5

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CLIENT <u>ECH-Vint Hill Assoc. LLC.</u>	PROJECT NAME <u>Vint Hill Lots 8 & 9</u>
PROJECT NUMBER <u>7258</u>	PROJECT LOCATION <u>Fauquier County, Virginia</u>
DATE STARTED <u>10/17/19</u> COMPLETED <u>10/17/19</u>	GROUND ELEVATION _____ HOLE SIZE <u>2.25"</u>
DRILLING CONTRACTOR <u>Northern Virginia Drilling Inc.</u>	GROUND WATER LEVELS:
DRILLING METHOD <u>Hollow Stem Auger</u>	AT TIME OF DRILLING <u>Dry</u>
LOGGED BY <u>Matthew Kline</u> CHECKED BY <u>Kevin Parris</u>	AT END OF DRILLING <u>Dry</u>
NOTES <u>Cave in at 6.0 ft</u>	AFTER DRILLING <u>Dry</u>

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲						
								20	40	60	80			
								<input type="checkbox"/> FINES CONTENT (%) <input type="checkbox"/> PL MC LL						
0.0		Topsoil												
2.5		Medium Stiff to Hard, Brown and Grayish Brown, Sandy SILT (ML), With Mica and Gravel, Moist	SS 1	92	7-13-50/1"									>>
5.0			SS 2	67	5-8-6 (14)									
7.5			SS 3	44	5-4-4 (8)									
10.0			SS 4	100	9-12-14 (26)									
		Bottom of hole at 10.0 feet.												

GEOTECH BH PLOTS 7258 VINT HILL LOTS 8 & 9.GPJ GINT US.LAB.GDT 10/23/19



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BORING NUMBER B-6

CLIENT ECH-Vint Hill Assoc. LLC. **PROJECT NAME** Vint Hill Lots 8 & 9

PROJECT NUMBER 7258 **PROJECT LOCATION** Fauquier County, Virginia

DATE STARTED 10/17/19 **COMPLETED** 10/17/19 **GROUND ELEVATION** _____ **HOLE SIZE** 2.25"

DRILLING CONTRACTOR Northern Virginia Drilling Inc. **GROUND WATER LEVELS:**

DRILLING METHOD Hollow Stem Auger **AT TIME OF DRILLING** Dry

LOGGED BY Matthew Kline **CHECKED BY** Kevin Parris **AT END OF DRILLING** Dry

NOTES Cave in at 6.0 ft **AFTER DRILLING** Dry

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲									
								20	40	60	80						
0.0		Topsoil															
2.5		Medium Stiff to Stiff, Brown to Light Grayish Brown, Sandy SILT (ML), With Mica and Gravel, Moist	SS 1	100	2-5-5 (10)												
5.0			SS 2	100	5-6-8 (14)												
7.5			SS 3	100	5-6-7 (13)												
10.0			SS 4	100	3-4-4 (8)												
		Bottom of hole at 10.0 feet.															

GEOTECH BH PLOTS 7258 VINT HILL LOTS 8 & 9.GPJ GINT US LAB.GDT 10/23/19



Not to Scale

Source:

Google Maps

Aerial View



Boring Location Diagram

Vint Hill Lots 8 and 9

Fauquier County, VA

DEA Project No. 7258

October 23, 2019