Geotechnical Report W18-W19 Street Project New York, New York

The Related Companies 60 Columbus Circle New York, NY 10023

Mueser Rutledge Consulting Engineers 14 Penn Plaza - 225 West 34th Street New York, NY 10122

July 1, 2015



Mueser Rutledge Consulting Engineers

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The Related Companies 60 Columbus Circle New York, NY 10023

Attention: Mr. Scott Fehmel

Re:

Geotechnical Report Phase I Investigation W18-W19 Street Project <u>New York, New York</u> MRCE File No. 12320

Dear Mr. Fehmel,

As per your request, Mueser Rutledge Consulting Engineers (MRCE) has completed a subsurface investigation for the referenced project. This report presents a summary of our Phase I investigation, our interpretation of subsurface conditions encountered in the borings, and general foundation recommendations for the proposed construction.

PROJECT DESCRIPTION

We understand that you are planning a residential development at the referenced site in Manhattan. The elevated High Line structure runs through the site. The development will include a building with a cellar on both east and west side of the High Line structure. The combined footprint of the proposed development including the High Line easement is about 50,600 square feet. We understand that the east and west buildings may be connected underneath the High Line but outside of those connections the High Line easement will not have a building structure. The two proposed buildings and their connections will have a combined footprint of about 46,000 square feet.

Sidewalk elevations around the site range between Elev. +8 and +14. Elevations in this report are given in feet and refer to the North American Vertical Datum of 1988 (NAVD 88).

EXHIBITS

The following exhibits are attached:

<u>Exhibit</u>	<u>Description</u>
Figure No. 1	Site Location Plan
Drawing No. B-1	Boring Location Plan
Drawing No. C-1	Top of Rock Contour Plan
Drawing No. GS-1	Geologic Sections A-A and B-B
Drawing No. GS-2	Geologic Sections C-C and D-D
Drawing No. GS-R	Geotechnical Reference Standards
Drawing No. RC-1	Rock Classification Criteria
Appendix	Description
Appendix A	MRCE Boring Logs
Appendix B	Previous Borings

SUBSURFACE INVESTIGATION

The NYC Building Code requires drilling of 17 borings for the proposed development assuming deep foundations will be used.

Phase I investigation focused on the portion of the site east of the Highline which is presently used as a parking lot. Remnants of two large oil tanks are present underneath that lot. A total of 25 borings were drilled in Phase I to satisfy the Code requirements but also to further define the subsurface profile and depth to top of rock. The borings were drilled within the eastern portion of the site or on the sidewalks surrounding the western portion of the site. Additional Phase II borings will be drilled at the western portion of the site at a later time.

Borings M-1 through M-25 were drilled by Aquifer Drilling and Testing (ADT) between April 18, 2015 and May 27, 2015 under continuous inspection by our resident engineers, Ms. Alexandra Patrone, Ms. Lysandra Lincoln, Mr. James Brickman, Mr. Nathan Seguin, Mr. Mark Chancey, Ms. Teresa Sandiford, and Mr. Jeremy Bielby, who prepared field logs for each boring. Upon completion of the exploration, an as-drilled survey was completed by Mega Engineering. The surveyed boring locations are shown on Drawing No. B-1.

The borings drilled within the sidewalk surrounding the site and the boring drilled under the highline structure were drilled with a track mounted drill rig. The remaining borings located within the site were drilled with a truck mounted drill rig. Both the track and truck mounted drill rigs used wash-rotary methods with casing and drilling mud to stabilize the borehole.

Samples were obtained using a 2-inch O.D. split-spoon sampler driven with a 140-pound hammer falling 30 inches. The number of hammer blows required to advance the split-spoon sampler through each of four six-inch drive intervals was recorded. The Standard Penetration Test (SPT) resistance or N-value, expressed in blows per foot, is an indication of the relative density of the material sampled and is calculated by summing the blows from the second and third six-inch intervals. In some instances where the sampler was unable to penetrate the full 24 inches due to the presence of dense soils, large gravel, cobbles, boulders, or other obstructions, the sampler was driven until 50 to 100 blows were administered and the actual penetration of the

sampler was measured and recorded. Recovered soil samples were classified in the field and placed in jars for preservation and transport to our in-house laboratory.

Due to the presence of contaminants at the site below the existing gas holder tanks, Integral Consulting, Inc. was present during the subsurface investigation to perform environmental testing on samples collected at depths corresponding to the approximate bottom of the existing tank remnants. In order to facilitate this testing, split spoon samples were taken continuously from 20 to 30 feet below ground surface. Sampling on five-foot centers resumed after 30 feet below ground surface until top of rock was encountered.

Eighteen of the 25 borings were sampled continuously in the top ten feet, at five foot intervals to twenty feet, continuously to thirty feet, and at five foot intervals to top of rock. The remaining seven borings were only sampled continuously from twenty to thirty feet below ground surface and continued without sampling to top of rock. A summary of the sampling procedure for each boring is shown in Table 1 below.

	Bor	ing.
Sampling	Track	Truck
	Rig	Rig
	M-1	M-4P
	M-2	M-6
	M-7	M-12
	M-9	M-15
Fully Sampled	M-10	M-17
	M-11	M-18
	M-16A	M-21
	M-24	M-22P
	M-25	M-23
	M-3	M-5
Env. Testing &	M-8	M-13
Kock Core Only	M-20	M-14A
		M-19

Table 1: Sampling Summary

The borings cored at least ten feet of bedrock. Bedrock was cored using an NX-size, double-tube core barrel equipped with a diamond bit, recovering a nominal 2-inch diameter rock core. Percent recovery and Rock Quality Designation (RQD) were determined for each core run. RQD is defined as the sum of the lengths recovered core pieces greater than four inches in length between natural breaks expressed as a percentage of the total core run. RQD is an indication of the relative frequency of jointing or natural fracturing of the bedrock. Rock cores were stored in wooden boxes for shipment to our laboratory.

After completion of the boring program, all soil samples and rock cores were delivered to our inhouse laboratory for verification of field classifications. Individual soil sample descriptions are provided on the typed logs in Appendix A. The MRCE soil classification is shown on Drawing No. GS-R. Sketches of recovered cores prepared in the field are attached to the boring logs. Rock core classification terminology and criteria used are shown on Drawing No. RC-1.

In order to isolate zones of contamination during drilling, steel casing was advanced to five feet below the last observed trace of contamination, as advised by Integral's on-site representative. The drilling fluid was then discarded and placed in steel drums to be disposed off-site. A new batch of drilling fluid was mixed and the borehole was advanced to completion using the mudrotary drilling techniques described above.

Previous Borings In 2009, Arcadis performed a remedial investigation at the site. The borings drilled during this investigation were relatively shallow and in most cases did not extend past the fill layer. The 2009 boring locations are shown on Drawing No. B-1 and their logs are attached as Appendix B.

SUBSURFACE CONDITIONS

General Geology Bedrock below the site is the Paleozoic Hartland Formation, though slivers of serpentine and the Walloomsac formation are also present in the neighborhood. During the Pleistocene a series of glaciers flowed across the region. The rock was scoured down and often covered with a layer of basal till. As the ice retreated it left behind an interlayered mix of outwash sand and glacial lake silt and clay. Minor re-advances of the ice brought in additional lenses of till and gravel. During the Holocene the glaciers continued their retreat and sea-level rose, depositing river sand and organic clay in low-lying areas. Since colonial times fill material has been deposited over the shore line deposits to extend the land into the Hudson River.

General descriptions of the materials encountered in the project borings are summarized below in order of their occurrence with depth:

Stratum F - Fill (NYC Class 7). All fully sampled borings encountered approximately 7 to 33-feet of brown fine to coarse sand with some silt, gravel, clay, and trace concrete and brick. N-values ranged from 0 (weight of rods) to over 100 blows per foot (bpf), with an average of about 28 bpf. Large debris and obstructions may be present within the fill layer. Boring No. M-16A encountered an approximately ten-foot thick brick wall below street grade. This brick wall may be part of the wall of the existing buried tank as shown on Drawing No. B-1.

Stratum O – Organic Silty Clay (NYC Class 4b). Lenses of organic silty clay were present within and below the fill in Boring M-18, M-7, and M-1. The organic silty clay consists of loose to medium dense black to brown organic silty clay and clayey fine sand with some fine sand and trace gravel. N-values ranged from 3 bpf to 25 bpf and averaged about 13 bpf.

Stratum S – Sand (NYC Class 3b). All borings encountered a layer of sand below the fill. The thickness of the sand stratum varies from approximately 15 to 45 feet. The sand primarily consists of medium dense to compact red to brown to gray fine to medium sand with some silt and gravel. Lenses of silt and varved deposits are present within the sand, as shown on the geologic sections, Drawings Nos. GS-1 and GS-2. N-values ranged from 3 bpf to over 100 bpf and averaged about 23 bpf.

Stratum M- Silt (NYC Class 5b). Lenses of silt and varved sand and silt deposits were present with the sand layer. The thickness of the silt ranged from two feet to about 10 feet. The

silt consists of loose to medium dense red brown clayey silt and silty fine sand varved with some brown silt layers. N-values ranged from 4 to 35 bpf and averaged about 19 bpf.

Stratum T – Till (NYC Class 3a). Boring No. M-16A encountered a thin seam of sandy Till above bedrock. One sample was taken in the till with an N-value of 36 bpf.

Stratum DR – Decomposed Rock (NYC Class 3a). A layer of decomposed rock was encountered above the bedrock in Boring Nos. M-11, M-2, M-18, M-12, M-4P, and M-11. The decomposed rock is typically composed dense grey brown micaceous fine to medium sand with some silt. N-values ranged from 50 to over 100 bpf, and averaged over 100 bpf.

Stratum R – Bedrock (NYC Class 1d to 1a). At least ten feet of bedrock was cored in each boring. Top of rock elevation varies from approximately Elev. -30 to Elev. -50. The top of bedrock contour plans is shown on Drawing No. C-1 The bedrock typically consists of slightly weathered to unweathered gray gneissic schist and schistose gneiss, jointed to blocky, with iron stained and weathered joints. Rock core recoveries ranged from 88 to 100 percent and RQD values ranged from 14 to 100 percent.

Groundwater Based on the water level observations made in Boring M-4P, groundwater is approximately twelve feet below ground surface, or Elev. 0. Water level readings were taken throughout the investigation.

FOUNDATION RECOMMENDATIONS

Foundations Considering the depth of unsuitable bearing materials (fill and compressible fine grained soils) deep foundations shall be used to support the proposed buildings. The following two systems and their combinations shall be considered for support of the proposed buildings:

- driven steel piles with tiedowns to resist uplift forces, and
- drilled minicaissons.

Driven Piles We recommend considering closed-end steel pipe piles (12- to 13-inch diameter) filled with concrete or steel H piles (HP12). An allowable compression capacity of 120 to 150 tons shall be employed in design assuming piles will be driven to bedrock. Driving tips or shoes shall be employed as some of the piles will need to penetrated stiffer soils, obstructions and/or thin decomposed rock above bedrock. Spudding or pre-drilling may be required to penetrate shallow hard soils or obstructions.

The contractor should be responsible for determining the actual driving resistance necessary to develop the capacity selected based on the hammer used and this resistance should be confirmed by pile load tests. The project specifications should require piles be driven, inspected, and load tested in accordance with the Code requirements.

Tiedowns If tension tiedowns are needed, they shall consist of preassembled double corrosion protected threaded bar tiedowns sized assuming a side friction of 100 psi. Their capacity check will also need to consider "cone" pullout evaluations and combined effect of all tiedowns.

Mini-Caissons We recommend considering 9- to 13-inch diameter mini-caissons extending into bedrock. The compression and tension capacity of the caissons will be developed within a rock

socket below the permanent casing. We recommend the caisson rock sockets be sized assuming a side friction of 200 psi in compression and 100 psi in tension. The tension capacity check will also need to consider "cone" pullout evaluations and combined effect of the caisson loads.

Lateral Capacities of Caissons and Piles Resistance of caissons and piles to lateral loads will largely depend on the diameter of the cassions/piles and the stiffness of the core beams for the caissons. We can provide lateral capacities of the caissons and piles when foundation plans and loads are available to us. Reduction factors will be required for the lateral capacity of the caisson and pile groups where caisson/pile spacing less than 6 diameters are considered.

Steel Corrosion Steel piles may be subject to corrosion. The corrosion protection may consist of coating the piles. In lieu of the coating, 1/16 inch of the steel pile perimeter may be considered sacrificial with stresses in the steel limited to 12,600 psi. All pile steel, including steel shells should be isolated from the reinforcing steel in the pile cap.

Foundation Slab and Walls The cellar walls and slab should be designed as structural elements able to resist both soil and hydrostatic pressures. The long term groundwater should be assumed to be at approximately Elev. 0. The wall and slab should be checked for short term loading conditions with groundwater at Elev. +5 representing utility leak conditions. At-rest earth pressures should be used for the design of foundation walls, assuming a friction angle of 32 degrees and a total unit weight of 120 pounds per cubic foot. Seismic earth pressures should be considered.

We recommend that the new cellar spaces be fully protected to grade with sheet waterproofing such as Grace or Cetco products. Hydrophilic waterstops should be used. Groutable tubes shall be considered for higher quality cellar usage. Both material and labor warranties should be obtained for the waterproofing system.

Seismic Design The site is in seismic Site Class E as per the Codes. Site Class E results in Seismic Design Category (SDC) C. A site specific study could improve the design accelerations by up to 20 percent when compared with the Code accelerations but would not improve SDC.

Please do not hesitate to call us with any questions.

MUESER RUTLEDGE CONSULTING ENGINEERS

By: Alexandra Patrone

Jan Cermak, P.E. By:

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EXHIBITS





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<u>GENERAL NOTES:</u>

- 1. BASE PLAN FROM SURVEY DATED JULY 29, 2014 BY FEHRINGER SURVEYING, P.C.
- 2. AS-DRILLED LOCATIONS FROM SURVEY DATED JUNE 1, 2015 BY MEGA ENGINEERING AND LAND SURVEYING, P.C.
- 3. ELEVATIONS ARE IN FEET AND REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.
- 4. BORINGS WERE MADE IN ACCORDANCE WITH THE NEW YORK CITY BUILDING CODE AND THE STANDARD SPECIFICATIONS FOR SUBSURFACE BORING AND SAMPLING BY MUESER RUTLEDGE CONSULTING ENGINEERS (MRCE).
- 5. ALL BORINGS WERE MADE UNDER THE CONTINUOUS INSPECTION OF MRCE.
- 6. BORINGS WERE MADE BY AQUIFER DRILLING AND TESTING (ADT) BETWEEN APRIL 18, 2015 AND MAY 27, 2015 UDING MUD-ROTARY DRILLING METHODS EMPLOYING DRILL FLUIDS TO MAINTAIN A STABLE BOREHOLE.
- 7. SOIL SAMPLES WERE COLLECTED USING A 2-INCH DIAMETER SPLIT-SPOON SAMPLER ADVANCED WITH A 140-POUND HAMMER FALLING 30 INCHES.
- 8. ROCK CORING WAS PERFORMED USING AN NX-SIZE DOUBLE-BARREL CORE SAMPLER WITH A DIAMOND BIT.
- 9. BORINGS WERE GROUTED UPON COMPLETION.
- 10. FOR BORING LOGS, SEE APPENDIX A.



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AS-DRILL	_ED BORING	LOCATION PLAN	drawing number B-1

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NOTES:

- 1. FOR GENERAL NOTES SEE DRAWING NO. B-1.
- 2. ELEVATIONS OF TOP OF BEDROCK AT BORING LOCATIONS WERE INTERPRETED FROM BORING LOGS.
- 3. ELEVATIONS ARE IN FEET AND REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)



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0.D. SPLIT-SPOON SAMPLER.



BORING LEGEND

A -- NUMBER, TYPE AND LOCATION OF BORING

EL. — GROUND SURFACE ELEVATION AT BORING

- NUMBER AND TYPE OF SAMPLE
 - D DRY SAMPLE TAKEN WITH 2 INCH O.D. SPLIT SPOON
- E G $\begin{bmatrix} J \\ K \end{bmatrix}$ L M U UNDISTURBED SAMPLE TAKEN WITH 3 INCH O.D. FIXED PISTON TYPE SAMPLER
 - UD UNDISTURBED SAMPLE EXTRUDED IN FIELD AND PLACED IN JAR DUE TO POOR RECOVERY OR DISTURBANCE
 - S THIN TUBE SAMPLE TAKEN WITH SHELBY TUBE SAMPLER
 - W WASH SAMPLE
 - NR NO RECOVERY
 - LENGTH OF SAMPLE ATTEMPT

STANDARD PENETRATION RESISTANCE. NUMBER OF BLOWS FROM 140 LB. HAMMER FREE FALLING 30 INCHES REQUIRED TO DRIVE 2 INCH O.D. SPLIT SPOON SAMPLER ONE FOOT AFTER INITIAL PENETRATION OF 6 INCHES, UNLESS A SPECIFIC PENETRATION IS INDICATED.

- P PRESSED OR PUSH SAMPLE
- WH SAMPLE TAKEN UNDER WEIGHT OF HAMMER AND RODS
- WR SAMPLE TAKEN UNDER WEIGHT OF RODS
- E AVERAGE NATURAL WATER CONTENT OF SAMPLE, IN PERCENT OF DRY WEIGHT
- G - UNIFIED SOIL CLASSIFICATON GROUP SYMBOL OF SAMPLE
- [J] = ATTERBERG LIQUID LIMIT VALUE K = ATTERBERG PLASTIC LIMIT VALUE

L

С

F

 \bigcirc

- COMPRESSIVE STRENGTH IN TSF DETERMINED FROM UNCONFINED COMPRESSION TEST
- M COMPRESSIVE STRENGTH IN TSF DETERMINED FROM UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST
- GROUNDWATER LEVEL OBSERVED IN BORING ∗- MUD LEVEL
 - GROUNDWATER LEVEL OBSERVED IN PIEZOMETER
 - ROCK CORE NUMBER
 - LENGTH OF CORE RUN
 - LENGTH OF CORE RECOVERED EXPRESSED AS A PERCENT OF THE LENGTH OF CORE RUN
- R ROCK QUALITY DESIGNATION-THE SUM OF THE LENGTHS OF PIECES OF RECOVERED CORE WHICH ARE EQUAL TO OR GREATER THAN FOUR INCHES IN LENGTH, EXPRESSED AS A PERCENTAGE OF THE TOTAL LENGTH OF CORE RUN. LENGTHS ARE MEASURED BETWEEN IN-SITU SEPARATIONS AND MECHANICAL BREAKS RESULTING FROM CORING ARE IGNORED.
- IMPERVIOUS SEAL
 - SAND FILTER SURROUNDING PIEZOMETER INTAKE ELEMENT
 - INTAKE ELEMENT
 - COBBLE OR BOULDER



GEOTECHNICAL REFERENCE STANDARDS GS-R

	IABLE	R-1 ROCK CORE CLASSIFICATIO	ON CRITER					TABLE_R-2 JOINTIN	<u>WEA</u> G DEF	THERING AND
				GENERAL CORING CH/	. MINIMUM WACTERISTICS		INTACT SPECIMEN			
HARDNESS/SOUNDNESS CLASSIFICATION	TYPICAL GEOLOGIC CLASSIFICATION	IDENTIFICATION CHARACTERISTICS	NX OR	LARGER	BX OR	SMALLER	COMPRESSIVE	FABRIC WEATHERI	NG	CHARACTERISTIC
			REC	RQD	REC	RQD	PSI	Unweathered	UnW	No decomposition
HARD ROCK	-CRYSTALLINE IGNEOUS,	- UNWEATHERED FABRIC	95	85	85	75	3000			rings when struck
UNWEATHERED	or metamorphic rocks -Highly siliceous sedimentary rocks	 RINGS WHEN STRUCK WITH BAR SHARP AND HARD FRACTURE SURFACE WHEN BROKEN MECHANICALLY 	OR MORE	OR MORE	OR MORE	OR MORE		Slightly Weathered	SI₩	Iron Stained Rings when struck
MAY BE JOINTED		 MAY BE JOINTED, BUT JOINTS ARE GENERALLY TIGHT. JOINTS MAY BE IRON STAINED. DOES NOT DISINTEGRATE UPON EXPOSURE 						Moderately Weathered	MdW	Deteriorated fabric Thuds when struck
		- DOES NOT SLAKE IN WATER						Highly Weathered	HiW	Friable, easily broken by hand
MEDIUM HARD ROCK	AS FOR HARD ROCKS AND:	AS FOR HARD ROCK, EXCEPT:	70	50	50	40	1500	Decomposed	Dec	Soil-like
SLIGHTLY WEATHERED MAY BE CLOSELY JOINTED	 MODERATELY SILICEOUS SEDIMENTARY ROCKS CERTAIN CALCAREOUS ROCKS 	 FABRIC MAY BE IRON STAINED MAY BE CLOSELY JOINTED, BUT JOINTS ARE GENERALLY TIGHT. JOINTS HAVE SLIGHT WEATHERING OR MAY BE IRON STAINED. 						DEGREE OF	JOINT	WEATHERING CHARACTERISTIC
INTERMEDIATE ROCK	AS FOR MEDIUM HARD ROCKS AND:	AS FOR MEDIUM HARD ROCK, EXCEPT:	50	35	35	25	500	lron stained joints	FeJtS	Indicates movement of water along joints
MODERATELY WEATHERED MAY BE CLOSELY JOINTED	 MOST SEDIMENTARY ROCKS OTHER THAN COMPACTION SHALES MOST CALCAREOUS ROCKS WHICH ARE NOT POROUS 	 MODERATELY WEATHERED FABRIC WEATHERED JOINTS THUDS WHEN STRUCK BY BAR CAN BE INDENTED WITH A STEEL NAIL BREAKS READILY WITH HAMMER PIECES OF WEATHERED SURFACE CAN BE BROKEN OFF BY HAND 						Weathered joints	Wjts	Joints are not tight and do not match. Joints have friable edges.
		 DOES NOT DISINTEGRATE UPON EXPOSURE UNWEATHERED PIECES DO NOT SLAKE 						DEGRE	<u>e of j</u>	OINTING
WEATHERED DOOK			1.565	1.500	1.000	1.500	450	Massive		JUINI FREQUENCI
WEATHERED ROCK	- COMPACTION SEDIMENTARIES	- HIGHLY WEATHERED FARRIC	THAN 50	THAN 35	THAN 35	THAN 25	150	MUSSIVE MSSI	/ Le	ess than 1 joint in 4 feet
HIGHLY WEATHERED MAY BE BROKEN	 CALCAREOUS ROCKS WITH SOIL—FILLED CAVITIES 	 CAN BE BROKEN EASILY, CRUMBLES WITH DIFFICULTY BY HAND 		00		25		Blocky Blky	1	joint every 2 to 4 feet
		– CAN BE SCRAPED BY KNIFE – MAY SOFTEN UPON EXPOSURE	WHEN REC TECHNIQUE	OVERED with Si S, described A	oil sampling as for soils			Moderately MdJt Jointed	.d 1	joint every foot to 2 feet
		- MAY SLAKE IN WATER - STANDARD PENETRATION RESISTANCE	ADDED TO	DESCRIPTION.	rmbols. (Wihd	ROCK)		Jointed Jtd	1	to 2 joints per foot
		EXCEEDS 50 BLOWS/F001						Closely ClJto Jointed	i 2	to 4 joints per foot
DECOMPOSED ROCK	ALL ROCK TYPES	- ROCK TEXTURE AND STRUCTURE OFTEN PRESERVED	GENERALLY TECHNIQUE	' RECOVERED WI	th soil sampli Ed as for soi	ING LS		Broken Bkn	Mo	ore than 4 joints per foot
(residual soils)		 - CAN BE CRUMPLED BY SLIGHT HAND - CAN BE CRUMPLED BY SLIGHT HAND - CAN BE PEELED WITH A KNIFE - CAN BE PEELED WITH A KNIFE - STANDARD PENEIRATION RESISTANCE LESS THAN 50 BLOWS/FOOT 	ADDED TO	DESCRIPTION.	MDULJ. (UEC h	Vertical joints are ignored in frequency evaluations, but ar descriptions and and on corr			d in RQD and joint It are noted in written core sketches.	
I 			L							

NOTES:

1. ROCK CORE DESCRIPTIONS REPRESENT ONLY THE MATERIAL RECOVERED IN THE CORING OPERATIONS.

- 2. GENERAL MINIMUM CORING CHARACTERISTICS ASSUME ROCK CORING WITH A DOUBLE TUBE SERIES "M" OR EQUIVALENT CORE BARREL USING GOOD CORING TECHNIQUES AND EQUIPMENT.
- 3. REC RECOVERY IS THE LENGTH OF CORE RECOVERED, EXPRESSED AS A PERCENTAGE OF THE LENGTH OF CORE RUN.
- 4. RQD ROCK QUALITY DESIGNATION IS THE SUM OF THE LENGTHS OF CORE PIECES FOUR INCHES OR LONGER EXPRESSED AS A PERCENTAGE OF THE TOTAL LENGTH OF CORE RUN. LENGTHS ARE MEASURED BETWEEN IN-STU SEPARATIONS; MECHANICAL BREAKS RESULTING FROM CORING AND VERTICAL JOINTS ARE IGNORED.

H SYMBOLS	<u>JOI</u>	JOINT ORIENTATION AND CONDITION								
Joint				SURFACE	-	CONDITION				
Healed Joint	Parallel	-	//	Curved –	С	Slick -	1			
Broken	Crossing	-	X	irregular —	1	Smooth -	2			
Part of Core Not Recovered	Foliation	-	F	Straight -	S	Rough -	3			
Cavities or Vugs in Core	Stratification	-	S							
Clay	Unfoliated or	_	U							
Sand	Unstratified									
	Mechanical Break	-	MB							
	<u>H SYMBOLS</u> Joint Healed Joint Broken Part of Core Not Recovered Cavities or Vugs in Core Clay Sand	H_SYMBOLS JOIN Joint Parallel Healed Joint Crossing Broken Crossing Part of Core Not Recovered Foliation Cavities or Vugs in Core Stratification Clay Unfoliated or Unstratified Sand Mechanical Break	H_SYMBOLS JOINT_O Joint Parallel - Healed Joint Crossing - Broken Crossing - Part of Core Not Recovered Foliation - Cavities or Vugs in Core Stratification - Clay Unfoliated or Unstratified - Sand Mechanical Break -	H_SYMBOLS JOINT ORIENTAL Joint Parallel - // Healed Joint Parallel - // Broken Crossing - X Part of Core Not Recovered Foliation - F Cavities or Vugs in Core Stratification - S Clay Unfoliated or - U U Sand Mechanical Break - MB	H_SYMBOLS JOINT ORIENTATION_AND Joint SURFACE Joint Parallel - Healed Joint Crossing - X Broken Crossing - X Part of Core Not Recovered Foliation - F Straight - Straight - Cavities or Vugs in Core Stratification - S Clay Unfoliated or - U Sand Mechanical - MB	H_SYMBOLS JOINT ORIENTATION AND CONDI- Joint SURFACE - Joint Parallel - // Curved - C Healed Joint Parallel - // Curved - C Broken Crossing - X Irregular - I Part of Core Not Recovered Foliation - F Straight - S Cavities or Vugs in Core Stratification - S S S S Clay Unfoliated or Unstratified - U U Mechanical Break MB H H	H_SYMBOLS JOINT_ORIENTATION_AND_CONDITION Joint Parallel - // Curved - CONDITION Healed Joint Parallel - // Curved - C Slick - Broken Crossing - X Irregular - I Smooth - Part of Core Not Recovered Foliation - F Straight - S Rough - Cavities or Vugs in Core Stratification - S S S -			

TABLE R-4 ROCK CORE SKETCH KEY

ATHERING

TABLE R-3 ABBREVIATIONS FOR ROCK CORE CLASSIFICATION

Blocky	Blky	Intermediate	Int
Broken	Bkn	Light	Lt
Brown	brn	Lignite	lign
Calcareous or Calcite	calc	Limestone	lms
Cavities	cvts	Jointed	Jtd
Chlorite	chi	Joints	Jts
Clay, Clayey	cl	Massive	Mssv
Closely Jointed	CIJtd	Medium Hard	MdHd
Coating on joint surface	coat	Mica, Micaceous	Mic
Crushed	crsh	Moderately Jointed	MdJtd
Dark	dk	Moderately Weathered	MdW
Decomposed	Dec	Pockets	pkts
Ditto	do	Quartz	qtz
Dolomite, Dolomitic	Dol	Recovery	Rec
Iron stained Joints	FeJts	Rock Quality Designation	RQD
Iron Stained	FeStn	Sand	sa
Feldspar	feld	Sandstone	SS
Foliation	Fol	Schist, Schistose	sch
Fractured	frct	Shale	sh
Fragments	fgmts	Shear zone	Sz
Gneiss, Gneissic	gns	Siliceous	sil
Gouge	gog	Silt	si
Granite, Granitic	gr	Slickensided	sl k s
Gray	gry	Slightly Weathered	SIW
Hard	Hđ	Unweathered	Un₩
Highly Weathered	HiW	Weathered	Wthd
Hornblende	Hbl	Weathered Joints	WJts
Injected	inj	Vein	Vn
Interbedded	Intrbd	Vertical Joints	VJts



ROCK CORE CLASSIFICATION CRITERIA

APPENDIX A

PROJECT: LOCATION:

WEST 18TH - WEST 19TH STREET/10TH AVENUE NEW YORK, NEW YORK

M-1 **BORING NO.** 3 SHEET 1 OF 12320 FILE NO. SURFACE ELEV. SIDEWALK/8.3±

						RES	. ENGR.	J. BIELBY/T. SANDIFORD
DAILY		SAM	PLE				CASING	
DROCRESS	NO		BLOW/S/6"	SAMPLE DESCRIPTION	STRATA	ПЕРТН	BLOWS	REMARKS
PROGRESS	NO.	DEFIII	BLOW5/0	SAMPLE DESCRIPTION	SIRAIA	DEFIII	BLOW5	
10:15							DRILLED	Hand auger to 5.
05-18-15							AHEAD	
Monday							4"	
Cloudy					F			
63°F					F	5		Vacuum excavated to
								6'
	1D	6.0	1 1	Brown silty find sand trace modium to coarse				0.
		0.0	1-1	brown sity line said, trace medium to coarse		0		-
		8.0	1-1	sand, clay (SIVI)		0		
	2D	8.0	1-1	Black to brown organic silty clay, some fine				2D-3D, 9D: REC=5"
		10.0	2-2	sand, trace gravel (OL)		10		
	3D	10.0	3-4	Black organic clayey fine sand (SC)				
		12.0	3-2					
								-
					0		-	
						15		
	40	45.0				15		
	4D	15.0	2-2	Black organic clayey fine sand, trace shells (SC)			VVC=65, pp=0.23	
		17.0	2-3					
						18.5		
						20		
	5D	20.0	7-7	Red brown clavey fine to medium sand trace				REC=2"
	00	20.0	9.10	arayol, coarso sand (SC)				1120-2
	<u></u>	22.0	40.0	Ten 40% Creve han fine conde come silt (CM)				-
	60	22.0	12-9 Top T0 : Gray bin line sand, some slit (SM)					
		24.0	9-8	Bot 4": Red brn f-m sand, some silt (SM)				
	7D	24.0	4-4	Red brown fine sand, some silt (SM)		25		
	26.0 5-7 8D 26.0 8-6	5-7						
		26.0	8-6	Red brown silty fine sand (SM)				
		28.0	7-7		S			WC=Water Content
	٩D	28.0	5-6	Red brown clavey silt (ML)	30		in percent of dry	
	30	20.0	5-0 6 9			weight		
	400	30.0	0-0	Ded bassing silts first stand stands with stands		30		weight.
	10D	30.0	5-4	Red brown silty fine sand varved with some				
		32.0	7-11	fine sand, some silt (SM)				pp=Pocket
								Penetrometer
							Unconfined Compres-	
						35		sive Strength in tsf.
	11D	35.0	5-12	Top 5" Red brn f-m sand sm silt_gravel (SM)		36		
		36.4	100/5"	Bot 4": Brn f c co. tr rock famte, cilt mico (DD) (SD SM)	**	36.5		**Decomposed rock
	10	27.0		Hord unweathered grow graciacia achiet		30.3		from 26' to 26 5'
09:00		37.0	REC=94%	Hard unweathered gray gheissic schist,				
05-19-15		42.0	RQD=86%	moderately jointed				Rig chatter at 36.5'.
Tuesday						40	*	1C: *Coring time from
Cloudy								09:20 to 09:38.
60°F					P			
	2C	42.0	REC=100%	Do1C			*	*Coring time from 09.51
		47 0	ROD-94%					to 10:09
		0.17				15		
						40		
						4-		
10:15						47		End of Boring at 47'.
						50		
1								
								1
L	I		L		1	I		1



MUESER RUTLEDGE CONSULTING ENGINEERS

						BORING N	10.	M-1	
						SHEET	3	OF	3
PROJECT	Г	WEST 18TH	- WEST 19TH	H STREET/10TH	H AVENUE	FILE NO.		12320	
LOCATIO	N		NEW YORK,	, NEW YORK		SURFACE	ELEV.	SIDEWA	LK/8.3±
BORING	LOCATION	N SE	E BORING LO	OCATION PLAN		DATUM		NAVD 88	
BORING	EQUIPME	NT AND METH	ODS OF STAR	BILIZING BOREH	OLE	_			
		TYPE OF	FEED						
TYPE OF E	BORING RIG	DURING	CORING	CASING L	JSED	X	YES	NO	
TRUCK		MECHAN		DIA., IN.	4	DEPTH, FT.	FROM	0 TC	37
SKID		HYDRAU		DIA., IN.		DEPTH, FT.	FROM	TC	
BARGE		OTHER		DIA., IN.		DEPTH, FT.	FROM	тс	
OTHER	TRACK CM	/IE-45							
TYPE AN	D SIZE OF	:		DRILLING	MUD USED	X	YES	NO	
D-SAMPLE	R 2" O.	D. SPLIT SPOO	N	DIAMETE	R OF ROTARY BIT	, IN.		3-7/8	
U-SAMPLE	R			TYPE OF	DRILLING MUD	_		QUIK GEL	
S-SAMPLE	R					-			
CORE BAR	REL NX D	OUBLE BARRE	L	AUGER U	ISED	,	YES	X NO	
CORE BIT	NX D	IAMOND		TYPE AN	D DIAMETER, IN.				
DRILL ROD	DS NWJ								
				CASING H	HAMMER, LBS.	,	AVERAGE	FALL, IN.	
				*SAMPLE	R HAMMER, LBS.	140	AVERAGE	FALL, IN.	30
				*USED AL	JTOMATIC HAMME	R.			
WATER L	EVEL OBS	SERVATIONS	IN BOREHOLE	<u> </u>					
		DEPTH OF	DEPTH OF	DEPTH TO					
DATE	TIME	HOLE	CASING WATER			CONDITION	IS OF OB	SERVATION	
					NO	NATER LEVE	EL OBSER	RVATIONS MADE	
PIEZOME	TER INST	ALLED	YES	X NO SKI	ETCH SHOWN C	N			
	c.	TVDE				YTU ET			
		TVPE							
						2тн гт –			
FILIER.				OD, IN.				_ DOT. ELEV.	
PAY QUA	NTITIES								
3.5" DIA. D	RY SAMPLE	BORING	LIN. FT.	37	NO. OF 3" SHELE	BY TUBE SAI	MPLES		
3.5" DIA. U	-SAMPLE B	ORING	LIN. FT.		NO. OF 3" UNDIS	STURBED SA	MPLES		
CORE DRI	lling in Ro	DCK	LIN. FT.	10	OTHER:				
	CONTRAC			AQUIFI		IESTING C			
	~ <u> </u>		PAUL GADDIS					NT KUIVIEKU	
		ED				JIVIPLETIO			0.15
						۲	DATE	05-1	9-10
			GHERTL	- J. IVIO33		·ix. 	BOI		M_1

PROJECT: LOCATION:

WEST 18TH - WEST 19TH STREET/10TH AVENUE NEW YORK, NEW YORK

M-2 **BORING NO.** 4 SHEET 1 OF 12320 FILE NO. SURFACE ELEV. 8.8± DES ENCO

DAILY NONCERS O. DEPTH BLOWSOF SAMPLE DESCRIPTION STRATA DEPTH BLOWSOF REMARKS 12:13 Monay				T		REG	. ENGR.	TERESA SANDIFORD	
NO. DEPTH BLOWSP ¹ SAMPLE DESCRIPTION STRATA DEPTH BLOWSP ¹ 12:10 05:11:03 Monday 2 0 <t< td=""><td>DAILY</td><td colspan="3">DAILY SAMPLE</td><td></td><td></td><td></td><td>CASING</td><td></td></t<>	DAILY	DAILY SAMPLE						CASING	
Indicate	DROCRESS	NO	NEDTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEDTH	BLOWS	REMARKS
ULTS Difference Worksy Image: Summy arrows in the image: Summy	PROGRESS	NO.		DLOWS/0		SINAIA			
dist-11s	12:15			4				DRILLED	vacuum excavated to
Monday Borny Borny Image: Series of the series	05-11-15							AHEAD	6'.
Surry Image: Surry <thimage: surry<="" th=""> Image: Surry</thimage:>	Monday							4"	Hand augered to 6'.
Borr ID 6.0 3-2 Black, brown clayey fine to medium sand (SC) 10 6.0 1-1 Black brown fine to medium sand, some sit, ID 10, 4D: REC=6* Odor. 10.0 1-1 Black brown fine to medium sand, some sit, ID ID 10, 4D: REC=6* Odor. 11.1 Black brown fine to medium sand, some sit, ID ID ID ID ID ID 11.1 Black brown fine to medium sand, some sit, ID	Sunny			-					
ID 6.0 3-2 Black, brown clayey fine to medium sand (SC) ID 8.0 1/12 Black, brown fine to medium sand, some silt, trace gravel (SM) ID, 4D: REC=6* ID 10.0 1-1 Black brown fine to medium sand, some silt, trace gravel (SM) IS ID 15.0 5-10 Black brown fine to medium sand, some silt, trace gravel (SM) IS IS ID 22.0 6-13 Brown black gravelly fine to coarse sand, trace gravel (ML) IS IS ID 22.0 6-13 Brown black gravelly fine to coarse sand, trace gravel (ML) IS IS ID 22.0 6-13 Brown black gravelly fine to coarse sand, trace gravel, silt IS IS ID 22.0 6-14 Brown fine to medium sand, trace gravel, silt IS IS IS ID 22.0 11-11 IS	0005			-			5		
1D 6.0 3-2 Black, brown clayey fine to medium sand, some sit, 10.0 1.1 1D, 4D: REC=6" Odor. 2D: REC=7" 3D 10.0 1.1 Black brown fine to medium sand, some sit, 12.0 1.1 1D, 4D: REC=6" Odor. 2D: REC=7" 4D 15.0 5-10 Black brown fine to medium sand, some sit, 17.0 9.9 Black brown fine to medium sand, some sit, 17.0 15 1 1 5D 20.0 6-13 Black brown fine to medium sand, some sit, 17.0 18.5 1 1 5D 20.0 6-13 Biown black gravely fine to coarse sand, trace 22.0 11.11 Brown fine to medium sand, trace gravel, sit 1 1 6D 22.0 8-16 Do 5D (SP-SM) 2 1 1 9D 28.0 11.11 Brown fine to medium sand, trace gravel, sit 2 1 1 9D 28.0 11.12 Brown fine to coarse sand, trace gravel, sit 30 1 1 11D 36.0 2.2 11.12 SP-SM 35 1 1 111	80°F			-			3		
10 6.0 3-2 Black, brown clayey fine to medium sand (SC) 20 8.0 1/12 20 8.0 1/12 30 10.0 1-1 12.0 1-1 Black brown fine to medium sand, some silt, trace gravel (SM) 10 40 15.0 5-10 Black brown fine to medium sand, some silt, trace gravel (SM) 15 50 20.0 6-13 Brown black gravely fine to coarse sand, trace gravel (ML) 16.5 22.0 11-13 Brown black gravely fine to coarse sand, trace gravel (ML) 24.0 10-14 22.0 11-13 Brown fine to medium sand, trace gravel (ML) 24.0 10-14 30.0 22.0 11-11 Brown fine to coarse sand, trace gravel, silt 30 4 40 26.0 11-11 Brown fine to coarse sand, trace gravel, silt 30 4 90 28.0 7-12 Brown fine to coarse sand, trace gravel, silt 30 4 90 20.0 11-12 Brown fine to coarse sand, trace gravel, silt 30 4 100 32.0 11-12 Brown fine to coarse sand, trace gravel, silt 35				_					
8.0 1-1 Black brown fine to medium sand, some silt, trace wood (SM) F 10 00 2D: REC=7" 4D 15.0 1-1 Black brown silty fine sand (SM) 15 10 16 <td></td> <td>1D</td> <td>6.0</td> <td>3-2</td> <td>Black, brown clayey fine to medium sand (SC)</td> <td></td> <td></td> <td></td> <td>1D, 4D: REC=6"</td>		1D	6.0	3-2	Black, brown clayey fine to medium sand (SC)				1D, 4D: REC=6"
2D 3.0 1/12* Black brown fine to medium sand, some silt, trace wood (SM) F 10 2D: REC=7* 4D 15.0 1-1 Black brown silty fine sand (SM) 15 2D: REC=7* 4D 15.0 5-10 Black brown fine to medium sand, some silt, trace gravel (SM) 15 10 2D: REC=7* 4D 15.0 5-10 Black brown fine to medium sand, some silt, trace gravel (SM) 18.5 20 11 1			8.0	1-1					
Image wood (SM) Image wood		2D	8.0	1/12"	Black brown fine to medium sand, some silt				Odor
10.0 1-1 Ifface wood (SM) 10 20: REC=7 30 10.0 1-3 Black brown silty fine sand (SM) 10 20: REC=7 40 15.0 5-10 Black brown fine to medium sand, some silt, trace gravel (SM) 15 15 15 40 15.0 5-10 Brown black gravely fine to coarse sand, trace gravel (ML) 18.5 20 18.5 50 20.0 6-13 Brown black gravely fine to coarse sand, trace gravel (ML) 24 24 24 70 24.0 10-10 Brown fine to coarse sand, trace gravel, silt (SP-SM) 24 24 24 24 90 28.0 70-111 Brown fine to coarse sand, trace gravel, silt (SP-SM) 30.0 7 30.0 7 111 5 5 5 5 35 5 35 5 900 28.0 7-12 Brown fine to coarse sand, trace gravel, silt (SP-SM) 30.0 7 30.0 7 14.15 100/5.5* Brown silty fine sand (SM) 5 35 5 35 5 5 005-12.15 37.0		20	40.0	1/12	black brown line to medium sand, some sit,	F	10		
30 1.0 1.3 Black brown silty fine sand (SM) 40 15.0 5-10 Black brown fine to medium sand, some silt, trace gravel (SM) 40 15.0 5-10 Black brown fine to medium sand, some silt, trace gravel (SM) 50 22.0 6-13 Brown black gravelly fine to coarse sand, trace silt (SP-SM) 18.5 60 22.0 8-15 Do 5D (SP-SM) 5D 26.0 11-11 80 26.0 11-11 Brown fine to medium sand, trace gravel, silt (SP-SM) S 24.4 10 30.0 9-7 12.10 Brown fine to coarse sand, trace gravel, silt (SP-SM) 30.0 + 90 28.0 7-12 Brown fine to coarse sand, trace gravel, silt (SP-SM) 30.0 + 110 30.0 9-7 100 30.4 - - 100 30.0 9-7 Top: Do 11D (SM) Bot: Gray micaceous fine to medium sand, trace gravel, silt (Decomposed Rock) (SP-SM) - - 110 100/5.5* Brown silty fine sand (SM) - - - - 100 30.0 1-4 Top: Do 11D (SM) - - -			10.0	1-1	trace wood (SIVI)	•	10		ZD: REC=7
12.0 1-1 40 15.0 50 20.0 6-13 Brown black gravelly fine to coarse sand, trace sit (SP-SM) 50 22.0 11-13 Do 5D (SP-SM) 22.0 11-11 80 26.0 12.0 11-11 80 26.0 12.0 11-11 80 26.0 11-11 Brown fine to medium sand, trace gravel, slit 90 28.0 100 30.0 9.7 12.10 11-12 Brown fine to coarse sand, trace gravel, slit 90 28.0 100 30.0 9.7 12.10 Brown fine to coarse sand, trace gravel, slit (SP-SM) 90 24.0 111 100/5.5* 8 11 120 1-4 121.0 Brown fine to medium sand, trace gravel, slit (SP-SM) 11 Brown slity fine sand (SM) 11 100/5.		3D	10.0	1-3	Black brown silty fine sand (SM)				
Image: state			12.0	1-1					
Interference Second Secon				-					
40 15.0 5-10 Black brown fine to medium sand, some silt, trace gravel (SM) 15 16 17 5D 20.0 6-13 Brown black gravelly fine to coarse sand, trace gravel (SM) S 18.5 1 6D 22.0 8-15 Do 5D (SP-SM) Do 5D (SP-SM) 24 1 7D 24.0 10-10 Brown fine to medium sand, trace gravel, silt (SP-SM) 25 WC=18 7D 24.0 10-11 Brown fine to medium sand, trace gravel, silt (SP-SM) 26 4 90 28.0 7-7-12 Brown fine to coarse sand, trace gravel, silt (SP-SM) 30 1 90 28.0 7-7-12 Brown fine to coarse sand, trace gravel, silt (SP-SM) 30 1 10D 30.0 12-10 Brown fine to coarse sand, trace silt, gravel 30 1 111-12 Brown fine to coarse sand, trace silt, gravel S 35 35 1100/5.5* Top: Do 11D (SM) Bot: Gray micaceous fine to medium sand, trace fine sand, trace silt (Decomposed Rock) (SP-SM) 40 6 12 40				-					
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4D 15.0 5-10 Black brown fine to medium sand, some silt, trace gravel (SM) 17.0 9-9 trace gravel (SM) 5D 20.0 6-13 Brown black gravelly fine to coarse sand, trace silt, gravel (ML) 18.5 6D 22.0 8-15 Do 5D (SP-SM) 24.0 16-14 7D 24.0 10-11 Brown clayey silt, trace fine sand, gravel (ML) 24 VC=18 28.0 10-11 Brown fine to medium sand, trace gravel, silt (SP-SM) S 24 VC=18 10D 30.0 7-12 Brown fine to coarse sand, trace gravel, silt (SP-SM) S 30 V 111 8D 26.0 11-11 Brown fine to coarse sand, trace gravel, silt (SP-SM) 30 V 10D 30.0 12-10 Brown silty fine sand (SM) 35 35 35 111 100/5.5" Top: Do 11D (SM) Bot: Gray micaceous fine to medium sand, trace gravel, silt (Decomposed Rock) (SP-SM) 40 41 41 112D 40.0 1-4 Top: Do 11D (SM) 50 Coring time from 11:45 Coring time from 12:35 114 50.0 RD=85%							15		
Introduction Introduction<		4D	15.0	5-10	Black brown fine to medium sand, some silt,				
International construction International constructon International construction <thi< td=""><td></td><td></td><td>17.0</td><td>9-9</td><td>trace gravel (SM)</td><td></td><td></td><td></td><td></td></thi<>			17.0	9-9	trace gravel (SM)				
14:15 100 5.0 20.0 6-13 sitt (SP-SM) Brown black gravelly fine to coarse sand, trace sitt (SP-SM) S 20 1 6D 22.0 10-10 Brown clayey sitt, trace fine sand, gravel (ML) S 24.0 10-10 26.0 11-11 Brown fine to medium sand, trace gravel, silt (SP-SM) Brown fine to coarse sand, trace gravel, silt (SP-SM) 25 0 0 9D 28.0 7-12 Brown fine to coarse sand, trace gravel, silt (SP-SM) 30.0 9-7 10D 30.0 12-10 Brown fine to coarse sand, trace silt, gravel (SP-SM) Brown silty fine sand (SM) 30 1 08:00 11D 35.0 2-2 Brown silty fine sand (SM) 35 35 30:01 12-10 Brown silty fine sand (SM) 0 40 41 100/5.5" 100/5.5" Top: Do 11D (SM) Do: Gray micaceous fine to medium sand, trace gray is isose gneiss, sit (Decomposed Rock) (SP-SM) DR Easy drilling at 44'. 12:0 40.0 45 * * * 10:0/5.5" 10:0/5.5" Me			11.0						
Image: state of the s				4					
Image: state of the s				_			18.5		
5D 20.0 6-13 Brown black gravelly fine to coarse sand, trace S 6D 22.0 11-13 bo 5D (SP-SM) 24.0 16-14 7D 24.0 16-14 Brown clayey silt, trace fine sand, gravel (ML) 24 24 7D 24.0 10-10 Brown fine to medium sand, trace gravel, silt 25 WC=18 9D 28.0 10-11 Brown fine to coarse sand, trace gravel, silt 30 4 9D 28.0 7-12 Brown fine to coarse sand, trace gravel, silt 30 4 10-10 30.0 9-7 (SP-SM) Brown fine to coarse sand, trace gravel, silt 30 4 11-12 Brown fine to coarse sand, trace silt, gravel 30 4 40 40 14:15							20		
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6D 22.0 8-15 Do 5D (SP-SM) 24.0 16-14 Brown clayey silt, trace fine sand, gravel (ML) 25 WC=18 7D 24.0 10-10 Brown fine to medium sand, trace gravel, silt 25 WC=18 28.0 10-11 (SP-SM) Brown fine to coarse sand, trace gravel, silt 30.0 9 30.0 9-7 24 10 Brown fine to coarse sand, trace gravel, silt 30.0 9 10D 30.0 12-10 Brown fine to coarse sand, trace silt, gravel 30.0 9 09:00 10D 35.0 2-2 Brown silty fine sand (SM) 35 35 06:01 11D 35.0 2-2 Brown silty fine sand (SM) 40 41 12D 40.0 1.4 Bot: Gray micaceous fine to medium sand, trace silt, gravel silt (Decomposed Rock) (SP-SM) DR 40 41 100/5.5" 8 Medium hard to hard gray schistose gneiss, trace pegmatite, slightly weathered to unweathered to intermediate to moderately jointed, weathered joints 40 45 * * * *			22.0	11-13		-	-		
24.0 16-14 Brown clayey silt, trace fine sand, gravel (ML) WC=18 26.0 11-11 Brown fine to medium sand, trace gravel, silt 25 WC=18 28.0 10-11 Brown fine to coarse sand, trace gravel, silt 30.0 9-7 30.0 9-7 (SP-SM) Brown fine to coarse sand, trace gravel, silt 30.0 - 10D 30.0 12-10 Brown fine to coarse sand, trace silt, gravel 30.0 - 09:00 11D 35.0 2-2 Brown silty fine sand (SM) - - 09:00 11D 35.0 2-2 Brown silty fine sand (SM) - - 09:11D 35.0 2-2 Brown silty fine sand (SM) - - - 09:00 11D 35.0 2-2 Brown silty fine sand (SM) - - - 09:12:15 37.0 3-4 - - - - - 100/5.5* Top: Do 11D (SM) Bot: Gray micaceous fine to medium sand, trace silt (Decomposed Rock) (SP-SM) - - - - 10 41.5 100/5.5* Rec=100%		6D	22.0	8-15	Do 5D (SP-SM)				
TD 24.0 10-10 Brown clayey silt, trace fine sand, gravel (ML) Z5 WC=18 26.0 11-11 BD 26.0 4-8 Brown fine to medium sand, trace gravel, silt (SP-SM) 30.0 9-7 95-SM) 30.0 9-7 97-SM) 30.0 12.10 Brown fine to coarse sand, trace gravel, silt (SP-SM) 30.0 12.10 Brown fine to coarse sand, trace silt, gravel 30.0 100 30.0 12.10 Brown fine to coarse sand, trace silt, gravel 35 35 35 14:15			24.0	16-14			24		
14:15 Brown fine to medium sand, trace gravel, silt 14:15 100 09:00 110 11:11 Brown fine to coarse sand, trace gravel, silt 09:00 110 33:0 9-7 100 30:0 32:0 11:12 09:00 11:12 09:00 110 09:00 110 09:00 110 05:12:15 37.0 37.0 3:4 Summy 40 41.5 100/5.5" Bot: Gray micaceous fine to medium sand, trace gravel, silt (Decomposed Rock) (SP-SM) 08:9F 12D 110 14 100/5.5" Bot: Gray micaceous fine to medium sand, trace silt, gravel silt (Decomposed Rock) (SP-SM) 05:0 RCE=100% Medium hard to hard gray schistose gneiss, trace pegmatite, slightly weathered to intermediate to moderately jointed to intermediate to moderately jointed to intermediate to moderately jointed. weathered joints 20 5:0 21 800-90% 22 5:0 35:0 RCD=90% 90 100		7D	24.0	10-10	Brown clayey silt, trace fine sand, gravel (ML)		25		WC=18
8D 26:0 1-11 Brown fine to medium sand, trace gravel, silt (SP-SM) 9D 28:0 7-12 Brown fine to coarse sand, trace gravel, silt (SP-SM) 10D 30:0 9-7 Brown fine to coarse sand, trace gravel, silt (SP-SM) 10D 30:0 9-7 Brown fine to coarse sand, trace silt, gravel (SP-SM) 11D 35:0 12-10 Brown silty fine sand (SM) 05-12-15 37.0 2-2 12D 40:0 1-4 10D/5.5" Top: Do 11D (SM) 88"F 12D 40:0 12D 100/5.5" 12D			26.0	11-11			-		
8D 28.0 10-11 Brown fine to medium sand, trace gravel, silt 9D 28.0 7-12 Brown fine to coarse sand, trace gravel, silt 10D 30.0 9-7 Brown fine to coarse sand, trace gravel, silt 10D 30.0 12-10 Brown fine to coarse sand, trace gravel, silt 10D 30.0 12-10 Brown fine to coarse sand, trace gravel 14:15 100 11-12 (SP-SM) 09:00 11D 35.0 2-2 09:01 11D 35.0 2-2 09:00 11D 35.0 2-2 09:01 11D 35.0 2-2 12D 40.0 1-4 Top: Do 11D (SM) Bown silty fine sand (SM) Bot: Gray micaceous fine to medium sand, trace silt (Decomposed Rock) (SP-SM) DR 11C 45.0 REC=100% Medium hard to hard gray schistose gneiss, trace pegmatite, slightly weathered to intermediate to moderately jointed, weathered joints * <t< td=""><td></td><td>00</td><td>20.0</td><td>11-11</td><td>Descur fine to reading a such that a manual with</td><td></td><td></td><td></td><td>-</td></t<>		00	20.0	11-11	Descur fine to reading a such that a manual with				-
28.0 10-11 (SP-SM) 30.0 9-7 Brown fine to coarse sand, trace gravel, silt 10D 30.0 12-10 Brown fine to coarse sand, trace silt, gravel 14:15		8D	26.0	4-8	Brown fine to medium sand, trace gravel, slit				
9D 28.0 7-12 Brown fine to coarse sand, trace gravel, silt (SP-SM) 30 4 10D 30.0 12-10 Brown fine to coarse sand, trace silt, gravel (SP-SM) 30 4 14:15 32.0 11-12 Brown silty fine sand (SM) 35 35 09:00 11D 35.0 2-2 Brown silty fine sand (SM) 35 35 09:00 11D 35.0 2-2 Brown silty fine sand (SM) 40 41 09:00 12D 40.0 1-4 Top: Do 11D (SM) Bot: Gray micaceous fine to medium sand, trace silt (Decomposed Rock) (SP-SM) Medium hard to hard gray schistose gneiss, trace pegmatite, slightly weathered to unweathered to intermediate to moderately jointed, weathered to intermediate to moderately jointed, weathered joints * * Coring time from 11:45 100/5.50 REC=100% Recellom% Hard unweathered gray, green gneiss, some gray schistose gneiss, trace pegmatite, moderately jointed to jointed * * Coring time from 12:35 100 50.0 RQD=90% pegmatite, moderately jointed to jointed * * Coring time from 12:35			28.0	10-11	(SP-SM)				
30.0 9-7 (SP-SM) 10D 30.0 12-10 Brown fine to coarse sand, trace silt, gravel 14:15		9D	28.0	7-12	Brown fine to coarse sand, trace gravel, silt				
100 300 12-10 Brown fine to coarse sand, trace silt, gravel Image: Constraint of the coarse sand, trace silt, gravel Image: Constraint of the coarse sand, trace silt, gravel Image: Constraint of the coarse sand, trace silt, gravel Image: Constraint of the coarse sand, trace silt, gravel Image: Constraint of the coarse sand, trace silt, gravel Image: Constraint of the coarse sand, trace silt, gravel Image: Constraint of the coarse sand, trace silt, gravel Image: Constraint of the coarse sand, trace silt, gravel Image: Constraint of the coarse sand, trace silt, gravel Image: Constraint of the coarse sand, trace silt, gravel Image: Constraint of the coarse sand, trace silt, gravel Image: Constraint of the coarse sand, trace silt, gravel Image: Constraint of the coarse sand, trace silt, gravel Image: Constraint of the coarse sand, trace silt, gravel Image: Constraint of the coarse sand, trace silt, gravel Image: Constraint of the coarse sand, trace silt, gravel Image: Constraint of the coarse sand, trace silt, gravel Image: Constraint of the coarse sand, trace silt, gravel Image: Constraint of the coarse sand, trace san			30.0	9-7	(SP-SM)		30		-
100 30:0 12:10 Brown nine to Coarse said, trace sit, graver 14:15 11-12 (SP-SM) S 09:00 11D 35.0 2-2 05:12:15 37.0 3-4 Tuesday		100	20.0	12 10	Brown fing to oppress conditions silt group				
14:15 11-12 (SP-SM) S 1 14:15 1 1 35 35 09:00 11D 35.0 2-2 37.0 3-4 Sunny 1 1 1 1 1 88°F 12D 40.0 1-4 Top: Do 11D (SM) 40 Bot: Gray micaceous fine to medium sand, trace silt (Decomposed Rock) (SP-SM) 40 41 1 1C 45.0 REC=100% Medium hard to hard gray schistose gneiss, trace pegmatite, slightly weathered to unweathered to intermediate to moderately jointed, weathered joints * *Coring time from 11:45 2C 50.0 REC=100% Hard unweathered gray, green gneiss, some 55.0 * *Coring time from 12:35 40 12:45. 12:45. * *Coring time from 12:35		100	30.0	12-10					-
Initial information Initial initinformation Initinformation<			32.0	11-12	(SP-SM)				
14:15						S			
14:15				-					-
14:15 35 09:00 11D 35.0 05:12:15 37.0 3.4 Tuesday	44.45						25		
09:00 11D 35.0 2-2 Brown silty fine sand (SM) 05:12:15 37.0 3-4 Image: Constraint of the same of the	14:15						35		
05-12-15 Tuesday Sunny 88°F 37.0 3-4 12D 40.0 12D 40.0 41.5 100/5.5" 12D 41.5 100/5.5" Bot: Gray micaceous fine to medium sand, trace silt (Decomposed Rock) (SP-SM) 1C 45.0 1C 45.0 1C 45.0 2C 50.0 2C 50.0 2C 50.0 2C 50.0 2C 50.0 RQD=90% Hard unweathered gray, green gneiss, some 55.0 MCCE Form BL-1 BORING NO	09:00	11D	35.0	2-2	Brown silty fine sand (SM)				
Tuesday Image: Constraint of the second	05-12-15		37.0	3-4					
Sunny Image:	Tuesday								
Sdiffy - - 40 88°F 12D 40.0 1-4 Top: Do 11D (SM) 41.5 100/5.5" Bot: Gray micaceous fine to medium sand, trace silt (Decomposed Rock) (SP-SM) - - 1 100/5.5" Bot: Gray micaceous fine to medium sand, trace silt (Decomposed Rock) (SP-SM) - - - 1 100/5.5" Nedium hard to hard gray schistose gneiss, trace pegmatite, slightly weathered to unweathered to unweathered to intermediate to moderately jointed, weathered joints - - - + Coring time from 11:45 + + Coring time from 11:45 + + 100/5.5" + + - - +	Suppy			-					
88°F 12D 40.0 1-4 Top: Do 11D (SM) 41 41.5 100/5.5" Bot: Gray micaceous fine to medium sand, trace silt (Decomposed Rock) (SP-SM) DR 1 1 10 45.0 REC=100% Medium hard to hard gray schistose gneiss, trace pegmatite, slightly weathered to unweathered to intermediate to moderately jointed, weathered joints 1 * *Coring time from 11:45 20 50.0 REC=100% Hard unweathered gray, green gneiss, some pegmatite, moderately jointed to jointed 1 * *Coring time from 12:35 20 50.0 REC=100% Hard unweathered gray, green gneiss, some pegmatite, moderately jointed to jointed 1 * MBCE Emm H 11 Medium hard to hard gray schistose gneiss, trace pegmatite, moderately jointed to jointed 12:18. *	Sumry			-			40		-
12D 40.0 1-4 Top: Do 11D (SM) 41 41.5 100/5.5" Bot: Gray micaceous fine to medium sand, trace silt (Decomposed Rock) (SP-SM) DR Image: Constraint of the second	88°F						40		
41.5 100/5.5" Bot: Gray micaceous fine to medium sand, trace silt (Decomposed Rock) (SP-SM) DR Image: Constraint of the second s		12D	40.0	1-4	Top: Do 11D (SM)		41		
Image: Sile (Decomposed Rock) (SP-SM) I			41.5	100/5.5"	Bot: Gray micaceous fine to medium sand, trace				
Image: State of the construction of				-	silt (Decomposed Rock) (SP-SM)				-
Image: Constraint of the second state in the second sta				-		DR	-		
IC 45.0 1C 45.0 S0.0 RQD=85% Medium hard to hard gray schistose gneiss, trace pegmatite, slightly weathered to unweathered to intermediate to moderately jointed, weathered joints * Coring time from 11:45 2C 50.0 REC=100% Hard unweathered gray, green gneiss, some pegmatite, moderately jointed to jointed 50 MECE Form Birt * Coring time from 12:35 * Coring time from 12:35				-					Easy drilling at 44°.
1C 45.0 REC=100% Medium hard to hard gray schistose gneiss, race pegmatite, slightly weathered to unweathered to intermediate to moderately jointed, weathered joints * Coring time from 11:45 2C 50.0 REC=100% Hard unweathered gray, green gneiss, some 55.0 RQD=90% Pegmatite, moderately jointed to jointed * Coring time from 12:35							45		
50.0 RQD=85% trace pegmatite, slightly weathered to unweathered to intermediate to moderately jointed, weathered joints to 12:18. 2C 50.0 REC=100% Hard unweathered gray, green gneiss, some pegmatite, moderately jointed to jointed *Coring time from 12:35 MBCE Form Birt Marce pegmatite, moderately jointed to jointed Marce pegmatite, moderately jointed to jointed Marce pegmatite, moderately jointed to jointed		1C	45.0	REC=100%	Medium hard to hard gray schistose gneiss,			*	*Coring time from 11:45
Image: Solid index pognitule, signify weathered to intermediate to moderately jointed, weathered joints Image: Solid index pognitule, signify weathered to intermediate to moderately jointed, weathered joints Image: Solid index pognitule, signify weathered to intermediate to moderately jointed, weathered joints Image: Solid index pognitule, signify weathered intermediate to moderately jointed, weathered joints Image: Solid intermediate to moderately jointed, weathered gray, green gneiss, some solid intermediate to jointed Image: Solid intermediate to moderately jointed to jointed Image: Solid intermediate to moderately jointed to jointed Image: Solid intermediate to moderately jointed to jointed Image: Solid intermediate to moderately jointed to jointed Image: Solid intermediate to moderately jointed to jointed Image: Solid intermediate to moderately jointed to jointed Image: Solid intermediate to moderately jointed to jointed Image: Solid intermediate to moderately jointed to jointed Image: Solid intermediate to moderately jointed to jointed Image: Solid intermediate to moderately jointed to jointed Image: Solid intermediate to moderately jointed to jointed Image: Solid intermediate to moderately jointed to jointed Image: Solid intermediate to moderately jointed to jointed Image: Solid intermediate to moderately jointed to jointed Image: Solid intermediate to moderately jointed to jointed Image: Solid intermediate to moderately jointed to jointed Image: Solid intermediate to moderately jointed to jointed Ima			50.0	ROD-85%	trace permatite slightly weathered to				to 12.18
Image: Sector of the sector			00.0	TOD=0070	unue othered to intermediate to mederately		-		10 12:10:
Image: Second				4	unweathered to intermediate to moderately	_			-
Image: Sector of the sector					jointed, weathered joints	R			
2C 50.0 REC=100% Hard unweathered gray, green gneiss, some * Coring time from 12:35 55.0 RQD=90% pegmatite, moderately jointed to jointed to 12:45.							50		
Image: second		2C	50.0	REC=100%	Hard unweathered gray, green gneiss, some			*	*Coring time from 12:35
MPCE Form BL-1			55.0	ROD_000/	negmatite, moderately jointed to jointed				to 12:45
MPCE Form BL-1 BORING NO M-2			55.0	100-30%	pegmane, moderalely jointed to jointed	1	1	1	10 12.40.
		-1					BORI		M-2

				BOR	ING NO.	M-2		
						SHE	ET 2 OF	4
PROJEC	T:	W	EST 18TH -	WEST 19TH STREET/10TH AVENUE		F	ILE NO.	12320
LOCATIC	DN:		1	NEW YORK, NEW YORK	SI	JRFAC	E ELEV.	8.8±
	1					RES	. ENGR.	TERESA SANDIFORD
DAILY		SAM	PLE				CASING	
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	SIRAIA	DEPTH	BLOWS	REMARKS
Cont'd								Paused run near Z
Tuesday					R			at 10.10.
Sunny								
88°F, 14:00						55		End of Boring at 55'.
								WC=Water Content
								In percent of ary
						60		weight.
						~ -		-
						65		
						70		
						75		
						80		
								-
						85		
								-
						90		
						95		
						100		
						100		



BOR-3_JAN2013

MUESER RUTLEDGE CONSULTING ENGINEERS

					BORING NO.				M-2	M-2		
							SHEET	4	OF	4		
PROJEC	Т	WEST 18T	H - WEST	19TH S	STREET/10TH	I AVENUE	FILE NO.		12320			
LOCATIO)N		NEW YO	DRK, N	EW YORK		SURFAC	E ELEV.	8.	8±		
BORING	LOCATION	<u> </u>	EE BORIN	G LOC	ATION PLAN		DATUM		NAVD 88			
BORING	EQUIPMEN		THODS OF	STABIL	IZING BOREH	DLE						
							V	VEO				
						ISED A		TES EROM		20		
	^			v		4			TC	<u> </u>		
BARCE				^			_DEFIN, FI		T	·		
OTHER		011121	·		DIA., IN.							
TYPE AN	D SIZE OF	:			DRILLING	MUD USED	Х	YES	NO			
D-SAMPLE	R <u>2" O.</u>	D. SPLIT SPC	DON		DIAMETEI	R OF ROTARY BI	Γ, IN.		3-7/8			
U-SAMPLE	R				TYPE OF	DRILLING MUD			QUIK GEL			
S-SAMPLE	R											
	REL NX D		EL			SED		YES	X NO			
		IAMOND	<u> </u>		I YPE ANL	DIAMETER, IN.						
						AMMER I BS			FALL IN			
					*SAMPLEI	R HAMMER I BS	140			30		
					*USED AU		ER.					
WATER L	EVEL OBS	SERVATION	S IN BORE	HOLE								
		DEPTH O	F DEPT	HOF	DEPTH TO							
DATE	TIME	HOLE	CAS	ING	WATER		CONDITIO	NS OF OB	SERVATION			
						NO	WATER LEV	EL OBSEF	RVATIONS MAD	Ε.		
PIEZOME	TER INST	ALLED	YES	Х	NO SKE	ETCH SHOWN (ON					
	_											
						LEN	GIH, FI.					
							GIH, FI. OTU ET					
FILTER.					OD, IN.	LEN	GIII, FT.		_BOT. ELEV.			
PAY QUA	NTITIES											
3.5" DIA. D	RY SAMPLE	BORING	LIN. FT.		45	NO. OF 3" SHEL	.BY TUBE SA	MPLES				
3.5" DIA. U	-SAMPLE BO	ORING	LIN. FT.	-		NO. OF 3" UNDI	STURBED S	AMPLES				
CORE DRI	lling in RC	ЮСК	LIN. FT.		10	OTHER:						
DODUIC												
BORING	CONTRAC	IOR _		חסרוי	AQUIFE		TESTING (50., INC.				
	e											
		ED		тг В(OWPLETIC			2 15		
					MOSS		ראי.	DATE	05-1	2-10		
			UNI	_i \ I L J.	10000		JIX	BU		M-2		
WINGE FORM B	0-1							60		101-2		

			<u>B0</u>		BOR	ING NO.	M-3	
						SHE	ET 1 OF	3
PROJEC	T:	W	EST 18TH -	WEST 19TH STREET/10TH AVENUE	=	F	FILE NO.	12320
LOCATIC	DN:			NEW YORK, NEW YORK	S	URFAC	E ELEV.	9.0±
				Ι	1	RES	. ENGR.	TERESA SANDIFORD
DAILY		SAM	PLE				CASING	
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	BLOWS	REMARKS
13:30								Hand augered with
UD-U7-15 Thursday								
Sunny								-
70°F						5		-
								-
						10		
						10		-
						15		
								-
								-
						20		-
	1D	20.0	9-16	Brown black clavey fine to medium sand (SC)		20		Medium sand & black
		22.0	19-14					3" band mid sample.
	2D	22.0	17-17	Brown fine to medium sand, trace gravel, silt				
		24.0	25-32	(SP-SM)				
	3D	24.0	6-4	Top: Brown clayey silt, trace fine sand (ML)		25		3D Top: WC=18
09:00		26.0	10-8	Bot: Brown f-m sand, tr silt, coarse sand (SP-SM				-
05-08-15	4D	26.0	8-11	Brown fine to coarse sand, trace gravel, silt				-
Friday	50	28.0	10-9	(SP-SM) Brown silty fine cond (SM)				
Sunny 75°E	50	20.0	5-6 7-6	Brown sitty line sand (SM)	S	30		-
75 F		30.0	7-0			50	V	-
								-
						35		
								-
								Hard drilling from 37.5'
	1C	38.5	RFC=88%	Medium hard slightly weathered gray gneissic		38.5		to 38.5' Top of rock at
		43.5	RQD=52%	schist, jointed to closely jointed, weathered		40		38.5'. Mica & black rock
				joints				in wood.
	2C	43.5	REC=87%	Medium hard unweathered gray gneissic schist,	R	45		Hole collapsed; drilling
		48.5	RQD=76%	Jointed		45		out before 2C.
								-
13:00						48.5		End of Boring at 48.5'.
						50		WC=Water Content
								in percent of dry
								weight.



BOR-3 JAN2013

MUESER RUTLEDGE CONSULTING ENGINEERS

							BORING I	NO.	M-3	
							SHEET	3	OF	3
PROJEC	т	WEST 18	TH - WEST 1	9TH S	STREET/10TH	I AVENUE	FILE NO.		12320	
LOCATIC	ON		NEW YO	RK, N	EW YORK		SURFACE	E ELEV.	9.0) t
BORING	LOCATIO	N 8	SEE BORING	g loc	ATION PLAN		DATUM		NAVD 88	
BORING	FOLIIPMEI			STARI						
		TYPE	OF FFFD		IZING DOREH					
TYPE OF F	BORING RIG				CASING	ISED	X	YES	NO	
TRUCK		MECH			DIA., IN.	4	DEPTH. FT	. FROM	0 TC	30
SKID		HYDR	AULIC	х	DIA., IN.		DEPTH, FT	FROM	TO)
BARGE		OTHE	R		DIA., IN.		DEPTH, FT	FROM	TC	
OTHER	TRAC	K					,			
TYPE AN	ID SIZE OF	:			DRILLING	MUD USED	Х	YES	NO	
D-SAMPLE	ER 2" O.	D. SPLIT SP	OON		DIAMETE	R OF ROTARY BIT	, IN.	1	3-7/8	
U-SAMPLE	R				TYPE OF	DRILLING MUD			QUIK GEL	
S-SAMPLE	R									
CORE BAF	RREL NX D	OUBLE BAR	REL		AUGER U	SED		YES	X NO	
CORE BIT	NX D	IAMOND			TYPE ANI	D DIAMETER, IN.				
DRILL ROI	DS NWJ									
					CASING H	AMMER, LBS.		AVERAGE	FALL, IN.	
					*SAMPLE	R HAMMER, LBS.	140	AVERAGE	FALL, IN.	30
					*USED AL	JTOMATIC HAMME	R.			
WATER L	_EVEL OBS	SERVATION	IS IN BOREH	OLE	1					
DATE		DEPTH C	DF DEPTI	HOF	DEPTH TO					
DATE		HULE	CASI	NG	WATER	NO				-
						NO		EL OBSER		
		-			1					
PIEZOME	ETER INST	ALLED	YES	Х	NO SKI	ETCH SHOWN C	DN			
							этп, гт. Этц ст			
							ЭТП, ГТ. ЭТН БТ			
					OD, IN.		5111,111.		BOT. LLL V.	
	NTITIES									
3.5" DIA, D	RY SAMPLE	BORING	LIN. FT.		38.5	NO. OF 3" SHEL	BY TUBE SA	MPI ES		
3.5" DIA, U		ORING	LIN. FT.			NO. OF 3" UNDIS		AMPLES		
CORF DRI		CK	LIN. FT.		10	OTHER:				
00112 211						0				
BORING	CONTRAC	TOR			AQUIFE	ER DRILLING &	TESTING C	CO., INC.		
DRILLER		-	JOHN CAMF	BELL		HELPERS		,		
REMARK	(S			BC	REHOLE GRO		OMPLETIC	DN.		
RESIDEN		ER		TEI	RESA SANDIF	ORD	-	DATE	05-0	8-15
CLASSIFICATION CHECK:		CHE	RYL J.	MOSS	TYPING CHEC	K:	-			
MRCE Form B	IS-1	-						BO	RING NO.	M-3

PROJECT: LOCATION: WEST 18TH - WEST 19TH STREET/10TH AVENUE NEW YORK, NEW YORK
 BORING NO.
 M-4P

 SHEET 1 OF
 5

 FILE NO.
 12320

 SURFACE ELEV.
 12.0±

 RES. ENGR.
 NATHAN SEGUIN

		0.4.1.4						
DAILY		SAM	PLE	-			CASING	
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	BLOWS	REMARKS
13:00	1D	0.0	23-14	Dark brown to black fine to coarse sand, some	**	0.25	DRILLED	**Pavement from 0' to
04-22-15		2.0	15-15	silt, gravel (Fill) (SM)			AHEAD	0.25'.
Wednesday	2D	2.0	8-10	Brown silty fine to medium sand, some gravel			4"	
Clear		4.0	10-15	& brick fragments (Fill) (SM)				
Clear	2NID	4.0	76	No recovery		5		
60°F	SINK	4.0	7-6	no recovery		5		
		6.0	5-4					
	4D	6.0	4-10	Dark gray silt, some fine sand, gravel (ML)				
		8.0	10-6					
	5D	8.0	3-16	Brown fine to coarse sandy gravel, some silt				5D, 10D, 14D: REC=6"
		10.0	9-11	(Fill) (GM)		10		
	6D	10.0	7-6	Red brown brick fragments, some fine to				Spoon bouncing on
14:40		12.0	8-50/2"	coarse sand, some silt & wood famts (Fill) (SM)				wood: tip from 10' to
00:00	70	12.0	52.5	Wood & gravel wash (Fill) (CD)				
09:00	10	12.0	32-3	WOOD & graver wash (Fill) (GF)				12, REC=1
04-23-15		14.0	1-1		F	45		
Thursday	8D	14.0	4-7	Dark gray coarse to fine sand, some gravel,	Г	15		REC=4"
Clear		16.0	8-8	trace wood, silt, brick (Fill) (SP-SM)				
55°F								
						20		
	00	20.0	1 1 1	Dark group grouply approa to find appd, trace		20		Cooling moved down
	90	20.0	4-11					Casing moved down
		22.0	26-12	Drick, silt (Fill) (GP)				with blows from 0" to
	10D	22.0	2-2	Dark gray fine to medium sand, gravel, trace				18".
		24.0	5-28	silt (Fill) (GP-GM)				9D, 14D: REC=6"
	11D	24.0	11-27	Dark gray fine to coarse sandy gravel, trace		25		
		26.0	17-11	silt, brick (GP-GM)				
	12D	26.0	5-9	Grav fine to coarse sand, some gravel, trace				
	120	28.0	12-18	silt (SP-SM)		28		
	120	20.0	11 10	Bod brown coores to fine cond, come grovel		20		
	130	20.0	11-12	Red blown coalse to line sand, some gravel,		20		
		30.0	11-11	trace slit (SP-SM)		30		
	14D	30.0	1-1	Red brown fine to coarse sand, trace silt				
		32.0	2-9	(SP-SM)				
						35		
	15D	35.0	3-3	Red brown silty fine sand varved with some				
	.05	37.0	8-7	brown silt lavers (SM&ML)				
		57.0	0-7		S			
						-		
						40		
	16D	40.0	4-4	Brown silty fine sand (SM)				
		42.0	5-5					
						45		
	170	15.0	67	Top 15": Red brn fine cond on silt tr miss (SM)			¥.	
		46.0	10 50/5"	Det 2", Crow hrn f m cond to site (DD) (CD CM)		16.6		
		40.9	10-50/5	DOL 3 . Gray Drn I-m sand, tr Slit (DR) (SP-SM)	P	40.0		
	1C	47.0	REC=79%	Intermediate slightly weathered gray gneissic		48		
		54.0	RQD=14%	schist, broken to closely jointed, iron stained				
				& weathered joints	D	50		
					n n			
L	1		1	1	1	ı		l

			BO		BOR	ING NO.	M-4P	
						SHE	ET 2 OF	5
PROJEC	T:	W	EST 18TH -	WEST 19TH STREET/10TH AVENUE		F	ILE NO.	12320
LOCATIO	DN:		Ν	NEW YORK, NEW YORK	5	URFAC	E ELEV.	12.0±
				,		RES	. ENGR.	JAMES BRICKMAN
DAILY		SAM	PLE				CASING	
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	BLOWS	REMARKS
Cont'd 04-23-15							*	*Coring time not taken.
Thurs., Clear			-		R			Inspecting two rigs.
55°F, 14:00						54		End of Boring at 54'.
						55		
			-					
						60		
						00		
			-					
			-			65		
						70		
			-					
			-					
			-			75		
			-					
			-					
			-					
						80		
						95		
						05		
			-					
			-					
						90		
			-					
						OF		
						90		
			-					
			4					
						100		
			1					



BOR-3_JAN2013

Mueser Rutledge Consulting Engineers 14 Penn Plaza - 225 West 34th Street New York, NY 10122 T: 917 339-9300 F: 917 339-9400 PIEZOMETER OR BORING NO. M-HP www.mrce.com SHEET 4 OF 5 FILE NO. 12320 PROJECT: W 182 - 19th St / 10th Ave LOCATION: <u>Ctr of site</u> just E of highline (see BLP) J PIEZOMETER LOCATION: <u>New York</u>, NY INSTALLATION DATE 4-24-15 RES ENGR. J. Brickman SEE SKETCH ON BACK DEPTH PVL Std. Pipe PIEZOMETER STRATA PIEZOMETER TYPE (FT) INSTALLATION DETAILS INTAKE POINT depth to bottom, ft = 20.4'GROUND depth to top, ft = 10.4'SURFACE AC length, ft = $\frac{15'}{15'}$ diameter, in = 2', ft = 0.(17)= L ELEV. /////// = 2R 0.4' STANDPIPE/RISER elevation of rim, ft = _____ diameter, in = 2', ft = 0.167 = 2r CUTHNAS CUTTINGS READING TIME DEPTH – RIM ELEVATION REMARKS TO WATER OF WATER DATE CLOCK 6' 11.7 4/2/15 1108 over weekend 000 4/29/15 11/5 ∞o 12.4 AFKSFWShing 1 4/30)15 1300 11.7 8' 5/5/15 1300 リカ 5/6/15 1200 11.8 5/11/15 1100 11.7 -10.4' 4 5/15/15 1030 49 11,9 5/21/5 1500 12.0 F -20.4' (fill to 28 SAND GROUT GROUND SURFACE ELEV. AAVD GRAVEL PIEZOMETER NO. M-HP

PIEZOMETER RECORD

MUESER RUTLEDGE CONSULTING ENGINEERS

						BORING	NO.	M-4	M-4P		
						SHEET	5	OF	5		
PROJEC ⁻	т	WEST 18TH -	WEST 19TH	STREET/10TH	I AVENUE	FILE NO.		12320			
LOCATIO	DN		NEW YORK, N	NEW YORK		SURFAC	E ELEV.	12	2.0±		
BORING	LOCATION	SEE	BORING LOO	CATION PLAN		DATUM		NAVD 88	3		
BORING	EQUIPMEN	NT AND METHO	DDS OF STABI	LIZING BOREH	OLE						
		TYPE OF I	EED				1				
TYPE OF E	BORING RIG	DURING C	ORING	CASING L	JSED	Х	YES	NO			
TRUCK	X	MECHANI	CAL	DIA., IN.	4	DEPTH, FT	. FROM	T	0 45		
SKID		HYDRAUL		DIA., IN.		_DEPTH, FT	. FROM	T	0		
BARGE		OTHER		DIA., IN.		_DEPTH, FT	. FROM	T	0		
OTHER											
						X	WE0				
	U SIZE UF			DRILLING			TES				
D-SAMPLE	R <u>2°0.</u>	D. SPLIT SPOON				I, IN.		3-7/8			
	:K			I TPE OF	DRILLING MUD			QUIK GEL			
					0CD		VEC	X NO			
					SED		TES	X NO			
		IAMOND		I YPE ANI	J DIAMETER, IN.						
				*CASING		140			20		
				*SAMPLE	P HAMMER I BS	140		= FALL, IN	30		
					ITOMATIC HAMM	ER		_ 1 ALL, IN	30		
WATERI	EVEL OBS	SERVATIONS I		OOLD AC							
<u></u>		DEPTH OF	DEPTH OF	DEPTH TO							
DATE	TIME	HOLE	CASING	WATER		CONDITIO	NS OF OB	SERVATION			
					NO	WATER LEV	EL OBSER	RVATIONS MAD	E.		
			-								
PIEZOME	ETER INST	ALLED X	YES	NO SKI	ETCH SHOWN (ON	SE	E SHEET NO	. 4		
	_										
STANDPIP				ID, IN.	LEN	GIH, FI.		TOP ELEV.			
	EMENI:			OD, IN.	LEN	GIH, FI.		IP ELEV.			
FILTER:				OD, IN.	LEN	GIH, FI.		BOI. ELEV.			
				47							
3.5 DIA. D				41							
				7	OTHER	OTONDED 9					
UURE DRI	LLING IN RU		LIN. FI.	1	UTIEK.						
BORING	CONTRAC	TOR				TESTING					
	CONTINAC								ח		
REMARK	s					FD	GLUK				
						MANI DATE 04-23-15					
CLASSIE				MOSS		CHECK:					
	S-1		GHEICTES				RO		M-4P		
MILLE FUIII B	U -1						50				

			<u>BO</u>	RING LOG		BOR	ING NO.	M-5
						SHE	ET 1 OF	3
PROJEC ⁻	T:	W	EST 18TH -	WEST 19TH STREET/10TH AVENUE		F	FILE NO.	12320
LOCATIC	N:		1	NEW YORK. NEW YORK	-	SURFAC	E ELEV.	10.0±
					-	RES		TERESA SANDIFORD
DAILY		SAM						
DAILY	NO	DEDTU				DEDTU		
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	SIRAL	A DEPTH	BLOWS	REMARKS
10:00			-				DRILLED	Vacuum excavated to
05-14-15							AHEAD	5'.
Thursday							4"	Advanced unsampled
Sunny								6' to 20'.
65°F						5		Casing shifting East
								at 4'. Driller will not
								pull & realign.
					_	10		-
					F			
			-					
						15		
						15		
			-					-
			-					-
			-					-
								-
						20		
	1D	20.0	2-3	Brown silty fine sand, trace mica (SM)				
		22.0	2-4					
	2D	22.0	4-4	Do 1D (SM)				
		24.0	6-6					
	3D	24.0	2-4	Brown clavey silt varved with trace light brown		25		
	-	26.0	4-6	silty clay (ML)				
	4D	26.0	6-3	Brown silty fine sand trace mica (SM)				
	Ч	20.0	5-8	Brown sity fine saild, trace fined (GM)				-
	۶D	20.0	-0 2 5					-
	50	20.0	5-5	D0 4D (SW)		20		-
		30.0	5-7		S	30	V	
								-
			-					-
								_
								_
						35		
								Advanced unsampled
								to top of rock at 40'.
								Soft rock at 38'.
								Core to realign at
						40		40' at 12:00.
	1C	40.0	REC=93%	Medium hard slightly weathered to unweathered			*	*Coring time from
		45.0	RQD=88%	grav gneissic schist to schistose gneiss, jointed			1	12:05 paused at 12:10
				to iron stained & weathered joints				12.12 to 12.40
			-				-	Slow drilling: core
			4			15		bouncing side to side
	20	15.0	DEC 4000/	Modium bord unweethered are resided and		40	*	*Coring time from
	20	45.0	REC=100%	iviedium naro unweatnered gray gneissic schist	R			Coring time from
		50.0	KQD=90%	to schistose gneiss, jointed to moderately				12:55 to 13:38; SIOW
				jointed to moderately jointed, weathered joints				arilling.
			4					
13:45						50		End of Boring at 50'.



BOR-3 JAN2013

MUESER RUTLEDGE CONSULTING ENGINEERS

								BORING	NO.	M-5	5
								SHEET	3	OF	3
PROJEC	т	WEST 1	8TH -	WEST 1	9TH S	STREET/10TH	I AVENUE	FILE NO.		12320	
LOCATIO	DN		۱	NEW YOF	RK, NI	EW YORK		SURFACE	E ELEV.	1().0±
BORING	LOCATIO	<u> </u>	SEE	BORING	LOC	ATION PLAN		DATUM		NAVD 8	3
BORING	EQUIPME			DDS OF S	IABILI	IZING BOREH	<u>JLE</u>				
								V	VES		
		G DO					ISED A				0 30
SKID	^			IC	Y					T	0
BARGE		OT			~				FROM	і т	0
OTHER		01				DIA., IN.				I	•
TYPE AN	D SIZE C)F:				DRILLING	MUD USED	Х	YES	NO	
D-SAMPLE	R <u>2" C</u>	D. D. SPLIT S	SPOON			DIAMETEI	R OF ROTARY BI	Γ, IN.		3-7/8	
U-SAMPLE	R					TYPE OF	DRILLING MUD			QUIK MUE)
S-SAMPLE	R								1		
CORE BAR	RREL NX	DOUBLE BA	RREL			AUGER U	SED		YES	X NO	
CORE BIT	NX	DIAMOND				TYPE AND	DIAMETER, IN.				
DRILL ROE	DS NW	J									
						CASING H	IAMMER, LBS.		AVERAGE	E FALL, IN.	
						*SAMPLEI	R HAMMER, LBS.	140	AVERAGE	E FALL, IN.	30
						*USED AL	ITOMATIC HAMM	ER.			
WATERL	<u>EVEL OE</u>										
DATE	TIME	HOL	F	CASIN	JG	WATER		CONDITIO	NS OF OB	SERVATION	
BATE				0,101			NO	WATER LEV	EL OBSEF	RVATIONS MAD)E.
				7		1					
PIEZOME	TER INS	TALLED		YES	Х	NO SKE	ETCH SHOWN (ON			
	Ē.	TVPE				וח חו	LEN	стн ет			
	EMENT:	TYPE				OD, IN		GTH, FT.		TIP FLEV.	. <u></u>
FILTER:		MATERIA	~			OD. IN.	LEN	GTH. FT.		BOT. ELEV.	
PAY QUA	NTITIES										
3.5" DIA. D	RY SAMPL	E BORING		LIN. FT.		40	NO. OF 3" SHEL	BY TUBE SA	MPLES		
3.5" DIA. U	-SAMPLE	BORING		LIN. FT.			NO. OF 3" UNDI	STURBED S	AMPLES		
CORE DRI	LLING IN F	ROCK		LIN. FT.		10	OTHER:				
DODING						A 01 1/2		TEOTING			
	CONTRA	UIUK			RELI	AQUIFE		IESTING (JO., INC.		
	e		JOF								
		EED								0F	14-15
		CHEE					DATE	05-14-15			
					VIL J.	WOOO		JIX	PO		M-5
WIRGE FORM B	0-1								ы		IVI-J

M-6 **BORING NO.** 4 SHEET 1 OF PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE 12320 FILE NO. LOCATION: NEW YORK, NEW YORK +12.0± SURFACE ELEV. RES. ENGR. NATHAN SEGUIN SAMPLE DAILY CASING DEPTH BLOWS/6" SAMPLE DESCRIPTION STRATA DEPTH BLOWS REMARKS NO. PROGRESS 0.25 DRILLED **Pavement from 0' to 49-13 1D 0.0 Black fine to coarse sand, some silt, trace 09:30 24-45 2.0 gravel, brick fragments (Fill) (SM) AHEAD 0.25'. 04-21-15 2D 39-66 Red brick, brown fine to medium sand, silt 2.0 4" Wednesday Partly Sunny 4.0 72-80 (Fill) (SM) 5 60°F 3D 4.0 9-54 Do 2D (Fill) (SM) 5.8 112-65/3" 4D 6.0 7-100 Do 2D (Fill) (SM) 7.0 5D 8.0 48-100/3" Do 2D (Fill) (SM) 10 8.8 6D 10.0 50-100/1" Brown silty fine to medium sand, some brick 10.6 fragments (Fill) (SM) F 15 7D 15.0 115/3" Do 6D (Fill) (SM) REC=2" 15.3 Difficult advancement with roller bit below 16' 20 8NR 20.0 100/3" No recovery 20.3 Highly contaminated; 9D 22.0 100/3" Red brown brick fragments, some fine to sheen/petroleum. 22.3 coarse sand, silt (Fill) (SM) 10D 24.0 100/3" Brown silty fine to medium sand, some gravel 25 Rig bounce from 24.5' 24.3 (Fill) (SM) to 25'. 11NR 25.0 26-17 No recovery 27 7-10 27.0 12D 27.0 12-23 Red brown gravelly fine to coarse sand, some Spoon sample split 29.0 23-21 30 at 29.5'. silt (SM) 13D 29.0 29-8 Brown fine to coarse sand, trace silt, gravel 31.0 8-8 (SP-SM) Spoon sample split 14D 7-7 Top 1.5': Do 13D (SP-SM) at 32.5'. 31.0 Bot 0.5': Red brown silty fine to medium sand 33.0 8-6 35 (SM) 15D 35.0 6-7 09:00 Red brown fine sandy silt (ML) REC=6" S 04-22-15 37.0 7-6 Thursday Clear 40 60°F 16NR 40.0 6-5 No recovery 42.0 7-9 45 Weathered rock in tip. 17D 7-100/5" 45.9 45.0 Brown fine to coarse sand, some silt, gravel 45.9 (SM) *Coring time at 7 1C 47.0 REC=100% Medium hard slightly weathered to unweathered minutes per foot. gray schistose gneiss, closely jointed to jointed, 52.0 RQD=58% R 50 iron stained & weathered joints

M-6

			<u>B0</u>	RING LOG		BOR	ING NO.	M-6		
	т.	14/			SHEET 2 OF 4					
PROJEC	-1: 	VV	ESI 181H -		-		ILE NO.	12320		
LOCATIC	JN:		ľ		5	URFAC	E ELEV.	+12.0±		
				1		RES	ENGR.	NATHAN SEGUIN		
DAILY PROGRESS	NO.	SAMI DEPTH	PLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS		
Cont'd 04-22-15 Thursday Clear	2C	52.0 54.0	REC=100% RQD=0%	Medium hard slightly weathered gray schistose gneiss, broken to closely jointed, Fe & WJts	R		*	*Coring time from 12 to 13 minutes per foot. *Coring time at 5		
60°F	3C	54.0	REC=100%	Medium hard slightly weathered to unweathered		55		minutes per foot.		
11:50		57.0	KQD=90%	jointed, iron stained joints		57		End of Boring at 57'.		
						60				
						<u>c</u> E				
						60				
						70				
								-		
						75				
						80				
								-		
						85				
						90				
						95				
								•		
								-		
						100				
								-		


							BORING	NO.	M-6	;
							SHEET	4	OF	4
PROJEC	т	WEST 18TH	- WEST 1	9TH S	TREET/10TH	I AVENUE	FILE NO.		12320	
LOCATIC	DN		NEW YOF	rk, Ne	EW YORK		SURFAC	E ELEV.	+1	2.0±
BORING	LOCATION	SE	E BORING	LOC	ATION PLAN		DATUM		NAVD 88	3
BORING	EQUIPMEN	NT AND METH	HODS OF S	TABILI	ZING BOREHO	DLE				
		TYPE OF	FEED					1		
TYPE OF E	BORING RIG	DURING	CORING		CASING U	SED	Х	YES	NO	
TRUCK	Х	MECHAN			DIA., IN.	4	DEPTH, FT	. FROM	T	O 40
SKID		HYDRAL	ILIC	Х	DIA., IN.		DEPTH, FT	. FROM	T	o
BARGE		OTHER			DIA., IN.		DEPTH, FT	. FROM	T	o
OTHER										
								1		
TYPE AN	D SIZE OF	:			DRILLING	MUD USED	Х	YES	NO	
D-SAMPLE	R <u>2" O.</u>	D. SPLIT SPOC	N		DIAMETER	R OF ROTARY BIT	Γ, IN.		3-7/8	
U-SAMPLE	R				TYPE OF I	DRILLING MUD			QUIK GEL	
S-SAMPLE	R							_		
CORE BAR	RREL NX D	OUBLE BARRE	L		AUGER U	SED		YES	X NO	
CORE BIT	NX D	IAMOND			TYPE AND	DIAMETER, IN.		-		
DRILL ROE	DS NWJ									
					*CASING I	HAMMER, LBS.	140	AVERAG	E FALL, IN.	30
					*SAMPLEF	R HAMMER, LBS.	140	AVERAG	E FALL, IN.	30
					*USED AU	TOMATIC HAMMI	ER.	-		
WATER L	EVEL OBS	SERVATIONS	IN BOREHO	OLE						
		DEPTH OF	DEPTH	OF	DEPTH TO					
DATE	TIME	HOLE	CASIN	١G	WATER		CONDITIO	NS OF OB	SERVATION	
						NO	WATER LEV	EL OBSEI	RVATIONS MAD	E.
						ľ				
PIEZOME	TER INST	ALLED	YES	Х	NO SKE	TCH SHOWN (N			
STANDPIP	E:	TYPE			ID, IN.	LEN	GTH, FT.		TOP ELEV.	
INTAKE EL	EMENT:	TYPE			OD, IN.	LEN	GTH, FT.		TIP ELEV.	
FILTER:		MATERIAL			OD, IN.	LEN	GTH, FT.		BOT. ELEV.	
PAY QUA	NTITIES									
3.5" DIA. D	RY SAMPLE	BORING	LIN. FT.		47	NO. OF 3" SHEL	.BY TUBE SA	MPLES		
3.5" DIA. U	-SAMPLE BO	ORING	LIN. FT.			NO. OF 3" UNDI	STURBED S	AMPLES		
CORE DRI	LLING IN RC	ОСК	LIN. FT.		10	OTHER:				
BORING	CONTRAC	TOR			AQUIFE	R DRILLING &	TESTING (CO., INC.		
DRILLER		C	OMENIC P	EPE		HELPERS		GEOR	GE RAYMON	D
REMARK	S.			BC	REHOLE GRO	UTED UPON C	OMPLETIC	DN.		
RESIDEN		ER		THF	RESA SANDIF	ORD		DATE	04-2	22-15
CLASSIF		HECK:	CHEF	RYL J	MOSS	TYPING CHEC	CK:			
	S-1		0.121	0.				RO		M-6
	U 1							50		111 0

PROJECT: LOCATION:

WEST 18TH - WEST 19TH STREET/10TH AVENUE NEW YORK, NEW YORK

BORING NO. 4 SHEET 1 OF 12320 FILE NO.

SURFACE ELEV. 8.9±

M-7

[1				1	RES	. ENG	GR.	TERESA SANDIFORD
DAILY		SAM	PLE	_			CAS	NG	
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	BLO	NS	REMARKS
08:00							DRIL	LED	
05-01-15							AHE	AD	_
Friday							4"	3"	_
Cloudy									
55°F						5			
									_
	1D	6.0	5-5	Brown, tan gravel (GP)	-				1D, 4D: REC=1"
		8.0	4-4		Г				-
	2D	8.0	4-3	Brown, tan fine to coarse sandy gravel, trace					REC=2"
		10.0	3-3	silt (GP-GM)		10			
	3D	10.0	7-5	Brown gravelly fine to coarse sand, some silt					
		12.0	3-5	(SM)					
	4D	12.0	2-7	Black gravel, trace fine to coarse sand (GP)					_
		14.0	5-7						_
						14.5			
	5D	15.0	19-7	Stiff gray organic silty clay, trace shells, fine					WC=53
		17.0	4-3	sand (OH)					_
					•				
					0				
						20			
	6D	20.0	7-11	Stiff gray organic silty clay, some fine sand (OH)					WC=36
		22.0	15-19			22			Blows from driller.
	7D	22.0	11-9	Brown fine to medium sand, some silt, trace					
		24.0	11-11	coarse sand (SM)					Cobbles spun from
	8D	24.0	8-8	Brown fine to medium sand, trace silt (SP-SM)		25			10:40 to 12:00.
		26.0	9-8						Blows from driller.
	9D	26.0	10-9	Do 8D (SP-SM)					Blows from driller.
		28.0	9-9						
	10D	28.0	6-8	Brown, green silt, some fine sand (ML)					_
		30.0	6-7			30			
	11D	30.0	9-10	Brown fine to coarse sand, some silt, trace					_
		32.0	9-9	gravel, clay (SM)					_
						35			
	12D	35.0	6-17	Brown gravel, trace fine to coarse sand (GP)					-
		37.0	14-10		S				-
09:00					•				-
05-04-15									-
Monday						40	•		
Sunny	13NR	40.0	26-13	No recovery					-
80°F		42.0	17-12						-
									-
						45			-
						45			
	14D	45.0	8-5	Brown silty fine sand, trace clay (SM)				-	
		47.0	5-8					<u> </u>	
						L		-	
						50		-	
	455	50.0				50		-	4
	15D	50.0	5-4	Brown, red brown silty fine sand, trace mica				<u> </u>	
		52.0	5-5	(SP)				V	

			<u>B0</u>	RING LOG	BORING NO. M-7					
						SHE	ET 2 OF	4		
PROJEC	T:	W	'EST 18TH -	WEST 19TH STREET/10TH AVENUE	-	F	ILE NO.	12320		
LOCATIC	DN:		1	NEW YORK, NEW YORK	S	URFAC	E ELEV.	. <u> </u>		
	1				1	RES	. ENGR.	TERESA SANDIFORD		
DAILY		SAM	PLE				CASING			
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	SIRAIA	DEPTH	BLOWS	REMARKS		
Cont'd			-							
Monday			-				3"			
Sunny			-				Ĩ			
80°F			-		•	55				
	16D	55.0	8-5	Do 15D (SM)	5					
		57.0	6-8							
			-					Hard drilling at 58'.		
			-							
	10	60.0		Medium hard elightly weethered to unweethered		60	*	3" Casing to 60".		
		65.0	REC=92%	area aneissic schist, closely jointed to ininted				to 13:15 at / minutes		
		05.0	NGD=03%	slightly weathered joints				per foot		
			-							
			-		Р	65				
	2C	65.0	REC=100%	Medium hard unweathered gray schistose	ĸ			Did not get core times;		
		70.0	RQD=80%	gneiss & gneissic schist, closely jointed to				covering two rigs.		
			-	jointed, slightly weathered joints						
44:00			-			70		End of Poring at 70'		
14:30						70		End of Bonnig at 70.		
			-					WC=Water Content		
			-					in percent of dry		
			-					weight.		
						75				
			-							
			-							
			-							
			-			80				
			-							
			-							
			-							
			-			85				
			-							
			-							
			-							
			-			90				
			-							
			-							
			-							
			-			95				
						35				
			-							
			1							
			-			100				
			-							



									BORING	NO.	N	1-7			
									SHEET	4	OF		4		
PROJEC [®]	Т	١	WEST 18	BTH -	WEST 19	9TH S	STREET/10TH	AVENUE	FILE NO.		1232	0			
LOCATIC)N			١	NEW YOF	rk, NI	EW YORK		SURFAC	E ELEV.		8.9±			
BORING	LOCA.	TION		SEE	BORING	LOC	ATION PLAN		DATUM		NAVD	88			
BORING	EQUIP	MEN	II AND M		<u>DDS OF S</u>	IABILI	IZING BOREHO	DLE							
								SED	V	VES	NO				
	DURING	RIG						3ED 4				то	40		
SKID						v					0	то то	60		
BARGE						Λ		5			0	TO	00		
OTHER	T	RACK	0				DIA., IN.					10			
OTTLER			<u> </u>												
TYPE AN	D SIZE	OF					DRILLING	MUD USED	Х	YES	NO				
D-SAMPLE	R 2	2" O. I	D. SPLIT S	POON			DIAMETER	R OF ROTARY BIT	Г. IN.		3-7/8	3			
U-SAMPLE	R						TYPE OF I	ORILLING MUD			QUIK M	UD			
S-SAMPLE	R														
CORE BAF	RREL		OUBLE BAI	RREL			AUGER US	SED		YES	X NO				
CORE BIT	١	NX DI	AMOND				TYPE AND	DIAMETER, IN.							
DRILL ROD	DS N	۱WJ													
							CASING H	AMMER, LBS.		AVERAG	E FALL, IN.				
							*SAMPLEF	R HAMMER, LBS.	140	AVERAG	E FALL, IN.	3	0		
							*USED AU	TOMATIC HAMMI	ER.						
WATER L	EVEL	OBS	ERVATIC	NS IN	BOREHO	DLE	Γ	I							
DATE	TIM		DEPTH	OF	DEPTH	OF	DEPTH TO								
DATE	IIV	E	HOL	E	CASIN	IG	WATER	NO			BE FALL, IN. 30 BSERVATION RVATIONS MADE.				
								NO	WATER LEV	EL UDSE		ADE.			
							L								
PIEZOME	TER I	NST/	ALLED		YES	Х	NO SKE	TCH SHOWN (ON						
STANDPIP	E:		TYPE				ID, IN.	LEN	GTH, FT.		TOP ELEV	· .			
INTAKE EL	EMENT		TYPE				OD, IN.	LEN	GTH, FT.		TIP ELEV.	-			
FILTER: MATERIAL						OD, IN.	LEN	GTH, FT.		BOT. ELEV	′. <u> </u>				
		-0													
		<u>-0</u>					60								
3.5" DIA. LESAMPLE BORING				LIN. FI.		60									
3.5" DIA. U-SAMPLE BORING L				LIN. FI.		10	NU. UF 3 UNDI	STURBED 5	AIVIPLES						
CORE DRILLING IN ROCK				LIN. FI.		10	UTTER:								
BORING	CONT	RAC	TOR				AQUIFE	R DRILLING &	TESTING (CO., INC.					
DRILLER PAUL			AUL GADI	DIS		HELPERS		CH	RIS RUBAN	l					
REMARK	S					BC	REHOLE GRC		OMPLETIC	DN.					
RESIDENT ENGINEER				TE	RESA SANDIF	ORD		DATE	0	5-04-1	5				
CLASSIF	ICATIC	N C	HECK:		CHEF	RYL J.	MOSS	TYPING CHEC	CK:	-					
MRCE Form BS-1								_		BC	RING NO.		M-7		

		<u>B0</u>	BORING NO. M-8							
					SHEET 1 OF 4					
PROJEC	T:	W	EST 18TH -	WEST 19TH STREET/10TH AVENUE		F	ILE NO.	12320		
LOCATIC	DN:			NEW YORK, NEW YORK	S	URFAC	E ELEV.	9.6±		
		SAM				RES	ENGR.	TERESA SANDIFORD		
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	BLOWS	REMARKS		
PROGRESS 11:00 04-30-15 Thursday Sunny 60°F	NO.	DEPTH	BLOWS/6" 8-6 7-5 8-7 7-6 4-5 6-7 8-7 10-10 17-12 10-9 REC=100%	SAMPLE DESCRIPTION Red brown fine to coarse sandy gravel, trace silt (GP) Red brown fine to coarse sand, some gravel, trace silt (SP-SM) Red brown fine to coarse sand, trace gravel, silt (SP-SM) Red brown silty fine sand, trace mica (SM) Do 4D (SM)	STRATA	DEPTH 5 10 10 15 20 20 20 20 20 30 30 30 30 30 40 40 40 45	BLOWS DRILLED AHEAD 4"	REC=2"; no contami- nation from 20' to 30'.		
		55.0	RQD=83%	schist, moderately jointed to jointed, WJts	к			minutes per foot.		

BORING NO. M-8

			BO	RING LOG		BORING NO. M-8				
						SHE	ET 2 OF	F 4		
PROJEC	T:	W	EST 18TH -	WEST 19TH STREET/10TH AVENUE		F	ILE NO.	12320		
LOCATIC	DN:			NEW YORK, NEW YORK	S	URFAC	E ELEV.	9.6±		
	n			1		RES	. ENGR.	TERESA SANDIFORD		
DAILY		SAM	PLE				CASING			
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	BLOWS	REMARKS		
Cont'd			-							
05-20-15										
Wednesday			-							
Partiy Sunny						55				
03 1	20	55.0	REC=85%	Top 1 5": Do 1C	R	- 55	*	*Coring time from		
		60.0	RQD=58%	Bot: Hard unweathered grav pegmatite.				14:00 to 14:28 at 5.6		
				moderately jointed				minutes per foot.		
14:30						60		End of Boring at 60'.		
			-							
			-							
			-			65				
			-			00				
			-							
						70				
			-							
			-							
						75				
			-							
						80				
			-							
			-							
			-			85				
			-							
			-			90				
						30				
			-							
						95				
			-							
						100				
			1							



SHEET 4 OF 4 PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE FILE NO. 12320 LOCATION NEW YORK, NEW YORK SURFACE ELEV. 9.64 BORING LOCATION SEE BORING LOCATION PLAN DATUM NAVD 88 BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE
PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE FILE NO. 12320 LOCATION NEW YORK, NEW YORK SURFACE ELEV. 9.6± BORING LOCATION SEE BORING LOCATION PLAN DATUM NAVD 88 BORING LOCATION SEE BORING LOCATION PLAN DATUM NAVD 88 BORING COLIPMENT AND METHODS OF STABILIZING BOREHOLE TYPE OF BORING RIG DURING CORING CASING USED X YES NO TRUCK MECHANICAL DIA., IN, 4 DEPTH, FT, FROM TO 30 SKID HYDRAULIC X DIA., IN, DEPTH, FT, FROM TO 30 SKID HYDRAULIC X DIA., IN, DEPTH, FT, FROM TO 30 SKID HYDRAULIC X DIA., IN, DEPTH, FT, FROM TO 30 SKID HYDRAULIC X DIA., IN, DEPTH, FT, FROM TO 30 SKID HYDRAULIC X DIA., IN, DEPTH, FT, FROM TO 30 USAMPLER 2' O. D. SPLIT SPOON DIAL, IN, INSTREE OF ROTARY BIT, IN, 3-7/8 37/8 37/8 USAMPLER
LOCATION NEW YORK, NEW YORK SURFACE ELEV. 9.6± BORING LOCATION SEE BORING LOCATION PLAN DATUM NAVD 88 BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE TYPE OF FRED TYPE OF FRED NO TUCK MECHANICAL DA., IN, 4 DEPTH, FT. FROM 0 TO SKID HYDRAULIC X DIA., IN, 4 DEPTH, FT. FROM TO BARGE OTHER DIA., IN, 4 DEPTH, FT. FROM TO 30 SKID HYDRAULIC X DIA., IN, 4 DEPTH, FT. FROM TO 30 SKID HYDRAULIC X DIA., IN, 4 DEPTH, FT. FROM TO 30 SKID HYDRAULIC X DIA., IN, 4 DEPTH, FT. FROM TO 30 SKID TRACK DIA., IN, 4 DEPTH, FT. FROM TO 30 SKID HER DIA., IN, 4 DEPTH, FT. FROM TO 30 SKID TRACK DRILLING MUD USED X YES NO OUK GEL SAMPLER CO.D. SPLIT SPOON DIAMETER OF ROTARY BIT, IN, 3-7/8 TYPE OF DEPTH OF DEPTH OF DEPTH OF DEPTH OF DEPTH
BORING LOCATION SEE BORING LOCATION PLAN DATUM NAVD 88 BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE TYPE OF FEED TYPE OF FEED TYPE OF BORING RIG DURING CORING CASING USED X YES NO SKID HYDRAULC X DIA., IN. 4 DEPTH, FT. FROM 0 0 30 BARGE OTHER DIA., IN. DEPTH, FT. FROM TO 30 DARGE OTHER DIA., IN. DEPTH, FT. FROM TO 30 DARGE OTHER DIA., IN. DEPTH, FT. FROM TO 30 DARGE OTHER DIA., IN. DEPTH, FT. FROM TO 30 DAMPLER Z'O.D. SPLIT SPOON DIAMETER OF ROTARY BIT, IN. 3-778 3-778 USAMPLER CORE BARREL AUGER USED YES X NO OCRE BARREL IN X DOUBLE BARREL AUGER USED YES X NO ORIEL RODS NWJ CASING HAMMER, LBS. 4/0 AVERAGE FALL, IN.
BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE TYPE OF FEED TYPE OF BORING RIG DURING CORING CASINO USED X YES NO SKID HYDRAULIC X DIA., IN. 4 DEPTH, FT. FROM 0 TO 30 SKID HYDRAULIC X DIA., IN. DEPTH, FT. FROM TO 30 SKID HYDRAULIC X DIA., IN. DEPTH, FT. FROM TO 30 OTHER OTHER OTHER DIA., IN. DEPTH, FT. FROM TO 30 OTHER TRACK TYPE OF DIALING MUD USED X YES NO DSAMPLER 2' O. D. SPLIT SPOON DIAMETER OF ROTARY BIT, IN. 3-7/8 USAMPLER TYPE OF DRILLING MUD QUIK GEL S:SAMPLER CORE BARREL AUGER USED YES X NO CORE BARREL AUGER USED YES X NO CORE BARREL NX DIAMOND TYPE AND DIAMETER, INS. AVERAGE FALL, IN. 30 TYPE NOS DEPTH OF DEPTH OF CONDITIONS OF OBSERVATION D
BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE TYPE OF FEED TYPE OF BORING RIG DURING CORING CASING USED X YES NO TRUCK MECHANICAL DIA., IN. 4 DEPTH, FT. FROM TO 30 SNID HYDRAULIC X DIA., IN. DEPTH, FT. FROM TO
BORRING ECONTINUES ECON
TYPE OF BORING RIG DURING CORING CASING USED X YES NO TRUCK MECHANICAL DIA., IN. 4 DEPTH, FT, FROM 0 TO 30 SKID HYDRAULIC X DIA., IN. DEPTH, FT, FROM TO 0 TO 30 SKID HYDRAULIC X DIA., IN. DEPTH, FT, FROM TO 0 0 TO 30 SKID HYDRAULIC X DIA., IN. DEPTH, FT, FROM TO 0 </td
IT LOCK MECHANICAL DIA., IN. 4 DEPTH, FF, FROM 0 TO 30 SKID HYDRAULIC X DIA., IN. DEPTH, FF, FROM TO 30 SKID HYDRAULIC X DIA., IN. DEPTH, FF, FROM TO 30 SKID HYDRAULIC X DIA., IN. DEPTH, FF, FROM TO 30 SKID HYDRAULIC X DIA., IN. DEPTH, FF, FROM TO 30 SKID SKID D.SPLIT SPOON DIA., IN. DEPTH, FF, FROM TO 30 DSAMPLER 2* O. D. SPLIT SPOON DIAMETER OF ROTARY BIT, IN. 3-7/8 3-7/8 U-SAMPLER TYPE OF DRILLING MUD QUIK GEL SXMPLER AUGER USED X YES NO CORE BARREL NX DOLAMOND TYPE AND DIAMETER, IS.
MIDON MYDRAULIC X DIA, IN DEPTH, FT. FROM TO O BARGE OTHER DIA, IN DEPTH, FT. FROM TO O OTHER TRACK TAL DIA, IN DEPTH, FT. FROM TO O TYPE AND SIZE OF: DRILLING MUD USED X YES NO D-SAMPLER 2' O. D. SPLIT SPOON DIAMETER OF ROTARY BIT, IN. 3-7/8 USAMPLER TYPE OF DRILLING MUD USED X YES NO OCRE BIT NX DUBLE BARREL AUGER USED YES X NO CORE BARREL NX DUMOND TYPE AND DIAMETER, IN.
DIAL DE CONTRER
OTHER TRACK TYPE AND SIZE OF: DRILLING MUD USED X YES NO D-SAMPLER
TYPE AND SIZE OF: DRILLING MUD USED X YES NO D-SAMPLER 2' O. D. SPLIT SPOON DIAMETER OF ROTARY BIT, IN. 3-7/8 USAMPLER
TYPE AND SIZE OF: DRILLING MUD USED X YES NO D-SAMPLER
D-SAMPLER 2° O. D. SPLIT SPOON DIAMETER OF ROTARY BIT, IN. 3-7/8 U-SAMPLER
U-SAMPLER
S-SAMPLER
CORE BARREL NX DOUBLE BARREL AUGER USED YES X NO CORE BIT NX DIAMOND TYPE AND DIAMETER, IN.
CORE BIT NX DIAMOND TYPE AND DIAMETER, IN.
DRILL RODS NWJ CASING HAMMER, LBSAVERAGE FALL, IN
CASING HAMMER, LBS
"SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30 "USED AUTOMATIC HAMMER. WATER LEVEL OBSERVATIONS IN BOREHOLE DATE DEPTH OF DEPTH OF DEPTH OF DEPTH TO OATE TIME HOLE CONDITIONS OF OBSERVATION MATER OATE TIME HOLE CASING WATER CONDITIONS OF OBSERVATION OATE TIME OBSERVATION NO WATER LEVEL OBSERVATIONS MADE. Image: 100 million of the second of th
"USED AUTOMATIC HAMMER. WATER LEVEL OBSERVATIONS IN BOREHOLE DATE TIME DEPTH OF DEPTH OF DEPTH TO CONDITIONS OF OBSERVATION DATE TIME HOLE CASING WATER CONDITIONS OF OBSERVATION DATE TIME HOLE CASING WATER NO WATER LEVEL OBSERVATIONS MADE. DATE Image: Standard Standa
WATER LEVEL OBSERVATIONS IN BOREHOLE DATE TIME DEPTH OF HOLE DEPTH OF CASING DEPTH TO WATER CONDITIONS OF OBSERVATION Image:
DATE TIME DEPTH OF HOLE DEPTH OF CASING DEPTH TO WATER CONDITIONS OF OBSERVATION Image:
DATE TIME HOLE CASING WATER CONDITIONS OF OBSERVATION Image: Second
PIEZOMETER INSTALLED YES X NO SKETCH SHOWN ON PIEZOMETER INSTALLED YES X NO SKETCH SHOWN ON STANDPIPE: TYPE ID, IN. LENGTH, FT. TOP ELEV. INTAKE ELEMENT: TYPE OD, IN. LENGTH, FT. TIP ELEV. FILTER: MATERIAL OD, IN. LENGTH, FT. TIP ELEV. PAY QUANTITIES 3.5" DIA. DRY SAMPLE BORING LIN. FT. 50 NO. OF 3" SHELBY TUBE SAMPLES
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Image: Standpipe: Type Image: Standpipe: Stan
PIEZOMETER INSTALLED YES X NO SKETCH SHOWN ON STANDPIPE: TYPE ID, IN. LENGTH, FT. TOP ELEV. INTAKE ELEMENT: TYPE OD, IN. LENGTH, FT. TIP ELEV. FILTER: MATERIAL OD, IN. LENGTH, FT. BOT. ELEV. PAY QUANTITIES 3.5" DIA. DRY SAMPLE BORING LIN. FT. 50 NO. OF 3" SHELBY TUBE SAMPLES
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STANDPIPE: TYPE ID, IN. LENGTH, FT. TOP ELEV. INTAKE ELEMENT: TYPE OD, IN. LENGTH, FT. TIP ELEV. FILTER: MATERIAL OD, IN. LENGTH, FT. BOT. ELEV. PAY QUANTITIES 3.5" DIA. DRY SAMPLE BORING LIN. FT. 50 NO. OF 3" SHELBY TUBE SAMPLES
STANDPIPE: TYPE ID, IN. LENGTH, FT. TOP ELEV. INTAKE ELEMENT: TYPE OD, IN. LENGTH, FT. TIP ELEV. FILTER: MATERIAL OD, IN. LENGTH, FT. BOT. ELEV. PAY QUANTITIES 3.5" DIA. DRY SAMPLE BORING LIN. FT. 50 NO. OF 3" SHELBY TUBE SAMPLES
INTAKE ELEMENT: TYPE OD, IN. LENGTH, FT. TIP ELEV. FILTER: MATERIAL OD, IN. LENGTH, FT. BOT. ELEV. PAY QUANTITIES 3.5" DIA. DRY SAMPLE BORING LIN. FT. 50 NO. OF 3" SHELBY TUBE SAMPLES
FILTER: MATERIAL OD, IN. LENGTH, FT. BOT. ELEV. PAY QUANTITIES 3.5" DIA. DRY SAMPLE BORING LIN. FT. 50 NO. OF 3" SHELBY TUBE SAMPLES
PAY QUANTITIES 3.5" DIA. DRY SAMPLE BORING LIN. FT. 50 NO. OF 3" SHELBY TUBE SAMPLES
PAY QUANTITIES 3.5" DIA. DRY SAMPLE BORING LIN. FT. 50 NO. OF 3" SHELBY TUBE SAMPLES
3.5° DIA. DRY SAMPLE BORING LIN. FT NO. OF 3° SHELBY TUBE SAMPLES
CORE DRILLING IN ROCK LIN. FT. 10 OTHER:
DRILLER DOUG WOOD HELPERS
REMARKS BORFHOLE GROUTED UPON COMPLETION
RESIDENT ENGINEER TERESA SANDIFORD DATE 04-30-15
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK:

PROJECT: LOCATION:

WEST 18TH - WEST 19TH STREET/10TH AVENUE NEW YORK, NEW YORK

 BORING NO.
 M-9

 SHEET 1 OF
 3

 FILE NO.
 12320

 SURFACE ELEV.
 8.8±

						RES	. ENGR.	TERESA SANDIFORD
DAILY		SAM	PLE				CASING	
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	BLOWS	REMARKS
11:45			220110/0		•			Hand auger to 1.5'
11.45								
05-11-15								
Monday							4"	1.5. Roller bit slowly
Sunny								through brick obstruc-
50°F	1D	4.0	5-3	Brown, red fine to coarse sand, some gravel,		5		tion.
		6.0	2-2	clay, trace brick fragments (SC)				Harder drilling at 3.5'.
	2D	6.0	3-3	Do 1D (SC)				Wash shows brick &
		8.0	4-4		F			gravel pieces: 4'
	3NR	8.0	16-5	No recovery	-			softened
		10.0	100	ite recovery		10		
	40	10.0	4-2	Descendences find to accord and the second		10		
	4D	10.0	1-1	Brown clayey fine to coarse sand, trace gravel				2D: REC=2"
		12.0	1-3	(SC)				4D: REC=3"
						15		
	5D	15.0	2-2	Black, brown gravelly organic silty clay (OH)				
	00	17.0	8-11					
		17.0	0-11					
						20		
	6D	20.0	7-7	Brown black clayey silt, some fine sand (ML)				1" Coarse gravel & 2"
14:45		22.0	7-11					medium sand at top of
09:00	7D	22.0	12-11	Interlavered brown fine to medium sand, some				sample.
05-12-15		24.0	10-8	silt & fine to coarse sand trace silt (SM&SP-SM)				6D: WC=19
00-12-10 Tura davi	<u>م</u>	24.0	60	Brown block fine to coarse cand, trace silt		25		Top had 1" hand of
Tuesday	0D	24.0	0-0			25		
Sunny		26.0	9-12	(SP-SM)				siity clay.
86°F	9D	26.0	4-5	Brown fine to coarse sand, trace silt (SP-SM)	c			
		28.0	9-12		3			
	10D	28.0	11-11	Brown clayey fine sand, trace silt, gravel (SM)				REC=1"
		30.0	11-12			30	¥	
	11D	30.0	9-7	Brown silty fine sand varyed with some clayey				
		32.0	7-10	silt (SM&ML)				
		52.0	7-10					
						35		
	12D	35.0	1-2	Red brown silty fine sand (SM)				WC=Water Content
		37.0	4-8					in percent of dry
								weight.
								-
						39.5		Hard drilling at 39 5'
	12D	10 0	100/1"	Grav micaceous fine to medium cand, trace	DR	/1	*	1C: *Coring time from
	130	40.0	100/1	silt (Decomposed Reals) (SD SM)		41		
		40.1						12.00 10 10:11 21 0.0
	1C	41.0	REC=83%	iviedium hard unweathered to slightly weathered		L		minutes per foot.
		42.5	RQD=50%	gray gneissic schist, jointed to MdJtd				At 13:11, core barrel
	2C	42.5	REC=98%	Do 1C		45		jammed.
		46.0	RQD=98%		-		*	2C: *Coring time from
	3C	46.0	REC=97%	Do 1C	к			13:25 to 13:40 at 4.3
	_	51.0	RQD=87%					minutes per foot
		01.0					*	3C: *Coring time from
						50		12:51 to 14:02 of 2.2
						50		13.31 10 14.02 at 2.2
14:00						51		minutes per toot.
								End of Boring at 51'.

M-9



						BORING	NO.	M-9	
						SHEET	3	OF	3
PROJEC ⁻	т	WEST 18TH -	WEST 19TH	STREET/10TH	H AVENUE	FILE NO.		12320	
LOCATIO	N		NEW YORK,	NEW YORK		SURFAC	E ELEV.	8.	8±
BORING	LOCATION	SEE	BORING LO	CATION PLAN		DATUM		NAVD 88	
BORING	EQUIPMEN	NT AND METH	DDS OF STAB	ILIZING BOREH	OLE				
		TYPE OF	FEED				1		
TYPE OF E	BORING RIG	DURING (CORING	CASING L	JSED	Х	YES	NO	
TRUCK		MECHANI	CAL	DIA., IN.	4	DEPTH, FT	. FROM	<u> </u>	30
SKID		HYDRAUL	IC X	DIA., IN.		DEPTH, FT	. FROM	тс)
BARGE		OTHER		DIA., IN.		DEPTH, FT	. FROM	тс	
OTHER	TRAC	K							
							1		
IYPE AN		:		DRILLING	MUD USED		YES	NO	
D-SAMPLE	R <u>2" O.</u>	D. SPLIT SPOON	1	DIAMETE	R OF ROTARY BI	T, IN.		3-7/8	
U-SAMPLE	:R			TYPE OF	DRILLING MUD			QUIK GEL	
S-SAMPLE	:R								
CORE BAR	REL NX D	OUBLE BARREL		AUGER U	ISED		YES	X NO	
CORE BIT		IAMOND		IYPE AN	D DIAMETER, IN.				
DRILL ROL	JS NWJ								
					HAMMER, LBS.	4.40		= FALL, IN.	20
				SAMPLER	R HAIMINER, LBS.	140	AVERAGE	= FALL, IN.	30
DATE	TIME	HOLE	CASING	WATER		CONDITIO	NS OF OB	SERVATION	
					NO	WATER LEV	EL OBSEF	RVATIONS MAD	=.
PIEZOME	ETER INST	ALLED	YES X	NO SK	ETCH SHOWN	ON			
STANDPIP	E:	TYPE		ID, IN.	LEN	IGTH, FT.		TOP ELEV.	
INTAKE EL	EMENT:	TYPE		OD, IN.	LEN	IGTH, FT.		TIP ELEV.	
FILTER:		MATERIAL		OD, IN.	LEN	IGTH, FT.		BOT. ELEV.	
<u>PAY QUA</u>	NTITIES								
3.5" DIA. D	RY SAMPLE	BORING	LIN. FT.	41	NO. OF 3" SHEI	LBY TUBE SA	MPLES		
3.5" DIA. U	-SAMPLE B	ORING	LIN. FT.		NO. OF 3" UND	ISTURBED S	AMPLES		
CORE DRI	lling in RC	DCK	LIN. FT.	10	OTHER:				
BORING	CONTRAC	TOR		AQUIF	ER DRILLING &	TESTING (CO., INC.		
DRILLER		P	AUL GADDIS		HELPERS				
REMARK	.S		E	BOREHOLE GRO	OUTED UPON C	COMPLETIC	DN.		
RESIDEN	IT ENGINE	ER	Т	ERESA SANDIF	ORD		DATE	05-1	2-15
CLASSIF	ICATION C	HECK:	CHERYL	J. MOSS	TYPING CHE	CK:			
MRCE Form B	S-1						BO	RING NO.	M-9

BORING NO. M-10 4 SHEET 1 OF PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE 12320 FILE NO. LOCATION: NEW YORK, NEW YORK 14.0± SURFACE ELEV. RES. ENGR. J. BRICKMAN/T. SANDIFORD SAMPLE DAILY CASING DEPTH BLOWS/6" SAMPLE DESCRIPTION STRATA DEPTH BLOWS REMARKS NO. PROGRESS **0.33** DRILLED **Asphalt from 0' to 1D 0.0 27-18 Black fine to coarse sand, some silt, trace gravel, 14:00 AHEAD 0.33'. 28-31 2.0 brick (SM) 04-23-15 2D 20-24 2.0 Gray fine to coarse sand, some silt, trace 4" Thurs., Clear 55°F, 14:15 4.0 20-21 gravel (SM) Gray & brown fine to coarse sand, some silt, 3D 4.0 13-9 5 3D. 5D. 8D: Petroleum 11:30 F 10-10 odor. 6.0 trace gravel (SM) 04-24-15 4D 6.0 10-14 Gray fine to coarse sand, some silt, gravel (SM) Friday 8.0 15-18 Clear 50°F 5D 8.0 9-16 Gray fine to coarse sand, some gravel, silt 10 10.0 62-33 (SM) 6D 10.0 17-21 Gray fine to coarse sand, some gravel fragments, 12.0 41-22 trace silt (SP-SM) 15 7D 15.0 12-14 Gray gravel fragments, some fine to coarse REC=3" 12-10 sand, trace silt (GP) 17.0 S 20 14:00 8D 20.0 100/4" Brown fine to coarse sand, some gravel, trace 09:15 Wood pieces from 22' clayey silt (SP-SM) 20.3 04-27-15 9D 22.0 15-73 Brown fine to medium sand, some gravel, silt to 24'. Monday 24.0 50-17 (SM) 24 Cloudy 10D 24.0 41-60 Red brown fine to coarse sand, some gravel, 25 60°F 26.0 36-34 silt (SM) 11D 26.0 27-21 Do 10D (SM) 28.0 20-39 12D 28.0 15-25 Do 10D (SM) 30.0 20-20 30 13D 30.0 10-15 Brown fine to medium sand, trace silt (SP-SM) 15-17 32.0 35 14D 35.0 8-9 Do 13D (SP-SM) S 37.0 9-13 40 15D 40.0 4-7 Brown fine sand, some silt, trace mica (SM) 42.0 11-11 45 16D WH-2 45.0 Brown silty fine sand, trace mica (SM) 47.0 4-7 48 1C 48.0 REC=92% Medium hard slightly weathered gray gneissic Hard drilling at 48'. 53.0 RQD=92% schist, jointed, iron stained joints *Coring time between 50 13:06 to 13:20 at 2.8 R minutes per foot.

M-10

			BC	DRING LOG		BOR	ING NO.	M-10
PROJEC	T: DN:	N	/EST 18TH	- WEST 19TH STREET/10TH AVENUE NEW YORK, NEW YORK		SHE F URFAC	FILE NO.	12320 14.0±
						RES	ENGR.	J. BRICKMAN/T. SANDIFORD
DAILY PROGRESS	NO.	SAM DEPTH	PLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
Cont'd 04-27-15 Monday								Coring time not taken; covering two rigs.
Cloudy 60°F	2C	53.0 58.0	REC=100% RQD=88%	Medium hard unweathered gray gneissic schist, jointed	R	55		-
14:00			-			58		End of Boring at 58'.
			-			60		
			- -			65		
			•					•
						70		- - -
			- - -					
			•			75		
						90		
			-			00		
			•			85		-
			-					-
			•			90		
			-					
			-			95		
			• •			100		
								•



						BORING N	10.	M-10				
						SHEET	4	OF	4			
PROJECT	Г	WEST 18TH -	WEST 19TH	STREET/10TH	I AVENUE	FILE NO.		12320				
LOCATIO	N		NEW YORK,	NEW YORK		SURFACE	ELEV.	14.	0±			
BORING	LOCATION	SEE	BORING LO	CATION PLAN		DATUM		NAVD 88				
BORING I	EQUIPMEN	NT AND METHO	DDS OF STAB		OLE							
		TYPE OF I	FEED									
TYPE OF B	BORING RIG	DURING C	ORING	CASING L	JSED	X	YES	NO				
TRUCK		MECHANI	CAL	DIA., IN.	4	DEPTH, FT.	FROM	0 то	30			
SKID		HYDRAUL	IC X	DIA., IN.		DEPTH, FT.	FROM	то				
BARGE		OTHER		DIA., IN.		DEPTH, FT.	FROM	то				
OTHER	TRACK (C	ME)										
TYPE AN	D SIZE OF	:		DRILLING	MUD USED	X	YES	NO				
D-SAMPLE	R <u>2" O.</u>	D. SPLIT SPOON	1	DIAMETE	R OF ROTARY BI	Γ, IN.		3-7/8				
U-SAMPLE	R			TYPE OF	DRILLING MUD	_						
S-SAMPLE	R											
CORE BAR	REL NX D	OUBLE BARREL		AUGER U	SED	`	YES	X NO				
CORE BIT	NX D	AMOND		TYPE ANI	D DIAMETER, IN.	_						
DRILL ROD	DS NWJ											
				CASING F	IAMMER, LBS.	/	AVERAGE	FALL, IN.				
				*SAMPLE	R HAMMER, LBS.	140	AVERAGE	FALL, IN.	30			
				*USED AL	JTOMATIC HAMM	ER.						
WAIERL	EVEL OBS	ERVATIONS II	N BOREHOLE									
DATE	TIME											
DATE		HOLL	CASING	WATER	NO							
		I	1		1							
PIEZOME	TER INST	ALLED	YES X	NO SKI	ETCH SHOWN (NC						
STANDPIP	E:	ТҮРЕ		ID, IN.	LEN	GTH, FT.		TOP ELEV.				
INTAKE EL	EMENT:	ТҮРЕ		OD, IN.	LEN	GTH, FT.		TIP ELEV.				
FILTER:		MATERIAL		OD, IN.	LEN	GTH, FT.		BOT. ELEV.				
<u>PAY QUA</u>	NTITIES											
3.5" DIA. DI	RY SAMPLE	BORING	LIN. FT.	48	NO. OF 3" SHEL	BY TUBE SAM	MPLES					
3.5" DIA. U-	-SAMPLE BO	DRING	LIN. FT.		NO. OF 3" UNDI	STURBED SA	MPLES					
CORE DRI	LLING IN RC	OCK	LIN. FT.	10	OTHER:							
DODUCT							o					
BORING	CONTRAC			AQUIFE	ER DRILLING &	TESTING C	0., INC.					
DRILLER	• —	DOUG					EO/GEO	RGE RAYMO	ND			
REMARK	5 T FN 0000		E			OMPLETIO	N.	.	7 4 5			
RESIDEN			JAMES BR	CKMAN/TERES	A SANDIFORD		DATE	04-27-15				
CLASSIFI	ICATION C	HECK:	CHERYL	J. MOSS	I YPING CHE	JK:			M 40			
MRCE Form BS	S-1						BOF	KING NO.	IVI-10			

PROJECT: LOCATION: WEST 18TH - WEST 19TH STREET/10TH AVENUE NEW YORK, NEW YORK

M-11 **BORING NO.** 4 SHEET 1 OF 12320 FILE NO. SURFACE ELEV. 11.8± RES. ENGR. N. SEGUIN/J. BRICKMAN

DAILY		SAM	PLE				CASING	
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	BLOWS	REMARKS
09:30	1D	0.0	35-51	Dark brown to black silty fine to coarse sand,	**	0.25	DRILLED	**Pavement from 0' to
04-22-15		2.0	34-22	some gravel, trace brick fragments (SM)			AHEAD	0.25'.
Wednesday	2D	2.0	12-20	Red brick & fine to coarse sand, some gravel,			4"	
Clear		3.5	47-25/0"	silt (SM)	F			
65°F	3D	4.0	11-16	Red brown fine to coarse sand, trace brick,	_	5		REC=6"
		6.0	21-15	silt (SP-SM)				
	4D	6.0	6-10	Top: Red brn f-c sand, some silt, gravel (SM)		7		4D, 10D: Spoon sample
		8.0	6-9	Bot: Brown silty fine sand, trace gravel (SM)				split.
	5D	8.0	11-11	Brown silty fine sand, some gravel (SM)				
		10.0	7-8		•	10		
	6D	10.0	6-5	Do 5D (SM)	5			
		12.0	6-6					-
			4					
			-			13.5		-
						15		
	7D	15.0	3-2	Dark gray to brown clayey silt, some fine sand				-
		17.0	2-3	(ML)				
			-		М			
			-			20		
	00	20.0	2.1	Dark grou dovou cilt, como fino cond, traco		20		-
	00	20.0	2-1	dravel (ML)		22		-
	0D	22.0	1-3	Dark grou grouply find to coored come		22		-
	90	22.0	4-0	citr (SM)				-
	10D	24.0	7-11	Sill (Sill) Dark grav fing to modium sand, some silt, trace		25		-
	100	24.0	20-20	dravel (SM)		23		
	11D	20.0	1/1-13	Red brown fine to medium sand, some silt				-
		28.0	17-19	(SP-SM)				
	12D	28.0	13-15	Red brown fine to coarse sand some gravel				-
	120	30.0	21-18	trace silt (SP-SM)		30		-
	13D	30.0	11-9	Top: Brown fine to coarse sand, some gravel.				Highly contaminated
		32.0	8-9	silt (SM)				spoon sample split.
			-	Bot: Brown silty fine sand (SM)				
					S			-
						35		
	14D	35.0	8-9	Brown silty fine sand (SM)				
14:40		37.0	10-11					
09:00								
04-23-15			_					_
Thursday						40		
Clear	15D	40.0	7-11	Brown silty fine sand (SM)				
55°F		42.0	12-12					-
			-					-
			-			45		Intermediate rock from
	16D	45.0	69-50/1"	Grav brown micaceous fine to medium sand	DR	46		46' to 48.5' medium
		45.6	00 00/1	some silt (Decomposed Rock) (SM)			3.5*	hard below.
	1C	46.0	REC=92%	Medium hard slightly weathered to unweathered			4*	*Coring time in
		51.0	RQD=87%	gray gneissic schist, schistose aneiss, iointed	_		4*	minutes per foot.
		_		to blocky, iron stained & weathered joints	R	50	5*	
			1				3*	
			1					
MRCE Form BI	-1			·		BORI		M-11

SAMPLE

BLOWS/6"

DEPTH

NO.

DAILY

PROGRESS

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE LOCATION: NEW YORK, NEW YORK

SAMPLE DESCRIPTION

 BORING NO.
 M-11

 SHEET 2 OF
 4

 FILE NO.
 12320

 SURFACE ELEV.
 11.8±

 RES. ENGR.
 JAMES BRICKMAN

 STRATA DEPTH
 BLOWS

 DR
 51

 R

 55
 3.5*

Cont'd					DR	51		
04-23-15	2C	51.0	REC=100%	Hard unweathered grav schistose gneiss.			-	- No coring time taken.
Thursday		56.0	POD-100%	massive			_	· · · · · · · · · · · · · · · ·
muisuay		50.0	NQD=100 //	111/2/2017	_		-	-
Clear					R		-	
55°F						55	3.5*	
12:00						56	3*	End of Boring at 56'
12.00			-			50	5	End of Bonnig at 50.
								-
			-					-
			_					
						60		
			-				-	-
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						65		
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			1					-



						BORING I	NO.	M-1 1	
						SHEET	4	OF	4
PROJECT	Т	WEST 18TH -	WEST 19TH	STREET/10TH	AVENUE	FILE NO.		12320	
LOCATIO)N	1	NEW YORK, N	IEW YORK		SURFACE	E ELEV.	11	.8±
BORING	LOCATION	SEE	BORING LOO	CATION PLAN		DATUM		NAVD 88	
BORING	EQUIPMEN	NT AND METHO	DDS OF STABI	LIZING BOREH	OLE				
		TYPE OF F	EED						
TYPE OF E	BORING RIG	DURING C	ORING	CASING L	ISED		YES		
TRUCK		MECHANIC		DIA., IN.	4		. FROM	0 10)
SKID		HYDRAUL	C <u> </u>	DIA., IN.			. FROM	10	
BARGE		OTHER		DIA., IN.		DEPTH, FT	. FROM	TC	
OTHER	TRACI	Κ							
						X	VEO		
				DRILLING			YES		
	:R <u>2°0.</u>	D. SPLIT SPOON				, IN.		3-7/8	
0-SAMPLE	:K			TYPE OF	DRILLING MUD			QUIK GEL	
S-SAMPLE					95D		VEC		
							IES		
		IAIVIOND			D DIAIVIE I ER, IN.				
DRILL ROL						140			20
	VVIII	Z AVVJ ABV SPC	UN			140		E FALL, IN.	30
				SAIVIPLEI	R HAIVIIVIER, LOS.		AVERAGE	= FALL, IN.	30
				USED AU		EK.			
WATER L									
DATE	TIME	HOLE	CASING	WATER		CONDITIO	NS OF OB	SERVATION	
27.112					NO	WATERIEV	FL OBSEF	RVATIONS MAD	F.
		1		I	L				
PIEZOME	TER INST	ALLED	YES X	NO SKE	ETCH SHOWN (N			
STANDPIP	E:	TYPE		ID, IN.	LEN	GTH, FT.		TOP ELEV.	
INTAKE EL	EMENT:	ТҮРЕ		OD, IN.	LEN	GTH, FT.		TIP ELEV.	
FILTER:		MATERIAL		OD, IN.	LEN	GTH, FT.		BOT. ELEV.	
				-					
PAY QUA	NTITIES								
3.5" DIA. D	RY SAMPLE	BORING	LIN. FT.	46	NO. OF 3" SHEL	BY TUBE SA	MPLES		
3.5" DIA. U	-SAMPLE BO	ORING	LIN. FT.		NO. OF 3" UNDI	STURBED SA	AMPLES		
CORE DRI	lling in RC	СК	LIN. FT.	10	OTHER:				
BORING	CONTRAC	TOR		AQUIFE	ER DRILLING &	TESTING C	<u>., INC.</u>		
DRILLER		D	OUG WOOD		HELPERS				
REMARK	S		В	OREHOLE GRO	DUTED UPON C	OMPLETIC	N.		
RESIDEN	IT ENGINE	ER	NATHAN	SEGUIN/JAMES	BRICKMAN		DATE	04-2	3-15
CLASSIFI	ICATION C	HECK:	CHERYL J	. MOSS	TYPING CHEC	CK:			
MRCE Form B	S-1						BO	RING NO.	M-11

PROJECT: LOCATION: WEST 18TH - WEST 19TH STREET/10TH AVENUE NEW YORK, NEW YORK

M-12 BORING NO. 4 SHEET 1 OF 12320 FILE NO. SURFACE ELEV. 11.0± RES ENGR TERESA SANDIEORD

DAWN		CVVI						
DAILY		SAIVI					CASING	DEMARKO
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	BLOWS	REMARKS
10:00	1D	0.0	32-11	Gray fine to coarse sand, some silt, trace gravel	**	0.33	DRILLED	**Asphalt from 0' to
04-27-15		2.0	17-15	(SM)			AHEAD	0.33' at surface.
Monday	2NR	2.0	11-13	No recovery			4"	No recovery.
Cloudy		4.0	14-11					
50°F	3D	4.0	7-7	Gray fine to coarse sand, some gravel, silt (SM)		5		
		6.0	5-6					
	4D	6.0	4-5	Gray fine to coarse sand, some gravel, silt (SM)				4D, 13D: REC=1"
		8.0	5-3					
	5D	8.0	9-12	Gray & red fine to coarse sand, some brick				REC=5"; brick in
		10.0	4-3	fragments, gravel, silt (Fill) (SM)		10		sample.
	6D	10.0	1-1	Gray black fine to medium sand, some organic				Rig chatter; stopped
		12.0	2-1	clay (SC)				filling from 12:24 to
								11:27.
						15		
	7D	15.0	9-12	Grav black fine to medium sand, some gravel.	F			
		17.0	6-6	trace silt, mica (SP-SM)				
			00					
						20		
	80	20.0	6-5	Gray red fine to medium sand, some clay, brick		20		8D-10D: Petroleum
	00	20.0	0-5	frogmente (SC)				odor
	00	22.0	3-0 100/5"	Crow to block fine to ecore cond, come group				
	90	22.0	100/5	Gray to black line to coarse sand, some graver,				OD. RECED
	100	22.4				25		9D. Spoon bouncing.
	10D	24.0	4-5	D0 9D (SM)		25		
		26.0	15-15					
	11D	26.0	12-13	Brown silt, trace fine to coarse sand (ML)				
		28.0	14-26					
	12NR	28.0	15-14	No recovery				
		30.0	14-9			30	V	
	13D	30.0	6-7	Gray gravel (GP)				
		32.0	9-6					
09:00								
04-28-15								
Tuesday						35		
Cloudy	14D	35.0	2-4	Red brown fine to medium sand, some silt,				
50°F		37.0	2-4	trace mica (SM)				
					•			
					5	40		
	15D	40.0	3-4	Brown to red brown silty fine sand, trace mica				
		42.0	3-4	(SM)				
						45		
	16D	45.0	2-1	Brown silty fine sand varved with trace fine sandy				
		47.0	2-3	silt (SM)				
						48.5		
					PP	50		-
	17D	50.0	60-100/1"	Grav to black micacaceous fine to medium		51		REC=6"
		50.6	00100/1	sand, trace silt (Decomposed Rock) (SP-SM)				
L		00.0	l		1	I	I	
MRCE Form BI	-1					BORI	NG NO	M-12

WEST 18TH - WEST 19TH STREET/10TH AVENUE
NEW YORK, NEW YORK

M-12 **BORING NO.** 4 SHEET 2 OF 12320 FILE NO. SURFACE ELEV. 11.0±

LOCATIC	DN:			NEW YORK, NEW YORK	S	URFAC	E ELEV.	11.0±	
						RES	. ENGR.	. TERESA SANDIFORD	
DAILY		SAM	PLE				CASING		
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	BLOWS	REMARKS	
Cont'd								No coring time	
04-28-15	1C	51.0	REC=92%	Medium hard unweathered gray gneissic				recorded; covering	
Tuesday		56.0	RQD=78%	schist, closely jointed to jointed				2 rigs.	
Cloudy									
50°F					Б	55			
	20	56.0	REC-70%	Hard unweathered gray schistose gneiss	ĸ			-	
	20	61.0	RQD=75%	moderately jointed					
		0110							
						60		-	
14:00						61		End of Boring at 61'.	
						65			
								-	
						70		-	
								-	
						75			
						80			
						00			
						85			
								-	
						90		-	
						30			
								_	
						95			
						100			
						100			
1	1	1				1		1	

PROJECT:



							BORING	NO.	M-12	2
							SHEET	4	OF	4
PROJECT	Γ	WEST 18TH	H - WEST 1	9TH S	TREET/10TH	I AVENUE	FILE NO.		12320	
LOCATIO	N		NEW YO	RK, NI	EW YORK		SURFAC	E ELEV.	11	.0±
BORING	LOCATION	SE	EE BORING	LOC	ATION PLAN		DATUM		NAVD 88	
BORING I	EQUIPMEN	NT AND MET	HODS OF S	TABILI	ZING BOREH	OLE				
		TYPE O	F FEED					1		
TYPE OF B	SORING RIG	DURINO	GCORING		CASING L	JSED	Х	YES	NO	
TRUCK	Χ	MECHA	NICAL		DIA., IN.	4	_DEPTH, FT	. FROM	<u> </u>	30
SKID		HYDRA	ULIC	Х	DIA., IN.		_DEPTH, FT	. FROM	тс)
BARGE		OTHER			DIA., IN.		_DEPTH, FT	. FROM	тс)
OTHER										
								1		
TYPE AN	D SIZE OF	:			DRILLING	MUD USED	Х	YES	NO	
D-SAMPLE	R <u>2" O.</u>	D. SPLIT SPO	ON		DIAMETE	R OF ROTARY BIT	⁻ , IN.		3-7/8	
U-SAMPLE	R				TYPE OF	DRILLING MUD			QUIK GEL	
S-SAMPLE	R							I		
CORE BAR	REL NX D	OUBLE BARRE	EL		AUGER U	SED		YES	X NO	
CORE BIT	NX D	IAMOND			TYPE ANI	D DIAMETER, IN.				
DRILL ROD	DS NWJ									
					CASING F	IAMMER, LBS.		AVERAGE	E FALL, IN.	
					*SAMPLE	R HAMMER, LBS.	140	AVERAGE	E FALL, IN.	30
				<u></u>	*USED AL		ER.			
WATERL	EVEL OBS	BERVATIONS								
	TIME									
DATE		HOLE	CASI	NG	WATER	NO				
										- .
PIEZOME	TER INST	ALLED	YES	Х	NO SKI	ETCH SHOWN C	N			
					l					
STANDPIP	E:	TYPE			ID, IN.	LEN	GTH, FT.		TOP ELEV.	
INTAKE EL	EMENT:	TYPE			OD, IN.	LEN	GTH, FT.		TIP ELEV.	
FILTER:		MATERIAL			OD, IN.	LEN	GTH, FT.		BOT. ELEV.	
PAY QUA	NTITIES									
3.5" DIA. D	RY SAMPLE	BORING	LIN. FT.		51	NO. OF 3" SHEL	BY TUBE SA	MPLES		
3.5" DIA. U	-SAMPLE BO	ORING	LIN. FT.			NO. OF 3" UNDI	STURBED S	AMPLES		
CORE DRI	LLING IN RC	ЮСК	LIN. FT.		10	OTHER:	-			
BORING	CONTRAC	TOR			AQUIFE	ER DRILLING &	TESTING (CO., INC.		
DRILLER		PAUL C	GADDIS/DOM		PEPE	HELPERS		,		
REMARK	s			BC	REHOLE GRO		OMPLETIC	DN.		
RESIDEN		ER		TEI	RESA SANDIF	ORD		DATE	04-2	8-15
CLASSIFI	CATION C	HECK:	CHEI	RYL J.	MOSS	TYPING CHEC	CK:	-		
MRCE Form BS	S-1	_						BO	RING NO.	M-12

BORING LOG						BOR	ING NO	D. M-13
						SHE	ET 1 C)F 3
PROJEC	T:	W	'EST 18TH -	WEST 19TH STREET/10TH AVENUE	_	F	FILE NO	D. 12320
LOCATIC	DN:		1	NEW YORK, NEW YORK	S	URFAC	EELE	V. 9.3±
					1	RES	. ENG	R. TERESA SANDIFORD
DAILY PROGRESS	NO.	SAM DEPTH	PLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASIN BLOW	G S REMARKS
11:00							DRILLE	D Hand auger to 6'.
05-13-15			4				AHEA	D Vacuum excavated to
Wednesday			-				4"	6'.
			-			5		to 20'
051			-					10 20 .
			-					
			-		F	10		
			-					
						15		
			-					
			-					
			-					
			-			20		
	1D	20.0	3-3	Brown silty fine sand, trace mica (SM)				
		22.0	3-3					
	2D	22.0	2-5	Do 1D (SM)				
	3D	24.0	2-3	Do 1D (SM)		25		
		26.0	4-4					
	4D	26.0	5-5	Do 1D (SM)				
		28.0	7-9		S			
	5D	28.0	6-7	Do 1D varved with trace silt (SM)		20		
		30.0	9-9			30	V	
								Chunky drilling at 33.5'.
			-			05		Advanced unsampled
	10	35.0	REC-100%	Medium hard slightly weathered to unweathered		35	*	to 35°; top of rock.
	10	40.0	RQD=73%	grav gneissic schist to schistose gneiss.				to 12:34 at 3.8 minutes
				jointed to moderately jointed, weathered joints				per foot.
		40.0			R	40	*	*O
	20	40.0	REC=100%	Hard unweathered gray schistose gneiss,				to 13:02 at 3.4 minutes
		10.0	110070					per foot.
13:15						45		End of Boring at 45'.
			-					
			-					
								-
						50		
			-					_
i -	1	1	1		1	1	1	1



PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE SHEET 3 0F 3 BORING LOCATION NEW YORK, NEW YORK SURFACE ELEV. 9.3± 9.3± BORING LOCATION SEE BORING LOCATION PLAN DATUM NAVD 88 BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE TYPE 0F FEED NO 0 TO 30 SKID HYDRAULIC X DIA, IN 4 DEPTH, FT, ROM 0 TO 30 BARGE OTHER DIA, IN DEPTH, FT, ROM TO 30 37.8 CARARGE OTHER DIA, IN DEPTH, FT, ROM TO 37.78 CORE BARREL NX DOUBLE BARREL DIALING MUD USED X YES NO CORE BARREL NX DOUBLE BARREL AUGER USED QUIK MUD 37.78 CORE BARREL NX DOUBLE BARREL AUGER USED QVES ALTONATIC HAMMER, LBS. AVERAGE FALL, IN. 30 TYPE OF DRILLING MUD DAMETER, IN. 30 'USED AUTOMATIC HAMMER, LBS. AVERAGE FALL, IN. 30 WATER LEVEL OBSERVATIONS IN									BORING	NO.	M- 1	3
PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE FILE NO. 12320 LOCATION NEW YORK, NEW YORK SURPACE ELEV. 9.3: BORING LOCATION SEE BORING LOCATION PLAN DATUM NAVD 88 BORING COLORING SEE BORING LOCATION PLAN DATUM NAVD 88 BORING COLORING CORING CASING USED X. YES NO TYPE OF FEED TYPE OF FEED TYPE OF FRED TYPE OF BORING RIG DURING CORING CASING USED X. YES NO SKID MYDRAULIC X DIA, IN. 4 DEPTH, FT. FROM TO BARGE OTHER DIA, IN. DEPTH, FT. FROM TO DAMPER 2'O.D. SPLIT SPOON DIALING MUD USED X. YES NO D-SAMPLER 2'O.D. SPLIT SPOON DIALING MUD USED X. YES NO D-SAMPLER 2'O.D. SPLIT SPOON DIALING MUD USED Y. YES X NO CORE BARREL IN XDUMEND TYPE OF DRILLING MUD USED YES X. NO CORE BARREL IN XDUMEND TYPE AND DIAMETER, IN. DRILLING SUND CORE BARREL CORE TO PORILLING MUD OWNERER, IN. DRILLING SIND WATER LEVEL OBSERVATIONS IN BOREHOLE DATE TIME DEPTH OF DEPTH OF DEPTH OF DEPTH OF DEPTH OF CONDITIONS OF OBSERVATION MATER LEVEL OBSERVATIONS IN BOREHOLE DATE TIME DEPTH OF DEPTH OF DEPTH TO DATER HAMBER, LBS. 140 AVERAGE FALL, IN. 30 "SGMDLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30 "USED AUTOMATIC HAMMER. DATE TIME DEPTH OF DEPTH OF DEPTH TO DATE TIME DEPTH OF DEPTH OF DEPTH TO DATER LEVEL OBSERVATIONS IN BOREHOLE DATE TIME DEPTH OF DEPTH TO DATER LEVEL OBSERVATIONS MADE. DATE TIME DEPTH OF DEPTH TO TO PLEV. TITACE DEEMENT: TYPE DO, IN. LENGTH, FT. TOP ELEV. DATER LEVEL OBSERVATIONS MADE. DATE TIME DEPTH OF DEPTH OF DEPTH TO DATER LEVEL OBSERVATIONS MADE. DEPTH OF TYPE DO, IN. LENGTH, FT. TOP ELEV. DATE TIME DEPTH OF DEPTH OF DO, TO THER: BORING CONTRACTOR AQUIFER ORILLING & TESTING CO, INC. DRILLER MATERIAL OD, IN. LENGTH, FT. BOT ELEV. DO, IN. LENGTH, FT. 35 NO. OF 3' SHELBY TUBE SAMPLES 35' DA. DRY SAMPLE BORING LIN, FT. 35 NO. OF 3' SHELBY TUBE SAMPLES 35' DA. DRY SAMPLE BORING LIN, FT. 35 NO. OF 3' SHELBY TUBE									SHEET	3	OF	3
LOCATION NEW YORK, NEW YORK SURFACE ELEV. 9.3.± BORING LOCATION SEE BORING LOCATION PLAN DATUM NAVD 88 BORING LOCATION SEE BORING LOCATION PLAN DATUM NAVD 88 BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE TYPE OF BORING RG DURING CORING CASING USED X YES NO TRUCK X MECHANICAL DUA.IN. 4 DEPTH, FT. FROM 0 TO 30 SKID HYDRAULIC X DIA.IN. 4 DEPTH, FT. FROM 0 TO 30 SKID HYDRAULIC X DIA.IN. 4 DEPTH, FT. FROM TO DARRE OTHER DIA.IN. DEPTH, FT. FROM TO CORE BARRE 2'.O.D. SPLIT SPOON USAMPLER S'.O.D. SPLIT SPOON USAMPLER AUGUNT AND DIAMETER OF ROTARY BIT, IN. 3.7/8 CORE BARRE 1XX DOUBLE BARREL AUGEN USED YES X NO CORE BIT NO DIAMETER OF ROTARY BIT, IN. 3.7/8 CORE BARRE IXX DOUBLE BARREL AUGEN USED YES X NO CORE BIT NO DIAMETER, IN. 30 CORE DIAMETER, IN. 40 CORE DIAMETER, INC. 40 CORE DIAMETER, AND AND AND AN	PROJEC	Г	WEST 1	8TH -	WEST 19	OTH S	TREET/10TH	AVENUE	FILE NO.		12320	
BORING LOCATION SEE BORING LOCATION PLAN DATUM NAVD 88 BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE TYPE OF BORING RIG DURING CORING CASING USED X YES NO TYPE OF BORING RIG DURING CORING CASING USED X YES NO SKID HYDRAULIC X DIA, IN. 4 DEPTH, FT. FROM TO SKID HYDRAULIC X DIA, IN. DEPTH, FT. FROM TO SKID HYDRAULIC X DIA, IN. DEPTH, FT. FROM TO OTHER DIAL, IN. DEPTH, FT. FROM TO 30 TYPE OF DRULING MUU USED X YES NO USAMPLER TYPE OF DRULING MUU USED X YES X USAMPLER TYPE OF DRULING MUD QUIK MUD QUIK MUD SVRU CASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30 TYPE AVERAGE FALL, IN. 30 CASING HAMMER, LBS. 140 AVERAGE FALL, IN. 30 TYSED AUTOMATIC HAMMER, LBS. AVERAGE FALL, IN. 30	LOCATIO	N		Ν	IEW YOF	RK, NI	EW YORK		SURFAC	E ELEV.		9.3±
BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE TYPE OF BORING RIG URING CORING DURING CORING	BORING	LOCATIO	N	SEE	BORING	LOC	ATION PLAN		DATUM		NAVD 8	8
BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE TYPE OF FEED TYPE OF BORING RIG DURING CORING CASING USED												
BURING LUDIPMENT AND METHODS OF STABILING BUREHOLE TYPE OF PERID TYPE OF PERID TVEX X MECHANICAL DIA., IN. DEPTH, FT. FROM OTO SKID HYDRAULIC X MECHANICAL DIA., IN. DEPTH, FT. FROM TO BARGE OTHER TYPE AND SIZE OF: D-SAMPLER SAMPLER SAMPLER SAMPLER CORE BARREL NO OCRE BARREL NUL NODUBLE BARREL ORE BARREL NUL NODON TYPE OF DRILING MUD OUK MUD SAMPLER CORE BARREL NWJ CASING HAMMER, LBS. 140 AVERAGE FALL, IN. "SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. "SAMPLER HAMMER, LBS. 140 DEPTH OF DEPTH OF DEPTH OF DEPTH OF	DODINO											
TYPE OF BORING RIG DURING CORING CASING USED X YES NO TRUCK X MECHANICAL DIA, IN. 4 DEPTH, FT. FROM 0 TO 30 SKID HYDRAULIC X DIA, IN. DEPTH, FT. FROM TO 30 BARGE OTHER DIA, IN. DEPTH, FT. FROM TO 37 DAMPLER OTHER DIA, IN. DEPTH, FT. FROM TO 37.8 USAMPLER OTO D. SPLITSPOON DIAMETER OF ROTARY BIT, IN. 3-7.8 3-7.8 USAMPLER CORE BARREL ND DUBLE BARREL AUGER USED YES X NO CORE BARREL NX DOUBLE BARREL AUGRE USED YES X NO CORE BARREL NX DOUMOND TYPE OF DRILLING MUD USED YES X NO CORE BARREL NX DOUMOND TYPE AND DIAMETER, I.BS. AVERAGE FALL, IN. 30 VEED AUTOMATIC HAMMER, LBS. 140 AVERAGE FALL, IN. 30 100 20 DATE INDALE MAMMER	BORING	EQUIPME	<u>INT AND N</u>		<u>, DS OF S</u>	ABILI	ZING BOREH	JLE				
TTPE ODINING DOWNOR DOWNO DOWNOR DOLO								SED	V	VES	NO	
SND HYDRAULC X DIA, IN. DETH, FT, FROM TO DO BARGE OTHER DIA, IN. DEPTH, FT, FROM TO TO OTHER OTHER DIA, IN. DEPTH, FT, FROM TO TO DSAMPLER 2'O.D. SPLIT SPOON DIAMETER OF ROTARY BIT, IN. 3-7/8 3-7/8 USAMPLER CORE BARREL AUGER USED X YES NO CORE BARREL NX DUMOND TYPE AND DIAMETER, IN. 3-7/8 CORE BARREL NX DUMOND TYPE AND DIAMETER, IN. 3-7/8 DRILL RODS NWJ CASING HAMMER, LBS. AVERAGE FALL, IN. 30 VATER LEVEL OBSERVATIONS IN BOREHOLE VERS AVERAGE FALL, IN. 30 WATER LEVEL OBSERVATIONS IN BOREHOLE OEPTH OF DEPTH OF DEPTH OF DATE TIME HOLE CASING WATER CONDITIONS OF OBSERVATION MADE. PIEZOMETER INSTALLED YES NO SKETCH SHOWN ON	TRUCK		MF(4		FROM		CO 30
BARGE OTHER DIA, IN DEPTH, FT. FROM TO TYPE AND SIZE OF: DRILLING MUD USED X YES NO D-SAMPLER 2' O. D. SPUT SPOON DIA, IN DEPTH, FT. FROM TO D-SAMPLER 2' O. D. SPUT SPOON DIALTING MUD USED X YES NO D-SAMPLER 2' O. D. SPUT SPOON DIALTING MUD QUIK MUD S-SAMPLER AUGER USED YES X NO CORE BARREL NX DUMOND TYPE OF DRILLING MUD QUIK MUD S-SAMPLER AUGER USED YES X NO ORILL RODS NWJ CASING HAMMER, LBS. AVERAGE FALL, IN.	SKID				ле <u> </u>	X			DEPTH FT	FROM		ro
OTHER	BARGE		OTH	IFR	•	~	DIA., IN		DEPTH, FT	FROM		го
TYPE AND SIZE OF: DESAMPLER 2*0. D. SPIT SPOON USAMPLER	OTHER		0				2,					
TYPE AND SIZE OF: DRILLING MUD USED X YES NO D-SAMPLER 2* 0. D. SPLIT SPOON DIAMETER OF ROTARY BIT, IN. 3-7/8 USAMPLER												
D-SAMPLER 2' O. D. SPLIT SPOON U-SAMPLER U-SAMPLER U-SAMPLER CORE BARREL NZ DUBLE BARREL AUGER USED U-SAMPLER CORE BARREL NX DIAMOND OUBLE BARREL AUGER USED U-SAMPLER AUGER USED U-SAMPLE BARREL U-SAMPLE U-SAMPLE BARREL U-SAMPLE U-SAMPLE U-SAMPLE U-SAMPLE U-SAMPLE U-SAMPLE U-SAMPLE U-SAMPLE U-SAMPLE U-SA	TYPE AN	D SIZE O	F:				DRILLING	MUD USED	Х	YES	NO	
U-SAMPLER	D-SAMPLE	R <u>2" O</u>	. D. SPLIT S	POON			DIAMETER	R OF ROTARY BIT	Γ, IN.		3-7/8	
S-SAMPLER CORE BARREL NX DUBLE BARREL AUGER USED YES X NO CASING HAMMER, LBS. YES X NO TYPE AND DIAMETER, IN. AVERAGE FALL, IN. 30 "SAMPLER HAMMER, LBS. 140 AVERAGE FALL, IN. 30 "USED AUTOMATIC HAMMER. WATER LEVEL OBSERVATIONS IN BOREHOLE DATE TIME DEPTH OF DEPTH OF DEPTH OF CASING WATER CONDITIONS OF OBSERVATION MATER LEVEL OBSERVATIONS IN BOREHOLE DATE TIME HOLE CASING WATER CONDITIONS OF OBSERVATION MADE. DATE TIME HOLE CASING WATER CONDITIONS OF OBSERVATION MADE. DATE TIME YES X NO SKETCH SHOWN ON STANDPIPE: TYPE ID, IN. LENGTH, FT. TOP ELEV. FILTER: MATERIAL OD, IN. LENGTH, FT. TOP ELEV. FILTER: MATERIAL OD, IN. LENGTH, FT. TOP ELEV. PAY QUANTITIES 3.5' DIA. DRY SAMPLE BORING LIN. FT. 35 NO. OF 3' SHELBY TUBE SAMPLES 3.5' DIA. DRY SAMPLE BORING LIN. FT. 10 OTHER: BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC. DRILLER JOHN CAMPBELL HELPERS BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC. DRILLER TERES BOREHOLE HELPERS BORING CONTRACTOR AQUIFER DRILLING & TESTING CO., INC. DRILLER DON CHECK: CHERYL J. MOSS TYPING CHECK: BORING CONTRACTOR AQUIFER DIEL HELPERS BORING CONTRACTOR TERES SANDIFORD DATE 05-13-15 CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK: BORING CONTRACTOR TERES ANDIFORD ANT ON MATE	U-SAMPLE	R					TYPE OF I	ORILLING MUD			QUIK MU	D
CORE BARREL NX DUADELE BARREL AUGER USED YES XNO CORE BIT NX DIAMOND YES XNO DRILL RODS NWJ CASING HAMMER, LBS. AVERAGE FALL, IN. O USED AUTOMATIC HAMMER, LBS. AVERAGE FALL, IN. O O O WATER LEVEL OBSERVATIONS IN BOREHOLE DEPTH OF DEPTH OF DEPTH OF CONDITIONS OF OBSERVATION O DATE TIME HOLE CASING WATER LEVEL OBSERVATIONS MADE. O DATE TIME HOLE CASING WATER CONDITIONS OF OBSERVATION O MATER LEVEL OBSERVATIONS MADE NO WATER LEVEL OBSERVATIONS MADE. O O O DATE TIME HOLE CASING WATER CONDITIONS OF OBSERVATION MADE. O DATE TIME HOLE CASING WATER CONDITIONS OF OBSERVATIONS MADE. O DATE TIME OEPTH OF DEPTH TO CONDITIONS OF OBSERVATION MADE.	S-SAMPLE	R								1		
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RESIDENT ENGINEER TERESA SANDIFORD DATE 05-13-15 CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK: BORING NO. M-13	REMARK	s		JUP								
CLASSIFICATION CHECK: CHERYL J. MOSS TYPING CHECK: BORING NO. M-13	RESIDEN		FFR			TE	RESA SANDIF			DATE	05	-13-15
MRCE Form BS-1 BORING NO. M-13			CHER									
	MRCE Form B	S-1								BO	RING NO.	M-13

BORING LOG						BORING NO. M-14				
						SHE	ET 1 OF	2		
PROJEC	T:	W	'EST 18TH -	WEST 19TH STREET/10TH AVENUE		F	FILE NO.	12320		
LOCATIC	DN:			NEW YORK, NEW YORK	S	URFAC	E ELEV.	10.9±		
		0.4 1.4				RES	5. ENGR.	TERESA SANDIFORD		
DAILY		SAIM			OTD AT A	DEDTU		DEMADKS		
13:30			BLOWS/0	SAMPLE DESCRIPTION	JIKAIA	DEFIN		Advanced unsampled		
04-28-15			-				AHEAD	to 20'.		
Tuesday							4" 5"	-		
Sunny										
55°F						5				
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			4					-		
			-			15		-		
			-			15		-		
			-					-		
			-					-		
						20	•	4" Casing to 20'.		
	1D	20.0	2-3	Black, brown fine to medium sand, some silt,	S			1D-2D: Petroleum		
	20	22.0	2-1 100/4"	gravel (SM) Brown fine to coarse sand, some gravel, silt	U	22 /	V	000r. 5" Casing over top to		
09:00	20	22.0	100/4	(SM)		22.4		22.4'.		
05-29-15						25		Obstruction at 22.4'		
Wednesday								causing water pressure		
65°F 10.00			-					from spinning casing		
,			-					to cause leak in pave-		
						30		Cobbles observed in		
			4			50		casing at 22.4'.		
			-					Boring offset 11' North.		
								End of Boring at 22.4'.		
			-					-		
			-			35				
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M-14

						BORING	NO.	M-14	Ļ
						SHEET	2	OF	2
PROJECT	г	WEST 18TH -	WEST 19TH	STREET/10TH	I AVENUE	FILE NO.		12320	
LOCATIO	N		NEW YORK, M	NEW YORK		SURFAC	E ELEV.	10	.9±
BORING	LOCATIO	SEE	BORING LOO	CATION PLAN		DATUM		NAVD 88	
BORING	EQUIPMEI	NT AND METHO	DDS OF STABI	LIZING BOREH	OLE				
		TYPE OF I	FEED				1		
TYPE OF E	BORING RIG	DURING C	ORING	CASING L	JSED	X	YES	NO	
TRUCK	X	MECHANI		DIA., IN.	5	DEPTH, FT	. FROM	<u> </u>	22.5
SKID		HYDRAUL	IC X	DIA., IN.	4	DEPTH, FT	. FROM	TC	20
BARGE		OTHER		DIA., IN.		DEPTH, FT	. FROM	тс)
OTHER									
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			I	DRILLING			TES	2 7/9	
	:R <u>20.</u> :D	D. SPLIT SPOON	1			I, IIN.		3-7/0	
	.n			TIFE OF					
					SED		VES	X NO	
CORE BIT				TYPE ANI	DIAMETER IN		1.50		
	DS NWJ								
				CASING H	AMMER. LBS.		AVERAGI	E FALL. IN.	
				*SAMPLE	R HAMMER, LBS.	140	AVERAG	E FALL, IN.	30
				*USED AL	JTOMATIC HAMM	ER.	-	· · ·	
WATER L	EVEL OBS	SERVATIONS II	N BOREHOLE						
		DEPTH OF	DEPTH OF	DEPTH TO					
DATE	TIME	HOLE	CASING	WATER		CONDITIO	NS OF OB	SERVATION	
					NO	WATER LEV	EL OBSE	RVATIONS MAD	Ε.
PIEZOME	TER INST	ALLED	YES X		ETCH SHOWN (ON			
STANDPIP	E:	TYPE		ID, IN.	LEN	GTH, FT.		TOP ELEV.	
INTAKE EL	EMENT:	TYPE		OD, IN.	LEN	GTH, FT.		TIP ELEV.	
FILTER:		MATERIAL		OD, IN.	LEN	GTH, FT.		BOT. ELEV.	
<u>PAY QUA</u>	NTITIES								
3.5" DIA. D	RY SAMPLE	BORING	LIN. FT.	22.4	NO. OF 3" SHEL	BY TUBE SA	MPLES		
3.5" DIA. U	-SAMPLE B	ORING	LIN. FT.		NO. OF 3" UNDI	STURBED S	AMPLES		
CORE DRI	lling in Ro	DCK	LIN. FT.		OTHER:				
BORING	CONTRAC	TOR		AQUIFE	ER DRILLING &	TESTING (CO., INC.		
DRILLER			DOMINICK		HELPERS				
REMARK	S		В	OREHOLE GRO	DUTED UPON C	OMPLETIC	DN.		
RESIDEN			TE	ERESA SANDIF	URD	01/	DATE	04-2	9-15
CLASSIFI	ICATION C	HECK:	CHERYL J	I. MOSS		UK:			
MRCE Form B	S-1						во	KING NO.	IVI-14

BORING LOG						BOR	ING NO.	M-14A	
						SHE	ET 1 OF	4	
PROJEC	T:	W	EST 18TH -	WEST 19TH STREET/10TH AVENUE		F	ILE NO.	12320	
LOCATIC	DN:		1	NEW YORK, NEW YORK	S	URFAC	E ELEV.	10.9±	
					-	RES	. ENGR.	TERESA SANDIFORD	
DAILY		SAM	PLE				CASING		
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	BLOWS	REMARKS	
11:30				Advanced down to 22' unsampled.			DRILLED	Spun 4" casing.	
04-29-15							AHEAD	Advanced down to 22'	
Wednesday							4"	unsampled; offset	
Sunny			-					12' North of M-14.	
65°F						5			
			-						
						10			
						10			
			-						
			-						
			-						
			-			15			
						20			
			-						
						22			
	1D	22.0	4-7	Brown, black gravel, some fine to coarse				REC=4"	
	00	24.0	10-12	sand, trace silt (GP)		25			
	20	24.0	10-6	Brown, black medium to line sand, trace		23			
	2D	26.0	/-0 //	Brown fine to coarse sand trace gravel silt					
	30	20.0	4-4 5-4	(SP-SM)					
	4D	28.0		Brown fine to medium sand trace silt (SP-SM)					
		30.0	6-4			30		Casing to 30'	
		00.0					¥.	Clearing mud tub at	
								11:20.	
			-						
						35			
					S				
			-			40		-	
						40			
			-						
			-					-	
			-						
						45			
			4					-	
14:45						49		Top of rock at 49'.	
09:00	1C	49.0	REC=100%	Medium hard to hard slightly weathered to		50	*	*Coring time from 09:00	
04-30, Thurs.		59.0	RQD=78%	unweathered gray gneissic schist, jointed to	R			to 09:55 at 5 minutes	
Cldy., 55°F				moderately jointed, iron stained & WJts				per foot 10' core.	

BORING NO. M-14A

	BORING LOG						ING NO.	M-14A	
							ET 2 OF	4	
PROJEC	T:	W	EST 18TH -	WEST 19TH STREET/10TH AVENUE	FILE NO			. 12320	
LOCATIO	DN:		1	NEW YORK, NEW YORK	S	URFAC	E ELEV.	10.9±	
	r			1	RES. ENGR			TERESA SANDIFORD	
DAILY		SAM	PLE				CASING		
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	BLOWS	REMARKS	
Cont'd								-	
04-30-15 Thursdov			-					-	
Cloudy			-						
55°F					R	55			
								Boring offset 12' North	
								of Boring Log M-14.	
14:00			-			59		End of Boring at 59'.	
						60		-	
			-					-	
								-	
						65			
								-	
			-					-	
			-			70		-	
						10			
								-	
			-					_	
						75			
								-	
			-					-	
			-			80		-	
			-					-	
								-	
						85			
			-					-	
			-						
			-			90		-	
								-	
			-					-	
			-			95		-	
						35		-	
						100		•	
	L					L			
1	1	1	1		1	1		1	



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BOR-3_JAN2013

						BORING	NO.	M-14A		
						SHEET	4	OF	4	
PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE								12320	· ·	
LOCATIO	DN		NEW YORK, NEW YORK			SURFACE	E ELEV.	10	.9±	
BORING	LOCATION	SEE	F BORING LOCATION PLAN			DATUM		NAVD 88	}	
					-				<u>.</u>	
BORING	EQUIPMEN	NT AND METH	ODS OF STA	BILIZING BOREH	IOLE					
		TYPE OF	FEED							
TYPE OF E	BORING RIG	DURING	CORING	CASING	USED	Х	YES	NO		
TRUCK	Х	MECHAN	ICAL	DIA., IN.	4	DEPTH, FT	. FROM	0 T(O 30	
SKID		HYDRAUI		X DIA., IN.		DEPTH, FT	. FROM	т	с	
BARGE		OTHER		DIA., IN.		DEPTH, FT	. FROM	т	с	
OTHER				=,		,				
TYPE AN	D SIZE OF	:		DRILLING	G MUD USED	Х	YES	NO		
D-SAMPLE	R 2" O.	D. SPLIT SPOOR	N	DIAMETE	R OF ROTARY BI	г, IN.	1	3-7/8		
U-SAMPLE	R			TYPE OF	DRILLING MUD			QUIK GEL		
S-SAMPLE	R									
CORE BAR	REL NX D	OUBLE BARREL		AUGER L	JSED		YES	X NO		
CORE BIT	NX D	IAMOND		TYPE AN	D DIAMETER, IN.		1			
DRILL ROD	DS NWJ									
				CASING I	HAMMER, LBS.		AVERAGE	E FALL, IN.		
				*SAMPLE	R HAMMER, LBS.	140	AVERAGE	E FALL, IN.	30	
				*USED A	UTOMATIC HAMM	ER.				
WATER L	EVEL OBS	SERVATIONS I	N BOREHOLI	<u> </u>						
		DEPTH OF	DEPTH OF	DEPTH TO						
DATE	TIME	HOLE	CASING	WATER		CONDITIONS OF OBSERVATION				
					NO	WATER LEV	EL OBSEF	RVATIONS MAD	E.	
			YES							
	л г .									
						СТП, ГТ. СТП ЕТ				
				OD, IN.		отн ет				
FILIER.				OD, IN.		GIN, FI.				
				40						
				10	0.01 3 UNDISTURDED SAMFLES					
OUKE DRI	LLING IN RU			10	UTTER.			<u> </u>		
BORING	CONTRAC	TOR				TESTING				
	CONTINAC				HEIPERS		JO., INO.			
REMARK	s		DOMINION)N			
RESIDEN		FR						04 (29-15	
							DATE	04-2	-0-10	
				_ 0. 10000		JIX	BU		M-1/A	
WINGE FORM B	0-1						BU			

PROJECT: LOCATION: WEST 18TH - WEST 19TH STREET/10TH AVENUE NEW YORK, NEW YORK

M-15 **BORING NO.** 4 SHEET 1 OF 12320 FILE NO. SURFACE ELEV. +10.0± RES. ENGR. L. LINCOLN/N. SEGUIN

DAILY	SAMPLE		PLE				CASING	
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	BLOWS	REMARKS
11:30	1D	0.0	61-9	Black fine to coarse sand, some gravel, silt,	**	0.25	DRILLED	**Asphalt from 0' to
04-19-15		2.0	7-16	trace brick (Fill) (SM)			AHEAD	0.25'.
Sunday	2D	2.0	13-9	Black brown fine to medium sand, some			4"	Petroleum odor.
Clear	Clear 4.0		22-34	gravel, silt, trace brick (Fill) (SM)				
60°F	3D	4.0	2-6	Black fine to coarse sandy gravel, trace silt,		5		3D, 6D: REC=5"
		6.0	12-7	brick (Fill) (GP-GM)				
	4D	6.0	4-4	Black fine to coarse sand, some silt, trace				
		8.0	4-4	gravel (Fill) (SM)				
	5NR	8.0	9-5	No recovery		40		
	6D	10.0	1-1 \\\ _/1-2"	Plack find to coored come alow (SC)		10		
	00	12.0	1/12	Black line to coarse sand, some clay (SC)				
	7D	12.0	W/H/24"	Dark brown fine to medium sand trace silt	F			
	10	14.0	VVI 1/2-7	clavey silt seams (SP-SM)				
		14.0				15		
	8D	15.0	1-2	Black fine to coarse sand some gravel trace		10		RFC=3"
	00	17.0	1-4	silt (SP-SM)				1120-0
	17.0		-					
			-			20		
	9D	20.0	1-100/4"	Black fine to coarse sandy gravel, trace brick,				REC=4"
		22.0	-	silt (GP-GM)				
	10D	22.0	19-18	Brown fine to coarse sandy gravel, some silt				
		24.0	14-13	(GM)		24		
	11D	24.0	4-3	Brown silty fine sand varved with trace clayey	S	25		
		26.0	3-4	silt seams (SM)	0	26		
	12D	26.0	28-34	Brown fine sand, some silt varved with some	С			
		28.0	24-10	clayey silt (SM&ML)		28.5		
10:00	13D	28.0	4-12	Brown fine to coarse sandy gravel, trace silt				
04-20-15	4.45	30.0	8-7	(GP-GM)		30		
Monday	14D	30.0	6-4	Top: Red brown fine to coarse sand, some		31		Spoon sample split.
Rain		32.0	5-5	gravel, slit (SW) Bet: Bed brown fine to medium cond. come				
50°F			-	cit (SM)				
			-			35		
	15NR	35.0	4-5	No recovery				
	37.0 4-3		4-3	Noncovery				
		01.0						
			-					
			1		_	40		
	16D	40.0	2-3	Red brown fine sand, some silt (SM)	5			
		42.0	3-4					
						45		
	17D	45.0	6-5	Red brown silty fine sand (SM)				
		47.0	7-7					
			4			4.5		
						49		
	10	50.0				50	*	*Continent timet. 4
	TC	50.0		marg unweathered to slightly weathered gray	ĸ		-	Coring time at 4
		55.0	KQD=91%	gneissic schist, jointed to Majta, Fe & WJts				minutes per foot.
MRCE Form BL-1 BORING NO. M-15								

BORING LOG						BOR	ING NO.	M-15	
							ET 2 OF	4	
PROJECT: WEST 18TH			'EST 18TH -	WEST 19TH STREET/10TH AVENUE	FILE NO.			12320	
LOCATION:				NEW YORK, NEW YORK	SI	JRFAC	E ELEV.	+10.0±	
					1	RES	. ENGR.	L. LINCOLN/N. SEGUIN	
DAILY		SAM	PLE	_			CASING		
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	BLOWS	REMARKS	
Cont'd			-						
04-20-15			-						
Monday			-						
Rain			-			55			
50°F	20	55.0	REC-100%	Hard unweathered aray anelssic schist blocky	R	55	*	*Coring time at 1	
	20	60.0	ROD=97%	fiard driwedthered gray grielosic series, blocky				minutes per foot	
		00.0							
			-						
13:15			-			60		End of Boring at 60'.	
			_			_			
			-			65			
			-						
			-						
			-						
			-			70			
						10			
			-						
			-						
			-						
			-			75			
			_						
			-						
			-			80			
			-						
			-						
			-						
			-			85			
			-						
			-						
			-						
			-						
			-			90			
			_						
			_						
			4						
			-			05			
			4			90			
			-						
			-						
			-						
			-			100			
			4						
			-						


								BORING	NO.	M-1	5
								SHEET	4	OF	4
PROJEC [®]	т	WEST 18	STH - WI	EST 19	TH S	TREET/10TH	I AVENUE	FILE NO.	-	12320	
LOCATIC	DN		NE\	N YOR	K, NE	W YORK		SURFAC	E ELEV.	+1	0.0±
BORING	LOCATION	N	SEE BC	RING	LOCA	TION PLAN		DATUM		NAVD 8	8
BORING	EQUIPMEN	NT AND M	ETHODS	S OF ST	ABILI	ZING BOREH	DLE				
		TYPE	E OF FEE	D					1		
TYPE OF E	BORING RIG	DUR	ING CORI	NG		CASING L	ISED	Х	YES	NO	
TRUCK	Х	MEC	HANICAL			DIA., IN.	4	_DEPTH, FT	. FROM	T	O 50
SKID		HYD	RAULIC		Х	DIA., IN.		_DEPTH, FT	. FROM	Т	-o
BARGE		OTH	ER			DIA., IN.		_DEPTH, FT	. FROM	Т	-o
OTHER											
									1		
TYPE AN	D SIZE OF					DRILLING	MUD USED	Х	YES	NO	
D-SAMPLE	R <u>2" O.</u>	D. SPLIT SP	POON			DIAMETEI	R OF ROTARY BIT	, IN.		3-7/8	
U-SAMPLE	R					TYPE OF	DRILLING MUD			QUIK GE	L
S-SAMPLE	R								1		
CORE BAF	RREL NX D	OUBLE BAF	REL			AUGER U	SED		YES	X NO	
CORE BIT	NX D	IAMOND				TYPE AND	DIAMETER, IN.				
DRILL ROI	DS <u>NWJ</u>										
						*CASING	HAMMER, LBS.	140	AVERAG	E FALL, IN.	30
						*SAMPLEI	R HAMMER, LBS.	140	AVERAGI	E FALL, IN.	30
					. –	*USED AU		=R.			
WATERL											
DATE	TIME		0F			DEPTH TO WATER					
DATE	TIME	HOLL	-	U/UIII	0	WAIER	NO	WATERIEV			DE.
											52.
			I								
PIEZOME	ETER INST	ALLED	YE	S	X	NO SKE	TCH SHOWN C	ON			
					·1						
STANDPIP	E:	TYPE				ID, IN.	LENG	GTH, FT.		TOP ELEV.	
INTAKE EL	EMENT:	TYPE				OD, IN.	LENG	GTH, FT.	-	TIP ELEV.	
FILTER:		MATERIAL				OD, IN.	LENG	GTH, FT.	-	BOT. ELEV.	
									-		
PAY QUA	NTITIES										
3.5" DIA. D	RY SAMPLE	BORING	LIN	I. FT.		50	NO. OF 3" SHEL	BY TUBE SA	MPLES		
3.5" DIA. U	-SAMPLE BO	ORING	LIN	I. FT.			NO. OF 3" UNDIS	STURBED SA	AMPLES		
CORE DRI	LLING IN RC	ОСК	LIN	I. FT.		10	OTHER:				
BORING	CONTRAC	TOR				AQUIFE	R DRILLING &	TESTING (CO., INC.		
DRILLER			DOME	NIC PE	PE		HELPERS		GEOR	GE RAYMON	ID
REMARK	S				BO	REHOLE GRO	DUTED UPON C	OMPLETIC	DN.		
RESIDEN	IT ENGINE	ER		LYSAN	DRA L	INCOLN/NAT	HAN SEGUIN		DATE	04-	20-15
CLASSIFICATION CHECK:			CHERYL J. MOSS TYPING CHE					CK:	-		
MRCE Form BS-1							_		BO	RING NO.	M-15

			<u>BC</u>	DRING LOG		BOR	ING NO.	M-16
						SHE	ET 1 OF	2
PROJEC	T:	W	EST 18TH ·	WEST 19TH STREET/10TH AVENUE		F	ILE NO.	12320
LOCATIO	DN:			NEW YORK, NEW YORK	S	URFAC	E ELEV.	+12.0±
						RFS	FNGR	ALEXANDRA PATRONE
		SAM	PI F				CASING	
DRIET	NO				CTDATA	перти	BLOWS	DEMADKS
PROGRESS	10.		26 19	Brown fine to modium cand, come silt, trace	31KAIA **	02510	BLUWS	**Asphalt from 0' to
04 49 45		2.0	20.20	gravel concrete brick (Fill) (SM)	F	0.25		
04-18-15	20	2.0	20-20	Do 1D (Fill) (SM)		2		0.25.
Saturday	20	2.0	F0/2"					-
Clear	20	3.5	50/2	Red briek frogmente (Fill) (CD CM)		5		-
70°F	30	4.0	50/2	Red blick fragments (Fill) (GP-GW)	BRICK	5		-
		4.2			WALL			-
								Hord drilling to 9'
								Offect Pering
40.00						10		End of Poring of 10'
12:30	40	10.0	F0/2"			10		End of Borning at 10.
	4D	10.0	50/2					-
								-
								-
						15		-
						13		
								-
								-
								-
						20		-
						20		
								-
								-
						25		-
						23		
								-
								-
						30		
						50		
								-
						35		-
						40		-
								-
						45		
	<u> </u>							4
								4
								4
						50		4
								4
1								4

								BORING	NO.	M-1	6
								SHEET	2	OF	2
PROJEC	т	WEST 18	BTH - W	EST 19	9TH S	STREET/10TH	I AVENUE	FILE NO.		12320	
LOCATIC	ON		NE	W YOF	RK, NI	EW YORK		SURFAC	E ELEV.	+1	2.0±
BORING	LOCATIO	N	SEE B	ORING	LOC	ATION PLAN		DATUM		NAVD 8	8
DODINO			FTUOR	0 0 - 0							
BORING	EQUIPME			<u>SOFS</u>	IABILI	IZING BOREH	<u>JLE</u>				
									VEO		
	BURING RIG			RING			ISED				0
				L	v	DIA., IN.				i	0
SKID					~	DIA., IN.				i	0
	трас	0IH	EK			DIA., IN.	·			·'	0
OTTER		<u>N</u>									
TYPF AN	ID SIZE OF						MUD USED		YES	X NO	
D-SAMPLE	-R 2" 0.	D. SPLIT SE	POON			DIAMETE	R OF ROTARY BI	Г. IN.			
U-SAMPLE	= =R					TYPE OF		.,			
S-SAMPLE											
CORE BAF	CORE BARREL NX DOUBLE BA					AUGER U	SED		YES	X NO	
CORE BIT	CORE BARREL IN DOUBLE BA					TYPE ANI	DIAMETER, IN.				
DRILL ROD	DS										
						CASING H	IAMMER, LBS.		AVERAGE	E FALL, IN.	
						*SAMPLE	R HAMMER, LBS.	140	AVERAGE	E FALL, IN.	30
						*USED AL	TOMATIC HAMMI	ER.	_		
WATER L	EVEL OB	<u>SERVATIO</u>	NS IN E	BOREHO	DLE						
		DEPTH	OF	DEPTH	OF	DEPTH TO					
DATE	TIME	HOLE	Ξ	CASIN	IG	WATER		CONDITIO	NS OF OB	SERVATION	_
							NO	WATERLEN	/EL OBSEF	RVATIONS MAL	DE.
PIEZOME	ETER INST	ALLED	Y	ES	Х	NO SKI	TCH SHOWN	NC			
						1					
STANDPIP	PE:	TYPE				ID, IN.	LEN	GTH, FT.		TOP ELEV.	
INTAKE EL	EMENT:	TYPE				OD, IN.	LEN	GTH, FT.		TIP ELEV.	
FILTER:		MATERIAL				OD, IN.	LEN	GTH, FT.		BOT. ELEV.	
<u>PAY QUA</u>	<u>ANTITIES</u>										
3.5" DIA. D	RY SAMPLE	BORING	LI	N. FT.		10	NO. OF 3" SHEL	BY TUBE SA	AMPLES		
3.5" DIA. U	J-SAMPLE B	ORING	LI	N. FT.			NO. OF 3" UNDI	STURBED S	AMPLES		
CORE DRI	ILLING IN RO	DCK	LI	N. FT.			OTHER:				
BODINO		TOP						TESTINO			
			-00		חר	AQUIFE		TESTING	50., INC.		
REMARK	 		DOU		50						
RESIDEN		FR						\mathbf{X} ILLL \mathbf{D} .		04-	18-15
				CHER		MOSS				04-	10-10
MRCE Form BS-1				UNLI					RO		M-16
MILOL I UNIT D									50		

PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE SMPET 10 [L R0. 1220 DOCATION: SAMPLE New YORK, NEW YORK SURFACE ELEV. 1220 Provess NO. DEPTH BLOWSRE SAMPLE CASIMO Provess NO. DEPTH BLOWSRE SAMPLE DESCRIPTION STRATA DEPTH BLOWS REMARKS Provess NO. DEPTH BLOWSRE SAMPLE DESCRIPTION STRATA DEPTH BLOWS REMARKS Provess NO. DEPTH BLOWSRE SAMPLE DESCRIPTION STRATA DEPTH BLOWS REMARKS Provess NO. DEPTH BLOWSRE Strata Depth BLOWS REMARKS Samady ID 16-10 Top 4": Red brick fragments (GP-GM) G G ID 12.0 4-6 Bod 2: Black fine to coarse sand, some brick, fragments (GP-GM) G G G ID 12.0 4-6 Bod 2: Black fine to coarse sand, some brick, fragments (GM) G G G G G G G G G G G				BC	DRING LOG		BOR	ING NO.	M-16A
PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE NEW YORK, NEW YORK Surrance Telle NO. 12320 NEW YORK, NEW YORK Surrance Telle NO.						SHE	ET 1 OF	4	
LOCATION: NEW YORK, NEW YORK SURFACE ELEV. +12.0: Dept SAMPLE CASING American Local Accession American Local Accession Processes SAMPLE SAMPLE CASING CASING Permitting to the construction of the construlity fine to medium construction of the construction of the const	PROJEC	T:	W	EST 18TH	- WEST 19TH STREET/10TH AVENUE		F	ILE NO.	12320
DAV RES. ENGR. A PROPOSE UNCOUNT REQUENCE 2033 MO. DEPTH BLOWSIE* SAMPLE DESCRIPTION STRATA DEPTH BCONSIG REMARKS 2047813 Common Stratter DOI	LOCATIO	DN:			NEW YORK. NEW YORK	S	URFAC	E ELEV.	+12.0±
DOUCH SAMPLE SAMPLE DESCRIPTION STRATA DEPTH BLOWG REMARKS 06:01:15 1 1 0					- ,		RES	. ENGR.	A. PATRONE/L. LINCOLN/N. SEGUIN
PHODESSE NO. DEPTH BLOWSIF SAMPLE DESCRIPTION STRATA DEPTH BLOWSIC REMARKS 04:815 Bandby - <td< td=""><td>DAIL Y</td><td></td><td>SAM</td><td>PLE</td><td></td><td></td><td></td><td>CASING</td><td></td></td<>	DAIL Y		SAM	PLE				CASING	
12:20 10:20 10:00 <th< td=""><td>PROGRESS</td><td>NO</td><td>DEPTH</td><td></td><td>SAMPLE DESCRIPTION</td><td>STRATA</td><td>DEPTH</td><td>BLOWS</td><td>REMARKS</td></th<>	PROGRESS	NO	DEPTH		SAMPLE DESCRIPTION	STRATA	DEPTH	BLOWS	REMARKS
DP-19-15 Subcev 70°F Image: Construction of the construction of th	12:30		021111	820110/0		0110117			
Sendory Clear 70°F Image: Construct of the stand structure of the stand st	04-18-15								
Closer Display Display <thdisplay< th=""> <thdisplay< th=""> <thdi< td=""><td>Saturday</td><td></td><td></td><td></td><td></td><td></td><td></td><td>4"</td><td></td></thdi<></thdisplay<></thdisplay<>	Saturday							4"	
Description BRICK 5 70°F 10 10.0 16-10 10 10.0 16-10 Top 4": Red brick fragments (GP-GM) Bot 2": Black fine to medium sand, some organic silt (FII) (SM) Top 4": Red brick fragments (GP-GM) 14.40 20 46 Black fine to medium sand, some organic silt (FII) (SM) F 10 10, 4D: Petroleum odor. 14.40 22.0 5-14 Black fine to coarse sand, some brick, 22.0 F 22 F 14.40 22.0 14-25 Black to brown fine to coarse sand, some brick, 24.0 F 24.0 14-14 Black to brown fine to coarse sand, some gravel, 300.0 122.26 F 24 26.0 22.26 Brown fine to coarse sand, some gravel, 30.0 12.26 S 30 0.77.0 28.0 7.8 Brown silty fine to medium sand, trace gravel 30.0 12.7 S 30 100 40.0 16.14 Red brown coarse to fine sand, some gravel, trace silt (SP-SM) 35.5 V 38.5 110 45.0 17.16 Top: Red brown gravelly coarse to fine sand, (ML, SM) 50.0 10 45.0 110 45.0 <td>Clear</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Clear								
Ch Image: Constraint of the stand stan	70°F					BRICK	5		
Image: state of the s	101					WALL			
Image: start of the s									
Image: start of the s									
Image:									
1D 10. 40: Perroleum odor. 20 15.0 WH-1 Black fine to rearse sand, some silt (SM) 15. 15.0 WH-1 Black fine to coarse sand, some silt (SM) 22.0 15.0 WH-1 Black to brown fine to coarse sand, some brick, gravel, silt (Fill) (SM) 22.0 12.24 15.0 20. 12.24 12							10		Drilled ahead to 10'
12.0 12.0 14.6 Bot 2*: Black fine to medium sand, some organic silt (Fill) (SM) 0dr. 2D 15.0 17.0 WH-1 1-2 Black organic silty fine sand (SM) F 15 3D 20.0 WH-2 Black fine to coarse sand, some silt (SM) 22 F 15 14.40 22.0 5-14 Black to brown fine to coarse sand, some brick, gravel, silt (Fill) (SM) F 24 04-19-15 24.0 14-25 Black to brown fine to coarse sand, some brick, gravel, silt (Fill) (SM) F 24 04-19-15 24.0 14-25 Black to brown fine to coarse sand, some brick, gravel, silt (Fill) (SM) F 24 04-19-15 24.0 14-14 Black to brown, red brown silty fine to medium sand, trace gravel (SM) F 24 00-1 22.0 16-17 Brown silty fine sand (SM) S 30 33.5 90 35.0 7-14 Brown silty fine sand (SM) S 35 V 90 35.0 7-14 Brown fine sandy silt varved with some silty fine sand, trace gravel, frace silt (SP-SM) G 45 11D 45.0 17-16 To		1D	10.0	16-10	Top 4": Red brick fragments (GP-GM)				1D 4D. Petroleum
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01-30 -40 22.0 14-2.5 Diack to brown, red brown silty fine to medium sand, trace gravel (SM) 01-19-15 5D 24.0 124-14 Black to brown, red brown silty fine to medium sand, trace gravel (SM) F 24 Clear 20.0 22.20 8rown fine to coarse sand, some gravel, silt S 30 0/12-15 26.0 22.20 7.8 Brown silty fine to medium sand, trace gravel S 30 0/12 28.0 7.8 Brown silty fine to medium sand, trace gravel S 30 1 90 30.0 16-17 Brown silty fine sand (SM) Brown silty fine sand (SM) V 33.5 V 9D 35.0 7-14 Brown fine sandy silt varved with some silty fine 38.5 36 V 10D 40.0 16-14 Red brown coarse to fine sand, some gravel, trace silt (SP-SM) 38.5 40 45 11D 45.0 17-16 Top: Red brown gravelly coarse to fine sand, trace silt (SP-SM) 45 46 11D 45.0 12-14 Red brown fine sandy silt, trace gravel (ML) EC=2" 50 REC=2" MICCE Form BL-1 <td>14:40</td> <td></td> <td>22.0</td> <td>14 25</td> <td>Black to brown find to coarse sand, some brick</td> <td></td> <td>~~~~</td> <td></td> <td></td>	14:40		22.0	14 25	Black to brown find to coarse sand, some brick		~~~~		
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Subary Sub_24.0 14-14 black to Drown, red brown sity line to medulin sand, trace gravel (SM) GerF 6D 26.0 22-26 Brown sity fine to coarse sand, some gravel, sit S 30 7D 28.0 38-21 (SM) 7D 28.0 7-8 Brown sity fine to medium sand, trace gravel (SM) S 30.0 12-26 (SM) Brown sity fine sand (SM) S 30 9D 35.0 7-14 Brown fine sandy sit varved with some silty fine S 30.5 9D 35.0 7-14 Brown fine sandy sit varved with some silty fine S 33.5 9D 35.0 7-14 Brown coarse to fine sand, some gravel, trace sit (SP-SM) 38.5 10D 40.0 16-14 trace sit (SP-SM) G 45 11D 45.0 17-16 Top: Red brown clayey sit, some fine sand, trace gravel (ML) 45 11D Bot: WC=27 11D 45.0 12:14 Red brown fine sandy sit, trace gravel (ML) 70 11D Bot: WC=27 11D 52.0 12:14 Red brown fine sandy sit, trace gravel (ML) 70 10	04-19-15	50	24.0	90-00	Black to brown rad brown silty fing to madium		24		
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607 60 28.0 38-21 (SM) 90.0 12-26 (SM) Brown silty fine to medium sand, trace gravel S 30.0 8D 30.0 16-17 Brown silty fine sand (SM) Brown silty fine sand (SM) S 30.0 9D 35.0 7-14 Brown fine sandy silt varved with some silty fine S 33.5 V 9D 35.0 7-14 Brown fine sandy silt varved with some silty fine S 38.5 V 10D 40.0 16-14 Red brown coarse to fine sand, some gravel, trace silt (SP-SM) G 445 11D 45.0 17-16 Top: Red brown clayey silt, some fine sand, trace gravel (ML) V 50 12D 50.0 12-14 Red brown fine sandy silt, trace gravel (ML) V 50 MICE Form BL-1 MCCE form BL-1 BORING NO. M-16A	Clear	6D	20.0	23-19	Sand, trace graver (Sivi)				
10 28.0 7-8 Brown silty fine to medium sand, trace gravel (SM) S 30 10 20.0 12-26 (SM) Brown silty fine sand (SM) S 30 10 32.0 20-29 Brown silty fine sand (SM) S 33.5 35 9D 35.0 7-14 Brown fine sandy silt varved with some silty fine V 33.5 35 9D 35.0 7-14 Brown fine sandy silt varved with some silty fine V 33.5 35 V 100 40.0 16-14 Red brown coarse to fine sand, some gravel, trace silt (SP-SM) G 40 45 110 45.0 17-16 Top: Red brown gravelly coarse to fine sand, trace silt (SP-SM) 46 110 46 110 45.0 17-16 Top: Red brown clayey silt, some fine sand, (ML) 110 Bot: WC=27 50 8 8 110 Bot: WC=27 110 52.0 12-14 Red brown fine sandy silt, trace gravel (ML) 50 110 Bot: WC=27 50 8 112D 50.0 12-14 Red brown fine sandy silt, trace gravel (ML) 50 8 8 8 <td>60°F</td> <td>60</td> <td>20.0</td> <td>22-20</td> <td>Brown line to coarse sand, some gravel, slit</td> <td></td> <td></td> <td></td> <td></td>	60°F	60	20.0	22-20	Brown line to coarse sand, some gravel, slit				
1/D 28.0 1/2-26 (SM) 30.0 12-26 (SM) 30.0 16-17 Brown silty fine sand (SM) 32.0 20-29 Brown silty fine sandy (SM) 9D 35.0 7-14 37.0 15-19 Brown fine sandy silt varved with some silty fine 37.0 15-19 10D 40.0 10D 40.0 14-13 Red brown coarse to fine sand, some gravel, trace silt (SP-SM) 11D 45.0 17.16 Top: Red brown gravely coarse to fine sand, trace gravel (ML) 12D 50.0 12D 50.0 12D 50.0 12D 50.0 12D 12-14 Red brown fine sandy silt, trace gravel (ML) MRCE Form BL-1 BORING NO.		70	28.0	38-21	(SIVI) Brown silty fine to medium could trace group	_			
Image: State of the state		70	20.0	7-0	Brown sitty line to medium sand, trace graver	S	20		
32.0 20-29 Brown Sinty fine sand (SM) 9D 35.0 7-14 9D 35.0 7-14 10D 40.0 16-14 10D 40.0 16-14 10D 40.0 16-14 10D 40.0 16-14 11D 45.0 17-16 11D 45.0 17-16 11D 45.0 17-16 12D 50.0 12-14 12D 50.0 12-14 Red brown fine sandy silt, trace gravel (ML) 11D Bot: WC=27 V 50 REC=2"		00	30.0	12-20	(SIVI) Brown ciltur fine cand (SM)		30		
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Image: Sector of the sector			32.0	20-29					
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Image: Constraint of the stand stan			37.0	15-19	sand (ML&SM)				
Image: Section of the section of th							20 E		
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10D 40.0 10-14 Red brown coarse to line sand, some gravel, trace silt (SP-SM) 42.0 14-13 trace silt (SP-SM) G 11D 45.0 17-16 Top: Red brown gravelly coarse to fine sand, trace silt (SP-SM) 45 11D 45.0 17-16 Top: Red brown gravelly coarse to fine sand, trace silt (SP-SM) 46 47.0 19-26 Bot 12": Red brown clayey silt, some fine sand (ML) 50 11D Bot: WC=27 12D 50.0 12-14 Red brown fine sandy silt, trace gravel (ML) ERC=2" MRCE Form BL-1 BORING NO. M-16A		100	40.0	10.14	Ded brown accres to fine cond, come arrowal		40		
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Image: Constraint of the stand of the s			42.0	14-13	trace slit (SP-SM)	G			
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47.0 19-26 trace silt (SP-SM) Bot 12": Red brown clayey silt, some fine sand (ML) 11D Bot: WC=27 12D 50.0 12D 52.0 15-21 Red brown fine sandy silt, trace gravel (ML) MRCE Form BL-1 BORING NO.		11D	45.0	17-16	Top: Red brown gravelly coarse to fine sand,		46		
Bot 12": Red brown clayey silt, some fine sand (ML) V 11D Bot: WC=27 12D 50.0 12-14 Red brown fine sandy silt, trace gravel (ML) REC=2" MRCE Form BL-1 BORING NO. M-16A			47.0	19-26	trace silt (SP-SM)				
Image: MRCE Form BL-1 Image: MIL between the standy silt, trace gravel (ML) V 50 MRCE Form BL-1 12-14 15-21 Red brown fine sandy silt, trace gravel (ML) Image: MIL between the standy silt, trace gravel (ML) Image: MIL between the standy silt, trace gravel (ML)					Bot 12": Red brown clayey silt, some fine sand		L		TID BOT: WC=27
12D 50.0 12-14 Red brown fine sandy silt, trace gravel (ML) 50 REC=2" MRCE Form BL-1 BORING NO. M-16A					(IVIL)	V	50		
12D 50.0 12-14 Red brown fine sandy slit, trace gravel (ML) REC=2" MRCE Form BL-1 BORING NO. M-16A		405	50.0	40.44			50		
bit S2.0 15-21 BORING NO. M-16A		12D	50.0	12-14	Red brown fine sandy slit, trace gravel (ML)		L		KEC=2"
MRCE Form BL-1 BORING NO. M-16A			52.0	15-21					
	MRCE Form BL	1					BORI	NG NO.	M-16A

			BO	RING LOG	BORING NO			M-16A
						SHE	ET 2 OF	4
PROJEC	T:	W	EST 18TH -	WEST 19TH STREET/10TH AVENUE		F	ILE NO.	12320
LOCATIC	DN:		1	NEW YORK, NEW YORK	S	URFAC	E ELEV.	+12.0±
						RES	. ENGR.	A. PATRONE/L. LINCOLN/N. SEGUIN
DAILY		SAM	PLE				CASING	
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	SIRAIA	DEPTH	BLOWS	REMARKS
Cont'd								
Sunday								
Clear					V			
60°F						55		
14:30	13D	55.0	11-15	Red brown clayey silt varved with silt, some		56		
11:50		56.5	21-50/2"	fine sand (ML&SM)	**	56.5	*	**Till from 56' to 56.5'.
04-20-15	1C	56.5	REC=100%	Hard slightly weathered to unweathered gray			*	*Coring time in 2
Monday		61.5	RQD=84%	gneissic schist, trace pegmatite, blocky		60		minutes per foot.
Rain						00		
55°F	2C	61.5	REC=100%	Hard slightly weathered to unweathered grav	R		*	*Coring time in 7
		64.8	RQD=93%	pegmatite, trace gneissic schist, jointed				minutes per foot.
	3C	64.8	REC=100%	Hard slightly weathered to unweathered gray		65	*	*Coring time in 10
13:25		66.5	RQD=76%	pegmatite, moderately jointed		<u>сс г</u>		minutes per foot.
						66.5		End of Boring at 66.5'.
								WC-Water Content
						70		in percent of dry
								weight.
						75		
						80		
						85		
						05		
						90		
						95		
						400		
						100		
1	1				1	1	1	1



						BORING I	NO.	M-1	6A
						SHEET	4	OF	4
PROJECT	Г	WEST 18TH -	WEST 19TH	STREET/10TH	I AVENUE	FILE NO.		12320)
LOCATIO	N	1	IEW YORK,	NEW YORK		SURFACE	E ELEV.	+	12.0±
BORING	LOCATION	SEE	BORING LO	CATION PLAN		DATUM		NAVD 8	38
BURING	EQUIPMEN		<u>105 OF 51AB</u>	ILIZING BUREH	<u>JLE</u>				
					ISED	Y	VES	NO	
TRUCK		MECHANIC			4		FROM	0 .	TO 35
SKID			∩				FROM		TO <u>35</u>
BARGE			• <u> </u>			DEPTH FT	FROM		то <u></u>
OTHER	TRACI	0111EIX					. 1 1001		
0									
TYPE AN	D SIZE OF	:		DRILLING	MUD USED		YES	X NO	
D-SAMPLE	R 2" O.	D. SPLIT SPOON		DIAMETEI	R OF ROTARY BI	T, IN.	1		
U-SAMPLE	R			TYPE OF	DRILLING MUD				
S-SAMPLE	R								
CORE BAR	REL NX D	OUBLE BARREL		AUGER U	SED		YES	X NO	
CORE BIT	NX D	IAMOND		TYPE AND	DIAMETER, IN.				
DRILL ROD	DS NWJ								
				*CASING	HAMMER, LBS.	140	AVERAGE	E FALL, IN.	30
				*SAMPLEI	R HAMMER, LBS.	140	AVERAGE	E FALL, IN.	30
				*USED AU	JTOMATIC HAMM	ER.			
WAIERL	EVEL OBS	SERVATIONS IN	BOREHOLE						
DATE	TIME	DEPTH OF HOLE		DEPTH TO WATER		СОМПІТІО		SERVATION	
DATE		HOLL	CAGING	WATER	NO	WATERIEV		RVATIONS MA	DE
			1						
PIEZOME	TER INST	ALLED	YES X		ETCH SHOWN (ON			
	с.	TVDE							
						GTH FT			
FII TER						GTH FT		BOT FLEV	
				00,		011,111			. <u></u>
PAY QUA	NTITIES								
3.5" DIA. D	RY SAMPLE	BORING	LIN. FT.	56.5	NO. OF 3" SHEL	BY TUBE SA	MPLES		
3.5" DIA. U-	-SAMPLE BO	ORING	LIN. FT.		NO. OF 3" UNDI	STURBED S	AMPLES		
CORE DRI	LLING IN RC	ОСК	LIN. FT.	10	OTHER:				
BORING	CONTRAC	TOR		AQUIFE	ER DRILLING &	TESTING C	CO., INC.		
DRILLER		D	OUG WOOD		HELPERS				
REMARK	S		E	BOREHOLE GRO	DUTED UPON C	OMPLETIC	DN.		
RESIDEN	IT ENGINE	ER ALEXA	NDRA PATRON	E/THERESA SAND	DIFORD/NATHAN	SEGUIN	DATE	04	-20-15
CLASSIFI	ICATION C	HECK:	CHERYL	J. MOSS	TYPING CHE	CK:			
MRCE Form BS	S-1						во	KING NO.	M-16A

PROJECT: LOCATION:

WEST 18TH - WEST 19TH STREET/10TH AVENUE NEW YORK, NEW YORK

M-17 **BORING NO.** 4 SHEET 1 OF 12320 FILE NO. SURFACE ELEV. +11.0±

RES. ENGR. A. PATRONE/L. LINCOLN

DAILY		SAM	PLE				CASING	
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	BLOWS	REMARKS
08:30					**	0.25	DRILLED	**Asphalt from 0' to
04-18-15	1D	1.0	10-12	Black, gray, red, medium to fine sand, some			AHEAD	0.25'.
Saturday		3.0	19-32	brick, gravel, concrete, tr silt (Fill) (SP-SM)			4"	Petroleum odor from
Clear	2D	3.0	10-10	Black gravel, some fine to coarse sand, trace				0' to 35'.
70°F		5.0	8-12	silt (GP-GM)		5		2D, 11D: REC=6"
	3NR	5.0	7-8	No recovery				
		7.0	6-8					
	4D	7.0	5-3	Gray medium to fine sand, some silt, trace				
		9.0	4-4	gravel, brick (Fill) (SM)				
	5D	9.0	12-7	Gray fine to medium sand, some silt, trace		10		
		11.0	5-4	coarse sand, gravel (SM)	F			
	6D	11.0	4-2	Gray fine to coarse sand, some gravel, silt,				
		13.0	5-5	trace coarse sand (SM)				
						15		
	7NR	15.0	4-2	No recovery				
		17.0	4-9					
	8D	17.0	2-2	Black to red gravel & brick, trace fine to coarse				REC=2"
		19.0	5-8	sand, silt (Fill) (GP)				
						20		
	9D	20.0	5-50/2"	Black to red fine to coarse sand, trace brick,		20.5		Refusal at 20.8'.
		20.8		gravel, silt (Fill) (SP-SM)	CONC			Refusal at 22'.
	1CNR	20.8	REC=0%	No recovery	CONC			
		21.5				23		Drill ahead to 23'; rods
	10D	21.5	100/6"	Do 9D (Fill) (SP-SM)		25		drop.
		22.0						
	11D	23.0	13-19	Brown coarse to fine sand, some gravel, trace				REC=6"
	100	25.0	15-10	brick, concrete, silt (Fill) (SP-SM)	_			Safety hammer used
	12D	25.0	29-31	Black fine to medium sand, some gravel, trace	F			for Sample 12D.
	400	27.0	12-28	silt, coarse sand (Fill) (SP-SM)		30		
	13D	27.0	17-29	Brown black fine to medium sand, some slit,				
		29.0	12-12	trace coarse sand, gravel (SM)		22		
	14NR	29.0	12-10	No recovery		33		
		31.0	11-13			25		Switch mud at 25!
	150	25.0	77	Red brown fine cond, come cilt (CM)		30		Switch mud at 55.
44:00	150	27.0	0 1 2	Red brown line sand, some sin (Sivi)				
14:00		37.0	0-12					
07.00			-					
Sunday			-			40	-	
Clear	16D	40.0	4-5	Red brown silty fine to medium sand (SM)	^	40	•	
60°F	100	42.0	6-7		5			
001		42.0	07					
			-					
			-			45		
	17D	45.0	4-7	Do 16D varved with trace clavey silt (SM)				
		47.0	9-13					
								Hard drilling at 48'.
			1			48.5		
			1			50		
	1C	50.0	REC=100%	Medium hard to intermediate slightly weathered	R			
		55.0	RQD=52%	gray gneissic schist, jointed to broken, Fe & WJts	s			
						BODI		M 17

			BO	RING LOG		BOR	ING NO.	M-17
						SHE	ET 2 OF	4
PROJEC	T:	W	'EST 18TH -	WEST 19TH STREET/10TH AVENUE		F	ILE NO.	12320
LOCATIC	DN:		1	NEW YORK, NEW YORK	S	URFAC	E ELEV.	+11.0±
	r			1		RES	. ENGR.	A. PATRONE/L. LINCOLN
DAILY		SAM	PLE				CASING	
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	BLOWS	REMARKS
Cont'd			1					
04-19-15			-					
Sunday			-					
Clear			-			55		
60 F	20	55.0	RFC=100%	Intermediate to medium bard slightly weathered	R	- 55		
	20	60.0	RQD=48%	grav gneissic schist, broken to jointed, iron				
				stained & weathered joints				
				,				-
09:30						60		End of Boring at 60'.
			1					
			_					
			-					
			-					
			-			65		•
			-					
			-					
			-					
			-			70		
			-					
			-					
						75		
			4					
			-					
			-					-
			-			00		
			-			00		
			-					
			-					
			-					
						85		
]					
			_					
			-					
			-					-
			-			90		
			-					
			1					
			-					
			1			95		
			1					
			-					
						100		
			-					
	1		1		1	1	1	1



						BORING	NO.	M-17	,	
						SHEET	4	OF	4	
PROJECT	г	WEST 18TH	- WEST 19TH	H STREET/10TH	H AVENUE	FILE NO.		12320		
LOCATIO	N		NEW YORK,	NEW YORK		SURFAC	E ELEV.	+11.0±		
BORING	LOCATION	SEE	BORING LO	DCATION PLAN		DATUM		NAVD 88		
BORING I	EQUIPMEN	NT AND METH	ODS OF STAE	BILIZING BOREH	OLE					
		TYPE OF	FEED		1055	Ň				
TYPE OF B			CORING	CASING	JSED		YES			
TRUCK	X	MECHAN		DIA., IN.	4				0 <u>40</u>	
SKID				X DIA., IN.				I() 	
	·	OTHER		DIA., IN.			. FROM	1		
UTHER	·									
TYPE AN	D SIZE OF					X	YES	NO		
	R 2" 0	D. SPLIT SPOON	d	DIAMETE	R OF ROTARY BIT		120	3-7/8		
U-SAMPLE	R <u>20.</u>		•	TYPE OF		,				
S-SAMPLE	R							Quintinob		
CORE BAR	REL NX D	OUBLE BARREL		AUGER U	SED		YES	X NO		
CORE BIT	NX D	IAMOND		TYPE AN	D DIAMETER, IN.] _			
DRILL ROD	DS NWJ									
				*CASING	HAMMER, LBS.	140	AVERAG	E FALL, IN.	30	
				*SAMPLE	R HAMMER, LBS.	140	AVERAG	E FALL, IN.	30	
				*USED AL	JTOMATIC HAMME	R.	=			
WATER L	EVEL OBS	ERVATIONS I	N BOREHOLE	<u> </u>						
		DEPTH OF	DEPTH OF	DEPTH TO						
DATE	TIME	HOLE	CASING	WATER		CONDITIO	NS OF OB	SERVATION		
					NO	WATER LEV	EL OBSE	RVATIONS MAD	Ε.	
			VES			м				
	E.	TVPE			LENG	STH FT				
						GTH FT				
						GTH FT		BOT FLEV		
TIETER.				000, 111		0111,111				
PAY QUA	NTITIES									
3.5" DIA. D	RY SAMPLE	BORING	LIN. FT.		NO. OF 3" SHEL	BY TUBE SA	MPLES			
3.5" DIA. U	-SAMPLE BO	ORING	LIN. FT.		NO. OF 3" UNDIS	STURBED S	AMPLES			
CORE DRI	LLING IN RC	OCK	LIN. FT.		OTHER:		-			
			···							
BORING	CONTRAC	TOR		AQUIFI	ER DRILLING &	TESTING (CO., INC.			
DRILLER			GUS SURI		HELPERS		SCO	TT ODWYER		
REMARK	s									
RESIDEN		ER	ALEXANDRA	A PATRONE/LYS	ANDRA LINCOLI	N	DATE	04-1	9-15	
CLASSIFI	ICATION C	HECK:	CHERYL	J. MOSS	TYPING CHEC	CK:	-			
MRCE Form BS	S-1						BO	RING NO.	M-17	

PROJECT: LOCATION: WEST 18TH - WEST 19TH STREET/10TH AVENUE NEW YORK, NEW YORK

4 SHEET 1 OF 12320 FILE NO.

M-18

SURFACE ELEV. +10.5±

BORING NO.

						<u>RE</u> S	ENGR.	A. PATRONE/L. LINCOLN
DAILY		SAM	PLE				CASING	
PROCRESS	NO		BLOW/S/6"	SAMPLE DESCRIPTION	STRATA	ПЕРТЦ	BLOW/S	REMARKS
PROGRESS	40.		02.45	Discluting to madium cond. come grouple silt	**	0.25		
08:20	тD	0.0	33-15	Diack line to medium sand, some graver, sit,		0.25	DRILLED	
04-18-15		2.0	20-14	trace brick, concrete (Fill) (SM)			AHEAD	0.25
Saturday	2D	2.0	15-16	Red to black fine to coarse sand, some brick,			5"	Petroleum odor from
Clear		4.0	12-14	gravel, silt (Fill) (SM)				0' to 35'.
70°F	3D	4.0	8-11	Red to green fine to coarse sand, some gravel,		5		
		6.0	6-7	brick, silt (Fill) (SM)				1
	4D	6.0	15-9	Black to grav fine to medium sand some gravel				
		0.0 0.0	66	cilt (Eill) (SM)				-
	50	0.0	0-0					
	วบ	8.0	6-6	Gray line to coarse sandy gravel, trace wood,		40		5D, 7D: REC=2
		10.0	11-3	siit (Fiii) (GP-GM)	F	10		
	6D	10.0	2-11	Gray fine to coarse sand, some gravel, trace	Г			6D, 12D: REC=6"
		12.0	11-4	silt (Fill) (SP-SM)				
						15		-
	70	15.0	0.1	Crow to rad growal & briak same find to approa		10		4
	10	15.0	9-1	Gray to red graver & blick, some line to coarse				-
		17.0	1-6	sand, trace slit (Fill) (GP-GM)				-
						20		Free phase (internal)
	8D	20.0	1/12"	Black fine to medium sand, some silt, organic				from 20' to 22'.
	02	22.0	24-45	silty clay layer, trace grayel (SM&OH)	M/S			Contaminated at hot-
	00	22.0	24-43	Tan Olle Drown for good some silt (OM)		22.2		tom of tonk from 201 to
	90	22.0	64-30	Top 2 : Brown I-m sand, some slit (SW)		22.3		tom of tank from 20 to
		24.0	21-44	Bot 22": Brn f-c sand, tr gvl, brk, si (Fill) (SP-SM)				22.3
	10NR	24.0	5-6	No recovery		25		
		26.0	9-11					
	11D	26.0	15-15	Black fine to medium sand, some gravel, trace				
		28.0	19-30	silt, coarse sand (Fill) (SP-SM)	_			
	12D	28.0	30-12	Black fine to coarse sand some gravel trace	F			-
	120	20.0	15 14	brick silt (Fill) (SD SM)		20		-
	400	30.0	10-14	Direct, Sill (Fill) (SF-Sivi) D_{1}		30		
	13D	30.0	22-18	D0 13D (FIII) (SP-SM)				Switch mud; drum
		32.0	12-13					cuttings.
						33.5		
						35	•	
	14D	35.0	3-3	Red brown fine sand, some silt (SM)				1
		37.0	3-4					-
		07.0	0 4					-
								-
								-
						40		
	15D	40.0	2-2	Do 14D (SM)				
		42.0	3-4		S			
								-
						15		-
	400	45.0	0.0			40		-
	16D	45.0	2-2	D0 14D (SM)				
		47.0	4-3					
								Mica in return at 49.5'.
								***Decomposed rock
					***	49.5		from 49.5' to 50'.
	17D	50.0	50/0"	Gray micaceous fine to medium sand trace				
14.00		00.0	00/0	silt (Decomposed Rock) (SP-SM)	R			-
14:00					1			

WEST 18TH - WEST 19TH STREET/10TH AVENUE LOCATION: NEW YORK, NEW YORK

M-18 **BORING NO.** 4 SHEET 2 OF 12320 FILE NO. SURFACE ELEV. +10.5±

						RES	. ENGR.	A. PATRONE/L. LINCOLN
DAILY		SAM	PLE				CASING	
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	BLOWS	REMARKS
07:00							3^	*Coring time in
04-19-15	1C	50.5	REC=95%	Hard unweathered gray gneissic schist, jointed			2^	minutes per foot.
Sunday		55.5	RQD=92%	to moderately jointed, iron stained joints			2^	
Clear							3^	-
60°F					Б	55	3*	
	2C	55.5	REC=100%	Hard unweathered gray gneissic schist, blocky	n		2^	
		60.5	RQD=88%				2^	
							2*	
						~~~	2*	
09:15						60	Ζ	
	-					60.5		End of Boring at 60.5'.
						65		
								-
								-
						70		
						70		
								-
						75		-
						75		
								-
								-
								-
								-
						80		
								-
								-
						05		
						85		
						00		
						90		
						05		
						30		
						100		
						100		

PROJECT:



							BORING	NO.	M-18	3
							SHEET	4	OF	4
PROJECT	Г ^г	WEST 18T	H - WEST 1	9TH S	TREET/10TH	I AVENUE	FILE NO.	-	12320	
LOCATIO	N		NEW YO	RK, NI	EW YORK		SURFAC	E ELEV.	+10	0.5±
BORING I		s S	EE BORING	S LOC	ATION PLAN		DATUM		NAVD 88	3
BORING E		NT AND MET	THODS OF S	TABILI	ZING BOREH	DLE				
		TYPE (	OF FEED					1		
TYPE OF B	ORING RIG	DURIN	G CORING		CASING U	SED	Х	YES	NO	
TRUCK	Х	MECHA			DIA., IN.	5	_DEPTH, FT	. FROM	T(	O 35
SKID		HYDRA		Х	DIA., IN.		_DEPTH, FT	. FROM	Т(	D
BARGE		OTHER			DIA., IN.		_DEPTH, FT	. FROM	Т(	D
OTHER										
								1		
TYPE ANI	J SIZE OF	:			DRILLING	MUD USED	Х	YES	NO	
D-SAMPLE	R <u>2" O.</u>	D. SPLIT SPC	ON		DIAMETER	R OF ROTARY BIT	, IN.		3-7/8	
U-SAMPLE	R				TYPE OF	DRILLING MUD				
S-SAMPLE	R							l <b></b> -		
CORE BAR	REL NX D	OUBLE BARR	EL		AUGER U	SED		YES	X NO	
CORE BIT	NX D	IAMOND			TYPE AND	DIAMETER, IN.				
DRILL ROD	S NWJ				*****					
					*CASING I	HAMMER, LBS.	140	AVERAG	E FALL, IN.	30
					*SAMPLE	R HAMMER, LBS.	140	AVERAG	E FALL, IN.	30
					*USED AU		=R.			
WATERL	EVELOBS	DERVATION								
DΔTE	TIME				WATER					
DATE		HOLL	UA01		WATER	NO	WATERIEV			F
										L.
PIEZOME	TER INST.	ALLED	YES	Х	NO SKE	TCH SHOWN C	N			
STANDPIPI	E:	TYPE			ID, IN.	LEN	GTH, FT.		TOP ELEV.	
INTAKE EL	EMENT:	TYPE			OD, IN.	LEN	GTH, FT.		TIP ELEV.	
FILTER:		MATERIAL			OD, IN.	LEN	GTH, FT.		BOT. ELEV.	
PAY QUA	NTITIES									
3.5" DIA. DI	RY SAMPLE	BORING	LIN. FT.			NO. OF 3" SHEL	BY TUBE SA	MPLES		
3.5" DIA. U-	SAMPLE BO	ORING	LIN. FT.			NO. OF 3" UNDI	STURBED S	AMPLES		
CORE DRIL	LING IN RC	DCK	LIN. FT.			OTHER:				
	-									
BORING (	CONTRAC	TOR			AQUIFE	R DRILLING &	TESTING (	CO., INC.		
DRILLER	-	_	DOMENIC F	PEPE		HELPERS		GEOR	GE RAYMONI	)
REMARK	S			BC	REHOLE GRO	UTED UPON C	OMPLETIC	DN.		
RESIDEN		ER	ALEXAN	DRA P	ATRONE/LYS/	NDRA LINCOL	N	DATE	04-1	19-15
CLASSIFI	CATION C	HECK:	CHE	MOSS	TYPING CHEC	CK:	-			
MRCE Form BS	S-1	—				_		BO	RING NO.	M-18

		BO		BOR	ING NO.	M-19		
						SHE	ET 1 OF	4
PROJEC	T:	W	EST 18TH -	WEST 19TH STREET/10TH AVENUE		F	FILE NO.	12320
LOCATIC	DN:		1	NEW YORK, NEW YORK	S	URFAC	E ELEV.	9.8±
	-				_	RES	6. ENGR.	TERESA SANDIFORD
DAILY PROGRESS	NO.	SAMI DEPTH	PLE BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	CASING BLOWS	REMARKS
05-15-15 Eridov							AHEAD	5'.
Cloudy						-	4	Cuttings & drill water
60°F						5		contaminated from 0'
								to 30'.
								from 6' to 18'.
					F	10		
								Hard drilling at 16' to
						4.5		16.9'. Mud shows
						15		white specs. Possible foundation
								mat.
	1D	18.0	6-5	Brown fine to coarse sand, some gravel, trace		18		
		20.0	5-4	silt (SP)		20		
	2D	20.0	5-5	Do 1D (SP)				
	3D	22.0	4-5 3-4	Brown fine to coarse sand, trace gravel, silt (SP)	_			REC=2"
	02	24.0	5-5		S			
	4D	24.0	2-3 3-5	Brown silty fine sand, trace mica (SM)		25		
	5D	26.0	3-4	Do 4D (SM)				
	6D	28.0	5-8	Pad brown & brown ailt, come fine cond (ML)		28		-
	00	30.0	8-14	Red brown & brown sitt, some line sand (ML)		30	•	
						35		
								-
						40		
						45		
						46		Chunky drilling at 46'.
	4.0	47.0		Manthana handa takat sa sa kasa ka			*	*Coring time from
	1C	47.0	ROD-78%	inveature nara slightly weathered to unweathered				13:22 to 13:37 at 3
		52.0		weathered joints	R	50		
					1			

M-19

#### PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE LOCATION: NEW YORK, NEW YORK

 BORING NO.
 M-19

 SHEET 2 OF
 4

 FILE NO.
 12320

 SURFACE ELEV.
 9.8±

	1			1		RES	. ENGR.	IERESA SANDIFORD
DAILY		SAM	PLE				CASING	
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	BLOWS	REMARKS
Cont'd			-					
05-15-15 Eridov	20	52.0	REC-97%	Hard unweathered arey anelissic schist to			*	*Coring time from
Cloudy	20	57.0	ROD-92%	schistose aneiss moderately jointed	R			13.50 to 14.15 at 5
60°F		07.0	NQD=0270	senistese grielss, moderately jointed		55		minutes per foot
								Note: Rig pressure
14:15			-			57		inconsistant.
								End of Boring at 57'.
						60		
			-					
			-					
			-			65		
						00		
			-					
			-					
						70		
			-					
			-					
						75		
						75		
			-					
			-					
						80		
			-					
						05		
						65		
			-					
						90		
			-			05		
						95		
						100		
			4					
			1					



BOR-3_JAN2013

									BORING	NO.	M-	19	
									SHEET	4	OF	4	
PROJEC	т	WES	ST 18	TH -	WEST 19	eth S	STREET/10TH	I AVENUE	FILE NO.		12320		
LOCATIC	DN			Ν	IEW YOF	rk, NI	EW YORK		SURFACE	E ELEV.		9.8±	
BORING	LOCATI			SEE	BORING	LOC	ATION PLAN		DATUM		NAVD 8	38	
BORING	EQUIPIN	<u>IENTAI</u>				IABILI	IZING BOREH	JLE					
									V	VES			
		xiG x	MEC					A A		FROM		TO 30	
SKID		^			C	v		4				TO <u>30</u>	
BARGE						Λ				FROM		TO	
OTHER			_0111	_1			DIA., IN.				. <u></u>		
			-							_			
TYPE AN	ID SIZE	OF:					DRILLING	MUD USED	Х	YES	NO		
D-SAMPLE	R <u>2</u> "	0. D. SF	PLIT SF	POON			DIAMETER	R OF ROTARY BIT	Γ, IN.		3-7/8		
U-SAMPLE	R						TYPE OF	DRILLING MUD			QUIK ML	ID	
S-SAMPLE	R									1			
CORE BAF	RREL N	K DOUBL	E BAR	REL			AUGER U	SED		YES	X NO		
CORE BIT	NΣ	K DIAMO	ND				TYPE AND	DIAMETER, IN.					
DRILL ROD		NJ											
							CASING H	IAMMER, LBS.		AVERAG	E FALL, IN.		
							*SAMPLE	R HAMMER, LBS.	140	AVERAG	E FALL, IN.	30	
							"USED AU		ER.				
WAIERL			EDTH										
DATE	TIME		HOLE		CASIN	IG	WATER		CONDITIO	NS OF OE	SERVATION		
								NO	WATER LEV	EL OBSE	RVATIONS MA	DE.	
		о <b>т</b> ан г											
PIEZOWE		STALLE	<u>=D</u>		YES	X		TCH SHOWN (	JN				
STANDPIP	E:	TYP	E				ID, IN.	LEN	GTH, FT.		TOP ELEV.		
INTAKE EL	EMENT:	TYP	E				OD, IN.	LEN	GTH, FT.		TIP ELEV.		
FILTER:		MAT	ERIAL				OD, IN.	LEN	GTH, FT.		BOT. ELEV.		
		<b>`</b>											
		<u>&gt;</u>					47						
3.5 DIA. D			C C		LIN. FI.		47						
			G				10		STURBED S	AMPLES			
CORE DRI	LLING IN	RUUK			LIN. FI.		10	UTTER:					
BORING	CONTR	ACTOR					AQUIFE	ER DRILLING &	TESTING C	CO., INC.			
DRILLER	_			PA	UL GADI	DIS		HELPERS					
REMARK	S					BC	REHOLE GRO	OUTED UPON C	OMPLETIC	DN.			
RESIDEN	IT ENGI	NEER				TE	RESA SANDIF	ORD		DATE	05	-15-15	
CLASSIF	ICATION	I CHEC	K:		CHEF	RYL J.	MOSS	TYPING CHEC	CK:				
MRCE Form B	S-1									BC	RING NO.	M-19	

			BO		BOR		10.	M-20	
						SHE	ET 1	OF	4
PROJEC	T:	W	<u>EST 18TH -</u>	WEST 19TH STREET/10TH AVENUE	_	F		10.	12320
LOCATIC	DN:		1	NEW YORK, NEW YORK	รเ	JRFAC	E EL	EV.	9.4±
	1				1	RES	. ENC	GR.	MARK CHANCY
DAILY		SAM	PLE				CASI	NG	
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	BLO	NS	REMARKS
11:10							DRIL		Unsampled to 20'.
04-28-15							AHE	AD	Unsampled from 32"
Suppy							4.0	)	10 00 .
61°F						5			
0.1									
						10			
						15			
									Hard drilling to 18'
									approximately; bore-
						20			hole keeps collapsing.
	1D	20.0	13-15	Black fine to coarse sandy gravel, trace silt					REC=6"
04-29-15	20	22.0	13-11	(GP-GM) Black modium to coarso sand traco silt					
weanesday	20	22.0	7-0 7-6	(SP-SM)					REC=5
	3D	24.0	11-7	Black gravelly fine coarse sandy gravel, trace		25			REC=2"
	-	26.0	7-12	silt (SM)	6	-			
	4D	26.0	14-14	Black gravel, trace silt, some fine to coarse	3				REC=3"
		28.0	26-24	sand (GP-GM)					
	5D	28.0	14-10	Light brown fine to coarse sandy gravel, trace					
	<b>CD</b>	30.0	6-4	silt GP-GM)		30			
	60	30.0	3-3	Brown line to coarse sand, trace slit (SP-SM)		30			
		52.0	5-0			52			
						35			
						40			
						ŦU			
						45			
						50			
							<b>↓</b>		

			<u>B0</u>	RING LOG		BORING NO SHEET 2 OI		M-20 4	
PROJEC	T:	W	EST 18TH -	WEST 19TH STREET/10TH AVENUE		F	ILE NO.	12320	
LOCATIO	DN:			NEW YORK, NEW YORK	S	URFAC	E ELEV.	9.4±	
					-	RES	. ENGR.	MARK CHANCY	
DAILY		SAM	PLE				CASING		
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	BLOWS	REMARKS	
Cont'd								_	
Wednesday							4.5"		
						55	<b>V</b>		
	1C	55.0	REC=88%	Medium hard slightly weathered to unweathered			4*	*Coring time in	
		60.0	RQD=76%	gray gneissic schist, trace pegmatite,			3.5^	minutes per foot.	
				moderately to jointed, iron stained & weathered jo			় ১ ২*	-	
					_	60	3.5*		
	2C	60.0	REC=96%	Medium hard unweathered gray gneissic	R		5*		
		65.0	RQD=93%	schist, moderately jointed, iron stained &			1.5*	-	
				weathered joints			2*		
							2*		
						65	3*	End of Boring at 65'.	
								-	
						70		_	
								-	
						75		-	
						75			
								-	
								-	
						80			
								-	
						85		-	
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PROJECT PROJECT WEST 18TH - WEST 18TH STREET/10TH AVENUE LOCATION     SHEET VEST 18TH - WEST 18TH STREET/10TH AVENUE NEW YORK, NEW YORK     SURFACE ELEV. SURFACE ELEV.     9.4±       BORING LOCATION     SEE BORING LOCATION PLAN     DATUM     NAVD 88       BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE TYPE OF BORING DURING CORING CASING USED     X yes     No       TVPE OF BORING DURING CORING SKID     X HYDRAULIC     DIA, IN     4.5     DEPTH, FT, FROM     0     TO       SKID     X HYDRAULIC     X DIA, IN     DEPTH, FT, FROM     TO     55       SKID     X HYDRAULIC     X DIA, IN     DEPTH, FT, FROM     TO       OTHER     DIALING MUD USED     X VES     NO       OCAMPLER     CORE BARREL     AUGER USED     YES     NO       CORE BARREL     AUGER USED     YES     NO     AVERAGE FALL, IN.       ORILL RODS     NW     CASING HAMMER, LBS.     140     AVERAGE FALL, IN.       WATER LEVEL OBSERVATIONS IN BOREHOLE     DEPTH TO     CONDITIONS OF OBSERVATION     SKETCH SHOWN ON       STANDPIPE     TYPE<								BORING I	NO.	M-20	)	
PROJECT WEST 18TH - WEST 19TH STREET/10TH AVENUE FILE NO. 12320 LOCATION NEW YORK, NEW YORK SURFACE LEV. 9.4.4 BORING LOCATION SEE BORING LOCATION PLAN DATUM NAVD 88 BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE TYPE OF FEED TYPE OF FEED TYPE OF FEED TYPE OF FRED TYPE OF OF DRILLING MUD USED TYPE OF DRILLING MUD USED TYPE OF DRILLING MUD USED TYPE OF DRILLING MUD OUIK GEL SAMPLER AUGER THANNER, LBS, 140 AVERAGE FALL, IN. SAMPLER AUGER USED TYPE TYPE TIME HOLE DEFTH OF DEFTH								SHEET	4	OF	4	
LOCATION NEW YORK, NEW YORK SURFACE ELEV. 9.4.± BORING LOCATION SEE BORING LOCATION PLAN DATUM NAVD 88 BORING CORTING NEW YORK SEE BORING LOCATION PLAN DATUM NAVD 88 BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE TYPE OF BORING RIG DURING CORING CASING USED X, YES	PROJEC	т	WEST 18T	H - WEST	19TH S	STREET/10TH	I AVENUE	FILE NO.		12320		
BORING LOCATION     SEE BORING LOCATION PLAN     DATUM     NAVD 88       BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE TYPE OF BORING RIG     DURING CORING     CASING USED     X. YES     NO       TUCK     MCCHANICAL     DIA, IN.     4.5     DEPTH, FT. FROM     0     TO       SKID     X     HYDRAULIC     X     DIA, IN.     DEPTH, FT. FROM     TO       SKID     X     HYDRAULIC     X     DIA, IN.     DEPTH, FT. FROM     TO       SKID     X     HYDRAULIC     X     DIA, IN.     DEPTH, FT. FROM     TO       SKID     X     HYDRAULIC     X     DIA, IN.     DEPTH, FT. FROM     TO       OTHER	LOCATIO	DN		NEW YC	RK, NI	EW YORK		SURFACE	ELEV.	9.4	4±	
BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE         TYPE OF BORING RIG DURING CORING       CASING USED       X       YES       NO         TUPE OF BORING RIG DURING CORING       CASING USED       X       YES       NO         SID       X       HOTANULIC       X       DIA, IN.       DEPTH, FT. FROM       TO       55         SAMA       MCHANICAL       DIA, IN.       DEPTH, FT. FROM       TO       0       0         OTHER       OTHER       DIA, IN.       DEPTH, FT. FROM       TO       0         OTHER       OTHER       DIA, IN.       DEPTH, FT. FROM       TO       0         OTHER       OTHER       DIA, IN.       DEPTH, FT. FROM       TO       0         OTHER       OTHER       DIA, IN.       DEPTH, FT. FROM       TO       0         OTHER       DIA, IN.       DEPTH, FT. FROM       OUIK GEL         SAMPLER       YES       NO         OTHER       DIA, IN.       9778         OTHER       AUGER USED       YES       X       NO         OTHER       AUGER USED       YES       <	BORING	LOCATIO	<u> </u>	SEE BORIN	g loc	ATION PLAN		DATUM		NAVD 88		
BORING EQUIPMENT AND METHODS OF STABILIZING BOREHOLE         TYPE OF FEED         TYPE OF FORM CORING         CASING USED         X YES         NO         TRUCK         MECHANICAL         DIA, IN         DEPTH, FT, FROM         TO         SAID         X         MECHANICAL         DIA, IN         DEPTH, FT, FROM         TO         SAID         OTHER         DIAL TYPE OF DRILLING MUD USED         X         OTHER         TYPE ADD DIAMETER OF ROTARY BIT, IN.         OTHER         OLSAMPLER         OLSAMPLER <td colspa<="" td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td>	<td></td>											
TYPE OF PEED           TYPE OF BORING RIG         CASING USED         X YES         NO           TYPE OF REED           TYPE OF REED         CASING USED         X YES         NO           SKID         X         YES         NO           SKID         X         YES         NO           OTHER         OTHER <th< td=""><td>BORING</td><td>EQUIPMEI</td><td>NT AND ME</td><td>THODS OF S</td><td>STABILI</td><td>IZING BOREH</td><td>OLE</td><td></td><td></td><td></td><td></td></th<>	BORING	EQUIPMEI	NT AND ME	THODS OF S	STABILI	IZING BOREH	OLE					
TYPE OF BORING RIG         DURING CORING         CASING USED         X         YES         NO           TRUCK         MECHANICAL         DIA., IN.         4.5         DEPTH, FT. FROM         0         TO         55           SKID         X         MYRAULC         X         DIA., IN.         DEPTH, FT. FROM         TO         55           SKID         X         MYRAULC         X         DIA., IN.         DEPTH, FT. FROM         TO         55           SKRE         OTHER         DIAL, IN.         DEPTH, FT. FROM         TO         53           TYPE AND SIZE OF:         DRILLING MUD USED         X         YES         NO           DSAMPLER         2'O. D. SPLIT SPOON         DIAMETER OF ROTARY BIT, IN.         3-7/8           USAMPLER         AUGER USED         YES         NO           CORE BAR         AUGER USED         YES         NO           CORE BARREL         AUGER USED         TYPE AND DIAMETER, IN.         30         130           CORE BARREL         S:34*         TYPE AND DIAMETER, IN.         30         130           CORE BARREL         AUGER USED         YES         X         NO           CORE BARREL         S:34*         TYPE AND DIAMETER, INS.         A			TYPE	OF FEED								
TRUCK         MECHANICAL         DIA., IN.         4.5         DEPTH, FT, FROM         0         TO         55           SKID         X         HYDRAULIC         X         DIA., IN.         DEPTH, FT, FROM         TO         TO           SKID         X         HYDRAULIC         X         DIA., IN.         DEPTH, FT, FROM         TO         TO           SKID         TYPE AND SIZE OF:         DIA., IN.         DESAMPLER         X         YES         NO           DSAMPLER         2'O.D. SPLIT SPOON         DIAMETER OF ROTARY BIT, IN.         3.7/8         3.7/8           USAMPLER         CORE BARREL         AUGER USED         YES         NO           CORE BARREL         AUGRE USED         YES         NO           CORE BARREL         AUGRE USED         YES         NO           CASING HAMMER, LBS.         140         AVERAGE FALL, IN.         30           VECORE BARREL         AUGRE USED         AVERAGE FALL, IN.         30           VECASING         WATER LEVEL OBSERVATIONS IN BOREHOLE         AVERAGE FALL, IN.         30           DATE         TIME         DEPTH OF         DEPTH TO         CONDITIONS OF OBSERVATIONS MADE:           DATE         TIME         OD, IN.         LENGTH, F	TYPE OF E	BORING RIG	DURIN	IG CORING		CASING L	ISED	Х	YES	NO		
SKID       X       HVDRAULIC       X       DIA., IN.       DEPTH, FT. FROM       TO         BARGE       OTHER       DIA., IN.       DEPTH, FT. FROM       TO	TRUCK		MECH	ANICAL		DIA., IN.	4.5	DEPTH, FT	FROM	0 TC	55	
BARGE OTHER DIA, IN. DEPTH, FT. FROM TO OTHER	SKID	Х	HYDR	AULIC	Х	DIA., IN.		DEPTH, FT	FROM	тс	)	
OTHER	BARGE		OTHE	R		DIA., IN.		DEPTH, FT	FROM	тс	)	
TYPE AND SIZE OF:       DRILLING MUD USED       X YES       NO         USAMPLER       2*0. D. SPLIT SPOON       DIAMETER OF ROTARY BIT, IN.       3-7/8         USAMPLER	OTHER											
TYPE AND SIZE OF:       DRILLING MUD USED       X_YES       NO         D-SAMPLER       2' O. D. SPLIT SPOON       DIAMETER OF ROTARY BIT, IN.       3-7/8         USAMPLER												
D-SAMPLER 2' O. D. SPLIT SPOON USAMPLER 2' O. D. SPLIT SPOON USAMPLER CORE BARREL CORE BORING LIN, FT. DO CON DIALERS CORE BORING LIN, FT. DO COL, SAMPLE BORING LIN, FT. DO CORE BARREL CORE BORING LIN, FT. DO COL, SAMPLE CONTRACTOR COL, SAMPLE CORD LIN, SAMPLE CORD LIN, SAMPLE CORD LIN, SAMPLE CONTRACTOR COL, SAMPLE CORD COMPLETION, RESIDENT ENGINEER CORREL CORD BARKEL CORD COMPLETION, RESIDENT ENGINEER CORREL CORD COMPLETION, RESIDENT ENGINEER CORREL CORD COMPLETION, RESIDENT ENGINEER CORREL CORD COMPLETION, COL, SAMPLE CORD COMPLETION, COL, SAMPLE CORD COMPLETION, COL, SAMPLE CORD COMPLETION, COL, SAMPLE CONTRACTOR COMPLETION, COL, SAMPLE COMPLEX COMPLETED LIPON COMPLETION, COL, SAMPLE COMPLETION, COL, SAMPLE	TYPE AN	D SIZE OF				DRILLING	MUD USED	Х	YES	NO		
U-SAMPLER	D-SAMPLE	R <u>2" O.</u>	D. SPLIT SPO	NOC		DIAMETE	R OF ROTARY BIT	, IN.		3-7/8		
S-SAMPLER CORE BARREL CASING HAMMER, LBS. AVERAGE FALL, IN. CASING HAMMER, LBS. AVERAGE FALL, IN. SOUTHORS CONTINUE CASING IN BOREHOLE CONDITIONS OF OBSERVATION CONDITIONS OF OBSERVATION CASING WATER CONDITIONS OF OBSERVATION MADE. CONDITIONS MADE. CONDITIONS MADE. CONDITIONS MADE. CONDITIONS OF OBSERVATION MADE. CONDITIONS OF OBSERVATION MADE. CONDITIONS OF OBSERVATION MADE. CONDITIONS MADE. CONDI	U-SAMPLE	R				TYPE OF	DRILLING MUD	-		QUIK GEL		
CORE BARREL       AUGER USED       YES       X_NO         CORE BIT       5:3/4"       TYPE AND DIAMETER, IN.       TYPE AND DIAMETER, IN.         DRILL RODS       NW       CASING HAMMER, LBS.       140       AVERAGE FALL, IN.       30         "SAMPLE RAMMER, LBS.       140       AVERAGE FALL, IN.       30       "SAMPLE RAMMER, LBS.       AVERAGE FALL, IN.       30         "USED AUTOMATIC HAMMER, LBS.       140       AVERAGE FALL, IN.       30       "SAMPLE RAMMER, LBS.       AVERAGE FALL, IN.       30         WATER LEVEL OBSERVATIONS IN BOREHOLE       DEPTH OF       DEPTH OF       DEPTH OF       MORTH TO       CONDITIONS OF OBSERVATION         DATE       HOLE       CASING       WATER       CONDITIONS OF OBSERVATION       MADE.         DATE       HOLE       CASING       WATER       NO WATER LEVEL OBSERVATIONS MADE.         DATE       HOLE       CASING       WATER       NO WATER LEVEL OBSERVATION MADE.         PIEZOMETER INSTALLED       YES       X       NO       SKETCH SHOWN ON         STANDPIPE:       TYPE       ID, IN.       LENGTH, FT.       TOP ELEV.         INTAKE ELEMENT:       TYPE       OD, IN.       LENGTH, FT.       TOP ELEV.         STANDPIPE:       TYPE       OD, IN.	S-SAMPLE	R										
CORE BIT       5:3/4"       TYPE AND DIAMETER, IN.         DRILL RODS       NW       CASING HAMMER, LBS.       140       AVERAGE FALL, IN.       30         "SAMPLER HAMMER, LBS.	CORE BAR	REL				AUGER U	SED		YES	X NO		
DRILL RODS       NW       CASING HAMMER, LBS.       140       AVERAGE FALL, IN.       30         "SAMPLER HAMMER, LBS.	CORE BIT	5-3/4	"			TYPE AND	DIAMETER, IN.	-				
CASING HAMMER, LBS.       140       AVERAGE FALL, IN.       30         "SAMPLER HAMMER, LBS.       AVERAGE FALL, IN.	DRILL ROE	DS <u>NW</u>										
"SAMPLER HAMMER, LBS						CASING F	IAMMER, LBS.	140	AVERAGE	FALL, IN.	30	
USED AUTOMATIC HAMMER.         WATER LEVEL OBSERVATIONS IN BOREHOLE         DATE       TIME       DEPTH OF       DEPTH OF       DEPTH OF       DEPTH OF       DEPTH OF         DATE       TIME       HOLE       CASING       WATER       CONDITIONS OF OBSERVATION         MATER LEVEL OBSERVATIONS MADE.       NO WATER LEVEL OBSERVATIONS MADE.       NO WATER LEVEL OBSERVATIONS MADE.         Image: Standpride       Image: Standpride       Image: Standpride       Image: Standpride         PIEZOMETER INSTALLED       YES       X NO       SKETCH SHOWN ON         Standpride       Image: Standpride       Image: Standpride       Image: Standpride         Standpride       OD, IN.       LENGTH, FT.       TOP ELEV.         INTAKE ELEMENT:       TYPE       Image: OD, IN.       LENGTH, FT.       TOP ELEV.         Standpride       OD, IN.       LENGTH, FT.       BOT. ELEV.       Image: Standpride         PAY QUANTITIES       3.5" DIA. DRY SAMPLE BORING       LIN. FT.       55       NO. OF 3" SHELBY TUBE SAMPLES       Image: Standpride         Standa IN SCORE ORI       LIN. FT.       10       OTHER:       Image: Standpride       Image: Standpride         BORING CONTRACTOR       AQUIFER DRILLING & TESTING CO., INC.       Image: Standpride <t< td=""><td></td><td></td><td></td><td></td><td></td><td>*SAMPLE</td><td>R HAMMER, LBS.</td><td></td><td>AVERAGE</td><td>FALL, IN.</td><td></td></t<>						*SAMPLE	R HAMMER, LBS.		AVERAGE	FALL, IN.		
WATER LEVEL OBSERVATIONS IN BOREHOLE         DATE       TIME       DEPTH OF       DEPTH OF       CONDITIONS of OBSERVATION         DATE       TIME       HOLE       DEPTH OF       CONDITIONS OF OBSERVATION         MATER       LEVEL OBSERVATIONS MADE.       NO WATER LEVEL OBSERVATIONS MADE.         NO       NO WATER LEVEL OBSERVATIONS MADE.         PIEZOMETER INSTALLED       YES       X         NO       SKETCH SHOWN ON         STANDPIPE:       TYPE         INTAKE ELEMENT:       TYPE         OD, IN.       LENGTH, FT.         TITE       OD, IN.         LENGTH, FT.       BOT. ELEV.         PAY QUANTITIES         3.5' DIA. DRY SAMPLE BORING       LIN. FT.         STOND SOCK       LIN. FT.         TIO       OTHER:         BORING CONTRACTOR       AQUIFER DRILLING & TESTING CO., INC.         DRILLER       PAUL GADDIS         REMARKS       BOREHOLE GROUTED UPON COMPLETION.         RESIDENT ENGINEER       MARK CHANCY         DATE       04-29-15         CLASSIFICATION CHECK:       CHERYL J. MOSS						*USED AU		:R.				
DATE     TIME     DEPTH OF HOLE     DEPTH OF CASING     DEPTH OF WATER     CONDITIONS OF OBSERVATION       NO     NO WATER LEVEL OBSERVATIONS MADE.     NO WATER LEVEL OBSERVATIONS MADE.     NO WATER LEVEL OBSERVATIONS MADE.       PIEZOMETER INSTALLED     YES     X     NO     SKETCH SHOWN ON       STANDPIPE:     TYPE     ID     IN.     LENGTH, FT.     TOP ELEV.       INTAKE ELEMENT:     TYPE     OD, IN.     LENGTH, FT.     TIP ELEV.       FILTER:     MATERIAL     OD, IN.     LENGTH, FT.     BOT. ELEV.       PAY QUANTITIES     3.5° DIA. DRY SAMPLE BORING     LIN. FT.     55     NO. OF 3° SHELBY TUBE SAMPLES       3.5° DIA. DRY SAMPLE BORING     LIN. FT.     10     OTHER:       BORING CONTRACTOR     AQUIFER DRILLING & TESTING CO., INC.       DRILLER     PAUL GADDIS     HELPERS       REMARKS     BOREHOLE GROUTED UPON COMPLETION.       RESIDENT ENGINEER     MARK CHANCY     DATE       O4-29-15     CLASSIFICATION CHECK:     CHERYL J. MOSS     TYPING CHECK:	WAIERL											
Difference       Milex       South find of object of the second s	DATE	TIME	HOLE		NG	WATER		CONDITIO		SERVATION		
PIEZOMETER INSTALLED       YES       X NO       SKETCH SHOWN ON         STANDPIPE:       TYPE       ID, IN.       LENGTH, FT.       TOP ELEV.         INTAKE ELEMENT:       TYPE       OD, IN.       LENGTH, FT.       TIP ELEV.         FILTER:       MATERIAL       OD, IN.       LENGTH, FT.       TIP ELEV.         PAY QUANTITIES       3.5" DIA. DRY SAMPLE BORING       LIN. FT.       55       NO. OF 3" SHELBY TUBE SAMPLES         3.5" DIA. U-SAMPLE BORING       LIN. FT.       55       NO. OF 3" UNDISTURBED SAMPLES         CORE DRILLING IN ROCK       LIN. FT.       10       OTHER:         BORING CONTRACTOR       AQUIFER DRILLING & TESTING CO., INC.         DRILLER       PAUL GADDIS       HELPERS         REMARKS       BOREHOLE GROUTED UPON COMPLETION.         RESIDENT ENGINEER       MARK CHANCY       DATE         CLASSIFICATION CHECK:       CHERYL J. MOSS       TYPING CHECK:	DATE	1	HOLL	0/10		WATER	NO	NATERIEV	FI OBSER		=	
PIEZOMETER INSTALLED       YES       X       NO       SKETCH SHOWN ON         STANDPIPE:       TYPE       ID, IN.       LENGTH, FT.       TOP ELEV.         INTAKE ELEMENT:       TYPE       OD, IN.       LENGTH, FT.       TIP ELEV.         FILTER:       MATERIAL       OD, IN.       LENGTH, FT.       TIP ELEV.         PAY QUANTITIES       3.5" DIA. DRY SAMPLE BORING       LIN. FT.       55       NO. OF 3" SHELBY TUBE SAMPLES         3.5" DIA. DRY SAMPLE BORING       LIN. FT.       55       NO. OF 3" UNDISTURBED SAMPLES         CORE DRILLING IN ROCK       LIN. FT.       10       OTHER:         BORING CONTRACTOR       AQUIFER DRILLING & TESTING CO., INC.         DRILLER       PAUL GADDIS       HELPERS         REMARKS       BOREHOLE GROUTED UPON COMPLETION.         RESIDENT ENGINEER       MARK CHANCY       DATE         CLASSIFICATION CHECK:       CHERYL J. MOSS       TYPING CHECK:												
PIEZOMETER INSTALLED       YES       X NO       SKETCH SHOWN ON         STANDPIPE:       TYPE       ID, IN.       LENGTH, FT.       TOP ELEV.         INTAKE ELEMENT:       TYPE       OD, IN.       LENGTH, FT.       TIP ELEV.         FILTER:       MATERIAL       OD, IN.       LENGTH, FT.       BOT. ELEV.         PAY QUANTITIES       3.5" DIA. DRY SAMPLE BORING       LIN. FT.       55       NO. OF 3" SHELBY TUBE SAMPLES         3.5" DIA. DRY SAMPLE BORING       LIN. FT.       55       NO. OF 3" UNDISTURBED SAMPLES         CORE DRILLING IN ROCK       LIN. FT.       10       OTHER:         BORING CONTRACTOR       AQUIFER DRILLING & TESTING CO., INC.         DRILLER       PAUL GADDIS       HELPERS         REMARKS       BOREHOLE GROUTED UPON COMPLETION.         RESIDENT ENGINEER       MARK CHANCY       DATE         CLASSIFICATION CHECK:       CHERYL J. MOSS       TYPING CHECK:												
PIEZOMETER INSTALLED       YES       X       NO       SKETCH SHOWN ON         STANDPIPE:       TYPE       ID, IN.       LENGTH, FT.       TOP ELEV.         INTAKE ELEMENT:       TYPE       OD, IN.       LENGTH, FT.       TIP ELEV.         FILTER:       MATERIAL       OD, IN.       LENGTH, FT.       BOT. ELEV.         PAY QUANTITIES       3.5' DIA. DRY SAMPLE BORING       LIN. FT.       55       NO. OF 3' SHELBY TUBE SAMPLES         3.5' DIA. DRY SAMPLE BORING       LIN. FT.       55       NO. OF 3' UNDISTURBED SAMPLES         CORE DRILLING IN ROCK       LIN. FT.       10       OTHER:         BORING CONTRACTOR       AQUIFER DRILLING & TESTING CO., INC.         DRILLER       PAUL GADDIS       HELPERS         REMARKS       BOREHOLE GROUTED UPON COMPLETION.         RESIDENT ENGINEER       MARK CHANCY       DATE         CLASSIFICATION CHECK:       CHERYL J. MOSS       TYPING CHECK:         DOR FOR DATE       CHERYL J. MOSS       TYPING CHECK:												
PIEZOMETER INSTALLED       YES       X       NO       SKETCH SHOWN ON         STANDPIPE:       TYPE       ID, IN.       LENGTH, FT.       TOP ELEV.         INTAKE ELEMENT:       TYPE       OD, IN.       LENGTH, FT.       TIP ELEV.         FILTER:       MATERIAL       OD, IN.       LENGTH, FT.       BOT. ELEV.         PAY QUANTITIES       3.5" DIA. DRY SAMPLE BORING       LIN. FT.       55       NO. OF 3" SHELBY TUBE SAMPLES         3.5" DIA. DRY SAMPLE BORING       LIN. FT.       55       NO. OF 3" UNDISTURBED SAMPLES         CORE DRILLING IN ROCK       LIN. FT.       10       OTHER:         BORING CONTRACTOR       AQUIFER DRILLING & TESTING CO., INC.         DRILLER       PAUL GADDIS       HELPERS         REMARKS       BOREHOLE GROUTED UPON COMPLETION.         RESIDENT ENGINEER       MARK CHANCY       DATE         CLASSIFICATION CHECK:       CHERYL J. MOSS       TYPING CHECK:												
PIEZOMETER INSTALLED       YES       X       NO       SKETCH SHOWN ON         STANDPIPE:       TYPE       ID, IN.       LENGTH, FT.       TOP ELEV.         INTAKE ELEMENT:       TYPE       OD, IN.       LENGTH, FT.       TIP ELEV.         FILTER:       MATERIAL       OD, IN.       LENGTH, FT.       BOT. ELEV.         PAY QUANTITIES       3.5" DIA. DRY SAMPLE BORING       LIN. FT.       55       NO. OF 3" SHELBY TUBE SAMPLES         3.5" DIA. DRY SAMPLE BORING       LIN. FT.       55       NO. OF 3" UNDISTURBED SAMPLES         CORE DRILLING IN ROCK       LIN. FT.       10       OTHER:         BORING CONTRACTOR       AQUIFER DRILLING & TESTING CO., INC.         DRILLER       PAUL GADDIS       HELPERS         REMARKS       BOREHOLE GROUTED UPON COMPLETION.         RESIDENT ENGINEER       MARK CHANCY       DATE         CLASSIFICATION CHECK:       CHERYL J. MOSS       TYPING CHECK:												
PIEZOMETER INSTALLED       YES       X NO       SKETCH SHOWN ON         STANDPIPE:       TYPE       ID, IN.       LENGTH, FT.       TOP ELEV.         INTAKE ELEMENT:       TYPE       OD, IN.       LENGTH, FT.       TIP ELEV.         FILTER:       MATERIAL       OD, IN.       LENGTH, FT.       BOT. ELEV.         PAY QUANTITIES       3.5° DIA. DRY SAMPLE BORING       LIN. FT.       55       NO. OF 3° SHELBY TUBE SAMPLES         3.5° DIA. DRY SAMPLE BORING       LIN. FT.       55       NO. OF 3° UNDISTURBED SAMPLES												
PIEZOMETER INSTALLED       YES       X       NO       SKETCH SHOWN ON         STANDPIPE:       TYPE       ID, IN.       LENGTH, FT.       TOP ELEV.         INTAKE ELEMENT:       TYPE       OD, IN.       LENGTH, FT.       TIP ELEV.         FILTER:       MATERIAL       OD, IN.       LENGTH, FT.       BOT. ELEV.         PAY QUANTITIES       3.5" DIA. DRY SAMPLE BORING       LIN. FT.       55       NO. OF 3" SHELBY TUBE SAMPLES         3.5" DIA. U-SAMPLE BORING       LIN. FT.       55       NO. OF 3" UNDISTURBED SAMPLES						-						
STANDPIPE:       TYPE       ID, IN.       LENGTH, FT.       TOP ELEV.         INTAKE ELEMENT:       TYPE       OD, IN.       LENGTH, FT.       TIP ELEV.         FILTER:       MATERIAL       OD, IN.       LENGTH, FT.       BOT. ELEV.         PAY QUANTITIES       3.5" DIA. DRY SAMPLE BORING       LIN. FT.       55       NO. OF 3" SHELBY TUBE SAMPLES         3.5" DIA. U-SAMPLE BORING       LIN. FT.       55       NO. OF 3" UNDISTURBED SAMPLES         CORE DRILLING IN ROCK       LIN. FT.       10       OTHER:         BORING CONTRACTOR       AQUIFER DRILLING & TESTING CO., INC.         DRILLER       PAUL GADDIS       HELPERS         REMARKS       BOREHOLE GROUTED UPON COMPLETION.         RESIDENT ENGINEER       MARK CHANCY       DATE         CLASSIFICATION CHECK:       CHERYL J. MOSS       TYPING CHECK:	PIEZOME	TER INST	ALLED	YES	Х	NO SKE	ETCH SHOWN C	N				
STANDPIPE:       TYPE       ID, IN.       LENGTH, FT.       TOP ELEV.         INTAKE ELEMENT:       TYPE       OD, IN.       LENGTH, FT.       TIP ELEV.         FILTER:       MATERIAL       OD, IN.       LENGTH, FT.       BOT. ELEV.         PAY QUANTITIES       3.5" DIA. DRY SAMPLE BORING       LIN. FT.       55       NO. OF 3" SHELBY TUBE SAMPLES         3.5" DIA. U-SAMPLE BORING       LIN. FT.       55       NO. OF 3" UNDISTURBED SAMPLES         CORE DRILLING IN ROCK       LIN. FT.       10       OTHER:         BORING CONTRACTOR       AQUIFER DRILLING & TESTING CO., INC.         DRILLER       PAUL GADDIS       HELPERS         REMARKS       BOREHOLE GROUTED UPON COMPLETION.         RESIDENT ENGINEER       MARK CHANCY       DATE         CLASSIFICATION CHECK:       CHERYL J. MOSS       TYPING CHECK:												
INTAKE ELEMENT:       TYPE       OD, IN.       LENGTH, FT.       TIP ELEV.         FILTER:       MATERIAL       OD, IN.       LENGTH, FT.       BOT. ELEV.         PAY QUANTITIES       3.5" DIA. DRY SAMPLE BORING       LIN. FT.       55       NO. OF 3" SHELBY TUBE SAMPLES         3.5" DIA. U-SAMPLE BORING       LIN. FT.       55       NO. OF 3" UNDISTURBED SAMPLES         CORE DRILLING IN ROCK       LIN. FT.       10       OTHER:         BORING CONTRACTOR       AQUIFER DRILLING & TESTING CO., INC.         DRILLER       PAUL GADDIS       HELPERS         REMARKS       BOREHOLE GROUTED UPON COMPLETION.         RESIDENT ENGINEER       MARK CHANCY       DATE         CLASSIFICATION CHECK:       CHERYL J. MOSS       TYPING CHECK:	STANDPIP	'E:	TYPE			ID, IN.	LENC	STH, FT.		TOP ELEV.		
FILTER:       MATERIAL       OD, IN.       LENGTH, FT.       BOT. ELEV.         PAY QUANTITIES       3.5" DIA. DRY SAMPLE BORING       LIN. FT.       55       NO. OF 3" SHELBY TUBE SAMPLES         3.5" DIA. U-SAMPLE BORING       LIN. FT.       55       NO. OF 3" UNDISTURBED SAMPLES         CORE DRILLING IN ROCK       LIN. FT.       10       OTHER:         BORING CONTRACTOR       AQUIFER DRILLING & TESTING CO., INC.         DRILLER       PAUL GADDIS       HELPERS         REMARKS       BOREHOLE GROUTED UPON COMPLETION.         RESIDENT ENGINEER       MARK CHANCY       DATE         CLASSIFICATION CHECK:       CHERYL J. MOSS       TYPING CHECK:	INTAKE EL	EMENT:	TYPE			OD, IN.	LENG	STH, FT.		TIP ELEV.		
PAY QUANTITIES         3.5" DIA. DRY SAMPLE BORING       LIN. FT.       55       NO. OF 3" SHELBY TUBE SAMPLES         3.5" DIA. U-SAMPLE BORING       LIN. FT.       NO. OF 3" UNDISTURBED SAMPLES         CORE DRILLING IN ROCK       LIN. FT.       10       OTHER:         BORING CONTRACTOR       AQUIFER DRILLING & TESTING CO., INC.         DRILLER       PAUL GADDIS       HELPERS         REMARKS       BOREHOLE GROUTED UPON COMPLETION.         RESIDENT ENGINEER       MARK CHANCY       DATE       04-29-15         CLASSIFICATION CHECK:       CHERYL J. MOSS       TYPING CHECK:       M20	FILTER:		MATERIAL			OD, IN.	LENG	STH, FT.		BOT. ELEV.		
PAY QUANTITIES         3.5" DIA. DRY SAMPLE BORING       LIN. FT.       55       NO. OF 3" SHELBY TUBE SAMPLES         3.5" DIA. U-SAMPLE BORING       LIN. FT.       NO. OF 3" UNDISTURBED SAMPLES         CORE DRILLING IN ROCK       LIN. FT.       10       OTHER:         BORING CONTRACTOR       AQUIFER DRILLING & TESTING CO., INC.         DRILLER       PAUL GADDIS       HELPERS         REMARKS       BOREHOLE GROUTED UPON COMPLETION.         RESIDENT ENGINEER       MARK CHANCY       DATE         CLASSIFICATION CHECK:       CHERYL J. MOSS       TYPING CHECK:												
3.5" DIA. DRY SAMPLE BORING       LIN. FT.       55       NO. OF 3" SHELBY TUBE SAMPLES         3.5" DIA. U-SAMPLE BORING       LIN. FT.       NO. OF 3" UNDISTURBED SAMPLES         CORE DRILLING IN ROCK       LIN. FT.       10       OTHER:         BORING CONTRACTOR       AQUIFER DRILLING & TESTING CO., INC.         DRILLER       PAUL GADDIS       HELPERS         REMARKS       BOREHOLE GROUTED UPON COMPLETION.         RESIDENT ENGINEER       MARK CHANCY       DATE         CLASSIFICATION CHECK:       CHERYL J. MOSS       TYPING CHECK:	<u>PAY QUA</u>	NTITIES										
3.5" DIA. U-SAMPLE BORING       LIN. FT.       NO. OF 3" UNDISTURBED SAMPLES         CORE DRILLING IN ROCK       LIN. FT.       10       OTHER:         BORING CONTRACTOR       AQUIFER DRILLING & TESTING CO., INC.         DRILLER       PAUL GADDIS       HELPERS         REMARKS       BOREHOLE GROUTED UPON COMPLETION.         RESIDENT ENGINEER       MARK CHANCY       DATE       04-29-15         CLASSIFICATION CHECK:       CHERYL J. MOSS       TYPING CHECK:       M20	3.5" DIA. D	RY SAMPLE	BORING	LIN. FT.		55	NO. OF 3" SHELE	BY TUBE SA	MPLES			
CORE DRILLING IN ROCK       LIN. FT.       10       OTHER:         BORING CONTRACTOR       AQUIFER DRILLING & TESTING CO., INC.         DRILLER       PAUL GADDIS       HELPERS         REMARKS       BOREHOLE GROUTED UPON COMPLETION.         RESIDENT ENGINEER       MARK CHANCY       DATE       04-29-15         CLASSIFICATION CHECK:       CHERYL J. MOSS       TYPING CHECK:       M20	3.5" DIA. U	-SAMPLE B	ORING	LIN. FT.			NO. OF 3" UNDIS	STURBED SA	AMPLES			
BORING CONTRACTOR       AQUIFER DRILLING & TESTING CO., INC.         DRILLER       PAUL GADDIS       HELPERS         REMARKS       BOREHOLE GROUTED UPON COMPLETION.         RESIDENT ENGINEER       MARK CHANCY       DATE       04-29-15         CLASSIFICATION CHECK:       CHERYL J. MOSS       TYPING CHECK:       M20	CORE DRI	LLING IN RO	DCK	LIN. FT.		10	OTHER:					
BORING CONTRACTOR     AQUIFER DRILLING & TESTING CO., INC.       DRILLER     PAUL GADDIS     HELPERS       REMARKS     BOREHOLE GROUTED UPON COMPLETION.       RESIDENT ENGINEER     MARK CHANCY     DATE     04-29-15       CLASSIFICATION CHECK:     CHERYL J. MOSS     TYPING CHECK:     M20												
DRILLER     PAUL GADDIS     HELPERS       REMARKS     BOREHOLE GROUTED UPON COMPLETION.       RESIDENT ENGINEER     MARK CHANCY     DATE     04-29-15       CLASSIFICATION CHECK:     CHERYL J. MOSS     TYPING CHECK:     M20	BORING	CONTRAC	IOR	<b>DA1</b>		AQUIFE	-R DRILLING &	IESTINGC	O., INC.			
RESIDENT ENGINEER     MARK CHANCY     DATE     04-29-15       CLASSIFICATION CHECK:     CHERYL J. MOSS     TYPING CHECK:     POPING NO     M 20	DRILLER	·		PAUL GAE	2015		HELPERS					
RESIDENT ENGINEER     MARK CHANCY     DATE     04-29-15       CLASSIFICATION CHECK:     CHERYL J. MOSS     TYPING CHECK:     POPING NO     M 20	REMARK				BC	NEHOLE GRO	DUTED UPON CO	JMPLETIC			0.45	
	RESIDEN				י יעס				DATE	04-2	9-15	
	MDOLES			UHE	RILJ.	10000		·IX.	PO		M-20	

PROJECT: LOCATION:

NO.

DAILY

PROGRESS

13:15

SAMPLE

BLOWS/6"

DEPTH

#### WEST 18TH - WEST 19TH STREET/10TH AVENUE NEW YORK, NEW YORK

SAMPLE DESCRIPTION

 BORING NO.
 M-21

 SHEET 1 OF
 4

 FILE NO.
 12320

 SURFACE ELEV.
 8.6±

 RES. ENGR.
 TERESA SANDIFORD

 STRATA DEPTH
 BLOWS

 DRILLED
 Vacuum excavated to

 AHEAD
 6'.

 4"
 Cobbles & coarse

 5
 gravel observed in

 cuttings of vacuum.
 Part of recovery filled

04-30-15							AHEAD	6'.
Thursday							4"	Hand excavated to 5'.
Sunny								Cobbles & coarse
65°F						5		gravel observed in
			_					cuttings of vacuum.
	1D	6.0	3-5	Brown gravel, trace fine to coarse sand (GP)				Part of recovery filled
		8.0	5-3					water observed at 6.5'.
	2D	8.0	5-4	Brown fine to coarse sand, some silt, trace				1D, 16D, 19D: REC=3"
		10.0	5-3	gravel (SM)	F	10		2D: REC=5"
	3D	10.0	2-2	Brown tan gravel, trace fine to coarse sand	•			REC=1"
		12.0	3-2	(GP)				Shells in sample.
			-			-		
			-			15		
	4D	15.0	3-3	Brown black fine to coarse sand, gravel		15		REC-2"
	40	17.0	6-3	trace silt, organic clay (CP-CM)		-		Sand in sample
		17.0	0-5					Sand in Sample.
						20		Cuttings is clay &
	5NR	20.0	1-1	No recovery				gravel.
		22.0	2-1					
	6D	22.0	3-2	Soft brown black organic silty clay, trace fine				WC=63
14:30		24.0	2-2	sand, shells (OH)				
09:00	7D	24.0	3-3	Brown gray clayey fine to medium sand (SC)	0	25		
05-01-15		26.0	7-7		•			
Friday	8D	26.0	8-9	Top: Do 7D, trace gravel (SC)				
Cloudy		28.0	7-12	Bot: Stiff light brown silty clay (CL)				8D Bot: WC=30
55°F	9D	28.0	4-6	Do with medium sand, some clay and stiff				
		30.0	11-14	brown silty (SC+CL)		30		
	10D	30.0	10-12	Brown silty fine sand (SM)				
		32.0	13-15					
			-					
			-			35		
	11D	35.0	6-5	Brown silt (ML)			•	Fixing hammer from
		37.0	6-6					10:00 to 11:45.
	400	40.0		Descentions to accord with the second		40		
	12D	40.0	8-9	Brown fine to coarse sand with fine gravel	S			
		42.0	10-7	(GP)				
			-					
			-			45		
	13D	45.0	20-18	Do 12D (GP)				REC=6"
		47.0	24-10					
						50		
	14D	50.0	13-10	Do 12D (GP)				
		52.0	7-18					
ι			1			1	1	P

			<u>BO</u>	RING LOG		BOR	ING NO.	M-21
						SHE	ET 2 OF	4
PROJEC	;Т:	W	'EST 18TH -	WEST 19TH STREET/10TH AVENUE		F	ILE NO.	12320
	ΩN·		1	NEW YORK NEW YORK	S		F FI FV.	8.6+
					-	RES		
DAWAY		SVM				NL0		
DAILY		SAIVI			075 474		CASING	
PROGRESS	NO.	DEPIH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	BLOWS	REMARKS
Cont'd			1					-
05-01-15			-					_
Fri., Cloudy			_					
55°F								
13:00						55		
10:30	15NR	55.0	9-8	No recovery				
5-5-15		57.0	18-13					
Tuesday								Rig chatter at 58'.
Partly								
Cloudy						60		Hole collapsed at 60'.
77°F	16D	60.0	12-10	Purple clay (CL)				
		62.0	11-12					
			-					
			-					-
			-			65		
	17D	65.0	10-14	Brown fine to medium sand (SP)				
	170	67.0	30-30					
		07.0	00 00					Rig chatter at 68'
					S			Rig challer at 00.
			-			70		-
	100	70.0	10.16	Brown modium to opprogram and trace fina		70		
	160	70.0	10-10	brown medium to coarse sand, trace line				-
		72.0	18-16	gravel (SP)				-
			-					
			-					-
	100					75		
	19D	75.0	19-16	Do 18D (SP)				REC=3"
		77.0	18-12					-
			-					-
			-					-
14:30						80		
09:00	20D	80.0	9-9	Brown fine sand, some silt (SM)				
05-06-15		82.0	10-10					
Wednesday								
Cloudy								
60°F						85		
	21D	85.0	8-15	Brown fine to medium sand, some silt, trace		86		
		86.1	100/2"	rock fragments (SM)	ПР			
					DR	88		-
	1C	88.0	REC=100%	Hard slightly weathered to unweathered gray			*	*Coring time from
		93.0	RQD=92%	schistose gneiss to gneissic schist, jointed		90		13:29 to 13:50 at 4.2
				to moderately jointed, slightly weathered				minutes per foot.
			1	ioints				Driller advanced to 88'
			-		_			for stick up purposes.
	2C	93.0	REC=95%	Hard unweathered gray gneissic schist.	R		*	*Coring time from
		98.0	RQD=82%	moderately jointed to jointed		95		14:09 to 14:28 at 3.8
		00.0	1102-02/0					minutes per foot
			-					
14.00			1			98		End of Boring at 98'
14.20			-			30		Lind of Doning at 30.
			1			100		WC-Water Contant
			4			100		in percent of dry
			-					woight
	1					1		weight.



BOR-3_JAN2013

						BORING I	NO.	M-2	1
						SHEET	4	OF	4
PROJEC [®]	т	WEST 18TH -	WEST 19TH	STREET/10TH	AVENUE	FILE NO.		12320	
LOCATIC	DN		NEW YORK,	NEW YORK		SURFACE	E ELEV.	8.	6±
BORING	LOCATION	SEE	BORING LO	CATION PLAN		DATUM		NAVD 88	3
BORING	EQUIPMEI		DDS OF STAB	ILIZING BOREH	<u>OLE</u>				
						V	VEO		
					13ED /		TES EPOM		25
	^				4			T	) <u> </u>
SKID								T	
OTHER				DIA., IN.				N	J
OTTLET									
TYPE AN	D SIZE OF	:		DRILLING	MUD USED	Х	YES	NO	
D-SAMPLE	R 2" O.	D. SPLIT SPOON		DIAMETE	R OF ROTARY BIT	, IN.		3-7/8	
U-SAMPLE	R			TYPE OF	DRILLING MUD			QUIK GEL	
S-SAMPLE	R						l		
CORE BAF	RREL NX D	OUBLE BARREL		AUGER U	SED		YES	X NO	
CORE BIT	NX D	IAMOND		TYPE ANI	DIAMETER, IN.				
DRILL ROL	JS NWJ								
					AWIVIER, LBS.	140	AVERAGE		20
				SAMPLE	R HAIVIIVIER, LOS.	140	AVERAGE	- FALL, IN	30
				USED AU		<u>.</u>			
				<b>DEPTH TO</b>					
DATE	TIME	HOLE	CASING	WATER		CONDITIO	NS OF OB	SERVATION	
					NO	WATER LEV	EL OBSEF	<b>RVATIONS MAD</b>	E.
PIEZOME	ETER INST	ALLED	YES X		ETCH SHOWN C	DN			
STANDPIP	۶Ę.	TYPE			LENC	ЭТН FT		TOP FLEV	
INTAKE EL	EMENT:	ТҮРЕ		OD. IN.	LENG	GTH. FT.		TIP ELEV.	
FILTER:		MATERIAL		OD, IN.		GTH. FT.		BOT. ELEV.	
						- ,			
PAY QUA	NTITIES								
3.5" DIA. D	RY SAMPLE	BORING	LIN. FT.	88	NO. OF 3" SHEL	BY TUBE SA	MPLES		
3.5" DIA. U	-SAMPLE B	ORING	LIN. FT.		NO. OF 3" UNDIS	STURBED S	AMPLES		
CORE DRI	LLING IN RO	ОСК	LIN. FT.	10	OTHER:				
BORING	CONTRAC			AQUIFI	ER DRILLING &	TESTING C	CO., INC.		
DRILLER		DOMINIC	PEPE/PAUL C	SADDIS	HELPERS		GEOR	GE RAYMONE	)
REMARK	S		E	BUREHOLE GRO	DUTED UPON C	OMPLETIC	N.		
RESIDEN			T	ERESA SANDIF			DATE	05-0	15-15
CLASSIF	ICATION C	HECK:	CHERYL	J. MOSS		ж: 			Mot
MRCE Form B	S-1						во	KING NO.	M-21

	BC		BOR	ING	NO.	M-22P			
						SHE	ET	1 <b>OF</b>	7
PROJEC	T:	W	EST 18TH ·	WEST 19TH STREET/10TH AVENUE		F	FILE	NO.	12320
LOCATIO	DN:			NEW YORK, NEW YORK	S	URFAC	ΈE	LEV.	8.0±
				1	I.	RES	6. EN	NGR.	TERESA SANDIFORD
DAILY		SAM	PLE	_			CA	SING	
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	BL	OWS	REMARKS
09:00						-	DRI		Hand auger to 6'.
05-01-15 Eridov									Vacuum cleared of
Cloudy								Ť	utilities to 6'.
55°F						5			
									Driller accidentally
								_	advanced to 15' with-
						10		_	out sampling.
					F	10		-	inspection: did not
									noticed to revert.
									-
						15			
	1D	15.0	22-21	Brown gravel, some fine to coarse sand, trace				_	REC=3"
		17.0	9-5	SIIT (GP-GM)					-
								-	-
						20			-
	2D	20.0	18-14	Brown, purple, gravel, some fine to coarse					Driller blows.
		22.0	10-10	sand, trace silt (GP-GM)					River deposit with
	3D	22.0	13-7	Top: Brn f-c sand, tr gravel, silt (SP-SM)					shell fragments from
	40	24.0	5-4	Bot: Brn blk organic si clay, tr f sand, shells (OH)		25		_	23 to 26.
	4D	24.0	2-3			23		-	
	5D	26.0	7-4	Do 3D Bottom (OH)					WC=52
		28.0	4-4						
	6D	28.0	9-13	Brown fine to coarse sand, some gravel, trace					
		30.0	14-17	silt (SP-SM)		30			
	7D	30.0	29-32	Do 6D (SP-SM)				_	-
		32.0	19-19					_	-
								-	-
						35			-
	8D	35.0	12-19	Brown gravel, some fine to coarse sand, silt	S				
		37.0	25-34	(GM)	5				-
								_	-
						40		_	-
	9D	40.0	12-17	Brown fine to medium sand, some silt (SM)		40		+	-
	00	42.0	14-14						-
									-
	105	15.0	<b>.</b>			45			4
40.45	10D	45.0	9-16 19-22	1 op: Brown fine to coarse sand, some gravel,				_	-
00.00		47.0	10-23	Bot: Red brown silt varved with trace clavey silt				+	10D Bot: WC=29
05-04-15				(ML)				+	100 000. 110-20
Monday						50			Casing to 50'.
Sunny	11D	50.0	39-73	Brown, gray gravelly fine to coarse sand (SP-SM)					
80°F		52.0	19-20				↓	♦ _	

PROJECT: LOCATION:

#### WEST 18TH - WEST 19TH STREET/10TH AVENUE NEW YORK, NEW YORK

 BORING NO.
 M-22P

 SHEET 2 OF
 7

 FILE NO.
 12320

SURFACE ELEV. 8.0± RES_ENGR_TERESA_SANDIEO

						RES	5. EN	GR.	TERESA SANDIFORD
DAILY		SAM	PLE				CAS	SING	
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	BLC	ws	REMARKS
Cont'd							DRIL	LED	
05-04-15							AHE	AD	
Monday							3	5"	
Suppy									
90°E						55			
001	12D	55.0	10-21	Brown fine to medium sand, some gravel, trace		- 55			
	120	53.0	20.17	silt (SD SM)					
		57.0	20-17						
	105					60			
	13D	60.0	11-29	Brown fine to coarse sand, some gravel, trace					
		62.0	32-37	silt (SP-SM)					
	1C	63.0	REC=	Cobble to sandstone, hard red brown					Hard drilling at 62.5'.
		68.0							1C Cored for 1' then
						65			rods dropped through
									68'.
	14D	68.0	17-26	Brown, red brown gravelly fine to coarse sand.					Borehole collapsed
13.00		70.0	53-42	trace silt (SP-SM)		70			at 70': clearing out.
09:00	15D	70.0	18-21	Brown fine to coarse sandy gravel trace silt					ar ro, cloanng oan
05-05-15	100	72.0	31-22	(GP-GM)					
03-03-13 Tuesday		12.0	51-22						
Cloudy									
Cloudy						75			
//°F	400	75.0	40.04	Desugations to account on a second site		75			
	16D	75.0	18-21	Brown fine to coarse sand, trace gravel, slit	S				
		77.0	20-25	(SP-SM)					
						80	V	'	Hole collapsed at 80'
	17D	80.0	97-32	Do 16D (SP-SM)					pulling rods created
		82.0	26-24						vacuum for sand to
									fill hole up to 76'.
									Keeping possible
13:00						85			head while putting
09:00	18D	85.0	18-20	Brown fine to coarse sand, some gravel, trace					rods.
05-06-15		87.0	21-16	silt (SP-SM)					
Wednesday									
Cloudy,									
Rain						90			
60°F	19D	90.0	21-31	Brown clavey gravel (GC)					REC=0.25"
001	100	92.0	31-46						1120-0120
		02.0	01 10						
						05			
	200	05.0	10.24	Brown find to opprove conditions groupli ailt		35			
	200	95.0	19-24	CD CM					
		97.0	20-20	(3r-3IVI)					
						400			
	0.15	100.0				100	<u> </u>		
	21D	100.0	15-26	Do 20D (SP-SM)		L			
		102.0	33-34						

#### WEST 18TH - WEST 19TH STREET/10TH AVENUE NEW YORK, NEW YORK

SAMPLE DESCRIPTION

 BORING NO.
 M-22P

 SHEET 3 OF
 7

 FILE NO.
 12320

 SURFACE ELEV.
 8.0±

 RES. ENGR.
 TERESA SANDIFORD

 STRATA
 DEPTH

 BLOWS
 REMARKS

 Mica & decomposed

 rock in wash at 104'.

 DR
 105

Cont'd								
05-06-15					S			
Wednesday					3			Mica & decomposed
Cldy., Rain						104		rock in wash at 104'.
60°F					DR	105		Hard drilling at 104'.
09.00	22D	105.0	50/1 5"	Top: Brn f-m sand, some silt (SP-SM)				Bit punched through
05.00	220	105.0	00/1.0	Bot: Grav f-m sand, some silt (DR) (SM)				to 105'
05-07-15	10	105.1		Medium hand elightly weethoused to wave othered				
Thursday	1C	105.0	REC=100%	Medium hard slightly weathered to unweathered			*	22D. REC=1.5
Sunny		110.0	RQD=88%	gray & black hornblende schist, trace			â	*Coring time from
75°F				pegmatite, jointed, weathered joints	R	110		10:09 to 10:29 at 4
	2C	110.0	REC=100%	Hard unweathered gray hornblende schist,				minutes per foot.
		115.0	RQD=100%	moderately jointed, mineral coated & iron				
				stained joints				
								-
14:25						115		End of Boring at 115'
14.25						115		End of boining at 115.
						-		MC Motor Content
								vvC=vvater Content
								in percent of dry
								weight.
						120		
								-
						125		-
						120		
								-
								-
						130		
								-
						135		-
						-		
						4.44		
						140		
						145		
						-		
						4=-		
						150		

PROJECT:

LOCATION:

DAILY

PROGRESS

SAMPLE

BLOWS/6"

DEPTH

NO.



BOR-3_JAN2013

Mueser Rutledge Consulting Engineers 14 Penn Plaza - 225 West 34th Street New York, NY 10122 T: 917 339-9300 F: 917 339-9400 www.mrce.com

#### **PIEZOMETER RECORD**

PIEZOMETER OR BORING NO. M-22P-A SHEET 5 OF 7 FILE NO. 12320 INSTALLATION DATE 5/18/15 -5/19/15 RES ENGR. T.SANDIFLD

NUMPER.



SEE SKETCH ON BACK

STRATA	PIEZOMETER	DEPTH	PIEZOMETER TYPE <u>S' SCREEN</u>	
GROUND SURFACE ELEV.	DETAILS	0.5	$\frac{\text{INTAKE POINT}}{\text{depth to bottom, ft = }} = \frac{20.4}{15.4}$ $\frac{15.4}{15.4}$ $\frac{15.4}{15.4$	5 = L = 2R = 2r
(F)			READING TIME     DEPTH - RIM     ELEVATION       DATE     CLOCK     TO WATER     OF WATER       S(21)/(S)     UBO     UBO     UBO	EMARKS
		-10	5/22/15   13/15 7.5'  5/22/15   1000 7.8'  5/22/15   1500 7.8' $5/22/15   1500 7.8' $	
		-13,5		
FILLTO		- 20,5		
			DNITE GROUND SURFACE ELEV.	

 ▲
 SAND

 GRAVEL



PIEZOMETER NO. N-22P-A

255	Mueser Rutle 14 Penn Plaza - 22 New York, NY 101	edge Consulting Engin 5 West 34th Street 22	eers	VARIABLE	HEAD PE	ERME	ABILIT	<u>Y TEST</u>
	T: 917 339-9300 www.mrce.com	F: 917 339-9400		PIEZON	IETER NO.		M-22P-A	۱
PROJEC	CT:	W 18th - W 19th St / 10	0th Ave		SHEET	6	OF	7
LOCATI	ON:	New York, NY			FILE NO.		12320	
PIEZON	VETER LOCATION:	B-2	2P-A		TEST NO.		1	£
								tora
					CH'KD BY		DATE	21/2015
HEAD RATIO, HJH0 01.0 01.0				<u>INTAKE</u> depth d diameter, in = <u>STANDF</u> eleva diameter, in = dept	POINT to bottom, epth to top, length, 2 , PIPE/RISER ation of rim, 2 , th of casing,	ft = ft = ft = ft = ft = ft = ft =	20.5 15.5 5 0.17 0 0 0.17	= L = 2R = 2r
0.00	0		2	depth to whi ₎ pipe was bail	ch stand- ed,	ft =		= Z

ELAPSED TIME,  $\Delta t$ , MIN.

READING TIME			ORIGINAL TEST	DEPTH AT	UNBALANCED	HEAD	
DATE	CLOCK	Δt MIN.	DEPTH, H _o (ft.)	TIME t, H _t (ft.)	$HEAD$ $DH_t = H_t - H_0$ (ft.)	RATIO DH _t /DH ₀	REMARKS
5/21/2015	10:00	0		0	18.5	1.00	Falling Head Test
	10:00	0.5		2.7	15.8	0.85	
	10:01	1		5	13.5	0.73	
	10:02	2		18.4	0.1	0.01	
			- 18.5				
			-				
			-				
			-				
			-				
L		1	1		1	1	

							BORING I	NO.	M-22	Р
							SHEET	7	OF	7
PROJECT WEST 18TH - WEST 19TH STREET/10TH AV						I AVENUE	FILE NO.		12320	
LOCATIO	DN	NEW YORK, NEW YORK						E ELEV.	8.	0±
BORING LOCATION SEE BORING LOCATION					ATION PLAN		DATUM		NAVD 88	\$
BORING	EQUIPME	NT AND MET	THODS OF S	TABILI		OLE				
		TYPE (	OF FEED					1		
TYPE OF E	BORING RIG	DURIN	G CORING		CASING L	JSED	Х	YES	NO	
TRUCK		MECHA	ANICAL		DIA., IN.	4	_DEPTH, FT	. FROM	TC	) 20
SKID		HYDRA		Х	DIA., IN.	3	DEPTH, FT	. FROM	TC	) 80
BARGE		OTHER			DIA., IN.		DEPTH, FT	. FROM	то	)
OTHER	TRAC	K								
								1		
IYPE AN	D SIZE OF	:			DRILLING	MUD USED	Х	YES	NO	
D-SAMPLE	R <u>2"0.</u>	D. SPLIT SPC	ON		DIAMETE		Γ, IN.		3-7/8, 2-7/8	3
U-SAMPLE	:R				TYPE OF	DRILLING MUD			QUIK GEL	
S-SAMPLE	:R							l <b>.</b> .		
CORE BAR	RREL NX D	OUBLE BARR	EL		AUGER U	SED		YES	X NO	
CORE BIT	NX D	IAMOND			TYPE AND	D DIAMETER, IN.				
DRILL ROL	DS NWJ									
					CASING F	AMMER, LBS.		AVERAGE	FALL, IN.	
					*SAMPLE	R HAMMER, LBS.	140	AVERAGE	FALL, IN.	30
					"USED AU		ER.			
WAIERL										
DATE	TIME	HOLE	CASI	NG	WATER		CONDITIO	NS OF OB	SERVATION	
DATE		HOLL	0,101				SEE PIEZO	METER SI	HEFT NO. 5.	
			1			1				
PIEZOME	TER INST	ALLED	X YES		NO SKE	ETCH SHOWN	NC	SE	E SHEET NO	. 5
STANDPIP	E:	TYPE			ID, IN.	LEN	GTH, FT.		TOP ELEV.	
INTAKE EL	EMENT:	TYPE			OD, IN.	LEN	GTH, FT.		TIP ELEV.	
FILTER:		MATERIAL			OD, IN.	LEN	GTH, FT.	-	BOT. ELEV.	
		_						-		
<u>PAY QUA</u>	NTITIES									
3.5" DIA. D	RY SAMPLE	BORING	LIN. FT.			NO. OF 3" SHEL	.BY TUBE SA	MPLES		
3.5" DIA. U-SAMPLE BORING LIN. F			LIN. FT.	. FT. NO. OF 3" UND			STURBED SA	AMPLES		
CORE DRI	LLING IN RO	ОСК	LIN. FT.			OTHER:				
BORING	CONTRAC	TOR			AQUIFE	ER DRILLING &	TESTING C	CO., INC.		
DRILLER		_	DOUG WO	OD		HELPERS			LEO	
REMARK	S				PIEZON	/ ETER INSTALI	ED.			
RESIDEN	IT ENGINE	ER		TER	ESA SANDIF	ORD		DATE	05-0	)7-15
CLASSIF	ICATION C	HECK:	CHE	RYL J. I	MOSS	TYPING CHEC	CK:	-		
MRCE Form B	S-1							BO	RING NO.	M-22P

PROJECT: LOCATION:

#### WEST 18TH - WEST 19TH STREET/10TH AVENUE NEW YORK, NEW YORK

 BORING NO.
 M-23

 SHEET 1 OF
 4

 FILE NO.
 12320

SURFACE ELEV. 7.7±

BORING NO.

M-23

					-	RES	. ENG	R. TERESA SANDIFORD
DAILY	SAMPLE		PLE				CASI	NG
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	BLOV	VS REMARKS
10:45							DRILL	ED Hand excavated to 5'.
05-20-15							AHE/	AD
Wednesday							4"	
Partly Cloudy								
65°F						5		
	40	0.0	4 5					
	U	0.0	4-5	Brown gravely line to coarse sand, some slit,				
	20	0.0 8.0	2.2	Brown find to coorse cand, some silt, trace				Botroloum odor
	20	10.0	3-5	dravel (SM)		10		
	3D	10.0	5-3	Brown black fine to coarse sand trace gravel	F	10		BEC=4"
	00	12.0	3-4	silt (SP-SM)	•			
		12.0	01					
						15		
	4D	15.0	4-3	Gray gravelly fine to coarse sand, trace silt		_		REC=1", possible
		17.0	3-2	(SP)				wash.
						20		
	5D	20.0	10-18	Top: Gray f-c sand, gravel, tr silt (GP-GM)		21		5D: WC=52
		22.0	6-2	Bot: Black organic silty clay (OH)				5D Bot: Petroleum
	6D	22.0	4-3	Black organic silty clay, some fine to coarse				odor.
15:00		24.0	3-2	sand, trace shells (OH)				6D: WC=42
09:00	7D	24.0	8-6	Black silty clay, trace fine sand, shell, wood		25		WC=51
05-21-15		26.0	3-4	(OH)				
Thursday	8D	26.0	6-6	Black organic silty clay, trace fine to medium				WC=41
Cloudy	<b>0</b> D	28.0	3-3	sand, shells (OH)				
60°F	9D	28.0	5-4	Soft gray organic slity clay, trace shells (OH)		20		VVC=56
	100	30.0	5-4 \\/⊔/ว⊿"		0	30		W/C_E8
	100	30.0	VVN/24	D0 9D (OH)				VVC=58
		32.0						
						35		
	11D	35.0	9-11	Do 9D, trace gravel (OH)				11D. 16D-17D:
		37.0	10-11					REC=1"
						38.5		
						40		
	12D	40.0	12-9	Brown fine to medium sand, some silt (SM)				
		42.0	9-8					
						44		
						45		
	13D	45.0	18-12	Brown clayey silt, trace silty clay (ML)	R.A			WC=33
		47.0	6-5		IVI			
						40 5		
					<b></b>	48.5		
	440	50.0			S	50		
	14D	50.0	15-14	Brown slity line to medium sand, trace coarse			$\vdash$	
		52.0	9-11	sanu, gravei (SIVI)	1		V	
#### MUESER RUTLEDGE CONSULTING ENGINEERS BORING LOG

BORING NO. M-23 4 SHEET 2 OF PROJECT: WEST 18TH - WEST 19TH STREET/10TH AVENUE 12320 FILE NO. LOCATION: NEW YORK, NEW YORK SURFACE ELEV. 7.7± **RES. ENGR.** TERESA SANDIFORD SAMPLE DAILY CASING DEPTH BLOWS/6" SAMPLE DESCRIPTION STRATA DEPTH BLOWS REMARKS PROGRESS NO. DRILLED Cont'd AHEAD 05-21-15 4" Thursday Cloudy 55  $60^{\circ}F$ 15D 9-11 Brown gravelly fine to coarse sand, trace silt 55.0 57.0 9-10 (SP-SM) 60 ¥ 16D 60.0 25-24 Brown gravel (GP) Gravel stuck in spoon 62.0 28-17 tip. S 65 17D 65.0 10-9 Brown gravel, trace coarse to fine sand (GP) 67.0 11-7 70 18D 70.0 9-10 Brown coarse to fine sand, some gravel, trace 72.0 7-9 silt (SP-SM) 14:00 09:00 Hard drilling from 74' 05-22-15 74.5 to 74.5'. TOR=74.5 Friday 19D 75.0 100/0.5" Boulder from drilling. Sunny 75.0 Hard drilling from 75'  $70^{\circ}F$ to 80'. 80 13:30 20D 80.0 100/0" Gray rock fragments (GP) 09:45 1C 80.0 REC=100% Medium hard unweathered gray gneissic Coring time from 10:32 05-26-15 85.0 RQD=84% schist, moderately jointed to jointed to 10:46 at 2.5 Tuesday Sunny minutes per foot. 85 70°F R 2C 85.0 REC=100% Hard unweathered gray gneissic schist, Coring time from 11:02 90.0 RQD=100% massive to 11:03 at 2 minutes per foot. 90 3C 90.0 REC=92% Hard unweathered gray gneissic schist, *Coring time from 95.0 moderately jointed 11:44 to 11:58 at RQD=92% 2.75 minutes per foot. 95 End of Boring at 95'. 12:00 WC=Water Content in percent of dry weight. 100

M-23



BOR-3_JAN2013

#### MUESER RUTLEDGE CONSULTING ENGINEERS

						BORING I	NO.	M-23	3
						SHEET	4	OF	4
PROJECT	Г	WEST 18TH -	WEST 19TH	STREET/10TH	H AVENUE	FILE NO.		12320	
LOCATIO	N	1	IEW YORK,	NEW YORK		SURFACE	E ELEV.	7.	7±
BORING	LOCATION	SEE	BORING LC	DCATION PLAN		DATUM		NAVD 88	
						-			
BORING I			DS OF STAE	BILIZING BOREH	OLE				
						V	VEO		
					JSED		TES EROM		60
	^				4			TC	
BARCE			·					TC	·
OTHER				DIA., IN.					,
OTTER									
TYPE AN	D SIZE OF	:		DRILLING	MUD USED	Х	YES	NO	
D-SAMPLE	R 2" O.	D. SPLIT SPOON		DIAMETE	R OF ROTARY BI	Г, IN.		3-7/8	
U-SAMPLE	R			TYPE OF	DRILLING MUD	· ·		QUIK MUD	
S-SAMPLE	R								
CORE BAR	REL NX D	OUBLE BARREL		AUGER U	ISED		YES	X NO	
CORE BIT	NX D	AMOND		TYPE AN	D DIAMETER, IN.				
DRILL ROD	NWJ								
				CASING H	HAMMER, LBS.		AVERAGE	E FALL, IN.	
				*SAMPLE	R HAMMER, LBS.	140	AVERAGE	E FALL, IN.	30
				*USED AU	JTOMATIC HAMM	ER.			
WATER L	EVEL OBS	SERVATIONS IN	BOREHOLE						
	TIME		DEPTH OF						
DATE		HOLE	CASING	WATER	NO	WATERIEV			=
			, <u> </u>						
PIEZOME	TER INST.	ALLED	YES	X NO SK	ETCH SHOWN (	ON			
	<b>-</b> .	TVDE							
						GTH FT		BOT FLEV	
				OD, IN.		0111,111.			
PAY QUA	NTITIES								
3.5" DIA. DI	RY SAMPLE	BORING	LIN. FT.	80	NO. OF 3" SHEL	BY TUBE SA	MPLES		
3.5" DIA. U-	-SAMPLE BO	DRING	LIN. FT.		NO. OF 3" UNDI	STURBED SA	AMPLES		
CORE DRII	LING IN RC	СК	LIN. FT.	15	OTHER:				
BORING	CONTRAC	TOR		AQUIF	ER DRILLING &	TESTING C	CO., INC.		
DRILLER		JOH	IN CAMPBEL	L	HELPERS				
REMARK	S			BOREHOLE GRO	OUTED UPON C	OMPLETIC	DN.		
RESIDEN	T ENGINE	ER		TERESA SANDIF	ORD		DATE	05-2	6-15
CLASSIFI	CATION C	HECK:	CHERYL	J. MOSS	TYPING CHE	CK:			
MRCE Form BS	S-1						BO	RING NO.	M-23

#### MUESER RUTLEDGE CONSULTING ENGINEERS **BORING LOG**

PROJECT: LOCATION:

DAILY

SAMPLE

PROGRESS NO. DEPTH BLOWS/6"

#### WEST 18TH - WEST 19TH STREET/10TH AVENUE NEW YORK, NEW YORK

SAMPLE DESCRIPTION

M-24 BORING NO. 3 SHEET 1 OF 12320 FILE NO. SURFACE ELEV. 7.7± RES. ENGR. TERESA SANDIFORD CASING STRATA DEPTH BLOWS REMARKS

09:00							DRILLED	Hand excavated to 3'.
05-20-15							AHEAD	Brick layer encountered
Wednesday							4"	roller bit from 3' to 6'.
Partly Sunny								
65°F						5		
	1D	6.0	9-3	Top: Brn gravelly f-c sand, some clay (SC)	E			
		8.0	2-1	Bot: Black clavev f-m sand, trace gravel (SC)	•			
	2D	8.0	4-5	Black gravel some medium to coarse sand (GP)				RFC=1"
	20	10.0	5-4			10		
	ЗD	10.0	10-6	Brown red gravelly fine to coarse sand some				
	00	12.0	2-4	clay (SC)				
		12.0	∠-+					
						13.5		
						13.5		
	40	45.0	0.4	Out the strength silts along the second Q		15		
	4D	15.0	3-1	Soft black organic silty clay, trace fine sand &				WC=65
		17.0	1-2	gravel (OH)				REC=3"
			-		0			
						20		
	5D	20.0	1-2	Soft gray organic silty clay, trace fine sand, shells				WC=58
		22.0	2-2	(OH)				5D, 12D: REC=6"
	6D	22.0	3-6	Do 5D (OH)				WC=48
		24.0	8-3			24		
	7D	24.0	3-4	Brown silty clay, trace to some fine sand, gravel		25		
		26.0	4-6	(CL)				
	8NR	26.0	5-9	No recovery				
		28.0	12-18		v			WC=30
	9D	28.0	11-8	Brown & red brown silt varved with some clavev				
	-	30.0	8-13	silt (ML)		30		
	10D	30.0	36-14	Red brown silty fine sand varved with some			, v	
		32.0	11-13	brown fine sand, some silt (SM)				
		02.0	11.10					
			-					
			-			35		
	11D	35.0	8-8	Brown fine sand, some silt (SM)	S			
	пD	27.0	12.20	blown line sand, some sin (Sivi)				
		37.0	13-20					
			-					WC-Water Content
			-			40		in percent of dry
	100	40.0	0.5	Tap 4" Dad brown silve fine cond (CNA)		40		In percent of dry
	12D	40.0	8-5	Top 1": Red brown slitty fine sand (SM)	DR	40		weight.
	10	41.2	100/3	Bot: Gray mic f-m sand, some slit (DR) (SIVI)		42	*	
	1C	42.0	REC=97%	Hard, unweathered to slightly weathered, gray			î	*Coring time from 13:42
		47.0	RQD=88%	gneissic schist, blocky, iron stained weathered				to 14:00.
				joints		45		
			_					
					R			
	2C	47.0	REC=96%	Hard unweathered gray gneissic schist, trace	11		*	*Coring time from 14:13
		52.0	RQD=96%	pegmatite, moderately jointed, iron stained				to 14:30.
				joints		50		
14:30						52		End of Boring at 52'.
MRCE Form BL	-1					BORI	NG NO.	M-24



BOR-3_JAN2013

#### MUESER RUTLEDGE CONSULTING ENGINEERS

					BORING N	ю.	M-24	ŧ
					SHEET	3	OF	3
PROJECT	WEST 18TH -	WEST 19TH	STREET/10TH	I AVENUE	FILE NO.		12320	
	1	NEW YORK, N	IEW YORK		SURFACE	ELEV.	7.	7±
BORING LOCATION	SEE	BORING LOC	CATION PLAN		DATUM		NAVD 88	<b>)</b>
					-			
BORING EQUIPMEN		DDS OF STABIL	LIZING BOREH	OLE				
					V	VEC		
				JSED 1		EPOM		2 20
				4		FROM	T	) <u> </u>
						FROM	T	,
			DIA., IN.					
	<u> </u>							
TYPE AND SIZE OF	:		DRILLING	MUD USED	X	YES	NO	
D-SAMPLER 2" O.	D. SPLIT SPOON		DIAMETE	R OF ROTARY BI	Г. IN.		3-7/8	
U-SAMPLER			TYPE OF	DRILLING MUD	· -		QUIK MUD	
S-SAMPLER					=			
CORE BARREL NX DO	OUBLE BARREL		AUGER U	SED		YES	X NO	
CORE BIT NX DI	AMOND		TYPE AND	D DIAMETER, IN.				
DRILL RODS NWJ					-			
			CASING F	IAMMER, LBS.		AVERAGE	FALL, IN.	
			*SAMPLE	R HAMMER, LBS.	140	AVERAGE	FALL, IN.	30
			*USED AL	JTOMATIC HAMMI	ER.			
WATER LEVEL OBS	ERVATIONS IN	BOREHOLE						
	DEPTH OF	DEPTH OF	DEPTH TO					
	HOLE	CASING	WATER	NO				
				NO				L.
PIEZOMETER INST	ALLED	YES X	NO SKE	ETCH SHOWN (	ON			
STANDPIPE:	TYPE		ID, IN.	LEN	GTH, FT.		TOP ELEV.	
INTAKE ELEMENT:	TYPE		OD, IN.	LEN	GTH, FT.		TIP ELEV.	
FILTER:			OD, IN.	LEN	GTH, FT.		BOT. ELEV.	
PAY QUANTITIES	DODINO		40					
3.5" DIA. DRY SAMPLE	BORING		42	NO. OF 3" SHEL	BY TUBE SA	MPLES		
3.5" DIA. U-SAMPLE BU			10	NO. OF 3" UNDI	STURBED SA	MPLES		
CORE DRILLING IN RC	ICK .	LIN. F1.	10	OTHER:				
BORING CONTRACT	TOR							
			AQUIFL			O., INC.		
	F/					N		
	FR		RESA SANDIE	ORD			05-2	20-15
CLASSIFICATION C	HECK:	CHERYL .I	. MOSS	TYPING CHE	CK:			
MRCE Form BS-1		2				BOI	RING NO.	M-24

### MUESER RUTLEDGE CONSULTING ENGINEERS BORING LOG

PROJECT: LOCATION: WEST 18TH - WEST 19TH STREET/10TH AVENUE NEW YORK, NEW YORK

DAILY		SVM				NL3	CASING	
DAILY	NO	DEDTU				DEDTU		
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	SIRAIA	DEPTH	BLOWS	
09:00	1D	0.0	38-25	Gray black fine to coarse sandy gravel, trace		0.33	DRILLED	Asphalt from 0 to
04-28-15		2.0	21-24	silt (Fill) (GM)			AHEAD	0.33'.
Tuesday	2D	2.0	11-17	Brown fine to medium sand, brick, trace gravel,			4"	
Sunny		4.0	16-9	coarse sand, silt (Fill) (SP-SM)				
55°F	3D	4.0	8-18	Brown fine to coarse sand, some brick, trace		5		
		6.0	17-11	gravel, silt (Fill) (SM)				
	4D	6.0	8-9	Gray black fine to coarse sand, some silt,				4D-6D: Petroleum
		8.0	8-7	trace gravel (Fill) (SM)				odor.
	5D	8.0	11-17	Do 4D (Fill) (SM)				
		10.0	15-11			10		
	6D	10.0	19-16	Gray black fine to coarse sandy gravel, trace				
		12.0	30-41	silt (Fill) (GP-GM)				
					_			
					F			
						15		
	7NR	15.0	5-2	No recovery				
		17.0	2-1					
						20		
	8D	20.0	3-8	Red brown fine to coarse sand and brick				8D-12D: Petroleum
		22.0	7-100/4"	fragments, trace gravel, silt (Fill) (SP-SM)				odor.
		-						Cobble dropped from
								22' to 24'.
	9D	24.0	1/12"	Brown gravel and brick fragments, trace fine		25		RFC=2"
	00	26.0	1-4	to coarse sand (Fill)		26		
	10D	26.0	17-22	Black brown fine to coarse sand trace silty				
	100	28.0	21-10	dravel (SP-SM)				
	11D	20.0	5-6	Red brown fine to medium sand trace silt				
		20.0	10.12	some silt lover (SP SM MI)		30		
	120	30.0	0.8	Pod brown fing to modium cand, come silt		30	V	
	120	30.0	9-0	trace mice (SM)				
		32.0	11-12					
					~	25		
	105	05.0			5	35		
	13D	35.0	4-5	Red brown silty fine sand, trace mica (SM)				
		37.0	9-10					
						40		
	14D	40.0	3-8	Red brown fine to medium sand, some silt,				
		42.0	7-13	trace mica (SM)				
						43		
	1C	44.0	REC=87%	Medium hard slightly weathered gray gneissic		45	*	Coring time from
		49.0	RQD=78%	schist, closely jointed to jointed				01:09 to 01:14 at 3.8
								minutes per foot.
					R			2C: Didn't observe
								coring time for 2C.
	2C	49.0	REC=93%	Medium hard slightly weathered to		50		Run paused for 20
		54.0	RQD=67%	unweathered gray gneissic schist, jointed to				minutes to fix pump.
				closely jointed				
L					1			L

BORING NO.

M-25

### MUESER RUTLEDGE CONSULTING ENGINEERS BODING LOG

			BO		BOR	ING NO.	M-25	
						SHE	ET 2 OF	4
PROJEC	T:	W	EST 18TH -	WEST 19TH STREET/10TH AVENUE		F	ILE NO.	12320
LOCATIC	DN:		١	NEW YORK, NEW YORK	S	URFAC	E ELEV.	12.4±
		-				RES	. ENGR.	TERESA SANDIFORD
DAILY		SAM	PLE				CASING	
PROGRESS	NO.	DEPTH	BLOWS/6"	SAMPLE DESCRIPTION	STRATA	DEPTH	BLOWS	REMARKS
Cont'd								
04-28-15			-		R			
Tues., Sunny						54		End of Poring at 54
55°F, 14:30			-			55		End of Boring at 54.
			-					
						60		
			-					
						65		
			-					
			-					
						70		
			-					
			-					
						75		
			-					
			-					
						80		
			-					
			-					
						85		
			-					
			-					
			-			90		
			-					
			-					
						95		
			-					
						100		



#### MUESER RUTLEDGE CONSULTING ENGINEERS

						BORING	NO.	M-25	5	
						SHEET	4	OF	4	
Г	WEST 18T	H - WEST 1	9TH S	STREET/10TH	AVENUE	FILE NO.	-	12320		
N		NEW YO	RK, N	EW YORK		SURFACE	E ELEV.	12	.4±	
LOCATION	S	EE BORINO	G LOC	ATION PLAN		DATUM		NAVD 88	3	
EQUIPMEN	NT AND MET	HODS OF S	TABIL	IZING BOREH	OLE					
	TYPE (	OF FEED								
SORING RIG	DURIN	GCORING		CASING	JSED	X	YES			
	MECHA			DIA., IN.	4		. FROM	0 10	D <u>30</u>	
			Х	DIA., IN.		_DEPIH, FI	. FROM	10		
				DIA., IN.		_DEPTH, FT	. FROM	10	)	
TRACI	< <u> </u>									
						V	VEC			
				DRILLING			TES	NO		
к <u>20.</u>	D. 3PLII 3PU					, IIN.		3-7/6		
.r				TIFE OF				QUIK GEL		
		<b>E</b> I			SED		VES	XNO		
				TYPE ANI	DIAMETER IN		120			
<u></u>				CASING H	AMMER I BS		AV/FRAGI	FALL IN		
				*SAMPLE	R HAMMER I BS	140	AVERAGI	= FALL IN	30	
				*USED AL		=R.				
EVEL OBS	ERVATION	S IN BOREH	OLE							
	DEPTH O	DEPTH	1 OF	DEPTH TO						
TIME	HOLE	CASI	NG	WATER		CONDITIO	NS OF OB	SERVATION		
					NO	WATER LEV	EL OBSER	RVATIONS MAD	E.	
TERINST	ALLED	YES	Х	NO SKI	ETCH SHOWN C	)N				
Γ.										
						ЭТН, FТ. Отн. гт				
						ЭТП, ГТ. ОТП ГТ				
				OD, IN.		эіп, гі.		_BOT. ELEV.		
NTITIES										
RV SAMPI F	BORING	LIN FT		11						
		LIN FT	LIN. FT. <u>44</u> NO. OF 3" SHE							
		LIN FT		10						
		LIN. 1 1.		10	UTHEIN.					
CONTRAC	TOR			AQUIF	ER DRILLING &	TESTING (	CO., INC			
		DOUG WO	OD		HELPERS			LEO		
s			BC	REHOLE GRO		OMPLETIC	DN.			
	ER		TE	RESA SANDIF	ORD		DATE	04-2	28-15	
CATION C	HECK:	CHE	RYL J.	MOSS	TYPING CHEC	CK:				
- S-1							BO	RING NO.	M-25	
		Image: Constraint of the second se	WEST 18TH - WEST 1      NEW YO      LOCATION SEE BORING      TYPE OF FEED      SORING RIG DURING CORING      MECHANICAL      MILIN POON      R      MILIN POON      REL    NX DOUBLE BARREL      NX DIAMOND    DEPTH OF    DEPTH      TIME    DEPTH OF    DEPTH      TER INSTALLED    YES      E:    TYPE      EMENT:    TYPE	WEST 18TH - WEST 19TH S      NEW YORK, NI      LOCATION      SEE BORING LOC      EQUIPMENT AND METHODS OF STABIL      TYPE OF FEED      BORING CORING      MECHANICAL      MIDUBROON      REL    NX DOUBLE BARREL      NX DIAMOND      NWJ      EVEL OBSERVATIONS IN BOREHOLE      TER INSTALLED    YES    X      EE <th colspan<="" td=""><td>WEST 18TH - WEST 19TH STREET/10TH NEW YORK, NEW YORK LOCATION SEE BORING LOCATION PLAN EQUIPMENT AND METHODS OF STABILIZING BOREH TYPE OF FEED ORING RIG DURING CORING CASING L MECHANICAL DIA., IN. HYDRAULIC X DIA., IN. OTHER DIA., IN. TRACK D SIZE OF: DRILLING R 2° O. D. SPLIT SPOON DIAMETEI R</td><td>WEST 18TH - WEST 19TH STREET/10TH AVENUE      NEW YORK, NEW YORK      LOCATION      SEE BORING LOCATION PLAN      EQUIPMENT AND METHODS OF STABILIZING BOREHOLE      TYPE OF FEED      NORING CORING    CASING USED      MECHANICAL    DIA, IN.    4      OTHER    DIA, IN.    4      OTHER    DIALING MUD USED      DIAMETER OF ROTARY BIT      TRACK      DIAMETER OF ROTARY BIT      TYPE OF DRILLING MUD USED      DIAMETER OF ROTARY BIT      TYPE OF DRILLING MUD USED      ND DIAMETER OF ROTARY BIT      TYPE OF DRILLING MUD USED      TYPE OF DRILLING MUD      INTYPE OF DRILLING MUD      NX DOUBLE BARREL      AUGER USED      TYPE AD DIAMETER, LBS.      SAMPLE BORING IN BOREHOLE      TYPE      OD, IN.      LEIN      MATERIALED</td><td>BORING I SHEET      NEET 18TH - WEST 19TH STREET/10TH AVENUE      NEW YORK, NEW YORK      SURFACT      LOCATION    SEE BORING LOCATION PLAN    DATUM      EQUIPMENT AND METHODS OF STABILIZING BOREHOLE      TYPE OF FEED      ORING ING CORING    CASING USED    X      TYPE OF FEED      OTHER    DIAL, IN.    4      HYPE OF FEED      OTHER    DIAL, IN.    4      MYDAULIC    X      OTHER    OTHER      OTHER    OTHER      OTHER    OTHER      OTHER    OTHER      OTHER    OTHER      DIAMETER OF ROTARY BIT, IN.      TYPE OF DRILLING MUD USED    X      NX DOUBLE BARREL    AUGER USED      NX DIAMOND    TYPE AND DIAMETER OF ROTARY BIT, IN.      SAMPLE BORING MUMER, LBS.    140</td><td>BORING NO. SHEET  4    IN  NEW YORK, NEW YORK  SURFACE ELEV.    LOCATION  SEE BORING LOCATION PLAN  DATUM    EQUIPMENT AND METHODS OF STABILIZING BOREHOLE  TYPE OF FEED  DATUM    TYPE OF FEED  CASING USED  X YES    MECHANICAL  DIA., IN.  4  DEPTH, FT. FROM    MECHANICAL  DIA., IN.  4  DEPTH, FT. FROM    OTHER  DIA., IN.  4  DEPTH, FT. FROM    D SIZE OF:  DRILLING MUD USED  X YES    R  2*0.0. SPLIT SPOON  DIAMETER OF ROTARY BIT, IN.    R  TYPE OF DRILLING MUD  X    R  7*0.0. SPLIT SPOON  DIAMETER OF ROTARY BIT, IN.    R  TYPE OF DRILLING MUD USED  X YES    NX DUAMOND  TYPE AND DIAMETER, ISS.  140    NS  NWJ  CASING HAMMER, LBS.  AVERAGI    'USED AUTOMATIC HAMMER, LBS.  140  AVERAGI    'USED AUTOMATIC HAMMER, LBS.  <td< td=""><td>Image: Construction of the state of the</td></td<></td></th>	<td>WEST 18TH - WEST 19TH STREET/10TH NEW YORK, NEW YORK LOCATION SEE BORING LOCATION PLAN EQUIPMENT AND METHODS OF STABILIZING BOREH TYPE OF FEED ORING RIG DURING CORING CASING L MECHANICAL DIA., IN. HYDRAULIC X DIA., IN. OTHER DIA., IN. TRACK D SIZE OF: DRILLING R 2° O. D. SPLIT SPOON DIAMETEI R</td> <td>WEST 18TH - WEST 19TH STREET/10TH AVENUE      NEW YORK, NEW YORK      LOCATION      SEE BORING LOCATION PLAN      EQUIPMENT AND METHODS OF STABILIZING BOREHOLE      TYPE OF FEED      NORING CORING    CASING USED      MECHANICAL    DIA, IN.    4      OTHER    DIA, IN.    4      OTHER    DIALING MUD USED      DIAMETER OF ROTARY BIT      TRACK      DIAMETER OF ROTARY BIT      TYPE OF DRILLING MUD USED      DIAMETER OF ROTARY BIT      TYPE OF DRILLING MUD USED      ND DIAMETER OF ROTARY BIT      TYPE OF DRILLING MUD USED      TYPE OF DRILLING MUD      INTYPE OF DRILLING MUD      NX DOUBLE BARREL      AUGER USED      TYPE AD DIAMETER, LBS.      SAMPLE BORING IN BOREHOLE      TYPE      OD, IN.      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FROM    MECHANICAL  DIA., IN.  4  DEPTH, FT. FROM    OTHER  DIA., IN.  4  DEPTH, FT. FROM    D SIZE OF:  DRILLING MUD USED  X YES    R  2*0.0. SPLIT SPOON  DIAMETER OF ROTARY BIT, IN.    R  TYPE OF DRILLING MUD  X    R  7*0.0. SPLIT SPOON  DIAMETER OF ROTARY BIT, IN.    R  TYPE OF DRILLING MUD USED  X YES    NX DUAMOND  TYPE AND DIAMETER, ISS.  140    NS  NWJ  CASING HAMMER, LBS.  AVERAGI    'USED AUTOMATIC HAMMER, LBS.  140  AVERAGI    'USED AUTOMATIC HAMMER, LBS.  <td< td=""><td>Image: Construction of the state of the</td></td<></td>	WEST 18TH - WEST 19TH STREET/10TH NEW YORK, NEW YORK LOCATION SEE BORING LOCATION PLAN EQUIPMENT AND METHODS OF STABILIZING BOREH TYPE OF FEED ORING RIG DURING CORING CASING L MECHANICAL DIA., IN. HYDRAULIC X DIA., IN. OTHER DIA., IN. TRACK D SIZE OF: DRILLING R 2° O. D. 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LEIN      MATERIALED	BORING I SHEET      NEET 18TH - WEST 19TH STREET/10TH AVENUE      NEW YORK, NEW YORK      SURFACT      LOCATION    SEE BORING LOCATION PLAN    DATUM      EQUIPMENT AND METHODS OF STABILIZING BOREHOLE      TYPE OF FEED      ORING ING CORING    CASING USED    X      TYPE OF FEED      OTHER    DIAL, IN.    4      HYPE OF FEED      OTHER    DIAL, IN.    4      MYDAULIC    X      OTHER    OTHER      OTHER    OTHER      OTHER    OTHER      OTHER    OTHER      OTHER    OTHER      DIAMETER OF ROTARY BIT, IN.      TYPE OF DRILLING MUD USED    X      NX DOUBLE BARREL    AUGER USED      NX DIAMOND    TYPE AND DIAMETER OF ROTARY BIT, IN.      SAMPLE BORING MUMER, LBS.    140	BORING NO. SHEET  4    IN  NEW YORK, NEW YORK  SURFACE ELEV.    LOCATION  SEE BORING LOCATION PLAN  DATUM    EQUIPMENT AND METHODS OF STABILIZING BOREHOLE  TYPE OF FEED  DATUM    TYPE OF FEED  CASING USED  X YES    MECHANICAL  DIA., IN.  4  DEPTH, FT. FROM    MECHANICAL  DIA., IN.  4  DEPTH, FT. FROM    OTHER  DIA., IN.  4  DEPTH, FT. FROM    D SIZE OF:  DRILLING MUD USED  X YES    R  2*0.0. SPLIT SPOON  DIAMETER OF ROTARY BIT, IN.    R  TYPE OF DRILLING MUD  X    R  7*0.0. SPLIT SPOON  DIAMETER OF ROTARY BIT, IN.    R  TYPE OF DRILLING MUD USED  X YES    NX DUAMOND  TYPE AND DIAMETER, ISS.  140    NS  NWJ  CASING HAMMER, LBS.  AVERAGI    'USED AUTOMATIC HAMMER, LBS.  140  AVERAGI    'USED AUTOMATIC HAMMER, LBS. <td< td=""><td>Image: Construction of the state of the</td></td<>	Image: Construction of the state of the

**APPENDIX B** 



# LEGEND:

- MONITORING WELL LOCATION
- SOIL BORING LOCATION
- PRE-DESIGN NAPL DELINEATION
  SOIL BORING LOCATION

 $\varkappa$ 

- RECOVERY WELL LOCATION
- ▲ BORING LOCATION (BBL)
- TEST PIT LOCATION
- ▲ APROXIMATE SOIL GAS SAMPLE LOCATION
  - LOT BOUNDARY
- BLOCK ID
- LOT ID
- BULKHEAD

____ · ___ · ___ · ___ · ___

691

(43)

- HIGH LINE
- REMEDIATED PROPERTY
- A----A' CROSS SECTION TRANSECT LOCATION

## NOTE:

- 1. BLOCK AND LOT ID AND PROPERTY LINE INFORMATION WAS OBTAINED FROM NEW YORK CITY DEPARTMENT OF FINANCE AUTOMATED CITY REGISTER INFORMATION SYSTEM (ACRIS).
- 2. SURVEY CONTROL WAS TAKEN FROM SITE WDE BASE SURVEY PREPARED BY MUNOZ ENGINEERING, P.C. DATED APRIL 2007.
- 3. CURBING AND STREET BOUNDARIES TAKEN FROM MUNOZ ENGINEERING DRAWING ENTITLED MONITORING WELLS AND BORINGS LOCATION SURVEY" DATED 11/24/2008 AND TRC DRAWING ENTITLED PROPOSED REMEDIAL INVESTIGATION SAMPLE LOCATIONS" DATE UNKNOWN.
- 4. ALL LOCATIONS ARE APPROXIMATE.
- 5. HISTORICAL SHORELINES DIGITIZED FROM W BRIDGES, 1814, COLTON, 1836, AND PERRIS, 1859.
- 6. FORMER MANUFACTURED GAS PLANT (MGP) STRUCTURES ARE FROM THE CONSOLIDATED GAS COMPANY PLANT, AS SHOWN ON SANBORN MAPPING DATED 1895.
- 7. BORINGS WERE COMPLETED BY BBL DURING THE PRELIMINARY SITE INVESTIGATION (2002) AND PHASE II SITE INVESTIGATION (2003).

GRAPHIC SCALE CONSOLIDATED EDISON COMPANY OF NEW YORK, INC. WEST 18TH STREET FORMER GAS WORKS REMEDIAL INVESTIGATION REPORT SOIL AND GROUNDWATER SAMPLE LOCATIONS AND CROSS SECTION TRANSECTS



FIGURE

4

UT NT Ξ bf) ä



APPROXIMATE EXTENT OF HISTORICAL CRIBBING

_ BOTTOM OF BORING





**NAVD 88)** 

(FEET

ELEVATION

**B'** EAST