STORMWATER BASIN AREA INVESTIGATION REPORT

PROPOSED RESIDENTIAL DEVELOPMENT

Texas Road & Falson Lane
Block 146, Lots 25 & 26
Township of Marlboro, Monmouth County, New Jersey

Prepared for:

PALLU ASSOCIATES, LLC 811 Amboy Avenue Edison, NJ 08837

Prepared by:



245 Main Street, Suite 110 Chester, New Jersey 07930

Peter H. Howell, P.E. Principal

NJ PE License No. 24GE04728700

Francis Van Cleve, P.E.

Project Manager

NJ PE License No. 24GE05534500

Project #2841-99-001E November 9, 2020

STORMWATER BASIN AREA INVESTIGATION REPORT

Proposed Residential Development Texas Road & Falson Lane

Block 146, Lots 25 & 26 Township of Marlboro, Monmouth County, New Jersey

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Soil Profile Pit Location Plan Soil Survey Plan Records of Subsurface Exploration Laboratory Test Results

1.0 PROJECT DESCRIPTION

Dynamic Earth, LLC (Dynamic Earth) has completed an exploration and evaluation of the subsurface conditions for the proposed site development to be located west of the intersection of Texas Road and Falson Lane in the Township of Marlboro, Monmouth County, New Jersey. The site is further identified as Block 146, Lots 25 and 26 and is shown on the *Soil Profile Pit Location Plan* in the Appendix of the report.

At the time of Dynamic Earth's investigation, the majority of the site was undeveloped and wooded. A JCP&L utility easement (approximately 150 feet in width) transects the site in a northwest to southeast direction. The proposed site development is expected to include construction of a multi-family residential development consisting of 16 residential buildings containing approximately 387 units. Additional improvements will include associated pavements, utilities, stormwater management facilities and clubhouse with associated amenities.

Four stormwater management basins (identified as Basins A1, A2, A3, and B) are proposed at the site. Basin A1 is proposed within the northern portion of the site; Basin B is proposed within the eastern portion of the site; Basin A2 is proposed within the southern portion of the site; and Basin A3 is proposed within the western portion of the site. The proposed site development details were provided on an October 14, 2020 (last revised) draft *Overall Grading Plan* prepared by Dynamic Engineering Consultants, PC (Dynamic).

Topographic information was provided on a July 31, 2020 (last revised) *Boundary and Topographic Survey* prepared by Dynamic Survey, LLC. Existing site grades range between approximately 84 feet within the western portion of the site and 130 feet within the eastern portion of the site. The elevations referenced in the survey are given in 1988 North American Vertical Datum (NAVD 88). All elevations given in this report are referenced in NAVD 88, unless otherwise noted.

The subject site is bound to the north by a wooded area and residential property; to the east by Falson Lane; to the south by Texas Road; and to the west by a wooded area, with residential property beyond.

2.0 SCOPE OF SERVICES

Dynamic Earth's scope of services pertaining to this report included evaluating the subsurface conditions at soil profile pits to estimate the apparent seasonal high groundwater level. Ten soil profile pits (identified as SPP-1 through SPP-10) were excavated at the site using a rubber-tire backhoe. Test locations were located within the area of anticipated stormwater management

facilities and were backfilled to the surface with excavated soils at completion. The test locations are shown on the attached *Soil Profile Pit Location Plan*.

The soils encountered were classified using the United States Department of Agriculture (USDA) classification system. Observations were made for groundwater and/or soil mottling and mineral deposits potentially indicative of zones of saturation or seasonal high groundwater. Soil logs are included in the Appendix of this report.

3.0 SOIL SURVEY

Based on a review of the United States Department of Agriculture – Natural Resources Conservation Services (USDA-NRCS) soil survey, the following soil resources are mapped underlying the area of the proposed site improvements, and are also shown on the *Soil Survey Plan* included in the Appendix.

Atsion sand, zero to two percent slopes (AtsA): Atsion sand, zero to two percent slopes is mapped within the western portion of the site. The typical soil profile (as detailed in the soil survey) consists of peat to a depth of two inches; underlain by sand to a depth of 80 inches below the natural ground surface (limit of report). The depth of the water table is reported to range between zero to 12 inches below the natural ground surface (limit of report).

Evesboro sand, zero to five percent slopes (EveB): Evesboro sand, zero to five percent slopes is mapped within a relatively small area within the northern portion of the site. The typical soil profile (as detailed in the soil survey) consists of sand to a depth of 31 inches; underlain by stratified loamy sand to sand to a depth of 80 inches below the natural ground surface (limit of report). The depth of the water table is reported to be more than 80 inches below the natural ground surface (limit of report).

Keyport sandy loam, two to five percent slopes (KemB): Keyport sandy loam, two to five percent slopes is mapped within the eastern portion of the site. The typical soil profile (as detailed in the soil survey) consists of sandy loam to a depth of 12 inches; clay to a depth of 41 inches; underlain by silty clay loam to a depth of 80 inches below the natural ground surface (limit of report). The depth of the water table is reported to range between 18 to 42 inches below the natural ground surface (limit of report).

Lakehurst sand, zero to five percent slopes (LakB): Lakehurst sand, zero to five percent slopes is mapped within the western, central, and southern portions of the site. The typical soil profile (as detailed in the soil survey) consists of slightly decomposed plant material to a depth of two inches; underlain by sand to a depth of 80 inches below the natural ground surface (limit of report). The

depth of the water table is reported to range between 18 to 42 inches below the natural ground surface (limit of report).

Lakewood sand, five to ten percent slopes (LasC): Lakewood sand, five to ten percent slopes is mapped within the central and southern portions of the site. The typical soil profile (as detailed in the soil survey) consists of sand to a depth of 11 inches; loamy sand to a depth of 13 inches; underlain by sand to a depth of 60 inches below the natural ground surface (limit of report). The depth of the water table is reported to range between 48 to 122 inches below the natural ground surface (limit of report).

Sassafras sandy loam, 15 to 25 percent slopes (SacE): Sassafras sandy loam, 15 to 25 percent slopes is mapped within a relatively small area within the northern portion of the site. The typical soil profile (as detailed in the soil survey) consists of sandy loam to a depth of 18 inches; sandy clay loam to a depth of 28 inches; loamy sand to a depth of 40 inches; underlain by sand to a depth of 80 inches below the natural ground surface (limit of report). The depth of the water table is reported to range between 48 to 122 inches below the natural ground surface (limit of report).

4.0 RESULTS

Detailed descriptions of the subsurface conditions encountered at each location are provided on the *Records of Subsurface Exploration* included herein. A summary of the subsurface conditions encountered is presented below.

4.1 Subsurface Soil Profile

Soil profile pits were performed within existing landscaped areas and encountered approximately three to six inches of topsoil at the surface. Beneath the surface cover, natural coastal plain deposits were encountered that generally consisted of sand, loamy sand, sandy loam, sandy clay loam, clay loam, and clay with variable amounts of gravel. The natural coastal plain deposits were encountered to termination/refusal depths ranging between approximately 8.3 feet and 12.0 feet below the ground surface; corresponding to elevations ranging between 96.0 feet and 83.5 feet.

4.2 Seasonal High Groundwater and Permeability

Evidence of seasonal high groundwater (based on soil mottling) was encountered within the soil profile pits at depths ranging between three feet and 11.1 feet below the ground surface; corresponding to elevations ranging between 99.9 and 89.4 feet. Groundwater levels are expected to fluctuate seasonally and following significant periods of precipitation. A summary of the seasonal high groundwater levels and permeability test results is presented in the following table:

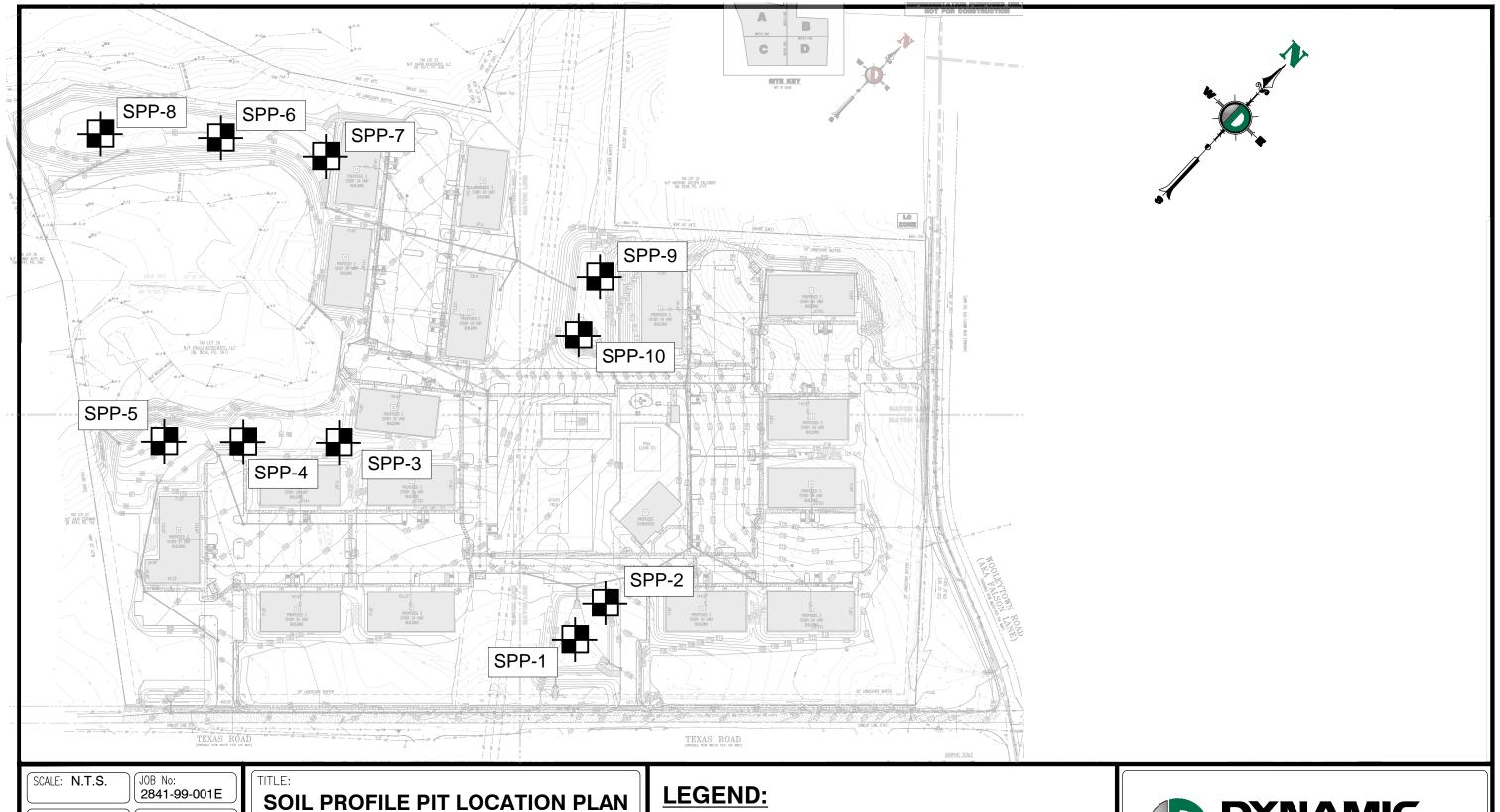
S	SEASONAL HIGH	H GROUNI	OWATER AN	D PERMEA	BILITY SUMM	ARY
	Approximate		ed Seasonal oundwater	Pe	ermeability Test	Results
Location	Surface Elevation	Depth	Elevation	Sample Depth	Permeability	(Inches/Hour)
		(Feet)		(Inches)	Replicate A	Replicate B
				12	6.7	4.9
SPP-1	103.8	4.0	99.8	36	< 0.14	< 0.14
				98	< 0.14	< 0.14
SPP-2	106.7	Not En	countered	24	< 0.14	< 0.14
311-2	100.7	NOT EII	Countered	96	< 0.14	< 0.14
SPP-3	100.0	3.5	96.5	60		
				24	2.6	1.8
SPP-4	96.7	3.0	93.7	48	< 0.14	< 0.14
				100	< 0.14	< 0.14
SPP-5	93.5	3.7	89.8	36	< 0.14	< 0.14
SPP-6	94.3	3.8	90.5	36		
SPP-7	95.2	3.3	91.9	36	5.6	7.2
311-7	95.2	5.5	91.9	60	> 20.0	> 20.0
SPP-8	93.5	4.1	89.4	35		
SPP-9	106.0	6.1	99.9	30	0.3	0.3
				80	1.8	2.0
SPP-10	103.0	3.3	99.7	35	< 0.14	< 0.14
				50	5.4	1.1

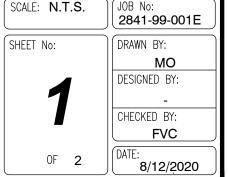
4.3 Conclusion

The NJ Stormwater BMP Manual, on Page E-12, Table 1 presents a rubric for the determination of permeability rates for hydrologic soil groups based on the most restrictive layer encountered. Specifically, there are three general criteria which include restrictions shallower than 20 inches; restrictions at 20 to 40 inches; and restrictions greater than 40 inches below the ground surface. Restrictions include (but are not limited to) abrupt textural boundary, fragipan, bedrock, dense material, or ortstein.

Based on the subsurface conditions encountered and the permeability testing performed, a restrictive layer was encountered at several test locations (SPP-1, SPP-2, SPP-4, and SPP-5) within the upper 40-inches of the soil profile that consisted of relatively firm, fine-grained soils (such as clay loam and clay). In addition, the results of permeability testing at these locations within the restrictive layer was less than 0.14 inches per hour. As such, the portions of the on-site soils encountered are consistent with hydrologic soil group (HSG) "D", as indicated in the NJ BMP Manual







PALLU ASSOCIATES PROJECT:

Proposed Residential Development

Block 146, Lots 25 & 26

Texas Road and Falson Lane, Township of Marlboro, Monmouth County, New Jersey

Rev. # 0 DEC Client Code: 2841 SPP-X



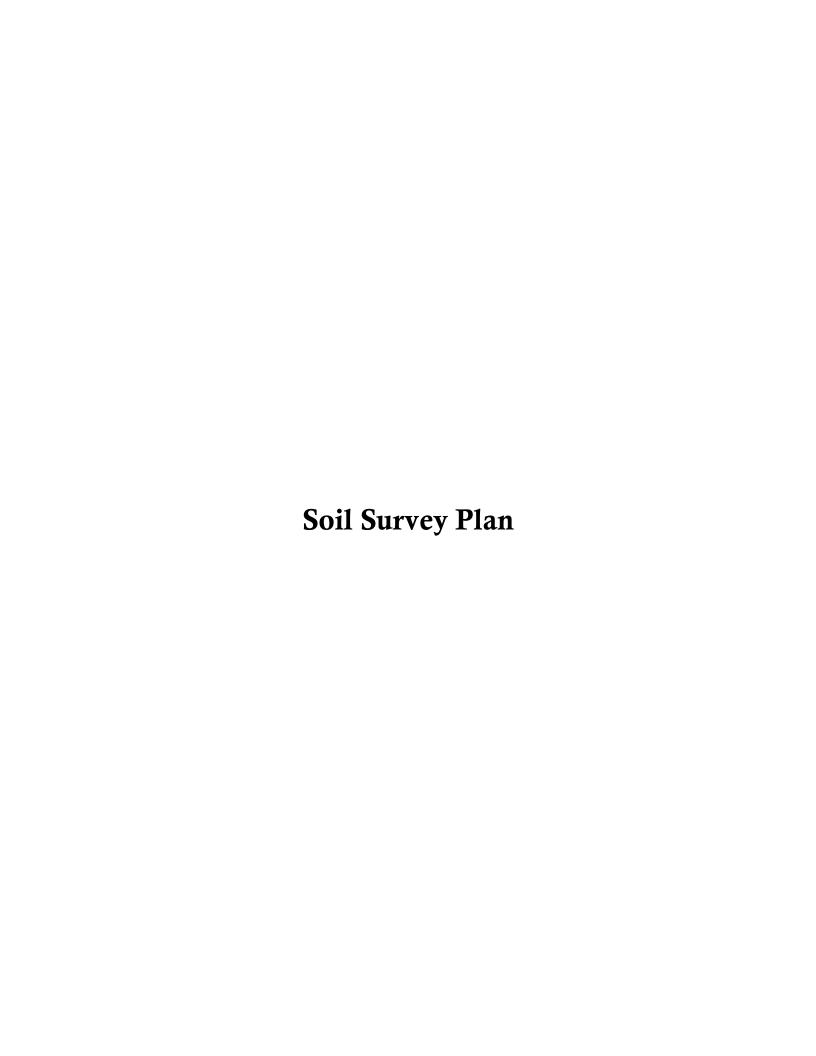
APPROXIMATE LOCATION OF SOIL PROFILE PIT

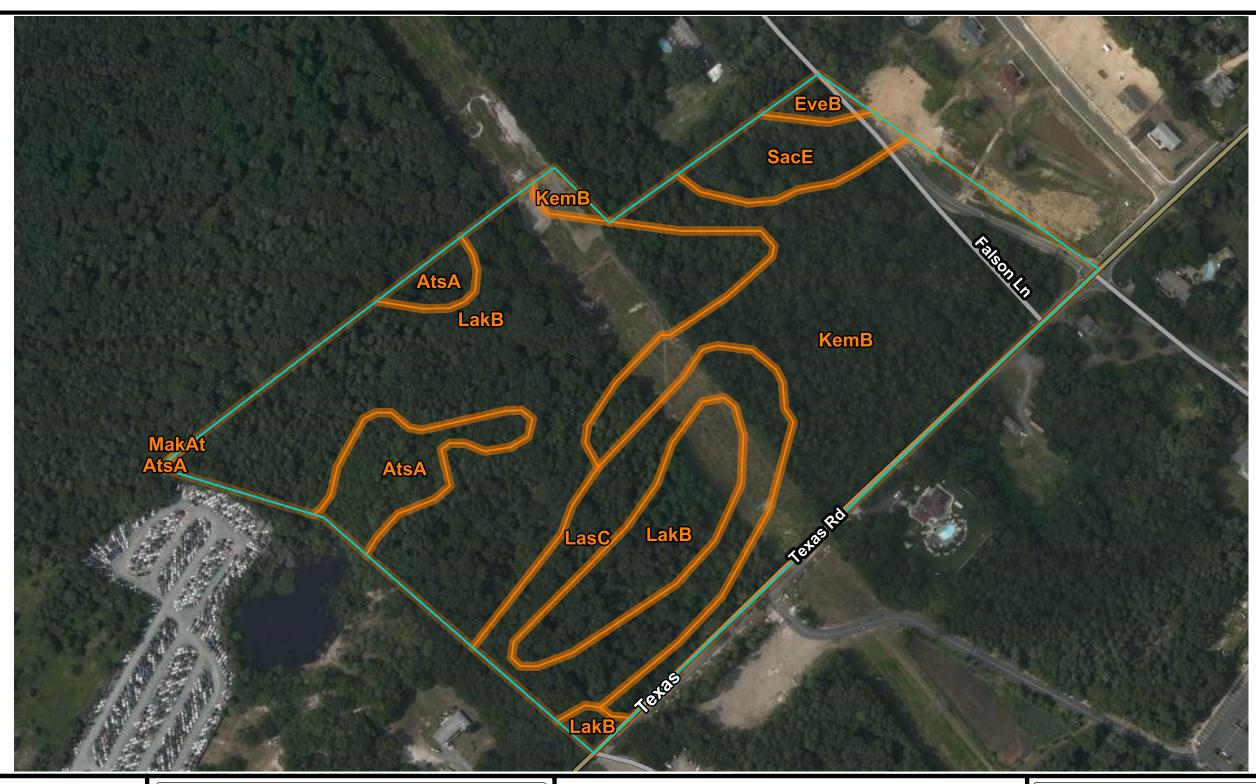
- NOTES:

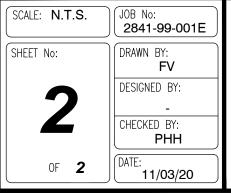
 1. THIS PLAN IS NOT FOR CONSTRUCTION AND WAS PREPARED TO ILLUSTRATE TEST
 LOCATIONS ONLY AND MAY NOT REFLECT THE MOST CURRENT REVISION OF THE BASE
- PLAN
 THIS PLAN HAS BEEN PREPARED BASED ON AN OCTOBER 14, 2020 DRAFT *DRAINAGE*PLAN BY DYNAMIC ENGINEERING CONSULTANTS, P.C.



245 Main Street - Suite 110 Chester, NJ 07930 T: 908.879.7095 - F: 908.879.0222 www.dynamic-earth.com







TITLE:

SOIL SURVEY PLAN

PROJECT: PALLU ASSOCIATES

Proposed Residential Development

Block 146, Lots 25 & 26 Texas Road and Falson Lane, Township of Marlboro, Monmouth County, New Jersey

Rev. # DEC Client Code: 2841

LEGEND:

AtsA: Atsion Sand, zero to two percent slopes

EveB: Evesboro Sand, zero to two percent slopes

KemB: Keyport Sandy Loam, two to five percent slopes

LakB: Lakehurst sand, zero to five percent slopes

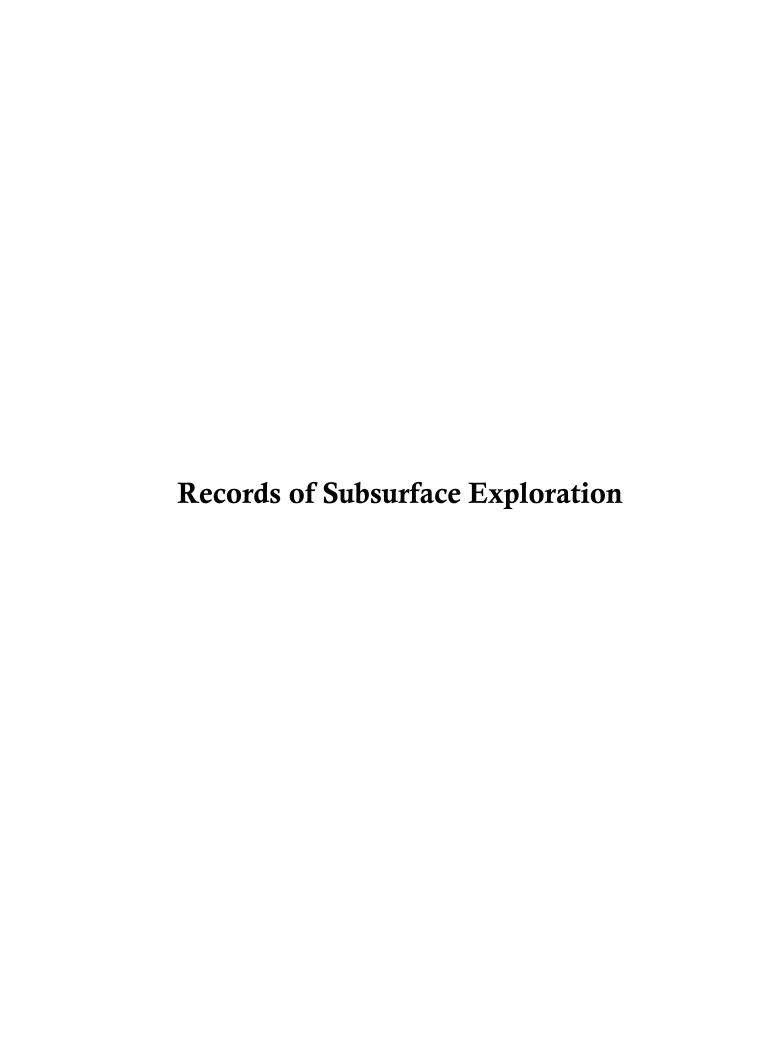
LasC: Lakewood sand, five to ten percent slopes

SacE: Sassafras sandy loam, 15 to 25 percent slopes

- THIS PLAN IS NOT FOR CONSTRUCTION AND WAS PREPARED TO ILLUSTRATE TEST LOCATIONS ONLY AND MAY NOT REFLECT THE MOST CURRENT REVISION OF THE BASE PLAN.
 THIS PLAN HAS BEEN PREPARED BASED ON A MAP FROM THE USDA WEB SOIL SURVEY INTERACTIVE MAP.



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SOIL PROFILE PIT LOG Soil Profile Pit: SPP-1

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Project:	Proposed Residentia	al Development										Project No.:	2841-99-001E											
			Township of Marlbo	ro, Monmouth Co	ounty, New Jen	sey	3/12/20				1		Pallu Associates, LLC	:	1			1						
Surface Elev Termination		103.8 12.0	Date Started: Date Completed:				3/12/20		Groundwa	ter Data			Depth (ft)			EL.				Groundw	ater Commen	ts		
Proposed Lo		SWM	Date Completed.	Logged by:	:		Ogrodnik		Seepage				NE											
Excavation / Test	Visual Observation			Contractor:			yweight Co		Groundwater				NE					Light gray (10 YR	7/1) mottles 48*-6	0"; 7.5YR 6/8 R	Reddish Yello	w mottles	136"-144"	
Method:	Visual Observation			Rig Type:		Case 5	80L Backhoe		Seasonal High Grou	ındwater			4.0			99.8								
									STRUCTURE		WATER		CONSISTENCY		BOUI	NDARY	ROOTS		MOTTLING		SA	MPLING		
DEPTH (IN)	COLOR	SOIL	TEXTURE		COARSE FRA	AGMENTS (%)		Shape	Grade	Size	CONTENT	Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography	ROOTS	Quantity	Size	Contrast	Type D	Depth (in)	No.	LAB RESULTS
				GRAVEL	COBBLES	STONES	BOULDERS															()		
0-6	TOPSOIL		LOAM	5	0	0	0	SUBANGULAR BLOCKY	WEAK	VERY FINE	MOIST	LOOSE	NONSTICKY	NONPLASTIC	ABRUPT <1"	SMOOTH	CMN (20% FINE MAX)	NONE			BAG	3	S-1	
				GRAVEL	COBBLES	STONES	BOULDERS		STRUCTU	RELESS														
6-18	Yellowish Brown (10YR 5/6)		SAND	5	0	0	0	SINGLE GRAIN			MOIST	LOOSE	NONSTICKY	NONPLASTIC	ABRUPT <1"	SMOOTH	FEW (5% MAX) VERY FINE	NONE			BAG TUBE	12	S-2 T-1	A = 6.7 IPH B = 4.9 IPH
				GRAVEL	COBBLES	STONES	BOULDERS																	
18-48	Yellowish Brown (10YR 5/8)		CLAY LOAM	5	0	0	0	SUBANGULAR BLOCKY	MODERATE	FINE	MOIST	FIRM	SLIGHTLY STICKY	SLIGHTLY PLASTIC	ABRUPT <1"	SMOOTH	FEW (5% MAX) VERY FINE	NONE			BAG TUBE	36	S-3 T-2	A < 0.14 IPH B < 0.14 IPH
				GRAVEL	COBBLES	STONES	BOULDERS																	
48-60	Yellowish Brown (10YR 5/8)		CLAY LOAM	5	0	0	0	SUBANGULAR BLOCKY	MODERATE	FINE	MOIST	FIRM	SLIGHTLY STICKY	SLIGHTLY PLASTIC	ABRUPT <1"	ѕмоотн	FEW (5% MAX) VERY FINE	FEW 2%	FINE <5MM	FAINT	BAG	36	S-3	
				GRAVEL	COBBLES	STONES	BOULDERS																	
60-136	Very Dark Gray (10YR 3/1)		CLAY	0	0	0	0	SUBANGULAR BLOCKY	MODERATE	MEDIUM	MOIST	FIRM	SLIGHTLY STICKY	MODERATELY PLASTIC	ABRUPT <1"	SMOOTH	NONE	NONE			BAG TUBE	98	S-4 T-3	A < 0.14 IPH B < 0.14 IPH
				GRAVEL	COBBLES	STONES	BOULDERS		STRUCTURELESS															
136-144	Very Plae Brown (10YR 7/4)		SAND	5	0	0	0	SINGLE GRAIN			MOIST	LOOSE	NONSTICKY	NONPLASTIC				FEW 2%	FINE <5MM	FAINT	BAG	140	S-5	
Additional	Remarks: Termir	nated at 144"	below the ground	surface.																				

Additional Remarks: Terminated at 144" below the ground surface.



Soil Profile Pit: SPP-2
Page 1 of 1

Project: Proposed Residential Development Project No.: 2841-99-001E Location: Texas Road and Wooleystown Road, Township of Marlboro, Monmouth County, New Jersey
Surface Elevation (ft): 10.67
Date Started:
Date Completed: Client: Pallu Associates, LLC 106.7 12.0 SWM Groundwater Comments Groundwater Data 8/12/20 (ft) (ft) Proposed Location:
Excavation
/ Test Visual Observation
Method: M. Ogrodnik Logged by: Contractor: Pennyweight Co Case 580L Backhoe Rig Type: Seasonal High Groundwater STRUCTURE CONSISTENCY SAMPLING WATER CONTENT COLOR SOIL TEXTURE COARSE FRAGMENTS (%) ROOTS LAB RESULTS DEPTH (IN) Type Depth (in) Resistance to Rupture Grade Size Stickiness Plasticity Distinctness Topography Quantity Size GRAVEL COBBLES STONES BOULDERS CMN (20% MAX) 0-6 TOPSOIL LOAM MOIST LOOSE NONSTICKY NONPLASTIC NONE BAG 3 SUBANGULAR BLOCKY WEAK VERY FINE GRAVEL COBBLES STONES BOULDERS SLIGHTLY PLASTIC BAG TUBE A < 0.14 IPH B < 0.14 IPH Yellowish Brown (10YR 5/8) 6-56 CLAY LOAM MOIST FIRM ABRUPT <1" SMOOTH FEW (5% MAX) NONE 24 SUBANGULAR MODERATE BLOCKY FINE COBBLES STONES BOULDERS GRAVEL SLIGHTLY 96 86-144 CLAY MOIST FIRM NONE NONE SUBANGULAR MODERATE MEDIUM BLOCKY

Additional Remarks: Terminated at 144" below the ground surface.



Page <u>1</u> of <u>1</u>

Soil Profile Pit: SPP-3

	Proposed Residentia												2841-99-001E											
		oleytown Road, Towns	hip of Marlboro,	, Monmouth Co	ounty, New Jers	sey		ı					Pallu Associates, LLC	:										
Surface Elev			Started:				12/20		Ground	water Data	1		Depth		1	El.			1		Groundw	ater Comn	ments	
Termination		9.8 Date	Completed:				V/12/20				1		(ft) NE			(ft)								
Proposed Lo Excavation	ocation:	SWM		Logged by:			Ogrodnik		Seepage				7.8			92.2			4					
	Visual Observation			Contractor:			yweight Co	H	Groundwater										10YR 5/8 Yellowis	sh Brown mottles	13"-93"; 10YR 5	/8 Yellowis	sh Brown n	ottles 93"-117";
Method:				Rig Type:		Case 5	80L Backhoe		Seasonal High Gr	oundwater			3.5			96.5								
DEPTH (IN)	COLOR	SOIL TEXTU	IDE		COARSE FRA	OMENTS (%)			STRUCTURE		WATER		CONSISTENCY		BOUI	NDARY	ROOT	rs		MOTTLING			SAMPLIN	LAB RESULTS
DEF III (III)	GOLON	SOIL TEXTO	JKE		COARSETRA	IOMENTO (%)		Shape	Grade	Size	CONTENT	Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography			Quantity	Size	Contrast	Туре	Depth (in)	No.
				GRAVEL	COBBLES	STONES	BOULDERS									į				į	į			
0-3	TOPSOIL		LOAM	5	0	0	0	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	LOOSE	NONSTICKY	NONPLASTIC	ABRUPT <1"	SMOOTH	CMN (20% MAX)	FINE	NONE			BAG	2	S-1
				GRAVEL	COBBLES	STONES	BOULDERS																	
3-42	Light Olive Brown (2.5Y 5/3)	SA	ANDY LOAM	5	0	0	0	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	ABRUPT <1"	SMOOTH	FEW (5% MAX)	VERY FINE	NONE			BAG	24	S-2
				GRAVEL	COBBLES	STONES	BOULDERS		STRUCT	URELESS														
42-93	Light Gray (2.5Y 6/1)		SAND	5	0	0	0	SINGLE GRAIN			MOIST	LOOSE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	SMOOTH	NONE		FEW 2%	FINE <5MM	FAINT	BAG TUBE	60	S-3 T-1
				GRAVEL	COBBLES	STONES	BOULDERS		STRUCT	URELESS														
93-117	Light Gray (2.5Y 6/1)		SAND	5	0	0	0	SINGLE GRAIN			WET	LOOSE	NONSTICKY	NONPLASTIC			NONE		CMN 2%-20%	MEDIUM 5MM-15MM	DISTINCT	BAG	100	S-4
																								1
																								1
			F																					
			-					1																
																<u> </u>					<u> </u>			

Additional Remarks: Refusal encountered at approximately 117 inches below the existing ground surface due to continuous cave-in.



SOIL PROFILE PIT LOG Soil Profile Pit: SPP-4

Page <u>1</u> of <u>1</u>

	Groundwater Data Seepage Groundwater Seasonal High Groundwater		Client:	2841-99-001E Pallu Associates, LLC Depth (ft)			El.					Groundw	ater Comm	to		
Surface Elevation (ti): 96.7 Date Started: 87.72.0	Seepage Groundwater Seasonal High Groundwater			Depth (ft)								Grounds	nter Comm	-amto		
Termination Depth (ft):	Seepage Groundwater Seasonal High Groundwater			(ft)												
Proposed Location: Excitation Contractor: Pennyweight Co	Groundwater Seasonal High Groundwater											Ground	atti Commi	ients		
	Groundwater Seasonal High Groundwater			NE												
				10.0			86.7			10YR 5/8 Yellowish	h Brown mottles 3	6" - 72"; 10YR	5/8 Yellow	ish Brown n	ottles 120"-1	44";
DEPTH (IN) COLOR SOIL TEXTURE COARSE FRAGMENTS (%)				3.0			93.7									
GRAVEL COBBLES STONES BOULDERS	STRUCTURE	WATER		CONSISTENCY		BOUN	DARY				MOTTLING		:	SAMPLING		
CLAY LOAM	ape Grade Size	CONTENT	Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography	ROOT	S	Quantity	Size	Contrast	Туре	Depth (in)	No.	LAB RESULTS
SUBAR			Kupture											(111)		-
4-36 Olive Brown (2.5Y 5/6) LOAMY SAND 5	GULAR WEAK FINE CKY	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	ABRUPT <1"	SMOOTH	CMN (20% MAX)	VERY FINE	NONE			BAG	2	S-1	
CLAY LOAM																
36-72 Gray (10YR 5/1) CLAY LOAM 5	GULAR WEAK FINE CKY	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	ABRUPT <1"	SMOOTH	FEW (5% MAX)	VERY FINE	NONE			BAG TUBE	24	S-2 T-1	A = 2.6 IPH B = 1.8 IPH
5 0 0 0 SUBAN BLU 72-120 Very Dark Gray (10YR 3/1) CLAY 0 0 0 SUBAN BLU 7 0 0 0 0 0 SUBAN BLU 0 0 0 0 0 SUBAN BLU 0 0 0 0 O O SUBAN BLU 0 0 0 0 O O O O SUBAN BLU 0 0 0 0 O O O O O O																
72-120 Very Dark Gray (10YR 3/1) CLAY 0 0 0 SUBAA BLI	GULAR WEAK FINE CKY	MOIST	FIRM	SLIGHTLY STICKY	SLIGHTLY PLASTIC	ABRUPT <1"	SMOOTH	FEW (5% MAX)	VERY FINE	FEW 2%	MEDIUM 5MM-15MM	DISTINCT	BAG TUBE	48	S-3 T-2	A < 0.14 IPH B < 0.14 IPH
(10YR 3/1) CLAT 0 0 0 SUBA																
	GULAR MODERATE MEDIUM CKY	MOIST	FIRM	SLIGHTLY STICKY	SLIGHTLY PLASTIC	ABRUPT <1"	SMOOTH	NONE		NONE			BAG TUBE	100	S-4 T-3	A < 0.14 IPH B < 0.14 IPH
GRAVEL COBBLES STONES BOULDERS																
120-144 Gray SANDY CLAY LOAM 5 0 0 SUBAI BLOOM	GULAR WEAK FINE	WET	FRIABLE	NONSTICKY	NONPLASTIC			NONE		FEW 2%	MEDIUM 5MM-15MM	DISTINCT	BAG	136	S-5	
																-
Additional Remarks: Terminated at 144" below the ground surface.											1	!				

Additional Remarks: Terminated at 144" below the ground surface.



Page <u>1</u> of <u>1</u>

Soil Profile Pit: SPP- 5

Project:	Proposed Residentia	al Development									Project No.:	2841-99-001E												
		oleytown Road, Township of Marlbor	o, Monmouth C	ounty, New Jers	sey							Pallu Associates, LLC												
Surface Ele	vation (ft):	93.5 Date Started:				8/12/20		Groundy	water Data			Depth	·		El.		_	1		Groundw	vater Comr	ments		
Termination	Depth (ft):	8.8 Date Completed: SWM				8/12/20 Ogrodnik						(ft) NE			(ft)									
Proposed L Excavation		SWM	Logged by Contractor:			nyweight Co		Seepage Groundwater				6.3			87.2			10YR 5/8 Yellowis	h Brown mottles	44" 76": 10VP 6	/9 Vollous	ich Prous r	nottlee 76* 10	es.
/ Test	Visual Observation		Rig Type			580L Backhoe		Seasonal High Gro				3.7		1	89.8			TOTA JO TEROWS	Sown modes	10, IUTKS	, o i eliUW	DIOWN I		Α,
Method:	1		Rig Type					STRUCTURE	oundwater			CONSISTENCY		POUL	NDARY	1			MOTTLING		T	SAMPLIN		
DEPTH (IN)	COLOR	SOIL TEXTURE		COARSE FRA	GMENTS (%)			SIRUCIURE		WATER		CONSISTENCE		ВООІ	NDART	ROO	rs		MOTILING			SAMPLIN	G	LAB RESULTS
							Shape	Grade	Size	CONTENT	Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography			Quantity	Size	Contrast	Type	Depth (in)	No.	
				!	!	1			1		Rupture						!					(in)		
			GRAVEL	COBBLES	STONES	BOULDERS														İ				
0-4	Topsoil	LOAM	5	0	0	0	SUBANGULAR BLOCKY	WEAK	VERY FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	ABRUPT <1"	SMOOTH	CMN (20% MAX)	VERY FINE	NONE			BAG	2	S-1	
			GRAVEL	COBBLES	STONES	BOULDERS																		
4-44	Yellowish Brown (10YR 5/4)	CLAY LOAM	5	0	0	0	SUBANGULAR BLOCKY	MODERATE	FINE	MOIST	FIRM	NONSTICKY	SLIGHTLY PLASTIC	ABRUPT <1"	SMOOTH	FEW (5% MAX)	VERY FINE	NONE			BAG TUBE	36	S-2 T-1	A < 0.14 IPH B < 0.14 IPH
			GRAVEL	COBBLES	STONES	BOULDERS		STRUCT	URELESS															
44-76	Light Gray	SAND	GIOAVEE	COBBLES	STORES	BOOLDERS				MOIST	LOOSE	NONSTICKY	NONPLASTIC	ABRUPT <1"	SMOOTH	NONE		FEW 2%	FINE	FAINT	BAG	60	S-3	
	(2.5Y 6/1)		5	0	0	0	SINGLE GRAIN												<5MM					
			GRAVEL	COBBLES	STONES	BOULDERS		STRUCT	URELESS															
76-105	Light Gray (2.5Y 6/1)	SAND	5	0	0	0	SINGLE GRAIN			WET	LOOSE	NONSTICKY	NONPLASTIC			NONE		CMN 2%-20%	MEDIUM 5MM-15MM	DISTINCT	BAG	96	S-4	
-																					\vdash			
							1																	
		t Refueal encountered at announ																						

Additional Remarks: Test Pit Refusal encountered at approximately 105 inches below the existing ground surface due to continuous cave-in.



Page <u>1</u> of <u>1</u>

Soil Profile Pit: SPP-6

Project: Proposed Residen	tial Development									Project No.:	2841-99-001E												
	tial Development /ooleytown Road, Township of Maribo	ro Monmouth C	ounty New Jers	eov							Pallu Associates, LLC	•											
Surface Elevation (ft):	94.3 Date Started:	io, moiniodai c	ounty, recti octi		8/12/20		Commit	lwater Data			Depth			El.					Groundw	nter Comm	monto		
ermination Depth (ft):	8.3 Date Completed:				8/12/20		Ground	Iwater Data			(ft)			(ft)					Groundw	ater Comm	ments		
Proposed Location: Excavation	SWM	Logged by			. Ogrodnik		Seepage				NE 7.0			87.3									
/ Test Visual Observation		Contractor:			nyweight Co		Groundwater				3.8			90.5			10YR 5/8 Yellowis	h Brown mottles	16"-84"; 10YR 5	/8 Yellowi:	ish Brown n	nottles 84"-100"	
Method:		Rig Type	:	Case	580L Backhoe		Seasonal High Gr	roundwater		_													
DEPTH (IN) COLOR	SOIL TEXTURE		COARSE FRA	GMENTS (%)			STRUCTURE		WATER		CONSISTENCY		BOUN	IDARY	ROO	TS		MOTTLING			SAMPLIN		LAB RESULTS
52 (iii)	OOL TEXTORE		OOMIGE THE			Shape	Grade	Size	CONTENT	Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography			Quantity	Size	Contrast	Туре	Depth (in)	No.	LAD RECOETO
		GRAVEL	COBBLES	STONES	BOULDERS														İ				
0-6 Topsoil	LOAM	0	0	0	0	SUBANGULAR BLOCKY	WEAK	VERY FINE	MOIST	VERY FRIABLE	NONSTICKY	NONPLASTIC	ABRUPT <1"	SMOOTH	CMN (20% MAX)	MEDIUM	NONE			BAG	3	S-1	
		GRAVEL	COBBLES	STONES	BOULDERS																		
5-46 Light Olive Brown (2.5Y 5/6)	SANDY LOAM	5	0	0	0	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	ABRUPT <1"	SMOOTH	FEW (5% MAX)	VERY FINE	NONE			BAG TUBE	36	S-2 T-1	
		GRAVEL	COBBLES	STONES	BOULDERS		STRUCT	TURELESS															
46-84 Light Gray (2.5Y 6/1)	SAND	5	0	0	0	SINGLE GRAIN			MOIST	LOOSE	NONSTICKY	NONPLASTIC	ABRUPT <1"	SMOOTH	NONE		FEW 2%	FINE <5MM	FAINT	BAG	60	S-3	
		GRAVEL	COBBLES	STONES	BOULDERS		STRUCT	TURELESS								1							
84-100 Light Gray (2.5Y 6/1)	SAND	5	0	0	0	SINGLE GRAIN			WET	LOOSE	NONSTICKY	NONPLASTIC			NONE		CMN 2%-20%	MEDIUM 5MM-15MM	DISTINCT	BAG	100	S-4	
Additional Remarks: Test F	I Pit Refusal encountered at appro	ximately 100	inches below	the existing	ground surfa	ce due to continu	ous cave-in.				1			Į.		!	II	!	!				



Page <u>1</u> of <u>1</u>

Soil Profile Pit: SPP-7

Project:	Proposed Residen	tial Development									Project No.:	2841-99-001E												
Location:	Texas Road and W	ooleytown Road, Township of Marlb	oro, Monmouth C	County, New Jen	sey						Client:	Pallu Associates, LLC												
Surface Ele	vation (ft):	95.2 Date Started:				8/12/20 8/12/20		Groundy	water Data			Depth		1	El.					Groundw	ater Comm	nents		
Termination	Depth (ft):	10.0 Date Completed:	Logged by			. Ogrodník		Seepage				(ft)			(ft)									
Proposed Le Excavation			Contractor			nyweight Co		Groundwater				7.5			87.7			10YR 5/8 Yellowis	h Brown mottles 4	IO"-120":				
/ Test Method:	Visual Observation		Rig Type		Case	580L Backhoe		Seasonal High Gr	roundwater			3.3			91.9									
miculou.								STRUCTURE				CONSISTENCY		BOUN	NDARY				MOTTLING			SAMPLING	3	
DEPTH (IN)	COLOR	SOIL TEXTURE		COARSE FRA	AGMENTS (%)				ı	WATER	Resistance to				1	ROOT	s			ı	—	Depth		LAB RESULTS
							Shape	Grade	Size		Rupture	Stickiness	Plasticity	Distinctness	Topography			Quantity	Size	Contrast	Туре	(in)	No.	
			GRAVEL	COBBLES	STONES	BOULDERS																		
0-4	Topsoil	Loam	5	0	0	0	SUBANGULAR BLOCKY	WEAK	VERY FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	ABRUPT <1"	SMOOTH	CMN (20% MAX)	FINE	NONE			BAG	2	S-1	
			GRAVEL	COBBLES	STONES	BOULDERS																		
4-40	Light Olive Brown (2.5Y 5/6)	SANDY LOAM	5	0	0	0	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	ABRUPT <1"	SMOOTH	FEW (5% MAX)	VERY FINE	NONE			BAG TUBE	36	S-2 T-1	A = 5.6 IPH B = 7.2 IPH
			GRAVEL	COBBLES	STONES	BOULDERS		STRUCT	TURELESS															
40-90	Light Gray (2.5Y 6/1)	SAND	5	0	0	0	SINGLE GRAIN			MOIST	LOOSE	NONSTICKY	NONPLASTIC	ABRUPT <1"	SMOOTH	NONE		FEW 2%	FINE <5MM	FAINT	BAG TUBE	60	S-3 T-2	A > 20.0 IPH B > 20.0 IPH
			GRAVEL	COBBLES	STONES	BOULDERS		STRUCT	TURELESS															
90-120	Light Gray (2.5Y 6/1)	SAND	5	0	0	0	SINGLE GRAIN			WET	LOOSE	NONSTICKY	NONPLASTIC			NONE		CMN 2%-20%	MEDIUM 5MM-15MM	DISTINCT	BAG	100	S-4	
							_																	
		bit Refueal encountered at annu					-																	

Additional Remarks: Test Pit Refusal encountered at approximately 120 inches below the existing ground surface due to continuous cave-in.



SOIL PROFILE PIT LOG Soil Profile Pit: SPP-8

Page <u>1</u> of <u>1</u>

Project:	Proposed Residentia	al Development									Project No.:	2841-99-001E												
		oleytown Road, Township of Marlborn	o, Monmouth C	ounty, New Jers	sey							Pallu Associates, LLC												
Surface Ele	vation (ft):	93.5 Date Started:				8/19/20		Groundw	rater Data			Depth			El.					Groundw	ater Comm	nents		
Termination	Depth (ft):	10.0 Date Completed: SWM				8/19/20 luackenbush		_				(ft) NE			(ft)									
Proposed Le Excavation	ocation:	Svvm	Logged by Contractor:			nyweight Co		Seepage Groundwater				4.1			89.4			Light gray (10 YR	7(0)	nos.				
	Visual Observation					580L Backhoe						4.1			89.4			Light gray (10 TK	7/2)motues 49 -1	20 ;				
Method:			Rig Type	:			1	Seasonal High Gro	oundwater							1					Г.			
DEPTH (IN)	COLOR	SOIL TEXTURE		COARSE FRA	GMENTS (%)			STRUCTURE		WATER		CONSISTENCY		BOUN	IDARY	ROOT	's		MOTTLING			SAMPLIN		LAB RESULTS
DE1 111 (III)		OOL TEXTORE		OOMIGE THE			Shape	Grade	Size	CONTENT	Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography			Quantity	Size	Contrast	Туре	Depth (in)	No.	LAD NEGOETO
			GRAVEL	COBBLES	STONES	BOULDERS													į					
0-6	Topsoil	SANDY LOAM	5	0	0	0	SUBANGULAR BLOCKY	WEAK	VERY FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	GRADUAL <5"	SMOOTH	CMN (20% MAX)	FINE	NONE			BAG	5	S-1	
			GRAVEL	COBBLES	STONES	BOULDERS																		
6-49	Yellowish Brown (10YR 5/4)	LOAMY SAND	10	0	0	0	SUBANGULAR BLOCKY	MODERATE	FINE	MOIST	FRIABLE	NONSTICKY	SLIGHTLY PLASTIC	GRADUAL <5"	SMOOTH	FEW (5% MAX)	VERY FINE	NONE			BAG TUBE	35	S-2 T-1	
			GRAVEL	COBBLES	STONES	BOULDERS																		
49-89	Light Gray (2.5Y 6/1)	LOAMY SAND	<5	0	0	0	SUBANGULAR BLOCKY	WEAK	VERY FINE	WET	LOOSE	NONSTICKY	NONPLASTIC	GRADUAL <5"	SMOOTH	NONE		FEW 2%	FINE <5MM	DISTINCT	BAG	55	S-3	
			GRAVEL	COBBLES	STONES	BOULDERS																		
89-120	Yellowish Brown (10YR 5/6)	LOAMY SAND	<5	0	0	0	SUBANGULAR BLOCKY	WEAK	VERY FINE	WET	LOOSE	NONSTICKY	NONPLASTIC			NONE		FEW 2%	FINE <5MM	FAINT	BAG	105	S-4	
		Petusal encountered at approx		Seed on the desire	the sector Comme		and the second second																	

Additional Remarks: Test Pit Refusal encountered at approximately 120 inches below the existing ground surface due to continuous cave-in.



SOIL PROFILE PIT LOG Soil Profile Pit: SPP-9

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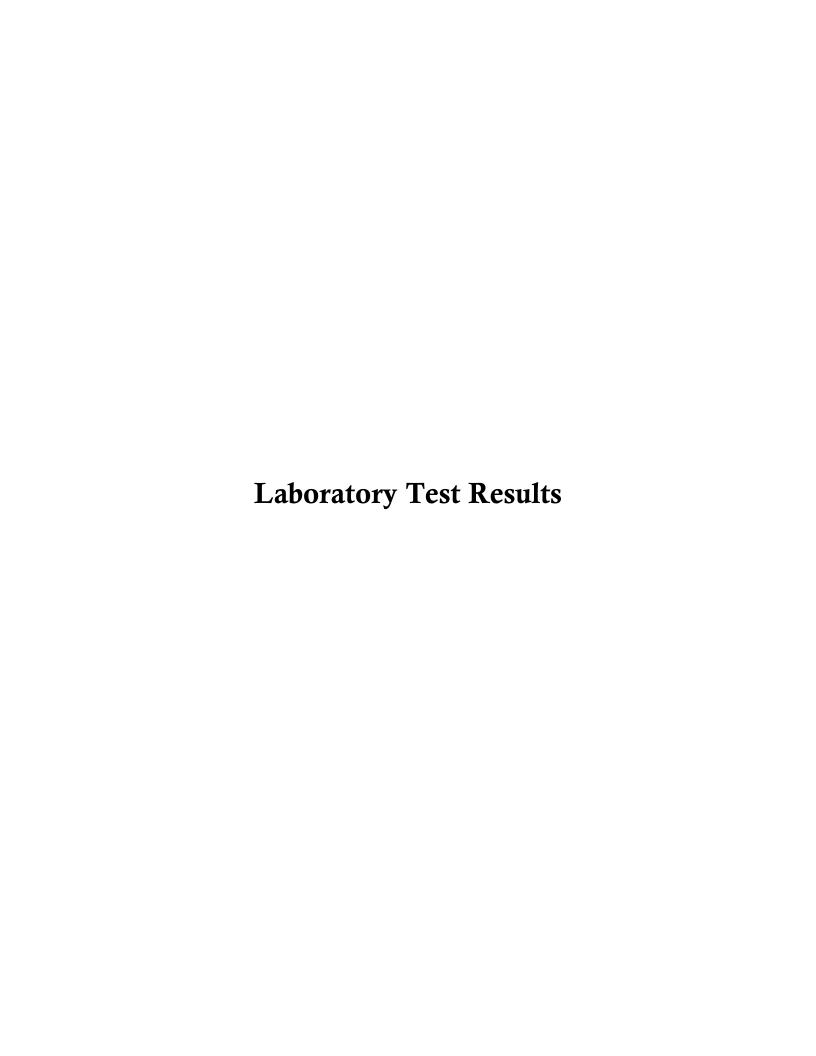
	roposed Residential										Project No.:	2841-99-001E												
		leytown Road, Township of Marlbor	o, Monmouth C	ounty, New Jers	sey							Pallu Associates, LLC												
urface Elevat ermination De	tion (ft):	106.0 Date Started: 10.0 Date Completed:				8/19/20 8/19/20		Groundy	water Data			Depth (ft)			El. (ft)					Groundw	ater Comm	nents		
roposed Loca Excavation	ation:	SWM	Logged by			uackenbush		Seepage				8.0			98.0									
	/isual Observation		Contractor:			nyweight Co		Groundwater				6.1			98.0			10YR 5/8 Yellowis	h Brown mottles 7	3"-120";				
Method:			Rig Type	:	Case	580L Backhoe		Seasonal High Gr	oundwater		,													
DEPTH (IN)	COLOR	SOIL TEXTURE		COARSE FRA	GMENTS (%)			STRUCTURE		WATER		CONSISTENCY		BOUI	NDARY	ROOT	rs		MOTTLING		:	SAMPLING	1	LAB RESULTS
							Shape	Grade	Size	CONTENT	Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography			Quantity	Size	Contrast	Туре	Depth (in)	No.	
			GRAVEL	COBBLES	STONES	BOULDERS																		
0-4	Topsoil	SANDY LOAM	5	0	0	0	SUBANGULAR BLOCKY	WEAK	VERY FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	GRADUAL <5"	SMOOTH	FEW (5% MAX)	FINE	NONE			BAG	4	S-1	
			GRAVEL	COBBLES	STONES	BOULDERS																		
4-27	Yellowish Brown (10YR 5/4)	LOAMY SAND	5	0	0	0	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	GRADUAL <5"	SMOOTH	FEW (5% MAX)	VERY FINE	NONE			BAG	25	S-2	
			GRAVEL	COBBLES	STONES	BOULDERS																		
27-73	Yellowish Brown (10YR 5/6)	SANDY CLAY LOAM	0	0	0	0	SUBANGULAR BLOCKY	MODERATE	FINE	MOIST	FRIABLE	SLIGHTLY STICKY	SLIGHTLY PLASTIC	GRADUAL <5"	SMOOTH	NONE		NONE			BAG TUBE	30	S-3 T-1	A = 0.3 IPH B = 0.3 IPH
			GRAVEL	COBBLES	STONES	BOULDERS		STRUCT	URELESS															-
73-96	Light Gray (2.5Y 7/1)	SAND	<5	0	0	0	SINGLE GRAIN			MOIST	FRIABLE	NONSTICKY	NONPLASTIC	GRADUAL <5"	SMOOTH	NONE		FEW 2%	FINE <5MM	FAINT	BAG TUBE	80	S-4 T-2	A = 1.8 IPH B = 2.0 IPH
			GRAVEL	COBBLES	STONES	BOULDERS		STRUCT	URELESS															
96-120	Light Gray (2.5Y 7/2)	SAND	<5	0	0	0	SINGLE GRAIN			WET	LOOSE	NONSTICKY	NONPLASTIC			NONE		FEW 2%	FINE <5MM	FAINT	BAG	105	S-5	
dditional Pa	amarke: Test Pit	Refusal encountered at approx	imately 120 i	inches helow	the existing	around surfa	ce Moduling due	to perched co	anditions at 27 i	inches to 73 inc	hes										Ш			



Soil Profile Pit: <u>SPP- 10</u>
Page <u>1</u> of <u>1</u>

Project: Proposed Residential Development Project No.: 2841-99-001E Location: Texas Road and Wooleysown Road, Township of Marlboro, Monmouth County, New Jersey
Surface Elevation (th): 10.30 Date Started:
Date Completed: Client: Pallu Associates, LLC 103.0 11.6 SWM Groundwater Data Groundwater Comments 8/19/20 (ft) (ft) Proposed Location: Excavation / Test Visual Observation Method: Logged by: Contractor: Pennyweight Co 92.3 Case 580L Backhoe 3.3 Rig Type: Seasonal High Groundwater STRUCTURE CONSISTENCY WATER CONTENT COLOR ROOTS LAB RESULTS DEPTH (IN) SOIL TEXTURE COARSE FRAGMENTS (%) Type Depth (in) Resistance to Rupture Grade Size Stickiness Distinctness Topography Quantity Size GRAVEL COBBLES STONES BOULDERS CMN (20% MAX) 0-5 SANDY LOAM MOIST FRIABLE NONSTICKY NONPLASTIC FINE NONE BAG 5 Topsoil SUBANGULAR BLOCKY WEAK VERY FINE GRAVEL COBBLES STONES BOULDERS BAG TUBE Yellowish Brown (10YR 5/4) A < 0.14 IPH B < 0.14 IPH SANDY LOAM MOIST FRIABLE NONSTICKY NONPLASTIC GRADUAL <5" SMOOTH NONE NONE 35 SUBANGULAR MODERATE BLOCKY FINE COBBLES STONES GRAVEL BOULDERS 50 40-128 LOAMY SAND MOIST FRIABLE NONSTICKY NONPLASTIC GRADUAL <5" SMOOTH NONE FEW 2% FAINT SUBANGULAR MODERATE <5 GRAVEL COBBLES STONES BOULDERS STRUCTURELESS 128-140 SAND WET LOOSE NONSTICKY NONPLASTIC NONE FEW 2% FAINT BAG 130 S-4 (10YR 5/3) SINGLE GRAIN

Additional Remarks: Test Pit Refusal encountered at approximately 140 inches below the existing ground surface due to continuous cave-in.



Tube Permeameter Test Data Job Number: 2841-99-001E **Project:** Proposed Residential Development Sample ID: Boring/Test Pit No.: SPP-1 Sample No.: S-1 Depth: 12" Client: Pallu Associates, LLC Lab Tech: Chrys Luna MUNICIPALITY Township of Marlboro BLOCK 146 LOT 25 & 26 1. Test Number S1 Replicate (letter) Α Date Collected 8/19/2020 2. Material Tested: Test in Native Soil-Indicate Depth 3. Type of Sample: Undisturbed Disturbed 4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 1.91 Length of Sample, L, in inches 4.00 5. Bulk Density Determination (Disturbed Samples Only): N/A 6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams Wt. of Tube Containing Sample N/A Wt. of Empty Tube 116.3831 7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 8. Bulk Density (Sample Wt./Sample Volume), grams/cc. 9. Standpipe Used: ____x No Yes, Indicate Internal Radius, cm. N/A 10. Height of Water Level Above Rim of Test Basin, in inches: At the Beginning of Each Test Interval, H1 5.00 At the End of Each Test Interval, H2 4.00 11. Rate of Water Level Drop (Add additional lines if needed): Time, Start of Test Time End of Test Length of Test Interval, T1 Interval T2 Interval, T, Minutes 0:00:00 0:07:00 7 0:00:00 0:07:19 7 0:00:00 0:07:57 8

8.0

 $K_{1}(in/hr) = 60 min/hr x r^{2}/R^{2} x L(in)/T(min) x ln (H^{1}/H^{2})$

K4

Classification:

_ Dry Soil _____Smearing _____ Compaction

_ Soil/Tube Contact _____Large Gravel ____

12. Calculation of Permeability:

6.7

__ Other - Specify __

Defects in the Sample (Check appropriate items):
 x NONE

Tube Permeameter Test Data Job Number: 2841-99-001E **Project:** Proposed Residential Development Sample ID: Boring/Test Pit No.: SPP-1 Sample No.: S-1 Depth: 12" Client: Pallu Associates, LLC Lab Tech: Chrys Luna MUNICIPALITY Township of Marlboro BLOCK 146 LOT 25 & 26 1. Test Number S1 Replicate (letter) В Date Collected 8/19/2020 2. Material Tested: Test in Native Soil-Indicate Depth 3. Type of Sample: Undisturbed Disturbed 4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 1.91 Length of Sample, L, in inches 4.00 5. Bulk Density Determination (Disturbed Samples Only): N/A 6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams Wt. of Tube Containing Sample N/A Wt. of Empty Tube 116.3831 7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 8. Bulk Density (Sample Wt./Sample Volume), grams/cc. 9. Standpipe Used: ____x No Yes, Indicate Internal Radius, cm. N/A 10. Height of Water Level Above Rim of Test Basin, in inches: At the Beginning of Each Test Interval, H1 5.00 At the End of Each Test Interval, H2 4.00 11. Rate of Water Level Drop (Add additional lines if needed): Time, Start of Test Time End of Test Length of Test Interval, T1 Interval T2 Interval, T, Minutes 0:00:00 0:10:30 10 0:00:00 0:12:32 13 0:00:00 0:10:49 11 $K_{1}(in/hr) = 60 min/hr x r^{2}/R^{2} x L(in)/T(min) x ln (H^{1}/H^{2})$ 12. Calculation of Permeability: 11.0

4.9

__ Other - Specify __

Defects in the Sample (Check appropriate items):
 x NONE

Classification:

_ Dry Soil _____Smearing _____ Compaction

_ Soil/Tube Contact _____Large Gravel ____

Tube Permeameter Test Data Job Number: 2841-99-001E **Project:** Proposed Residential Development Sample ID: Boring/Test Pit No.: SPP-1 Sample No.: T-2 _Depth: 36" Client: Pallu Associates, LLC Lab Tech: Chrys Luna MUNICIPALITY Township of Marlboro BLOCK 146 LOT 25 & 26 1. Test Number T2 Replicate (letter) Α Date Collected 8/12/2020 2. Material Tested: Test in Native Soil-Indicate Depth 3. Type of Sample: Undisturbed Disturbed 4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 1.91 Length of Sample, L, in inches 4.50 5. Bulk Density Determination (Disturbed Samples Only): N/A 6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams Wt. of Tube Containing Sample N/A Wt. of Empty Tube 130.931 7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 8. Bulk Density (Sample Wt./Sample Volume), grams/cc. 9. Standpipe Used: ____x No Yes, Indicate Internal Radius, cm. N/A 10. Height of Water Level Above Rim of Test Basin, in inches: At the Beginning of Each Test Interval, H1 5.00 At the End of Each Test Interval, H2 5.00 11. Rate of Water Level Drop (Add additional lines if needed): Time, Start of Test Time End of Test Length of Test Interval, T1 Interval T2 Interval, T, Minutes 0:00:00 4:00:00 240 0:00:00 4:00:00 240 0:00:00 4:00:00 240 $K_{1}(in/hr) = 60 min/hr x r^{2}/R^{2} x L(in)/T(min) x ln (H^{1}/H^{2})$

240.0

12. Calculation of Permeability:

< 0.14

__ Other - Specify _

_ Soil/Tube Contact ____

13. Defects in the Sample (Check appropriate items): NONE

Classification:

___Large Gravel ____

_ Dry Soil _____Smearing _____ Compaction

Tube Permeameter Test Data Job Number: 2841-99-001E Project: Proposed Residential Development Sample ID: Boring/Test Pit No.: SPP-1 Sample No.: T-2 Depth: 36" Client: Pallu Associates, LLC Lab Tech: Chrys Luna MUNICIPALITY Township of Marlboro BLOCK 146 LOT 25 & 26 1. Test Number Replicate (letter) В Date Collected 8/12/2020 2. Material Tested: Test in Native Soil-Indicate Depth 3. Type of Sample: Undisturbed Disturbed 4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 1.91 Length of Sample, L, in inches 3.00 5. Bulk Density Determination (Disturbed Samples Only): N/A Wt. of Tube Containing Sample 6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams N/A Wt. of Empty Tube 7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 87.28736 8. Bulk Density (Sample Wt./Sample Volume), grams/cc. 9. Standpipe Used: ____x No Yes, Indicate Internal Radius, cm. N/A 10. Height of Water Level Above Rim of Test Basin, in inches: At the Beginning of Each Test Interval, H1 5.00 At the End of Each Test Interval, H2 5.00 11. Rate of Water Level Drop (Add additional lines if needed): Time, Start of Test Time End of Test Length of Test Interval, T1 Interval, T, Minutes Interval T2 0:00:00 4:00:00 240 0:00:00 4:00:00 240 0:00:00 4:00:00 240

240.0

 $K_{1}(in/hr) = 60 min/hr x r^{2}/R^{2} x L(in)/T(min) x ln (H^{1}/H^{2})$

K0

Classification:

___Large Gravel ____

Dry Soil _____Smearing ____ Compaction

12. Calculation of Permeability:

K=

< 0.14

_ Other - Specify _

_ Soil/Tube Contact _____

13. Defects in the Sample (Check appropriate items): $x \qquad \text{NONE}$

•	\decpc.local\earthfolders\Data\EARTH Projects\2841 Pallu Associates, LLC\99-001E Marlboro\Laboratory\Pallu Permeability Tubes\2841-99-001E Permeability Tube
	Autosaved)

Tube Permeameter Test Data Job Number: 2841-99-001E **Project:** Proposed Residential Development Sample ID: Boring/Test Pit No.: SPP-1 T-3 Sample No.: Depth: 98" Client: Pallu Associates, LLC Lab Tech: Chrys Luna MUNICIPALITY Township of Marlboro BLOCK 146 LOT 25 & 26 1. Test Number Replicate (letter) Α Date Collected 8/12/2020 2. Material Tested: Test in Native Soil-Indicate Depth 3. Type of Sample: Undisturbed Disturbed 4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 1.91 Length of Sample, L, in inches 3.00 5. Bulk Density Determination (Disturbed Samples Only): N/A 6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams Wt. of Tube Containing Sample N/A Wt. of Empty Tube 87.28736 7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 8. Bulk Density (Sample Wt./Sample Volume), grams/cc. 9. Standpipe Used: No Yes, Indicate Internal Radius, cm. N/A 10. Height of Water Level Above Rim of Test Basin, in inches: At the Beginning of Each Test Interval, H1 5.00 At the End of Each Test Interval, H2 5.00 11. Rate of Water Level Drop (Add additional lines if needed): Time, Start of Test Time End of Test Length of Test Interval, T1 Interval T2 Interval, T, Minutes 0:00:00 4:00:00 240 0:00:00 4:00:00 240 0:00:00 4:00:00 240

240.0

х	NONE			
	_ Soil/Tube Contact	Large Gravel	Large Roots	
	_ Dry Soil	Smearing	_ Compaction	
	_ Other - Specify			

K, (in/hr) = 60 min/hr x r2/R2 x L(in)/T(min) x ln (H1/H2)

K0

Classification:

12. Calculation of Permeability:

< 0.14

13. Defects in the Sample (Check appropriate items):

Tube Permeameter Test Data Job Number: 2841-99-001E **Project:** Proposed Residential Development Sample ID: Boring/Test Pit No.: SPP-1 Sample No.: T-3 _Depth: 98" Client: Pallu Associates, LLC Lab Tech: Chrys Luna MUNICIPALITY Township of Marlboro BLOCK 146 LOT 25 & 26 1. Test Number T3 Replicate (letter) В Date Collected 8/12/2020 2. Material Tested: Test in Native Soil-Indicate Depth 3. Type of Sample: Undisturbed Disturbed 4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 1.91 Length of Sample, L, in inches 4.00 5. Bulk Density Determination (Disturbed Samples Only): N/A 6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams Wt. of Tube Containing Sample N/A Wt. of Empty Tube 116.3831 7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 8. Bulk Density (Sample Wt./Sample Volume), grams/cc. 9. Standpipe Used: ____x No Yes, Indicate Internal Radius, cm. N/A 10. Height of Water Level Above Rim of Test Basin, in inches: At the Beginning of Each Test Interval, H1 5.00 At the End of Each Test Interval, H2 5.00 11. Rate of Water Level Drop (Add additional lines if needed): Time, Start of Test Time End of Test Length of Test Interval, T1 Interval T2 Interval, T, Minutes 0:00:00 4:00:00 240 0:00:00 4:00:00 240 0:00:00 4:00:00 240 $K_{1}(in/hr) = 60 min/hr x r^{2}/R^{2} x L(in)/T(min) x ln (H^{1}/H^{2})$ 12. Calculation of Permeability: 240.0

< 0.14

__ Other - Specify _

_ Soil/Tube Contact ____

Defects in the Sample (Check appropriate items):
 x NONE

Classification:

___Large Gravel ____

_ Dry Soil _____Smearing _____ Compaction

Tube Permeameter Test Data Job Number: 2841-99-001E **Project:** Proposed Residential Development Sample ID: Boring/Test Pit No.: SPP-2 Sample No.: T-1 Depth: 24" Client: Pallu Associates, LLC Lab Tech: Chrys Luna MUNICIPALITY Township of Marlboro BLOCK 146 LOT 25 & 26 1. Test Number T1 Replicate (letter) Α Date Collected 8/12/2020 2. Material Tested: Test in Native Soil-Indicate Depth 3. Type of Sample: Undisturbed Disturbed 4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 1.91 Length of Sample, L, in inches 4.50 5. Bulk Density Determination (Disturbed Samples Only): N/A 6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams Wt. of Tube Containing Sample N/A Wt. of Empty Tube 130.931 7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 8. Bulk Density (Sample Wt./Sample Volume), grams/cc. 9. Standpipe Used: ____x No Yes, Indicate Internal Radius, cm. N/A 10. Height of Water Level Above Rim of Test Basin, in inches: At the Beginning of Each Test Interval, H1 5.00 At the End of Each Test Interval, H2 5.00 11. Rate of Water Level Drop (Add additional lines if needed): Time, Start of Test Time End of Test Length of Test Interval, T1 Interval T2 Interval, T, Minutes 0:00:00 4:00:00 240 0:00:00 4:00:00 240 0:00:00 4:00:00 240 $K_{1}(in/hr) = 60 min/hr x r^{2}/R^{2} x L(in)/T(min) x ln (H^{1}/H^{2})$ 12. Calculation of Permeability: 240.0

< 0.14

__ Other - Specify _

_ Soil/Tube Contact ____

Defects in the Sample (Check appropriate items):
 x NONE

Classification:

___Large Gravel ____

_ Dry Soil _____Smearing _____ Compaction

Tube Permeameter Test Data Job Number: 2841-99-001E **Project:** Proposed Residential Development Sample ID: Boring/Test Pit No.: SPP-2 Sample No.: T-1 Depth: 24" Client: Pallu Associates, LLC Lab Tech: Chrys Luna MUNICIPALITY Township of Marlboro BLOCK 146 LOT 25 & 26 1. Test Number T1 Replicate (letter) В Date Collected 8/12/2020 2. Material Tested: Test in Native Soil-Indicate Depth 3. Type of Sample: Undisturbed Disturbed 4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 1.91 Length of Sample, L, in inches 3.00 5. Bulk Density Determination (Disturbed Samples Only): N/A 6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams Wt. of Tube Containing Sample N/A Wt. of Empty Tube 87.28736 7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 8. Bulk Density (Sample Wt./Sample Volume), grams/cc. 9. Standpipe Used: ____x No Yes, Indicate Internal Radius, cm. N/A 10. Height of Water Level Above Rim of Test Basin, in inches: At the Beginning of Each Test Interval, H1 5.00 At the End of Each Test Interval, H2 5.00 11. Rate of Water Level Drop (Add additional lines if needed): Time, Start of Test Time End of Test Length of Test Interval, T1 Interval T2 Interval, T, Minutes 0:00:00 4:00:00 240 0:00:00 4:00:00 240 0:00:00 4:00:00 240 $K_{1}(in/hr) = 60 min/hr x r^{2}/R^{2} x L(in)/T(min) x ln (H^{1}/H^{2})$ 12. Calculation of Permeability: 240.0

< 0.14

__ Other - Specify _

_ Soil/Tube Contact ____

Defects in the Sample (Check appropriate items):
 x NONE

Classification:

___Large Gravel ____

_ Dry Soil _____Smearing _____ Compaction

Tube Permeameter Test Data Job Number: 2841-99-001E Project: Proposed Residential Development Sample ID: Boring/Test Pit No.: SPP-2 Sample No.: T-2 Depth: 96" Client: Pallu Associates, LLC Lab Tech: Chrys Luna MUNICIPALITY Township of Marlboro BLOCK 146 LOT 25 & 26 1. Test Number Replicate (letter) Α Date Collected 8/12/2020 2. Material Tested: Test in Native Soil-Indicate Depth 3. Type of Sample: Undisturbed Disturbed 4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 1.91 Length of Sample, L, in inches 2.50 5. Bulk Density Determination (Disturbed Samples Only): N/A Wt. of Tube Containing Sample 6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams N/A Wt. of Empty Tube 7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 72.73947 8. Bulk Density (Sample Wt./Sample Volume), grams/cc. 9. Standpipe Used: ____x No Yes, Indicate Internal Radius, cm. N/A 10. Height of Water Level Above Rim of Test Basin, in inches: At the Beginning of Each Test Interval, H1 5.00 At the End of Each Test Interval, H2 5.00 11. Rate of Water Level Drop (Add additional lines if needed): Time, Start of Test Time End of Test Length of Test Interval, T1 Interval, T, Minutes Interval T2 0:00:00 4:00:00 240 0:00:00 4:00:00 240 0:00:00 4:00:00 240

240.0

 $K_{1}(in/hr) = 60 min/hr x r^{2}/R^{2} x L(in)/T(min) x ln (H^{1}/H^{2})$

K0

Classification:

Dry Soil _____Smearing ____ Compaction

_ Soil/Tube Contact _____Large Gravel ____

12. Calculation of Permeability:

K=

< 0.14

_ Other - Specify _

13. Defects in the Sample (Check appropriate items): $x \qquad \text{NONE}$

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Tube Permeameter Test Data Job Number: 2841-99-001E Project: Proposed Residential Development Sample ID: Boring/Test Pit No.: SPP-2 Sample No.: T-2 Depth: 96" Client: Pallu Associates, LLC Lab Tech: Chrys Luna MUNICIPALITY Township of Marlboro BLOCK 146 LOT 25 & 26 1. Test Number Replicate (letter) В Date Collected 8/12/2020 2. Material Tested: Test in Native Soil-Indicate Depth 3. Type of Sample: Undisturbed Disturbed 4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 1.91 Length of Sample, L, in inches 3.50 5. Bulk Density Determination (Disturbed Samples Only): N/A Wt. of Tube Containing Sample 6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams N/A Wt. of Empty Tube 7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 101.8353 8. Bulk Density (Sample Wt./Sample Volume), grams/cc. 9. Standpipe Used: ____x No Yes, Indicate Internal Radius, cm. N/A 10. Height of Water Level Above Rim of Test Basin, in inches: At the Beginning of Each Test Interval, H1 5.00 At the End of Each Test Interval, H2 5.00 11. Rate of Water Level Drop (Add additional lines if needed): Time, Start of Test Time End of Test Length of Test Interval, T1 Interval, T, Minutes Interval T2 0:00:00 4:00:00 240 0:00:00 4:00:00 240 0:00:00 4:00:00 240

240.0

 $K_{1}(in/hr) = 60 min/hr x r^{2}/R^{2} x L(in)/T(min) x ln (H^{1}/H^{2})$

K0

Classification:

___Large Gravel ____

Dry Soil _____Smearing ____ Compaction

12. Calculation of Permeability:

K=

< 0.14

_ Other - Specify _

_ Soil/Tube Contact _____

13. Defects in the Sample (Check appropriate items): $x \qquad \text{NONE}$

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Tube Permeameter Test Data Job Number: 2841-99-001E Project: Proposed Residential Development Sample ID: Boring/Test Pit No.: SPP-4 Sample No.: T-1 Depth: 24" Client: Pallu Associates, LLC Lab Tech: Chrys Luna MUNICIPALITY Township of Marlboro BLOCK 146 LOT 25 & 26 1. Test Number T1 Replicate (letter) Α Date Collected 8/12/2020 2. Material Tested: Test in Native Soil-Indicate Depth 3. Type of Sample: Undisturbed Disturbed 4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 1.91 Length of Sample, L, in inches 4.00 5. Bulk Density Determination (Disturbed Samples Only): N/A 6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams Wt. of Tube Containing Sample N/A Wt. of Empty Tube 7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 116.3831 8. Bulk Density (Sample Wt./Sample Volume), grams/cc. 9. Standpipe Used: ____x No Yes, Indicate Internal Radius, cm. N/A 10. Height of Water Level Above Rim of Test Basin, in inches: At the Beginning of Each Test Interval, H1 5.00 At the End of Each Test Interval, H2 4.00 11. Rate of Water Level Drop (Add additional lines if needed): Time, Start of Test Time End of Test Length of Test Interval, T1 Interval, T, Minutes Interval T2 0:00:00 13:52 AM 20 0:00:00 27:00 AM 21 0:00:00 21:00 AM 21 12. Calculation of Permeability: K, (in/hr) = 60 min/hr x r2/R2 x L(in)/T(min) x ln (H1/H2)21.0

2.6

__ Other - Specify __

13. Defects in the Sample (Check appropriate items): $x \qquad \text{NONE}$

Classification:

_ Dry Soil _____Smearing _____ Compaction

_ Soil/Tube Contact _____Large Gravel ____

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Tube Permeameter Test Data Job Number: 2841-99-001E **Project:** Proposed Residential Development Sample ID: Boring/Test Pit No.: SPP-4 Sample No.: T-1 _Depth: 24" Client: Pallu Associates, LLC Lab Tech: Chrys Luna MUNICIPALITY Township of Marlboro BLOCK 146 LOT 25 & 26 1. Test Number T1 Replicate (letter) В Date Collected 8/12/2020 2. Material Tested: Test in Native Soil-Indicate Depth 3. Type of Sample: Undisturbed Disturbed 4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 1.91 Length of Sample, L, in inches 4.00 5. Bulk Density Determination (Disturbed Samples Only): N/A 6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams Wt. of Tube Containing Sample N/A Wt. of Empty Tube 116.3831 7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 8. Bulk Density (Sample Wt./Sample Volume), grams/cc. 9. Standpipe Used: ____x No Yes, Indicate Internal Radius, cm. N/A 10. Height of Water Level Above Rim of Test Basin, in inches: At the Beginning of Each Test Interval, H1 5.00 At the End of Each Test Interval, H2 4.00 11. Rate of Water Level Drop (Add additional lines if needed): Time, Start of Test Time End of Test Length of Test Interval, T1 Interval T2 Interval, T, Minutes 0:00:00 30:00 AM 30 0:00:00 1:00:00 30 0:00:00 2:55:00 30 $K_{1}(in/hr) = 60 min/hr x r^{2}/R^{2} x L(in)/T(min) x ln (H^{1}/H^{2})$ 12. Calculation of Permeability: 30.0

1.8

__ Other - Specify __

Defects in the Sample (Check appropriate items):
 x NONE

Classification:

_ Dry Soil _____Smearing _____ Compaction

_ Soil/Tube Contact _____Large Gravel ____

Tube Permeameter Test Data Job Number: 2841-99-001E **Project:** Proposed Residential Development Sample ID: Boring/Test Pit No.: SPP-4 Sample No.: T-2 _Depth: 48" Client: Pallu Associates, LLC Lab Tech: Chrys Luna MUNICIPALITY Township of Marlboro BLOCK 146 LOT 25 & 26 1. Test Number T2 Replicate (letter) Α Date Collected 8/12/2020 2. Material Tested: Test in Native Soil-Indicate Depth 3. Type of Sample: Undisturbed Disturbed 4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 1.91 Length of Sample, L, in inches 4.00 5. Bulk Density Determination (Disturbed Samples Only): N/A 6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams Wt. of Tube Containing Sample N/A Wt. of Empty Tube 116.3831 7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 8. Bulk Density (Sample Wt./Sample Volume), grams/cc. 9. Standpipe Used: ____x No Yes, Indicate Internal Radius, cm. N/A 10. Height of Water Level Above Rim of Test Basin, in inches: At the Beginning of Each Test Interval, H1 5.00 At the End of Each Test Interval, H2 5.00 11. Rate of Water Level Drop (Add additional lines if needed): Time, Start of Test Time End of Test Length of Test Interval, T1 Interval T2 Interval, T, Minutes 0:00:00 4:00:00 240 0:00:00 4:00:00 240 0:00:00 4:00:00 240

240.0

 $K_{1}(in/hr) = 60 min/hr x r^{2}/R^{2} x L(in)/T(min) x ln (H^{1}/H^{2})$

K0

Classification:

___Large Gravel ____

_ Dry Soil _____Smearing _____ Compaction

12. Calculation of Permeability:

< 0.14

__ Other - Specify _

_ Soil/Tube Contact ____

Defects in the Sample (Check appropriate items):
 x NONE

Tube Permeameter Test Data Job Number: 2841-99-001E **Project:** Proposed Residential Development Sample ID: Boring/Test Pit No.: SPP-4 Sample No.: T-2 _Depth: 48" Client: Pallu Associates, LLC Lab Tech: Chrys Luna MUNICIPALITY Township of Marlboro BLOCK 146 LOT 25 & 26 1. Test Number T2 Replicate (letter) В Date Collected 8/12/2020 2. Material Tested: Test in Native Soil-Indicate Depth 3. Type of Sample: Undisturbed Disturbed 4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 1.91 Length of Sample, L, in inches 3.00 5. Bulk Density Determination (Disturbed Samples Only): N/A 6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams Wt. of Tube Containing Sample N/A Wt. of Empty Tube 87.28736 7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 8. Bulk Density (Sample Wt./Sample Volume), grams/cc. 9. Standpipe Used: ____x No Yes, Indicate Internal Radius, cm. N/A 10. Height of Water Level Above Rim of Test Basin, in inches: At the Beginning of Each Test Interval, H1 5.00 At the End of Each Test Interval, H2 5.00 11. Rate of Water Level Drop (Add additional lines if needed): Time, Start of Test Time End of Test Length of Test Interval, T1 Interval T2 Interval, T, Minutes 0:00:00 4:00:00 240 0:00:00 4:00:00 240 0:00:00 4:00:00 240 $K_{1}(in/hr) = 60 min/hr x r^{2}/R^{2} x L(in)/T(min) x ln (H^{1}/H^{2})$ 12. Calculation of Permeability: 240.0

< 0.14

__ Other - Specify _

_ Soil/Tube Contact ____

Defects in the Sample (Check appropriate items):
 x NONE

Classification:

___Large Gravel ____

Dry Soil _____Smearing _____ Compaction

Tube Permeameter Test Data Job Number: 2841-99-001E Project: Proposed Residential Development Sample ID: Boring/Test Pit No.: SPP-4 Sample No.: T-3 Depth: 100" Client: Pallu Associates, LLC Lab Tech: Chrys Luna MUNICIPALITY Township of Marlboro BLOCK 146 LOT 25 & 26 1. Test Number T3 Replicate (letter) Α Date Collected 8/12/2020 2. Material Tested: Test in Native Soil-Indicate Depth 3. Type of Sample: Undisturbed Disturbed 4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 1.91 Length of Sample, L, in inches 3.50 5. Bulk Density Determination (Disturbed Samples Only): N/A Wt. of Tube Containing Sample 6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams N/A Wt. of Empty Tube 7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 101.8353 8. Bulk Density (Sample Wt./Sample Volume), grams/cc. 9. Standpipe Used: ____x No Yes, Indicate Internal Radius, cm. N/A 10. Height of Water Level Above Rim of Test Basin, in inches: At the Beginning of Each Test Interval, H1 5.00 At the End of Each Test Interval, H2 5.00 11. Rate of Water Level Drop (Add additional lines if needed): Time, Start of Test Time End of Test Length of Test Interval, T1 Interval, T, Minutes Interval T2 0:00:00 4:00:00 240 0:00:00 4:00:00 240 0:00:00 4:00:00 240

240.0

 $K_{1}(in/hr) = 60 min/hr x r^{2}/R^{2} x L(in)/T(min) x ln (H^{1}/H^{2})$

K0

Classification:

___Large Gravel ____

Dry Soil _____Smearing ____ Compaction

12. Calculation of Permeability:

K=

< 0.14

_ Other - Specify _

_ Soil/Tube Contact _____

13. Defects in the Sample (Check appropriate items): $x \qquad \text{NONE}$

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Tube Permeameter Test Data Job Number: 2841-99-001E **Project:** Proposed Residential Development Sample ID: Boring/Test Pit No.: SPP-4 Sample No.: T-3 Depth: 100" Client: Pallu Associates, LLC Lab Tech: Chrys Luna MUNICIPALITY Township of Marlboro BLOCK 146 LOT 25 & 26 1. Test Number T3 Replicate (letter) В Date Collected 8/12/2020 2. Material Tested: Test in Native Soil-Indicate Depth 3. Type of Sample: Undisturbed Disturbed 4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 1.91 Length of Sample, L, in inches 3.00 5. Bulk Density Determination (Disturbed Samples Only): N/A 6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams Wt. of Tube Containing Sample N/A Wt. of Empty Tube 87.28736 7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 8. Bulk Density (Sample Wt./Sample Volume), grams/cc. 9. Standpipe Used: ____x No Yes, Indicate Internal Radius, cm. N/A 10. Height of Water Level Above Rim of Test Basin, in inches: At the Beginning of Each Test Interval, H1 5.00 At the End of Each Test Interval, H2 5.00 11. Rate of Water Level Drop (Add additional lines if needed): Time, Start of Test Time End of Test Length of Test Interval, T1 Interval T2 Interval, T, Minutes 0:00:00 4:00:00 240 0:00:00 4:00:00 240 0:00:00 4:00:00 240 $K_{1}(in/hr) = 60 min/hr x r^{2}/R^{2} x L(in)/T(min) x ln (H^{1}/H^{2})$ 12. Calculation of Permeability: 240.0

< 0.14

__ Other - Specify _

_ Soil/Tube Contact ____

Defects in the Sample (Check appropriate items):
 x NONE

Classification:

___Large Gravel ____

_ Dry Soil _____Smearing _____ Compaction

K0

Tube Permeameter Test Data Job Number: 2841-99-001E **Project:** Proposed Residential Development Sample ID: Boring/Test Pit No.: SPP-5 Sample No.: T-1 Depth: 36" Client: Pallu Associates, LLC Lab Tech: Chrys Luna MUNICIPALITY Township of Marlboro BLOCK 146 LOT 25 & 26 1. Test Number T1 Replicate (letter) Α Date Collected 8/19/2020 2. Material Tested: Test in Native Soil-Indicate Depth 3. Type of Sample: Undisturbed Disturbed 4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 1.91 Length of Sample, L, in inches 3.50 5. Bulk Density Determination (Disturbed Samples Only): N/A 6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams Wt. of Tube Containing Sample N/A Wt. of Empty Tube 101.8353 7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 8. Bulk Density (Sample Wt./Sample Volume), grams/cc. 9. Standpipe Used: ____x No Yes, Indicate Internal Radius, cm. N/A 10. Height of Water Level Above Rim of Test Basin, in inches: At the Beginning of Each Test Interval, H1 5.00 At the End of Each Test Interval, H2 5.00 11. Rate of Water Level Drop (Add additional lines if needed): Time, Start of Test Time End of Test Length of Test Interval, T1 Interval T2 Interval, T, Minutes 0:00:00 2:00:00 120 0:00:00 2:00:00 120 0:00:00 2:00:00 120 $K_{1}(in/hr) = 60 min/hr x r^{2}/R^{2} x L(in)/T(min) x ln (H^{1}/H^{2})$ 12. Calculation of Permeability: 120.0

< 0.14

__ Other - Specify _

_ Soil/Tube Contact ____

Defects in the Sample (Check appropriate items):
 x NONE

Classification:

___Large Gravel ____

_ Dry Soil _____Smearing _____ Compaction

K0

Tube Permeameter Test Data Job Number: 2841-99-001E **Project:** Proposed Residential Development Sample ID: Boring/Test Pit No.: SPP-5 Sample No.: T-1 Depth: 36" Client: Pallu Associates, LLC Lab Tech: Chrys Luna MUNICIPALITY Township of Marlboro BLOCK 146 LOT 25 & 26 1. Test Number T1 Replicate (letter) В Date Collected 8/19/2020 2. Material Tested: Test in Native Soil-Indicate Depth 3. Type of Sample: Undisturbed Disturbed 4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 1.91 Length of Sample, L, in inches 3.00 5. Bulk Density Determination (Disturbed Samples Only): N/A 6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams Wt. of Tube Containing Sample N/A Wt. of Empty Tube 87.28736 7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 8. Bulk Density (Sample Wt./Sample Volume), grams/cc. 9. Standpipe Used: ____x No Yes, Indicate Internal Radius, cm. N/A 10. Height of Water Level Above Rim of Test Basin, in inches: At the Beginning of Each Test Interval, H1 5.00 At the End of Each Test Interval, H2 5.00 11. Rate of Water Level Drop (Add additional lines if needed): Time, Start of Test Time End of Test Length of Test Interval, T1 Interval T2 Interval, T, Minutes 0:00:00 2:00:00 120 0:00:00 2:00:00 120 0:00:00 2:00:00 120 $K_{1}(in/hr) = 60 min/hr x r^{2}/R^{2} x L(in)/T(min) x ln (H^{1}/H^{2})$ 12. Calculation of Permeability: 120.0

< 0.14

__ Other - Specify _

_ Soil/Tube Contact ____

Defects in the Sample (Check appropriate items):
 x NONE

Classification:

___Large Gravel ____

_ Dry Soil _____Smearing _____ Compaction

K0

Tube Permeameter Test Data Job Number: 2841-99-001E Project: Proposed Warehouse Building Sample ID: Boring/Test Pit No.: SPP-7 Sample No.: T-1 _ Depth: 36" Client: Pallu Associates Lab Tech: S. Curtis MUNICIPALITY Township of Marlboro <u>25 & 26</u> **BLOCK** 146 LOTS 1. Test Number T-1A Replicate (letter) A Date Collected 10/21/2020 Fill 2. Material Tested: X Test in Native Soil-Indicate Depth 3. Type of Sample: x Undisturbed Inside Radius of Sample Tube, R, in cm 4. Sample Dimensions: Length of Sample, L, in inches Sample must be greater than 2" but less then 4" 3.00 5. Bulk Density Determination (Disturbed Samples Only): N/A 6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams Wt. of Tube Containing Sample Wt. of Empty Tube 7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 87.2874 8. Bulk Density (Sample Wt./Sample Volume), grams/cc. Yes, Indicate Internal Radius, cm. N/A 9. Standpipe Used: ____X No 10. Height of Water Level Above Rim of Test Basin, in inches: At the Beginning of Each Test Interval, H1 5.00 At the End of Each Test Interval, H2 4.00 11. Rate of Water Level Drop (Add additional lines if needed): Time, Start of Test Time End of Test Length of Test Interval, T, Minutes Interval, T1 Interval T2 0:00:00 6:38.41 6.6 0:00:00 6:48.72 6.8 0:00:00 7:21.17 7.2 12. Calculation of Permeability: K, $(in/hr) = 60 \text{ min/hr} \times r2/R2 \times L(in)/T(min) \times ln (H1/H2)$ T= 7.2 Classification: K= 5.6 К3 13. Defects in the Sample (Check appropriate items): x NONE

___ Soil/Tube Contact _____Large Gravel _____ Large Roots

____Smearing ____ Compaction

Dry Soil ____

_ Other - Specify _

Tube Permeameter Test Data Job Number: 2841-99-001E Project: Proposed Warehouse Building Sample ID: Boring/Test Pit No.: SPP-7 Sample No.: T-1 _ Depth: 36" Client: Pallu Associates Lab Tech: S. Curtis MUNICIPALITY Township of Marlboro **BLOCK** 146 LOTS 25 & 26 T-1C Replicate (letter) 1. Test Number B Date Collected 10/21/2020 2. Material Tested: X Test in Native Soil-Indicate Depth 3. Type of Sample: Undisturbed 4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 1.91 Length of Sample, L, in inches Sample must be greater than 2" but less then 4" 3.00 5. Bulk Density Determination (Disturbed Samples Only): N/A 6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams Wt. of Tube Containing Sample Wt. of Empty Tube 7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 87.2874 8. Bulk Density (Sample Wt./Sample Volume), grams/cc. > 1.2 Yes, Indicate Internal Radius, cm. N/A 9. Standpipe Used: ____X No 10. Height of Water Level Above Rim of Test Basin, in inches: At the Beginning of Each Test Interval, H1 5.00 At the End of Each Test Interval, H2 4.00 11. Rate of Water Level Drop (Add additional lines if needed): Time, Start of Test Time End of Test Length of Test Interval, T, Minutes Interval, T1 Interval T2 0:00:00 5:13.11 5.2 0:00:00 5:19.44 5.3 0:00:00 5:39.30 5.6 12. Calculation of Permeability: $K_{1}(in/hr) = 60 \text{ min/hr} \times r2/R2 \times L(in)/T(min) \times ln (H1/H2)$ 5.6

13. Defects in the Sample (Check appropriate items):						
	х	NONE				
		Soil/Tube ContactLarge Gravel Large Roots				
		Dry SoilSmearing Compaction				
		Other - Specify				

K4

Classification:

K=

Tube Permeameter Test Data Job Number: 2841-99-001E Project: Proposed Warehouse Building Sample ID: Boring/Test Pit No.: SPP-7 Sample No.: T-2 _ Depth: Client: Pallu Associates 48" - 90" Lab Tech: S. Curtis MUNICIPALITY Township of Marlboro 25 & 26 **BLOCK** 146 LOTS 1. Test Number T-2A Replicate (letter) A Date Collected 10/21/2020 2. Material Tested: X Test in Native Soil-Indicate Depth 3. Type of Sample: x Undisturbed Inside Radius of Sample Tube, R, in cm 4. Sample Dimensions: Length of Sample, L, in inches Sample must be greater than 2" but less then 4" 5. Bulk Density Determination (Disturbed Samples Only): N/A 6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams Wt. of Tube Containing Sample Wt. of Empty Tube 7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 101.835 8. Bulk Density (Sample Wt./Sample Volume), grams/cc. Yes, Indicate Internal Radius, cm. N/A 9. Standpipe Used: ____ X No 10. Height of Water Level Above Rim of Test Basin, in inches: At the Beginning of Each Test Interval, H1 5.00 At the End of Each Test Interval, H2 4.00 11. Rate of Water Level Drop (Add additional lines if needed): Time, Start of Test Time End of Test Length of Test Interval, T, Minutes Interval, T1 Interval T2 0:00:00 1:28.36 1.5 0:00:00 1:29.10 1.5 0:00:00 1:22.77 1.3 12. Calculation of Permeability: K, $(in/hr) = 60 \text{ min/hr} \times r2/R2 \times L(in)/T(min) \times ln (H1/H2)$ T= 1.3 Classification: K= > 20.0 K5

13. Defects in the Sample (Check appropriate items):

_____ NONE

Dry Soil ____

_ Other - Specify _

___ Soil/Tube Contact _____Large Gravel _____ Large Roots

_____Smearing _____ Compaction

Tube Permeameter Test Data Job Number: 2841-99-001E Project: Proposed Warehouse Building Sample ID: Boring/Test Pit No.: SPP-7 Sample No.: T-2 _ Depth: Client: Pallu Associates 48" - 90" Lab Tech: S. Curtis MUNICIPALITY Township of Marlboro 25 & 26 **BLOCK** 146 LOTS 1. Test Number T-2B Replicate (letter) B Date Collected 10/21/2020 2. Material Tested: X Test in Native Soil-Indicate Depth 3. Type of Sample: Undisturbed Inside Radius of Sample Tube, R, in cm 4. Sample Dimensions: Length of Sample, L, in inches Sample must be greater than 2" but less then 4" 5. Bulk Density Determination (Disturbed Samples Only): N/A 6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams Wt. of Tube Containing Sample Wt. of Empty Tube 7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 101.835 8. Bulk Density (Sample Wt./Sample Volume), grams/cc. Yes, Indicate Internal Radius, cm. N/A 9. Standpipe Used: ____ X No 10. Height of Water Level Above Rim of Test Basin, in inches: At the Beginning of Each Test Interval, H1 5.00 At the End of Each Test Interval, H2 4.00 11. Rate of Water Level Drop (Add additional lines if needed): Time, Start of Test Time End of Test Length of Test Interval, T, Minutes Interval, T1 Interval T2 0:00:00 1:01.05 0:00:00 1:00.37 0:00:00 1:05.19 12. Calculation of Permeability: K, $(in/hr) = 60 \text{ min/hr} \times r2/R2 \times L(in)/T(min) \times ln (H1/H2)$ T= Classification: K= > 20.0 K5 13. Defects in the Sample (Check appropriate items):

x NONE

Dry Soil ____

_ Other - Specify _

___ Soil/Tube Contact _____Large Gravel _____ Large Roots

_____Smearing _____ Compaction

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_ Other - Specify _

Project: Proposed Warehouse Building Sample ID: Boring/Test Pit No.: SPP-9 Sample No.: T-1 Depth: Client: Pallu Associates, LLC 30 Lab Tech: S. Curtis MUNICIPALITY Township of Marlboro BLOCK 146 LOTS 25 & 26 T-1A Replicate (letter) 10/19/2020 1. Test Number Α Date Collected 2. Material Tested: Fill __ Test in Native Soil-Indicate Depth 3. Type of Sample: Undisturbed Disturbed 4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 1 91 Sample must be greater than 2" but less then 4" Length of Sample, L, in inches 4.00 5. Bulk Density Determination (Disturbed Samples Only): N/A 6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams Wt. of Tube Containing Sample Wt. of Empty Tube 7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 116.3831 8. Bulk Density (Sample Wt./Sample Volume), grams/cc. > 1.2 Yes, Indicate Internal Radius, cm. N/A 9. Standpipe Used: X No 10. Height of Water Level Above Rim of Test Basin, in inches: At the Beginning of Each Test Interval, H1 At the End of Each Test Interval, H2 4.00 11. Rate of Water Level Drop (Add additional lines if needed): Time, Start of Test Time End of Test Length of Test Interval, T1 Interval T2 Interval, T, Minutes 0:00:00 1:30:00 180 0:00:00 2:00:00 180 0:00:00 3:00:00 180 12. Calculation of Permeability: K, $(in/hr) = 60 \text{ min/hr} \times r2/R2 \times L(in)/T(min) \times ln (H1/H2)$ 180 0.3 K= Classification: K1 13. Defects in the Sample (Check appropriate items): x NONE _ Soil/Tube Contact _____Large Gravel _____ Large Roots _ Dry Soil _____Smearing _____ Compaction

Other - Specify ___

Job Number: 2841-99-001E Project: Proposed Warehouse Building Sample ID: Boring/Test Pit No.: SPP-9 Sample No.: T-1 Depth: Client: Pallu Associates 30 Lab Tech: S. Curtis MUNICIPALITY Township of Marlboro BLOCK 146 LOTS 25 & 26 T-1B Replicate (letter) 10/19/2020 1. Test Number B Date Collected 2. Material Tested: Fill X Test in Native Soil-Indicate Depth 3. Type of Sample: Undisturbed Disturbed 4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 1 91 Sample must be greater than 2" but less then 4" Length of Sample, L, in inches 4.00 5. Bulk Density Determination (Disturbed Samples Only): N/A 6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams Wt. of Tube Containing Sample Wt. of Empty Tube 7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 116.3831 8. Bulk Density (Sample Wt./Sample Volume), grams/cc. > 1.2 Yes, Indicate Internal Radius, cm. N/A 9. Standpipe Used: X No 10. Height of Water Level Above Rim of Test Basin, in inches: At the Beginning of Each Test Interval, H1 4.00 At the End of Each Test Interval, H2 11. Rate of Water Level Drop (Add additional lines if needed): Time, Start of Test Time End of Test Length of Test Interval, T1 Interval T2 Interval, T, Minutes 0:00:00 1:30:00 180 0:00:00 2:00:00 180 0:00:00 3:00:00 180 12. Calculation of Permeability: K, (in/hr) = 60 min/hr x r2/R2 x L(in)/T(min) x ln (H1/H2) T= 180 K= 0.3 Classification: K1 13. Defects in the Sample (Check appropriate items): ___x NONE __ Soil/Tube Contact _____Large Gravel _____ Large Roots __ Dry Soil ______Smearing _____ Compaction

Tube Permeameter Test Data Job Number: 2841-99-001E Project: Proposed Warehouse Building Sample ID: Boring/Test Pit No.: SPP-9 Sample No.: Client: Pallu Associates T-2 Depth: 80 Lab Tech: S. Curtis MUNICIPALITY Township of Marlboro BLOCK 146 LOTS 25 & 26 1. Test Number T-2A Replicate (letter) Α Date Collected 10/19/2020 2 Material Tested: Fill Test in Native Soil-Indicate Depth x Undisturbed 3. Type of Sample: Disturbed 4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm Sample must be greater than 2" but less then 4" Length of Sample, L, in inches 4.00 5. Bulk Density Determination (Disturbed Samples Only): N/A 6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams Wt. of Tube Containing Sample Wt. of Empty Tube 7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 116.3831 8. Bulk Density (Sample Wt./Sample Volume), grams/cc. _____ Yes, Indicate Internal Radius, cm. N/A 9. Standpipe Used: X No 10. Height of Water Level Above Rim of Test Basin, in inches: At the Beginning of Each Test Interval, H1 5.00 At the End of Each Test Interval, H2 4.00 11. Rate of Water Level Drop (Add additional lines if needed): Time. Start of Test Length of Test Time End of Test Interval, T1 Interval, T, Minutes Interval T2 0:00:00 35.93 30 0:00:00 35.93 30 0:00:00 39.13 30 12. Calculation of Permeability: K, $(in/hr) = 60 \text{ min/hr} \times r2/R2 \times L(in)/T(min) \times ln (H1/H2)$ 30 Classification: 1.8 K2 13. Defects in the Sample (Check appropriate items):

___ Large Roots

x NONE

_ Soil/Tube Contact ____

_ Other - Specify _

___Large Gravel ____

_ Dry Soil _____Smearing _____ Compaction

Tube Permeameter Test Data Job Number: 2841-99-001E Project: Proposed Warehouse Building Sample ID: Boring/Test Pit No.: SPP-9 Sample No.: T-2 _ Depth: Client: Pallu Associates 80 Lab Tech: S. Curtis MUNICIPALITY Township of Marlboro 25 & 26 **BLOCK** 146 LOTS 10/19/2020 1. Test Number T-2C Replicate (letter) B Date Collected 2. Material Tested: X Test in Native Soil-Indicate Depth 3. Type of Sample: x Undisturbed Inside Radius of Sample Tube, R, in cm 4. Sample Dimensions: Length of Sample, L, in inches Sample must be greater than 2" but less then 4" 4.00 5. Bulk Density Determination (Disturbed Samples Only): N/A 6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams Wt. of Tube Containing Sample Wt. of Empty Tube 7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 116.383 8. Bulk Density (Sample Wt./Sample Volume), grams/cc. Yes, Indicate Internal Radius, cm. N/A 9. Standpipe Used: ____X No 10. Height of Water Level Above Rim of Test Basin, in inches: At the Beginning of Each Test Interval, H1 At the End of Each Test Interval, H2 3.50 11. Rate of Water Level Drop (Add additional lines if needed): Time, Start of Test Time End of Test Length of Test Interval, T, Minutes Interval, T1 Interval T2 0:00:00 38.43 30 0:00:00 40.82 30 0:00:00 39.55 30 12. Calculation of Permeability: K, $(in/hr) = 60 \text{ min/hr} \times r2/R2 \times L(in)/T(min) \times ln (H1/H2)$ T= 30 Classification: K= 2.0 К3

13. Defects in the Sample (Check appropriate items):

Dry Soil ____

_ Other - Specify _

___ Soil/Tube Contact _____Large Gravel _____ Large Roots

____Smearing ____ Compaction

x NONE

___ Other - Specify __

Project: 1 Residential Development Sample ID: Boring/Test Pit No.: SPP-10 Sample No.: T-1 Depth: 35" Client: Pallu Associates, LLC Lab Tech: Chrys Luna MUNICIPALITY Township of Marlboro **BLOCK** 146 LOTS 25 & 26 1. Test Number T1 Replicate (letter) A Date Collected 8/19/2020 2. Material Tested: Fill X Test in Native Soil-Indicate Depth 3. Type of Sample: Undisturbed Disturbed 4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 1.91 Length of Sample, L, in inches 4.00 5. Bulk Density Determination (Disturbed Samples Only): N/A 6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams N/A Wt. of Tube Containing Sample Wt. of Empty Tube 7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 116.3831 8. Bulk Density (Sample Wt./Sample Volume), grams/cc. Yes, Indicate Internal Radius, cm. N/A 9. Standpipe Used: ____x No 10. Height of Water Level Above Rim of Test Basin, in inches: At the Beginning of Each Test Interval, H1 5.00 At the End of Each Test Interval, H2 5.00 11. Rate of Water Level Drop (Add additional lines if needed): Time, Start of Test Time End of Test Length of Test Interval, T1 Interval T2 Interval, T, Minutes 0:00:00 2:00:00 120 0:00:00 2:00:00 120 0:00:00 2:00:00 120 K, $(in/hr) = 60 \text{ min/hr} \times r2/R2 \times L(in)/T(min) \times ln (H1/H2)$ T= 12. Calculation of Permeability: 120.0 K = < 0.14 Classification: K0 13. Defects in the Sample (Check appropriate items): x NONE Soil/Tube Contact ____ ____Large Gravel _____ Large Roots Dry Soil _____Smearing ____ Compaction

Other - Specify _

Job Number: 2841-99-001E Project: Proposed Residential Development Sample ID: Boring/Test Pit No.: SPP-10 Sample No.: T-1 Depth: Client: Pallu Associates, LLC Lab Tech: Chrys Luna MUNICIPALITY Township of Marlboro BLOCK 146 LOTS 25 & 26 1. Test Number T1 Replicate (letter) A Date Collected 8/19/2020 2. Material Tested: Fill Test in Native Soil-Indicate Depth Disturbed 3. Type of Sample: x Undisturbed Inside Radius of Sample Tube, R, in cm 4. Sample Dimensions: 1.91 Length of Sample, L, in inches 4 50 5. Bulk Density Determination (Disturbed Samples Only): N/A 6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams Wt. of Tube Containing Sample N/A Wt. of Empty Tube 7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 130.931 8. Bulk Density (Sample Wt./Sample Volume), grams/cc. 9. Standpipe Used: x No Yes, Indicate Internal Radius, cm. N/A 10. Height of Water Level Above Rim of Test Basin, in inches: At the Beginning of Each Test Interval, H1 5.00 At the End of Each Test Interval, H2 4.94 11. Rate of Water Level Drop (Add additional lines if needed): Time. Start of Test Time End of Test Length of Test Interval, T, Minutes Interval, T1 Interval T2 0:00:00 2:00:00 120 0:00:00 2:00:00 120 0:00:00 2:00:00 120 12. Calculation of Permeability: K, $(in/hr) = 60 \text{ min/hr} \times r2/R2 \times L(in)/T(min) \times ln (H1/H2)$ 120.0 < 0.14 Classification: 13. Defects in the Sample (Check appropriate items): x NONE _ Soil/Tube Contact _____Large Gravel ____ ____Large Roots ____Smearing _____ Compaction Dry Soil ____

Other - Specify _

Project: Proposed Residential Development Sample ID: Boring/Test Pit No.: SPP-10 Sample No.: T-2 Depth: Client: Pallu Associates, LLC Lab Tech: Chrys Luna MUNICIPALITY Township of Marlboro BLOCK 146 LOTS 25 & 26 1. Test Number T2 Replicate (letter) B Date Collected 8/19/2020 2. Material Tested: Fill Test in Native Soil-Indicate Depth Disturbed 3. Type of Sample: x Undisturbed Inside Radius of Sample Tube, R, in cm 4. Sample Dimensions: 1.91 Length of Sample, L, in inches 4.00 5. Bulk Density Determination (Disturbed Samples Only): N/A 6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams Wt. of Tube Containing Sample N/A Wt. of Empty Tube 7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 116.3831 8. Bulk Density (Sample Wt./Sample Volume), grams/cc. _____ Yes, Indicate Internal Radius, cm. N/A 9. Standpipe Used: x No 10. Height of Water Level Above Rim of Test Basin, in inches: At the Beginning of Each Test Interval, H1 5.00 At the End of Each Test Interval, H2 4.00 11. Rate of Water Level Drop (Add additional lines if needed): Time. Start of Test Time End of Test Length of Test Interval, T, Minutes Interval, T1 Interval T2 0:00:00 0:03:50 10 0:00:00 0:04:05 10 0:00:00 0:04:11 10 12. Calculation of Permeability: K, $(in/hr) = 60 \text{ min/hr} \times r2/R2 \times L(in)/T(min) \times ln (H1/H2)$ 10.0 5.4 Classification: 13. Defects in the Sample (Check appropriate items): x NONE _ Soil/Tube Contact _____Large Gravel ____ ____Large Roots ____Smearing _____ Compaction _ Dry Soil ____

Other - Specify _

Project: Proposed Residential Development Sample ID: Boring/Test Pit No.: SPP-10 Sample No.: T-2 Depth: Client: Pallu Associates, LLC Lab Tech: Chrys Luna MUNICIPALITY Township of Marlboro BLOCK 146 LOT 25 & 26 1. Test Number T2 Replicate (letter) B Date Collected 2. Material Tested: Fill Test in Native Soil-Indicate Depth Disturbed 3. Type of Sample: x Undisturbed Inside Radius of Sample Tube, R, in cm 4. Sample Dimensions: 1.91 Length of Sample, L, in inches 4.00 5. Bulk Density Determination (Disturbed Samples Only): N/A 6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams Wt. of Tube Containing Sample N/A Wt. of Empty Tube 7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 116.3831 8. Bulk Density (Sample Wt./Sample Volume), grams/cc. ____x No _____ Yes, Indicate Internal Radius, cm. N/A 9. Standpipe Used: 10. Height of Water Level Above Rim of Test Basin, in inches: At the Beginning of Each Test Interval, H1 5.00 At the End of Each Test Interval, H2 4.00 11. Rate of Water Level Drop (Add additional lines if needed): Time. Start of Test Time End of Test Length of Test Interval, T, Minutes Interval, T1 Interval T2 0:00:00 1:04:12 54 0:00:00 1:00:18 50 0:00:00 0:58:52 49 12. Calculation of Permeability: K, $(in/hr) = 60 \text{ min/hr} \times r2/R2 \times L(in)/T(min) \times ln (H1/H2)$ 49.0 1.1 Classification: 13. Defects in the Sample (Check appropriate items): x NONE _ Soil/Tube Contact _____Large Gravel ____ ____Large Roots _ Dry Soil _____Smearing _____ Compaction