

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

STORMWATER BASIN AREA INVESTIGATION REPORT

Proposed Residential Development

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Block 146, Lots 25 & 26

Township of Marlboro, Monmouth County, New Jersey

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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:

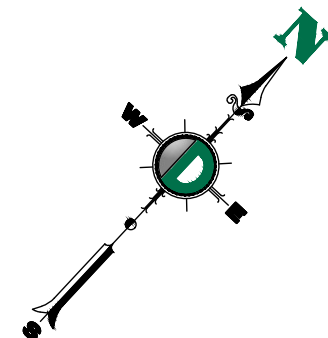
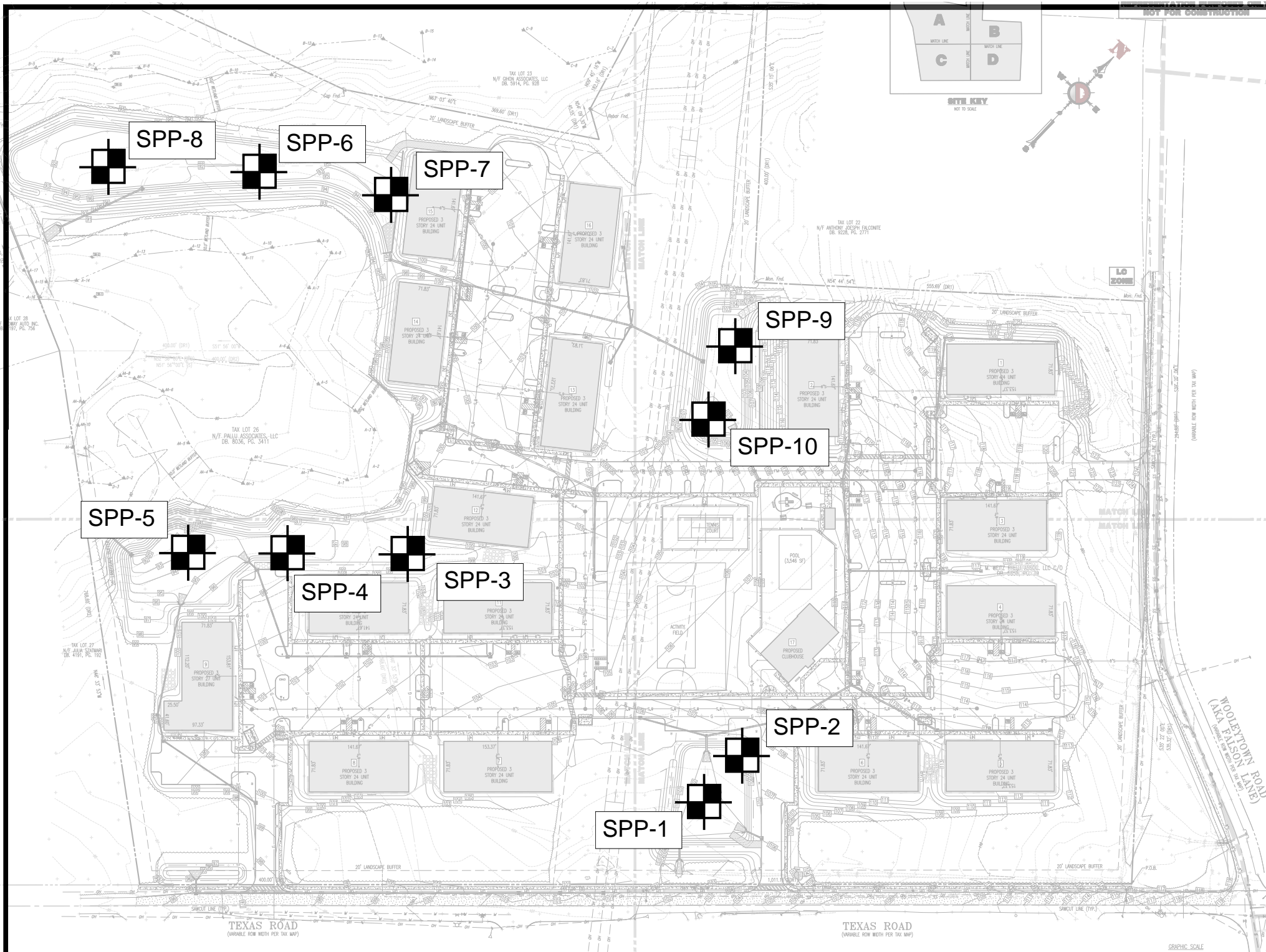
SEASONAL HIGH GROUNDWATER AND PERMEABILITY SUMMARY						
Location	Approximate Surface Elevation	Estimated Seasonal High Groundwater		Permeability Test Results		
		Depth (Feet)	Elevation	Sample Depth (Inches)	Permeability (Inches/Hour)	
					Replicate A	Replicate B
SPP-1	103.8	4.0	99.8	12	6.7	4.9
				36	< 0.14	< 0.14
				98	< 0.14	< 0.14
SPP-2	106.7	Not Encountered		24	< 0.14	< 0.14
				96	< 0.14	< 0.14
SPP-3	100.0	3.5	96.5	60	--	--
SPP-4	96.7	3.0	93.7	24	2.6	1.8
				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
				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

Soil Profile Pit Location Plan



SCALE: N.T.S.

JOB No:
2841-99-001E

SHEET No:

1

OF 2

DRAWN BY:
MO
DESIGNED BY:
-
CHECKED BY:
FVC

DATE:
8/12/2020

TITLE:
SOIL PROFILE PIT LOCATION 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. # **0** DEC Client Code: **2841**

LEGEND:

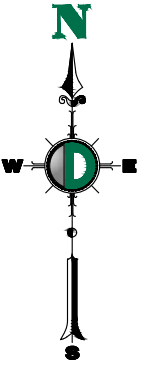
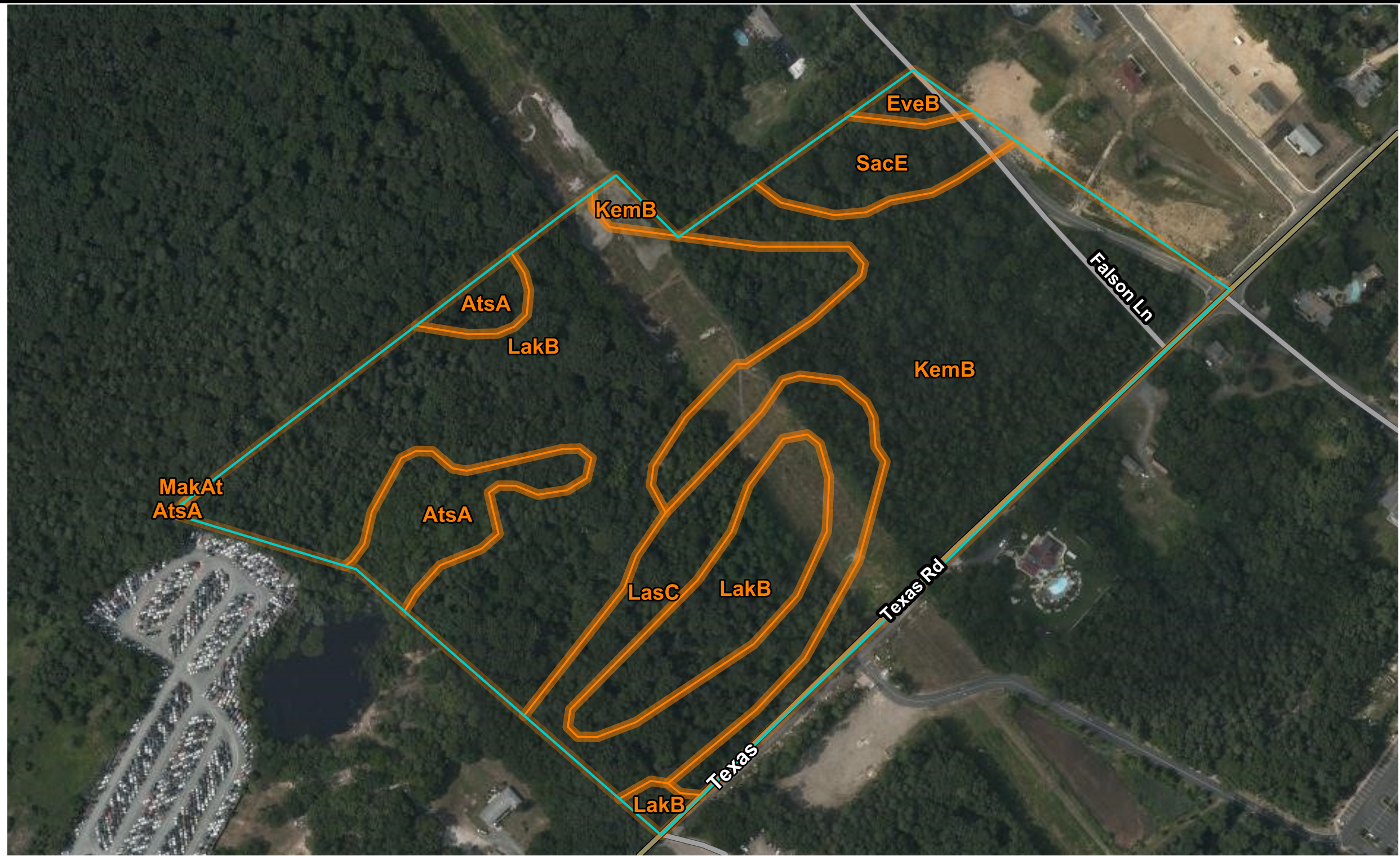
SPP-X
 APPROXIMATE
LOCATION OF
SOIL PROFILE PIT

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
 2. 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

Soil Survey Plan



SCALE: N.T.S.

JOB No:
2841-99-001E

TITLE:
SOIL SURVEY PLAN

SHEET No:
2
OF **2**

DRAWN BY:
FV
DESIGNED BY:
-
CHECKED BY:
PHH
DATE:
11/03/20

PROJECT: **PALLU ASSOCIATES**
Proposed Residential Development
Block 146, Lots 25 & 26
Texas Road and Falsen Lane, Township of Marlboro, Monmouth
County, New Jersey

Rev. # 0 DEC Client Code: 2841

LEGEND:

AtsA: Atsion Sand, zero to two percent slopes	LakB: Lakehurst sand, zero to five percent slopes
EveB: Evesboro Sand, zero to two percent slopes	LasC: Lakewood sand, five to ten percent slopes
KemB: Keyport Sandy Loam, two to five percent slopes	SacE: Sassafras sandy loam, 15 to 25 percent slopes

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.
2. THIS PLAN HAS BEEN PREPARED BASED ON A MAP FROM THE USDA WEB SOIL SURVEY INTERACTIVE MAP.



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Records of Subsurface Exploration



SOIL PROFILE PIT LOG

Soil Profile Pit: **SPP-1**

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Project: Proposed Residential Development Project No.: 2841-99-001E
 Location: Texas Road and Woolletown Road, Township of Marlboro, Monmouth County, New Jersey Client: Palju Associates, LLC

Surface Elevation (ft): 103.8	Date Started: 8/12/20	Groundwater Data	Depth (ft):	El. (ft):	Groundwater Comments
Termination Depth (ft): 12.0	Date Completed: 8/12/20	Storage	NE	--	
Proposed Location: SWM	Logged by: M. Ogrodnik	Groundwater	NE	--	
Excavation / Test Method: Visual Observation	Contractor: Pennyweight Co	Seasonal High Groundwater	4.0	99.8	

DEPTH (IN)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS		MOTTLING			SAMPLING		LAB RESULTS	
							Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography			Quantity	Size	Contrast	Type	Depth (ft)		No.
0-6	TOPSOIL	LOAM	GRAVEL: 5	COBBLES: 0	STONES: 0	BOULDERS: 0	SUBANGULAR BLOCKY	WEAK	VERY FINE	MOIST	LOOSE	NONSTICKY	NONPLASTIC	ABRUPT <1"	SMOOTH	CMN (20% MAX)	FINE	NONE			BAG	3	S-1	
6-18	Yellowish Brown (10YR 5/8)	SAND	GRAVEL: 5	COBBLES: 0	STONES: 0	BOULDERS: 0	STRUCTURELESS			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
18-48	Yellowish Brown (10YR 5/8)	CLAY LOAM	GRAVEL: 5	COBBLES: 0	STONES: 0	BOULDERS: 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
48-60	Yellowish Brown (10YR 5/8)	CLAY LOAM	GRAVEL: 5	COBBLES: 0	STONES: 0	BOULDERS: 0	SUBANGULAR BLOCKY	MODERATE	FINE	MOIST	FIRM	SLIGHTLY STICKY	SLIGHTLY PLASTIC	ABRUPT <1"	SMOOTH	FEW (5% MAX)	VERY FINE	FEW 2%	FINE <5MM	FAINT	BAG	36	S-3	
60-136	Very Dark Gray (10YR 3/1)	CLAY	GRAVEL: 0	COBBLES: 0	STONES: 0	BOULDERS: 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
136-144	Very Pale Brown (10YR 7/4)	SAND	GRAVEL: 5	COBBLES: 0	STONES: 0	BOULDERS: 0	STRUCTURELESS			MOIST	LOOSE	NONSTICKY	NONPLASTIC					FEW 2%	FINE <5MM	FAINT	BAG	140	S-5	

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



SOIL PROFILE PIT LOG

Soil Profile Pit: **SPP-2**

Page 1 of 1

Project: Proposed Residential Development Project No.: 2841-99-001E
 Location: Texas Road and Woolletown Road, Township of Marlboro, Monmouth County, New Jersey Client: Palju Associates, LLC

Surface Elevation (ft): 106.7	Date Started: 8/12/20	Groundwater Data	Depth (ft):	El. (ft):	Groundwater Comments
Termination Depth (ft): 12.0	Date Completed: 8/12/20	Storage	NE	--	
Proposed Location: SWM	Logged by: M. Ogirodnik	Groundwater	NE	--	
Excavation / Test Method: Visual Observation	Contractor: Pennyweight Co	Seasonal High Groundwater	NE	--	
	Rig Type: Case 580L Backhoe				

DEPTH (ft)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS		MOTTLING			SAMPLING			LAB RESULTS
			GRAVEL	COBBLES	STONES	BOULDERS	Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography	Quantity	Size	Contrast	Type	Depth (ft)	No.			
0-6	TOPSOIL	LOAM	5	0	0	0	SUBANGULAR BLOCKY	WEAK	VERY FINE	MOIST	LOOSE	NONSTICKY	NONPLASTIC	ABRUPT <1"	SMOOTH	CMN (20% MAX)	VERY FINE	NONE			BAG	3	S-1	
6-56	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	24	S-2 T-1	A < 0.14 IPH B < 0.14 IPH
86-144	Very Dark Gray (10YR 3/1)	CLAY	0	0	0	0	SUBANGULAR BLOCKY	MODERATE	MEDIUM	MOIST	FIRM	SLIGHTLY STICKY	SLIGHTLY PLASTIC			NONE		NONE			BAG TUBE	96	S-3 T-2	A < 0.14 IPH B < 0.14 IPH

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



SOIL PROFILE PIT LOG

Soil Profile Pit: **SPP-3**

Page 1 of 1

Project: Proposed Residential Development Project No.: 2841-99-001E
 Location: Texas Road and Woolletown Road, Township of Marlboro, Monmouth County, New Jersey Client: Palju Associates, LLC

Surface Elevation (ft): 100.0	Date Started: 8/12/20	Groundwater Data	Depth (ft):	El. (ft):	Groundwater Comments
Termination Depth (ft): 9.8	Date Completed: 8/12/20	Flowage:	NE	92.2	
Proposed Location: SWM	Logged by: M. Odrovnik	Groundwater:	7.8	96.5	
Excavation / Test Method: Visual Observation	Contractor: Pennyweight Co	Seasonal High Groundwater:	3.5		

DEPTH (IN)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS		MOTTLING			SAMPLING			LAB RESULTS
							Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography	Quantity	Size	Contrast	Type	Depth (ft)	No.			
0-3	TOPSOIL	LOAM	GRAVEL: 5	COBBLES: 0	STONES: 0	BOULDERS: 0	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	LOOSE	NONSTICKY	NONPLASTIC	ABRUPT <1"	SMOOTH	CMN (20% MAX)	FINE	NONE			BAG	2	S-1	
3-42	Light Olive Brown (2.5Y 5/3)	SANDY LOAM	GRAVEL: 5	COBBLES: 0	STONES: 0	BOULDERS: 0	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	ABRUPT <1"	SMOOTH	FEW (5% MAX)	VERY FINE	NONE			BAG	24	S-2	
42-93	Light Gray (2.5Y 6/1)	SAND	GRAVEL: 5	COBBLES: 0	STONES: 0	BOULDERS: 0	SINGLE GRAIN	STRUCTURELESS		MOIST	LOOSE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	SMOOTH	NONE		FEW 2%	FINE <5MM	FAINT	BAG TUBE	60	S-3 T-1	
93-117	Light Gray (2.5Y 6/1)	SAND	GRAVEL: 5	COBBLES: 0	STONES: 0	BOULDERS: 0	SINGLE GRAIN	STRUCTURELESS		WET	LOOSE	NONSTICKY	NONPLASTIC			NONE		CMN 2%-20%	MEDIUM 5MM-15MM	DISTINCT	BAG	100	S-4	

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**

Project: Proposed Residential Development Project No.: 2841-99-001E
 Location: Texas Road and Wooleytown Road, Township of Marlboro, Monmouth County, New Jersey Client: Palju Associates, LLC

Surface Elevation (ft): 96.7	Date Started: 8/12/20	Groundwater Data	Depth (ft):	El. (ft):	Groundwater Comments
Termination Depth (ft): 12.0	Date Completed: 8/12/20	Static	NE	86.7	
Proposed Location: SWM	Logged by: M. Ogorzlik	Groundwater	10.0	93.7	
Excavation / Test Method: Visual Observation	Contractor: Pennyweight Co	Seasonal High Groundwater	3.0		

DEPTH (ft)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS		MOTTLING			SAMPLING			LAB RESULTS
							Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography			Quantity	Size	Contrast	Type	Depth (ft)	No.	
0-4	Topsoil	LOAM	GRAVEL	COBBLES	STONES	BOULDERS	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	ABRUPT <1"	SMOOTH	CMN (20% MAX)	VERY FINE	NONE			BAG	2	S-1	
5	0	0	0																					
4-36	Olive Brown (2.5Y 5/6)	LOAMY SAND	GRAVEL	COBBLES	STONES	BOULDERS	SUBANGULAR BLOCKY	WEAK	FINE	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																					
36-72	Gray (10YR 5/1)	CLAY LOAM	GRAVEL	COBBLES	STONES	BOULDERS	SUBANGULAR BLOCKY	WEAK	FINE	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
5	0	0	0																					
72-120	Very Dark Gray (10YR 3/1)	CLAY	GRAVEL	COBBLES	STONES	BOULDERS	SUBANGULAR BLOCKY	MODERATE	MEDIUM	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
0	0	0	0																					
120-144	Gray (10YR 5/1)	SANDY CLAY LOAM	GRAVEL	COBBLES	STONES	BOULDERS	SUBANGULAR BLOCKY	WEAK	FINE	WET	FRIABLE	NONSTICKY	NONPLASTIC			NONE		FEW 2%	MEDIUM 5MM-15MM	DISTINCT	BAG	136	S-5	
5	0	0	0																					

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



SOIL PROFILE PIT LOG

Soil Profile Pit: **SPP-5**

Project: Proposed Residential Development Project No.: 2841-99-001E
 Location: Texas Road and Wooleytown Road, Township of Marlboro, Monmouth County, New Jersey Client: Palju Associates, LLC

Surface Elevation (ft): 93.5	Date Started: 8/12/20	Groundwater Data	Depth (ft):	El. (ft):	Groundwater Comments
Termination Depth (ft): 8.8	Date Completed: 8/12/20	Storage	NE		
Proposed Location: SWM	Logged by: M. Odrognik	Groundwater	6.3	87.2	
Excavation / Test Method: Visual Observation	Contractor: Pennyweight Co	Seasonal High Groundwater	3.7	89.8	

DEPTH (IN)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS		MOTTLING			SAMPLING			LAB RESULTS	
							Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography			Quantity	Size	Contrast	Type	Depth (ft)	No.		
0-4	Topsoil	LOAM	GRAVEL	COBBLES	STONES	BOULDERS	SUBANGULAR BLOCKY	WEAK	VERY FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	ABRUPT <1"	SMOOTH	CMN (20% MAX)	VERY FINE	NONE			BAG	2	S-1		
			5	0	0	0																			
4-44	Yellowish Brown (10YR 5/4)	CLAY LOAM	GRAVEL	COBBLES	STONES	BOULDERS	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	
			5	0	0	0																			
44-76	Light Gray (2.5Y 6/1)	SAND	GRAVEL	COBBLES	STONES	BOULDERS	STRUCTURELESS			MOIST	LOOSE	NONSTICKY	NONPLASTIC	ABRUPT <1"	SMOOTH	NONE				BAG	60	S-3			
			5	0	0	0	SINGLE GRAIN																		
76-105	Light Gray (2.5Y 6/1)	SAND	GRAVEL	COBBLES	STONES	BOULDERS	STRUCTURELESS			WET	LOOSE	NONSTICKY	NONPLASTIC			NONE			CMN 2%-20%	MEDIUM 5MM-15MM	DISTINCT	BAG	96	S-4	
			5	0	0	0	SINGLE GRAIN																		

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



SOIL PROFILE PIT LOG

Soil Profile Pit: **SPP-6**

Page 1 of 1

Project: Proposed Residential Development Project No.: 2841-99-001E
 Location: Texas Road and Woolletown Road, Township of Marlboro, Monmouth County, New Jersey Client: Palju Associates, LLC

Surface Elevation (ft): 94.3	Date Started: 8/12/20	Groundwater Data	Depth (ft):	El. (ft):	Groundwater Comments
Termination Depth (ft): 8.3	Date Completed: 8/12/20	Storage	NE		
Proposed Location: SWM	Logged by: M. Odrobnik	Groundwater	7.0	87.3	
Excavation / Test Method: Visual Observation	Contractor: Pennyweight Co	Seasonal High Groundwater	3.8	90.5	

DEPTH (ft)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS		MOTTLING			SAMPLING			LAB RESULTS
			GRAVEL	COBBLES	STONES	BOULDERS	Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography	Quantity	Size	Contrast	Type	Depth (ft)	No.			
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	
5-6	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	
46-84	Light Gray (2.5Y 6/1)	SAND	5	0	0	0	SINGLE GRAIN	STRUCTURELESS		MOIST	LOOSE	NONSTICKY	NONPLASTIC	ABRUPT <1"	SMOOTH	NONE		FEW 2%	FINE <5MM	FAINT	BAG	60	S-3	
84-100	Light Gray (2.5Y 6/1)	SAND	5	0	0	0	SINGLE GRAIN	STRUCTURELESS		WET	LOOSE	NONSTICKY	NONPLASTIC			NONE		CMN 2%-20%	MEDIUM 5MM-15MM	DISTINCT	BAG	100	S-4	

Additional Remarks: Test Pit Refusal encountered at approximately 100 inches below the existing ground surface due to continuous cave-in.



SOIL PROFILE PIT LOG

Soil Profile Pit: **SPP-7**

Project: Proposed Residential Development Project No.: 2841-99-001E
 Location: Texas Road and Wooleytown Road, Township of Marlboro, Monmouth County, New Jersey Client: Palju Associates, LLC

Surface Elevation (ft): 95.2	Date Started: 8/12/20	Groundwater Data	Depth (ft)	El. (ft)	Groundwater Comments
Termination Depth (ft): 10.0	Date Completed: 8/12/20	Storage	7.5	87.7	
Proposed Location: SWM	Logged by: M. Odrojnik	Groundwater	3.3	91.9	
Excavation / Test Method: Visual Observation	Contractor: Pennyweight Co	Seasonal High Groundwater			
	Rig Type: Case 580L Backhoe				10YR 5/8 Yellowish Brown mottles 40"-120"

DEPTH (IN)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS		MOTTLING			SAMPLING		LAB RESULTS		
							Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography			Quantity	Size	Contrast	Type	Depth (ft)		No.	
0-4	Topsoil	Loam	GRAVEL	COBBLES	STONES	BOULDERS	SUBANGULAR BLOCKY	WEAK	VERY FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	ABRUPT <1"	SMOOTH	CMN (20% MAX)	FINE	NONE			BAG	2	S-1		
			5	0	0	0																			
4-40	Light Olive Brown (2.5Y 5/6)	SANDY LOAM	GRAVEL	COBBLES	STONES	BOULDERS	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	
			5	0	0	0																			
40-90	Light Gray (2.5Y 6/1)	SAND	GRAVEL	COBBLES	STONES	BOULDERS	STRUCTURELESS			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	
			5	0	0	0	SINGLE GRAIN																		
90-120	Light Gray (2.5Y 6/1)	SAND	GRAVEL	COBBLES	STONES	BOULDERS	STRUCTURELESS			WET	LOOSE	NONSTICKY	NONPLASTIC			NONE		CMN 2%-20%	MEDIUM 5MM-15MM	DISTINCT	BAG	100	S-4		
			5	0	0	0	SINGLE GRAIN																		

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**

Project: Proposed Residential Development Project No.: 2841-99-001E
 Location: Texas Road and Wooleytown Road, Township of Marlboro, Monmouth County, New Jersey Client: Palju Associates, LLC

Surface Elevation (ft): 93.5	Date Started: 8/19/20	Groundwater Data	Depth (ft):	El. (ft):	Groundwater Comments
Termination Depth (ft): 10.0	Date Completed: 8/19/20	Storage	NE		
Proposed Location: SWM	Logged by: R. Quackenbush	Groundwater	4.1	89.4	
Excavation / Test Method: Visual Observation	Contractor: Pennyweight Co	Seasonal High Groundwater	4.1	89.4	

DEPTH (IN)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS		MOTTLING			SAMPLING		LAB RESULTS	
							Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography			Quantity	Size	Contrast	Type	Depth (ft)		No.
0-6	Topsoil	SANDY LOAM	GRAVEL: 5	COBBLES: 0	STONES: 0	BOULDERS: 0	SUBANGULAR BLOCKY	WEAK	VERY FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	GRADUAL <5"	SMOOTH	CMN (20% MAX)	FINE	NONE			BAG	5	S-1	
6-49	Yellowish Brown (10YR 5/4)	LOAMY SAND	GRAVEL: 10	COBBLES: 0	STONES: 0	BOULDERS: 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	
49-89	Light Gray (2.5Y 6/1)	LOAMY SAND	GRAVEL: <5	COBBLES: 0	STONES: 0	BOULDERS: 0	SUBANGULAR BLOCKY	WEAK	VERY FINE	WET	LOOSE	NONSTICKY	NONPLASTIC	GRADUAL <5"	SMOOTH	NONE		FEW 2%	FINE <5MM	DISTINCT	BAG	55	S-3	
89-120	Yellowish Brown (10YR 5/6)	LOAMY SAND	GRAVEL: <5	COBBLES: 0	STONES: 0	BOULDERS: 0	SUBANGULAR BLOCKY	WEAK	VERY FINE	WET	LOOSE	NONSTICKY	NONPLASTIC			NONE		FEW 2%	FINE <5MM	FAINT	BAG	105	S-4	

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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Project: Proposed Residential Development Project No.: 2841-99-001E
 Location: Texas Road and Woolletown Road, Township of Marlboro, Monmouth County, New Jersey Client: Palju Associates, LLC

Surface Elevation (ft): 106.0	Date Started: 8/19/20	Groundwater Data	Depth (ft):	El. (ft):	Groundwater Comments
Termination Depth (ft): 10.0	Date Completed: 8/19/20	Storage	8.0	98.0	
Proposed Location: SWM	Logged by: R. Quackenbush	Groundwater	6.1	99.9	

Excavation / Test Method: Visual Observation Contractor: Pennyweight Co Rig Type: Case 580L Backhoe Seasonal High Groundwater

10YR 5/8 Yellowish Brown mottles 73"-120";

DEPTH (IN)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS	MOTTLING			SAMPLING		LAB RESULTS		
			GRAVEL	COBBLES	STONES	BOULDERS	Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography		Quantity	Size	Contrast	Type	Depth (ft)		No.	
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		
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		
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	
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
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	

Additional Remarks: Test Pit Refusal encountered at approximately 120 inches below the existing ground surface. Moduling due to perched conditions at 27 inches to 73 inches.



SOIL PROFILE PIT LOG

Soil Profile Pit: **SPP-10**

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Project: Proposed Residential Development Project No.: 2841-99-001E
 Location: Texas Road and Wooleytown Road, Township of Marlboro, Monmouth County, New Jersey Client: Palu Associates, LLC

Surface Elevation (ft): 103.0	Date Started: 8/19/20	Groundwater Data	Depth (ft):	EL:	Groundwater Comments
Termination Depth (ft): 11.6	Date Completed: 8/19/20	Static	NE		
Proposed Location: SWM	Logged by: R. Quackenbush	Groundwater	10.7	92.3	
Excavation / Test Method: Visual Observation	Contractor: Pennyweight Co	Seasonal High Groundwater	3.3	99.7	

DEPTH (IN)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%)				STRUCTURE			WATER CONTENT	CONSISTENCY			BOUNDARY		ROOTS	MOTTLING			SAMPLING		LAB RESULTS		
							Shape	Grade	Size		Resistance to Rupture	Stickiness	Plasticity	Distinctness	Topography		Quantity	Size	Contrast	Type	Depth (ft)		No.	
0-5	Topsoil	SANDY LOAM	GRAVEL: 5	COBBLES: 0	STONES: 0	BOULDERS: 0	SUBANGULAR BLOCKY	WEAK	VERY FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	GRADUAL <5"	SMOOTH	CMN (20% MAX)	FINE	NONE			BAG	5	S-1	
5-40	Yellowish Brown (10YR 5/4)	SANDY LOAM	GRAVEL: 5	COBBLES: 0	STONES: 0	BOULDERS: 0	SUBANGULAR BLOCKY	MODERATE	FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	GRADUAL <5"	SMOOTH	NONE		NONE			BAG TUBE	35	S-2 T-1	A < 0.14 IPH B < 0.14 IPH
40-128	Pale Brown (10YR 6/3)	LOAMY SAND	GRAVEL: <5	COBBLES: 0	STONES: 0	BOULDERS: 0	SUBANGULAR BLOCKY	MODERATE	FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	GRADUAL <5"	SMOOTH	NONE		FEW 2%	FINE <5MM	FAINT	BAG TUBE	50	S-3 T-2	A = 5.4 IPH B = 1.1 IPH
128-140	Brown (10YR 5/3)	SAND	GRAVEL: 5	COBBLES: 0	STONES: 0	BOULDERS: 0	SINGLE GRAIN	STRUCTURELESS		WET	LOOSE	NONSTICKY	NONPLASTIC			NONE		FEW 2%	FINE <5MM	FAINT	BAG	130	S-4	

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

Laboratory Test Results

Tube Permeameter Test Data

Job Number: 2841-99-001E

Project: Proposed Residential Development

Client: Pallu Associates, LLC

Lab Tech: Chrys Luna

Sample ID: **Boring/Test Pit No.:** SPP-1 **Sample No.:** T-3 **Depth:** 98"
MUNICIPALITY Township of Marlboro **BLOCK** 146 **LOT** 25 & 26

1. Test Number T3 Replicate (letter) A Date Collected 8/12/2020

2. Material Tested: Fill X Test in Native Soil-Indicate Depth

3. Type of Sample: x 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 N/A

Wt. of Tube Containing Sample
 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. -- > 1.2

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 Interval, T1	Time End of Test Interval T2	Length of Test Interval, T, Minutes
0:00:00	4:00:00	240
0:00:00	4:00:00	240
0:00:00	4:00:00	240

12. Calculation of Permeability: $K, (in/hr) = 60 \text{ min/hr} \times r^2/R^2 \times L(in)/T(\text{min}) \times \ln(H1/H2)$ T= 240.0

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

Tube Permeameter Test Data

Job Number: 2841-99-001E

Project: Proposed Residential Development

Client: Pallu Associates, LLC

Lab Tech: Chrys Luna

Sample ID: **Boring/Test Pit No.:** SPP-1 **Sample No.:** T-3 **Depth:** 98"
MUNICIPALITY Township of Marlboro **BLOCK** 146 **LOT** 25 & 26

1. Test Number T3 Replicate (letter) B Date Collected 8/12/2020

2. Material Tested: Fill X Test in Native Soil-Indicate Depth

3. Type of Sample: x 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. -- > 1.2

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 Interval, T1	Time End of Test Interval T2	Length of Test Interval, T, Minutes
0:00:00	4:00:00	240
0:00:00	4:00:00	240
0:00:00	4:00:00	240

12. Calculation of Permeability: $K, (in/hr) = 60 \text{ min/hr} \times r^2/R^2 \times L(in)/T(\text{min}) \times \ln(H1/H2)$ T= 240.0

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

Tube Permeameter Test Data

Job Number: 2841-99-001E

Project: Proposed Residential Development

Client: Pallu Associates, LLC

Lab Tech: Chrys Luna

Sample ID: **Boring/Test Pit No.:** SPP-2 **Sample No.:** T-1 **Depth:** 24"

MUNICIPALITY Township of Marlboro BLOCK 146 LOT 25 & 26

1. Test Number T1 Replicate (letter) A Date Collected 8/12/2020

2. Material Tested: Fill X Test in Native Soil-Indicate Depth

3. Type of Sample: x 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 N/A

Wt. of Tube Containing Sample _____
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. -- > 1.2

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 Interval, T1	Time End of Test Interval T2	Length of Test Interval, T, Minutes
0:00:00	4:00:00	240
0:00:00	4:00:00	240
0:00:00	4:00:00	240

12. Calculation of Permeability: $K, (in/hr) = 60 \text{ min/hr} \times r^2/R^2 \times L(in)/T(\text{min}) \times \ln(H1/H2)$ $T =$ 240.0

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 _____

Tube Permeameter Test Data

Job Number: 2841-99-001E

Project: Proposed Residential Development

Client: Pallu Associates, LLC

Lab Tech: Chrys Luna

Sample ID: **Boring/Test Pit No.:** SPP-2 **Sample No.:** T-1 **Depth:** 24"
MUNICIPALITY Township of Marlboro **BLOCK** 146 **LOT** 25 & 26

1. Test Number T1 Replicate (letter) B Date Collected 8/12/2020

2. Material Tested: Fill X Test in Native Soil-Indicate Depth

3. Type of Sample: x 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 N/A

Wt. of Tube Containing Sample
 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. -- > 1.2

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 Interval, T1	Time End of Test Interval T2	Length of Test Interval, T, Minutes
0:00:00	4:00:00	240
0:00:00	4:00:00	240
0:00:00	4:00:00	240

12. Calculation of Permeability: $K, (in/hr) = 60 \text{ min/hr} \times r^2/R^2 \times L(in)/T(\text{min}) \times \ln(H1/H2)$ T= 240.0

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

Tube Permeameter Test Data

Job Number: 2841-99-001E

Project: Proposed Residential Development

Client: Pallu Associates, LLC

Lab Tech: Chrys Luna

Sample ID: **Boring/Test Pit No.:** SPP-2 **Sample No.:** T-2 **Depth:** 96"
MUNICIPALITY Township of Marlboro **BLOCK** 146 **LOT** 25 & 26

1. Test Number T2 Replicate (letter) A Date Collected 8/12/2020

2. Material Tested: Fill X Test in Native Soil-Indicate Depth

3. Type of Sample: x 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

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. 72.73947

8. Bulk Density (Sample Wt./Sample Volume), grams/cc. -- > 1.2

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 Interval, T1	Time End of Test Interval T2	Length of Test Interval, T, Minutes
0:00:00	4:00:00	240
0:00:00	4:00:00	240
0:00:00	4:00:00	240

12. Calculation of Permeability: $K, (in/hr) = 60 \text{ min/hr} \times r^2/R^2 \times L(in)/T(\text{min}) \times \ln(H1/H2)$ T= 240.0

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

Tube Permeameter Test Data

Job Number: 2841-99-001E

Project: Proposed Residential Development

Client: Pallu Associates, LLC

Lab Tech: Chrys Luna

Sample ID: **Boring/Test Pit No.:** SPP-4 **Sample No.:** T-1 **Depth:** 24"
MUNICIPALITY Township of Marlboro **BLOCK** 146 **LOT** 25 & 26

1. Test Number T1 Replicate (letter) B Date Collected 8/12/2020

2. Material Tested: Fill X Test in Native Soil-Indicate Depth

3. Type of Sample: x 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. -- > 1.2

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 Interval, T1	Time End of Test Interval T2	Length of Test Interval, T, Minutes
0:00:00	30:00 AM	30
0:00:00	1:00:00	30
0:00:00	2:55:00	30

12. Calculation of Permeability: $K, (in/hr) = 60 \text{ min/hr} \times r^2/R^2 \times L(in)/T(\text{min}) \times \ln(H1/H2)$ T= 30.0

K = 1.8 **Classification:** **K2**

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

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

Tube Permeameter Test Data

Job Number: 2841-99-001E

Sample ID: **Boring/Test Pit No.:** SPP-4 **Sample No.:** T-2 **Depth:** 48"

Project: Proposed Residential Development

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 8/12/2020

2. Material Tested: Fill X Test in Native Soil-Indicate Depth

3. Type of Sample: x 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 N/A

Wt. of Tube Containing Sample _____
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. -- > 1.2

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 Interval, T1	Time End of Test Interval T2	Length of Test Interval, T, Minutes
0:00:00	4:00:00	240
0:00:00	4:00:00	240
0:00:00	4:00:00	240

12. Calculation of Permeability: $K, (in/hr) = 60 \text{ min/hr} \times r^2/R^2 \times L(in)/T(\text{min}) \times \ln(H1/H2)$ T= 240.0

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 _____

Tube Permeameter Test Data

Job Number: 2841-99-001E

Project: Proposed Residential Development

Client: Pallu Associates, LLC

Lab Tech: Chrys Luna

Sample ID: **Boring/Test Pit No.:** SPP-4 **Sample No.:** T-3 **Depth:** 100"
MUNICIPALITY Township of Marlboro **BLOCK** 146 **LOT** 25 & 26

1. Test Number T3 Replicate (letter) A Date Collected 8/12/2020

2. Material Tested: Fill X Test in Native Soil-Indicate Depth

3. Type of Sample: x 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 N/A

Wt. of Tube Containing Sample _____
 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. -- > 1.2

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 Interval, T1	Time End of Test Interval T2	Length of Test Interval, T, Minutes
0:00:00	4:00:00	240
0:00:00	4:00:00	240
0:00:00	4:00:00	240

12. Calculation of Permeability: $K, (in/hr) = 60 \text{ min/hr} \times r^2/R^2 \times L(in)/T(\text{min}) \times \ln(H1/H2)$ $T =$ 240.0

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 _____

Tube Permeameter Test Data

Job Number: 2841-99-001E

Project: Proposed Residential Development

Client: Pallu Associates, LLC

Lab Tech: Chrys Luna

Sample ID: **Boring/Test Pit No.:** SPP-4 **Sample No.:** T-3 **Depth:** 100"
MUNICIPALITY Township of Marlboro **BLOCK** 146 **LOT** 25 & 26

1. Test Number T3 Replicate (letter) B Date Collected 8/12/2020

2. Material Tested: Fill X Test in Native Soil-Indicate Depth

3. Type of Sample: x 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 N/A

Wt. of Tube Containing Sample
 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. -- > 1.2

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 Interval, T1	Time End of Test Interval T2	Length of Test Interval, T, Minutes
0:00:00	4:00:00	240
0:00:00	4:00:00	240
0:00:00	4:00:00	240

12. Calculation of Permeability: $K, (in/hr) = 60 \text{ min/hr} \times r^2/R^2 \times L(in)/T(\text{min}) \times \ln(H1/H2)$ T= 240.0

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

Tube Permeameter Test Data

Job Number: 2841-99-001E

Project: Proposed Residential Development

Client: Pallu Associates, LLC

Lab Tech: Chrys Luna

Sample ID: **Boring/Test Pit No.:** SPP-5 **Sample No.:** T-1 **Depth:** 36"
MUNICIPALITY Township of Marlboro **BLOCK** 146 **LOT** 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: x 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 N/A

Wt. of Tube Containing Sample
 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. -- > 1.2

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 Interval, T1	Time End of Test Interval T2	Length of Test Interval, T, Minutes
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: $K, (in/hr) = 60 \text{ min/hr} \times r^2/R^2 \times L(in)/T(\text{min}) \times \ln(H1/H2)$ T= 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 _____

Tube Permeameter Test Data

Job Number: 2841-99-001E

Project: Proposed Warehouse Building

Client: Pallu Associates, LLC

Lab Tech: S. Curtis

Sample ID: Boring/Test Pit No.: SPP-9 **Sample No.:** T-1 **Depth:** 30
MUNICIPALITY Township of Marlboro **BLOCK** 146 **LOTS** 25 & 26

1. Test Number T-1A Replicate (letter) A Date Collected 10/19/2020

2. Material Tested: Fill X Test in Native Soil-Indicate Depth

3. Type of Sample: x Undisturbed Disturbed

4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 1.91
 Length of Sample, L, in inches 4.00

Sample must be greater than 2" but less than 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. 116.3831

8. Bulk Density (Sample Wt./Sample Volume), grams/cc. -- > 1.2

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 Interval, T1	Time End of Test Interval T2	Length of Test 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: $K, (in/hr) = 60 \text{ min/hr} \times r^2/R^2 \times L(in)/T(\text{min}) \times \ln(H1/H2)$ 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
 Other - Specify _____

Tube Permeameter Test Data

Job Number: 2841-99-001E

Sample ID: Boring/Test Pit No.: SPP-9 **Sample No.:** T-1 **Depth:** 30

Project: Proposed Warehouse Building

Client: Pallu Associates

Lab Tech: S. Curtis

MUNICIPALITY Township of Marlboro **BLOCK** 146 **LOTS** 25 & 26

1. **Test Number** T-1B **Replicate (letter)** B **Date Collected** 10/19/2020

2. **Material Tested:** **Fill** **X** **Test in Native Soil-Indicate Depth**

3. **Type of Sample:** **x** **Undisturbed** **Disturbed**

4. **Sample Dimensions:** **Inside Radius of Sample Tube, R, in cm** **1.91**
Length of Sample, L, in inches **4.00**

Sample must be greater than 2" but less than 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.** **116.3831**

8. **Bulk Density (Sample Wt./Sample Volume), grams/cc.** **--** **> 1.2**

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 Interval, T1	Time End of Test Interval T2	Length of Test 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:** $K, (in/hr) = 60 \text{ min/hr} \times r^2/R^2 \times L(in)/T(\text{min}) \times \ln (H1/H2)$ **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**
 Other - Specify _____

Tube Permeameter Test Data

Job Number: 2841-99-001E
Project: Proposed Warehouse Building
Client: Pallu Associates
Lab Tech: S. Curtis

Sample ID: Boring/Test Pit No.: SPP-9 **Sample No.:** T-2 **Depth:** 80
MUNICIPALITY Township of Marlboro **BLOCK** 146 **LOTS** 25 & 26

1. Test Number T-2A Replicate (letter) A Date Collected 10/19/2020

2. Material Tested: Fill X Test in Native Soil-Indicate Depth

3. Type of Sample: x Undisturbed Disturbed

4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 1.91
Length of Sample, L, in inches 4.00

Sample must be greater than 2" but less than 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. 116.3831

8. Bulk Density (Sample Wt./Sample Volume), grams/cc. > 1.2

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 Interval, T1	Time End of Test Interval T2	Length of Test Interval, T, Minutes
0:00:00	35.93	30
0:00:00	35.93	30
0:00:00	39.13	30

12. Calculation of Permeability: $K, (in/hr) = 60 \text{ min/hr} \times r^2/R^2 \times L(in)/T(\text{min}) \times \ln(H1/H2)$ T= 30

K = 1.8 **Classification:** **K2**

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

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

Tube Permeameter Test Data

Job Number: 2841-99-001E
Project: Residential Development
Client: Pallu Associates, LLC
Lab Tech: Chrys Luna

Sample ID: Boring/Test Pit No.: SPP-10 **Sample No.:** T-1 **Depth:** 35"
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: x 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. -- > 1.2

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 Interval, T1	Time End of Test Interval T2	Length of Test Interval, T, Minutes
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: $K, (in/hr) = 60 \text{ min/hr} \times r^2/R^2 \times L(in)/T(\text{min}) \times \ln(H1/H2)$ T= 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

Tube Permeameter Test Data

Job Number: 2841-99-001E

Project: Proposed Residential Development

Client: Pallu Associates, LLC

Lab Tech: Chrys Luna

Sample ID: **Boring/Test Pit No.:** SPP-10 **Sample No.:** T-2 **Depth:** 50"
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 X Test in Native Soil-Indicate Depth

3. Type of Sample: x 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. -- > 1.2

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 Interval, T1	Time End of Test Interval T2	Length of Test Interval, T, Minutes
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: $K, (in/hr) = 60 \text{ min/hr} \times r^2/R^2 \times L(in)/T(\text{min}) \times \ln(H1/H2)$ $T =$ 10.0

K = 5.4 **Classification:** **K3**

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

 x NONE
 Soil/Tube Contact Large Gravel Large Roots
 Dry Soil Smearing Compaction
 Other - Specify _____

Tube Permeameter Test Data

Job Number: 2841-99-001E

Project: Proposed Residential Development

Client: Pallu Associates, LLC

Lab Tech: Chrys Luna

Sample ID: **Boring/Test Pit No.:** SPP-10 **Sample No.:** T-2 **Depth:** 50"

MUNICIPALITY Township of Marlboro BLOCK 146 LOT 25 & 26

1. Test Number T2 Replicate (letter) B Date Collected _____

2. Material Tested: _____ Fill X Test in Native Soil-Indicate Depth

3. Type of Sample: x 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. -- > 1.2

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 Interval, T1	Time End of Test Interval T2	Length of Test Interval, T, Minutes
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: $K, (in/hr) = 60 \text{ min/hr} \times r^2/R^2 \times L(in)/T(\text{min}) \times \ln(H1/H2)$ $T=$ 49.0

K = 1.1 **Classification:** **K2**

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

x NONE
 _____ Soil/Tube Contact _____ Large Gravel _____ Large Roots
 _____ Dry Soil _____ Smearing _____ Compaction
 _____ Other - Specify _____