

# STORMWATER BASIN AREA INVESTIGATION REPORT

**PROPOSED RESIDENTIAL DEVELOPMENT**  
**Texas Road & Greenwood Road**  
**Block 119, Lot 16**  
**Township of Marlboro, Monmouth County, New Jersey**

*Prepared for:*

**ASHBELL ASSOCIATES, LLC**  
**811 Amboy Avenue**  
**Edison, NJ 08837**

*Prepared by:*




245 Main Street, Suite 110  
Chester, New Jersey 07930

  
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Project #2841-99-001E  
November 12, 2020

**STORMWATER BASIN AREA INVESTIGATION REPORT**  
**Proposed Residential Development**  
**Texas Road & Greenwood Road**  
**Block 119, Lot 16**  
**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 at Texas Road and Greenwood Road in the Township of Marlboro, Monmouth County, New Jersey. The site is further identified as Block 119, Lot 16 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 subject site was undeveloped and wooded. The proposed site development is expected to include construction of five, three-story residential buildings occupying a total footprint area of approximately 55,300 square feet. Additional improvements will include associated pavements, utilities, and clubhouse, and shed with associated amenities. Stormwater management facilities are proposed within the northwestern and southwestern portion of the site. Conceptual site development details were provided on a July 30, 2020 *Overall Site Plan* prepared by Dynamic Engineering Consultants, PC (Dynamic).

Topographic information was provided on a July 31, 2020 *Boundary and Topographic Survey* prepared by Dynamic Survey, LLC. Existing site grades range between approximately 53 feet within the northwestern portion of the site and 92 feet within the southeastern portion of the site. The elevations provided in this report are referenced to 1988 North American Vertical Datum (NAVD 88).

The subject site is bound to the north by a wooded area with Ticetown Road beyond; to the east by Greenwood Road; 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. Four soil profile pits (identified as SPP-1 through SPP-4) 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 enclosed *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.

**Laboratory Permeability Testing:** Undisturbed tube permeameter tests were conducted in accordance to New Jersey Department of Environmental Protection (N.J.D.E.P.) *Stormwater Best Practices Manual – Appendix E* test methods on representative samples obtained from anticipated stormwater management facility infiltration depths. Detailed results of the permeability testing are included herein.

### 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 site and are shown on the enclosed “*Soil Survey Location Plan*”.

**Manahawkin muck, zero to two percent slopes, frequently flooded (MakAt):** Manahawkin muck, zero to two percent slopes, frequently flooded is mapped within the central portion of the site. The typical soil profile (as detailed in the soil survey) consists of muck to a depth of 47 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 six inches below the natural ground surface.

**Atsion sand, zero to two percent slopes (AtsA):** Atsion sand, zero to two percent slopes is mapped within the southwestern 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.

**Elkton loam, zero to two percent slopes (EkaAr):** Elkton loam, zero to two percent slopes is mapped within the eastern and northern portions of the site. The typical soil profile (as detailed in the soil survey) consists of loam to a depth of eight inches; underlain by clay loam 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 zero to 12 inches below the natural ground surface.

**Klej loamy sand, zero to five percent slopes (KkgB):** Klej loamy sand, zero to five percent slopes is mapped within the eastern and southern portions of the site. The typical soil profile (as detailed in the soil survey) consists of decomposed plant material to a depth of four inches; loamy sand to a depth of 40 inches; underlain by sand to a depth of 64 inches below the natural ground surface (limit of report). The depth of the water table is reported to range between 12 to 24 inches below the natural ground surface (limit of report).

**Pits, Sand, and Gravel (PHG):** Pits, Sand, and Gravel is mapped within a relatively small area within the western portion of the site. The typical soil profile (as detailed in the soil survey) consists

of sandy material disturbed by human activity. The depth to groundwater is not reported in the survey.

#### 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

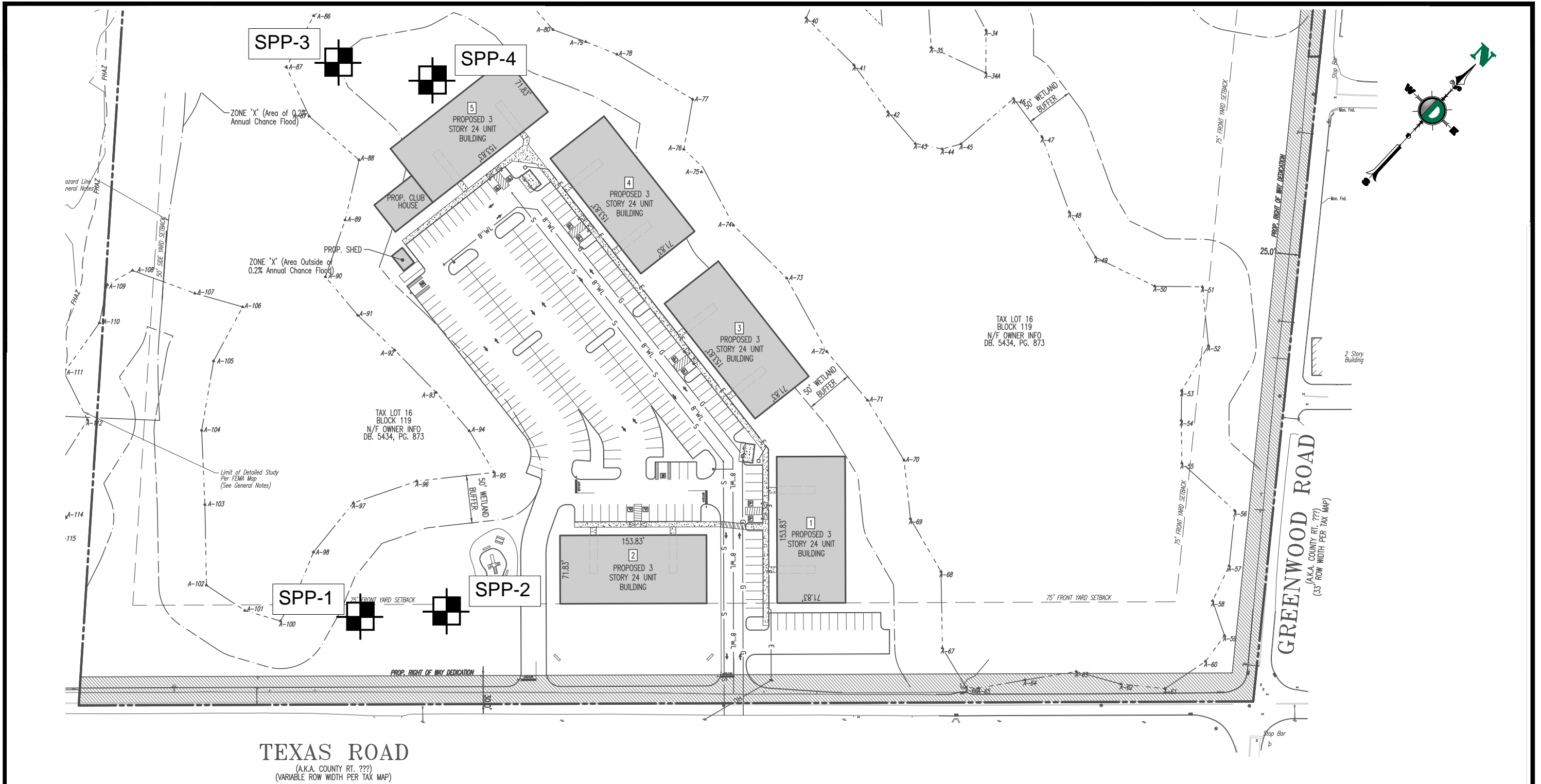
Soil profile pits were performed within existing landscaped areas and encountered approximately eleven to 14 inches of topsoil at the surface. Beneath the surface cover, natural coastal plain deposits were encountered that generally consisted of sand, loamy sand, sandy clay loam, silt loam, and clay loam with variable amounts of gravel. The natural coastal plain deposits were encountered to refusal (due to continuous wet cave-in) depths ranging between approximately ten feet and 12.0 feet below the ground surface; corresponding to elevations ranging between 72.0 feet and 61.5 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 approximately 0.9 feet and 4.1 feet below the ground surface; corresponding to elevations ranging between 80.2 feet and 70.6 feet. Groundwater was encountered at depths ranging between approximately two feet and 4.1 feet; corresponding to elevations ranging between 80.2 feet and 69.0 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:

STORMWATER INVESTIGATION 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	81.0	4.1	76.9	53	--	--
SPP-2	84.0	3.8	80.2	35	1.7	1.7
				50	0.2	< 0.2
SPP-3	71.5	0.9	70.6	50	--	--
SPP-4	74.5	0.9	73.6	55	< 0.2	< 0.2

## **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:  
11/2/2020

TITLE:  
**SOIL PROFILE PIT LOCATION PLAN**

PROJECT: **ASHBELL ASSOCIATES, LLC**  
**Proposed Residential Development**  
Block 119, Lot 16  
Texas Road and Greenwood Road, Township of Marlboro,  
Monmouth County, New Jersey

Rev. # 0 DEC Client Code: 2841

**LEGEND:**

SPP-X  
 APPROXIMATE LOCATION OF SOIL PROFILE PIT

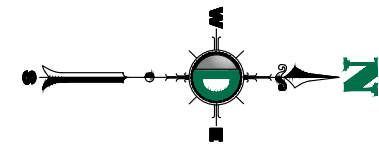
NOTES:  
1. THIS PLAN IS NOT FOR CONSTRUCTION AND WAS PREPARED TO ILLUSTRATE TEST LOCATIONS ONLY AND MAY NOT REFLECT THE MOST CURRENT REVISION OF THE BASE PLAN  
2. THIS PLAN HAS BEEN PREPARED BASED ON A JULY 30, 2020 OVERALL SITE PLAN BY DYNAMIC ENGINEERING CONSULTANTS, P.C.



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# **Soil Survey Location Plan**





SCALE: N.T.S.

JOB No:  
2841-99-001E

SHEET No:  
**2**  
OF **2**

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

TITLE:  
**SOIL SURVEY LOCATION PLAN**

PROJECT: **ASHBELL ASSOCIATES, LLC**  
**Proposed Residential Development**  
Block 119 Lot 16  
Texas Road and Greenwood Road, Township of Marlboro,  
Monmouth County, New Jersey

Rev. # 0      DEC Client Code: 2841

**LEGEND:**

**AtsA:** Atsion Sand, zero to two percent slopes  
**MakAt:** Manahawkin Muck, zero to two percent slopes, frequently flooded  
**EkaAr:** Elkton Loam, zero to two percent slopes

**KkgB:** Klej loamy sand, zero to five percent slopes  
**PHG:** Pits, Sand and Gravel

NOTES:  
1. 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**

Page 1 of 1

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

Surface Elevation (ft): 81.0	Date Started: 8/19/20	Groundwater Data	Depth (ft)	El. (ft)	Groundwater Comments
Termination Depth (ft): 11.0	Date Completed: 8/19/20	Static	4.1	76.9	
Proposed Location: SWM	Logged by: R. Quackenbush	Groundwater	4.1	76.9	
Excavation / Test Method: Visual Observation	Contractor: Pennyweight Co	Seasonal High Groundwater	4.1	76.9	
	Rig Type: Case 580L Backhoe				Light Gray (10 YR 7/1) and Yellowish Brown (10 YR 5/6) mottles 49" - 144"

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.	
0-14	Topsoil	SANDY LOAM	GRAVEL	COBBLES	STONES	BOULDERS	SUBANGULAR BLOCKY	WEAK	VERY FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	GRADUAL <5"	SMOOTH	MNY (>20% MAX)	MEDIUM	NONE			BAG	12	S-1	
14-49	Grayish Brown (10 YR 5/2)	LOAMY SAND	GRAVEL	COBBLES	STONES	BOULDERS	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	GRADUAL <5"	SMOOTH	FEW (5% MAX)	VERY FINE	NONE			BAG	35	S-2	
49-70	Dark Gray (10YR 4/1)	SANDY CLAY LOAM	GRAVEL	COBBLES	STONES	BOULDERS	SUBANGULAR BLOCKY	STRONG	COARSE	WET	VERY FRIABLE	MODERATELY STICKY	MODERATELY PLASTIC	GRADUAL <5"	SMOOTH	NONE		FEW 2%	FINE <5MM	DISTINCT	BAG TUBE	53	S-3 T-1	
70-132	Light Gray (2.5Y 6/1)	SAND	GRAVEL	COBBLES	STONES	BOULDERS	SINGLE GRAIN	STRUCTURELESS		WET	LOOSE	NONSTICKY	NONPLASTIC			NONE		FEW 2%	FINE <5MM	FAINT	BAG	100	S-4	

Additional Remarks: Test Pit Refusal due to continuous wet cave-in at approximately 132 inches below the existing ground surface.



SOIL PROFILE PIT LOG

Soil Profile Pit: **SPP-2**

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

Surface Elevation (ft): 84.0	Date Started: 8/19/20	Groundwater Data	Depth (ft)	El. (ft)	Groundwater Comments
Termination Depth (ft): 12.0	Date Completed: 8/19/20	Static	3.8	80.2	
Proposed Location: SWM	Logged by: R. Quackenbush	Groundwater	3.8	80.2	
Excavation / Test Method: Visual Observation	Contractor: Pennyweight Co	Seasonal High Groundwater	3.8	80.2	
	Rig Type: Case 580L Backhoe				Light Gray (10 YR 7/1) and Yellowish Brown (10 YR 5/6) mottles 45" - 144"

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.	
0-11	Topsoil	SANDY LOAM	GRAVEL	COBBLES	STONES	BOULDERS	SUBANGULAR BLOCKY	WEAK	VERY FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	GRADUAL <5"	SMOOTH	FEW (5% MAX)	VERY FINE	NONE			BAG	11	S-1	
11-45	Grayish Brown (10 YR 5/2)	LOAMY SAND	GRAVEL	COBBLES	STONES	BOULDERS	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	GRADUAL <5"	SMOOTH	NONE		NONE			BAG TUBE	35	S-2 T-1	A = 1.7 IPH B = 1.7 IPH
45-75	Dark Gray (10YR 4/1)	SANDY CLAY LOAM	GRAVEL	COBBLES	STONES	BOULDERS	SUBANGULAR BLOCKY	STRONG	COARSE	WET	VERY FRIABLE	MODERATELY STICKY	MODERATELY PLASTIC	GRADUAL <5"	SMOOTH	NONE		FEW 2%	FINE <5MM	DISTINCT	BAG TUBE	50	S-3 T-2	A = 0.2 IPH B = 0.2 IPH
75-144	Light Gray (2.5Y 6/1)	LOAMY SAND	GRAVEL	COBBLES	STONES	BOULDERS	SUBANGULAR BLOCKY	WEAK	FINE	WET	LOOSE	NONSTICKY	NONPLASTIC			NONE		FEW 2%	FINE <5MM	FAINT	BAG	110	S-4	

Additional Remarks: Test Pit Refusal due to continuous wet cave-in at approximately 144 inches below the existing ground surface.



SOIL PROFILE PIT LOG

Soil Profile Pit: **SPP-3**

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

Surface Elevation (ft): 71.5	Date Started: 8/19/20	Groundwater Data	Depth (ft)	El. (ft)	Groundwater Comments
Termination Depth (ft): 10.0	Date Completed: 8/19/20	Surface	2.5	69.0	
Proposed Location: SWM	Logged by: R. Quackenbush	Groundwater	6.9	70.6	
Excavation / Test Method: Visual Observation	Contractor: Pennyweight Co	Seasonal High Groundwater			
	Rig Type: Case 580L Backhoe				Light Gray (10 YR 7/1) and Yellowish Brown (10 YR 5/6) mottles 11" - 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.	
0-11	Topsoil	SANDY LOAM	GRAVEL: 5	COBBLES: 0	STONES: 0	BOULDERS: 0	SUBANGULAR BLOCKY	WEAK	VERY FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	GRADUAL <5"	SMOOTH	FEW (5% MAX)	VERY FINE	NONE			BAG	8	S-1		
11-30	Yellowish Brown (10YR 5/6)	CLAY LOAM	GRAVEL: 0	COBBLES: 0	STONES: 0	BOULDERS: 0	SUBANGULAR BLOCKY	STRONG	COARSE	MOIST	VERY FRIABLE	SLIGHTLY STICKY	SLIGHTLY PLASTIC	GRADUAL <5"	SMOOTH	NONE		FEW 2%	FINE <5MM	FAINT	BAG	20	S-2		
30-90	Dark Gray (10YR 4/1)	SILT LOAM	GRAVEL: 0	COBBLES: 0	STONES: 0	BOULDERS: 0	PLATY	STRONG	COARSE	WET	VERY FRIABLE	MODERATELY STICKY	MODERATELY PLASTIC	GRADUAL <5"	SMOOTH	NONE		FEW 2%	FINE <5MM	DISTINCT	BAG TUBE	50	S-3 T-1		
90-120	Light Gray (2.5Y 6/1)	LOAMY SAND	GRAVEL: <5	COBBLES: 0	STONES: 0	BOULDERS: 0	SUBANGULAR BLOCKY	WEAK	FINE	WET	LOOSE	NONSTICKY	NONPLASTIC			NONE		FEW 2%	FINE <5MM	FAINT	BAG	110	S-4		

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



SOIL PROFILE PIT LOG

Soil Profile Pit: **SPP-4**

Page 1 of 1

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

Surface Elevation (ft): 74.5	Date Started: 8/19/20	Groundwater Data	Depth (ft)	El. (ft)	Groundwater Comments
Termination Depth (ft): 11.3	Date Completed: 8/19/20	Static	2.0	72.5	
Proposed Location: SWM	Logged by: R. Quackenbush	Groundwater	6.9	73.6	
Excavation / Test Method: Visual Observation	Contractor: Pennyweight Co	Seasonal High Groundwater			
	Rig Type: Case 580L Backhoe				Light Gray (10 YR 7/1) and Yellowish Brown (10 YR 5/6) mottles 11" - 135"

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.			
0-11	Topsoil	SANDY LOAM	5	0	0	0	SUBANGULAR BLOCKY	WEAK	VERY FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	GRADUAL <5"	SMOOTH	FEW (5% MAX)	VERY FINE	NONE			BAG	11	S-1	
11-24	Dark Gray (10YR 4/1)	CLAY LOAM		0	0	0	SUBANGULAR BLOCKY	STRONG	COARSE	MOIST	VERY FRIABLE	SLIGHTLY STICKY	SLIGHTLY PLASTIC	GRADUAL <5"	SMOOTH	NONE		FEW 2%	FINE <5MM	FAINT	BAG	16	S-2	
24-102	Dark Gray (10YR 4/1)	SILT LOAM	0	0	0	0	PLATY	STRONG	COARSE	WET	VERY FRIABLE	MODERATELY STICKY	MODERATELY PLASTIC	GRADUAL <5"	SMOOTH	NONE		FEW 2%	FINE <5MM	DISTINCT	BAG TUBE	55	S-3 T-1	A < 0.2 IPH B < 0.2 IPH
102-135	Light Gray (2.5Y 6/1)	LOAMY SAND	<5	0	0	0	SUBANGULAR BLOCKY	WEAK	FINE	WET	LOOSE	NONSTICKY	NONPLASTIC			NONE		FEW 2%	FINE <5MM	FAINT	BAG	120	S-4	

Additional Remarks: Test Pit Refusal due to continuous wet cave-in at approximately 135 inches below the existing ground surface.

# **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-2 **Sample No.:** T-1 **Depth:** 35"

MUNICIPALITY Township of Marlboro BLOCK 119 LOT 16

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 \_\_\_\_\_

Wt. of Tube Containing Sample \_\_\_\_\_  
Wt. of Empty Tube \_\_\_\_\_

7. Sample Volume (L x 2.54 cm./inch x 3.14R<sup>2</sup>), cc. 116.3831

8. Bulk Density (Sample Wt./Sample Volume), grams/cc. 0 > 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	2:00:00	30
0:00:00	2:00:00	32
0:00:00	2:00:00	32

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= 32.0

K = 1.7 **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:** Proposed Residential Development

**Client:** Pallu Associates, LLC

**Lab Tech:** Chrys Luna

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

**MUNICIPALITY** Township of Marlboro **BLOCK** 119 **LOT** 16

1. Test Number T2 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 \_\_\_\_\_

Wt. of Tube Containing Sample \_\_\_\_\_  
Wt. of Empty Tube \_\_\_\_\_

7. Sample Volume (L x 2.54 cm./inch x 3.14R<sup>2</sup>), cc. 116.3831

8. Bulk Density (Sample Wt./Sample Volume), grams/cc. 0 > 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 4.50

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 = 0.2 **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-2 **Sample No.:** T-2 **Depth:** 50"

**Project:** Proposed Residential Development

**Client:** Pallu Associates, LLC

**Lab Tech:** Chrys Luna

MUNICIPALITY Township of Marlboro BLOCK 119 LOT 16

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 \_\_\_\_\_

Wt. of Tube Containing Sample \_\_\_\_\_  
Wt. of Empty Tube \_\_\_\_\_

7. Sample Volume (L x 2.54 cm./inch x 3.14R<sup>2</sup>), cc. 116.3831

8. Bulk Density (Sample Wt./Sample Volume), grams/cc. 0 > 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 4.88

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

K = < 0.2 **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

**Sample ID:** **Boring/Test Pit No.:** SPP-4 **Sample No.:** T-1 **Depth:** 55'

**Project:** Proposed Residential Development

**Client:** Pallu Associates, LLC

**Lab Tech:** Chrys Luna

MUNICIPALITY Township of Marlboro BLOCK 119 LOT 16

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 \_\_\_\_\_

Wt. of Tube Containing Sample \_\_\_\_\_  
Wt. of Empty Tube \_\_\_\_\_

7. Sample Volume (L x 2.54 cm./inch x 3.14R<sup>2</sup>), cc. 101.8353

8. Bulk Density (Sample Wt./Sample Volume), grams/cc. 0 > 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

K = < 0.2 **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 \_\_\_\_\_

