STORMWATER BASIN AREA INVESTIGATION REPORT

PROPOSED BUILDING EXPANSION

New Jersey State Highway Route 35
& Huntington Avenue & Fisher Avenue
Block 514, Lots 1-3
Township of Neptune, Monmouth County, New Jersey

Prepared for:

Crash Champions, LLC
601 Oakmont Lane
Westmont Township, Illinois, 60559

Prepared by:

DYNAMIC ENGINEERING

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Project #4790-23-03619
August 15, 2024

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Block 514, Lot 1-3
Township of Neptune, Monmouth County, New Jersey

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APPENDICES

1.0 INTRODUCTION

Dynamic Engineering Consultants, PC (Dynamic) has completed a subsurface evaluation in support of the proposed stormwater management facilities associated with the proposed site improvements to be located at New Jersey State Highway Route 35 and Huntington Avenue and Fisher Avenue in the Township of Neptune, Monmouth County, New Jersey. The site is further identified as Block 514, Lots 1 through 3. The site of the proposed construction is attached on the *Soil Profile Pit Location Plan* included in the appendix of this report.

At the time of Dynamic's investigation, the subject site was developed with an existing automobile service station, associated parking/driveway, utilities, and landscaped areas. Based on a May 30, 2024, *Site Plan* prepared by Dynamic, the proposed site improvements will include the construction of two building additions to the west and east of the existing building. The building additions are expected to occupy footprint areas of approximately 3,536 square feet and 541 square feet, respectively. Additional improvements will include associated pavements and utilities. Potential stormwater management facilities are proposed throughout the site; however, details regarding the storm water management facilities (i.e. type, bottom of basin elevations, size, etc.) were not provided at the time of this report.

Topographic information was provided on a July 11, 2024 *Engineering Design Survey* prepared by Clark Land Services, Inc. Existing site grades generally slope downward from the southwest to the northeast and range between approximately 18 feet within the southwestern portion of the site and 14 feet within the northeastern portion of the site. The elevations referenced in the survey are given in 1988 North American Vertical Datum (NAVD 88).

The subject site is bound to the north by Huntington Avenue with residential and commercial property (Lo Temp Total Car Care) beyond; to the east Fisher Avenue with residential property beyond; to the south by commercial property (Taco Bell) and residential property with New Jersy State Highway Route 33 (aka Old Corlies Avenue) beyond; and to the west by New Jesey State Highway Route 35 with commercial property (McDonald's) beyond.

2.0 SCOPE OF SERVICES

Dynamic's scope of services pertaining to this report included evaluating the subsurface conditions by excavating soil profile pits to estimate the apparent seasonal high groundwater level and collecting samples for laboratory permeability testing. Four soil profile pits (identified as SPP-1 through SPP-4) were excavated at the site using a track mounted miniature excavator. Prior to performing the test locations, ground penetrating radar (GPR) was utilized in an attempt to avoid potential subsurface utilities and/or anomalies. Test locations were located within or near the area of potential stormwater 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 within the possible area of the proposed stormwater management facilities 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 the report. Samples were collected within representative zones near the infiltration level.

Undisturbed tube permeability tests were collected in general accordance with New Jersey Department of Environmental Protection (N.J.D.E.P.) *Stormwater Best Practices Manual – Chapter 12 Soil Testing Criteria* test methods on representative samples obtained from anticipated stormwater management facility.

Environmental conditions were not evaluated by Dynamic as part 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 site within the area of the proposed site improvements and are shown on the *NCRS-USDA Custom Soil Report* included in the appendix of this report:

Urban Land (UR): This soil series is mapped throughout the subject site. The parent material is reported to be surfaces covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soils. The typical soil profile and depth to ground water is not detailed within the soil 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 included below.

4.1 Subsurface Soil Profile

The soil profile pits were performed within accessible areas of the site and encountered approximately three inches to six inches of topsoil at the surface. Beneath the surface cover, existing fill material was encountered that generally consisted of silty clay loam, loamy sand,

and sandy loam with varying amounts of gravel and debris. The debris included brick fragments, metal, asphalt, wood, plastic, ash, glass, roots, and cinders. The existing fill material encountered extended to depths ranging between approximately five feet and six feet below the ground surface; corresponding to elevations ranging between 11.1 feet to 9.8 feet. Beneath the existing fill material, natural coastal plain deposits were encountered that generally consisted of silty clay loam and sand with variable amounts of gravel and roots. The natural coastal plain deposits were encountered to refusal depths ranging between approximately eight feet and 9.5 feet below the ground surface; corresponding to elevations ranging between 7.6 feet and 6.8 feet. The refusal encountered was due to continuous wet-cave-in of the soil profile pits.

4.2 Seasonal High Groundwater and Permeability Results

Indicators of seasonal high groundwater (i.e. soil mottling) were encountered at depths ranging between approximately 3.2 and 5.5 feet below the ground surface; corresponding to elevations ranging between 12.1 feet and 11.1 feet. Groundwater was encountered within the soil profile pits at depths ranging between approximately five feet and seven feet below the ground surface; corresponding to elevations ranging between 10.4 feet and 9.6 feet. Groundwater levels are expected to fluctuate seasonally and following periods of significant precipitation.

The soil strata tested for the proposed stormwater facilities had permeability rates of less than approximately 0.2 inches per hour (iph). A summary of the seasonal high groundwater levels and permeability test results are presented in the following table.

ESTIMATED SEASONAL HIGH GROUNDWATER AND GROUNDWATER SUMMARY						
Location	**Approximate Surface Elevation (feet)**	**Estimated Seasonal High Groundwater**		**Permeability Results**		
		Depth (feet)	**Elevation (feet)**	**Depth (inches)**	**Permeability (in/hr)**	
					A	**B**
SPP-1	16.6	5.5	11.1	50[1]	<0.2	<0.2
SPP-2	17.1	5.5	11.6	48[1]	<0.2	<0.2
SPP-3	15.4	3.3	12.1	30[1]	Not Tested	
SPP-4	14.8	3.2	11.6	34[1]	Not Tested	

[1]Peremability Sample collected within existing fill material

5.0 GENERAL COMMENTS AND LIMITATIONS

Supplemental recommendations will be required upon finalization of conceptual site plans or if significant changes are made in the characteristics or location of the proposed stormwater management facilities. Dynamic should be included as a consultant to the design team and should be provided final plans for review to confirm these criteria apply or to modify recommendations as necessary.

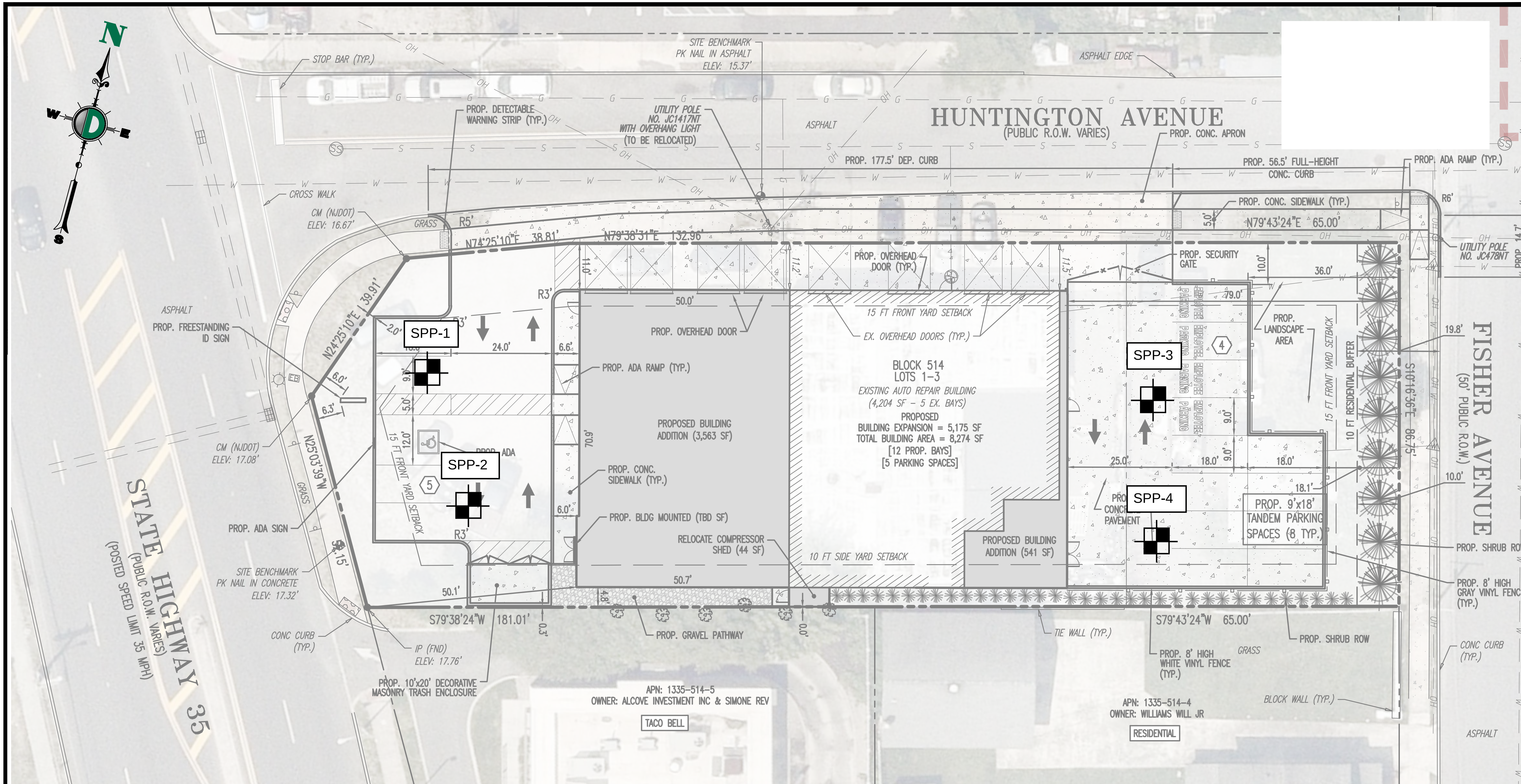
The results presented herein should be utilized by a qualified engineer in preparing preliminary design concepts and site grading. The engineer should consider these results as minimum physical standards that may be superseded by local and regional building codes and structural considerations. These results are prepared for the use of the client for the specific project detailed and should not be used by any third party. These recommendations are relevant to the preliminary design phase and should not be substituted for construction specifications.

The possibility exists that conditions between test locations may differ from those at specific soil profile pit locations, and conditions may not be as anticipated by the designers or contractors. In addition, the construction process may itself alter soil conditions. Therefore, Dynamic Geotechnical Engineers or their representatives should observe and document the final construction procedures used and the conditions encountered, as well as conduct testing and inspection to ensure the design criteria are met or recommendations to address deviations are implemented.

Dynamic assumes that a qualified contractor will be employed to perform the construction work, and that the contractor will be required to exercise care to ensure all excavations are performed in accordance with applicable regulations and good practice. Particular attention should be paid to avoiding damaging or undermining adjacent properties and maintaining slope stability. Deviations from the noted subsurface conditions encountered during construction should be brought to the attention of the geotechnical engineer.

The geotechnical engineer warrants that the findings, recommendations, specifications, or professional advice contained herein have been promulgated after being prepared in accordance with generally accepted professional engineering practice in the fields of foundation engineering, soil mechanics, and engineering geology. No other warranties are implied or expressed.

Soil Profile Pit Location Plan



SCALE: N.T.S.	JOB No: 4790 23-03619
SHEET No: 1 OF 1	DRAWN BY: MS
	DESIGNED BY: --
	CHECKED BY: FVC
	DATE: 7/1/2024

TITLE:
SOIL PROFILE PIT LOCATION PLAN

PROJECT: **CRASH CHAMPIONS, LLC**
PROPOSED AUTOMOBILE REPAIR EXPANSION
NJSH 35 & Huntington Avenue & Fisher Avenue
Block 514, Lots 1-3
Township of Neptune, Monmouth County, New Jersey

Rev. # 0 | DEC Client Code: 4790

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. BASE PLAN OBTAINED FROM A MAY 30, 2024 SITE PLAN PREPARED BY DYNAMIC ENGINEERING CONSULTANTS, P.C.

DYNAMIC ENGINEERING
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Records of Subsurface Exploration

DYNAMIC ENGINEERING

SOIL PROFILE PIT LOG

Soil Profile Pit: SPP- 1

Project: Proposed Building Expansion | **Project No.:** 4790-23-03619
Location: New Jersey State Highway Route 35 & Huntington Avenue & Fisher Avenue | **Client:** Crash Champions, LLC

Surface Elevation (ft):	16.6	**Date Started:**	6/19/24	**Groundwater Data**	**Depth (ft)**	**El. (ft)**	**Groundwater Comments**
Termination Depth (ft):	9.5	**Date Completed:**	6/19/24				
Proposed Location:	SWM	**Logged by:**	G. Seselgis	Seepage	NE	-	Dark Grey (10YR 4/1) mottles encountered between 66-84".
Excavation / Test Method:	Visual Observation	**Contractor:**	Neighbors Property Management	Groundwater	7.0	9.6	
		Rig Type:	Bobcat E60	Seasonal High Groundwater	5.5	11.1	

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 (in)	No.	
0-3	SURFACE COVER Gray (10YR 5/1)	GRAVELLY	LOAMY SAND	20	0	0	0	SUBANGULAR BLOCKY	WEAK	MEDIUM	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	SMOOTH	CMN (20% MAX)	FINE	NONE						
3-44	FILL Brown (10YR 4/3)	VERY COBBLY	SANDY LOAM	10	25	0	0	SUBANGULAR BLOCKY	MODERATE	MEDIUM	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	NONE		NONE			BAG	30	S-1	
44-66	FILL Black (10YR 2/1)		SANDY CLAY LOAM	0	0	0	0	SUBANGULAR BLOCKY	MODERATE	MEDIUM	MOIST	FRIABLE	SLIGHTLY STICKY	MODERATELY PLASTIC	CLEAR <2.5"	WAVY	FEW (5% MAX)	FINE	NONE			BAG TUBE	50	S-2 T-1	A < 0.2 iph B < 0.2 iph
66-72	FILL Very Dark Gray (10YR 3/1)	GRAVELLY	SANDY LOAM	15	0	0	0	SUBANGULAR BLOCKY	MODERATE	MEDIUM	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	NONE		CMN 2%-20%	MEDIUM 5MM-15MM	FAINT	BAG	70	S-3	
72-84	Grayish Brown (10YR 5/2)		SANDY CLAY LOAM	0	0	0	0	SUBANGULAR BLOCKY	MODERATE	MEDIUM	MOIST	FRIABLE	MODERATELY STICKY	MODERATELY PLASTIC	GRADUAL <5"	SMOOTH	NONE		CMN 2%-20%	MEDIUM 5MM-15MM	FAINT	BAG	80	S-4	
84-114	Very Dark Gray (10YR 3/1)		SAND	0	0	0	0	SINGLE GRAIN	STRUCTURELESS		WET	LOOSE	NONSTICKY	NONPLASTIC			NONE		CMN 2%-20%	MEDIUM 5MM-15MM	FAINT	BAG	114	S-5	

Additional Remarks: Existing fill debris consisting of asphalt, brick, cinderblocks, plastic and glass encountered from three to 72". Possible petroleum odor during excavation. SPP-1 terminated at 9.5 feet due to collapse from groundwater.

DYNAMIC ENGINEERING

SOIL PROFILE PIT LOG

Soil Profile Pit: SPP- 2

Project: Proposed Building Expansion — **Project No.:** 4790-23-03619

Location: New Jersey State Highway Route 35 & Huntington Avenue & Fisher Avenue — **Client:** Crash Champions, LLC

Surface Elevation (ft):	17.1	**Date Started:**	6/19/24
Termination Depth (ft):	9.5	**Date Completed:**	6/19/24
Proposed Location:	SWM	**Logged by:**	G. Seselgis
Excavation / Test Method:	Visual Observation	**Contractor:**	Neighbors Property Management
		Rig Type:	Bobcat E60

Groundwater Data	Depth (ft)	El. (ft)	Groundwater Comments
Seepage	NE	-	Dark Grey (10YR 3/1) mottles encountered between 66-84".
Groundwater	7.0	10.1	
Seasonal High Groundwater	5.5	11.6	

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 (in)	No.	
0-3	SURFACE COVER Grayish Brown (10YR 5/2)	GRAVELLY	LOAMY SAND	20	0	0	0	SUBANGULAR BLOCKY	WEAK	FINE	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	SMOOTH	CMN (20% MAX)	FINE	NONE						
3-44	FILL Yellowish Brown (10YR 5/6)	COBBLY	LOAMY SAND	10	15	5	0	SUBANGULAR BLOCKY	WEAK	MEDIUM	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	NONE		NONE			BAG	24	S-1	
44-66	FILL Black (10YR 2/1)		SANDY CLAY LOAM	0	0	0	0	SUBANGULAR BLOCKY	MODERATE	COARSE	MOIST	FRIABLE	SLIGHTLY STICKY	MODERATELY PLASTIC	CLEAR <2.5"	WAVY	FEW (5% MAX)	FINE	NONE			BAG TUBE	48	S-2 T-1	A < 0.2 iph B < 0.2 iph
66-72	FILL Gray (10YR 5/1)	GRAVELLY	SANDY LOAM	15	0	0	0	SUBANGULAR BLOCKY	MODERATE	MEDIUM	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	NONE		CMN 2%-20%	MEDIUM 5MM-15MM	DISTINCT	BAG	66	S-3	
72-84	Dark Reddish Gray (2.5YR 3/1)		SANDY CLAY LOAM	0	0	0	0	SUBANGULAR BLOCKY	MODERATE	COARSE	MOIST	FRIABLE	MODERATELY STICKY	MODERATELY PLASTIC	CLEAR <2.5"	WAVY	NONE		CMN 2%-20%	MEDIUM 5MM-15MM	DISTINCT	BAG	76	S-4	
84-114	Dark Gray (7.5YR 4/1)		SAND	0	0	0	0	SINGLE GRAIN	STRUCTURELESS		WET	LOOSE	NONSTICKY	NONPLASTIC			NONE		CMN 2%-20%	MEDIUM 5MM-15MM	DISTINCT	BAG	114	S-5	

Additional Remarks: Existing fill debris consisting of asphalt, brick, metal and wood encountered from three to 72 inches. Possible petroleum odor during excavation. SPP-2 terminated at 9.5 feet due to collapse from groundwater.

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SOIL PROFILE PIT LOG

Soil Profile Pit: SPP- 3

Project:	Proposed Building Expansion	Project No.:	4790-23-03619
Location:	New Jersey State Highway Route 35 & Huntington Avenue & Fisher Avenue	Client:	Crash Champions, LLC

Surface Elevation (ft):	15.4	Date Started:	6/19/24
Termination Depth (ft):	8.0	Date Completed:	6/19/24
Proposed Location:	SWM	Logged by:	G. Seselgis
Excavation / Test Method:	Visual Observation	Contractor:	Neighbors Property Management
		Rig Type:	Bobcat E60

Groundwater Data	Depth (ft)	El. (ft)	Groundwater Comments
Seepage	NE	-	Dark Grey (10YR 4/1) mottles encountered between 39-78".
Groundwater	5.0	10.4	
Seasonal High Groundwater	3.3	12.1	

DEPTH (IN)	COLOR	SOIL TEXTURE	COARSE FRAGMENTS (%) GRAVEL	COBBLES	STONES	BOULDERS	STRUCTURE Shape	Grade	Size	WATER CONTENT	CONSISTENCY Resistance to Rupture	Stickiness	Plasticity	BOUNDARY Distinctness	Topography	ROOTS		MOTTLING Quantity	Size	Contrast	SAMPLING Type	Depth (in)	No.	LAB RESULTS
0-6	TOPSOIL Gray (10YR 5/1)	SANDY LOAM	5	0	0	0	SUBANGULAR BLOCKY	WEAK	MEDIUM	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	SMOOTH	CMN (20% MAX)	FINE	NONE						
6-25	FILL Brown (10YR 4/3)	GRAVELLY LOAMY SAND	20	10	5	0	SUBANGULAR BLOCKY	WEAK	MEDIUM	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	SMOOTH	FEW (5% MAX)	FINE	NONE			BAG	16	S-1	
25-39	FILL Black (10YR 2/1)	SANDY CLAY LOAM	0	0	0	0	SUBANGULAR BLOCKY	MODERATE	COARSE	MOIST	FRIABLE	SLIGHTLY STICKY	MODERATELY PLASTIC	CLEAR <2.5"	SMOOTH	FEW (5% MAX)	FINE	NONE			BAG TUBE	30	S-2 T-1	
39-60	FILL Gray (10YR 5/1)	GRAVELLY LOAMY SAND	20	0	0	0	SUBANGULAR BLOCKY	WEAK	MEDIUM	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	SMOOTH	NONE		CMN 2%-20%	MEDIUM 5MM-15MM	DISTINCT	BAG	42	S-3	
60-78	Dark Gray (10YR 4/1)	SANDY CLAY LOAM	0	0	0	0	SUBANGULAR BLOCKY	MODERATE	COARSE	WET	FRIABLE	MODERATELY STICKY	MODERATELY PLASTIC	CLEAR <2.5"	SMOOTH	NONE		CMN 2%-20%	MEDIUM 5MM-15MM	DISTINCT	BAG	70	S-4	
78-96	Dark Gray (10YR 4/1)	SAND	0	0	0	0	STRUCTURELESS SINGLE GRAIN			WET	LOOSE	NONSTICKY	NONPLASTIC			NONE		CMN 2%-20%	MEDIUM 5MM-15MM	DISTINCT	BAG	96	S-5	

Additional Remarks: Existing fill debris consisting of glass, ash, metal and coal encountered from 6 to 60 inches. SPP-3 terminated at 8.0 feet due to collapse from groundwater.

DYNAMIC ENGINEERING

SOIL PROFILE PIT LOG

Soil Profile Pit: <u>SPP- 4</u>

Project:	**Proposed Building Expansion**	**Project No.:**	**4790-23-03619**
Location:	**New Jersey State Highway Route 35 & Huntington Avenue & Fisher Avenue**	**Client:**	**Crash Champions, LLC**

Surface Elevation (ft):	14.8	**Date Started:**	6/19/24
Termination Depth (ft):	8.0	**Date Completed:**	6/19/24
Proposed Location:	SWM	**Logged by:**	G. Seselgis
Excavation / Test Method:	Visual Observation	**Contractor:**	Neighbors Property Management
		Rig Type:	Bobcat E60

Groundwater Data	Depth (ft)	El. (ft)	Groundwater Comments
Seepage	NE	-	Dark Grey (10YR 4/1) mottles encountered between 38-72".
Groundwater	5.0	9.8	
Seasonal High Groundwater	**3.2**	11.6	

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 (in)	No.	
0-6	TOPSOIL Gray (10YR 5/1)		SANDY LOAM	5	0	0	0	SUBANGULAR BLOCKY	WEAK	MEDIUM	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	SMOOTH	CMN (20% MAX)	FINE	NONE						
6-26	FILL Brown (10YR 4/3)	COBBLY	SANDY LOAM	5	10	0	0	SUBANGULAR BLOCKY	WEAK	MEDIUM	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	CMN (20% MAX)	MEDIUM	NONE			BAG	20	S-1	
26-38	FILL Black (10YR 2/1)		SANDY CLAY LOAM	0	0	0	0	SUBANGULAR BLOCKY	MODERATE	COARSE	MOIST	FRIABLE	MODERATELY STICKY	MODERATELY PLASTIC	CLEAR <2.5"	SMOOTH	FEW (5% MAX)	FINE	NONE			BAG TUBE	34	S-2 T-1	
38-60	FILL Gray (10YR 5/1)	GRAVELLY	SANDY LOAM	5	0	0	0	SUBANGULAR BLOCKY	MODERATE	MEDIUM	MOIST	FRIABLE	NONSTICKY	NONPLASTIC	CLEAR <2.5"	WAVY	NONE		CMN 2%-20%	MEDIUM 5MM-15MM	DISTINCT	BAG	44	S-3	
60-72	Grayish Brown (10YR 5/2)		SILTY CLAY	0	0	0	0	SUBANGULAR BLOCKY	MODERATE	COARSE	WET	FRIABLE	MODERATELY STICKY	MODERATELY PLASTIC	CLEAR <2.5"	SMOOTH	NONE		CMN 2%-20%	MEDIUM 5MM-15MM	DISTINCT	BAG	66	S-4	
72-96	Dark Gray (10YR 4/1)	GRAVELLY	SAND	5	0	0	0	SINGLE GRAIN	STRUCTURELESS		WET	LOOSE	NONSTICKY	NONPLASTIC			NONE		CMN 2%-20%	MEDIUM 5MM-15MM	DISTINCT	BAG	78	S-5	

Additional Remarks: Existing fill debris consisting of bricks and wood encountered from 6 to 60". SPP-4 terminated at 8.0 feet due to collapse from groundwater.

Laboratory Permeability
Test Results

Tube Permeameter Test Data

Job Number: 4790 23-03619
Project: Proposed Automobile Repair Expansion
Client: Crash Champions, LLC
Lab Tech: S. Handelsman

Sample ID: **Boring/Test Pit No.:** SPP-1 **Sample No.:** T-1 **Depth:** 50"

MUNICIPALITY Township of Neptune BLOCK 514 LOT 1,2,3

1. Test Number T-1 Replicate (letter) A Date Collected 6/19/2024

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

3. Type of Sample: ______ Undisturbed X Disturbed

4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 3.81
   Length of Sample, L, in inches 3.50

5. Bulk Density Determination (Disturbed Samples Only): N --

6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams --

7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 405.2111

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

9. Standpipe Used: x No ______ Yes, Indicate Internal Radius, cm.

10. Height of Water Level Above Rim of Test Basin, in inches:

    At the Beginning of Each Test Interval, H1 4.50
    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
		>240
		>240
		>240

12. Calculation of Permeability: K, (in/hr) = 60 min/hr x r2/R2 x L(in)/T(min) x ln (H1/H2) T= >240

    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: 4790 23-03619
Project: Proposed Automobile Repair Expansion
Client: Crash Champions, LLC
Lab Tech: S. Handelsman

Sample ID: **Boring/Test Pit No.:** SPP-1 **Sample No.:** T-1 **Depth:** 50"

MUNICIPALITY Township of Neptune BLOCK 514 LOT 1,2,3

1. Test Number T-1 Replicate (letter) B Date Collected 6/19/2024

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

3. Type of Sample: ________ Undisturbed X Disturbed

4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 3.81
   Length of Sample, L, in inches 3.00

5. Bulk Density Determination (Disturbed Samples Only): N --

6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams --

7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 347.3238

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

9. Standpipe Used: x No ________ Yes, Indicate Internal Radius, cm.

10. Height of Water Level Above Rim of Test Basin, in inches:

    At the Beginning of Each Test Interval, H1 4.50
    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
		>240
		>240
		>240

12. Calculation of Permeability: K, (in/hr) = 60 min/hr x r2/R2 x L(in)/T(min) x ln (H1/H2) T= >240

    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: 4790 23-03619
Project: Proposed Automobile Repair Expansion
Client: Crash Champions, LLC
Lab Tech: S. Handelsman

Sample ID: **Boring/Test Pit No.:** SPP-2 **Sample No.:** T-1 **Depth:** 48"

MUNICIPALITY Township of Neptune BLOCK 514 LOT 1,2,3

1. Test Number T-1 Replicate (letter) A Date Collected 6/19/2024

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

3. Type of Sample: ________ Undisturbed X Disturbed

4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 3.81
   Length of Sample, L, in inches 3.00

5. Bulk Density Determination (Disturbed Samples Only): N --

6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams --

7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 347.3238

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

9. Standpipe Used: x No ________ Yes, Indicate Internal Radius, cm.

10. Height of Water Level Above Rim of Test Basin, in inches:

    At the Beginning of Each Test Interval, H1 4.50
    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
		>240
		>240
		>240

12. Calculation of Permeability: K, (in/hr) = 60 min/hr x r2/R2 x L(in)/T(min) x ln (H1/H2) T= >240

    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: 4790 23-03619
Project: Proposed Automobile Repair Expansion
Client: Crash Champions, LLC
Lab Tech: S. Handelsman

Sample ID: **Boring/Test Pit No.:** SPP-2 **Sample No.:** T-1 **Depth:** 48"

MUNICIPALITY Township of Neptune BLOCK 514 LOT 1,2,3

1. Test Number T-1 Replicate (letter) B Date Collected 6/19/2024

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

3. Type of Sample: ________ Undisturbed X Disturbed

4. Sample Dimensions: Inside Radius of Sample Tube, R, in cm 3.81
   Length of Sample, L, in inches 3.75

5. Bulk Density Determination (Disturbed Samples Only): N --

6. Sample Weight (Wt. Tube Containing Sample-Wt. of Empty Tube), grams --

7. Sample Volume (L x 2.54 cm./inch x 3.14R2), cc. 434.1548

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

9. Standpipe Used: x No ________ Yes, Indicate Internal Radius, cm.

10. Height of Water Level Above Rim of Test Basin, in inches:

    At the Beginning of Each Test Interval, H1 4.50
    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
		>240
		>240
		>240

12. Calculation of Permeability: K, (in/hr) = 60 min/hr x r2/R2 x L(in)/T(min) x ln (H1/H2) T= >240

    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 ____

USDA-NRCS Custom Soil Resource Report for Monmouth County, NJ

United States Department of Agriculture

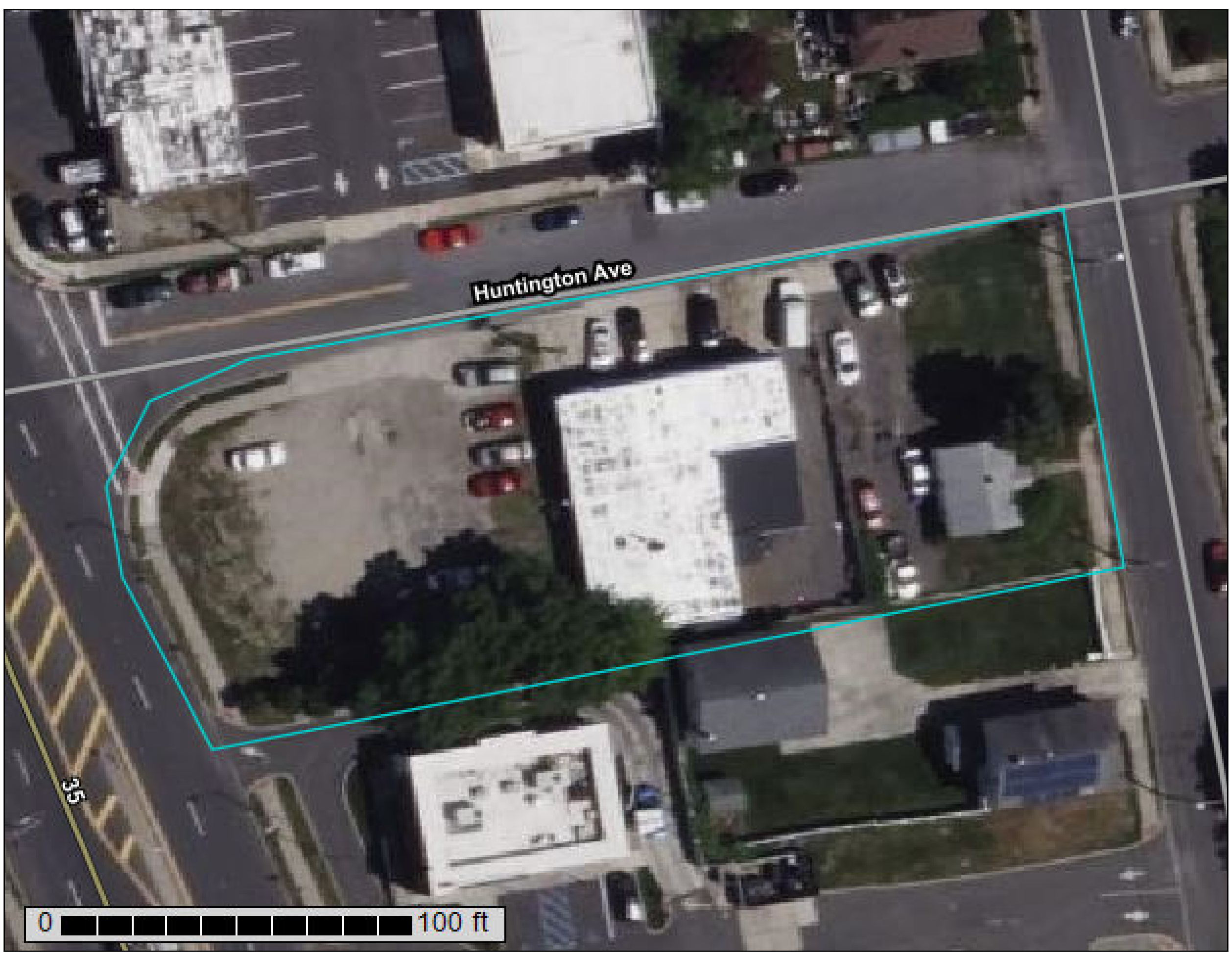
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for

Monmouth County, New Jersey



June 25, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Soil Map

Map Scale: 1:488 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0, 5, 10, 20, 30

Feet: 0, 20, 40, 80, 120

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Monmouth County, New Jersey
Survey Area Data: Version 17, Aug 29, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 4, 2022—Jul 22, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
UR	Urban land	0.7	100.0%
Totals for Area of Interest		**0.7**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Monmouth County, New Jersey

UR—Urban land

Map Unit Setting

National map unit symbol: 4j92
Elevation: 0 to 170 feet
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Parent material: Surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: Unranked

Minor Components

Udorthents

Percent of map unit: 5 percent
Landform: Low hills
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

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