MIDLANTIC ENGINEERING, INC.
120 COMMERCE ROAD
PITTSTON TOWNSHIP, PA 18640-9552

GEOTECHNICAL ENGINEERING REPORT

STORMWATER MANAGEMENT AND INFILTRATION TESTING
MILFORD WAREHOUSE DEVELOPMENT
MILFORD TOWNSHIP, PA

(Project #23004-SWM)

PREPARED FOR:

NATIONAL LAND DEVELOPERS, LLC
1010 WILSON AVENUE
GLEN MILLS, PA 19342

AUGUST 18, 2023

MIDLANTIC ENGINEERING

August 18, 2023

National Land Developers, LLC
1010 Wilson Avenue
Glen Mills, PA 19342

ATTENTION: Mr. Joseph Marley
jmarley@nationalld.com

REFERENCE: GEOTECHNICAL ENGINEERING REPORT (#23004-SWM)
Stormwater Management and Infiltration Testing
Milford Warehouse Development
Milford Township, PA

Mr. Marley:

Submitted herewith is our geotechnical engineering report to address the proposed stormwater management areas for the above referenced development. Our services have been performed in accordance with our proposal/agreement dated October 24, 2022 and your subsequent authorization to proceed.

1. SCOPE OF SERVICES

Services performed for this phase of the study included site reconnaissance, observation and logging of seventeen test pits, in-situ infiltration testing, soil laboratory analysis, and preparation of our report. Our geotechnical engineering analysis and report for the proposed stormwater management development areas includes the following:

a. Our evaluation of the estimated subsurface conditions within the proposed stormwater management infiltration areas based on the data obtained.

b. Analysis of subgrade conditions, soil laboratory testing, and in-situ infiltration testing to provide design parameters for infiltration devices.

c. Comments concerning the use of infiltration practices at the designated areas tested.

Services with respect to environmental considerations, wetlands investigations, erosion control, building foundations, pavement designs, construction cost or quantity estimates, and construction observation and testing are not included in the scope of services under this phase of our contract.

2. DESCRIPTION OF SITE AND PROPOSED CONSTRUCTION

The project area is bordered by I-84 to the north, by SR 6 to the south, and by commercial properties to the west and east. The proposed structure is a 434,000 ft^2 warehouse structure with a finish floor at El 904. The project vicinity is indicated on a 2023 USGS quadrangle map and on a 2023 aerial photograph included as Figure Nos. 1-1 and 1-2 in Enclosure (1).

Underground and aboveground infiltration basins and a rain garden are proposed to the north, south, and west of the structure. To the east of the structure is a water quality basin (Basin #3). The proposed bottoms of the infiltration basins and rain garden vary.

The information listed above was provided to us by your office, derived from project development plans provided to us, or was obtained during our own site visits.

3. SUBSURFACE CONDITIONS

In order to evaluate subsurface conditions in the proposed stormwater management areas, seventeen test pits were excavated. The test pits were extended to a depth of approximately 4 feet to 18.5 feet to determine the shallow subsurface stratification and depths to limiting zones, if applicable. The test pit logs, water observation data, and test pit location plan are included in Enclosure (4).

3.1 Test Pit Data and Stratification

The test pits indicate the following generalized strata underlie the proposed stormwater management area to the depths investigated:

Stratum	Depths	Description
Stratum F (fill)	from surface grades to depths of 1 to 2 feet at test pits TP-I-1B, TP-I-2B, TP-I-4A, and TP-I-6E	silty sand (SM), poorly graded gravel with sand (GP), and silty sand with gravel (SM) – FILL; includes brick fragments and rock fragments
Stratum B	below topsoil and Stratum F material to maximum depths investigated	silty SAND with gravel (SM), poorly graded SAND with silt (SP-SM), poorly graded SAND with silt and gravel (SP-SM), silty GRAVEL with sand (GM), poorly graded GRAVEL with silt and sand (GP-GM); occasional cobbles

The soil symbols indicated in the stratum descriptions and on the test pit logs represent the Unified Soil Classification (ASTM D-2488) group symbols based on visual observation of the specimens recovered. Criteria for visual classification of soil samples are given in Enclosure (4) of this report. The visual classifications may vary from the results of laboratory testing classifications.

3.2 Geology

The existing fill materials of Stratum F are associated with site grading for previous developments in the area.

The natural materials of Stratum B represent glacial lake delta deposits of the Pleistocene geologic epoch. The natural soil subgrades are moderately over-consolidated. The surficial geology mapping of the study area is included as Figure No. 2-2 in Enclosure (2).

The underlying bedrock consists of interbedded shales and siltstones. The sedimentary rock belongs to the Trimmers Rock formation of the Devonian period. Bedrock was not encountered in the test pits to the maximum depths investigated.

3.3 Groundwater Observations

Groundwater observations were performed during excavation at the test pit locations. The results of the groundwater observations are shown on the test pit logs in Enclosure (4).

A perched water level was encountered at a depth of 3.0 feet in test pit TP-I-6E.

Groundwater was not encountered in the remaining test pits to the maximum depths investigated.

Water level readings at the test pit locations are considered to be a reliable indication of groundwater conditions at the times indicated. Fluctuations in groundwater levels, as well as perched water, may be expected with variations in precipitation, evaporation, adjacent construction activity, and similar factors.

4. INFILTRATION FACILITY ANALYSES

The proposed stormwater management area was identified within the study area and were investigated for suitability for infiltration devices.

The Soil Conservation Service mapping of Pike County was referenced for the development area. The delineation of the development area is overlain on the SCS mapping included as Figure No. 2-1 in Enclosure (2). The mapping indicates the natural soil subgrades of the site generally consist of glacial lake delta material deposits. The engineering index and physical properties of the series provided by SCS are indicated as follows:

Series Designation	USCS Classifications	Hydrologic Classification	Estimated Permeability (in/hr.)
89B – Chenango gravelly fine sandy loam	SM, GM, GP-GM, GW-GM	A	0.6 to 20.0 in/hr.
9B – Craigsville-Wyoming complex	SM, SP-SM, SW-SM, GM GP-GM, GW-GM	A/B	2.0 to 20.0 in/hr.

The protocols outlined in the final draft of the Pennsylvania Stormwater Best Management Practices Manual were used as the reference for design and construction standards for stormwater infiltration systems. The protocols include parameters for the conduct of the infiltration testing, site conditions, design considerations, construction requirements and factors of safety.

4.1 Depth of Limiting Zones

Protocol 2 of the referenced manual recommends that a minimum 2-foot clearance be maintained between the bottom of the infiltration facility and a limiting zone of seasonally high water table or intact bedrock.

Water was encountered at a depth of 3.0 feet in test pit TP-I-6E.

Groundwater was not encountered in the remaining test pits to the maximum depths investigated.

Bedrock was not encountered to the maximum depth investigated.

The proposed infiltration facility can be considered feasible based on depths to limiting zone.

4.2 Soil Textures

Protocol 2 recommends that infiltration facilities be constructed in native soils without prior fill or disturbance. Protocol 2 allows infiltration in areas that have experienced historic fill or disturbance provided that sufficient time has elapsed to restore natural permeability, which is defined as at least 5 years in Chapter 6.

The proposed infiltration facilities were investigated at depths ranging from 0.5 feet to 16.2 feet below surface grade. The test pits indicate the proposed infiltration facilities will generally be in the natural granular materials of Stratum B.

The Pennsylvania Protocol does not have any criteria for soil gradations or for the allowable percentage of fines (<#200 sieve) in the soil, but the other standards referenced in the Pennsylvania Manual limit the clay content to 20 percent by weight, and the combined silt/clay content to 40 percent by weight.

Soil laboratory testing of the subgrade material was performed in accordance with ASTM D-2487 and is included in Enclosure (3). The laboratory gradation and classification test results are summarized as follows:

Soil Classifications Summary

Test Pit	Soil Sample Depth/ Elevation	Stratum	Classification	% Moisture	Combined Silt/Clay (%<#200)
TP-I-1A	4.8' El 890.0	B	poorly graded GRAVEL with silt and sand (GP-GM), cobbles	4.4%	5%
TP-I-1B	16.2' El 890.0	B	poorly graded GRAVEL with sand (GP), cobbles	4.2%	2%
TP-I-2A	4.8' El 868.0	B	poorly graded GRAVEL with silt and sand (GP-GM), cobbles	6.3%	9%
TP-I-4B	9.7' El 897.0	B	poorly graded GRAVEL with sand (GP), cobbles	2.8%	2%
TP-I-5A	1.9' El 894.0	B	silty GRAVEL with sand (GM)	6.3%	15%
TP-I-6A	10.2' El 890.0	B	poorly graded SAND (SP)	5.3%	1%
TP-I-6C	1.5' El 890.0	B	poorly graded GRAVEL with silt (GP-GM)	5.2%	11%
TP-I-6E	0.5' El 888.0	F	silty sand with gravel – FILL (SM)	15.2%	27%
TP-15	4.0' El 907.7	B	poorly graded GRAVEL with sand (GP)	2.6%	1%

The proposed infiltration facilities are considered to be feasible in the natural granular material of Stratum B.

4.3 In-Situ Infiltration Rates

Protocol 2 recommends that soils underlying infiltration devices should have infiltration rates between 0.1 and 10 inches per hour.

In-situ infiltration testing was conducted at a depth of approximately 0.5 feet to 16.2 feet below existing grades as indicated on the site plan included in Enclosure (4). The test method referenced in Protocol 1, as summarized herein, was used to conduct the in-situ infiltration testing.

A test pit was excavated to the test depth at the study location. A solid 4-inch I.D. PVC casing was installed and seated approximately 2 inches into the underlying soil subgrades. The outer ring of the infiltration test casing was sealed with a water-bentonite soil mixture. The test location was presoaked for 1 hour with a 12-inch depth of water immediately prior to testing with the water level re-established at 30-minute intervals. The drop in the water level during the last 30 minutes of the presoak period was used to determine the time interval used for the infiltration test in accordance with Protocol 1.

Measurements were taken at the appropriate time interval for a total of 8 readings obtained or until a stabilized rate of drop was obtained, whichever occurred first. A stabilized rate of drop is defined by Protocol 1 as a difference of ¼-inch or less of drop between the highest and lowest readings of four consecutive readings. The water level in the infiltration test casing was re-established after each reading.

The final in-situ infiltration rate was calculated as the average stabilized rate or the drop in water level during the final time period, expressed as inches per hour. Infiltration rates listed as zero includes tests where the rate of infiltration was below a measurable rate, less than $^{1}/_{16}$ of an inch per hour.

The observed in-situ infiltration rates at the test locations and test depths are summarized below:

Basin	Test Pit	Estimated Surface Grade	Infiltration Test Grade	Stratum	Soil Type	Average In-situ Infiltration Rate (in/hr.)
1 (BOB = 890.0)	I-1A	El 894.8	El 890.0 (4.8')	B	poorly graded GRAVEL with silt and sand (GP-GM)	>10 in/hr.
	I-1B	El 906.2	El 890.0 (16.2')	B	poorly graded GRAVEL with sand (GP)	>10 in/hr.
	I-1C	El 889.0	El 888.5 (0.5')	B	silty SAND with gravel (SM)	9½ in/hr.
	I-1D	El 888.0	El 887.5 (0.5')	B	silty SAND with gravel (SM)	7½ in/hr.
2 (BOB = 868.0)	I-2A	El 872.8	El 868.0 (4.8')	B	poorly graded GRAVEL with silt and sand (GP-GM)	>10 in/hr.
	I-2B	El 871.3	El 868.0 (3.3')	B	poorly graded GRAVEL with sand (GP)	>10 in/hr.
4 (BOB = 897.0)	I-4A	El 906.7	El 897.0 (9.7')	B	poorly graded SAND with gravel (SP)	>10 in/hr.
	I-4B	El 906.7	El 897.0 (9.7')	B	poorly graded GRAVEL with sand (GP)	>10 in/hr.
	I-4C	El 904.4	El 897.0 (7.4')	B	poorly graded GRAVEL with sand (GP)	>10 in/hr.
5 (BOB = 894.0)	I-5A	El 895.9	El 894.0 (1.9')	B	silty GRAVEL with sand (GM)	6 in/hr.
6 (BOB = 890.0)	I-6A	El 900.2	El 890.0 (10.2')	B	poorly graded SAND (SP)	>10 in/hr.
	I-6B	El 900.1	El 890.0 (10.1')	B	poorly graded GRAVEL with sand (GP)	>10 in/hr.
	I-6C	El 891.5	El 890.0 (1.5')	B	poorly graded GRAVEL with silt (GP-GM)	>10 in/hr.
	I-6D	El 889.3	El 888.8 (0.5')	B	poorly graded GRAVEL with silt and sand (GP-GM)	>10 in/hr.
	I-6E	El 888.5	El 888.0 (0.5')	F	silty SAND with gravel (SM)	1¾ in/hr.

Note: BOB = Bottom of Basin

Based upon the recommended infiltration rates in Protocol 2, infiltration facilities are not considered feasible in the natural subgrade materials of Stratum B in Basins #1, #2, #4, and #6. These infiltration rates are considered to be excessive. Infiltration facilities are considered feasible in the natural materials of Stratum B in Basin #5.

4.4 Safety Factors

Protocol 2 recommends the minimum safety factor that may be used is two (2). It further recommends that a minimum safety factor of three (3) be used for soils which classify as silty loam, clay loam, silty clay loam, sandy clay loam or clay under the USDA classification system if the percolation test methodology is used.

Based on the gradation and classification of materials encountered, we recommend a safety factor of two (2) in the natural granular materials of Stratum B.

4.5 Infiltration Design Recommendations

Based on the measured in-situ rates at the proposed infiltration facility grades, we recommend the following in-situ infiltration design parameters:

Area	Test Pit	Stratum	Recommended In-situ Infiltration Rate (in/hr.)	Recommended Design Factor of Safety
Basin #1	TP-I-1A, -1B, -1C, -1D	B	>10 in/hr.	2
Basin #2	TP-I-2A, -2B	B	>10 in/hr.	2
Basin #4	TP-I-4A, -4B, -4C	B	>10 in/hr.	2
Basin #5	TP-I-5A	B	6 in/hr.	2
Basin #6	TP-I-6A, -6B, -6C	B	>10 in/hr.	2

If infiltration facilities are incorporated into the development, we recommend that the infiltration facilities be designed in strict accordance with Pennsylvania Stormwater Best Management Practices most recent edition of the manual.

4.6 Remediation – Subgrade Preparation Recommendations

In order to prepare subgrade areas where infiltration rates are excessive, we recommend a subgrade augmentation program. An engineered soil may be used to modify subgrades which have excessive infiltration rates. This engineered soil buffer consists of a mixture of sand and topsoil/compost and may be used to develop a subgrade infiltration rate to within a range of 4 to 8 inches per hour and consider a factor of safety of two (2).

An estimated proposed subgrade cross-section for this construction process is included for reference as Figure No. 6-1 in Enclosure (6). The soil buffer should be tested after installation to ensure the required infiltration rates are achieved.

5. WATER QUALITY BASIN #3

Two test pits were excavated in Water Quality Basin #3 to determine the existing soil conditions. Test pits were excavated to depths of 16 to 17 feet. The existing soils classified as poorly graded gravel with sand and included cobbles. Infiltration testing was not performed but would be anticipated to be in excess of 10 inches per hour. Sealing of the basin bottom will require a liner or a layer of impervious material.

6. OBSERVATIONS REQUIREMENTS AND STUDY LIMITATIONS

The report is based on the design concept of the proposed project as furnished to our office during the preparation of this report. Any substantial changes in construction locations or grading should be brought to our attention so that we may determine any effect on the recommendations given herein.

The analysis and recommendations submitted in this report are based upon the test pit data and the site plans provided to us. This report does not reflect variations which may occur between the test locations. The nature and extent of variations between test locations may not become evident until the course of construction. It is recommended that on-site observation of facility installations be performed during the construction period to ascertain if re-evaluation of the recommendations of this report must be made.

We have prepared this report for the use of your office and the design professionals for design and planning purposes in accordance with generally accepted geotechnical engineering practices. No other warranties, either expressed or implied are made as to the professional services included in this report.

We appreciate the opportunity to be of service to you for this project. Please do not hesitate to contact us for further clarification of any aspect of this study.

Sincerely,

MIDLANTIC ENGINEERING, INC.

Timothy Burns, P.E.
President

Encls:
(1) Project Vicinity Plans
- Project Vicinity Plan – USGS 2023, Figure No. 1-1
- Project Vicinity Plan – Aerial 2023, Figure No. 1-2

(2) Geologic Mapping
- SCS Mapping, Figure No. 2-1
- Surficial Geologic Mapping, Figure No. 2-2

(3) Laboratory Testing Data
- Soil Classifications Summary
- Gradation and Classifications (9 Sheets)

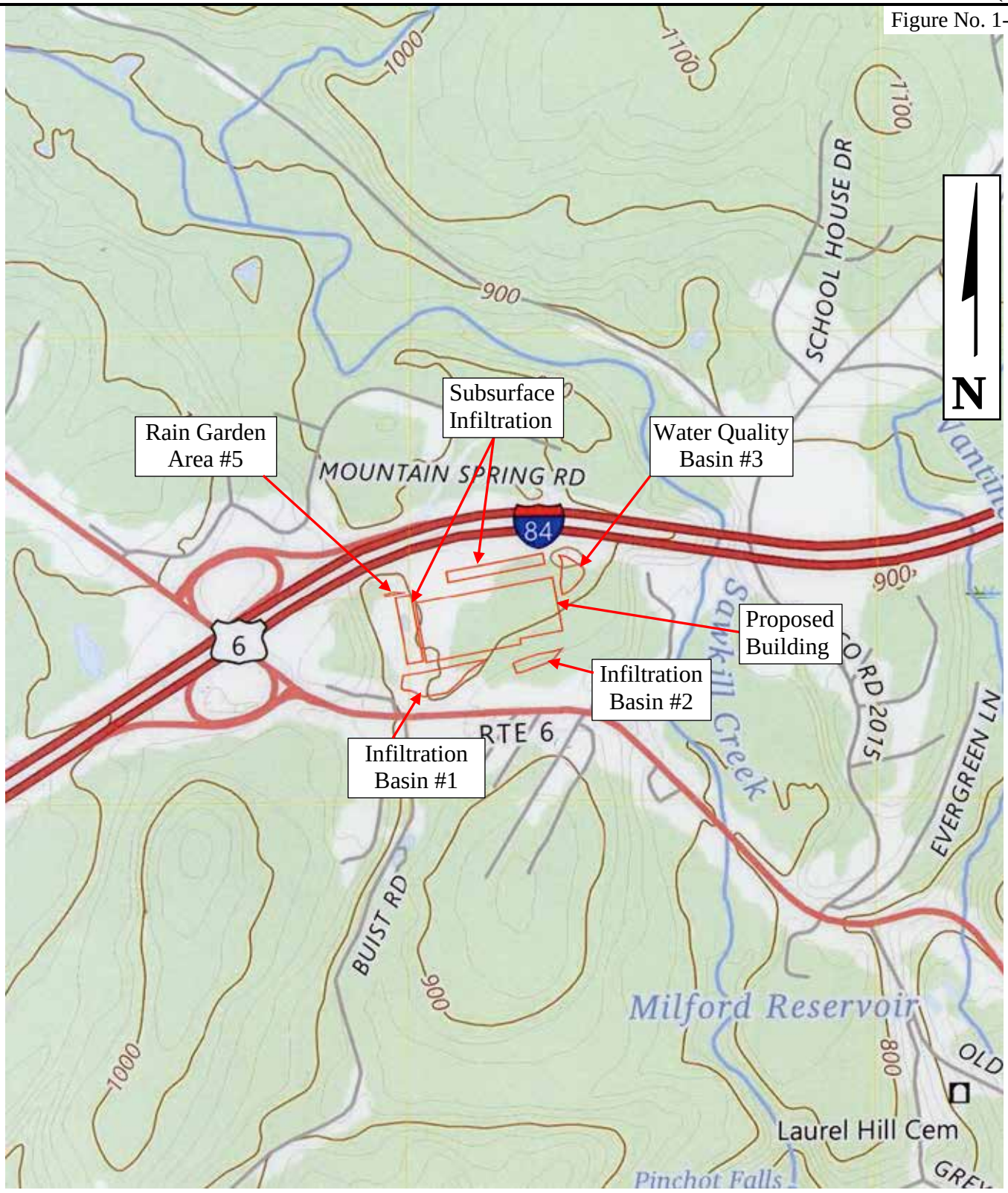
(4) Subsurface Investigation Report
- General Notes
- Identification of Soils
- Test Pit Location Plan, Figure No. 4-1
- Test Pit Logs (TP-I-1A through TP-I-6E, TP-15 and TP-16) (17 sheets)

(5) In-Situ Infiltration Testing Setup
(6) Detail – Prepared Infiltration Subgrade, Figure No. 6-1

cc: LVL Engineering Group
Attn: Mr. Kris J. Reiss, P.E.
kreiss@lvlengineers.com

Attn: Mr. Michael E. Gable, P.E.
mgable@lvlengineers.com

Figure No. 1-1



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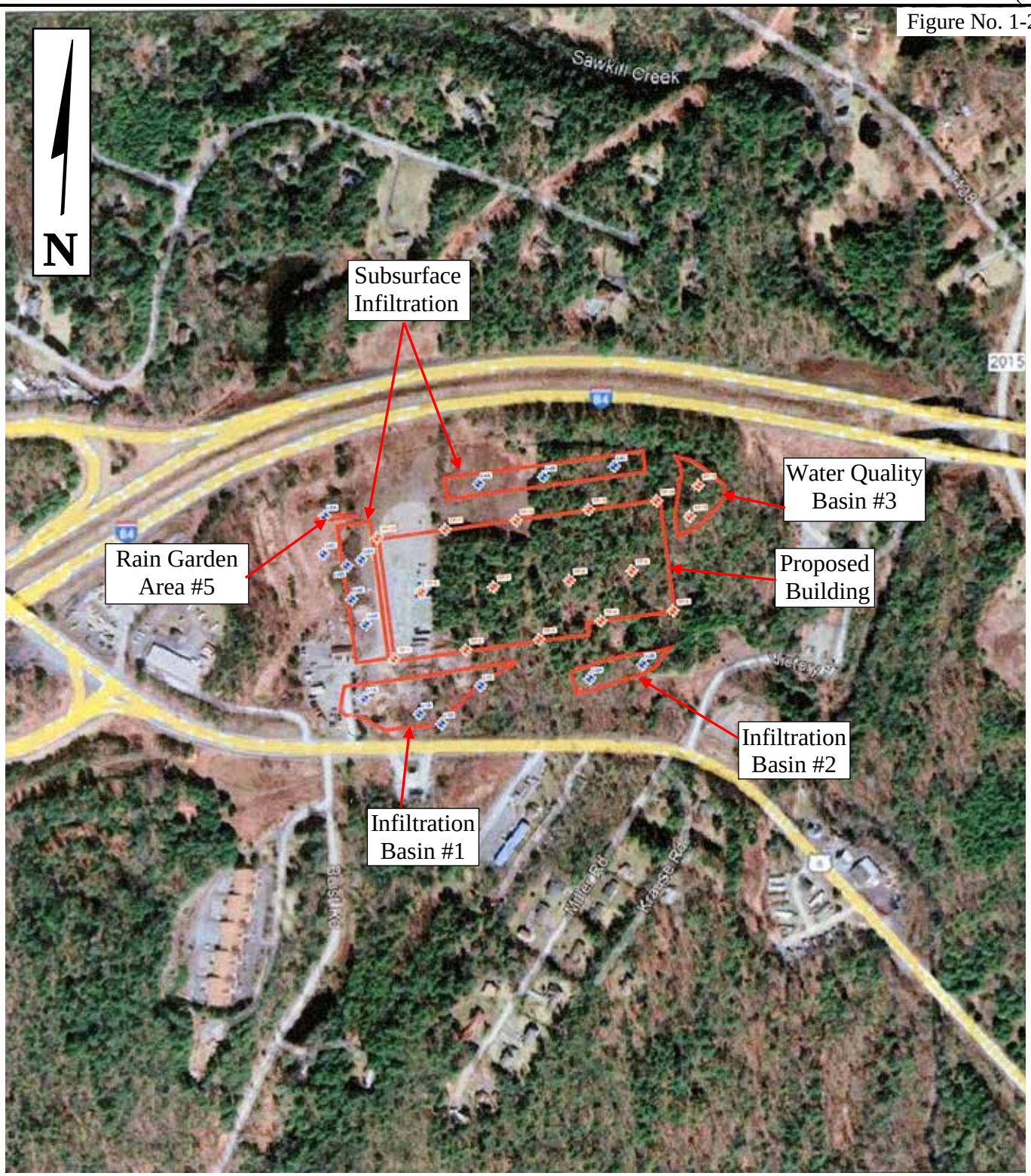
Drawing Title:
Project Vicinity Plan – USGS 2023
Milford Warehouse Development
Milford Township, PA

Drawn By:	Checked By:	Scale:
LJ	TB	1” = 1,000’
Date:	Project No.:	Sheet No.
08/18/23	23004-SWM	---

Figure No. 1-2



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Drawing Title:
Project Vicinity Plan – Aerial 2023
Milford Warehouse Development
Milford Township, PA

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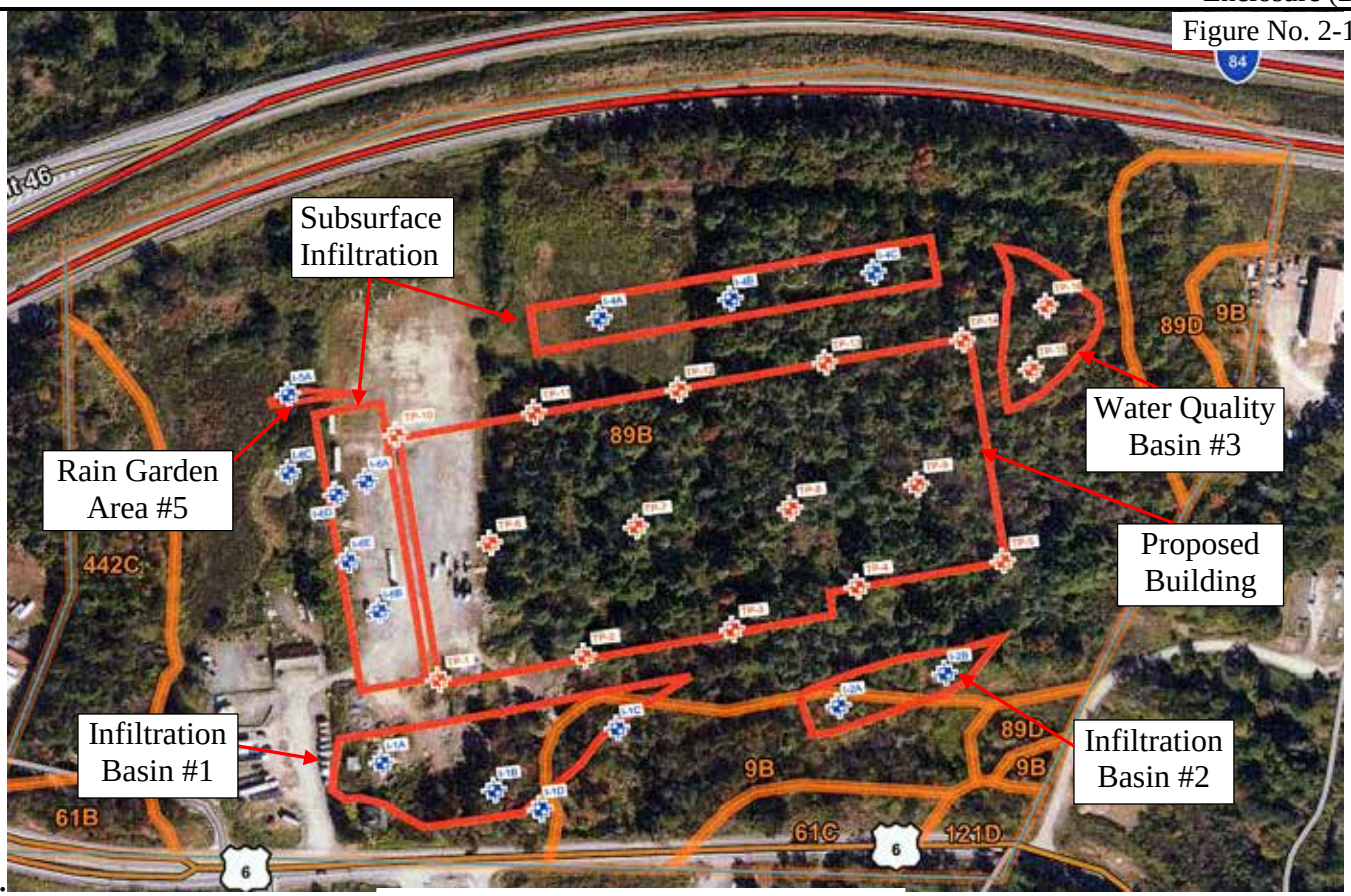
Figure No. 2-1



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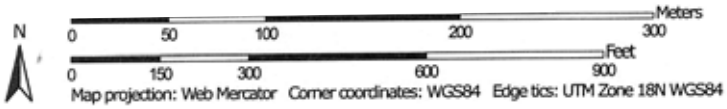

Map Unit Legend

Symbol	USCS Classifications
89B – Chenango gravelly fine sandy loam	
0” – 10” – gravelly fine sandy loam	SM
10” – 29” – gravelly fine sandy loam, very gravelly fine sandy loam	SM, GM
29” – 70” – extremely cobbly loamy coarse sand, extremely gravelly loamy coarse sand	GM, GP-GM, GW-GM
9B – Craigsville – Wyoming complex	
0” – 5” – gravelly sandy loam	SM, SC
5” – 27” – gravelly, sandy loam, cobbly loam	SM, GM
27” – 60” – very gravelly loamy sand, very gravelly sandy loam, very cobbly loamy sand	GM, GP-GM

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Drawing Title:
SCS Mapping
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Milford Township, PA

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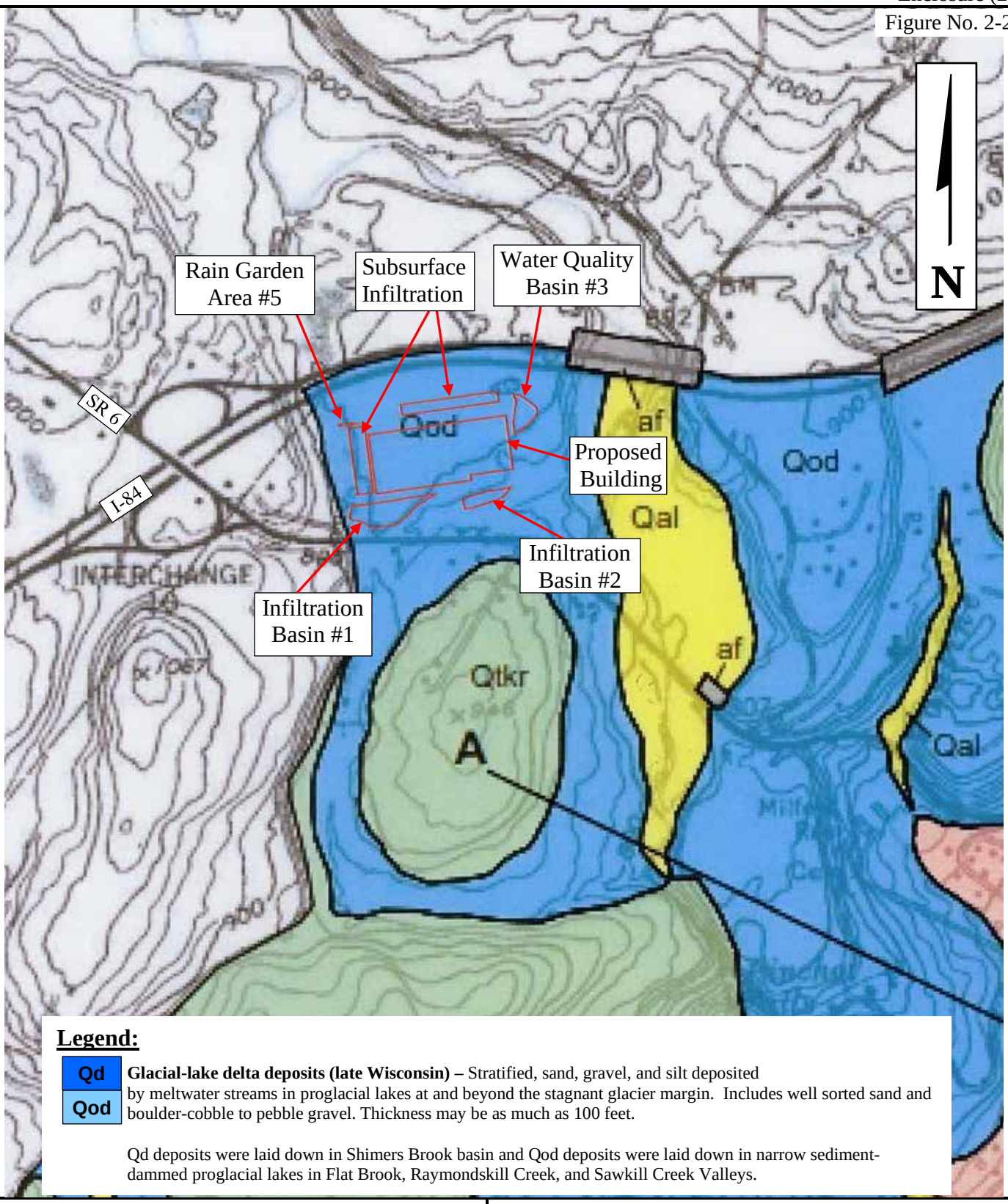
Figure No. 2-2



Legend:

Qd / **Qod** **Glacial-lake delta deposits (late Wisconsin) –** Stratified, sand, gravel, and silt deposited by meltwater streams in proglacial lakes at and beyond the stagnant glacier margin. Includes well sorted sand and boulder-cobble to pebble gravel. Thickness may be as much as 100 feet.

Qd deposits were laid down in Shimers Brook basin and Qod deposits were laid down in narrow sediment-dammed proglacial lakes in Flat Brook, Raymondskill Creek, and Sawkill Creek Valleys.

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Drawing Title:
Surficial Geology Mapping
Milford Warehouse Development
Milford Township, PA

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LABORATORY TEST DATA

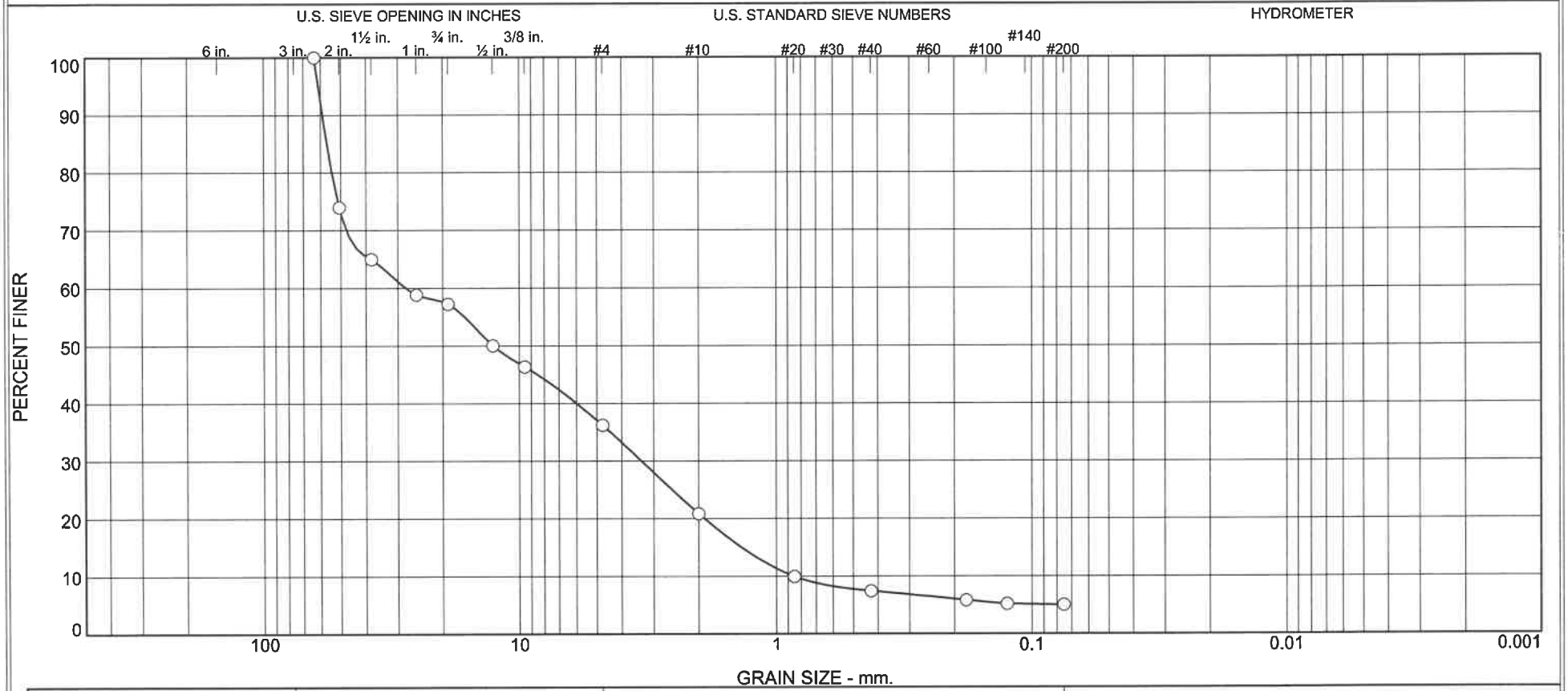
- Soil Classifications Summary
- Gradation and Classifications (9 Sheets)

SOIL CLASSIFICATIONS SUMMARY

Results of testing are summarized in the following table, and the individual gradation and classification curves are included within this enclosure.

Test Pit	Soil Sample Depth/ Elevation	Stratum	Classification	% Moisture	Combined Silt/Clay (%<#200)
TP-I-1A	4.8' El 890.0	B	poorly graded GRAVEL with silt and sand (GP-GM), cobbles	4.4%	5%
TP-I-1B	16.2' El 890.0	B	poorly graded GRAVEL with sand (GP), cobbles	4.2%	2%
TP-I-2A	4.8' El 868.0	B	poorly graded GRAVEL with silt and sand (GP-GM), cobbles	6.3%	9%
TP-I-4B	9.7' El 897.0	B	poorly graded GRAVEL with sand (GP), cobbles	2.8%	2%
TP-I-5A	1.9' El 894.0	B	silty GRAVEL with sand (GM)	6.3%	15%
TP-I-6A	10.2' El 890.0	B	poorly graded SAND (SP)	5.3%	1%
TP-I-6C	1.5' El 890.0	B	poorly graded GRAVEL with silt (GP-GM)	5.2%	11%
TP-I-6E	0.5' El 888.0	F	silty sand with gravel – FILL (SM)	15.2%	27%
TP-15	4.0' El 907.7	B	poorly graded GRAVEL with sand (GP)	2.6%	1%

GRADATION AND CLASSIFICATION (ASTM D2487)



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	42.8	21.0	15.3	13.5	2.4	5.0	

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	TP-I-1A	S-2	4.8'/890.0	8/4/23	GP-GM	brown poorly graded GRAVEL with silt and sand	4.4	NV	NP
						Stratum B			

Client National Land Developers, LLC
Project Milford Warehouse Development
Milford Twp., PA
Project No. 23004

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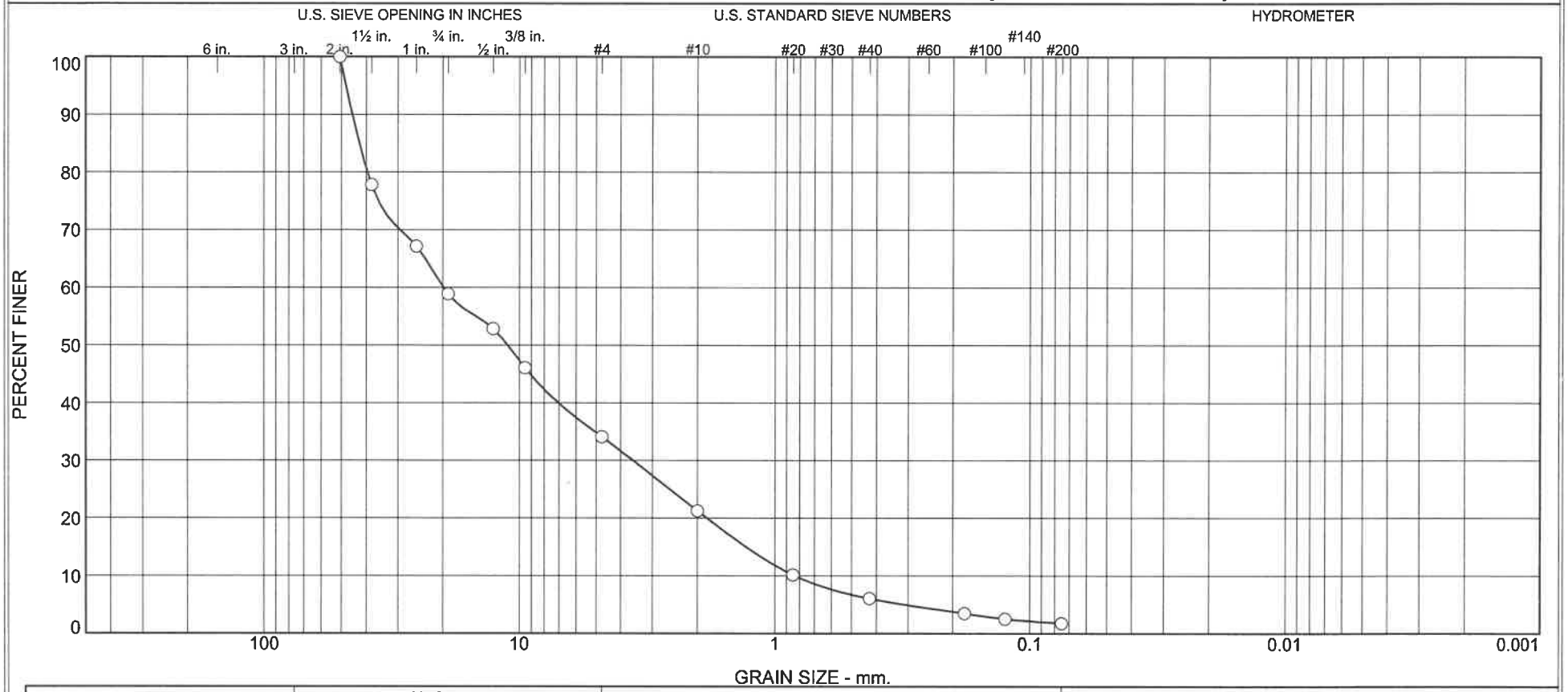
○ with cobbles

Tested By: MJ **Checked By:** DH

GRADATION AND CLASSIFICATION (ASTM D2487)



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	41.1	24.8	12.8	15.2	4.3	1.8	

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	TP-I-1B	S-2	16.2'/890.0	8/4/23	GP	brown poorly graded GRAVEL with sand	4.2	NV	NP
						Stratum B			

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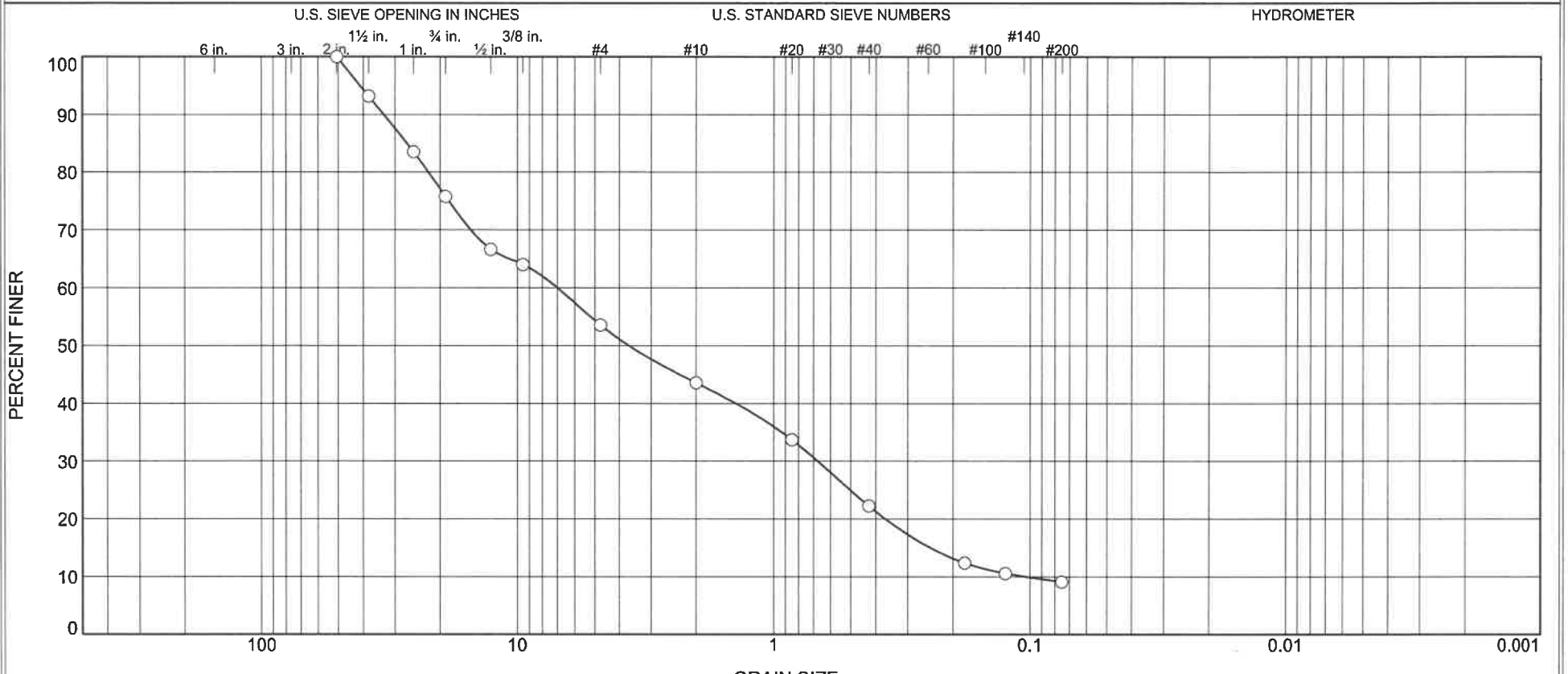
○ cobbles

Tested By: MJ **Checked By:** DH

GRADATION AND CLASSIFICATION (ASTM D2487)



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	24.2	22.2	10.0	21.3	13.2	9.1	

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	TP-I-2A	S-2	4.8'/868.0	8/4/23	GP-GM	brown poorly graded GRAVEL with silt and sand	6.3	NV	NP
						Stratum B			

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Milford Twp., PA
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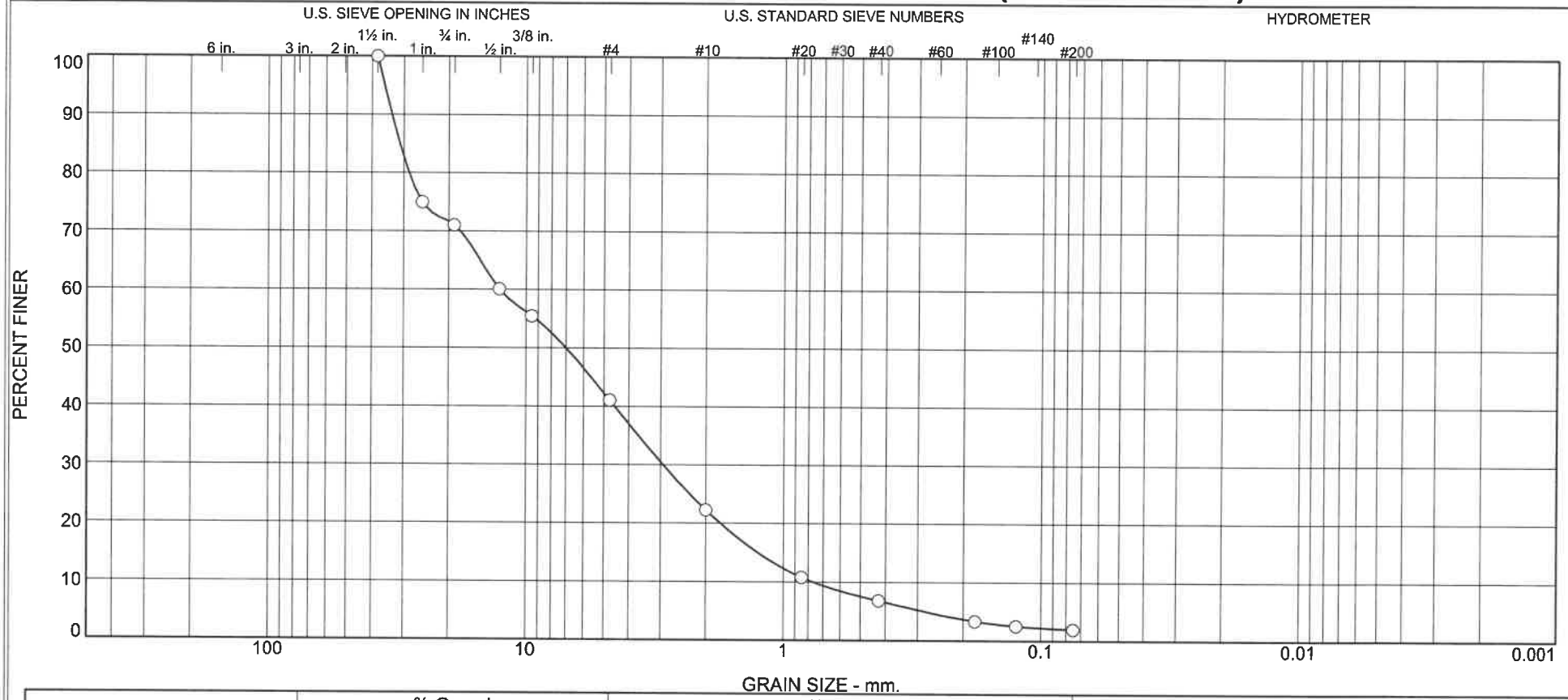
○ with cobbles

Tested By: MJ **Checked By:** DH

GRADATION AND CLASSIFICATION (ASTM D2487)



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	29.0	29.9	18.8	15.5	4.8	2.0	

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	TP-I-4B	S-1	9.7'/897.0	8/4/23	GP	brown poorly graded GRAVEL with sand	2.8	NV	NP
						Stratum B			

Client National Land Developers, LLC

Project Milford Warehouse Development

Milford Twp., PA

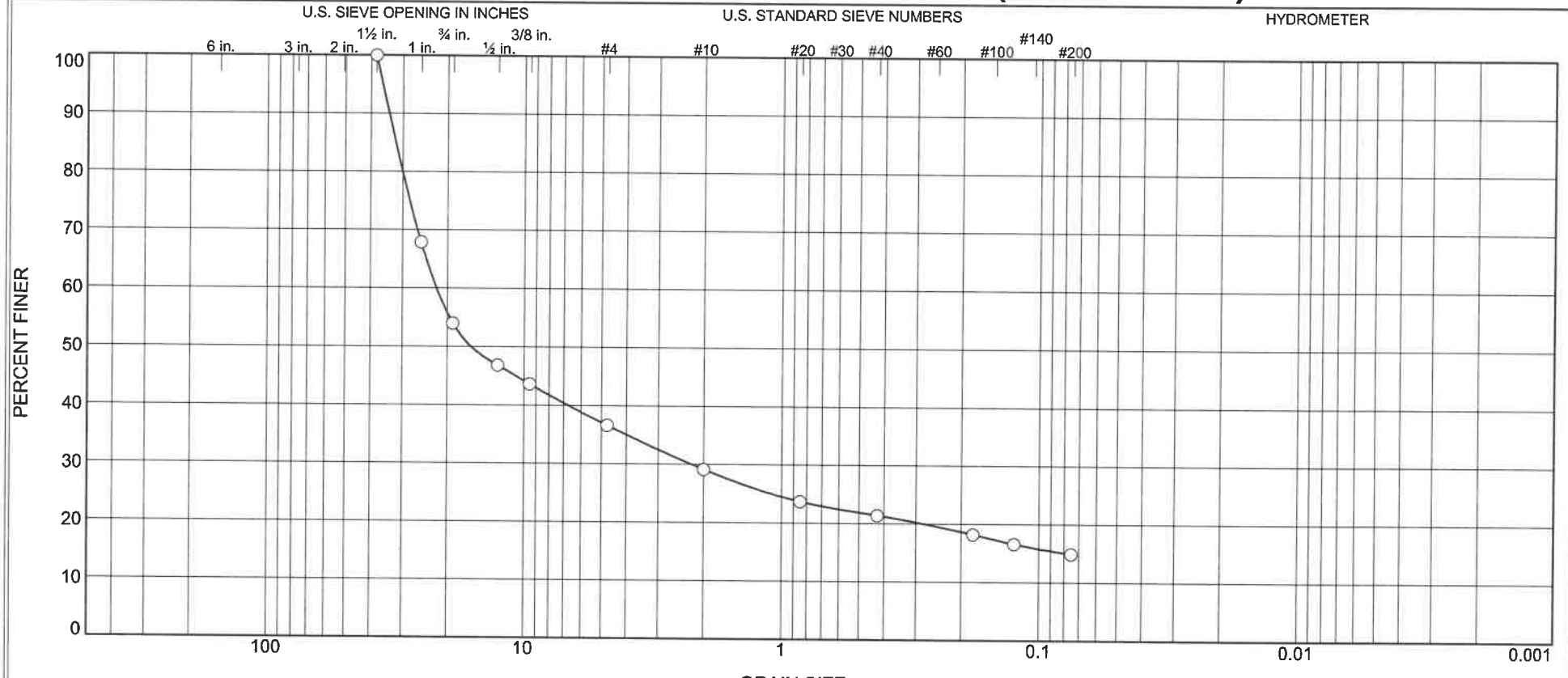
Project No. 23004

MIDLANTIC ENGINEERING

○ with cobbles

Tested By: MJ **Checked By:** DH

GRADATION AND CLASSIFICATION (ASTM D2487)



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	46.0	17.4	7.5	7.7	6.5	14.9	

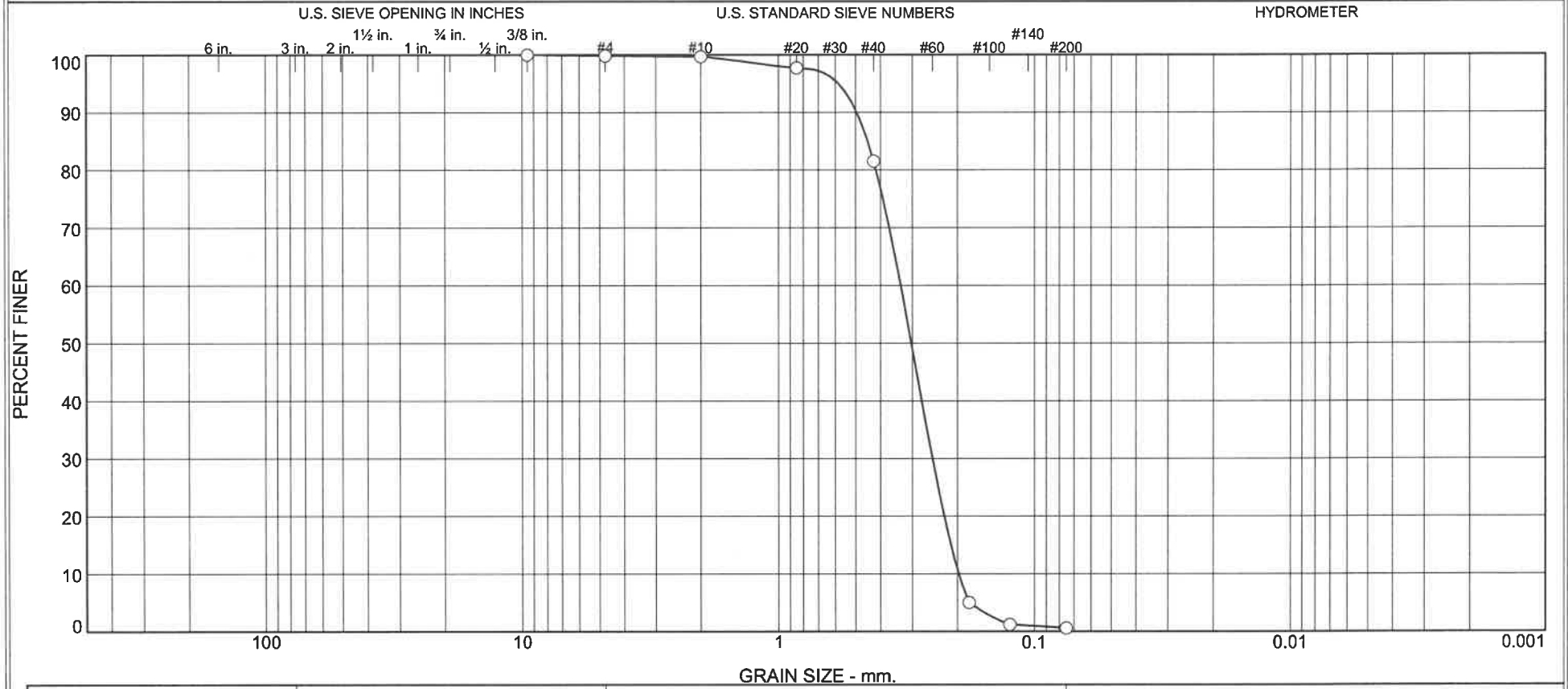
	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	TP-I-5A	S-1	1.9'/894.0	8/4/23	GM	brown silty GRAVEL with sand Stratum B	6.3	NV	NP

Client National Land Developers, LLC
Project Milford Warehouse Development
Milford Twp., PA
Project No. 23004

MIDLANTIC ENGINEERING

Tested By: MJ **Checked By:** DH

GRADATION AND CLASSIFICATION (ASTM D2487)



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.2	0.1	18.2	80.9	0.6	

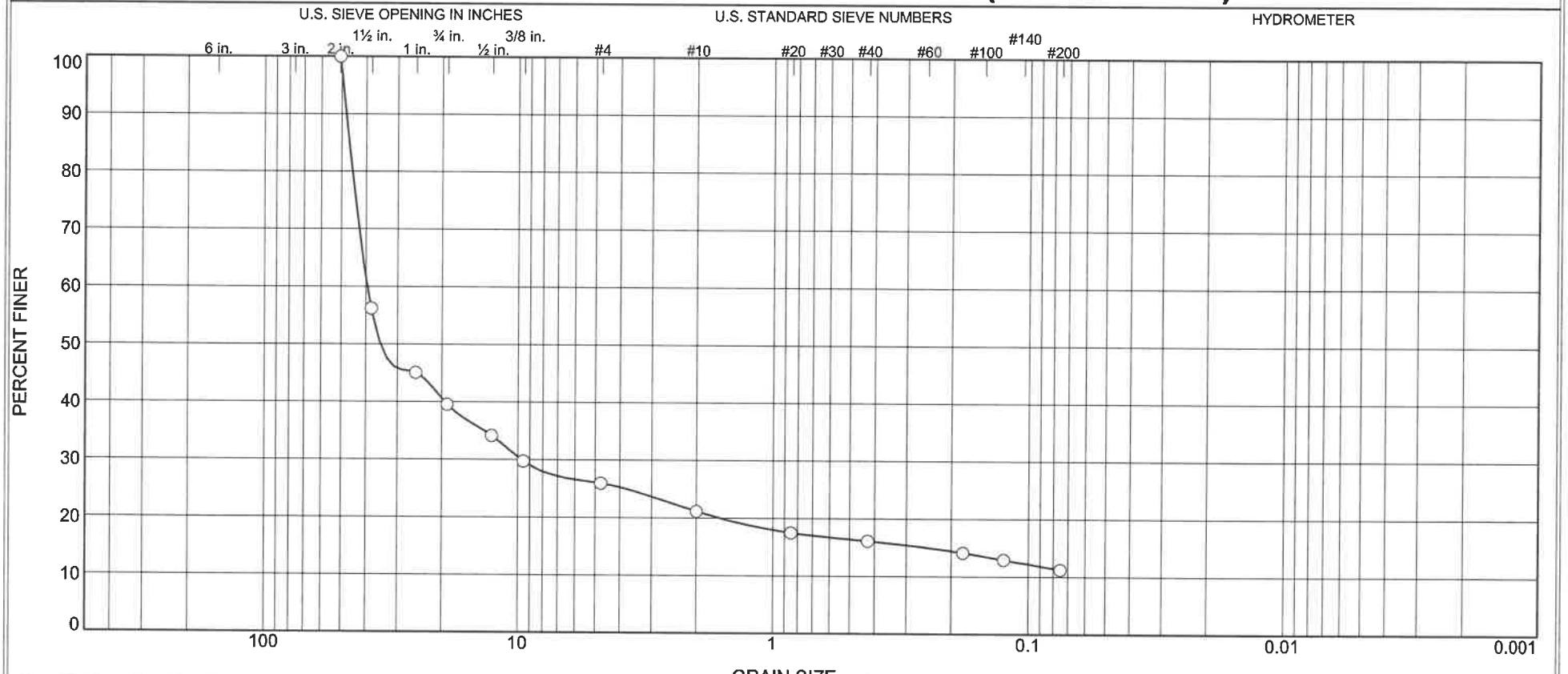
	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	TP-I-6A	S-2	10.2'/890.0	8/4/23	SP	brown poorly graded SAND	5.3	NV	NP
						Stratum B			

Client National Land Developers, LLC
Project Milford Warehouse Development
Milford Twp., PA
Project No. 23004

MIDLANTIC ENGINEERING

Tested By: MJ **Checked By:** DH

GRADATION AND CLASSIFICATION (ASTM D2487)



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	60.5	13.5	4.8	5.1	4.9	11.2	

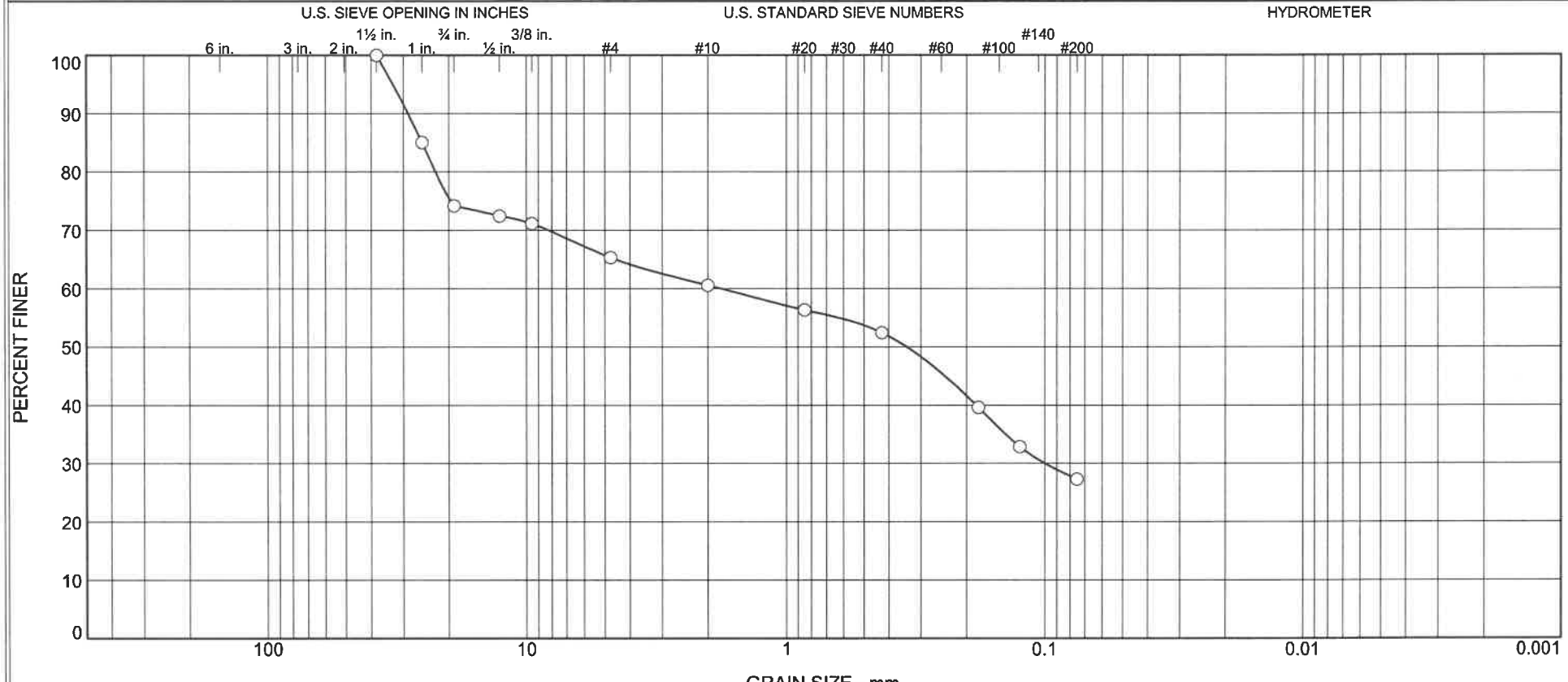
	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	TP-I-6C	S-1	1.5'/890.0	8/4/23	GP-GM	brown poorly graded GRAVEL with silt	5.2	NV	NP
						Stratum B			

Client National Land Developers, LLC
Project Milford Warehouse Development
Milford Twp., PA
Project No. 23004

MIDLANTIC ENGINEERING

Tested By: MJ **Checked By:** DH

GRADATION AND CLASSIFICATION (ASTM D2487)



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	25.8	8.9	4.7	8.2	25.1	27.3	

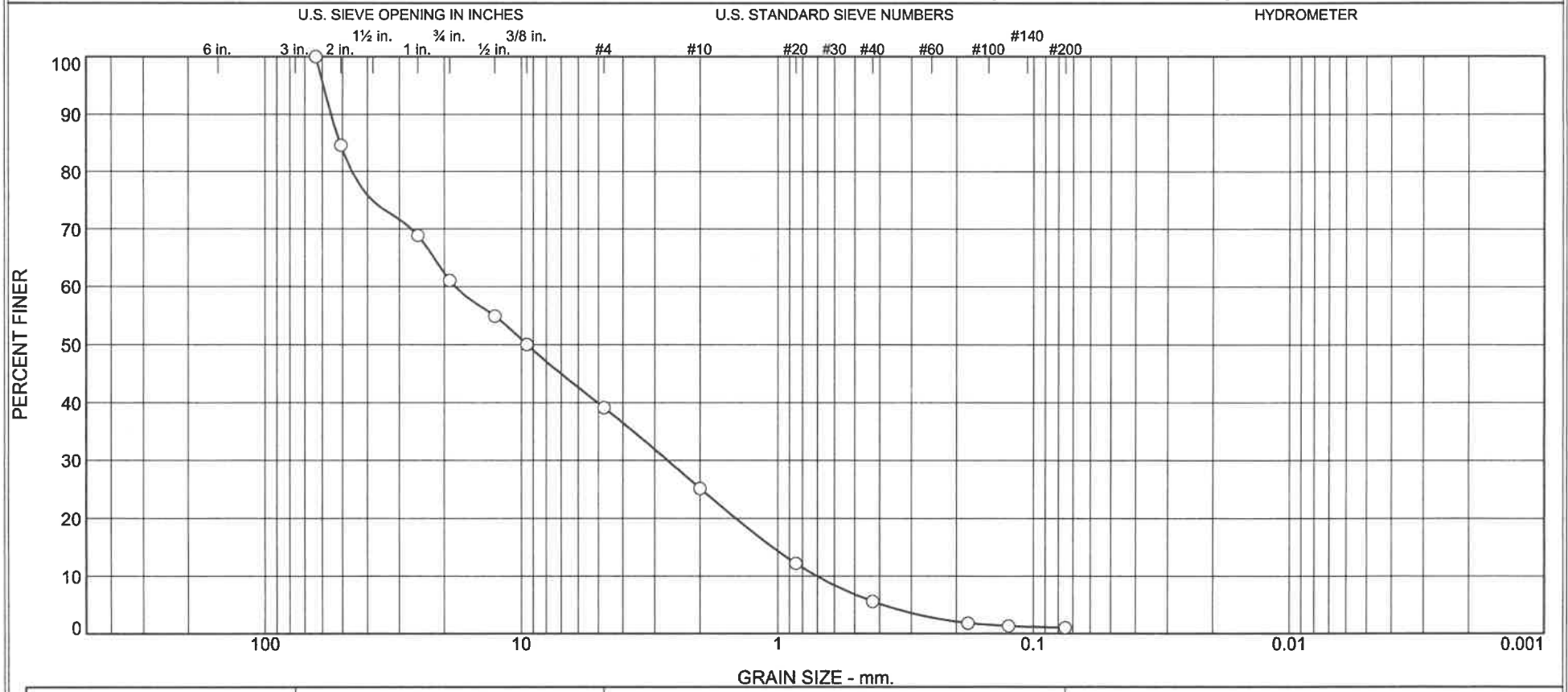
	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	TP-I-6E	S-1	0.5'/888.0	8/4/23	SM	gray/brown silty SAND with gravel-FILL Stratum F	15.2	NV	NP

Client National Land Developers, LLC
Project Milford Warehouse Development
Milford Twp., PA
Project No. 23004

MIDLANTIC ENGINEERING

Tested By: MJ **Checked By:** DH

GRADATION AND CLASSIFICATION (ASTM D2487)



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	38.9	22.0	13.9	19.6	4.6	1.0	

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	TP-15	S-1	4.0'/907.7	8/4/23	GP	brown poorly graded GRAVEL with sand	2.6	NV	NP
						Stratum B			

Client National Land Developers, LLC
Project Milford Warehouse Development
Milford Twp., PA
Project No. 23004

MIDLANTIC ENGINEERING

○ with cobbles

Tested By: MJ **Checked By:** DH

SUBSURFACE INVESTIGATION REPORT

- General Notes
- Identification of Soils
- Test Pit Location Plan, Figure No. 4-1
- Test Pit Logs (TP-I-1A through TP-I-6E, TP-15 and TP-16) (17 sheets)

GENERAL NOTES

1. Test pits are logged by engineering personnel to provide a record for geotechnical evaluation. The log itself includes a description of soil and rock materials encountered using visual classification in the field. Boundary lines between various strata are identified where possible and a graphical presentation is included based on the material excavated from the pit. Any significant features, such as fill conditions, underground structures, groundwater or water seepage conditions are recorded.

2. The test pit logs and related information depict subsurface conditions only at the specific location and at the particular time excavated. Soil conditions at other locations may differ from conditions occurring at these test pit locations. Also, the passage of time may result in a change in the subsurface soil and groundwater conditions at these locations.

3. The stratification lines represent the approximate boundary between soil and rock types as observed in the test pits. The profiles and water level observations presented have been made with reasonable care and accuracy and must be considered only an approximate representation of subsurface conditions to be encountered at the particular location.

4. Strata descriptions are based on visual inspection and are in accordance with the Unified Soil Classification System, per ASTM D-2488.

5. The test pit locations and grades are based on information provided by others and should be considered as approximate only. The test pit observations and draft logs were prepared by Mr. Daniel Hartigan, P.E. of this office.

MIDLANTIC ENGINEERING INC.
120 Commerce Road • Pittston Twp., PA 18640-9552
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IDENTIFICATION OF SOILS

I. Definition of Soil Group Names – ASTM D-2487-11			Symbol	Group Name
Coarse-Grained Soils More than 50% retained on No. 200 sieve	**Gravels** – More than 50% of coarse fraction retained on No. 4 sieve Coarse, ¾" to 3" Fine, No. 4 to ¾"	Clean Gravels Less than 5% fines	GW	well-graded gravel
			GP	poorly graded gravel
		Gravels with Fines More than 12% fines	GM	silty gravel
			GC	clayey gravel
	Sands – 50% or more of coarse fraction passes No. 4 sieve Coarse: No. 10 to No. 4 Medium: No. 40 to No. 10 Fine: No. 200 to No. 40	Clean Sands Less than 5% fines	SW	well-graded sand
			SP	poorly graded sand
		Sands with Fines More than 12% fines	SM	silty sand
			SC	clayey sand
Fine-Grained Soils 50% or more passes the No. 200 sieve	**Silts and Clays** – Liquid Limit less than 50 Low to medium plasticity	Inorganic	CL	lean clay
			ML	silt
		Organic	OL	organic clay
				organic silt
	Silts and Clays – Liquid Limit 50 or more Medium to high plasticity	Inorganic	CH	fat clay
			MH	elastic silt
		Organic	OH	organic clay
				organic silt
Highly Organic Soils	Primarily organic matter, dark in color, and organic odor		PT	peat

II. Definition of Minor Component Proportions		Approximate Percentage of Fraction by Weight
adjective form	gravelly, sandy	30% or more coarse grained
with	sand, gravel	15% or more coarse grained
	silt, clay	5% to 12% fine grained
trace	sand, gravel	Less than 15% coarse grained
	silt, clay	Less than 5% fine grained

III. Glossary of Miscellaneous Terms

symbols Unified Soil Classification Symbols are shown above as group symbols. Use a Line Chart for laboratory identification. Dual symbols are used for borderline classifications.

boulders & cobbles Boulders are considered rounded pieces of rock larger than 12 inches, while cobbles range from 3 to 12 inch size.

disintegrated rock Very generally defined as residual rock material with a standard penetration resistance (SPT) of more than 50 blows per foot, and less than refusal. Refusal is defined as a SPT of 100 blows for 2" or less penetration.

rock fragments Angular pieces of rock, distinguished from transported gravel, which have separated from original vein or strata and are present in a soil matrix.

quartz A hard silica mineral often found in residual soils

ironite Iron oxide deposited within a soil layer forming cemented deposits

cemented sand Usually localized rock-like deposits within a soil stratum composed of sand grains cemented by calcium carbonate or other materials.

mica A soft plate of silica mineral found in many rocks, and in residual or transported soil derived therefrom.

organic materials (excluding peat) Topsoil: Surface soils that support plant life and which contain considerable amounts of organic matter;
Organic Matter: Soil containing organic colloids throughout its structure;
Lignite: Hard, brittle decomposed organic matter with low fixed carbon content (a low grade of coal).

fill Man made deposit containing soil, rock and often foreign matter

probable fill Soils which contain no visually detected foreign matter but which are suspect with regard to origin

lenses 0 to 2 inch seam of minor soil component

layers 2 to 12 inch seam of minor soil component

pocket Discontinuous body of minor soil component

color shades Light to dark to indicate substantial difference in color

moisture conditions Wet, moist, or dry to indicate visual appearance of specimen

Enclosure (4)
Figure No. 4-1

N

I-5A
MAIN GARDEN AREA 5

I-6C
INFILTRATION SYSTEM 6

I-6D

I-6A

I-6E

I-6B

CDSWQ UNIT 1

CDSWQ UNIT 2

CDSWQ UNIT 3

OIL & GRADE MEDIA FILTER

WATER QUALITY BASIN 3

I-4A

I-4B

I-4C

SUBSURFACE INFILTRATION

PROPOSED 59 DOCKS

TP-1

TP-2

TP-3

TP-4

TP-5

TP-6

TP-7

TP-8

TP-9

TP-10

TP-11

TP-12

TP-13

TP-14

TP-15

TP-16

GRT 903.90
INV 903.40

2X2 INLET/CLEANOUT BOX
GRT 903.90
INV 902.90
SUMP 901.90

PROPOSED 8" WIDE TRENCH DRAIN WITH AVERAGE DEPTH OF 9"

PROPOSED BUILDING
434,000 SQ.FT. WAREHOUSE
FF = 904.00

24" SEPTIC TANK EFFLUENT FILTER

3-WAY DISTRIBUTION BOX

3 ECOFLOW PRETREATMENT TANKS

DOSING TANK

RESERVE DISPOSAL BED 2

THREE SEPTIC TANKS

LIMIT ELJEN GEOTEXTILE SAND FILTER

LOT 2
42.42 AC.±
1,847,822 SQ. FT.

TRENCH DRAIN NOTES:
1. PROVIDE 6 24"X24"24" DEEP CLEANOUT/INLET BOXES WITH 59 GALLONS OF STORAGE CAPACITY EACH WITH TOTAL STORAGE CAPACITY OF 354 GALLONS.
2. PROVIDE 980 FEET OF 8" WIDE TRENCH DRAIN WITH AVERAGE DEPTH OF 9" CONTAINING 3.7 GALLONS OF STORAGE PER FOOT OR 3665 GALLONS OF STORAGE.
3. TOTAL SPILL CONTAINMENT VOLUME IS 4,019 GALLONS.

FIRE LINE

WATER STORAGE TANK

EMERGENCY ACCESS

DOMESTIC FIRE DEPARTMENT LINE CONNECTION WITH DIRECT DRAFT FROM

FIRE DEPARTMENT CONNECTION WITH DIRECT CONNECTION TO FIRE PROTECTION MAIN

I-1A

I-1B

I-1C

I-1D

INFILTRATION BASIN 1

I-2A

INFILTRATION BASIN 2

I-2B

ACCESS

PROPOSED EMERGENCY ACCESS NON-PERVIOUS SURFACE

LEGEND

= Test Pit Location

= Infiltration Location

MIDLANTIC ENGINEERING

Test Pit Location Plan
Milford Warehouse Development
Milford Township, PA

Project:	Date:	Scale:
23004-SWM	08/18/23	1" = 100'

MIDLANTIC ENGINEERING

TEST PIT LOG TP-I-1A

Project: Milford Warehouse Development
Milford Township, PA

Test Loc. No.	**TP-I-1A**
Contract No.	**23004**
Date Excavated:	08/03/23
ME, Inc. Rep.:	DH
Equip. Used:	Excavator
Surface Elev.:	894.8

Groundwater Observations

Encountered:	08/03/23	Depth:	none
Completion:	08/03/23	Depth:	dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing Depth	InSitu Testing Geo. Pen.	M (%)	Remarks
	7" topsoil							
	brown poorly graded GRAVEL with silt and sand, cobbles	GP-GM	B		2		9.4	
4					4		4.4	infiltration testing @ 4.8'; El 890.0
6				887.8	6			
	Bottom of Test Pit at 7.0 feet							
8					8			
10					10			
12					12			
14					14			
16					16			
18					18			
20					12			

Comments: Backfilled upon completion.

MIDLANTIC ENGINEERING

TEST PIT LOG TP-I-1B

Project: Milford Warehouse Development
Milford Township, PA

Test Loc. No.	**TP-I-1B**
Contract No.	**23004**
Date Excavated:	08/07/23
ME, Inc. Rep.:	DH
Equip. Used:	Excavator
Surface Elev.:	906.2

Groundwater Observations

Encountered:	08/07/23	Depth:	none
Completion:	08/07/23	Depth:	dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing Depth	InSitu Testing Geo. Pen.	M (%)	Remarks
0	3" topsoil, brick, stone – FILL		F					
2				904.2	2			
4	brown poorly graded GRAVEL with silt and sand	GP-GM	B		4			
6					6			
8					8		5.2	
10					10			
12	brown poorly graded GRAVEL with sand, occasional cobbles	GP			12			
14					14			
16					16		4.2	infiltration testing @ 16.2'; El 890.0
18				887.7	18			
	Bottom of Test Pit at 18.5 feet							
20					12			

Comments: Backfilled upon completion.

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MIDLANTIC ENGINEERING

TEST PIT LOG TP-I-1C

Project: Milford Warehouse Development
Milford Township, PA

Test Loc. No.	**TP-I-1C (relocated)**
Contract No.	**23004**
Date Excavated:	08/03/23
ME, Inc. Rep.:	DH
Equip. Used:	Excavator
Surface Elev.:	889.0

Groundwater Observations

Encountered:	08/03/23	Depth:	none
Completion:	08/03/23	Depth:	dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing Depth	InSitu Testing Geo. Pen.	M (%)	Remarks
0	5" topsoil						10.5	infiltration testing @ 0.5'; El 888.5
2	yellow, brown silty SAND with gravel	SM	B		2			
4				885.0	4			
	Bottom of Test Pit at 4.0 feet							
6					6			
8					8			
10					10			
12					12			
14					14			
16					16			
18					18			
20					12			

Comments: Backfilled upon completion.

MIDLANTIC ENGINEERING

TEST PIT LOG TP-I-1D

Project: Milford Warehouse Development
Milford Township, PA

Test Loc. No.	**TP-I-1D (added)**
Contract No.	**23004**
Date Excavated:	08/03/23
ME, Inc. Rep.:	DH
Equip. Used:	Excavator
Surface Elev.:	888.0

Groundwater Observations

Encountered:	08/03/23	Depth:	none
Completion:	08/03/23	Depth:	dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing Depth	InSitu Testing Geo. Pen.	M (%)	Remarks
	5" topsoil						16.4	infiltration testing @ 0.5'; El 887.5
	yellow, brown silty SAND with gravel	SM	B					
4				884.0				
	Bottom of Test Pit at 4.0 feet							

Comments: Backfilled upon completion.

MIDLANTIC ENGINEERING

TEST PIT LOG TP-I-2A

Project: Milford Warehouse Development
Milford Township, PA

Test Loc. No. **TP-I-2A**

Contract No. **23004**

Date Excavated: 08/03/23

ME, Inc. Rep.: DH

Equip. Used: Excavator

Surface Elev.: 872.8

Groundwater Observations

Encountered:	08/03/23	Depth:	none
Completion:	08/03/23	Depth:	dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing Depth	InSitu Testing Geo. Pen.	M (%)	Remarks
0	3" topsoil							
2	brown poorly graded SAND with silt	SP-SM	B		2		12.6	
4	brown poorly graded GRAVEL with silt and sand, cobbles	GP-GM			4		6.3	infiltration testing @ 4.8'; El 868.0
6	dark brown poorly graded SAND with silt and gravel	SP-SM		865.8	6		3.8	
8	Bottom of Test Pit at 7.0 feet				8			
10					10			
12					12			
14					14			
16					16			
18					18			
20					12			

Comments: Backfilled upon completion.

MIDLANTIC ENGINEERING

TEST PIT LOG TP-I-2B

Project: Milford Warehouse Development
Milford Township, PA

Test Loc. No.	**TP-I-2B**
Contract No.	**23004**
Date Excavated:	08/03/23
ME, Inc. Rep.:	DH
Equip. Used:	Excavator
Surface Elev.:	871.3

Groundwater Observations

Encountered:	08/03/23	Depth:	none
Completion:	08/03/23	Depth:	dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing Depth	InSitu Testing Geo. Pen.	M (%)	Remarks
0	3" topsoil brown silty sand – FILL	SM	F	869.3				
2	6" topsoil brown poorly graded GRAVEL with sand, cobbles	GP	B	865.3			9.5	infiltration testing @ 3.3'; El 868.0
6	Bottom of Test Pit at 6.0 feet							
8								
10								
12								
14								
16								
18								
20					12			

Comments: Backfilled upon completion.

MIDLANTIC ENGINEERING

TEST PIT LOG TP-I-4A

Project: Milford Warehouse Development
Milford Township, PA

Test Loc. No.	**TP-I-4A**
Contract No.	**23004**
Date Excavated:	08/02/23
ME, Inc. Rep.:	DH
Equip. Used:	Excavator
Surface Elev.:	906.7

Groundwater Observations

Encountered:	08/02/23	Depth:	none
Completion:	08/02/23	Depth:	dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing Depth	InSitu Testing Geo. Pen.	M (%)	Remarks
	2" topsoil gray poorly graded gravel with sand – FILL	GP	F	905.2				
2	brown poorly graded SAND with gravel, cobbles	SP	B		2			
4					4			
6					6			
8					8			
10					10		3.5	infiltration testing @ 9.7'; El 897.0
12				894.7	12			
	Bottom of Test Pit at 12.0 feet							
14					14			
16					16			
18					18			
20					12			

Comments: Backfilled upon completion.

MIDLANTIC ENGINEERING

TEST PIT LOG TP-I-4B

Project: Milford Warehouse Development
Milford Township, PA

Test Loc. No.	**TP-I-4B**
Contract No.	**23004**
Date Excavated:	08/02/23
ME, Inc. Rep.:	DH
Equip. Used:	Excavator
Surface Elev.:	906.7

Groundwater Observations

Encountered:	08/02/23	Depth:	none
Completion:	08/02/23	Depth:	dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing Depth	InSitu Testing Geo. Pen.	M (%)	Remarks
0	6" topsoil				0			
2					2			
4	brown poorly graded GRAVEL with sand, cobbles	GP	B		4			
6					6			
8					8			
10					10		2.8	infiltration testing @ 9.7' El 897.0
12	Bottom of Test Pit at 12.0 feet			894.7	12			
14					14			
16					16			
18					18			
20					12			

Comments: Backfilled upon completion.

MIDLANTIC ENGINEERING

TEST PIT LOG TP-I-4C

Project: Milford Warehouse Development
Milford Township, PA

Test Loc. No. **TP-I-4C**

Contract No. **23004**

Date Excavated: 08/03/23

ME, Inc. Rep.: DH

Equip. Used: Excavator

Surface Elev.: 904.4

Groundwater Observations

Encountered:	08/03/23	Depth:	none
Completion:	08/03/23	Depth:	dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing Depth	InSitu Testing Geo. Pen.	M (%)	Remarks
0	4" topsoil							
2	orange, brown poorly graded SAND with silt and gravel	SP-SM	B		2		11.0	
4					4			
6	brown poorly graded GRAVEL with sand, cobbles	GP			6			
8					8		2.9	infiltration testing @ 7.4'; El 897.0
10				894.4	10			
	Bottom of Test Pit at 10.0 feet							
12					12			
14					14			
16					16			
18					18			
20					12			

Comments: Backfilled upon completion.

MIDLANTIC ENGINEERING

TEST PIT LOG TP-I-5A

Project: Milford Warehouse Development
Milford Township, PA

Test Loc. No.	**TP-I-5A**
Contract No.	**23004**
Date Excavated:	08/02/23
ME, Inc. Rep.:	DH
Equip. Used:	Excavator
Surface Elev.:	895.9

Groundwater Observations

Encountered:	08/02/23	Depth:	none
Completion:	08/02/23	Depth:	dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing Depth	InSitu Testing Geo. Pen.	M (%)	Remarks
0	6" topsoil							
	brown silty GRAVEL with sand	GM	B				6.3	infiltration testing @ 1.9'; El 894.0
4				890.9				
	Bottom of Test Pit at 5.0 feet							

Comments: Backfilled upon completion.

MIDLANTIC ENGINEERING

TEST PIT LOG TP-I-6A

Project: Milford Warehouse Development
Milford Township, PA

Test Loc. No.	**TP-I-6A**
Contract No.	**23004**
Date Excavated:	08/02/23
ME, Inc. Rep.:	DH
Equip. Used:	Excavator
Surface Elev.:	900.2

Groundwater Observations

Encountered:	08/02/23	Depth:	none
Completion:	08/02/23	Depth:	dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing Depth	InSitu Testing Geo. Pen.	M (%)	Remarks
	3" topsoil							
	brown poorly graded GRAVEL with sand, cobbles	GP	B					
2					2			
4					4		3.7	
6					6			
8					8			
10	brown poorly graded SAND	SP			10		5.3	infiltration testing @ 10.2'; El 890.0
12				887.7	12			
	Bottom of Test Pit at 12.5 feet							
14					14			
16					16			
18					18			
20					12			

Comments: Backfilled upon completion.

MIDLANTIC ENGINEERING

TEST PIT LOG TP-I-6B

Project: Milford Warehouse Development
Milford Township, PA

Test Loc. No. **TP-I-6B**

Contract No. **23004**

Date Excavated: 08/02/23

ME, Inc. Rep.: DH

Equip. Used: Excavator

Surface Elev.: 900.1

Groundwater Observations

Encountered:	08/02/23	Depth:	none
Completion:	08/02/23	Depth:	dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing Depth	InSitu Testing Geo. Pen.	M (%)	Remarks
	3" topsoil / gravel – FILL							
	brown poorly graded GRAVEL with sand, cobbles	GP	B					
2					2			
4					4		4.4	
6					6			
8					8			
10					10		4.4	infiltration testing @ 10.1'; El 890.0
12				887.6	12			
	Bottom of Test Pit at 12.5 feet							
14					14			
16					16			
18					18			
20					12			

Comments: Backfilled upon completion.

MIDLANTIC ENGINEERING

TEST PIT LOG TP-I-6C

Project: Milford Warehouse Development
Milford Township, PA

Test Loc. No.	**TP-I-6C**
Contract No.	**23004**
Date Excavated:	08/02/23
ME, Inc. Rep.:	DH
Equip. Used:	Excavator
Surface Elev.:	891.5

Groundwater Observations

Encountered:	08/02/23	Depth:	none
Completion:	08/02/23	Depth:	dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing Depth	InSitu Testing Geo. Pen.	M (%)	Remarks
	5" topsoil							
2	brown poorly graded GRAVEL with silt	GP-GM	B		2		5.2	infiltration testing @ 1.5'; El 890.0
4				887.5	4			
	Bottom of Test Pit at 4.0 feet							
6					6			
8					8			
10					10			
12					12			
14					14			
16					16			
18					18			
20					12			

Comments: Backfilled upon completion.

MIDLANTIC ENGINEERING

TEST PIT LOG TP-I-6D

Project: Milford Warehouse Development
Milford Township, PA

Test Loc. No. **TP-I-6D**

Contract No. **23004**

Date Excavated: 08/02/23

ME, Inc. Rep.: DH

Equip. Used: Excavator

Surface Elev.: 889.3

Groundwater Observations

Encountered:	08/02/23	Depth:	none
Completion:	08/02/23	Depth:	dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing Depth	InSitu Testing Geo. Pen.	M (%)	Remarks
	5" topsoil						20.7	infiltration testing @ 0.5'; El 888.8
2	gray poorly graded GRAVEL with silt and sand	GP-GM	B		2			
	brown, orange poorly graded SAND with gravel	SP						
4				884.3	4		14.3	
6	Bottom of Test Pit at 5.0 feet				6			
8					8			
10					10			
12					12			
14					14			
16					16			
18					18			
20					12			

Comments: Backfilled upon completion.

MIDLANTIC ENGINEERING

TEST PIT LOG TP-I-6E

Project: Milford Warehouse Development
Milford Township, PA

Test Loc. No. **TP-I-6D**

Contract No. **23004**

Date Excavated: 08/02/23

ME, Inc. Rep.: DH

Equip. Used: Excavator

Surface Elev.: 888.5

Groundwater Observations

Encountered:	08/02/23	Depth:	3.0’
Completion:	08/02/23	Depth:	3.0’

Depth (ft.)	Strata Description	Class.	Str’m	Elev.	InSitu Testing Depth	InSitu Testing Geo. Pen.	M (%)	Remarks
	5” topsoil gray, brown silty sand with gravel – FILL	SM	F	887.5			15.2	infiltration testing @ 0.5’; El 888.0
2	brown, gray silty SAND	SM	B		2		16.2	
4	Bottom of Test Pit at 4.0 feet			884.5	4			
6					6			
8					8			
10					10			
12					12			
14					14			
16					16			
18					18			
20					12			

Comments: Backfilled upon completion.

MIDLANTIC ENGINEERING

TEST PIT LOG TP-15

Project: Milford Warehouse Development
Milford Township, PA

Test Loc. No.: **TP-15**

Contract No.: **23004**

Date Excavated: 08/03/23

ME, Inc. Rep.: DH

Equip. Used: Excavator

Surface Elev: 911.7

Groundwater Observations

Encountered:	08/03/23	Depth:	none
Completion:	08/03/23	Depth:	dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing Depth	InSitu Testing Geoprobe Penetr'n	M (%)	Remarks
0	6" topsoil							
1					1			
2	brown poorly graded GRAVEL with sand, cobbles	GP	B		2			
3					3			
4					4		2.6	
5					5			
6					6			
7					7			
8					8			
9					9			
10					10		4.0	
11					11			
12					12			
13					13			
14					14			
15					15			
16				895.7	16			
	Bottom of Test Pit at 16.0 feet							
17					17			

Comments: Backfilled upon completion.

MIDLANTIC ENGINEERING

TEST PIT LOG TP-16

Project: Milford Warehouse Development
Milford Township, PA

Test Loc. No.: **TP-16**

Contract No.: **23004**

Date Excavated: 08/03/23

ME, Inc. Rep.: DH

Equip. Used: Excavator

Surface Elev: 906.8

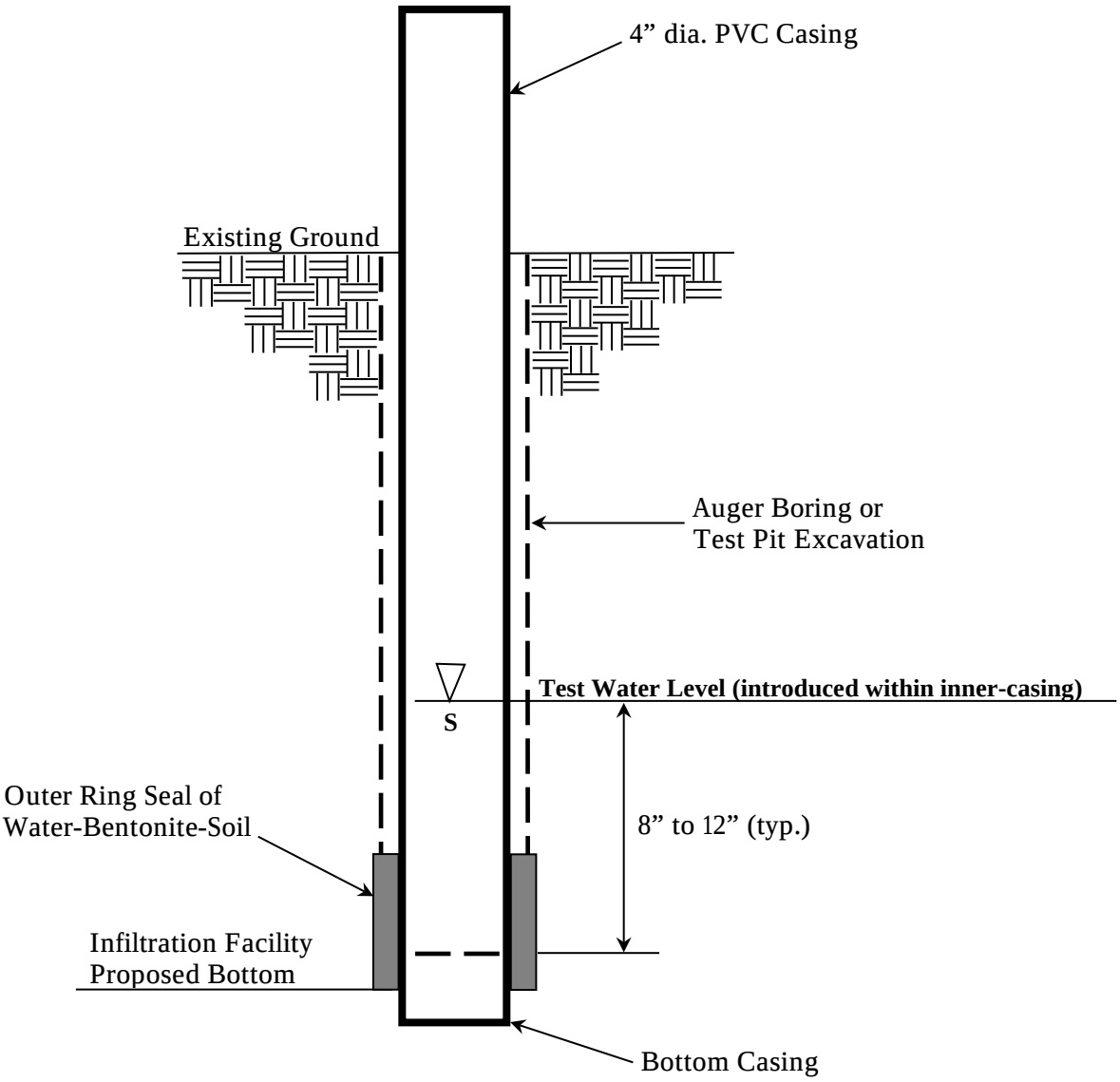
Groundwater Observations

Encountered:	08/04/23	Depth:	none
Completion:	08/04/23	Depth:	dry

Depth (ft.)	Strata Description	Class.	Str'm	Elev.	InSitu Testing Depth	InSitu Testing Geoprobe Penetr'n	M (%)	Remarks
0	topsoil							
1					1			
2	brown poorly graded GRAVEL with sand, cobbles	GP	B		2			
3					3			
4					4		3.5	
5					5			
6					6			
7					7			
8					8			
9					9			
10					10			
11					11			
12					12			
13	brown poorly graded SAND with gravel, cobbles	SP			13			
14					14		3.0	
15					15			
16					16			
17				889.8	17			
	Bottom of Test Pit at 17.0 feet							

Comments: Backfilled upon completion.

IN-SITU INFILTRATION TESTING



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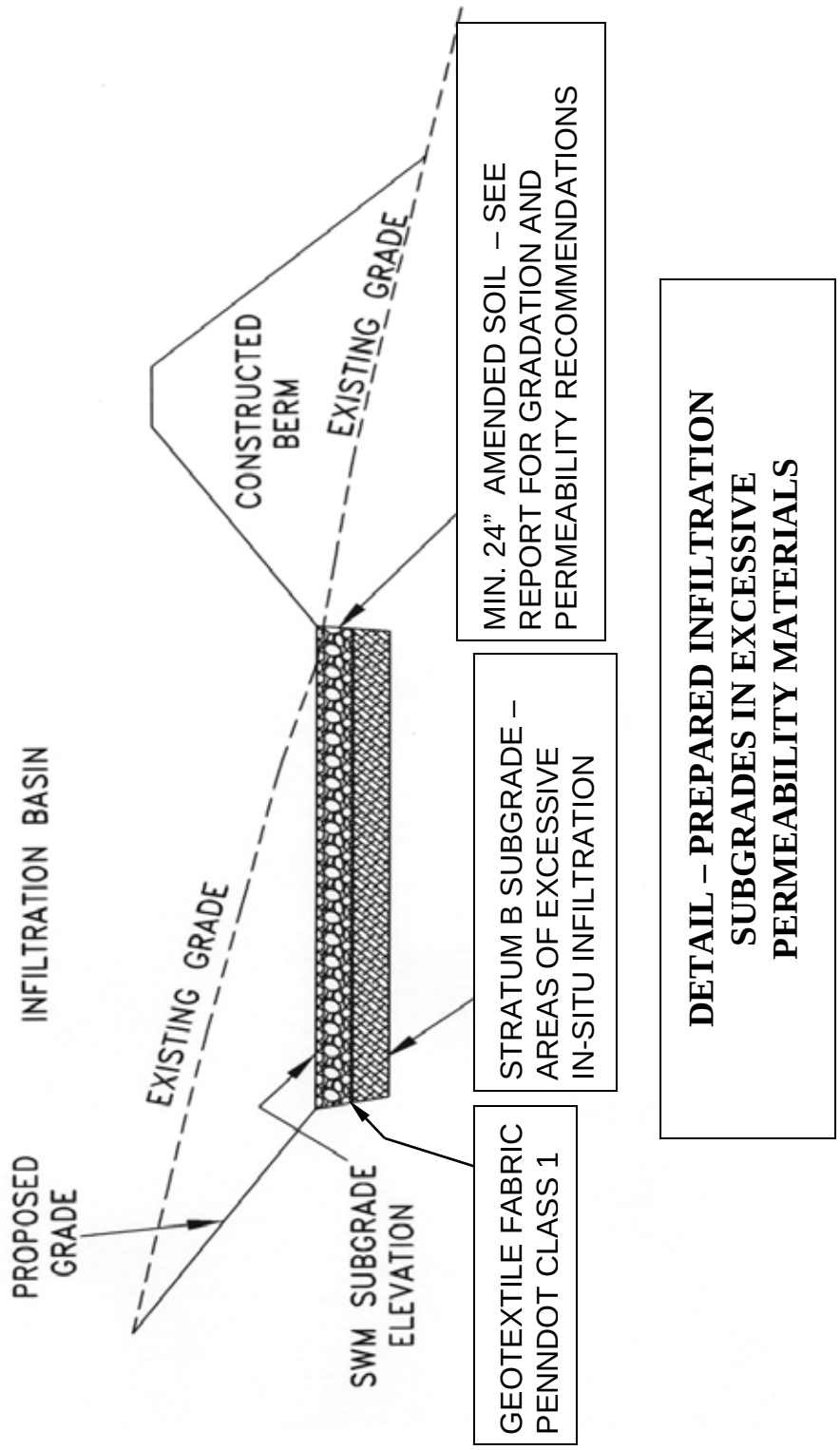
Drawing Title:
In-situ Infiltration Testing Setup
Milford Warehouse Development
Milford Township, PA

Drawn By:	Checked By:	Scale:
LA	TB	NTS
Date:	Project No.:	Sheet No.
08/18/23	23004-SWM	---



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Drawing Title:
Detail – Prepared Infiltration Subgrades
Milford Warehouse Development
Milford Township, PA

Drawn By:	Checked By:	Scale:
LA	TB	NTS
Date:	Project No.:	Sheet No.
08/18/23	23004-SWM	---