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Appendix I – STORMWATER MANAGEMENT STUDY

BURNS McDONNELL

Stormwater Management Study

PSEG LONG ISLAND
We make things work for you.

PSEG Long Island

Commercial Ave Termination Facility
Project No. 178669

Issued for Permitting
May 2026

Stormwater Management Study

prepared for

PSEG Long Island

Commercial Ave Termination Facility
Town of Hempstead, New York

Project No. 178669

Issued for Permitting
May 2026

prepared by

Burns & McDonnell Consultants, Inc.
d/b/a Burns & McDonnell EGS, P.C.

BURNS McDONNELL

INDEX AND CERTIFICATION

PSEG Long Island
Stormwater Management Study
Commercial Ave Termination Facility – Project No. 178669
Issued for Permitting – May 2026

Report Index

Certification

I hereby certify, as a Professional Engineer in the State of New York, that the information in this document was assembled under my direct personal charge. This report is not intended or represented to be suitable for reuse by the PSEG Long Island or others without specific verification or adaptation by the Engineer.

Michael J. Blake, P.E. Date
N.Y. P.E. No. 094084
C.O.A. No. 021848
P.S.C. No. 083295

Additional reference information provided by others and not certified by the above sealing Engineer.

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LIST OF ABBREVIATIONS

Abbreviation	Term/Phrase/Name
BMcD	Burns & McDonnell
BMP	Best Management Practice
CF	Cubic Feet
CFS	Cubic Feet per Second
Cpv	Channel Protection Volume
E&S	Erosion and Sedimentation Control
FEMA	Federal Emergency Management Agency
FPS	Feet per Second
FT	Feet
LF	Linear Feet
NAD	North American Datum
NAVD	North American Vertical Datum
NYSDEC	New York State Department of Environmental Conservation
NYSEG	New York State Electric and Gas Corporation
Qf	Extreme Storm Control
Qp	Overbank Flood Control
ROW	Right-of-way
RRv	Runoff Reduction Volume
WQV	Water Quality Volume

1.0 PROJECT OVERVIEW

1.1 Location and Project Summary

PSEG Long Island plans to construct the Commercial Ave Termination Facility ("Project"). The Project is located in the Village of Garden City, the Town of Hempstead, Nassau County, New York, at the corner of Commercial Ave and Quentin Roosevelt Blvd (approximate Latitude: 40°43'50.4"N, Longitude: 73°36'19.4"W). Refer to Figure 1-1: USGS Site Vicinity Map. The existing property is approximately 1.16 acres and is enclosed by an existing fence.

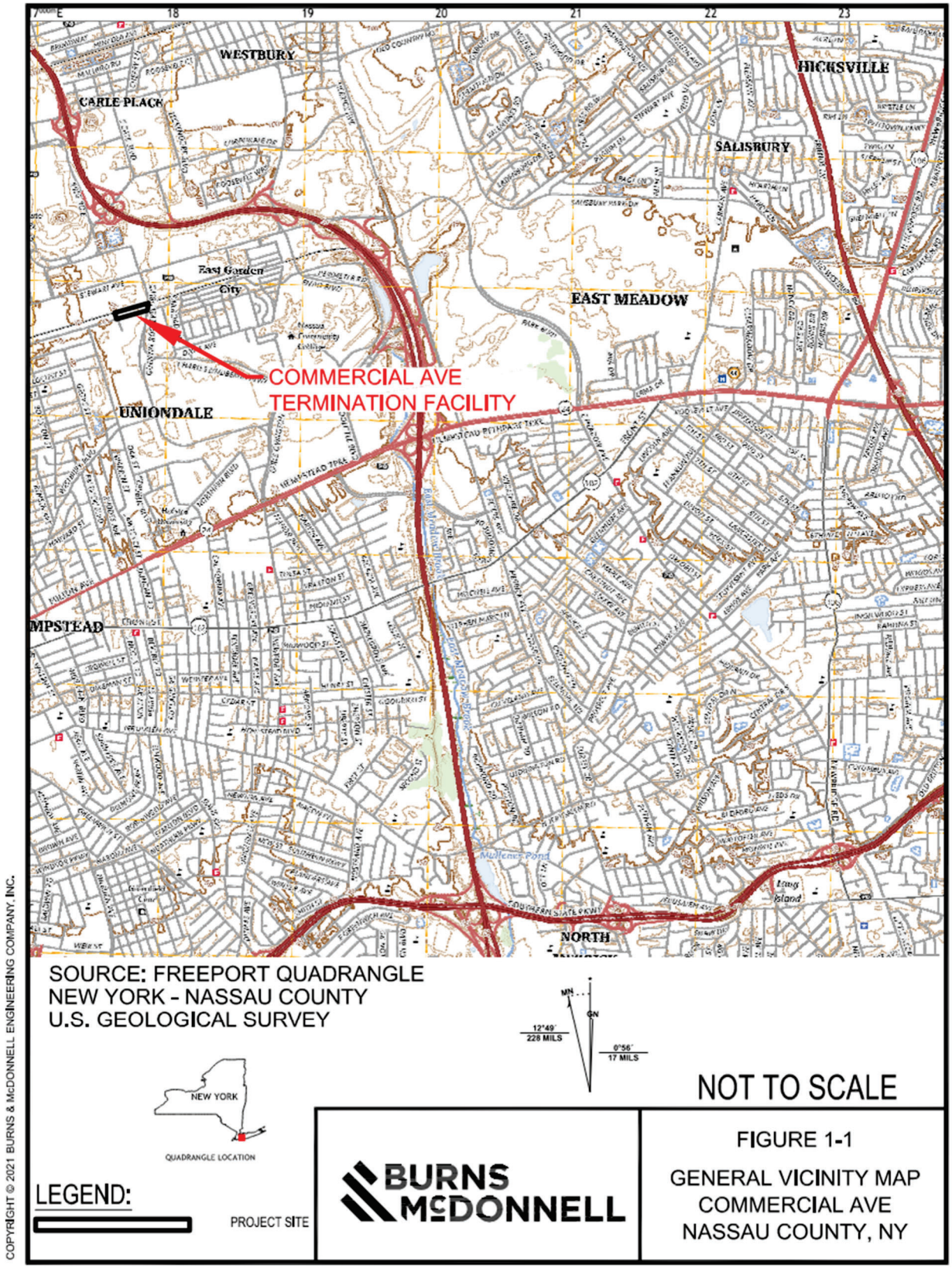
The Site is bordered to the north by the Long Island Railroad right-of-way, to the east by Quentin Roosevelt Blvd, to the south by Commercial Avenue, and to the west by an industrial storage yard. Meadowbrook Parkway is located in the vicinity of the project site, running largely north and east of the site. The Site has a gentle terrain which slopes from east to west. The pre-development groundcover consists entirely of compacted gravel area. Elevations within the property range from 76 feet to 83 feet, referenced to the North American Vertical Datum of 1988 ("NAVD88").

The Project will involve construction of a new termination pad, which will include a new 8'-2" tall security fence, three new access driveways connecting to Commercial Avenue, stormwater drainage, and termination facility electrical infrastructure.

A hydraulic model was developed to evaluate the pre- and post-development drainage conditions on the Site for the 1-, 10-, and 100-year design frequency storm events and provide water quality treatment for the water quality volume (WQV). The analyses summary, results, and model output are located in further sections.

The Project will result in a total of approximately 2.42 acres of disturbance within the limit of disturbance (LOD), of which 1.16 acres will occur directly on the project site. The proposed increase in impervious cover as a result of the project is approximately 0.38 acres, which accounts for proposed structure footings, pads, roads, and aprons.

Figure 1-1: USGS Site Vicinity Map



1.2 Existing Conditions Survey Information

A topographic survey was prepared by SAM-NY Geospatial Inc. dated October 7th, 2024, and was used as a base throughout the analysis and design of the Site Development Plans and Stormwater Management Study. Bearings and distances are based on NAD83 (New York State Plane Coordinate System, Long Island Zone). Elevations and contours are based on NAVD88.

1.3 Geotechnical Investigations

A preliminary Geotechnical Engineering Report was prepared by POZ Engineering and Environmental Consulting, P.C., dated March 27, 2026. The report provided infiltration test results and groundwater depths necessary for the stormwater design. A total of two boring logs were completed on site, with groundwater being encountered at both boring locations, and at a depth of 27.42 ft below grade. Infiltration test was performed at one location on site and resulted in Mean Coefficient of Permeability of 8.078 x 10^-3 cm/sec (11.45 in/hr). Data from the geotechnical report and boring logs are provided in Appendix F.

1.4 Soils

The United States Department of Agriculture ("USDA") Natural Resources Conservation Service ("NRCS") Web Soil Survey indicates that the project area is classified as Urban Land. This designation indicates that the original soil profile has been altered by development, and as such, specific soil types and their corresponding Hydrologic Soil Groups ("HSGs") are not mapped for this location.

To provide a conservative stormwater analysis and to avoid mobilizing subsurface contaminants, a Hydrologic Soil Group D has been assumed for all hydrologic and hydraulic calculations.

The NRCS Web Soil Survey is located in Appendix D.

1.5 Wetlands, Rivers and Streams

According to the New York State Department of Environmental Conservation (NYSDEC) Environmental Resource Mapper, there are no state or federally regulated wetlands located on the project property. Furthermore, there are no rivers, streams, or wetlands located on or immediately adjacent to the site.

No wetlands are anticipated to be impacted due to the construction of the termination facility.

1.6 Floodplain

The site is in Zone X (unshaded) as shown on the Federal Emergency Management Agency ("FEMA") Flood Insurance Rate Map ("FIRM") Map Number 36059C0226G, effective date September 11, 2009. Zone X (unshaded) is defined as "areas determined to be outside 500-year floodplain". The FEMA FIRM is provided for reference in Appendix E.

1.7 Receiving Surface Waters

The project site is located within the Hempstead Bay Watershed, which is part of the larger Long Island South Shore Estuary system. Runoff from the site is understood to be collected through the permeable substation pad system, and the local municipal storm sewer system which is tributary to Meadow Brook. Meadow Brook ultimately discharges into Hempstead Bay and the Atlantic Ocean.

1.8 Pre-Development Site Conditions

The pre-developed site consists of entirely compacted gravel surface. Stormwater runoff generally drains across the site from east to west.

1.9 Post-Development Site Conditions

The post-development site will consist of a permeable substation pad system, bound by fences, and access driveways. The pad will consist of approximately 0.78 acres of substation pad surface, 0.34 acres of asphalt roadways, and 0.04 acres of concrete foundations and paving. The post-development design will incorporate water quality and quantity control measures into the design.

No new water or septic/sanitary sewer services are required for the Project.
No proposed improvements are located within a FEMA 100-year flood plain, there are no adverse impacts to properties as a result.

* * * * *

2.0 HYDROLOGY AND HYDRAULICS

The stormwater management for the Project has been developed to minimize the downstream effects of development at the site. The stormwater requirements set forth by the New York State Department of Environmental Conservation (NYSDEC) Stormwater Management Design Manual, dated July 2024, was utilized for the design of the Site Development Plans and this Report.

The development of the site results in the need to attenuate stormwater onsite and provide water quality treatment and recharge.

2.1 Stormwater Sizing Criteria

Stormwater sizing criteria shall be in accordance with the NYSDEC Stormwater Management Design Manual. The following criteria applies to this project:

2.1.1 Alternate Stormwater Management for National Grid Substations

National Grid (NG) together with the consulting firm, Environmental Design & Research (EDR), prepared a NYSDEC stormwater management prototype system (System), which may be applicable to substation projects. The user assumes the sole responsibility for the use of this system, its applicability to the project site, and verification of the appropriate use and compliance with village, town, city, county, state, and federal stormwater requirements for this location.

A memorandum prepared by Environmental Design and Research (EDR) was issued February 2016, referencing the Alternate Stormwater Management for substations. The design was prepared by National Grid and can be used for all substation designs. The memorandum discusses the development of a stormwater management system that is integrated into the substation pad construction and meets the requirements of NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity as follows:

The system that has been developed is included in the substation pad cross-section and provides a stormwater management compliant design that meets the requirements of the current version of the NYSDEC General Permit for Stormwater Discharges from Construction Activity, including Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (Cpv), Overbank Flood Control (Qp), and Extreme Flood Control (Qf). Our combined efforts have produced two systems for the following on-site soil infiltration rate scenarios, which include:

- *Sites with infiltration rates greater than or equal to 0.5 inches per hour*

- *Sites with infiltration rates less than 0.5 inches per hour*

The NYSDEC responded in a letter dated January 20, 2017 that both designs are acceptable in conformance with the 2015 version of the NYS Stormwater Design Manual. The Preliminary Geotechnical Engineering Report provided infiltrations rates greater than 0.5 in/hr. The design approval is provided in Appendix G.

2.1.2 Water Quality and Runoff Reduction Volume

The project achieves full compliance with the state's Water Quality Volume (WQv) and Runoff Reduction Volume (RRv) requirements by implementing the pre-approved "Alternate Stormwater Management for National Grid Substations" design.

As confirmed by the NYSDEC, this design utilizes the permeable substation pad system itself as an integrated and compliant Best Management Practice (BMP). The system is engineered with an underlying filter and reservoir course to capture, filter, and infiltrate stormwater at its source.

Given the site's field-verified infiltration rate of 11.45 in/hr, the design for high-infiltration sites is being used. Because this pre-approved practice is being implemented, the WQv and RRv requirements are fully addressed, and a separate downstream treatment facility is not required.

2.1.3 Volume Control

The proposed design will manage and control the peak runoff rates for the 1-year, 10-year, and 100-year storm events. This will be achieved primarily through the permeable substation pad system, which utilizes a surface course, filter course, and underground reservoir course to capture and infiltrate a significant volume of stormwater.

The design also includes a series of on-site catch basins that work in conjunction with the permeable pad. These catch basins will collect a portion of the runoff from impervious surfaces and convey it to the local municipal storm drainage system.

The analysis in the following sections will demonstrate that the combined effect of the infiltration system and the conveyance network ensures that the post-development peak runoff rates for these storm events are controlled to be less than or equal to the pre-development rates.

2.2 Methodology and Design Data

The data used to prepare and perform the stormwater design calculations is presented below.

2.2.1 Rainfall Data

Type III 24-hour rainfall depths for Garden City, New York were obtained from the NOAA National Weather Service Precipitation Frequency Data Server. The Water quality storm precipitation was referenced from the NYSDEC Stormwater Manual, Figure 4.1 for the 90th Percentile Rainfall in New York State.

Table 2-1: 24-Hour Type III Rainfall Data

Return Frequency (yr)	24 Hour Depth (in)
1	2.71
2	3.32
10	5.16
25	6.30
50	7.16
100	8.07

2.2.2 Runoff Data

The stormwater runoff calculations were completed using the USDA NRCS/SCS TR-55 runoff curve number method in HydroCAD. The input values that were used in the HydroCAD model are shown in the tables below.

The maximum flow length for overland flow on unpaved areas shall be 100 feet in accordance with the NYSDEC Stormwater Manual. Table 3-1 lists the Manning's roughness coefficients used in the analysis to determine the Time of Concentration and pipe flows.

Table 2-2: Manning's Roughness Coefficients

Surface Description	Manning's n
Compacted Gravel	0.03
Station Stone	0.1
Concrete Pavement/RCP	0.013

Table 2-3 provides the Runoff Curve Numbers (CN) for the SCS method for the various surface conditions present and proposed on the site. As mentioned previously, the soils present on site are Hydrologic Soil Group D. The CN values are referenced from TR-55, Tables 2-2a.

Table 2-3: Standard SCS Runoff Curve Numbers

Land Type	Hydrologic Soil Group	Curve Number
Compacted Gravel	D	98
Asphalt Roadway	D	98
Concrete Flatwork	D	98
Station Stone	D	98

The following tables provide the surface area conditions used to analyze the site. Table 2-4 provides the surface area conditions of the pre-developed site at its current condition and Table 2-5 provides the values in post-development conditions.

Table 2-4: Pre-Developed Model Data

Subarea	Area (ac)	Curve Number*	Time of Concentration (Minutes)
Pre	1.16	98	-
Total	-	-	7.4

* Curve Numbers are weighted in HydroCAD model

Table 2-5: Post-Developed Model Data

Subarea	Area (ac)	Composite Curve Number	Time of Concentration (Minutes)
Post	0.78	98	-
-	0.34	98	-
-	0.04	98	-
Total	1.16	98	12.7

* Curve Numbers are weighted in HydroCAD model
* Minimum time of concentration used for post-development model.

2.3 Volume Control Calculations

The proposed design will manage and control the peak runoff rates for the 1-year, 10-year, and 100-year storm events. The primary method for volume control is the permeable substation pad system, which is designed to capture and fully infiltrate all rainfall on its surface, as well as a portion of the runoff from adjacent impervious areas.

In conjunction with the infiltration system, a network of catch basins will collect runoff from the impervious roadway and convey it to the local municipal system.

The hydrologic model demonstrates that the combined effect of the high-rate infiltration from the permeable pad and the conveyance from the impervious areas ensures that the post-development peak

discharge rates are controlled to be less than or equal to the pre-development rates for all required storm events.

Table 2-6 provides a summary and comparison of the HydroCAD results. The hydraulic models for existing and proposed conditions are provided in Appendix B.

Table 2-6: Summary of Site Runoff-Combined Total

Storm Event (years)	Site Runoff, Existing Conditions (CFS)	Site Runoff, Proposed Conditions (CFS)	Reduction in Runoff (Existing - Proposed) (CFS)
1	2.89	2.46	0.43
2	3.56	3.03	0.53
10	5.57	4.74	0.83
25	6.81	5.80	1.01
50	7.75	6.59	1.16
100	8.74	7.43	1.31

Although NYSDEC only requires compliance with the 1-year, 10-year and 100-year storm events, the additional storm events for the 2-year, 25-year and 50-year are included for additional demonstration of runoff reduction.

2.4 Water Quality Calculations

The project achieves full compliance with the state's Water Quality Volume (WQv) and Runoff Reduction Volume (RRv) requirements by implementing the pre-approved "Alternate Stormwater Management for National Grid Substations" design.

As confirmed by the NYSDEC in a letter dated January 20, 2017, this design utilizes the permeable substation pad system itself as an integrated and compliant Best Management Practice (BMP). The system is engineered with an underlying filter and reservoir course to capture, filter, and infiltrate stormwater at its source.

Given the site's field-verified infiltration rate of 11.45 in/hr, the design for high-infiltration sites is being implemented. Because this pre-approved practice is being used, the WQv and RRv requirements are fully addressed by default, and a separate Water Quality Volume calculation or downstream treatment facility is not required.

2.5 Stormwater Conveyance System

The stormwater conveyance system consists of a series of catch basins and underground pipes designed to manage runoff from the impervious roadway surfaces. While the site's primary hydrologic model conservatively directs all runoff to the permeable substation pad system, these catch basins serve as a secondary stormwater runoff conveyance system.

In practice, the catch basins will collect a portion of the runoff from the impervious asphalt and convey this runoff directly to the local municipal system. Any flow captured by this conveyance network effectively reduces the load on the primary infiltration system, providing an additional factor of safety for its performance.

The conveyance pipes have been sized in accordance with standard engineering practice.

* * * * *

3.0 BEST MANAGEMENT PRACTICES

The proposed Stormwater Management System contains Best Management Practices (BMPs) that will, if maintained properly, provide treatment of Site generated stormwater runoff. The proposed BMPs are described below.

3.1 Water Quality Volume & Runoff Reduction Volume

The project achieves full compliance with the state's Water Quality Volume (WQv) and Runoff Reduction Volume (RRv) requirements by implementing the pre-approved "Alternate Stormwater Management for National Grid Substations" design.

3.2 Temporary Erosion Controls

During construction of the proposed station, the Contractor will be responsible for installation, implementation, and maintenance of temporary erosion and sedimentation control measures to prevent off-site tracking and conveyance of waterborne loss of sediment and debris. The specific measures proposed are located on the Erosion & Sediment Control Plans, which are provided in Appendix H.

Temporary erosion and sedimentation controls shall not be removed until construction is complete, and site stabilization is achieved.

3.3 Permanent Erosion Controls

Upon completion of construction, the Site shall be stabilized by one or more of the following measures in accordance with the Site Development Plans (under separate cover):

3.3.1 Crushed Rock

Crushed rock, forming the permeable substation pad system, will be installed on the station pad area. This system provides both permanent surface stabilization and serves as the primary stormwater management practice. Additional rock may be required during final stabilization as a result of the original crushed rock application being disturbed during construction.

* * * * *

4.0 CONCLUSION

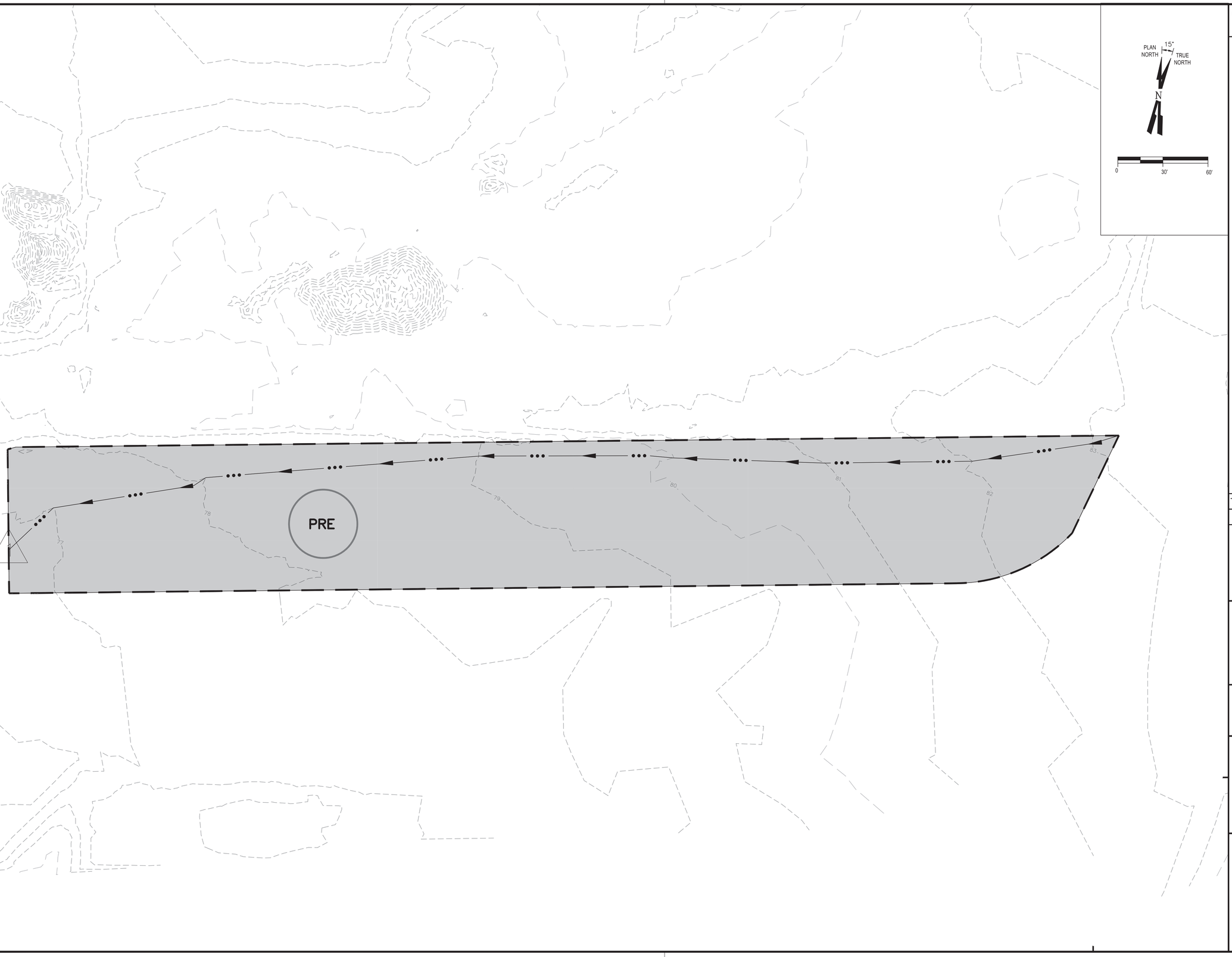
In order to mitigate the impacts of stormwater runoff from the redeveloped site, a combination of Best Management Practices (BMPs) was implemented in accordance with the New York State Stormwater Management Design Manual.

The project's design is based on the pre-approved "Alternate Stormwater Management for National Grid Substations," which utilizes a permeable substation pad system as an integrated and fully compliant stormwater management practice. This single, high-performance BMP addresses the state's requirements for Water Quality Volume (WQv) and Runoff Reduction Volume (RRv) by capturing and infiltrating stormwater at the source.

In conjunction with the permeable pad, a series of catch basins manages runoff from the impervious roadway areas. The combined performance of these practices ensures that the post-development peak discharge rates are controlled to be less than or equal to the pre-development rates for all required storm events.

* * * * *

APPENDIX A – PRE- AND POST-DEVELOPMENT DRAINAGE AREA MAPS



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A	05/01/26	VG	JR	ISSUED FOR PERMITTING

LEGEND:

- PROPERTY LINE
- 120 EXISTING MAJOR CONTOUR
- 120 EXISTING MINOR CONTOUR
- DRAINAGE AREA
- TIME OF CONCENTRATION
- EXISTING GRAVEL SURFACE
- 1 DESIGN POINT

TIME OF CONCENTRATION	7.4 MINUTES
AREA	1.16 ACRES

BURNS McDONNELL

date	detailed
05/01/26	V. GLORIOSO
designed	checked
V. GLORIOSO	J. RINGER

PSEG LONG ISLAND
175 East Old Country Road
Hicksville, New York

TOWN OF HEMPSTEAD, NEW YORK

COMMERCIAL AVE TERMINATION FACILITY

PRE-DEVELOPED WATERSHED

project	contract
178669	-

drawing EXHIBIT 1 – rev. A

sheet 1 of 2 sheets

file COMMERCIAL AVE PRE-WATERSHED MAP.dwg

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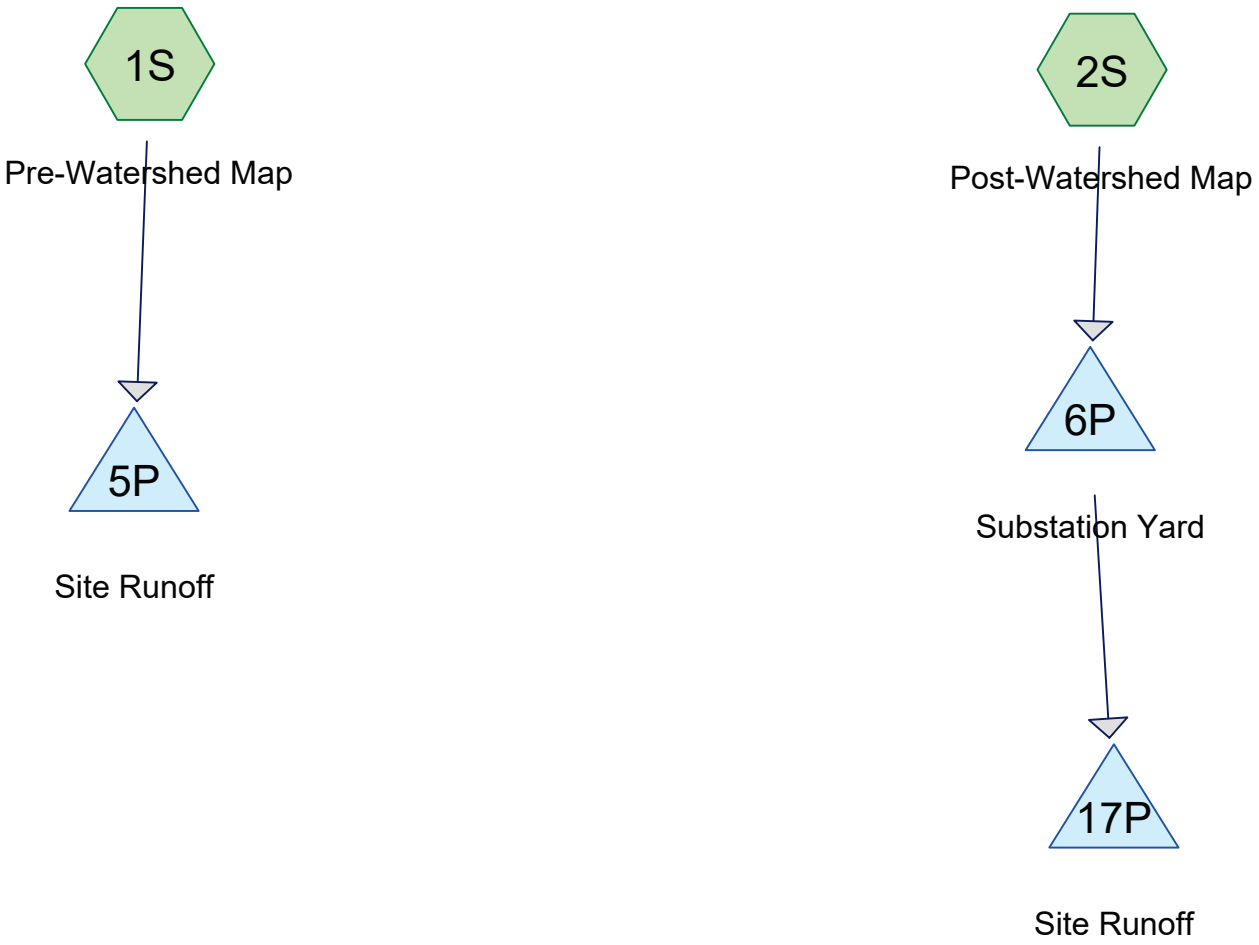
APPENDIX B – HYDROLOGY MODELS



Subcat Reach Pond Link

Routing Diagram for Commercial Ave REV
Prepared by Burns & McDonnell, Printed 5/1/2026

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1 Year, 24 Hour	Type III 24-hr		Default	24.00	1	2.71	2
2	2 Year, 24 Hour	Type III 24-hr		Default	24.00	1	3.32	2
3	10 Year, 24 Hour	Type III 24-hr		Default	24.00	1	5.16	2
4	25 Year, 24 Hour	Type III 24-hr		Default	24.00	1	6.30	2
5	50 Year, 24 Hour	Type III 24-hr		Default	24.00	1	7.16	2
6	100 Year, 24 Hour	Type III 24-hr		Default	24.00	1	8.07	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.934	98	Paved parking, HSG D (1S, 2S)
0.379	98	Paved roads w/curbs & sewers, HSG D (2S)
2.313	**98**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
2.313	HSG D	1S, 2S
0.000	Other	
2.313		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	1.934	0.000	1.934	Paved parking	1S, 2S
0.000	0.000	0.000	0.379	0.000	0.379	Paved roads w/curbs & sewers	2S
0.000	**0.000**	**0.000**	**2.313**	**0.000**	**2.313**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	6P	72.01	71.90	10.9	0.0101	0.013	0.0	18.0	0.0	

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre-WatershedMap Runoff Area=50,377 sf 100.00% Impervious Runoff Depth=2.48"
Flow Length=645' Tc=7.4 min CN=98 Runoff=2.89 cfs 0.239 af

Subcatchment2S: Post-WatershedMap Runoff Area=50,377 sf 100.00% Impervious Runoff Depth=2.48"
Flow Length=592' Tc=12.7 min CN=98 Runoff=2.46 cfs 0.239 af

Pond 5P: Site Runoff Inflow=2.89 cfs 0.239 af
Primary=2.89 cfs 0.239 af

Pond 6P: SubstationYard Peak Elev=74.02' Storage=1 cf Inflow=2.46 cfs 0.239 af
Discarded=2.46 cfs 0.239 af Primary=0.00 cfs 0.000 af Outflow=2.46 cfs 0.239 af

Pond 17P: Site Runoff Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 2.313 ac Runoff Volume = 0.478 af Average Runoff Depth = 2.48"
0.00% Pervious = 0.000 ac 100.00% Impervious = 2.313 ac

Summary for Subcatchment 1S: Pre-Watershed Map

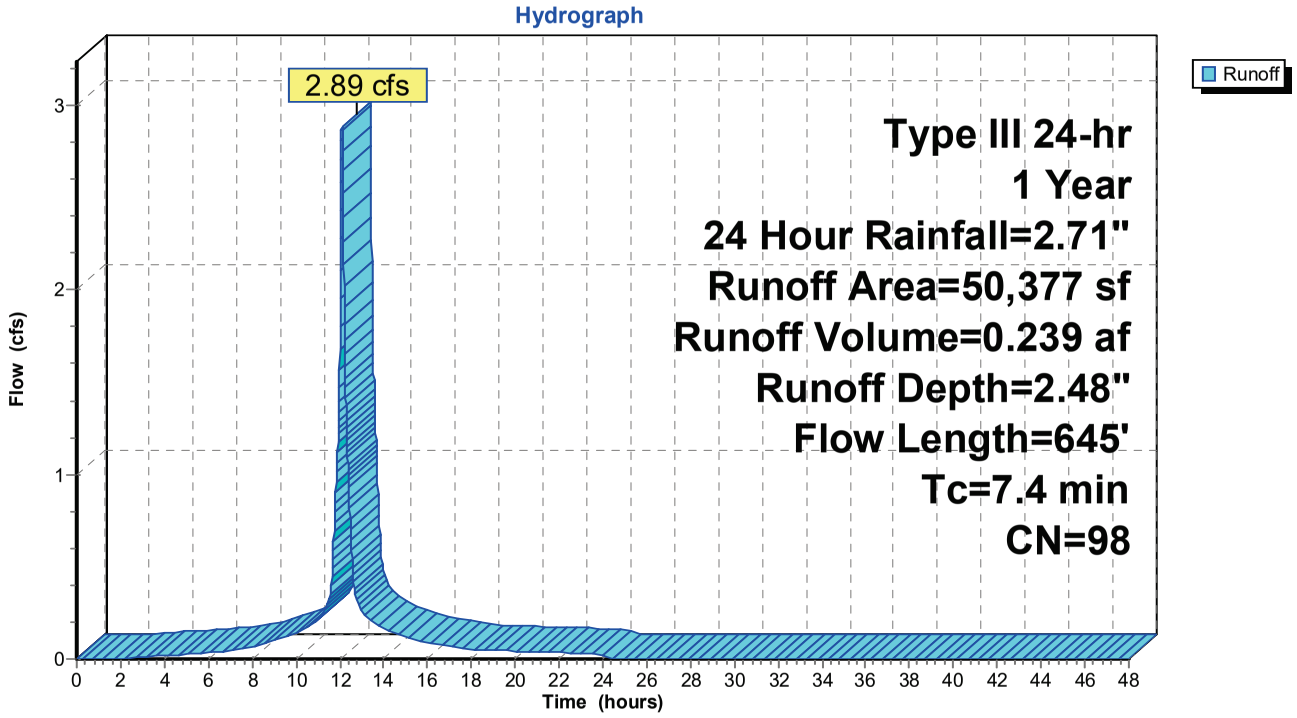
Runoff = 2.89 cfs @ 12.10 hrs, Volume= 0.239 af, Depth= 2.48"
Routed to Pond 5P : Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 1 Year, 24 Hour Rainfall=2.71"

Area (sf)	CN	Description
50,377	98	Paved parking, HSG D
50,377		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	100	0.0160	0.57		**Sheet Flow,** n= 0.030 P2= 3.32"
4.5	545	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.4	645	Total			

Subcatchment 1S: Pre-Watershed Map



Summary for Subcatchment 2S: Post-Watershed Map

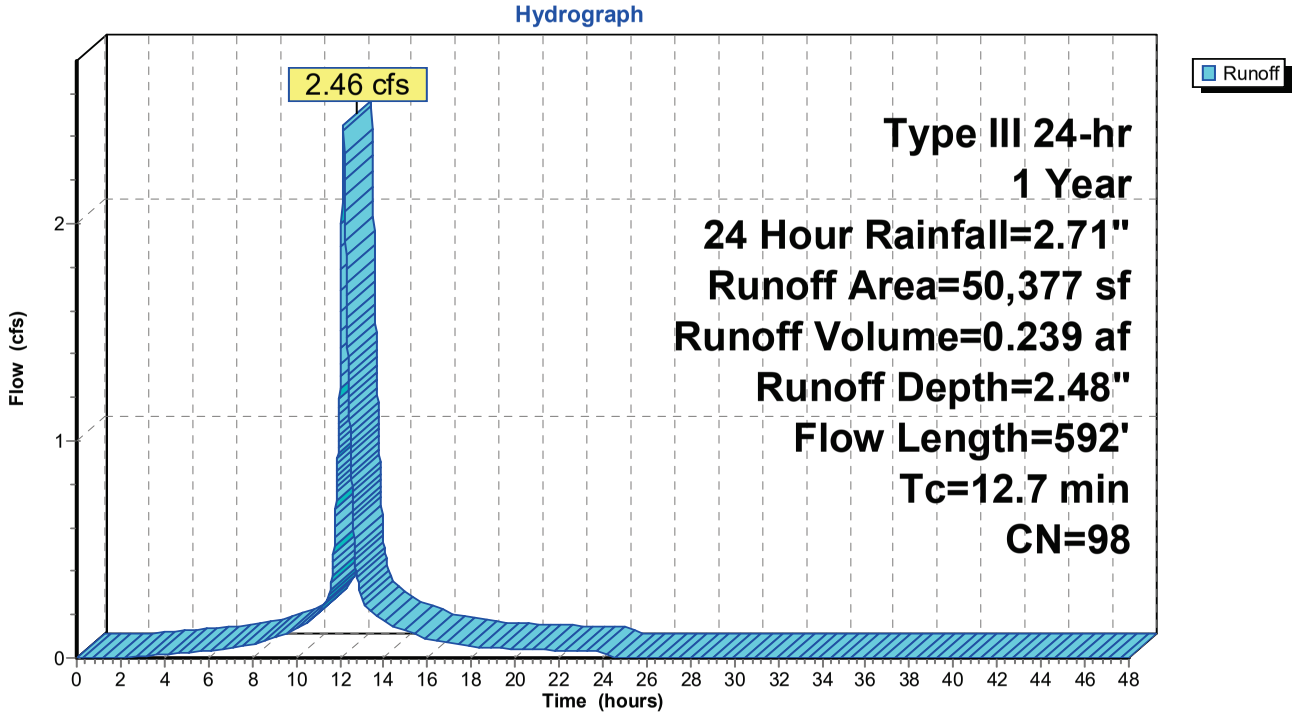
Runoff = 2.46 cfs @ 12.17 hrs, Volume= 0.239 af, Depth= 2.48"
Routed to Pond 6P : Substation Yard

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 1 Year, 24 Hour Rainfall=2.71"

Area (sf)	CN	Description
14,586	98	Paved roads w/curbs & sewers, HSG D
1,940	98	Paved roads w/curbs & sewers, HSG D
33,851	98	Paved parking, HSG D
50,377	98	Weighted Average
50,377		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	100	0.0140	0.21		**Sheet Flow,** n= 0.100 P2= 3.32"
2.9	311	0.0120	1.76		**Shallow Concentrated Flow, Shallow Concentrated #1** Unpaved Kv= 16.1 fps
1.8	181	0.0070	1.70		**Shallow Concentrated Flow, Shallow Concentrated #2** Paved Kv= 20.3 fps
12.7	592	Total			

Subcatchment 2S: Post-Watershed Map



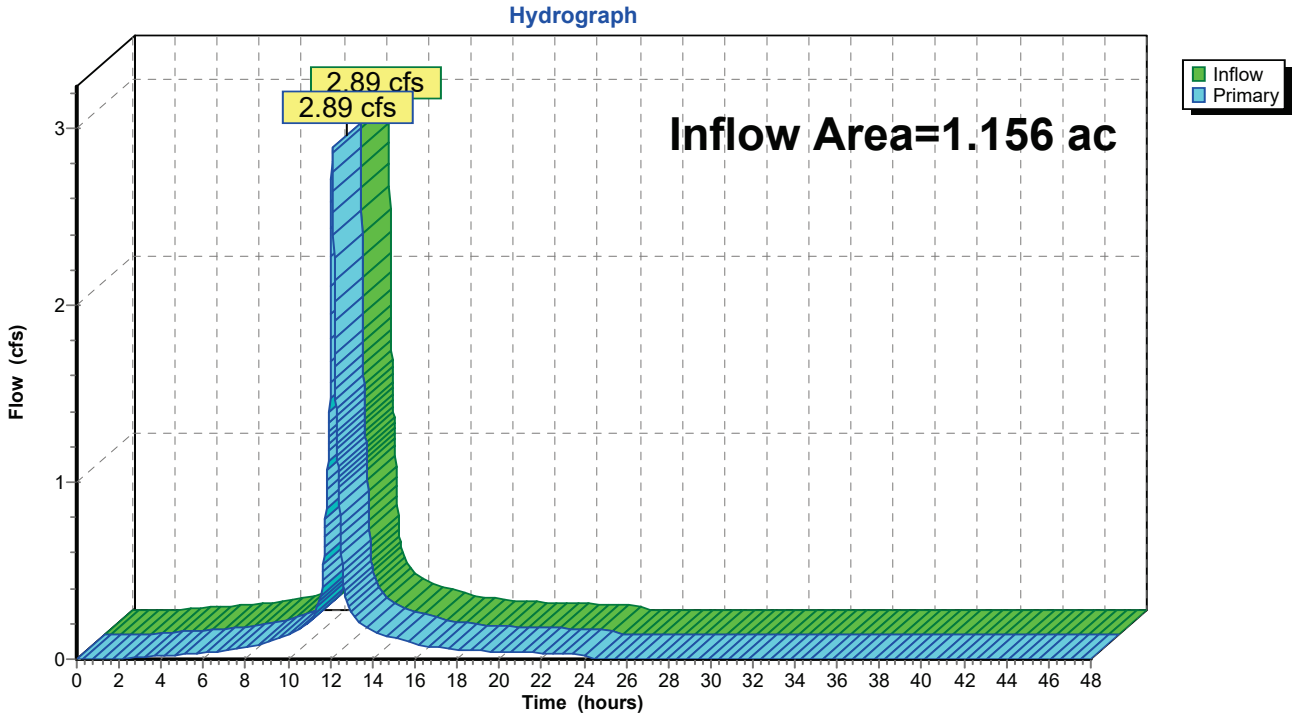
Summary for Pond 5P: Site Runoff

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.156 ac,100.00% Impervious, Inflow Depth = 2.48" for 1 Year, 24 Hour event
Inflow = 2.89 cfs @ 12.10 hrs, Volume= 0.239 af
Primary = 2.89 cfs @ 12.10 hrs, Volume= 0.239 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Pond 5P: Site Runoff



Summary for Pond 6P: Substation Yard

Inflow Area = 1.156 ac,100.00% Impervious, Inflow Depth = 2.48" for 1 Year, 24 Hour event
Inflow = 2.46 cfs @ 12.17 hrs, Volume= 0.239 af
Outflow = 2.46 cfs @ 12.17 hrs, Volume= 0.239 af, Atten= 0%, Lag= 0.0 min
Discarded = 2.46 cfs @ 12.17 hrs, Volume= 0.239 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 17P : Site Runoff

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 74.02' @ 12.17 hrs Surf.Area= 9 sf Storage= 1 cf

Plug-Flow detention time= 0.0 min calculated for 0.239 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (766.3 - 766.2)

Volume	Invert	Avail.Storage	Storage Description
#1	74.00'	10,127 cf	**Reservoir Course (Prismatic)** Listed below 33,755 cf Overall x 30.0% Voids

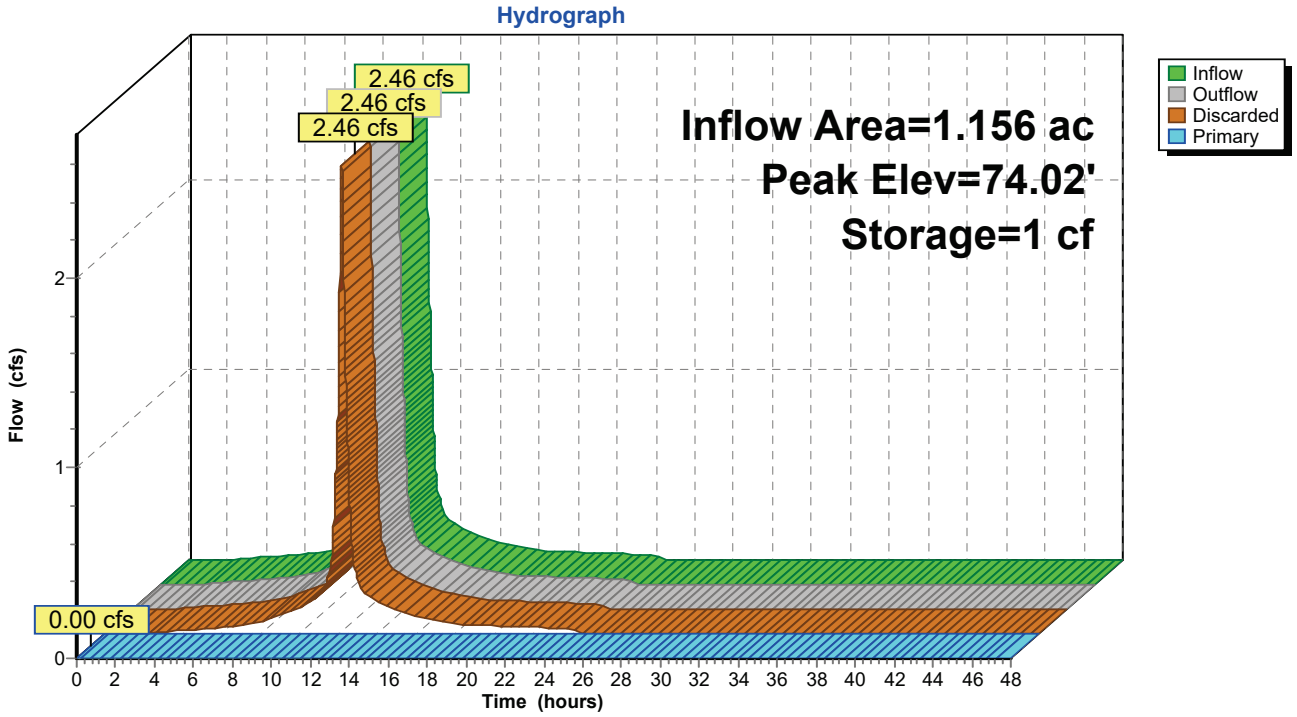
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
74.00	0	0	0
75.00	408	204	204
76.00	3,954	2,181	2,385
77.00	9,092	6,523	8,908
78.00	4,306	6,699	15,607
79.00	5,588	4,947	20,554
80.00	4,919	5,254	25,808
81.00	5,438	5,179	30,986
82.00	100	2,769	33,755

Device	Routing	Invert	Outlet Devices
#1	Discarded	74.00'	**9.00 cfs Exfiltration at all elevations**
#2	Primary	72.01'	**18.0" Round Culvert** L= 10.9' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 72.01' / 71.90' S= 0.0101 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#3	Device 2	77.96'	**8.0' long Combined Catch Basin System** 2 End Contraction(s)

Discarded OutFlow Max=9.00 cfs @ 12.17 hrs HW=74.02' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 9.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=74.00' (Free Discharge)
└**2=Culvert** (Passes 0.00 cfs of 8.04 cfs potential flow)
└**3=Combined Catch Basin System** (Controls 0.00 cfs)

Pond 6P: Substation Yard



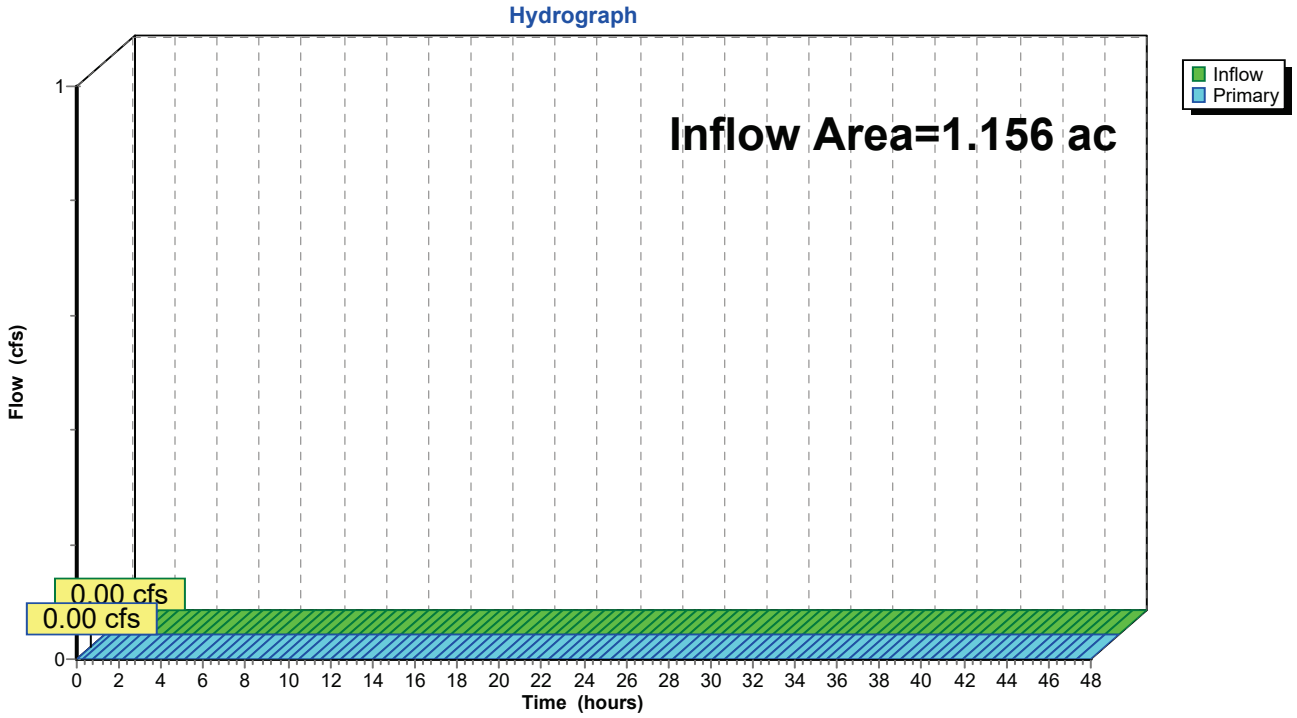
Summary for Pond 17P: Site Runoff

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.156 ac,100.00% Impervious, Inflow Depth = 0.00" for 1 Year, 24 Hour event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Pond 17P: Site Runoff



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre-WatershedMap Runoff Area=50,377 sf 100.00% Impervious Runoff Depth=3.09"
Flow Length=645' Tc=7.4 min CN=98 Runoff=3.56 cfs 0.298 af

Subcatchment2S: Post-WatershedMap Runoff Area=50,377 sf 100.00% Impervious Runoff Depth=3.09"
Flow Length=592' Tc=12.7 min CN=98 Runoff=3.03 cfs 0.298 af

Pond 5P: Site Runoff Inflow=3.56 cfs 0.298 af
Primary=3.56 cfs 0.298 af

Pond 6P: SubstationYard Peak Elev=74.03' Storage=2 cf Inflow=3.03 cfs 0.298 af
Discarded=3.03 cfs 0.298 af Primary=0.00 cfs 0.000 af Outflow=3.03 cfs 0.298 af

Pond 17P: Site Runoff Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 2.313 ac Runoff Volume = 0.595 af Average Runoff Depth = 3.09"
0.00% Pervious = 0.000 ac 100.00% Impervious = 2.313 ac

Summary for Subcatchment 1S: Pre-Watershed Map

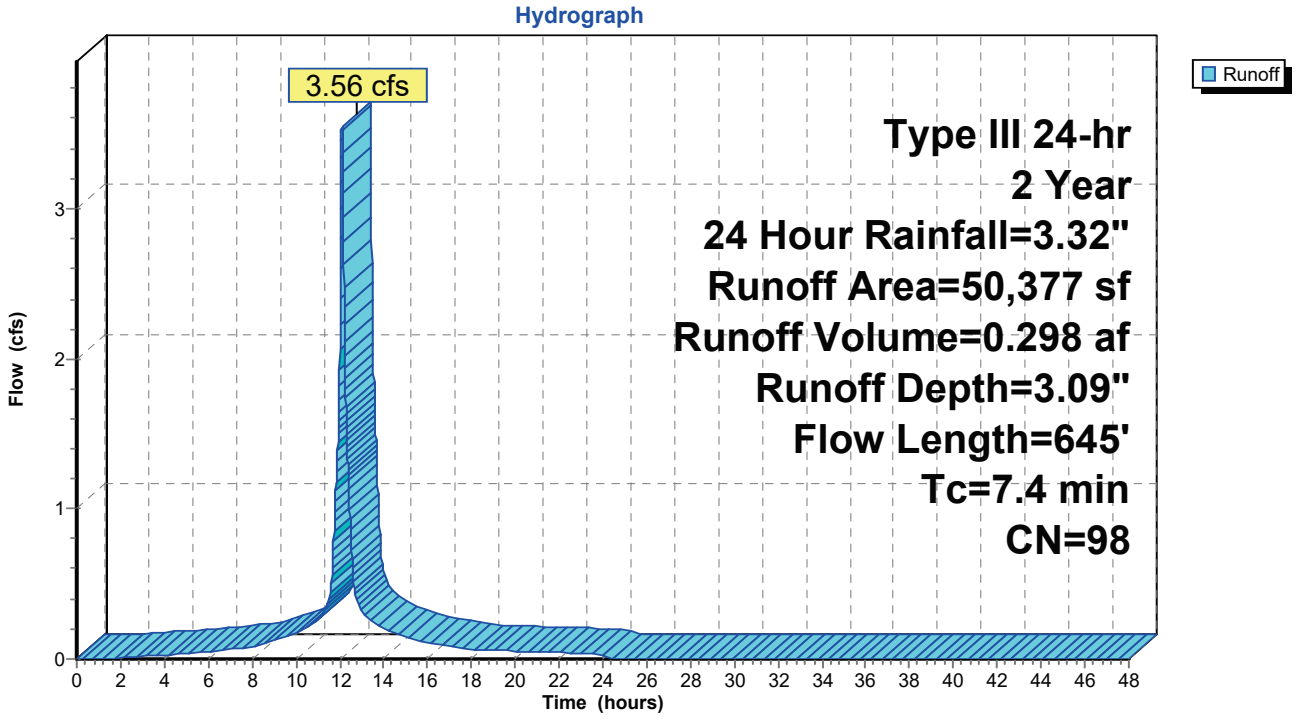
Runoff = 3.56 cfs @ 12.10 hrs, Volume= 0.298 af, Depth= 3.09"
Routed to Pond 5P : Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year, 24 Hour Rainfall=3.32"

Area (sf)	CN	Description
50,377	98	Paved parking, HSG D
50,377		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	100	0.0160	0.57		**Sheet Flow,** n= 0.030 P2= 3.32"
4.5	545	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.4	645	Total			

Subcatchment 1S: Pre-Watershed Map



Summary for Subcatchment 2S: Post-Watershed Map

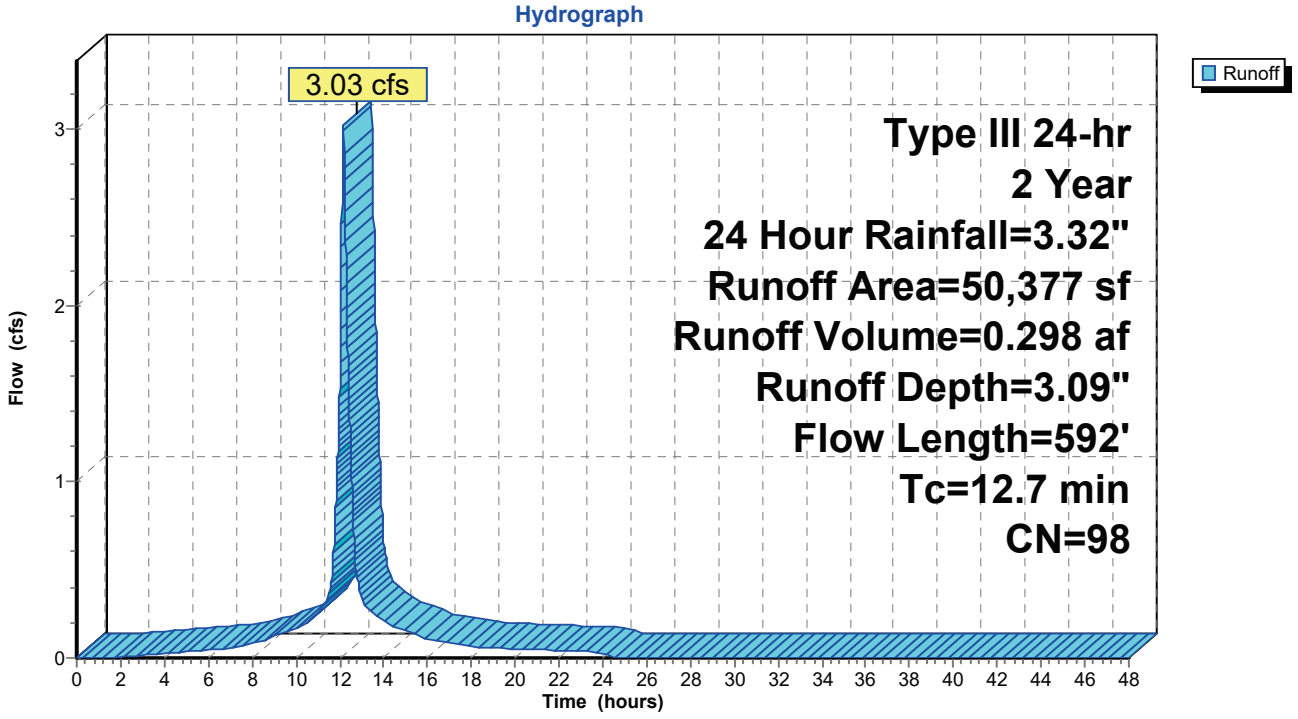
Runoff = 3.03 cfs @ 12.17 hrs, Volume= 0.298 af, Depth= 3.09"
Routed to Pond 6P : Substation Yard

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year, 24 Hour Rainfall=3.32"

Area (sf)	CN	Description
14,586	98	Paved roads w/curbs & sewers, HSG D
1,940	98	Paved roads w/curbs & sewers, HSG D
33,851	98	Paved parking, HSG D
50,377	98	Weighted Average
50,377		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	100	0.0140	0.21		**Sheet Flow,** n= 0.100 P2= 3.32"
2.9	311	0.0120	1.76		**Shallow Concentrated Flow, Shallow Concentrated #1** Unpaved Kv= 16.1 fps
1.8	181	0.0070	1.70		**Shallow Concentrated Flow, Shallow Concentrated #2** Paved Kv= 20.3 fps
12.7	592	Total			

Subcatchment 2S: Post-Watershed Map



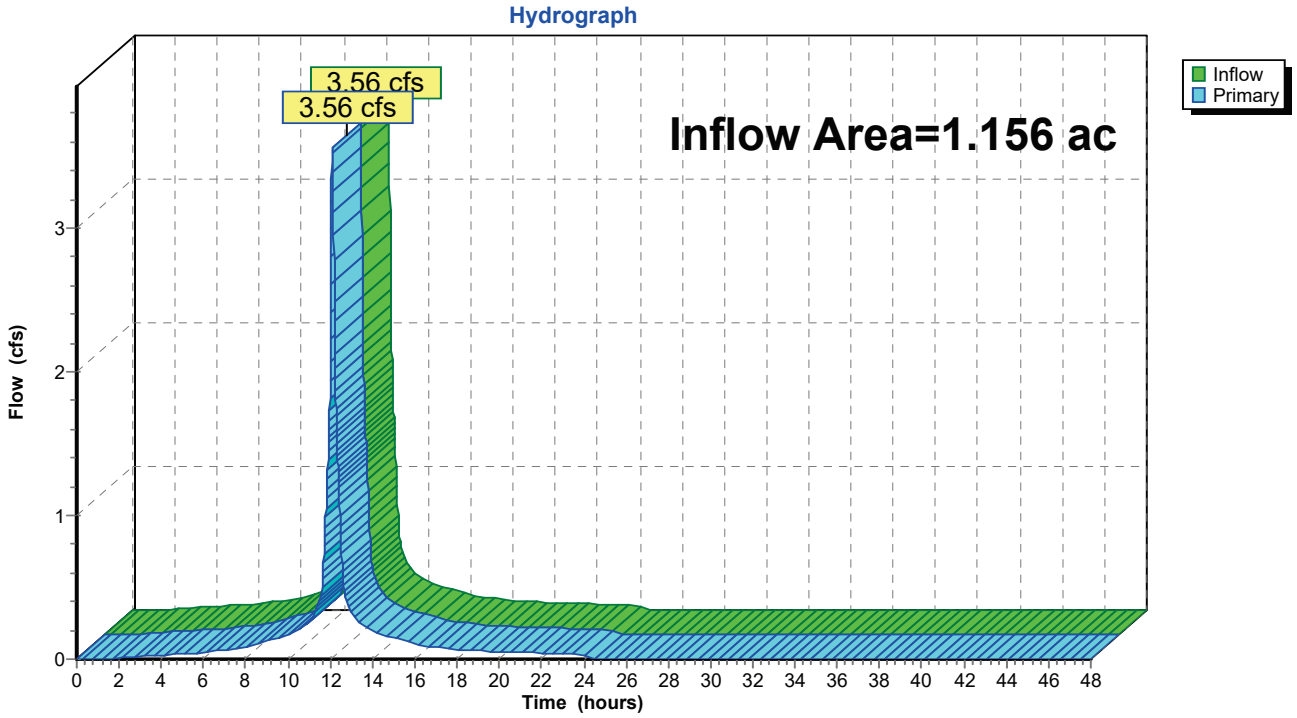
Summary for Pond 5P: Site Runoff

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.156 ac,100.00% Impervious, Inflow Depth = 3.09" for 2 Year, 24 Hour event
Inflow = 3.56 cfs @ 12.10 hrs, Volume= 0.298 af
Primary = 3.56 cfs @ 12.10 hrs, Volume= 0.298 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Pond 5P: Site Runoff



Summary for Pond 6P: Substation Yard

Inflow Area = 1.156 ac,100.00% Impervious, Inflow Depth = 3.09" for 2 Year, 24 Hour event
Inflow = 3.03 cfs @ 12.17 hrs, Volume= 0.298 af
Outflow = 3.03 cfs @ 12.17 hrs, Volume= 0.298 af, Atten= 0%, Lag= 0.0 min
Discarded = 3.03 cfs @ 12.17 hrs, Volume= 0.298 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 17P : Site Runoff

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 74.03' @ 12.17 hrs Surf.Area= 11 sf Storage= 2 cf

Plug-Flow detention time= 0.0 min calculated for 0.297 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (761.9 - 761.8)

Volume	Invert	Avail.Storage	Storage Description
#1	74.00'	10,127 cf	**Reservoir Course (Prismatic)** Listed below 33,755 cf Overall x 30.0% Voids

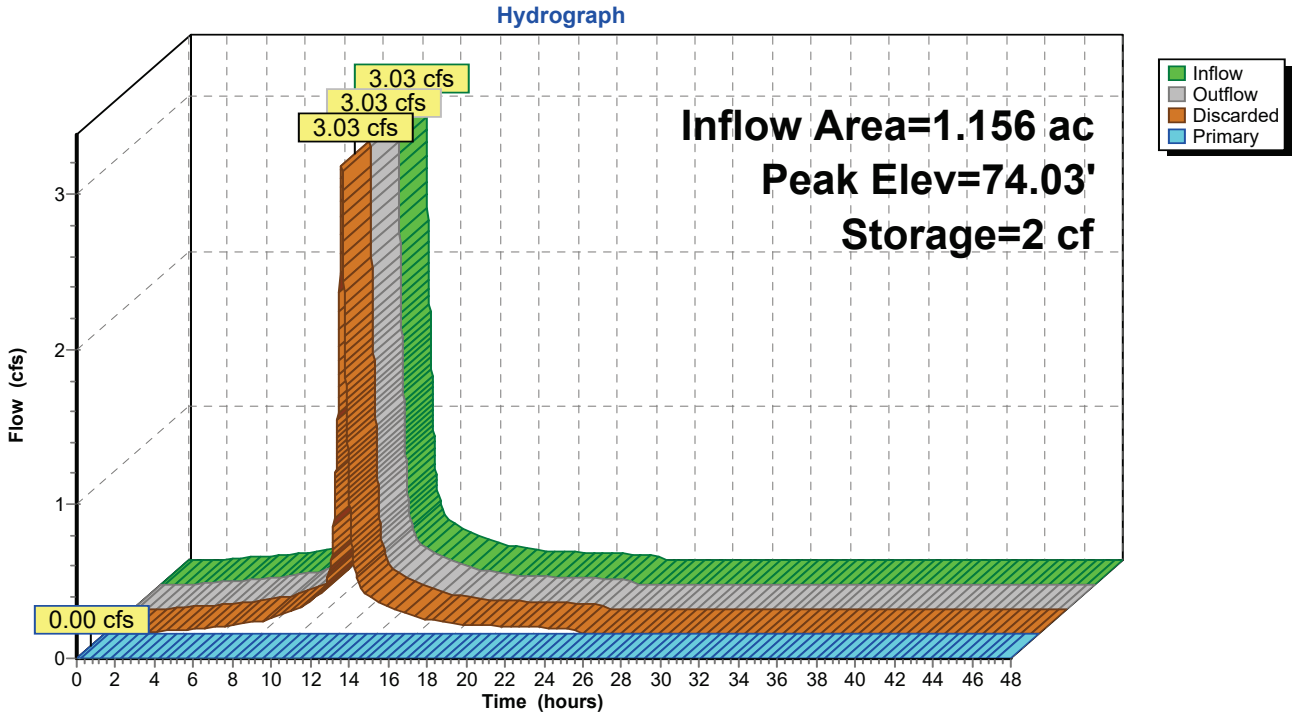
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
74.00	0	0	0
75.00	408	204	204
76.00	3,954	2,181	2,385
77.00	9,092	6,523	8,908
78.00	4,306	6,699	15,607
79.00	5,588	4,947	20,554
80.00	4,919	5,254	25,808
81.00	5,438	5,179	30,986
82.00	100	2,769	33,755

Device	Routing	Invert	Outlet Devices
#1	Discarded	74.00'	**9.00 cfs Exfiltration at all elevations**
#2	Primary	72.01'	**18.0" Round Culvert** L= 10.9' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 72.01' / 71.90' S= 0.0101 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#3	Device 2	77.96'	**8.0' long Combined Catch Basin System** 2 End Contraction(s)

Discarded OutFlow Max=9.00 cfs @ 12.17 hrs HW=74.03' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 9.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=74.00' (Free Discharge)
└**2=Culvert** (Passes 0.00 cfs of 8.04 cfs potential flow)
└**3=Combined Catch Basin System** (Controls 0.00 cfs)

Pond 6P: Substation Yard



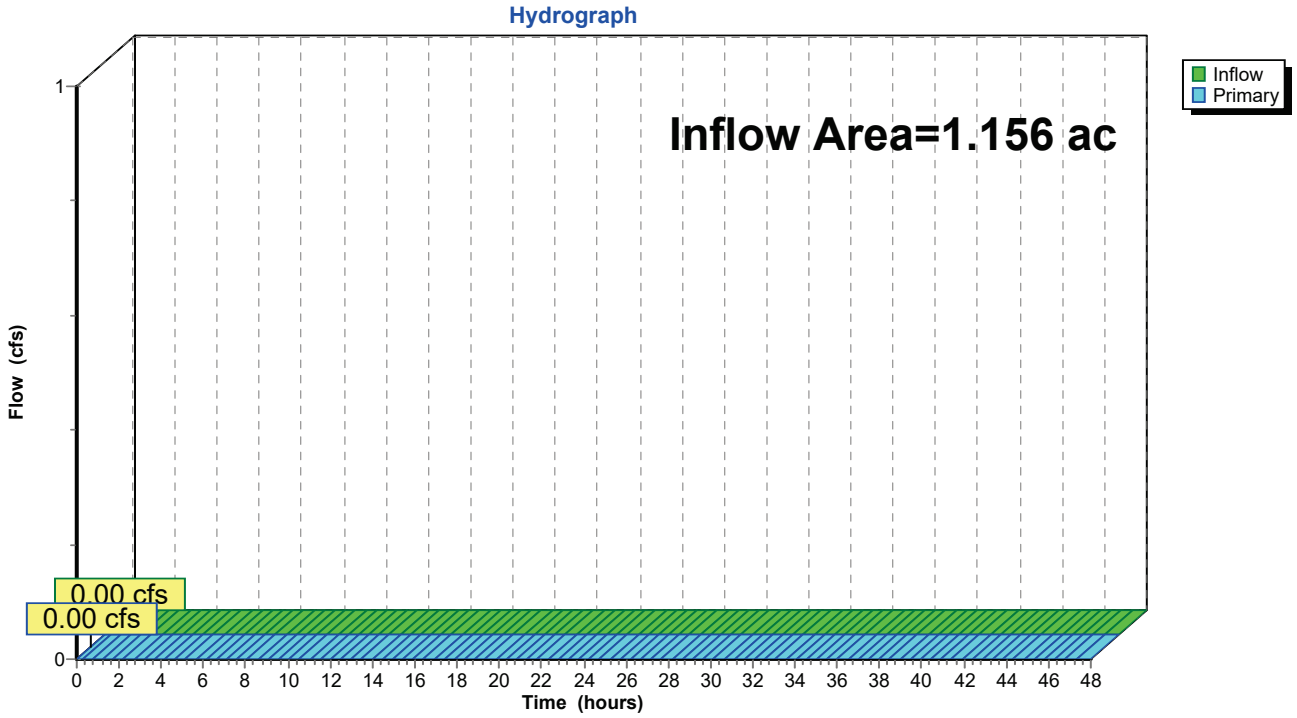
Summary for Pond 17P: Site Runoff

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.156 ac,100.00% Impervious, Inflow Depth = 0.00" for 2 Year, 24 Hour event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Pond 17P: Site Runoff



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre-WatershedMap Runoff Area=50,377 sf 100.00% Impervious Runoff Depth=4.92"
Flow Length=645' Tc=7.4 min CN=98 Runoff=5.57 cfs 0.474 af

Subcatchment2S: Post-WatershedMap Runoff Area=50,377 sf 100.00% Impervious Runoff Depth=4.92"
Flow Length=592' Tc=12.7 min CN=98 Runoff=4.74 cfs 0.474 af

Pond 5P: Site Runoff Inflow=5.57 cfs 0.474 af
Primary=5.57 cfs 0.474 af

Pond 6P: SubstationYard Peak Elev=74.04' Storage=3 cf Inflow=4.74 cfs 0.474 af
Discarded=4.74 cfs 0.474 af Primary=0.00 cfs 0.000 af Outflow=4.74 cfs 0.474 af

Pond 17P: Site Runoff Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 2.313 ac Runoff Volume = 0.949 af Average Runoff Depth = 4.92"
0.00% Pervious = 0.000 ac 100.00% Impervious = 2.313 ac

Summary for Subcatchment 1S: Pre-Watershed Map

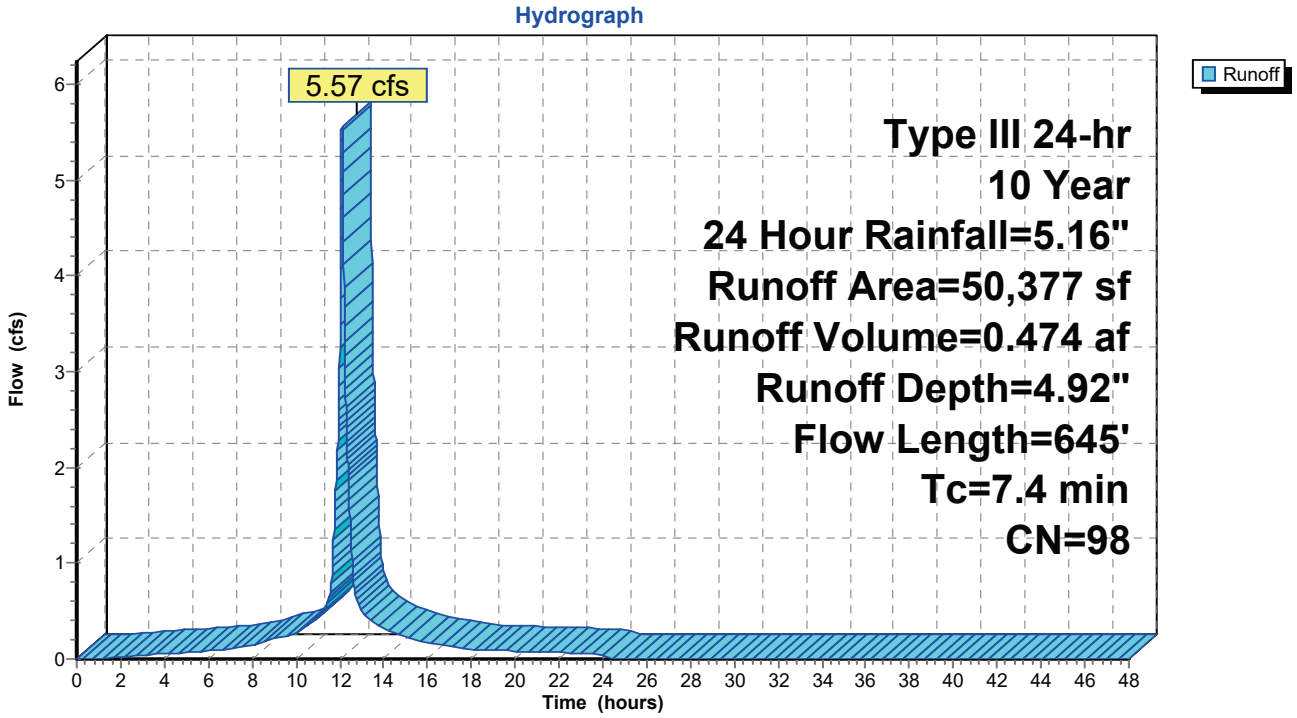
Runoff = 5.57 cfs @ 12.10 hrs, Volume= 0.474 af, Depth= 4.92"
Routed to Pond 5P : Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year, 24 Hour Rainfall=5.16"

Area (sf)	CN	Description
50,377	98	Paved parking, HSG D
50,377		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	100	0.0160	0.57		**Sheet Flow,** n= 0.030 P2= 3.32"
4.5	545	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.4	645	Total			

Subcatchment 1S: Pre-Watershed Map



Summary for Subcatchment 2S: Post-Watershed Map

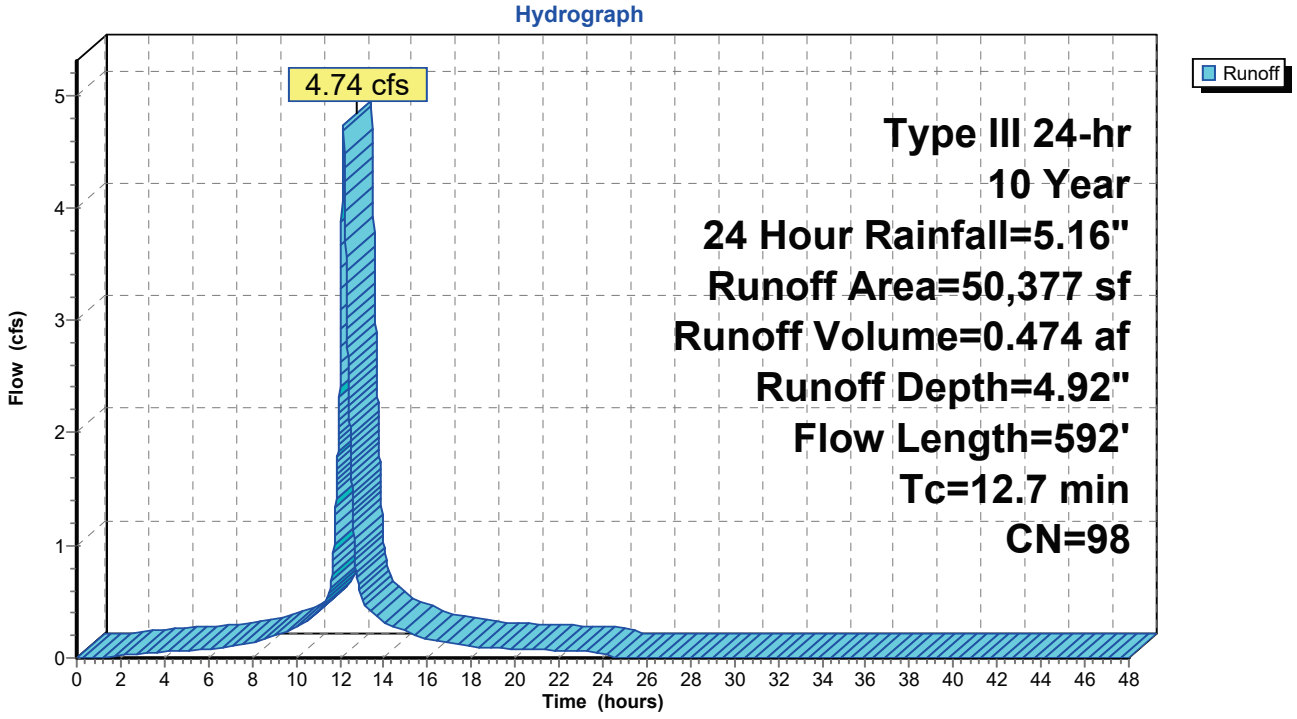
Runoff = 4.74 cfs @ 12.17 hrs, Volume= 0.474 af, Depth= 4.92"
Routed to Pond 6P : Substation Yard

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year, 24 Hour Rainfall=5.16"

Area (sf)	CN	Description
14,586	98	Paved roads w/curbs & sewers, HSG D
1,940	98	Paved roads w/curbs & sewers, HSG D
33,851	98	Paved parking, HSG D
50,377	98	Weighted Average
50,377		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	100	0.0140	0.21		**Sheet Flow,** n= 0.100 P2= 3.32"
2.9	311	0.0120	1.76		**Shallow Concentrated Flow, Shallow Concentrated #1** Unpaved Kv= 16.1 fps
1.8	181	0.0070	1.70		**Shallow Concentrated Flow, Shallow Concentrated #2** Paved Kv= 20.3 fps
12.7	592	Total			

Subcatchment 2S: Post-Watershed Map



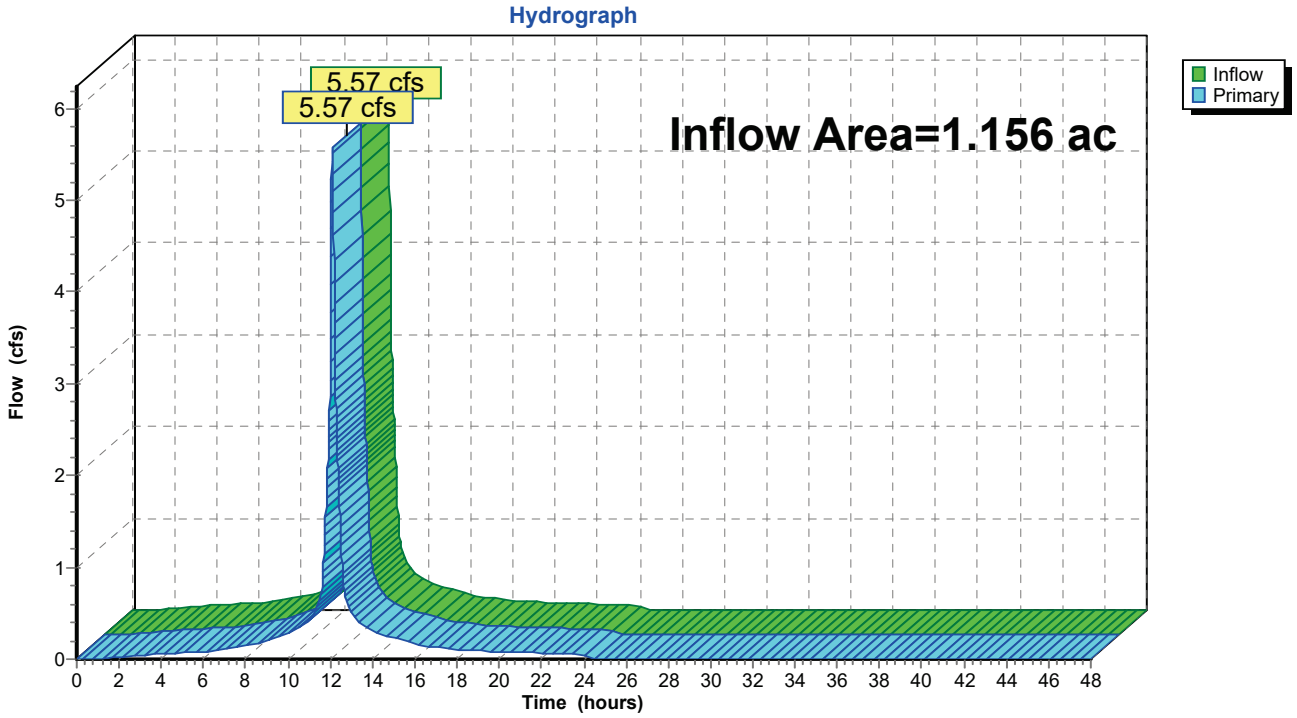
Summary for Pond 5P: Site Runoff

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.156 ac,100.00% Impervious, Inflow Depth = 4.92" for 10 Year, 24 Hour event
Inflow = 5.57 cfs @ 12.10 hrs, Volume= 0.474 af
Primary = 5.57 cfs @ 12.10 hrs, Volume= 0.474 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Pond 5P: Site Runoff



Summary for Pond 6P: Substation Yard

Inflow Area = 1.156 ac,100.00% Impervious, Inflow Depth = 4.92" for 10 Year, 24 Hour event
Inflow = 4.74 cfs @ 12.17 hrs, Volume= 0.474 af
Outflow = 4.74 cfs @ 12.17 hrs, Volume= 0.474 af, Atten= 0%, Lag= 0.0 min
Discarded = 4.74 cfs @ 12.17 hrs, Volume= 0.474 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 17P : Site Runoff

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 74.04' @ 12.17 hrs Surf.Area= 17 sf Storage= 3 cf

Plug-Flow detention time= 0.0 min calculated for 0.474 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (753.7 - 753.7)

Volume	Invert	Avail.Storage	Storage Description
#1	74.00'	10,127 cf	**Reservoir Course (Prismatic)** Listed below 33,755 cf Overall x 30.0% Voids

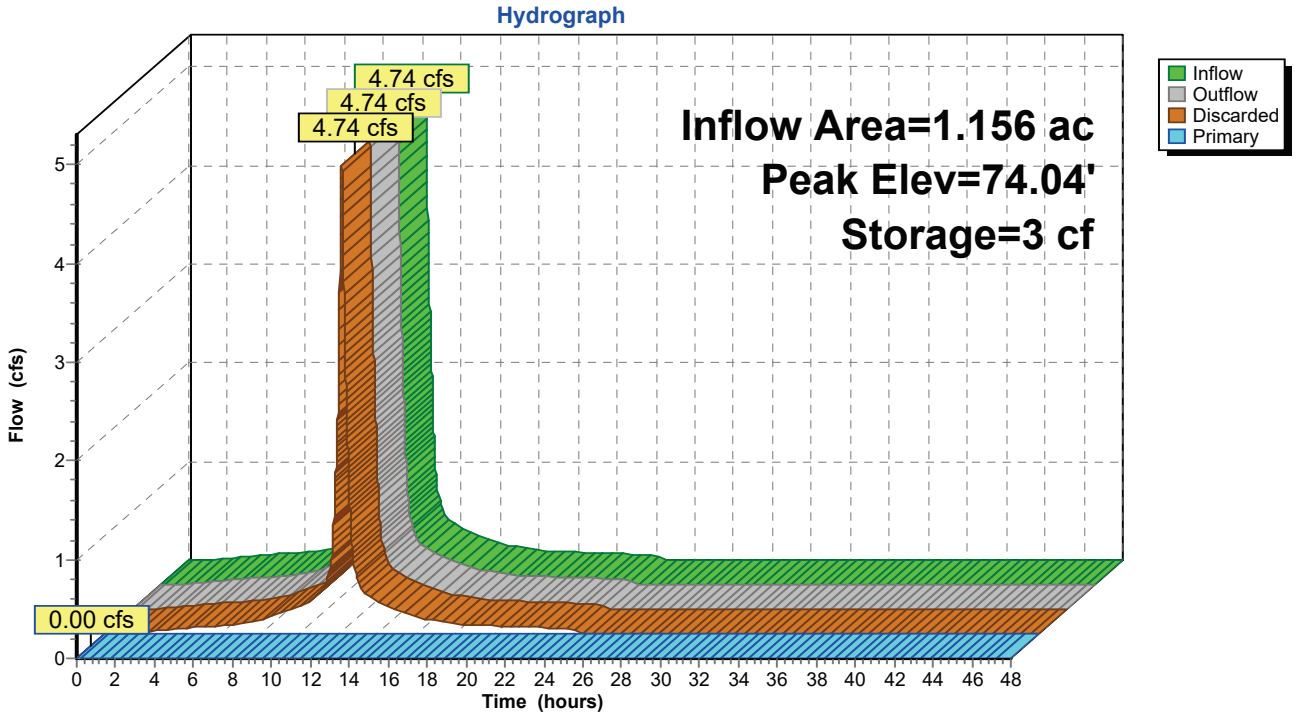
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
74.00	0	0	0
75.00	408	204	204
76.00	3,954	2,181	2,385
77.00	9,092	6,523	8,908
78.00	4,306	6,699	15,607
79.00	5,588	4,947	20,554
80.00	4,919	5,254	25,808
81.00	5,438	5,179	30,986
82.00	100	2,769	33,755

Device	Routing	Invert	Outlet Devices
#1	Discarded	74.00'	**9.00 cfs Exfiltration at all elevations**
#2	Primary	72.01'	**18.0" Round Culvert** L= 10.9' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 72.01' / 71.90' S= 0.0101 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#3	Device 2	77.96'	**8.0' long Combined Catch Basin System** 2 End Contraction(s)

Discarded OutFlow Max=9.00 cfs @ 12.17 hrs HW=74.04' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 9.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=74.00' (Free Discharge)
└**2=Culvert** (Passes 0.00 cfs of 8.04 cfs potential flow)
└**3=Combined Catch Basin System** (Controls 0.00 cfs)

Pond 6P: Substation Yard



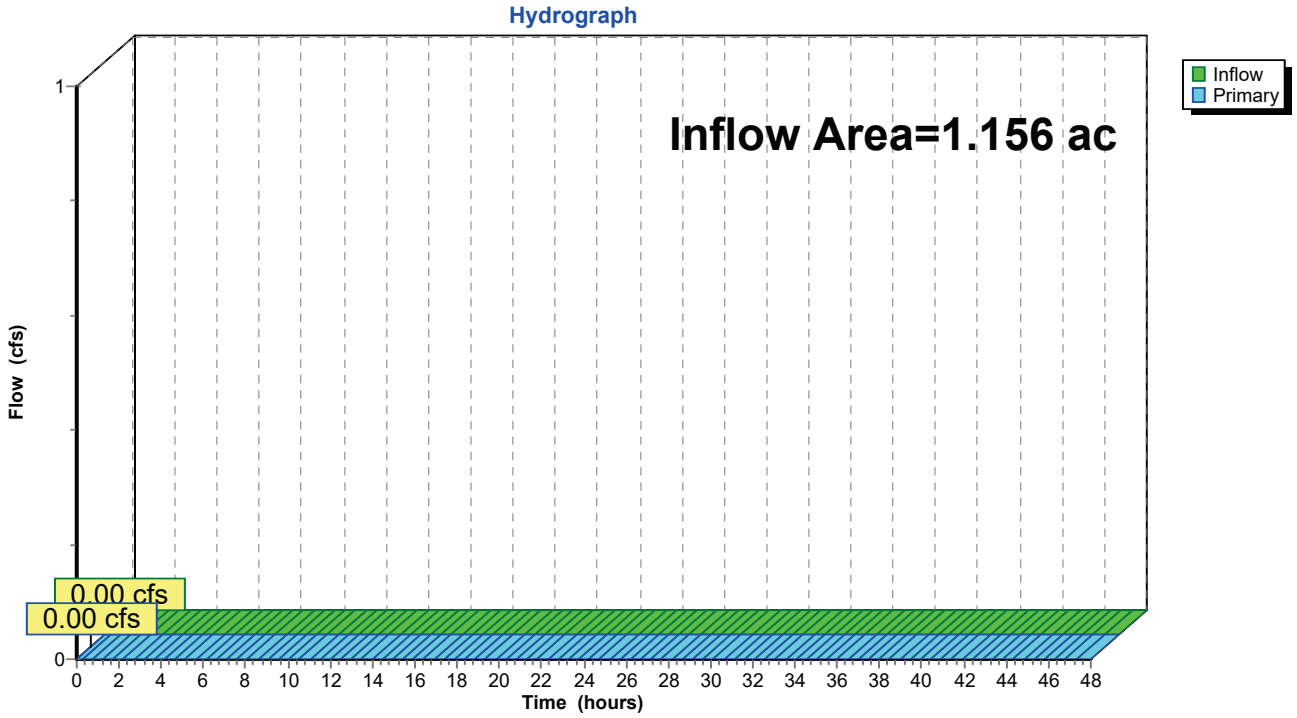
Summary for Pond 17P: Site Runoff

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.156 ac,100.00% Impervious, Inflow Depth = 0.00" for 10 Year, 24 Hour event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Pond 17P: Site Runoff



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre-WatershedMap Runoff Area=50,377 sf 100.00% Impervious Runoff Depth=6.06"
Flow Length=645' Tc=7.4 min CN=98 Runoff=6.81 cfs 0.584 af

Subcatchment2S: Post-WatershedMap Runoff Area=50,377 sf 100.00% Impervious Runoff Depth=6.06"
Flow Length=592' Tc=12.7 min CN=98 Runoff=5.80 cfs 0.584 af

Pond 5P: Site Runoff Inflow=6.81 cfs 0.584 af
Primary=6.81 cfs 0.584 af

Pond 6P: SubstationYard Peak Elev=74.05' Storage=3 cf Inflow=5.80 cfs 0.584 af
Discarded=5.80 cfs 0.584 af Primary=0.00 cfs 0.000 af Outflow=5.80 cfs 0.584 af

Pond 17P: Site Runoff Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 2.313 ac Runoff Volume = 1.168 af Average Runoff Depth = 6.06"
0.00% Pervious = 0.000 ac 100.00% Impervious = 2.313 ac

Summary for Subcatchment 1S: Pre-Watershed Map

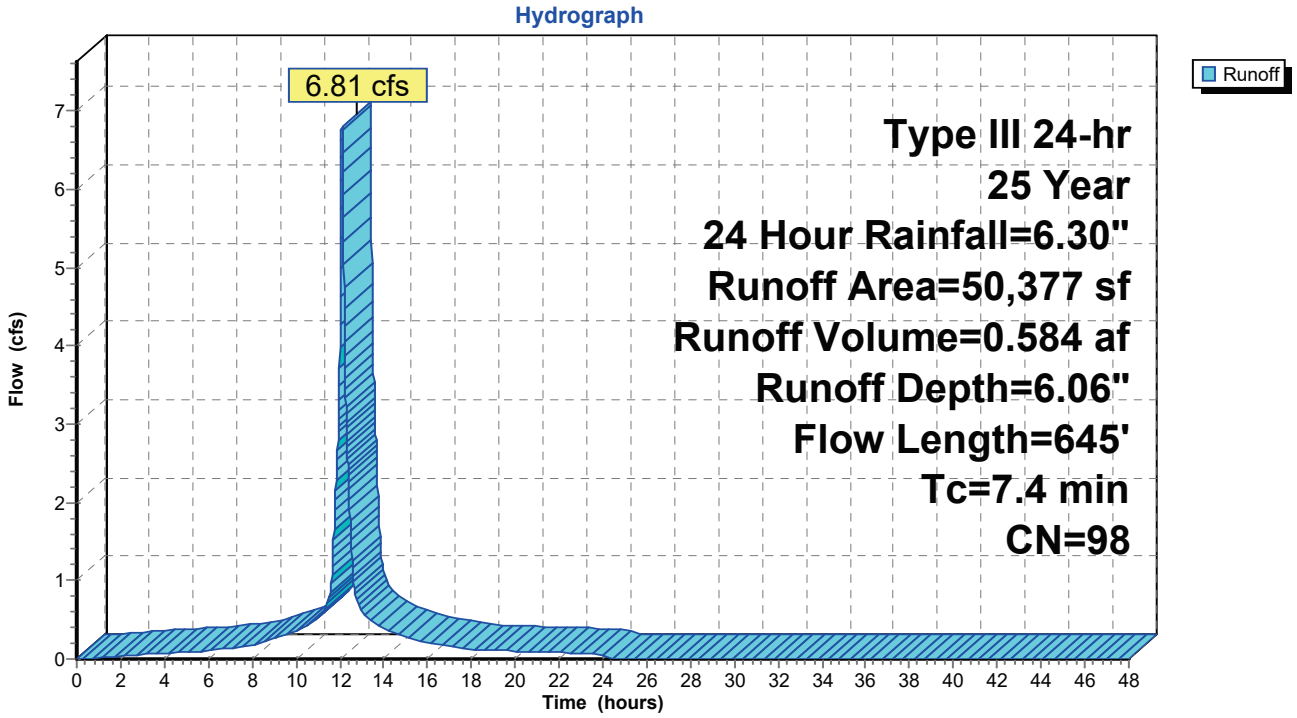
Runoff = 6.81 cfs @ 12.10 hrs, Volume= 0.584 af, Depth= 6.06"
Routed to Pond 5P : Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year, 24 Hour Rainfall=6.30"

Area (sf)	CN	Description
50,377	98	Paved parking, HSG D
50,377		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	100	0.0160	0.57		**Sheet Flow,** n= 0.030 P2= 3.32"
4.5	545	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.4	645	Total			

Subcatchment 1S: Pre-Watershed Map



Summary for Subcatchment 2S: Post-Watershed Map

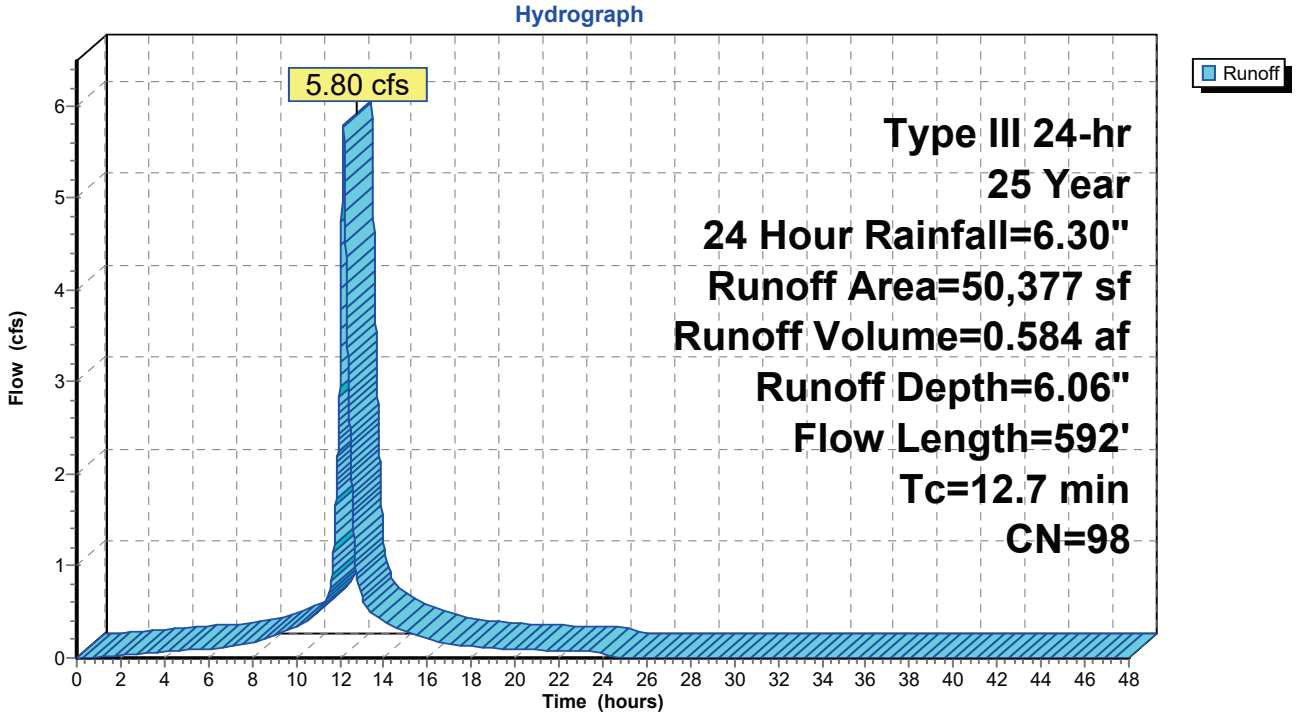
Runoff = 5.80 cfs @ 12.17 hrs, Volume= 0.584 af, Depth= 6.06"
Routed to Pond 6P : Substation Yard

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year, 24 Hour Rainfall=6.30"

Area (sf)	CN	Description
14,586	98	Paved roads w/curbs & sewers, HSG D
1,940	98	Paved roads w/curbs & sewers, HSG D
33,851	98	Paved parking, HSG D
50,377	98	Weighted Average
50,377		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	100	0.0140	0.21		**Sheet Flow,** n= 0.100 P2= 3.32"
2.9	311	0.0120	1.76		**Shallow Concentrated Flow, Shallow Concentrated #1** Unpaved Kv= 16.1 fps
1.8	181	0.0070	1.70		**Shallow Concentrated Flow, Shallow Concentrated #2** Paved Kv= 20.3 fps
12.7	592	Total			

Subcatchment 2S: Post-Watershed Map



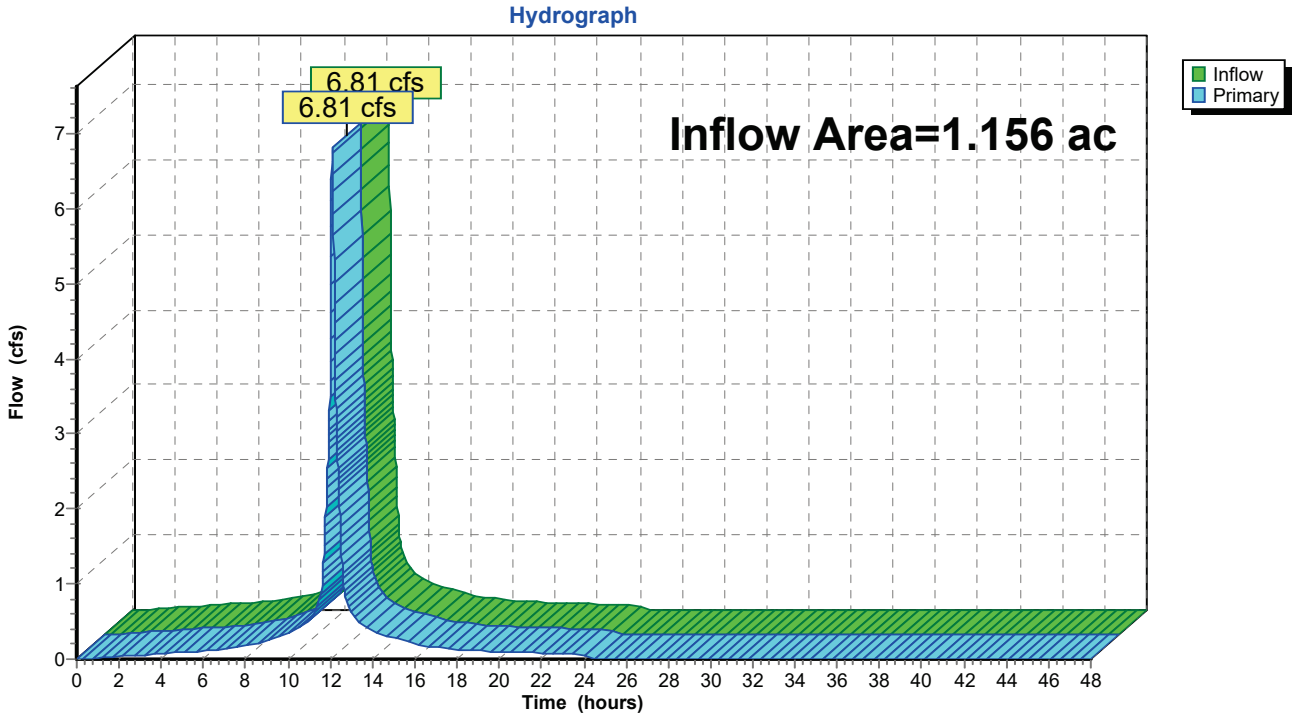
Summary for Pond 5P: Site Runoff

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.156 ac,100.00% Impervious, Inflow Depth = 6.06" for 25 Year, 24 Hour event
Inflow = 6.81 cfs @ 12.10 hrs, Volume= 0.584 af
Primary = 6.81 cfs @ 12.10 hrs, Volume= 0.584 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Pond 5P: Site Runoff



Summary for Pond 6P: Substation Yard

Inflow Area = 1.156 ac,100.00% Impervious, Inflow Depth = 6.06" for 25 Year, 24 Hour event
Inflow = 5.80 cfs @ 12.17 hrs, Volume= 0.584 af
Outflow = 5.80 cfs @ 12.17 hrs, Volume= 0.584 af, Atten= 0%, Lag= 0.0 min
Discarded = 5.80 cfs @ 12.17 hrs, Volume= 0.584 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 17P : Site Runoff

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 74.05' @ 12.17 hrs Surf.Area= 21 sf Storage= 3 cf

Plug-Flow detention time= 0.0 min calculated for 0.584 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (750.7 - 750.6)

Volume	Invert	Avail.Storage	Storage Description
#1	74.00'	10,127 cf	**Reservoir Course (Prismatic)** Listed below 33,755 cf Overall x 30.0% Voids

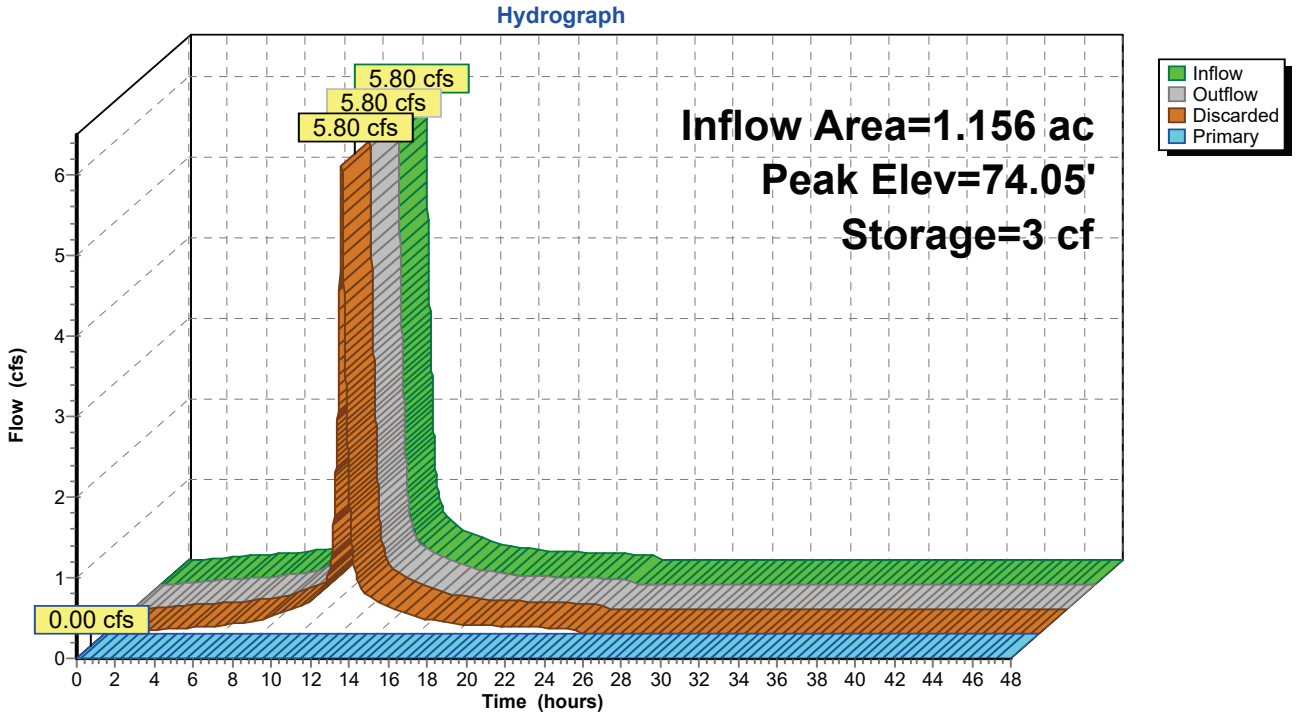
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
74.00	0	0	0
75.00	408	204	204
76.00	3,954	2,181	2,385
77.00	9,092	6,523	8,908
78.00	4,306	6,699	15,607
79.00	5,588	4,947	20,554
80.00	4,919	5,254	25,808
81.00	5,438	5,179	30,986
82.00	100	2,769	33,755

Device	Routing	Invert	Outlet Devices
#1	Discarded	74.00'	**9.00 cfs Exfiltration at all elevations**
#2	Primary	72.01'	**18.0" Round Culvert** L= 10.9' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 72.01' / 71.90' S= 0.0101 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#3	Device 2	77.96'	**8.0' long Combined Catch Basin System** 2 End Contraction(s)

Discarded OutFlow Max=9.00 cfs @ 12.17 hrs HW=74.05' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 9.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=74.00' (Free Discharge)
└**2=Culvert** (Passes 0.00 cfs of 8.04 cfs potential flow)
└**3=Combined Catch Basin System** (Controls 0.00 cfs)

Pond 6P: Substation Yard



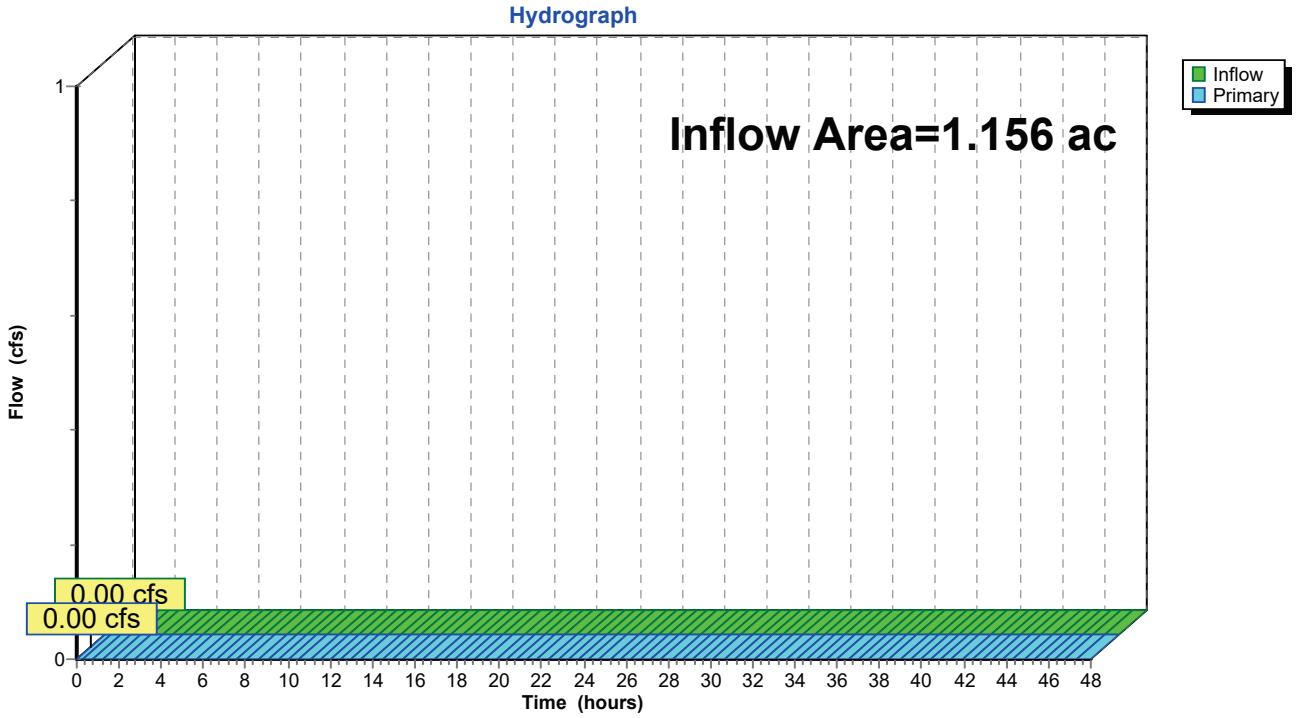
Summary for Pond 17P: Site Runoff

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.156 ac,100.00% Impervious, Inflow Depth = 0.00" for 25 Year, 24 Hour event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Pond 17P: Site Runoff



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre-WatershedMap Runoff Area=50,377 sf 100.00% Impervious Runoff Depth=6.92"
Flow Length=645' Tc=7.4 min CN=98 Runoff=7.75 cfs 0.667 af

Subcatchment2S: Post-WatershedMap Runoff Area=50,377 sf 100.00% Impervious Runoff Depth=6.92"
Flow Length=592' Tc=12.7 min CN=98 Runoff=6.59 cfs 0.667 af

Pond 5P: Site Runoff Inflow=7.75 cfs 0.667 af
Primary=7.75 cfs 0.667 af

Pond 6P: SubstationYard Peak Elev=74.06' Storage=4 cf Inflow=6.59 cfs 0.667 af
Discarded=6.59 cfs 0.667 af Primary=0.00 cfs 0.000 af Outflow=6.59 cfs 0.667 af

Pond 17P: Site Runoff Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 2.313 ac Runoff Volume = 1.334 af Average Runoff Depth = 6.92"
0.00% Pervious = 0.000 ac 100.00% Impervious = 2.313 ac

Summary for Subcatchment 1S: Pre-Watershed Map

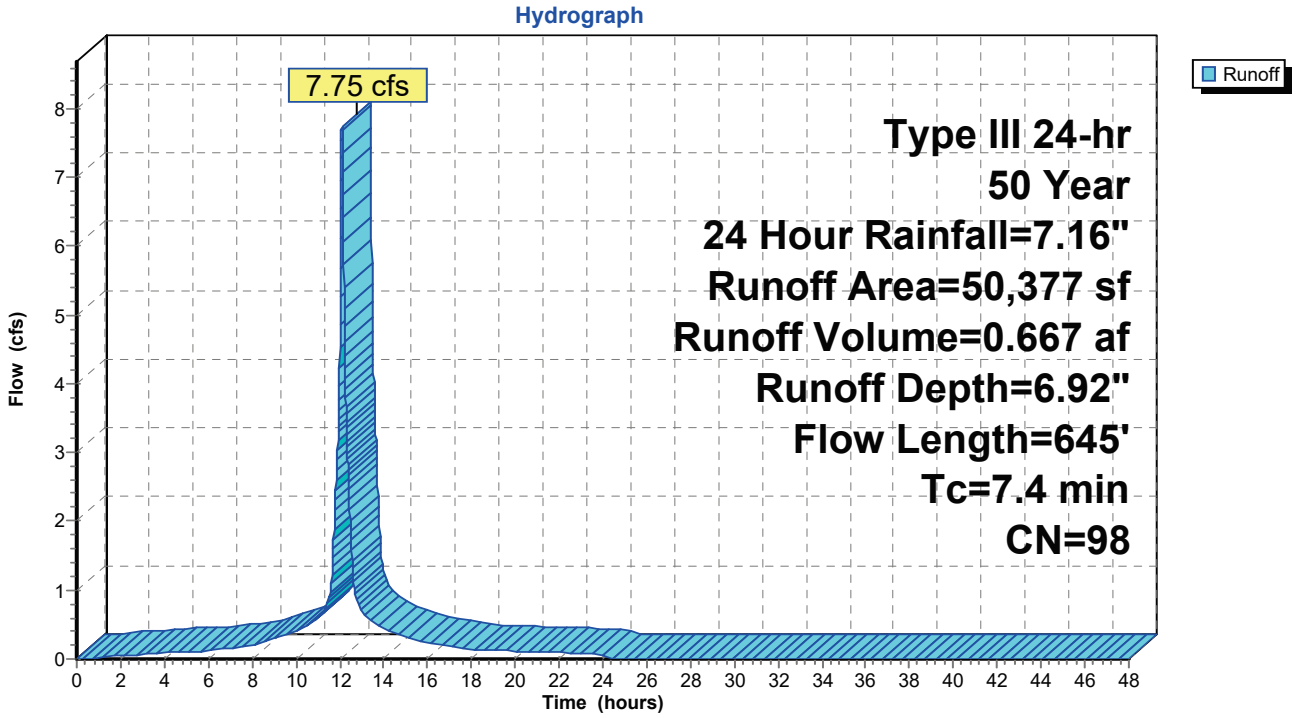
Runoff = 7.75 cfs @ 12.10 hrs, Volume= 0.667 af, Depth= 6.92"
Routed to Pond 5P : Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50 Year, 24 Hour Rainfall=7.16"

Area (sf)	CN	Description
50,377	98	Paved parking, HSG D
50,377		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	100	0.0160	0.57		**Sheet Flow,** n= 0.030 P2= 3.32"
4.5	545	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.4	645	Total			

Subcatchment 1S: Pre-Watershed Map



Summary for Subcatchment 2S: Post-Watershed Map

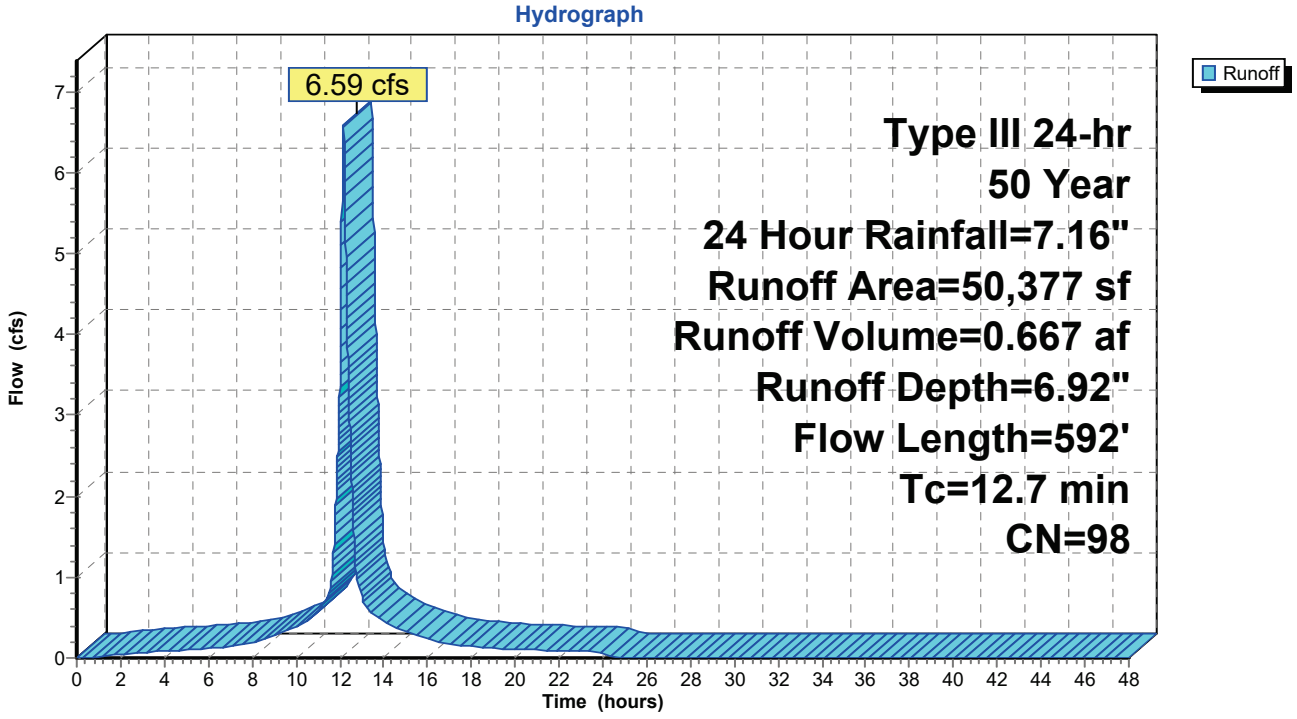
Runoff = 6.59 cfs @ 12.17 hrs, Volume= 0.667 af, Depth= 6.92"
Routed to Pond 6P : Substation Yard

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50 Year, 24 Hour Rainfall=7.16"

Area (sf)	CN	Description
14,586	98	Paved roads w/curbs & sewers, HSG D
1,940	98	Paved roads w/curbs & sewers, HSG D
33,851	98	Paved parking, HSG D
50,377	98	Weighted Average
50,377		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	100	0.0140	0.21		**Sheet Flow,** n= 0.100 P2= 3.32"
2.9	311	0.0120	1.76		**Shallow Concentrated Flow, Shallow Concentrated #1** Unpaved Kv= 16.1 fps
1.8	181	0.0070	1.70		**Shallow Concentrated Flow, Shallow Concentrated #2** Paved Kv= 20.3 fps
12.7	592	Total			

Subcatchment 2S: Post-Watershed Map



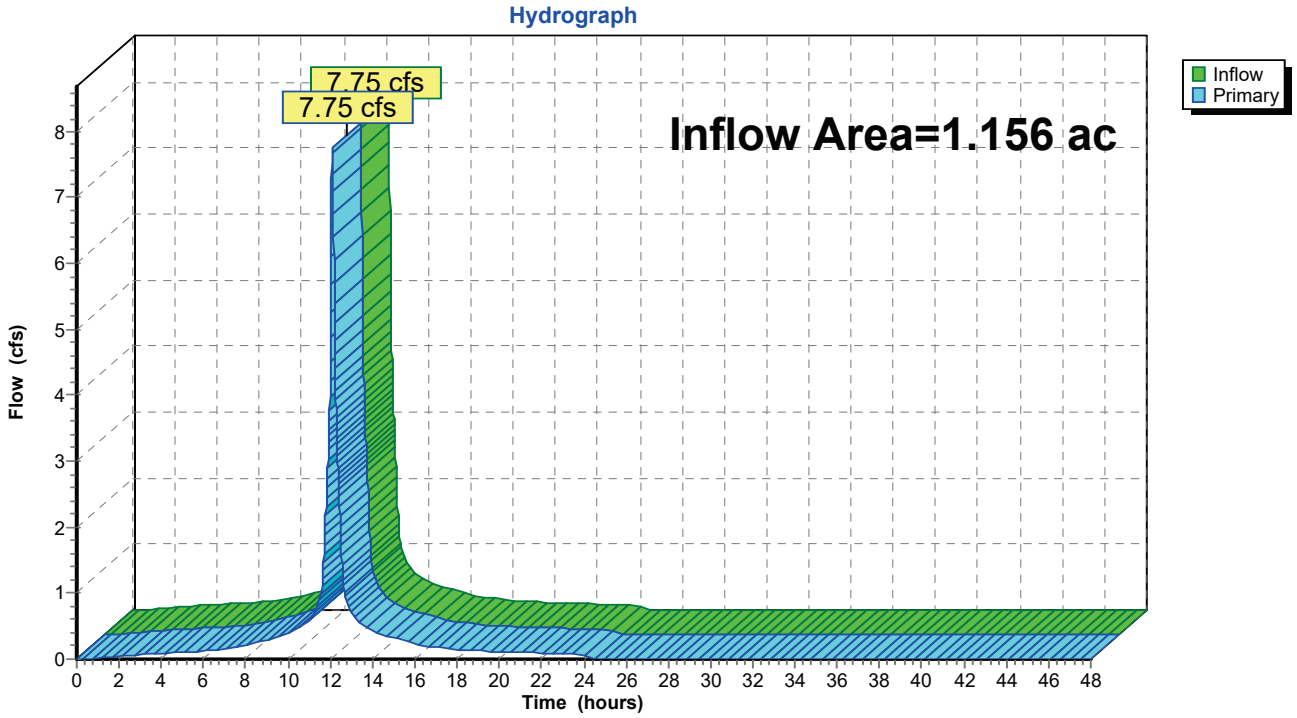
Summary for Pond 5P: Site Runoff

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.156 ac,100.00% Impervious, Inflow Depth = 6.92" for 50 Year, 24 Hour event
Inflow = 7.75 cfs @ 12.10 hrs, Volume= 0.667 af
Primary = 7.75 cfs @ 12.10 hrs, Volume= 0.667 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Pond 5P: Site Runoff



Summary for Pond 6P: Substation Yard

Inflow Area = 1.156 ac,100.00% Impervious, Inflow Depth = 6.92" for 50 Year, 24 Hour event
Inflow = 6.59 cfs @ 12.17 hrs, Volume= 0.667 af
Outflow = 6.59 cfs @ 12.17 hrs, Volume= 0.667 af, Atten= 0%, Lag= 0.0 min
Discarded = 6.59 cfs @ 12.17 hrs, Volume= 0.667 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 17P : Site Runoff

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 74.06' @ 12.17 hrs Surf.Area= 24 sf Storage= 4 cf

Plug-Flow detention time= 0.0 min calculated for 0.667 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (748.9 - 748.9)

Volume	Invert	Avail.Storage	Storage Description
#1	74.00'	10,127 cf	**Reservoir Course (Prismatic)** Listed below 33,755 cf Overall x 30.0% Voids

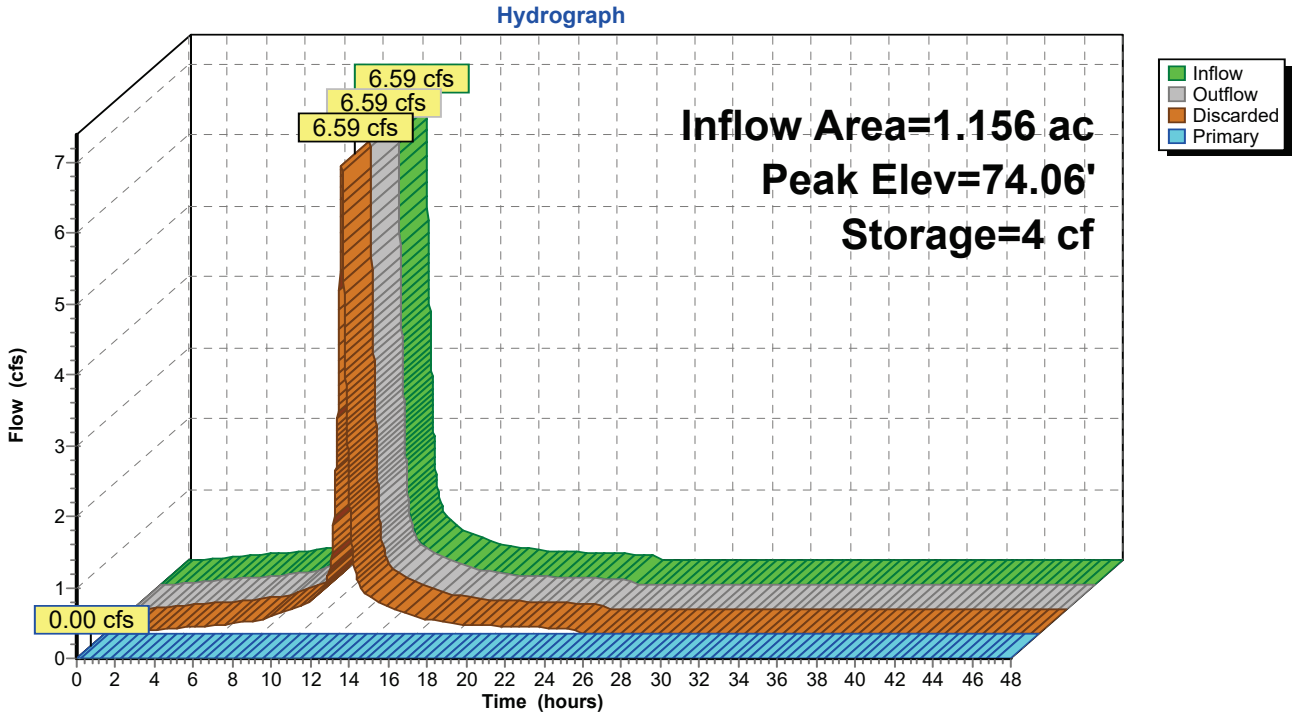
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
74.00	0	0	0
75.00	408	204	204
76.00	3,954	2,181	2,385
77.00	9,092	6,523	8,908
78.00	4,306	6,699	15,607
79.00	5,588	4,947	20,554
80.00	4,919	5,254	25,808
81.00	5,438	5,179	30,986
82.00	100	2,769	33,755

Device	Routing	Invert	Outlet Devices
#1	Discarded	74.00'	**9.00 cfs Exfiltration at all elevations**
#2	Primary	72.01'	**18.0" Round Culvert** L= 10.9' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 72.01' / 71.90' S= 0.0101 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#3	Device 2	77.96'	**8.0' long Combined Catch Basin System** 2 End Contraction(s)

Discarded OutFlow Max=9.00 cfs @ 12.17 hrs HW=74.06' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 9.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=74.00' (Free Discharge)
└**2=Culvert** (Passes 0.00 cfs of 8.04 cfs potential flow)
└**3=Combined Catch Basin System** (Controls 0.00 cfs)

Pond 6P: Substation Yard



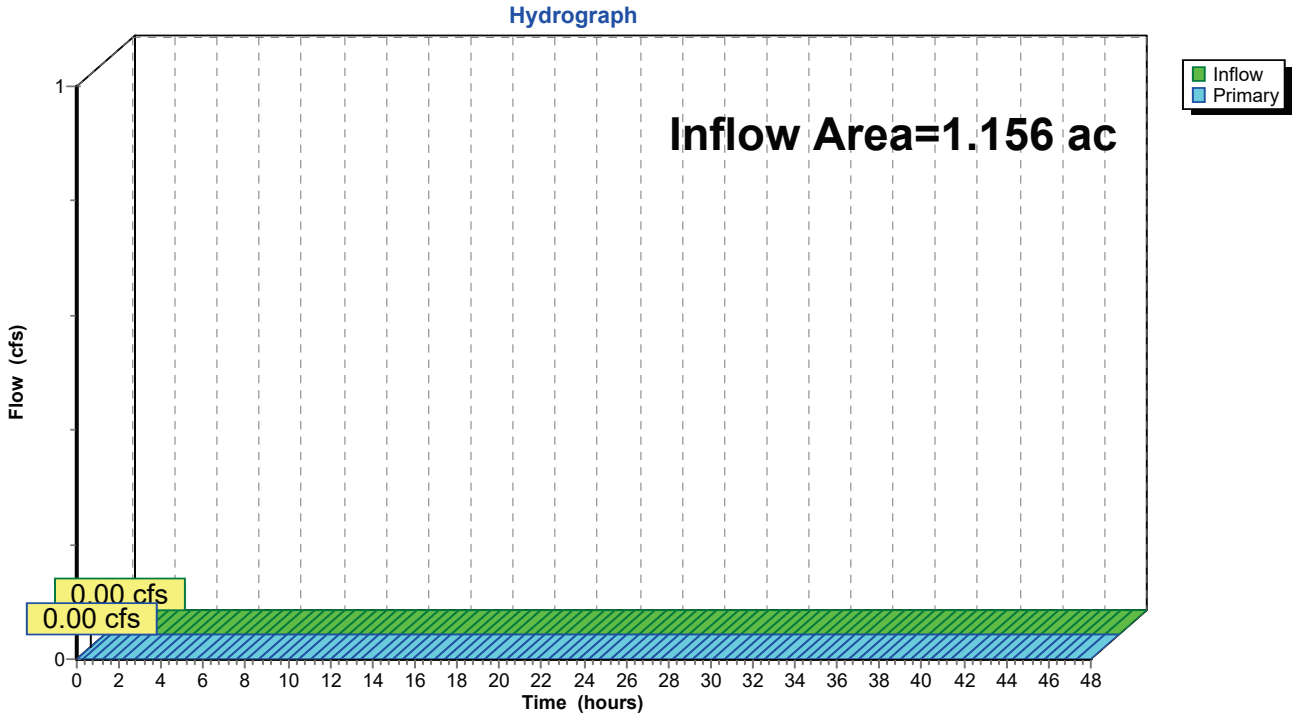
Summary for Pond 17P: Site Runoff

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.156 ac,100.00% Impervious, Inflow Depth = 0.00" for 50 Year, 24 Hour event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Pond 17P: Site Runoff



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre-WatershedMap Runoff Area=50,377 sf 100.00% Impervious Runoff Depth=7.83"
Flow Length=645' Tc=7.4 min CN=98 Runoff=8.74 cfs 0.755 af

Subcatchment2S: Post-WatershedMap Runoff Area=50,377 sf 100.00% Impervious Runoff Depth=7.83"
Flow Length=592' Tc=12.7 min CN=98 Runoff=7.43 cfs 0.755 af

Pond 5P: Site Runoff Inflow=8.74 cfs 0.755 af
Primary=8.74 cfs 0.755 af

Pond 6P: SubstationYard Peak Elev=74.07' Storage=4 cf Inflow=7.43 cfs 0.755 af
Discarded=7.43 cfs 0.755 af Primary=0.00 cfs 0.000 af Outflow=7.43 cfs 0.755 af

Pond 17P: Site Runoff Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 2.313 ac Runoff Volume = 1.509 af Average Runoff Depth = 7.83"
0.00% Pervious = 0.000 ac 100.00% Impervious = 2.313 ac

Summary for Subcatchment 1S: Pre-Watershed Map

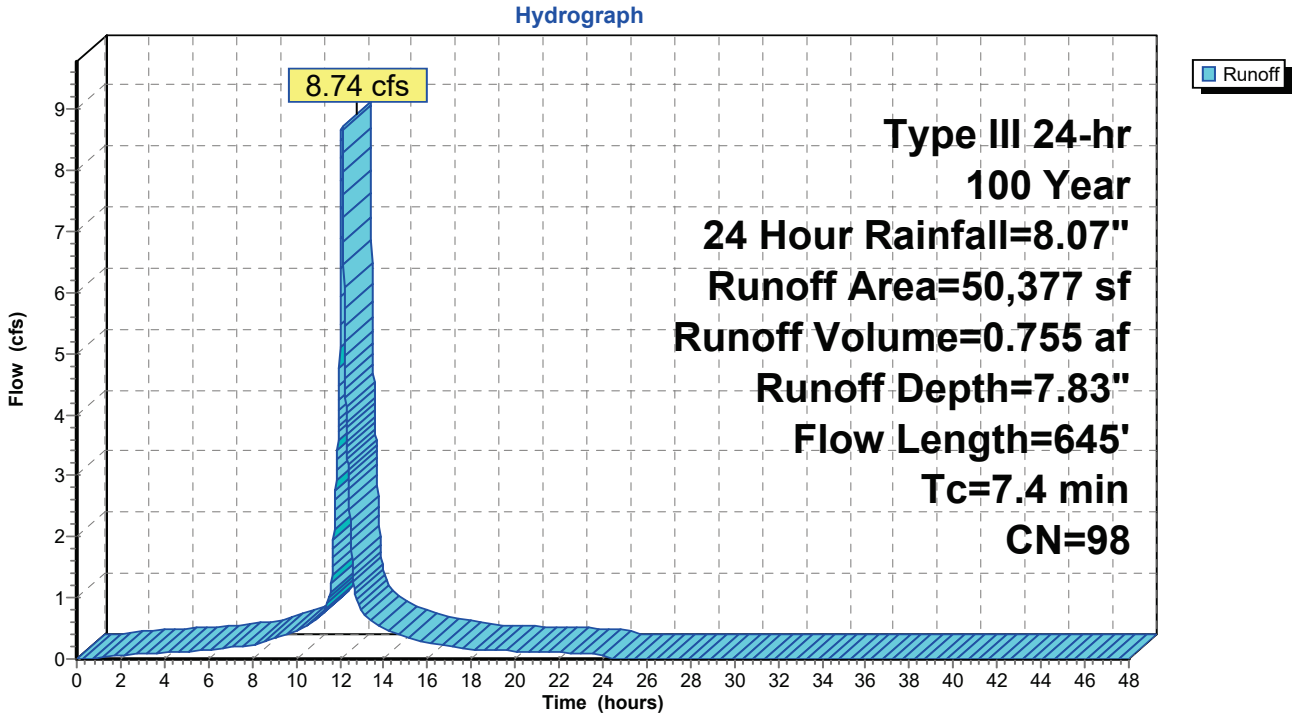
Runoff = 8.74 cfs @ 12.10 hrs, Volume= 0.755 af, Depth= 7.83"
Routed to Pond 5P : Site Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year, 24 Hour Rainfall=8.07"

Area (sf)	CN	Description
50,377	98	Paved parking, HSG D
50,377		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	100	0.0160	0.57		**Sheet Flow,** n= 0.030 P2= 3.32"
4.5	545	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.4	645	Total			

Subcatchment 1S: Pre-Watershed Map



Summary for Subcatchment 2S: Post-Watershed Map

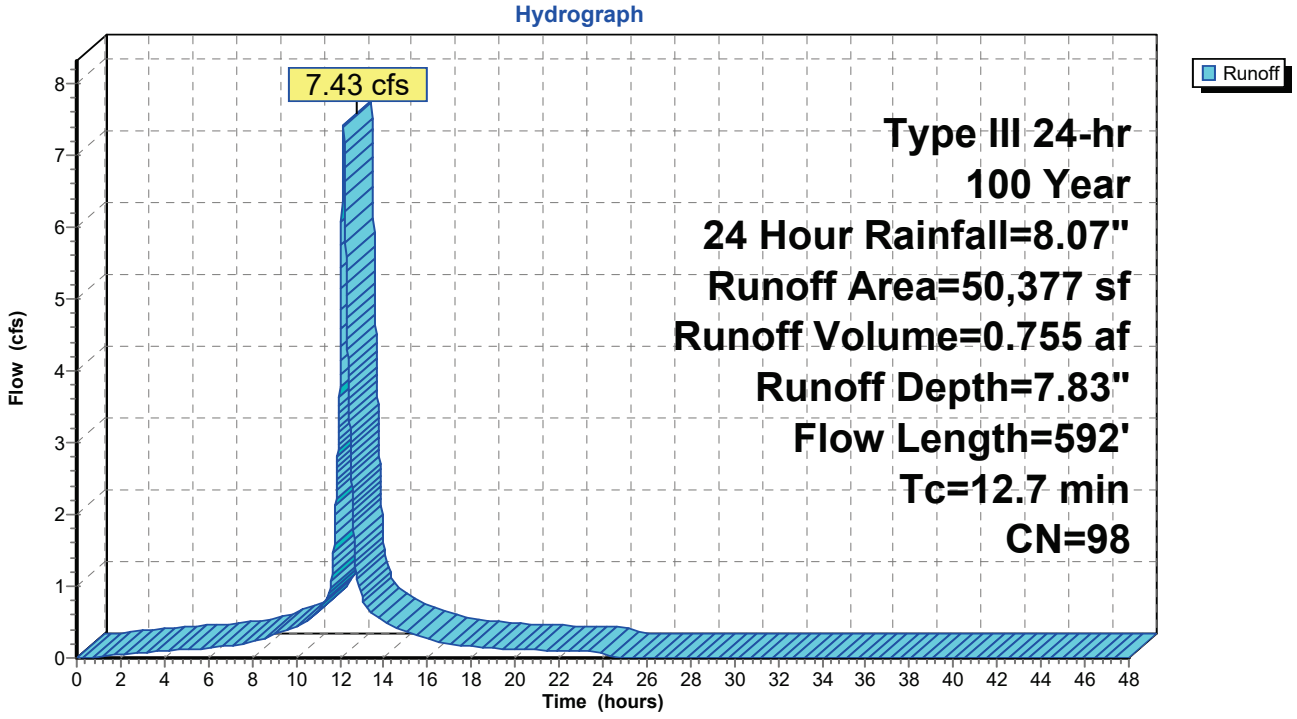
Runoff = 7.43 cfs @ 12.17 hrs, Volume= 0.755 af, Depth= 7.83"
Routed to Pond 6P : Substation Yard

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year, 24 Hour Rainfall=8.07"

Area (sf)	CN	Description
14,586	98	Paved roads w/curbs & sewers, HSG D
1,940	98	Paved roads w/curbs & sewers, HSG D
33,851	98	Paved parking, HSG D
50,377	98	Weighted Average
50,377		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	100	0.0140	0.21		**Sheet Flow,** n= 0.100 P2= 3.32"
2.9	311	0.0120	1.76		**Shallow Concentrated Flow, Shallow Concentrated #1** Unpaved Kv= 16.1 fps
1.8	181	0.0070	1.70		**Shallow Concentrated Flow, Shallow Concentrated #2** Paved Kv= 20.3 fps
12.7	592	Total			

Subcatchment 2S: Post-Watershed Map



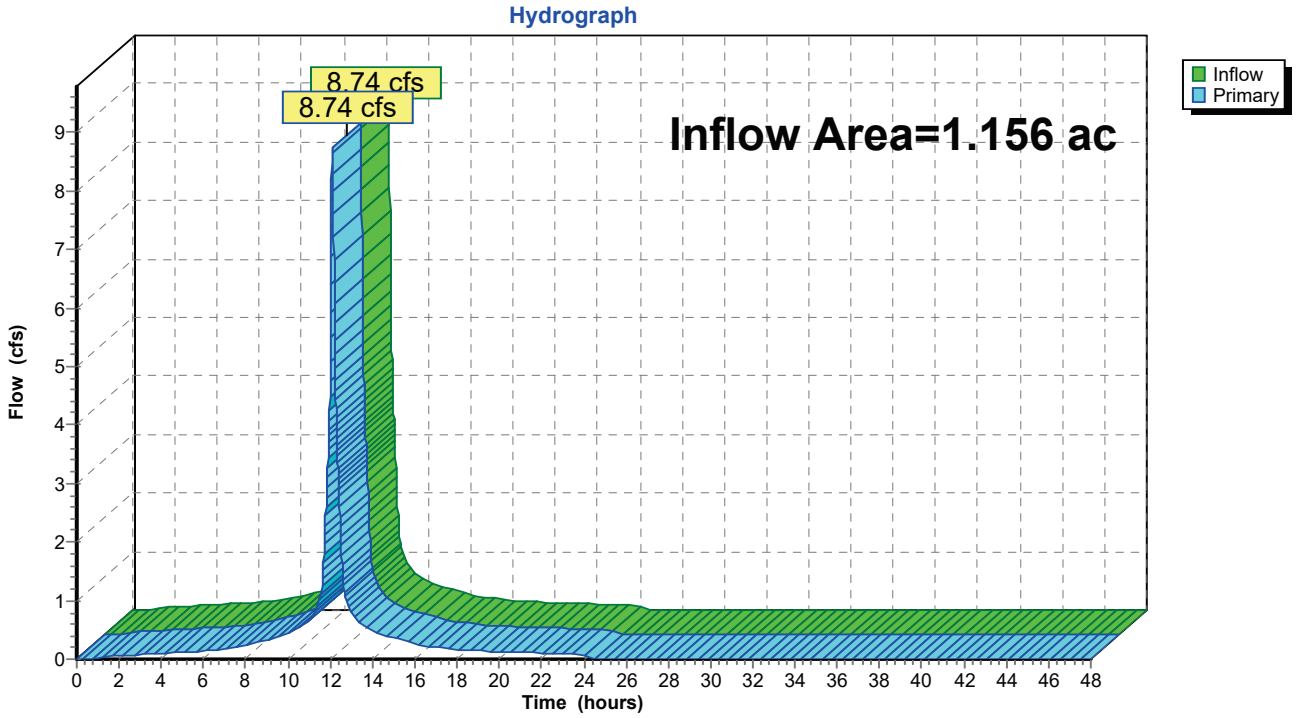
Summary for Pond 5P: Site Runoff

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.156 ac,100.00% Impervious, Inflow Depth = 7.83" for 100 Year, 24 Hour event
Inflow = 8.74 cfs @ 12.10 hrs, Volume= 0.755 af
Primary = 8.74 cfs @ 12.10 hrs, Volume= 0.755 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Pond 5P: Site Runoff



Summary for Pond 6P: Substation Yard

Inflow Area = 1.156 ac,100.00% Impervious, Inflow Depth = 7.83" for 100 Year, 24 Hour event
Inflow = 7.43 cfs @ 12.17 hrs, Volume= 0.755 af
Outflow = 7.43 cfs @ 12.17 hrs, Volume= 0.755 af, Atten= 0%, Lag= 0.0 min
Discarded = 7.43 cfs @ 12.17 hrs, Volume= 0.755 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 17P : Site Runoff

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 74.07' @ 12.17 hrs Surf.Area= 27 sf Storage= 4 cf

Plug-Flow detention time= 0.0 min calculated for 0.754 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (747.3 - 747.3)

Volume	Invert	Avail.Storage	Storage Description
#1	74.00'	10,127 cf	**Reservoir Course (Prismatic)** Listed below 33,755 cf Overall x 30.0% Voids

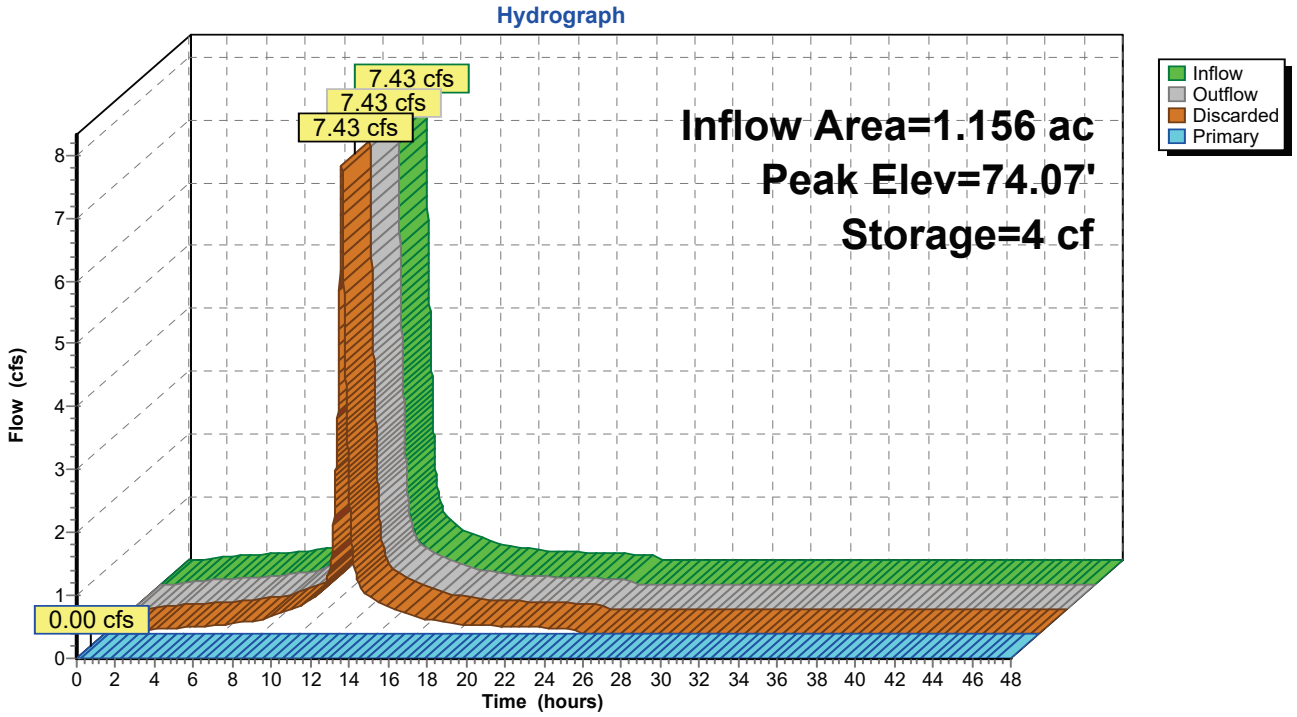
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
74.00	0	0	0
75.00	408	204	204
76.00	3,954	2,181	2,385
77.00	9,092	6,523	8,908
78.00	4,306	6,699	15,607
79.00	5,588	4,947	20,554
80.00	4,919	5,254	25,808
81.00	5,438	5,179	30,986
82.00	100	2,769	33,755

Device	Routing	Invert	Outlet Devices
#1	Discarded	74.00'	**9.00 cfs Exfiltration at all elevations**
#2	Primary	72.01'	**18.0" Round Culvert** L= 10.9' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 72.01' / 71.90' S= 0.0101 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#3	Device 2	77.96'	**8.0' long Combined Catch Basin System** 2 End Contraction(s)

Discarded OutFlow Max=9.00 cfs @ 12.17 hrs HW=74.07' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 9.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=74.00' (Free Discharge)
└**2=Culvert** (Passes 0.00 cfs of 8.04 cfs potential flow)
└**3=Combined Catch Basin System** (Controls 0.00 cfs)

Pond 6P: Substation Yard



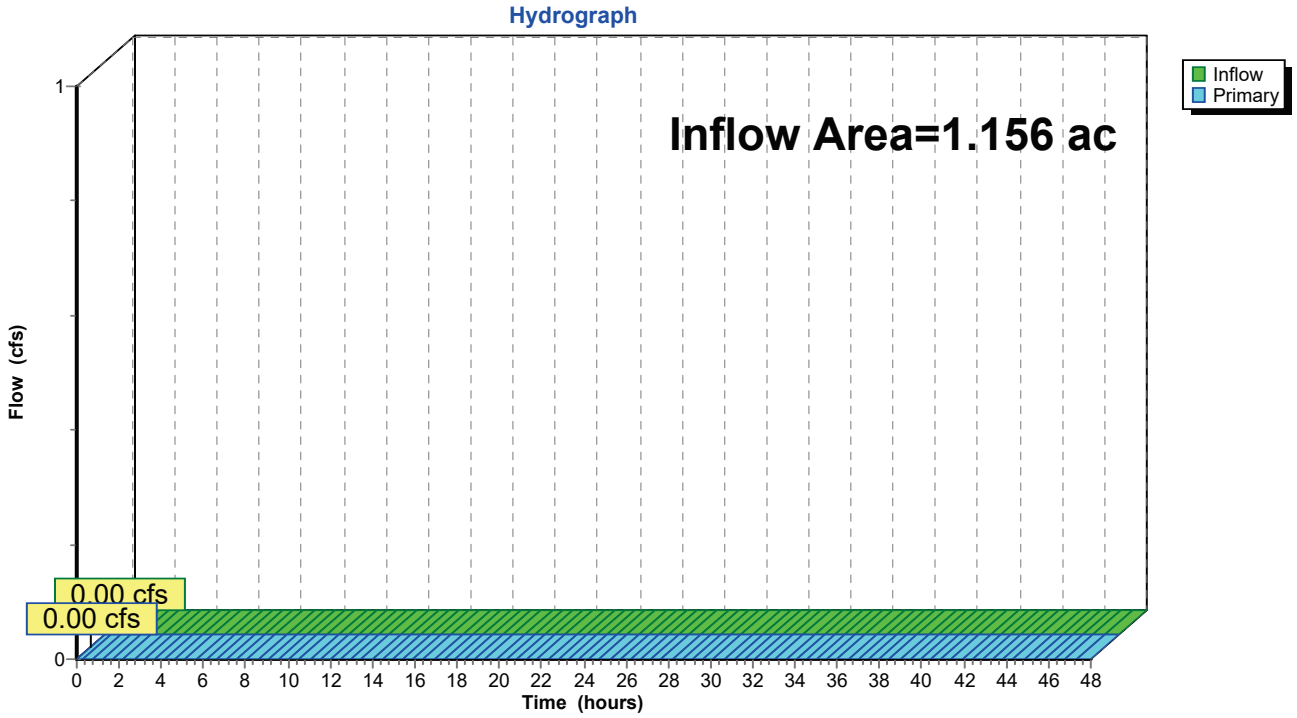
Summary for Pond 17P: Site Runoff

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.156 ac,100.00% Impervious, Inflow Depth = 0.00" for 100 Year, 24 Hour event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Pond 17P: Site Runoff



NOAA Atlas 14, Volume 10, Version 3
Location name: Garden City, New York, USA*
Latitude: 40.7308°, Longitude: -73.6051°
Elevation: 81 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.363 (0.279-0.470)	0.437 (0.336-0.567)	0.559 (0.428-0.727)	0.661 (0.504-0.864)	0.801 (0.593-1.08)	0.905 (0.658-1.25)	1.02 (0.720-1.44)	1.14 (0.767-1.64)	1.33 (0.859-1.97)	1.48 (0.938-2.23)
10-min	0.514 (0.395-0.666)	0.620 (0.476-0.804)	0.793 (0.607-1.03)	0.937 (0.714-1.22)	1.14 (0.840-1.54)	1.28 (0.932-1.77)	1.44 (1.02-2.05)	1.62 (1.09-2.33)	1.88 (1.22-2.78)	2.10 (1.33-3.16)
15-min	0.604 (0.465-0.783)	0.729 (0.560-0.946)	0.933 (0.715-1.21)	1.10 (0.840-1.44)	1.34 (0.988-1.81)	1.51 (1.10-2.08)	1.69 (1.20-2.41)	1.91 (1.28-2.74)	2.22 (1.43-3.28)	2.47 (1.56-3.72)
30-min	0.829 (0.638-1.08)	1.00 (0.770-1.30)	1.28 (0.983-1.67)	1.52 (1.16-1.98)	1.84 (1.36-2.49)	2.08 (1.51-2.87)	2.33 (1.65-3.32)	2.63 (1.76-3.78)	3.06 (1.98-4.52)	3.41 (2.16-5.13)
60-min	1.05 (0.811-1.37)	1.27 (0.979-1.65)	1.63 (1.25-2.12)	1.93 (1.47-2.52)	2.34 (1.73-3.17)	2.65 (1.92-3.65)	2.97 (2.11-4.23)	3.35 (2.24-4.82)	3.89 (2.52-5.76)	4.35 (2.75-6.54)
2-hr	1.42 (1.10-1.84)	1.70 (1.31-2.19)	2.14 (1.65-2.77)	2.52 (1.93-3.27)	3.03 (2.25-4.07)	3.41 (2.49-4.66)	3.82 (2.70-5.37)	4.26 (2.87-6.09)	4.90 (3.18-7.19)	5.41 (3.43-8.08)
3-hr	1.66 (1.28-2.13)	1.97 (1.52-2.53)	2.48 (1.91-3.19)	2.90 (2.22-3.75)	3.48 (2.59-4.66)	3.92 (2.86-5.33)	4.38 (3.10-6.12)	4.88 (3.29-6.94)	5.58 (3.63-8.17)	6.15 (3.91-9.14)
6-hr	2.04 (1.59-2.61)	2.44 (1.89-3.11)	3.07 (2.38-3.94)	3.60 (2.78-4.63)	4.33 (3.24-5.76)	4.88 (3.57-6.60)	5.45 (3.88-7.59)	6.08 (4.12-8.61)	6.99 (4.56-10.2)	7.72 (4.92-11.4)
12-hr	2.39 (1.87-3.03)	2.88 (2.25-3.66)	3.68 (2.87-4.69)	4.35 (3.37-5.56)	5.26 (3.96-6.98)	5.95 (4.39-8.02)	6.68 (4.80-9.29)	7.52 (5.10-10.6)	8.75 (5.72-12.6)	9.78 (6.26-14.4)
24-hr	2.71 (2.13-3.41)	3.32 (2.61-4.19)	4.32 (3.38-5.47)	5.16 (4.02-6.56)	6.30 (4.77-8.34)	7.16 (5.32-9.64)	8.07 (5.86-11.3)	9.18 (6.25-12.8)	10.9 (7.13-15.6)	12.3 (7.89-17.9)
2-day	3.06 (2.41-3.83)	3.80 (3.00-4.78)	5.03 (3.95-6.33)	6.04 (4.72-7.63)	7.44 (5.66-9.80)	8.46 (6.33-11.4)	9.59 (7.01-13.3)	11.0 (7.50-15.3)	13.1 (8.64-18.7)	15.0 (9.65-21.7)
3-day	3.35 (2.65-4.18)	4.15 (3.29-5.20)	5.47 (4.32-6.86)	6.57 (5.15-8.27)	8.08 (6.16-10.6)	9.19 (6.89-12.3)	10.4 (7.63-14.4)	11.9 (8.15-16.5)	14.2 (9.39-20.2)	16.3 (10.5-23.5)
4-day	3.60 (2.86-4.49)	4.44 (3.52-5.54)	5.82 (4.60-7.28)	6.96 (5.47-8.74)	8.52 (6.52-11.2)	9.68 (7.27-12.9)	10.9 (8.03-15.1)	12.5 (8.57-17.3)	14.9 (9.85-21.1)	17.0 (11.0-24.5)
7-day	4.29 (3.42-5.33)	5.18 (4.12-6.43)	6.63 (5.26-8.25)	7.83 (6.18-9.79)	9.49 (7.27-12.3)	10.7 (8.06-14.2)	12.0 (8.84-16.5)	13.7 (9.40-18.7)	16.1 (10.7-22.7)	18.3 (11.8-26.1)
10-day	4.96 (3.96-6.14)	5.88 (4.69-7.28)	7.38 (5.87-9.16)	8.62 (6.82-10.7)	10.3 (7.93-13.4)	11.6 (8.74-15.3)	13.0 (9.52-17.6)	14.6 (10.1-20.0)	17.1 (11.3-23.9)	19.1 (12.4-27.3)
20-day	7.03 (5.64-8.64)	8.03 (6.44-9.88)	9.68 (7.74-11.9)	11.1 (8.78-13.7)	12.9 (9.94-16.5)	14.4 (10.8-18.6)	15.8 (11.5-21.1)	17.5 (12.1-23.7)	19.7 (13.1-27.5)	21.5 (14.0-30.5)
30-day	8.78 (7.06-10.8)	9.86 (7.93-12.1)	11.6 (9.32-14.3)	13.1 (10.4-16.2)	15.1 (11.6-19.2)	16.7 (12.6-21.5)	18.3 (13.3-24.0)	19.9 (13.8-26.8)	22.0 (14.7-30.5)	23.6 (15.4-33.3)
45-day	11.0 (8.86-13.4)	12.2 (9.80-14.8)	14.1 (11.3-17.2)	15.7 (12.5-19.3)	17.9 (13.8-22.5)	19.6 (14.8-25.0)	21.3 (15.4-27.8)	22.9 (16.0-30.8)	25.0 (16.7-34.4)	26.4 (17.3-37.1)
60-day	12.8 (10.4-15.6)	14.1 (11.4-17.2)	16.1 (13.0-19.7)	17.8 (14.3-21.9)	20.2 (15.6-25.4)	22.0 (16.6-28.0)	23.8 (17.3-30.9)	25.5 (17.8-34.1)	27.5 (18.5-37.9)	28.9 (18.9-40.5)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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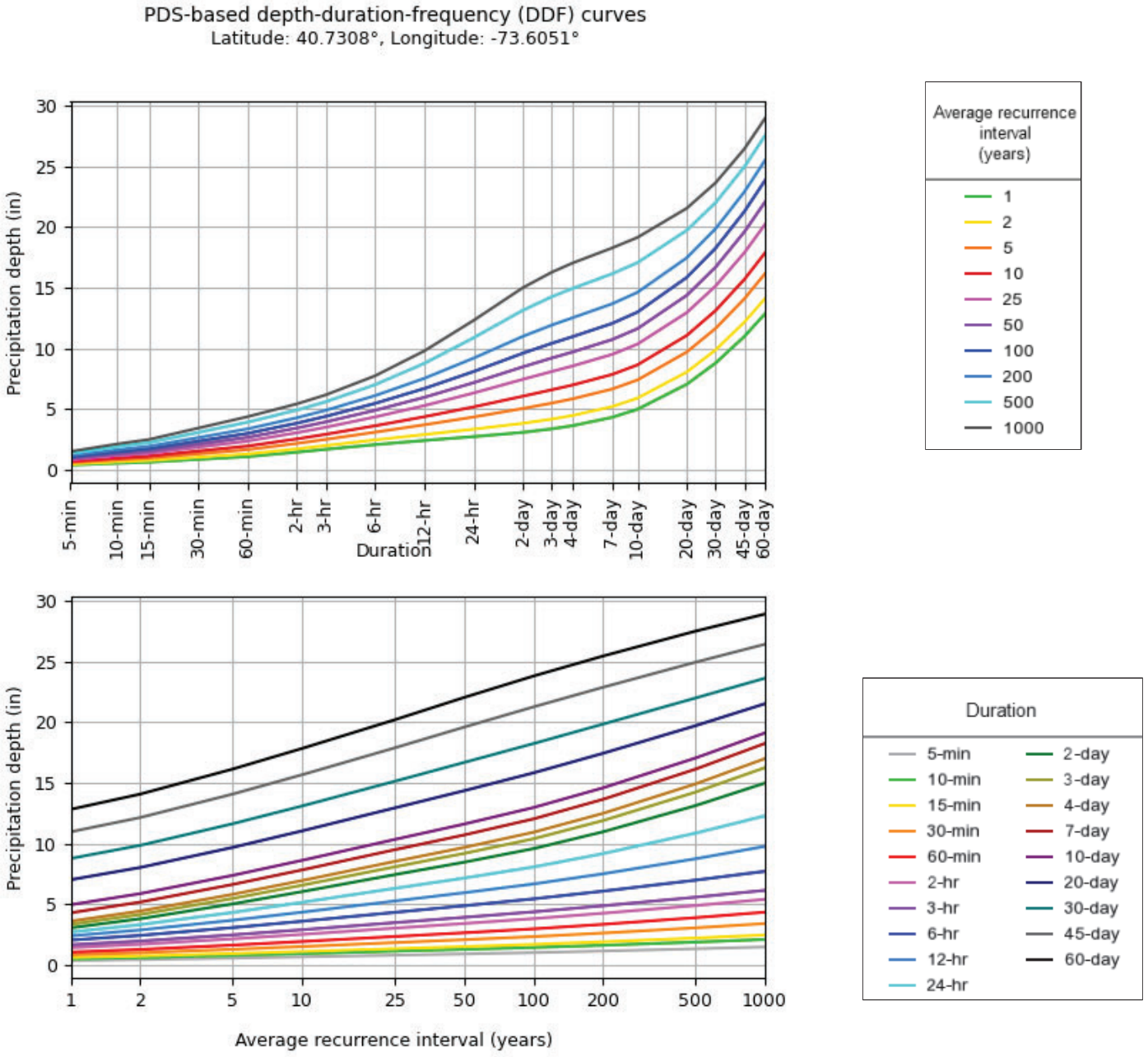
PF graphical



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Created (GMT): Tue Apr 28 16:15:19 2026

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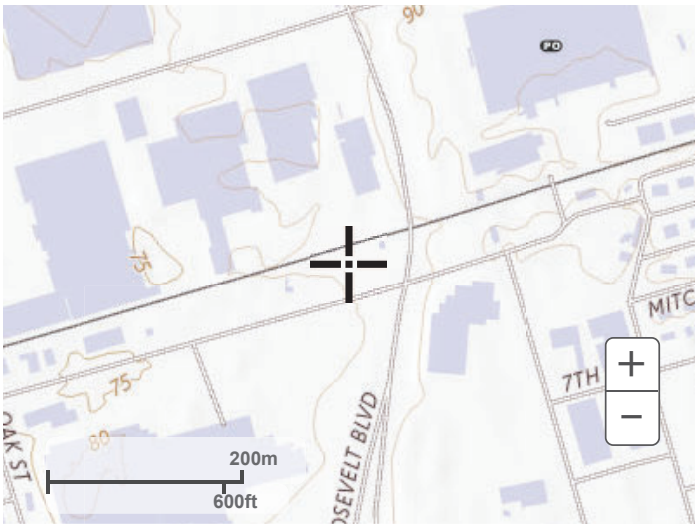
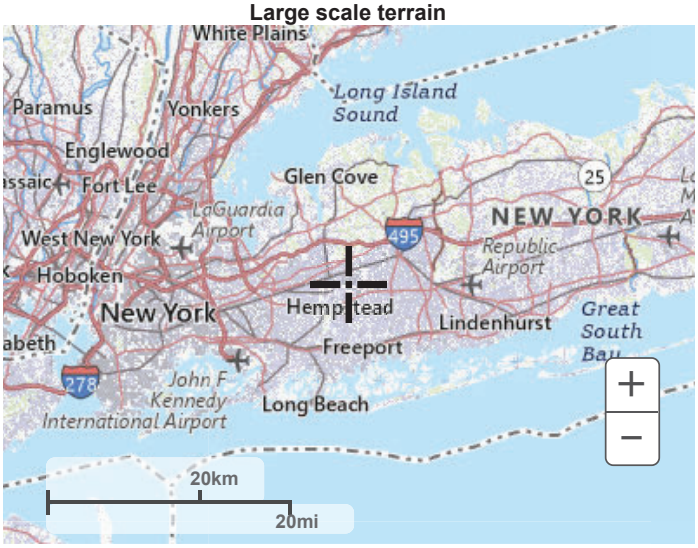
Maps & aerials

Small scale terrain



Large scale terrain



Large scale map

Large scale aerial

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National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

APPENDIX C – HYDRAULIC AND STABILITY CALCULATIONS

WATER QUALITY VOLUME CALCULATION

$$WQv = \frac{P * R_v * A}{12}$$

where:

WQ_v	= water quality volume (in acre-feet)
P	= 90% Rainfall Event Number (see Figure 4.1)
R_v	= 0.05 + 0.009(I), where I is percent impervious cover
A	= site area in acres (Contributing area)

P - 90% Rainfall Event referenced from Figure 4.1 in the NYS Stormwater Management Design Manual

REQUIRED WATER QUALITY VOLUME

P =	1.5	IN
Rv =	0.95	
I =	100	%
A =	1.16	AC

WQv	**=**	**0.138**	**AC-FT**
	=	**6,000**	**CF**

PROVIDED WATER QUALITY VOLUME

1. The substation pad design is pre approved to provide the required water quality in the pad. The WQv values below were found from HydroCAD by taking the maximum total volume the pad can hold.

WQv	**=**	**0.233**	**AC-FT**
	=	**10,127**	**CF**

Total Water Quality Volume Provided	**10,127**	**CF**	>	6,000	CF	= WQv Required

Pad Storage*			
elevation	surface area	surface area	inc. storage
(ft)	(sf)	(acres)	(cf)
74.00	0	0.000	0
75.00	408	0.009	204
76.00	3954	0.091	2181
77.00	9092	0.209	6523
78.00	4306	0.099	6699
79.00	5588	0.128	4947
80.00	4919	0.113	5254
81.00	5438	0.125	5179
82.00	100	0.002	2769

* 30% Void Ratio

Pre Watershed Area			
Description	CN	Area (SF)	Area (Ac)
Compacted Gravel	98	50377.00	1.156
Composite CN	98	Total Area	1.156 ac

Tc	0.123	hrs

Total Site Area	1.16	ac

Post Watershed Area			
Description	CN	Area (SF)	Area (Ac)
Asphalt Roadway	98	14586.00	0.335
Concrete Flatwork	98	1940.00	0.045
Station Stone	98	33851.00	0.777
Composite CN	98	Total Area	1.156 ac

Tc	0.212	hrs

Total Site Area	1.16	ac

Results

	1 Year	2 Year	10 Year	25 Year	50 Year	100 Year	
Pre	2.89	3.56	5.57	6.81	7.75	8.74	cfs
Post	2.46	3.03	4.74	5.80	6.59	7.43	cfs
difference	0.43	0.53	0.83	1.01	1.16	1.31	cfs

APPENDIX D – WEB SOIL SURVEY

United States Department of Agriculture

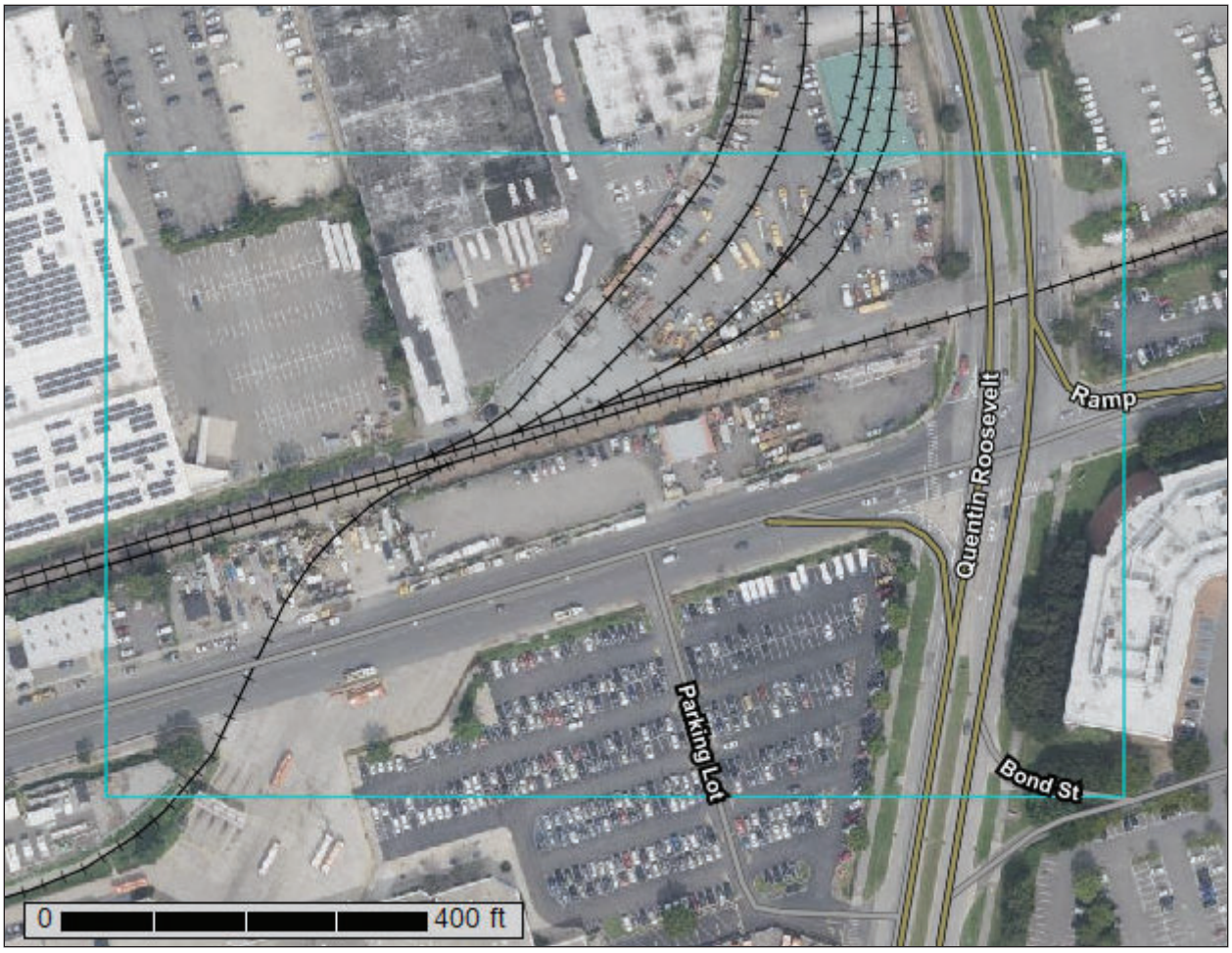
NRCS

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 Nassau County, New York

Commercial Ave



April 16, 2026

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.

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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.

Custom Soil Resource Report
Soil Map

Map Scale: 1:1,860 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 25 50 100 150

Feet
0 50 100 200 300

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: Nassau County, New York
Survey Area Data: Version 23, Aug 28, 2025

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

Date(s) aerial images were photographed: Mar 1, 2023—Sep 1, 2023

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
Ug	Urban land	17.9	100.0%
Totals for Area of Interest		**17.9**	**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.

Nassau County, New York

Ug—Urban land

Map Unit Setting

National map unit symbol: 9ttq
Mean annual precipitation: 42 to 46 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 190 to 230 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Minor Components

Enfield

Percent of map unit: 2 percent
Hydric soil rating: No

Riverhead

Percent of map unit: 2 percent
Hydric soil rating: No

Hempstead

Percent of map unit: 2 percent
Hydric soil rating: No

Udipsamments

Percent of map unit: 2 percent
Hydric soil rating: No

Udorthents

Percent of map unit: 2 percent
Hydric soil rating: No

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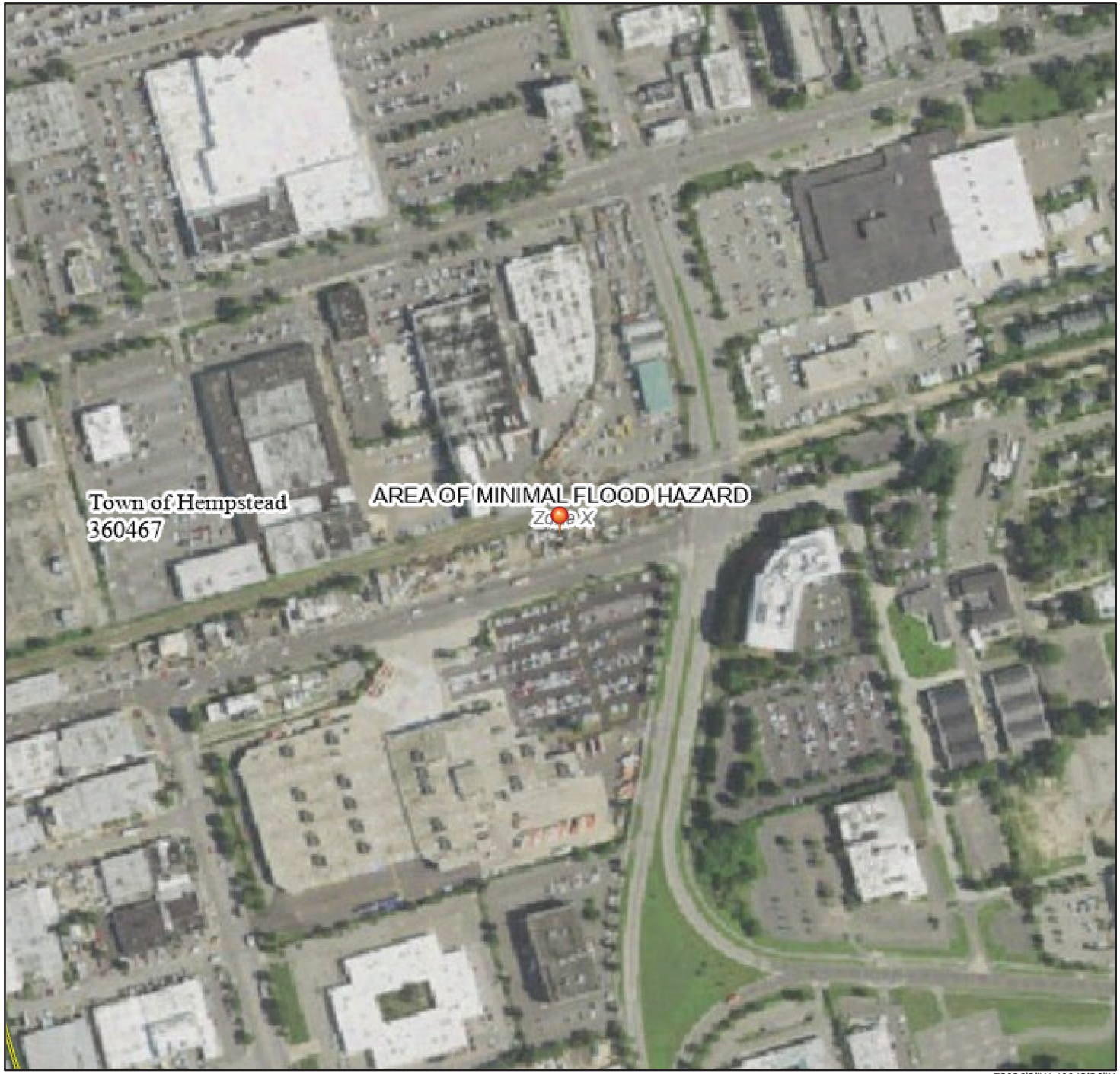
APPENDIX E – FEMA FLOOD INSURANCE RATE MAP

National Flood Hazard Layer FIRMette

FEMA

73°36'40"W 40°44'4"N



73°36'2"W 40°43'36"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/21/2026 at 2:09 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

APPENDIX F – GEOTECHNICAL DATA

POZ Engineering & Environmental Consulting, P.C.

PRELIMINARY Geotechnical Report

To

Burns & McDonnell Consultants, P.C.

For

PSEGLI STEWARD AVENUE

P.O. 178669

March 27, 2026

1. **Introduction** – POZ engaged in a contract for Burns and McDonnell for geotechnical services in an empty lot along Commerce Ave in Garden City, Long Island, NY (Appendix A). POZ sub-contracted the drilling operations to Soil Mechanics Drilling, who mobilized with a truck mounted core rig, a GPR unit, and a VAC truck. The lot had a wrecker at the extreme west of the property with two trailers at the extreme east. The location of the proposed boreholes were marked by a surveyor of Burns and McDonnell prior to drilling. The drilling began with the auger placed at the 5-foot level that was vacuumed out. A 2-inch split-spoon core barrel was placed inside the auger and sampled to 7 feet. The sample was pulled out of the hole and measured in feet and placed in a plastic bag that was marked as “S-1 BHxE 5’ to 7’”. Augering continued to the next sampling depth at 10 feet, which was S2, etc (See Appendix B for borehole logs). In addition, a proctor was taken for each hole from the auger return that was estimated at about 35 feet. The site conditions for each location were as follows:

1.1. BH2E – This was the second to be drilled but the first to be vacuumed. The operator of the VAC truck could not penetrate to the 5-foot level, so the operator moved to BH4E. After six attempts to penetrate the soil to five feet (see final location in Appendix A), the drill rig was positioned on the top of the hole and began to take 2-foot core samples at 5-foot intervals to 52 feet. In all, ten samples were taken.

1.2. BH4E – This was the first hole to be drilled and sampled after two attempts to vacuum the soil to the 5-foot level. The drill rig was positioned on the top of the hole and began to take 2-foot core samples at 5-foot intervals to 52 feet. In all, ten samples were taken.

2. **Purpose of Report** – The purpose of the drilling was to determine the chemical, electrical, and physical characteristics of the site for proposed structures.

3. **Results of Drilling** –

3.1. BH2E – This hole was difficult to vacuum (soft dig) with many slabs of concrete as per GPR. The samples pulled out of the hole were contaminated with diesel fuel. Appendix A shows a google earth shot of many vehicles in the lot prior to our project. This contaminant seemed to be filtered out at about 35 feet or so (see Appendix B BH2E log). Ground water was detected at 27.42 feet, and no sampling of the groundwater was not in the scope of this work.

3.2. BH4E- This hole was vacuumed (soft dig) with two attempts, but only 6 inches apart; the GPR detected only a large boulder. The operation of collecting samples was severely hampered by the weather (rain), which a process of tag and bag was only possible. The result of this drilling is located in Appendix B as BH4E log.

4. **Laboratory Results** – The soils were taken to Pennoni geotechnical testing lab in Pittston, PA (see Appendix C). The lab tested each interval with the exception of S-1, S-2, S-5, and S-7 for each borehole. These samples were sent to other laboratories for chemical and geothermal analysis. Only one proctor was tested due to the lab not willing to sample the contaminated samples (BH2E), but did a visual on each sample. The tests show a typical glacial outwash material as was expected from the geology. The samples that were sent to other laboratories for chemical and geothermal composition are not part of this report.

5. **Methodology** – The results of the laboratory samples were used to calculate the soil bearing capacity (q_{ult}) using principles of engineering for geotechnical results. In Appendix D, each borehole is evaluated for q_{ult} from Terzagi for round footings.

$$q_{ult} = 1.3c'N_c + \sigma'_D N_q + 0.3\, y'BN_y$$

where:

c' = Effective Cohesion factor

N_c , N_q , N_y = Bearing capacity Factors

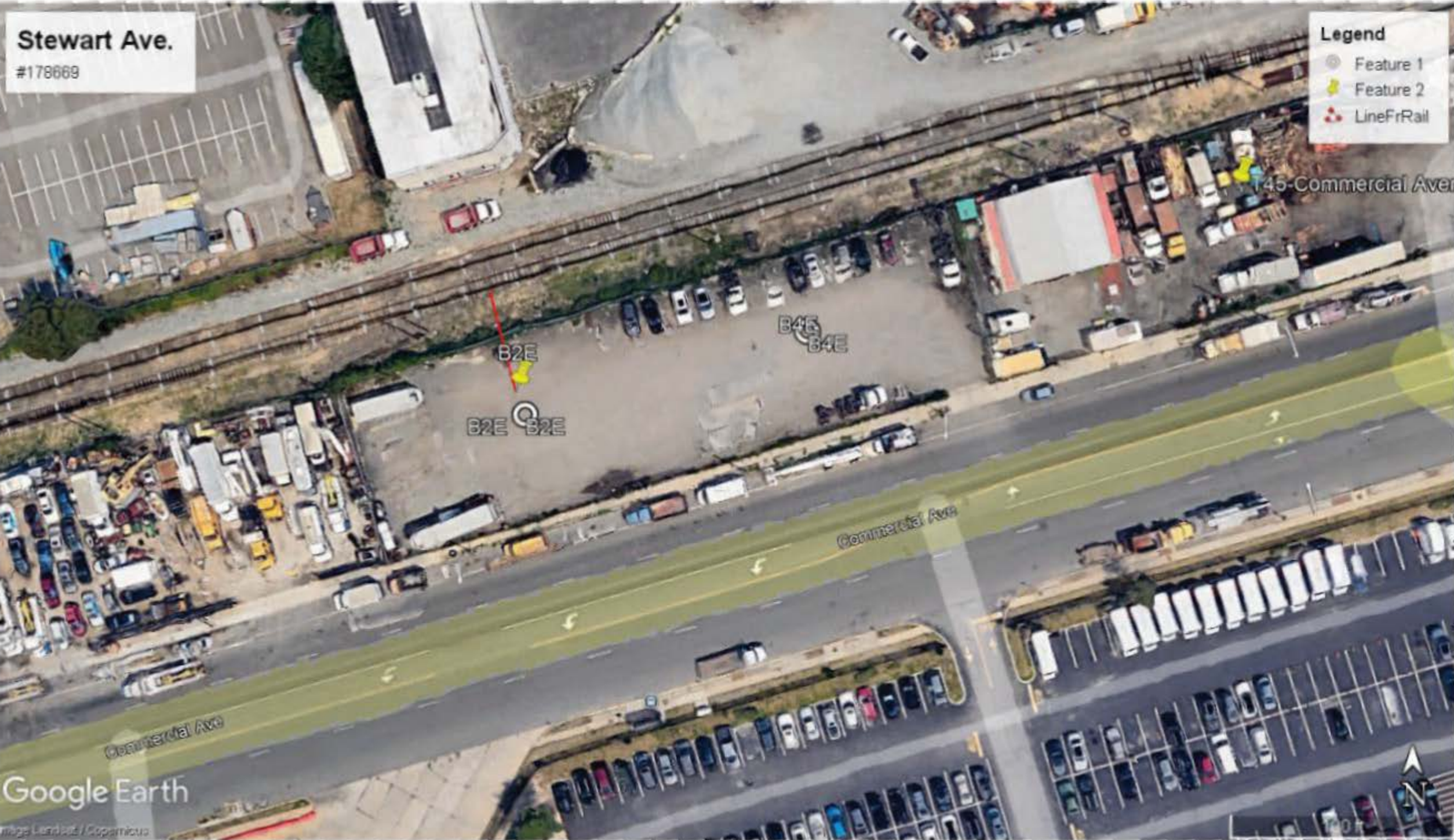
σ'_D = Vertical stress at depth

B = Diameter of footing

6. **Discussion of Results** – The results of this methodology are listed in Table #1 and 2 and Figure 1 of Appendix D.
   6.1. Since the composition of the soil is predominantly sand, c' is 0.
   6.2. The bearing capacity factors are dependent on the angle of the sand particles to each other in the matrix (Φ), which is dependent on the SPT value.
   6.3. For this analysis, it is assumed that a 4-foot circular footing will be constructed on the soil face at a certain depth and the composite for BH4E is hypothetically equal to BH2E.
   6.4. There are 3 cases that affect q_{ult} : Soil above the ground water this is true for S-1 through S-4; Soil at or near the groundwater level for S-5; Soil below the groundwater level for all samples at and below S6.
      6.4.1. In the first case the density of the soil was calculated for y' in both boreholes. The comparative graph shows BH4E with higher q_{ult} values that BH2E. This was due to the N (SPT) values that increase the Φ resulting in higher bearing capacity factors.
      6.4.2. In the second case the soil and water density along with the depth were calculated for y'. The N (SPT) values were similar to case 1, above.
      6.4.3. In the third case y' was the difference between the soil and water densities. For the most part, the N (SPT) values were similar to case 1, above.
7. **References**-
   7.1. "Geotechnical Engineering, Principles and Practices", Donald Coduto, et.al., Second Editon, Pearson, 2011.

APPENDIX A

Location


Stewart Ave.
#178669
Legend
Feature 1
Feature 2
LineFrRail
145-Commercial Aven
B2E
B2E
B2E
B4E
B4E
Commercial Ave
Commercial Ave
Google Earth
N

APPENDIX B

Borehole Logs

Hole No. BH 2E

DIVISION
DRILLING LOG

INSTALLATION OF

SHEET: 1 of 2 SHEETS

1. PROJECT: Stewart Ave. #178669

2. LOCATION (Coordinates or Station): 40d43'49.73" N 73d36'23.48" W

3. DRILLING AGENCY: Soil Mechanics

4. HOLE NO. (As shown on drawing title and title number): B2E

5. NAME OF DRILLER: Steve Mitchell

6. DIRECTION OF HOLE
X: VERTICAL INCLINED _____ DEG. FROM VERT.

7. THICKNESS OF OVERBURDEN: N/A

8. DEPTH DRILLED INTO ROCK: N/A

9. TOTAL DEPTH OF HOLE: 52'

10. SIZE AND TYPE OF BIT: 2-inch

11. DATUM FOR ELEVATION SHOWN (TBM or MSL): 76' asl

12. MANUFACTURERS DESIGNATION OF DRILL:

13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN — DISTURBED: 10 — UNDISTURBED:

14. TOTAL NUMBER CORE BOXES N/A

15. ELEVATION GROUND WATER: 76 feet

16. DATE HOLE STARTED: 3/6/2026 COMPLETED: 3/6/2026

17. ELEVATION TOP OF HOLE: 76'

18. TOTAL CORE RECOVERY FOR BORING: N/A

19. SIGNATURE OF INSPECTOR

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
76'-	0'	--	Surface			Soft dig with Vacuum Truck to 5 feet
71'	5	--	Gravel & Coarse grain Sand 5Y4/3	1' 50%	S1	6-16-20-18, Deisel smell, wet 5 to 7 feet
			Auger			
66'	10	--	Gravel & Coarse grain Sand 5Y4/4	1.1' 55%	S2	5-8-11-8, wet 10 to 12 feet
			Auger			
61'	15	--	Gravel & Coarse grain Sand 5Y4/4	1.1' 55%	S3	10-11-12-14, Moist 15 to 17 feet
			Auger			
56'	20	--	Coarse grain sand 5Y5/4	1.75' 87.5%	S4	6-9-9-9, Moist 20 to 22 feet
			Auger			
51'	25	--	Coarse grain sand 5Y5/6	1' 50%	S5	4-5-5-5, Moist 25 to 27 feet
			Auger			^ depth to ground water 27.42 feet
46'	30	--	Coarse grain sand 5Y5/6	2' 100%	S6	4-5-5-6, Wet 30 to 32 feet
			Auger			
41'	35	--	Coarse grain sand and gravel 5Y6/8	1" 50%	S7	5-3-3-3, wet 35 to 37 feet
			Auger			
36'	40	--	Coarse grain sand and gravel 5Y6/8	0.9' 45%	S8	6-6-6-7, wet 40 to 42 feet
			Auger			
31'	45	--	See page 2			

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE

Hole No.: B2E

PROJECT: Stewart Ave., # 178669 INSTALLATION SHEET :2 of 2

OF: SHEETS

ELEVATION a	DEPTH b	LEGEND C	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV-ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	42	- - -	Auger			
31’	45	-- -	Fine grain Sand w/ gravel 5Y6/8	0.95’ 47.5%	S9	4-5-5-6, wet, 45 to 47 feet
		- - -	Auger			
26’	50	-- -	Fine grain sand 5Y6/8	1.2’ 60%	S10	4-7-10-17, wet 50 to 52 feet
		-	BOH			

Hole No. BH 4E

DIVISION
DRILLING LOG

INSTALLATION OF

SHEET: 1 of 2 SHEETS

1. PROJECT: Stewart Ave. #178669

2. LOCATION (Coordinates or Station): 40d43'49.97" N 73d36'21.76" W

3. DRILLING AGENCY: Soil Mechanics

4. HOLE NO. (As shown on drawing title and title number): B4E

5. NAME OF DRILLER: Steve Mitchell

6. DIRECTION OF HOLE
X: VERTICAL INCLINED _____ DEG. FROM VERT.

7. THICKNESS OF OVERBURDEN: N/A

8. DEPTH DRILLED INTO ROCK: N/A

9. TOTAL DEPTH OF HOLE: 52'

10. SIZE AND TYPE OF BIT: 2-inch

11. DATUM FOR ELEVATION SHOWN (TBM or MSL): 76' asl

12. MANUFACTURERS DESIGNATION OF DRILL:

13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED 10; UNDISTURBED

14. TOTAL NUMBER CORE BOXES N/A

15. ELEVATION GROUND WATER: 76 feet

16. DATE HOLE STARTED: 3/6/2026 COMPLETED: 3/6/2026

17. ELEVATION TOP OF HOLE: 76'

18. TOTAL CORE RECOVERY FOR BORING: N/A

19. SIGNATURE OF INSPECTOR

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
76'-	0'	--	Surface			Soft dig with Vacuum Truck to 5 feet
71'	5	--	Gravel & Coarse grain Sand 5Y6/4	1.4' 70%	S1	7-20-21-21, moist 5 to 7 feet
			Auger			
66'	10	--	Gravel & Coarse grain Sand 5Y6/8	1.5' 75%	S2	10-12-16-23, moist 10 to 12 feet
			Auger			
61'	15	--	Gravel & Coarse grain Sand 5Y6/8	1.4' 70%	S3	6-8-10-9, Moist 15 to 17 feet
			Auger			
56'	20	--	Coarse grain sand & gravel 5Y6/8	1.4' 70%	S4	9-12-15-15, Moist 20 to 22 feet
			Auger			
51'	25	--	Fine grain sand & gravel 5Y7/8	1.6' 80%	S5	5-11-15-17, Moist 25 to 27 feet
			Auger			^ water at 27.42 feet
46'	30	--	Fine grain sand & gravel 5Y7/8	2' 100%	S6	10-11-15-20, Wet 30 to 32 feet
			Auger			Washed casing
41'	35	--	Fine grain sand and gravel 5Y7/8	1.2" 60%	S7	10-15-13-20, wet 35 to 37 feet
36'	40	--	Auger			Washing casing
			Fine grain sand and gravel 5Y7/8	0.9' 45%	S8	6-6-8-9, wet 40 to 42 feet
31'	45	--	Auger See page 2			Washed casing

DRILLING LOG (Cont Sheet) ELEVATION TOP OF HOLE

Hole No.: B4E

PROJECT: Stewart Ave., # 178669 INSTALLATION SHEET :2 of 2

OF: SHEETS

ELEVATION a	DEPTH b	LEGEND C	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV-ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	42	- - -	Auger			Washed casing
31’	45	-- -	Fine grain Sand w/ gravel 5Y7/8	0.7’ 35%	S9	7-10-13-14, wet, 45 to 47 feet
		- - -	Auger			Washing casing
26’	50	-- -	Fine grain sand 5Y7/8	1.2’ 60%	S10	10-10-13-14, wet 50 to 52 feet
		-	BOH			

Appendix C

Laboratory Resulting

TRANSMITTAL NOTICE

March 24, 2026

PEECP26001
LAB #07-215981

POZ Engineering & Environmental Consulting, P.C.
Attn: Mr. Emanuel T. Posluszny, P.E.
emanuel@poz-e.com
490 North Main Street
P.O. Box 663
Pittston, PA 18640

RE: Stewart Avenue #178669 (#26029)
Garden City, NY

Mr. Posluszny:

Please find enclosed the results of the laboratory testing performed on the test boring samples for boring BH-4E and BH-2E delivered to our office on March 16, 2026.

Sample BH-4E was tested for gradation & classification and moisture-density relationship. The results of this testing are included herein as Enclosure (1).

Sample BH-2E was visually classified. The results of this testing are included herein as Enclosure (2).

If you have any questions, please contact our office.

Sincerely,
PENNONI ASSOCIATES, INC.

Timothy Burns, P.E.
Senior Engineer
tburns@pennoni.com

Encls:
(1) Laboratory Test Data (Test Boring BH-4E)
- Soil Classifications Summary
- Gradation and Classifications (8 sheets)
- Moisture-Density Relationship

(2) Laboratory Test Data (Test Boring BH-2E)
- Soil Classifications Summary

PENNONI ASSOCIATES, INC.
120 Commerce Road • Pittston Twp., PA 18640-9552
570/655-2200 (phone) • www.pennoni.com

#26029
LABORATORY TEST DATA

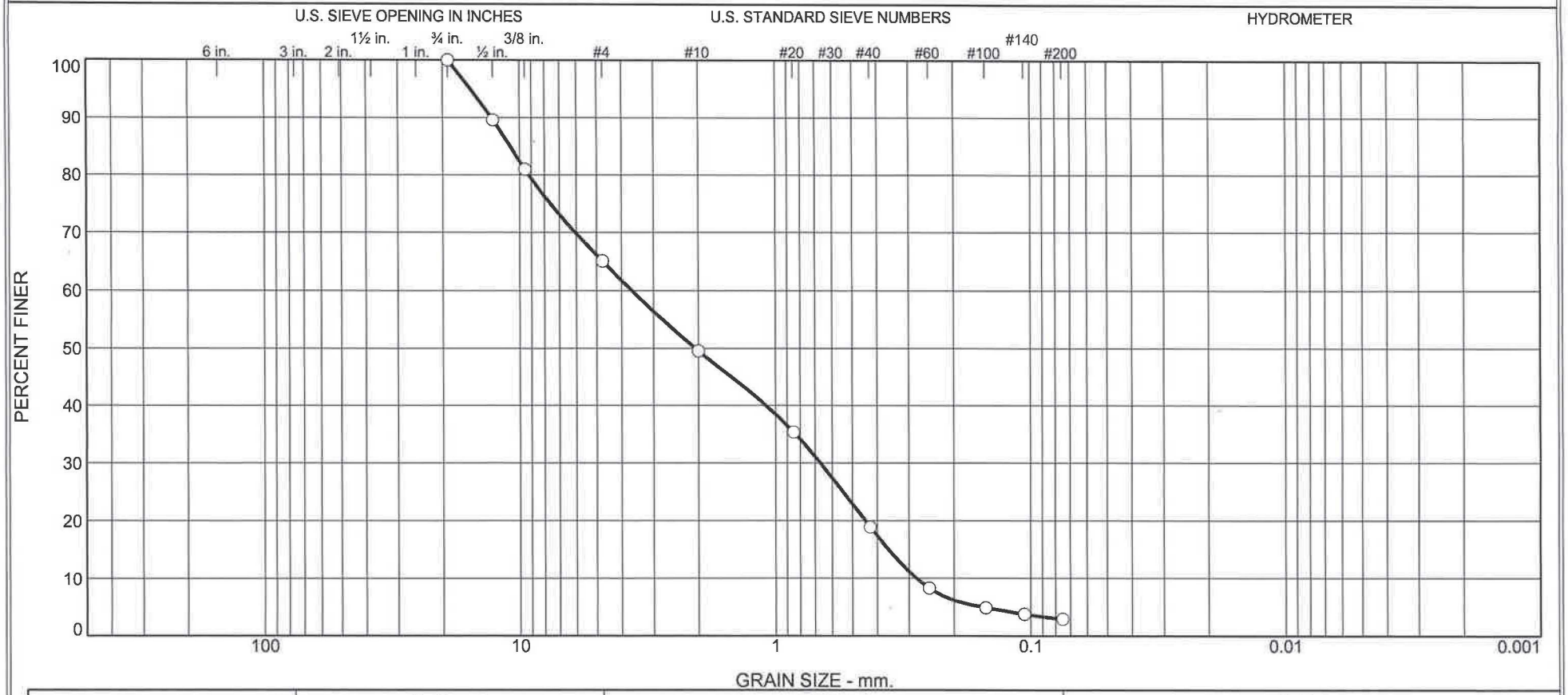
- Soil Classifications Summary (BH-4E)
- Gradation and Classifications (8 sheets)
- Moisture-Density Relationship

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 Boring BH-4E Sample No.	Soil Sample Depth	Classification (ASTM D-2487)	%Moisture (D-2216)	Combined Silt/Clay (% < #200)
S-2	10’ – 12’	light brown poorly graded SAND with gravel (SP)	2.9%	2.9%
S-5	25’ – 27’	orange/brown poorly graded SAND (SP)	5.2%	2.8%
S-6	30’ – 32’	light brown poorly graded SAND with gravel (SP)	11.3%	1.8%
S-7	35’ – 37’	light brown poorly graded SAND with silt and gravel (SP-SM)	12.7%	5.1%
S-8	40’ – 42’	light brown poorly graded SAND with gravel (SP)	28.2%	2.9%
S-9	45’ – 47’	light brown poorly graded SAND (SP)	16.0%	1.7%
S-10	50’ – 52’	light brown poorly graded SAND with gravel (SP)	14.7%	3.1%
Bulk	below 35’	light brown poorly graded SAND with gravel (SP)	7.2%	2.5%

GRADATION AND CLASSIFICATION



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	34.9	15.6	30.6	16.0	2.9	

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Stewart Ave. #178669	BH-4E S-2	10'-12'	3/5/26	SP	lt. brown poorly graded SAND with gravel	2.9	NP	NP

Client POZ Engineering & Environmental

Project Materials Testing 2026

Project No. 26029 Figure

Pennoni

○ Plasticity Index PI= Non-Plastic

Tested By: MJ

GRADATION AND CLASSIFICATION

	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	8.8	7.0	47.8	33.6	2.8	

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Stewart Ave. #178669	BH-4E S-5	25'-27'	3/5/26	SP	orange/brown poorly graded SAND	5.2	NP	NP

Client POZ Engineering & Environmental

Project Materials Testing 2026

Project No. 26029 Figure

Pennoni

○ Plasticity Index PI= Non-Plastic

Tested By: MJ

GRADATION AND CLASSIFICATION

	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	8.6	16.7	8.4	32.4	32.1	1.8	

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Stewart Ave. #178669	BH-4E S-6	30'-32'	3/5/26	SP	lt. brown poorly graded SAND with gravel	11.3	NP	NP

Client POZ Engineering & Environmental

Project Materials Testing 2026

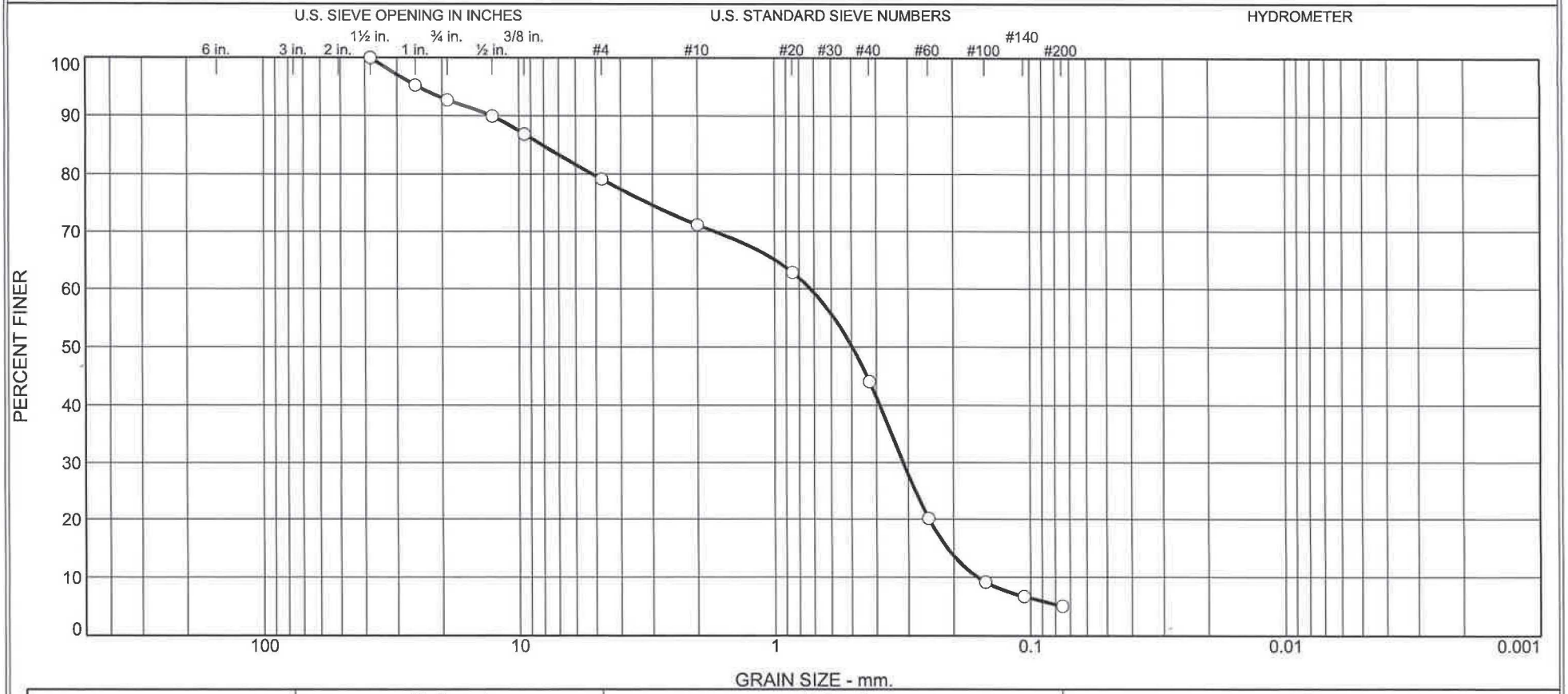
Project No. 26029 Figure

Pennoni

○ Plasticity Index PI= Non-Plastic

Tested By: MJ

GRADATION AND CLASSIFICATION



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	7.3	13.6	8.0	27.0	39.0	5.1	

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Stewart Ave. #178669	BH-4E S-7	35'-37'	3/5/26	SP-SM	lt. brown poorly graded SAND with silt and gravel	12.7	NP	NP

Client POZ Engineering & Environmental

Project Materials Testing 2026

Project No. 26029 Figure

Pennoni

○ Plasticity Index PI= Non-Plastic

Tested By: MJ

GRADATION AND CLASSIFICATION

	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	3.6	18.6	10.6	34.2	30.1	2.9	

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Stewart Ave. #178669	BH-4E S-8	40'-42'	3/5/26	SP	lt. brown poorly graded SAND with gravel	28.2	NP	NP

Client POZ Engineering & Environmental

Project Materials Testing 2026

Project No. 26029 Figure

Pennoni

○ Plasticity Index PI= Non-Plastic

Tested By: MJ

GRADATION AND CLASSIFICATION

	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	10.9	10.2	46.2	31.0	1.7	

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Stewart Ave. #178669	BH-4E S-9	45'-47'	3/5/26	SP	lt. brown poorly graded SAND	16.0	NP	NP

Client POZ Engineering & Environmental

Project Materials Testing 2026

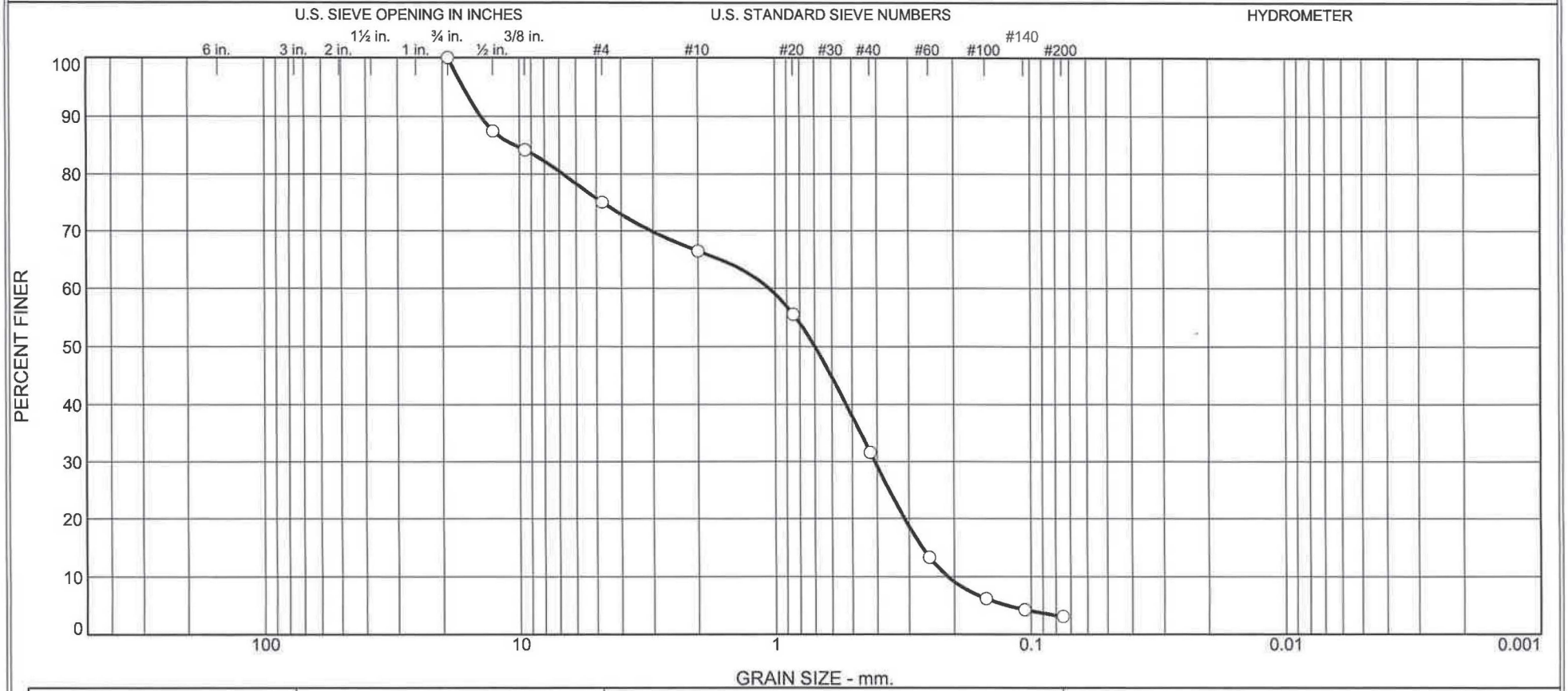
Project No. 26029 Figure

Pennoni

○ Plasticity Index PI= Non-Plastic

Tested By: MJ

GRADATION AND CLASSIFICATION



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	25.0	8.5	34.9	28.5	3.1	

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Stewart Ave. #178669	BH-4E S-10	50'-52'	3/5/26	SP	lt. brown poorly graded SAND with gravel	14.7	NP	NP

Client POZ Engineering & Environmental

Project Materials Testing 2026

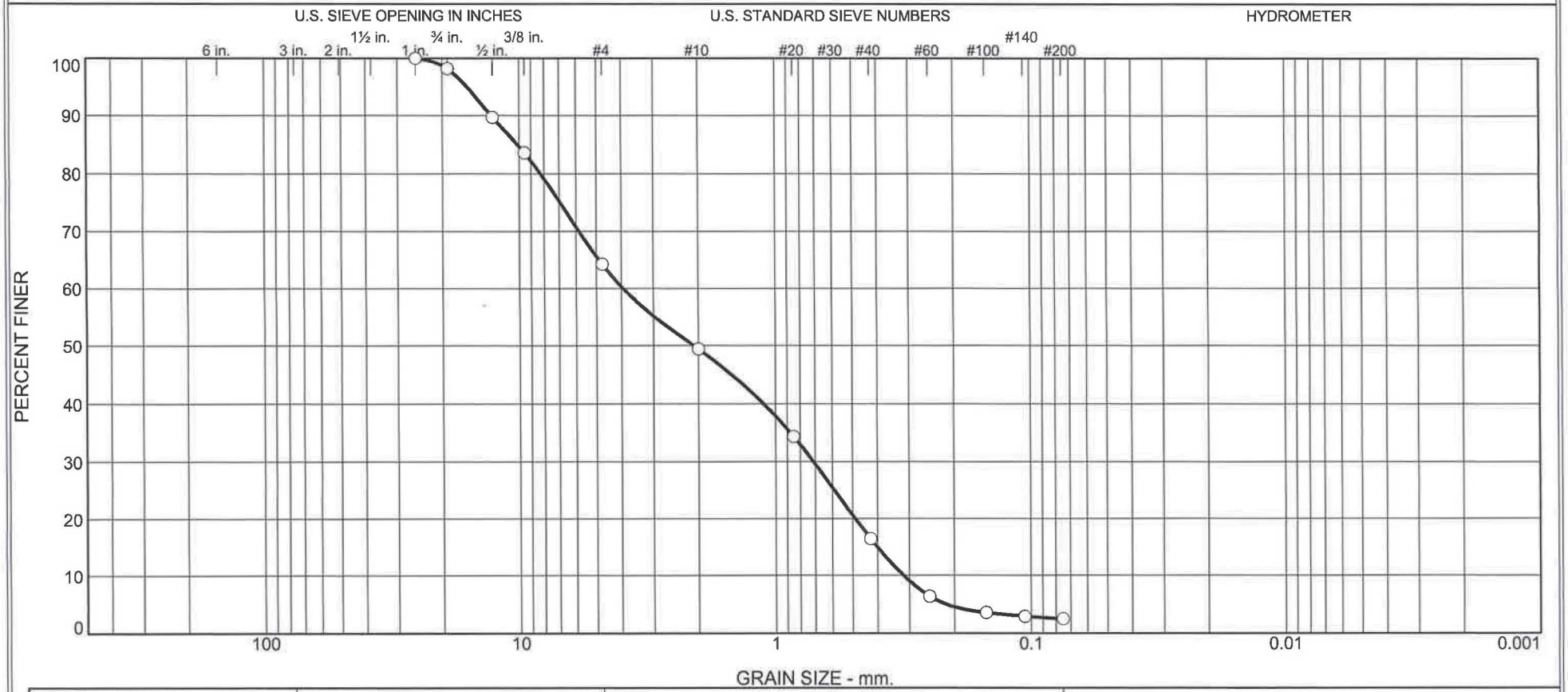
Project No. 26029 Figure

Pennoni

○ Plasticity Index PI= Non-Plastic

Tested By: MJ

GRADATION AND CLASSIFICATION



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	1.8	33.9	14.9	32.9	14.0	2.5	

	Source	Sample #	Depth/Elev.	Date Sampled	USCS	Material Description	NM %	LL	PL
○	Stewart Ave. #178669	S-1 (bulk)	below 35'	3/5/26	SP	lt. browm poorly graded SAND with gravel	7.2	NP	NP

Client POZ Engineering & Environmental

Project Materials Testing 2026

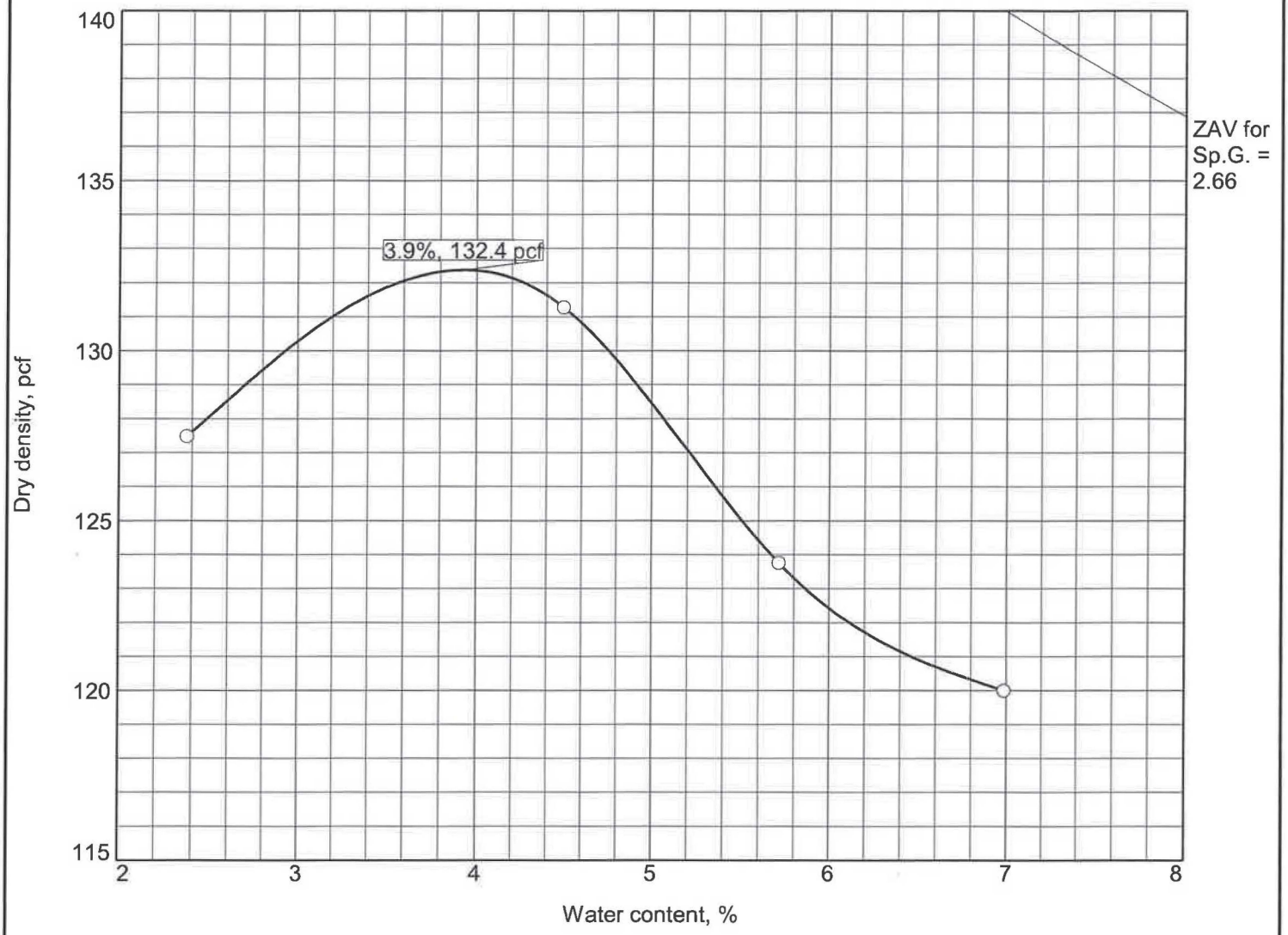
Project No. 26029 Figure

Pennoni

○ Plasticity Index PI= Non-Plastic
Specific Gravity= 2.659
Unit Weight= 106.8 lbs/cuft

Tested By: MJ

MOISTURE-DENSITY RELATIONSHIP



Test specification: ASTM D 698-12 Method B Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/8 in.	% < No.200
	USCS	AASHTO						
below 35'	SP	A-1-a	7.2	2.659	NP	NP	16.4	2.5

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 132.4 pcf Optimum moisture = 3.9 %	lt. browm poorly graded SAND with gravel

Project No. 26029 **Client:** POZ Engineering & Environmental

Project: Materials Testing 2026

○ **Source of Sample:** Stewart Ave. #178669 **Sample Number:** S-1 (bulk)

Pennoni

Remarks:

S-1 bulk
3-5-26
Specific Gravity= 2.659

Figure

Tested By: MJ

PENNONI ASSOCIATES, INC.
120 Commerce Road • Pittston Twp., PA 18640-9552
570/655-2200 (phone) • www.pennoni.com

#26029
LABORATORY TEST DATA

- Soil Classifications Summary (BH-2E)

SOIL CLASSIFICATIONS SUMMARY

Results of visual observation are summarized in the following table.

Test Boring BH-2E Sample No.	Soil Sample Depth	Classification (ASTM D-2488*)
S-2	10’ – 12’	light brown poorly graded SAND with gravel (SP)
S-5	25’ – 27’	gray poorly graded SAND (SP)
S-6	30’ – 32’	gray poorly graded SAND (SP)
S-7	35’ – 37’	light brown poorly graded SAND with gravel (SP)
S-8	40’ – 42’	light brown poorly graded SAND (SP)
S-9	45’ – 47’	light brown poorly graded SAND (SP)
S-10	50’ – 52’	light brown poorly graded SAND (SP)
Bulk	below 35’	gray poorly graded SAND with gravel (SP)

Note: *Visual classification per ASTM D-2488.

Appendix D

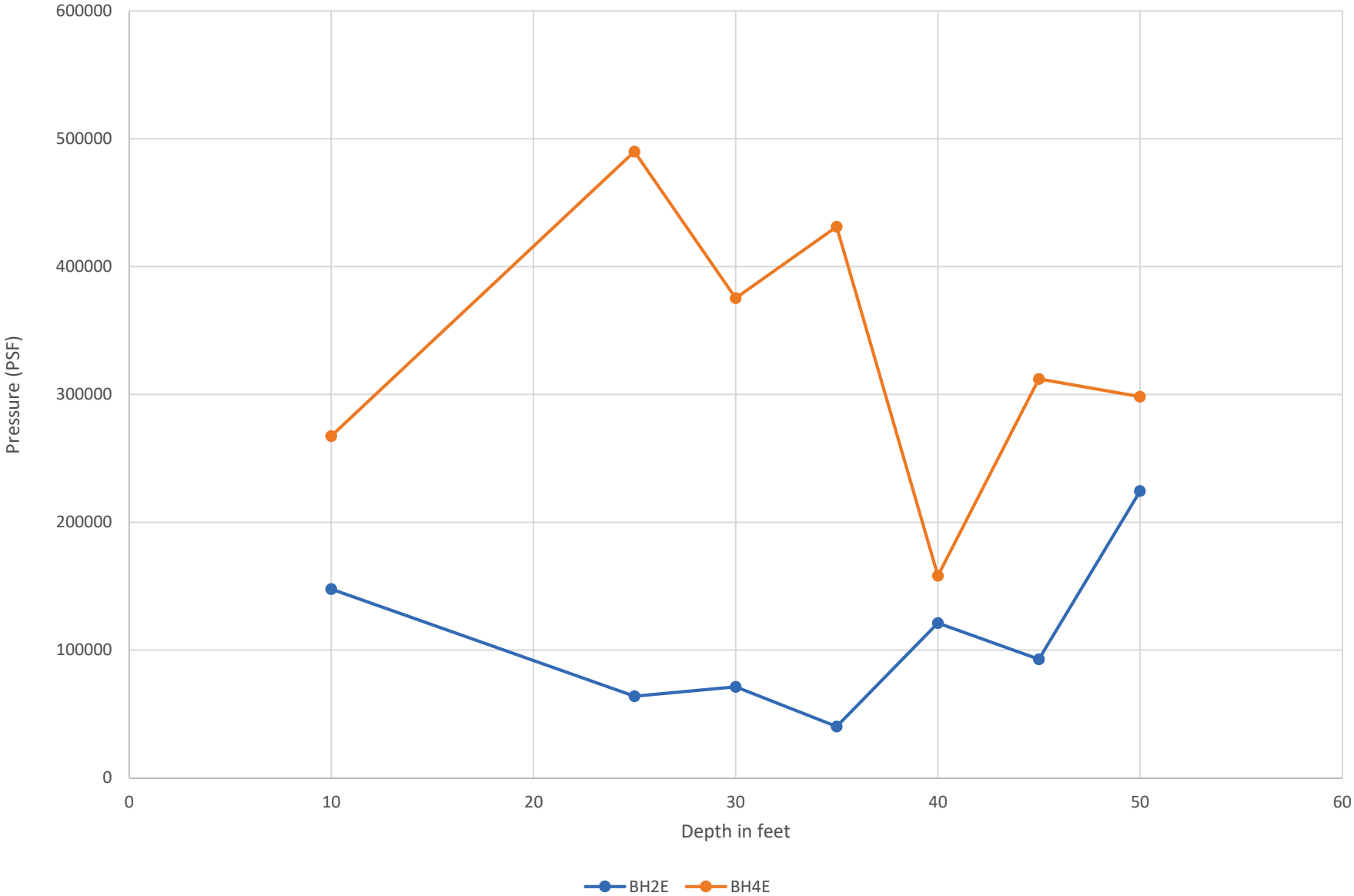
Analysis

Table #1 - BH2E*								SPT											
					Recovery			Blows											
Strata	moisture	Sample#	Depth Interval (ft)	Penetration (ft)	Feet	Percent	RQD	6"	12"	18"	24"	N (SPT)	Grd Water	USCS	NOTE	NM%	LL	PL	PSF
Light Bwn Poorly grd Sand w/ Gravel	M	S-2	10-12	2	1.1	55%	N/A	5	8	11	8	19		SP					
Gray poorly grd sand	M	S-5	25-27	2	1	50%	N/A	4	5	5	5	10	27.42	SP					
Gray poorly grd sand	**W**	S-6	30-32	2	2	100%	**N/A**	4	5	5	6	11		SP					
Light Bwn Poorly grd Sand w/Gravel	**W**	S-7	35-37	2	1	50%	**N/A**	5	3	3	3	6		SP					
Light Bwn Poorly grd Sand	**W**	S-8	40-42	2	0.9	45%	**N/A**	6	6	6	7	13		SP					
Light Bwn Poorly grd Sand	**W**	S-9	45-47	2	0.95	48%	**N/A**	4	5	5	6	11		SP					
Light Bwn Poorly grd Sand w/ Gravel	**W**	S-10	50-52	2	1.2	60%	**N/A**	4	7	10	17	27		SP					
End of core			52.0																

	C'	O'z	Deg	Nc	Nq	Nd	D (ft)	O'd psf	Y (pcf)	B (FT)	Qult (PSF)	F							
	0		47	106.8	93.8	148.5	10	1324	132.4	4	147784.9		Deg=SPT vs normal Stress						
	0		30	37.2	22.5	20.1	25	2686	107.4	4	63890.27			F=Safety Factor					
	0		33	48.1	32.2	33.3	30	2100	70	4	71349.6			Qult=Ultimate Shear Strength of Soil (PSF)					
	0		27	29.2	15.9	12.5	35	2450	70	4	40355			Y=density					
	0		35	57.8	41.4	47.3	40	2800	70	4	121217.6			O'd=normal stress					
	0		32	44	28.5	28	45	3150	70	4	92911			Groundwater at 27.42'					
	0		38	77.5	61.5	82.3	50	3500	70	4	224467.6			Nd,Nq,Nd= Bearing Capacity Factors					
														B=Circular footing in diameter					
* Was not tested by the laboratory due to contamination														D=depth of footing below the ground					
Used BH4E vaules to arrive at bearing Capacity																			

Table #2 - B-4	BH 4E							SPT												
Southeast corner					Recovery			Blows												
Strata	moisture	Sample#	Depth Interval (ft)	Penetration (ft)	Feet	Percent	RQD	6"	12"	18"	24"	N (SPT)	Grd Water	USCS	NOTE	NM%	LL	PL	PSF	
Light Bwn Poorly grd Sand w/ Gravel	M	S-2	10-12	2	1.5	75%	N/A	10	12	16	23	39		SP		2.9				
Org/brwn poorly grd sand	M	S-5	25-27	2	1.6	80%	N/A	5	11	15	17	32	27.42	SP		5.2				
Light Bwn Poorly grd Sand w/ Gravel	**W**	S-6	30-32	2	2	100%	**N/A**	10	11	15	20	35		SP		11.3				
Light Bwn Poorly grd Sand w/ silt & Gravel	**W**	S-7	35-37	2	1.2	60%	**N/A**	10	15	13	20	33		SP-SM		12.7				
Light Bwn Poorly grd Sand w/ Gravel	**W**	S-8	40-42	2	0.9	45%	**N/A**	6	6	8	9	17		SP		28.2				
Light Bwn Poorly grd Sand	**W**	S-9	45-47	2	0.7	35%	**N/A**	7	10	13	14	27		SP		16				
Light Bwn Poorly grd Sand w/ Gravel	**W**	S-10	50-52	2	1.2	60%	**N/A**	10	10	13	14	27		SP		14.7				
End of core			52.0																	
	C'	**O'z**	**Deg**	**Nc**	**Nq**	**Nd**	**D**	**O'd**	**(pcf)**	**B (FT**	**Qult (PSF)**	**F**								
	0		45	160	160	350	10	1324	132.4	4	267448		Deg=SPT vs normal Stress							
	0		44	160	160	350	25	2686	107.4	4	489926.4			F=Safety Factor						
	0		45	160	160	350	30	2100	70	4	375200			Qult=Ultimate Shear Strength of Soil (PSF)						
	0		45	160	160	350	35	2450	70	4	431200			Y=density						
	0		37	70.1	53.8	68.1	40	2800	70	4	158267.2			O'd=normal stress						
	0		41	106.8	93.8	148.5	45	3150	70	4	312102			Groundwater at 27.42'						
	0		40	95.7	81.3	121.5	50	3500	70	4	298158			Nd,Nq,Nd= Bearing Capacity Factors						
														B=Circular footing in diameter						
														D=depth of footing below the ground						

Figure 1 -
BH2E and BH4E Comparison



B - IT - 1

$$K_m = \frac{\pi * d}{11 * (t_2 - t_1)} * \ln \frac{H_1}{H_2}$$

K_m = MEAN COEFFICENT OF PERMIABILITY (cm./sec.)

d = INSIDE DIAMETER (cm.)

L = LENGTH OF CASING (cm.)

H_1 = PIEZOMETER HEAD FOR $t = t_1$ (cm.)

H_2 = PIEZOMETER HEAD FOR $t = t_2$ (cm.)

D_1 = DEPTH TO H_1 FROM TOP OF CASING (cm.)

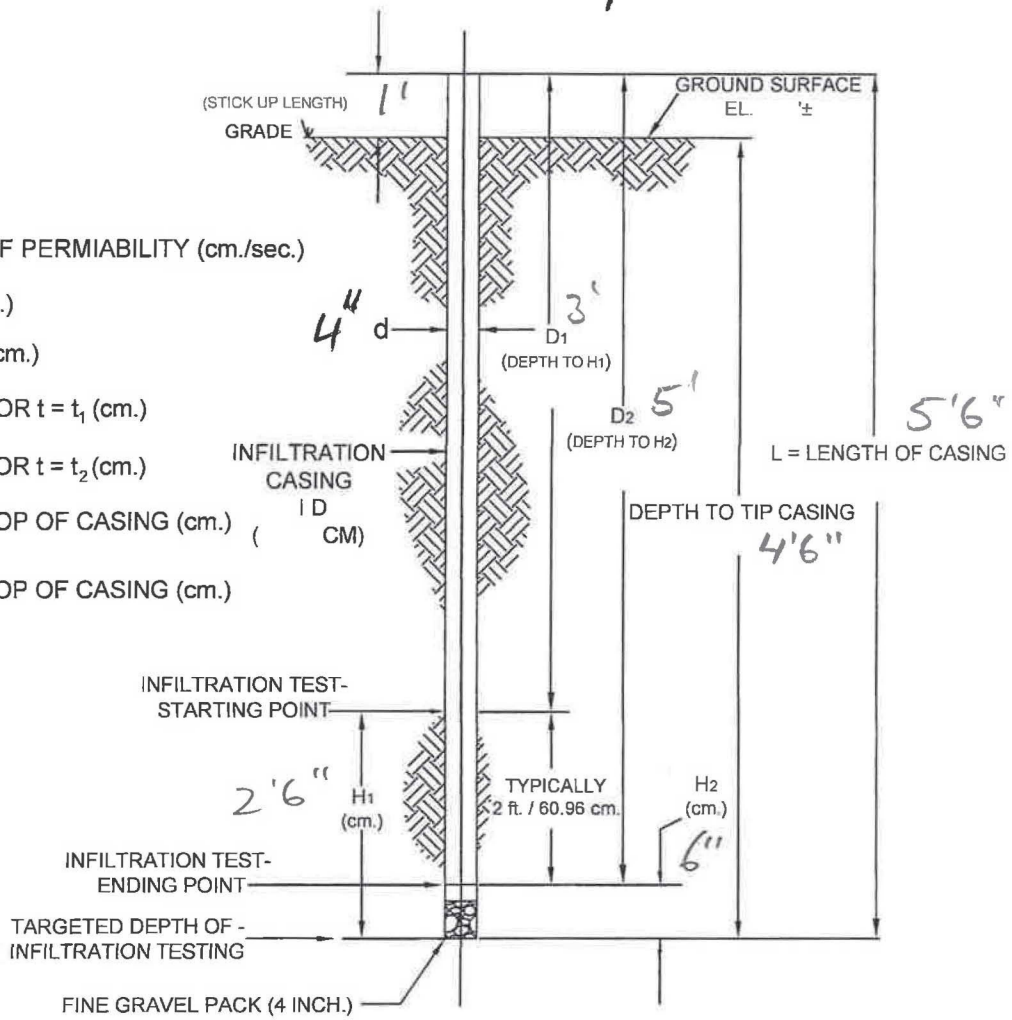
D_2 = DEPTH TO H_2 FROM TOP OF CASING (cm.)

t = TIME (sec.)

In = NATURAL LOG

H_1 = L - D_1 (cm.)

H_2 = L - D_2 (cm.)



JOB NO. 25-332 **LOCATION:** IT-1

DATE: PRESOAK: 3/5/26 **DATE TEST CONDUCTED:** 3/6/26

FALLING HEAD INFILTRATION TEST DATA

D_1 3 ft. X.XX m. XX.X cm.

D_2 5 ft. X.XX m. XX.X cm.

TIME: (MINUTES AND SECONDS)				COMMENTS
RUN No.	START (T1)	END (T2)	ELAPSED	
NO. 1			11 min 42 sec	Drained 2'
NO. 2			9 min 15 sec	
NO. 3			8 min 44 sec	
NO. 4			8 min 49 sec	
NO. 5				

Avg 9 min 38 sec

I.D. OF CASING Ø 4" ID = cm 10.16

DEPTH TO TIP AT BOTTOM OF CASING FT. 4'6"

$$K_m = \frac{\pi * d}{11 * (t_2 - t_1)} * \ln \frac{H_1}{H_2}$$

ALL UNITS IN CM. AND SECONDS

K_m = MEAN COEFFICIENT OF PERMIABILITY (CM/SEC) = 8.078×10^{-3}

SUBSOIL
INVESTIGATIONS

SOIL MECHANICS DRILLING CORP.

3770 MERRICK ROAD, SEAFORD, NEW YORK 11783
PH: (516) 221-2333 FAX: (516) 221-0254
EMAIL: SOILMECHANICSDRAFT@EARTHLINK.NET

April 27, 2026

POZ Engineering & Environmental
P.O. Box 663
Pittston, PA 6418640
Attn: Mr. Posluszny, PE
emanuel@poz-e.com
570-498-7676

Re: 99200 Commercial Ave.
Garden City, NY
Proposal # 25-5370
Project #25-332

Dear Mr. Posluszny:

Forwarded herewith are the results of investigative efforts, conducted in general conformance with Field Wenner 4-Pin Soil Resistivity Testing (ASTM G57), completed at the above referenced property on 4/24/26.

I Field Wenner 4-Pin Soil Resistivity Testing (ASTM G57)

Linear pin spacing for the project, in area of geotechnical borings B-2E and B-4E, was 0.5', 1.0', 1.5', 2.0', 3.0', 5.0', 7.0', 10.0', 15.0', 20.0', 30.0', 45.0', 70.0', 100.0 or as far as practical (see Site Plan attached). The wearing surface in the survey area consisted of asphalt pavement. The data acquired in the field was used to document soil resistivity at the test locations, identified as Traverse #1 through Traverse #4, as follows (see Tables #1 through #4 attached):

(i) Traverse #1 North to South (5,362.0 to 14,362.0 ohm-cm)
(ii) Traverse #2 North to South (5,630.1 to 16,086.0 ohm-cm)

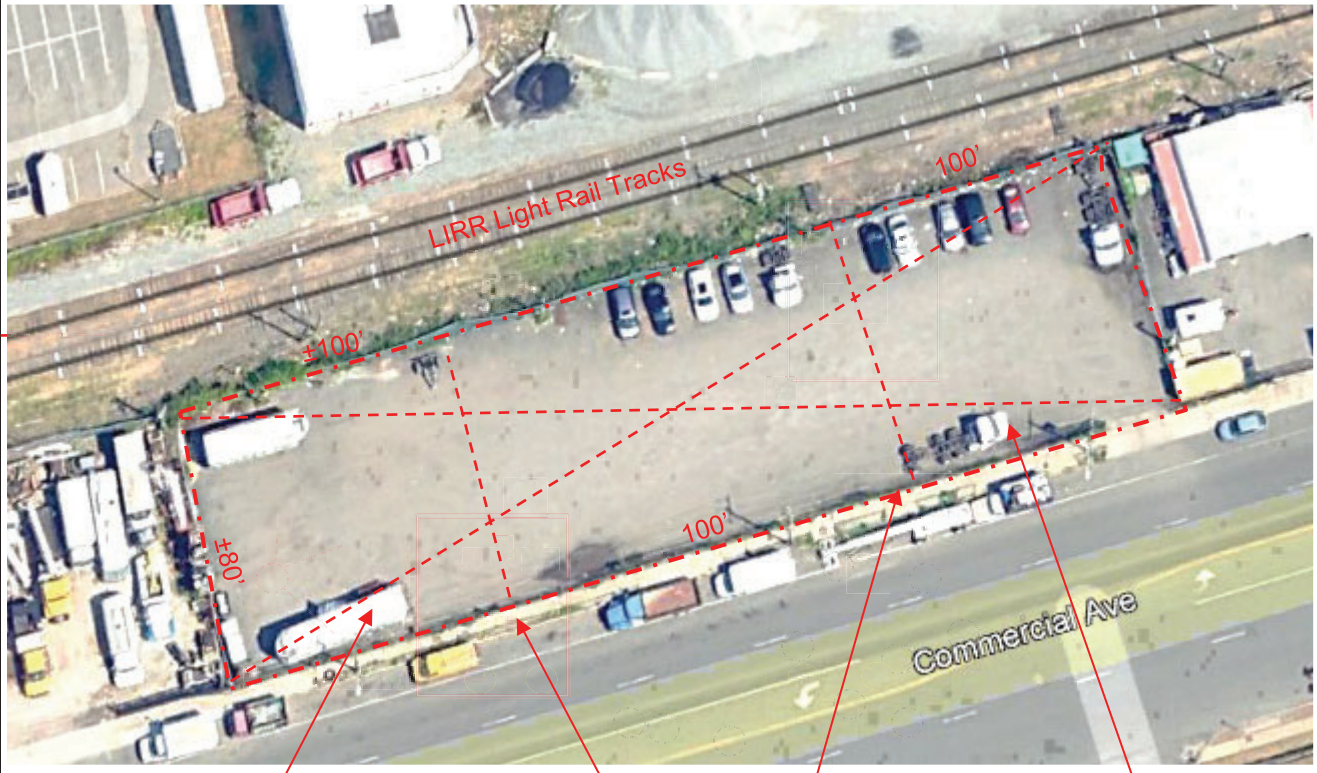
(iii) Traverse #3 Northwest to Southeast (6,894.0 to 191,500.0 ohm-cm)
(iii) Traverse #4 Northeast to Southwest (5,745.0 to 55,535.0 ohm-cm)

Should you have any questions regarding the contents of this report/letter, please feel free to contact our office.

Very truly yours,
Soil Mechanics Drilling Corp.

Altan Gulum, C.P.G., P.G.
Project Geologist

Daniel Marzano
Environmental Scientist



SOIL MECHANICS DRILLING
3770 MERRICK ROAD • SEAFORD, L. I., NEW YORK 11783
(516) 221-2333 • FAX (516) 221-0254

Site Plan
99200 Commercial Ave.
Garden City, NY

DATE: 4/26

SCALE: N.T.S.

JOB NO.: 25-332

N
W
E
S

Table #1

Project: 99200 Commercial Ave., Garden City, NY Sampling Location: Boring Location B2E & B4E Date: 4/24/26 Prepared For: Poz Engineering				Instrument Manufacturer/Model #: McMiller 400A Soil Resistivity Meter Soil Temperature: 60° Air Temperature: 65° Percent Moisture: NA Soil Composition: NA Ground Water Table: NA Last 48 Hours Precipitation (Inches): 0.05" (Area of survey asphalt paved)		
Test Location	**Pin Spacing** **S (ft.)**	**Dial Reading** **D**	**Range Switch Setting** **R**	**Resistance (ohm)** **D x R**	**Spacing Multiplier:** **191.5 x S**	**Resistivity (ohm-cm)** **Resistance x Spacing Multiplier**
Traverse #1	0.5'	1.5	100.0	150.0	95.75	14,362.5
	1.0'	6.6	10.0	66.0	191.5	12,639.0
	1.5'	3.8	10.0	38.0	287.25	10,915.5
	2.0'	2.5	10.0	25.0	383.0	9,575.0
	3.0'	2.0	10.0	20.0	574.5	11,490.0
	5.0'	7.0	1.0	7.0	957.5	6,702.5
	7.0'	4.0	1.0	4.0	1,340.5	5,362.0
	10.0'	4.0	1.0	4.0	1,915.0	7,660.0
	15.0'	3.5	1.0	3.5	2,872.5	10,053.75
	20.0'	3.0	1.0	3.0	3,830.0	11,490.0

Table #2

Project: 99200 Commercial Ave., Garden City, NY Sampling Location: Boring Location B2E & B4E Date: 4/24/26 Prepared For: Poz Engineering				Instrument Manufacturer/Model #: McMiller 400A Soil Resistivity Meter Soil Temperature: 60° Air Temperature: 65° Percent Moisture: NA Soil Composition: NA Ground Water Table: NA Last 48 Hours Precipitation (Inches): 0.05" (Area of survey asphalt paved)		
Test Location	**Pin Spacing S (ft.)**	**Dial Reading D**	**Range Switch Setting R**	**Resistance (ohm) D x R**	**Spacing Multiplier: 191.5 x S**	**Resistivity (ohm-cm) Resistance x Spacing Multiplier**
Traverse #2	0.5'	10.0	10.0	100.0	95.75	9,575.0
	1.0'	6.0	10.0	60.0	191.5	11,490.0
	1.5'	4.0	10.0	40.0	287.25	11,490.0
	2.0'	2.8	10.0	28.0	383.0	10,724.0
	3.0'	1.6	10.0	16.0	574.5	9,192.0
	5.0'	6.2	1.0	6.2	957.5	5,936.5
	7.0'	4.2	1.0	4.2	1,340.5	5,630.1
	10.0'	4.1	1.0	4.1	1,915.0	7,851.5
	15.0'	5.0	1.0	5.0	2,872.5	14,362.5
	20.0'	4.2	1.0	4.2	3,830.0	16,086.0

Table #3

Project: 99200 Commercial Ave., Garden City, NY Sampling Location: Boring Location B2E & B4E Date: 4/24/26 Prepared For: Poz Engineering				Instrument Manufacturer/Model #: McMiller 400A Soil Resistivity Meter Soil Temperature: 60° Air Temperature: 65° Percent Moisture: NA Soil Composition: NA Ground Water Table: NA Last 48 Hours Precipitation (Inches): 0.05" (Area of survey asphalt paved)		
Test Location	**Pin Spacing S (ft.)**	**Dial Reading D**	**Range Switch Setting R**	**Resistance (ohm) D x R**	**Spacing Multiplier: 191.5 x S**	**Resistivity (ohm-cm) Resistance x Spacing Multiplier**
Traverse #3	0.5'	1.6	100.0	160.0	95.75	15,320.0
	1.0'	5.4	10.0	54.0	191.5	10,341.0
	1.5'	4.0	10.0	40.0	287.25	11,490.0
	2.0'	3.0	10.0	30.0	383.0	11,490.0
	3.0'	2.2	10.0	22.0	574.5	12,639.0
	5.0'	7.2	1.0	7.2	957.5	6,894.0
	7.0'	5.6	1.0	5.6	1,340.5	7,506.8
	10.0'	4.5	1.0	4.5	1,915.0	8,617.5
	15.0'	2.5	1.0	2.5	2,872.5	7,181.25
	20.0'	2.9	1.0	2.9	3,830.0	11,107.0
	30.0'	3.5	1.0	3.5	5,745.0	20,107.5
	45.0'	3.6	1.0	3.6	8,617.5	31,023.0
	70.0'	2.9	1.0	2.9	13,405.0	38,874.5
	100.0'	10.0	1.0	10.0	19,150.0	191,500.0

Table #4

Project: 99200 Commercial Ave., Garden City, NY Sampling Location: Boring Location B2E & B4E Date: 4/24/26 Prepared For: Poz Engineering	Instrument Manufacturer/Model #: McMiller 400A Soil Resistivity Meter Soil Temperature: 60° Air Temperature: 65° Percent Moisture: NA Soil Composition: NA Ground Water Table: NA Last 48 Hours Precipitation (Inches): 0.05" (Area of survey asphalt paved)

Test Location	Pin Spacing S (ft.)	Dial Reading D	Range Switch Setting R	Resistance (ohm) D x R	Spacing Multiplier: 191.5 x S	Resistivity (ohm-cm) Resistance x Spacing Multiplier
Traverse #4	0.5'	2.3	100.0	230.0	95.75	22,022.5
	1.0'	7.2	10.0	72.0	191.5	13,788.0
	1.5'	4.4	10.0	44.0	287.25	12,639.0
	2.0'	2.6	10.0	26.0	383.0	9,958.0
	3.0'	10.0	1.0	10.0	574.5	5,745.0
	5.0'	7.0	1.0	7.0	957.5	6,702.5
	7.0'	4.7	1.0	4.7	1,340.5	6,300.35
	10.0'	3.2	1.0	3.2	1,915.0	6,128.0
	15.0'	2.2	1.0	2.2	2,872.5	6,319.5
	20.0'	3.0	1.0	3.0	3,830.0	11,490.0
	30.0'	2.0	1.0	2.0	5,745.0	11,490.0
	45.0'	2.5	1.0	2.5	8,617.5	21,543.75
	70.0'	2.5	1.0	2.5	13,405.0	33,512.5
	100.0'	2.9	1.0	2.9	19,150.0	55,535.0

APPENDIX G – SUBSTATION PAD DESIGN & NYSDEC APPROVAL LETTER

Environmental Design & Research,
Landscape Architecture, Engineering & Environmental Services, D.P.C.
217 Montgomery Street, Suite 1000, Syracuse, New York 13202
P. 315.471.0688 • F. 315.471.1061 • www.edrcompanies.com

memorandum

To:	David Gasper, PE, NYSDEC	**EDR Project No:**	12073
From:	Carolyne Bean, EIT & Thomas Dussing, PE		
Date:	February 12, 2016		
Reference:	Alternate Stormwater Management for National Grid Substations		

Discussion

Environmental Design and Research (EDR) has worked with National Grid, the New York State Department of Environmental Conservation (NYSDEC), and the State University of New York, College of Environmental Science and Forestry (SUNY ESF) for more than 24 months to develop a stormwater management system (**system**) that is integrated into National Grid's substation pad construction and meets the requirements of the current version of the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity. The **system** that has been developed is included in the substation pad cross-section and provides a stormwater management compliant design that meets the requirements of the current version of the NYSDEC General Permit for Stormwater Discharges from Construction Activity, including Water Quality Volume (WQ_v), Runoff Reduction Volume (RRv), Channel Protection Volume (Cp_v), Overbank Flood Control (Q_p), and Extreme Flood Control (Q_f). Our combined efforts have produced two **systems** for the following on-site soil infiltrations rate scenarios, which include:

- Sites with infiltration rates greater than or equal to 0.5 inches per hour – Detail 1 on Drawing C-101
- Sites with infiltration rates less than 0.5 inches per hour – Detail 1 on Drawing C-102

National Grid requests approval of these two **systems,** as compliant stormwater management practices with the New York State Stormwater Manual (current version), and that they be approved as standard stormwater management practices, as required by the current version of the NYSDEC Stormwater General Permit. If a project utilizing one of the cross sections is subject to review by a Municipal Separate Storm Sewer System (MS4), it would be responsibility of the MS4 to review and approve the Stormwater Pollution Prevention Plan (SWPPP) by signing the MS4 SWPPP Acceptance form. If the project is not subject to review by a MS4, the SWPPP would follow the normal approval process for a non-MS4 project that is in conformance with the current version of the NYSDEC Stormwater General Permit.

Based on the demonstration project results, we offer the following in support of this request:

- The proposed stormwater management **systems** are designed for 7 inches of rainfall. This represents the largest 100-year storm rainfall depth within National Grid's service area or greater than six back to back 90% storms (1.1 inches).
- The **systems** provide treatment and management of WQ_v, RRv, Cp_v, Q_p, and Q_f by providing storage and infiltration (as applicable), of all rain events, up to and including, the 100-year storm.
- The **systems** are self-contained which reduces the impact to the surrounding environment by eliminating additional site disturbance that would be necessary for green infrastructure and traditional stormwater practices.
- National Grid has provided testing at a demonstration area that is supported by laboratory tested infiltration rates and porosities. A portion of the construction and testing of the demonstration project was witnessed by a former NYSDEC representative, Ellen Hahn Kubek. The demonstration area testing results show that the **systems** can accept and hold the 100-year storm volume without ponding or surface runoff.

Demonstration Area Test Results

100-Year Storm Demonstration

Ellen Hahn Kubek, a former NYSDEC representative, was present for the 100-Year storm test on November 21, 2013. 1,800 gallons of water was applied uniformly with a hose over a 30-minute duration, or at rate of 9.2 inches per hour. (Note that according to the Natural Resource Conservation Service (NRCS) Type 2 Rainfall Distribution, the highest 30-minute precipitation intensity of a 24-hour storm is between 11.5 hours and 12 hours. During this 30-minute time frame, 35% of the storm rainfall depth occurs. For a 7 inch, 100-Year Storm this translates to 2.5 inches of rainfall, or a rate of 5.0 inches per hour. Therefore, the application rate used during the test was greater than the maximum intensity that would occur during an NRCS Type 2 rain event.) The November 21, 2013 demonstration showed that the proposed cross section does have an acceptable infiltration rate, with no surface runoff being created during the test even with the high application intensity. (Also, note that the compaction results for the demonstration area were greater than National Grid's requirement of 95% standard proctor for the filter course.)

Demonstration Area Volume Correction

Following the construction of the demonstration area, it was determined that an insufficient depth of the reservoir course had been placed. Measurements from the surface of the test area to the bottom of the observation wells determined that it had been constructed with 4 inches of reservoir course material rather than the 10 inches that is proposed in the attached drawings. Since the 100-Year storm is proposed to be stored within the reservoir and filter courses, EDR calculated the equivalent storage volume required for testing the 100-Year storm based on the cross section as constructed (4–inch reservoir course). Based on this calculation the volume of water used for the 100-Year storm test was 1,800 gallons rather than initially proposed 2,800 gallons.

NYSDEC Stormwater Requirements

Runoff Reduction and Water Quality Volume Management

The proposed **system** for sites with **infiltration rates greater than or equal to 0.5 inches per hour** provides 100% storage and infiltration of the 7-inch rainfall event. This exceeds minimum RRv and WQv requirements for any Hydrologic Soil Group (HSG).

The proposed **system** for sites with **infiltration rates less than 0.5 inches per hour** will meet the RRv and WQv requirements by using practices from the 2010 NYS Stormwater Management Design Manual (Design Manual): vegetated filter strip or riparian forest buffer. Per the Design Manual, a maximum of 75 feet of flow length over impervious area can discharge to these practices. According to the hydrologic modeling reports attached, a 50 feet-wide by 75 feet-long impervious area with CN of 98 creates a peak discharge rate of 114 gallons per minute and an average discharge rate of 57 gallons per minute. Per the Design Manual, this discharge rate can be directed to a 50 feet wide by 60 feet long filter strip or buffer with a slope of 0% to 8% on HSG D soils. A 1-acre substation was modeled using the average porosity provided by the **system** with a 4 inch underdrain outlet. This resulted in a peak discharge rate of 56 gallons per minute. The average discharge rate from the impervious area is similar to the peak discharge rate from the substation area; therefore, it is reasonable to consider the same stormwater management via sheet flow to a filter strip or buffer to be acceptable. National Grid proposes for their **system** to meet the RRv and WQv requirements for sites with an infiltration rate of less than 0.5 inches per hour by using the following design criteria:

- A filter strip or buffer 50 feet wide, with the necessary length per the Design Manual, will be provided for each acre of substation area.
- Per the Design Manual, the length of the filter strip or buffer would be based on the attainable or existing site slopes. Filter strips or buffers with slopes of 0% to 8% would be 50 feet long, 8% to 12% would be 75 feet long and 12% to 15% would be 100 feet long. In HSG C or D soils, the length will be increased by 15% or 20%, respectively.

National Grid proposes that in this site condition, the substation underdrain(s) discharge to a flow dissipater (to create sheet flow) then to a filter strip or buffer sized as described. An example layout for a 5-acre substation on HSG D soils is shown on drawing C-103.

Volume Management

The proposed **system** for sites with infiltration rates greater than or equal to 0.5 inches per hour provide storage of Cp_v, Q_p, and Q_f and discharged via infiltration. The proposed **system** for sites with infiltration rates less than 0.5 inches per hour will provide storage for volume management and will discharge via an underdrain system that will be appropriately sized to meet the Cp_v, Q_p, and Q_f requirements. The underdrains will discharge to a flow dissipater and sheet flow over a filter strip or buffer as previously discussed to meet RRv and WQv requirements. Supporting stormwater detention calculations are attached.

Stormwater Management System Summary

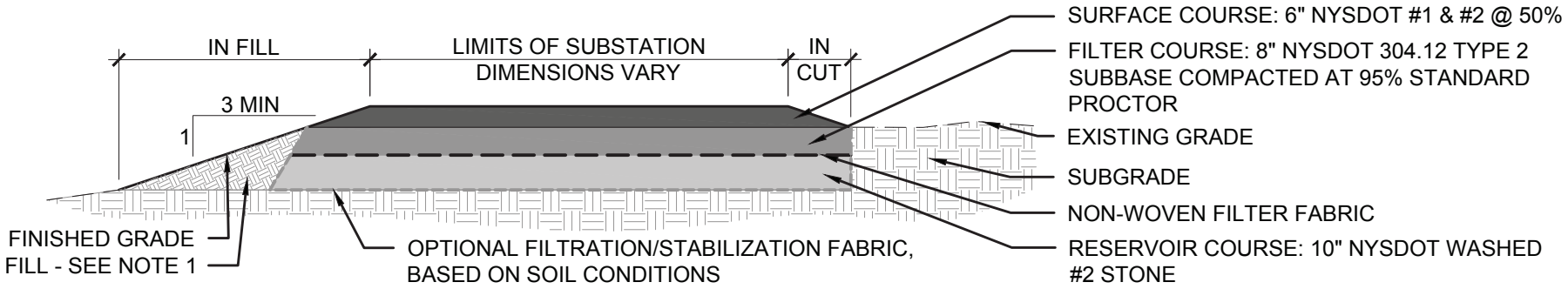
In summary, the **systems** proposed by National Grid would provide stormwater management as detailed in the table below.

Site Infiltration (in/hr)	RRv & WQv	Cp_v	Q_p	Q_f
≥ 0.5	100% Infiltration (2.5 hours or less)*	100% Infiltration	100% Infiltration	100% Infiltration (14 hours or less)**
< 0.5	100% Vegetated Filter or Riparian Forest Buffer	Attenuation	Attenuation	Attenuation

* Calculated based on the largest 90% storm rainfall depth within National Grid's service area – 1.1 inches.
** Calculated based on the largest 100-Year storm rainfall depth within National Grid's service area – 7.0 inches

Attachments: C-101 Proposed Substation Sections for Infiltration Rates of 0.5 in/hr and Greater
C-102 Proposed Substation Sections for Infiltration Rates Less Than 0.5 in/hr
C-103 Example Substation Filter Strip Layout for Infiltration Rates Less Than 0.5 in/hr
1 and 100 year Hydrologic Modeling Reports
National Grid Proposed Sections – Volume Storage Calculation
Photo of 11/22/20130 White Board Discussion with Ellen Hahn Kubek
12/27/2013 Email from Ellen Hahn Kubek

Copies To: Michael McPeck, National Grid
Carol Lamb-Lafay, NYSDEC
David Follansbee, NYSDEC
File



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C-101

SUBSTATION SECTION - INFILTRATION RATE ≥ 0.5 IN/HR

Scale: NTS

nationalgrid

NOTES:

1. ALL FILL USED FOR SIDE SLOPES SHALL BE ONSITE MATERIAL FROM AREA CUT TO CREATE THE SUBSTATION OR SHALL BE OFFSITE FILL COMPACTED TO HAVE AN INFILTRATION RATE LESS THAN THE SUBSTATION SUBGRADE.
2. INFILTRATION TESTING SHALL BE COMPLETED AS REQUIRED BY APPENDIX D OF THE 2010 NYS STORMWATER MANAGEMENT DESIGN MANUAL, OR AS APPROVED BY THE NYS DEC REGIONAL OFFICE OR MS4 REPRESENTATIVE.
3. THIS SECTION SHALL BE APPLICABLE TO MEET THE STORMWATER MANAGEMENT REQUIREMENTS OF NEW DEVELOPMENT AND REDEVELOPMENT PROJECTS, PER THE 2010 NYS STORMWATER MANAGEMENT DESIGN MANUAL, FOR SITES WITH INFILTRATION RATES OF GREATER THAN OR EQUAL TO 0.5 INCHES PER HOUR.
4. ALL THOSE UTILIZING THIS SECTION, WITH THE EXCEPTION OF NATIONAL GRID, SHALL INCLUDE THE FOLLOWING NOTE IN ALL STORMWATER REPORTS AND DRAWINGS:

   "NATIONAL GRID (NG) TOGETHER WITH THE CONSULTING FIRM, ENVIRONMENTAL DESIGN & RESEARCH (EDR), PREPARED A NYSDEC STORMWATER MANAGEMENT PROTOTYPE SYSTEM (SYSTEM), WHICH MAY BE APPLICABLE TO SUBSTATION PROJECTS. THE USER ASSUMES THE SOLE RESPONSIBILITY FOR THE USE OF THIS SYSTEM, ITS APPLICABILITY TO THE PROJECT SITE, AND VERIFICATION OF THE APPROPRIATE USE AND COMPLIANCE WITH VILLAGE, TOWN, CITY, COUNTY, STATE, AND FEDERAL STORMWATER REQUIREMENTS FOR THIS LOCATION."

PROJECT TITLE: **NATIONAL GRID - SUBSTATION STORMWATER MANAGEMENT PRACTICES**		edr JOB NUMBER: **12073**	
DRAWING TITLE: **PROPOSED SUBSTATION SECTIONS FOR INFILTRATION RATES OF 0.5 IN/HR AND GREATER**		DRAWING NUMBER: **C-101**	
DRAWN BY: **CB**	CHECKED BY: **TD**	SCALE: **NTS**	DATE: **2/12/2016**

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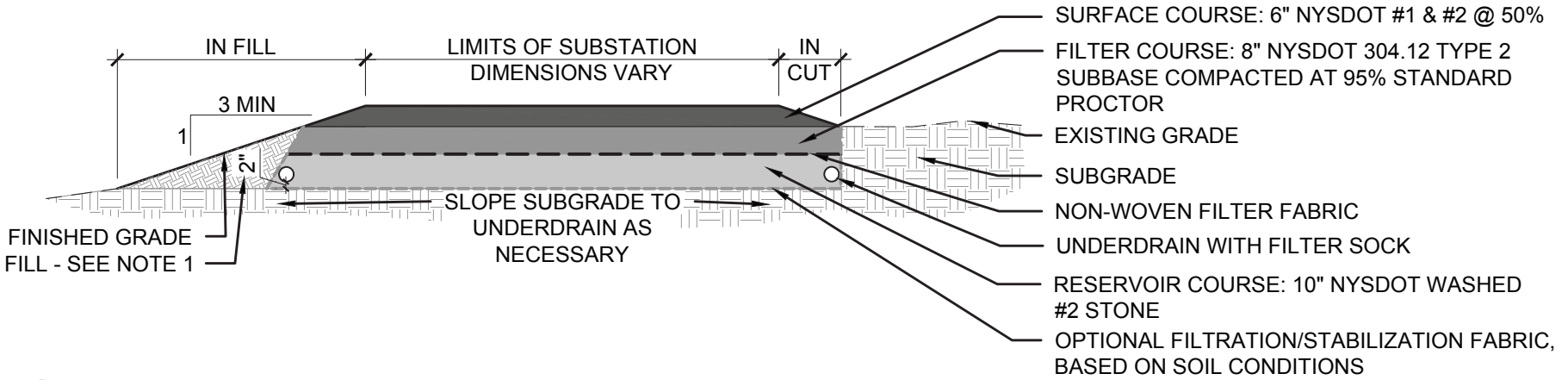

1 C-102 SUBSTATION SECTION - INFILTRATION RATE < 0.5 IN/HR

Scale: NTS

nationalgrid

NOTES:

1. ALL FILL USED FOR SIDE SLOPES SHALL BE ONSITE MATERIAL FROM AREA CUT TO CREATE THE SUBSTATION OR SHALL BE OFFSITE FILL COMPACTED TO HAVE AN INFILTRATION RATE LESS THAN THE SUBSTATION SUBGRADE.
2. UNDERDRAIN SIZE AND LAYOUT WILL VARY DEPENDING ON THE SIZE OF THE SUBSTATION.
3. UNDERDRAIN WILL DAYLIGHT AND DISCHARGE TO A LEVEL SPREADER THEN A VEGETATED FILTER STRIP OR RIPARIAN FOREST BUFFER TO MEET RUNOFF REDUCTION VOLUME REQUIREMENTS.
4. LEVEL SPREADER SHALL BE DESIGNED PER THE NYS STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL TO CREATE SHEET FLOW PRIOR TO DISCHARGE TO THE VEGETATED FILTER STRIP OR RIPARIAN FOREST BUFFER.
6. VEGETATED FILTER STRIP OR RIPARIAN FOREST BUFFER WIDTH SHALL BE 50 FEET PER ACRE OF SUBSTATION. LENGTH AND REMAINING DESIGN CRITERIA SHALL BE PER THE 2010 NYS STORMWATER MANAGEMENT DESIGN MANUAL.
7. UNDERDRAINS SHALL BE SIZED TO MEET CHANNEL PROTECTION VOLUME (Cpv), OVER BANK FLOOD CONTROL (Qp) AND EXTREME FLOOD CONTROL (Qf) DESIGN CRITERIA.
8. THIS SECTION SHALL BE APPLICABLE TO MEET THE STORMWATER MANAGEMENT REQUIREMENTS OF NEW DEVELOPMENT AND REDEVELOPMENT PROJECTS, PER THE 2010 NYS STORMWATER MANAGEMENT DESIGN MANUAL, FOR SITES WITH INFILTRATION RATES LESS THAN 0.5 INCHES PER HOUR.
9. ALL THOSE UTILIZING THIS SECTION, WITH THE EXCEPTION OF NATIONAL GRID, SHALL INCLUDE THE FOLLOWING NOTE IN ALL STORMWATER REPORTS AND DRAWINGS:

   "NATIONAL GRID (NG) TOGETHER WITH THE CONSULTING FIRM, ENVIRONMENTAL DESIGN & RESEARCH (EDR), PREPARED A NYSDEC STORMWATER MANAGEMENT PROTOTYPE SYSTEM (SYSTEM), WHICH MAY BE APPLICABLE TO SUBSTATION PROJECTS. THE USER ASSUMES THE SOLE RESPONSIBILITY FOR THE USE OF THIS SYSTEM, ITS APPLICABILITY TO THE PROJECT SITE, AND VERIFICATION OF THE APPROPRIATE USE AND COMPLIANCE WITH VILLAGE, TOWN, CITY, COUNTY, STATE, AND FEDERAL STORMWATER REQUIREMENTS FOR THIS LOCATION."

PROJECT TITLE: **NATIONAL GRID - SUBSTATION STORMWATER MANAGEMENT PRACTICES**	edr JOB NUMBER: **12073**
DRAWING TITLE: **PROPOSED SUBSTATION SECTIONS FOR INFILTRATION RATES LESS THAN 0.5 IN/HR**	DRAWING NUMBER: **C-102**
DRAWN BY: **CB** / CHECKED BY: **TD**	SCALE: **NTS** / DATE: **2/12/2016**

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NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

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1/20/2017

Michael McPeck, P.E.
Lead Civil/Structural Engineer
National Grid
300 Erie Boulevard West
Syracuse, NY 13202

Re: National Grid's Stormwater Management Practices for Substations – Final Design Report

Dear Mr. McPeck:

We have completed our review of Environmental Design & Research's (EDR's) final design report, dated February 25, 2016, for the post-construction stormwater management practices to be used at National Grid's substation pads and have determined that the two designs comply with the NYS Stormwater Management Design Manual (2015 version).

EDR's final report calls for the use of an "Infiltration" practice at sites with soils that have an infiltration rate greater than or equal to 0.5 in/hr; and "Sheetflow to Riparian Buffer or Filter Strip" practice at sites with soils that have an infiltration rate less than 0.5 in/hr. Please be reminded that the system designs must comply with all applicable criteria in Chapters 5 and 6 of the Design Manual (i.e. separation distance to groundwater/bedrock for infiltration practices, minimum width of the riparian buffer /filter strip is 50 feet, etc.).

If you have any questions or require additional information, please contact me at (518) 402-8114.

Sincerely,

David Gasper

David Gasper, P.E.

cc: Tom Dussing, EDR