

PRELIMINARY FULL STORMWATER POLLUTION PREVENTION PLAN

Cascade Creek Subdivision Town of Amenia

APPLICANT: Hudson River Housing
313 Mill Street
Poughkeepsie, NY 12601

LOCATION: 34 Cascade Road
Town of Amenia
Dutchess County
Tax Map #: 132000-7167-00-245925

PROJECT No.: 24-019

DATE: August 10, 2026

PREPARED BY:



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Cascade Creek Subdivision
Parcel ID 132000-7167-00-245925
Preliminary SWPPP

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1.0 INTRODUCTION

The applicant is proposing to subdivide an existing undeveloped parcel in the Town of Amenia, Dutchess County, New York, to construct a twenty-six (26) lot residential development known as the “Cascade Creek Subdivision” (the “Project”). The project parcel (the “Site”) is located along NYS Route 22, and is on Cascade Road, within the Town of Amenia’s Suburban Residential (“SR”) zoning district. The project parcel is approximately 24.13-acres in size, with Parcel ID Number 245925. The proposed subdivision will create twenty-six (26) single-family residential lots intended to provide workforce housing for low-to-moderate income residents, one (1) open space Homeowners Association (HOA) lot, and one (1) new road right-of-way with access entrance onto NYS Route 22. This layout is classified as a “major, conservation subdivision” under the Amenia Town Code, which is permitted within the SR district. Additionally, this proposed clustered layout preserves over 50% of the property as protected open space, protecting the Site’s key natural features. Associated infrastructure includes a common water supply system (on-site wells), a common subsurface sewage disposal system, utilities, and post-construction stormwater management practices.

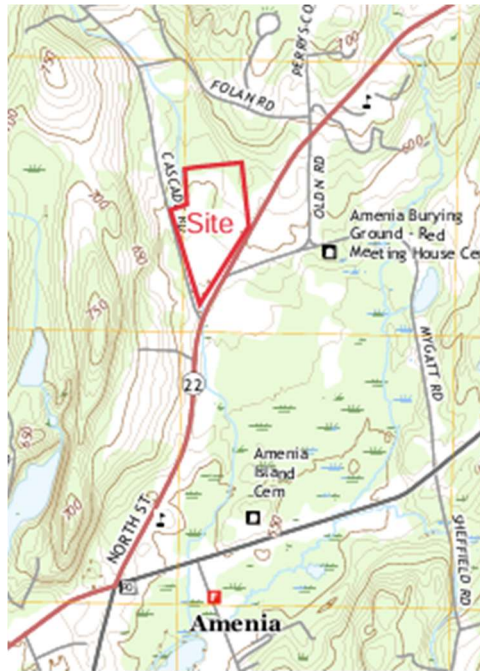
1.1 NYSDEC REGULATORY ASSESSMENT

The proposed Cascade Creek Subdivision is a new development project that will disturb more than 1-acre of land or vegetation; therefore, the project is subject to the requirements of the New York State Department of Environmental Conservation (NYSDEC) State Pollution Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity, Permit GP #0-25-001. A copy of this permit is included in Appendix A of this report.

Also, the development activities are subject to the design requirements of Chapter 4: Unified Stormwater Sizing Criteria of the NYSDEC Stormwater Management Design Manual, 2024 (SWMDM).

As part of obtaining permit coverage for this project, this Full Stormwater Pollution Prevention Plan (SWPPP) has been prepared and provided to the property owner, site contractor, and Town of Amenia to be used as a guide for the construction phase as well as both the short-term and long-term maintenance of the stormwater facilities designed herein. The project area is shown below in Figure 1-1 Project Site Location.

Figure 1-1 Project Site Location



1.2 QUANTITATIVE METHOD OF ANALYSIS

A hydrologic analysis was performed that utilizes the methods stated in Technical Release # 55, Urban Hydrology for Small Watersheds, published by the U.S. Department of Agriculture, Soil Conservation Service. A Type III Dutchess County Rainfall Distribution was used to generate tabular hydrographs for the 1, 10, and 100-year storm events, with respective 24-hour rainfall depths of 2.58, 4.63, and 8.27 inches. Sediment and erosion control practices have been selected using the New York State Standards and Specifications for Erosion and Sediment Control, 2016. The Site survey data provided by the owner and United States Geological Survey data was used to delineate the overall watershed areas and to select design points. The soil type was delineated as per the Dutchess County Soil Survey.

1.3 STORMWATER MANAGEMENT OBJECTIVES

The introduction of impervious surfaces decreases the natural infiltration rates of developed areas. The impervious surface will accumulate pollutants deposited from the atmosphere, leaked from vehicles, or windblown from adjacent areas. During storm events, these pollutants will wash off during the initial stage of a storm event and will then runoff to downstream waters. Additionally, the natural runoff rate can be increased, which leads to increased downstream erosion, enlarging stream channels and potential degradation of ecological habitats. It is the objective of this report to identify the means proposed to minimize erosion and sediment problems on land undergoing urban development as well as meet NYSDEC pollutant removal goals. Section 3.6 of the 2024

NYS SWMDM contains a six-step process for analysis and selection of appropriate Stormwater Management Practices (SMPs).

Step 1 of this process is site planning. A detailed map is developed identifying any wetlands, waterways, or sensitive areas. Strategies are used that will maintain the natural drainage design points and avoid erodible soils to the greatest extent possible. Erosion and Sediment control SMPs will be utilized to verify that no sediment will run off-site into any sensitive areas during or after construction. To ensure this project satisfies this step, the new development has been centralized into a cluster subdivision. This concept maintains the existing natural features to the maximum extent possible, and maximizes the retention of forest cover, with the woodlands to the northern side of the parcel that will be protected in the HOA conservation parcel. Also, the houses are not spread out across the whole parcel, reducing the length of driveways and road, as well as decreasing the amount of proposed new impervious area. Additionally, stormwater management has been included throughout the entire design process, ensuring the most efficient practices are implemented.

Step 2 of the process is the determination of the Water Quality Treatment Volume (WQ_v) using the design criteria in Chapter 4 of the SWMDM. These calculations are summarized in Section 4 of this report.

Step 3 of the process is the application of runoff reduction techniques and standard SMPs with RR_v Capacity (e.g. infiltration practices, bioretention and open channel practices) to reduce total WQ_v. This step selects the SMPs that provide: 1) reduction of stormwater runoff from the site, 2) pretreatment of the runoff for contaminant removal, and 3) storage of the calculated volume of the WQ_v of stormwater runoff. For this project, the SMPs selected will be infiltration practices, specifically two Infiltration Basins.

Step 4 of the process is the determination of the minimum RR_v required. Here, the minimum RR_v required is calculated and compared to the runoff reduction determined in Step 3.

Step 5 of the process will determine what standard SMPs will be needed for any remaining WQ_v that has not been addressed in Step 3 or 4 of the SMP selection process.

Step 6 of the process will determine the Volume and Peak Rate Control Practices needed. The channel protection volume, overbank flood control, and extreme flood control must be addressed to meet water quantity requirements.

2.0 EXISTING CONDITIONS

2.1 ARCHAEOLOGICAL SENSITIVITY

The New York State Historic Preservation Office's (SHPO) online Cultural Resource Information System (CRIS) website was reviewed to determine if there were any National Registered and Archaeological Sensitive areas associated with the Site. When the SEQRA review began for the Project, the Site was located in the CRIS Archaeological Buffer Area, subjecting it to further investigations. However, since the SEQRA negative declaration of significance was issued for the Project, the Site has been removed from the buffer.

As part of the SEQRA review, the Site had been studied by Hudson Cultural Service (HCS), which prepared a Phase 1A&B Archaeological Report, dated November 2024. This report concluded that no additional cultural resource investigations were warranted for the Site. The report was submitted to NYSOPRHP SHPO, who reviewed it and determined in a letter dated 12/11/2024, that no archaeological /and/or historic resources will be affected by the proposed Subdivision. The CRIS map and OPRHP "No Impact" Letter are included in Appendix C of this report.

2.2 FLOOD PLAIN

A review of the FEMA Flood Insurance Rate Map (FIRM) information for the project Site shows no flood hazard areas on or near to the Site. The Site is not located within a 100-year flood plain. The FIRMette Map is included in Appendix C.

2.3 HABITAT

A review of the New York State Department of Environmental Conservation's (NYSDEC) Environmental Resource Mapper (ERM) indicated the possibility of rare plants or animals being present on the project Site, and the Full EAF submitted as part of the SEQR Determination Process in September of 2025 flagged the potential presence of the Bog Turtle.

Based on the potential for the presence of endangered/threatened species, the Phase I Bog Turtle Habitat Suitability Assessment Report was prepared by Michael Nowicki of Ecological Solutions, LLC on September 11, 2024 and last revised on June 5, 2025, (also included in the SEQR Determination documentation previously submitted). The report concluded that there are no wetlands on the Site and no potential bog turtle habitat.

Therefore, there is no threat to any Bog Turtle as there is no habitat suitable for them on-site. A copy of the ERM Map is located in Appendix C.

2.4 STATE AND NATIONAL WETLANDS

Watercourses

The project parcel is adjacent to one (1) watercourse, which has been identified by New York State Department of Environmental Conservation (NYSDEC):

- 1) *Wassaic Creek and Tribs, C(T)*: A riverine system beginning off-site to the north of the project parcel, and flowing generally along the existing Cascade Road, bearing to the southeast before outletting into the distant wetlands north of NYS Route 343 and east of NYS Route 22.

The creek maintains a NYSDEC Classification of C(T), indicating that the watercourse is best used for fishing. The stream has also been designated as possible trout waters. There are no disturbances proposed to the watercourses.

The NWI Mapper is included in Appendix C of this report.

2.5 SITE SOILS

Based on a review of the USDA Natural Resources Conservation Service's Soil Survey of Dutchess County, New York, four (4) types of soil are present on the project Site. The soil distributions are shown below in Figure 2-1 and Table 2-1.

Figure 2-1 Project Site Soils Map



The soils and their descriptions are as follows:

Table 2-1 Soils Present Onsite

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
CuB	Copake gravelly silt loam, undulating	A	8.3	34.3%
CuC	Copake gravelly silt loam, rolling	A	0.0	0.1%
SkC	Stockbridge silt loam, 8 to 15 percent slopes	C	0.6	2.3%
We	Wappinger loam	B	15.3	63.3%
Totals for Area of Interest			24.2	100%

The USDA Natural Resource Conservation Service (NRCS) assigns each soil series to a hydrologic soil group (HSG). The HSG is a four-letter index (A-D) that is intended to show the relative potential for a soil to generate runoff.

HSG A soils have a high infiltration rate (low runoff potential) when thoroughly wet. These consist of deep, well drained to excessively drained sands and gravels.

HSG B has a moderate infiltration rate when thoroughly wet. These consist of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture.

HSG C soils have a slow infiltration rate when thoroughly wet. These consist of soils that have a layer that impedes the downward movement of water.

HSG D have a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clay soils that have a high shrink-swell potential, soils that have a clay-pan or clay layer at or near the surface, and soils that are shallow over nearly impervious material.

The portion of the Site that is proposed for redevelopment is made up of Hydrologic Soil Groups A, B, and C. The predominant soil type that is expected to be encountered is Hydrologic Soil Group B and A.

2.6 GENERAL SITE CHARACTERISTICS

The topography of the project Site slopes from an elevation of approximately 682 feet towards the northeastern boundary to an elevation of approximately 574 feet at the southwestern boundary of the Site. Stormwater typically flows from the northeast to the southwest across the Site.

Property boundary and topographic survey data that were used as a basis of this design were based upon an actual field survey which was last updated on or before February 20, 2025 by Wesley P. Chase, L.S #50986.

2.7 PRE-DEVELOPMENT DRAINAGE ANALYSIS

The predevelopment drainage analysis for the project area determined that one (1) drainage area exists on the project Site. The following details the analysis of this drainage area:

2.7.1 EXISTING DRAINAGE ANALYSIS

For the purposes of this analysis, a drainage area map was developed for the project Site depicting the existing landscape of the undeveloped parcel and any surrounding developed areas in the drainage watershed nearby to determine the impervious area contribution and generate various storm event flow rates that currently exist at or near the project Site. The map outlines the drainage area that contains the entire project site. This Pre-Development Drainage Map is attached in Appendix D.

Drainage Area-1: DA-1 encompasses the entire project Site, and some adjacent areas, totaling 34.99-acres in area. Stormwater in this drainage area generally flows from northwest to southeast, towards the existing watercourse (Design Point DP-1) right before it discharges into an offsite culvert that routes under NYS Route 22. The time of concentration (T_c) is 36.5 minutes.

A stormwater model was developed using *HydroCAD* version 10.0 to model the existing and proposed drainage areas and attenuation characteristics of the proposed stormwater management practices. The existing and developed hydrologic and hydraulic calculations are shown in Appendix D of this report.

Table 2-2 shown below summarizes the existing conditions for the design point by using the 1, 10, and 100-year storm events.

Table 2-2 Pre-Development Condition Peak Flow Rates			
Pre-Development Flow (cfs)			
Drainage Area Design Point	1 Year	10 Year	100 Year
DP-1	0.26	11.94	66.00

3.0 PROPOSED CONDITIONS

3.1 POST DEVELOPMENT DRAINAGE ANALYSIS

The post development design will add additional impervious surface to the Site, causing an increase in the stormwater runoff flow rate. To properly analyze this condition, ten (10) sub-basins (DA-1A through DA-1J) have been used to analyze the redeveloped Site. The

design point, DP-1, remains the same as was for the existing analysis. These basins are shown on the Proposed Drainage Plan provided in Appendix D. A summary table of the unmitigated developed Site can be found in Table 3-1 below.

Table 3-1 Unmitigated Post Development Condition Peak Flow Rates

Unmitigated Post-Development Flow (cfs)			
Drainage Area Design Point	1-Year	10-Year	100-Year
DP-1	3.03	26.77	95.70

3.1.1 PROPOSED SUB-BASIN DRAINAGE ANALYSIS

For this project, the SMPs selected will be infiltration basins. The sub-basins are divided as follows:

Drainage Area DA-1A: DA-1A is located on the western portion of the project parcel, immediately east of and adjacent to Cascade Road. DA-1A is 15.96-acres in size and contains primarily of undisturbed woodland and open space west of the proposed residential loop. Stormwater in this drainage area generally flows south/southwest, directed away from the development in DA-1B via a proposed bypass swale, eventually discharging into the on-site Creek near Design Point DP-1. The calculated time of concentration (Tc) is 29.7 minutes. It is important to note that although this drainage area contains No Development it was found to be contributing to the overall runoff increase when modeled. Therefore, an additional infiltration basin (Infiltration Basin A) was included to reduce the peak rates.

Drainage Area DA-1B: DA-1B is located south of DA-1A in the north-central portion of the project site and is 3.87-acres in size. Stormwater runoff generated in this drainage area generally flows south and east along a proposed roadside swale, discharging into a proposed stormwater management infiltration basin. The calculated time of concentration (Tc) is 15.2 minutes.

Drainage Area DA-1C: DA-1C is located south of DA-1A and east of DA-1B and is 3.30-acres in size. Stormwater runoff generated in this drainage area generally flows south/southeast towards the proposed subdivision entrance, and will discharge into a culvert under the proposed subdivision entrance. The calculated time of concentration (Tc) is 44.7 minutes.

Drainage Area DA-1D: DA-1D is in the south middle of the project Site and contains the entire proposed Subdivision Entrance onto NYS Route 22, with an area of 0.06-acre. It is entirely impervious, and runoff generally flows toward the residences along the

entrance from NYS Route 22. The stormwater is routed through yard drains to a pretreatment basin supplementing Infiltration Basin 2. The time of concentration (T_c) is 6.0 minutes.

Drainage Area DA-1E: DA-1E is located on the central portion of the project site inside of the subdivision loop and is 1.38-acres in size. Stormwater runoff generated in this drainage area generally flows east along a proposed roadside swale that eventually is routed to the proposed infiltration basin. The time of concentration (T_c) is 6.0 minutes.

Drainage Area DA-1F: DA-1F is located in the central portion of the parcel, directly south of DA-1E and is 2.30-acres in size. Stormwater runoff generally flows southwest, discharging into yard drains that route to the proposed stormwater treatment infiltration basin. The calculated time of concentration (T_c) is 11.9 minutes.

Drainage Area DA-1G: DA-1G is located on the west-central portion of the project Site and is 0.70-acre in size. It includes a portion of the loop and driveways for the western residences. Stormwater runoff flows south along the proposed roadside swale into the proposed treatment infiltration basin. The time of concentration (T_c) is 6.0 minutes.

Drainage Area DA-1H: DA-1H is located on the west-central portion of the project site, directly south of DA-1G and is 0.45-acre in size. It encompasses a portion of the initial entrance roadway section, and four residential driveways. Stormwater runoff area generally flows north toward the same proposed treatment infiltration basin serving DA-1G. The time of concentration (T_c) is 6.0 minutes.

Drainage Area DA-1I: DA-1I is located directly west of DA-1G and is 1.78-acres in size. It contains several western residential lots, and one of the proposed infiltration basin treatment practices. Stormwater generally flows south, discharging into the proposed treatment infiltration basin. The calculated time of concentration (T_c) is 12.3 minutes.

Drainage Area DA-1J: DA-1J is located in the southwestern section of the Site, west of DA-1H and is 3.12-acres in size. It consists of four residences and the second proposed infiltration basin treatment practice. Stormwater generally flows west into the proposed infiltration basin. The calculated time of concentration (T_c) is 12.7 minutes.

Note on minimum T_c : For Subcatchments: DA-1D, DA-1E, DA-1G, and DA-1H; the calculated time of concentration was less than 6 minutes. Per TR-55 Chapter 3 (as adopted by the NYS Stormwater Design Manual), the minimum T_c applied is 6.0 minutes (0.1 hours), and this value was manually entered into the HydroCAD model accordingly.

The Proposed Stormwater Drainage Plan shows the stormwater collection and treatment system for the Site and is included in Appendix D.

A pre-development and post-development comparison of the 1-year, 10-year, and 100-year pre- and post-development stormwater runoff analysis was performed using the results of the hydraulic analysis completed with HydroCAD 10.0, located in Appendix D.

Table 3-2 below compares the total flow rates for 1, 10, and 100-year storm events for the pre- vs. post-development with proposed Site mitigation.

Table 3-2 Pre vs. Post Development Peak Flow Rates

Drainage Area Design Point	Storm Event	Pre-Dev. Runoff (cfs)	Post Dev. Runoff (cfs)	Pre. Vs Post Δ%
DP-1	1-yr.	0.26	0.00	-100%
	10-yr.	11.94	10.32	-13.57%
	100-yr.	66.0	60.47	-8.38%

Table 3-2 demonstrates that the proposed Site Stormwater Management improvements mitigate the stormwater runoff generated by this development.

It is important to note that this proposed management plan reduces stormwater runoff from the Site for the 100-year storm, 10-year storm, and the 1-year storm events.

4.0 WATER QUALITY AND QUANTITY CONTROLS

Each proposed stormwater management practice is designed in accordance with this section.

4.1 UNIFIED STORMWATER SIZING CRITERIA

The unified stormwater sizing criteria is used to analyze the impacts of a proposed development and to develop stormwater management practices that reduce erosion, prevent overbank flooding, and help control extreme floods. These criteria as presented in Chapter 4 of the SWMDM, provides a means for sizing stormwater practices for such Sites. The following outlines the analysis and findings of said criteria as it applies to this particular project. Copies of the detailed Unified Sizing Criteria calculations for this project can be found in Appendix E.

4.1.1 WAIVERS

The SWMDM outlines specific instances in which any and/or all of the unified stormwater sizing criteria may be waived due to a number of varying circumstances. Such circumstances allow the designer and owner/operator to waive the requirements when designing stormwater management practices. The following practices identify each of the unified stormwater sizing criteria and under which conditions each criterion may be waived.

The Channel Protection Volume (CP_v) may be waived if the entire volume is recharged at the Site. It may also be waived if the Site discharges directly to tidal waters or fifth-order or larger stream. Additionally, the Channel Protection Volume (CP_v) may be waived if a downstream analysis reveals that channel protection is not required.

The Overbank Flood Control requirement (Q_p) may be waived if the Site discharges directly to tidal waters of fifth-order or larger stream. Additionally, the Overbank Flood Control requirement (Q_p) may be waived if a downstream analysis reveals that overbank flood control is not required.

The Extreme Flood Control requirement (Q_f), or 100-year storm control, may be waived if the Site discharged directly to a fifth-order or larger stream. If the development is prohibited within the ultimate 100-year floodplain the Extreme Flood Control criteria (Q_f) may be waived. Finally, if a downstream analysis reveals that 100-year storm control is not required, the criteria may be waived.

4.1.2 WATER QUALITY VOLUME (WQ_v)

Treatment of 100% of the WQ_v is required for any new impervious area created by the project using NYSDEC approved stormwater management practices (SMPs). Table 4-1 below summarizes the calculations for the WQ_v .

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

Where:

WQ_v	=	Water Quality Volume in acre-feet
P	=	90% Rainfall Event Number in inches
R_v	=	$0.05 + 0.009(I)$, minimum R_v of 0.2
A	=	Site Area in acres
I	=	Impervious Cover as a Percentage

Table 4-1 Post Development WQv Requirements Summary

Drainage Area ID	Drainage Area (ac)	Total Existing Disturbed Impervious (ac)	New Impervious (ac)	100% New WQv (ac-ft)	25% Existing Disturbed (ac-ft)	Total WQv (ac-ft)	Total WQv (cu-ft)
DA-1A	15.96	0.000	0.000	0.000	0.000	0.000	0.00
DA-1B	3.87	0.000	0.612	0.081	0.000	0.081	3512.78
DA-1C	4.41	0.000	0.000	0.024	0.000	0.024	1040.54
DA-1D	0.06	0.000	0.060	0.006	0.000	0.006	268.98
DA-1E	1.38	0.000	0.376	0.044	0.000	0.044	1923.79
DA-1F	2.30	0.000	0.780	0.089	0.000	0.089	3856.27
DA-1G	0.70	0.000	0.263	0.029	0.000	0.029	1283.00
DA-1H	0.45	0.000	0.167	0.019	0.000	0.019	815.44
DA-1I	1.78	0.000	0.243	0.033	0.000	0.033	1453.31
DA-1J	3.12	0.000	0.162	0.033	0.000	0.033	1425.04
TOTAL	34.03	0.000	2.66	0.358	0.000	0.358	15579.17

Table 4-1 above shows the calculated change in impervious area and the volume of WQ_v storage required for the existing disturbed (25%) and newly created (100%) impervious area combined for the entire Site.

In accordance with the SWMDM the volume of the required pretreatment for infiltration practices is dependent on the infiltration rate of the receiving soils. If the infiltration rate is less than or equal to 10.00 in/hr, then 25% of the WQ_v is required for pretreatment. If the infiltration rate is greater than 10.00 in/hr, then 50% of the WQ_v is required for pretreatment.

Table 4-2 below summarizes the pretreatment method for each practice.

Table 4-2 Pretreatment Calculation Summary

Treatment Practice	Pretreatment Method
Infiltration Basin 1	(1) Forebay
Infiltration Basin 2	(2) Forebay(s)
Infiltration Basin A	N/A

4.1.3 RUNOFF REDUCTION VOLUME (RR_v)

Section 4.3 of the SWMDM describes the calculation for Runoff Reduction Volume (RR_v). As a new development project, the Site must reduce the total post-development water quality volume (WQ_v) by practices like infiltrating, evaporation, or harvesting stormwater runoff using Green Infrastructure practices and standard Stormwater Management Practices (SMPs) with RR_v capacity.

For this project, the primary treatment strategy relies on standard infiltration practices (infiltration basins). Since 100% of the calculated WQ_v directed to these practices will be

fully infiltrated into the underlying HSG A and C soils, 100% of the volume (as per the SWMDM) counts toward satisfying the RR_v requirement. This design strategy fully meets and exceeds the minimum Runoff Reduction Volume (RR_v) required for this new development.

Table 4-3 below shows the calculated values for RR_v for the proposed post-development drainage areas.

Table 4-3 Runoff Reduction Volume Requirements Summary

Drainage Area ID	Drainage Area (ac)	Total New Impervious (ac)	Min RR_v Required (ac-ft)	Min RR_v Required (cu-ft)
DA-1A	15.96	0.000	0.000	0.00
DA-1B	3.87	0.612	0.006	266.60
DA-1C	4.41	0.000	0.000	0.00
DA-1D	0.06	0.060	0.003	121.44
DA-1E	1.38	0.376	0.006	266.28
DA-1F	2.30	0.780	0.015	641.54
DA-1G	0.70	0.263	0.004	192.96
DA-1H	0.45	0.167	0.003	121.05
DA-1I	1.78	0.243	0.002	79.46
DA-1J	3.12	0.162	0.001	29.63
Total	34.03	2.66	0.039	1718.97

4.1.4 CHANNEL PROTECTION VOLUME (CP_v)

Section 4.4 of the SWMDM describes the calculation for Channel Protection Volume (CP_v). New development projects shall provide 24-hour extended detention of the post development 1-year, 24-hour storm, which remains after runoff reduction. The purpose of the CP_v is to protect downstream channels from accelerated erosion.

A detailed analysis and proper CP_v sizing calculations are provided in Appendix E, which show that the CP_v requirements are met.

For this project, the proposed management plan significantly reduces stormwater runoff from the Site without the need for providing additional storage to reduce the 1-year flow peaks. As demonstrated in Table 3-2, the proposed management plan reduces stormwater runoff from the Site for the 1-year event for the drainage area.

4.1.5 OVERBANK FLOOD PROTECTION VOLUME (QP_{10}) AND EXTREME FLOOD PROTECTION VOLUME (Qf_{100})

Section 4.7 of the SWMDM provides calculations for Overbank Flood Protection Volume (Qp_{10}). On new development sites, the Qp_{10} requires the post-development peak

discharge from the 10-year, 24-hour storm event to be weakened to pre-development levels. The purpose of the Q_{p10} is to prevent an increase in the frequency and magnitude of out-of-bank flooding that in turn protects the downstream channel from increased erosion. Section 4.8 of the SWMDM provides calculations for Extreme Flood Control Volume (Q_{f100}). The Q_{f100} requires the post-development peak discharge rate from the 100-year, 24-hour storm event to be diminished down to pre-development rates. The purpose of the Q_{f100} is to prevent the increased risk of flood damage from large storm events and to maintain the pre-development 100-year floodplain boundaries.

The analysis shows that both the Q_{p10} and the Q_{f100} meet the SWMDM requirements without the need for traditional storage volumes. As demonstrated in Table 3-2, the proposed management plan reduces stormwater runoff from the Site for the 10-year event for each drainage area, and reduces the overall discharge resulting from the 100-year storm.

4.2 STORMWATER MANAGEMENT PRACTICES

As noted in Section 3 of this report, the Stormwater Management Practices (SMPs) selected to satisfy runoff treatment requirements will comprise of two (2) infiltration basins. Please see tables 4-4 and 4-5 below for the proposed practices and corresponding treatment capacities.

Table 4-4 SMP Measures

SMP Feature	In Use	Description
Infiltration Basin	X	Vegetated excavations designed to capture and temporarily store runoff, allowing for direct infiltration into the ground.

Table 4-5 Proposed SMP Treatment

Drainage Area	Proposed SMP(s)	Required WQv (cu-ft)	RRv Min. (cu-ft)	Provided WQv by SMP (cu-ft)	Provided RRv by SMP (cu-ft)
DA-1A	Infiltration Basin A	0.00	0.00	>0.00	100% of WQv
DA-1B	Infiltration Basin 1	6889.88	612.34	>6889.88	100% of WQv
DA-1E					
DA-1I					
DA-1C	Infiltration Basin 2	8689.28	1106.63	>8689.28	100% of WQv
DA-1D					
DA-1F					
DA-1G					
DA-1H					
DA-1J					
Total		15579.16	1718.97		

Please note the total provided WQv and total provided RRV exceed the required WQv and minimum RRV. Therefore, the proposed design fully satisfies treatment requirements as set forth in the New York Stormwater Design Manual.

4.3 STORMWATER MANAGEMENT PRACTICE MAINTENANCE

The maintenance of all stormwater management practices will be the responsibility of the contractor during construction, transitioning to the property owner's/operator's responsibility after construction is complete.

The proposed stormwater management practices shall be inspected once every seven (7) days during construction. The inspection reports shall be kept within the Construction Log book located in an accessible, on-site location (documents located in Appendix F). Upon completion of construction, the owner/operator will formally retain responsibility for all long-term SMP maintenance.

Table 4-6 below outlines the detailed inspection and maintenance schedule for the permanent SMPs. The contractor is subject to these same operational standards on a temporary, weekly basis during construction. The same requirements apply to the contractor during construction, but are just on a temporary weekly basis as the practices are implemented.

Table 4-6 Permanent SMP Maintenance Schedule

SMP Feature	Inspection & Maintenance Intervals	Inspection/Maintenance Requirements (Responsibility of Owner/Operator Post-Construction)
Infiltration Basin	Bi-Annually (Spring and Fall) for the first 2 years of operation. Yearly following, and after major storm events.	Check for evidence of sediment buildup. Remove trash or debris. Perform clean-out operations if average sediment depth exceeds 3 inches (as shown on sediment marker). Topsoil and seed any areas disturbed during cleanout.
Yard Drain/Catch Basin	Bi-Annually (Spring and Fall)	Check for evidence of sediment buildup. Clear sumps of sediment, leaves, trash, and debris.

4.4 POLLUTION PREVENTION MEASURES

Non-structural stormwater controls will focus on preventing non-sediment related pollutants from entering stormwater runoff, sediment control structures, storm drainage systems, and receiving bodies of water. Potential pollutants that may be generated on a construction site include gasoline, oils, grease, paints, solvents, paper, plastics, Styrofoam, aluminum cans, glass bottles, solid or liquid waste and raw materials (such as sand, aggregate and cement). "Good housekeeping" practices shall be used to prevent these pollutants from entering the Site stormwater discharges. The following measures

are to be taken to control the accidental exposure of materials and substances to stormwater runoff:

- Solid waste shall be disposed of in waste receptacles of adequate capacity at convenient locations to site workers. Regular collection and disposal of the collected wastes shall occur as needed.
- Storage areas will be protected from stormwater in accordance with any manufacturer's guidelines for storage of chemicals, paints, solvents, acids, pesticides, fertilizers, or other potential pollutants.
- Raw construction materials shall be stored in areas controlled by retention-type sediment control devices.
- Equipment wash down areas shall be designated on site and in areas draining to regularly maintained sediment control devices. Equipment maintenance areas are to be protected from stormwater and shall be designated and shall include appropriate waste receptacles for spent oils, gasoline, grease and solvents. Accumulated waste shall be regularly collected as needed.
- Sanitary facilities shall be provided in convenient locations to site workers and shall be adequately maintained.
- Any spill of chemicals including oil, hazardous materials, chemicals, etc. should be reported as required and the necessary clean-up measures put in place.

5.0 EROSION AND SEDIMENT CONTROL

The stormwater pollution prevention plan reflects the New York State requirements for erosion and sediment control (ESC). To ensure compliance, this plan was prepared in accordance with the New York State standards outlined in the New York Standards and Specifications for Erosion and Sediment Control (2016).

5.1 EROSION AND SEDIMENT CONTROL MEASURES

The erosion and sediment control measures shall be fully constructed and operational prior to clearing and/or grading of any area of the proposed project. When construction activity temporarily ceases, areas shall be stabilized with temporary seed and mulch within 14 days of the last disturbance activity. Additionally, all erosion and sediment control practices outlined on the erosion and sediment control and grading plans are to be installed prior to disturbance. All practices are to be designed and installed in accordance with the New York Standards and Specifications for Erosion and Sediment Control (2016). A description of the temporary, vegetative, and permanent structural measures proposed are detailed in tables 5-1, 5-2, and 5-3 below.

Table 5-1 Temporary Erosion Control Measures

Erosion Control Measure	In Use	Description
Silt Fence	X	Temporary geo-textile fabric barrier to intercept sediment carried through sheet flow.
Compost Filter Sock	X	Temporary degradable geo-textile filled with compost filter media to intercept sediment carried through sheet flow.
Stabilized Construction Entrance	X	Aggregate pad underlain with geotextile where vehicles enter/exit the site.
Stabilized Stockpile	X	Designated material storage areas protected by temporary vegetative cover or mulching, with a silt fence installed at the toe of the slope.
Concrete Washout Area	X	Temporary self-contained containment area uses to safely capture and isolate concrete wash water and solids.
Storm Drain Inlet Protection	X	Temporary permeable barrier installed around storm inlets to prevent sediment entry.

Table 5-2 Vegetative Erosion Control Measures

Vegetative Measures	In Use	Description
Mulching	X	Use of straw along with vegetation to stabilize exposed soils.
Protection of Vegetation	X	Protection and preservation of existing mature trees and vegetative buffers/plants.
Seeding	X	Establishment of temporary or permanent grass cover for stabilization.
Topsoiling	X	Stripping, stockpiling, and redistribution of topsoil to support vegetative growth.

Table 5-3 Permanent Erosion Control Measures

Permanent Measures	In Use	Description
Land Grading	X	Permanent reshaping of slopes to stable angles to prevent surface erosion.
Soil Restoration	X	Decompaction of previously disturbed areas to their original nature.
Rock Outlet Protection	X	Stone riprap armoring around pipe discharge to stabilize and reduce velocity.
Conveyance Swale	X	Vegetative channel designed to convey stormwater runoff.

5.2 EROSION AND SEDIMENT CONTROL MAINTENANCE

A combination of temporary and permanent erosion control measures shall be installed on-site per the provided project plans. All catch basins and drainage inlets are to be protected using filter fabric drop inlet protection. All inlets and outlets of drainage pipe and culverts will be stabilized with rock riprap protection. Slopes and other disturbed areas will be protected with silt fence and shall be temporarily seeded and mulched as necessary during active construction phases.

Excavated stockpile soils and other materials will be stabilized on-site in a temporary designated soil stockpile, which will be protected by silt fence. The area in which the soil will be stockpiled will be determined and located as necessary during the course of construction. Upon completion of construction, any temporary sediment and erosion control measures will be removed, and the disturbed areas will be permanently stabilized with seed and mulch (in accordance with the plans).

Throughout construction, all vegetative and structural erosion control practices shall be maintained, repaired, or cleaned as per the E&SC maintenance schedule on a weekly basis, by a qualified individual. The owner or operator shall have a trained contractor inspect the erosion and sediment control practices and pollution prevention measures being implemented within the active work area daily to ensure that they are being maintained in effective operating condition at all times.

A qualified inspector shall conduct site inspections for sites with on-going soil disturbance activities at least once every seven (7) calendar days. Such inspections are to be conducted by either a New York State Licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training.

Inspection and maintenance schedules for temporary ESC measures are detailed in Table 5-4 below.

Table 5-4 Temporary ESC Maintenance Schedule

Erosion and Sediment Control Measure	Inspection & Maintenance Intervals	Inspection/Maintenance Requirements
Stabilized Construction Entrance	Weekly & After Rain Events	Periodically top-dress with additional stone as aggregate becomes fouled. Clean any tracked sediment in public right-of-ways immediately.
Silt Fence	Weekly & After Rain Events	Check for tears, post sagging, and undermining. Remove & redistribute sediment when bulges develop in the silt fence.
Storm Drain Inlet Protection	Weekly & After Rain Events	Verify that the fabric protection is intact and structurally sound. Remove accumulated sediment as needed.
Concrete Washout	Weekly & After Rain Events	Inspect the containment structure/liner to ensure there are no tears, leaks, or other structural failures. Remove, break up, and legally dispose of hardened concrete when necessary.
Filter Sock	Weekly & After Rain Events	Check for tears and undermining. Remove & redistribute sediment as necessary.
Stabilized Stockpile	Weekly & After Rain Events	Ensure temporary seeding or mulching is intact. Inspect downslope silt fence, and remove sediment accumulations as needed.

Upon completion of site and/or phase stabilization, all temporary erosion and sediment control measures shall be removed by the contractor. Permanent measures shall be inspected to ensure that they are installed as per the plans and will function properly.

Inspection and maintenance schedules for permanent E&SC Measures are shown in table 5-5 below.

Table 5-5 Permanent ESC Maintenance Schedule

SMP	Inspection/Maintenance Intervals	Inspection/Maintenance Requirements
Land Grading	Bi-Annually (Spring and Fall)	Check for uneven settling and cavities. Re-grade, topsoil, seed, and mulch any damaged slopes immediately as necessary.
Rock Outlet Protection	Bi-Annually (Spring and Fall)	Verify that all riprap armoring is in place and has not shifted. Remove any accumulated sediment or debris blocking the outlet.
Soil Restoration	Annually	Verify that de-compacted and restored areas maintain healthy vegetative growth. Inspect for signs of surface compaction from unauthorized vehicle traffic. Re-till and re-seed any re-compacted areas as necessary.
Conveyance Swale	Bi-Annually (Spring and Fall)	Check for sediment deposition or bank erosion. Clear trash and debris. Mow at least twice per growing season to prevent woody growth and invasive weeds.

Upon submission of the NOT to the NYSDEC, the maintenance responsibility for the permanent SMPs shall fall to the property owner. For post-construction stormwater management practices that are privately owned, the owner or operator shall have a mechanism in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

6.0 CONSTRUCTION SCHEDULE

Permit requirements:

Since the overall plan will exceed 1-acre of disturbance, the project requires a full stormwater pollution prevention plan (SWPPP) and will require GP-0-25-001 Stormwater SPDES permit coverage for all land disturbances. Prior to any ground disturbances the NOI shall be filed and acknowledgement of permit coverage must be obtained. Prior to construction, a pre-construction meeting shall be held between the contractors and the professional engineer overseeing construction to confirm that all required approvals, documentation, and erosion and sediment controls are in place.

The construction shall be sequenced such that the potential for erosion is minimized, and no more than 5.0-acres are disturbed at one time. A waiver must be filed if such disturbance does exceed this threshold. The details of the construction sequence and potential phasing to ensure this disturbance threshold is minimized shall be determined at a later submission of this project.

As the project progresses a detailed schedule will be developed.

7.0 CONCLUSION

Urban development can have the potential to negatively impact the natural environment both during and after construction. Development can drastically alter the hydrologic cycle, degrade water quality, diminish groundwater recharge, and increase both runoff erosion and overbank flooding. However, with proper use of stormwater practices, these negative effects can be reduced or eliminated. Additionally, proper design, installation, and maintenance of these practices can help the developed area keep stormwater discharge off the Site at the same or more improved rate than when it was undeveloped. This Stormwater Pollution Prevention Plan will help to achieve these goals, minimize impacts of erosion and sediment problems on land undergoing development, as well as meet New York State Department of Environmental Conservation stormwater management requirements.

Performance criteria for the selected SMPs is based on the practice design as noted in Chapter 6 of the SWMDM. These criteria were strictly followed on this project.

A summary of the stormwater design provides the following:

- The NYSDEC SWMDM was strictly followed in the site evaluation and the SMP selection process.
- The selected SMPs provide and maintain Water Quality and Water Quantity volumes for the site.

- Stormwater pretreatment will be provided as required to mitigate contaminant transport.

Also included in the appendices are contractor and owner certifications and forms, which are to be signed, and an original copy of this report, certification, and plans are to be kept at the job site. Prior to the start of any construction activity the Notice of Intent (GP #0-025-001) must be filed with the New York State Department of Environmental Conservation. Upon stabilization and completion of construction activities a Notice of Termination of the GP #0-25-001 must be filed with the New York State Department of Environmental Conservation.

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APPENDIX A

NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity
Permit No. GP-0-25-001

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Department of
Environmental
Conservation

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL
CONSERVATION (NYSDEC)

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

CONSTRUCTION ACTIVITY

Permit No. GP-0-25-001

Construction General Permit (CGP)

Issued Pursuant to Article 17, Titles 7, 8 and Article 70
of the Environmental Conservation Law

Effective Date: January 29, 2025

Expiration Date: January 28, 2030

Scott E. Sheeley

Chief Permit Administrator

A handwritten signature in blue ink, reading "Scott E. Sheeley". The signature is written in a cursive style with a long, sweeping underline.

Authorized Signature

JAN. 29, 2025

Date

Address: NYSDEC
Division of Environmental Permits
625 Broadway, 4th Floor
Albany, N.Y. 12233-1750

PREFACE

Pursuant to Section 402 of the Clean Water Act (CWA), and 40 CFR 122.26(b)(14)(x), (15)(i), and (15)(ii), *stormwater discharges* from certain *construction activities* are unlawful unless they are authorized by a National Pollutant Discharge Elimination System (NPDES) permit or by a state permit program. New York State administers the approved State Pollutant Discharge Elimination System (SPDES) program with permits issued in accordance with the New York State Environmental Conservation Law (ECL) Article 17, Titles 7 and 8, and Article 70, as well as 6 NYCRR Parts 621 and 750.

Construction activities constitute construction of a *point source* and, therefore, pursuant to ECL sections 17-0505, 17-0701, and 17-0803, the *owner or operator* must have coverage under a SPDES permit prior to *commencement of construction activities*. The *owner or operator* cannot wait until there is an actual *discharge* from the *construction site* to obtain permit coverage.

***Note: The italicized words/phrases within this permit are defined in Appendix A.**

**NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SPDES CONSTRUCTION GENERAL PERMIT (CGP) GP-0-25-001
FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES**

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Part I. How to Obtain Coverage and General Requirements

To be covered under this permit, the *owner or operator* must meet all eligibility requirements in Part I.A. and follow the requirements for obtaining permit coverage in Part I.D., F., or G.

A. Eligibility Requirements

For a *common plan of development or sale*, the *phase(s)* that meet the eligibility requirements in Part I.A. may obtain coverage under this permit even if other *phase(s)* of the same *common plan of development or sale* do not meet the eligibility requirements and require an individual SPDES permit.

1. The *owner's or operator's construction activities* involve soil disturbances of:
 - a. one or more acres; or
 - b. less than one acre which are part of a *common plan of development or sale* that will ultimately disturb one or more acres; or
 - c. less than one acre where NYSDEC has determined that a SPDES permit is required for *stormwater discharges* based on the potential for contribution to a violation of a *water quality standard* or for significant contribution of pollutants to *surface waters of the State*.
 - i. 5,000 square feet or more, but less than one acre, and are in the New York City Watershed located east of the Hudson River, Appendix C Figure 1; or
 - ii. 20,000 square feet or more, but less than one acre, within the municipal boundaries of the City of New York (NYC); or
 - iii. less than 20,000 square feet which are part of a *common plan of development or sale* that will ultimately disturb 20,000 square feet or more, but less than one acre, within the municipal boundaries of NYC; or
 - iv. that creates 5,000 square feet or more of *impervious area* within the municipal boundaries of NYC.

2. *Discharges from the owner's or operator's construction activities* are/were not:

- a. already covered by a different SPDES permit; or
- b. covered under a different SPDES permit that was denied, terminated, or revoked; or
- c. identified in an expired individual SPDES permit that was not renewed; or
- d. required to obtain an individual SPDES permit or another general SPDES permit in accordance with Part VII.K.

3. If *construction activities* may adversely affect a species that is endangered or threatened, the *owner or operator* must obtain a:

- a. permit issued pursuant to 6 NYCRR Part 182 for the project; or
- b. letter issued by NYSDEC of non-jurisdiction pursuant to 6 NYCRR Part 182 for the project.

4. If *construction activities* have the potential to affect an *historic property*, the *owner or operator* must obtain one of the following:

- a. documentation that the *construction activity* is not within an archeological buffer area indicated on the sensitivity map, and that the *construction activity* is not located on or immediately adjacent to a property listed or determined to be eligible for listing on the National or State Registers of Historic Places, and that there is no new permanent building on the *construction site* within the following distances from a building, structure, or object that is more than 50 years old, or if there is such a new permanent building on the *construction site* within those parameters that NYS Office of Parks, Recreation and Historic Preservation (OPRHP), a Historic Preservation Commission of a Certified Local Government, or a qualified preservation professional has determined that the building, structure, or object more than 50 years old is not historically/archeologically significant:
 - i. 1-5 acres of disturbance - 20 feet; or
 - ii. 5-20 acres of disturbance - 50 feet; or

- iii. 20+ acres of disturbance - 100 feet.
- b. NYSDEC consultation form sent to OPRHP,¹ and copied to NYSDEC's Agency Historic Preservation Officer (APO), and
 - i. the State Environmental Quality Review Act (SEQR) Environmental Assessment Form (EAF) with a negative declaration or the Findings Statement, with documentation of OPRHP's agreement with the resolution; or
 - ii. documentation from OPRHP that the *construction activity* will result in No Impact; or
 - iii. documentation from OPRHP providing a determination of No Adverse Impact; or
 - iv. a Letter of Resolution signed by the *owner or operator*, OPRHP and the DEC APO which allows for this *construction activity* to be eligible for coverage under the general permit in terms of the State Historic Preservation Act (SHPA).
- c. documentation of satisfactory compliance with Section 106 of the National Historic Preservation Act for a coterminous project area:
 - i. No Affect; or
 - ii. No Adverse Affect; or
 - iii. Executed Memorandum of Agreement.
- d. documentation that SHPA Section 14.09 has been completed by NYSDEC or another state agency.
- 5. If *construction activities* are subject to SEQR, the *owner or operator* must obtain documentation that SEQR has been satisfied.
- 6. If *construction activities* are not subject to SEQR, but subject to the equivalent environmental review from another New York State or federal agency, the

¹ The consultation form can be submitted, along with other project information, through OPRHP's Cultural Resource Information System (CRIS) portal. If submitted through CRIS, paper copies of the consultation form need not be mailed.

Part I.A.6.

owner or operator must obtain documentation that project review, pursuant to a process equivalent to SEQR from another New York State or federal agency, has been satisfied.

7. If *construction activities* require Uniform Procedures Act (UPA) Permits (see 6 NYCRR Part 621) from NYSDEC, or the equivalent from another New York State or federal agency, the *owner or operator* must:
 - a. obtain all such necessary permits; or
 - b. receive notification from NYSDEC pursuant to 6 NYCRR 621.3(a)(4) excepting Part I.A.7.a.
8. *Construction activities* are not eligible if they meet the following criteria in Part I.A.8.a. or b.:
 - a. For linear transportation and linear utility project types, the *construction activities*:
 - i. are within the watershed of *surface waters of the State* classified as AA or AA-S identified utilizing the Stormwater Interactive Map on NYSDEC's website; and
 - ii. are undertaken on land with no existing *impervious cover*; and
 - iii. disturb two or more acres of *steep slope*.
 - b. For all other project types, the *construction activities*:
 - i. are within the watershed of *surface waters of the State* classified as AA or AA-S identified utilizing the Stormwater Interactive Map on NYSDEC's website; and
 - ii. are undertaken on land with no existing *impervious cover*; and
 - iii. disturb one or more acres of *steep slope*.

B. Types of *Discharges* Authorized

1. The following *stormwater discharges* are authorized under this permit:
 - a. *Stormwater discharges*, including *stormwater* runoff, snowmelt runoff, and surface runoff and drainage, associated with *construction activity*, are authorized under this permit provided that appropriate *stormwater* controls are designed, installed, and maintained in accordance with Part II. and Part III.
 - b. *Stormwater discharges* from construction support activities at the *construction site* (including concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, and borrow areas) if the following requirements are met:
 - i. The support activity is directly related to the *construction site* required to have permit coverage for *stormwater discharges*; and
 - ii. The support activity is not a commercial operation, nor does it serve multiple unrelated *construction sites*; and
 - iii. The support activity does not continue to operate beyond the completion of the *construction activity* at the site it supports; and
 - iv. *Stormwater* controls are implemented in accordance with Part II. and Part III. for *discharges* from the support activity areas.
2. The following non-*stormwater discharges* associated with *construction activity* are authorized under this permit:
 - a. Non-*stormwater discharges* listed in 6 NYCRR 750-1.2(a)(29)(vi), with the following exception: “*Discharges* from firefighting activities are authorized only when the firefighting activities are emergencies/unplanned”; and
 - b. Non-*stormwater discharges* of waters to which other components have not been added that are used in accordance with the *SWPPP* to control dust or irrigate vegetation in stabilized areas; and
 - c. Uncontaminated *discharges* from *dewatering* operations

3. Authorized *discharges of stormwater* or authorized *discharges* of non-*stormwater*, commingled with a *discharge* authorized by a different SPDES permit and/or a *discharge* that does not require SPDES permit authorization, are also authorized under this permit.

C. Prohibited *Discharges*

1. Non-*stormwater discharges* prohibited under this permit include but are not limited to:
 - a. Wastewater from washout of concrete; and
 - b. Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds, and other construction materials; and
 - c. Fuels, oils, or other *pollutants* used in vehicle and equipment operation and maintenance; and
 - d. Soaps, solvents, or detergents used in vehicle and equipment washing or external building washdown; and
 - e. Toxic or hazardous substances from a spill or other release.

D. Electronic Notice of Intent (eNOI) Submittal

To receive authorization in accordance with Part I.D.3.b., the *owner or operator* must submit a complete eNOI in accordance with the requirements in Part I.D. The eNOI contains questions to: ensure eligibility requirements in Part I.A. have been met; obtain *owner or operator* contact information; obtain the total area to be disturbed and the existing/future *impervious areas* (rounded to the nearest tenth of an acre); confirm *Traditional Land Use Control MS4 Operator* jurisdiction over construction projects; satisfy the EPA eRule requirements; confirm that the Water Quality-Based Effluent Limitations in Part II. have been met; demonstrate consideration of the future risks due to climate change in accordance with Part III.A.2.; and confirm that the other *Stormwater Pollution Prevention Plan (SWPPP)* requirements in Part III. have been met.

1. An eNOI may be submitted for:
 - a. *construction activities* that are not part of a *common plan of development or sale*; or

- b. an entire *common plan of development or sale*; or
 - c. separate *phase(s)* of a *common plan of development or sale* if the following requirements are met:
 - i. the *common plan of development or sale* meets the eligibility requirements of Part I.A.5. or 6.; and
 - ii. the *phase(s)* meet(s) all other eligibility requirements of Part I.A.; and
 - iii. Part III.C. Required *SWPPP* Components by Project Type is based on the *common plan of development or sale*, not the *phase(s)*; or
 - d. *tree clearing* that is associated with, or will support, a *renewable energy* generation, transmission, or storage project that meets Part I.A.5. and 6., if the *tree clearing*:
 - i. meets all other eligibility requirements of Part I.A.; and
 - ii. will occur in NYSDEC's Regions 3-9; and
 - iii. is not within ¼ mile of a bat hibernaculum protected pursuant to 6 NYCRR Part 182; and
 - iv. will occur between November 1st and March 31st.
2. As prerequisites for submitting an eNOI, the *owner or operator* must:
- a. prepare a *SWPPP* for Part I.D.1.a., b., c., or d. in accordance with Part III.; and
 - b. based on the following criteria, upload the following signature forms signed in accordance with Part VII.J. to the eNOI prior to submission:
 - i. for all eNOIs:
 - 1. the *SWPPP* Preparer Certification Form, Appendix F, signed by the *SWPPP* preparer; and

2. the Owner/Operator Certification Form, Appendix J, signed by the *owner or operator*; and
- ii. if an eNOI includes *construction activities* within the municipal boundary(ies) of *Traditional Land Use Control MS4 Operator(s)* that will *discharge* to the *MS4(s)*:
 1. determine if the *Traditional Land Use Control MS4 Operator(s)* have review authority. A *Traditional Land Use Control MS4 Operator* does not have review authority where:

- a. the *owner or operator* of the *construction activities* in Part I.D.2.b.ii. is the same entity as the *Traditional Land Use Control MS4 Operator* identified in Part I.D.2.b.ii.; or

 - b. there is a statute exempting the *owner or operator* from zoning review by the *Traditional Land Use Control MS4 Operator*; or
 - c. there is no such statute per Part I.D.2.b.ii.1.b., the *Traditional Land Use Control MS4 Operator* concludes, after public hearing, that it does not have zoning review authority in accordance with Legal Memorandum LU14 Updated January 2020 “Governmental Immunity from Zoning and Other Legislation”; and
 2. if the *Traditional Land Use Control MS4 Operator(s)* have review authority, submit the *SWPPP* to the *Traditional Land Use Control MS4 Operator(s)* for review and have:
 - a. if outside the municipal boundaries of NYC: the *MS4 SWPPP Acceptance Form*, Appendix G, signed by the principal executive officer or ranking elected official from the *Traditional Land Use Control MS4 Operator*, or by a duly authorized representative of that person in accordance with Part VII.J.2.; or

- b. if within the municipal boundaries of NYC: The City of New York Department of Environmental Protection (NYCDEP) SWPPP Acceptance/Approval Form, Appendix H, signed by the principal executive officer or ranking elected official from the Traditional Land Use Control MS4 Operator, or by a duly authorized representative of that person in accordance with Part VII.J.2.; and

- 3. if the *Traditional Land Use Control MS4 Operator* does not have review authority, have the MS4 No Jurisdiction Form, Appendix I, signed by the principal executive officer or ranking elected official from the *Traditional Land Use Control MS4 Operator*, or by a duly authorized representative of that person in accordance with Part VII.J.2.

3. Submitting an eNOI:

- a. The *owner or operator* must submit a complete Notice of Intent electronically using a NYSDEC approved form.²
- b. The *owner or operator* is authorized to *commence construction activity* as of the authorization date indicated in the Letter of Authorization (LOA), which is sent by NYSDEC after a complete eNOI is submitted.
 - i. If an eNOI is received for a *SWPPP* that deviates from one of the technical standards but demonstrates *equivalence* in accordance with Part III.B.1.a.ii. or Part III.B.2.b.ii., if the *SWPPP* includes *construction activities* that are not within the municipal boundary(ies) of *Traditional Land Use Control MS4 Operator(s)*, and/or if the *SWPPP* includes *construction activities* within the municipal boundary(ies) of *Traditional Land Use Control MS4 Operator(s)* that do not have review authority in accordance with Part I.D.2.b.ii.1., the authorization date indicated in the LOA will be 60 business days after the eNOI submission date.

² Unless NYSDEC grants a waiver in accordance with 40 CFR 127.15(c) or (d). All waiver requests must be submitted to Stormwater_info@dec.ny.gov or NYSDEC, Bureau of Water Permits, 625 Broadway, 4th Floor, Albany, New York 12233-3505.

- c. If *Traditional Land Use Control MS4 Operator(s)* have review authority in accordance with Part I.D.2.b.ii.2., the *owner or operator* must, within five business days of receipt of the LOA, send an electronic copy of the LOA to the *Traditional Land Use Control MS4 Operator(s)* with review authority.

E. General Requirements for Owners or Operators with Permit Coverage

1. As of the date the LOA is received, the *owner or operator* must make the eNOI, *SWPPP*, and LOA available for review and copying in accordance with the requirements in Part VII.H. When applicable, as of the date an updated LOA is received, the *owner or operator* must make the updated LOA available for review and copying in accordance with the requirements in Part VII.H.
2. The *owner or operator* must ensure compliance with all requirements of this permit and that the provisions of the *SWPPP*, including any changes made to the *SWPPP* in accordance with Part III.A.5., are properly implemented and maintained from the *commencement of construction activity* until:
 - a. all areas of disturbance have achieved *final stabilization*; and
 - b. the owner's or operator's coverage under this permit is terminated in accordance with Part V.A.5.a.
3. As of the date of the *commencement of construction activities* until Part I.E.2.a. and b. have been met, the *owner or operator* must maintain at the *construction site*, a copy of:
 - a. all documentation necessary to demonstrate eligibility with this permit; and
 - b. this permit; and
 - c. the *SWPPP*; and
 - d. the signed *SWPPP Preparer Certification Form*; and
 - e. the signed *MS4 SWPPP Acceptance Form* or signed *NYCDEP SWPPP Acceptance/Approval Form* or signed *MS4 No Jurisdiction Form* (when applicable); and
 - f. the signed *Owner/Operator Certification Form*; and

- g. the eNOI; and
 - h. the LOA; and
 - i. the LOA transmittal to the Traditional Land Use Control MS4 Operator in accordance with Part I.D.3.c. (when applicable).
4. The *owner or operator* must maintain at the *construction site*, until Part I.E.2.a. and b. have been met, as of the date the documents become final or are received, a copy of the:
- a. responsible contractor's or subcontractor's certification statement(s) in accordance with Part III.A.7.; and
 - b. inspection reports in accordance with Part IV.C.4. and 6.; and
 - c. Request to Disturb Greater Than Five Acres and the Authorization Letter to Disturb Greater Than Five Acres in accordance with Part I.E.6. (when applicable); and
 - d. Request to Continue Coverage and the Letter of Continued Coverage (LOCC) in accordance with Part I.F.2. and 4. (when applicable); and
 - e. The updated LOA(s) in accordance with Part I.E.9. (when applicable).
5. The *owner or operator* must maintain the documents in Part I.E.3. and 4. in a secure location, such as a job trailer, on-site construction office, or mailbox with lock. The secure location must be accessible during normal business hours to an individual performing a compliance inspection. The documents must be paper documents unless electronic documents are accessible to the inspector during an inspection to the same extent as a paper copy stored at the site would be. If electronic documents are kept on site, the *owner or operator* must maintain functional equipment on site available to an inspector during normal hours of operation such that an inspector may view the electronic documents in a format that can be read in a similar manner as a paper record and in a legally dependable format with no less evidentiary value than their paper equivalent.
6. The *owner or operator* must meet the following requirements prior to disturbing greater than five acres of soil at any one time:
- a. The *owner or operator* must submit a written Request to Disturb Greater Than Five Acres to:

Part I.E.6.a.i.

- i. NYSDEC's Regional Office Division of Water staff based on the project location, Appendix E, if a *Traditional Land Use Control MS4 Operator* does not have review authority in accordance with Part I.D.2.b.ii.1.; or
 - ii. the *Traditional Land Use Control MS4 Operator*, if a *Traditional Land Use Control MS4 Operator* has review authority in accordance with Part I.D.2.b.ii.1.; or
 - iii. NYSDEC's Regional Office Division of Water staff based on the project location, Appendix E, and each involved *Traditional Land Use Control MS4 Operator*, if the project spans multiple municipalities with more than one *Traditional Land Use Control MS4 Operator* involved with review authority in accordance with Part I.D.2.b.ii.1.
- b. The written Request to Disturb Greater Than Five Acres must include:
- i. The SPDES permit identification number (Permit ID); and
 - ii. Full technical justification demonstrating why alternative methods of construction that would result in five acres of soil disturbance or less at any one time are not feasible; and
 - iii. The phasing plan for the project and sequencing plans for all *phases* from the *SWPPP* in accordance with Part III.B.1.d.; and
 - iv. Plans with locations and details of erosion and sediment control practices such that the heightened concern for erosion when disturbing greater than five acres at one time has been addressed; and
 - v. Acknowledgment that "the *owner or operator* will comply with the requirements in Part IV.C.2.b."; and
 - vi. Acknowledgment that "the *owner or operator* will comply with the requirements in Part II.B.1.b."
- c. The *owner or operator* must be in receipt of an Authorization Letter to Disturb Greater Than Five Acres, which will include when the

authorization begins and ends and indicate a maximum area (acres) of soil disturbance allowed at any one time, from:

- i. NYSDEC, if Part I.E.6.a.i. or iii. apply; or
 - ii. the *Traditional Land Use Control MS4 Operator*, if Part I.E.6.a.ii. applies.
7. Upon a finding of significant non-compliance with the practices described in the *SWPPP* or violation of this permit, NYSDEC may order an immediate stop to all *construction activity* at the site until the non-compliance is remedied. The stop work order must be in writing, describe the non-compliance in detail, and be sent to the *owner or operator*.
8. If any human remains or archaeological remains are encountered during excavation, the *owner or operator* must immediately cease, or cause to cease, all *construction activity* in the area of the remains and notify the appropriate Regional Water Engineer (RWE).³ *Construction activity* shall not resume until written permission to do so has been received from the RWE.
9. To be authorized to implement modifications to the information previously submitted in the eNOI, the *owner or operator* must:
 - a. notify NYSDEC via email at Stormwater_info@dec.ny.gov requesting access to update the eNOI; and
 - b. update the eNOI to reflect the modifications and resubmit the eNOI in accordance with Part I.D.; and
 - c. receive an updated LOA.
10. The eNOI, *SWPPP*, LOA, updated LOAs (when applicable), and inspection reports required by this permit are public documents that the *owner or operator* must make available for review and copying by any person within five business days of the *owner or operator* receiving a written request by any such person to review these documents. Copying of documents will be done at the requester's expense.

³ The Regional Water Manager where a DEC Region does not have a RWE.

F. Permit Coverage for *Discharges* Authorized Under GP-0-20-001

When applicable:

1. Upon the effective date of this permit, an *owner or operator* of a *construction activity*, with coverage under GP-0-20-001, will have interim coverage under GP-0-25-001 for 45 calendar days starting on the effective date of GP-0-25-001 so long as the *owner or operator* maintains compliance with all applicable requirements of this permit.
2. Within 30 calendar days of the effective date of this permit, the *owner or operator*, with coverage under GP-0-20-001, must submit a complete Request to Continue Coverage electronically using a NYSDEC approved form,⁴ which contains the information identified in Part I.F.3. below, if:
 - a. the *owner or operator* continues to implement the SMP component in conformance with the technical standards in place at the time of initial project authorization; and
 - b. the *owner or operator* will comply with all non-design requirements of GP-0-25-001.
3. The Request to Continue Coverage form contains questions to: ensure eligibility requirements in Part I.A. have been met; verify *owner or operator* contact information; verify the permit identification number; verify the original eNOI submission ID, if applicable; verify Part I.F.2.a. and b.; verify the version of the Design Manual that the technical/design components conform to; and receive an updated Owner/Operator Certification Form, Appendix I.
4. The *owner or operator* has obtained continued coverage under GP-0-25-001 as of the date indicated in the LOCC, which is sent by NYSDEC after a complete Request to Continue Coverage form is submitted.
5. If the owner or operator does not submit the Request to Continue Coverage form in accordance with Part I.F.2. and 3., coverage under this permit is automatically terminated after interim coverage expires.

⁴ Unless NYSDEC grants a waiver in accordance with 40 CFR 127.15(c) or (d). All waiver requests must be submitted to Stormwater_info@dec.ny.gov or NYSDEC, Bureau of Water Permits, 625 Broadway, 4th Floor, Albany, New York 12233-3505.

G. Change of *Owner or Operator*

When applicable:

1. When property ownership changes, or when there is a change in operational control over the construction plans and specifications, the following process applies:
 - a. The new *owner or operator* must meet the applicable prerequisites for submitting an eNOI in accordance with Part I.D.2.; and
 - b. The new *owner or operator* must submit an eNOI in accordance with Part I.D.3.; and
 - c. Permit coverage for the new *owner or operator* will be effective upon receipt of the LOA in accordance with Part I.D.3.b.; and
 - d. The new *owner or operator*, upon receipt of their LOA, must provide their Permit ID to the original *owner or operator*; and
 - e. If the original *owner or operator* will no longer be the *owner or operator* of the *construction activity* identified in the original *owner's or operator's* eNOI, the original *owner or operator*, upon receipt of the new *owner's or operator's* Permit ID in accordance with Part I.G.1.d., must submit to NYSDEC a completed eNOT in accordance with Part V. that includes the name and Permit ID of the new *owner or operator*; or
 - f. If the original *owner or operator* maintains ownership of a portion of the *construction activity*, the original *owner or operator* must maintain their coverage under the permit by modifying their eNOI; modifications to the eNOI must include:
 - i. the revised area of disturbance and/or *impervious area(s)*; and
 - ii. the revised SMP information, if applicable; and
 - iii. a narrative description of what has changed; and
 - iv. the new *owner's or operator's* Permit ID for the portion of the project removed from the eNOI.

Owners or operators must follow Part I.E.9. to modify the eNOI.

Part II. Water Quality-Based Effluent Limitations

A. Maintaining Water Quality

NYSDEC expects that compliance with the requirements of this permit will control *discharges* necessary to meet applicable *water quality standards*. It shall be a violation of the *ECL* for any *discharge* to either cause or contribute to a violation of the following *water quality standards* as contained in Parts 700 through 705 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York:

1. There must be no increase in turbidity that will cause a substantial visible contrast to natural conditions; and
2. There must be no increase in suspended, colloidal or settleable solids that will cause deposition or impair the waters for their best usages; and
3. There must be no residue from oil and floating substances, nor visible oil film, nor globules of grease.

If there is evidence indicating that the *stormwater discharges* authorized by this permit are causing, have the reasonable potential to cause, or are contributing to a violation of the *water quality standard*, the *owner or operator* must take appropriate corrective action in accordance with Part IV.C.5. of this permit and document in accordance with Part IV.C.4. of this permit. To address the *water quality standard* violation the *owner or operator* must include and implement appropriate controls in the *SWPPP* to correct the problem or obtain an individual SPDES permit.

If, despite compliance with the requirements of this permit, it is demonstrated that the *stormwater discharges* authorized by this permit are causing or contributing to a violation of *water quality standards*, or if NYSDEC determines that a modification of this permit is necessary to prevent a violation of *water quality standards*, the authorized *discharges* will no longer be eligible for coverage under this permit, and the *owner or operator* must obtain an individual SPDES permit prior to further *discharges* from the *construction site*.

B. Effluent Limitations Applicable to *Discharges* from *Construction Activities*

Discharges authorized by this permit must achieve, at a minimum, the effluent limitations in Part II.B.1.a., b., c., d., and e. These limitations represent the

degree of effluent reduction attainable by the application of best practicable technology currently available.

1. Erosion and Sediment Control Requirements - The *owner or operator* must select, design, install, implement, and maintain control measures to *minimize* the *discharge of pollutants* and prevent a violation of the *water quality standards*. The selection, design, installation, implementation, and maintenance of these control measures must meet the non-numeric effluent limitations in Part II.B.1.a., b., c., d., and e. and be in accordance with the New York State Standards and Specifications for Erosion and Sediment Control (BB), dated November 2016, using sound engineering judgment. Where control measures are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must include in *SWPPP* the reason(s) for the deviation, or alternative design, and provide information in the *SWPPP* demonstrating that the deviation or alternative design is *equivalent* to the technical standard.

- a. **Erosion and Sediment Controls.** At a minimum, erosion and sediment controls must be selected, designed, installed, implemented, and maintained to:
 - i. *Minimize* soil erosion through application of runoff control and soil stabilization control measure to *minimize pollutant discharges*; and
 - ii. Control *stormwater discharges*, including both peak flow rates and total *stormwater* volume, to *minimize* channel and *streambank* erosion and scour in the immediate vicinity of the *discharge* points; and
 - iii. *Minimize* the amount of soil exposed during *construction activity*; and
 - iv. *Minimize* the disturbance of *steep slope*; and
 - v. *Minimize* sediment *discharges* from the site; and
 - vi. Provide and maintain *natural buffers* around surface waters, direct *stormwater* to vegetated areas and maximize *stormwater* infiltration to reduce *pollutant discharges*, unless *infeasible*; and
 - vii. *Minimize* soil compaction. *Minimizing* soil compaction is not required

where the intended function of a specific area of the site dictates that it be compacted; and

- viii. Unless *infeasible*, preserve a sufficient amount of topsoil to complete soil restoration and establish a uniform, dense vegetative cover; and
 - ix. *Minimize* dust. On areas of exposed soil, *minimize* dust through the appropriate application of water or other dust suppression techniques to control the generation of *pollutants* that could be discharged from the site.
- b. **Soil Stabilization.** In areas where soil disturbance activity has ceased, whether permanently or *temporarily ceased*, the application of soil stabilization measures must be initiated by the end of the next business day and completed within 14 calendar days from the date the current soil disturbance activity ceased. For *construction sites* that *directly discharge* to one of the 303(d) segments listed in Appendix D, or are located in one of the watersheds listed in Appendix C, or are authorized to disturb greater than five acres in accordance with Part I.E.5.a.viii., the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven calendar days from the date the soil disturbance activity ceased.
- c. **Dewatering.** *Discharges* from *dewatering* activities, including *discharges* from *dewatering* of trenches and excavations, must be managed by appropriate control measures.
- d. **Pollution Prevention Measures.** Select, design, install, implement, and maintain effective pollution prevention measures to *minimize* the *discharge of pollutants* and prevent a violation of the *water quality standards*. At a minimum, such measures must be selected, designed, installed, implemented, and maintained to:
- i. *Minimize* the *discharge of pollutants* from equipment and vehicle washing, wheel wash water, and other wash waters. Soaps, detergents and solvents cannot be used; and
 - ii. *Minimize* the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, hazardous and toxic waste, and other materials present on the site to precipitation

and to *stormwater*. *Minimization* of exposure is not required in cases where the exposure to precipitation and to *stormwater* will not result in a *discharge* of *pollutants*, or where exposure of a specific material or product poses little risk of *stormwater* contamination (such as final products and materials intended for outdoor use); and

- iii. Prevent the *discharge* of *pollutants* from spills and leaks and implement chemical spill and leak prevention and response procedures.
- e. **Surface Outlets.** When discharging from basins and impoundments, the surface outlets must be designed, constructed, and maintained in such a manner that sediment does not leave the basin or impoundment and that erosion at or below the outlet does not occur.

C. Post-Construction Stormwater Management Practice (SMP) Requirements

- 1. The *owner or operator* of a *construction activity* that requires post-construction SMPs, in accordance with Part III.C., must select, design, install, implement, and maintain the SMPs to meet the *performance criteria* in the New York State Stormwater Management Design Manual, dated July 31, 2024 (DM), using sound engineering judgment. Where SMPs are not designed in conformance with the *performance criteria* in the DM, the *owner or operator* must include in the *SWPPP* the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.
- 2. The *owner or operator* of a *construction activity*, that requires SMPs in accordance with Part III.C., must design the practices to meet the applicable *sizing criteria* in Part II.C.2.a., b., c., or d.

a. Sizing Criteria for *New Development*

- i. Runoff Reduction Volume (RRv) and Water Quality Volume (WQv):
 - 1. Reduce the total WQv by application of RR techniques and standard SMPs with RRv capacity. The total WQv must be calculated in accordance with the criteria in Section 4.2 of the DM; or

2. Minimum RRV and Treatment of Remaining Total WQv: *Construction activities* that cannot meet the requirements in Part II.C.2.a.i.1. due to *site limitations* must direct runoff from all newly constructed *impervious areas* to a RR technique or standard SMP with RRV capacity unless *infeasible*. The specific *site limitations* that prevent the reduction of 100% of the WQv must be documented in the *SWPPP*. For each *impervious area* that is not directed to a RR technique or standard SMP with RRV capacity, the *SWPPP* must include documentation which demonstrates that all options were considered and for each option explains why it is considered *infeasible*.

In no case shall the runoff reduction achieved from the newly constructed *impervious areas* be less than the Minimum RRV as calculated using the criteria in Section 4.4 of the DM. The remaining portion of the total WQv that cannot be reduced must be treated by application of standard SMPs.

- ii. Channel Protection Volume (CPv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event, remaining after runoff reduction. Where a CPv control orifice is provided, the minimum orifice size must be 3 inches, with acceptable external trash rack or orifice protection. The CPv requirement does not apply when:
 1. Reduction of the entire CPv is achieved by application of runoff reduction techniques or infiltration systems; or
 2. The 1-year post-development peak *discharge* is less than or equal to 2.0 cfs without detention or velocity controls; or
 3. The site *directly discharges* into a fifth order or larger water body (stream, river, or lake), or tidal waters, where the increase in smaller flows will not impact the stream bank or channel integrity. However, the point of *discharge* must be adequately protected against scour and erosion by the increased peak *discharge*.

- iii. **Overbank Flood Control Criteria (Qp):** Requires storage to attenuate the post-development 10-year, 24-hour peak *discharge* rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
 - 1. the site *directly discharges* to tidal waters or fifth order or larger streams, or
 - 2. A downstream analysis reveals that *overbank* control is not required.
- iv. **Extreme Flood Control Criteria (Qf):** Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
 - 1. the site *directly discharges* to tidal waters or fifth order or larger streams, or
 - 2. A downstream analysis reveals that *overbank* control is not required.

b. Sizing Criteria for New Development in Enhanced Phosphorus Removal Watersheds

- i. Runoff Reduction Volume (RRv) and Water Quality Volume (WQv):
 - 1. Reduce the WQv by application of RR techniques and standard SMPs with RRv capacity. The total WQv is the runoff volume from the 1-year, 24-hour design storm over the post-developed watershed and must be calculated in accordance with the criteria in Section 4.3 of the DM; or
 - 2. Minimum RRv and Treatment of Remaining Total WQv: *Construction activities* that cannot meet the criteria in Part II.C.2.b.i.1. due to *site limitations* must direct runoff from all newly constructed *impervious areas* to a RR technique or standard SMP with RRv capacity unless *infeasible*. The specific *site limitations* that prevent the reduction of 100% of the WQv must be documented in the *SWPPP*. For each *impervious area* that is not directed to a RR technique or standard SMP with RRv capacity, the *SWPPP* must include

documentation which demonstrates that all options were considered and for each option explains why it is considered *infeasible*.

In no case shall the runoff reduction achieved from the newly constructed *impervious areas* be less than the Minimum RRv as calculated using the criteria in Section 4.5 of the DM. The remaining portion of the total WQv that cannot be reduced must be treated by application of standard SMPs.

- ii. Channel Protection Volume (CPv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event, remaining after runoff reduction. Where a CPv control orifice is provided, the minimum orifice size must be 3 inches, with acceptable external trash rack or orifice protection. The CPv requirement does not apply when:
 - 1. Reduction of the entire CPv is achieved by application of runoff reduction techniques or infiltration systems; or
 - 2. The 1-year post-development peak *discharge* is less than or equal to 2.0 cfs; or
 - 3. The site *directly discharges* to tidal waters, or a fifth order or larger water body (stream, river, or lake) where the increase in smaller flows will not impact the stream bank or channel integrity. However, the point of *discharge* must be adequately protected against scour and erosion by the increased peak *discharge*.
- iii. *Overbank* Flood Control Criteria (Qp): Requires storage to attenuate the post-development 10-year, 24-hour peak *discharge* rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
 - 1. the site *directly discharges* to tidal waters or fifth order or larger streams; or
 - 2. A downstream analysis reveals that *overbank* control is not required.

- iv. Extreme Flood Control Criteria (Qf): Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
 - 1. the site *directly discharges* to tidal waters or fifth order or larger streams; or
 - 2. A downstream analysis reveals that *overbank* control is not required.

c. Sizing Criteria for Redevelopment Activity

- i. Water Quality Volume (WQv): The WQv treatment objective for *redevelopment activity* must be addressed by one of the following options, as outlined in Section 9.2.1. *Redevelopment activities* located in an Enhanced Phosphorus Removal Watershed (see Part III.B.3. and Appendix C) must calculate the WQv in accordance with Section 4.3 of the DM. All other *redevelopment activities* must calculate the WQv in accordance with Section 4.2 of the DM.
 - 1. Reduce the existing *impervious cover* by a minimum of 25% of the total disturbed, *impervious area*. The Soil Restoration criteria in Section 5.1.6 of the DM must be applied to all newly created pervious areas; or
 - 2. Capture and treat 100% of the required WQv, for a minimum of 25% of the disturbed redevelopment *impervious area*, by implementation of standard SMPs or reduced by application of runoff reduction techniques; or
 - 3. Capture and treat 100% of the required WQv, for a minimum of 75% of the disturbed redevelopment *impervious area*, by implementation of a volume-based alternative SMP, as defined in Section 9.4 of the DM; or
 - 4. Capture and treat 100% of the required WQv, for a minimum of 75% of the disturbed redevelopment *impervious area*, by implementation of a flow-through alternative SMP sized to treat the peak rate of runoff from the WQv design storm; or

5. Application of a combination of 1 through 4 above that provide a weighted average of at least two of the above methods. Application of this method must be in accordance with the criteria in Section 9.2.1(A)(V) of the DM; or
 6. If there is an existing SMP located on the site that captures and treats runoff from the *impervious area* that is being disturbed, the WQv treatment option selected must, at a minimum, provide treatment equal to the treatment that was being provided by the existing practice(s) if that treatment is greater than the treatment required by options 1 through 5 above.
- ii. Channel Protection Volume (CPv) is not required if there is 0% change to hydrology that increases the *discharge* rate and volume from the project site.
 - iii. *Overbank* Flood Control (Qp) is not required if there is 0% change to hydrology that increases the *discharge* rate from the project site.
 - iv. Extreme Flood Control (Qf) is not required if there is 0% change to hydrology that increases the *discharge* rate from the project site.

d. *Sizing Criteria for Combination of Redevelopment Activity and New Development*

Construction projects, that include both *new development* and *redevelopment activity*, must use SMPs that meet the *sizing criteria* calculated as an aggregate of the *sizing criteria* in Part II.C.2.a. or b. for the *new development* portion of the project and Part II.C.2.c. for the *redevelopment activity* portion of the project.

Part III. Stormwater Pollution Prevention Plan (SWPPP)

A. General SWPPP Requirements

1. A SWPPP must be prepared and implemented by the *owner or operator* of all *construction activity* covered by this permit. All authorized *discharges* must be identified in the SWPPP. The SWPPP must document the selection, design, installation, implementation and maintenance of the control measures and

practices that will be used to meet the effluent limitations in Part II.B. and, where applicable, the SMP requirements in Part II.C.

2. The *SWPPP* must demonstrate consideration in narrative format of the future physical risks due to climate change pursuant to the Community Risk and Resiliency Act (CRRA), 6 NYCRR Part 490, and associated guidance.

- a. The owner or operator must consider:

- i. the following physical risks due to climate change:

- (i) increasing temperature; and
 - (ii) increasing precipitation; and
 - (iii) increasing variability in precipitation, including chance of drought; and
 - (iv) increasing frequency and severity of flooding; and
 - (v) rising sea level; and
 - (vi) increasing storm surge; and
 - (vii) shifting ecology.

- ii. for each of the following:

- (i) overall site planning; and
 - (ii) location, elevation, and sizing of:
 - a. control measures and practices; and
 - b. conveyance system(s); and
 - c. detention system(s).

3. The *SWPPP* must describe the erosion and sediment control practices and where required, SMPs that will be used and/or constructed to reduce the *pollutants* in *stormwater discharges* and to assure compliance with the

requirements of this permit. In addition, the *SWPPP* must identify potential sources of pollution which may reasonably be expected to affect the quality of *stormwater discharges*.

4. All *SWPPPs*, that require the SMP component in accordance with Part III.B.2., must be prepared by a *qualified professional*.
5. The *owner or operator* must keep the *SWPPP* current so that, at all times, it accurately documents the erosion and sediment control practices that are being used or will be used during construction, and all SMPs that will be constructed on the site. At a minimum, the *owner or operator* must modify the *SWPPP*, including construction drawings:
 - a. whenever the current provisions prove to be ineffective in *minimizing pollutants* in *stormwater discharges* from the site; and
 - b. whenever there is a change in design, construction, or operation at the *construction site* that has or could have an effect on the *discharge of pollutants*; and
 - c. to address issues or deficiencies identified during an inspection by the *qualified inspector*, NYSDEC, or other regulatory authority; and
 - d. to document the final construction conditions in an as-built drawing.
6. NYSDEC may notify the *owner or operator* at any time that the *SWPPP* does not meet one or more of the minimum requirements of this permit. The notification must be in writing and identify the provisions of the *SWPPP* that require modification. Within fourteen (14) calendar days of such notification, or as otherwise indicated by NYSDEC, the *owner or operator* must make the required changes to the *SWPPP* and submit written notification to NYSDEC that the changes have been made. If the *owner or operator* does not respond to NYSDEC's comments in the specified time frame, NYSDEC may suspend the *owner's or operator's* coverage under this permit or require the *owner or operator* to obtain coverage under an individual SPDES permit in accordance with Part II.D.4.
7. Prior to the *commencement of construction activity*, the *owner or operator* must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting, and maintaining the erosion and sediment control practices included in the *SWPPP* and the

contractor(s) and subcontractor(s) that will be responsible for constructing the SMPs included in the *SWPPP*. The *owner or operator* must have each of the contractors and subcontractors identify at least one person from their company to be *trained contractor* that will be responsible for implementation of the *SWPPP*. The *owner or operator* must ensure that at least one *trained contractor* is on site daily when soil disturbance activities are being performed.

The *owner or operator* must have each of the contractors and subcontractors identified above sign a copy of the following certification statement below before the *commencement of construction activities*:

"I hereby certify under penalty of law that I understand and agree to comply with the requirements of the *SWPPP* and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with the requirements of the most current version of the New York State Pollutant Discharge Elimination System (SPDES) Construction General Permit (CGP) for Stormwater Discharges from Construction Activities and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations"

In addition to providing the certification statement above, the certification page must also identify the specific elements of the *SWPPP* that each contractor and subcontractor will be responsible for and include the name and title of the person providing the signature; the name and title of the *trained contractor* responsible for *SWPPP* implementation; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification statement is signed. The *owner or operator* must attach the certification statement(s) to the copy of the *SWPPP* that is maintained at the *construction site*. If new or additional contractors are hired to implement measures identified in the *SWPPP* after the *commencement of construction activities*, they must also sign the certification statement and provide the information listed above prior to performing *construction activities*.

B. Required *SWPPP* Contents

1. Erosion and sediment control component - The *owner or operator* must prepare a *SWPPP* that includes erosion and sediment control practices.
 - a. Erosion and sediment control practices must be designed:
 - i. in conformance with the BB; or
 - ii. *equivalent* to the BB if deviating from Part III.B.1.a.i.
 - b. If the erosion and sediment control practices are designed in conformance with Part III.B.1.a.ii., the *SWPPP* must include a demonstration of *equivalence* to the BB.
 - c. At a minimum, the erosion and sediment control component of the *SWPPP* must include the following:
 - i. Background information about the scope of the project, including the location, type and size of project; and
 - ii. A site map/construction drawing(s) with north arrows for the project, including a general location map. At a minimum, the site map must show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent off-site surface water(s); floodplain/floodway boundaries; wetlands and drainage patterns that could be affected by the *construction activity*; existing and final contours; locations of different soil types with boundaries; material, waste, borrow or equipment storage areas located on adjacent properties; and location(s) of the *stormwater discharge(s)* and receiving surface water(s); and
 - iii. A description of the soil(s) present at the site, including an identification of the Hydrologic Soil Group (HSG); and
 - iv. A phasing plan for the project and sequencing plans for all *phases*, both of which must address clearing and grubbing, excavation and grading, utility and infrastructure installation, *final stabilization*,

and any other *construction activity* at the site that will result in soil disturbance.

1. The phasing plan must include:
 - a. a map delineating and labeling the limits of soil disturbance for all *phases* of a project; and
 - b. a table identifying the order and intended schedule of when each *phase* will begin and end its sequencing plan. The table must identify the total disturbed area for each *phase* at any one time and the total disturbed area for the overall project at any one time all on one timeline showing all overlapping quantities of disturbed area at any one time; and
2. A sequencing plan for a specific *phase* must include:
 - a. a table indicating the order and intended schedule of *construction activities* within a *phase*, and corresponding construction drawings with a description of the work to be performed; and
 - b. all permanent and *temporary stabilization* measures; and
- v. A description of the minimum erosion and sediment control practices to be installed or implemented for each *construction activity* that will result in soil disturbance. Include a schedule that identifies the timing of initial placement or implementation of each erosion and sediment control practice and the minimum time frames that each practice should remain in place or be implemented; and
- vi. A site map/construction drawing(s) showing the specific location(s), size(s), and length(s) of each erosion and sediment control practice; and
- vii. The dimensions, material specifications, installation details, and operation and maintenance requirements for all erosion and sediment control practices. Include the location and sizing of any

temporary sediment basins and structural practices that will be used to divert flows from exposed soils; and

- viii. A maintenance inspection schedule for the contractor(s) and subcontractor(s) identified in Part III.A.7. to ensure continuous and effective operation of the erosion and sediment control practices. The maintenance inspection schedule must be in accordance with the requirements in the BB technical standard; and
 - ix. A description of the pollution prevention measures that will be used to control litter, construction chemicals and construction debris from becoming a *pollutant* source in the *stormwater discharges*; and
 - x. A description and location of any *stormwater discharges* associated with industrial activity other than construction at the site, including, but not limited to, *stormwater discharges* from asphalt plants and concrete plants located on the *construction site*; and
 - xi. Identification of any elements of the design that are not in conformance with the design criteria in the BB technical standard. Include the reason for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.
2. SMP component – The *owner or operator* of *construction activity* identified in Table 2 of Appendix B must prepare a *SWPPP* that includes SMPs.
- a. SMPs must be designed in conformance with the applicable *sizing criteria* in Part II.C.2.a., c., or d.; and
 - b. SMPs must be designed in conformance with the *performance criteria*:
 - i. in the DM; or
 - ii. *equivalent* to the DM if deviating from Part III.B.2.b.i.; or
 - iii. in the New York State Stormwater Management Design Manual, dated January 2015 (2015 Design Manual), or *equivalent* to it, if the following criteria are met:

1. The eNOI is submitted in accordance with Part I.D. before January 29, 2027 for *construction activities* that are either:
 - a. subject to governmental review and approval:
 - i. where the *owner or operator* made any application to that governmental entity prior to the effective date of this permit; and
 - ii. such application included a *SWPPP* developed using the 2015 Design Manual or *equivalent* to it; or
 - b. not subject to governmental review and approval:
 - i. where a fiscal allocation for the *construction activities* has been developed and approved by a governmental entity; and
 - ii. the *SWPPP* was developed using the 2015 Design Manual or *equivalent* to it; and
 - c. If SMPs are designed in conformance with Part III.B.2.b.ii., the *SWPPP* must include the reason(s) for the deviation or alternative design and a demonstration of *equivalence* to the DM; and
 - d. If SMPs are designed in conformance with Part III.B.2.b.iii., the *SWPPP* must include supporting information or documentation demonstrating that Part III.B.2.b.iii.1.a. or b. apply; and
 - e. The SMP component of the *SWPPP* must include the following:
 - i. Identification of all SMPs to be constructed as part of the project, including which option the SMP designs conform to, either Part III.B.2.b.i., ii., or iii. Include the dimensions, material specifications and installation details for each SMP; and
 - ii. A site map/construction drawing(s) showing the specific location and size of each SMP; and

- iii. A Stormwater Modeling and Analysis Report that includes:
 - (i) Map(s) showing pre-development conditions, including watershed/subcatchments boundaries, flow paths/routing, and design points; and
 - (ii) Map(s) showing post-development conditions, including watershed/subcatchments boundaries, flow paths/routing, design points and SMPs; and
 - (iii) Results of *stormwater* modeling (i.e. hydrology and hydraulic analysis) for the required storm events. Include supporting calculations (model runs), methodology, and a summary table that compares pre- and post-development runoff rates and volumes for the different storm events; and
 - (iv) Summary table, with supporting calculations, which demonstrates that each SMP has been designed in conformance with the *sizing criteria* included in the DM; and
 - (v) Identification of any *sizing criteria* that is not required based on the requirements included in Part II.C.; and
 - (vi) Identification of any elements of the design that are not in conformance with the *performance criteria* in the DM. Include the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the DM.
- iv. Soil testing results and locations (test pits, borings); and
- v. Infiltration test results, when required in accordance with Part III.B.2.a.; and
- vi. An operations and maintenance plan that includes inspection and maintenance schedules and actions to ensure continuous and effective operation of each SMP. The plan must identify the entity

that will be responsible for the long-term operation and maintenance of each practice; and

3. Enhanced Phosphorus Removal Standards - The *owner or operator* of *construction activity* identified in Table 2 of Appendix B that is located in a watershed identified in Appendix C must prepare a *SWPPP* that includes SMPs designed in conformance with the applicable *sizing criteria* in Part II.C.2.b., c., or d. and the *performance criteria* Enhanced Phosphorus Removal Standards included in the DM. At a minimum, the SMP component of the *SWPPP* must meet the requirements of Part III.B.2.

C. Required *SWPPP* Components by Project Type

Owners or operators of *construction activities*, identified in Table 1 of Appendix B, are required to prepare a *SWPPP* that only includes erosion and sediment control practices designed in accordance with Part III.B.1. *Owners or operators* of the *construction activities*, identified in Table 2 of Appendix B, must prepare a *SWPPP* that also includes SMPs designed in accordance with Part III.B.2 or 3.

For the entire area of disturbance, including the entire *common plan of development or sale* if applicable, the owner or operator must evaluate every bullet from Appendix B Table 1 and Table 2 separately. If bullets from both Table 1 and Table 2 apply, the *SWPPP* must include erosion and sediment control practices for all *construction activities* but SMPs for only those portions of the *construction activities* that fall under Table 2 bullet(s).

Part IV. Inspection and Maintenance Requirements

A. General Construction Site Inspection and Maintenance Requirements

1. The *owner or operator* must ensure that all erosion and sediment control practices (including pollution prevention measures), and all SMPs identified in the *SWPPP*, are inspected and maintained in accordance with Part IV.B. and C.

B. Contractor Maintenance Inspection Requirements

1. The *owner or operator* of each *construction activity*, identified in Tables 1 and 2 of Appendix B, must have a *trained contractor* inspect the erosion and sediment control practices and pollution prevention measures being

implemented within the active work area daily to ensure that they are being maintained in effective operating condition at all times. If deficiencies are identified, the contractor must:

- a. if the corrective action does not require engineering design:
 - i. begin implementing corrective actions within one business day; and
 - ii. complete the corrective actions within five business days; or
 - b. if the corrective action requires engineering design:
 - i. begin the engineering design process within five business days; and
 - ii. complete the corrective action in a reasonable time frame but no later than within 60 calendar days.
2. For *construction sites* where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *trained contractor* can stop conducting the maintenance inspections in accordance with Part IV.B.1. The *trained contractor* must begin conducting the maintenance inspections in accordance with Part IV.B.1. as soon as soil disturbance activities resume.
 3. For *construction sites* where soil disturbance activities have been shut down with partial project completion, the *trained contractor* can stop conducting the maintenance inspections in accordance with Part IV.B.1. if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all SMPs required for the completed portion of the project have been constructed in conformance with the *SWPPP* and are operational.

C. Qualified Inspector Inspection Requirements

1. With the exception of the following *construction activities* identified in Tables 1 and 2 of Appendix B, a *qualified inspector* must conduct site inspections for all other *construction activities* identified in Tables 1 and 2 of Appendix B:
 - a. the construction of a single-family residential subdivision with 25% or less *impervious cover* at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than or equal to five (5) acres and is

not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix D; and

- b. the construction of a single-family home that involves soil disturbances of one (1) or more acres but less than or equal to five (5) acres and is not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix D; and
 - c. construction on *agricultural property* that involves soil disturbances of one (1) or more acres but less than five (5) acres; and
 - d. *construction activities* located in the New York City Watershed located east of the Hudson River, see Appendix C Figure 1, that involve soil disturbances of 5,000 square feet or more, but less than one acre.
2. The *qualified inspector* must conduct site inspections in accordance with the following timetable:
- a. For *construction sites* where soil disturbance activities are on-going, the *qualified inspector* must conduct a site inspection at least once every seven (7) calendar days; or
 - b. For *construction sites* where soil disturbance activities are on-going and the *owner or operator* has received authorization in accordance with Part I.E.6. to disturb greater than five (5) acres of soil at any one time, the *qualified inspector* must conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections must be separated by a minimum of two (2) full calendar days; or
 - c. For *construction sites* where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *qualified inspector* must conduct a site inspection at least once every thirty (30) calendar days. The *owner or operator* must notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix E) or, in areas under the jurisdiction of a *Traditional Land Use Control MS4 Operator*, the *Traditional Land Use Control MS4 Operator* (provided the *Traditional Land Use Control MS4 Operator* is not the *owner or operator* of the *construction activity*) by hard copy or email prior to reducing the inspections to this frequency and again by hard copy or email prior to re-commencing construction; or

- d. For *construction sites* where soil disturbance activities have been shut down with partial project completion, the requirement to have the *qualified inspector* conduct inspections ceases if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all SMPs required for the completed portion of the project have been constructed in conformance with the *SWPPP* and are operational. The *owner or operator* must notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix E) or, in areas subject to the review authority of *Traditional Land Use Control MS4 Operator(s)* in accordance with Part I.D.2.b.ii.1., the *Traditional Land Use Control MS4 Operator(s)* (provided the *Traditional Land Use Control MS4 Operator(s)* are not the *owners or operators* of the *construction activity*) in writing prior to the shutdown and again in writing prior to resuming *construction activity*. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the *owner or operator* must terminate coverage by meeting the requirements of Part V; or
 - e. For *construction sites* involving soil disturbance of one (1) or more acres that *directly discharge* to one of the 303(d) segments listed in Appendix D or is located in one of the watersheds listed in Appendix C, the *qualified inspector* must conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections must be separated by a minimum of two (2) full calendar days.
3. At a minimum, the *qualified inspector* must inspect:
- a. all erosion and sediment control practices and pollution prevention measures to ensure integrity and effectiveness; and
 - b. all SMPs under construction to ensure that they are constructed in conformance with the *SWPPP*; and
 - c. all areas of disturbance that have not achieved *final stabilization*; and
 - d. all points of *discharge to surface waters of the State* located within, or immediately adjacent to, the property boundaries of the *construction site*; and
 - e. all points of *discharge* from the *construction site*.

4. The *qualified inspector* must prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report must include and/or address all of the following, for all *construction activities* except those listed in Part IV.C.1.:
 - a. Permit identification number; and
 - b. Date and time of inspection; and
 - c. Name and title of person(s) performing inspection; and
 - d. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection, including the temperature at the time of the inspection; and
 - e. A description of the condition of the runoff at all points of *discharge* from the *construction site*. This must include identification of any *discharges* of sediment from the *construction site*. Include *discharges* from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow; and
 - f. A description of the condition of all *surface waters of the State* located within, or immediately adjacent to, the property boundaries of the *construction site* which receive runoff from disturbed areas. This must include identification of any *discharges* of sediment to the *surface waters of the State*; and
 - g. Identification of all erosion and sediment control practices and pollution prevention measures that need repair or maintenance; and
 - h. Identification of all erosion and sediment control practices and pollution prevention measures that were not installed properly or are not functioning as designed and need to be reinstalled or replaced; and
 - i. Description and sketch (map) of areas with active soil disturbance activity, areas that have been disturbed but are inactive at the time of the inspection, and areas that have been stabilized (temporary and/or final) since the last inspection; and
 - j. Estimates, in square feet or acres, of the following areas:

- i. Total area with active soil disturbance (not requiring either *temporary stabilization* or *final stabilization*); and
 - ii. Total area with inactive soil disturbance (requiring either *temporary stabilization* or *final stabilization*); and
 - iii. Total area that has achieved *temporary stabilization*; and
 - iv. Total area that has achieved *final stabilization*; and
- k. Current stage of construction of all SMPs and identification of all *construction activity* on site that is not in conformance with the *SWPPP* and technical standards; and
- l. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices and pollution prevention measures; and to correct deficiencies identified with the construction of the SMP(s); and
- m. Identification and status of all corrective actions that were required by previous inspection; and
- n. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *qualified inspector* must attach color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The *qualified inspector* must also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The *qualified inspector* must attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.
5. Within one business day of the completion of an inspection, the *qualified inspector* must notify the *owner or operator*, and appropriate contractor or subcontractor identified in Part III.A.7., of any corrective actions that need to be taken. The contractor or subcontractor must:
- a. if the corrective action does not require engineering design:

- i. begin implementing corrective actions within one business day; and
 - ii. complete the corrective actions within five business days; or
 - b. if the corrective action requires engineering design:
 - i. begin the engineering design process within five business days; and
 - ii. complete the corrective action in a reasonable time frame but no later than within 60 calendar days.
6. All inspection reports must be signed by the *qualified inspector*. In accordance with Part I.E.3., the inspection reports must be maintained on site with the *SWPPP*.

Part V. How to Terminate CGP Coverage

A. Electronic Notice of Termination (eNOT) Submittal

The eNOT contains questions to ensure requirements in Part V.A. have been met.

1. An *owner or operator* must terminate coverage when one or more of the following requirements have been met:
 - a. Total project completion:
 - i. all *construction activity* identified in the *SWPPP* has been completed; and
 - ii. all areas of disturbance have achieved *final stabilization*; and
 - iii. all temporary, structural erosion and sediment control measures have been removed; and
 - iv. all SMPs have been constructed in conformance with the *SWPPP* and are operational; and
 - v. an as-built drawing has been prepared; or

- b. Planned shutdown with partial project completion:
 - i. all soil disturbance activities have ceased; and
 - ii. all areas disturbed as of the project shutdown date have achieved *final stabilization*; and
 - iii. all temporary, structural erosion and sediment control measures have been removed; and
 - iv. all SMPs required for the completed portion of the project have been constructed in conformance with the *SWPPP* and are operational; and
 - v. an as-built drawing has been prepared; or
 - c. In accordance with Part I.G. Change of Owner or Operator; or
 - d. The *owner or operator* has obtained coverage under an alternative general SPDES permit or an individual SPDES permit.
2. For *construction activities* that require *qualified inspector* inspections in accordance with Part IV.C.1. and have met Part V.A.1.a. or b., the *owner or operator* must have the *qualified inspector* perform a final site inspection prior to submitting the eNOT. The *qualified inspector* must, by signing the “Final Stabilization” and “Post-Construction Stormwater Management Practice(s)” certification statements on the eNOT, certify that all the requirements in Part V.A.1.a. or b. have been achieved.
3. For *construction activities* that are subject to the review authority of *Traditional Land Use Control MS4 Operator(s)* in accordance with Part I.D.2.b.ii.1. and meet Part V.A.1.a. or b., the *owner or operator* must have the *Traditional Land Use Control MS4 Operator(s)* sign the “MS4 Acceptance” statement on the eNOT in accordance with the requirements in Part VII.J. A *Traditional Land Use Control MS4 Operator* official, by signing this statement, determined that it is acceptable for the *owner or operator* to submit the eNOT in accordance with the requirements of this Part. A *Traditional Land Use Control MS4 Operator* can make this determination by performing a final site inspection themselves or by accepting the *qualified inspector’s* final site inspection certification(s) when required in Part V.A.2.

Part V.A.4.

4. For *construction activities* that require SMPs and meet Part V.A.1.a. or b., the *owner or operator* must, prior to submitting the eNOT, ensure one of the following:
 - a. for SMP(s) that were constructed by a private entity, but will be owned, operated, and maintained by a public entity, the SMP(s) and any right-of-way(s) needed to operate and maintain such practice(s) have been deeded to the municipality in which the practice(s) is located; or
 - b. for SMP(s) that are privately owned, but will be operated and maintained by a public entity, an executed operation and maintenance agreement is in place with the municipality that will operate and maintain the SMP(s); or
 - c. for SMP(s) that are privately owned, the *owner or operator* has a mechanism in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the *owner or operator's* deed of record; or
 - d. for SMP(s) that are owned by a public or private institution (e.g. school, university, hospital), government agency or authority, or public utility, the *owner or operator* has policies and procedures in place that ensure operation and maintenance of the practices in accordance with the operation and maintenance plan.
5. An *owner or operator* that has met the requirements of Part V.A.1., 2., 3., and 4. must request termination of coverage under this permit by submitting a complete Notice of Termination form electronically using a NYSDEC approved form.⁵
 - a. The owner's or operator's coverage is terminated as of the termination date indicated in the Letter of Termination (LOT), which is sent by NYSDEC after a complete eNOT is submitted.

⁵ Unless NYSDEC grants a waiver in accordance with 40 CFR 127.15(c) or (d). All waiver requests must be submitted to Stormwater_info@dec.ny.gov or NYSDEC, Bureau of Water Permits, 625 Broadway, 4th Floor, Albany, New York 12233-3505.

Part VI. Record Retention and Reporting

A. Record Retention

The *owner or operator* must retain a copy of the documents listed in Part I.E.3. and a copy of the LOT for a period of at least five years from the date that NYSDEC accepts a complete NOT submitted in accordance with Part V.

B. Reporting

Except for the eNOI, the signature forms associated with the eNOI, and the eNOT, all other written correspondence requested by NYSDEC, including individual permit applications, must be sent to the address of the appropriate DOW (SPDES) Program contact at the Regional Office listed in Appendix E.

Part VII. Standard Permit Requirements

For the purposes of this permit, examples of contractors and subcontractors include: third-party maintenance and construction contractors.

A. Duty to Comply

The *owner or operator*, and all contractors or subcontractors, must comply with all requirements of this permit. Any non-compliance with the requirements of this permit constitutes a violation of the New York State Environmental Conservation Law (ECL), and its implementing regulations, and is grounds for enforcement action. Filing of a request for termination of coverage under this permit, or a notification of planned changes or anticipated non-compliance, does not limit, diminish or stay compliance with any requirements of this permit.

B. Need to Halt or Reduce Activity Not a Defense

The necessity to halt or reduce the *construction activity* regulated by this permit, in order to maintain compliance with the requirements of this permit, must not be a defense in an enforcement action.

C. Penalties

There are substantial criminal, civil, and administrative penalties associated with violating the requirements of this permit. Fines of up to \$37,500 per day for each

violation and imprisonment for up to 15 years may be assessed depending upon the nature and degree of the offense.

D. False Statements

Any person who knowingly makes any false material statement, representation, or certification in any application, record, report, or other document filed or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance must, upon conviction, be punished in accordance with ECL §71-1933 and or New York State Penal Law Articles 175 and 210.

E. Re-Opener Clause

Upon issuance of this permit, a determination has been made on the basis of a submitted Notice of Intent, plans, or other available information, that compliance with the specified permit requirements will reasonably protect classified water use and assure compliance with applicable *water quality standards*. Satisfaction of the requirements of this permit notwithstanding, if operation pursuant to this permit causes or contributes to a condition in contravention of State *water quality standards* or guidance values, or if NYSDEC determines that a modification is necessary to prevent impairment of the best use of the waters or to assure maintenance of *water quality standards* or compliance with other provisions of ECL Article 17 or the Clean Water Act (CWA), or any regulations adopted pursuant thereto, NYSDEC may require such modification and the Commissioner may require abatement action to be taken by the *owner or operator* and may also prohibit such operation until the modification has been implemented.

F. Duty to Mitigate

The *owner or operator*, and its contractors and subcontractors, must take all reasonable steps to *minimize* or prevent any *discharge* in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

G. Requiring Another General Permit or Individual SPDES Permit

NYSDEC may require any *owner or operator* authorized to *discharge* in accordance with this permit to apply for and obtain an individual SPDES permit or apply for authorization to *discharge* in accordance with another general SPDES permit.

1. Cases where an individual SPDES permit or authorization to discharge in accordance with another general SPDES permit may be required include, but is not limited to the following:

Part VII.G.1.a.

- a. the *owner or operator* is not in compliance with the conditions of this permit or does not meet the requirements for coverage under this permit; and
 - b. a change has occurred in the availability of demonstrated technology or practices for the control or abatement of *pollutants* applicable to the *point source*; and
 - c. new effluent limitation guidelines or new source performance standards are promulgated that are applicable to *point sources* authorized to *discharge* in accordance with this permit; and
 - d. existing effluent limitation guidelines or new source performance standards that are applicable to *point sources* authorized to *discharge* in accordance with this permit are modified; and
 - e. a water quality management plan containing requirements applicable to such *point sources* is approved by NYSDEC; and
 - f. circumstances have changed since the time of the request to be covered so that the *owner or operator* is no longer appropriately controlled under this permit, or either a temporary or permanent reduction or elimination of the authorized *discharge* is necessary; and
 - g. the *discharge* is in violation of section 17-0501 of the ECL; and
 - h. the *discharge(s)* is a significant contributor of *pollutants*. In making this determination, NYSDEC may consider the following factors:
 - i. the location of the *discharge(s)* with respect to *surface waters of the State*; and
 - ii. the size of the *discharge(s)*; and
 - iii. the quantity and nature of the *pollutants discharged* to *surface waters of the State*; and
 - iv. other relevant factors including compliance with other provisions of ECL Article 17, or the CWA.
2. When NYSDEC requires any *owner or operator* authorized by this permit to apply for an individual SPDES permit as provided for in this subdivision, it must notify the *owner or operator* in writing that a permit application is required. This notice must include a brief statement of the reasons for this decision, an application

form, a statement setting a time for the *owner or operator* to file the application for an individual SPDES permit, and a deadline, not sooner than 180 days from the *owner's or operator's* receipt of the notification letter, whereby the authorization to *discharge* under this permit must be terminated. NYSDEC may grant additional time upon demonstration, to the satisfaction of the RWE,⁶ that additional time to apply for an alternative authorization is necessary or where NYSDEC has not provided a permit determination in accordance with 6 NYCRR Part 621.

3. When an individual SPDES permit is issued to an *owner or operator* authorized to *discharge* under this permit for the same *discharge(s)*, this permit authorization for *construction activities* authorized under the individual SPDES permit is automatically terminated on the effective date of the individual SPDES permit unless termination is earlier in accordance with 6 NYCRR Part 750.

H. Duty to Provide Information

The *owner or operator* must furnish to NYSDEC, within five business days, unless otherwise set forth by NYSDEC, any information that NYSDEC may request to determine whether cause exists to determine compliance with this permit or to determine whether cause exists for requiring an individual SPDES permit in accordance with 6 NYCRR 750-1.21(e) (see Part VII.G. Requiring Another General Permit or Individual Permit).

The *owner or operator* must make available to NYSDEC, for inspection and copying, or furnish to NYSDEC within 25 business days of receipt of a NYSDEC request for such information, any information retained in accordance with this permit.

Except for Part I.D.4. and 5. and Part I.G., the following applies: where the *owner or operator* becomes aware that it failed to submit any relevant facts on the Notice of Intent, or submitted incorrect information in a Notice of Intent or in any report to NYSDEC, the *owner or operator* must submit such facts or corrected information to NYSDEC within five business days.

I. Extension

In the event a new permit is not issued and effective prior to the expiration of this permit, and this permit is extended pursuant to the State Administrative Procedure Act and 6 NYCRR Part 621, then the *owner or operator* with coverage under this permit may continue to operate and *discharge* in accordance with the requirements of this permit until a new permit is issued and effective.

⁶ The Regional Water Manager where a DEC Region does not have a RWE.

J. Signatories and Certification

The Notice of Intent, Notice of Termination, and reports required by this permit must be signed as provided in 40 CFR §122.22.

1. All Notices of Intent and Notices of Termination must be signed as follows:

a. For a corporation. By a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

- (i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation; or
- (ii) the manager of one or more manufacturing, production or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for Notice of Intent or Notice of Termination requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

Note: NYSDEC does not require specific assignments or delegations of authority to responsible corporate officers identified in 40 CFR §122.22(a)(1)(i). NYSDEC will presume that these responsible corporate officers have the requisite authority to sign the Notice of Intent or Notice of Termination unless the corporation has notified NYSDEC to the contrary. Corporate procedures governing authority to sign a Notice of Intent or Notice of Termination may provide for assignment or delegation to applicable corporate positions under 40 CFR §122.22(a)(1)(ii) rather than to specific individuals.

b. For a partnership or sole proprietorship. By a general partner or the proprietor, respectively.

- c. For a municipality, State, Federal, or other public agency. By either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:
 - 1. the chief executive officer of the agency; or
 - 2. a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).
- 2. All reports required by this permit, and other information requested by NYSDEC, must be signed by a person described in Part VII.J.1., or by a duly authorized representative of that person. A person is a duly authorized representative only if:
 - a. The authorization is made in writing by a person described in Part VII.J.1. or using the Duly Authorized Form, found on the DEC website; and
 - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and
 - c. The written authorization is submitted to NYSDEC.
- 3. Changes to authorization. If an authorization under Part VII.J.2. is no longer accurate because a different individual or position has responsibility for the overall operation of the *construction activity*, a new authorization satisfying the requirements of Part VII.J.2. must be submitted to NYSDEC prior to or together with any reports, information, or applications to be signed by an authorized representative.
- 4. Certification. Any person signing a document under Part VII.J.1. or 2. must make the following certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who

manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

5. Electronic reporting. If documents described in Part VII.J.1. or 2. are submitted electronically by or on behalf of the *construction activity* with coverage under this permit, any person providing the electronic signature for such documents must meet all relevant requirements of this section, and must ensure that all of the relevant requirements of 40 CFR Part 3 (including, in all cases, subpart D to Part 3) (Cross-Media Electronic Reporting) and 40 CFR Part 127 (NPDES Electronic Reporting Requirements) are met for that submission.

K. Inspection and Entry

The *owner or operator* must allow NYSDEC, the USEPA Regional Administrator, the applicable county health department, or any authorized representatives of those entities, or, in the case of a *construction site* which *discharges* through an *MS4*, an authorized representative of the *MS4* receiving the *discharge*, upon the presentation of credentials and other documents as may be required by law, to:

1. enter upon the *owner's or operator's* premises where a regulated facility or activity is located or conducted or where records must be kept under the requirements of this permit; and
2. have access to and copy at reasonable times, any records that must be kept under the requirements of this permit, including records required to be maintained for purposes of operation and maintenance; and
3. inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices or operations regulated or required under this permit; and
4. sample or monitor at reasonable times, for the purposes of assuring general SPDES permit compliance or as otherwise authorized by the CWA or ECL, any substances or parameters at any location; and
5. enter upon the property of any contributor to the regulated facility or activity under authority of the *owner or operator*.

L. Confidentiality of Information

The following must not be held confidential: this permit, the fact sheet for this permit, the name and address of any *owner or operator*, effluent data, the Notice of Intent, and information regarding the need to obtain an individual permit or an alternative general SPDES permit. This includes information submitted on forms themselves and any attachments used to supply information required by the forms (except information submitted on usage of substances). Upon the request of the *owner or operator*, NYSDEC must make determinations of confidentiality in accordance with 6 NYCRR Part 616, except as set forth in the previous sentence. Any information accorded confidential status must be disclosed to the Regional Administrator upon his or her written request. Prior to disclosing such information to the Regional Administrator, NYSDEC will notify the Regional Administrator of the confidential status of such information.

M. Other Permits May Be Required

Nothing in this permit relieves the *owner or operator* from a requirement to obtain any other permits required by law.

N. NYSDEC Orders or Civil Decrees/Judgments

The issuance of this permit by the NYSDEC, and the coverage under this permit by the *owner or operator*, does not supersede, revoke, or rescind any existing order on consent or civil Decree/Judgment, or modification to any such documents or to any order issued by the Commissioner, or any of the terms, conditions, or requirements contained in such order or modification therefore, unless expressly noted.

O. Property Rights

Coverage under this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State, or local laws or regulations, nor does it obviate the necessity of obtaining the assent of any other jurisdiction as required by law for the *discharge* authorized.

P. Compliance with Interstate Standards

If the *construction activity* covered by this permit originates within the jurisdiction of an interstate water pollution control agency, then the *construction activity* must also comply with any applicable effluent standards or *water quality standards* promulgated by that interstate agency and as set forth in this permit for such *construction activities*.

Q. Oil and Hazardous Substance Liability

Coverage under this permit does not affect the imposition of responsibilities upon, or the institution of any legal action against, the *owner or operator* under section 311 of the CWA, which must be in conformance with regulations promulgated pursuant to section 311 governing the applicability of section 311 of the CWA to *discharges* from facilities with *NPDES* permits, nor must such issuance preclude the institution of any legal action or relieve the *owner or operator* from any responsibilities, liabilities, or penalties to which the *owner or operator* is or may be subject pursuant to the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. section 9601 et seq. (CERCLA).

R. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, must not be affected thereby.

S. NYSDEC Approved Forms

The *owner or operator* must provide all relevant information that is requested by NYSDEC, and required by this permit, on all NYSDEC approved forms.

APPENDIX A – Abbreviations and Definitions

Abbreviations

APO – Agency Preservation Officer
BB – New York State Standards and Specifications for Erosion and Sediment Control (Blue Book), dated November 2016
BMP – Best Management Practice
CPESC – Certified Professional in Erosion and Sediment Control
CPv – Channel Protection Volume
CWA – Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq)
DM – New York State Stormwater Management Design Manual (Design Manual), dated July 31, 2024
DOW – Division of Water
EAF – Environmental Assessment Form
ECL – chapter 43-B of the Consolidated Laws of the State of New York, entitled the Environmental Conservation Law
EPA – U.S. Environmental Protection Agency
HSG – Hydrologic Soil Group
MS4 – Municipal Separate Storm Sewer System
NOI – Notice of Intent
NOT – Notice of Termination
NPDES – National Pollutant Discharge Elimination System
NYC – The City of New York
NYCDEP – The City of New York Department of Environmental Protection
NYSDEC – The New York State Department of Environmental Conservation
OPRHP – Office of Parks, Recreation and Historic Places
Qf – Extreme Flood
Qp – Overbank Flood
RR – Runoff Reduction
RRv – Runoff Reduction Volume
RWE – Regional Water Engineer
SEQR – State Environmental Quality Review Act
SHPA – State Historic Preservation Act
SMP – Post-Construction Stormwater Management Practice
SPDES – State Pollutant Discharge Elimination System
SWPPP – Stormwater Pollution Prevention Plan
TMDL – Total Maximum Daily Load
UPA – Uniform Procedures Act
USDA – United States Department of Agriculture
WQv – Water Quality Volume

Definitions

All definitions in this section are solely for the purposes of this permit. If a word is not italicized in the permit, use its common definition.

Agricultural Building – a structure designed and constructed to house farm implements, hay, grain, poultry, livestock or other horticultural products; excluding any structure designed, constructed or used, in whole or in part, for human habitation, as a place of employment where agricultural products are processed, treated or packaged, or as a place used by the public.

Agricultural Property – the land for construction of a barn, *agricultural building*, silo, stockyard, pen or other structural practices identified in Table II in the “Agricultural Best Management Practice Systems Catalogue” (dated June 2023).

Alter Hydrology from Pre- to Post-Development Conditions – the post-development peak flow rate(s) has increased by more than 5% of the pre-developed condition for the design storm of interest (e.g. 10 yr and 100 yr).

Combined Sewer System – a sewer system which conveys sewage and *stormwater* through a single pipe system to a publicly owned treatment works.

Commence (Commencement of) Construction Activities – the initial disturbance of soils associated with clearing, grading or excavation activities; or other construction related activities that disturb or expose soils such as demolition, stockpiling of fill material, and the initial installation of erosion and sediment control practices required in the *SWPPP*. See definition for “*Construction Activity(ies)*” also.

Common Plan of Development or Sale – a contiguous area where multiple separate and distinct *construction activities* are occurring, or may occur, under one plan. The “common plan” of development or sale is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, marketing plan, advertisement, drawing, permit application, State Environmental Quality Review Act (SEQR) environmental assessment form or other documents, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating *construction activities* may occur on a specific plot. A *common plan of development or sale* is comprised of two or more *phases*.

Common plan of development or sale does not include separate and distinct *construction activities* that are occurring, or may occur, under one plan that are at least 1/4 mile apart provided any interconnecting road, pipeline or utility project that is part of the same “common plan” is not concurrently being disturbed.

Construction Activity(ies) – identified within 40 CFR 122.26(b)(14)(x), 122.26(b)(15)(i), and 122.26(b)(15)(ii), any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, mechanized logging equipment operation, the cutting and skidding of trees, stump removal and/or brush root removal.

Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility, which is excluded from the calculation of the soil disturbance for a project. Routine maintenance includes, but is not limited to:

- Re-grading of gravel roads or parking lots; and
- Cleaning and shaping of existing roadside ditches and culverts that maintains the approximate original line and grade, and maintains or improves the hydraulic capacity of the ditch; and
- Replacement of existing culverts that maintains the approximate original line and grade, and maintains or improves the hydraulic capacity of a ditch; and
- Replacement of existing bridges that maintains the approximate original line and grade, and maintains or improves the hydraulic capacity beneath the bridges; and
- Cleaning and shaping of existing roadside ditches that does not maintain the approximate original grade, hydraulic capacity and purpose of the ditch if the changes to the line and grade, hydraulic capacity or purpose of the ditch are installed to improve water quality and quantity controls (e.g. installing grass lined ditch); and
- Placement of aggregate shoulder backing that stabilizes the transition between the road shoulder and the ditch or *embankment*; and
- Full depth milling and filling of existing asphalt pavements, replacement of concrete pavement slabs, and similar work that does not expose soil or disturb the bottom six (6) inches of subbase material; and
- Long-term use of equipment storage areas at or near highway maintenance facilities; and
- Removal of sediment from the edge of the highway to restore a previously existing sheet-flow drainage connection from the highway surface to the highway ditch or *embankment*; and
- Existing use of Canal Corp owned upland disposal sites for the canal, and
- Replacement of curbs, gutters, sidewalks and guide rail posts; and
- Maintenance of ski trails including brush hog use and mowing; and
- Above ground snowmaking pipe replacement; and
- Replacement of existing utility poles; etc.

Construction Site – the land area where *construction activity(ies)* will occur. See also the definitions for “*Commence (Commencement of) Construction Activities*” and “*Common Plan of Development or Sale.*”

Dewatering – the act of draining rainwater and/or groundwater from building foundations, vaults or excavations/trenches.

Directly Discharge(s)(ing) (to a specific surface waterbody) – runoff flows from a *construction site* by overland flow and the first point of *discharge* is the specific surface waterbody, or runoff flows from a *construction site* to a separate storm sewer system and the first point of *discharge* from the separate storm sewer system is the specific surface waterbody.

Discharge(s)(d) – any addition of any *pollutant* to waters of the State through an outlet or *point source*.

Embankment – an earthen or rock slope that supports a road/highway.

Equivalent (Equivalence) – the practice or measure meets all the performance, longevity, maintenance, and safety objectives of the technical standard and will provide an equal or greater degree of water quality protection.

Final Stabilization – all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other *equivalent* stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.

Historic Property – any building, structure, site, object or district that is listed on the State or National Registers of Historic Places or is determined to be eligible for listing on the State or National Registers of Historic Places.

Impervious Area (Cover) – all impermeable surfaces that cannot effectively infiltrate rainfall. This includes paved, concrete and compacted gravel surfaces (i.e. parking lots, driveways, roads, runways and sidewalks); building rooftops and miscellaneous impermeable structures such as patios, pools, and sheds.

Infeasible – not technologically possible, or not economically practicable and achievable considering best industry practices.

Minimize(ing)(ation) – reduce and/or eliminate to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable in light of best industry practices.

Municipal Separate Storm Sewer System (MS4) - a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

1. owned or operated by a State, city, town, village, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, *stormwater*, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA, that *discharges to surface waters of the State*; and
2. designed or used for collecting or conveying *stormwater*; and
3. which is not a *combined sewer system*; and
4. which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

Natural Buffer(s) – an undisturbed area with natural cover running along a surface water (e.g. wetland, stream, river, lake, etc.).

New Development – any land disturbance that does not meet the definition of *Redevelopment Activity* included in this appendix.

New York State Erosion and Sediment Control Certificate Program – a certificate program that establishes and maintains a process to identify and recognize individuals who are capable of developing, designing, inspecting and maintaining erosion and sediment control plans on projects that disturb soils in New York State. The certificate program is administered by the New York State Conservation District Employees Association.

Nonpoint Source(s) – any source of water pollution or *pollutants* which is not a discrete conveyance or *point source* permitted pursuant to Title 7 or 8 of Article 17 of the Environmental Conservation Law (see ECL Section 17-1403).

Overbank – flow events that exceed the capacity of the stream channel and spill out into the adjacent floodplain.

Owner or Operator – the person, persons, or legal entity which owns or leases the property on which the *construction activity* is occurring; an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications; and/or an entity that has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit requirements.

Performance Criteria – the six performance criteria for each group of SMPs in Chapters 5 and 6 of the technical standard, New York State Stormwater Management Design Manual (DM), dated July 31, 2024. These include feasibility, conveyance, pretreatment, treatment, landscaping, and maintenance. It does not include the *Sizing Criteria* (i.e. WQv, RRV, CPv, Qp and Qf) in Part I.C.2. of the permit.

Phase – a defined area in which *construction activities* are occurring or will occur separate from other defined area(s).

Point Source – any discernible, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel or other floating craft, or landfill leachate collection system from which *pollutants* are or may be *discharged*.

Pollutant(s) – dredged spoil, filter backwash, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, agricultural waste and ballast *discharged* into water; which may cause or might reasonably be expected to cause pollution of the waters of the state in contravention of the standards or guidance values adopted as provided in 6 NYCRR Parts 700 et seq.

Qualified Inspector – a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, *New York State Erosion and Sediment Control Certificate Program* holder or other NYSDEC endorsed individual(s).

It can also mean someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect has received four (4) hours of NYSDEC endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other NYSDEC endorsed entity. After receiving the initial training, the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect shall receive four (4) hours of training every three (3) years.

It can also mean a person that meets the *Qualified Professional* qualifications in addition to the *Qualified Inspector* qualifications.

Note: Inspections of any SMPs that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

Qualified Professional – a person that is knowledgeable in the principles and practices of *stormwater* management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other NYSDEC endorsed individual(s). Individuals preparing *SWPPPs* that require the SMP component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics. All components of the *SWPPP* that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York.

Redevelopment Activity(ies) – the disturbance and reconstruction of existing *impervious area*, including *impervious areas* that were removed from a project site within five (5) years of preliminary project plan submission to the local government (i.e. site plan, subdivision, etc.).

Renewable Energy – electricity or thermal energy generated by renewable energy systems through use of the following technologies: solar thermal, photovoltaics, on land and offshore wind, hydroelectric, geothermal electric, geothermal ground source heat, tidal energy, wave energy, ocean thermal, and fuel cells which do not utilize a fossil fuel resource in the process of generating electricity.

Site Limitations – site conditions that prevent the use of an infiltration technique and or infiltration of the total WQv. Typical *site limitations* include: seasonal high groundwater, shallow depth to bedrock, and soils with an infiltration rate less than 0.5 inches/hour. The existence of *site limitations* shall be confirmed and documented using actual field testing (i.e. test pits, soil borings, and infiltration test) or using information from the most current United States Department of Agriculture (USDA) Soil Survey for the County where the project is located.

Sizing Criteria – the criteria included in Part I.C.2 of the permit that are used to size SMPs. The criteria include; Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (Cpv), *Overbank Flood* (Qp), and Extreme Flood (Qf).

Steep Slope – land area designated on the current United States Department of Agriculture (USDA) Soil Survey as Soil Slope Phase D, (provided the map unit name or description is inclusive of slopes greater than 25%), or Soil Slope Phase E or F, (regardless of the map unit name), or a combination of the three designations.

Stormwater – that portion of precipitation that, once having fallen to the ground, is in excess of the evaporative or infiltrative capacity of soils, or the retentive capacity of surface features, which flows or will flow off the land by surface runoff to waters of the State.

Streambank – the terrain alongside the bed of a creek or stream. The bank consists of the sides of the channel, between which the flow is confined.

Stormwater Pollution Prevention Plan (SWPPP) – a project specific report, including construction drawings, that among other things: describes the *construction activity(ies)*, identifies the potential sources of pollution at the *construction site*; describes and shows the *stormwater* controls that will be used to control the *pollutants* (i.e. erosion and sediment controls; for many projects, includes SMPs); and identifies procedures the *owner or operator* will implement to comply with the requirements of the permit. See Part III of the permit for a complete description of the information that must be included in the *SWPPP*.

Surface Waters of the State – shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800 to 941.

Temporarily Ceased – an existing disturbed area will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary Stabilization – exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Total Maximum Daily Load (TMDL) – the sum of the allowable loads of a single *pollutant* from all contributing point and *nonpoint sources*. It is a calculation of the maximum amount of a *pollutant* that a waterbody can receive and still meet *water quality standards*, and an allocation of that amount to the *pollutant's* sources. A TMDL stipulates Waste Load Allocations (WLA) for *point source discharges*, Load Allocations (LA) for *nonpoint sources*, and a margin of safety (MOS).

Traditional Land Use Control MS4 Operator – a city, town, or village with land use control authority that is authorized to *discharge* under New York State DEC's SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s) or the City of New York's Individual SPDES Permit for their Municipal Separate Storm Sewer Systems (NY-0287890).

Trained Contractor – an employee from the contracting (construction) company, identified in Part III.A.7., that has received four (4) hours of NYSDEC endorsed training

in proper erosion and sediment control principles from a Soil and Water Conservation District, or other NYSDEC endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) years.

It can also mean an employee from the contracting (construction) company, identified in Part III.A.7., that meets the *qualified inspector* qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, *New York State Erosion and Sediment Control Certificate Program* holder, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of NYSDEC endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other NYSDEC endorsed entity).

The *trained contractor* is responsible for the day-to-day implementation of the *SWPPP*.

Tree Clearing – *construction activities* limited to felling and removal of trees.

Tree clearing does not include hand felling and leaving the trees in place with no support from mechanized equipment, which is not considered *construction activity* requiring coverage under this permit.

Water Quality Standard – such measures of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in 6 NYCRR Part 700 et seq.

APPENDIX B – Required SWPPP Components by Project Type

Table 1
CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP
THAT ONLY INCLUDES EROSION AND SEDIMENT CONTROLS

The following *construction activities* that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres:

- Single-family home not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix D
- Single-family residential subdivisions with 25% or less *impervious cover* at total site build-out and not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix D
- Construction of a barn or other *agricultural building*, silo, stock yard or pen.
- Structural agricultural conservation practices as identified in Table II in the “Agricultural Best Management Practice Systems Catalogue” (dated June 2023) that include construction or reconstruction of *impervious area* or *alter hydrology from pre- to post-development* conditions.

The following *construction activities* that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land:

- All construction activities located in the New York City Watershed located east of the Hudson River, see Appendix C Figure 1, that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

Within the municipal boundaries of NYC:

- Stand-alone road reconstruction, where the total soil disturbance from only that road construction, is less than one (1) acre of land.

The following *construction activities*:

- Installation of underground linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains
- Environmental enhancement projects, such as wetland mitigation, *stormwater* retrofits, stream restoration, and resiliency projects that reconstruct shoreline areas to address sea level rise
- Pond construction
- Linear bike paths running through areas with vegetative cover, including bike paths surfaced with an *impervious cover*
- Cross-country ski trails, walking/hiking trails, and mountain biking trails, including a de minimis parking lot (maximum 10 spaces total, sized for passenger cars) with 35 feet minimum preservation of undisturbed area downgradient from the parking lot
- Dam rehabilitation (the structure of the dam itself)
- Sidewalks, bike paths, or walking paths, surfaced with an *impervious cover*, that are not part of residential, commercial, or institutional development;
- Sidewalks, bike paths, or walking paths, surfaced with an *impervious cover*, that include incidental shoulder or curb work along an existing highway to support construction of the sidewalk, bike path, or walking path.

Table 1 (Continued)
CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP
THAT ONLY INCLUDES EROSION AND SEDIMENT CONTROLS

The following *construction activities*:

- Slope stabilization
- Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics
- Spoil areas that will be covered with vegetation
- Vegetated open space (i.e. recreational parks, lawns, meadows, fields, downhill ski trails) that do not *alter hydrology from pre- to post-development* conditions
- Athletic fields (natural grass) that do not include the construction or reconstruction of *impervious area* and do not *alter hydrology from pre- to post-development* conditions
- Demolition where vegetation will be established, and no *redevelopment activity* is planned¹
- Installation or replacement of either an overhead electric transmission line or a ski lift tower that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover*.
- Solar array field areas that have tables elevated off the ground, spaced one table width apart, do not *alter hydrology from pre- to post-development conditions*, and address water quality volume and runoff reduction volume by maintaining sheet flow on slopes less than 8%.
- Structural agricultural conservation practices as identified in Table II in the “Agricultural Best Management Practice Systems Catalogue” (dated June 2023) that do not include construction or reconstruction of *impervious area* and do not *alter hydrology from pre- to post-development* conditions.
- Temporary access roads, median crossovers, detour roads, lanes, or other temporary *impervious areas* that will be restored to pre-construction conditions once the *construction activity* is complete (in this context, “temporary” means the *impervious area* will be in place for two years or less)
- Other *construction activities* that do not include the construction or reconstruction of *impervious area*, and do not *alter hydrology from pre- to post-development* conditions, and are not listed in Table 2.

1. If the site is redeveloped in the future, a new eNOI must be submitted.

Table 2

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A *SWPPP* THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES (SMPs)

The following *construction activities*:

- Single-family home located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix D
- Single-family home that disturbs five (5) or more acres of land
- Single-family residential subdivisions located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix D
- Single-family residential subdivisions that involve soil disturbances of between one (1) and five (5) acres of land with greater than 25% *impervious cover* at total site build-out
- Single-family residential subdivisions that involve soil disturbances of between 20,000 square feet and one (1) acre of land within the municipal boundaries of NYC with greater than 25% *impervious cover* at total site build-out
- Single-family residential subdivisions that involve soil disturbances of five (5) or more acres of land, and single-family residential subdivisions that involve soil disturbances of less than five (5) acres that are part of a *common plan of development or sale* that will ultimately disturb five (5) or more acres of land
- Multi-family residential developments; includes duplexes, townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Creation of 5,000 square feet or more of *impervious area* in the municipal boundaries of NYC
- Airports
- Amusement parks
- Breweries, cideries, and wineries, including establishments constructed on agricultural land
- Campgrounds
- Cemeteries that include the construction or reconstruction of *impervious area* (>5% of disturbed area) or *alter the hydrology from pre- to post-development* conditions
- Commercial developments
- Churches and other places of worship
- Construction of a barn or other *agricultural building* (e.g. silo) that involves soil disturbance greater than five acres.
- Structural agricultural conservation practices as identified in Table II in the “Agricultural Best Management Practice Systems Catalogue” (dated June 2023) that involves soil disturbance greater than five acres and include the construction or reconstruction of *impervious area* or *alter hydrology from pre- to post-development* conditions.
- Facility buildings, including ski lodges, restroom buildings, pumphouses, ski lift terminals, and maintenance and groomer garages
- Institutional development; includes hospitals, prisons, schools and colleges
- Industrial facilities; includes industrial parks
- Landfills; including creation of landfills or capping landfills.
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTWs, water treatment plants, and water storage tanks
- Golf courses
- Office complexes

Table 2 (Continued)

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A *SWPPP* THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES (SMPs)

The following *construction activities*:

- Permanent laydown yards and equipment storage lots
- Playgrounds that include the construction or reconstruction of *impervious area*
- Sports complexes
- Racetracks; includes racetracks with earthen (dirt) surfaces
- Road construction or reconstruction, outside the municipal boundaries of NYC
- Road construction within the municipal boundaries of NYC
- Stand-alone road reconstruction, within the municipal boundaries of NYC where the total soil disturbance from that road reconstruction involves soil disturbance of one (1) acre or more of land
- Parking lot construction or reconstruction (as with all Table 2 bullets, this includes parking lots constructed as part of the *construction activities* listed in Table 1, unless a Table 1 bullet specifies otherwise)
- Athletic fields (natural grass) that include the construction or reconstruction of *impervious area* (>5% of disturbed area) or *alter the hydrology from pre- to post-development* conditions
- Athletic fields with artificial turf
- Permanent access roads, parking areas, substations, compressor stations, and well drilling pads, surfaced with *impervious cover*, and constructed as part of an overhead electric transmission line, wind-power, cell tower, oil or gas well drilling, sewer or water main, ski lift, or other linear utility project
- Sidewalks, bike paths, or walking paths, surfaced with an *impervious cover*, that are part of a residential, commercial or institutional development
- Sidewalks, bike paths, or walking paths, surfaced with an *impervious cover*, that are part of highway construction or reconstruction
- Solar array field areas on slopes greater than 8% that cannot maintain sheet flow using management practices identified in the BB or the DM
- Solar array field areas on slopes less than 8% that will *alter the hydrology from pre- to post-development* conditions
- Solar array field areas with tables that are not elevated high enough to achieve *final stabilization* beneath the tables
- Traditional *impervious areas* associated with solar development (e.g. roads, buildings, transformers)
- Utility pads surfaced with *impervious cover*, including electric vehicle charging stations
- All other *construction activities* that include the construction or reconstruction of *impervious area* or *alter the hydrology from pre- to post-development* conditions, and are not listed in Table 1

APPENDIX C – Watersheds Requiring Enhanced Phosphorus Removal

Watersheds where *owners or operators of construction activities* identified in Table 2 of Appendix B must prepare a *SWPPP* that includes SMPs designed in conformance with the Enhanced Phosphorus Removal Standards included in the DM technical standard.

- Entire New York City Watershed located east of the Hudson River – Figure 1
- Onondaga Lake Watershed – Figure 2
- Greenwood Lake Watershed – Figure 3
- Oscawana Lake Watershed – Figure 4
- Kinderhook Lake Watershed – Figure 5

Figure 1 - New York City Watershed East of the Hudson

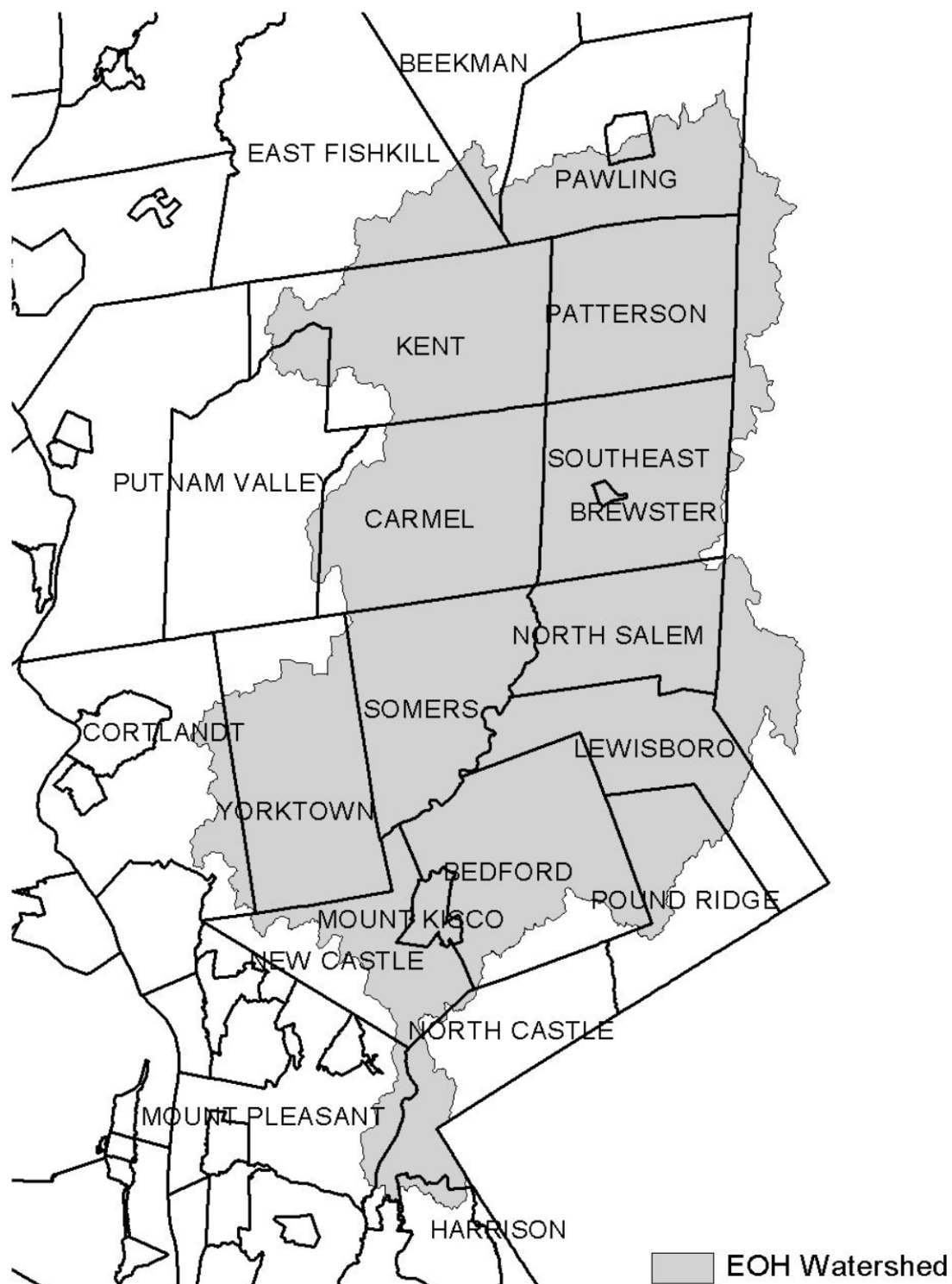


Figure 2 - Onondaga Lake Watershed



Figure 3 - Greenwood Lake Watershed

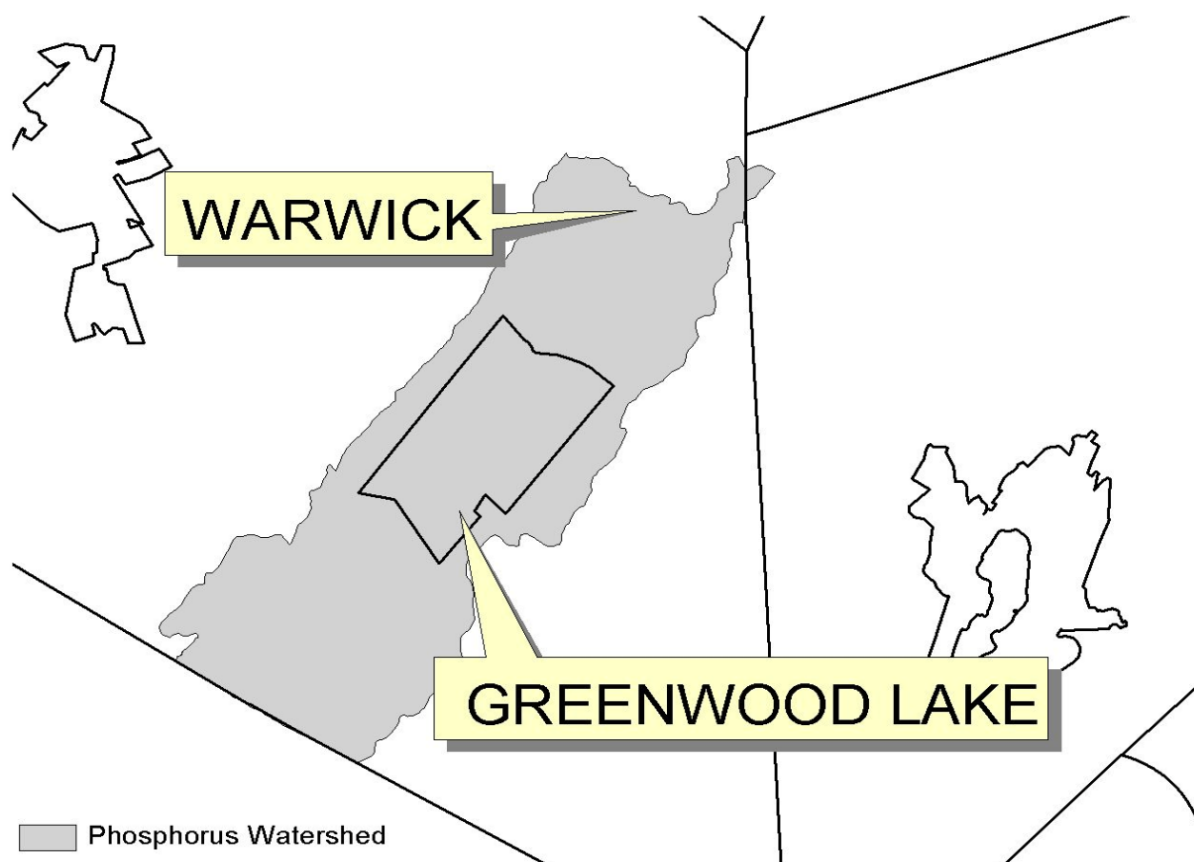


Figure 4 - Oscawana Lake Watershed

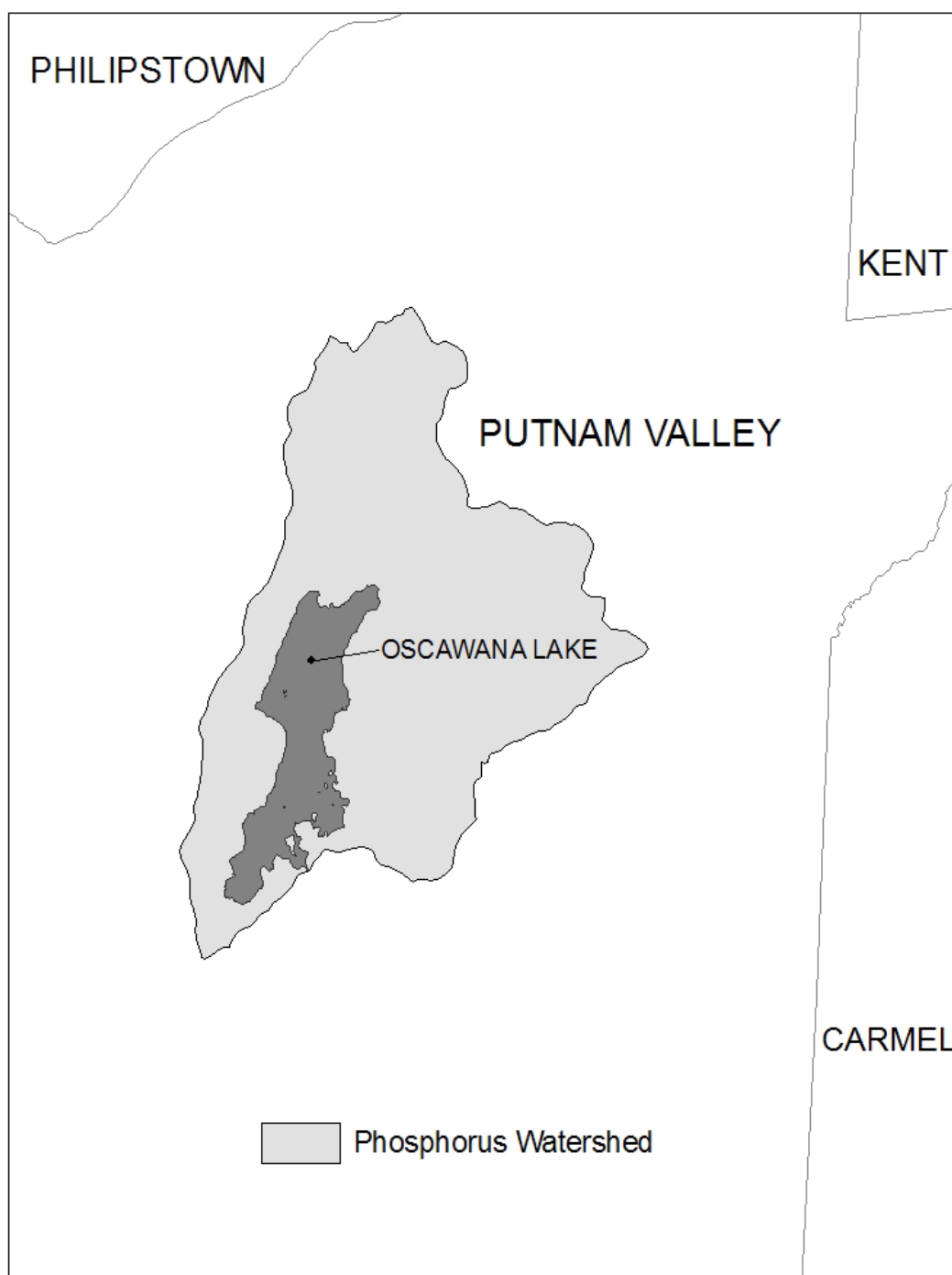
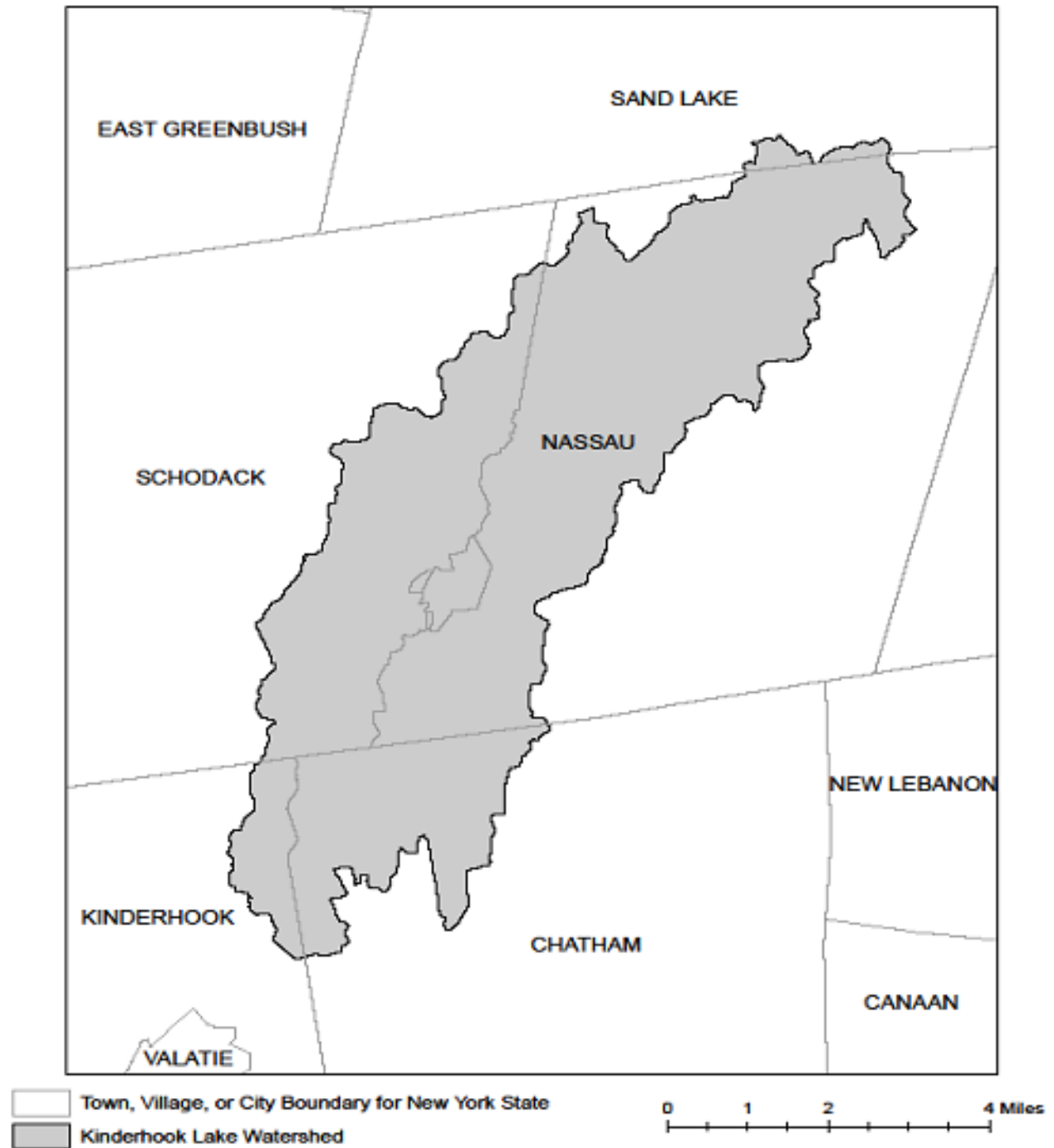


Figure 5 - Kinderhook Lake Watershed



APPENDIX D – Impaired Waterbodies (by Construction Related Pollutants)

List of waterbodies impaired by *pollutants* related to *construction activity*, including turbidity, silt/sediment, and nutrients (e.g. nitrogen, phosphorus). This list is a subset of “The Final New York State 2018 Section 303(d) List of Impaired Waters Requiring a TMDL” dated June 2020.

County	Waterbody	Pollutant
Albany	Ann Lee (Shakers) Pond, Stump Pond (1201-0096)	Phosphorus
Albany	Lawsons Lake (1301-0235)	Phosphorus
Allegany	Amity Lake, Saunders Pond (0403-0054)	Phosphorus
Allegany	Andover Pond (0403-0056)	Phosphorus
Bronx	Reservoir No.1/Lake Isle (1702-0075)	Phosphorus
Bronx	Van Cortlandt Lake (1702-0008)	Phosphorus
Broome	Blueberry, Laurel Lakes (1404-0033)	Phosphorus
Broome	Fly Pond, Deer Lake (1404-0038)	Phosphorus
Broome	Minor Tribs to Lower Susquehanna (0603-0044)	Phosphorus
Broome	Whitney Point Lake/Reservoir (0602-0004)	Phosphorus
Cattaraugus	Allegheny River/Reservoir (0201-0023)	Phosphorus
Cattaraugus	Beaver Lake/Alma Pond (0201-0073)	Phosphorus
Cattaraugus	Case Lake (0201-0020)	Phosphorus
Cattaraugus	Linlyco/Club Pond (0201-0035)	Phosphorus
Cayuga	Duck Lake (0704-0025)	Phosphorus
Cayuga	Owasco Inlet, Upper, and tribs (0706-0014)	Nutrients
Chautauqua	Chadakoin River and tribs (0202-0018)	Phosphorus
Chautauqua	Hulburt/Clymer Pond (0202-0079)	Phosphorus
Chautauqua	Middle Cassadaga Lake (0202-0002)	Phosphorus
Clinton	Great Chazy River, Lower, Main Stem (1002-0001)	Silt/Sediment
Columbia	Robinson Pond (1308-0003)	Phosphorus
Cortland	Dean Pond (0602-0077)	Phosphorus
Dutchess	Fallkill Creek (1301-0087)	Phosphorus
Dutchess	Hillside Lake (1304-0001)	Phosphorus
Dutchess	Wappingers Lake (1305-0001)	Phosphorus
Dutchess	Wappingers Lake (1305-0001)	Silt/Sediment
Erie	Beeman Creek and tribs (0102-0030)	Phosphorus
Erie	Delaware Park Pond (0101-0026)	Phosphorus
Erie	Ellicott Creek, Lower, and tribs (0102-0018)	Phosphorus
Erie	Ellicott Creek, Lower, and tribs (0102-0018)	Silt/Sediment
Erie	Green Lake (0101-0038)	Phosphorus
Erie	Little Sister Creek, Lower, and tribs (0104-0045)	Phosphorus
Erie	Murder Creek, Lower, and tribs (0102-0031)	Phosphorus

Erie	Rush Creek and tribs (0104-0018)	Phosphorus
Erie	Scajaquada Creek, Lower, and tribs (0101-0023)	Phosphorus
Erie	Scajaquada Creek, Middle, and tribs (0101-0033)	Phosphorus
Erie	Scajaquada Creek, Upper, and tribs (0101-0034)	Phosphorus
Erie	South Branch Smoke Cr, Lower, and tribs (0101-0036)	Phosphorus
Erie	South Branch Smoke Cr, Lower, and tribs (0101-0036)	Silt/Sediment
Genesee	Bigelow Creek and tribs (0402-0016)	Phosphorus
Genesee	Black Creek, Middle, and minor tribs (0402-0028)	Phosphorus
Genesee	Black Creek, Upper, and minor tribs (0402-0048)	Phosphorus
Genesee	Bowen Brook and tribs (0102-0036)	Phosphorus
Genesee	LeRoy Reservoir (0402-0003)	Phosphorus
Genesee	Mill Pond (0402-0050)	Phosphorus
Genesee	Oak Orchard Cr, Upper, and tribs (0301-0014)	Phosphorus
Genesee	Oatka Creek, Middle, and minor tribs (0402-0031)	Phosphorus
Genesee	Tonawanda Cr, Middle, Main Stem (0102-0002)	Phosphorus
Greene	Schoharie Reservoir (1202-0012)	Silt/Sediment
Greene	Sleepy Hollow Lake (1301-0059)	Silt/Sediment
Herkimer	Steele Creek tribs (1201-0197)	Phosphorus
Herkimer	Steele Creek tribs (1201-0197)	Silt/Sediment
Kings	Hendrix Creek (1701-0006) 18	Nitrogen
Kings	Prospect Park Lake (1701-0196)	Phosphorus
Lewis	Mill Creek/South Branch, and tribs (0801-0200)	Nutrients
Livingston	Christie Creek and tribs (0402-0060)	Phosphorus
Livingston	Conesus Lake (0402-0004)	Phosphorus
Livingston	Mill Creek and minor tribs (0404-0011)	Silt/Sediment
Monroe	Black Creek, Lower, and minor tribs (0402-0033)	Phosphorus
Monroe	Buck Pond (0301-0017)	Phosphorus
Monroe	Cranberry Pond (0301-0016)	Phosphorus
Monroe	Durand, Eastman Lakes (0302-0037)	Phosphorus
Monroe	Lake Ontario Shoreline, Western (0301-0069) 9	Phosphorus
Monroe	Long Pond (0301-0015)	Phosphorus
Monroe	Mill Creek and tribs (0302-0025)	Phosphorus 2
Monroe	Mill Creek/Blue Pond Outlet and tribs (0402-0049)	Phosphorus
Monroe	Minor Tribs to Irondequoit Bay (0302-0038)	Phosphorus
Monroe	Rochester Embayment - East (0302-0002) [9]	Phosphorus
Monroe	Rochester Embayment - West (0301-0068) 9	Phosphorus
Monroe	Shipbuilders Creek and tribs (0302-0026)	Phosphorus 2
Monroe	Thomas Creek/White Brook and tribs (0302-0023)	Phosphorus

Nassau	Bannister Creek/Bay (1701-0380)	Nitrogen
Nassau	Beaver Lake (1702-0152)	Phosphorus
Nassau	Browswere Bay (1701-0383)	Nitrogen
Nassau	Camaans Pond (1701-0052)	Phosphorus
Nassau	East Meadow Brook, Upper, and tribs (1701-0211)	Silt/Sediment
Nassau	East Rockaway Channel (1701-0381)	Nitrogen
Nassau	Glen Cove Creek, Lower, and tribs (1702-0146)	Silt/Sediment
Nassau	Grant Park Pond (1701-0054)	Phosphorus
Nassau	Hempstead Bay, Broad Channel (1701-0032)	Nitrogen
Nassau	Hempstead Lake (1701-0015)	Phosphorus
Nassau	Hewlett Bay (1701-0382)	Nitrogen
Nassau	Hog Island Channel (1701-0220)	Nitrogen
Nassau	Massapequa Creek, Upper, and tribs (1701-0174)	Phosphorus
Nassau	Milburn/Parsonage Creeks, Upp, and tribs (1701-0212)	Phosphorus
Nassau	Reynolds Channel, East (1701-0215) [12]	Nitrogen
Nassau	Reynolds Channel, West (1701-0216) 12	Nitrogen
Nassau	Tidal Tribs to Hempstead Bay (1701-0218)	Nitrogen
Nassau	Tribs (fresh) to East Bay (1701-0204)	Silt/Sediment
Nassau	Tribs (fresh) to East Bay (1701-0204)	Phosphorus
Nassau	Tribs to Smith Pond/Halls Pond (1701-0221)	Phosphorus
Nassau	Woodmere Channel (1701-0219)	Nitrogen
New York	Harlem Meer (1702-0103)	Phosphorus
New York	The Lake in Central Park (1702-0105)	Phosphorus
Niagara	Bergholtz Creek and tribs (0101-0004)	Phosphorus
Niagara	Hyde Park Lake (0101-0030)	Phosphorus
Niagara	Lake Ontario Shoreline, Western (0301-0053) 9	Phosphorus
Niagara	Lake Ontario Shoreline, Western (0301-0072) 9	Phosphorus
Oneida	Ballou, Nail Creeks (1201-0203)	Phosphorus
Onondaga	Ley Creek and tribs (0702-0001) 10	Nutrients (phosphorus)
Onondaga	Minor Tribs to Onondaga Lake (0702-0022) 10	Nutrients (phosphorus)
Onondaga	Minor Tribs to Onondaga Lake (0702-0022) 10	Nitrogen (NH ₃ , NO ₂)
Onondaga	Onondaga Creek, Lower (0702-0023) 10	Nutrients (phosphorus)
Onondaga	Onondaga Creek, Lower, and tribs (0702-0023)	Turbidity
Onondaga	Onondaga Creek, Middle, and tribs (0702-0004)	Turbidity
Onondaga	Onondaga Creek, Upper, and tribs (0702-0024)	Turbidity
Ontario	Great Brook and minor tribs (0704-0034)	Phosphorus 2
Ontario	Great Brook and minor tribs (0704-0034)	Silt/Sediment

Ontario	Hemlock Lake Outlet and minor tribs (0402-0013)	Phosphorus
Ontario	Honeoye Lake (0402-0032)	Phosphorus
Orange	Brown Pond Reservoir (1303-0013)	Phosphorus
Orange	Lake Washington (1303-0012)	Phosphorus
Orange	Minor Tribs to Middle Wallkill (1306-0061)	Phosphorus
Orange	Monhagen Brook and tribs (1306-0074)	Phosphorus
Orange	Orange Lake (1301-0008) [16]	Phosphorus
Orange	Quaker Creek and tribs (1306-0025)	Phosphorus
Orange	Wallkill River, Middle, Main Stem (1306-0038)	Phosphorus
Orange	Wallkill River, Upper, and Minor tribs (1306-0017)	Phosphorus
Orleans	Glenwood Lake (0301-0041)	Phosphorus
Orleans	Lake Ontario Shoreline, Western (0301-0070) 9	Phosphorus
Orleans	Lake Ontario Shoreline, Western (0301-0071) 9	Phosphorus
Oswego	Lake Neatahwanta (0701-0018)	Nutrients (phosphorus)
Oswego	Pleasant Lake (0703-0047)	Phosphorus
Putnam	Lost Lake, Putnam Lake (1302-0053)	Phosphorus
Putnam	Minor Tribs to Croton Falls Reservoir (1302-0001)	Phosphorus
Queens	Bergen Basin (1701-0009) 18	Nitrogen
Queens	Jamaica Bay, Eastern, and tribs, Queens (1701-0005) 18	Nitrogen
Queens	Kissena Lake (1702-0258)	Phosphorus
Queens	Meadow Lake (1702-0030)	Phosphorus
Queens	Shellbank Basin (1701-0001) 18	Nitrogen
Queens	Willow Lake (1702-0031)	Phosphorus
Rensselaer	Nassau Lake (1310-0001)	Phosphorus
Rensselaer	Snyders Lake (1301-0043)	Phosphorus
Richmond	Grassmere Lake/Bradys Pond (1701-0357)	Phosphorus
Rockland	Congers Lake, Swartout Lake (1501-0019)	Phosphorus
Rockland	Rockland Lake (1501-0021)	Phosphorus
Saratoga	Ballston Lake (1101-0036)	Phosphorus
Saratoga	Dwaas Kill and tribs (1101-0007)	Phosphorus
Saratoga	Dwaas Kill and tribs (1101-0007)	Silt/Sediment
Saratoga	Lake Lonely (1101-0034)	Phosphorus
Saratoga	Round Lake (1101-0060)	Phosphorus
Saratoga	Tribs to Lake Lonely (1101-0001)	Phosphorus
Schenectady	Collins Lake (1201-0077)	Phosphorus
Schenectady	Duane Lake (1311-0006)	Phosphorus
Schenectady Lake	Mariaville Lake (1201-0113)	Phosphorus
Schuyler	Cayuta Lake (0603-0005)	Phosphorus

Seneca	Reeder Creek and tribs (0705-0074)	Phosphorus
St.Lawrence	Black Lake Outlet, Black Lake (0906-0001)	Phosphorus
St.Lawrence	Fish Creek and minor tribs (0906-0026)	Phosphorus
Steuben	Smith Pond (0502-0012)	Phosphorus
Suffolk	Agawam Lake (1701-0117)	Phosphorus
Suffolk	Big/Little Fresh Ponds (1701-0125)	Phosphorus
Suffolk	Canaan Lake (1701-0018)	Phosphorus
Suffolk	Canaan Lake (1701-0018)	Silt/Sediment
Suffolk	Fresh Pond (1701-0241)	Phosphorus
Suffolk	Great South Bay, East (1701-0039)	Nitrogen
Suffolk	Great South Bay, Middle (1701-0040)	Nitrogen
Suffolk	Great South Bay, West (1701-0173)	Nitrogen
Suffolk	Lake Ronkonkoma (1701-0020)	Phosphorus
Suffolk	Mattituck/Marratooka Pond (1701-0129)	Phosphorus
Suffolk	Mill and Seven Ponds (1701-0113)	Phosphorus
Suffolk	Millers Pond (1702-0013)	Phosphorus
Suffolk	Moriches Bay, East (1701-0305)	Nitrogen
Suffolk	Moriches Bay, West (1701-0038)	Nitrogen
Suffolk	Quantuck Bay (1701-0042)	Nitrogen
Suffolk	Shinnecock Bay and Inlet (1701-0033)	Nitrogen
Suffolk	Tidal Tribs to West Moriches Bay (1701-0312)	Nitrogen
Sullivan	Bodine, Montgomery Lakes (1401-0091)	Phosphorus
Sullivan	Davies Lake (1402-0047)	Phosphorus
Sullivan	Evens Lake (1402-0004)	Phosphorus
Sullivan	Pleasure Lake (1402-0055)	Phosphorus
Sullivan	Swan Lake (1401-0063)	Phosphorus
Tompkins	Cayuga Lake, Southern End (0705-0040)	Phosphorus
Tompkins	Cayuga Lake, Southern End (0705-0040)	Silt/Sediment
Ulster	Ashokan Reservoir (1307-0004)	Silt/Sediment
Ulster	Esopus Creek, Lower, Main Stem (1307-0010) [17]	Turbidity
Ulster	Esopus Creek, Middle, Main Stem (1307-0003) 17	Turbidity
Ulster	Esopus Creek, Upper, and minor tribs (1307-0007)[3]	Silt/Sediment
Ulster	Wallkill River, Lower, Main Stem (1306-0027)	Phosphorus
Warren	Hague Brook and tribs (1006-0006)	Silt/Sediment
Warren	Huddle/Finkle Brooks and tribs (1006-0003)	Silt/Sediment
Warren	Indian Brook and tribs (1006-0002)	Silt/Sediment
Warren	Lake George (1006-0016) and tribs	Silt/Sediment
Warren	Tribs to Lake George, East Shore (1006-0020)	Silt/Sediment
Warren	Tribs to Lake George, Lk.George Village (1006-0008)	Silt/Sediment

Washington	Wood Cr/Champlain Canal and tribs (1005-0036)	Phosphorus
Westchester	Lake Katonah (1302-0136)	Phosphorus
Westchester	Lake Lincolndale (1302-0089)	Phosphorus
Westchester	Lake Meahagh (1301-0053)	Phosphorus
Westchester	Lake Mohegan (1301-0149)	Phosphorus
Westchester	Lake Shenorock (1302-0083)	Phosphorus
Westchester	Mamaroneck River, Lower (1702-0071)	Silt/Sediment
Westchester	Mamaroneck River, Upp, & minor tribs (1702-0123)	Silt/Sediment
Westchester	Saw Mill River (1301-0007)	Phosphorus
Westchester	Saw Mill River, Middle, and tribs (1301-0100)	Phosphorus
Westchester	Sheldrake River (1702-0069)	Phosphorus
Westchester	Sheldrake River (1702-0069)	Silt/Sediment
Westchester	Silver Lake (1702-0040)	Phosphorus
Westchester	Teatown Lake (1302-0150)	Phosphorus
Westchester	Truesdale Lake (1302-0054)	Phosphorus
Westchester	Wallace Pond (1301-0140)	Phosphorus

APPENDIX E – List of NYSDEC Regional Offices

<u>Region</u>	<u>COVERING THE FOLLOWING COUNTIES:</u>	<u>DIVISION OF ENVIRONMENTAL PERMITS (DEP) PERMIT ADMINISTRATORS</u>	<u>DIVISION OF WATER (DOW) WATER (SPDES) PROGRAM</u>
1	NASSAU AND SUFFOLK	50 CIRCLE ROAD STONY BROOK, NY 11790 TEL. (631) 444-0365	50 CIRCLE ROAD STONY BROOK, NY 11790-3409 TEL. (631) 444-0405
2	BRONX, KINGS, NEW YORK, QUEENS AND RICHMOND	1 HUNTERS POINT PLAZA, 47-40 21ST ST. LONG ISLAND CITY, NY 11101-5407 TEL. (718) 482-4997	1 HUNTERS POINT PLAZA, 47-40 21ST ST. LONG ISLAND CITY, NY 11101-5407 TEL. (718) 482-4933
3	DUTCHESS, ORANGE, PUTNAM, ROCKLAND, SULLIVAN, ULSTER AND WESTCHESTER	21 SOUTH PUTT CORNERS ROAD NEW PALTZ, NY 12561-1696 TEL. (845) 256-3059	220 WHITE PLAINS ROAD, SUITE 110 TEL. (914) 428 - 2505
4	ALBANY, COLUMBIA, DELAWARE, GREENE, MONTGOMERY, OTSEGO, RENSSELAER, SCHENECTADY AND SCHOHARIE	1130 NORTH WESTCOTT ROAD SCHENECTADY, NY 12306-2014 TEL. (518) 357-2069	1130 NORTH WESTCOTT ROAD SCHENECTADY, NY 12306-2014 TEL. (518) 357-2045
5	CLINTON, ESSEX, FRANKLIN, FULTON, HAMILTON, SARATOGA, WARREN AND WASHINGTON	1115 STATE ROUTE 86, Po Box 296 RAY BROOK, NY 12977-0296 TEL. (518) 897-1234	232 GOLF COURSE ROAD WARRENSBURG, NY 12885-1172 TEL. (518) 623-1200
6	HERKIMER, JEFFERSON, LEWIS, ONEIDA AND ST. LAWRENCE	STATE OFFICE BUILDING 317 WASHINGTON STREET WATERTOWN, NY 13601-3787 TEL. (315) 785-2245	STATE OFFICE BUILDING 207 GENESEE STREET UTICA, NY 13501-2885 TEL. (315) 793-2554
7	BROOME, CAYUGA, CHENANGO, CORTLAND, MADISON, ONONDAGA, OSWEGO, TIOGA AND TOMPKINS	5786 WIDEWATERS PARKWAY SYRACUSE, NY 13214-1867 TEL. (315) 426-7438	5786 WIDEWATERS PARKWAY SYRACUSE, NY 13214-1867 TEL. (315) 426-7500
8	CHEMUNG, GENESEE, LIVINGSTON, MONROE, ONTARIO, ORLEANS, SCHUYLER, SENECA, STEUBEN, WAYNE AND YATES	6274 EAST AVON-LIMA ROADAVON, NY 14414-9519 TEL. (585) 226-2466	6274 EAST AVON-LIMA RD. AVON, NY 14414-9519 TEL. (585) 226-2466
9	ALLEGANY, CATTARAUGUS, CHAUTAUQUA, ERIE, NIAGARA AND WYOMING	700 DELAWARE AVENUE BUFFALO, NY 14209-2999 TEL. (716) 851-7165	700 DELAWARE AVENUE BUFFALO, NY 14209-2999 TEL. (716) 851-7070

APPENDIX F – SWPPP Preparer Certification Form

The SWPPP Preparer Certification Form required by this permit begins on the following page.



Department of
Environmental
Conservation

SWPPP Preparer Certification Form

SPDES General Permit for Stormwater Discharges from Construction Activity, GP-0-25-001 (CGP)

(In accordance with CGP Part I.D.2.b., the completed form must be attached to the eNOI and submitted to NYSDEC electronically.)

Project/Site Name:

eNOI Submission ID:

Owner/Operator Name:

Certification Statement – SWPPP Preparer

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) has been prepared in accordance with the requirements of GP-0-25-001. I certify under penalty of law that the SWPPP and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

SWPPP Preparer First Name

MI

SWPPP Preparer Last Name

Signature

Date

APPENDIX G – MS4 SWPPP Acceptance Form

The MS4 SWPPP Acceptance Form required by this permit begins on the following page.



Department of
Environmental
Conservation

MS4 SWPPP Acceptance Form

for construction activities seeking authorization under the

SPDES General Permit for Stormwater Discharges from Construction Activity, GP-0-25-001 (CGP)

(In accordance with CGP Part I.D.2.b., the completed form must be attached to the eNOI and submitted to NYSDEC electronically.)

I. Project Owner/Operator Information

1. Owner/Operator Name:

2. Contact Person:

3. Street Address:

4. City/State/Zip:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/State/Zip:

III. Stormwater Pollution Prevention Plan (SWPPP) Review and Acceptance Information

8. SWPPP Reviewed by:

9. Title/Position:

10. Date Final SWPPP Reviewed and Accepted:

IV. Regulated MS4 Information

11. Name of MS4 Operator:

12. MS4 SPDES Permit Identification Number: NYR20A

13. Street Address:

14. City/State/Zip:

15. Telephone Number:

MS4 SWPPP Acceptance Form - continued

V. Certification Statement - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative

I hereby certify that the final Stormwater Pollution Prevention Plan (SWPPP) for the construction project identified in section II. of this form has been reviewed and meets the substantive requirements in the SPDES General Permit for Stormwater Discharges from Construction Activity, GP-0-25-001 (CGP). Note: The MS4 Operator, through the acceptance of the SWPPP, assumes no responsibility for the accuracy and adequacy of the design included in the SWPPP. In addition, review and acceptance of the SWPPP by the MS4 Operator does not relieve the owner/operator or their SWPPP preparer of responsibility or liability for errors or omissions in the plan.

Printed Name¹:

Title/Position:

Signature:

Date:

VI. Additional Information

¹ Printed name of the principal executive officer or ranking elected official for the MS4 Operator or their duly authorized representative in accordance with CGP Part VII.J.2.

APPENDIX H – NYCDEP SWPPP Acceptance/Approval Form

The City of New York Department of Environmental Protection (NYCDEP) SWPPP Acceptance/Approval form required by this permit begins on the following page.



THE CITY OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Environmental Planning and Analysis
59-17 Junction Blvd., 9th Floor; Flushing, NY 11373

SWPPP Acceptance/Approval

Application Number:

I. Project Owner/Operator Information

1. Owner/Operator Name:

2. Contact Person:

3. Street Address:

4. City/State/Zip:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/State/Zip:

III. Stormwater Pollution Prevention Plan (SWPPP) Review and Acceptance/Approval

8. SWPPP Reviewed by:

9. Title/Position: /

10. Date Final SWPPP Reviewed and Accepted:

11. Acceptance/Approval Expiration Date:

IV. Regulated MS4 Information for projects that require coverage under the NY State Pollution Discharge Elimination System General Permit for Stormwater Discharges from Construction Activity

12. Name of MS4: *CITY OF NEW YORK*

13. MS4 SPDES Permit Identification Number: *NY-0287890*

14. Contact Person:

15. Street Address: *59-17 Junction Blvd. 9th Floor*

16. City/State/Zip: *Flushing, NY 11373*

17. Telephone Number:



Projects in the MS4 area must submit a copy of this SWPPP Acceptance with a Notice of Intent for coverage under the NY SPDES General Permit for Stormwater Discharges from Construction Activity to: NYS Department of Environmental Conservation, Division of Water; 625 Broadway, 4th Floor; Albany, New York 12233-3505.



THE CITY OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Environmental Planning and Analysis
59-17 Junction Blvd., 9th Floor; Flushing, NY 11373

V. Certification Statement - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative

I hereby certify that the final Stormwater Pollution Prevention Plan (SWPPP) for the construction project identified in question 5 has been reviewed and meets the substantive requirements in the SPDES General Permit For Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s).

Note: The MS4, through the acceptance of the SWPPP, assumes no responsibility for the accuracy and adequacy of the design included in the SWPPP. In addition, review and acceptance of the SWPPP by the MS4 does not relieve the owner/operator or their SWPPP preparer of responsibility or liability for errors or omissions in the plan.

Printed Name:

Title/Position:

Signature:

Date:

VI. Conditions of Acceptance/Approval and Additional Information



Projects in the MS4 area must submit a copy of this SWPPP Acceptance with a Notice of Intent for coverage under the NY SPDES General Permit for Stormwater Discharges from Construction Activity to: NYS Department of Environmental Conservation, Division of Water; 625 Broadway, 4th Floor; Albany, New York 12233-3505.

APPENDIX I – MS4 No Jurisdiction Form

The MS4 No Jurisdiction Form required by this permit begins on the following page.



Department of
Environmental
Conservation

MS4 No Jurisdiction Form

for construction activities seeking authorization under the

SPDES General Permit for Stormwater Discharges from Construction Activity, GP-0-25-001 (CGP)

(In accordance with CGP Part I.D.2.b., the completed form must be attached to the eNOI and submitted to NYSDEC electronically.)

I. Project Owner/Operator Information

- a. Owner/Operator Name:
- b. Contact Person:
- c. Street Address:
- d. City/State/Zip:

II. Project Site Information

- a. Project/Site Name:
- b. Street Address:
- c. City/State/Zip:
- d. eNOI Submission ID:

III. Traditional Land Use Control MS4 Operator Information

- a. Name of MS4 Operator:
- b. MS4 SPDES Permit ID Number: NYR20A
- c. Street Address:
- d. City/State/Zip:
- e. Telephone Number:

IV. Certification Statement

In accordance with CGP Part I.D.2.b.ii.3., I hereby certify that the Traditional Land Use Control MS4 Operator identified in section III. of this form does not have review authority over the construction project identified in section II. of this form, which is owned/operated by the entity identified in section I. of this form. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

- a. Printed name of the principal executive officer or ranking elected official for the MS4 Operator or their duly authorized representative in accordance with CGP Part VII.J.2.:
- b. Title/Position:
- c. Signature:
- d. Date:

APPENDIX J – Owner/Operator Certification Form

The Owner/Operator Certification Form required by this permit begins on the following page.

Owner/Operator Certification Form

SPDES General Permit for Stormwater Discharges from Construction Activity, GP-0-25-001 (CGP)

(In accordance with CGP Part I.D.2.b. or Part I.F.2. and 3., the completed form must be attached to the eNOI or the Request to Continue Coverage, and submitted to NYSDEC electronically.)

Project/Site Name: _____

eNOI Submission ID: _____

eNOI Submitted by: **Owner/Operator** **SWPPP Preparer** **Other**

Certification Statement - Owner/Operator

I hereby certify that I read, and will comply with, the GP-0-25-001 permit requirements. I understand that authorization to discharge under the permit for the project/site named above is dependent on receipt of a Letter of Authorization (LOA) or a Letter of Continued Coverage (LOCC) from the New York State Department of Environmental Conservation (NYSDEC) in accordance with CGP Part I.D.3.b. or Part I.F.4. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Owner/Operator First Name MI Owner/Operator Last Name

Signature

Date

APPENDIX B

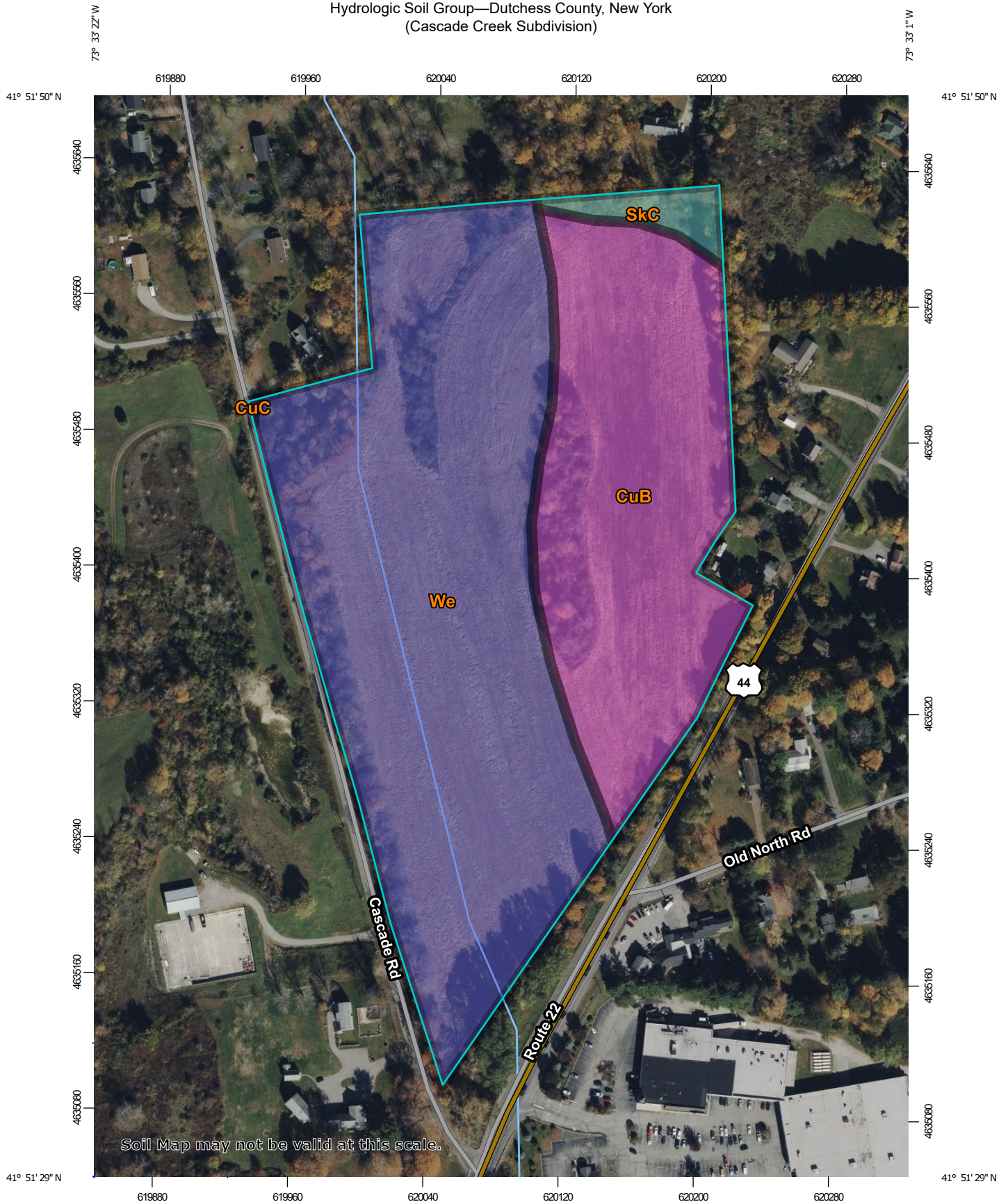
USDA NRCS Site Soil Survey

Site Soil Deep Test Results

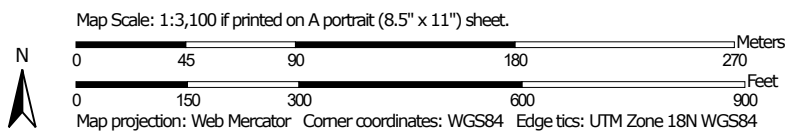
Site Soil Percolation Test Results

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Hydrologic Soil Group—Dutchess County, New York (Cascade Creek Subdivision)



Soil Map may not be valid at this scale.



**Natural Resources
Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

8/10/2026
Page 1 of 4

Hydrologic Soil Group—Dutchess County, New York (Cascade Creek Subdivision)

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Lines

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Points

 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available

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: Dutchess County, New York
 Survey Area Data: Version 22, Sep 2, 2025

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

Date(s) aerial images were photographed: Oct 21, 2022—Oct 27, 2022

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
CuB	Copake gravelly silt loam, undulating	A	8.3	34.3%
CuC	Copake gravelly silt loam, rolling	A	0.0	0.0%
SkC	Stockbridge silt loam, 8 to 15 percent slopes	C	0.6	2.3%
We	Wappinger loam	B	15.3	63.3%
Totals for Area of Interest			24.2	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

DEEP TEST RESULTS

DUTCHESS COUNTY HEALTH DEPARTMENT

Name of property: 34 Cascade Rd

(T)(V)(G) Amenia

Date: 6/20/2024

TAX GRID #

132000	7	1	6	7	0	0	2	4	5	9	2	5
--------	---	---	---	---	---	---	---	---	---	---	---	---

Owner of property: xxxxx

Engineer: Richard A. Rennia, Jr., P.E.

Person directing test: Thomas Harvey

DCHD Rep: William Gieseler, PE

HOLE #	LOT #	TOTAL DEPTH	ROCK DEPTH	WATER DEPTH	MOTTLING DEPTH	SOIL DESCRIPTION
DT-1		84"	N/A	72"	N/A	0 - 18" Farm Tillage
						18" - 72" Silty Loam w/ Coarse Sand & Gravel
DT-2		84"	N/A	72"	N/A	0 - 24" Farm Tillage
						24" - 72" Silty Loam w/ Coarse Sand & Gravel
DT-3		90"	N/A	90"	N/A	0 - 24" Farm Tillage
						24" - 90" Silty Loam w/ Gravel
DT-4		96"	N/A	N/A	N/A	0 - 12" Farm Tillage
						12" - 30" Gravelly Loam
						30" - 96" Coarse Sand & Gravel
DT-5		96"	N/A	N/A	N/A	0 - 24" Farm Tillage
						24" - 48" Coarse Gravel
						48" - 96" Reddish Brown, Sandy Loam
DT-6		96"	N/A	N/A	N/A	0 - 24" Farm Tillage
						24" - 96" Silty Clay Loam w/ Sand
DT-7		48"	48"	N/A	N/A	0 - 18" Farm Tillage
						18" - 48" Silty Clay Loam w/ Sand
DT-8		72"	72"	N/A	N/A	0 - 18" Farm Tillage
						18" - 72" Silty Clay Loam w/ Sand
DT-9		90"	N/A	N/A	90"	0 - 30" Farm Tillage w/ Roots
						30" - 90" Gravel w/ Silty Loam
DT-10		84"	N/A	84"	N/A	0 - 36" Farm Tillage
						36" - 84" Gravel w/ Silty Loam
DT-11		90"	N/A	90"	N/A	0 - 24" Farm Tillage
						24" - 90" Gravelly Silty Loam

General remarks (terrain; weather; springs, streams, etc.) :

It was very hot and sunny.

Hot, thunderstorm, heavy rain/flash flood.

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DEEP TEST RESULTS

DUTCHESS COUNTY HEALTH DEPARTMENT

Name of property: 34 Cascade Rd

(T)(V)(C) Amenia

Date: 7/8/2025 & 7/25/2025*

TAX GRID #

132000	7	1	6	7	0	0	2	4	5	9	2	5
--------	---	---	---	---	---	---	---	---	---	---	---	---

Owner of property: DSLL LLC.

Engineer: Richard A. Rennia, Jr., P.E.

Person directing test: Thomas Harvey

DCHD Rep: William Gieseler, PE

HOLE #	LOT #	TOTAL DEPTH	ROCK DEPTH	WATER DEPTH	MOTTLING DEPTH	SOIL DESCRIPTION
DT-A		84"	N/A	N/A	N/A	0 - 12" Farm Tillage
						12" - 84" Silty Loam w/ Coarse Sand & Gravel
DT-B		84"	N/A	N/A	N/A	0 - 12" Farm Tillage
						12" - 84" Silty Loam w/ Coarse Sand & Gravel
DT-C		84"	N/A	N/A	N/A	0 - 12" Farm Tillage
						12" - 84" Silty Loam
DT-D		84"	N/A	N/A	N/A	0 - 12" Farm Tillage
						12" - 84" Silty Loam
DT-E		82"	N/A	72"	N/A	0 - 12" Farm Tillage
						12" - 82" Silty Loam w/ Coarse Sand & Gravel
DT-F*		92"	N/A	72"	N/A	0 - 12" Farm Tillage
						12" - 92" Silty Loam w/ Coarse Sand & Gravel
DT-G*		95"	N/A	69"	N/A	0 - 12" Farm Tillage
						12" - 95" Silty Loam w/ Coarse Sand & Gravel
DT-H*		92"	N/A	69"	N/A	0 - 12" Farm Tillage
						12" - 92" Silty Loam w/ Coarse Sand & Gravel
DT-I*		82"	N/A	72"	N/A	0 - 12" Farm Tillage
						12" - 82" Silty Loam w/ Coarse Sand & Gravel
DT-J*		72"	N/A	48"	N/A	0 - 12" Farm Tillage
						12" - 72" Silty Loam w/ Coarse Sand & Gravel
DT-K*		77"	N/A	50"	N/A	0 - 12" Farm Tillage
						12" - 82" Silty Loam w/ Coarse Sand & Gravel
DT-L*		85"	N/A	82"	N/A	0 - 12" Farm Tillage
						12" - 85" Silty Loam w/ Coarse Sand & Gravel

General remarks (terrain; weather; springs, streams, etc.) :

It was very hot and sunny.

Hot, thunderstorm, heavy rain/flash flood.

HD-185

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DUTCHESS COUNTY DEPARTMENT OF HEALTH

PERCOLATION TEST DATA

Name: 34 Cascade Rd

(T)(V)(C) Amenia

Date: 7/10/2025

TAX GRID #

132000	7	1	6	7	0	0	2	4	5	9	2	5
--------	---	---	---	---	---	---	---	---	---	---	---	---

By: Kevin Guo & Grace Burns

DCHD:

Lot No.	Test Hole No.	Test Hole Depth	Soil Type	Soaked	TEST RUNS					
					*	1	2	3	4	5
	PT-1	24"	Silty loam w/ Coarse Sand & Gravel	YES	Finish	1:13	1:20	1:27		
					Start	1:07	1:14	1:21		
					Time	6 min.	6 min.	6 min.		
	PT-2	24"	Silty Loam	YES	Finish	1:40	1:53	2:06		
					Start	1:29	1:41	1:54		
					Time	11 min.	12 min.	12 min.		
	PT-3	24"	Silty Loam	YES	Finish	2:01	2:22	2:42		
					Start	1:44	2:04	2:24		
					Time	17 min.	18 min.	18 min.		
	PT-4	24"	Silty loam w/ Coarse Sand & Gravel	YES	Finish	2:10	2:12	2:13		
					Start	2:09	2:11	2:12		
					Time	1 min.	1 min.	1 min.		
	PT-5	24"	Silty loam w/ Coarse Sand & Gravel	YES	Finish	3:04	3:05	3:07		
					Start	3:03	3:04	3:06		
					Time	1 min.	1 min.	1 min.		
	PT-6	24"	Silty loam w/ Coarse Sand & Gravel	YES	Finish	2:57	3:00	3:03		
					Start	2:55	2:58	3:01		
					Time	2 min.	2 min.	2 min.		
	PT-7	24"	Silty loam w/ Coarse Sand & Gravel	YES	Finish	3:05	3:06	3:08		
					Start	3:04	3:05	3:07		
					Time	1 min.	1 min.	1 min.		
					Finish					
					Start					
					Time					

I, Richard A. Rennia, Jr., P.E., the undersigned, certify that these percolation tests were done by myself or or under my direction according to the standard procedure. The data and results presented are true and correct.

Dated: _____

Signature: _____

License No. (P.E.)(L.S.) NYPE: 082459

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DUTCHESS COUNTY DEPARTMENT OF HEALTH

PERCOLATION TEST DATA

Name: 34 Cascade Rd

(T)(V)(C) Amenia

Date: 7/22/2025

TAX GRID #

132000	7	1	6	7	0	0	2	4	5	9	2	5
--------	---	---	---	---	---	---	---	---	---	---	---	---

By: Kevin Guo & Grace Burns

DCHD:

Lot No.	Test Hole No.	Test Hole Depth	Soil Type	Soaked	TEST RUNS					
					*	1	2	3	4	5
	PT-8	24"	Sandy Loam w/ Gravel	YES	Finish	2:38	2:45	2:52		
					Start	2:32	2:39	2:46		
					Time	6 min.	6 min.	6 min.		
	PT-9	24"	Sandy Loam w/ Gravel	YES	Finish	2:14	2:16	2:18		
					Start	2:13	2:14	2:16		
					Time	1 min.	2 min.	2 min.		
	PT-10	24"	Sandy Loam w/ Gravel	YES	Finish	1:44	1:51	1:58		
					Start	1:39	1:45	1:52		
					Time	5 min.	6 min.	6 min.		
	PT-11	24"	Sandy Loam w/ Gravel	YES	Finish	1:12	1:14	1:17		
					Start	1:10	1:12	1:15		
					Time	2 min.	2 min.	2 min.		
	PT-12	24"	Sandy Loam w/ Gravel	YES	Finish	1:07	1:14	1:21		
					Start	1:02	1:08	1:15		
					Time	5 min.	6 min.	6 min.		
	PT-13	24"	Sandy Loam w/ Gravel	YES	Finish	1:07	1:08	1:09		
					Start	1:06	1:07	1:08		
					Time	1 min.	1 min.	1 min.		
					Finish					
					Start					
					Time					
					Finish					
					Start					
					Time					
					Finish					
					Start					
					Time					
					Finish					
					Start					
					Time					

I, Richard A. Rennia, Jr., P.E., the undersigned, certify that these percolation tests were done by myself or or under my direction according to the standard procedure. The data and results presented are true and correct.

Dated: _____

Signature: _____

License No. (P.E.)(L.S.) NYPE: 082459

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APPENDIX C

FIRMette Map

CRIS Map

OPRHP “No Impact” Letter, dated 12/11/2024

NWIM Map

ERM Map

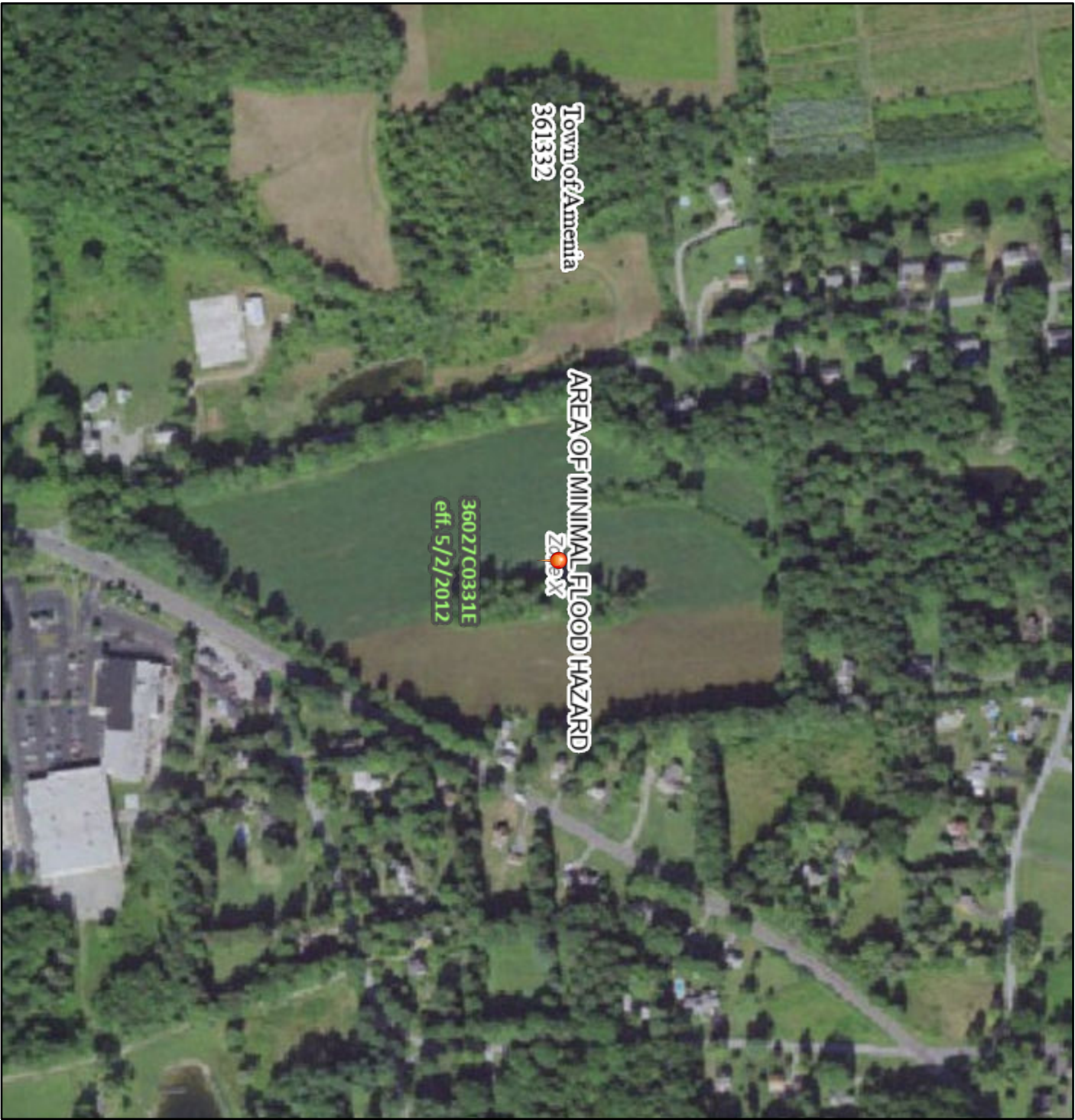
NOAA Precipitation Frequency Table

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National Flood Hazard Layer FIRMette



73°33'30"W 41°51'55"N



Legend

SEE THIS 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 Water Surface Elevation



17.5 Coastal Transect



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



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



N

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 **8/10/2026 at 1:25 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.

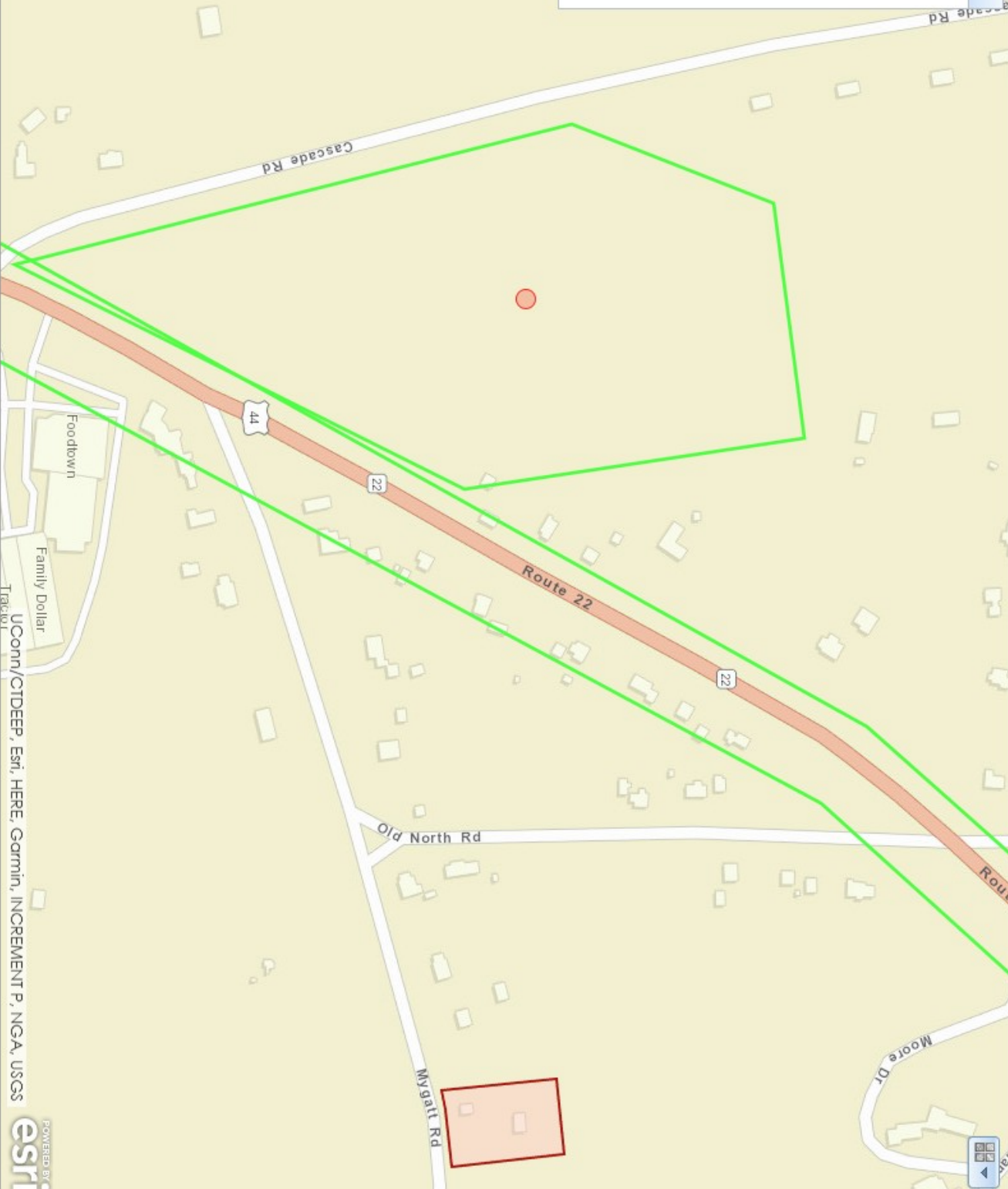
This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmoderized areas cannot be used for regulatory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

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National Register Building sites (View)

Survey Archaeology Areas (View)

Archaeological Buffer Areas



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**New York State
Parks, Recreation and
Historic Preservation**

KATHY HOCHUL
Governor

RANDY SIMONS
Commissioner *Pro Tempore*

December 11, 2024

Sarah Seifert
Hudson River Housing, Inc.
313 Mill Street
Poughkeepsie, NY 12601

Re: HCR/HTFC
Cascade Creek Town - New Multifamily Residential Community
34 Cascade Rd, Town of Amenia, Dutchess County, NY 12501
24PR08937

Dear Sarah Seifert:

Thank you for requesting the comments of the New York State Historic Preservation Office (SHPO). We have reviewed the provided documentation in accordance with Section 106 of the National Historic Preservation Act of 1966. These comments are those of the SHPO and relate only to Historic/Cultural resources. They do not include other environmental impacts to New York State Parkland that may be involved in or near your project.

The SHPO has reviewed the Phase IB Archaeological Survey Report prepared by Hudson Cultural Services (HCS) for this project (November 21, 2024; 24SR00638). No archaeological sites were identified by the survey, and thus no further archaeological investigations are warranted. It is therefore the opinion of the New York SHPO that no historic properties, including archaeological and/or historic resources, will be affected by this undertaking.

If you have any questions, I can be reached at Josalyn.Ferguson@parks.ny.gov.

Sincerely,

Josalyn Ferguson, Ph.D.
Scientist – Archaeology

via email only

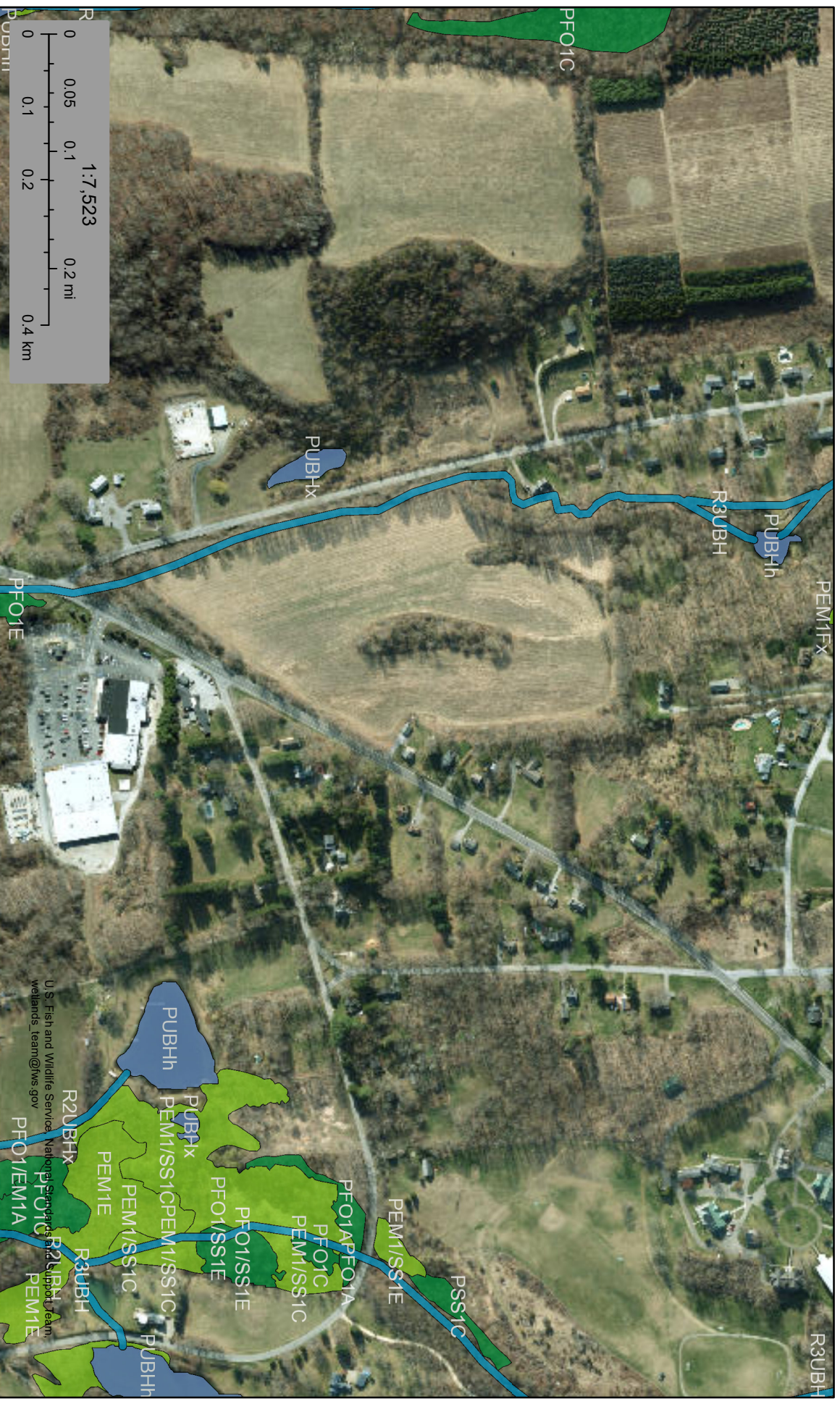
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U.S. Fish and Wildlife Service

National Wetlands Inventory

Cascade Creek Subdivision



August 10, 2026

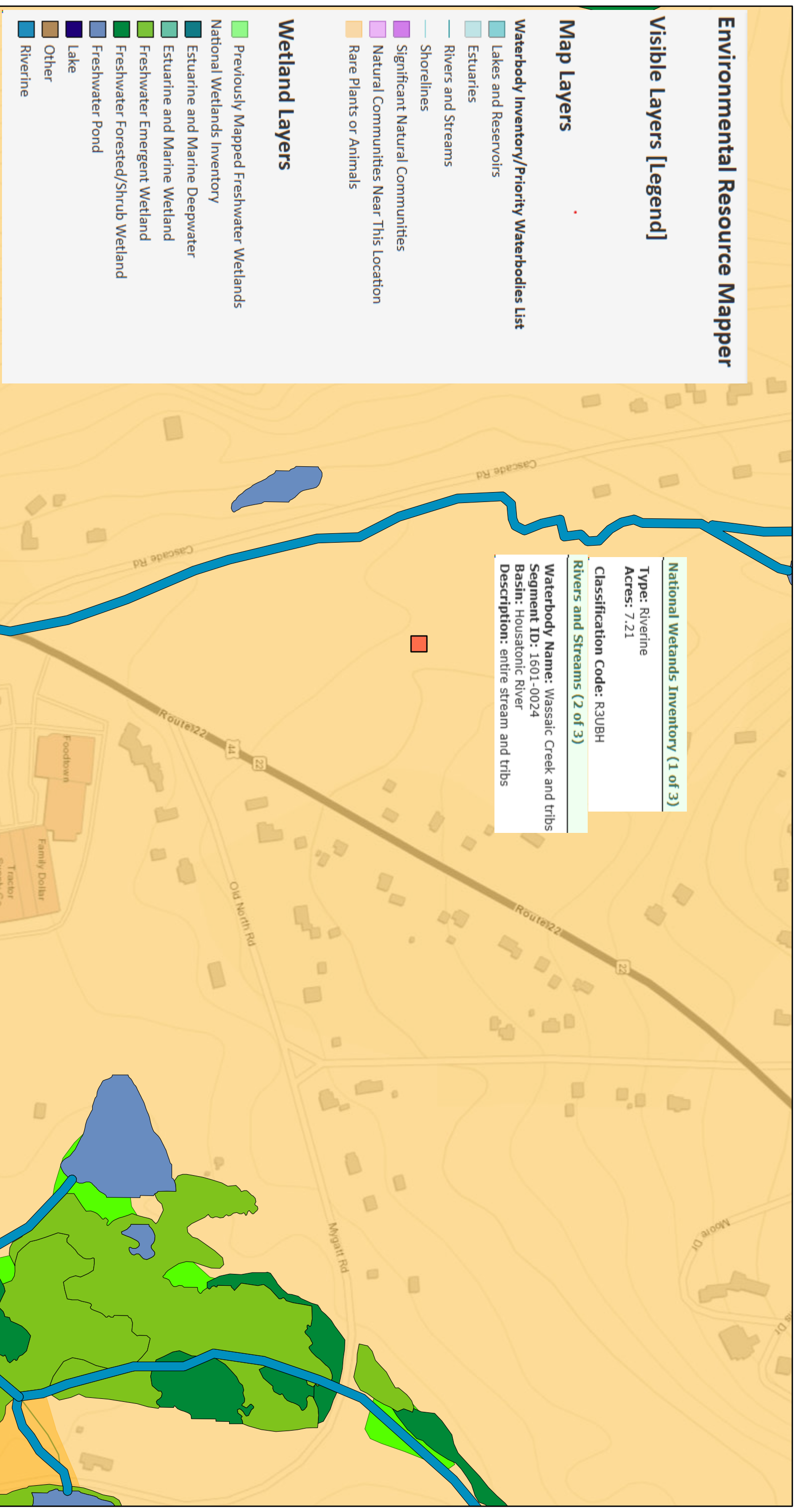
Wetlands

- | Wetlands | | |
|--------------------------------|-----------------------------------|----------|
| Estuarine and Marine Deepwater | Freshwater Emergent Wetland | Lake |
| Estuarine and Marine Wetland | Freshwater Forested/Shrub Wetland | Other |
| | Freshwater Pond | Riverine |

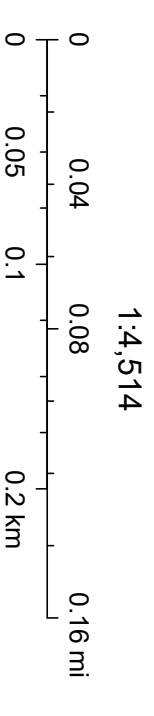
This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

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Cascade Creek Subdivision



August 10, 2026



UConn/CTDEEP, Esri, HERE, Garmin, INCREMENT P,
USGS, EPA, USDA

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Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Metadata for Point			
Smoothing	Yes		
State			
Location	41.862 degrees North		
Latitude	73.553 degrees West		
Longitude	180 feet		
Elevation	Fri Aug 07 2026 15:45:03 GMT-0400 (Eastern Daylight Time)		
Date/Time			

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.31	0.47	0.58	0.76	0.95	1.19	1yr	0.82	1.10	1.37	1.69	2.09	2.58	2.90	1yr	2.28	2.79	3.23	3.83	4.48	1yr
2yr	0.37	0.57	0.71	0.93	1.17	1.47	2yr	1.01	1.35	1.68	2.07	2.54	3.10	3.49	2yr	2.74	3.35	3.85	4.59	5.19	2yr
5yr	0.44	0.68	0.86	1.15	1.47	1.85	5yr	1.27	1.68	2.13	2.62	3.20	3.89	4.47	5yr	3.44	4.30	4.93	5.71	6.48	5yr
10yr	0.50	0.78	0.99	1.34	1.74	2.21	10yr	1.50	1.98	2.55	3.14	3.83	4.63	5.39	10yr	4.10	5.19	5.95	6.75	7.66	10yr
25yr	0.58	0.93	1.19	1.64	2.18	2.80	25yr	1.89	2.46	3.24	4.00	4.85	5.83	6.92	25yr	5.16	6.66	7.63	8.42	9.56	25yr
50yr	0.67	1.07	1.38	1.93	2.59	3.34	50yr	2.24	2.90	3.88	4.78	5.80	6.94	8.37	50yr	6.14	8.05	9.22	9.96	11.32	50yr
100yr	0.76	1.24	1.60	2.26	3.09	4.01	100yr	2.66	3.42	4.65	5.74	6.93	8.27	10.12	100yr	7.32	9.73	11.14	11.78	13.40	100yr
200yr	0.88	1.43	1.85	2.66	3.67	4.79	200yr	3.17	4.04	5.58	6.87	8.29	9.86	12.25	200yr	8.73	11.78	13.48	13.95	15.87	200yr
500yr	1.06	1.75	2.28	3.31	4.64	6.08	500yr	4.00	5.02	7.09	8.73	10.51	12.45	15.78	500yr	11.02	15.18	17.36	17.44	19.86	500yr

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APPENDIX D

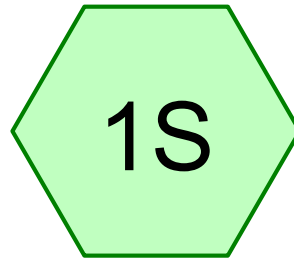
Pre-Development Drainage Analysis: HydroCAD Report

Pre-Development Drainage Conditions

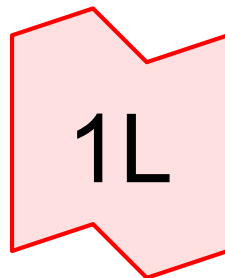
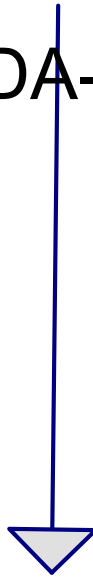
Post-Development Drainage Analysis: HydroCAD Report

Post-Development Drainage Conditions

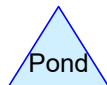
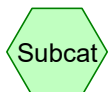
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DA-1



DP-1



Routing Diagram for Existing Conditions Model

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Existing Conditions Model

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Page 2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
9.980	30	Meadow, non-grazed, HSG A (1S)
0.880	36	Woods, Fair, HSG A (1S)
0.410	39	>75% Grass cover, Good, HSG A (1S)
9.980	58	Meadow, non-grazed, HSG B (1S)
6.510	60	Woods, Fair, HSG B (1S)
3.630	73	Woods, Fair, HSG C (1S)
0.770	74	>75% Grass cover, Good, HSG C (1S)
0.750	79	Woods, Fair, HSG D (1S)
1.080	98	Paved parking, HSG A (1S)
33.990	53	TOTAL AREA

Existing Conditions Model

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Page 3

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
12.350	HSG A	1S
16.490	HSG B	1S
4.400	HSG C	1S
0.750	HSG D	1S
0.000	Other	
33.990		TOTAL AREA

Existing Conditions Model

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Page 4

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.410	0.000	0.770	0.000	0.000	1.180	>75% Grass cover, Good	1S
1.080	0.000	0.000	0.000	0.000	1.080	Paved parking	1S
9.980	9.980	0.000	0.000	0.000	19.960	Meadow, non-grazed	1S
0.880	6.510	3.630	0.750	0.000	11.770	Woods, Fair	1S
12.350	16.490	4.400	0.750	0.000	33.990	TOTAL AREA	

Existing Conditions Model

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Type II 24-hr 1-yr Rainfall=2.58"

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Page 5

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: DA-1

Runoff Area=33.990 ac 3.18% Impervious Runoff Depth>0.05"

Flow Length=2,724' Tc=36.5 min CN=53 Runoff=0.26 cfs 0.131 af

Link 1L: DP-1

Inflow=0.26 cfs 0.131 af

Primary=0.26 cfs 0.131 af

Total Runoff Area = 33.990 ac Runoff Volume = 0.131 af Average Runoff Depth = 0.05"
96.82% Pervious = 32.910 ac 3.18% Impervious = 1.080 ac

Existing Conditions Model

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Type II 24-hr 1-yr Rainfall=2.58"

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Page 6

Summary for Subcatchment 1S: DA-1

Runoff = 0.26 cfs @ 13.88 hrs, Volume= 0.131 af, Depth> 0.05"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr 1-yr Rainfall=2.58"

Area (ac)	CN	Description
0.770	74	>75% Grass cover, Good, HSG C
0.410	39	>75% Grass cover, Good, HSG A
0.880	36	Woods, Fair, HSG A
6.510	60	Woods, Fair, HSG B
3.630	73	Woods, Fair, HSG C
0.750	79	Woods, Fair, HSG D
1.080	98	Paved parking, HSG A
9.980	30	Meadow, non-grazed, HSG A
9.980	58	Meadow, non-grazed, HSG B
33.990	53	Weighted Average
32.910		96.82% Pervious Area
1.080		3.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	150	0.0483	0.18		Sheet Flow, Sheet Flow Grass: Dense n= 0.240 P2= 3.10"
8.6	780	0.0904	1.50		Shallow Concentrated Flow, Shallow Concentrated Flow 1 Woodland Kv= 5.0 fps
11.5	1,480	0.0176	2.14		Shallow Concentrated Flow, Shallow Concentrated Flow 2 Unpaved Kv= 16.1 fps
2.3	314	0.0096	2.26	9.05	Channel Flow, Channel Flow - Existing Swale Area= 4.0 sf Perim= 20.0' r= 0.20' n= 0.022 Earth, clean & straight
36.5	2,724	Total			

Existing Conditions Model

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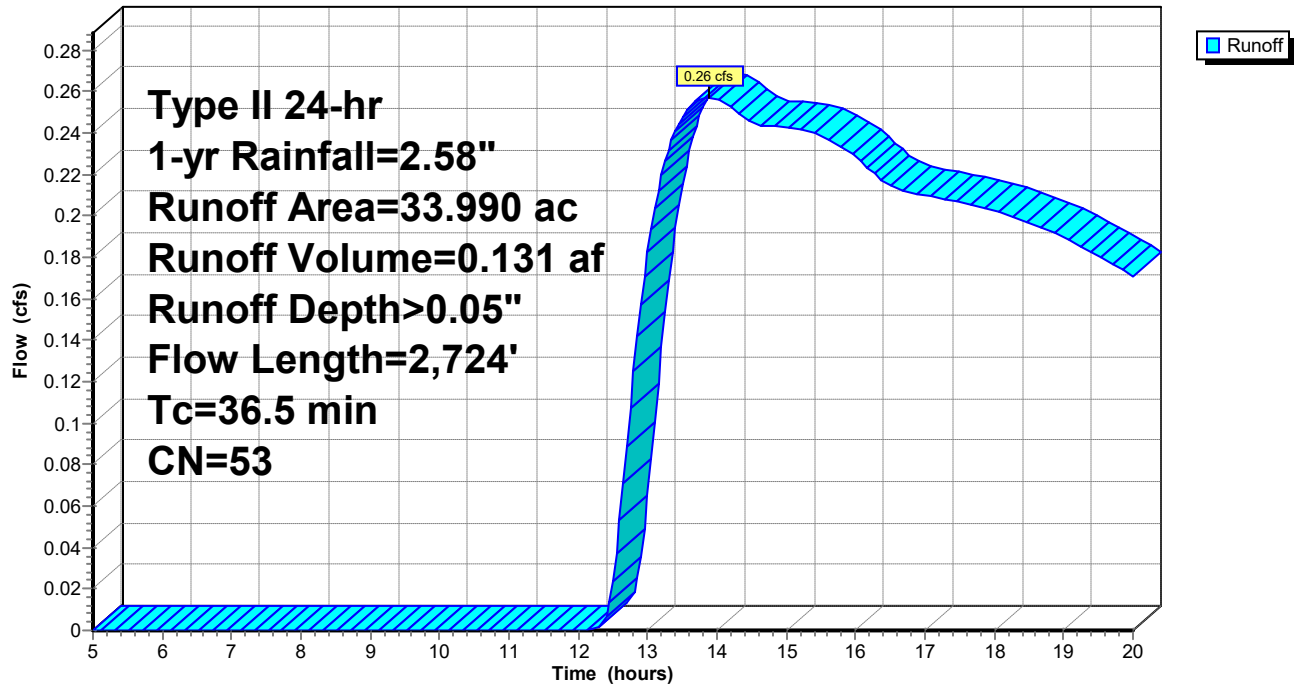
Type II 24-hr 1-yr Rainfall=2.58"

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Subcatchment 1S: DA-1

Hydrograph



Existing Conditions Model

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Type II 24-hr 1-yr Rainfall=2.58"

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Page 8

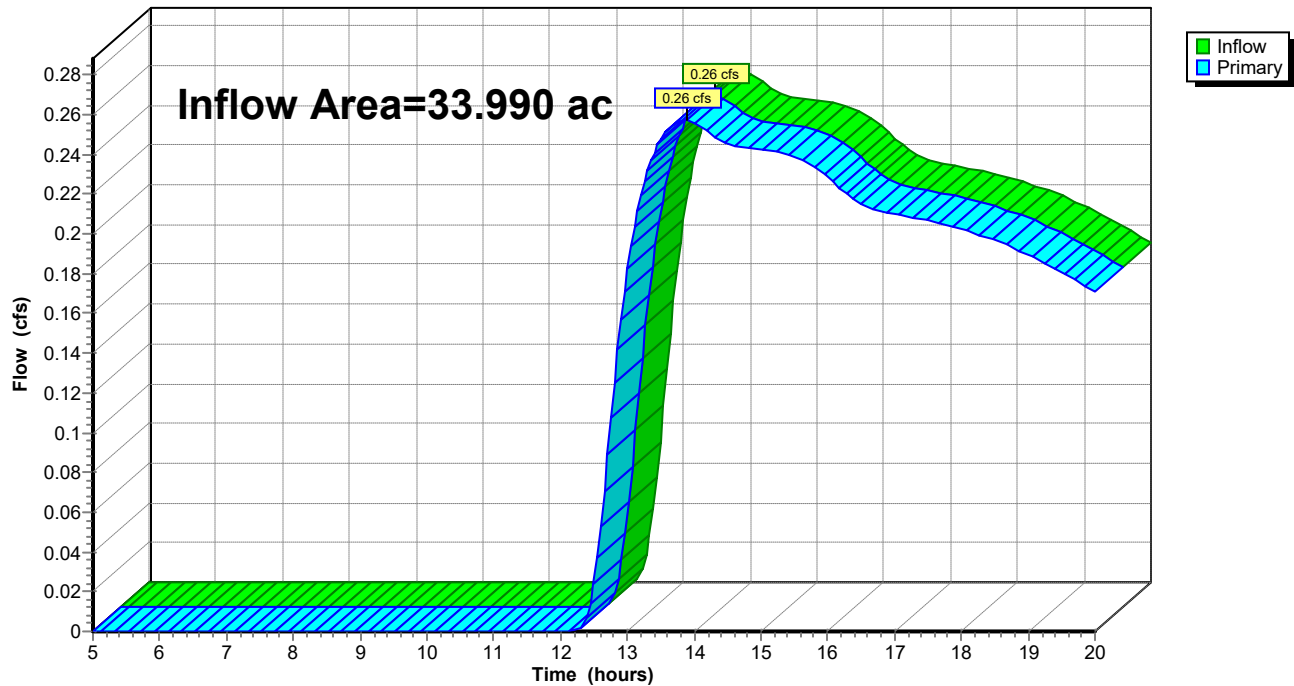
Summary for Link 1L: DP-1

Inflow Area = 33.990 ac, 3.18% Impervious, Inflow Depth > 0.05" for 1-yr event
Inflow = 0.26 cfs @ 13.88 hrs, Volume= 0.131 af
Primary = 0.26 cfs @ 13.88 hrs, Volume= 0.131 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 1L: DP-1

Hydrograph



Existing Conditions Model

Type II 24-hr 10-yr Rainfall=4.63"

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Page 9

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: DA-1

Runoff Area=33.990 ac 3.18% Impervious Runoff Depth>0.59"

Flow Length=2,724' Tc=36.5 min CN=53 Runoff=11.94 cfs 1.669 af

Link 1L: DP-1

Inflow=11.94 cfs 1.669 af

Primary=11.94 cfs 1.669 af

Total Runoff Area = 33.990 ac Runoff Volume = 1.669 af Average Runoff Depth = 0.59"
96.82% Pervious = 32.910 ac 3.18% Impervious = 1.080 ac

Existing Conditions Model

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Type II 24-hr 10-yr Rainfall=4.63"

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Summary for Subcatchment 1S: DA-1

Runoff = 11.94 cfs @ 12.42 hrs, Volume= 1.669 af, Depth> 0.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr 10-yr Rainfall=4.63"

Area (ac)	CN	Description
0.770	74	>75% Grass cover, Good, HSG C
0.410	39	>75% Grass cover, Good, HSG A
0.880	36	Woods, Fair, HSG A
6.510	60	Woods, Fair, HSG B
3.630	73	Woods, Fair, HSG C
0.750	79	Woods, Fair, HSG D
1.080	98	Paved parking, HSG A
9.980	30	Meadow, non-grazed, HSG A
9.980	58	Meadow, non-grazed, HSG B
33.990	53	Weighted Average
32.910		96.82% Pervious Area
1.080		3.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	150	0.0483	0.18		Sheet Flow, Sheet Flow Grass: Dense n= 0.240 P2= 3.10"
8.6	780	0.0904	1.50		Shallow Concentrated Flow, Shallow Concentrated Flow 1 Woodland Kv= 5.0 fps
11.5	1,480	0.0176	2.14		Shallow Concentrated Flow, Shallow Concentrated Flow 2 Unpaved Kv= 16.1 fps
2.3	314	0.0096	2.26	9.05	Channel Flow, Channel Flow - Existing Swale Area= 4.0 sf Perim= 20.0' r= 0.20' n= 0.022 Earth, clean & straight
36.5	2,724	Total			

Existing Conditions Model

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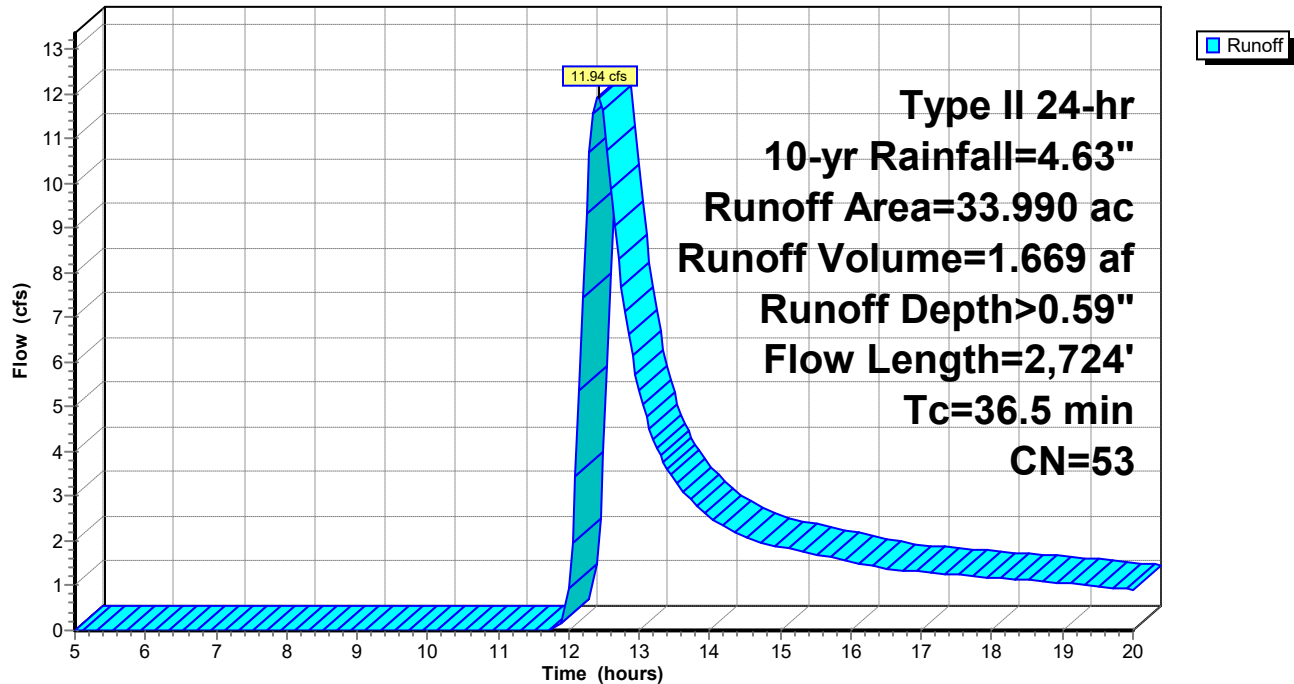
Type II 24-hr 10-yr Rainfall=4.63"

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Page 11

Subcatchment 1S: DA-1

Hydrograph



Existing Conditions Model

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Type II 24-hr 10-yr Rainfall=4.63"

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Page 12

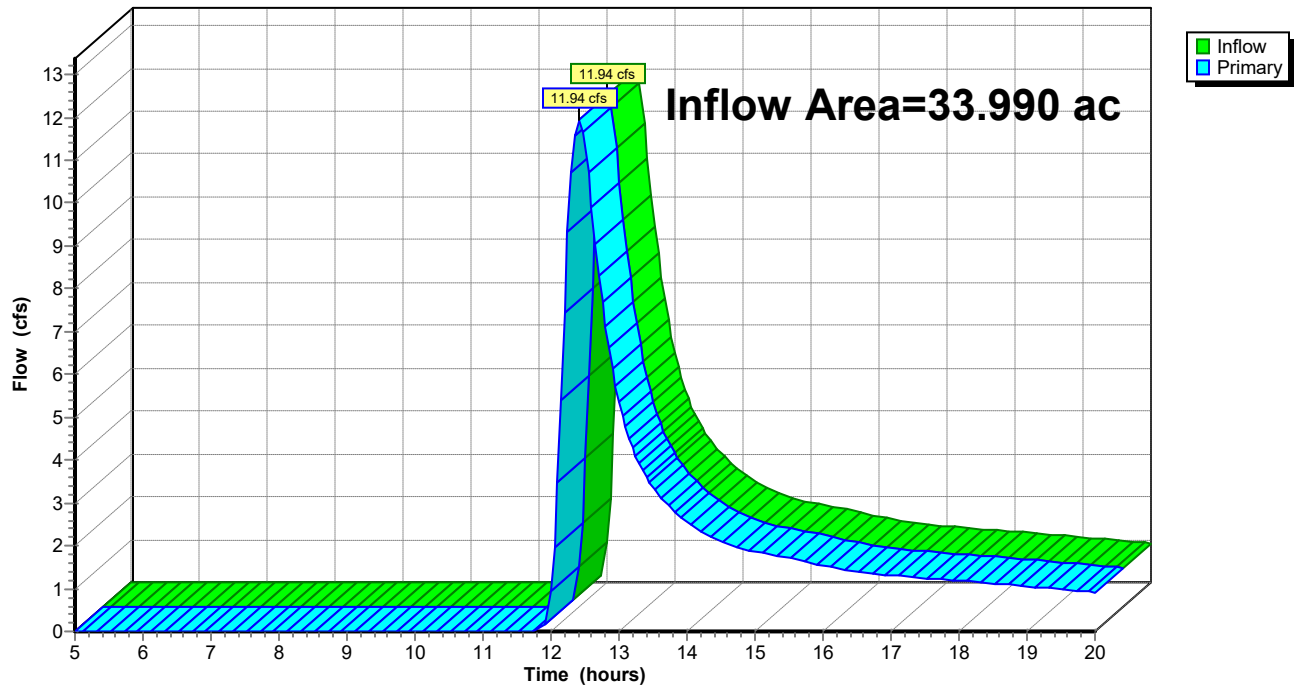
Summary for Link 1L: DP-1

Inflow Area = 33.990 ac, 3.18% Impervious, Inflow Depth > 0.59" for 10-yr event
Inflow = 11.94 cfs @ 12.42 hrs, Volume= 1.669 af
Primary = 11.94 cfs @ 12.42 hrs, Volume= 1.669 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 1L: DP-1

Hydrograph



Existing Conditions Model

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Type II 24-hr 100-yr Rainfall=8.27"

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Page 13

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: DA-1

Runoff Area=33.990 ac 3.18% Impervious Runoff Depth>2.45"

Flow Length=2,724' Tc=36.5 min CN=53 Runoff=66.00 cfs 6.927 af

Link 1L: DP-1

Inflow=66.00 cfs 6.927 af

Primary=66.00 cfs 6.927 af

Total Runoff Area = 33.990 ac Runoff Volume = 6.927 af Average Runoff Depth = 2.45"
96.82% Pervious = 32.910 ac 3.18% Impervious = 1.080 ac

Existing Conditions Model

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Type II 24-hr 100-yr Rainfall=8.27"

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Summary for Subcatchment 1S: DA-1

Runoff = 66.00 cfs @ 12.35 hrs, Volume= 6.927 af, Depth> 2.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type II 24-hr 100-yr Rainfall=8.27"

Area (ac)	CN	Description
0.770	74	>75% Grass cover, Good, HSG C
0.410	39	>75% Grass cover, Good, HSG A
0.880	36	Woods, Fair, HSG A
6.510	60	Woods, Fair, HSG B
3.630	73	Woods, Fair, HSG C
0.750	79	Woods, Fair, HSG D
1.080	98	Paved parking, HSG A
9.980	30	Meadow, non-grazed, HSG A
9.980	58	Meadow, non-grazed, HSG B
33.990	53	Weighted Average
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1.080		3.18% Impervious Area

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8.6	780	0.0904	1.50		Shallow Concentrated Flow, Shallow Concentrated Flow 1 Woodland Kv= 5.0 fps
11.5	1,480	0.0176	2.14		Shallow Concentrated Flow, Shallow Concentrated Flow 2 Unpaved Kv= 16.1 fps
2.3	314	0.0096	2.26	9.05	Channel Flow, Channel Flow - Existing Swale Area= 4.0 sf Perim= 20.0' r= 0.20' n= 0.022 Earth, clean & straight
36.5	2,724	Total			

Existing Conditions Model

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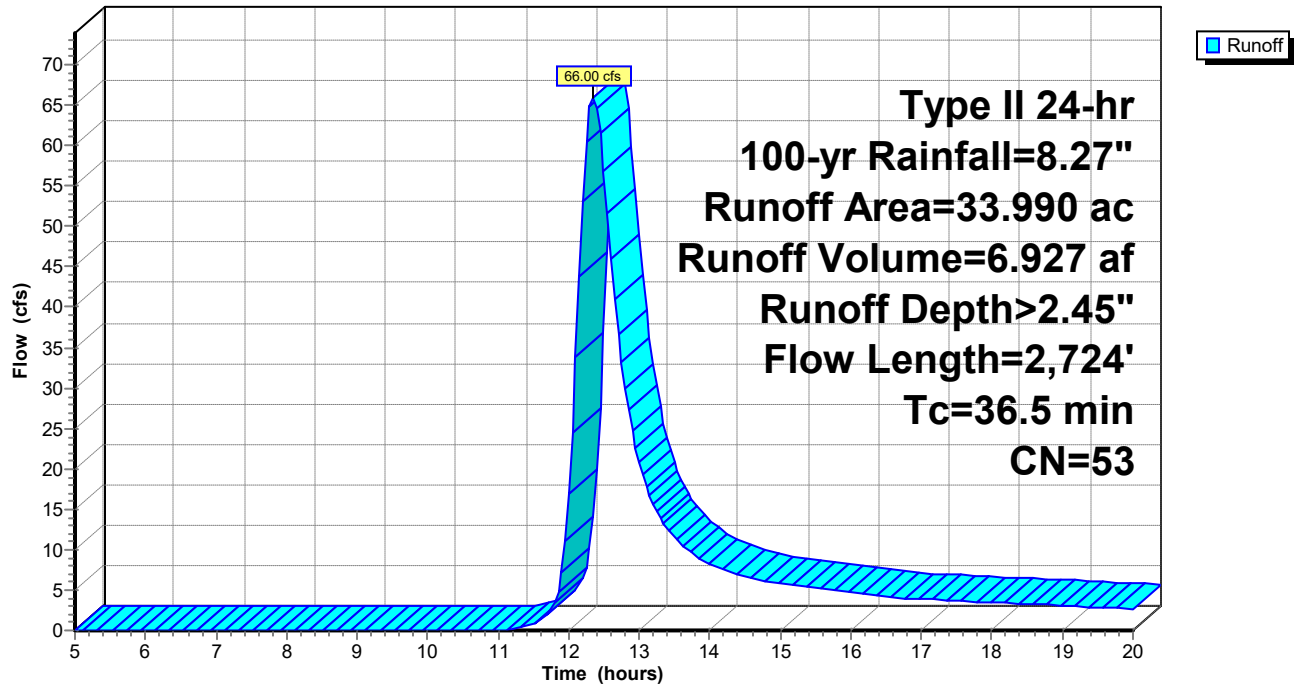
Type II 24-hr 100-yr Rainfall=8.27"

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Subcatchment 1S: DA-1

Hydrograph



Existing Conditions Model

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Type II 24-hr 100-yr Rainfall=8.27"

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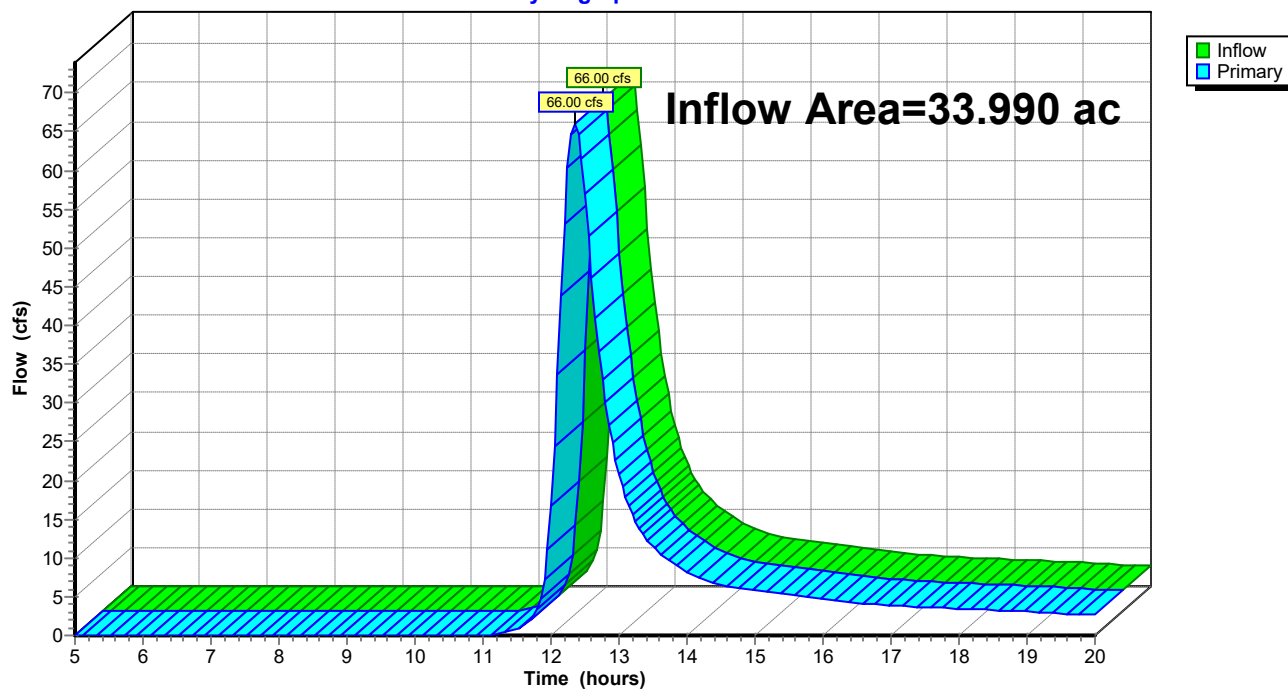
Summary for Link 1L: DP-1

Inflow Area = 33.990 ac, 3.18% Impervious, Inflow Depth > 2.45" for 100-yr event
Inflow = 66.00 cfs @ 12.35 hrs, Volume= 6.927 af
Primary = 66.00 cfs @ 12.35 hrs, Volume= 6.927 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 1L: DP-1

Hydrograph



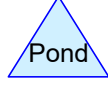
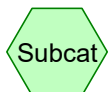
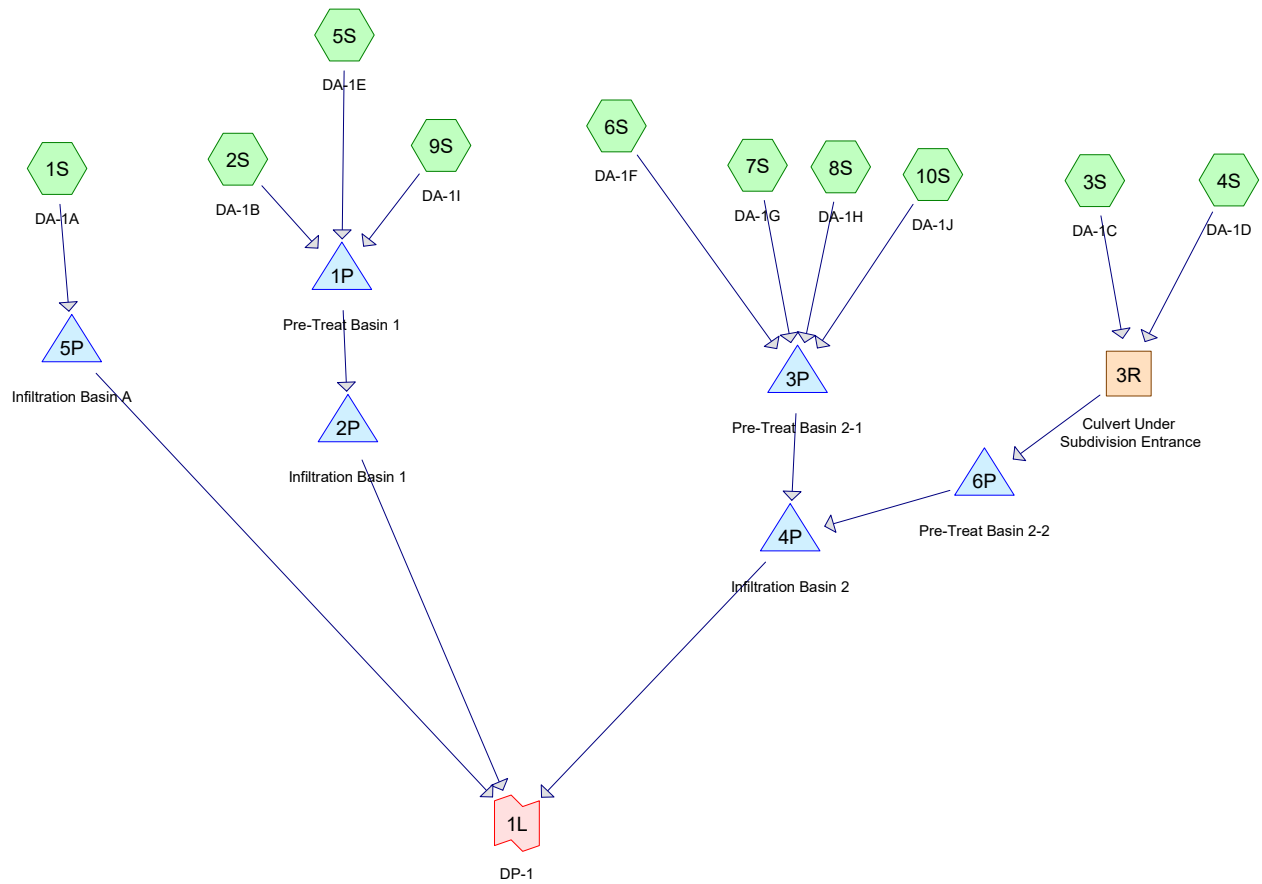
TIME OF CONCENTRATION

52 WYCKOFF STREET, APT. 1
BROOKLYN, NY 11201



DATE	REVISION	ENGINEERING, DESIGN, & PLANS PREPARED BY:				
		RENNIA ENGINEERING DESIGN, PLLC				
		CIVIL • ENVIRONMENTAL • STRUCTURAL				
		6 Dover Village Plaza, Suite 5, P.O. Box 400, Dover Plains, NY 12522				
		Tel. (845) 877-0555, Fax. (845) 877-0556				
		Copyright 2020, All Rights Reserved				
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PRELIMINARY						
CASCADE CREEK SUBDIVISION						
TOWN OF ALEMUA						
DUTCHESS COUNTY, NY						
PRE-DEVELOPMENT STORMWATER DRAINAGE AREA MAP						
DATE	SCALE	DESIGNED BY	DRAWN BY	CHECKED BY	JOB NO.	SHEET NO.
8/10/2026	1"=100'	RED	RED	RAR	2-010	1 of 1

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Routing Diagram for Post Development Conditions Model
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Post Development Conditions Model

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
5.660	30	Meadow, non-grazed, HSG A (1S, 2S, 3S, 5S, 6S)
1.450	36	Woods, Fair, HSG A (3S, 5S, 6S)
1.420	39	>75% Grass cover, Good, HSG A (2S, 3S, 5S)
9.740	58	Meadow, non-grazed, HSG B (1S, 2S, 7S, 8S, 9S, 10S)
4.160	60	Woods, Fair, HSG B (1S)
3.550	61	>75% Grass cover, Good, HSG B (2S, 6S, 7S, 8S, 9S, 10S)
0.090	71	Meadow, non-grazed, HSG C (1S)
2.080	73	Woods, Fair, HSG C (1S)
1.770	74	>75% Grass cover, Good, HSG C (1S)
0.750	79	Woods, Fair, HSG D (1S)
3.360	98	Paved parking, driveways, roofs (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S)
34.030	58	TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
8.530	HSG A	1S, 2S, 3S, 5S, 6S
17.450	HSG B	1S, 2S, 6S, 7S, 8S, 9S, 10S
3.940	HSG C	1S
0.750	HSG D	1S
3.360	Other	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S
34.030		TOTAL AREA

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
1.420	3.550	0.000	0.000	0.000	4.970	>75% Grass cover, Good	2 S, 3 S, 5 S, 6 S, 7 S, 8 S, 9 S, 10 S
0.000	0.000	0.000	0.000	3.360	3.360	Paved parking, driveways, roofs	1 S, 2 S, 3 S, 4 S, 5 S, 6 S, 7 S, 8 S,

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Ground Covers (all nodes) (continued)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	1.770	0.000	0.000	1.770	>75% Grass cover, Good	1 S
5.660	9.740	0.090	0.000	0.000	15.490	Meadow, non-grazed	1 S, 2 S, 3 S, 5 S, 6 S, 7 S, 8 S, 9 S, 10 S
1.450	4.160	2.080	0.750	0.000	8.440	Woods, Fair	1 S, 3 S, 5 S, 6 S
8.530	17.450	3.940	0.750	3.360	34.030	TOTAL AREA	

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Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	3R	583.00	582.10	180.0	0.0050	0.025	15.0	0.0	0.0

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Type II 24-hr 1-yr Rainfall=2.58"

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Time span=5.00-30.00 hrs, dt=0.05 hrs, 501 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: DA-1A	Runoff Area=15.960 ac 3.88% Impervious Runoff Depth=0.27" Flow Length=2,344' Tc=29.7 min CN=63 Runoff=1.93 cfs 0.361 af
Subcatchment 2S: DA-1B	Runoff Area=3.870 ac 15.76% Impervious Runoff Depth=0.10" Flow Length=850' Tc=15.2 min CN=55 Runoff=0.06 cfs 0.031 af
Subcatchment 3S: DA-1C	Runoff Area=4.410 ac 1.81% Impervious Runoff Depth=0.00" Flow Length=1,300' Tc=44.7 min CN=34 Runoff=0.00 cfs 0.000 af
Subcatchment 4S: DA-1D	Runoff Area=0.060 ac 100.00% Impervious Runoff Depth>2.31" Tc=6.0 min CN=98 Runoff=0.21 cfs 0.012 af
Subcatchment 5S: DA-1E	Runoff Area=1.380 ac 27.54% Impervious Runoff Depth=0.07" Tc=6.0 min CN=53 Runoff=0.01 cfs 0.008 af
Subcatchment 6S: DA-1F	Runoff Area=2.300 ac 33.91% Impervious Runoff Depth=0.36" Flow Length=252' Tc=11.9 min CN=66 Runoff=0.84 cfs 0.069 af
Subcatchment 7S: DA-1G	Runoff Area=0.700 ac 37.14% Impervious Runoff Depth=0.65" Tc=6.0 min CN=74 Runoff=0.77 cfs 0.038 af
Subcatchment 8S: DA-1H	Runoff Area=0.450 ac 37.78% Impervious Runoff Depth=0.70" Tc=6.0 min CN=75 Runoff=0.53 cfs 0.026 af
Subcatchment 9S: DA-1I	Runoff Area=1.780 ac 13.48% Impervious Runoff Depth=0.33" Flow Length=430' Tc=12.3 min CN=65 Runoff=0.54 cfs 0.049 af
Subcatchment 10S: DA-1J	Runoff Area=3.120 ac 5.13% Impervious Runoff Depth=0.22" Flow Length=190' Tc=12.7 min CN=61 Runoff=0.43 cfs 0.057 af
Reach 3R: Culvert Under Subdivision	Avg. Flow Depth=0.25' Max Vel=1.18 fps Inflow=0.21 cfs 0.012 af 15.0" Round Pipe n=0.025 L=180.0' S=0.0050 '/' Capacity=2.38 cfs Outflow=0.20 cfs 0.012 af
Pond 1P: Pre-Treat Basin 1	Peak Elev=593.11' Storage=2,988 cf Inflow=0.55 cfs 0.088 af Outflow=0.05 cfs 0.020 af
Pond 2P: Infiltration Basin 1	Peak Elev=590.00' Storage=19 cf Inflow=0.05 cfs 0.020 af Discarded=0.05 cfs 0.020 af Primary=0.00 cfs 0.000 af Outflow=0.05 cfs 0.020 af
Pond 3P: Pre-Treat Basin 2-1	Peak Elev=581.13' Storage=3,039 cf Inflow=2.09 cfs 0.190 af Outflow=0.35 cfs 0.122 af
Pond 4P: Infiltration Basin 2	Peak Elev=578.01' Storage=72 cf Inflow=0.35 cfs 0.124 af Discarded=0.34 cfs 0.124 af Primary=0.00 cfs 0.000 af Outflow=0.34 cfs 0.124 af
Pond 5P: Infiltration Basin A	Peak Elev=592.45' Storage=2,043 cf Inflow=1.93 cfs 0.361 af Discarded=0.85 cfs 0.361 af Primary=0.00 cfs 0.000 af Outflow=0.85 cfs 0.361 af

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Type II 24-hr 1-yr Rainfall=2.58"

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Pond 6P: Pre-Treat Basin 2-2

Peak Elev=582.00' Storage=414 cf Inflow=0.20 cfs 0.012 af

Outflow=0.00 cfs 0.002 af

Link 1L: DP-1

Inflow=0.00 cfs 0.000 af

Primary=0.00 cfs 0.000 af

Total Runoff Area = 34.030 ac Runoff Volume = 0.651 af Average Runoff Depth = 0.23"

90.13% Pervious = 30.670 ac 9.87% Impervious = 3.360 ac

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Type II 24-hr 1-yr Rainfall=2.58"

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Summary for Subcatchment 1S: DA-1A

Runoff = 1.93 cfs @ 12.35 hrs, Volume= 0.361 af, Depth= 0.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Type II 24-hr 1-yr Rainfall=2.58"

Area (ac)	CN	Description
* 0.620	98	Paved parking, driveways, roofs
1.770	74	>75% Grass cover, Good, HSG C
1.150	30	Meadow, non-grazed, HSG A
5.340	58	Meadow, non-grazed, HSG B
0.090	71	Meadow, non-grazed, HSG C
4.160	60	Woods, Fair, HSG B
2.080	73	Woods, Fair, HSG C
0.750	79	Woods, Fair, HSG D
15.960	63	Weighted Average
15.340		96.12% Pervious Area
0.620		3.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	100	0.0600	0.18		Sheet Flow, Sheet Flow Grass: Dense n= 0.240 P2= 3.10"
8.7	780	0.0894	1.49		Shallow Concentrated Flow, Shallow Concentrated Flow 1 Woodland Kv= 5.0 fps
2.5	349	0.0201	2.28		Shallow Concentrated Flow, Shallow Concentrated Flow 2 Unpaved Kv= 16.1 fps
1.0	141	0.0107	2.39	14.34	Channel Flow, Channel Flow 1 - Bypass Swale Area= 6.0 sf Perim= 30.0' r= 0.20' n= 0.022 Earth, clean & straight
5.6	599	0.0121	1.77		Shallow Concentrated Flow, Shallow Concentrated Flow 3 Unpaved Kv= 16.1 fps
2.6	375	0.0140	2.39	19.09	Channel Flow, Channel Flow 2 - Cascade Creek Area= 8.0 sf Perim= 20.0' r= 0.40' n= 0.040 Winding stream, pools & shoals
29.7	2,344	Total			

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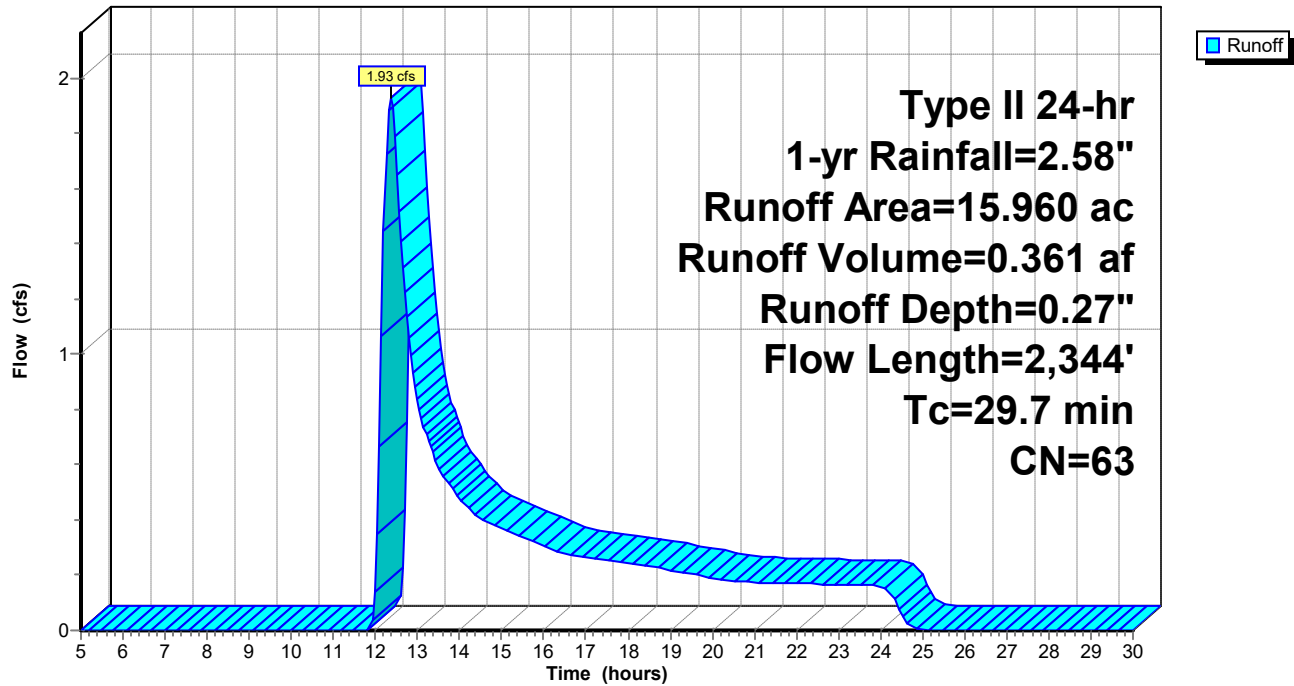
Type II 24-hr 1-yr Rainfall=2.58"

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Subcatchment 1S: DA-1A

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.58"

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Summary for Subcatchment 2S: DA-1B

Runoff = 0.06 cfs @ 12.53 hrs, Volume= 0.031 af, Depth= 0.10"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Type II 24-hr 1-yr Rainfall=2.58"

Area (ac)	CN	Description
0.610	98	Paved parking, driveways, roofs
0.420	39	>75% Grass cover, Good, HSG A
0.760	61	>75% Grass cover, Good, HSG B
1.040	30	Meadow, non-grazed, HSG A
1.040	58	Meadow, non-grazed, HSG B
3.870	55	Weighted Average
3.260		84.24% Pervious Area
0.610		15.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	100	0.0300	0.14		Sheet Flow, Sheet Flow
					Grass: Dense n= 0.240 P2= 3.10"
1.8	279	0.0260	2.60		Shallow Concentrated Flow, Shallow Concentrated Flow
					Unpaved Kv= 16.1 fps
1.1	471	0.0377	7.12	42.72	Channel Flow, Channel Flow - Roadside Swale
					Area= 6.0 sf Perim= 15.0' r= 0.40'
					n= 0.022 Earth, clean & straight
15.2	850	Total			

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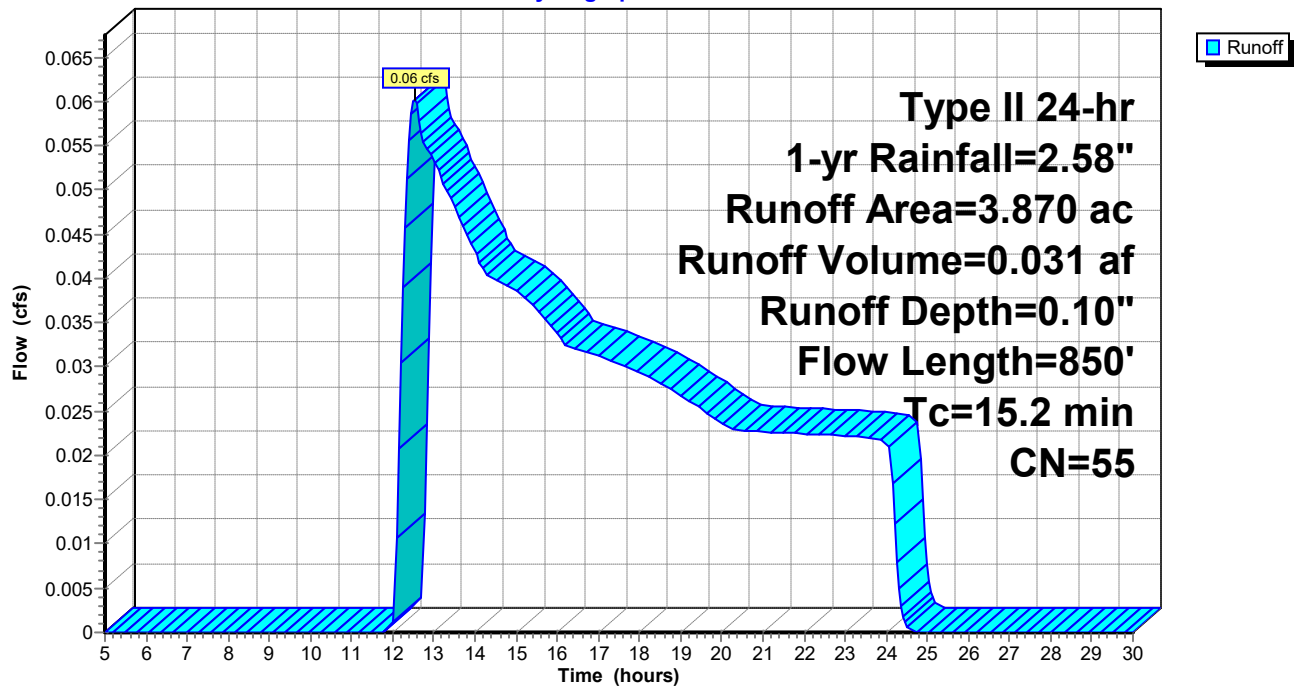
Type II 24-hr 1-yr Rainfall=2.58"

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Subcatchment 2S: DA-1B

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.58"

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Summary for Subcatchment 3S: DA-1C

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

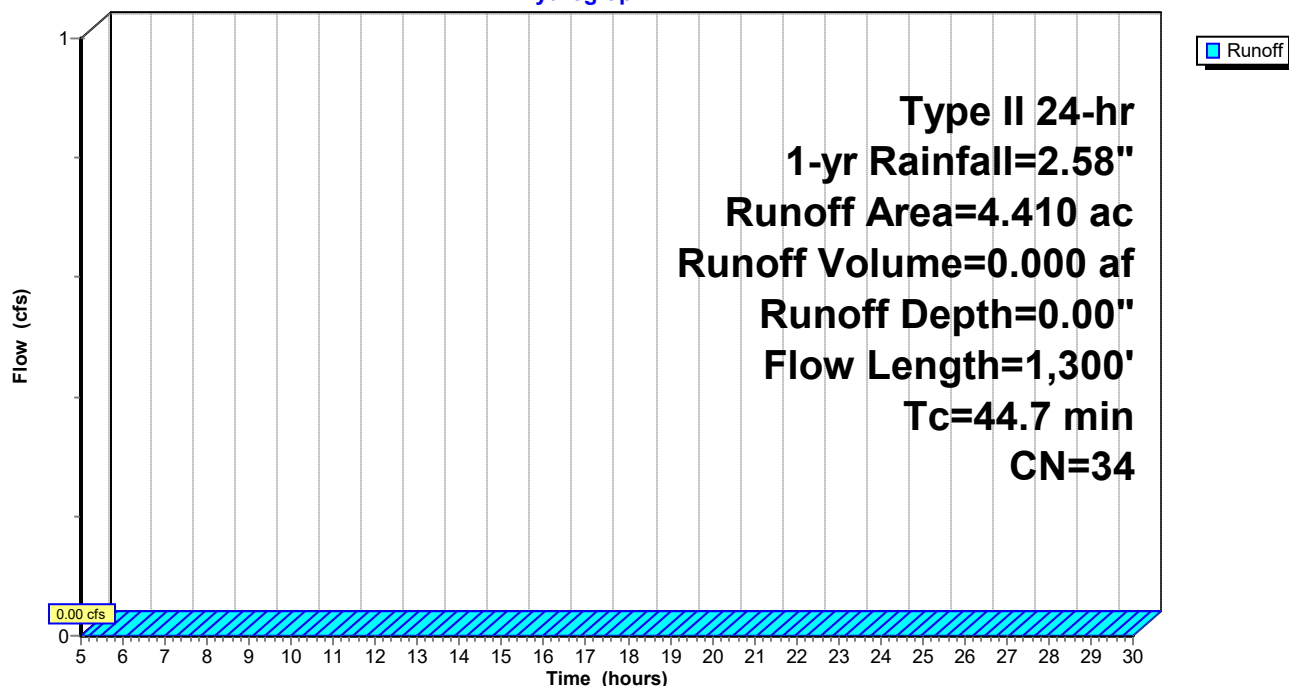
Type II 24-hr 1-yr Rainfall=2.58"

Area (ac)	CN	Description
0.080	98	Paved parking, driveways, roofs
2.800	30	Meadow, non-grazed, HSG A
0.410	39	>75% Grass cover, Good, HSG A
1.120	36	Woods, Fair, HSG A
4.410	34	Weighted Average
4.330		98.19% Pervious Area
0.080		1.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.0	100	0.0050	0.04		Sheet Flow, Sheet Flow
					Woods: Light underbrush n= 0.400 P2= 3.10"
6.7	1,200	0.0346	2.99		Shallow Concentrated Flow, Shallow Concentrated Flow
					Unpaved Kv= 16.1 fps
44.7	1,300	Total			

Subcatchment 3S: DA-1C

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Type II 24-hr 1-yr Rainfall=2.58"

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Summary for Subcatchment 4S: DA-1D

Runoff = 0.21 cfs @ 11.96 hrs, Volume= 0.012 af, Depth> 2.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

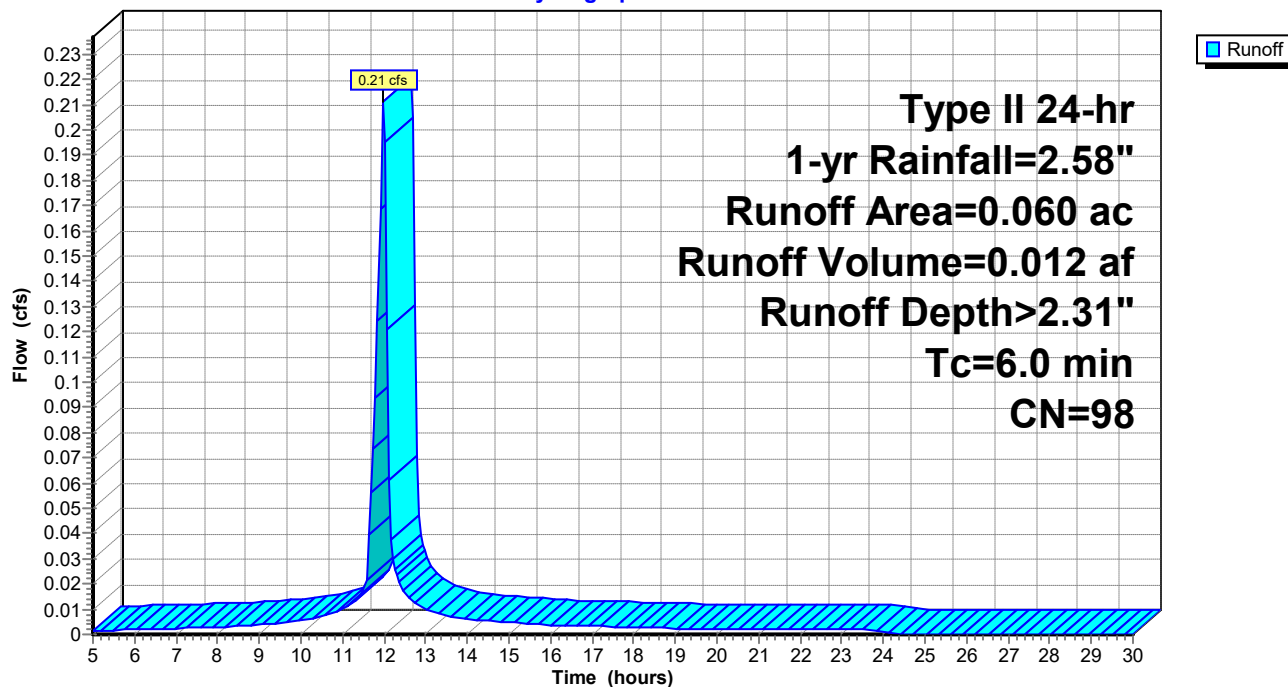
Type II 24-hr 1-yr Rainfall=2.58"

Area (ac)	CN	Description
0.060	98	Paved parking, driveways, roofs
0.060		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Direct Entry

Subcatchment 4S: DA-1D

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.58"

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Summary for Subcatchment 5S: DA-1E

Runoff = 0.01 cfs @ 13.35 hrs, Volume= 0.008 af, Depth= 0.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

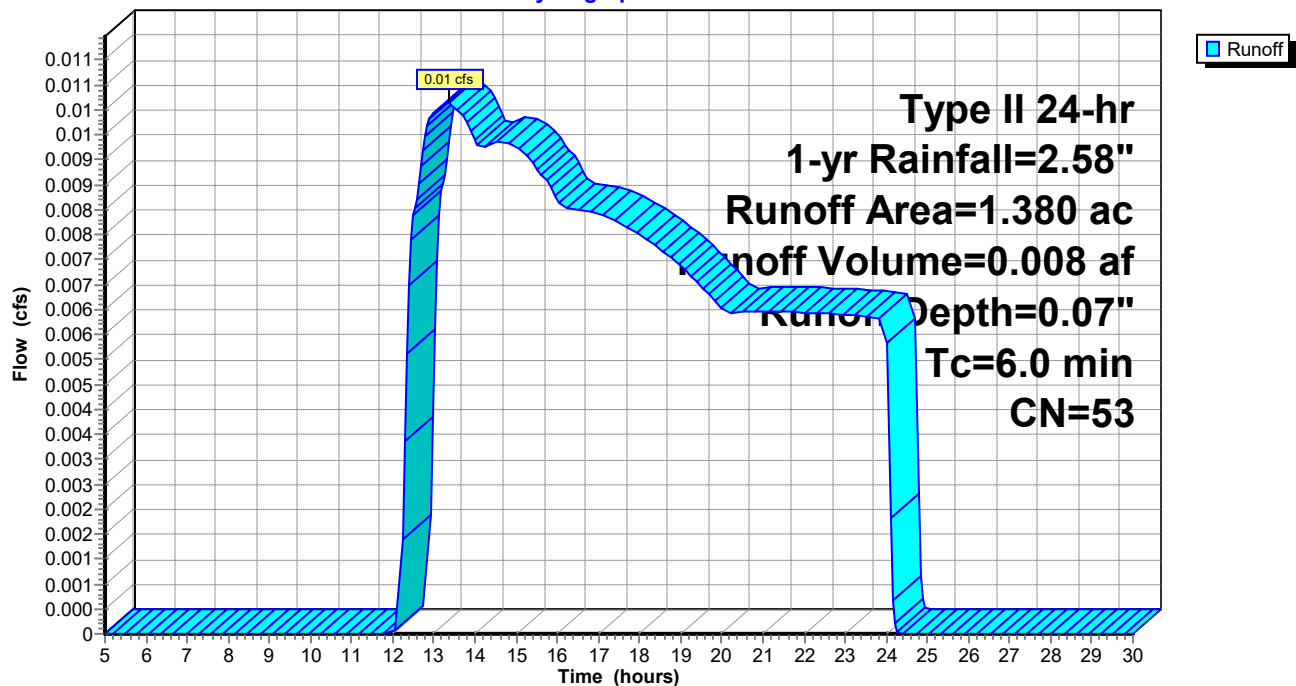
Type II 24-hr 1-yr Rainfall=2.58"

Area (ac)	CN	Description
0.380	98	Paved parking, driveways, roofs
0.590	39	>75% Grass cover, Good, HSG A
0.090	36	Woods, Fair, HSG A
0.320	30	Meadow, non-grazed, HSG A
1.380	53	Weighted Average
1.000		72.46% Pervious Area
0.380		27.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Direct Entry

Subcatchment 5S: DA-1E

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.58"

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Summary for Subcatchment 6S: DA-1F

Runoff = 0.84 cfs @ 12.07 hrs, Volume= 0.069 af, Depth= 0.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

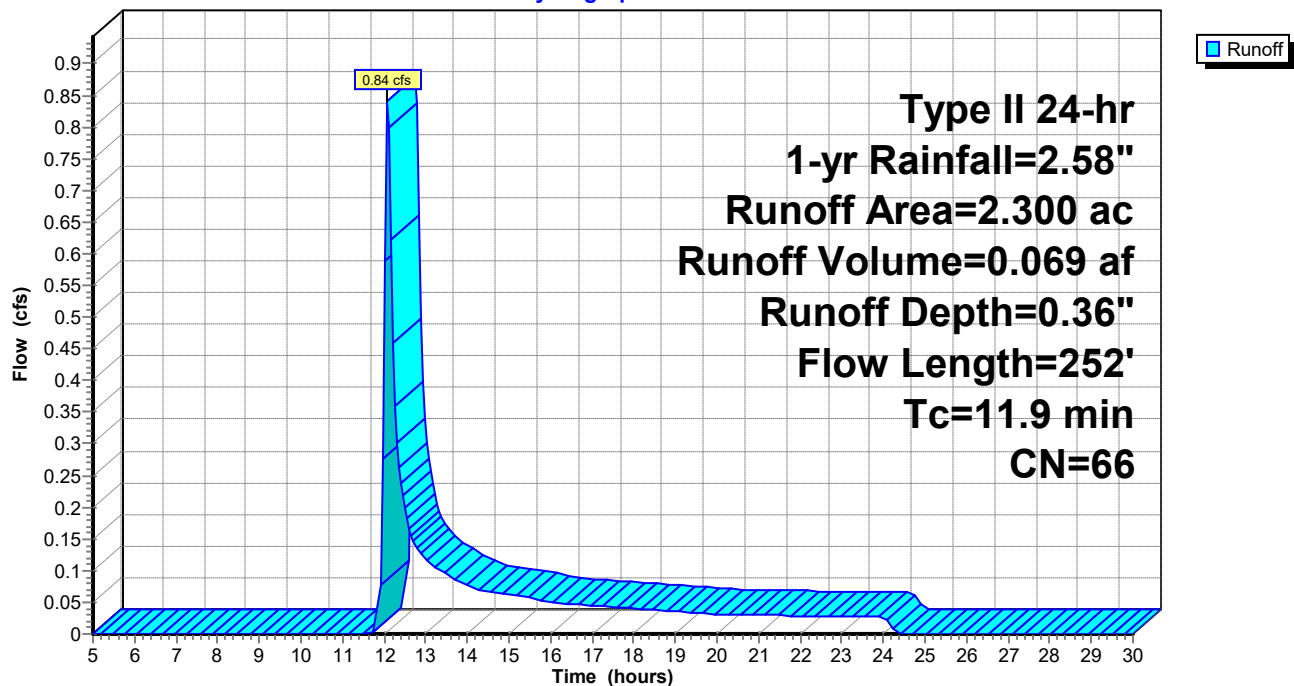
Type II 24-hr 1-yr Rainfall=2.58"

Area (ac)	CN	Description
0.780	98	Paved parking, driveways, roofs
0.930	61	>75% Grass cover, Good, HSG B
0.240	36	Woods, Fair, HSG A
0.350	30	Meadow, non-grazed, HSG A
2.300	66	Weighted Average
1.520		66.09% Pervious Area
0.780		33.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	50	0.0100	0.08		Sheet Flow, Sheet Flow
					Grass: Dense n= 0.240 P2= 3.10"
0.9	202	0.0545	3.76		Shallow Concentrated Flow, Shallow Concentrated Flow
					Unpaved Kv= 16.1 fps
11.9	252	Total			

Subcatchment 6S: DA-1F

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.58"

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Summary for Subcatchment 7S: DA-1G

Runoff = 0.77 cfs @ 11.98 hrs, Volume= 0.038 af, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

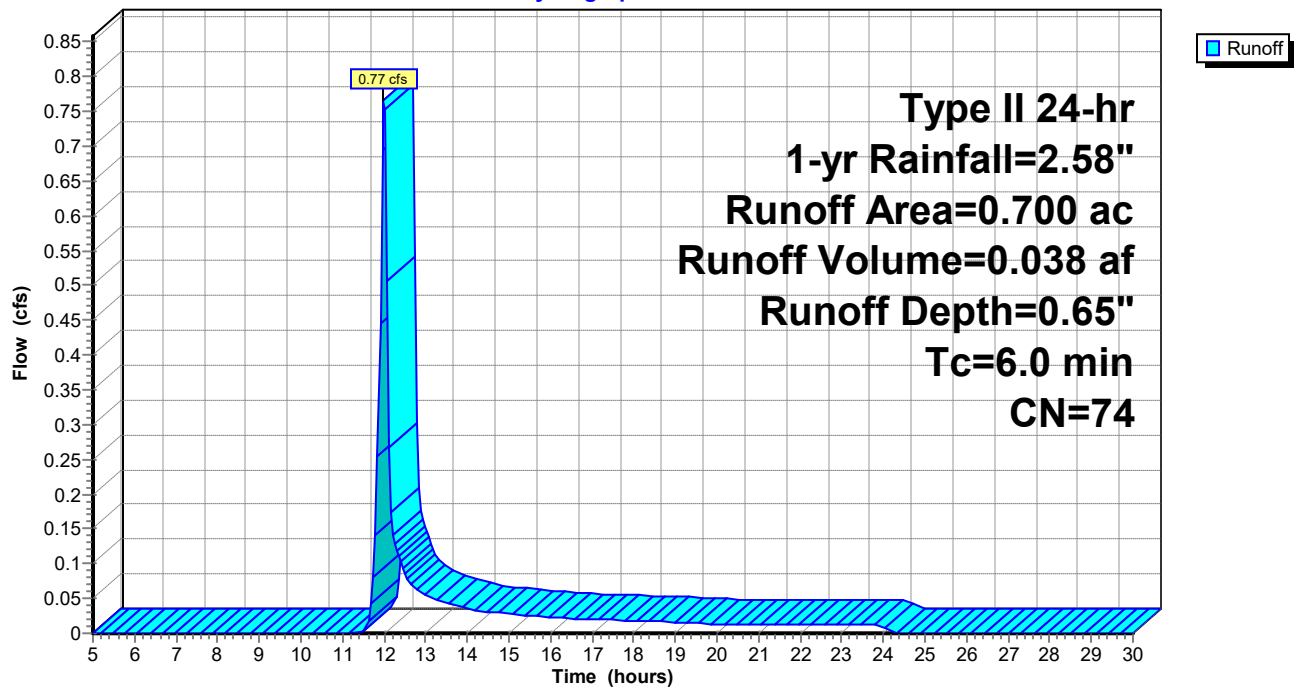
Type II 24-hr 1-yr Rainfall=2.58"

Area (ac)	CN	Description
0.260	98	Paved parking, driveways, roofs
0.320	61	>75% Grass cover, Good, HSG B
0.120	58	Meadow, non-grazed, HSG B
0.700	74	Weighted Average
0.440		62.86% Pervious Area
0.260		37.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Direct Entry

Subcatchment 7S: DA-1G

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.58"

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Summary for Subcatchment 8S: DA-1H

Runoff = 0.53 cfs @ 11.98 hrs, Volume= 0.026 af, Depth= 0.70"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

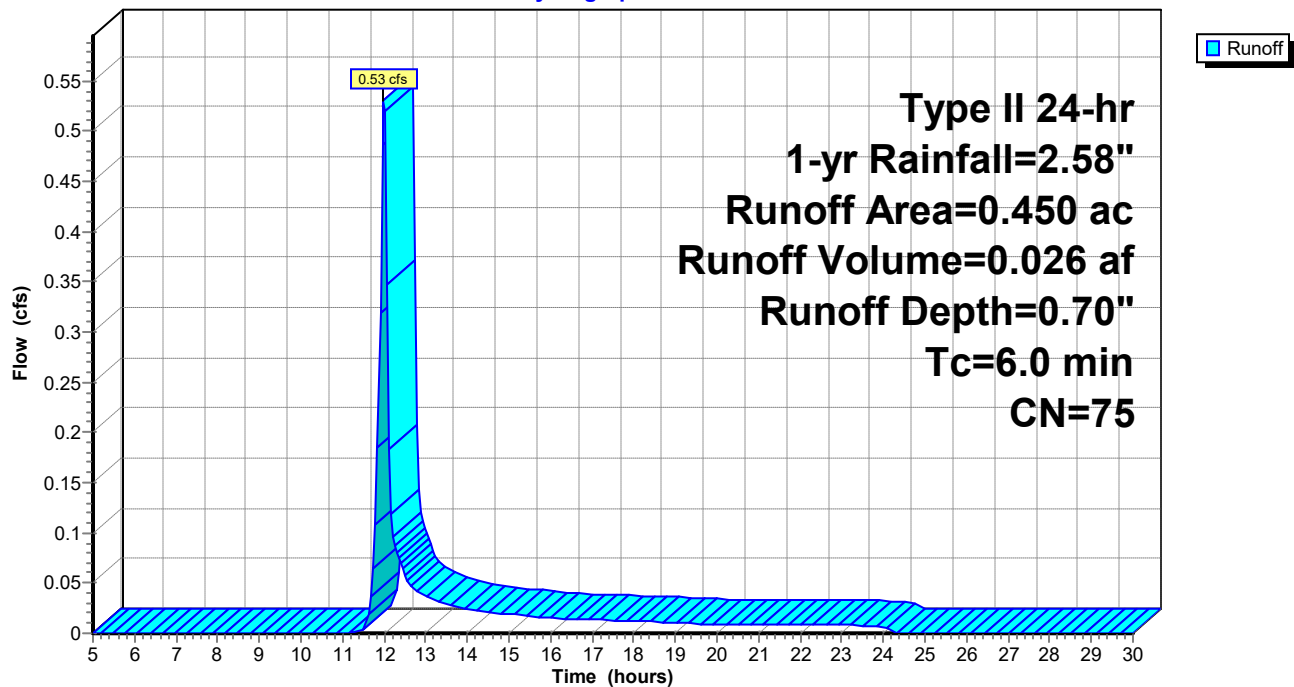
Type II 24-hr 1-yr Rainfall=2.58"

Area (ac)	CN	Description
0.170	98	Paved parking, driveways, roofs
0.220	61	>75% Grass cover, Good, HSG B
0.060	58	Meadow, non-grazed, HSG B
0.450	75	Weighted Average
0.280		62.22% Pervious Area
0.170		37.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Direct Entry

Subcatchment 8S: DA-1H

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Type II 24-hr 1-yr Rainfall=2.58"

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Summary for Subcatchment 9S: DA-1I

Runoff = 0.54 cfs @ 12.08 hrs, Volume= 0.049 af, Depth= 0.33"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

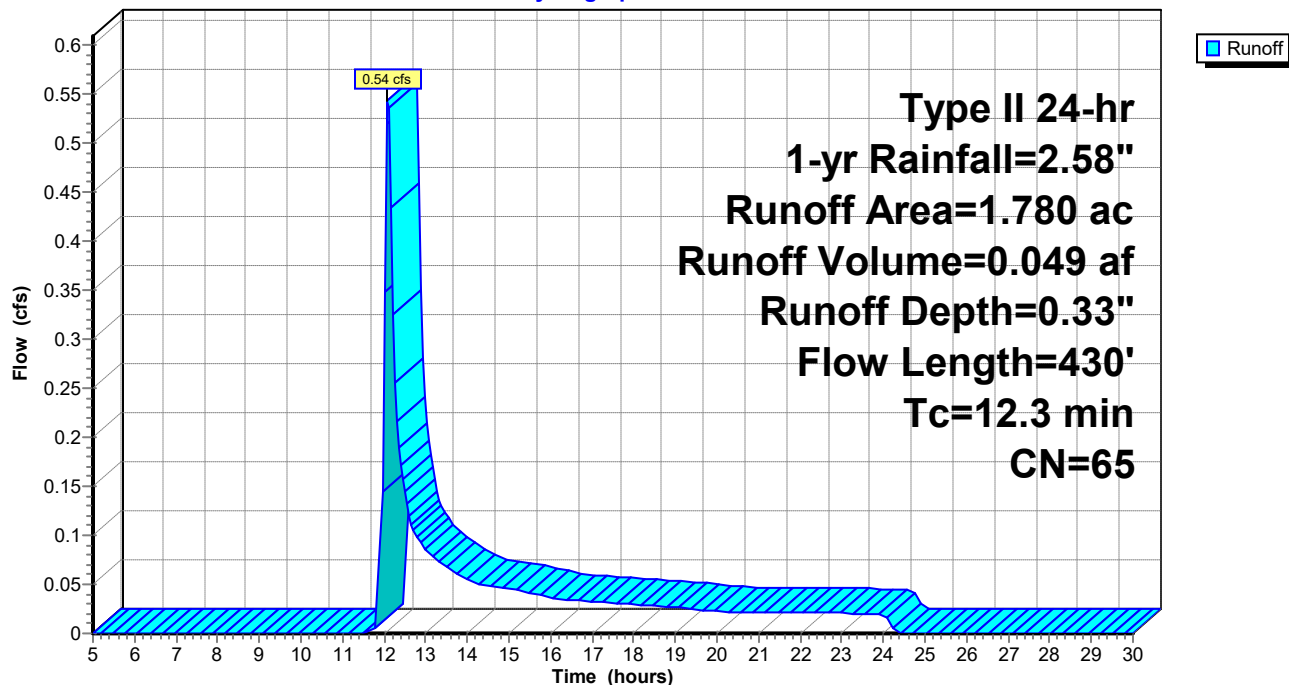
Type II 24-hr 1-yr Rainfall=2.58"

Area (ac)	CN	Description
0.240	98	Paved parking, driveways, roofs
0.790	61	>75% Grass cover, Good, HSG B
0.750	58	Meadow, non-grazed, HSG B
1.780	65	Weighted Average
1.540		86.52% Pervious Area
0.240		13.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0150	0.09		Sheet Flow, Sheet Flow
					Grass: Dense n= 0.240 P2= 3.10"
3.0	380	0.0171	2.11		Shallow Concentrated Flow, Shallow Concentrated Flow
					Unpaved Kv= 16.1 fps
12.3	430	Total			

Subcatchment 9S: DA-1I

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.58"

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Summary for Subcatchment 10S: DA-1J

Runoff = 0.43 cfs @ 12.11 hrs, Volume= 0.057 af, Depth= 0.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

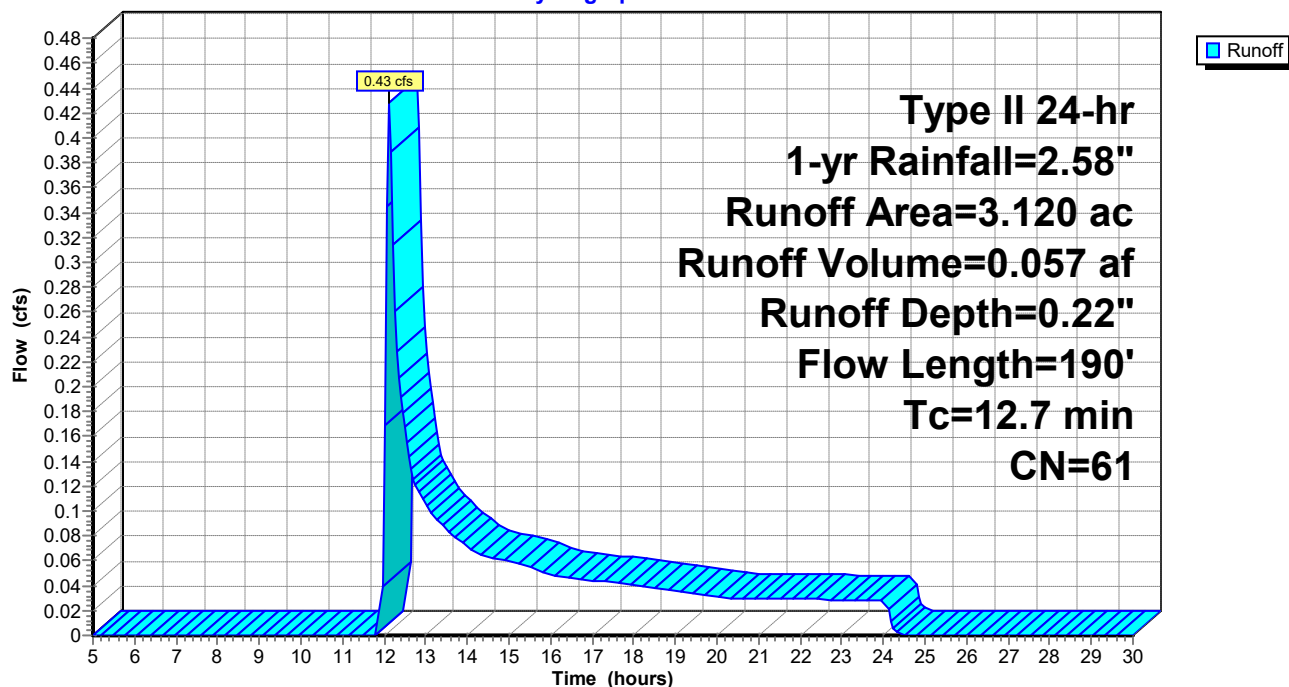
Type II 24-hr 1-yr Rainfall=2.58"

Area (ac)	CN	Description
2.430	58	Meadow, non-grazed, HSG B
0.530	61	>75% Grass cover, Good, HSG B
0.160	98	Paved parking, driveways, roofs
3.120	61	Weighted Average
2.960		94.87% Pervious Area
0.160		5.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	50	0.0100	0.08		Sheet Flow, Sheet Flow
					Grass: Dense n= 0.240 P2= 3.10"
1.7	140	0.0071	1.36		Shallow Concentrated Flow, Shallow Concentrated Flow
					Unpaved Kv= 16.1 fps
12.7	190	Total			

Subcatchment 10S: DA-1J

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Summary for Reach 3R: Culvert Under Subdivision Entrance

[52] Hint: Inlet/Outlet conditions not evaluated

[82] Warning: Early inflow requires earlier time span

Inflow Area = 4.470 ac, 3.13% Impervious, Inflow Depth > 0.03" for 1-yr event
Inflow = 0.21 cfs @ 11.96 hrs, Volume= 0.012 af
Outflow = 0.20 cfs @ 12.03 hrs, Volume= 0.012 af, Atten= 7%, Lag= 4.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.18 fps, Min. Travel Time= 2.5 min

Avg. Velocity= 0.36 fps, Avg. Travel Time= 8.3 min

Peak Storage= 31 cf @ 11.99 hrs

Average Depth at Peak Storage= 0.25'

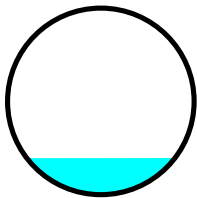
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 2.38 cfs

15.0" Round Pipe

n= 0.025 Corrugated metal

Length= 180.0' Slope= 0.0050 '/'

Inlet Invert= 583.00', Outlet Invert= 582.10'



Post Development Conditions Model

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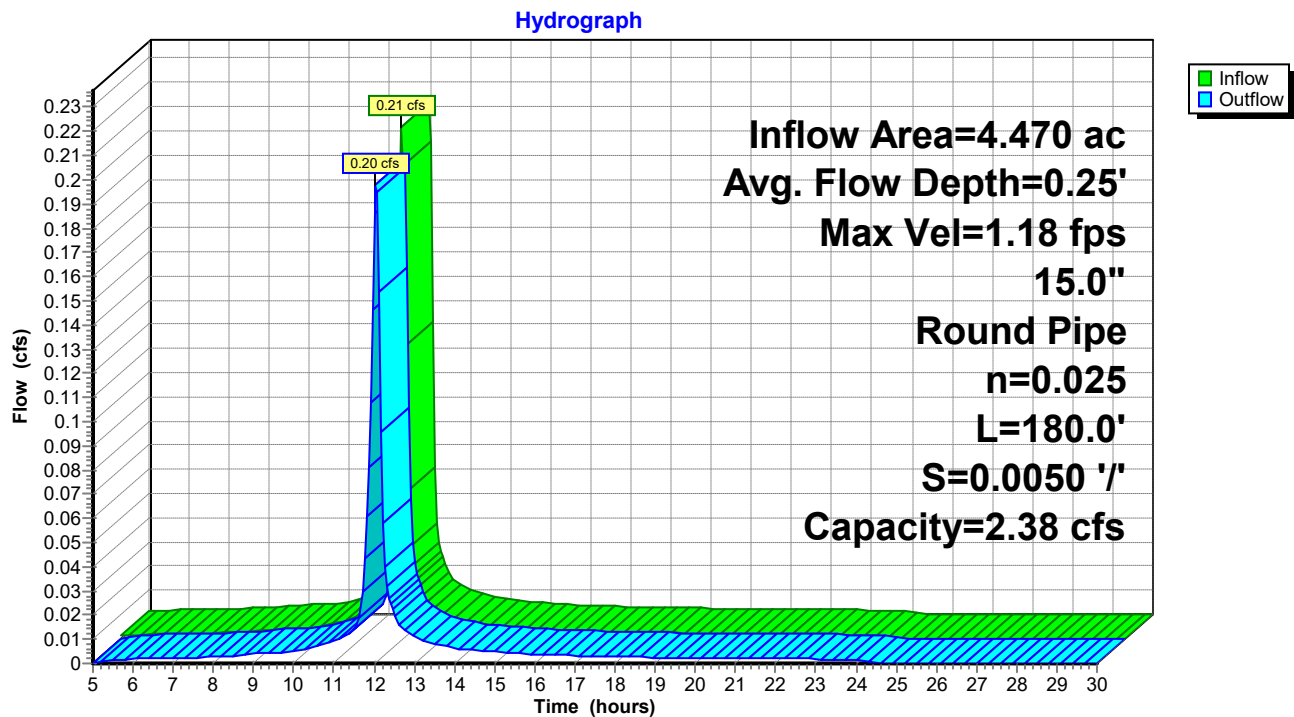
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Type II 24-hr 1-yr Rainfall=2.58"

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Reach 3R: Culvert Under Subdivision Entrance



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Stage-Area-Storage for Reach 3R: Culvert Under Subdivision Entrance

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
583.00	0.0	0	584.04	1.1	196
583.02	0.0	1	584.06	1.1	200
583.04	0.0	2	584.08	1.1	203
583.06	0.0	4	584.10	1.1	206
583.08	0.0	6	584.12	1.2	209
583.10	0.0	8	584.14	1.2	211
583.12	0.1	11	584.16	1.2	214
583.14	0.1	14	584.18	1.2	216
583.16	0.1	17	584.20	1.2	218
583.18	0.1	20	584.22	1.2	219
583.20	0.1	23	584.24	1.2	221
583.22	0.1	26			
583.24	0.2	30			
583.26	0.2	33			
583.28	0.2	37			
583.30	0.2	41			
583.32	0.2	45			
583.34	0.3	49			
583.36	0.3	53			
583.38	0.3	57			
583.40	0.3	61			
583.42	0.4	65			
583.44	0.4	69			
583.46	0.4	74			
583.48	0.4	78			
583.50	0.5	83			
583.52	0.5	87			
583.54	0.5	91			
583.56	0.5	96			
583.58	0.6	100			
583.60	0.6	105			
583.62	0.6	109			
583.64	0.6	114			
583.66	0.7	118			
583.68	0.7	123			
583.70	0.7	127			
583.72	0.7	132			
583.74	0.8	136			
583.76	0.8	141			
583.78	0.8	145			
583.80	0.8	149			
583.82	0.9	154			
583.84	0.9	158			
583.86	0.9	162			
583.88	0.9	166			
583.90	0.9	170			
583.92	1.0	174			
583.94	1.0	178			
583.96	1.0	182			
583.98	1.0	186			
584.00	1.1	189			
584.02	1.1	193			

Post Development Conditions Model

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Summary for Pond 1P: Pre-Treat Basin 1

Inflow Area = 7.030 ac, 17.50% Impervious, Inflow Depth = 0.15" for 1-yr event
 Inflow = 0.55 cfs @ 12.08 hrs, Volume= 0.088 af
 Outflow = 0.05 cfs @ 19.92 hrs, Volume= 0.020 af, Atten= 90%, Lag= 470.1 min
 Primary = 0.05 cfs @ 19.92 hrs, Volume= 0.020 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs / 3
 Peak Elev= 593.11' @ 19.92 hrs Surf.Area= 2,096 sf Storage= 2,988 cf

Plug-Flow detention time= 576.8 min calculated for 0.020 af (22% of inflow)
 Center-of-Mass det. time= 339.2 min (1,313.6 - 974.4)

Volume	Invert	Avail.Storage	Storage Description
#1	591.00'	8,404 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
591.00	832	116.0	0	0	832
593.00	2,016	180.0	2,762	2,762	2,368
595.00	3,711	244.0	5,641	8,404	4,569

Device	Routing	Invert	Outlet Devices
#1	Primary	593.10'	15.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.04 cfs @ 19.92 hrs HW=593.11' (Free Discharge)
 ↑1=**Broad-Crested Rectangular Weir** (Weir Controls 0.04 cfs @ 0.25 fps)

Post Development Conditions Model

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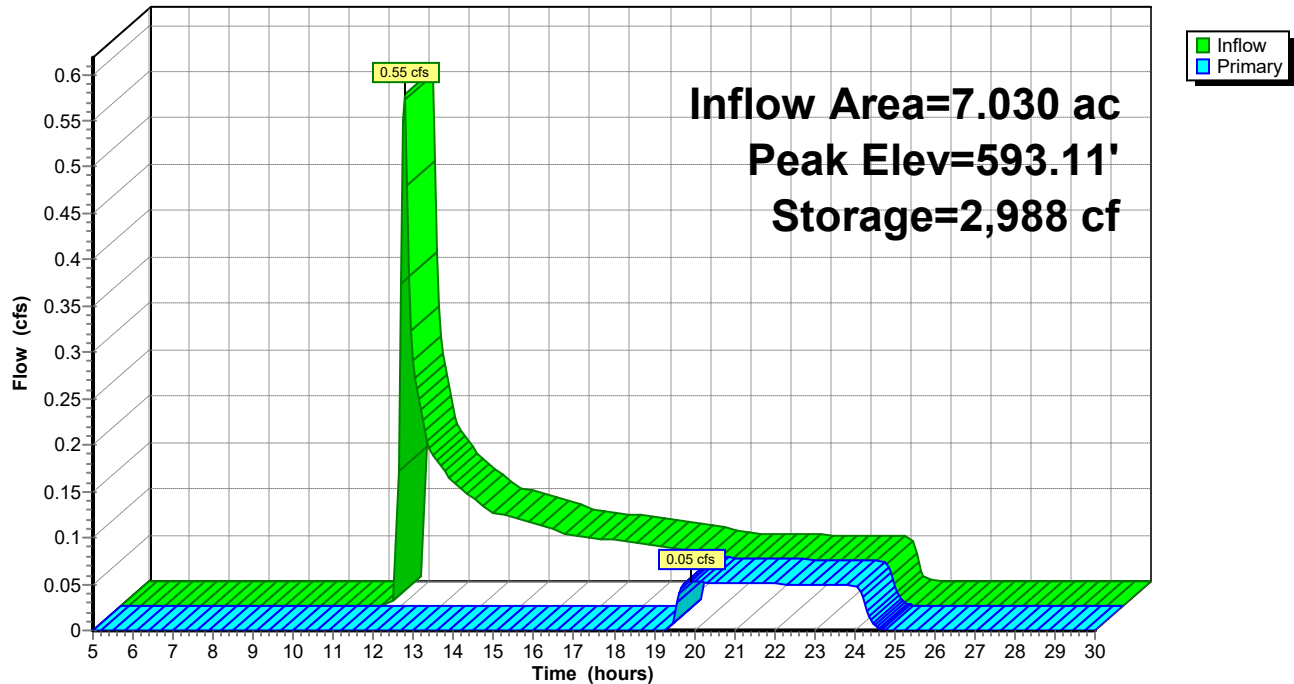
Type II 24-hr 1-yr Rainfall=2.58"

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Pond 1P: Pre-Treat Basin 1

Hydrograph



Post Development Conditions Model*Type II 24-hr 1-yr Rainfall=2.58"*

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Stage-Area-Storage for Pond 1P: Pre-Treat Basin 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
591.00	832	0	593.60	2,471	4,106
591.05	855	42	593.65	2,511	4,230
591.10	879	86	593.70	2,551	4,357
591.15	903	130	593.75	2,591	4,485
591.20	927	176	593.80	2,632	4,616
591.25	952	223	593.85	2,674	4,749
591.30	977	271	593.90	2,715	4,883
591.35	1,002	320	593.95	2,757	5,020
591.40	1,028	371	594.00	2,799	5,159
591.45	1,053	423	594.05	2,842	5,300
591.50	1,080	477	594.10	2,885	5,443
591.55	1,106	531	594.15	2,928	5,589
591.60	1,133	587	594.20	2,971	5,736
591.65	1,160	645	594.25	3,015	5,886
591.70	1,188	703	594.30	3,059	6,038
591.75	1,216	763	594.35	3,104	6,192
591.80	1,244	825	594.40	3,149	6,348
591.85	1,272	888	594.45	3,194	6,507
591.90	1,301	952	594.50	3,239	6,667
591.95	1,330	1,018	594.55	3,285	6,830
592.00	1,360	1,085	594.60	3,331	6,996
592.05	1,389	1,154	594.65	3,377	7,164
592.10	1,419	1,224	594.70	3,424	7,334
592.15	1,450	1,296	594.75	3,471	7,506
592.20	1,481	1,369	594.80	3,518	7,681
592.25	1,512	1,444	594.85	3,566	7,858
592.30	1,543	1,520	594.90	3,614	8,037
592.35	1,575	1,598	594.95	3,662	8,219
592.40	1,607	1,678	595.00	3,711	8,404
592.45	1,639	1,759			
592.50	1,672	1,841			
592.55	1,705	1,926			
592.60	1,738	2,012			
592.65	1,772	2,100			
592.70	1,806	2,189			
592.75	1,840	2,280			
592.80	1,874	2,373			
592.85	1,909	2,468			
592.90	1,945	2,564			
592.95	1,980	2,662			
593.00	2,016	2,762			
593.05	2,052	2,864			
593.10	2,089	2,967			
593.15	2,125	3,073			
593.20	2,162	3,180			
593.25	2,200	3,289			
593.30	2,238	3,400			
593.35	2,276	3,513			
593.40	2,314	3,627			
593.45	2,353	3,744			
593.50	2,392	3,863			
593.55	2,431	3,983			

Post Development Conditions Model

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Type II 24-hr 1-yr Rainfall=2.58"

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Summary for Pond 2P: Infiltration Basin 1

Inflow Area = 7.030 ac, 17.50% Impervious, Inflow Depth = 0.03" for 1-yr event
Inflow = 0.05 cfs @ 19.92 hrs, Volume= 0.020 af
Outflow = 0.05 cfs @ 20.09 hrs, Volume= 0.020 af, Atten= 1%, Lag= 10.4 min
Discarded = 0.05 cfs @ 20.09 hrs, Volume= 0.020 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 590.00' @ 20.09 hrs Surf.Area= 3,009 sf Storage= 19 cf

Plug-Flow detention time= 6.0 min calculated for 0.020 af (100% of inflow)
Center-of-Mass det. time= 6.0 min (1,319.5 - 1,313.6)

Volume	Invert	Avail.Storage	Storage Description		
#1	590.00'	45,691 cf	Custom Stage Data (Irregular) Listed below		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
590.00	3,000	430.0	0	0	3,000
592.00	7,700	510.0	10,337	10,337	9,058
594.00	13,200	590.0	20,654	30,992	16,146
595.00	16,250	630.0	14,699	45,691	20,077

Device	Routing	Invert	Outlet Devices
#1	Discarded	590.00'	10.000 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 0.00' Phase-In= 0.01'
#2	Primary	593.00'	10.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.25 cfs @ 20.09 hrs HW=590.00' (Free Discharge)
↑1=Exfiltration (Controls 0.25 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=590.00' (Free Discharge)
↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Post Development Conditions Model

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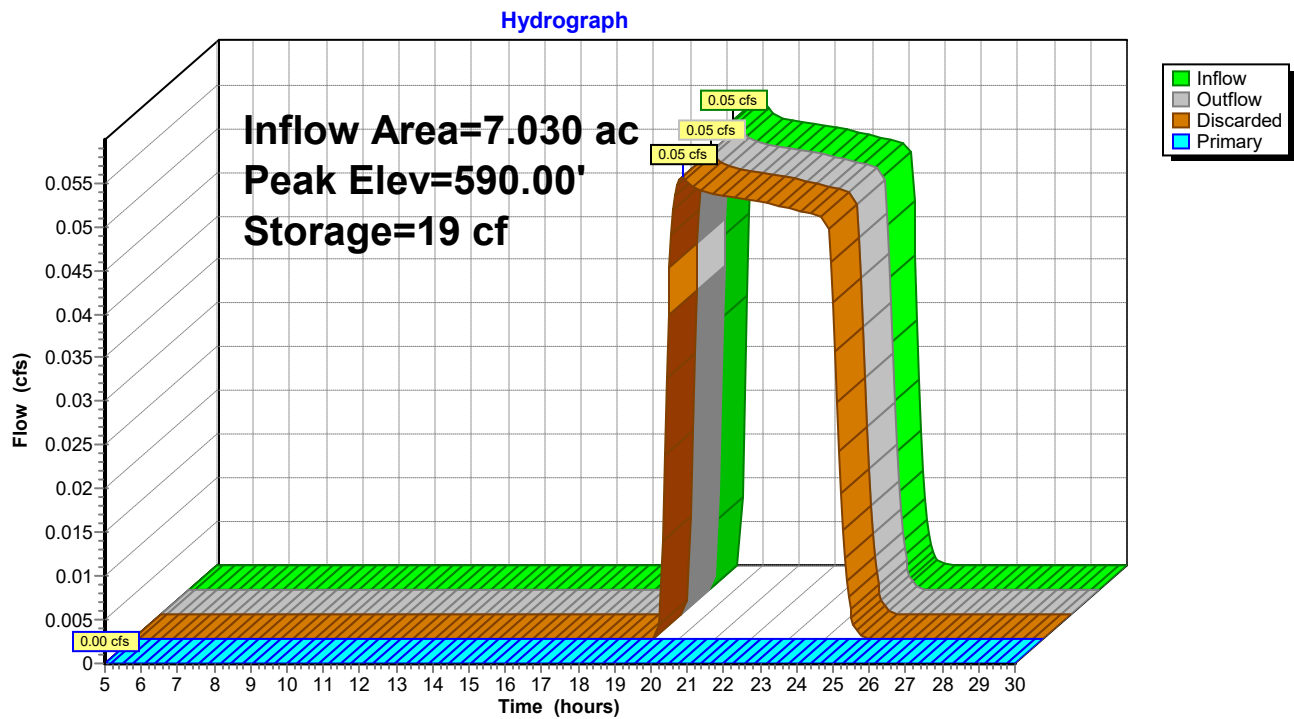
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Type II 24-hr 1-yr Rainfall=2.58"

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Pond 2P: Infiltration Basin 1



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Stage-Area-Storage for Pond 2P: Infiltration Basin 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
590.00	3,000	0	592.60	9,350	16,534
590.05	3,117	258	592.65	9,487	17,050
590.10	3,235	517	592.70	9,625	17,567
590.15	3,352	775	592.75	9,763	18,083
590.20	3,470	1,034	592.80	9,900	18,599
590.25	3,588	1,292	592.85	10,038	19,116
590.30	3,705	1,551	592.90	10,175	19,632
590.35	3,823	1,809	592.95	10,313	20,148
590.40	3,940	2,067	593.00	10,450	20,665
590.45	4,058	2,326	593.05	10,587	21,181
590.50	4,175	2,584	593.10	10,725	21,697
590.55	4,292	2,843	593.15	10,862	22,214
590.60	4,410	3,101	593.20	11,000	22,730
590.65	4,527	3,360	593.25	11,138	23,247
590.70	4,645	3,618	593.30	11,275	23,763
590.75	4,763	3,877	593.35	11,413	24,279
590.80	4,880	4,135	593.40	11,550	24,796
590.85	4,998	4,393	593.45	11,688	25,312
590.90	5,115	4,652	593.50	11,825	25,828
590.95	5,233	4,910	593.55	11,962	26,345
591.00	5,350	5,169	593.60	12,100	26,861
591.05	5,467	5,427	593.65	12,237	27,377
591.10	5,585	5,686	593.70	12,375	27,894
591.15	5,702	5,944	593.75	12,513	28,410
591.20	5,820	6,202	593.80	12,650	28,926
591.25	5,938	6,461	593.85	12,788	29,443
591.30	6,055	6,719	593.90	12,925	29,959
591.35	6,173	6,978	593.95	13,063	30,476
591.40	6,290	7,236	594.00	13,200	30,992
591.45	6,408	7,495	594.05	13,352	31,727
591.50	6,525	7,753	594.10	13,505	32,462
591.55	6,642	8,012	594.15	13,657	33,197
591.60	6,760	8,270	594.20	13,810	33,932
591.65	6,877	8,528	594.25	13,963	34,667
591.70	6,995	8,787	594.30	14,115	35,402
591.75	7,113	9,045	594.35	14,268	36,136
591.80	7,230	9,304	594.40	14,420	36,871
591.85	7,348	9,562	594.45	14,573	37,606
591.90	7,465	9,821	594.50	14,725	38,341
591.95	7,583	10,079	594.55	14,877	39,076
592.00	7,700	10,337	594.60	15,030	39,811
592.05	7,837	10,854	594.65	15,182	40,546
592.10	7,975	11,370	594.70	15,335	41,281
592.15	8,112	11,887	594.75	15,488	42,016
592.20	8,250	12,403	594.80	15,640	42,751
592.25	8,388	12,919	594.85	15,793	43,486
592.30	8,525	13,436	594.90	15,945	44,221
592.35	8,663	13,952	594.95	16,098	44,956
592.40	8,800	14,468	595.00	16,250	45,691
592.45	8,938	14,985			
592.50	9,075	15,501			
592.55	9,212	16,017			

Post Development Conditions Model

Type II 24-hr 1-yr Rainfall=2.58"

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Summary for Pond 3P: Pre-Treat Basin 2-1

Inflow Area = 6.570 ac, 20.85% Impervious, Inflow Depth = 0.35" for 1-yr event
 Inflow = 2.09 cfs @ 12.02 hrs, Volume= 0.190 af
 Outflow = 0.35 cfs @ 12.84 hrs, Volume= 0.122 af, Atten= 83%, Lag= 49.2 min
 Primary = 0.35 cfs @ 12.84 hrs, Volume= 0.122 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs / 3
 Peak Elev= 581.13' @ 12.84 hrs Surf.Area= 2,137 sf Storage= 3,039 cf

Plug-Flow detention time= 246.7 min calculated for 0.122 af (64% of inflow)
 Center-of-Mass det. time= 108.0 min (1,022.2 - 914.2)

Volume	Invert	Avail.Storage	Storage Description
#1	579.00'	8,857 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
579.00	832	116.0	0	0	832
581.00	2,015	180.0	2,761	2,761	2,368
583.00	4,215	260.0	6,096	8,857	5,204

Device	Routing	Invert	Outlet Devices
#1	Primary	581.10'	20.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.31 cfs @ 12.84 hrs HW=581.13' (Free Discharge)
 ↑1=**Broad-Crested Rectangular Weir** (Weir Controls 0.31 cfs @ 0.47 fps)

Post Development Conditions Model

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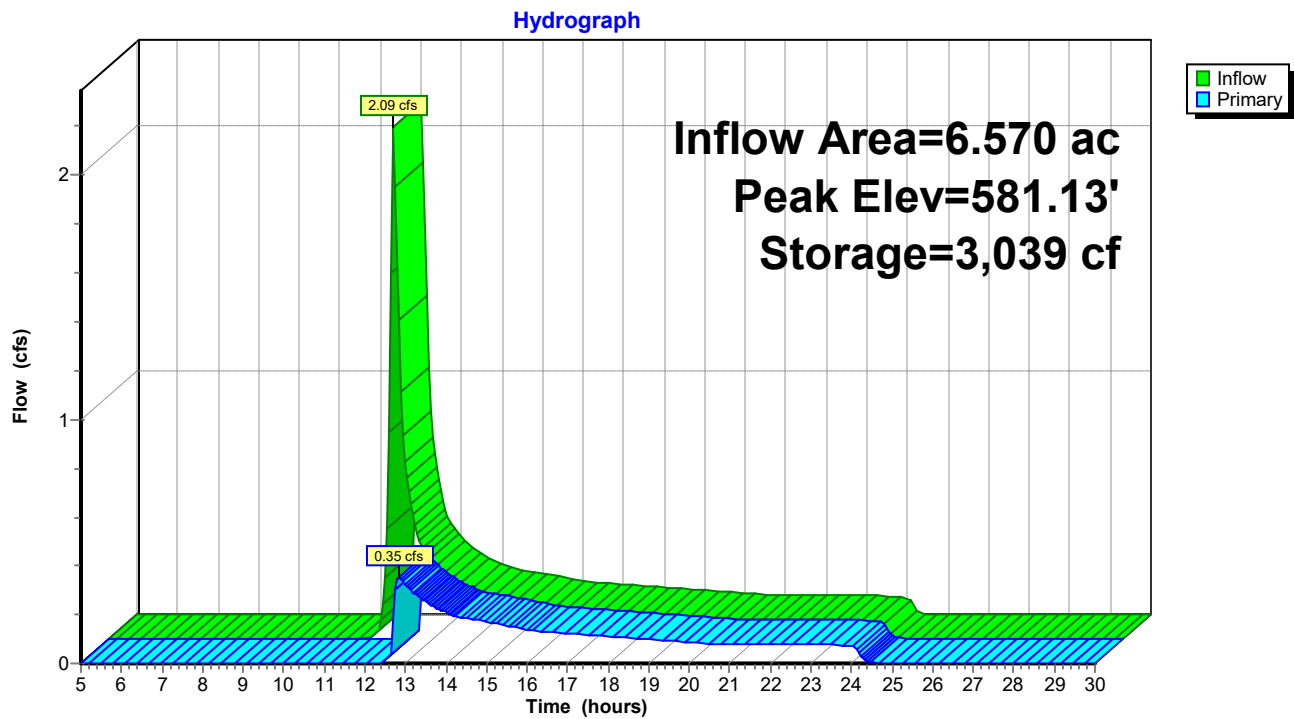
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Pond 3P: Pre-Treat Basin 2-1



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Stage-Area-Storage for Pond 3P: Pre-Treat Basin 2-1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
579.00	832	0	581.60	2,591	4,139
579.05	855	42	581.65	2,642	4,270
579.10	879	86	581.70	2,694	4,403
579.15	903	130	581.75	2,746	4,539
579.20	927	176	581.80	2,799	4,678
579.25	952	223	581.85	2,852	4,819
579.30	977	271	581.90	2,906	4,963
579.35	1,002	320	581.95	2,960	5,110
579.40	1,027	371	582.00	3,015	5,259
579.45	1,053	423	582.05	3,070	5,411
579.50	1,079	477	582.10	3,126	5,566
579.55	1,106	531	582.15	3,182	5,724
579.60	1,133	587	582.20	3,239	5,884
579.65	1,160	644	582.25	3,296	6,048
579.70	1,187	703	582.30	3,354	6,214
579.75	1,215	763	582.35	3,412	6,383
579.80	1,243	825	582.40	3,471	6,555
579.85	1,272	888	582.45	3,530	6,730
579.90	1,301	952	582.50	3,590	6,908
579.95	1,330	1,018	582.55	3,650	7,089
580.00	1,359	1,085	582.60	3,711	7,273
580.05	1,389	1,154	582.65	3,772	7,460
580.10	1,419	1,224	582.70	3,834	7,651
580.15	1,449	1,295	582.75	3,896	7,844
580.20	1,480	1,369	582.80	3,959	8,040
580.25	1,511	1,443	582.85	4,022	8,240
580.30	1,542	1,520	582.90	4,086	8,442
580.35	1,574	1,598	582.95	4,150	8,648
580.40	1,606	1,677	583.00	4,215	8,857
580.45	1,638	1,758			
580.50	1,671	1,841			
580.55	1,704	1,925			
580.60	1,737	2,011			
580.65	1,771	2,099			
580.70	1,805	2,189			
580.75	1,839	2,280			
580.80	1,874	2,372			
580.85	1,908	2,467			
580.90	1,944	2,563			
580.95	1,979	2,661			
581.00	2,015	2,761			
581.05	2,060	2,863			
581.10	2,106	2,967			
581.15	2,152	3,074			
581.20	2,199	3,182			
581.25	2,246	3,294			
581.30	2,294	3,407			
581.35	2,342	3,523			
581.40	2,391	3,641			
581.45	2,440	3,762			
581.50	2,490	3,885			
581.55	2,540	4,011			

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Type II 24-hr 1-yr Rainfall=2.58"

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Summary for Pond 4P: Infiltration Basin 2

Inflow Area = 11.040 ac, 13.68% Impervious, Inflow Depth = 0.13" for 1-yr event
Inflow = 0.35 cfs @ 12.84 hrs, Volume= 0.124 af
Outflow = 0.34 cfs @ 12.95 hrs, Volume= 0.124 af, Atten= 4%, Lag= 6.6 min
Discarded = 0.34 cfs @ 12.95 hrs, Volume= 0.124 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 578.01' @ 12.95 hrs Surf.Area= 8,369 sf Storage= 72 cf

Plug-Flow detention time= 3.6 min calculated for 0.124 af (100% of inflow)
Center-of-Mass det. time= 3.6 min (1,027.4 - 1,023.8)

Volume	Invert	Avail.Storage	Storage Description
#1	578.00'	73,283 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
578.00	8,351	444.0	0	0	8,351
580.00	13,197	519.0	21,364	21,364	14,179
582.00	18,703	582.0	31,740	53,104	19,807
583.00	21,691	613.0	20,179	73,283	22,815

Device	Routing	Invert	Outlet Devices
#1	Discarded	578.00'	10.000 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 0.00' Phase-In= 0.01'
#2	Primary	581.00'	10.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=1.66 cfs @ 12.95 hrs HW=578.01' (Free Discharge)
↑1=Exfiltration (Controls 1.66 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=578.00' (Free Discharge)
↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Post Development Conditions Model

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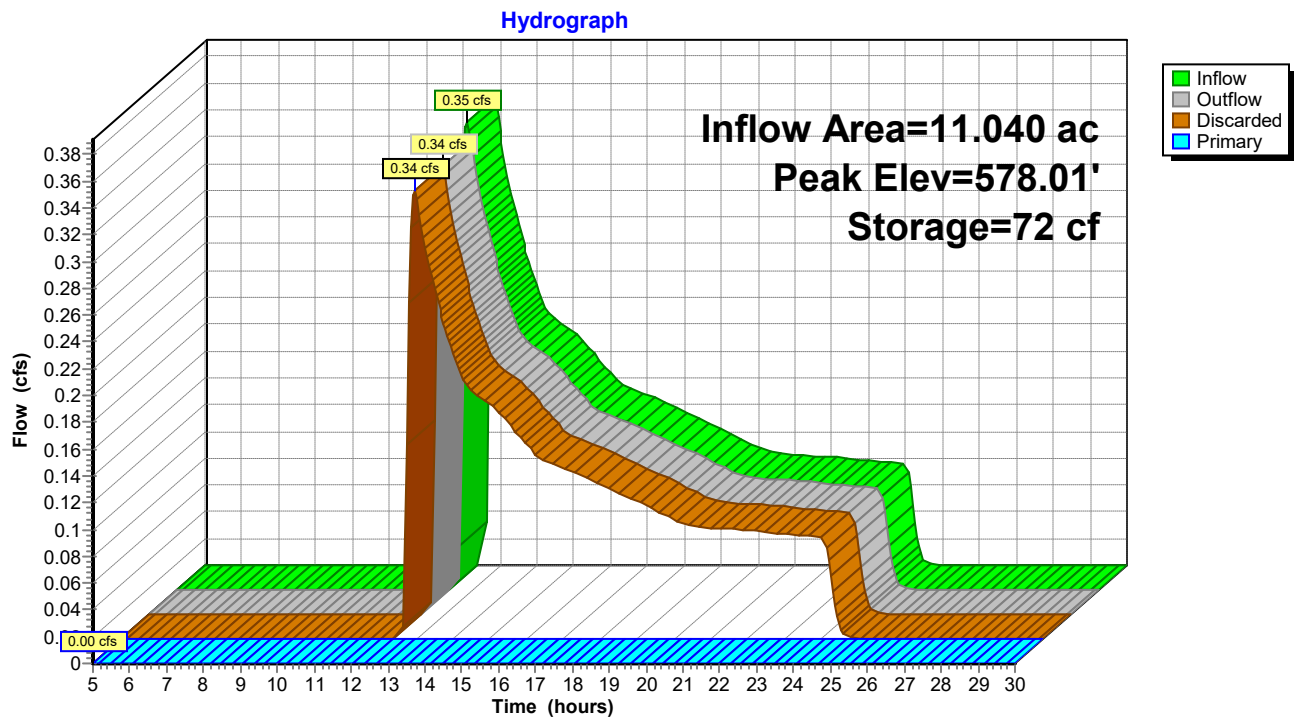
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Type II 24-hr 1-yr Rainfall=2.58"

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Pond 4P: Infiltration Basin 2



Post Development Conditions Model

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Type II 24-hr 1-yr Rainfall=2.58"

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Stage-Area-Storage for Pond 4P: Infiltration Basin 2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
578.00	8,351	0	580.60	14,748	29,743
578.05	8,459	420	580.65	14,881	30,484
578.10	8,567	846	580.70	15,015	31,231
578.15	8,676	1,277	580.75	15,150	31,986
578.20	8,786	1,714	580.80	15,284	32,746
578.25	8,896	2,156	580.85	15,420	33,514
578.30	9,008	2,603	580.90	15,556	34,288
578.35	9,119	3,056	580.95	15,693	35,070
578.40	9,232	3,515	581.00	15,830	35,858
578.45	9,345	3,980	581.05	15,968	36,653
578.50	9,459	4,450	581.10	16,107	37,455
578.55	9,574	4,925	581.15	16,246	38,263
578.60	9,689	5,407	581.20	16,386	39,079
578.65	9,805	5,894	581.25	16,526	39,902
578.70	9,922	6,387	581.30	16,667	40,732
578.75	10,039	6,887	581.35	16,809	41,569
578.80	10,157	7,391	581.40	16,951	42,413
578.85	10,276	7,902	581.45	17,093	43,264
578.90	10,395	8,419	581.50	17,237	44,122
578.95	10,515	8,942	581.55	17,381	44,987
579.00	10,636	9,471	581.60	17,525	45,860
579.05	10,757	10,005	581.65	17,670	46,740
579.10	10,880	10,546	581.70	17,816	47,627
579.15	11,003	11,093	581.75	17,962	48,522
579.20	11,126	11,647	581.80	18,109	49,423
579.25	11,250	12,206	581.85	18,257	50,332
579.30	11,375	12,772	581.90	18,405	51,249
579.35	11,501	13,343	581.95	18,554	52,173
579.40	11,627	13,922	582.00	18,703	53,104
579.45	11,754	14,506	582.05	18,847	54,043
579.50	11,882	15,097	582.10	18,992	54,989
579.55	12,010	15,694	582.15	19,137	55,942
579.60	12,139	16,298	582.20	19,283	56,903
579.65	12,269	16,908	582.25	19,429	57,871
579.70	12,400	17,525	582.30	19,576	58,846
579.75	12,531	18,148	582.35	19,724	59,828
579.80	12,663	18,778	582.40	19,872	60,818
579.85	12,795	19,415	582.45	20,020	61,815
579.90	12,928	20,058	582.50	20,169	62,820
579.95	13,062	20,708	582.55	20,319	63,832
580.00	13,197	21,364	582.60	20,469	64,852
580.05	13,323	22,027	582.65	20,620	65,879
580.10	13,450	22,696	582.70	20,771	66,914
580.15	13,577	23,372	582.75	20,923	67,956
580.20	13,705	24,054	582.80	21,076	69,006
580.25	13,833	24,742	582.85	21,229	70,064
580.30	13,962	25,437	582.90	21,382	71,129
580.35	14,091	26,139	582.95	21,536	72,202
580.40	14,222	26,846	583.00	21,691	73,283
580.45	14,352	27,561			
580.50	14,484	28,282			
580.55	14,616	29,009			

Post Development Conditions Model

Type II 24-hr 1-yr Rainfall=2.58"

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Summary for Pond 5P: Infiltration Basin A

Inflow Area = 15.960 ac, 3.88% Impervious, Inflow Depth = 0.27" for 1-yr event
 Inflow = 1.93 cfs @ 12.35 hrs, Volume= 0.361 af
 Outflow = 0.85 cfs @ 12.99 hrs, Volume= 0.361 af, Atten= 56%, Lag= 38.2 min
 Discarded = 0.85 cfs @ 12.99 hrs, Volume= 0.361 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 592.45' @ 12.99 hrs Surf.Area= 3,669 sf Storage= 2,043 cf

Plug-Flow detention time= 16.8 min calculated for 0.360 af (100% of inflow)
 Center-of-Mass det. time= 16.8 min (972.2 - 955.5)

Volume	Invert	Avail.Storage	Storage Description		
#1	592.00'	38,563 cf	Custom Stage Data (Irregular) Listed below		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
592.00	2,850	325.0	0	0	2,850
594.00	6,500	405.0	9,103	9,103	7,554
596.00	10,955	486.0	17,262	26,365	13,366
597.00	13,485	526.0	12,198	38,563	16,627

Device	Routing	Invert	Outlet Devices											
#1	Discarded	592.00'	10.000 in/hr Exfiltration over Surface area											
			Conductivity to Groundwater Elevation = 0.00' Phase-In= 0.01'											
#2	Primary	594.80'	50.0' long x 2.0' breadth Broad-Crested Rectangular Weir											
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00											
			2.50 3.00 3.50											
			Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88											
			2.85 3.07 3.20 3.32											

Discarded OutFlow Max=0.85 cfs @ 12.99 hrs HW=592.45' (Free Discharge)

↑ **1=Exfiltration** (Controls 0.85 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=592.00' (Free Discharge)

↑ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Post Development Conditions Model

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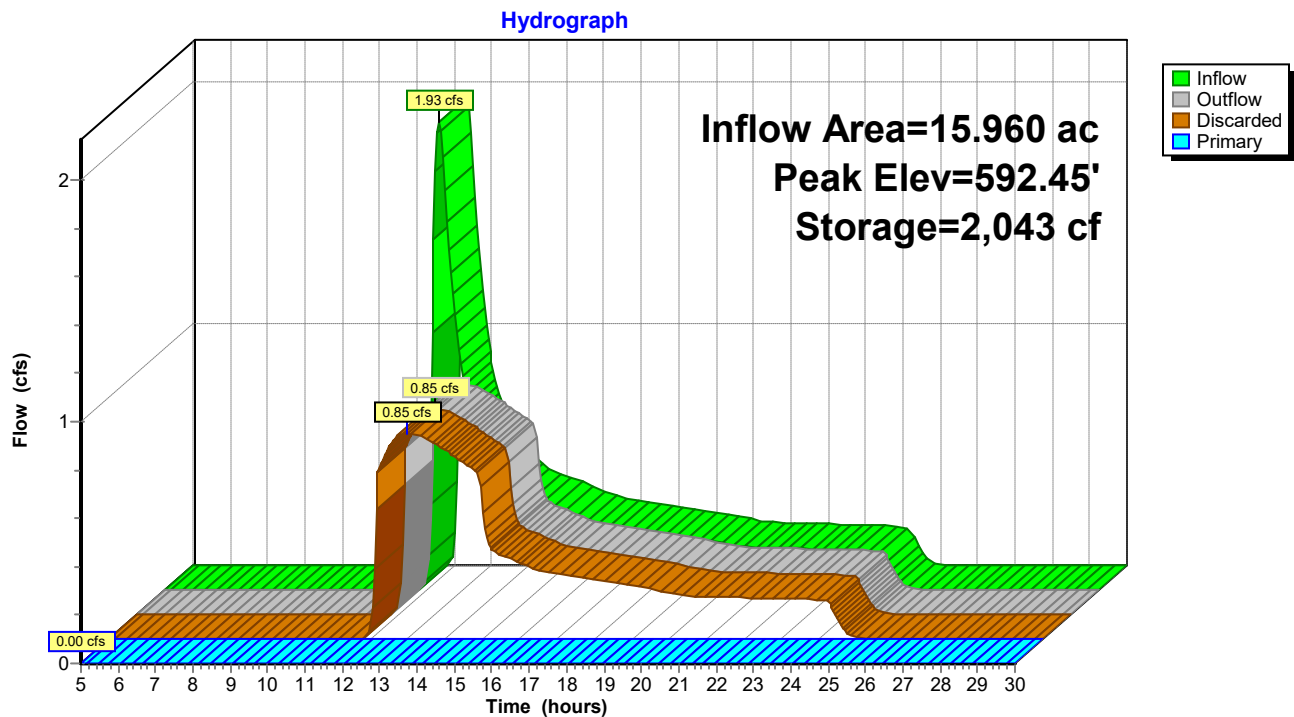
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Type II 24-hr 1-yr Rainfall=2.58"

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Pond 5P: Infiltration Basin A



Post Development Conditions Model

Type II 24-hr 1-yr Rainfall=2.58"

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Stage-Area-Storage for Pond 5P: Infiltration Basin A

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
592.00	2,850	0	594.60	7,837	14,281
592.05	2,941	228	594.65	7,948	14,713
592.10	3,033	455	594.70	8,059	15,145
592.15	3,124	683	594.75	8,171	15,576
592.20	3,215	910	594.80	8,282	16,008
592.25	3,306	1,138	594.85	8,393	16,439
592.30	3,397	1,365	594.90	8,505	16,871
592.35	3,489	1,593	594.95	8,616	17,302
592.40	3,580	1,821	595.00	8,728	17,734
592.45	3,671	2,048	595.05	8,839	18,165
592.50	3,763	2,276	595.10	8,950	18,597
592.55	3,854	2,503	595.15	9,062	19,029
592.60	3,945	2,731	595.20	9,173	19,460
592.65	4,036	2,958	595.25	9,284	19,892
592.70	4,128	3,186	595.30	9,396	20,323
592.75	4,219	3,414	595.35	9,507	20,755
592.80	4,310	3,641	595.40	9,618	21,186
592.85	4,401	3,869	595.45	9,730	21,618
592.90	4,492	4,096	595.50	9,841	22,049
592.95	4,584	4,324	595.55	9,953	22,481
593.00	4,675	4,551	595.60	10,064	22,913
593.05	4,766	4,779	595.65	10,175	23,344
593.10	4,858	5,006	595.70	10,287	23,776
593.15	4,949	5,234	595.75	10,398	24,207
593.20	5,040	5,462	595.80	10,509	24,639
593.25	5,131	5,689	595.85	10,621	25,070
593.30	5,222	5,917	595.90	10,732	25,502
593.35	5,314	6,144	595.95	10,844	25,933
593.40	5,405	6,372	596.00	10,955	26,365
593.45	5,496	6,599	596.05	11,081	26,795
593.50	5,588	6,827	596.10	11,208	27,585
593.55	5,679	7,055	596.15	11,334	28,195
593.60	5,770	7,282	596.20	11,461	28,805
593.65	5,861	7,510	596.25	11,588	29,415
593.70	5,953	7,737	596.30	11,714	30,024
593.75	6,044	7,965	596.35	11,841	30,634
593.80	6,135	8,192	596.40	11,967	31,244
593.85	6,226	8,420	596.45	12,094	31,854
593.90	6,317	8,648	596.50	12,220	32,464
593.95	6,409	8,875	596.55	12,346	33,074
594.00	6,500	9,103	596.60	12,473	33,684
594.05	6,611	9,534	596.65	12,599	34,294
594.10	6,723	9,966	596.70	12,726	34,904
594.15	6,834	10,397	596.75	12,853	35,514
594.20	6,946	10,829	596.80	12,979	36,124
594.25	7,057	11,260	596.85	13,106	36,733
594.30	7,168	11,692	596.90	13,232	37,343
594.35	7,280	12,124	596.95	13,359	37,953
594.40	7,391	12,555	597.00	13,485	38,563
594.45	7,502	12,987			
594.50	7,614	13,418			
594.55	7,725	13,850			

Post Development Conditions Model

Type II 24-hr 1-yr Rainfall=2.58"

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Summary for Pond 6P: Pre-Treat Basin 2-2

Inflow Area = 4.470 ac, 3.13% Impervious, Inflow Depth > 0.03" for 1-yr event
 Inflow = 0.20 cfs @ 12.03 hrs, Volume= 0.012 af
 Outflow = 0.00 cfs @ 14.95 hrs, Volume= 0.002 af, Atten= 97%, Lag= 175.0 min
 Primary = 0.00 cfs @ 14.95 hrs, Volume= 0.002 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 582.00' @ 14.95 hrs Surf.Area= 586 sf Storage= 414 cf

Plug-Flow detention time= 562.2 min calculated for 0.002 af (18% of inflow)

Center-of-Mass det. time= 348.0 min (1,123.4 - 775.5)

Volume	Invert	Avail.Storage	Storage Description
#1	581.00'	1,214 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
581.00	262	60.0	0	0	262
583.00	1,038	120.0	1,214	1,214	1,140

Device	Routing	Invert	Outlet Devices
#1	Primary	582.00'	20.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.00 cfs @ 14.95 hrs HW=582.00' (Free Discharge)

↑1=Broad-Crested Rectangular Weir (Weir Controls 0.00 cfs @ 0.07 fps)

Post Development Conditions Model

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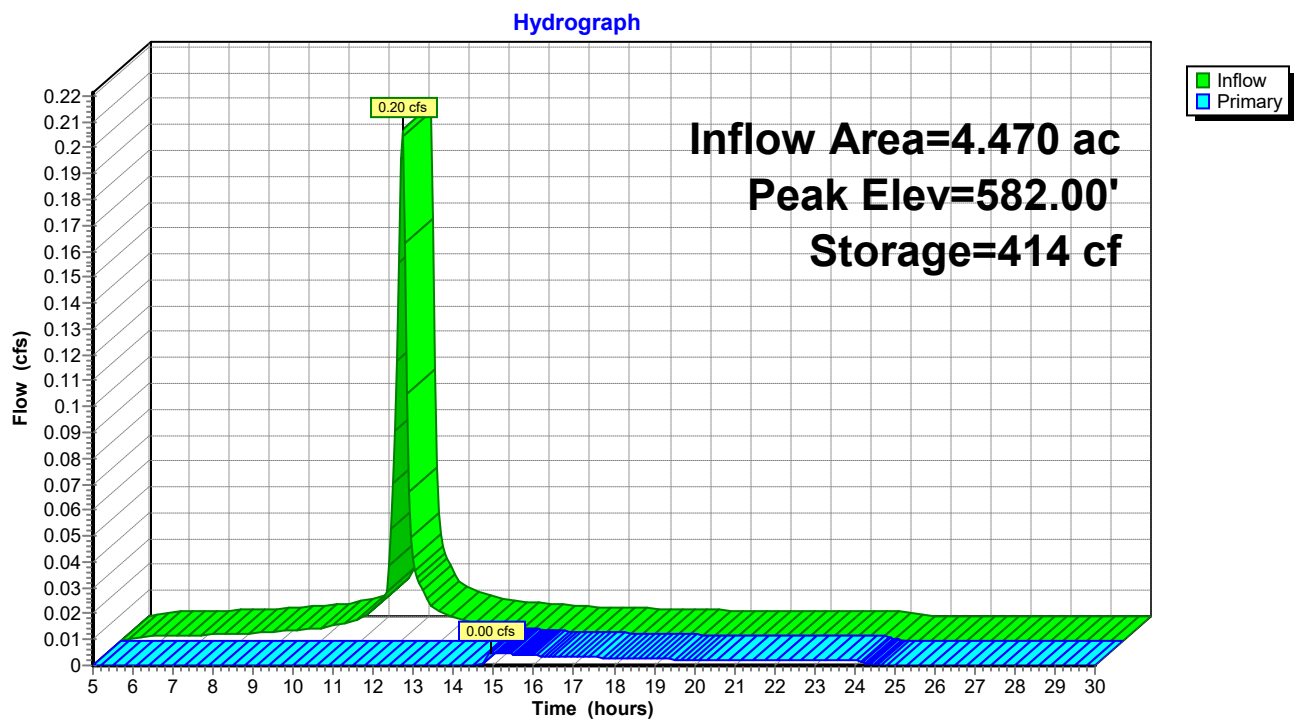
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Type II 24-hr 1-yr Rainfall=2.58"

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Pond 6P: Pre-Treat Basin 2-2



Post Development Conditions Model*Type II 24-hr 1-yr Rainfall=2.58"*

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Stage-Area-Storage for Pond 6P: Pre-Treat Basin 2-2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
581.00	262	0	582.04	601	437
581.02	267	5	582.06	609	449
581.04	272	11	582.08	617	461
581.06	278	16	582.10	625	474
581.08	283	22	582.12	633	486
581.10	289	28	582.14	641	499
581.12	294	33	582.16	649	512
581.14	300	39	582.18	658	525
581.16	305	45	582.20	666	538
581.18	311	51	582.22	674	552
581.20	316	58	582.24	683	565
581.22	322	64	582.26	691	579
581.24	328	71	582.28	699	593
581.26	334	77	582.30	708	607
581.28	340	84	582.32	716	621
581.30	346	91	582.34	725	636
581.32	352	98	582.36	734	650
581.34	358	105	582.38	742	665
581.36	364	112	582.40	751	680
581.38	370	119	582.42	760	695
581.40	376	127	582.44	769	710
581.42	382	135	582.46	778	726
581.44	389	142	582.48	787	741
581.46	395	150	582.50	796	757
581.48	401	158	582.52	805	773
581.50	408	166	582.54	814	789
581.52	414	174	582.56	823	806
581.54	421	183	582.58	832	822
581.56	427	191	582.60	842	839
581.58	434	200	582.62	851	856
581.60	441	209	582.64	860	873
581.62	448	217	582.66	870	890
581.64	454	226	582.68	879	908
581.66	461	236	582.70	889	926
581.68	468	245	582.72	898	943
581.70	475	254	582.74	908	962
581.72	482	264	582.76	918	980
581.74	489	274	582.78	927	998
581.76	496	283	582.80	937	1,017
581.78	503	293	582.82	947	1,036
581.80	511	304	582.84	957	1,055
581.82	518	314	582.86	967	1,074
581.84	525	324	582.88	977	1,093
581.86	533	335	582.90	987	1,113
581.88	540	346	582.92	997	1,133
581.90	548	357	582.94	1,007	1,153
581.92	555	368	582.96	1,017	1,173
581.94	563	379	582.98	1,028	1,194
581.96	570	390	583.00	1,038	1,214
581.98	578	402			
582.00	586	413			
582.02	594	425			

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Type II 24-hr 1-yr Rainfall=2.58"

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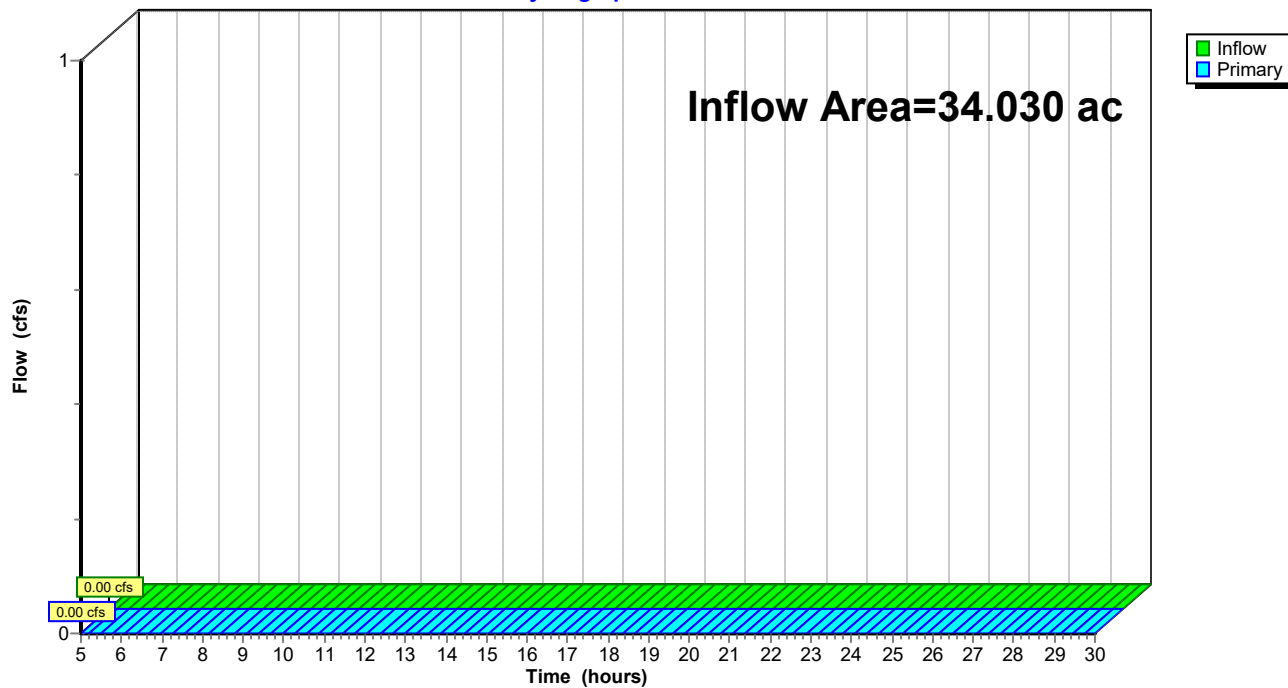
Summary for Link 1L: DP-1

Inflow Area = 34.030 ac, 9.87% Impervious, Inflow Depth = 0.00" for 1-yr event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Link 1L: DP-1

Hydrograph



Post Development Conditions Model

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Type II 24-hr 10-yr Rainfall=4.63"

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Time span=5.00-30.00 hrs, dt=0.05 hrs, 501 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: DA-1A	Runoff Area=15.960 ac 3.88% Impervious Runoff Depth=1.28" Flow Length=2,344' Tc=29.7 min CN=63 Runoff=15.89 cfs 1.702 af
Subcatchment 2S: DA-1B	Runoff Area=3.870 ac 15.76% Impervious Runoff Depth=0.80" Flow Length=850' Tc=15.2 min CN=55 Runoff=3.12 cfs 0.259 af
Subcatchment 3S: DA-1C	Runoff Area=4.410 ac 1.81% Impervious Runoff Depth=0.03" Flow Length=1,300' Tc=44.7 min CN=34 Runoff=0.02 cfs 0.010 af
Subcatchment 4S: DA-1D	Runoff Area=0.060 ac 100.00% Impervious Runoff Depth>4.26" Tc=6.0 min CN=98 Runoff=0.38 cfs 0.021 af
Subcatchment 5S: DA-1E	Runoff Area=1.380 ac 27.54% Impervious Runoff Depth=0.70" Tc=6.0 min CN=53 Runoff=1.38 cfs 0.080 af
Subcatchment 6S: DA-1F	Runoff Area=2.300 ac 33.91% Impervious Runoff Depth=1.48" Flow Length=252' Tc=11.9 min CN=66 Runoff=4.70 cfs 0.284 af
Subcatchment 7S: DA-1G	Runoff Area=0.700 ac 37.14% Impervious Runoff Depth=2.07" Tc=6.0 min CN=74 Runoff=2.50 cfs 0.121 af
Subcatchment 8S: DA-1H	Runoff Area=0.450 ac 37.78% Impervious Runoff Depth=2.15" Tc=6.0 min CN=75 Runoff=1.67 cfs 0.081 af
Subcatchment 9S: DA-1I	Runoff Area=1.780 ac 13.48% Impervious Runoff Depth=1.41" Flow Length=430' Tc=12.3 min CN=65 Runoff=3.40 cfs 0.210 af
Subcatchment 10S: DA-1J	Runoff Area=3.120 ac 5.13% Impervious Runoff Depth=1.15" Flow Length=190' Tc=12.7 min CN=61 Runoff=4.58 cfs 0.300 af
Reach 3R: Culvert Under Subdivision	Avg. Flow Depth=0.33' Max Vel=1.40 fps Inflow=0.38 cfs 0.032 af 15.0" Round Pipe n=0.025 L=180.0' S=0.0050 '/' Capacity=2.38 cfs Outflow=0.36 cfs 0.031 af
Pond 1P: Pre-Treat Basin 1	Peak Elev=593.42' Storage=3,668 cf Inflow=7.15 cfs 0.548 af Outflow=6.81 cfs 0.480 af
Pond 2P: Infiltration Basin 1	Peak Elev=590.87' Storage=4,520 cf Inflow=6.81 cfs 0.480 af Discarded=1.17 cfs 0.480 af Primary=0.00 cfs 0.000 af Outflow=1.17 cfs 0.480 af
Pond 3P: Pre-Treat Basin 2-1	Peak Elev=581.47' Storage=3,822 cf Inflow=12.25 cfs 0.785 af Outflow=11.93 cfs 0.716 af
Pond 4P: Infiltration Basin 2	Peak Elev=578.90' Storage=8,438 cf Inflow=12.23 cfs 0.738 af Discarded=2.41 cfs 0.738 af Primary=0.00 cfs 0.000 af Outflow=2.41 cfs 0.738 af
Pond 5P: Infiltration Basin A	Peak Elev=594.99' Storage=17,628 cf Inflow=15.89 cfs 1.702 af Discarded=2.02 cfs 1.370 af Primary=10.32 cfs 0.332 af Outflow=12.34 cfs 1.702 af

Post Development Conditions Model

Type II 24-hr 10-yr Rainfall=4.63"

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Pond 6P: Pre-Treat Basin 2-2

Peak Elev=582.04' Storage=436 cf Inflow=0.36 cfs 0.031 af
Outflow=0.36 cfs 0.022 af

Link 1L: DP-1

Inflow=10.32 cfs 0.332 af
Primary=10.32 cfs 0.332 af

Total Runoff Area = 34.030 ac Runoff Volume = 3.067 af Average Runoff Depth = 1.08"
90.13% Pervious = 30.670 ac 9.87% Impervious = 3.360 ac

Post Development Conditions Model

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Type II 24-hr 10-yr Rainfall=4.63"

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Summary for Subcatchment 1S: DA-1A

Runoff = 15.89 cfs @ 12.27 hrs, Volume= 1.702 af, Depth= 1.28"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Type II 24-hr 10-yr Rainfall=4.63"

Area (ac)	CN	Description
* 0.620	98	Paved parking, driveways, roofs
1.770	74	>75% Grass cover, Good, HSG C
1.150	30	Meadow, non-grazed, HSG A
5.340	58	Meadow, non-grazed, HSG B
0.090	71	Meadow, non-grazed, HSG C
4.160	60	Woods, Fair, HSG B
2.080	73	Woods, Fair, HSG C
0.750	79	Woods, Fair, HSG D
15.960	63	Weighted Average
15.340		96.12% Pervious Area
0.620		3.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	100	0.0600	0.18		Sheet Flow, Sheet Flow Grass: Dense n= 0.240 P2= 3.10"
8.7	780	0.0894	1.49		Shallow Concentrated Flow, Shallow Concentrated Flow 1 Woodland Kv= 5.0 fps
2.5	349	0.0201	2.28		Shallow Concentrated Flow, Shallow Concentrated Flow 2 Unpaved Kv= 16.1 fps
1.0	141	0.0107	2.39	14.34	Channel Flow, Channel Flow 1 - Bypass Swale Area= 6.0 sf Perim= 30.0' r= 0.20' n= 0.022 Earth, clean & straight
5.6	599	0.0121	1.77		Shallow Concentrated Flow, Shallow Concentrated Flow 3 Unpaved Kv= 16.1 fps
2.6	375	0.0140	2.39	19.09	Channel Flow, Channel Flow 2 - Cascade Creek Area= 8.0 sf Perim= 20.0' r= 0.40' n= 0.040 Winding stream, pools & shoals
29.7	2,344	Total			

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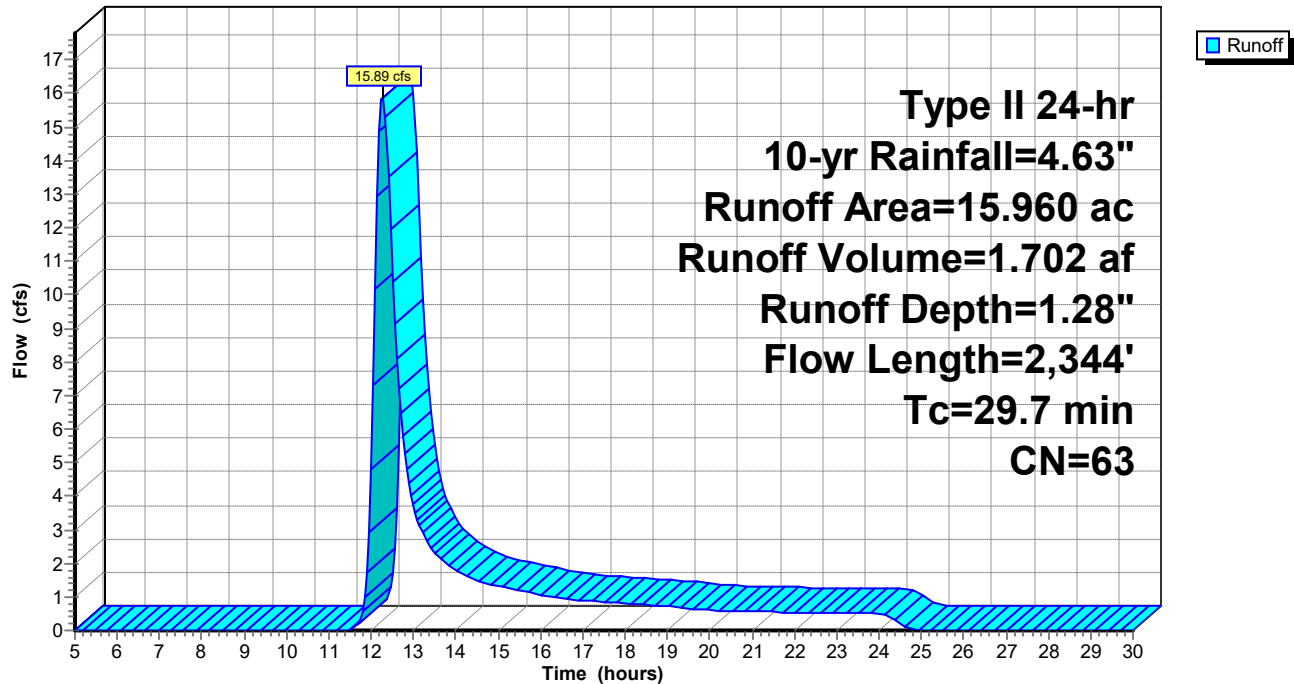
Type II 24-hr 10-yr Rainfall=4.63"

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Subcatchment 1S: DA-1A

Hydrograph



Post Development Conditions Model

Type II 24-hr 10-yr Rainfall=4.63"

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Summary for Subcatchment 2S: DA-1B

Runoff = 3.12 cfs @ 12.11 hrs, Volume= 0.259 af, Depth= 0.80"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Type II 24-hr 10-yr Rainfall=4.63"

Area (ac)	CN	Description
0.610	98	Paved parking, driveways, roofs
0.420	39	>75% Grass cover, Good, HSG A
0.760	61	>75% Grass cover, Good, HSG B
1.040	30	Meadow, non-grazed, HSG A
1.040	58	Meadow, non-grazed, HSG B
3.870	55	Weighted Average
3.260		84.24% Pervious Area
0.610		15.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	100	0.0300	0.14		Sheet Flow, Sheet Flow Grass: Dense n= 0.240 P2= 3.10"
1.8	279	0.0260	2.60		Shallow Concentrated Flow, Shallow Concentrated Flow Unpaved Kv= 16.1 fps
1.1	471	0.0377	7.12	42.72	Channel Flow, Channel Flow - Roadside Swale Area= 6.0 sf Perim= 15.0' r= 0.40' n= 0.022 Earth, clean & straight
15.2	850	Total			

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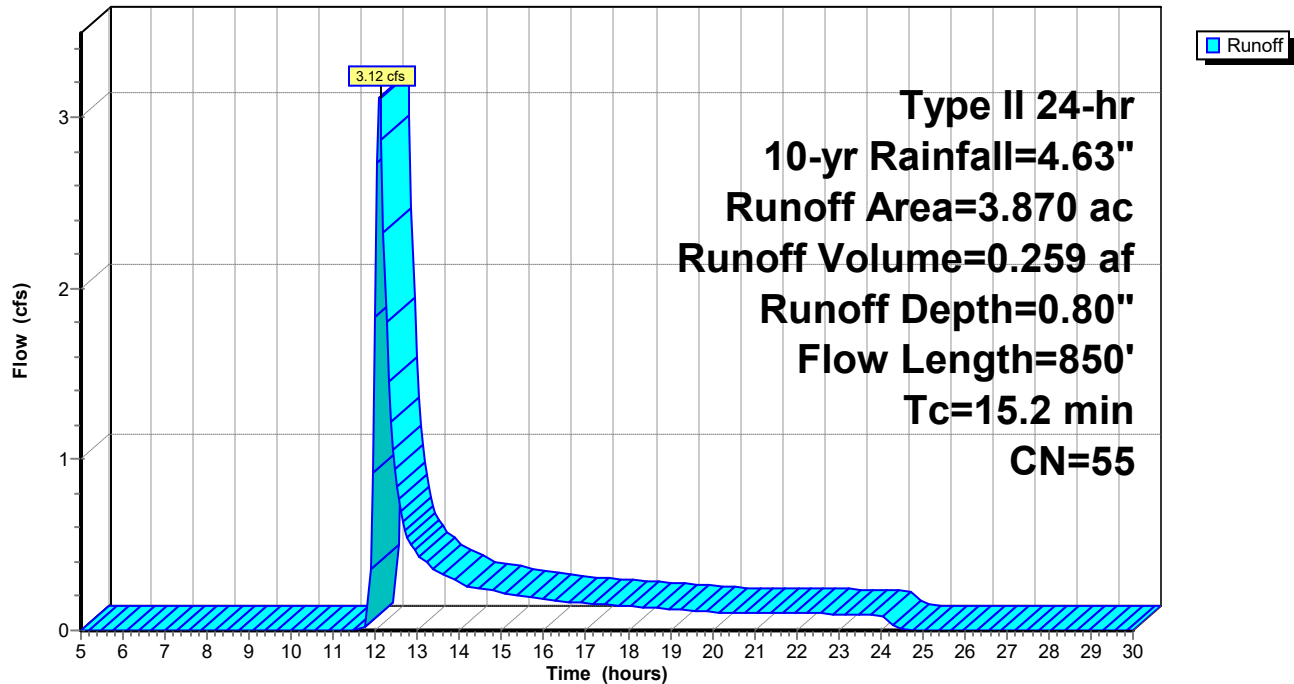
Type II 24-hr 10-yr Rainfall=4.63"

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Subcatchment 2S: DA-1B

Hydrograph



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Type II 24-hr 10-yr Rainfall=4.63"

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Summary for Subcatchment 3S: DA-1C

Runoff = 0.02 cfs @ 24.04 hrs, Volume= 0.010 af, Depth= 0.03"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

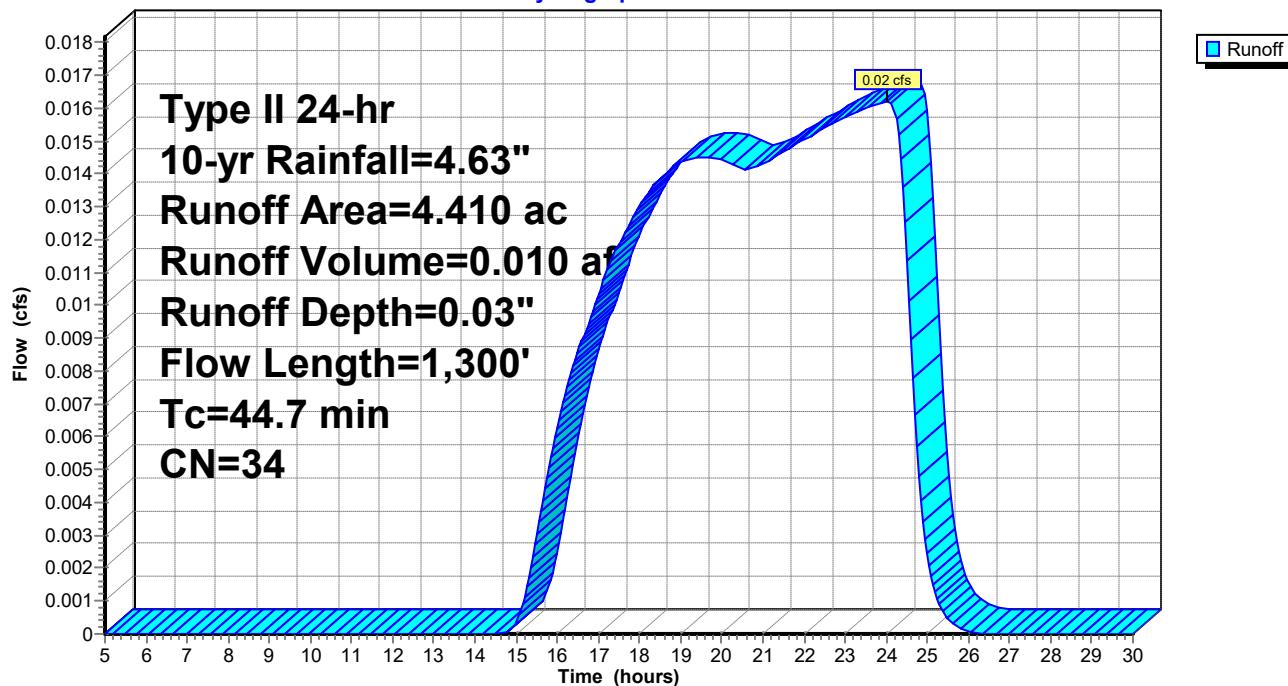
Type II 24-hr 10-yr Rainfall=4.63"

Area (ac)	CN	Description
0.080	98	Paved parking, driveways, roofs
2.800	30	Meadow, non-grazed, HSG A
0.410	39	>75% Grass cover, Good, HSG A
1.120	36	Woods, Fair, HSG A
4.410	34	Weighted Average
4.330		98.19% Pervious Area
0.080		1.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.0	100	0.0050	0.04		Sheet Flow, Sheet Flow
					Woods: Light underbrush n= 0.400 P2= 3.10"
6.7	1,200	0.0346	2.99		Shallow Concentrated Flow, Shallow Concentrated Flow
					Unpaved Kv= 16.1 fps
44.7	1,300	Total			

Subcatchment 3S: DA-1C

Hydrograph



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Type II 24-hr 10-yr Rainfall=4.63"

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Summary for Subcatchment 4S: DA-1D

Runoff = 0.38 cfs @ 11.96 hrs, Volume= 0.021 af, Depth> 4.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

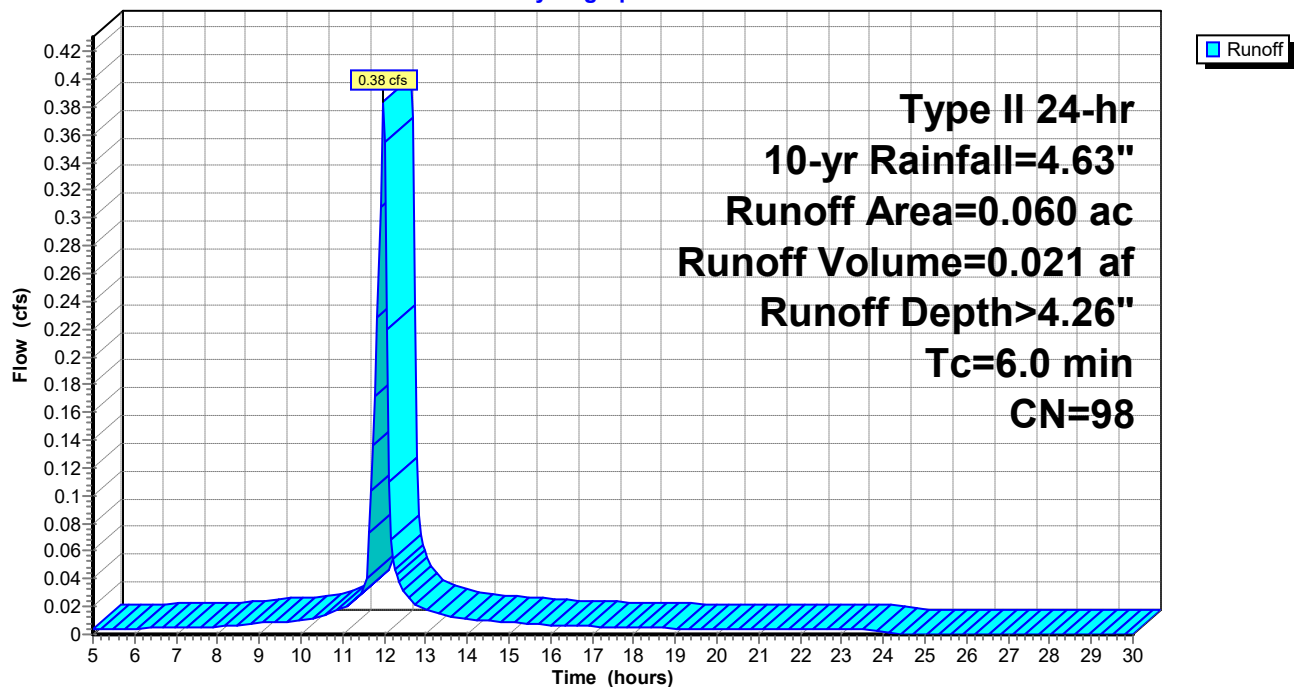
Type II 24-hr 10-yr Rainfall=4.63"

Area (ac)	CN	Description
0.060	98	Paved parking, driveways, roofs
0.060		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Direct Entry

Subcatchment 4S: DA-1D

Hydrograph



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Type II 24-hr 10-yr Rainfall=4.63"

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Summary for Subcatchment 5S: DA-1E

Runoff = 1.38 cfs @ 12.00 hrs, Volume= 0.080 af, Depth= 0.70"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

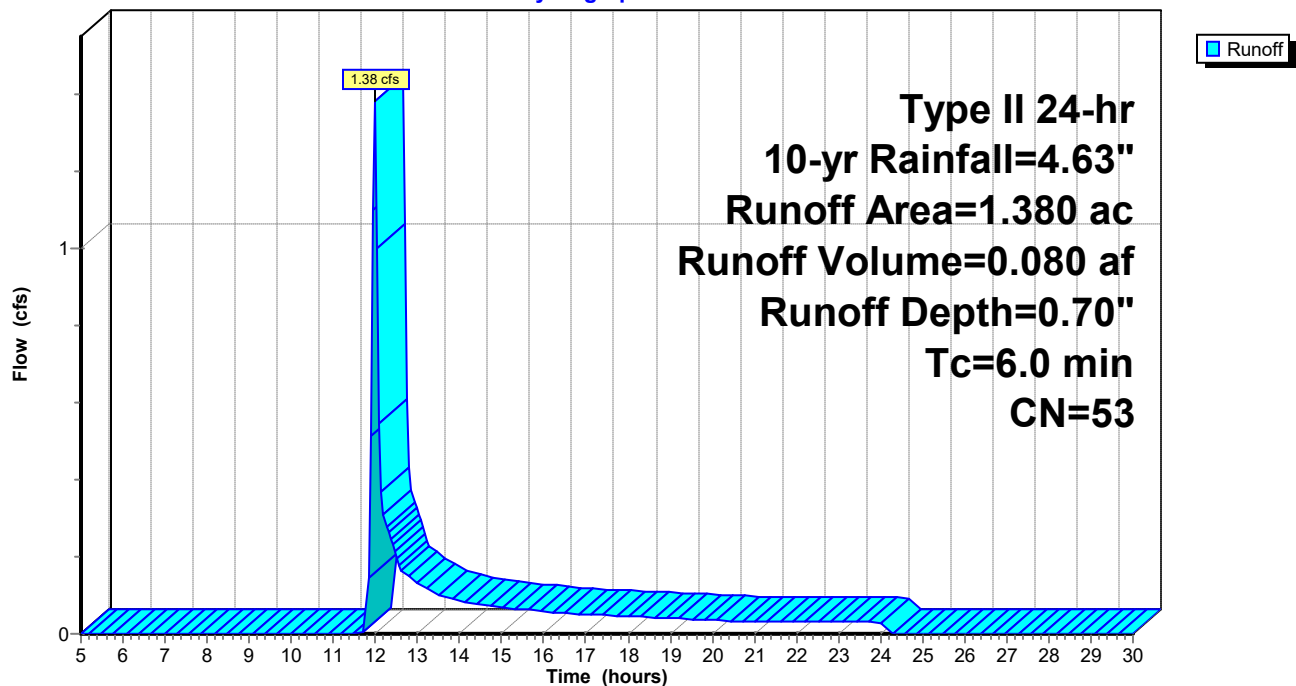
Type II 24-hr 10-yr Rainfall=4.63"

Area (ac)	CN	Description
0.380	98	Paved parking, driveways, roofs
0.590	39	>75% Grass cover, Good, HSG A
0.090	36	Woods, Fair, HSG A
0.320	30	Meadow, non-grazed, HSG A
1.380	53	Weighted Average
1.000		72.46% Pervious Area
0.380		27.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Direct Entry

Subcatchment 5S: DA-1E

Hydrograph



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Type II 24-hr 10-yr Rainfall=4.63"

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Summary for Subcatchment 6S: DA-1F

Runoff = 4.70 cfs @ 12.05 hrs, Volume= 0.284 af, Depth= 1.48"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

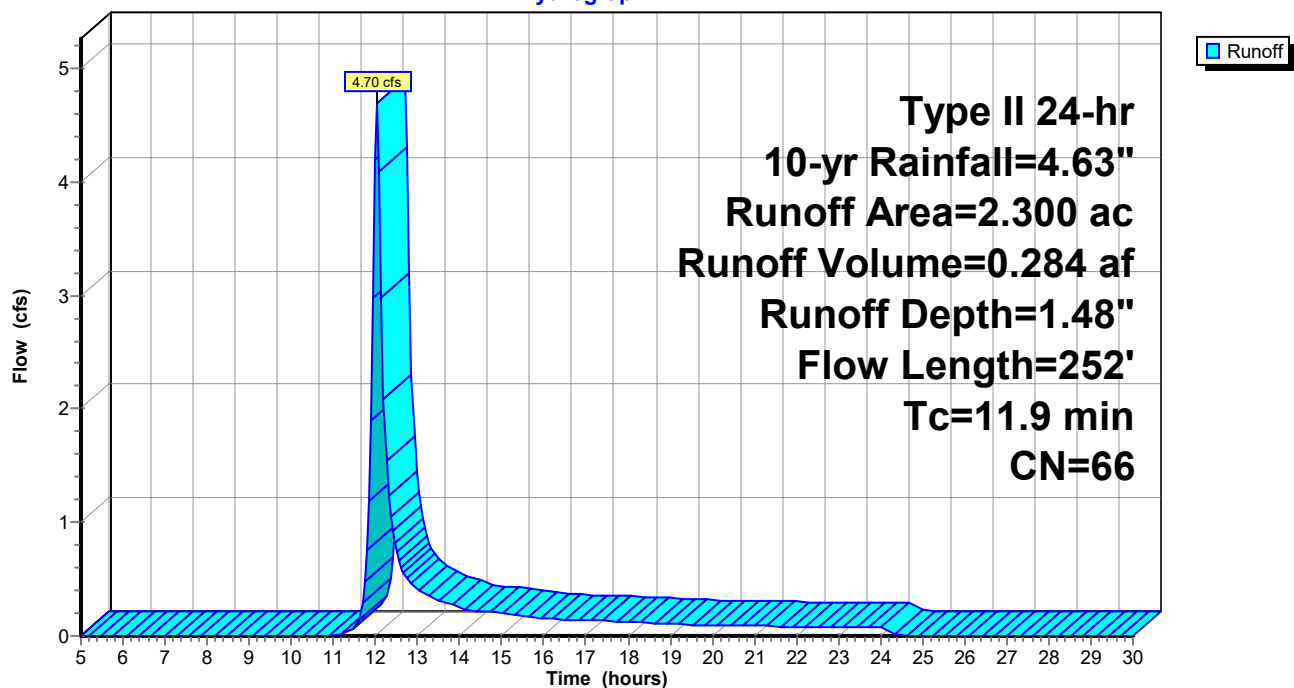
Type II 24-hr 10-yr Rainfall=4.63"

Area (ac)	CN	Description
0.780	98	Paved parking, driveways, roofs
0.930	61	>75% Grass cover, Good, HSG B
0.240	36	Woods, Fair, HSG A
0.350	30	Meadow, non-grazed, HSG A
2.300	66	Weighted Average
1.520		66.09% Pervious Area
0.780		33.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	50	0.0100	0.08		Sheet Flow, Sheet Flow
					Grass: Dense n= 0.240 P2= 3.10"
0.9	202	0.0545	3.76		Shallow Concentrated Flow, Shallow Concentrated Flow
					Unpaved Kv= 16.1 fps
11.9	252	Total			

Subcatchment 6S: DA-1F

Hydrograph



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Summary for Subcatchment 7S: DA-1G

Runoff = 2.50 cfs @ 11.97 hrs, Volume= 0.121 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

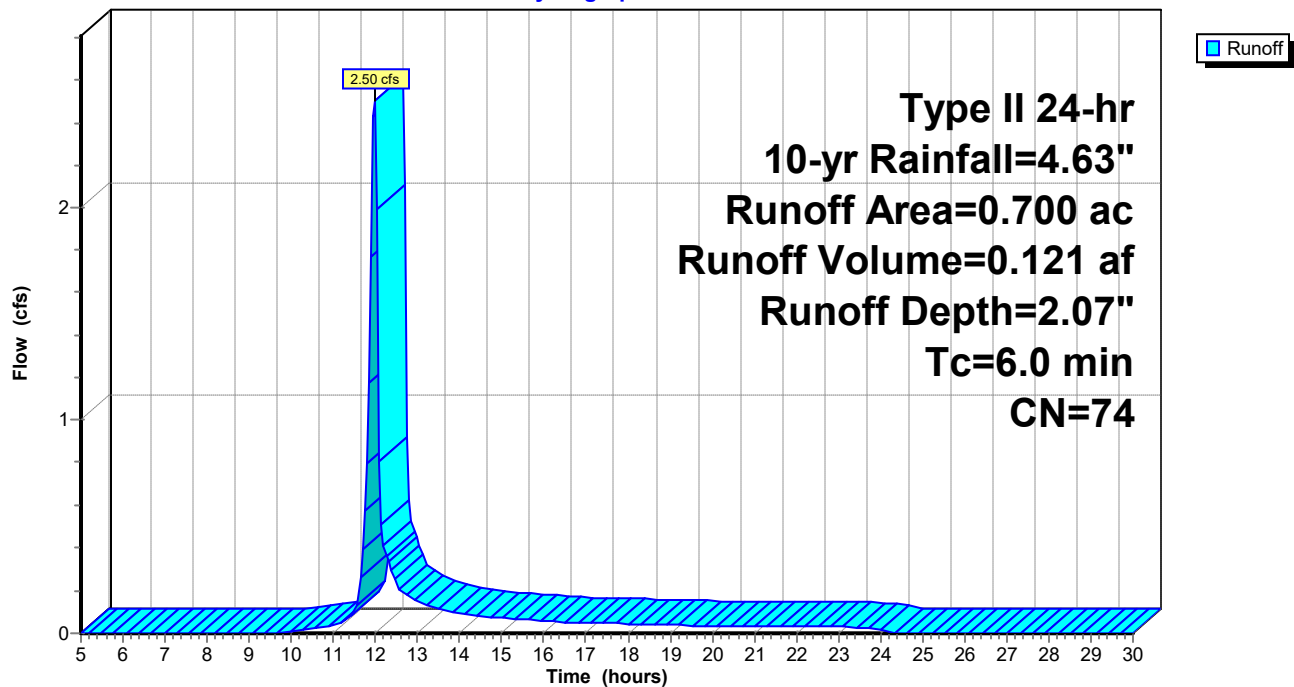
Type II 24-hr 10-yr Rainfall=4.63"

Area (ac)	CN	Description
0.260	98	Paved parking, driveways, roofs
0.320	61	>75% Grass cover, Good, HSG B
0.120	58	Meadow, non-grazed, HSG B
0.700	74	Weighted Average
0.440		62.86% Pervious Area
0.260		37.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Direct Entry

Subcatchment 7S: DA-1G

Hydrograph



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Summary for Subcatchment 8S: DA-1H

Runoff = 1.67 cfs @ 11.97 hrs, Volume= 0.081 af, Depth= 2.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

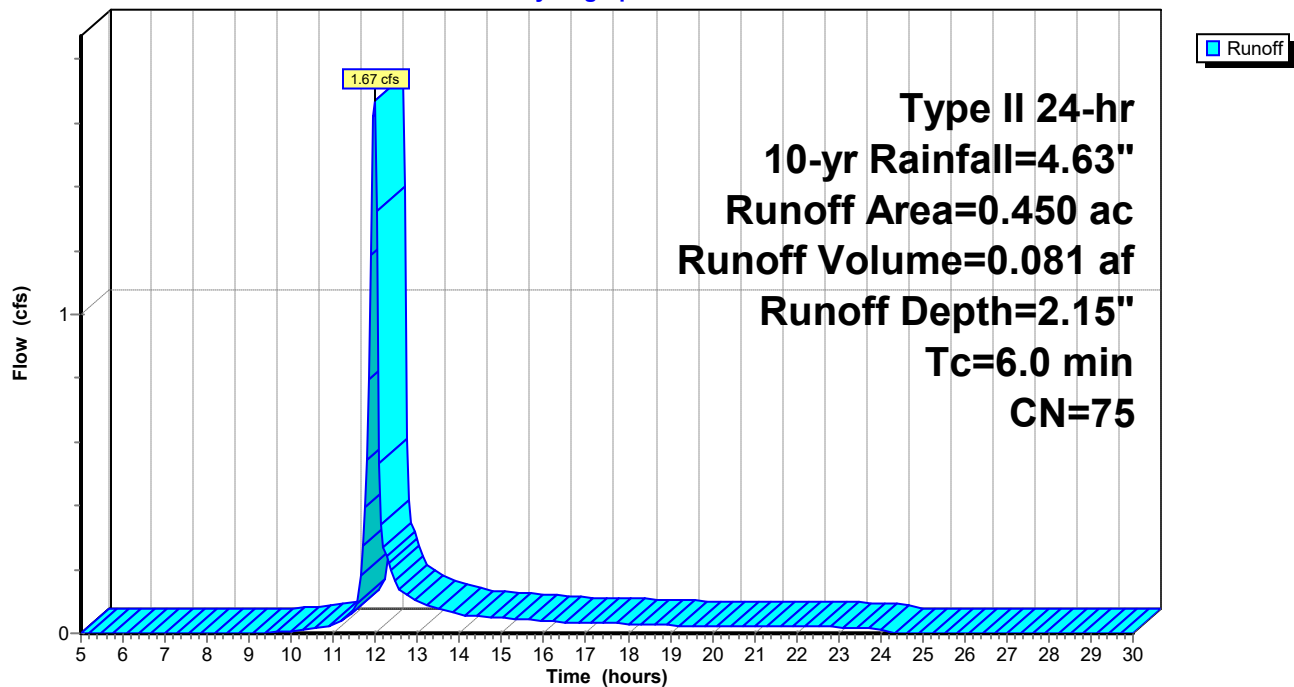
Type II 24-hr 10-yr Rainfall=4.63"

Area (ac)	CN	Description
0.170	98	Paved parking, driveways, roofs
0.220	61	>75% Grass cover, Good, HSG B
0.060	58	Meadow, non-grazed, HSG B
0.450	75	Weighted Average
0.280		62.22% Pervious Area
0.170		37.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Direct Entry

Subcatchment 8S: DA-1H

Hydrograph



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Summary for Subcatchment 9S: DA-1I

Runoff = 3.40 cfs @ 12.05 hrs, Volume= 0.210 af, Depth= 1.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

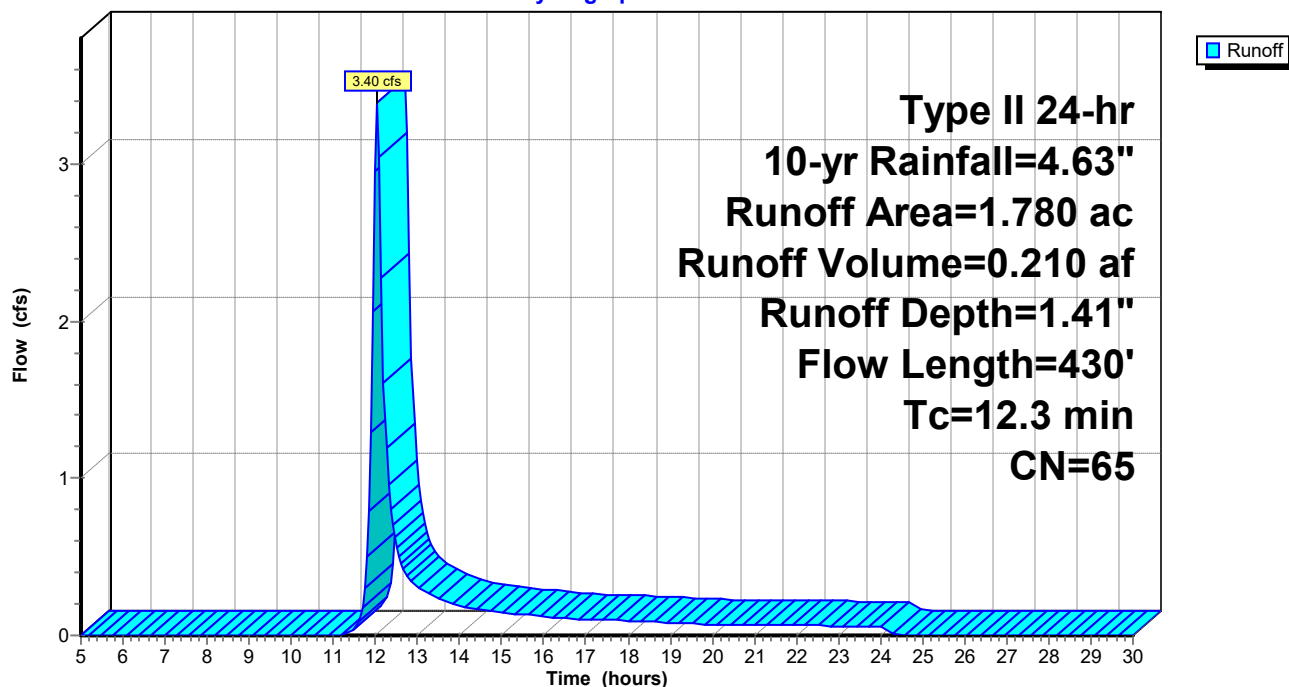
Type II 24-hr 10-yr Rainfall=4.63"

Area (ac)	CN	Description
0.240	98	Paved parking, driveways, roofs
0.790	61	>75% Grass cover, Good, HSG B
0.750	58	Meadow, non-grazed, HSG B
1.780	65	Weighted Average
1.540		86.52% Pervious Area
0.240		13.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0150	0.09		Sheet Flow, Sheet Flow
					Grass: Dense n= 0.240 P2= 3.10"
3.0	380	0.0171	2.11		Shallow Concentrated Flow, Shallow Concentrated Flow
					Unpaved Kv= 16.1 fps
12.3	430	Total			

Subcatchment 9S: DA-1I

Hydrograph



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Summary for Subcatchment 10S: DA-1J

Runoff = 4.58 cfs @ 12.06 hrs, Volume= 0.300 af, Depth= 1.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

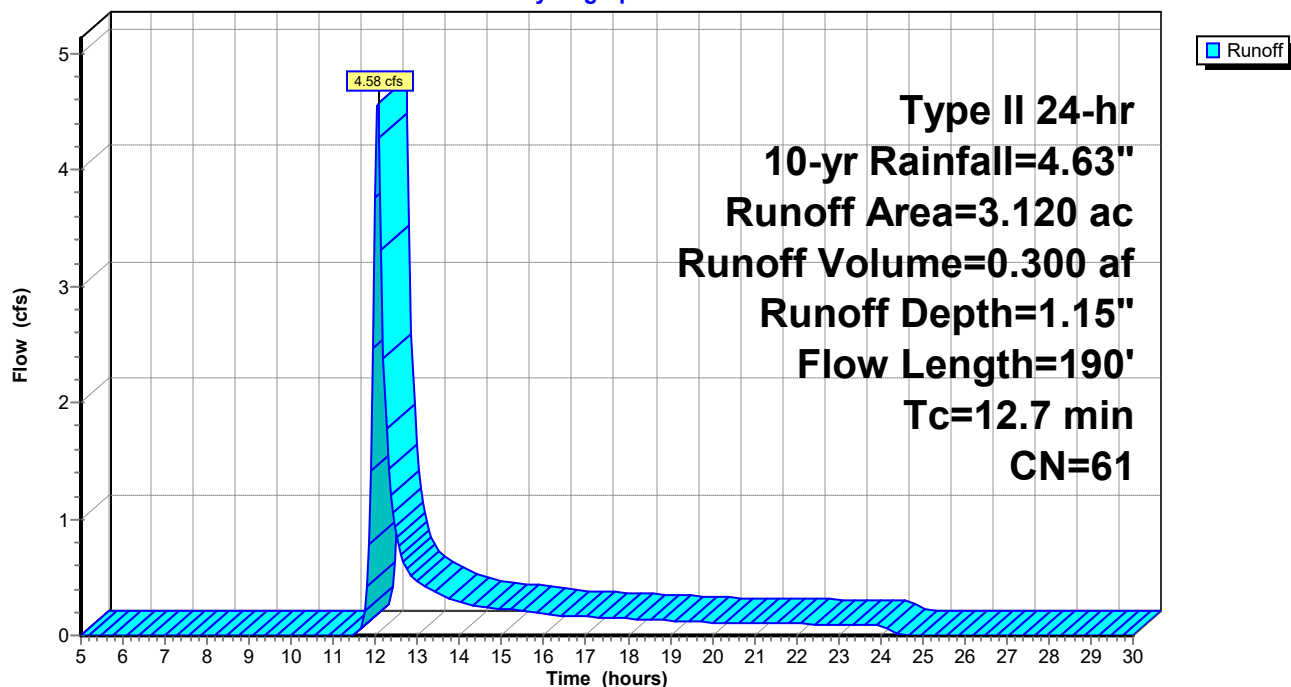
Type II 24-hr 10-yr Rainfall=4.63"

Area (ac)	CN	Description
2.430	58	Meadow, non-grazed, HSG B
0.530	61	>75% Grass cover, Good, HSG B
0.160	98	Paved parking, driveways, roofs
3.120	61	Weighted Average
2.960		94.87% Pervious Area
0.160		5.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	50	0.0100	0.08		Sheet Flow, Sheet Flow
					Grass: Dense n= 0.240 P2= 3.10"
1.7	140	0.0071	1.36		Shallow Concentrated Flow, Shallow Concentrated Flow
					Unpaved Kv= 16.1 fps
12.7	190	Total			

Subcatchment 10S: DA-1J

Hydrograph



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Summary for Reach 3R: Culvert Under Subdivision Entrance

[52] Hint: Inlet/Outlet conditions not evaluated

[82] Warning: Early inflow requires earlier time span

Inflow Area = 4.470 ac, 3.13% Impervious, Inflow Depth > 0.08" for 10-yr event
Inflow = 0.38 cfs @ 11.96 hrs, Volume= 0.032 af
Outflow = 0.36 cfs @ 12.02 hrs, Volume= 0.031 af, Atten= 7%, Lag= 3.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.40 fps, Min. Travel Time= 2.1 min

Avg. Velocity= 0.51 fps, Avg. Travel Time= 5.9 min

Peak Storage= 47 cf @ 11.99 hrs

Average Depth at Peak Storage= 0.33'

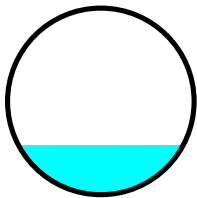
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 2.38 cfs

15.0" Round Pipe

n= 0.025 Corrugated metal

Length= 180.0' Slope= 0.0050 '/'

Inlet Invert= 583.00', Outlet Invert= 582.10'



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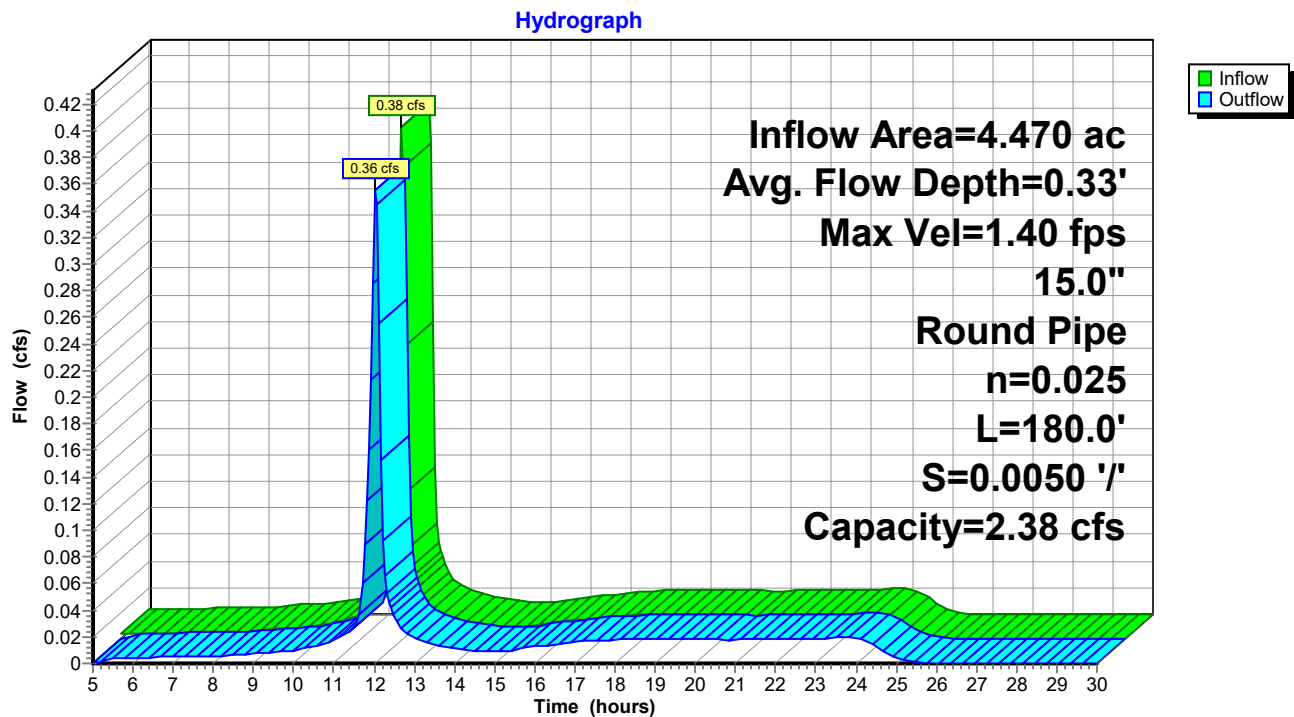
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Reach 3R: Culvert Under Subdivision Entrance



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Stage-Area-Storage for Reach 3R: Culvert Under Subdivision Entrance

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
583.00	0.0	0	584.04	1.1	196
583.02	0.0	1	584.06	1.1	200
583.04	0.0	2	584.08	1.1	203
583.06	0.0	4	584.10	1.1	206
583.08	0.0	6	584.12	1.2	209
583.10	0.0	8	584.14	1.2	211
583.12	0.1	11	584.16	1.2	214
583.14	0.1	14	584.18	1.2	216
583.16	0.1	17	584.20	1.2	218
583.18	0.1	20	584.22	1.2	219
583.20	0.1	23	584.24	1.2	221
583.22	0.1	26			
583.24	0.2	30			
583.26	0.2	33			
583.28	0.2	37			
583.30	0.2	41			
583.32	0.2	45			
583.34	0.3	49			
583.36	0.3	53			
583.38	0.3	57			
583.40	0.3	61			
583.42	0.4	65			
583.44	0.4	69			
583.46	0.4	74			
583.48	0.4	78			
583.50	0.5	83			
583.52	0.5	87			
583.54	0.5	91			
583.56	0.5	96			
583.58	0.6	100			
583.60	0.6	105			
583.62	0.6	109			
583.64	0.6	114			
583.66	0.7	118			
583.68	0.7	123			
583.70	0.7	127			
583.72	0.7	132			
583.74	0.8	136			
583.76	0.8	141			
583.78	0.8	145			
583.80	0.8	149			
583.82	0.9	154			
583.84	0.9	158			
583.86	0.9	162			
583.88	0.9	166			
583.90	0.9	170			
583.92	1.0	174			
583.94	1.0	178			
583.96	1.0	182			
583.98	1.0	186			
584.00	1.1	189			
584.02	1.1	193			

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Type II 24-hr 10-yr Rainfall=4.63"

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Summary for Pond 1P: Pre-Treat Basin 1

Inflow Area = 7.030 ac, 17.50% Impervious, Inflow Depth = 0.94" for 10-yr event
 Inflow = 7.15 cfs @ 12.06 hrs, Volume= 0.548 af
 Outflow = 6.81 cfs @ 12.12 hrs, Volume= 0.480 af, Atten= 5%, Lag= 3.6 min
 Primary = 6.81 cfs @ 12.12 hrs, Volume= 0.480 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs / 3
 Peak Elev= 593.42' @ 12.12 hrs Surf.Area= 2,327 sf Storage= 3,668 cf

Plug-Flow detention time= 89.9 min calculated for 0.480 af (87% of inflow)
 Center-of-Mass det. time= 28.6 min (920.8 - 892.2)

Volume	Invert	Avail.Storage	Storage Description		
#1	591.00'	8,404 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
591.00	832	116.0	0	0	832
593.00	2,016	180.0	2,762	2,762	2,368
595.00	3,711	244.0	5,641	8,404	4,569

Device	Routing	Invert	Outlet Devices											
#1	Primary	593.10'	15.0' long x 2.0' breadth Broad-Crested Rectangular Weir											
			Head (feet)	0.20	0.40	0.60	0.80	1.00	1.20	1.40	1.60	1.80	2.00	
				2.50	3.00	3.50								
			Coef. (English)	2.54	2.61	2.61	2.60	2.66	2.70	2.77	2.89	2.88		
				2.85	3.07	3.20	3.32							

Primary OutFlow Max=6.21 cfs @ 12.12 hrs HW=593.40' (Free Discharge)
 ↑1=Broad-Crested Rectangular Weir (Weir Controls 6.21 cfs @ 1.40 fps)

Post Development Conditions Model

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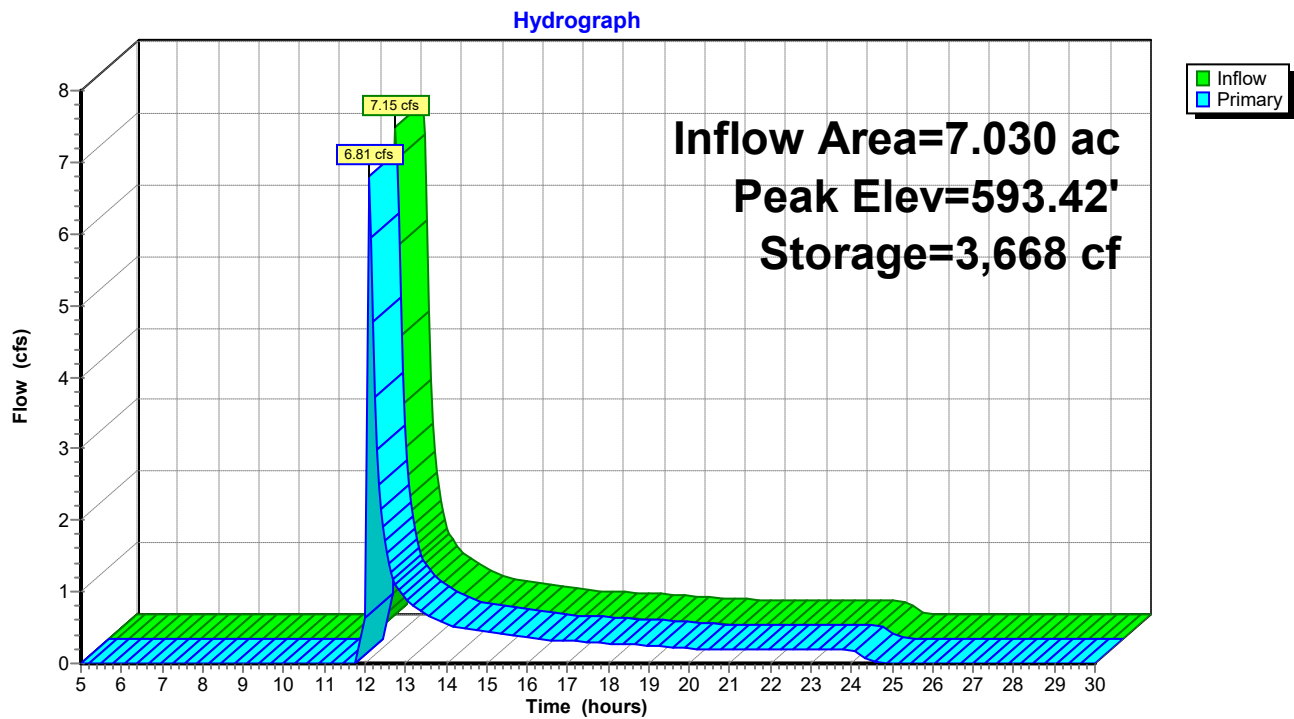
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Pond 1P: Pre-Treat Basin 1



Post Development Conditions Model

Type II 24-hr 10-yr Rainfall=4.63"

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Stage-Area-Storage for Pond 1P: Pre-Treat Basin 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
591.00	832	0	593.60	2,471	4,106
591.05	855	42	593.65	2,511	4,230
591.10	879	86	593.70	2,551	4,357
591.15	903	130	593.75	2,591	4,485
591.20	927	176	593.80	2,632	4,616
591.25	952	223	593.85	2,674	4,749
591.30	977	271	593.90	2,715	4,883
591.35	1,002	320	593.95	2,757	5,020
591.40	1,028	371	594.00	2,799	5,159
591.45	1,053	423	594.05	2,842	5,300
591.50	1,080	477	594.10	2,885	5,443
591.55	1,106	531	594.15	2,928	5,589
591.60	1,133	587	594.20	2,971	5,736
591.65	1,160	645	594.25	3,015	5,886
591.70	1,188	703	594.30	3,059	6,038
591.75	1,216	763	594.35	3,104	6,192
591.80	1,244	825	594.40	3,149	6,348
591.85	1,272	888	594.45	3,194	6,507
591.90	1,301	952	594.50	3,239	6,667
591.95	1,330	1,018	594.55	3,285	6,830
592.00	1,360	1,085	594.60	3,331	6,996
592.05	1,389	1,154	594.65	3,377	7,164
592.10	1,419	1,224	594.70	3,424	7,334
592.15	1,450	1,296	594.75	3,471	7,506
592.20	1,481	1,369	594.80	3,518	7,681
592.25	1,512	1,444	594.85	3,566	7,858
592.30	1,543	1,520	594.90	3,614	8,037
592.35	1,575	1,598	594.95	3,662	8,219
592.40	1,607	1,678	595.00	3,711	8,404
592.45	1,639	1,759			
592.50	1,672	1,841			
592.55	1,705	1,926			
592.60	1,738	2,012			
592.65	1,772	2,100			
592.70	1,806	2,189			
592.75	1,840	2,280			
592.80	1,874	2,373			
592.85	1,909	2,468			
592.90	1,945	2,564			
592.95	1,980	2,662			
593.00	2,016	2,762			
593.05	2,052	2,864			
593.10	2,089	2,967			
593.15	2,125	3,073			
593.20	2,162	3,180			
593.25	2,200	3,289			
593.30	2,238	3,400			
593.35	2,276	3,513			
593.40	2,314	3,627			
593.45	2,353	3,744			
593.50	2,392	3,863			
593.55	2,431	3,983			

Post Development Conditions Model

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Type II 24-hr 10-yr Rainfall=4.63"

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Summary for Pond 2P: Infiltration Basin 1

Inflow Area = 7.030 ac, 17.50% Impervious, Inflow Depth = 0.82" for 10-yr event
Inflow = 6.81 cfs @ 12.12 hrs, Volume= 0.480 af
Outflow = 1.17 cfs @ 12.71 hrs, Volume= 0.480 af, Atten= 83%, Lag= 35.5 min
Discarded = 1.17 cfs @ 12.71 hrs, Volume= 0.480 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 590.87' @ 12.71 hrs Surf.Area= 5,055 sf Storage= 4,520 cf

Plug-Flow detention time= 31.4 min calculated for 0.480 af (100% of inflow)
Center-of-Mass det. time= 31.4 min (952.1 - 920.8)

Volume	Invert	Avail.Storage	Storage Description		
#1	590.00'	45,691 cf	Custom Stage Data (Irregular) Listed below		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
590.00	3,000	430.0	0	0	3,000
592.00	7,700	510.0	10,337	10,337	9,058
594.00	13,200	590.0	20,654	30,992	16,146
595.00	16,250	630.0	14,699	45,691	20,077

Device	Routing	Invert	Outlet Devices
#1	Discarded	590.00'	10.000 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 0.00' Phase-In= 0.01'
#2	Primary	593.00'	10.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=1.17 cfs @ 12.71 hrs HW=590.87' (Free Discharge)
↑1=Exfiltration (Controls 1.17 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=590.00' (Free Discharge)
↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Post Development Conditions Model

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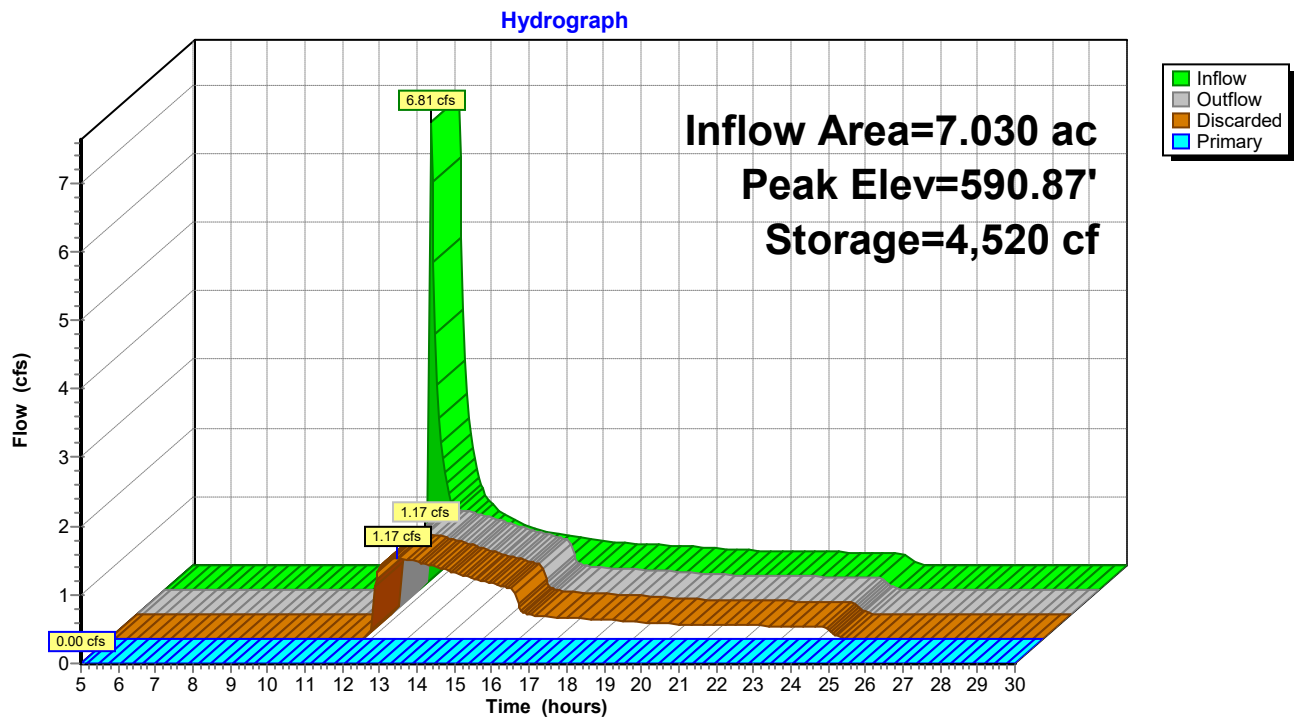
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Type II 24-hr 10-yr Rainfall=4.63"

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Pond 2P: Infiltration Basin 1



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Stage-Area-Storage for Pond 2P: Infiltration Basin 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
590.00	3,000	0	592.60	9,350	16,534
590.05	3,117	258	592.65	9,487	17,050
590.10	3,235	517	592.70	9,625	17,567
590.15	3,352	775	592.75	9,763	18,083
590.20	3,470	1,034	592.80	9,900	18,599
590.25	3,588	1,292	592.85	10,038	19,116
590.30	3,705	1,551	592.90	10,175	19,632
590.35	3,823	1,809	592.95	10,313	20,148
590.40	3,940	2,067	593.00	10,450	20,665
590.45	4,058	2,326	593.05	10,587	21,181
590.50	4,175	2,584	593.10	10,725	21,697
590.55	4,292	2,843	593.15	10,862	22,214
590.60	4,410	3,101	593.20	11,000	22,730
590.65	4,527	3,360	593.25	11,138	23,247
590.70	4,645	3,618	593.30	11,275	23,763
590.75	4,763	3,877	593.35	11,413	24,279
590.80	4,880	4,135	593.40	11,550	24,796
590.85	4,998	4,393	593.45	11,688	25,312
590.90	5,115	4,652	593.50	11,825	25,828
590.95	5,233	4,910	593.55	11,962	26,345
591.00	5,350	5,169	593.60	12,100	26,861
591.05	5,467	5,427	593.65	12,237	27,377
591.10	5,585	5,686	593.70	12,375	27,894
591.15	5,702	5,944	593.75	12,513	28,410
591.20	5,820	6,202	593.80	12,650	28,926
591.25	5,938	6,461	593.85	12,788	29,443
591.30	6,055	6,719	593.90	12,925	29,959
591.35	6,173	6,978	593.95	13,063	30,476
591.40	6,290	7,236	594.00	13,200	30,992
591.45	6,408	7,495	594.05	13,352	31,727
591.50	6,525	7,753	594.10	13,505	32,462
591.55	6,642	8,012	594.15	13,657	33,197
591.60	6,760	8,270	594.20	13,810	33,932
591.65	6,877	8,528	594.25	13,963	34,667
591.70	6,995	8,787	594.30	14,115	35,402
591.75	7,113	9,045	594.35	14,268	36,136
591.80	7,230	9,304	594.40	14,420	36,871
591.85	7,348	9,562	594.45	14,573	37,606
591.90	7,465	9,821	594.50	14,725	38,341
591.95	7,583	10,079	594.55	14,877	39,076
592.00	7,700	10,337	594.60	15,030	39,811
592.05	7,837	10,854	594.65	15,182	40,546
592.10	7,975	11,370	594.70	15,335	41,281
592.15	8,112	11,887	594.75	15,488	42,016
592.20	8,250	12,403	594.80	15,640	42,751
592.25	8,388	12,919	594.85	15,793	43,486
592.30	8,525	13,436	594.90	15,945	44,221
592.35	8,663	13,952	594.95	16,098	44,956
592.40	8,800	14,468	595.00	16,250	45,691
592.45	8,938	14,985			
592.50	9,075	15,501			
592.55	9,212	16,017			

Post Development Conditions Model

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Summary for Pond 3P: Pre-Treat Basin 2-1

Inflow Area = 6.570 ac, 20.85% Impervious, Inflow Depth = 1.43" for 10-yr event
 Inflow = 12.25 cfs @ 12.02 hrs, Volume= 0.785 af
 Outflow = 11.93 cfs @ 12.04 hrs, Volume= 0.716 af, Atten= 3%, Lag= 1.0 min
 Primary = 11.93 cfs @ 12.04 hrs, Volume= 0.716 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs / 3
 Peak Elev= 581.47' @ 12.04 hrs Surf.Area= 2,464 sf Storage= 3,822 cf

Plug-Flow detention time= 63.8 min calculated for 0.716 af (91% of inflow)
 Center-of-Mass det. time= 18.1 min (882.1 - 864.0)

Volume	Invert	Avail.Storage	Storage Description
#1	579.00'	8,857 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
579.00	832	116.0	0	0	832
581.00	2,015	180.0	2,761	2,761	2,368
583.00	4,215	260.0	6,096	8,857	5,204

Device	Routing	Invert	Outlet Devices
#1	Primary	581.10'	20.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=11.73 cfs @ 12.04 hrs HW=581.47' (Free Discharge)
 ↑1=**Broad-Crested Rectangular Weir** (Weir Controls 11.73 cfs @ 1.58 fps)

Post Development Conditions Model

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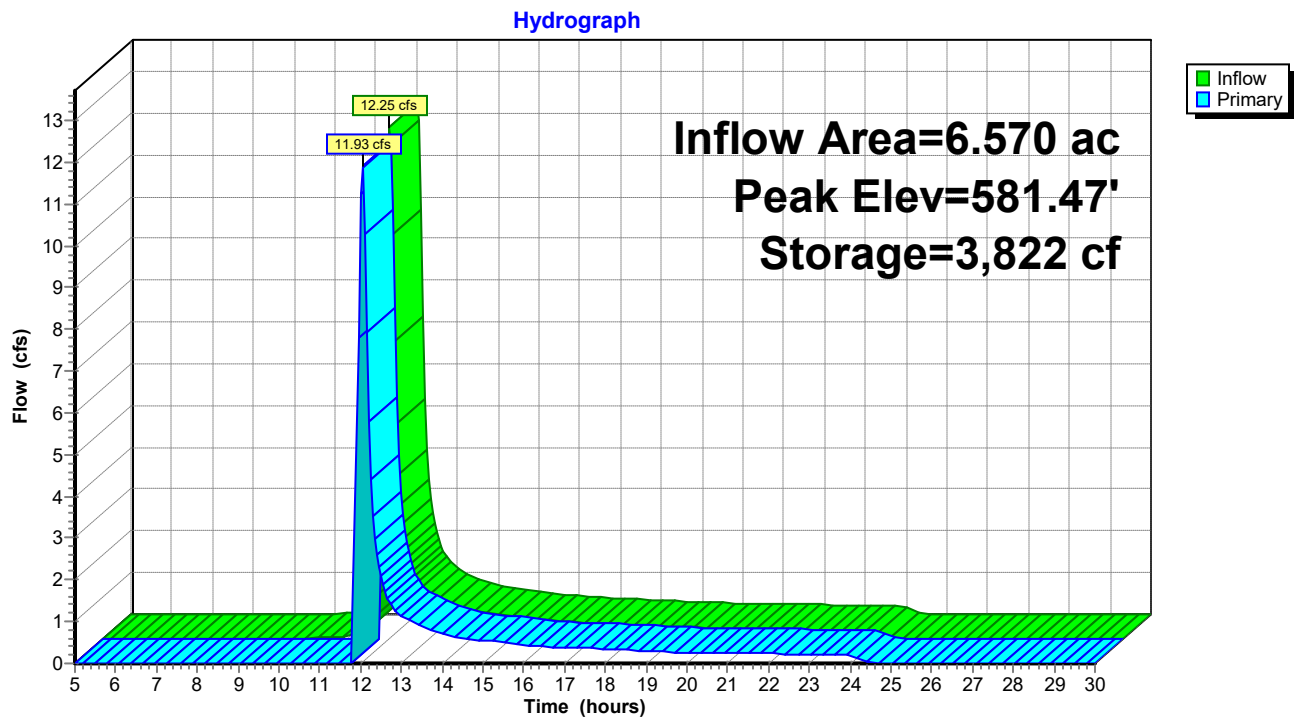
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Type II 24-hr 10-yr Rainfall=4.63"

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Pond 3P: Pre-Treat Basin 2-1



Post Development Conditions Model*Type II 24-hr 10-yr Rainfall=4.63"*

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Stage-Area-Storage for Pond 3P: Pre-Treat Basin 2-1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
579.00	832	0	581.60	2,591	4,139
579.05	855	42	581.65	2,642	4,270
579.10	879	86	581.70	2,694	4,403
579.15	903	130	581.75	2,746	4,539
579.20	927	176	581.80	2,799	4,678
579.25	952	223	581.85	2,852	4,819
579.30	977	271	581.90	2,906	4,963
579.35	1,002	320	581.95	2,960	5,110
579.40	1,027	371	582.00	3,015	5,259
579.45	1,053	423	582.05	3,070	5,411
579.50	1,079	477	582.10	3,126	5,566
579.55	1,106	531	582.15	3,182	5,724
579.60	1,133	587	582.20	3,239	5,884
579.65	1,160	644	582.25	3,296	6,048
579.70	1,187	703	582.30	3,354	6,214
579.75	1,215	763	582.35	3,412	6,383
579.80	1,243	825	582.40	3,471	6,555
579.85	1,272	888	582.45	3,530	6,730
579.90	1,301	952	582.50	3,590	6,908
579.95	1,330	1,018	582.55	3,650	7,089
580.00	1,359	1,085	582.60	3,711	7,273
580.05	1,389	1,154	582.65	3,772	7,460
580.10	1,419	1,224	582.70	3,834	7,651
580.15	1,449	1,295	582.75	3,896	7,844
580.20	1,480	1,369	582.80	3,959	8,040
580.25	1,511	1,443	582.85	4,022	8,240
580.30	1,542	1,520	582.90	4,086	8,442
580.35	1,574	1,598	582.95	4,150	8,648
580.40	1,606	1,677	583.00	4,215	8,857
580.45	1,638	1,758			
580.50	1,671	1,841			
580.55	1,704	1,925			
580.60	1,737	2,011			
580.65	1,771	2,099			
580.70	1,805	2,189			
580.75	1,839	2,280			
580.80	1,874	2,372			
580.85	1,908	2,467			
580.90	1,944	2,563			
580.95	1,979	2,661			
581.00	2,015	2,761			
581.05	2,060	2,863			
581.10	2,106	2,967			
581.15	2,152	3,074			
581.20	2,199	3,182			
581.25	2,246	3,294			
581.30	2,294	3,407			
581.35	2,342	3,523			
581.40	2,391	3,641			
581.45	2,440	3,762			
581.50	2,490	3,885			
581.55	2,540	4,011			

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Type II 24-hr 10-yr Rainfall=4.63"

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Summary for Pond 4P: Infiltration Basin 2

Inflow Area = 11.040 ac, 13.68% Impervious, Inflow Depth = 0.80" for 10-yr event
Inflow = 12.23 cfs @ 12.04 hrs, Volume= 0.738 af
Outflow = 2.41 cfs @ 12.44 hrs, Volume= 0.738 af, Atten= 80%, Lag= 23.9 min
Discarded = 2.41 cfs @ 12.44 hrs, Volume= 0.738 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 578.90' @ 12.44 hrs Surf.Area= 10,399 sf Storage= 8,438 cf

Plug-Flow detention time= 24.6 min calculated for 0.736 af (100% of inflow)
Center-of-Mass det. time= 24.6 min (911.5 - 886.9)

Volume	Invert	Avail.Storage	Storage Description
#1	578.00'	73,283 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
578.00	8,351	444.0	0	0	8,351
580.00	13,197	519.0	21,364	21,364	14,179
582.00	18,703	582.0	31,740	53,104	19,807
583.00	21,691	613.0	20,179	73,283	22,815

Device	Routing	Invert	Outlet Devices
#1	Discarded	578.00'	10.000 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 0.00' Phase-In= 0.01'
#2	Primary	581.00'	10.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=2.41 cfs @ 12.44 hrs HW=578.90' (Free Discharge)
↑1=Exfiltration (Controls 2.41 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=578.00' (Free Discharge)
↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Post Development Conditions Model

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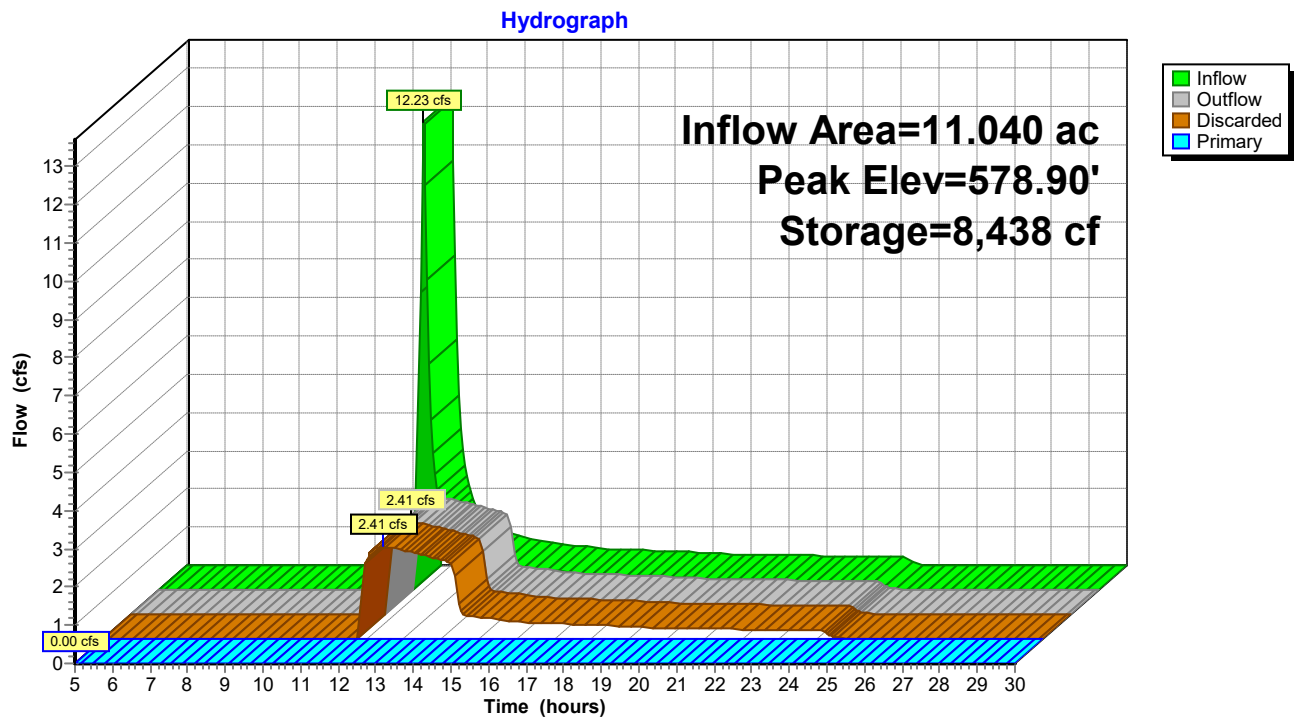
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Pond 4P: Infiltration Basin 2



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Stage-Area-Storage for Pond 4P: Infiltration Basin 2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
578.00	8,351	0	580.60	14,748	29,743
578.05	8,459	420	580.65	14,881	30,484
578.10	8,567	846	580.70	15,015	31,231
578.15	8,676	1,277	580.75	15,150	31,986
578.20	8,786	1,714	580.80	15,284	32,746
578.25	8,896	2,156	580.85	15,420	33,514
578.30	9,008	2,603	580.90	15,556	34,288
578.35	9,119	3,056	580.95	15,693	35,070
578.40	9,232	3,515	581.00	15,830	35,858
578.45	9,345	3,980	581.05	15,968	36,653
578.50	9,459	4,450	581.10	16,107	37,455
578.55	9,574	4,925	581.15	16,246	38,263
578.60	9,689	5,407	581.20	16,386	39,079
578.65	9,805	5,894	581.25	16,526	39,902
578.70	9,922	6,387	581.30	16,667	40,732
578.75	10,039	6,887	581.35	16,809	41,569
578.80	10,157	7,391	581.40	16,951	42,413
578.85	10,276	7,902	581.45	17,093	43,264
578.90	10,395	8,419	581.50	17,237	44,122
578.95	10,515	8,942	581.55	17,381	44,987
579.00	10,636	9,471	581.60	17,525	45,860
579.05	10,757	10,005	581.65	17,670	46,740
579.10	10,880	10,546	581.70	17,816	47,627
579.15	11,003	11,093	581.75	17,962	48,522
579.20	11,126	11,647	581.80	18,109	49,423
579.25	11,250	12,206	581.85	18,257	50,332
579.30	11,375	12,772	581.90	18,405	51,249
579.35	11,501	13,343	581.95	18,554	52,173
579.40	11,627	13,922	582.00	18,703	53,104
579.45	11,754	14,506	582.05	18,847	54,043
579.50	11,882	15,097	582.10	18,992	54,989
579.55	12,010	15,694	582.15	19,137	55,942
579.60	12,139	16,298	582.20	19,283	56,903
579.65	12,269	16,908	582.25	19,429	57,871
579.70	12,400	17,525	582.30	19,576	58,846
579.75	12,531	18,148	582.35	19,724	59,828
579.80	12,663	18,778	582.40	19,872	60,818
579.85	12,795	19,415	582.45	20,020	61,815
579.90	12,928	20,058	582.50	20,169	62,820
579.95	13,062	20,708	582.55	20,319	63,832
580.00	13,197	21,364	582.60	20,469	64,852
580.05	13,323	22,027	582.65	20,620	65,879
580.10	13,450	22,696	582.70	20,771	66,914
580.15	13,577	23,372	582.75	20,923	67,956
580.20	13,705	24,054	582.80	21,076	69,006
580.25	13,833	24,742	582.85	21,229	70,064
580.30	13,962	25,437	582.90	21,382	71,129
580.35	14,091	26,139	582.95	21,536	72,202
580.40	14,222	26,846	583.00	21,691	73,283
580.45	14,352	27,561			
580.50	14,484	28,282			
580.55	14,616	29,009			

Post Development Conditions Model

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Summary for Pond 5P: Infiltration Basin A

Inflow Area = 15.960 ac, 3.88% Impervious, Inflow Depth = 1.28" for 10-yr event
Inflow = 15.89 cfs @ 12.27 hrs, Volume= 1.702 af
Outflow = 12.34 cfs @ 12.47 hrs, Volume= 1.702 af, Atten= 22%, Lag= 12.0 min
Discarded = 2.02 cfs @ 12.47 hrs, Volume= 1.370 af
Primary = 10.32 cfs @ 12.47 hrs, Volume= 0.332 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 594.99' @ 12.47 hrs Surf.Area= 8,700 sf Storage= 17,628 cf

Plug-Flow detention time= 79.5 min calculated for 1.699 af (100% of inflow)
Center-of-Mass det. time= 79.3 min (969.8 - 890.5)

Volume	Invert	Avail.Storage	Storage Description
#1	592.00'	38,563 cf	Custom Stage Data (Irregular) Listed below

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
592.00	2,850	325.0	0	0	2,850
594.00	6,500	405.0	9,103	9,103	7,554
596.00	10,955	486.0	17,262	26,365	13,366
597.00	13,485	526.0	12,198	38,563	16,627

Device	Routing	Invert	Outlet Devices
#1	Discarded	592.00'	10.000 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 0.00' Phase-In= 0.01'
#2	Primary	594.80'	50.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=2.02 cfs @ 12.47 hrs HW=594.98' (Free Discharge)
↑1=Exfiltration (Controls 2.02 cfs)

Primary OutFlow Max=9.53 cfs @ 12.47 hrs HW=594.98' (Free Discharge)
↑2=Broad-Crested Rectangular Weir (Weir Controls 9.53 cfs @ 1.07 fps)

Post Development Conditions Model

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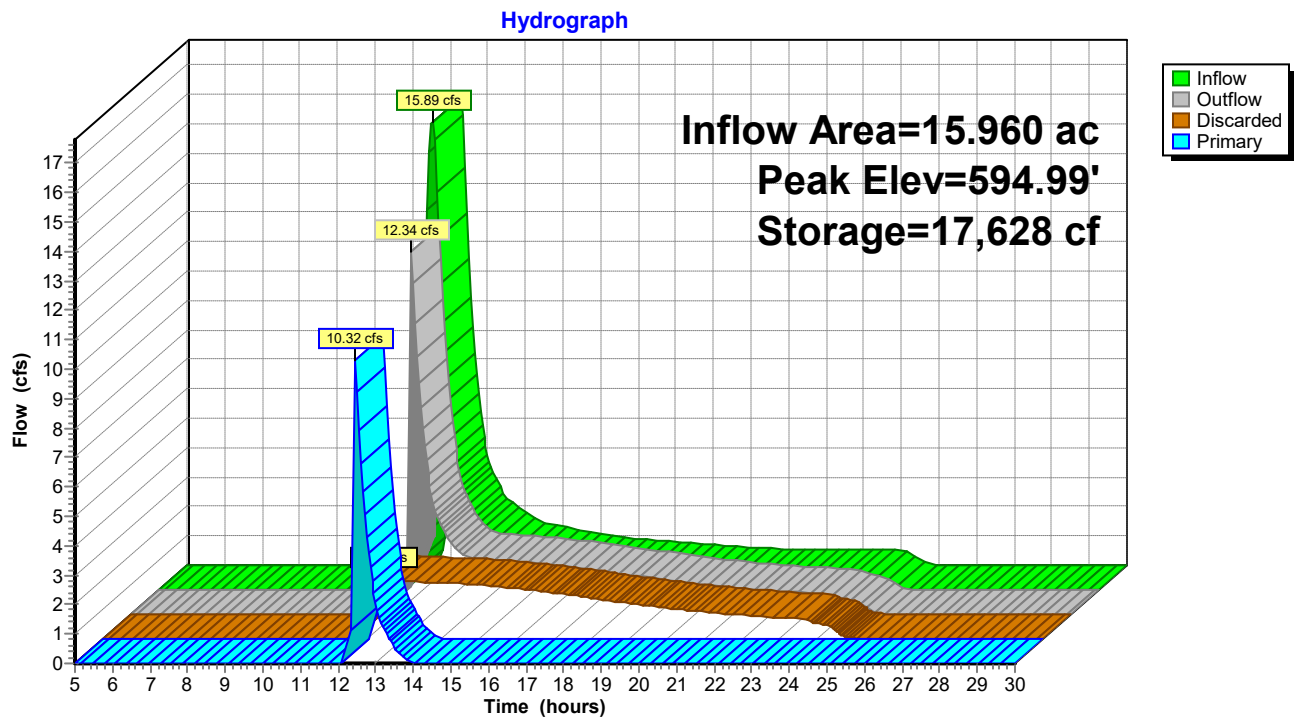
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Type II 24-hr 10-yr Rainfall=4.63"

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Pond 5P: Infiltration Basin A



Post Development Conditions Model

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Stage-Area-Storage for Pond 5P: Infiltration Basin A

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
592.00	2,850	0	594.60	7,837	14,281
592.05	2,941	228	594.65	7,948	14,713
592.10	3,033	455	594.70	8,059	15,145
592.15	3,124	683	594.75	8,171	15,576
592.20	3,215	910	594.80	8,282	16,008
592.25	3,306	1,138	594.85	8,393	16,439
592.30	3,397	1,365	594.90	8,505	16,871
592.35	3,489	1,593	594.95	8,616	17,302
592.40	3,580	1,821	595.00	8,728	17,734
592.45	3,671	2,048	595.05	8,839	18,165
592.50	3,763	2,276	595.10	8,950	18,597
592.55	3,854	2,503	595.15	9,062	19,029
592.60	3,945	2,731	595.20	9,173	19,460
592.65	4,036	2,958	595.25	9,284	19,892
592.70	4,128	3,186	595.30	9,396	20,323
592.75	4,219	3,414	595.35	9,507	20,755
592.80	4,310	3,641	595.40	9,618	21,186
592.85	4,401	3,869	595.45	9,730	21,618
592.90	4,492	4,096	595.50	9,841	22,049
592.95	4,584	4,324	595.55	9,953	22,481
593.00	4,675	4,551	595.60	10,064	22,913
593.05	4,766	4,779	595.65	10,175	23,344
593.10	4,858	5,006	595.70	10,287	23,776
593.15	4,949	5,234	595.75	10,398	24,207
593.20	5,040	5,462	595.80	10,509	24,639
593.25	5,131	5,689	595.85	10,621	25,070
593.30	5,222	5,917	595.90	10,732	25,502
593.35	5,314	6,144	595.95	10,844	25,933
593.40	5,405	6,372	596.00	10,955	26,365
593.45	5,496	6,599	596.05	11,081	26,795
593.50	5,588	6,827	596.10	11,208	27,585
593.55	5,679	7,055	596.15	11,334	28,195
593.60	5,770	7,282	596.20	11,461	28,805
593.65	5,861	7,510	596.25	11,588	29,415
593.70	5,953	7,737	596.30	11,714	30,024
593.75	6,044	7,965	596.35	11,841	30,634
593.80	6,135	8,192	596.40	11,967	31,244
593.85	6,226	8,420	596.45	12,094	31,854
593.90	6,317	8,648	596.50	12,220	32,464
593.95	6,409	8,875	596.55	12,346	33,074
594.00	6,500	9,103	596.60	12,473	33,684
594.05	6,611	9,534	596.65	12,599	34,294
594.10	6,723	9,966	596.70	12,726	34,904
594.15	6,834	10,397	596.75	12,853	35,514
594.20	6,946	10,829	596.80	12,979	36,124
594.25	7,057	11,260	596.85	13,106	36,733
594.30	7,168	11,692	596.90	13,232	37,343
594.35	7,280	12,124	596.95	13,359	37,953
594.40	7,391	12,555	597.00	13,485	38,563
594.45	7,502	12,987			
594.50	7,614	13,418			
594.55	7,725	13,850			

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Type II 24-hr 10-yr Rainfall=4.63"

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Summary for Pond 6P: Pre-Treat Basin 2-2

[88] Warning: Qout>Qin may require Finer Routing>1

Inflow Area = 4.470 ac, 3.13% Impervious, Inflow Depth > 0.08" for 10-yr event
Inflow = 0.36 cfs @ 12.02 hrs, Volume= 0.031 af
Outflow = 0.36 cfs @ 12.07 hrs, Volume= 0.022 af, Atten= 0%, Lag= 2.7 min
Primary = 0.36 cfs @ 12.07 hrs, Volume= 0.022 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs / 3

Peak Elev= 582.04' @ 12.07 hrs Surf.Area= 601 sf Storage= 436 cf

Plug-Flow detention time= 288.5 min calculated for 0.022 af (69% of inflow)

Center-of-Mass det. time= 123.9 min (1,045.9 - 922.0)

Volume	Invert	Avail.Storage	Storage Description
#1	581.00'	1,214 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
581.00	262	60.0	0	0	262
583.00	1,038	120.0	1,214	1,214	1,140

Device	Routing	Invert	Outlet Devices
#1	Primary	582.00'	20.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.31 cfs @ 12.07 hrs HW=582.03' (Free Discharge)

↑1=**Broad-Crested Rectangular Weir** (Weir Controls 0.31 cfs @ 0.46 fps)

Post Development Conditions Model

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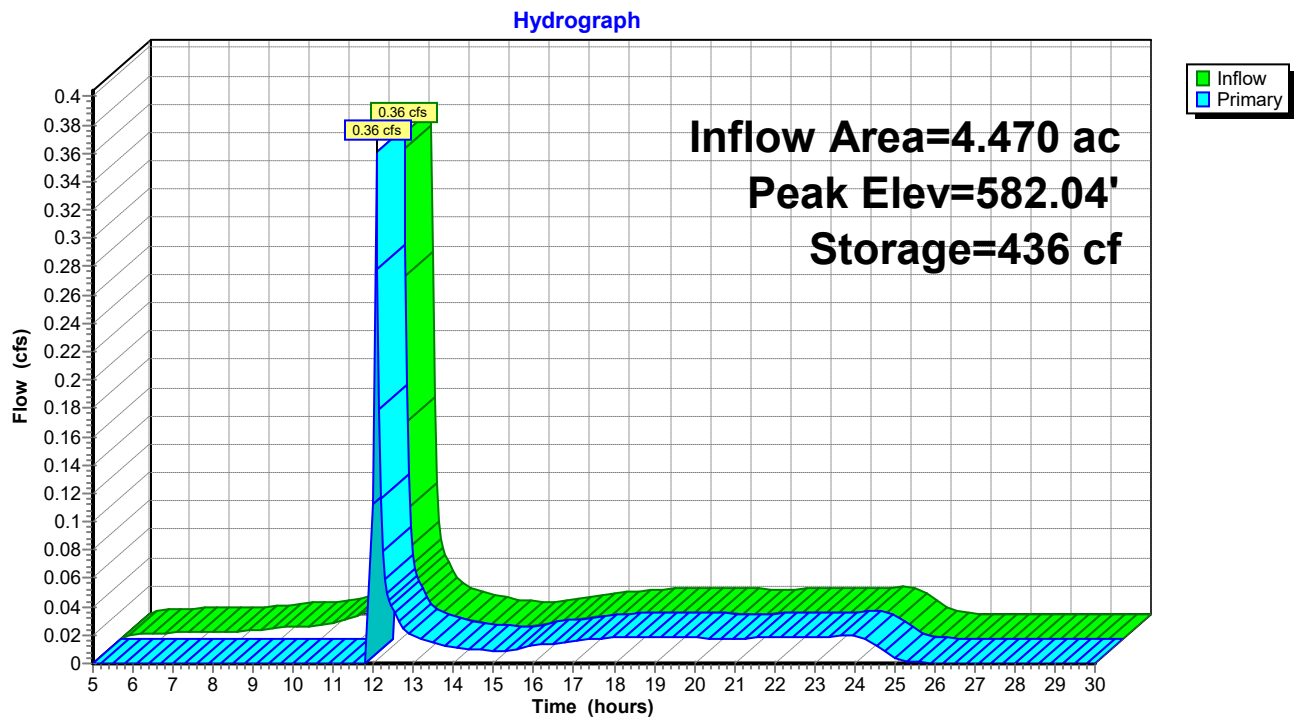
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Pond 6P: Pre-Treat Basin 2-2



Post Development Conditions Model

Type II 24-hr 10-yr Rainfall=4.63"

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Stage-Area-Storage for Pond 6P: Pre-Treat Basin 2-2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
581.00	262	0	582.04	601	437
581.02	267	5	582.06	609	449
581.04	272	11	582.08	617	461
581.06	278	16	582.10	625	474
581.08	283	22	582.12	633	486
581.10	289	28	582.14	641	499
581.12	294	33	582.16	649	512
581.14	300	39	582.18	658	525
581.16	305	45	582.20	666	538
581.18	311	51	582.22	674	552
581.20	316	58	582.24	683	565
581.22	322	64	582.26	691	579
581.24	328	71	582.28	699	593
581.26	334	77	582.30	708	607
581.28	340	84	582.32	716	621
581.30	346	91	582.34	725	636
581.32	352	98	582.36	734	650
581.34	358	105	582.38	742	665
581.36	364	112	582.40	751	680
581.38	370	119	582.42	760	695
581.40	376	127	582.44	769	710
581.42	382	135	582.46	778	726
581.44	389	142	582.48	787	741
581.46	395	150	582.50	796	757
581.48	401	158	582.52	805	773
581.50	408	166	582.54	814	789
581.52	414	174	582.56	823	806
581.54	421	183	582.58	832	822
581.56	427	191	582.60	842	839
581.58	434	200	582.62	851	856
581.60	441	209	582.64	860	873
581.62	448	217	582.66	870	890
581.64	454	226	582.68	879	908
581.66	461	236	582.70	889	926
581.68	468	245	582.72	898	943
581.70	475	254	582.74	908	962
581.72	482	264	582.76	918	980
581.74	489	274	582.78	927	998
581.76	496	283	582.80	937	1,017
581.78	503	293	582.82	947	1,036
581.80	511	304	582.84	957	1,055
581.82	518	314	582.86	967	1,074
581.84	525	324	582.88	977	1,093
581.86	533	335	582.90	987	1,113
581.88	540	346	582.92	997	1,133
581.90	548	357	582.94	1,007	1,153
581.92	555	368	582.96	1,017	1,173
581.94	563	379	582.98	1,028	1,194
581.96	570	390	583.00	1,038	1,214
581.98	578	402			
582.00	586	413			
582.02	594	425			

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Type II 24-hr 10-yr Rainfall=4.63"

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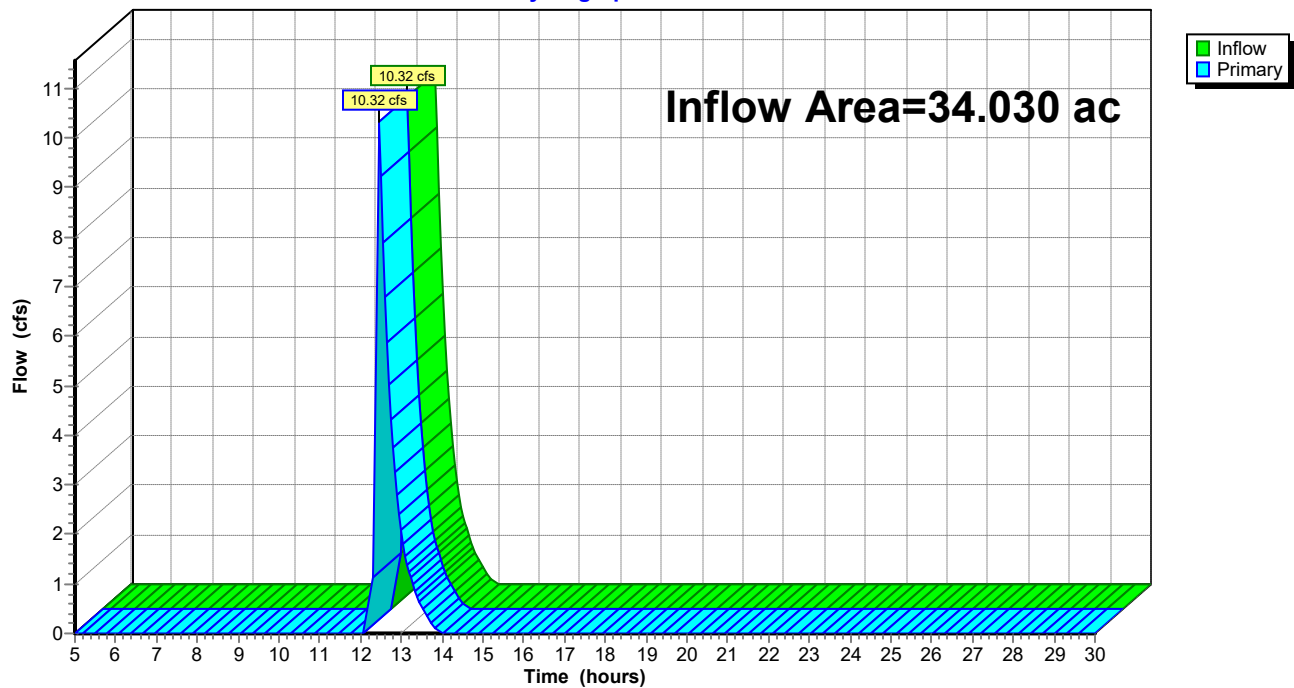
Summary for Link 1L: DP-1

Inflow Area = 34.030 ac, 9.87% Impervious, Inflow Depth = 0.12" for 10-yr event
Inflow = 10.32 cfs @ 12.47 hrs, Volume= 0.332 af
Primary = 10.32 cfs @ 12.47 hrs, Volume= 0.332 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Link 1L: DP-1

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.27"

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Time span=5.00-30.00 hrs, dt=0.05 hrs, 501 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: DA-1A	Runoff Area=15.960 ac 3.88% Impervious Runoff Depth=3.88" Flow Length=2,344' Tc=29.7 min CN=63 Runoff=53.34 cfs 5.163 af
Subcatchment 2S: DA-1B	Runoff Area=3.870 ac 15.76% Impervious Runoff Depth=2.97" Flow Length=850' Tc=15.2 min CN=55 Runoff=14.29 cfs 0.958 af
Subcatchment 3S: DA-1C	Runoff Area=4.410 ac 1.81% Impervious Runoff Depth=0.81" Flow Length=1,300' Tc=44.7 min CN=34 Runoff=1.17 cfs 0.297 af
Subcatchment 4S: DA-1D	Runoff Area=0.060 ac 100.00% Impervious Runoff Depth>7.71" Tc=6.0 min CN=98 Runoff=0.69 cfs 0.039 af
Subcatchment 5S: DA-1E	Runoff Area=1.380 ac 27.54% Impervious Runoff Depth=2.75" Tc=6.0 min CN=53 Runoff=6.55 cfs 0.316 af
Subcatchment 6S: DA-1F	Runoff Area=2.300 ac 33.91% Impervious Runoff Depth=4.23" Flow Length=252' Tc=11.9 min CN=66 Runoff=13.86 cfs 0.811 af
Subcatchment 7S: DA-1G	Runoff Area=0.700 ac 37.14% Impervious Runoff Depth=5.17" Tc=6.0 min CN=74 Runoff=6.12 cfs 0.301 af
Subcatchment 8S: DA-1H	Runoff Area=0.450 ac 37.78% Impervious Runoff Depth=5.29" Tc=6.0 min CN=75 Runoff=4.01 cfs 0.198 af
Subcatchment 9S: DA-1I	Runoff Area=1.780 ac 13.48% Impervious Runoff Depth=4.11" Flow Length=430' Tc=12.3 min CN=65 Runoff=10.30 cfs 0.610 af
Subcatchment 10S: DA-1J	Runoff Area=3.120 ac 5.13% Impervious Runoff Depth=3.65" Flow Length=190' Tc=12.7 min CN=61 Runoff=15.77 cfs 0.949 af
Reach 3R: Culvert Under Subdivision	Avg. Flow Depth=0.63' Max Vel=1.94 fps Inflow=1.21 cfs 0.336 af 15.0" Round Pipe n=0.025 L=180.0' S=0.0050 '/' Capacity=2.38 cfs Outflow=1.21 cfs 0.336 af
Pond 1P: Pre-Treat Basin 1	Peak Elev=593.90' Storage=4,879 cf Inflow=28.32 cfs 1.884 af Outflow=27.86 cfs 1.817 af
Pond 2P: Infiltration Basin 1	Peak Elev=593.48' Storage=25,572 cf Inflow=27.86 cfs 1.817 af Discarded=2.73 cfs 1.514 af Primary=8.56 cfs 0.303 af Outflow=11.29 cfs 1.817 af
Pond 3P: Pre-Treat Basin 2-1	Peak Elev=581.89' Storage=4,924 cf Inflow=37.08 cfs 2.260 af Outflow=36.27 cfs 2.192 af
Pond 4P: Infiltration Basin 2	Peak Elev=581.22' Storage=39,483 cf Inflow=36.91 cfs 2.518 af Discarded=3.82 cfs 2.373 af Primary=2.73 cfs 0.146 af Outflow=6.55 cfs 2.518 af
Pond 5P: Infiltration Basin A	Peak Elev=595.33' Storage=20,620 cf Inflow=53.34 cfs 5.163 af Discarded=2.20 cfs 2.227 af Primary=51.02 cfs 2.936 af Outflow=53.22 cfs 5.163 af

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Type II 24-hr 100-yr Rainfall=8.27"

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Pond 6P: Pre-Treat Basin 2-2

Peak Elev=582.08' Storage=463 cf Inflow=1.21 cfs 0.336 af
Outflow=1.20 cfs 0.326 af

Link 1L: DP-1

Inflow=60.47 cfs 3.384 af
Primary=60.47 cfs 3.384 af

Total Runoff Area = 34.030 ac Runoff Volume = 9.643 af Average Runoff Depth = 3.40"
90.13% Pervious = 30.670 ac 9.87% Impervious = 3.360 ac

Post Development Conditions Model

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Summary for Subcatchment 1S: DA-1A

Runoff = 53.34 cfs @ 12.25 hrs, Volume= 5.163 af, Depth= 3.88"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=8.27"

Area (ac)	CN	Description
* 0.620	98	Paved parking, driveways, roofs
1.770	74	>75% Grass cover, Good, HSG C
1.150	30	Meadow, non-grazed, HSG A
5.340	58	Meadow, non-grazed, HSG B
0.090	71	Meadow, non-grazed, HSG C
4.160	60	Woods, Fair, HSG B
2.080	73	Woods, Fair, HSG C
0.750	79	Woods, Fair, HSG D
15.960	63	Weighted Average
15.340		96.12% Pervious Area
0.620		3.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	100	0.0600	0.18		Sheet Flow, Sheet Flow Grass: Dense n= 0.240 P2= 3.10"
8.7	780	0.0894	1.49		Shallow Concentrated Flow, Shallow Concentrated Flow 1 Woodland Kv= 5.0 fps
2.5	349	0.0201	2.28		Shallow Concentrated Flow, Shallow Concentrated Flow 2 Unpaved Kv= 16.1 fps
1.0	141	0.0107	2.39	14.34	Channel Flow, Channel Flow 1 - Bypass Swale Area= 6.0 sf Perim= 30.0' r= 0.20' n= 0.022 Earth, clean & straight
5.6	599	0.0121	1.77		Shallow Concentrated Flow, Shallow Concentrated Flow 3 Unpaved Kv= 16.1 fps
2.6	375	0.0140	2.39	19.09	Channel Flow, Channel Flow 2 - Cascade Creek Area= 8.0 sf Perim= 20.0' r= 0.40' n= 0.040 Winding stream, pools & shoals
29.7	2,344	Total			

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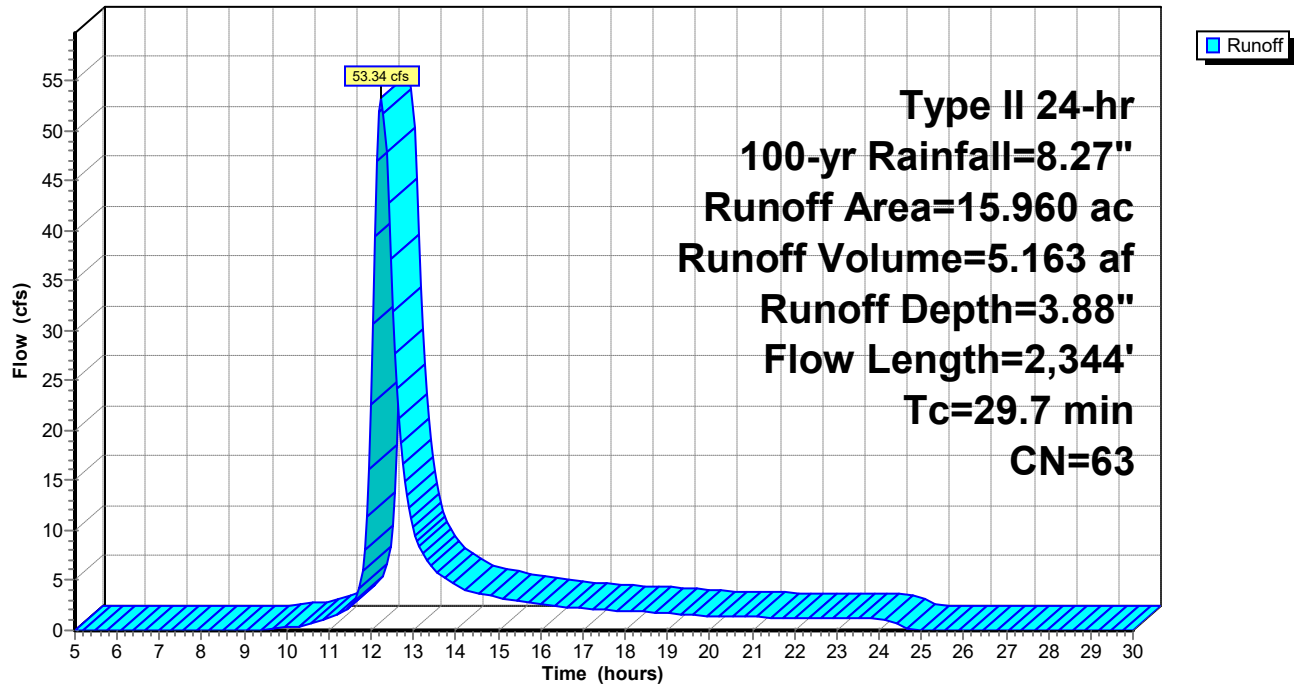
Type II 24-hr 100-yr Rainfall=8.27"

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Subcatchment 1S: DA-1A

Hydrograph



Post Development Conditions Model

Type II 24-hr 100-yr Rainfall=8.27"

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Summary for Subcatchment 2S: DA-1B

Runoff = 14.29 cfs @ 12.08 hrs, Volume= 0.958 af, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Type II 24-hr 100-yr Rainfall=8.27"

Area (ac)	CN	Description
0.610	98	Paved parking, driveways, roofs
0.420	39	>75% Grass cover, Good, HSG A
0.760	61	>75% Grass cover, Good, HSG B
1.040	30	Meadow, non-grazed, HSG A
1.040	58	Meadow, non-grazed, HSG B
3.870	55	Weighted Average
3.260		84.24% Pervious Area
0.610		15.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	100	0.0300	0.14		Sheet Flow, Sheet Flow
					Grass: Dense n= 0.240 P2= 3.10"
1.8	279	0.0260	2.60		Shallow Concentrated Flow, Shallow Concentrated Flow
					Unpaved Kv= 16.1 fps
1.1	471	0.0377	7.12	42.72	Channel Flow, Channel Flow - Roadside Swale
					Area= 6.0 sf Perim= 15.0' r= 0.40'
					n= 0.022 Earth, clean & straight
15.2	850	Total			

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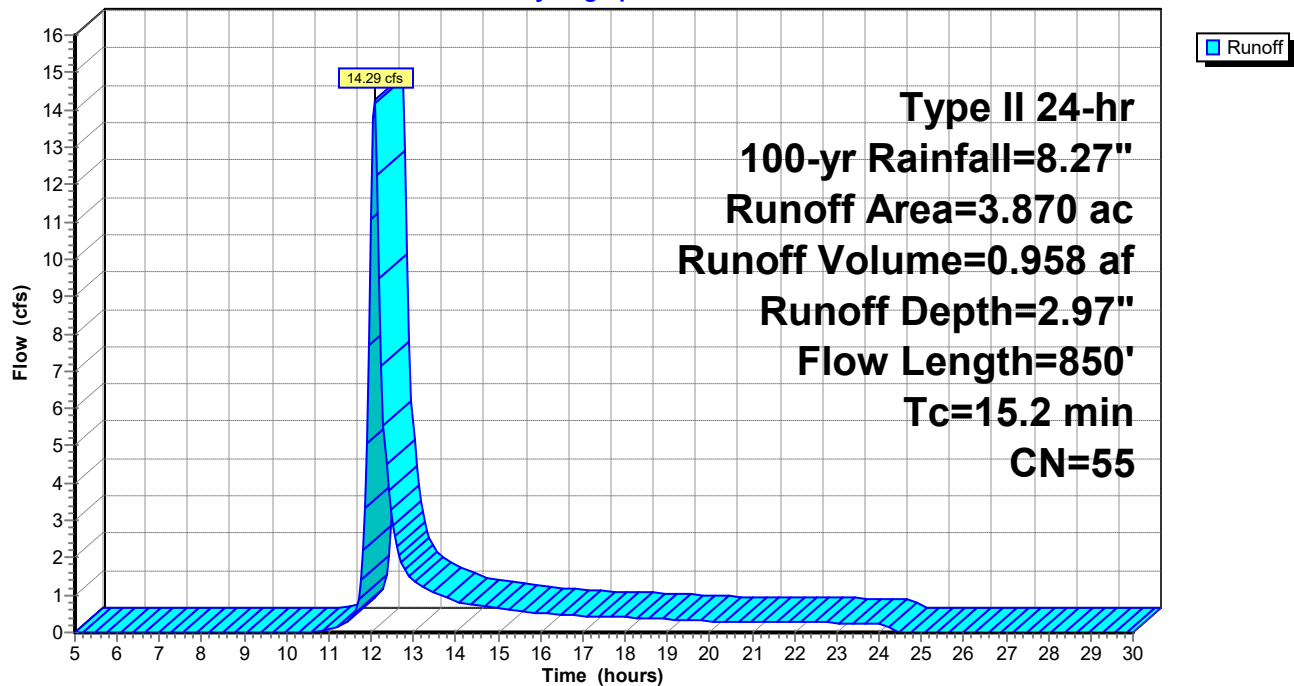
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Subcatchment 2S: DA-1B

Hydrograph



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Summary for Subcatchment 3S: DA-1C

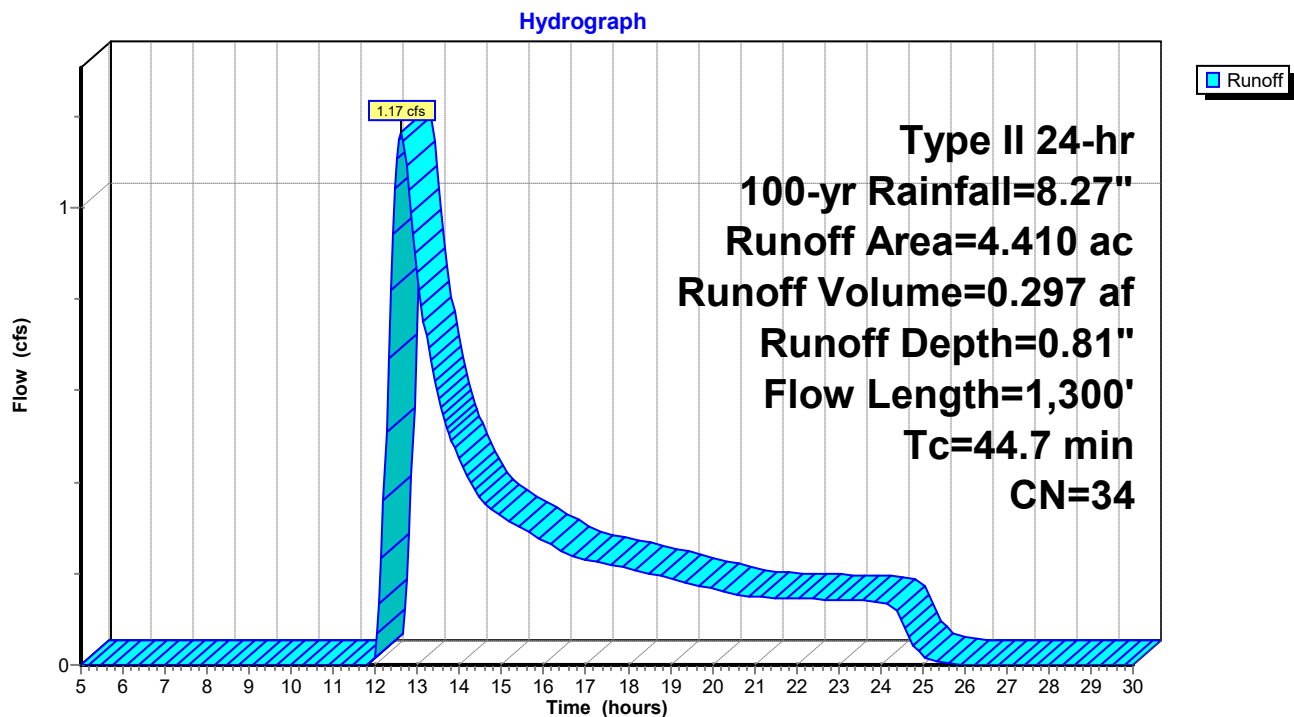
Runoff = 1.17 cfs @ 12.61 hrs, Volume= 0.297 af, Depth= 0.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=8.27"

Area (ac)	CN	Description
0.080	98	Paved parking, driveways, roofs
2.800	30	Meadow, non-grazed, HSG A
0.410	39	>75% Grass cover, Good, HSG A
1.120	36	Woods, Fair, HSG A
4.410	34	Weighted Average
4.330		98.19% Pervious Area
0.080		1.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.0	100	0.0050	0.04		Sheet Flow, Sheet Flow
					Woods: Light underbrush n= 0.400 P2= 3.10"
6.7	1,200	0.0346	2.99		Shallow Concentrated Flow, Shallow Concentrated Flow
					Unpaved Kv= 16.1 fps
44.7	1,300	Total			

Subcatchment 3S: DA-1C



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Summary for Subcatchment 4S: DA-1D

Runoff = 0.69 cfs @ 11.96 hrs, Volume= 0.039 af, Depth> 7.71"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

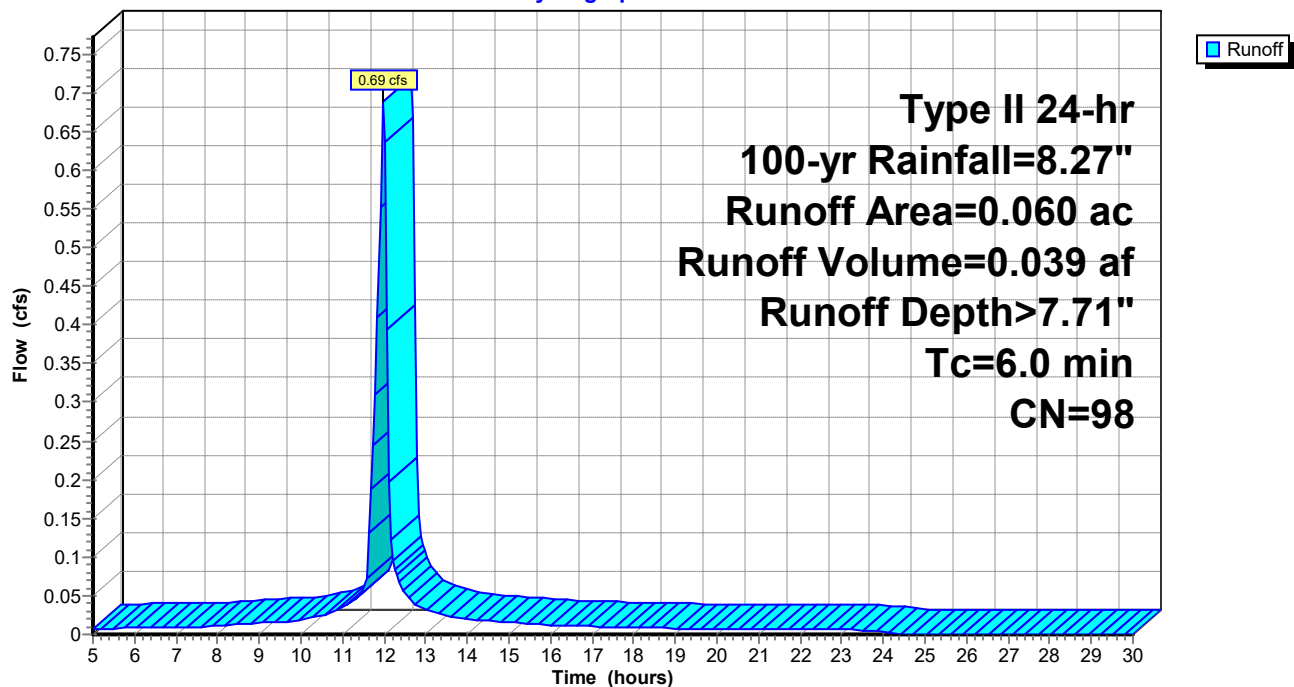
Type II 24-hr 100-yr Rainfall=8.27"

Area (ac)	CN	Description
0.060	98	Paved parking, driveways, roofs
0.060		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Direct Entry

Subcatchment 4S: DA-1D

Hydrograph



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Summary for Subcatchment 5S: DA-1E

Runoff = 6.55 cfs @ 11.98 hrs, Volume= 0.316 af, Depth= 2.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

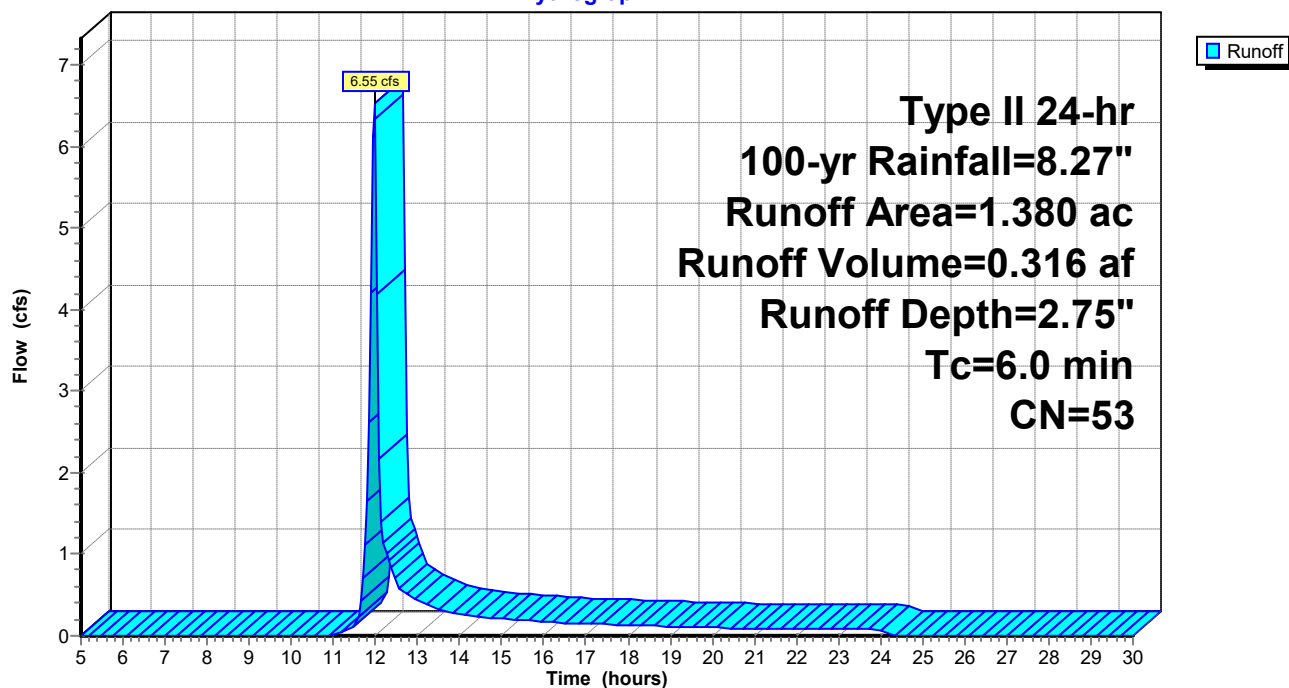
Type II 24-hr 100-yr Rainfall=8.27"

Area (ac)	CN	Description
0.380	98	Paved parking, driveways, roofs
0.590	39	>75% Grass cover, Good, HSG A
0.090	36	Woods, Fair, HSG A
0.320	30	Meadow, non-grazed, HSG A
1.380	53	Weighted Average
1.000		72.46% Pervious Area
0.380		27.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Direct Entry

Subcatchment 5S: DA-1E

Hydrograph



Post Development Conditions Model

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Type II 24-hr 100-yr Rainfall=8.27"

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Summary for Subcatchment 6S: DA-1F

Runoff = 13.86 cfs @ 12.04 hrs, Volume= 0.811 af, Depth= 4.23"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

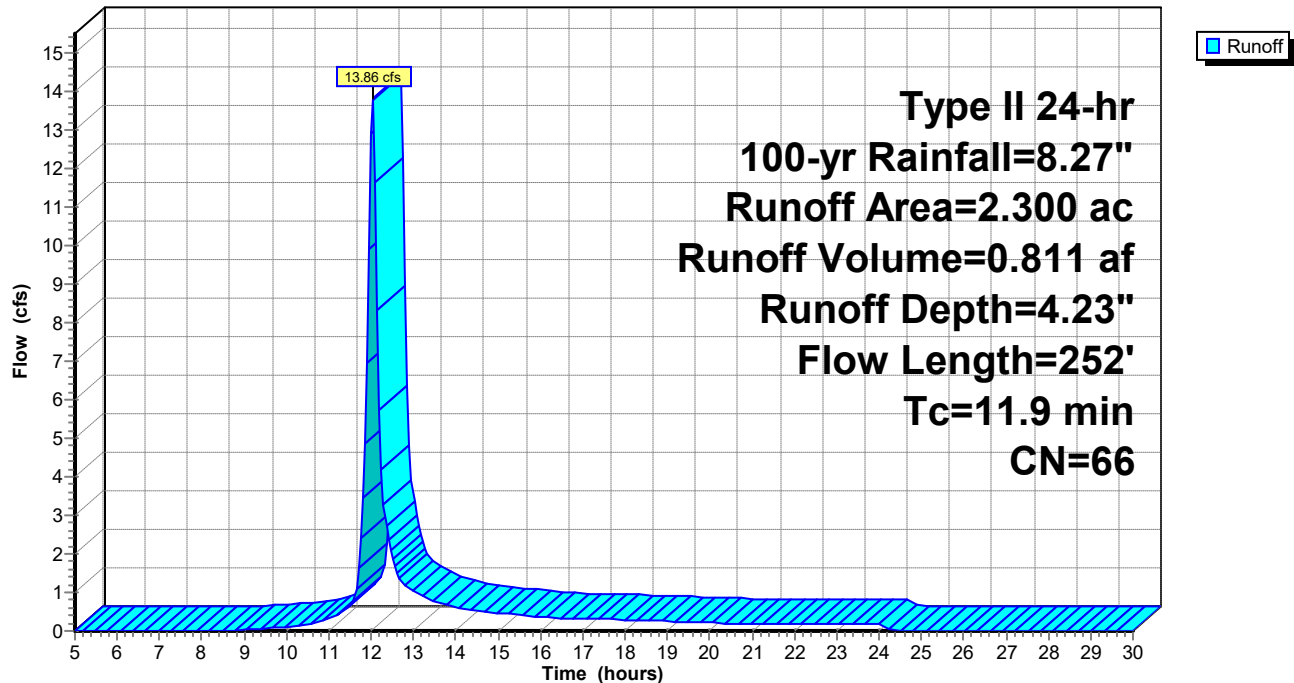
Type II 24-hr 100-yr Rainfall=8.27"

Area (ac)	CN	Description
0.780	98	Paved parking, driveways, roofs
0.930	61	>75% Grass cover, Good, HSG B
0.240	36	Woods, Fair, HSG A
0.350	30	Meadow, non-grazed, HSG A
2.300	66	Weighted Average
1.520		66.09% Pervious Area
0.780		33.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	50	0.0100	0.08		Sheet Flow, Sheet Flow
					Grass: Dense n= 0.240 P2= 3.10"
0.9	202	0.0545	3.76		Shallow Concentrated Flow, Shallow Concentrated Flow
					Unpaved Kv= 16.1 fps
11.9	252	Total			

Subcatchment 6S: DA-1F

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.27"

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Summary for Subcatchment 7S: DA-1G

Runoff = 6.12 cfs @ 11.97 hrs, Volume= 0.301 af, Depth= 5.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

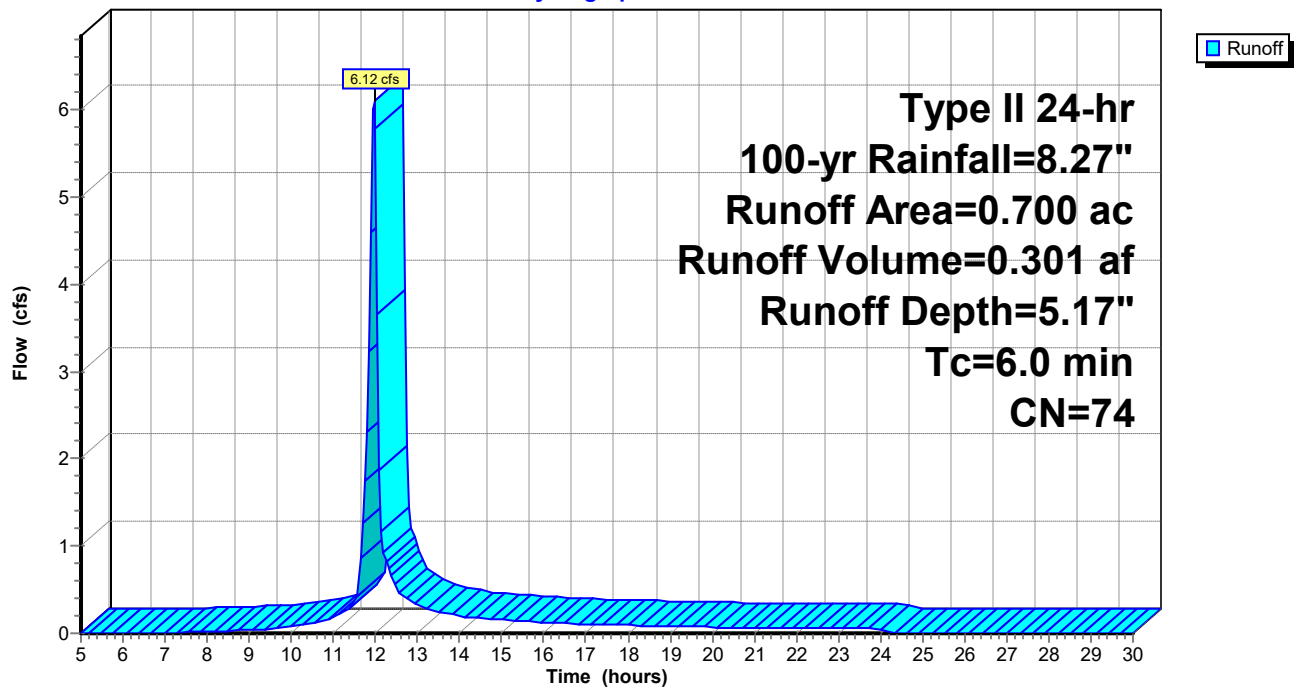
Type II 24-hr 100-yr Rainfall=8.27"

Area (ac)	CN	Description
0.260	98	Paved parking, driveways, roofs
0.320	61	>75% Grass cover, Good, HSG B
0.120	58	Meadow, non-grazed, HSG B
0.700	74	Weighted Average
0.440		62.86% Pervious Area
0.260		37.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Direct Entry

Subcatchment 7S: DA-1G

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.27"

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Summary for Subcatchment 8S: DA-1H

Runoff = 4.01 cfs @ 11.97 hrs, Volume= 0.198 af, Depth= 5.29"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

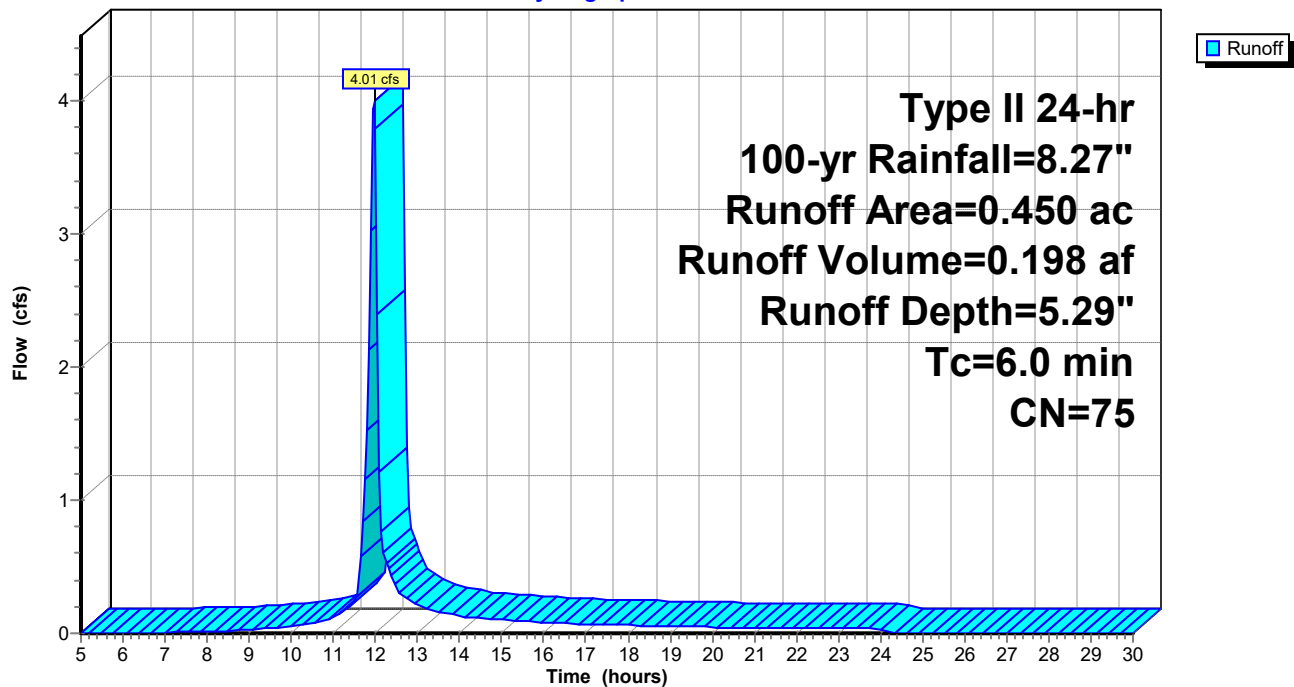
Type II 24-hr 100-yr Rainfall=8.27"

Area (ac)	CN	Description
0.170	98	Paved parking, driveways, roofs
0.220	61	>75% Grass cover, Good, HSG B
0.060	58	Meadow, non-grazed, HSG B
0.450	75	Weighted Average
0.280		62.22% Pervious Area
0.170		37.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Direct Entry

Subcatchment 8S: DA-1H

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.27"

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Summary for Subcatchment 9S: DA-1I

Runoff = 10.30 cfs @ 12.04 hrs, Volume= 0.610 af, Depth= 4.11"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

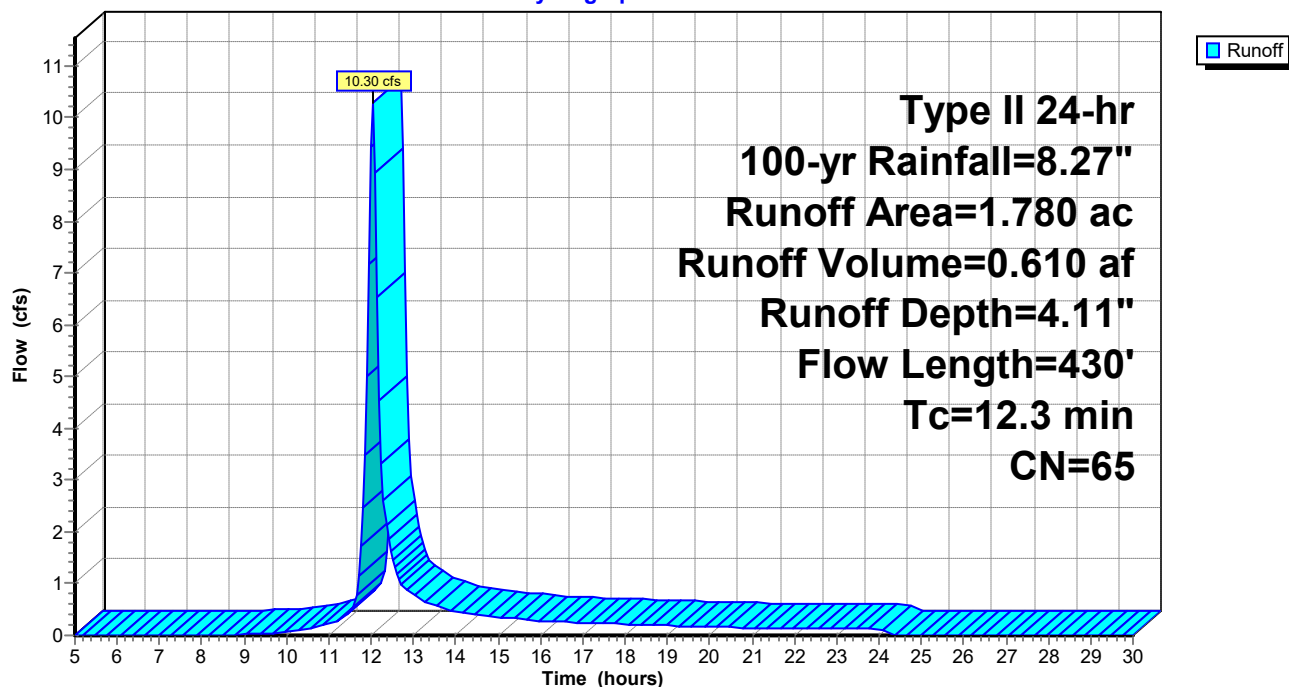
Type II 24-hr 100-yr Rainfall=8.27"

Area (ac)	CN	Description
0.240	98	Paved parking, driveways, roofs
0.790	61	>75% Grass cover, Good, HSG B
0.750	58	Meadow, non-grazed, HSG B
1.780	65	Weighted Average
1.540		86.52% Pervious Area
0.240		13.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0150	0.09		Sheet Flow, Sheet Flow
					Grass: Dense n= 0.240 P2= 3.10"
3.0	380	0.0171	2.11		Shallow Concentrated Flow, Shallow Concentrated Flow
					Unpaved Kv= 16.1 fps
12.3	430	Total			

Subcatchment 9S: DA-1I

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.27"

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Summary for Subcatchment 10S: DA-1J

Runoff = 15.77 cfs @ 12.05 hrs, Volume= 0.949 af, Depth= 3.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

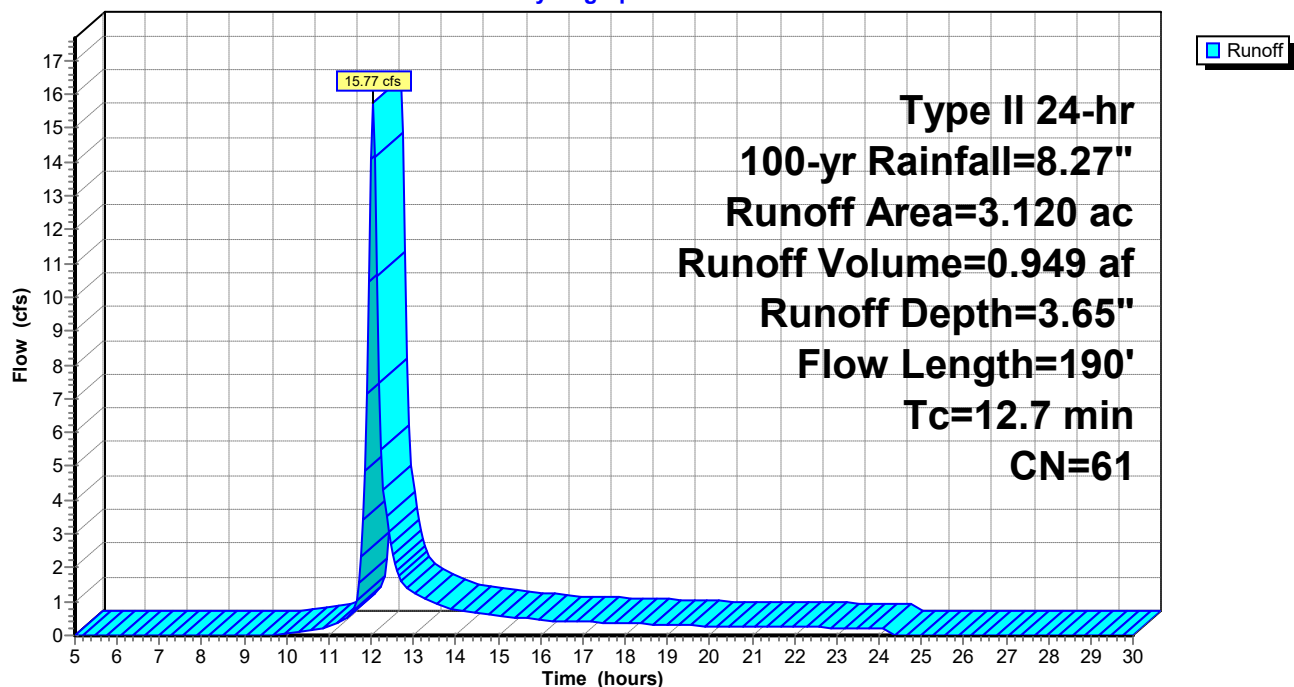
Type II 24-hr 100-yr Rainfall=8.27"

Area (ac)	CN	Description
2.430	58	Meadow, non-grazed, HSG B
0.530	61	>75% Grass cover, Good, HSG B
0.160	98	Paved parking, driveways, roofs
3.120	61	Weighted Average
2.960		94.87% Pervious Area
0.160		5.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	50	0.0100	0.08		Sheet Flow, Sheet Flow
					Grass: Dense n= 0.240 P2= 3.10"
1.7	140	0.0071	1.36		Shallow Concentrated Flow, Shallow Concentrated Flow
					Unpaved Kv= 16.1 fps
12.7	190	Total			

Subcatchment 10S: DA-1J

Hydrograph



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Summary for Reach 3R: Culvert Under Subdivision Entrance

[52] Hint: Inlet/Outlet conditions not evaluated

[82] Warning: Early inflow requires earlier time span

Inflow Area = 4.470 ac, 3.13% Impervious, Inflow Depth > 0.90" for 100-yr event
Inflow = 1.21 cfs @ 12.61 hrs, Volume= 0.336 af
Outflow = 1.21 cfs @ 12.65 hrs, Volume= 0.336 af, Atten= 0%, Lag= 2.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.94 fps, Min. Travel Time= 1.5 min

Avg. Velocity= 0.94 fps, Avg. Travel Time= 3.2 min

Peak Storage= 112 cf @ 12.62 hrs

Average Depth at Peak Storage= 0.63'

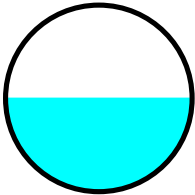
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 2.38 cfs

15.0" Round Pipe

n= 0.025 Corrugated metal

Length= 180.0' Slope= 0.0050 '/'

Inlet Invert= 583.00', Outlet Invert= 582.10'



Post Development Conditions Model

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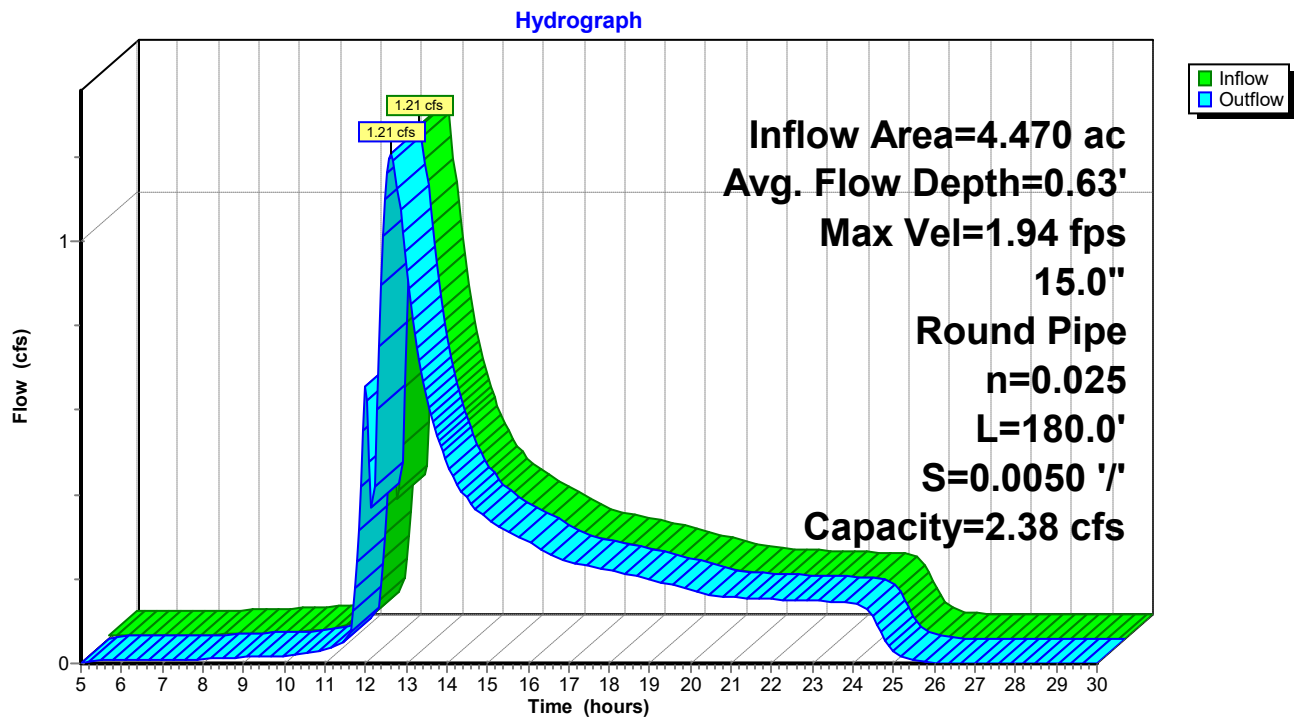
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Reach 3R: Culvert Under Subdivision Entrance



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Stage-Area-Storage for Reach 3R: Culvert Under Subdivision Entrance

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
583.00	0.0	0	584.04	1.1	196
583.02	0.0	1	584.06	1.1	200
583.04	0.0	2	584.08	1.1	203
583.06	0.0	4	584.10	1.1	206
583.08	0.0	6	584.12	1.2	209
583.10	0.0	8	584.14	1.2	211
583.12	0.1	11	584.16	1.2	214
583.14	0.1	14	584.18	1.2	216
583.16	0.1	17	584.20	1.2	218
583.18	0.1	20	584.22	1.2	219
583.20	0.1	23	584.24	1.2	221
583.22	0.1	26			
583.24	0.2	30			
583.26	0.2	33			
583.28	0.2	37			
583.30	0.2	41			
583.32	0.2	45			
583.34	0.3	49			
583.36	0.3	53			
583.38	0.3	57			
583.40	0.3	61			
583.42	0.4	65			
583.44	0.4	69			
583.46	0.4	74			
583.48	0.4	78			
583.50	0.5	83			
583.52	0.5	87			
583.54	0.5	91			
583.56	0.5	96			
583.58	0.6	100			
583.60	0.6	105			
583.62	0.6	109			
583.64	0.6	114			
583.66	0.7	118			
583.68	0.7	123			
583.70	0.7	127			
583.72	0.7	132			
583.74	0.8	136			
583.76	0.8	141			
583.78	0.8	145			
583.80	0.8	149			
583.82	0.9	154			
583.84	0.9	158			
583.86	0.9	162			
583.88	0.9	166			
583.90	0.9	170			
583.92	1.0	174			
583.94	1.0	178			
583.96	1.0	182			
583.98	1.0	186			
584.00	1.1	189			
584.02	1.1	193			

Post Development Conditions Model

Type II 24-hr 100-yr Rainfall=8.27"

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Summary for Pond 1P: Pre-Treat Basin 1

Inflow Area = 7.030 ac, 17.50% Impervious, Inflow Depth = 3.22" for 100-yr event
 Inflow = 28.32 cfs @ 12.04 hrs, Volume= 1.884 af
 Outflow = 27.86 cfs @ 12.06 hrs, Volume= 1.817 af, Atten= 2%, Lag= 0.9 min
 Primary = 27.86 cfs @ 12.06 hrs, Volume= 1.817 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs / 3
 Peak Elev= 593.90' @ 12.06 hrs Surf.Area= 2,714 sf Storage= 4,879 cf

Plug-Flow detention time= 28.9 min calculated for 1.813 af (96% of inflow)
 Center-of-Mass det. time= 8.8 min (861.2 - 852.3)

Volume	Invert	Avail.Storage	Storage Description
#1	591.00'	8,404 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
591.00	832	116.0	0	0	832
593.00	2,016	180.0	2,762	2,762	2,368
595.00	3,711	244.0	5,641	8,404	4,569

Device	Routing	Invert	Outlet Devices
#1	Primary	593.10'	15.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=27.60 cfs @ 12.06 hrs HW=593.89' (Free Discharge)
 ↑1=Broad-Crested Rectangular Weir (Weir Controls 27.60 cfs @ 2.32 fps)

Post Development Conditions Model

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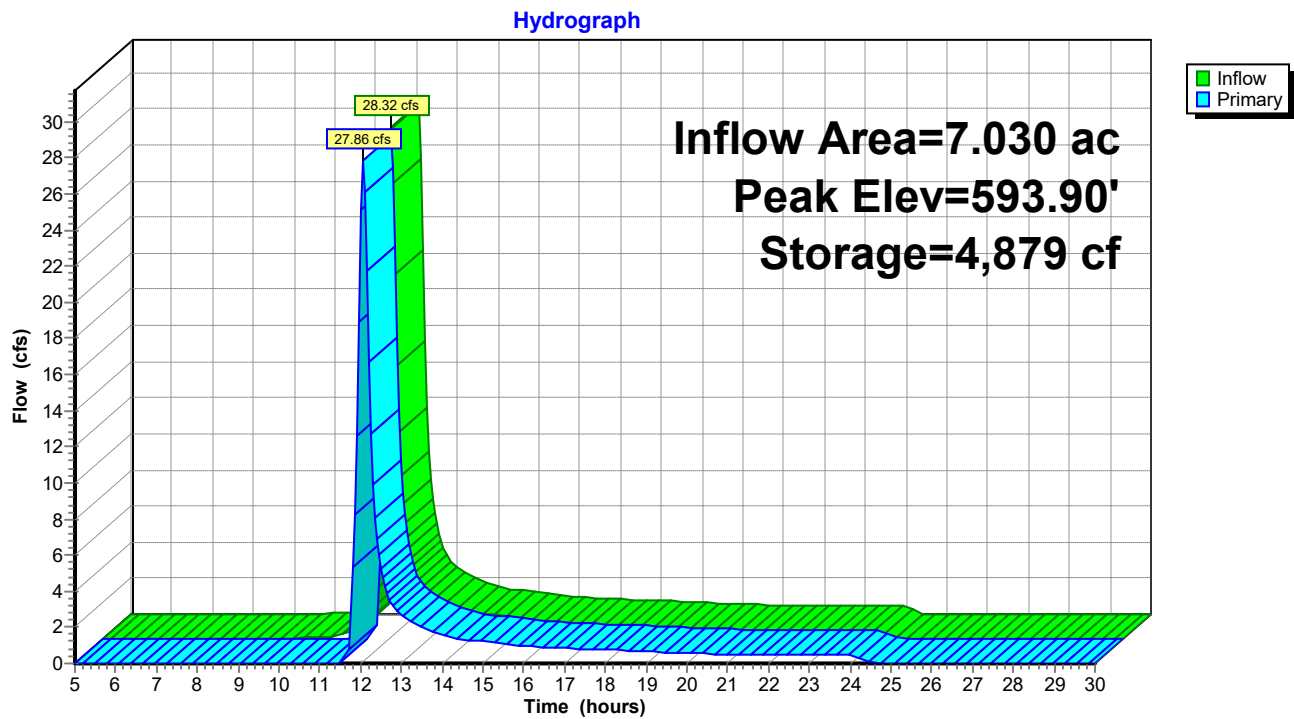
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Type II 24-hr 100-yr Rainfall=8.27"

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Pond 1P: Pre-Treat Basin 1



Post Development Conditions Model*Type II 24-hr 100-yr Rainfall=8.27"*

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Stage-Area-Storage for Pond 1P: Pre-Treat Basin 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
591.00	832	0	593.60	2,471	4,106
591.05	855	42	593.65	2,511	4,230
591.10	879	86	593.70	2,551	4,357
591.15	903	130	593.75	2,591	4,485
591.20	927	176	593.80	2,632	4,616
591.25	952	223	593.85	2,674	4,749
591.30	977	271	593.90	2,715	4,883
591.35	1,002	320	593.95	2,757	5,020
591.40	1,028	371	594.00	2,799	5,159
591.45	1,053	423	594.05	2,842	5,300
591.50	1,080	477	594.10	2,885	5,443
591.55	1,106	531	594.15	2,928	5,589
591.60	1,133	587	594.20	2,971	5,736
591.65	1,160	645	594.25	3,015	5,886
591.70	1,188	703	594.30	3,059	6,038
591.75	1,216	763	594.35	3,104	6,192
591.80	1,244	825	594.40	3,149	6,348
591.85	1,272	888	594.45	3,194	6,507
591.90	1,301	952	594.50	3,239	6,667
591.95	1,330	1,018	594.55	3,285	6,830
592.00	1,360	1,085	594.60	3,331	6,996
592.05	1,389	1,154	594.65	3,377	7,164
592.10	1,419	1,224	594.70	3,424	7,334
592.15	1,450	1,296	594.75	3,471	7,506
592.20	1,481	1,369	594.80	3,518	7,681
592.25	1,512	1,444	594.85	3,566	7,858
592.30	1,543	1,520	594.90	3,614	8,037
592.35	1,575	1,598	594.95	3,662	8,219
592.40	1,607	1,678	595.00	3,711	8,404
592.45	1,639	1,759			
592.50	1,672	1,841			
592.55	1,705	1,926			
592.60	1,738	2,012			
592.65	1,772	2,100			
592.70	1,806	2,189			
592.75	1,840	2,280			
592.80	1,874	2,373			
592.85	1,909	2,468			
592.90	1,945	2,564			
592.95	1,980	2,662			
593.00	2,016	2,762			
593.05	2,052	2,864			
593.10	2,089	2,967			
593.15	2,125	3,073			
593.20	2,162	3,180			
593.25	2,200	3,289			
593.30	2,238	3,400			
593.35	2,276	3,513			
593.40	2,314	3,627			
593.45	2,353	3,744			
593.50	2,392	3,863			
593.55	2,431	3,983			

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Type II 24-hr 100-yr Rainfall=8.27"

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Summary for Pond 2P: Infiltration Basin 1

[79] Warning: Submerged Pond 1P Primary device # 1 by 0.37'

Inflow Area = 7.030 ac, 17.50% Impervious, Inflow Depth = 3.10" for 100-yr event
Inflow = 27.86 cfs @ 12.06 hrs, Volume= 1.817 af
Outflow = 11.29 cfs @ 12.28 hrs, Volume= 1.817 af, Atten= 59%, Lag= 13.4 min
Discarded = 2.73 cfs @ 12.28 hrs, Volume= 1.514 af
Primary = 8.56 cfs @ 12.28 hrs, Volume= 0.303 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 593.48' @ 12.28 hrs Surf.Area= 11,757 sf Storage= 25,572 cf

Plug-Flow detention time= 83.1 min calculated for 1.813 af (100% of inflow)
Center-of-Mass det. time= 83.0 min (944.1 - 861.2)

Volume	Invert	Avail.Storage	Storage Description		
#1	590.00'	45,691 cf	Custom Stage Data (Irregular) Listed below		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
590.00	3,000	430.0	0	0	3,000
592.00	7,700	510.0	10,337	10,337	9,058
594.00	13,200	590.0	20,654	30,992	16,146
595.00	16,250	630.0	14,699	45,691	20,077

Device	Routing	Invert	Outlet Devices
#1	Discarded	590.00'	10.000 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 0.00' Phase-In= 0.01'
#2	Primary	593.00'	10.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=2.73 cfs @ 12.28 hrs HW=593.47' (Free Discharge)

↑1=Exfiltration (Controls 2.73 cfs)

Primary OutFlow Max=8.44 cfs @ 12.28 hrs HW=593.47' (Free Discharge)

↑2=Broad-Crested Rectangular Weir (Weir Controls 8.44 cfs @ 1.79 fps)

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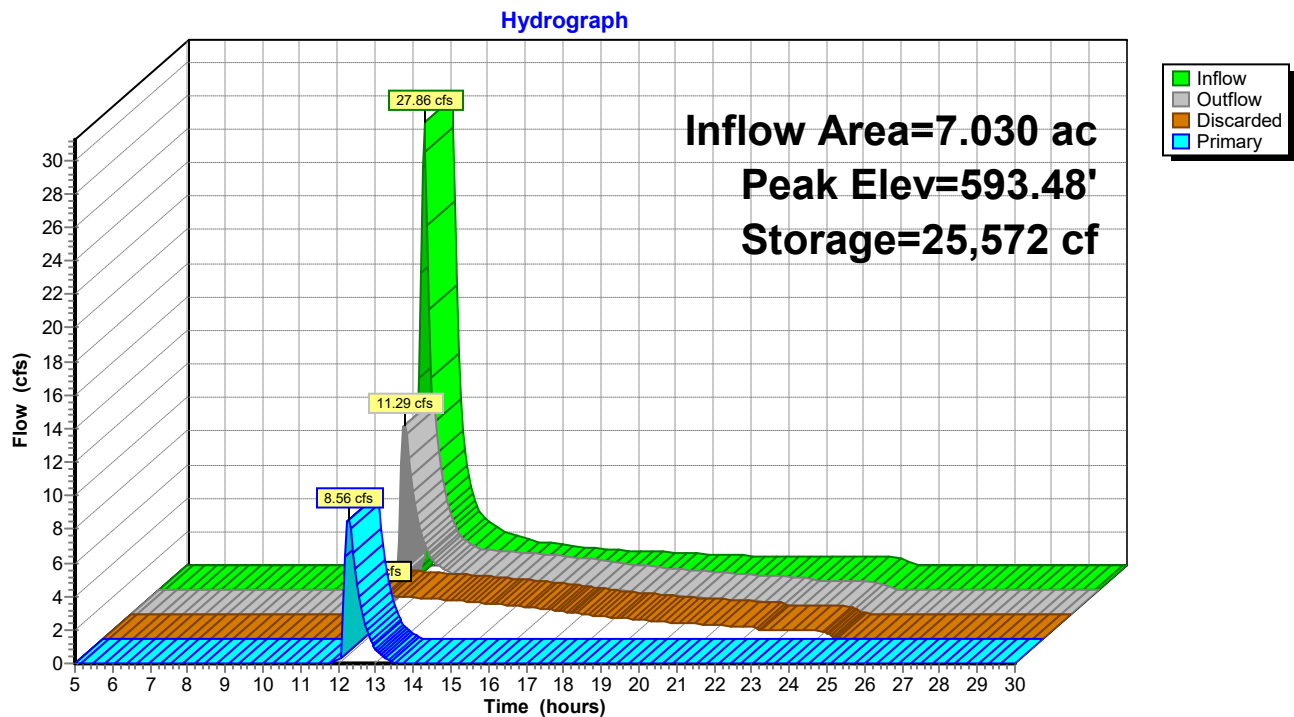
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Pond 2P: Infiltration Basin 1



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Stage-Area-Storage for Pond 2P: Infiltration Basin 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
590.00	3,000	0	592.60	9,350	16,534
590.05	3,117	258	592.65	9,487	17,050
590.10	3,235	517	592.70	9,625	17,567
590.15	3,352	775	592.75	9,763	18,083
590.20	3,470	1,034	592.80	9,900	18,599
590.25	3,588	1,292	592.85	10,038	19,116
590.30	3,705	1,551	592.90	10,175	19,632
590.35	3,823	1,809	592.95	10,313	20,148
590.40	3,940	2,067	593.00	10,450	20,665
590.45	4,058	2,326	593.05	10,587	21,181
590.50	4,175	2,584	593.10	10,725	21,697
590.55	4,292	2,843	593.15	10,862	22,214
590.60	4,410	3,101	593.20	11,000	22,730
590.65	4,527	3,360	593.25	11,138	23,247
590.70	4,645	3,618	593.30	11,275	23,763
590.75	4,763	3,877	593.35	11,413	24,279
590.80	4,880	4,135	593.40	11,550	24,796
590.85	4,998	4,393	593.45	11,688	25,312
590.90	5,115	4,652	593.50	11,825	25,828
590.95	5,233	4,910	593.55	11,962	26,345
591.00	5,350	5,169	593.60	12,100	26,861
591.05	5,467	5,427	593.65	12,237	27,377
591.10	5,585	5,686	593.70	12,375	27,894
591.15	5,702	5,944	593.75	12,513	28,410
591.20	5,820	6,202	593.80	12,650	28,926
591.25	5,938	6,461	593.85	12,788	29,443
591.30	6,055	6,719	593.90	12,925	29,959
591.35	6,173	6,978	593.95	13,063	30,476
591.40	6,290	7,236	594.00	13,200	30,992
591.45	6,408	7,495	594.05	13,352	31,727
591.50	6,525	7,753	594.10	13,505	32,462
591.55	6,642	8,012	594.15	13,657	33,197
591.60	6,760	8,270	594.20	13,810	33,932
591.65	6,877	8,528	594.25	13,963	34,667
591.70	6,995	8,787	594.30	14,115	35,402
591.75	7,113	9,045	594.35	14,268	36,136
591.80	7,230	9,304	594.40	14,420	36,871
591.85	7,348	9,562	594.45	14,573	37,606
591.90	7,465	9,821	594.50	14,725	38,341
591.95	7,583	10,079	594.55	14,877	39,076
592.00	7,700	10,337	594.60	15,030	39,811
592.05	7,837	10,854	594.65	15,182	40,546
592.10	7,975	11,370	594.70	15,335	41,281
592.15	8,112	11,887	594.75	15,488	42,016
592.20	8,250	12,403	594.80	15,640	42,751
592.25	8,388	12,919	594.85	15,793	43,486
592.30	8,525	13,436	594.90	15,945	44,221
592.35	8,663	13,952	594.95	16,098	44,956
592.40	8,800	14,468	595.00	16,250	45,691
592.45	8,938	14,985			
592.50	9,075	15,501			
592.55	9,212	16,017			

Post Development Conditions Model

Type II 24-hr 100-yr Rainfall=8.27"

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Summary for Pond 3P: Pre-Treat Basin 2-1

Inflow Area = 6.570 ac, 20.85% Impervious, Inflow Depth = 4.13" for 100-yr event
 Inflow = 37.08 cfs @ 12.02 hrs, Volume= 2.260 af
 Outflow = 36.27 cfs @ 12.03 hrs, Volume= 2.192 af, Atten= 2%, Lag= 0.8 min
 Primary = 36.27 cfs @ 12.03 hrs, Volume= 2.192 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs / 3
 Peak Elev= 581.89' @ 12.03 hrs Surf.Area= 2,891 sf Storage= 4,924 cf

Plug-Flow detention time= 25.8 min calculated for 2.188 af (97% of inflow)
 Center-of-Mass det. time= 8.6 min (842.2 - 833.6)

Volume	Invert	Avail.Storage	Storage Description
#1	579.00'	8,857 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
579.00	832	116.0	0	0	832
581.00	2,015	180.0	2,761	2,761	2,368
583.00	4,215	260.0	6,096	8,857	5,204

Device	Routing	Invert	Outlet Devices
#1	Primary	581.10'	20.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=35.55 cfs @ 12.03 hrs HW=581.88' (Free Discharge)
 ↑1=**Broad-Crested Rectangular Weir** (Weir Controls 35.55 cfs @ 2.29 fps)

Post Development Conditions Model

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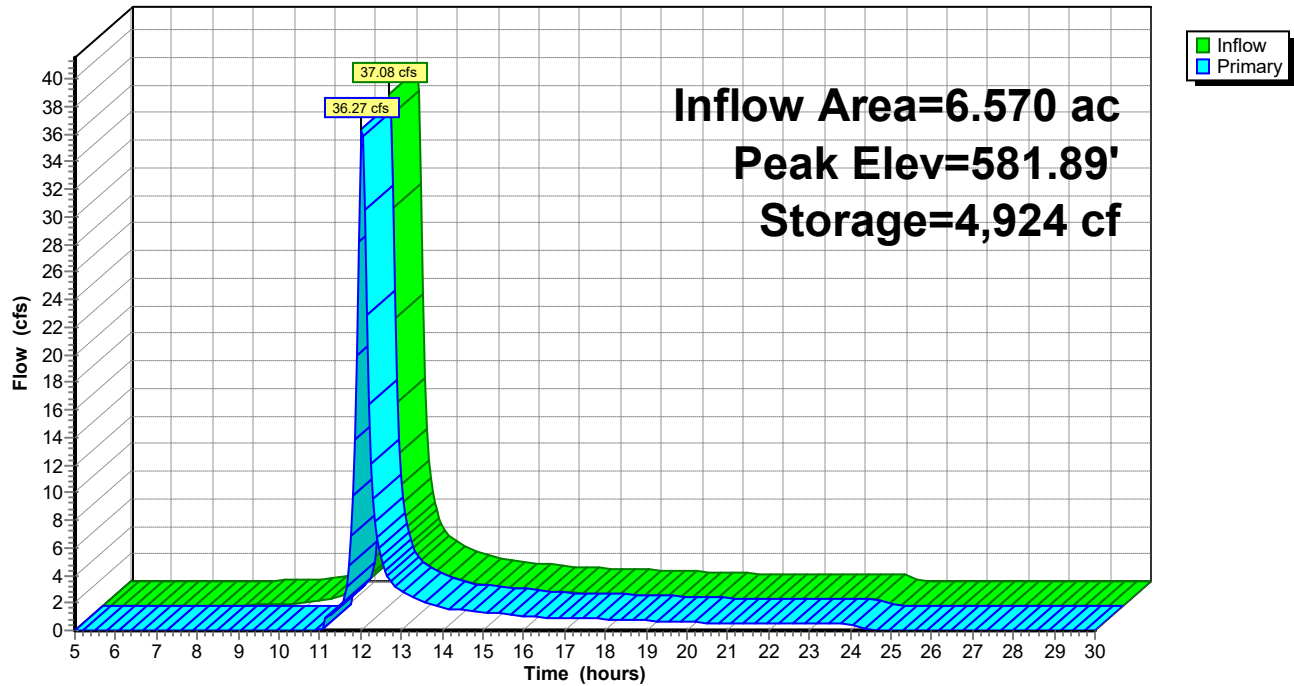
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Pond 3P: Pre-Treat Basin 2-1

Hydrograph



Post Development Conditions Model*Type II 24-hr 100-yr Rainfall=8.27"*

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Stage-Area-Storage for Pond 3P: Pre-Treat Basin 2-1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
579.00	832	0	581.60	2,591	4,139
579.05	855	42	581.65	2,642	4,270
579.10	879	86	581.70	2,694	4,403
579.15	903	130	581.75	2,746	4,539
579.20	927	176	581.80	2,799	4,678
579.25	952	223	581.85	2,852	4,819
579.30	977	271	581.90	2,906	4,963
579.35	1,002	320	581.95	2,960	5,110
579.40	1,027	371	582.00	3,015	5,259
579.45	1,053	423	582.05	3,070	5,411
579.50	1,079	477	582.10	3,126	5,566
579.55	1,106	531	582.15	3,182	5,724
579.60	1,133	587	582.20	3,239	5,884
579.65	1,160	644	582.25	3,296	6,048
579.70	1,187	703	582.30	3,354	6,214
579.75	1,215	763	582.35	3,412	6,383
579.80	1,243	825	582.40	3,471	6,555
579.85	1,272	888	582.45	3,530	6,730
579.90	1,301	952	582.50	3,590	6,908
579.95	1,330	1,018	582.55	3,650	7,089
580.00	1,359	1,085	582.60	3,711	7,273
580.05	1,389	1,154	582.65	3,772	7,460
580.10	1,419	1,224	582.70	3,834	7,651
580.15	1,449	1,295	582.75	3,896	7,844
580.20	1,480	1,369	582.80	3,959	8,040
580.25	1,511	1,443	582.85	4,022	8,240
580.30	1,542	1,520	582.90	4,086	8,442
580.35	1,574	1,598	582.95	4,150	8,648
580.40	1,606	1,677	583.00	4,215	8,857
580.45	1,638	1,758			
580.50	1,671	1,841			
580.55	1,704	1,925			
580.60	1,737	2,011			
580.65	1,771	2,099			
580.70	1,805	2,189			
580.75	1,839	2,280			
580.80	1,874	2,372			
580.85	1,908	2,467			
580.90	1,944	2,563			
580.95	1,979	2,661			
581.00	2,015	2,761			
581.05	2,060	2,863			
581.10	2,106	2,967			
581.15	2,152	3,074			
581.20	2,199	3,182			
581.25	2,246	3,294			
581.30	2,294	3,407			
581.35	2,342	3,523			
581.40	2,391	3,641			
581.45	2,440	3,762			
581.50	2,490	3,885			
581.55	2,540	4,011			

Post Development Conditions Model

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Summary for Pond 4P: Infiltration Basin 2

[79] Warning: Submerged Pond 3P Primary device # 1 by 0.12'

Inflow Area = 11.040 ac, 13.68% Impervious, Inflow Depth = 2.74" for 100-yr event
 Inflow = 36.91 cfs @ 12.03 hrs, Volume= 2.518 af
 Outflow = 6.55 cfs @ 12.49 hrs, Volume= 2.518 af, Atten= 82%, Lag= 27.8 min
 Discarded = 3.82 cfs @ 12.49 hrs, Volume= 2.373 af
 Primary = 2.73 cfs @ 12.49 hrs, Volume= 0.146 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 581.22' @ 12.49 hrs Surf.Area= 16,455 sf Storage= 39,483 cf

Plug-Flow detention time= 94.8 min calculated for 2.513 af (100% of inflow)
 Center-of-Mass det. time= 94.6 min (952.9 - 858.2)

Volume	Invert	Avail.Storage	Storage Description
#1	578.00'	73,283 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
578.00	8,351	444.0	0	0	8,351
580.00	13,197	519.0	21,364	21,364	14,179
582.00	18,703	582.0	31,740	53,104	19,807
583.00	21,691	613.0	20,179	73,283	22,815

Device	Routing	Invert	Outlet Devices
#1	Discarded	578.00'	10.000 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 0.00' Phase-In= 0.01'
#2	Primary	581.00'	10.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=3.82 cfs @ 12.49 hrs HW=581.22' (Free Discharge)

↑1=Exfiltration (Controls 3.82 cfs)

Primary OutFlow Max=2.71 cfs @ 12.49 hrs HW=581.22' (Free Discharge)

↑2=Broad-Crested Rectangular Weir (Weir Controls 2.71 cfs @ 1.21 fps)

Post Development Conditions Model

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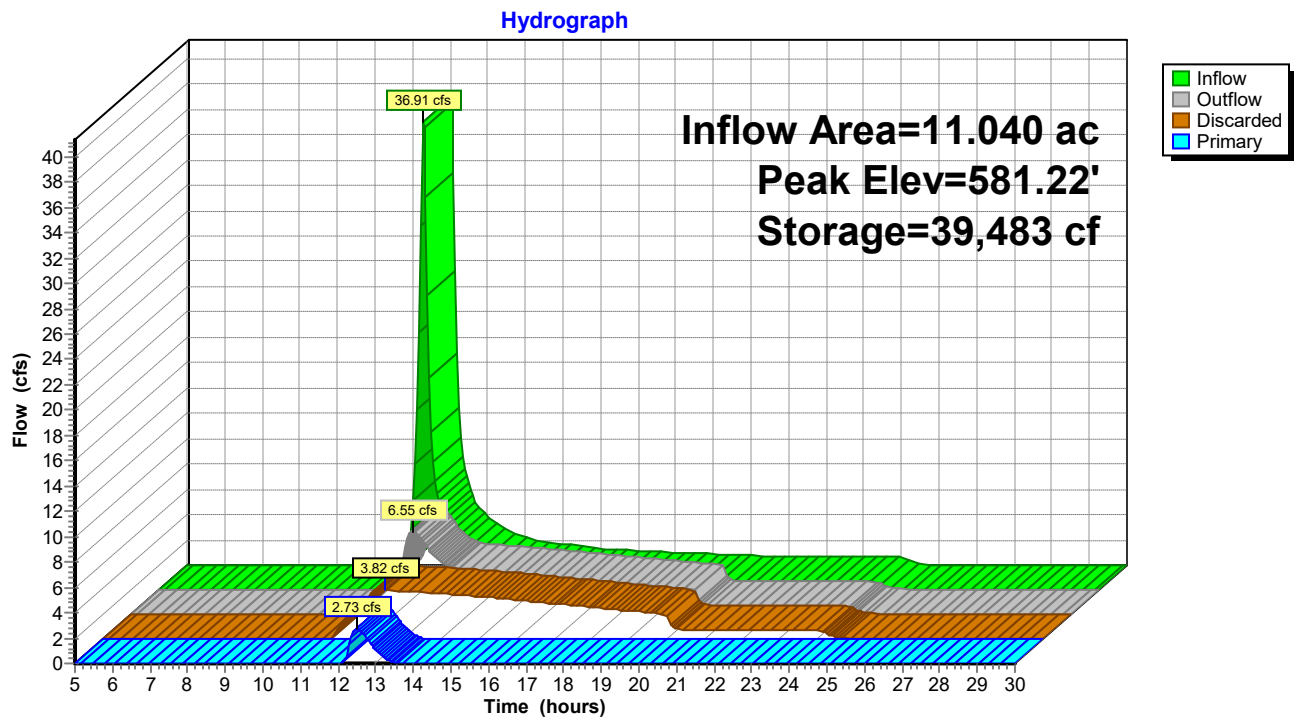
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Type II 24-hr 100-yr Rainfall=8.27"

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Pond 4P: Infiltration Basin 2



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Stage-Area-Storage for Pond 4P: Infiltration Basin 2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
578.00	8,351	0	580.60	14,748	29,743
578.05	8,459	420	580.65	14,881	30,484
578.10	8,567	846	580.70	15,015	31,231
578.15	8,676	1,277	580.75	15,150	31,986
578.20	8,786	1,714	580.80	15,284	32,746
578.25	8,896	2,156	580.85	15,420	33,514
578.30	9,008	2,603	580.90	15,556	34,288
578.35	9,119	3,056	580.95	15,693	35,070
578.40	9,232	3,515	581.00	15,830	35,858
578.45	9,345	3,980	581.05	15,968	36,653
578.50	9,459	4,450	581.10	16,107	37,455
578.55	9,574	4,925	581.15	16,246	38,263
578.60	9,689	5,407	581.20	16,386	39,079
578.65	9,805	5,894	581.25	16,526	39,902
578.70	9,922	6,387	581.30	16,667	40,732
578.75	10,039	6,887	581.35	16,809	41,569
578.80	10,157	7,391	581.40	16,951	42,413
578.85	10,276	7,902	581.45	17,093	43,264
578.90	10,395	8,419	581.50	17,237	44,122
578.95	10,515	8,942	581.55	17,381	44,987
579.00	10,636	9,471	581.60	17,525	45,860
579.05	10,757	10,005	581.65	17,670	46,740
579.10	10,880	10,546	581.70	17,816	47,627
579.15	11,003	11,093	581.75	17,962	48,522
579.20	11,126	11,647	581.80	18,109	49,423
579.25	11,250	12,206	581.85	18,257	50,332
579.30	11,375	12,772	581.90	18,405	51,249
579.35	11,501	13,343	581.95	18,554	52,173
579.40	11,627	13,922	582.00	18,703	53,104
579.45	11,754	14,506	582.05	18,847	54,043
579.50	11,882	15,097	582.10	18,992	54,989
579.55	12,010	15,694	582.15	19,137	55,942
579.60	12,139	16,298	582.20	19,283	56,903
579.65	12,269	16,908	582.25	19,429	57,871
579.70	12,400	17,525	582.30	19,576	58,846
579.75	12,531	18,148	582.35	19,724	59,828
579.80	12,663	18,778	582.40	19,872	60,818
579.85	12,795	19,415	582.45	20,020	61,815
579.90	12,928	20,058	582.50	20,169	62,820
579.95	13,062	20,708	582.55	20,319	63,832
580.00	13,197	21,364	582.60	20,469	64,852
580.05	13,323	22,027	582.65	20,620	65,879
580.10	13,450	22,696	582.70	20,771	66,914
580.15	13,577	23,372	582.75	20,923	67,956
580.20	13,705	24,054	582.80	21,076	69,006
580.25	13,833	24,742	582.85	21,229	70,064
580.30	13,962	25,437	582.90	21,382	71,129
580.35	14,091	26,139	582.95	21,536	72,202
580.40	14,222	26,846	583.00	21,691	73,283
580.45	14,352	27,561			
580.50	14,484	28,282			
580.55	14,616	29,009			

Post Development Conditions Model

Type II 24-hr 100-yr Rainfall=8.27"

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Summary for Pond 5P: Infiltration Basin A

Inflow Area = 15.960 ac, 3.88% Impervious, Inflow Depth = 3.88" for 100-yr event
 Inflow = 53.34 cfs @ 12.25 hrs, Volume= 5.163 af
 Outflow = 53.22 cfs @ 12.27 hrs, Volume= 5.163 af, Atten= 0%, Lag= 1.0 min
 Discarded = 2.20 cfs @ 12.27 hrs, Volume= 2.227 af
 Primary = 51.02 cfs @ 12.27 hrs, Volume= 2.936 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 595.33' @ 12.27 hrs Surf.Area= 9,472 sf Storage= 20,620 cf

Plug-Flow detention time= 52.3 min calculated for 5.163 af (100% of inflow)
 Center-of-Mass det. time= 52.2 min (908.9 - 856.7)

Volume	Invert	Avail.Storage	Storage Description		
#1	592.00'	38,563 cf	Custom Stage Data (Irregular) Listed below		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
592.00	2,850	325.0	0	0	2,850
594.00	6,500	405.0	9,103	9,103	7,554
596.00	10,955	486.0	17,262	26,365	13,366
597.00	13,485	526.0	12,198	38,563	16,627

Device	Routing	Invert	Outlet Devices											
#1	Discarded	592.00'	10.000 in/hr Exfiltration over Surface area											
			Conductivity to Groundwater Elevation = 0.00' Phase-In= 0.01'											
#2	Primary	594.80'	50.0' long x 2.0' breadth Broad-Crested Rectangular Weir											
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00											
			2.50 3.00 3.50											
			Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88											
			2.85 3.07 3.20 3.32											

Discarded OutFlow Max=2.20 cfs @ 12.27 hrs HW=595.33' (Free Discharge)

↑ **1=Exfiltration** (Controls 2.20 cfs)

Primary OutFlow Max=50.62 cfs @ 12.27 hrs HW=595.33' (Free Discharge)

↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 50.62 cfs @ 1.90 fps)

Post Development Conditions Model

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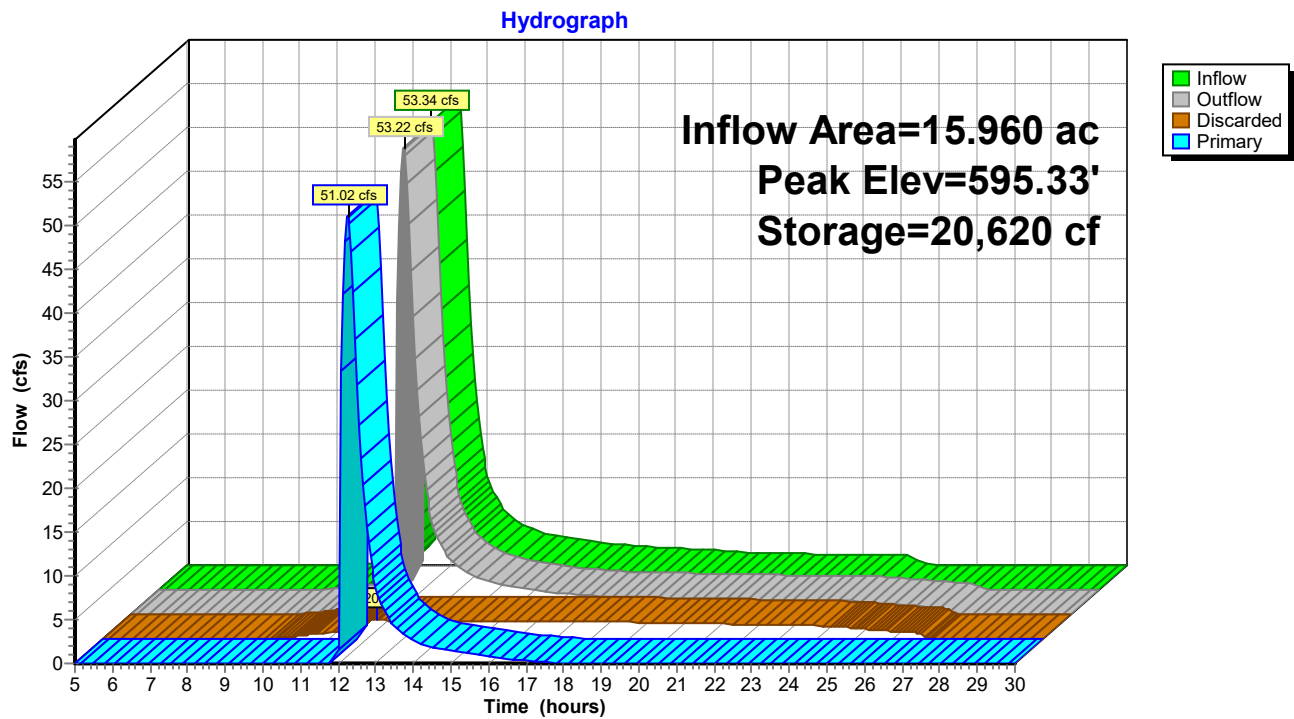
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Pond 5P: Infiltration Basin A



Post Development Conditions Model

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Stage-Area-Storage for Pond 5P: Infiltration Basin A

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
592.00	2,850	0	594.60	7,837	14,281
592.05	2,941	228	594.65	7,948	14,713
592.10	3,033	455	594.70	8,059	15,145
592.15	3,124	683	594.75	8,171	15,576
592.20	3,215	910	594.80	8,282	16,008
592.25	3,306	1,138	594.85	8,393	16,439
592.30	3,397	1,365	594.90	8,505	16,871
592.35	3,489	1,593	594.95	8,616	17,302
592.40	3,580	1,821	595.00	8,728	17,734
592.45	3,671	2,048	595.05	8,839	18,165
592.50	3,763	2,276	595.10	8,950	18,597
592.55	3,854	2,503	595.15	9,062	19,029
592.60	3,945	2,731	595.20	9,173	19,460
592.65	4,036	2,958	595.25	9,284	19,892
592.70	4,128	3,186	595.30	9,396	20,323
592.75	4,219	3,414	595.35	9,507	20,755
592.80	4,310	3,641	595.40	9,618	21,186
592.85	4,401	3,869	595.45	9,730	21,618
592.90	4,492	4,096	595.50	9,841	22,049
592.95	4,584	4,324	595.55	9,953	22,481
593.00	4,675	4,551	595.60	10,064	22,913
593.05	4,766	4,779	595.65	10,175	23,344
593.10	4,858	5,006	595.70	10,287	23,776
593.15	4,949	5,234	595.75	10,398	24,207
593.20	5,040	5,462	595.80	10,509	24,639
593.25	5,131	5,689	595.85	10,621	25,070
593.30	5,222	5,917	595.90	10,732	25,502
593.35	5,314	6,144	595.95	10,844	25,933
593.40	5,405	6,372	596.00	10,955	26,365
593.45	5,496	6,599	596.05	11,081	26,795
593.50	5,588	6,827	596.10	11,208	27,585
593.55	5,679	7,055	596.15	11,334	28,195
593.60	5,770	7,282	596.20	11,461	28,805
593.65	5,861	7,510	596.25	11,588	29,415
593.70	5,953	7,737	596.30	11,714	30,024
593.75	6,044	7,965	596.35	11,841	30,634
593.80	6,135	8,192	596.40	11,967	31,244
593.85	6,226	8,420	596.45	12,094	31,854
593.90	6,317	8,648	596.50	12,220	32,464
593.95	6,409	8,875	596.55	12,346	33,074
594.00	6,500	9,103	596.60	12,473	33,684
594.05	6,611	9,534	596.65	12,599	34,294
594.10	6,723	9,966	596.70	12,726	34,904
594.15	6,834	10,397	596.75	12,853	35,514
594.20	6,946	10,829	596.80	12,979	36,124
594.25	7,057	11,260	596.85	13,106	36,733
594.30	7,168	11,692	596.90	13,232	37,343
594.35	7,280	12,124	596.95	13,359	37,953
594.40	7,391	12,555	597.00	13,485	38,563
594.45	7,502	12,987			
594.50	7,614	13,418			
594.55	7,725	13,850			

Post Development Conditions Model

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Summary for Pond 6P: Pre-Treat Basin 2-2

Inflow Area = 4.470 ac, 3.13% Impervious, Inflow Depth > 0.90" for 100-yr event
 Inflow = 1.21 cfs @ 12.65 hrs, Volume= 0.336 af
 Outflow = 1.20 cfs @ 12.66 hrs, Volume= 0.326 af, Atten= 0%, Lag= 0.5 min
 Primary = 1.20 cfs @ 12.66 hrs, Volume= 0.326 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs / 3
 Peak Elev= 582.08' @ 12.66 hrs Surf.Area= 618 sf Storage= 463 cf

Plug-Flow detention time= 26.3 min calculated for 0.326 af (97% of inflow)
 Center-of-Mass det. time= 12.0 min (965.9 - 954.0)

Volume	Invert	Avail.Storage	Storage Description		
#1	581.00'	1,214 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
581.00	262	60.0	0	0	262
583.00	1,038	120.0	1,214	1,214	1,140

Device	Routing	Invert	Outlet Devices											
#1	Primary	582.00'	20.0' long x 2.0' breadth Broad-Crested Rectangular Weir											
			Head (feet)	0.20	0.40	0.60	0.80	1.00	1.20	1.40	1.60	1.80	2.00	
				2.50	3.00	3.50								
			Coef. (English)	2.54	2.61	2.61	2.60	2.66	2.70	2.77	2.89	2.88		
				2.85	3.07	3.20	3.32							

Primary OutFlow Max=1.20 cfs @ 12.66 hrs HW=582.08' (Free Discharge)

↑1=**Broad-Crested Rectangular Weir** (Weir Controls 1.20 cfs @ 0.73 fps)

Post Development Conditions Model

Prepared by Rennia Engineering Design, PLLC

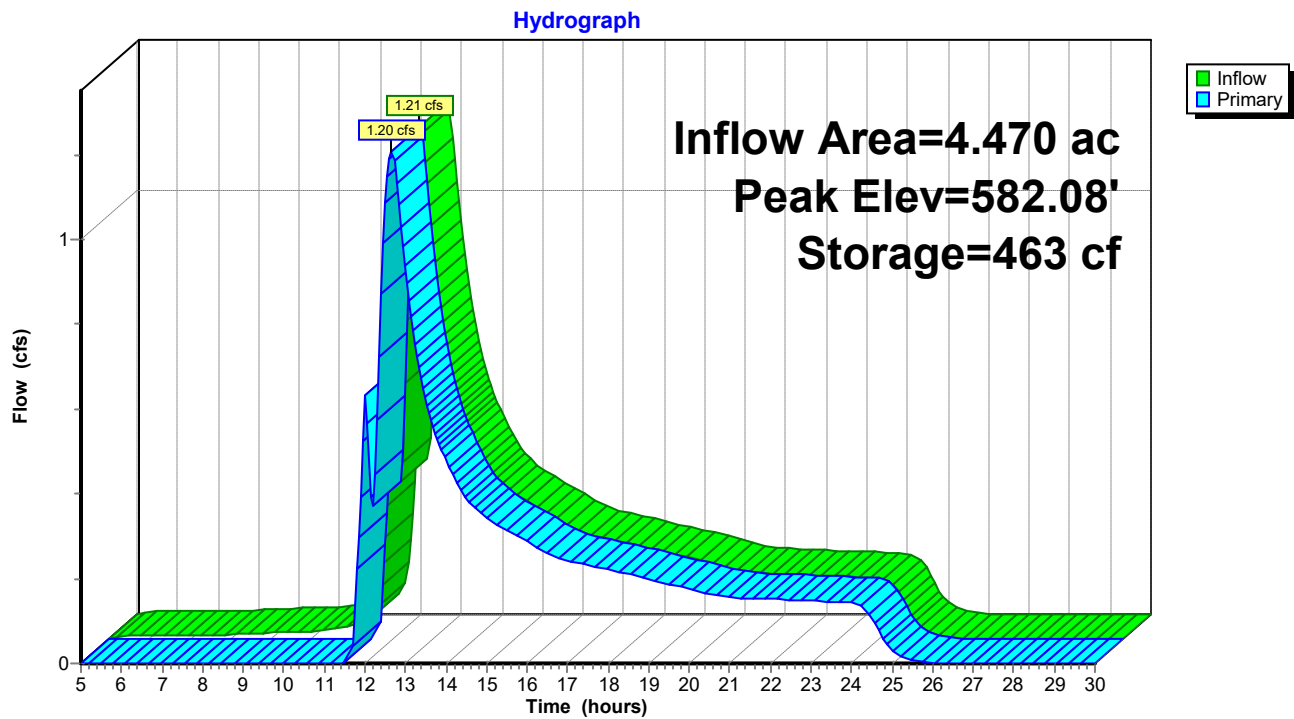
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Type II 24-hr 100-yr Rainfall=8.27"

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Pond 6P: Pre-Treat Basin 2-2



Post Development Conditions Model*Type II 24-hr 100-yr Rainfall=8.27"*

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Stage-Area-Storage for Pond 6P: Pre-Treat Basin 2-2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
581.00	262	0	582.04	601	437
581.02	267	5	582.06	609	449
581.04	272	11	582.08	617	461
581.06	278	16	582.10	625	474
581.08	283	22	582.12	633	486
581.10	289	28	582.14	641	499
581.12	294	33	582.16	649	512
581.14	300	39	582.18	658	525
581.16	305	45	582.20	666	538
581.18	311	51	582.22	674	552
581.20	316	58	582.24	683	565
581.22	322	64	582.26	691	579
581.24	328	71	582.28	699	593
581.26	334	77	582.30	708	607
581.28	340	84	582.32	716	621
581.30	346	91	582.34	725	636
581.32	352	98	582.36	734	650
581.34	358	105	582.38	742	665
581.36	364	112	582.40	751	680
581.38	370	119	582.42	760	695
581.40	376	127	582.44	769	710
581.42	382	135	582.46	778	726
581.44	389	142	582.48	787	741
581.46	395	150	582.50	796	757
581.48	401	158	582.52	805	773
581.50	408	166	582.54	814	789
581.52	414	174	582.56	823	806
581.54	421	183	582.58	832	822
581.56	427	191	582.60	842	839
581.58	434	200	582.62	851	856
581.60	441	209	582.64	860	873
581.62	448	217	582.66	870	890
581.64	454	226	582.68	879	908
581.66	461	236	582.70	889	926
581.68	468	245	582.72	898	943
581.70	475	254	582.74	908	962
581.72	482	264	582.76	918	980
581.74	489	274	582.78	927	998
581.76	496	283	582.80	937	1,017
581.78	503	293	582.82	947	1,036
581.80	511	304	582.84	957	1,055
581.82	518	314	582.86	967	1,074
581.84	525	324	582.88	977	1,093
581.86	533	335	582.90	987	1,113
581.88	540	346	582.92	997	1,133
581.90	548	357	582.94	1,007	1,153
581.92	555	368	582.96	1,017	1,173
581.94	563	379	582.98	1,028	1,194
581.96	570	390	583.00	1,038	1,214
581.98	578	402			
582.00	586	413			
582.02	594	425			

Post Development Conditions Model

Prepared by Rennia Engineering Design, PLLC

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Type II 24-hr 100-yr Rainfall=8.27"

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Page 114

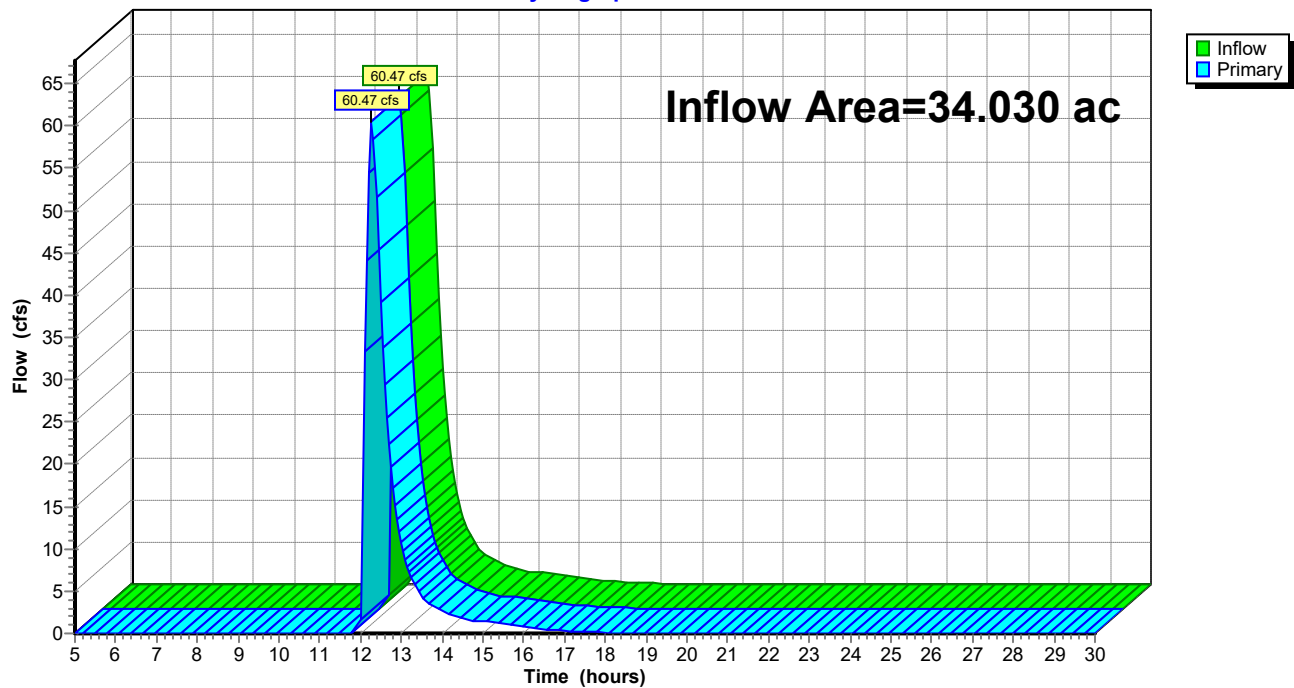
Summary for Link 1L: DP-1

Inflow Area = 34.030 ac, 9.87% Impervious, Inflow Depth = 1.19" for 100-yr event
Inflow = 60.47 cfs @ 12.28 hrs, Volume= 3.384 af
Primary = 60.47 cfs @ 12.28 hrs, Volume= 3.384 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Link 1L: DP-1

Hydrograph



TIME OF CONCENTRATION

SITE DATA

ZONING DISTRICT: "SR" SUBURBAN RESIDENTIAL
LOT SIZE: #24.13 ACRES
TAX GRID No.: 132000-7167-00-245925
PROPERTY ADDRESS: 34 CASCADE ROAD
AMENIA, NY 12501
PROPERTY OWNER: DSSL, LLC

DATE	REVISION	ENGINEERING, DESIGN, & PLANS PREPARED BY:				
		RENNIA ENGINEERING DESIGN, PLLC				
		CIVIL • ENVIRONMENTAL • STRUCTURAL				
		6 Dover Village Plaza, Suite 5, P.O. Box 400, Dover Plains, NY 12522				
		Tel. (845) 877-0555, Fax: (845) 877-0556				
		Copyright 2020, All Rights Reserved				
		IT IS A VIOLATION OF NEW YORK STATE EDUCATION LAW FOR ANY PERSON TO ALTER THESE PLANS, SPECIFICATIONS OR REPORTS IN ANY MANNER WITHOUT THE WRITTEN PERMISSION OF THE PROFESSIONAL ENGINEER.				
		IT IS UNLAWFUL TO REPRODUCE OR TRANSMIT THESE PLANS, SPECIFICATIONS OR REPORTS IN ANY MANNER WITHOUT THE WRITTEN PERMISSION OF THE PROFESSIONAL ENGINEER.				
		IT IS UNLAWFUL TO ACT UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER WITHOUT THE WRITTEN PERMISSION OF THE PROFESSIONAL ENGINEER.				
PRELIMINARY						
CASCADE CREEK SUBDIVISION						
TOWN OF ALENIA						
DUTCHESS COUNTY, NY						
POST-DEVELOPMENT STORMWATER DRAINAGE AREA MAP						
DATE	SCALE	DESIGNED BY	DRAWN BY	CHECKED BY	JOB NO.	SHEET NO.
8/10/2026	1"=100'	RED	RED	PAR	2-410-9	1 of 1

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APPENDIX E

Unified Sizing Criteria

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Project:	Cascade Creek
Location:	Town of Amenia
County:	Dutchess
State:	NY
Date:	8/9/2026

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

$$R_v = 0.05 + 0.009 (I)$$

$$A = \text{site area in acres}$$

$$P = \text{rainfall (in) 90\% Rainfall Event Number (See Figure 4.1)}$$

Water Quality Calculations

Drainage Area ID	Drainage Area (ac)	Total Existing Disturbed Impervious (ac)	New Impervious (ac)	Existing Disturbed I (%)	New I (%)	Existing Rv	New Rv	P	100% New Imp. WQv (ac-ft)	25% Existing Disturbed (ac-ft)	Total WQv (ac-ft)	Total WQv (cu-ft)	Comments
1A	15.96	0.000	0.000	0.0	0.0	0.00	0.00	1.3	0.000	0.000	0.000	0.00	* No dev.; Infiltr. Basin A
1B	3.87	0.000	0.612	0.0	15.8	0.05	0.19	1.3	0.081	0.000	0.081	3512.78	Infiltr. Basin 1
1C	4.41	0.000	0.000	0.0	0.0	0.05	0.05	1.3	0.024	0.000	0.024	1040.54	Limited dev.; Infiltr. Basin 2
1D	0.06	0.000	0.060	0.0	100.0	0.05	0.95	1.3	0.006	0.000	0.006	268.98	Entrance; Infiltr. Basin 2
1E	1.38	0.000	0.376	0.0	27.3	0.05	0.30	1.3	0.044	0.000	0.044	1923.79	Infiltr. Basin 1
1F	2.30	0.000	0.780	0.0	33.9	0.05	0.36	1.3	0.089	0.000	0.089	3856.27	Infiltr. Basin 2
1G	0.70	0.000	0.263	0.0	37.6	0.05	0.39	1.3	0.029	0.000	0.029	1283.00	Infiltr. Basin 2
1H	0.45	0.000	0.167	0.0	37.1	0.05	0.38	1.3	0.019	0.000	0.019	815.44	Infiltr. Basin 2
1I	1.78	0.000	0.243	0.0	13.7	0.05	0.17	1.3	0.033	0.000	0.033	1453.31	Infiltr. Basin 1
1J	3.12	0.000	0.162	0.0	5.2	0.05	0.10	1.3	0.033	0.000	0.033	1425.04	Infiltr. Basin 2
Total	34.03	0.00	2.66						0.358	0.000	0.358	15579.17	

Runoff Reduction Volume Calculations

Post-Dev. Drainage Area	Contributing Area (acres)	Total New Impervious (acres)	I (%)	Rv	P	Aic	S	Min RRV Required (ac-ft)	Min RRV Required (cu-ft)	Comments
1A	15.96	0.000	0.00	0.05	1.3	0.000	0.36	0.000	0.00	
1B	3.87	0.612	15.82	0.19	1.3	0.612	0.48	0.006	266.60	
1C	4.41	0.000	0.00	0.05	1.3	0.000	0.52	0.000	0.00	
1D	0.06	0.060	100.17	0.95	1.3	0.060	0.45	0.003	121.44	
1E	1.38	0.376	27.27	0.30	1.3	0.376	0.51	0.006	266.28	
1F	2.30	0.780	33.92	0.36	1.3	0.780	0.49	0.015	641.54	
1G	0.70	0.263	37.60	0.39	1.3	0.263	0.40	0.004	192.96	
1H	0.45	0.167	37.11	0.38	1.3	0.167	0.40	0.003	121.05	
1I	1.78	0.243	13.67	0.17	1.3	0.243	0.40	0.002	79.46	
1J	3.12	0.162	5.20	0.10	1.3	0.162	0.40	0.001	29.63	
		Total	0.039					0.039	1718.97	

Where:

$$RR_v = \frac{P * R_v * Aic * S}{12}$$

RR_{min} = Minimum Runoff Reduction Volume
P = 90% Rainfall Event Number (see Figure 4.1)
I = Impervious Cover (Percent)
Rv = 0.05 + 0.009 (I) where I =100%
Aic = Total Area of New Impervious Cover
S = Hydrologic Soil Group (HSG) Specific Reduction Factor (S)

Project Name:	Cascade Creek
Location:	Town of Amenia
County:	Dutchess
State:	NY
Date:	8/9/2026

Infiltration Basin #1 Summary Worksheet

Basin Storage Summary

Elevation	Surface Area (ft ²)	Storage Provided (ft ³)
590	3000	0
592	7700	10700
594	13200	20900
595	16250	14725

Total: 46325

Pre-Treatment Storage Summary

Elevation	Surface Area (ft ²)	Storage Provided (ft ³)
591	832	0
593	2016	2848
595	3711	5727

Total: 8575

Calculated Treatment Volumes

Post-Dev. Drainage Area	WQv Required (ft ³)	RRv Required (ft ³)	CPv Required (ft ³)	Total Min. Volume (ft ³)	
1B	3,512.78	266.60	753.94	4,533	
1E	1,923.79	266.28	185.20	2,375	Total provided below lowest outlet at 593'
1I	1,453.31	79.46	1,165.68	2,698	
Total	6,889.88	612.34	2,104.81	9,607.04	20,665

✓

Pretreatment Summary

% of WQv Required (ft³)

25% WQv for $f_c \leq 10.00$ inch/hr or 50% WQv for $f_c > 10.00$ inch/hr

Basin ID	Min. Req. Volume % of WQv	Min. Req. Volume (ft ³)	Volume Provided (ft ³)
Infiltration Basin - 1	25%	1722.47	2967

✓

Infiltration Basin #2 Summary Worksheet

Basin Storage Summary

Elevation	Surface Area (ft ²)	Storage Provided (ft ³)
578	8351	0
580	13197	21548
582	18703	31900
583	21691	20197
Total:		73645

Pre-Treatment 2-1 Storage Summary

Elevation	Surface Area (ft ²)	Storage Provided (ft ³)
579	832	0
581	2015	2847
583	3711	5726
Total:		8573

Pre-Treatment 2-2 Storage Summary

Elevation	Surface Area (ft ²)	Storage Provided (ft ³)
581	155	0
583	810	965
Total:		965

Calculated Treatment Volumes

Post-Dev. Drainage Area	WQv Required (ft ³)	RRv Required (ft ³)	CPv Required (ft ³)	Total Min. Volume (ft ³)	
1F	3,856.27	641.54	1,645.65	6,143	
1G	1,283.00	192.96	913.65	2,390	
1H	815.44	121.05	626.87	1,563	
1J	1,425.04	29.63	1,370.86	2,826	
1C	1,040.54	0.00	0.00	1,041	
1D	268.98	121.44	281.54	672	
Total - 1	7,379.76	985.19	4,557.03	12,921.98	Total provided below lowest outlet at 581'
Total - 2	1,309.52	121.44	281.54	1,712.50	
TOTAL	8,689.28	1,106.63	4,838.57	14,634.48	35858 ✓

Pretreatment Summary

% of WQv Required (ft³)

25% WQv for $f_c \leq 10.00$ inch/hr or 50% WQv for $f_c > 10.00$ inch/hr

Basin ID	Min. Req. Volume % of WQv	Min. Req. Volume (ft ³)	Volume Provided (ft ³)	
Infiltration Basin - 2-1	25%	1844.94	2967	✓
Infiltration Basin - 2-2	25%	327.38	413	✓

Infiltration Basin A Summary Worksheet

Basin Storage Summary

Elevation	Surface Area (ft ²)	Storage Provided (ft ³)
592	2850	0
594	6500	9350
596	10955	17455
597	13485	12220

Total: 39025

Calculated Treatment Volumes

Post-Dev. Drainage Area	WQv Required (ft ³)	RRv Required (ft ³)	CPv Required (ft ³)	Total Min. Volume (ft ³)	
1A	0.00	0.00	0.00	0	
					Total provided below lowest outlet at 594.8'
Total	0.00	0.00	0.00	0.00	16,008 ✓

APPENDIX F

Pre-Construction Documents

Owner/Operator Certification

Contractor Certification

Subcontractor Certification

Qualified Professional Certification

Construction Inspection Reports

Monthly Summary

SWPPP Modification Form

NYSDEC Notice of Intent (NOI) (TBA)

NYSDEC Notice of Termination (NOT)

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PRE-CONSTRUCTION MEETING DOCUMENTS

Project Name: _____
Permit No. _____ **Date of Authorization** _____
Name of Operator: _____
Prime Contractor: _____

a. Preamble to Site Assessment and Inspections -The Following Information To Be Read By All Person's Involved in The Construction of Stormwater Related Activities:

The Operator agrees to have a qualified professional¹ conduct an assessment of the site prior to the commencement of construction² and certify in this inspection report that the appropriate erosion and sediment controls described in the SWPPP have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction.

Prior to the commencement of construction, the Operator shall certify in this site logbook that the SWPPP has been prepared in accordance with the State's standards and meets all Federal, State and local erosion and sediment control requirements.

When construction starts, site inspections shall be conducted by the qualified professional at least every 7 calendar days (Construction Duration Inspections). The Operator shall maintain a record of all inspection reports in this site logbook. The site logbook shall be maintained on site and be made available to the permitting authorities upon request. The Operator shall post at the site, in a publicly accessible location, a summary of the site inspection activities on a monthly basis (Monthly Summary Report).

The operator shall also prepare a written summary of compliance with this general permit at a minimum frequency of every three months (Operator's Compliance Response Form), while coverage exists. The summary should address the status of achieving each component of the SWPPP.

Prior to filing the Notice of Termination or the end of permit term, the Operator shall have a qualified professional perform a final site inspection. The qualified professional shall certify that the site has undergone final stabilization³ using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed. In addition, the Operator must identify and certify that all permanent structures described in the SWPPP have been constructed and provide the owner(s) with an operation and maintenance plan that ensures the structure(s) continuously functions as designed.

1 "Qualified Professional means a person knowledgeable in the principles and practice of erosion and sediment controls, such as a Certified Professional in Erosion and Sediment Control (CPESC), soil scientist, licensed engineer or someone working under the direction and supervision of a licensed engineer (person must have experience in the principles and practices of erosion and sediment control).

2 "Commencement of construction" means the initial removal of vegetation and disturbance of soils associated with clearing, grading or excavating activities or other construction activities.

3 "Final stabilization" means that all soil-disturbing activities at the site have been completed and a uniform, perennial vegetative cover with a density of eighty (80) percent has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures.

Pre-construction Site Assessment Checklist

1. Notice of Intent, SWPPP, and Contractors Certification:

Yes No NA

- ☐ ☐ ☐ Has a Notice of Intent been filed with the NYS Department of Conservation?
- ☐ ☐ ☐ Is the SWPPP on-site? Where? _____
- ☐ ☐ ☐ Is the Plan current? What is the latest revision date? _____
- ☐ ☐ ☐ Is a copy of the NOI (with brief description) onsite? Where? _____
- ☐ ☐ ☐ Have all contractors involved with stormwater related activities signed a contractor's certification?

2. Resource Protection

Yes No NA

- ☐ ☐ ☐ Are construction limits clearly flagged or fenced?
- ☐ ☐ ☐ Important trees and associated rooting zones, on-site septic system absorption fields, existing vegetated areas suitable for filter strips, especially in perimeter areas, have been flagged for protection.
- ☐ ☐ ☐ Creek crossings installed prior to land-disturbing activity, including clearing and blasting.

3. Surface Water Protection

Yes No NA

- ☐ ☐ ☐ Clean stormwater runoff has been diverted from areas to be disturbed.
- ☐ ☐ ☐ Bodies of water located either on site or in the vicinity of the site have been identified and protected.
- ☐ ☐ ☐ Appropriate practices to protect on-site or downstream surface water are installed.
- ☐ ☐ ☐ Are clearing and grading operations divided into areas <5 acres?

4. Stabilized Construction Entrance

Yes No NA

- ☐ ☐ ☐ A temporary construction entrance to capture mud and debris from construction vehicles before they enter the public highway has been installed.
- ☐ ☐ ☐ Other access areas (entrances, construction routes, equipment parking areas) are stabilized immediately as work takes place with gravel or other cover.
- ☐ ☐ ☐ Sediment tracked onto public streets is removed or cleaned on a regular basis.

5. Perimeter Sediment Controls

Yes No NA

- ☐ ☐ ☐ Silt fence material and installation comply with the standard drawing and specifications.
- ☐ ☐ ☐ Silt fences are installed at appropriate spacing intervals
- ☐ ☐ ☐ Sediment/detention basin was installed as first land disturbing activity.
- ☐ ☐ ☐ Sediment traps and barriers are installed.

6. Pollution Prevention for Waste and Hazardous Materials

Yes No NA

- ☐ ☐ ☐ The Operator or designated representative has been assigned to implement the spill prevention avoidance and response plan.
- ☐ ☐ ☐ The plan is contained in the SWPPP on page _____
- ☐ ☐ ☐ Appropriate materials to control spills are onsite. Where? _____

OWNER/OPERATOR'S CERTIFICATION

"I hereby certify that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings. "

Area of Responsibility:

Company Name (please print): _____

Individual Name (please print): _____

Title _____ **Date:** _____

Address: _____

Phone: _____ **Email:** _____

Signature: _____

Trained Contractor Name (please print): _____

Trained Contractor Title: _____

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CONTRACTORS CERTIFICATION

"I hereby certify that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings. "

Area of Responsibility:

Company Name (please print): _____

Individual Name (please print): _____

Title _____ **Date:** _____

Address: _____

Phone: _____ **Email:** _____

Signature: _____

Trained Contractor Name (please print): _____

Trained Contractor Title: _____

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SUBCONTRACTORS CERTIFICATION

"I hereby certify that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings. "

Area of Responsibility:

Company Name (please print): _____

Individual Name (please print): _____

Title _____ **Date:** _____

Address: _____

Phone: _____ **Email:** _____

Signature: _____

Trained Contractor Name (please print): _____

Trained Contractor Title: _____

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QUALIFIED PROFESSIONAL'S CREDENTIALS & CERTIFICATION

"I hereby certify that I meet the criteria set forth in the General Permit to conduct site inspections for this project and that the appropriate erosion and sediment controls described in the SWPPP and as described in the Pre-construction Site Assessment Checklist have been adequately installed or implemented, ensuring the overall preparedness of this site for the commencement of construction."

Area of Responsibility:

Company Name (please print): _____

Individual Name (please print): _____

Title _____ **Date:** _____

Address: _____

Phone: _____ **Email:** _____

Signature: _____

Qualified Inspector Name (please print): _____

Qualified Inspector Title: _____

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Stormwater Construction Site Inspection Report

General Information			
Project Name			
SPDES Tracking No.	NYR-	Municipality/County	
Date of Inspection		Start Time	End Time
Inspector's Name(s)			
Inspector's Title(s)			
Inspector's Signature			
Inspector's Contact Information	Rennia Engineering 6 Dover Village Plaza, Suite 5 Dover Plains, NY 12522 (845) 877-0555		
Inspector's Qualifications			
Describe present phase of construction			
Type of Inspection: ☒ Regular ☐ Pre-storm event ☐ During storm event ☐ Post-storm event			
Weather Information			
Has there been a storm event since the last inspection? ☐ Yes ☐ No If yes, provide: Storm Start Date & Time: Storm Duration (hrs): Approximate Amount of Precipitation (in):			
Weather at time of this inspection? ☐ Clear ☐ Cloudy ☐ Rain ☐ Sleet ☐ Fog ☐ Snowing ☐ High Winds ☐ Other: Temperature:			
Have any discharges occurred since the last inspection? ☐ Yes ☐ No If yes, describe:			
Are there any discharges at the time of inspection? ☐ Yes ☐ No If yes, describe:			

Site-specific SMPs

	SMP	SMP Installed?	SMP Maintenance Required?	Corrective Action Needed and Notes
1	Silt Fence	☐ Yes ☐ No	☐ Yes ☐ No	
2	Stabilized Construction Entrance	☐ Yes ☐ No	☐ Yes ☐ No	
3	Bioretention Areas	☐ Yes ☐ No	☐ Yes ☐ No	
4	Sand Filter	☐ Yes ☐ No	☐ Yes ☐ No	
5	Dry Wells	☐ Yes ☐ No	☐ Yes ☐ No	
6	Dry Swale	☐ Yes ☐ No	☐ Yes ☐ No	
7	Porous Pavement	☐ Yes ☐ No	☐ Yes ☐ No	
10	Site Grading	☐ Yes ☐ No	☐ Yes ☐ No	

Overall Site Issues

	SWMP/Activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
1	Are all slopes and disturbed areas not actively being worked properly stabilized?	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA	
2	Are natural resource areas (e.g., streams, wetlands, mature trees, etc.) protected with barriers or similar SWMPs?	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA	
3	Are perimeter controls and sediment barriers adequately installed (keyed into substrate) and maintained?	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA	
4	Are discharge points and receiving waters free of any sediment deposits?	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA	
5	Are storm drain inlets properly protected?	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA	
6	Is the construction exit preventing sediment from being tracked into the street?	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA	
7	Is trash/litter from work areas collected and placed in covered dumpsters?	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA	
8	Are washout facilities (e.g., paint, stucco, concrete) available, clearly marked, and maintained?	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA	
9	Are vehicle and equipment fueling, cleaning, and maintenance areas free of spills, leaks, or any other deleterious material?	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA	
10	Are materials that are potential stormwater contaminants stored inside or under cover?	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA	
11	Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled?	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA	

Monthly Summary of Site Inspection Activities

Name of Permitted Facility:	Today's Date:	Reporting Month:
Location:	Permit Identification #:	
Name and Telephone Number of Site Inspector: Rennia Engineering Design, PLLC 845-877-0555		

Date of Inspection	Regular / Rainfall based Inspection	Name of Inspector	Items of Concern

Owner/Operator Certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law."

Signature of Permittee or Duly Authorized Representative

Name of Permittee or Duly Authorized Representative date

Duly authorized representatives must have written authorization, submitted to DEC, to sign any permit documents.

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SITE INSPECTION MODIFICATIONS TO THE SWPPP

The Operator shall amend the SWPPP whenever:

1. There is a significant change in design, construction, operation, or maintenance which may have a significant effect on the potential for the discharge of pollutants to the waters of the United States and which has not otherwise been addressed in the SWPPP; or
2. The SWPPP proves to be ineffective in:
 - a. Eliminating or significantly minimizing pollutants from sources identified in the SWPPP and as required by this permit; or
 - b. Achieving the general objectives of controlling pollutants in stormwater discharges from permitted construction activity; and
3. Additionally, the SWPPP shall be amended to identify any new contractor or subcontractor that will implement any measure of the SWPPP.

Modification & Reason:[illegible]

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**New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505**

(NOTE: Submit completed form to address above)

NOTICE OF TERMINATION for Storm Water Discharges Authorized
under the SPDES General Permit for Construction Activity

Please indicate your permit identification number: NYR ____ _

I. Owner or Operator Information

1. Owner/Operator Name:

2. Street Address:

3. City/State/Zip:

4. Contact Person:

4a. Telephone:

4b. Contact Person E-Mail:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/Zip:

8. County:

III. Reason for Termination

9a. ☐ All disturbed areas have achieved final stabilization in accordance with the general permit and SWPPP. ***Date final stabilization completed** (month/year): _____

9b. ☐ Permit coverage has been transferred to new owner/operator. Indicate new owner/operator's permit identification number: NYR ____ _
(Note: Permit coverage can not be terminated by owner identified in I.1. above until new owner/operator obtains coverage under the general permit)

9c. ☐ Other (Explain on Page 2)

IV. Final Site Information:

10a. Did this construction activity require the development of a SWPPP that includes post-construction stormwater management practices? ☐ yes ☐ no (If no, go to question 10f.)

10b. Have all post-construction stormwater management practices included in the final SWPPP been constructed? ☐ yes ☐ no (If no, explain on Page 2)

10c. Identify the entity responsible for long-term operation and maintenance of practice(s)?

**NOTICE OF TERMINATION for Storm Water Discharges Authorized under the
SPDES General Permit for Construction Activity - continued**

10d. Has the entity responsible for long-term operation and maintenance been given a copy of the operation and maintenance plan required by the general permit? ☐ yes ☐ no

10e. Indicate the method used to ensure long-term operation and maintenance of the post-construction stormwater management practice(s):

- ☐ Post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain practice(s) have been deeded to the municipality.
- ☐ Executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s).
- ☐ For post-construction stormwater management practices that are privately owned, a mechanism is in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the owner or operator's deed of record.
- ☐ For post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university or hospital), government agency or authority, or public utility; policy and procedures are in place that ensures operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

10f. Provide the total area of impervious surface (i.e. roof, pavement, concrete, gravel, etc.) constructed within the disturbance area? _____
(acres)

11. Is this project subject to the requirements of a regulated, traditional land use control MS4? ☐ yes
☐ no
(If Yes, complete section VI - "MS4 Acceptance" statement)

V. Additional Information/Explanation:
(Use this section to answer questions 9c. and 10b., if applicable)

VI. MS4 Acceptance - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative (Note: Not required when 9b. is checked -transfer of coverage)

I have determined that it is acceptable for the owner or operator of the construction project identified in question 5 to submit the Notice of Termination at this time.

Printed Name:

Title/Position:

Signature:

Date:

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the
SPDES General Permit for Construction Activity - continued

VII. Qualified Inspector Certification - Final Stabilization:

I hereby certify that all disturbed areas have achieved final stabilization as defined in the current version of the general permit, and that all temporary, structural erosion and sediment control measures have been removed. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:

Title/Position:

Signature:

Date:

VIII. Qualified Inspector Certification - Post-construction Stormwater Management Practice(s):

I hereby certify that all post-construction stormwater management practices have been constructed in conformance with the SWPPP. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:

Title/Position:

Signature:

Date:

IX. Owner or Operator Certification

I hereby certify that this document was prepared by me or under my direction or supervision. My determination, based upon my inquiry of the person(s) who managed the construction activity, or those persons directly responsible for gathering the information, is that the information provided in this document is true, accurate and complete. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:

Title/Position:

Signature:

Date:

(NYS DEC Notice of Termination - January 2015)

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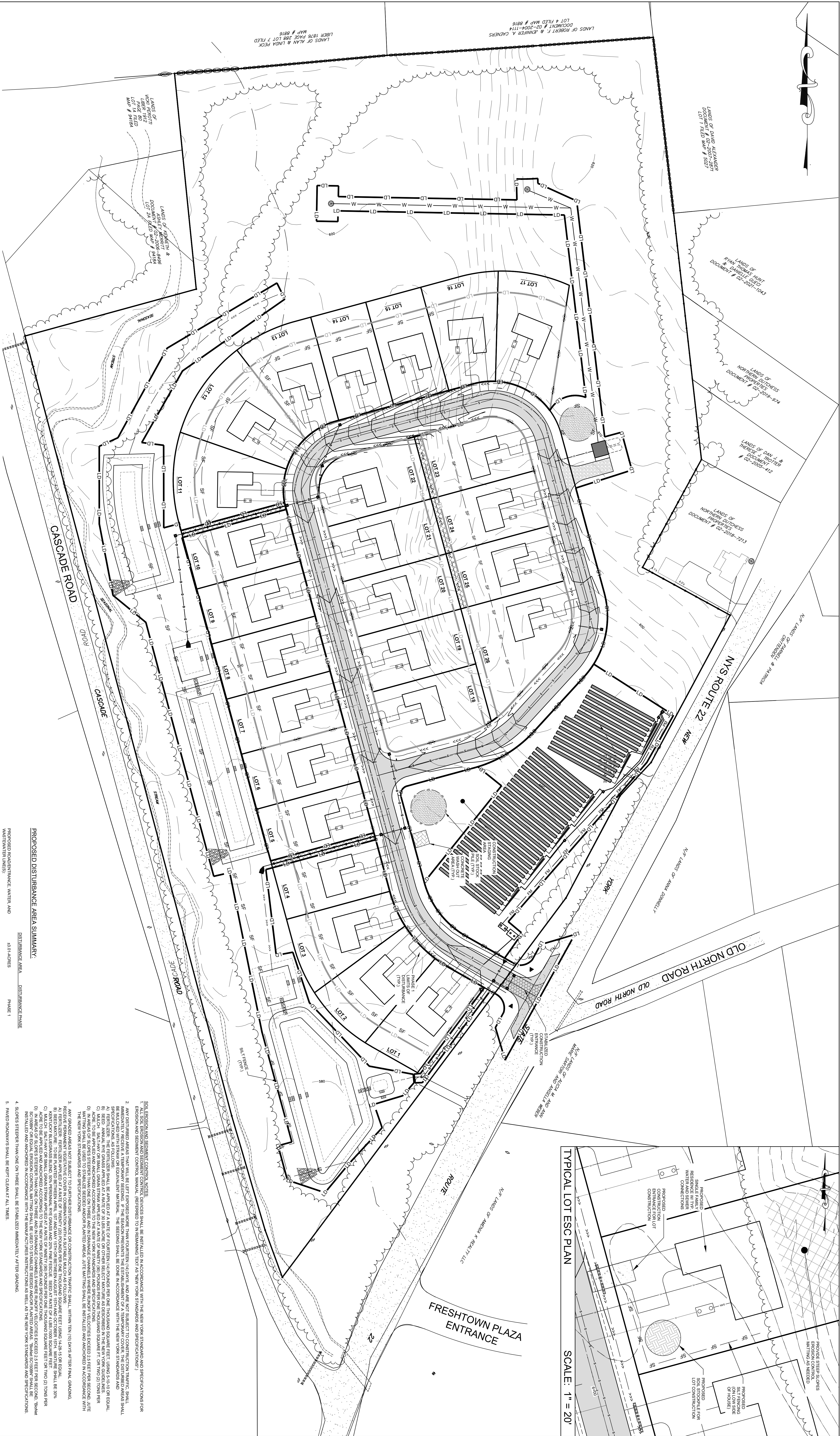
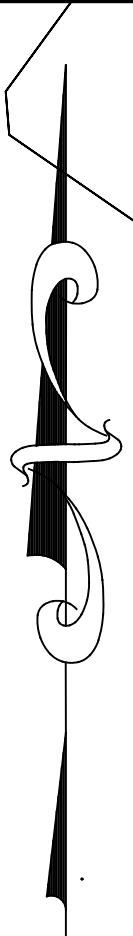
APPENDIX G

Stormwater Plan, Sheet 5 of 10

Erosion & Sediment Control Plan, Sheet 6 of 10

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