CASTLEMORE HOLDINGS MIMA, LLC

STORMWATER POLLUTION PREVENTION PLAN

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Project Location:
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Town of Esopus
Ulster County, New York

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1.0 INTRODUCTION

1.1 Overview

This Stormwater Pollution Prevention Plan (SWPPP) has been prepared for the Applicant and Owner, Castlemore Holdings MIMA LLC. The property is approximately 39 acres in size. The parcel is currently vacant and wooded with several gravel drives constructed from a previous proposed development on the property. The remainder of the site is wooded with ACOE wetlands at the eastern portion of the site. Proposed site improvements include gravel access driveway network and parking areas, 39 cabins, walkways, stormwater management practices, wastewater disposal system, water supply well and other associated site improvements. The property is bordered by farmland to the south, single family home sites to the north, wetlands to the east, and farmland to the west.

The Applicant is proposing to construct a campground with cabins. All proposed land disturbance is in relation to the development of the facility and its associated improvements.

This Stormwater Pollution Prevention Plan (SWPPP) has been developed in accordance with New York State Department of Environmental Conservation (NYSDEC) State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity Permit No. GP-0-20-001, dated January 29, 2020 which authorizes stormwater discharges to surface waters of the State from the following construction activities identified within 40 CFR Parts 122.26(b)(14)(x), 122.26(b)(15)(i) and 122.26(b)(15)(ii), provided all of the eligibility provisions of this permit are met:

1. Construction activities involving soil disturbances of one (1) or more acres; including disturbances of less than one acre that are part of a larger common plan of development or sale that will ultimately disturb one or more acres of land; excluding routine maintenance activity that is performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility;
2. Construction activities involving soil disturbances of less than one (1) acre where the Department 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.
3. Construction activities located in the New York City, East of Hudson watershed, that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

This project qualifies for SPDES coverage under provision 1 as stated above.

The objectives of this SWPPP are as follows:

- To develop a sediment and erosion control plan in accordance with the most current version of the technical standard, New York State Standards and Specifications for Erosion

and Sediment Control, which implements best management practices to stabilize disturbed areas, protect off site areas and sensitive areas and minimize the transport of sediment.

- To develop the permanent stormwater management system for the site which will control the rate of stormwater discharge from the site after construction, reduce the overall volume of runoff being discharged from the site and treat the stormwater for runoff pollutants. The stormwater management system has been designed in accordance with the most current version of the technical standard, New York State Department of Environmental Conservation Stormwater Management Design Manual (the Design Manual).

Construction activities are not permitted to begin until such time that authorization is obtained under the General Permit. This project is located within a designated Municipal Separate Storm Sewer System (MS4) area and thus must be reviewed by the Municipalities designated Stormwater Officer. Authorization to commence construction activities may commence five (5) days following receipt of the Notice of Intent (NOI) accompanied by the MS4 Acceptance Form.

A copy of the General Permit, SWPPP, NOI, NOI acknowledgment letter, MS4 SWPPP acceptance form, inspection reports and accompanying plans shall be maintained on-site from the date of initiation of construction activities until final stabilization of all disturbed areas has been achieved and the Notice of Termination (NOT) has been submitted.

1.2 Land Disturbance

Per the General Permit, no more than five (5) acres of land disturbance may occur at any one time without written approval from the NYSDEC.

Disturbance of more than five (5) acres at any one time is not anticipated for this project, as the project will be phased to keep disturbance below the 5 acre threshold. Total proposed disturbance for all phases is approximately 10.6 acres. For areas where construction activity temporarily or permanently ceases, stabilization measures must be initiated by the end of the next business day and be completed within fourteen (14) days of the date that the soil disturbance activity ceased in accordance with the SPDES permit.

2.0 EXISTING CONDITIONS

2.1 Site Soils and Ground Cover Description

The parcel proposed for development is currently developed with an office and single-family home with associated improvements; the remainder being wooded with wetlands. The soils encountered on the site consist of Bath-Nassau, Mardin-Nassau and Volusia soils. On-site soil classifications and their approximate boundaries have been taken from the *Ulster County Soil*

Survey. The soil locations are shown on the attached Erosion & Sediment Control Plan. Site soils include the following:

Table 2.1 Soil Types

Soil Name	Soil Symbol	Hydrologic Soil Group
Bath-Nassau Complex	BnC	D
Bath Nassau-Rock outrop complex	BOD	D
Mardin-Nassau Complex	MgB	D
Raynham silt loam	Ra	D
Volusia Gravelly Silt Loam	VoB	D

2.2 Hydrologic Soil Group Information

Type A-Soils- These soils have low runoff potential when thoroughly wet. Soils are excessively drained and are typically comprised of less than 10 percent clay and more than 90 percent sand or gravel.

Type B-Soils- These soils have moderate infiltration rates when thoroughly wetted and consist chiefly of moderately deep to deep, moderately well to well drained soils with moderately fine to moderately course textures.

Type C-Soils- These soils have a moderately high runoff potential when thoroughly wet. These soils are poorly drained and typically contain between 20 and 40 percent clay and less than 50 percent sand or gravel.

Type D-Soils- These soils have high runoff potential, with low infiltration rates when thoroughly wetted and consist chiefly of clay soils with a high swelling potential, high water table, and shallow soils over impervious material.

Additional soils data can be found in the Appendices.

2.3 Name of Receiving Waters

Drainage from the eastern portion of the site flows into the ACOE wetland on the east side of the site. Runoff on the western portion of the site flows to the west and then south east eventually discharging into the Hudson River.

2.4 Environmentally Sensitive Areas

There are ACOE wetlands on site which will be protected to the greatest extent practicable.

3.0 STORMWATER OBJECTIVES

Development of the site will result in several impacts to the existing drainage patterns at the site, both during and after construction. During construction, there is potential for erosion as

disturbed areas are not yet vegetated. This lack of vegetation during construction creates the potential for significant amounts of sediment to enter the existing wetlands and watercourses. Excess sediment can be damaging to existing habitats both on-site and downstream.

Temporary and permanent erosion control measures shall be implemented to reduce sediment discharge from the site into wetlands and watercourses located on adjacent properties. Best Management Practices will be incorporated for all erosion and sediment control practices and may include the use of silt fence, temporary silt basins, silt barriers, diversion swales, sediment forebays, check dams, stone construction entrances, rip rap, and vegetative means both during and after construction. Permanent erosion and sediment control measures to be implemented may include, but are not limited to, establishment of a stabilizing ground cover in all areas, storm sewers, catch basins and water quality treatment units. Specific measures will be implemented to ensure the protection of the site's undisturbed areas, to limit soil transport and to provide for increased monitoring of stormwater management and erosion control facilities throughout the construction process.

This SWPPP will describe provisions for the treatment of the Water Quality Volume (WQv) and Runoff Reduction Volume (RRv) and for the attenuation of the Overbank Flood Flow (Qp – "10 year storm") and Extreme Flood Flow (Qf – "100 year storm") as defined by the NYSDEC Manual.

The stormwater management system has been designed to meet the Channel Protection (CPv) requirement set forth in the Design Manual. According to the NYSDEC Manual CPv is not required at sites where the resulting diameter of the ED orifice is too small to prevent clogging, which it was in this case. Therefore, meeting the full CPv requirement is considered inappropriate for this site. The outlet orifices within the pond outlet control structures, which are designed to outlet runoff from the 1-year storm event, have been sized as small as possible to prevent frequent clogging, which is discussed in Section 4.4 of the Design Manual. A 3" diameter outlet with a trash rack is proposed on the outlet control structures.

The CPv for EX-1 has been calculated to be 0.261 af. The average release should be 0.13 cfs or less to meet the CPv. As indicated above, meeting this would require an orifice too small to prevent clogging, so a 3" orifice is proposed with trash rack.

The CPV for EX-2 has been calculated to be 1.157 af. The average release should be 0.58 cfs or less to meet the CPv. As indicated above, meeting this would require an orifice too small to prevent clogging, so a 3" orifice is proposed with trash rack.

The maximum flow rates exiting the ponds during the 1-year storm are minimal and will not be erosive to downstream channels.

As noted above, the stormwater management system will meet all conditions set forth in the Design Manual with regards to Water Quality Volume (WQv). All of the stormwater runoff from disturbed / improved areas will be directed to either one of the bioretention areas or stormwater ponds where the runoff will be treated and discharged from the site, at rates no greater than existing runoff rates.

Runoff Reduction Volume (RRv) will also be achieved at the site to replicate pre-development hydrology, in accordance with conditions set forth in the Design Manual. The RRv requirement

will be satisfied by the bioretention areas, which are considered to be standard stormwater management practices with RRv capacity. In accordance with the Design Manual, the Specific Reduction Factor may be applied to the total calculated RRv. This factor accounts for the absorptive capacity of on-site hydrologic soil groups in order to determine the RRv which is considered feasible for a specific site. As noted in the redevelopment section, RRv is not required for areas of the site proposed as redevelopment.

4.0 STORMWATER MANAGEMENT PLAN

4.1 Narrative

A Drainage Analysis was completed to assess the pre-and post-development runoff rates for the 1-year, 10-year and the 100-year storm events. This Drainage Analysis provides a calculation model for the operation of the stormwater management system and structures being proposed. The following summarizes the findings from this drainage analysis.

4.2 Calculation Methodology

The design storms analyzed in this study are the 1-year, 10-year and the 100-year, 24-hr. duration storm events. The Soil Conservation Service (SCS) TR 55 method for establishing runoff curve numbers and times of concentration was used along with the Soil Conservation Service TR 20 method to analyze peak runoff rates, and to develop hydrographs, routing, storage requirements and structure design. Applied Microcomputer Systems HydroCAD (v10.00) computer modeling software was utilized.

The time of concentration was computed to determine the time for an entire watershed to contribute runoff to a specific location. The method incorporates watershed characteristics such as slope, length, and runoff curve number. Flow paths used in this analysis of each watershed are shown on the attached Drainage Maps. Runoff curve numbers were calculated by takeoff of coverage areas using AutoCAD software.

Rainfall events and types were obtained from the Northeast Regional Climate Center, which provides local, specific rainfall events for a particular location. Rainfall information from the NRCC is included in the Appendix.

The quantitative analysis has been conducted to determine the optimal sizing and volumetric capacities of the proposed stormwater system components in order to prevent any increase in runoff rates at the Stormwater Discharge Points (SDP) as a result of the proposed site development. The analysis proves that there will not be an increased rate of runoff as a result of site development at either SDP during the 1 year, 10 year and 100-year storm events. The stormwater management system has been designed to meet the conditions for Qp, and Qf as per the NYSDEC Design Manual. Pre and Post development drainage calculations and maps are included in the Appendix.

4.3 Qualitative Analysis

Stormwater run-off is recognized as a major contributor of pollution that can adversely affect the quality of receiving water bodies. Water quality contaminants are transported from land, particularly impervious surface, during the initial stages of storm events. The initial stormwater volume created as part of the storm event is referred to as the Water Quality Volume (WQv). This is the target volume to be treated with the proposed stormwater measures as per the Design Manual.

The Water Quality Volume (WQv) can be determined using the following equation from Section 4 of the New York State Stormwater Design Manual:

$WQv = (P) * (R_V) * (A) / 12$

Where:

WQv = Water quality volume (in acre-feet)

P = 90% Rainfall Event Number

$R_V = .05 + 0.009 * (I)$, where I is percent impervious

A = Site area in acres

Five bioretention areas and two stormwater ponds were incorporated into the stormwater management system to capture and treat the WQv identified for the site. Each practice has been designed in accordance with the Design Manual, latest edition. Calculations for WQv are included as an Appendix.

In addition to the WQv treatment required, the Runoff Reduction Volume (RRv) must be satisfied / reduced by Green Infrastructure Practices (GIP's) or by standard stormwater management practices (SMP's) with RRv capacity as detailed in the Design Manual. Runoff Reduction of 100% of the post-development WQv must be achieved through stormwater infiltration, groundwater recharge, reuse, recycle, evaporation / evapotranspiration in order to replicate pre-development hydrology by maintaining pre-construction infiltration, peak runoff flow, discharge volume, as well as minimizing concentrated flow by using runoff control techniques to provide treatment in a distributed manner before runoff reaches the collections system. As mentioned above, this requirement can be accomplished by the application of GIP's and/or standard SMP's with RRv capacity.

Projects that cannot meet 100% of the runoff reduction requirement due to site limitations that prevent or limit the use of infiltration techniques shall identify the specific site limitations. As previously mentioned, the Specific Reduction Factor may be used to provide a reduction to the required RRv at a specific site if deemed appropriate.

The minimum RRv can be determined using the following equation from Section 4 of the Design Manual:

$RRv = (P) * (Rv) * (Ai) / 12$

Where:

RRv = Runoff Reduction Volume (in acre-feet)

Ai = (S) * (Aic)

Ai = Impervious cover targeted for runoff reduction

Aic = Total area of new impervious cover

P = 90% Rainfall Event Number

Rv = .05 + 0.009 * (I), where I is percent impervious

S = Hydrologic Soil Group (HSG) Specific Reduction Factor (HSG A = 0.55, HSG B = 0.40, HSG C = 0.30, HSB D = 0.20)

Five bioretention areas with underdrains are proposed to provide the required minimum runoff reduction volume for the site. The practices were sized in accordance with the Design Manual and provided as an Appendix.

4.4 Redevelopment Activity

Redevelopment of previously developed sites is encouraged from a watershed protection standpoint because it often provides an opportunity to conserve natural resources in less impacted areas by targeting development to areas with existing services and infrastructures. At the same time, redevelopment provides an opportunity to correct existing problems and reduce pollutant discharges from older developed areas that were constructed without effective stormwater pollution controls.

In accordance with the Design Manual, redevelopment activity is considered when a project includes disturbance and reconstruction of existing impervious surfaces. As described above, the site currently several gravel driveways which are proposed to be redeveloped. The existing conditions and plan shows the impervious surfaces on the site are considered redevelopment areas.

The Design Manual provides alternative sizing criteria for stormwater management practices proposed as part of redevelopment activities. Implementation of the alternative sizing criteria will result in pollution reductions over existing conditions with no or substandard practices in place.

The alternative sizing criteria to be utilized for water quality volume at this site is described in option 2 of Chapter 9 of the manual. Option 2 states that a minimum of 25% of the WQv from the disturbed impervious area is captured and treated by the implementation of standard stormwater management practices or reduced by application of green infrastructure techniques. RRv is not required for redevelopment areas. The stormwater management practices proposed to treat impervious surfaces not considered redevelopment activity are required to satisfy the full WQv and RRv.

4.5 Site Design

As required by the SPDES permit, the majority of runoff from impervious surfaces at the site is directed to either an RR technique or standard SMP with RRv capacity. This runoff enters either one of the bioretention facilities, or one of the stormwater ponds, where the RRv requirement is satisfied and the WQv is treated. The runoff from the site outlets to either the existing ACOE wetland east of the site or to the west. The "treatment train", as required by the Design Manual provides a high level of water quality treatment, efficiently removing pollutants before discharging to the downstream wetland and watercourse system.

Pretreatment is provided for all stormwater management practices as needed. Pretreatment for the bioretention facilities is provided by a pea gravel diaphragm, grass filter strip, a mulch layer over the bioretention planting bed and by grass channel. Pretreatment for the ponds will be provided by pea gravel diaphragm, grass filter strip and the bioretention area which will collect sediments and pollutants.

Please see below for a summary table of the WQv and RRv. For additional information please see the Appendices.

Parameter	**Required**	**Provided**	**Practice / Information**
WQv	11,275 cf	21,093 cf	Bioretention Facility 1-1 – 1,428 cf
			Bioretention Facility 2A – 2,400 cf
			Bioretention Facility 2C-1 – 2,322 cf
			Bioretention Facility 2C-2 – 1,338 cf
			Pond Permanent Pool 1 – 10,662 cf
			Pond Permanent Pool 2A – 2,943 cf
			Pond Permanent Pool 2B – 0 cf
RRv	1,516 cf	3,036 cf	Bioretention Facility 1-1 – 571 cf
			Bioretention Facility 2A – 960 cf
			Bioretention Facility 2C-1 – 929 cf
			Bioretention Facility 2C-2 – 576 cf

4.6 Pre Development Conditions

The existing watershed area that will be impacted as a result of the proposed development is shown on the Pre-Development Drainage Map, which is included as an Appendix. Pertinent information relating to this watershed is summarized in the table below.

Table 4.2 Pre-Development Conditions					
Sub catch	**Area (acre)**	**Cover Condition**	**Curve Number**	**Soil Group**	**Time of Conc. (min)**
EX-1	4.343	Woods	77	D	27.9
EX-2	17.025	Woods, Gravel	79	D	37.1

For a more detailed description of the watershed, refer to the pre-development drainage calculations included in the Appendix.

4.7 Post Development Conditions

The post-development watershed area is shown on the Post-Development Drainage Map, which is included in the Appendix. Pertinent information relating to the watershed is summarized in the table below.

Table 4.3 Post-Development Conditions					
Sub catch	**Area (acre)**	**Cover Condition**	**Curve Number**	**Soil Group**	**Time of Conc. (min)**
PR- 1A	1.773	Grass, Gravel, Bare, Water, Woods	82	D	6.0
PR- 1B	2.596	Woods, Grass	77	D	21.6
PR-2A	1.581	Woods, Grass, Bare, Gravel, Water	82	D	9.1
PR-2B	7.419	Woods, Grass, Gravel, Bare, Water	86	D	14.2
PR-2C	7.997	Woods, Grass, Gravel, Roof	79	D	20.2

For a more detailed description of the watersheds, refer to the HydroCAD drainage calculations included as an Appendix.

4.8 Pre-and Post-Development Flow Comparison

The quantitative analysis focuses on pre-development verses post-development flow rates at the Stormwater Discharge Point (SDP). The analysis proves that no impact will result at any of the SDPs with respect to stormwater quantity for the 1, 10 or 100 year storm events.

The pre-and post-development watershed areas have been analyzed to determine stormwater runoff flow rates at each SDP. Table 4.4 compares pre-and post-development peak runoff rates during all storm events analyzed for the watershed area.

Table 4.4 Pre vs. Post Runoff Rates at SDPs

Design Point	1-Year Storm Event (cfs)		10-Year Storm Event (cfs)		100-Year Storm Event (cfs)	
	Pre	Post	Pre	Post	Pre	Post
SDP-1	2.95	2.16	9.31	8.33	21.75	18.26
SDP-2	10.96	8.61	32.44	32.32	73.59	71.71

As shown on Table 4.4, there is a decrease in runoff rates from pre-development to post-development conditions for each design storm. The HydroCAD drainage analysis which was used to calculate these values can be found in the Appendix.

4.9 Water Quality Treatment

The qualitative analysis focuses on the methods proposed to provide treatment of the Water Quality Volume (WQv) in order to prevent pollutants from being discharged into existing wetlands and watercourses, post-development and satisfaction of the Runoff Reduction Volume (RRv) in order to replicate pre-development hydrologic conditions. The WQv and RRv calculations have been provided in the Appendices. The following is a brief description of the water quality practices, which were designed in accordance with the Design Manual.

The bioretention areas, and ponds have been designed to capture and treat the required Water Quality Volume (WQv) and Runoff Reduction Volume (RRv). Runoff from the buildings and gravel surfaces will be directed into the bioretention areas and ponds, which have been sized according to the WQv and the required RRv for this portion of the site. The remaining WQv will be satisfied by the permanent pools in the ponds which collect the stormwater runoff from the remainder of the developed site. The bioretention areas, and pond meet the requirements set forth in the NYSDEC Design Manual, including but not limited to pretreatment, landscaping and maintenance access.

4.10 Green Infrastructure Practices

Green Infrastructure Planning Practices were utilized in order to preserve sensitive areas, reduce impervious cover and promote reduction of the total runoff volume discharging from the site.

- Gravel areas, buildings and associated development were located at the less steep portion of the property to best fit site terrain.
- Gravel is proposed to reduce impervious surfaces and promote infiltration or stormwater.
- Post construction, all soil in disturbed areas will be restored to their original properties by way of deep tilling and compost amendment. After soil restoration

has occurred, these areas will then be vegetated in order to maintain the restored soil structure which will help to absorb rainwater, prevent flooding and erosion and filter out pollutants.

5.0 CONSTRUCTION SEQUENCING SCHEDULE

Construction activities shall be scheduled in such a manner as to minimize the impacts that stormwater will have during construction on receiving waters both on and off-site. The total area of disturbance for the proposed project is approximately 10.6 acres.

5.1 Construction Sequence

The project will be constructed in controlled phases to minimize overall disturbance. Erosion Controls must be installed prior to the start of each phase of construction construction and must be maintained throughout the construction process. Each phase of the project will have a specific construction sequencing schedule to ensure proper temporary and permanent erosion controls are in place. The Contractor will be responsible for implementing the sequencing schedule.

A typical sequencing schedule will be provided on the "Erosion and Sediment Control Plan". The schedule will address the following items.

- Pre-Construction Activities
- Installation of erosion and sediment control (ESC) measures
- Approval of ESC measures
- Land clearing and grading activities
- Maintenance of ESC measures and installation of additional ESC measures
- Installation of utilities
- Surface stabilization
- Building construction
- Landscaping and final stabilization
- Final inspection

6.0 EROSION AND SEDIMENT CONTROL MEASURES

6.1 General

The most sensitive stage of the development cycle is the period when vegetation is cleared, and a site is graded. The potential impacts to on-site and off-site receiving waters and adjoining properties are particularly high at this stage. For example, trees and topsoil are removed, soils are exposed to erosion, and natural topography and drainage patterns are altered. Control of erosion and sediment during these periods is an essential function of this SWPPP and accompanying plans.

Effective and practical measures employed to minimize the erosion potential and prevent sediment from leaving the construction site and reaching streams or other water bodies have been recommended in accordance with:

- New York State Standards and Specifications for Erosion and Sediment Control, Latest Edition

In order to ensure the effectiveness of the measures recommended herein, routine inspections and documentation, along with procedures for monitoring the findings, maintenance, and corrective actions resulting from each inspection are outlined within this section of the SWPPP.

6.2 Timing of Control Measures

As indicated above in the Construction Sequence Schedule, all erosion and sediment control measures shall be installed prior to commencing any clearing or grading of the site. Structural controls (i.e. check dams) shall be installed concurrently with the applicable activity. Areas where construction activity temporarily or permanently cease shall have stabilization initiated by the end of the next business day and be completed within fourteen (14) days of the last disturbance in accordance with the SPDES permit. Once construction activity ceases permanently in an area, silt fences and hay bale barriers and any earth/dikes shall be removed once permanent vegetation/stabilization is established.

The exposed areas or soil stockpile shall have stabilization initiated by the end of the next business day and be completed within the 14-day period. Stabilization measures to be used include temporary seeding, permanent seeding, mulching and stone riprap.

During construction, runoff shall be diverted around the site with earth dikes, piping, or stabilized channels where possible. Sheet runoff from the site shall be filtered through silt fences. All storm drain inlets shall be provided with barrier filters. Stone riprap shall be provided at the outlets of drainage pipes where erosive velocities are encountered.

After major site construction has been completed, soil restoration is required across areas of the developed site where soils have been disturbed and will be vegetated in order to recover the original properties and porosity of the soil. This practice is applied in the cleanup, restoration and landscaping phase of construction followed by the permanent establishment of an appropriate, deep-rooted groundcover to help maintain the restored soil structure. Soil restoration includes mechanical decompaction, compost amendment, or both. Refer to section 5.1.6 of the NYSDEC Stormwater Management Design Manual for additional information.

6.3 Planned Erosion and Sediment Control Practices

6.3.1 *Stabilized Construction Entrance*

A stabilized construction entrance consists of a pad of aggregate overlaying a geotextile fabric located at a point where construction vehicles enter or exit a site to reduce or eliminate the tracking of sediment onto public right of ways, street, alleys or parking areas, thereby preventing

the transportation of sediment into local stormwater collection systems. Efficiency is greatly increased when a washing area is included as part of a stabilized construction entrance.

Stabilized construction entrances shall be a minimum of fifty (50) feet long and twelve (12) feet wide, but not less than the full width of points where vehicles enter and exit the site. Where there is only one access point to the site, the stabilized construction entrance shall be a minimum of twenty-four (24) feet wide. Stabilized construction entrances shall be a minimum of six (6) inches in depth consisting of one (1) to four (4) inch stone or reclaimed or recycled equivalent.

6.3.2 *Silt Fencing*

A silt fence is a temporary sediment barrier consisting of a filter fabric stretched across and attached to supporting posts, entrenched, and supported with woven wire fence. Silt fences are installed on the contours across a slope and used to trap sediment by intercepting and detaining sediment laden runoff from disturbed areas in order to promote sedimentation on the uphill side of the fence.

Silt fences are suitable for perimeter and interior control, placed below areas where runoff may occur in the form of sheet flow. It should not be placed in channels or areas where flow is concentrated. In addition to interior and perimeter control a silt fence can be applied in the following applications:

- Below the toe or down slope of exposed and erodible slopes.
- Along streams and channels banks.
- Around temporary spoil area and stockpiles.

6.3.3 *Dust Control*

Dust control measures reduce the surface and air transport of dust, thereby preventing pollutants from mixing into stormwater. Dust control measures for the construction activities associated within this project consist of windbreaks, minimization of soil disturbance (preserving buffer areas of vegetation where practical), mulching, temporary and permanent vegetation cover, barriers (i.e. geotextile on driving surfaces) and water spraying.

Construction activities shall be scheduled to minimize the amount of area disturbed at any one time.

6.3.4 *Straw Bales*

Straw bales will be placed around catch basins. Straw bales will be placed in a row with ends tightly abutting the adjacent bales. Each bale will be embedded in the soil a minimum of four inches. Bales will be securely anchored in place by stakes or re-bars driven through the bales. The first stake in each bale will be angled toward the previously laid bale to force the bales together.

6.3.5 *Temporary Sediment Basin*

Various types of sediment containment facilities, consisting of rip-rap outlet traps and pipe outlet traps may be proposed as part of the erosion and sediment control plan. These facilities purpose is to intercept sediment-laden surface runoff and enable sediment settlement prior to discharge

from the site. The outlet for these traps will be properly stabilized to avoid erosion at the discharge point. Sediment traps shall be located and installed in all drainage ways, storm drain inlets, pipe outlets, grass outlets, stone outlets, riprap outlets and at other points of collection from the disturbed area. Sediment traps shall be located and installed prior to grading or filling the drainage area they are to protect.

6.3.6 *Stone Check Dam*

Check dams shall be placed in channels to reduce scour and erosion by reducing flow velocity and promoting sediment settlement. Check dams shall be spaced in the channel so that the crest of the downstream dam is at the elevation of the toe of the upstream dam. Check dams, consisting of a well-graded stone two (2) – nine (9) inches in size (NYSDOT – Light Stone) shall maintain a height of two (2) feet with side slopes of 2:1 extending beyond the bank of the channel by a minimum of one and a half (1.5) feet. Check dams shall be anchored in the channel by a cutoff trench of one and a half (1.5) feet in width by a half (0.5) foot in depth.

6.3.7 *Temporary Diversion Swales*

Temporary diversions swales will be constructed and installed to direct runoff away from disturbed areas, as required. Swales will be installed with stone check dams to prevent downstream siltation. Diverted runoff from disturbed areas will be directed into the temporary sediment basins. Temporary diversion swales will be stabilized and operational before land disturbing activities begin.

6.3.8 *Tree Preservation and Protection*

Fencing shall be used wherever trees are to be protected adjacent to areas of disturbance. Trees to be detained within 40 feet of any proposed structure or excavation shall be protected by fencing as specified on the Erosion and Sediment Control Plan. Fences may also be used to prevent compaction or disturbance of sensitive soils.

6.3.9 *Temporary Soil Stockpiles*

Material, such as topsoil, will be temporarily stockpiled (if necessary) on the site throughout the construction. Stockpiles will be located in areas away from the path of stormwater and will be protected from erosion by a surrounding silt fence barrier. Soil and topsoil stockpiles will be seeded or stabilized by the end of the next business day they are created and completed within 14 days.

6.3.10 *Limit of Disturbance*

Construction fence: a standard, 40" high construction fence shall be used. Construction fences shall be secured at all clearing limits, using standard steel fence posts set six feet apart. If plastic mesh "mirafi" fence is used, post spacing shall be as per manufacturer's specifications.

6.3.11 *Land Grading*

A waiver to disturb an area greater than five acres at any one time will not be required prior to construction as the total land disturbance associated with this project is less than 5 acres.

- Topsoil shall be distributed to form a uniform depth over the area. It shall not be placed when it is partly frozen, muddy, or on frozen slopes or over ice, snow, or standing water.
- Topsoil placed and graded on slopes steeper than 5% shall be promptly fertilized, seeded, mulched and stabilized by "tracking" with suitable equipment.
- Apply topsoil in the following amounts for intended use:
- Mowed lawn: four to six inches
- Area not to be maintained: one to two inches
- Complete rough grading and final grade, allowing for depth of topsoil to be added.
- Scarify all compact, slowly permeable, medium and fine textured subsoil areas. Scarify at approximately right angles to the slope direction in soil areas that are steeper than 5%.
- Remove refuse, woody plant parts, stones over three inches in diameter, and other litter.
- The furnishing of new topsoil shall be of a better or equal to quality of the existing adjacent topsoil. It shall meet the following criteria:
- Topsoil shall have at least 2% by weight of fine textured stable organic material, and no greater than 6%.
- Topsoil shall have not less than 20% fine texture material (passing the no. 200 sieve) and not more than 15% clay.
- Topsoil shall be relatively free of stones over 1½" diameter, thrash, noxious weeds, and shall have less than 10% gravel by volume.

6.3.12 *Temporary Vegetative Cover (during construction)*

Temporary seeding may be used in disturbed areas to minimize erosion and sediment loss. Any disturbed area that will not be redisturbed for 7 days or more will be stabilized by the 7th day after the last disturbance. After grass has appeared, those areas which fail to show a uniform stand of grass shall be reseeded. This process will be repeated until all areas are covered with satisfactory growth.

- Site Preparation: same as permanent vegetative cover
- Seed Mixtures:
- Rapidly germinating annual ryegrass (30 lbs. per acre)
- Perennial ryegrass (100 lbs. per acre)
- Cereal rye (30 lbs. per acre)
- Seeding: same as permanent vegetative cover

6.3.13 *Permanent Vegetative Cover (after construction)*

1. Site Preparation:

- Bring area to be seeded to required grade. A minimum of four inches of topsoil is required.
- Prepare seedbed-loosening soil to a depth of four to six inches.
- Remove all stones over one inch in diameter, sticks and foreign matter from the surface.
- Lime to pH of 6.5.
- Where the soil has been compacted by construction operations, loosen soil to a depth of two (2) inches before applying fertilizer, lime and seed.
- Apply fertilizer at the rate of 600 pounds per acre of 5-10-10. Apply limestone (equivalent to 50 percent calcium plus magnesium oxide) at a rate of three tons per acre.
- Incorporate lime and fertilizer in the top two to four inches of topsoil.
- Smooth and firm the seedbed.

2. Seeding:

- Apply seed uniformly by hand, cyclone seeder, or hydro-seeder (slurry including seed and fertilizer). Hydro-seeding, which includes mulch, may be left on soil surface. Seeding rates must be increased 10% when hydro-seeding.
- Mulch seeded areas with hay or straw mulch (2000 lbs./acre).
- Irrigate to fully saturate soil layer, but not to dislodge planting soil.
- Seed between April 1st and May 15th or August 15th and October 15th. Seeding may occur between May 15th and August 15th if adequate irrigation is provided.

6.3.14 *Water Barriers*

Water barriers will be used to prevent water from concentrating on unprotected road surfaces. The water barriers will be designed to divert runoff into a temporary sediment trap or stabilized drainage channel thereby protecting the road surface from gully erosion.

6.3.15 *Dewatering*

Dewatering will be used to intercept sediment-laden stormwater or pumped groundwater and allow it to settle out of the pumped discharge prior to being released from the site. Water resulting from dewatering operations shall be direct to temporary sediment traps or dewatering devices. Temporary sediment traps and dewatering bags will be provided, installed and maintained at down-gradient locations to control sediment deposits offsite. Water from dewatering operations shall be treated to eliminate the discharge of sediment and other pollutants.

6.3.16 *Outlet Stabilization Structures*

Rip Rap outlet protection will be placed at all pipe discharge locations, in order to reduce depth, velocity, and energy of the discharge flow and to minimize downstream erosion. A filter layer will be placed between the rip-rap and underlying soil surface to prevent soil movement into and

through the rip-rap. Rock outlet protection will be designed in accordance with the New York State Guidelines for Urban Erosion and Sediment Control.

6.3.17 *Concrete Washout Area*

Best management practice objectives for concrete washout are to collect and retain all the concrete washout water and solids in leak proof containers, preventing caustic material from reaching the soil surface and migrating to surface waters or into ground waters. 100 percent of collected concrete washout water and solids should be recycled. Several different types of EPA approved washout containers are available, all of which are capable of containing all concrete washout materials. Washout containers should not be placed within 50 feet of storm drains, open ditches and water bodies. Washout facilities should be inspected daily during use and after heavy rains to check for leaks. When the contains has reached 75% capacity, the washwater should be vacuumed off or allowed to evaporate to avoid overflows. The hardened materials should be removed and recycled.

6.4 General Inspection and Maintenance Practice

6.4.1 *Pre-Construction Inspection and Maintenance*

Prior to the commencement of construction, a qualified professional shall conduct an assessment of the site and certify that the appropriate erosion and sediment control structures have been adequately installed and implemented.

6.4.2 *Construction Inspection and Maintenance*

Owner or Operator Maintenance Inspection Requirements:

The owner or operator shall inspect, in accordance with the requirements in the most current version of the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, the erosion and sediment controls identified in the SWPPP to ensure that they are being maintained in effective operating condition at all times.

Qualified Inspector Inspection Requirements:

The owner or operator shall have a qualified inspector conduct site inspection. In order to perform these inspections, the qualified inspector has to be a:

- Licensed Professional Engineer
- Certified Professional in Erosion and Sediment Control
- 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 hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity.

For construction sites where soil disturbance activities are on-going, the qualified inspector shall conduct a site inspection at least once every seven days.

For construction sites where soil disturbance activities are on-going and the owner or operator has received authorization in accordance with Part II.C.3 of GP-0-20-001 to disturb greater than five acres of soil at any one time, the qualified inspector shall conduct at least two site inspections every seven calendar days. The two inspections shall be separated by a minimum of two full calendar days.

The qualified inspector shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and / or address the following:

1. Date and time of inspection
2. Name and title of person performing inspection
3. A description of the weather and soil conditions at the time of inspection
4. A description of the condition of the runoff at all points of discharge from the construction site. This shall include identification of any discharges of sediment from the construction site. Include discharges from conveyance systems and overland flow.
5. A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the construction site which receive runoff from disturbed areas. This shall include identification of any discharges of sediment to the surface waterbody
6. Identification of all erosion and sediment control practices that need repair or maintenance
7. Identification of all erosion and sediment control practices that were not installed properly or are not functioning as designed and need to be reinstalled or replaced
8. Description and sketch of areas that are disturbed at the time of the inspection and areas that have been stabilized (temporary and / or final) since the last inspection
9. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards
10. Corrective actions that must be taken to install, repair, replace or maintain erosion and sediment control practices; and to correct deficiencies identified with the construction of the post-construction stormwater management practice
11. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The qualified inspector shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven calendar days of the date of the inspection. The qualified inspector shall 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 shall attach paper color copies of the digital photographs to the inspection report that

documents the completion of the corrective action work within seven calendar days of that inspection.

Within one business day of the completion of an inspection, the qualified inspector shall notify the owner or operator and appropriate contractor or subcontractor identified in Part III.A.6 of GP-0-20-001 of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.

All inspection reports shall be signed by the qualified inspector. The inspection reports shall be maintained on site with the SWPPP.

The contractor is responsible for the installation and maintenance of all erosion and sediment control measures throughout the course of construction.

The contractor is responsible for controlling dust by sprinkling exposed soil areas periodically with water as required. The contractor is to supply all equipment and water.

6.5 Reporting

6.5.1 *Inspection / Maintenance Reports*

Inspection/maintenance reports will be prepared prior to and during construction in accordance with the schedule outlined above, by the qualified professional. All inspection reports shall be signed by the qualified inspector. Pursuant to Part II.C.2, the inspection reports shall be maintained on site with the SWPPP.

6.5.2 *Site Log Book*

During construction, the contractor shall maintain a record of all erosion and sediment control inspection reports at the site in a log book. The site log book shall be maintained on-site and made available to the permitting authority.

6.5.3 *Post Construction*

The owner or operator shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for a period of at least five years from the date that the site achieves final stabilization. This period may be extended by the Department, in its sole discretion, at any time upon written notification.

With the exception of the NOI, NOT and MS4 SWPPP Acceptance form (which must be submitted to the address referenced in Part II.A.1), all written correspondence requested by the Department, including individual permit applications, shall be sent to the address of the appropriate Department Regional Office listed in Appendix F of GP-0-20-001.

The operator shall also prepare a written summary of its status with respect to compliance with this general permit at a minimum frequency of every three months during which coverage under this permit exists. The summary should address the status of achieving the overall goal of the SWPPP. This summary shall be handled in the same manner as prescribed for SWPPP's under Part III, subsection B of the NYSDEC SPDES General Permit GP-0-20-001.

7.0 STORMWATER MEASURES

The following section describes the design of each stormwater measure and the maintenance requirements. All maintenance activities are the responsibility of the property owner. Construction specifications for each stormwater measure are identified on the approved plans.

7.1 Bioretention Area

7.1.1 *Bioretention - Design*

Stormwater runoff from the building and the gravel areas will be directed toward the bioretention areas. This Stormwater Management practice will be integrated into the site to provide WQv treatment and to satisfy the RRv requirements.

The bioretention areas have been sized to treat the WQv and satisfy the RRv for site runoff directed to the practices in accordance with the Design Manual. Runoff in excess capacity of bioretention areas will rise to the invert / rim elevation of an engineered outlet control structure and be conveyed to the stormwater management ponds.

Elements of the systems include pea gravel diaphragm, bioretention soil, filter fabric, gravel, 6" diameter perforated collection pipes, a 12” diameter outlet pipe and an outlet control structure.

The bioretention areas will be covered with with grasses and various absorbent plantings, on top of a layer of engineered permeable soil 2.5 feet in depth. Captured runoff will infiltrate downward through the underlying soils, where it is filtered of pollutants. This filtered runoff will be collected by underground perforated pipes and then be directed to either the pond or the stormwater discharge point.

Pretreatment for the bioretention will be provided by a pea gravel diaphragm in accordance with the Design Manual.

The bioretention area will be incorporated to provide both water quality treatment and to reduce the runoff reduction volume of impervious surfaces as required.

7.1.2 *Maintenance and Inspection*

Silt / sediment shall be removed from the filter bed when the accumulation exceeds one inch. When the filtering capacity of the bioretention soil diminishes substantially (i.e. when water ponds on the surface of the filter bed for more than 48 hours), the top few inches of discolored material shall be removed and replaced with fresh material. The removed sediments shall be disposed of in an acceptable manner. Dead or diseased plant material shall be replaced.

Long term operation and maintenance for bioretention areas will be the responsibility of lot owner.

7.2 Stormwater Ponds

7.2.1 *Design*

The ponds have been designed primarily to reduce peak flow rates discharging from the site. Additionally, 2 of the ponds will have a permanent pool which will capture and treat the remaining Water Quality Volume (WQv). The lowest outlet elevations have been set above the WQv elevation to ensure the full treatment volume. The ponds will have 2H:1V side slopes max with safety fencing. The ponds meet the requirements set forth in the NYSDEC Design Manual, including but not limited to pretreatment, landscaping and maintenance access. Preatreatment for surface runoff conveyed to the pond is provided by the bioretention areas, pea gravel diaphragms and grass channels.

7.2.2 *Maintenance and Inspection*

The pond shall be inspected by the owner annually and maintained as necessary. The pond berm and banks must be mowed a minimum of 2 times per year. Sediment removal should occur after 50% of total permanent pool capacity has been lost.

8.0 GOOD HOUSEKEEPING AND MATERIAL MANAGEMENT PRACTICES

8.1 General

The following good housekeeping and material management practices shall be followed to reduce the risk of spills or exposure of materials to stormwater runoff.

8.2 Chemical

Chemicals used on-site shall be kept in small quantities and stored in closed water tight containers undercover in a neat and orderly manner and kept out of direct contact with stormwater. Chemical products shall not be mixed with one another unless recommended by manufacturer.

All on-site personnel shall have access to material safety data sheets (MSDS) and National Institute for Occupational Safety and Health (NIOSH) Guide to Chemical Hazards (latest edition) for all chemicals stored and used on-site.

Manufacturer's and/or Federal, State, County and Local guidelines for proper use and disposal shall be followed. Any spills or contamination of runoff with chemicals shall be contained, collected, cleaned up immediately and disposed of in accordance with Federal, State, County and Local regulations.

8.3 Fuels and Oil

All on-site vehicles, tools, and construction equipment shall be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage. On-site vehicle and equipment refueling shall be conducted at a location away from access to surface waters and runoff. Any

on-site storage tanks shall have a means of secondary containment. Oil products shall be kept in their original containers with original manufacturer's label. In the event of a spill, it shall be contained, cleaned up immediately and the material, including any contaminated soil, shall be disposed of in accordance with Federal, State, County and Local regulations.

Fuel and oil spills in excess of reportable quantities shall be reported to the NYSDEC as soon as the discharge is discovered.

8.4 Fertilizers

Fertilizers used on-site shall be stored in closed watertight containers undercover in a neat orderly manner and kept out of direct contact with stormwater. Manufacturer's and/or Federal, State, County and Local guidelines for proper use and disposal shall be followed. Any spills or contamination of runoff with fertilizers shall be contained, collected, cleaned up immediately, and disposed of in accordance with Federal, State, County and Local regulations.

8.5 Sanitary Waste Facilities

Should portable units be located on-site, they shall be placed in upland areas away from direct contact with surface waters. They shall be serviced and cleaned on a weekly basis by a licensed portable toilet and septic disposal service. Any spills occurring during service shall be cleaned up immediately and disposed of in accordance with Federal, State, County, and Local regulations.

8.6 Concrete and Asphalt Trucks

Concrete and asphalt trucks shall not be allowed to wash out or discharge surplus material on-site unless within an approved washout facility.

9.0 CERTIFICATIONS

9.1 Preparer of the SWPPP

The following certification will be signed by the preparer of the final SWPPP to accompany the site plan and subdivision set.

"I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-20-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and / or administrative proceedings."

Name	Andrew Willingham, PE
*Title	Principal
Firm/Business Name	Willingham Engineering, PLLC
Address	183 Main Street
Telephone Number	(845) 255-0210

Signature _____

Date _____

* Person providing signature shall meet the requirements of Part V.H. of General Permit GP-0-20-001

9.2 Site Contractor and Sub-Contractors

The general contractor, and all subcontractor's involved with construction activity that disturbs site soil or who implement erosion and sediment control measures identified in this preliminary SWPPP, and subsequent SWPPP's for the project are responsible for complying with the requirements set forth in the NYSDEC SPDES Permit GP-0-20-001 and therefore must provide the following certification.

"I hereby certify under penalty of law 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 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."

Name _____

*Title _____

Firm/Business Name_____

Address_____

Telephone Number_____

Signature_____

Date_____

Person providing signature shall meet the requirements of Part V.H. of General Permit GP-0-20-001

APPENDICES

APPENDIX A: SOILS DATA

APPENDIX B: EROSION AND SEDIMENT CONTROL PLANS

APPENDIX C: NOTICE OF INTENT (NOI)

APPENDIX D: GP-0-20-001

APPENDIX E: WEEKLY INSPECTION FORM

APPENDIX F: MS4 ACCEPTANCE FORM

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APPENDIX A

SOILS DATA

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for Ulster County, New York

April 29, 2023

Preface

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

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

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

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

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

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

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Contents

How Soil Surveys Are Made

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

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

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

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

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

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

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

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

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

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

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

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

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

Custom Soil Resource Report
Soil Map

Map Scale: 1:3,490 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

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

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

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: Ulster County, New York
Survey Area Data: Version 21, Sep 10, 2022

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.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BnC	Bath-Nassau complex, 8 to 25 percent slopes	2.2	5.6%
BOD	Bath-Nassau-Rock outcrop complex, hilly	12.3	31.0%
MgB	Mardin-Nassau complex, 3 to 8 percent slopes	11.2	28.3%
Ra	Raynham silt loam	12.4	31.2%
VoB	Volusia gravelly silt loam, 3 to 8 percent slopes	1.6	3.9%
Totals for Area of Interest		**39.6**	**100.0%**

Map Unit Descriptions

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

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

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

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

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

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

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

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

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

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

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

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

Ulster County, New York

BnC—Bath-Nassau complex, 8 to 25 percent slopes

Map Unit Setting

National map unit symbol: 9xft
Elevation: 600 to 1,800 feet
Mean annual precipitation: 41 to 62 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 110 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Bath and similar soils: 50 percent
Nassau and similar soils: 30 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bath

Setting

Landform: Till plains, hills, drumlinoid ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived mainly from gray and brown siltstone, sandstone, and shale

Typical profile

H1 - 0 to 6 inches: gravelly silt loam
H2 - 6 to 28 inches: gravelly loam
H3 - 28 to 48 inches: very gravelly loam
H4 - 48 to 52 inches: bedrock

Properties and qualities

Slope: 8 to 25 percent
Depth to restrictive feature: 26 to 38 inches to fragipan; 40 to 80 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 24 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: F140XY030NY - Well Drained Dense Till
Hydric soil rating: No

Description of Nassau

Setting

Landform: Till plains, ridges, benches
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Channery loamy till derived mainly from local slate or shale

Typical profile

H1 - 0 to 6 inches: channery silt loam
H2 - 6 to 16 inches: very channery silt loam
H3 - 16 to 20 inches: unweathered bedrock

Properties and qualities

Slope: 8 to 25 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: F144AY033MA - Shallow Dry Till Uplands
Hydric soil rating: No

Minor Components

Hudson

Percent of map unit: 5 percent
Hydric soil rating: No

Cambridge

Percent of map unit: 5 percent
Hydric soil rating: No

Volusia

Percent of map unit: 5 percent
Hydric soil rating: No

Manlius

Percent of map unit: 5 percent
Hydric soil rating: No

BOD—Bath-Nassau-Rock outcrop complex, hilly

Map Unit Setting

National map unit symbol: 9xfv
Elevation: 600 to 1,800 feet
Mean annual precipitation: 41 to 62 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 110 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Bath and similar soils: 40 percent
Nassau and similar soils: 25 percent
Rock outcrop: 15 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bath

Setting

Landform: Till plains, hills, drumlinoid ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived mainly from gray and brown siltstone, sandstone, and shale

Typical profile

H1 - 0 to 6 inches: gravelly silt loam
H2 - 6 to 28 inches: gravelly loam
H3 - 28 to 48 inches: very gravelly loam
H4 - 48 to 52 inches: bedrock

Properties and qualities

Slope: 10 to 25 percent
Depth to restrictive feature: 26 to 38 inches to fragipan; 40 to 80 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 24 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: C
Ecological site: F140XY030NY - Well Drained Dense Till
Hydric soil rating: No

Description of Nassau

Setting

Landform: Till plains, ridges, benches
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Channery loamy till derived mainly from local slate or shale

Typical profile

H1 - 0 to 6 inches: channery silt loam
H2 - 6 to 16 inches: very channery silt loam
H3 - 16 to 20 inches: unweathered bedrock

Properties and qualities

Slope: 10 to 25 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: F144AY033MA - Shallow Dry Till Uplands
Hydric soil rating: No

Description of Rock Outcrop

Typical profile

H1 - 0 to 60 inches: unweathered bedrock

Properties and qualities

Slope: 10 to 25 percent
Depth to restrictive feature: 0 inches to lithic bedrock
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydric soil rating: Unranked

Minor Components

Manlius

Percent of map unit: 5 percent
Hydric soil rating: No

Mardin
Percent of map unit: 5 percent
Hydric soil rating: No

Hudson
Percent of map unit: 5 percent
Hydric soil rating: No

Volusia
Percent of map unit: 5 percent
Hydric soil rating: No

MgB—Mardin-Nassau complex, 3 to 8 percent slopes

Map Unit Setting
National map unit symbol: 2v30k
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Mardin and similar soils: 55 percent
Nassau and similar soils: 25 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mardin

Setting
Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till

Typical profile
Ap - 0 to 8 inches: gravelly silt loam
Bw - 8 to 15 inches: gravelly silt loam
E - 15 to 20 inches: gravelly silt loam
Bx - 20 to 72 inches: gravelly silt loam

Properties and qualities
Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 14 to 26 inches to fragipan

Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 13 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: D
Ecological site: F144AY033MA - Shallow Dry Till Uplands
Hydric soil rating: No

Description of Nassau

Setting

Landform: Till plains, ridges, benches
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex, concave
Across-slope shape: Convex, linear
Parent material: Channery loamy till derived mainly from local slate or shale

Typical profile

H1 - 0 to 6 inches: channery silt loam
H2 - 6 to 16 inches: very channery silt loam
H3 - 16 to 20 inches: unweathered bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: D
Ecological site: F144AY033MA - Shallow Dry Till Uplands
Hydric soil rating: No

Minor Components

Manlius

Percent of map unit: 5 percent
Landform: Till plains, ridges, benches
Landform position (two-dimensional): Shoulder, footslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex, concave
Across-slope shape: Convex, linear

Hydric soil rating: No

Volusia

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Interfluve, base slope, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Churchville

Percent of map unit: 5 percent
Landform: Till plains, lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Side slope, base slope, tread
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Schoharie

Percent of map unit: 5 percent
Landform: Lake plains
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Side slope, tread
Down-slope shape: Concave
Across-slope shape: Convex, linear
Hydric soil rating: No

Ra—Raynham silt loam

Map Unit Setting

National map unit symbol: 9xj3
Elevation: 50 to 500 feet
Mean annual precipitation: 41 to 62 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 110 to 200 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Raynham and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Raynham

Setting

Landform: Lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread

Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Glaciolacustrine, eolian, or old alluvial deposits, comprised mainly of silt and very fine sand

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 37 inches: silt loam
H3 - 37 to 56 inches: very fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: High (about 11.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F140XY016NY - Mineral Wetlands
Hydric soil rating: No

Minor Components

Scio

Percent of map unit: 5 percent
Hydric soil rating: No

Madalin

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Williamson

Percent of map unit: 5 percent
Hydric soil rating: No

Unadilla

Percent of map unit: 5 percent
Hydric soil rating: No

Canandaigua

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

VoB—Volusia gravelly silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2srf6
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Volusia and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Volusia

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Interfluve, base slope, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived from interbedded sedimentary rock

Typical profile

Ap - 0 to 8 inches: gravelly silt loam
Bw - 8 to 15 inches: gravelly silt loam
E - 15 to 19 inches: gravelly silt loam
Bx - 19 to 58 inches: gravelly silt loam
C - 58 to 70 inches: gravelly silt loam

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 10 to 22 inches to fragipan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: Low (about 3.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F140XY028NY - Moist Till Upland

Hydric soil rating: No

Minor Components

Mardin

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Chippewa

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

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APPENDIX B

EROSION & SEDIMENT CONTROL PLANS

LEGEND

- EXISTING PROPERTY LINE
- ADJACENT PROPERTY LINE
- ZONING BOUNDARY
- EXISTING EDGE OF PAVEMENT
- EXISTING BUILDING SETBACK
- EXISTING TREE LINE
- ACOE WETLAND BOUNDARY
- ACOE WETLAND AREA
- EXISTING GRAVEL ROAD / DRIVEWAY
- PROPOSED STRUCTURE
- PROPOSED DECK
- PROPOSED WELL
- PROPOSED SETBACK FROM WELL
- PROPOSED SANITARY DISPOSAL SYSTEM
- PROPOSED TREE LINE
- PROPOSED BIORETENTION AREA
- PROPOSED STORMWATER MANAGEMENT POND
- PROPOSED GRAVEL ROAD
- PROPOSED LIMIT OF DISTURBANCE
- PROPOSED SILT FENCE
- PROPOSED PEA GRAVEL DIAPHRAGM
- PROPOSED DRAINAGE CULVERT
- PROPOSED ROOF LEADER WITH DOWNSPOUT
- PROPOSED END SECTION WITH RIP-RAP OUTLET PROTECTION
- PROPOSED CATCH BASIN
- PROPOSED DRAINAGE MANHOLE
- PROPOSED STONE OVERFLOW WEIR
- PROPOSED CATCH BASIN WITH INLET PROTECTION
- PROPOSED CHECK DAM
- PROPOSED STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED CONCRETE WASHOUT FACILITY

CONSTRUCTION SEQUENCING SCHEDULE

1. ESTABLISH THE WORK LIMITS AND LOCATIONS OF PROPOSED IMPROVEMENTS INCLUDING PROPOSED EROSION AND SEDIMENT CONTROL MEASURES.
2. INSTALL STABILIZED CONSTRUCTION ENTRANCE AND ENTRANCE DRIVE AS NECESSARY TO PROVIDE SITE ACCESS. INSTALL ALL PERIMETER EROSION AND SEDIMENT CONTROLS IN TANDEM WITH ROAD CONSTRUCTION.
3. ROUGH GRADE STORMWATER PONDS AND BIORETENTION AREAS CLEARING AS NECESSARY. POND AREAS SHALL BE USED AS TEMPORARY SEDIMENT BASIN DURING CONSTRUCTION. CONSTRUCT TEMPORARY STONE OUTLET FILTERS.
4. INSTALL ALL OTHER EROSION CONTROL MEASURES TO PROTECT ADJACENT PROPERTIES FROM SEDIMENT RUNOFF DURING CONSTRUCTION. ALL SEDIMENT AND EROSION CONTROL MEASURES MUST BE MAINTAINED AND ALTERED / IMPROVED AS NECESSARY DURING CONSTRUCTION ACTIVITIES.
5. CLEAR / DEMO SITE AS NECESSARY. ROUGH GRADE SITE. INSTALL DRIVEWAY AND PARKING MATERIALS, BUILDING FOUNDATIONS AND ASSOCIATED IMPROVEMENTS.
6. REMOVE AND DISPOSE OF ALL SEDIMENTS COLLECTED IN SEDIMENT BASINS. FINALIZE CONSTRUCTION OF PERMANENT STORMWATER MANAGEMENT FEATURES.
7. APPLY SURFACE STABILIZATION MEASURES. TOPSOIL AS NECESSARY, FERTILIZE, SEED AND MULCH ALL DISTURBED AREAS, INCLUDING GRASSED DITCHES AND EXPOSED SLOPES. NO DISTURBED AREAS SHALL BE LEFT EXPOSED.
8. WHERE WORK IS DELAYED OR COMPLETED SOIL STABILIZATION MEASURES MUST BE INITIATED BY THE END OF THE NEXT BUSINESS DAY AND COMPLETED WITHIN 14 DAYS.

PROPOSED DISTURBANCE AREA = ±10.6 ACRES

0 1 2 3
ORIGINAL SIZE IN INCHES

STATE OF NEW YORK • ANDREW V. WILLINGHAM • 083984 • PROFESSIONAL ENGINEER

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REV	DATE	DESCRIPTION
2	03/04/24	REVISIONS PER PLANNING BOARD
1	12/04/23	REVISIONS PER PLANNING BOARD

EROSION AND SEDIMENT CONTROL PLAN

CASTLEMORE HOLDINGS MIMA, LLC

38 HUDSON LANE

TOWN OF ESOPUS, ULSTER COUNTY, NEW YORK

DRAWN BY	CHECKED BY
MLT	
DATE	SCALE
10/02/23	1"=50'
PROJECT NO.	
22084	
SHEET NO.	
SP-9	

LEGEND

- EXISTING PROPERTY LINE
- ADJACENT PROPERTY LINE
- ZONING BOUNDARY
- EXISTING EDGE OF PAVEMENT
- EXISTING BUILDING SETBACK
- EXISTING TREE LINE
- ACOE WETLAND BOUNDARY
- ACOE WETLAND AREA
- EXISTING GRAVEL ROAD / DRIVEWAY
- PROPOSED STRUCTURE
- PROPOSED DECK
- PROPOSED WELL
- PROPOSED SETBACK FROM WELL
- PROPOSED SANITARY DISPOSAL SYSTEM
- PROPOSED TREE LINE
- PROPOSED BIORETENTION AREA
- PROPOSED STORMWATER MANAGEMENT POND
- PROPOSED GRAVEL ROAD
- PROPOSED LIMIT OF DISTURBANCE
- PROPOSED SILT FENCE
- PROPOSED PEA GRAVEL DIAPHRAGM
- PROPOSED DRAINAGE CULVERT
- PROPOSED ROOF LEADER WITH DOWNSPOUT
- PROPOSED END SECTION WITH RIP-RAP OUTLET PROTECTION
- PROPOSED CATCH BASIN
- PROPOSED DRAINAGE MANHOLE
- PROPOSED STONE OVERFLOW WEIR
- PROPOSED CATCH BASIN WITH INLET PROTECTION
- PROPOSED CHECK DAM
- PROPOSED STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED CONCRETE WASHOUT FACILITY

CONSTRUCTION SEQUENCING SCHEDULE

1. ESTABLISH THE WORK LIMITS AND LOCATIONS OF PROPOSED IMPROVEMENTS INCLUDING PROPOSED EROSION AND SEDIMENT CONTROL MEASURES.
2. INSTALL STABILIZED CONSTRUCTION ENTRANCE AND ENTRANCE DRIVE AS NECESSARY TO PROVIDE SITE ACCESS. INSTALL ALL PERIMETER EROSION AND SEDIMENT CONTROLS IN TANDEM WITH ROAD CONSTRUCTION.
3. ROUGH GRADE STORMWATER PONDS AND BIORETENTION AREAS CLEARING AS NECESSARY. POND AREAS SHALL BE USED AS TEMPORARY SEDIMENT BASIN DURING CONSTRUCTION. CONSTRUCT TEMPORARY STONE OUTLET FILTERS.
4. INSTALL ALL OTHER EROSION CONTROL MEASURES TO PROTECT ADJACENT PROPERTIES FROM SEDIMENT RUNOFF DURING CONSTRUCTION. ALL SEDIMENT AND EROSION CONTROL MEASURES MUST BE MAINTAINED AND ALTERED / IMPROVED AS NECESSARY DURING CONSTRUCTION ACTIVITIES.
5. CLEAR / DEMO SITE AS NECESSARY. ROUGH GRADE SITE. INSTALL DRIVEWAY AND PARKING MATERIALS, BUILDING FOUNDATIONS AND ASSOCIATED IMPROVEMENTS.
6. REMOVE AND DISPOSE OF ALL SEDIMENTS COLLECTED IN SEDIMENT BASINS, FINALIZE CONSTRUCTION OF PERMANENT STORMWATER MANAGEMENT FEATURES.
7. APPLY SURFACE STABILIZATION MEASURES. TOPSOIL AS NECESSARY, FERTILIZE, SEED AND MULCH ALL DISTURBED AREAS, INCLUDING GRASSED DITCHES AND EXPOSED SLOPES. NO DISTURBED AREAS SHALL BE LEFT EXPOSED.
8. WHERE WORK IS DELAYED OR COMPLETED SOIL STABILIZATION MEASURES MUST BE INITIATED BY THE END OF THE NEXT BUSINESS DAY AND COMPLETED WITHIN 14 DAYS.

PROPOSED DISTURBANCE AREA = ±10.6 ACRES

0 1 2 3
ORIGINAL SIZE IN INCHES

STATE OF NEW YORK
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REV	DATE	DESCRIPTION
2	03/04/24	REVISIONS PER PLANNING BOARD
1	12/04/23	REVISIONS PER PLANNING BOARD

EROSION AND SEDIMENT CONTROL PLAN

CASTLEMORE HOLDINGS MIMA, LLC

38 HUDSON LANE

TOWN OF ESOPUS, ULSTER COUNTY, NEW YORK

DRAWN BY	CHECKED BY
MLT	
DATE	SCALE
10/02/23	1"=50'
PROJECT NO.	
22084	
SHEET NO.	
SP-10	

EROSION AND SEDIMENT CONTROL NOTES - GENERAL

ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE STANDARDS AND PRINCIPLES AS OUTLINED IN THE "NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL" AND THE LOCAL MUNICIPALITY'S EROSION AND SEDIMENT CONTROL STANDARDS AND PRACTICES, IF SUCH A DOCUMENT EXISTS. THE INTENT OF THE OUTLINED MEASURES IS TO MINIMIZE EROSION AND SEDIMENTATION DURING CONSTRUCTION, STABILIZE AND PROTECT THE SITE FROM EROSION AFTER CONSTRUCTION IS COMPLETE AND MITIGATE ANY ADVERSE IMPACTS TO STORMWATER QUALITY RESULTING FROM SEDIMENT RUNOFF CAUSED BY DEVELOPMENT ACTIVITIES.

NO SOIL STOCKPILE OR GRADED AREA SHALL REMAIN EXPOSED FOR MORE THAN 14 DAYS. THE EXPOSED AREAS OR SOIL STOCKPILE SHALL BE STABILIZED WITHIN THE 14 DAY PERIOD. STABILIZATION MEASURES TO BE USED INCLUDE TEMPORARY SEEDING, PERMANENT SEEDING, MULCHING AND STONE RIP RAP. DURING CONSTRUCTION, RUNOFF SHALL BE DIVERTED AROUND THE SITE WITH EARTH DIKES, PIPING, OR STABILIZED CHANNELS WHERE POSSIBLE. SHEET RUNOFF FROM THE SITE SHALL BE PROVIDED WITH BARRIER FILTERS. STONE RIP RAP SHALL BE PROVIDED AT THE OUTLETS OF DRAINAGE PIPES WHERE EROSIVE VELOCITIES ARE ENCOUNTERED.

TIMING OF CONTROL MEASURES

AS INDICATED ABOVE IN THE CONSTRUCTION SEQUENCE SCHEDULE, ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO COMMENCING ANY CLEARING OR GRADING OF THE SITE. STRUCTURAL CONTROLS SHALL BE INSTALLED CONCURRENTLY WITH THE APPLICABLE ACTIVITY, AREAS WHERE CONSTRUCTION ACTIVITY TEMPORARILY CEASES FOR MORE THAN TWENTY ONE (21) DAYS WILL BE STABILIZED WITH A TEMPORARY SEED AND MULCH WITHIN FOURTEEN (14) DAYS OF THE LAST DISTURBANCE. ONCE CONSTRUCTION ACTIVITY CEASES PERMANENTLY IN AN AREA, SILT FENCES AND HAY BALE BARRIERS AND ANY EARTH DIKES WILL BE REMOVED ONCE PERMANENT MEASURES AND STABILIZATION ARE ESTABLISHED.

GENERAL INSPECTION AND MAINTENANCE PRACTICE

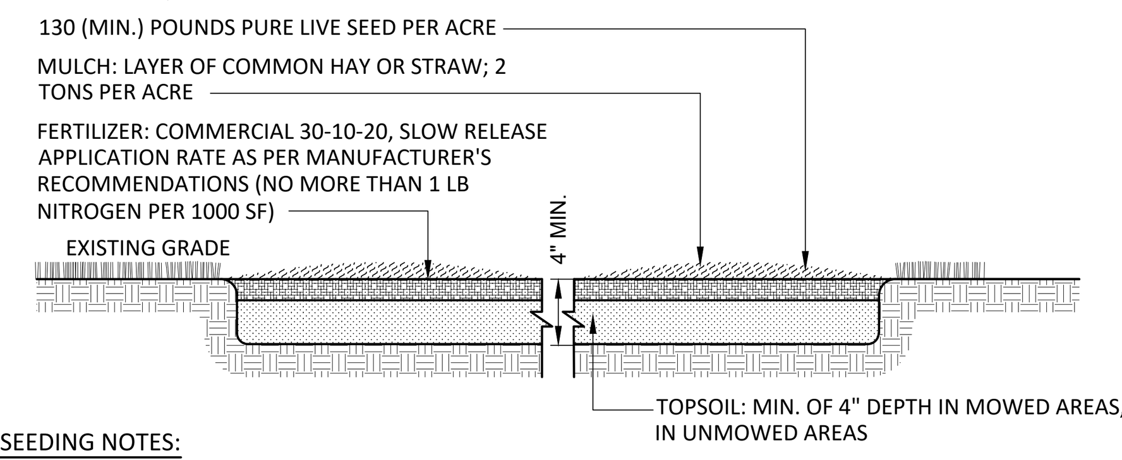
THESE ARE THE GENERAL INSPECTION AND MAINTENANCE PRACTICES THAT WILL BE USED TO IMPLEMENT THE PLAN DURING CONSTRUCTION.

1. THE SMALLEST PRACTICAL PORTION OF THE SITE WILL BE DISTURBED AT ONE TIME.
2. ALL CONTROL MEASURES WILL BE INSPECTED AT LEAST ONCE EACH WEEK.
3. ALL MEASURES WILL BE MAINTAINED IN GOOD WORKING ORDER. IF A REPAIR IS NECESSARY IT WILL BE INITIATED WITHIN 24 HOURS OF REPORT.
4. A MAINTENANCE INSPECTION REPORT WILL BE MADE AFTER EACH INSPECTION.
5. THE CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL MEASURES THROUGHOUT THE COURSE OF CONSTRUCTION.

INSTALLATION NOTES

1. TEMPORARY SEEDING SHOULD BE MADE WITHIN 24 HOURS OF CONSTRUCTION OR DISTURBANCE. IF NOT, THE SOIL MUST BE SCARIFIED PRIOR TO SEEDING.
2. IN ORDER FOR MULCH TO BE EFFECTIVE IT MUST BE PLACED PRIOR TO MAJOR STORM EVENTS. IT WILL BE NECESSARY TO CLOSELY MONITOR WEATHER PREDICTIONS TO HAVE ADEQUATE WARNING OF SIGNIFICANT STORMS.
3. THE TIME PERIOD TO MULCH CAN RANGE FROM 14 TO 21 DAYS OF INACTIVITY ON AN AREA, THE LENGTH OF TIME VARYING WITH SITE CONDITIONS. PROFESSIONAL JUDGMENT SHALL BE USED TO EVALUATE THE INTERACTION OF SITE CONDITIONS (SOIL ERODABILITY, SEASON OF YEAR, EXTENT OF DISTURBANCE, PROXIMITY TO SENSITIVE RESOURCES, ETC.) AND THE POTENTIAL IMPACT OF EROSION ON ADJACENT AREAS IN ORDER TO CHOOSE AN APPROPRIATE TIME RESTRICTION.
4. WHEN MULCH IS APPLIED TO PROVIDE PROTECTION OVER WINTER (PAST THE GROWING SEASON) IT SHALL BE AT THE RATE OF 6,000 LBS OF HAY OR STRAW PER ACRE. A TACKIFIER MAY BE ADDED TO THE MULCH.

SEDIMENT BARRIERS SHALL BE INSTALLED PRIOR TO ANY SOIL DISTURBANCE OF THE CONTRIBUTING DRAINAGE AREA ABOVE THEM. (REFER TO CONSTRUCTION SEQUENCING SCHEDULE IN SWPPP REPORT FOR FURTHER INFORMATION).



SEEDING NOTES:

1. PROVIDE FRESH, CLEAN, NEW SEED COMPLYING WITH ESTABLISHED TOLERANCES FOR GERMINATION AND PURITY IN ACCORDANCE WITH THE U.S. DEPARTMENT OF AGRICULTURE RULES AND REGULATIONS UNDER THE LATEST EDITION OF THE FEDERAL SEED ACT. SEED SHALL BE MIXED BY THE DEALER AND SHALL BE DELIVERED TO THE SITE IN SEALED CONTAINERS WHICH SHALL BEAR THE DEALER'S GUARANTEE ANALYSIS.
2. SEED MIXTURES:
   FOR TEMPORARY SEEDING - OR - AREAS THAT WILL NOT BE MAINTAINED:
   RAPIDLY GERMINATING ANNUAL RYEGRASS: 30 LBS PER ACRE PERENNIAL
   RYEGRASS: 100 LBS PER ACRE
   CEREAL RYE: 30 LBS PER ACRE
   FOR USE ON LAWN AREAS (AREAS TO BE MAINTAINED)
   ALTERNATE A (SUNNY SITE)
   65% KENTUCKY BLUE GRASS BLEND: 85-114 LBS PER ACRE
   20% PERENNIAL RYEGRASS: 26-35 LBS PER ACRE
   15% FINE FESCUE: 19-26 LBS PER ACRE
   TOTAL: 130-175 LBS PER ACRE
   ALTERNATE B (SHADY SITE)
   80% KENTUCKY BLUE GRASS BLEND*: 105-138 LBS PER ACRE
   20% PERENNIAL RYEGRASS: 25-37 LBS PER ACRE
   TOTAL: 130-175 LBS PER ACRE
   * SHADE TOLERANT
3. APPLY SEED UNIFORMLY BY HAND, CYCLONE SEEDER, OR HYDRO SEEDER (SLURRY INCLUDING SEED AND FERTILIZER). HYDRO-SEEDINGS, WHICH INCLUDE MULCH, MAY BE LEFT ON SOIL SURFACE. SEEDING RATES MUST BE INCREASED 10% WHEN HYDRO-SEEDING.
4. MULCH SEEDED AREAS WITH STRAW MULCH (2000 LBS PER ACRE).
5. IRRIGATE TO FULLY SATURATE SOIL LAYER, BUT NOT TO DISLODGE PLANTING SOIL.
6. SEED BETWEEN APRIL 1ST AND MAY 15TH OR AUGUST 15TH AND OCTOBER 15TH. SEEDING MAY OCCUR BETWEEN MAY 15TH AND AUGUST 15TH IF ADEQUATE IRRIGATION IS PROVIDED.

TOPSOIL APPLICATION NOTES:

1. TOPSOIL SHALL BE DISTURBED TO A UNIFORM DEPTH OVER THE AREA. IT SHALL NOT BE PLACED WHEN IT IS PARTIALLY FROZEN, MUDDY OR ON FROZEN SLOPES OVER ICE, SNOW OR STANDING WATER.
2. TOPSOIL PLACED AND GRADED ON SLOPES STEEPER THAN 5% SHALL BE PROMPTLY FERTILIZED, SEEDED AND STABILIZED BY "TRACKING" WITH SUITABLE EQUIPMENT.
3. APPLY TOPSOIL IN THE FOLLOWING AMOUNTS FOR INTENDED USE:
   MOWED LAWN: 4-8 INCHES
   UNMOWED AREA: 2-4 INCHES
4. COMPLETE ROUGH GRADING AND FINAL GRADE, ALLOWING FOR DEPTH OF TOPSOIL TO BE ADDED. SCARIFY ALL COMPACT, SLOWLY PERMEABLE, MEDIUM AND FINE TEXTURED SUBSOIL AREAS. SCARIFY AT APPROXIMATELY RIGHT ANGLES TO THE SLOPE DIRECTION IN SOIL AREAS THAT ARE STEEPER THAN 5%.
5. REMOVE REFUSE, WOODY PLANT PARTS, STONES OVER 3 INCHES IN DIAMETER, AND OTHER LITTER.

TOPSOIL MATERIAL NOTES:

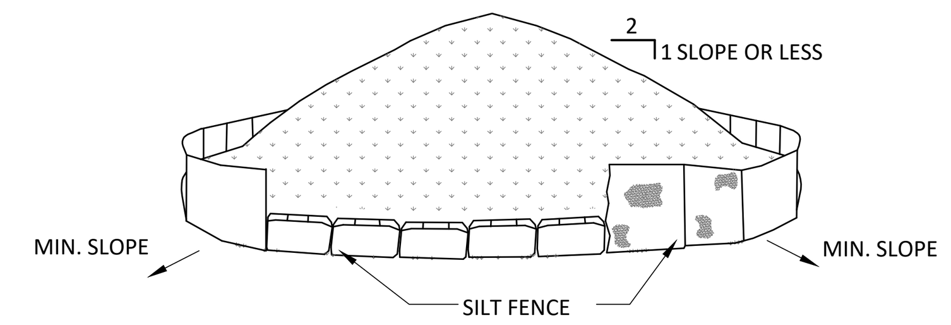
THE FURNISHINGS OF NEW TOPSOIL SHALL BE OF A BETTER OR EQUAL QUALITY OF THE EXISTING ADJACENT TOPSOIL AND SHALL MEET THE FOLLOWING CRITERIA;

- TOPSOIL SHALL HAVE AT LEAST 2%, BUT NOT MORE THAN 6% BY WEIGHT OF FINE TEXTURED STABLE ORGANIC MATERIAL.
- TOPSOIL SHALL HAVE NOT LESS THAN 20% FINE TEXTURED MATERIAL (PASSING THE NO. 200 SIEVE) AND NOT MORE THAN 15% CLAY.
- TOPSOIL SHALL BE RELATIVELY FREE OF STONES OVER 1" DIAMETER, THRASH, NOXIOUS WEEDS, AND WILL HAVE LESS THAN 10% GRAVEL BY VOLUME.

INSPECTION & MAINTENANCE NOTES:

1. TEMPORARY SEEDING AND PLANTING WILL BE INSPECTED FOR BARE SPOTS, WASHOUTS, AND UNHEALTHY GROWTH.
2. TEMPORARY SEEDINGS SHALL BE PERIODICALLY INSPECTED. AT A MINIMUM 95% OF THE SOIL SURFACE SHOULD BE COVERED BY VEGETATION. IF ANY EVIDENCE OF EROSION OR SEDIMENTATION IS APPARENT, REPAIRS SHALL BE MADE AND OTHER TEMPORARY MEASURES USED IN THE INTERIM. (MULCH, FILTER BARRIERS, CHECK DAMS, ETC.)
3. ALL MULCHES MUST BE INSPECTED PERIODICALLY, IN PARTICULAR AFTER RAINSTORMS, TO CHECK FOR RILL EROSION. IF LESS THAN 90% OF THE SOIL SURFACE IS COVERED BY MULCH, ADDITIONAL MULCH SHALL BE APPLIED IMMEDIATELY.
4. AERATE COMPACTED OR HEAVY USED AREAS, ANNUALLY AS SOON AS THE SOIL MOISTURE CONDITIONS PERMIT. AERATE AREA 6 TO 8 TIMES USING A SPOON HOLLOW TINE TYPE AERATION. DO NOT USE SPIKE EQUIPMENT.
5. RESEED BARE AND THIN AREAS ANNUALLY WITH ORIGINAL SPECIES.
6. SOIL SHALL MAINTAIN A pH OF 6.0-7.0.

TOPSOIL, SEED AND MULCH DETAIL
SCALE: NTS



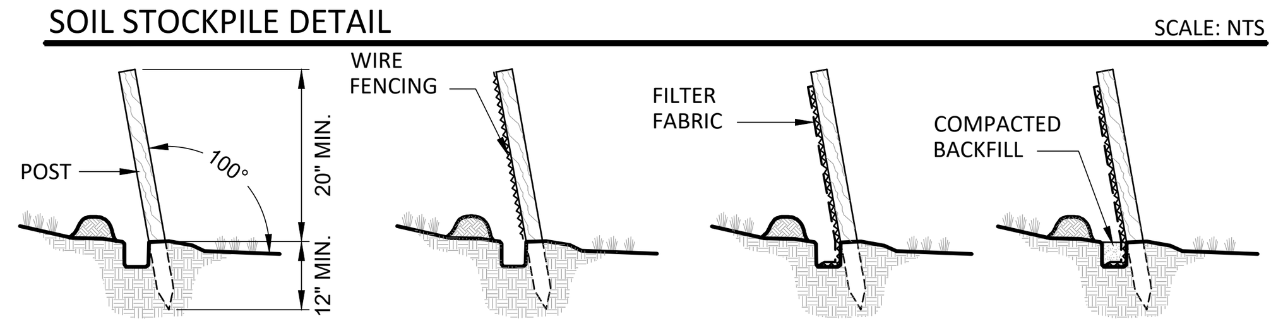
SPECIFICATION AND INSTALLATION NOTES:

1. AREA CHOSEN FOR STOCKPILING OPERATIONS SHALL BE DRY AND STABLE.
2. MAXIMUM SLOPE OF STOCKPILE SHALL BE 1:2.
3. UPON COMPLETION OF SOIL STOCKPILING, EACH PILE SHALL BE SURROUNDED WITH EITHER SILT FENCING OR HAY BALES AND STABILIZED WITH VEGETATION OR COVERED.
4. SEE SPECIFICATIONS ON INSTALLATION OF SILT FENCE.

INSPECTION & MAINTENANCE NOTES:

1. SOIL AND TOPSOIL STOCKPILE SHOULD BE SEEDED IF THEY ARE TO REMAIN DORMANT FOR 30 DAYS.
2. SEE SILT FENCE DETAIL FOR MAINTENANCE AND INSPECTIONS.

SOIL STOCKPILE DETAIL
SCALE: NTS



STEP 1
SET POSTS AND EXCAVATE A 6"x6" TRENCH, SET POST DOWNSLOPE.
ANGLE POST 10° UPSLOPE FOR STABILITY AND SELF CLEANING.

STEP 2
STAPLE WIRE MESH FENCING TO FENCE POSTS.

STEP 3
ATTACH FILTER FABRIC TO THE WIRE FENCING AND EXTEND IT INTO THE TRENCH.

STEP 4
BACKFILL THE TRENCH AND COMPACT THE EXCAVATED SOIL.

MATERIAL NOTES:

1. SYNTHETIC FILTER FABRIC SHALL CONTAIN ULTRAVIOLET RAY INHIBITORS AND STABILIZERS TO PROVIDE A MINIMUM OF 6 MONTHS OF EXPECTED USABLE CONSTRUCTION LIFE AT A TEMPERATURE RANGE OF 0 DEGREES TO 120 DEGREE F. SYNTHETIC FILTER FABRIC SHALL BE CERTIFIED BY THE MANUFACTURER OR SUPPLIERS AS CONFORMING TO THE FOLLOWING REQUIREMENTS:

FABRIC PROPERTIES	MIN. ACCEPTED VALUE	TEST METHOD
GRAB TENSILE STRENGTH (lbs)	90	ASTM D1682
ELONGATION FAILURE AT (%)	50	ASTM D1682
MULLEN BURST STRENGTH (PSI)	190	ASTM D3786
PUNCTURE STRENGTH (lbs)	40	ASTM D751 (MODIFIED)
SLURRY FLOW RATE (gal/min/sf)	0.3	
EQUIVALENT OPENING SIZE	40-80	US STD SIEVE CW-02215
ULTRAVIOLET RADIATION STABILITY (%)	90	ASTM G-26

2. THE HEIGHT OF THE SILT FENCE SHALL NOT EXCEED 36 INCHES.
3. THE FILTER FABRIC SHALL BE PURCHASED IN A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID THE USE OF JOINTS. WHEN JOINTS ARE NECESSARY, FILTER CLOTH SHALL BE SPLICED TOGETHER ONLY AT SUPPORT POSTS, WITH A 6 INCH OVERLAP MINIMUM AND SHALL BE SECURELY SEALED.

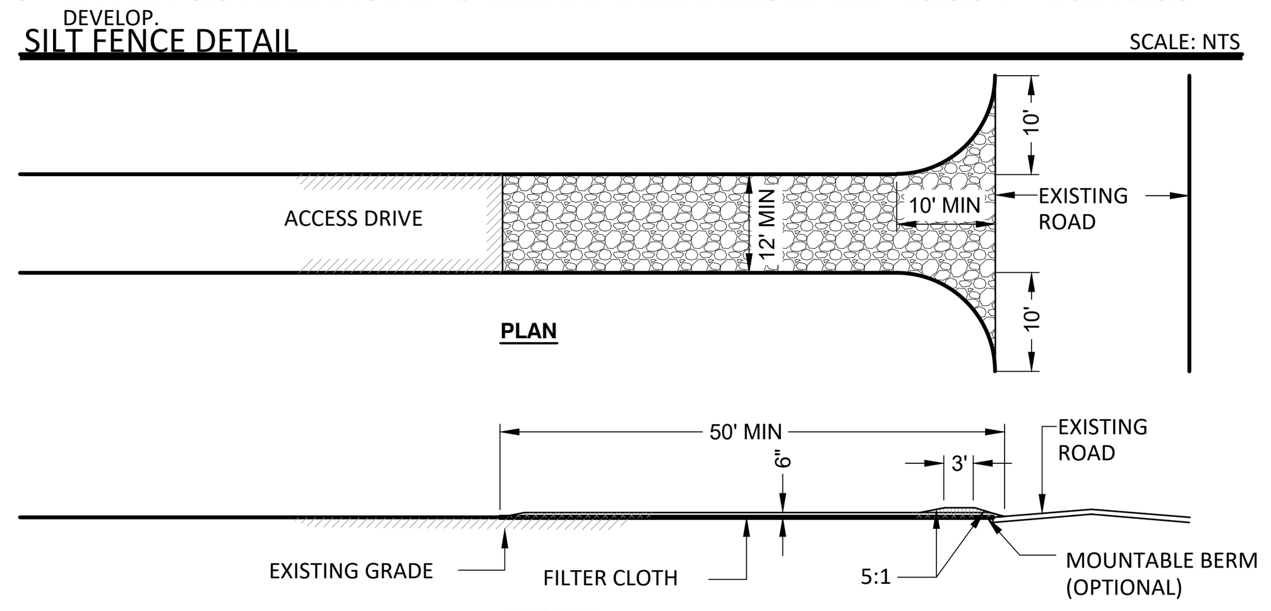
INSTALLATION NOTES:

1. WHEN STANDARD STRENGTH FILTER FABRIC IS USED, A WIRE MESH SUPPORT FENCE SHALL BE FASTENED SECURELY TO THE UPSLOPE SIDE OF THE POSTS USING HEAVY DUTY WIRE STAPLES AT LEAST ONE (1) INCH LONG, TIE WIRES, OR HOG RINGS. THE WIRE SHALL EXTEND NO MORE THAN 36 INCHES ABOVE THE ORIGINAL GROUND SURFACES.
2. THE "STANDARD STRENGTH" FILTER FABRIC SHALL BE STAPLED OR WIRED TO THE FENCE, AND EIGHT (8) INCHES OF THE FABRIC SHALL BE EXTENDED INTO THE TRENCH. FILTER FABRIC SHALL NOT BE STAPLED TO EXISTING TREES.
3. WHEN EXTRA STRENGTH FILTER FABRIC AND CLOSER POST SPACING ARE USED, THE WIRE MESH SUPPORT FENCE MAY BE ELIMINATED. IN SUCH A CASE, THE FILTER FABRIC IS STAPLED OR WIRED DIRECTLY TO THE POSTS WITH ALL OTHER PROVISIONS APPLYING.
4. SILT FENCES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFUL PURPOSE, BUT NOT BEFORE THE UPSLOPE AREA HAS BEEN PERMANENTLY STABILIZED.
5. POSTS SHALL BE SPACED A MAXIMUM OF 10 FEET APART AND DRIVEN SECURELY INTO THE GROUND .

INSPECTION AND MAINTENANCE NOTES:

1. STRAW BALE BARRIER AND SILT FENCE BARRIERS SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. THEY SHALL BE REPAIRED IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THEM. ANY REQUIRED REPAIRS SHALL BE MADE WITHIN 24 HOURS OF CONTRACTOR NOTIFICATION. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR THE EDGES, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THEM, SEDIMENT BARRIERS SHALL BE REPLACED WITH A TEMPORARY CHECK DAM.
2. SHOULD THE FABRIC ON A SILT FENCE OR FILTER BARRIER DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER IS STILL NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY.
3. SEDIMENT DEPOSITS SHOULD BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE THIRD (1/3) THE HEIGHT OF THE BARRIER.
4. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE OR FILTER BARRIER IS NO LONGER REQUIRED SHOULD BE DRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED, AND SEEDED.
5. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" IN THE SILT FENCES DEVELOP.

SILT FENCE DETAIL
SCALE: NTS



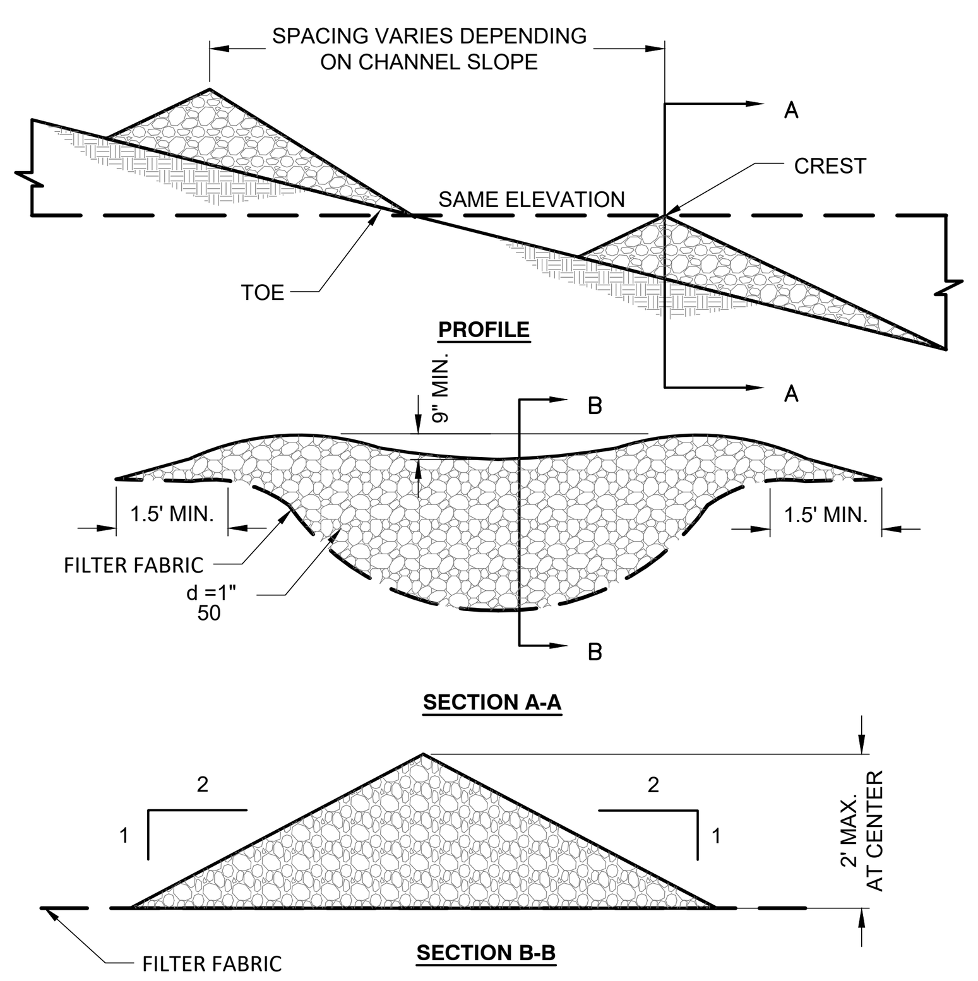
SPECIFICATIONS AND INSTALLATION NOTES:

1. PRIOR TO INITIATION OF CONSTRUCTION ACTIVITIES AT THE PROJECT SITE, STABILIZED CONSTRUCTION ENTRANCED SHALL BE CONSTRUCTED AT ALL POINTS OF CONSTRUCTION INGRESS AND EGRESS.
2. STONE SIZE - USE 2" STONE OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
3. THICKNESS - NOT LESS THAN 6 INCHES.
4. WIDTH - 12 FEET MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.
5. LENGTH - AS REQUIRED, BUT NOT LESS THAN 50 FEET.
6. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE. THE FILTER CLOTH SHALL BE WOVEN .
7. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.

INSPECTION & MAINTENANCE NOTES:

1. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAINFALL.
2. THE STABILIZED CONSTRUCTION ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OF SEDIMENT ON TO PUBLIC RIGHT-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH AGGREGATE, WHICH DRAINS INTO AN APPROVED SEDIMENT-TRAPPING DEVICE. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING STORM DRAINS, DITCHES OR WATERWAYS.

STABILIZED CONSTRUCTION ENTRANCE DETAIL
SCALE: NTS



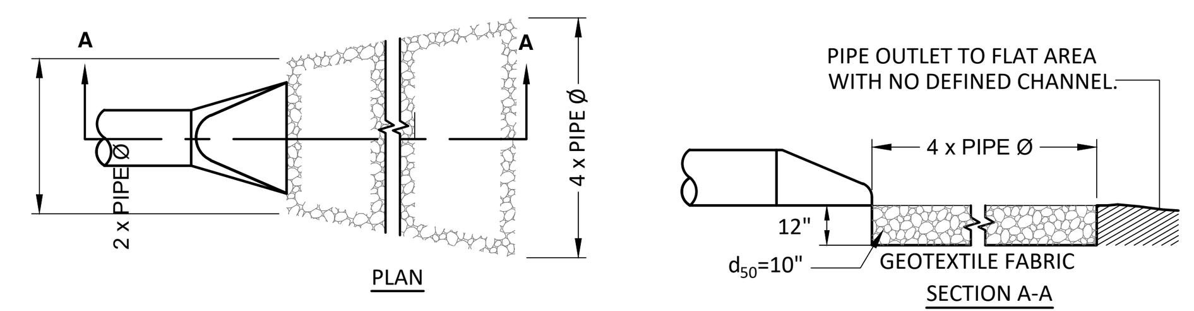
SPECIFICATIONS AND INSTALLATION NOTES:

1. STONE SHALL BE PLACED ON A FILTER FABRIC FOUNDATION.
2. SET SPACING OF CHECK DAMS SUCH THAT THE ELEVATION OF THE CREST OF THE DOWNSTREAM DAM IS THE SAME AS THE TOE OF THE UPSTREAM DAM.
3. EXTEND THE STONE A MINIMUM OF 1.5 FEET BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM.
4. PROTECT THE CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH STONE OR LINER AS APPROPRIATE.
5. ENSURE THAT CHANNEL APPURTENANCE SUCH AS CULVERT ENTRANCED BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONES.

INSTALLATION AND MAINTENANCE NOTES:

1. THE CHECK DAMS SHALL BE INSPECTED PERIODICALLY. CONTRACTOR SHALL CORRECT THE DAMAGE WITHIN 24 HOURS OF NOTIFICATION.
2. REMOVE SEDIMENT ACCUMULATED BEHIND DAM AS NEEDED TO ALLOW CHANNEL TO DRAIN THROUGH THE STONE CHECK DAM.
3. REPLACE STONE AS NEEDED TO MAINTAIN THE DESIGN CROSS SECTION OF THE STRUCTURES.

STONE CHECK DAM DETAIL
SCALE: NTS



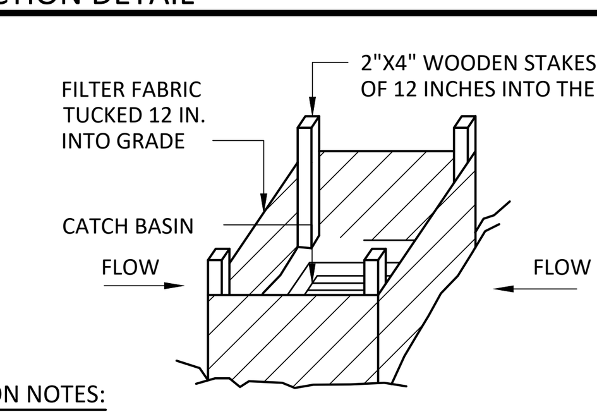
SPECIFICATIONS AND INSTALLATION NOTES:

1. ANY FILL REQUIRED IN THE SUBGRADE SHALL BE SUITABLY COMPACTED.
2. THE ROCK OR GRAVEL SHALL CONFORM TO THE SPECIFIED GRADING LIMITS.
3. FILTERING CLOTH SHALL BE PROTECTED FROM PUNCHING, CUTTING, OR TEARING. ANY DAMAGE OTHER THAN THE OCCASIONAL SMALL HOLE SHALL BE REPAIRED BY PLACING ANOTHER PIECE OF CLOTH OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE CLOTH. ALL OVERLAPS WHETHER FOR REPAIRS OR FOR JOINING TWO PIECES OF CLOTH SHALL BE A MINIMUM OF 1 FOOT.
4. STONE FOR RIP RAP MAY BE PLACED BY EQUIPMENT. IT SHALL BE CONSTRUCTED TO THE FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. THE STONE RIP RAP SHALL BE PLACED IN A MANNER THAT WILL INSURE THAT THE RIP RAP IS REASONABLY HOMOGENEOUS WITH THE SMALLER STONES FILLING THE VOIDS BETWEEN THE LARGER STONES. RIP RAP SHALL BE PLACED IN A MANNER TO PREVENT DAMAGE TO THE FILTER CLOTH.

INSPECTION & MAINTENANCE NOTES:

1. INSPECT THE STRUCTURE PERIODICALLY AND AFTER MAJOR STORM EVENTS.
2. REPAIR OR REPLACE FAILING STRUCTURES IMMEDIATELY.
3. CHECK CHANNEL FOR SCOUR OR DEBRIS AND LOSS OF ROCK FROM APRONS.

RIPRAP OUTLET PROTECTION DETAIL
SCALE: NTS



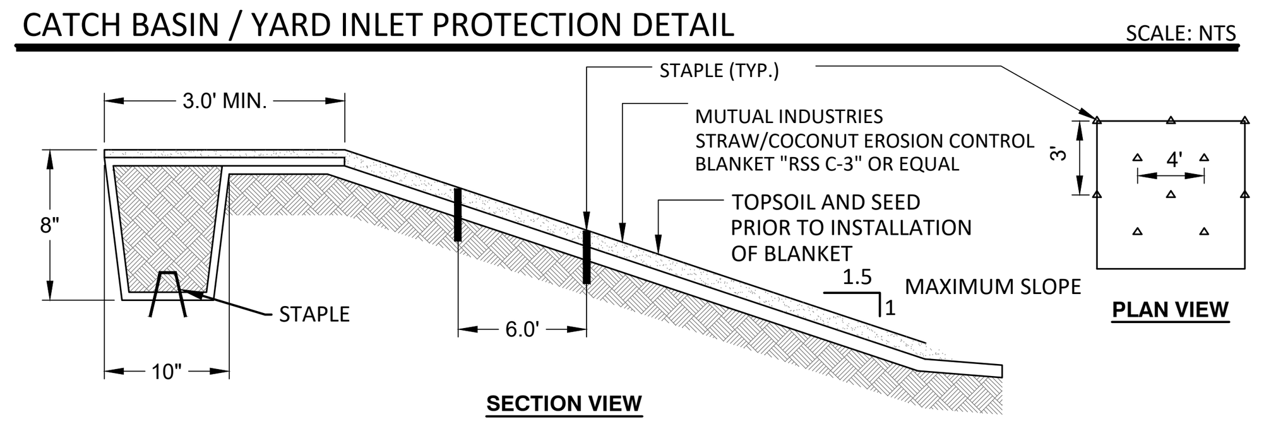
SPECIFICATIONS AND INSTALLATION NOTES:

1. INLET PROTECTION SHALL BE INSTALLED IMMEDIATELY AFTER INSTALLATION OF CATCH BASIN OR YARD DRAIN AND BE MAINTAINED UNTIL UNTIL DRAINAGE AREA IS STABILIZED.
2. REFER TO SILT FENCE DETAIL. CUT FABRIC FROM A CONTINUOUS ROLL TO ELIMINATE JOINTS. IF JOINTS ARE NEEDED THEY WILL BE OVERLAPPED TO THE NEXT STAKE.
3. STAKE MATERIALS WILL BE STANDARD 2X4 WOOD WITH A MINIMUM LENGTH OF 3 FEET.
4. SPACE STAKES EVENLY AROUND INLET, 3 FEET APART AND DRIVE INTO THE GROUND A MINIMUM OF 18 INCHES. SPANS GREATER THAN 3 FEET MAY BE BRIDGED WITH THE USE OF WIRE MESH BEHIND THE FILTER FABRIC FOR SUPPORT.
5. FABRIC SHALL BE EMBEDDED 1 FOOT MINIMUM BELOW GRADE AND BACKFILLED. IT SHALL BE SECURELY FASTENED TO THE STAKES AND FRAME.

INSPECTION & MAINTENANCE NOTES:

1. SEDIMENT DEPOSITS SHALL BE REMOVED AFTER REACHING $\frac{1}{3}$ OF THE HEIGHT OF THE FABRIC, OR MORE OFTEN IF THE FABRIC BECOMES CLOGGED.
2. THE INLET PROTECTION SHALL BE INSPECTED WITHIN 24 HOURS AFTER EACH RAINFALL, OR DAILY DURING EXTENDED PERIODS OF PRECIPITATION.
3. REPAIRS SHALL BE MADE IMMEDIATELY, AS NECESSARY, TO PREVENT PARTICLES FROM REACHING THE DRAINAGE SYSTEM AND/ OR CAUSING SURFACE FLOODING.
4. SHOULD THE FABRIC ON A SILT FENCE OR FILTER BARRIER DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER IS STILL NECESSARY, THE FABRIC SHALL BE REPLACED WITHIN 24 HOURS OF CONTRACTOR NOTIFICATION.

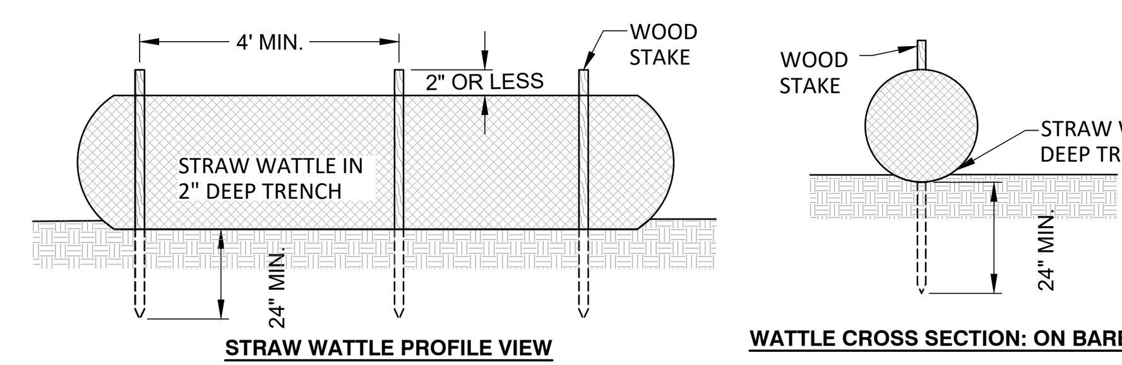
CATCH BASIN / YARD INLET PROTECTION DETAIL
SCALE: NTS



NOTES:

1. GRADE AND COMPACT AREA OF INSTALLATION, REMOVING ALL ROCKS, VEGETATION, ETC.
2. INSTALL TOPSOIL, SEED AND MULCH PER DETAIL.
3. EXTEND BLANKET 2'-0" OVER CREST OF SLOPE AND EXCAVATE A 12"X6" TERMINAL ANCHOR TRENCH.
4. ANCHOR BLANKET IN TRENCH WITH STAPLES @ SPACING PER MANUFACTURER , BACKFILL AND COMPACT SOIL.
5. UNROLL BLANKET DOWN SLOPE.
6. OVERLAP ADJACENT ROLLS AT LEAST 3" AND ANCHOR PER MANUFACTURER.
7. LAY BLANKET LOOSE TO MAINTAIN DIRECT CONTACT WITH SOIL (DO NOT PULL TAUGHT).
8. SECURE BLANKET TO GROUND SURFACE STAPLES WITH PATTERN PER MANUFACTURER..
9. TRIM TO BE STAPLED PARALLEL TO CONTOUR.
10. EROSION CONTROL BLANKET SHALL BE CURLEX DOUBLE NET (CURLEX II).
11. EROSION CONTROL BLANKET SHALL BE COMPOSED OF BIODEGRADABLE MATERIALS.

EROSION CONTROL BLANKET DETAIL
SCALE: NTS



MATERIAL NOTES:

1. WATTLES SHALL BE AMERICAN EXCELSIOR COMPANY'S PREMIER STRAW WATTLES OR APPROVED EQUAL.
2. ORGANIC, AGRICULTURAL STRAW FIBERS MUST BE WEED FREE ENCASED IN POLYPROPYLENE OR FIBERNET.
3. 75% OF FIBERS MUST BE A MINIMUM OF 4" LONG.
4. NET OPENINGS MUST BE APPROXIMATELY 0.5" WIDE BY 1.0" LONG.
5. ALL COMPONENTS MUST BE BIODEGRADABLE.

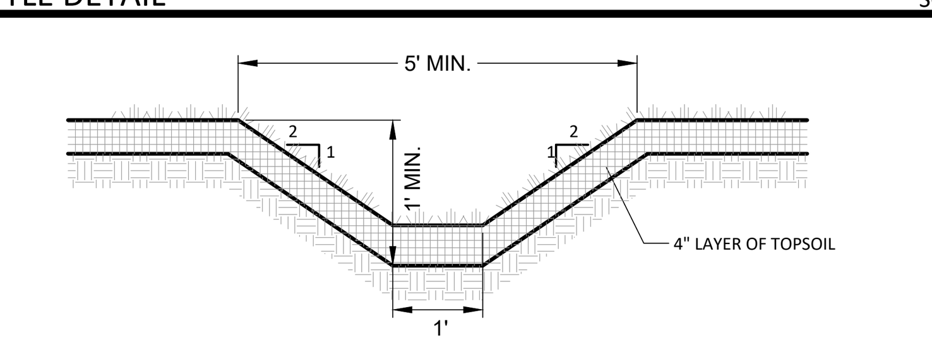
INSTALLATION NOTES:

1. INSTALL WATTLE IN A 2" DEEP TRENCH CONSTRUCTED ALONG THE CONTOUR, PERPENDICULAR TO THE SLOPE OR DIRECTION OF FLOW.
2. ENDS OF WATTLES SHALL BE TURNED UP THE SLOPE SO AS TO RETAIN WATER AND PREVENT ITS RELEASE FROM THE END OF THE WATTLE.
3. WATTLES SHALL BE SECURED TO THE SUBGRADE BY WOODEN STAKES SPACED EVERY FOUR LINEAL FEET ACROSS THE LENGTH OF THE WATTLE. STAKES SHALL BE DRIVEN THROUGH THE CENTER OF THE WATTLE AND INTO THE GROUND A MINIMUM OF 24" WITH LESS THAN TWO INCHES PROJECTING ABOVE THE TOP OF THE WATTLE. A STAKE SHALL BE PLACED WITHIN 2 FEET OF THE END OF THE WATTLE.
4. IF WATTLES ARE JOINED TOGETHER BY ABUTTING THE ENDS, TIE THE ENDS TOGETHER USING HEAVY TWINE OR PLASTIC LOCKING TIES.
5. WHEN INSTALLING IN A CHANNEL BOTTOM, WATTLE INSTALLATION SHALL CONTINUE THREE FEET ABOVE THE ANTICIPATED HIGH WATER MARK.
6. WATTLE SHALL REMAIN IN PLACE UNTIL FULLY ESTABLISHED VEGETATION AND ROOT SYSTEMS ARE PRESENT AND CAN SURVIVE ON THEIR OWN. WATTLES ARE NOT REMOVED AND WILL DEGRADE IN PLACE.

INSPECTION AND MAINTENANCE NOTES:

1. STRAW WATTLES SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. THEY SHALL BE REPAIRED IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THEM. ANY REQUIRED REPAIRS SHALL BE MADE WITHIN 24 HOURS OF CONTRACTOR NOTIFICATION. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR THE EDGES, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THEM, SEDIMENT BARRIERS SHALL BE REPLACED WITH A TEMPORARY CHECK DAM.
2. SHOULD THE STRAW WATTLE DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER IS STILL NECESSARY, IT SHALL BE REPLACED.
3. SEDIMENT DEPOSITS SHOULD BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE HALF (1/2) THE HEIGHT OF THE BARRIER.
4. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE WATTLE IS NO LONGER REQUIRED SHOULD BE DRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED, AND SEEDED. WHEN THE WATTLE IS NO LONGER NEEDED, STAKES SHALL BE REMOVED.

STRAW WATTLE DETAIL
SCALE: NTS



SECTION

NOTES:

1. STABILIZATION OF THE SWALE SHALL BE COMPLETED WITHIN 10 DAYS OF INSTALLATION.
2. ALL TEMPORARY SWALES SHALL HAVE UNINTERRUPTED POSITIVE GRADE TO OUTLET.
3. DIVERTED RUNOFF FROM A DISTURBED AREA SHALL BE CONVEYED TO A SEDIMENT TRAPPING DEVICE.
4. ALL TREES, BRUSH , STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED AND DISPOSED OF SO AS NOT TO INTERFERE WITH THE FUNCTIONING OF THE SWALE.
5. THE SWALE SHALL BE EXCAVATED OR SHAPED AS REQUIRED TO MEET THE CRITERIA SPECIFIED HEREIN AND BE FREE OF BANK PROJECTIONS OR OTHER IRREGULARITIES WHICH WILL IMPEDE NORMAL FLOW.
6. SWALE SHALL BE SEEDED AND MULCHED IN ACCORDANCE WITH TOPSOIL, SEED AND MULCH DETAIL.
7. CONTRACTOR IS RESPONSIBLE FOR PERIODIC INSPECTION AND REQUIRED MAINTENANCE.
8. ALL DRAINAGE SWALES SHALL BE KEPT FREE OF DEBRIS AND THE VEGETATION SHALL BE MAINTAINED TO ALLOW FLOW OF STORMWATER.

GRASS LINED DIVERSION SWALE DETAIL
SCALE: NTS

CONDITIONS WHERE PRACTICE APPLIES:

WASHOUT FACILITIES SHALL BE PROVIDED FOR EVERY PROJECT WHERE CONCRETE WILL BE POURED OR OTHERWISE FORMED ON THE SITE. THIS FACILITY WILL RECEIVE HIGHLY ALKALINE WASH WATER FROM THE CLEANING OF CHUTES, MIXERS, HOPPERS, VIBRATORS, PLACING EQUIPMENT, TROWELS, AND SCREEDS. UNDER NO CIRCUMSTANCES WILL WASH WATER FROM THESE OPERATIONS BE ALLOWED TO INFILTRATE INTO THE SOIL OR ENTER SURFACE WATERS.

DESIGN CAPACITY:

THE WASHOUT FACILITY SHOULD BE SIZED TO CONTAIN SOLIDS, WASH WATER, AND RAINFALL AND SIZED TO ALLOW FOR THE EVAPORATION OF THE WASH WATER AND RAINFALL. WASH WATER SHALL BE ESTIMATED AT 7 GALLONS PER CHUTE AND 50 GALLONS PER HOPPER OF THE CONCRETE PUMP TRUCK AND/OR DISCHARGING DRUM. THE MINIMUM SIZE SHALL BE 8 FEET BY 8 FEET AT THE BOTTOM AND 2 FEET IF EXCAVATED, THE SIDE SLOPES SHALL BE 2 HORIZONTAL TO 1 VERTICAL.

LOCATION:

LOCATE THE FACILITY A MINIMUM OF 100 FEET FROM DRAINAGE SWALES, STORM DRAIN INLETS, WETLANDS, STREAMS AND OTHER SURFACE WATERS. PREVENT SURFACE WATER FROM ENTERING THE STRUCTURE EXCEPT FOR THE ACCESS ROAD. PROVIDE APPROPRIATE ACCESS WITH A GRAVEL ACCESS ROAD SLOPED DOWN TO THE STRUCTURE. SIGNS SHALL BE PLACED TO DIRECT DRIVERS TO THE FACILITY AFTER THEIR LOAD IS DISCHARGED.

LINER:

ALL WASHOUT FACILITIES WILL BE LINED TO PREVENT LEACHING OF LIQUIDS INTO THE GROUND. THE LINER SHALL BE PLASTIC SHEETING WITH A MINIMUM THICKNESS OF 10 MILS WITH NO HOLES OR TEARS, AND ANCHORED BEYOND THE TOP OF THE PIT WITH AN EARTHEN BERM, SAND BAGS, STONE, OR OTHER STRUCTURAL APPURTENANCE EXCEPT AT THE ACCESS POINT. IF PRE-FABRICATED WASHOUTS ARE USED THEY MUST ENSURE THE CAPTURE AND CONTAINMENT OF THE CONCRETE WASH AND BE SIZED BASED ON THE EXPECTED FREQUENCY OF CONCRETE POURS. THEY SHALL BE SITED AS NOTED IN THE LOCATION CRITERIA.

MAINTENANCE:

1. ALL CONCRETE WASHOUT FACILITIES SHALL BE INSPECTED DAILY. DAMAGED OR LEAKING FACILITIES SHALL BE DEACTIVATED AND REPAIRED OR REPLACED IMMEDIATELY. EXCESS RAINWATER THAT HAS ACCUMULATED OVER HARDENED CONCRETE SHOULD BE PUMPED TO A STABILIZED AREA, SUCH AS A GRASS FILTER STRIP.
2. ACCUMULATED HARDENED MATERIAL SHALL BE REMOVED WHEN 75% OF THE STORAGE CAPACITY OF THE STRUCTURE IS FILLED. ANY EXCESS WASH WATER SHALL BE PUMPED INTO A CONTAINMENT VESSEL AND PROPERLY DISPOSED OF OFF SITE.
3. DISPOSE OF THE HARDENED MATERIAL OFF-SITE IN A CONSTRUCTION/DEMOLITION LANDFILL. ON-SITE DISPOSAL MAY BE ALLOWED IF THIS HAS BEEN APPROVED AND ACCEPTED AS PART OF THE PROJECTS SWPPP. IN THAT CASE, THE MATERIAL SHOULD BE RECYCLED AS SPECIFIED, OR BURIED AND COVERED WITH A MINIMUM OF 2 FEET OF CLEAN COMPACTED EARTHFILL THAT IS PERMANENTLY STABILIZED TO PREVENT EROSION.
4. THE PLASTIC LINER SHALL BE REPLACED WITH EACH CLEANING OF THE WASHOUT FACILITY.
5. INSPECT THE PROJECT SITE FREQUENTLY TO ENSURE THAT NO CONCRETE DISCHARGES ARE TAKING PLACE IN NON-DESIGNATED AREAS.

CONCRETE WASHOUT FACILITY
SCALE: NTS

CONDITIONS WHERE PRACTICE APPLIES:

ON CONSTRUCTION ROADS, ACCESS POINTS, AND OTHER DISTURBED AREAS SUBJECT TO SURFACE DUST MOVEMENT AND DUST BLOWING WHERE OFF-SITE DAMAGE MAY OCCUR IF DUST IS NOT CONTROLLED.

DESIGN CRITERIA:

CONSTRUCTION OPERATIONS SHOULD BE SCHEDULED TO MINIMIZE THE AMOUNT OF AREA DISTURBED AT ONE TIME. BUFFER AREAS OF VEGETATION SHOULD BE LEFT WHERE PRACTICAL. TEMPORARY OR PERMANENT STABILIZATION MEASURES SHALL BE INSTALLED. NO SPECIFIC DESIGN CRITERIA IS GIVEN; SEE CONSTRUCTION SPECIFICATIONS BELOW FOR COMMON METHODS OF DUST CONTROL.

WATER QUALITY MUST BE CONSIDERED WHEN MATERIALS ARE SELECTED FOR DUST CONTROL. WHERE THERE IS A POTENTIAL FOR THE MATERIAL TO WASH OFF TO A STREAM, INGREDIENT INFORMATION MUST BE PROVIDED TO THE NYSDEC.

NO POLYMER APPLICATION SHALL TAKE PLACE WITHOUT WRITTEN APPROVAL FROM THE NYSDEC.

DESIGN CRITERIA:

A. NON-DRIVING AREAS – THESE AREAS USE PRODUCTS AND MATERIALS APPLIED OR PLACED ON SOIL SURFACES TO PREVENT AIRBORNE MIGRATION OF SOIL PARTICLES.

VEGETATIVE COVER – FOR DISTURBED AREAS NOT SUBJECT TO TRAFFIC, VEGETATION PROVIDES THE MOST PRACTICAL METHOD OF DUST CONTROL.

MULCH (INCLUDING GRAVEL MULCH) – MULCH OFFERS A FAST EFFECTIVE MEANS OF CONTROLLING DUST. THIS CAN ALSO INCLUDE ROLLED EROSION CONTROL BLANKETS.

SPRAY ADHESIVES – THESE ARE PRODUCTS GENERALLY COMPOSED OF POLYMERS IN A LIQUID OR SOLID FORM THAT ARE MIXED WITH WATER TO FORM AN EMULSION THAT IS SPRAYED ON THE SOIL SURFACE WITH TYPICAL HYDROSEEDING EQUIPMENT. THE MIXING RATIOS AND APPLICATION RATES WILL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR THE SPECIFIC SOILS ON THE SITE. IN NO CASE SHOULD THE APPLICATION OF THESE ADHESIVES BE MADE ON WET SOILS OR IF THERE IS A PROBABILITY OF PRECIPITATION WITHIN 48 HOURS OF ITS PROPOSED USE. MATERIAL SAFETY DATA SHEETS WILL BE PROVIDED TO ALL APPLICATORS AND OTHERS WORKING WITH THE MATERIAL.

B. DRIVING AREAS – THESE AREAS UTILIZE WATER, POLYMER EMULSIONS, AND BARRIERS TO PREVENT DUST MOVEMENT FROM THE TRAFFIC SURFACE INTO THE AIR.

SPRINKLING – THE SITE MAY BE SPRAYED WITH WATER UNTIL THE SURFACE IS WET. THIS IS ESPECIALLY EFFECTIVE ON HAUL ROADS AND ACCESS ROUTE TO PROVIDE SHORT TERM LIMITED DUST CONTROL.

POLYMER ADDITIVES – THESE POLYMERS ARE MIXED WITH WATER AND APPLIED TO THE DRIVING SURFACE BY A WATER TRUCK WITH A GRAVITY FEED DRIP BAR, SPRAY BAR OR AUTOMATED DISTRIBUTOR TRUCK. THE MIXING RATIOS AND APPLICATION RATES WILL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. INCORPORATION OF THE EMULSION INTO THE SOIL WILL BE DONE TO THE APPROPRIATE DEPTH BASED ON EXPECTED TRAFFIC. COMPACTION AFTER INCORPORATION WILL BE BY VIBRATORY ROLLER TO A MINIMUM OF 95%. THE PREPARED SURFACE SHALL BE MOIST AND NO APPLICATION OF THE POLYMER WILL BE MADE IF THERE IS A PROBABILITY OF PRECIPITATION WITHIN 48 HOURS OF ITS PROPOSED USE. MATERIAL SAFETY DATA SHEETS WILL BE PROVIDED TO ALL APPLICATORS WORKING WITH THE MATERIAL.

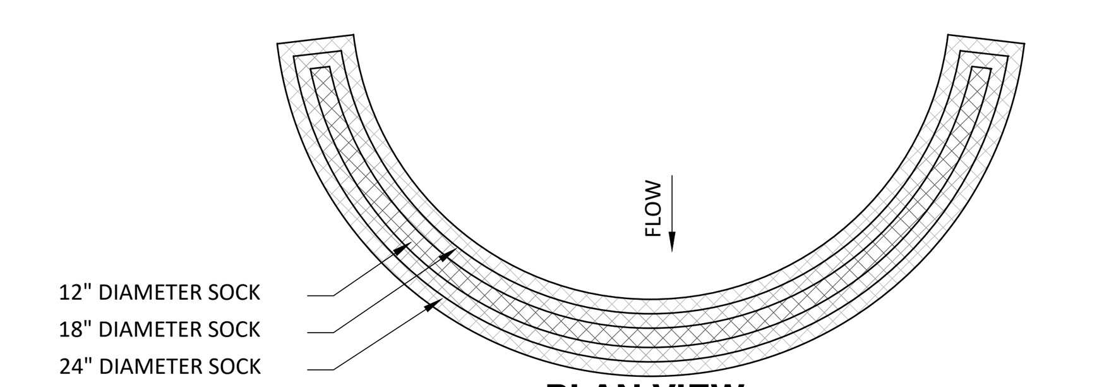
BARRIERS – WOVEN GEO-TEXTILES CAN BE PLACED ON THE DRIVING SURFACE TO EFFECTIVELY REDUCE DUST THROW AND PARTICLE MIGRATION ON HAUL ROADS. STONE CAN ALSO BE USED FOR CONSTRUCTION ROADS FOR EFFECTIVE DUST CONTROL.

WINDBREAK – A SILT FENCE OR SIMILAR BARRIER CAN CONTROL AIR CURRENTS AT INTERVALS EQUAL TO TEN TIMES THE BARRIER HEIGHT. PRESERVE EXISTING WIND BARRIER VEGETATION AS MUCH AS PRACTICAL.

MAINTENANCE:

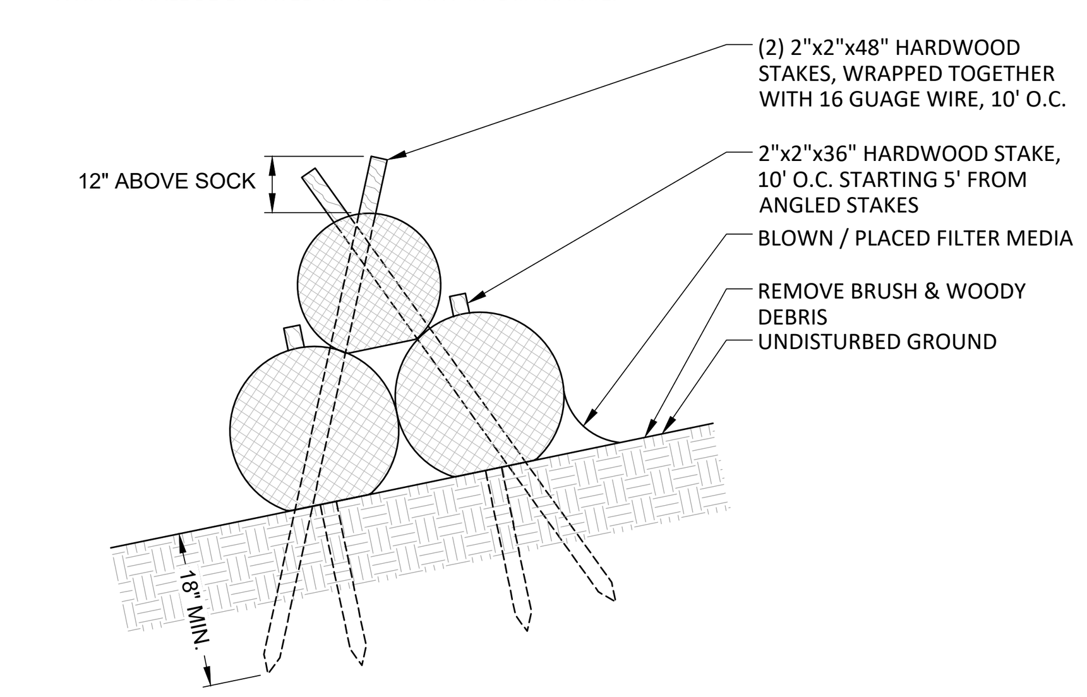
MAINTAIN DUST CONTROL MEASURES THROUGH DRY WEATHER PERIODS UNTIL ALL DISTURBED AREAS ARE STABILIZED.

DUST CONTROL NOTES
SCALE: NTS



PLAN VIEW

1. COMPOST SOCK SEDIMENT TRAP SHALL BE SIZED TO PROVIDE 3,600 CUBIC FEET OF STORAGE CAPACITY FOR ACRE TRIBUTARY TO THE TRAP.
2. MINIMUM BASE WIDTH IS EQUIVALENT TO THE HEIGHT.
3. SEDIMENT ACCUMULATION SHALL NOT EXCEED $\frac{1}{3}$ THE TOTAL HEIGHT OF THE TRAP.
4. SOCKS SHALL BE OF LARGER DIAMETER AT THE BASE OF THE TRAP AND DECREASE IN DIAMETER FOR SUCCESSIVE LAYERS AS INDICATED TO THE LEFT.
5. ENDS OF THE TRAP SHALL BE A MINIMUM OF 1 FOOT HIGHER IN ELEVATION THAT THE MID-SECTION, WHICH SHALL BE LOCATED AT THE POINT OF DISCHARGE.



STAKING DETAIL

SPECIFICATIONS:

1. SOCK INFILL AND FILTER MEDIA MATERIAL SHALL MEET THE STANDARDS OF THE NYS STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL.
2. COMPOST SOCK SEDIMENT TRAPS SHALL NOT EXCEED THREE SOCKS IN HEIGHT AND SHALL BE STACKED IN PYRAMIDAL FORM AS SHOWN ABOVE. MINIMUM TRAP HEIGHT IS ONE 24 INCH DIAMETER SOCK. ADDITIONAL STORAGE MAY BE PROVIDED BY MEANS OF AN EXCAVATED SUMP 12 INCHES DEEP EXTENDING 1 TO 3 FEET UPSLOPE OF THE SOCKS ALONG THE LOWER SIDE OF THE TRAP.
3. COMPOST SOCK SEDIMENT TRAPS SHALL PROVIDE 3,600 CUBIC FEET STORAGE CAPACITY WITH 12 INCHES OF FREEBOARD FOR EACH TRIBUTARY DRAINAGE ACRE.
4. THE MAXIMUM TRIBUTARY DRAINAGE AREA IS 5.0 ACRES. SINCE COMPOST SOCKS ARE "FLOW-THROUGH", NO SPILLWAY IS REQUIRED.
5. COMPOST SOCK SEDIMENT TRAPS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. SEDIMENT SHALL BE REMOVED WHEN IT REACHES $\frac{1}{3}$ THE HEIGHT OF THE SOCKS.
6. PHOTODEGRADABLE AND BIODEGRADABLE SOCKS SHALL NOT BE USED FOR MORE THAN 1 YEAR.

COMPOST FILTER SOCK SEDIMENT TRAP
SCALE: NTS

0 1 2 3
ORIGINAL SIZE IN INCHES

STATE OF NEW YORK · ANDREW V. WILLINGHAM · 083984 · PROFESSIONAL ENGINEER

we willingham engineering
183 Main Street
New Paltz, New York 12561
T 845.255.0210 F 845.256.8110
www.willinghamengineering.com

REV	DATE	DESCRIPTION

EROSION & SEDIMENT CONTROL DETAILS

CASTLEMORE HOLDINGS MIMA, LLC

38 HUDSON LANE

TOWN OF ESOPUS, ULSTER COUNTY, NEW YORK

DRAWN BY	CHECKED BY
MLT	
DATE	SCALE
10/02/23	AS NOTED
PROJECT NO.	
22084	
SHEET NO.	
SP-14	

APPENDIX C

NOTICE OF INTENT (NOI)

NOI for coverage under Stormwater General Permit for Construction Activity

version 1.37

(Submission #: HQ1-WE6M-4XJYW, version 1)

Details

Originally Started By	Matt Towne
Alternate Identifier	Castlemore Holdings MIMA, LLC
Submission ID	HQ1-WE6M-4XJYW
Submission Reason	New
Status	Draft

Form Input

Owner/Operator Information

Owner/Operator Name (Company/Private Owner/Municipality/Agency/Institution, etc.)
Castlemore Holdings MIMA, LLC

Owner/Operator Contact Person Last Name (NOT CONSULTANT)
Yan

Owner/Operator Contact Person First Name
Tommy

Owner/Operator Mailing Address
21 W End Ave #2410

City
New York

State
NY

Zip
10023

Phone
917-400-1423

Email
yan.tommy@live.com

Federal Tax ID
NONE PROVIDED

> If the owner/operator is an organization, provide the Federal Tax ID number, or Employer Identification Number (EIN), in the format xx-xxxxxxx. If the owner/operator is an individual and not an organization, enter "Not Applicable" or "N/A" and do not provide the individual's social security number.

Project Location

Project/Site Name
Castlemore Holdings MIMA, LLC

Street Address (Not P.O. Box)
38 Hudson Lane

Side of Street
South

City/Town/Village (THAT ISSUES BUILDING PERMIT)
Town of Esopus

State
NY

Zip
12487

DEC Region
3

> The DEC Region must be provided. Please use the NYSDEC Stormwater Interactive Map (https://gisservices.dec.ny.gov/gis/stormwater/) to confirm which DEC Region this site is located in. To view the DEC Regions, click on "Other Useful Reference Layers" on the left side of the map, then click on "DEC Administrative Boundary." Zoom out as needed to see the Region boundaries.
> For projects that span multiple Regions, please select a primary Region and then provide the additional Regions as a note in Question 39.

County
ULSTER

Name of Nearest Cross Street
River Road

Distance to Nearest Cross Street (Feet)
1120

Project In Relation to Cross Street
West

Tax Map Numbers Section-Block-Parcel
64.3-5-2.320

Tax Map Numbers
64.3-5-2.320

> If the project does not have tax map numbers (e.g. linear projects), enter “Not Applicable” or "N/A".

1. Coordinates

Provide the Geographic Coordinates for the project site. The two methods are:
- Navigate to the project location on the map (below) and click to place a marker and obtain the XY coordinates.
- The "Find Me" button will provide the lat/long for the person filling out this form. Then pan the map to the correct location and click the map to place a marker and obtain the XY coordinates.

Navigate to your location and click on the map to get the X,Y coordinates
41.857155719404645,-73.9631719831767

Project Details

2. What is the nature of this project?
Redevelopment with increase in impervious area

> For the purposes of this eNOI, “New Construction” refers to any project that does not involve the disturbance of existing impervious area (i.e. 0 acres). If existing impervious area will be disturbed on the project site, it is considered redevelopment with either increase in impervious area or no increase in impervious area.

3. Select the predominant land use for both pre and post development conditions.

Pre-Development Existing Landuse
Forest

Post-Development Future Land Use
Commercial

3a. If Single Family Subdivision was selected in question 3, enter the number of subdivision lots.
NONE PROVIDED

---

4. In accordance with the larger common plan of development or sale, enter the total project site acreage, the acreage to be disturbed and the future impervious area (acreage)within the disturbed area.

*** ROUND TO THE NEAREST TENTH OF AN ACRE. ***

Total Site Area (acres)
39.0

Total Area to be Disturbed (acres)
10.6

Existing Impervious Area to be Disturbed (acres)
0.8

Future Impervious Area Within Disturbed Area (acres)
2.4

5. Do you plan to disturb more than 5 acres of soil at any one time?
No

---

6. Indicate the percentage (%) of each Hydrologic Soil Group(HSG) at the site.

A (%)
0

B (%)
0

C (%)
0

D (%)
100

7. Is this a phased project?
No

8. Enter the planned start and end dates of the disturbance activities.

Start Date
08/31/2024

End Date
04/30/2025

9. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.
on-site ACOE wetland

> Drainage ditches and storm sewer systems are not considered surface waterbodies. Please identify the surface waterbody that they discharge to. If the nearest surface waterbody is unnamed, provide a description of the waterbody, such as, “Unnamed tributary to Niagara River.”

9a. Type of waterbody identified in question 9?
Wetland/Federal Jurisdiction On Site (Answer 9b)

Other Waterbody Type Off Site Description
NONE PROVIDED

9b. If "wetland" was selected in 9A, how was the wetland identified?
Delineated by Consultant

10. Has the surface waterbody(ies) in question 9 been identified as a 303(d) segment in Appendix E of GP-0-20-001?
No

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-20-001?
No

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters?
No

> Please use the DEC Stormwater Interactive Map (https://gisservices.dec.ny.gov/gis/stormwater/) to confirm if this site is located in one of the watersheds of an AA or AA-S classified water. To view the watershed areas, click on “Permit Related Layers” on the left side of the map, then click on “Class AA AAS Watersheds.”

If No, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as D (provided the map unit name is inclusive of slopes greater than 25%), E or F on the USDA Soil Survey?
Yes

If Yes, what is the acreage to be disturbed?
3.1

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area?
No

15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)?
No

16. What is the name of the municipality/entity that owns the separate storm sewer system?
NONE PROVIDED

17. Does any runoff from the site enter a sewer classified as a Combined Sewer?
No

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law?
No

19. Is this property owned by a state authority, state agency, federal government or local government?
No

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.)
No

Required SWPPP Components

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)?
Yes

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)?
Yes

If you answered No in question 22, skip question 23 and the Post-construction Criteria and Post-construction SMP Identification sections.

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual?
Yes

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:
Professional Engineer (P.E.)

SWPPP Preparer
Willingham Engineering

Contact Name (Last, First)
Towne, Matthew

Mailing Address
183 Main Street

City
New Paltz

State
New York

Zip
12561

Phone
845-255-0210

Email
mtowne@willinghamengineering.com

Download SWPPP Preparer Certification Form

Please take the following steps to prepare and upload your preparer certification form:

1) Click on the link below to download a blank certification form
2) The certified SWPPP preparer should sign this form
3) Scan the signed form
4) Upload the scanned document
Download SWPPP Preparer Certification Form

Please upload the SWPPP Preparer Certification
NONE PROVIDED
Comment
NONE PROVIDED

Erosion & Sediment Control Criteria

25. Has a construction sequence schedule for the planned management practices been prepared?
Yes

26. Select all of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural
Check Dams
Dust Control
Sediment Basin
Silt Fence
Stabilized Construction Entrance
Storm Drain Inlet Protection

Biotechnical
None

Vegetative Measures
Topsoiling
Grassed Waterway
Mulching
Seeding

Permanent Structural
Rock Outlet Protection
Land Grading

Other
NONE PROVIDED

Post-Construction Criteria

*** IMPORTANT: Completion of Questions 27-39 is not required if response to Question 22 is No.**

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.
Preservation of Undisturbed Area
Preservation of Buffers
Parking Reduction
Locating Development in Less Sensitive Areas

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual (2010 version).
All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout). (Acre-feet)
0.259

29. Post-construction SMP Identification

Use the Post-construction SMP Identification section to identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity that were used to reduce the Total WQv Required (#28).

Identify the SMPs to be used by providing the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects shall use the Post-Construction SMP Identification section to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29. (acre-feet)
0.070

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28)?
No

If Yes, go to question 36. If No, go to question 32.

32. Provide the Minimum RRv required based on HSG. [Minimum RRv Required = (P) (0.95) (Ai) / 12, Ai=(s) (Aic)] (acre-feet)
0.035

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?
Yes

If Yes, go to question 33.

Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQv required (#28) must also be included in the SWPPP.

If No, sizing criteria has not been met; therefore, NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

33. SMPs

Use the Post-construction SMP Identification section to identify the Standard SMPs and, if applicable, the Alternative SMPs to be used to treat the remaining total WQv (=Total WQv Required in #28 - Total RRv Provided in #30).

Also, provide the total impervious area that contributes runoff to each practice selected.

NOTE: Use the Post-construction SMP Identification section to identify the SMPs used on Redevelopment projects.

33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question #29. (acre-feet)
0.484

Note: For the standard SMPs with RRv capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - provided by the practice. (See Table 3.5 in Design Manual)

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a).
0.554

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)?
Yes

If Yes, go to question 36.

If No, sizing criteria has not been met; therefore, NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

36. Provide the total Channel Protection Storage Volume (CPv required and provided or select waiver (#36a), if applicable.

CPv Required (acre-feet)
1.419

CPv Provided (acre-feet)
1.419

36a. The need to provide channel protection has been waived because:
NONE PROVIDED

37. Provide the Overbank Flood (Qp) and Extreme Flood (Qf) control criteria or select waiver (#37a), if applicable.

Overbank Flood Control Criteria (Qp)

Pre-Development (CFS)
41.75

Post-Development (CFS)
40.65

Total Extreme Flood Control Criteria (Qf)

Pre-Development (CFS)
95.34

Post-Development (CFS)
89.97

37a. The need to meet the Qp and Qf criteria has been waived because:
NONE PROVIDED

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed?
Yes

If Yes, Identify the entity responsible for the long term Operation and Maintenance
Owner

39. Use this space to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). (See question #32a) This space can also be used for other pertinent project information.
Full WQV not reduced due to poor quality (HSG D) soils. Full CPv not met due to potential clogging. 4" diameter outlet with trash structure used to reduce CPv as much aspracticable.

Post-Construction SMP Identification

Runoff Reduction (RR) Techniques, Standard Stormwater Management Practices (SMPs) and Alternative SMPs

Identify the Post-construction SMPs to be used by providing the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

RR Techniques (Area Reduction)

Round to the nearest tenth

Total Contributing Acres for Conservation of Natural Area (RR-1)
NONE PROVIDED

Total Contributing Impervious Acres for Conservation of Natural Area (RR-1)
NONE PROVIDED

Total Contributing Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2)
NONE PROVIDED

Total Contributing Impervious Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2)
NONE PROVIDED

Total Contributing Acres for Tree Planting/Tree Pit (RR-3)
NONE PROVIDED

Total Contributing Impervious Acres for Tree Planting/Tree Pit (RR-3)
NONE PROVIDED

Total Contributing Acres for Disconnection of Rooftop Runoff (RR-4)
NONE PROVIDED

RR Techniques (Volume Reduction)

Total Contributing Impervious Acres for Disconnection of Rooftop Runoff (RR-4)
NONE PROVIDED

Total Contributing Impervious Acres for Vegetated Swale (RR-5)
NONE PROVIDED

Total Contributing Impervious Acres for Rain Garden (RR-6)
NONE PROVIDED

Total Contributing Impervious Acres for Stormwater Planter (RR-7)
NONE PROVIDED

Total Contributing Impervious Acres for Rain Barrel/Cistern (RR-8)
NONE PROVIDED

Total Contributing Impervious Acres for Porous Pavement (RR-9)
NONE PROVIDED

Total Contributing Impervious Acres for Green Roof (RR-10)
NONE PROVIDED

Standard SMPs with RRv Capacity

Total Contributing Impervious Acres for Infiltration Trench (I-1)
NONE PROVIDED

Total Contributing Impervious Acres for Infiltration Basin (I-2)
NONE PROVIDED

Total Contributing Impervious Acres for Dry Well (I-3)
NONE PROVIDED

Total Contributing Impervious Acres for Underground Infiltration System (I-4)
NONE PROVIDED

Total Contributing Impervious Acres for Bioretention (F-5)
0.98

Total Contributing Impervious Acres for Dry Swale (O-1)
NONE PROVIDED

Standard SMPs

Total Contributing Impervious Acres for Micropool Extended Detention (P-1)
NONE PROVIDED

Total Contributing Impervious Acres for Wet Pond (P-2)
2.37

Total Contributing Impervious Acres for Wet Extended Detention (P-3)
NONE PROVIDED

Total Contributing Impervious Acres for Multiple Pond System (P-4)
NONE PROVIDED

Total Contributing Impervious Acres for Pocket Pond (P-5)
NONE PROVIDED

Total Contributing Impervious Acres for Surface Sand Filter (F-1)
NONE PROVIDED

Total Contributing Impervious Acres for Underground Sand Filter (F-2)
NONE PROVIDED

Total Contributing Impervious Acres for Perimeter Sand Filter (F-3)
NONE PROVIDED

Total Contributing Impervious Acres for Organic Filter (F-4)
NONE PROVIDED

Total Contributing Impervious Acres for Shallow Wetland (W-1)
NONE PROVIDED

Total Contributing Impervious Acres for Extended Detention Wetland (W-2)
NONE PROVIDED

Total Contributing Impervious Acres for Pond/Wetland System (W-3)
NONE PROVIDED

Total Contributing Impervious Acres for Pocket Wetland (W-4)
NONE PROVIDED

Total Contributing Impervious Acres for Wet Swale (O-2)
NONE PROVIDED

Alternative SMPs (DO NOT INCLUDE PRACTICES BEING USED FOR PRETREATMENT ONLY)

Total Contributing Impervious Area for Hydrodynamic
NONE PROVIDED

Total Contributing Impervious Area for Wet Vault
NONE PROVIDED

Total Contributing Impervious Area for Media Filter
NONE PROVIDED

"Other" Alternative SMP?
NONE PROVIDED

Total Contributing Impervious Area for "Other"
NONE PROVIDED

Provide the name and manufaturer of the alternative SMPs (i.e. proprietary practice(s)) being used for WQv treatment.

Note: Redevelopment projects which do not use RR techniques, shall use questions 28, 29, 33 and 33a to provide SMPs used, total WQv required and total WQv provided for the project.

Manufacturer of Alternative SMP
NONE PROVIDED

Name of Alternative SMP
NONE PROVIDED

Other Permits

40. Identify other DEC permits, existing and new, that are required for this project/facility.
None

If SPDES Multi-Sector GP, then give permit ID
NONE PROVIDED

If Other, then identify
NYSDEC SPDES Permit For Subsurface Wastewater

41. Does this project require a US Army Corps of Engineers Wetland Permit?
No

If "Yes," then indicate Size of Impact, in acres, to the nearest tenth
NONE PROVIDED

42. If this NOI is being submitted for the purpose of continuing or transferring coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned.
NONE PROVIDED

MS4 SWPPP Acceptance

43. Is this project subject to the requirements of a regulated, traditional land use control MS4?
Yes - Please attach the MS4 Acceptance form below

If No, skip question 44

44. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI?
NONE PROVIDED

MS4 SWPPP Acceptance Form Download

Download form from the link below. Complete, sign, and upload.
MS4 SWPPP Acceptance Form

MS4 Acceptance Form Upload
NONE PROVIDED
Comment
NONE PROVIDED

Owner/Operator Certification

Owner/Operator Certification Form Download

Download the certification form by clicking the link below. Complete, sign, scan, and upload the form.
Owner/Operator Certification Form (PDF, 45KB)

Upload Owner/Operator Certification Form
NONE PROVIDED
Comment
NONE PROVIDED

APPENDIX D

GP-0-20-001

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

CONSTRUCTION ACTIVITY

Permit No. GP- 0-20-001

Issued Pursuant to Article 17, Titles 7, 8 and Article 70

of the Environmental Conservation Law

Effective Date: January 29, 2020 Expiration Date: January 28, 2025

John J. Ferguson

Chief Permit Administrator

1-23-20

Authorized Signature Date

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

PREFACE

Pursuant to Section 402 of the Clean Water Act ("CWA"), 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 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, 8 and Article 70.

An *owner or operator* of a *construction activity* that is eligible for coverage under this permit must obtain coverage prior to the *commencement of construction activity*. Activities that fit the definition of "*construction activity*", as defined under 40 CFR 122.26(b)(14)(x), (15)(i), and (15)(ii), constitute construction of a *point source* and therefore, pursuant to ECL section 17-0505 and 17-0701, the *owner or operator* must have coverage under a SPDES permit prior to *commencing construction activity*. 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 GENERAL PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES

Table of Contents

Part 1. PERMIT COVERAGE AND LIMITATIONS

A. Permit Application

This permit authorizes stormwater *discharges* to *surface waters of the State* from the following *construction activities* identified within 40 CFR Parts 122.26(b)(14)(x), 122.26(b)(15)(i) and 122.26(b)(15)(ii), provided all of the eligibility provisions of this permit are met:

1. *Construction activities* involving soil disturbances of one (1) or more acres; including disturbances of less than one acre that are part of a *larger common plan of development or sale* that will ultimately disturb one or more acres of land; excluding *routine maintenance activity* that is performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility;

2. *Construction activities* involving soil disturbances of less than one (1) acre where the Department 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.*

3. *Construction activities* located in the watershed(s) identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

B. Effluent Limitations Applicable to Discharges from Construction Activities

*Discharge*s authorized by this permit must achieve, at a minimum, the effluent limitations in Part I.B.1. (a) – (f) of this permit. 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 I.B.1.(a) – (f) of this permit and be in accordance with the New York State Standards and Specifications for Erosion and Sediment Control, 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 the *Stormwater Pollution Prevention Plan* (“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.

a. **Erosion and Sediment Controls.** Design, install and maintain effective erosion and sediment controls to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such controls must be designed, installed and maintained to:

   (i) *Minimize* soil erosion through application of runoff control and soil stabilization control measure to *minimize pollutant discharge*s;

   (ii) Control stormwater *discharge*s, including both peak flowrates and total stormwater volume, to *minimize* channel and *streambank* erosion and scour in the immediate vicinity of the *discharge* points;

   (iii) *Minimize* the amount of soil exposed during *construction activity*;

   (iv) *Minimize* the disturbance of *steep slopes*;

   (v) *Minimize* sediment *discharge*s from the site;

   (vi) Provide and maintain *natural buffer*s around surface waters, direct stormwater to vegetated areas and maximize stormwater infiltration to reduce *pollutant discharge*s, unless *infeasible*;

   (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;

   (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 temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within fourteen (14) 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 E or is located in one of the watersheds listed in Appendix C, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. See Appendix A for definition of *Temporarily Ceased*.

c. **Dewatering**. *Discharge*s from *dewatering* activities, including *discharge*s from *dewatering* of trenches and excavations, must be managed by appropriate control measures.

d. **Pollution Prevention Measures**. 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 designed, installed, implemented and maintained to:

(i) *Minimize* the *discharge* of *pollutants* from equipment and vehicle washing, wheel wash water, and other wash waters. This applies to washing operations that use clean water only. Soaps, detergents and solvents cannot be used;

(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. **Prohibited *Discharges*.** The following *discharge*s are prohibited:

(i) Wastewater from washout of concrete;

(ii) Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;

(iii) Fuels, oils, or other *pollutants* used in vehicle and equipment operation and maintenance;

(iv) Soaps or solvents used in vehicle and equipment washing; and

(v) Toxic or hazardous substances from a spill or other release.

f. Surface Outlets. When discharging from basins and impoundments, the outlets shall 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 Requirements

1. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must select, design, install, and maintain the practices to meet the *performance criteria* in the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015, using sound engineering judgment. Where post-construction stormwater management practices ("SMPs") are not designed in conformance with the *performance criteria* in the Design Manual, 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 post-construction stormwater management practices pursuant to Part III.C. of this permit must design the practices to meet the applicable *sizing criteria* in Part I.C.2.a., b., c. or d. of this permit.

a. Sizing Criteria for New Development

(i) Runoff Reduction Volume ("RRv"): Reduce the total Water Quality Volume ("WQv") by application of RR techniques and standard SMPs with RRv capacity. The total WQv shall be calculated in accordance with the criteria in Section 4.2 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: Construction activities that cannot meet the criteria in Part I.C.2.a.(i) of this permit due to site limitations shall 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 shall 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 4.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume ("Cpv"): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. 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 site discharges directly to tidal waters, or fifth order or larger streams.

(iv) *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 discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) 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 discharges directly 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 Watershed

(i) Runoff Reduction Volume (RRv): Reduce the total Water Quality Volume (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 shall be

calculated in accordance with the criteria in Section 10.3 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: *Construction activities* that cannot meet the criteria in Part I.C.2.b.(i) of this permit due to *site limitations* shall 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 shall 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 10.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume (Cpv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. 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 site *discharge*s directly to tidal waters, or fifth order or larger streams.

(iv) *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 *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) 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 *discharge*s directly 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* shall be addressed by one of the following options. *Redevelopment activities* located in an Enhanced Phosphorus Removal Watershed (see Part III.B.3. and Appendix C of this permit) shall calculate the WQv in accordance with Section 10.3 of the Design Manual. All other *redevelopment activities* shall calculate the WQv in accordance with Section 4.2 of the Design Manual.

(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 Design Manual must be applied to all newly created pervious areas, or

(2) Capture and treat a minimum of 25% of the WQv from the disturbed, *impervious area* by the application of standard SMPs; or reduce 25% of the WQv from the disturbed, *impervious area* by the application of RR techniques or standard SMPs with RRv capacity., or

(3) Capture and treat a minimum of 75% of the WQv from the disturbed, *impervious area* as well as any additional runoff from tributary areas by application of the alternative practices discussed in Sections 9.3 and 9.4 of the Design Manual., or

(4) Application of a combination of 1, 2 and 3 above that provide a weighted average of at least two of the above methods. Application of this method shall be in accordance with the criteria in Section 9.2.1(B) (IV) of the Design Manual.

If there is an existing post-construction stormwater management practice 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 – 4 above.

(ii) Channel Protection Volume (Cpv): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iii) *Overbank* Flood Control Criteria (Qp): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iv) Extreme Flood Control Criteria (Qf): Not required if there are no changes to hydrology that increase 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 shall provide post-construction stormwater management controls that meet the sizing criteria calculated as an aggregate of the Sizing Criteria in Part I.C.2.a. or b. of this permit for the New Development portion of the project and Part I.C.2.c of this permit for Redevelopment Activity portion of the project.

D. Maintaining Water Quality

The Department expects that compliance with the conditions of this permit will control *discharge*s 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 *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, such as:

1. There shall be no increase in turbidity that will cause a substantial visible contrast to natural conditions;

2. There shall be no increase in suspended, colloidal or settleable solids that will cause deposition or impair the waters for their best usages; and

3. There shall be no residue from oil and floating substances, nor visible oil film, nor globules of grease.

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

If there is evidence indicating that despite compliance with the terms and conditions of this general permit it is demonstrated that the stormwater *discharge*s authorized by this permit are causing or contributing to a violation of *water quality standards*, or if the Department determines that a modification of the permit is necessary to prevent a violation of *water quality standards*, the authorized *discharge*s will no longer be eligible for coverage under this permit. The Department may require the *owner or operator* to obtain an individual SPDES permit to continue discharging.

E. Eligibility Under This General Permit

1. This permit may authorize all *discharges* of stormwater from *construction activity* to *surface waters of the State* and *groundwaters* except for ineligible *discharges* identified under subparagraph F. of this Part.

2. Except for non-stormwater *discharges* explicitly listed in the next paragraph, this permit only authorizes stormwater *discharge*s; including stormwater runoff, snowmelt runoff, and surface runoff and drainage, from *construction activities*.

3. Notwithstanding paragraphs E.1 and E.2 above, the following non-stormwater discharges are authorized by this permit: those 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"; waters to which other components have not been added that are used to control dust in accordance with the SWPPP; and uncontaminated *discharge*s from *construction site* de-watering operations. All non-stormwater discharges must be identified in the SWPPP. Under all circumstances, the *owner or operator* must still comply with *water quality standards* in Part I.D of this permit.

4. The *owner or operator* must maintain permit eligibility to *discharge* under this permit. Any *discharges* that are not compliant with the eligibility conditions of this permit are not authorized by the permit and the *owner or operator* must either apply for a separate permit to cover those ineligible *discharges* or take steps necessary to make the *discharge* eligible for coverage.

F. Activities Which Are Ineligible for Coverage Under This General Permit

All of the following are **not** authorized by this permit:

1. *Discharge*s after *construction activities* have been completed and the site has undergone *final stabilization*;

2. *Discharge*s that are mixed with sources of non-stormwater other than those expressly authorized under subsection E.3. of this Part and identified in the SWPPP required by this permit;

3. *Discharges* that are required to obtain an individual SPDES permit or another SPDES general permit pursuant to Part VII.K. of this permit;

4. *Construction activities* or *discharges* from *construction activities* that may adversely affect an *endangered or threatened species* unless the *owner or*

operator has obtained a permit issued pursuant to 6 NYCRR Part 182 for the project or the Department has issued a letter of non-jurisdiction for the project. All documentation necessary to demonstrate eligibility shall be maintained on site in accordance with Part II.D.2 of this permit;

5. *Discharges* which either cause or contribute to a violation of *water quality standards* adopted pursuant to the *ECL* and its accompanying regulations;

6. *Construction activities* for residential, commercial and institutional projects:

   a. Where the *discharge*s from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb one (1) or more acres of land designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name 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.

7. *Construction activities* for linear transportation projects and linear utility projects:

   a. Where the *discharge*s from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb two (2) or more acres of land designated on the current USDA Soil Survey as Soil Slope Phase "D" (provided the map unit name 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.

8. *Construction activities* that have the potential to affect an *historic property*, unless there is documentation that such impacts have been resolved. The following documentation necessary to demonstrate eligibility with this requirement shall be maintained on site in accordance with Part II.D.2 of this permit and made available to the Department in accordance with Part VII.F of this permit:

   a. Documentation that the *construction activity* is not within an archeologically sensitive 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.

      - 1-5 acres of disturbance - 20 feet
      - 5-20 acres of disturbance - 50 feet
      - 20+ acres of disturbance - 100 feet, or

   b. DEC consultation form sent to OPRHP, and copied to the NYS DEC Agency Historic Preservation Officer (APO), and
      (i) the State Environmental Quality Review (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/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); or

   c. Documentation of satisfactory compliance with Section 106 of the National Historic Preservation Act for a coterminous project area:

(i) No Affect
(ii) No Adverse Affect
(iii) Executed Memorandum of Agreement, or

d. Documentation that:

(i) SHPA Section 14.09 has been completed by NYS DEC or another state agency.

9. *Discharge*s from *construction activities* that are subject to an existing SPDES individual or general permit where a SPDES permit for *construction activity* has been terminated or denied; or where the *owner or operator* has failed to renew an expired individual permit.

Part II. PERMIT COVERAGE

A. How to Obtain Coverage

1. An *owner or operator* of a *construction activity* that is not subject to the requirements of a regulated, traditional land use control MS4 must first prepare a SWPPP in accordance with all applicable requirements of this permit and then submit a completed Notice of Intent (NOI) to the Department to be authorized to discharge under this permit.

2. An *owner or operator* of a *construction activity* that is subject to the requirements of a *regulated, traditional land use control MS4* must first prepare a SWPPP in accordance with all applicable requirements of this permit and then have the SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department. The *owner or operator* shall have the “MS4 SWPPP Acceptance” form signed in accordance with Part VII.H., and then submit that form along with a completed NOI to the Department.

3. The requirement for an *owner or operator* to have its SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department does not apply to an *owner or operator* that is obtaining permit coverage in accordance with the requirements in Part II.F. (Change of *Owner or Operator*) or where the *owner or operator* of the *construction activity* is the *regulated, traditional land use control MS4* . This exemption does not apply to *construction activities* subject to the New York City Administrative Code.

B. Notice of Intent (NOI) Submittal

1. Prior to December 21, 2020, an owner or operator shall use either the electronic (eNOI) or paper version of the NOI that the Department prepared. Both versions of the NOI are located on the Department's website (http://www.dec.ny.gov/). The paper version of the NOI shall be signed in accordance with Part VII.H. of this permit and submitted to the following address:

   NOTICE OF INTENT
   NYS DEC, Bureau of Water Permits
   625 Broadway, 4th Floor
   Albany, New York 12233-3505

2. Beginning December 21, 2020 and in accordance with EPA's 2015 NPDES Electronic Reporting Rule (40 CFR Part 127), the *owner or operator* must submit the NOI electronically using the *Department's* online NOI.

3. The *owner or operator* shall have the SWPPP preparer sign the "SWPPP Preparer Certification" statement on the NOI prior to submitting the form to the Department.

4. As of the date the NOI is submitted to the Department, the *owner or operator* shall make the NOI and SWPPP available for review and copying in accordance with the requirements in Part VII.F. of this permit.

C. Permit Authorization

1. An *owner or operator* shall not *commence construction activity* until their authorization to *discharge* under this permit goes into effect.

2. Authorization to *discharge* under this permit will be effective when the *owner or operator* has satisfied all of the following criteria:

   a. project review pursuant to the State Environmental Quality Review Act ("SEQRA") have been satisfied, when SEQRA is applicable. See the Department's website (http://www.dec.ny.gov/) for more information,

   b. where required, all necessary Department permits subject to the *Uniform Procedures Act ("UPA")* (see 6 NYCRR Part 621), or the equivalent from another New York State agency, have been obtained, unless otherwise notified by the Department pursuant to 6 NYCRR 621.3(a)(4). *Owners or operators* of *construction activities* that are required to obtain *UPA* permits

must submit a preliminary SWPPP to the appropriate DEC Permit Administrator at the Regional Office listed in Appendix F at the time all other necessary *UPA* permit applications are submitted. The preliminary SWPPP must include sufficient information to demonstrate that the *construction activity* qualifies for authorization under this permit,

c. the final SWPPP has been prepared, and

d. a complete NOI has been submitted to the Department in accordance with the requirements of this permit.

3. An *owner or operator* that has satisfied the requirements of Part II.C.2 above will be authorized to *discharge* stormwater from their *construction activity* in accordance with the following schedule:

   a. For *construction activities* that are <u>not</u> subject to the requirements of a *regulated, traditional land use control MS4*:

      (i) Five (5) business days from the date the Department receives a complete electronic version of the NOI (eNOI) for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.; or

      (ii) Sixty (60) business days from the date the Department receives a complete NOI (electronic or paper version) for *construction activities* with a SWPPP that has <u>not</u> been prepared in conformance with the design criteria in technical standard referenced in Part III.B.1. or, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C., the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, or;

      (iii) Ten (10) business days from the date the Department receives a complete paper version of the NOI for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.

b. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*:

(i) Five (5) business days from the date the Department receives both a complete electronic version of the NOI (eNOI) and signed "*MS4* SWPPP Acceptance" form, or

(ii) Ten (10) business days from the date the Department receives both a complete paper version of the NOI and signed "MS4 SWPPP Acceptance" form.

4. Coverage under this permit authorizes stormwater *discharges* from only those areas of disturbance that are identified in the NOI. If an *owner or operator* wishes to have stormwater *discharges* from future or additional areas of disturbance authorized, they must submit a new NOI that addresses that phase of the development, unless otherwise notified by the Department. The *owner or operator* shall not *commence construction activity* on the future or additional areas until their authorization to *discharge* under this permit goes into effect in accordance with Part II.C. of this permit.

D. General Requirements For Owners or Operators With Permit Coverage

1. The *owner or operator* shall ensure that the provisions of the SWPPP are implemented from the *commencement of construction activity* until all areas of disturbance have achieved *final stabilization* and the Notice of Termination ("NOT") has been submitted to the Department in accordance with Part V. of this permit. This includes any changes made to the SWPPP pursuant to Part III.A.4. of this permit.

2. The *owner or operator* shall maintain a copy of the General Permit (GP-0-20-001), NOI, *NOI Acknowledgment Letter*, SWPPP, MS4 SWPPP Acceptance form, inspection reports, responsible contractor's or subcontractor's certification statement (see Part III.A.6.), and all documentation necessary to demonstrate eligibility with this permit at the *construction site* until all disturbed areas have achieved *final stabilization* and the NOT has been submitted to the Department. The documents must be maintained 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.

3. The *owner or operator* of a *construction activity* shall not disturb greater than five (5) acres of soil at any one time without prior written authorization from the Department or, in areas under the jurisdiction of a *regulated, traditional land*

use control MS4, the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*). At a minimum, the *owner or operator* must comply with the following requirements in order to be authorized to disturb greater than five (5) acres of soil at any one time:

a. The *owner or operator* shall have a *qualified inspector* conduct **at least** two (2) site inspections in accordance with Part IV.C. of this permit every seven (7) calendar days, for as long as greater than five (5) acres of soil remain disturbed. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

b. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016.

c. The *owner or operator* shall prepare a phasing plan that defines maximum disturbed area per phase and shows required cuts and fills.

d. The *owner or operator* shall install any additional site-specific practices needed to protect water quality.

e. The *owner or operator* shall include the requirements above in their SWPPP.

4. In accordance with statute, regulations, and the terms and conditions of this permit, the Department may suspend or revoke an *owner's or operator's* coverage under this permit at any time if the Department determines that the SWPPP does not meet the permit requirements or consistent with Part VII.K..

5. Upon a finding of significant non-compliance with the practices described in the SWPPP or violation of this permit, the Department may order an immediate stop to all activity at the site until the non-compliance is remedied. The stop work order shall be in writing, describe the non-compliance in detail, and be sent to the *owner or operator*.

6. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*, the *owner or operator* shall notify the

regulated, traditional land use control MS4 in writing of any planned amendments or modifications to the post-construction stormwater management practice component of the SWPPP required by Part III.A. 4. and 5. of this permit. Unless otherwise notified by the *regulated, traditional land use control MS4*, the *owner or operator* shall have the SWPPP amendments or modifications reviewed and accepted by the *regulated, traditional land use control MS4* prior to commencing construction of the post-construction stormwater management practice.

E. Permit Coverage for Discharges Authorized Under GP-0-15-002

1. Upon renewal of SPDES General Permit for Stormwater Discharges from *Construction Activity* (Permit No. GP-0-15-002), an *owner or operator* of *a construction activity* with coverage under GP-0-15-002, as of the effective date of GP- 0-20-001, shall be authorized to *discharge* in accordance with GP- 0-20-001, unless otherwise notified by the Department.

   An *owner or operator* may continue to implement the technical/design components of the post-construction stormwater management controls provided that such design was done in conformance with the technical standards in place at the time of initial project authorization. However, they must comply with the other, non-design provisions of GP-0-20-001.

F. Change of Owner or Operator

1. When property ownership changes or when there is a change in operational control over the construction plans and specifications, the original *owner or operator* must notify the new *owner or operator*, in writing, of the requirement to obtain permit coverage by submitting a NOI with the Department. For *construction activities* subject to the requirements of a *regulated, traditional land use control MS4,* the original *owner or operator* must also notify the MS4, in writing, of the change in ownership at least 30 calendar days prior to the change in ownership.

2. Once the new *owner or operator* obtains permit coverage, the original *owner or operator* shall then submit a completed NOT with the name and permit identification number of the new *owner or operator* to the Department at the address in Part II.B.1. of this permit. If the original *owner or operator* maintains ownership of a portion of the *construction activity* and will disturb soil, they must maintain their coverage under the permit.

3. Permit coverage for the new *owner or operator* will be effective as of the date the Department receives a complete NOI, provided the original *owner or*

operator was not subject to a sixty (60) business day authorization period that has not expired as of the date the Department receives the NOI from the new *owner or operator*.

Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General SWPPP Requirements

1. A SWPPP shall be prepared and implemented by the *owner or operator* of each *construction activity* covered by this permit. 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 I.B. of this permit and where applicable, the post-construction stormwater management practice requirements in Part I.C. of this permit. The SWPPP shall be prepared prior to the submittal of the NOI. The NOI shall be submitted to the Department prior to the *commencement of construction activity*. A copy of the completed, final NOI shall be included in the SWPPP.

2. The SWPPP shall describe the erosion and sediment control practices and where required, post-construction stormwater management practices that will be used and/or constructed to reduce the *pollutants* in stormwater *discharges* and to assure compliance with the terms and conditions of this permit. In addition, the SWPPP shall identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater *discharges*.

3. All SWPPPs that require the post-construction stormwater management practice component shall be prepared by a *qualified professional* that is knowledgeable in the principles and practices of stormwater management and treatment.

4. The *owner or operator* must keep the SWPPP current so that it at all times accurately documents the erosion and sediment controls practices that are being used or will be used during construction, and all post-construction stormwater management practices that will be constructed on the site. At a minimum, the *owner or operator* shall amend the SWPPP, including construction drawings:

    a. whenever the current provisions prove to be ineffective in minimizing *pollutants* in stormwater *discharges* from the site;

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*;

c. to address issues or deficiencies identified during an inspection by the *qualified inspector,* the Department or other regulatory authority; and

d. to document the final construction conditions.

5. The Department 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 shall 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 the Department, the *owner or operator* shall make the required changes to the SWPPP and submit written notification to the Department that the changes have been made. If the *owner or operator* does not respond to the Department's comments in the specified time frame, the Department 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. of this permit.

6. 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 post-construction stormwater management practices included in the SWPPP. The *owner or operator* shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the *trained contractor.* The *owner or operator* shall ensure that at least one *trained contractor* is on site on a daily basis when soil disturbance activities are being performed.

   The *owner or operator* shall have each of the contractors and subcontractors identified above sign a copy of the following certification statement below before they commence any *construction activity*:

   "I hereby certify under penalty of law 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 *discharge*s 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* shall 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 construction has commenced, they must also sign the certification statement and provide the information listed above.

7. For projects where the Department requests a copy of the SWPPP or inspection reports, the *owner or operator* shall submit the documents in both electronic (PDF only) and paper format within five (5) business days, unless otherwise notified by the Department.

B. Required SWPPP Contents

1. Erosion and sediment control component - All SWPPPs prepared pursuant to this permit shall include erosion and sediment control practices designed in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Where erosion and sediment control practices are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must demonstrate *equivalence* to the technical standard. At a minimum, the erosion and sediment control component of the SWPPP shall include the following:

    a. Background information about the scope of the project, including the location, type and size of project

b. A site map/construction drawing(s) for the project, including a general location map. At a minimum, the site map shall 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);

c. A description of the soil(s) present at the site, including an identification of the Hydrologic Soil Group (HSG);

d. A construction phasing plan and sequence of operations describing the intended order of *construction activities*, including clearing and grubbing, excavation and grading, utility and infrastructure installation and any other activity at the site that results in soil disturbance;

e. 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;

f. A temporary and permanent soil stabilization plan that meets the requirements of this general permit and the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, for each stage of the project, including initial land clearing and grubbing to project completion and achievement of *final stabilization*;

g. A site map/construction drawing(s) showing the specific location(s), size(s), and length(s) of each erosion and sediment control practice;

h. 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;

i. A maintenance inspection schedule for the contractor(s) identified in Part III.A.6. of this permit, to ensure continuous and effective operation of the erosion and sediment control practices. The maintenance inspection

schedule shall be in accordance with the requirements in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016;

j. 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*;

k. 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

l. Identification of any elements of the design that are not in conformance with the design criteria in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. 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. Post-construction stormwater management practice component – The *owner or operator* of any construction project identified in Table 2 of Appendix B as needing post-construction stormwater management practices shall prepare a SWPPP that includes practices designed in conformance with the applicable *sizing criteria* in Part I.C.2.a., c. or d. of this permit and the *performance criteria* in the technical standard, New York State Stormwater Management Design Manual dated January 2015

   Where post-construction stormwater management practices are not designed in conformance with the *performance criteria* in the technical standard, 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.

   The post-construction stormwater management practice component of the SWPPP shall include the following:

   a. Identification of all post-construction stormwater management practices to be constructed as part of the project. Include the dimensions, material specifications and installation details for each post-construction stormwater management practice;

b. A site map/construction drawing(s) showing the specific location and size of each post-construction stormwater management practice;

c. 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;

   (ii) Map(s) showing post-development conditions, including watershed/subcatchments boundaries, flow paths/routing, design points and post-construction stormwater management practices;

   (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;

   (iv) Summary table, with supporting calculations, which demonstrates that each post-construction stormwater management practice has been designed in conformance with the *sizing criteria* included in the Design Manual;

   (v) Identification of any *sizing criteria* that is not required based on the requirements included in Part I.C. of this permit; and

   (vi) Identification of any elements of the design that are not in conformance with the *performance criteria* in the Design Manual. 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 Design Manual;

d. Soil testing results and locations (test pits, borings);

e. Infiltration test results, when required; and

f. An operations and maintenance plan that includes inspection and maintenance schedules and actions to ensure continuous and effective operation of each post-construction stormwater management practice. The plan shall identify the entity that will be responsible for the long term operation and maintenance of each practice.

3. Enhanced Phosphorus Removal Standards - All construction projects identified in Table 2 of Appendix B that are located in the watersheds identified in Appendix C shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the applicable *sizing criteria* in Part I.C.2. b., c. or d. of this permit and the *performance criteria,* Enhanced Phosphorus Removal Standards included in the Design Manual. At a minimum, the post-construction stormwater management practice component of the SWPPP shall include items 2.a - 2.f. above.

C. Required SWPPP Components by Project Type

Unless otherwise notified by the Department, *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 conformance with Part III.B.1 of this permit. *Owners or operators* of the *construction activities* identified in Table 2 of Appendix B shall prepare a SWPPP that also includes post-construction stormwater management practices designed in conformance with Part III.B.2 or 3 of this permit.

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 post-construction stormwater management practices identified in the SWPPP are inspected and maintained in accordance with Part IV.B. and C. of this permit.

2. The terms of this permit shall not be construed to prohibit the State of New York from exercising any authority pursuant to the ECL, common law or federal law, or prohibit New York State from taking any measures, whether civil or criminal, to prevent violations of the laws of the State of New York or protect the public health and safety and/or the environment.

B. Contractor Maintenance Inspection Requirements

1. The *owner or operator* of each *construction activity* identified in Tables 1 and 2 of Appendix B 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. If deficiencies are identified, the contractor shall

begin implementing corrective actions within one business day and shall complete the corrective actions in a reasonable time frame.

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. The *trained contractor* shall begin conducting the maintenance inspections in accordance with Part IV.B.1. of this permit 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 if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.

C. Qualified Inspector Inspection Requirements

The *owner or operator* shall have a *qualified inspector* conduct site inspections in conformance with the following requirements:

[Note: The *trained contractor* identified in Part III.A.6. and IV.B. of this permit **cannot** conduct the *qualified inspector* site inspections unless they meet the *qualified inspector* qualifications included in Appendix A. In order to perform these inspections, the *trained contractor* would have to be a:

- licensed Professional Engineer,
- Certified Professional in Erosion and Sediment Control (CPESC),
- New York State Erosion and Sediment Control Certificate Program holder
- 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 in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity].

1. A *qualified inspector* shall conduct site inspections for all *construction activities* identified in Tables 1 and 2 of Appendix B, with the exception of:

   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 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 E;

b. the construction of a single family home that involves a soil disturbance of one (1) or more acres of land but less than 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 E;

c. construction on agricultural property that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres; and

d. *construction activities* located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

2. Unless otherwise notified by the Department, the *qualified inspector* shall conduct site inspections in accordance with the following timetable:

a. For construction sites where soil disturbance activities are on-going, the *qualified inspector* shall conduct a site inspection at least once every seven (7) calendar days.

b. For construction sites where soil disturbance activities are on-going and the *owner or operator* has received authorization in accordance with Part II.D.3 to disturb greater than five (5) acres of soil at any one time, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

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* shall conduct a site inspection at least once every thirty (30) calendar days. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to reducing the frequency of inspections.

d. For construction sites where soil disturbance activities have been shut down with partial project completion, the *qualified inspector* can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the *owner or operator* shall have the *qualified inspector* perform a final inspection and certify that all disturbed areas have achieved *final stabilization,* and all temporary, structural erosion and sediment control measures have been removed*;* and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice" certification statements on the NOT. The *owner or operator* shall then submit the completed NOT form to the address in Part II.B.1 of this permit.

e. For construction sites that directly *discharge* to one of the 303(d) segments listed in Appendix E or is located in one of the watersheds listed in Appendix C, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

3. At a minimum, the *qualified inspector* shall inspect all erosion and sediment control practices and pollution prevention measures to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved *final stabilization,* all points of *discharge* to natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site*, and all points of *discharge* from the *construction site*.

4. The *qualified inspector* shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

a. Date and time of inspection;

b. Name and title of person(s) performing inspection;

c. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;

d. A description of the condition of the runoff at all points of *discharge* from the *construction site*. This shall 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;

e. A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site* which receive runoff from disturbed areas. This shall include identification of any *discharges* of sediment to the surface waterbody;

f. Identification of all erosion and sediment control practices and pollution prevention measures that need repair or maintenance;

g. 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;

h. Description and sketch 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;

i. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;

j. 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 post-construction stormwater management practice(s);

k. Identification and status of all corrective actions that were required by previous inspection; and

l. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *qualified inspector* shall attach paper 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* shall 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* shall 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* shall notify the *owner or operator* and appropriate contractor or subcontractor identified in Part III.A.6. of this permit of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.

6. All inspection reports shall be signed by the *qualified inspector.* Pursuant to Part II.D.2. of this permit, the inspection reports shall be maintained on site with the SWPPP.

Part V. TERMINATION OF PERMIT COVERAGE

A. Termination of Permit Coverage

1. An *owner or operator* that is eligible to terminate coverage under this permit must submit a completed NOT form to the address in Part II.B.1 of this permit. The NOT form shall be one which is associated with this permit, signed in accordance with Part VII.H of this permit.

2. An *owner or operator* may terminate coverage when one or more the following conditions have been met:

   a. Total project completion - All *construction activity* identified in the SWPPP has been completed; and all areas of disturbance have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices have been constructed in conformance with the SWPPP and are operational;

b. Planned shutdown with partial project completion - All soil disturbance activities have ceased; and all areas disturbed as of the project shutdown date have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational;

c. A new *owner or operator* has obtained coverage under this permit in accordance with Part II.F. of this permit.

d. The *owner or operator* obtains coverage under an alternative SPDES general permit or an individual SPDES permit.

3. For *construction activities* meeting subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *qualified inspector* perform a final site inspection prior to submitting the NOT. The *qualified inspector* shall, by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice certification statements on the NOT, certify that all the requirements in Part V.A.2.a. or b. of this permit have been achieved.

4. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4* and meet subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *regulated, traditional land use control MS4* sign the "MS4 Acceptance" statement on the NOT in accordance with the requirements in Part VII.H. of this permit. The *regulated, traditional land use control MS4* official, by signing this statement, has determined that it is acceptable for the *owner or operator* to submit the NOT in accordance with the requirements of this Part. The *regulated, traditional land use control MS4* can make this determination by performing a final site inspection themselves or by accepting the *qualified inspector*'s final site inspection certification(s) required in Part V.A.3. of this permit.

5. For *construction activities* that require post-construction stormwater management practices and meet subdivision 2a. of this Part, the *owner or operator* must, prior to submitting the NOT, ensure one of the following:

a. the post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain such practice(s) have been deeded to the municipality in which the practice(s) is located,

b. an executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s),

c. for post-construction stormwater management practices 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,

d. for post-construction stormwater management practices 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 policy and procedures in place that ensures operation and maintenance of the practices in accordance with the operation and maintenance plan.

Part VI. REPORTING AND RETENTION RECORDS

A. Record Retention

The *owner or operator* shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for a period of at least five (5) years from the date that the Department receives a complete NOT submitted in accordance with Part V. of this general permit.

B. Addresses

With the exception of the NOI, NOT, and MS4 SWPPP Acceptance form (which must be submitted to the address referenced in Part II.B.1 of this permit), all written correspondence requested by the Department, including individual permit applications, shall be sent to the address of the appropriate DOW Water (SPDES) Program contact at the Regional Office listed in Appendix F.

Part VII. STANDARD PERMIT CONDITIONS

A. Duty to Comply

The *owner or operator* must comply with all conditions of this permit. All contractors and subcontractors associated with the project must comply with the terms of the SWPPP. Any non-compliance with this permit constitutes a violation of the Clean Water

Act (CWA) and the ECL and is grounds for an enforcement action against the *owner or operator* and/or the contractor/subcontractor; permit revocation, suspension or modification; or denial of a permit renewal application. Upon a finding of significant non-compliance with this permit or the applicable SWPPP, the Department may order an immediate stop to all *construction activity* at the site until the non-compliance is remedied. The stop work order shall be in writing, shall describe the non-compliance in detail, and shall be sent to the *owner or operator*.

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). *Construction activity* shall not resume until written permission to do so has been received from the RWE.

B. Continuation of the Expired General Permit

This permit expires five (5) years from the effective date. If a new general permit is not issued prior to the expiration of this general permit, an *owner or operator* with coverage under this permit may continue to operate and *discharge* in accordance with the terms and conditions of this general permit, if it is extended pursuant to the State Administrative Procedure Act and 6 NYCRR Part 621, until a new general permit is issued.

C. Enforcement

Failure of the *owner or operator,* its contractors, subcontractors, agents and/or assigns to strictly adhere to any of the permit requirements contained herein shall constitute a violation of this permit. There are substantial criminal, civil, and administrative penalties associated with violating the provisions of this permit. Fines of up to $37,500 per day for each violation and imprisonment for up to fifteen (15) years may be assessed depending upon the nature and degree of the offense.

D. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for an *owner or operator* in an enforcement action that it would have been necessary to halt or reduce the *construction activity* in order to maintain compliance with the conditions of this permit.

E. Duty to Mitigate

The *owner or operator* and its contractors and subcontractors shall 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.

F. Duty to Provide Information

The *owner or operator* shall furnish to the Department, within a reasonable specified time period of a written request, all documentation necessary to demonstrate eligibility and any information to determine compliance with this permit or to determine whether cause exists for modifying or revoking this permit, or suspending or denying coverage under this permit, in accordance with the terms and conditions of this permit. The NOI, SWPPP 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 (5) 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.

G. Other Information

When the *owner or operator* becomes aware that they failed to submit any relevant facts, or submitted incorrect information in the NOI or in any of the documents required by this permit , or have made substantive revisions to the SWPPP (e.g. the scope of the project changes significantly, the type of post-construction stormwater management practice(s) changes, there is a reduction in the sizing of the post-construction stormwater management practice, or there is an increase in the disturbance area or *impervious area*), which were not reflected in the original NOI submitted to the Department, they shall promptly submit such facts or information to the Department using the contact information in Part II.A. of this permit. Failure of the *owner or operator* to correct or supplement any relevant facts within five (5) business days of becoming aware of the deficiency shall constitute a violation of this permit.

H. Signatory Requirements

1. All NOIs and NOTs shall be signed as follows:

    a. For a corporation these forms shall be signed 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 permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

b. For a partnership or sole proprietorship these forms shall be signed by a general partner or the proprietor, respectively; or

c. For a municipality, State, Federal, or other public agency these forms shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

(i) the chief executive officer of the agency, or

(ii) 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. The SWPPP and other information requested by the Department shall be signed by a person described in Part VII.H.1. of this permit 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.H.1. of this permit;

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field,

superintendent, 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 shall include the name, title and signature of the authorized representative and be attached to the SWPPP.

3. All inspection reports shall be signed by the *qualified inspector* that performs the inspection.

4. The MS4 SWPPP Acceptance form shall be signed by the principal executive officer or ranking elected official from the *regulated, traditional land use control MS4,* or by a duly authorized representative of that person.

   It shall constitute a permit violation if an incorrect and/or improper signatory authorizes any required forms, SWPPP and/or inspection reports.

I. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations. *Owners or operators* must obtain any applicable conveyances, easements, licenses and/or access to real property prior to *commencing construction activity*.

J. 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 shall not be affected thereby.

K. Requirement to Obtain Coverage Under an Alternative Permit

1. The Department may require any owner or operator authorized by this permit to apply for and/or obtain either an individual SPDES permit or another SPDES general permit. When the Department requires any discharger authorized by a general permit to apply for an individual SPDES permit, it shall notify the discharger in writing that a permit application is required. This notice shall

include a brief statement of the reasons for this decision, an application form, a statement setting a time frame for the owner or operator to file the application for an individual SPDES permit, and a deadline, not sooner than 180 days from owner or operator receipt of the notification letter, whereby the authorization to discharge under this general permit shall be terminated. Applications must be submitted to the appropriate Permit Administrator at the Regional Office. The Department may grant additional time upon demonstration, to the satisfaction of the Department, that additional time to apply for an alternative authorization is necessary or where the Department has not provided a permit determination in accordance with Part 621 of this Title.

2. When an individual SPDES permit is issued to a discharger authorized to *discharge* under a general SPDES permit for the same *discharge*(s), the general permit authorization for outfalls authorized under the individual SPDES permit is automatically terminated on the effective date of the individual permit unless termination is earlier in accordance with 6 NYCRR Part 750.

L. Proper Operation and Maintenance

The *owner or operator* shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the *owner or operator* to achieve compliance with the conditions of this permit and with the requirements of the SWPPP.

M. Inspection and Entry

The *owner or operator* shall allow an authorized representative of the Department, EPA, applicable county health department, 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 conditions of this permit;

2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and

3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment), practices or operations regulated or required by this permit.

4. Sample or monitor at reasonable times, for purposes of assuring permit compliance or as otherwise authorized by the Act or ECL, any substances or parameters at any location.

N. Permit Actions

This permit may, at any time, be modified, suspended, revoked, or renewed by the Department in accordance with 6 NYCRR Part 621. The filing of a request by the *owner or operator* for a permit modification, revocation and reissuance, termination, a notification of planned changes or anticipated noncompliance does not limit, diminish and/or stay compliance with any terms of this permit.

O. Definitions

Definitions of key terms are included in Appendix A of this permit.

P. Re-Opener Clause

1. If there is evidence indicating potential or realized impacts on water quality due to any stormwater discharge associated with construction activity covered by this permit, the owner or operator of such discharge may be required to obtain an individual permit or alternative general permit in accordance with Part VII.K. of this permit or the permit may be modified to include different limitations and/or requirements.

2. Any Department initiated permit modification, suspension or revocation will be conducted in accordance with 6 NYCRR Part 621, 6 NYCRR 750-1.18, and 6 NYCRR 750-1.20.

Q. Penalties for Falsification of Forms and Reports

In accordance with 6NYCRR Part 750-2.4 and 750-2.5, 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 reports of compliance or noncompliance shall, upon conviction, be punished in accordance with ECL §71-1933 and or Articles 175 and 210 of the New York State Penal Law.

R. Other Permits

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

APPENDIX A – Acronyms and Definitions

Acronyms

APO – Agency Preservation Officer
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)
DOW – Division of Water
EAF – Environmental Assessment Form
ECL - 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
OPRHP – Office of Parks, Recreation and Historic Places
Qf – Extreme Flood
Qp – Overbank Flood
RRv – Runoff Reduction Volume
RWE – Regional Water Engineer
SEQR – State Environmental Quality Review
SEQRA - State Environmental Quality Review Act
SHPA – State Historic Preservation Act
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.

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 –means the land for construction of a barn, *agricultural building*, silo, stockyard, pen or other structural practices identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" prepared by the Department in cooperation with agencies of New York Nonpoint Source Coordinating Committee (dated June 2007).

Alter Hydrology from Pre to Post-Development Conditions - means 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 - means a sewer that is designed to collect and convey both "sewage" and "stormwater".

Commence (Commencement of) Construction Activities - means 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.

Construction Activity(ies) - means any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, 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.

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

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

Direct Discharge (to a specific surface waterbody) - means that 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) - means any addition of any pollutant to waters of the State through an outlet or *point source*.

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

Endangered or Threatened Species – see 6 NYCRR Part 182 of the Department's rules and regulations for definition of terms and requirements.

Environmental Conservation Law (ECL) - means chapter 43-B of the Consolidated Laws of the State of New York, entitled the Environmental Conservation Law.

Equivalent (Equivalence) – means that 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 - means that 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.

General SPDES permit - means a SPDES permit issued pursuant to 6 NYCRR Part 750-1.21 and Section 70-0117 of the ECL authorizing a category of discharges.

Groundwater(s) - means waters in the saturated zone. The saturated zone is a subsurface zone in which all the interstices are filled with water under pressure greater than that of the atmosphere. Although the zone may contain gas-filled interstices or interstices filled with fluids other than water, it is still considered saturated.

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

Infeasible – means not technologically possible, or not economically practicable and achievable in light of best industry practices.

Larger Common Plan of Development or Sale - means a contiguous area where multiple separate and distinct *construction activities* are occurring, or will occur, under one plan. The term “plan” in “larger 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 (SEQRA) environmental assessment form or other documents, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating that *construction activities* may occur on a specific plot.

For discrete construction projects that are located within a larger common plan of development or sale that are at least 1/4 mile apart, each project can be treated as a separate plan of development or sale provided any interconnecting road, pipeline or utility project that is part of the same “common plan” is not concurrently being disturbed.

Minimize – means 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 (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):

(i) Owned or operated by a State, city, town, 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*;*
(ii) Designed or used for collecting or conveying stormwater;
(iii) Which is not a *combined sewer*; and
(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

National Pollutant Discharge Elimination System (NPDES) - means the national system for the issuance of wastewater and stormwater permits under the Federal Water Pollution Control Act (Clean Water Act).

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

New Development – means 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.

NOI Acknowledgment Letter - means the letter that the Department sends to an owner or operator to acknowledge the Department's receipt and acceptance of a complete Notice of Intent. This letter documents the owner's or operator's authorization to discharge in accordance with the general permit for stormwater discharges from *construction activity*.

Nonpoint Source - means 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 –means flow events that exceed the capacity of the stream channel and spill out into the adjacent floodplain.

Owner or Operator - means 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 conditions.

Performance Criteria – means the design criteria listed under the "Required Elements" sections in Chapters 5, 6 and 10 of the technical standard, New York State Stormwater Management Design Manual, dated January 2015. It does not include the Sizing Criteria (i.e. WQv, RRv, Cpv, Qp and Qf) in Part I.C.2. of the permit.

Point Source - means 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 - means 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 - means 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 Department 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 Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department 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 post-construction stormwater management practices that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

Qualified Professional - means 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 Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management practice 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) – means 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.).

Regulated, Traditional Land Use Control MS4 - means 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).

Routine Maintenance Activity - means *construction activity* that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility, including, but not limited to:

- Re-grading of gravel roads or parking lots,
- Cleaning and shaping of existing roadside ditches and culverts that maintains the approximate original line and grade, and hydraulic capacity of the ditch,
- 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),
- Placement of aggregate shoulder backing that stabilizes the transition between the road shoulder and the ditch or *embankment*,
- 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,
- Long-term use of equipment storage areas at or near highway maintenance facilities,
- 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*,
- Existing use of Canal Corp owned upland disposal sites for the canal, and
- Replacement of curbs, gutters, sidewalks and guide rail posts.

Site limitations – means 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 – means the criteria included in Part I.C.2 of the permit that are used to size post-construction stormwater management control practices. The criteria include; Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (Cpv), *Overbank* Flood (Qp), and Extreme Flood (Qf).

State Pollutant Discharge Elimination System (SPDES) - means the system established pursuant to Article 17 of the ECL and 6 NYCRR Part 750 for issuance of permits authorizing discharges to the waters of the state.

Steep Slope – means land area designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name 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.

Streambank – as used in this permit, means 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) – means 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 post-construction stormwater management controls); and identifies procedures the *owner or operator* will implement to comply with the terms and conditions 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 – means that an existing disturbed area will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary Stabilization - means that 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 Loads (TMDLs) - A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and *nonpoint source*s. It is a calculation of the maximum amount of a pollutant that a waterbody can receive on a daily basis and still meet *water quality standards*, and an allocation of that amount to the pollutant's sources. A TMDL stipulates wasteload allocations (WLAs) for *point source* discharges, load allocations (LAs) for *nonpoint source*s, and a margin of safety (MOS).

Trained Contractor - means an employee from the contracting (construction) company, identified in Part III.A.6., that has received four (4) hours of Department endorsed

training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department 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.6., 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 Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity).

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

Uniform Procedures Act (UPA) Permit - means a permit required under 6 NYCRR Part 621 of the Environmental Conservation Law (ECL), Article 70.

Water Quality Standard - means 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 or not *directly discharging* to one of the 303(d) segments listed in Appendix E
- 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 E
- Construction of a barn or other *agricultural building*, silo, stock yard or pen.

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 watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- 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 projects, stormwater retrofits and stream restoration projects
- Pond construction
- Linear bike paths running through areas with vegetative cover, including bike paths surfaced with an impervious cover
- Cross-country ski trails and walking/hiking trails
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are not part of residential, commercial or institutional development;
- Sidewalk, bike path or walking path projects, 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.
- Slope stabilization projects
- Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics

Table 1 (Continued) 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:

- Spoil areas that will be covered with vegetation
- Vegetated open space projects (i.e. recreational parks, lawns, meadows, fields, downhill ski trails) excluding projects that *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 project where vegetation will be established, and no redevelopment is planned
- Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover*
- Structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State", excluding projects that involve soil disturbances of greater than five acres and construction activities that include the construction or reconstruction of impervious area
- 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

Table 2

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- 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 E
- 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 E
- 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 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 larger common plan of development or sale that will ultimately disturb five or more acres of land
- Multi-family residential developments; includes duplexes, townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- 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) and structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" that include the construction or reconstruction of *impervious area*, excluding projects that involve soil disturbances of less than five acres.
- Golf courses
- Institutional development; includes hospitals, prisons, schools and colleges
- Industrial facilities; includes industrial parks
- Landfills
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTW's, water treatment plants, and water storage tanks
- Office complexes
- Playgrounds that include the construction or reconstruction of impervious area
- Sports complexes
- Racetracks; includes racetracks with earthen (dirt) surface
- Road construction or reconstruction, including roads constructed as part of the construction activities listed in Table 1

Table 2 (Continued)

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Parking lot construction or reconstruction, including parking lots constructed as part of the construction activities listed in Table 1
- 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 over-head electric transmission line project, wind-power project, cell tower project, oil or gas well drilling project, sewer or water main project or other linear utility project
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a residential, commercial or institutional development
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a highway construction or reconstruction project
- 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 post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the technical standard, New York State Stormwater Management Design Manual ("Design Manual").

- 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

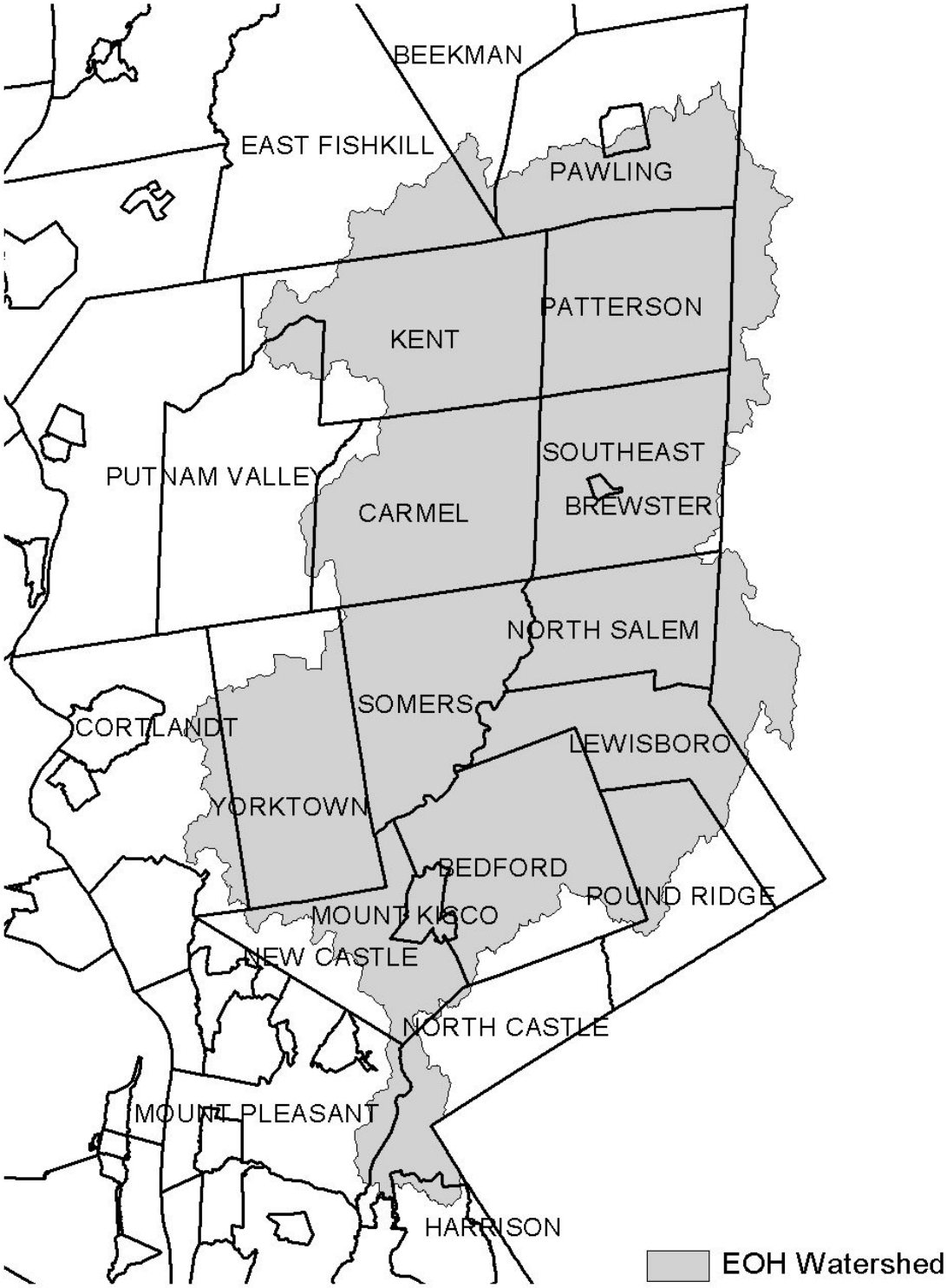


Figure 2 - Onondaga Lake Watershed

Figure 3 - Greenwood Lake Watershed

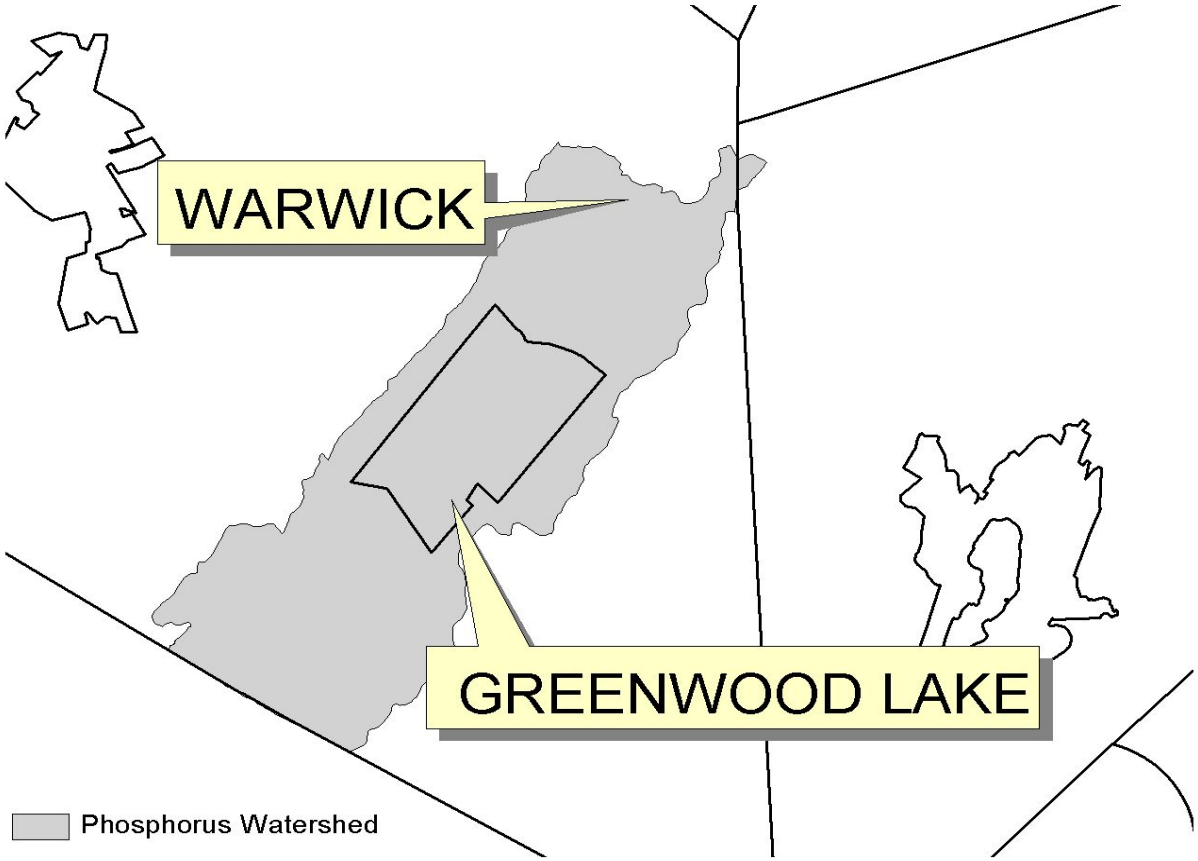


Figure 4 - Oscawana Lake Watershed

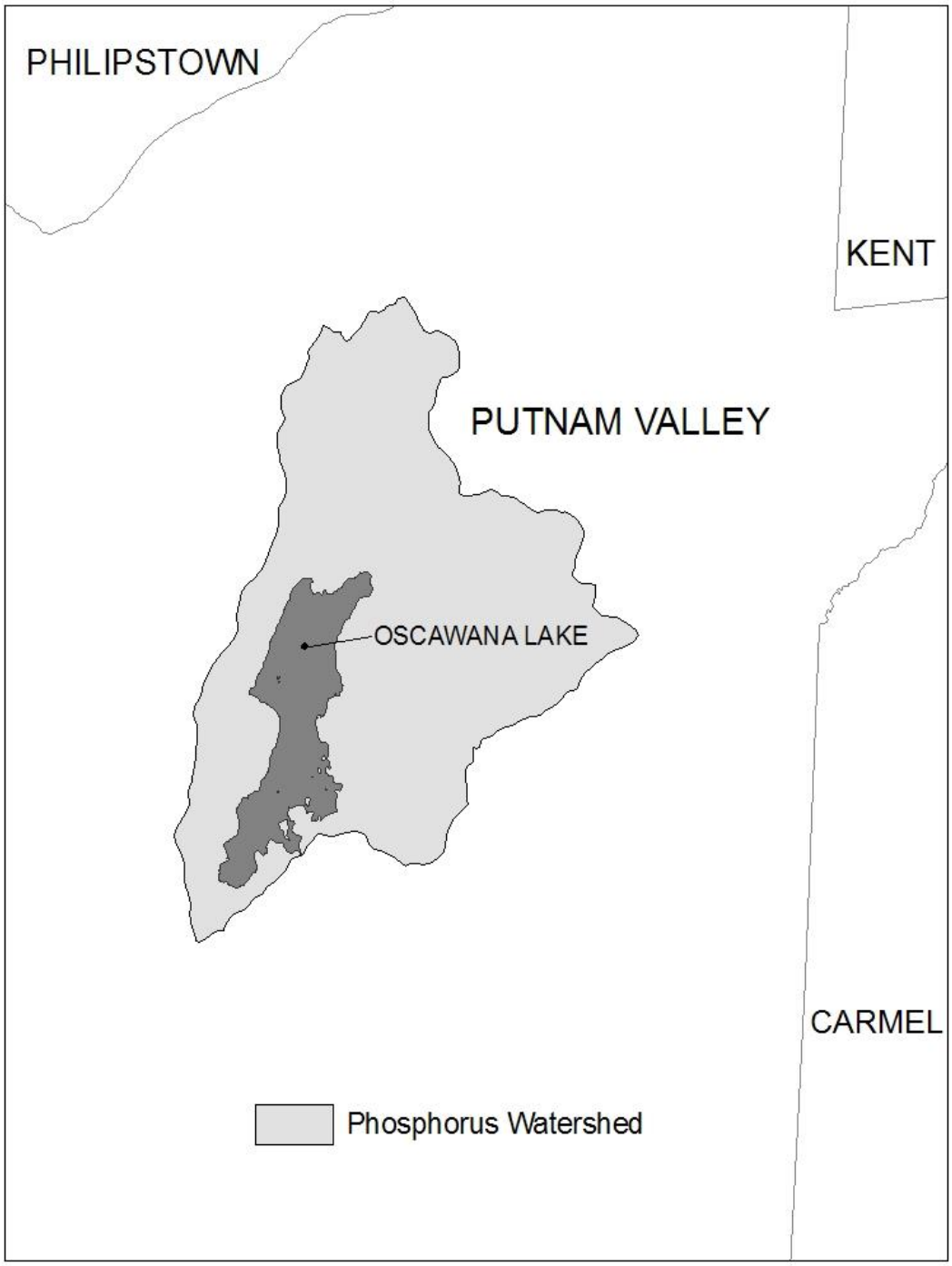
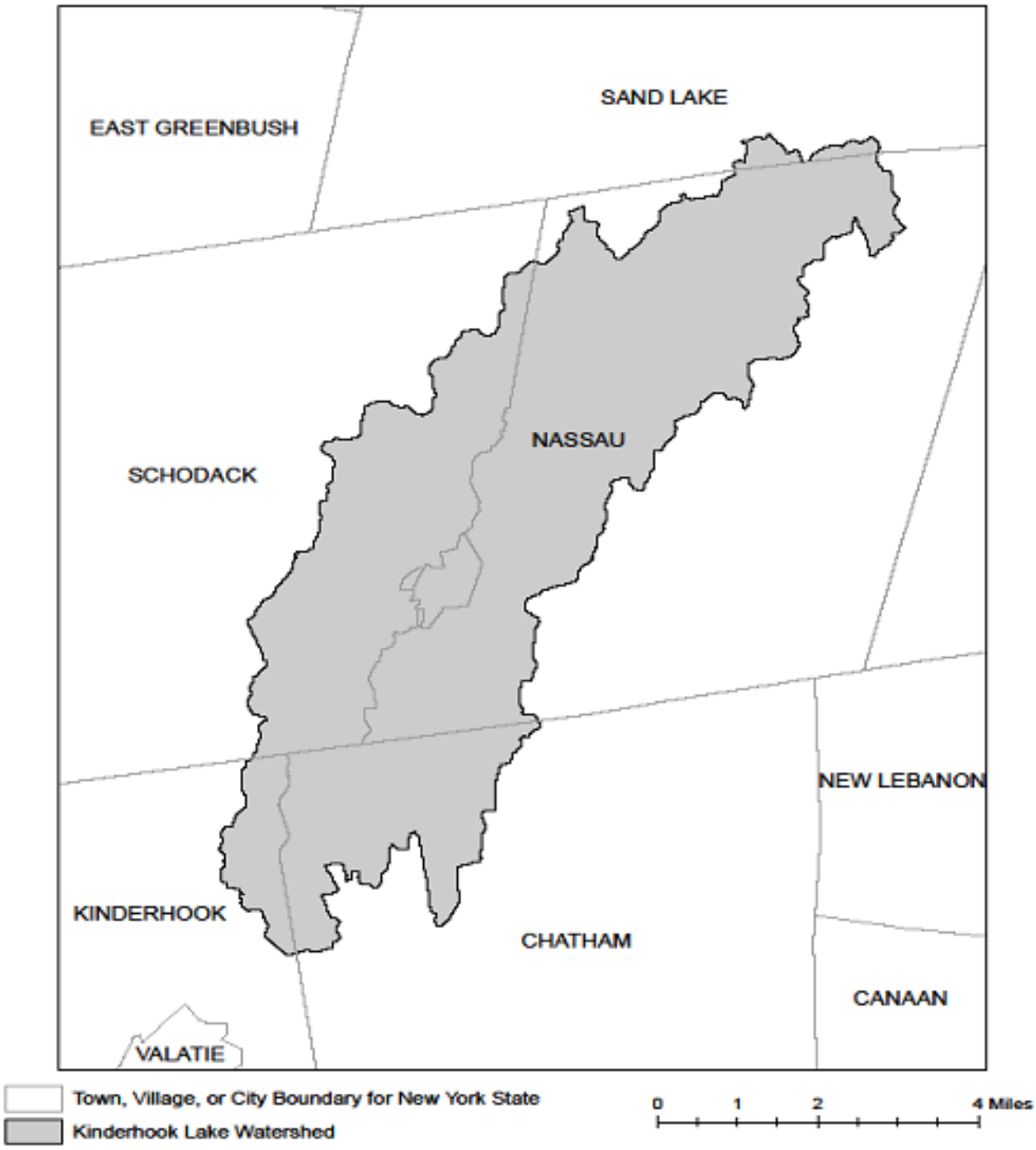


Figure 5 - Kinderhook Lake Watershed



APPENDIX D – Watersheds with Lower Disturbance Threshold

Watersheds where *owners or operators* of construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land must obtain coverage under this permit.

Entire New York City Watershed that is located east of the Hudson River **-** See Figure 1 in Appendix C

APPENDIX E – 303(d) Segments Impaired by Construction Related Pollutant(s)

List of 303(d) segments impaired by pollutants related to *construction activity* (e.g. silt, sediment or nutrients). The list was developed using "The Final New York State 2016 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy" dated November 2016. *Owners or operators* of single family home and single family residential subdivisions with 25% or less total impervious cover at total site build-out that involve soil disturbances of one or more acres of land, but less than 5 acres, and *directly discharge* to one of the listed segments below shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015.

COUNTY	WATERBODY	POLLUTANT
Albany	Ann Lee (Shakers) Pond, Stump Pond	Nutrients
Albany	Basic Creek Reservoir	Nutrients
Allegany	Amity Lake, Saunders Pond	Nutrients
Bronx	Long Island Sound, Bronx	Nutrients
Bronx	Van Cortlandt Lake	Nutrients
Broome	Fly Pond, Deer Lake, Sky Lake	Nutrients
Broome	Minor Tribs to Lower Susquehanna (north)	Nutrients
Broome	Whitney Point Lake/Reservoir	Nutrients
Cattaraugus	Allegheny River/Reservoir	Nutrients
Cattaraugus	Beaver (Alma) Lake	Nutrients
Cattaraugus	Case Lake	Nutrients
Cattaraugus	Linlyco/Club Pond	Nutrients
Cayuga	Duck Lake	Nutrients
Cayuga	Little Sodus Bay	Nutrients
Chautauqua	Bear Lake	Nutrients
Chautauqua	Chadakoin River and tribs	Nutrients
Chautauqua	Chautauqua Lake, North	Nutrients
Chautauqua	Chautauqua Lake, South	Nutrients
Chautauqua	Findley Lake	Nutrients
Chautauqua	Hulburt/Clymer Pond	Nutrients
Clinton	Great Chazy River, Lower, Main Stem	Silt/Sediment
Clinton	Lake Champlain, Main Lake, Middle	Nutrients
Clinton	Lake Champlain, Main Lake, North	Nutrients
Columbia	Kinderhook Lake	Nutrients
Columbia	Robinson Pond	Nutrients
Cortland	Dean Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Dutchess	Fall Kill and tribs	Nutrients
Dutchess	Hillside Lake	Nutrients
Dutchess	Wappingers Lake	Nutrients
Dutchess	Wappingers Lake	Silt/Sediment
Erie	Beeman Creek and tribs	Nutrients
Erie	Ellicott Creek, Lower, and tribs	Silt/Sediment
Erie	Ellicott Creek, Lower, and tribs	Nutrients
Erie	Green Lake	Nutrients
Erie	Little Sister Creek, Lower, and tribs	Nutrients
Erie	Murder Creek, Lower, and tribs	Nutrients
Erie	Rush Creek and tribs	Nutrients
Erie	Scajaquada Creek, Lower, and tribs	Nutrients
Erie	Scajaquada Creek, Middle, and tribs	Nutrients
Erie	Scajaquada Creek, Upper, and tribs	Nutrients
Erie	South Branch Smoke Cr, Lower, and tribs	Silt/Sediment
Erie	South Branch Smoke Cr, Lower, and tribs	Nutrients
Essex	Lake Champlain, Main Lake, South	Nutrients
Essex	Lake Champlain, South Lake	Nutrients
Essex	Willsboro Bay	Nutrients
Genesee	Bigelow Creek and tribs	Nutrients
Genesee	Black Creek, Middle, and minor tribs	Nutrients
Genesee	Black Creek, Upper, and minor tribs	Nutrients
Genesee	Bowen Brook and tribs	Nutrients
Genesee	LeRoy Reservoir	Nutrients
Genesee	Oak Orchard Cr, Upper, and tribs	Nutrients
Genesee	Tonawanda Creek, Middle, Main Stem	Nutrients
Greene	Schoharie Reservoir	Silt/Sediment
Greene	Sleepy Hollow Lake	Silt/Sediment
Herkimer	Steele Creek tribs	Silt/Sediment
Herkimer	Steele Creek tribs	Nutrients
Jefferson	Moon Lake	Nutrients
Kings	Hendrix Creek	Nutrients
Kings	Prospect Park Lake	Nutrients
Lewis	Mill Creek/South Branch, and tribs	Nutrients
Livingston	Christie Creek and tribs	Nutrients
Livingston	Conesus Lake	Nutrients
Livingston	Mill Creek and minor tribs	Silt/Sediment
Monroe	Black Creek, Lower, and minor tribs	Nutrients
Monroe	Buck Pond	Nutrients
Monroe	Cranberry Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Monroe	Lake Ontario Shoreline, Western	Nutrients
Monroe	Long Pond	Nutrients
Monroe	Mill Creek and tribs	Nutrients
Monroe	Mill Creek/Blue Pond Outlet and tribs	Nutrients
Monroe	Minor Tribs to Irondequoit Bay	Nutrients
Monroe	Rochester Embayment - East	Nutrients
Monroe	Rochester Embayment - West	Nutrients
Monroe	Shipbuilders Creek and tribs	Nutrients
Monroe	Thomas Creek/White Brook and tribs	Nutrients
Nassau	Beaver Lake	Nutrients
Nassau	Camaans Pond	Nutrients
Nassau	East Meadow Brook, Upper, and tribs	Silt/Sediment
Nassau	East Rockaway Channel	Nutrients
Nassau	Grant Park Pond	Nutrients
Nassau	Hempstead Bay	Nutrients
Nassau	Hempstead Lake	Nutrients
Nassau	Hewlett Bay	Nutrients
Nassau	Hog Island Channel	Nutrients
Nassau	Long Island Sound, Nassau County Waters	Nutrients
Nassau	Massapequa Creek and tribs	Nutrients
Nassau	Milburn/Parsonage Creeks, Upp, and tribs	Nutrients
Nassau	Reynolds Channel, west	Nutrients
Nassau	Tidal Tribs to Hempstead Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Silt/Sediment
Nassau	Tribs to Smith/Halls Ponds	Nutrients
Nassau	Woodmere Channel	Nutrients
New York	Harlem Meer	Nutrients
New York	The Lake in Central Park	Nutrients
Niagara	Bergholtz Creek and tribs	Nutrients
Niagara	Hyde Park Lake	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Oneida	Ballou, Nail Creeks and tribs	Nutrients
Onondaga	Harbor Brook, Lower, and tribs	Nutrients
Onondaga	Ley Creek and tribs	Nutrients
Onondaga	Minor Tribs to Onondaga Lake	Nutrients
Onondaga	Ninemile Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Middle, and tribs	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Onondaga	Onondaga Lake, northern end	Nutrients
Onondaga	Onondaga Lake, southern end	Nutrients
Ontario	Great Brook and minor tribs	Silt/Sediment
Ontario	Great Brook and minor tribs	Nutrients
Ontario	Hemlock Lake Outlet and minor tribs	Nutrients
Ontario	Honeoye Lake	Nutrients
Orange	Greenwood Lake	Nutrients
Orange	Monhagen Brook and tribs	Nutrients
Orange	Orange Lake	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Oswego	Lake Neatahwanta	Nutrients
Oswego	Pleasant Lake	Nutrients
Putnam	Bog Brook Reservoir	Nutrients
Putnam	Boyd Corners Reservoir	Nutrients
Putnam	Croton Falls Reservoir	Nutrients
Putnam	Diverting Reservoir	Nutrients
Putnam	East Branch Reservoir	Nutrients
Putnam	Lake Carmel	Nutrients
Putnam	Middle Branch Reservoir	Nutrients
Putnam	Oscawana Lake	Nutrients
Putnam	Palmer Lake	Nutrients
Putnam	West Branch Reservoir	Nutrients
Queens	Bergen Basin	Nutrients
Queens	Flushing Creek/Bay	Nutrients
Queens	Jamaica Bay, Eastern, and tribs (Queens)	Nutrients
Queens	Kissena Lake	Nutrients
Queens	Meadow Lake	Nutrients
Queens	Willow Lake	Nutrients
Rensselaer	Nassau Lake	Nutrients
Rensselaer	Snyders Lake	Nutrients
Richmond	Grasmere Lake/Bradys Pond	Nutrients
Rockland	Congers Lake, Swartout Lake	Nutrients
Rockland	Rockland Lake	Nutrients
Saratoga	Ballston Lake	Nutrients
Saratoga	Dwaas Kill and tribs	Silt/Sediment
Saratoga	Dwaas Kill and tribs	Nutrients
Saratoga	Lake Lonely	Nutrients
Saratoga	Round Lake	Nutrients
Saratoga	Tribs to Lake Lonely	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Schenectady	Collins Lake	Nutrients
Schenectady	Duane Lake	Nutrients
Schenectady	Mariaville Lake	Nutrients
Schoharie	Engleville Pond	Nutrients
Schoharie	Summit Lake	Nutrients
Seneca	Reeder Creek and tribs	Nutrients
St.Lawrence	Black Lake Outlet/Black Lake	Nutrients
St.Lawrence	Fish Creek and minor tribs	Nutrients
Steuben	Smith Pond	Nutrients
Suffolk	Agawam Lake	Nutrients
Suffolk	Big/Little Fresh Ponds	Nutrients
Suffolk	Canaan Lake	Silt/Sediment
Suffolk	Canaan Lake	Nutrients
Suffolk	Flanders Bay, West/Lower Sawmill Creek	Nutrients
Suffolk	Fresh Pond	Nutrients
Suffolk	Great South Bay, East	Nutrients
Suffolk	Great South Bay, Middle	Nutrients
Suffolk	Great South Bay, West	Nutrients
Suffolk	Lake Ronkonkoma	Nutrients
Suffolk	Long Island Sound, Suffolk County, West	Nutrients
Suffolk	Mattituck (Marratooka) Pond	Nutrients
Suffolk	Meetinghouse/Terrys Creeks and tribs	Nutrients
Suffolk	Mill and Seven Ponds	Nutrients
Suffolk	Millers Pond	Nutrients
Suffolk	Moriches Bay, East	Nutrients
Suffolk	Moriches Bay, West	Nutrients
Suffolk	Peconic River, Lower, and tidal tribs	Nutrients
Suffolk	Quantuck Bay	Nutrients
Suffolk	Shinnecock Bay and Inlet	Nutrients
Suffolk	Tidal tribs to West Moriches Bay	Nutrients
Sullivan	Bodine, Montgomery Lakes	Nutrients
Sullivan	Davies Lake	Nutrients
Sullivan	Evens Lake	Nutrients
Sullivan	Pleasure Lake	Nutrients
Tompkins	Cayuga Lake, Southern End	Nutrients
Tompkins	Cayuga Lake, Southern End	Silt/Sediment
Tompkins	Owasco Inlet, Upper, and tribs	Nutrients
Ulster	Ashokan Reservoir	Silt/Sediment
Ulster	Esopus Creek, Upper, and minor tribs	Silt/Sediment
Warren	Hague Brook and tribs	Silt/Sediment

303(d) Segments Impaired by Construction Related Pollutant(s)

Warren	Huddle/Finkle Brooks and tribs	Silt/Sediment
Warren	Indian Brook and tribs	Silt/Sediment
Warren	Lake George	Silt/Sediment
Warren	Tribs to L.George, Village of L George	Silt/Sediment
Washington	Cossayuna Lake	Nutrients
Washington	Lake Champlain, South Bay	Nutrients
Washington	Tribs to L.George, East Shore	Silt/Sediment
Washington	Wood Cr/Champlain Canal and minor tribs	Nutrients
Wayne	Port Bay	Nutrients
Westchester	Amawalk Reservoir	Nutrients
Westchester	Blind Brook, Upper, and tribs	Silt/Sediment
Westchester	Cross River Reservoir	Nutrients
Westchester	Lake Katonah	Nutrients
Westchester	Lake Lincolndale	Nutrients
Westchester	Lake Meahagh	Nutrients
Westchester	Lake Mohegan	Nutrients
Westchester	Lake Shenorock	Nutrients
Westchester	Long Island Sound, Westchester (East)	Nutrients
Westchester	Mamaroneck River, Lower	Silt/Sediment
Westchester	Mamaroneck River, Upper, and minor tribs	Silt/Sediment
Westchester	Muscoot/Upper New Croton Reservoir	Nutrients
Westchester	New Croton Reservoir	Nutrients
Westchester	Peach Lake	Nutrients
Westchester	Reservoir No.1 (Lake Isle)	Nutrients
Westchester	Saw Mill River, Lower, and tribs	Nutrients
Westchester	Saw Mill River, Middle, and tribs	Nutrients
Westchester	Sheldrake River and tribs	Silt/Sediment
Westchester	Sheldrake River and tribs	Nutrients
Westchester	Silver Lake	Nutrients
Westchester	Teatown Lake	Nutrients
Westchester	Titicus Reservoir	Nutrients
Westchester	Truesdale Lake	Nutrients
Westchester	Wallace Pond	Nutrients
Wyoming	Java Lake	Nutrients
Wyoming	Silver Lake	Nutrients

APPENDIX F – List of NYS DEC Regional Offices

Region	Covering the following counties:	DIVISION OF ENVIRONMENTAL PERMITS (DEP) Permit Administrators	DIVISION OF WATER (DOW) Water (SPDES) Program
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	100 Hillside Avenue, Suite 1w White Plains, NY 10603 Tel. (914) 428 - 2505
4	Albany, Columbia, Delaware, Greene, Montgomery, Otsego, Rensselaer, Schenectady and Schoharie	1150 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	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7438	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 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	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7165	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7070

APPENDIX E

WEEKLY INSPECTION FORM

183 Main Street
New Paltz, NY 12561
845-255-0210

Stormwater Pollution Prevention Plan (SWPPP)

Construction Duration Inspections

Project Name and Location:	Date:	Page Number:
	Permit Number:	Weather:
On-site Representative(s):	Entry Time:	Report Number:
Phone Number:	Exit Time:	
		Overall Inspection Rating:
SPDES Permittee Contact:	Contacted:	
	Yes	
	No	
Comments:		

Status of Site Work / Additional Notes:

Inspector (Print Name)

Date of Inspection

Qualified Professional (Print Name)

Qualified Professional Signature

The above signed acknowledges that to the best of his/her knowledge, all information provided on the forms is accurate and complete.

Maintaining Water Quality

Yes	No	NA	
			Is there an increase in turbidity causing a substantial visible contrast to natural conditions?
			Is there residue from oil and floating substances, visible oil film, or globules or grease?
			All disturbance is within the limits of the approved plans.
			Have receiving lake/bay, stream, and/or wetland been impacted by silt from the project?

Housekeeping

Yes	No	NA	
1. General Site Conditions			
			Is construction site litter and debris appropriately managed?
			Are facilities and equipment necessary for implementation of erosion and sediment control in working order and/or properly maintainted?
			Is construction impacting the adjacent property?
			Is dust adequately controlled?
2. Temporary Stream Crossing			
			Maximum diameter pipes necessary to span creek without dredging are installed.
			Installed non-woven geotextile fabric beneath approaches.
			Is fill composed of aggregate (no earth or soil)?
			Rock on approaches is clean enough to remove mud from vehicles & prevent sediment from entering stream during high flow.

Runoff Control Practices

Yes	No	NA	
1. Excavation Dewatering			
			Upstream and downstream berms (sandbags, inflatable dams, etc.) are installed per plan.
			Clean water from upstream pool is being pumped to the downstream pool.
			Sediment laden water from work area is being discharged to a silt-trapping device.
			Constructed upstream berm with one-foot minimum freeboard.
2. Level Spreader			
			Installed per plan.
			Constructed on disturbed soil, not on fill, receiving only clear, non-sediment laden flow.
			Flow sheets out of level spreader without erosion on downstream edge.
3. Interceptor Dikes and Swales			
			Installed per plan with minimum side slopes 2H:1V or flatter.
			Stabilized by geotextile fabric, seed, or mulch with no erosion occurring.
			Sediment-laden runoff directed to sediment trapping structure.

Runoff Control Practices (continued)

Yes	No	NA	
			4. Stone Check Dam
			Is channel stable? (Flow is not eroding soil underneath or around the structure.)
			Check is in good condition. (Rocks in place and no permanent pools behind structure.)
			Has accumulated sediment been removed?
			5. Rock Outlet Protection
			Installed per plan.
			Installed concurrently with pipe installation.

Soil Stabilization

Yes	No	NA	
			1. Topsoil and Spoil Stockpiles
			Stockpiles are stabilized with vegetation and/or mulch.
			Sediment control is installed at the toe of the slope.
			2. Revegetation
			Temporary seedings and mulch have been applied to idle areas.
			4 inches minimum of topsoil has been applied under permanent seedings.

Sediment Control Practices

Yes	No	NA	
			1. Stabilized Construction Entrance
			Stone is clean enough to effectively remove mud from vehicles.
			Installed per standards and specifications?
			Does all traffic use the stabilized entrance to enter and leave site?
			Is adequate drainage provided to prevent ponding at entrance?
			2. Silt Fence
			Installed on contour, 10 feet from toe of slope (not across conveyance channels.)
			Joints constructed by wrapping the two ends together for continuous support.
			Fabric buried 6 inches minimum.
			Posts are stable, fabric is tight and without rips or frayed areas. Sediment accumulation is
			0 % of design capacity.
			3. Storm Drain Inlet Protection (Use for Stone & Block, Filter Fabric, Curb, or Excavated Practices)
			Installed concrete blocks lengthwise so open ends face outward, not upward.
			Placed wire screen between No. 3 crushed stone and concrete blocks.
			Drainage area is 1 acre or less.
			Excavated area is 900 cubic feet.
			Excavated side slopes should be 2H:1V.

Sediment Control Practices (continued)

Yes	No	NA	
			3. Storm Drain Inlet Protection (continued)
			2" x 4" frame is constructed and structurally sound.
			Posts 3-foot maximum spacing between posts.
			Fabric is embedded 1 to 1.5 feet below ground and secured to frame/posts with staples at max 8-inch spacing.
			Posts are stable, fabric is tight and without rips or frayed areas.
			NA % Design capacity of sediment accumulation.
			4. Temporary Sediment Trap
			Outlet structure is constructed per the approved plan or drawing.
			Geotextile fabric has been placed beneath rock fill.
			NA % Design capacity of sediment accumulation.
			5. Temporary Sediment Basin
			Basin and outlet structure constructed per the approved plan.
			Basin side slopes are stabilized with seed/mulch.
			Drainage structure flushed and basin surface restored upon removal of sediment basin facility.
			0 % Design capacity of sediment accumulation.

Note: Not all erosion and sediment control practices are included in this listing. Add additional pages to this list as required by site specific design.

Contruction inspection checklists for post-development stormwater management practices can be found in Appendix F of the New York State Stormwater Management Design Manual.

Additional Notes:

APPENDIX F

MS4 ACCEPTANCE FORM

NYS Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance Form

for

Construction Activities Seeking Authorization Under SPDES General Permit

*(NOTE: Attach Completed Form to Notice Of Intent and Submit to Address Above)

I. Project Owner/Operator Information	
1. Owner/Operator Name:	Castlemore Holdings MIMA, LLC
2. Contact Person:	Tommy Yan
3. Street Address:	21 W End Ave #2410
4. City/State/Zip:	New York, NY 10023
II. Project Site Information	
5. Project/Site Name:	Yan Property
6. Street Address:	38 Hudson Lane
7. City/State/Zip:	Ulster Park, NY 12487
III. Stormwater Pollution Prevention Plan (SWPPP) Review and Acceptance Information	
8. SWPPP Reviewed by:	Town of Esopus
9. Title/Position:	Stormwater Management Officer
10. Date Final SWPPP Reviewed and Accepted:	
IV. Regulated MS4 Information	
11. Name of MS4:	Town of Esopus
12. MS4 SPDES Permit Identification Number: NYR20A	
13. Contact Person:	
14. Street Address:	
15. City/State/Zip:	
16. 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 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. Additional Information

(NYS DEC - MS4 SWPPP Acceptance Form - January 2015)

APPENDIX G

HYDROCAD ANALYSIS

Subcat Reach Pond Link

Routing Diagram for PRE

Prepared by {enter your company name here}, Printed 10/2/2023

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EX-1: Runoff Area=4.343 ac 0.00% Impervious Runoff Depth>0.72"
Flow Length=460' Tc=27.9 min CN=77 Runoff=2.95 cfs 0.261 af

Subcatchment EX-2: Runoff Area=17.025 ac 0.00% Impervious Runoff Depth>0.81"
Flow Length=900' Tc=37.1 min CN=79 Runoff=10.96 cfs 1.155 af

Pond SDP-1: Inflow=2.95 cfs 0.261 af
Primary=2.95 cfs 0.261 af

Pond SDP-2: Inflow=10.96 cfs 1.155 af
Primary=10.96 cfs 1.155 af

Total Runoff Area = 21.368 ac Runoff Volume = 1.416 af Average Runoff Depth = 0.80"
100.00% Pervious = 21.368 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment EX-1:

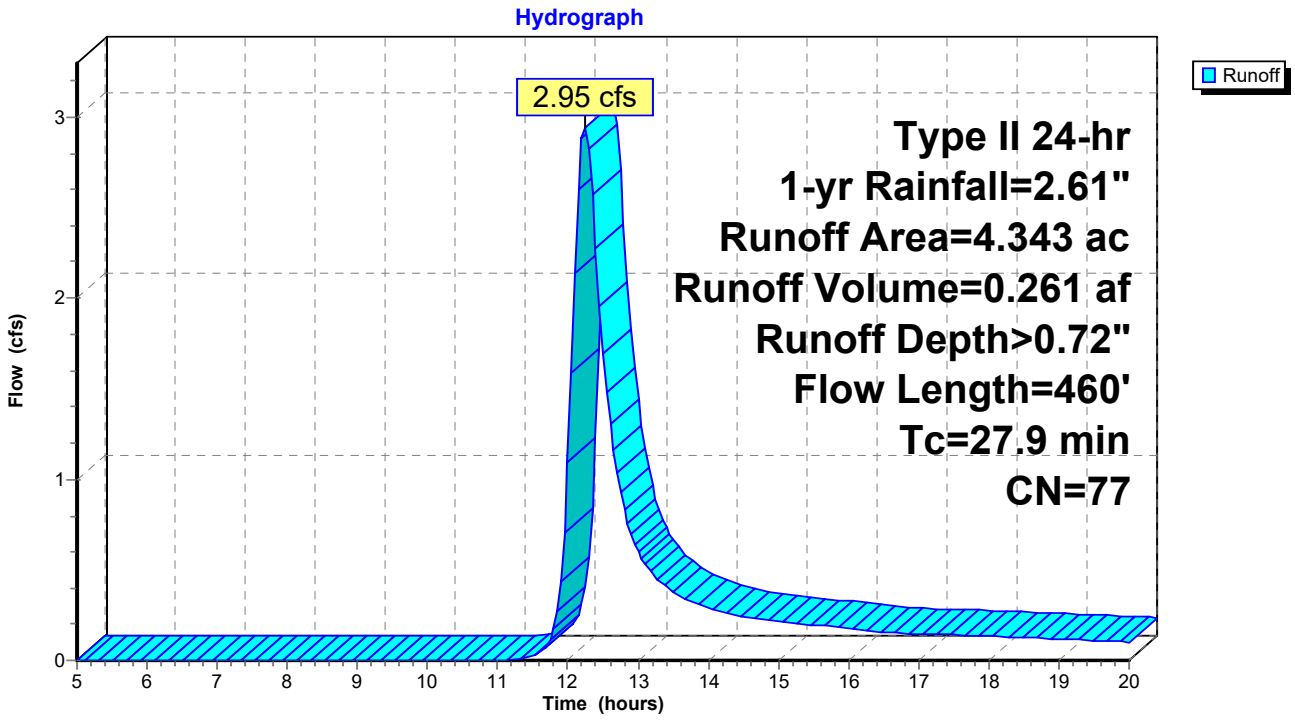
Runoff = 2.95 cfs @ 12.24 hrs, Volume= 0.261 af, Depth> 0.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=2.61"

Area (ac)	CN	Description
4.343	77	Woods, Good, HSG D
4.343		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	150	0.0330	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.16"
2.0	150	0.0600	1.22		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.4	160	0.1500	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
27.9	460	Total			

Subcatchment EX-1:



Summary for Subcatchment EX-2:

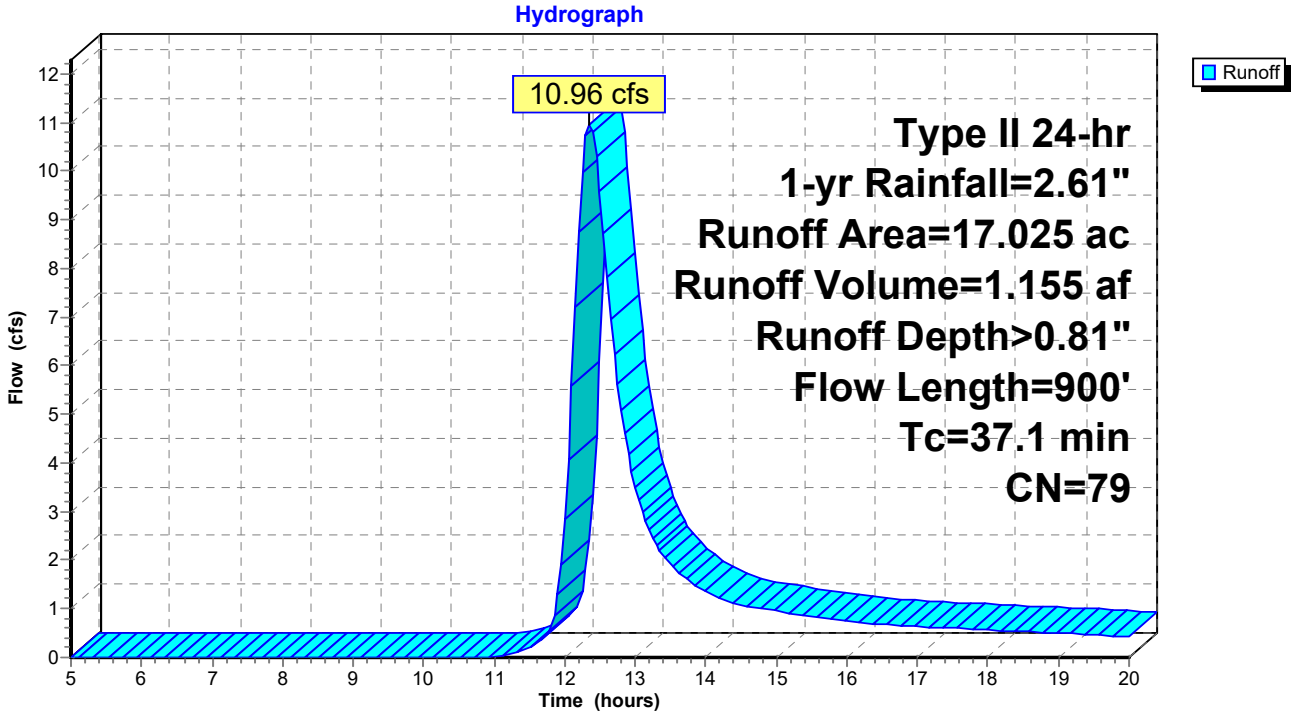
Runoff = 10.96 cfs @ 12.36 hrs, Volume= 1.155 af, Depth> 0.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=2.61"

Area (ac)	CN	Description
1.899	96	Gravel surface, HSG D
15.126	77	Woods, Good, HSG D
17.025	79	Weighted Average
17.025		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.9	150	0.0200	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.16"
5.5	600	0.1317	1.81		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	50	0.0400	3.22		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.4	100	0.0600	1.22		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
37.1	900	Total			

Subcatchment EX-2:

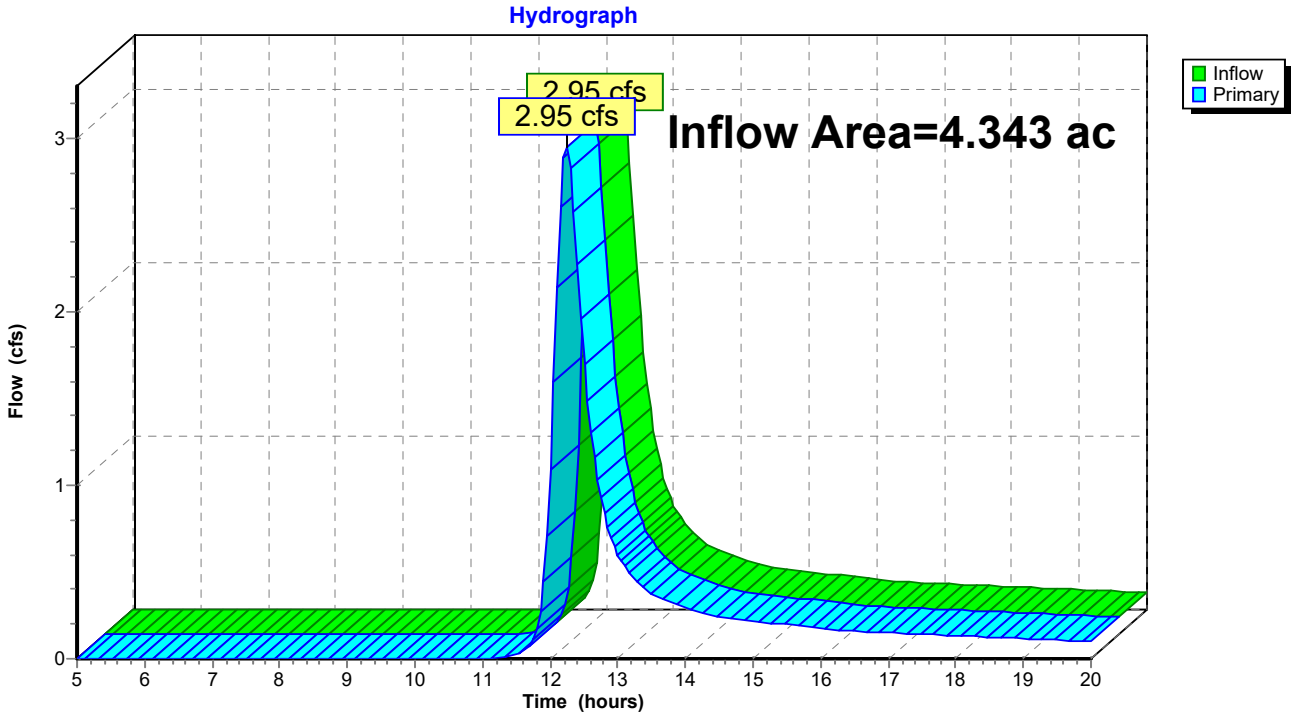


Summary for Pond SDP-1:

Inflow Area = 4.343 ac, 0.00% Impervious, Inflow Depth > 0.72" for 1-yr event
Inflow = 2.95 cfs @ 12.24 hrs, Volume= 0.261 af
Primary = 2.95 cfs @ 12.24 hrs, Volume= 0.261 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond SDP-1:

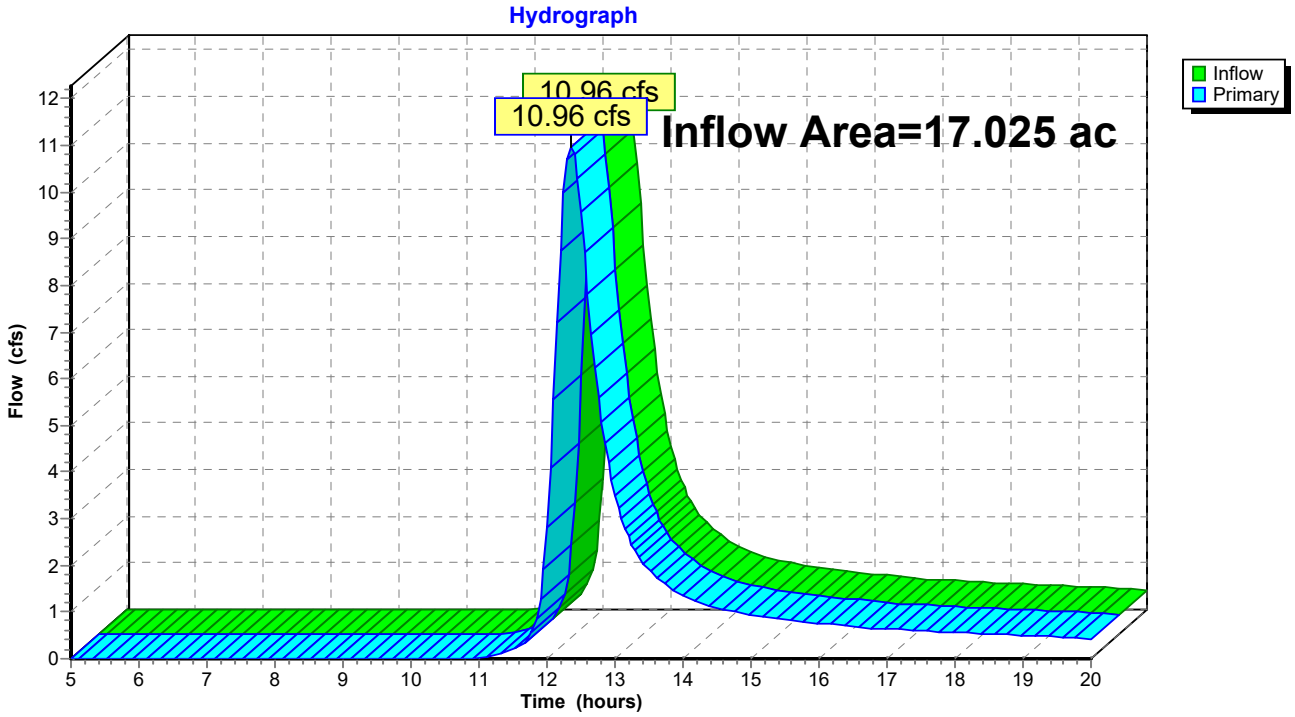


Summary for Pond SDP-2:

Inflow Area = 17.025 ac, 0.00% Impervious, Inflow Depth > 0.81" for 1-yr event
Inflow = 10.96 cfs @ 12.36 hrs, Volume= 1.155 af
Primary = 10.96 cfs @ 12.36 hrs, Volume= 1.155 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond SDP-2:



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EX-1: Runoff Area=4.343 ac 0.00% Impervious Runoff Depth>2.17"
Flow Length=460' Tc=27.9 min CN=77 Runoff=9.31 cfs 0.785 af

Subcatchment EX-2: Runoff Area=17.025 ac 0.00% Impervious Runoff Depth>2.33"
Flow Length=900' Tc=37.1 min CN=79 Runoff=32.44 cfs 3.299 af

Pond SDP-1: Inflow=9.31 cfs 0.785 af
Primary=9.31 cfs 0.785 af

Pond SDP-2: Inflow=32.44 cfs 3.299 af
Primary=32.44 cfs 3.299 af

Total Runoff Area = 21.368 ac Runoff Volume = 4.084 af Average Runoff Depth = 2.29"
100.00% Pervious = 21.368 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment EX-1:

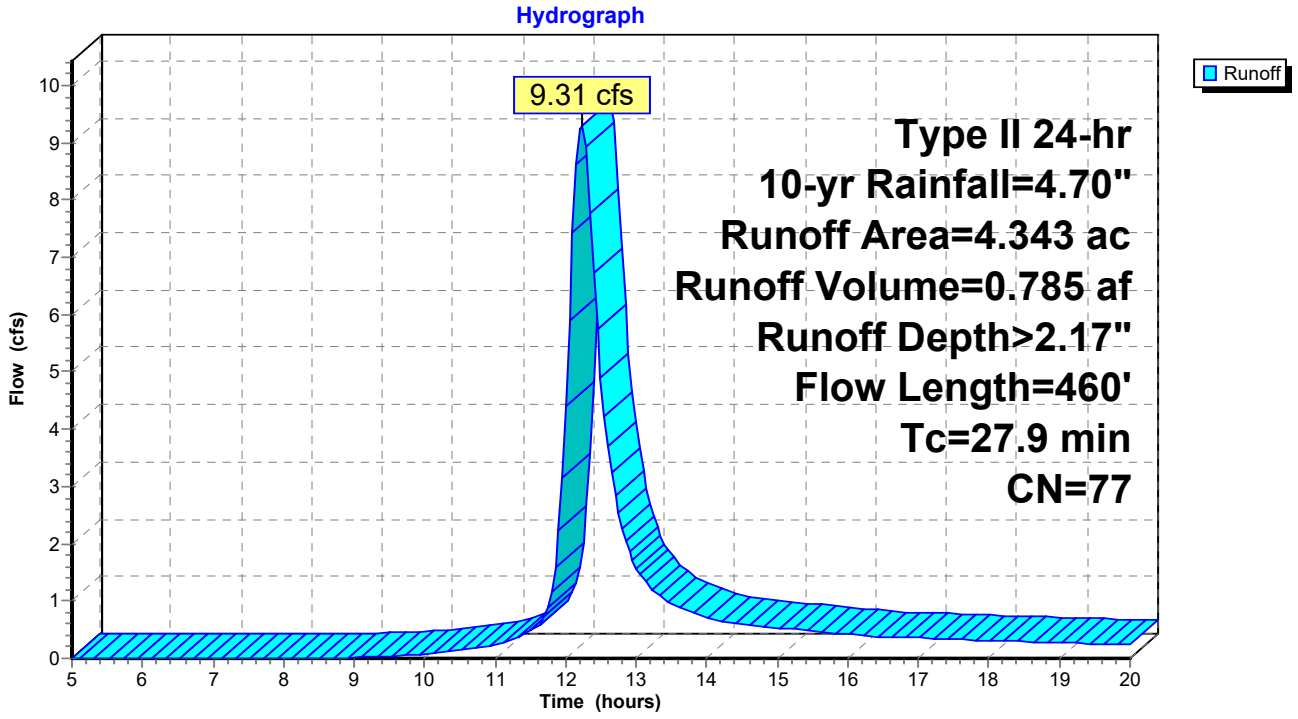
Runoff = 9.31 cfs @ 12.22 hrs, Volume= 0.785 af, Depth> 2.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=4.70"

Area (ac)	CN	Description
4.343	77	Woods, Good, HSG D
4.343		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	150	0.0330	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.16"
2.0	150	0.0600	1.22		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.4	160	0.1500	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
27.9	460	Total			

Subcatchment EX-1:



Summary for Subcatchment EX-2:

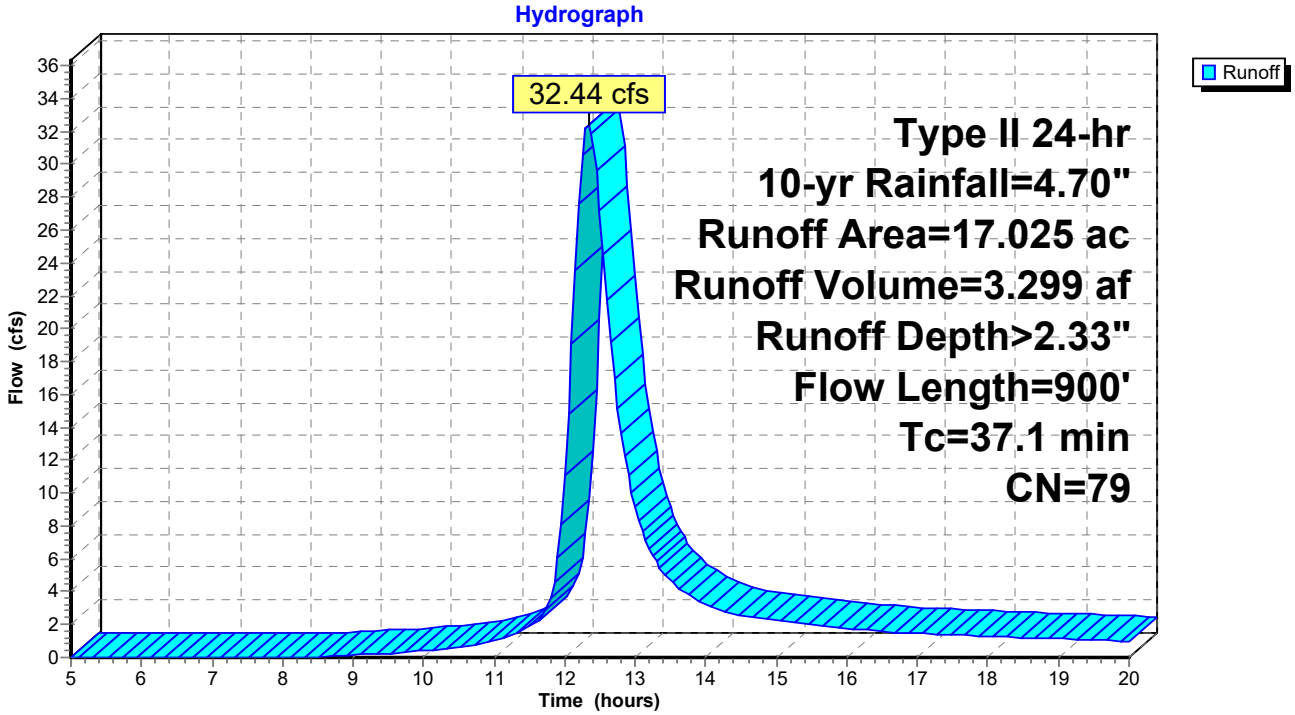
Runoff = 32.44 cfs @ 12.33 hrs, Volume= 3.299 af, Depth> 2.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=4.70"

Area (ac)	CN	Description
1.899	96	Gravel surface, HSG D
15.126	77	Woods, Good, HSG D
17.025	79	Weighted Average
17.025		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.9	150	0.0200	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.16"
5.5	600	0.1317	1.81		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	50	0.0400	3.22		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.4	100	0.0600	1.22		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
37.1	900	Total			

Subcatchment EX-2:

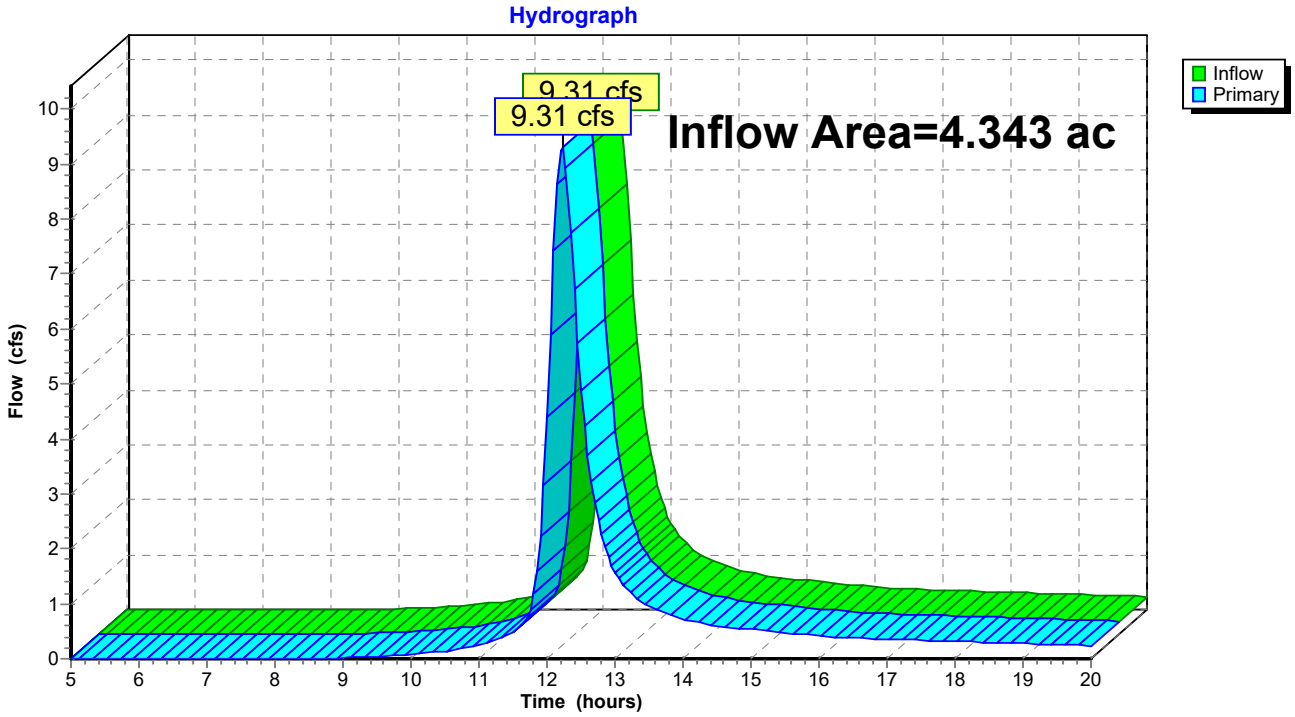


Summary for Pond SDP-1:

Inflow Area = 4.343 ac, 0.00% Impervious, Inflow Depth > 2.17" for 10-yr event
Inflow = 9.31 cfs @ 12.22 hrs, Volume= 0.785 af
Primary = 9.31 cfs @ 12.22 hrs, Volume= 0.785 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond SDP-1:

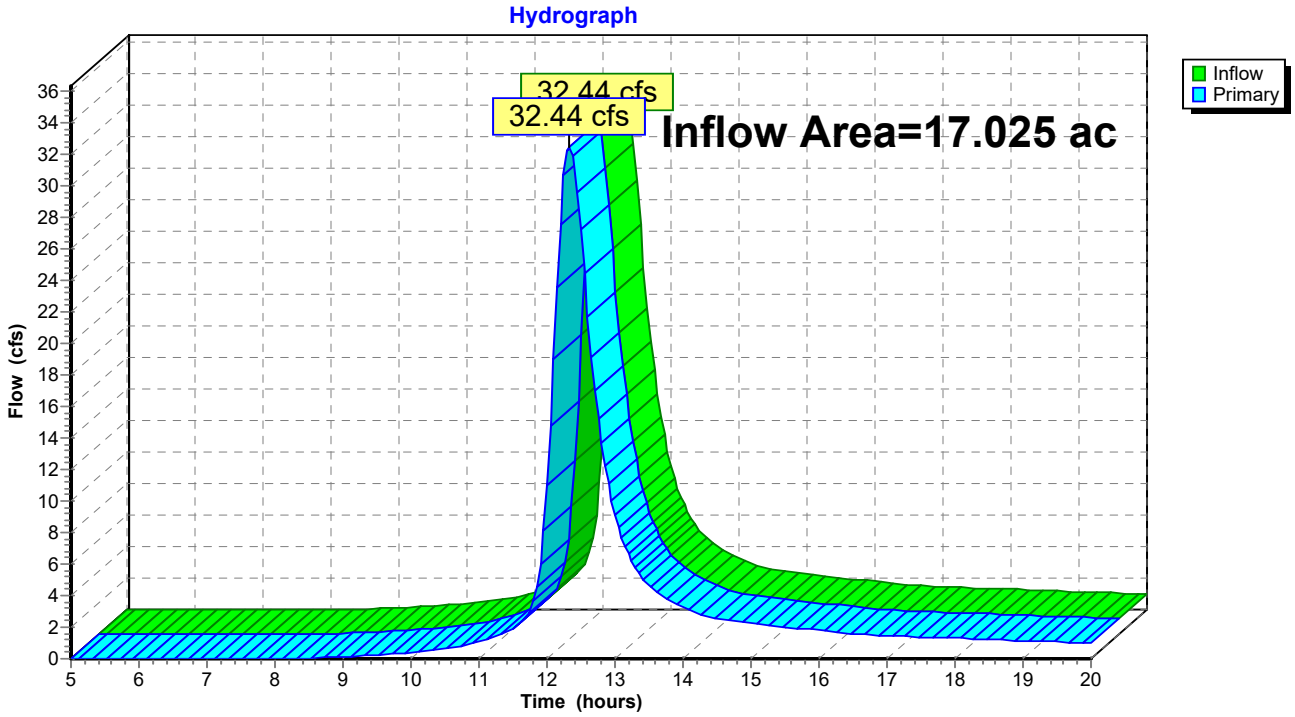


Summary for Pond SDP-2:

Inflow Area = 17.025 ac, 0.00% Impervious, Inflow Depth > 2.33" for 10-yr event
Inflow = 32.44 cfs @ 12.33 hrs, Volume= 3.299 af
Primary = 32.44 cfs @ 12.33 hrs, Volume= 3.299 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond SDP-2:



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EX-1: Runoff Area=4.343 ac 0.00% Impervious Runoff Depth>5.13"
Flow Length=460' Tc=27.9 min CN=77 Runoff=21.75 cfs 1.858 af

Subcatchment EX-2: Runoff Area=17.025 ac 0.00% Impervious Runoff Depth>5.35"
Flow Length=900' Tc=37.1 min CN=79 Runoff=73.59 cfs 7.589 af

Pond SDP-1: Inflow=21.75 cfs 1.858 af
Primary=21.75 cfs 1.858 af

Pond SDP-2: Inflow=73.59 cfs 7.589 af
Primary=73.59 cfs 7.589 af

Total Runoff Area = 21.368 ac Runoff Volume = 9.447 af Average Runoff Depth = 5.31"
100.00% Pervious = 21.368 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment EX-1:

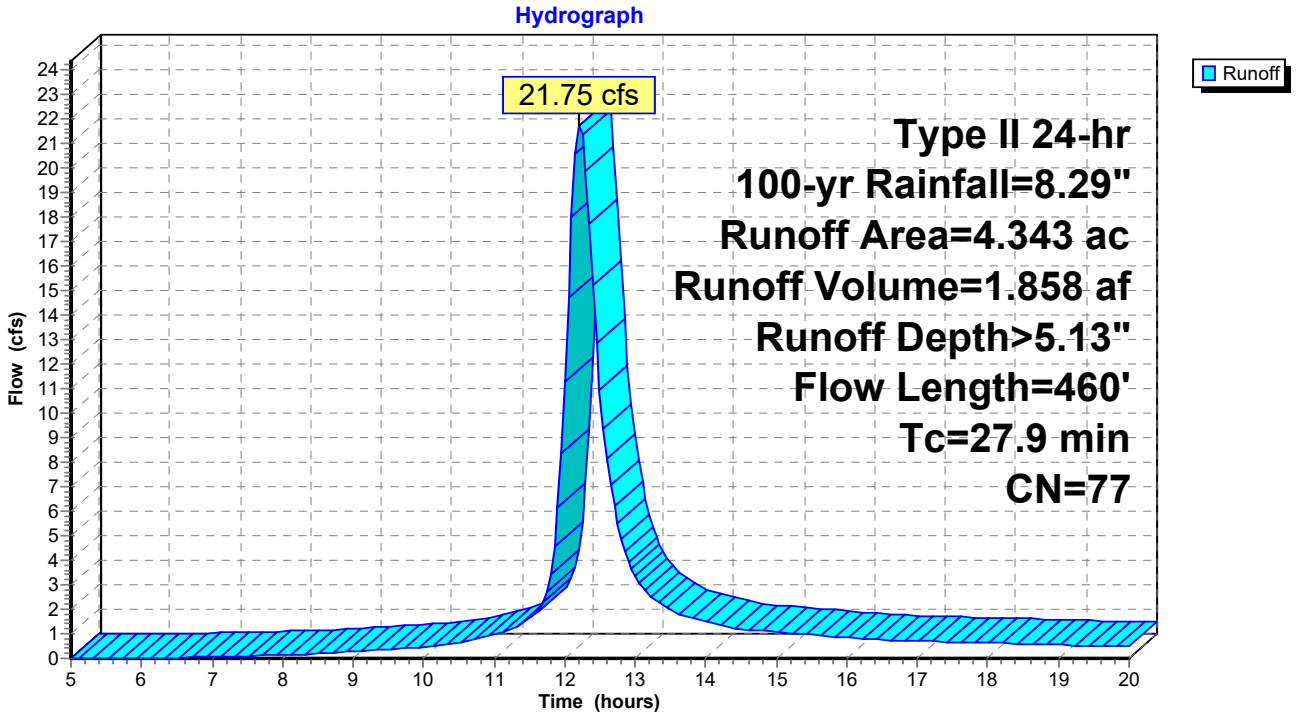
Runoff = 21.75 cfs @ 12.21 hrs, Volume= 1.858 af, Depth> 5.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=8.29"

Area (ac)	CN	Description
4.343	77	Woods, Good, HSG D
4.343		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5	150	0.0330	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.16"
2.0	150	0.0600	1.22		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.4	160	0.1500	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
27.9	460	Total			

Subcatchment EX-1:



Summary for Subcatchment EX-2:

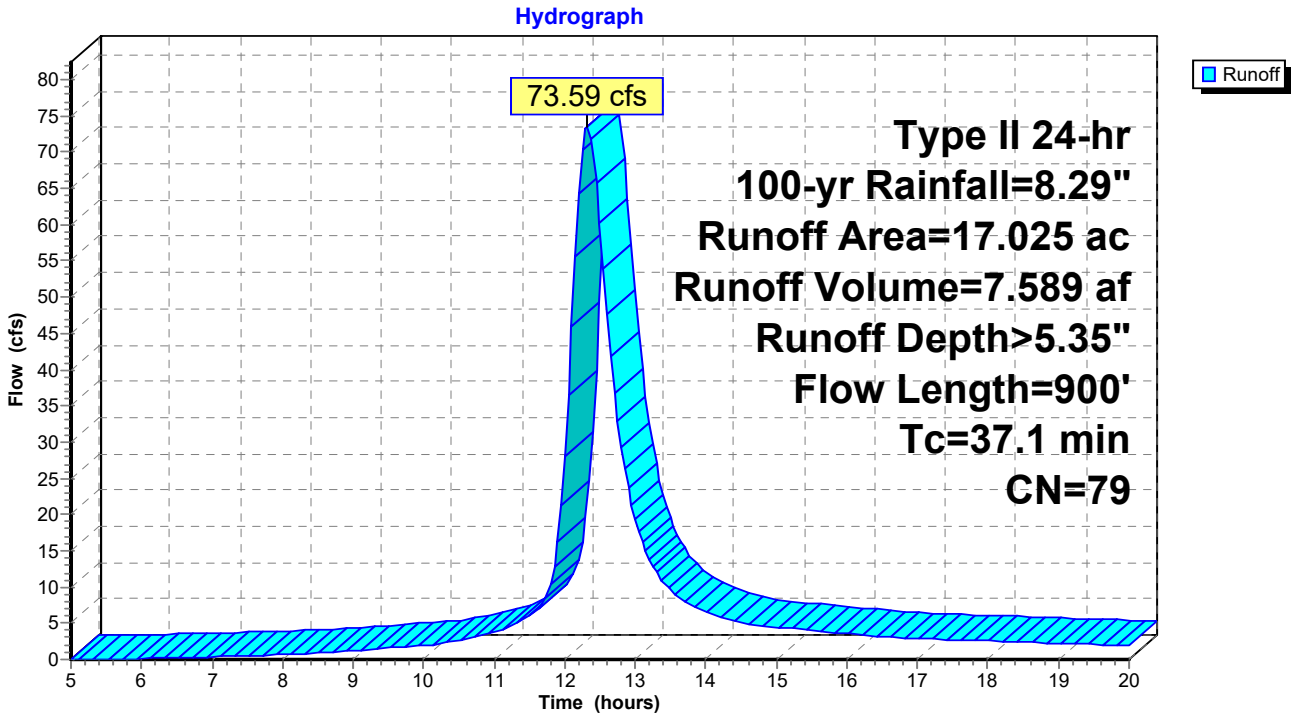
Runoff = 73.59 cfs @ 12.32 hrs, Volume= 7.589 af, Depth> 5.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=8.29"

Area (ac)	CN	Description
1.899	96	Gravel surface, HSG D
15.126	77	Woods, Good, HSG D
17.025	79	Weighted Average
17.025		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.9	150	0.0200	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.16"
5.5	600	0.1317	1.81		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	50	0.0400	3.22		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.4	100	0.0600	1.22		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
37.1	900	Total			

Subcatchment EX-2:

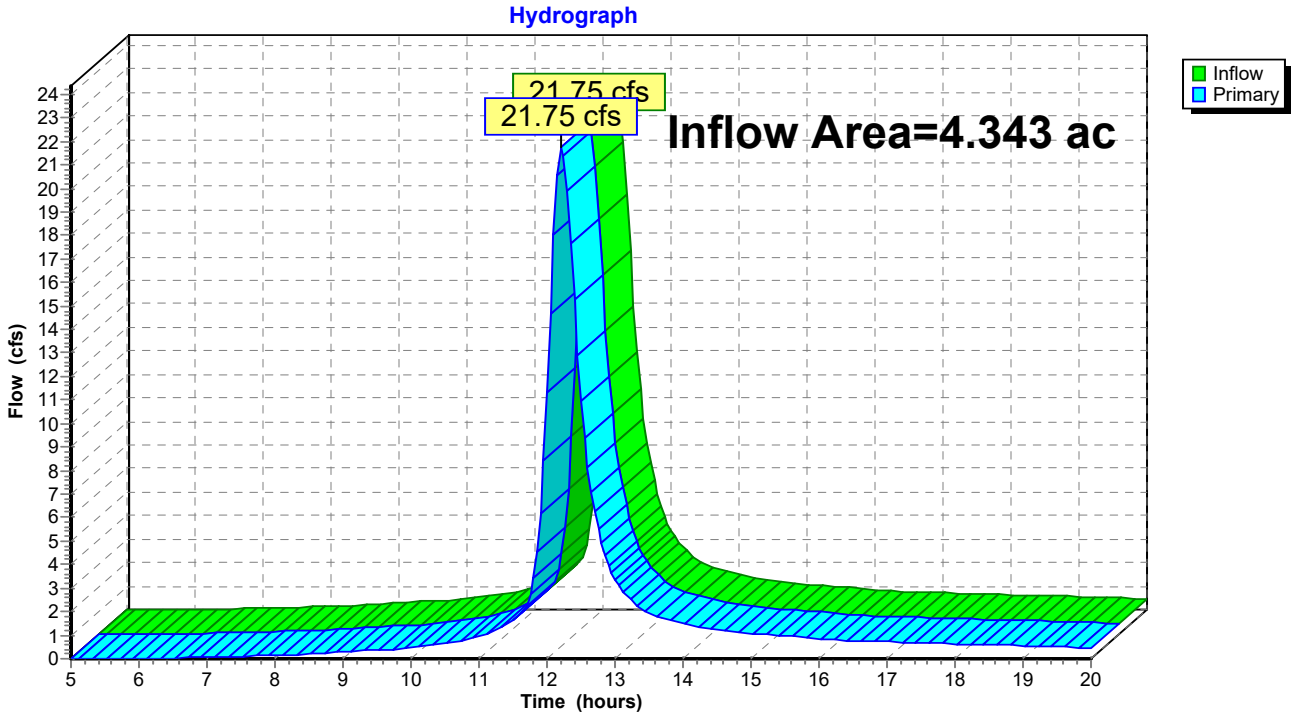


Summary for Pond SDP-1:

Inflow Area = 4.343 ac, 0.00% Impervious, Inflow Depth > 5.13" for 100-yr event
Inflow = 21.75 cfs @ 12.21 hrs, Volume= 1.858 af
Primary = 21.75 cfs @ 12.21 hrs, Volume= 1.858 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond SDP-1:

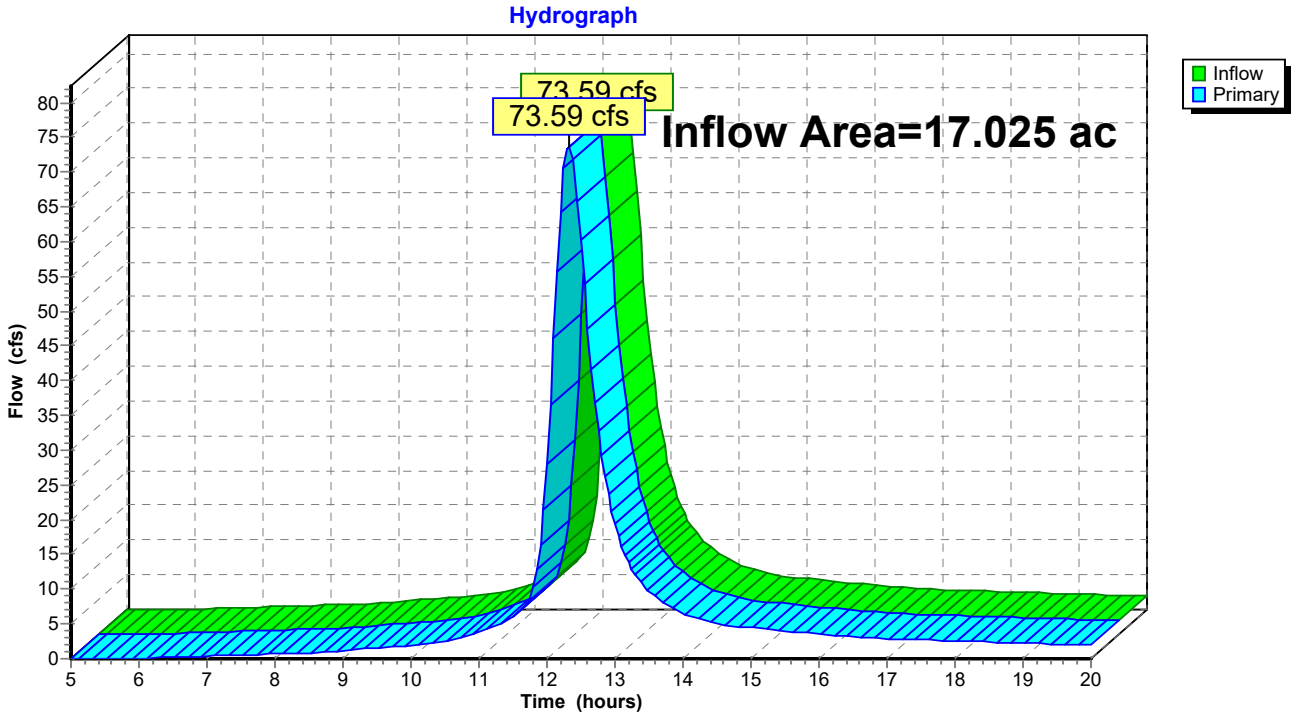


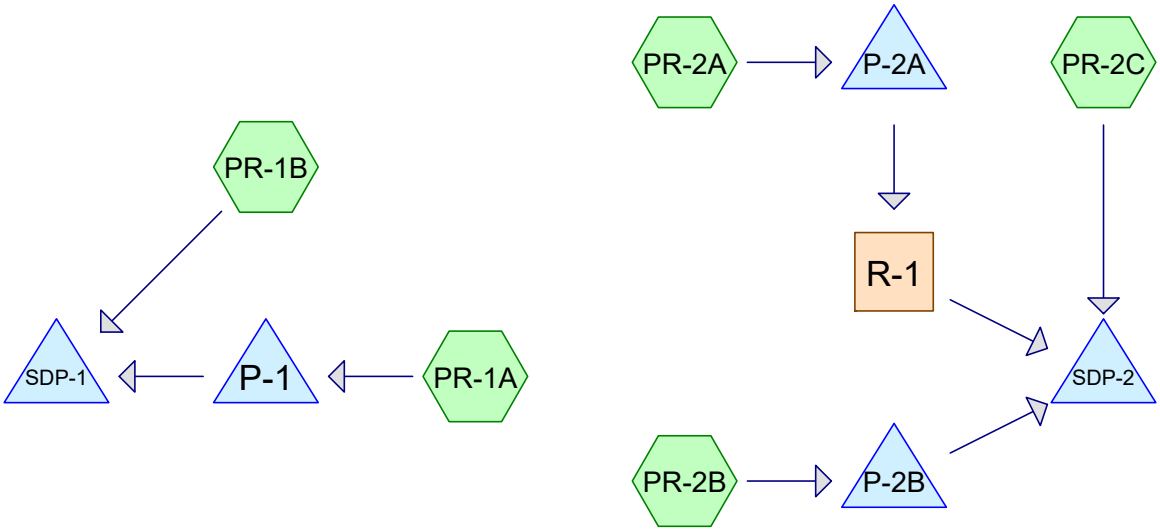
Summary for Pond SDP-2:

Inflow Area = 17.025 ac, 0.00% Impervious, Inflow Depth > 5.35" for 100-yr event
Inflow = 73.59 cfs @ 12.32 hrs, Volume= 7.589 af
Primary = 73.59 cfs @ 12.32 hrs, Volume= 7.589 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond SDP-2:





Subcat Reach Pond Link

Routing Diagram for POST

Prepared by {enter your company name here}, Printed 2/27/2024

Project Notes

Defined 3 rainfall events from ESOPUS IDF

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	PR-2B	0.00	0.00	20.0	0.0200	0.013	12.0	0.0	0.0
2	PR-2B	0.00	0.00	125.0	0.1000	0.013	15.0	0.0	0.0
3	PR-2C	0.00	0.00	30.0	0.0200	0.013	15.0	0.0	0.0
4	P-1	222.00	221.20	40.0	0.0200	0.013	18.0	0.0	0.0
5	P-2A	193.00	188.00	40.0	0.1250	0.013	15.0	0.0	0.0
6	P-2B	151.30	151.10	60.0	0.0033	0.013	24.0	0.0	0.0

Summary for Subcatchment PR-1A:

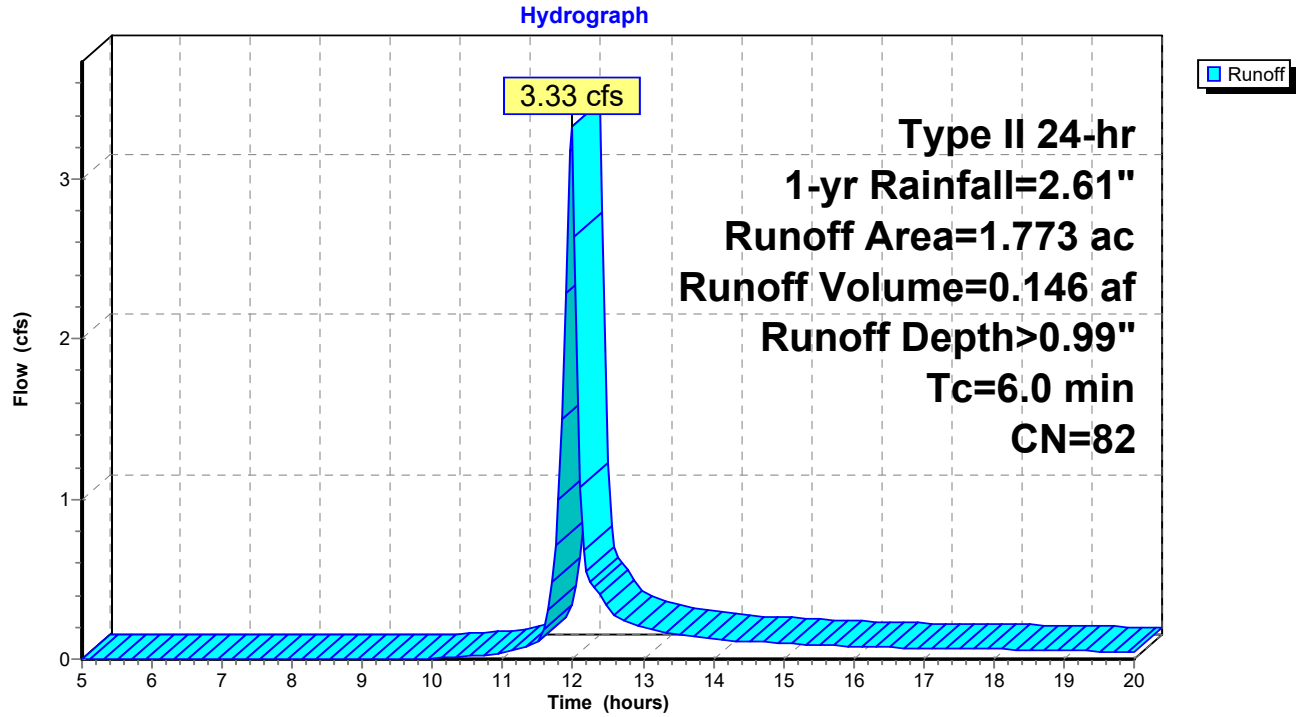
Runoff = 3.33 cfs @ 11.98 hrs, Volume= 0.146 af, Depth> 0.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=2.61"

Area (ac)	CN	Description
0.177	96	Gravel surface, HSG D
1.160	80	>75% Grass cover, Good, HSG D
0.069	94	Fallow, bare soil, HSG D
0.092	98	Water Surface, HSG D
0.275	70	Woods, Good, HSG C
1.773	82	Weighted Average
1.681		94.81% Pervious Area
0.092		5.19% Impervious Area

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

Subcatchment PR-1A:



Summary for Subcatchment PR-1B:

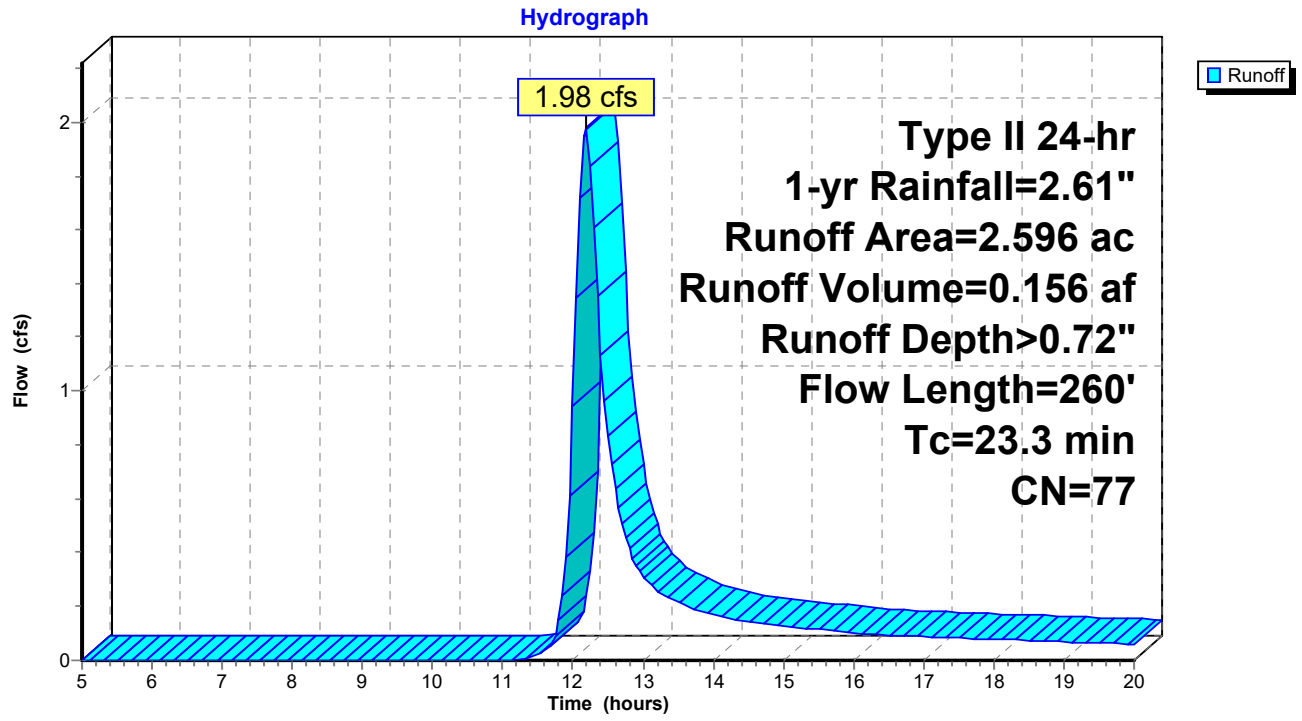
Runoff = 1.98 cfs @ 12.18 hrs, Volume= 0.156 af, Depth> 0.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=2.61"

Area (ac)	CN	Description
2.496	77	Woods, Good, HSG D
0.100	80	>75% Grass cover, Good, HSG D
2.596	77	Weighted Average
2.596		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.6	100	0.0200	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.16"
1.7	160	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.3	260	Total			

Subcatchment PR-1B:



Summary for Subcatchment PR-2A:

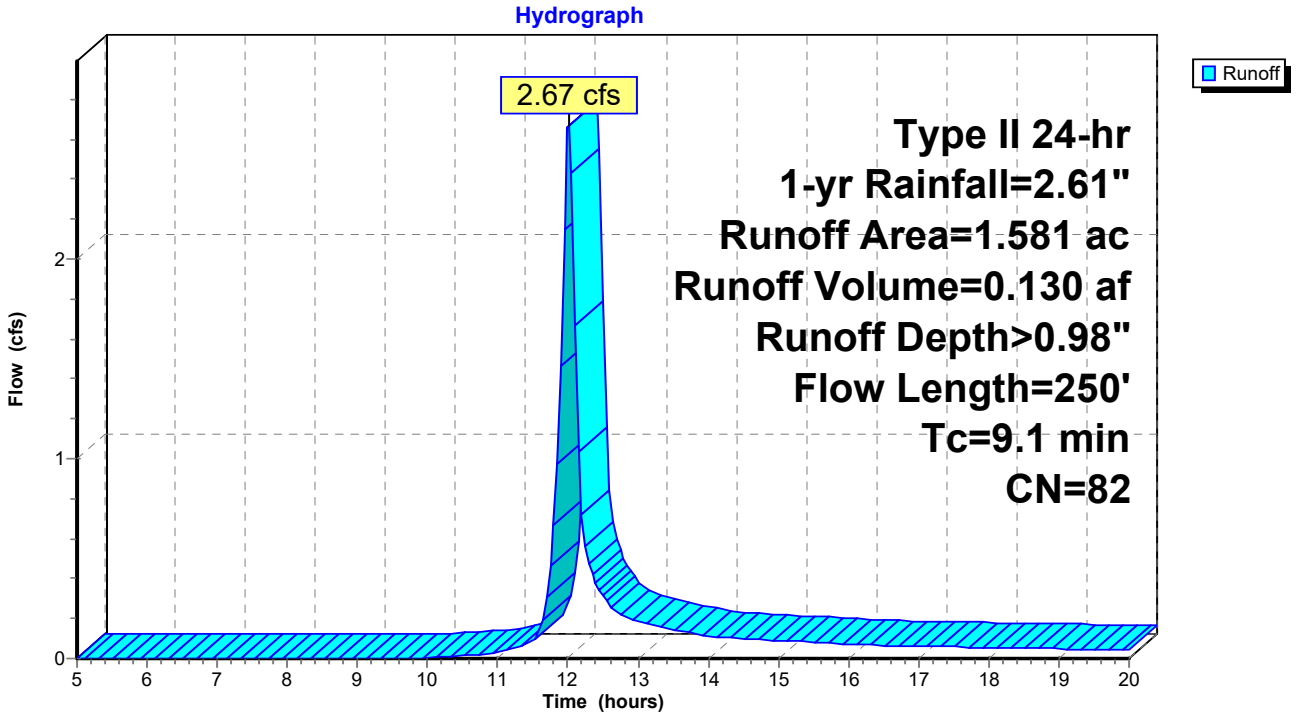
Runoff = 2.67 cfs @ 12.01 hrs, Volume= 0.130 af, Depth> 0.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=2.61"

	Area (ac)	CN	Description
	0.083	94	Fallow, bare soil, HSG D
*	0.170	96	PR Gravel surface, HSG D
	0.390	77	Woods, Good, HSG D
*	0.014	96	EX Gravel surface, HSG D
	0.878	80	>75% Grass cover, Good, HSG D
	0.046	98	Water Surface, HSG D
	1.581	82	Weighted Average
	1.535		97.09% Pervious Area
	0.046		2.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	55	0.0350	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.16"
1.1	75	0.0667	1.14	3.41	**Channel Flow,** Area= 3.0 sf Perim= 5.0' r= 0.60' n= 0.240 Sheet flow over Dense Grass
0.9	120	0.1830	2.14		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.1	250	Total			

Subcatchment PR-2A:



Summary for Subcatchment PR-2B:

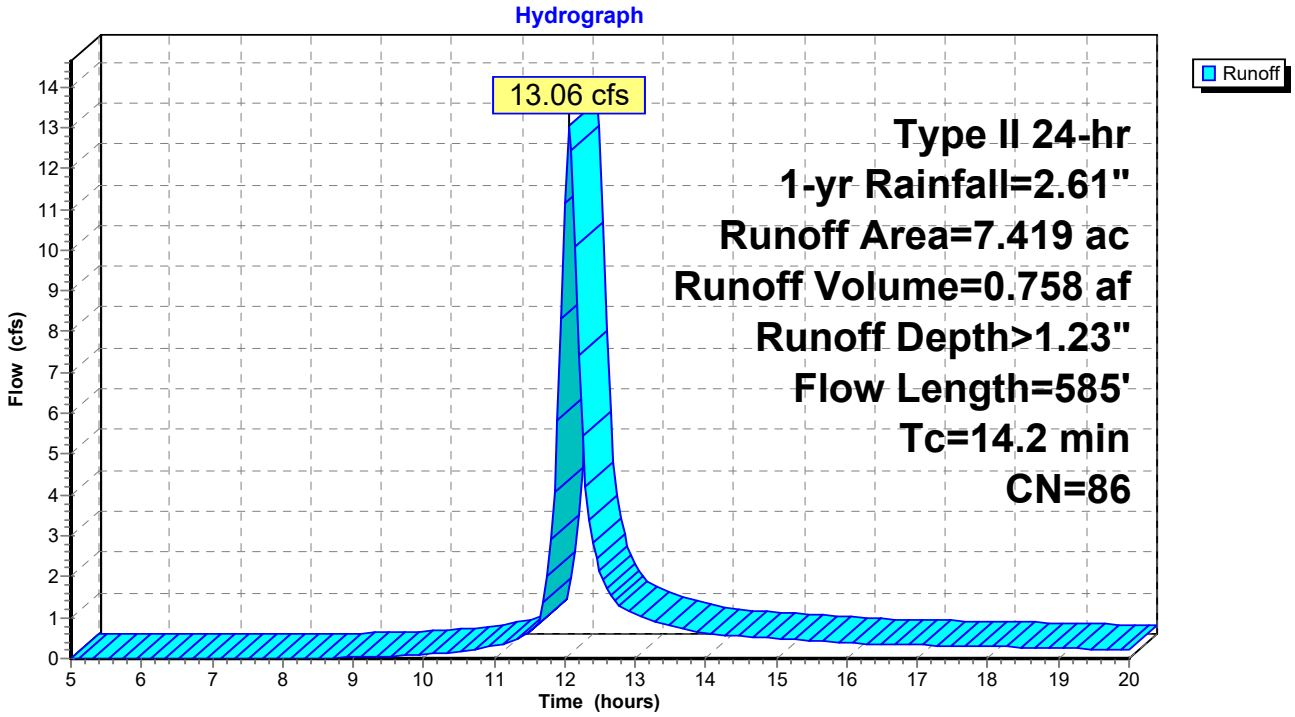
Runoff = 13.06 cfs @ 12.06 hrs, Volume= 0.758 af, Depth> 1.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=2.61"

	Area (ac)	CN	Description
	0.361	94	Fallow, bare soil, HSG D
*	2.733	96	PR Gravel surface, HSG D
*	0.115	96	EX Gravel surface, HSG D
	2.733	77	Woods, Good, HSG D
	1.443	80	>75% Grass cover, Good, HSG D
	0.034	98	Water Surface, HSG D
	7.419	86	Weighted Average
	7.385		99.54% Pervious Area
	0.034		0.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.5	65	0.0410	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.16"
0.1	15	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	80	0.0750	1.92		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	20	0.0200	6.42	5.04	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
1.5	240	0.1460	2.67		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	125	0.1000	16.65	20.43	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
0.2	40	0.4000	3.16		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.2	585	Total			

Subcatchment PR-2B:



Summary for Subcatchment PR-2C:

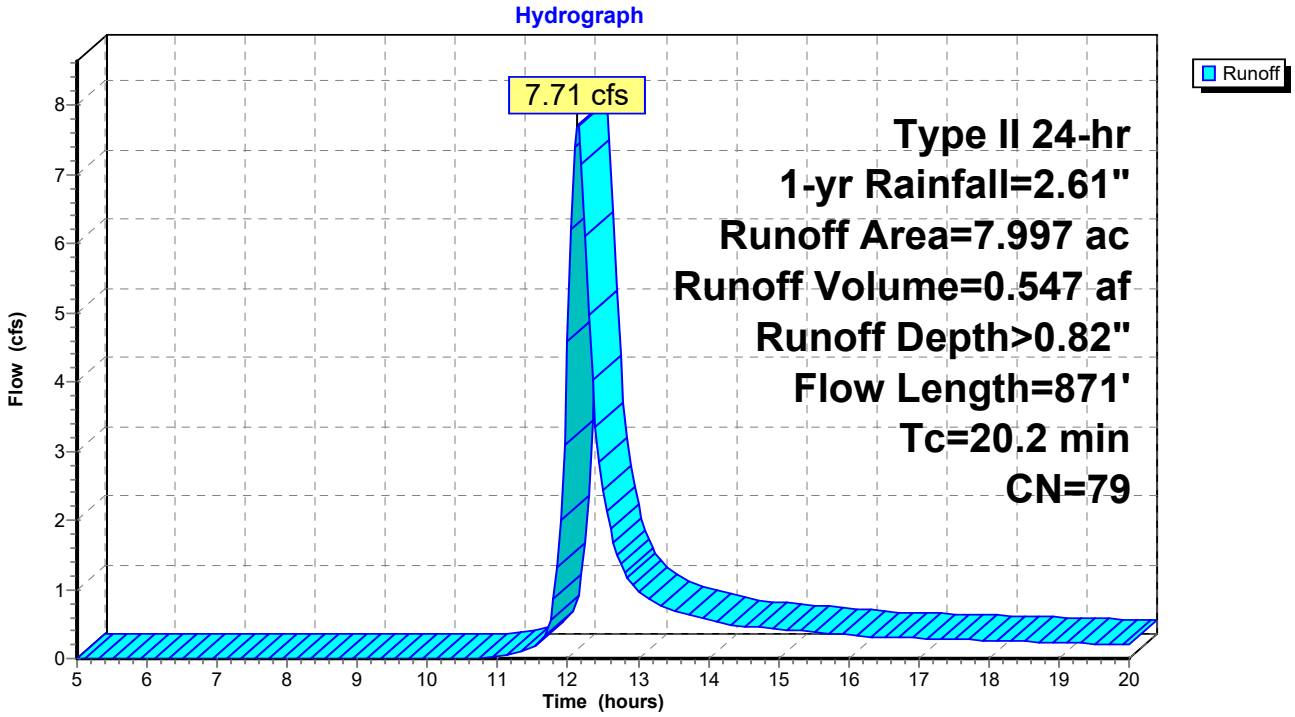
Runoff = 7.71 cfs @ 12.14 hrs, Volume= 0.547 af, Depth> 0.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=2.61"

	Area (ac)	CN	Description
	0.047	98	Unconnected roofs, HSG D
	0.565	96	Gravel surface, HSG D
*	0.185	96	EX Gravel surface, HSG D
	6.450	77	Woods, Good, HSG D
	0.717	80	>75% Grass cover, Good, HSG D
	0.033	94	Fallow, bare soil, HSG D
	7.997	79	Weighted Average
	7.950		99.41% Pervious Area
	0.047		0.59% Impervious Area
	0.047		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	100	0.0600	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.16"
2.5	305	0.1640	2.02		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.4	311	0.0960	2.17		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	125	0.0960	1.55		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	30	0.0200	7.44	9.14	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
20.2	871	Total			

Subcatchment PR-2C:



Summary for Reach R-1:

[79] Warning: Submerged Pond P-2A Primary device # 2 OUTLET by 0.08'

Inflow Area = 1.581 ac, 2.91% Impervious, Inflow Depth > 0.93" for 1-yr event
Inflow = 0.27 cfs @ 12.59 hrs, Volume= 0.122 af
Outflow = 0.26 cfs @ 13.23 hrs, Volume= 0.118 af, Atten= 1%, Lag= 38.3 min

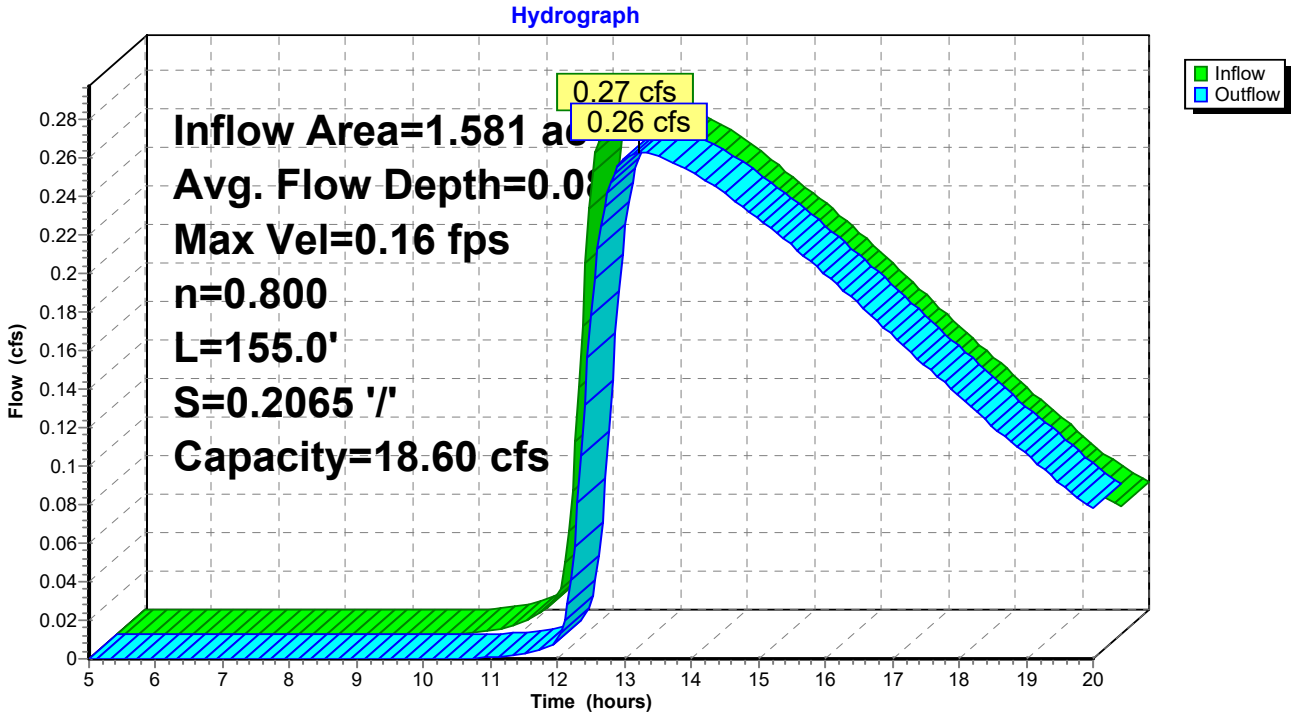
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.16 fps, Min. Travel Time= 16.4 min
Avg. Velocity = 0.11 fps, Avg. Travel Time= 22.6 min

Peak Storage= 259 cf @ 12.96 hrs
Average Depth at Peak Storage= 0.08'
Bank-Full Depth= 1.00' Flow Area= 25.0 sf, Capacity= 18.60 cfs

20.00' x 1.00' deep channel, n= 0.800 Sheet flow: Woods+dense brush
Side Slope Z-value= 5.0 '/' Top Width= 30.00'
Length= 155.0' Slope= 0.2065 '/'
Inlet Invert= 188.00', Outlet Invert= 156.00'

‡

Reach R-1:



Summary for Pond P-1:

Inflow Area = 1.773 ac, 5.19% Impervious, Inflow Depth > 0.99" for 1-yr event
Inflow = 3.33 cfs @ 11.98 hrs, Volume= 0.146 af
Outflow = 0.19 cfs @ 13.11 hrs, Volume= 0.109 af, Atten= 94%, Lag= 67.9 min
Primary = 0.19 cfs @ 13.11 hrs, Volume= 0.109 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Starting Elev= 222.00' Surf.Area= 4,064 sf Storage= 10,662 cf
Peak Elev= 222.76' @ 13.11 hrs Surf.Area= 4,964 sf Storage= 14,092 cf (3,430 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 140.6 min (938.2 - 797.6)

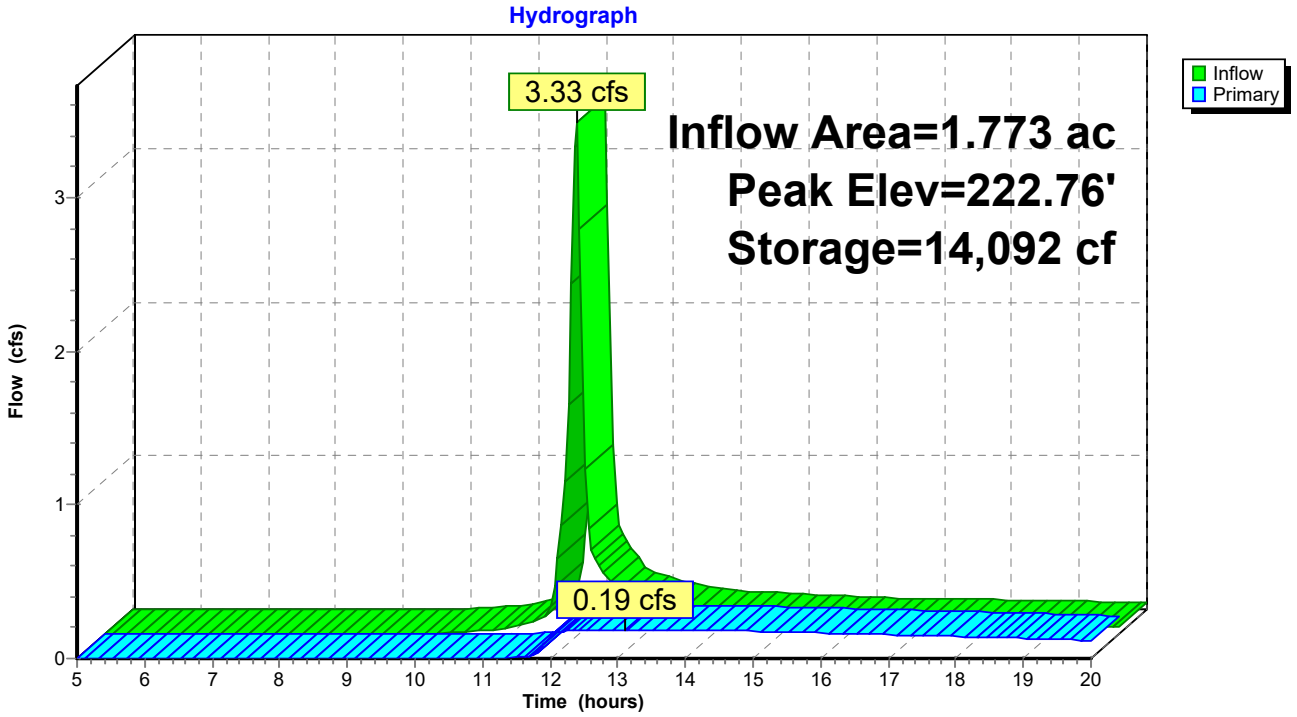
Volume	Invert	Avail.Storage	Storage Description
#1	218.00'	36,659 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
218.00	1,330	0	0
220.00	2,634	3,964	3,964
222.00	4,064	6,698	10,662
224.00	6,432	10,496	21,158
226.00	9,069	15,501	36,659

Device	Routing	Invert	Outlet Devices
#1	Primary	225.00'	**10.0' long x 4.0' 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 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Primary	222.00'	**18.0" Round Culvert** L= 40.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 222.00' / 221.20' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#3	Device 2	222.00'	**3.0" Vert. Orifice/Grate** C= 0.600
#4	Device 2	222.80'	**18.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 2	225.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.19 cfs @ 13.11 hrs HW=222.76' (Free Discharge)
- **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
- **2=Culvert** (Passes 0.19 cfs of 2.67 cfs potential flow)
  - **3=Orifice/Grate** (Orifice Controls 0.19 cfs @ 3.84 fps)
  - **4=Orifice/Grate** (Controls 0.00 cfs)
  - **5=Orifice/Grate** (Controls 0.00 cfs)

Pond P-1:


Hydrograph
3.33 cfs
0.19 cfs
Inflow Area=1.773 ac
Peak Elev=222.76'
Storage=14,092 cf
Inflow
Primary
Flow (cfs)
0
1
2
3
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
Time (hours)

Summary for Pond P-2A:

Inflow Area = 1.581 ac, 2.91% Impervious, Inflow Depth > 0.98" for 1-yr event
Inflow = 2.67 cfs @ 12.01 hrs, Volume= 0.130 af
Outflow = 0.27 cfs @ 12.59 hrs, Volume= 0.122 af, Atten= 90%, Lag= 35.0 min
Primary = 0.27 cfs @ 12.59 hrs, Volume= 0.122 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Starting Elev= 193.00' Surf.Area= 1,588 sf Storage= 2,943 cf
Peak Elev= 194.39' @ 12.59 hrs Surf.Area= 2,332 sf Storage= 5,618 cf (2,675 cf above start)

Plug-Flow detention time= 316.0 min calculated for 0.054 af (42% of inflow)
Center-of-Mass det. time= 105.3 min (905.3 - 800.0)

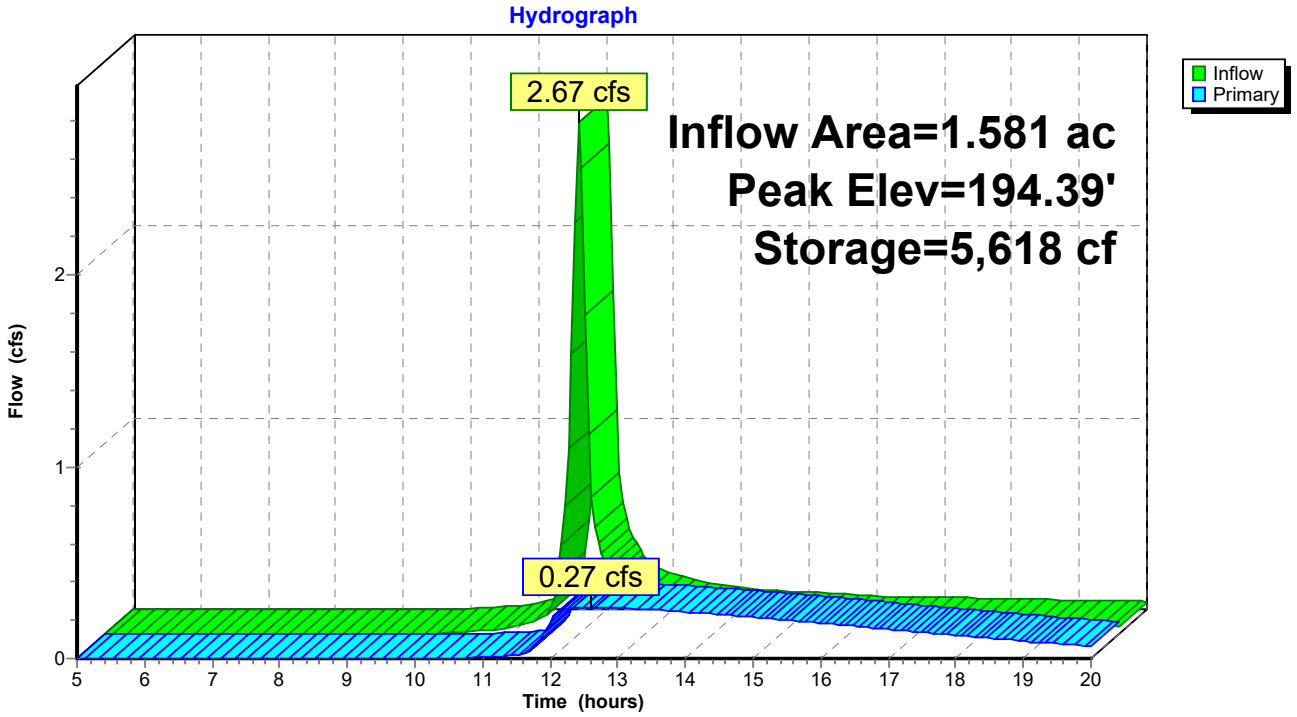
Volume	Invert	Avail.Storage	Storage Description
#1	190.00'	30,964 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
190.00	483	0	0
192.00	1,111	1,594	1,594
194.00	2,064	3,175	4,769
196.00	3,452	5,516	10,285
198.00	5,104	8,556	18,841
200.00	7,019	12,123	30,964

Device	Routing	Invert	Outlet Devices
#1	Primary	199.50'	**20.0' long x 6.0' 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 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#2	Primary	193.00'	**15.0" Round Culvert** L= 40.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 193.00' / 188.00' S= 0.1250 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#3	Device 2	193.00'	**3.0" Vert. Orifice/Grate** C= 0.600
#4	Device 2	199.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.27 cfs @ 12.59 hrs HW=194.39' (Free Discharge)
- **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
- **2=Culvert** (Passes 0.27 cfs of 5.15 cfs potential flow)
  - **3=Orifice/Grate** (Orifice Controls 0.27 cfs @ 5.41 fps)
  - **4=Orifice/Grate** (Controls 0.00 cfs)

Pond P-2A:


Hydrograph
2.67 cfs
0.27 cfs
Inflow Area=1.581 ac
Peak Elev=194.39'
Storage=5,618 cf
Inflow
Primary
Flow (cfs)
0
1
2
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
Time (hours)

Summary for Pond P-2B:

Inflow Area = 7.419 ac, 0.46% Impervious, Inflow Depth > 1.23" for 1-yr event
Inflow = 13.06 cfs @ 12.06 hrs, Volume= 0.758 af
Outflow = 0.97 cfs @ 13.14 hrs, Volume= 0.625 af, Atten= 93%, Lag= 64.5 min
Primary = 0.97 cfs @ 13.14 hrs, Volume= 0.625 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 156.78' @ 13.14 hrs Surf.Area= 6,248 sf Storage= 17,242 cf

Plug-Flow detention time= 189.3 min calculated for 0.625 af (82% of inflow)
Center-of-Mass det. time= 138.6 min (931.6 - 793.0)

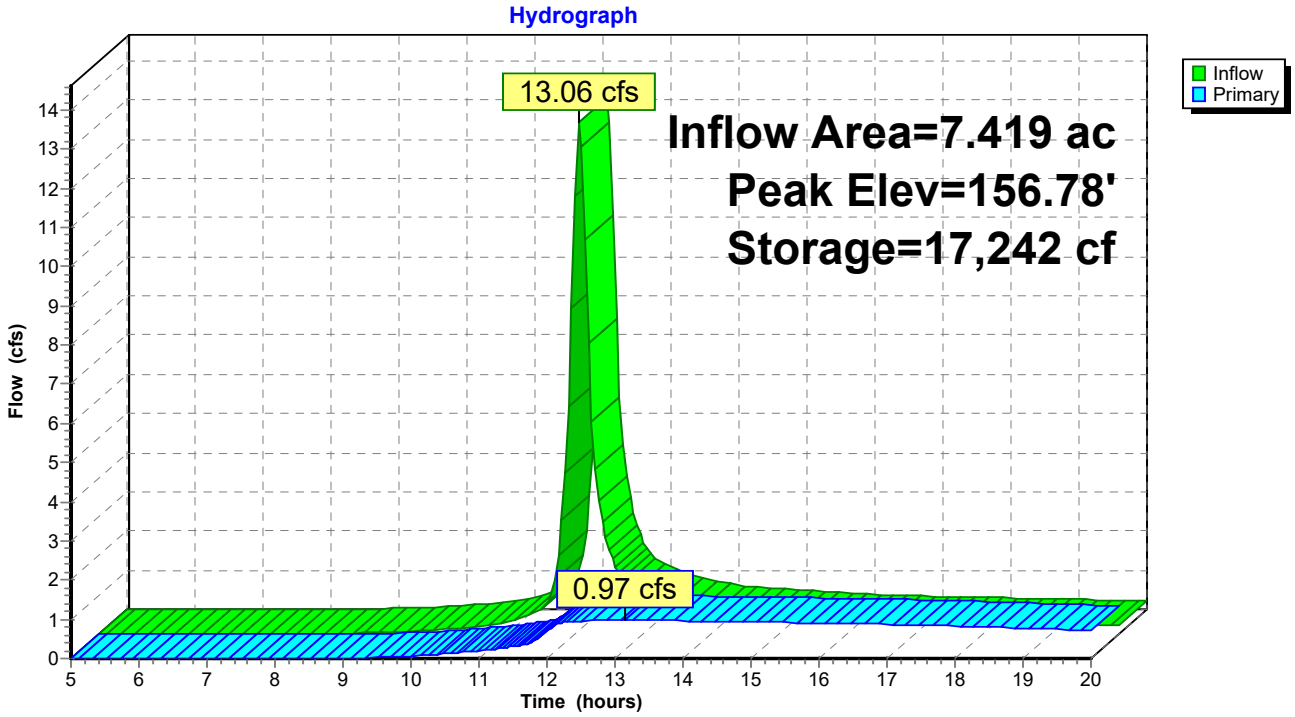
Volume	Invert	Avail.Storage	Storage Description
#1	151.30'	71,804 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
151.30	670	0	0
152.00	1,274	680	680
154.00	2,870	4,144	4,824
156.00	5,119	7,989	12,813
158.00	8,018	13,137	25,950
160.00	11,379	19,397	45,347
162.00	15,078	26,457	71,804

Device	Routing	Invert	Outlet Devices
#1	Primary	161.50'	**20.0' long x 6.0' 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 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#2	Primary	151.30'	**24.0" Round Culvert** L= 60.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.30' / 151.10' S= 0.0033 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#3	Device 2	151.30'	**4.0" Vert. Orifice/Grate** C= 0.600
#4	Device 2	156.80'	**22.0" W x 5.0" H Vert. Orifice/Grate X 2.00** C= 0.600
#5	Device 2	161.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.97 cfs @ 13.14 hrs HW=156.78' (Free Discharge)
- **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
- **2=Culvert** (Passes 0.97 cfs of 32.01 cfs potential flow)
  - **3=Orifice/Grate** (Orifice Controls 0.97 cfs @ 11.10 fps)
  - **4=Orifice/Grate** (Controls 0.00 cfs)
  - **5=Orifice/Grate** (Controls 0.00 cfs)

Pond P-2B:


Hydrograph
13.06 cfs
0.97 cfs
Inflow Area=7.419 ac
Peak Elev=156.78'
Storage=17,242 cf
Inflow
Primary
Flow (cfs)
Time (hours)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

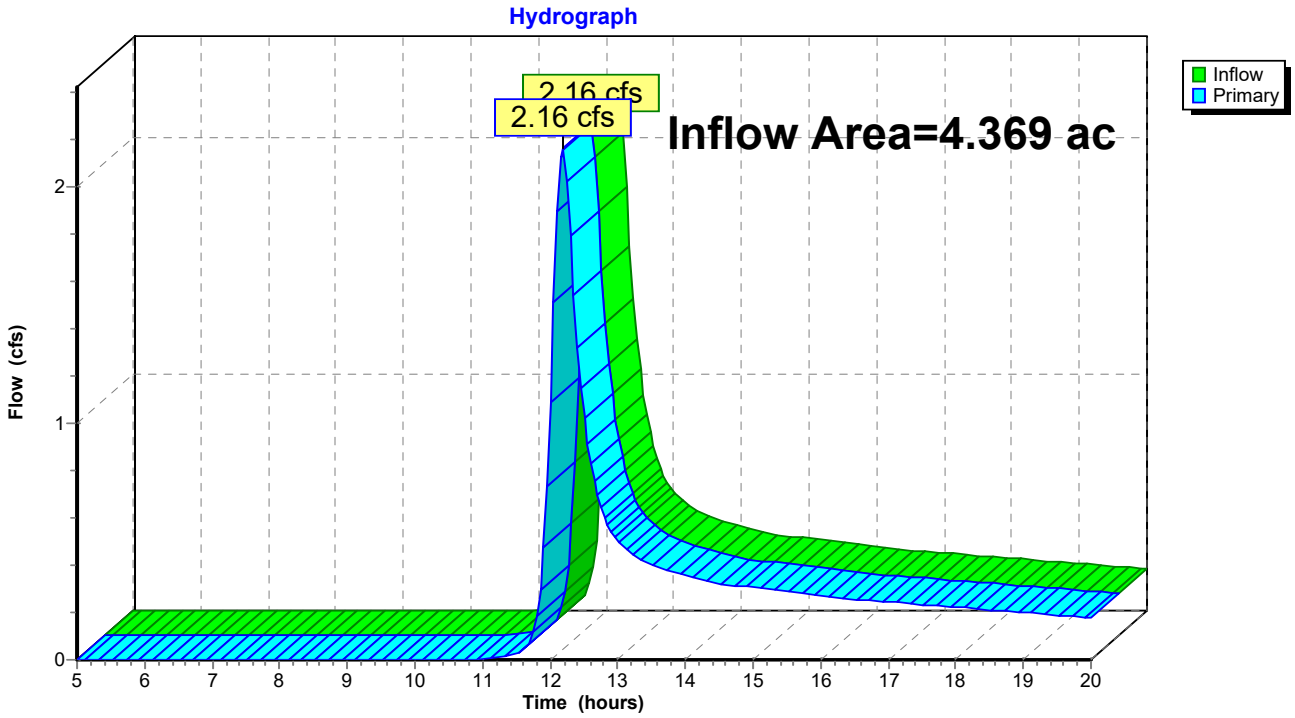
Summary for Pond SDP-1:

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

Inflow Area = 4.369 ac, 2.11% Impervious, Inflow Depth > 0.73" for 1-yr event
Inflow = 2.16 cfs @ 12.18 hrs, Volume= 0.266 af
Primary = 2.16 cfs @ 12.18 hrs, Volume= 0.266 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond SDP-1:



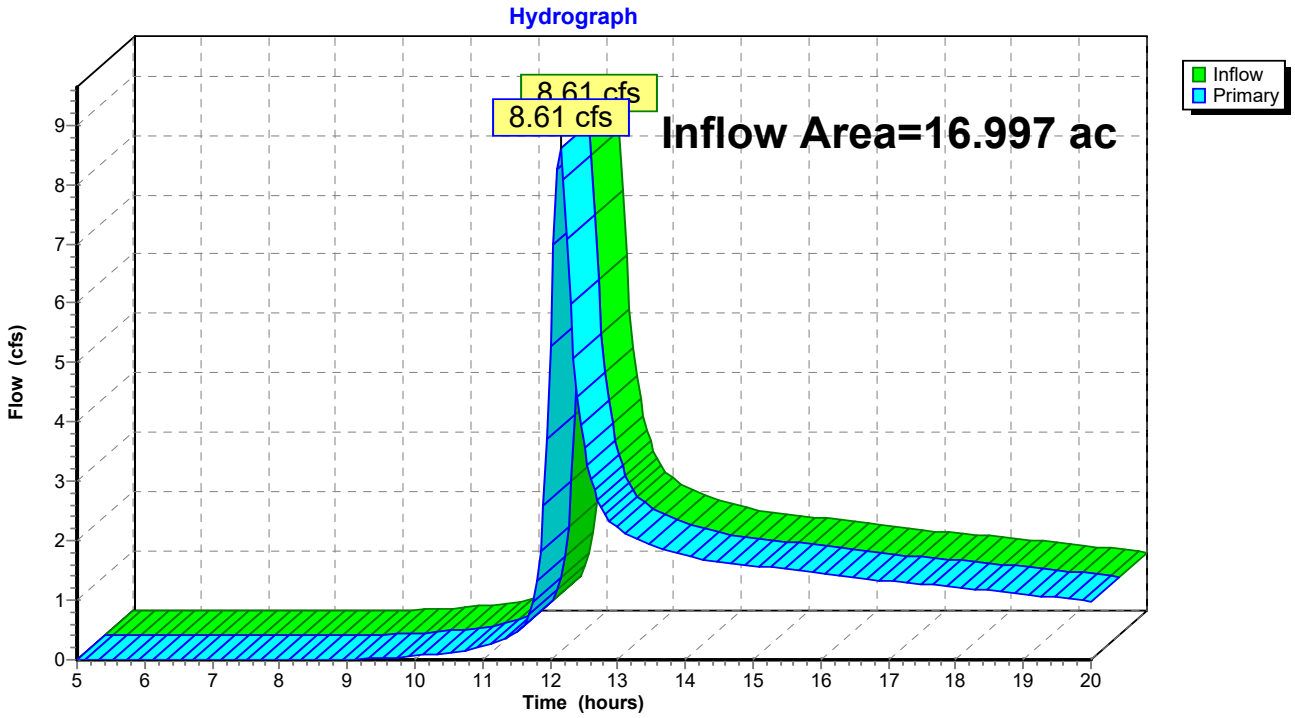
Summary for Pond SDP-2:

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

Inflow Area = 16.997 ac, 0.75% Impervious, Inflow Depth > 0.91" for 1-yr event
Inflow = 8.61 cfs @ 12.15 hrs, Volume= 1.289 af
Primary = 8.61 cfs @ 12.15 hrs, Volume= 1.289 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond SDP-2:



Summary for Subcatchment PR-1A:

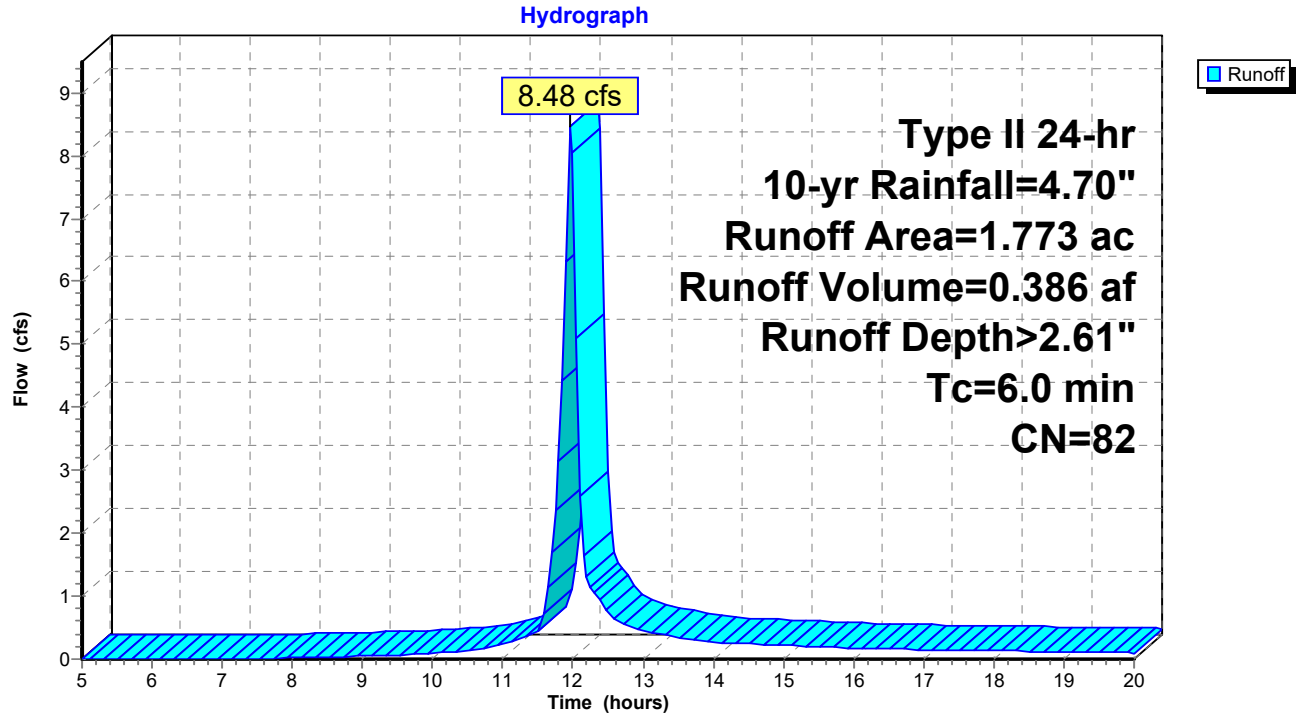
Runoff = 8.48 cfs @ 11.97 hrs, Volume= 0.386 af, Depth> 2.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=4.70"

Area (ac)	CN	Description
0.177	96	Gravel surface, HSG D
1.160	80	>75% Grass cover, Good, HSG D
0.069	94	Fallow, bare soil, HSG D
0.092	98	Water Surface, HSG D
0.275	70	Woods, Good, HSG C
1.773	82	Weighted Average
1.681		94.81% Pervious Area
0.092		5.19% Impervious Area

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

Subcatchment PR-1A:



Summary for Subcatchment PR-1B:

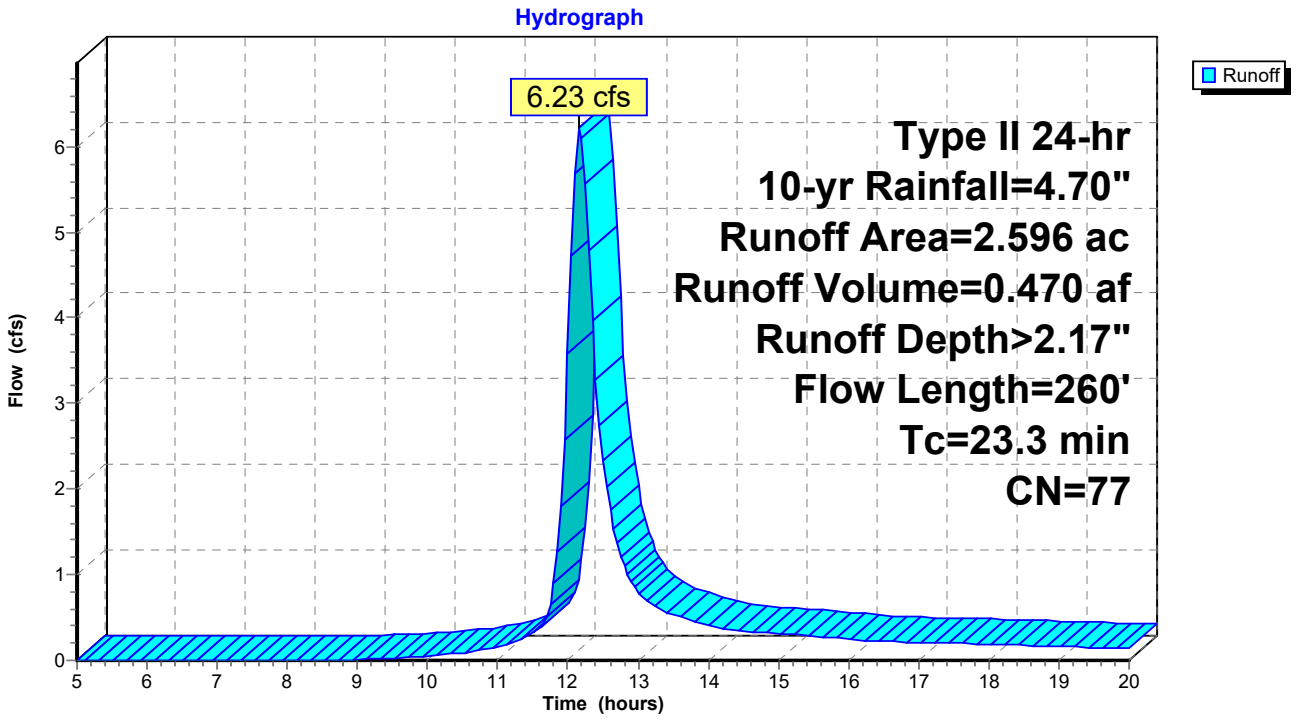
Runoff = 6.23 cfs @ 12.17 hrs, Volume= 0.470 af, Depth> 2.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=4.70"

Area (ac)	CN	Description
2.496	77	Woods, Good, HSG D
0.100	80	>75% Grass cover, Good, HSG D
2.596	77	Weighted Average
2.596		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.6	100	0.0200	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.16"
1.7	160	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.3	260	Total			

Subcatchment PR-1B:



Summary for Subcatchment PR-2A:

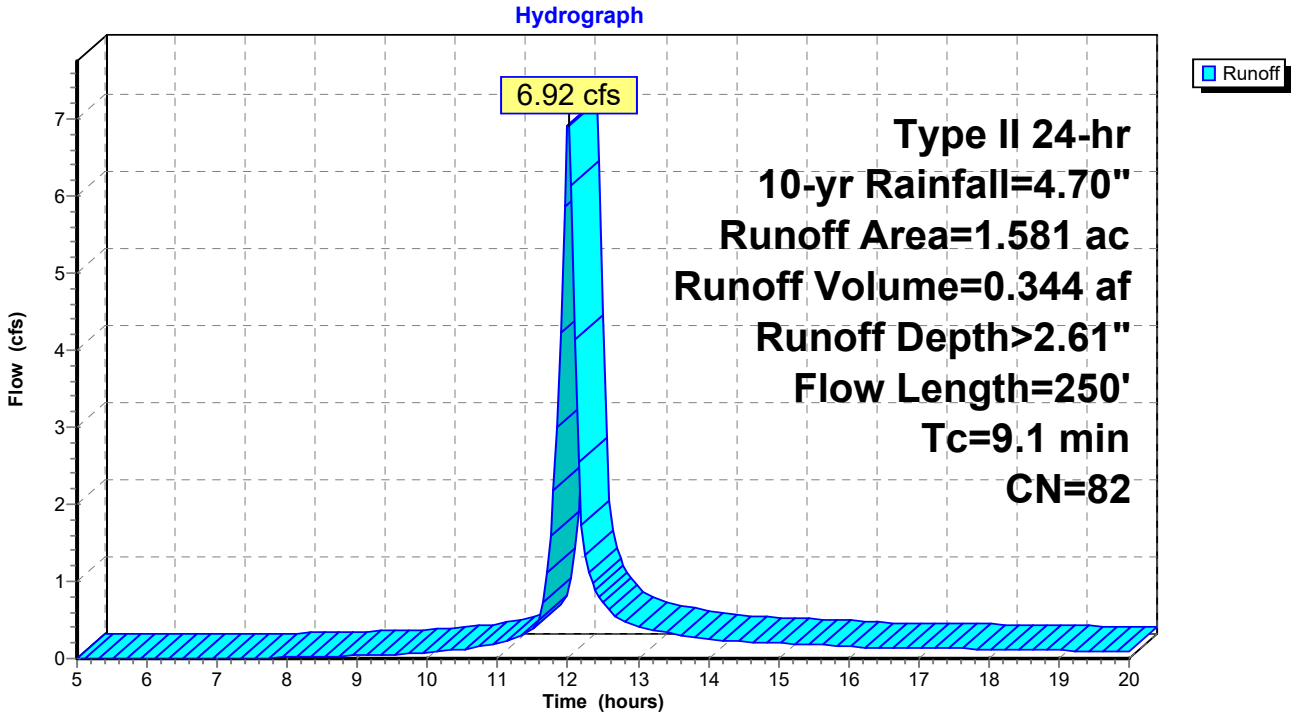
Runoff = 6.92 cfs @ 12.00 hrs, Volume= 0.344 af, Depth> 2.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=4.70"

	Area (ac)	CN	Description
	0.083	94	Fallow, bare soil, HSG D
*	0.170	96	PR Gravel surface, HSG D
	0.390	77	Woods, Good, HSG D
*	0.014	96	EX Gravel surface, HSG D
	0.878	80	>75% Grass cover, Good, HSG D
	0.046	98	Water Surface, HSG D
	1.581	82	Weighted Average
	1.535		97.09% Pervious Area
	0.046		2.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	55	0.0350	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.16"
1.1	75	0.0667	1.14	3.41	**Channel Flow,** Area= 3.0 sf Perim= 5.0' r= 0.60' n= 0.240 Sheet flow over Dense Grass
0.9	120	0.1830	2.14		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.1	250	Total			

Subcatchment PR-2A:



Summary for Subcatchment PR-2B:

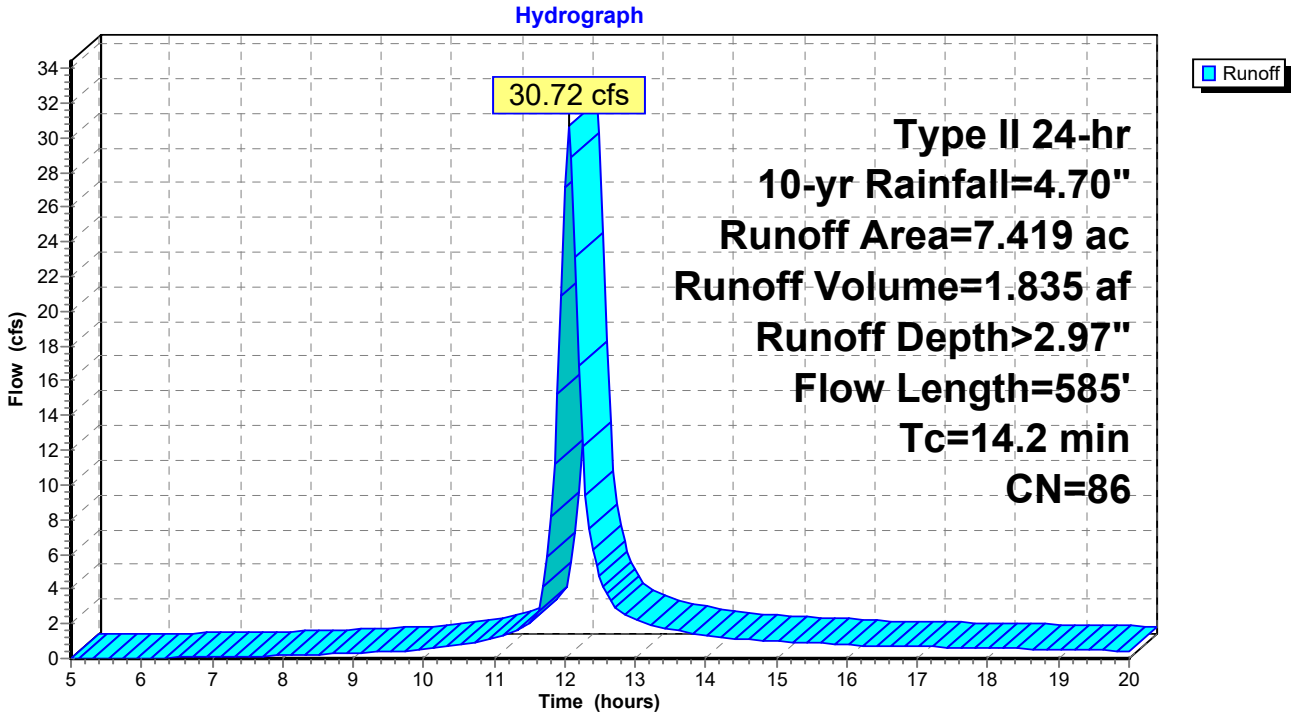
Runoff = 30.72 cfs @ 12.06 hrs, Volume= 1.835 af, Depth> 2.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=4.70"

	Area (ac)	CN	Description
	0.361	94	Fallow, bare soil, HSG D
*	2.733	96	PR Gravel surface, HSG D
*	0.115	96	EX Gravel surface, HSG D
	2.733	77	Woods, Good, HSG D
	1.443	80	>75% Grass cover, Good, HSG D
	0.034	98	Water Surface, HSG D
	7.419	86	Weighted Average
	7.385		99.54% Pervious Area
	0.034		0.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.5	65	0.0410	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.16"
0.1	15	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	80	0.0750	1.92		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	20	0.0200	6.42	5.04	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
1.5	240	0.1460	2.67		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	125	0.1000	16.65	20.43	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
0.2	40	0.4000	3.16		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.2	585	Total			

Subcatchment PR-2B:



Summary for Subcatchment PR-2C:

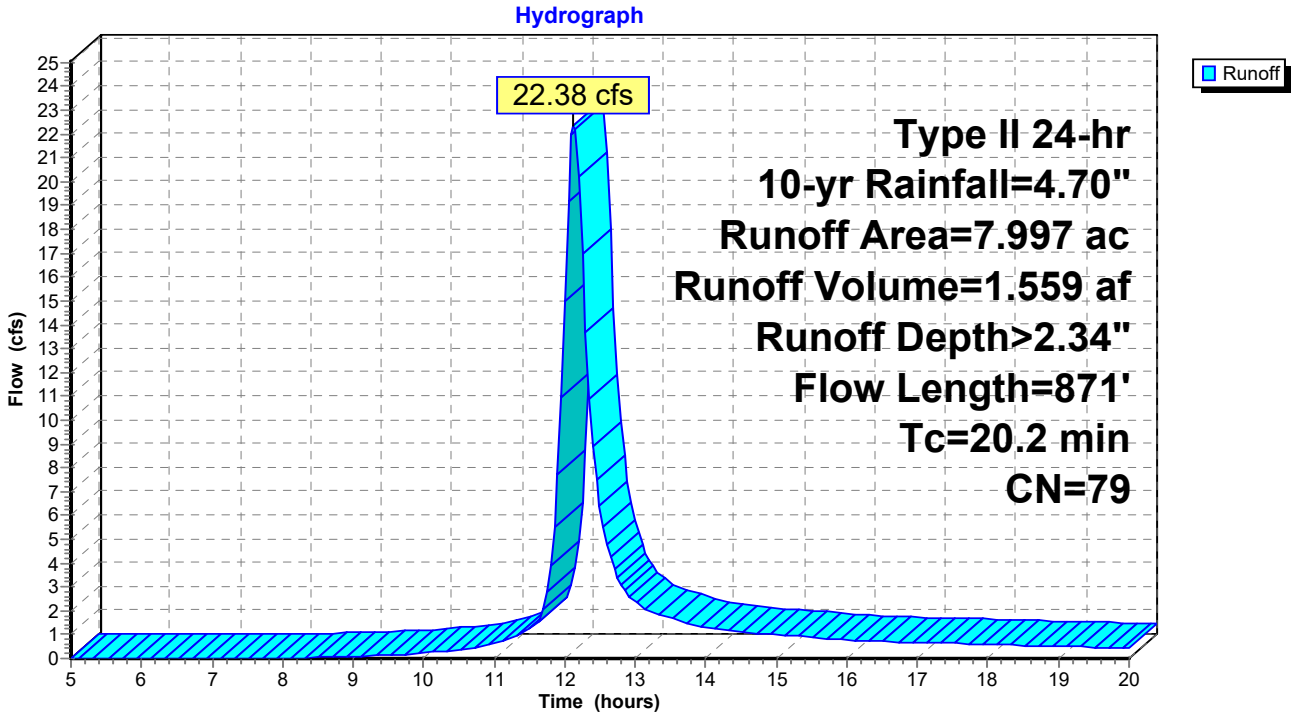
Runoff = 22.38 cfs @ 12.13 hrs, Volume= 1.559 af, Depth> 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=4.70"

	Area (ac)	CN	Description
	0.047	98	Unconnected roofs, HSG D
	0.565	96	Gravel surface, HSG D
*	0.185	96	EX Gravel surface, HSG D
	6.450	77	Woods, Good, HSG D
	0.717	80	>75% Grass cover, Good, HSG D
	0.033	94	Fallow, bare soil, HSG D
	7.997	79	Weighted Average
	7.950		99.41% Pervious Area
	0.047		0.59% Impervious Area
	0.047		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	100	0.0600	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.16"
2.5	305	0.1640	2.02		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.4	311	0.0960	2.17		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	125	0.0960	1.55		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	30	0.0200	7.44	9.14	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
20.2	871	Total			

Subcatchment PR-2C:



Summary for Reach R-1:

[79] Warning: Submerged Pond P-2A Primary device # 2 OUTLET by 0.11'

Inflow Area = 1.581 ac, 2.91% Impervious, Inflow Depth > 2.03" for 10-yr event
Inflow = 0.42 cfs @ 13.02 hrs, Volume= 0.268 af
Outflow = 0.42 cfs @ 13.43 hrs, Volume= 0.256 af, Atten= 0%, Lag= 24.6 min

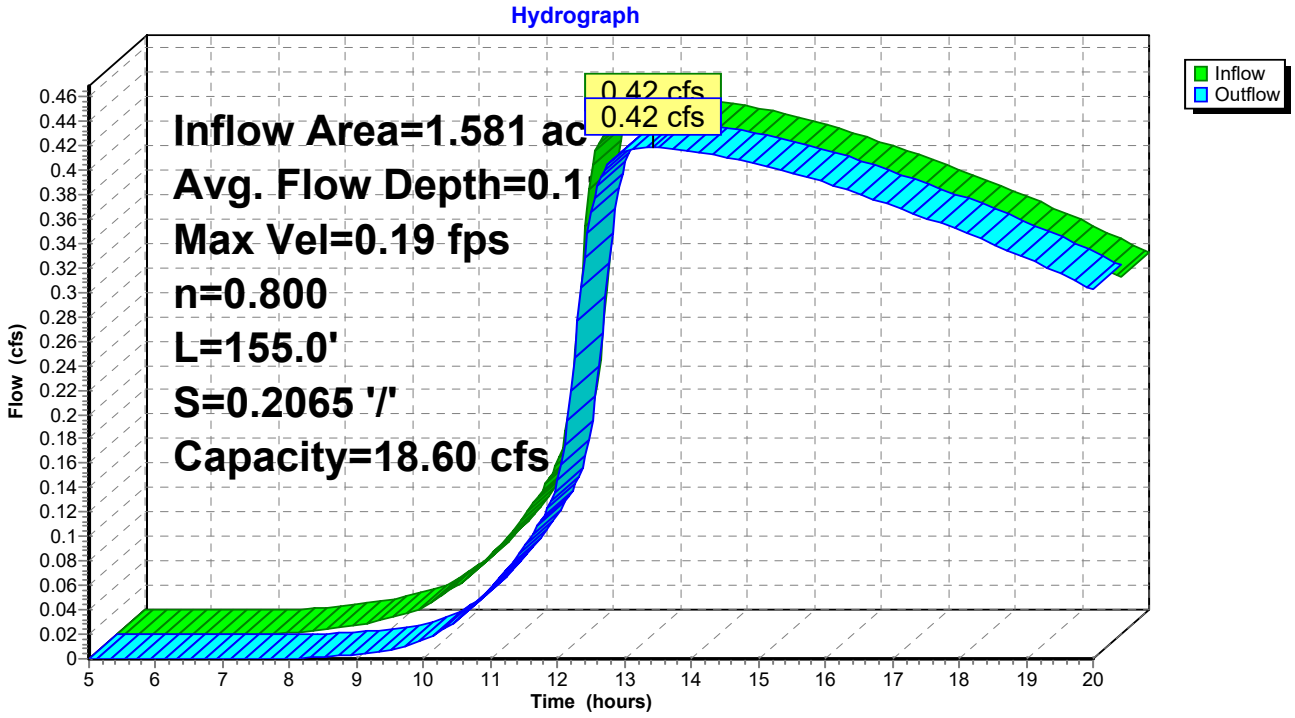
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.19 fps, Min. Travel Time= 13.7 min
Avg. Velocity = 0.14 fps, Avg. Travel Time= 19.1 min

Peak Storage= 344 cf @ 13.20 hrs
Average Depth at Peak Storage= 0.11'
Bank-Full Depth= 1.00' Flow Area= 25.0 sf, Capacity= 18.60 cfs

20.00' x 1.00' deep channel, n= 0.800 Sheet flow: Woods+dense brush
Side Slope Z-value= 5.0 '/' Top Width= 30.00'
Length= 155.0' Slope= 0.2065 '/'
Inlet Invert= 188.00', Outlet Invert= 156.00'

‡

Reach R-1:



Summary for Pond P-1:

Inflow Area = 1.773 ac, 5.19% Impervious, Inflow Depth > 2.61" for 10-yr event
Inflow = 8.48 cfs @ 11.97 hrs, Volume= 0.386 af
Outflow = 2.11 cfs @ 12.13 hrs, Volume= 0.318 af, Atten= 75%, Lag= 9.4 min
Primary = 2.11 cfs @ 12.13 hrs, Volume= 0.318 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Starting Elev= 222.00' Surf.Area= 4,064 sf Storage= 10,662 cf
Peak Elev= 223.55' @ 12.13 hrs Surf.Area= 5,897 sf Storage= 18,373 cf (7,711 cf above start)

Plug-Flow detention time= 389.1 min calculated for 0.074 af (19% of inflow)
Center-of-Mass det. time= 62.6 min (839.3 - 776.7)

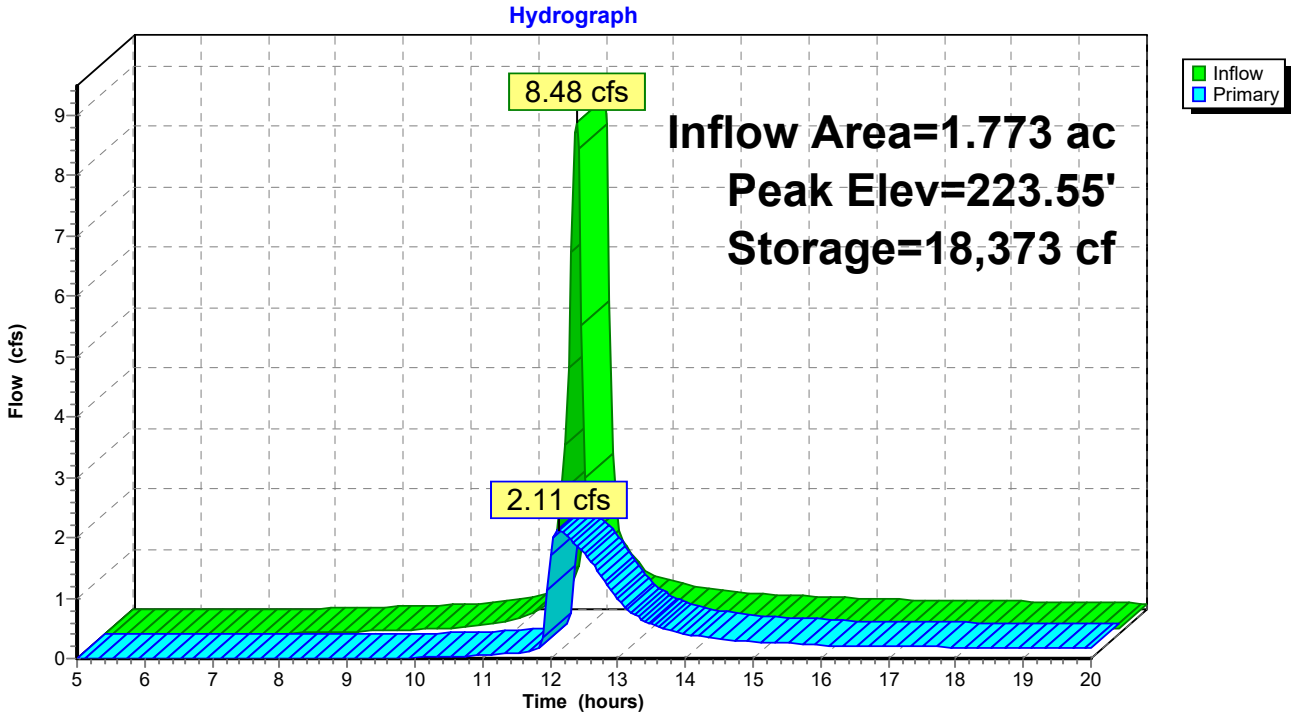
Volume	Invert	Avail.Storage	Storage Description
#1	218.00'	36,659 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
218.00	1,330	0	0
220.00	2,634	3,964	3,964
222.00	4,064	6,698	10,662
224.00	6,432	10,496	21,158
226.00	9,069	15,501	36,659

Device	Routing	Invert	Outlet Devices
#1	Primary	225.00'	**10.0' long x 4.0' 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 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Primary	222.00'	**18.0" Round Culvert** L= 40.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 222.00' / 221.20' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#3	Device 2	222.00'	**3.0" Vert. Orifice/Grate** C= 0.600
#4	Device 2	222.80'	**18.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 2	225.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.11 cfs @ 12.13 hrs HW=223.55' (Free Discharge)
- **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
- **2=Culvert** (Passes 2.11 cfs of 7.59 cfs potential flow)
  - **3=Orifice/Grate** (Orifice Controls 0.28 cfs @ 5.74 fps)
  - **4=Orifice/Grate** (Orifice Controls 1.83 cfs @ 3.65 fps)
  - **5=Orifice/Grate** (Controls 0.00 cfs)

Pond P-1:


Hydrograph
8.48 cfs
2.11 cfs
Inflow Area=1.773 ac
Peak Elev=223.55'
Storage=18,373 cf
Inflow
Primary
Flow (cfs)
Time (hours)
0
1
2
3
4
5
6
7
8
9
5
6
7
8
9
10
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12
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Summary for Pond P-2A:

Inflow Area = 1.581 ac, 2.91% Impervious, Inflow Depth > 2.61" for 10-yr event
Inflow = 6.92 cfs @ 12.00 hrs, Volume= 0.344 af
Outflow = 0.42 cfs @ 13.02 hrs, Volume= 0.268 af, Atten= 94%, Lag= 61.1 min
Primary = 0.42 cfs @ 13.02 hrs, Volume= 0.268 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Starting Elev= 193.00' Surf.Area= 1,588 sf Storage= 2,943 cf
Peak Elev= 196.26' @ 13.02 hrs Surf.Area= 3,669 sf Storage= 11,222 cf (8,279 cf above start)

Plug-Flow detention time= 285.9 min calculated for 0.199 af (58% of inflow)
Center-of-Mass det. time= 146.5 min (925.6 - 779.2)

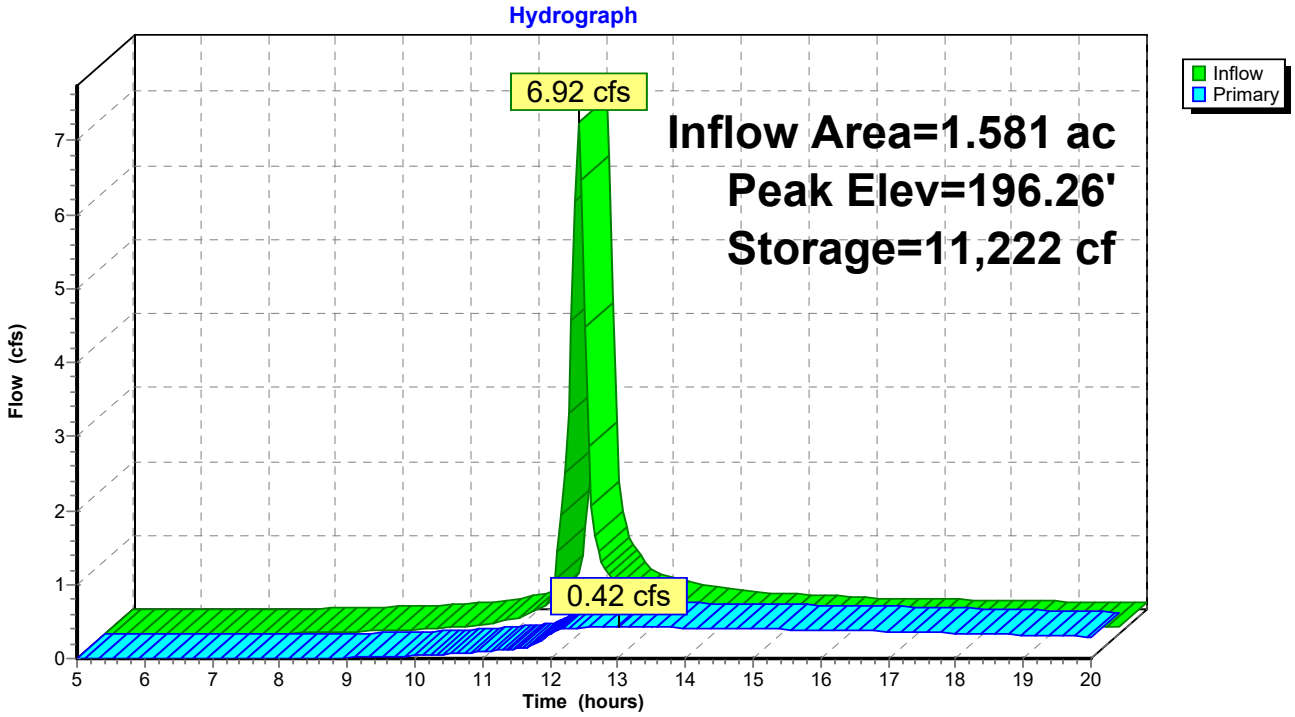
Volume	Invert	Avail.Storage	Storage Description
#1	190.00'	30,964 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
190.00	483	0	0
192.00	1,111	1,594	1,594
194.00	2,064	3,175	4,769
196.00	3,452	5,516	10,285
198.00	5,104	8,556	18,841
200.00	7,019	12,123	30,964

Device	Routing	Invert	Outlet Devices
#1	Primary	199.50'	**20.0' long x 6.0' 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 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#2	Primary	193.00'	**15.0" Round Culvert** L= 40.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 193.00' / 188.00' S= 0.1250 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#3	Device 2	193.00'	**3.0" Vert. Orifice/Grate** C= 0.600
#4	Device 2	199.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.42 cfs @ 13.02 hrs HW=196.26' (Free Discharge)
- **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
- **2=Culvert** (Passes 0.42 cfs of 9.60 cfs potential flow)
  - **3=Orifice/Grate** (Orifice Controls 0.42 cfs @ 8.53 fps)
  - **4=Orifice/Grate** (Controls 0.00 cfs)

Pond P-2A:


Hydrograph
6.92 cfs
0.42 cfs
Inflow Area=1.581 ac
Peak Elev=196.26'
Storage=11,222 cf
Inflow
Primary
Flow (cfs)
Time (hours)
0
1
2
3
4
5
6
7
5
6
7
8
9
10
11
12
13
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15
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17
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19
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Summary for Pond P-2B:

Inflow Area = 7.419 ac, 0.46% Impervious, Inflow Depth > 2.97" for 10-yr event
Inflow = 30.72 cfs @ 12.06 hrs, Volume= 1.835 af
Outflow = 10.76 cfs @ 12.28 hrs, Volume= 1.552 af, Atten= 65%, Lag= 13.1 min
Primary = 10.76 cfs @ 12.28 hrs, Volume= 1.552 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 158.72' @ 12.28 hrs Surf.Area= 9,235 sf Storage= 32,199 cf

Plug-Flow detention time= 101.0 min calculated for 1.552 af (85% of inflow)
Center-of-Mass det. time= 54.9 min (828.3 - 773.4)

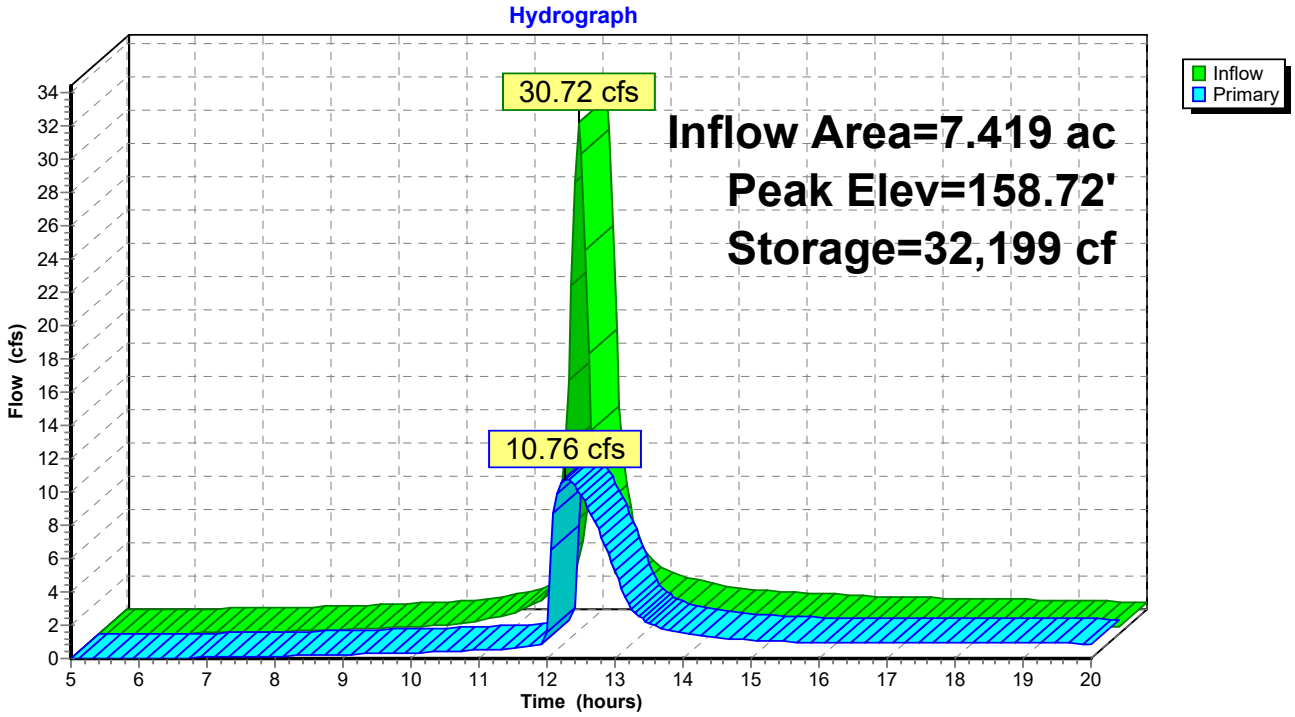
Volume	Invert	Avail.Storage	Storage Description
#1	151.30'	71,804 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
151.30	670	0	0
152.00	1,274	680	680
154.00	2,870	4,144	4,824
156.00	5,119	7,989	12,813
158.00	8,018	13,137	25,950
160.00	11,379	19,397	45,347
162.00	15,078	26,457	71,804

Device	Routing	Invert	Outlet Devices
#1	Primary	161.50'	**20.0' long x 6.0' 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 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#2	Primary	151.30'	**24.0" Round Culvert** L= 60.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.30' / 151.10' S= 0.0033 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#3	Device 2	151.30'	**4.0" Vert. Orifice/Grate** C= 0.600
#4	Device 2	156.80'	**22.0" W x 5.0" H Vert. Orifice/Grate X 2.00** C= 0.600
#5	Device 2	161.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=10.75 cfs @ 12.28 hrs HW=158.72' (Free Discharge)
- **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
- **2=Culvert** (Passes 10.75 cfs of 38.32 cfs potential flow)
  - **3=Orifice/Grate** (Orifice Controls 1.13 cfs @ 12.97 fps)
  - **4=Orifice/Grate** (Orifice Controls 9.61 cfs @ 6.29 fps)
  - **5=Orifice/Grate** (Controls 0.00 cfs)

Pond P-2B:


Hydrograph
30.72 cfs
10.76 cfs
Inflow Area=7.419 ac
Peak Elev=158.72'
Storage=32,199 cf
Inflow
Primary
Flow (cfs)
Time (hours)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
5
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7
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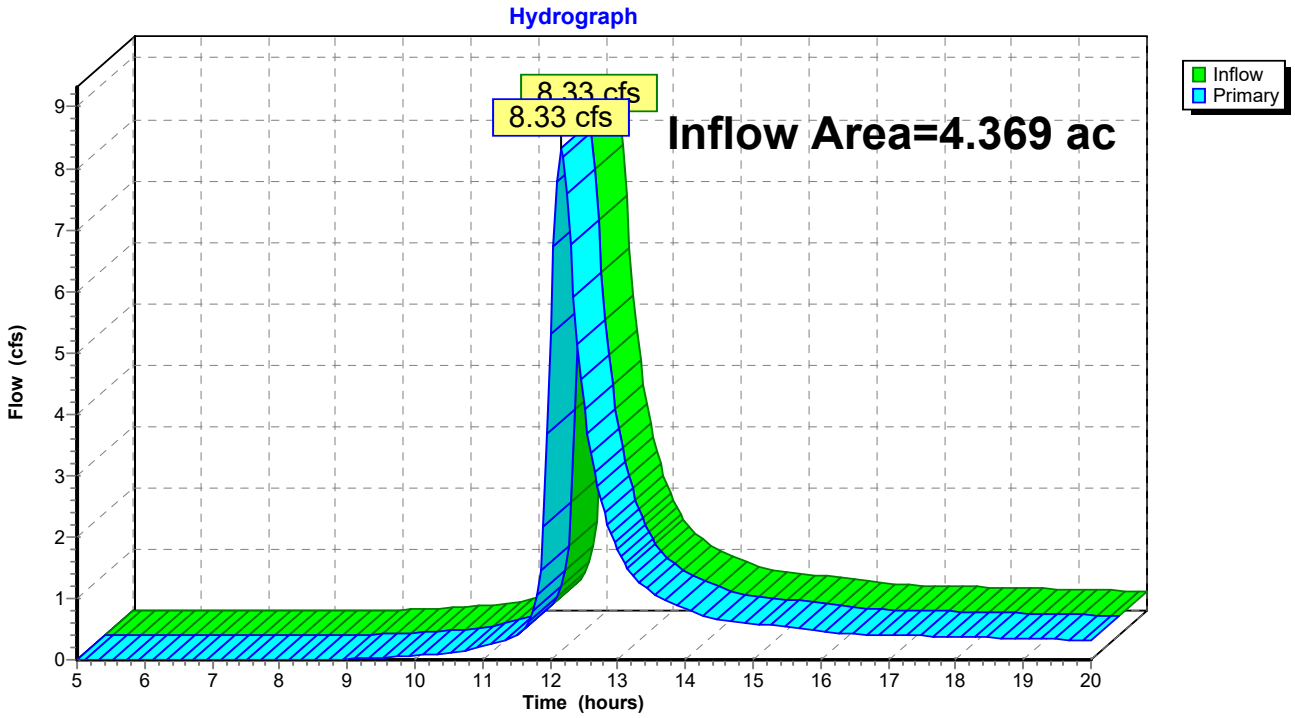
Summary for Pond SDP-1:

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

Inflow Area = 4.369 ac, 2.11% Impervious, Inflow Depth > 2.17" for 10-yr event
Inflow = 8.33 cfs @ 12.17 hrs, Volume= 0.788 af
Primary = 8.33 cfs @ 12.17 hrs, Volume= 0.788 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond SDP-1:



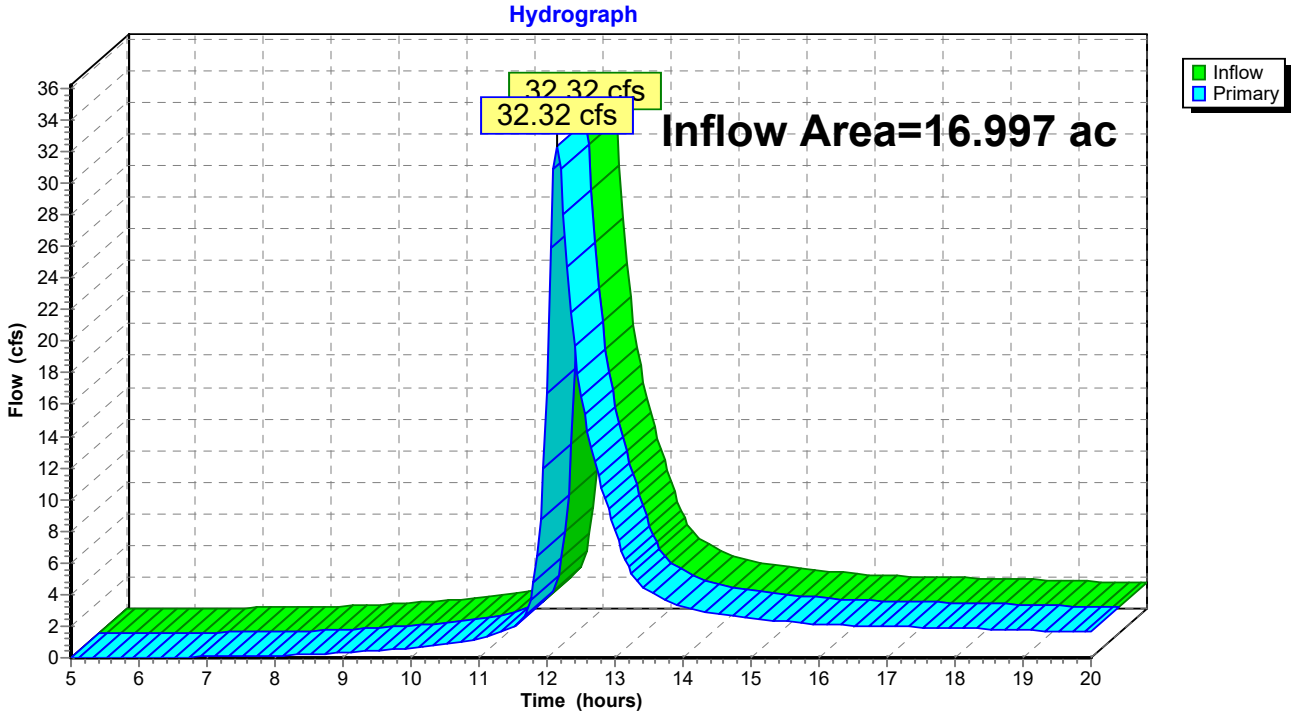
Summary for Pond SDP-2:

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

Inflow Area = 16.997 ac, 0.75% Impervious, Inflow Depth > 2.38" for 10-yr event
Inflow = 32.32 cfs @ 12.15 hrs, Volume= 3.367 af
Primary = 32.32 cfs @ 12.15 hrs, Volume= 3.367 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond SDP-2:



Summary for Subcatchment PR-1A:

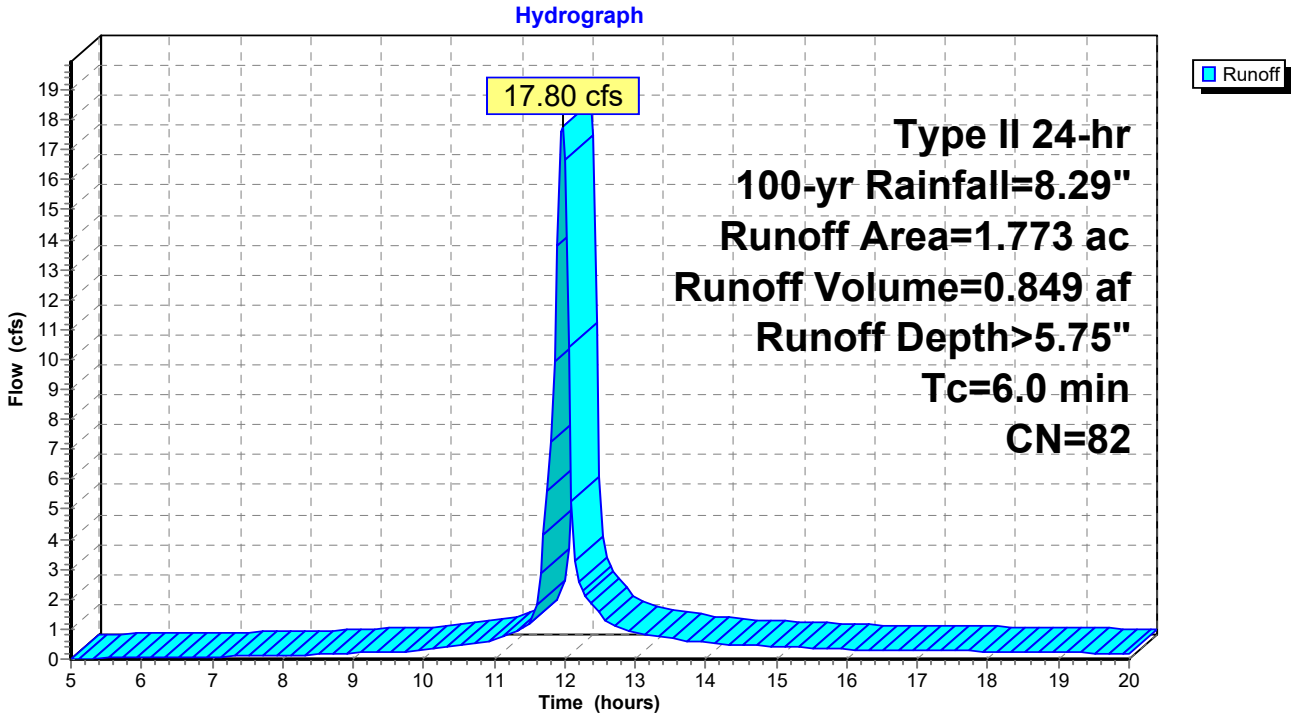
Runoff = 17.80 cfs @ 11.97 hrs, Volume= 0.849 af, Depth> 5.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=8.29"

Area (ac)	CN	Description
0.177	96	Gravel surface, HSG D
1.160	80	>75% Grass cover, Good, HSG D
0.069	94	Fallow, bare soil, HSG D
0.092	98	Water Surface, HSG D
0.275	70	Woods, Good, HSG C
1.773	82	Weighted Average
1.681		94.81% Pervious Area
0.092		5.19% Impervious Area

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

Subcatchment PR-1A:



Summary for Subcatchment PR-1B:

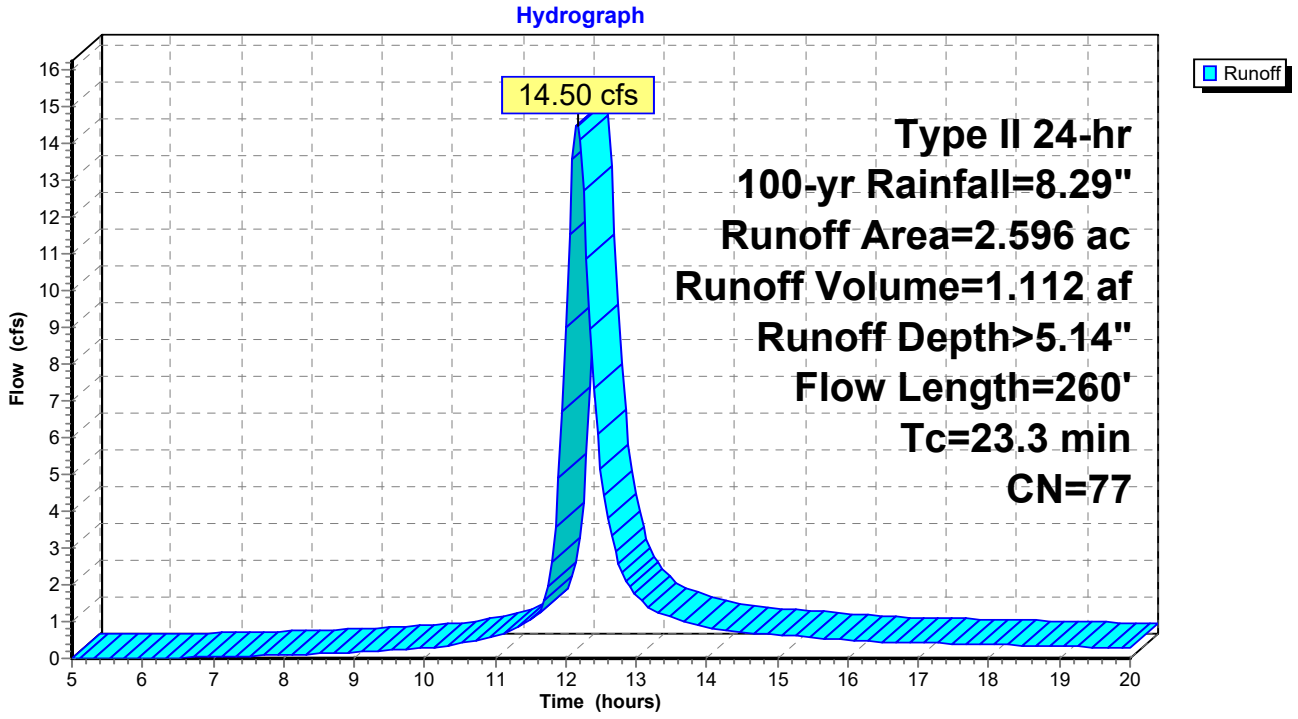
Runoff = 14.50 cfs @ 12.16 hrs, Volume= 1.112 af, Depth> 5.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=8.29"

Area (ac)	CN	Description
2.496	77	Woods, Good, HSG D
0.100	80	>75% Grass cover, Good, HSG D
2.596	77	Weighted Average
2.596		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.6	100	0.0200	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.16"
1.7	160	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.3	260	Total			

Subcatchment PR-1B:



Summary for Subcatchment PR-2A:

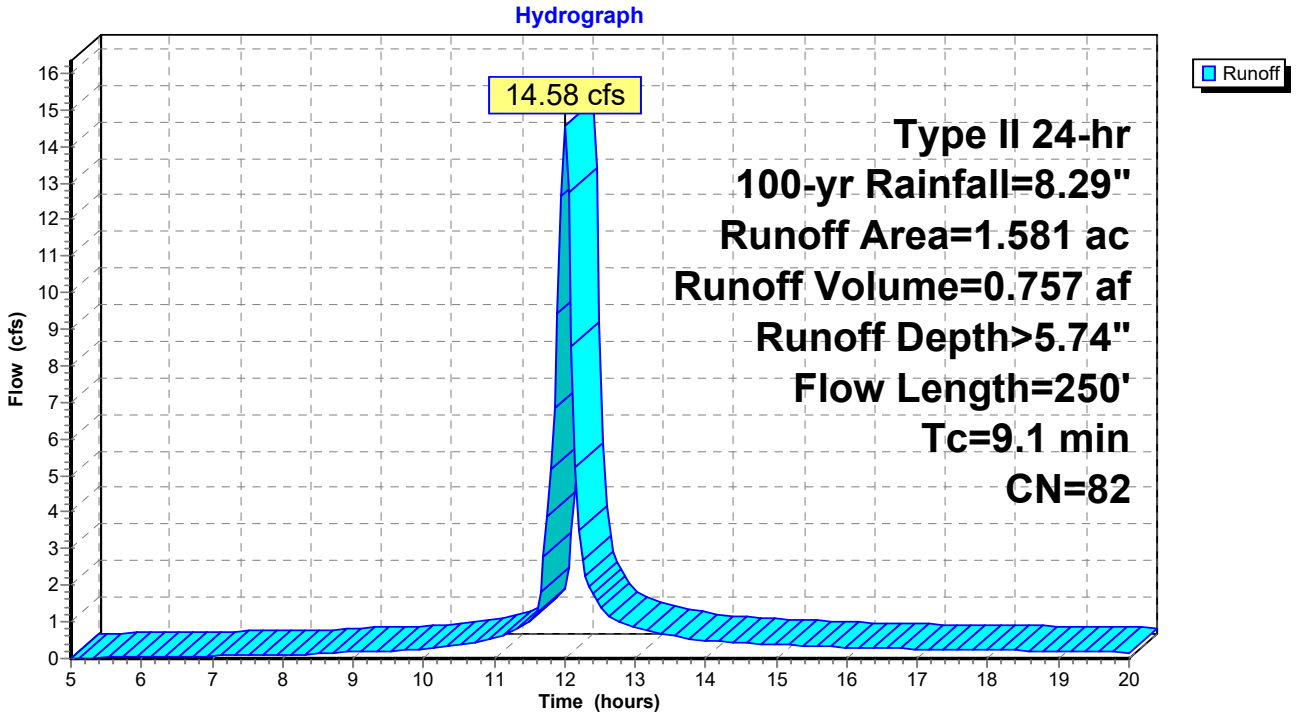
Runoff = 14.58 cfs @ 12.00 hrs, Volume= 0.757 af, Depth> 5.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=8.29"

	Area (ac)	CN	Description
	0.083	94	Fallow, bare soil, HSG D
*	0.170	96	PR Gravel surface, HSG D
	0.390	77	Woods, Good, HSG D
*	0.014	96	EX Gravel surface, HSG D
	0.878	80	>75% Grass cover, Good, HSG D
	0.046	98	Water Surface, HSG D
	1.581	82	Weighted Average
	1.535		97.09% Pervious Area
	0.046		2.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	55	0.0350	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.16"
1.1	75	0.0667	1.14	3.41	**Channel Flow,** Area= 3.0 sf Perim= 5.0' r= 0.60' n= 0.240 Sheet flow over Dense Grass
0.9	120	0.1830	2.14		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.1	250	Total			

Subcatchment PR-2A:



Summary for Subcatchment PR-2B:

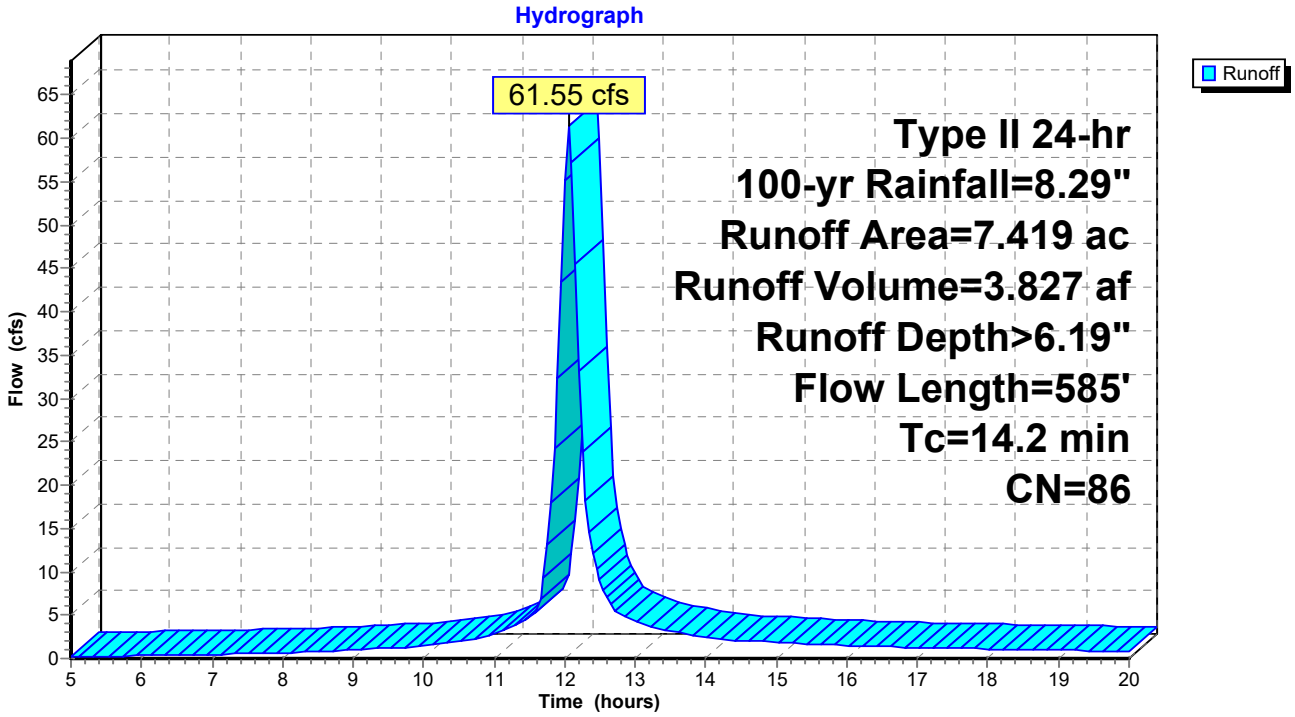
Runoff = 61.55 cfs @ 12.05 hrs, Volume= 3.827 af, Depth> 6.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=8.29"

	Area (ac)	CN	Description
	0.361	94	Fallow, bare soil, HSG D
*	2.733	96	PR Gravel surface, HSG D
*	0.115	96	EX Gravel surface, HSG D
	2.733	77	Woods, Good, HSG D
	1.443	80	>75% Grass cover, Good, HSG D
	0.034	98	Water Surface, HSG D
	7.419	86	Weighted Average
	7.385		99.54% Pervious Area
	0.034		0.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.5	65	0.0410	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.16"
0.1	15	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	80	0.0750	1.92		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	20	0.0200	6.42	5.04	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
1.5	240	0.1460	2.67		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	125	0.1000	16.65	20.43	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
0.2	40	0.4000	3.16		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.2	585	Total			

Subcatchment PR-2B:



Summary for Subcatchment PR-2C:

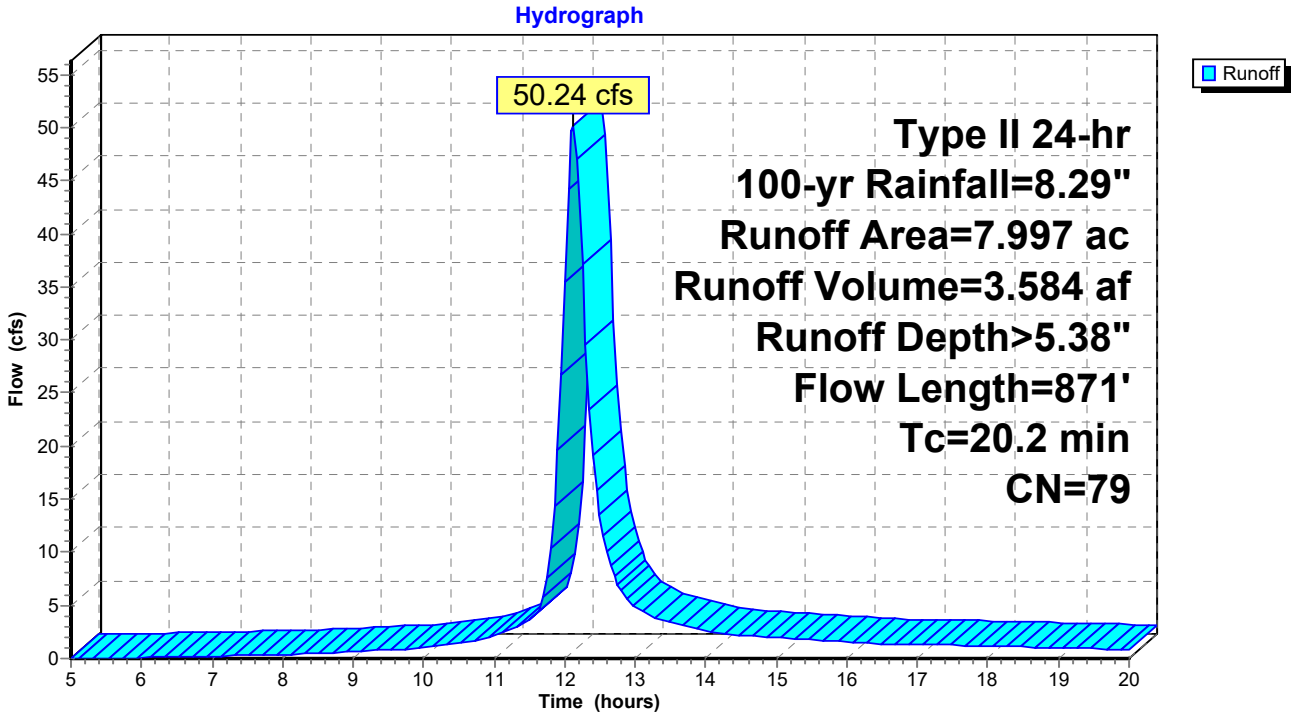
Runoff = 50.24 cfs @ 12.12 hrs, Volume= 3.584 af, Depth> 5.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=8.29"

	Area (ac)	CN	Description
	0.047	98	Unconnected roofs, HSG D
	0.565	96	Gravel surface, HSG D
*	0.185	96	EX Gravel surface, HSG D
	6.450	77	Woods, Good, HSG D
	0.717	80	>75% Grass cover, Good, HSG D
	0.033	94	Fallow, bare soil, HSG D
	7.997	79	Weighted Average
	7.950		99.41% Pervious Area
	0.047		0.59% Impervious Area
	0.047		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	100	0.0600	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.16"
2.5	305	0.1640	2.02		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.4	311	0.0960	2.17		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	125	0.0960	1.55		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	30	0.0200	7.44	9.14	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
20.2	871	Total			

Subcatchment PR-2C:



Summary for Reach R-1:

[79] Warning: Submerged Pond P-2A Primary device # 2 OUTLET by 0.13'

Inflow Area = 1.581 ac, 2.91% Impervious, Inflow Depth > 3.20" for 100-yr event
Inflow = 0.56 cfs @ 13.71 hrs, Volume= 0.421 af
Outflow = 0.56 cfs @ 14.05 hrs, Volume= 0.403 af, Atten= 0%, Lag= 20.5 min

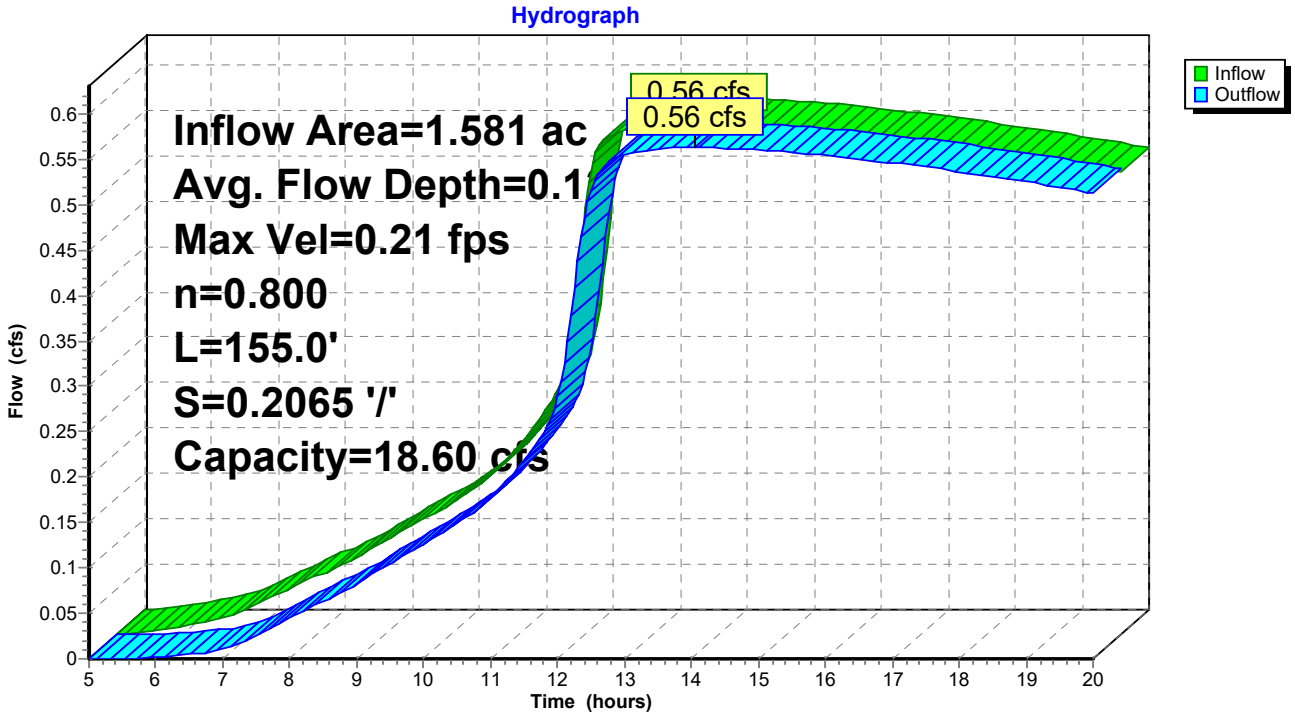
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.21 fps, Min. Travel Time= 12.2 min
Avg. Velocity = 0.15 fps, Avg. Travel Time= 16.8 min

Peak Storage= 413 cf @ 13.85 hrs
Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 1.00' Flow Area= 25.0 sf, Capacity= 18.60 cfs

20.00' x 1.00' deep channel, n= 0.800 Sheet flow: Woods+dense brush
Side Slope Z-value= 5.0 '/' Top Width= 30.00'
Length= 155.0' Slope= 0.2065 '/'
Inlet Invert= 188.00', Outlet Invert= 156.00'

‡

Reach R-1:



Summary for Pond P-1:

Inflow Area = 1.773 ac, 5.19% Impervious, Inflow Depth > 5.75" for 100-yr event
Inflow = 17.80 cfs @ 11.97 hrs, Volume= 0.849 af
Outflow = 3.76 cfs @ 12.14 hrs, Volume= 0.764 af, Atten= 79%, Lag= 10.8 min
Primary = 3.76 cfs @ 12.14 hrs, Volume= 0.764 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Starting Elev= 222.00' Surf.Area= 4,064 sf Storage= 10,662 cf
Peak Elev= 224.92' @ 12.14 hrs Surf.Area= 7,647 sf Storage= 27,645 cf (16,983 cf above start)

Plug-Flow detention time= 173.9 min calculated for 0.518 af (61% of inflow)
Center-of-Mass det. time= 54.2 min (812.8 - 758.6)

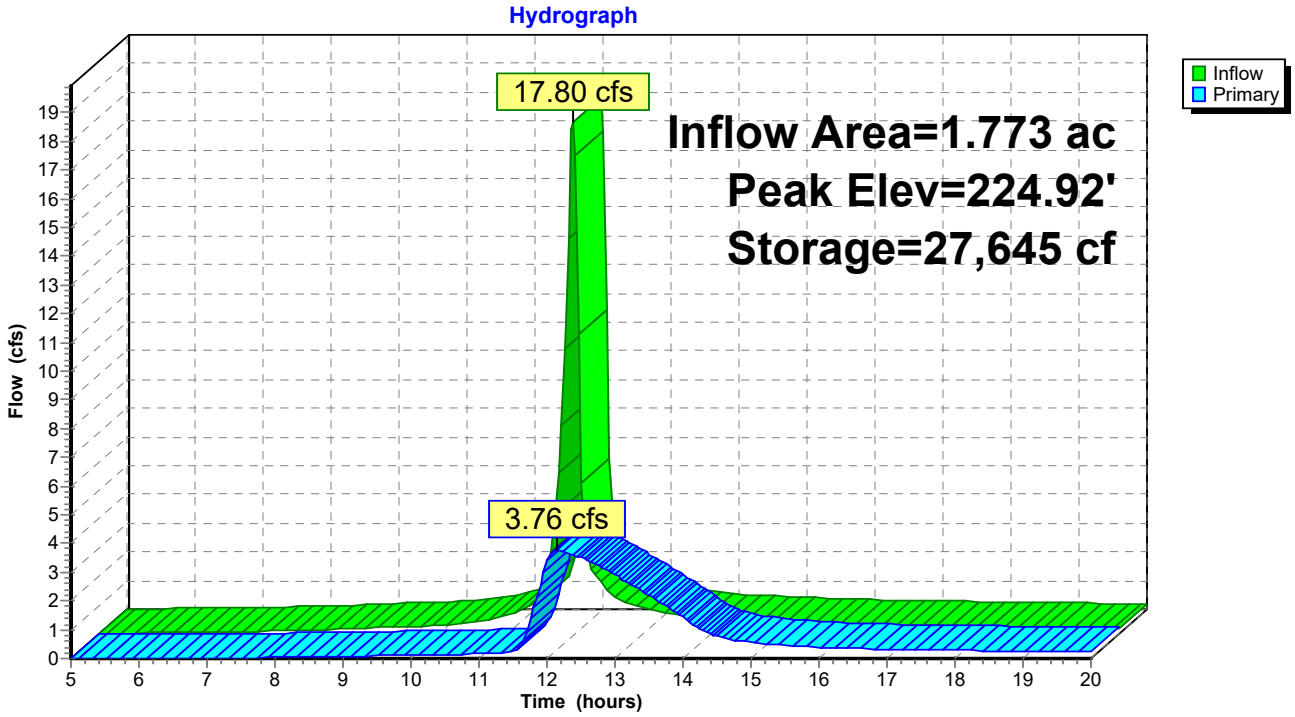
Volume	Invert	Avail.Storage	Storage Description
#1	218.00'	36,659 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
218.00	1,330	0	0
220.00	2,634	3,964	3,964
222.00	4,064	6,698	10,662
224.00	6,432	10,496	21,158
226.00	9,069	15,501	36,659

Device	Routing	Invert	Outlet Devices
#1	Primary	225.00'	**10.0' long x 4.0' 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 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Primary	222.00'	**18.0" Round Culvert** L= 40.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 222.00' / 221.20' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#3	Device 2	222.00'	**3.0" Vert. Orifice/Grate** C= 0.600
#4	Device 2	222.80'	**18.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600
#5	Device 2	225.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.76 cfs @ 12.14 hrs HW=224.92' (Free Discharge)
- **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
- **2=Culvert** (Passes 3.76 cfs of 12.53 cfs potential flow)
  - **3=Orifice/Grate** (Orifice Controls 0.40 cfs @ 8.05 fps)
  - **4=Orifice/Grate** (Orifice Controls 3.36 cfs @ 6.73 fps)
  - **5=Orifice/Grate** (Controls 0.00 cfs)

Pond P-1:


Hydrograph
17.80 cfs
3.76 cfs
Inflow Area=1.773 ac
Peak Elev=224.92'
Storage=27,645 cf
Inflow
Primary
Flow (cfs)
Time (hours)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

Summary for Pond P-2A:

Inflow Area = 1.581 ac, 2.91% Impervious, Inflow Depth > 5.74" for 100-yr event
Inflow = 14.58 cfs @ 12.00 hrs, Volume= 0.757 af
Outflow = 0.56 cfs @ 13.71 hrs, Volume= 0.421 af, Atten= 96%, Lag= 102.4 min
Primary = 0.56 cfs @ 13.71 hrs, Volume= 0.421 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Starting Elev= 193.00' Surf.Area= 1,588 sf Storage= 2,943 cf
Peak Elev= 198.80' @ 13.71 hrs Surf.Area= 5,872 sf Storage= 23,244 cf (20,301 cf above start)

Plug-Flow detention time= 283.8 min calculated for 0.352 af (47% of inflow)
Center-of-Mass det. time= 147.2 min (908.2 - 761.0)

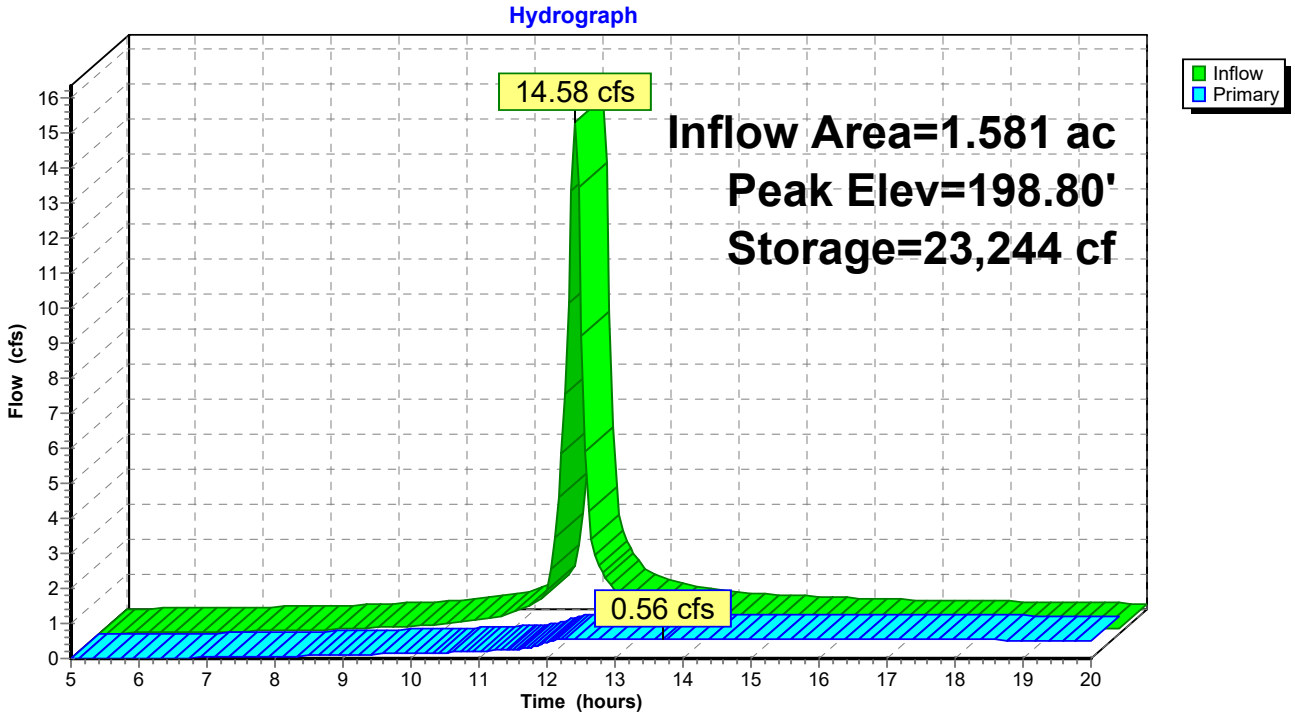
Volume	Invert	Avail.Storage	Storage Description
#1	190.00'	30,964 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
190.00	483	0	0
192.00	1,111	1,594	1,594
194.00	2,064	3,175	4,769
196.00	3,452	5,516	10,285
198.00	5,104	8,556	18,841
200.00	7,019	12,123	30,964

Device	Routing	Invert	Outlet Devices
#1	Primary	199.50'	**20.0' long x 6.0' 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 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#2	Primary	193.00'	**15.0" Round Culvert** L= 40.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 193.00' / 188.00' S= 0.1250 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#3	Device 2	193.00'	**3.0" Vert. Orifice/Grate** C= 0.600
#4	Device 2	199.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.56 cfs @ 13.71 hrs HW=198.80' (Free Discharge)
- **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
- **2=Culvert** (Passes 0.56 cfs of 13.44 cfs potential flow)
  - **3=Orifice/Grate** (Orifice Controls 0.56 cfs @ 11.47 fps)
  - **4=Orifice/Grate** (Controls 0.00 cfs)

Pond P-2A:


Hydrograph
14.58 cfs
0.56 cfs
Inflow Area=1.581 ac
Peak Elev=198.80'
Storage=23,244 cf
Inflow
Primary
Flow (cfs)
Time (hours)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
5
6
7
8
9
10
11
12
13
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15
16
17
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19
20

Summary for Pond P-2B:

[82] Warning: Early inflow requires earlier time span

Inflow Area = 7.419 ac, 0.46% Impervious, Inflow Depth > 6.19" for 100-yr event
Inflow = 61.55 cfs @ 12.05 hrs, Volume= 3.827 af
Outflow = 27.24 cfs @ 12.24 hrs, Volume= 3.434 af, Atten= 56%, Lag= 11.1 min
Primary = 27.24 cfs @ 12.24 hrs, Volume= 3.434 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 161.53' @ 12.24 hrs Surf.Area= 14,201 sf Storage= 64,863 cf

Plug-Flow detention time= 74.1 min calculated for 3.433 af (90% of inflow)
Center-of-Mass det. time= 39.0 min (796.2 - 757.2)

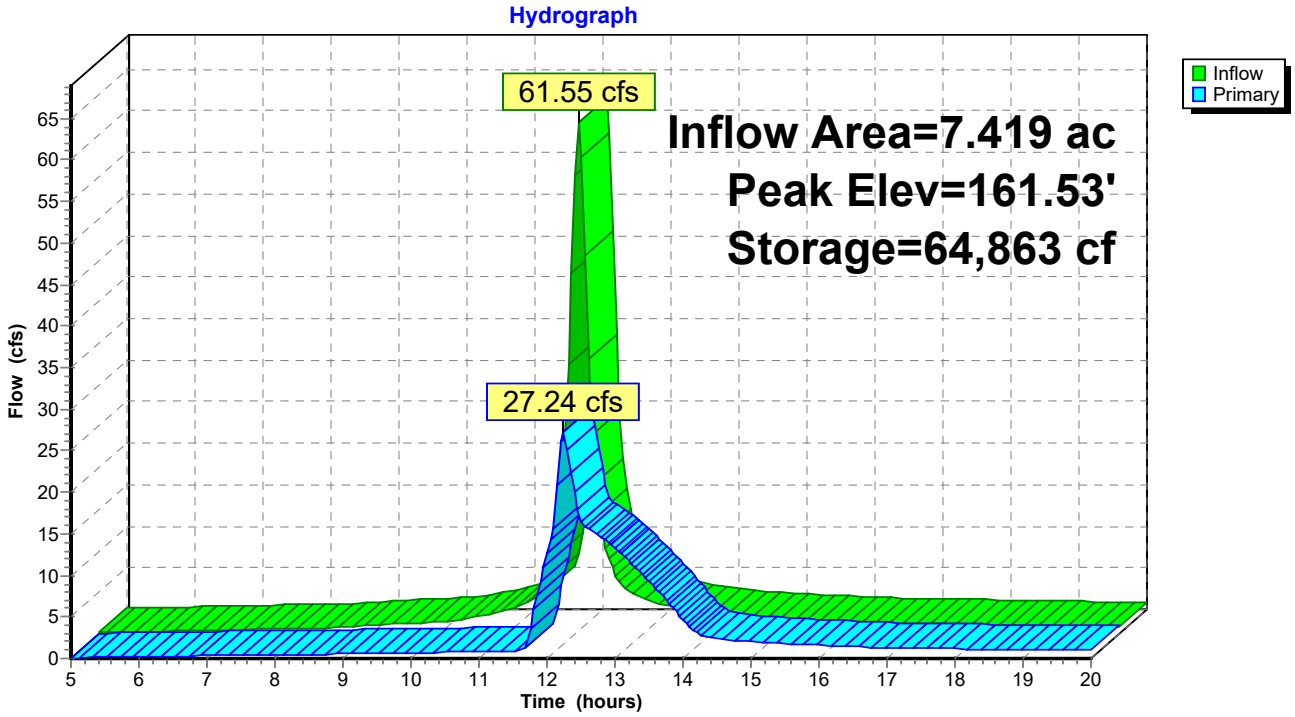
Volume	Invert	Avail.Storage	Storage Description
#1	151.30'	71,804 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
151.30	670	0	0
152.00	1,274	680	680
154.00	2,870	4,144	4,824
156.00	5,119	7,989	12,813
158.00	8,018	13,137	25,950
160.00	11,379	19,397	45,347
162.00	15,078	26,457	71,804

Device	Routing	Invert	Outlet Devices
#1	Primary	161.50'	**20.0' long x 6.0' 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 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#2	Primary	151.30'	**24.0" Round Culvert** L= 60.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 151.30' / 151.10' S= 0.0033 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#3	Device 2	151.30'	**4.0" Vert. Orifice/Grate** C= 0.600
#4	Device 2	156.80'	**22.0" W x 5.0" H Vert. Orifice/Grate X 2.00** C= 0.600
#5	Device 2	161.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=26.86 cfs @ 12.24 hrs HW=161.52' (Free Discharge)
- **1=Broad-Crested Rectangular Weir** (Weir Controls 0.13 cfs @ 0.33 fps)
- **2=Culvert** (Passes 26.74 cfs of 45.93 cfs potential flow)
  - **3=Orifice/Grate** (Orifice Controls 1.33 cfs @ 15.27 fps)
  - **4=Orifice/Grate** (Orifice Controls 15.62 cfs @ 10.23 fps)
  - **5=Orifice/Grate** (Weir Controls 9.78 cfs @ 2.36 fps)

Pond P-2B:


Hydrograph
61.55 cfs
27.24 cfs
Inflow Area=7.419 ac
Peak Elev=161.53'
Storage=64,863 cf
Inflow
Primary
Flow (cfs)
Time (hours)
0
5
10
15
20
25
30
35
40
45
50
55
60
65
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

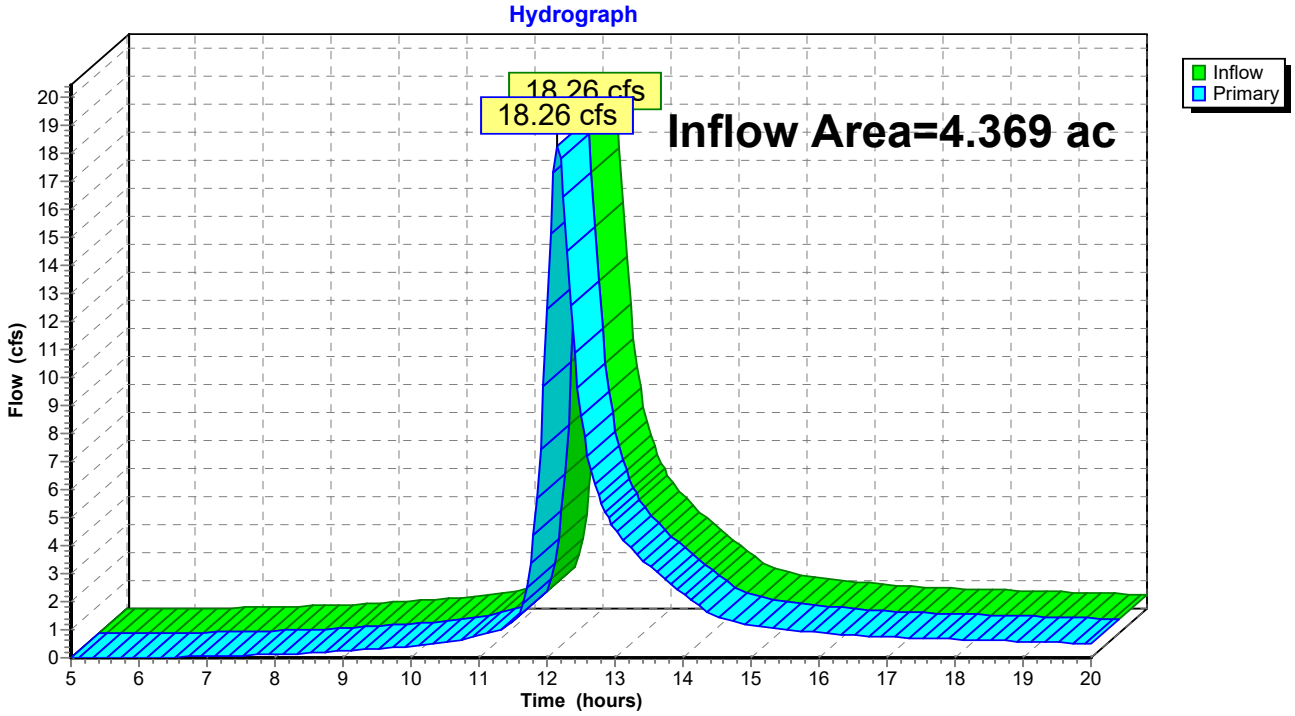
Summary for Pond SDP-1:

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

Inflow Area = 4.369 ac, 2.11% Impervious, Inflow Depth > 5.15" for 100-yr event
Inflow = 18.26 cfs @ 12.16 hrs, Volume= 1.876 af
Primary = 18.26 cfs @ 12.16 hrs, Volume= 1.876 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond SDP-1:



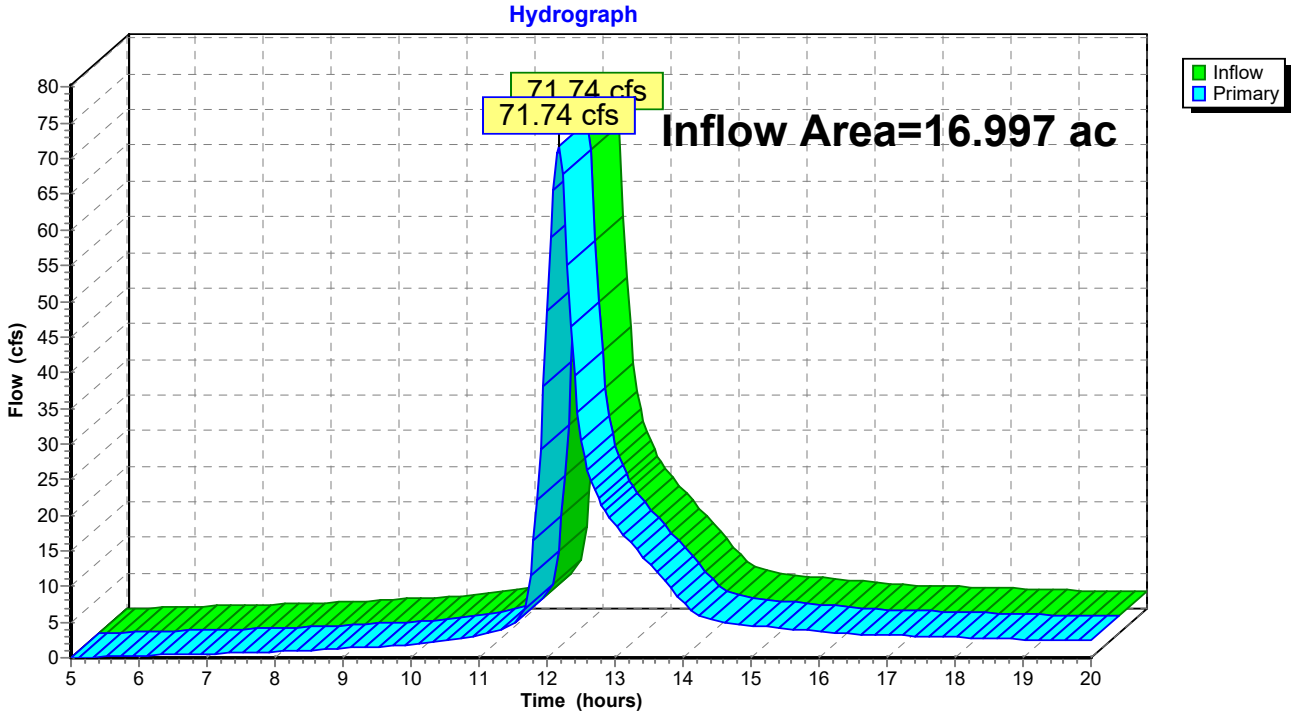
Summary for Pond SDP-2:

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

Inflow Area = 16.997 ac, 0.75% Impervious, Inflow Depth > 5.24" for 100-yr event
Inflow = 71.74 cfs @ 12.18 hrs, Volume= 7.421 af
Primary = 71.74 cfs @ 12.18 hrs, Volume= 7.421 af, Atten= 0%, Lag= 0.0 min

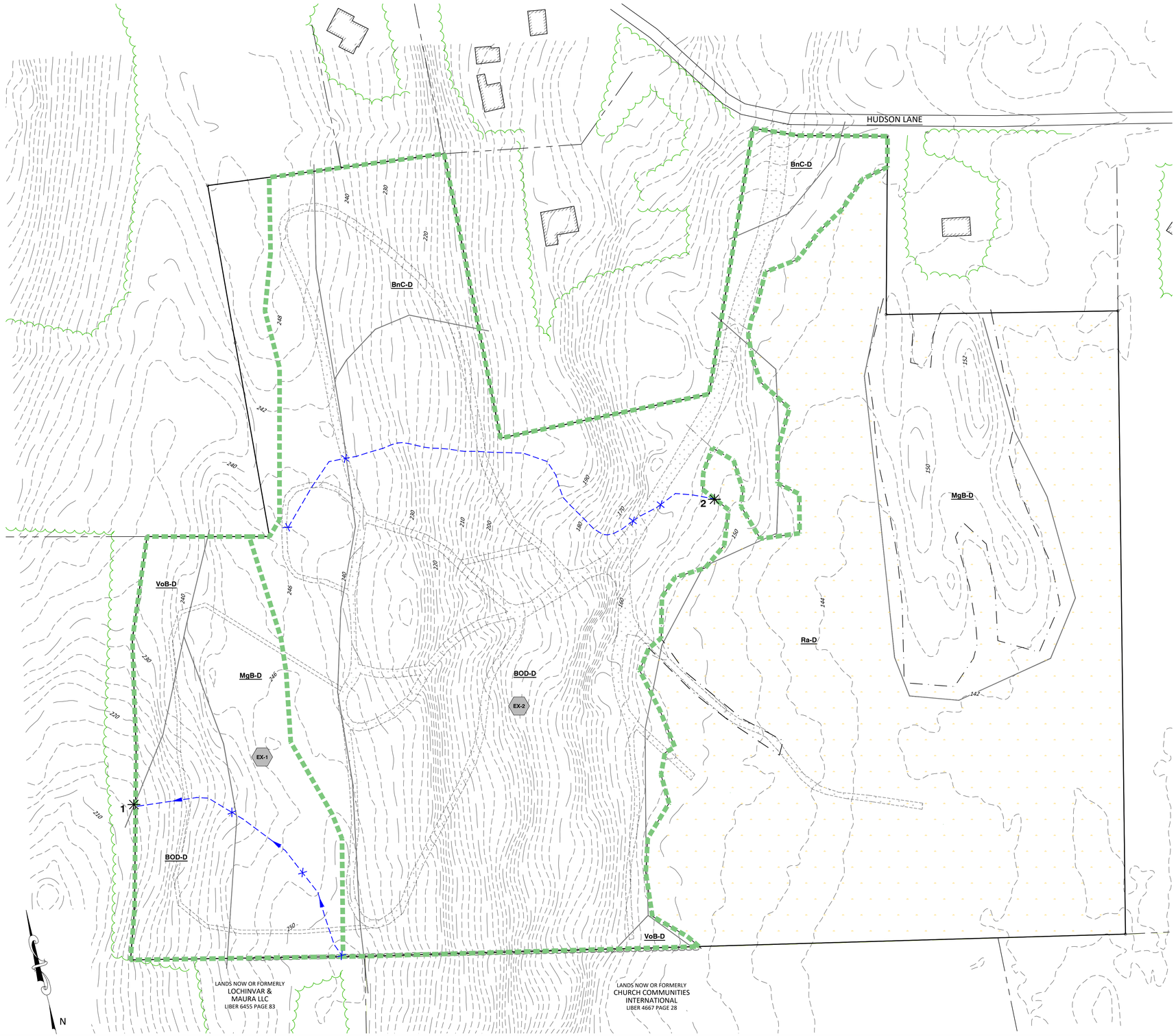
Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond SDP-2:



APPENDIX H

DRAINAGE MAPS



LEGEND

- EXISTING PROPERTY LINE
- ADJACENT PROPERTY LINE
- ZONING BOUNDARY
- EXISTING EDGE OF PAVEMENT
- EXISTING BUILDING SETBACK
- EXISTING TREE LINE
- ACOE WETLAND BOUNDARY
- ACOE WETLAND AREA
- 110 — EXISTING MAJOR CONTOUR (LIDAR)
- EXISTING MINOR CONTOUR (LIDAR)
- EXISTING GRAVEL ROAD / DRIVEWAY
- VoA-C — SOIL TYPE BOUNDARY WITH HYDROLOGIC SOIL TYPE
- SUBCATCHMENT BOUNDARY
- TIME OF CONCENTRATION/ REACH SEGMENT
- EX-1 — SUBCATCHMENT
- 1 — STORMWATER DISCHARGE POINT - SDP

SUBCATCHMENT AREA SUMMARY

Subcatchment EX-1	Soil Type	Cn	Area (Ac)
WOODS, GOOD	D	77	4.343
		Total=	4.343

Subcatchment EX-2	Soil Type	Cn	Area (Ac)
GRAVEL	D	96	1.899
WOODS, GOOD	D	77	15.126
		Total=	17.025

HYDROCAD ROUTING DIAGRAM

0 1 2 3
ORIGINAL SIZE IN INCHES

STATE OF NEW YORK
ANDREW V. WILLINGHAM
089984
PROFESSIONAL ENGINEER

willingham engineering
183 Main Street
New Paltz, New York 12561
T 845.255.0210 F 845.256.8110
www.willinghamengineering.com

REV	DATE	DESCRIPTION
1	12/04/23	REVISIONS PER PLANNING BOARD

PRE-DEVELOPMENT DRAINAGE MAP

CASTLEMORE HOLDINGS MIMA, LLC

38 HUDSON LANE

TOWN OF ESOPUS, ULSTER COUNTY, NEW YORK

DRAWN BY	CHECKED BY
MLT	
DATE	SCALE
10/02/23	1"=80'
PROJECT NO.	
22084	
SHEET NO.	
PRE	

LEGEND

- EXISTING PROPERTY LINE
- ADJACENT PROPERTY LINE
- ZONING BOUNDARY
- EXISTING EDGE OF PAVEMENT
- EXISTING BUILDING SETBACK
- EXISTING TREE LINE
- 110 — EXISTING MAJOR CONTOUR (LIDAR)
- EXISTING MINOR CONTOUR (LIDAR)
- VoA-C — SOIL TYPE BOUNDARY WITH HYDROLOGIC SOIL TYPE
- ACOE WETLAND BOUNDARY
- ACOE WETLAND AREA
- EXISTING GRAVEL ROAD / DRIVEWAY
- PROPOSED STRUCTURE
- PROPOSED WELL
- PROPOSED SETBACK FROM WELL
- PROPOSED SANITARY DISPOSAL SYSTEM
- PROPOSED TREE LINE
- PROPOSED BIORETENTION AREA / RAIN GARDEN
- PROPOSED STORMWATER MANAGEMENT POND
- PROPOSED GRAVEL ROAD
- 180 — PROPOSED 10 FT CONTOUR
- 178 — PROPOSED 2 FT CONTOUR
- PROPOSED DRAINAGE CULVERT
- PROPOSED END SECTION WITH RIP-RAP OUTLET PROTECTION
- PROPOSED CATCH BASIN
- PROPOSED DRAINAGE MANHOLE
- PROPOSED DRAINAGE DITCH
- PROPOSED ROOF LEADER WITH 4"Ø SDR 35 DOWNSPOUT @ 1% MIN SLOPE
- SUBCATCHMENT BOUNDARY
- TIME OF CONCENTRATION/ REACH SEGMENT
- PR-1 — SUBCATCHMENT
- 1 — STORMWATER DISCHARGE POINT - SDP
- P-1A — STORMWATER MANAGEMENT PRACTICE
- R-1 — REACH

SUBCATCHMENT AREA SUMMARY

Subcatchment PR-1A	Soil Type	Cn	Area (Ac)
FALLOW, BARE SOIL (BENEATH CABINS)	D	94	0.069
GRAVEL	D	96	0.177
GRASS, GOOD	D	80	1.160
WATER SURFACE	D	98	0.092
WOODS, GOOD	D	77	0.275
		Total=	1.773

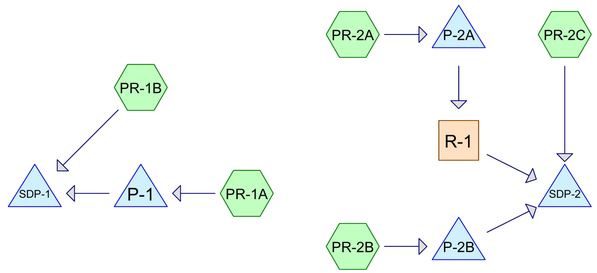
Subcatchment PR-1B	Soil Type	Cn	Area (Ac)
WOODS, GOOD	D	77	2.496
GRASS, GOOD	D	80	0.100
		Total=	2.596

Subcatchment PR-2A	Soil Type	Cn	Area (Ac)
FALLOW, BARE SOIL (BENEATH CABINS)	D	94	0.083
GRAVEL	D	96	0.184
WOODS, GOOD	D	77	0.390
GRASS, GOOD	D	80	0.878
WATER SURFACE	D	98	0.046
		Total=	1.581

Subcatchment PR-2B	Soil Type	Cn	Area (Ac)
FALLOW, BARE SOIL (BENEATH CABINS)	D	94	0.361
GRAVEL	D	96	2.848
WOODS, GOOD	D	77	2.733
GRASS, GOOD	D	80	1.443
WATER SURFACE	D	98	0.034
		Total=	7.419

Subcatchment PR-2C	Soil Type	Cn	Area (Ac)
ROOFS	D	98	0.047
GRAVEL	D	96	0.750
WOODS, GOOD	D	77	6.450
GRASS, GOOD	D	80	0.717
		Total=	7.997

HYDROCAD ROUTING DIAGRAM



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ORIGINAL SIZE IN INCHES

STATE OF NEW YORK
ANDREW V. WILLINGHAM
083984
LICENSED PROFESSIONAL ENGINEER

willingham engineering
183 Main Street
New Paltz, New York 12561
T 845.255.0210 F 845.256.8110
www.willinghamengineering.com

REV	DATE	DESCRIPTION
2	03/04/24	REVISIONS PER PLANNING BOARD
1	12/04/23	REVISIONS PER PLANNING BOARD

POST-DEVELOPMENT DRAINAGE MAP

CASTLEMORE HOLDINGS MIMA, LLC

38 HUDSON LANE

TOWN OF ESOPUS, ULSTER COUNTY, NEW YORK

DRAWN BY	CHECKED BY
MLT	
DATE	SCALE
10/02/23	1"=80'
PROJECT NO.	
22084	
SHEET NO.	
POST	

APPENDIX I

STORMWATER CALCULATIONS

WQv and RRv Summary Sheet

Total WQv Required =		11,275	cf
WQv Provided by:	Bioretention 1-1 -	1,428	cf
	Bioretention 2A -	2,400	cf
	Bioretention 2C-1 -	2,322	cf
	Bioretention 2C-2 -	1,338	cf
	Pond Permanent Pool 1-	10,662	cf
	Pond Permanent Pool 2A-	2,943	cf
	Pond Permanent Pool 2B- (Dry Pond)	0	cf
Total WQv Provided=		21,093	cf
Total Minimum RRv Required using specific reduction factor=		1,516	cf
RRv Provided by:	Bioretention 1-1 -	571	cf
	Bioretention 2A -	960	cf
	Bioretention 2C-1 -	929	cf
	Bioretention 2C-2 -	576	cf
Total RRv Provided =		3,036	cf

Redevelopment Calculations

Total Impervious at Site	2.37	Ac
Redeveloped Impervious	0.80	Ac

Redeveloped impervious surface requiring
25% WQv treatment (no RRv requirement for redevelopment)

Redeveloped Impervious	0.80	ac

P= 1.4
Rv= 0.05 + 0.009 (I)
Rv= 0.95
I= Impervious Cover (percent)
I= 100%
A= 0.80

WQv={[(P)(Rv)(A)]/12} * 25% reduction for redevelopment
WQv= 966 (cf) for portion of site to be redeveloped

Total WQv required for redevelopment portion of site
Total WQv = 966 cf

Note - RRv is not required for areas of redevelopment

New Impervious Surfaces

Total New Impervious	1.57	Ac
Total Site Disturbance	9.8	Ac

P= 1.4
Rv= 0.05 + 0.009 (I)
Rv= 0.207
I= Impervious Cover (percent)
I= 17%
A= 9.80
S= 0.2

Specific Reduction Factor	
HSG A	0.55
HSG B	0.4
HSG C	0.3
HSG D	0.2

WQv={[(P)(Rv)(A)]/12}
WQv= 10,309 (cf) for new impervious surfaces

RRv={[(P)(Rv)(A)(S)]/12}
RRv= 1,516 (cf) with specific reduction factor
*Note - RRv not requried for Redeveloped Impervious Surfaces

Total WQv= 11,275 (cf) New and Redevelopment impervious surfaces

Bioretention Worksheet

(For use on HSG C or D Soils with underdrains)

Af=WQv*(df)/[k*(hf+df)(tf)]

Af	Required Surface Area (ft2)
WQv	Water Quality Volume (ft3)
df	Depth of the Soil Medium (feet)
hf	Average height of water above the planter bed
tf	Volume Through the Filter Media (days)

k — The hydraulic conductivity [ft/day], can be varied depending on the properties of the soil media. Some reported conductivity values are: ***Sand*** - 3.5 ft/day (City of Austin 1988); ***Peat*** - 2.0 ft/day (Galli 1990); ***Leaf Compost*** - 8.7 ft/day (Claytor and Schueler, 1996); ***Bioretention Soil*** (0.5 ft/day (Claytor &

Design Point:	**(Acres)**

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
1	0.98	0.25	0.25	0.28	1375.19	1.40	Bioretention
Enter Impervious Area Reduced by Disconnection of Rooftops		0.00	25%	0.28	1,375	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.						*ft^3*	

Soil Information			
Soil Group	D		
Soil Infiltration Rate	0.00	*in/hour*	*Okay*
Using Underdrains?	Yes	*Okay*	

Calculate the Minimum Filter Area				
		Value	Units	Notes
WQv		1,375	*ft^3*	
Enter Depth of Soil Media	*df*	2.5	*ft*	*2.5-4 ft*
Enter Hydraulic Conductivity	*k*	0.5	*ft/day*	
Enter Average Height of Ponding	*hf*	0.5	*ft*	*6 inches max.*
Enter Filter Time	*tf*	2	*days*	
Required Filter Area	***Af***	**1146**	***ft^2***	

Determine Actual Bio-Retention Area			
Filter Width	70	*ft*	
Filter Length	17	*ft*	
Filter Area	1190	*ft^2*	
Actual Volume Provided	1428	*ft^3*	

Determine Runoff Reduction				
Is the Bioretention contributing flow to another practice?		Yes	Select Practice	Other/Standard SMP
RRv	571			
RRv applied	**571**	***ft^3***	***This is 40% of the storage provided or WQv whichever is less.***	
Volume Treated	0	*ft^3*	*This is the portion of the WQv that is not reduced in the practice.*	

Bioretention Worksheet

(For use on HSG C or D Soils with underdrains)

Af=WQv*(df)/[k*(hf+df)(tf)]

Af	Required Surface Area (ft2)
WQv	Water Quality Volume (ft3)
df	Depth of the Soil Medium (feet)
hf	Average height of water above the planter bed
tf	Volume Through the Filter Media (days)

k — The hydraulic conductivity [ft/day], can be varied depending on the properties of the soil media. Some reported conductivity values are: ***Sand*** - 3.5 ft/day (City of Austin 1988); ***Peat*** - 2.0 ft/day (Galli 1990); ***Leaf Compost*** - 8.7 ft/day (Claytor and Schueler, 1996); ***Bioretention Soil*** (0.5 ft/day (Claytor & Schueler, 1996)

Design Point:	**(Acres)**

Enter Site Data For Drainage Area to be Treated by Practice

Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
2	1.00	0.27	0.27	0.29	1475.30	1.40	Bioretention
Enter Impervious Area Reduced by Disconnection of Rooftops			27%	0.29	1,475	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.						*ft^3*	

Soil Information

Soil Group	D		
Soil Infiltration Rate	0.00	*in/hour*	*Okay*
Using Underdrains?	Yes	*Okay*	

Calculate the Minimum Filter Area

		Value	Units	Notes
WQv		1,475	*ft^3*	
Enter Depth of Soil Media	*df*	2.5	*ft*	*2.5-4 ft*
Enter Hydraulic Conductivity	*k*	0.5	*ft/day*	
Enter Average Height of Ponding	*hf*	0.5	*ft*	*6 inches max.*
Enter Filter Time	*tf*	2	*days*	
Required Filter Area	***Af***	**1229**	***ft^2***	

Determine Actual Bio-Retention Area

Filter Width	20	*ft*	
Filter Length	100	*ft*	
Filter Area	2000	*ft^2*	
Actual Volume Provided	2400	*ft^3*	

Determine Runoff Reduction

Is the Bioretention contributing flow to another practice?		Yes	Select Practice	Other/Standard SMP
RRv	960			
RRv applied	**960**	***ft^3***	***This is 40% of the storage provided or WQv whichever is less.***	
Volume Treated	0	*ft^3*	*This is the portion of the WQv that is not reduced in the practice.*	

Bioretention Worksheet

(For use on HSG C or D Soils with underdrains)

Af=WQv*(df)/[k*(hf+df)(tf)]

Af	Required Surface Area (ft2)
WQv	Water Quality Volume (ft3)
df	Depth of the Soil Medium (feet)
hf	Average height of water above the planter bed
tf	Volume Through the Filter Media (days)

k — The hydraulic conductivity [ft/day], can be varied depending on the properties of the soil media. Some reported conductivity values are: ***Sand*** - 3.5 ft/day (City of Austin 1988); ***Peat*** - 2.0 ft/day (Galli 1990); ***Leaf Compost*** - 8.7 ft/day (Claytor and Schueler, 1996); ***Bioretention Soil*** (0.5 ft/day (Claytor &

Design Point:	**(Acres)**

Enter Site Data For Drainage Area to be Treated by Practice

Catchment Number	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Rv	WQv *(ft^3)*	Precipitation *(in)*	Description
3	0.50	0.22	0.44	0.45	1133.29	1.40	Bioretention
Enter Impervious Area Reduced by Disconnection of Rooftops			44%	0.45	1,133	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.						*ft^3*	

Soil Information

Soil Group	D		
Soil Infiltration Rate	0.00	*in/hour*	*Okay*
Using Underdrains?	Yes	*Okay*	

Calculate the Minimum Filter Area

		Value	Units	Notes
WQv		1,133	*ft^3*	
Enter Depth of Soil Media	*df*	2.5	*ft*	*2.5-4 ft*
Enter Hydraulic Conductivity	*k*	0.5	*ft/day*	
Enter Average Height of Ponding	*hf*	0.5	*ft*	*6 inches max.*
Enter Filter Time	*tf*	2	*days*	
Required Filter Area	***Af***	**944**	***ft^2***	

Determine Actual Bio-Retention Area

Filter Width	43	*ft*	
Filter Length	45	*ft*	
Filter Area	1935	*ft^2*	
Actual Volume Provided	2322	*ft^3*	

Determine Runoff Reduction

Is the Bioretention contributing flow to another practice?			Select Practice	
RRv	929			
RRv applied	**929**	***ft^3***	***This is 40% of the storage provided or WQv whichever is less.***	
Volume Treated	204	*ft^3*	*This is the portion of the WQv that is not reduced in the practice.*	
Volume Directed	0	*ft^3*	This volume is directed another practice	
Sizing √	OK		*Check to be sure Area provided ≥ Af*	

Bioretention Worksheet

(For use on HSG C or D Soils with underdrains)

Af=WQv*(df)/[k*(hf+df)(tf)]

Af	Required Surface Area (ft2)
WQv	Water Quality Volume (ft3)
df	Depth of the Soil Medium (feet)
hf	Average height of water above the planter bed
tf	Volume Through the Filter Media (days)

k — The hydraulic conductivity [ft/day], can be varied depending on the properties of the soil media. Some reported conductivity values are: ***Sand*** - 3.5 ft/day (City of Austin 1988); ***Peat*** - 2.0 ft/day (Galli 1990); ***Leaf Compost*** - 8.7 ft/day (Claytor and Schueler, 1996); ***Bioretention Soil*** (0.5 ft/day (Claytor &

Design Point:	**(Acres)**

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
4	2.00	0.24	0.12	0.16	1605.91	1.40	Bioretention
Enter Impervious Area Reduced by Disconnection of Rooftops			12%	0.16	1,606	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.						*ft^3*	

Soil Information			
Soil Group	D		
Soil Infiltration Rate	0.00	*in/hour*	*Okay*
Using Underdrains?	Yes	*Okay*	

Calculate the Minimum Filter Area				
		Value	Units	Notes
WQv		1,606	*ft^3*	
Enter Depth of Soil Media	*df*	2.5	*ft*	*2.5-4 ft*
Enter Hydraulic Conductivity	*k*	0.5	*ft/day*	
Enter Average Height of Ponding	*hf*	0.5	*ft*	*6 inches max.*
Enter Filter Time	*tf*	2	*days*	
Required Filter Area	***Af***	**1338**	***ft^2***	

Determine Actual Bio-Retention Area			
Filter Width	10	*ft*	
Filter Length	120	*ft*	
Filter Area	1200	*ft^2*	
Actual Volume Provided	1440	*ft^3*	

Determine Runoff Reduction				
Is the Bioretention contributing flow to another practice?			Select Practice	
RRv	576			
RRv applied	**576**	***ft^3***	***This is 40% of the storage provided or WQv whichever is less.***	
Volume Treated	1,030	*ft^3*	*This is the portion of the WQv that is not reduced in the practice.*	
Volume Directed	0	*ft^3*	This volume is directed another practice	
Sizing √	Error		*Check to be sure Area provided ≥ Af*	

APPENDIX J

CONSTRUCTION INSPECTION AND MAINTENANCE CHECKLISTS

Stormwater/Wetland Pond Construction Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
Pre-Construction/Materials and Equipment		
Pre-construction meeting		
Pipe and appurtenances on-site prior to construction and dimensions checked		
1. Material (including protective coating, if specified)		
2. Diameter		
3. Dimensions of metal riser or pre-cast concrete outlet structure		
4. Required dimensions between water control structures (orifices, weirs, etc.) are in accordance with approved plans		
5. Barrel stub for prefabricated pipe structures at proper angle for design barrel slope		
6. Number and dimensions of prefabricated anti-seep collars		
7. Watertight connectors and gaskets		
8. Outlet drain valve		
Project benchmark near pond site		
Equipment for temporary de-watering		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
2. Subgrade Preparation		
Area beneath embankment stripped of all vegetation, topsoil, and organic matter		
3. Pipe Spillway Installation		
Method of installation detailed on plans		
A. Bed preparation		
Installation trench excavated with specified side slopes		
Stable, uniform, dry subgrade of relatively impervious material (If subgrade is wet, contractor shall have defined steps before proceeding with installation)		
Invert at proper elevation and grade		
B. Pipe placement		
Metal / plastic pipe		
1. Watertight connectors and gaskets properly installed		
2. Anti-seep collars properly spaced and having watertight connections to pipe		
3. Backfill placed and tamped by hand under “haunches” of pipe		
4. Remaining backfill placed in max. 8 inch lifts using small power tamping equipment until 2 feet cover over pipe is reached		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
3. Pipe Spillway Installation		
Concrete pipe		
1. Pipe set on blocks or concrete slab for pouring of low cradle		
2. Pipe installed with rubber gasket joints with no spalling in gasket interface area		
3. Excavation for lower half of anti-seep collar(s) with reinforcing steel set		
4. Entire area where anti-seep collar(s) will come in contact with pipe coated with mastic or other approved waterproof sealant		
5. Low cradle and bottom half of anti-seep collar installed as monolithic pour and of an approved mix		
6. Upper half of anti-seep collar(s) formed with reinforcing steel set		
7. Concrete for collar of an approved mix and vibrated into place (protected from freezing while curing, if necessary)		
8. Forms stripped and collar inspected for honeycomb prior to backfilling. Parge if necessary.		
C. Backfilling		
Fill placed in maximum 8 inch lifts		
Backfill taken minimum 2 feet above top of anti-seep collar elevation before traversing with heavy equipment		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
4. Riser / Outlet Structure Installation		
Riser located within embankment		
A. Metal riser		
Riser base excavated or formed on stable subgrade to design dimensions		
Set on blocks to design elevations and plumbed		
Reinforcing bars placed at right angles and projecting into sides of riser		
Concrete poured so as to fill inside of riser to invert of barrel		
B. Pre-cast concrete structure		
Dry and stable subgrade		
Riser base set to design elevation		
If more than one section, no spalling in gasket interface area; gasket or approved caulking material placed securely		
Watertight and structurally sound collar or gasket joint where structure connects to pipe spillway		
C. Poured concrete structure		
Footing excavated or formed on stable subgrade, to design dimensions with reinforcing steel set		
Structure formed to design dimensions, with reinforcing steel set as per plan		
Concrete of an approved mix and vibrated into place (protected from freezing while curing, if necessary)		
Forms stripped & inspected for “honeycomb” prior to backfilling; parge if necessary		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
5. Embankment Construction		
Fill material		
Compaction		
Embankment		
1. Fill placed in specified lifts and compacted with appropriate equipment		
2. Constructed to design cross-section, side slopes and top width		
3. Constructed to design elevation plus allowance for settlement		
6. Impounded Area Construction		
Excavated / graded to design contours and side slopes		
Inlet pipes have adequate outfall protection		
Forebay(s)		
Pond benches		
7. Earth Emergency Spillway Construction		
Spillway located in cut or structurally stabilized with riprap, gabions, concrete, etc.		
Excavated to proper cross-section, side slopes and bottom width		
Entrance channel, crest, and exit channel constructed to design grades and elevations		

CONSTRUCTION SEQUENCE	SATISFACTORY / UNSATISFACTORY	COMMENTS
8. Outlet Protection		
A. End section		
Securely in place and properly backfilled		
B. Endwall		
Footing excavated or formed on stable subgrade, to design dimensions and reinforcing steel set, if specified		
Endwall formed to design dimensions with reinforcing steel set as per plan		
Concrete of an approved mix and vibrated into place (protected from freezing, if necessary)		
Forms stripped and structure inspected for "honeycomb" prior to backfilling; parge if necessary		
C. Riprap apron / channel		
Apron / channel excavated to design cross-section with proper transition to existing ground		
Filter fabric in place		
Stone sized as per plan and uniformly place at the thickness specified		
9. Vegetative Stabilization		
Approved seed mixture or sod		
Proper surface preparation and required soil amendments		
Excelsior mat or other stabilization, as per plan		

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
10. Miscellaneous		
Drain for ponds having a permanent pool		
Trash rack / anti-vortex device secured to outlet structure		
Trash protection for low flow pipes, orifices, etc.		
Fencing (when required)		
Access road		
Set aside for clean-out maintenance		
11. Stormwater Wetlands		
Adequate water balance		
Variety of depth zones present		
Approved pondscaping plan in place Reinforcement budget for additional plantings		
Plants and materials ordered 6 months prior to construction		
Construction planned to allow for adequate planting and establishment of plant community (April-June planting window)		
Wetland buffer area preserved to maximum extent possible		

Comments:

Actions to be Taken:

Bioretention Construction Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

CONSTRUCTION SEQUENCE	SATISFACTORY/ UNSATISFACTORY	COMMENTS
1. Pre-Construction		
Pre-construction meeting		
Runoff diverted		
Facility area cleared		
If designed as exfilter, soil testing for permeability		
Facility location staked out		
2. Excavation		
Size and location		
Lateral slopes completely level		
If designed as exfilter, ensure that excavation does not compact susoils.		
Longitudinal slopes within design range		

CONSTRUCTION SEQUENCE	SATISFACTORY / UNSATISFACTORY	COMMENTS
3. Structural Components		
Stone diaphragm installed correctly		
Outlets installed correctly		
Underdrain		
Pretreatment devices installed		
Soil bed composition and texture		
4. Vegetation		
Complies with planting specs		
Topsoil adequate in composition and placement		
Adequate erosion control measures in place		
5. Final Inspection		
Dimensions		
Proper stone diaphragm		
Proper outlet		
Soil/ filter bed permeability testing		
Effective stand of vegetation and stabilization		
Construction generated sediments removed		
Contributing watershed stabilized before flow is diverted to the practice		

Comments:

Actions to be Taken:

Stormwater Pond/Wetland Operation, Maintenance and Management Inspection Checklist

Project _____
Location: _____
Site Status: _____

Date: _____
Time: _____

Inspector: _____

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
1. Embankment and emergency spillway (Annual, After Major Storms)		
1. Vegetation and ground cover adequate		
2. Embankment erosion		
3. Animal burrows		
4. Unauthorized planting		
5. Cracking, bulging, or sliding of dam		
a. Upstream face		
b. Downstream face		
c. At or beyond toe		
downstream		
upstream		
d. Emergency spillway		
6.Pond, toe & chimney drains clear and functioning		
7.Seeps/leaks on downstream face		
8.Slope protection or riprap failure		
9. Vertical/horizontal alignment of top of dam “As-Built”		

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
10. Emergency spillway clear of obstructions and debris		
11. Other (specify)		
2. Riser and principal spillway (Annual)		
Type: Reinforced concrete _____ Corrugated pipe _____ Masonry _____ 1. Low flow orifice obstructed		
2. Low flow trash rack. a. Debris removal necessary		
b. Corrosion control		
3. Weir trash rack maintenance a. Debris removal necessary		
b. corrosion control		
4. Excessive sediment accumulation insider riser		
5. Concrete/masonry condition riser and barrels a. cracks or displacement		
b. Minor spalling (<1")		
c. Major spalling (rebars exposed)		
d. Joint failures		
e. Water tightness		
6. Metal pipe condition		
7. Control valve a. Operational/exercised		
b. Chained and locked		
8. Pond drain valve a. Operational/exercised		
b. Chained and locked		
9. Outfall channels functioning		
10. Other (specify)		

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
3. Permanent Pool (Wet Ponds) (monthly)		
1. Undesirable vegetative growth		
2. Floating or floatable debris removal required		
3. Visible pollution		
4. Shoreline problem		
5. Other (specify)		
4. Sediment Forebays		
1.Sedimentation noted		
2. Sediment cleanout when depth < 50% design depth		
5. Dry Pond Areas		
1. Vegetation adequate		
2. Undesirable vegetative growth		
3. Undesirable woody vegetation		
4. Low flow channels clear of obstructions		
5. Standing water or wet spots		
6. Sediment and / or trash accumulation		
7. Other (specify)		
6. Condition of Outfalls (Annual , After Major Storms)		
1. Riprap failures		
2. Slope erosion		
3. Storm drain pipes		
4.Endwalls / Headwalls		
5. Other (specify)		
7. Other (Monthly)		
1. Encroachment on pond, wetland or easement area		

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
2. Complaints from residents		
3.Aesthetics a. Grass growing required		
b. Graffiti removal needed		
c. Other (specify)		
4. Conditions of maintenance access routes.		
5. Signs of hydrocarbon build-up		
6. Any public hazards (specify)		
8. Wetland Vegetation (Annual)		
1. Vegetation healthy and growing Wetland maintaining 50% surface area coverage of wetland plants after the second growing season. (If unsatisfactory, reinforcement plantings needed)		
2. Dominant wetland plants: Survival of desired wetland plant species Distribution according to landscaping plan?		
3. Evidence of invasive species		
4. Maintenance of adequate water depths for desired wetland plant species		
5. Harvesting of emergent plantings needed		
6. Have sediment accumulations reduced pool volume significantly or are plants “choked” with sediment		
7. Eutrophication level of the wetland.		
8. Other (specify)		

Comments:

Actions to be Taken:

Bioretention Operation, Maintenance and Management Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
1. Debris Cleanout (Monthly)		
Bioretention and contributing areas clean of debris		
No dumping of yard wastes into practice		
Litter (branches, etc.) have been removed		
2. Vegetation (Monthly)		
Plant height not less than design water depth		
Fertilized per specifications		
Plant composition according to approved plans		
No placement of inappropriate plants		
Grass height not greater than 6 inches		
No evidence of erosion		
3. Check Dams/Energy Dissipaters/Sumps (Annual, After Major Storms)		
No evidence of sediment buildup		

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
Sumps should not be more than 50% full of sediment		
No evidence of erosion at downstream toe of drop structure		
4. Dewatering (Monthly)		
Dewaters between storms		
No evidence of standing water		
5. Sediment Deposition (Annual)		
Swale clean of sediments		
Sediments should not be > 20% of swale design depth		
6. Outlet/Overflow Spillway (Annual, After Major Storms)		
Good condition, no need for repair		
No evidence of erosion		
No evidence of any blockages		
7. Integrity of Filter Bed (Annual)		
Filter bed has not been blocked or filled inappropriately		

Comments:

Actions to be Taken:

APPENDIX K

NRCC MEAN PRECIPITATION FREQUENCY ESTIMATES

Northeast Regional Climate Center Extreme Precipitation Estimates (inches)
for Esopus, Ulster County, New York

Mean precipitation frequency estimates

Duraction	90%-Storm	1-Year	10-Year	100-Year
Inches	1.4	2.61	4.7	8.29

APPENDIX L

SHPO NO IMPACT LETTER

New York State
Parks, Recreation and
Historic Preservation

KATHY HOCHUL
Governor

ERIK KULLESEID
Commissioner

November 29, 2023

Matt Towne
Project Manager
Willingham Engineering
183 Main Street
New Paltz, NY 12561

Re: DEC
39 Tourist Cabins
38 Hudson Ln, Ulster Park, NY 12487
23PR04677

Dear Matt Towne:

Thank you for requesting the comments of the Division for Historic Preservation of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the submitted materials in accordance with the New York State Historic Preservation Act of 1980 (section 14.09 of the New York Parks, Recreation and Historic Preservation Law). These comments are those of the Division for Historic Preservation and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project.

OPRHP has reviewed the Phase I Archaeological Survey Report entitled “Hudson Hideaway 1A/1B PR#23PR04677 Town of Esopus, Ulster County” (November 2023; 23SR00615). No archaeological sites were identified by the survey. Therefore, it is the opinion of the OPRHP that no properties, including archaeological and/or historic resources, listed in or eligible for the New York State and National Registers of Historic Places will be impacted by this project.

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

Sincerely,

Jessica Vavrasek

Jessica Vavrasek
Historic Preservation Specialist – Archaeology/NAGPRA

APPENDIX M

NATURAL HERITAGE PROGRAM RESPONSE LETTER

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Fish and Wildlife, New York Natural Heritage Program
625 Broadway, Fifth Floor, Albany, NY 12233-4757
P: (518) 402-8935 | F: (518) 402-8925
www.dec.ny.gov

November 15, 2023

Matthew Towne
Willingham Engineering
183 Main Street
New Paltz, NY 12561

Re: 39-unit tourist cabin commercial development, 38 Hudson Lane
County: Ulster Town/City: Esopus

Dear Matthew Towne:

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to the above project.

Enclosed is a report of rare or state-listed animals and plants, and significant natural communities that our database indicates occur in the vicinity of the project site.

For most sites, comprehensive field surveys have not been conducted; the enclosed report only includes records from our database. We cannot provide a definitive statement as to the presence or absence of all rare or state-listed species or significant natural communities. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other sources may be required to fully assess impacts on biological resources.

The presence of the plants and animals identified in the enclosed report may result in this project requiring additional review or permit conditions. For further guidance, and for information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the NYS DEC Region 3 Office, Division of Environmental Permits, at dep.r3@dec.ny.gov.

Sincerely,

Heidi Krahling
Environmental Review Specialist
New York Natural Heritage Program

795

The following state-listed animals have been documented in the vicinity of the project site.

The following list includes animals that are listed by NYS as Endangered, Threatened, or Special Concern; and/or that are federally listed.

For more information, including any permit considerations for the project, please contact the NYSDEC Region 3 Office, Division of Environmental Permits, at dep.r3@dec.ny.gov, (845) 256-3054.

The following species have been documented in the Hudson River and so could occur downstream from and within 0.5 mile of the project site.

COMMON NAME	*SCIENTIFIC NAME*	*NY STATE LISTING*	*FEDERAL LISTING*	
Fish				
Shortnose Sturgeon *migration corridor*	*Acipenser brevirostrum*	Endangered	Endangered	1091
Atlantic Sturgeon	*Acipenser oxyrinchus*	No Open Season	Endangered	11464

NOTE: This area is also a state-significant Anadromous Fish Concentration Area.

The following species has been documented nesting within 0.5 mile of the project site.

COMMON NAME	*SCIENTIFIC NAME*	*NY STATE LISTING*	*FEDERAL LISTING*	
Birds				
Bald Eagle *Breeding*	*Haliaeetus leucocephalus*	Threatened		12651

The following species have been documented within 2 miles of the project site. Individual animals may travel 2.5 miles from documented locations. The main impact of concern is the cutting or removal of potential roost trees.

COMMON NAME	*SCIENTIFIC NAME*	*NY STATE LISTING*	*FEDERAL LISTING*	
Mammals				
Indiana Bat *Bachelor colony*	*Myotis sodalis*	Endangered	Endangered	11650

The following species has been documented within 5 miles of the project site. Individual animals may travel 5 miles from documented locations. The main impact of concern is the cutting or removal of potential roost trees.

COMMON NAME	*SCIENTIFIC NAME*	*NY STATE LISTING*	*FEDERAL LISTING*	
Mammals				
Northern Long-eared Bat *Hibernaculum*	*Myotis septentrionalis*	Endangered	Endangered	14175

This report only includes records from the NY Natural Heritage database.

Information about many of the listed animals in New York, including habitat, biology, identification, conservation, and management, are available online in Natural Heritage's Conservation Guides at www.guides.nynhp.org, and from NYSDEC at www.dec.ny.gov/animals/7494.html.

New York Natural Heritage Program

Report on Rare Animals, Rare Plants, and Significant Natural Communities

The following rare plants, rare animals, and significant natural communities have been documented at the project site, or in its vicinity.

We recommend that potential impacts of the proposed project on these species or communities be addressed as part of any environmental assessment or review conducted as part of the planning, permitting and approval process, such as reviews conducted under SEQR. Field surveys of the project site may be necessary to determine the status of a species at the site, particularly for sites that are currently undeveloped and may contain suitable habitat. Final requirements of the project to avoid, minimize, or mitigate potential impacts are determined by the lead permitting agency or the government body approving the project.

The following plants are listed as Endangered or Threatened by New York State, and/or are considered rare by the New York Natural Heritage Program, and are a vulnerable natural resource of conservation concern.

COMMON NAME	*SCIENTIFIC NAME*	*NY STATE LISTING*	*HERITAGE CONSERVATION STATUS*
Vascular Plants			
Swamp Cottonwood	*Populus heterophylla*	Threatened	Imperiled in NYS

Documented within 0.5 mile northeast of the project site. 2005-08-02: This is a muck-bottomed, perched, red maple hardwood swamp over greywacke or limestone within a mostly Appalachian oak-hickory forest in ridge and valley terrain of rocky ridge tops. The swamp is dominated by Acer rubrum, Quercus bicolor, Nyssa sylvatica. 14451

This report only includes records from the NY Natural Heritage database. For most sites, comprehensive field surveys have not been conducted, and we cannot provide a definitive statement as to the presence or absence of all rare or state-listed species. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other sources may be required to fully assess impacts on biological resources.

If any rare plants or animals are documented during site visits, we request that information on the observations be provided to the New York Natural Heritage Program so that we may update our database.

Information about many of the rare animals and plants in New York, including habitat, biology, identification, conservation, and management, are available online in Natural Heritage's Conservation Guides at www.guides.nynhp.org.