

STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

Prepared for:

DIVERSIFIED EQUIPMENT, LLC
LAWN AND GARDEN FACILITY
1947 STATE ROUTE 332
CANANDAIGUA, NY 14424

Date:
October 26, 2022

REVISED:
12/01/22

Prepared by:



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1.0 **INTRODUCTION**

This SWPPP is prepared in accordance with the requirements of Article 17, Titles 7, 8, and Article 70 of the New York State Environmental Conservation Law to obtain coverage by the SPDES General Permit for Stormwater Discharge from Construction Activities (GP-0-20-001). A Construction Notice of Intent (NOI) has been filed with the NYSDEC (APPENDIX D), and the Town of Canandaigua will review the SWPPP and indicate its approval.

The design standards and practices outlined herein are in accordance with the New York Standards and Specifications for Erosion and Sediment Control and the New York State Stormwater Management Design Manual (SWDM).

The SWPPP includes the following:

- Identification of the SWPPP coordinator with a description of this person's duties.
- Description of the existing site conditions including existing land use of the site (i.e., wooded areas, open grassed areas, pavement, buildings, etc.), soil types at the site, as well as the location of surface waters which are located on or next to the site (wetlands, streams, rivers, lakes, ponds, etc.).
- Identification of the body of water(s) which will receive runoff from the construction site, including the ultimate body of water that receives the stormwater.
- Identification of drainage areas and potential stormwater contaminants.
- Description of construction stormwater management controls necessary to reduce erosion, sediment, and pollutants in stormwater discharge.
- Description of the facility's monitoring plan and how controls will be coordinated with construction activities.
- Description of post-construction stormwater management practices for runoff quality and quantity control.

2.0 FACILITIES DESCRIPTION

2.1 Site Location

The proposed project is in the Town of Canandaigua located southeast of the intersection of State Route 332 and Purdy Road. The site is bounded by neighboring vacant rural, commercial, agricultural, and residential land uses.

According to the New York State Historic Preservation Office GIS – Public Access Website, the site is not in the state registry for historical significance but may be archeologically sensitive. NYS SHPO has made a determination that this project will have no impact on any archaeological and/or historic resources. The site is not within a 100 year floodplain as mapped by FEMA.

2.2. Project Description

Existing:

The area of the subject property is 7.4879 acres. Lands directly to the north and east are primarily agricultural and vacant use. Lands across State Route 332 are primarily residential and agricultural uses. To the northwest there is a commercial salon and a residential subdivision. This community is a mixture of agricultural, commercial, and residential uses. The site is not in a NYS DEC Brownfield remediation program and no know contamination is present.

Proposed:

The proposed project will include the new development of a commercial lawn and garden equipment repair/rental facility (5,000 square feet). Additionally, the proposed development will provide a building for equipment storage (4,000 square feet). A new asphalt driveway will be 0.438 acres with an additional 0.530 acre stone driveway to loop around the back of the facility. A new on site wastewater treatment system and stormwater management facility are proposed as well. The remaining lands will be used for stormwater management and/or maintained as lawn.

2.3 Type of Construction

The development construction activities will generally consist of the following:

- Stripping of topsoil
- Earthwork (regrading of earth with cuts and fills)
- Rough grading of site
- Excavations for the installation of underground utilities
- Building construction
- Driveway installation
- Construction of stormwater management facilities
- Final grading
- Landscaping, topsoil, and seeding of disturbed areas

2.4 Existing Site Hydrology

In general, the project site drains northwest toward a drainage ditch that eventually feeds a class C stream that runs northeast until it reaches the Canandaigua Outlet. The total parcel as it exists consists of one major drainage area that can be divided up into smaller drainage areas. The site receives runoff from across State Route 332 and the State Route itself. This runoff is collected in an existing pond onsite. This existing pond outlets to the northwest along with the remaining drainage areas. All minor drainage areas are ultimately tributary to the same unnamed class C stream located offsite. Drainage from this site is conveyed via the class C stream to the Canandaigua Lake Outlet, located northwest of the site.

2.4 Proposed Site Hydrology

The purpose of the Stormwater Management Plan is to safely control and convey all runoff from the site and to effectively reduce post-development runoff flows from new impervious areas while providing treatment of water quality.

The sites proposed drainage patterns will remain consistent with existing patterns except for an increase of impervious area and addition of another stormwater management facility designed as a Pocket Pond (P-5). Stormwater will sheet over

vegetation and newly impervious surfaces through a combination of pea stone gravel stirps, dry swales, and a stormwater management facility prior to discharging offsite.

3.0 CONSTRUCTION STORMWATER MANAGEMENT

3.1 Stormwater Management Controls

The purpose of this section is to identify the types of temporary and permanent erosion and sediment controls that will be used on the site. The controls will provide soil stabilization for disturbed areas and structural controls to divert runoff and remove sediment. This section will also address control of other potential stormwater pollutant sources such as epoxy, concrete dust, grease, fuel oil, waste disposal, and sanitary waste disposal.

a. Temporary and Permanent Erosion Control Practices

To limit soil migration, the following measures will be implemented:

- Silt fencing will be placed along the perimeter of the area to be cleared and graded before any work takes place.
- The temporary seed mix shall consist of 30 pounds per acre of rye grass (annual or perennial) and 100 pounds per acre winter rye (cereal rye). Use winter rye if seeding occurs in October or November.
- Areas where soil disturbance activities have temporarily or permanently ceased, soil stabilization measures will be initiated by the end of the next business day and completed within 14 days (7 days if over 5-acres of disturbance, or 3 days during specified winter months). The temporary seed mix shall consist of 30 pounds per acre of rye grass (annual or perennial) and 100 pounds per acre winter rye (cereal rye). Use winter rye if seeding occurs in October or November.
- No phosphorus shall be used at planting time unless soil testing has been completed and tested by a horticultural testing lab and the soil tests specifically indicate a phosphorus deficiency that is harmful, or will prevent new lawns and plantings from establishment

properly. If soil tests indicate a phosphorus deficiency that will impact plant and lawn establishment, phosphorus shall be applied at the minimum recommended level prescribed in the soil test following all NYSDEC regulations.

- After fertilizer, all areas which will not be impacted by further construction shall be permanently seeded. The permanent seed mix shall be 30% Kentucky Blue Grass blend at 30 pounds per acre, 35% perennial rye grass at 35 pounds per acre, and 35% red fescue at 35 pounds per acre. An alternative seed would be 100% tall fescue, turf type fine leaf at 150-200 pounds per acre.
- After seeding, disturbed areas will be mulched with 6.0 pounds per 1,000 square feet of straw or hydroseeded with an appropriate tackifier.
- Topsoil stockpiles will be stabilized with temporary seed and mulch no later than 7 days from placement of the stockpile. The temporary seed shall be rye (grain) applied at the rate of 120 pounds per acre.
- Areas of the site which are to be paved will be temporarily stabilized by applying geotextile and stone sub-base until asphalt is applied.
- Stabilized construction entrances will be placed at the entrances to the site.
- All catch basins will be will have at least 1.0-foot sumps which will trap sediment from parking lot runoff following completion and stabilizations of the project. During construction, each basin will be protected from sediment laden inflow in accordance with the New York Standards and Specifications for Erosion and Sediment Control.

b. Control Structure Design

All erosion and sediment control structures are designed and shall be installed in accordance with the New York Standards and Specifications for Erosion and Sediment Control.

c. Construction Practices to Minimize Stormwater Contamination

All waste materials will be collected and stored in a secure metal dumpster

supplied by a waste handler which is a licensed solid waste management company. All trash and construction debris from the site shall be deposited in the dumpster. The dumpster will be emptied on an as-needed basis and the trash will be hauled to an approved landfill. No construction materials will be buried on-site. All personnel will be instructed regarding the correct procedure for waste disposal. All sanitary waste will be collected from the portable units by a licensed sanitary sewer waste management contractor. Good housekeeping and spill control practices will be followed during construction to minimize stormwater contamination from petroleum products, fertilizers, paints, and concrete. To prevent stormwater contamination from the site, good housekeeping practices are listed below:

- Fertilizers will be applied only in the minimum amounts recommended by the manufacturer, unless specified otherwise by the engineer and will be worked into the soil to limit exposure to stormwater.
- Fertilizers and hazardous materials/waste shall be stored in a covered shed or a sealable bin to avoid spills.
- All construction vehicles on site shall be monitored for leaks and receive regular preventative maintenance to reduce the chance of leakage.
- Petroleum products shall be stored in tightly sealed containers which are clearly labeled. Storage shall comply w/ NYSDEC standard requirements for the material(s) contained.
- Sanitary waste shall be collected from portable units as needed to avoid overfilling.
- All curing compounds shall be tightly sealed and stored when not required for use. Excess compounds shall not be discharged to the storm system and shall be properly disposed according to the manufacturer's instructions.
- Materials and equipment necessary for spill cleanup shall be kept in the temporary material storage trailer onsite. Equipment shall include, but not be limited to, brooms, dust pans, mops, rags, gloves, goggles, fast absorbent material, sand, saw dust, and plastic

and metal trash containers.

- Petroleum spills must be reported to the DEC. Consult NYDEC regulations for spills.

All reportable petroleum spills and most hazardous spills must be reported to the DEC hotline (1-800-457-7362) and the National Response Center (1-800-424-8802). Report the spill to local authorities, if required. For spills not deemed reportable, facts concerning the incident shall be documented by the spiller and a record maintained for one year.

- Concrete trucks shall only be allowed to wash out or discharge surplus concrete or drum wash water to a correctly installed and maintained concrete wash-out area.
- When testing/cleaning of water supply lines occurs, the discharge from the tested pipe will be collected and conveyed to a completed stormwater collection system for ultimate discharge into the stormwater management facility.
- Stabilized construction entrances shall be constructed to reduce vehicle tracking of sediments onto public roadways.
- The paved roads at the site entrances shall be swept daily to remove excess mud, dirt, or rock tracked from the site.
- Dump trucks hauling fine and dusty material from the construction site shall be covered with a tarpaulin.
- All ruts caused by equipment used for site clearing and grading shall be eliminated by re-grading.

d. **Coordination of Stormwater Management Control Structures with Construction Activities**

Stormwater Management Control Structures shall be coordinated with construction activities so the control plan is in place before construction begins. The following control structures will be coordinated with construction activities:

- The temporary perimeter controls (silt fences, stabilized construction entrance, sediment basins and check dams) shall be installed before any work begins.
- Clearing and grading shall not occur in an area until it is necessary for construction to proceed.
- Once construction activity ceases permanently in an area, that area will be immediately stabilized with permanent seed and mulch.
- The proposed detention basin shall initially be constructed as a sediment trap during construction (See Construction Documents).
- The temporary perimeter controls (silt fencing) shall not be removed until all construction activities at the site are complete and soils have been stabilized.

e. **Certification of Compliance with Federal, State, and Local Regulation**

This SWPPP reflects local, state, and federal requirements for stormwater management and erosion and sediment control, as established in SPDES General Permit for Stormwater Discharge from Construction Activity, Permit No. GP-0-20-001. There are no other applicable State or Federal requirements for sediment and erosion site plans (or permits), or stormwater management site plans (or permits).

3.2 **Maintenance/Inspection Procedures**

a. **Inspections**

Visual inspections of all cleared and graded areas of the construction site will be performed weekly as required by the SPDES General Permit for Stormwater Discharge from Construction Activities (GP-0-20-001). If at any time disturbance exceeds 5 acres, inspections will be performed twice weekly. Inspection Reports will be submitted to the developer, the construction contractor(s), and the Town of Canandaigua.

The site inspections will be conducted by a qualified professional whom the DEC defines as a person knowledgeable in principals and practice of

erosion and sediment controls, such as a licensed professional engineer, Certified Professional in Erosion and Sediment Control (CPESC), or soil scientist. The inspections will verify that the control structures described in Section 3 of this SWPPP are being utilized correctly to control erosion and sedimentation. The inspector shall also have the capacity to require additional controls as required to control erosion and sediment on the site. The inspection will also verify that the procedures used to prevent stormwater contamination from construction materials and petroleum products are effective.

The Inspection Report will be completed after each inspection. A copy of the report form to be completed by the SWPPP coordinator is provided in APPENDIX A of this SWPPP. Completed forms will be maintained on-site during the entire construction project. A copy shall also be submitted to the governing agency. The developer will be responsible for reviewing each report and making all necessary repairs to the stormwater management facilities as indicated in the report. Following construction, the completed forms shall be retained at the owner's office for a minimum of one year.

If construction activities change or design modifications are made to the site plan which could impact stormwater, this SWPPP will be amended appropriately by recommendations and requirements set forth by the inspector. The inspection report shall serve as an amendment to this SWPPP.

b. Maintenance

1. Construction

During construction and until such time as the site is stabilized, all erosion/sediment control measures shall be maintained as specified in the New York Standards and Specifications for Erosion and Sediment Control and as summarized below:

- Silt Fence - Remove accumulated sediment when bulges appear in the fencing or when sediment is one-foot deep.
- Sediment Trap - Remove sediment and restore trap to original dimensions when sediment has accumulated to one-half of the design depth of the trap.
- Stabilized Construction Entrance - Periodic top dressing with stone is required to help prevent tracking of sediment onto public roads.
- Concrete Washout – Concrete truck shall be washed out into a sealed container or diked area to prevent contaminants from discharging to surface waters.
- Onsite Dumpster – A temporary dumpster with a cover should be maintained to prevent debris from littering the site.

Maintenance of the site by the owner will also include but not be limited to the following:

- Periodic sweeping of the pavement to remove accumulated sediment.
- Periodic mowing of the banks of the pond area and maintenance of the vegetation.

2. Post-Construction

APPENDIX F includes the recommended Maintenance and Management Inspection Checklists taken from the New York State Stormwater Management Design Manual for the stormwater management facility.

Maintenance of the site by the owner will also include but not be limited to the following:

- Periodic sweeping of the pavement to remove accumulated

sediment.

- Periodic mowing of the banks of the pond area and maintenance of the vegetation.

3.3. Employee Training

An employee training program shall be developed and implemented by the owner(s) and contractors to educate employees about the requirements of the SWPPP. This education program will include background on the components and goals of the SWPPP and hands-on training in erosion controls, spill prevention and response, good housekeeping, proper material handling, disposal and control of waste, equipment fueling, and proper storage, washing, and inspection procedures. All employees shall be trained prior to their first day on the site.

3.4 SWPPP COORDINATOR AND DUTIES

A construction site SWPPP coordinator for the facility shall be appointed by the developer and/or contractor. The duties of the construction site SWPPP coordinator include the following:

- Implement the SWPPP plan with the aid of the SWPPP team; Oversee maintenance practices identified in the SWPPP
- Implement and oversee employee training
- Conduct or provide for inspection and monitoring activities
- Identify other potential pollutant sources and make sure they are added to the plan
- Identify any deficiencies in the SWPPP and make sure they are corrected, and ensure that any changes in construction plans are addressed in the SWPPP
- Ensure that all housekeeping and monitoring procedures are implemented

4.0 POST-CONSTRUCTION STORMWATER MANAGEMENT

4.1 **Collection and Conveyance Facilities**

Permanent stormwater collection and conveyance facilities are designed to control the developed, post-construction stormwater runoff from the proposed development, employing the following standards:

<u>Facilities</u>	<u>Design Standard</u>
Underground storm sewer and catch basins	- developed 10-year storm
Swales	- developed 10-year storm
Major culverts	- developed 25-year storm
Overland stabilized flood routes	- developed 100-year storm

- (1) Pipe velocity <15 fps, rip-rap aprons provided at outlets in accordance with New York Standards and Specifications for Erosion and Sediment Control.
- (2) If calculated channel velocity exceeds 6 fps, then erosion protection (i.e. stone lining, pavement, staked mesh) will be provided in accordance with New York Standards and Specifications for Erosion and Sediment Control.

4.2 **Stormwater Peak Runoff Rates and Water Quality Management**

Due to the construction of additional impervious surfaces, peak stormwater runoff rates, volumes, and pollutant loads will increase when the new areas are developed. Mitigation of this impact is achieved through employment of stormwater management measures that achieve pollutant removal goals, reduce channel erosion, prevent overbank flooding, and help control extreme floods. This project will meet all NYSDEC Water quality treatment requirements for the improvements. In addition, this project will meet the Town of Canandaigua required Enhanced Phosphorous Removal as outlined in Chapter 10 of the SWDM.

Green infrastructure has been implemented (Appendix C) to reduce, infiltrate and treat the required water quality volume. Computations for the design are included

in APPENDICES B and C. FIGURES 5 and 6 show existing and proposed tributary drainage areas.

5.0 GREEN INFRASTRUCTURE TECHNIQUES

This project has incorporated several of the required practices outlined by the SWDM as “Green Infrastructure Techniques and Practices”. The intent of these practices is to preserve natural areas and features as well as promote infiltration and groundwater recharge. Appendix C explains the design and implementation of these practices.

Pea stone gravel strips and 432 linear feet of dry swales alongside the parking lot will help to filter and infiltrate stormwater runoff through soil and vegetative media.

6.0 NOTICE OF TERMINATION

Following the completion of construction, the owner/operator shall file a Notice of Termination (NOT) with the DEC (APPENDIX H). Prior to filing the NOT, the operator shall have the qualified professional perform a final site inspection, at which time the qualified professional shall certify that the site has undergone final stabilization. “Final Stabilization” means that all soil-disturbing activities at the site have been completed and a uniform, perennial vegetative cover with a density of 80% has been established or equivalent stabilization measures (such as the use of mulches or geotextile) have been employed on all unpaved areas and areas not covered by permanent structures.

6.0 **Certification**

Engineer's Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manages the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that false statements made herein are punishable as a Class A misdemeanor pursuant to Section 210.45 of the Penal Law."

Name

Project Engineer

Title

Date

Corporate Certification (Owner)

“I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manages the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that false statements made herein are punishable as a Class A misdemeanor pursuant to Section 210.45 of the Penal Law.”

Name

Title

Date

The General Contractor shall be responsible for the coordination of the installation and maintenance of all erosion and sediment controls for the project, including the work of all subcontractors. Final stabilization of the site, including removal of temporary controls and placement of permanent stormwater management practices shall also be coordinated by the General Contractor.

Contractor Certification (General Contractor)

“I hereby certify that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that the *owner or operator* must comply with the terms and conditions of the New York State Pollutant Discharge Eliminate System (“SPDES”) general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I understand that certifying false, incorrect, or inaccurate information is a violation of the referenced permit and the laws of the State of New York and subject me to criminal, civil, and/or administrative proceedings.”

Name

Title

Date

The excavation and grading subcontractor shall be responsible for erosion and sediment control during all aspects of general excavation and grading including, but not limited to; clearing and grubbing, installation of temporary stabilization controls (silt fence, sediment traps, diversion swales, temporary seeding, etc.) earthwork, utility installations, paving, and other permanent, non-vegetative cover.

Contractor Certification (Excavations and Grading Subcontractor)

“I hereby certify that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that the *owner or operator* must comply with the terms and conditions of the New York State Pollutant Discharge Eliminate System (“SPDES”) general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I understand that certifying false, incorrect, or inaccurate information is a violation of the referenced permit and the laws of the State of New York and subject me to criminal, civil, and/or administrative proceedings.”

Name

Title

Date

The Landscaping Contractor shall be responsible for erosion and sediment control practices, including permanent vegetative cover, during and directly related to all landscaping for the project.

Contractor Certification (Landscaping Subcontractor)

“I hereby certify that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that the *owner or operator* must comply with the terms and conditions of the New York State Pollutant Discharge Eliminate System (“SPDES”) general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I understand that certifying false, incorrect, or inaccurate information is a violation of the referenced permit and the laws of the State of New York and subject me to criminal, civil, and/or administrative proceedings.”

Name

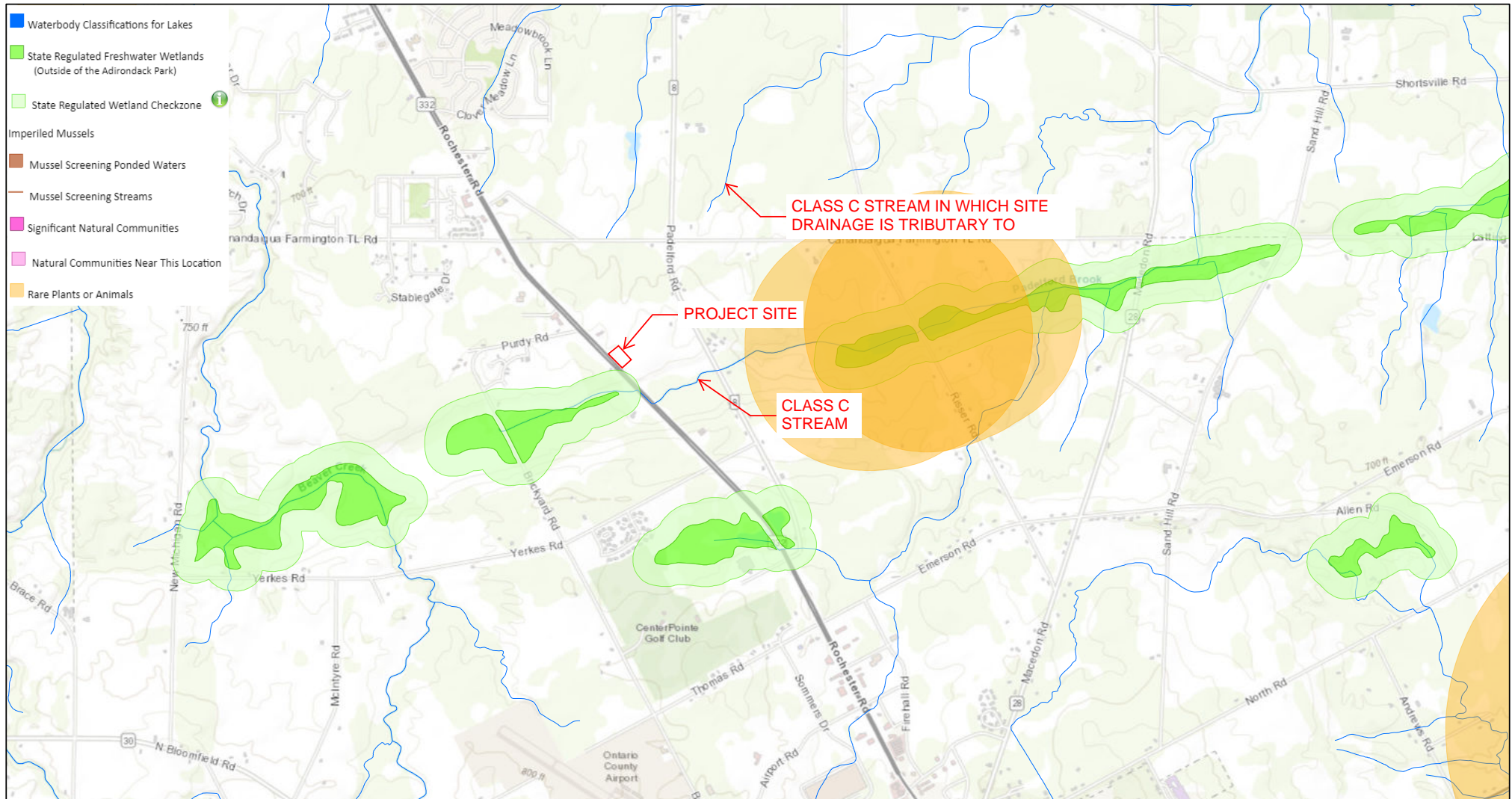
Title

Date

FIGURE 1

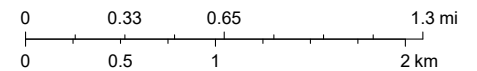
LOCATION MAP

Figure-1 LOCATION MAP



October 24, 2022

1:36,112



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Author: Marks Engineering
Not a legal document

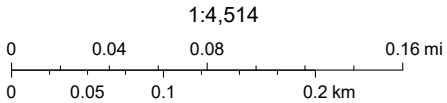
FIGURE 2

AERIAL PHOTO

Figure-2 AERIAL MAP



October 24, 2022



Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

FIGURE 3

SOIL MAP

Hydrologic Soil Group—Ontario County, New York (FIGURE 3 - SOILS MAP)



Hydrologic Soil Group—Ontario County, New York
(FIGURE 3 - SOILS MAP)

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

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

Soil Rating Lines

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

Soil Rating Points

 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

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

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

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

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

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

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

Soil Survey Area: Ontario County, New York
 Survey Area Data: Version 22, Sep 12, 2022

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

Date(s) aerial images were photographed: Aug 3, 2021—Nov 7, 2021

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
35A	Odessa silt loam, 0 to 3 percent slopes	D	4.1	100.0%
Totals for Area of Interest			4.1	100.0%

Description

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

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

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

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

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

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

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

Rating Options

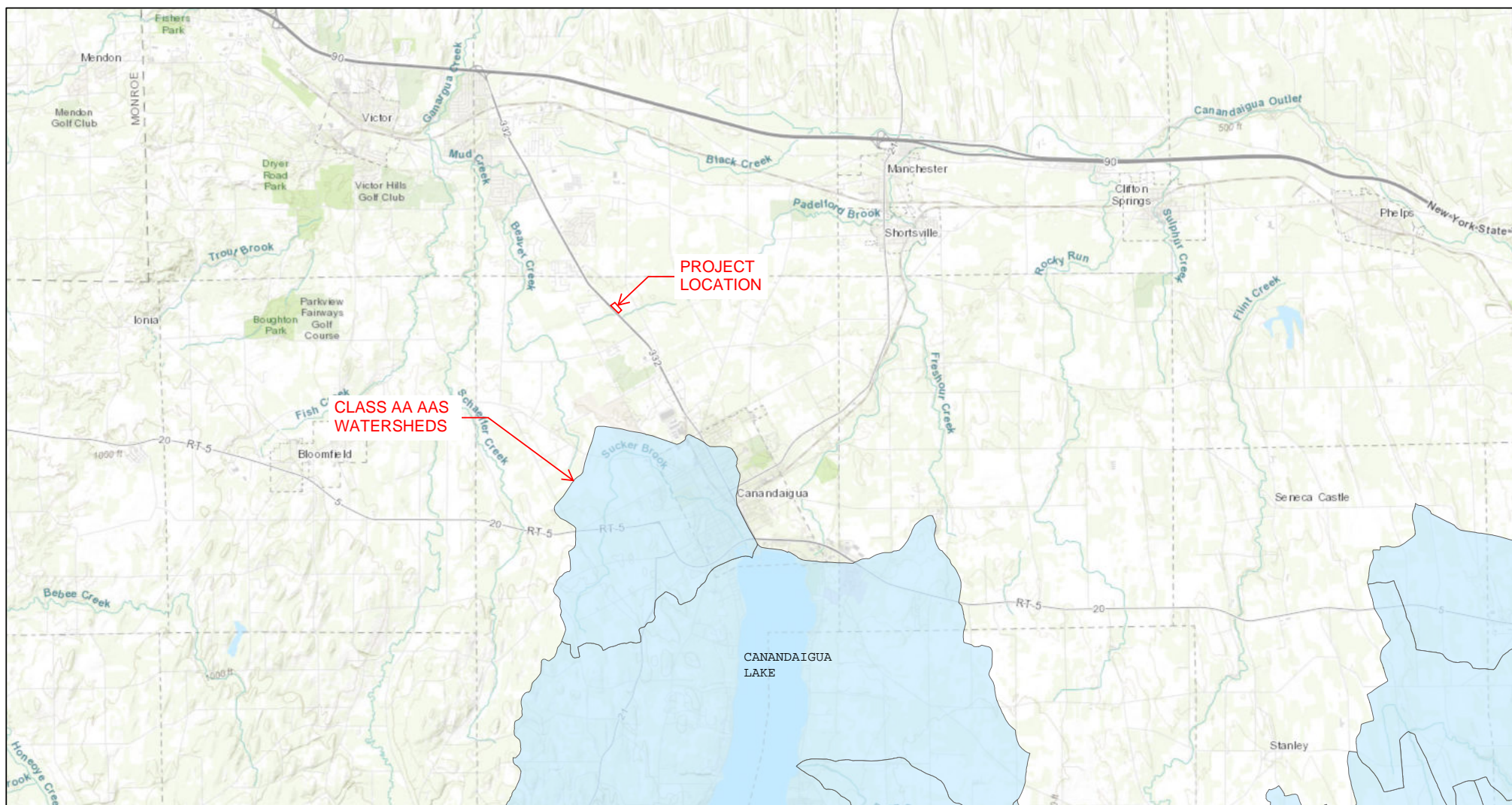
Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

FIGURE 4

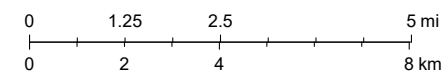
NYS DEC STORMWATER MAPPER MAP

FIGURE 4 - STORMWATER MAP



October 24, 2022

1:144,448

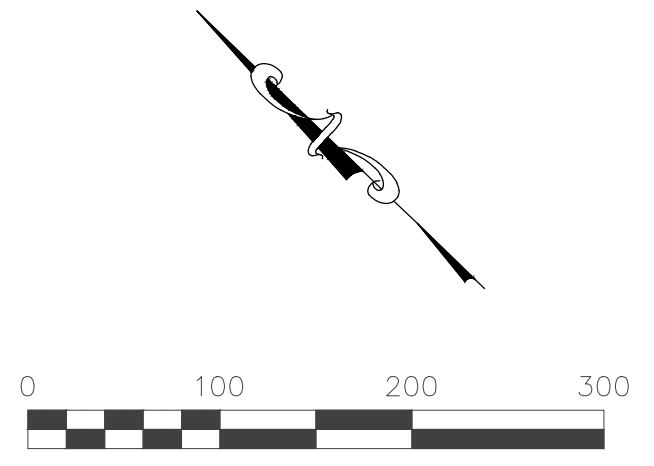
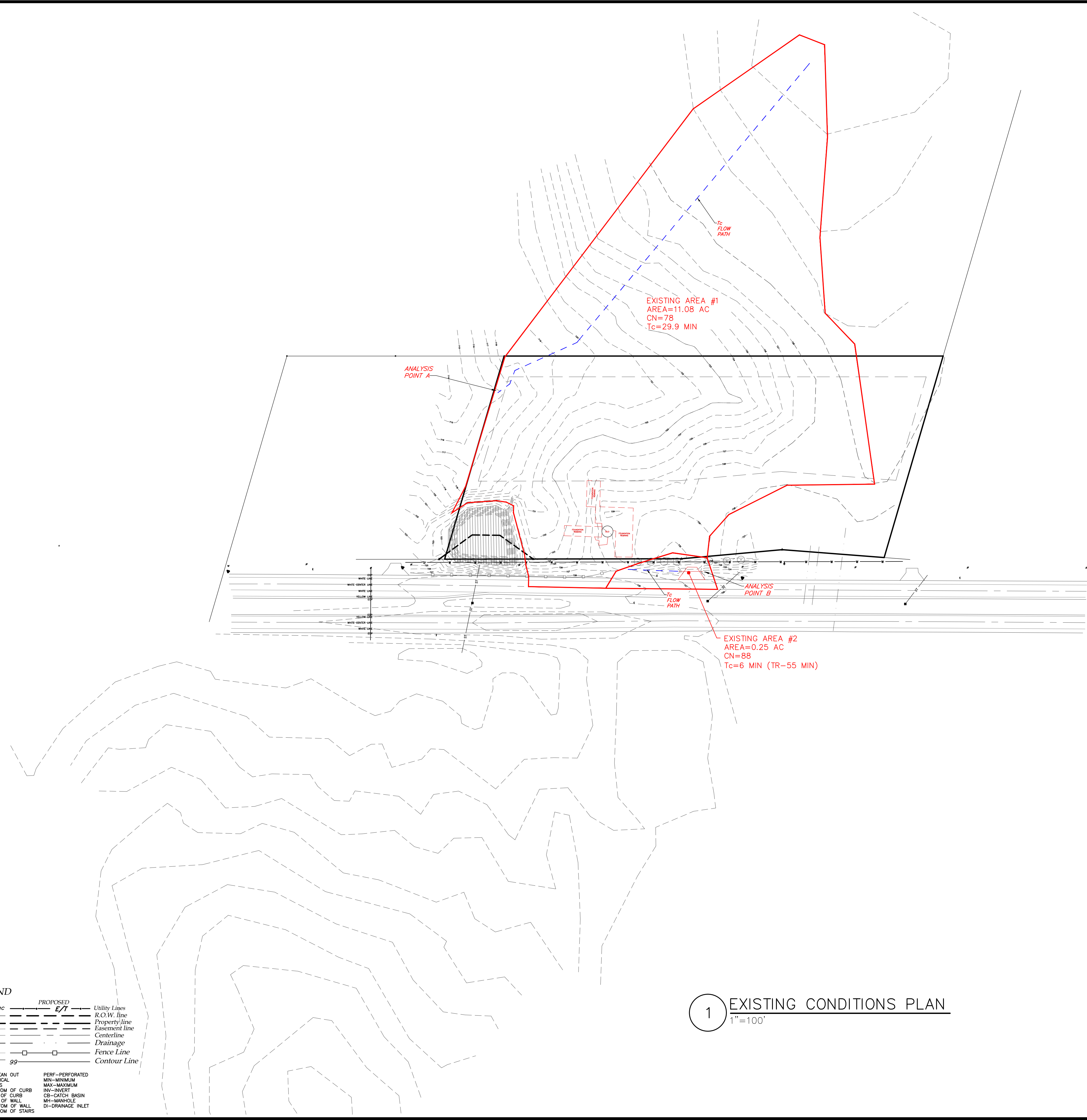


Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Author: Marks Engineering
Not a legal document

FIGURE 5

EXISTING DRAINAGE MAP



LEGEND

Iron pin or pipe found	EXISTING C/L	PROPOSED E/T	Utility Lines
Benchmark	EXISTING E/L	PROPOSED E/T	R.O.W. line
Utility pole	EXISTING F/L	PROPOSED F/L	Property line
Hydrant	EXISTING C/L	PROPOSED C/L	Easement line
Light pole	EXISTING D/L	PROPOSED D/L	Centerline
PERC TEST	EXISTING F/L	PROPOSED F/L	Drainage
DEEP HOLE	EXISTING C/L	PROPOSED C/L	Fence Line
	EXISTING C/L	PROPOSED C/L	Contour Line

ABBREVIATIONS:
EX-EXISTING
COP-CORRUGATED POLYETHYLENE PIPE
O.C.-ON CENTER
SICP-SMOOTH INTERIOR CORRUGATED POLYETHYLENE PIPE
UC-UNDERGROUND
CONC-CONCRETE

CO -CLEAN OUT
TYP-TYPICAL
R-RADIUS
BC-BOTTOM OF CURB
TC-TOP OF CURB
TW-TOP OF WALL
BW-BOTTOM OF WALL
BS-BOTTOM OF STAIRS

PERF-PERFORATED
MIN-MINIMUM
MAX-MAXIMUM
INV-INVERT
CB-CATCH BASIN
MH-MANHOLE
DI-DRAINAGE INLET

1 EXISTING CONDITIONS PLAN
1"=100'

NOT FOR CONSTRUCTION

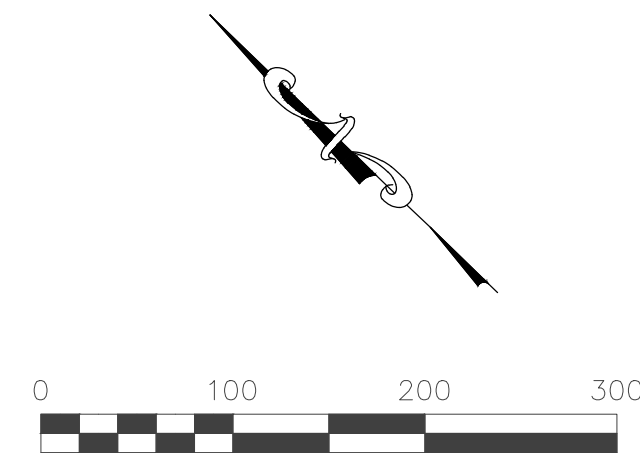
		Marks Engineering 412 BEEMAN ST CANANDAIGUA, NY 14424 www.marksengineering.com bmarks@marksengineering.com Phone: 585-905-0360 Fax: 585-485-6205	
NEW COMMERCIAL SITE PLANS PREPARED FOR: DIVERSIFIED EQUIPMENT, LLC NEW LAWN & GARDEN EQUIPMENT REPAIR/RENTAL FACILITY AND EQUIPMENT STORAGE BUILDING SHOWING LAND IN: 1947 STATE ROUTE 332 TOWN OF CANANDAIGUA COUNTY OF ONTARIO STATE OF NEW YORK		STAMP	
DRAWING TITLE: EXISTING CONDITIONS		BY: J.W.J.	
DRAWN BY: J.W.J.		DESIGNED BY: J.W.J.	
CHECKED BY: B.A.M.		SCALE: 1"=100'	
JOB NO.: 22-210		DATE: 10/26/2022	
TAX MAP#: 56.00-1-13.21		DATE: 10/26/2022	

FIGURE 01

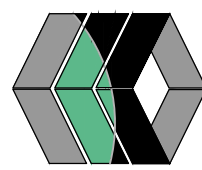
IT IS A VIOLATION OF NYS EDUCATION LAW SECTION 7209 FOR ANY PERSON TO ALTER A DOCUMENT IN ANY WAY, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL. IF A DOCUMENT BEARING THE SEAL OF AN ALTERED, THE ALTERING PROFESSIONAL SHALL AFFIX TO THE DOCUMENT THEIR SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY THEIR SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

FIGURE 6

PROPOSED DRAINAGE MAP



NOT FOR CONSTRUCTION



STAMP

[illegible]

NEW COMMERCIAL SITE PLANS PREPARED FOR:

DIVERSIFIED EQUIPMENT, LLC

**NEW LAWN & GARDEN EQUIPMENT REPAIR/RENTAL FACILITY AND
EQUIPMENT STORAGE BUILDING**

SHOWING LAND IN:
1947 STATE ROUTE 332
TOWN OF CANANDAIGUA

COUNTY OF ONTARIO

DRAWING TITLE:
PROPOSED CONDITIONS

DRAWN BY:	JWJ
DESIGNED BY:	JWJ
CHECKED BY:	BAM
SCALE:	1"=100'
JOB NO.:	22-210
DATE:	10/26/2022
TAX MAP#:	56.00-1-13.21

FIGURE 02

[illegible]

MarksEngineering

4 2 BEEMAN ST
CANANDAIGUA, NY 14424
www.marksengineering.com
Phone 585-905-0360
Fax: 585-485-6205
bmarks@marksengineering.com

[illegible]

APPENDIX A

Inspection Report Form

MARKS ENGINEERING, P.C.

42 BEEMAN STREET, CANANDAIGUA, NY 14424 phone 585.329.6138 fax 585.486.6205

SWPPP INSPECTION REPORT

PROJECT: _____ PROJECT NO.: _____			SPDES PERMIT NO. : _____ WEATHER: _____		
CONSTRUCTION STAGE: _____			LAST SIGNIFICANT PRECIPITATION EVENT: _____		
COMPONENT		CONDITION		DEFICIENCIES AND RECOMMENDATIONS	
1	GENERAL HOUSEKEEPING	ACCEPT			
		DEFICIENT	N/A		
2	SILT FENCE/ PERIMETER CONTROLS	ACCEPT			
		DEFICIENT	N/A		
3	SEDIMENT BASINS, TRAPS & PONDS	ACCEPT			
		DEFICIENT	N/A		
4	INLET PROTECTION	ACCEPT			
		DEFICIENT	N/A		
5	PAVEMENT/ ROADWAY/ OFF-SITE	ACCEPT			
		DEFICIENT	N/A		
6	CONSTRUCTION ACCESS	ACCEPT			
		DEFICIENT	N/A		
7	STABILIZATION (SEED/MULCH)	ACCEPT			
		DEFICIENT	N/A		
8	CHECK DAMS	ACCEPT			
		DEFICIENT	N/A		
9	SWALES & DIKES	ACCEPT			
		DEFICIENT	N/A		
10	STOCKPILES & MATERIAL MANAGEMENT	ACCEPT			
		DEFICIENT	N/A		
11	STABILIZED OUTLET PROTECTION & LEVEL SPREADERS	ACCEPT			
		DEFICIENT	N/A		
12	DEWATERING	ACCEPT			
		DEFICIENT	N/A		
13	CONCRETE WASH-OUT	ACCEPT			
		DEFICIENT	N/A		
14	RECORD KEEPING & POSTINGS	ACCEPT			
		DEFICIENT	N/A		
	CRITICAL / REPORT				
SOIL CONDITIONS:		DRY	WET	none	
ADDITIONAL COMMENTS: _____					

INSPECTION BY: _____ TIME: _____

SIGNATURE OF INSPECTOR: J.P.S.

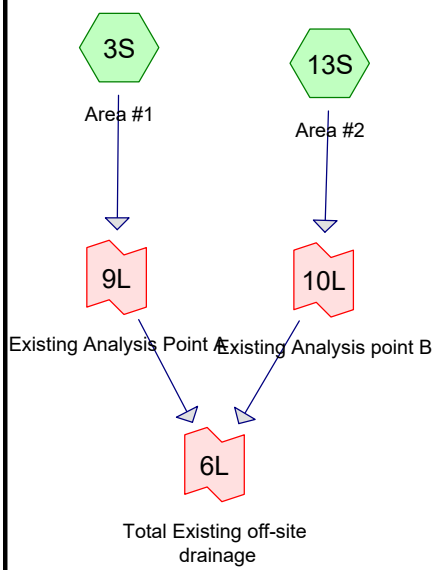
DATE OF INSPECTION: _____

INSPECTIONS FREQUENCY Weekly

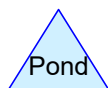
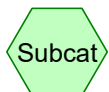
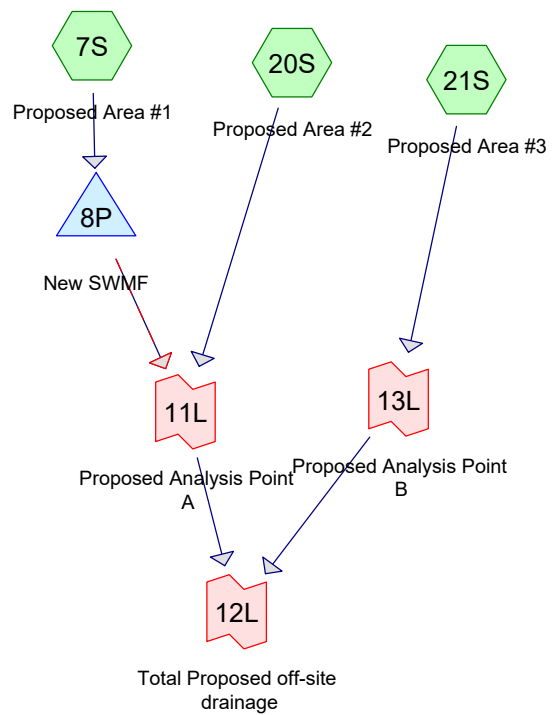
APPENDIX B

Existing and Proposed Peak Runoff Computations

Existing Drainage



Proposed Drainage



Routing Diagram for hydrocad model

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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3.240	80	>75% Grass cover, Good, HSG D (3S, 7S, 13S, 20S, 21S)
17.780	78	Meadow, non-grazed, HSG D (3S, 20S)
1.460	98	Paved parking, HSG D (3S, 7S, 13S, 20S, 21S)
0.180	98	Water Surface, HSG D (7S)
22.660	80	TOTAL AREA

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Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
22.660	HSG D	3S, 7S, 13S, 20S, 21S
0.000	Other	
22.660		TOTAL AREA

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Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	3.240	0.000	3.240	>75% Grass cover, Good	3S, 7S, 13S, 20S, 21S
0.000	0.000	0.000	17.780	0.000	17.780	Meadow, non-grazed	3S, 20S
0.000	0.000	0.000	1.460	0.000	1.460	Paved parking	3S, 7S, 13S, 20S, 21S
0.000	0.000	0.000	0.180	0.000	0.180	Water Surface	7S
0.000	0.000	0.000	22.660	0.000	22.660	TOTAL AREA	

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Pipe Listing (selected 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	8P	719.50	717.50	87.0	0.0230	0.013	12.0	0.0	0.0

hydrocad model*Type II 24-hr 1-year Rainfall=1.88"*

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Time span=5.00-36.00 hrs, dt=0.01 hrs, 3101 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment3S: Area #1 Runoff Area=11.080 ac 0.63% Impervious Runoff Depth=0.42"
Flow Length=887' Tc=29.9 min CN=78 Runoff=3.32 cfs 0.387 af

Subcatchment7S: Proposed Area #1 Runoff Area=2.000 ac 40.00% Impervious Runoff Depth=0.81"
Flow Length=277' Tc=12.1 min CN=87 Runoff=2.32 cfs 0.135 af

Subcatchment13S: Area #2 Runoff Area=0.250 ac 44.00% Impervious Runoff Depth=0.87"
Tc=6.0 min CN=88 Runoff=0.39 cfs 0.018 af

Subcatchment20S: Proposed Area #2 Runoff Area=8.990 ac 5.45% Impervious Runoff Depth=0.45"
Flow Length=887' Tc=29.9 min CN=79 Runoff=3.01 cfs 0.340 af

Subcatchment21S: Proposed Area #3 Runoff Area=0.340 ac 50.00% Impervious Runoff Depth=0.93"
Tc=6.0 min CN=89 Runoff=0.56 cfs 0.026 af

Pond 8P: New SWMF Peak Elev=720.13' Storage=2,923 cf Inflow=2.32 cfs 0.135 af
Primary=0.17 cfs 0.132 af Secondary=0.00 cfs 0.000 af Outflow=0.17 cfs 0.132 af

Link 6L: Total Existing off-site drainage Inflow=3.37 cfs 0.405 af
Primary=3.37 cfs 0.405 af

Link 9L: Existing Analysis Point A Inflow=3.32 cfs 0.387 af
Primary=3.32 cfs 0.387 af

Link 10L: Existing Analysis point B Inflow=0.39 cfs 0.018 af
Primary=0.39 cfs 0.018 af

Link 11L: Proposed Analysis Point A Inflow=3.17 cfs 0.472 af
Primary=3.17 cfs 0.472 af

Link 12L: Total Proposed off-site drainage Inflow=3.24 cfs 0.498 af
Primary=3.24 cfs 0.498 af

Link 13L: Proposed Analysis Point B Inflow=0.56 cfs 0.026 af
Primary=0.56 cfs 0.026 af

Total Runoff Area = 22.660 ac Runoff Volume = 0.906 af Average Runoff Depth = 0.48"
92.76% Pervious = 21.020 ac 7.24% Impervious = 1.640 ac

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Type II 24-hr 1-year Rainfall=1.88"

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Summary for Subcatchment 3S: Area #1

Runoff = 3.32 cfs @ 12.29 hrs, Volume= 0.387 af, Depth= 0.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=1.88"

Area (ac)	CN	Description
0.070	98	Paved parking, HSG D
0.160	80	>75% Grass cover, Good, HSG D
10.850	78	Meadow, non-grazed, HSG D
11.080	78	Weighted Average
11.010		99.37% Pervious Area
0.070		0.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.2	100	0.0060	0.08		Sheet Flow, Sheet Flow Cultivated: Residue>20% n= 0.170 P2= 2.18"
4.2	340	0.0230	1.36		Shallow Concentrated Flow, Shallow concentrated Cultivated Straight Rows Kv= 9.0 fps
2.8	260	0.0300	1.56		Shallow Concentrated Flow, Shallow concentrated Cultivated Straight Rows Kv= 9.0 fps
1.4	117	0.0230	1.36		Shallow Concentrated Flow, Shallow concentrated Cultivated Straight Rows Kv= 9.0 fps
0.3	70	0.0280	4.12	36.25	Channel Flow, Channel Flow Area= 8.8 sf Perim= 40.0' r= 0.22' n= 0.022 Earth, clean & straight
29.9	887	Total			

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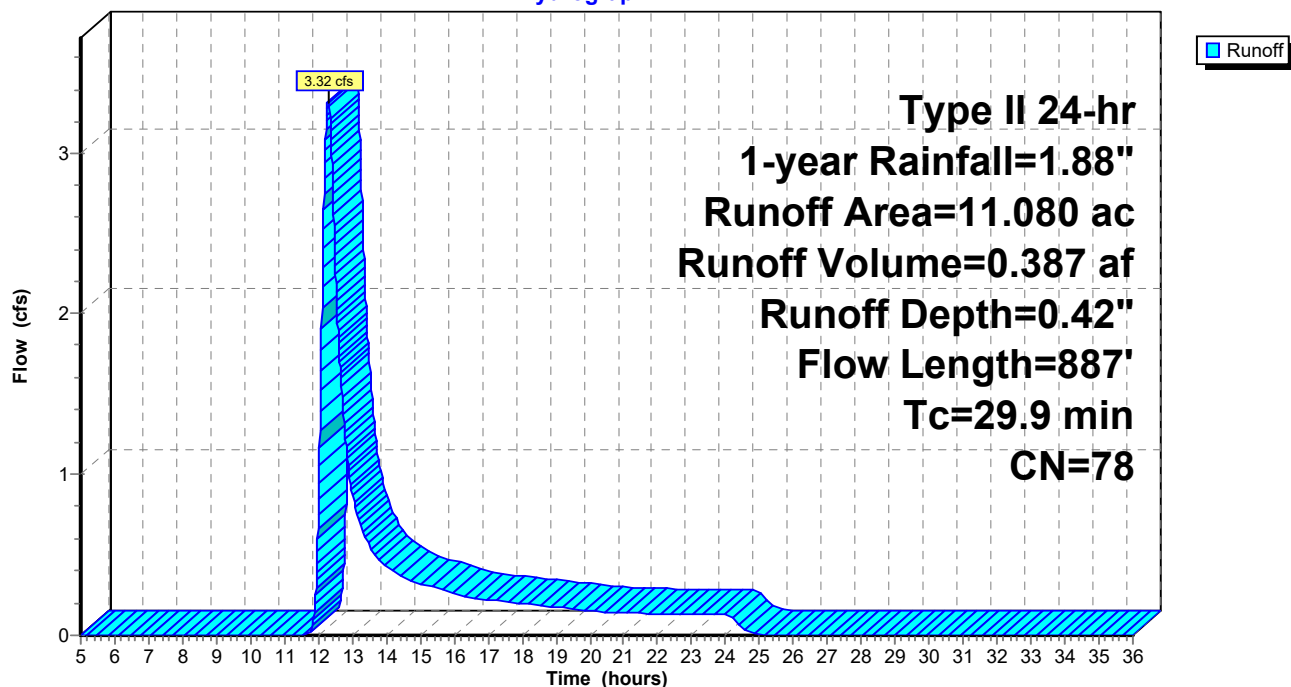
Type II 24-hr 1-year Rainfall=1.88"

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Subcatchment 3S: Area #1

Hydrograph



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Type II 24-hr 1-year Rainfall=1.88"

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Summary for Subcatchment 7S: Proposed Area #1

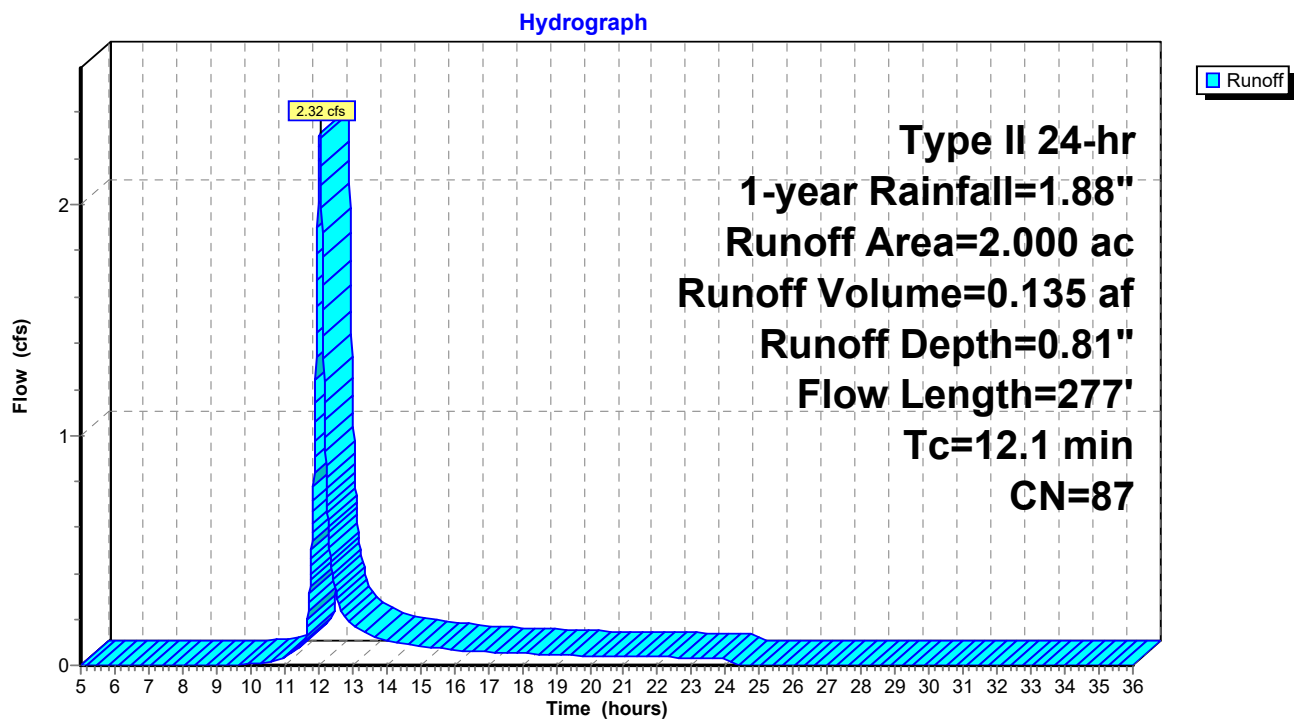
Runoff = 2.32 cfs @ 12.04 hrs, Volume= 0.135 af, Depth= 0.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=1.88"

Area (ac)	CN	Description
0.620	98	Paved parking, HSG D
0.180	98	Water Surface, HSG D
1.200	80	>75% Grass cover, Good, HSG D
2.000	87	Weighted Average
1.200		60.00% Pervious Area
0.800		40.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0220	0.15		Sheet Flow, Sheet Flow Grass: Short n= 0.150 P2= 2.18"
0.2	44	0.0440	3.38		Shallow Concentrated Flow, Shallow cocentrated Unpaved Kv= 16.1 fps
0.4	73	0.0130	3.31	14.88	Channel Flow, Channel Flow Area= 4.5 sf Perim= 16.0' r= 0.28' n= 0.022 Earth, clean & straight
0.1	50	0.0500	6.48	29.18	Channel Flow, Channel Flow Area= 4.5 sf Perim= 16.0' r= 0.28' n= 0.022 Earth, clean & straight
0.0	10	0.0500	6.48	29.18	Channel Flow, Channel Flow Area= 4.5 sf Perim= 16.0' r= 0.28' n= 0.022 Earth, clean & straight
12.1	277	Total			

Subcatchment 7S: Proposed Area #1



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Type II 24-hr 1-year Rainfall=1.88"

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Summary for Subcatchment 13S: Area #2

Runoff = 0.39 cfs @ 11.98 hrs, Volume= 0.018 af, Depth= 0.87"

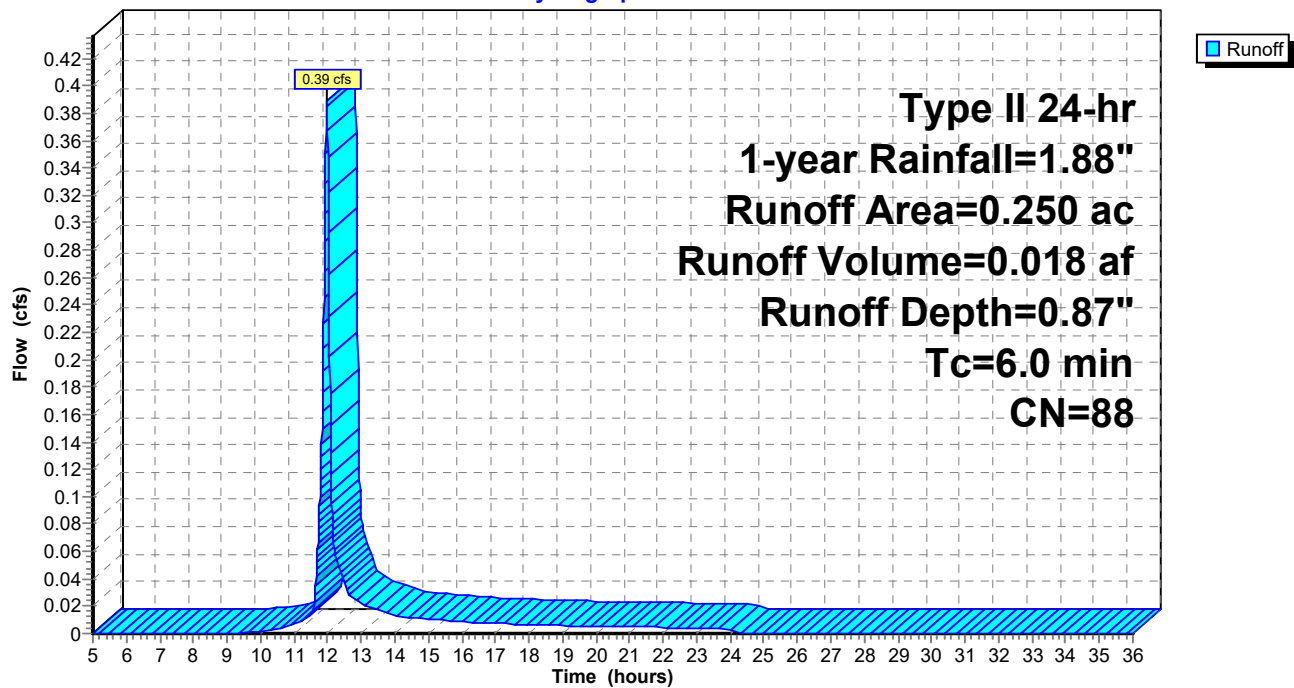
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=1.88"

Area (ac)	CN	Description
0.110	98	Paved parking, HSG D
0.140	80	>75% Grass cover, Good, HSG D
0.250	88	Weighted Average
0.140		56.00% Pervious Area
0.110		44.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, 6 min (TR-55 min)

Subcatchment 13S: Area #2

Hydrograph



hydrocad model

Type II 24-hr 1-year Rainfall=1.88"

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Summary for Subcatchment 20S: Proposed Area #2

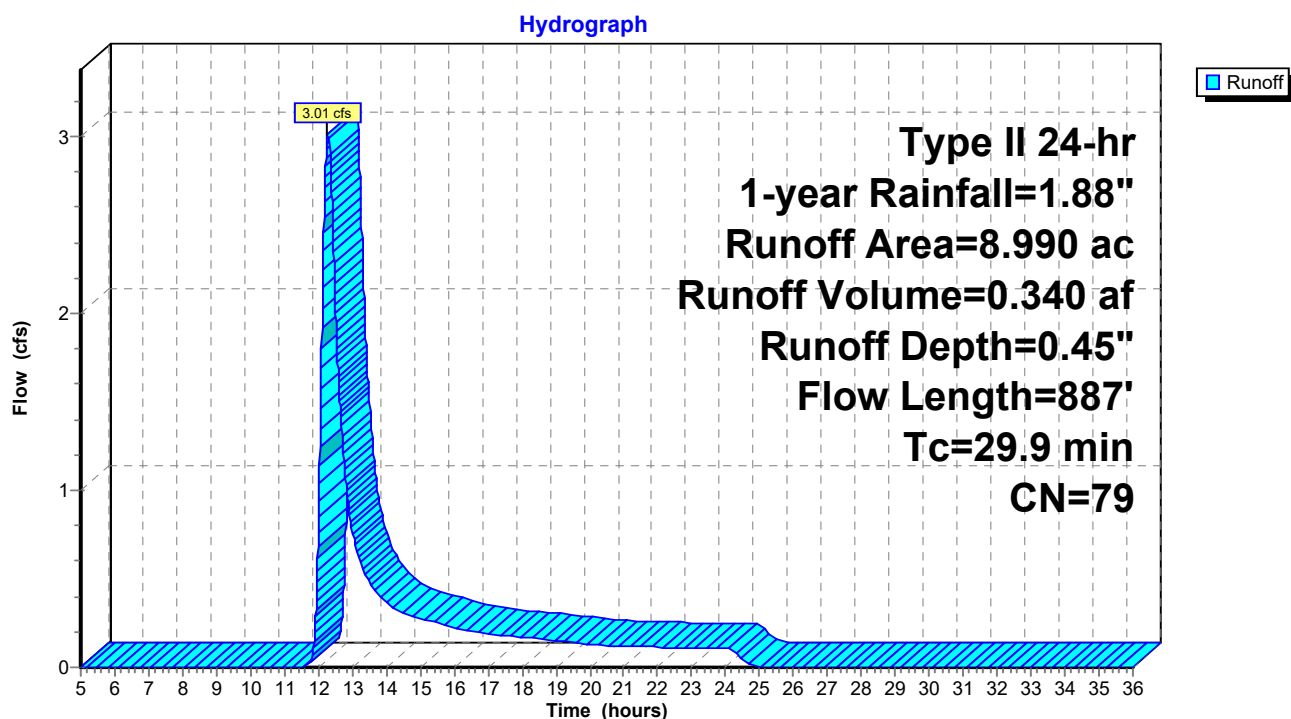
Runoff = 3.01 cfs @ 12.27 hrs, Volume= 0.340 af, Depth= 0.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=1.88"

Area (ac)	CN	Description
0.490	98	Paved parking, HSG D
1.570	80	>75% Grass cover, Good, HSG D
6.930	78	Meadow, non-grazed, HSG D
8.990	79	Weighted Average
8.500		94.55% Pervious Area
0.490		5.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.2	100	0.0060	0.08		Sheet Flow, Sheet Flow Cultivated: Residue>20% n= 0.170 P2= 2.18"
4.2	340	0.0230	1.36		Shallow Concentrated Flow, Shallow concentrated Cultivated Straight Rows Kv= 9.0 fps
2.8	260	0.0300	1.56		Shallow Concentrated Flow, Shallow concentrated Cultivated Straight Rows Kv= 9.0 fps
1.4	117	0.0230	1.36		Shallow Concentrated Flow, Shallow concentrated Cultivated Straight Rows Kv= 9.0 fps
0.3	70	0.0280	4.12	36.25	Channel Flow, Channel Flow Area= 8.8 sf Perim= 40.0' r= 0.22' n= 0.022 Earth, clean & straight
29.9	887	Total			

Subcatchment 20S: Proposed Area #2



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Type II 24-hr 1-year Rainfall=1.88"

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Summary for Subcatchment 21S: Proposed Area #3

Runoff = 0.56 cfs @ 11.97 hrs, Volume= 0.026 af, Depth= 0.93"

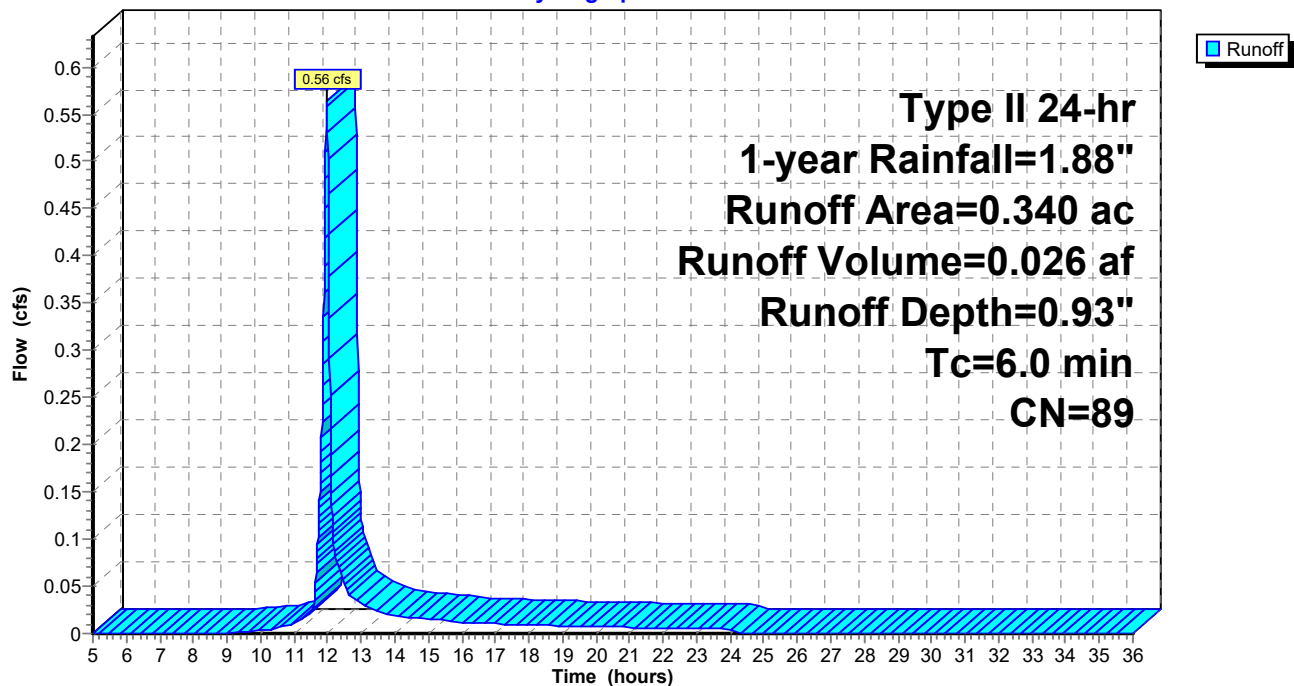
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-year Rainfall=1.88"

Area (ac)	CN	Description
0.170	98	Paved parking, HSG D
0.170	80	>75% Grass cover, Good, HSG D
0.340	89	Weighted Average
0.170		50.00% Pervious Area
0.170		50.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, 6 min (TR-55 min)

Subcatchment 21S: Proposed Area #3

Hydrograph



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Type II 24-hr 1-year Rainfall=1.88"

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Summary for Pond 8P: New SWMF

Inflow Area = 2.000 ac, 40.00% Impervious, Inflow Depth = 0.81" for 1-year event
 Inflow = 2.32 cfs @ 12.04 hrs, Volume= 0.135 af
 Outflow = 0.17 cfs @ 13.10 hrs, Volume= 0.132 af, Atten= 93%, Lag= 63.7 min
 Primary = 0.17 cfs @ 13.10 hrs, Volume= 0.132 af
 Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs
 Peak Elev= 720.13' @ 13.10 hrs Surf.Area= 5,000 sf Storage= 2,923 cf

Plug-Flow detention time= 249.9 min calculated for 0.132 af (97% of inflow)
 Center-of-Mass det. time= 234.2 min (1,080.2 - 846.0)

Volume	Invert	Avail.Storage	Storage Description
#1	719.50'	30,752 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
719.50	4,263	0	0
720.00	4,837	2,275	2,275
721.00	6,074	5,456	7,731
722.00	8,185	7,130	14,860
723.00	11,333	9,759	24,619
723.50	13,200	6,133	30,752

Device	Routing	Invert	Outlet Devices
#1	Primary	719.50'	12.0" Round Culvert L= 87.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 719.50' / 717.50' S= 0.0230 ' S= 0.0230 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	722.00'	24.0" x 24.0" Horiz. 2'x2' grate C= 0.600 Limited to weir flow at low heads
#3	Secondary	722.50'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#4	Primary	719.50'	3.0" Vert. 3" orifice C= 0.600

Primary OutFlow Max=0.17 cfs @ 13.10 hrs HW=720.13' (Free Discharge)

1=Culvert (Passes 0.00 cfs of 1.42 cfs potential flow)

2=2'x2' grate (Controls 0.00 cfs)

4=3" orifice (Orifice Controls 0.17 cfs @ 3.43 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=719.50' (Free Discharge)

3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

hydrocad model

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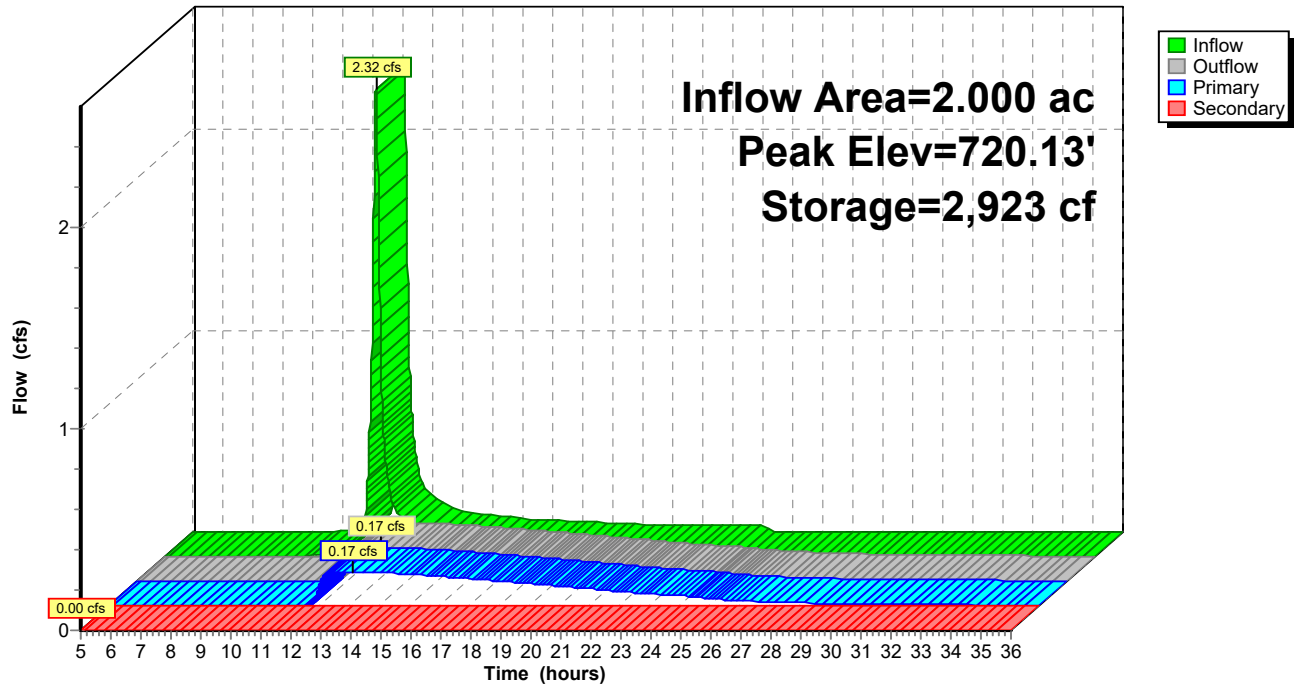
Type II 24-hr 1-year Rainfall=1.88"

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Pond 8P: New SWMF

Hydrograph



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Type II 24-hr 1-year Rainfall=1.88"

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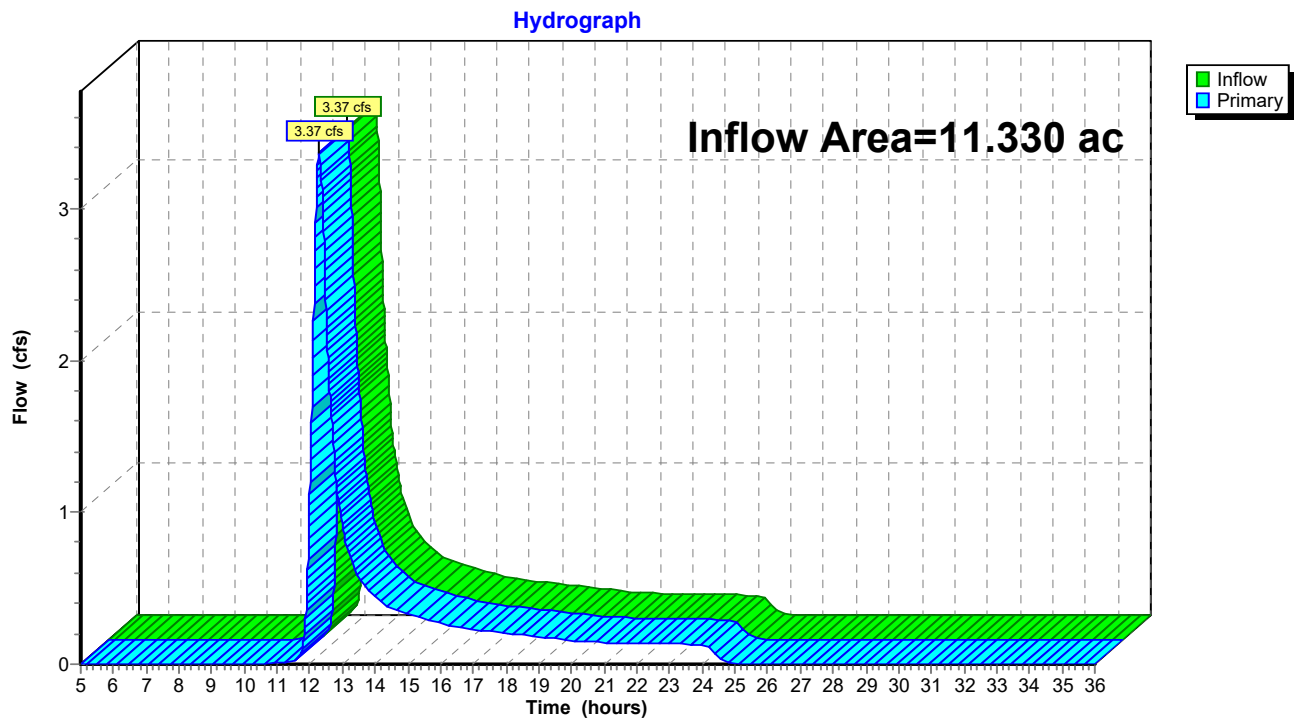
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Summary for Link 6L: Total Existing off-site drainage

Inflow Area = 11.330 ac, 1.59% Impervious, Inflow Depth = 0.43" for 1-year event
Inflow = 3.37 cfs @ 12.29 hrs, Volume= 0.405 af
Primary = 3.37 cfs @ 12.29 hrs, Volume= 0.405 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs

Link 6L: Total Existing off-site drainage

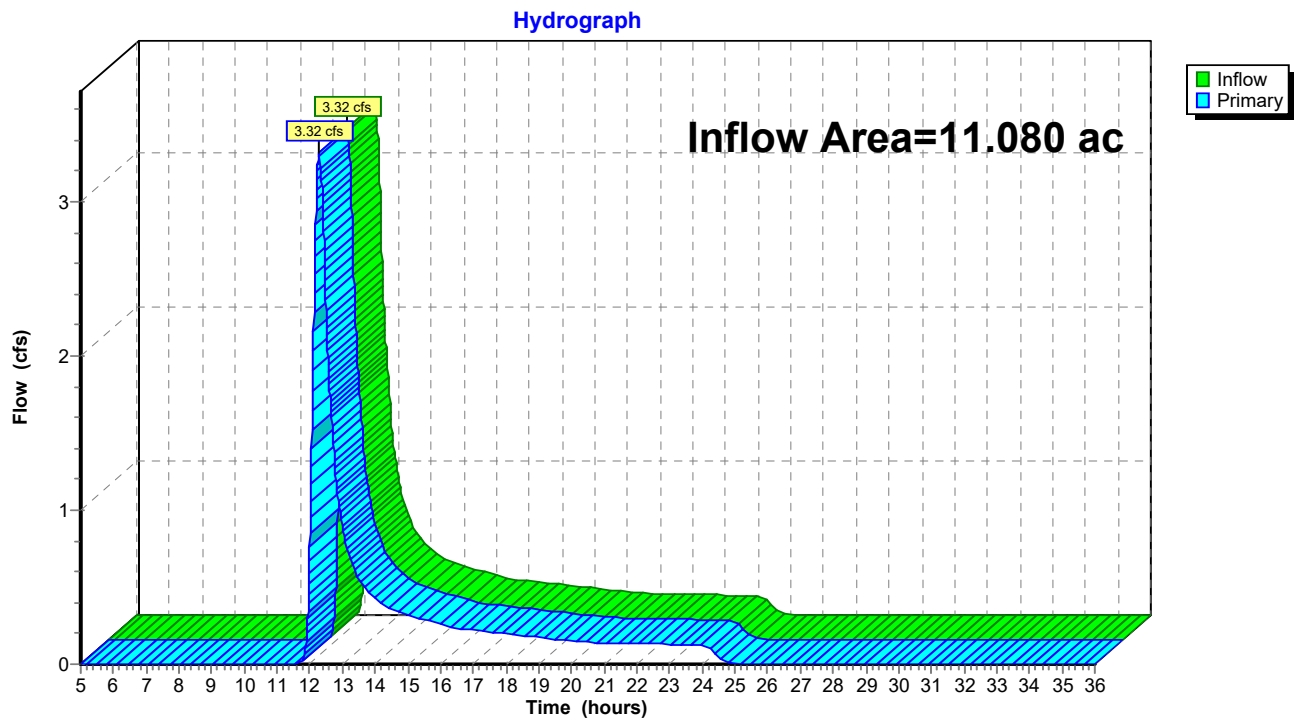


Summary for Link 9L: Existing Analysis Point A

Inflow Area = 11.080 ac, 0.63% Impervious, Inflow Depth = 0.42" for 1-year event
 Inflow = 3.32 cfs @ 12.29 hrs, Volume= 0.387 af
 Primary = 3.32 cfs @ 12.29 hrs, Volume= 0.387 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs

Link 9L: Existing Analysis Point A



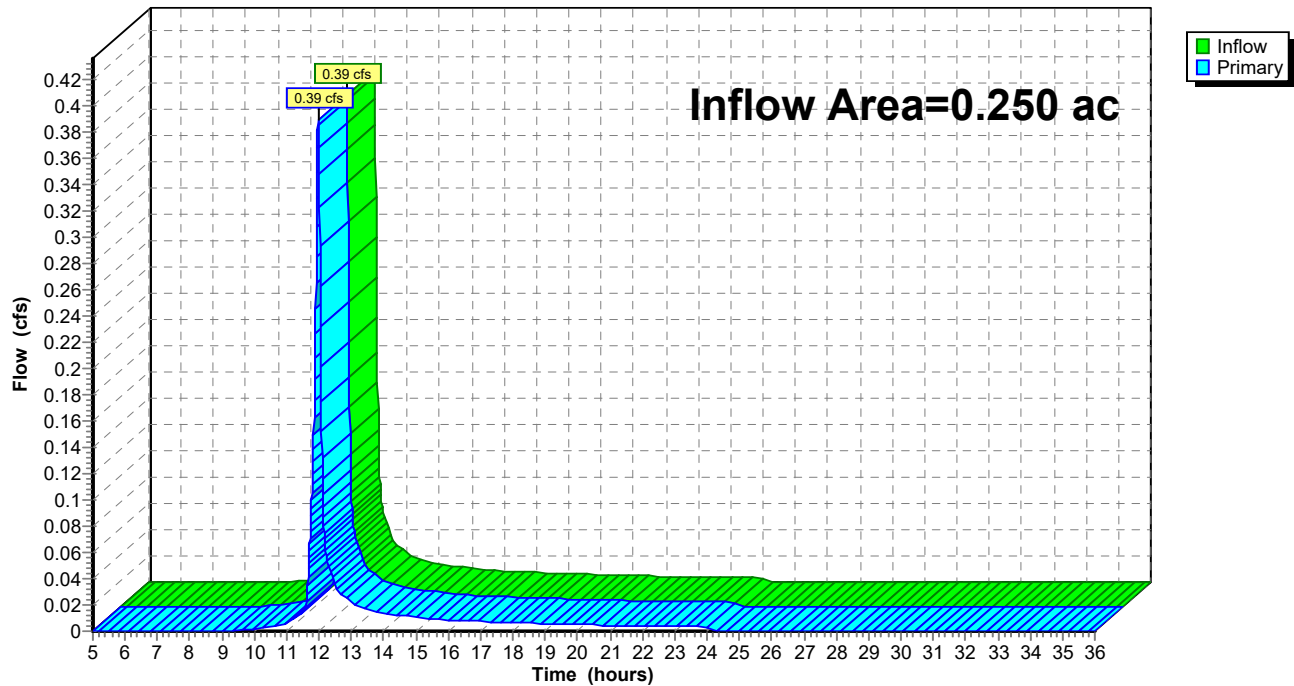
Summary for Link 10L: Existing Analysis point B

Inflow Area = 0.250 ac, 44.00% Impervious, Inflow Depth = 0.87" for 1-year event
 Inflow = 0.39 cfs @ 11.98 hrs, Volume= 0.018 af
 Primary = 0.39 cfs @ 11.98 hrs, Volume= 0.018 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs

Link 10L: Existing Analysis point B

Hydrograph

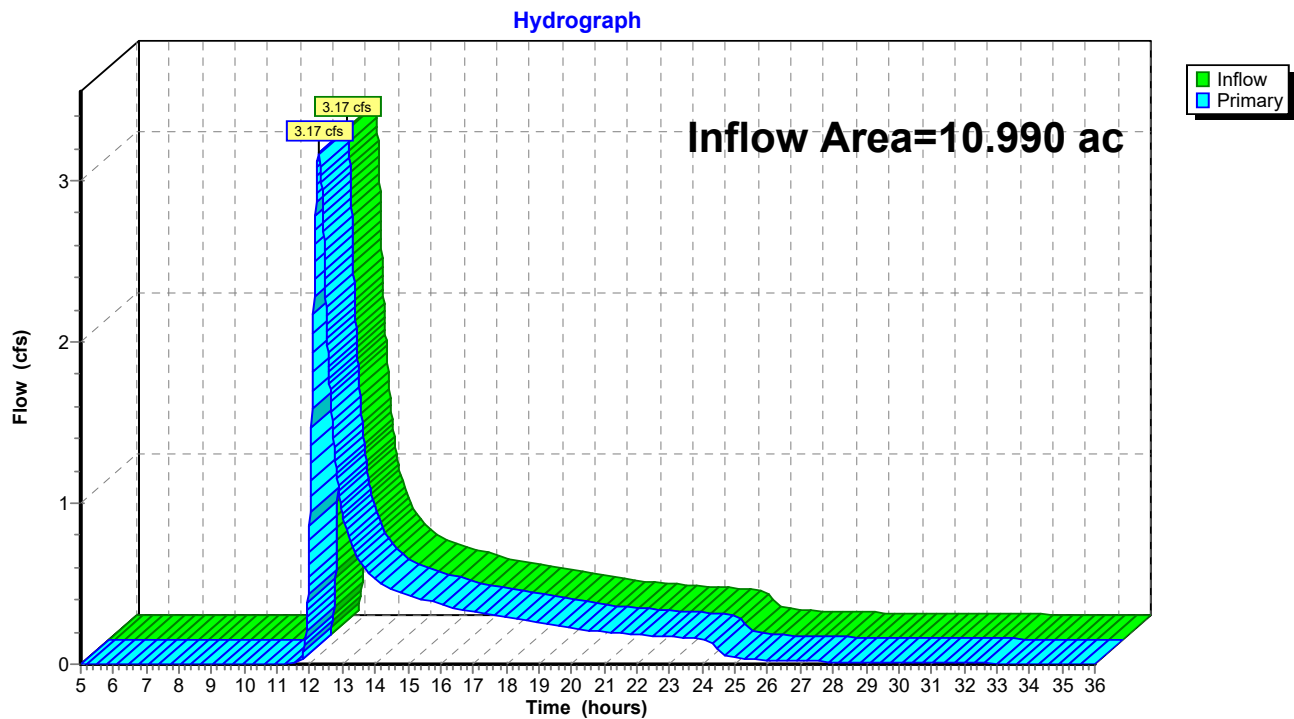


Summary for Link 11L: Proposed Analysis Point A

Inflow Area = 10.990 ac, 11.74% Impervious, Inflow Depth > 0.52" for 1-year event
 Inflow = 3.17 cfs @ 12.27 hrs, Volume= 0.472 af
 Primary = 3.17 cfs @ 12.27 hrs, Volume= 0.472 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs

Link 11L: Proposed Analysis Point A



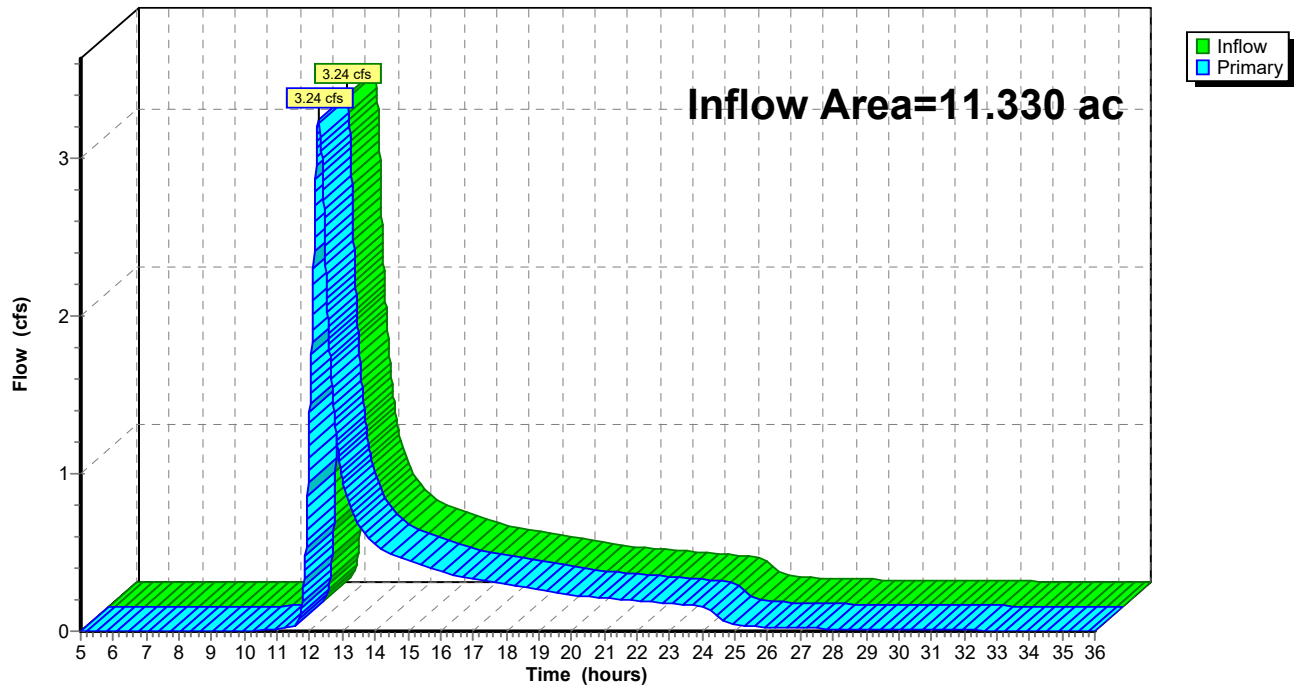
Summary for Link 12L: Total Proposed off-site drainage

Inflow Area = 11.330 ac, 12.89% Impervious, Inflow Depth > 0.53" for 1-year event
 Inflow = 3.24 cfs @ 12.27 hrs, Volume= 0.498 af
 Primary = 3.24 cfs @ 12.27 hrs, Volume= 0.498 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs

Link 12L: Total Proposed off-site drainage

Hydrograph



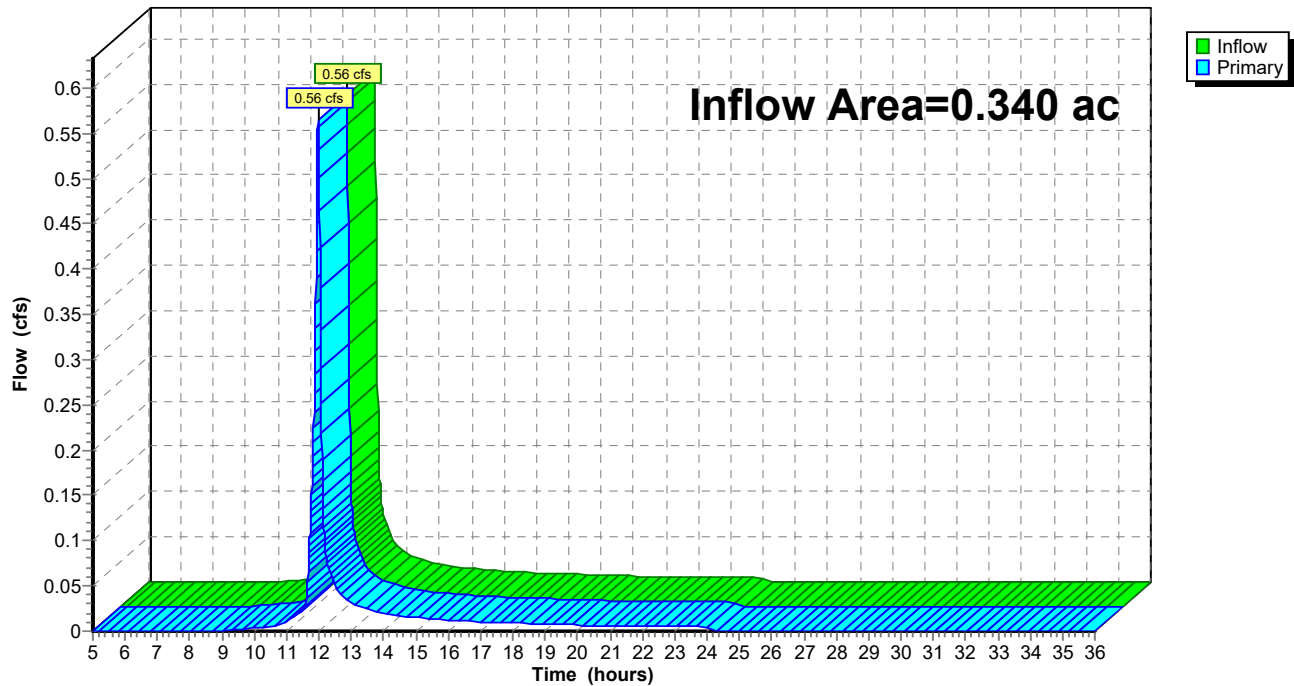
Summary for Link 13L: Proposed Analysis Point B

Inflow Area = 0.340 ac, 50.00% Impervious, Inflow Depth = 0.93" for 1-year event
 Inflow = 0.56 cfs @ 11.97 hrs, Volume= 0.026 af
 Primary = 0.56 cfs @ 11.97 hrs, Volume= 0.026 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs

Link 13L: Proposed Analysis Point B

Hydrograph



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Type II 24-hr 2-year Rainfall=2.18"

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Time span=5.00-36.00 hrs, dt=0.01 hrs, 3101 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment3S: Area #1 Runoff Area=11.080 ac 0.63% Impervious Runoff Depth=0.59"
Flow Length=887' Tc=29.9 min CN=78 Runoff=5.02 cfs 0.543 af

Subcatchment7S: Proposed Area #1 Runoff Area=2.000 ac 40.00% Impervious Runoff Depth=1.05"
Flow Length=277' Tc=12.1 min CN=87 Runoff=3.00 cfs 0.175 af

Subcatchment13S: Area #2 Runoff Area=0.250 ac 44.00% Impervious Runoff Depth=1.11"
Tc=6.0 min CN=88 Runoff=0.50 cfs 0.023 af

Subcatchment20S: Proposed Area #2 Runoff Area=8.990 ac 5.45% Impervious Runoff Depth=0.63"
Flow Length=887' Tc=29.9 min CN=79 Runoff=4.47 cfs 0.473 af

Subcatchment21S: Proposed Area #3 Runoff Area=0.340 ac 50.00% Impervious Runoff Depth=1.18"
Tc=6.0 min CN=89 Runoff=0.71 cfs 0.033 af

Pond 8P: New SWMF Peak Elev=720.33' Storage=3,942 cf Inflow=3.00 cfs 0.175 af
Primary=0.20 cfs 0.171 af Secondary=0.00 cfs 0.000 af Outflow=0.20 cfs 0.171 af

Link 6L: Total Existing off-site drainage Inflow=5.09 cfs 0.567 af
Primary=5.09 cfs 0.567 af

Link 9L: Existing Analysis Point A Inflow=5.02 cfs 0.543 af
Primary=5.02 cfs 0.543 af

Link 10L: Existing Analysis point B Inflow=0.50 cfs 0.023 af
Primary=0.50 cfs 0.023 af

Link 11L: Proposed Analysis Point A Inflow=4.65 cfs 0.643 af
Primary=4.65 cfs 0.643 af

Link 12L: Total Proposed off-site drainage Inflow=4.74 cfs 0.677 af
Primary=4.74 cfs 0.677 af

Link 13L: Proposed Analysis Point B Inflow=0.71 cfs 0.033 af
Primary=0.71 cfs 0.033 af

Total Runoff Area = 22.660 ac Runoff Volume = 1.247 af Average Runoff Depth = 0.66"
92.76% Pervious = 21.020 ac 7.24% Impervious = 1.640 ac

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Type II 24-hr 2-year Rainfall=2.18"

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Summary for Subcatchment 3S: Area #1

Runoff = 5.02 cfs @ 12.26 hrs, Volume= 0.543 af, Depth= 0.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-year Rainfall=2.18"

Area (ac)	CN	Description
0.070	98	Paved parking, HSG D
0.160	80	>75% Grass cover, Good, HSG D
10.850	78	Meadow, non-grazed, HSG D
11.080	78	Weighted Average
11.010		99.37% Pervious Area
0.070		0.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.2	100	0.0060	0.08		Sheet Flow, Sheet Flow Cultivated: Residue>20% n= 0.170 P2= 2.18"
4.2	340	0.0230	1.36		Shallow Concentrated Flow, Shallow concentrated Cultivated Straight Rows Kv= 9.0 fps
2.8	260	0.0300	1.56		Shallow Concentrated Flow, Shallow concentrated Cultivated Straight Rows Kv= 9.0 fps
1.4	117	0.0230	1.36		Shallow Concentrated Flow, Shallow concentrated Cultivated Straight Rows Kv= 9.0 fps
0.3	70	0.0280	4.12	36.25	Channel Flow, Channel Flow Area= 8.8 sf Perim= 40.0' r= 0.22' n= 0.022 Earth, clean & straight
29.9	887	Total			

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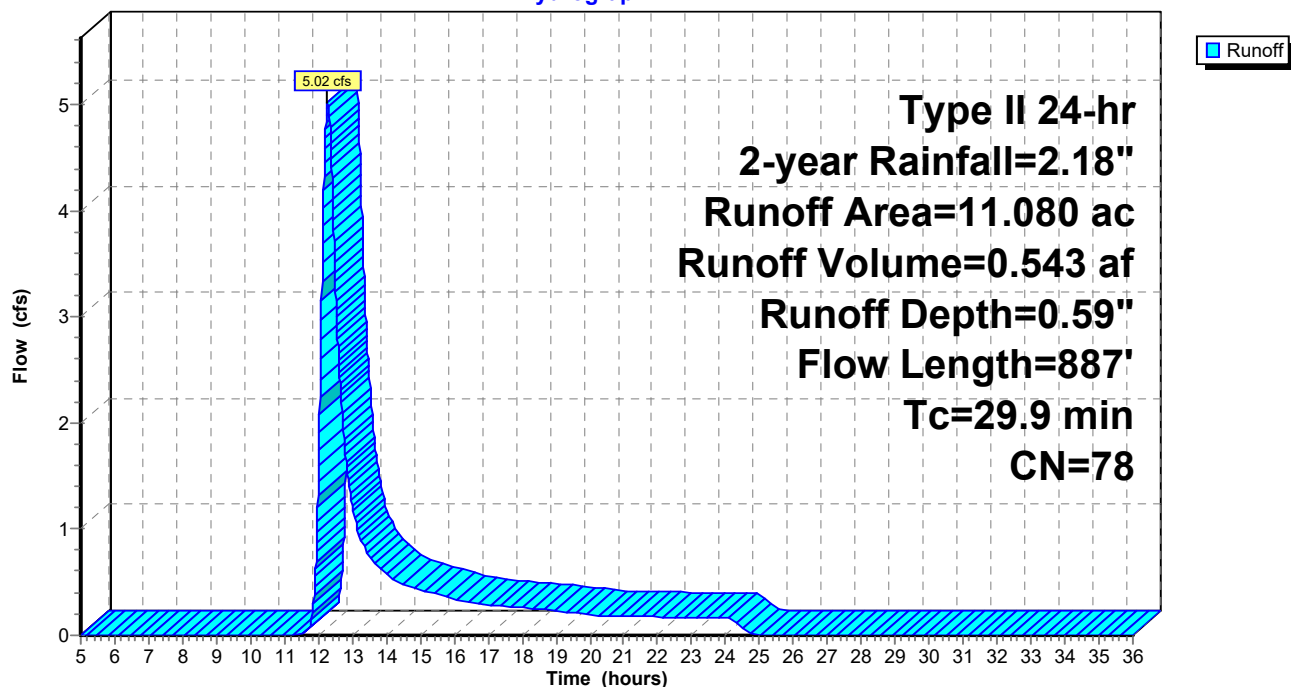
Type II 24-hr 2-year Rainfall=2.18"

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Subcatchment 3S: Area #1

Hydrograph



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Type II 24-hr 2-year Rainfall=2.18"

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Summary for Subcatchment 7S: Proposed Area #1

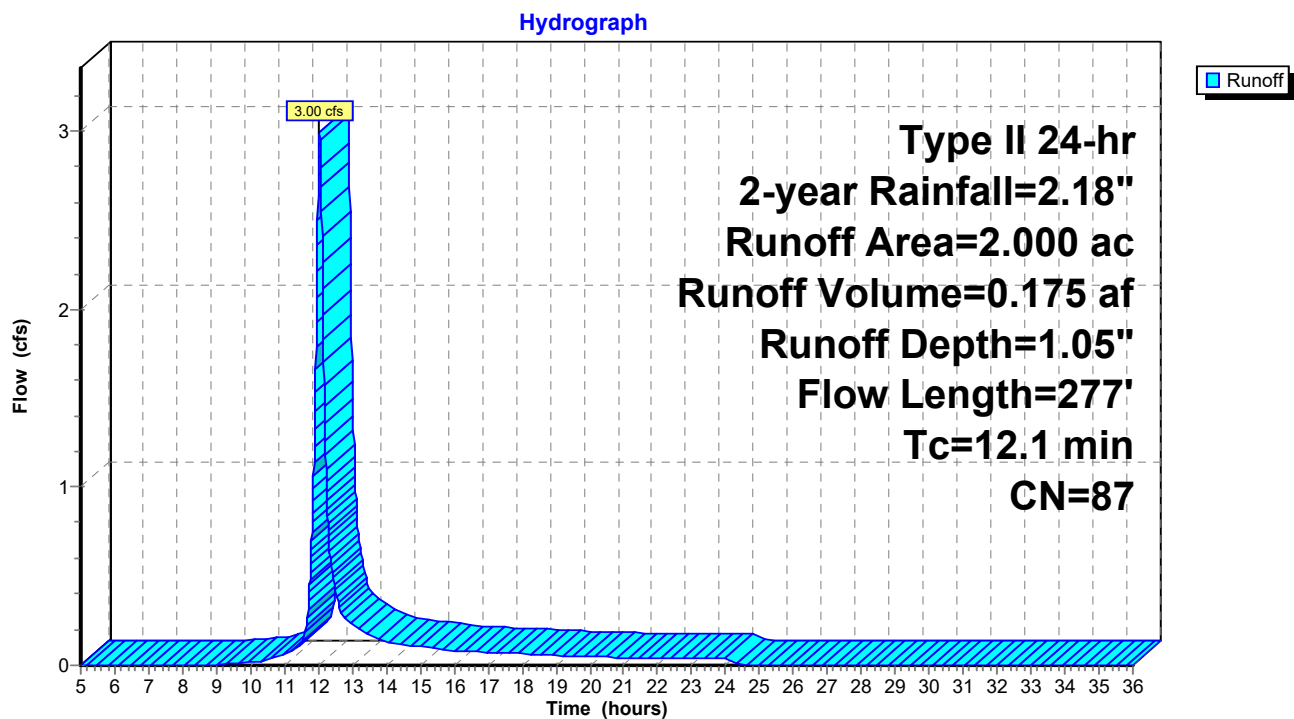
Runoff = 3.00 cfs @ 12.04 hrs, Volume= 0.175 af, Depth= 1.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-year Rainfall=2.18"

Area (ac)	CN	Description
0.620	98	Paved parking, HSG D
0.180	98	Water Surface, HSG D
1.200	80	>75% Grass cover, Good, HSG D
2.000	87	Weighted Average
1.200		60.00% Pervious Area
0.800		40.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0220	0.15		Sheet Flow, Sheet Flow Grass: Short n= 0.150 P2= 2.18"
0.2	44	0.0440	3.38		Shallow Concentrated Flow, Shallow cocentrated Unpaved Kv= 16.1 fps
0.4	73	0.0130	3.31	14.88	Channel Flow, Channel Flow Area= 4.5 sf Perim= 16.0' r= 0.28' n= 0.022 Earth, clean & straight
0.1	50	0.0500	6.48	29.18	Channel Flow, Channel Flow Area= 4.5 sf Perim= 16.0' r= 0.28' n= 0.022 Earth, clean & straight
0.0	10	0.0500	6.48	29.18	Channel Flow, Channel Flow Area= 4.5 sf Perim= 16.0' r= 0.28' n= 0.022 Earth, clean & straight
12.1	277	Total			

Subcatchment 7S: Proposed Area #1



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Type II 24-hr 2-year Rainfall=2.18"

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Summary for Subcatchment 13S: Area #2

Runoff = 0.50 cfs @ 11.97 hrs, Volume= 0.023 af, Depth= 1.11"

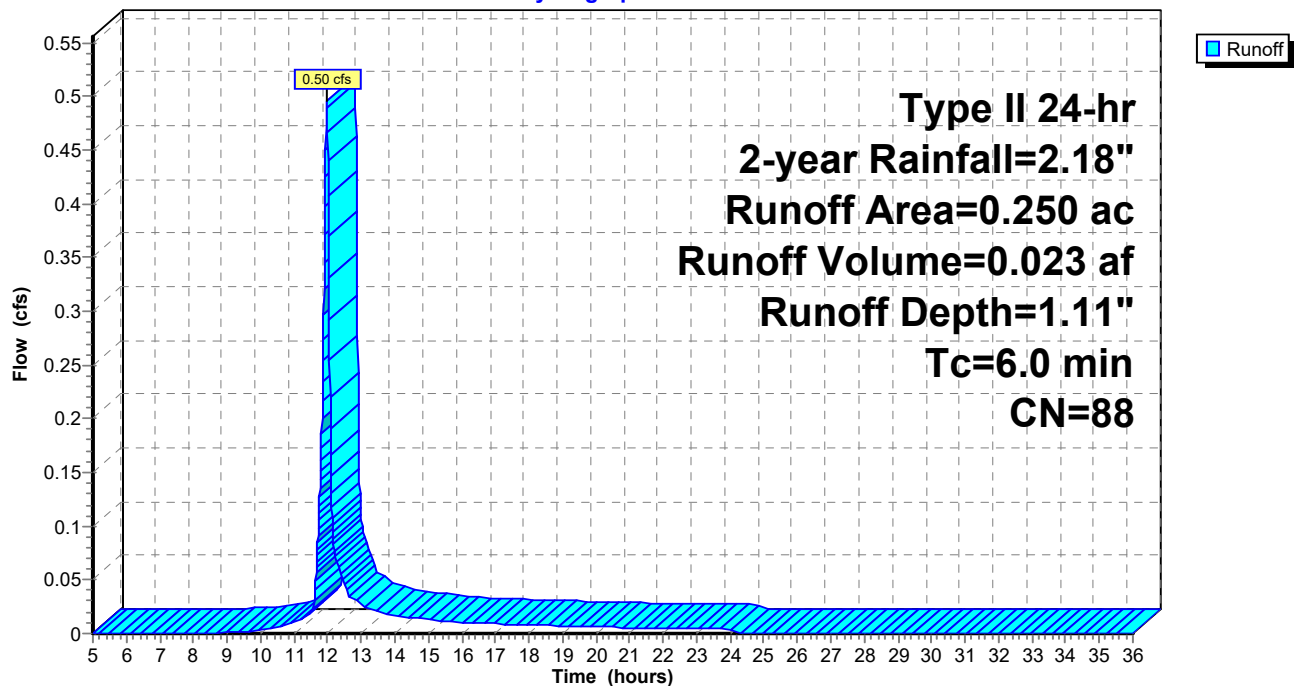
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-year Rainfall=2.18"

Area (ac)	CN	Description
0.110	98	Paved parking, HSG D
0.140	80	>75% Grass cover, Good, HSG D
0.250	88	Weighted Average
0.140		56.00% Pervious Area
0.110		44.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, 6 min (TR-55 min)

Subcatchment 13S: Area #2

Hydrograph



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Type II 24-hr 2-year Rainfall=2.18"

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Summary for Subcatchment 20S: Proposed Area #2

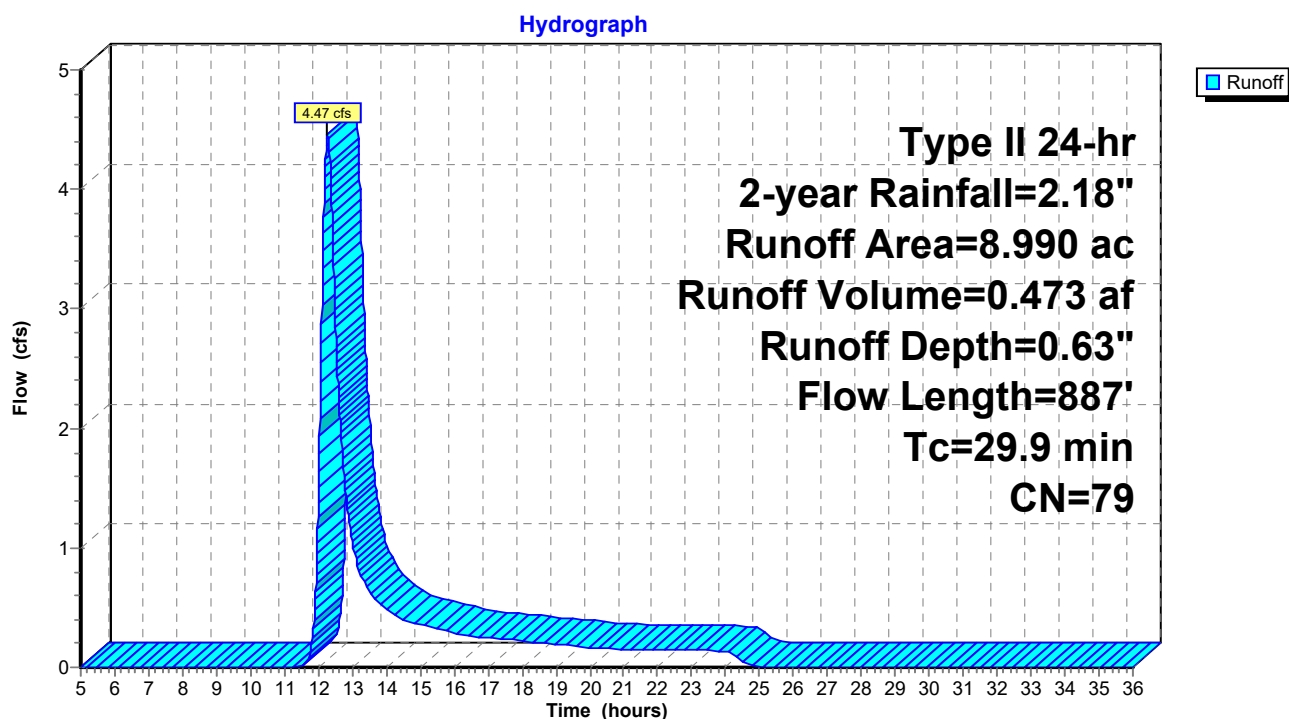
Runoff = 4.47 cfs @ 12.26 hrs, Volume= 0.473 af, Depth= 0.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-year Rainfall=2.18"

Area (ac)	CN	Description
0.490	98	Paved parking, HSG D
1.570	80	>75% Grass cover, Good, HSG D
6.930	78	Meadow, non-grazed, HSG D
8.990	79	Weighted Average
8.500		94.55% Pervious Area
0.490		5.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.2	100	0.0060	0.08		Sheet Flow, Sheet Flow Cultivated: Residue>20% n= 0.170 P2= 2.18"
4.2	340	0.0230	1.36		Shallow Concentrated Flow, Shallow concentrated Cultivated Straight Rows Kv= 9.0 fps
2.8	260	0.0300	1.56		Shallow Concentrated Flow, Shallow concentrated Cultivated Straight Rows Kv= 9.0 fps
1.4	117	0.0230	1.36		Shallow Concentrated Flow, Shallow concentrated Cultivated Straight Rows Kv= 9.0 fps
0.3	70	0.0280	4.12	36.25	Channel Flow, Channel Flow Area= 8.8 sf Perim= 40.0' r= 0.22' n= 0.022 Earth, clean & straight
29.9	887	Total			

Subcatchment 20S: Proposed Area #2



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Type II 24-hr 2-year Rainfall=2.18"

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Summary for Subcatchment 21S: Proposed Area #3

Runoff = 0.71 cfs @ 11.97 hrs, Volume= 0.033 af, Depth= 1.18"

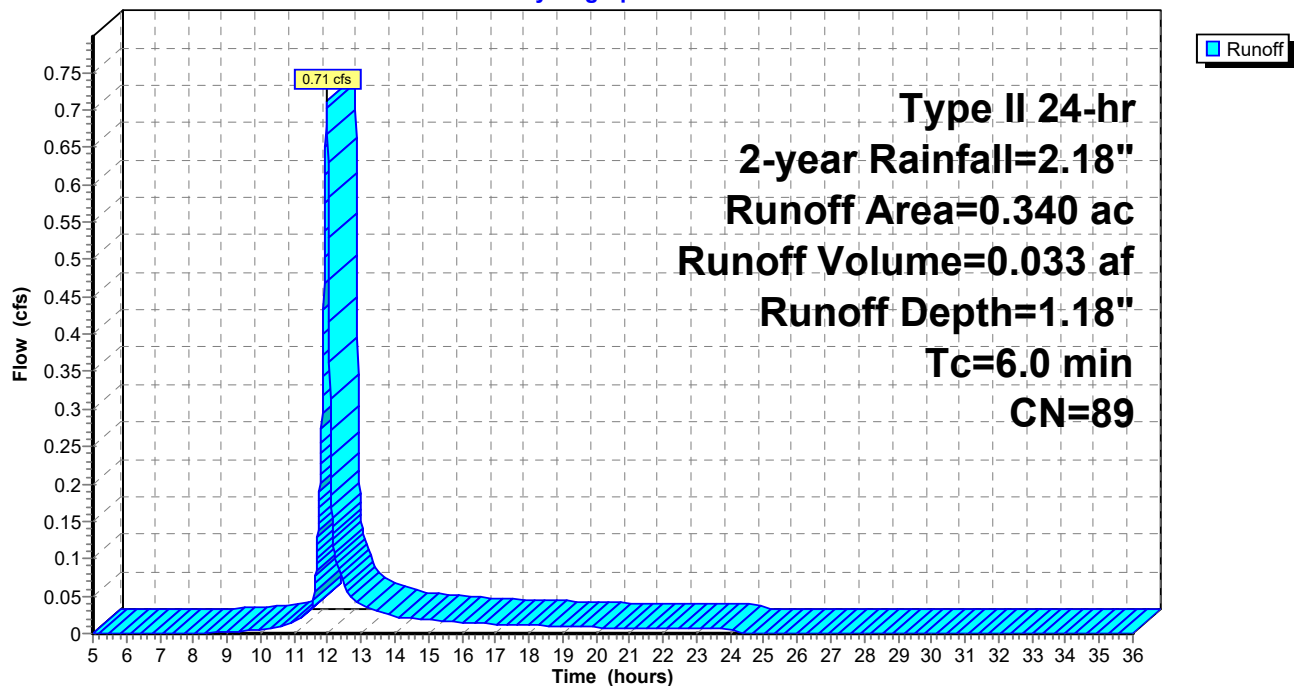
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-year Rainfall=2.18"

Area (ac)	CN	Description
0.170	98	Paved parking, HSG D
0.170	80	>75% Grass cover, Good, HSG D
0.340	89	Weighted Average
0.170		50.00% Pervious Area
0.170		50.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, 6 min (TR-55 min)

Subcatchment 21S: Proposed Area #3

Hydrograph



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Type II 24-hr 2-year Rainfall=2.18"

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Summary for Pond 8P: New SWMF

Inflow Area = 2.000 ac, 40.00% Impervious, Inflow Depth = 1.05" for 2-year event
 Inflow = 3.00 cfs @ 12.04 hrs, Volume= 0.175 af
 Outflow = 0.20 cfs @ 13.19 hrs, Volume= 0.171 af, Atten= 93%, Lag= 68.7 min
 Primary = 0.20 cfs @ 13.19 hrs, Volume= 0.171 af
 Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs
 Peak Elev= 720.33' @ 13.19 hrs Surf.Area= 5,246 sf Storage= 3,942 cf

Plug-Flow detention time= 272.1 min calculated for 0.171 af (98% of inflow)
 Center-of-Mass det. time= 258.8 min (1,097.5 - 838.7)

Volume	Invert	Avail.Storage	Storage Description
#1	719.50'	30,752 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
719.50	4,263	0	0
720.00	4,837	2,275	2,275
721.00	6,074	5,456	7,731
722.00	8,185	7,130	14,860
723.00	11,333	9,759	24,619
723.50	13,200	6,133	30,752

Device	Routing	Invert	Outlet Devices
#1	Primary	719.50'	12.0" Round Culvert L= 87.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 719.50' / 717.50' S= 0.0230 ' S= 0.0230 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	722.00'	24.0" x 24.0" Horiz. 2'x2' grate C= 0.600 Limited to weir flow at low heads
#3	Secondary	722.50'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#4	Primary	719.50'	3.0" Vert. 3" orifice C= 0.600

Primary OutFlow Max=0.20 cfs @ 13.19 hrs HW=720.33' (Free Discharge)

↑ **1=Culvert** (Passes 0.00 cfs of 2.16 cfs potential flow)

↑ **2=2'x2' grate** (Controls 0.00 cfs)

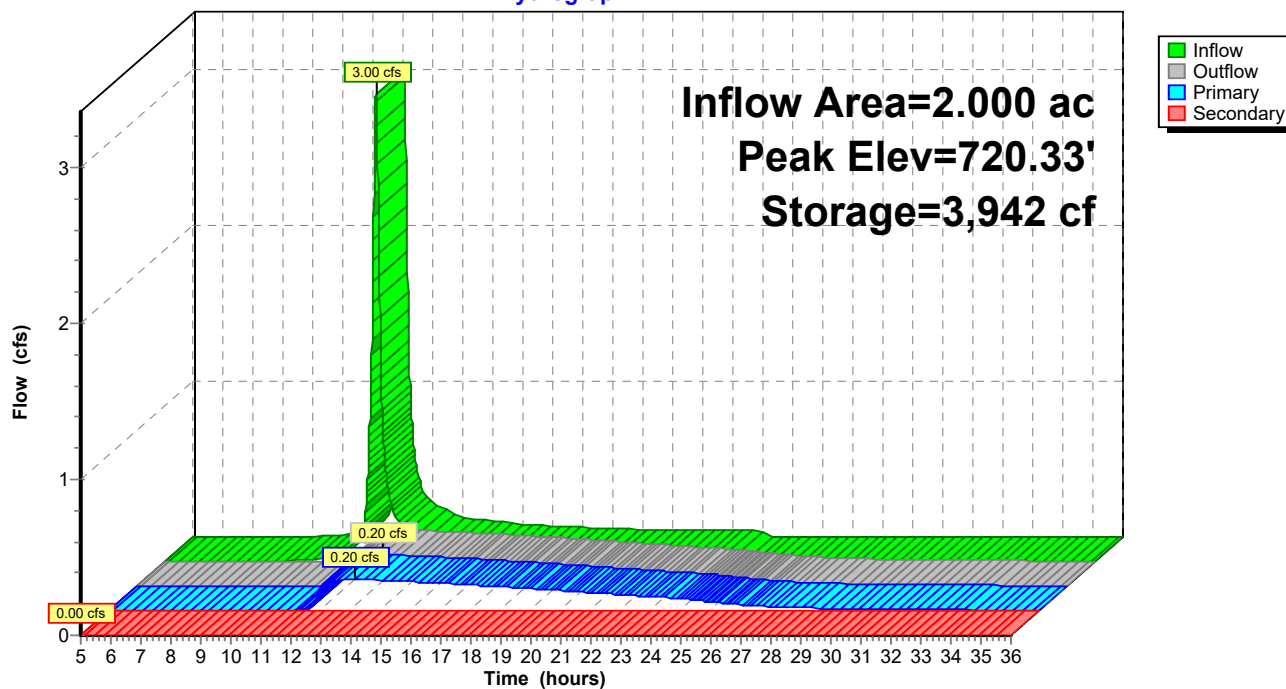
↑ **4=3" orifice** (Orifice Controls 0.20 cfs @ 4.04 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=719.50' (Free Discharge)

↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 8P: New SWMF

Hydrograph

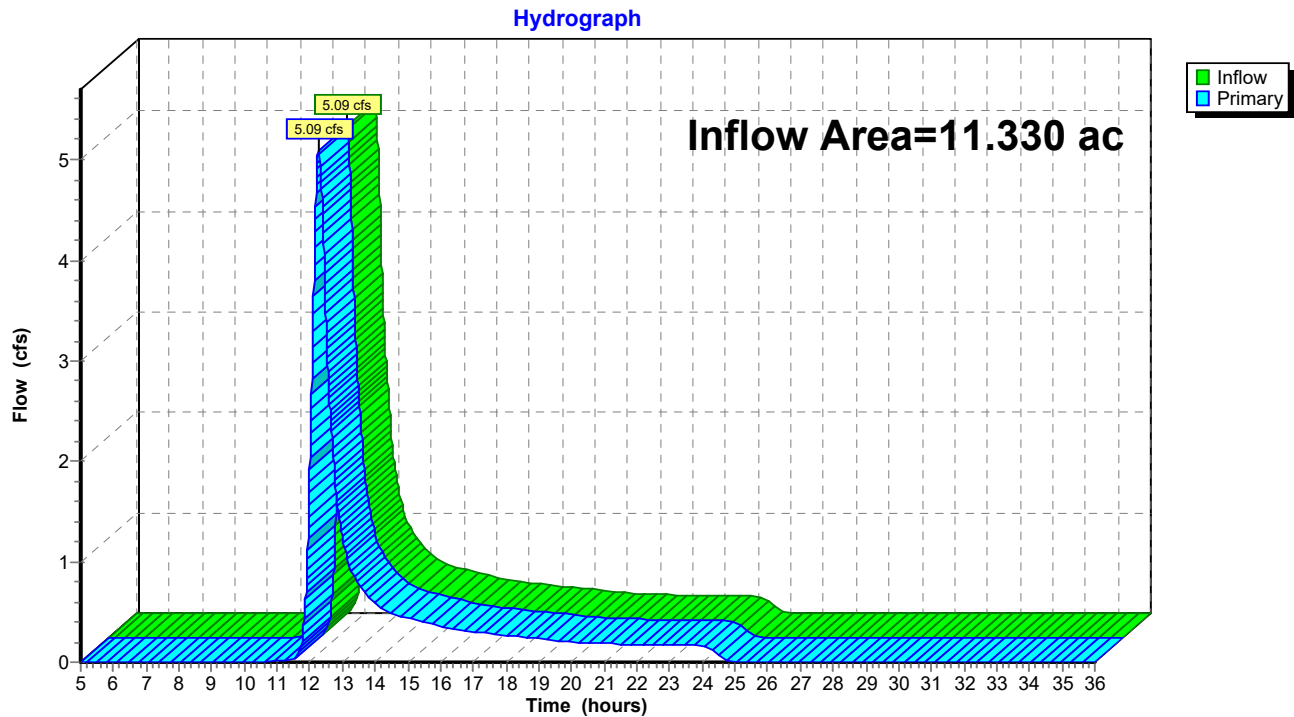


Summary for Link 6L: Total Existing off-site drainage

Inflow Area = 11.330 ac, 1.59% Impervious, Inflow Depth = 0.60" for 2-year event
 Inflow = 5.09 cfs @ 12.26 hrs, Volume= 0.567 af
 Primary = 5.09 cfs @ 12.26 hrs, Volume= 0.567 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs

Link 6L: Total Existing off-site drainage

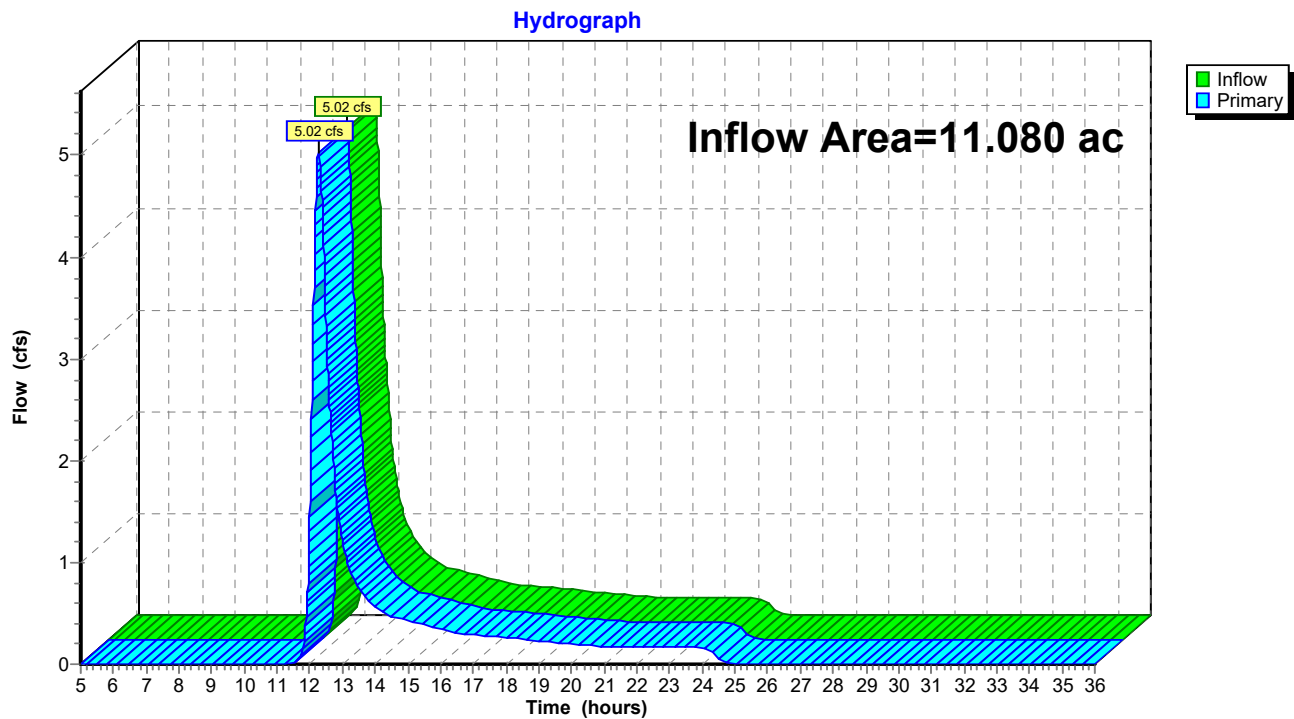


Summary for Link 9L: Existing Analysis Point A

Inflow Area = 11.080 ac, 0.63% Impervious, Inflow Depth = 0.59" for 2-year event
 Inflow = 5.02 cfs @ 12.26 hrs, Volume= 0.543 af
 Primary = 5.02 cfs @ 12.26 hrs, Volume= 0.543 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs

Link 9L: Existing Analysis Point A

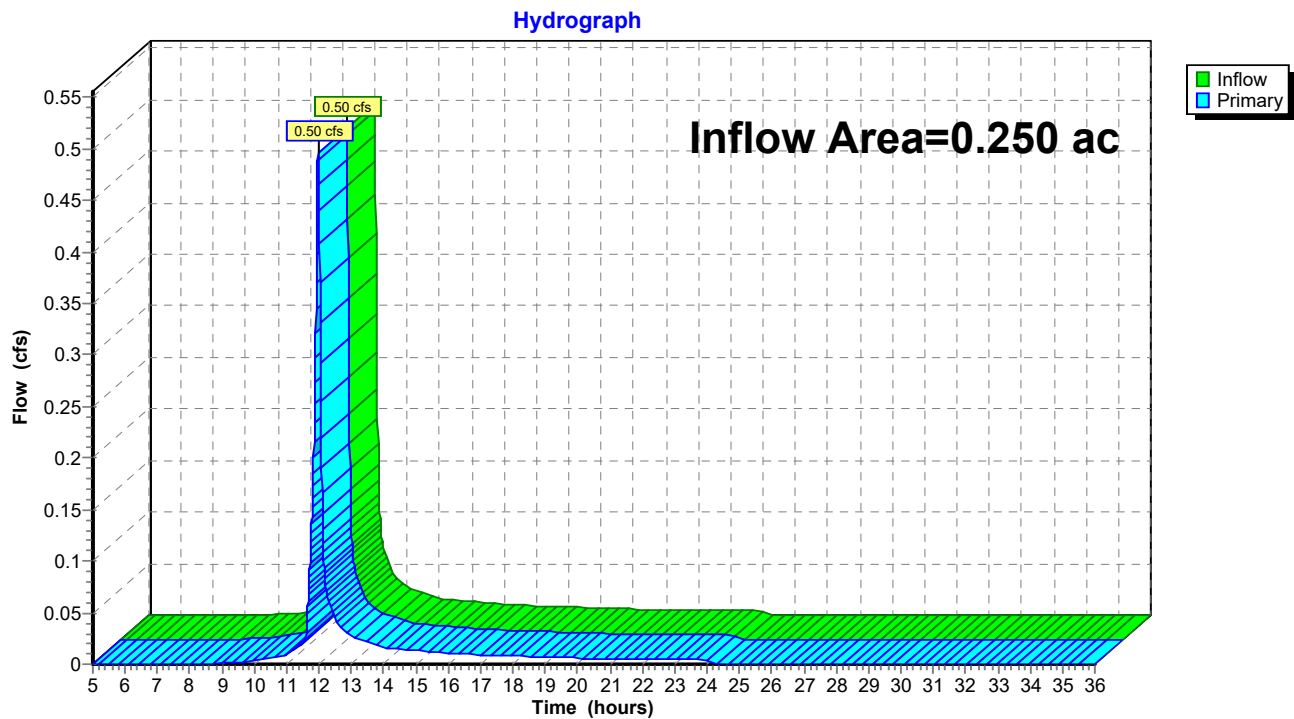


Summary for Link 10L: Existing Analysis point B

Inflow Area = 0.250 ac, 44.00% Impervious, Inflow Depth = 1.11" for 2-year event
 Inflow = 0.50 cfs @ 11.97 hrs, Volume= 0.023 af
 Primary = 0.50 cfs @ 11.97 hrs, Volume= 0.023 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs

Link 10L: Existing Analysis point B

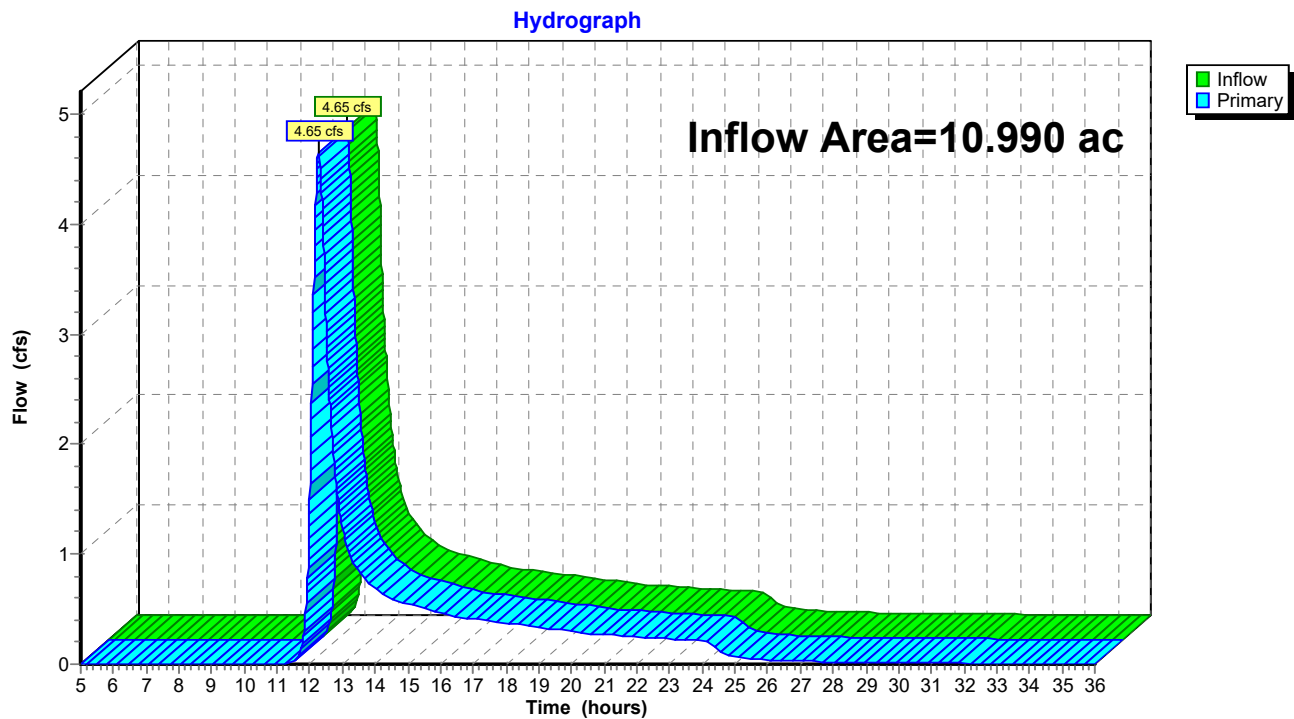


Summary for Link 11L: Proposed Analysis Point A

Inflow Area = 10.990 ac, 11.74% Impervious, Inflow Depth > 0.70" for 2-year event
 Inflow = 4.65 cfs @ 12.26 hrs, Volume= 0.643 af
 Primary = 4.65 cfs @ 12.26 hrs, Volume= 0.643 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs

Link 11L: Proposed Analysis Point A



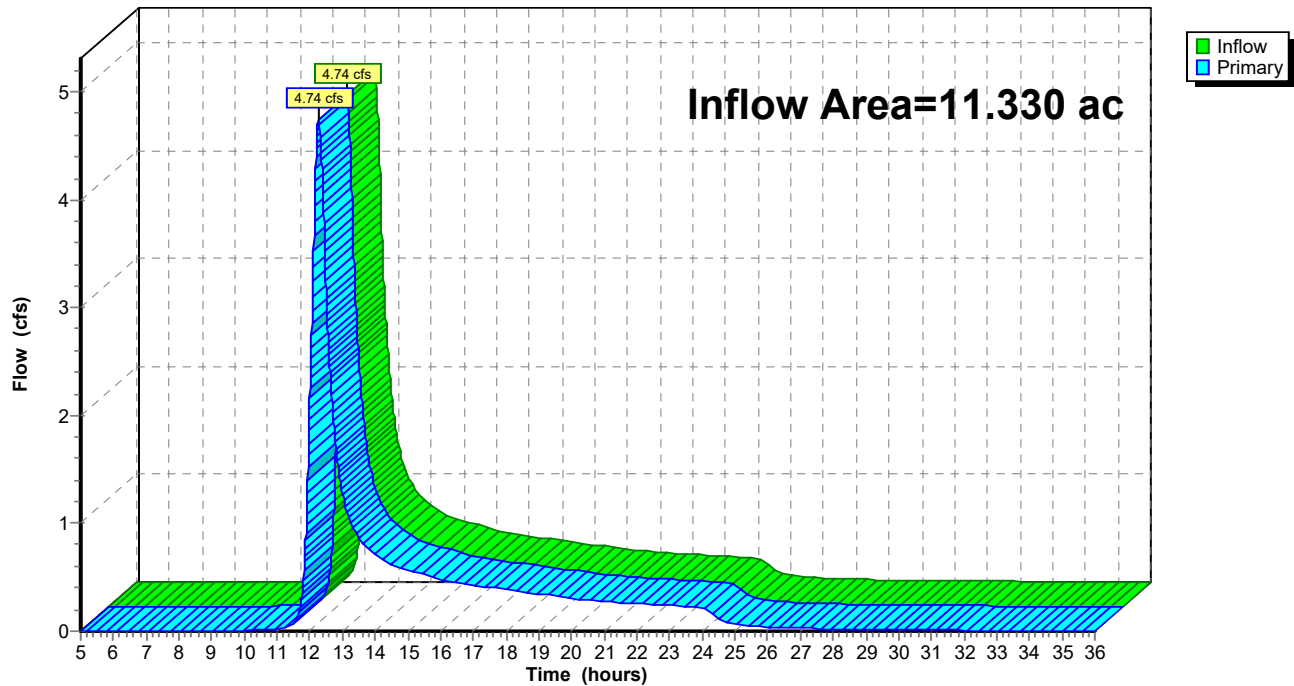
Summary for Link 12L: Total Proposed off-site drainage

Inflow Area = 11.330 ac, 12.89% Impervious, Inflow Depth > 0.72" for 2-year event
 Inflow = 4.74 cfs @ 12.26 hrs, Volume= 0.677 af
 Primary = 4.74 cfs @ 12.26 hrs, Volume= 0.677 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs

Link 12L: Total Proposed off-site drainage

Hydrograph



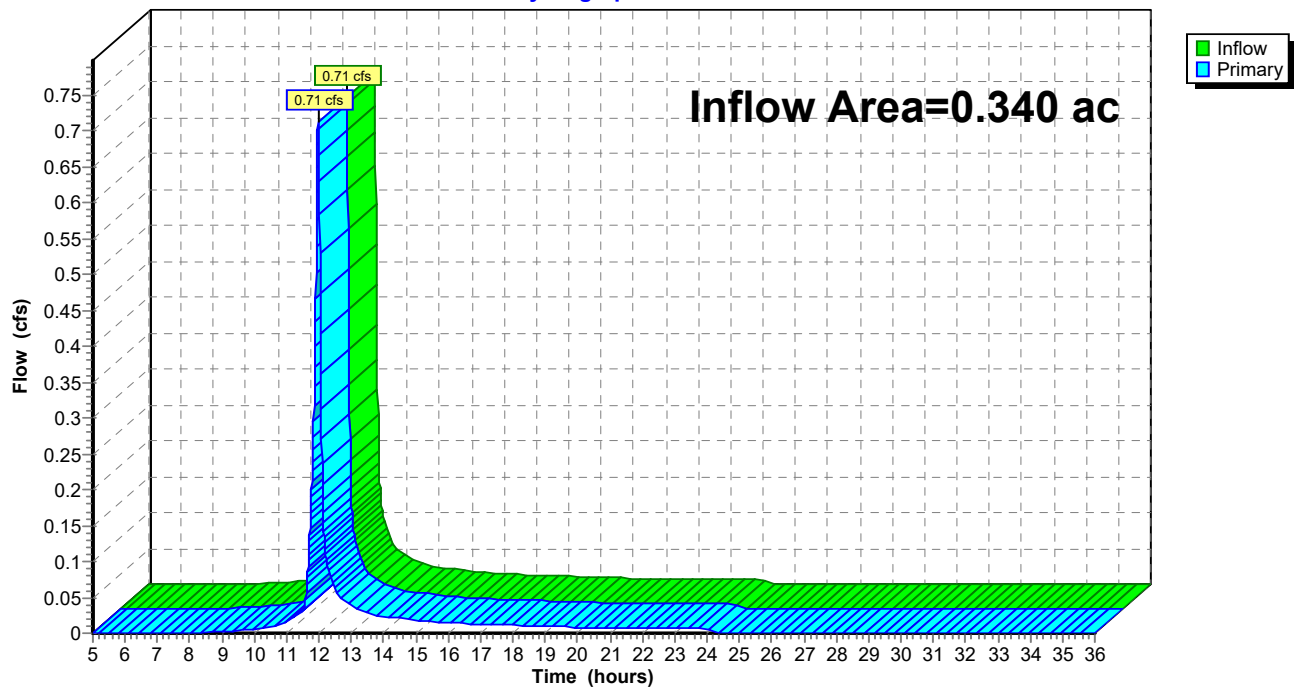
Summary for Link 13L: Proposed Analysis Point B

Inflow Area = 0.340 ac, 50.00% Impervious, Inflow Depth = 1.18" for 2-year event
 Inflow = 0.71 cfs @ 11.97 hrs, Volume= 0.033 af
 Primary = 0.71 cfs @ 11.97 hrs, Volume= 0.033 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs

Link 13L: Proposed Analysis Point B

Hydrograph



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Type II 24-hr 10-year Rainfall=3.14"

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Time span=5.00-36.00 hrs, dt=0.01 hrs, 3101 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment3S: Area #1

Runoff Area=11.080 ac 0.63% Impervious Runoff Depth=1.23"
Flow Length=887' Tc=29.9 min CN=78 Runoff=11.47 cfs 1.135 af

Subcatchment7S: Proposed Area #1

Runoff Area=2.000 ac 40.00% Impervious Runoff Depth=1.86"
Flow Length=277' Tc=12.1 min CN=87 Runoff=5.30 cfs 0.310 af

Subcatchment13S: Area #2

Runoff Area=0.250 ac 44.00% Impervious Runoff Depth=1.94"
Tc=6.0 min CN=88 Runoff=0.85 cfs 0.040 af

Subcatchment20S: Proposed Area #2

Runoff Area=8.990 ac 5.45% Impervious Runoff Depth=1.29"
Flow Length=887' Tc=29.9 min CN=79 Runoff=9.85 cfs 0.968 af

Subcatchment21S: Proposed Area #3

Runoff Area=0.340 ac 50.00% Impervious Runoff Depth=2.03"
Tc=6.0 min CN=89 Runoff=1.20 cfs 0.057 af

Pond 8P: New SWMF

Peak Elev=720.98' Storage=7,630 cf Inflow=5.30 cfs 0.310 af
Primary=0.28 cfs 0.304 af Secondary=0.00 cfs 0.000 af Outflow=0.28 cfs 0.304 af

Link 6L: Total Existing off-site drainage

Inflow=11.58 cfs 1.176 af
Primary=11.58 cfs 1.176 af

Link 9L: Existing Analysis Point A

Inflow=11.47 cfs 1.135 af
Primary=11.47 cfs 1.135 af

Link 10L: Existing Analysis point B

Inflow=0.85 cfs 0.040 af
Primary=0.85 cfs 0.040 af

Link 11L: Proposed Analysis Point A

Inflow=10.10 cfs 1.272 af
Primary=10.10 cfs 1.272 af

Link 12L: Total Proposed off-site drainage

Inflow=10.25 cfs 1.330 af
Primary=10.25 cfs 1.330 af

Link 13L: Proposed Analysis Point B

Inflow=1.20 cfs 0.057 af
Primary=1.20 cfs 0.057 af

Total Runoff Area = 22.660 ac Runoff Volume = 2.511 af Average Runoff Depth = 1.33"
92.76% Pervious = 21.020 ac 7.24% Impervious = 1.640 ac

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Type II 24-hr 10-year Rainfall=3.14"

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Summary for Subcatchment 3S: Area #1

Runoff = 11.47 cfs @ 12.26 hrs, Volume= 1.135 af, Depth= 1.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-year Rainfall=3.14"

Area (ac)	CN	Description
0.070	98	Paved parking, HSG D
0.160	80	>75% Grass cover, Good, HSG D
10.850	78	Meadow, non-grazed, HSG D
11.080	78	Weighted Average
11.010		99.37% Pervious Area
0.070		0.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.2	100	0.0060	0.08		Sheet Flow, Sheet Flow Cultivated: Residue>20% n= 0.170 P2= 2.18"
4.2	340	0.0230	1.36		Shallow Concentrated Flow, Shallow concentrated Cultivated Straight Rows Kv= 9.0 fps
2.8	260	0.0300	1.56		Shallow Concentrated Flow, Shallow concentrated Cultivated Straight Rows Kv= 9.0 fps
1.4	117	0.0230	1.36		Shallow Concentrated Flow, Shallow concentrated Cultivated Straight Rows Kv= 9.0 fps
0.3	70	0.0280	4.12	36.25	Channel Flow, Channel Flow Area= 8.8 sf Perim= 40.0' r= 0.22' n= 0.022 Earth, clean & straight
29.9	887	Total			

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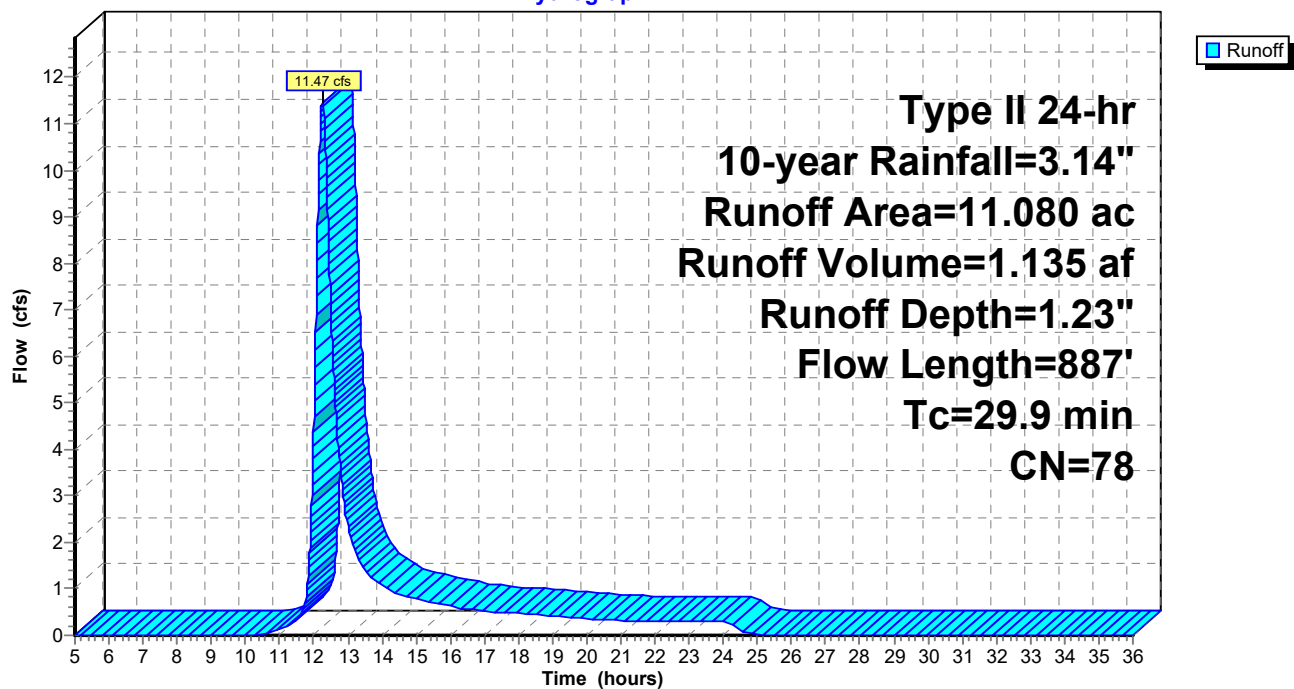
Type II 24-hr 10-year Rainfall=3.14"

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Subcatchment 3S: Area #1

Hydrograph



hydrocad model

Type II 24-hr 10-year Rainfall=3.14"

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Summary for Subcatchment 7S: Proposed Area #1

Runoff = 5.30 cfs @ 12.04 hrs, Volume= 0.310 af, Depth= 1.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-year Rainfall=3.14"

Area (ac)	CN	Description
0.620	98	Paved parking, HSG D
0.180	98	Water Surface, HSG D
1.200	80	>75% Grass cover, Good, HSG D
2.000	87	Weighted Average
1.200		60.00% Pervious Area
0.800		40.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0220	0.15		Sheet Flow, Sheet Flow Grass: Short n= 0.150 P2= 2.18"
0.2	44	0.0440	3.38		Shallow Concentrated Flow, Shallow cocentrated Unpaved Kv= 16.1 fps
0.4	73	0.0130	3.31	14.88	Channel Flow, Channel Flow Area= 4.5 sf Perim= 16.0' r= 0.28' n= 0.022 Earth, clean & straight
0.1	50	0.0500	6.48	29.18	Channel Flow, Channel Flow Area= 4.5 sf Perim= 16.0' r= 0.28' n= 0.022 Earth, clean & straight
0.0	10	0.0500	6.48	29.18	Channel Flow, Channel Flow Area= 4.5 sf Perim= 16.0' r= 0.28' n= 0.022 Earth, clean & straight
12.1	277	Total			

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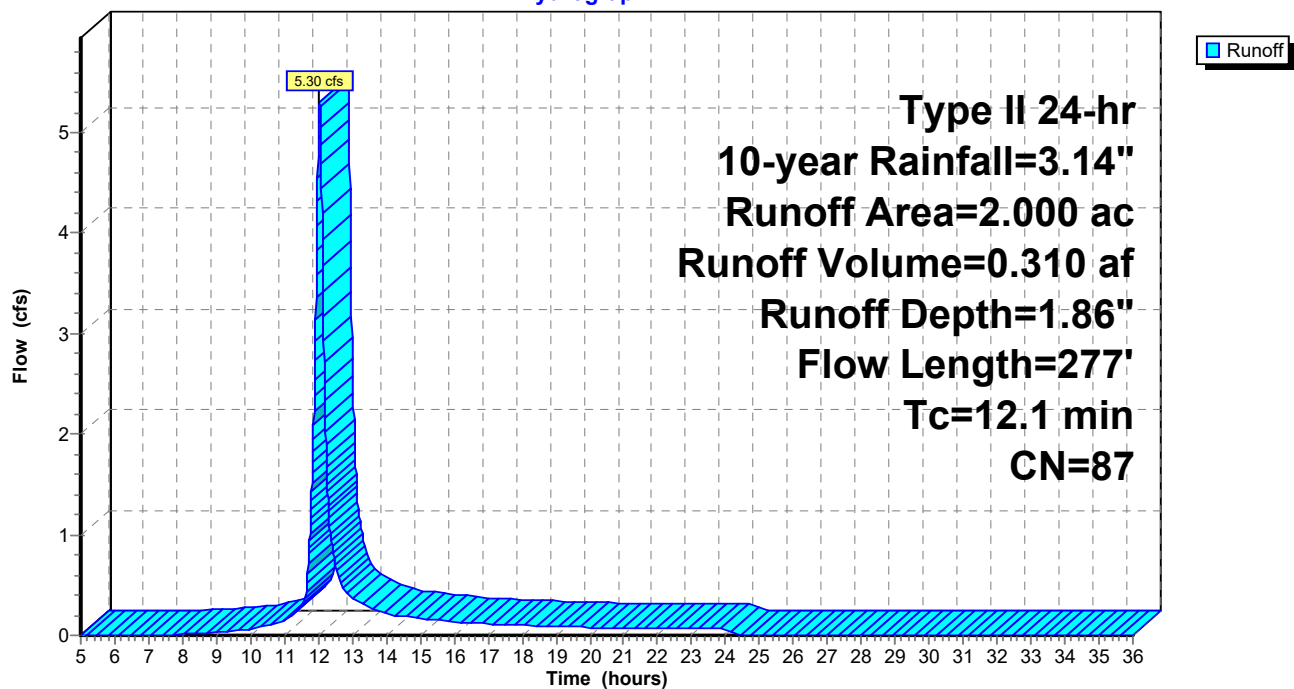
Type II 24-hr 10-year Rainfall=3.14"

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Subcatchment 7S: Proposed Area #1

Hydrograph



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Type II 24-hr 10-year Rainfall=3.14"

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Summary for Subcatchment 13S: Area #2

Runoff = 0.85 cfs @ 11.97 hrs, Volume= 0.040 af, Depth= 1.94"

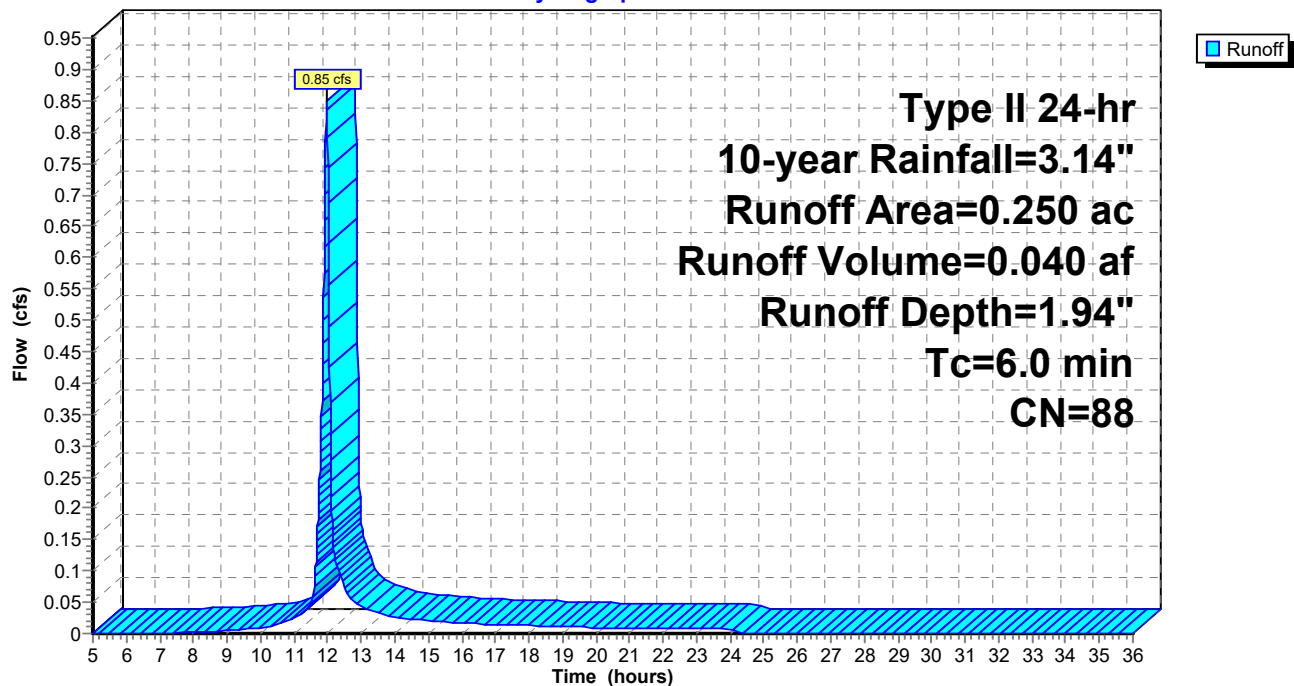
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-year Rainfall=3.14"

Area (ac)	CN	Description
0.110	98	Paved parking, HSG D
0.140	80	>75% Grass cover, Good, HSG D
0.250	88	Weighted Average
0.140		56.00% Pervious Area
0.110		44.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, 6 min (TR-55 min)

Subcatchment 13S: Area #2

Hydrograph



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Type II 24-hr 10-year Rainfall=3.14"

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Summary for Subcatchment 20S: Proposed Area #2

Runoff = 9.85 cfs @ 12.26 hrs, Volume= 0.968 af, Depth= 1.29"

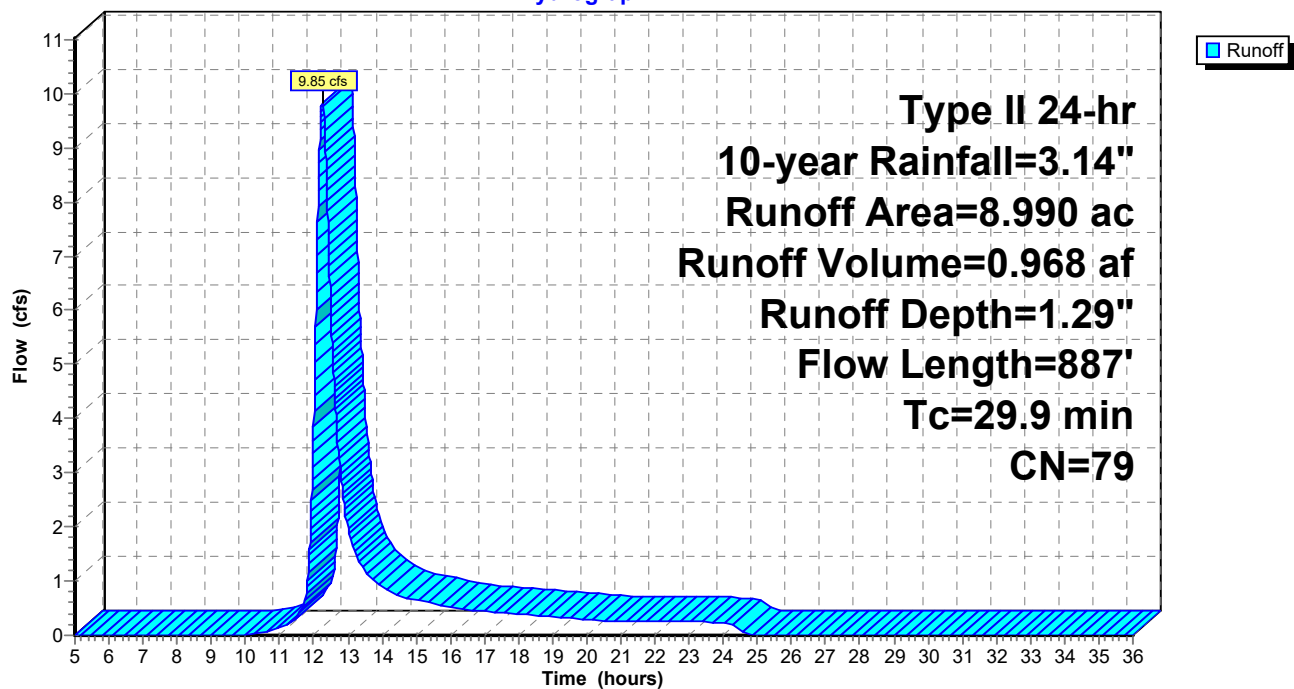
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-year Rainfall=3.14"

Area (ac)	CN	Description
0.490	98	Paved parking, HSG D
1.570	80	>75% Grass cover, Good, HSG D
6.930	78	Meadow, non-grazed, HSG D
8.990	79	Weighted Average
8.500		94.55% Pervious Area
0.490		5.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.2	100	0.0060	0.08		Sheet Flow, Sheet Flow Cultivated: Residue>20% n= 0.170 P2= 2.18"
4.2	340	0.0230	1.36		Shallow Concentrated Flow, Shallow concentrated Cultivated Straight Rows Kv= 9.0 fps
2.8	260	0.0300	1.56		Shallow Concentrated Flow, Shallow concentrated Cultivated Straight Rows Kv= 9.0 fps
1.4	117	0.0230	1.36		Shallow Concentrated Flow, Shallow concentrated Cultivated Straight Rows Kv= 9.0 fps
0.3	70	0.0280	4.12	36.25	Channel Flow, Channel Flow Area= 8.8 sf Perim= 40.0' r= 0.22' n= 0.022 Earth, clean & straight
29.9	887	Total			

Subcatchment 20S: Proposed Area #2

Hydrograph



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Type II 24-hr 10-year Rainfall=3.14"

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Summary for Subcatchment 21S: Proposed Area #3

Runoff = 1.20 cfs @ 11.97 hrs, Volume= 0.057 af, Depth= 2.03"

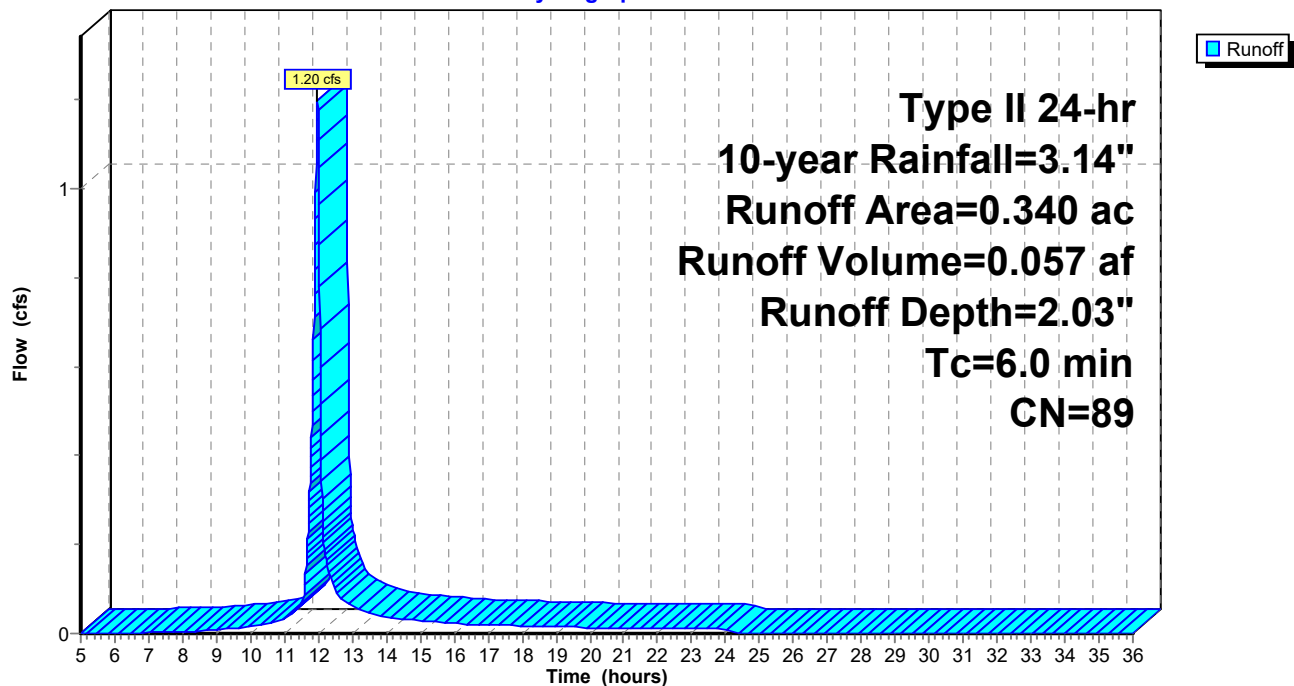
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-year Rainfall=3.14"

Area (ac)	CN	Description
0.170	98	Paved parking, HSG D
0.170	80	>75% Grass cover, Good, HSG D
0.340	89	Weighted Average
0.170		50.00% Pervious Area
0.170		50.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, 6 min (TR-55 min)

Subcatchment 21S: Proposed Area #3

Hydrograph



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Type II 24-hr 10-year Rainfall=3.14"

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Summary for Pond 8P: New SWMF

Inflow Area = 2.000 ac, 40.00% Impervious, Inflow Depth = 1.86" for 10-year event
 Inflow = 5.30 cfs @ 12.04 hrs, Volume= 0.310 af
 Outflow = 0.28 cfs @ 13.50 hrs, Volume= 0.304 af, Atten= 95%, Lag= 88.0 min
 Primary = 0.28 cfs @ 13.50 hrs, Volume= 0.304 af
 Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs
 Peak Elev= 720.98' @ 13.50 hrs Surf.Area= 6,053 sf Storage= 7,630 cf

Plug-Flow detention time= 354.4 min calculated for 0.304 af (98% of inflow)
 Center-of-Mass det. time= 342.8 min (1,165.1 - 822.2)

Volume	Invert	Avail.Storage	Storage Description
#1	719.50'	30,752 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
719.50	4,263	0	0
720.00	4,837	2,275	2,275
721.00	6,074	5,456	7,731
722.00	8,185	7,130	14,860
723.00	11,333	9,759	24,619
723.50	13,200	6,133	30,752

Device	Routing	Invert	Outlet Devices
#1	Primary	719.50'	12.0" Round Culvert L= 87.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 719.50' / 717.50' S= 0.0230 ' S Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	722.00'	24.0" x 24.0" Horiz. 2'x2' grate C= 0.600 Limited to weir flow at low heads
#3	Secondary	722.50'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#4	Primary	719.50'	3.0" Vert. 3" orifice C= 0.600

Primary OutFlow Max=0.28 cfs @ 13.50 hrs HW=720.98' (Free Discharge)

↑ **1=Culvert** (Passes 0.00 cfs of 3.75 cfs potential flow)

↑ **2=2'x2' grate** (Controls 0.00 cfs)

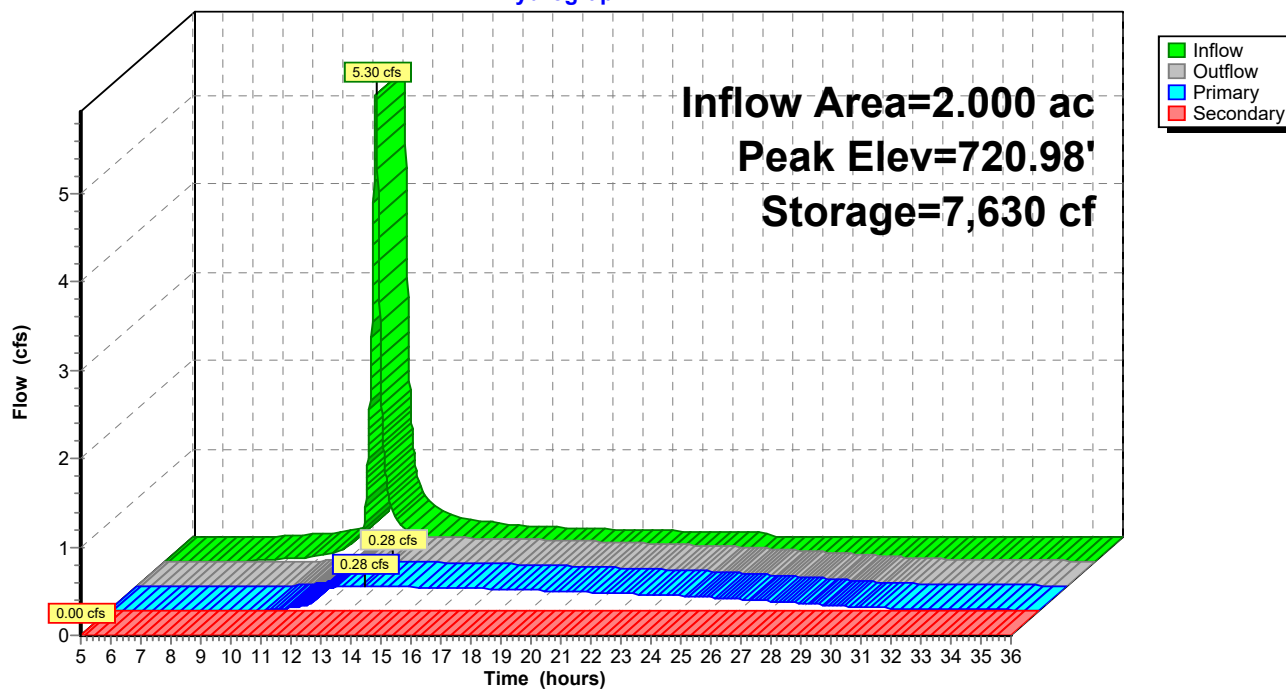
↑ **4=3" orifice** (Orifice Controls 0.28 cfs @ 5.61 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=719.50' (Free Discharge)

↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 8P: New SWMF

Hydrograph



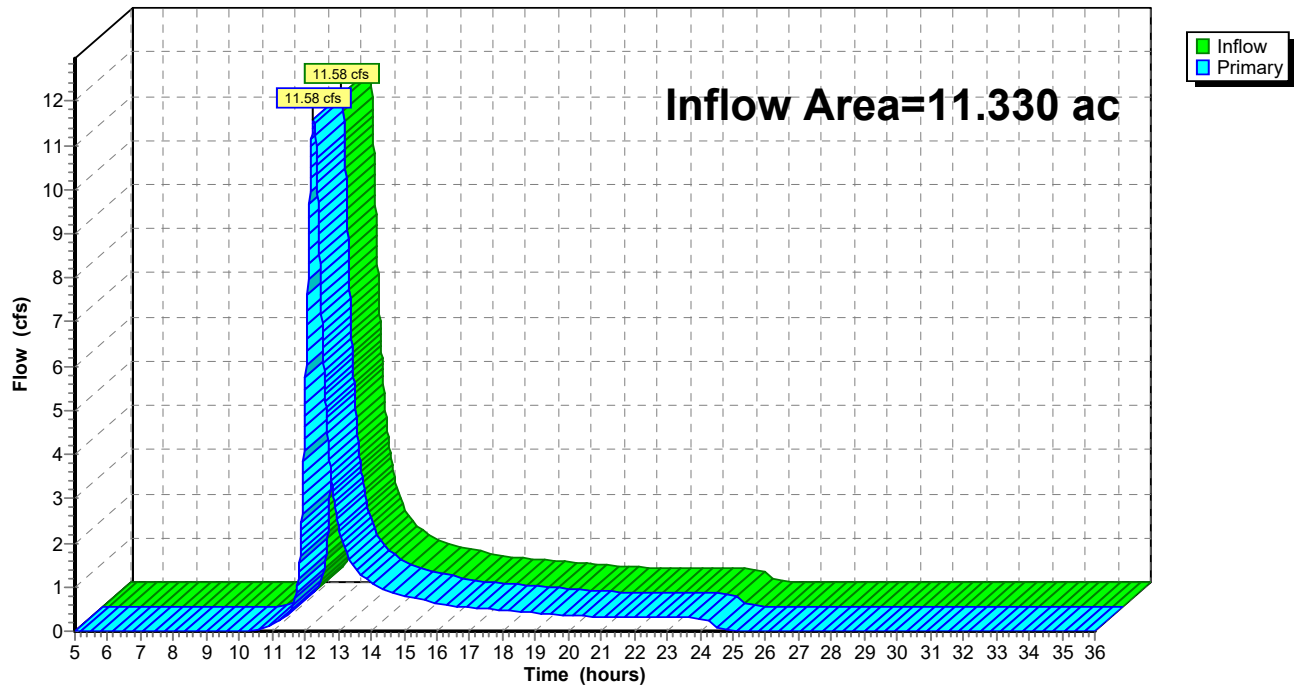
Summary for Link 6L: Total Existing off-site drainage

Inflow Area = 11.330 ac, 1.59% Impervious, Inflow Depth = 1.25" for 10-year event
 Inflow = 11.58 cfs @ 12.26 hrs, Volume= 1.176 af
 Primary = 11.58 cfs @ 12.26 hrs, Volume= 1.176 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs

Link 6L: Total Existing off-site drainage

Hydrograph

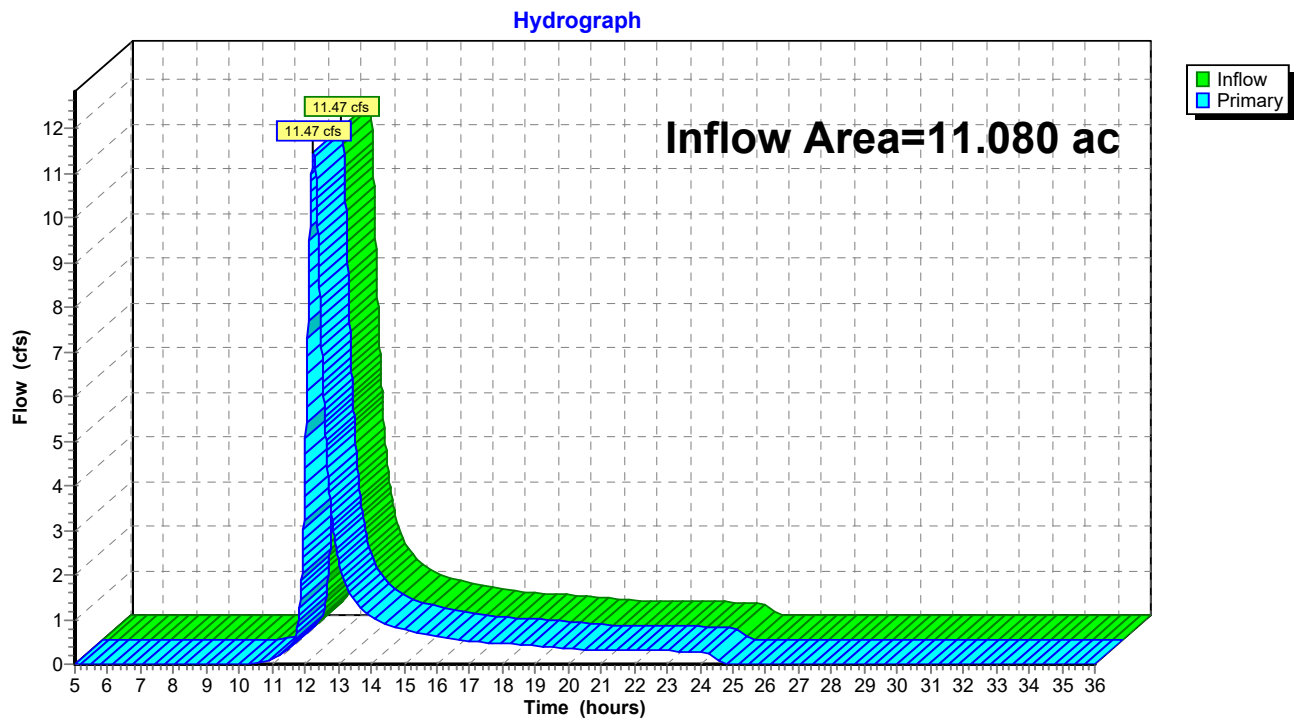


Summary for Link 9L: Existing Analysis Point A

Inflow Area = 11.080 ac, 0.63% Impervious, Inflow Depth = 1.23" for 10-year event
 Inflow = 11.47 cfs @ 12.26 hrs, Volume= 1.135 af
 Primary = 11.47 cfs @ 12.26 hrs, Volume= 1.135 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs

Link 9L: Existing Analysis Point A



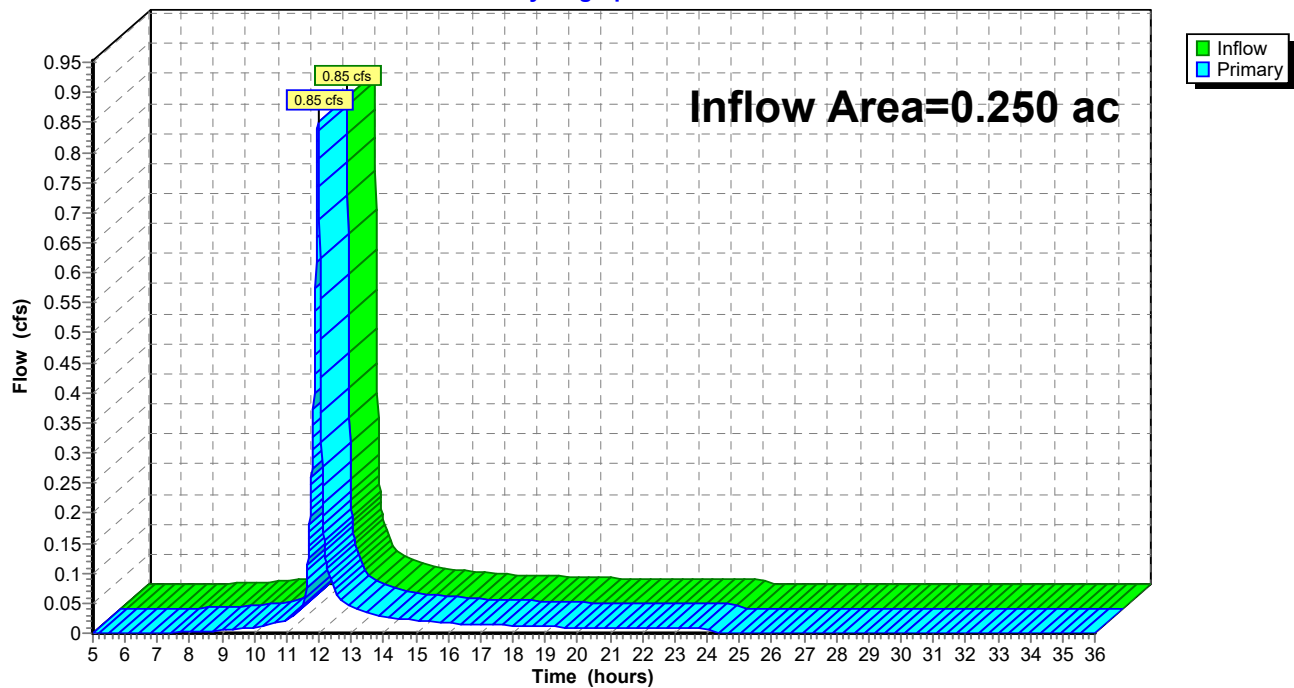
Summary for Link 10L: Existing Analysis point B

Inflow Area = 0.250 ac, 44.00% Impervious, Inflow Depth = 1.94" for 10-year event
 Inflow = 0.85 cfs @ 11.97 hrs, Volume= 0.040 af
 Primary = 0.85 cfs @ 11.97 hrs, Volume= 0.040 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs

Link 10L: Existing Analysis point B

Hydrograph



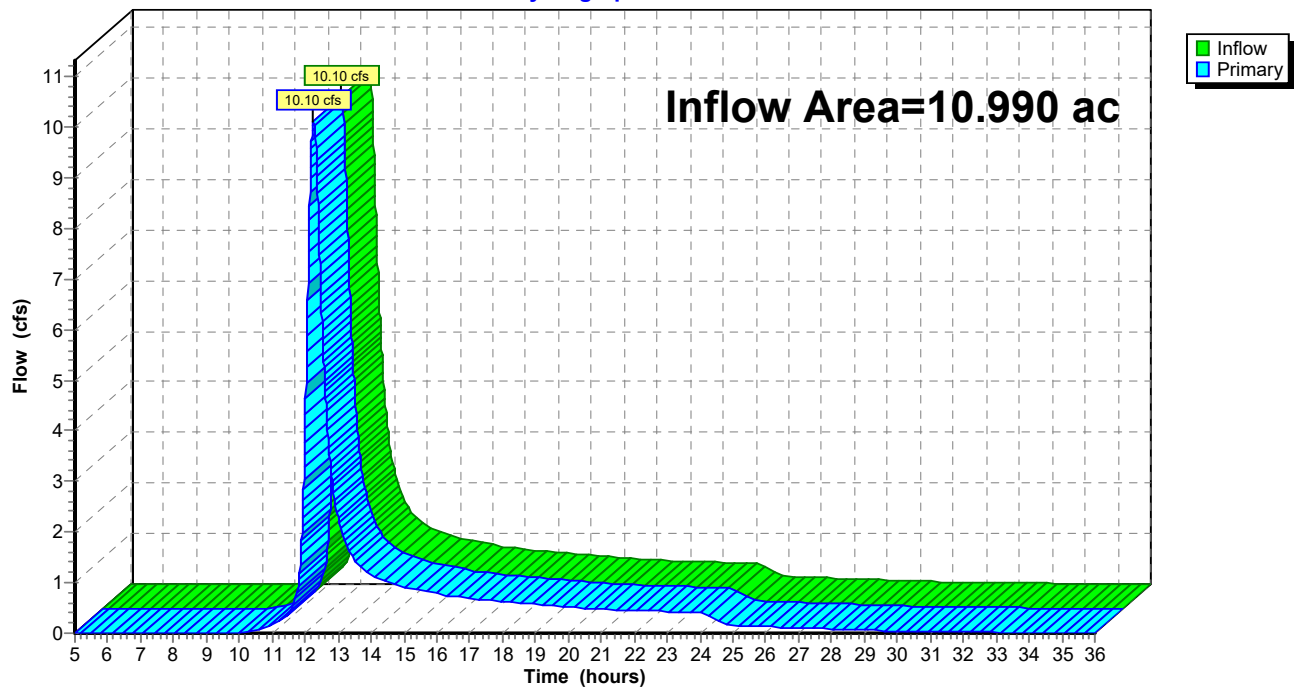
Summary for Link 11L: Proposed Analysis Point A

Inflow Area = 10.990 ac, 11.74% Impervious, Inflow Depth > 1.39" for 10-year event
 Inflow = 10.10 cfs @ 12.26 hrs, Volume= 1.272 af
 Primary = 10.10 cfs @ 12.26 hrs, Volume= 1.272 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs

Link 11L: Proposed Analysis Point A

Hydrograph



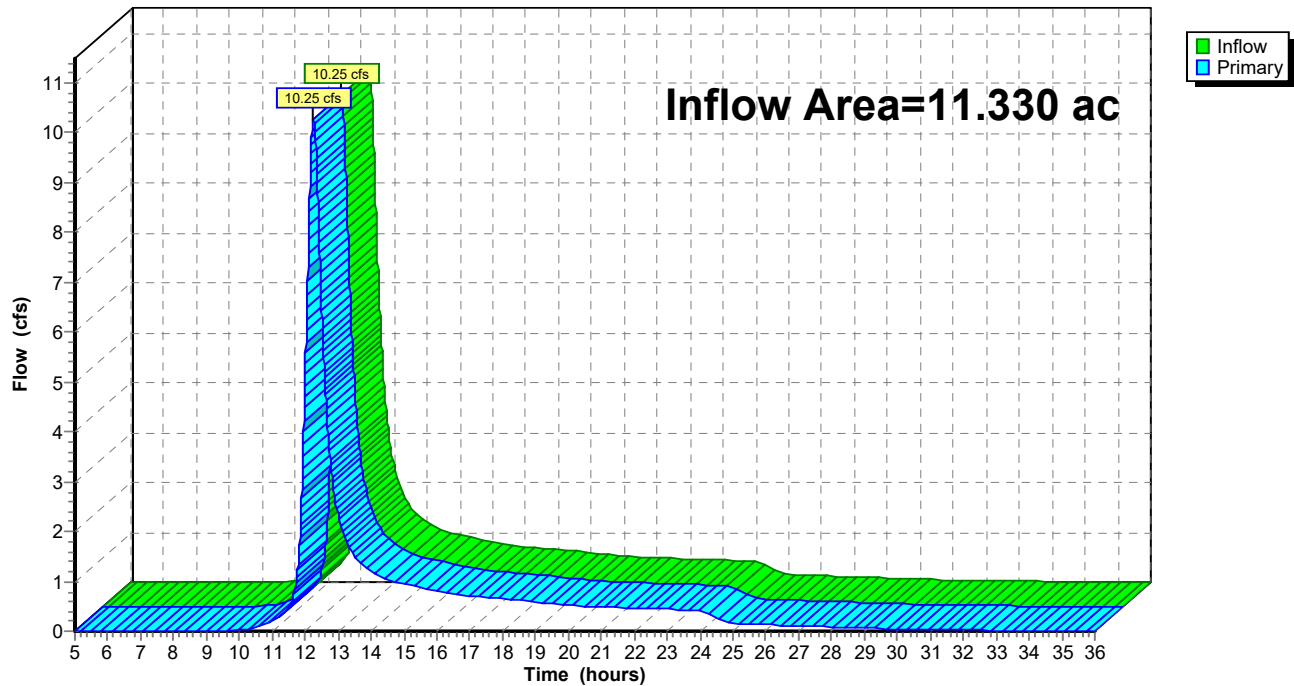
Summary for Link 12L: Total Proposed off-site drainage

Inflow Area = 11.330 ac, 12.89% Impervious, Inflow Depth > 1.41" for 10-year event
 Inflow = 10.25 cfs @ 12.26 hrs, Volume= 1.330 af
 Primary = 10.25 cfs @ 12.26 hrs, Volume= 1.330 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs

Link 12L: Total Proposed off-site drainage

Hydrograph

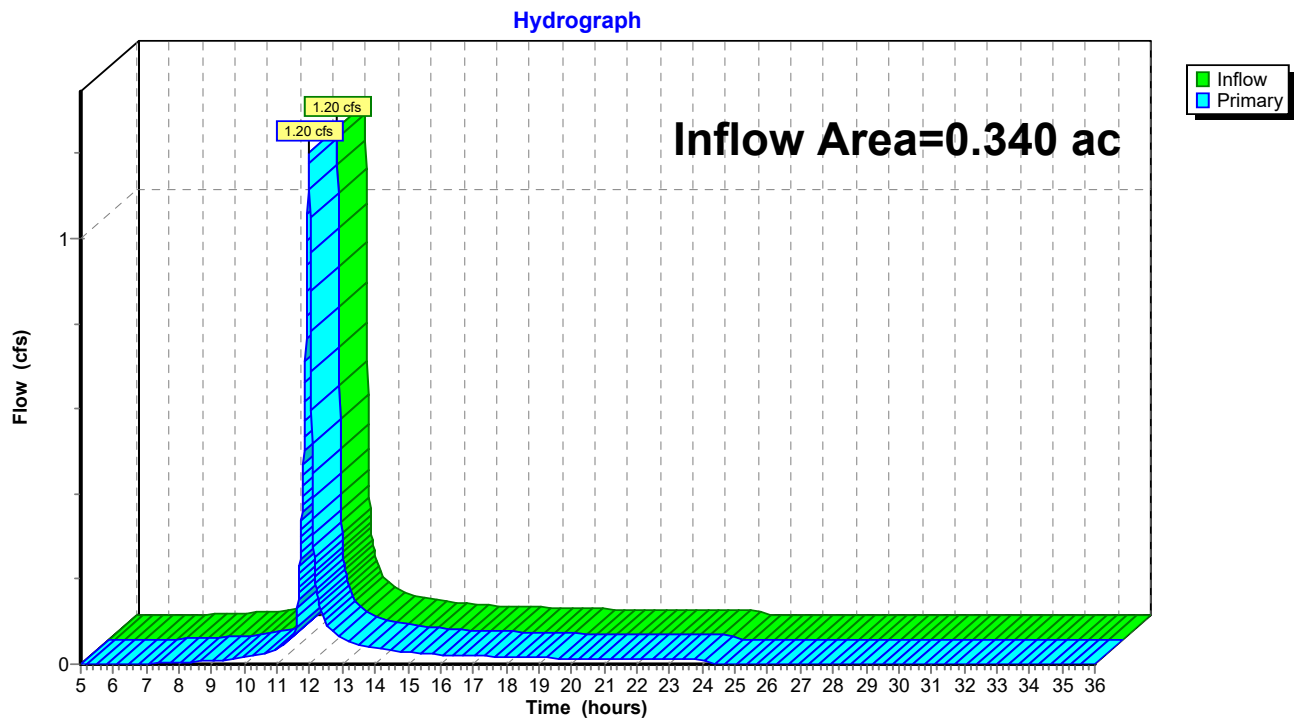


Summary for Link 13L: Proposed Analysis Point B

Inflow Area = 0.340 ac, 50.00% Impervious, Inflow Depth = 2.03" for 10-year event
 Inflow = 1.20 cfs @ 11.97 hrs, Volume= 0.057 af
 Primary = 1.20 cfs @ 11.97 hrs, Volume= 0.057 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs

Link 13L: Proposed Analysis Point B



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Time span=5.00-36.00 hrs, dt=0.01 hrs, 3101 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment3S: Area #1 Runoff Area=11.080 ac 0.63% Impervious Runoff Depth=2.96"
Flow Length=887' Tc=29.9 min CN=78 Runoff=28.48 cfs 2.733 af

Subcatchment7S: Proposed Area #1 Runoff Area=2.000 ac 40.00% Impervious Runoff Depth>3.84"
Flow Length=277' Tc=12.1 min CN=87 Runoff=10.64 cfs 0.640 af

Subcatchment13S: Area #2 Runoff Area=0.250 ac 44.00% Impervious Runoff Depth>3.94"
Tc=6.0 min CN=88 Runoff=1.66 cfs 0.082 af

Subcatchment20S: Proposed Area #2 Runoff Area=8.990 ac 5.45% Impervious Runoff Depth=3.05"
Flow Length=887' Tc=29.9 min CN=79 Runoff=23.85 cfs 2.287 af

Subcatchment21S: Proposed Area #3 Runoff Area=0.340 ac 50.00% Impervious Runoff Depth>4.05"
Tc=6.0 min CN=89 Runoff=2.30 cfs 0.115 af

Pond 8P: New SWMF Peak Elev=722.09' Storage=15,581 cf Inflow=10.64 cfs 0.640 af
Primary=1.05 cfs 0.618 af Secondary=0.00 cfs 0.000 af Outflow=1.05 cfs 0.618 af

Link 6L: Total Existing off-site drainage Inflow=28.68 cfs 2.815 af
Primary=28.68 cfs 2.815 af

Link 9L: Existing Analysis Point A Inflow=28.48 cfs 2.733 af
Primary=28.48 cfs 2.733 af

Link 10L: Existing Analysis point B Inflow=1.66 cfs 0.082 af
Primary=1.66 cfs 0.082 af

Link 11L: Proposed Analysis Point A Inflow=24.21 cfs 2.905 af
Primary=24.21 cfs 2.905 af

Link 12L: Total Proposed off-site drainage Inflow=24.49 cfs 3.020 af
Primary=24.49 cfs 3.020 af

Link 13L: Proposed Analysis Point B Inflow=2.30 cfs 0.115 af
Primary=2.30 cfs 0.115 af

Total Runoff Area = 22.660 ac Runoff Volume = 5.857 af Average Runoff Depth = 3.10"
92.76% Pervious = 21.020 ac 7.24% Impervious = 1.640 ac

hydrocad model

Type II 24-hr 100-year Rainfall=5.29"

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Summary for Subcatchment 3S: Area #1

Runoff = 28.48 cfs @ 12.25 hrs, Volume= 2.733 af, Depth= 2.96"

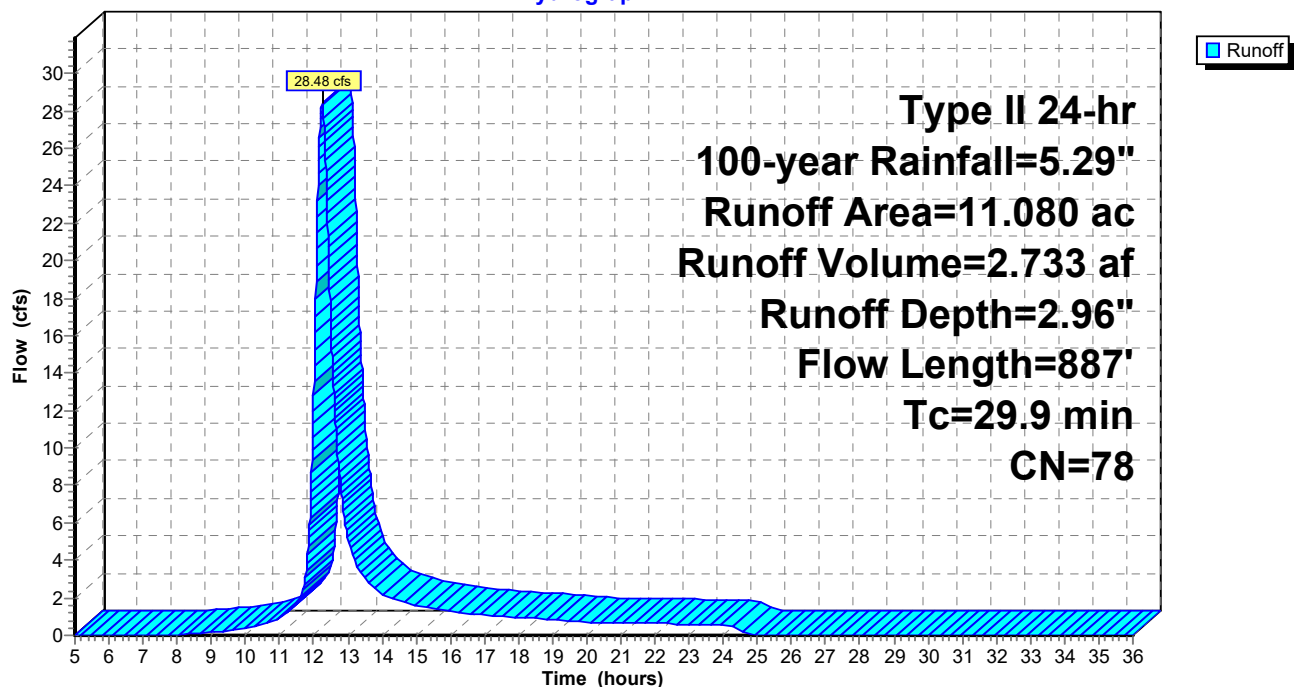
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-year Rainfall=5.29"

Area (ac)	CN	Description
0.070	98	Paved parking, HSG D
0.160	80	>75% Grass cover, Good, HSG D
10.850	78	Meadow, non-grazed, HSG D
11.080	78	Weighted Average
11.010		99.37% Pervious Area
0.070		0.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.2	100	0.0060	0.08		Sheet Flow, Sheet Flow Cultivated: Residue>20% n= 0.170 P2= 2.18"
4.2	340	0.0230	1.36		Shallow Concentrated Flow, Shallow concentrated Cultivated Straight Rows Kv= 9.0 fps
2.8	260	0.0300	1.56		Shallow Concentrated Flow, Shallow concentrated Cultivated Straight Rows Kv= 9.0 fps
1.4	117	0.0230	1.36		Shallow Concentrated Flow, Shallow concentrated Cultivated Straight Rows Kv= 9.0 fps
0.3	70	0.0280	4.12	36.25	Channel Flow, Channel Flow Area= 8.8 sf Perim= 40.0' r= 0.22' n= 0.022 Earth, clean & straight
29.9	887	Total			

Subcatchment 3S: Area #1

Hydrograph



hydrocad model

Type II 24-hr 100-year Rainfall=5.29"

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Summary for Subcatchment 7S: Proposed Area #1

Runoff = 10.64 cfs @ 12.03 hrs, Volume= 0.640 af, Depth> 3.84"

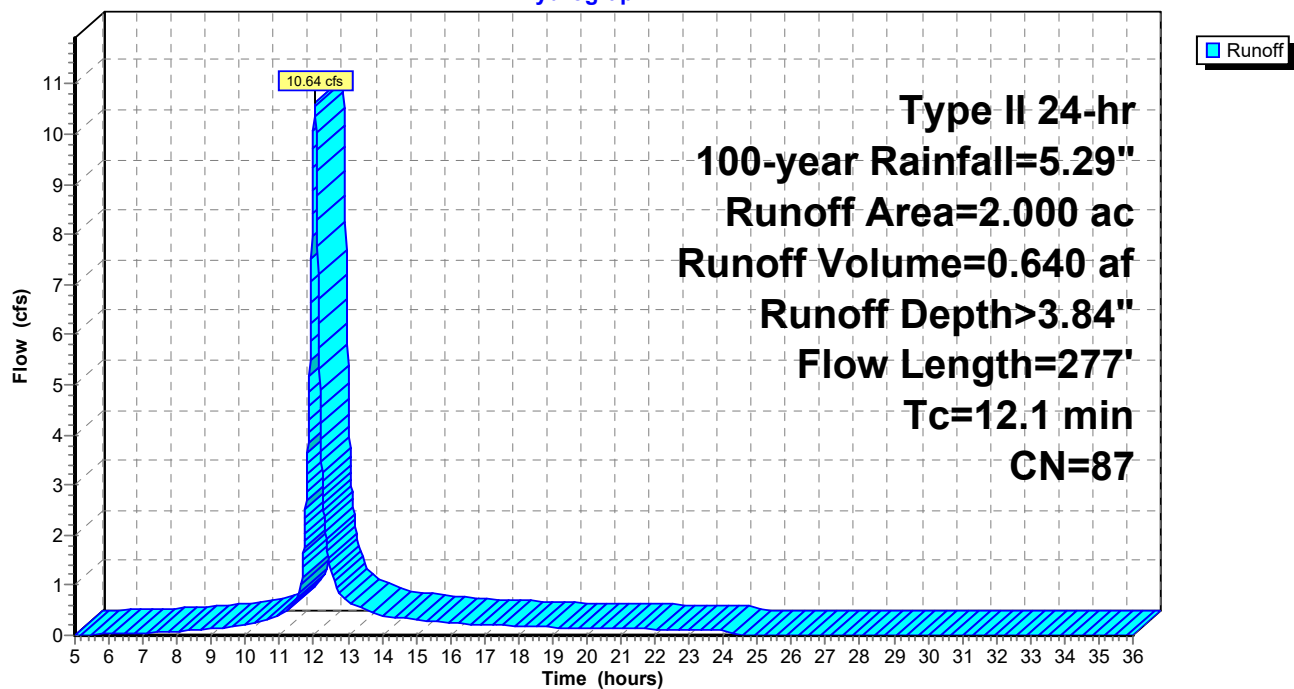
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-year Rainfall=5.29"

Area (ac)	CN	Description
0.620	98	Paved parking, HSG D
0.180	98	Water Surface, HSG D
1.200	80	>75% Grass cover, Good, HSG D
2.000	87	Weighted Average
1.200		60.00% Pervious Area
0.800		40.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0220	0.15		Sheet Flow, Sheet Flow Grass: Short n= 0.150 P2= 2.18"
0.2	44	0.0440	3.38		Shallow Concentrated Flow, Shallow cocentrated Unpaved Kv= 16.1 fps
0.4	73	0.0130	3.31	14.88	Channel Flow, Channel Flow Area= 4.5 sf Perim= 16.0' r= 0.28' n= 0.022 Earth, clean & straight
0.1	50	0.0500	6.48	29.18	Channel Flow, Channel Flow Area= 4.5 sf Perim= 16.0' r= 0.28' n= 0.022 Earth, clean & straight
0.0	10	0.0500	6.48	29.18	Channel Flow, Channel Flow Area= 4.5 sf Perim= 16.0' r= 0.28' n= 0.022 Earth, clean & straight
12.1	277	Total			

Subcatchment 7S: Proposed Area #1

Hydrograph



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Type II 24-hr 100-year Rainfall=5.29"

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Summary for Subcatchment 13S: Area #2

Runoff = 1.66 cfs @ 11.97 hrs, Volume= 0.082 af, Depth> 3.94"

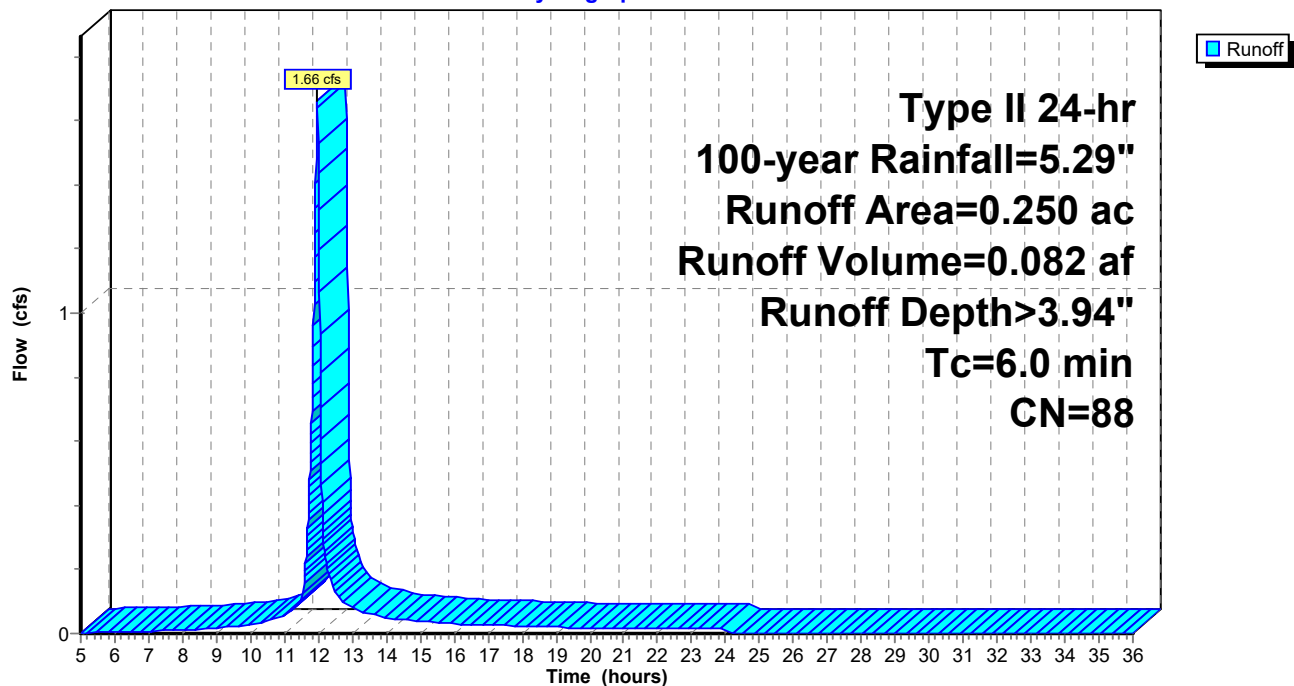
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-year Rainfall=5.29"

Area (ac)	CN	Description
0.110	98	Paved parking, HSG D
0.140	80	>75% Grass cover, Good, HSG D
0.250	88	Weighted Average
0.140		56.00% Pervious Area
0.110		44.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, 6 min (TR-55 min)

Subcatchment 13S: Area #2

Hydrograph



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Type II 24-hr 100-year Rainfall=5.29"

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Summary for Subcatchment 20S: Proposed Area #2

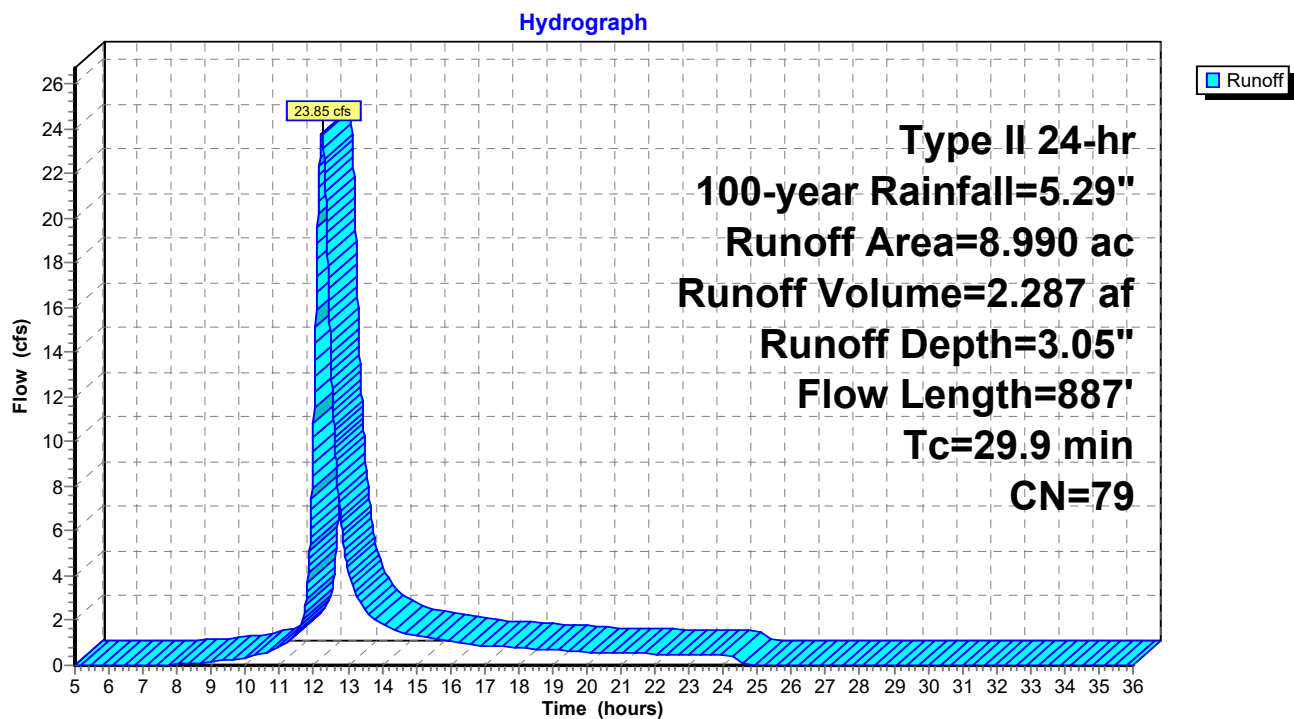
Runoff = 23.85 cfs @ 12.25 hrs, Volume= 2.287 af, Depth= 3.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-year Rainfall=5.29"

Area (ac)	CN	Description
0.490	98	Paved parking, HSG D
1.570	80	>75% Grass cover, Good, HSG D
6.930	78	Meadow, non-grazed, HSG D
8.990	79	Weighted Average
8.500		94.55% Pervious Area
0.490		5.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.2	100	0.0060	0.08		Sheet Flow, Sheet Flow Cultivated: Residue>20% n= 0.170 P2= 2.18"
4.2	340	0.0230	1.36		Shallow Concentrated Flow, Shallow concentrated Cultivated Straight Rows Kv= 9.0 fps
2.8	260	0.0300	1.56		Shallow Concentrated Flow, Shallow concentrated Cultivated Straight Rows Kv= 9.0 fps
1.4	117	0.0230	1.36		Shallow Concentrated Flow, Shallow concentrated Cultivated Straight Rows Kv= 9.0 fps
0.3	70	0.0280	4.12	36.25	Channel Flow, Channel Flow Area= 8.8 sf Perim= 40.0' r= 0.22' n= 0.022 Earth, clean & straight
29.9	887	Total			

Subcatchment 20S: Proposed Area #2



hydrocad model

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Type II 24-hr 100-year Rainfall=5.29"

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Summary for Subcatchment 21S: Proposed Area #3

Runoff = 2.30 cfs @ 11.97 hrs, Volume= 0.115 af, Depth> 4.05"

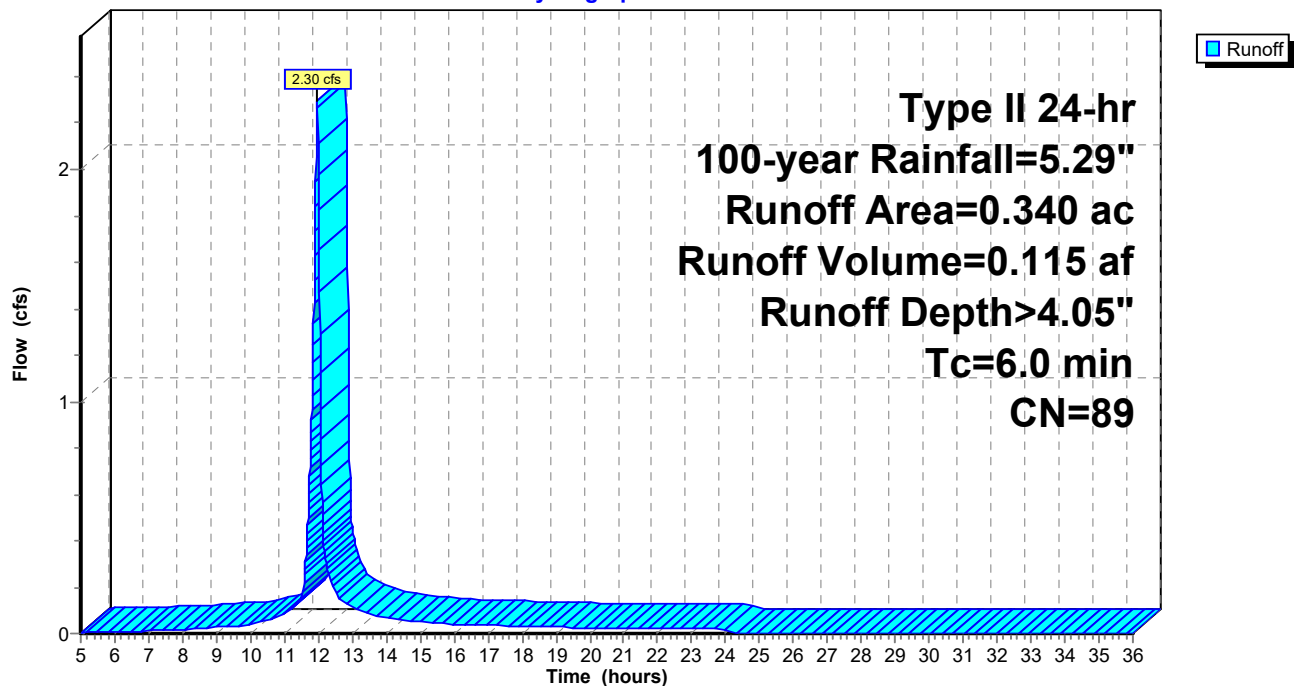
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-year Rainfall=5.29"

Area (ac)	CN	Description
0.170	98	Paved parking, HSG D
0.170	80	>75% Grass cover, Good, HSG D
0.340	89	Weighted Average
0.170		50.00% Pervious Area
0.170		50.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, 6 min (TR-55 min)

Subcatchment 21S: Proposed Area #3

Hydrograph



hydrocad model

Type II 24-hr 100-year Rainfall=5.29"

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Summary for Pond 8P: New SWMF

Inflow Area = 2.000 ac, 40.00% Impervious, Inflow Depth > 3.84" for 100-year event
 Inflow = 10.64 cfs @ 12.03 hrs, Volume= 0.640 af
 Outflow = 1.05 cfs @ 12.60 hrs, Volume= 0.618 af, Atten= 90%, Lag= 34.0 min
 Primary = 1.05 cfs @ 12.60 hrs, Volume= 0.618 af
 Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs
 Peak Elev= 722.09' @ 12.60 hrs Surf.Area= 8,458 sf Storage= 15,581 cf

Plug-Flow detention time= 449.5 min calculated for 0.618 af (97% of inflow)
 Center-of-Mass det. time= 428.6 min (1,230.3 - 801.7)

Volume	Invert	Avail.Storage	Storage Description
#1	719.50'	30,752 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
719.50	4,263	0	0
720.00	4,837	2,275	2,275
721.00	6,074	5,456	7,731
722.00	8,185	7,130	14,860
723.00	11,333	9,759	24,619
723.50	13,200	6,133	30,752

Device	Routing	Invert	Outlet Devices
#1	Primary	719.50'	12.0" Round Culvert L= 87.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 719.50' / 717.50' S= 0.0230 ' S= 0.0230 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	722.00'	24.0" x 24.0" Horiz. 2'x2' grate C= 0.600 Limited to weir flow at low heads
#3	Secondary	722.50'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#4	Primary	719.50'	3.0" Vert. 3" orifice C= 0.600

Primary OutFlow Max=1.04 cfs @ 12.60 hrs HW=722.09' (Free Discharge)

↑ **1=Culvert** (Passes 0.67 cfs of 5.46 cfs potential flow)

↑ **2=2'x2' grate** (Weir Controls 0.67 cfs @ 0.96 fps)

↑ **4=3" orifice** (Orifice Controls 0.37 cfs @ 7.55 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=719.50' (Free Discharge)

↑ **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

hydrocad model

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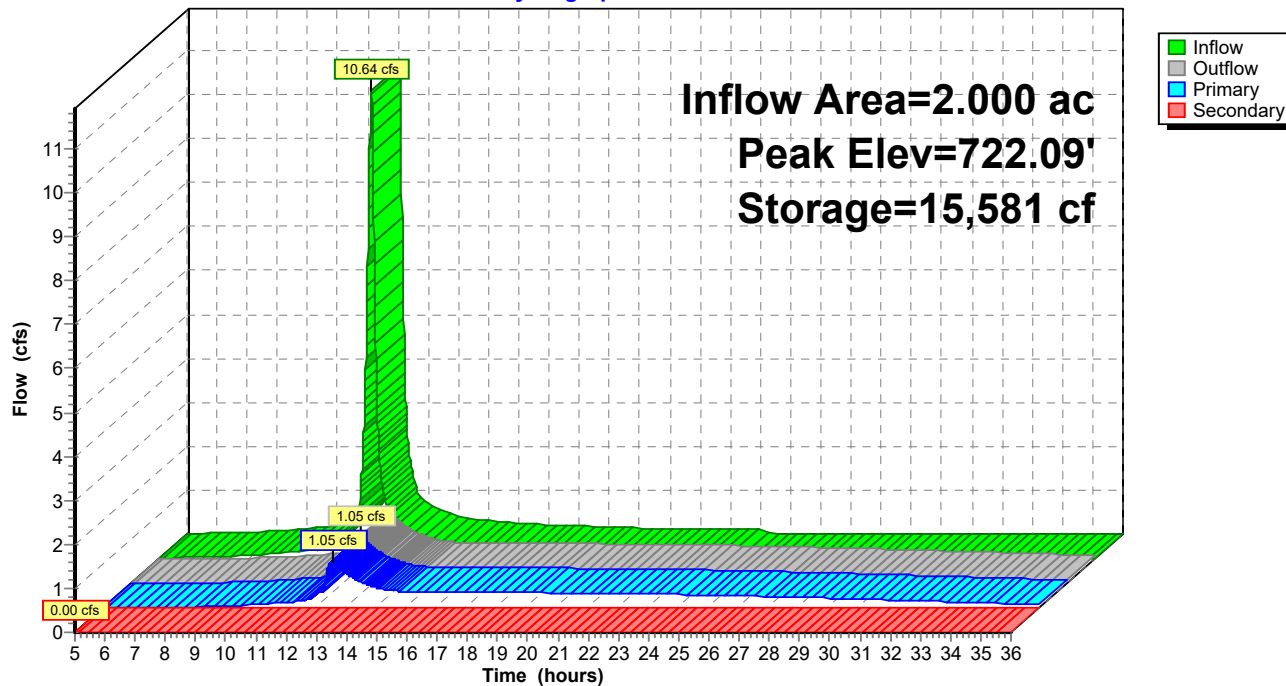
Type II 24-hr 100-year Rainfall=5.29"

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Pond 8P: New SWMF

Hydrograph



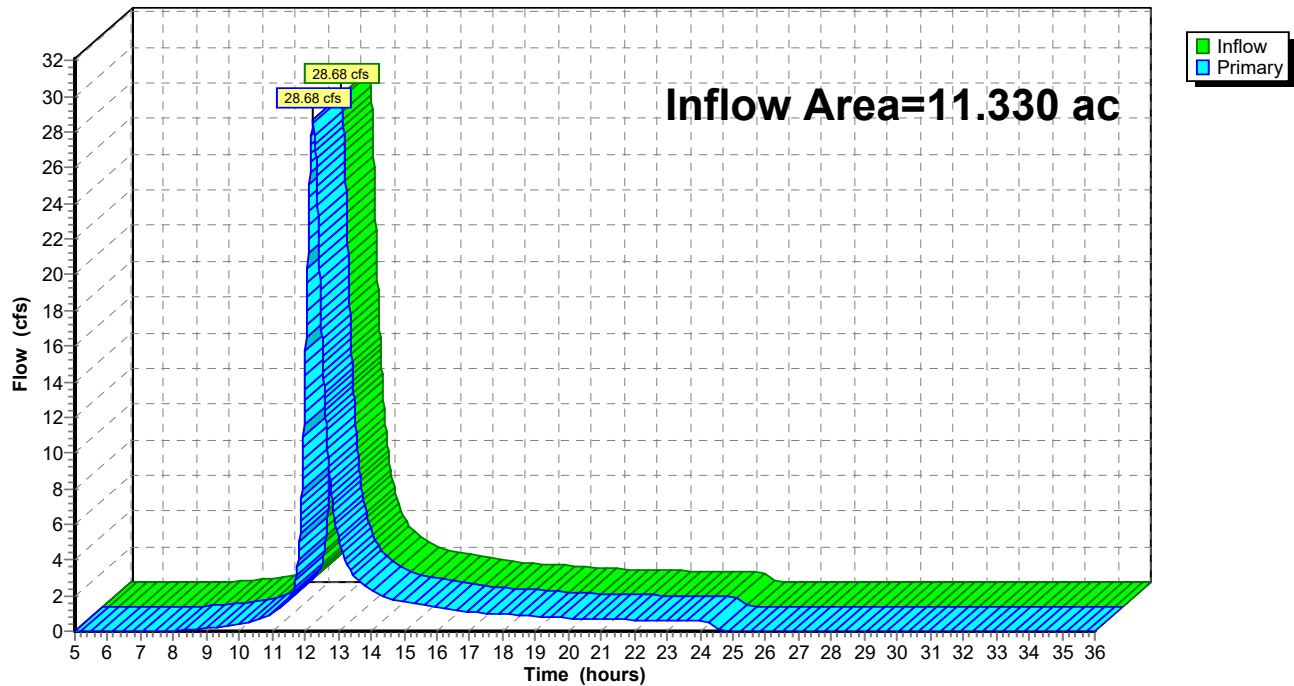
Summary for Link 6L: Total Existing off-site drainage

Inflow Area = 11.330 ac, 1.59% Impervious, Inflow Depth = 2.98" for 100-year event
 Inflow = 28.68 cfs @ 12.25 hrs, Volume= 2.815 af
 Primary = 28.68 cfs @ 12.25 hrs, Volume= 2.815 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs

Link 6L: Total Existing off-site drainage

Hydrograph

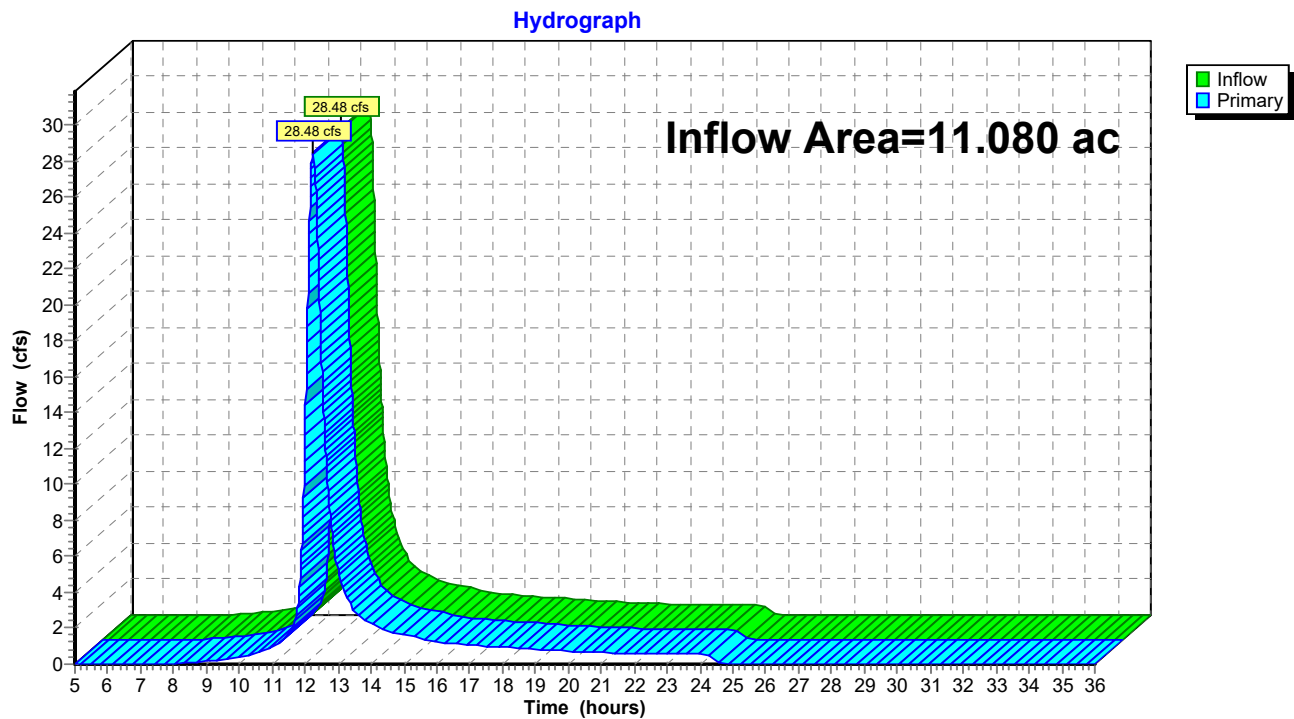


Summary for Link 9L: Existing Analysis Point A

Inflow Area = 11.080 ac, 0.63% Impervious, Inflow Depth = 2.96" for 100-year event
 Inflow = 28.48 cfs @ 12.25 hrs, Volume= 2.733 af
 Primary = 28.48 cfs @ 12.25 hrs, Volume= 2.733 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs

Link 9L: Existing Analysis Point A

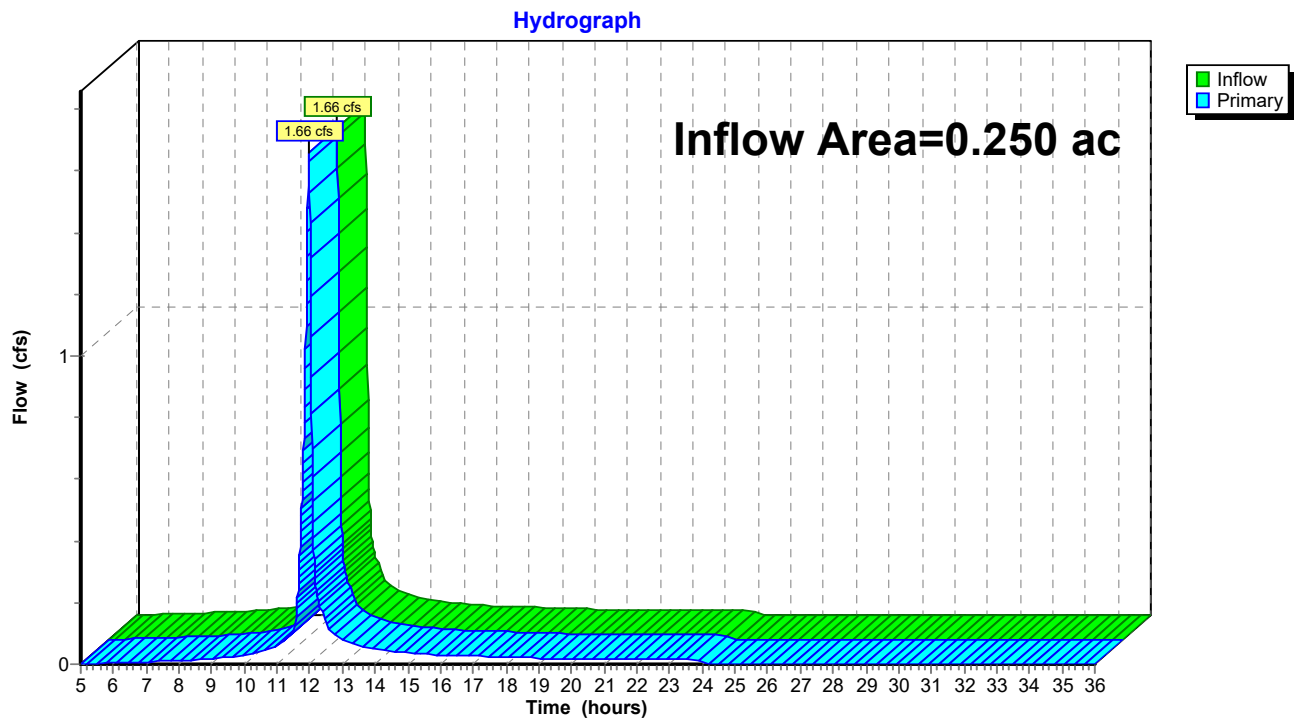


Summary for Link 10L: Existing Analysis point B

Inflow Area = 0.250 ac, 44.00% Impervious, Inflow Depth > 3.94" for 100-year event
 Inflow = 1.66 cfs @ 11.97 hrs, Volume= 0.082 af
 Primary = 1.66 cfs @ 11.97 hrs, Volume= 0.082 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs

Link 10L: Existing Analysis point B

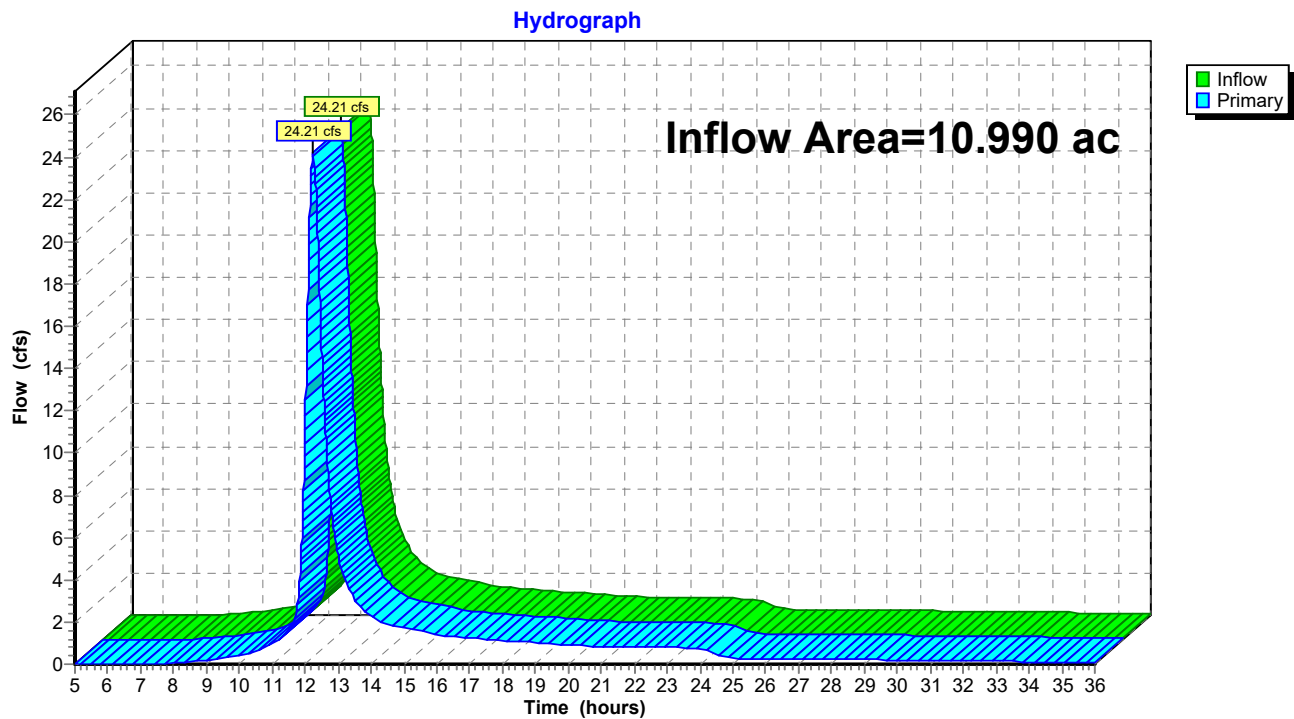


Summary for Link 11L: Proposed Analysis Point A

Inflow Area = 10.990 ac, 11.74% Impervious, Inflow Depth > 3.17" for 100-year event
 Inflow = 24.21 cfs @ 12.25 hrs, Volume= 2.905 af
 Primary = 24.21 cfs @ 12.25 hrs, Volume= 2.905 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs

Link 11L: Proposed Analysis Point A



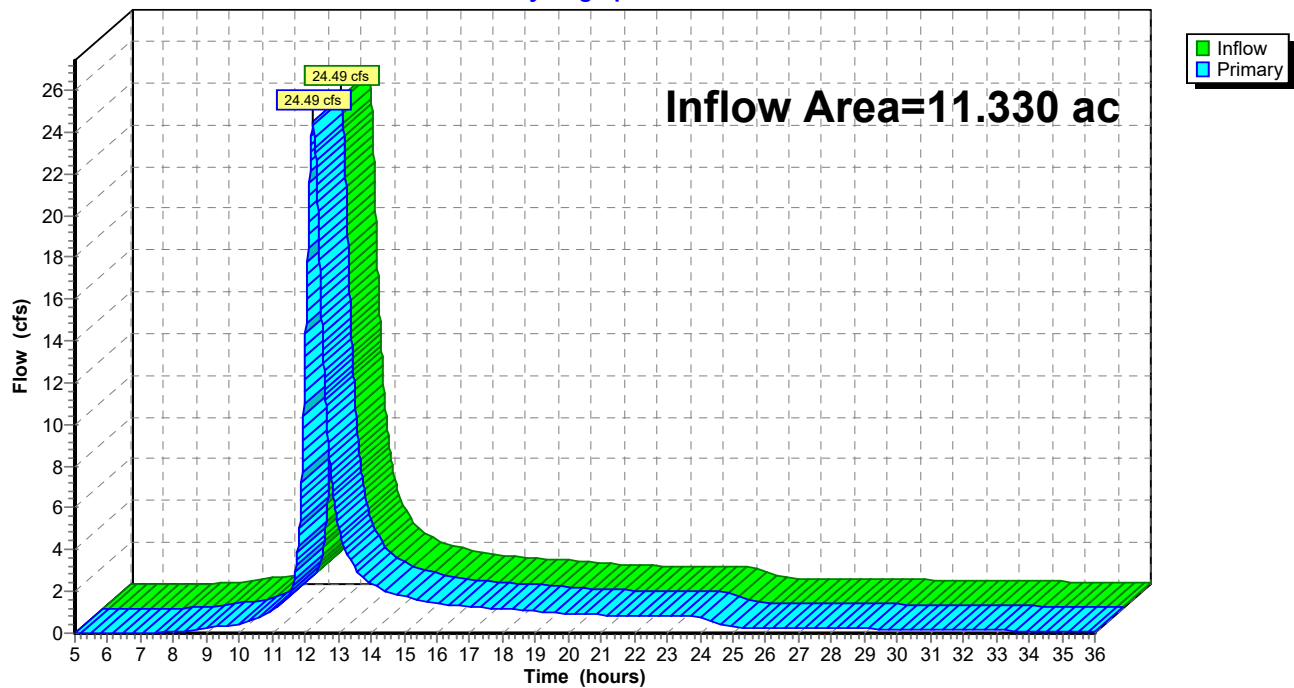
Summary for Link 12L: Total Proposed off-site drainage

Inflow Area = 11.330 ac, 12.89% Impervious, Inflow Depth > 3.20" for 100-year event
 Inflow = 24.49 cfs @ 12.25 hrs, Volume= 3.020 af
 Primary = 24.49 cfs @ 12.25 hrs, Volume= 3.020 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs

Link 12L: Total Proposed off-site drainage

Hydrograph

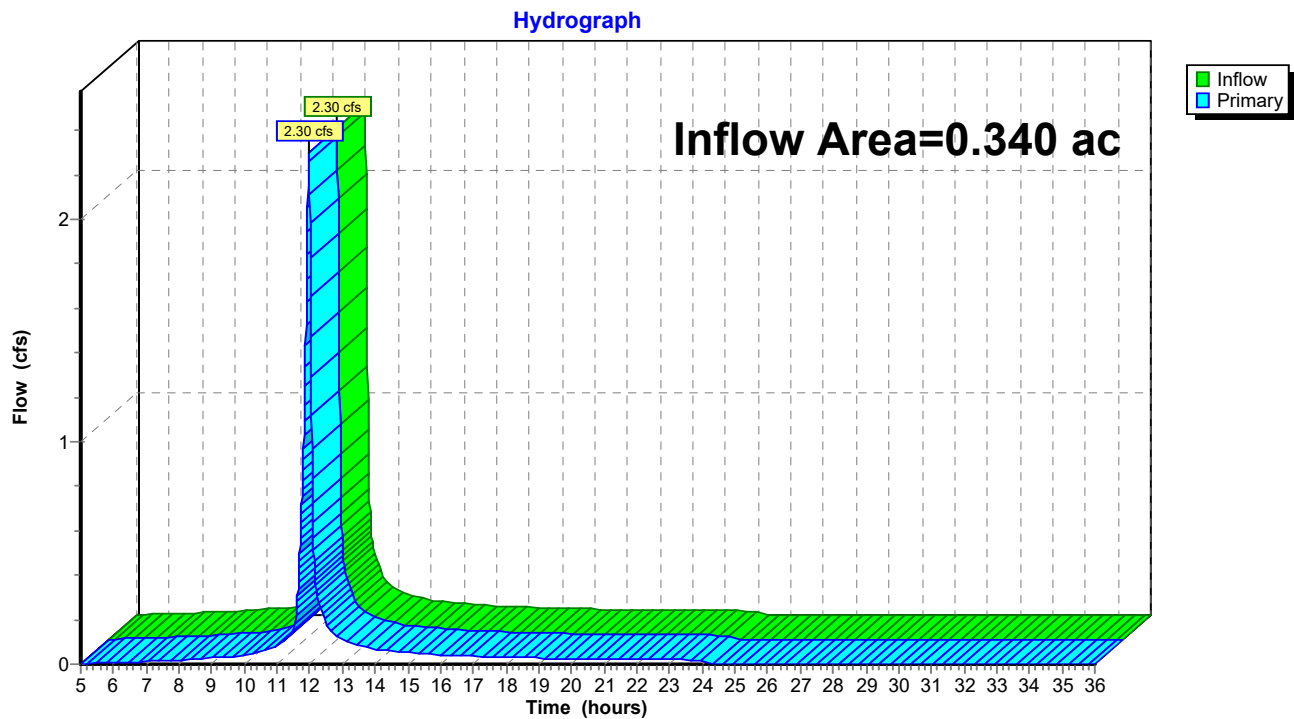


Summary for Link 13L: Proposed Analysis Point B

Inflow Area = 0.340 ac, 50.00% Impervious, Inflow Depth > 4.05" for 100-year event
 Inflow = 2.30 cfs @ 11.97 hrs, Volume= 0.115 af
 Primary = 2.30 cfs @ 11.97 hrs, Volume= 0.115 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.01 hrs

Link 13L: Proposed Analysis Point B



APPENDIX C

Stormwater Design Calculations

CALCULATIONS:

Project: **Diversified Equipment**
Overall WQv & RRv Calculations

Project No.: 22-210
Date: 11/1/2022
By: JWJ
Sheet 1 of 2

Subarea A

P (90% Rainfall Event) =

1.00 inches

Water Quality Area =

7.5 acres

Area= Total Lot Area

Impervious Area =

1.3 acres

I = % Impervious =

17.1 %

Weighted S Value =

0.20

Hydrologic Soil Group (HSG) Specific Reduction Factor "S" =

Soil Classification	Area (ac)	S Factor	Weighted #
A Soils	0	0.5	0
B Soils	0	0.4	0
C Soils	0	0.3	0
D Soils	7.5	0.2	1.5

Total Area = 7.5 acres

Total Weighted # = 1.5

Weighted S Value = **0.20**

$R_v = 0.05 + 0.009(I)$

Rv = 0.2038051

WQv Required = $P * \text{Area} * R_v / 12$

WQv = 0.13 AC-FT

WQv = 5541 CF

Minimum allowable RRv = $P * 0.95 * S * \text{Impervious Area} / 12$

RRv Min = 0.0202937 AC-FT

Min Allowable RRv = 884 CF

CALCULATIONS:

Project: Diversified Equipment
WQv and RRv Summary

Project No.: 22-210
Date: 11/1/2022
By: JWJ
Sheet 2 of 2

Overall Required WQv = 5541 cf

Minimum Allowable RRv = 884 cf

WQv Total

WQv provided from Deep Pool **7,572 cf**
WQv provided by dry swale #1 **1,928 cf**
WQv provided by dry swale #2 **1,863 cf**

Total WQv Provided = 11,363 cf

RRv Total

RRv Provided by dry swale #1 **459 cf**
RRv Provided by dry swale #2 **617 cf**

Total RRv Provided = 1,076 cf

Total WQv Provided =	11,363 cf	>	5,541 cf
Total RRv Provided =	1,076 cf	>	884 cf

CALCULATIONS:

Project: Channel Protection Volume Calculations

Project No.: 22-210

Date: 11/1/2022

By: JWJ

Sheet 1 of 5

**COMPUTE CHANNEL PROTECTION STORAGE VOLUME -
EXISTING STORMWATER MANAGEMENT FACILITY**Channel Protection Volume: Provide 24 hours of extended detention (T) for one-year event.Design Storms

1-YEAR (in)

1.88

1. DETERMINE THE VALUE OF THE UNIT PEAK DISCHARGE (q_u) USING TR-55 AND TYPE II

DRAINAGE AREA (A) TO FACILITY= 2.00 acres

RUNOFF CURVE NUMBER (CN) = 87

 $I_a = (200/CN - 2)$ I_a VALUE = 0.299 I_a/P I_a/P VALUE = 0.159TIME OF CONCENTRATION (T_c) = 0.200 hrs. (FROM DRAINAGE CALCULATIONS)Peak Unit Discharge, (q_u) (Exhibit 4-II) q_u = 775 csm/inWhen $T=24$ hours, find q_o/q_i (Figure 3-15) q_o/q_i = 0.025 $V_s/V_r = 0.683 - 1.43(q_o/q_i) + 1.64(q_o/q_i)^2 - 0.804(q_o/q_i)^3$
where V_s = channel protection storage (C_{pv}) and V_r = volume of runoff in inches V_s/V_r V_s/V_r VALUE = 0.648Direct Runoff, Q (Figure 2-1) Q VALUE = 0.70 inchesChannel Protection Storage, V_s
 $V_s = C_{pv} = (V_s/V_r)(Q)(1/12)(\text{AREA})$ V_s V_s VALUE = 0.076 ac-ft
3294 CF C_{pv} = 3294 CFRelease Rate over 24 Hours $3294 \text{ ft}^3 / [(24 \text{ hr})(3600 \text{ sec / hr})] = 0.038 \text{ cfs}$ **CHANNEL PROTECTION VOLUME PROVIDED**

ELEVATION (ft)	CONTOUR AREA (ft ²)	TOTAL STORAGE (ft ³)
719.50	4,263	0
720.00	4,837	2,275
721.00	6,074	7,731
722.00	8,185	14,861

14,861 > 3,294
OK

CALCULATIONS:

Project: Channel Protection Volume Calculations
0

Project No.: 22-210

Date: 11/1/2022

By: JWW

Sheet 2 of 3

Figure 2-1 Solution of runoff equation.

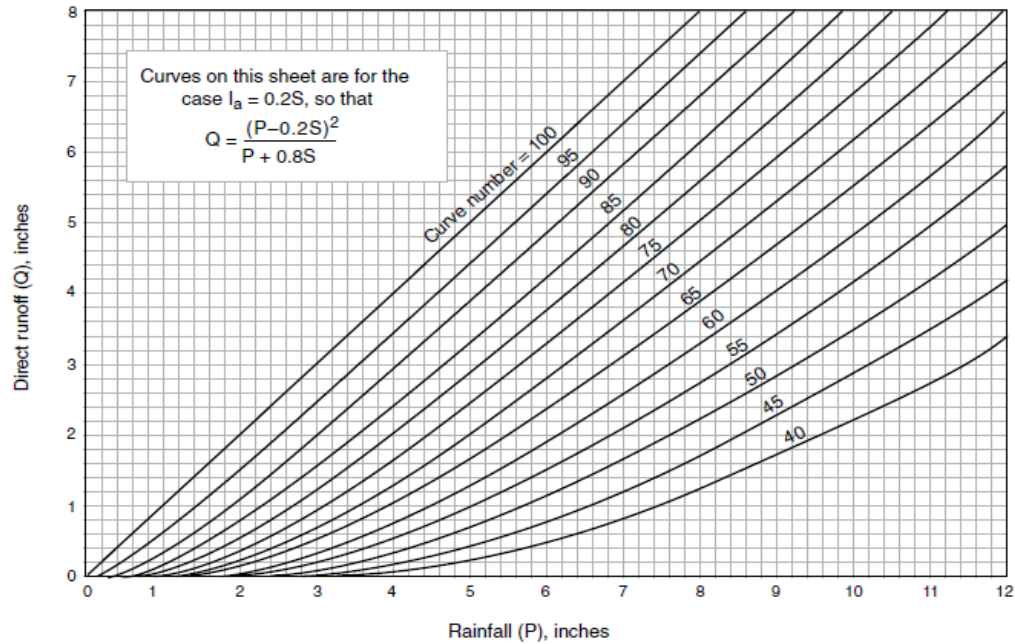
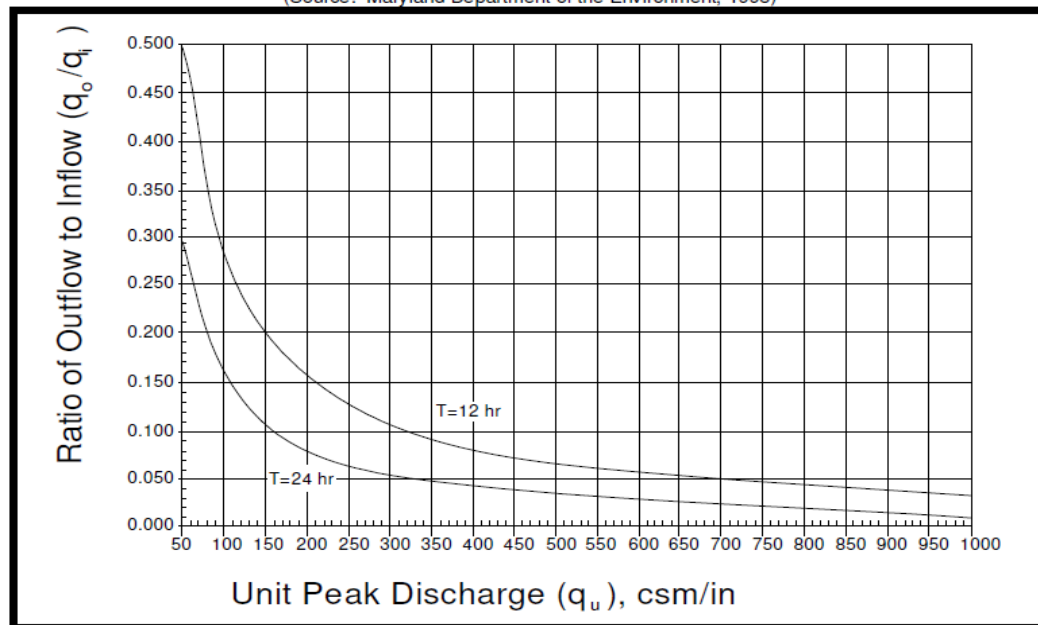


Figure 3-15. Detention Time vs. Discharge Ratios

(Source: Maryland Department of the Environment, 1998)



CALCULATIONS:

Project: Channel Protection Volume Calculations
0

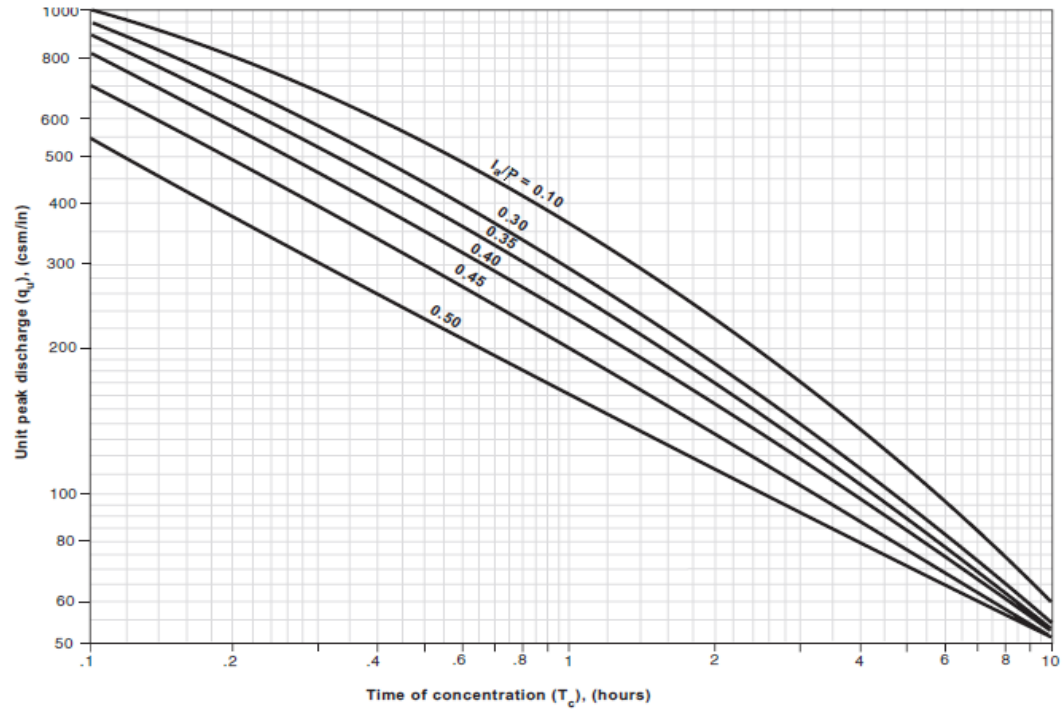
Project No.: 22-210

Date: 11/1/2022

By: JWW

Sheet 3 of 3

Exhibit 4-II Unit peak discharge (q_p) for NRCS (SCS) type II rainfall distribution



CALCULATIONS:Project: **Orifice / Spillway Calculations****0**Project No.: **22-210**Date: **11/1/2022**By: **JWJ**Sheet **2 of 5****COMPUTE ORIFICE DIAMETER**Required Channel Protection Volume (RCPv)= **3294 cf**Elevation at RCPv = **720.3**Flow Required to release RCPv over 24 Hrs.= **0.04 cfs****OUTLET ORIFICE =** **3 inch diameter**Invert @ Orifice = **719.5** Average Head = **0.34 ft**Center of Orifice = **0.125 FT** $Q = CA[2GH]^{1/2}$
Where C= 0.6 **Q= 0.14 cfs**If Avearge Outflow Rate using oriface < Rate to release RCPv over 24 hrs "OK"
*(unless using smallest recommended orifice of 3")**0.137 < 0.04****OK****SPILLWAY CALCULATION**

Extreme Flood Protection, Q of undetained 100-year inflow Hydrograph

100-year Storm Event Inflow (Q) to SMWF = **10.4 cfs**Height (H) from Spillway Invert to Top of Berm= **1.00 ft** $Q = (0.666) * C * L * ((2g)^{.5}) H^{(3/2)}$
Where C= 0.5 **L = 3.89 ft** **Use L = 10 ft**

CALCULATIONS:

Project: **Deep Pool Sizing Calculations**
Diversified Equipment

Project No.: **22-210**
Date: **1/1/2022**
By: **JWJ**
Sheet **3 of 5**

WATER QUALITY VOLUME, WQv

DRAINAGE AREA (A) TO FACILITY= **2.00 acres**

IMPERVIOUS AREA = **0.62 acres**

90 PERCENTILE RAINFALL EVENT = **1.00 inches**

CURVE NUMBER (CN) = **87.0**

TIME OF CONCENTRATION (Tc) = **0.200 hours**

IMPERVIOUS COVER (I) = **0.31**

RUNOFF COEFFICIENT (Rv) = **0.33**
 $R_v = 0.05 + (I)(0.9)$

WATER QUALITY VOLUME (WQv) = **0.055 acre-ft** **2389 cf**
 $WQ_v = P * R_v * A / 12$

DEEP POOL VOLUME

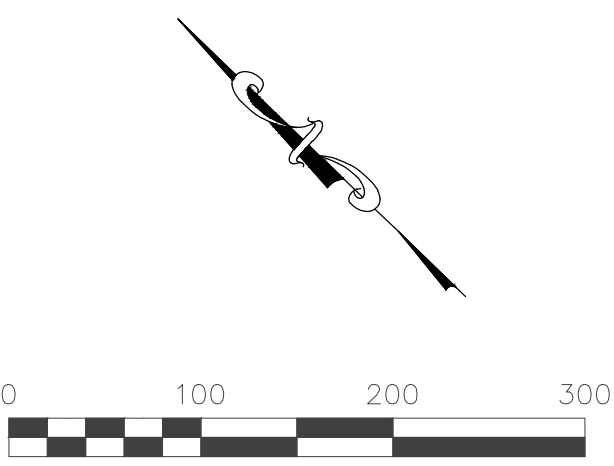
50% WQv= **1,194** cf

ELEVATION (ft)	CONTOUR AREA (ft ²)	TOTAL STORAGE (ft ³)
715.00	543	0
716.00	809	676
717.00	1,124	1,643
718.00	1,471	2,941
719.00	2,958	5,156
719.50	4,262	8,766
		8,766 > 1,194 OK

Pretreatment Forebay Volume

10% WQv= **239** cf

ELEVATION (ft)	CONTOUR AREA (ft ²)	TOTAL STORAGE (ft ³)
720.00	66	0
721.00	292	179
722.00	715	683
		683 > 239 OK



STATE OF NEW YORK
BRENNAN
093182
PROFESSIONAL ENGINEER
STAMP

[illegible]

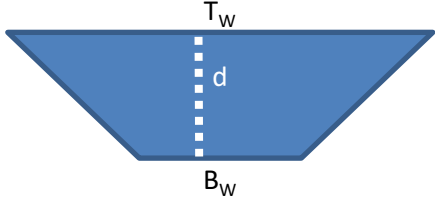
NEW COMMERCIAL SITE PLANS PREPARED FOR:
DIVERSIFIED EQUIPMENT, LLC
NEW LAWN & GARDEN EQUIPMENT REPAIR/RENTAL FACILITY AND
EQUIPMENT STORAGE BUILDING
SHOWING LAND IN:
1947 STATE ROUTE 332
TOWN OF CANANDAIGUA
COUNTY OF ONTARIO
STATE OF NEW YORK

DRAWING TITLE:	
PROPOSED CONDITIONS	
DRAWN BY:	JWJ
DESIGNED BY:	JWJ
CHECKED BY:	BAM
SCALE:	1"=100'
JOB NO.:	22-210
DATE:	10/26/2022
TAX MAP#:	56.00-1-13.21

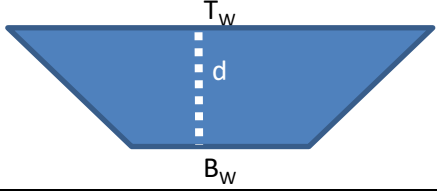
FIGURE 02

IT IS A VIOLATION OF NYS EDUCATION LAW SECTION 7209 FOR ANY PERSON TO ALTER A DOCUMENT IN ANY WAY, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL. IF A DOCUMENT BEARING THE SEAL IS ALTERED, THE ALTERING PROFESSIONAL SHALL AFFIX TO THE DOCUMENT THEIR SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY THEIR SIGNATURE AND DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

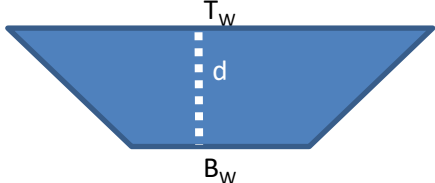
Dry Swale Worksheet

Design Point:							
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	1.10	0.64	0.58	0.57	2290.53	1.00	Bio-retention
Enter Impervious Area Reduced by Disconnection of Rooftops			58%	0.57	2,291	<<WQv after adjusting for Disconnected Rooftops	
Pretreatment Provided					Pretreatment Technique		
Pretreatment (10% of WQv)			229	ft ³			
Calculate Available Storage Capacity							
Bottom Width	6	ft	Design with a bottom width no greater than eight feet to avoid potential gullyng and channel braiding, but no less than two feet				
Side Slope (X:1)	6	Okay	Channels shall be designed with moderate side slopes (flatter than 3:1) for most conditions. 2:1 is the absolute maximum side slope				
Longitudinal Slope	1%	Okay	Maximum longitudinal slope shall be 4%				
Flow Depth	1	ft	Maximum ponding depth of one foot at the mid-point of the channel, and a maximum depth of 18" at the end point of the channel (for storage of the WQv)				
Top Width	18	ft					
Area	12.00	sf					
Minimum Length	172	ft					
Actual Length	172	ft					
End Point Depth check	1.50	Okay	A maximum depth of 18" at the end point of the channel (for storage of the WQv)				
Storage Capacity	2,293	ft ³					
Soil Group (HSG)			D				
Runoff Reduction							
Is the Dry Swale contributing flow to another practice?			No	Select Practice			
RRv	459	ft³	Runnoff Reduction equals 40% in HSG A and B and 20% in HSG C and D up to the WQv				
Volume Treated	1,832	ft ³	This is the difference between the WQv calculated and the runoff reduction achieved in the swale				
Volume Directed	0	ft ³	This volume is directed another practice				
Volume V	Okay		Check to be sure that channel is long enough to store WQv				

Dry Swale Worksheet

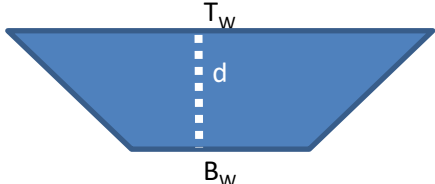
Design Point:							
Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	Total Area (Acres)	Impervious Area (Acres)	Percent Impervious %	Rv	WQv (ft ³)	Precipitation (in)	Description
2	3.40	0.57	0.17	0.20	2479.29	1.00	Bioretention
Enter Impervious Area Reduced by Disconnection of Rooftops			17%	0.20	2,479	<<WQv after adjusting for Disconnected Rooftops	
Pretreatment Provided					Pretreatment Technique		
Pretreatment (10% of WQv)			248	ft ³			
Calculate Available Storage Capacity							
Bottom Width	5	ft	Design with a bottom width no greater than eight feet to avoid potential gullyng and channel braiding, but no less than two feet				
Side Slope (X:1)	4	Okay	Channels shall be designed with moderate side slopes (flatter than 3:1) for most conditions. 2:1 is the absolute maximum side slope				
Longitudinal Slope	1%	Okay	Maximum longitudinal slope shall be 4%				
Flow Depth	1	ft	Maximum ponding depth of one foot at the mid-point of the channel, and a maximum depth of 18" at the end point of the channel (for storage of the WQv)				
Top Width	13	ft					
Area	9.00	sf					
Minimum Length	248	ft					
Actual Length	315	ft					
End Point Depth check	1.50	Okay	A maximum depth of 18" at the end point of the channel (for storage of the WQv)				
Storage Capacity	3,083	ft ³					
Soil Group (HSG)			D				
Runoff Reduction							
Is the Dry Swale contributing flow to another practice?			No	Select Practice			
RRv	617	ft³	Runoff Reduction equals 40% in HSG A and B and 20% in HSG C and D up to the WQv				
Volume Treated	1,863	ft ³	This is the difference between the WQv calculated and the runoff reduction achieved in the swale				
Volume Directed	0	ft ³	This volume is directed another practice				
Volume v	Okay		Check to be sure that channel is long enough to store WQv				

Dry Swale Worksheet

Design Point:							
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
Enter Impervious Area Reduced by Disconnection of Rooftops						<<WQv after adjusting for Disconnected Rooftops	
Pretreatment Provided					Pretreatment Technique		
Pretreatment (10% of WQv)				ft ³			
Calculate Available Storage Capacity							
Bottom Width		ft	Design with a bottom width no greater than eight feet to avoid potential gullyng and channel braiding, but no less than two feet				
Side Slope (X:1)			Channels shall be designed with moderate side slopes (flatter than 3:1) for most conditions. 2:1 is the absolute maximum side slope				
Longitudinal Slope			Maximum longitudinal slope shall be 4%				
Flow Depth		ft	Maximum ponding depth of one foot at the mid-point of the channel, and a maximum depth of 18" at the end point of the channel (for storage of the WQv)				
Top Width	0	ft					
Area	0.00	sf					
Minimum Length		ft					
Actual Length		ft					
End Point Depth check			A maximum depth of 18" at the end point of the channel (for storage of the WQv)				
Storage Capacity		ft ³					
Soil Group (HSG)							
Runoff Reduction							
Is the Dry Swale contributing flow to another practice?				Select Practice			
RRv		ft ³	Runoff Reduction equals 40% in HSG A and B and 20% in HSG C and D up to the WQv				
Volume Treated		ft ³	This is the difference between the WQv calculated and the runoff reduction achieved in the swale				
Volume Directed		ft ³	This volume is directed another practice				

Dry Swale Worksheet

Volume V	Okay		Check to be sure that channel is long enough to store WQ_v
------------	------	--	--

Design Point:							
Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	Total Area (Acres)	Impervious Area (Acres)	Percent Impervious %	R_v	WQ_v (ft^3)	Precipitation (in)	Description
Enter Impervious Area Reduced by Disconnection of Rooftops						<< WQ_v after adjusting for Disconnected Rooftops	
Pretreatment Provided					Pretreatment Technique		
Pretreatment (10% of WQ_v)				ft^3			
Calculate Available Storage Capacity							
Bottom Width		ft	Design with a bottom width no greater than eight feet to avoid potential gullyng and channel braiding, but no less than two feet				
Side Slope (X:1)			Channels shall be designed with moderate side slopes (flatter than 3:1) for most conditions. 2:1 is the absolute maximum side slope				
Longitudinal Slope			Maximum longitudinal slope shall be 4%				
Flow Depth		ft	Maximum ponding depth of one foot at the mid-point of the channel, and a maximum depth of 18" at the end point of the channel (for storage of the WQ_v)				
Top Width	0	ft					
Area	0.00	sf					
Minimum Length		ft					
Actual Length		ft					
End Point Depth check			A maximum depth of 18" at the end point of the channel (for storage of the WQ_v)				
Storage Capacity		ft^3					
Soil Group (HSG)							
Runoff Reduction							
Is the Dry Swale contributing flow to another practice?				Select Practice			
RRv		ft^3	Runoff Reduction equals 40% in HSG A and B and 20% in HSG C and D up to the WQ_v				
Volume Treated		ft^3	This is the difference between the WQ_v calculated and the runoff reduction achieved in the swale				

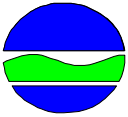
Dry Swale Worksheet

Volume Directed		ft^3	This volume is directed another practice
Volume V	<i>Okay</i>		Check to be sure that channel is long enough to store WQv

Total RRV	1,075.20
Total Area	4.50
Total Impervious Area	1.21
Total Volume Treated	3,694.62
Rooftop Disconnect Impervious Area Total	0.00

APPENDIX D

Notice of Intent (NOI)

NOTICE OF INTENT**New York State Department of Environmental Conservation****Division of Water****625 Broadway, 4th Floor****Albany, New York 12233-3505**
 NYR
 (for DEC use only)

**Stormwater Discharges Associated with Construction Activity Under State
 Pollutant Discharge Elimination System (SPDES) General Permit # GP-0-20-001**

All sections must be completed unless otherwise noted. Failure to complete all items may result in this form being returned to you, thereby delaying your coverage under this General Permit. Applicants must read and understand the conditions of the permit and prepare a Stormwater Pollution Prevention Plan prior to submitting this NOI. Applicants are responsible for identifying and obtaining other DEC permits that may be required.

-IMPORTANT-**RETURN THIS FORM TO THE ADDRESS ABOVE****OWNER/OPERATOR MUST SIGN FORM****Owner/Operator Information**

Owner/Operator (Company Name/Private Owner Name/Municipality Name)

Owner/Operator Contact Person Last Name (NOT CONSULTANT)

Owner/Operator Contact Person First Name

Owner/Operator Mailing Address

City

State

Zip

 -

Phone (Owner/Operator)

 - -

Fax (Owner/Operator)

 - -

Email (Owner/Operator)

FED TAX ID

 -

(not required for individuals)

Project Site Information

Project/Site Name

[illegible]

Street Address (NOT P.O. BOX)

[illegible]

Side of Street

☐ North ☐ South ☐ East ☐ West

City/Town/Village (THAT ISSUES BUILDING PERMIT)

[illegible]

State

--	--

Zip

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--	--	--	--

County

[illegible]DEC Region

--	--

Name of Nearest Cross Street

[illegible]

Distance to Nearest Cross Street (Feet)

--	--	--	--	--

Project In Relation to Cross Street

☐ North ☐ South ☐ East ☐ West

Tax Map Numbers
Section-Block-Parcel

[illegible]

Tax Map Numbers

[illegible]

1. Provide the Geographic Coordinates for the project site. To do this, go to the NYSDEC Stormwater Interactive Map on the DEC website at:

<https://giservices.dec.ny.gov/gis/stormwater/>

Zoom into your Project Location such that you can accurately click on the centroid of your site. Once you have located the centroid of your project site, go to the bottom right hand corner of the map for the X, Y coordinates. Enter the coordinates into the boxes below. For problems with the interactive map use the help function.

X Coordinates (Easting)

-7

--	--	--	--	--	--

Ex. -73.749

Y Coordinates (Northing)

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Ex. 42.652

2. What is the nature of this construction project?

- New Construction

- Redevelopment with increase in impervious area

- Redevelopment with no increase in impervious area

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

SELECT ONLY ONE CHOICE FOR EACH

**Pre-Development
Existing Land Use**

- ☐ FOREST
☐ PASTURE/OPEN LAND
☐ CULTIVATED LAND
☐ SINGLE FAMILY HOME
☐ SINGLE FAMILY SUBDIVISION
☐ TOWN HOME RESIDENTIAL
☐ MULTIFAMILY RESIDENTIAL
☐ INSTITUTIONAL/SCHOOL
☐ INDUSTRIAL
☐ COMMERCIAL
☐ ROAD/HIGHWAY
☐ RECREATIONAL/SPORTS FIELD
☐ BIKE PATH/TRAIL
☐ LINEAR UTILITY
☐ PARKING LOT
☐ OTHER

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

**Post-Development
Future Land Use**

- ☐ SINGLE FAMILY HOME
☐ SINGLE FAMILY SUBDIVISION
☐ TOWN HOME RESIDENTIAL
☐ MULTIFAMILY RESIDENTIAL
☐ INSTITUTIONAL/SCHOOL
☐ INDUSTRIAL
☐ COMMERCIAL
☐ MUNICIPAL
☐ ROAD/HIGHWAY
☐ RECREATIONAL/SPORTS FIELD
☐ BIKE PATH/TRAIL
☐ LINEAR UTILITY (water, sewer, gas, etc.)
☐ PARKING LOT
☐ CLEARING/GRADING ONLY
☐ DEMOLITION, NO REDEVELOPMENT
☐ WELL DRILLING ACTIVITY *(Oil, Gas, etc.)
☐ OTHER

Number of Lots

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***Note:** for gas well drilling, non-high volume hydraulic fractured wells only

4. In accordance with the larger common plan of development or sale, enter the total project site area; the total area to be disturbed; existing impervious area to be disturbed (for redevelopment activities); and the future impervious area constructed within the disturbed area. (Round to the nearest tenth of an acre.)

Total Site Area	Total Area To Be Disturbed	Existing Impervious Area To Be Disturbed	Future Impervious Area Within Disturbed Area																					
<table border="1"><tr><td></td><td></td><td></td><td></td><td></td></tr></table>						<table border="1"><tr><td></td><td></td><td></td><td></td><td></td><td>6</td></tr></table>						6	<table border="1"><tr><td></td><td></td><td></td><td></td><td></td></tr></table>						<table border="1"><tr><td></td><td></td><td></td><td></td><td></td></tr></table>					
					6																			

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

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

A	B	C	D												
<table border="1"><tr><td></td><td></td><td></td></tr></table> %				<table border="1"><tr><td></td><td></td><td></td></tr></table> %				<table border="1"><tr><td></td><td></td><td></td></tr></table> %				<table border="1"><tr><td></td><td></td><td></td></tr></table> %			

7. Is this a phased project? ☐ Yes ☐ No

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

Start Date	End Date																											
<table border="1"><tr><td></td><td></td><td></td><td></td><td></td></tr></table> / <table border="1"><tr><td></td><td></td><td></td><td></td><td></td></tr></table> / <table border="1"><tr><td></td><td></td><td></td><td></td><td></td></tr></table>																- <table border="1"><tr><td>1</td><td>2</td><td></td></tr></table> / <table border="1"><tr><td></td><td></td><td></td><td></td><td></td></tr></table> / <table border="1"><tr><td>2</td><td>0</td><td>2</td><td>3</td></tr></table>	1	2							2	0	2	3
1	2																											
2	0	2	3																									

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

- [illegible]

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

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

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

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

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 ☐ No

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 ☐ No
- If No, skip questions 23 and 27-39.**

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 ☐ No

25. Has a construction sequence schedule for the planned management practices been prepared? ☐ Yes ☐ No

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

Temporary Structural

- ☐ Check Dams
- ☐ Construction Road Stabilization
- ☐ Dust Control
- ☐ Earth Dike
- ☐ Level Spreader
- ☐ Perimeter Dike/Swale
- ☐ Pipe Slope Drain
- ☐ Portable Sediment Tank
- ☐ Rock Dam
- ☐ Sediment Basin
- ☐ Sediment Traps
- ☐ Silt Fence
- ☐ Stabilized Construction Entrance
- ☐ Storm Drain Inlet Protection
- ☐ Straw/Hay Bale Dike
- ☐ Temporary Access Waterway Crossing
- ☐ Temporary Stormdrain Diversion
- ☐ Temporary Swale
- ☐ Turbidity Curtain
- ☐ Water bars

Biotechnical

- Brush Matting
- Wattling

Other

[illegible]

Vegetative Measures

- ☐ Brush Matting
- ☐ Dune Stabilization
- ☐ Grassed Waterway
- ☐ Mulching
- ☐ Protecting Vegetation
- ☐ Recreation Area Improvement
- ☐ Seeding
- ☐ Sodding
- ☐ Straw/Hay Bale Dike
- ☐ Streambank Protection
- ☐ Temporary Swale
- ☐ Topsoiling
- ☐ Vegetating Waterways

Permanent Structural

- ☐ Debris Basin
- ☐ Diversion
- ☐ Grade Stabilization Structure
- ☐ Land Grading
- ☐ Lined Waterway (Rock)
- ☐ Paved Channel (Concrete)
- ☐ Paved Flume
- ☐ Retaining Wall
- ☐ Riprap Slope Protection
- ☐ Rock Outlet Protection
- ☐ Streambank Protection

Post-construction Stormwater Management Practice (SMP) Requirements

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 Areas
- ☐ Preservation of Buffers
- ☐ Reduction of Clearing and Grading
- ☐ Locating Development in Less Sensitive Areas
- ☐ Roadway Reduction
- ☐ Sidewalk Reduction
- ☐ Driveway Reduction
- ☐ Cul-de-sac Reduction
- ☐ Building Footprint Reduction
- ☐ Parking Reduction

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).
- ☐ Compacted areas were considered as impervious cover when calculating the **WQv Required**, and the compacted areas were assigned a post-construction Hydrologic Soil Group (HSG) designation that is one level less permeable than existing conditions for the hydrology analysis.

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

Total WQv Required

. acre-feet

29. Identify the RR techniques (Area Reduction), RR techniques (Volume Reduction) and Standard SMPs with RRv Capacity in Table 1 (See Page 9) that were used to reduce the Total WQv Required (#28).

Also, provide in Table 1 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 Tables 1 and 2 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.

Table 1 - Runoff Reduction (RR) Techniques
and Standard Stormwater Management
Practices (SMPs)

RR Techniques (Area Reduction)	Total Contributing Area (acres)	Total Contributing Impervious Area(acres)
○ Conservation of Natural Areas (RR-1) ...	<input type="text"/> <input type="text"/> <input type="text"/> . <input type="text"/> <input type="text"/> <input type="text"/>	and/or <input type="text"/> <input type="text"/> <input type="text"/> . <input type="text"/> <input type="text"/> <input type="text"/>
○ Sheetflow to Riparian Buffers/Filters Strips (RR-2)	<input type="text"/> <input type="text"/> <input type="text"/> . <input type="text"/> <input type="text"/> <input type="text"/>	and/or <input type="text"/> <input type="text"/> <input type="text"/> . <input type="text"/> <input type="text"/> <input type="text"/>
○ Tree Planting/Tree Pit (RR-3)	<input type="text"/> <input type="text"/> <input type="text"/> . <input type="text"/> <input type="text"/> <input type="text"/>	and/or <input type="text"/> <input type="text"/> <input type="text"/> . <input type="text"/> <input type="text"/> <input type="text"/>
○ Disconnection of Rooftop Runoff (RR-4) ..	<input type="text"/> <input type="text"/> <input type="text"/> . <input type="text"/> <input type="text"/> <input type="text"/>	and/or <input type="text"/> <input type="text"/> <input type="text"/> . <input type="text"/> <input type="text"/> <input type="text"/>
<u>RR Techniques (Volume Reduction)</u>		
○ Vegetated Swale (RR-5)	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
○ Rain Garden (RR-6)	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
○ Stormwater Planter (RR-7)	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
○ Rain Barrel/Cistern (RR-8)	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
○ Porous Pavement (RR-9)	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
○ Green Roof (RR-10)	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
<u>Standard SMPs with RRv Capacity</u>		
○ Infiltration Trench (I-1)	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
○ Infiltration Basin (I-2)	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
○ Dry Well (I-3)	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
○ Underground Infiltration System (I-4)	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
○ Bioretention (F-5)	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
○ Dry Swale (O-1)	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
<u>Standard SMPs</u>		
○ Micropool Extended Detention (P-1)	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
○ Wet Pond (P-2)	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
○ Wet Extended Detention (P-3)	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
○ Multiple Pond System (P-4)	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
○ Pocket Pond (P-5)	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
○ Surface Sand Filter (F-1)	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
○ Underground Sand Filter (F-2)	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
○ Perimeter Sand Filter (F-3)	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
○ Organic Filter (F-4)	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
○ Shallow Wetland (W-1)	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
○ Extended Detention Wetland (W-2)	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
○ Pond/Wetland System (W-3)	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
○ Pocket Wetland (W-4)	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
○ Wet Swale (O-2)	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>

Table 2 - Alternative SMPs
(DO NOT INCLUDE PRACTICES BEING
USED FOR PRETREATMENT ONLY)

Alternative SMP		Total Contributing Impervious Area(acres)			
<input type="radio"/> Hydrodynamic					
<input type="radio"/> Wet Vault					
<input type="radio"/> Media Filter					
<input type="radio"/> Other					

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

[illegible]

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.

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

Total RRv provided

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 ·

--	--	--

 acre-feet

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28).

☐ Yes ☐ 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)]

Minimum RRv Required

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.

--	--	--

acre-feet

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

☐ Yes ☐ No

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, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

33. Identify the Standard SMPs in Table 1 and, if applicable, the Alternative SMPs in Table 2 that were used to treat the remaining total WQv(=Total WQv Required in 28 - Total RRv Provided in 30).

Also, provide in Table 1 and 2 the total impervious area that contributes runoff to each practice selected.

Note: Use Tables 1 and 2 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.

WQv Provided

. acre-feet

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 - RRv 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).

.

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 ☐ No

If Yes, go to question 36.

If No, sizing criteria has not been met, so 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

CPv Provided

. acre-feet

- 36a. The need to provide channel protection has been waived because:

- ☐ Site discharges directly to tidal waters or a fifth order or larger stream.
- ☐ Reduction of the total CPv is achieved on site through runoff reduction techniques or infiltration systems.

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

Total Overbank Flood Control Criteria (Qp)

Pre-Development

. CFS

Post-development

. CFS

Total Extreme Flood Control Criteria (Qf)

Pre-Development

. CFS

Post-development

. CFS

37a. The need to meet the Qp and Qf criteria has been waived because:

- ☐ Site discharges directly to tidal waters or a fifth order or larger stream.
- ☐ Downstream analysis reveals that the Qp and Qf controls are not required

- Site discharges directly to tidal waters or a fifth order or larger stream.
- Downstream analysis reveals that the Qp and Qf controls are not required

☐ Yes ☐ No

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

[illegible]

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.

40. Identify other DEC permits, existing and new, that are required for this project/facility.

- [illegible]

41. Does this project require a US Army Corps of Engineers Wetland Permit? ☐ ☐ ☐ ☐ ☐ ☐

☐ Yes ☐ No

If Yes, Indicate Size of Impact.

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42. Is this project subject to the requirements of a regulated, traditional land use control MS4?
(If No, skip question 43)

☐ Yes ☐ No

43. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI?

☐ Yes ☐ No

44. 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.

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Owner/Operator Certification	
<p>I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.</p>	
Print First Name <div style="border: 1px solid black; height: 30px; width: 100%; position: relative;"> <div style="position: absolute; top: 0; left: 0; right: 0; bottom: 0; border: 1px solid black; display: flex; flex-wrap: wrap;"> <!-- 20 empty boxes for first name --> <!-- This is a simplified representation of the grid --> </div> </div>	MI <div style="border: 1px solid black; height: 30px; width: 100%; position: relative;"> <div style="position: absolute; top: 0; left: 0; right: 0; bottom: 0; border: 1px solid black; display: flex; flex-wrap: wrap;"> <!-- 2 empty boxes for MI --> </div> </div>
Print Last Name <div style="border: 1px solid black; height: 30px; width: 100%; position: relative;"> <div style="position: absolute; top: 0; left: 0; right: 0; bottom: 0; border: 1px solid black; display: flex; flex-wrap: wrap;"> <!-- 20 empty boxes for last name --> </div> </div>	
Owner/Operator Signature <div style="border: 1px solid black; height: 60px; width: 100%;"></div>	
<div style="display: flex; justify-content: space-between; align-items: flex-end;"> <div style="width: 60%;"> <div style="border: 1px solid black; height: 60px; width: 100%;"></div> </div> <div style="width: 35%; text-align: center;"> Date <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 2px 5px;"> </div> <div style="font-size: 1.5em;">/</div> <div style="border: 1px solid black; padding: 2px 5px;"> </div> <div style="font-size: 1.5em;">/</div> <div style="border: 1px solid black; padding: 2px 5px;"> </div> <div style="border: 1px solid black; padding: 2px 5px;"> </div> <div style="border: 1px solid black; padding: 2px 5px;"> </div> </div> </div> </div>	

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APPENDIX E

***MS4 Stormwater Pollution Prevention Plan (SWPPP)
Acceptance Form -***



Department of
Environmental
Conservation

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:

2. Contact Person:

3. Street Address:

4. City/State/Zip:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/State/Zip:

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

8. SWPPP Reviewed by:

9. Title/Position:

10. Date Final SWPPP Reviewed and Accepted:

IV. Regulated MS4 Information

11. Name of MS4:

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

APPENDIX F

MAINTENANCE AGREEMENT
and
Management Inspection Checklist

2.5. Swales

Areas of Swales

- Key areas to inspect for swales include the following:
- SW 1. Drainage Area
- SW 2. Inlets
- SW 3. Swale Surface Area
- SW 4. Vegetation
- SW 5. Outlets

Note: The category of Swales includes:

- Vegetated Swale – shallow channel densely planted with variety of grasses, shrubs, and/or trees (also called bioswale or drainage swale)
- Wet Swale – a cross between a wetland and a swale, this linear system intercepts groundwater to maintain wetland vegetation

For the purposes of this chapter, the term “Swale” will be used to generally describe these practices.

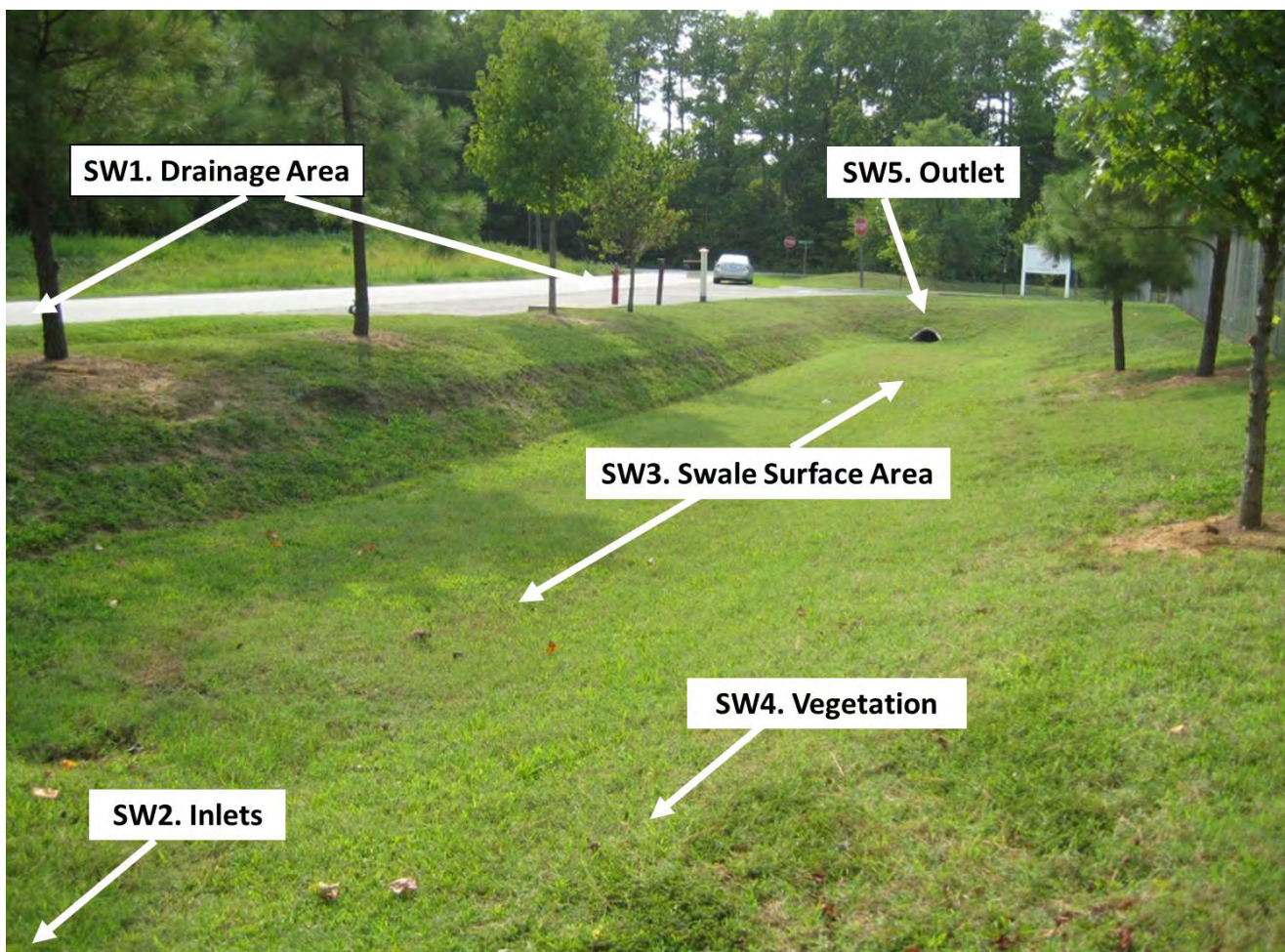


Figure 2.5.1 Key Areas for Level 1 Inspection of Swales Credit

Swale Level 1 Inspection




The Level 1 Inspection focuses on the Drainage Area (SW1), Inlets (SW2), Swale Surface Area (SW3), Vegetation (SW4), and Outlets (SW5). This inspection should be conducted on a regular basis, with an early spring inspection to ensure that the practice has survived the winter, particularly if there has been a significant amount of snow. An inspection during the growing season or in the early fall is also recommended to check on the health of vegetation.

SW 1. Drainage Area

Description: The drainage area sends runoff to and is uphill from the swale. When it rains, water runs off and flows to and along the swale.

Instruction: Look for areas that are uphill from the swale. Consult **Table 2.5.1** below.

Table 2.5.1 SW Drainage Area

Problem (Check if Present)	Follow-Up Actions
 <ul style="list-style-type: none"> <input type="checkbox"/> Bare soil, erosion of the ground (rills washing out the dirt) 	<ul style="list-style-type: none"> <input type="checkbox"/> Seed and mulch or sod areas of bare soil to establish vegetation. <input type="checkbox"/> Fill in erosion areas with soil, compact, and add seed and straw to establish vegetation. <input type="checkbox"/> If a rill or small channel is forming, try to redirect water flowing to this area by creating a small berm or adding topsoil to areas that are heavily compacted. <input type="checkbox"/> Other: <div> <input type="checkbox"/> Kick-Out to Level 2 Inspection: Large areas of soil have been eroded, or larger channels are forming. May require rerouting of flow paths </div>
 <ul style="list-style-type: none"> <input type="checkbox"/> Piles of grass clippings, mulch, dirt, salt, or other materials 	<ul style="list-style-type: none"> <input type="checkbox"/> Remove or cover piles of grass clippings, mulch, dirt, etc. <input type="checkbox"/> Other:
<ul style="list-style-type: none"> <input type="checkbox"/> Open containers of oil, grease, paint, or other substances 	<ul style="list-style-type: none"> <input type="checkbox"/> Cover or properly dispose of materials; consult your local solid waste authority for guidance on materials that may be toxic or hazardous.
	<p>Kick-Out to Level 2 Inspection: Grass on edge of pavement continues to die off for unknown reasons. Swale edge may need to be replaced with other materials (e.g., stone diaphragm).</p>
<ul style="list-style-type: none"> <input type="checkbox"/> Grass dying at edge of road 	<ul style="list-style-type: none"> <input type="checkbox"/> Seed and mulch; add topsoil or compost if needed. <input type="checkbox"/> Other: <div> <input type="checkbox"/> Kick-Out to Level 2 Inspection: Grass on edge of pavement continues to die off for unknown reasons. Swale edge may need to be replaced with other materials (e.g., stone diaphragm). </div>


SW 2. Inlets

Description: The inlets to a swale are where water flows in. Depending on the design, water can flow in through:

- Ditch, pipe, or curb opening at top of swale: This is the most common approach, where water enters the swale at the top.
- Along the entire edge of the swale: If the swale is along a roadway or parking lot, water may enter along the long side of the swale through defined curb openings or simply by water flowing into the swale from the pavement edge (known as “sheetflow”).

Instruction: Stand in the swale and look for all the places where water flows in. Consult **Table 2.5.2** below for possible problems.

Table 2.5.2 SW Inlets

Problem (Check if Present)	Follow-Up Actions
<input type="checkbox"/> Inlets or the swale edge are collecting grit, grass clippings, or debris or have grass/weeds growing. Some water may not be getting into the swale. The objective is to have a clear pathway for water to flow into the swale.	<div> <input type="checkbox"/> Use a flat shovel to remove grit and debris (especially at curb inlets or opening). Parking lots will generate fine grit that will accumulate at these spots. </div> <div> <input type="checkbox"/> Pull out clumps of growing grass or weeds, and scoop out the soil or grit that the plants are growing in. </div> <div> <input type="checkbox"/> Remove any grass clippings, leaves, sticks, and other debris that is collecting at inlets or along the edge of the swale where water is supposed to enter. </div> <div> <input type="checkbox"/> For pipes and ditches, remove sediment and debris that is partially blocking the pipe or ditch opening where it enters the swale. </div> <div> <input type="checkbox"/> Dispose of all material properly in an area where it will not re-enter the swale. </div> <div> <input type="checkbox"/> Other: </div>
	<input type="checkbox"/> Kick-Out to Level 2 Inspection: Inlets are blocked to the extent that most of the water does not seem to be entering the swale.
 <input type="checkbox"/> Some or all of the inlets are eroding so that rills, gullies, and other erosion are present, or there is bare dirt that is washing into the swale.	<div> <input type="checkbox"/> For small areas of erosion, smooth out the eroded part and apply rock or stone (e.g., river cobble) to prevent further erosion. Usually, filter fabric is placed under the rock or stone. </div> <div> <input type="checkbox"/> In some cases, reseeding and applying an erosion control matting can be used to prevent further erosion. Some of these materials may be available at a garden center, but it may be best to consult a landscape contractor. </div> <div> <input type="checkbox"/> Other: </div>
	<input type="checkbox"/> Level 2 Inspection: Erosion is occurring at most of the inlets or along much of the swale edge. The inlet design may have to be modified.

SW 3. Swale Surface Area

Description: The swale surface area is the vegetated area where water flows during a storm and also the side slopes that slope down into the swale bottom. Depending on the design, the swale may also contain “check dams,” which are small dams made out of earth, stone, wood, or other materials. The check dams slow down and temporarily pond water as it flows down the swale.

Instruction: Examine the entire swale surface and side slopes. Consult **Table 2.5.3** below for possible problems.

Table 2.5.3 SW Surface Area


Problem (Check if Present)	Follow-Up Actions
<input type="checkbox"/> Minor areas of sediment, grit, trash, or other debris are accumulating in the swale.	<div> <input type="checkbox"/> Use a shovel to scoop out minor areas of sediment or grit, especially in the spring after winter sanding materials may wash in and accumulate. Dispose of the material where it cannot re-enter the swale. <input type="checkbox"/> If removing the material creates a hole or low area, fill with good topsoil and add seed and straw to re-vegetate. <input type="checkbox"/> Remove trash, vegetative debris, and other undesirable materials. <input type="checkbox"/> If the swale is densely vegetated, it may be difficult to do the maintenance; check for excessive ponding or other issues described in this section to see if the accumulated material is causing a problem. <input type="checkbox"/> Other: </div> <div> <input type="checkbox"/> Kick-Out to Level 2 Inspection: Sediment has accumulated more than 3 inches deep and covers 25% or more of the swale surface. <input type="checkbox"/> The source of sediment is unknown or cannot be controlled with simple measures. </div>
 <input type="checkbox"/> There is erosion in the bottom or on the side slopes. Water seems to be carving out rills as it flows through the swale or on the slopes.	<div> <input type="checkbox"/> Try filling the eroded areas with clean topsoil, and then seed and mulch to establish vegetation. <input type="checkbox"/> If the problem recurs, you may have to use some type of matting, stone (e.g., river cobble), or other material to fill in eroded areas. <input type="checkbox"/> If the erosion is on a side slope, fill with soil and cover with erosion-control matting or at least straw mulch after re-seeding. </div> <div> <input type="checkbox"/> Kick-Out to Level 2 Inspection: The problem persists or the erosion is more than 3 inches deep and seems to be an issue with how water enters and moves through the swale. <input type="checkbox"/> Kick-Out to Level 2 Inspection: The problem does not seem to be caused by flowing water, but a collapse or sinking of the surface (e.g., “sinkhole”) due to some underground problem. </div>
<input type="checkbox"/> Water does not flow evenly down the length of the swale, but ponds in certain areas for long periods of time (e.g., 72 hours after a storm). The swale does not seem to have “positive drainage.” Check during or immediately after a rain storm.	<div> <input type="checkbox"/> If the problem is minor (just small, isolated areas), try using a metal rake or other tools to create a more even flow path; remove excessive vegetative growth, sediment, or other debris that may be blocking the flow. <input type="checkbox"/> Other: </div> <div> <input type="checkbox"/> Kick-Out to Level 2 Inspection: Water ponds in more than 25% of the swale for three days or more after a storm. The issue may be with the underlying soil or the grade of the swale. <input type="checkbox"/> Water ponds behind check dams for three days or more after a storm. Check dams may be clogged or not functioning properly. </div>

Table 2.5.3 SW Surface Area



Problem (Check if Present)	Follow-Up Actions
<div data-bbox="94 184 597 632" data-label="Image"> </div> <div data-bbox="94 638 597 774" data-label="List-Group"> <ul style="list-style-type: none"> <input type="checkbox"/> Check dams (if present): water is flowing around the edges of check dams, creating erosion or sinkholes on the uphill or downhill side, or the check dams are breaking apart or breaching. </div>	<div data-bbox="630 218 1526 512" data-label="List-Group"> <ul style="list-style-type: none"> <input type="checkbox"/> If the problem is isolated to just a few check dams, try simple repairs. <input type="checkbox"/> It is very important for the center of each check dam (where most of the water flows) to be lower (by at least several inches) than the edges of the check dams where they meet the side slopes. Also, the check dams should be keyed into side slopes so water does not flow between the check dam and side slope. <input type="checkbox"/> Use a level to check the right check-dam configuration, as noted above. Repair by moving around stone, filling and compacting soil, or adding new material so that water will be directed to the center of the check dam instead of the edges. <input type="checkbox"/> Other: </div> <div data-bbox="630 627 1526 711" data-label="List-Group"> <ul style="list-style-type: none"> <input type="checkbox"/> Kick-Out to Level 2 Inspection: Many check dams are impacted and/or the problem seems to be a design issue with height, spacing, shape, or materials used to construct them. </div>

SW 4. Vegetation

Description: The health of vegetation within the swale is perhaps the most critical maintenance item for the property owner or responsible party. Many vegetated swales become overgrown, and “desirable” vegetation becomes choked out by weeds and invasive plants. It is important to know what the swale is supposed to look like and what plants seem to be thriving or doing poorly. Periodic maintenance of vegetation will prevent larger problems that are more difficult and costly to manage.

Instruction: Examine the swale vegetation. Consult **Table 2.5.4** below for possible problems.

Table 2.5.4 SW Vegetation

Problem (Check if Present)	Follow-Up Actions
 <ul style="list-style-type: none"> <input type="checkbox"/> Vegetation is too overgrown to access swale for maintenance activities 	<ul style="list-style-type: none"> <input type="checkbox"/> Mow or bush-hog the path. <input type="checkbox"/> Other:
 <ul style="list-style-type: none"> <input type="checkbox"/> Vegetation requires regular maintenance: pulling weeds, removing dead and diseased plants, adding plants to fill in areas that are not well vegetated, etc. 	<ul style="list-style-type: none"> <input type="checkbox"/> If you can identify which plants are weeds or not intended to be part of the planting plan, eliminate these, preferably by hand pulling. <input type="checkbox"/> If weeds are widespread, check with the local stormwater authority and/or Extension Office about proper use of herbicides for areas connected with the flow of water. <input type="checkbox"/> Even vegetation that is intended to be present can become large, overgrown, block flow, and/or crowd out surrounding plants. Prune and thin accordingly. <input type="checkbox"/> If weeds or invasive plants have overtaken the whole swale, bush-hog the entire area before seed heads form in the spring. It will be necessary to remove the root mat manually or with appropriate herbicides, as noted above. <input type="checkbox"/> Replant with species that are aesthetically pleasing and seem to be doing well in the swale. <input type="checkbox"/> Other: <input type="checkbox"/> Kick-Out to Level 2 Inspection: You are unsure of the original planting design or the vegetation maintenance task is beyond your capabilities of time, expertise, or resources. If you are unsure of the health of the vegetation (e.g. salt damage, invasives, which plants are undesirable) or the appropriate season to conduct vegetation management, consult a landscape professional before undertaking any cutting, pruning, mowing, or brush hogging.
<ul style="list-style-type: none"> <input type="checkbox"/> Vegetation is too thin, is not healthy, and there are many spots that are not well vegetated. 	<ul style="list-style-type: none"> <input type="checkbox"/> The original plants are likely not suited for the actual conditions within the swale. If you are knowledgeable about plants, select and plant more appropriate vegetation (preferably native plants) so that almost the entire surface area will be covered by the end of the second growing season. <input type="checkbox"/> Other: <input type="checkbox"/> Kick-Out to Level 2 Inspection: For all but small practices (e.g., in residential yards), this task will likely require a landscape design professional or horticulturalist.

SW 5. Outlets

Description: These are where water leaves the swale when it fills up or where water reaches the downstream end of the swale. There may be a small stone apron or rock dam here or even an outlet grate.

Instruction: Examine outlets that release water out of the swale. Consult **Table 2.5.5** below for possible problems.

Table 2.5.5 SW Outlets

Problem (Check if Present)	Follow-Up Actions
<input type="checkbox"/> Outlet is obstructed with mulch, sediment, debris, trash, etc.	<input type="checkbox"/> Remove the debris and dispose of it where it cannot re-enter the swale. <input type="checkbox"/> Other:
	<input type="checkbox"/> Kick-Out to Level 2 Inspection: Outlet is completely clogged or obstructed; there is too much material to remove by hand or with simple hand tools.

2.6. Tree Planting

Tree Planting Actions for Maintenance

Key actions to take for tree planting maintenance include the following:

- TP1. Watering
- TP2. Mulch
- TP3. Pruning
- TP4. Disease or pests

Note: This is a simple, “non-structural” practice and, as such, maintenance tasks are similar to any landscape maintenance. Tree planting can involve individual trees or more, such as reforesting a riparian buffer.

For this type of practice, inspection is part of maintenance to check on the health of the trees.

Tree Planting Level 1 Inspection

The Level 1 Inspection goes hand in hand with active maintenance and includes watering (TP1), mulching (TP2), and Pruning (TP3). Watering should occur during the growing season. Mulching and pruning occurs once a year in the spring and early spring, respectively.

TP 1. Watering

Description: Proper water management is perhaps the most crucial maintenance activity to ensure survival of newly planted trees. Watering is essential during periods of drought, while over watering can be fatal. Watering options include regular or soaker hoses, sprinklers, buckets, drip irrigation, or installation of larger capacity watering tanks for irrigation systems. Consult the maintenance plan for instructions on the timing, volume, and method of watering that is appropriate for the specific species of trees.

Instruction: Inspect the trees to determine whether they need watering. Consult **Table 2.6.1** below.

Table 2.6.1 TP Watering

Problem (Check if Present)	Follow-Up Actions
<input type="checkbox"/> Soil is not moist to the touch and/or it has not rained in a week, and leaves/needles are starting to appear wilted/dry.	<input type="checkbox"/> Water trees deeply and slowly near the base. Soaker hoses and drip irrigation work best for deep watering of trees and shrubs. <input type="checkbox"/> Other:



Figure 2.6.1. Key Areas for Inspection and Maintenance for Tree Planting

2.10. Ponds and Wetlands

Areas of Ponds and Wetlands

Key areas to inspect for ponds and wetlands include the following:

- PO 1. Drainage area
- PO 2. Inlet pipes and swales
- PO 3. Pond area and embankments
- PO 4. Pond outlet

Note: This category includes the following practices:

- *Wet ponds* – have a permanent pool of water and may be divided into various “cells”
- *Stormwater wetlands* – have a variety of depth zones ranging from deep pools to shallow wetlands and are characterized by wetland vegetation

It is recommended strongly to have as-built drawings and copies of previous inspections at hand, if available. Aerial photos may be needed to help direct the inspector to the pond or wetland location if it is obscured by vegetation.

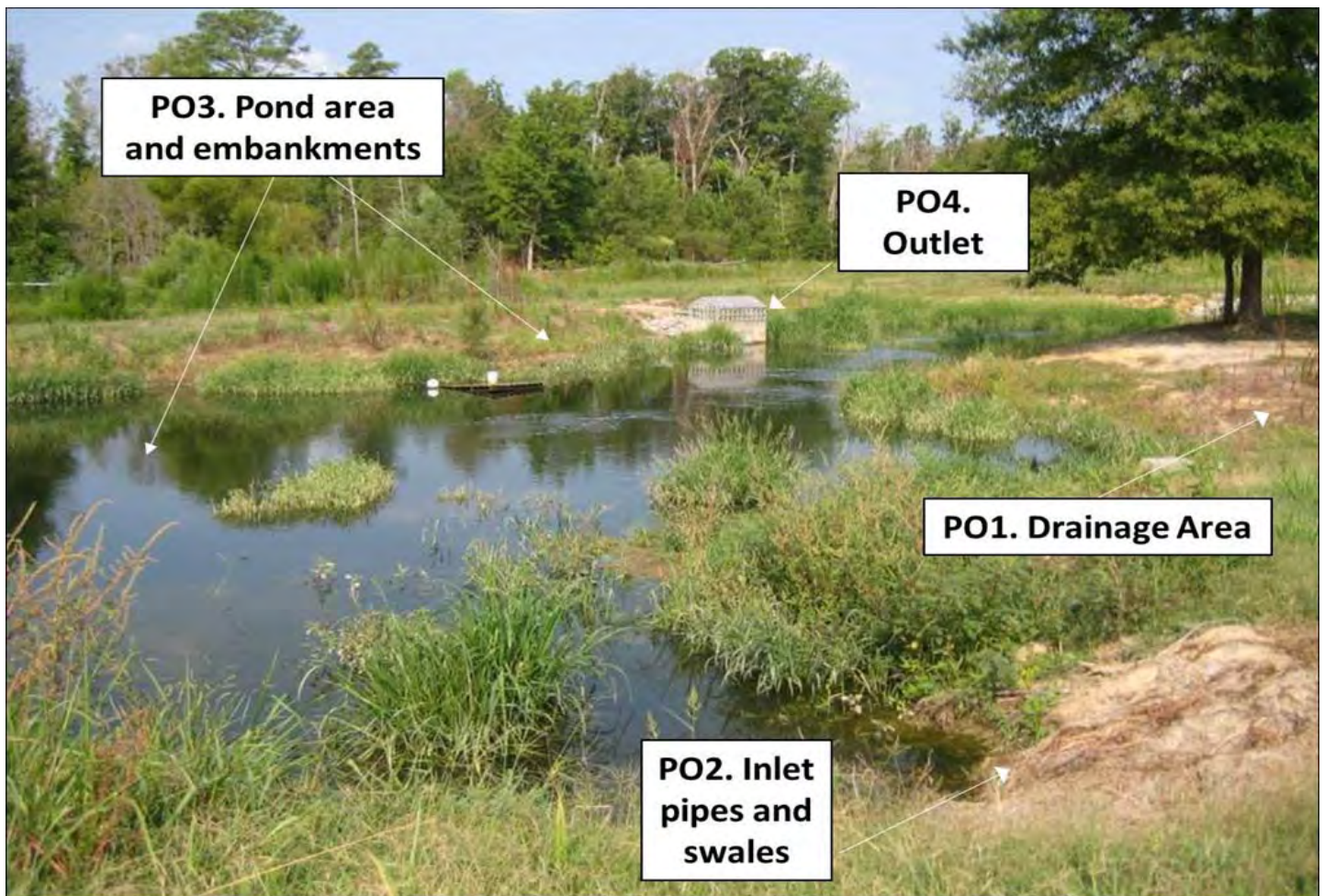


Figure 2.10.1. Key Areas for Level 1 Inspection of a Pond/Wetland



Pond and Wetland Level 1 Inspection

The Level 1 Inspection focuses on the drainage area (PW 1), inlet pipes or swales (PW 2), pond area and embankments (PW 3) and pond outlet structures and outfall (PW 4). This inspection should be conducted on a regular basis to ensure that a buildup of trash, vegetation, or sediment does not interfere with the pre-treatment, pond or wetland, and the outfall's normal flow or function. Pond embankments and dams should be regularly inspected for evidence of erosion, burrowing or tunneling animals, and large woody vegetation growing on the dam.

PW 1. Drainage Area

Description: The drainage area conveys runoff to and is uphill from the pond inlet. When it rains, water runs off through roof drains, yard drains, parking lots, roadways and underdrains to the ponds. Flow is through underground piping systems, overland via swales, or across the ground as sheetflow. Sometimes, the runoff will contain dirt, grit, grass clippings, leaves and woody debris that can collect in the drainage system. If left alone, blockages can occur and increase the chance of shallow flooding or standing water. Standing water in drainage systems foster mosquitos, pipe corrosion, and possible nuisance and odor conditions.

Instruction: Look for areas that are uphill from the pond. Consult **Table 2.10.1** below:




Table 2.10.1 PW Drainage Area		
Problem (Check if Present)	Follow-Up Actions	
<input type="checkbox"/> Bare soil, erosion of the ground (rills washing out the dirt)	<input type="checkbox"/> Seed and straw areas of bare soil to establish vegetation. <input type="checkbox"/> Fill in eroded areas with soil, compact, seed and mulch with straw to establish vegetation. <input type="checkbox"/> Other:	
	<input type="checkbox"/> Kick-Out to Level 2 Inspection: If a rill or small channel is forming, try to redirect water flowing to this area by creating a small berm or adding topsoil to areas that are heavily compacted. <input type="checkbox"/> If large areas of soil have been eroded or larger channels are forming, this may require rerouting of flow paths or use of an erosion-control seed mat or blanket to reestablish acceptable ground cover or anchor sod where it is practical.	
 <input type="checkbox"/> Piles of grass clippings, mulch, dirt, salt, or other materials	<input type="checkbox"/> Remove or cover piles of grass clippings, mulch, dirt, etc. <input type="checkbox"/> Remove excessive vegetation or woody debris that can block drainage systems. <input type="checkbox"/> Other:	
 <input type="checkbox"/> Open containers of oil, grease, paint, or other substances exposed to rain in the drainage area	<input type="checkbox"/> Cover or properly dispose of materials; consult your local solid waste authority for guidance on materials that may be toxic or hazardous. <input type="checkbox"/> Other:	

PW 2. Pond Inlets

Description: Free, unobstructed flow from the drainage area to stormwater ponds is necessary to prevent shallow flooding and even structural damage from flooding. Pond inlets can consist of pipes, ditches, swales, or other means to convey stormwater to the pond or wetland.

Instruction: Look for all areas where water flows into the pond during storms. Note that there may be multiple points of inflow and types of structures (e.g., pipes, open ditches, etc.). Consult **Table 2.10.2** below:

Table 2.10.2 Pond Inlets

Problem (Check if Present)	Follow-Up Actions
  <ul style="list-style-type: none"> <input type="checkbox"/> Inlets are buried, covered or filled with silt, debris, or trash, or blocked by excessive vegetation. 	<ul style="list-style-type: none"> <input type="checkbox"/> If the problem can be remedied with hand tools and done in a safe manner, remove vegetation, trash, woody debris, etc. from blocking inlet structures. <input type="checkbox"/> Other: <input type="checkbox"/> Kick-Out to Level 2 or 3 Inspection: If the amount of material is too large to handle OR there are ANY safety concerns about working in standing water, soft sediment, etc., the work will likely have to be performed by a qualified contractor.
 <ul style="list-style-type: none"> <input type="checkbox"/> Inlets are broken, and, with pieces of pipe or concrete falling into the pond, there is erosion around the inlet, there is open space under the pipe, or there is erosion where the inlet meets the pond 	<ul style="list-style-type: none"> <input type="checkbox"/> Kick-Out to Level 2 Inspection: These types of structural or erosion problems are more serious and will require a qualified contractor to repair.

PW 3. Pond Area and Embankments

Description: The pond area and embankment can consist of the following elements:

- Pre-treatment cell or small holding area where water first flows into the pond from the various inlets. These are commonly referred to as “forebays” and will be demarcated from the main pond area by small dams made of earth or rock. The purpose of forebays is to capture some of the sediment and pollutants before they reach the deep pool, making maintenance easier over time. Not all ponds will have forebays.
- The pond surface can be open water or a combination of open water and areas with wetland vegetation. Sometimes there is a shallow bench around the perimeter of a pond, known as an “aquatic bench.”
- The “side slopes” are areas around the perimeter of the pond where the surrounding land slopes down to the pond surface.
- Most ponds will have a “riser structure,” where the water exits a pond during storms. This can be a concrete or metal pipe that is open at the top, often with some type of trash rack. Some ponds also have an “emergency spillway,” which is an open, rock-lined channel that carries water from large storms safely across the embankment.
- The dam or embankment holds water in the pond and is constructed of compacted soil, such as clay. There is often a pipe through the embankment that carries water from the riser structure safely through the embankment to the downstream channel.

The pond’s pre-treatment areas or forebays should not be choked with vegetation or full of sediment. Removal of excessive vegetation and sediment and selective replanting are often annual maintenance activities.

Likewise, the pond’s deep pool should not be choked with vegetation or filled with sediment. Vegetation and sediment bars can restrict flow and cause short circuiting that reduces capture of sediment. Pond volume is to be maintained at the original design capacity and free of sediment bars or debris piles. Sometimes ponds are over-maintained and have no vegetation. Algae and turbidity (muddy water) are common problems in many ponds.

Instruction: Examine both interior and exterior pond banks as well as the pond body. Observe from the inlet pipes to the outfall structure and emergency overflow.

Table 2.10.3 PW Pond Area and Embankments


Problem (Check if Present)		Follow-Up Actions
	<input type="checkbox"/> The pretreatment area(s) or forebay(s) are filled with sediment, trash, vegetation, or other debris.	<div> <input type="checkbox"/> If the problem can be remedied with hand tools and done in a safe manner, use a flat shovel or other equipment to remove small amounts of sediment. <input type="checkbox"/> Remove trash and excessive vegetation from forebays if this can be done in a safe manner. <input type="checkbox"/> Other: </div> <div> <input type="checkbox"/> Kick-Out to Level 2 Inspection: Large amounts of sediment or debris will have to be removed by a qualified contractor. ANY condition that poses a safety concern for working in standing water or soft sediments should be referred to a Level 2 Inspection or qualified contractor. </div>

Table 2.10.3 PW Pond Area and Embankments






Problem (Check if Present)		Follow-Up Actions
	<input type="checkbox"/> The pond area itself has accumulated sediment, trash, debris, or excessive vegetation that is choking the flow of the water, OR the pond area is covered with algae or aquatic plants.	<div> <input type="checkbox"/> Level 1 includes handling only small amounts of material that can be removed by hand, or with rakes or other hand tools. Do not attempt any repair that poses a safety issue. <input type="checkbox"/> Other: </div> <div> <input type="checkbox"/> Kick-Out to Level 2 Inspection: Most cases will call for a Level 2 Inspection and/or a qualified contractor. <input type="checkbox"/> You are not sure what type and amount of vegetation is supposed to be in the pond. <input type="checkbox"/> The algae or aquatic plants should be identified so that proper control techniques can be applied. </div>
	<input type="checkbox"/> The side slopes of the pond are unstable, eroding, and have areas of bare dirt.	<div> <input type="checkbox"/> If there are only minor areas, try filling in small rills or gullies with topsoil, compacting, and seeding and mulching all bare dirt areas with an appropriate seed. Alternatively, try using herbaceous plugs to get vegetation established in tricky areas, such as steep slopes. <input type="checkbox"/> Other: </div> <div> <input type="checkbox"/> Kick-Out to Level 2 Inspection: Erosion and many bare dirt areas on steep side slopes will require a Level 2 Inspection and repair by a qualified contractor. </div>
	<input type="checkbox"/> The riser structure is clogged with trash, debris, sediment, vegetation, etc., OR is open, unlocked, or has a steep drop and poses a safety concern. The pond level may have dropped below its "normal" level.	<div> <input type="checkbox"/> If you can safely access the riser on foot or with a small boat, clear minor amounts of debris and remove it from the pond area for safe disposal. <input type="checkbox"/> Other: </div> <div> <input type="checkbox"/> Kick-Out to Level 2 Inspection: The riser cannot be accessed safely, the amount of debris is substantial, or the riser seems to be completely clogged and the water level has risen too high. <input type="checkbox"/> There are safety issues with the riser and concern about access to pipes, drops, or any other life safety concern. <input type="checkbox"/> The riser is leaning, broken, settling or slumping, corroded, eroded or any other structural problem. </div>

Table 2.10.3 PW Pond Area and Embankments


Problem (Check if Present)		Follow-Up Actions
	<ul style="list-style-type: none"> <input type="checkbox"/> The dam/embankment is slumping, sinking, settling, eroding, or has medium or large trees growing on it. 	<ul style="list-style-type: none"> <input type="checkbox"/> If there are small isolated areas, try to fix them by adding clean material (clay and topsoil) and seeding and mulching. <input type="checkbox"/> Periodically mow embankments to enable inspection of the banks and to minimize establishment of woody vegetation. <input type="checkbox"/> Remove any woody vegetation that has already established on embankments. <input type="checkbox"/> Other: <div style="background-color: #f0f0f0; padding: 5px;"> <ul style="list-style-type: none"> <input type="checkbox"/> Kick-Out to Level 2 Inspection: Most of these situations will require a Level 2 Inspection or evaluation and repair by a qualified contractor. Seepage through the dam or problems with the pipe through the dam can be a serious issue that should be addressed to avoid possible dam failure. </div>
	<ul style="list-style-type: none"> <input type="checkbox"/> The emergency spillway or outfall (if it exists) has <input type="checkbox"/> erosion, settlement, or loss of material. Rock-lined spillways have excessive debris or vegetation. 	<ul style="list-style-type: none"> <input type="checkbox"/> Clear light debris and vegetation. <input type="checkbox"/> Other: <div style="background-color: #f0f0f0; padding: 5px;"> <ul style="list-style-type: none"> <input type="checkbox"/> Kick-Out to Level 2 Inspection: Displacement of rock lining, excessive vegetation and erosion/settlement may warrant review and decision by Level 2 Inspector to check against original plan. <input type="checkbox"/> Any uncertainty about the integrity of the emergency spillway should be referred to a Level 2 Inspector. <input type="checkbox"/> Erosion or settlement such that design has been compromised should be reviewed by an engineer. </div>

PW 4. Pond Outlet

Description: The pond's outlet enables the ponded water to discharge to downstream drainage systems or stream channels. The outlet is often at the base of the dam/embankment on the downstream side. Inspection of this point can help prevent flooding of the pond and upstream drainage systems and prevent pond failure at a weak point of a pond's containment system.

Instruction: Examine the outlet of the pipe on the downstream side of the dam/embankment where it empties into a stream, channel, or drainage system. Consult the table below for possible problems.

Table 2.10.4 PW Pond Outlet

Problem (Check if Present)	Follow-Up Actions
 <ul style="list-style-type: none"> <input type="checkbox"/> The pond outlet is clogged with sediment, trash, debris, vegetation, or is eroding, caving in, slumping, or falling apart. 	<ul style="list-style-type: none"> <input type="checkbox"/> If there is a minor blockage, remove the debris or vegetation to allow free flow of water. <input type="checkbox"/> Remove any accumulated trash at the outlet. <input type="checkbox"/> Outlet:
	<ul style="list-style-type: none"> <input type="checkbox"/> Kick-Out to Level 2 Inspection: <input type="checkbox"/> If the area at the outlet cannot be easily accessed or if the blockage is substantial, a Level 2 Inspection is warranted. <input type="checkbox"/> Erosion at and downstream of the outfall should be evaluated by a qualified professional. <input type="checkbox"/> Any structural problems, such as broken pipes, structures falling into the stream, or holes or tunnels around the outfall pipe, should be evaluated by a Level 2 Inspector and will require repair by a qualified contractor. <input type="checkbox"/> The pool of water at the outlet pipe is discolored, has an odor, or has excessive algae or vegetative growth.

2.11. Infiltration

Areas of Infiltration

Key areas to inspect for Infiltration include the following:

- IN 1. Drainage Area
- IN 2. Inlets
- IN 3. Infiltration Area
- IN 4. Outlets

Note: The category of Infiltration includes:

- Infiltration Trench – Long, narrow infiltration practice, usually with small gravel at the surface and a reservoir of larger gravel or stone beneath
- Infiltration Basin – Larger practice, usually covered with grass and highly permeable soil beneath
- Dry Well – Small pit filled with stone or gravel, or precast concrete chamber surrounded by stone that receives and stores runoff to enable it to infiltrate into the underlying ground.



Figure 2.11.1 Key Areas for Level 1 Inspection of Infiltration Practice

APPENDIX G

Erosion and Sediment Control Maintenance Information

STANDARD AND SPECIFICATIONS FOR CONSTRUCTION ROAD STABILIZATION



Definition & Scope

The stabilization of temporary construction access routes, on-site vehicle transportation routes, and construction parking areas to control erosion on temporary construction routes and parking areas.

Conditions Where Practice Applies

All traffic routes and parking areas for temporary use by construction traffic.

Design Criteria

Construction roads should be located to reduce erosion potential, minimize impact on existing site resources, and maintain operations in a safe manner. Highly erosive soils, wet or rocky areas, and steep slopes should be avoided. Roads should be routed where seasonal water tables are deeper than 18 inches. Surface runoff and control should be in accordance with other standards.

Road Grade – A maximum grade of 12% is recommended, although grades up to 15% are possible for short distances.

Road Width – 12 foot minimum for one-way traffic or 24 foot minimum for two-way traffic.

Side Slope of Road Embankment – 2:1 or flatter.

Ditch Capacity – On-site roadside ditch and culvert capacities shall be the 10 yr. peak runoff.

Composition – Use a 6-inch layer of NYS DOT sub-base Types 1,2,3, 4 or equivalent as specified in NYSDOT Standard Specifications.

Construction Specifications

1. Clear and strip roadbed and parking areas of all vegetation, roots, and other objectionable material.
2. Locate parking areas on naturally flat areas as available. Keep grades sufficient for drainage, but not more than 2 to 3 percent.
3. Provide surface drainage and divert excess runoff to stabilized areas.
4. Maintain cut and fill slopes to 2:1 or flatter and stabilized with vegetation as soon as grading is accomplished.
5. Spread 6-inch layer of sub-base material evenly over the full width of the road and smooth to avoid depressions.
6. Provide appropriate sediment control measures to prevent offsite sedimentation.

Maintenance

Inspect construction roads and parking areas periodically for condition of surface. Top dress with new gravel as needed. Check ditches for erosion and sedimentation after rainfall events. Maintain vegetation in a healthy, vigorous condition. Areas producing sediment should be treated immediately.

STANDARD AND SPECIFICATIONS FOR CONCRETE TRUCK WASHOUT



Definition & Scope

A temporary excavated or above ground lined constructed pit where concrete truck mixers and equipment can be washed after their loads have been discharged, to prevent highly alkaline runoff from entering storm drainage systems or leaching into soil.

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 Criteria

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 deep. 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

- 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.
- 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.
- 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.
- The plastic liner shall be replaced with each cleaning of the washout facility.
- Inspect the project site frequently to ensure that no concrete discharges are taking place in non-designated areas.

STANDARD AND SPECIFICATIONS FOR DUST CONTROL



dust control (see Section 3).

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.

Definition & Scope

The control of dust resulting from land-disturbing activities, to prevent surface and air movement of dust from disturbed soil surfaces that may cause off-site damage, health hazards, and traffic safety problems.

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.

Construction Specifications

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

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.

STANDARD AND SPECIFICATIONS FOR PROTECTING VEGETATION DURING CONSTRUCTION



Definition & Scope

The protection of trees, shrubs, ground cover and other vegetation from damage by construction equipment. In order to preserve existing vegetation determined to be important for soil erosion control, water quality protection, shade, screening, buffers, wildlife habitat, wetland protection, and other values.

Conditions Where Practices Applies

On planned construction sites where valued vegetation exists and needs to be preserved.

Design Criteria

1. Planning Considerations

A. Inventory:

1) Property boundaries, topography, vegetation and soils information should be gathered. Identify potentially high erosion areas, areas with tree windthrow potential, etc. A vegetative cover type map should be made on a copy of a topographic map which shows other natural and manmade features. Vegetation that is desirable to preserve because of its value for screening, shade, critical erosion control, endangered species, aesthetics, etc., should be identified and marked on the map.

2) Based upon this data, general statements should be prepared about the present condition, potential problem areas, and unique features of the property.

B. Planning:

1) After engineering plans (plot maps) are prepared, another field review should take place and

recommendations made for the vegetation to be saved. Minor adjustments in location of roads, dwellings, and utilities may be needed. Construction on steep slopes, erodible soils, wetlands, and streams should be avoided. Clearing limits should be delineated (See "Determine Limits of Clearing and Grading" on page 2.2).

2) Areas to be seeded and planted should be identified. Remaining vegetation should blend with their surroundings and/or provide special function such as a filter strip, buffer zone, or screen.

3) Trees and shrubs of special seasonal interest, such as flowering dogwood, red maple, striped maple, serviceberry, or shadbush, and valuable potential shade trees should be identified and marked for special protective treatment as appropriate.

4) Trees to be cut should be marked on the plans. If timber can be removed for salable products, a forester should be consulted for marketing advice.

5) Trees that may become a hazard to people, personal property, or utilities should be removed. These include trees that are weak-wooded, disease-prone, subject to windthrow, or those that have severely damaged root systems.

6) The vigor of remaining trees may be improved by a selective thinning. A forester should be consulted for implementing this practice.

2. Measures to Protect Vegetation

A. Limit soil placement over existing tree and shrub roots to a maximum of 3 inches. Soils with loamy texture and good structure should be used.

B. Use retaining walls and terraces to protect roots of trees and shrubs when grades are lowered. Lowered grades should start no closer than the dripline of the tree. For narrow-canopied trees and shrubs, the stem diameter in inches is converted to feet and doubled, such that a 10 inch tree should be protected to 20 feet.

C. Trenching across tree root systems should be the same minimum distance from the trunk, as in "B". Tunnels under root systems for underground utilities should start 18 inches or deeper below the normal ground surface. Tree roots which must be severed should be cut clean. Backfill material that will be in contact with the roots should be topsoil or a prepared planting soil mixture.

D. Construct sturdy fences, or barriers, of wood, steel, or other protective material around valuable

vegetation for protection from construction equipment. Place barriers far enough away from trees, but not less than the specifications in "B", so that tall equipment such as backhoes and dump trucks do not contact tree branches.

E. Construction limits should be identified and clearly marked to exclude equipment.

F. Avoid spills of oil/gas and other contaminants.

G. Obstructive and broken branches should be pruned properly. The branch collar on all branches whether living or dead should not be damaged. The 3 or 4 cut method should be used on all branches larger than two inches at the cut. First cut about one-third the way through the underside of the limb (about 6-12 inches from the tree trunk). Then (approximately an inch further out) make a second cut through the limb from the upper side. When the branch is removed, there is no splintering of the main tree trunk. Remove the stub. If the branch is larger than 5-6 inches in diameter, use the four cut system. Cuts 1 and 2 remain the same and cut 3 should be from the underside of the limb, on the outside of the branch collar. Cut 4 should be from the top and in alignment with the 3rd cut. Cut 3 should be 1/4 to 1/3 the way through the limb. This will prevent the bark from peeling down the trunk. Do not paint the cut surface.

H. Penalties for damage to valuable trees, shrubs, and herbaceous plants should be clearly spelled out in the contract.

PROTECTING TREES IN HEAVY USE AREAS

The compaction of soil over the roots of trees and shrubs by the trampling of recreationists, vehicular traffic, etc., reduces oxygen, water, and nutrient uptake by feeder roots. This weakens and may eventually kill the plants. Table 2.6 rates the "Susceptibility of Tree Species to Compaction."

Where heavy compaction is anticipated, apply and maintain a 3 to 4 inch layer of undecayed wood chips or 2 inches of No. 2 washed, crushed gravel. In addition, use of a wooden or plastic mat may be used to lessen compaction, if applicable.

STANDARD AND SPECIFICATIONS FOR SITE POLLUTION PREVENTION



Definition & Scope

A collection of management practices intended to control non-sediment pollutants associated with construction activities to prevent the generation of pollutants due to improper handling, storage, and spills and prevent the movement of toxic substances from the site into surface waters.

Conditions Where Practice Applies

On all construction sites where the earth disturbance exceeds 5,000 square feet, and involves the use of fertilizers, pesticides, petroleum based chemicals, fuels and lubricants, as well as sealers, paints, cleared woody vegetation, garbage, and sanitary wastes.

Design Criteria

The variety of pollutants on a particular site and the severity of their impacts depend on factors such as the nature of the construction activity, the physical characteristics of the construction site, and the proximity of water bodies and conveyances to the pollutant source.

1. All state and federal regulations shall be followed for the storage, handling, application, usage, and disposal of pesticides, fertilizers, and petroleum products.
2. Vehicle and construction equipment staging and maintenance areas will be located away from all drainage ways with their parking areas graded so the runoff from these areas is collected, contained and treated prior to discharge from the site.
3. Provide sanitary facilities for on-site personnel.
4. Store, cover, and isolate construction materials including topsoil, and chemicals, to prevent runoff of



pollutants and contamination of groundwater and surface waters.

5. Develop and implement a spill prevention and control plan. The plan should include NYSDEC's spill reporting and initial notification requirements.
6. Provide adequate disposal for solid waste including woody debris, stumps, and other construction waste and include these methods and directions in the construction details on the site construction drawings. Fill, woody debris, stumps and construction waste shall not be placed in regulated wetlands, streams or other surface waters.
7. Distribute or post informational material regarding proper handling, spill response, spill kit location, and emergency actions to be taken, to all construction personnel.
8. Refueling equipment shall be located at least 100 feet from all wetlands, streams and other surface waters.



STANDARD AND SPECIFICATIONS FOR STABILIZED CONSTRUCTION ACCESS



Definition & Scope

A stabilized pad of aggregate underlain with geotextile located at any point where traffic will be entering or leaving a construction site to or from a public right-of-way, street, alley, sidewalk, or parking area. The purpose of stabilized construction access is to reduce or eliminate the tracking of sediment onto public rights-of-way or streets.

Conditions Where Practice Applies

A stabilized construction access shall be used at all points of construction ingress and egress.

Design Criteria

See Figure 2.1 on page 2.31 for details.

Aggregate Size: Use a matrix of 1-4 inch stone, or reclaimed or recycled concrete equivalent.

Thickness: Not less than six (6) inches.

Width: 12-foot minimum but not less than the full width of points where ingress or egress occurs. 24-foot minimum if there is only one access to the site.

Length: As required, but not less than 50 feet (except on a single residence lot where a 30 foot minimum would apply).

Geotextile: To be placed over the entire area to be covered with aggregate. Filter cloth will not be required on a single-family residence lot. Piping of surface water under entrance shall be provided as required. If piping is impossible, a mountable berm with 5:1 slopes will be permitted.

Criteria for Geotextile: The geotextile shall be woven or nonwoven fabric consisting only of continuous chain polymeric filaments or yarns of polyester. The fabric shall be

inert to commonly encountered chemicals, hydro-carbons, mildew, rot resistant, and conform to the fabric properties as shown:

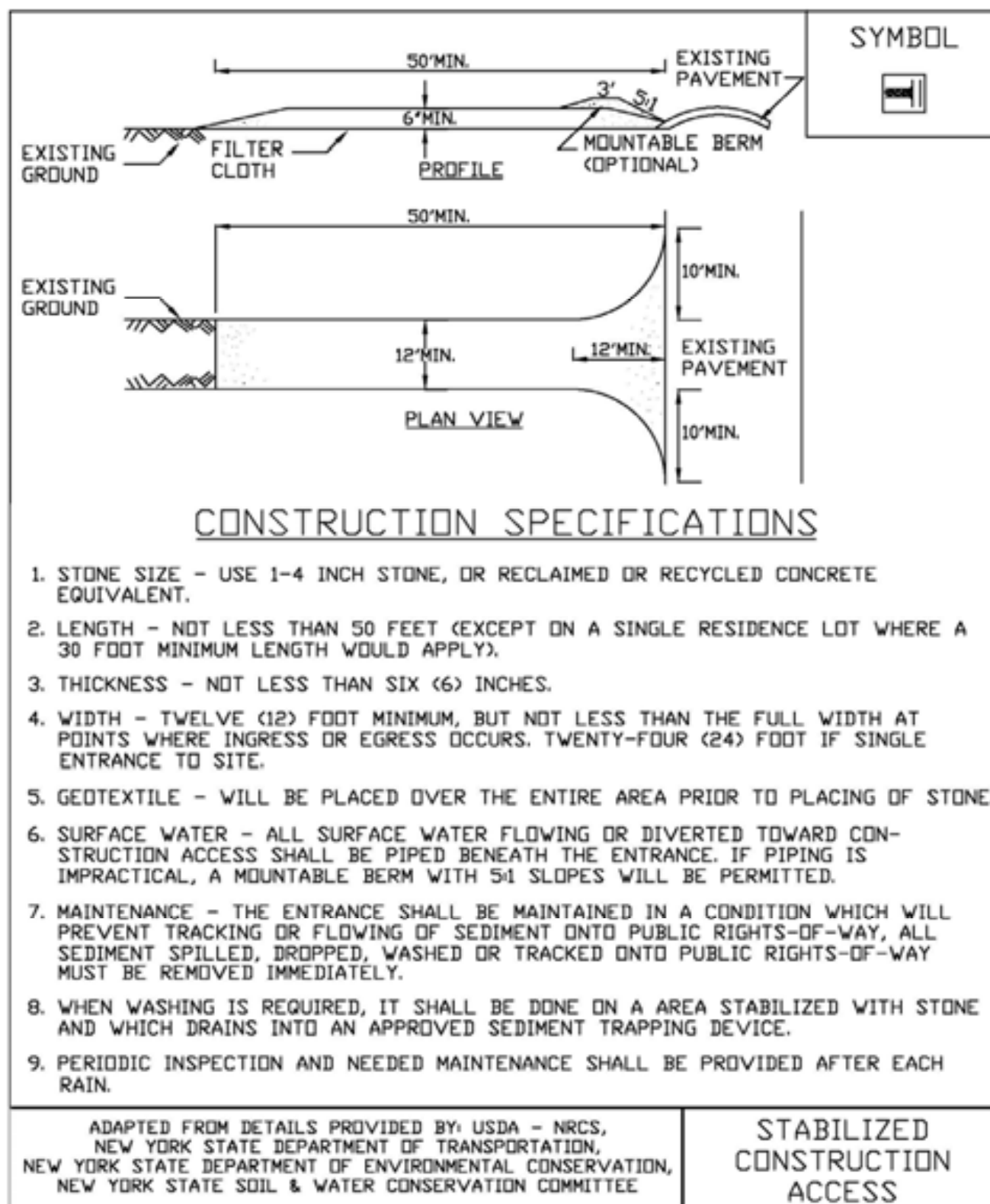
Fabric Properties ³	Light Duty ¹ Roads Grade Sub-grade	Heavy Duty ² Haul Roads Rough Graded	Test Method
Grab Tensile Strength (lbs)	200	220	ASTM D1682
Elongation at Failure (%)	50	60	ASTM D1682
Mullen Burst Strength (lbs)	190	430	ASTM D3786
Puncture Strength (lbs)	40	125	ASTM D751 Modified
Equivalent	40-80	40-80	US Std Sieve
Opening Size			CW-02215
Aggregate Depth	6	10	-
¹ Light Duty Road: Area sites that have been graded to subgrade and where most travel would be single axle vehicles and an occasional multi-axle truck. Acceptable materials are Trevira Spunbond 1115, Mirafi 100X, Typar 3401, or equivalent. ² Heavy Duty Road: Area sites with only rough grading, and where most travel would be multi-axle vehicles. Acceptable materials are Trevira Spunbond 1135, Mirafi 600X, or equivalent. ³ Fabrics not meeting these specifications may be used only when design procedure and supporting documentation are supplied to determine aggregate depth and fabric strength.			

Maintenance

The access shall be maintained in a condition which will prevent tracking of sediment onto public rights-of-way or streets. This may require periodic top dressing with additional aggregate. All sediment spilled, dropped, or washed onto public rights-of-way must be removed immediately.

When necessary, wheels must be cleaned to remove sediment prior to entrance onto public rights-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 watercourses.

Figure 2.1
Stabilized Construction Access



STANDARD AND SPECIFICATIONS FOR WINTER STABILIZATION



Definition & Scope

A temporary site specific, enhanced erosion and sediment control plan to manage runoff and sediment at the site during construction activities in the winter months to protect off-site water resources.

Conditions Where Practice Applies

This standard applies to all construction activities involved with ongoing land disturbance and exposure between November 15th to the following April 1st.

Design Criteria

1. Prepare a snow management plan with adequate storage for snow and control of melt water, requiring cleared snow to be stored in a manner not affecting ongoing construction activities.
2. Enlarge and stabilize access points to provide for snow management and stockpiling. Snow management activities must not destroy or degrade installed erosion and sediment control practices.
3. A minimum 25 foot buffer shall be maintained from all perimeter controls such as silt fence. Mark silt fence with tall stakes that are visible above the snow pack.
4. Edges of disturbed areas that drain to a waterbody within 100 feet will have 2 rows of silt fence, 5 feet apart, installed on the contour.
5. Drainage structures must be kept open and free of snow and ice dams. All debris, ice dams, or debris from plowing operations, that restrict the flow of runoff and meltwater, shall be removed.
6. Sediment barriers must be installed at all appropriate

perimeter and sensitive locations. Silt fence and other practices requiring earth disturbance must be installed before the ground freezes.

7. Soil stockpiles must be protected by the use of established vegetation, anchored straw mulch, rolled stabilization matting, or other durable covering. A barrier must be installed at least 15 feet from the toe of the stockpile to prevent soil migration and to capture loose soil.
8. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures should be initiated by the end of the next business day and completed within three (3) days. Rolled erosion control blankets must be used on all slopes 3 horizontal to 1 vertical or steeper.
9. If straw mulch alone is used for temporary stabilization, it shall be applied at double the standard rate of 2 tons per acre, making the application rate 4 tons per acre. Other manufactured mulches should be applied at double the manufacturer's recommended rate.
10. To ensure adequate stabilization of disturbed soil in advance of a melt event, areas of disturbed soil should be stabilized at the end of each work day unless:
 - a. work will resume within 24 hours in the same area and no precipitation is forecast or;
 - b. the work is in disturbed areas that collect and retain runoff, such as open utility trenches, foundation excavations, or water management areas.
11. Use stone paths to stabilize access perimeters of buildings under construction and areas where construction vehicle traffic is anticipated. Stone paths should be a minimum 10 feet in width but wider as necessary to accommodate equipment.

Maintenance

The site shall be inspected frequently to ensure that the erosion and sediment control plan is performing its winter stabilization function. If the site will not have earth disturbing activities ongoing during the "winter season", all bare exposed soil must be stabilized by established vegetation, straw or other acceptable mulch, matting, rock, or other approved material such as rolled erosion control products. Seeding of areas with mulch cover is preferred but seeding alone is not acceptable for proper stabilization.

Compliance inspections must be performed and reports filed properly in accordance with the SWPPP for all sites under a winter shutdown.

STANDARD AND SPECIFICATIONS FOR VEGETATING WATERWAYS



Definition & Scope

Waterways are a **permanently** constructed conveyance channel, shaped or graded. They are vegetated for the safe transport of excess surface water from construction sites and urban areas without damage from erosion.

Conditions Where Practice Applies

This standard applies to vegetating waterways and similar water carrying structures.

Supplemental measures may be required with this practice. These may include: subsurface drainage to permit the growth of suitable vegetation and to eliminate wet spots; a section stabilized with asphalt, stone, or other suitable means; or additional storm drains to handle snowmelt or storm runoff.

Retardance factors for determining waterway dimensions are shown in Table 3.1 on page 3.10 and "Maximum Permissible Velocities for Selected Grass and Legume Mixtures" (See Table 4.10 on page 4.79).

Design Criteria

Waterways or outlets shall be protected against erosion by vegetative means as soon after construction as practical. Vegetation must be well established before diversions or other channels are outletted into them. Consideration should be given to the use of turf reinforcement mats, excelsior matting, other rolled erosion control products, or sodding of channels to provide erosion protection as soon after construction as possible. It is strongly recommended that the center line of the waterway be protected with one of the above materials to avoid center gullies and to protect seedlings from erosion before establishment.

1. Liming, fertilizing, and seedbed preparation.

- A. Lime to pH 6.5.
 - B. **The soil should be tested to determine the amounts of amendments needed.** If the soil must be fertilized before results of a soil test can be obtained to determine fertilizer needs, apply commercial fertilizer at 1.0 lbs/1,000 sq. ft. of N, P₂O₅, and K₂O.
 - C. Lime and fertilizer shall be mixed thoroughly into the seedbed during preparation.
 - D. Channels, except for paved section, shall have at least 4 inches of topsoil.
 - E. Remove stones and other obstructions that will hinder maintenance.
2. Timing of Seeding.
 - A. Early spring and late August are best.
 - B. Temporary cover to protect from erosion is recommended during periods when seedings may fail.

3. Seed Mixtures:

Mixtures	Rate per Acre (lbs)	Rate per 1,000 sq. ft. (lbs)
A. White clover or ladino clover ¹	8	0.20
Smooth brome grass	20	0.45
Creeping red fescue ²	2	0.05
Total	30	0.70

OR

B. Smooth brome grass ³	25	0.60
Creeping red fescue	20	0.50
Perennial ryegrass	10	0.20
Total	55	1.30

¹ Inoculate with appropriate inoculum immediately prior to seeding. Ladino or birdsfoot trefoil may be substituted for common white clover and seeded at the same rate.

² Perennial ryegrass may be substituted for the creeping red fescue but increase seeding rate to 5 lbs/acre (0.1 lb/1,000 sq. ft).

³ Use this mixture in areas which are mowed frequently. Common white clover may be added if desired and seeded at 8 lbs/acre (0.2 lb/1,000 sq. ft.)

4. Seeding

Select the appropriate seed mixture and apply uniformly over the area. Rolling or cultipacking across the waterway is desirable.

Waterway centers or crucial areas may be sodded. Refer to the standard and specification for Stabilization with Sod. Be sure sod is securely anchored using staples or stakes.

5. Mulching

All seeded areas will be mulched. Channels more than 300 feet long, and/or where the slope is 5 percent or more, must have the mulch securely anchored. Refer to the standard and specifications for Mulching for details.

6. Maintenance

Fertilize, lime, and mow as needed to maintain dense protective vegetative cover.

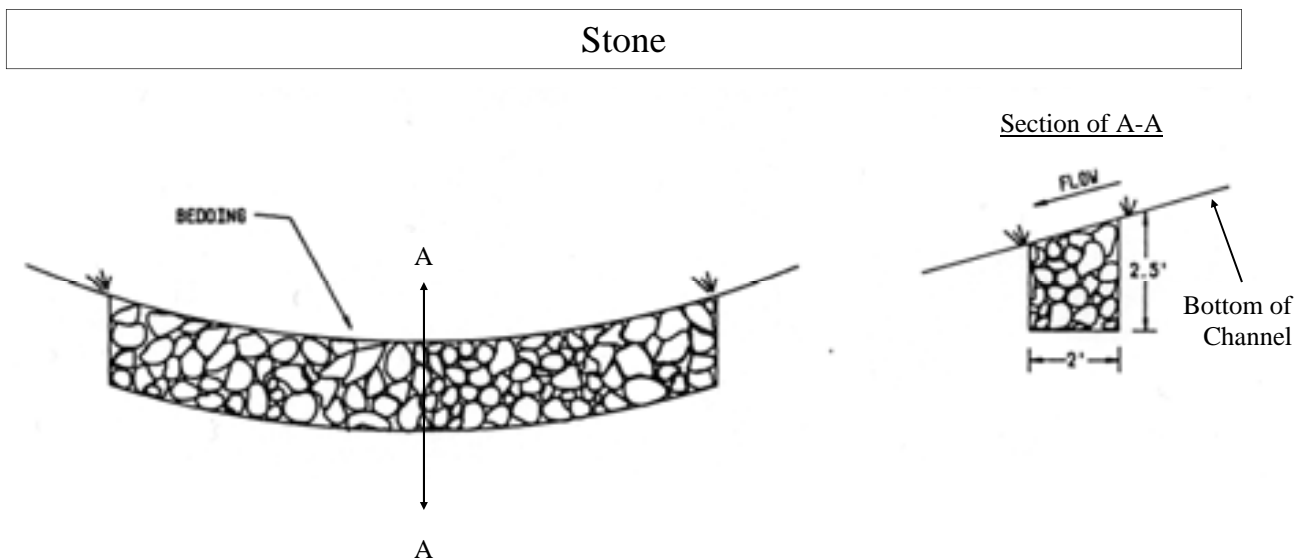
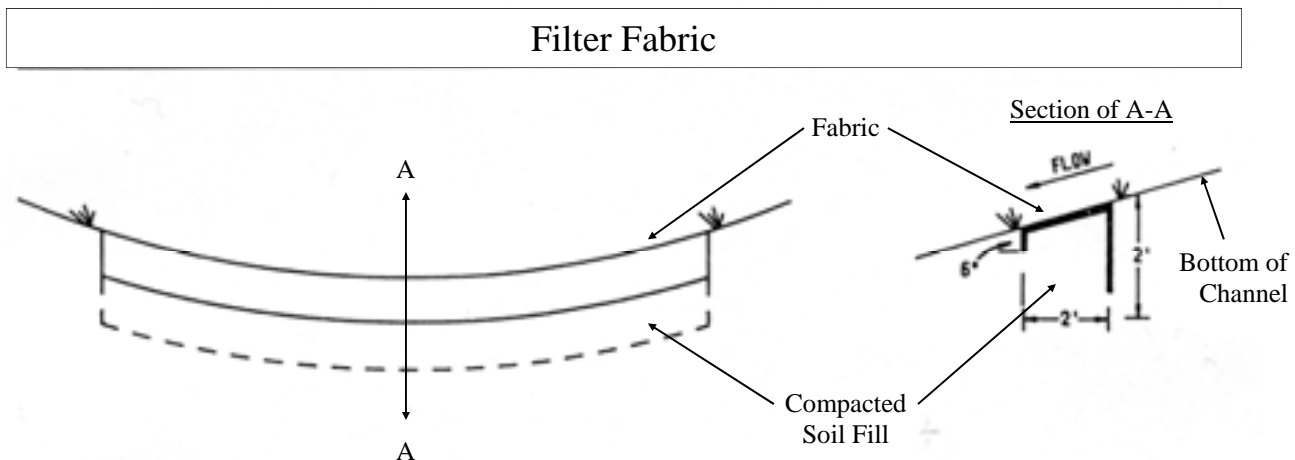
Waterways shall not be used for roadways.

If rills develop in the centerline of a waterway, prompt attention is required to avoid the formation of gullies. Either stone and/or compacted soil fill with excelsior or filter fabric as necessary may be used during the establishment phase. See Figure 4.25, Rill Maintenance Measures. Spacing between rill maintenance barriers shall not exceed 100 feet.

Table 4.10
Maximum Permissible Velocities for Selected Seed Mixtures

Cover	Slope Range ² (%)	Permissible Velocity ¹	
		Erosion-resistant Soils (ft. per sec.) K=0.10 - 0.35 ³	Easily Eroded Soils (ft. per sec.) K=0.36 - 0.80
Smooth Brome Hard Fescue	0-5 5-10 Over 10	7 6 5	5 4 3
Grass Mixtures	² 0-5 5-10	5 4	4 3
White/Red Clover Alfalfa Red Fescue	⁴ 0-5	3.5	2.5
¹ Use velocities exceeding 5 feet per second only where good covers and proper maintenance can be obtained. ² Do not use on slopes steeper than 10 percent except for vegetated side slopes in combination with a stone, concrete, or highly resistant vegetative center section. ³ K is the soil erodibility factor used in the Revised Universal Soil Loss Equation. Visit Appendix A or consult the appropriate USDA-NRCS technical guide for K values for New York State soils. ⁴ Do not use on slopes steeper than 5 percent except for vegetated side slopes in combination with a stone, concrete, or highly resistant vegetative center section. ⁵ Annuals - use on mild slopes or as temporary protection until permanent covers are established. ⁶ Use on slopes steeper than 5 percent is not recommended.			

Figure 4.25
Rill Maintenance Measures



STANDARD AND SPECIFICATIONS FOR BUFFER FILTER STRIP



Land Slope (%)	Minimum Filter Strip Width (ft.)
≤10	50
20	60
30	85
40	105
50	125
60	145
70	165

Definition & Scope

A **temporary/permanent** well vegetated grassed area below a disturbed area that can be used to remove sediment from runoff prior to it reaching surface waters or other designated areas of concern, such as parking lots and road pavement.

Condition Where Practice Applies

This practice is effective when the flow is in the form of sheet flow and the vegetative cover is established prior to disturbance. Surface water must be protected from sediment-laden runoff until buffer filter strip vegetation is established, and then the proposed disturbance can be undertaken. This practice is effective when the flow is in the form of sheet flow (maximum of 150 feet).

Design Criteria

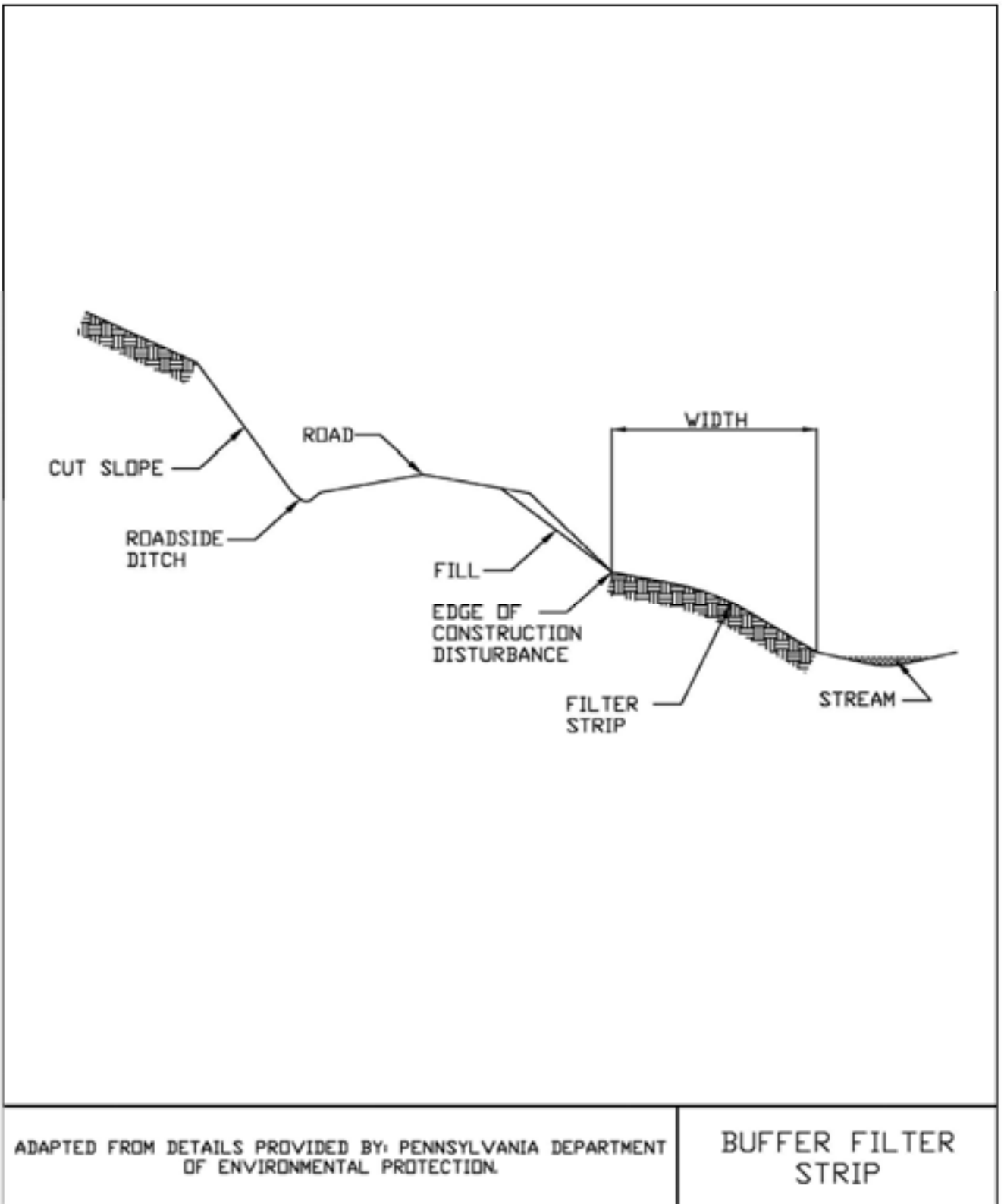
1. The vegetation should be a well established perennial grass. Wooded and brushy areas are not acceptable for purposes of sediment removal.
2. The minimum buffer filter strip width for stream protection shall be in accordance with the following table:

3. The minimum buffer filter strip width to protect paved areas during construction is 20 feet.

Maintenance

If at any time the width of the buffer filter strip has been reduced by sediment deposition to half its original width or concentrated flow has developed, suitable additional practices should be installed. The erosion and sediment control plan shall include these details.

Figure 5.1
Buffer Filter Strip



STANDARD AND SPECIFICATIONS FOR CHECK DAM



Definition & Scope

Small barriers or dams constructed of stone, bagged sand or gravel, or other durable materials across a drainageway to reduce erosion in a drainage channel by reducing the velocity of flow in the channel.

Conditions Where Practice Applies

This practice is used as a **temporary** and, in some cases, a **permanent** measure to limit erosion by reducing velocities in open channels that are degrading or subject to erosion or where permanent stabilization is impractical due to short period of usefulness and time constraints of construction.

Design Criteria

Drainage Area: Maximum drainage area above the check dam shall not exceed two (2) acres.

Height: Not greater than 2 feet. Center shall be maintained 9 inches lower than abutments at natural ground elevation.

Side Slopes: Shall be 2:1 or flatter.

Spacing: The check dams shall be spaced as necessary in the channel so that the crest of the downstream dam is at the elevation of the toe of the upstream dam. This spacing is equal to the height of the check dam divided by the channel slope.

Therefore:

$$S = \frac{h}{s}$$

Where:
S = spacing interval (ft.)
h = height of check dam (ft.)
s = channel slope (ft./ft.)

Example:

For a channel with
and 2 ft. high stone
they are spaced as

$$S = \frac{2 \text{ ft}}{0.04 \frac{\text{ft}}{\text{ft}}} = 50 \text{ ft}$$

a 4% slope
check dams,
follows:

For stone check dams: Use a well graded stone matrix 2 to 9 inches in size (NYS – DOT Light Stone Fill meets these requirements).

The overflow of the check dams will be stabilized to resist erosion that might be caused by the check dam. See Figure 3.1 on page 3.3 for details.

Check dams should be anchored in the channel by a cutoff trench 1.5 ft. wide and 0.5 ft. deep and lined with filter fabric to prevent soil migration.

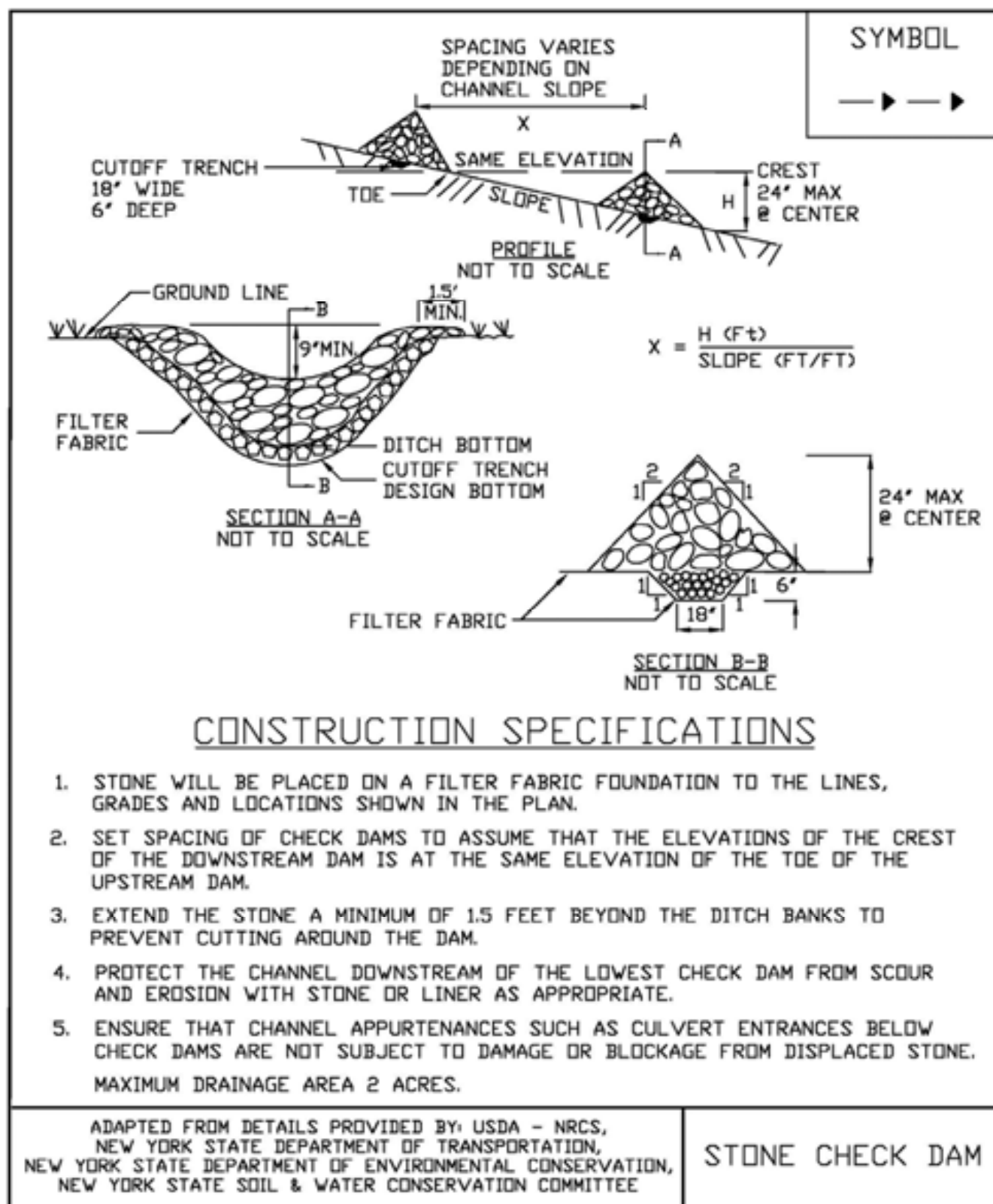
For filter sock or fiber roll check dams: The check dams will be anchored by staking the dam to the earth contact surface. The dam will extend to the top of the bank. The check dam will have a splash apron of NYS DOT #2 crushed stone extending a minimum 3 feet downstream from the dam and 1 foot up the sides of the channel. The compost and materials for a filter sock check dam shall meet the requirements shown in the standard for Compost Filter Sock on page 5.7.

Maintenance

The check dams should be inspected after each runoff event. Correct all damage immediately. If significant erosion has occurred between structures, a liner of stone or other suitable material should be installed in that portion of the channel or additional check dams added.

Remove sediment accumulated behind the dam as needed to allow channel to drain through the stone check dam and prevent large flows from carrying sediment over the dam.

Figure 3.1
Stone Check Dam Detail



STANDARD AND SPECIFICATIONS FOR GRASSED WATERWAY



Definition & Scope

A natural or **permanent** man-made channel of parabolic or trapezoidal cross-section that is below adjacent ground level and is stabilized by suitable vegetation. The flow channel is normally wide and shallow and conveys the runoff down the slope without causing damage by erosion.

Conditions Where Practice Applies

Grass waterways are used where added vegetative protection is needed to control erosion resulting from concentrated runoff.

Design Criteria

Capacity

The minimum capacity shall be that required to confine the peak rate of runoff expected from a 10-year 24 hour frequency rainfall event or a higher frequency corresponding to the hazard involved. This requirement for confinement may be waived on slopes of less than one (1) percent where out-of-bank flow will not cause erosion or property damage.

Peak rates of runoff values used in determining the capacity requirements shall be computed by appropriate methods. Where there is base flow, it shall be handled by a stone center, subsurface drain, or other suitable means since sustained wetness usually prevents adequate vegetative cover. The cross-sectional area of the stone center or subsurface drain size to be provided shall be determined by using a flow rate of 0.1 cfs/acre or by actual measurement of the maximum base flow.

Velocity

Please see Table 3.1, Diversion Maximum Permissible Design Velocities on page 3.10, for seed, soil, and velocity variables.

Cross Section

The design water surface elevation of a grassed waterway receiving water from diversions or other tributary channels shall be equal to or less than the design water surface elevation in the diversion or other tributary channels.

The top width of parabolic waterways shall not exceed 30 feet and the bottom width of trapezoidal waterways shall not exceed 15 feet unless multiple or divided waterways, stone center, or other means are provided to control meandering of low flows.

Structural Measures

In cases where grade or erosion problems exist, special control measures may be needed such as lined waterways (see page 3.27), or grade stabilization measures (see page 3.21). Where needed, these measures will be supported by adequate design computations. For typical cross sections of waterways with riprap sections or stone centers, refer to Figure 3.8 on page 3.24.

The design procedures for parabolic and trapezoidal channels are available in the NRCS Engineering Field Handbook. Figure 3.9 on page 3.25 also provides a design chart for parabolic waterway.

Outlets

Each waterway shall have a stable outlet. The outlet may be another waterway, a stabilized open channel, grade stabilization structure, etc. In all cases, the outlet must discharge in such a manner as not to cause erosion. Outlets shall be constructed and stabilized prior to the operation of the waterway.

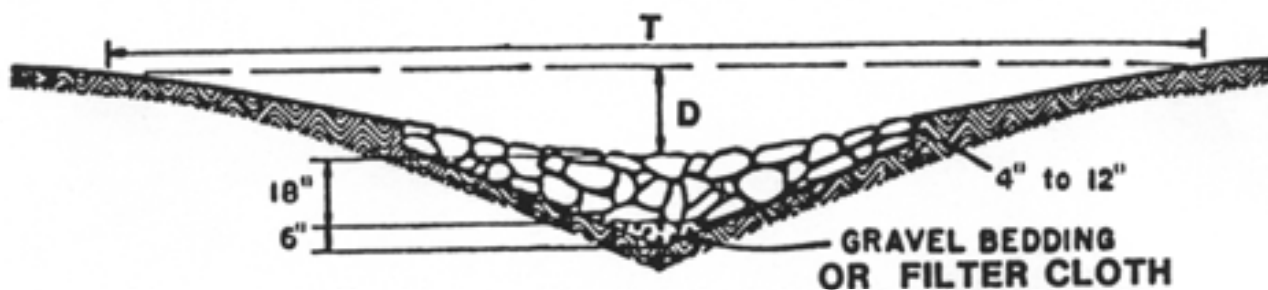
Stabilization

Waterways shall be stabilized in accordance with the appropriate vegetative stabilization standard and specifications, and will be dependent on such factors as slope, soil class, etc. See standard for Vegetating Waterways on Page 4.78.

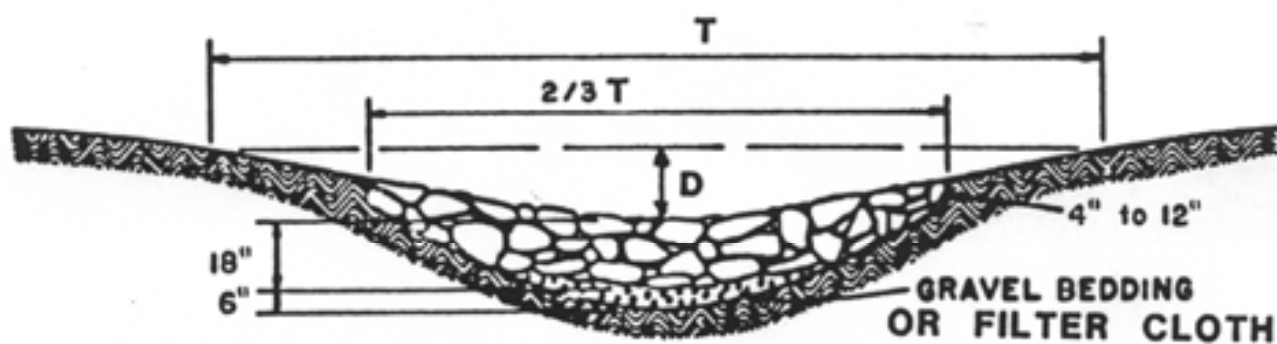
Construction Specifications

See Figure 3.10 on page 3.26 for details.

Figure 3.8
Typical Waterway Cross Sections Details

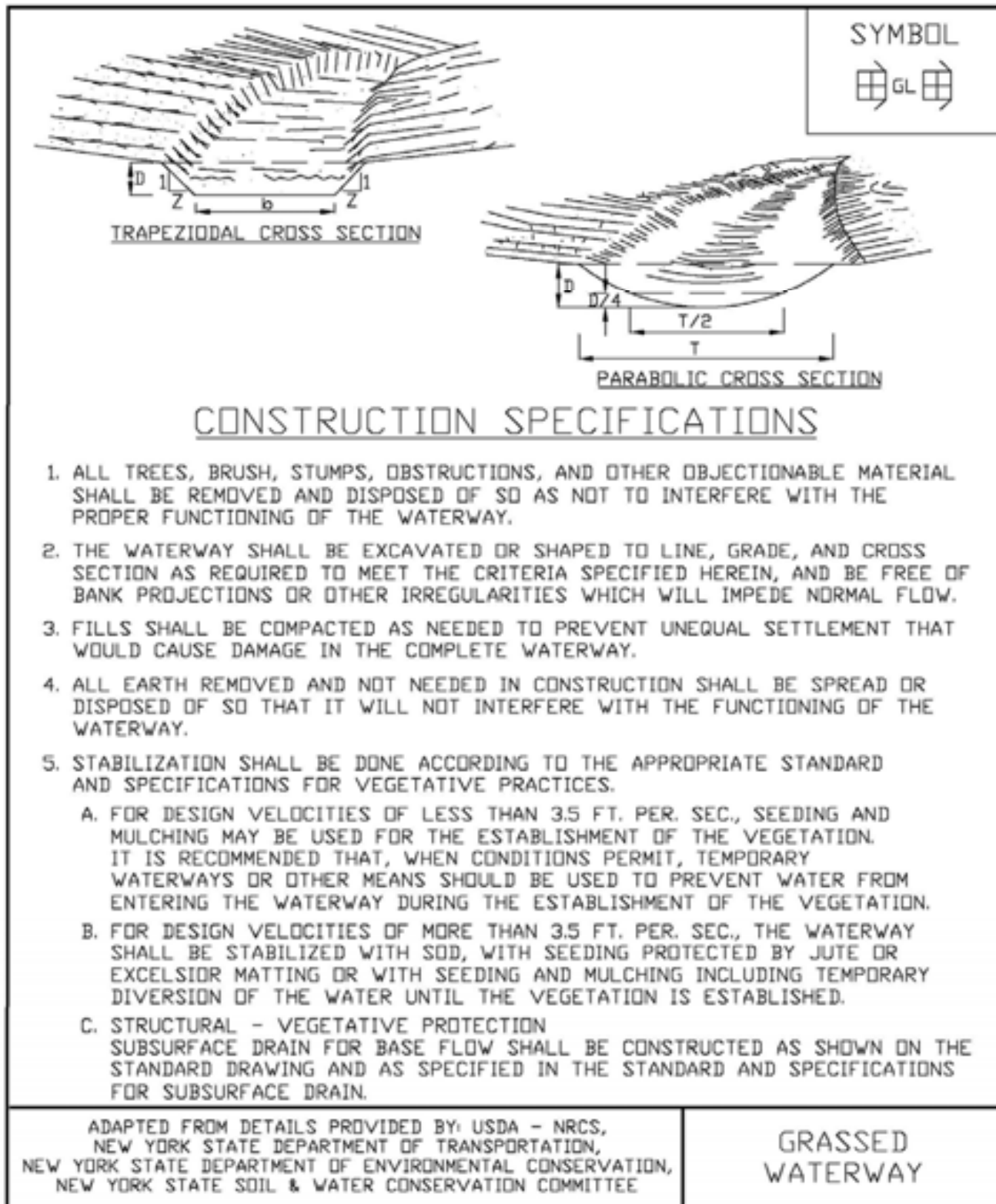


Waterway with stone center drain. "V"
 section shaped by motor grader.



Waterway with stone center drain.
 Rounded section shaped by bulldozer.

Figure 3.10
Grassed Waterway Detail



STANDARD AND SPECIFICATIONS FOR ROCK OUTLET PROTECTION



Definition & Scope

A **permanent** section of rock protection placed at the outlet end of the culverts, conduits, or channels to reduce the depth, velocity, and energy of water, such that the flow will not erode the receiving downstream reach.

Conditions Where Practice Applies

This practice applies where discharge velocities and energies at the outlets of culverts, conduits, or channels are sufficient to erode the next downstream reach. This applies to:

1. Culvert outlets of all types.
2. Pipe conduits from all sediment basins, dry storm water ponds, and permanent type ponds.
3. New channels constructed as outlets for culverts and conduits.

Design Criteria

The design of rock outlet protection depends entirely on the location. Pipe outlet at the top of cuts or on slopes steeper than 10 percent, cannot be protected by rock aprons or riprap sections due to re-concentration of flows and high velocities encountered after the flow leaves the apron.

Many counties and state agencies have regulations and design procedures already established for dimensions, type and size of materials, and locations where outlet protection is required. Where these requirements exist, they shall be followed.

Tailwater Depth

The depth of tailwater immediately below the pipe outlet

must be determined for the design capacity of the pipe. If the tailwater depth is less than half the diameter of the outlet pipe, and the receiving stream is wide enough to accept divergence of the flow, it shall be classified as a Minimum Tailwater Condition; see Figure 3.16 on page 3.42 as an example. If the tailwater depth is greater than half the pipe diameter and the receiving stream will continue to confine the flow, it shall be classified as a Maximum Tailwater Condition; see Figure 3.17 on page 3.43 as an example. Pipes which outlet onto flat areas with no defined channel may be assumed to have a Minimum Tailwater Condition; see Figure 3.16 on page 3.42 as an example.

Apron Size

The apron length and width shall be determined from the curves according to the tailwater conditions:

Minimum Tailwater – Use Figure 3.16 on page 3.42

Maximum Tailwater – Use Figure 3.17 on page 3.43

If the pipe discharges directly into a well defined channel, the apron shall extend across the channel bottom and up the channel banks to an elevation one foot above the maximum tailwater depth or to the top of the bank, whichever is less.

The upstream end of the apron, adjacent to the pipe, shall have a width two (2) times the diameter of the outlet pipe, or conform to pipe end section if used.

Bottom Grade

The outlet protection apron shall be constructed with no slope along its length. There shall be no overfall at the end of the apron. The elevation of the downstream end of the apron shall be equal to the elevation of the receiving channel or adjacent ground.

Alignment

The outlet protection apron shall be located so that there are no bends in the horizontal alignment.

Materials

The outlet protection may be done using rock riprap, grouted riprap, or gabions. Outlets constructed on the bank of a stream or wetland shall not use grouted rip-rap, gabions or concrete.

Riprap shall be composed of a well-graded mixture of rock size so that 50 percent of the pieces, by weight, shall be larger than the d_{50} size determined by using the charts. A

well-graded mixture, as used herein, is defined as a mixture composed primarily of larger rock sizes, but with a sufficient mixture of other sizes to fill the smaller voids between the rocks. The diameter of the largest rock size in such a mixture shall be 1.5 times the d_{50} size.

Thickness

The minimum thickness of the riprap layer shall be 1.5 times the maximum rock diameter for d_{50} of 15 inches or less; and 1.2 times the maximum rock size for d_{50} greater than 15 inches. The following chart lists some examples:

D₅₀ (inches)	d_{max} (inches)	Minimum Blanket Thick- ness (inches)
4	6	9
6	9	14
9	14	20
12	18	27
15	22	32
18	27	32
21	32	38
24	36	43

Rock Quality

Rock for riprap shall consist of field rock or rough unhewn quarry rock. The rock shall be hard and angular and of a quality that will not disintegrate on exposure to water or weathering. The specific gravity of the individual rocks shall be at least 2.5.

Filter

A filter is a layer of material placed between the riprap and the underlying soil surface to prevent soil movement into and through the riprap. Riprap shall have a filter placed under it in all cases.

A filter can be of two general forms: a gravel layer or a plastic filter cloth. The plastic filter cloth can be woven or non-woven monofilament yarns, and shall meet these base requirements: thickness 20-60 mils, grab strength 90-120 lbs; and shall conform to ASTM D-1777 and ASTM D-1682.

Gravel filter blanket, when used, shall be designed by comparing particle sizes of the overlying material and the base material. Design criteria are available in Standard and Specification for Anchored Slope and Channel Stabilization on page 4.7.

Gabions

Gabions shall be made of hexagonal triple twist mesh with heavily galvanized steel wire. The maximum linear dimension of the mesh opening shall not exceed 4 ½ inches and the area of the mesh opening shall not exceed 10 square inches.

Gabions shall be fabricated in such a manner that the sides, ends, and lid can be assembled at the construction site into a rectangular basket of the specified sizes. Gabions shall be of single unit construction and shall be installed according to manufacturer's recommendations.

The area on which the gabion is to be installed shall be graded as shown on the drawings. Foundation conditions shall be the same as for placing rock riprap, and filter cloth shall be placed under all gabions. Where necessary, key, or tie, the structure into the bank to prevent undermining of the main gabion structure.

Maintenance

Once a riprap outlet has been installed, the maintenance needs are very low. It should be inspected after high flows for evidence of scour beneath the riprap or for dislodged rocks. Repairs should be made immediately.

Design Procedure

1. Investigate the downstream channel to assure that nonerosive velocities can be maintained.
2. Determine the tailwater condition at the outlet to establish which curve to use.
3. Use the appropriate chart with the design discharge to determine the riprap size and apron length required. It is noted that references to pipe diameters in the charts are based on full flow. For other than full pipe flow, the parameters of depth of flow and velocity must be used to adjust the design discharges.
4. Calculate apron width at the downstream end if a flare section is to be employed.

Design Examples are demonstrated in Appendix B.

Construction Specifications

1. The subgrade for the filter, riprap, or gabion shall be prepared to the required lines and grades. Any fill required in the subgrade shall be compacted to a density of approximately that of the surrounding undisturbed material.
2. The rock or gravel shall conform to the specified grad-

ing limits when installed respectively in the riprap or filter.

3. Filter cloth shall be protected from punching, cutting, or tearing. Any damage other than an 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 one foot.
4. Rock for the riprap or gabion outlets may be placed by equipment. Both shall each be constructed to the full course thickness in one operation and in such a manner as to avoid displacement of underlying materials. The rock for riprap or gabion outlets shall be delivered and placed in a manner that will ensure that it is reasonably homogenous with the smaller rocks and spalls filling the voids between the larger rocks. Riprap shall be placed in a manner to prevent damage to the filter blanket or filter cloth. Hand placement will be required to the extent necessary to prevent damage to the permanent works.

Figure 3.18
Riprap Outlet Protection Detail (1)

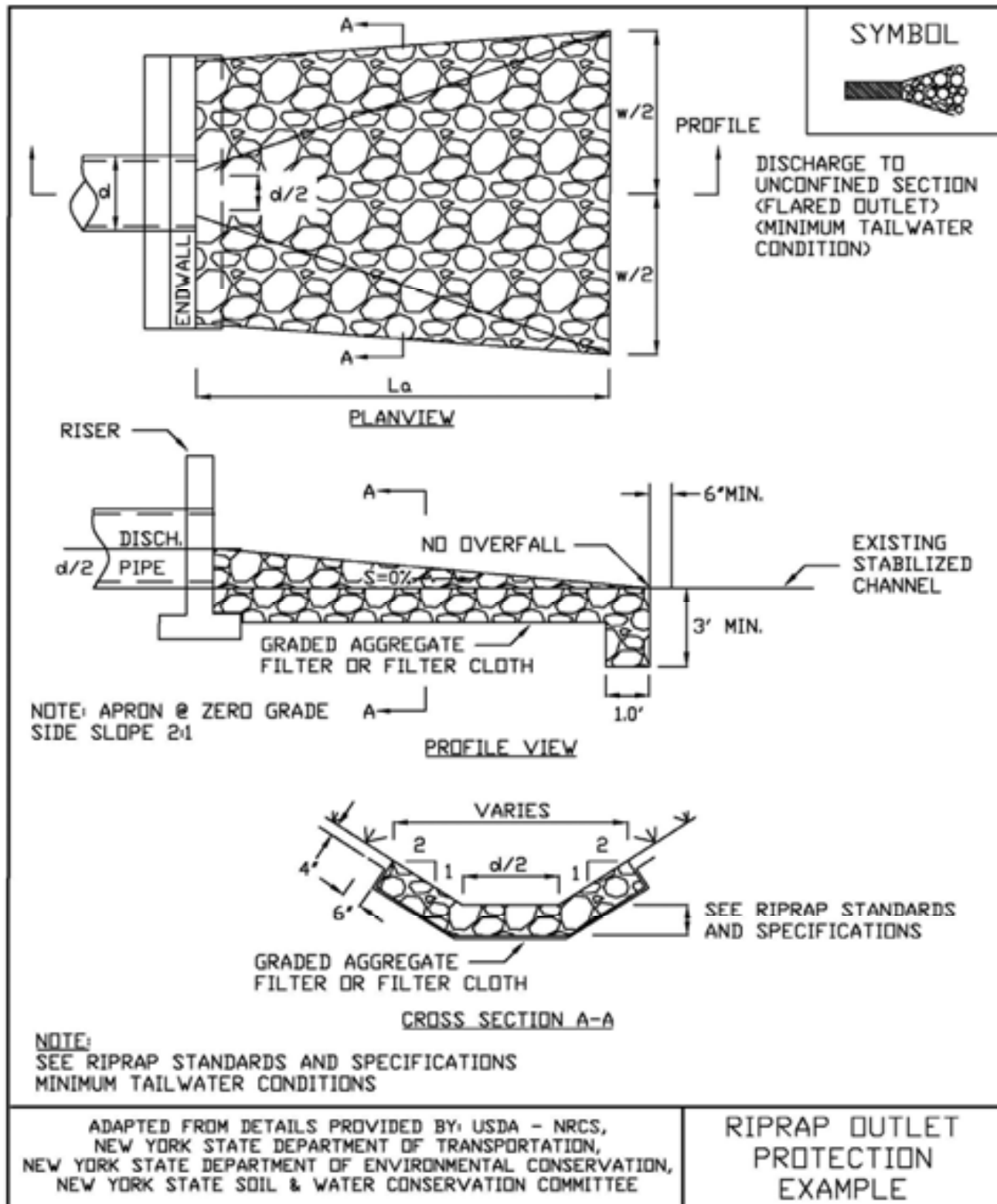


Figure 3.19
Riprap Outlet Protection Detail (2)

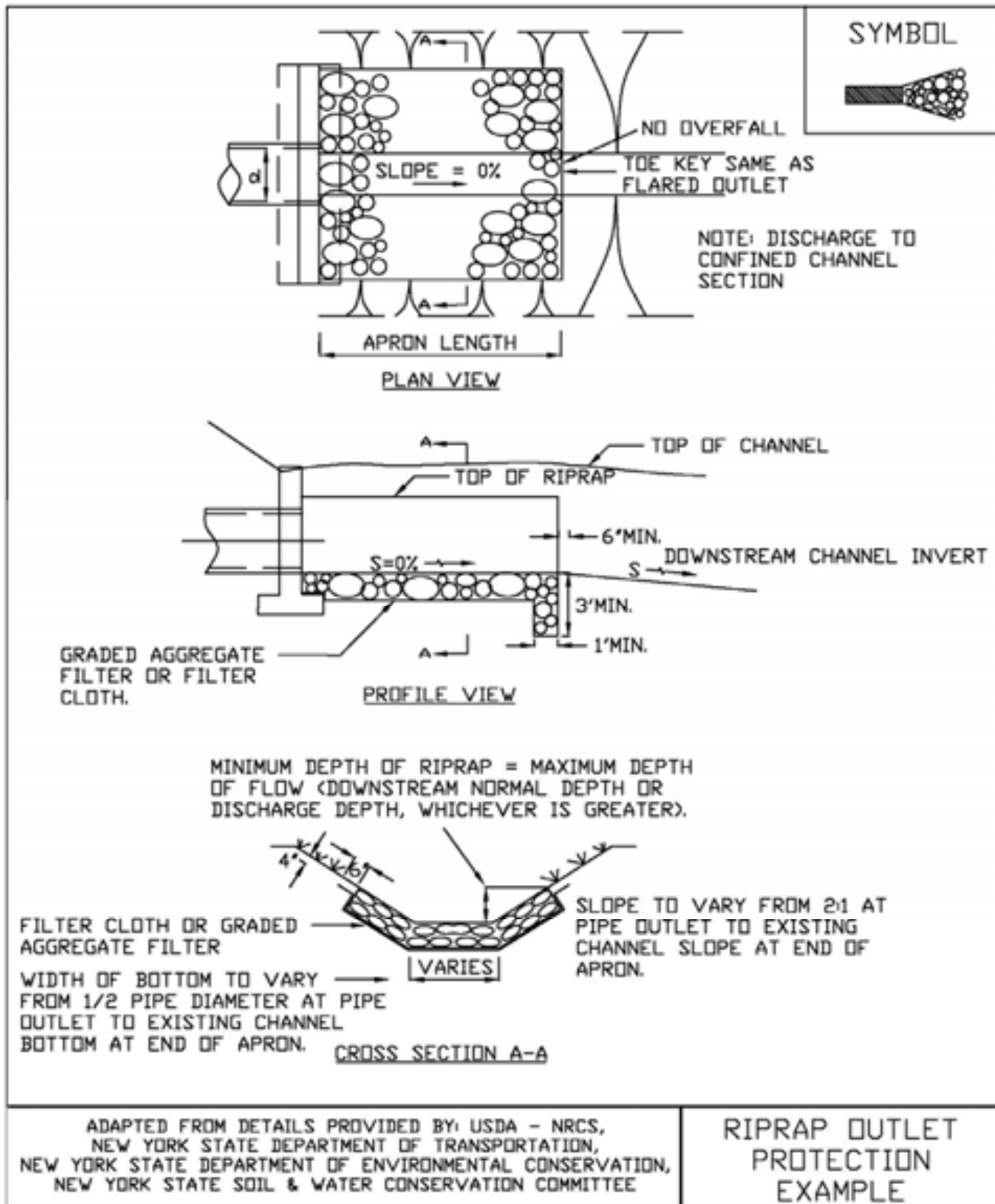
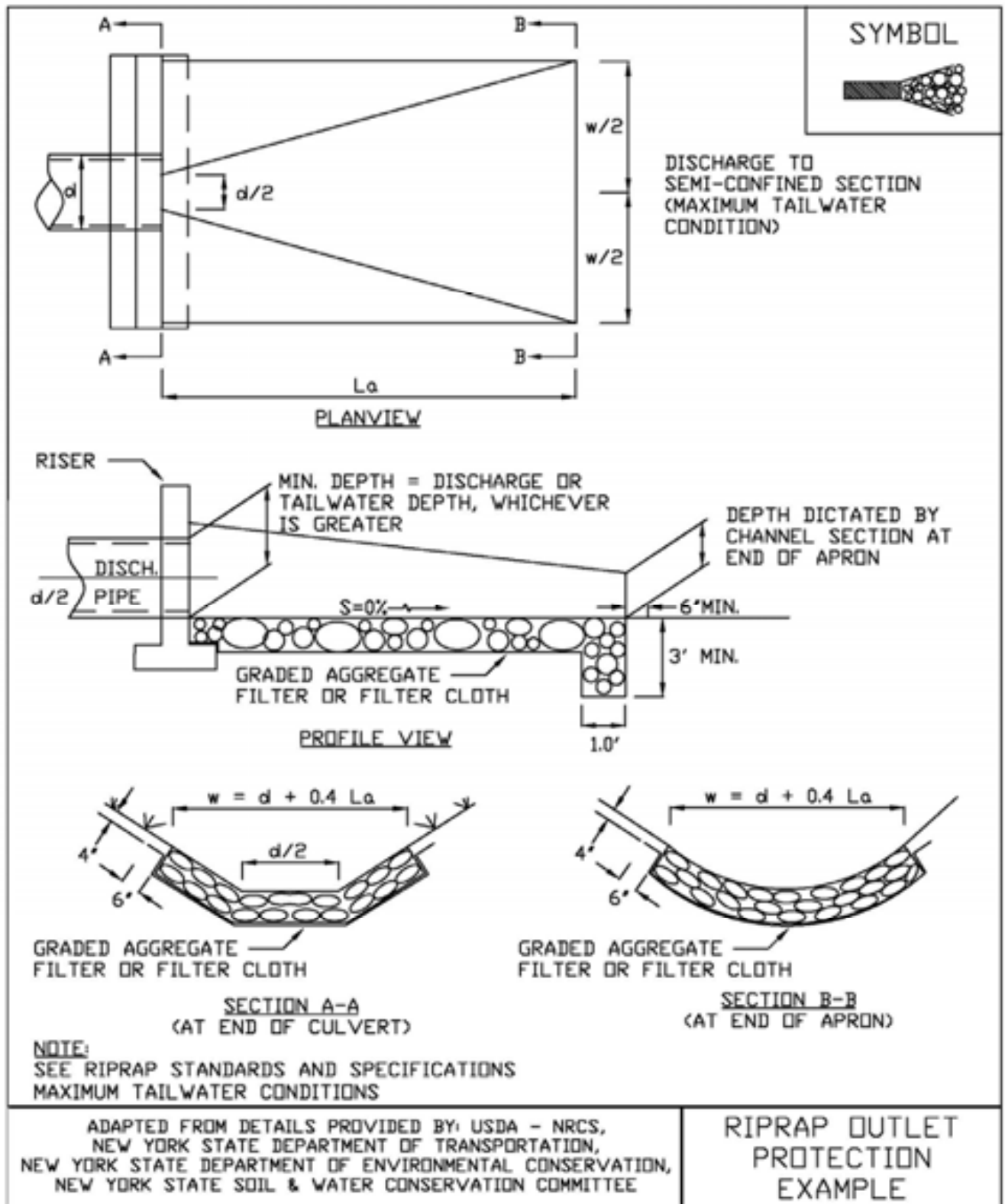


Figure 3.20
Riprap Outlet Protection Detail (3)



STANDARD AND SPECIFICATIONS FOR LANDGRADING



Definition & Scope

Permanent reshaping of the existing land surface by grading in accordance with an engineering topographic plan and specification to provide for erosion control and vegetative establishment on disturbed, reshaped areas.

Design Criteria

The grading plan should be based upon the incorporation of building designs and street layouts that fit and utilize existing topography and desirable natural surrounding to avoid extreme grade modifications. Information submitted must provide sufficient topographic surveys and soil investigations to determine limitations that must be imposed on the grading operation related to slope stability, effect on adjacent properties and drainage patterns, measures for drainage and water removal, and vegetative treatment, etc.

Many municipalities and counties have regulations and design procedures already established for land grading and cut and fill slopes. Where these requirements exist, they shall be followed.

The plan must show existing and proposed contours of the area(s) to be graded. The plan shall also include practices for erosion control, slope stabilization, safe disposal of runoff water and drainage, such as waterways, lined ditches, reverse slope benches (include grade and cross section), grade stabilization structures, retaining walls, and surface and subsurface drains. The plan shall also include phasing of these practices. The following shall be incorporated into the plan:

1. Provisions shall be made to safely convey surface runoff to storm drains, protected outlets, or to stable water courses to ensure that surface runoff will not

damage slopes or other graded areas; see standards and specifications for Grassed Waterway, Diversion, or Grade Stabilization Structure.

2. Cut and fill slopes that are to be stabilized with grasses shall not be steeper than 2:1. When slopes exceed 2:1, special design and stabilization consideration are required and shall be adequately shown on the plans. (Note: Where the slope is to be mowed, the slope should be no steeper than 3:1, although 4:1 is preferred because of safety factors related to mowing steep slopes.)
3. Reverse slope benches or diversion shall be provided whenever the vertical interval (height) of any 2:1 slope exceeds 20 feet; for 3:1 slope it shall be increased to 30 feet and for 4:1 to 40 feet. Benches shall be located to divide the slope face as equally as possible and shall convey the water to a stable outlet. Soils, seeps, rock outcrops, etc., shall also be taken into consideration when designing benches.
 - A. Benches shall be a minimum of six feet wide to provide for ease of maintenance.
 - B. Benches shall be designed with a reverse slope of 6:1 or flatter to the toe of the upper slope and with a minimum of one foot in depth. Bench gradient to the outlet shall be between 2 percent and 3 percent, unless accompanied by appropriate design and computations.
 - C. The flow length within a bench shall not exceed 800 feet unless accompanied by appropriate design and computations; see Standard and Specifications for Diversion on page 3.9
4. Surface water shall be diverted from the face of all cut and/or fill slopes by the use of diversions, ditches and swales or conveyed downslope by the use of a designed structure, except where:
 - A. The face of the slope is or shall be stabilized and the face of all graded slopes shall be protected from surface runoff until they are stabilized.
 - B. The face of the slope shall not be subject to any concentrated flows of surface water such as from natural drainage ways, graded ditches, downspouts, etc.
 - C. The face of the slope will be protected by anchored stabilization matting, sod, gravel, riprap, or other stabilization method.

5. Cut slopes occurring in ripable rock shall be serrated as shown in Figure 4.9 on page 4.26. The serrations shall be made with conventional equipment as the excavation is made. Each step or serration shall be constructed on the contour and will have steps cut at nominal two-foot intervals with nominal three-foot horizontal shelves. These steps will vary depending on the slope ratio or the cut slope. The nominal slope line is 1 ½: 1. These steps will weather and act to hold moisture, lime, fertilizer, and seed thus producing a much quicker and longer-lived vegetative cover and better slope stabilization. Overland flow shall be diverted from the top of all serrated cut slopes and carried to a suitable outlet.
6. Subsurface drainage shall be provided where necessary to intercept seepage that would otherwise adversely affect slope stability or create excessively wet site conditions.
7. Slopes shall not be created so close to property lines as to endanger adjoining properties without adequately protecting such properties against sedimentation, erosion, slippage, settlement, subsidence, or other related damages.
8. Fill material shall be free of brush, rubbish, rocks, logs, stumps, building debris, and other objectionable material. It should be free of stones over two (2) inches in diameter where compacted by hand or mechanical tampers or over eight (8) inches in diameter where compacted by rollers or other equipment. Frozen material shall not be placed in the fill nor shall the fill material be placed on a frozen foundation.
9. Stockpiles, borrow areas, and spoil shall be shown on the plans and shall be subject to the provisions of this Standard and Specifications.
10. All disturbed areas shall be stabilized structurally or vegetatively in compliance with the Permanent Construction Area Planting Standard on page 4.42.
4. Areas to be filled shall be cleared, grubbed, and stripped of topsoil to remove trees, vegetation, roots, or other objectionable material.
5. Areas that are to be topsoiled shall be scarified to a minimum depth of four inches prior to placement of topsoil.
6. All fills shall be compacted as required to reduce erosion, slippage, settlement, subsidence, or other related problems. Fill intended to support buildings, structures, and conduits, etc., shall be compacted in accordance with local requirements or codes.
7. All fill shall be placed and compacted in layers not to exceed 9 inches in thickness.
8. Except for approved landfills or nonstructural fills, fill material shall be free of frozen particles, brush, roots, sod, or other foreign objectionable materials that would interfere with, or prevent, construction of satisfactory fills.
9. Frozen material or soft, mucky or highly compressible materials shall not be incorporated into fill slopes or structural fills.
10. Fill shall not be placed on saturated or frozen surfaces.
11. All benches shall be kept free of sediment during all phases of development.
12. Seeps or springs encountered during construction shall be handled in accordance with the Standard and Specification for Subsurface Drain on page 3.48 or other approved methods.
13. All graded areas shall be permanently stabilized immediately following finished grading.
14. Stockpiles, borrow areas, and spoil areas shall be shown on the plans and shall be subject to the provisions of this Standard and Specifications.

Construction Specifications

See Figures 4.9 and 4.10 for details.

1. All graded or disturbed areas, including slopes, shall be protected during clearing and construction in accordance with the erosion and sediment control plan until they are adequately stabilized.
2. All erosion and sediment control practices and measures shall be constructed, applied and maintained in accordance with the erosion and sediment control plan and these standards.
3. Topsoil required for the establishment of vegetation shall be stockpiled in amount necessary to complete finished grading of all exposed areas.



Figure 4.11
Landgrading - Construction Specifications

<u>CONSTRUCTION SPECIFICATIONS</u>	
<ol style="list-style-type: none"> 1. ALL GRADED OR DISTURBED AREAS INCLUDING SLOPES SHALL BE PROTECTED DURING CLEARING AND CONSTRUCTION IN ACCORDANCE WITH THE APPROVED EROSION AND SEDIMENT CONTROL PLAN UNTIL THEY ARE PERMANENTLY STABILIZED. 2. ALL SEDIMENT CONTROL PRACTICES AND MEASURES SHALL BE CONSTRUCTED, APPLIED AND MAINTAINED IN ACCORDANCE WITH THE APPROVED EROSION AND SEDIMENT CONTROL PLAN. 3. TOPSOIL REQUIRED FOR THE ESTABLISHMENT OF VEGETATION SHALL BE STOCKPILED IN AMOUNT NECESSARY TO COMPLETE FINISHED GRADING OF ALL EXPOSED AREAS. 4. AREAS TO BE FILLED SHALL BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS OR OTHER OBJECTIONABLE MATERIAL. 5. AREAS WHICH ARE TO BE TOPSOILED SHALL BE SCARIFIED TO A MINIMUM DEPTH OF FOUR INCHES PRIOR TO PLACEMENT OF TOPSOIL. 6. ALL FILLS SHALL BE COMPACTED AS REQUIRED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE OR OTHER RELATED PROBLEMS. FILL INTENDED TO SUPPORT BUILDINGS, STRUCTURES AND CONDUITS, ETC. SHALL BE COMPACTED IN ACCORDANCE WITH LOCAL REQUIREMENTS OR CODES. 7. ALL FILL SHALL BE PLACED AND COMPACTED IN LAYERS NOT TO EXCEED 9 INCHES IN THICKNESS. 8. EXCEPT FOR APPROVED LANDFILLS, FILL MATERIAL SHALL BE FREE OF FROZEN PARTICLES, BRUSH, ROOTS, SOD, OR OTHER FOREIGN OR OTHER OBJECTIONABLE MATERIALS THAT WOULD INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY FILLS. 9. FROZEN MATERIALS OR SOFT, MUCKY OR HIGHLY COMPRESSIBLE MATERIALS SHALL NOT BE INCORPORATED IN FILLS. 10. FILL SHALL NOT BE PLACED ON SATURATED OR FROZEN SURFACES. 11. ALL BENCHES SHALL BE KEPT FREE OF SEDIMENT DURING ALL PHASES OF DEVELOPMENT. 12. SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED IN ACCORDANCE WITH THE STANDARD AND SPECIFICATION FOR SUBSURFACE DRAIN OR OTHER APPROVED METHOD. 13. ALL GRADED AREAS SHALL BE PERMANENTLY STABILIZED IMMEDIATELY FOLLOWING FINISHED GRADING. 14. STOCKPILES, BORROW AREAS AND SPOIL AREAS SHALL BE SHOWN ON THE PLANS AND SHALL BE SUBJECT TO THE PROVISIONS OF THIS STANDARD AND SPECIFICATION. 	
ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE	LANDGRADING SPECIFICATIONS

STANDARD AND SPECIFICATIONS FOR MULCHING



Definition and Scope

Applying coarse plant residue or chips, or other suitable materials, to cover the soil surface to provide initial erosion control while a seeding or shrub planting is establishing. Mulch will conserve moisture and modify the surface soil temperature and reduce fluctuation of both. Mulch will prevent soil surface crusting and aid in weed control. Mulch can also be used alone for temporary stabilization in non-growing months. Use of stone as a mulch could be more permanent and should not be limited to non-growing months.

Conditions Where Practice Applies

On soils subject to erosion and on new seedlings and shrub plantings. Mulch is useful on soils with low infiltration rates by retarding runoff.

Criteria

Site preparation prior to mulching requires the installation of necessary erosion control or water management practices and drainage systems.

Slope, grade and smooth the site to fit needs of selected mulch products.

Remove all undesirable stones and other debris to meet the needs of the anticipated land use and maintenance required.

Apply mulch after soil amendments and planting is accomplished or simultaneously if hydroseeding is used.

Select appropriate mulch material and application rate or material needs. Hay mulch shall not be used in wetlands or in areas of permanent seeding. Clean straw mulch is preferred alternative in wetland application. Determine local availability.

Select appropriate mulch anchoring material.

NOTE: The best combination for grass/legume establishment is straw (cereal grain) mulch applied at 2 ton/acre (90 lbs./1000sq.ft.) and anchored with wood fiber mulch (hydromulch) at 500 – 750 lbs./acre (11 – 17 lbs./1000 sq. ft.). The wood fiber mulch must be applied through a hydroseeder immediately after mulching.



Table 4.2
Guide to Mulch Materials, Rates, and Uses

Mulch Material	Quality Standards	per 1000 Sq. Ft.	per Acre	Depth of Application	Remarks
Wood chips or shavings	Air-dried. Free of objectionable coarse material	500-900 lbs.	10-20 tons	2-7"	Used primarily around shrub and tree plantings and recreation trails to inhibit weed competition. Resistant to wind blowing. Decomposes slowly.
Wood fiber cellulose (partly digested wood fibers)	Made from natural wood usually with green dye and dispersing agent	50 lbs.	2,000 lbs.	—	Apply with hydromulcher. No tie down required. Less erosion control provided than 2 tons of hay or straw.
Gravel, Crushed Stone or Slag	Washed; Size 2B or 3A—1 1/2"	9 cu. yds.	405 cu. yds.	3"	Excellent mulch for short slopes and around plants and ornamentals. Use 2B where subject to traffic. (Approximately 2,000 lbs./cu. yd.). Frequently used over filter fabric for better weed control.
Hay or Straw	Air-dried; free of undesirable seeds & coarse materials	90-100 lbs. 2-3 bales	2 tons (100-120 bales)	cover about 90% surface	Use small grain straw where mulch is maintained for more than three months. Subject to wind blowing unless anchored. Most commonly used mulching material. Provides the best micro-environment for germinating seeds.
Jute twisted yarn	Undyed, unbleached plain weave. Warp 78 ends/yd., Weft 41 ends/yd. 60-90 lbs./roll	48" x 50 yds. or 48" x 75 yds.	—	—	Use without additional mulch. Tie down as per manufacturers specifications. Good for center line of concentrated water flow.
Excelsior wood fiber mats	Interlocking web of excelsior fibers with photodegradable plastic netting	4' x 112.5' or 8' x 112.5'.	—	—	Use without additional mulch. Excellent for seeding establishment. Anchor as per manufacturers specifications. Approximately 72 lbs./roll for excelsior with plastic on both sides. Use two sided plastic for centerline of waterways.
Straw or coconut fiber, or combination	Photodegradable plastic net on one or two sides	Most are 6.5 ft. x 3.5 ft.	81 rolls	—	Designed to tolerate higher velocity water flow, centerlines of waterways, 60 sq. yds. per roll.

Table 4.3
Mulch Anchoring Guide

Anchoring Method or Material	Kind of Mulch to be Anchored	How to Apply
1. Peg and Twine	Hay or straw	After mulching, divide areas into blocks approximately 1 sq. yd. in size. Drive 4-6 pegs per block to within 2" to 3" of soil surface. Secure mulch to surface by stretching twine between pegs in criss-cross pattern on each block. Secure twine around each peg with 2 or more tight turns. Drive pegs flush with soil. Driving stakes into ground tightens the twine.
2. Mulch netting	Hay or straw	Staple the light-weight paper, jute, wood fiber, or plastic nettings to soil surface according to manufacturer's recommendations. Should be biodegradable. Most products are not suitable for foot traffic.
3. Wood cellulose fiber	Hay or straw	Apply with hydroseeder immediately after mulching. Use 500 lbs. wood fiber per acre. Some products contain an adhesive material ("tackifier"), possibly advantageous.
4. Mulch anchoring tool	Hay or straw	Apply mulch and pull a mulch anchoring tool (blunt, straight discs) over mulch as near to the contour as possible. Mulch material should be "tucked" into soil surface about 3".
5. Tackifier	Hay or straw	Mix and apply polymeric and gum tackifiers according to manufacturer's instructions. Avoid application during rain. A 24-hour curing period and a soil temperature higher than 45 ⁰ Fahrenheit are required.

STANDARD AND SPECIFICATIONS FOR SOIL RESTORATION



Definition & Scope

The decompaction of areas of a development site or construction project where soils have been disturbed to recover the original properties and porosity of the soil; thus providing a sustainable growth medium for vegetation, reduction of runoff and filtering of pollutants from stormwater runoff.

Conditions Where Practice Applies

Soil restoration is to be applied to areas whose heavy construction traffic is done and final stabilization is to begin. This is generally applied in the cleanup, site restoration, and landscaping phase of construction followed by the permanent establishment of an appropriate ground cover to maintain the soil structure. Soil restoration measures should be applied over and adjacent to any runoff reduction practices to achieve design performance.



Design Criteria

1. Soil restoration areas will be designated on the plan views of areas to be disturbed.

2. Soil restoration will be completed in accordance with Table 4.6 on page 4.53.

Specification for Full Soil Restoration

During periods of relatively low to moderate subsoil moisture, the disturbed subsoils are returned to rough grade and the following Soil Restoration steps applied:

1. Apply 3 inches of compost over subsoil. The compost shall be well decomposed (matured at least 3 months), weed-free, organic matter. It shall be aerobically composted, possess no objectionable odors, and contain less than 1%, by dry weight, of man-made foreign matter. The physical parameters of the compost shall meet the standards listed in Table 5.2 - Compost Standards Table, except for "Particle Size" 100% will pass the 1/2" sieve. **Note: All biosolids compost produced in New York State (or approved for importation) must meet NYS DEC's 6 NYCRR Part 360 (Solid Waste Management Facilities) requirements. The Part 360 requirements are equal to or more stringent than 40 CFR Part 503 which ensure safe standards for pathogen reduction and heavy metals content.**



2. Till compost into subsoil to a depth of at least 12 inches using a cat-mounted ripper, tractor mounted disc, or tiller, to mix and circulate air and compost into the subsoil.
3. Rock-pick until uplifted stone/rock materials of four inches and larger size are cleaned off the site.
4. Apply topsoil to a depth of 6 inches.
5. Vegetate as required by the seeding plan. Use appropriate ground cover with deep roots to maintain the soil structure.
6. Topsoil may be manufactured as a mixture or a mineral component and organic material such as compost.

At the end of the project an inspector should be able to push a 3/8" metal bar 12 inches into the soil just with body weight. This should not be performed within the drip line of any existing trees or over utility installations that are within 24 inches of the surface.

Maintenance

Keep the site free of vehicular and foot traffic or other weight loads. Consider pedestrian footpaths.

Table 4.6
Soil Restoration Requirements

Type of Soil Disturbance	Soil Restoration Requirement		Comments/Examples
No soil disturbance	Restoration not permitted		Preservation of Natural Features
Minimal soil disturbance	Restoration not required		Clearing and grubbing
Areas where topsoil is stripped only - no change in grade	HSG A&B	HSG C&D	Protect area from any ongoing construction activities.
	Apply 6 inches of topsoil	Aerate* and apply 6 inches of topsoil	
Areas of cut or fill	HSG A&B	HSG C&D	
	Aerate* and apply 6 inches of topsoil	Apply full Soil Restoration**	
Heavy traffic areas on site (especially in a zone 5-25 feet around buildings but not within a 5 foot perimeter around foundation walls)	Apply full Soil Restoration (decompaction and compost enhancement)		
Areas where Runoff Reduction and/or Infiltration practices are applied	Restoration not required, but may be applied to enhance the reduction specified for appropriate practices.		Keep construction equipment from crossing these areas. To protect newly installed practice from any ongoing construction activities construct a single phase operation fence area
Redevelopment projects	Soil Restoration is required on redevelopment projects in areas where existing impervious area will be converted to pervious area.		
* Aeration includes the use of machines such as tractor-drawn implements with coulters making a narrow slit in the soil, a roller with many spikes making indentations in the soil, or prongs which function like a mini-subsoiler.			
** Per “Deep Ripping and De-compaction, DEC 2008”.			

STANDARD AND SPECIFICATIONS FOR SILT FENCE



Definition & Scope

A **temporary** barrier of geotextile fabric installed on the contours across a slope used to intercept sediment laden runoff from small drainage areas of disturbed soil by temporarily ponding the sediment laden runoff allowing settling to occur. The maximum period of use is limited by the ultraviolet stability of the fabric (approximately one year).

Conditions Where Practice Applies

A silt fence may be used subject to the following conditions:

1. Maximum allowable slope length and fence length will not exceed the limits shown in the Design Criteria for the specific type of silt fence used ; and
2. Maximum ponding depth of 1.5 feet behind the fence; and
3. Erosion would occur in the form of sheet erosion; and
4. There is no concentration of water flowing to the barrier; and
5. Soil conditions allow for proper keying of fabric, or other anchorage, to prevent blowouts.

Design Criteria

1. Design computations are not required for installations of 1 month or less. Longer installation periods should be designed for expected runoff.
2. All silt fences shall be placed as close to the disturbed area as possible, but at least 10 feet from the toe of a slope steeper than 3H:1V, to allow for maintenance and

roll down. The area beyond the fence must be undisturbed or stabilized.

3. The type of silt fence specified for each location on the plan shall not exceed the maximum slope length and maximum fence length requirements shown in the following table:

		Slope Length/Fence Length (ft.)		
Slope	Steepness	Standard	Reinforced	Super
<2%	< 50:1	300/1500	N/A	N/A
2-10%	50:1 to 10:1	125/1000	250/2000	300/2500
10-20%	10:1 to 5:1	100/750	150/1000	200/1000
20-33%	5:1 to 3:1	60/500	80/750	100/1000
33-50%	3:1 to 2:1	40/250	70/350	100/500
>50%	> 2:1	20/125	30/175	50/250

Standard Silt Fence (SF) is fabric rolls stapled to wooden stakes driven 16 inches in the ground.

Reinforced Silt Fence (RSF) is fabric placed against welded wire fabric with anchored steel posts driven 16 inches in the ground.

Super Silt Fence (SSF) is fabric placed against chain link fence as support backing with posts driven 3 feet in the ground.

4. Silt fence shall be removed as soon as the disturbed area has achieved final stabilization.

The silt fence shall be installed in accordance with the appropriate details. Where ends of filter cloth come together, they shall be overlapped, folded and stapled to prevent sediment bypass. Butt joints are not acceptable. A detail of the silt fence shall be shown on the plan. See Figure 5.30 on page 5.56 for Reinforced Silt Fence as an example of details to be provided.

Criteria for Silt Fence Materials

1. Silt Fence Fabric: The fabric shall meet the following specifications unless otherwise approved by the appropriate erosion and sediment control plan approval authority. Such approval shall not constitute statewide acceptance.

Fabric Properties	Minimum Acceptable Value	Test Method
Grab Tensile Strength (lbs)	110	ASTM D 4632
Elongation at Failure (%)	20	ASTM D 4632
Mullen Burst Strength (PSI)	300	ASTM D 3786
Puncture Strength (lbs)	60	ASTM D 4833
Minimum Trapezoidal Tear Strength (lbs)	50	ASTM D 4533
Flow Through Rate (gal/min/sf)	25	ASTM D 4491
Equivalent Opening Size	40-80	US Std Sieve ASTM D 4751
Minimum UV Residual (%)	70	ASTM D 4355

Super Silt Fence

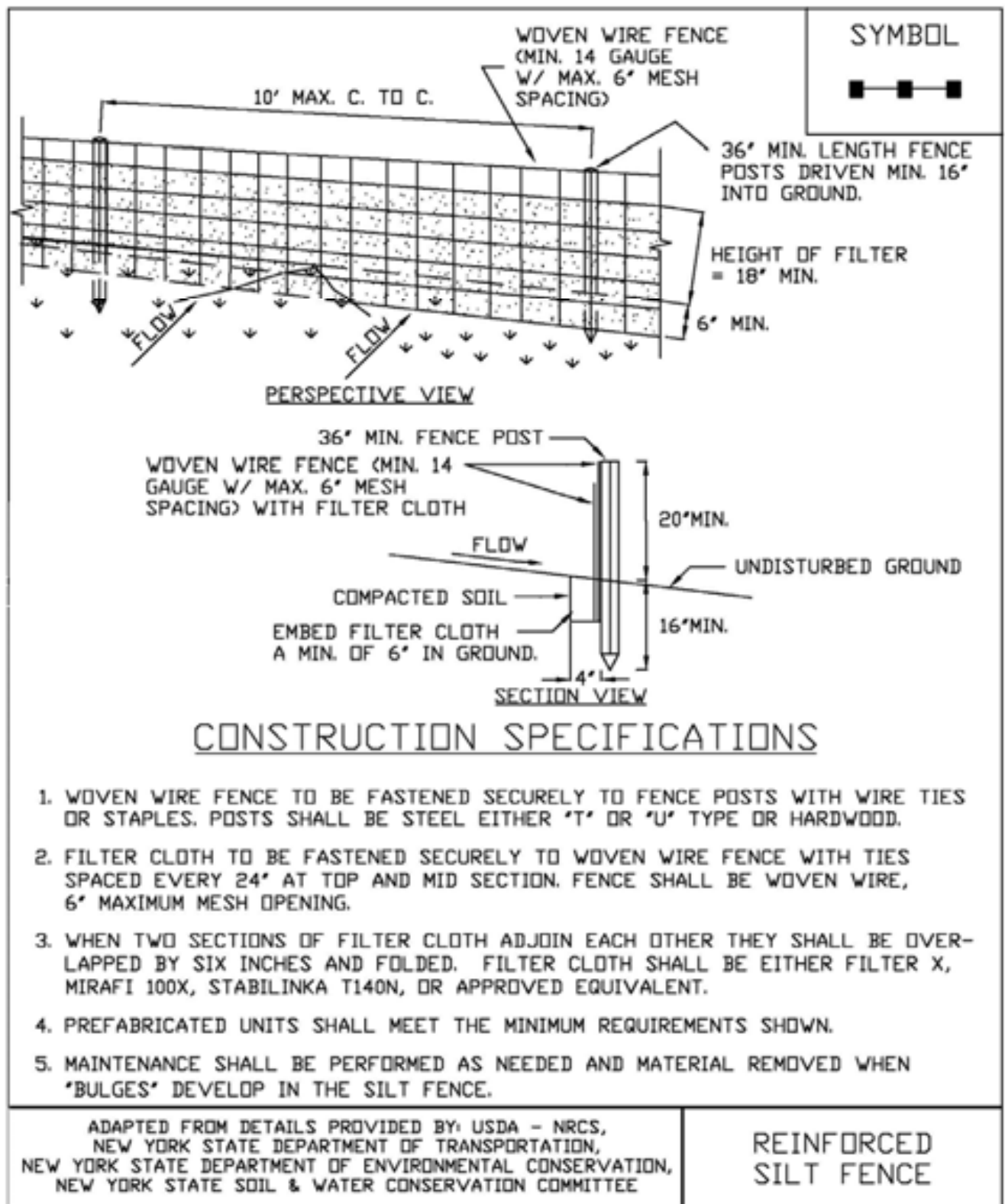


2. Fence Posts (for fabricated units): The length shall be a minimum of 36 inches long. Wood posts will be of sound quality hardwood with a minimum cross sectional area of 3.5 square inches. Steel posts will be standard T and U section weighing not less than 1.00 pound per linear foot. Posts for super silt fence shall be standard chain link fence posts.
3. Wire Fence for reinforced silt fence: Wire fencing shall be a minimum 14 gage with a maximum 6 in. mesh opening, or as approved.
4. Prefabricated silt fence is acceptable as long as all material specifications are met.

Reinforced Silt Fence



Figure 5.30
Reinforced Silt Fence



STANDARD AND SPECIFICATIONS FOR TEMPORARY CONSTRUCTION AREA SEEDING



Definition & Scope

Providing temporary erosion control protection to disturbed areas and/or localized critical areas for an interim period by covering all bare ground that exists as a result of construction activities or a natural event. Critical areas may include but are not limited to steep excavated cut or fill slopes and any disturbed, denuded natural slopes subject to erosion.

Conditions Where Practice Applies

Temporary seedings may be necessary on construction sites to protect an area, or section, where final grading is complete, when preparing for winter work shutdown, or to provide cover when permanent seedings are likely to fail due to mid-summer heat and drought. The intent is to provide temporary protective cover during temporary shutdown of construction and/or while waiting for optimal planting time.

Criteria

Water management practices must be installed as appropriate for site conditions. The area must be rough graded and slopes physically stable. Large debris and rocks are usually removed. Seedbed must be seeded within 24 hours of disturbance or scarification of the soil surface will be necessary prior to seeding.

Fertilizer or lime are not typically used for temporary seedings.

IF: Spring or summer or early fall, then seed the area with ryegrass (annual or perennial) at 30 lbs. per acre (Approximately 0.7 lb./1000 sq. ft. or use 1 lb./1000 sq. ft.).

IF: Late fall or early winter, then seed Certified 'Aroostook' winter rye (cereal rye) at 100 lbs. per acre (2.5 lbs./1000 sq. ft.).

Any seeding method may be used that will provide uniform application of seed to the area and result in relatively good soil to seed contact.

Mulch the area with hay or straw at 2 tons/acre (approx. 90 lbs./1000 sq. ft. or 2 bales). Quality of hay or straw mulch allowable will be determined based on long term use and visual concerns. Mulch anchoring will be required where wind or areas of concentrated water are of concern. Wood fiber hydromulch or other sprayable products approved for erosion control (nylon web or mesh) may be used if applied according to manufacturers' specification. Caution is advised when using nylon or other synthetic products. They may be difficult to remove prior to final seeding and can be a hazard to young wildlife species.

STANDARD AND SPECIFICATIONS FOR SEDIMENT TRAP



Definition & Scope

A **temporary** sediment control device formed by excavation and/or embankment to intercept sediment-laden runoff and trap the sediment in order to protect drainageways, properties, and rights-of-way below the sediment trap from sedimentation.

Conditions Where Practice Applies

A sediment trap is usually installed in a drainageway, at a storm drain inlet, or other points of collection from a disturbed area for one construction season.

Sediment traps should be used to artificially break up the natural drainage area into smaller sections where a larger device (sediment basin) would be less effective.

Design Criteria

If the drainage area to the proposed trap location exceeds 5 acres, or the trap is in place beyond one construction season, or any of the additional design criteria presented here cannot be met, a full Sediment Basin must be used. See Standard and Specification for Sediment Basin on page 5.19.

Drainage Area

The maximum drainage area for all sediment traps shall be 5 acres.

Location

Sediment traps shall be located so that they can be installed prior to grading or filling in the drainage area they are to protect. Traps must **not be located any closer than 20 feet** from a proposed building foundation if the trap is to func-

tion during building construction. Locate traps to obtain maximum storage benefit from the terrain and for ease of cleanout and disposal of the trapped sediment.

Trap Size

The volume of a sediment trap as measured at the elevation of the crest of the outlet shall be at least 3,600 cubic feet per acre of drainage area. A minimum length to width ratio of 2:1 should be provided. The volume of a constructed trap shall be calculated using standard mathematical procedures. The volume of a natural sediment trap may be approximated by the equation: Volume (cu.ft.) = 0.4 x surface area (sq.ft.) x maximum depth (ft.).

Trap Cleanout

Sediment shall be removed and the trap restored to the original dimensions when the sediment has accumulated to $\frac{1}{2}$ of the design depth of traps I-II, and $\frac{1}{3}$ the depth for trap III. Sediment removed from the trap shall be deposited in a protected area and in such a manner that it will not erode.

Embankment

All earth embankments for sediment traps shall not exceed five (5) feet in height as measured at the low point of the original ground along the centerline of the embankment. Embankments shall have a minimum four (4) foot wide top and side slopes of 2:1 or flatter. The embankment shall be compacted by traversing with equipment while it is being constructed. The embankment shall be stabilized with seed and mulch as soon as it is completed.

The elevation of the top of any dike directing water to any sediment trap will equal or exceed the maximum height of the outlet structure along the entire length of the trap.

Excavation

All excavation operations shall be carried out in such a manner that erosion and water pollution shall be minimal. Excavated portions of sediment traps shall have 1:1 or flatter slopes.

Outlet

The outlet shall be designed, constructed, and maintained in such a manner that sediment does not leave the trap and that erosion at or below the outlet does not occur.

Sediment traps must outlet onto stabilized (preferable undisturbed) ground, into a watercourse, stabilized channel, or into a storm drain system. Distance between inlet and outlet should be maximized to the longest length practicable.

All traps must be seeded and mulched immediately after construction.

Trap Details Needed on Erosion and Sediment Control Plans

Each trap shall be delineated on the plans in such a manner that it will not be confused with any other features. Each trap on a plan shall indicate all the information necessary to properly construct and maintain the structure. If the drawings are such that this information cannot be delineated on the drawings, then a table shall be developed. If a table is developed, then each trap on a plan shall have a number and the numbers shall be consecutive.

The following information shall be shown for each trap in a summary table format on the plans.

1. Trap number
2. Type of trap
3. Drainage area
4. Storage required
5. Storage provided (if applicable)
6. Outlet length or pipe sizes
7. Storage depth below outlet or cleanout elevation
8. Embankment height and elevation (if applicable)

Type of Sediment Traps

There are three (3) specific types of sediment traps which vary according to their function, location, or drainage area.

- I. Pipe Outlet Sediment Trap
- II. Stone Outlet Sediment Trap
- III. Compost Filter Sock Sediment Trap

I. Pipe Outlet Sediment Trap

A Pipe Outlet Sediment Trap consists of a trap formed by embankment or excavation. The outlet for the trap is through a perforated riser and a pipe through the embankment. The outlet pipe and riser shall be made of steel, corrugated metal or other suitable material. The top of the embankment shall be at least 1 ½ feet above the crest of the riser. The preferred method of dewatering the sediment trap is by surface skimmer. See Dewatering Device Standard, page 5.10. If the riser alone is used for dewatering, the top 2/3 of the riser shall be perforated with one (1) inch nominal diameter holes or slits spaced six (6) inches vertically and horizontally placed in the concave portion of the corrugated pipe.

No holes or slits will be allowed within six (6) inches of the top of the horizontal barrel. All pipe connections shall be watertight. The riser shall be wrapped with ½ to ¼ inch hardware cloth wire then wrapped with filter cloth with a sieve size between #40-80 and secured with strapping or connecting band at the top and bottom of the cloth. The

cloth shall cover an area at least six (6) inches above the highest hole and six (6) inches below the lowest hole. The top of the riser pipe shall not be covered with filter cloth. The riser shall have a base with sufficient weight to prevent flotation of the riser. Two approved bases are:

1. A concrete base 12 in. thick with the riser embedded 9 in. into the concrete base, or
2. One quarter inch, minimum, thick steel plate attached to the riser by a continuous weld around the circumference of the riser to form a watertight connection. The plate shall have 2.5 feet of stone, gravel, or earth placed on it to prevent flotation. In either case, each side of the square base measurement shall be the riser diameter plus 24 inches.

Pipe outlet sediment traps shall be limited to a five (5) acre maximum drainage area. Pipe outlet sediment trap is interchangeable in the field with stone outlet provided that these sediment traps are constructed in accordance with the detail and specifications for that trap.

Select pipe diameter from the following table:
See details for Pipe Outlet Sediment Trap ST-I in Figure 5.25 and 5.26 on pages 5.49 and 5.50.

Optional sediment trap dewatering devices are shown on Figure 5.29 on Page 5.53.

Minimum Sizes

Barrel Diameter¹ (in.)	Riser Diameter¹ (in.)	Maximum Drainage Area (ac.)
12	15	1
15	18	2
18	21	3
21	24	4
21	27	5

¹ Barrel diameter may be same size as riser diameter



II. Stone Outlet Sediment Trap

A Stone Outlet Sediment Trap consists of a trap formed by an embankment or excavation. The outlet of this trap is over a stone section placed on level ground. The minimum length (feet) of the outlet shall be equal to four (4) times the drainage area (acres).

Required storage shall be 3,600 cubic feet per acre of drainage area.

The outlet crest (top of stone in weir section) shall be level, at least one (1) foot below top of embankment and no more than one (1) foot above ground beneath the outlet. Stone used in the outlet shall be small riprap (4 in. x 8 in.). To provide more efficient trapping effect, a layer of filter cloth should be embedded one (1) foot back into the upstream face of the outlet stone or a one (1) foot thick layer of two (2) inch or finer aggregate shall be placed on the upstream face of the outlet.

Stone Outlet Sediment Traps may be interchangeable in the field with pipe outlet sediment traps provided they are constructed in accordance with the detail and specifications for those traps. Stone outlet sediment traps shall be limited to a five (5) acre maximum drainage area.

See details for Stone Outlet Sediment Trap ST-II in Figure 5.27 on page 5.51



III. Compost Sock Sediment Trap

A compost sock sediment trap consists of a trap formed by creating an enclosure of geotextile mesh tubes filled with a compost filter media. These traps are used in locations where there is no opportunity to direct runoff into larger traps or well vegetated areas. This could occur at site entrances and access points or in tight areas due to construction boundary limits.

Surface runoff can be directed to the trap with standard conveyance practices. Groundwater or surface ponding in low areas can be pumped into the compost sock sediment trap with appropriate energy dissipation at the pump outlet to prevent scour.

Design criteria for Compost Sock Sediment Trap

1. The maximum drainage area tributary to the trap shall be 5 acres.
2. The minimum settled height above ground shall be 2.0 feet formed by staking 3 compost filter socks in a pyramid as shown in Figure 5.28 on page 5.52.
3. The storage volume provided in the compost sock sediment trap shall be 3,600 cubic feet per tributary drainage acre.
4. If necessary, additional storage area can be created by excavating a sump 1 foot deep beginning at least 5 feet away from the inside sock.
5. All compost filter sock materials, mesh, and compost, will meet the material specifications listed in the Compost Filter Sock standard. No spillway is required.
6. Compost filter sock sediment traps shall be inspected weekly and after every rainfall event. Sediment shall be removed when it reaches one third, $\frac{1}{3}$, the height of the trap.
7. The maximum limit of use for a compost sock sediment trap is one (1) year. The existing trap shall be replaced if there is a need for a trap beyond that time limit.
8. Upon completion of the work, the compost sock sediment trap shall be removed. The compost within the socks may be used during cleanup as a vegetative growth medium in accordance with the site stabilization plan.



Figure 5.25
Pipe Outlet Sediment Trap: ST-I

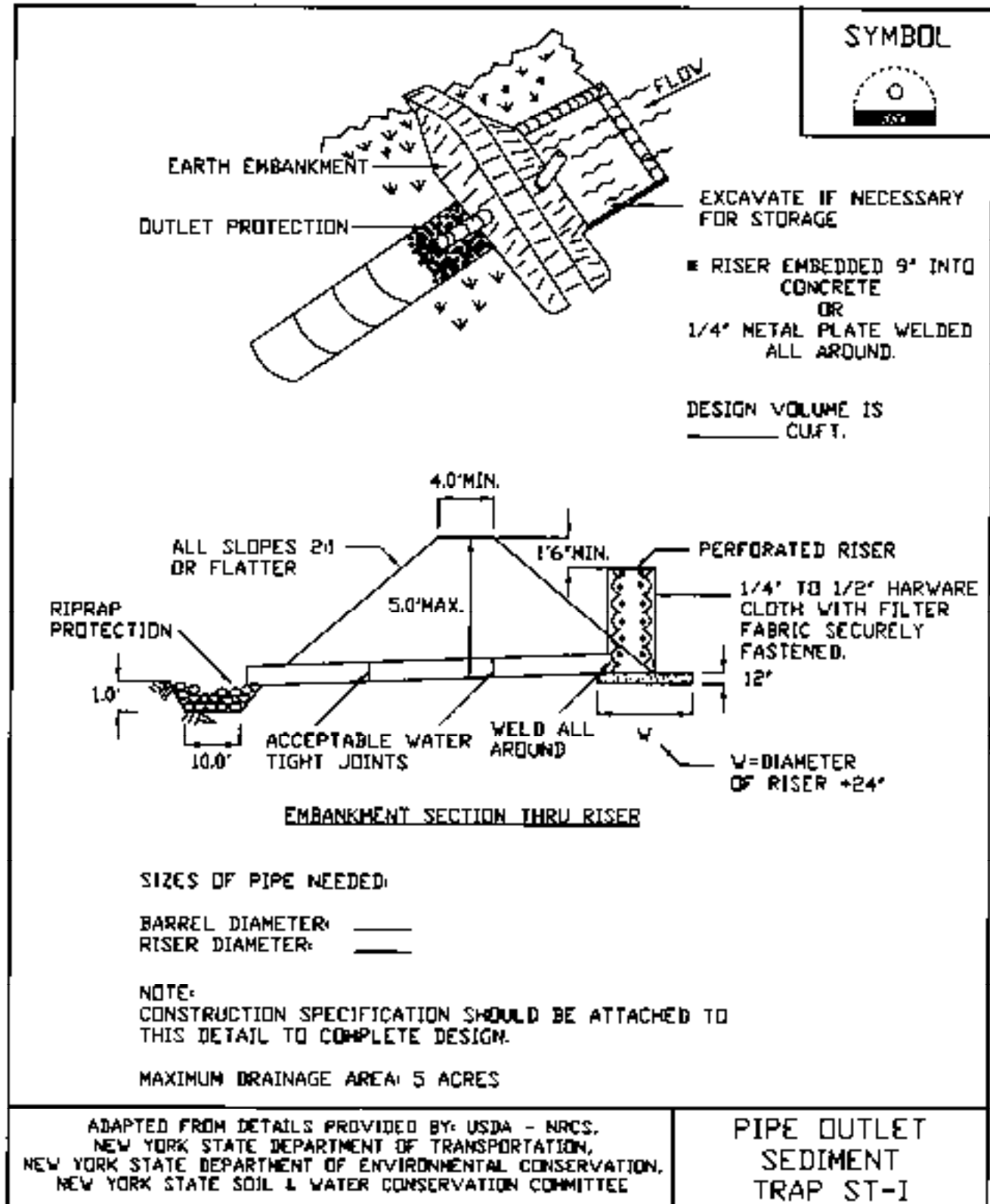


Figure 5.26
Pipe Outlet Sediment Trap: ST-I - Construction Specifications


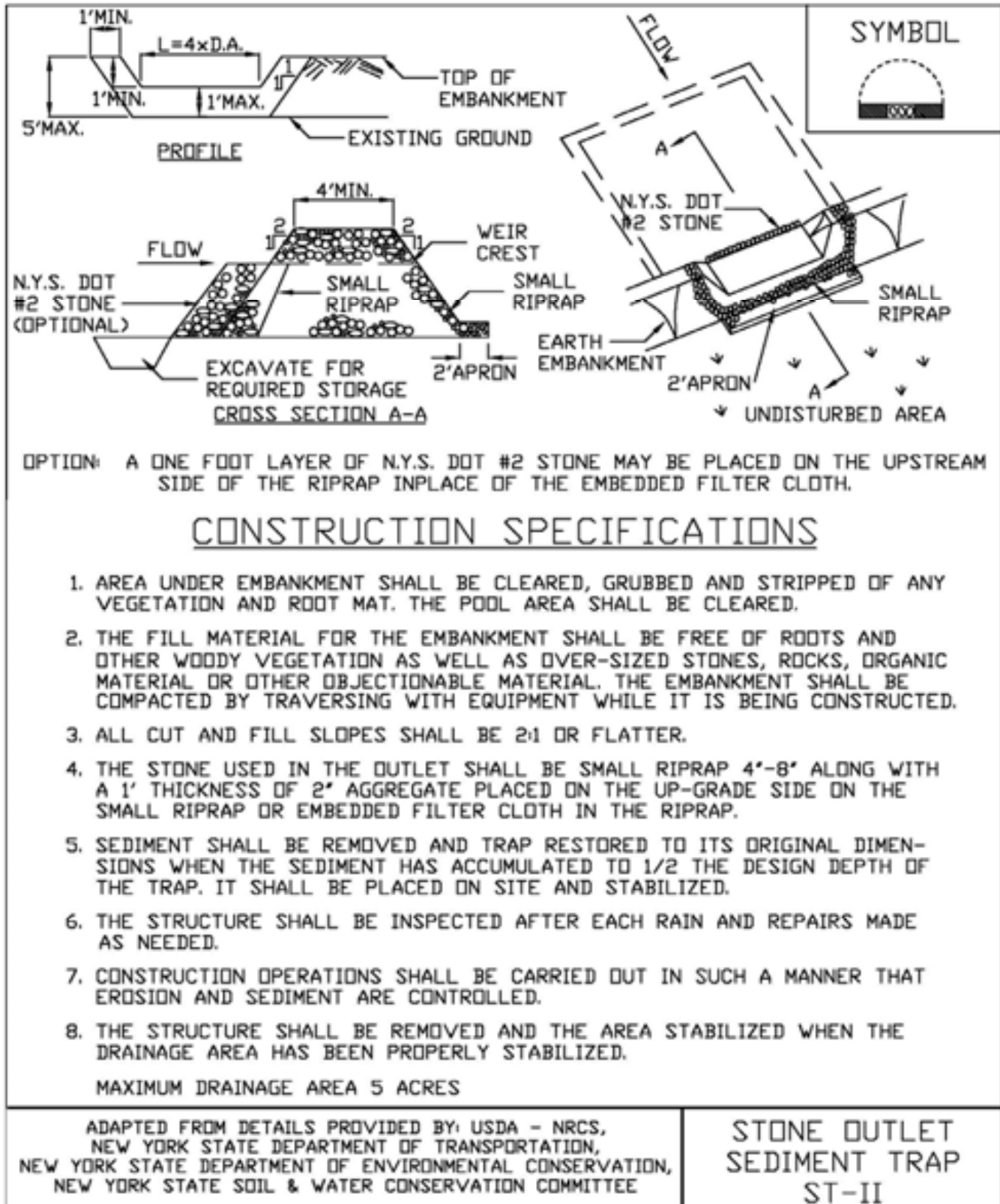
<p style="text-align: center;"><u>CONSTRUCTION SPECIFICATIONS</u></p>	<p style="text-align: center;">SYMBOL</p> 
<ol style="list-style-type: none"> 1. AREA UNDER EMBANKMENT SHALL BE CLEARED, GRUBBED AND STRIPPED OF ANY VEGETATION AND ROOT MAT. THE POOL AREA SHALL BE CLEARED. 2. THE FILL MATERIAL FOR THE EMBANKMENT SHALL BE FREE OF ROOTS OR OTHER WOODY VEGETATION AS WELL AS OVER-SIZED STONES, ROCKS, ORGANIC MATERIAL, OR OTHER OBJECTIONABLE MATERIAL. THE EMBANKMENT SHALL BE COMPACTED BY TRAVERSING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED. 3. VOLUME OF SEDIMENT STORAGE SHALL BE 3600 CUBIC FEET PER ACRE OF CONTRIBUTORY DRAINAGE. 4. SEDIMENT SHALL BE REMOVED AND TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE TRAP. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND STABILIZED. 5. THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NEEDED. 6. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND SEDIMENT ARE CONTROLLED. 7. THE STRUCTURE SHALL BE REMOVED AND AREA STABILIZED WHEN THE DRAINAGE AREA HAS BEEN PROPERLY STABILIZED. 8. ALL FILL SLOPES SHALL BE 2:1 OR FLATTER; CUT SLOPES 1:1 OR FLATTER. 9. ALL PIPE CONNECTIONS SHALL BE WATERTIGHT. 10. THE TOP 2/3 OF THE RISER SHALL BE PERFORATED WITH ONE (1) INCH DIAMETER HOLES OR SLITS SPACED SIX (6) INCHES VERTICALLY AND HORIZONTALLY AND PLACED IN THE CONCAVE PORTION OF PIPE. NO HOLES WILL BE ALLOWED WITHIN SIX (6) INCHES OF THE HORIZONTAL BARREL. 11. THE RISER SHALL BE WRAPPED WITH 1/4 TO 1/2 INCH HARDWARE CLOTH WIRE THEN WRAPPED WITH FILTER CLOTH (HAVING AN EQUIVALENT SIEVE SIZE OF 40-80). THE FILTER CLOTH SHALL EXTEND SIX (6) INCHES ABOVE THE HIGHEST HOLE AND SIX (6) INCHES BELOW THE LOWEST HOLE. WHERE ENDS OF THE FILTER CLOTH COME TOGETHER, THEY SHALL BE OVER-LAPPED, FOLDED AND STAPLED TO PREVENT BYPASS. 12. STRAPS OR CONNECTING BANDS SHALL BE USED TO HOLD THE FILTER CLOTH AND WIRE FABRIC IN PLACE. THEY SHALL BE PLACED AT THE TOP AND BOTTOM OF THE CLOTH. 13. FILL MATERIAL AROUND THE PIPE SPILLWAY SHALL BE HAND COMPACTED IN FOUR (4) INCH LAYERS. A MINIMUM OF TWO (2) FEET OF HAND COMPACTED BACKFILL SHALL BE PLACED OVER THE PIPE SPILLWAY BEFORE CROSSING IT WITH CONSTRUCTION EQUIPMENT. 14. THE RISER SHALL BE ANCHORED WITH EITHER A CONCRETE BASE OR STEEL PLATE BASE TO PREVENT FLOTATION. FOR CONCRETE BASE THE DEPTH SHALL BE TWELVE (12) INCHES WITH THE RISER EMBEDDED NINE (9) INCHES. A 1/4 INCH MINIMUM THICKNESS STEEL PLATE SHALL BE ATTACHED TO THE RISER BY A CONTINUOUS WELD AROUND THE BOTTOM TO FORM A WATERTIGHT CONNECTION AND THEN PLACE TWO (2) FEET OF STONE, GRAVEL, OR TAMPED EARTH ON THE PLATE. 	
<p>ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE</p>	<p style="text-align: center;">PIPE OUTLET SEDIMENT TRAP ST-I</p>

Figure 5.27
Stone Outlet Sediment Trap: ST-II



APPENDIX G

Notice of Termination (NOT)

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

(NOTE: Submit completed form to address above)

NOTICE OF TERMINATION for Storm Water Discharges Authorized
under the SPDES General Permit for Construction Activity

Please indicate your permit identification number: NYR ____ _

I. Owner or Operator Information

1. Owner/Operator Name:

2. Street Address:

3. City/State/Zip:

4. Contact Person:

4a. Telephone:

4b. Contact Person E-Mail:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/Zip:

8. County:

III. Reason for Termination

9a. ☐ All disturbed areas have achieved final stabilization in accordance with the general permit and SWPPP. ***Date final stabilization completed** (month/year): _____

9b. ☐ Permit coverage has been transferred to new owner/operator. Indicate new owner/operator's permit identification number: NYR ____ _

(Note: Permit coverage can not be terminated by owner identified in I.1. above until new owner/operator obtains coverage under the general permit)

9c. ☐ Other (Explain on Page 2)

IV. Final Site Information:

10a. Did this construction activity require the development of a SWPPP that includes post-construction stormwater management practices? ☐ yes ☐ no (If no, go to question 10f.)

10b. Have all post-construction stormwater management practices included in the final SWPPP been constructed? ☐ yes ☐ no (If no, explain on Page 2)

10c. Identify the entity responsible for long-term operation and maintenance of practice(s)?

**NOTICE OF TERMINATION for Storm Water Discharges Authorized under the
SPDES General Permit for Construction Activity - continued**

10d. Has the entity responsible for long-term operation and maintenance been given a copy of the operation and maintenance plan required by the general permit? ☐ yes ☐ no

10e. Indicate the method used to ensure long-term operation and maintenance of the post-construction stormwater management practice(s):

- ☐ Post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain practice(s) have been deeded to the municipality.
- ☐ Executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s).
- ☐ For post-construction stormwater management practices that are privately owned, a mechanism is in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the owner or operator's deed of record.
- ☐ For post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university or hospital), government agency or authority, or public utility; policy and procedures are in place that ensures operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

10f. Provide the total area of impervious surface (i.e. roof, pavement, concrete, gravel, etc.) constructed within the disturbance area? _____
(acres)

11. Is this project subject to the requirements of a regulated, traditional land use control MS4? ☐ yes
☐ no
(If Yes, complete section VI - "MS4 Acceptance" statement)

V. Additional Information/Explanation:
(Use this section to answer questions 9c. and 10b., if applicable)

VI. MS4 Acceptance - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative (Note: Not required when 9b. is checked -transfer of coverage)

I have determined that it is acceptable for the owner or operator of the construction project identified in question 5 to submit the Notice of Termination at this time.

Printed Name:

Title/Position:

Signature:

Date:

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the
SPDES General Permit for Construction Activity - continued

VII. Qualified Inspector Certification - Final Stabilization:

I hereby certify that all disturbed areas have achieved final stabilization as defined in the current version of the general permit, and that all temporary, structural erosion and sediment control measures have been removed. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:

Title/Position:

Signature:

Date:

VIII. Qualified Inspector Certification - Post-construction Stormwater Management Practice(s):

I hereby certify that all post-construction stormwater management practices have been constructed in conformance with the SWPPP. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:

Title/Position:

Signature:

Date:

IX. Owner or Operator Certification

I hereby certify that this document was prepared by me or under my direction or supervision. My determination, based upon my inquiry of the person(s) who managed the construction activity, or those persons directly responsible for gathering the information, is that the information provided in this document is true, accurate and complete. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:

Title/Position:

Signature:

Date:

(NYS DEC Notice of Termination - January 2015)

APPENDIX H

Environmental Impact Information



Parks, Recreation, and Historic Preservation

KATHY HOCHUL
Governor

ERIK KULLESEID
Commissioner

July 15, 2022

Jason McCormick
Project Engineer
McCormick ENgineering PC
294 Skuse Road
Geneva, NY 14456

Re: DEC
Diversified Equipment LLC/new construction/1947 SR 332, Canandaigua
1947 State Route 332, Canandaigua, NY 14424
22PR04383

Dear Jason McCormick:

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project 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 OPRHP 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. Such impacts must be considered as part of the environmental review of the project pursuant to the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8) and its implementing regulations (6 NYCRR Part 617).

Based upon this review, it is the opinion of 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 further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

A handwritten signature in black ink, reading "R. Daniel Mackay".

R. Daniel Mackay

Deputy Commissioner for Historic Preservation
Division for Historic Preservation

Short Environmental Assessment Form

Part 1 - Project Information

Instructions for Completing

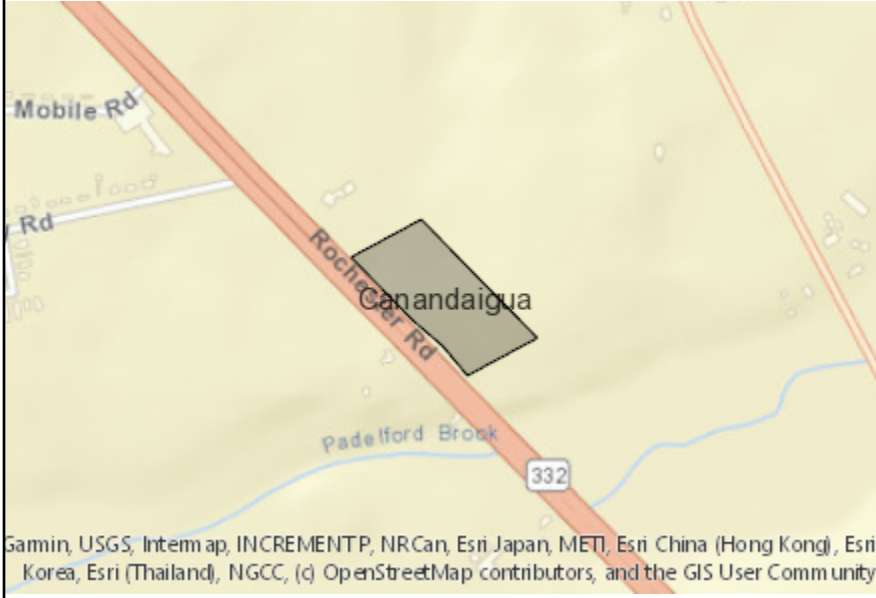
Part 1 – Project Information. The applicant or project sponsor is responsible for the completion of Part 1. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification. Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information.

Complete all items in Part 1. You may also provide any additional information which you believe will be needed by or useful to the lead agency; attach additional pages as necessary to supplement any item.

Part 1 – Project and Sponsor Information				
Name of Action or Project:				
Project Location (describe, and attach a location map):				
Brief Description of Proposed Action:				
Name of Applicant or Sponsor:			Telephone:	
			E-Mail:	
Address:				
City/PO:		State:	Zip Code:	
1. Does the proposed action only involve the legislative adoption of a plan, local law, ordinance, administrative rule, or regulation?			NO	YES
If Yes, attach a narrative description of the intent of the proposed action and the environmental resources that may be affected in the municipality and proceed to Part 2. If no, continue to question 2.			<input type="checkbox"/>	<input type="checkbox"/>
2. Does the proposed action require a permit, approval or funding from any other government Agency?			NO	YES
If Yes, list agency(s) name and permit or approval:			<input type="checkbox"/>	<input type="checkbox"/>
3. a. Total acreage of the site of the proposed action? _____ acres b. Total acreage to be physically disturbed? _____ acres c. Total acreage (project site and any contiguous properties) owned _____ acres or controlled by the applicant or project sponsor?				
4. Check all land uses that occur on, are adjoining or near the proposed action: 5. Urban Rural (non-agriculture) Industrial Commercial Residential (suburban) <input type="checkbox"/> Forest Agriculture Aquatic Other(Specify): <input type="checkbox"/> Parkland				

5. Is the proposed action,	NO	YES	N/A
a. A permitted use under the zoning regulations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Consistent with the adopted comprehensive plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Is the proposed action consistent with the predominant character of the existing built or natural landscape?	NO	YES	
	<input type="checkbox"/>	<input type="checkbox"/>	
7. Is the site of the proposed action located in, or does it adjoin, a state listed Critical Environmental Area?	NO	YES	
If Yes, identify: _____	<input type="checkbox"/>	<input type="checkbox"/>	
8. a. Will the proposed action result in a substantial increase in traffic above present levels?	NO	YES	
	<input type="checkbox"/>	<input type="checkbox"/>	
b. Are public transportation services available at or near the site of the proposed action?	<input type="checkbox"/>	<input type="checkbox"/>	
c. Are any pedestrian accommodations or bicycle routes available on or near the site of the proposed action?	<input type="checkbox"/>	<input type="checkbox"/>	
9. Does the proposed action meet or exceed the state energy code requirements?	NO	YES	
If the proposed action will exceed requirements, describe design features and technologies: _____ _____	<input type="checkbox"/>	<input type="checkbox"/>	
10. Will the proposed action connect to an existing public/private water supply?	NO	YES	
If No, describe method for providing potable water: _____ _____	<input type="checkbox"/>	<input type="checkbox"/>	
11. Will the proposed action connect to existing wastewater utilities?	NO	YES	
If No, describe method for providing wastewater treatment: _____ _____	<input type="checkbox"/>	<input type="checkbox"/>	
12. a. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places?	NO	YES	
	<input type="checkbox"/>	<input type="checkbox"/>	
b. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory?	<input type="checkbox"/>	<input type="checkbox"/>	
13. a. Does any portion of the site of the proposed action, or lands adjoining the proposed action, contain wetlands or other waterbodies regulated by a federal, state or local agency?	NO	YES	
	<input type="checkbox"/>	<input type="checkbox"/>	
b. Would the proposed action physically alter, or encroach into, any existing wetland or waterbody?	<input type="checkbox"/>	<input type="checkbox"/>	
If Yes, identify the wetland or waterbody and extent of alterations in square feet or acres: _____ _____ _____			

14. Identify the typical habitat types that occur on, or are likely to be found on the project site. Check all that apply: <input type="checkbox"/> Shoreline <input type="checkbox"/> Forest Agricultural/grasslands Early mid-successional Wetland <input type="checkbox"/> Urban Suburban		
15. Does the site of the proposed action contain any species of animal, or associated habitats, listed by the State or Federal government as threatened or endangered?	NO <input type="checkbox"/>	YES <input type="checkbox"/>
16. Is the project site located in the 100-year flood plan?	NO <input type="checkbox"/>	YES <input type="checkbox"/>
17. Will the proposed action create storm water discharge, either from point or non-point sources? If Yes,	NO <input type="checkbox"/>	YES <input type="checkbox"/>
a. Will storm water discharges flow to adjacent properties?	<input type="checkbox"/>	<input type="checkbox"/>
b. Will storm water discharges be directed to established conveyance systems (runoff and storm drains)?	<input type="checkbox"/>	<input type="checkbox"/>
If Yes, briefly describe: _____ _____		
18. Does the proposed action include construction or other activities that would result in the impoundment of water or other liquids (e.g., retention pond, waste lagoon, dam)? If Yes, explain the purpose and size of the impoundment: _____ _____	NO <input type="checkbox"/>	YES <input type="checkbox"/>
49. Has the site of the proposed action or an adjoining property been the location of an active or closed solid waste management facility? If Yes, describe: _____ _____	NO <input type="checkbox"/>	YES <input type="checkbox"/>
20. Has the site of the proposed action or an adjoining property been the subject of remediation (ongoing or completed) for hazardous waste? If Yes, describe: _____ _____	NO <input type="checkbox"/>	YES <input type="checkbox"/>
I CERTIFY THAT THE INFORMATION PROVIDED ABOVE IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE Applicant/sponsor/name: _____ Date: _____ Signature: _____ Title: _____		



Disclaimer: The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.



Part 1 / Question 7 [Critical Environmental Area]	No
Part 1 / Question 12a [National or State Register of Historic Places or State Eligible Sites]	No
Part 1 / Question 12b [Archeological Sites]	Yes
Part 1 / Question 13a [Wetlands or Other Regulated Waterbodies]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
Part 1 / Question 15 [Threatened or Endangered Animal]	No
Part 1 / Question 16 [100 Year Flood Plain]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
Part 1 / Question 20 [Remediation Site]	No



Department of
Environmental
Conservation

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

A handwritten signature in black ink, appearing to be "John J. Ferguson", written over a horizontal line. The signature is stylized and cursive.

Authorized Signature

1-23-20
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**

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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

Discharges 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 discharges*;
 - (ii) Control stormwater *discharges*, 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 *discharges* from the site;
 - (vi) Provide and maintain *natural buffers* around surface waters, direct stormwater to vegetated areas and maximize stormwater infiltration to reduce *pollutant discharges*, 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.** *Discharges* from *dewatering* activities, including *discharges* 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 *discharges* 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 *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.

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 *discharges* necessary to meet applicable *water quality standards*. It shall be a violation of the *ECL* for any discharge to either cause or contribute to a violation of *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 *discharges* 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 *discharges* 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 *discharges* 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 *discharges*; 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 *discharges* 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. *Discharges* after *construction activities* have been completed and the site has undergone *final stabilization*;
2. *Discharges* 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 *discharges* 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 *discharges* 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. *Discharges 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 not 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 not 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 *discharges* from *construction activities* and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations"

In addition to providing the certification statement above, the certification page must also identify the specific elements of the SWPPP that each contractor and subcontractor will be responsible for and include the name and title of the person providing the signature; the name and title of the *trained contractor* responsible for SWPPP implementation; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification statement is signed. The *owner or operator* 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

- I. 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 sources*. 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 sources*, 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

<p>The following construction activities that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres:</p> <ul style="list-style-type: none">• Single family home <u>not</u> located in one of the watersheds listed in Appendix C or <u>not directly discharging</u> 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 <u>not</u> located in one of the watersheds listed in Appendix C and <u>not</u> directly discharging to one of the 303(d) segments listed in Appendix E• Construction of a barn or other <i>agricultural building</i>, silo, stock yard or pen.
<p>The following construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land:</p> <p>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.</p>
<p>The following construction activities that involve soil disturbances of one (1) or more acres of land:</p> <ul style="list-style-type: none">• 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

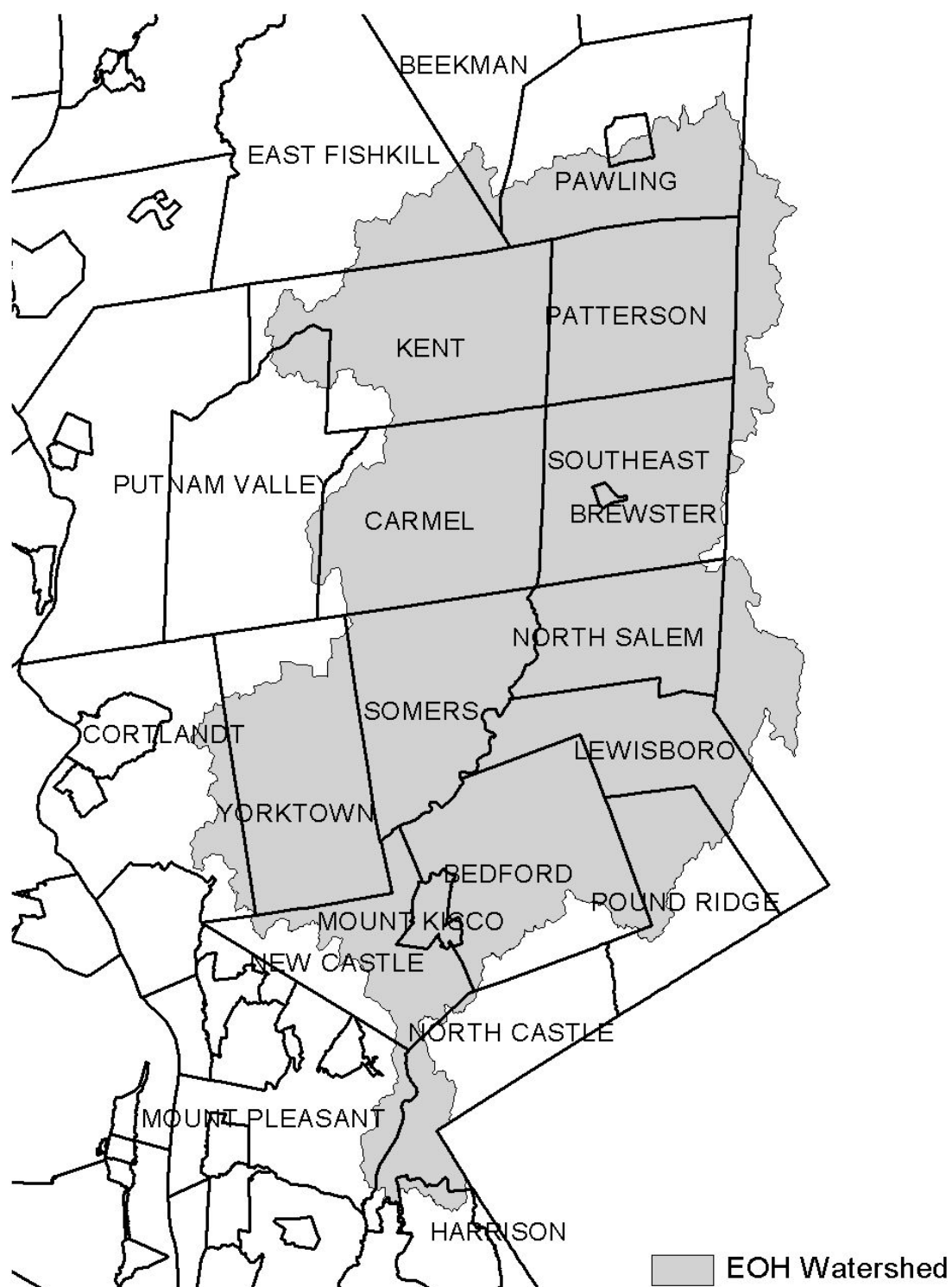
Figure 1 - New York City Watershed East of the Hudson

Figure 2 - Onondaga Lake Watershed

Figure 3 - Greenwood Lake Watershed

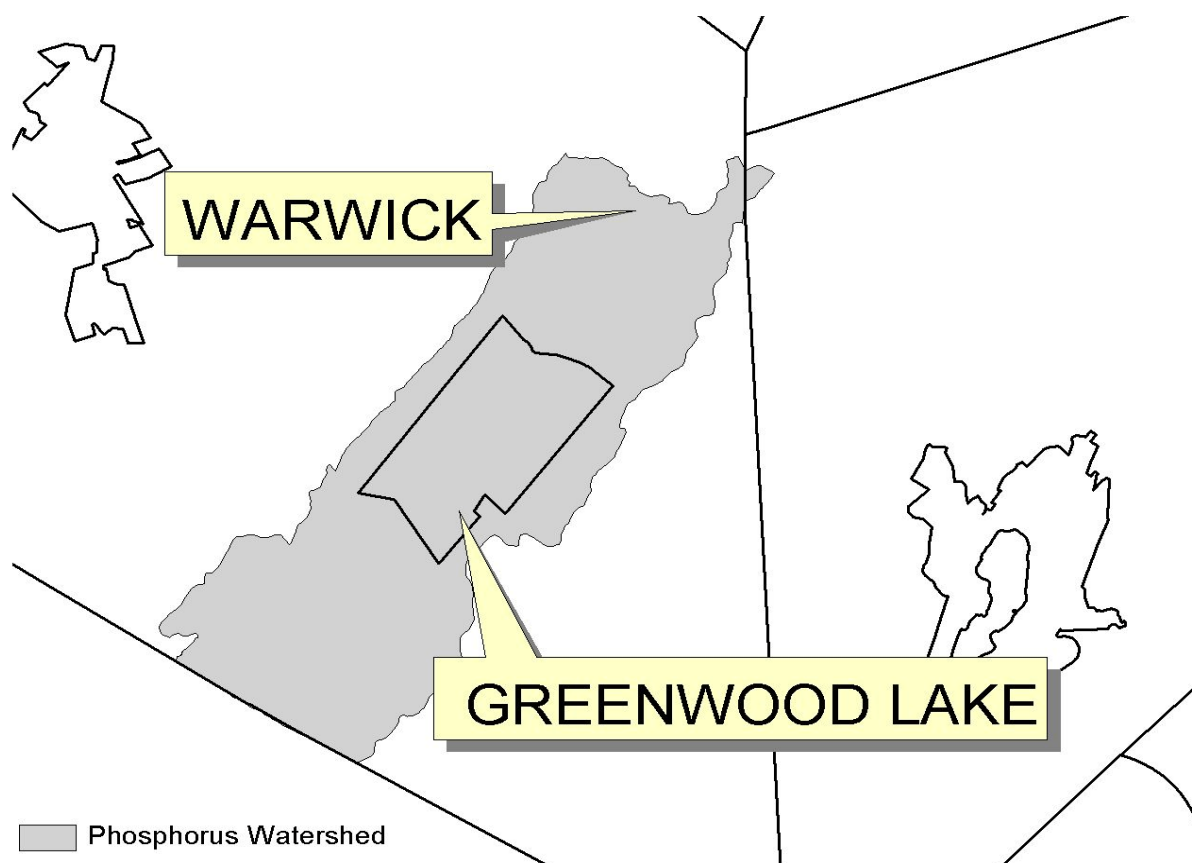


Figure 4 - Oscawana Lake Watershed

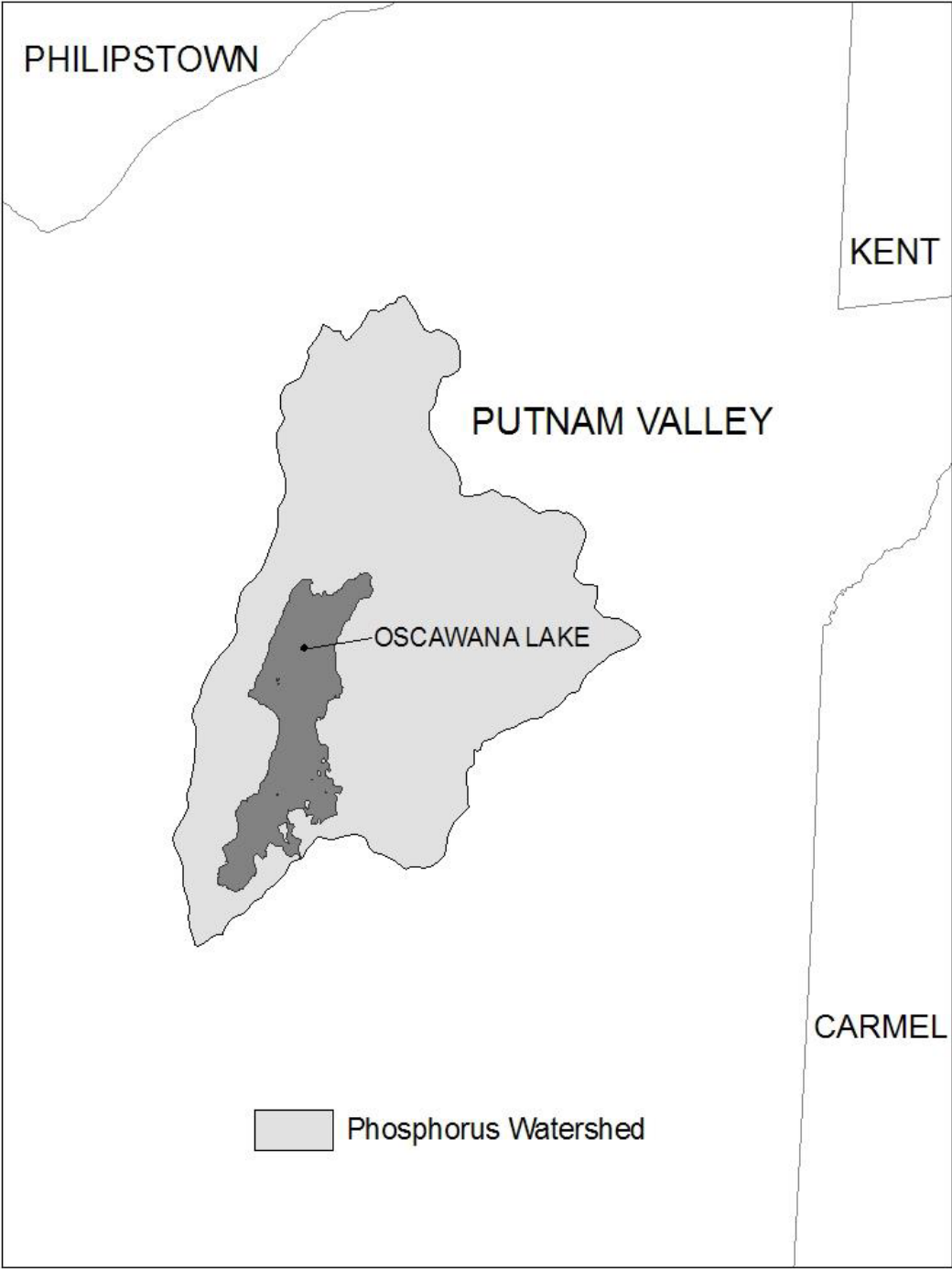
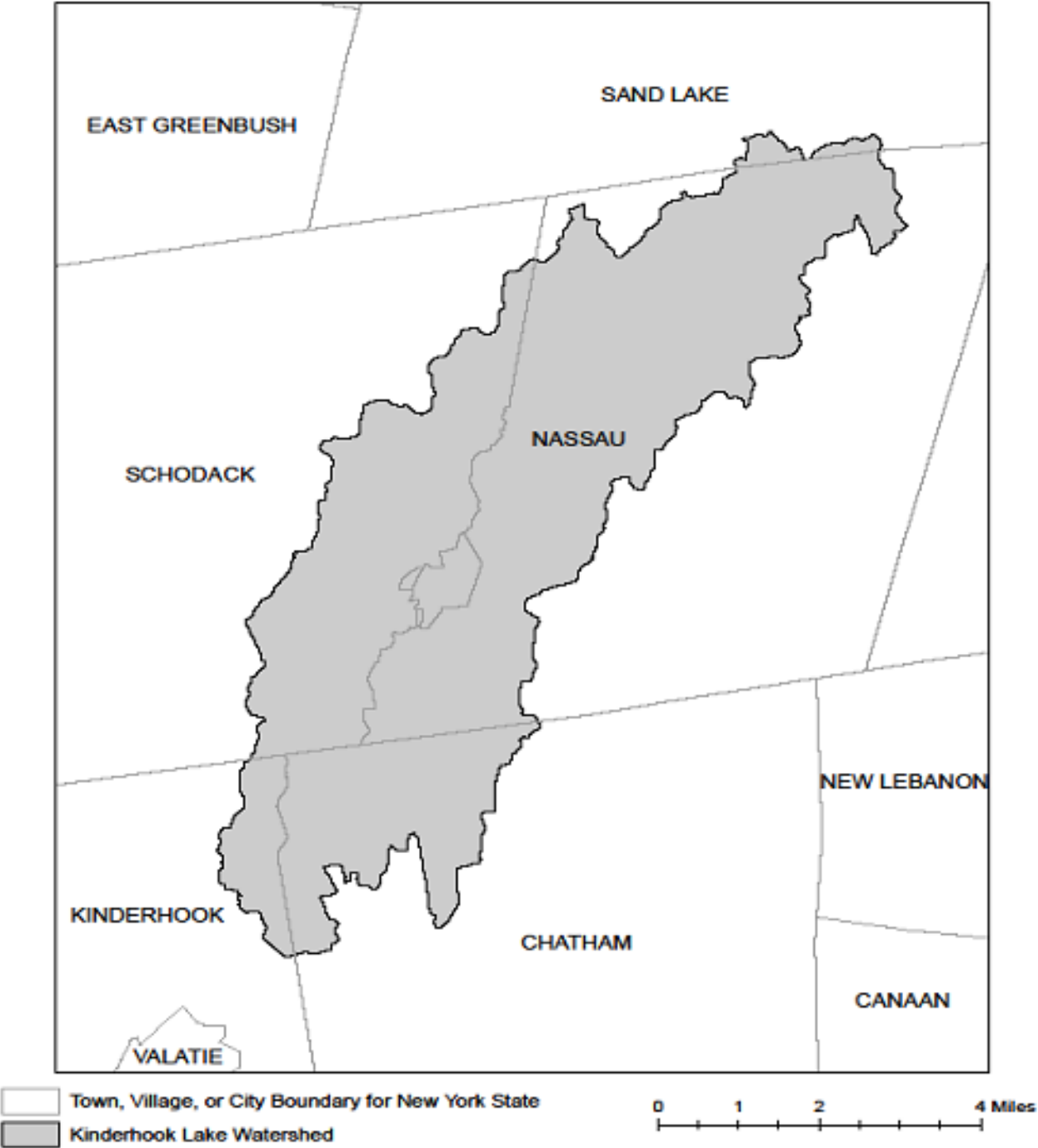


Figure 5 - Kinderhook Lake Watershed



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
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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

<u>Region</u>	<u>COVERING THE FOLLOWING COUNTIES:</u>	<u>DIVISION OF ENVIRONMENTAL PERMITS (DEP) PERMIT ADMINISTRATORS</u>	<u>DIVISION OF WATER (DOW) WATER (SPDES) PROGRAM</u>
1	NASSAU AND SUFFOLK	50 CIRCLE ROAD STONY BROOK, NY 11790 TEL. (631) 444-0365	50 CIRCLE ROAD STONY BROOK, NY 11790-3409 TEL. (631) 444-0405
2	BRONX, KINGS, NEW YORK, QUEENS AND RICHMOND	1 HUNTERS POINT PLAZA, 47-40 21ST ST. LONG ISLAND CITY, NY 11101-5407 TEL. (718) 482-4997	1 HUNTERS POINT PLAZA, 47-40 21ST ST. LONG ISLAND CITY, NY 11101-5407 TEL. (718) 482-4933
3	DUTCHESS, ORANGE, PUTNAM, ROCKLAND, SULLIVAN, ULSTER AND WESTCHESTER	21 SOUTH PUTT CORNERS ROAD NEW PALTZ, NY 12561-1696 TEL. (845) 256-3059	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