STORM WATER POLLUTION PREVENTION PLAN FOR THE CONSTRUCTION OF

RURAL OUTREACH CENTER
730 Olean Road
East Aurora, NY 14052

Prepared for:
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1.0 INTRODUCTION

The Clean Water Act states that storm water discharges associated with an industrial activity from a point source, including through a separate municipal storm sewer system, is unlawful unless authorized by a National Pollutant Discharge Elimination System (NPDES) permit. In New York State, the New York State Department of Environmental Conservation (NYSDEC) administers the NPDES through the State Pollution Discharge Elimination System (SPDES) program. According to the SPDES General Permit, construction sites or common plans of development, that result in soil disturbance of one or more acres that are not classified single family residential or agricultural, are subject to permitting requirements.

This plan outlines the manner in which to reduce the potential of storm water runoff pollution and assigns responsibilities to ensure that the contractor and his subcontractors implement the requirements of the Storm Water Pollution Prevention Plan (SWPPP) during construction activities until the site is stabilized. The SWPPP was developed based on the SPDES General Permit for Storm Water Discharges from Construction Activity Permit No. GP-0-20-001, dated January 29, 2020.

2.0 NOTICE OF INTENT REQUIREMENTS

To obtain coverage under a general permit, an electronic Notice of Intent (eNOI) must be submitted using the Department's online NOI.

A completed copy of the eNOI form has been included in Appendix B-1.

3.0 STORM WATER POLLUTION PREVENTION PLAN

This Storm Water Pollution Prevention Plan (SWPPP) was developed to set operating guidelines during construction activities. A copy of this SWPPP shall be retained at the construction site throughout the duration of this project.

The Contractor shall meet all conditions of this SWPPP and all conditions within the NYSDEC SPDES General Permit for Stormwater discharges from Construction Activities - Permit No. GP-0-20-001 dated January 29, 2020. The contractor shall be responsible for all measures of the SWPPP including being responsible for any subcontractors who may implement the SWPPP.

During the course of the project and upon approval by the owner, the contractor shall amend the plan whenever there is a change in construction, operation, or maintenance, which may have an effect on the potential for the discharge of pollutants. In addition, if a new subcontractor is utilized at the site who will implement tasks included in the plan, the SWPPP shall be amended.

3.1 Site Description

The project site is located at 730 Olean Road, in the Town of Aurora, New York. The site is situated on a 7.20+/- acre parcel and consists of an existing metal clad trailer/ building, a storage shed, an asphalt paved parking lot for 6 vehicles, a gravel drive and lawn areas along the front of the parcel. The remainder of the site is heavily wooded. The site generally slopes in a southwesterly direction and consists of three drainage areas, a northern drainage area, a central drainage area and a southern drainage area. The northern drainage area consists mostly of wooded areas (trees and light underbrush). Stormwater runoff from the northern drainage area flows toward the existing property to the north/west. The central drainage area consists of the majority of the wooded area, along with the existing metal clad trailer/building, storage shed, asphalt parking lot and gravel drive. Stormwater runoff from the central drainage area flows overland to the existing ditch along Olean Road. The southern drainage area consists mostly of wooded areas. Stormwater runoff from the southern drainage area flows onto the adjacent property to the south.

Development will consist of removal of the existing metal clad trailer/building and storage shed and demolition of the existing asphalt paved parking lot and gravel drive to accommodate the construction of a single-story, 9,738 s.f. building along with site improvements. Site improvements include two asphalt paved parking lots to accommodate 60 parking spaces including 3 handicap accessible parking spaces, at concrete sidewalks, a stormwater detention basin, two bio-retention basins, a new septic system, new domestic and fire protection water services and site landscaping.

Upon completion, the proposed project will add 0.78 acres of new impervious cover and 0.43 acres of reconstructed impervious area. The total anticipated ground disturbance during construction of this project will be approximately 3.90 acres. Due to the increase in impervious areas, stormwater detention is required. Additionally, since the construction of this site will disturb more than one acre, a Storm Water Pollution Prevention Plan (SWPPP), in accordance with the New York State Department of Environmental Conservation (NYSDEC) standards will be prepared and a NOI (Notice of Intent) will be filed prior to beginning construction.

The site is not located in a 100-year flood plain.

The soils on the site, according to the United State Department of Agriculture's National Resources Conservation Service are Orpark silt loam (OrC) and Rhinebeck gravelly loam (RkB), which are both listed as Hydrologic Soil HSG "C/D". For dual hydrologic group soils, the first letter is for drained areas and the second is for undrained areas. Only soils that in their natural condition are in group D are assigned to dual classes. Upon review of the New York State Historic Preservation Office's GIS for Archeology and National Register online resources tool, neither construction activities nor the stormwater discharge from this site will have an effect on property that is listed on either the State or National Register of Historic Places.

B. Below is a description of the intended sequence of major construction activities which involve soil disturbance:

- Install silt fence.
- Clear, grub and install temporary erosion and sediment controls simultaneously where possible.
- Remove debris from site. (Debris to be disposed of in a NYSDEC approved landfill approved to accept this type of material.)
- Remove, stockpile and seed any excess topsoil and install temporary erosion and sediment controls simultaneously.
- Excavate and rough grade the construction site and stormwater detention facility.
- Install utilities, construct building, install pavement and pour concrete sidewalks
- Final grade, replace topsoil, seed and mulch all disturbed turf areas outside of pavement limits immediately upon acceptance of the grade.
- Construct bioretention basins and all plantings within
- Replace remaining topsoil and seed and mulch all areas disturbed from construction activities.
- After stabilization, remove temporary erosion and sediment controls.

C. Plans and details for temporary stormwater controls have been included in Appendix G-1. The plans have been included to indicate grading limits, drainage patterns, grade slopes, and location of erosion and sediment controls and storm water discharge locations.

The owner/operator is:	Rural Outreach Center 730 Olean Road East Aurora, NY 14052
The contact person is:	Frank Cerny, Executive Director 716-240-2220 frankcerny@theroc.co

3.2 Construction Controls

The Contractor shall be required to construct and maintain the following controls in accordance with this document and the associated Contract Documents for this project. There shall not be more than five (5) acres of disturbed soil at any one time, without prior written approval from the MS4. Additionally, the MS4 shall be notified when any shutdown or decrease in inspection frequency is anticipated.

A. Stabilization Practices.

1. Seeding.
   Immediately after completion of grading operations, topsoil shall be replaced and all areas disturbed from grading operations shall be seeded in an effort to stabilize the site. Where land disturbance is necessary, temporary seeding or mulching must be

used on areas which will be exposed for more than 14 days. Permanent stabilization should be performed as soon as possible after completion of grading.

2. Mulching.
   Directly after seeding, all disturbed areas shall be mulched to prevent surface compaction, reduce runoff and erosion, control weeds and help establish plant cover.

3. Preservation of Vegetation.
   The contractor shall make every effort to protect trees, shrubs, ground cover and any other vegetation adjacent to the work areas. The purpose of preserving existing vegetation where obtainable is to reduce soil erosion and enhance water quality.

4. Dust Control.
   Dust resulting from land-disturbing activities shall be controlled to prevent surface and air movement of dust from disturbed soil surfaces. Dust control measures are necessary on construction roads, access points and other disturbed areas subject to dust movement.

5. Equipment/Material Storage.
   An equipment and material storage area is shown on the Erosion & Sediment Control Plan. The location of the storage area may be modified if deemed necessary and documented in the SWPPP documents. The storage area will be graded to insure that any material spillage shall be directed away from the adjacent property. In addition, any identified chemical spills (oil, grease, etc.) shall be addressed immediately, a written log prepared and kept on-site with the SWPPP and appropriate local officials contacted, if necessary.

6. Temporary Soil Stockpiles.
   A temporary stockpile area is shown on the Erosion & Sediment Control Plan. The shape, size and location of this area may be modified by the site contractor if deemed necessary and documented in the SWPPP documents. The stockpile area shall be perimeter protected with silt fence and seeded as soon as possible to minimize the potential for sediment transport and erosion.

7. Staging Area
   The contractor staging area is shown on the Erosion & Sediment Control Plan. The shape, size and location of this area may be modified by the site contractor if deemed necessary and documented in the SWPPP documents.

B. Structural Practices.

1. Silt Fence (Temporary)
   - A silt fence is used to intercept sheet flow runoff from small drainage areas. The silt fence also reduces runoff velocity and promotes deposition of transported sediment.

- Silt fence shall be maintained to prevent sediment bypass and shall be removed and replaced when bulges develop in the silt fence.

2. Storm Drain Inlet Protection (Temporary)
   - A storm drain inlet barrier shall be installed around inlets. The purpose is to prevent sediment - laden water from entering inlets to a storm drain system.
   - Inspect and clean after every storm. Sediment should be removed when 50 percent of the storage volume is achieved. This material should be incorporated in the site in a stabilized manner.

3. Stabilized Construction Entrance (Temporary).
   - A stabilized construction entrance shall be constructed where traffic will be entering or leaving a construction site to or from a street, alley, sidewalk or parking area. The purpose of the stabilized construction entrance is to reduce or eliminate the tracking of sediment onto public streets.

4. Check Dam (Temporary).
   - A check dam is a small barrier 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.

C. Other Pollution Prevention Measures (Chemicals and Debris)
   - The Contractor shall be responsible for providing onsite trash receptacles appropriate to store all litter, construction chemicals and construction debris. The contents of the receptacles shall be properly disposed of at a NYSDEC licensed waste facility (or equal).
   - Hazardous products shall be maintained in their original containers when possible, and be kept with their original labels and applicable Material Safety Data Sheets (MSDS);
   - Fertilizers shall only be applied as recommended by the manufacturer, and once applied shall be worked into the soil to limit exposure to storm water runoff. Storage shall be within an enclosed or covered area.
   - Paints, coatings and sealants shall be maintained in a tightly enclosed, leak-proof container at all times. Excess materials shall be disposed of as required by applicable laws and regulations.
   - Excess concrete material shall be removed and disposed of off-site in an appropriate manner. Concrete wash water shall not be allowed to discharge to storm water conveyances.
   - All petroleum product spills, if such occurs, shall be cleaned up immediately, the source of the spill be repaired or removed, and contained material shall be disposed of as required by applicable law. In the event a spill, the contractor shall contact the NYSDEC Spills Hotline at 1-800-457-7362 to report such spill. Within 2 hours of discovery, except spills which meet all of the following criteria:
     1) The quantity is known to be less than 5 gallons; and
     2) The spill is contained and under the control of the spiller; and

3) The spill has not and will not reach the State's water or any land; and
4) The spill is cleaned up within 2 hours of discovery.
5) A spill is considered to have not impacted land if it occurs on a paved surface such as asphalt or concrete. A spill in a dirt or gravel parking lot is considered to have impacted land and is reportable.

More details on notification and reporting requirements can be found at the NYSDEC Website (http://www.dec.ny.gov/chemical/8428.html

D. Good Housekeeping and Control of Construction Wastes and Chemicals

1. Good Housekeeping
It is anticipated that construction materials such as concrete, asphalt, petroleum based products, stone, and fertilizers will be present on-site at various stages during the project. In order to prevent the conveyance to and contamination of any adjacent and/or downstream property, lands or water bodies, good housekeeping practices shall be employed. Such precautions shall include:
- Storing of only enough materials to complete the project, or active phases of the project;
- Materials stored on-site shall be stored in a neat and orderly manner and in their appropriate containers and, if possible, under a covered area or enclosed structure;
- The manufacturer's recommendations for use and disposal shall be followed at all times;
- The project site superintendent shall inspect the site daily to ensure proper use, storage and disposal of all materials on-site.

2. Hazardous Products
Hazardous products shall be maintained in their original containers when possible, and be kept with their original labels and applicable Material Safety Data Sheets (MSDS);
- All petroleum product spills, if such occurs, shall be cleaned up immediately, the source of the spill be repaired or removed, and contained material shall be disposed of as required by applicable law.
- Fertilizers shall only be applied as recommended by the manufacturer, and once applied shall be worked into the soil to limit exposure to storm water runoff. Storage shall be within an enclosed or covered area.
- Paints, coatings and sealants shall be maintained in a tightly enclosed, leak-proof container at all times. Excess materials shall be disposed of as required by applicable laws and regulations;
- Excess concrete material shall be removed and disposed of off-site in an appropriate manner. Concrete wash water shall not be allowed to discharge to storm water conveyances.

3.3 Storm Water Management.

The best approach to storm water management for construction activities is through the use of self-designed Storm Water Pollution Prevention Plan (SWPPP). The development of the SWPPP through the use of Best Management Practices (BMP) is to prevent erosion and pollutants from the construction materials mixing with storm water runoff and being discharged from the project site. BMP's should be designed to prevent, or at least control, the pollution of storm water before it has a chance to affect receiving waters. Using BMP's in this way improves the discharge water quality.

Specific requirements for management of storm water and maintaining water quality include, but are not limited to:

A. There shall be no increase in turbidity that will cause a substantial visible contrast to natural condition;
B. There shall be no suspended, colloidal, and settleable solids that will cause deposition or impair the waters for their best usages, and;

C. There shall be no residue from oil and floating substances, visible oil film, globules or grease.

In addition, local ordinances may affect these Best Management Practices. Any conditions or specific local ordinances are to be included in the development of the BMP's for the project.

3.4 Post Construction Water Quality & Quantity Controls

A. Chapters 3-5 of the NYSDEC Stormwater Management Design Manual (SMDM) provides a green infrastructure approach to stormwater management to reduce a site's impact on the aquatic ecosystem through the use of site planning techniques, runoff reduction techniques, and standard SMP's. Runoff Reduction Volume (RRv) is the reduction of the total Water Quality Volume (WQv) by application of green infrastructure techniques and SMP's to replicate pre-development hydrology.

Outlined below is the NYSDEC SMDM site planning flowchart in relation to this site.

Step 1: Site Planning – Green Infrastructure Method to Preserve Natural Resources and Reduce Impervious Cover

1. Preservation of Undisturbed Areas
    - Vegetative areas and natural terrain has been retained to the maximum extent practical/possible.
2. Preservation of Buffer
    - Natural vegetative buffer has been retained to the maximum extent practical/possible. As many trees as possible have been saved.
3. Reduction of Clearing and Grading
    - Clearing and grading has been limited to the least amount possible while still allowing for development of the site.

4. Locating Development in Less Sensitive Areas
    - The proposed development is located within an archeological sensitive resource area, as listed on the NYS Office of Parks, Recreation and Historic Preservation website. The project will have no effect upon cultural resources in or eligible for inclusion in the National Register of Historic Places.
5. Open Space Design
    - The impervious cover has been minimized to the smallest extent possible.
6. Soil Restoration
    - Soil restoration will be applied to disturbed lawn areas.
7. Roadway Reduction
    - Roadway widths and lengths have been minimized to the maximum extent possible while still maintaining the intended use of the site.
8. Sidewalk Reduction
    - Sidewalk widths and lengths have been minimized to the smallest extent possible while still maintaining accessibility to the building.
9. Driveway Reduction
    - Driveways have been minimized as much as possible while still meeting site and fire code requirements.
10. Cul-de-sac Reduction
    - This project does not include a cul-de-sac. Therefore, cul-de-sac reduction is not applicable
11. Building Footprint Reduction
    - The smallest possible building footprint has been provided.
12. Parking Reduction
    - Parking areas have been reduced to the maximum extent possible. The Town dictates the minimum required parking spaces.

Step 2: Water Quality Volume

The total water quality volume required is 3,061 c.f.

Step 3: Runoff Reduction by Applying Green Infrastructure Techniques and Standard SMPs with RRv Capacity

1. Conservation of Natural Areas
    - Natural areas and natural terrain have been retained to the maximum extent practical/possible while still allowing for the buildout of the property.
2. Sheet flow to Riparian Buffers or Filter Strips
    - No riprarian buffers are present on site.
3. Vegetated Open Swale
    - Vegetative open swales are used on the project, but RRv credit is provided by other SMP's
4. Tree Planting / Tree Box

- New trees will be planted on-site to enhance the landscaping on-site and meet the Town's Landscaping requirements. Although trees will be planted, RRv credit cannot be used. The planted areas drain to the bio-retention basin. Credit is already given for these areas.

5. Disconnection of Rooftop Runoff
   - Runoff from the new building will be directed to a bioretention basin, prior to being discharged to the detention system.
6. Stream Daylighting
   - Not applicable – This situation does not exist on this site.
7. Rain Garden
   - This method was considered but due to site constraints, bio-retention basins are more applicable.
8. Green Roof
   - This method was considered but bioretention basins are more applicable.
9. Stormwater Planters
   - This method was considered, however, RRv credit is already given for the bioretention basins.
10. Rain tanks/Cisterns
    - This method was considered, however, landscape irrigation will not be a concern.
11. Porous Pavement
    - Not applicable – Maintenance issues and the use of salts for parking lot deicing make this option impractical. Impervious soils on site make this option infeasible.
12. Standard SMPs with RRv Capacity
    - Both the new impervious areas and reconstructed impervious areas will be collected and conveyed to bioretention basins for water quality control.

The NYSDEC SMDM's intent is for projects to meet 100% of runoff reduction volume through the use of green infrastructure techniques. Projects that do not achieve runoff reduction to pre-construction condition must, at a minimum, provide the minimum RRv as well as provide the remaining WQv in standard SMPs.

Two (2) bio-retention facilities will be used to treat impervious areas on-site to offset the WQv and RRv required by the new impervious area and reconstructed impervious area from the total site disturbance area.

The minimum RRv requirement has been attained through the use of the bio-retention facilities. Additionally, the required water quality treatment volume will be provided in the bio-retention facilities. This project is considered a redevelopment project with an increase in impervious area. Therefore, per Chapter 9.2.1.B.II, a standard SMP will be used to treat 100% of the WQv from new impervious areas and 25% of the WQv from reconstructed impervious areas.

Below is a summary of the water quality volume and runoff reduction volumes attained on

site:

Total Water Quality Volume Required (WQv):	**3,061 cf**
100% WQv req'd from new impervious area:	2,690 cf
25% WQv req'd from reconstructed impervious using standard SMP:	0.25(1,483 cf) = 371 cf

Minimum Runoff Reduction Volume Required (RRv, min) 538 cf

East Bioretention Basin:

WQ_v Required	2,000 cf
WQ_v Provided	1,200 cf
RR_v Provided	800 cf

(Standard SMP with Runoff Reduction Volume)
– due to HSG D soils, RRv = 40% WQv for bioretention basins

North Bioretention Basin:

WQ_v Required	1,228 cf
WQ_v Provided	737 cf
RR_v Provided	491 cf

(Standard SMP with Runoff Reduction Volume)
– due to HSG D soils, RRv = 40% WQv for bioretention basins

Total RRv Provided: 1,291 cf

Total WQv Provided (WQv provided + RRv provided): 3,228 cf

Post construction maintenance of the permanent water quality treatment facilities will be performed by the Owner. For the bioretention basins, this will include removing any litter, maintaining and replacing plantings as needed and adding/replacing mulch as needed.

B. New York State Department of Environmental Conservation regulations require design of stormwater detention facilities to limit the peak discharge produced by the 10-year and 100-year storm events to the pre-developed runoff rates, as well as provide extended detention of the 1-YR, 24-HR storm event (channel protection volume).

Stormwater runoff from the new building as well as the two parking lots will be conveyed to a stormwater detention basin. The stormwater detention basin has been sized for future site improvements that includes a 4,480 s.f. stand-alone building. Stormwater discharge from the detention basin is limited by a control structure that consists of a 12-inch diameter HDPE inlet pipe, a 7.4-inch orifice, a 4-foot long sharp crested weir and an 18-inch diameter HDPE outlet pipe.

The channel protection volume (CPv) requirement is relaxed for redevelopment projects with an increase in impervious area. The post development 1-YR storm event discharge rate will be less than the pre-development 1-YR storm event discharge rate.

The stormwater detention calculations were completed using HYDROCAD, version 10 software. Following is a summary of the pre and post development discharge rates and associated detention volumes and water surface elevations:

Discharge to Olean Road Drainage Ditch:

Storm Event	Pre-Development Discharge (cfs)	Post-Development Discharge (cfs)	Detention Volume (cf)	Water Surface Elevation (feet)
1-YR	2.65	2.63	1,181	885.79
10-YR	8.55	8.41	4,564	886.73
100-YR	20.37	20.25	8,164	887.36

Discharge to South:

Storm Event	Pre-Development Discharge (cfs)	Post-Development Discharge (cfs)
1-YR	0.13	0.12
10-YR	0.52	0.49
100-YR	1.36	1.29

3.5 Construction and Waste Materials

Some of the construction materials expected to be stored onsite include precast concrete drainage structures, corrugated HDPE pipe, under drain pipe, silt fence, etc. These materials will be stored in the contractor's staging area. The Contractor shall install additional silt fence around the perimeter of both the staging and topsoil stockpile areas, should contaminated runoff flow off the area.

3.6 Other Requirements.

A. Any discharges other than storm water must be in compliance with the appropriate SPDES permit (other than this permit).
B. No solid materials including building materials shall be discharged to waters of the United States, except as authorized by a federal or state law.
C. All construction activities shall be in compliance with all federal, state and local laws as required.

3.7 Inspections.

A. Inspections are important for visually evaluating potential storm water runoff pollution sources at the facility. All projects should be inspected periodically to ensure contaminants are not present in the storm water exiting a project site. On projects which apply for coverage under the SPDES General Permit, qualified inspectors of the Owner

shall inspect and evaluate the site. Qualified inspectors are persons 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), or a soil scientist.

B. The Owner shall have a qualified inspector conduct an assessment of the site prior to the commencement of construction and certify in an inspection report that the erosion and sediment controls described in the SWPPP have been installed or implemented. Following the commencement of construction, site inspections shall occur at least once every seven calendar days. For construction sites where soil disturbance activities are on going and the owner or operator has received authorization 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. When performing just two (2) inspections every seven (7) calendar days, the 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 Regional Office stormwater contact person in writing prior to reducing the frequency of inspections

D. The owner shall prepare a written summary of the project status with respect to compliance with the Permit at a minimum frequency of every three months during which coverage under the Permit exists. The summary should address the status of achieving each component of the SWPPP. The Owner shall post at the site, in a publicly-accessible location, a summary of the site inspection activities on a monthly basis.

E. 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 MS4 stormwater management officer 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(s) 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 Notice of Termination (N.O.T.). The owner or operator shall then submit the completed N.O.T. form to the MS4 stormwater management officer.

F. Each inspection report shall, at the minimum, include the following:

- Date and time of inspection
- Name and title of person(s) performing inspection.
- A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection
- 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.
- On a site map, indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period.
- Indicate on a site map all areas of the site map that have undergone temporary or permanent stabilization.
- Indicate all disturbed site areas that have not undergone active site work during the previous 14-day period.
- Inspect all sediment control practices and record the approximate degree of sediment accumulation as a percentage of the sediment storage volume.
- Inspect all erosion and sediment control practices and record all maintenance requirements such as verifying the integrity of barrier or diversion systems (silt fencing) and containment systems (sediment basins).
- Identification of all erosion and sediment control practices that were not installed properly or are not functioning as designed and need to be reinstalled or replaced
- Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching.
- Document any excessive deposition of sediment or ponding water along barriers or diversion systems. Record the depth of sediment within containment structures, any erosion near outlet and overflow structures, and verify the ability of rock filters around perforated riser pipes to pass water.
- Location where vehicles enter or exit the site shall be inspected for evidence of offsite sediment tracking
- 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
- Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s).

F. The process for conducting the evaluation shall follow these steps:

- Review the Storm Water Pollution Prevention Plan and draw up a list of any items of concern.
- List all specified control measures and areas covered in the plan.
- Conduct inspections to determine whether all storm water pollution prevention

measures are accurately identified in the plan, are in place, and working properly.
- Document findings and inspections in a site log book.
- Modify SWPPP as appropriate. (Note: The plan shall be modified by the contractor and site inspector within 7 days of the inspection).

G. 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 Contractor's Certification Form 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.

H. All inspection reports shall be signed by the qualified inspector. A copy of the inspection reports shall be maintained on site with the SWPPP and submitted to the MS4 stormwater management officer.

A copy of the erosion and sediment control inspection checklist has been included in Appendix D-1.

3.8 Maintenance.

The contractor is required to inspect and maintain all soil erosion and siltation controls throughout the duration of the project and until final stabilization of the site. "Final Stabilization" means that all soil disturbing activities at the site have been completed, and that a uniform, perennial vegetative cover with a density of 80% has been obtained.

Maintenance shall include, but not be limited to, repair or replacement of any existing controls, removal of sediment and any other measures deemed necessary, which would reduce soil erosion and siltation runoff. Sediment shall be removed from sediment traps or sediment basins whenever their capacity has been reduced by fifty (50) percent from the design capacity. Refer to Section 3.2 for maintenance of individual controls.

Maintenance of the bioretention basins and stormwater detention facility will be provided by the owner. Generally, this consists of inspecting and replacing diseased plants, removing litter and debris, checking for clogging of planting soil and replacing when necessary. Suggested inspection and maintenance checklists are provided in appendix H-1.

3.9 Contractors.

The contractor must sign a SWPPP certification form before undertaking any construction activity at the site identified in the Storm Water Pollution Prevention Plan. The contractor is responsible for any and all subcontractors working on the SWPPP. A copy of the Contractor's Certification Form has been included in Appendix E-1.

4.0 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 site achieves final stabilization. This period may be extended by the Department, in its sole discretion, at any time upon written notification

5.0 NOTICE OF TERMINATION REQUIREMENTS

A. Prior to filing a Notice of Termination (NOT) the Owner shall have a qualified inspector perform a final site inspection. The qualified inspector shall 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. Additionally, the NOT will need to submit the NOT to the MS4 stormwater management officer for their signature. The MS4 may require a final inspection o the site at that time.
B. Post-construction stormwater management practices that are owned by a public or private institution (e.g. school, college, university), or government agency or authority, 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.
C. Post-construction stormwater management practices that are privately owned, the owner or operator has a deed restriction in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.
D. Post-construction stormwater management practices that are privately owned, but will be maintained by a municipality, require an executed maintenance agreement be in place with the municipality that will maintain the post-construction stormwater management practice(s). Any right-of- way(s) needed to maintain such practice(s) must have been deeded to the municipality in which the practice(s) is located.

In addition, the Owner must certify that the permanent structure(s) have been constructed as described in the SWPPP.

When the project is completed and the site has been stabilized, the Owner must submit a NOT. A copy of the NOT form has been included in Appendix F-1. The NOT form shall be submitted to the following address:

NYS DEC "Notice of Termination"
Bureau of Water Permits
625 Broadway
Albany, NY 12233-3505

OPERATOR CERTIFICATION

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

_____

Signature Date

_____

Name, Title

_____

Affiliation

APPENDIX A-1

NYSDEC SPDES GENERAL PERMIT FOR STORM WATER DISCHARGES ASSOCIATED FROM CONSTRUCTION ACTIVITY
PERMIT NO. GP-0-20-001

NEW YORK STATE OF OPPORTUNITY | 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

1-23-20

Authorized Signature

Date

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

PREFACE

Pursuant to Section 402 of the Clean Water Act ("CWA"), stormwater *discharges* from certain *construction activities* are unlawful unless they are authorized by a *National Pollutant Discharge Elimination System ("NPDES")* permit or by a state permit program. New York administers the approved State Pollutant Discharge Elimination System (SPDES) program with permits issued in accordance with the New York State Environmental Conservation Law (ECL) Article 17, Titles 7, 8 and Article 70.

An *owner or operator* of a *construction activity* that is eligible for coverage under this permit must obtain coverage prior to the *commencement of construction activity*. Activities that fit the definition of "*construction activity*", as defined under 40 CFR 122.26(b)(14)(x), (15)(i), and (15)(ii), constitute construction of a *point source* and therefore, pursuant to ECL section 17-0505 and 17-0701, the *owner or operator* must have coverage under a SPDES permit prior to *commencing construction activity*. The *owner or operator* cannot wait until there is an actual *discharge* from the *construction site* to obtain permit coverage.

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

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES

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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

*Discharge*s authorized by this permit must achieve, at a minimum, the effluent limitations in Part I.B.1. (a) – (f) of this permit. These limitations represent the degree of effluent reduction attainable by the application of best practicable technology currently available.

1. Erosion and Sediment Control Requirements - The *owner or operator* must select, design, install, implement and maintain control measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. The selection, design, installation, implementation, and maintenance of these control measures must meet the non-numeric effluent limitations in Part I.B.1.(a) – (f) of this permit and be in accordance with the New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, using sound engineering judgment. Where control measures are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must include in the *Stormwater Pollution Prevention Plan* (“SWPPP”) the reason(s) for the

deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

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

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

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

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

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

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

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

   (vii) *Minimize* soil compaction. Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted;

   (viii) Unless *infeasible*, preserve a sufficient amount of topsoil to complete soil restoration and establish a uniform, dense vegetative cover; and

   (ix) *Minimize* dust. On areas of exposed soil, *minimize* dust through the appropriate application of water or other dust suppression techniques to control the generation of pollutants that could be discharged from the site.

b. **Soil Stabilization**. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within fourteen (14) days from the date the current soil disturbance activity ceased. For construction sites that *directly discharge* to one of the 303(d) segments

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

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

d. **Pollution Prevention Measures**. Design, install, implement, and maintain effective pollution prevention measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such measures must be designed, installed, implemented and maintained to:

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

(ii) *Minimize* the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, hazardous and toxic waste, and other materials present on the site to precipitation and to stormwater. Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a *discharge* of *pollutants*, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use) ; and

(iii) Prevent the *discharge* of *pollutants* from spills and leaks and implement chemical spill and leak prevention and response procedures.

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

(i) Wastewater from washout of concrete;

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

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

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

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

f. Surface Outlets. When discharging from basins and impoundments, the outlets shall be designed, constructed and maintained in such a manner that sediment does not leave the basin or impoundment and that erosion at or below the outlet does not occur.

C. Post-construction Stormwater Management Practice Requirements

1. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must select, design, install, and maintain the practices to meet the *performance criteria* in the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015, using sound engineering judgment. Where post-construction stormwater management practices ("SMPs") are not designed in conformance with the *performance criteria* in the Design Manual, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must design the practices to meet the applicable *sizing criteria* in Part I.C.2.a., b., c. or d. of this permit.

a. Sizing Criteria for New Development

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

(ii) Minimum RRv and Treatment of Remaining Total WQv: Construction activities that cannot meet the criteria in Part I.C.2.a.(i) of this permit due to site limitations shall direct runoff from all newly constructed impervious areas to a RR technique or standard SMP with RRv capacity unless infeasible. The specific site limitations that prevent the reduction of 100% of the WQv shall be documented in the SWPPP.

For each impervious area that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered infeasible.

In no case shall the runoff reduction achieved from the newly constructed impervious areas be less than the Minimum RRv as calculated using the criteria in Section 4.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume ("Cpv"): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site discharges directly to tidal waters, or fifth order or larger streams.

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

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

b. *Sizing Criteria* for *New Development* in Enhanced Phosphorus Removal Watershed

(i) Runoff Reduction Volume (RRv): Reduce the total Water Quality Volume (WQv) by application of RR techniques and standard SMPs with RRv capacity. The total WQv is the runoff volume from the 1-year, 24 hour design storm over the post-developed watershed and shall be

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

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

In no case shall the runoff reduction achieved from the newly constructed *impervious areas* be less than the Minimum RRv as calculated using the criteria in Section 10.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume (Cpv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site *discharge*s directly to tidal waters, or fifth order or larger streams.

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

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

c. Sizing Criteria for Redevelopment Activity

(i) Water Quality Volume (WQv): The WQv treatment objective for *redevelopment activity* shall be addressed by one of the following options. *Redevelopment activities* located in an Enhanced Phosphorus Removal Watershed (see Part III.B.3. and Appendix C of this permit) shall calculate the WQv in accordance with Section 10.3 of the Design Manual. All other *redevelopment activities* shall calculate the WQv in accordance with Section 4.2 of the Design Manual.

(1) Reduce the existing *impervious cover* by a minimum of 25% of the total disturbed, *impervious area*. The Soil Restoration criteria in Section 5.1.6 of the Design Manual must be applied to all newly created pervious areas, or

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

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

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

If there is an existing post-construction stormwater management practice located on the site that captures and treats runoff from the *impervious area* that is being disturbed, the WQv treatment option selected must, at a minimum, provide treatment equal to the treatment that was being provided by the existing practice(s) if that treatment is greater than the treatment required by options 1 – 4 above.

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

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

(iv) Extreme Flood Control Criteria (Qf): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site

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

Construction projects that include both New Development and Redevelopment Activity shall provide post-construction stormwater management controls that meet the sizing criteria calculated as an aggregate of the Sizing Criteria in Part I.C.2.a. or b. of this permit for the New Development portion of the project and Part I.C.2.c of this permit for Redevelopment Activity portion of the project.

D. Maintaining Water Quality

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

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

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

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

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

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

E. Eligibility Under This General Permit

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

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

3. Notwithstanding paragraphs E.1 and E.2 above, the following non-stormwater discharges are authorized by this permit: those listed in 6 NYCRR 750-1.2(a)(29)(vi), with the following exception: "Discharges from firefighting activities are authorized only when the firefighting activities are emergencies/unplanned"; waters to which other components have not been added that are used to control dust in accordance with the SWPPP; and uncontaminated *discharge*s from *construction site* de-watering operations. All non-stormwater discharges must be identified in the SWPPP. Under all circumstances, the *owner or operator* must still comply with *water quality standards* in Part I.D of this permit.

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

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

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

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

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

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

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

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

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

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

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

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

   c. Which disturb one (1) or more acres of land designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

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

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

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

   c. Which disturb two (2) or more acres of land designated on the current USDA Soil Survey as Soil Slope Phase "D" (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

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

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

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

   b. DEC consultation form sent to OPRHP, and copied to the NYS DEC Agency Historic Preservation Officer (APO), and
      (i) the State Environmental Quality Review (SEQR) Environmental Assessment Form (EAF) with a negative declaration or the Findings Statement, with documentation of OPRHP's agreement with the resolution; or
      (ii) documentation from OPRHP that the *construction activity* will result in No Impact; or
      (iii) documentation from OPRHP providing a determination of No Adverse Impact; or
      (iv) a Letter of Resolution signed by the owner/operator, OPRHP and the DEC APO which allows for this *construction activity* to be eligible for coverage under the general permit in terms of the State Historic Preservation Act (SHPA); or

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

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

d. Documentation that:

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

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

Part II. PERMIT COVERAGE

A. How to Obtain Coverage

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

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

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

B. Notice of Intent (NOI) Submittal

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

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

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

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

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

C. Permit Authorization

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

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

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

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

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

c. the final SWPPP has been prepared, and

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

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

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

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

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

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

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

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

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

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

D. General Requirements For Owners or Operators With Permit Coverage

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

2. The *owner or operator* shall maintain a copy of the General Permit (GP-0-20-001), NOI, *NOI Acknowledgment Letter*, SWPPP, MS4 SWPPP Acceptance form, inspection reports, responsible contractor's or subcontractor's certification statement (see Part III.A.6.), and all documentation necessary to demonstrate eligibility with this permit at the *construction site* until all disturbed areas have achieved *final stabilization* and the NOT has been submitted to the Department. The documents must be maintained in a secure location, such as a job trailer, on-site construction office, or mailbox with lock. The secure location must be accessible during normal business hours to an individual performing a compliance inspection.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

F. Change of Owner or Operator

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

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

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

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

Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General SWPPP Requirements

1. A SWPPP shall be prepared and implemented by the *owner or operator* of each *construction activity* covered by this permit. The SWPPP must document the selection, design, installation, implementation and maintenance of the control measures and practices that will be used to meet the effluent limitations in Part I.B. of this permit and where applicable, the post-construction stormwater management practice requirements in Part I.C. of this permit. The SWPPP shall be prepared prior to the submittal of the NOI. The NOI shall be submitted to the Department prior to the *commencement of construction activity*. A copy of the completed, final NOI shall be included in the SWPPP.

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

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

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

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

b. whenever there is a change in design, construction, or operation at the *construction site* that has or could have an effect on the *discharge* of *pollutants*;

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

d. to document the final construction conditions.

5. The Department may notify the *owner or operator* at any time that the SWPPP does not meet one or more of the minimum requirements of this permit. The notification shall be in writing and identify the provisions of the SWPPP that require modification. Within fourteen (14) calendar days of such notification, or as otherwise indicated by the Department, the *owner or operator* shall make the required changes to the SWPPP and submit written notification to the Department that the changes have been made. If the *owner or operator* does not respond to the Department's comments in the specified time frame, the Department may suspend the *owner's or operator's* coverage under this permit or require the *owner or operator* to obtain coverage under an individual SPDES permit in accordance with Part II.D.4. of this permit.

6. Prior to the *commencement of construction activity*, the *owner or operator* must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The *owner or operator* shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the *trained contractor.* The *owner or operator* shall ensure that at least one *trained contractor* is on site on a daily basis when soil disturbance activities are being performed.

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

   "I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with

the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater *discharge*s from *construction activities* and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations"

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

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

B. Required SWPPP Contents

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

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

b. A site map/construction drawing(s) for the project, including a general location map. At a minimum, the site map shall show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent off-site surface water(s); floodplain/floodway boundaries; wetlands and drainage patterns that could be affected by the *construction activity*; existing and final contours ; locations of different soil types with boundaries; material, waste, borrow or equipment storage areas located on adjacent properties; and location(s) of the stormwater *discharge*(s);

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

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

e. A description of the minimum erosion and sediment control practices to be installed or implemented for each *construction activity* that will result in soil disturbance. Include a schedule that identifies the timing of initial placement or implementation of each erosion and sediment control practice and the minimum time frames that each practice should remain in place or be implemented;

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

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

h. The dimensions, material specifications, installation details, and operation and maintenance requirements for all erosion and sediment control practices. Include the location and sizing of any temporary sediment basins and structural practices that will be used to divert flows from exposed soils;

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

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

j. A description of the pollution prevention measures that will be used to control litter, construction chemicals and construction debris from becoming a *pollutant* source in the stormwater *discharges*;

k. A description and location of any stormwater *discharges* associated with industrial activity other than construction at the site, including, but not limited to, stormwater *discharges* from asphalt plants and concrete plants located on the *construction site*; and

l. Identification of any elements of the design that are not in conformance with the design criteria in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Include the reason for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. Post-construction stormwater management practice component – The *owner or operator* of any construction project identified in Table 2 of Appendix B as needing post-construction stormwater management practices shall prepare a SWPPP that includes practices designed in conformance with the applicable *sizing criteria* in Part I.C.2.a., c. or d. of this permit and the *performance criteria* in the technical standard, New York State Stormwater Management Design Manual dated January 2015

   Where post-construction stormwater management practices are not designed in conformance with the *performance criteria* in the technical standard, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

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

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

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

c. A Stormwater Modeling and Analysis Report that includes:
   (i) Map(s) showing pre-development conditions, including watershed/subcatchments boundaries, flow paths/routing, and design points;

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

   (iii) Results of stormwater modeling (i.e. hydrology and hydraulic analysis) for the required storm events. Include supporting calculations (model runs), methodology, and a summary table that compares pre and post-development runoff rates and volumes for the different storm events;

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

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

   (vi) Identification of any elements of the design that are not in conformance with the *performance criteria* in the Design Manual. Include the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the Design Manual;

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

e. Infiltration test results, when required; and

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

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

C. Required SWPPP Components by Project Type

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

Part IV. INSPECTION AND MAINTENANCE REQUIREMENTS

A. General Construction Site Inspection and Maintenance Requirements

1. The *owner or operator* must ensure that all erosion and sediment control practices (including pollution prevention measures) and all post-construction stormwater management practices identified in the SWPPP are inspected and maintained in accordance with Part IV.B. and C. of this permit.

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

B. Contractor Maintenance Inspection Requirements

1. The *owner or operator* of each *construction activity* identified in Tables 1 and 2 of Appendix B shall have a *trained contractor* inspect the erosion and sediment control practices and pollution prevention measures being implemented within the active work area daily to ensure that they are being maintained in effective operating condition at all times. If deficiencies are identified, the contractor shall

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

2. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *trained contractor* can stop conducting the maintenance inspections. The *trained contractor* shall begin conducting the maintenance inspections in accordance with Part IV.B.1. of this permit as soon as soil disturbance activities resume.

3. For construction sites where soil disturbance activities have been shut down with partial project completion, the *trained contractor* can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.

C. Qualified Inspector Inspection Requirements

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

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

- licensed Professional Engineer,
- Certified Professional in Erosion and Sediment Control (CPESC),
- New York State Erosion and Sediment Control Certificate Program holder
- Registered Landscape Architect, or
- someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity].

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

   a. the construction of a single family residential subdivision with 25% or less *impervious cover* at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located

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

b. the construction of a single family home that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

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

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

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

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

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

c. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *qualified inspector* shall conduct a site inspection at least once every thirty (30) calendar days. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to reducing the frequency of inspections.

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

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

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

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

a. Date and time of inspection;

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

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

d. A description of the condition of the runoff at all points of *discharge* from the *construction site*. This shall include identification of any *discharges* of sediment from the *construction site*. Include *discharges* from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;

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

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

g. Identification of all erosion and sediment control practices and pollution prevention measures that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;

h. Description and sketch of areas with active soil disturbance activity, areas that have been disturbed but are inactive at the time of the inspection, and areas that have been stabilized (temporary and/or final) since the last inspection;

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

j. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices and pollution prevention measures; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s);

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

l. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The *qualified inspector* shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.

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

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

Part V. TERMINATION OF PERMIT COVERAGE

A. Termination of Permit Coverage

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

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

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

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

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

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

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

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

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

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

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

c. for post-construction stormwater management practices that are privately owned, the *owner or operator* has a mechanism in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the *owner or operator's* deed of record,

d. for post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university, hospital), government agency or authority, or public utility; the *owner or operator* has policy and procedures in place that ensures operation and maintenance of the practices in accordance with the operation and maintenance plan.

Part VI. REPORTING AND RETENTION RECORDS

A. Record Retention

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

B. Addresses

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

Part VII. STANDARD PERMIT CONDITIONS

A. Duty to Comply

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

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

If any human remains or archaeological remains are encountered during excavation, the *owner or operator* must immediately cease, or cause to cease, all *construction activity* in the area of the remains and notify the appropriate Regional Water Engineer (RWE). *Construction activity* shall not resume until written permission to do so has been received from the RWE.

B. Continuation of the Expired General Permit

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

C. Enforcement

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

D. Need to Halt or Reduce Activity Not a Defense

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

E. Duty to Mitigate

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

F. Duty to Provide Information

The *owner or operator* shall furnish to the Department, within a reasonable specified time period of a written request, all documentation necessary to demonstrate eligibility and any information to determine compliance with this permit or to determine whether cause exists for modifying or revoking this permit, or suspending or denying coverage under this permit, in accordance with the terms and conditions of this permit. The NOI, SWPPP and inspection reports required by this permit are public documents that the *owner or operator* must make available for review and copying by any person within five (5) business days of the *owner or operator* receiving a written request by any such person to review these documents. Copying of documents will be done at the requester's expense.

G. Other Information

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

H. Signatory Requirements

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

    a. For a corporation these forms shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

(i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or

(ii) the manager of one or more manufacturing, production or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

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

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

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

(ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

2. The SWPPP and other information requested by the Department shall be signed by a person described in Part VII.H.1. of this permit or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described in Part VII.H.1. of this permit;

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

superintendent, position of *equivalent* responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position) and,

c. The written authorization shall include the name, title and signature of the authorized representative and be attached to the SWPPP.

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

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

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

I. Property Rights

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

J. Severability

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

K. Requirement to Obtain Coverage Under an Alternative Permit

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

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

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

L. Proper Operation and Maintenance

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

M. Inspection and Entry

The *owner or operator* shall allow an authorized representative of the Department, EPA, applicable county health department, or, in the case of a *construction site* which *discharges* through an *MS4*, an authorized representative of the *MS4* receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the owner’s or operator's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;

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

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

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

N. Permit Actions

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

O. Definitions

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

P. Re-Opener Clause

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

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

Q. Penalties for Falsification of Forms and Reports

In accordance with 6NYCRR Part 750-2.4 and 750-2.5, any person who knowingly makes any false material statement, representation, or certification in any application, record, report or other document filed or required to be maintained under this permit, including reports of compliance or noncompliance shall, upon conviction, be punished in accordance with ECL §71-1933 and or Articles 175 and 210 of the New York State Penal Law.

R. Other Permits

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

APPENDIX A – Acronyms and Definitions

Acronyms

APO – Agency Preservation Officer
BMP – Best Management Practice
CPESC – Certified Professional in Erosion and Sediment Control
Cpv – Channel Protection Volume
CWA – Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq)
DOW – Division of Water
EAF – Environmental Assessment Form
ECL - Environmental Conservation Law
EPA – U. S. Environmental Protection Agency
HSG – Hydrologic Soil Group
MS4 – Municipal Separate Storm Sewer System
NOI – Notice of Intent
NOT – Notice of Termination
NPDES – National Pollutant Discharge Elimination System
OPRHP – Office of Parks, Recreation and Historic Places
Qf – Extreme Flood
Qp – Overbank Flood
RRv – Runoff Reduction Volume
RWE – Regional Water Engineer
SEQR – State Environmental Quality Review
SEQRA - State Environmental Quality Review Act
SHPA – State Historic Preservation Act
SPDES – State Pollutant Discharge Elimination System
SWPPP – Stormwater Pollution Prevention Plan
TMDL – Total Maximum Daily Load
UPA – Uniform Procedures Act
USDA – United States Department of Agriculture
WQv – Water Quality Volume

Definitions

All definitions in this section are solely for the purposes of this permit.

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

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

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

Combined Sewer - means a sewer that is designed to collect and convey both "sewage" and "stormwater".

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

Construction Activity(ies) - means any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, logging equipment operation, the cutting and skidding of trees, stump removal and/or brush root removal. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

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

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

Direct Discharge (to a specific surface waterbody) - means that runoff flows from a *construction site* by overland flow and the first point of discharge is the specific surface waterbody, or runoff flows from a *construction site* to a separate storm sewer system

and the first point of discharge from the separate storm sewer system is the specific surface waterbody.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Note: Inspections of any post-construction stormwater management practices that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

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

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

Regulated, Traditional Land Use Control MS4 - means a city, town or village with land use control authority that is authorized to discharge under New York State DEC's

SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s) or the City of New York's Individual SPDES Permit for their Municipal Separate Storm Sewer Systems (NY-0287890).

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

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

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

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

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

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

Streambank – as used in this permit, means the terrain alongside the bed of a creek or stream. The bank consists of the sides of the channel, between which the flow is confined.

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

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

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

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

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

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

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

It can also mean an employee from the contracting (construction) company, identified in Part III.A.6., that meets the *qualified inspector* qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity).

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

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

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

APPENDIX B – Required SWPPP Components by Project Type

Table 1
Construction Activities that Require the Preparation of a SWPPP That Only Includes Erosion and Sediment Controls

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

- Single family home not located in one of the watersheds listed in Appendix C or not *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions with 25% or less impervious cover at total site build-out and not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E
- Construction of a barn or other *agricultural building*, silo, stock yard or pen.

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

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

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

- Installation of underground, linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains
- Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and stream restoration projects
- Pond construction
- Linear bike paths running through areas with vegetative cover, including bike paths surfaced with an impervious cover
- Cross-country ski trails and walking/hiking trails
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are not part of residential, commercial or institutional development;
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that include incidental shoulder or curb work along an existing highway to support construction of the sidewalk, bike path or walking path.
- Slope stabilization projects
- Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics

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

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

- Spoil areas that will be covered with vegetation
- Vegetated open space projects (i.e. recreational parks, lawns, meadows, fields, downhill ski trails) excluding projects that *alter hydrology from pre to post development* conditions,
- Athletic fields (natural grass) that do not include the construction or reconstruction of *impervious area* and do not *alter hydrology from pre to post development* conditions
- Demolition project where vegetation will be established, and no redevelopment is planned
- Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover*
- Structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State", excluding projects that involve soil disturbances of greater than five acres and construction activities that include the construction or reconstruction of impervious area
- Temporary access roads, median crossovers, detour roads, lanes, or other temporary impervious areas that will be restored to pre-construction conditions once the construction activity is complete

Table 2

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

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

- Single family home located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family home that disturbs five (5) or more acres of land
- Single family residential subdivisions located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions that involve soil disturbances of between one (1) and five (5) acres of land with greater than 25% impervious cover at total site build-out
- Single family residential subdivisions that involve soil disturbances of five (5) or more acres of land, and single family residential subdivisions that involve soil disturbances of less than five (5) acres that are part of a larger common plan of development or sale that will ultimately disturb five or more acres of land
- Multi-family residential developments; includes duplexes, townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Airports
- Amusement parks
- Breweries, cideries, and wineries, including establishments constructed on agricultural land
- Campgrounds
- Cemeteries that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Commercial developments
- Churches and other places of worship
- Construction of a barn or other *agricultural building* (e.g. silo) and structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" that include the construction or reconstruction of *impervious area*, excluding projects that involve soil disturbances of less than five acres.
- Golf courses
- Institutional development; includes hospitals, prisons, schools and colleges
- Industrial facilities; includes industrial parks
- Landfills
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTW's, water treatment plants, and water storage tanks
- Office complexes
- Playgrounds that include the construction or reconstruction of impervious area
- Sports complexes
- Racetracks; includes racetracks with earthen (dirt) surface
- Road construction or reconstruction, including roads constructed as part of the construction activities listed in Table 1

Table 2 (Continued)

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

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

- Parking lot construction or reconstruction, including parking lots constructed as part of the construction activities listed in Table 1
- Athletic fields (natural grass) that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Athletic fields with artificial turf
- Permanent access roads, parking areas, substations, compressor stations and well drilling pads, surfaced with *impervious cover,* and constructed as part of an over-head electric transmission line project, wind-power project, cell tower project, oil or gas well drilling project, sewer or water main project or other linear utility project
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a residential, commercial or institutional development
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a highway construction or reconstruction project
- All other construction activities that include the construction or reconstruction of *impervious area* or *alter the hydrology from pre to post development* conditions, and are not listed in Table 1

APPENDIX C – Watersheds Requiring Enhanced Phosphorus Removal

Watersheds where *owners or operators* of construction activities identified in Table 2 of Appendix B must prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the technical standard, New York State Stormwater Management Design Manual ("Design Manual").

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

Figure 1 - New York City Watershed East of the Hudson

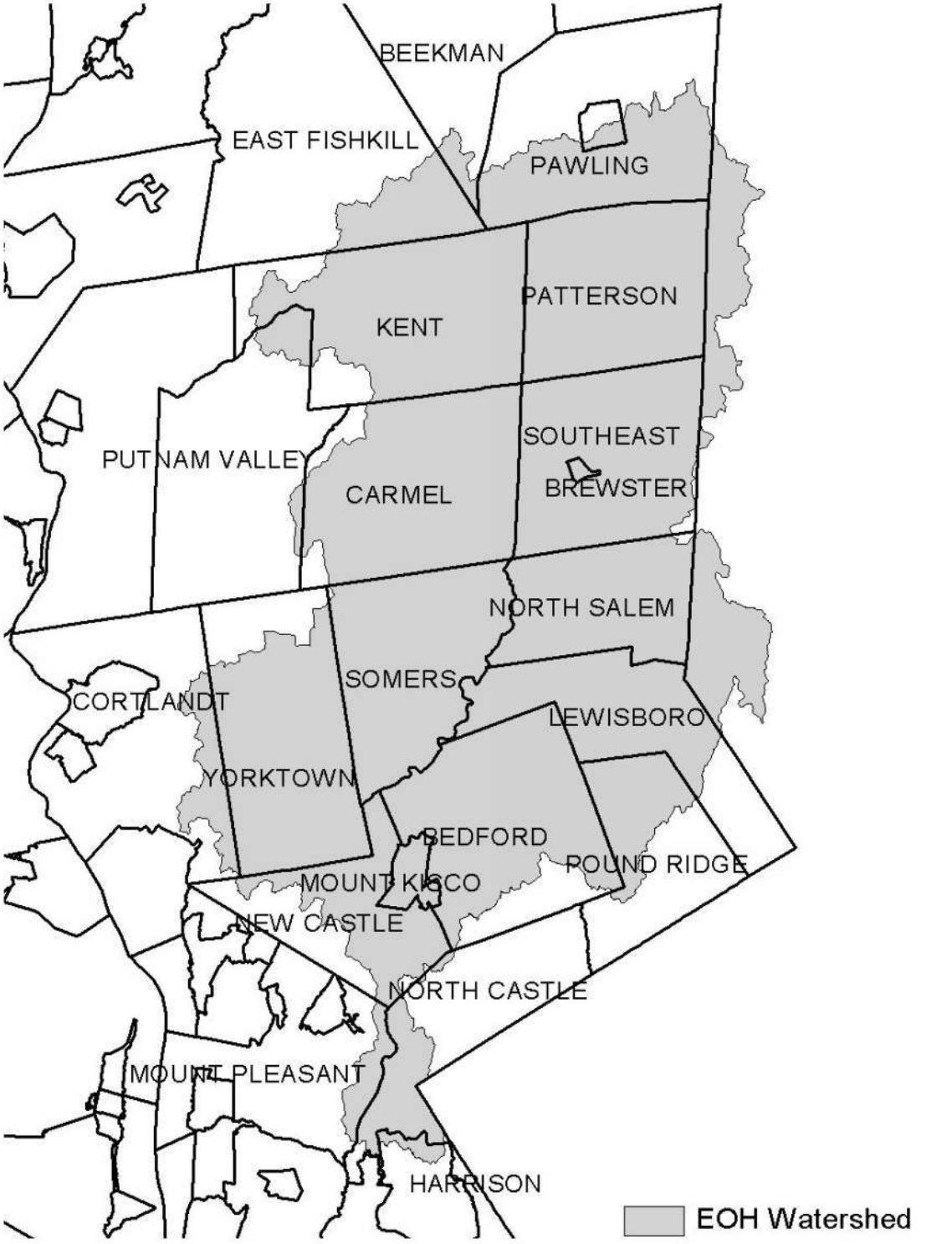


Figure 2 - Onondaga Lake Watershed

Figure 3 - Greenwood Lake Watershed

Figure 4 - Oscawana Lake Watershed

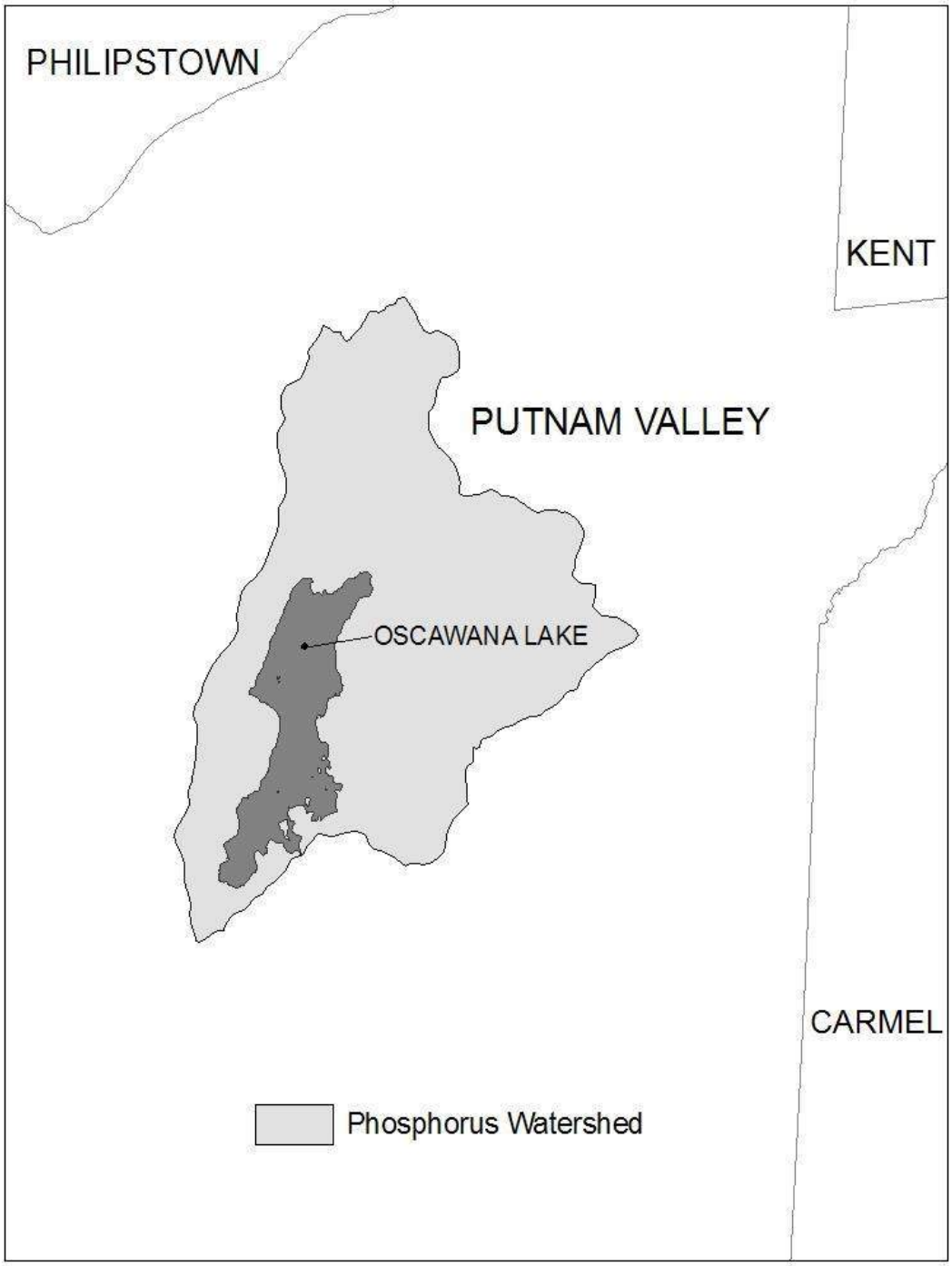
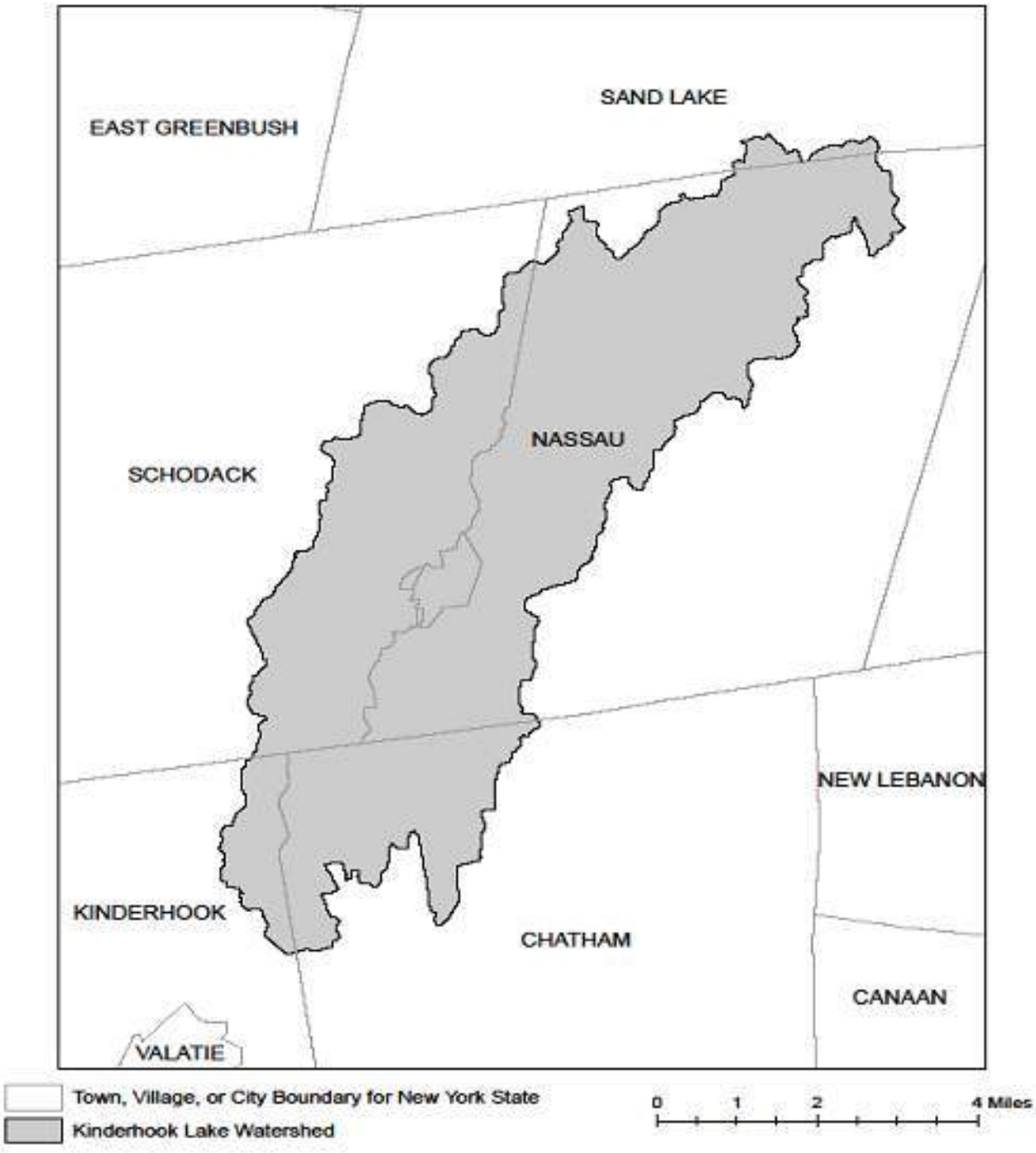


Figure 5 - Kinderhook Lake Watershed



APPENDIX D – Watersheds with Lower Disturbance Threshold

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

APPENDIX F – List of NYS DEC Regional Offices

Region	Covering the following counties:	DIVISION OF ENVIRONMENTAL PERMITS (DEP) Permit Administrators	DIVISION OF WATER (DOW) Water (SPDES) Program
1	Nassau and Suffolk	50 Circle Road Stony Brook, NY 11790 Tel. (631) 444-0365	50 Circle Road Stony Brook, NY 11790-3409 Tel. (631) 444-0405
2	Bronx, Kings, New York, Queens and Richmond	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4997	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4933
3	Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster and Westchester	21 South Putt Corners Road New Paltz, NY 12561-1696 Tel. (845) 256-3059	100 Hillside Avenue, Suite 1w White Plains, NY 10603 Tel. (914) 428 - 2505
4	Albany, Columbia, Delaware, Greene, Montgomery, Otsego, Rensselaer, Schenectady and Schoharie	1150 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2069	1130 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2045
5	Clinton, Essex, Franklin, Fulton, Hamilton, Saratoga, Warren and Washington	1115 State Route 86, Po Box 296 Ray Brook, NY 12977-0296 Tel. (518) 897-1234	232 Golf Course Road Warrensburg, NY 12885-1172 Tel. (518) 623-1200
6	HERKIMER, JEFFERSON, LEWIS, ONEIDA AND ST. LAWRENCE	STATE OFFICE BUILDING 317 WASHINGTON STREET WATERTOWN, NY 13601-3787 TEL. (315) 785-2245	STATE OFFICE BUILDING 207 GENESEE STREET UTICA, NY 13501-2885 TEL. (315) 793-2554
7	BROOME, CAYUGA, CHENANGO, CORTLAND, MADISON, ONONDAGA, OSWEGO, TIOGA AND TOMPKINS	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7438	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7500
8	CHEMUNG, GENESEE, LIVINGSTON, MONROE, ONTARIO, ORLEANS, SCHUYLER, SENECA, STEUBEN, WAYNE AND YATES	6274 EAST AVON-LIMA ROADAVON, NY 14414-9519 TEL. (585) 226-2466	6274 EAST AVON-LIMA RD. AVON, NY 14414-9519 TEL. (585) 226-2466
9	ALLEGANY, CATTARAUGUS, CHAUTAUQUA, ERIE, NIAGARA AND WYOMING	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7165	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7070

APPENDIX B-1

NOTICE OF INTENT (NOI),
MS4 SWPPP ACCEPTANCE FORM &
NYSDEC ACKNOWLEDGMENT OF NOI LETTER

FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY UNDER THE SPDES GENERAL PERMIT

0644089821

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)
RURAL OUTREACH CENTER

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

Owner/Operator Contact Person First Name
FRANK

Owner/Operator Mailing Address
730 OLEAN ROAD

City
EAST AURORA

State
NY

Zip
14052-____

Phone (Owner/Operator)
716-240-2220

Fax (Owner/Operator)
___-___-____

Email (Owner/Operator)
FRANKCERNY@THEROC.CO

FED TAX ID
__-_____ (not required for individuals)

Project Site Information

Project/Site Name
RURAL OUTREACH CENTER

Street Address (NOT P.O. BOX)
730 OLEAN ROAD

Side of Street
○ **North** ○ **South** ● **East** ○ **West**

City/Town/Village (THAT ISSUES BUILDING PERMIT)
TOWN OF AURORA

State: NY
Zip: 14052-
County: ERIE
DEC Region: 9

Name of Nearest Cross Street
SOUTHBOUND ONRAMP TO NYS ROUTE 400

Distance to Nearest Cross Street (Feet)
1200

Project In Relation to Cross Street
● **North** ○ **South** ○ **East** ○ **West**

Tax Map Numbers
Section-Block-Parcel
176.00-4-17.2

Tax Map Numbers

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://gisservices.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 78603
Ex. -73.749

Y Coordinates (Northing)
42746
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 — Number of Lots
- ○ 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

***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
7.2	3.9	0.4	1.2

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
%	%	%	100 %

7. Is this a phased project? ○ **Yes** ● **No**

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

Start Date	End Date
09/01/2021	09/01/2022

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

Name

EAST BRANCH CAZENOVIA CREEK

9a. Type of waterbody identified in Question 9?

- ○ Wetland / State Jurisdiction On Site (Answer 9b)
- ○ Wetland / State Jurisdiction Off Site
- ○ Wetland / Federal Jurisdiction On Site (Answer 9b)
- ○ Wetland / Federal Jurisdiction Off Site
- ○ Stream / Creek On Site
- ● Stream / Creek Off Site
- ○ River On Site
- ○ River Off Site
- ○ Lake On Site
- ○ Lake Off Site
- ○ Other Type On Site
- ○ Other Type Off Site

9b. How was the wetland identified?

- ○ Regulatory Map
- ○ Delineated by Consultant
- ○ Delineated by Army Corps of Engineers
- ○ Other (identify)

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

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

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters? ○ **Yes** ● **No**
If no, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey? ○ **Yes** ○ **No**
If Yes, what is the acreage to be disturbed?

.

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

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

16. What is the name of the municipality/entity that owns the separate storm sewer system?

NYS DEPARTMENT OF TRANSPORTATION

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**

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:

- ● **Professional Engineer (P.E.)**
- ○ **Soil and Water Conservation District (SWCD)**
- ○ **Registered Landscape Architect (R.L.A)**
- ○ **Certified Professional in Erosion and Sediment Control (CPESC)**
- ○ **Owner/Operator**
- ○ **Other**

SWPPP Preparer
C&S ENGINEERS, INC.

Contact Name (Last, Space, First)
UTZIG JASON

Mailing Address
141 ELM STREET, SUITE 100

City
BUFFALO

State Zip
NY 14203-

Phone
716-955-3013

Fax

Email
JUTZIG@CSCOS.COM

SWPPP Preparer Certification

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

First Name
JASON

MI
P

Last Name
UTZIG

Signature

Date
05/14/2021

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

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

Other

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

		0	.	0	7	0

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)

	Total Contributing Area (acres)		Total Contributing Impervious Area(acres)
RR Techniques (Area Reduction)			
○ Conservation of Natural Areas (RR-1)		and/or	
○ Sheetflow to Riparian Buffers/Filters Strips (RR-2)		and/or	
○ Tree Planting/Tree Pit (RR-3)		and/or	
○ Disconnection of Rooftop Runoff (RR-4)		and/or	
RR Techniques (Volume Reduction)			
○ Vegetated Swale (RR-5)			
○ Rain Garden (RR-6)			
○ Stormwater Planter (RR-7)			
○ Rain Barrel/Cistern (RR-8)			
○ Porous Pavement (RR-9)			
○ Green Roof (RR-10)			
Standard SMPs with RRv Capacity			
○ Infiltration Trench (I-1)			
○ Infiltration Basin (I-2)			
○ Dry Well (I-3)			
○ Underground Infiltration System (I-4)			
● Bioretention (F-5)			0.956
○ Dry Swale (O-1)			
Standard SMPs			
○ Micropool Extended Detention (P-1)			
○ Wet Pond (P-2)			
○ Wet Extended Detention (P-3)			
○ Multiple Pond System (P-4)			
○ Pocket Pond (P-5)			
○ Surface Sand Filter (F-1)			
○ Underground Sand Filter (F-2)			
○ Perimeter Sand Filter (F-3)			
○ Organic Filter (F-4)			
○ Shallow Wetland (W-1)			
○ Extended Detention Wetland (W-2)			
○ Pond/Wetland System (W-3)			
○ Pocket Wetland (W-4)			
○ Wet Swale (O-2)			

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

Alternative SMP	Total Contributing Impervious Area(acres)
○ **Hydrodynamic**	
○ **Wet Vault**	
○ **Media Filter**	
○ **Other**	

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

Name

Manufacturer

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

0.029 **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

0.012 **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

0.045 **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). 0.074

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: 8.55 **CFS**

Post-development: 8.41 **CFS**

Total Extreme Flood Control Criteria (Qf)

Pre-Development: 20.37 **CFS**

Post-development: 20.25 **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

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed? ● **Yes** ○ **No**

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

RURAL OUTREACH CENTER

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.

In accordance with Chapter 9.2.1.A.II of the NYSDEC SMDM, the channel protection volume requirement is relaxed and not required for redevelopment projects, so long as the hydrology and hydraulic analysis for the project shows that the post-construction 1-year, 24-hour discharge rate and velocity are less than or equal to the pre-construction discharge rate and velocity. The developed condition will meet this requirement.

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

- ○ Air Pollution Control
- ○ Coastal Erosion
- ○ Hazardous Waste
- ○ Long Island Wells
- ○ Mined Land Reclamation
- ○ Solid Waste
- ○ Navigable Waters Protection / Article 15
- ○ Water Quality Certificate
- ○ Dam Safety
- ○ Water Supply
- ○ Freshwater Wetlands/Article 24
- ○ Tidal Wetlands
- ○ Wild, Scenic and Recreational Rivers
- ○ Stream Bed or Bank Protection / Article 15
- ○ Endangered or Threatened Species(Incidental Take Permit)
- ○ Individual SPDES
- ○ SPDES Multi-Sector GP [N][Y][R][ ][ ][ ][ ][ ][ ]
- ○ Other [ ]
- ● None

41. Does this project require a US Army Corps of Engineers Wetland Permit? ○ **Yes** ● **No**
If Yes, Indicate Size of Impact. [ ][ ][ ][ ][ ][ ].[ ]

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

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. [N][Y][R][ ][ ][ ][ ][ ][ ]

Owner/Operator Certification

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.

Print First Name **MI**

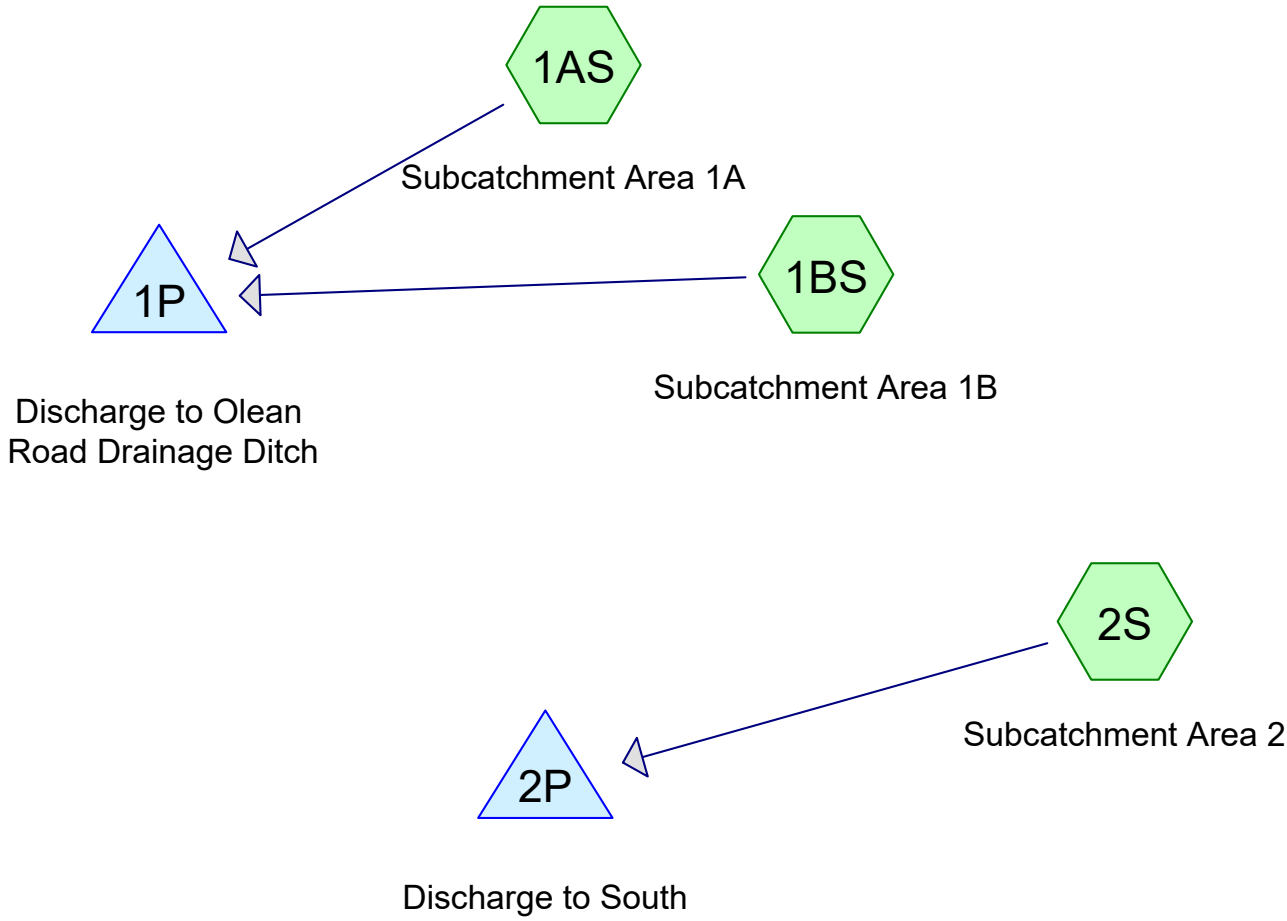
Print Last Name

Owner/Operator Signature

Date / /

APPENDIX C-1

DRAINAGE CALCULATIONS



Subcat Reach Pond Link

Routing Diagram for Existing Drainage Analysis
Prepared by C&S Engineers, Inc., Printed 5/14/2021

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1yr	Type II 24-hr		Default	24.00	1	1.88	2
2	10yr	Type II 24-hr		Default	24.00	1	3.15	2
3	100yr	Type II 24-hr		Default	24.00	1	5.25	2

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	1BS	0.00	0.00	163.0	0.0500	0.025	12.0	0.0	0.0

Summary for Subcatchment 1AS: Subcatchment Area 1A

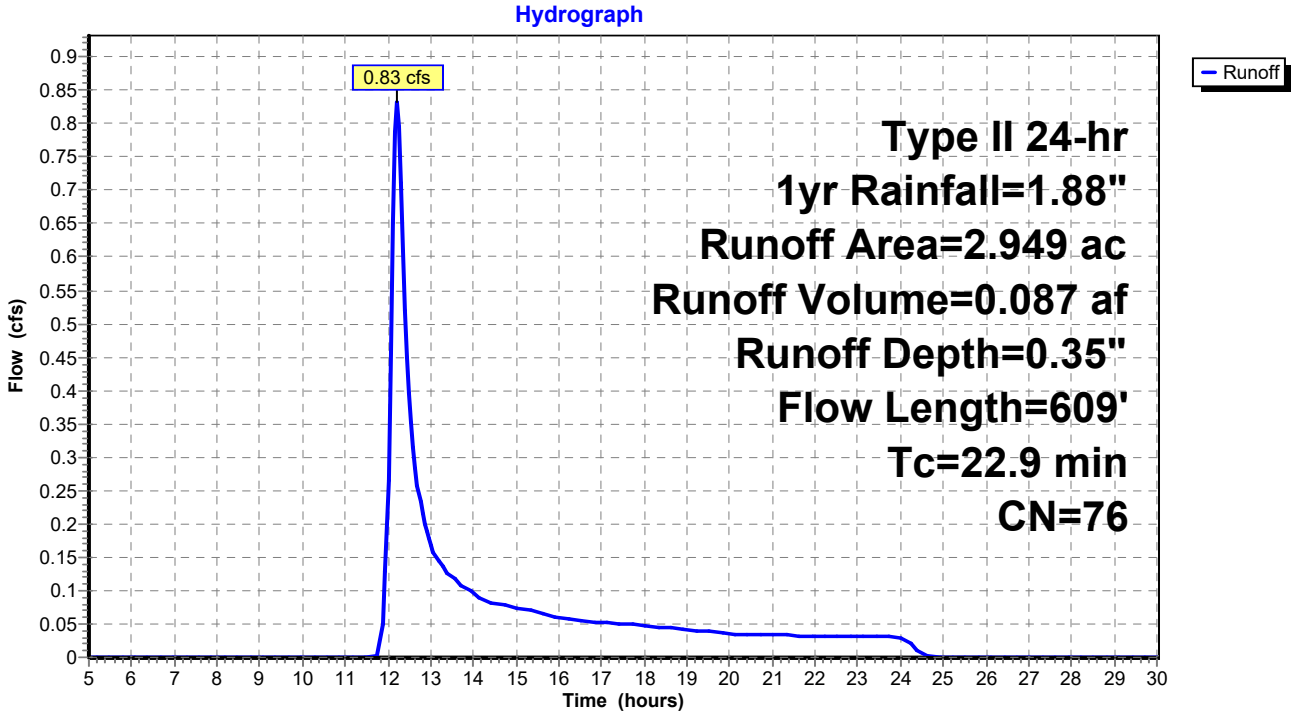
Runoff = 0.83 cfs @ 12.20 hrs, Volume= 0.087 af, Depth= 0.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 1yr Rainfall=1.88"

Area (ac)	CN	Description
2.042	77	Woods, Good, HSG D
0.907	73	Brush, Good, HSG D
2.949	76	Weighted Average
2.949		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	42	0.1607	0.12		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 2.20"
9.3	58	0.0870	0.10		**Sheet Flow, BC** Woods: Light underbrush n= 0.400 P2= 2.20"
3.4	232	0.0518	1.14		**Shallow Concentrated Flow, CD** Woodland Kv= 5.0 fps
4.6	277	0.0405	1.01		**Shallow Concentrated Flow, DE** Woodland Kv= 5.0 fps
22.9	609	Total			

Subcatchment 1AS: Subcatchment Area 1A



Summary for Subcatchment 1BS: Subcatchment Area 1B

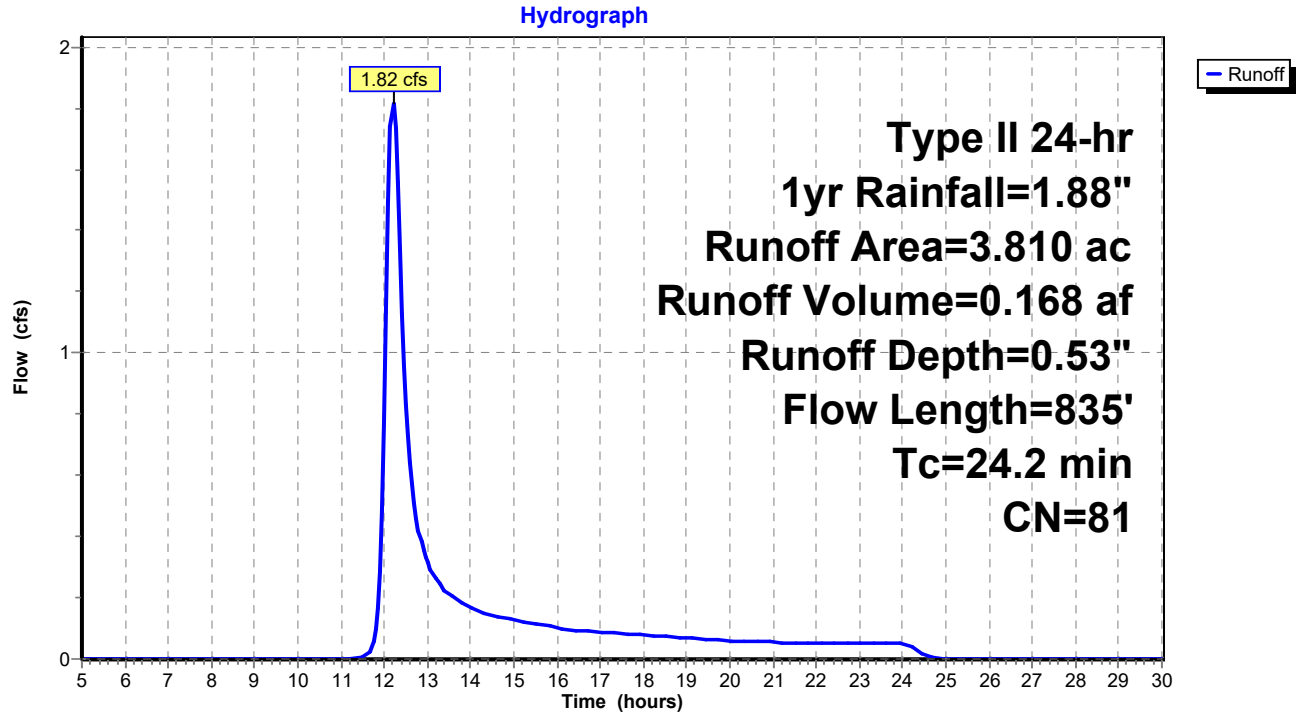
Runoff = 1.82 cfs @ 12.20 hrs, Volume= 0.168 af, Depth= 0.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 1yr Rainfall=1.88"

Area (ac)	CN	Description
1.880	77	Woods, Good, HSG D
0.429	98	Paved parking, HSG D
1.501	80	>75% Grass cover, Good, HSG D
3.810	81	Weighted Average
3.381		88.74% Pervious Area
0.429		11.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.7	100	0.0824	0.11		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 2.20"
9.0	572	0.0448	1.06		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
0.5	163	0.0500	5.27	4.14	**Pipe Channel, CD** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.025 Corrugated metal
24.2	835	Total			

Subcatchment 1BS: Subcatchment Area 1B



Summary for Subcatchment 2S: Subcatchment Area 2

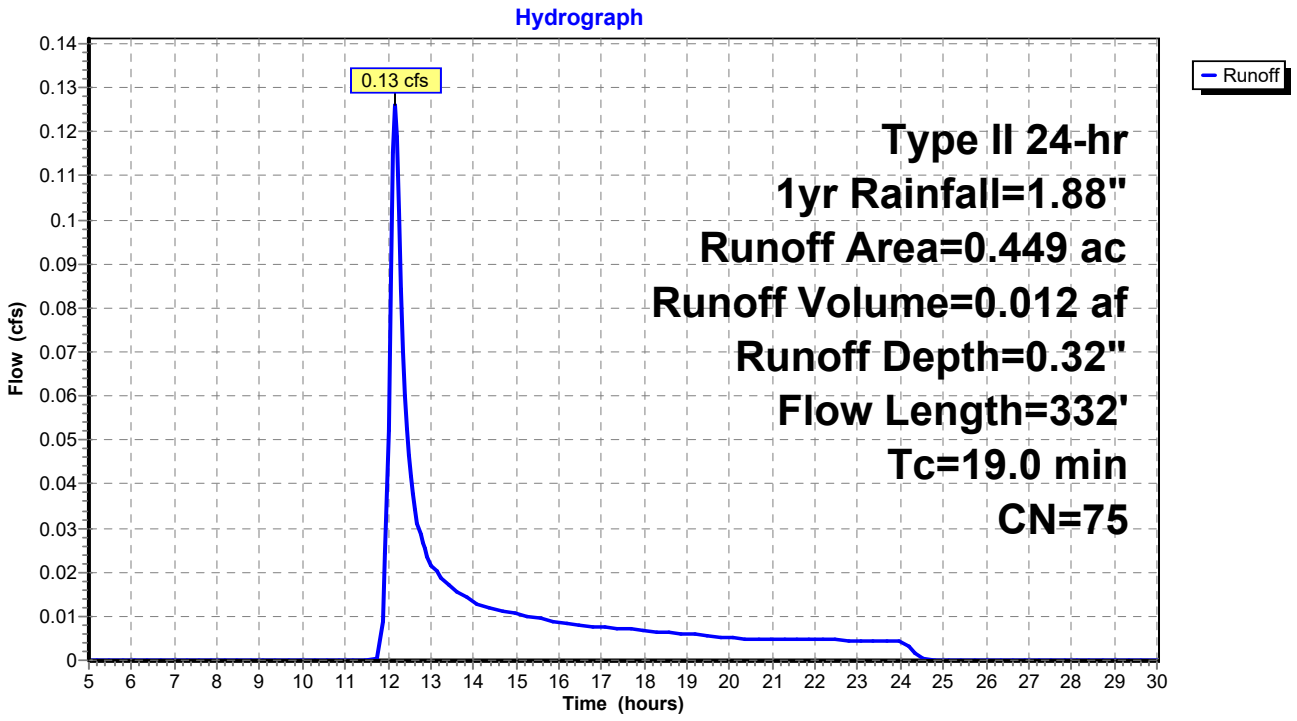
Runoff = 0.13 cfs @ 12.16 hrs, Volume= 0.012 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 1yr Rainfall=1.88"

Area (ac)	CN	Description
0.234	77	Woods, Good, HSG D
0.215	73	Brush, Good, HSG D
0.449	75	Weighted Average
0.449		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0	100	0.0780	0.11		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 2.20"
4.0	232	0.0377	0.97		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
19.0	332	Total			

Subcatchment 2S: Subcatchment Area 2



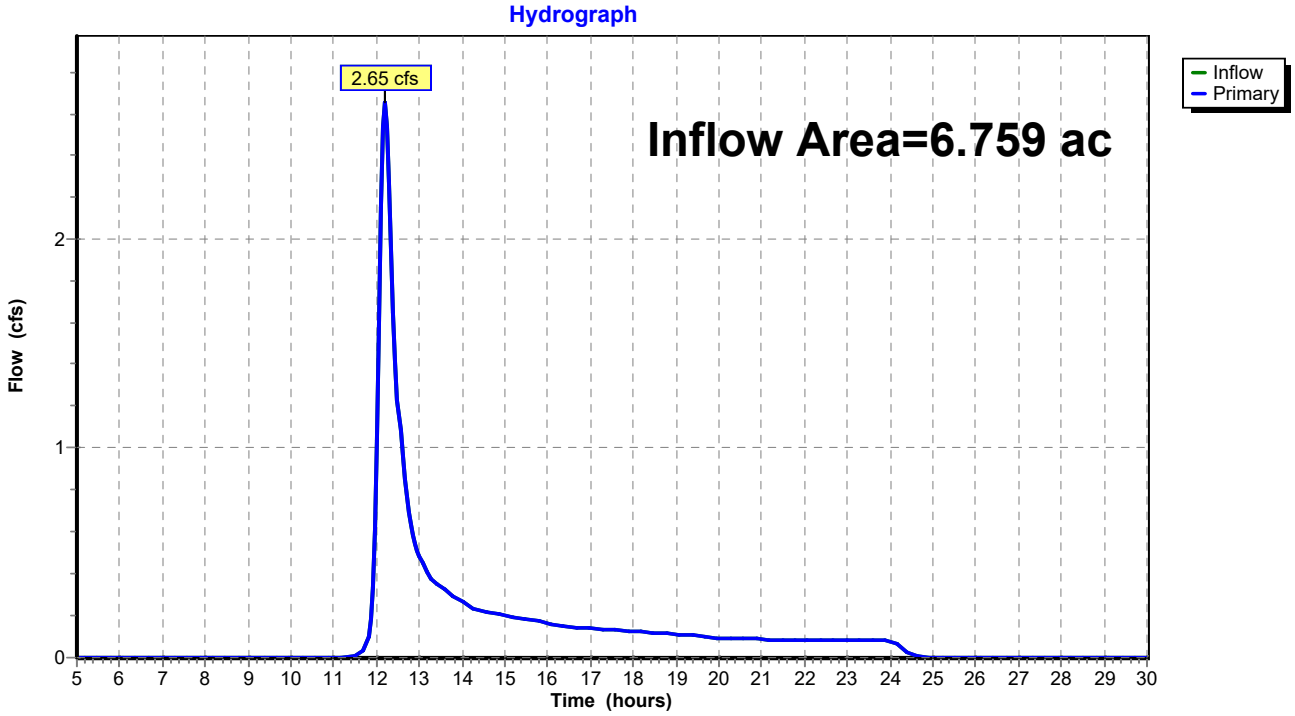
Summary for Pond 1P: Discharge to Olean Road Drainage Ditch

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

Inflow Area = 6.759 ac, 6.35% Impervious, Inflow Depth = 0.45" for 1yr event
Inflow = 2.65 cfs @ 12.20 hrs, Volume= 0.255 af
Primary = 2.65 cfs @ 12.20 hrs, Volume= 0.255 af, Atten= 0%, Lag= 0.0 min

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

Pond 1P: Discharge to Olean Road Drainage Ditch



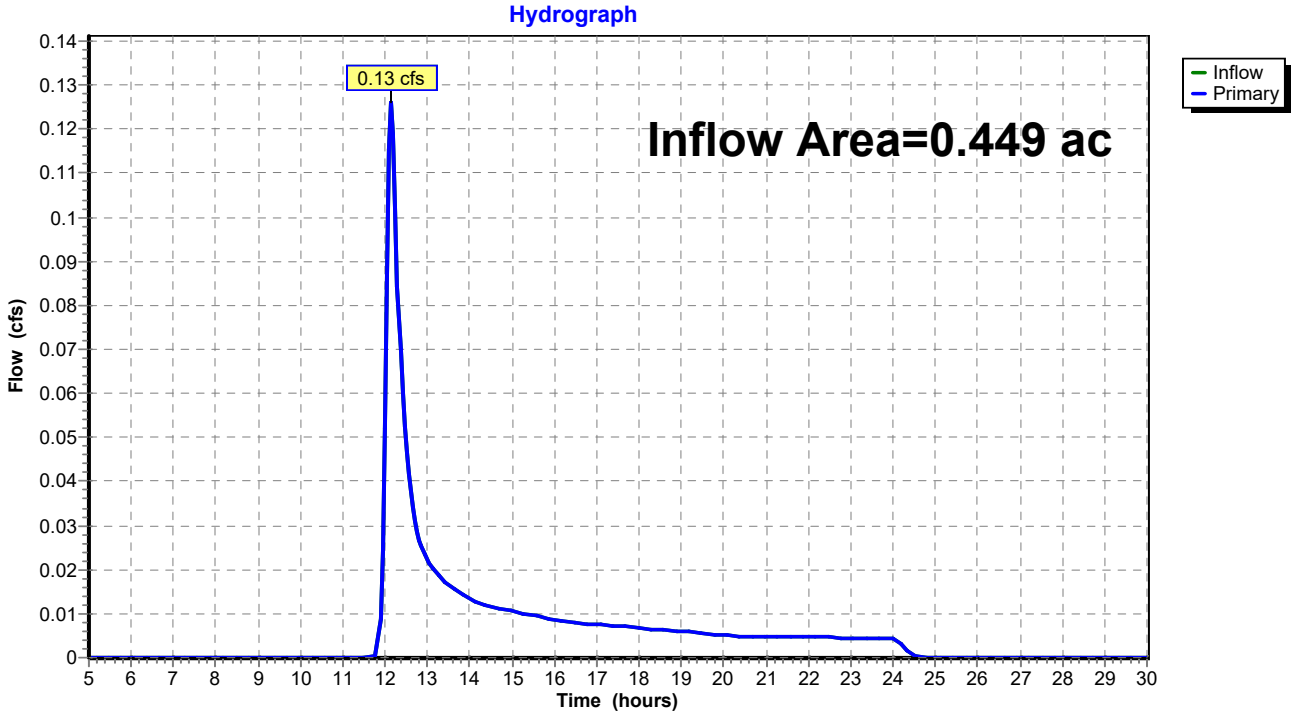
Summary for Pond 2P: Discharge to South

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

Inflow Area = 0.449 ac, 0.00% Impervious, Inflow Depth = 0.32" for 1yr event
Inflow = 0.13 cfs @ 12.16 hrs, Volume= 0.012 af
Primary = 0.13 cfs @ 12.16 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.0 min

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

Pond 2P: Discharge to South



Summary for Subcatchment 1AS: Subcatchment Area 1A

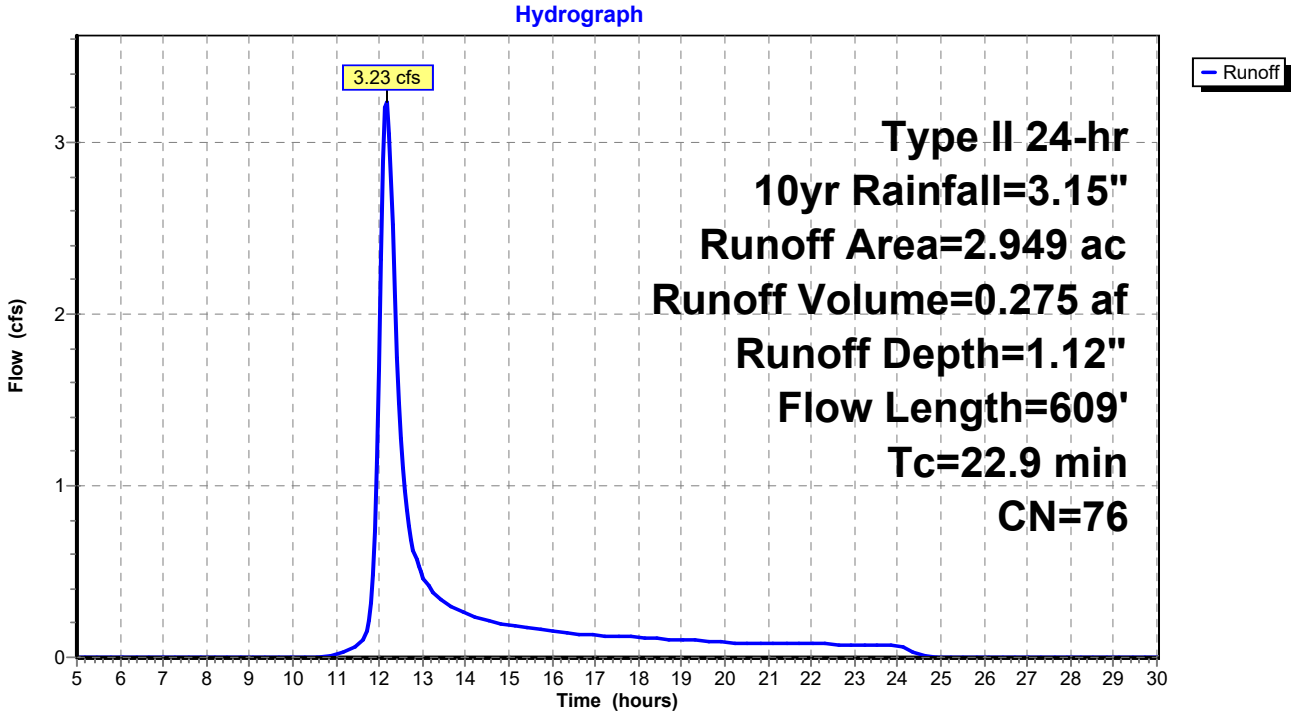
Runoff = 3.23 cfs @ 12.17 hrs, Volume= 0.275 af, Depth= 1.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10yr Rainfall=3.15"

Area (ac)	CN	Description
2.042	77	Woods, Good, HSG D
0.907	73	Brush, Good, HSG D
2.949	76	Weighted Average
2.949		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	42	0.1607	0.12		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 2.20"
9.3	58	0.0870	0.10		**Sheet Flow, BC** Woods: Light underbrush n= 0.400 P2= 2.20"
3.4	232	0.0518	1.14		**Shallow Concentrated Flow, CD** Woodland Kv= 5.0 fps
4.6	277	0.0405	1.01		**Shallow Concentrated Flow, DE** Woodland Kv= 5.0 fps
22.9	609	Total			

Subcatchment 1AS: Subcatchment Area 1A



Summary for Subcatchment 1BS: Subcatchment Area 1B

[47] Hint: Peak is 129% of capacity of segment #3

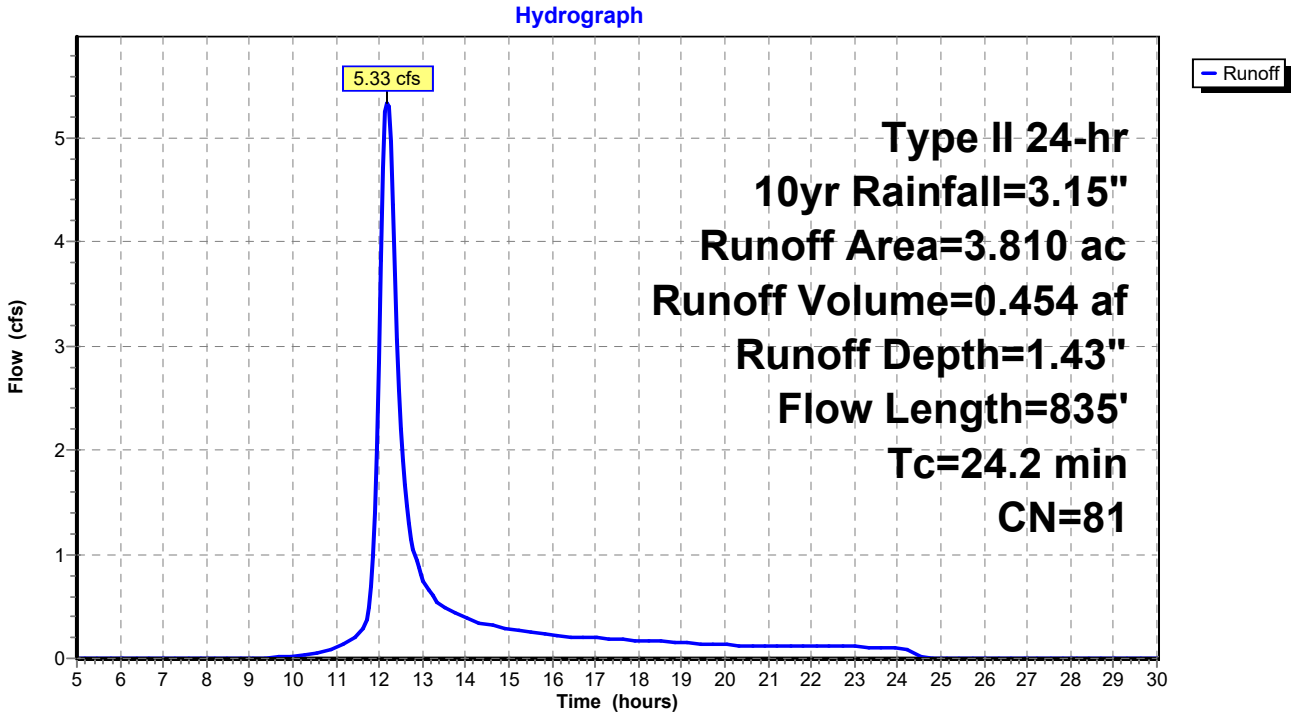
Runoff = 5.33 cfs @ 12.18 hrs, Volume= 0.454 af, Depth= 1.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10yr Rainfall=3.15"

Area (ac)	CN	Description
1.880	77	Woods, Good, HSG D
0.429	98	Paved parking, HSG D
1.501	80	>75% Grass cover, Good, HSG D
3.810	81	Weighted Average
3.381		88.74% Pervious Area
0.429		11.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.7	100	0.0824	0.11		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 2.20"
9.0	572	0.0448	1.06		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
0.5	163	0.0500	5.27	4.14	**Pipe Channel, CD** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.025 Corrugated metal
24.2	835	Total			

Subcatchment 1BS: Subcatchment Area 1B



Summary for Subcatchment 2S: Subcatchment Area 2

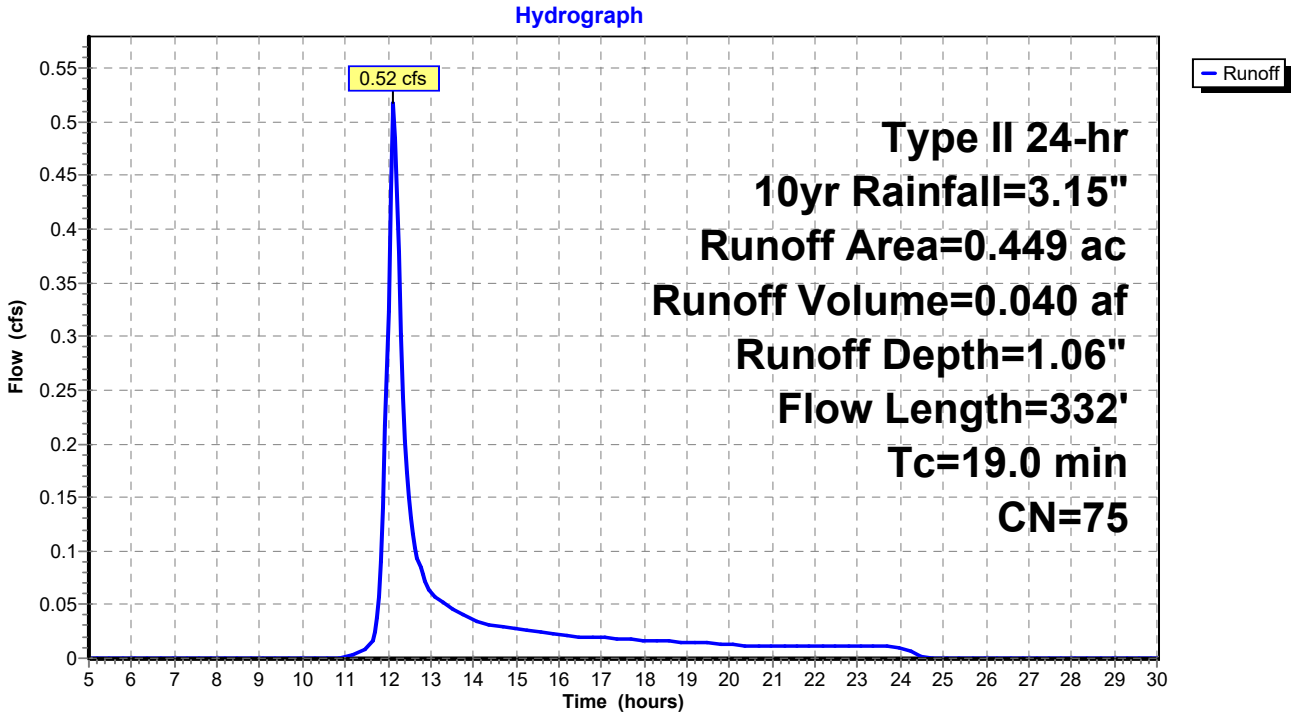
Runoff = 0.52 cfs @ 12.13 hrs, Volume= 0.040 af, Depth= 1.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10yr Rainfall=3.15"

Area (ac)	CN	Description
0.234	77	Woods, Good, HSG D
0.215	73	Brush, Good, HSG D
0.449	75	Weighted Average
0.449		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0	100	0.0780	0.11		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 2.20"
4.0	232	0.0377	0.97		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
19.0	332	Total			

Subcatchment 2S: Subcatchment Area 2



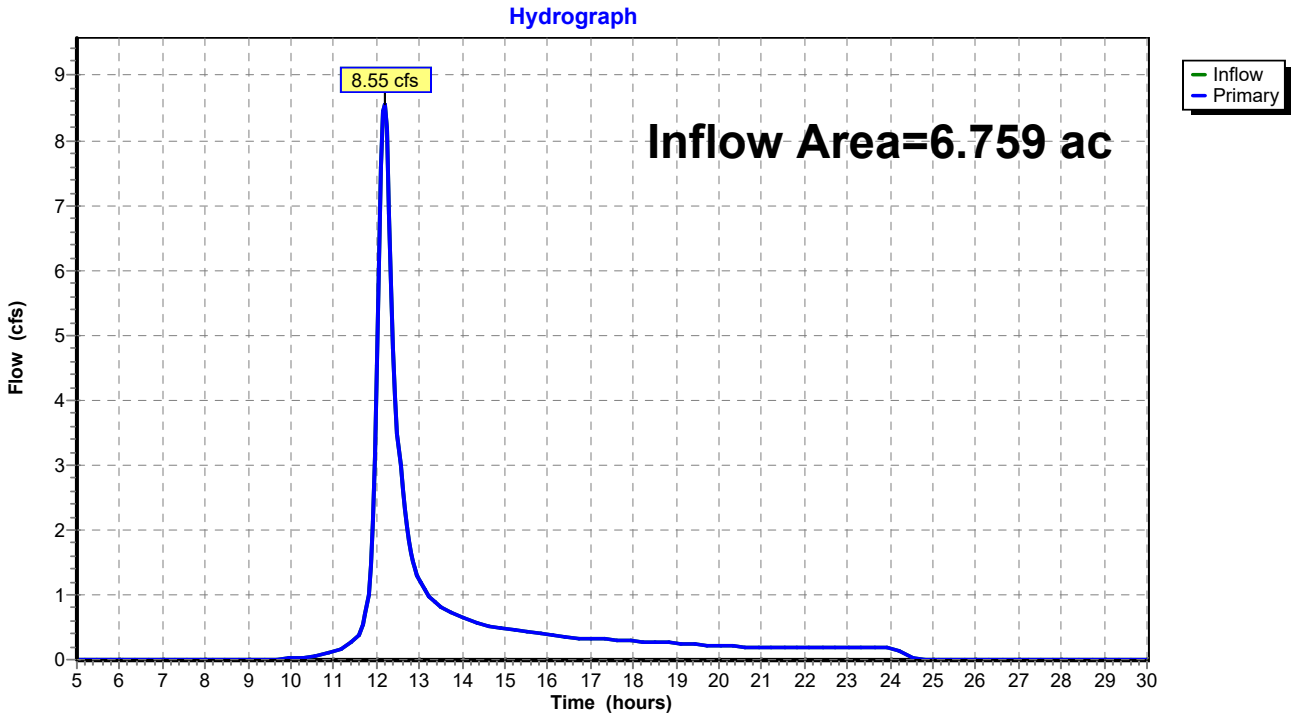
Summary for Pond 1P: Discharge to Olean Road Drainage Ditch

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

Inflow Area = 6.759 ac, 6.35% Impervious, Inflow Depth = 1.29" for 10yr event
Inflow = 8.55 cfs @ 12.18 hrs, Volume= 0.729 af
Primary = 8.55 cfs @ 12.18 hrs, Volume= 0.729 af, Atten= 0%, Lag= 0.0 min

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

Pond 1P: Discharge to Olean Road Drainage Ditch



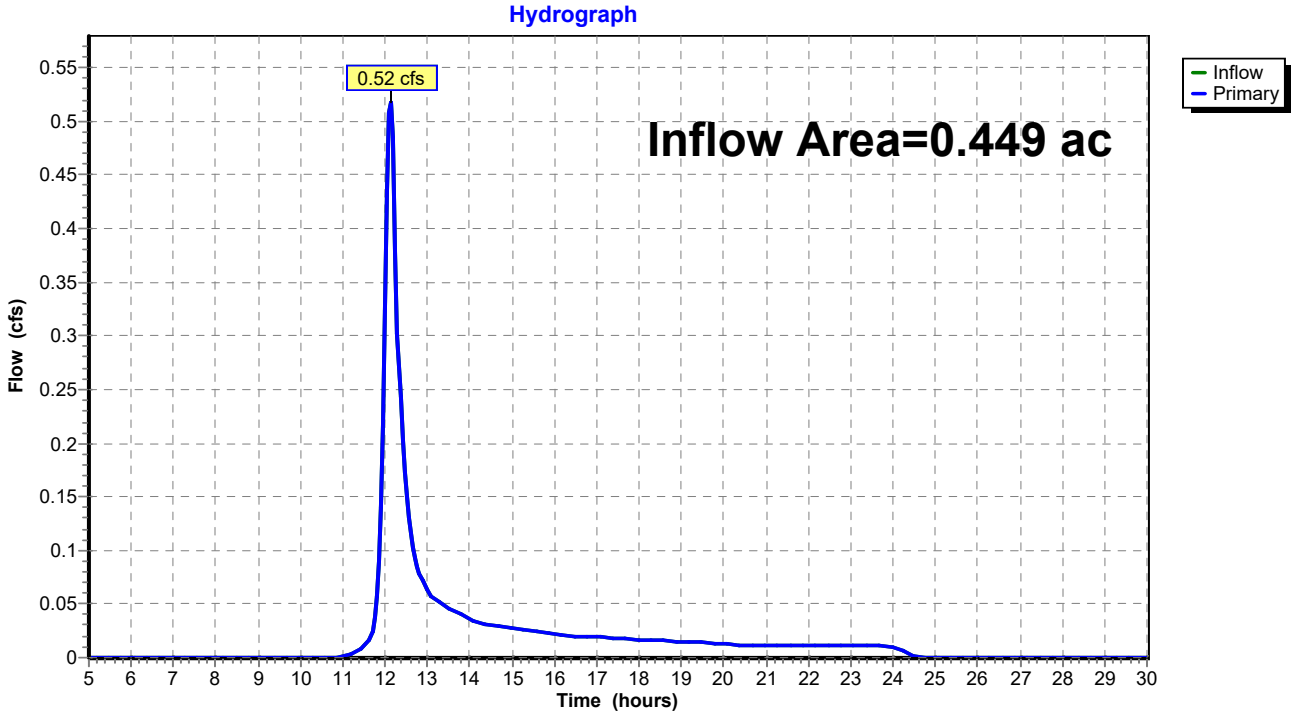
Summary for Pond 2P: Discharge to South

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

Inflow Area = 0.449 ac, 0.00% Impervious, Inflow Depth = 1.06" for 10yr event
Inflow = 0.52 cfs @ 12.13 hrs, Volume= 0.040 af
Primary = 0.52 cfs @ 12.13 hrs, Volume= 0.040 af, Atten= 0%, Lag= 0.0 min

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

Pond 2P: Discharge to South



Summary for Subcatchment 1AS: Subcatchment Area 1A

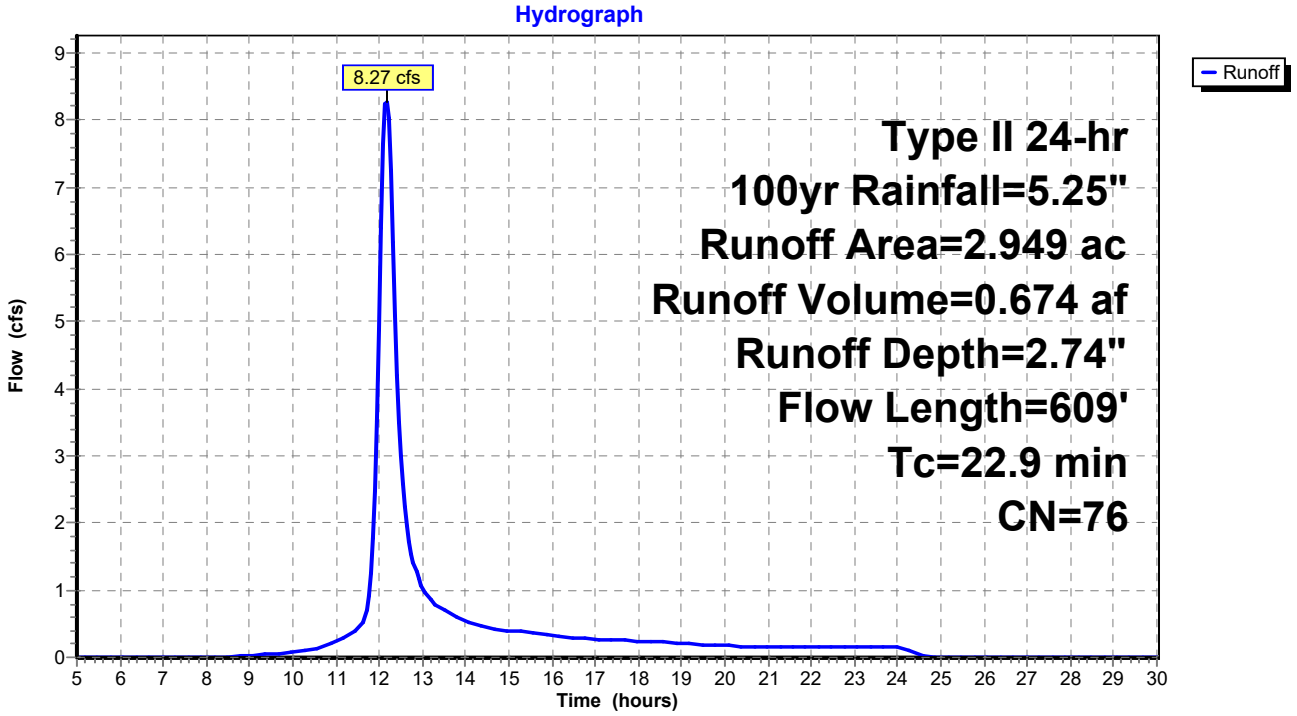
Runoff = 8.27 cfs @ 12.16 hrs, Volume= 0.674 af, Depth= 2.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 100yr Rainfall=5.25"

Area (ac)	CN	Description
2.042	77	Woods, Good, HSG D
0.907	73	Brush, Good, HSG D
2.949	76	Weighted Average
2.949		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	42	0.1607	0.12		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 2.20"
9.3	58	0.0870	0.10		**Sheet Flow, BC** Woods: Light underbrush n= 0.400 P2= 2.20"
3.4	232	0.0518	1.14		**Shallow Concentrated Flow, CD** Woodland Kv= 5.0 fps
4.6	277	0.0405	1.01		**Shallow Concentrated Flow, DE** Woodland Kv= 5.0 fps
22.9	609	Total			

Subcatchment 1AS: Subcatchment Area 1A



Summary for Subcatchment 1BS: Subcatchment Area 1B

[47] Hint: Peak is 292% of capacity of segment #3

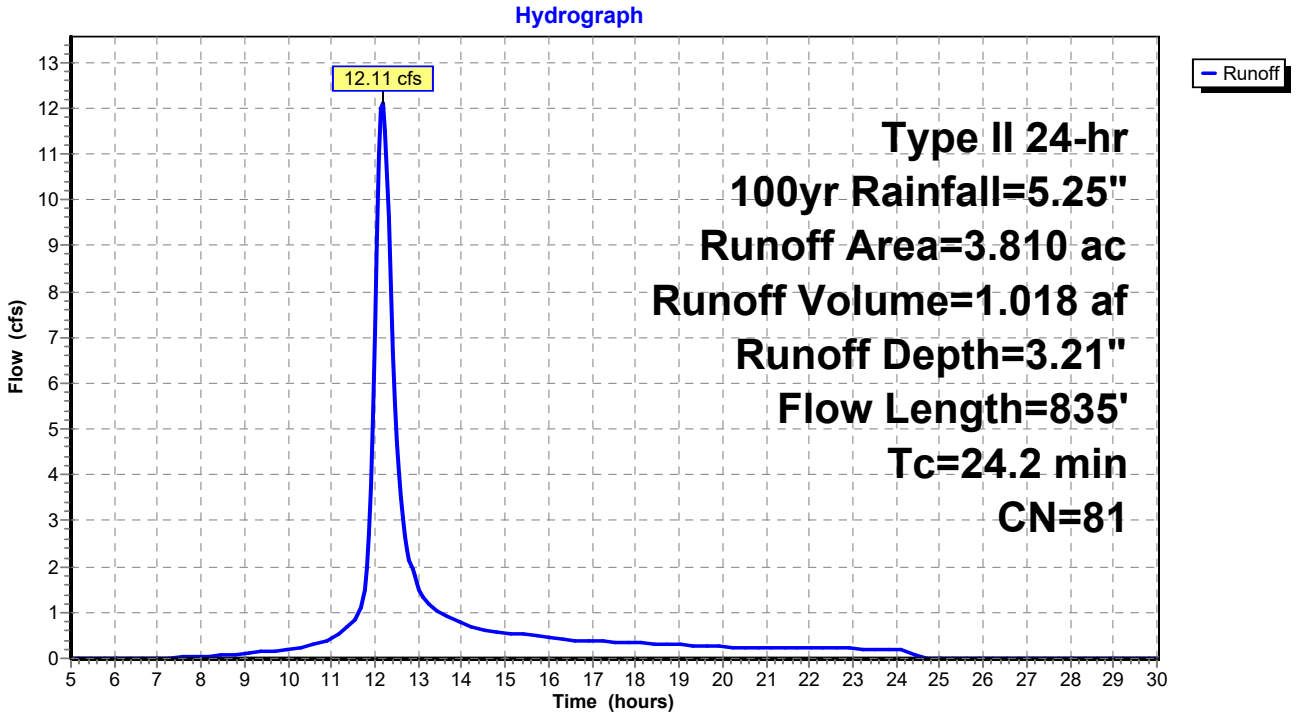
Runoff = 12.11 cfs @ 12.17 hrs, Volume= 1.018 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 100yr Rainfall=5.25"

Area (ac)	CN	Description
1.880	77	Woods, Good, HSG D
0.429	98	Paved parking, HSG D
1.501	80	>75% Grass cover, Good, HSG D
3.810	81	Weighted Average
3.381		88.74% Pervious Area
0.429		11.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.7	100	0.0824	0.11		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 2.20"
9.0	572	0.0448	1.06		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
0.5	163	0.0500	5.27	4.14	**Pipe Channel, CD** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.025 Corrugated metal
24.2	835	Total			

Subcatchment 1BS: Subcatchment Area 1B



Summary for Subcatchment 2S: Subcatchment Area 2

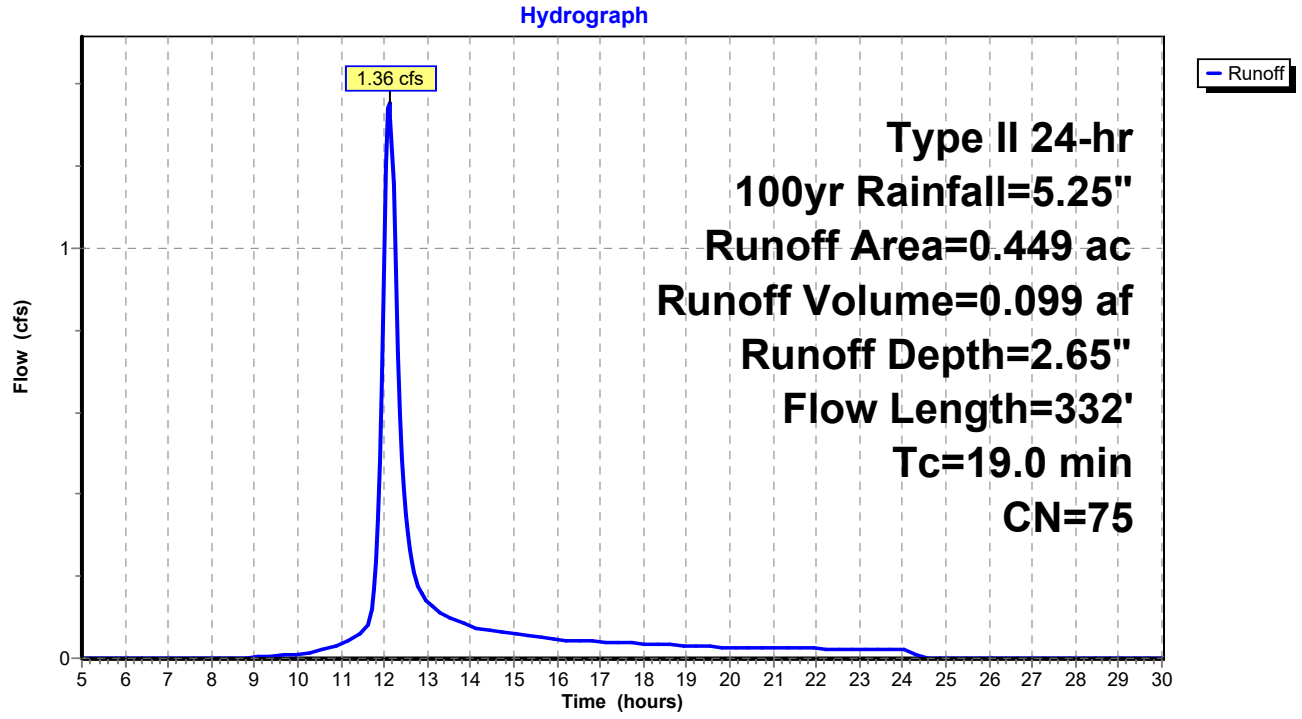
Runoff = 1.36 cfs @ 12.12 hrs, Volume= 0.099 af, Depth= 2.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 100yr Rainfall=5.25"

Area (ac)	CN	Description
0.234	77	Woods, Good, HSG D
0.215	73	Brush, Good, HSG D
0.449	75	Weighted Average
0.449		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0	100	0.0780	0.11		**Sheet Flow, AB** Woods: Light underbrush n= 0.400 P2= 2.20"
4.0	232	0.0377	0.97		**Shallow Concentrated Flow, BC** Woodland Kv= 5.0 fps
19.0	332	Total			

Subcatchment 2S: Subcatchment Area 2



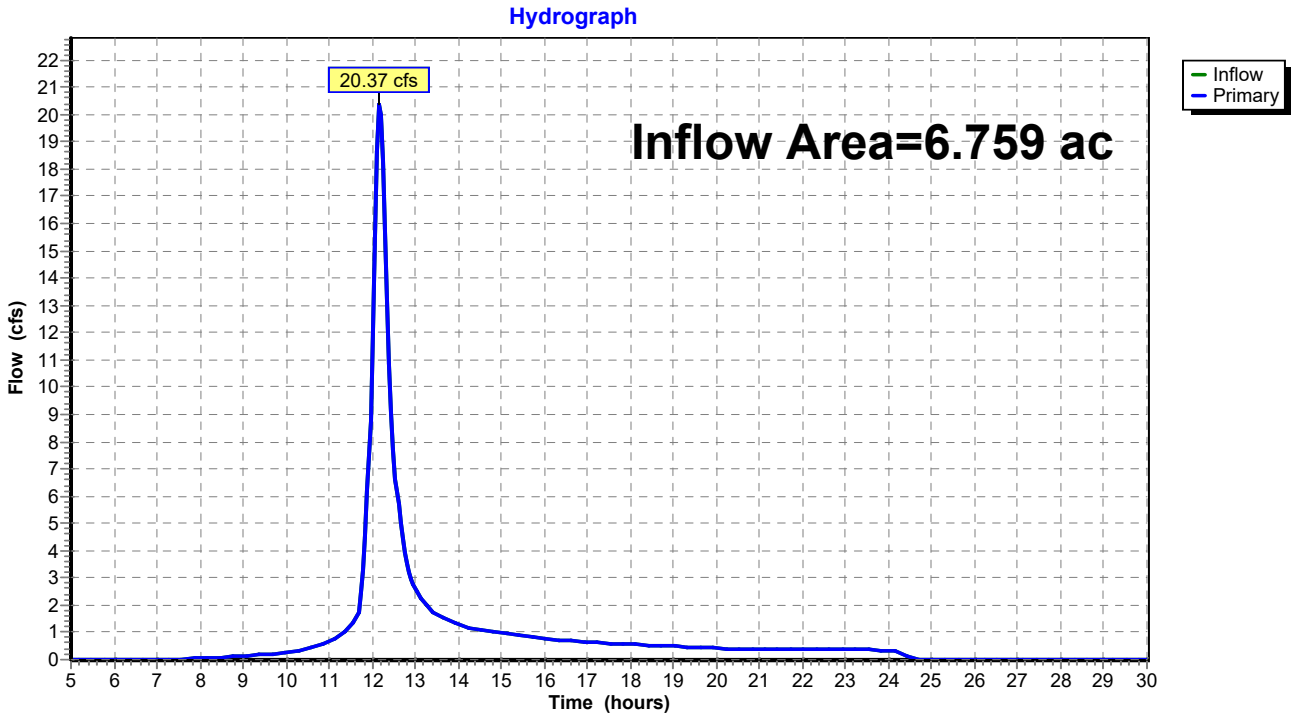
Summary for Pond 1P: Discharge to Olean Road Drainage Ditch

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

Inflow Area = 6.759 ac, 6.35% Impervious, Inflow Depth = 3.00" for 100yr event
Inflow = 20.37 cfs @ 12.17 hrs, Volume= 1.692 af
Primary = 20.37 cfs @ 12.17 hrs, Volume= 1.692 af, Atten= 0%, Lag= 0.0 min

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

Pond 1P: Discharge to Olean Road Drainage Ditch



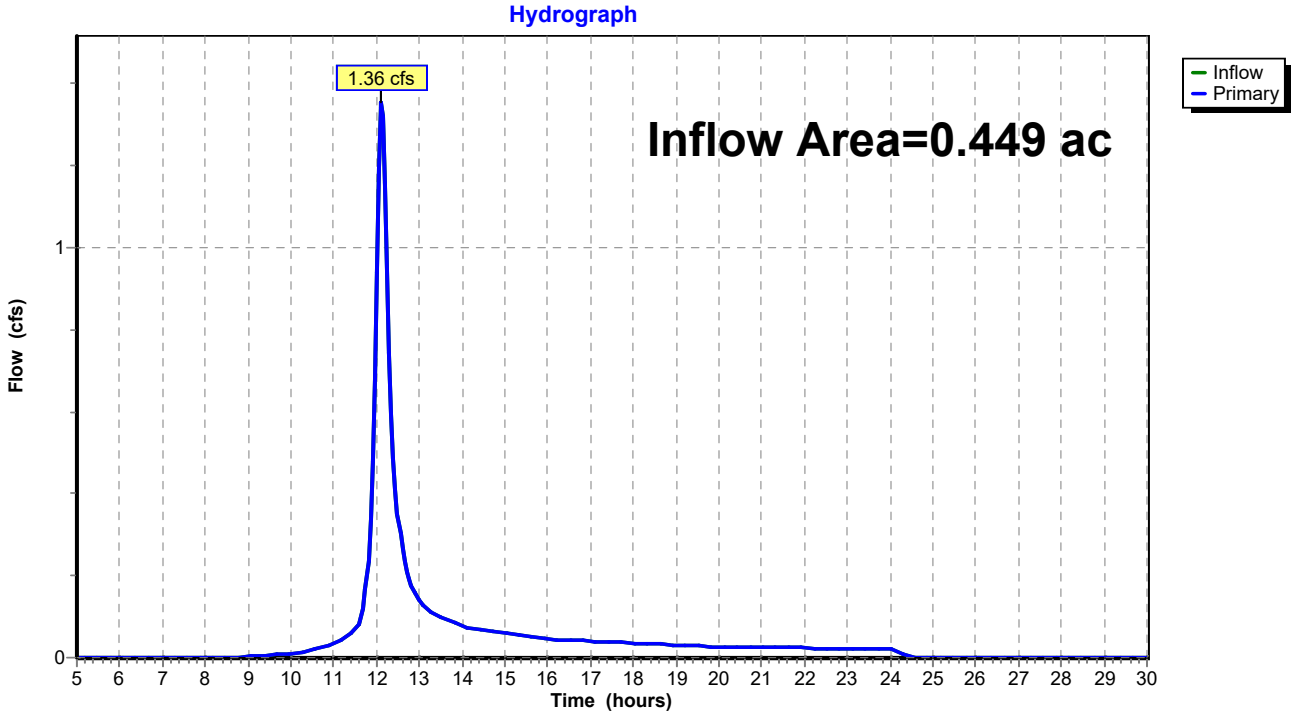
Summary for Pond 2P: Discharge to South

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

Inflow Area = 0.449 ac, 0.00% Impervious, Inflow Depth = 2.65" for 100yr event
Inflow = 1.36 cfs @ 12.12 hrs, Volume= 0.099 af
Primary = 1.36 cfs @ 12.12 hrs, Volume= 0.099 af, Atten= 0%, Lag= 0.0 min

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

Pond 2P: Discharge to South



OINT OF BEGINNING
HWEST CORNER OF
ANDS CONVEYED TO
CLARKE AND WIFE
R 8349, PAGE 149

266.80' DEED AND MEASURED

SOUTH LINE LANDS OF CLARKE L. 8349, P. 149

30' EASEMENT TO TELEPHONE NEW YORK TELEPHONE COMPANY

EDGE OF PAVEMENT

OLEAN ROAD

(WIDTH VARIES)

446.00' DEED AND MEASURED

ASPHALT DRIVE

BENCHMARK
PK NAIL
ELEVATION = 885.75'

FOUND 2" IRON ROD
1.1' E
ONLINE

453.50' DEED AND MEASURED

SOUTH LINE LANDS OF CLARKE L. 8349, P. 149

241.80' DEED AND MEASURED

EAST LINE LANDS OF CLARKE L. 8349, P. 149

FOUND IRON PIPE
3.7' E
ONLINE

SUBCATCHMENT AREA 1A

TREES & BRUSH

FOUND IRON AXLE
0.7' N
ONLINE

FOUND IRON PIPE
1.6' E
0.2' N

WEST LINE OF LANDS FORMERLY OWNED BY THE PENNSYLVANIA RAILROAD COMPANY

313.41' DEED AND MEASURED

NORFOLK SOUTHERN RAILROAD

SOUTH LINE OF LOT 14

NORTH LINE OF LOT 13

98.24' DEED
99°35'30" MEAS

FOUND REBAR AND CAP
0.4'W

SUBCATCHMENT AREA 2

FOUND REBAR
ONLINE

SUBCATCHMENT AREA 1B

FOUND REBAR
ONLINE

856.38' DEED AND MEASURED

RURAL OUTREACH CENTER BUILDING

STONE PARKING AREA

STONE DRIVEWAY

SHED

FOUND REBAR
ONLINE

TELEPHONE MARKER

FOUND REBAR
ONLINE

30" BOX CULVERT
INVERT = 883.50'

PLAN
NORTH

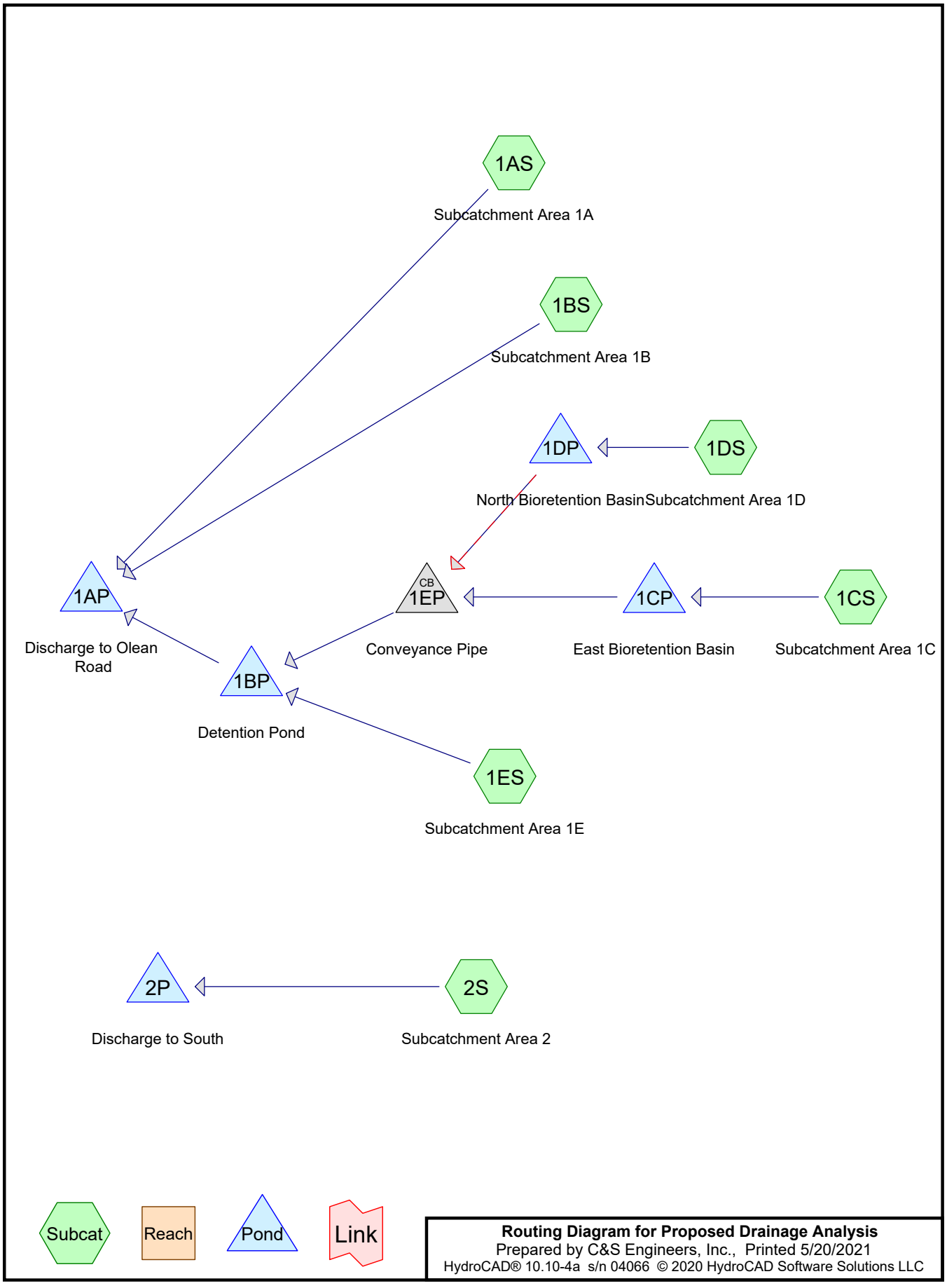
EXISTING DRAINAGE ANALYSIS MAP

DRAINAGE AREA

IMPERVIOUS AREA

TIME OF CONCENTRATION

80 0 80 160 Ft.
80'


1AS
Subcatchment Area 1A
1BS
Subcatchment Area 1B
1DP
1DS
North Bioretention Basin
Subcatchment Area 1D
1AP
CB
1EP
1CP
1CS
Discharge to Olean Road
Conveyance Pipe
East Bioretention Basin
Subcatchment Area 1C
1BP
Detention Pond
1ES
Subcatchment Area 1E
2P
2S
Discharge to South
Subcatchment Area 2
Subcat
Reach
Pond
Link
Routing Diagram for Proposed Drainage Analysis
Prepared by C&S Engineers, Inc., Printed 5/20/2021
HydroCAD® 10.10-4a s/n 04066 © 2020 HydroCAD Software Solutions LLC

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1yr	Type II 24-hr		Default	24.00	1	1.88	2
2	10yr	Type II 24-hr		Default	24.00	1	3.15	2
3	100yr	Type II 24-hr		Default	24.00	1	5.25	2

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	1BP	884.50	884.00	26.0	0.0192	0.013	18.0	0.0	0.0
2	1BP	884.50	884.50	21.0	0.0000	0.013	12.0	0.0	0.0
3	1CP	898.00	896.81	134.0	0.0089	0.013	12.0	0.0	0.0
4	1CP	898.00	898.00	120.0	0.0000	0.013	6.0	0.0	0.0
5	1DP	898.00	898.00	38.0	0.0000	0.013	6.0	0.0	0.0
6	1EP	893.50	885.00	109.0	0.0780	0.013	18.0	0.0	0.0
7	1EP	896.81	893.50	196.0	0.0169	0.013	18.0	0.0	0.0

Summary for Subcatchment 1AS: Subcatchment Area 1A

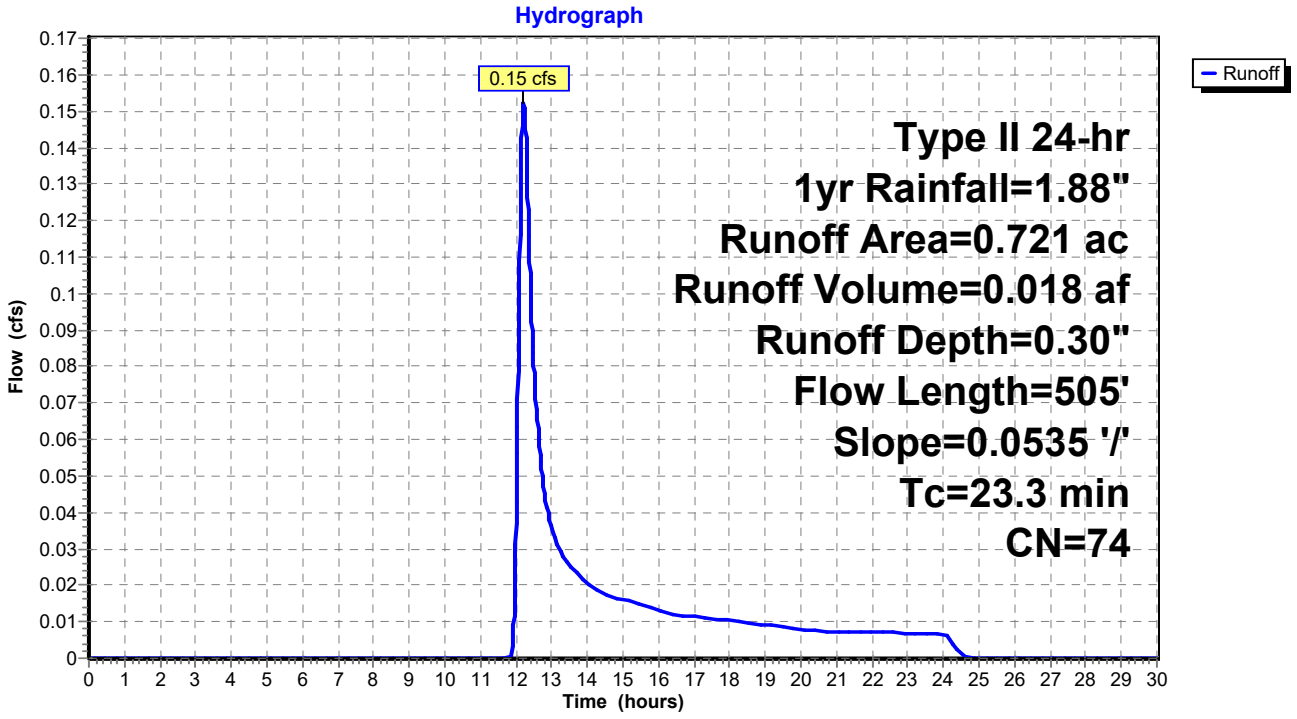
Runoff = 0.15 cfs @ 12.22 hrs, Volume= 0.018 af, Depth= 0.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type II 24-hr 1yr Rainfall=1.88"

Area (ac)	CN	Description
0.173	77	Woods, Good, HSG D
0.548	73	Brush, Good, HSG D
0.721	74	Weighted Average
0.721		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.5	100	0.0535	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.20"
5.8	405	0.0535	1.16		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.3	505	Total			

Subcatchment 1AS: Subcatchment Area 1A



Summary for Subcatchment 1BS: Subcatchment Area 1B

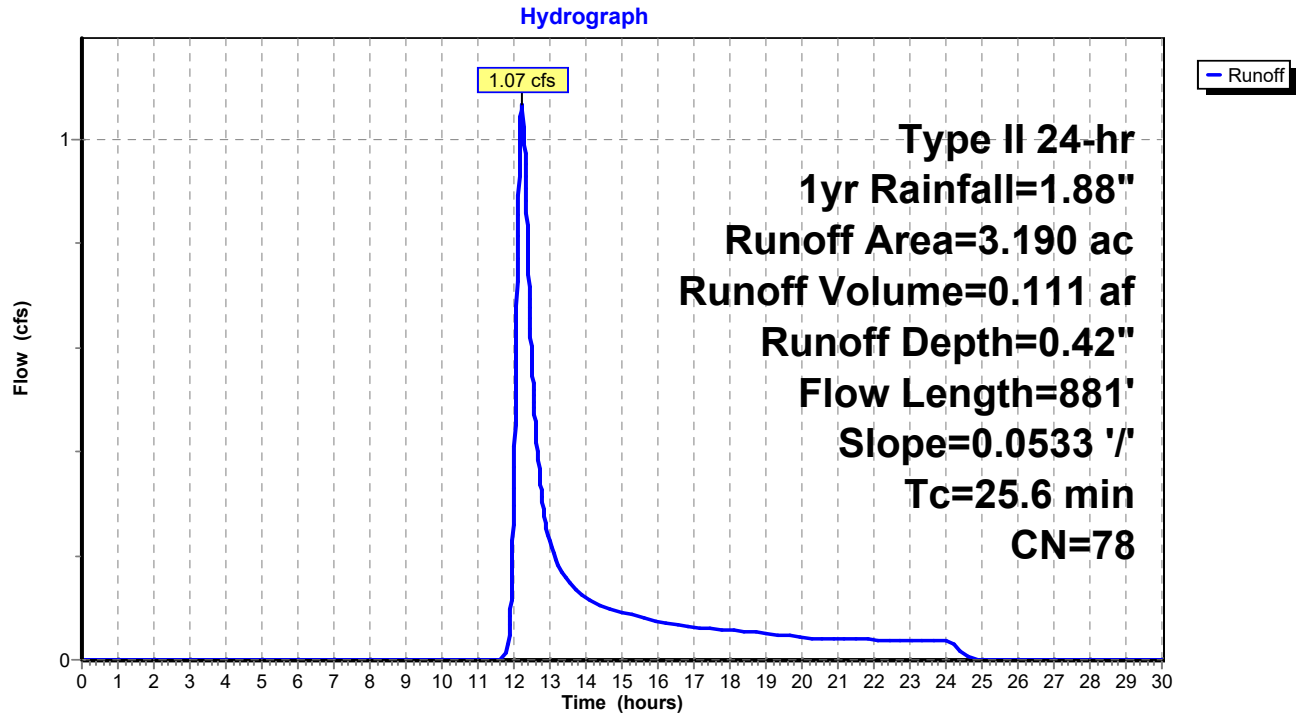
Runoff = 1.07 cfs @ 12.23 hrs, Volume= 0.111 af, Depth= 0.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type II 24-hr 1yr Rainfall=1.88"

Area (ac)	CN	Description
1.534	77	Woods, Good, HSG D
0.352	73	Brush, Good, HSG D
1.200	80	>75% Grass cover, Good, HSG D
0.104	98	Paved parking, HSG D
3.190	78	Weighted Average
3.086		96.74% Pervious Area
0.104		3.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.5	100	0.0533	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.20"
8.1	781	0.0533	1.62		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
25.6	881	Total			

Subcatchment 1BS: Subcatchment Area 1B



Summary for Subcatchment 1CS: Subcatchment Area 1C

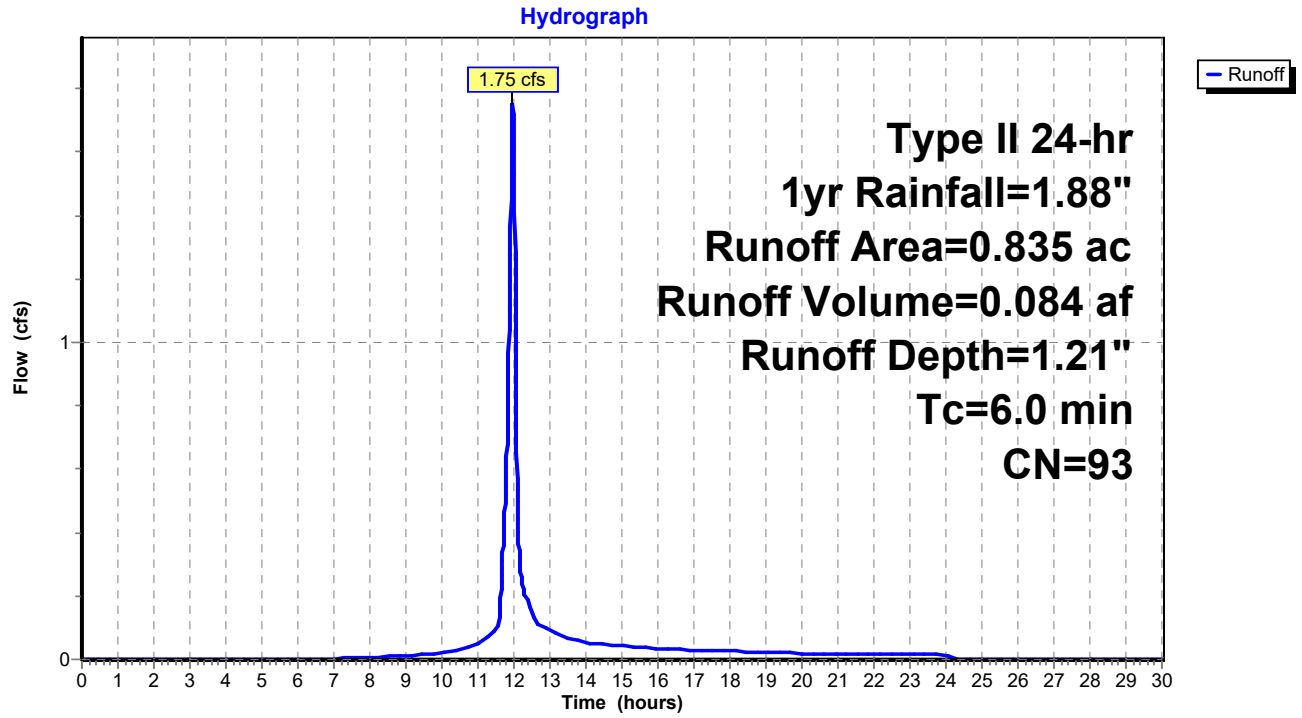
Runoff = 1.75 cfs @ 11.97 hrs, Volume= 0.084 af, Depth= 1.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type II 24-hr 1yr Rainfall=1.88"

Area (ac)	CN	Description
0.585	98	Paved parking, HSG D
0.250	80	>75% Grass cover, Good, HSG D
0.835	93	Weighted Average
0.250		29.94% Pervious Area
0.585		70.06% Impervious Area

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

Subcatchment 1CS: Subcatchment Area 1C



Summary for Subcatchment 1DS: Subcatchment Area 1D

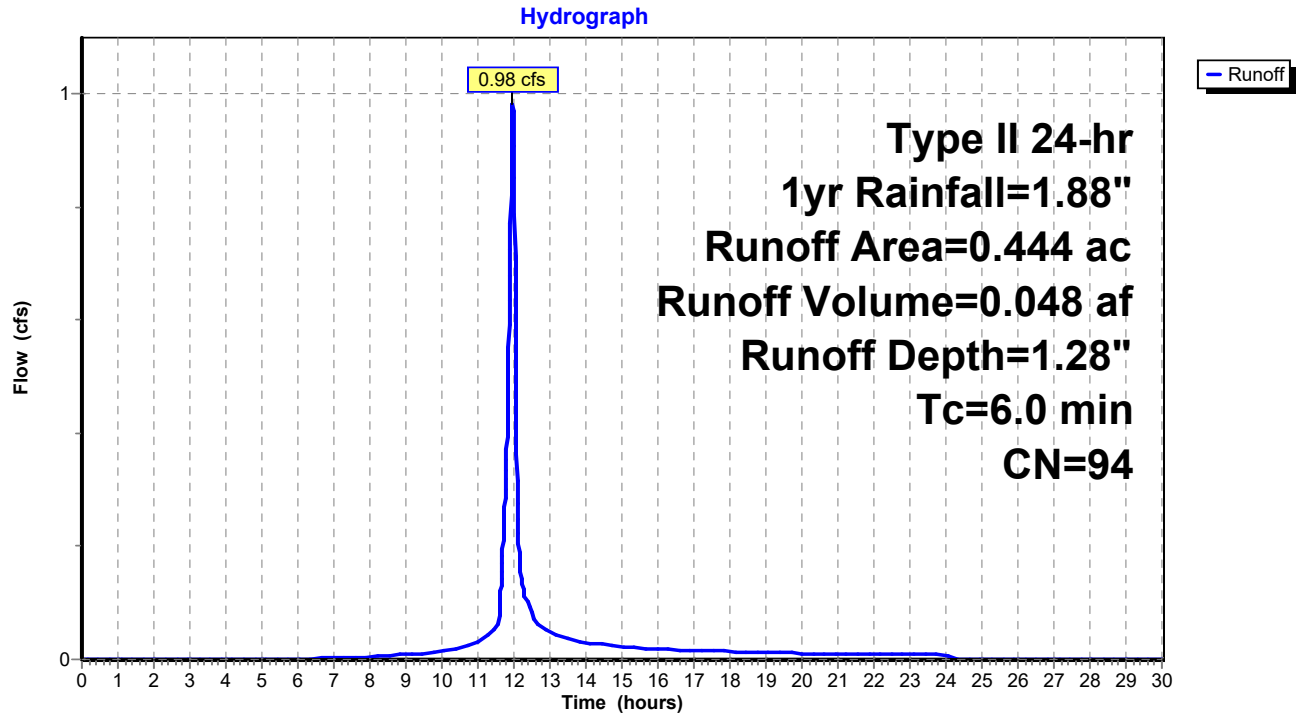
Runoff = 0.98 cfs @ 11.97 hrs, Volume= 0.048 af, Depth= 1.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type II 24-hr 1yr Rainfall=1.88"

Area (ac)	CN	Description
0.357	98	Paved parking, HSG D
0.087	80	>75% Grass cover, Good, HSG D
0.444	94	Weighted Average
0.087		19.59% Pervious Area
0.357		80.41% Impervious Area

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

Subcatchment 1DS: Subcatchment Area 1D



Summary for Subcatchment 1ES: Subcatchment Area 1E

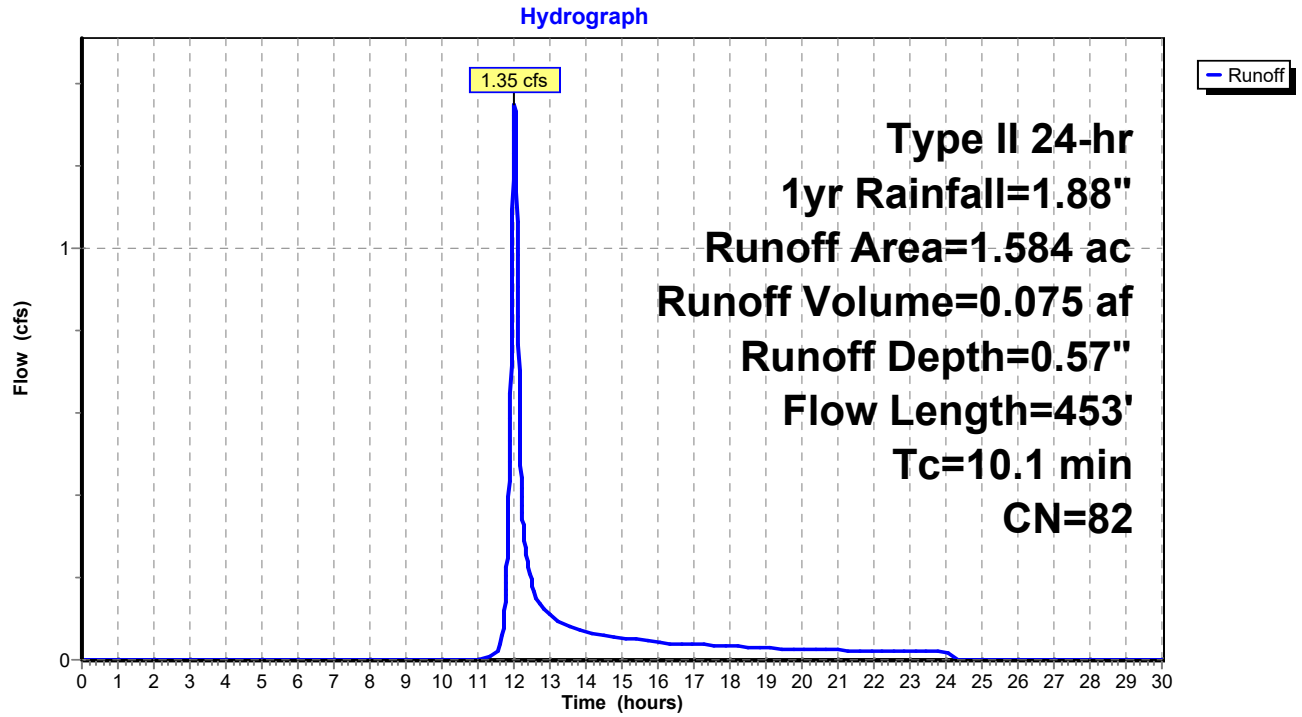
Runoff = 1.35 cfs @ 12.03 hrs, Volume= 0.075 af, Depth= 0.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type II 24-hr 1yr Rainfall=1.88"

Area (ac)	CN	Description
1.395	80	>75% Grass cover, Good, HSG D
0.189	98	Paved parking, HSG D
1.584	82	Weighted Average
1.395		88.07% Pervious Area
0.189		11.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	65	0.0310	1.25		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.20"
5.3	35	0.0460	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.20"
3.9	353	0.0460	1.50		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.1	453	Total			

Subcatchment 1ES: Subcatchment Area 1E



Summary for Subcatchment 2S: Subcatchment Area 2

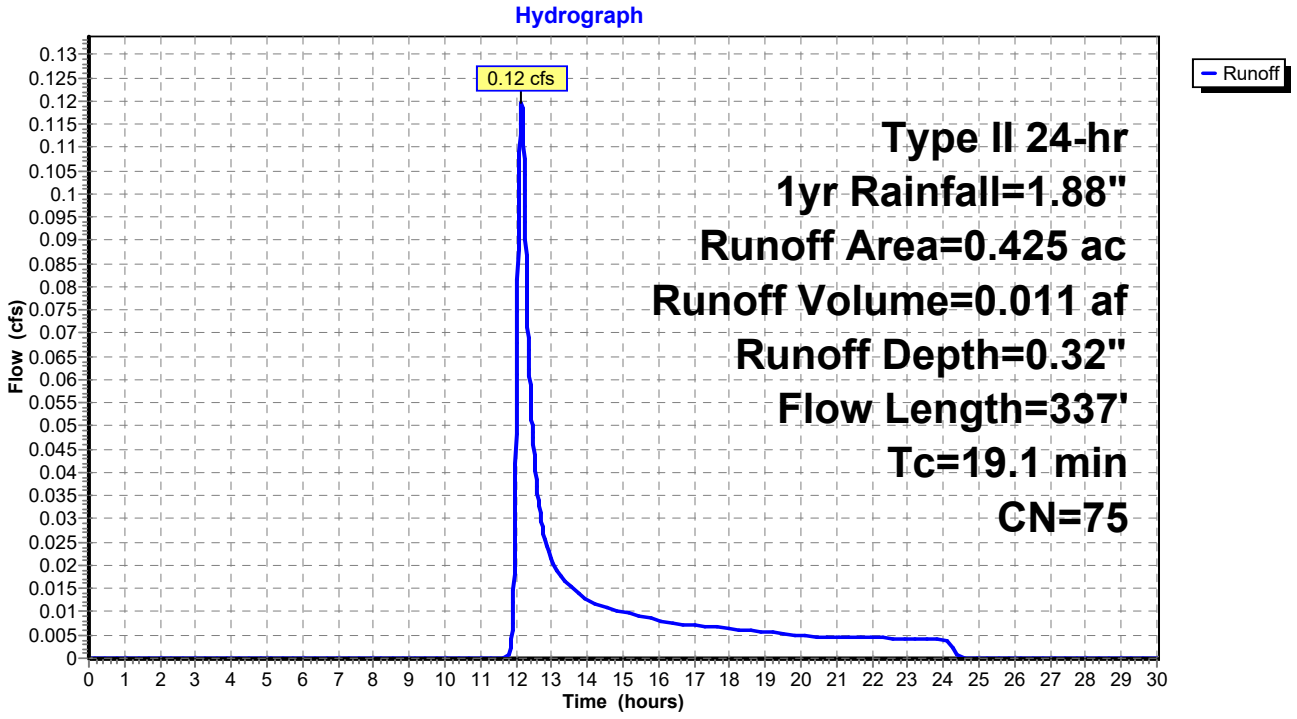
Runoff = 0.12 cfs @ 12.16 hrs, Volume= 0.011 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type II 24-hr 1yr Rainfall=1.88"

Area (ac)	CN	Description
0.220	77	Woods, Good, HSG D
0.205	73	Brush, Good, HSG D
0.425	75	Weighted Average
0.425		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0	100	0.0780	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.20"
4.1	237	0.0377	0.97		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
19.1	337	Total			

Subcatchment 2S: Subcatchment Area 2



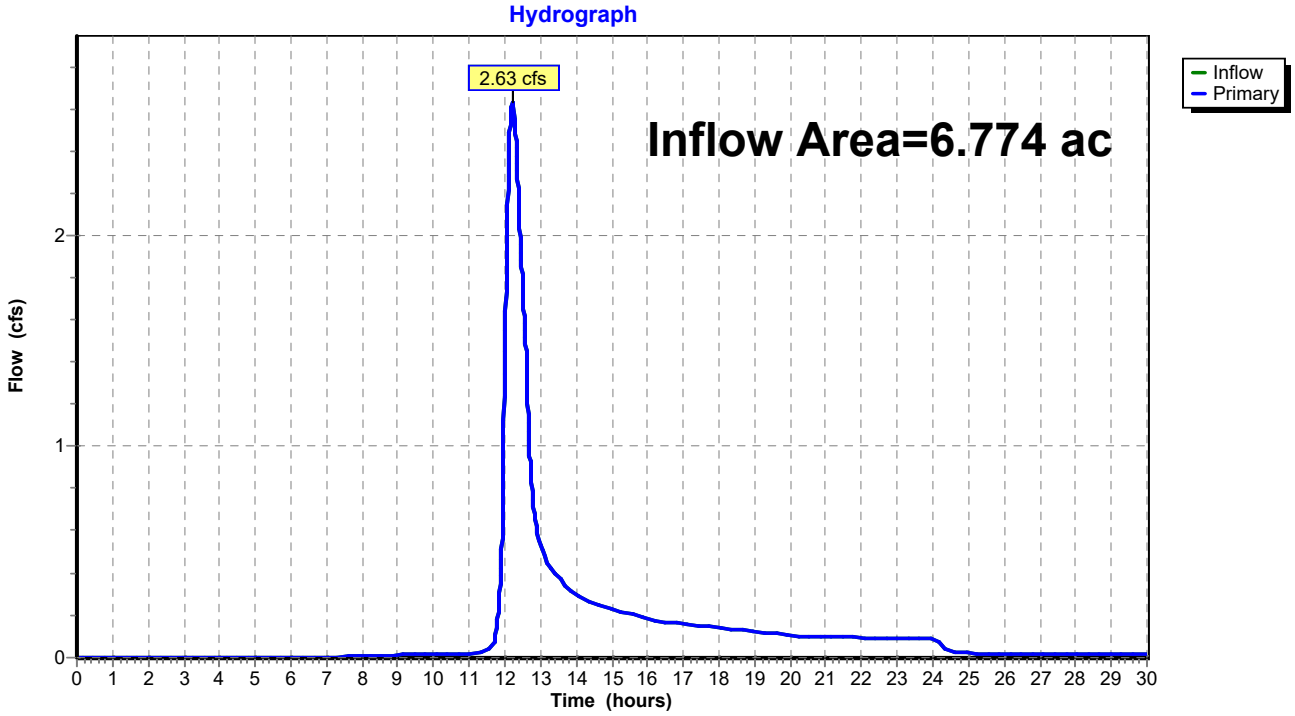
Summary for Pond 1AP: Discharge to Olean Road

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

Inflow Area = 6.774 ac, 18.23% Impervious, Inflow Depth > 0.55" for 1yr event
Inflow = 2.63 cfs @ 12.21 hrs, Volume= 0.309 af
Primary = 2.63 cfs @ 12.21 hrs, Volume= 0.309 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Pond 1AP: Discharge to Olean Road



Summary for Pond 1BP: Detention Pond

[79] Warning: Submerged Pond 1EP Primary device # 1 OUTLET by 0.79'

Inflow Area = 2.863 ac, 39.50% Impervious, Inflow Depth > 0.76" for 1yr event
Inflow = 3.47 cfs @ 12.02 hrs, Volume= 0.180 af
Outflow = 1.43 cfs @ 12.16 hrs, Volume= 0.180 af, Atten= 59%, Lag= 8.0 min
Primary = 1.43 cfs @ 12.16 hrs, Volume= 0.180 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 885.79' @ 12.16 hrs Surf.Area= 2,337 sf Storage= 1,181 cf

Plug-Flow detention time= 5.1 min calculated for 0.180 af (100% of inflow)
Center-of-Mass det. time= 4.9 min (906.6 - 901.7)

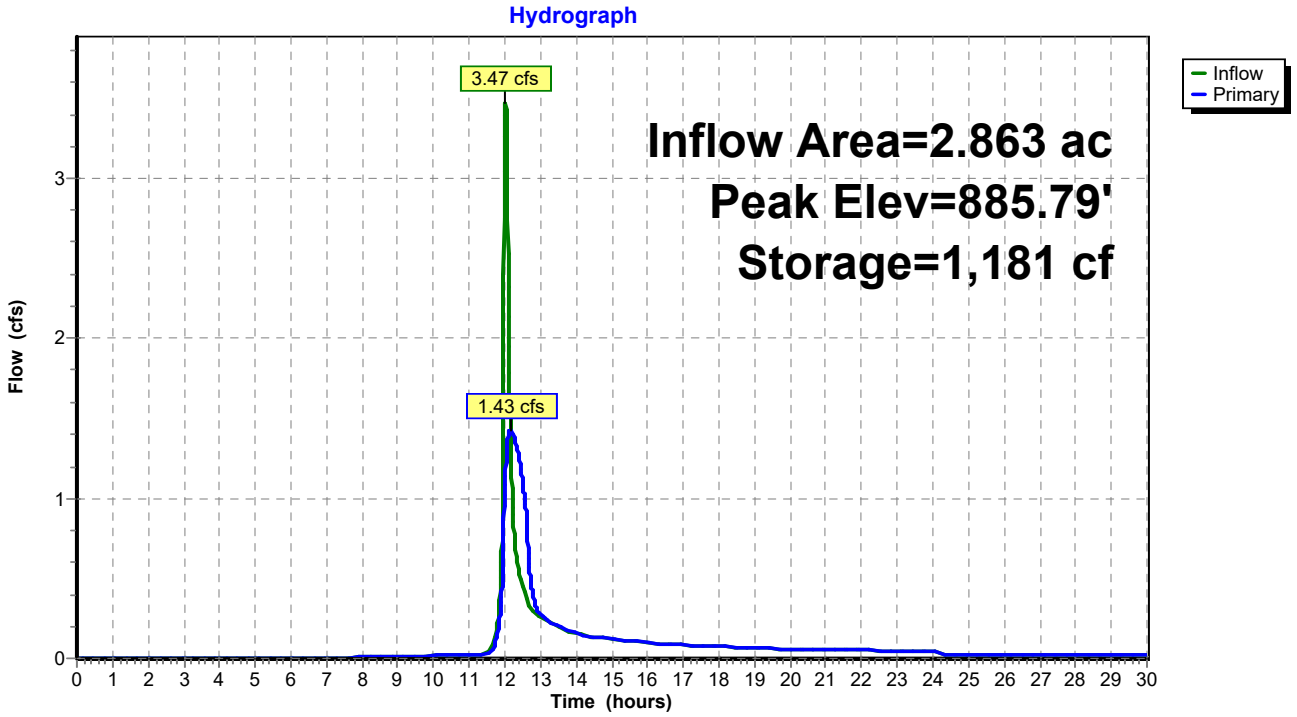
Volume	Invert	Avail.Storage	Storage Description
#1	884.50'	12,606 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
884.50	0	0.0	0	0	0
885.00	592	119.0	99	99	1,127
886.00	2,992	335.0	1,638	1,737	8,934
887.00	5,687	455.0	4,268	6,005	16,489
888.00	7,559	480.0	6,601	12,606	18,407

Device	Routing	Invert	Outlet Devices
#1	Primary	884.50'	**18.0" Round 18" Outlet Pipe** L= 26.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 884.50' / 884.00' S= 0.0192 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	884.50'	**7.4" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 2	884.50'	**12.0" Round 12" Inlet Pipe** L= 21.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 884.50' / 884.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#4	Device 1	886.40'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=1.43 cfs @ 12.16 hrs HW=885.79' (Free Discharge)
- **1=18" Outlet Pipe** (Passes 1.43 cfs of 4.94 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 1.43 cfs @ 4.77 fps)
    - **3=12" Inlet Pipe** (Passes 1.43 cfs of 2.35 cfs potential flow)
  - **4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1BP: Detention Pond



Summary for Pond 1CP: East Bioretention Basin

Inflow Area = 0.835 ac, 70.06% Impervious, Inflow Depth = 1.21" for 1yr event
Inflow = 1.75 cfs @ 11.97 hrs, Volume= 0.084 af
Outflow = 1.31 cfs @ 12.03 hrs, Volume= 0.067 af, Atten= 25%, Lag= 3.4 min
Primary = 1.31 cfs @ 12.03 hrs, Volume= 0.067 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 902.14' @ 12.03 hrs Surf.Area= 2,412 sf Storage= 1,287 cf

Plug-Flow detention time= 197.8 min calculated for 0.067 af (80% of inflow)
Center-of-Mass det. time= 117.2 min (926.6 - 809.4)

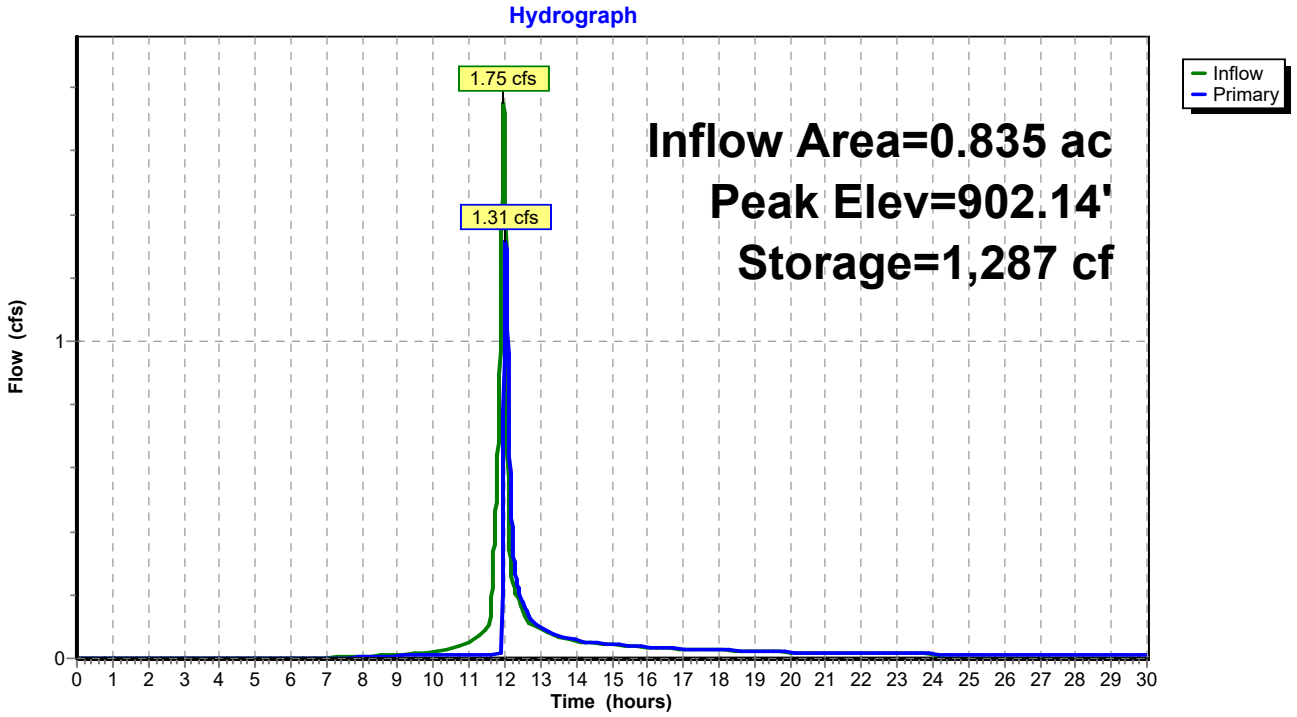
Volume	Invert	Avail.Storage	Storage Description
#1	901.50'	4,064 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
901.50	1,722	271.0	0	0	1,722
902.00	2,191	290.0	976	976	2,582
903.00	4,082	370.0	3,088	4,064	6,796

Device	Routing	Invert	Outlet Devices
#1	Primary	898.00'	**12.0" Round Culvert** L= 134.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 898.00' / 896.81' S= 0.0089 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	898.00'	**6.0" Round Underdrain** L= 120.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 898.00' / 898.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 2	901.50'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 800.00'
#4	Device 1	902.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.31 cfs @ 12.03 hrs HW=902.13' (Free Discharge)
- **1=Culvert** (Passes 1.31 cfs of 5.30 cfs potential flow)
  - **2=Underdrain** (Passes 0.01 cfs of 0.89 cfs potential flow)
    - **3=Exfiltration** (Controls 0.01 cfs)
  - **4=Orifice/Grate** (Weir Controls 1.30 cfs @ 1.20 fps)

Pond 1CP: East Bioretention Basin



Summary for Pond 1DP: North Bioretention Basin

Inflow Area = 0.444 ac, 80.41% Impervious, Inflow Depth = 1.28" for 1yr event
Inflow = 0.98 cfs @ 11.97 hrs, Volume= 0.048 af
Outflow = 0.81 cfs @ 12.02 hrs, Volume= 0.037 af, Atten= 17%, Lag= 2.8 min
Primary = 0.01 cfs @ 12.02 hrs, Volume= 0.014 af
Secondary = 0.80 cfs @ 12.02 hrs, Volume= 0.024 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 902.10' @ 12.02 hrs Surf.Area= 1,360 sf Storage= 729 cf

Plug-Flow detention time= 208.4 min calculated for 0.037 af (79% of inflow)
Center-of-Mass det. time= 124.7 min (927.7 - 802.9)

Volume	Invert	Avail.Storage	Storage Description
#1	901.50'	2,159 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

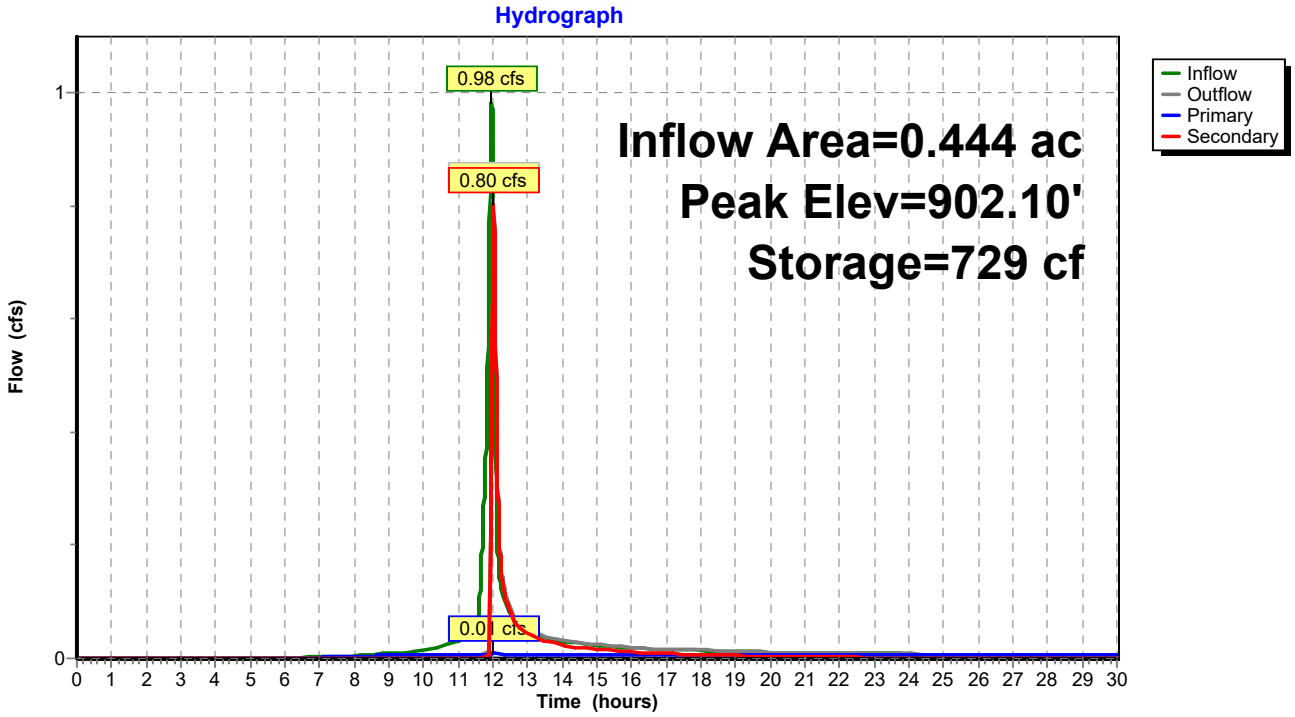
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
901.50	1,080	152.0	0	0	1,080
902.00	1,314	161.0	598	598	1,317
903.00	1,822	180.0	1,561	2,159	1,860

Device	Routing	Invert	Outlet Devices
#1	Primary	898.00'	**6.0" Round Culvert** L= 38.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 898.00' / 898.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	901.50'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 800.00'
#3	Secondary	902.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.01 cfs @ 12.02 hrs HW=902.10' (Free Discharge)
↑—**1=Culvert** (Passes 0.01 cfs of 1.35 cfs potential flow)
↑—**2=Exfiltration** (Controls 0.01 cfs)

Secondary OutFlow Max=0.80 cfs @ 12.02 hrs HW=902.10' (Free Discharge)
↑—**3=Orifice/Grate** (Weir Controls 0.80 cfs @ 1.02 fps)

Pond 1DP: North Bioretention Basin



Summary for Pond 1EP: Conveyance Pipe

[79] Warning: Submerged Pond 1CP Primary device # 1 OUTLET by 0.76'

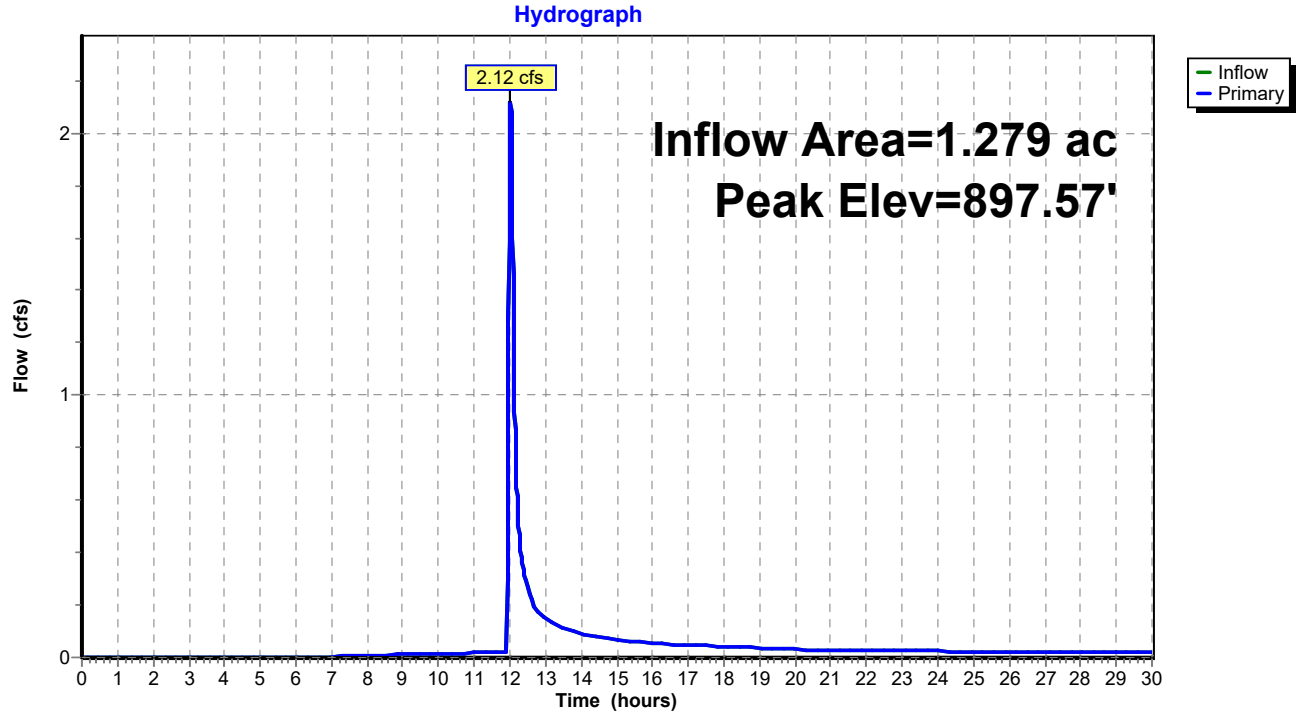
Inflow Area = 1.279 ac, 73.65% Impervious, Inflow Depth > 0.98" for 1yr event
Inflow = 2.12 cfs @ 12.02 hrs, Volume= 0.105 af
Outflow = 2.12 cfs @ 12.02 hrs, Volume= 0.105 af, Atten= 0%, Lag= 0.0 min
Primary = 2.12 cfs @ 12.02 hrs, Volume= 0.105 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 897.57' @ 12.02 hrs
Flood Elev= 902.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	893.50'	**18.0" Round Culvert** L= 109.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 893.50' / 885.00' S= 0.0780 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	896.81'	**18.0" Round Culvert** L= 196.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 896.81' / 893.50' S= 0.0169 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.11 cfs @ 12.02 hrs HW=897.57' (Free Discharge)
└**1=Culvert** (Passes 2.11 cfs of 12.24 cfs potential flow)
└**2=Culvert** (Inlet Controls 2.11 cfs @ 2.34 fps)

Pond 1EP: Conveyance Pipe



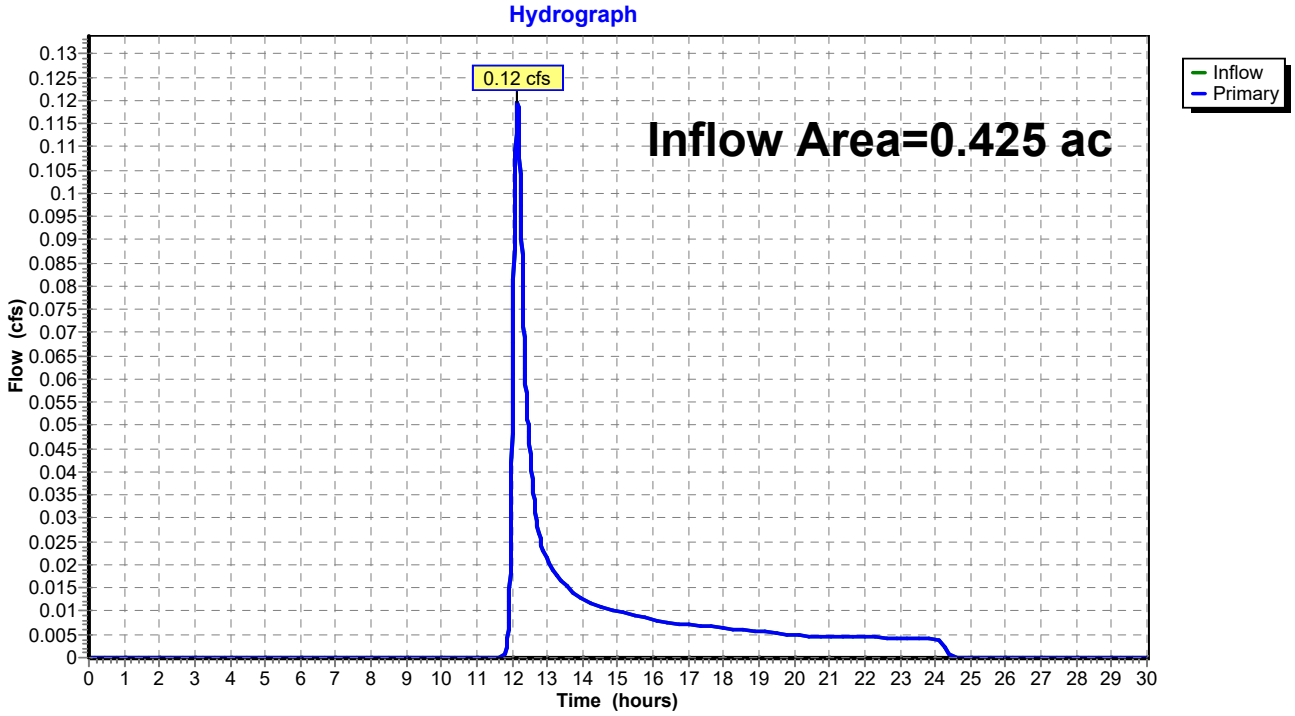
Summary for Pond 2P: Discharge to South

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

Inflow Area = 0.425 ac, 0.00% Impervious, Inflow Depth = 0.32" for 1yr event
Inflow = 0.12 cfs @ 12.16 hrs, Volume= 0.011 af
Primary = 0.12 cfs @ 12.16 hrs, Volume= 0.011 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Pond 2P: Discharge to South



Summary for Subcatchment 1AS: Subcatchment Area 1A

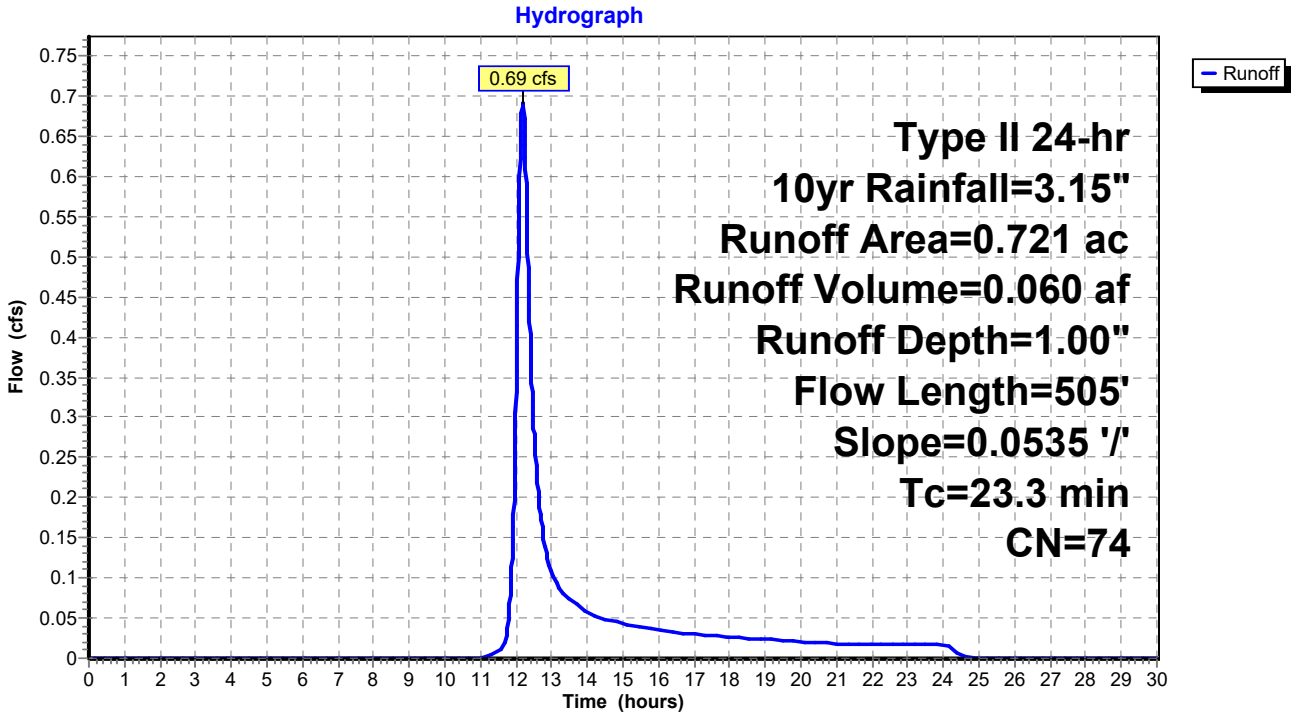
Runoff = 0.69 cfs @ 12.19 hrs, Volume= 0.060 af, Depth= 1.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type II 24-hr 10yr Rainfall=3.15"

Area (ac)	CN	Description
0.173	77	Woods, Good, HSG D
0.548	73	Brush, Good, HSG D
0.721	74	Weighted Average
0.721		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.5	100	0.0535	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.20"
5.8	405	0.0535	1.16		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.3	505	Total			

Subcatchment 1AS: Subcatchment Area 1A



Summary for Subcatchment 1BS: Subcatchment Area 1B

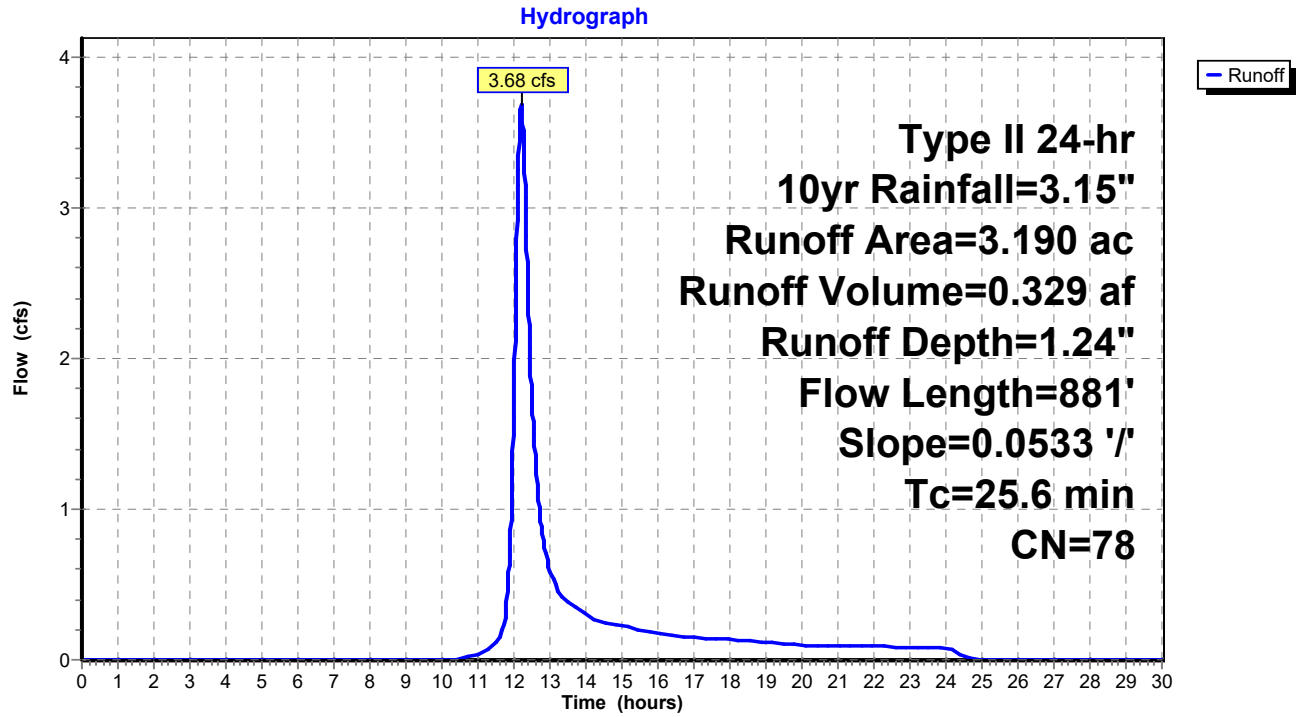
Runoff = 3.68 cfs @ 12.20 hrs, Volume= 0.329 af, Depth= 1.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type II 24-hr 10yr Rainfall=3.15"

Area (ac)	CN	Description
1.534	77	Woods, Good, HSG D
0.352	73	Brush, Good, HSG D
1.200	80	>75% Grass cover, Good, HSG D
0.104	98	Paved parking, HSG D
3.190	78	Weighted Average
3.086		96.74% Pervious Area
0.104		3.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.5	100	0.0533	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.20"
8.1	781	0.0533	1.62		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
25.6	881	Total			

Subcatchment 1BS: Subcatchment Area 1B



Summary for Subcatchment 1CS: Subcatchment Area 1C

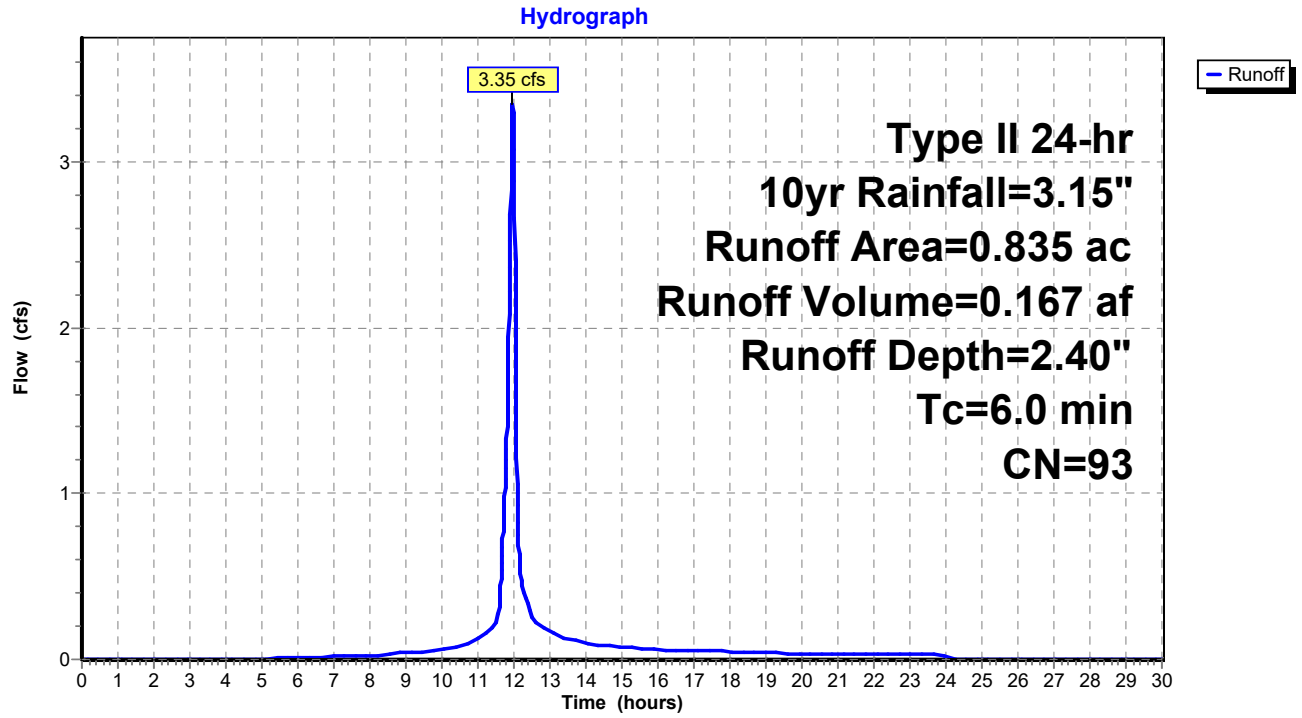
Runoff = 3.35 cfs @ 11.97 hrs, Volume= 0.167 af, Depth= 2.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type II 24-hr 10yr Rainfall=3.15"

Area (ac)	CN	Description
0.585	98	Paved parking, HSG D
0.250	80	>75% Grass cover, Good, HSG D
0.835	93	Weighted Average
0.250		29.94% Pervious Area
0.585		70.06% Impervious Area

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

Subcatchment 1CS: Subcatchment Area 1C



Summary for Subcatchment 1DS: Subcatchment Area 1D

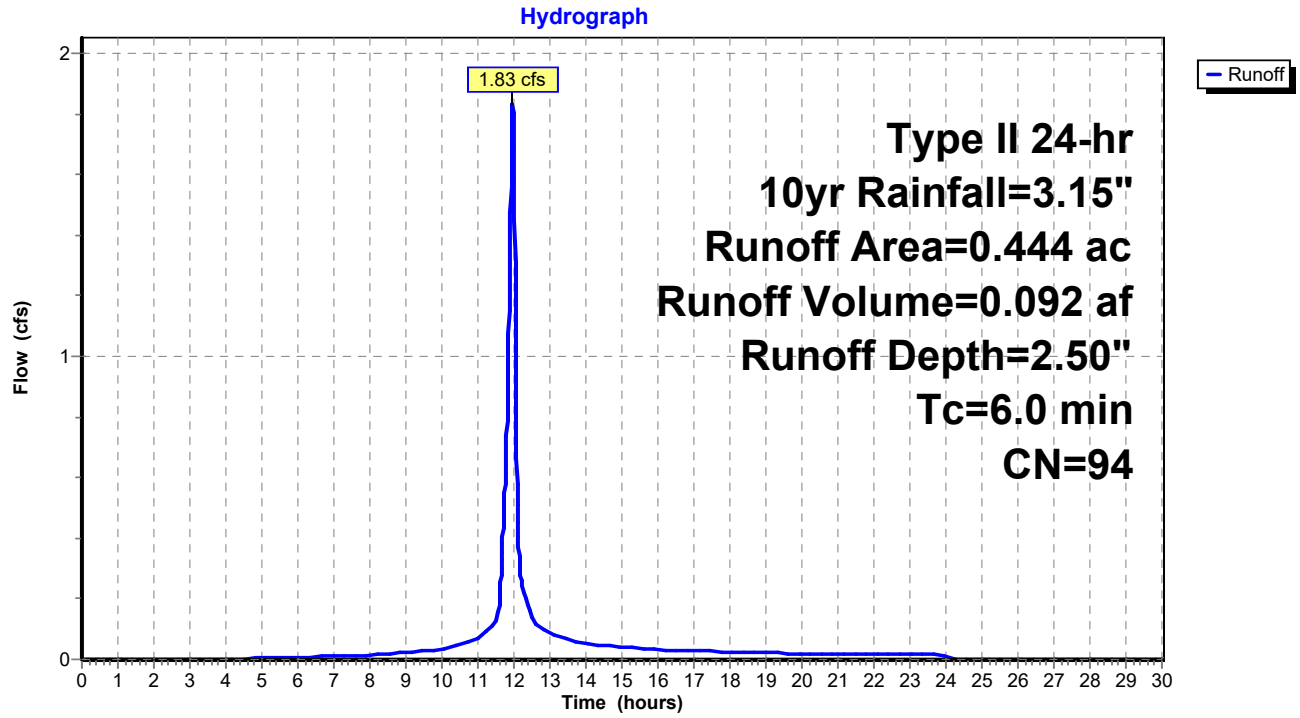
Runoff = 1.83 cfs @ 11.97 hrs, Volume= 0.092 af, Depth= 2.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type II 24-hr 10yr Rainfall=3.15"

Area (ac)	CN	Description
0.357	98	Paved parking, HSG D
0.087	80	>75% Grass cover, Good, HSG D
0.444	94	Weighted Average
0.087		19.59% Pervious Area
0.357		80.41% Impervious Area

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

Subcatchment 1DS: Subcatchment Area 1D



Summary for Subcatchment 1ES: Subcatchment Area 1E

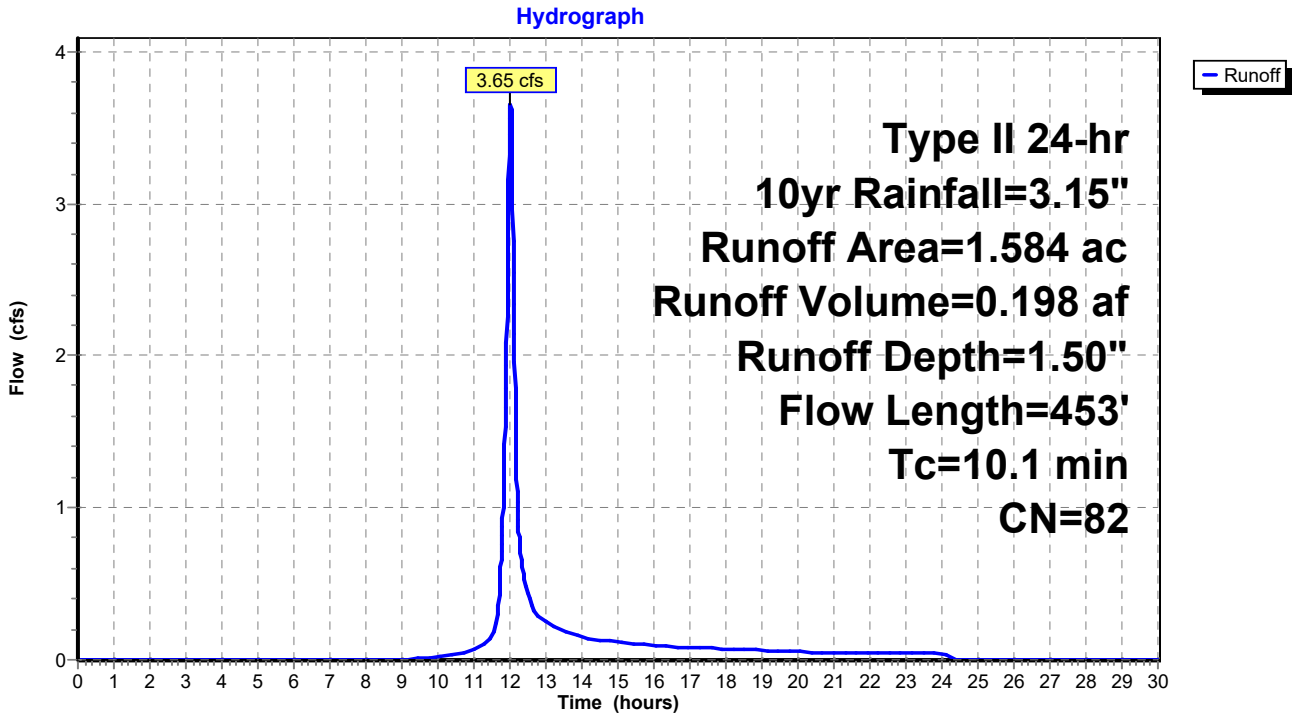
Runoff = 3.65 cfs @ 12.02 hrs, Volume= 0.198 af, Depth= 1.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type II 24-hr 10yr Rainfall=3.15"

Area (ac)	CN	Description
1.395	80	>75% Grass cover, Good, HSG D
0.189	98	Paved parking, HSG D
1.584	82	Weighted Average
1.395		88.07% Pervious Area
0.189		11.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	65	0.0310	1.25		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.20"
5.3	35	0.0460	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.20"
3.9	353	0.0460	1.50		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.1	453	Total			

Subcatchment 1ES: Subcatchment Area 1E



Summary for Subcatchment 2S: Subcatchment Area 2

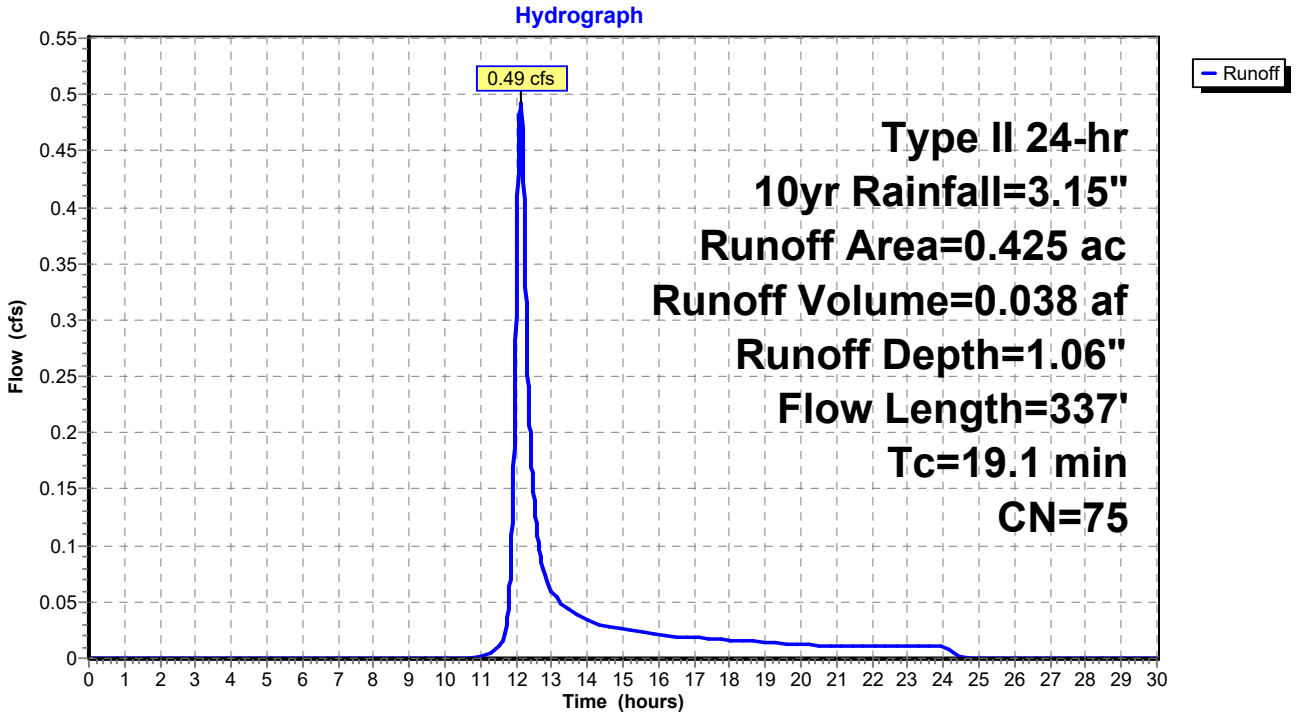
Runoff = 0.49 cfs @ 12.12 hrs, Volume= 0.038 af, Depth= 1.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type II 24-hr 10yr Rainfall=3.15"

Area (ac)	CN	Description
0.220	77	Woods, Good, HSG D
0.205	73	Brush, Good, HSG D
0.425	75	Weighted Average
0.425		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0	100	0.0780	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.20"
4.1	237	0.0377	0.97		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
19.1	337	Total			

Subcatchment 2S: Subcatchment Area 2



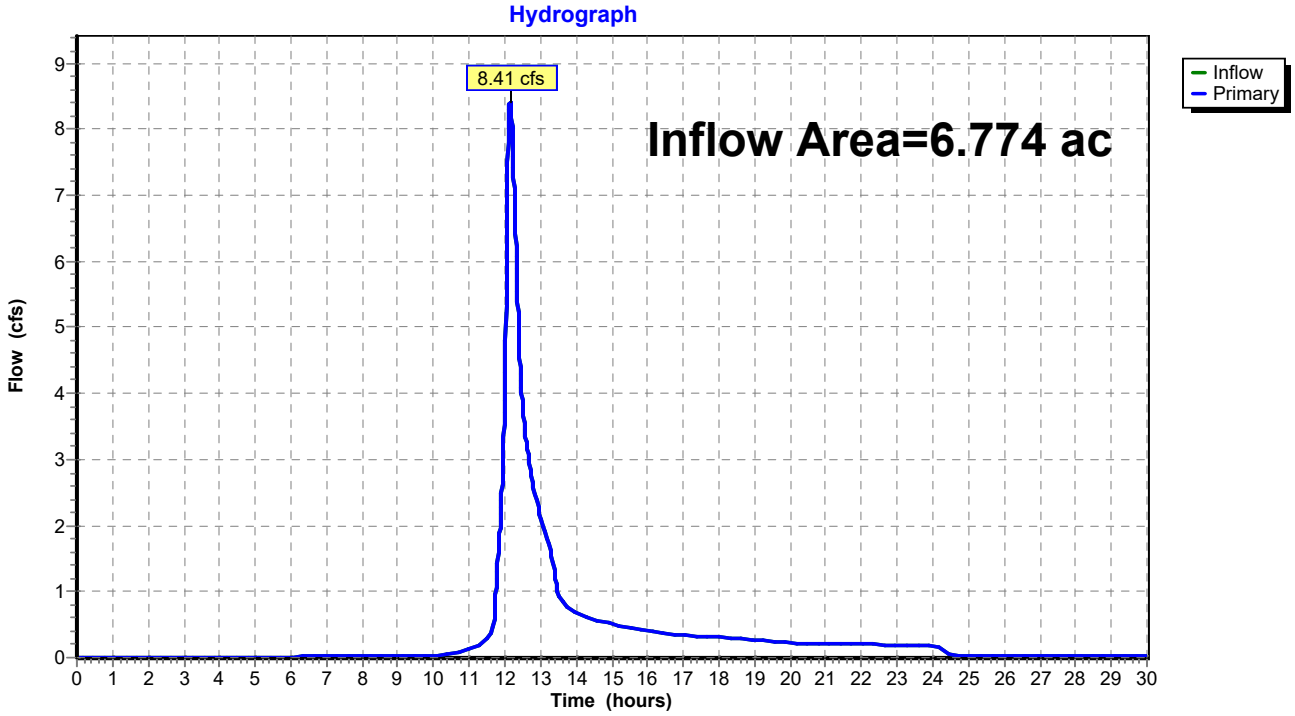
Summary for Pond 1AP: Discharge to Olean Road

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

Inflow Area = 6.774 ac, 18.23% Impervious, Inflow Depth > 1.45" for 10yr event
Inflow = 8.41 cfs @ 12.14 hrs, Volume= 0.819 af
Primary = 8.41 cfs @ 12.14 hrs, Volume= 0.819 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Pond 1AP: Discharge to Olean Road



Summary for Pond 1BP: Detention Pond

[79] Warning: Submerged Pond 1EP Primary device # 1 OUTLET by 1.73'

Inflow Area = 2.863 ac, 39.50% Impervious, Inflow Depth > 1.80" for 10yr event
Inflow = 8.42 cfs @ 12.00 hrs, Volume= 0.430 af
Outflow = 4.40 cfs @ 12.11 hrs, Volume= 0.430 af, Atten= 48%, Lag= 6.5 min
Primary = 4.40 cfs @ 12.11 hrs, Volume= 0.430 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 886.73' @ 12.11 hrs Surf.Area= 4,865 sf Storage= 4,564 cf

Plug-Flow detention time= 12.3 min calculated for 0.430 af (100% of inflow)
Center-of-Mass det. time= 12.2 min (857.8 - 845.6)

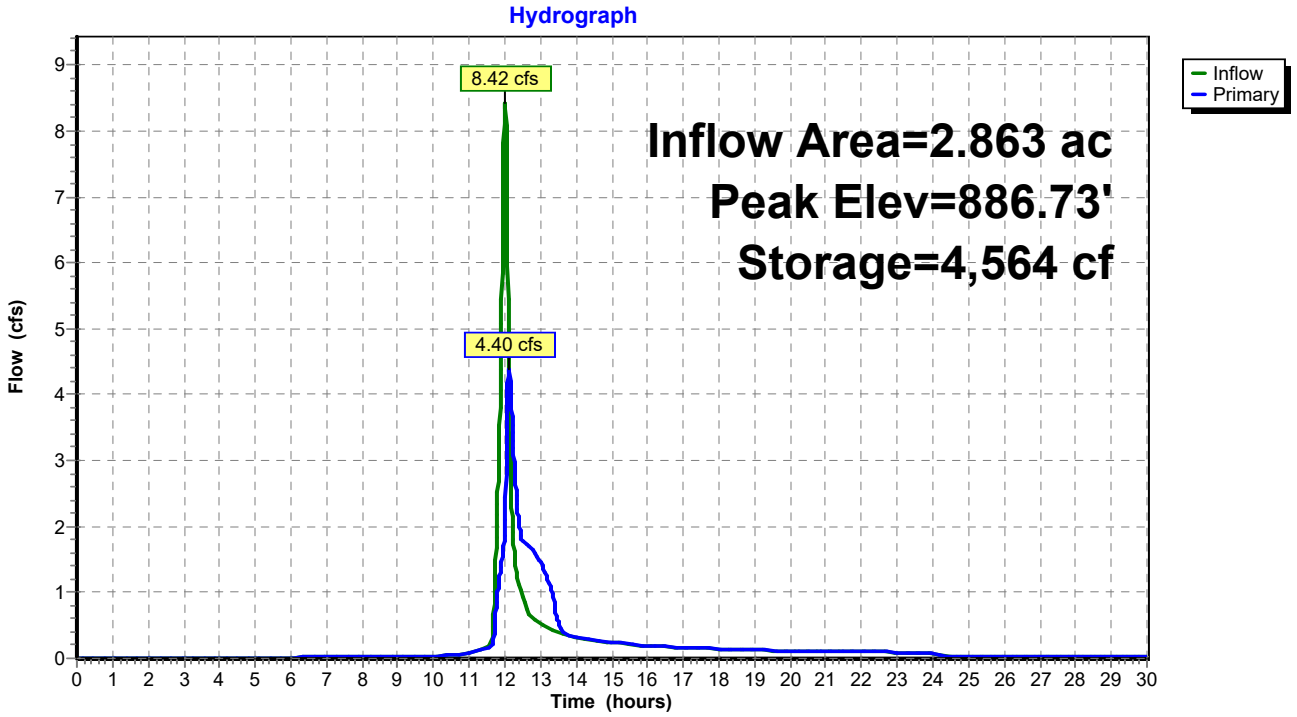
Volume	Invert	Avail.Storage	Storage Description
#1	884.50'	12,606 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
884.50	0	0.0	0	0	0
885.00	592	119.0	99	99	1,127
886.00	2,992	335.0	1,638	1,737	8,934
887.00	5,687	455.0	4,268	6,005	16,489
888.00	7,559	480.0	6,601	12,606	18,407

Device	Routing	Invert	Outlet Devices
#1	Primary	884.50'	**18.0" Round 18" Outlet Pipe** L= 26.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 884.50' / 884.00' S= 0.0192 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	884.50'	**7.4" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 2	884.50'	**12.0" Round 12" Inlet Pipe** L= 21.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 884.50' / 884.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#4	Device 1	886.40'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=4.39 cfs @ 12.11 hrs HW=886.73' (Free Discharge)
- **1=18" Outlet Pipe** (Passes 4.39 cfs of 8.16 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 1.99 cfs @ 6.67 fps)
    - **3=12" Inlet Pipe** (Passes 1.99 cfs of 4.38 cfs potential flow)
  - **4=Sharp-Crested Rectangular Weir** (Weir Controls 2.40 cfs @ 1.87 fps)

Pond 1BP: Detention Pond



Summary for Pond 1CP: East Bioretention Basin

Inflow Area = 0.835 ac, 70.06% Impervious, Inflow Depth = 2.40" for 10yr event
Inflow = 3.35 cfs @ 11.97 hrs, Volume= 0.167 af
Outflow = 3.11 cfs @ 12.00 hrs, Volume= 0.150 af, Atten= 7%, Lag= 1.7 min
Primary = 3.11 cfs @ 12.00 hrs, Volume= 0.150 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 902.24' @ 12.00 hrs Surf.Area= 2,593 sf Storage= 1,551 cf

Plug-Flow detention time= 113.7 min calculated for 0.150 af (90% of inflow)
Center-of-Mass det. time= 62.8 min (852.8 - 790.0)

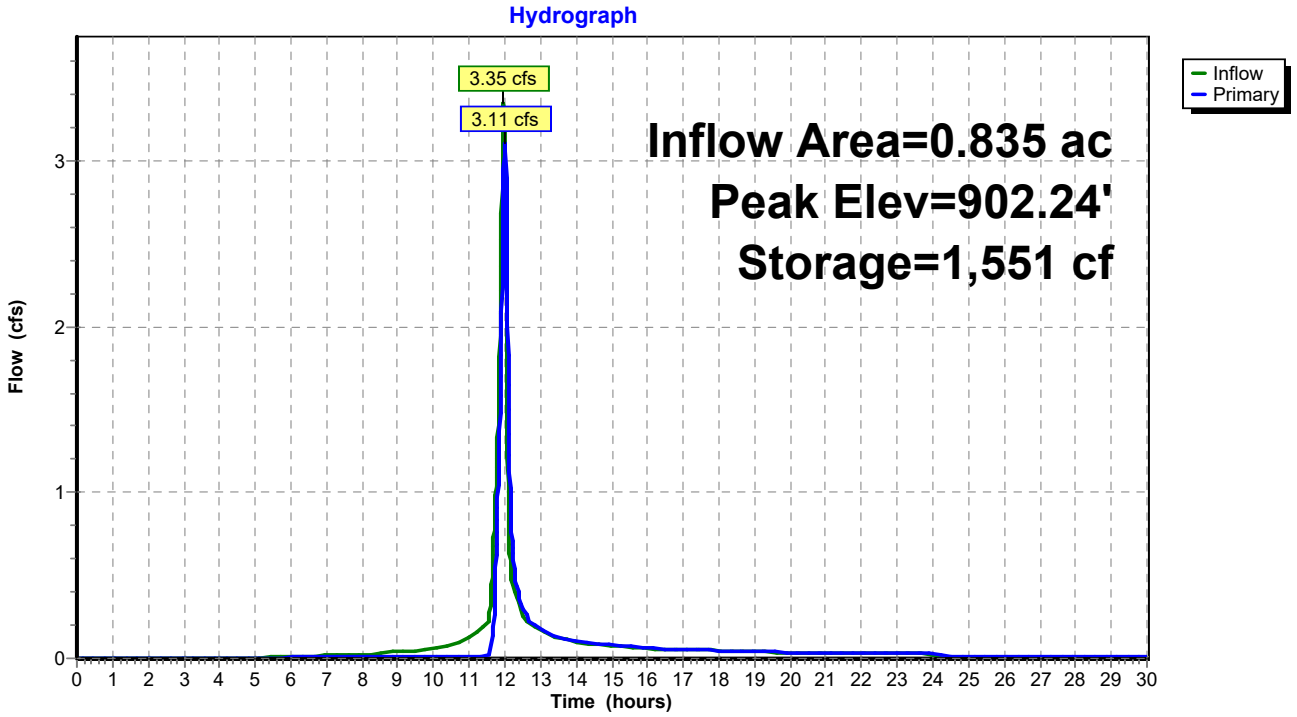
Volume	Invert	Avail.Storage	Storage Description
#1	901.50'	4,064 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
901.50	1,722	271.0	0	0	1,722
902.00	2,191	290.0	976	976	2,582
903.00	4,082	370.0	3,088	4,064	6,796

Device	Routing	Invert	Outlet Devices
#1	Primary	898.00'	**12.0" Round Culvert** L= 134.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 898.00' / 896.81' S= 0.0089 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	898.00'	**6.0" Round Underdrain** L= 120.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 898.00' / 898.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 2	901.50'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 800.00'
#4	Device 1	902.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.10 cfs @ 12.00 hrs HW=902.24' (Free Discharge)
- **1=Culvert** (Passes 3.10 cfs of 5.37 cfs potential flow)
  - **2=Underdrain** (Passes 0.02 cfs of 0.90 cfs potential flow)
    - **3=Exfiltration** (Controls 0.02 cfs)
  - **4=Orifice/Grate** (Weir Controls 3.09 cfs @ 1.60 fps)

Pond 1CP: East Bioretention Basin



Summary for Pond 1DP: North Bioretention Basin

Inflow Area = 0.444 ac, 80.41% Impervious, Inflow Depth = 2.50" for 10yr event
Inflow = 1.83 cfs @ 11.97 hrs, Volume= 0.092 af
Outflow = 1.76 cfs @ 11.99 hrs, Volume= 0.082 af, Atten= 4%, Lag= 1.2 min
Primary = 0.01 cfs @ 11.99 hrs, Volume= 0.015 af
Secondary = 1.75 cfs @ 11.99 hrs, Volume= 0.067 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 902.16' @ 11.99 hrs Surf.Area= 1,392 sf Storage= 821 cf

Plug-Flow detention time= 122.3 min calculated for 0.082 af (89% of inflow)
Center-of-Mass det. time= 67.4 min (851.7 - 784.4)

Volume	Invert	Avail.Storage	Storage Description
#1	901.50'	2,159 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

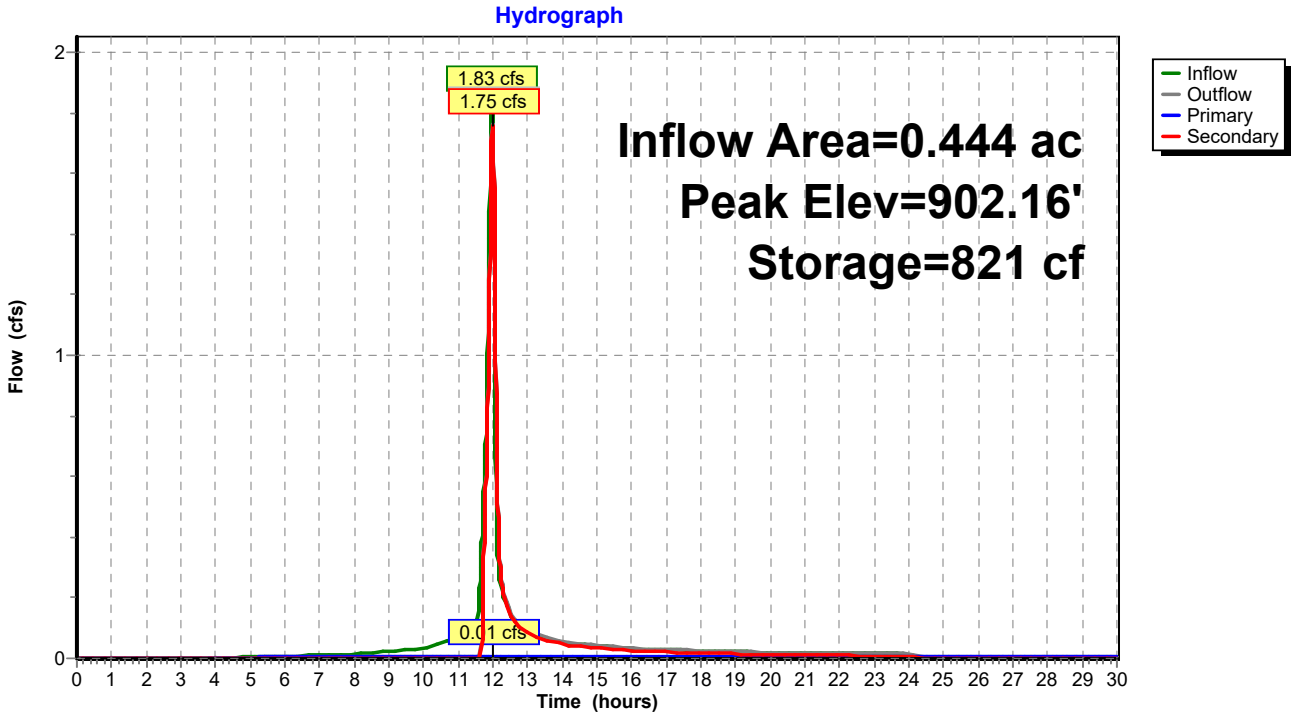
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
901.50	1,080	152.0	0	0	1,080
902.00	1,314	161.0	598	598	1,317
903.00	1,822	180.0	1,561	2,159	1,860

Device	Routing	Invert	Outlet Devices
#1	Primary	898.00'	**6.0" Round Culvert** L= 38.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 898.00' / 898.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	901.50'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 800.00'
#3	Secondary	902.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.01 cfs @ 11.99 hrs HW=902.16' (Free Discharge)
↑—**1=Culvert** (Passes 0.01 cfs of 1.36 cfs potential flow)
↑—**2=Exfiltration** (Controls 0.01 cfs)

Secondary OutFlow Max=1.75 cfs @ 11.99 hrs HW=902.16' (Free Discharge)
↑—**3=Orifice/Grate** (Weir Controls 1.75 cfs @ 1.33 fps)

Pond 1DP: North Bioretention Basin



Summary for Pond 1EP: Conveyance Pipe

[79] Warning: Submerged Pond 1CP Primary device # 1 INLET by 0.08'
[79] Warning: Submerged Pond 1DP Primary device # 1 by 0.08'

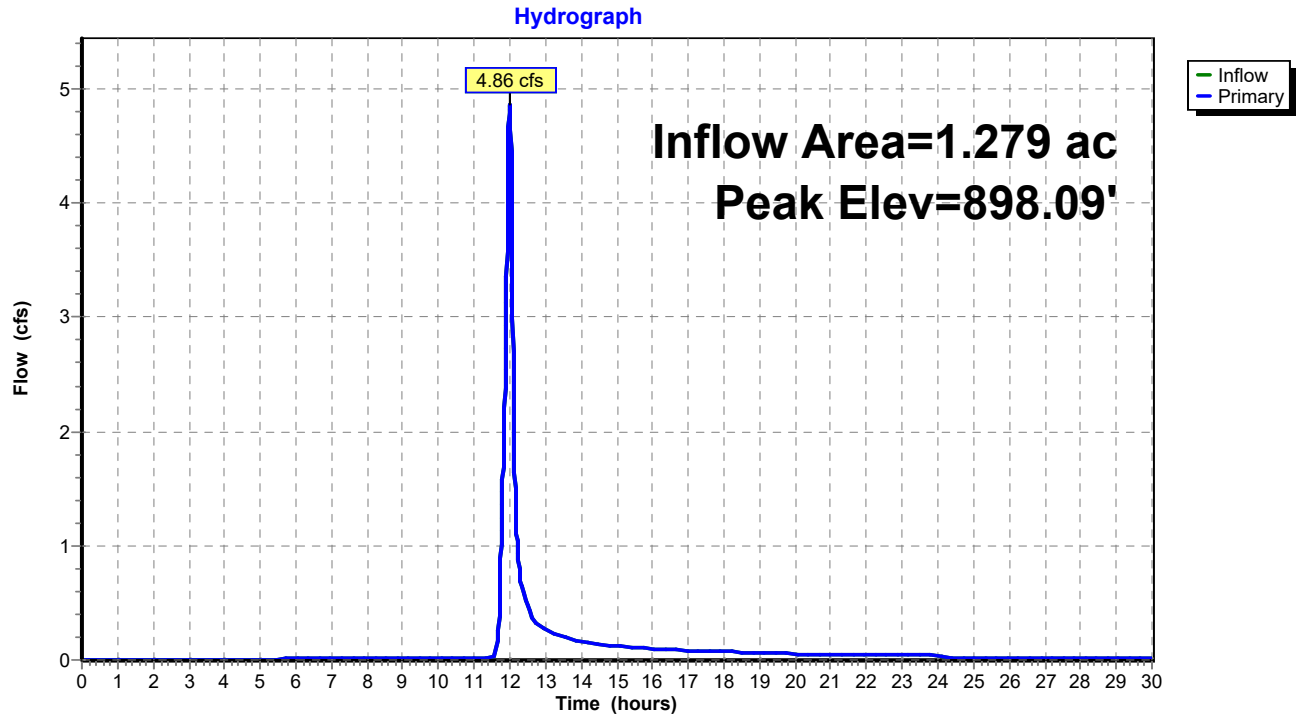
Inflow Area = 1.279 ac, 73.65% Impervious, Inflow Depth > 2.18" for 10yr event
Inflow = 4.86 cfs @ 11.99 hrs, Volume= 0.232 af
Outflow = 4.86 cfs @ 11.99 hrs, Volume= 0.232 af, Atten= 0%, Lag= 0.0 min
Primary = 4.86 cfs @ 11.99 hrs, Volume= 0.232 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 898.09' @ 11.99 hrs
Flood Elev= 902.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	893.50'	**18.0" Round Culvert** L= 109.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 893.50' / 885.00' S= 0.0780 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	896.81'	**18.0" Round Culvert** L= 196.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 896.81' / 893.50' S= 0.0169 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=4.85 cfs @ 11.99 hrs HW=898.08' (Free Discharge)
↑—**1=Culvert** (Passes 4.85 cfs of 13.15 cfs potential flow)
↑—**2=Culvert** (Inlet Controls 4.85 cfs @ 3.03 fps)

Pond 1EP: Conveyance Pipe



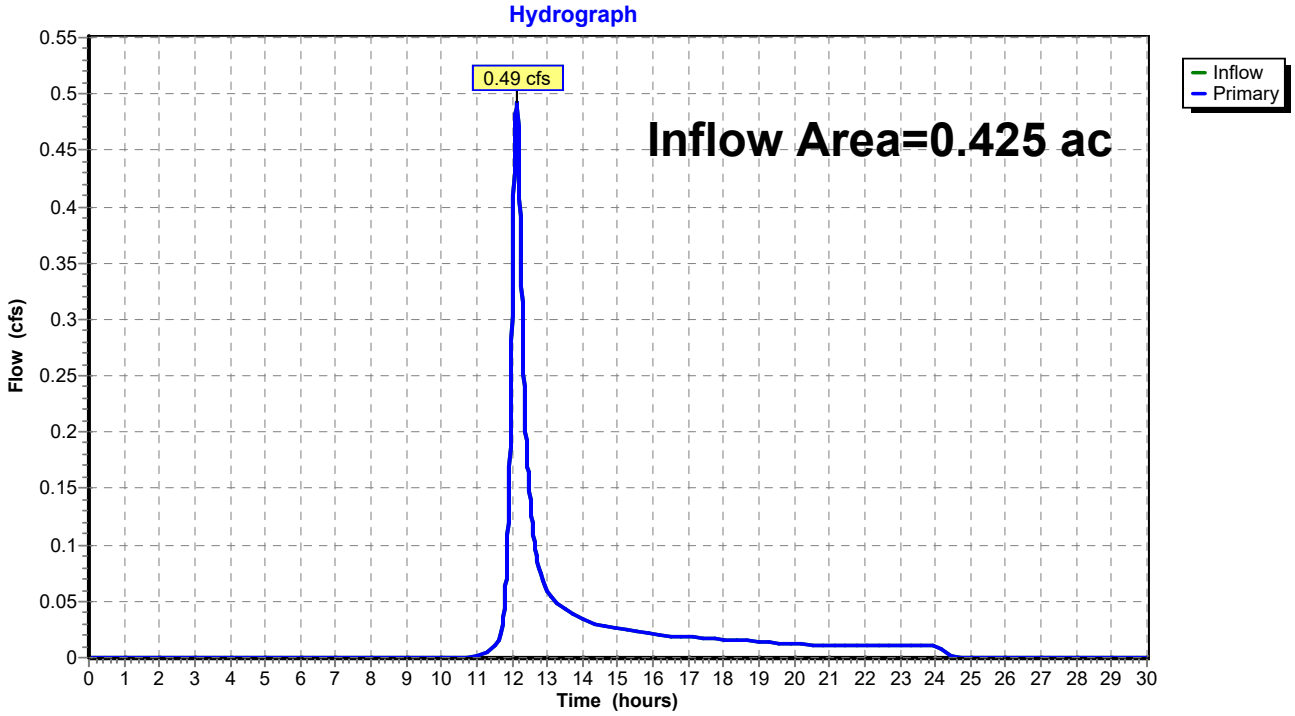
Summary for Pond 2P: Discharge to South

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

Inflow Area = 0.425 ac, 0.00% Impervious, Inflow Depth = 1.06" for 10yr event
Inflow = 0.49 cfs @ 12.12 hrs, Volume= 0.038 af
Primary = 0.49 cfs @ 12.12 hrs, Volume= 0.038 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Pond 2P: Discharge to South



Summary for Subcatchment 1AS: Subcatchment Area 1A

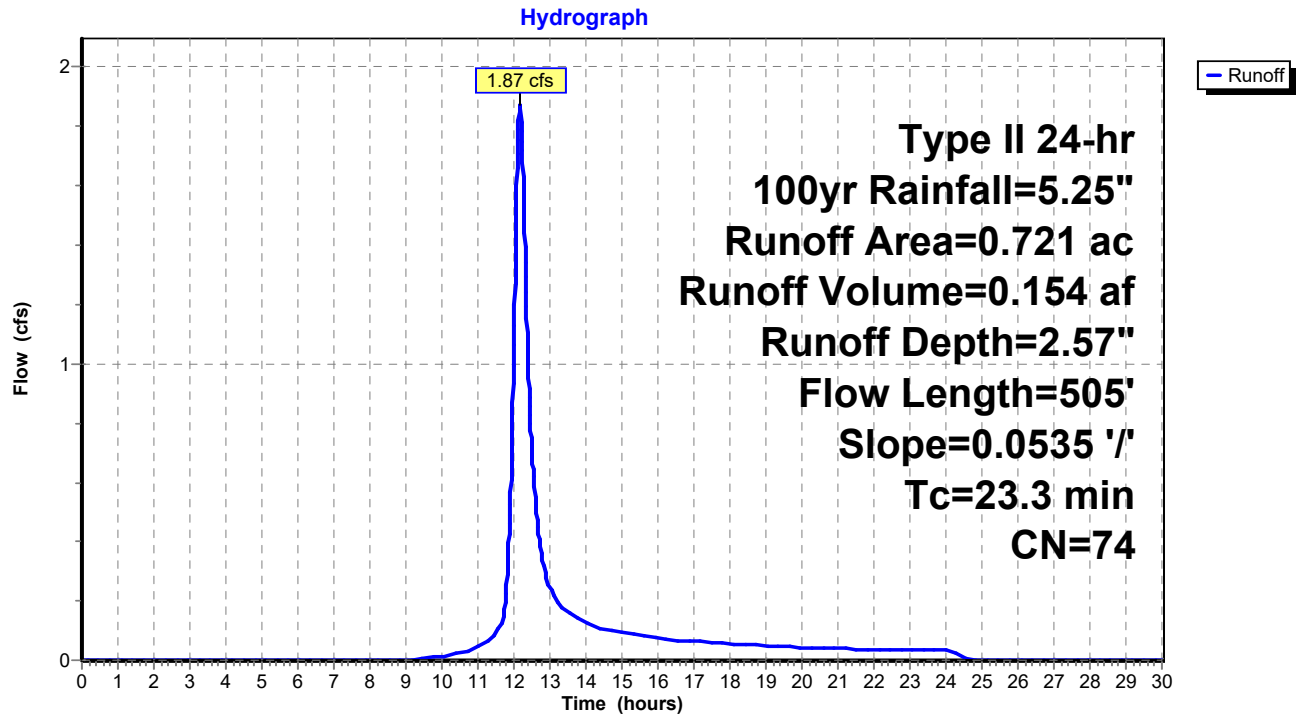
Runoff = 1.87 cfs @ 12.17 hrs, Volume= 0.154 af, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type II 24-hr 100yr Rainfall=5.25"

Area (ac)	CN	Description
0.173	77	Woods, Good, HSG D
0.548	73	Brush, Good, HSG D
0.721	74	Weighted Average
0.721		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.5	100	0.0535	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.20"
5.8	405	0.0535	1.16		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.3	505	Total			

Subcatchment 1AS: Subcatchment Area 1A



Summary for Subcatchment 1BS: Subcatchment Area 1B

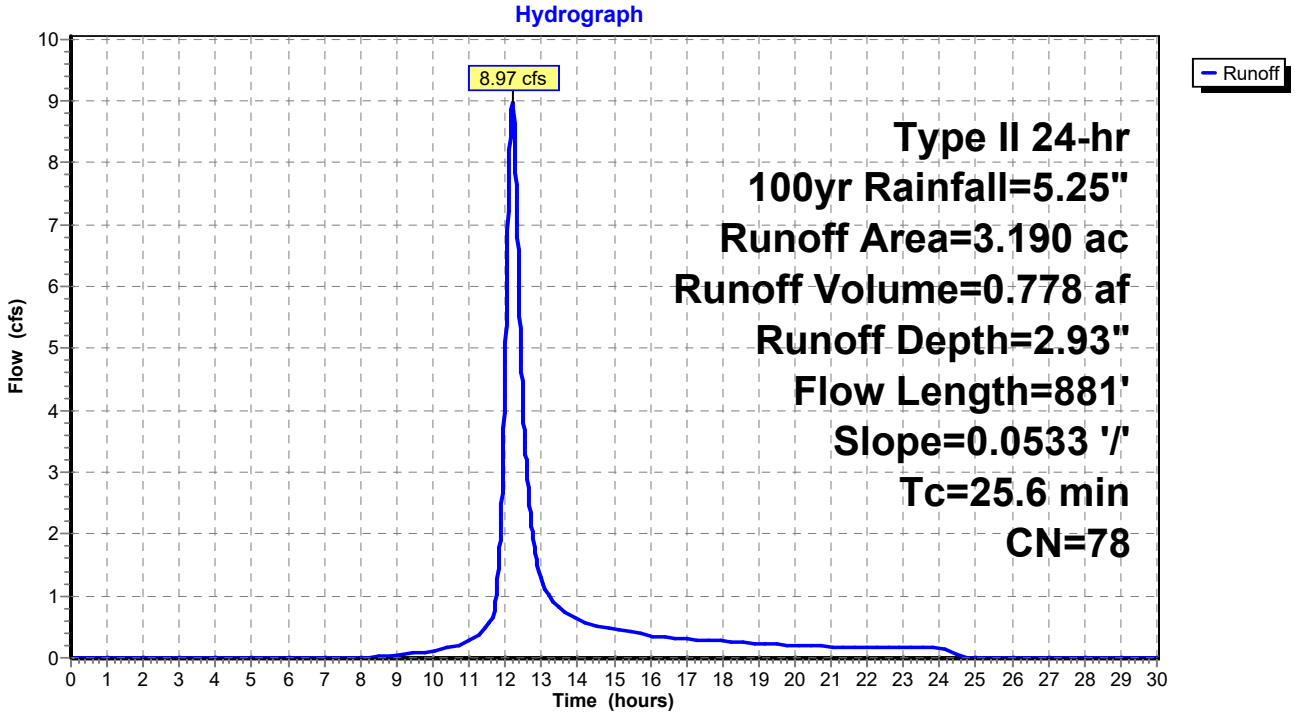
Runoff = 8.97 cfs @ 12.20 hrs, Volume= 0.778 af, Depth= 2.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type II 24-hr 100yr Rainfall=5.25"

Area (ac)	CN	Description
1.534	77	Woods, Good, HSG D
0.352	73	Brush, Good, HSG D
1.200	80	>75% Grass cover, Good, HSG D
0.104	98	Paved parking, HSG D
3.190	78	Weighted Average
3.086		96.74% Pervious Area
0.104		3.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.5	100	0.0533	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.20"
8.1	781	0.0533	1.62		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
25.6	881	Total			

Subcatchment 1BS: Subcatchment Area 1B



Summary for Subcatchment 1CS: Subcatchment Area 1C

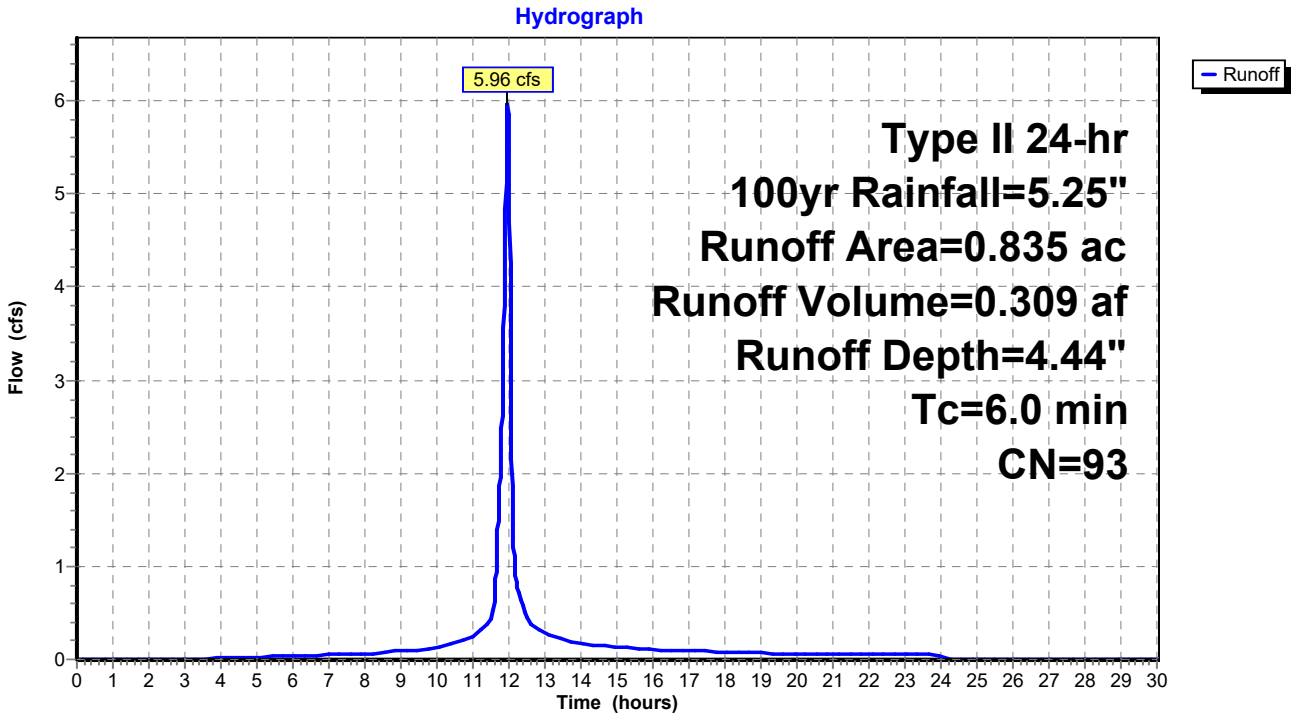
Runoff = 5.96 cfs @ 11.97 hrs, Volume= 0.309 af, Depth= 4.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type II 24-hr 100yr Rainfall=5.25"

Area (ac)	CN	Description
0.585	98	Paved parking, HSG D
0.250	80	>75% Grass cover, Good, HSG D
0.835	93	Weighted Average
0.250		29.94% Pervious Area
0.585		70.06% Impervious Area

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

Subcatchment 1CS: Subcatchment Area 1C



Summary for Subcatchment 1DS: Subcatchment Area 1D

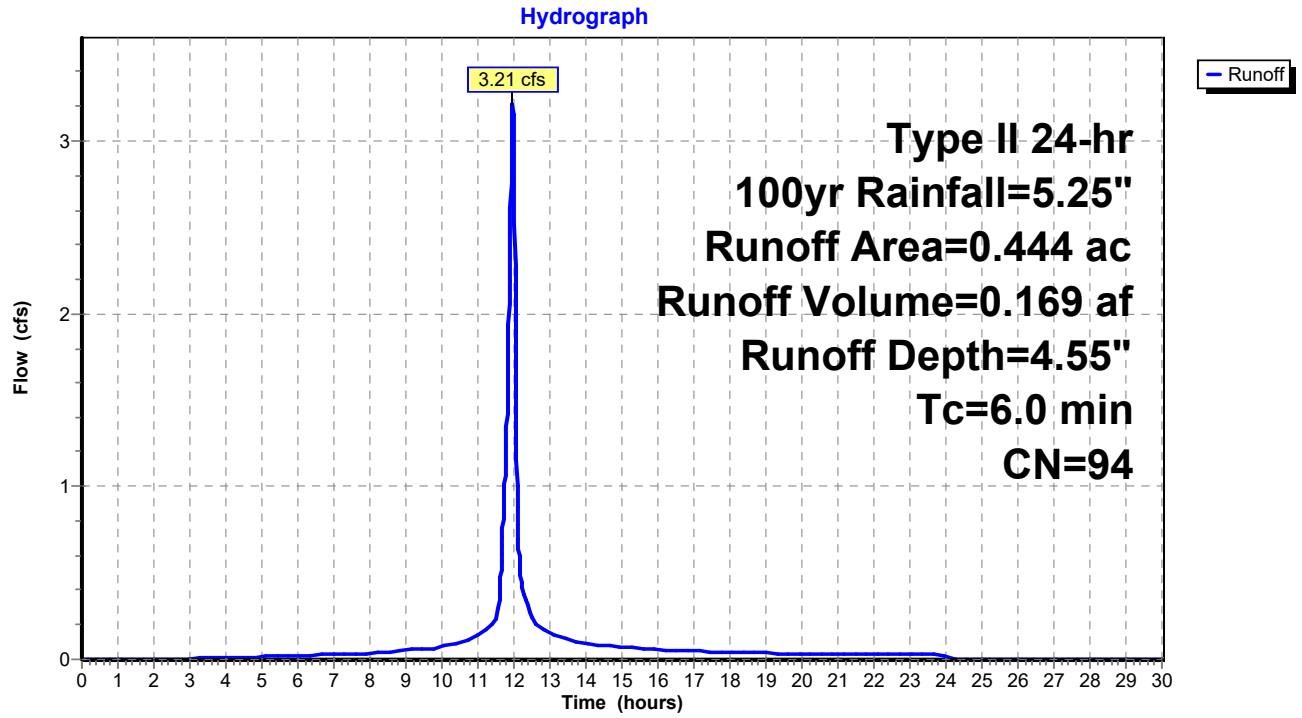
Runoff = 3.21 cfs @ 11.97 hrs, Volume= 0.169 af, Depth= 4.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type II 24-hr 100yr Rainfall=5.25"

Area (ac)	CN	Description
0.357	98	Paved parking, HSG D
0.087	80	>75% Grass cover, Good, HSG D
0.444	94	Weighted Average
0.087		19.59% Pervious Area
0.357		80.41% Impervious Area

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

Subcatchment 1DS: Subcatchment Area 1D



Summary for Subcatchment 1ES: Subcatchment Area 1E

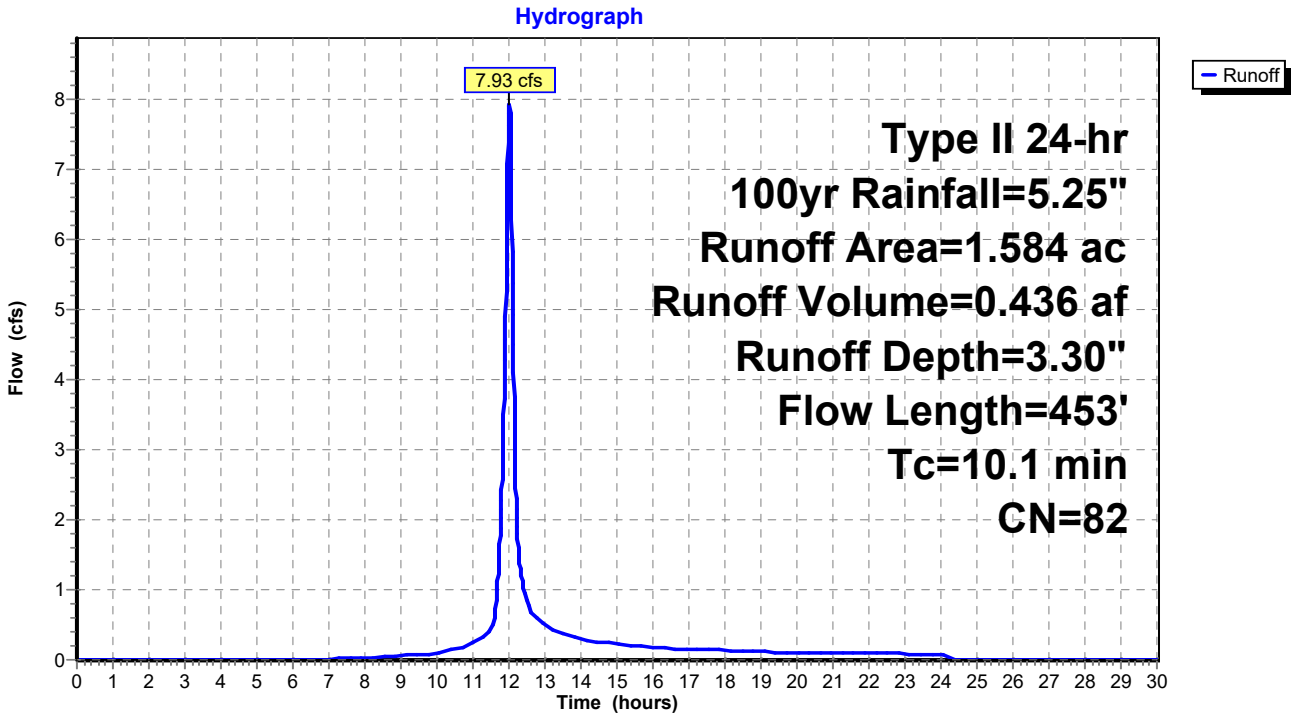
Runoff = 7.93 cfs @ 12.02 hrs, Volume= 0.436 af, Depth= 3.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type II 24-hr 100yr Rainfall=5.25"

Area (ac)	CN	Description
1.395	80	>75% Grass cover, Good, HSG D
0.189	98	Paved parking, HSG D
1.584	82	Weighted Average
1.395		88.07% Pervious Area
0.189		11.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	65	0.0310	1.25		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.20"
5.3	35	0.0460	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.20"
3.9	353	0.0460	1.50		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.1	453	Total			

Subcatchment 1ES: Subcatchment Area 1E



Summary for Subcatchment 2S: Subcatchment Area 2

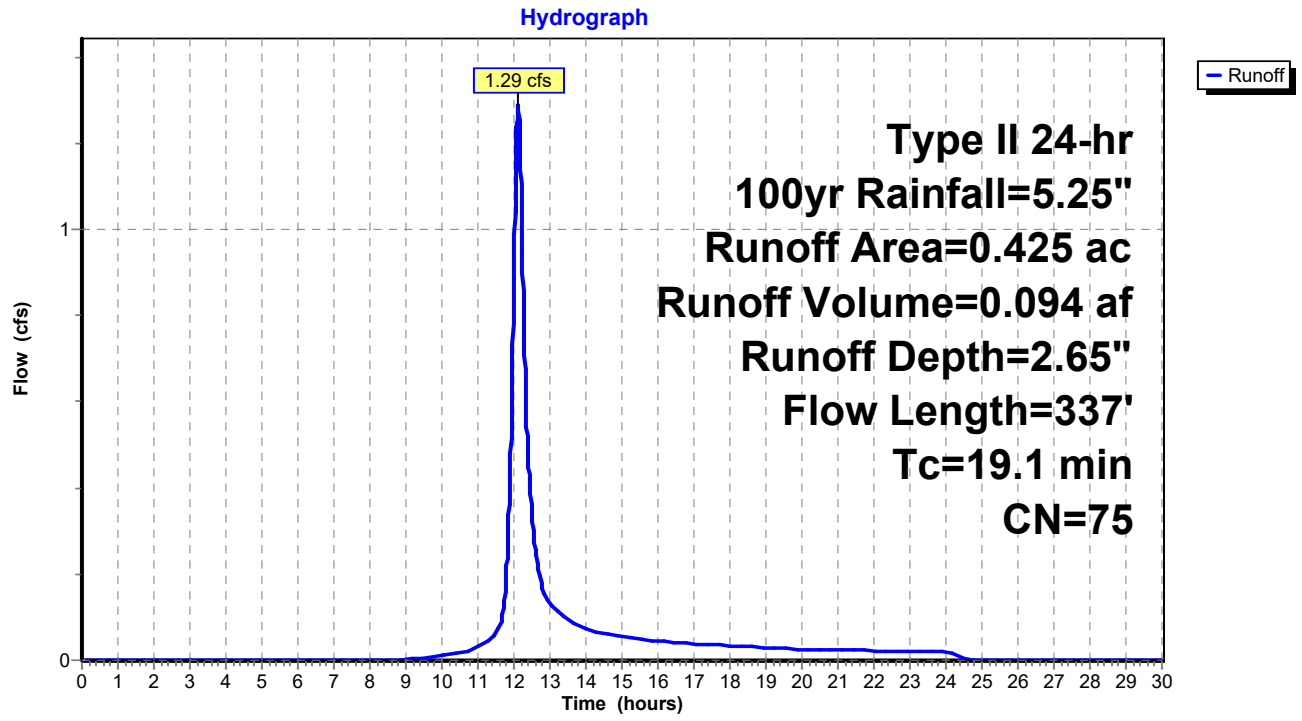
Runoff = 1.29 cfs @ 12.12 hrs, Volume= 0.094 af, Depth= 2.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type II 24-hr 100yr Rainfall=5.25"

Area (ac)	CN	Description
0.220	77	Woods, Good, HSG D
0.205	73	Brush, Good, HSG D
0.425	75	Weighted Average
0.425		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0	100	0.0780	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.20"
4.1	237	0.0377	0.97		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
19.1	337	Total			

Subcatchment 2S: Subcatchment Area 2



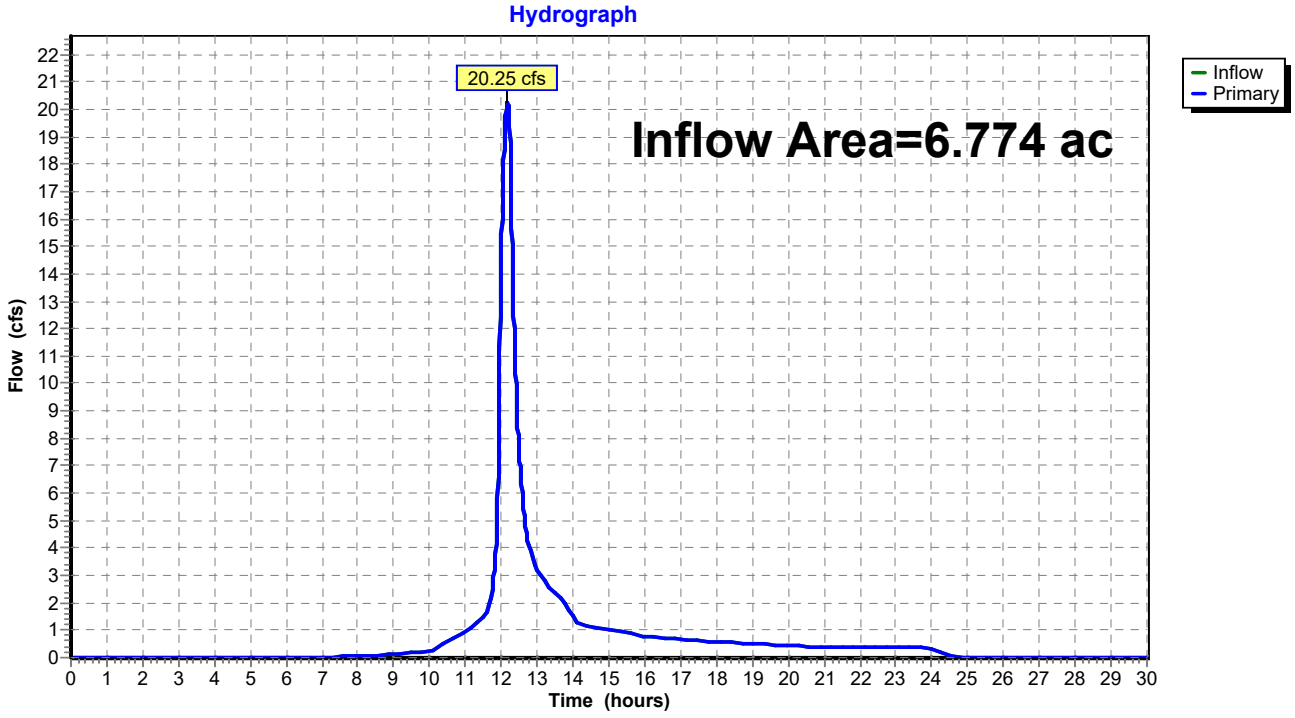
Summary for Pond 1AP: Discharge to Olean Road

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

Inflow Area = 6.774 ac, 18.23% Impervious, Inflow Depth > 3.22" for 100yr event
Inflow = 20.25 cfs @ 12.17 hrs, Volume= 1.819 af
Primary = 20.25 cfs @ 12.17 hrs, Volume= 1.819 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Pond 1AP: Discharge to Olean Road



Summary for Pond 1BP: Detention Pond

[79] Warning: Submerged Pond 1EP Primary device # 1 OUTLET by 2.36'

Inflow Area = 2.863 ac, 39.50% Impervious, Inflow Depth > 3.72" for 100yr event
Inflow = 16.34 cfs @ 12.01 hrs, Volume= 0.887 af
Outflow = 9.76 cfs @ 12.10 hrs, Volume= 0.887 af, Atten= 40%, Lag= 5.5 min
Primary = 9.76 cfs @ 12.10 hrs, Volume= 0.887 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 887.36' @ 12.10 hrs Surf.Area= 6,329 sf Storage= 8,164 cf

Plug-Flow detention time= 11.4 min calculated for 0.887 af (100% of inflow)
Center-of-Mass det. time= 11.4 min (827.2 - 815.9)

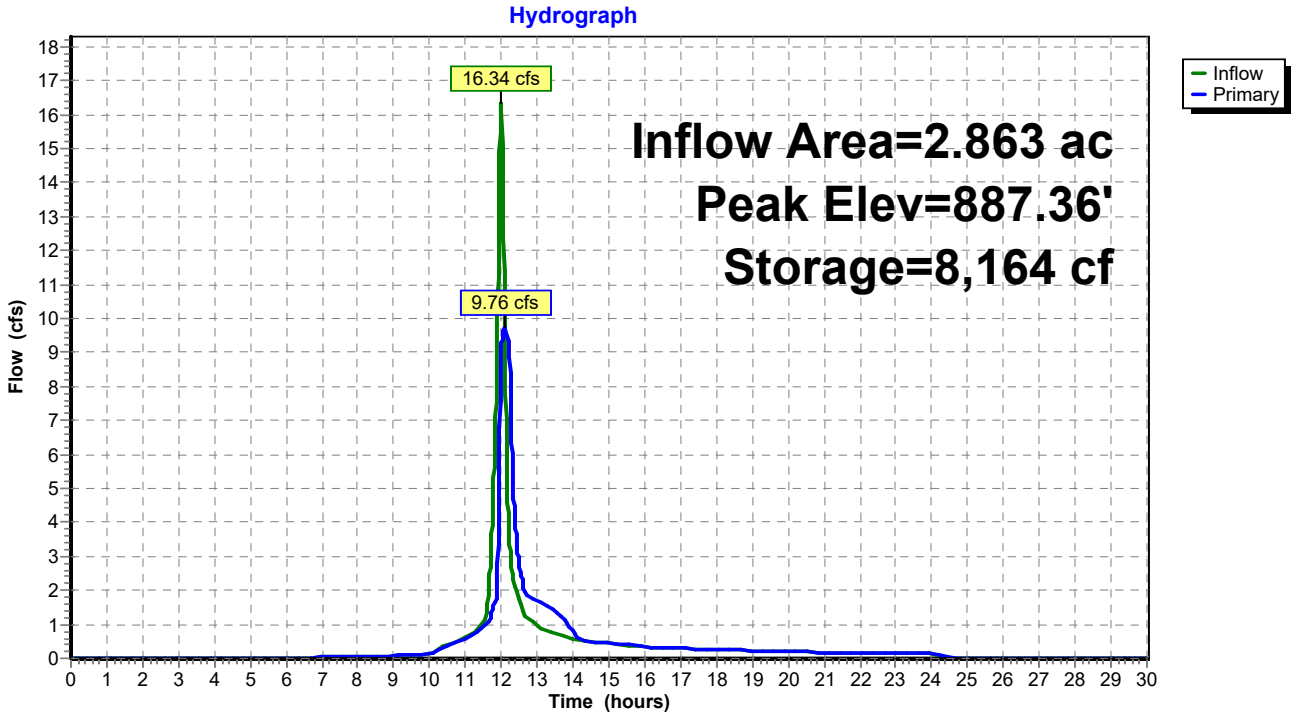
Volume	Invert	Avail.Storage	Storage Description
#1	884.50'	12,606 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
884.50	0	0.0	0	0	0
885.00	592	119.0	99	99	1,127
886.00	2,992	335.0	1,638	1,737	8,934
887.00	5,687	455.0	4,268	6,005	16,489
888.00	7,559	480.0	6,601	12,606	18,407

Device	Routing	Invert	Outlet Devices
#1	Primary	884.50'	**18.0" Round 18" Outlet Pipe** L= 26.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 884.50' / 884.00' S= 0.0192 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	884.50'	**7.4" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 2	884.50'	**12.0" Round 12" Inlet Pipe** L= 21.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 884.50' / 884.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#4	Device 1	886.40'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=9.76 cfs @ 12.10 hrs HW=887.36' (Free Discharge)
- **1=18" Outlet Pipe** (Inlet Controls 9.76 cfs @ 5.52 fps)
  - **2=Orifice/Grate** (Passes < 2.30 cfs potential flow)
    - **3=12" Inlet Pipe** (Passes < 5.12 cfs potential flow)
  - **4=Sharp-Crested Rectangular Weir** (Passes < 11.69 cfs potential flow)

Pond 1BP: Detention Pond



Summary for Pond 1CP: East Bioretention Basin

Inflow Area = 0.835 ac, 70.06% Impervious, Inflow Depth = 4.44" for 100yr event
Inflow = 5.96 cfs @ 11.97 hrs, Volume= 0.309 af
Outflow = 5.44 cfs @ 12.00 hrs, Volume= 0.293 af, Atten= 9%, Lag= 1.9 min
Primary = 5.44 cfs @ 12.00 hrs, Volume= 0.293 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 902.36' @ 12.00 hrs Surf.Area= 2,809 sf Storage= 1,880 cf

Plug-Flow detention time= 75.1 min calculated for 0.292 af (95% of inflow)
Center-of-Mass det. time= 43.8 min (817.2 - 773.4)

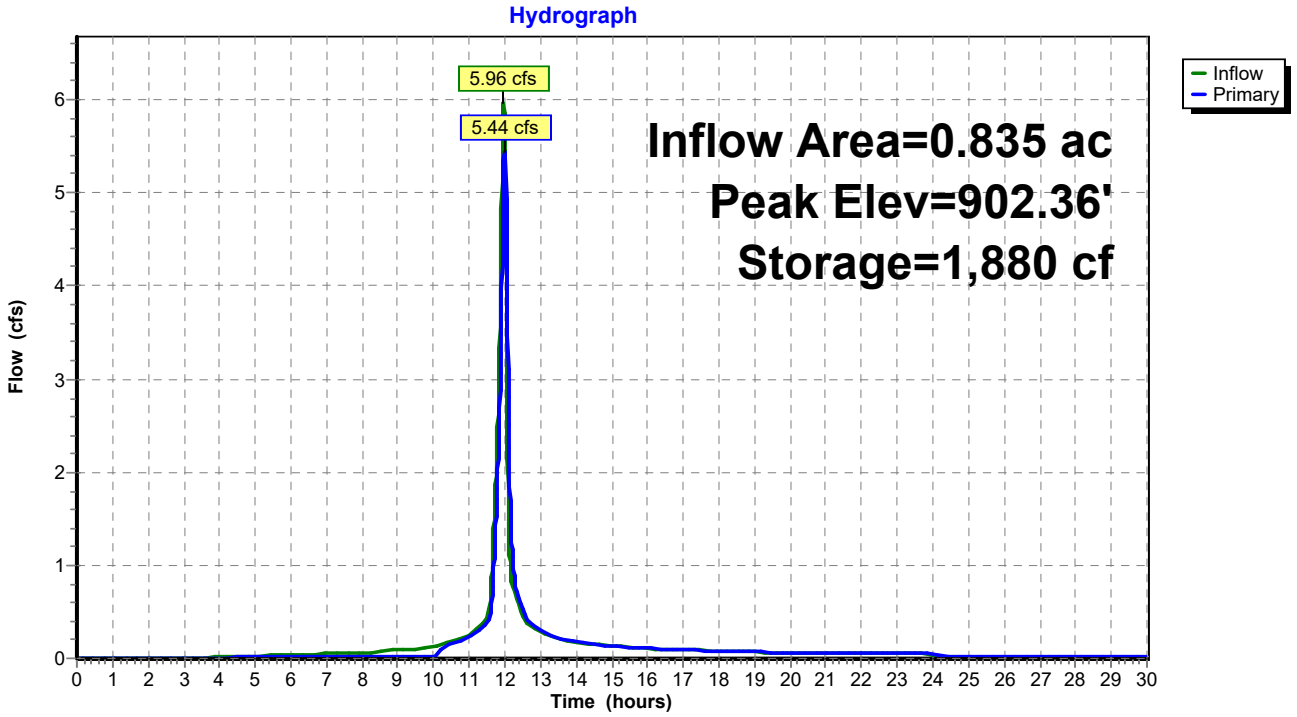
Volume	Invert	Avail.Storage	Storage Description
#1	901.50'	4,064 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
901.50	1,722	271.0	0	0	1,722
902.00	2,191	290.0	976	976	2,582
903.00	4,082	370.0	3,088	4,064	6,796

Device	Routing	Invert	Outlet Devices
#1	Primary	898.00'	**12.0" Round Culvert** L= 134.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 898.00' / 896.81' S= 0.0089 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	898.00'	**6.0" Round Underdrain** L= 120.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 898.00' / 898.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 2	901.50'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 800.00'
#4	Device 1	902.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.44 cfs @ 12.00 hrs HW=902.36' (Free Discharge)
└**1=Culvert** (Barrel Controls 5.44 cfs @ 6.93 fps)
  ├**2=Underdrain** (Passes < 0.92 cfs potential flow)
  │ └**3=Exfiltration** (Passes < 0.02 cfs potential flow)
  └**4=Orifice/Grate** (Passes < 5.71 cfs potential flow)

Pond 1CP: East Bioretention Basin



Summary for Pond 1DP: North Bioretention Basin

Inflow Area = 0.444 ac, 80.41% Impervious, Inflow Depth = 4.55" for 100yr event
Inflow = 3.21 cfs @ 11.97 hrs, Volume= 0.169 af
Outflow = 3.12 cfs @ 11.99 hrs, Volume= 0.158 af, Atten= 3%, Lag= 1.1 min
Primary = 0.01 cfs @ 11.99 hrs, Volume= 0.016 af
Secondary = 3.11 cfs @ 11.99 hrs, Volume= 0.142 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 902.24' @ 11.99 hrs Surf.Area= 1,429 sf Storage= 929 cf

Plug-Flow detention time= 82.1 min calculated for 0.158 af (94% of inflow)
Center-of-Mass det. time= 47.2 min (815.8 - 768.6)

Volume	Invert	Avail.Storage	Storage Description
#1	901.50'	2,159 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

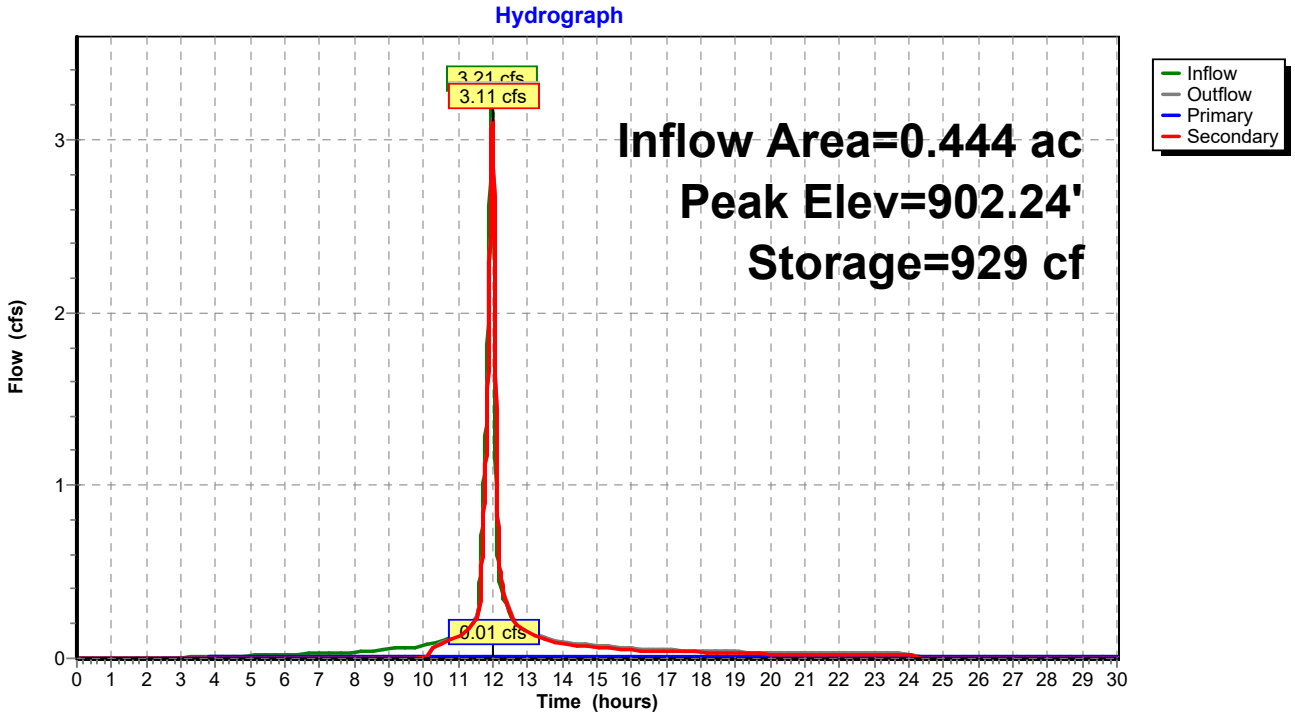
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
901.50	1,080	152.0	0	0	1,080
902.00	1,314	161.0	598	598	1,317
903.00	1,822	180.0	1,561	2,159	1,860

Device	Routing	Invert	Outlet Devices
#1	Primary	898.00'	**6.0" Round Culvert** L= 38.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 898.00' / 898.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	901.50'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 800.00'
#3	Secondary	902.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.01 cfs @ 11.99 hrs HW=902.24' (Free Discharge)
↑—**1=Culvert** (Passes 0.01 cfs of 1.38 cfs potential flow)
↑—**2=Exfiltration** (Controls 0.01 cfs)

Secondary OutFlow Max=3.10 cfs @ 11.99 hrs HW=902.24' (Free Discharge)
↑—**3=Orifice/Grate** (Weir Controls 3.10 cfs @ 1.61 fps)

Pond 1DP: North Bioretention Basin



Summary for Pond 1EP: Conveyance Pipe

[79] Warning: Submerged Pond 1CP Primary device # 1 INLET by 1.18'
[79] Warning: Submerged Pond 1DP Primary device # 1 by 1.18'

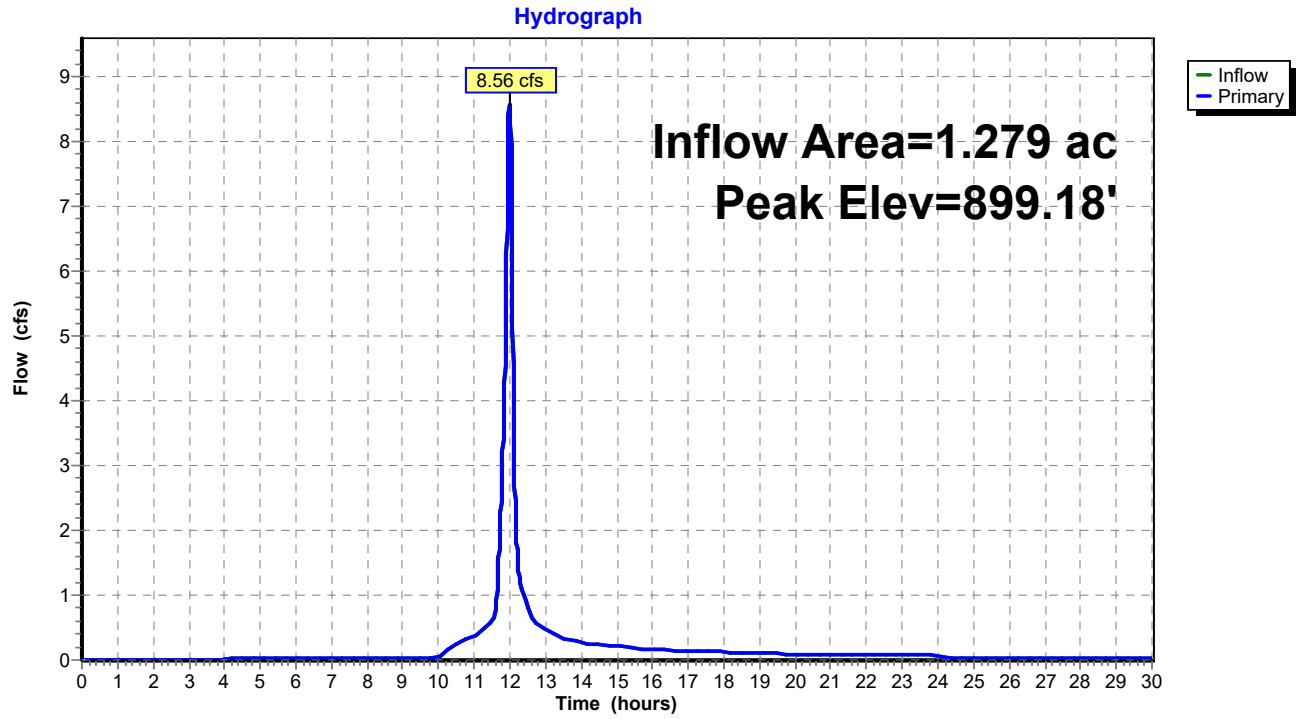
Inflow Area = 1.279 ac, 73.65% Impervious, Inflow Depth > 4.23" for 100yr event
Inflow = 8.56 cfs @ 11.99 hrs, Volume= 0.451 af
Outflow = 8.56 cfs @ 11.99 hrs, Volume= 0.451 af, Atten= 0%, Lag= 0.0 min
Primary = 8.56 cfs @ 11.99 hrs, Volume= 0.451 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 899.18' @ 11.99 hrs
Flood Elev= 902.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	893.50'	**18.0" Round Culvert** L= 109.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 893.50' / 885.00' S= 0.0780 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	896.81'	**18.0" Round Culvert** L= 196.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 896.81' / 893.50' S= 0.0169 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.55 cfs @ 11.99 hrs HW=899.18' (Free Discharge)
↑**1=Culvert** (Passes 8.55 cfs of 14.92 cfs potential flow)
↑**2=Culvert** (Inlet Controls 8.55 cfs @ 4.84 fps)

Pond 1EP: Conveyance Pipe



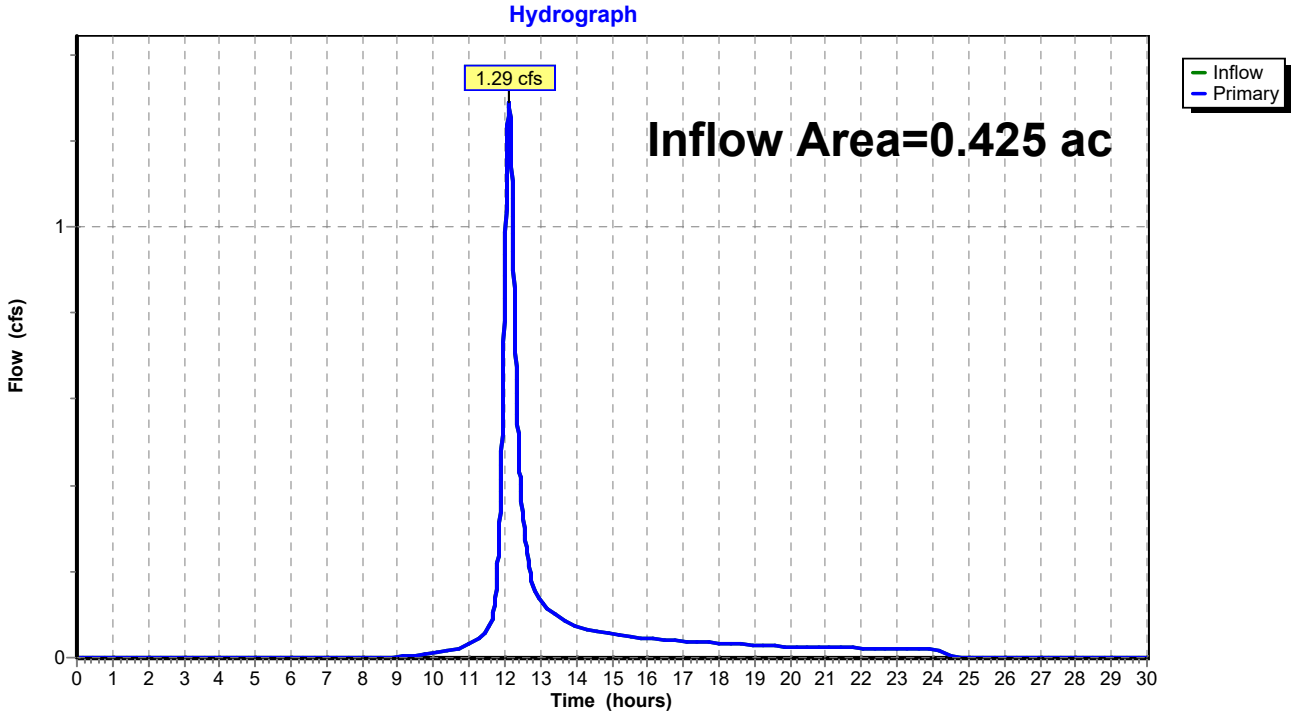
Summary for Pond 2P: Discharge to South

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

Inflow Area = 0.425 ac, 0.00% Impervious, Inflow Depth = 2.65" for 100yr event
Inflow = 1.29 cfs @ 12.12 hrs, Volume= 0.094 af
Primary = 1.29 cfs @ 12.12 hrs, Volume= 0.094 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Pond 2P: Discharge to South




PROPOSED DRAINAGE ANALYSIS MAP
DRAINAGE AREA
IMPERVIOUS AREA
TIME OF CONCENTRATION
80 0 80 160 Ft.
80'
PLAN NORTH
SUBCATCHMENT AREA 1A
SUBCATCHMENT AREA 1B
SUBCATCHMENT AREA 1C
SUBCATCHMENT AREA 1D
SUBCATCHMENT AREA 2
TREES & BRUSH
FOUND IRON AXLE 0.7' N ONLINE
FOUND IRON PIPE 1.6' E 0.2' N
FOUND 2" IRON ROD 1.1' E ONLINE
453.50' DEED AND MEASURED
SOUTH LINE LANDS OF CLARKE L. 8349, P. 149
EAST LINE LANDS OF CLARKE L. 8349, P. 149
241.80' DEED AND MEASURED
266.80' DEED AND MEASURED
313.41' DEED AND MEASURED
856.38' DEED AND MEASURED
446.00' DEED AND MEASURED
WEST LINE OF LANDS FORMERLY OWNED BY THE PENNSYLVANIA RAILROAD COMPANY
NORFOLK SOUTHERN RAILROAD
FOUND REBAR AND CAP 0.4'W
98°24' DEED 99°35'30" MEAS
SOUTH LINE OF LOT 14
NORTH LINE OF LOT 13
FOUND REBAR ONLINE
30" BOX CULVERT INVERT = 883.50'
TELEPHONE MARKER
BENCHMARK PK NAIL ELEVATION = 885.75'
OLEAN ROAD
(WIDTH VARIES)
EDGE OF PAVEMENT
ASPHALT DRIVE
EXISTING FIRE HYDRANT
OINT OF BEGINNING HWEST CORNER OF ANDS CONVEYED TO CLARKE AND WIFE R 8349, PAGE 149
APPROXIMATE LOCATION OF EXISTING 8" ECWA WATERMAIN (PER ECWA RECORDS)
6" CL 52 DUCTILE IRON PRIVATE FIRE SERVICE
3" CL 52 DUCTILE IRON DOMESTIC WATER SERVICE
8x6 TS&V (BY ECWA)
6" GATE VALVE (BY ECWA)
3" GATE VALVE (BY ECWA)
HOTBOX ENCLOSURE (SEE DETAIL)
DOMESTIC AND PRIVATE FIRE SERVICES SHALL BE DUCTILE IRON FROM TAP LOCATION THROUGH HOTBOX ENCLOSURE. TRANSITION FROM DUCTILE IRON TO PVC AND PE PIPING 10-FEET DOWNSTREAM OF ENCLOSURE.
LIGHT STONE FILL RIP RAP
1,500 GALLON, TWO-COMPARTMENT SEPTIC TANK RIM 903.75
FFE 905.00

DATE: MAY 2021
PROJECT NAME: RURAL OUTREACH CENTER

Stormwater Quality Calculations

Impervious Areas (refer to Existing & Proposed Drainage Analysis Maps)

$I_{Existing} := 0.43$ — $I_{Existing}$ = Existing Impervious Area (acres) per Existing Drainage Analysis Map

$I_{Proposed} := 1.21$ — $I_{Proposed}$ = Proposed Impervious Area (acres) per Proposed Drainage Analysis Map

$I_{New} := I_{Proposed} - I_{Existing}$ — I_{New} = New Impervious Area (acres)

$I_{New} = 0.780$

$I_{Reconstructed} := I_{Proposed} - I_{New}$ — $I_{Reconstructed}$ = Reconstructed Impervious Area (acres)

$I_{Reconstructed} = 0.430$

Minimum Runoff Reduction Volume (RR_v Min)

The minimum RRv is calculated by applying a reduction factor (S) (based on the HSG on site) to the area of new impervious coverage.

$P := 1.0$ — ***90% Rainfall Event (inches)***

$Rv := 0.95$ — **0.05 + 0.009(I) where I is 100% impervious**

$Aic := 0.78$ — ***Total Area of new impervious area (acres)***

$S := 0.20$ — ***Hydrologic Soil Group (HSG) Specific Reduction Factor (S)***
The site is 100% HSG D. Therefore, S = 0.20

$RR_{vmin} := \frac{P \cdot Rv \cdot Aic \cdot S}{12} = 0.012$ — ***Runoff Reduction Volume Minimum (acre-feet)***

$RR_{vmin} \cdot 43560 = 538$ — ***Runoff Reduction Volume Minimum (cubic-feet)***

Water Quality Volume Required (WQ_v Required)

New Impervious Area

$P = 1.000$ — *90% Rainfall Event (inches)*

$A_n := 0.78$ — *Total Area of New Impervious area (acres)*

$I := 100$ — *Percent impervious cover (100%)*

$R_v := 0.05 + 0.009 \cdot I$ — **0.05 + 0.009(I) where I is 100% impervious**

$R_v = 0.950$

$$WQ_{vNew} := \frac{P \cdot R_v \cdot A_n}{12}$$

$WQ_{vNew} = 0.062$ — *Water Quality Volume Required from New Impervious Areas (acre-feet)*

$WQ_{vNew} \cdot 43560 = 2690$ — *Water Quality Volume Required from New Impervious Areas (cubic feet)*

Reconstructed Impervious Area

$P = 1.000$ — *90% Rainfall Event (inches)*

$A_r := 0.43$ — *Total Area of new impervious area (acres)*

$I := 100$ — *Percent impervious cover (100%)*

$R_v := 0.05 + 0.009 \cdot I$ — **0.05 + 0.009(I) where I is 100% impervious**

$R_v = 0.950$

$$WQ_{vRecon} := \frac{P \cdot R_v \cdot A_r}{12}$$

$WQ_{vRecon} = 0.034$ — *Water Quality Volume Required from Reconstructed Impervious Areas (acre-feet)*

$WQ_{vRecon} \cdot 43560 = 1483$ — *Water Quality Volume Required from Reconstructed Impervious Areas (cubic feet)*

Total Water Quality Volume Required

In accordance with Chapters 4 and 9 of the NYSDEC SMDM, treat 100% of the new impervious area and 25% of the reconstructed impervious area with a standard practice.

$WQ_{vRequired} := \left(1.0 \cdot WQ_{vNew} + 0.25 \cdot WQ_{vRecon}\right)$

$WQ_{vRequired} = 0.070$ ***Total Water Quality Volume Required (acre-feet)***

$WQ_{vRequired} \cdot 43560 = 3061$ ***Total Water Quality Volume Required (cubic feet)***

Water Quality Volume Provided (WQ_v Provided)

East Bioretention Basin

$P = 1.000$ ***90% Rainfall Event (inches)***

$A_1 := 0.58$ ***Area draining to BMP = Parking Lot + small portion of access drive = 26,070 sf 0.60 acres***

$I := 100$ ***Percent impervious cover (100%)***

$R_v := 0.05 + 0.009 \cdot I$ **0.05 + 0.009(I) where I is 100% impervious**

$R_v = 0.950$

$$WQ_{v1} := \frac{P \cdot R_v \cdot A_1}{12}$$

$WQ_{v1} = 0.046$ ***Water Quality Volume Provided in BMP (acre-feet)***

$WQ_{v1} \cdot 43560 = 2000$ ***Water Quality Volume Provided in BMP (cubic feet)***

For Bioretention Basins in Type 'D' soils, 40% of the water quality volume can count towards the Runoff Reduction Volume.

$RR_{v1} := 0.40 \cdot WQ_{v1}$

$RR_{v1} = 0.018$ **Runoff Reduction Volume Provided in BMP (acre-feet)**

$RR_{v1} \cdot 43560 = 800$ **Runoff Reduction Volume Provided in BMP (cubic-feet)**

$WQ_{vProvided1} := WQ_{v1} - RR_{v1}$

$WQ_{vProvided1} = 0.028$ **Water Quality Volume Provided in BMP (acre-feet)**

$WQ_{vProvided1} \cdot 43560 = 1200$ **Water Quality Volume Provided in BMP (cubic-feet)**

Size Filter Area of East Bioretention Basin

$WQ_{v1} \cdot 43560 = 2000$ — ***Water Quality Volume Provided in BMP (cubic feet)***

$d_f := 2.5$ — **Filter Bed Depth = 2.5 feet**

$k := 0.50$ — **Coefficient of permeability of filter media = 0.50 ft/day (for bioretention soil)**

$h_f := 0.50$ — **Average height of water above filter bed (feet)**

$t_f := 2$ — **Design filter bed drain time = 2 day for bioretention**

$$A_{fl} := \frac{WQ_{v1} \cdot 43560 \cdot d_f}{k \cdot (h_f + d_f) \cdot t_f}$$

$A_{fl} = 1667$ — Required Surface Area of filter bed (square feet)

A_f provided is 1,722 square feet

North Bioretention Basin

$P = 1.000$ — ***90% Rainfall Event (inches)***

$A_2 := .356$ — ***Area draining to BMP = New Bldg, Sdwlks+ Future Bldg = 15,523 sf = 0.356 acres***

$I := 100$ — ***Percent impervious cover (100%)***

$R_v := 0.05 + 0.009 \cdot I$ — **0.05 + 0.009(I) where I is 100% impervious**

$R_v = 0.950$

$$WQ_{v2} := \frac{P \cdot R_v \cdot A_2}{12}$$

$WQ_{v2} = 0.028$ — ***Water Quality Volume Provided in BMP (acre-feet)***

$WQ_{v2} \cdot 43560 = 1228$ — ***Water Quality Volume Provided in BMP (cubic feet)***

For Bioretention Basins in Type 'D' soils, 40% of the water quality volume can count towards the Runoff Reduction Volume.

$RR_{v2} := 0.40 \cdot WQ_{v2}$

$RR_{v2} = 0.011$ — **Runoff Reduction Volume Provided in BMP (acre-feet)**

$RR_{v2} \cdot 43560 = 491$ — **Runoff Reduction Volume Provided in BMP (cubic-feet)**

$WQ_{vProvided2} := WQ_{v2} - RR_{v2}$

$WQ_{vProvided2} = 0.017$ **Water Quality Volume Provided in BMP (acre-feet)**

$WQ_{vProvided2} \cdot 43560 = 737$ **Water Quality Volume Provided in BMP (cubic-feet)**

Size Filter Area of North Bioretention Basin

$WQ_{v2} \cdot 43560 = 1228$ ***Water Quality Volume Provided in BMP (cubic feet)***

$d_f := 2.5$ **Filter Bed Depth = 2.5 feet**

$k := 0.50$ **Coefficient of permeability of filter media = 0.50 ft/day (for bioretention soil)**

$h_f := 0.50$ **Average height of water above filter bed (feet)**

$t_f := 2$ **Design filter bed drain time = 2 day for bioretention**

$$A_{f2} := \frac{WQ_{v2} \cdot 43560 \cdot d_f}{k \cdot (h_f + d_f) \cdot t_f}$$

$A_{f2} = 1023$ Required Surface Area of filter bed (square feet)

A_f provided is 1,080 square feet

Hydrologic Soil Group—Erie County, New York
(Rural Outreach Center - 730 Olean Rd., Aurora, NY)

Map Scale: 1:1,930 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 25 50 100 150

Feet
0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

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 1:15,800.

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

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

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

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

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

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

Soil Survey Area: Erie County, New York
Survey Area Data: Version 20, Jun 11, 2020

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

Date(s) aerial images were photographed: Aug 6, 2018—Sep 27, 2019

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
OrC	Orpark silt loam, 8 to 15 percent slopes	C/D	1.2	17.5%
RkB	Rhinebeck gravelly loam, 3 to 8 percent slopes	C/D	5.4	82.5%
Totals for Area of Interest			**6.6**	**100.0%**

Description

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

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

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

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

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

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

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

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

APPENDIX D-1

WEEKLY SOIL EROSION AND SEDIMENT CONTROL INSPECTION CHECKLIST

EROSION AND SEDIMENT CONTROL
INSPECTION CHECKLIST

Project Name:	**Date & Time of Inspection:**
Project Title:	**Current Conditions (Temp., etc.):**
Project No.:	**Reason for Inspection:**
Inspector' Name:	**Contractor:**

Project E&SC Inspection Report No. ____

(Date of Last Inspection - _____**)**

The State Pollutant Discharge Elimination System General Permit for Construction Activity (Permit) requires site inspections to be conducted at least every 7 calendar days.

Prior to conducting site inspection, review the previous site inspection report to identify reported deficiencies and the proposed corrective actions to address these deficiencies. During the site inspection, evaluate whether the implemented corrective actions proposed in the previous site inspection adequately addressed reported deficiencies.

Are the SWPPP, NOI, Acknowledgment of NOI, MS4 Acceptance Form and Contractor Certifications on site and available to review?	**Yes** ☐ **No** ☐ **N/A** ☐
Are the weekly SWPPP inspection reports on site and available to review (either in a SWPPP mailbox or job trailer?	**Yes** ☐ **No** ☐ **N/A** ☐
Did you review the previous site inspection report?	**Yes** ☐ **No** ☐ **N/A** ☐
Did the previous site inspection require an update to the Storm Water Pollution Prevention Plan (SWPPP)?	**Yes** ☐ **No** ☐ **N/A** ☐
If so was the SWPPP updated?	**Yes** ☐ **No** ☐ **N/A** ☐

Project Site Activities

Provide a description of the construction activities that have occurred on site since the last inspection, what activities are currently occurring, and what activities are planned over the course of the next week. The description should consist of general activities, with specific activities identified where appropriate, and as they relate to the implementation and maintenance of Erosion and Sediment Control Measures.

Prior Activities:
Current Activities:
Planned Activities:

Site Map

The project site map shall be utilized as part of the site inspection process. The site map shall be used to visually depict various construction stages of the site, as well as to identify specific areas requiring attention. The various stages are to be depicted by the use of different color highlighters. The following outlines the color to be used for the selected construction activity:

Blue will indicate all disturbed site areas and drainage pathways that have undergone active site work within last 14 days.

Green will indicate site areas which have been temporarily or permanently stabilized.

Yellow will indicate site areas which have not undergone construction activity within the last 14 days but will within the next seven days.

Pink will indicate site areas which have not undergone construction within the last 14 days and will not undergo construction within the next 7 days. Notify contractor that this site area needs to be temporarily or permanently stabilized.

Approximately how many acres are within the Blue area**?** _____ Acres
Approximately how many acres are within the Yellow area? _____ Acres
Approximately how many acres are within the Pink area? _____ Acres
Add all of the acreage from the three areas _____ Acres

If the total area is greater than five (5) acres, then the portion of the site in excess of five acres shall be temporarily or permanently stabilized, unless written permission has been obtained from the NYSDEC in advance for any land disturbance of five acres or greater.

INSPECTION ITEM	YES	NO	PHOTO #	COMMENTS
a. Is there any evidence of sediment deposition or the discharge of sediment laden water to adjacent properties or drainage facilities?				
b. Is there any evidence of sediment deposition in a sediment trapping device? Record percentage _____% (SPDES permit requires sediment to be removed once it exceeds 50% of the sediment storage volume.)				
Is the sediment trapping device in need of maintenance?				
c. Are protected areas such as wetlands, property boundaries, and vegetation preservation areas, properly delineated?				
d. Is there evidence of erosion at the outlet of pipes, swales or ditches?				
e. Is the construction entrance stabilized and operating correctly?				
f. If Diversion Berms and/or Earth Dikes are required, have they been installed?				
If so, are they in need of maintenance?				
g. If Check Dams are required, have they been installed?				
If so, are they in need of maintenance?				
h. Do catch basins and drainage inlets have proper protection - i.e., filter fabric, stone and block, etc. - inlet protection?				
If so, are they in need of maintenance?				
i. Is there any loss of stabilizing vegetation, or seeding and mulching?				
j. Is there evidence of rill or gully erosion occurring on slopes?				

Were the Corrective Action(s) Identified in Last Inspection Report Implemented? Yes ☐ No ☐ N/A ☐ **If yes, Did the Corrective Actions Rectify the Problem? Yes ☐ No ☐ N/A ☐**
Indicate Deficiencies Identified During the Current Site Inspection (which were not already identified in this report):
Who was Notified of Problem(s) and When Were They Notified?
Corrective Actions to be Taken by Whom and When:
Are the Corrective Actions to be taken consistent with the current SWPPP? Yes ☐ No ☐ N/A ☐ **If no, update the SWPPP prior to the next site inspection to reference the inclusion of these corrective actions**

Contractor Signature: _____ **Date:** _____

Inspector's Signature: _____ **Date:** _____

Reviewing P.E.: _____ **Date:** _____

APPENDIX E-1

CONTRACTOR'S CERTIFICATION FORM

CONTRACTOR'S STORM WATER POLLUTION PREVENTION CERTIFICATION FORM

Project Address/Location: _____

Project Name: _____

Contractor's Official Name: _____

Address: _____

Telephone Number: _____

Contractor's Responsibilities: _____

_____

_____

_____

Trained Individual(s) Responsible for SWPPP Implementation

_____ _____

Printed Name of Trained Individual Title

_____ _____

Printed Name of Trained Individual Title

Certification Statement:

"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 Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings."

_____ _____

Printed Name Signature

_____ _____

Title Date

APPENDIX F-1

NOTICE OF TERMINATION (NOT)

FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY UNDER THE SPDES GENERAL PERMIT

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 G-1

SWPPP PLANS & DETAILS

ROC RURAL OUTREACH CENTER

730 OLEAN ROAD EAST AURORA, NY

NO.	DATE	REMARKS

REVISIONS

CONSULTANTS:
SITE ENGINEERS:
C & S Engineers
141 Elm Street
Buffalo, NY 14203
P:(716) 847-1630

STRUCTURAL ENGINEERS:
Siracuse Engineers, PC
960 Busti Avenue Suite 120
Buffalo, NY 14213
P:(716) 856-1894

MEP/FP ENGINEERS:
Buffalo Engineering, P.C.
4245 Union Road Suite 204
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P:(716) 633-6300

FONTANESE FOLTS AUBRECHT ERNST
A PROFESSIONAL CORPORATION
ARCHITECTS

(716) 662-2200
6395 WEST QUAKER STREET
ORCHARD PARK, N.Y. 14127

PROJECT NO. D69,029,001

DATE 03/12/2021

SCALE AS NOTED

DRAWN BY JMH

DRAWING TITLE

GRADING PLAN

DRAWING NO.

C-103

453.50' DEED AND MEASURED

313.41' DEED AND MEASURED

241.80' DEED AND MEASURED

266.80' DEED AND MEASURED

856.38' DEED AND MEASURED

446.00' DEED AND MEASURED

NORFOLK SOUTHERN RAILROAD

OLEAN ROAD (WIDTH VARIES)

TREES & BRUSH

POSSIBLE LOCATION FOR EXCESS SOIL

STMH RIM 896.50

CB 902.00

END SECT. INV 901.50

HP 907.12

RIM 902.00

TC 904.25 BC 904.25

TC 904.75 BC 904.25

TC 904.87 BC 904.37

TC 904.37 BC 904.37

TC 904.87 BC 904.37

TC 904.82 BC 904.32

TC 904.25 BC 904.75

TC 903.75 BC 903.25

FFE 905.00

HP 903.70

END SECTION INV 904.05

END SECTION INV. 904.25

LIGHT STONE FILL RIP RAP

SPILLWAY ELEVATION 901.35

DUPLEX PUMP STATION RIM 903.50

STORMWATER DRY DETENTION BASIN V=1.70 A.F. 885.79 10-YR W.S.E. 885.73 100-YR W.S.E. 892.26 TOP OF BERM 888.50

1,500 GALLON TWO-COMPARTMENT SEPTIC TANK RIM 903.75

STORMWATER CONTROL STRUCTURE RIM 889.00

END SECTION INV. 884.20

EASEMENT OF NEW YORK TELEPHONE COMPANY

EDGE OF PAVEMENT

ASPHALT DRIVE

BENCHMARK PK NAIL ELEVATION = 885.75'

TELEPHONE MARKER

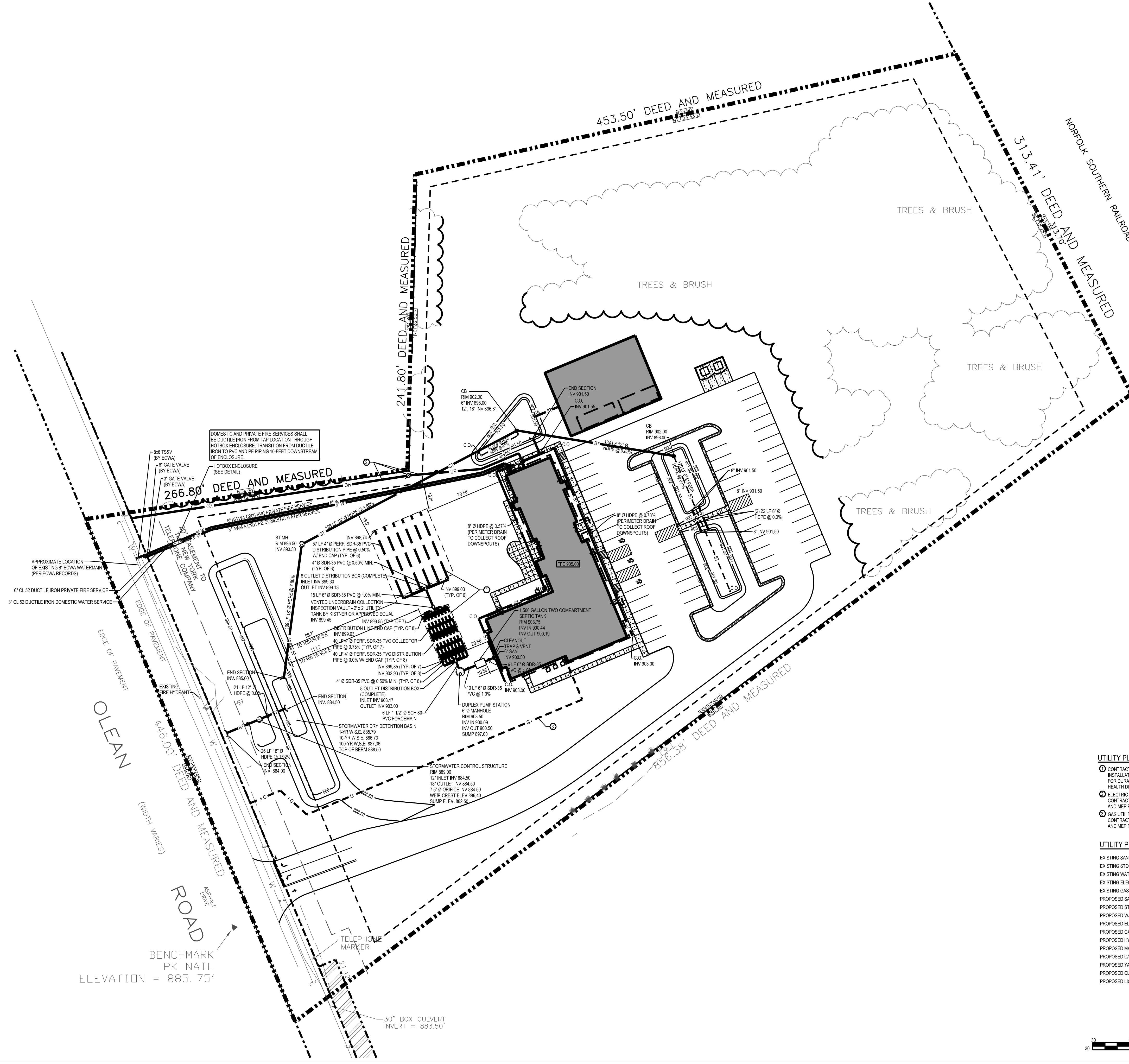
30" BOX CULVERT INVERT = 883.50'

GRADING PLAN LEGEND

- PROPERTY LINE
- PROPOSED CURB
- 903.10 PROPOSED POINT ELEVATION
- 907 EXISTING CONTOUR
- 905 PROPOSED CONTOUR
- TC TOP OF CURB
- BC BOTTOM OF CURB
- HP HIGH POINT
- FLOW DIRECTION

30' 0 30 60 FT.

PLAN NORTH



UTILITY PLAN SHEET KEYNOTES

1. CONTRACTOR TO CONTACT ENGINEER 5 DAYS PRIOR TO PLANNED INSTALLATION OF SEPTIC SYSTEM. DESIGN ENGINEER TO BE PRESENT FOR DURATION OF INSTALLATION IN ORDER TO COMPLETE ERIE COUNTY HEALTH DEPARTMENT CERTIFICATE OF CONSTRUCTION COMPLIANCE.
2. ELECTRIC UTILITY IS SHOWN FOR SCHEMATIC PURPOSES ONLY. CONTRACTOR TO COORDINATE WITH LOCAL UTILITY COMPANY AND MEP PLANS FOR ACTUAL LAYOUT.
3. GAS UTILITY IS SHOWN FOR SCHEMATIC PURPOSES ONLY. CONTRACTOR TO COORDINATE WITH LOCAL UTILITY COMPANY AND MEP PLANS FOR ACTUAL LAYOUT.

UTILITY PLAN LEGEND

EXISTING SANITARY SEWER	— — SA — —
EXISTING STORM SEWER	— — ST — —
EXISTING WATER MAIN	— — W — —
EXISTING ELECTRIC	— — E — —
EXISTING GAS	— — G — —
PROPOSED SANITARY SEWER	SA
PROPOSED STORM SEWER	ST
PROPOSED WATER MAIN	W
PROPOSED ELECTRIC	E
PROPOSED GAS	G
PROPOSED HYDRANT	
PROPOSED MANHOLE	
PROPOSED CATCH BASIN	
PROPOSED YARD DRAIN	YD
PROPOSED CLEAN OUT	C.O.
PROPOSED LIGHT STANDARD	

ROC

RURAL OUTREACH CENTER

730 OLEAN ROAD EAST AURORA, NY

NO.	DATE	REMARKS

REVISIONS

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C & S Engineers
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6395 WEST QUAKER STREET
ORCHARD PARK, N.Y. 14127

PROJECT NO. D69.029.001

DATE 03/12/2021

SCALE AS NOTED

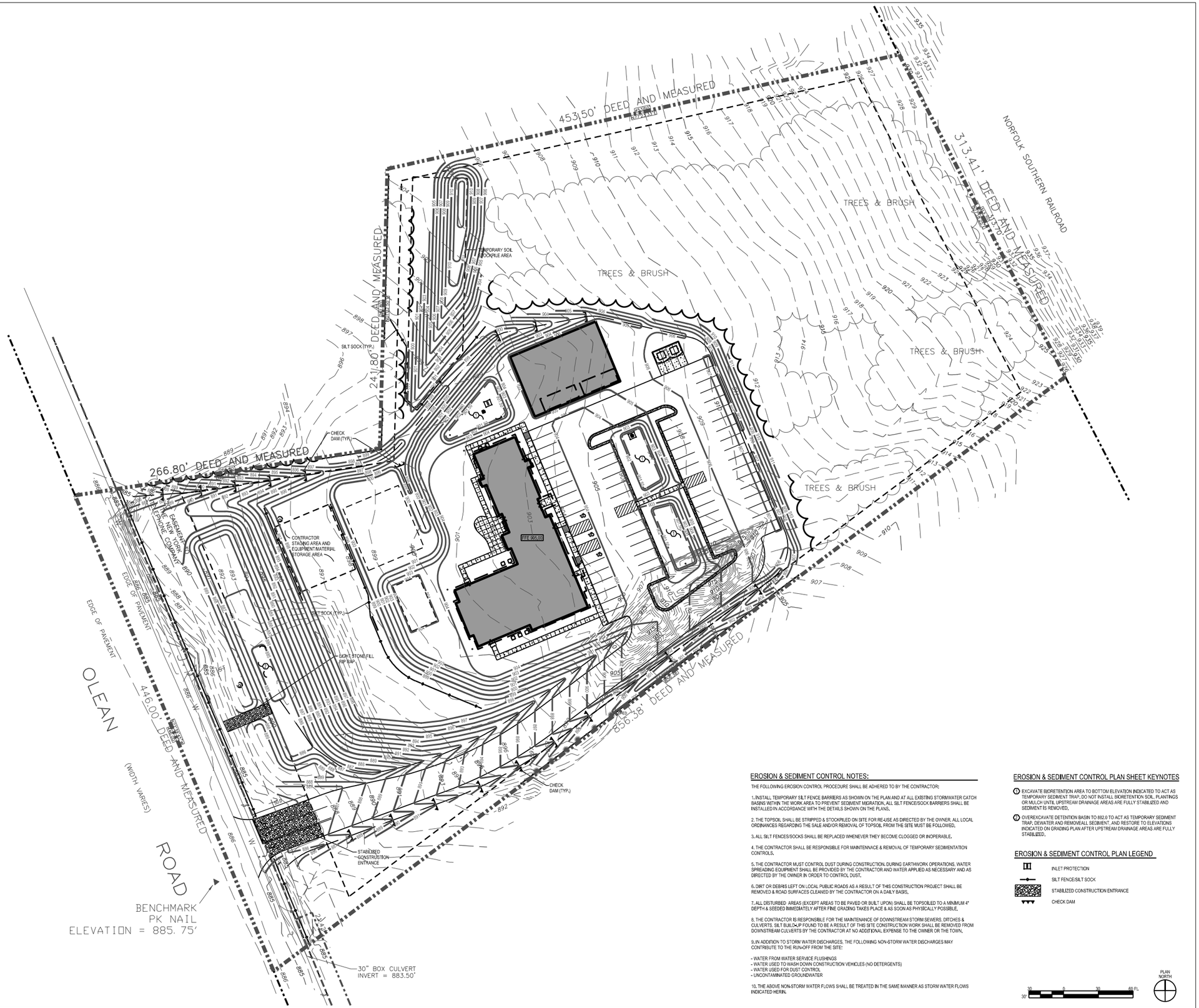
DRAWN BY JMH

DRAWING TITLE

UTILITY PLAN

DRAWING NO.

C-104



EROSION & SEDIMENT CONTROL NOTES:

THE FOLLOWING EROSION CONTROL PROCEDURE SHALL BE ADHERED TO BY THE CONTRACTOR:

1. INSTALL TEMPORARY SILT FENCE BARRIERS AS SHOWN ON THE PLAN AND AT ALL EXISTING STORM/WATER CATCH BASINS WITHIN THE WORK AREA TO PREVENT SEDIMENT MIGRATION. ALL SILT FENCE/SOCK BARRIERS SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAILS SHOWN ON THE PLANS.

2. THE TOPSOIL SHALL BE STRIPPED & STOCKPILED ON SITE FOR RE-USE AS DIRECTED BY THE OWNER. ALL LOCAL ORDINANCES REGARDING THE SALE AND/OR REMOVAL OF TOPSOIL FROM THE SITE MUST BE FOLLOWED.

3. ALL SILT FENCES/SOCKS SHALL BE REPLACED WHENEVER THEY BECOME CLOGGED OR INOPERABLE.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENNACE & REMOVAL OF TEMPORARY SEDIMENTATION CONTROLS.

5. THE CONTRACTOR MUST CONTROL DUST DURING CONSTRUCTION. DURING EARTHWORK OPERATIONS, WATER SPREADING EQUIPMENT SHALL BE PROVIDED BY THE CONTRACTOR AND WATER APPLIED AS NECESSARY AND AS DIRECTED BY THE OWNER IN ORDER TO CONTROL DUST.

6. DIRT OR DEBRIS LEFT ON LOCAL PUBLIC ROADS AS A RESULT OF THIS CONSTRUCTION PROJECT SHALL BE REMOVED & ROAD SURFACES CLEANED BY THE CONTRACTOR ON A DAILY BASIS.

7. ALL DISTURBED AREAS (EXCEPT AREAS TO BE PAVED OR BUILT UPON) SHALL BE TOPSOILED TO A MINIMUM 4" DEPTH & SEEDED IMMEDIATELY AFTER FINE GRADING TAKES PLACE & AS SOON AS PHYSICALLY POSSIBLE.

8. THE CONTRACTOR IS RESPONSIBLE FOR THE MAINTENANCE OF DOWNSTREAM STORM SEWERS, DITCHES & CULVERTS. SILT BUILD-UP FOUND TO BE A RESULT OF THIS SITE CONSTRUCTION WORK SHALL BE REMOVED FROM DOWNSTREAM CULVERTS BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER OR THE TOWN.

9. IN ADDITION TO STORM WATER DISCHARGES, THE FOLLOWING NON-STORM WATER DISCHARGES MAY CONTRIBUTE TO THE RUN-OFF FROM THE SITE:

- WATER FROM WATER SERVICE FLUSHINGS
- WATER USED TO WASH DOWN CONSTRUCTION VEHICLES (NO DETERGENTS)
- WATER USED FOR DUST CONTROL
- UNCONTAMINATED GROUNDWATER

10. THE ABOVE NON-STORM WATER FLOWS SHALL BE TREATED IN THE SAME MANNER AS STORM WATER FLOWS INDICATED HEREIN.

EROSION & SEDIMENT CONTROL PLAN SHEET KEYNOTES

1. EXCAVATE BIORETENTION AREA TO BOTTOM ELEVATION INDICATED TO ACT AS TEMPORARY SEDIMENT TRAP, DO NOT INSTALL BIORETENTION SOIL, PLANTINGS OR MULCH UNTIL UPSTREAM DRAINAGE AREAS ARE FULLY STABILIZED AND SEDIMENT IS REMOVED.
2. OVEREXCAVATE DETENTION BASIN TO 882.0 TO ACT AS TEMPORARY SEDIMENT TRAP, DEWATER AND REMOVEALL SEDIMENT, AND RESTORE TO ELEVATIONS INDICATED ON GRADING PLAN AFTER UPSTREAM DRAINAGE AREAS ARE FULLY STABILIZED.

EROSION & SEDIMENT CONTROL PLAN LEGEND

- INLET PROTECTION
- SILT FENCE/SILT SOCK
- STABILIZED CONSTRUCTION ENTRANCE
- CHECK DAM

30 0 30 60 Ft.

PLAN NORTH

RURAL OUTREACH CENTER
730 OLEAN ROAD EAST AURORA, NY

NO.	DATE	REMARKS

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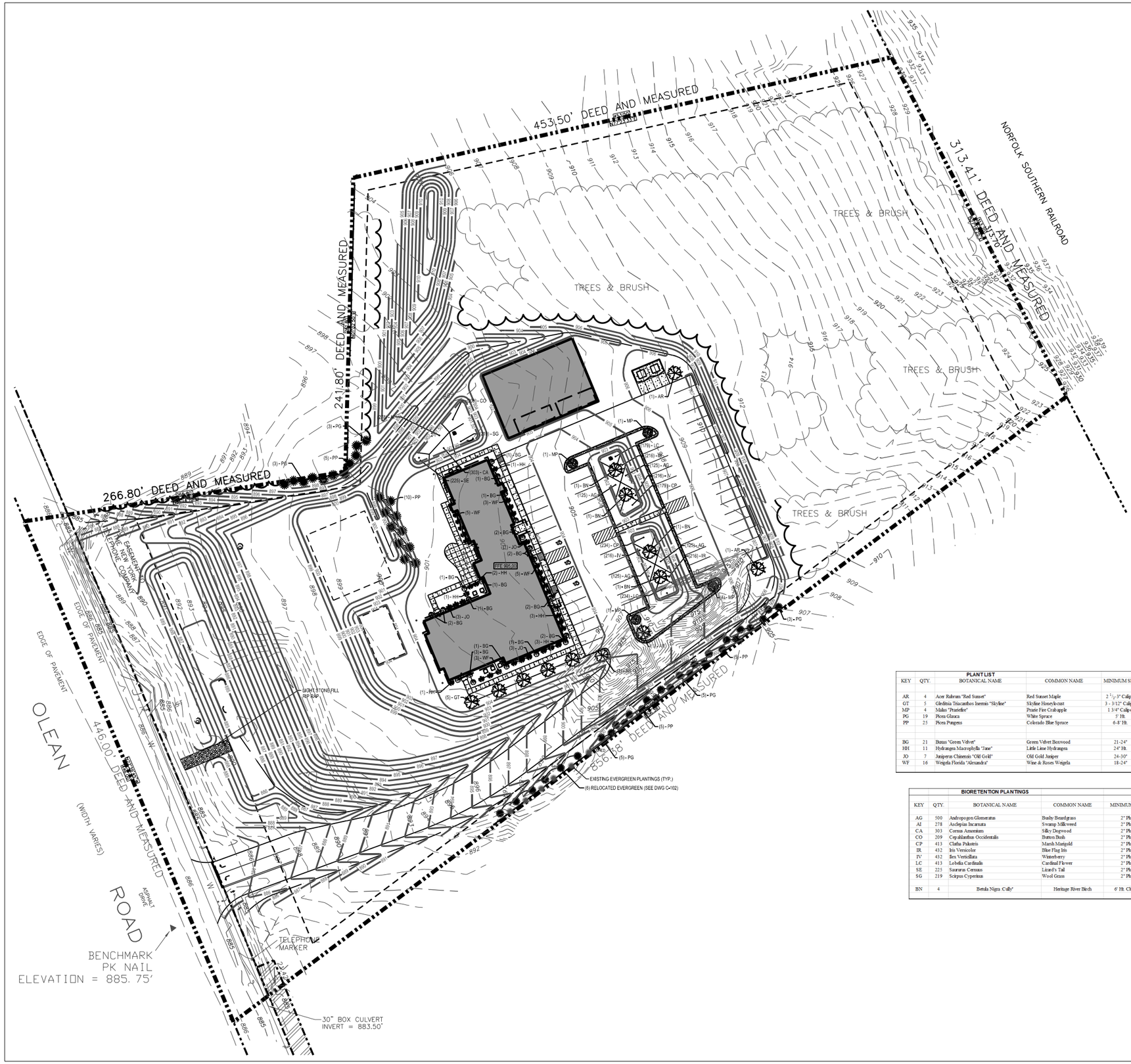
6395 WEST QUAKER STREET
ORCHARD PARK, N.Y. 14127

PROJECT NO. D69,029,001
DATE 03/12/2021
SCALE AS NOTED
DRAWN BY JMH

DRAWING TITLE
EROSION & SEDIMENT CONTROL PLAN

DRAWING NO.
C-105



PLANTING SPECIFICATION

1. SCOPE OF WORK
   - A. THIS WORK SHALL CONSIST OF PERFORMING, CLEARING, AND GRUBBING, SOIL PREPARATION, FINISH GRADING, PLANTING, DRAINAGE, INCLUDING ALL LABOR MATERIALS, TOOLS, EQUIPMENT, AND ANY OTHER APPURTENANCES NECESSARY FOR THE COMPLETION OF THIS PROJECT.
2. MATERIALS
   - A. PLANTS - ALL PLANTS SHALL BE HEALTHY, OF NORMAL GROWTH, WELL ROOTED FREE FROM DISEASE AND INSECTS, QUALITY AND OF PLANT MATERIAL THAT SHALL CONFORM TO THE AMERICAN STANDARD FOR NURSERY STOCK (ANSI Z60.1) AND BE OF NUMBER ONE GRADE.
   - B. VARIETIES AND SIZES OF PLANTS SHALL BE AS SHOWN ON DRAWINGS
3. FERTILIZER
   - A. FERTILIZER SHALL BE MILORGANITE (6-4-0) OR APPROVED EQUAL.
4. GENERAL WORK PROCEDURES
   - A. LANDSCAPE WORK SHALL BE ACCORDING TO THE WORKMANLIKE STANDARDS ESTABLISHED FOR LANDSCAPE CONSTRUCTION AND PLANTING,
5. WEEDING
   - A. BEFORE AND DURING PRELIMINARY GRADING AND FINISH GRADING, ALL WEEDS AND GRASSES SHALL BE DUG OUT BY THE ROOTS AND DISPOSED OF AT THE CONTRACTOR'S EXPENSE.
6. SOIL CONDITIONING
   - A. CULTIVATE ALL AREAS TO BE PLANTED TO A DEPTH OF 6". ALL DEBRIS EXPOSED FROM EXCAVATION AND CULTIVATION SHALL BE DISPOSED OF AT THE CONTRACTOR'S EXPENSE.
7. PLANTING

   POSITION TREES AND SHRUBS AT THEIR INTENDED LOCATIONS AS PER THE PLANS AND SECURE THE APPROVAL OF THE LANDSCAPE ARCHITECT BEFORE EXCAVATING PITS, MAKING NECESSARY ADJUSTMENTS AS DIRECTED.
   - A. PLANTING PITS SHALL BE DUG WITH LEVEL BOTTOMS, AS SHOWN ON THE PLANTING DETAILS.
     - 3 PARTS TOPSOIL
     - 1 PART PEAT MOSS OR COMPOST
     - 1/3 PART MILORGANITE FERTILIZER
   - B. PREPARED SOIL SHALL BE TAMPED FIRMLY AT BOTTOM OF PIT, FILL PREPARED SOIL AROUND BALL OF PLANT WAY, AND WATER, COMPLETE BACKFILLING AND WATER THOROUGHLY,
   - C. ALL PLANTS SHALL BE SET SO THAT, WHEN SETTLED, THEY BEAR THE SAME RELATION TO THE REQUIRED GRADE AS THEY BORE TO THE NATURAL BEFORE BEING TRANSPLANTED.
   - D. IMMEDIATELY AFTER PLANTING, STAKE ALL TREES WITH 3 CEDAR STAKES PER TREE,
   - E. PREPARE RAISED EARTH SAUCER AS WIDE AS PLANTING HOLE OF EACH PLANT,
   - F. WATER IMMEDIATELY AFTER PLANTING, WATER SHALL BE APPLIED TO EACH TREE AND SHRUB IN SUCH MANNER AS NOT TO DISTURB BACKFILL AND TO THE EXTENT THAT ALL MATERIALS IN THE PLANTING HOLE ARE THOROUGHLY SATURATED.
   - G. AFTER SHRUB BEDS AND TREE SAUCERS ARE BACKFILLED AND FINE GRADED, MULCH WITH 3" DEPTH OF DARK, SHREDDED HARDWOOD BARK MULCH.
8. FINISH GRADING
   - A. PLUS/MINUS .1 FOOT OF FINISH GRADE.
   - B. ALL LAWN AND PLANTING AREAS SHALL BE GRADED TO A SMOOTH, EVEN, UNIFORM PLANE WITH NO ABRUPT CHANGE OF SURFACE. SOIL AREAS ADJACENT TO THE BUILDING SHALL SLOPE AWAY FROM THE BUILDING.
   - C. ALL PLANTING AREAS SHALL BE GRADED AND MAINTAINED TO ALLOW FREE FLOW OF SURFACE WATER.
9. GUARANTEE
   - A. CONTRACTOR SHALL GUARANTEE ALL PLANTS FOR A PERIOD OF ONE (1) YEAR.
10. CLEAN-UP
    - A. UPON THE COMPLETION OF ALL PLANTING WORK AND BEFORE FINAL ACCEPTANCE. THE CONTRACTOR SHALL REMOVE ALL MATERIAL, EQUIPMENT AND DEBRIS RESULTING FROM HIS WORK. ALL ACCEPTABLE CONDITIONS AS APPROVED BY THE OWNERS AUTHORIZED REPRESENTATIVE.
11. MAINTENANCE

    MAINTENANCE PERIOD TO COMMENCE AFTER FINAL INSPECTION.
    - A. MAINTENANCE PERIOD FOR THIS CONTRACT SHALL BE 90 CALENDAR DAYS COMMENCING AFTER FINAL INSPECTION OF CONSTRUCTION, MAINTAIN TREES, SHRUBS AND OTHER PLANTS BY PRUNING, CULTIVATING AND WEEDING AS REQUIRED FOR HEALTHY GROWTH, RESTORE PLANTING SAUCERS, TIGHTEN AND REPAIR STAKE AND GUY SUPPORTS AND RESET TREES AND SHRUBS TO PROPER GRADES OR VERTICAL POSITION AS REQUIRED, SPRAY AS REQUIRED TO KEEP TREES AND SHRUBS FREE OF INSECTS AND DISEASE, MAINTAIN LAWNS BY WATERING, FERTILIZING, WEEDING, MOWING, TRIMMING, AND OTHER OPERATIONS SUCH AS ROLLING, REGRADING, AND REPLANTING AS REQUIRED TO ESTABLISH A SMOOTH, ACCEPTABLE LAWN, FREE OF ERODED OR BARE AREAS.

PLANT LIST

KEY	QTY.	BOTANICAL NAME	COMMON NAME	MINIMUM SIZE	
AR	4	Acer Rubrum "Red Sunset"	Red Sunset Maple	2 1/2"-3" Caliper	
GT	5	Gleditsia Triacanthos Inermis "Skyline"	Skyline Honeylocust	3 - 3 1/2" Caliper	
MP	4	Malus "Prairifire"	Prarie Fire Crabapple	1 3/4" Caliper	
PG	19	Picea Glauca	White Spruce	5' Ht.	Full to Ground
PP	25	Picea Pungens	Colorado Blue Spruce	6-8' Ht.	Full to Ground
BG	21	Buxus "Green Velvet"	Green Velvet Boxwood	21-24"	
HH	11	Hydrangea Macrophylla "Jane"	Little Lime Hydrangea	24" Ht.	
JO	7	Juniperus Chinensis "Old Gold"	Old Gold Juniper	24-30"	
WF	16	Weigela Florida "Alexandra"	Wine & Roses Weigela	18-24"	

BIORETENTION PLANTINGS

KEY	QTY.	BOTANICAL NAME	COMMON NAME	MINIMUM SIZE	REMARKS
AG	500	Andropogon Glomeratus	Bushy Beardgrass	2" Plug	
AI	278	Asclepias Incarnata	Swamp Milkweed	2" Plug	
CA	303	Cornus Amomium	Silky Dogwood	2" Plug	
CO	209	Cephalanthus Occidentalis	Button Bush	2" Plug	
CP	413	Clatha Palustris	Marsh Marigold	2" Plug	
IR	432	Iris Versicolor	Blue Flag Iris	2" Plug	
IV	432	Ilex Verticillata	Winterberry	2" Plug	
LC	413	Lobelia Cardinalis	Cardinal Flower	2" Plug	
SE	225	Saururus Cernuus	Lizard's Tail	2" Plug	
SG	219	Scirpus Cyperinus	Wool Grass	2" Plug	
BN	4	Betula Nigra 'Cully'	Heritage River Birch	6' Ht. Clumps	Min. 3 stems

LEGEND

PROPOSED TREE

PROPOSED SHRUB

30 0 30 60 Ft.

PLAN NORTH

ROC RURAL OUTREACH CENTER
730 OLEAN ROAD EAST AURORA, NY

NO.	DATE	REMARKS

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ORCHARD PARK, N.Y. 14127

PROJECT NO. D69.029.001

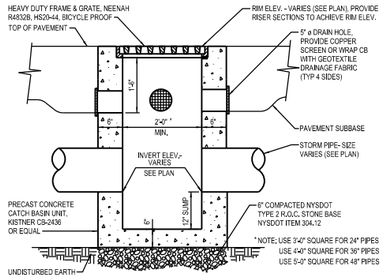
DATE 03/12/2021

SCALE AS NOTED

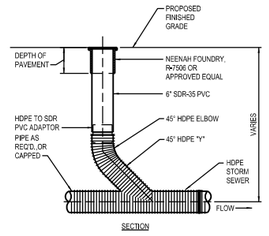
DRAWN BY JMH

DRAWING TITLE
LANDSCAPE PLAN

DRAWING NO.
C-106

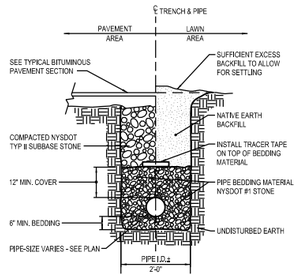


TYPICAL PRECAST CATCH BASIN
N.T.S.

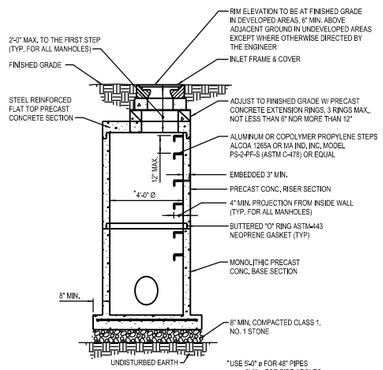


SECTION

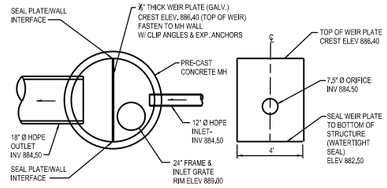
TYPICAL STORM SEWER CLEANOUT (6" & 10")
N.T.S.



STORM PIPE TRENCH SECTION
N.T.S.



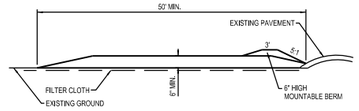
STORM MANHOLE DETAIL
N.T.S.



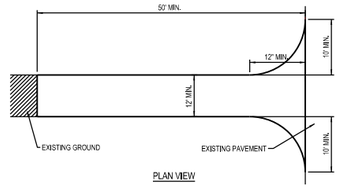
STORMWATER CONTROL STRUCTURE DETAIL
N.T.S.

STABILIZED CONSTRUCTION ENTRANCE NOTES:

1. STONE SIZE - USE 2" STONE, WASHED, CRUSHED.
2. LENGTH - NOT LESS THAN 50 FEET
3. THICKNESS - NOT LESS THAN SIX (6) INCHES
4. WIDTH - TWELVE (12) FOOT MINIMUM, BU NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS, TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE, IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC-RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE & WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION & NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

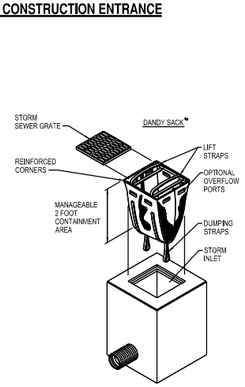


PROFILE



PLAN VIEW

TEMPORARY STABILIZED CONSTRUCTION ENTRANCE
N.T.S.



DANDY SACK™ SPECIFICATIONS

NOTE: THE DANDY SACK™ WILL BE MANUFACTURED IN THE U.S.A. FROM A WOVEN MONOFILAMENT FABRIC THAT MEETS OR EXCEEDS THE FOLLOWING SPECIFICATIONS:

REGULAR FLOW DANDY SACK™ (BLACK)

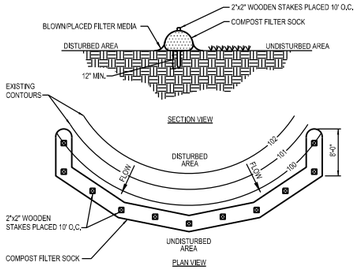
MECHANICAL PROPERTIES	TEST METHOD	UNITS	MARV
GRAB TENSILE STRENGTH	ASTM D 4632	kN (lbs)	1.78 (400) x 1.40 (315)
GRAB TENSILE ELONGATION	ASTM D 4632	%	15 x 15
PUNCTURE STRENGTH	ASTM D 4833	kN (lbs)	0.67 (150)
MULLEN BURST STRENGTH	ASTM D 3786	kPa (psi)	2326 (600)
TRAPEZOID TEAR STRENGTH	ASTM D 4533	kN (lbs)	0.67 (150) x 0.73 (165)
UV RESISTANCE	ASTM D 4355	%	90
APPARENT OPENING SIZE	ASTM D 4751	Mm (US Std Sieve)	0.425 (40)
FLOW RATE	ASTM D 4491	l/min/m² (gal/min/ft²)	2852 (70)
PERMITTIVITY	ASTM D 4491	Sec⁻¹	0.90

HI-FLOW DANDY SACK™ (SAFETY ORANGE)

MECHANICAL PROPERTIES	TEST METHOD	UNITS	MARV
GRAB TENSILE STRENGTH	ASTM D 4632	kN (lbs)	1.62 (365) X 0.89 (200)
GRAB TENSILE ELONGATION	ASTM D 4632	%	24 X 10
PUNCTURE STRENGTH	ASTM D 4833	kN (lbs)	0.40 (90)
MULLEN BURST STRENGTH	ASTM D 3786	kPa (psi)	3097 (450)
TRAPEZOID TEAR STRENGTH	ASTM D 4533	kN (lbs)	0.51 (115) X 0.33 (75)
UV RESISTANCE	ASTM D 4355	%	90
APPARENT OPENING SIZE	ASTM D 4751	Mm (US Std Sieve)	0.425 (40)
FLOW RATE	ASTM D 4491	l/min/m² (gal/min/ft²)	5907 (145)
PERMITTIVITY	ASTM D 4491	Sec⁻¹	2.1

*NOTE: DANDY SACKS™ CAN BE ORDERED WITH OUR OPTIONAL OIL ABSORBENT PILLOWS.

FILTER SACK INLET PROTECTION
N.T.S.

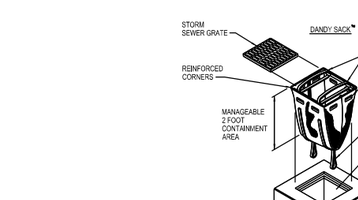


ADAPTED FROM DETAILS PROVIDED BY: FILTREXX

COMPOST STANDARDS TABLE	
ORGANIC MATTER CONTENT	25% - 100% (DRY WEIGHT)
ORGANIC PORTION	FIBROUS & ELONGATED
PH	6.0 - 8.0
MOISTURE CONTENT	30% - 60%
PARTICLE SIZE	100 % PASSING A 1" SCREEN 10 - 50% PASSING A 3/8" SCREEN
SOLUBLE SALT CONCENTRATION	5.0 ds/M (mmhos/cm) MAXIMUM

1. SOCK FABRIC SHALL MEET STANDARDS OF TABLE 5.1. COMPOST SHALL MEET THE STANDARDS LISTED ON OF TABLE 5.2.
2. COMPOST FILTER SOCK SHALL BE PLACED AT EXISTING LEVEL GRADE, BOTH ENDS OF THE SOCK SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN SOCK ALIGNMENT (FIGURE 5.2), MAXIMUM SLOPE LENGTH ABOVE ANY SOCK SHALL NOT EXCEED THAT SHOWN ON FIGURE X.X. STAKES MAY BE INSTALLED IMMEDIATELY DOWNSLOPE OF THE SOCK IF SO SPECIFIED BY THE MANUFACTURER.
3. TRAFFIC SHALL NOT BE PERMITTED TO CROSS FILTER SOCKS.
4. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES HALF THE ABOVE GROUND HEIGHT OF THE SOCK & DISPOSED IN THE MANNER DESCRIBED ELSEWHERE IN THE PLAN.
5. SOCKS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED SOCKS SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF INSPECTION.
6. BIODEGRADABLE FILTER SOCKS SHALL BE REPLACED AFTER 6 MONTHS: PHOTODEGRADABLE SOCKS AFTER 1 YEAR, POLYPROPYLENE SOCKS SHALL BE REPLACED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
7. UPON STABILIZATION OF THE AREA TRIBUTARY TO THE SOCKS, STAKES SHALL BE REMOVED. THE SOCK MAY BE LEFT IN PLACE AND VEGETATED OR REMOVED. IN THE LATTER CASE, THE MESH SHALL BE CUT OPEN AND THE MULCH SPREAD AS A SOIL SUPPLEMENT.

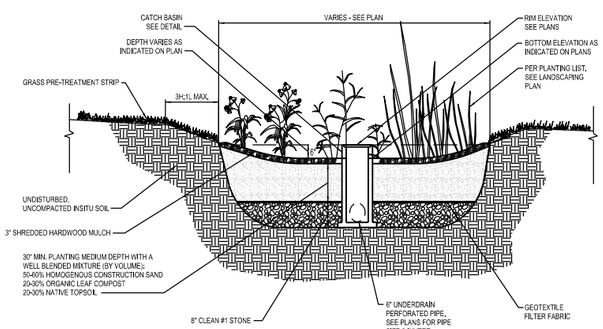
COMPOST FILTER SOCK
N.T.S.



CHECK DAM NOTES:

1. STONE WILL BE PLACED ON A STABILIZATION FABRIC FOUNDATION TO THE LINES, GRADES AND LOCATIONS AS SHOWN OR AS DIRECTED BY THE ENGINEER.
2. SET SPACING OF CHECK DAMS TO ASSURE THAT THE ELEVATION OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION AS THE TOE OF THE UPSTREAM DAM.
3. EXTEND THE STONE A MINIMUM OF 1'-6" BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM.
4. PROTECT THE DITCH DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR & EROSION WITH STONE OR LINER AS APPROPRIATE.
5. ENSURE THAT DITCH APPURTANANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONES.

CHECK DAM SECTIONS
N.T.S.



NOTE: EXCAVATE BIORETENTION AREA TO BOTTOM ELEVATION INDICATED TO ACT AS TEMPORARY SEDIMENT TRAP. DO NOT INSTALL BIORETENTION SOIL, PLANTINGS OR MULCH UNTIL UPSTREAM DRAINAGE AREAS ARE FULLY STABILIZED AND SEDIMENT IS REMOVED.

STANDARD BIO-RETENTION CROSS-SECTION
N.T.S.

ROC
RURAL OUTREACH CENTER
730 OLEAN ROAD EAST AURORA, NY

NO.	DATE	REMARKS

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PROJECT NO.

DATE 03/12/2021

SCALE AS NOTED

DRAWN BY

DRAWING TITLE

STORM & EROSION & SEDIMENT CONTROL DETAILS

DRAWING NO.

C-503

APPENDIX H-1

POST CONSTRUCTION MAINTENANCE SCHEDULE

Stormwater Management Facility Inspection Procedures

Post Construction Operation & Maintenance

1. **On a quarterly basis, perform the following:**
    a. **Inspect catch basins, manholes, storm piping and underground detention piping for debris and accumulation of sediment**
    b. **Remove and properly dispose of any collected debris from structures**
    c. **Flush storm sewers with water, if necessary, to remove accumulated sediment**
    d. **Check all rip rap stone for erosion and re-stone, if necessary, to prevent further erosion**
    e. **Inspect grass and landscaped areas for un-vegetated areas or areas with less than 80% healthy stand of grass and reseed and mulch as necessary. Water areas daily if reseeded between July and August.**

2. **Maintain all lawn areas by regular mowing, including the grass slopes of the bio-retention basin. Any eroded areas shall be re-graded, seeded and mulched immediately.**

3. **Inspect the bio-retention basin for debris and sediment accumulation. Debris and sediment accumulation should be removed from the basin. Remove and properly dispose of any collected debris and sediment. Sediment must be removed when accumulation depth exceeds one inch.**

4. **The bio-retention basin is to be maintained as required in the NYSDEC Stormwater Management Design Manual (NYSDEC SMDM) and as a component of the property landscaping and shall be maintained on a regular basis. Mulching, weeding and plant replacement shall occur on a regular basis.**

5. **Inspect the dry detention basin for debris and sediment accumulation. Debris and sediment accumulation should be removed from the basin. Remove and properly dispose of any collected debris and sediment. Sediment must be removed when accumulation depth exceeds one foot.**

6. **The dry detention basin is to be maintained as required in the NYSDEC Stormwater Management Design Manual (NYSDEC SMDM) and as a component of the property landscaping and shall be maintained on a regular basis. Mowing shall occur on a regular basis.**

NEW YORK STATE OF OPPORTUNITY. Department of Environmental Conservation

MAINTENANCE GUIDANCE

Stormwater Management Practices

March 31, 2017

FINAL

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Section 1. Introduction

1.1. Stormwater Management Practice (SMP) Groups

Stormwater management has become an important function for municipalities to address the quality of local water resources and to adhere to state standards. Increasingly, stormwater management practices (SMPs) are constructed as part of new development or redevelopment projects as retrofits to existing infrastructure and/or as part of local watershed restoration plan efforts.

While SMPs are proliferating, municipalities are charged with a certain level of implementation and oversight. Whether this is a new function for a municipality or an expansion of existing programs, it is important for these local programs to have some degree of guidance to successfully meet the challenge. One important area where guidance has been lacking is how to properly operate and maintain the wide range of SMPs that are constructed. This chapter was developed to address this need. It is widely understood that SMPs will not function properly to protect water resources without attention to operation and maintenance (O&M), and that O&M tasks and responsibilities must be identified and assumed by various stakeholders.

The chapter is structured around a hierarchy concept where O&M responsibilities are addressed by SMP owners/property managers, municipal staff, landscape contractors and professionals with knowledge in stormwater management (Qualified Professional). The hierarchy approach, explained in more detail below in Section 1.2, strives for a cost-efficient way to ensure long-term performance of SMPs.

The maintenance procedures described in this chapter are applied to ten separate SMP groups (**Table 1.1**)**.** These same ten groups are used to separate maintenance inspection guidance, costs, and other guidance in the chapter.

Table 1.1 Practices Discussed in this Chapter, by Group

SMP Group	Practices Included
Rainwater Harvesting	• Rain Barrel • Cistern
Disconnection and Sheetflow	• Rooftop Disconnection • Sheetflow to Filter Strip • Sheetflow to Riparian Buffers
Swales	• Vegetated Swale • Wet Swale
Tree Planting	• Tree Planting
Bioretention	• Bioretention Cell • Dry Swale • Rain Garden • Stormwater Planters • Tree Pits
Green Roofs	• Green Roofs
Permeable Pavements	• Permeable Pavers • Porous Asphalt/Concrete
Ponds and Wetlands	• Wet Pond Design Options • Stormwater Wetland Design Options
Infiltration	• Infiltration Trench • Infiltration Basin • Dry Well
Sand and Organic Filters	• Surface Sand Filters • Underground Sand Filters • Underground Organic Filters

1.2. Maintenance Hierarchy

SMPs require inspections and maintenance to identify small problems before they become more serious and expensive to repair. For example, removing a small amount of sediment from a filtering medium or permeable pavement surface is much less expensive than replacing a surface that has already become clogged. However, it can be cost prohibitive for most communities or SMP owners to hire highly trained staff or contractors to inspect these practices or to carry out the actual maintenance tasks. This can be especially true with the advent of “micro-scale” Green Infrastructure practices, which may be distributed across many individual public and private properties, and where the absolute number of SMPs within a municipality may exceed local government inspection and maintenance capabilities.

Many SMP maintenance problems start out as fairly small, easily rectified issues as long as they are detected early enough through an inspection. For these issues, property owners or managers can likely take care of the issue in an expedient and cost-effective manner.

However, at some point, property owners or managers will encounter an issue where diagnosing the problem and knowing the appropriate remedy will exceed their technical capabilities. At this point, an individual with training in SMP inspection, operation and maintenance, such as a municipal inspector or landscape contractor, may have to be called in for assistance.

Similarly, some problems escalate to the point where a Qualified Professional (i.e. professional engineer or landscape architect) is needed to bring the SMP back to a good functioning condition. The Qualified Professional may need to bring in other experts to assess problems with the SMP. For instance, they may call in a horticulturalist to assess problems with the planting plan.

Figure 1.1 The SMP Maintenance Hierarchy Pyramid

Acknowledging this step-wise approach to SMP inspection and maintenance, the SMP Maintenance Hierarchy concept was developed. The concept uses a combination of skill levels (**Figure 1.1**) as explained in more detail below.

Level 1: Property Owners and Managers, Interns, etc.

This category includes property owners, property managers, or HOA representatives, for privately owned SMPs. For municipally owned SMPS, this could include municipal maintenance staff or interns, and volunteers. These individuals would typically have no or only very limited training in stormwater maintenance and inspection but can use available guidance to quickly identify and rectify common and simple issues with SMP performance. This level completes routine inspections and maintenance activities. For most SMPs, the majority of inspection and maintenance activities can be conducted at this skill level, thus Level 1 forms the base of the Maintenance Hierarchy pyramid. Many well-functioning SMPs can be adequately maintained for long periods of time using Level 1 capabilities.

Although many issues can be addressed at Level 1, these inspectors and maintainers need a relief valve when the SMP problems become harder to diagnose and/or the remedies require a higher level of resources and expertise. Such issues are referred to in this chapter as “kick-outs to Level 2.” For instance, an SMP may have a minor amount of sediment that has accumulated at inlets or on the practice bottom. A Level 1 person may be able to take care of this with a flat shovel and wheel barrow. However, a Level 2 inspection would be triggered if the sediment is deep, widespread, keeps recurring, and/or requires more sophisticated equipment to remove.

Level 2: Trained Municipal Staff

This level of inspection and maintenance is conducted primarily by municipal employees or landscape contractors who have completed training on SMP, inspection, operation and maintenance. Level 2 inspections can take place in response to two circumstances:

1. As part of an ongoing, routine municipal inspection program whereby SMPs are visited on a rotating basis at a frequency established by the local program, or

2. In response to a “kick-out” from a Level 1 inspector based on a specific problem or problems.

Circumstance #2 obviously will require coordination and communication between the Level 1 and Level 2 inspectors, with documentation and background provided by the Level 1 inspector. This is an essential part of making the hierarchy approach successful. In the example above, the Level 2 inspector can better diagnose the sources of the sediment, whether the sediment is affecting performance of the SMP, and the specific tasks needed to remove the sediment and abate the source.

As with kick-outs from Level 1 to Level 2, the same can exist from Level 2 to Level 3. It may be that the Level 2 inspector encounters a problem where a Qualified Professional is needed to re-design certain components of the SMP, and a qualified contractor is needed to undertake a more serious repair. This is when Level 3 is activated.

Level 3: Qualified Professionals

Qualified professionals include professional engineers and landscape architects, who can revisit design issues associated with chronic or serious problems. For repair and maintenance of the SMPs at this level, individuals with specific skills and certifications, such as a certified plumber who has experience working with rainwater harvesting practices or a horticulturalist with knowledge on proper plantings may need to be called in by the Qualified Professional. Level 3 inspection or maintenance is triggered in response to specific problems identified during a Level 2 inspection.

Continuing with the example above, the Level 2 inspector identifies that the sediment is accumulating in the SMP because of the lack of pre-treatment or that the practice is not sized properly for its drainage area. The Level 2 inspector at this point should consult a Qualified Professional (Level 3) who can go back to the original or as-built plan and develop workable solutions.

Table 1.2 further describes how maintenance and inspection activities differ among the three levels of the SMP Maintenance Hierarchy.

Table 1.2 Maintenance/Inspection Hierarchy Levels

	Level 1: Owners and Untrained Staff	**Level 2: Trained Municipal Staff**	**Level 3: Qualified Professionals**
Qualifications/ Training of Inspectors	No special training, but person is provided educational materials	On-the-job training and/or short workshops Define adequate training or provide examples	Professional License such as a PE or RLA
Frequency of Inspection	At least annually	Routine as determined by the local program OR as kick-out from Level 1 inspection	Only as needed from Level 2 inspection
Inspection Guidance	Checklists are included for each practice group in **Section 2** of this chapter and in **Appendix A**.	Guidance for the inspection is included in **Section 3**, and checklists are included in **Appendix B.**	**Section 4** includes guidance for diagnosing typical problems.
Typical Maintenance Activities	Routine mowing. Trash removal. Plant care and upkeep. Mulching as needed. Removal of small amounts of sediment from pretreatment areas of the practice.	Removal of larger amounts of sediment. Structural damage repair. Minor regrading and scarification of soil surface to restore permeability.	Redesign an improperly functioning practice. Includes re-grading of the contributing drainage area, replacing soil media and plantings (new planting plan), or modifying conveyance structures.
Triggers for Inspection or Maintenance by this Level	Regular inspection (no trigger)	Level 1 Inspection Sheets (**Section 2**) describe triggers that warrant a Level 2 Inspection.	Level 2 Inspection Guidance (**Section 3**) describes triggers that warrant a Level 3 Inspection.

1.3. Using the Remainder of this Chapter

This chapter provides guidance for maintaining SMPs, including inspection, maintenance activities, and maintenance planning. The chapter includes four sections as follows:

- **Section 2** outlines Level 1 inspection and maintenance procedures in the form of visual checklists. This includes guidance for inspection of each of the 10 SMP groups/categories included in this chapter, as well as specific kick-outs for Level 2.
- **Section 3** provides guidance for Level 2 inspections as to observed conditions, remedies, and triggers for Level 3.
- **Section 4** is most relevant to Level 3 and includes diagnostic measures for specific problems, as well as guidance for performing repair activities.
- **Section 5** provides an overview of planning for maintenance, including techniques for estimating maintenance costs and elements of a maintenance plan.

Section 2. Level 1 Inspections

2.1. How to Use this Section

Section 2 provides guidance for Level 1 inspections of 10 groups of stormwater management practices (SMPs). See Section 1 of this chapter for an explanation of Level 1 in the Maintenance Hierarchy.

- **Section 2.2** provides general guidance for Level 1 inspections.
- **Sections 2.3 through 2.12** provide detailed Level 1 inspection guidance and inspection forms for each of the 10 practice categories:
    - 2.3 Rainwater Harvesting
    - 2.4 Disconnection and Sheetflow
    - 2.5 Swales
    - 2.6 Tree Planting
    - 2.7 Bioretention
    - 2.8 Green Roofs
    - 2.9 Permeable Pavement
    - 2.10 Ponds and Wetlands
    - 2.11 Infiltration
    - 2.12 Sand and Organic Filters

2.2. General Guidance for Level 1 Inspections

Regardless of which practice you are inspecting, some key procedures and equipment are necessary. Read through this guidance before going on an inspection, and use the specific guidance in **Sections 2.3 through 2.12** for the particular practice type you are inspecting. The Level 1 Inspection can be completed with minimal previous training. Typical Level 1 inspectors may include a property owner or manager (for private SMPs) or perhaps an intern or maintenance or landscape crew members in the case of a publicly owned practice. Level 1 inspections are the most frequent inspections. They are designed to identify key maintenance issues before they become more serious and to help keep up with routine maintenance tasks.

When to Conduct a Level 1 Inspection

The Level 1 Inspection should be conducted at least annually for all practices and is often supplemented with additional visits after large storms, winter salting and sanding, or other seasonal changes. In addition, it is recommended that inspections take place more frequently during the first few years after installation of an SMP. Many issues can be identified and corrected during this early period so that they do not lead to larger problems in subsequent years. Plant establishment and health is one of these key issues. Once the SMP is stable and seems to be functioning properly, the inspections can become less frequent.

What to Take into the Field

The Level 1 Inspection is fairly simple, and it is assumed that very little measurement will be needed. However, the inspector should take pictures to document findings and should also keep a record of the inspections. The list of needs for the Level 1 Inspection includes the following:

1. Safety vest (if SMP is located in an area near traffic)
2. Notes or records from past inspections
3. Digital camera or phone
4. Clipboard and pencils (if using paper forms), or Tablet or smartphone if using digital forms
5. Bug spray (if needed)
6. Sun block (if needed)
7. Tape measure (optional, to measure pipe sizes and SMP dimensions)
8. Letter of permission to access property if the inspector is from an outside agency (e.g., summer intern working for the municipality)
9. Site Plan showing SMPs, Planting Plan (includes planting/seed mixes) and details
10. Engineers scale
11. Flagging/stakes and waterproof marker (to mark problem areas that need to be visited again)

Checklist and Follow-Up Actions

The Level 1 Inspection checklists included in **Sections 2.3 through 2.12** describe follow-up actions for each observed condition (See **Figure 2.2.1** for an example). A Level 1 Inspection Table is available for each component or key area of the particular SMP group. Use as follows:

- Check the box in the LEFT column if the problem is present at the site.
- Check the appropriate follow-up actions in the RIGHT column, or add your own as needed to fix the problem.
- DOCUMENT all your actions. Keep copies of the Level 1 inspection tables, plus notes, photos, or other documentation of corrective measures to fix problems. Record dates of actions and any follow-up inspections. This will be important for communicating with Level 2 inspectors and/or the local stormwater program.
- Activate a Level 2 Inspection (**Section 3**) as guided by the table (shown in blue cells): These blue cells identify conditions when a more detailed inspection will be needed to further diagnose problems. As the problem becomes more severe, it will be necessary to activate a Level 2 inspection. Consult the local stormwater program authority for the most appropriate Level 2 inspection option.

2.7. Bioretention

Areas of Bioretention

Key areas to inspect for Bioretention include the following:

- BR 1. Drainage Area
- BR 2. Inlets
- BR 3. Bioretention Ponding Area
- BR 4. Vegetation
- BR 5. Outlets

Note: The category of Bioretention includes:

- Bioretention cells – areas of soil, mulch, and vegetation that treat runoff
- Dry swales – long, linear bioretention cells, sometimes with check dams along a mildly sloping swale
- Rain gardens – usually small-scale bioretention practices on residential or small commercial properties

Figure 2.7.1. Key Areas for Level 1 Inspection of Bioretention

- Stormwater planters – usually in more urban settings, with soil and plants in a concrete box that receives roof runoff or perhaps other water from the site
- Tree pits – also a more urban practice where the bioretention is confined within some sort of box (e.g., concrete) and places along road curbs or other areas to treat runoff

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

Bioretention Level 1 Inspection

The Level 1 Inspection focuses on the Drainage Area (BR1), Inlets (BR2), Bioretention Ponding Area (BR3), Vegetation (BR4), and Outlets (BR5). 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.

BR 1. Drainage Area

Description: The drainage area sends runoff to and is uphill from the Bioretention cell. When it rains, water runs off and flows to the Bioretention cell and ponds within the cell temporarily (usually for no more than 48 hours). Sometimes, the runoff will contain dirt, grit, grass clippings, oil, or other substances that SHOULD NOT be directed to the Bioretention area.

Instruction: Look for areas that are uphill from the Bioretention cell. Consult **Table 2.7.1** below.

Table 2.7.1 BR Drainage Area

Problem (Check if Present)		Follow-Up Actions
	☐ Bare soil, erosion of the ground (rills washing out the dirt)	☐ Seed and mulch areas of bare soil to establish vegetation. ☐ Fill in erosion areas with soil, compact, and seed and straw to establish vegetation. ☐ 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. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Large areas of soil have been eroded, or larger channels are forming. May require rerouting of flow paths.
	☐ Piles of grass clippings, mulch, dirt, salt, or other materials	☐ Remove or cover piles of grass clippings, mulch, dirt, etc. ☐ Other:
	☐ Open containers of oil, grease, paint, or other substances	☐ Cover or properly dispose of materials; consult your local solid waste authority for guidance on materials that may be toxic or hazardous. ☐ Other:

BR 2. Inlets

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

- Curb cuts or openings in a parking lot or roadway
- Pipes or ditches that carry water into the Bioretention cell from the drainage area
- Flow directly over the land surface (known as “sheetflow”), sometimes across a strip of rock or stone

Figure 2.7.2 Bioretention Cell Inlets

CSN, 2013

Instruction: Stand in the Bioretention cell itself and look for all the places where water flows in. Often there will be multiple points of inflow to the practice. Consult **Table 2.7.2** below for possible problems.

Table 2.7.2 BR Inlets

Problem (Check if Present)	Follow-Up Actions
 ☐ Inlets collect grit and debris or grass/weeds. Some water may not be getting into the Bioretention cell. The objective is to have a clear pathway for water to flow into the cell.	☐ Use a flat shovel to remove grit and debris (especially at curb inlets or openings). Parking lots generate fine grit that will accumulate at these spots. ☐ Pull out clumps of growing grass or weeds and scoop out the soil or grit that the plants are growing in. ☐ Remove any grass clippings, leaves, sticks, and other debris that is collecting at inlets. ☐ For pipes and ditches, remove sediment and debris that is partially blocking the pipe or ditch opening where it enters the Bioretention cell. ☐ Dispose of all material properly where it will not re-enter the Bioretention cell. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Inlets are blocked to the extent that most of the water does not seem to be entering the Bioretention cell.
 ☐ Some or all of the inlets are eroding so that rills, gullies, and other erosion is present, or there is bare dirt that is washing into the Bioretention cell.	☐ 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. ☐ In some cases, reseeding and applying 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. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Erosion is occurring at most of the inlets, and it looks like there is too much water that is concentrating at these points. The inlet design may have to be modified.

BR 3. Bioretention Ponding Area

Description: The ponding area fills up with water during a rainstorm. If you picture the Bioretention cell as a bathtub, there is the *bottom* (usually flat surface), *side slopes* (areas that slope down to the bottom from the surrounding ground), and *berms or structures that control the depth to which water ponds.*

Instruction: Examine the entire Bioretention surface and side slopes. Consult the table below for possible problems.

Table 2.7.3 BR Ponding Area

Problem (Check if Present)	Follow-Up Actions
 ☐ Mulch (if used) needs to be replaced or replenished. The mulch layer had decomposed or is less than 1-inch thick.	☐ Add new mulch to a total depth (including any existing mulch that is left) of 2 to 3 inches. The mulch should be shredded hardwood mulch that is less likely to float away during rainstorms. ☐ Avoid adding too much mulch so that inlets are obstructed or certain areas become higher than the rest of the Bioretention surface. ☐ Other:
 ☐ Minor areas of sediment, grit, trash, or other debris are accumulating on the bottom.	☐ 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 Bioretention cell. ☐ If removing the material creates a hole or low area, fill with soil mix that matches original mix and cover with mulch so that the Bioretention surface area is as flat as possible. ☐ Remove trash, vegetative debris, and other undesirable materials. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Sediment has accumulated more than 2-inches deep and covers 25% or more of the Bioretention surface. ☐ Kick-Out to Level 2 Inspection: The Bioretention cell is too densely vegetated to assess sediment accumulation or ponding; see BR-4, Vegetation.

 ☐ There is erosion in the bottom or on the side slopes. Water seems to be carving out rills as it flows across the Bioretention surface or on the slopes, or sinkholes are forming in certain areas. ☐ Source: Stormwater Maintenance, LLC.	☐ Try filling the eroded areas with clean topsoil or sand, and cover with mulch. ☐ If the problem recurs, you may have to use stone (e.g., river cobble) to fill in problem areas. ☐ If the erosion is on a side slope, fill with clay that can be compacted and seed and mulch the area. ☐ Other: ☐ 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 Bioretention cell. ☐ 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.
 ☐ The bottom of the Bioretention cell is not flat, and the water pools at one end, along an edge, or in certain pockets. The whole bottom is not uniformly covered with water. See design plan to verify that Bioretention surface is intended to be flat. Check during or immediately after a rainstorm.	☐ If the problem is minor (just small, isolated areas are not covered with water), try raking the surface OR adding mulch to low spots to create a more level surface. You may need to remove and replace plantings in order to properly even off the surface. ☐ Check the surface with a string and bubble level to get the surface as flat as possible. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Ponding water is isolated to less than half of the Bioretention surface area, and there seem to be elevation differences of more than a couple of inches across the surface.
 ☐ Water stands on the surface more than 72 hours after a rainstorm and /or wetland-type vegetation is present. The Bioretention cell does not appear to be draining properly.	☐ Kick-Out to Level 2 Inspection: This is generally a serious problem, and it will be necessary to activate a Level 2 Inspection.

BR 4. Vegetation

Description: The health of vegetation within the Bioretention cell is perhaps the most critical maintenance item for the property owner or responsible party. Many Bioretention cells become overgrown, and "desirable" vegetation becomes choked out by weeds and invasive plants. It is important to know what the Bioretention cell 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 all Bioretention cell vegetation. Consult the table below for possible problems.

Table 2.7.4 BR Vegetation

Problem (Check if Present)	Follow-Up Actions
 ☐ Vegetation requires regular maintenance—pulling weeds, removing dead and diseased plants, replacing mulch around plants, adding plants to fill in areas that are not well vegetated, etc.	☐ If you can identify which plants are weeds or not intended to be part of the planting plan, eliminate these, preferably by hand pulling. ☐ 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. ☐ Even vegetation that is intended to be present can become large, overgrown, and/or crowd out surrounding plants. Prune and thin accordingly. ☐ If weeds or invasive plants have overtaken the whole Bioretention cell, bush-hog the entire area before seedheads form in the spring. It will be necessary to remove the root mat manually or with appropriate herbicides, as noted above. ☐ Re-plant with species that are aesthetically pleasing and seem to be doing well in the Bioretention cell. ☐ Other: ☐ 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.
 ☐ Vegetation is too thin, is not healthy, and there are many spots that are not well vegetated.	☐ The original plants are likely not suited for the actual conditions within the Bioretention cell. 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. ☐ Other: ☐ Kick-Out to Level 2 Inspection: For all but small practices (e.g., rain gardens), this task will likely require a landscape design professional or horticulturalist.

BR 5. Outlets

Description: Outlets are where water leaves the Bioretention cell when there is too much ponded water. There are various ways that outlets are configured. They can be a yard drain type of structure in the Bioretention cell itself or a rock weir where water flows during large storms. Many Bioretention practices have an underdrain, which is like a French drain, that helps the Bioretention cell drain properly after storms. The underdrain pipe may “daylight” (come to the ground surface) at some point downhill from the Bioretention cell.

Instruction: Examine outlets that release water out of the Bioretention cell. Consult the table below for possible problems.

Table 2.7.5 BR Outlets

Problem (Check if Present)	Follow-Up Actions
☐ Erosion at outlet	☐ Add stone to reduce the impact from the water flowing out of the outlet pipe or weir during storms. ☐ Other:
	☐ Kick-Out to Level 2 Inspection: Rills have formed and erosion problem becomes more severe.
 ☐ Outlet obstructed with mulch, sediment, debris, trash, etc.	☐ Remove the debris and dispose of it where it cannot re-enter the Bioretention cell. ☐ Other:
	☐ 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.

2.8. Green Roof

Areas of the Green Roof

Key areas to inspect for green roofs include the following:

GR 1. Vegetation and Surface
GR 2. Overflows and Drains

Note: Green Roofs consist of green infrastructure practices applied on rooftops, wherein stormwater is filtered through a vegetated planting bed. Green Roofs are a unique practice in that they are often covered by a professional ongoing maintenance contract, and their design is highly variable depending on the specific product. This section highlights some key inspection items.

Figure 2.8.1. Key Areas for Level 1 Inspection of Green Roof

Section 3. Level 2 and 3 Inspections

3.1. How to Use this Section

This section provides guidance for Level 2 and 3 inspections for 10 groups of stormwater management practices (SMPs). See Section 1 of this chapter for an explanation of the Maintenance Hierarchy approach.

- Section 3.2 provides general guidance for Level 2 and 3 inspections.
- Sections 3.3 through 3.12 provide detailed Level 2 and 3 inspection guidance for each of the 10 practice categories:
    - 3.3 Rainwater Harvesting
    - 3.4 Disconnection and Sheetflow
    - 3.5 Swales
    - 3.6 Tree Planting
    - 3.7 Bioretention
    - 3.8 Green Roofs
    - 3.9 Permeable Pavement
    - 3.10 Ponds and Wetlands
    - 3.11 Infiltration
    - 3.12 Sand and Organic Filters
- Each section has **tables** containing guidance for Level 2 inspectors on specific SMP conditions and possible repairs for those problems (in left column), as well as lists of conditions that would likely trigger a Level 3 evaluation or maintenance action (right column). In addition, **Appendix B** contains detailed checklists for Level 2 inspectors to use in the field during their inspections.
- **Section 3.13** provides a brief overview for Level 3 inspections and how these fit into the overall hierarchy. However, most of the content for Level 3 maintenance actions is contained in **Section 4.**

3.2. General Guidance for Level 2 and 3 Inspections

The Level 2 inspection will typically be performed by a municipal employee or landscape contractor with some training in stormwater operations and maintenance. Regardless of which type of practice is being inspected, some key procedures and equipment are necessary. Read through this guidance before going on an inspection, and use the specific guidance in **Sections 3.3 through 3.12** for the practice you are inspecting. While much of the equipment and general procedures are somewhat similar to Level 1 inspections, additional information is provided for Level 2 inspectors below.

When to Conduct a Level 2 Inspection

The Level 2 Inspection is needed for two reasons. First, routine inspections to comply with local stormwater regulations typically require a Level 2 inspector. In addition, a Level 2 inspection may be triggered to address or diagnose problems identified during a Level 1 inspection. In this situation, the Level 2 inspector should confer with the Level 1 inspector about problems they have identified and then conduct a follow-up inspection that focuses more on diagnosing the causes of the problems and possible solutions. The checklists in **Appendix B** and other resources cited in **Sections 3.3 through 3.12** can be used as tools.

The frequency of this type of inspection may be defined by the municipality. As with Level 1 inspections, the frequency may change with the age of the SMP, with higher frequencies the first couple of years after installation. Well-established and well-maintained practices may only need to be inspected every few years.

Notifying the Responsible Party

Consult the plan file and maintenance agreement to ascertain the responsible party. Confirm that there is right of access through the local code, signed maintenance agreement, or other means. Contact the responsible party at least three business days in advance of the proposed inspection. If the responsible party cannot be found or contacted, make a reasonable effort through file research to contact a property representative, and document these efforts in writing. If the inspection is in response to a Level 1 inspection and referral to your agency, try to speak with the person who conducted the Level 1 inspection and get any documentation they may have. For publicly owned and managed SMPs, the responsible party will likely be the municipality or other regulated MS4.

What to Take in the Field

Level 2 inspections may require more measurement and, as a result, need some additional materials. In addition, the Level 2 inspection may involve gaining access to private property. Consequently, additional identification is needed for these inspections. A list of recommended items to take in the field is provided in **Table 2.2.1**.

Table 3.2.1 What to Take in the Field for a Level 2 Inspection

- Safety equipment: safety vest, steel-toe shoes, traffic cones if working near traffic, etc.
- Approved plan and as-built (record drawing) if available
- Records of previous inspections if available
- Engineering scale
- Hand level and pocket rod if needed to measure relative elevations
- Digital camera
- Several copies of SMP checklist if paper forms are used (**Appendix B**)
- Clipboard and pencils if paper forms are used
- Dry erase white board and marker (optional) to include in photos to keep track of SMP tracking # in municipal database (see **Figure 3.2** as example)
- Letter on municipal letterhead granting access and/or agency photo badge
- Pipe wrench to open underdrain clean-out caps
- Flashlight to look into underdrain cleanouts and/or manholes
- Manhole puller
- Soil probe or auger
- 100' measuring tape
- Shovel
- Bug spray

Conducting the Inspection

In general, the inspection should follow a consistent, logical approach, such as outlined below.

- Conduct a quick tour of the practice to identify any obvious issues and important components: inlets (number, location), surface area, overflow structures, berms or impoundments, outfalls, downstream conveyance channels or receiving waters. Check these components against the design plan or as-built drawing (if available).
- Starting at the outlet or low point, use the checklists provided in Appendix B to evaluate the practice. The inspection will proceed from the outlet or outfall to the stormwater treatment area, berms, side slopes, inlets, and drainage area. Make sure to fill in key information on the inspection form, such as SMP identifier number, site name, inspector name, date, and weather conditions.

Figure 3.2. A white board and digital camera can be handy to note SMP tracking #, date of inspection, and other forms of documentation. Note that an inspector may alternatively tag photographs, particularly if they are recorded on a smartphone or Tablet.

- Take photos of important components or maintenance concerns, and mark photo locations and direction on a sketch.
- Review the inspection form before leaving the site to make sure that all necessary information has been collected.

Follow-Up Actions

Immediate follow-up actions include entering the inspection information in the appropriate database or hard copy file, downloading and labeling photos, and providing other necessary documentation.

Another possible follow-up action would be to activate a Level 3 inspection in certain situations. The Level 2 inspector will have to make a judgement call as to whether observed problems warrant a Level 3 investigation, and will also have to coordinate with the responsible party to pursue such an investigation. The Level 2 guidance in this chapter summarizes follow-up actions associated with various observations of SMP condition. Note that these tables are divided into “Level 2” and “Triggers for Level 3” follow-up actions, with Level 2 actions in *blue* cells and Level 3 in *green* cells. Consult **Section 4** of this chapter for more guidance on how to diagnose and correct some of the maintenance items included in these tables.

Another follow-up action involves communicating problems and corrective measures to the responsible party (private or public). This may involve instructing the responsible party to undertake a Level 3 inspection or to provide a timeframe for correcting simpler issues that do not require Level 3 involvement. Many local programs have existing procedures for sending letters or activating a compliance procedure. These procedures include verifying that repairs and corrections are completed by the responsible party.

Level 3 Inspection Guidance

The Level 3 inspection is typically conducted by a Qualified Professional such as a professional engineer or Landscape Architect. It is assumed that the Level 3 inspector is knowledgeable in stormwater management, as well as engineering and construction practices. The Level 3 inspector will not typically be completing a full practice inspection. This inspection is conducted only in response to problems identified during the Level 2 inspection, is more diagnostic in nature, assumes a greater degree of initial knowledge, and may require more extensive intervention.

The Level 3 inspection is also more results based in that it will lead to a specific repair to address the issue that triggered the inspection. **Section 4** identifies 12 problems typically addressed in a Level 3 inspection and discusses measures to diagnose the cause of the problem, as well as repairs needed to address it. It should be noted that the problems addressed in each **Section 4** subsection can occur in a variety of SMPs (e.g., erosion is a common issue in almost every type of SMP). As a result, each subsection identifies the SMPs where the problem most commonly occurs and, in some cases, an SMP-specific diagnosis procedure.

3.6. Tree Planting – Level 2 Inspections and Triggers for Level 3

A Level 2 Tree Planting inspection should be conducted periodically during the growing season by the Cooperative Extension or an arborist.

Table 3.6.1 Level 2 Inspection: TREE PLANTING	
Recommended Repairs	**Triggers for Level 3 Inspection**
Observed Condition: Appearance of fungus or pest damage	
Condition 1: Fungus, discoloration, browning leaves or holes in leaves Check with arborist or other tree professional about the best way to proceed. This requires a Level 3 inspection. Condition 2: Burrowing insects, holes Check with arborist or other tree professional about the best way to proceed. This requires a Level 3 inspection.	• Any concerns about how to address infestation or disease

3.7. Bioretention – Level 2 Inspections and Triggers for Level 3

The most likely triggers for a Level 3 Inspection for Bioretention are:

- Standing water, clogged media
- Vegetation management
- Bioretention does not conform to original design plan in surface area or storage.
- Severe erosion of filter bed, inlets, or around outlets
- Significant sediment accumulation, indicating an uncontrolled source of sediment

Table 3.7.1 Level 2 Inspection: BIORETENTION NOTE: Key Source for this Information *(CSN, 2013)*	
Recommended Repairs	**Triggers for Level 3 Inspection**
Observed Condition: Water Stands on Surface for More than 72 Hours after Storm	
Condition 1: Small pockets of standing water Use a soil probe or auger to examine the soil profile. If isolated areas have accumulated grit, fines, or vegetative debris or have bad soil media, try scraping off top 3 inches of media and replacing with clean material. Also check to see that surface is level and water is not ponding selectively in certain areas. Condition 2: Standing water is widespread or covers entire surface Requires diagnosis and resolution of problem: • Clogged underdrain? • Filter fabric between soil media and underdrain stone? • Need to install underdrain if not present? • Too much sediment/grit washing in from drainage area? • Too much ponding depth? • Improper soil media?	• Soil media is clogged and problem is not evident from Level 2 inspection. • Level 2 inspection identifies problem, but it cannot be resolved easily or is associated with the original design of the practice.

Observed Condition: Vegetation is sparse or out of control	
Condition 1: Original design planting plan seems good but has not been maintained, so there are many invasives and/or dead plants Will require some horticultural experience to restore vegetation to intended condition by weeding, pruning, removing plants, and adding new plants. Condition 2: Original design planting plan is unknown or cannot be actualized A landscape architect or horticulturalist will be needed to redo the planting plan. Will likely require analysis of soil pH, moisture, organic content, sun/shade, and other conditions to make sure plants match conditions. Plan should include invasive plant management and maintenance plan to include mulching, watering, disease intervention, periodic thinning/pruning, etc.	• Vegetation deviates significantly from original planting plan; Bioretention has been neglected and suffered from deferred maintenance. • Owner/responsible party does not know how to maintain the practice.
Observed Condition: Bioretention does not conform to original design plan in surface area or storage	
Condition 1: Level 2 Inspection reveals that practice is too small based on design dimension, does not have adequate storage (e.g., ponding depth) based on the plan, and/or does not treat the drainage area runoff as indicated on the plan Small areas of deviation can be corrected by the property owner or responsible party, but it is likely that a Qualified Professional will have to revisit the design and attempt a redesign that meets original objectives or that can be resubmitted to the municipality for approval.	• More than a 25% departure from the approved plan in surface area, storage, or drainage area; sometimes less than this threshold at the discretion of the Level 2 inspector.
Observed Condition: Severe erosion of filter bed, inlets, or around outlets	
Condition 1: Erosion at inlets The lining (e.g., grass, matting, stone, rock) may not be adequate for the actual flow velocities coming through the inlets. First line of defense is to try a more non-erosive lining and/or to extend the lining further down to where inlet slopes meet the Bioretention surface. If problem persists, analysis by a Qualified Professional is warranted. Condition 2: Erosion of Bioretention filter bed This is often caused by “preferential flow paths” through and along the Bioretention surface. The source of flow should be analyzed and methods employed to dissipate energy and disperse the flow (e.g., check dams, rock splash pads). Condition 3: Erosion on side slopes Again, the issue is likely linked with unanticipated flow paths down the side slopes (probably overland flow that concentrates as it hits the edge of the slope). For small or isolated areas, try filling, compacting, and re-establishing healthy ground cover vegetation. If the problem is more widespread, further analysis is required to determine how to redirect the flow.	• Erosion (rills, gullies) is more than 12 inches deep at inlets or the filter bed or more than 3 inches deep on side slopes. • If the issue is not caused by moving water but some sort of subsurface defect. This may manifest as a sinkhole or linear depression and be associated with problems with the underdrain stone or pipe or underlying soil.
Observed Condition: Significant sediment accumulation, indicating an uncontrolled source of sediment	
Condition 1: Isolated areas of sediment accumulation, generally less than 3-inches deep Sediment source may be from a one-time or isolated event. Remove accumulated sediment and top 2 to 3 inches of Bioretention soil media; replace with clean material. Check drainage area for any ongoing sources of sediment. Condition 2: Majority of the surface is caked with “hard pan” (thin layer of clogging material) or accumulated sediment that is 3-inches deep or more This can be caused by an improper construction sequence (drainage area not fully stabilized prior to installation of Bioretention soil media) or another chronic source of sediment in the drainage area. Augering several holes down through the media can indicate how severe the problem is; often the damage is confined to the first several inches of soil media. Removing and replacing this top layer (or to the depth where sediment incursion is seen in auger holes) can be adequate, as long as the problem does not recur.	• More than 2 inches of accumulated sediment cover 25% or more of the Bioretention surface area. • “Hard pan” of thin, crusty layer covers majority of Bioretention surface area and seems to be impeding flow of water down through the soil media. • New sources of sediment seem to be accumulating with each significant rainfall event.

APPENDIX I-1

STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL

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

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.

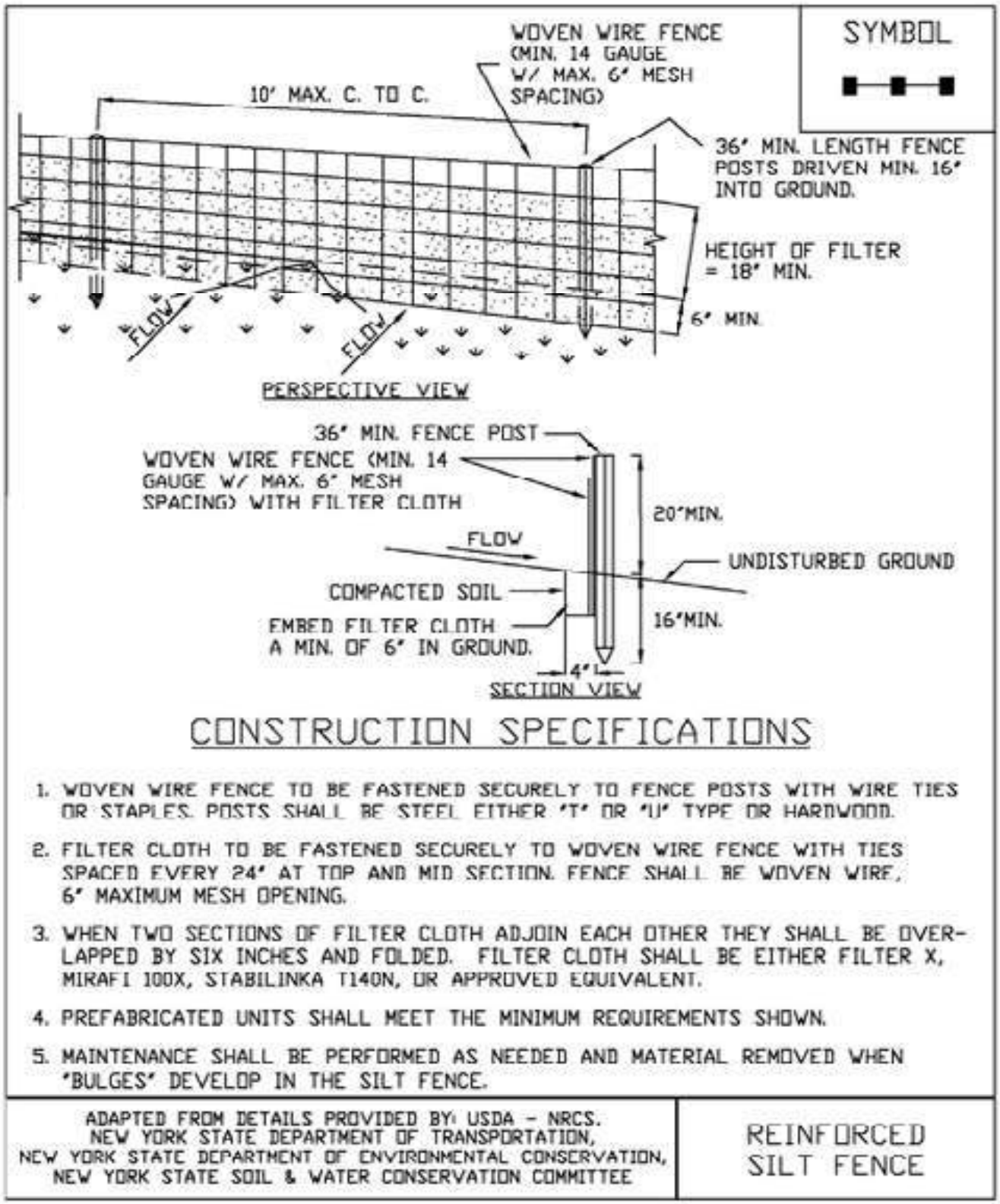
3. Wire Fence for reinforced silt fence: Wire fencing shall be a minimum 14 gage with a maximum 6 in. mesh opening, or as approved.

4. Prefabricated silt fence is acceptable as long as all material specifications are met.

Super Silt Fence

Reinforced Silt Fence

Figure 5.30
Reinforced Silt Fence



STANDARD AND SPECIFICATIONS FOR COMPOST FILTER SOCK

Definition & Scope

A **temporary** sediment control practice composed of a degradable geotextile mesh tube filled with compost filter media to filter sediment and other pollutants associated with construction activity to prevent their migration offsite.

Condition Where Practice Applies

Compost filter socks can be used in many construction site applications where erosion will occur in the form of sheet erosion and there is no concentration of water flowing to the sock. In areas with steep slopes and/or rocky terrain, soil conditions must be such that good continuous contact between the sock and the soil is maintained throughout its length. For use on impervious surfaces such as road pavement or parking areas, proper anchorage must be provided to prevent shifting of the sock or separation of the contact between the sock and the pavement. Compost filter socks are utilized both at the site perimeter as well as within the construction areas. These socks may be filled after placement by blowing compost into the tube pneumatically, or filled at a staging location and moved into its designed location.

Design Criteria

1. Compost filter socks will be placed on the contour with both terminal ends of the sock extended 8 feet upslope at a 45 degree angle to prevent bypass flow.
2. Diameters designed for use shall be 12" – 32" except that 8" diameter socks may be used for residential lots to control areas less than 0.25 acres.
3. The flat dimension of the sock shall be at least 1.5 times the nominal diameter.
4. The **Maximum Slope Length** (in feet) above a compost filter sock shall not exceed the following limits:

Dia. (in.)	Slope %						
	2	5	10	20	25	33	50
8	225*	200	100	50	20	—	—
12	250	225	125	65	50	40	25
18	275	250	150	70	55	45	30
24	350	275	200	130	100	60	35
32	450	325	275	150	120	75	50
* Length in feet							

5. The compost infill 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. **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. When using compost filter socks adjacent to surface water, the compost should have a low nutrient value.**
6. The compost filter sock fabric material shall meet the minimum requirements provided in Table 5.1 - Compost Sock Fabric Minimum Specifications Table.

7. Compost filter socks shall be anchored in earth with 2" x 2" wooden stakes driven 12" into the soil on 10 foot centers on the centerline of the sock. On uneven terrain, effective ground contact can be enhanced by the placement of a fillet of filter media on the disturbed area side of the compost sock.

8. All specific construction details and material specifications shall appear on the erosion and sediment control constructions drawings when compost filter socks are included in the plan.

Maintenance

1. Traffic shall not be permitted to cross filter socks.

2. Accumulated sediment shall be removed when it reaches half the above ground height of the sock and disposed of in accordance with the plan.

3. Socks shall be inspected weekly and after each runoff event. Damaged socks shall be repaired in the manner required by the manufacturer or replaced within 24 hours of inspection notification.

4. Biodegradable filter socks shall be replaced after 6 months; photodegradable filter socks after 1 year. Polypropylene socks shall be replaced according to the manufacturer's recommendations.

5. Upon stabilization of the area contributory to the sock, stakes shall be removed. The sock may be left in place and vegetated or removed in accordance with the stabilization plan. For removal the mesh can be cut and the compost spread as an additional mulch to act as a soil supplement.

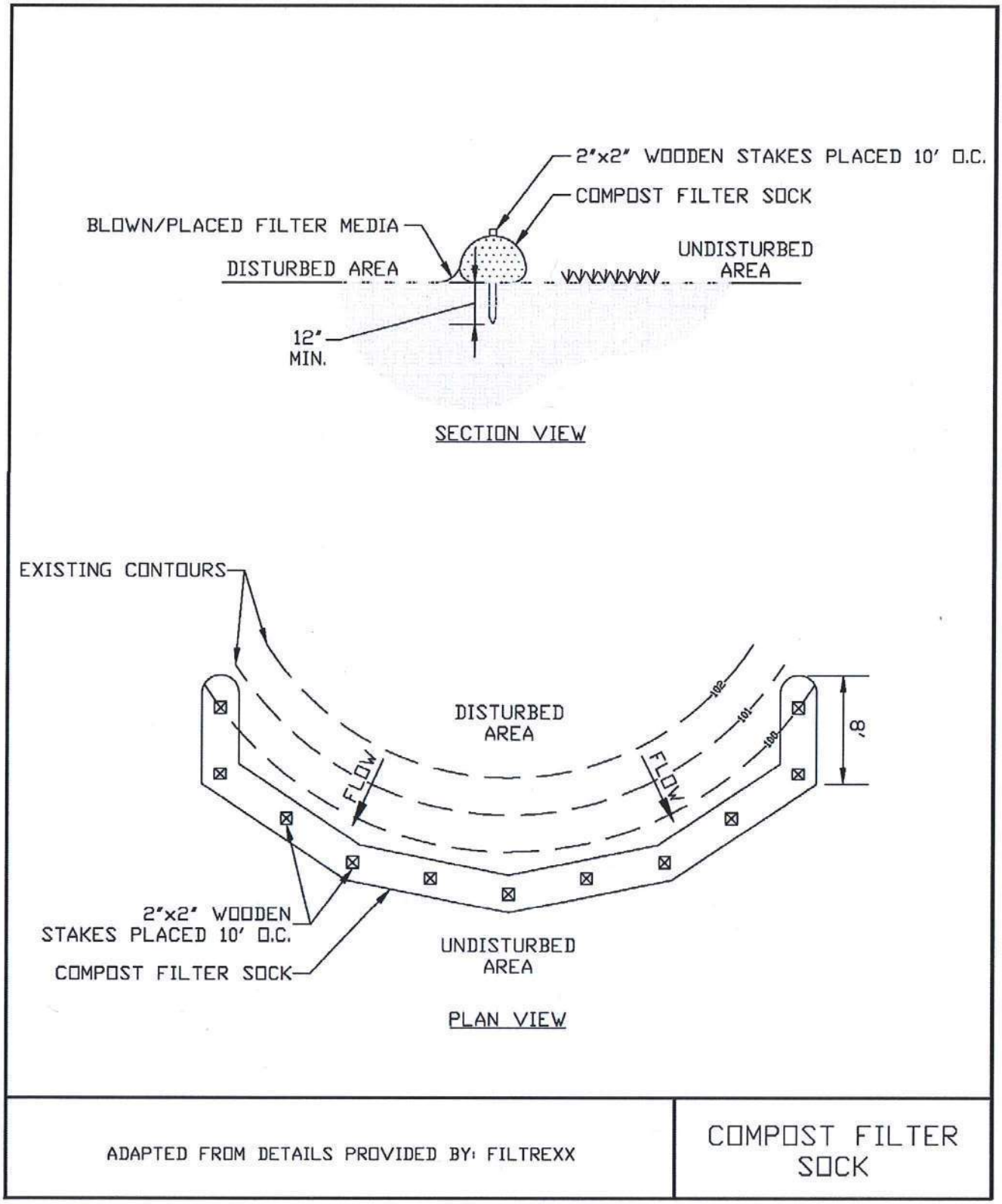
Table 5.1 - Compost Sock Fabric Minimum Specifications Table

Material Type	3 mil HDPE	5 mil HDPE	5 mil HDPE	Multi-Filament Polypropylene (MFPP)	Heavy Duty Multi-Filament Polypropylene (HDMFPP)
Material Characteristics	Photodegradable	Photodegradable	Biodegradable	Photodegradable	Photodegradable
Sock Diameters	12" 18"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"
Mesh Opening	3/8"	3/8"	3/8"	3/8"	1/8"
Tensile Strength		26 psi	26 psi	44 psi	202 psi
Ultraviolet Stability % Original Strength (ASTM G-155)	23% at 1000 hr.	23% at 1000 hr.		100% at 1000 hr.	100% at 1000 hr.
Minimum Functional Longevity	6 months	9 months	6 months	1 year	2 years

Table 5.2 - Compost Standards Table

Organic matter content	25% - 100% (dry weight)
Organic portion	Fibrous and elongated
pH	6.0 – 8.0
Moisture content	30% - 60%
Particle size	100% passing a 2" screen and 10 - 50% passing a 3/8" screen
Soluble salt concentration	5.0 dS/m (mmhos/cm) maximum

Figure 5.2
Compost Filter Sock



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 Subgrade	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.

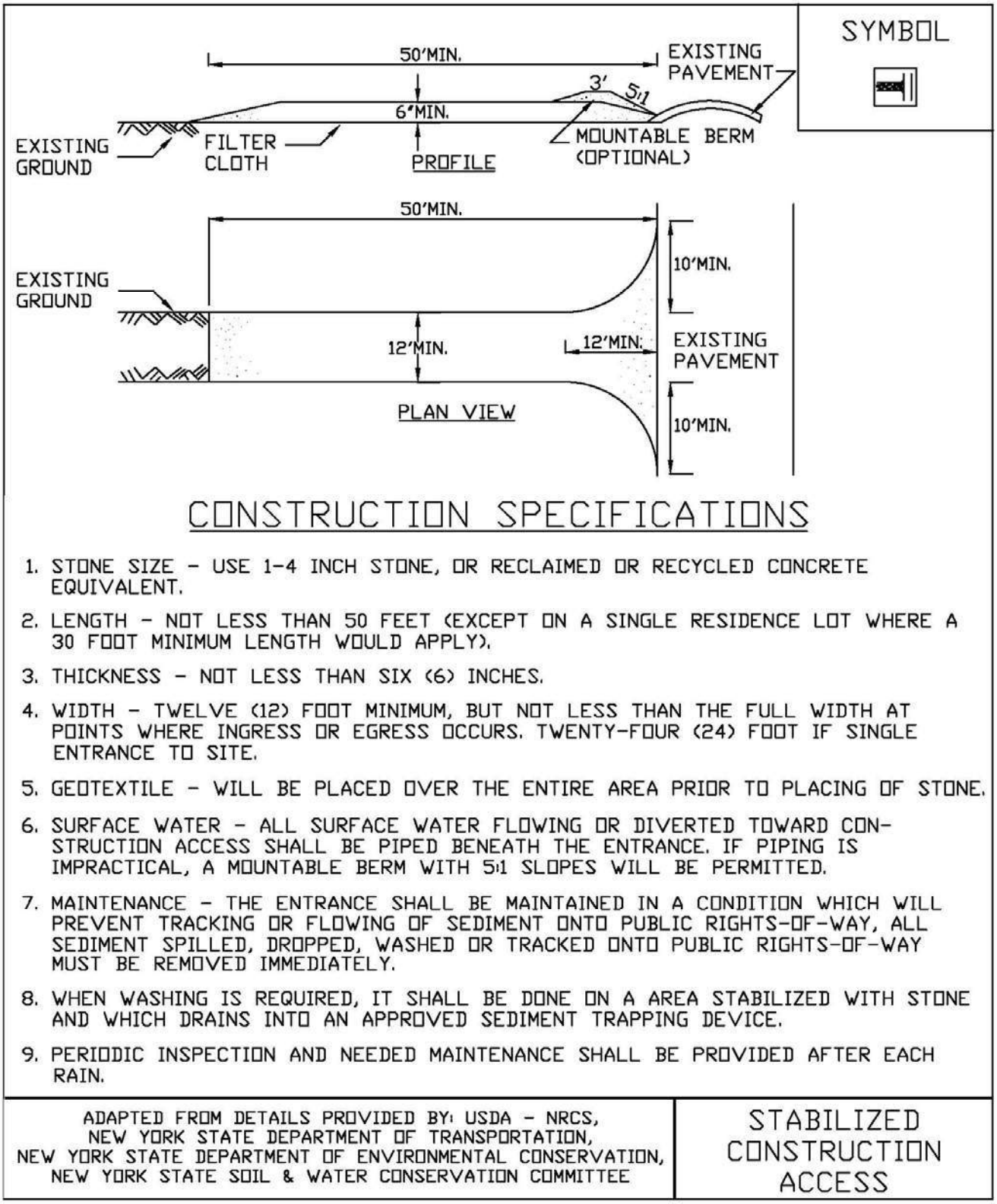
[3]Fabrics not meeting these specifications may be used only when design procedure and supporting documentation are supplied to determine aggregate depth and fabric strength.

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



CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 1-4 INCH STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. GEOTEXTILE - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ACCESS SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON A AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

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

STABILIZED CONSTRUCTION ACCESS

STANDARD AND SPECIFICATIONS FOR STORM DRAIN INLET PROTECTION

Definition & Scope

A **temporary** barrier with low permeability, installed around inlets in the form of a fence, berm or excavation around an opening, detaining water and thereby reducing the sediment content of sediment laden water by settling thus preventing heavily sediment laden water from entering a storm drain system.

Conditions Where Practice Applies

This practice shall be used where the drainage area to an inlet is disturbed, it is not possible to temporarily divert the storm drain outfall into a trapping device, and watertight blocking of inlets is not advisable. **It is not to be used in place of sediment trapping devices.** This practice shall be used with an upstream buffer strip if placed at a storm drain inlet on a paved surface. It may be used in conjunction with storm drain diversion to help prevent siltation of pipes installed with low slope angle.

Types of Storm Drain Inlet Practices

There are five (5) specific types of storm drain inlet protection practices that vary according to their function, location, drainage area, and availability of materials:

I. Excavated Drop Inlet Protection
II. Fabric Drop Inlet Protection
III. Stone & Block Drop Inlet Protection
IV. Paved Surface Inlet Protection
V. Manufactured Insert Inlet Protection

Design Criteria

Drainage Area – The drainage area for storm drain inlets shall not exceed one acre. Erosion control/temporary stabilization measures must be implemented on the disturbed drainage area tributary to the inlet. The crest elevations of these practices shall provide storage and minimize bypass flow.

Type I – Excavated Drop Inlet Protection

This practice is generally used during initial overlot grading after the storm drain trunk line is installed.

Limit the drainage area to the inlet device to 1 acre. Excavated side slopes shall be no steeper than 2:1. The minimum depth shall be 1 foot and the maximum depth 2 feet as measured from the crest of the inlet structure. Shape the excavated basin to fit conditions with the longest dimension oriented toward the longest inflow area to provide maximum trap efficiency. The capacity of the excavated basin should be established to contain 900 cubic feet per acre of disturbed area. Weep holes, protected by fabric and stone, should be provided for draining the temporary pool.

Inspect and clean the excavated basin after every storm. Sediment should be removed when 50 percent of the storage volume is achieved This material should be incorporated into the site in a stabilized manner.

Type II – Fabric Drop Inlet Protection

This practice is generally used during final elevation grading phases after the storm drain system is completed.

Limit the drainage area to 1 acre per inlet device. Land area slope immediately surrounding this device should not exceed 1 percent. The maximum height of the fabric above the inlet crest shall not exceed 1.5 feet unless reinforced.

The top of the barrier should be maintained to allow overflow to drop into the drop inlet and not bypass the inlet to

unprotected lower areas. Support stakes for fabric shall be a minimum of 3 feet long, spaced a maximum 3 feet apart. They should be driven close to the inlet so any overflow drops into the inlet and not on the unprotected soil. Improved performance and sediment storage volume can be obtained by excavating the area.

Inspect the fabric barrier after each rain event and make repairs as needed. Remove sediment from the pool area as necessary with care not to undercut or damage the filter fabric. Upon stabilization of the drainage area, remove all materials and unstable sediment and dispose of properly. Bring the adjacent area of the drop inlet to grade, smooth and compact and stabilize in the appropriate manner to the site.

Type III – Stone and Block Drop Inlet Protection

This practice is generally used during the initial and intermediate overlot grading of a construction site.

Limit the drainage area to 1 acre at the drop inlet. The stone barrier should have a minimum height of 1 foot and a maximum height of 2 feet. Do not use mortar. The height should be limited to prevent excess ponding and bypass flow.

Recess the first course of blocks at least 2 inches below the crest opening of the storm drain for lateral support. Subsequent courses can be supported laterally if needed by placing a 2x4 inch wood stud through the block openings perpendicular to the course. The bottom row should have a few blocks oriented so flow can drain through the block to dewater the basin area.

The stone should be placed just below the top of the blocks on slopes of 2:1 or flatter. Place hardware cloth of wire mesh with ½ inch openings over all block openings to hold stone in place.

As an optional design, the concrete blocks may be omitted and the entire structure constructed of stone, ringing the outlet ("doughnut"). The stone should be kept at a 3:1 slope toward the inlet to keep it from being washed into the inlet. A level area 1 foot wide and four inches below the crest will further prevent wash. Stone on the slope toward the inlet should be at least 3 inches in size for stability and 1 inch or smaller away from the inlet to control flow rate. The elevation of the top of the stone crest must be maintained 6 inches lower than the ground elevation down slope from the inlet to ensure that all storm flows pass over the stone into the storm drain and not past the structure. Temporary diking should be used as necessary to prevent bypass flow.

The barrier should be inspected after each rain event and repairs made where needed. Remove sediment as necessary to provide for accurate storage volume for subsequent rains. Upon stabilization of contributing drainage area, remove all materials and any unstable soil and dispose of properly.

Bring the disturbed area to proper grade, smooth, compact and stabilize in a manner appropriate to the site.

Type IV – Paved Surface Inlet Protection

This practice is generally used after pavement construction has been done while final grading and soil stabilization is occurring. These practices should be used with upstream buffer strips in linear construction applications, and with temporary surface stabilization for overlot areas, to reduce the sediment load at the practice. This practice includes sand bags, compost filter socks, geo-tubes filled with ballast, and manufactured surface barriers. Pea gravel can also be used in conjunction with these practices to improve performance. When the inlet is not at a low point, and is offset from the pavement or gutter line, protection should be selected and installed so that flows are not diverted around the inlet.

The drainage area should be limited to 1 acre at the drain inlet. All practices will be placed at the inlet perimeter or beyond to maximize the flow capacity of the inlet. Practices shall be weighted, braced, tied, or otherwise anchored to prevent movement or shifting of location on paved surfaces. Traffic safety shall be integrated with the use of this practice. All practices should be marked with traffic safety cones as appropriate. Structure height shall not cause flooding or by-pass flow that would cause additional erosion.

The structure should be inspected after every storm event. Any sediment should be removed and disposed of on the site. Any broken or damaged components should be replaced. Check all materials for proper anchorage and secure as necessary.

Type V - Manufactured Insert Inlet Protection

The drainage area shall be limited to 1 acre at the drain inlet. All inserts will be installed and anchored in accordance with the manufacturers recommendations and design details. The fabric portion of the structure will equal or exceed the performance standard for the silt fence fabric. The inserts will be installed to preserve a minimum of 50 percent of the open, unobstructed design flow area of the storm drain inlet opening to maintain capacity for storm events.

Figure 5.31
Excavated Drop Inlet Protection

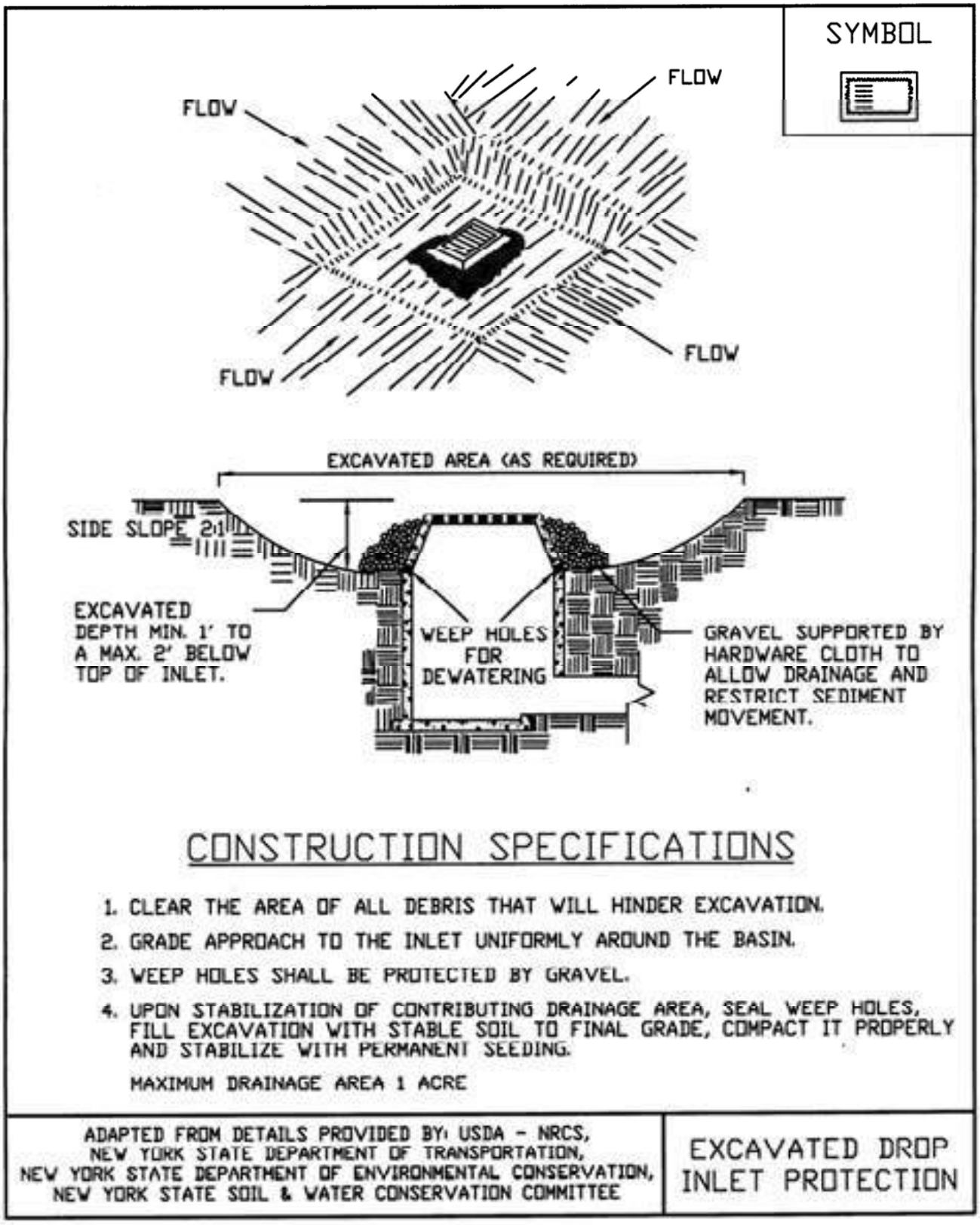


Figure 5.32
Fabric Drop Inlet Protection

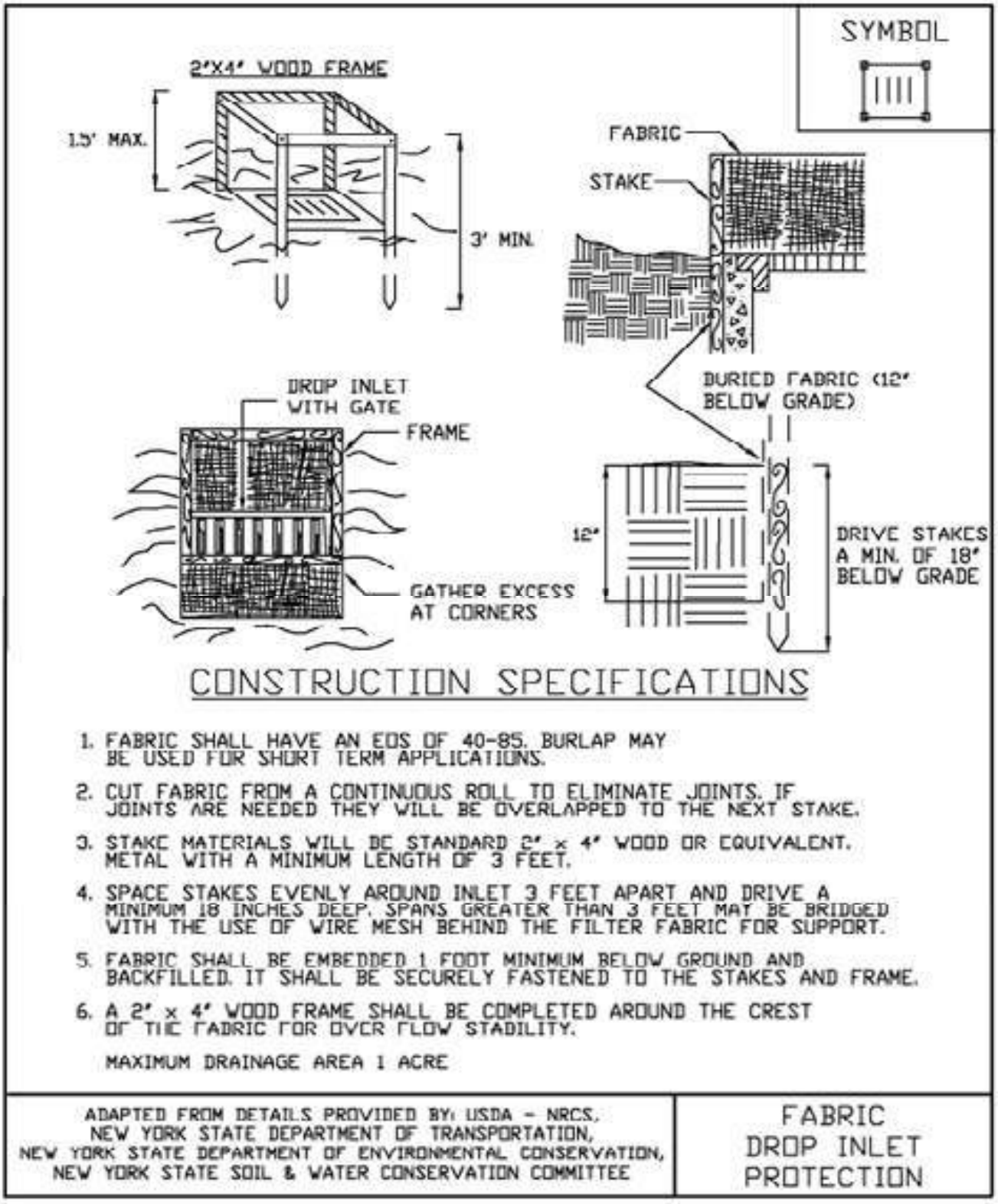
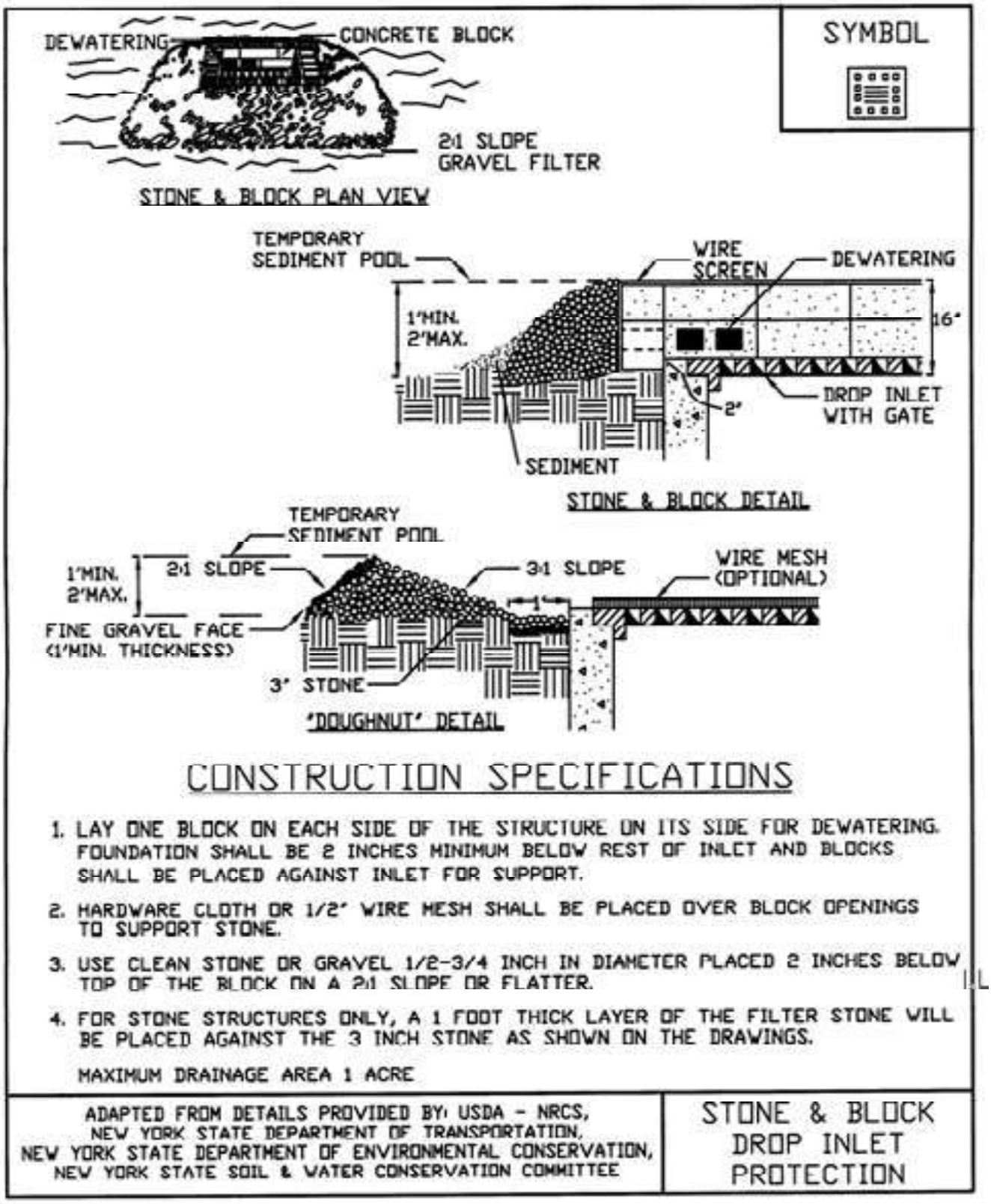


Figure 5.33
Stone & Block Drop Inlet Protection



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 a 4% slope and 2 ft. high stone check dams, they are spaced as follows:

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

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.

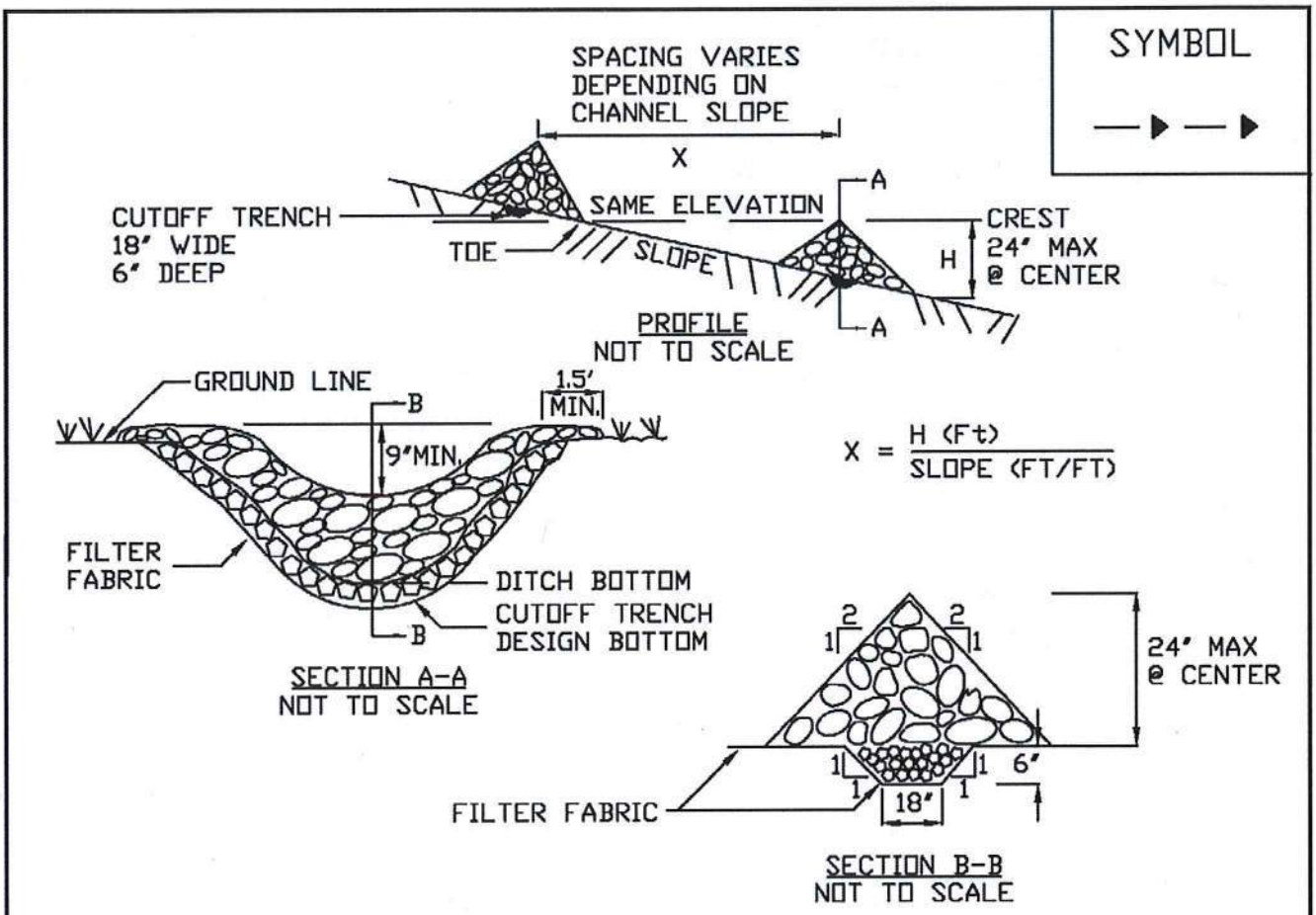
For filter sock or fiber roll check dams: The check dams will be anchored by staking the dam to the earth contact surface. The dam will extend to the top of the bank. The check dam will have a splash apron of NYS DOT #2 crushed stone extending a minimum 3 feet downstream from the dam and 1 foot up the 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



CONSTRUCTION SPECIFICATIONS

1. STONE WILL BE PLACED ON A FILTER FABRIC FOUNDATION TO THE LINES, GRADES AND LOCATIONS SHOWN IN THE PLAN.
2. SET SPACING OF CHECK DAMS TO ASSUME THAT THE ELEVATIONS OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION OF THE TOE OF THE UPSTREAM DAM.
3. EXTEND THE STONE A MINIMUM OF 1.5 FEET BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM.
4. PROTECT THE CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH STONE OR LINER AS APPROPRIATE.
5. ENSURE THAT CHANNEL APPURTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONE.

MAXIMUM DRAINAGE AREA 2 ACRES.

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	STONE CHECK DAM

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