STORMWATER POLLUTION PREVENTION PLAN for CONSTRUCTION ACTIVITIES at

WILSON HILL SOLAR, LLC
TOWN OF HOOSICK, NY

Prepared for

WILSON HILL SOLAR, LLC, A SUBSIDIARY OF NEXAMP, INC.
101 SUMMER STREET, 2ND FLOOR
BOSTON NY, 02110

Prepared by
The Environmental Design Partnership, LLP
900 Route 146
Clifton Park, NY 12065
Telephone: (518) 371-7621
Facsimile: (518) 371-9540

SEPTEMBER, 2023

NOI Permittee: WILSON HILL SOLAR, LLC
WILSON HILL SOLAR

Table of Contents

SECTION 1

Written Stormwater Pollution Prevention Plan

I. SCOPE

A. **PURPOSE:** WILSON HILL SOLAR, LLC intends to implement the appropriate Stormwater Pollution Prevention Plan measures in accordance with the SPDES general permit governing stormwater discharges during construction, and in accordance with erosion control practices. This section provides a descriptive explanation of the means by which WILSON HILL SOLAR, LLC will comply with the National Stormwater Pollution Prevention Program.

B. **NPDES GENERAL PERMITS FOR STORMWATER DISCHARGE FROM CONSTRUCTION SITES:** Regulations promulgated by the New York State Department of Environmental Conservation (NYSDEC) regulate the discharge of storm water from construction activities on sites where one (1) or more acres of soil is disturbed. One of the ways to comply with these regulations for affected sites is to request coverage under the General Permit for Construction Activities. (Copy enclosed herewith) In order to be authorized to discharge under the General Permit, a Stormwater Pollution Prevention Plan (SWPPP) for the site must be prepared in accordance with all applicable requirements of this permit and followed during the construction activities. If the construction activity is **not** subject to the requirements of a regulated, traditional land use control MS4 a Notice of Intent (NOI) form must be completed and received by the New York State Department of Environmental Conservation at least 5-days prior to any earth-disturbing activities. If the construction activity is subject to the requirements of a regulated, traditional land use control MS4, then the owner/operator must have its SWPPP reviewed and accepted by the MS4 prior to submitting the NOI to the Department. The owner/operator shall have the "MS4 SWPPP Acceptance" form signed and then submit that form along with the NOI to the Department.

C. **RESPONSIBILITIES OF CONTRACTOR REGARDING THE GENERAL PERMIT:** The CONTRACTOR shall manage the discharge of stormwater from the site in accordance with the SPDES General Permit for Construction Activities conditions and the following provisions of this section of the specifications. The CONTRACTOR shall be responsible for conducting the stormwater management practices in accordance with the permit. The CONTRACTOR shall be responsible for providing qualified inspectors to conduct the inspections required by the SWPPP. The CONTRACTOR shall be responsible for any enforcement action taken or imposed by federal, state, or local agencies, including the cost of fines, construction delays, and remedial actions resulting from the CONTRACTOR'S failure to comply with the permit provisions. It shall be the responsibility of the CONTRACTOR to make any changes to the SWPPP necessary when the CONTRACTOR or any of his subcontractors elects to use borrow or fill or material storage sites, either contiguous to or remote from the construction site, when such sites are used solely for this construction site. Such sites are considered to be part of the construction site covered by the permit and this SWPPP. Off-site borrow, fill, or material storage sites which are used for multiple construction projects are not subject to this requirement, unless specifically required by state or local jurisdictional entity regulations. The CONTRACTOR should consider this requirement in negotiating with earthwork subcontractors, since the choice of an off-site borrow, fill, or material storage site may impact their duty to implement, make changes to, and perform inspections required by the SWPPP for the site.

D. **NOTICE OF INTENT:** The NOI Permittee petitions the New York State Department of Environmental Conservation for the stormwater discharges during construction at this site to be covered by the SPDES General Permit for Construction Activity for the State of New York. A Notice of Intent (NOI) (using the form required by the NYSDEC) to be covered under this permit is hereby filed. An Erosion and Sediment Control Plan has been prepared and is attached herewith.

E. **CONTRACTOR RESPONSIBILITIES**: The SWPPP and associated Erosion and Sediment Control Plans represent the **MINIMUM** erosion and sediment control measures that will be required to protect the site during construction. WILSON HILL SOLAR, LLC and the CONTRACTOR understand that additional erosion and sediment control measures will be necessary during construction. It will be the responsibility of the CONTRACTOR to implement additional erosion and sediment control measures as necessary to protect the site during construction. WILSON HILL SOLAR, LLC and the CONTRACTOR shall designate a Project Manager prior to commencing construction. The Project Manager will ensure that all construction managers and sub-contractors are appropriately assigned and understand the importance of the following topics:

- Erosion and Sedimentation Control for Water Quality Protection
- Implementation of the Erosion and Sedimentation Control Plan
- The Importance to Proper Installation of Erosion and Sedimentation Control Measures
- Regular Inspection by qualified personnel of Erosion and Sedimentation Control Measures
- Diligent Maintenance of Erosion and Sedimentation Control Measures
- Contemporaneous preparation of accurate and complete records regarding inspection and maintenance of Erosion and Sedimentation Control Measures
- Record Keeping for Inspections and Maintenance activities

F. **REQUIREMENTS FOR THE CONTRACTOR AND SUBCONTRACTOR(S):** The *SWPPP Ledger* shall provide a "Contractor's Certification Log" **(Form 2)**, identifying the Company Name, Business Address and Telephone Number along with the Responsible Person for the CONTRACTOR and all subcontractors' who will implement the measures identified in the SWPPP. Each of the entities identified on **Form 2** shall sign a "Contractor's Certification" **(Form 3)**, verifying they have been instructed and fully understand the requirements of the New York State Department of Environmental Conservation and SWPPP. **This certification must be signed, by a fully qualified individual on behalf of each entity, prior to the beginning of any construction activities and shall be filed in the project's *SWPPP* Ledger.**

Additionally, the "Trained Contractor" must be identified on Form 3 and his/her credentials should be kept on-site in the SWPPP ledger.

G. **STORMWATER POLLUTION PREVENTION PROGRAM LOCATION REQUIREMENTS:** The *SWPPP Ledger* is meant to be a working document that shall be maintained at the site of the Construction Activities at all times throughout the project, shall be readily available upon request by the NOI Permittee's personnel or New York State Department of Environmental Conservation or any other agency with regulatory authority over stormwater issues, and shall be kept on-site until the site complies with the Final Stabilization section of this document. Refer to Part VII., F., Duty to Provide Information, of the General Permit for additional public viewing requirements.

H. **SWPPP LEDGER:** The SWPPP Ledger shall be a 3-ring Binder, tabbed and indexed for the following sections:

SECTION 1:
- **Written SWPPP**

SECTION 2:
- **Site Map and General Location Map**
- **Erosion and Sediment Control Plan(s)**

SECTION 3:
- **New York State Notice of Intent**
- **New York State NOI Acknowledgement Letter**

SECTION 4:
- **New York State SPDES General Permit**

SECTION 5:
- **NOI Permittee's Certification (Form 1)**
- **Contractor's/Subcontractor's Certification Log (Form 2)**
- **Contractor's Certification for each contractor listed on Form 2 (Form 3)**

- **Inspection Report (Form 4)**
- **Modification Report (Form 5)**
- **Record of Stabilization and Construction Activities Report (Form 6)**
- **Record of Temporary Erosion and Sediment Control Practices (Form 6A)**
- **Project Rainfall Log (Form 7)**
- **Final Stabilization/Termination Checklist (Form 8)**

SECTION 6:

- **Supplemental Information**
  – Stormwater Management Report
  – FEMA Flood Mapping
  – NYSDEC ERM Mapper
  – SHPO Letter of No Effect
  – Soils Report (USDA)
  – USFW IPAC Results

SECTION 7:

- **Completed Inspection Forms**

The Project Manager must review and evaluate for compliance the *SWPPP Ledger* at each Project Review meeting. All Inspection and Maintenance Forms (*Forms 4 - 7*) will be initialed by the Project Manager at each reporting interval.

I. **INSPECTIONS AND RECORD KEEPING:** Inspections are required at least weekly by a "Qualified Inspector". Sites that have a waiver to disturb greater than five (5) acres require two (2) inspections every seven (7) days with at least two (2) days between inspections. Inspections shall continue until the site complies with the "Final Stabilization" section of this document and a Notice of Termination (NOT) has been filed with the NYSDEC. Each inspection must be followed up by a report documenting the inspector's findings and request the required maintenance and/or repair for the erosion and sedimentation control measures. The inspector shall notify the Project Manager within one day of the inspection of any deficiencies. Within one day of this notification the Project Manager must commence with corrective measures. It is imperative that the Project Manager documents the Inspection and Maintenance of all erosion and sedimentation control measures as soon as possible after the inspection and/or maintenance is completed. These records are used to prove that the required inspection and maintenance were performed and shall be placed in the *SWPPP Ledger*. In addition to inspection and maintenance reports, records should be kept of the Construction Activities that occur on the site. The Project Sponsor shall retain copies of the SWPPP, all reports and data for a minimum of five (5) years after the project is complete. The following list identifies the **required** Inspection and Maintenance documentation that must be maintained by the Project Manager under this SWPPP.

- **Form 4** **Inspection Report for SWPPP**
- **Form 5** **Requested Changes to the SWPPP (Modification Report)**
- **Form 6** **Record of Stabilization and Construction Activities**
- **Form 6A** **Record of Temporary Erosion and Sediment Control Practices**
- **Form 7** **Project Rainfall Log**

J. **SWPPP MODIFICATIONS:** The inspection report should also identify if any revisions to the SWPPP are warranted due to unexpected conditions. The SWPPP is meant to be a dynamic working guide that is to be kept current and amended whenever the design, construction, operation, or maintenance of the site changes in a way which significantly affects the potential for the discharge of pollutants or when the plan proves to be ineffective in eliminating or significantly minimizing pollutant discharges. Any such changes to the SWPPP must be made in writing on the Modification Report Form **(Form 5)** within 7 days of the date such modification or amendment is made. The CONTRACTOR'S failure to monitor or report deficiencies to the NOI Permittee will result in the CONTRACTOR being liable for fines and construction delays resulting from any federal, state, or local agency enforcement action.

K. **FINAL STABILIZATION AND TERMINATION OF PERMIT COVERAGE:** The site will be considered finally stabilized when all soil disturbing activities have been completed and a uniform perennial vegetative cover for the unpaved areas and areas not covered by permanent structures has been established or equivalent permanent stabilization measures have been established and the development area no longer discharges stormwater associated with construction activities and a Notice of Termination (NOT) form filed by the NOI Permittee with the New York State Department of Environmental Conservation. This filing terminates coverage under the General Permit and terminates the CONTRACTOR'S responsibility to implement the SWPPP. Requirements of the SWPPP, including periodic inspections, must be continued until the NOT is filed.

II. SITE DESCRIPTION

A. PROJECT NAME AND LOCATION

The Wilson Hill Solar, LLC project site is geographically situation at Latitude N 42° 54' 10.9", Longitude W 73° 22' 50.7" in the Town of WILSON HILL SOLAR, RENSSELAER COUNTY, NEW YORK. The site is located on the north side of WILSON HILL ROAD, east of the intersection with FOG HILL ROAD. The project site is comprised of 99.52 +/- acres of land. The overall disturbance area is 25.1 acres. The project is bounded on the north, east, and west by PRIVATE PROPERTY and on the south by WILSON HILL ROAD. Access to the project will be from WILSON HILL ROAD. The entire parcel will remain privately owned and maintained. Approximately ±7.60 acres of impervious surfaces, including travel surfaces and buildings will be constructed. Reclamation of disturbed areas will be conducted on an ongoing basis as construction progresses.

B. NOI PERMITTEE'S NAME AND ADDRESS

WILSON HILL SOLAR, LLC
101 SUMMER STREET, 2nd FLOOR
BOSTON, MA 02110

C. PROJECT DESCRIPTION

The project will involve the installation of 585 W solar modules installed on a ground mounted racking system. The modules will be wired in series strings and connected in parallel to the inverters, which convert the photovoltaic output power from DC to AC. The solar electric system will be interconnected with the existing site electrical system in accordance with the applicable electrical code and National Grid requirements, and as approved by the Town of Hoosick. Also included, as a permanent element of the development is on-site stormwater management. The estimated time for completion of the construction project is approximately one (1) year.

The proposed project will consist of the following key components:

- Solar modules
- Power inverter enclosures
- Power transformers
- Underground electrical conduits
- Operations and Maintenance (O&M)
- Building supervisory control and data acquisition (SCADA) system
- Overhead interconnection electrical line
- Access and maintenance roads

D. RUNOFF COEFFICIENT, SOILS, AND RAINFALL INFORMATION

The predevelopment Curve Number (CN) for green areas was determined to be 71 (HSG C) or 78 (HSG D). Soils within the project area consist of silty loams that fall in the hydrologic soil group C or D, as described by the Soil Conservation Service. The post development CN for disturbed green areas is 71 (HSG C) or 78 (HSG D), and the weighted CN for the post-development contributing area is 78. A CN of 98 was used for all post-development impervious surface areas.

The site is in Rensselaer County, which receives an average of 42 inches of rainfall annually with the highest amounts of rainfall received in the months of June and July.

E. NAME OF RECEIVING WATERS

Drainage will be direct to open, vegetated swales along the proposed access roads to a series of stormwater management or stormwater diversion areas (bioretention area, ponds), with emergency overflows directed to the existing drainage corridors to the east.

F. INDIAN COUNTRY LANDS

The site is not located on any known current or previously designated Indian Country lands.

G. ENDANGERED OR THREATENED SPECIES

A review of the New York State Department of Environmental Conservation's (NYSDEC) Environmental Resource Mapper (http://www.dec.ny.gov/imsmaps/ERM/viewer.htm) indicated no known State regulated rare plants, rare animals or significant natural communities on-site. A letter has been directed to NYSDEC New York Natural Heritage Program requesting they provide us with a determination as to whether the proposed activity is likely to result in the take or taking of any species listed as endangered or threatened in 6 NYCRR Part 182.

H. HISTORIC PLACES

A review of the New York State Historic Preservation Office (OPRHP) Geographic Information System Mapper (http://www.oprhp.state.ny.us/nr/main.asp) indicated that the site is not located in an archeo sensitive area. A letter has been received from the OPRHP Historic Preservation Field Services Bureau stating that the project is likely to have no impact. This letter is included within Section 6 of the SWPPP.

III. CONTROLS

A. EROSION AND SEDIMENT CONTROLS

The following section describes the anticipated Erosion and Sediment Controls required for use during construction of the proposed site. These controls represent the **MINIMUM** erosion and sediment control measures that will be required to protect the site during construction. **Additional erosion and sediment control measures will be necessary during construction.** It will be the responsibility of the NOI permittee to authorize the CONTRACTOR to implement all additional erosion and sediment control measures necessary to protect the site during construction.

1. Stabilization practices include (but not limited to):
   a) Land clearing activities shall be done only in areas where earthwork will be performed and shall progress as earthwork is needed
   b) Frequent watering of excavation and fill areas to minimize wind erosion during construction.
   c) Use of stabilization fabric for all slopes having a slope of 1V:3H or greater.

d) Seeding and planting of all unpaved areas
   - Temporary seedings should be made within 24 hours of construction or disturbance. If not, the soil must be scarified prior to seeding.
   - Broadcasting or hydroseeding may be used as seeding methods.
   - Seeding mixtures should be as follows
     a) Ryegrass (annual or perennial) applied at 30 lbs. per acre (0.7 lbs./1000 sq. ft.)
     b) Certified "Aroostook" winter rye (cereal rye) applied at 100 lbs. per acre (2.5 lbs./1000 sq. ft.) *Winter rye shall be used if seeding in October/November.

e) Topsoiling
   - Scarify all compact, slowly permeable, medium and fine textured subsoil areas. Scarify at approximately right angles to the slope direction in soil areas that are steeper than 5 percent.
   - Remove refuse, woody plant parts, stones over 3 inches in diameter, and other liter.
   - Topsoil material shall have at least 2 percent by weight of fine textured stable organic material, and no greater than 6 percent.
   - Topsoil shall have no less than 20 percent fine textured material (passing the No. 200 sieve) and not more than 15 percent clay.
   - Topsoil shall not be placed when it is partly frozen, muddy, or on frozen slopes or over ice, snow, or standing water.

f) Mulching
   - For grass / legume establishment apply straw mulch applied at 2 ton/acre (90 lbs./1000 sq. ft.) and anchor with wood fiber mulch (hydromulch) at 500-750 lbs./acre (11 – 17 lbs./1000 sq. ft.)

g) Protecting Vegetation During Construction
   - Limit soil placement over existing tree and shrub roots to a maximum of 3 inches.
   - Use retaining walls and terraces to protect roots of trees and shrubs when grades are lowered. Lowered grades should start no closer than the dripline of the tree.
   - Avoid trenching within the dripline of the tree.
   - Construction limits should be identified and clearly marked to exclude equipment.

2. Structural practices include (but not limited to):

a) Inlet protection and outlet protection using silt fences
   - See detail on Erosion and Sediment Control Plans

b) Perimeter protection using silt fences

c) Sediment basin(s)

d) Stabilized construction exit points
   - Aggregate size shall be 2 inch stone or reclaimed / recycled concrete equivalent
   - Thickness shall be not less than 6 inches
   - Width to be the full width of the access point, but not less than 12 ft
   - Length shall be as required, but not less than 50 ft.
   - Filter cloth shall be applied over the entire area to be covered with aggregate
   - The entrance shall be maintained in a condition which will prevent tracking of sediment onto public rights-of-way or streets. When necessary, wheels must be cleaned to remove sediment prior to entrance onto public rights-of-way.

e) Storm sewer

f) Stormwater detention ponds (which may also serve as a temporary sediment basin)

g) Straw Bale Dike
   - Straw bale dikes have an estimated design life of three months.
   - Shall only be used where no other practice is feasible

i) Stone Check Dam
   - Use graded stone 2 to 15 inches in size

- Sediment accumulated behind the check dam shall be removed as needed to allow drainage through the check dam and prevent large flows from carrying sediment over the dam.

3. Sequence of Major Activities

The CONTRACTOR will be responsible for implementing erosion and sediment control measures outlined in the SWPPP and any additional erosion and sediment control measures required to stabilize the site. The CONTRACTOR may designate these tasks to certain subcontractors as appropriate, but the ultimate responsibility for implementing these controls and ensuring their proper functioning remains with the CONTRACTOR. The order of activities will be as follows (refer to Stormwater Pollution Prevention Plan Sheet contained in this SWPPP for additional details):

a) Construct temporary construction exits at locations shown on the SWPPP plan sheet.

b) Install perimeter silt fences and stormwater ponds. Stormwater ponds are to be used as temporary sediment basins during construction.

c) Begin clearing and grubbing operations. Clearing and grubbing shall be done only in areas where earthwork will be performed and only in areas where building is planned to commence within 7 days after clearing and grubbing. Clearing and grubbing operations shall be limited so that no more than 5 acres of disturbed soil exists at any one time without prior written approval from the NYS DEC.

d) Frequent watering of the excavation and fill areas shall be done to minimize wind erosion.

e) Commence site grading and new building construction.

f) Disturbed areas of the site where construction activity has ceased for more than 7 days should be temporarily seeded and watered.

g) Install protective silt fences at all grate inlets, curb inlets, and at the ends of all exposed storm sewer pipes.

h) Finalize pavement subgrade preparation.

i) Construct all curb and gutter, gutter inlets, area inlets, and storm sewer manholes, as shown on the plans. Place required riprap at locations shown on the plans.

j) Remove silt fences around inlets and manholes no more than 48 hours prior to placing stabilized base course.

k) Install base material as required for pavement.

l) Carry out final grading and seeding and planting, including stormwater management basins.

m) Remove silt fencing only after all paving is complete and exposed surfaces are stabilized.

n) Remove temporary construction exits only prior to pavement construction in these areas (These areas are to be paved last).

4. Stormwater Management

The proposed stormwater management system was designed by The Environmental Design Partnership, Clifton Park, NY. The following paragraphs summarize the stormwater management measures to be incorporated on the site to control pollutants in stormwater discharges after construction is completed. A copy of the Stormwater Management Report is enclosed under Section 6 – Supplemental Information.

Five (5) stormwater management areas, constructed as bioretention areas and a wet pond, will be constructed to provide sufficient volume to hold all storm events up to 100 years and allow the water to recharge into the ground. The basins will have an emergency overflow spillway area to provide a safe overland flow path in the event that the basin capacities may be exceeded.

5. Post-Construction Maintenance of the Stormwater Management System

Post construction maintenance and protection of the Stormwater Management System shall be performed in accordance with Section VI. LONG TERM OPERATION AND MAINTENANCE PROCEDURES of the SWPPP.

B. OTHER CONTROLS

1. Waste Disposal

All waste materials will be collected and stored in a securely lidded metal dumpster rented from a local waste management company which must be a solid waste management company licensed to do business in New York State. The dumpster will comply with all local and state solid waste management regulations.

All trash and construction debris from the site will be deposited in the dumpster. The dumpster will be emptied as often as necessary, and the trash will be hauled to a landfill approved by New York State and the local government authority. No construction waste materials will be buried on site. All personnel will be instructed regarding the correct procedures for waste disposal. Notices stating these practices will be posted in the job site construction office trailer, and the job site superintendent will be responsible for seeing that these procedures are followed.

2. Sanitary Waste

All sanitary waste will be collected from the portable units a minimum of two times per week by a licensed portable facility provider in complete compliance with local and state regulations.

3. Off-Site Vehicle Tracking

A stabilized construction exit will be provided to help reduce vehicle tracking of sediments. The paved streets adjacent to the site entrance will be inspected daily and swept as necessary to remove any excess mud, dirt, or rock tracked from the site. Dump trucks hauling material from the construction site will be covered with a tarpaulin. The job site superintendent will be responsible for seeing that these procedures are followed.

4. Concrete Waste From Concrete Trucks

a) Emptying of excess concrete and/or washout from concrete delivery trucks will be allowed on the job site, but only in either (1) specifically designated diked areas which have been prepared to prevent contact between the concrete and/or washout and stormwater which will be discharged from the site or (2) in locations where waste concrete can be poured into forms to make riprap or other useful concrete products.

b) The hardened residue from the concrete washout diked areas will be disposed of in accordance with the procedures given in the Spill Prevention Control and Countermeasures (SPCC) Plan and in accordance with applicable state and federal regulations. The job site superintendent will be responsible for seeing that these procedures are followed.

5. Hazardous Substances and Hazardous Waste

a) All hazardous waste materials will be disposed of by the CONTRACTOR in the manner specified by local, state, and/or federal regulations and by the manufacturer of such products. Site personnel will be instructed in these practices by the job site superintendent, who will also be responsible for seeing that these practices are followed. Material Safety Data Sheets (MSDS's) for each substance with hazardous properties that is used on the job site will be obtained and used for the proper management of potential wastes that may result from these products. An MSDS will be posted in the immediate area where such product is stored and/or used and another copy of each MSDS will be maintained in the SWPPP file at the job site construction trailer office. Each employee who must handle a substance with hazardous properties will be instructed on the use of MSDS sheets and the specific information in the applicable MSDS for the product he/she is using, particularly regarding spill control techniques.

b) The CONTRACTOR will implement the Spill Prevention Control and Countermeasures (SPCC) Plan found within this SWPPP and will train all personnel in the proper cleanup and handling of spilled materials. No spilled hazardous materials or hazardous wastes will be allowed to come in contact with stormwater discharges. If such contact occurs, the stormwater discharge will be contained on site until appropriate measures in compliance with state and federal regulations are taken to dispose of such contaminated stormwater. It shall be the responsibility of the job site superintendent to properly train all personnel in the use of the SPCC plan.

c) Any spills of hazardous materials which are in quantities in excess of Reportable Quantities as defined by EPA regulations shall be immediately reported to the EPA National Response Center 1-800-424-8802.

d) In order to minimize the potential for a spill of hazardous materials to come into contact with stormwater, the following steps will be implemented:

- All materials with hazardous properties (such as pesticides, petroleum products, fertilizers, detergents, construction chemicals, acids, paints, paint solvents, cleaning solvents, additives for soil stabilization, concrete curing compounds and additives, etc.) will be stored in a secure location, under cover, when not in use. All such materials shall have secondary containment to prevent contamination of soil and runoff.
- The minimum practical quantity of all such materials will be kept on the job site.
- A spill control and containment kit (containing, for example, absorbent such as kitty litter or sawdust, acid neutralizing powder, brooms, dust pans, mops, rags, gloves, goggles, plastic and metal trash containers, etc.) will be provided at the storage site.
- All of the product in a container will be used before the container is disposed of. All such containers will be triple-rinsed with water prior to disposal. The rinse water used in these containers will be disposed of in a manner in compliance with state and federal regulations and will not be allowed to mix with stormwater discharges.
- All products will be stored in and used from the original container with the original product label.
- All products will be used in strict compliance with instructions on the product label.
- The disposal of excess or used products will be in strict compliance with instructions on the product label.

6. Contaminated Soils

a) Any contaminated soils (resulting from spills of materials with hazardous properties) which may result from construction activities will be contained and cleaned up immediately in accordance with the procedures given in the Spill Prevention Control and Countermeasures (SPCC) Plan and in accordance with applicable state and federal regulations.

b) The job site superintendent will be responsible for seeing that these procedures are followed.

IV. COMPLIANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS

A. The CONTRACTOR will obtain copies of any and all local and state regulations that are applicable to stormwater management, erosion control, and pollution minimization at this job site and will comply fully with such regulations. The CONTRACTOR will submit written evidence of such compliance if requested by any agent of a regulatory body. The CONTRACTOR will comply with all conditions of the New York State Department of Environmental Conservation SPDES General Permit for Construction Activities, including the conditions related to maintaining the SWPPP and evidence of compliance with the SWPPP at the job site and allowing regulatory personnel access to the job site and to records in order to determine compliance.

V. MAINTENANCE/INSPECTION PROCEDURES DURING CONSTRUCTION

A. Erosion and Sediment Control and Stabilization Measures Maintenance and Inspection Practices

1. The following is a list of erosion and sediment controls to be used on this site during construction practice.

   a) Stabilization practices for this site include:
      - Land clearing activities shall be done only in areas where earthwork will be performed and shall progress as earthwork is needed
      - Frequent watering of excavation and fill areas to minimize wind erosion during construction.
      - Use of stabilization fabric for all slopes having a slope of 1V:3H or greater.
      - Permanent seeding and planting of all unpaved areas using the hydromulching grass seeding technique.

   b) Structural practices for this site include:
      - Perimeter protection using silt fences
      - Inlet protection and outlet protection using silt fences
      - Storm sewer
      - Stabilized construction exit points
      - Stormwater detention ponds (which may also serve as a temporary sediment basin)

2. The following inspection and maintenance practices will be used to maintain erosion and sediment controls and stabilization measures.

   a) All control measures will be inspected once every seven (7) days at a minimum. Sites that have a waiver to disturb greater than five (5) acres require two (2) inspections every seven (7) days with at least two (2) days between inspections.
   b) All measures will be maintained in good working order; if repairs are found to be necessary, they will be initiated within 24 hours of report.
   c) Built up sediment will be removed from silt fence when it has reached one-third the height of the fence.
   d) Silt fences will be inspected for depth of sediment, tears, etc., to see if the fabric is securely attached to the fence posts, and to see that the fence posts are securely in the ground.
   e) The sediment basins will be inspected for depth of sediment, and built up sediment will be removed when it reaches 50 percent of the capacity.
   f) Temporary and permanent seeding and all other stabilization measures will be inspected for bare spots, washouts, and healthy growth.

g) A maintenance inspection report will be made after each inspection. Copies of the report forms to be completed by the inspector are included in this SWPPP.
h) The job site superintendent will be responsible for selecting and training the individuals who will be responsible for these inspections, maintenance and repair activities, and filling out inspection and maintenance reports.
i) Personnel selected for the inspection and maintenance responsibilities will receive appropriate instruction from the job site superintendent. They will be trained in all the inspection and maintenance practices necessary for keeping the erosion and sediment controls that are used onsite in good working order. They will also be trained in the completion of, initiation of actions required by, and the filing of the inspection forms. Documentation of this personnel training will be kept on site with the SWPPP.
j) Disturbed areas and material storage areas will be inspected for evidence of or potential for pollutants entering stormwater systems.
k) Report to the NYS Department of Environmental Conservation within 24 hours any noncompliance with the SWPPP that will endanger public health or the environment. Follow up with a written report within 5 days of the noncompliance event.

B. Inspection and Maintenance Report Forms

Once installation of any required or optional erosion control device or measure has been implemented, weekly inspections of each measure shall be performed by the CONTRACTOR'S inspection personnel. The Inspection and Maintenance Reports found in this SWPPP shall be used by the inspectors to inventory and report the condition of each measure to assist in maintaining the erosion and sediment control measures in good working order.

These report forms shall become an integral part of the SWPPP and shall be made readily accessible to governmental inspection officials, the NOI Permittee's Engineer, and the NOI Permittee for review upon request during visits to the project site. In addition, copies of the reports shall be provided to any of these persons, upon request, via mail or facsimile transmission. Inspection and maintenance report forms are to be maintained by the NOI Permittee for five years following the final stabilization of the site.

C. Other Record-Keeping Requirements

The CONTRACTOR shall keep the following records related to construction activities at the site:
- Dates when major grading activities occur and the areas that were graded
- Dates and details concerning the installation of structural controls
- Dates when construction activities cease in an area
- Dates when areas are stabilized, either temporarily or permanently
- Dates of rainfall and the amount of rainfall
- Dates and descriptions of the character and amount of any spills of hazardous materials
- Records of reports filed with regulatory agencies if reportable quantities of hazardous materials spilled

D. Winter Operations

The following is a list of erosion and sediment controls and inspection and maintenance practices for winter operations for this site.

a) **Prior to November 1st of any given year all exposed soil areas must be covered with:**
- Mulch
- Seed and mulch
- Geotextile
- Erosion control matting
- Rock or
- Other approved mulch to prevent soil from eroding

b) Install sediment barriers (silt fence or drop inlet protection) at ALL necessary perimeter and sensitive locations BEFORE SOIL FREEZES.

c) Slopes and Stockpiles:
- o Protect slopes and stockpiles with anchored straw or mulch, rolled erosion control product or other durable covering.
- o Sediment barrier must be installed around piles and at slope toes to prevent soil transport from the pile or slope.
- o Stabilize exposed areas BEFORE snow covers them.

d) All entrance/exit locations must be properly stabilized and maintained to accommodate snow management.

e) Inspections:
- o If soil disturbance is COMPLETELY suspended AND site is PROPERLY STABILIZED, qualified inspection frequency may be reduced with written notification to NYSDEC or MS4.
- o Confirmation must be received from NYSDEC prior to reducing inspection frequency.
- o Monthly inspections must be performed at a minimum.
- o Sediment control measures should be checked after rain or snowmelt events.
- o Regular inspections must resume by March 15th.

VI. LONG TERM OPERATION AND MAINTENANCE PROCEDURES

The proposed WILSON HILL SOLAR project will be PRIVATELY and the operation and maintenance requirements will be the responsibility of the private owner.

The entire Stormwater Management System shall be inspected on a yearly basis to ensure that the system operates in the manner originally intended. Specific components of the system shall require additional attention as described below.

1. Bioretention Areas
   a. Bioretention Areas shall be inspected annually and following major storm events to ensure the system operates in the manner originally intended. The inspection should include, but not be limited to, the following components; all outlet orifices, embankment, emergency spillway, drain, accumulation of sediment, and general erosion control measures.
   b. Re-grading and re-vegetation shall be performed as necessary and rip-rap shall be replaced as necessary.
   c. Embankments shall be mowed a minimum of twice per year to discourage woody growth and control weeds.
   d. Debris and litter shall be removed from basins during regular mowing operations or more frequently as necessary.
   e. Accumulated sediment shall be removed from the wet pond area when 10 percent of the basin capacity has been lost due to sedimentation or at a minimum of every 10 to 20 years.

2. Wet Ponds
   a. Ponds shall be inspected annually and following major storm events to ensure the system operates in the manner originally intended. The inspection should include, but not be limited to, the following components; all outlet orifices, embankment, emergency spillway, drain, accumulation of sediment, and general erosion control measures.
   b. Special attention should be provided to ensure the low flow outlet orifice continues to function properly with the base Pocket Pond elevation maintained at the elevation of the low flow outlet orifice.

c. Re-grading and re-vegetation shall be performed as necessary and rip-rap shall be replaced as necessary.
d. Embankments shall be mowed a minimum of twice per year to discourage woody growth and control weeds.
e. Debris and litter shall be removed from basins during regular mowing operations or more frequently as necessary.
f. Accumulated sediment shall be removed from the wet pond area when 10 percent of the pond capacity has been lost due to sedimentation or at a minimum of every 10 to 20 years.
g. Accumulated sediment in the forebay shall occur every five to six years or after 50% of the total forebay capacity has been filled.

2. Open Channels
   a. Open channels shall be inspected annually and following major storm events to ensure the system operates in the manner originally intended.
   b. Removal of sediment build-up within the bottom of the channel or filter strip shall be required when 25% of the channel volume has been exceeded.

3. Closed Drainage System
   a. Pipes shall be inspected annually and following major storm events to ensure the system operates in the manner originally intended.

STORMWATER POLLUTION PREVENTION PLAN
SUMMARY OF EROSION AND SEDIMENT CONTROL AND STABILIZATION MEASURES
MAINTENANCE/INSPECTION PROCEDURES

- ☐ All control measures will be inspected at least once every seven (7) days. Sites that have a waiver to disturb greater than five (5) acres require two (2) inspections every seven (7) days with at least two (2) days between inspections.

- ☐ All measures will be maintained in good working order; if a repair is necessary, it will be initiated within 24 hours of report.

- ☐ Built-up sediment will be removed from silt fences when it has reached one-third the height of the fence.

- ☐ Silt fences will be inspected for depth of sediment, tears, to see if the fabric is securely attached to the fence posts, and to see that the fence posts are firmly in the ground.

- ☐ Sediment basins, if present, will be inspected for depth of sediment, and built-up sediment will be removed when it reaches 50% of the design capacity or at the end of the job.

- ☐ Diversion dikes, if present, will be inspected and any breaches promptly repaired.

- ☐ Temporary and permanent seeding and planting and other stabilization measures will be inspected for bare spots, washouts, and healthy growth.

- ☐ A maintenance inspection report will be made after each inspection. Copies of the report forms to be used are included in this SWPPP.

- ☐ The site job superintendent will select the individuals who will be responsible for inspections, maintenance and repair activities, and filling out the inspection and maintenance reports.

- ☐ Personnel selected for inspection and maintenance responsibilities will receive training from the site job superintendent. They will be trained in all the inspection and maintenance practices necessary for keeping the erosion and sediment controls used onsite in good working order.

- ☐ Disturbed areas and materials storage areas will be inspected for evidence of or potential for pollutants entering stormwater systems.

- ☐ Report to The Department of Environmental Conservation within 24 hours any noncompliance with the SWPPP that will endanger public health or the environment. Follow up with a written report within 5 days of the noncompliance event.

STORMWATER POLLUTION PREVENTION PLAN

CONSTRUCTION/IMPLEMENTATION CHECKLIST

1. Maintain Records (Project Manager) of Construction Activities, including:

- ☐ Dates when major grading activities occur
- ☐ Dates when construction activities temporarily cease on a portion of the site
- ☐ Dates when construction activities permanently cease on a portion of the site
- ☐ Dates when stabilization measures are initiated on the site
- ☐ Dates of rainfall and the amount of rainfall
- ☐ Dates and descriptions of the character and amount of any spills of hazardous materials
- ☐ Records of reports filed with regulatory agencies if reportable quantities of hazardous materials spilled

2. Prepare Inspection Reports (Qualified Inspector) summarizing:

- ☐ Name of inspector
- ☐ Qualifications of inspector
- ☐ Measures/areas inspected
- ☐ Observed conditions
- ☐ Changes necessary to the SWPPP

3. Report Releases of Reportable Quantities of Oil or Hazardous Materials (Project Manager, if they occur):

- ☐ Notify National Response Center (1-800-424-8802) immediately
- ☐ Notify permitting authority in writing within 14 days
- ☐ Modify the pollution prevention plan to include:

  - the date of release
  - circumstances leading to the release
  - steps taken to prevent reoccurrence of the release

4. Modify Pollution Prevention Plan (per Qualified Inspector) as necessary to:

- ☐ Comply with the minimum permit requirements when notified by The Department of Environmental Conservation that the plan does not comply
- ☐ Address a change in design, construction operation, or maintenance that has an effect on the potential for discharge of pollutants
- ☐ Prevent reoccurrence of reportable quantity releases of a hazardous material or oil

VII. SPILL PREVENTION CONTROL AND COUNTERMEASURES (SPCC) PLAN

A. MATERIALS COVERED

The following materials or substances with known hazardous properties are expected to be present onsite during construction:

Concrete	Cleaning solvents
Detergents	Petroleum based products
Paints	Pesticides
Paint solvents	Acids
Fertilizers	Concrete additives
Soil stabilization additives	

B. MATERIAL MANAGEMENT PRACTICES

The following are the material management practices that will be used to reduce the risk of spills or other accidental exposure of materials and substances to stormwater runoff.

1. Good Housekeeping

The following good housekeeping practices will be followed onsite during the construction project.

a) An effort will be made to store only enough product required to do the job.

b) All materials stored onsite will be stored in a neat, orderly manner and, if possible, under a roof or other enclosure.

c) Products will be kept in their original containers with the original manufacturer's label in legible condition.

d) Substances will not be mixed with one another unless recommended by the manufacturer.

e) Whenever possible, all of a product will be used up before disposing of the container.

f) Manufacturer's recommendations for proper use and disposal will be followed.

g) The job site superintendent will be responsible for daily inspections to ensure proper use and disposal of materials.

2. Hazardous Products

These practices will be used to reduce the risks associated with hazardous materials.

a) Products will be kept in original containers with the original labels in legible condition.

b) Original labels and material safety data sheets (MSDS's) will be procured and used for each material.

c) If surplus product must be disposed of, manufacturer's or local/state/federal recommended methods for proper disposal will be followed.

d) A spill control and containment kit (containing, for example, absorbent such as kitty litter or sawdust, acid neutralizing powder, brooms, dust pans, mops, rags, gloves, goggles, plastic and metal trash containers, etc.) will be provided at the storage site.

e) All of the product in a container will be used before the container is disposed of. All such containers will be triple-rinsed with water prior to disposal. The rinse water used in these containers will be disposed of in a manner in compliance with state and federal regulations and will not be allowed to mix with stormwater discharges.

3. Product Specific Practices

The following product specific practices will be followed on the job site.

a) Petroleum Products

All onsite vehicles will be monitored for leaks and receive regular preventative maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers which are clearly labeled. Any petroleum storage tanks used onsite will have a dike or berm containment structure constructed around it to contain any spills that may occur. Any asphalt substances used onsite will be applied according to the manufacturer's recommendations.

b) Fertilizers

Fertilizers will be applied only in the minimum amounts recommended by the manufacturer. Once applied, fertilizer will be worked in the soil to limit exposure to stormwater. Storage will be in a covered shed. The contents of any partially used bags of fertilizer will be transferred to a sealable plastic bin to avoid spills.

c) Paints, Paint Solvents, and Cleaning Solvents

All containers will be tightly sealed and stored when not in use. Excess paint and solvents will not be discharged to the storm sewer system but will be properly disposed of according to manufacturer's instructions or state and federal regulations.

d) Concrete Trucks

Concrete trucks will be allowed to wash out or discharge surplus concrete or drum wash water on the site, but only in either (1) specifically designated diked areas which have been prepared to prevent contact between the concrete and/or washout and stormwater which will be discharged from the site or (2) in locations where waste concrete can be poured into forms to make riprap or other useful concrete products.

The hardened residue from the concrete washout diked areas will be disposed of in the same manner as other non-hazardous construction waste materials or may be broken up and used on site as deemed appropriate by the CONTRACTOR. The job site superintendent will be responsible for seeing that these procedures are followed.

4. Spill Prevention Practices

In addition to the good housekeeping and material management practices discussed in the previous sections of this plan, the following practices will be followed for spill prevention and cleanup.

a) Manufacturer's recommended methods for spill cleanup will be clearly posted and site personnel will be trained regarding these procedures and the location of the information and cleanup supplies.

b) Materials and equipment necessary for spill cleanup will be kept in the material storage area onsite in spill control and containment kit (containing, for example, absorbent such as kitty litter or sawdust, acid neutralizing powder, brooms, dust pans, mops, rags, gloves, goggles, plastic and metal trash containers, etc.).

c) All spills will be cleaned up immediately after discovery.

d) The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with the hazardous substances.

e) Spills of toxic or hazardous materials will be reported to the appropriate federal, state, and/or local government agency, regardless of the size of the spill. Spills of amounts that exceed Reportable Quantities of certain substances specifically mentioned in federal regulations (40 CFR 302 list and oil) will be immediately reported to the EPA National Response Center, telephone 1-800-424-8802. Reportable Quantities of some substances which may be used at the job site are as follows:

oil - appearance of a film or sheen on water

pesticides - usually 1 lb.

acids - 5000 lb.

solvents, flammable - 100 lb.

f) The SPCC plan will be adjusted to include measures to prevent this type of spill from recurring and how to clean up the spill if there is another one. A description of the spill, what caused it, and the cleanup measures will also be included. If the spill exceeds a Reportable Quantity, all federal regulations regarding reports of the incident will be complied with.

g) The job site superintendent will be the spill prevention and cleanup coordinator. He will designate the individuals who will receive spill prevention and cleanup training. These individuals will each become responsible for a particular phase of prevention and cleanup. The names of these personnel will be posted in the material storage area and in the office trailer onsite.

VIII. CONTROL OF ALLOWABLE NON-STORMWATER DISCHARGES

A. Certain types of discharges are allowable under the NYS Department of Environmental Conservation SPDES General Permit for Construction Activity, and it is the intent of this SWPPP to allow such discharges. These types of discharges will be allowed under the conditions that no pollutants will be allowed to come in contact with the water prior to or after its discharge. The control measures, which have been outlined previously in this SWPPP, will be strictly followed to ensure that no contamination of these non-stormwater discharges takes place. The following allowable non-stormwater discharges that may occur from the job site include:

a) Discharges from fire fighting activities

b) Fire hydrant flushings (see note below)

c) Waters used to wash vehicles or control dust in order to minimize offsite sediment tracking

d) Potable water sources such as waterline flushings (see note below), irrigation drainage from watering vegetation, routine exterior building washdown (without detergents present) (See Note below)

e) Pavement washwaters where spills or leaks of hazardous materials have not occurred or detergents have not been used

f) Springs and other uncontaminated groundwater, including dewatering ground water infiltration

g) Foundation or footing drains where no contamination with process materials such as solvents is present

NOTE: CONTRACTOR shall neutralize any super-chlorinated water from water distribution pipes before releasing it into the environment. Neutralization techniques are available from the Operator's Engineer.

IX. CERTIFICATION AND NOTIFICATION

A. The NYS Department of Environmental Conservation requires that certifications of knowledge of the contents of this SWPPP and agreement to follow the SWPPP be made by the NOI Permittee and the CONTRACTOR. The terms of the General Permit also require that each CONTRACTOR sign the SWPPP plan, (Form 3) thereby making them co-permittees and acknowledging their responsibility for certain operational aspects of the plan. These certifications should be signed before the CONTRACTOR begins activities and should be filed with the site's SWPPP at the jobsite. These certifications are provided within this document, see Table of Contents for location.

SECTION 2

Erosion and Sedimentation Control Plan

Site Map and General Location Map

Phasing Plan

Site Location Map
469 Wilson Hill Road
Town of Hoosick
Source: Google Earth

Rensselaer County, NY
August 21, 2023

Figure: 1

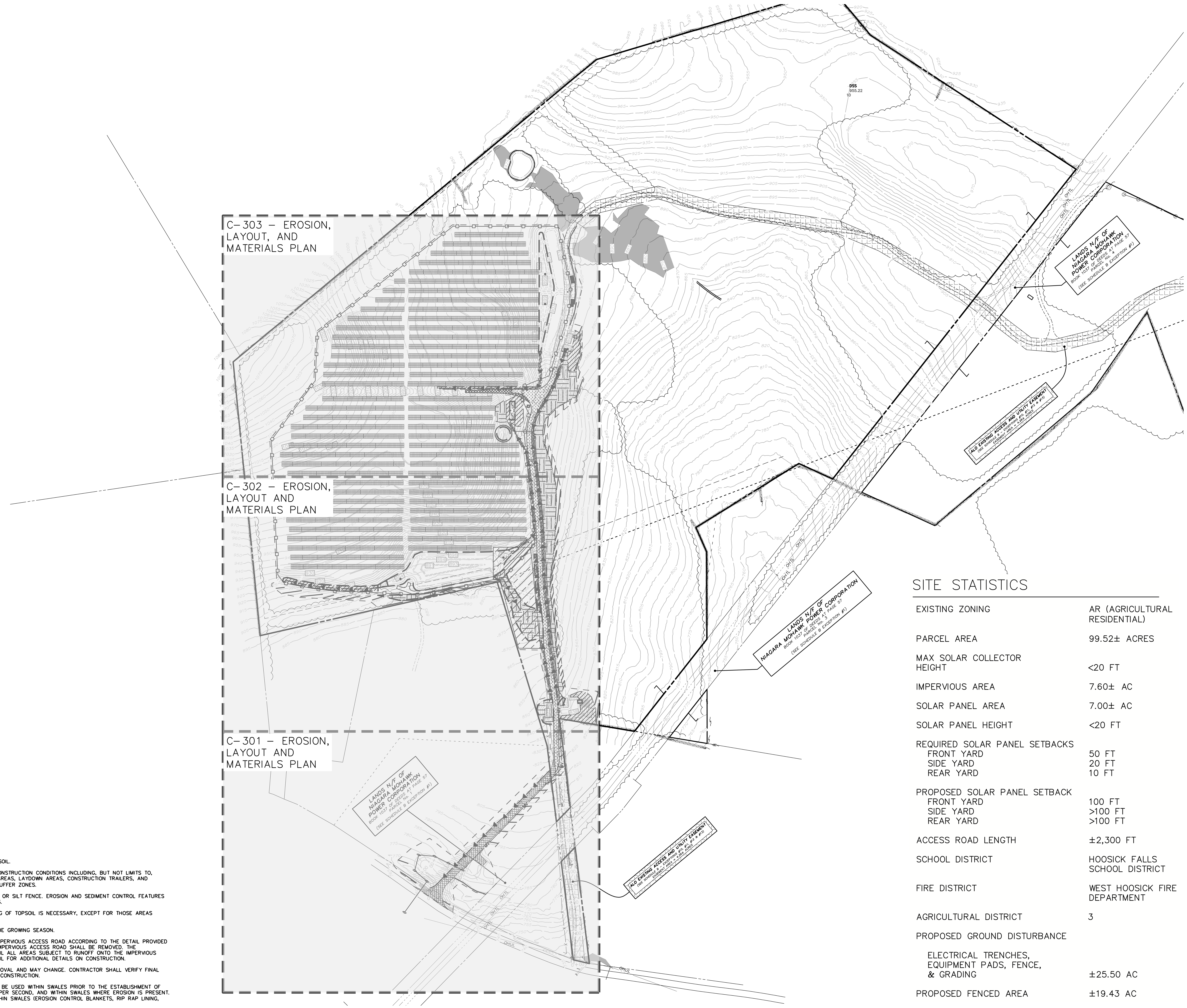
EROSION, LAYOUT, AND MATERIALS PLAN LEGEND

DENOTES EXISTING GRADE	
DENOTES USACE WETLAND AREAS	
DENOTES TEMPORARY CONSTRUCTION ACCESS ROAD	
DENOTES IMPERVIOUS MAINTENANCE ACCESS ROAD	
DENOTES RIP-RAP SLOPE/OUTLET PROTECTION	
DENOTES TEMPORARY EROSION CONTROL BLANKET (ON SLOPES OVER 10%)	2 / C-304
DENOTES FIXED KNOT FARM FENCE	3 / C-500
DENOTES SOLAR PANEL TRACKER (SEE ELECTRICAL PLANS FOR DETAILS)	
DENOTES MEDIUM VOLTAGE TRENCH (SEE ELECTRICAL PLANS FOR DETAILS)	
DENOTES PROPOSED CONTOUR	
DENOTES PERMANENT OVERLAND FLOW DISPERSION DEVICE	5 / C-501
DENOTES PROPOSED 12" COMPOST FILTER SOCK	1 / C-304
DENOTES SWALE WITH CHECK DAM	8 / C-304
STORMWATER MANAGEMENT FACILITY NOTIFICATION SIGN	2 / C-501
CONTROL POINT (PENDING)	

GRAPHIC SCALE

150 120 90 60 30 0 75 150 300 600

(IN FEET)
1 INCH = 150 FT.



SITE STATISTICS

EXISTING ZONING	AR (AGRICULTURAL RESIDENTIAL)
PARCEL AREA	99.52± ACRES
MAX SOLAR COLLECTOR HEIGHT	<20 FT
IMPERVIOUS AREA	7.60± AC
SOLAR PANEL AREA	7.00± AC
SOLAR PANEL HEIGHT	<20 FT
REQUIRED SOLAR PANEL SETBACKS	
FRONT YARD	50 FT
SIDE YARD	20 FT
REAR YARD	10 FT
PROPOSED SOLAR PANEL SETBACK	
FRONT YARD	100 FT
SIDE YARD	>100 FT
REAR YARD	>100 FT
ACCESS ROAD LENGTH	±2,300 FT
SCHOOL DISTRICT	HOOSICK FALLS SCHOOL DISTRICT
FIRE DISTRICT	WEST HOOSICK FIRE DEPARTMENT
AGRICULTURAL DISTRICT	3
PROPOSED GROUND DISTURBANCE	
ELECTRICAL TRENCHES, EQUIPMENT PADS, FENCE, & GRADING	±25.50 AC
PROPOSED FENCED AREA	±19.43 AC

NOTES:

1. ALL AREAS TO BE REVEGETATED SHALL HAVE A MINIMUM OF FOUR INCHES OF TOPSOIL.
2. AREAS USED FOR PARKING DURING CONSTRUCTION SHALL BE RESTORED TO PRE-CONSTRUCTION CONDITIONS INCLUDING, BUT NOT LIMITS TO, DECOMPACTION, REGRADING, LOAMING, AND SEEDING. IN NO CASE SHALL PARKING AREAS, LAYDOWN AREAS, CONSTRUCTION TRAILERS, AND PORTABLE TOILETS BE LOCATED WITHIN A WETLAND RESOUCE AREA AND/OR ANY BUFFER ZONES.
3. WETLANDS NEAR THE SOLAR ARRAY SHALL BE PROTECTED WITH FILTREXX SILTSOXX OR SILT FENCE. EROSION AND SEDIMENT CONTROL FEATURES SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF SOIL DISTURBING ACTIVITIES.
4. AREAS DESIGNATED FOR CUTTING SHALL BE CUT, ONLY. NO GRUBBING OR STRIPPING OF TOPSOIL IS NECESSARY, EXCEPT FOR THOSE AREAS SHOWN ON THE SITE PLANS.
5. PERMANENT STABILIZATION SHALL BE ESTABLISHED AS SOON AS FEASIBLE GIVEN THE GROWING SEASON.
6. FOR ACCESS DURING CONSTRUCTION, CONTRACTOR SHALL UTILIZE A TEMPORARY, IMPERVIOUS ACCESS ROAD ACCORDING TO THE DETAIL PROVIDED ON SHEET C-500. ONCE CONSTRUCTION HAS BEEN COMPLETED, THE TEMPORARY, IMPERVIOUS ACCESS ROAD SHALL BE REMOVED. THE PERMANENT IMPERVIOUS ACCESS ROAD SHALL NOT BE CONSTRUCTED OR USED UNTIL ALL AREAS SUBJECT TO RUNOFF ONTO THE IMPERVIOUS ACCESS HAVE ACHIEVED FINAL STABILIZATION. SEE IMPERVIOUS ACCESS ROAD DETAIL FOR ADDITIONAL DETAILS ON CONSTRUCTION.
7. PROPOSED UTILITY AND CUSTOMER POLE LOCATIONS ARE SUBJECT TO UTILITY APPROVAL AND MAY CHANGE. CONTRACTOR SHALL VERIFY FINAL POLE LOCATIONS WITH THE OWNER PRIOR TO ORDERING MATERIALS AND BEGINNING CONSTRUCTION.
8. FILTER SOCK CHECK DAMS, STONE CHECK DAMS, OR EQUAL ARE RECOMMENDED TO BE USED WITHIN SWALES PRIOR TO THE ESTABLISHMENT OF VEGETATION, WHERE VELOCITIES OF THE 2 YEAR, 24 HOUR STORM EXCEED 4 FEET PER SECOND, AND WITHIN SWALES WHERE EROSION IS PRESENT. ALTERNATIVE EROSION AND SEDIMENT CONTROL PRACTICES MAY ALSO BE USED WITHIN SWALES (EROSION CONTROL BLANKETS, RIP RAP LINING, ETC,) IF APPROVED BY OWNER.
9. ALL COMPACTED AREAS, INTERIOR TO THE ARRAY, SHALL RECEIVE DECOMPACTION AND DEEP-RIPPING SOIL RESTORATION PER THE NYSDEC "BLUE BOOK" RECOMMENDATIONS.

FOR MUNICIPAL APPROVAL ONLY - NOT INTENDED FOR CONSTRUCTION

nexamp
101 Summer Street, Boston, MA 02110
Tel: (617) 431-1440 Fax: (978) 416-2525 Web: nexamp.com

edp ENVIRONMENTAL DESIGN PARTNERSHIP, LLP.
900 Route 146 Clifton Park, New York 12065
(518) 371-7621
edpllp.com

Rev	Issued For	Date
A	PRELIM. PLAN SET	5/22/2023
B	INTERNAL COMMENTS	8/10/2023
C	INTERNAL COMMENTS	9/15/2023

P.E. seal/Consultant: STATE OF NEW YORK · STEPHANIE ALESSANDRINI · LICENSED PROFESSIONAL ENGINEER · 108887

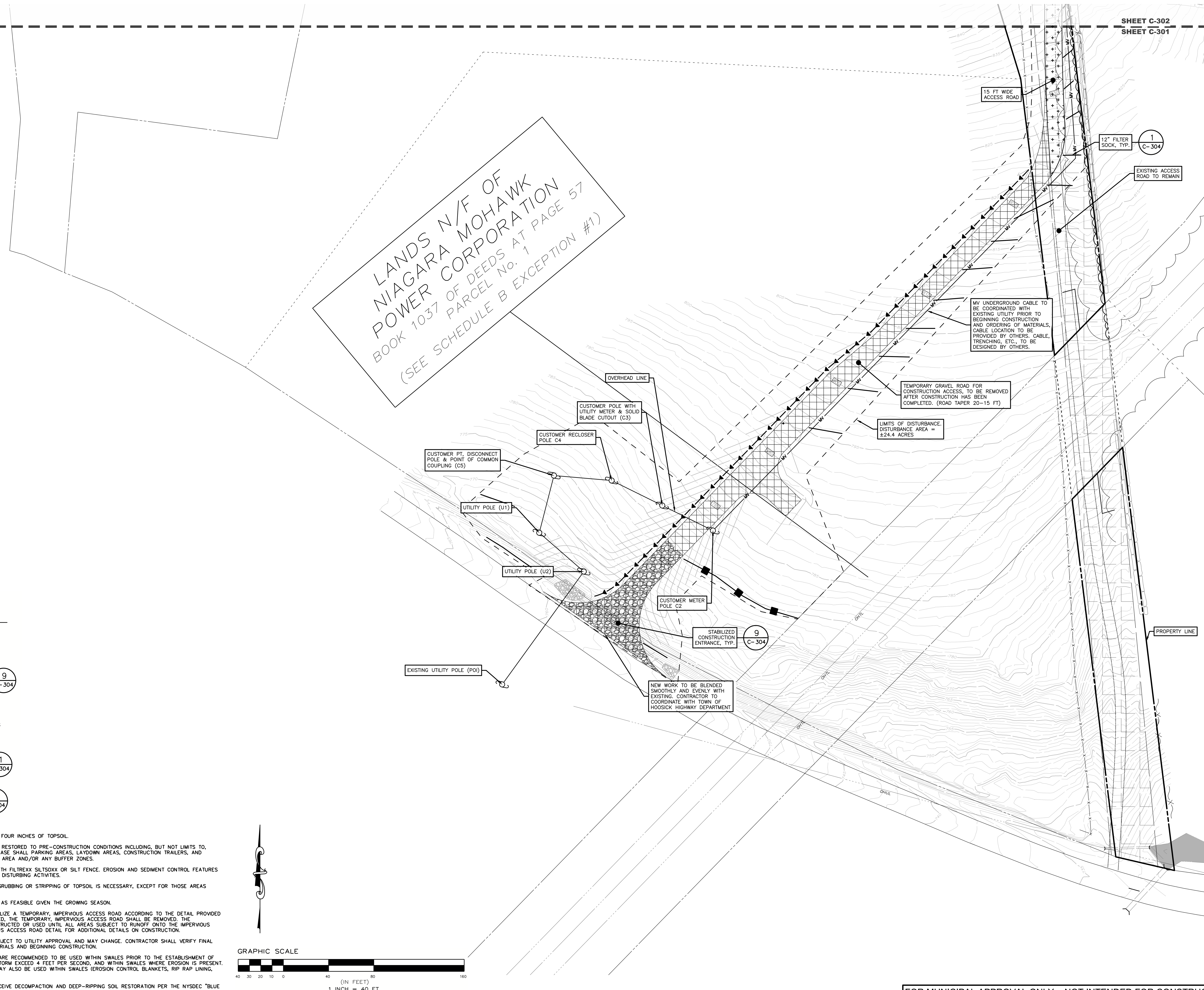
Project: WILSON HILL SOLAR
469 Wilson Hill Road
Hoosick Falls, NY 12090

Drawing Title: OVERALL EROSION, LAYOUT, AND MATERIALS PLAN

NOT FOR CONSTRUCTION

Drawn by: BMW Scale: As Shown Approved by: STA

Dwg No:	Size: D	Sheet Rev:
C-300		C



EROSION, LAYOUT, AND MATERIALS PLAN LEGEND

DENOTES EXISTING GRADE	
DENOTES USACE WETLAND AREAS	
DENOTES STABILIZED CONSTRUCTION ENTRANCE	9 C-304
DENOTES TEMPORARY CONSTRUCTION ACCESS ROAD	
DENOTES IMPERVIOUS MAINTENANCE ACCESS ROAD	
DENOTES PROPOSED CONTOUR	
DENOTES PROPOSED 12" COMPOST FILTER SOCK	1 C-304
CONTROL POINT (PENDING)	
DENOTES SWALE WITH CHECK DAM	8 C-304

NOTES:

1. ALL AREAS TO BE REVEGETATED SHALL HAVE A MINIMUM OF FOUR INCHES OF TOPSOIL.
2. AREAS USED FOR PARKING DURING CONSTRUCTION SHALL BE RESTORED TO PRE-CONSTRUCTION CONDITIONS INCLUDING, BUT NOT LIMITS TO, DECOMPACTION, REGRADING, LOAMING, AND SEEDING. IN NO CASE SHALL PARKING AREAS, LAYDOWN AREAS, CONSTRUCTION TRAILERS, AND PORTABLE TOILETS BE LOCATED WITHIN A WETLAND RESOUCE AREA AND/OR ANY BUFFER ZONES.
3. WETLANDS NEAR THE SOLAR ARRAY SHALL BE PROTECTED WITH FILTREXX SILTSOXX OR SILT FENCE. EROSION AND SEDIMENT CONTROL FEATURES SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF SOIL DISTURBING ACTIVITIES.
4. AREAS DESIGNATED FOR CUTTING SHALL BE CUT, ONLY. NO GRUBBING OR STRIPPING OF TOPSOIL IS NECESSARY, EXCEPT FOR THOSE AREAS SHOWN ON THE SITE PLANS.
5. PERMANENT STABILIZATION SHALL BE ESTABLISHED AS SOON AS FEASIBLE GIVEN THE GROWING SEASON.
6. FOR ACCESS DURING CONSTRUCTION, CONTRACTOR SHALL UTILIZE A TEMPORARY, IMPERVIOUS ACCESS ROAD ACCORDING TO THE DETAIL PROVIDED ON SHEET C-500. ONCE CONSTRUCTION HAS BEEN COMPLETED, THE TEMPORARY, IMPERVIOUS ACCESS ROAD SHALL BE REMOVED. THE PERMANENT IMPERVIOUS ACCESS ROAD SHALL NOT BE CONSTRUCTED OR USED UNTIL ALL AREAS SUBJECT TO RUNOFF ONTO THE IMPERVIOUS ACCESS HAVE ACHIEVED FINAL STABILIZATION. SEE IMPERVIOUS ACCESS ROAD DETAIL FOR ADDITIONAL DETAILS ON CONSTRUCTION.
7. PROPOSED UTILITY AND CUSTOMER POLE LOCATIONS ARE SUBJECT TO UTILITY APPROVAL AND MAY CHANGE. CONTRACTOR SHALL VERIFY FINAL POLE LOCATIONS WITH THE OWNER PRIOR TO ORDERING MATERIALS AND BEGINNING CONSTRUCTION.
8. FILTER SOCK CHECK DAMS, STONE CHECK DAMS, OR EQUAL ARE RECOMMENDED TO BE USED WITHIN SWALES PRIOR TO THE ESTABLISHMENT OF VEGETATION, WHERE VELOCITIES OF THE 2 YEAR, 24 HOUR STORM EXCEED 4 FEET PER SECOND, AND WITHIN SWALES WHERE EROSION IS PRESENT. ALTERNATIVE EROSION AND SEDIMENT CONTROL PRACTICES MAY ALSO BE USED WITHIN SWALES (EROSION CONTROL BLANKETS, RIP RAP LINING, ETC.) IF APPROVED BY OWNER.
9. ALL COMPACTED AREAS, INTERIOR TO THE ARRAY, SHALL RECEIVE DECOMPACTION AND DEEP-RIPPING SOIL RESTORATION PER THE NYSDEC "BLUE BOOK" RECOMMENDATIONS.

FOR MUNICIPAL APPROVAL ONLY - NOT INTENDED FOR CONSTRUCTION

nexamp
101 Summer Street, Boston, MA 02110
Tel: (617) 431-1440 Fax: (978) 416-2525 Web: nexamp.com

edp ENVIRONMENTAL DESIGN PARTNERSHIP, LLP.
900 Route 146 Clifton Park, New York 12065
(518) 371-7621
edpllp.com

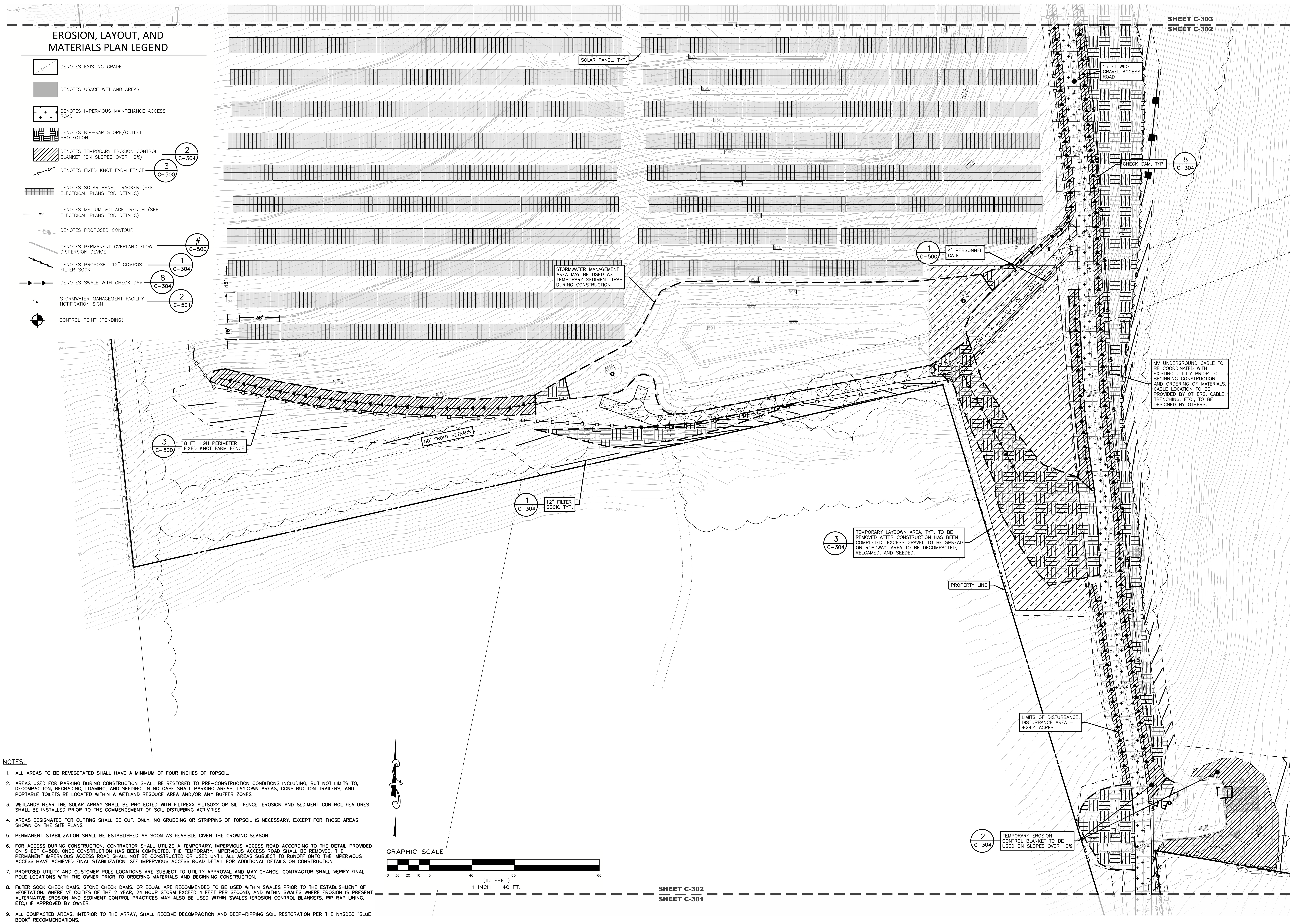
Rev	Issued For	Date
A	PRELIM. PLAN SET	5/22/2023
B	INTERNAL COMMENTS	8/10/2023
C	INTERNAL COMMENTS	9/15/2023

P.E. seal/Consultant: STATE OF NEW YORK · STEPHANIE T ALESSANDRINI · 100887 · LICENSED PROFESSIONAL ENGINEER

Project: WILSON HILL SOLAR
469 Wilson Hill Road
Hoosick Falls, NY 12090

Drawing Title: EROSION, LAYOUT AND MATERIALS PLAN
NOT FOR CONSTRUCTION
Drawn by: BMW Scale: As Shown Approved by: STA

Dwg No: C-301 Size: D Sheet Rev: C



EROSION, LAYOUT, AND MATERIALS PLAN LEGEND

- DENOTES EXISTING GRADE
- DENOTES USACE WETLAND AREAS
- DENOTES IMPERVIOUS MAINTENANCE ACCESS ROAD
- DENOTES RIP-RAP SLOPE/OUTLET PROTECTION
- DENOTES TEMPORARY EROSION CONTROL BLANKET (ON SLOPES OVER 10%) — 2 C-304
- DENOTES FIXED KNOT FARM FENCE — 3 C-500
- DENOTES SOLAR PANEL TRACKER (SEE ELECTRICAL PLANS FOR DETAILS)
- DENOTES MEDIUM VOLTAGE TRENCH (SEE ELECTRICAL PLANS FOR DETAILS)
- DENOTES PROPOSED CONTOUR
- DENOTES PERMANENT OVERLAND FLOW DISPERSION DEVICE — # C-500
- DENOTES PROPOSED 12" COMPOST FILTER SOCK — 1 C-304
- DENOTES SWALE WITH CHECK DAM — 8 C-304
- STORMWATER MANAGEMENT FACILITY NOTIFICATION SIGN — 2 C-501
- CONTROL POINT (PENDING)

NOTES:

1. ALL AREAS TO BE REVEGETATED SHALL HAVE A MINIMUM OF FOUR INCHES OF TOPSOIL.
2. AREAS USED FOR PARKING DURING CONSTRUCTION SHALL BE RESTORED TO PRE-CONSTRUCTION CONDITIONS INCLUDING, BUT NOT LIMITS TO, DECOMPACTION, REGRADING, LOAMING, AND SEEDING. IN NO CASE SHALL PARKING AREAS, LAYDOWN AREAS, CONSTRUCTION TRAILERS, AND PORTABLE TOILETS BE LOCATED WITHIN A WETLAND RESOUCE AREA AND/OR ANY BUFFER ZONES.
3. WETLANDS NEAR THE SOLAR ARRAY SHALL BE PROTECTED WITH FILTREXX SILTSOXX OR SILT FENCE. EROSION AND SEDIMENT CONTROL FEATURES SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF SOIL DISTURBING ACTIVITIES.
4. AREAS DESIGNATED FOR CUTTING SHALL BE CUT, ONLY. NO GRUBBING OR STRIPPING OF TOPSOIL IS NECESSARY, EXCEPT FOR THOSE AREAS SHOWN ON THE SITE PLANS.
5. PERMANENT STABILIZATION SHALL BE ESTABLISHED AS SOON AS FEASIBLE GIVEN THE GROWING SEASON.
6. FOR ACCESS DURING CONSTRUCTION, CONTRACTOR SHALL UTILIZE A TEMPORARY, IMPERVIOUS ACCESS ROAD ACCORDING TO THE DETAIL PROVIDED ON SHEET C-500. ONCE CONSTRUCTION HAS BEEN COMPLETED, THE TEMPORARY, IMPERVIOUS ACCESS ROAD SHALL BE REMOVED. THE PERMANENT IMPERVIOUS ACCESS ROAD SHALL NOT BE CONSTRUCTED OR USED UNTIL ALL AREAS SUBJECT TO RUNOFF ONTO THE IMPERVIOUS ACCESS HAVE ACHIEVED FINAL STABILIZATION. SEE IMPERVIOUS ACCESS ROAD DETAIL FOR ADDITIONAL DETAILS ON CONSTRUCTION.
7. PROPOSED UTILITY AND CUSTOMER POLE LOCATIONS ARE SUBJECT TO UTILITY APPROVAL AND MAY CHANGE. CONTRACTOR SHALL VERIFY FINAL POLE LOCATIONS WITH THE OWNER PRIOR TO ORDERING MATERIALS AND BEGINNING CONSTRUCTION.
8. FILTER SOCK CHECK DAMS, STONE CHECK DAMS, OR EQUAL ARE RECOMMENDED TO BE USED WITHIN SWALES PRIOR TO THE ESTABLISHMENT OF VEGETATION, WHERE VELOCITIES OF THE 2 YEAR, 24 HOUR STORM EXCEED 4 FEET PER SECOND, AND WITHIN SWALES WHERE EROSION IS PRESENT. ALTERNATIVE EROSION AND SEDIMENT CONTROL PRACTICES MAY ALSO BE USED WITHIN SWALES (EROSION CONTROL BLANKETS, RIP RAP LINING, ETC,) IF APPROVED BY OWNER.
9. ALL COMPACTED AREAS, INTERIOR TO THE ARRAY, SHALL RECEIVE DECOMPACTION AND DEEP-RIPPING SOIL RESTORATION PER THE NYSDEC "BLUE BOOK" RECOMMENDATIONS.

FOR MUNICIPAL APPROVAL ONLY - NOT INTENDED FOR CONSTRUCTION

nexamp
101 Summer Street, Boston, MA 02110
Tel: (617) 431-1440 Fax: (978) 416-2525 Web: nexamp.com

edp ENVIRONMENTAL DESIGN PARTNERSHIP, LLP.
900 Route 146 Clifton Park, New York 12065
(518) 371-7621 edpllp.com

Rev	Issued For	Date
A	PRELIM. PLAN SET	5/22/2023
B	INTERNAL COMMENTS	8/10/2023
C	INTERNAL COMMENTS	9/15/2023

P.E. seal/Consultant: STATE OF NEW YORK · STEPHANIE ALESSANDRINI · 086887 · LICENSED PROFESSIONAL ENGINEER

Project: WILSON HILL SOLAR
469 Wilson Hill Road
Hoosick Falls, NY 12090

Drawing Title: EROSION, LAYOUT AND MATERIALS PLAN

NOT FOR CONSTRUCTION

Drawn by: BMW Scale: As Shown Approved by: STA

Dwg No:	Size: D	Sheet Rev:
C-302		C

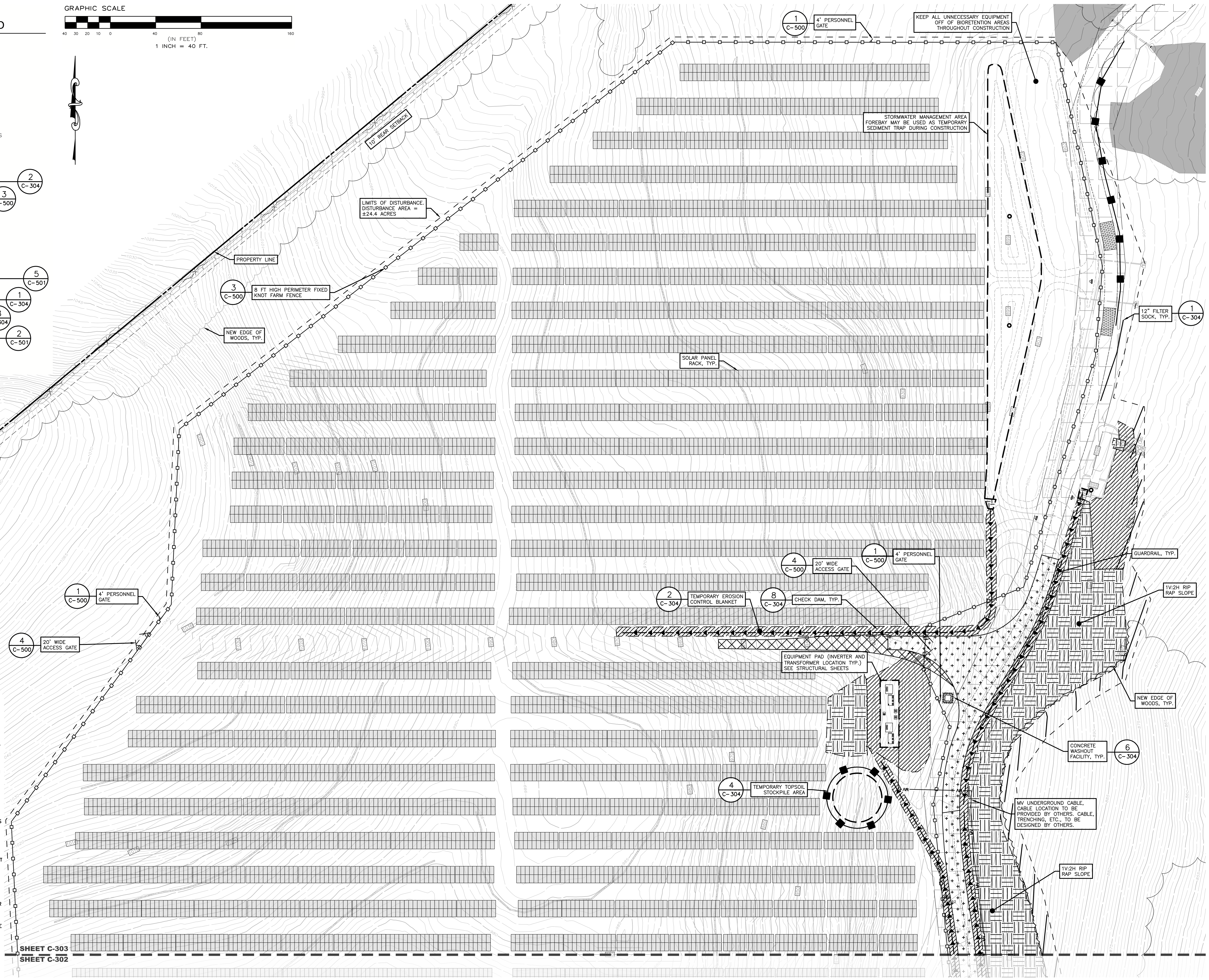
EROSION, LAYOUT, AND MATERIALS PLAN LEGEND

- DENOTES EXISTING GRADE
- DENOTES USACE WETLAND AREAS
- DENOTES EMERGENCY OVERFLOW WEIR
- DENOTES TEMPORARY CONSTRUCTION ACCESS ROAD
- DENOTES IMPERVIOUS MAINTENANCE ACCESS ROAD
- DENOTES RIP-RAP SLOPE/OUTLET PROTECTION
- DENOTES TEMPORARY EROSION CONTROL BLANKET (ON SLOPES OVER 10%) — 2 / C-304
- DENOTES FIXED KNOT FARM FENCE — 3 / C-500
- DENOTES SOLAR PANEL TRACKER (SEE ELECTRICAL PLANS FOR DETAILS)
- DENOTES MEDIUM VOLTAGE TRENCH (SEE ELECTRICAL PLANS FOR DETAILS)
- DENOTES PROPOSED CONTOUR
- DENOTES PERMANENT OVERLAND FLOW DISPERSION DEVICE — 5 / C-501
- DENOTES PROPOSED 12" COMPOST FILTER SOCK — 1 / C-304
- DENOTES SWALE WITH CHECK DAM — 8 / C-304
- STORMWATER MANAGEMENT FACILITY NOTIFICATION SIGN — 2 / C-501
- CONTROL POINT (PENDING)

GRAPHIC SCALE

40 30 20 10 0 40 80 160

(IN FEET)
1 INCH = 40 FT.



NOTES:

1. ALL AREAS TO BE REVEGETATED SHALL HAVE A MINIMUM OF FOUR INCHES OF TOPSOIL.
2. AREAS USED FOR PARKING DURING CONSTRUCTION SHALL BE RESTORED TO PRE-CONSTRUCTION CONDITIONS INCLUDING, BUT NOT LIMITS TO, DECOMPACTION, REGRADING, LOAMING, AND SEEDING. IN NO CASE SHALL PARKING AREAS, LAYDOWN AREAS, CONSTRUCTION TRAILERS, AND PORTABLE TOILETS BE LOCATED WITHIN A WETLAND RESOUCE AREA AND/OR ANY BUFFER ZONES.
3. WETLANDS NEAR THE SOLAR ARRAY SHALL BE PROTECTED WITH FILTREXX SILTSOXX OR SILT FENCE. EROSION AND SEDIMENT CONTROL FEATURES SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF SOIL DISTURBING ACTIVITIES.
4. AREAS DESIGNATED FOR CUTTING SHALL BE CUT, ONLY. NO GRUBBING OR STRIPPING OF TOPSOIL IS NECESSARY, EXCEPT FOR THOSE AREAS SHOWN ON THE SITE PLANS.
5. PERMANENT STABILIZATION SHALL BE ESTABLISHED AS SOON AS FEASIBLE GIVEN THE GROWING SEASON.
6. FOR ACCESS DURING CONSTRUCTION, CONTRACTOR SHALL UTILIZE A TEMPORARY, IMPERVIOUS ACCESS ROAD ACCORDING TO THE DETAIL PROVIDED ON SHEET C-500. ONCE CONSTRUCTION HAS BEEN COMPLETED, THE TEMPORARY, IMPERVIOUS ACCESS ROAD SHALL BE REMOVED. THE PERMANENT IMPERVIOUS ACCESS ROAD SHALL NOT BE CONSTRUCTED OR USED UNTIL ALL AREAS SUBJECT TO RUNOFF ONTO THE IMPERVIOUS ACCESS HAVE ACHIEVED FINAL STABILIZATION. SEE IMPERVIOUS ACCESS ROAD DETAIL FOR ADDITIONAL DETAILS ON CONSTRUCTION.
7. PROPOSED UTILITY AND CUSTOMER POLE LOCATIONS ARE SUBJECT TO UTILITY APPROVAL AND MAY CHANGE. CONTRACTOR SHALL VERIFY FINAL POLE LOCATIONS WITH THE OWNER PRIOR TO ORDERING MATERIALS AND BEGINNING CONSTRUCTION.
8. FILTER SOCK CHECK DAMS, STONE CHECK DAMS, OR EQUAL ARE RECOMMENDED TO BE USED WITHIN SWALES PRIOR TO THE ESTABLISHMENT OF VEGETATION, WHERE VELOCITIES OF THE 2 YEAR, 24 HOUR STORM EXCEED 4 FEET PER SECOND, AND WITHIN SWALES WHERE EROSION IS PRESENT. ALTERNATIVE EROSION AND SEDIMENT CONTROL PRACTICES MAY ALSO BE USED WITHIN SWALES (EROSION CONTROL BLANKETS, RIP RAP LINING, ETC.) IF APPROVED BY OWNER.
9. ALL COMPACTED AREAS, INTERIOR TO THE ARRAY, SHALL RECEIVE DECOMPACTION AND DEEP-RIPPING SOIL RESTORATION PER THE NYSDEC "BLUE BOOK" RECOMMENDATIONS.

FOR MUNICIPAL APPROVAL ONLY - NOT INTENDED FOR CONSTRUCTION

nexamp
101 Summer Street, Boston, MA 02110
Tel: (617) 431-1440 Fax: (978) 416-2525 Web: nexamp.com

edp ENVIRONMENTAL DESIGN PARTNERSHIP, LLP.
900 Route 146 Clifton Park, New York 12065
(518) 371-7621 edpllp.com

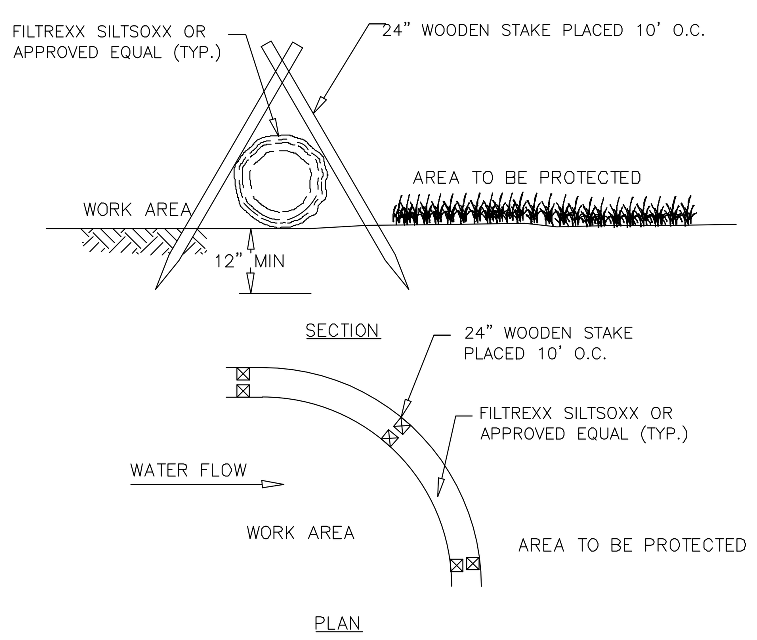
Rev	Issued For	Date
A	PRELIM. PLAN SET	5/22/2023
B	INTERNAL COMMENTS	8/10/2023
C	INTERNAL COMMENTS	9/15/2023

P.E. seal/Consultant: STATE OF NEW YORK · STEPHANIE ALESSANDRINI · LICENSED PROFESSIONAL ENGINEER · 100887

Project: WILSON HILL SOLAR
469 Wilson Hill Road
Hoosick Falls, NY 12090

Drawing Title: EROSION, LAYOUT, AND MATERIALS PLAN
NOT FOR CONSTRUCTION
Drawn by: BMW Scale: As Shown Approved by: STA

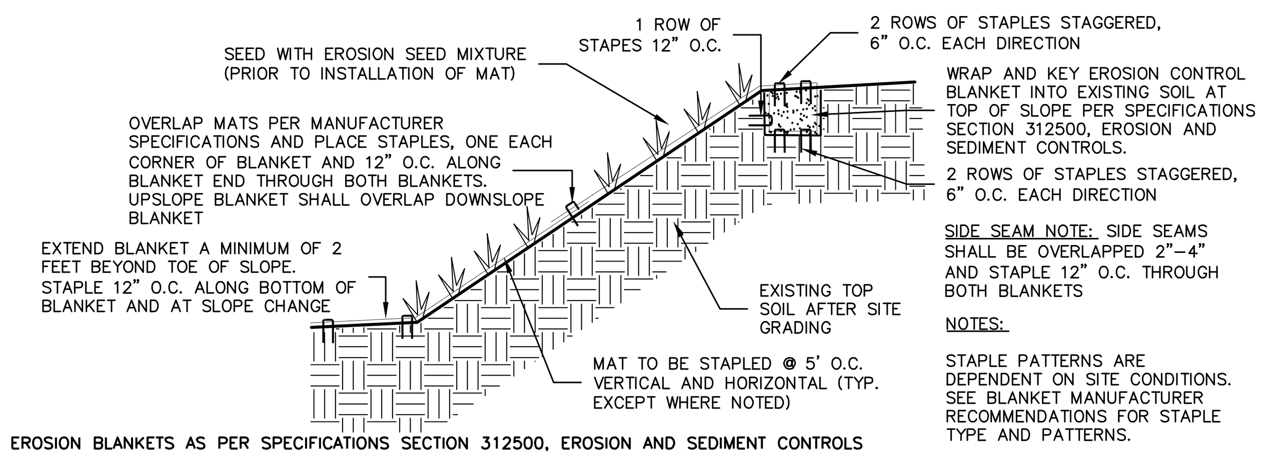
Dwg No: C-303 Size: D Sheet Rev: C



1. FILTER SOCK SHALL BE 12" DIAMETER MIN.
2. SOCKS TO BE FILLED WITH BIODEGRADABLE COMPOST MATERIAL.
3. WOODEN STAKES SHALL BE PLACED DOWNSLOPE OF THE FILTER SOCK.

1 / C-304 12 IN. FILTER SOCK

NOT TO SCALE



SIDE SEAM NOTE: SIDE SEAMS SHALL BE OVERLAPPED 2"-4" AND STAPLE 12" O.C. THROUGH BOTH BLANKETS

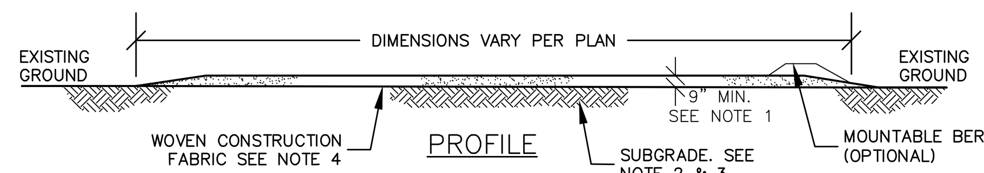
NOTES:

STAPLE PATTERNS ARE DEPENDENT ON SITE CONDITIONS. SEE BLANKET MANUFACTURER RECOMMENDATIONS FOR STAPLE TYPE AND PATTERNS.

EROSION BLANKETS AS PER SPECIFICATIONS SECTION 312500, EROSION AND SEDIMENT CONTROLS

2 / C-304 EROSION CONTROL BLANKET

NOT TO SCALE



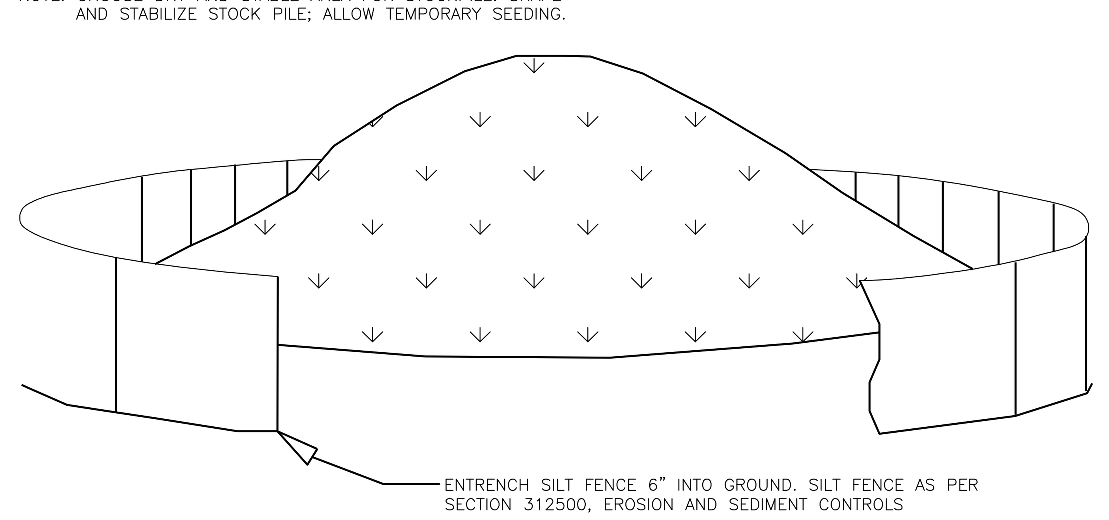
NOTES:

1. CONSTRUCTION STAGING ARE TO BE 9" GRAVEL COURSE, WELL GRADED, WELL COMPACTED, TO CONFORM TO NYS DOT ITEM NO. 304.05 TYPE. MIN. COMPACTION 95% MODIFIED PROCTOR OR 9" CRUSHED STONE COURSE, WELL GRADED WELL COMPACTED, TO CONFORM TO NYS DOT ITEM NO. 304.03 TYPE 2 MIN. COMPACTION 95% MODIFIED PROCTOR
2. SUBGRADE MUST BE PROOF-ROLLED PRIOR TO PLACEMENT OF CRUSHED STONE.
3. WELL COMPACTED SUBGRADE MIN. COMPACTION 90% MODIFIED PROCTOR
4. WOVEN CONSTRUCTION FABRIC TO BE A.O.B.E. PROPEX GEOTEXT 315ST OR EQUAL
5. TEMPORARY STAGING AREA TO BE INSTALLED WITHOUT DISTURBANCE TO EXISTING GROUND

3 / C-304 TEMPORARY STAGING AREA

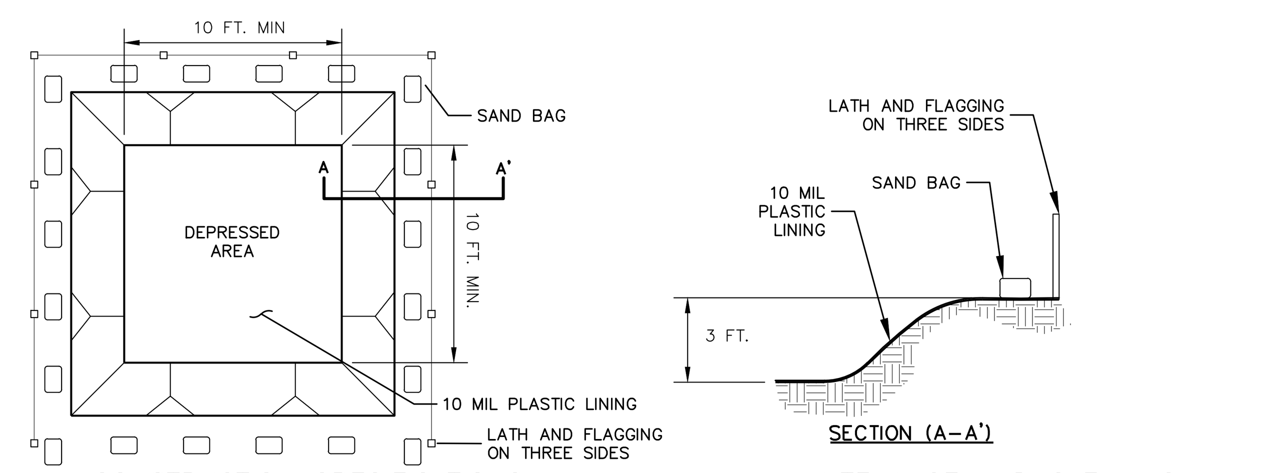
NOT TO SCALE

NOTE: CHOOSE DRY AND STABLE AREA FOR STOCKPILE. SHAPE AND STABILIZE STOCK PILE; ALLOW TEMPORARY SEEDING.



4 / C-304 SOIL STOCKPILE AREA

NOT TO SCALE



CONSTRUCTION SPECIFICATIONS

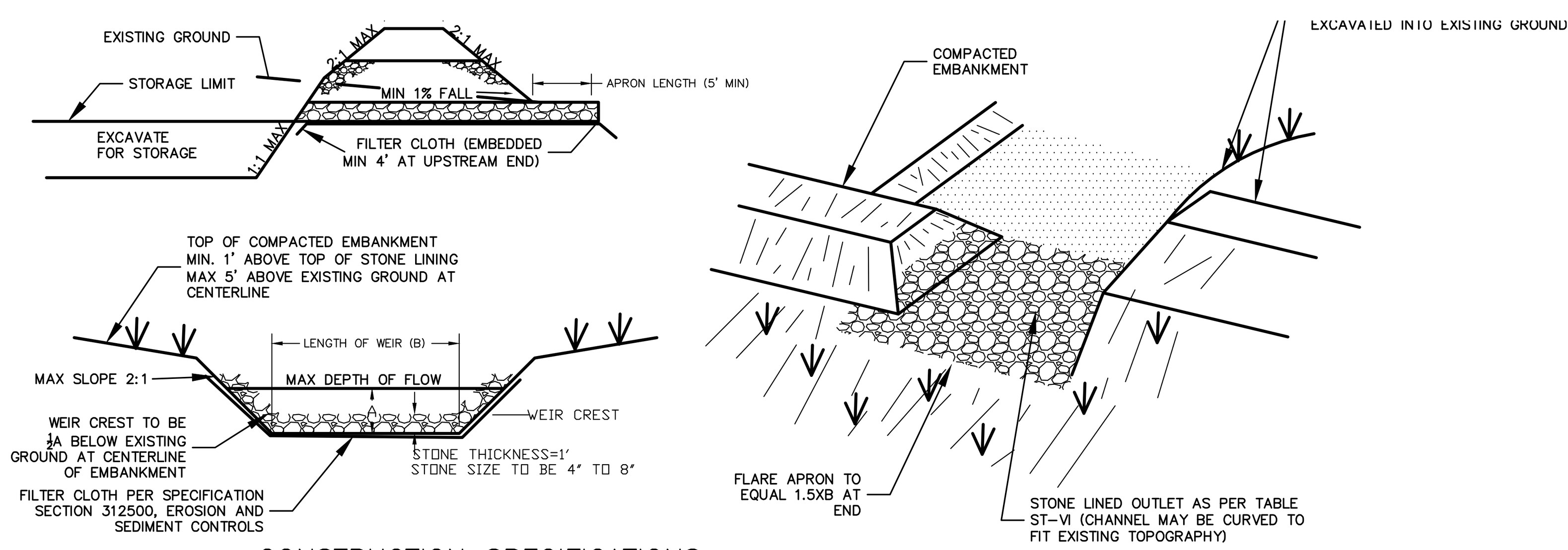
1. CONCRETE WASHOUT FACILITY SHALL BE LOCATED A MINIMUM OF FIFTY FEET (50') FROM SENSITIVE AREAS.
2. THE BASIN DIMENSIONS DEPICTED ABOVE ARE REQUIRED MINIMUMS. CONCRETE WASHOUT FACILITY SHALL BE CONSTRUCTED AND MAINTAINED IN SUFFICIENT QUANTITY AND SIZE TO CONTAIN ALL LIQUID AND CONCRETE WASTE ENERATED BY WASHOUT OPERATIONS. (APPROXIMATELY 60 GALLONS OF WASTE AND WATER PER TRUCK).
3. PLASTIC LINING MATERIAL SHALL BE A MINIMUM 10 MIN POLYETHYLENE SHEETING AND SHOULD BE FREE OF HOLES, TEARS, OR OTHER DEFECTS THAT COMPROMISE THE IMPERMEABILITY OF THE MATERIAL.
4. WASHOUT FACILITY MUST BE CLEANED, OR NEW FACILITES MUST BE CONSTRUCTED AND READY FOR USE ONCE THE WASHOUT IS 75% FULL.

MAINTENANCE AND CLEANING

1. DO NOT DISCHARGE LIQUID OR SLURRY TO WATERWAYS, STORM DRAINS OR DIRECTLY ONTO GROUND
2. DO NOT USE SANITARY SEWER WITHOUT LOCAL APPROVAL.
3. PLACE A SECURE NON COLLAPSING, NON-WATER COLLECTING COVER OVER THE FACILITY PRIOR TO PREDICTED WET WEATHER TO PREVENT ACCUMULATION AND OVERFLOW.
4. REMOVE AND DISPOSE OF HARDEN CONCRETE AND RETURN THE STRUCTURE TO A FUNCTIONAL STATE.
5. INSPECT THE WASHOUT FACILITY FOR SIGNS OF WEAKENING OR DAMAGE AND REPAIR AS NESSESARY(RELINE THE STRUCTURE WITH NEW POLY SHEETING AFTER EACH CLEANING).

6 / C-304 CONCRETE WASHOUT FACILITY

NOT TO SCALE



CONSTRUCTION SPECIFICATIONS

1. THE AREA UNDER EMBANKMENT SHALL BE CLEARED, GRUBBED AND STRIPPED OF ANY VEGETATION AND ROOT MAT. THE POOL AREA SHALL BE CLEARED
2. THE FILL MATERIAL FOR THE EMBANKMENT SHALL BE FREE OF ROOTS OR OTHER WOODY VEGETATION AS WELL AS OVER-SIZED STONES, ROCKS, ORGANIC MATERIAL OR OTHER OBJECTIONABLE MATERIAL. THE EMBANKMENT SHALL BE COMPACTED BY TRAVERSING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED. MAXIMUM HEIGHT OF EMBANKMENT SHALL BE 5 FEET, MEASURED AT CENTERLINE OF EMBANKMENT.
3. ALL FILL SLOPES SHALL BE 2:1 OR FLATTER, CUT SLOPES 1:1 OR FLATTER
4. EXCAVATION OF THE TOP OF ANY DIKE DIRECTING WATER INTO TRAP MUST EQUAL OR EXCEED THE HEIGHT OF THE EMBANKMENT
5. STORAGE AREA PROVIDED SHALL BE FIGURED BY COMPUTING THE VOLUME AVAILABLE BEHIND THE OUTLET CHANNEL UP TO AN ELEVATION OF ONE (1) FOOT BELOW THE LEVEL WEIR CREST
6. FILTER CLOTH SHALL BE PLACED OVER THE BOTTOM AND SIDES OF THE OUTLET CHANNEL PRIOR TO TO PLACEMENT IN STONE. SECTIONS OF FABRIC MUST OVERLAP AT LEAST 1 FOOT WITH SECTION NEAREST THE ENTRANCE PLACED ON TOP. FABRIC SHALL BE EMBEDDED AT LEAST 6 INCHES INTO EXISTING GROUND AT ENTRANCE OUTLET CHANNEL.S
7. STONE USED IN THE OUTLET CHANNEL SHALL BE 4 TO 8 INCH RIP-RAP. TO PROVIDE A FILTERING EFFECT, A LAYER OF FILTER CLOTH SHALL BE EMBEDDED 1 FOOT WITH SECTION NEAREST ENTRANCE PLACED ON TOP. FABRIC SHALL BE EMBEDDED AT LEAST 6 INCHES INTO EXISTING GROUND AT ENTRANCE OUTLET CHANNEL.
8. SEDIMENT SHALL BE REMOVED AND TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN SEDIMENT HAS ACCUMULATED TO ½ THE DESIGN DEPTH OF THE TRAP. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER IT WILL NOT ERODE.
9. THE STRUCTURE SHALL BE REPAIRED AFTER EACH RAIN AND REPAIRED AS NEEDED
10. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER EROSION AND WATER POLLUTION ARE MINIMIZED
11. THE STRUCTURE SHALL BE REMOVED AND THE AREA STABILIZED WHEN DRAINAGE AREA HAS BEEN PROPERLY STABILIZED
12. DRAINAGE FOR THIS AREA IS LIMITED TO 15 ACRES OR LESS.
13. IF LOCATED IN THE SAME LOCATION AS A PROPOSED INFILTRATION BASIN THE BOTTOM OF THE SEDIMENT SHALL BE A MINIMUM OF 1' ABOVE THE BOTTOM OF THE PROPOSED INFILTRATION BASIN.

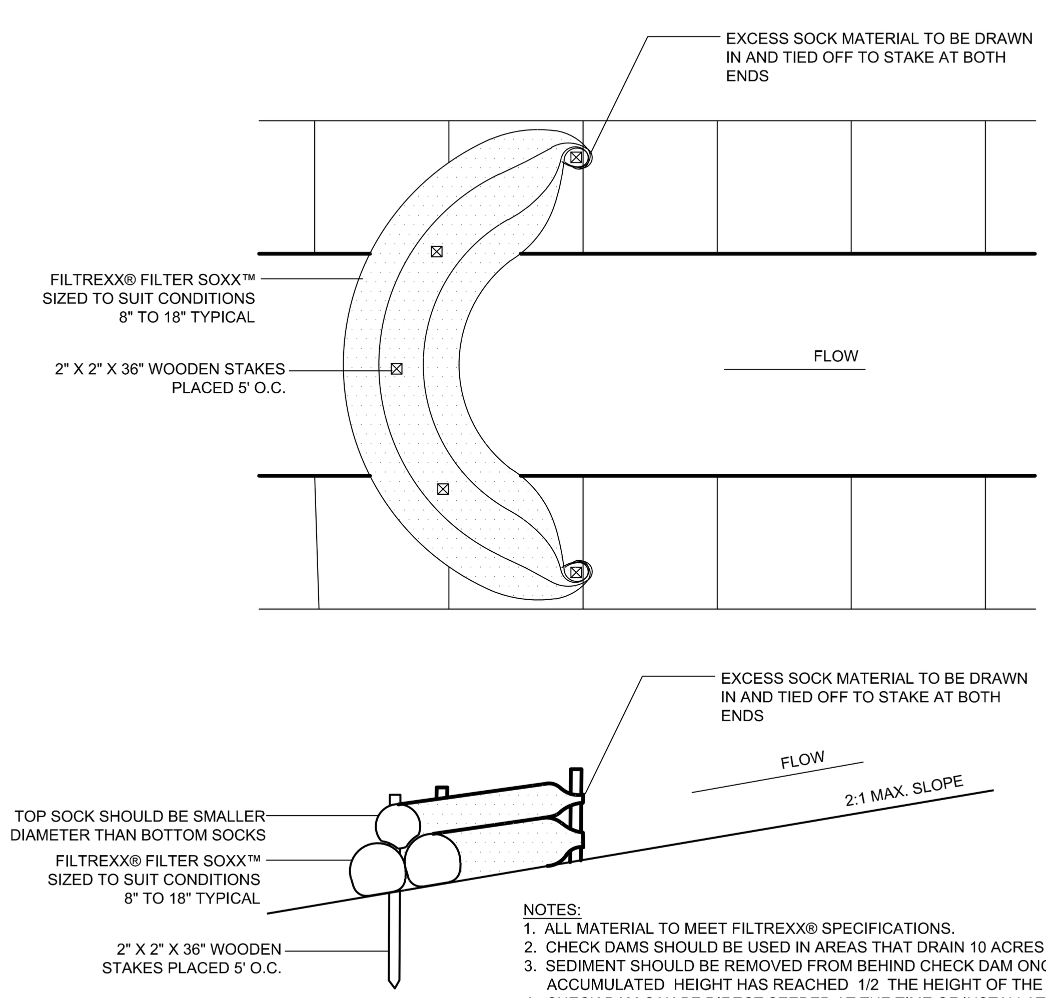
DESIGN CALCULATIONS SMA

SIZES SHOWN ON SITE PLAN
MIN SIZE = 3,600 CF/ACRE

CONTRIBUTING AREA (ACRES)	DEPTH OF CHANNEL (A) (FT)	LENGTH OF WEIR (B) (FT)
1	1.5	4.0
2	1.5	5.0
3	1.5	6.0
4	1.5	10.0
5	1.5	12.0
6	1.5	14.0
7	1.5	16.0
8	2.0	10.0
9	2.0	10.0
10	2.0	12.0

7 / C-304 STONE OUTLET SEDIMENT TRAP

NOT TO SCALE



NOTES:
1. ALL MATERIAL TO MEET FILTREXX® SPECIFICATIONS.
2. CHECK DAMS SHOULD BE USED IN AREAS THAT DRAIN 10 ACRES OR LESS.
3. SEDIMENT SHOULD BE REMOVED FROM BEHIND CHECK DAM ONCE THE ACCUMULATED HEIGHT HAS REACHED 1/2 THE HEIGHT OF THE CHECK DAM.
4. CHECK DAM CAN BE DIRECT SEEDED AT THE TIME OF INSTALLATION.
5. CONTRACTOR IS REQUIRED TO BE A FILTREXX CERTIFIED INSTALLER.

8 / C-304 FILTER SOCK CHECK DAM

NOT TO SCALE

EROSION AND SEDIMENT CONTROL AND STABILIZATION MEASURES, MAINTENANCE AND INSPECTION PRACTICES:

1. THE FOLLOWING IS A LIST OF EROSION AND SEDIMENT CONTROLS TO BE USED ON THIS SITE DURING CONSTRUCTION:

A. STABILIZATION PRACTICES FOR THIS SITE INCLUDE:
- LAND CLEARING ACTIVITIES SHALL BE DONE ONLY IN AREAS WHERE EARTHWORK WILL BE PERFORMED AND SHALL PROGRESS AS EARTHWORK IS NEEDED
- WATERING OF EXCAVATION AND FILL AREAS TO MINIMIZE WIND EROSION DURING CONSTRUCTION AS NEEDED.
- USE OF STABILIZATION FABRIC FOR ALL SLOPES HAVING A SLOPE OF 1V:2H OR GREATER AND FILL SLOPES 1V:3H OR GREATER.
- PERMANENT SEEDING AND PLANTING OF ALL UNPAVED AREAS USING THE HYDROMULCHING GRASS SEEDING TECHNIQUE.

B. STRUCTURAL PRACTICES FOR THIS SITE INCLUDE:
- PERIMETER PROTECTION USING COMPOST FILTER SOCKS
- STABILIZED CONSTRUCTION EXIT POINTS
- SEDIMENT TRAPS OR FILTER SOCKS
- CHECK DAMS

2. THE FOLLOWING INSPECTION AND MAINTENANCE PRACTICES WILL BE USED TO MAINTAIN EROSION AND SEDIMENT CONTROLS AND STABILIZATION MEASURES.

A. ALL CONTROL MEASURES WILL BE INSPECTED ONCE EVERY SEVEN (7) DAYS BY A QUALIFIED INSPECTOR AS DESCRIBED IN PART IV, SECTION C OF THE SPDES PERMIT FOR CONSTRUCTION ACTIVITY NO. GP-0-20-001. SITES THAT HAVE A WAIVER TO DISTURB GREATER THAN FIVE (5) ACRES REQUIRE (2) INSPECTIONS EVERY SEVEN (7) DAYS WITH AT LEAST TWO (2) DAYS BETWEEN INSPECTIONS.

B. DISTURBED AREAS SHALL BE STABILIZED AS SOON AS PRACTICAL AFTER CONSTRUCTION ACTIVITIES HAVE CONCLUDED IN AN AREA. ALL BARE AREAS AND AREAS SUBJECT TO EROSION SHALL BE STABILIZED OR SEEDED AND MULCHED WITHIN XX DAYS WITH TEMPORARY EROSION CONTROL SEEDING.

C. ALL MEASURES WILL BE MAINTAINED IN GOOD WORKING ORDER; IF REPAIRS ARE FOUND TO BE NECESSARY, THEY WILL BE INITIATED WITHIN 24 HOURS OF REPORT.

D. BUILT UP SEDIMENT WILL BE REMOVED FROM FILTER SOCKS WHEN IT HAS REACHED ONE-HALF THE HEIGHT OF THE SOCK. AN ADDITIONAL FILTER SOCK MAY BE INSTALLED ON TOP OF THE ORIGINAL TO INCREASE SEDIMENT STORAGE CAPACITY/PREVENT SEDIMENT DISTURBANCE.

E. FILTER SOCKS WILL BE INSPECTED FOR DEPTH OF SEDIMENT, DISLODGEMENT, BREAKS, TEARS, ETC. DAMAGED OR DISLODGED FILTER SOCKS SHALL BE REPAIRED OR REPLACED IMMEDIATELY.

F. TEMPORARY AND PERMANENT SEEDING AND ALL OTHER STABILIZATION MEASURES WILL BE INSPECTED FOR BARE SPOTS, WASHOUTS, AND HEALTHY GROWTH.

G. SEDIMENT BASINS WILL BE INSPECTED FOR DEPTH OF SEDIMENT. BUILT UP SEDIMENT WILL BE REMOVED WHEN IT REACHES 50 PERCENT OF THE CAPACITY.

H. CHECK DAMS WILL BE INSPECTED FOR DEPTH OF SEDIMENT, WASHOUT, ETC. BUILT UP SEDIMENT WILL BE REMOVED FROM BEHIND THE CHECK DAM WHEN IT REACHES ONE-THIRD OF THE HEIGHT OF THE CHECK DAM.

I. A MAINTENANCE INSPECTION REPORT WILL BE MADE AFTER EACH INSPECTION. COPIES OF THE REPORT FORMS TO BE COMPLETED BY THE INSPECTOR ARE INCLUDED IN THIS SWPPP. UPON COMPLETION, COPIES OF THE REPORTS SHALL BE SUBMITTED TO THE TOWN.

J. THE JOB SITE SUPERINTENDENT WILL BE RESPONSIBLE FOR SELECTING AND TRAINING THE INDIVIDUALS WHO WILL BE RESPONSIBLE FOR THESE INSPECTIONS, MAINTENANCE AND REPAIR ACTIVITIES, AND FILLING OUT INSPECTION AND MAINTENANCE REPORTS. ALL PERSONNEL PERFORMING INSPECTIONS MUST MEET THE REQUIREMENTS DESCRIBED IN PART IV, SECTION C OF THE SPDES PERMIT FOR CONSTRUCTION ACTIVITY NO. GP-0-20-001.

K. PERSONNEL SELECTED FOR THE INSPECTION AND MAINTENANCE RESPONSIBILITIES WILL RECEIVE APPROPRIATE INSTRUCTION FROM THE JOB SITE SUPERINTENDENT. THEY WILL BE TRAINED IN ALL THE INSPECTION AND MAINTENANCE PRACTICES NECESSARY FOR KEEPING THE EROSION AND SEDIMENT CONTROLS THAT ARE USED ONSITE IN GOOD WORKING ORDER. THEY WILL ALSO BE TRAINED IN THE COMPLETION OF, INITIATION OF ACTIONS REQUIRED BY, AND THE FILING OF THE INSPECTION FORMS. DOCUMENTATION OF THIS PERSONNEL TRAINING WILL BE KEPT ON SITE WITH THE SWPPP. ALL PERSONNEL DESCRIBED IN PART IV MUST MEET THE REQUIREMENTS DESCRIBED IN PART IV, SECTION C OF THE SPDES PERMIT FOR CONSTRUCTION ACTIVITY NO. GP-0-20-001.

L. DISTURBED AREAS AND MATERIAL STORAGE AREAS WILL BE INSPECTED FOR EVIDENCE OF OR POTENTIAL FOR POLLUTANTS ENTERING STORMWATER SYSTEMS.

M. REPORT TO THE NYS DEPARTMENT OF ENVIRONMENTAL CONSERVATION WITHIN 24 HOURS ANY NONCOMPLIANCE WITH THE SWPPP THAT WILL ENDANGER PUBLIC HEALTH OR THE ENVIRONMENT. FOLLOW UP WITH A WRITTEN REPORT WITHIN 5 DAYS OF THE NONCOMPLIANCE EVENT.

N. NECESSARY MEASURES SHALL BE TAKEN TO CONTAIN ANY FUEL OR POLLUTION RUNOFF. NO RE-FUELING SHALL BE OCCUR WITHIN 100 FEET OF ANY WETLAND RESOURCE AREA AND 200 FEET FROM RIVERFRONT. LEAKING EQUIPMENT OR SUPPLIES SHALL IMMEDIATELY BE REPAIRED OR REMOVED FROM THE SITE.

O. CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO PREVENT DUST FROM FORMING.

SOIL RESTORATION:

AS PER CHAPTER 5 OF THE NEW YORK STATE STORMWATER MANAGEMENT DESIGN MANUAL, SOIL RESTORATION IS REQUIRED ON THIS SITE IN ALL NON-IMPERVIOUS AREAS ONCE FINAL SUBGRADE ELEVATION IS ACHIEVED. IN AREAS OF CUT OR FILL THE SOILS SHALL BE AERATED AND 6 INCHES OF TOPSOIL SHALL BE APPLIED. IN AREAS OF HEAVY CONSTRUCTION TRAFFIC (ESPECIALLY IN AREAS 5 TO 25 FEET FROM BUILDING, BUT NOT WITHIN 5 FEET OF FOUNDATION WALLS) THE FOLLOWING RESTORATION MUST BE APPLIED:

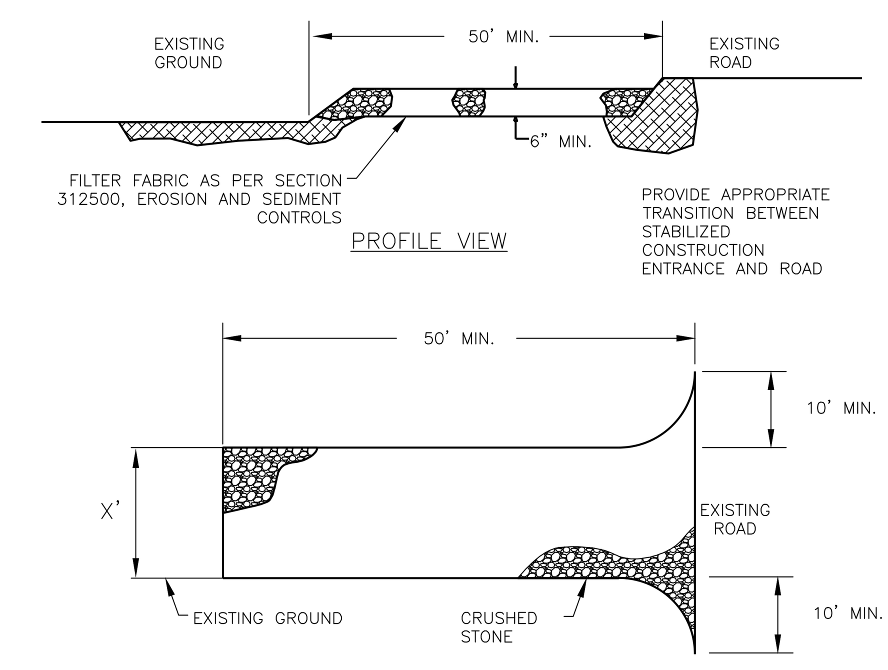
1. APPLY 3 INCHES OF COMPOST OVER SUBSOIL.
2. TILL COMPOST INTO SUBSOIL TO A DEPTH OF AT LEAST 12 INCHES USING A CAT-MOUNTED RIPPER, TRACTOR-MOUNTED DISC, OR TILLER, MIXING, AND CIRCULATING AIR AND COMPOST INTO SOIL.
3. ROCK-PICK UNTIL UPLIFTED STONE/ROCK MATERIALS OF 4 INCHES AND LARGER SIZE ARE CLEANED OFF THE SITE.
4. APPLY TOPSOIL TO A DEPTH OF 6 INCHES.
5. VEGETATE AS REQUIRED BY APPROVED PLAN.

ADDITIONAL EROSION CONTROL AND GRADING NOTES:

1. MINIMAL EROSION CONTROL DEVICES ARE ILLUSTRATED ON SITE PLAN IN A SCHEMATIC MANNER BASED ON NY STATE GUIDELINES FOR EROSION AND SEDIMENT CONTROL. IT WILL BE NECESSARY TO ADJUST THE ACTUAL LOCATION AND QUANTITY OF EROSION CONTROL DEVICES DEPENDING UPON FIELD CONDITIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING THESE MEASURES AS REQUIRED TO PROTECT THE SITE.
2. SLOPES SHALL TYPICALLY BE GRADED AT A MAXIMUM OF 3:1 (3 HORIZ. 1 VERT.) WITHIN ALL CUT OR FILL AREAS, UNLESS OTHERWISE DESIGNATED ON PLANS.
3. TEMPORARY SEED SHALL BE A COMMERCIALLY AVAILABLE MIXTURE OF PERENNIAL RYE AND UTILITY GRADE FESCUE. PERCENTAGE OF PERENNIAL RYE SHALL NOT EXCEED 50%. PERMANENT SEED SHALL BE AS SPECIFIED ON THE PLANTING PLANS.
4. SEEDED AREAS SHALL BE FULLY COVERED WITH A LEAN STRAW OR MULCH MATERIAL. IF ORDERED BY THE ENGINEER OR MUNICIPALITY, A BIODEGRADABLE NETTING (E.G., EXCELSIOR BLANKET, COIR GEOTEXTILE) SHALL BE ANCHORED OVER SEEDED AREAS WHICH DEMONSTRATE "RILLING" OR OTHER EROSION PROCESSES.
5. TOPSOIL AND SEED SHALL BE REAPPLIED TO ANY AREAS WHICH FAIL TO ESTABLISH AS A RESULT OF INITIAL APPLICATION.
6. FILTER SOCK BARRIERS SHALL BE PLACED WITHIN ALL AREAS OF EXPOSED SLOPES TO CONTROL SOIL EROSION DURING AND AFTER CONSTRUCTION.
7. EROSION CONTROL (ERO-MAT), GEOTEXTILE FABRIC, COMPOST BLANKET, RIPRAP, OR APPROVED EQUAL, SHALL BE INSTALLED ON ALL 6H:1V SLOPES: AN ORGANIC FIBER PROTECTIVE MAT, HALF INCH LAYER OF CHOPPED STRAW, KNITTED INTO A RUGGED MAT WITH A THIN NETTING OF PHOTODEGRADABLE POLYPROPYLENE. SECURE MAT TO SLOPE WITH 6" STEEL U-SHAPED STABLES, 2 STAPLES PER SQUARE YARD, OR AS PER MANUFACTURER'S INSTRUCTIONS.
8. PRIOR TO SEEDING, ACCESS AISLES, TEMPORARY STAGING AREAS, STORAGE, AND PARKING AREAS TO BE DECOMPACTED AND RELOADED.
9. SEDIMENT BARRIERS SHALL BE CONSTRUCTED AROUND ALL SOIL STOCKPILE AREAS.
10. STREAM REACHES ON-SITE AND DOWNSTREAM OF CONSTRUCTION SHALL NOT HAVE SUBSTANTIAL VISIBLE CONTRAST RELATIVE TO COLOR, TASTE, ODOR, TURBIDITY AND SEDIMENT DEPOSITION FROM THE REACHES UPSTREAM OF THE CONSTRUCTION ACTIVITY.
11. VEHICULAR ACCESS POINTS SHALL BE MONITORED AND INSPECTED AT THE SAME FREQUENCY AS EROSION CONTROL FEATURES TO INSURE THAT DEPOSITS OF SAND, SILT OR OTHER MATERIAL IS NOT BEING DEPOSITED ON PUBLIC ROADWAYS. IN THE EVENT ANY SIGNIFICANT DEPOSITS OCCUR THEY SHALL BE CLEANED UP IMMEDIATELY.
12. A SPDES PERMIT SHALL BE IN PLACE PRIOR TO COMMENCING ANY GROUND DISTURBANCE.
13. PROJECT DRAINAGE FEATURES TO BE CLEANED OUT AFTER COMPLETION OF CONSTRUCTION.

SEQUENCE OF CONSTRUCTION ACTIVITIES:

1. SITE TO BE MOBILIZED.
2. EROSION AND SEDIMENT CONTROL MEASURES TO BE INSTALLED IN CONJUNCTION WITH ANY BRUSH OR TREE CLEARING REQUIRED. NOTE: EROSION AND SEDIMENT CONTROL MEASURES TO BE INSTALLED IN ACCORDANCE WITH SHEETS C-300, C-301, C-302, C-303, AND C-304 ASSOCIATED DETAILS AS WELL AS NYS DEC CONSTRUCTION GENERAL PERMIT #GP-0-20-001. IN ANY INSTANCE THAT A CONFLICT BETWEEN THESE TWO GUIDELINES IS PRESENT, THE MORE CONSERVATIVE GUIDELINE TAKES PRECEDENT.
3. CLEARING AND GRUBBING OPERATIONS CREW SHALL CHIP AND MULCH DIRECTLY BEHIND OPERATION TO MAKE SURE NO AREAS ABOVE FIVE ACRES SHALL BE DISTURBED AT ANY TIME. NO MORE THAN FIVE ACRES SHALL BE DISTURBED AT ANY ONE TIME WITHOUT PRIOR APPROVAL FROM NYSDEC.
4. INSTALLATION OF ACCESS ROAD TO COMMENCE. NOTE: ANY AREAS OF DISTURBANCE SHALL BE STABILIZED WITH TEMPORARY SEEDING PER THE REQUIRED TIMELINES AS PER NYS DEC CONSTRUCTION GENERAL PERMIT #GP-0-20-001.
5. MV TRENCHES AND FOUNDATIONS INSTALLATION IN CONJUNCTION WITH THE PLACEMENT OF CONCRETE FOUNDATIONS FOR THE ELECTRICAL EQUIPMENT PADS TO COMMENCE.
6. WATERING OF THE EXCAVATION AND FILL AREAS SHALL BE DONE TO MINIMIZE WIND EROSION AS NEEDED THROUGHOUT CONSTRUCTION.
7. RACKING, TABLES, MODULES, INVERTERS AND ELECTRICAL EQUIPMENT INSTALLATION TO COMMENCE.
8. REMOVE LAYDOWN AREA, SPREAD GRAVEL ON ROADWAY, AND SEED AREAS.
9. FINAL SITE STABILIZATION TO COMMENCE.
10. ALL EROSION AND SEDIMENT CONTROL MEASURES TO BE REMOVED ONCE 80% VEGETATIVE COVER HAS BEEN ACHIEVED. REMOVE FILTER SOCKS, STABILIZED CONSTRUCTION ENTRANCES, AND OTHER TEMPORARY EROSION AND SEDIMENT CONTROLS. REGRADE ALL AREAS OF DISTURBANCE FROM SAID REMOVAL TO BE SEEDED PRIOR TO DEMOBILIZATION.
11. SITE TO BE DEMOBILIZED.



1. STONE FOR A STABILIZED CONSTRUCTION ENTRANCE SHALL BE 1 TO 2 INCH STONE, RECLAIMED STONE, OR RECYCLED CONCRETE EQUIVALENT.
2. THE LENGTH OF THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 50 FEET.
3. THE THICKNESS OF THE STONE FOR THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 6 INCHES.
4. THE WIDTH OF THE ENTRANCE SHALL NOT BE LESS THAN THE FULL WIDTH OF THE PROPOSED ENTRANCE.
5. GEOTEXTILE FILTER CLOTH SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING THE STONE.
6. ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARDS THE CONSTRUCTION ENTRANCE SHALL BE PIPED BENEATH THE SURFACE.
7. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO EXISTING ROAD. THIS MANY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE OR ADDITIONAL LENGTH AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO EXISTING ROAD SHALL BE REMOVED IMMEDIATELY.

9 / C-304 STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE

FOR MUNICIPAL APPROVAL ONLY - NOT INTENDED FOR CONSTRUCTION

nexamp
101 Summer Street, Boston, MA 02110
Tel: (617) 431-1440 Fax: (978) 416-2525 Web: nexamp.com

edp ENVIRONMENTAL DESIGN PARTNERSHIP, LLP.
900 Route 146 Clifton Park, New York 12065
(518) 371-7621
edpllp.com

Rev	Issued For	Date
A	PRELIM. PLAN SET	5/22/2023
B	INTERNAL COMMENTS	8/10/2023
C	INTERNAL COMMENTS	9/15/2023

P.E. seal/Consultant: STATE OF NEW YORK · STEPHANIE ALESSANDRINI · 092881 · LICENSED PROFESSIONAL ENGINEER

Project: WILSON HILL SOLAR
469 Wilson Hill Road
Hoosick Falls, NY 12090

Drawing Title: EROSION, LAYOUT AND MATERIALS DETAILS

NOT FOR CONSTRUCTION

Drawn by: BMW Scale: As Shown Approved by: STA

Dwg No: C-304 Size: D Sheet Rev: C

PHASE 1

1. INSTALLATION OF EROSION AND SEDIMENT CONTROL FEATURES (SEE EROSION AND SEDIMENT CONTROL PLANS FOR DETAILS)
2. INSTALLATION OF TEMPORARY ACCESS ROADWAY
3. INSTALLATION OF TEMPORARY LAYDOWN AREA
4. TOPSOIL REMOVAL
5. STUMPING AND CHIPPING
6. TEMPORARY STABILIZATION (MULCH, STRAW, TEMPORARY SEEDING, OR WOOD CHIPS, AS APPROVED BY OWNER).

MAXIMUM DISTURBANCE: ±4.90 ACRES

PHASE 1 DISTURBANCE

SCALE: 1"=200'

PHASE 2

1. INSTALLATION OF EROSION AND SEDIMENT CONTROL FEATURES (SEE EROSION AND SEDIMENT CONTROL PLANS FOR DETAILS)
2. TOPSOIL REMOVAL
3. STUMPING AND CHIPPING
4. TEMPORARY STABILIZATION (MULCH, STRAW, TEMPORARY SEEDING, OR WOOD CHIPS, AS APPROVED BY OWNER).

MAXIMUM DISTURBANCE: ±4.90 ACRES

PHASE 2 DISTURBANCE

SCALE: 1"=200'

PHASE 3

1. INSTALLATION OF EROSION AND SEDIMENT CONTROL FEATURES (SEE EROSION AND SEDIMENT CONTROL PLANS FOR DETAILS)
2. TOPSOIL REMOVAL
3. STUMPING AND CHIPPING
4. TEMPORARY STABILIZATION (MULCH, STRAW, TEMPORARY SEEDING, OR WOOD CHIPS, AS APPROVED BY OWNER).

MAXIMUM DISTURBANCE: ±4.90 ACRES

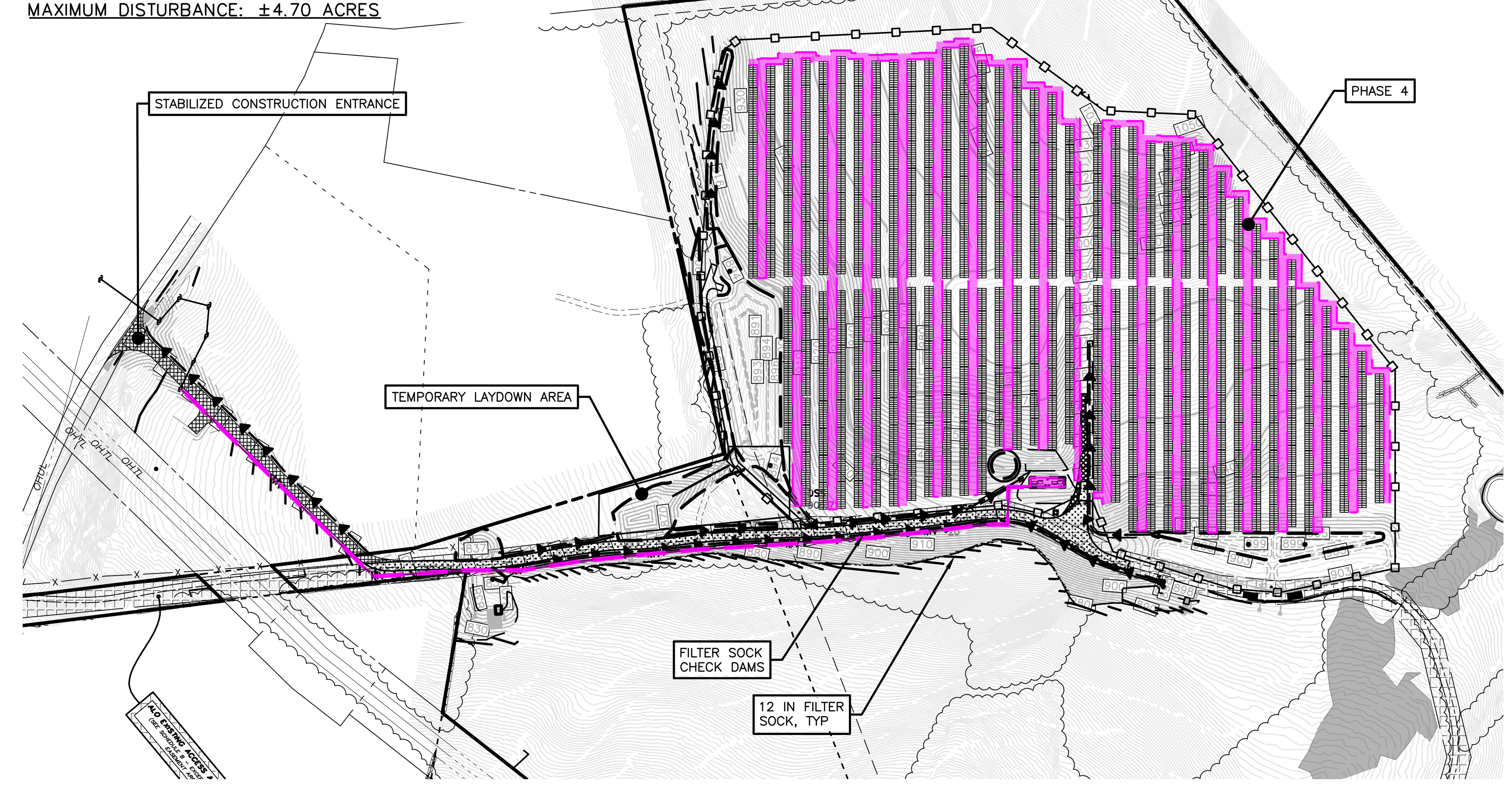
PHASE 3 DISTURBANCE

SCALE: 1"=200'

PHASE 4

1. ELECTRICAL UNDERGROUND MV INSTALLATION
2. EQUIPMENT PAD AND CONDUIT LAYOUT
3. EQUIPMENT PAD INSTALLATION
4. FOUNDATION INSTALLATION/COMBINER BOX INSTALLATION
5. RACK INSTALLATION
6. MODULE INSTALLATIONS
7. STRING WIRE/SWITCHGEAR INSTALLATION, CENTRAL STRING INVERTER, WEATHER STATIO

MAXIMUM DISTURBANCE: ±4.70 ACRES



PHASE 4 DISTURBANCE

SCALE: 1"=200'

FOR MUNICIPAL APPROVAL ONLY - NOT INTENDED FOR CONSTRUCTION

nexamp
101 Summer Street, Boston, MA 02110
Tel: (617) 431-1440 Fax: (978) 416-2525 Web: nexamp.com

edp ENVIRONMENTAL DESIGN PARTNERSHIP, LLP.
900 Route 146 Clifton Park, New York 12065
(518) 371-7621 edpllp.com

Rev	Issued For	Date

P.E. seal/Consultant:

Project:
WILSON HILL SOLAR
469 Wilson Hill Road
Hoosick Falls, NY 12090

Drawing Title:
DISTURBANCE PHASING PLAN
NOT FOR CONSTRUCTION

Drawn by: BMW Scale: As Shown Approved by: STA

Dwg No: PH 1 Size: D Sheet Rev:

SECTION 3

Federal, State or Local Notice of Intent (NOI)

NYSDEC NOI Acknowledgement Letter

NOI for coverage under Stormwater General Permit for Construction Activity

version 1.36

(Submission #: HPX-4SRJ-3ZYAS, version 1)

Details

Submission Alias	Wilson Hill Road Solar Array
Originally Started By	Brandon Ferguson
Alternate Identifier	Wilson Hill Road Solar Array
Submission ID	HPX-4SRJ-3ZYAS
Submission Reason	New
Status	Draft

Form Input

Owner/Operator Information

Owner/Operator Name (Company/Private Owner/Municipality/Agency/Institution, etc.)
Wilson Hill Solar, LLC

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

Owner/Operator Contact Person First Name
Eamon

Owner/Operator Mailing Address
101 Summer Street, 2nd Floor

City
Boston

State
MA

Zip
02110

Phone
845-772-2963

Email
eriley@nexamp.com

Federal Tax ID
NONE PROVIDED

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

Project Location

Project/Site Name
Wilson Hill Road Solar Array

Street Address (Not P.O. Box)
469 Wilson Hill Road

Side of Street
North

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

State
NY

Zip
12090

DEC Region
4

The DEC Region must be provided. Please use the NYSDEC Stormwater Interactive Map (https://gisservices.dec.ny.gov/gis/stormwater/) to confirm which DEC Region this site is located in. To view the DEC Regions, click on “Other Useful Reference Layers” on the left side of the map, then click on “DEC Administrative Boundary.” Zoom out as needed to see the Region boundaries.

For projects that span multiple Regions, please select a primary Region and then provide the additional Regions as a note in Question 39.

County
RENSSELAER

Name of Nearest Cross Street
Fog Hill Road

Distance to Nearest Cross Street (Feet)
850

Project In Relation to Cross Street
East

Tax Map Numbers Section-Block-Parcel
26-1-12.21/1

Tax Map Numbers
NONE PROVIDED

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

1. Coordinates

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

Navigate to your location and click on the map to get the X,Y coordinates
42.900895102639076,-73.38223675800164

Project Details

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

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

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

Pre-Development Existing Landuse
Pasture/Open Land

Post-Development Future Land Use
Other: Solar Field

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

---

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

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

Total Site Area (acres)
99.5

Total Area to be Disturbed (acres)
25.1

Existing Impervious Area to be Disturbed (acres)
1.0

Future Impervious Area Within Disturbed Area (acres)
7.6

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

---

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

A (%)
0.0

B (%)
0.0

C (%)
3.2

D (%)
96.8

7. Is this a phased project?
Yes

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

Start Date
04/01/2024

End Date
09/30/2024

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

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

9a. Type of waterbody identified in question 9?
River Off Site

Other Waterbody Type Off Site Description
NONE PROVIDED

9b. If "wetland" was selected in 9A, how was the wetland identified?
NONE PROVIDED

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

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

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

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

If No, skip question 13.

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

If Yes, what is the acreage to be disturbed?
19.6

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

15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)?
Yes

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

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

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

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

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

Required SWPPP Components

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

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

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

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

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

SWPPP Preparer
Environmental Design Partnership

Contact Name (Last, First)
Alessandrini Stephanie

Mailing Address
900 Rt 146

City
Clifton Park

State
NY

Zip
12065

Phone
518-371-7621

Email
salessandrini@edpllp.com

Download SWPPP Preparer Certification Form
Please take the following steps to prepare and upload your preparer certification form:

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

Please upload the SWPPP Preparer Certification

NONE PROVIDED
Comment
NONE PROVIDED

Erosion & Sediment Control Criteria

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

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

Temporary Structural
Check Dams
Construction Road Stabilization
Level Spreader
Sediment Traps
Silt Fence
Stabilized Construction Entrance

Biotechnical
None

Vegetative Measures
Grassed Waterway
Seeding
Topsoiling

Permanent Structural
Land Grading
Riprap Slope Protection
Rock Outlet Protection

Other
NONE PROVIDED

Post-Construction Criteria

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

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.
Preservation of Undisturbed Area
Reduction of Clearing and Grading

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

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout). (Acre-feet)
0.754

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

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

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

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29. (acre-feet)
0.150

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

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

32. Provide the Minimum RRv required based on HSG. [Minimum RRv Required = (P) (0.95) (Ai) / 12, Ai=(s) (Aic)] (acre-feet)
0.140

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

If Yes, go to question 33.
Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQv required (#28) must also be included in the SWPPP.

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

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

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

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

33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question #29. (acre-feet)
0.604

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

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a).
0.754

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

If Yes, go to question 36.

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

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

CPv Required (acre-feet)
NONE PROVIDED

CPv Provided (acre-feet)
NONE PROVIDED

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

Overbank Flood Control Criteria (Qp)

Pre-Development (CFS)
71.28

Post-Development (CFS)
64.09

Total Extreme Flood Control Criteria (Qf)

Pre-Development (CFS)
136.00

Post-Development (CFS)
128.33

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

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

If Yes, Identify the entity responsible for the long term Operation and Maintenance
WIlson Hill Solar, LLC

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.
The site has limited areas what stormwater practices are practical and where stormwater practices can be placed due to the large area with steep slopes.

Post-Construction SMP Identification

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

RR Techniques (Area Reduction)

Round to the nearest tenth

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

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

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

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

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

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

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

RR Techniques (Volume Reduction)

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

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

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

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

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

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

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

Standard SMPs with RRv Capacity

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

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

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

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

Total Contributing Impervious Acres for Bioretention (F-5)
3.83

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

Standard SMPs

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

Total Contributing Impervious Acres for Wet Pond (P-2)
4.10

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

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

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

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

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

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

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

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

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

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

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

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

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

Total Contributing Impervious Area for Hydrodynamic
NONE PROVIDED

Total Contributing Impervious Area for Wet Vault
NONE PROVIDED

Total Contributing Impervious Area for Media Filter
NONE PROVIDED

"Other" Alternative SMP?
NONE PROVIDED

Total Contributing Impervious Area for "Other"
NONE PROVIDED

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

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

Manufacturer of Alternative SMP
NONE PROVIDED

Name of Alternative SMP
NONE PROVIDED

Other Permits

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

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

If Other, then identify
NONE PROVIDED

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

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

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

MS4 SWPPP Acceptance

43. Is this project subject to the requirements of a regulated, traditional land use control MS4?
No

If No, skip question 44

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

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

MS4 Acceptance Form Upload
> NONE PROVIDED
> **Comment**
> NONE PROVIDED

Owner/Operator Certification

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

Upload Owner/Operator Certification Form
> NONE PROVIDED
> **Comment**
> NONE PROVIDED

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)

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Owner/Operator Certification Form

SPDES General Permit For Stormwater Discharges From Construction Activity (GP-0-20-001)

Project/Site Name: ____

eNOI Submission Number: ____

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

Certification Statement - Owner/Operator

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.

Owner/Operator First Name M.I. Last Name

____

Signature

____

Date

SWPPP Preparer Certification Form

SPDES General Permit for Stormwater Discharges From Construction Activity (GP-0-20-001)

Project Site Information

Project/Site Name

Dutch Meadows Residential Community

Owner/Operator Information

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

RBC Glenville Development, LLC

Certification Statement – SWPPP Preparer

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	MI	Last Name

Signature

Date

SECTION 4

Federal, State or Local NPDES General Permit

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

CONSTRUCTION ACTIVITY

Permit No. GP- 0-20-001

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

of the Environmental Conservation Law

Effective Date: January 29, 2020

Expiration Date: January 28, 2025

John J. Ferguson

Chief Permit Administrator

1-23-20

Authorized Signature

Date

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

PREFACE

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

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

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

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

Table of Contents

Part 1. PERMIT COVERAGE AND LIMITATIONS

A. Permit Application

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

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

2. *Construction activities* involving soil disturbances of less than one (1) acre where the Department has determined that a *SPDES* permit is required for stormwater *discharges* based on the potential for contribution to a violation of a *water quality standard* or for significant contribution of *pollutants* to *surface waters of the State.*

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

B. Effluent Limitations Applicable to Discharges from Construction Activities

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

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

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

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

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

(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 *Discharge*s.** 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 not subject to the requirements of a *regulated, traditional land use control MS4*:

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

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

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

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

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

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

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

D. General Requirements For Owners or Operators With Permit Coverage

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

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

3. The *owner or operator* of a *construction activity* shall not disturb greater than five (5) acres of soil at any one time without prior written authorization from the Department or, in areas under the jurisdiction of a *regulated, traditional land* *use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*). At a minimum, the *owner or operator* must comply with the following requirements in order to be authorized to disturb greater than five (5) acres of soil at any one time:

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

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

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

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

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

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

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

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

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

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

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

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

F. Change of Owner or Operator

1. When property ownership changes or when there is a change in operational control over the construction plans and specifications, the original *owner or operator* must notify the new *owner or operator*, <u>in writing,</u> 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; <u>and</u> all areas of disturbance have achieved *final stabilization*; <u>and</u> all temporary, structural erosion and sediment control measures have been removed; <u>and</u> 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

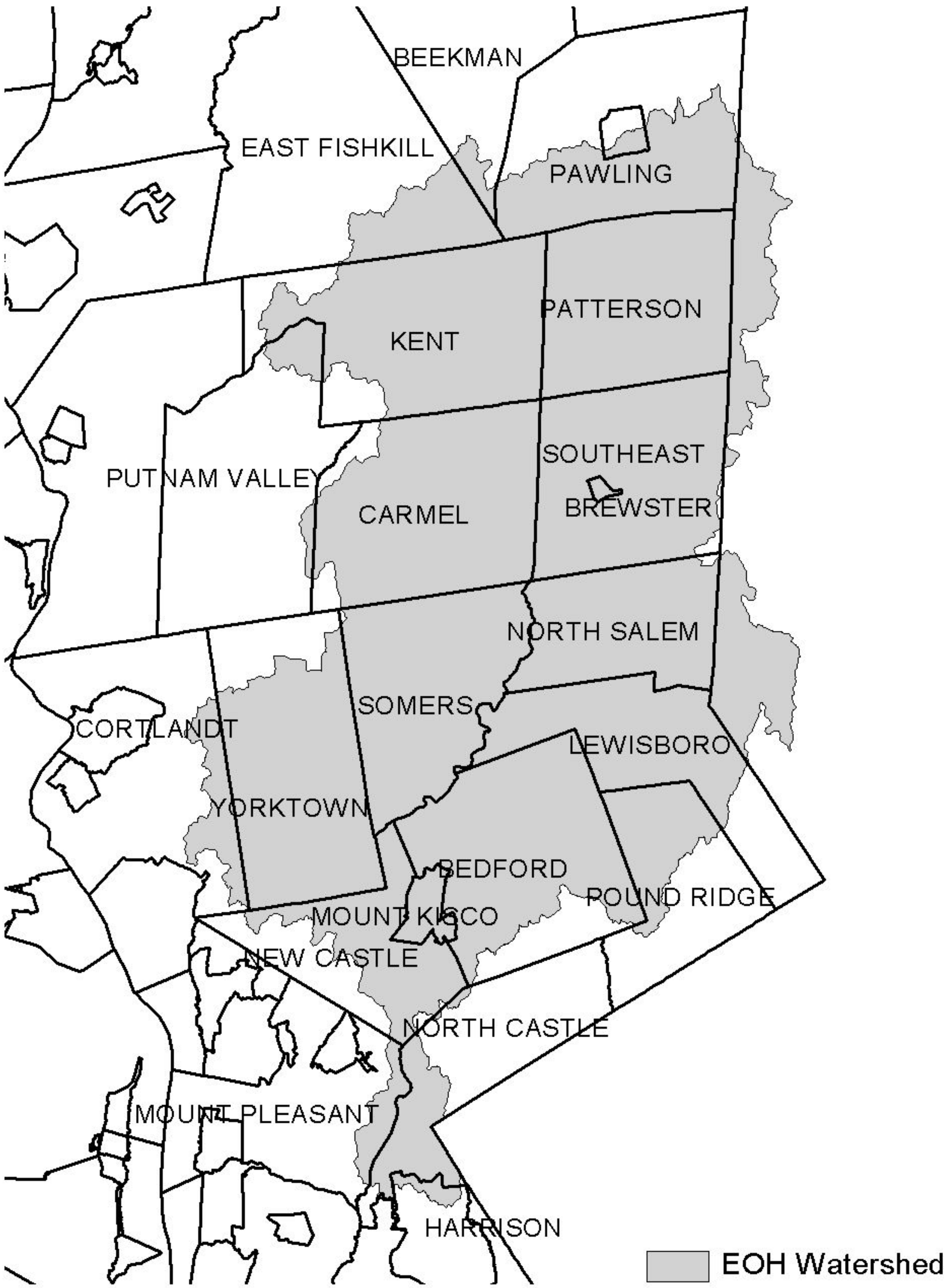


Figure 2 - Onondaga Lake Watershed

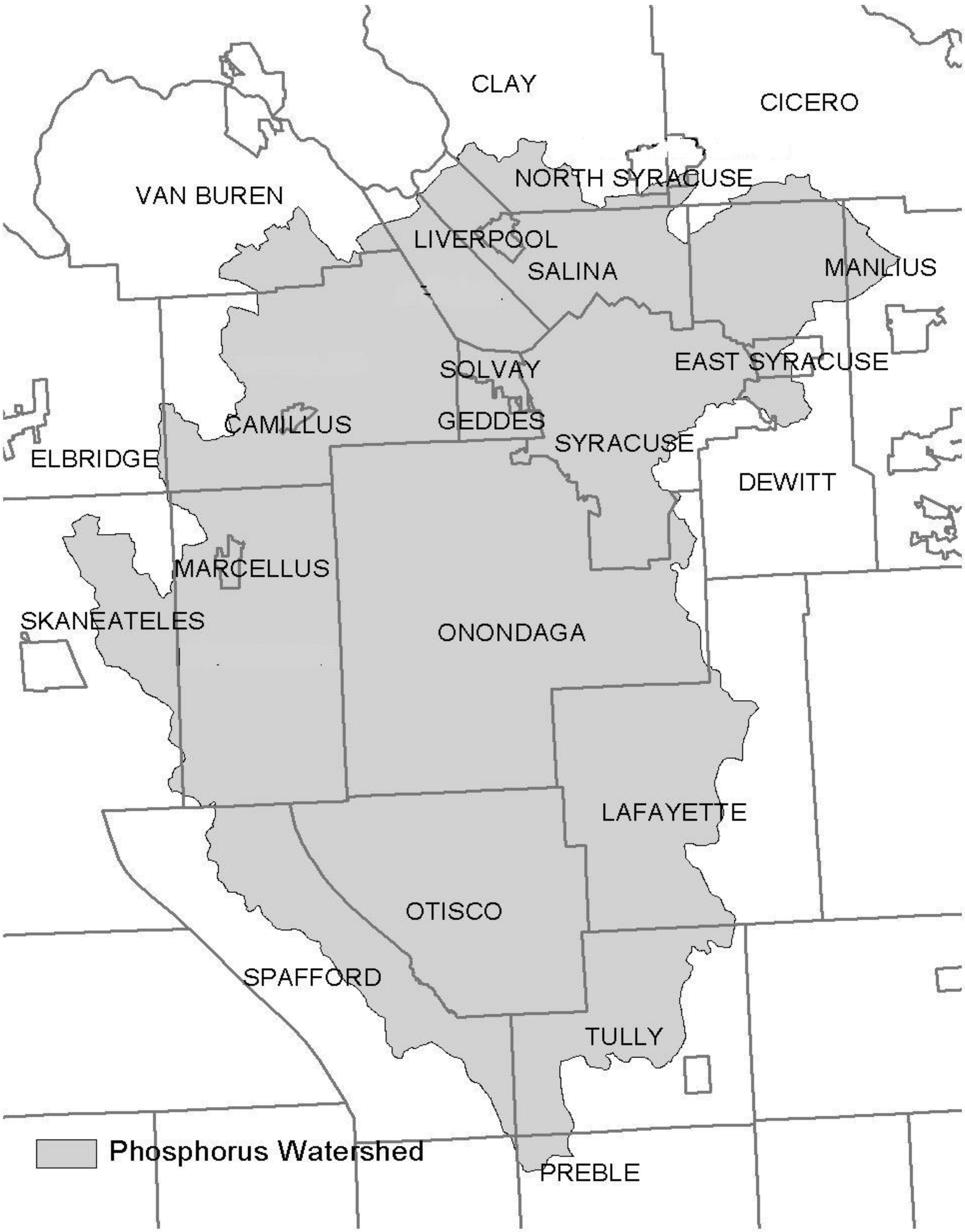
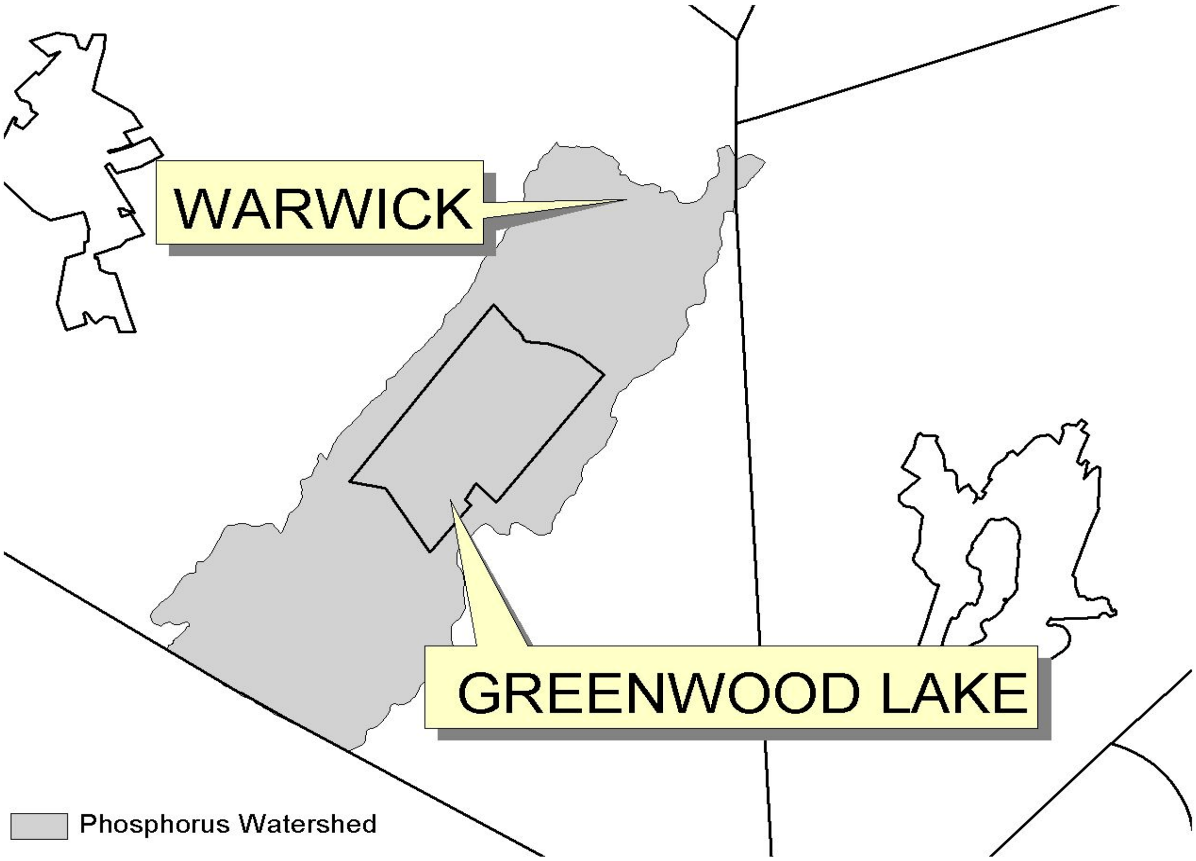


Figure 3 - Greenwood Lake Watershed



<u>Figure 4 - Oscawana Lake Watershed</u>

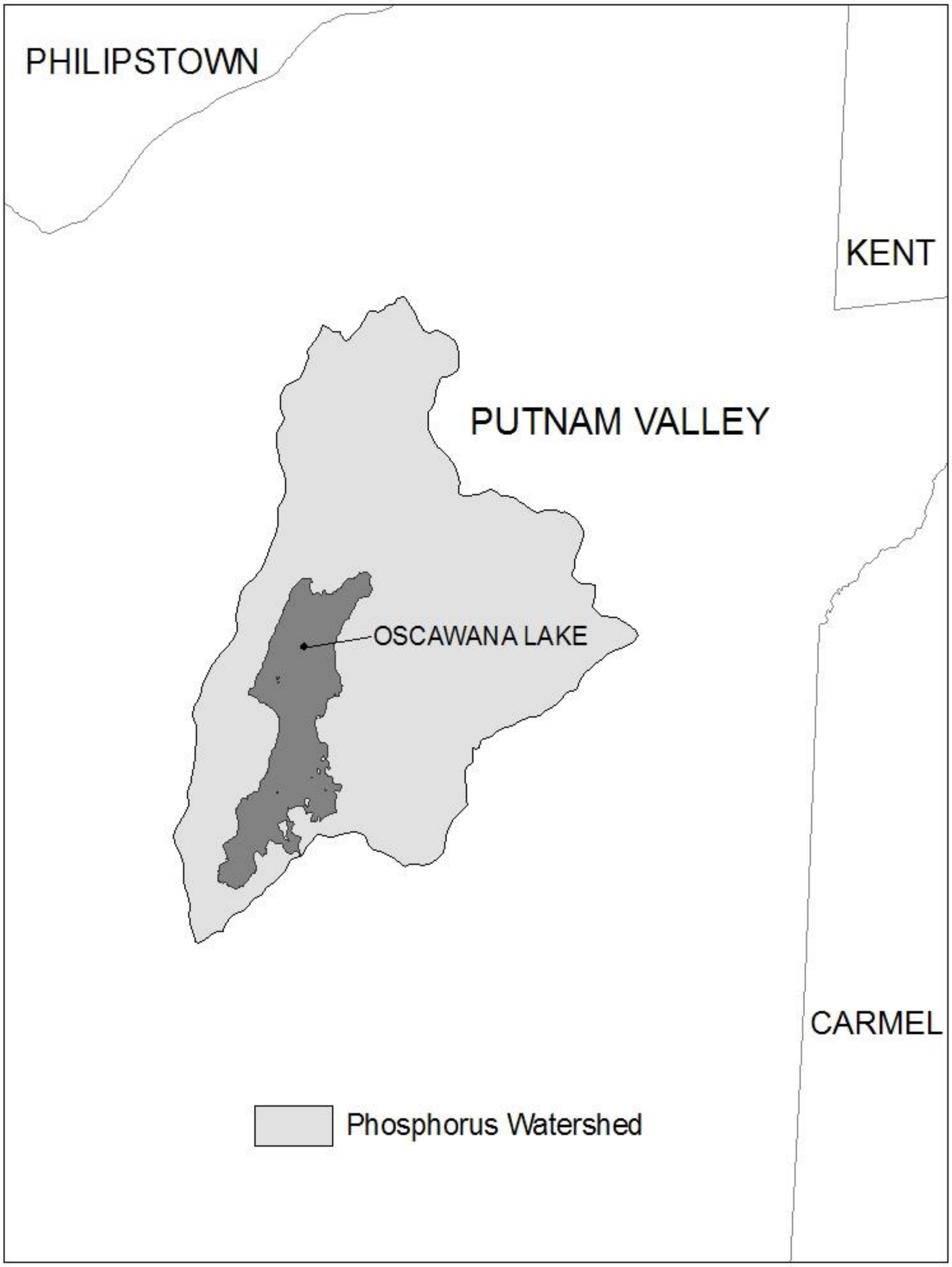
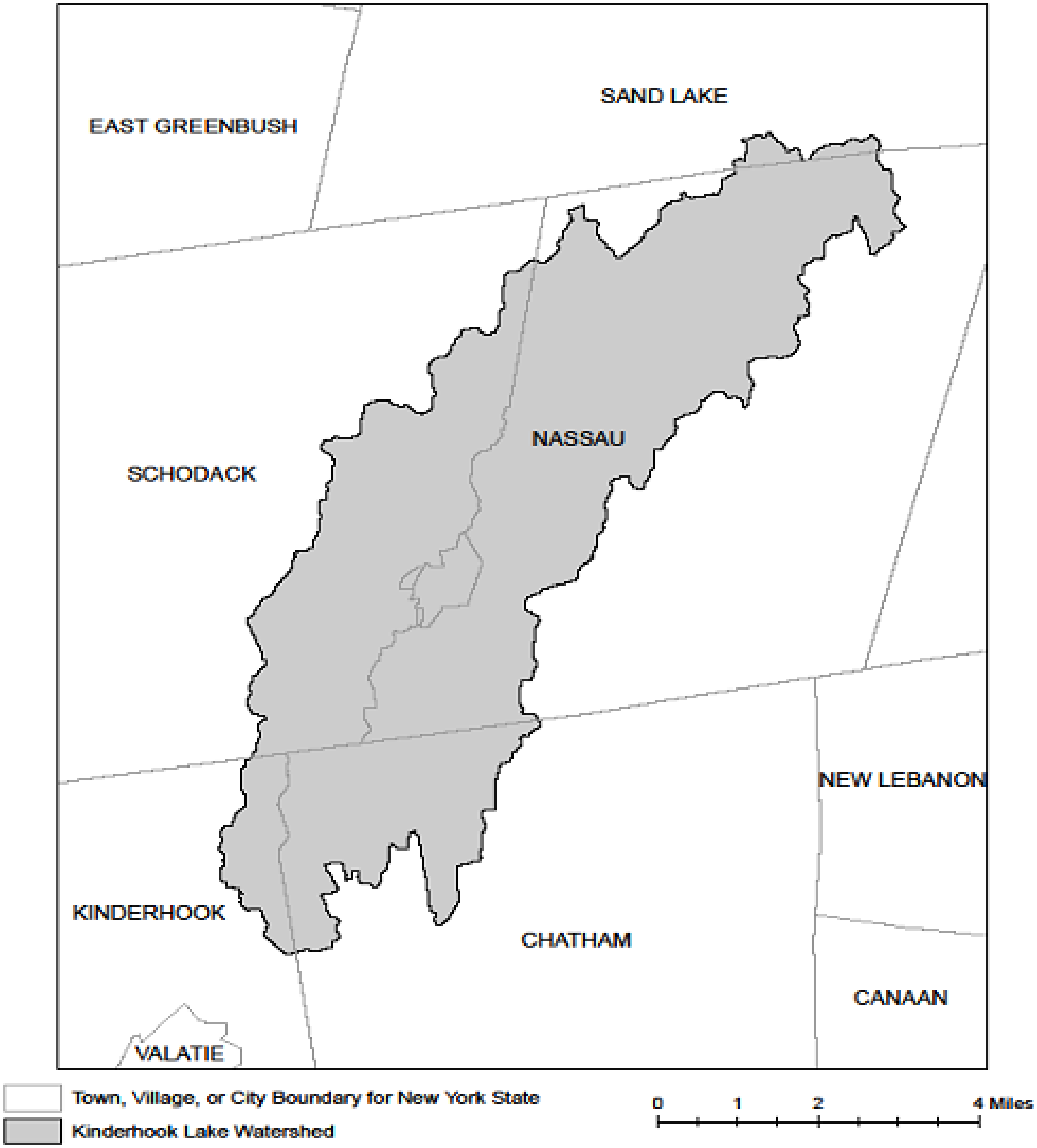


Figure 5 - Kinderhook Lake Watershed



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

SECTION 5

Certifications, Forms, Reports, and Daily Logs

STORMWATER POLLUTION PREVENTION PLAN
NOI PERMITTEE'S CERTIFICATION

FORM 1

Construction Site
WILSON HILL SOLAR
TOWN OF HOOSICK, Rensselaer County, New York

STORMWATER POLLUTION PREVENTION PLAN DATED August, 2023

NOI PERMITTEE'S CERTIFICATION:

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

NOI Permittee's
Designated Project Manager: ________________________

Signed: ____

Printed Name: __________________________________

Position: _______________________________________

Date: ____

STORMWATER POLLUTION PREVENTION PLAN
CONTRACTOR'S CERTIFICATION LOG

FORM 2

Construction Site
WILSON HILL SOLAR
TOWN OF HOOSICK, Rensselaer County, New York

Company Name	
Address	
Contact Name	
Telephone Number	
Cell Phone/Pager	
Scope of Services	
Certification Date	

Company Name	
Address	
Contact Name	
Telephone Number	
Cell Phone/Pager	
Scope of Services	
Certification Date	

Company Name	
Address	
Contact Name	
Telephone Number	
Cell Phone/Pager	
Scope of Services	
Certification Date	

Designated Project Manager____________________

STORMWATER POLLUTION PREVENTION PLAN
CONTRACTOR'S/SUBCONTRACTOR'S CERTIFICATION
FORM 3

This form to be completed for each contractor listed on Form 2. Reproduce as needed

Construction Site

WILSON HILL SOLAR

TOWN OF HOOSICK, Rensselaer County, New York

CONSTRUCTION POLLUTION PREVENTION PROGRAM
DATED August, 2023

CONTRACTOR'S CERTIFICATION:

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

The Contractor/Subcontractor further understands that the SWPPP and associated Erosion and Sediment Control Plans represent the **MINIMUM** erosion and sediment control measures that will be required to protect the site during construction. Additional erosion and sediment control measures will be necessary during construction. It will be the responsibility of Contractor/Subcontractor to implement all additional erosion and sediment control measures necessary to protect the site during construction.

CONTRACTOR:	**SUB**CONTRACTOR:
Name (Print): ______________________	Name (Print): ______________________
Signature: ______________________	Signature: ______________________
Date: ______________________	Date: ______________________
Title: ______________________	Title: ______________________
Company Name: ______________________	Company Name: ______________________
Address: ______________________	Address: ______________________
______________________	______________________
Phone: ______________________	Phone: ______________________

Elements of SWPPP Contractor/Subcontractor responsible for: ______________________

Name of Trained Contractor Responsible for SWPPP Implementation: ______________________

Title of Trained Contractor Responsible for SWPPP Implementation: ______________________

FORM 4
WILSON HILL SOLAR, LLC – WILSON HILL SOLAR
SWPPP # __________
This form to be completed by Contractor's designated inspector at least weekly. Reproduce as needed.

SWPPP INSPECTION REPORTS Page 1 of _______
Date ___________

Weather and Soil Conditions
Weather Conditions: ____
Soil Conditions: Dry [ ] Wet [ ] Saturated [ ] Snow Covered [ ] Frozen [ ]

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

Housekeeping
1. General Site Conditions
Yes No NA
[ ] [ ] [ ] Is construction site litter and debris appropriately managed?
[ ] [ ] [ ] Are facilities and equipment necessary for implementation of erosion and sediment control in working order and/or properly maintained?
[ ] [ ] [ ] Is construction impacting the adjacent property?
[ ] [ ] [ ] Is dust adequately controlled?

2. Temporary Stream Crossing
Yes No NA
[ ] [ ] [ ] Maximum diameter pipes necessary to span creek without dredging are installed.
[ ] [ ] [ ] Installed non-woven geotextile fabric beneath approaches.
[ ] [ ] [ ] Is fill composed of aggregate (no earth or soil)?
[ ] [ ] [ ] Rock on approaches is clean enough to remove mud from vehicles and prevent sediment from entering stream during high flow.

Runoff Control Practices
1. Excavation Dewatering
Yes No NA
[ ] [ ] [ ] Upstream and downstream berms (sandbags, inflatable dams, etc.) are installed per plan.
[ ] [ ] [ ] Clean water from upstream pool is being pumped to the downstream pool.
[ ] [ ] [ ] Sediment-laden water from work area is being discharged to a silt-trapping device.
[ ] [ ] [ ] Constructed upstream berm with one-foot minimum freeboard.

2. Water Bar
Yes No NA
[ ] [ ] [ ] Installed per plan with vehicle crossings stabilized with gravel.
[ ] [ ] [ ] Outlet located on undisturbed soil or lined with riprap.
[ ] [ ] [ ] Bar height is 12-inch minimum from bottom of channel with minimum base width of 6-foot.

3. Interceptor Dikes and Swales
Yes No NA
[ ] [ ] [ ] Installed per plan with minimum side slopes 1V:3H or flatter.
[ ] [ ] [ ] Stabilized by geotextile fabric, seed, or mulch with no erosion occurring.
[ ] [ ] [ ] Sediment-laden runoff directed to sediment trapping structure.

SWPPP INSPECTION REPORT Page 2 of _______
Date ___________

4. Stone Check Dam
Yes No NA
[ ] [ ] [ ] Is channel stable? (flow is not eroding soil underneath or around the structure).
[ ] [ ] [ ] Check is in good condition (rocks in place and no permanent pools behind the structure).
[ ] [ ] [ ] Has accumulated sediment been removed?

5. Rock Outlet Protection
Yes No NA
[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Installed concurrently with pipe installation.

<u>Soil Stabilization</u>
1. Topsoil and Spoil Stockpiles
Yes No NA
[ ] [ ] [ ] Stockpiles are stabilized with vegetation and/or mulch.
[ ] [ ] [ ] Sediment control is installed at the toe of the slope.

2. Revegetation
Yes No NA
[ ] [ ] [ ] Temporary seedings and mulch have been applied to idle areas.
[ ] [ ] [ ] Four inches minimum of topsoil has been applied under permanent seedings.

<u>Sediment Control Practices</u>
1. Stabilized Construction Entrance
Yes No NA
[ ] [ ] [ ] Stone is clean enough to effectively remove mud from vehicles.
[ ] [ ] [ ] Installed per standards and specifications?
[ ] [ ] [ ] Does all traffic use the stabilized entrance to enter and leave site?
[ ] [ ] [ ] Is adequate drainage provided to prevent ponding at entrance?

2. Silt Fence
Yes No NA
[ ] [ ] [ ] Installed on Contour, ten feet from toe of slope (not across conveyance channels).
[ ] [ ] [ ] Joints constructed by wrapping the two ends together for continuous support.
[ ] [ ] [ ] Fabric buried six inches minimum.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.
Sediment accumulation is _____% of design capacity.

3. Storm Drain Inlet Protection (Use for Stone & Block; Filter Fabric; Curb; or, Excavated practices)
Yes No NA
[ ] [ ] [ ] Installed concrete blocks lengthwise so open ends face outward, not upward.
[ ] [ ] [ ] Placed wire screen between No. 3 crushed stone and concrete blocks.
[ ] [ ] [ ] Drainage area is one acre or less.
[ ] [ ] [ ] Excavated area is 900 cubic feet.
[ ] [ ] [ ] Excavated side slopes should be 2:1.
[ ] [ ] [ ] 2" x 4" frame is constructed and structurally sound.
[ ] [ ] [ ] Posts three-foot maximum spacing between posts.
[ ] [ ] [ ] Fabric is embedded 1 to 1.5 feet below ground and secured to frame/posts with staples at maximum eight inch spacing.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.
Sediment accumulation _____% of design capacity.

SWPPP INSPECTION REPORT

4. Temporary Sediment Trap

Yes No NA

[ ] [ ] [ ] Outlet structure is constructed per the approved plan or drawing.
[ ] [ ] [ ] Geotextile fabric has been placed beneath rock fill.
Sediment accumulation is _____% of design capacity.

5. Temporary Sediment Basin

Yes No NA

[ ] [ ] [ ] Basin and outlet structure constructed per the approved plan.
[ ] [ ] [ ] Basin side slopes are stabilized with seed/mulch.
[ ] [ ] [ ] Drainage structure flushed and basin surface restored upon removal of sediment basin facility.
Sediment accumulation is _____% of design capacity.

Dust Control Practices

1. Haul Road and Current Work Areas

Yes No NA

[ ] [ ] [ ] Are all traffic surface areas sufficiently treated to prevent fugitive dust?
[ ] [ ] [ ] Are any areas of site's non-traffic and work area experiencing wind erosion?
[ ] [ ] [ ] Are there any disturbed areas in need of temporary seed and mulch to protect surface from wind erosion?
[ ] [ ] [ ] Is watering truck on-site?
[ ] [ ] [ ] Is dust visible in air at any location of the site?

Note: Not all erosion and sediment control practices are included in this listing. Add additional pages to this list as required by site-specific design.
Construction inspection checklists for post-development stormwater management practices can be found in Appendix F of the New York Stormwater Management Design Manual.

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

____

____

____

Description of areas that are disturbed at the time of the inspection and areas that have been stabilized (temporary and/or final) since the last inspection (see Page 5 for Sketch). ______________________________________

____

____

____

SWPPP INSPECTION REPORT

Page 4 of _______
Date ___________

ADDITIONAL COMMENTS*:

____
____
____
____
____
____
____
____
____
____
____
____
____

________________________________ ________________________________
Inspector (print name and title) Date and Time of Inspection

________________________________ ________________________________
Qualified Professional (print name) Qualified Professional Signature

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

***Attach photographs of practices identified as needing corrective actions.**

NOTE: IN ACCORDANCE WITH PART IV.C.4 OF THE SPDES GENERAL PERMIT (GP-0-20-001), THE QUALIFIED INSPECTOR MUST NOTIFY THE OWNER OR OPERATOR AND APPROPRIATE CONTRACTOR OF ANY CORRECTIVE ACTIONS THAT NEED TO BE TAKEN. THE CONTRACTOR SHALL BEGIN IMPLEMENTING THE CORRECTIVE ACTIONS WITHIN ONE (1) BUSINESS DAY OF THIS NOTIFICATION AND SHALL COMPLETE THE CORRECTIVE ACTIONS IN A REASONABLE TIME FRAME.

STORMWATER POLLUTION PREVENTION PLAN
MODIFICATION REPORT
FORM 5

This form to be used only when Contractor's designated inspector believes changes to the SWPPP and/or Erosion and Sediment control plans is warranted. For example, additional erosion control measures needed or removal of specific control measures can be done without adverse impact. This form must be approved by Designated Project Manager prior to implementation.

Construction Site
WILSON HILL SOLAR
TOWN OF HOOSICK, Rensselaer County, New York

CHANGES REQUIRED FOR STORMWATER POLLUTION PREVENTION PLAN

To:	**Designated Project Manager**	**Date:**	
Address:			
Telephone:			
Facsimile:			
Sent Via:	☐ **Facsimile**	☐ **E-mail**	☐ **US Mail**

INSPECTOR: ______________________ DATE: ____________________
(Print)

____
(Signature)

QUALIFICATIONS OF INSPECTOR: ____

CHANGES REQUIRED TO THE STORMWATER POLLUTION PREVENTION PLAN: ____________________
____
____

REASONS FOR CHANGES: ____
____
____

TO BE PERFORMED BY: ___________________ ON OR BEFORE: ________________

APPROVED BY DESIGNATED PROJECT MANAGER_________________________ DATE: _____________

STORMWATER POLLUTION PREVENTION PLAN
RECORD OF STABILIZATION AND CONSTRUCTION ACTIVITIES
FORM 6

Construction Site

WILSON HILL SOLAR

TOWN OF HOOSICK, Rensselaer County, New York

A record of dates when major grading activities occur, when construction activities temporarily or permanently cease on a portion of the site, and when stabilization measures are initiated shall be maintained until final site stabilization is achieved and the Notice of Termination is filed. *Reproduce copies of this form as needed.*

MAJOR GRADING, CONSTRUCTION, OR STABILIZATION ACTIVITIES

Description of Activity: ____

Begin Date:__________ Site Contractor: ________________________________

Location: ____

End Date: ____

Description of Activity: ____

Begin Date:__________ Site Contractor: ________________________________

Location: ____

End Date: ____

Description of Activity: ____

Begin Date:__________ Site Contractor: ________________________________

Location: ____

End Date: ____

Description of Activity: ____

Begin Date:__________ Site Contractor: ________________________________

Location: ____

End Date: ____

Description of Activity: ____

Begin Date:__________ Site Contractor: ________________________________

Location: ____

End Date: ____

Designated Project Manager______________________

STORMWATER POLLUTION PREVENTION PLAN
RECORD OF TEMPORARY EROSION AND SEDIMENT CONTROL PRACTICES
FORM 6A

Construction Site

WILSON HILL SOLAR

TOWN OF HOOSICK, Rensselaer County, New York

A record of the timing of temporary erosion and sediment control practices to be implemented, including the timing of initial placement and the duration that each practice should remain in place. The record may reflect the actual date of planned installation or the specific construction activity with which it will be associated. The timing of removal may reflect an actual date or the length of time over which the practice will be implemented.

TEMPORARY EROSION AND SEDIMENT CONTROL PRACTICES

Description of Practice: ______________________________

Date/Timing of Initial Placement:__________ Site Contractor: ______________________________

Location: ______________________________

Projected Date/Timing of Removal: ______________________________

Description of Practice: ______________________________

Date/Timing of Initial Placement:__________ Site Contractor: ______________________________

Location: ______________________________

Projected Date/Timing of Removal: ______________________________

Description of Practice: ______________________________

Date/Timing of Initial Placement:__________ Site Contractor: ______________________________

Location: ______________________________

Projected Date/Timing of Removal: ______________________________

Description of Practice: ______________________________

Date/Timing of Initial Placement:__________ Site Contractor: ______________________________

Location: ______________________________

Projected Date/Timing of Removal: ______________________________

Description of Practice: ______________________________

Date/Timing of Initial Placement:__________ Site Contractor: ______________________________

Location: ______________________________

Projected Date/Timing of Removal: ______________________________

Designated Project Manager____________________

YEAR 20___

FORM 7

STORMWATER POLLUTION PREVENTION PLAN

PROJECT RAINFALL LOG (to be completed by Contractor)

Month	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Day												
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
31												
PM Initials												

STORMWATER POLLUTION PREVENTION PLAN

FINAL STABILIZATION CERTIFICATION /NOTICE OF TERMINATION CHECKLIST

FORM 8

This form is to be completed by Contractor and submitted to Designated Project Manager for approval only afterContractor believes all work regulated by SWPPP is complete.

Construction Site
WILSON HILL SOLAR
TOWN OF HOOSICK, Rensselaer County, New York

1. ☐ **All soil disturbing activities are complete.**

2. ☐ **Temporary Erosion and Sediment Control Measures have been removed or will be removed at the appropriate time.**

3. ☐ **All areas of the Construction Site not otherwise covered by a permanent pavement or structure have been stabilized with a uniform perennial vegetative cover with a density of 85% or equivalent measures have been employed.**

CONTRACTOR'S CERTIFICATION:

"I certify under penalty of law that all storm water discharges associated with industrial activity from the identified project that are authorized by NPDES general permit have been eliminated and that all disturbed areas and soils at the construction site have achieved Final Stabilization and all temporary erosion and sediment control measures have been removed or will be removed at the appropriate time."

Company Name ____

Name (Print) ____

Signature ____

Date ____

APPROVED BY DESIGNATED PROJECT MANAGER_______________________ DATE: _______

SECTION 6

Supplemental Information

1. **Stormwater Management Narrative – Appendices and Figures Available Upon Request**

2. **FEMA Flood Mapping**

3. **NYSDEC Environmental Resource Mapper**

4. **SHPO Letter of No Effect**

5. **Soils Report (USDA)**

6. **USFW IPAC Results**

Stormwater Management Narrative

Wilson Hill Road Solar Array

469 Wilson Hill Road

Town of Hoosick

Rensselaer County, New York

Applicant:

Wilson Hill Solar, LLC

101 Summer Street, 2nd Floor

Boston, MA 02110

JUNE 2023

Revised September 2023

Prepared By:

The Environmental Design Partnership, LLP

900 Route 146

Clifton Park, NY 12065

TABLE OF CONTENTS

Contents

Figures

Attachments

900 Route 146, Clifton Park, New York 12065
phone (518) 371-7621

1.0 Introduction

Wilson Hill Solar, LLC is proposing the development of a solar farm on an existing parcel of land totaling approximately 99.52± acres located on the northern side of Wilson Hill Road in the Town of Hoosick, New York. The proposed site development includes a solar farm which consists of approximately 7.00± acres of solar panels spaced 30.0± feet center to center and the construction of approximately 2,300± linear feet (LF) of access road, stormwater management areas, and eight-foot-high perimeter fencing. The total area of proposed disturbance is approximately 25.1± acres and 7.60± acres of impervious area will be added to the site.

A stormwater management system has been designed to provide pollutant removal, reduce channel erosion, prevent overbank flooding, and safely control extreme flood events in accordance with the NYS Stormwater Management Design Manual (Design Manual). The NYS Department of Environmental Conservation (NYSDEC) issued specific guidance in April 2018 relative to stormwater management design considerations for solar panel installations. The temporary erosion control measures and post-construction stormwater management systems for this project have been designed in accordance with those guidelines and subsequent discussions with the NYSDEC relative to their guidelines. Section 7.0 of this report addresses specific solar panel application guidance.

The proposed stormwater management system for the project will include roadside swales, attenuation ponds, bioretention areas, and a wet pond designed to convey runoff from the proposed gravel stormwater access roads, solar panels, and the solar equipment pad. Runoff from the impervious access road and solar panels is directed into vegetated swales that discharge into bioretention areas or a wet pond. Additional roadside swales are proposed to direct stormwater runoff from the solar panel array into attenuation ponds to protect against washouts.

This narrative presents a review of the design concepts and parameters of the stormwater management system for the proposed increased impervious areas, in accordance with NYSDEC solar application guidance, including the access roads and the equipment pads. The purpose of the stormwater management narrative is to assure that changes in the surface runoff characteristics, as a result of the proposed construction, will not adversely impact adjacent or downstream properties. On-site stormwater management will be implemented in accordance with the Design Manual and NYSDEC solar application guidance to accommodate both additional stormwater runoff and to provide water quality treatment according to the green infrastructure standards.

2.0 Redevelopment Justification

Redevelopment Activity is defined as "…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,

900 Route 146, Clifton Park, New York 12065
phone (518) 371-7621

subdivision, etc.)", according to the NYSDEC SPDES General Permit GP-0-20-001 for Stormwater Discharges from Construction Activity.

The proposed solar facility will be constructed on an abandoned farm field. As part of the proposed development a section of an existing impervious roadway will be improved. Therefore, this project is considered a redevelopment project.

The Design Manual states several of the challenges encountered during redevelopment projects include "…the need to tie in to the existing drainage infrastructure… …the presence of underground utilities, incompatible surrounding land usages, highly compacted soils that are not suitable for infiltration, and contaminated soils that require mitigation."
Due to these constraints, the Design Manual offers "alternative sizing criteria" which differs from the standards and sizing criteria listed in other portions of the manual. These standards include:

- Water Quantity: Analyzing how redevelopment and new development activities change the existing hydrology and discharge rates from the project site.
- Channel Protection: Channel protection is known as stream channel protection, designed to protect stream channels from erosion. It is accomplished by providing 24-hour extended detention of the one-year, 24-hour storm event. For redevelopment projects, channel protection is not required if the post-construction 1-year 24-hour discharge rate and velocity is less than or equal to the pre-construction discharge rate.
- Water Quality: Water quality volumes must be treated for redevelopment projects by implementing conventional treatment standards, alternative treatment standards, or a combination of both.

The proposed redevelopment meets the alternative sizing criteria put forth in the Design Manual; more detail will be provided in Section 6 of this report.

3.0 Existing Conditions

The site generally consists of a farm field with small patches of wooded areas. The topography of the land consists of drainage from northeast to southwest. The typical slopes in the area of proposed development range from 10% to 20%, with localized areas over 30%. Elevations at the site vary between 734 and 1087 feet above sea level.

3.1 Soil and Groundwater Conditions

The USDA Natural Resources Conservation Service Soil Survey identifies the soils on the site, in the area of proposed development, to consist of sandy to silty loams, which range from somewhat poorly drained to moderately well drained, and which are predominantly classified as Hydrologic Soil Group (HSG) C/D. The results from the USDA Natural Resources Conservation Soil Survey (Soil Survey) are included in Section 6 of the SWPPP.

900 Route 146, Clifton Park, New York 12065
phone (518) 371-7621

4.0 Predevelopment Stormwater Analysis

The existing hydrologic conditions, in the area to be disturbed as a result of the proposed construction, were analyzed using Applied Microcomputer Systems' "HydroCAD" computer modeling program. The HydroCAD stormwater modeling program employs the United States Department of Agriculture's Soil Conservation Service (SCS) Technical Release 20 (TR-20) method for stormwater analysis. Using this modeling technique, the site is divided into "subcatchments" that represent specific areas contributing stormwater runoff to an existing, or proposed drainage feature. The subcatchments typically flow through "reaches" (i.e., swales, channels, or pipes) that convey the stormwater to storm basins or discharge areas.

A hydrologic model of the existing site was prepared using the Hydrocad program. Four (4) subcatchments were used to represent the existing drainage condition, see Figure 2.

The existing parameters of topography, vegetation, slope and soil type are all incorporated into the predevelopment model.

Table 1 presents a summary of the pre-development stormwater peak discharge for the 1 year, 10 year and 100-year design storm events at the respective Design Points. As will be discussed in subsequent sections, the post development stormwater discharge rate has been limited to the predevelopment discharge rate for the 1-year, 10-year, and 100-year storm events.

Table 1: Pre-Development Runoff Rates

Storm Event	Design Point Discharge (cfs)				Total Discharge offsite (cfs)
	OFF#1	OFF#2	OFF#3	OFF#4	
1-Year (2.19")	7.92	13.92	0.56	0.83	23.23
10-Year (3.63")	24.66	42.14	1.92	2.56	71.28
50-Year (5.18")	40.17	68.00	3.20	4.16	115.53
100-Year (6.05")	47.36	79.94	3.80	4.90	136.00

900 Route 146, Clifton Park, New York 12065
phone (518) 371-7621

The pre-development Curve Numbers (CN) for the existing ground covers are listed in Table 2.

Table 2: Pre-Development Ground Cover

Pre-Development Ground Cover Description	Curve Number
Gravel Surface, HSG C/D	96
Meadow non-grazed, HSG D	78
Meadow non-grazed, HSG C	71
Woods, Fair HSG D	79

The weighted CN for the pre-development conditions for the site is approximately 79. The HydroCAD model results for the pre-development conditions are included within Attachment B.

Design Point OFF#1 conveys flows to the neighboring property to the south. Design Point OFF#2 conveys flows to a low point off the property in the southeastern direction. Design Point OFF#3 includes runoff from the existing gravel access drive that flows to the south into a roadside ditch. Design point OFF#4 consists of a filed draining into a roadside ditch along Wilson Hill Road.

5.0 Stormwater Management Planning and Practice Selection

The site layout and stormwater design for this project was completed while taking into consideration the potential impacts on the existing site and downstream hydrology. Stormwater runoff from the existing site predominately sheet flows to areas to the south of the site. The stormwater management system will replicate similar practices.

Stormwater from impervious areas on the site is designed to be treated with bioretention areas with underdrains and a wet pond. This design method was considered ideal on this site given the steep topography which eliminates the possibility of using a majority of other treatment practices. Bioretention areas are considered standard stormwater management practices with runoff reduction volume capacity and wet ponds are only considered standard stormwater management practices.

The total disturbance for the project will be on the order of 25.1± acres. The proposed redevelopment will result in an increase of impervious cover by 7.60± acres.

6.0 Post-Development Stormwater Analysis

The post-development conditions were analyzed using the HydroCAD computer modeling program.

Twelve (12) subcatchments were used to represent the post development drainage conditions of the site in the areas of the proposed development. Site improvements to the property will

900 Route 146, Clifton Park, New York 12065
phone (518) 371-7621

consist of a solar farm which will include 7.00± acres of solar panels, approximately 2,700± LF of access road, a solar electrical equipment pad, and chain link fencing. Also included, as permanent elements of the development, are the on-site stormwater management areas. Stormwater management practices have been designed to provide storage, treatment, and attenuation of stormwater runoff from the proposed impervious surfaces on the site.

Stormwater runoff from the proposed impervious access road, solar panels, and solar electrical equipment pads will flow into vegetated swales which will convey flows to five (5) stormwater management areas, designed as bioretention areas and a wet pond.

Runoff from the undeveloped site perimeter, outside of the stormwater management areas, will sheet flow off site, which is similar to predevelopment drainage patterns. In areas with slopes greater than 5% where solar panels will be installed, overland flow dispersion devices will be installed on 100-foot intervals. The overland flow dispersion devices will maintain sheet flow patterns similar to predevelopment conditions.

The post-development ground cover Curve Numbers (CN) are listed in Table 3.

Table 3: Post-Development Ground Cover

Post-Development Ground Cover Description	Curve Number
Meadow, non-grazed, HSG D	78
Meadow, non-grazed, HSG C	71
Gravel Access Road	96
Improved Entrance Road, Equipment Pad	98
Woods, Fair HSG D	79

The weighted CN for the post-development conditions for the site is approximately 78. The HydroCAD model results for the post-development conditions are included within Attachment B. The contributing area to each stormwater management area is identified on Figure 3.

6.1 Stormwater Management Areas #1 through #4 – Bioretention Areas

Stormwater Management Areas (SMA) #1 through #4 are designed as bioretention areas with underdrains. They will provide detention and treatment of stormwater runoff from the improved access road, solar panels, and equipment pad.

Stormwater runoff contributing to SMA #1 and #2 will sheet floe from the existing slope into forebays that will distribute into bioretention areas. Runoff contributing to SMA #3 and #4 will be collected in swales located adjacent to the roadway.

900 Route 146, Clifton Park, New York 12065
phone (518) 371-7621

Stormwater runoff contributing to SMA #1 through #4 will receive pretreatment through the forebays that convey flows to the proposed SMAs. According to the Design Manual, a minimum pretreatment volume of 10% of the WQv must be provided.

6.2 Stormwater Management Area #5 – Wet Pond

Stormwater Management Area (SMA) #5 is designed as a wet pond. It will provide the primary detention and treatment of stormwater runoff from the solar panels.

Stormwater runoff contributing to SMA #1 will be collected in vegetated swales located adjacent to the solar panels and will receive pretreatment through the sediment forebays within the wet pond. According to the Design Manual, a minimum pretreatment volume of 10% of the WQv must be provided.

6.3 Redevelopment Criteria

Chapter 9 of the Design Manual states specific sizing criteria for water quantity, channel protection, and water quality volume as described below in the following sections.

6.3.1 Water Quantity

In accordance with Chapter 9 of the Design Manual, if the redevelopment results in no change to hydrology that increases the discharge rate from the project site, the 10-Year and 100-Year criteria do not apply.

The 1-Year, 10-Year, and 100-Year storm events were analyzed using HydroCAD under the post-development conditions shown in Figure 3. The following table presents the pre-development and post development discharge rates for discharges off the site. As indicated, the post development discharge rate is less than the predevelopment rate, and therefore, no additional water quantity controls are required.

Table 4: Water Quantity Summary

Storm Event	Predevelopment Runoff (CFS)	Post development Runoff (CFS)	Runoff Reduction (CFS)
1-Year (2.19")	23.23	7.50	15.73
10-Year (3.63")	71.28	44.16	27.12
50-Year (5.18”)	115.53	80.91	34.62
100-Year (6.05")	136.00	97.42	38.58

6.3.2 Channel Protection

For redevelopment projects, channel protection is not required if there are no changes to hydrology that increase the discharge rate from the project site. But as shown in the HydroCAD

900 Route 146, Clifton Park, New York 12065
phone (518) 371-7621

analysis the bioretention areas and wet pond attenuate a 1-year 24-hour storm for at least 24 hours.

6.3.3 Water Quality (WQ_v)

Chapter 9 of the Design Manual lists several options for providing water quality treatment on a redevelopment project. These options include the following:

1. Reduce the existing impervious cover by a minimum of 25% of the total disturbed, impervious area.
2. Treat at least 25% of the Water Quality Volume (WQ_v) from the disturbed, impervious area through the implementation of standard stormwater management practices or by reduction through the implementation of green infrastructure techniques.
3. Propose the use of alternative SMPs to treat at least 75% of the WQ_v from the disturbed impervious area, as well as any additional runoff from tributary areas that are not within the disturbed, impervious area.
4. Use a combination of impervious cover reduction and standard alternative SMPs that provide a weighted average of at least two of the above methods using the following formula: %WQv treatment by Alternative Practice = (25 – (% IC Reduction + % WQv treatment by Standard Practice + % Runoff Reduction))*3

The proposed development uses Option 2 to meet the Water Quality Treatment requirements but the bioretention areas and wet pond are sized to treat 100% of all disturbed impervious areas on the site. The Design Manual allows for a runoff reduction equivalent to the water quality volume associated with this practice.

The runoff reduction for the bioretention area is on the order of 6,532 CF. Attachment A contains the WQv and RRv calculations for the bioretention areas.

The proposed solar farm includes both redevelopment and new development activities. As such, the new development portions of the project have been designed in accordance with the sizing criteria in Chapter 4 of the Design Manual.

In general, small storm events and the initial runoff from larger storm events are an environmental concern as this stormwater runoff typically contains roadway pollutants and thermal energy stored by the asphalt. In accordance with the Design Manual, this initial runoff is designated as the Water Quality Volume (WQ_v) and special attention is given to this volume of runoff to meet water quality objectives.

The water quality storage volume, WQ_v, is calculated as follows:

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

Where: WQ_v = water quality volume (acre-feet)

900 Route 146, Clifton Park, New York 12065
phone (518) 371-7621

P = 90% rainfall event number

R_v = 0.05+0.009(I), where I is percent impervious cover excluding 75% of redevelopment impervious area (Option 2 above)

A = site area (acres), impervious area used with I = 100%

Table 6 below lists the required water quality volume for each stormwater management area in the areas of new development.

Table 6: Required Water Quality Volume

SMA I.D.	P	R_v	A (SF)	Required WQ_v (cf)	Provided WQv (cf)
SMA#1	1.1	0.41	23,086	860	860
SMA#2	1.1	0.56	24,393	1,262	1,262
SMA#3	1.1	0.37	506,603	17,056	17,056
SMA#4	1.1	0.36	211,266	7,042	7,042
SMA#5	1.1	0.40	180,774	6,614	6,614
TOTAL				32,835	32,835

6.3.4 Runoff Reduction Volume (RRv)

The Design Manual specifies that runoff shall be reduced by 100% of the site WQv using standard SMPs with RRv capacity and green infrastructure techniques. The proposed project area is approximately 25.1± acres with a total proposed impervious area on the order of 7.60± acres. The resulting WQv for the site coverage is computed as 32,835± CF.

Site constraints, including poor soils and steep topography prohibit the ability to meet 100% of the RRv reduction. The minimum RRv for the site has been calculated as 6,089 CF. See Attachment A for the minimum RRv calculations.

6.3.4.1 Green Infrastructure Practices

The proposed impervious area on the site will be treated through a combination of SMA's #1 through #5. The SMA's have been designed to increase the time of concentration and reduce the peak discharge. The runoff reduction for the SMA's is on the order of 6,532 CF. Attachment A contains WQv and RRv calculations for this Green Infrastructure Practice. Attachment A contains the WQv and RRv calculations for this green infrastructure practice. Table 7 provides a summary of the runoff reduction provided.

Table 7: Runoff Reduction Volume Summary

Runoff Reduction Technique	RRv (cf)

900 Route 146, Clifton Park, New York 12065
phone (518) 371-7621

B1 (Bioretention Area)	378
B2 (Bioretention Area)	624
B3 (Bioretention Area)	2,851
B4 (Bioretention Area)	2,678
Total Site Reduction	**6,532**
Minimum RRv	**6,089**
% of Min. RRv	**107%**

Many of the green infrastructure practices recommended in the Design Manual were not applied to the stormwater management design on this site due to either site restrictions or the use of more feasible green infrastructure or standard SMP techniques in place of more restrictive and/or maintenance intensive practices. The following table discusses why the unused green infrastructure practices were not feasible.

Table 8: Non-Feasible Green Infrastructure Practices

Green Infrastructure Practice	Reason use is not feasible
Conservation of Natural Areas	Existing natural areas on site will be conserved to the greatest extent possible, solar facilities are considered temporary in nature, however the added reduction is minimal.
Porous Pavement	Porous Pavement is not economically feasible on this site.
Tree Planting/Tree box	Trees will be saved on the site as possible to conserve the natural areas. Trees will also be planted to maintain a buffer from the roadway and viewshed to the proposed site, though the resulting runoff reduction value for adding additional trees is minimal.
Disconnection of Rooftop Runoff	No structures are proposed within the project area
Stream Daylighting	No streams exist on the project site.
Rain Gardens	Rain gardens are not recommended for commercial applications as well as not economically feasible.
Green Roofs	Rooftops are not present on the site.
Stormwater Planters	The proposed practices were deemed more economically feasible and effective as opposed to stormwater planters. Additionally, they require less maintenance.
Rain Barrels/Cisterns	Rain Barrels/Cisterns would require the ability to use the water between storm events which is not feasible for this project type.

900 Route 146, Clifton Park, New York 12065
phone (518) 371-7621

7.0 NYSDEC Solar Panel Construction Guidance Stormwater Analysis

Due to the increase in solar projects throughout New York State, the Department of Environmental Conservation (NYSDEC) released guidance for solar panel stormwater permitting and stormwater pollution prevention plans (SWPPP) in April 2018. The NYSDEC Solar Panel Construction Guidance (SPCG) classifies solar projects under two separate "Scenarios". Scenario 1 Solar Projects are considered *"…Land clearing and grading for the purposes of creating vegetated open space…".* These projects typically require a SWPPP that only addresses erosion and sediment controls. Solar projects are categorized as Scenario 1 if they are designed and constructed in accordance with a specific set of six criteria. Solar projects that aren't designed and constructed to meet these six (6) criteria are classified as Scenario 2 and require a SWPPP that addresses post-construction stormwater management practices which are designed in accordance with the sizing criteria in the Designed Manual. Table 9 provides an analysis of the six (6) criteria provided by the NYSDEC SPCG as they pertain to the Northern Gateway Renewables, LLC Solar Farm:

Table 9: NYSDEC Solar Panel Criteria

Scenario 1 Criteria	Proposed Solar Farm Design
1. Solar panels are constructed on post or rack systems and elevated off the ground surface.	Solar panels will be installed on mechanically driven posts with approximately 36 inches between the bottom of the panel and existing grade.
2. The panels are spaced apart so that rain water can flow off the down gradient side of the panel and continue to sheet flow across the ground surface*.	Panels are spaced 30± feet from center to center with 15.9± feet between the panel rows (adjacent edge of panel to adjacent edge of panel). The typical width of a solar panel rack is 14.1± feet. The panel spacing is the larger than the panel width, therefore, sheet flow is maintained.
3. For solar panels constructed on slopes, the individual rows of solar panels are generally installed along the contour so rain water sheet flows down slope*.	Panels are constructed generally along the contours to maintain sheet flow. In locations where panels are not along contours, and slopes are greater than 5%, overland flow dispersion devices are spaced at 100 ft apart are proposed to maintain sheet flow down slope in accordance with discussions with NYSDEC.
4. The ground surface below the panels consist of a well-established vegetative cover.	All ground surface below the panels will have well-established vegetative cover in accordance with the "Final Stabilization" noted in Appendix A of the SPDES Construction General Permit (see Section 4 of the SWPPP).
5. The project does not include the construction of any traditional imperious areas.	The proposed project does contain a solar equipment pad and a gravel road, both of which are considered impervious. **This project therefore falls under Scenario 2.**
6. Construction of the solar panels will not alter the hydrology from pre-to post	Based on the analysis performed in this report, the project will create minor disturbance, and add impervious area however, the

900 Route 146, Clifton Park, New York 12065
phone (518) 371-7621

development conditions.	pre-to post development hydrology will be maintained.

Criteria 5 of the NYSDEC SPCG is not met as traditional impervious area will be added to the site, therefore, this project falls under Scenario 2 and will require post-construction stormwater management controls for impervious areas of the project (gravel access road and equipment pads). This interpretation is also included in the **Notes- Item 5 portion of the NYSDEC SPCG.

*The NYSDEC SPCG also references the Maryland Department of the Environment's (MDE) "Stormwater Design Guidance - Solar Panel Installations" memo for further guidance on panel installation. The MDE's memo provides guidance using two examples of solar panels to provide direction; Example 1 references solar panels which are installed on average slopes less than 5% and Example 2 references solar panels which are installed on average slopes between 5% and 10%.

Example 1- Using Non-Rooftop Disconnection Where the Average Slope ≤ 5%

MDE states that in order for solar panels to qualify as non-rooftop disconnect, the disconnection length must be greater than or equal to the solar panel width. The proposed solar panel project uses a rack system with a width of 14.1± feet and a disconnection length of 15.9± feet. The spacing between the panel rows is greater than the width of the solar racks, therefore, the solar panels meet the MDE requirements for runoff treatment under non-rooftop disconnection.

Example 2- Using Non-Rooftop Disconnection Where the Average Slope ≥ 5% but ≤ 10%

In this example, the MDE advises the use of level spreaders along the drip edge of the panels to maintain sheet flow and dissipate energy in addition to maintaining a disconnection length greater than or equal to the solar panel width. Areas where slopes are ≥ 5%, overland flow dispersion devices are proposed which are parallel to contours in ±100-foot intervals in accordance with the New York State Standards and Specifications for Erosion and Sediment Control (Blue Book) requirements for level spreaders and discussions with NYSDEC representatives regarding the application of the NYSDEC SPCG for use with tracker style systems.

In accordance with the aforementioned guidance, post-construction stormwater management is required for all new impervious areas on the project site. Therefore, SMA #1 through SMA #3 have been designed in accordance with the Design Manual to treat the proposed gravel access road and solar equipment pad. Since this project has been designed in accordance with Criteria 1 through Criteria 4 of the NYSDEC SPCG Criteria, the WQv and RRv requirements for the solar panels do not need to be addressed.

900 Route 146, Clifton Park, New York 12065
phone (518) 371-7621

8.0 Summary

Development of the proposed project site will alter the stormwater drainage characteristics of the site; impervious area will be added in the form of a compacted gravel access road, solar panels, and a solar equipment pad. Changes to the stormwater drainage characteristics of the site have been evaluated in accordance with the Design Manual. The proposed stormwater management system has been designed to comply with the recommendations in the Design Manual and the NYSDEC SPCG as it relates to maintaining sheet flow, providing water quality/runoff reduction/channel protection volume, overbank flood control and extreme flood control for new development projects.

The proposed stormwater management system has been designed to attenuate and treat the stormwater runoff generated from the contributing areas for storm events to the pre-development rates, up to and including the 100-Year design storm event. The proposed stormwater management design includes the use of bioretention areas and attenuation ponds. Stormwater modeling results indicate the ability to reduce the overall post-development discharge rate from the site as summarized in Table 10.

Table 10: Post Development Stormwater Peak Discharge Rates

Peak Discharge Rates in cfs	1-Year Storm	10-Year Storm	50-Year Storm	100-Year Storm
Pre-Development	23.23	71.28	115.53	136.00
Post-Development	7.5	44.16	80.91	97.42
Overall Reduction (cfs)	15.73	27.12	34.62	38.58

Through the implementation of acceptable stormwater management practices, recommended by the NYS Stormwater Management Design Manual, the proposed project will not adversely affect adjacent or downstream properties.

Prepared by:

The Environmental Design Partnership, LLP

Stephanie Alessandrini, P.E.

900 Route 146, Clifton Park, New York 12065
phone (518) 371-7621

REFERENCES

HydroCAD version 10.0, Applied Microcomputer Systems, Chocura, New Hampshire.

NYSDEC, 1990. "Technical and Operational Guidance Series (5.1.8) Stormwater Management Guidelines for New Development", New York State Department of Environmental Conservation, Division of Water.

NYSDEC, 1992. "Reducing the Impacts of Stormwater Runoff from New Development", New York State Department of Environmental Conservation, Division of Water.

NYSDEC, 2015. "New York State Stormwater Management Design Manual", Center for Watershed Protection, Ellicott City, MD.

Rawls, W.J., Brakensiek, D.L., and Saxton, K. E., 1982. "Estimation of Soil Properties", Transactions of the American Society of Agricultural Engineers, Vol. 25, No. J, pp. 1316-1320.

S.C.S., 1982. "TR-20 Project Formulation-Hydrology, Technical Release No. 20", U.S. Department of Agriculture, Soil Conservation Service, Hydrology Unit Division of Engineering.

United States Department of Agriculture, Web Soil Survey. Retrieved from https://websoilsurvey.sc.egov.usda.gov

NYSDEC, 2018. "Solar Panel Construction Stormwater Permitting/ SWPPP Guidance", New York State Department of Environmental Conservation, Division of Water.

MDE,2000. "2000 Maryland Stormwater Design Manual, Volumes I and II". Maryland Department of the Environment

MDE. "Stormwater Design Guidance- Solar Panel Installations". Maryland Department of the Environment

900 Route 146, Clifton Park, New York 12065
phone (518) 371-7621

Figures

1. Site Location map
2. Pre-Development Drainage Map
3. Post Development Drainage Map

900 Route 146, Clifton Park, New York 12065
phone (518) 371-7621

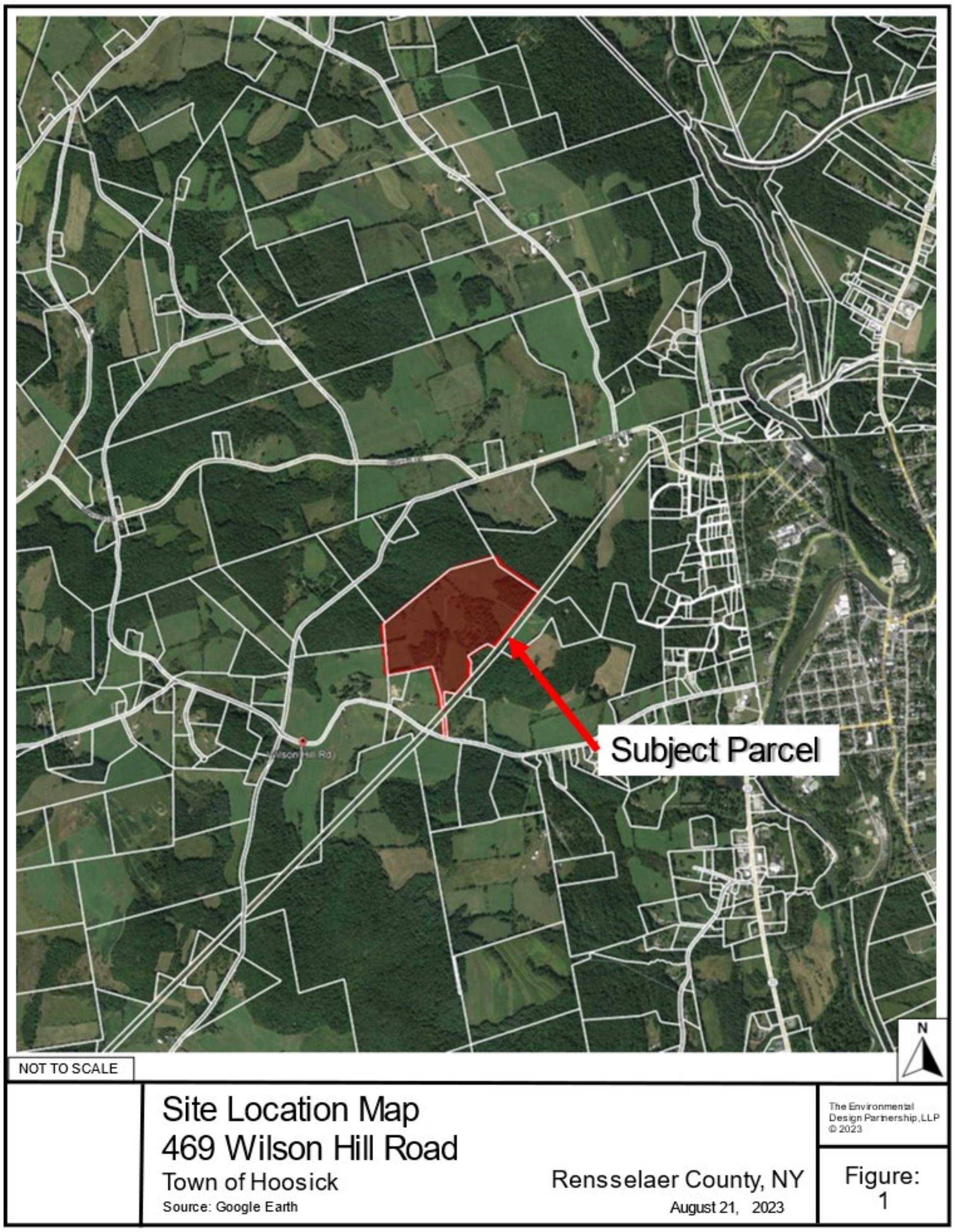


Figure 1: Site Location Map

900 Route 146, Clifton Park, New York 12065
phone (518) 371-7621

Attachment A

Water Quality Calculation

Runoff Reduction Calculation

900 Route 146, Clifton Park, New York 12065
phone (518) 371-7621

Version 1.8 Total Water Quality Volume Calculation

Last Updated: 11/09/2015 WQv(acre-feet) = [(P)(Rv)(A)] /12

Is this project subject to Chapter 10 of the NYS Design Manual (i.e. WQv is equal to post-development 1 year runoff volume)?..	No

Design Point:	A		*Manually enter P, Total Area and Impervious Cover.*
P=	1.10	*inch*	

Catchment Number	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Rv	WQv *(ft^3)*	Description
Breakdown of Subcatchments						
1	0.53	0.21	40%	0.41	860	Bioretention
2	0.56	0.32	57%	0.56	1,262	Bioretention
3	11.63	4.10	35%	0.37	17,056	Wet Pond
4	4.85	1.69	35%	0.36	7,042	Bioretention
5	4.15	1.61	39%	0.40	6,614	Bioretention
6						
7						
8						
9						
10						
Subtotal (1-30)	21.72	7.93	37%	0.38	**32,835**	**Subtotal 1**
Total	21.72	7.93	37%	0.38	**32,835**	**Initial WQv**

Technique	Total Contributing Area *(Acre)*	Contributing Impervious Area *(Acre)*	Notes
Identify Runoff Reduction Techniques By Area			
Conservation of Natural Areas	0.00	0.00	*minimum 10,000 sf*
Riparian Buffers	0.00	0.00	*maximum contributing length 75 feet to 150 feet*
Filter Strips	0.00	0.00	
Tree Planting	0.00	0.00	*Up to 100 sf directly connected impervious area may be subtracted per tree*
Total	**0.00**	**0.00**	

	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Runoff Coefficient Rv	WQv *(ft^3)*
Recalculate WQv after application of Area Reduction Techniques					
"<<Initial WQv"	21.72	7.93	37%	0.38	32,835
Subtract Area	0.00	0.00			
WQv adjusted after Area Reductions	**21.72**	**7.93**	37%	0.38	32,835
Disconnection of Rooftops		0.00			
Adjusted WQv after Area Reduction and Rooftop Disconnect	21.72	7.93	37%	0.38	**32,835**
WQv reduced by Area Reduction techniques					0

Total Water Quality Volume Calculation

WQv(acre-feet) = [(P)(Rv)(A)] /12

All Subcatchments						
Catchment	**Total Area** *(Acres)*	**Impervious Cover** *(Acres)*	**Percent Impervious** *%*	**Runoff Coefficient** *Rv*	**WQv** *(ft^3)*	**Description**
1	0.53	0.21	0.40	0.41	860.49	Bioretention
2	0.56	0.32	0.57	0.56	1,262	Bioretention
3	11.63	4.10	0.35	0.37	17056.10	Wet Pond
4	4.85	1.69	0.35	0.36	7041.66	Bioretention
5	4.15	1.61	0.39	0.40	6614.40	Bioretention
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

Runoff Reduction Volume and Treated volumes						
	Runoff Reduction Techiques/Standard SMPs		**Total Contributing Area**	**Total Contributing Impervious Area**	**WQv Reduced (RRv)**	**WQv Treated**
			(acres)	**(acres)**	**cf**	**cf**
Area/Volume Reduction	Conservation of Natural Areas	RR-1	0.00	0.00		
	Sheetflow to Riparian Buffers/Filter Strips	RR-2	0.00	0.00		
	Tree Planting/Tree Pit	RR-3	0.00	0.00		
	Disconnection of Rooftop Runoff	RR-4		0.00		
	Vegetated Swale	RR-5	0.00	0.00	0	
	Rain Garden	RR-6	0.00	0.00	0	
	Stormwater Planter	RR-7	0.00	0.00	0	
	Rain Barrel/Cistern	RR-8	0.00	0.00	0	
	Porous Pavement	RR-9	0.00	0.00	0	
	Green Roof (Intensive & Extensive)	RR-10	0.00	0.00	0	
Standard SMPs w/RRv Capacity	Infiltration Trench	I-1	0.00	0.00	0	0
	Infiltration Basin	I-2	0.00	0.00	0	0
	Dry Well	I-3	0.00	0.00	0	0
	Underground Infiltration System	I-4				
	Bioretention & Infiltration Bioretention	F-5	10.09	3.83	6532	9247
	Dry swale	O-1	0.00	0.00	0	0
Standard SMPs	Micropool Extended Detention (P-1)	P-1				
	Wet Pond (P-2)	P-2	11.63	4.10		17056
	Wet Extended Detention (P-3)	P-3				
	Multiple Pond system (P-4)	P-4				
	Pocket Pond (p-5)	P-5				
	Surface Sand filter (F-1)	F-1				
	Underground Sand filter (F-2)	F-2				
	Perimeter Sand Filter (F-3)	F-3				
	Organic Filter (F-4	F-4				
	Shallow Wetland (W-1)	W-1				
	Extended Detention Wetland (W-2	W-2				
	Pond/Wetland System (W-3)	W-3				
	Pocket Wetland (W-4)	W-4				
	Wet Swale (O-2)	O-2				
	Totals by Area Reduction	→	0.00	0.00	0	
	Totals by Volume Reduction	→	0.00	0.00	0	
	Totals by Standard SMP w/RRV	→	10.09	3.83	6532	9247
	Totals by Standard SMP	→	11.63	4.10		17056
	Totals (Area + Volume + all SMPs)	→	21.72	7.93	6,532	26,303

Minimum RRv

Enter the Soils Data for the site		
Soil Group	Acres	S
A		55%
B		40%
C	0.78	30%
D	**31.54**	20%
Total Area	32.316	
Calculate the Minimum RRv		
S =	**0.20**	
Impervious =	7.93	*acre*
Precipitation	1.1	*in*
Rv	0.95	
Minimum RRv	**6,089**	***ft3***
	0.14	af

Bioretention Worksheet

(For use on HSG C or D Soils with underdrains)

Af=WQv*(df)/[k*(hf+df)(tf)]

Af	Required Surface Area (ft2)
WQv	Water Quality Volume (ft3)
df	Depth of the Soil Medium (feet)
hf	Average height of water above the planter bed
tf	Volume Through the Filter Media (days)
k	The hydraulic conductivity [ft/day], can be varied depending on the properties of the soil media. Some reported conductivity values are: ***Sand*** - 3.5 ft/day (City of Austin 1988); ***Peat*** - 2.0 ft/day (Galli 1990); ***Leaf Compost*** - 8.7 ft/day (Claytor and Schueler, 1996); ***Bioretention Soil*** (0.5 ft/day (Claytor &

Design Point:	A

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
1	0.53	0.21	0.40	0.41	860.49	1.10	Bioretention
Enter Impervious Area Reduced by Disconnection of Rooftops		0.00	40%	0.41	860	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.					0	*ft^3*	
Soil Information							
Soil Group		D					
Soil Infiltration Rate		0.00	*in/hour*	*Okay*			
Using Underdrains?		Yes	*Okay*				
Calculate the Minimum Filter Area							
				Value		Units	Notes
WQv				860		*ft^3*	
Enter Depth of Soil Media			*df*	2.5		*ft*	*2.5-4 ft*
Enter Hydraulic Conductivity			*k*	0.5		*ft/day*	
Enter Average Height of Ponding			*hf*	0.5		*ft*	*6 inches max.*
Enter Filter Time			*tf*	5		*days*	
Required Filter Area			***Af***	**287**		***ft^2***	
Determine Actual Bio-Retention Area							
Filter Width		9	*ft*				
Filter Length		35	*ft*				
Filter Area		315	*ft^2*				
Actual Volume Provided		945	*ft^3*				
Determine Runoff Reduction							
Is the Bioretention contributing flow to another practice?			No	Select Practice			
RRv		378					
RRv applied		**378**	***ft^3***	***This is 40% of the storage provided or WQv whichever is less.***			
Volume Treated		482	*ft^3*	*This is the portion of the WQv that is not reduced in the practice.*			
Volume Directed		0	*ft^3*	This volume is directed another practice			
Sizing √		OK		*Check to be sure Area provided ≥ Af*			

Bioretention Worksheet

(For use on HSG C or D Soils with underdrains)

Af=WQv*(df)/[k*(hf+df)(tf)]

Af	Required Surface Area (ft2)
WQv	Water Quality Volume (ft3)
df	Depth of the Soil Medium (feet)
hf	Average height of water above the planter bed
tf	Volume Through the Filter Media (days)

k The hydraulic conductivity [ft/day], can be varied depending on the properties of the soil media. Some reported conductivity values are: ***Sand*** - 3.5 ft/day (City of Austin 1988); ***Peat*** - 2.0 ft/day (Galli 1990); ***Leaf Compost*** - 8.7 ft/day (Claytor and Schueler, 1996); ***Bioretention Soil*** (0.5 ft/day (Claytor & Schueler, 1996)

Design Point:	**A**						
Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
2	0.56	0.32	0.57	0.56	1261.99	1.10	Bioretention
Enter Impervious Area Reduced by Disconnection of Rooftops			57%	0.56	1,262	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.						*ft^3*	
Soil Information							
Soil Group		D					
Soil Infiltration Rate		0.00	*in/hour*	*Okay*			
Using Underdrains?		Yes	*Okay*				
Calculate the Minimum Filter Area							
				Value		Units	Notes
WQv				1,262		*ft^3*	
Enter Depth of Soil Media			*df*	2.5		*ft*	*2.5-4 ft*
Enter Hydraulic Conductivity			*k*	0.5		*ft/day*	
Enter Average Height of Ponding			*hf*	0.5		*ft*	*6 inches max.*
Enter Filter Time			*tf*	2		*days*	
Required Filter Area			***Af***	**1052**		***ft^2***	
Determine Actual Bio-Retention Area							
Filter Width		26	*ft*				
Filter Length		50	*ft*				
Filter Area		1300	*ft^2*				
Actual Volume Provided		1560	*ft^3*				
Determine Runoff Reduction							
Is the Bioretention contributing flow to another practice?			No	Select Practice			
RRv		624					
RRv applied		**624**	***ft^3***	***This is 40% of the storage provided or WQv whichever is less.***			
Volume Treated		638	*ft^3*	*This is the portion of the WQv that is not reduced in the practice.*			
Volume Directed		0	*ft^3*	This volume is directed another practice			
Sizing √		OK		*Check to be sure Area provided ≥ Af*			

Bioretention Worksheet

(For use on HSG C or D Soils with underdrains)

Af=WQv*(df)/[k*(hf+df)(tf)]

Af	Required Surface Area (ft2)
WQv	Water Quality Volume (ft3)
df	Depth of the Soil Medium (feet)
hf	Average height of water above the planter bed
tf	Volume Through the Filter Media (days)
k	The hydraulic conductivity [ft/day], can be varied depending on the properties of the soil media. Some reported conductivity values are: ***Sand*** - 3.5 ft/day (City of Austin 1988); ***Peat*** - 2.0 ft/day (Galli 1990); ***Leaf Compost*** - 8.7 ft/day (Claytor and Schueler, 1996); ***Bioretention Soil*** (0.5 ft/day (Claytor &

Design Point:	**A**						
Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
4	4.85	1.69	0.35	0.36	7041.66	1.10	Bioretention
Enter Impervious Area Reduced by Disconnection of Rooftops		0.00	35%	0.36	7,042	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.					0	*ft^3*	
Soil Information							
Soil Group		D					
Soil Infiltration Rate		0.00	*in/hour*	*Okay*			
Using Underdrains?		Yes	*Okay*				
Calculate the Minimum Filter Area							
				Value		Units	Notes
WQv				7,042		*ft^3*	
Enter Depth of Soil Media			*df*	2.5		*ft*	*2.5-4 ft*
Enter Hydraulic Conductivity			*k*	0.5		*ft/day*	
Enter Average Height of Ponding			*hf*	0.5		*ft*	*6 inches max.*
Enter Filter Time			*tf*	2		*days*	
Required Filter Area			***Af***	**5868**		***ft^2***	
Determine Actual Bio-Retention Area							
Filter Width		33	*ft*				
Filter Length		180	*ft*				
Filter Area		5940	*ft^2*				
Actual Volume Provided		7128	*ft^3*				
Determine Runoff Reduction							
Is the Bioretention contributing flow to another practice?			No	Select Practice			
RRv		2,851					
RRv applied		**2,851**	***ft^3***	***This is 40% of the storage provided or WQv whichever is less.***			
Volume Treated		4,190	*ft^3*	*This is the portion of the WQv that is not reduced in the practice.*			
Volume Directed		0	*ft^3*	This volume is directed another practice			
Sizing √		OK		*Check to be sure Area provided ≥ Af*			

Bioretention Worksheet

(For use on HSG C or D Soils with underdrains)

Af=WQv*(df)/[k*(hf+df)(tf)]

Af	Required Surface Area (ft2)
WQv	Water Quality Volume (ft3)
df	Depth of the Soil Medium (feet)
hf	Average height of water above the planter bed
tf	Volume Through the Filter Media (days)
k	The hydraulic conductivity [ft/day], can be varied depending on the properties of the soil media. Some reported conductivity values are: ***Sand*** - 3.5 ft/day (City of Austin 1988); ***Peat*** - 2.0 ft/day (Galli 1990); ***Leaf Compost*** - 8.7 ft/day (Claytor and Schueler, 1996); ***Bioretention Soil*** (0.5 ft/day (Claytor & Schueler, 1996)

Design Point:	**A**						
Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft ^{3})*	**Precipitation** *(in)*	**Description**
5	4.15	1.61	0.39	0.40	6614.40	1.10	Bioretention
Enter Impervious Area Reduced by Disconnection of Rooftops		0.00	39%	0.40	6,614	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.					0	*ft ^{3}*	
Soil Information							
Soil Group		D					
Soil Infiltration Rate		0.00	*in/hour*	*Okay*			
Using Underdrains?		Yes	*Okay*				
Calculate the Minimum Filter Area							
				Value		Units	Notes
WQv				6,614		*ft ^{3}*	
Enter Depth of Soil Media			*df*	2.5		*ft*	*2.5-4 ft*
Enter Hydraulic Conductivity			*k*	0.5		*ft/day*	
Enter Average Height of Ponding			*hf*	0.5		*ft*	*6 inches max.*
Enter Filter Time			*tf*	2		*days*	
Required Filter Area			***Af***	**5512**		***ft ^{2}***	
Determine Actual Bio-Retention Area							
Filter Width		31	*ft*				
Filter Length		180	*ft*				
Filter Area		5580	*ft ^{2}*				
Actual Volume Provided		6696	*ft ^{3}*				
Determine Runoff Reduction							
Is the Bioretention contributing flow to another practice?			No	Select Practice			
RRv		2,678					
RRv applied		**2,678**	***ft ^{3}***	***This is 40% of the storage provided or WQv whichever is less.***			
Volume Treated		3,936	*ft ^{3}*	*This is the portion of the WQv that is not reduced in the practice.*			
Volume Directed		0	*ft ^{3}*	This volume is directed another practice			
Sizing √		OK		*Check to be sure Area provided ≥ Af*			

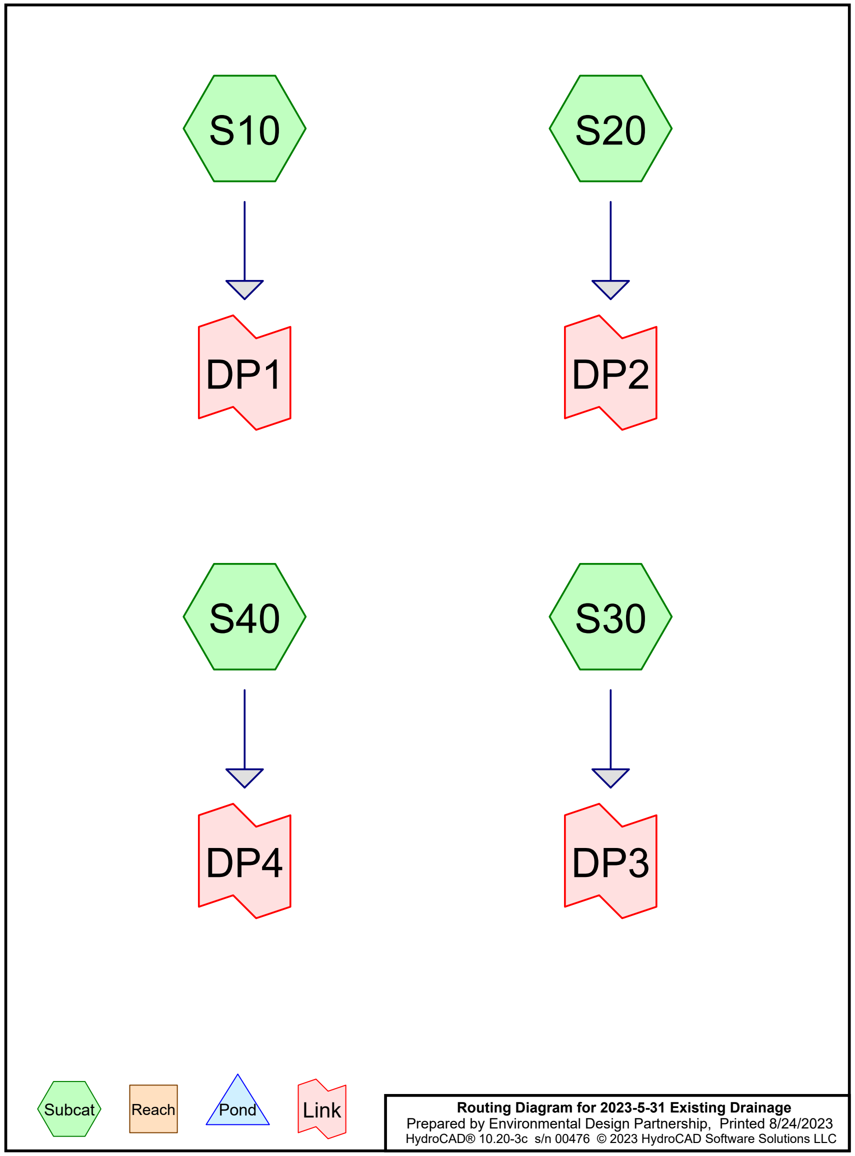
Bioretention Worksheet

Total RRv Applied	6,531.60
Total Area	10.09
Total Impervious Area	3.83
Total Volume Treated	9,246.94
Rooftop Disconnect Impervious Area Total	0.00

Attachment B

Stormwater Modeling Calculations

900 Route 146, Clifton Park, New York 12065
phone (518) 371-7621



Routing Diagram for 2023-5-31 Existing Drainage
Prepared by Environmental Design Partnership, Printed 8/24/2023
HydroCAD® 10.20-3c s/n 00476 © 2023 HydroCAD Software Solutions LLC

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-YR	NRCC 24-hr	B	Default	24.00	1	2.25	2
2	10-YR	NRCC 24-hr	B	Default	24.00	1	3.95	2
3	50-YR	NRCC 24-hr	B	Default	24.00	1	5.35	2
4	100-YR	NRCC 24-hr	B	Default	24.00	1	5.98	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.165	96	Gravel surface, HSG C (S30)
0.365	96	Gravel surface, HSG D (S20)
0.708	71	Meadow, non-grazed, HSG C (S30)
22.524	78	Meadow, non-grazed, HSG D (S10, S20, S40)
9.862	79	Woods, Fair, HSG D (S10, S20)
0.097	76	Woods/grass comb., Fair, HSG C (S30)
33.721	**78**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.970	HSG C	S30
32.751	HSG D	S10, S20, S40
0.000	Other	
33.721		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.165	0.365	0.000	0.530	Gravel surface	S20, S30
0.000	0.000	0.708	22.524	0.000	23.232	Meadow, non-grazed	S10, S20, S30, S40
0.000	0.000	0.000	9.862	0.000	9.862	Woods, Fair	S10, S20
0.000	0.000	0.097	0.000	0.000	0.097	Woods/grass comb., Fair	S30
0.000	**0.000**	**0.970**	**32.751**	**0.000**	**33.721**	**TOTAL AREA**	

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentS10: Runoff Area=11.450 ac 0.00% Impervious Runoff Depth=0.63"
Flow Length=975' Tc=11.2 min CN=78 Runoff=7.92 cfs 0.602 af

SubcatchmentS20: Runoff Area=20.243 ac 0.00% Impervious Runoff Depth=0.67"
Flow Length=1,201' Tc=13.5 min CN=79 Runoff=13.92 cfs 1.138 af

SubcatchmentS30: Runoff Area=0.970 ac 0.00% Impervious Runoff Depth=0.55"
Flow Length=837' Tc=11.2 min CN=76 Runoff=0.56 cfs 0.044 af

SubcatchmentS40: Runoff Area=1.058 ac 0.00% Impervious Runoff Depth=0.63"
Flow Length=210' Tc=8.1 min CN=78 Runoff=0.83 cfs 0.056 af

Link DP1: Inflow=7.92 cfs 0.602 af
Primary=7.92 cfs 0.602 af

Link DP2: Inflow=13.92 cfs 1.138 af
Primary=13.92 cfs 1.138 af

Link DP3: Inflow=0.56 cfs 0.044 af
Primary=0.56 cfs 0.044 af

Link DP4: Inflow=0.83 cfs 0.056 af
Primary=0.83 cfs 0.056 af

Total Runoff Area = 33.721 ac Runoff Volume = 1.840 af Average Runoff Depth = 0.65"
100.00% Pervious = 33.721 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment S10:

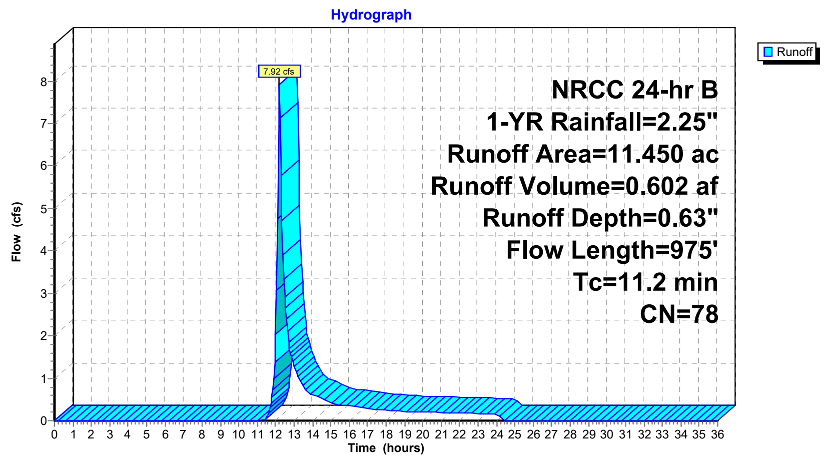
Runoff = 7.92 cfs @ 12.20 hrs, Volume= 0.602 af, Depth= 0.63"
Routed to Link DP1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 1-YR Rainfall=2.25"

Area (ac)	CN	Description
8.383	78	Meadow, non-grazed, HSG D
3.067	79	Woods, Fair, HSG D
11.450	78	Weighted Average
11.450		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	100	0.1700	0.25		**Sheet Flow, SF - MEADOW** Grass: Dense n= 0.240 P2= 2.68"
4.6	875	0.2080	3.19		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
11.2	975	Total			

Subcatchment S10:



Summary for Subcatchment S20:

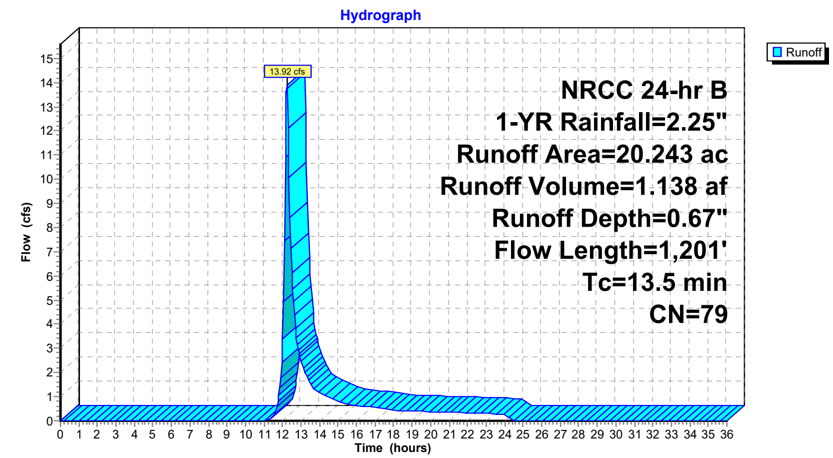
Runoff = 13.92 cfs @ 12.23 hrs, Volume= 1.138 af, Depth= 0.67"
Routed to Link DP2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 1-YR Rainfall=2.25"

Area (ac)	CN	Description
13.083	78	Meadow, non-grazed, HSG D
6.795	79	Woods, Fair, HSG D
0.365	96	Gravel surface, HSG D
20.243	79	Weighted Average
20.243		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	100	0.1400	0.23		**Sheet Flow, SF - MEADOW** Grass: Dense n= 0.240 P2= 2.68"
0.6	98	0.2857	2.67		**Shallow Concentrated Flow, SCF - WOODS** Woodland Kv= 5.0 fps
5.7	1,003	0.1751	2.93		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
13.5	1,201	Total			

Subcatchment S20:



Summary for Subcatchment S30:

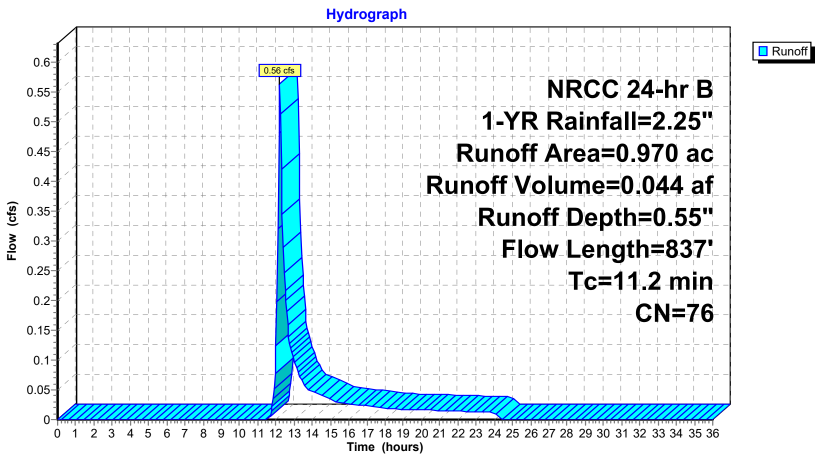
Runoff = 0.56 cfs @ 12.21 hrs, Volume= 0.044 af, Depth= 0.55"
Routed to Link DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 1-YR Rainfall=2.25"

Area (ac)	CN	Description
0.708	71	Meadow, non-grazed, HSG C
0.165	96	Gravel surface, HSG C
0.097	76	Woods/grass comb., Fair, HSG C
0.970	76	Weighted Average
0.970		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	100	0.1500	0.24		**Sheet Flow, SF - MEADOW** Grass: Dense n= 0.240 P2= 2.68"
1.3	192	0.1200	2.42		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
0.4	130	0.0923	4.89		**Shallow Concentrated Flow, SCF - GRAVEL** Unpaved Kv= 16.1 fps
2.5	415	0.1542	2.75		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
11.2	837	Total			

Subcatchment S30:



Summary for Subcatchment S40:

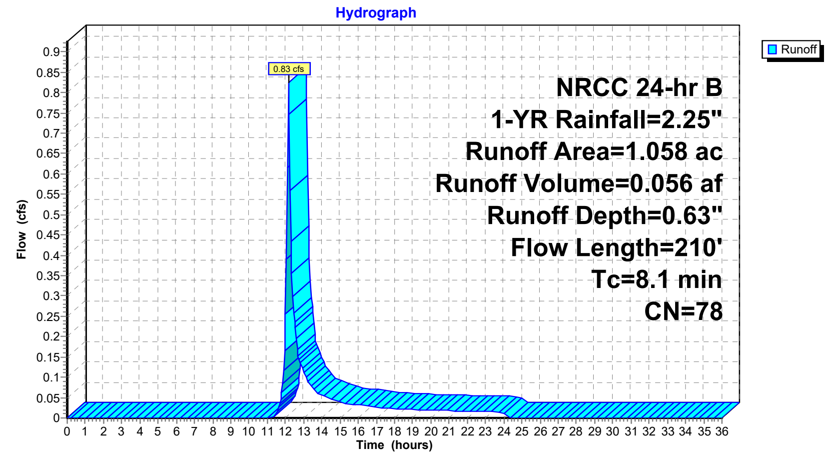
Runoff = 0.83 cfs @ 12.16 hrs, Volume= 0.056 af, Depth= 0.63"
Routed to Link DP4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 1-YR Rainfall=2.25"

Area (ac)	CN	Description
1.058	78	Meadow, non-grazed, HSG D
1.058		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.1200	0.22		**Sheet Flow, SF** Grass: Dense n= 0.240 P2= 2.68"
0.5	110	0.2272	3.34		**Shallow Concentrated Flow, SCF** Short Grass Pasture Kv= 7.0 fps
8.1	210	Total			

Subcatchment S40:

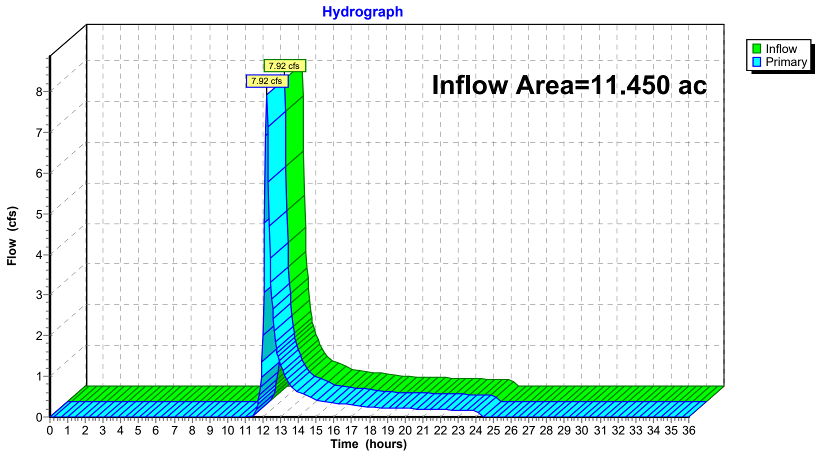


Summary for Link DP1:

Inflow Area = 11.450 ac, 0.00% Impervious, Inflow Depth = 0.63" for 1-YR event
Inflow = 7.92 cfs @ 12.20 hrs, Volume= 0.602 af
Primary = 7.92 cfs @ 12.20 hrs, Volume= 0.602 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP1:

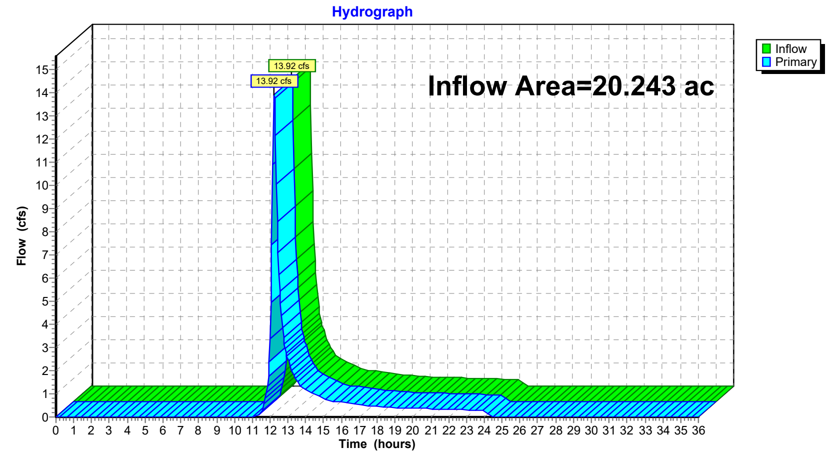


Summary for Link DP2:

Inflow Area = 20.243 ac, 0.00% Impervious, Inflow Depth = 0.67" for 1-YR event
Inflow = 13.92 cfs @ 12.23 hrs, Volume= 1.138 af
Primary = 13.92 cfs @ 12.23 hrs, Volume= 1.138 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP2:

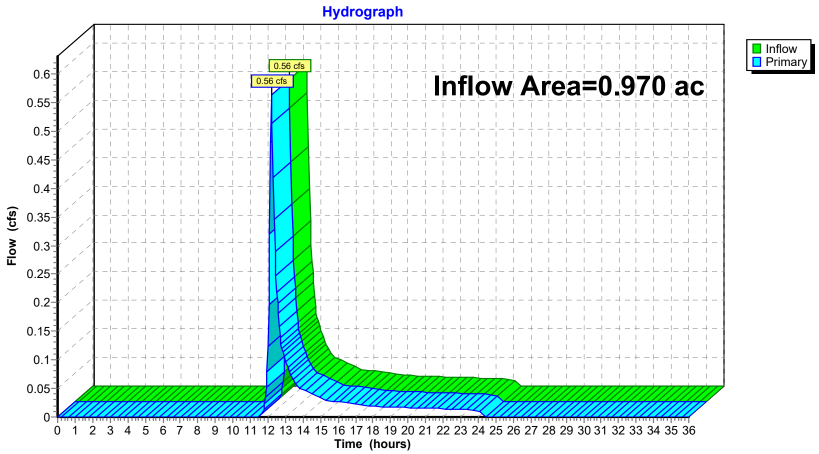


Summary for Link DP3:

Inflow Area =	0.970 ac, 0.00% Impervious, Inflow Depth = 0.55"	for 1-YR event
Inflow =	0.56 cfs @ 12.21 hrs, Volume=	0.044 af
Primary =	0.56 cfs @ 12.21 hrs, Volume=	0.044 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP3:

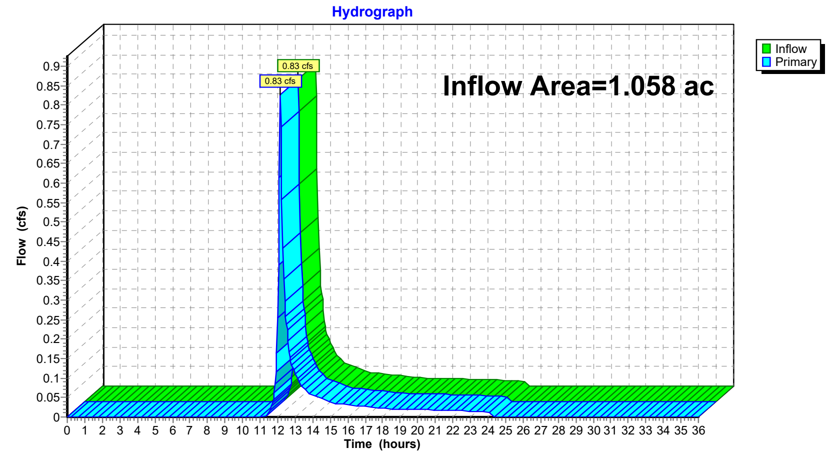


Summary for Link DP4:

Inflow Area =	1.058 ac, 0.00% Impervious, Inflow Depth = 0.63"	for 1-YR event
Inflow =	0.83 cfs @ 12.16 hrs, Volume=	0.056 af
Primary =	0.83 cfs @ 12.16 hrs, Volume=	0.056 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP4:



Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentS10:	Runoff Area=11.450 ac 0.00% Impervious Runoff Depth=1.85" Flow Length=975' Tc=11.2 min CN=78 Runoff=24.66 cfs 1.763 af
SubcatchmentS20:	Runoff Area=20.243 ac 0.00% Impervious Runoff Depth=1.92" Flow Length=1,201' Tc=13.5 min CN=79 Runoff=42.14 cfs 3.244 af
SubcatchmentS30:	Runoff Area=0.970 ac 0.00% Impervious Runoff Depth=1.70" Flow Length=837' Tc=11.2 min CN=76 Runoff=1.92 cfs 0.137 af
SubcatchmentS40:	Runoff Area=1.058 ac 0.00% Impervious Runoff Depth=1.85" Flow Length=210' Tc=8.1 min CN=78 Runoff=2.56 cfs 0.163 af
Link DP1:	Inflow=24.66 cfs 1.763 af Primary=24.66 cfs 1.763 af
Link DP2:	Inflow=42.14 cfs 3.244 af Primary=42.14 cfs 3.244 af
Link DP3:	Inflow=1.92 cfs 0.137 af Primary=1.92 cfs 0.137 af
Link DP4:	Inflow=2.56 cfs 0.163 af Primary=2.56 cfs 0.163 af

Total Runoff Area = 33.721 ac Runoff Volume = 5.307 af Average Runoff Depth = 1.89"
100.00% Pervious = 33.721 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment S10:

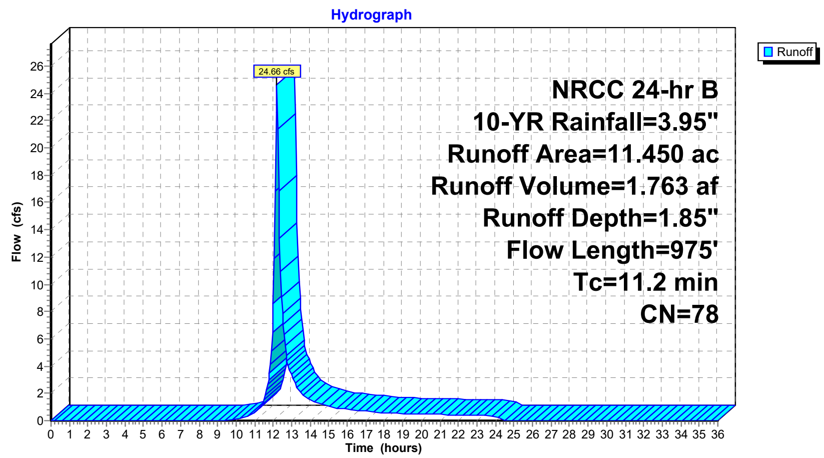
Runoff = 24.66 cfs @ 12.19 hrs, Volume= 1.763 af, Depth= 1.85"
Routed to Link DP1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 10-YR Rainfall=3.95"

Area (ac)	CN	Description
8.383	78	Meadow, non-grazed, HSG D
3.067	79	Woods, Fair, HSG D
11.450	78	Weighted Average
11.450		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	100	0.1700	0.25		**Sheet Flow, SF - MEADOW** Grass: Dense n= 0.240 P2= 2.68"
4.6	875	0.2080	3.19		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
11.2	975	Total			

Subcatchment S10:



Summary for Subcatchment S20:

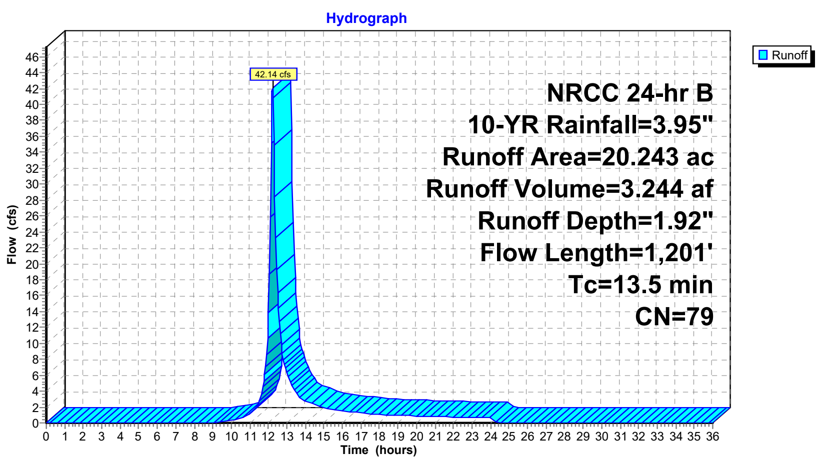
Runoff = 42.14 cfs @ 12.22 hrs, Volume= 3.244 af, Depth= 1.92"
Routed to Link DP2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 10-YR Rainfall=3.95"

Area (ac)	CN	Description
13.083	78	Meadow, non-grazed, HSG D
6.795	79	Woods, Fair, HSG D
0.365	96	Gravel surface, HSG D
20.243	79	Weighted Average
20.243		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	100	0.1400	0.23		**Sheet Flow, SF - MEADOW** Grass: Dense n= 0.240 P2= 2.68"
0.6	98	0.2857	2.67		**Shallow Concentrated Flow, SCF - WOODS** Woodland Kv= 5.0 fps
5.7	1,003	0.1751	2.93		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
13.5	1,201	Total			

Subcatchment S20:



Summary for Subcatchment S30:

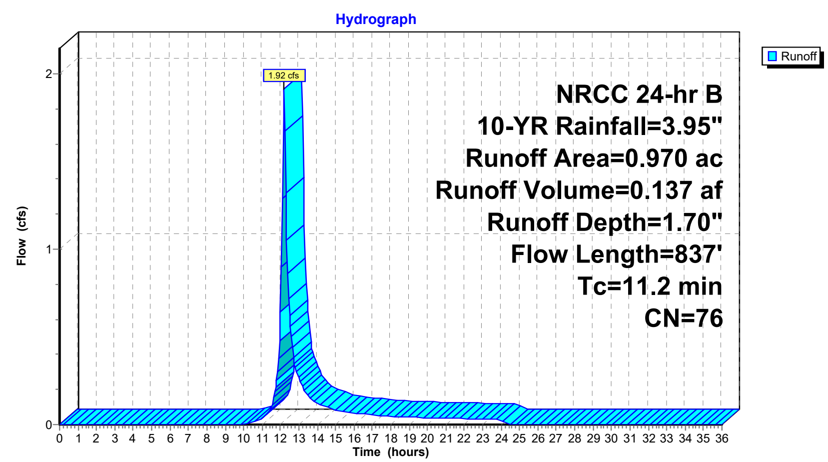
Runoff = 1.92 cfs @ 12.20 hrs, Volume= 0.137 af, Depth= 1.70"
Routed to Link DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 10-YR Rainfall=3.95"

Area (ac)	CN	Description
0.708	71	Meadow, non-grazed, HSG C
0.165	96	Gravel surface, HSG C
0.097	76	Woods/grass comb., Fair, HSG C
0.970	76	Weighted Average
0.970		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	100	0.1500	0.24		**Sheet Flow, SF - MEADOW** Grass: Dense n= 0.240 P2= 2.68"
1.3	192	0.1200	2.42		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
0.4	130	0.0923	4.89		**Shallow Concentrated Flow, SCF - GRAVEL** Unpaved Kv= 16.1 fps
2.5	415	0.1542	2.75		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
11.2	837	Total			

Subcatchment S30:



Summary for Subcatchment S40:

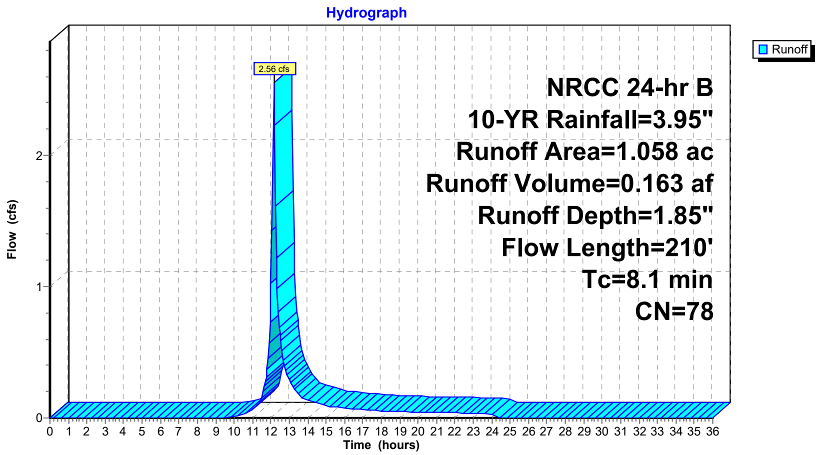
Runoff = 2.56 cfs @ 12.16 hrs, Volume= 0.163 af, Depth= 1.85"
Routed to Link DP4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 10-YR Rainfall=3.95"

Area (ac)	CN	Description
1.058	78	Meadow, non-grazed, HSG D
1.058		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.1200	0.22		**Sheet Flow, SF** Grass: Dense n= 0.240 P2= 2.68"
0.5	110	0.2272	3.34		**Shallow Concentrated Flow, SCF** Short Grass Pasture Kv= 7.0 fps
8.1	210	Total			

Subcatchment S40:

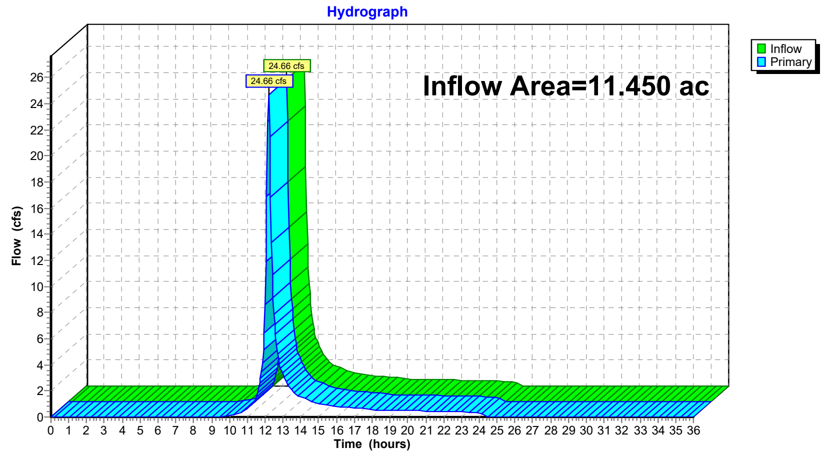


Summary for Link DP1:

Inflow Area = 11.450 ac, 0.00% Impervious, Inflow Depth = 1.85" for 10-YR event
Inflow = 24.66 cfs @ 12.19 hrs, Volume= 1.763 af
Primary = 24.66 cfs @ 12.19 hrs, Volume= 1.763 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP1:

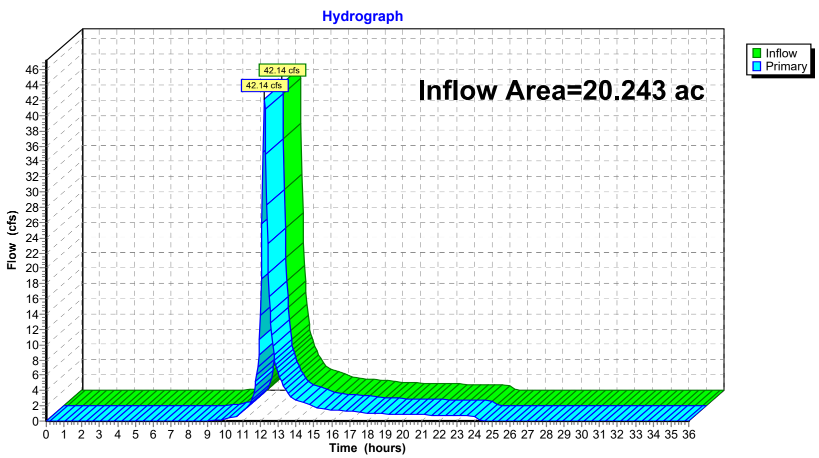


Summary for Link DP2:

Inflow Area = 20.243 ac, 0.00% Impervious, Inflow Depth = 1.92" for 10-YR event
Inflow = 42.14 cfs @ 12.22 hrs, Volume= 3.244 af
Primary = 42.14 cfs @ 12.22 hrs, Volume= 3.244 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP2:

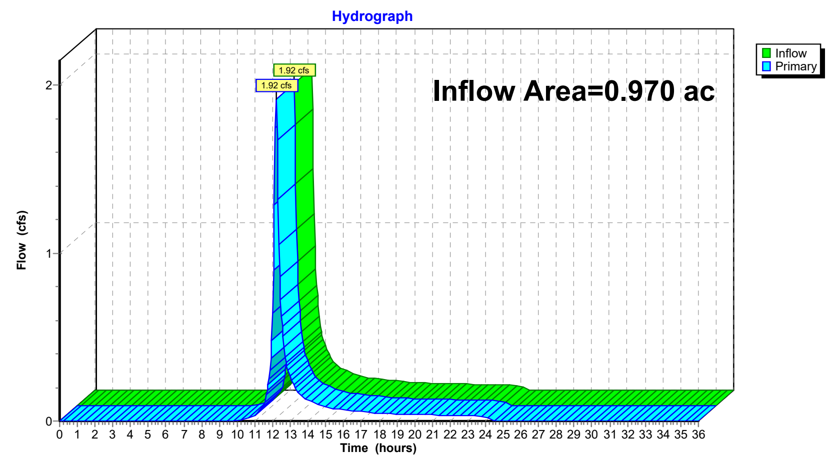


Summary for Link DP3:

Inflow Area = 0.970 ac, 0.00% Impervious, Inflow Depth = 1.70" for 10-YR event
Inflow = 1.92 cfs @ 12.20 hrs, Volume= 0.137 af
Primary = 1.92 cfs @ 12.20 hrs, Volume= 0.137 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP3:

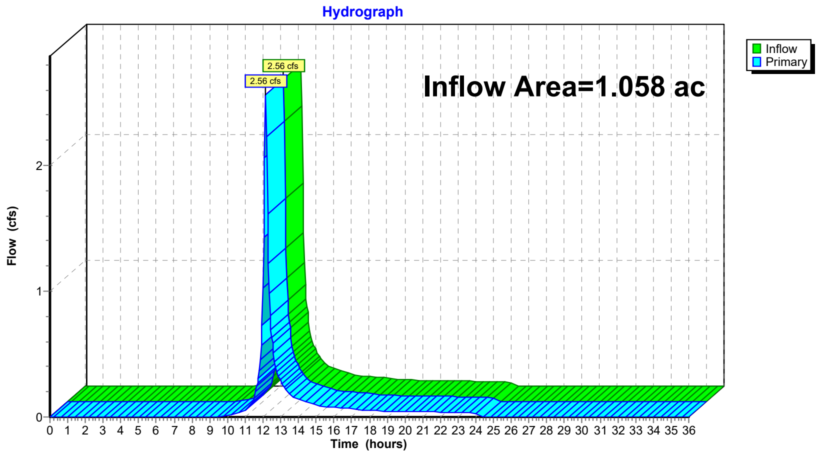


Summary for Link DP4:

Inflow Area = 1.058 ac, 0.00% Impervious, Inflow Depth = 1.85" for 10-YR event
Inflow = 2.56 cfs @ 12.16 hrs, Volume= 0.163 af
Primary = 2.56 cfs @ 12.16 hrs, Volume= 0.163 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP4:



Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentS10: Runoff Area=11.450 ac 0.00% Impervious Runoff Depth=3.01"
Flow Length=975' Tc=11.2 min CN=78 Runoff=40.17 cfs 2.873 af

SubcatchmentS20: Runoff Area=20.243 ac 0.00% Impervious Runoff Depth=3.11"
Flow Length=1,201' Tc=13.5 min CN=79 Runoff=68.00 cfs 5.238 af

SubcatchmentS30: Runoff Area=0.970 ac 0.00% Impervious Runoff Depth=2.83"
Flow Length=837' Tc=11.2 min CN=76 Runoff=3.20 cfs 0.228 af

SubcatchmentS40: Runoff Area=1.058 ac 0.00% Impervious Runoff Depth=3.01"
Flow Length=210' Tc=8.1 min CN=78 Runoff=4.16 cfs 0.265 af

Link DP1: Inflow=40.17 cfs 2.873 af
Primary=40.17 cfs 2.873 af

Link DP2: Inflow=68.00 cfs 5.238 af
Primary=68.00 cfs 5.238 af

Link DP3: Inflow=3.20 cfs 0.228 af
Primary=3.20 cfs 0.228 af

Link DP4: Inflow=4.16 cfs 0.265 af
Primary=4.16 cfs 0.265 af

Total Runoff Area = 33.721 ac Runoff Volume = 8.605 af Average Runoff Depth = 3.06"
100.00% Pervious = 33.721 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment S10:

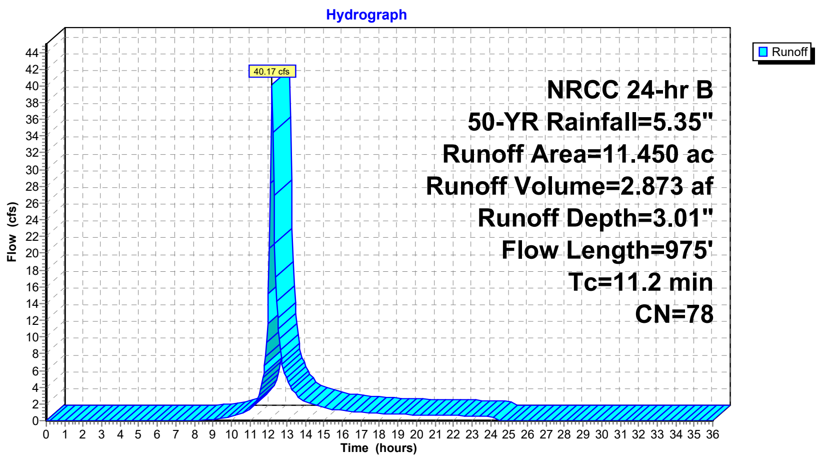
Runoff = 40.17 cfs @ 12.19 hrs, Volume= 2.873 af, Depth= 3.01"
Routed to Link DP1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 50-YR Rainfall=5.35"

Area (ac)	CN	Description
8.383	78	Meadow, non-grazed, HSG D
3.067	79	Woods, Fair, HSG D
11.450	78	Weighted Average
11.450		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	100	0.1700	0.25		**Sheet Flow, SF - MEADOW** Grass: Dense n= 0.240 P2= 2.68"
4.6	875	0.2080	3.19		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
11.2	975	Total			

Subcatchment S10:



Summary for Subcatchment S20:

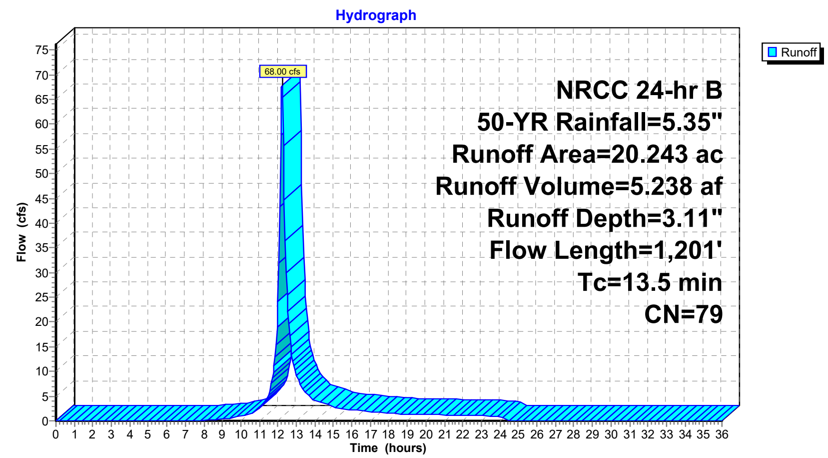
Runoff = 68.00 cfs @ 12.22 hrs, Volume= 5.238 af, Depth= 3.11"
Routed to Link DP2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 50-YR Rainfall=5.35"

Area (ac)	CN	Description
13.083	78	Meadow, non-grazed, HSG D
6.795	79	Woods, Fair, HSG D
0.365	96	Gravel surface, HSG D
20.243	79	Weighted Average
20.243		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	100	0.1400	0.23		**Sheet Flow, SF - MEADOW** Grass: Dense n= 0.240 P2= 2.68"
0.6	98	0.2857	2.67		**Shallow Concentrated Flow, SCF - WOODS** Woodland Kv= 5.0 fps
5.7	1,003	0.1751	2.93		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
13.5	1,201	Total			

Subcatchment S20:



Summary for Subcatchment S30:

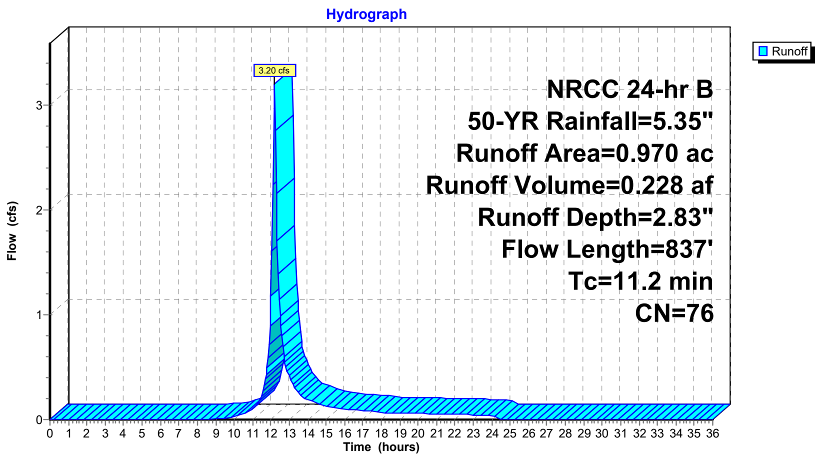
Runoff = 3.20 cfs @ 12.19 hrs, Volume= 0.228 af, Depth= 2.83"
Routed to Link DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 50-YR Rainfall=5.35"

Area (ac)	CN	Description
0.708	71	Meadow, non-grazed, HSG C
0.165	96	Gravel surface, HSG C
0.097	76	Woods/grass comb., Fair, HSG C
0.970	76	Weighted Average
0.970		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	100	0.1500	0.24		**Sheet Flow, SF - MEADOW** Grass: Dense n= 0.240 P2= 2.68"
1.3	192	0.1200	2.42		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
0.4	130	0.0923	4.89		**Shallow Concentrated Flow, SCF - GRAVEL** Unpaved Kv= 16.1 fps
2.5	415	0.1542	2.75		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
11.2	837	Total			

Subcatchment S30:



Summary for Subcatchment S40:

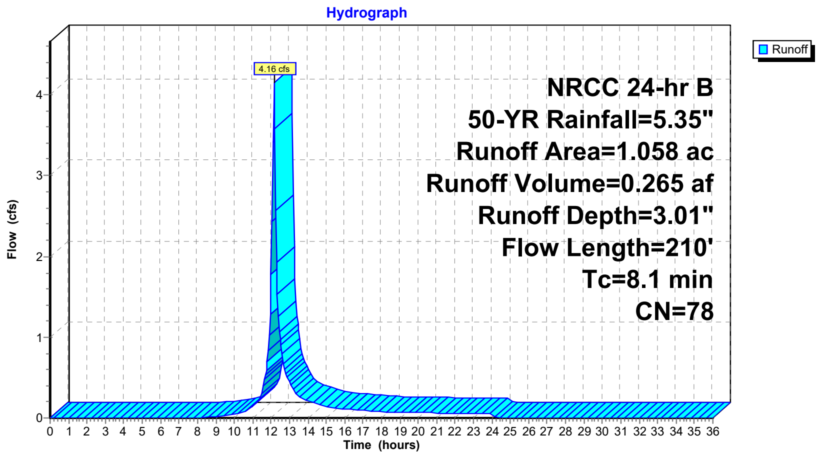
Runoff = 4.16 cfs @ 12.15 hrs, Volume= 0.265 af, Depth= 3.01"
Routed to Link DP4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 50-YR Rainfall=5.35"

Area (ac)	CN	Description
1.058	78	Meadow, non-grazed, HSG D
1.058		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.1200	0.22		**Sheet Flow, SF** Grass: Dense n= 0.240 P2= 2.68"
0.5	110	0.2272	3.34		**Shallow Concentrated Flow, SCF** Short Grass Pasture Kv= 7.0 fps
8.1	210	Total			

Subcatchment S40:

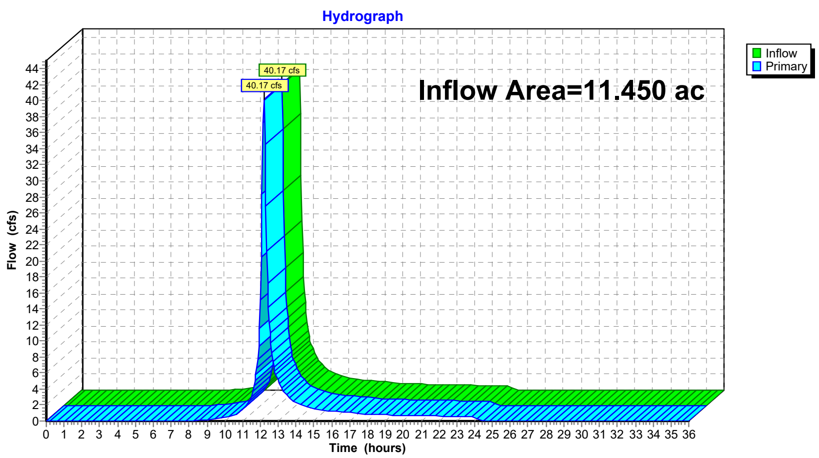


Summary for Link DP1:

Inflow Area = 11.450 ac, 0.00% Impervious, Inflow Depth = 3.01" for 50-YR event
Inflow = 40.17 cfs @ 12.19 hrs, Volume= 2.873 af
Primary = 40.17 cfs @ 12.19 hrs, Volume= 2.873 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP1:

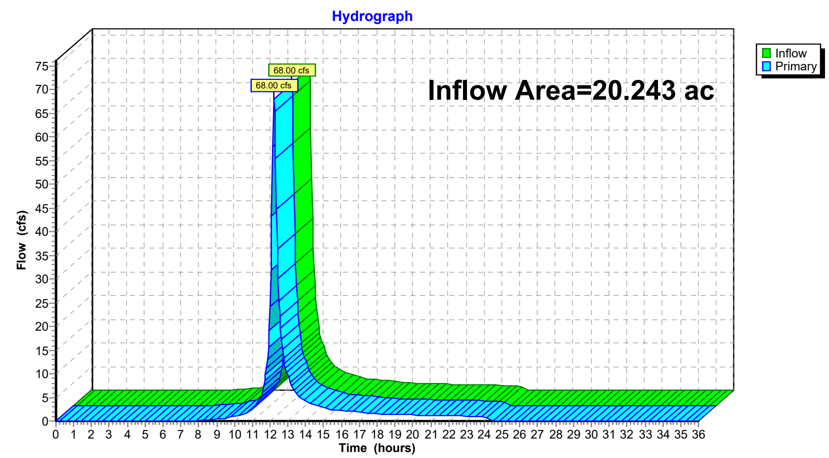


Summary for Link DP2:

Inflow Area = 20.243 ac, 0.00% Impervious, Inflow Depth = 3.11" for 50-YR event
Inflow = 68.00 cfs @ 12.22 hrs, Volume= 5.238 af
Primary = 68.00 cfs @ 12.22 hrs, Volume= 5.238 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP2:

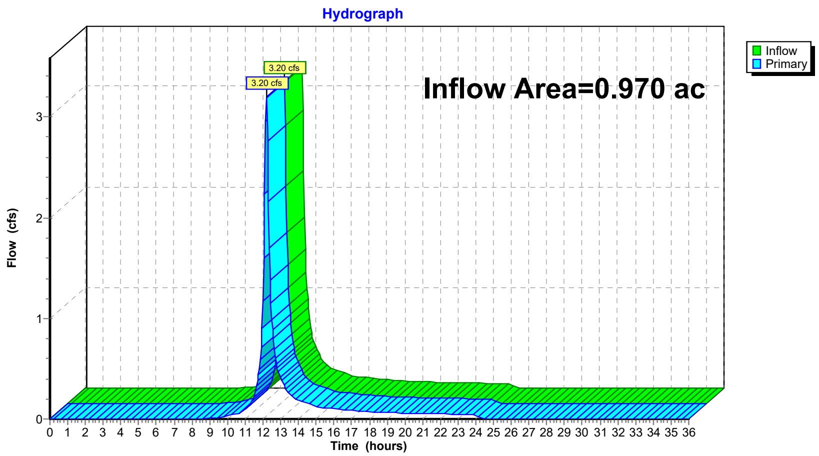


Summary for Link DP3:

Inflow Area = 0.970 ac, 0.00% Impervious, Inflow Depth = 2.83" for 50-YR event
Inflow = 3.20 cfs @ 12.19 hrs, Volume= 0.228 af
Primary = 3.20 cfs @ 12.19 hrs, Volume= 0.228 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP3:

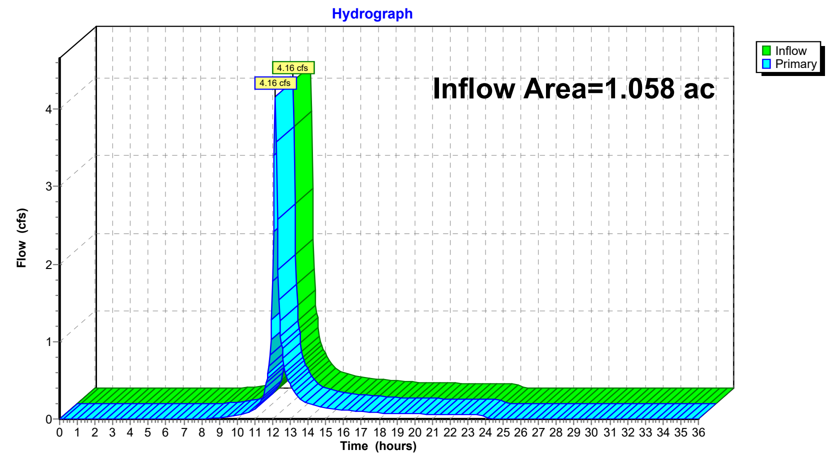


Summary for Link DP4:

Inflow Area = 1.058 ac, 0.00% Impervious, Inflow Depth = 3.01" for 50-YR event
Inflow = 4.16 cfs @ 12.15 hrs, Volume= 0.265 af
Primary = 4.16 cfs @ 12.15 hrs, Volume= 0.265 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP4:



Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentS10: Runoff Area=11.450 ac 0.00% Impervious Runoff Depth=3.56"
Flow Length=975' Tc=11.2 min CN=78 Runoff=47.36 cfs 3.398 af

SubcatchmentS20: Runoff Area=20.243 ac 0.00% Impervious Runoff Depth=3.66"
Flow Length=1,201' Tc=13.5 min CN=79 Runoff=79.94 cfs 6.177 af

SubcatchmentS30: Runoff Area=0.970 ac 0.00% Impervious Runoff Depth=3.36"
Flow Length=837' Tc=11.2 min CN=76 Runoff=3.80 cfs 0.272 af

SubcatchmentS40: Runoff Area=1.058 ac 0.00% Impervious Runoff Depth=3.56"
Flow Length=210' Tc=8.1 min CN=78 Runoff=4.90 cfs 0.314 af

Link DP1: Inflow=47.36 cfs 3.398 af
Primary=47.36 cfs 3.398 af

Link DP2: Inflow=79.94 cfs 6.177 af
Primary=79.94 cfs 6.177 af

Link DP3: Inflow=3.80 cfs 0.272 af
Primary=3.80 cfs 0.272 af

Link DP4: Inflow=4.90 cfs 0.314 af
Primary=4.90 cfs 0.314 af

Total Runoff Area = 33.721 ac Runoff Volume = 10.161 af Average Runoff Depth = 3.62"
100.00% Pervious = 33.721 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment S10:

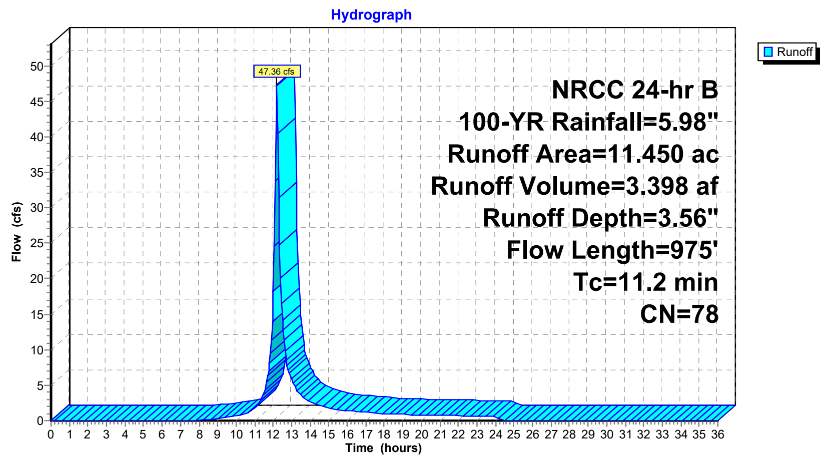
Runoff = 47.36 cfs @ 12.19 hrs, Volume= 3.398 af, Depth= 3.56"
Routed to Link DP1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 100-YR Rainfall=5.98"

Area (ac)	CN	Description
8.383	78	Meadow, non-grazed, HSG D
3.067	79	Woods, Fair, HSG D
11.450	78	Weighted Average
11.450		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	100	0.1700	0.25		**Sheet Flow, SF - MEADOW** Grass: Dense n= 0.240 P2= 2.68"
4.6	875	0.2080	3.19		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
11.2	975	Total			

Subcatchment S10:



Summary for Subcatchment S20:

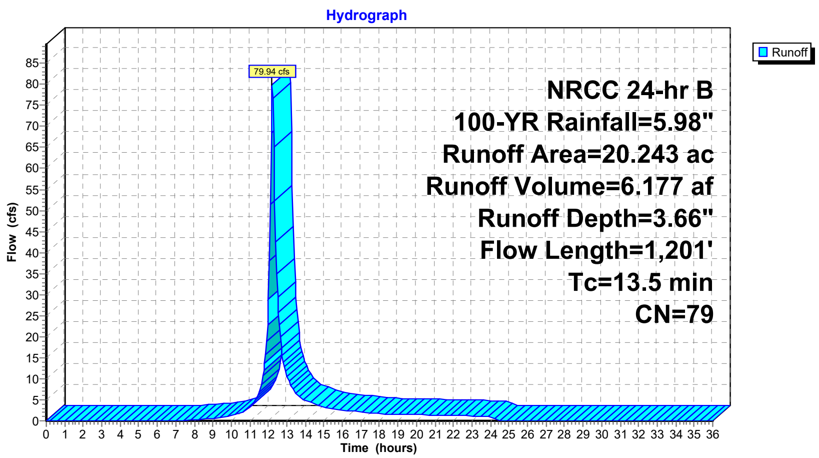
Runoff = 79.94 cfs @ 12.22 hrs, Volume= 6.177 af, Depth= 3.66"
Routed to Link DP2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 100-YR Rainfall=5.98"

Area (ac)	CN	Description
13.083	78	Meadow, non-grazed, HSG D
6.795	79	Woods, Fair, HSG D
0.365	96	Gravel surface, HSG D
20.243	79	Weighted Average
20.243		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	100	0.1400	0.23		**Sheet Flow, SF - MEADOW** Grass: Dense n= 0.240 P2= 2.68"
0.6	98	0.2857	2.67		**Shallow Concentrated Flow, SCF - WOODS** Woodland Kv= 5.0 fps
5.7	1,003	0.1751	2.93		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
13.5	1,201	Total			

Subcatchment S20:



Summary for Subcatchment S30:

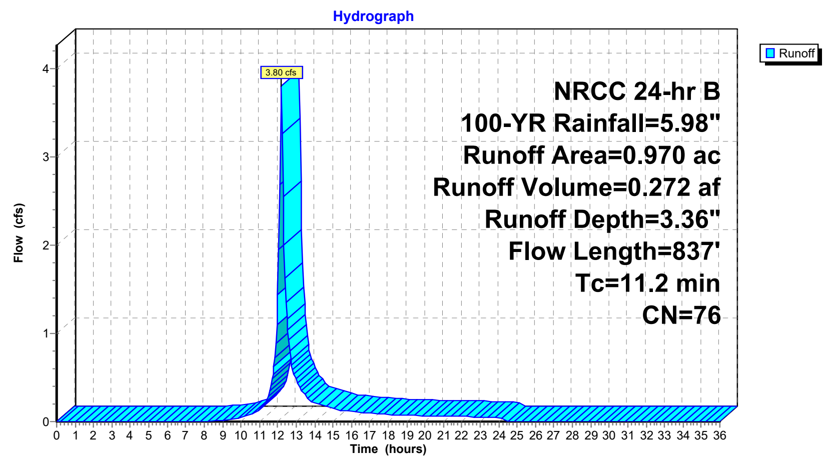
Runoff = 3.80 cfs @ 12.19 hrs, Volume= 0.272 af, Depth= 3.36"
Routed to Link DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 100-YR Rainfall=5.98"

Area (ac)	CN	Description
0.708	71	Meadow, non-grazed, HSG C
0.165	96	Gravel surface, HSG C
0.097	76	Woods/grass comb., Fair, HSG C
0.970	76	Weighted Average
0.970		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	100	0.1500	0.24		**Sheet Flow, SF - MEADOW** Grass: Dense n= 0.240 P2= 2.68"
1.3	192	0.1200	2.42		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
0.4	130	0.0923	4.89		**Shallow Concentrated Flow, SCF - GRAVEL** Unpaved Kv= 16.1 fps
2.5	415	0.1542	2.75		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
11.2	837	Total			

Subcatchment S30:



Summary for Subcatchment S40:

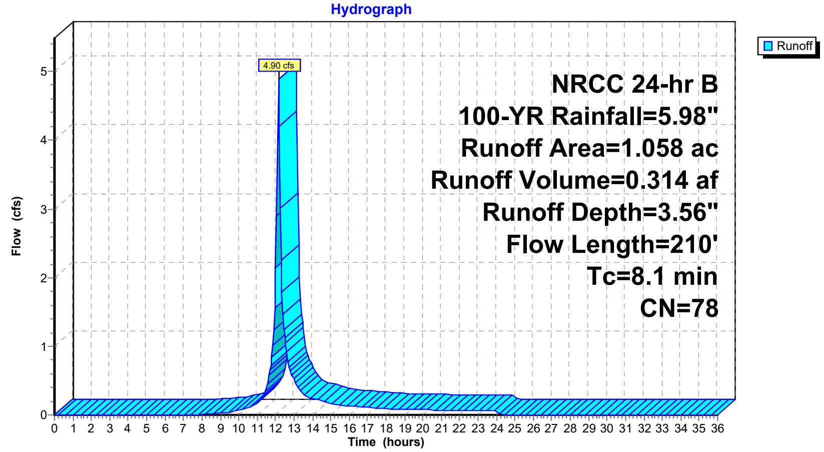
Runoff = 4.90 cfs @ 12.15 hrs, Volume= 0.314 af, Depth= 3.56"
Routed to Link DP4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 100-YR Rainfall=5.98"

Area (ac)	CN	Description
1.058	78	Meadow, non-grazed, HSG D
1.058		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.1200	0.22		**Sheet Flow, SF** Grass: Dense n= 0.240 P2= 2.68"
0.5	110	0.2272	3.34		**Shallow Concentrated Flow, SCF** Short Grass Pasture Kv= 7.0 fps
8.1	210	Total			

Subcatchment S40:

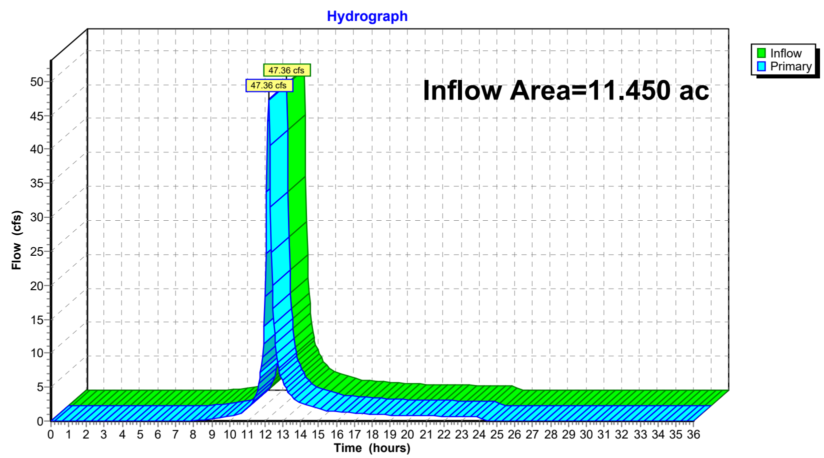


Summary for Link DP1:

Inflow Area = 11.450 ac, 0.00% Impervious, Inflow Depth = 3.56" for 100-YR event
Inflow = 47.36 cfs @ 12.19 hrs, Volume= 3.398 af
Primary = 47.36 cfs @ 12.19 hrs, Volume= 3.398 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP1:

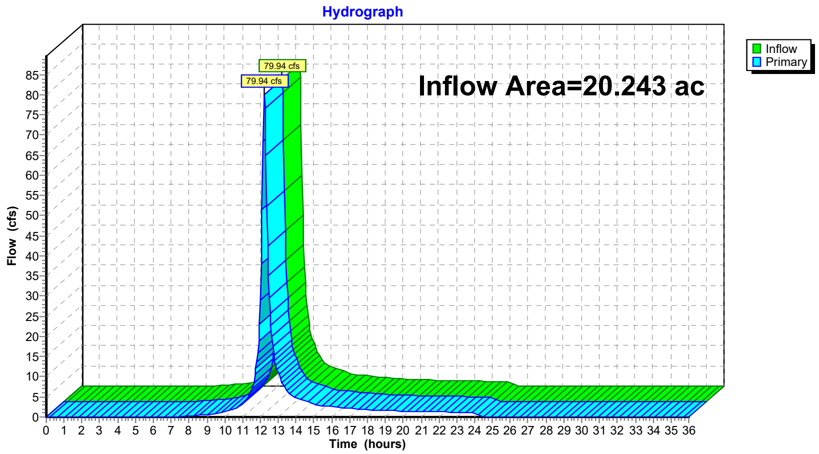


Summary for Link DP2:

Inflow Area = 20.243 ac, 0.00% Impervious, Inflow Depth = 3.66" for 100-YR event
Inflow = 79.94 cfs @ 12.22 hrs, Volume= 6.177 af
Primary = 79.94 cfs @ 12.22 hrs, Volume= 6.177 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP2:

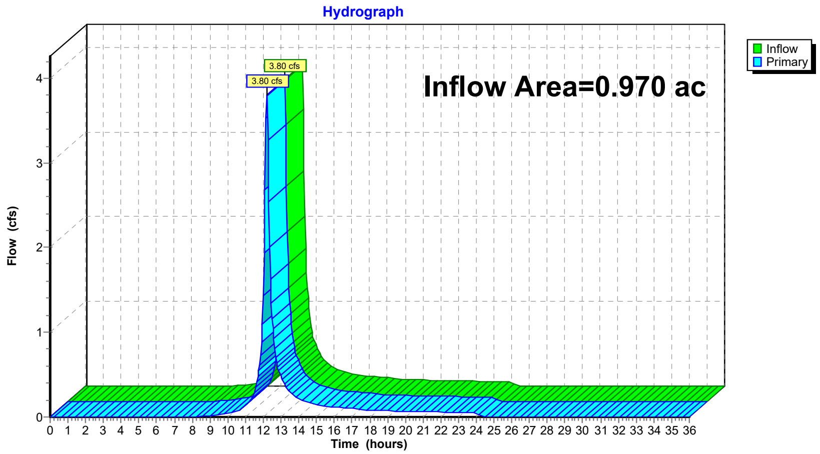


Summary for Link DP3:

Inflow Area = 0.970 ac, 0.00% Impervious, Inflow Depth = 3.36" for 100-YR event
Inflow = 3.80 cfs @ 12.19 hrs, Volume= 0.272 af
Primary = 3.80 cfs @ 12.19 hrs, Volume= 0.272 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP3:

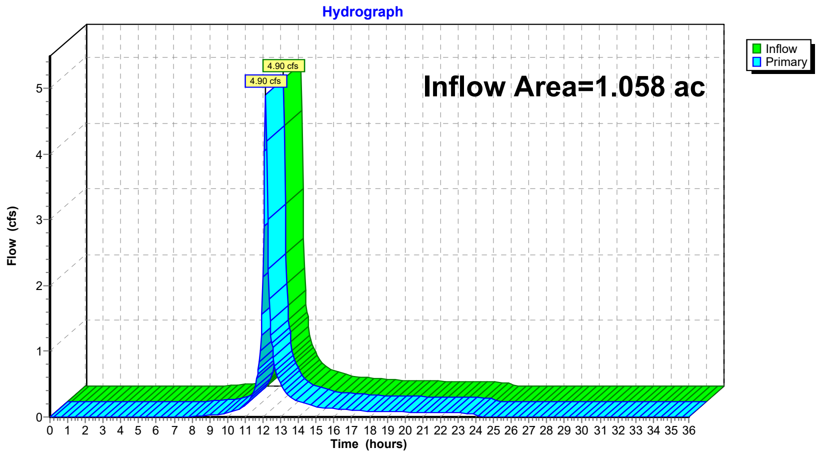


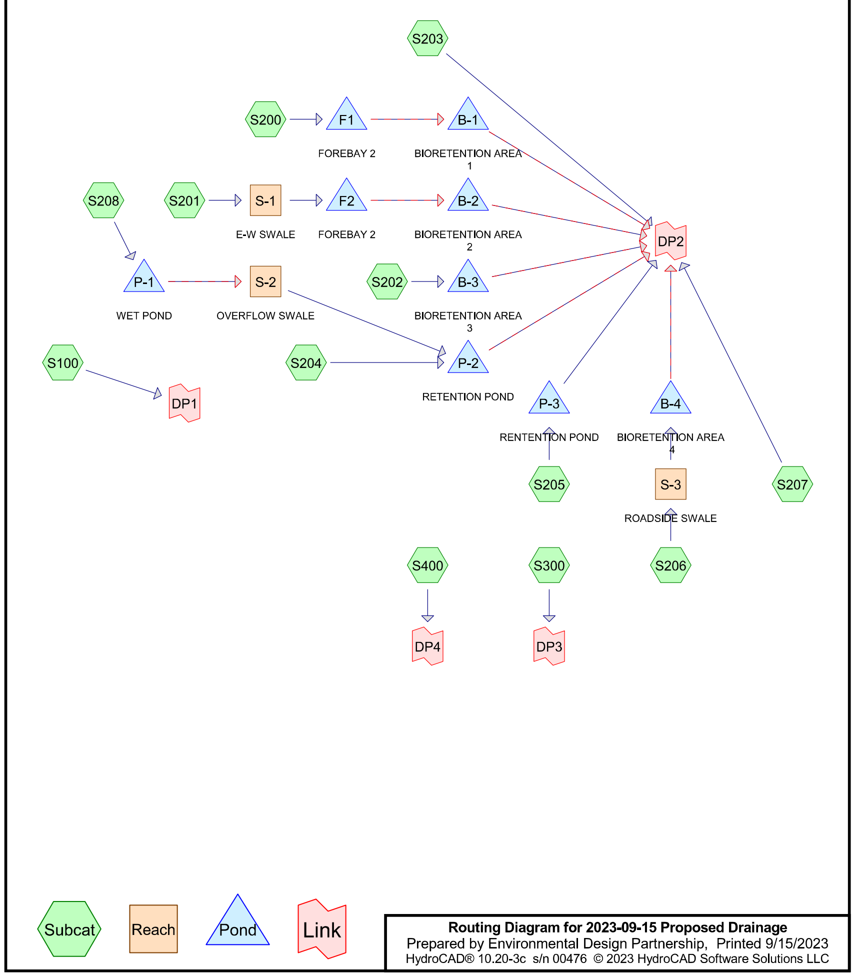
Summary for Link DP4:

Inflow Area = 1.058 ac, 0.00% Impervious, Inflow Depth = 3.56" for 100-YR event
Inflow = 4.90 cfs @ 12.15 hrs, Volume= 0.314 af
Primary = 4.90 cfs @ 12.15 hrs, Volume= 0.314 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP4:





Routing Diagram for 2023-09-15 Proposed Drainage
Prepared by Environmental Design Partnership, Printed 9/15/2023
HydroCAD® 10.20-3c s/n 00476 © 2023 HydroCAD Software Solutions LLC

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-YR	NRCC 24-hr	B	Default	24.00	1	2.25	2
2	10-YR	NRCC 24-hr	B	Default	24.00	1	3.95	2
3	100-YR	NRCC 24-hr	B	Default	24.00	1	5.98	2
4	WQv	NRCC 24-hr	B	Default	24.00	1	1.10	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.130	96	Gravel surface, HSG C (S300)
0.110	96	Gravel surface, HSG D (S203)
0.736	71	Meadow, non-grazed, HSG C (S300)
22.100	78	Meadow, non-grazed, HSG D (S100, S200, S201, S202, S203, S204, S205, S206, S207, S208, S400)
0.055	98	Paved parking, HSG C (S300)
0.510	98	Paved parking, HSG D (S202, S206)
7.397	98	SOLAR PANELS (S200, S201, S208)
2.677	79	Woods, Fair, HSG D (S100, S200, S201, S203, S207, S208)
33.715	**83**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.921	HSG C	S300
25.397	HSG D	S100, S200, S201, S202, S203, S204, S205, S206, S207, S208, S400
7.397	Other	S200, S201, S208
33.715		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.130	0.110	0.000	0.240	Gravel surface	S203, S300
0.000	0.000	0.736	22.100	0.000	22.836	Meadow, non-grazed	S100, S200, S201, S202, S203, S204, S205, S206, S207, S208, S300, S400
0.000	0.000	0.055	0.510	0.000	0.565	Paved parking	S202, S206, S300
0.000	0.000	0.000	0.000	7.397	7.397	SOLAR PANELS	S200, S201, S208
0.000	0.000	0.000	2.677	0.000	2.677	Woods, Fair	S100, S200, S201, S203, S207, S208
0.000	**0.000**	**0.921**	**25.397**	**7.397**	**33.715**	**TOTAL AREA**	

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	B-1	900.50	899.00	50.0	0.0300	0.020	0.0	8.0	0.0	
2	B-2	900.50	899.00	50.0	0.0300	0.020	0.0	8.0	0.0	
3	B-3	895.50	895.00	60.0	0.0083	0.020	0.0	8.0	0.0	
4	B-4	835.50	834.00	25.0	0.0600	0.020	0.0	8.0	0.0	
5	P-1	893.90	892.00	70.0	0.0271	0.020	0.0	18.0	0.0	
6	P-2	866.00	865.00	50.0	0.0200	0.020	0.0	18.0	0.0	
7	P-2	866.00	865.00	50.0	0.0200	0.020	0.0	18.0	0.0	
8	P-3	838.00	837.00	100.0	0.0100	0.020	0.0	12.0	0.0	

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment S100: Runoff Area=2.376 ac 0.00% Impervious Runoff Depth=0.63"
Flow Length=775' Tc=11.3 min CN=78 Runoff=1.64 cfs 0.125 af

Subcatchment S200: Runoff Area=4.851 ac 34.74% Impervious Runoff Depth=0.98"
Flow Length=1,171' Tc=13.3 min CN=85 Runoff=5.17 cfs 0.397 af

Subcatchment S201: Runoff Area=4.153 ac 38.74% Impervious Runoff Depth=1.04"
Flow Length=636' Tc=9.7 min CN=86 Runoff=5.28 cfs 0.361 af

Subcatchment S202: Runoff Area=0.530 ac 35.85% Impervious Runoff Depth=0.98"
Flow Length=319' Tc=2.7 min CN=85 Runoff=0.84 cfs 0.043 af

Subcatchment S203: Runoff Area=3.357 ac 0.00% Impervious Runoff Depth=0.67"
Flow Length=1,218' Tc=16.3 min CN=79 Runoff=2.13 cfs 0.189 af

Subcatchment S204: Runoff Area=0.687 ac 0.00% Impervious Runoff Depth=0.63"
Flow Length=200' Tc=7.4 min CN=78 Runoff=0.55 cfs 0.036 af

Subcatchment S205: Runoff Area=0.484 ac 0.00% Impervious Runoff Depth=0.63"
Flow Length=450' Tc=9.0 min CN=78 Runoff=0.36 cfs 0.025 af

Subcatchment S206: Runoff Area=0.561 ac 57.04% Impervious Runoff Depth=1.24"
Tc=6.0 min CN=89 Runoff=0.97 cfs 0.058 af

Subcatchment S207: Runoff Area=3.066 ac 0.00% Impervious Runoff Depth=0.63"
Flow Length=180' Tc=8.1 min CN=78 Runoff=2.39 cfs 0.161 af

Subcatchment S208: Runoff Area=11.671 ac 35.16% Impervious Runoff Depth=0.98"
Flow Length=865' Tc=11.3 min CN=85 Runoff=13.31 cfs 0.956 af

Subcatchment S300: Runoff Area=0.921 ac 5.97% Impervious Runoff Depth=0.55"
Flow Length=800' Tc=11.4 min CN=76 Runoff=0.53 cfs 0.042 af

Subcatchment S400: Runoff Area=1.058 ac 0.00% Impervious Runoff Depth=0.63"
Flow Length=210' Tc=8.1 min CN=78 Runoff=0.83 cfs 0.056 af

Reach S-1: E-W SWALE Avg. Flow Depth=0.32' Max Vel=8.48 fps Inflow=5.28 cfs 0.361 af
n=0.022 L=485.0' S=0.1299 '/' Capacity=65.06 cfs Outflow=5.25 cfs 0.361 af

Reach S-2: OVERFLOW SWALE Avg. Flow Depth=0.04' Max Vel=3.45 fps Inflow=0.30 cfs 0.562 af
n=0.022 L=120.0' S=0.1958 '/' Capacity=507.22 cfs Outflow=0.30 cfs 0.562 af

Reach S-3: ROADSIDE SWALE Avg. Flow Depth=0.14' Max Vel=4.28 fps Inflow=0.97 cfs 0.058 af
n=0.025 L=825.0' S=0.1018 '/' Capacity=50.69 cfs Outflow=0.88 cfs 0.058 af

Pond B-1: BIORETENTION AREA 1 Peak Elev=903.53' Storage=3,377 cf Inflow=1.78 cfs 0.227 af
Outflow=0.39 cfs 0.224 af

Pond B-2: BIORETENTION AREA 2 Peak Elev=903.55' Storage=3,156 cf Inflow=2.74 cfs 0.231 af
Outflow=0.61 cfs 0.228 af

Pond B-3: BIORETENTION AREA 3 Peak Elev=898.60' Storage=286 cf Inflow=0.84 cfs 0.043 af
Primary=0.01 cfs 0.012 af Secondary=0.79 cfs 0.031 af Outflow=0.80 cfs 0.043 af

Pond B-4: BIORETENTION AREA 4 Peak Elev=838.51' Storage=1,549 cf Inflow=0.88 cfs 0.058 af
Primary=0.02 cfs 0.040 af Secondary=0.04 cfs 0.004 af Outflow=0.06 cfs 0.044 af

Pond F1: FOREBAY 2 Peak Elev=903.61' Storage=7,829 cf Inflow=5.17 cfs 0.397 af
Outflow=1.78 cfs 0.227 af

Pond F2: FOREBAY 2 Peak Elev=903.65' Storage=6,144 cf Inflow=5.25 cfs 0.361 af
Outflow=2.74 cfs 0.231 af

Pond P-1: WET POND Peak Elev=895.78' Storage=47,889 cf Inflow=13.31 cfs 0.956 af
Primary=0.30 cfs 0.562 af Secondary=0.00 cfs 0.000 af Outflow=0.30 cfs 0.562 af

Pond P-2: RETENTION POND Peak Elev=866.18' Storage=3,403 cf Inflow=0.72 cfs 0.598 af
Outflow=0.32 cfs 0.521 af

Pond P-3: RENTENTION POND Peak Elev=838.27' Storage=282 cf Inflow=0.36 cfs 0.025 af
12.0" Round Culvert n=0.020 L=100.0' S=0.0100 '/' Outflow=0.20 cfs 0.021 af

Link DP1: Inflow=1.64 cfs 0.125 af
Primary=1.64 cfs 0.125 af

Link DP2: Inflow=4.50 cfs 1.432 af
Primary=4.50 cfs 1.432 af

Link DP3: Inflow=0.53 cfs 0.042 af
Primary=0.53 cfs 0.042 af

Link DP4: Inflow=0.83 cfs 0.056 af
Primary=0.83 cfs 0.056 af

Total Runoff Area = 33.715 ac Runoff Volume = 2.449 af Average Runoff Depth = 0.87"
76.38% Pervious = 25.753 ac 23.62% Impervious = 7.962 ac

Summary for Subcatchment S100:

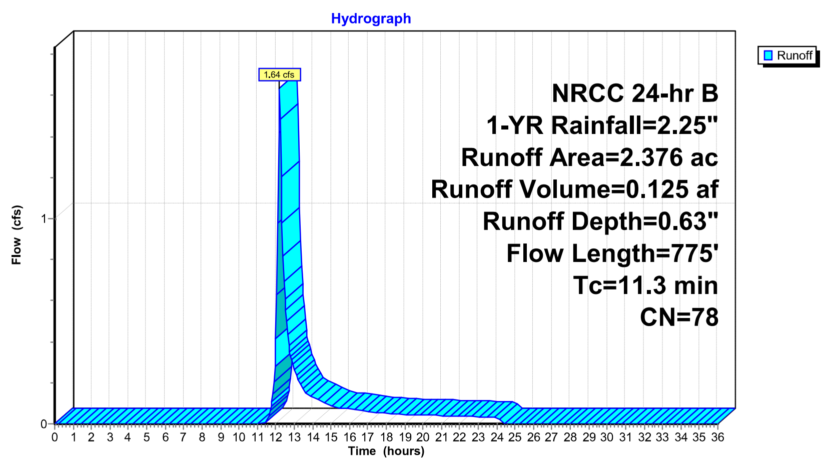
Runoff = 1.64 cfs @ 12.20 hrs, Volume= 0.125 af, Depth= 0.63"
Routed to Link DP1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 1-YR Rainfall=2.25"

Area (ac)	CN	Description
0.763	79	Woods, Fair, HSG D
1.613	78	Meadow, non-grazed, HSG D
2.376	78	Weighted Average
2.376		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	50	0.2800	0.18		**Sheet Flow, SF - WOODS** Woods: Light underbrush n= 0.400 P2= 2.68"
3.1	50	0.2800	0.27		**Sheet Flow, SF - MEADOW** Grass: Dense n= 0.240 P2= 2.68"
3.2	635	0.2272	3.34		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
0.3	40	0.2272	2.38		**Shallow Concentrated Flow, SCF - WOODS** Woodland Kv= 5.0 fps
11.3	775	Total			

Subcatchment S100:



Summary for Subcatchment S200:

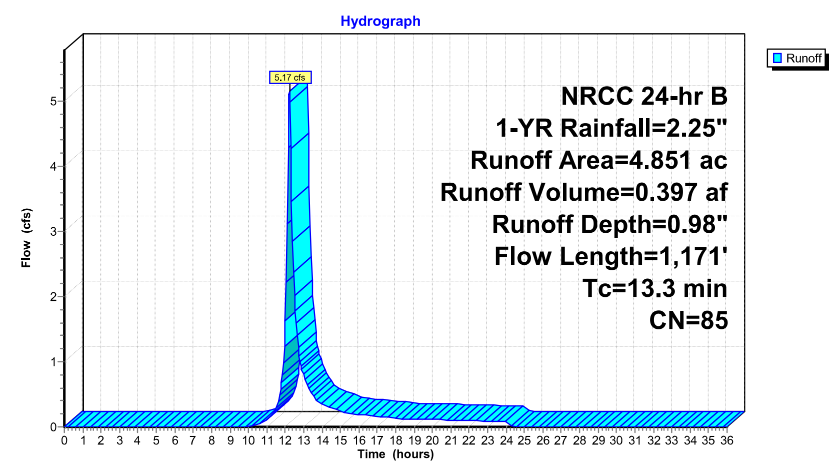
Runoff = 5.17 cfs @ 12.22 hrs, Volume= 0.397 af, Depth= 0.98"
Routed to Pond F1 : FOREBAY 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 1-YR Rainfall=2.25"

	Area (ac)	CN	Description
	0.013	79	Woods, Fair, HSG D
	3.153	78	Meadow, non-grazed, HSG D
*	1.685	98	SOLAR PANELS
	4.851	85	Weighted Average
	3.166		65.26% Pervious Area
	1.685		34.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	100	0.1500	0.24		**Sheet Flow, SF - MEADOW** Grass: Dense n= 0.240 P2= 2.68"
6.3	1,071	0.1634	2.83		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
13.3	1,171	Total			

Subcatchment S200:



Summary for Subcatchment S201:

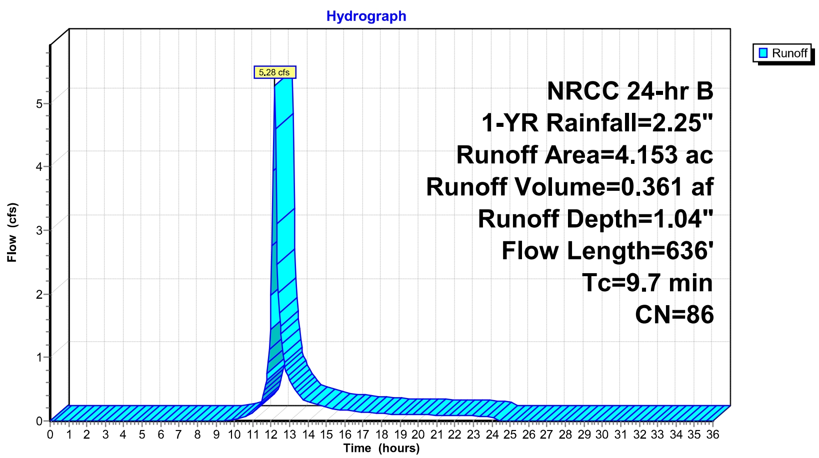
Runoff = 5.28 cfs @ 12.17 hrs, Volume= 0.361 af, Depth= 1.04"
Routed to Reach S-1 : E-W SWALE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 1-YR Rainfall=2.25"

	Area (ac)	CN	Description
	0.014	79	Woods, Fair, HSG D
	2.530	78	Meadow, non-grazed, HSG D
*	1.609	98	SOLAR PANELS
	4.153	86	Weighted Average
	2.544		61.26% Pervious Area
	1.609		38.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	100	0.1600	0.25		**Sheet Flow, SF - MEADOW** Grass: Dense n= 0.240 P2= 2.68"
2.9	536	0.1900	3.05		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
9.7	636	Total			

Subcatchment S201:



Summary for Subcatchment S202:

[49] Hint: Tc<2dt may require smaller dt

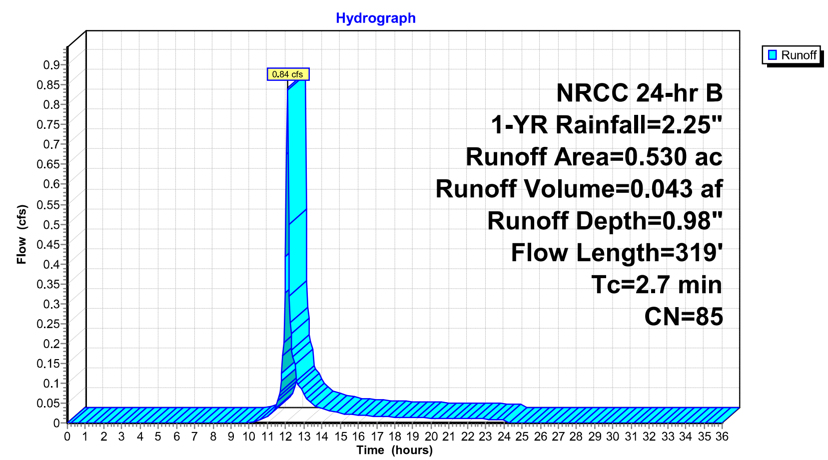
Runoff = 0.84 cfs @ 12.09 hrs, Volume= 0.043 af, Depth= 0.98"
Routed to Pond B-3 : BIORETENTION AREA 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 1-YR Rainfall=2.25"

Area (ac)	CN	Description
0.340	78	Meadow, non-grazed, HSG D
0.190	98	Paved parking, HSG D
0.530	85	Weighted Average
0.340		64.15% Pervious Area
0.190		35.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	100	0.1500	0.84		**Sheet Flow, SF - GRAVEL** Fallow n= 0.050 P2= 2.68"
0.7	219	0.1100	4.97		**Shallow Concentrated Flow, SCF - MEADOW** Grassed Waterway Kv= 15.0 fps
2.7	319	Total			

Subcatchment S202:



Summary for Subcatchment S203:

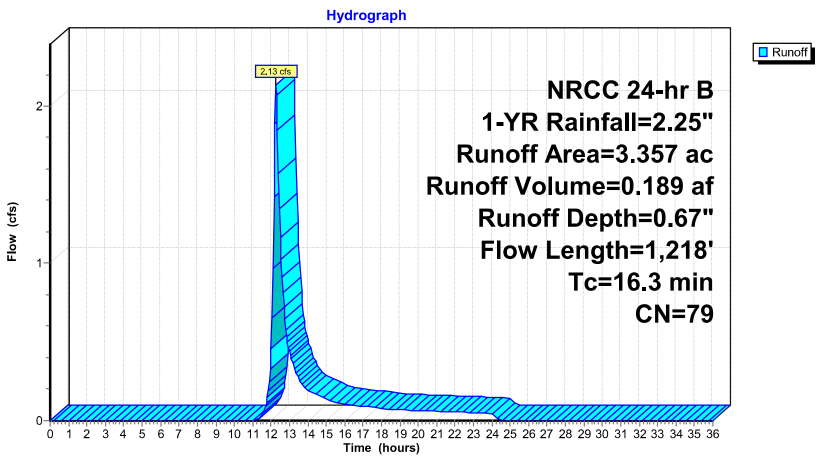
Runoff = 2.13 cfs @ 12.27 hrs, Volume= 0.189 af, Depth= 0.67"
Routed to Link DP2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 1-YR Rainfall=2.25"

Area (ac)	CN	Description
2.546	78	Meadow, non-grazed, HSG D
0.701	79	Woods, Fair, HSG D
0.110	96	Gravel surface, HSG D
3.357	79	Weighted Average
3.357		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	100	0.1900	0.17		**Sheet Flow, SF - MEADOW** Woods: Light underbrush n= 0.400 P2= 2.68"
6.8	1,118	0.1512	2.72		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
16.3	1,218	Total			

Subcatchment S203:



Summary for Subcatchment S204:

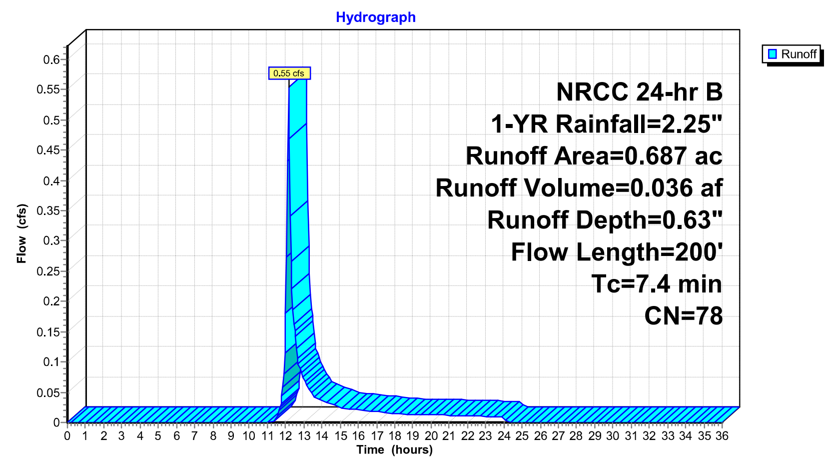
Runoff = 0.55 cfs @ 12.15 hrs, Volume= 0.036 af, Depth= 0.63"
Routed to Pond P-2 : RETENTION POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 1-YR Rainfall=2.25"

Area (ac)	CN	Description
0.687	78	Meadow, non-grazed, HSG D
0.687		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	100	0.1600	0.25		**Sheet Flow, SF - MEADOW** Grass: Dense n= 0.240 P2= 2.68"
0.6	100	0.1500	2.71		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
7.4	200	Total			

Subcatchment S204:



Summary for Subcatchment S205:

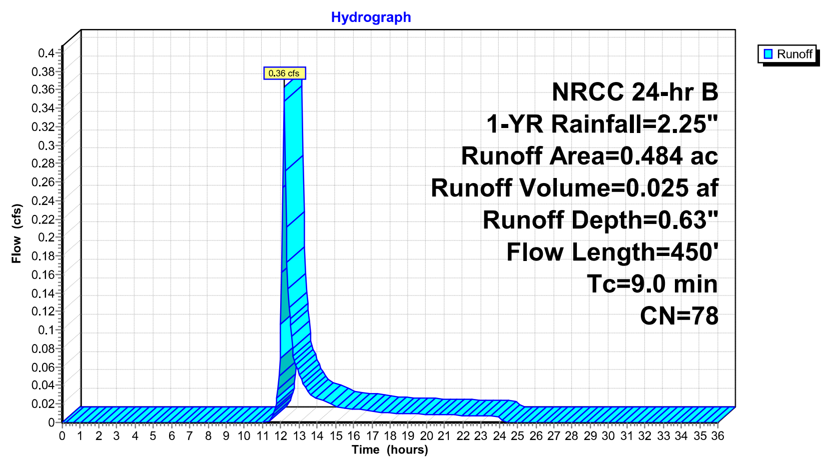
Runoff = 0.36 cfs @ 12.17 hrs, Volume= 0.025 af, Depth= 0.63"
Routed to Pond P-3 : RENTENTION POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 1-YR Rainfall=2.25"

Area (ac)	CN	Description
0.484	78	Meadow, non-grazed, HSG D
0.484		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	100	0.1700	0.25		**Sheet Flow, SF - WOODS** Grass: Dense n= 0.240 P2= 2.68"
2.4	350	0.1200	2.42		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
9.0	450	Total			

Subcatchment S205:



Summary for Subcatchment S206:

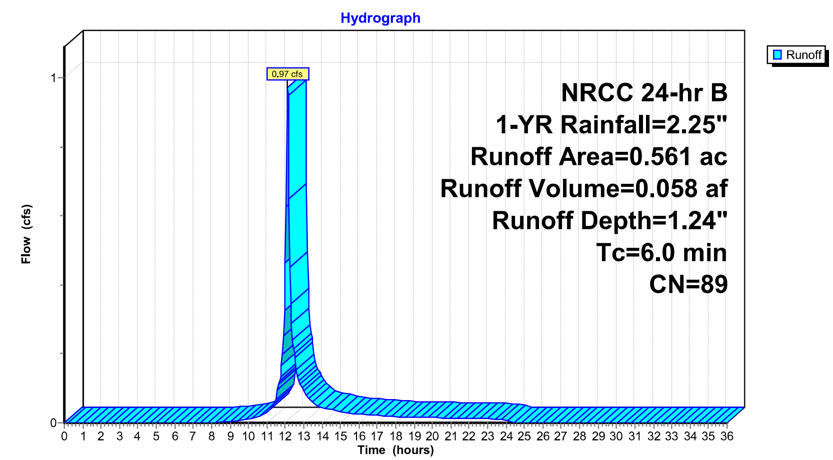
Runoff = 0.97 cfs @ 12.13 hrs, Volume= 0.058 af, Depth= 1.24"
Routed to Reach S-3 : ROADSIDE SWALE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 1-YR Rainfall=2.25"

Area (ac)	CN	Description
0.320	98	Paved parking, HSG D
0.241	78	Meadow, non-grazed, HSG D
0.561	89	Weighted Average
0.241		42.96% Pervious Area
0.320		57.04% Impervious Area

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

Subcatchment S206:



Summary for Subcatchment S207:

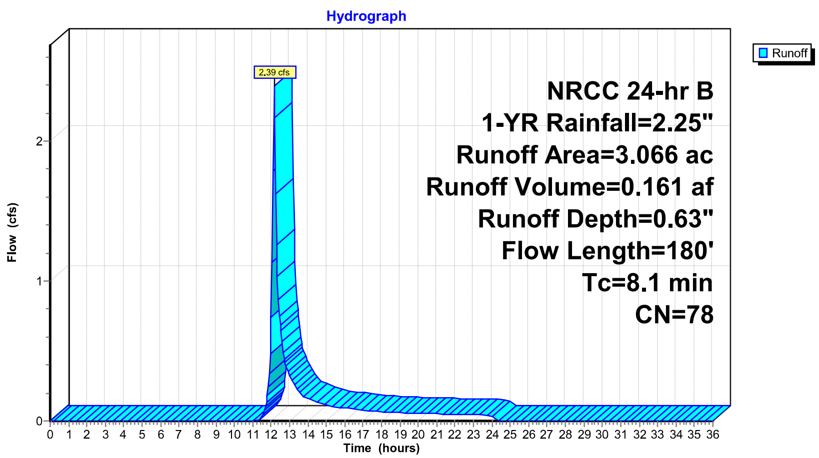
Runoff = 2.39 cfs @ 12.16 hrs, Volume= 0.161 af, Depth= 0.63"
Routed to Link DP2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 1-YR Rainfall=2.25"

Area (ac)	CN	Description
1.099	79	Woods, Fair, HSG D
1.967	78	Meadow, non-grazed, HSG D
3.066	78	Weighted Average
3.066		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	30	0.5000	0.30		**Sheet Flow, SF** Grass: Dense n= 0.240 P2= 2.68"
6.0	70	0.3000	0.20		**Sheet Flow, SF WOODS** Woods: Light underbrush n= 0.400 P2= 2.68"
0.5	80	0.3000	2.74		**Shallow Concentrated Flow, SCF** Woodland Kv= 5.0 fps
8.1	180	Total			

Subcatchment S207:



Summary for Subcatchment S208:

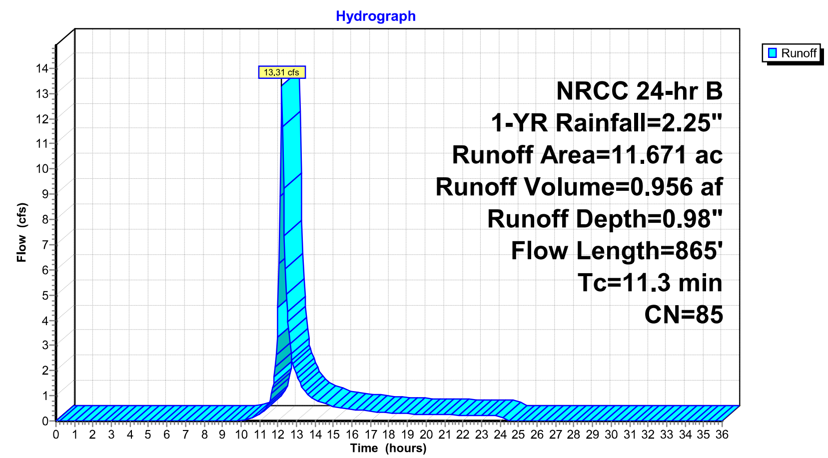
Runoff = 13.31 cfs @ 12.20 hrs, Volume= 0.956 af, Depth= 0.98"
Routed to Pond P-1 : WET POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 1-YR Rainfall=2.25"

	Area (ac)	CN	Description
	0.087	79	Woods, Fair, HSG D
	7.481	78	Meadow, non-grazed, HSG D
*	4.103	98	SOLAR PANELS
	11.671	85	Weighted Average
	7.568		64.84% Pervious Area
	4.103		35.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	100	0.1300	0.23		**Sheet Flow, SF - MEADOW** Grass: Dense n= 0.240 P2= 2.68"
3.9	765	0.2235	3.31		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
11.3	865	Total			

Subcatchment S208:



Summary for Subcatchment S300:

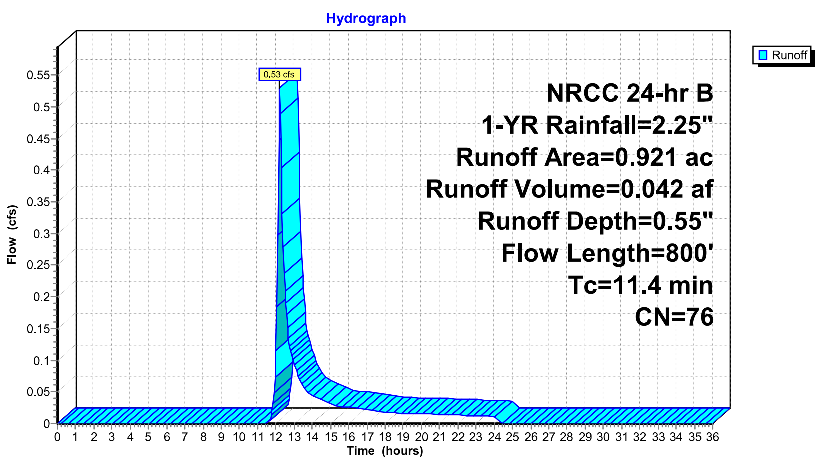
Runoff = 0.53 cfs @ 12.21 hrs, Volume= 0.042 af, Depth= 0.55"
Routed to Link DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 1-YR Rainfall=2.25"

Area (ac)	CN	Description
0.055	98	Paved parking, HSG C
0.736	71	Meadow, non-grazed, HSG C
0.130	96	Gravel surface, HSG C
0.921	76	Weighted Average
0.866		94.03% Pervious Area
0.055		5.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	100	0.1400	0.23		**Sheet Flow, SF - MEADOW** Grass: Dense n= 0.240 P2= 2.68"
0.2	100	0.1200	7.03		**Shallow Concentrated Flow, SCF - PAVED** Paved Kv= 20.3 fps
4.0	600	0.1300	2.52		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
11.4	800	Total			

Subcatchment S300:



Summary for Subcatchment S400:

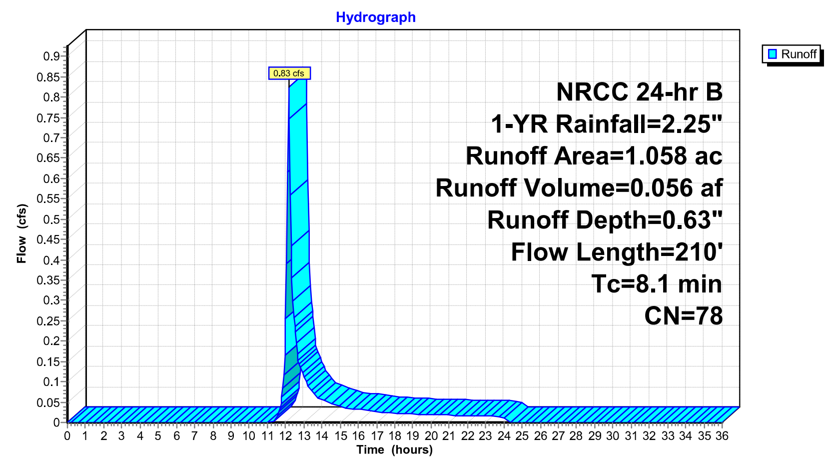
Runoff = 0.83 cfs @ 12.16 hrs, Volume= 0.056 af, Depth= 0.63"
Routed to Link DP4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 1-YR Rainfall=2.25"

Area (ac)	CN	Description
1.058	78	Meadow, non-grazed, HSG D
1.058		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.1200	0.22		**Sheet Flow, SF** Grass: Dense n= 0.240 P2= 2.68"
0.5	110	0.2272	3.34		**Shallow Concentrated Flow, SCF** Short Grass Pasture Kv= 7.0 fps
8.1	210	Total			

Subcatchment S400:



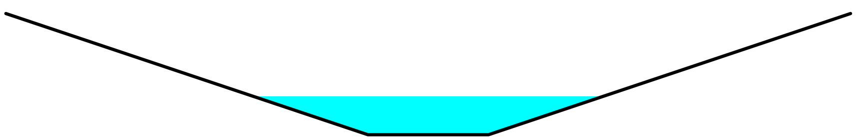
Summary for Reach S-1: E-W SWALE

Inflow Area = 4.153 ac, 38.74% Impervious, Inflow Depth = 1.04" for 1-YR event
Inflow = 5.28 cfs @ 12.17 hrs, Volume= 0.361 af
Outflow = 5.25 cfs @ 12.19 hrs, Volume= 0.361 af, Atten= 1%, Lag= 0.9 min
Routed to Pond F2 : FOREBAY 2

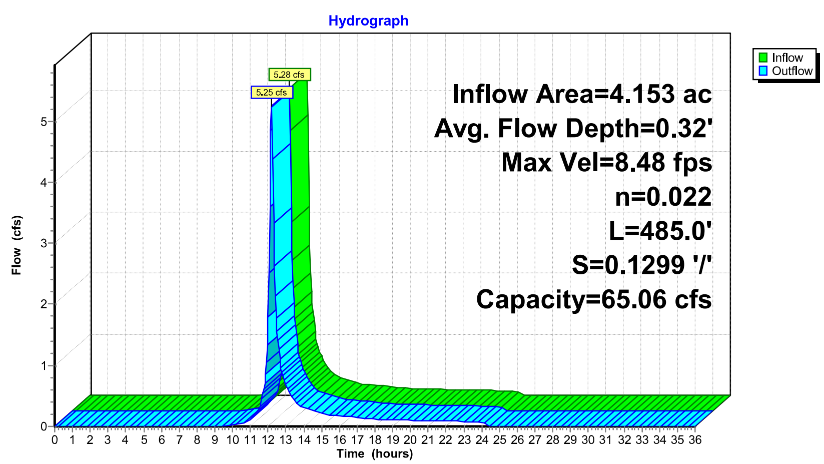
Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.48 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 2.90 fps, Avg. Travel Time= 2.8 min

Peak Storage= 300 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.32' , Surface Width= 2.90'
Bank-Full Depth= 1.00' Flow Area= 4.0 sf, Capacity= 65.06 cfs

1.00' x 1.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 3.0 '/' Top Width= 7.00'
Length= 485.0' Slope= 0.1299 '/'
Inlet Invert= 968.00', Outlet Invert= 905.00'



Reach S-1: E-W SWALE



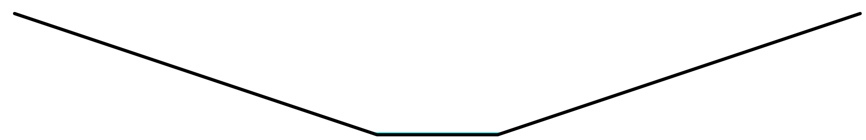
Summary for Reach S-2: OVERFLOW SWALE

Inflow Area = 11.671 ac, 35.16% Impervious, Inflow Depth > 0.58" for 1-YR event
Inflow = 0.30 cfs @ 18.25 hrs, Volume= 0.562 af
Outflow = 0.30 cfs @ 18.25 hrs, Volume= 0.562 af, Atten= 0%, Lag= 0.3 min
Routed to Pond P-2 : RETENTION POND

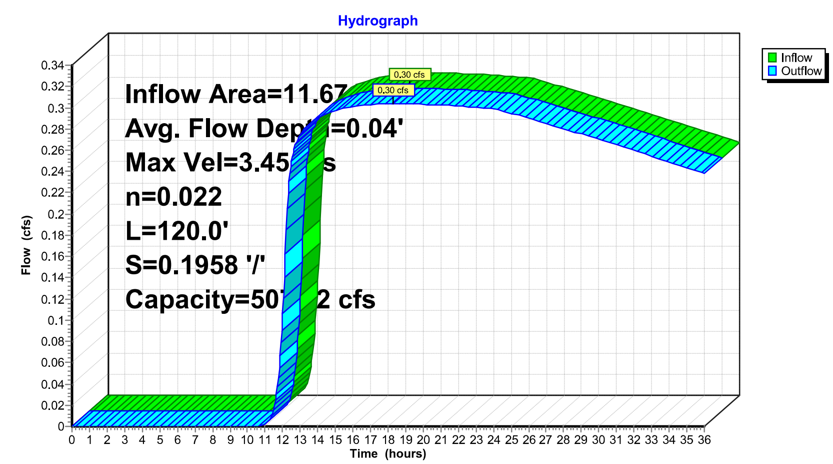
Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.45 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 3.29 fps, Avg. Travel Time= 0.6 min

Peak Storage= 11 cf @ 18.25 hrs
Average Depth at Peak Storage= 0.04' , Surface Width= 2.25'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 507.22 cfs

2.00' x 2.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 3.0 '/' Top Width= 14.00'
Length= 120.0' Slope= 0.1958 '/'
Inlet Invert= 893.50', Outlet Invert= 870.00'



Reach S-2: OVERFLOW SWALE



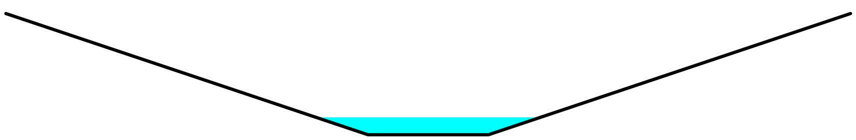
Summary for Reach S-3: ROADSIDE SWALE

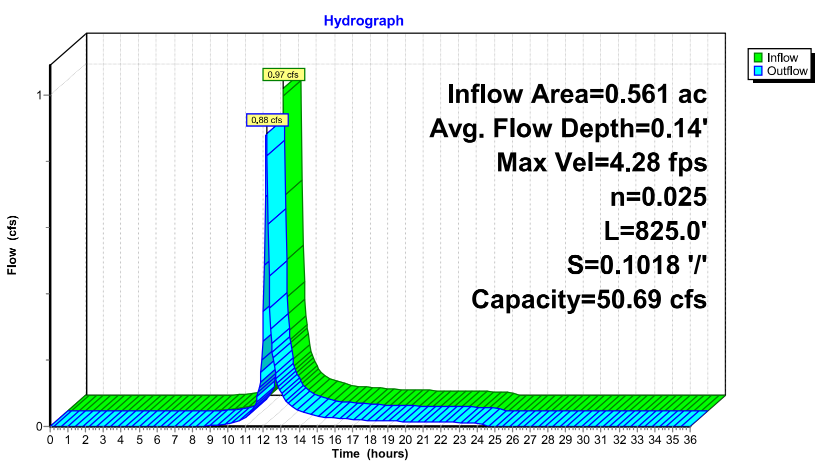
Inflow Area = 0.561 ac, 57.04% Impervious, Inflow Depth = 1.24" for 1-YR event
Inflow = 0.97 cfs @ 12.13 hrs, Volume= 0.058 af
Outflow = 0.88 cfs @ 12.16 hrs, Volume= 0.058 af, Atten= 9%, Lag= 1.8 min
Routed to Pond B-4 : BIORETENTION AREA 4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.28 fps, Min. Travel Time= 3.2 min
Avg. Velocity = 1.29 fps, Avg. Travel Time= 10.7 min

Peak Storage= 170 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.14' , Surface Width= 1.86'
Bank-Full Depth= 1.00' Flow Area= 4.0 sf, Capacity= 50.69 cfs

1.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 3.0 '/' Top Width= 7.00'
Length= 825.0' Slope= 0.1018 '/'
Inlet Invert= 924.00', Outlet Invert= 840.00'





Summary for Pond B-1: BIORETENTION AREA 1

Inflow Area = 4.851 ac, 34.74% Impervious, Inflow Depth = 0.56" for 1-YR event
Inflow = 1.78 cfs @ 12.57 hrs, Volume= 0.227 af
Outflow = 0.39 cfs @ 13.79 hrs, Volume= 0.224 af, Atten= 78%, Lag= 73.1 min
Primary = 0.39 cfs @ 13.79 hrs, Volume= 0.224 af
Routed to Link DP2 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 903.53' @ 13.79 hrs Surf.Area= 6,650 sf Storage= 3,377 cf

Plug-Flow detention time= 336.7 min calculated for 0.224 af (99% of inflow)
Center-of-Mass det. time= 330.5 min (1,279.1 - 948.7)

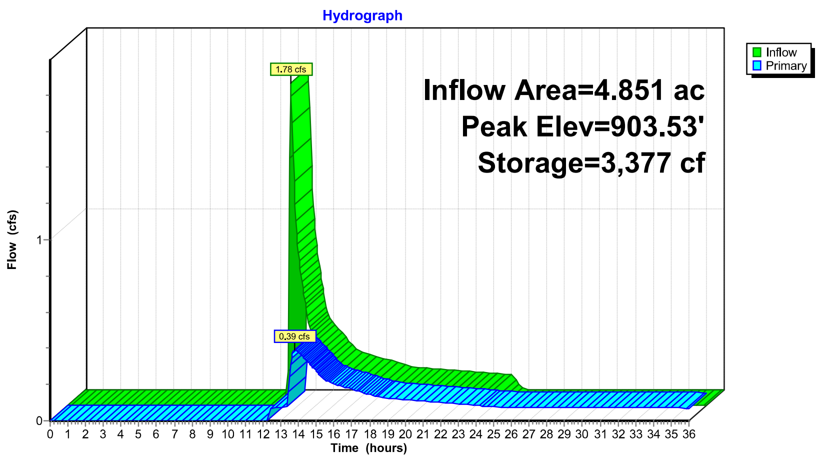
Volume	Invert	Avail.Storage	Storage Description
#1	903.00'	14,542 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
903.00	5,991	427.0	0	0	5,991
905.00	8,631	465.0	14,542	14,542	8,832

Device	Routing	Invert	Outlet Devices
#1	Primary	900.50'	**8.0" Round Culvert** L= 50.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 900.50' / 899.00' S= 0.0300 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.35 sf
#2	Primary	903.50'	**20.0' long + 15.0 '/' SideZ x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	903.00'	**0.500 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.39 cfs @ 13.79 hrs HW=903.53' TW=0.00' (Dynamic Tailwater)
1=Culvert (Passes 0.08 cfs of 1.96 cfs potential flow)
3=Exfiltration (Exfiltration Controls 0.08 cfs)
2=Broad-Crested Rectangular Weir (Weir Controls 0.31 cfs @ 0.44 fps)

Pond B-1: BIORETENTION AREA 1



Summary for Pond B-2: BIORETENTION AREA 2

Inflow Area = 4.153 ac, 38.74% Impervious, Inflow Depth = 0.67" for 1-YR event
Inflow = 2.74 cfs @ 12.37 hrs, Volume= 0.231 af
Outflow = 0.61 cfs @ 13.12 hrs, Volume= 0.228 af, Atten= 78%, Lag= 45.0 min
Primary = 0.61 cfs @ 13.12 hrs, Volume= 0.228 af
Routed to Link DP2 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 903.55' @ 13.12 hrs Surf.Area= 6,084 sf Storage= 3,156 cf

Plug-Flow detention time= 306.7 min calculated for 0.228 af (99% of inflow)
Center-of-Mass det. time= 301.5 min (1,221.7 - 920.2)

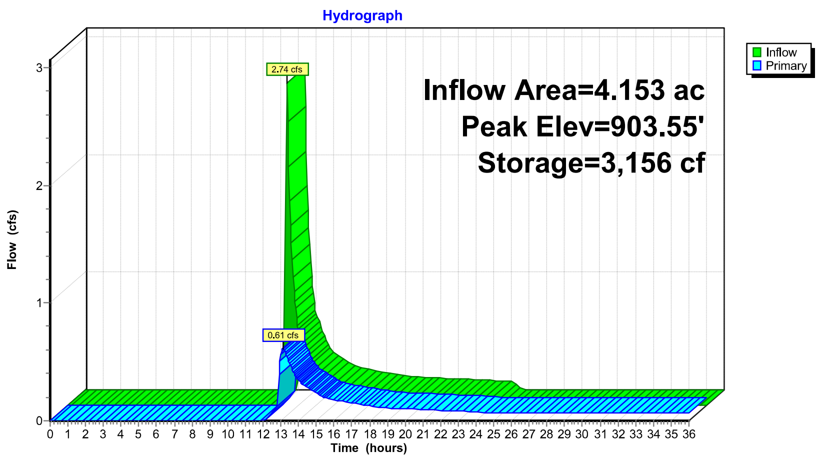
Volume	Invert	Avail.Storage	Storage Description
#1	903.00'	13,358 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
903.00	5,420	421.0	0	0	5,420
905.00	8,023	459.0	13,358	13,358	8,223

Device	Routing	Invert	Outlet Devices
#1	Primary	900.50'	**8.0" Round Culvert** L= 50.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 900.50' / 899.00' S= 0.0300 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.35 sf
#2	Primary	903.50'	**20.0' long + 15.0 '/' SideZ x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	903.00'	**0.500 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.61 cfs @ 13.12 hrs HW=903.55' TW=0.00' (Dynamic Tailwater)
- **1=Culvert** (Passes 0.07 cfs of 1.97 cfs potential flow)
  - **3=Exfiltration** (Exfiltration Controls 0.07 cfs)
- **2=Broad-Crested Rectangular Weir** (Weir Controls 0.54 cfs @ 0.53 fps)

Pond B-2: BIORETENTION AREA 2



Summary for Pond B-3: BIORETENTION AREA 3

Inflow Area = 0.530 ac, 35.85% Impervious, Inflow Depth = 0.98" for 1-YR event
Inflow = 0.84 cfs @ 12.09 hrs, Volume= 0.043 af
Outflow = 0.80 cfs @ 12.10 hrs, Volume= 0.043 af, Atten= 5%, Lag= 0.7 min
Primary = 0.01 cfs @ 12.10 hrs, Volume= 0.012 af
Routed to Link DP2 :
Secondary = 0.79 cfs @ 12.10 hrs, Volume= 0.031 af
Routed to Link DP2 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 898.60' @ 12.10 hrs Surf.Area= 611 sf Storage= 286 cf

Plug-Flow detention time= 130.5 min calculated for 0.043 af (100% of inflow)
Center-of-Mass det. time= 130.1 min (968.7 - 838.6)

Volume	Invert	Avail.Storage	Storage Description
#1	898.00'	1,580 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

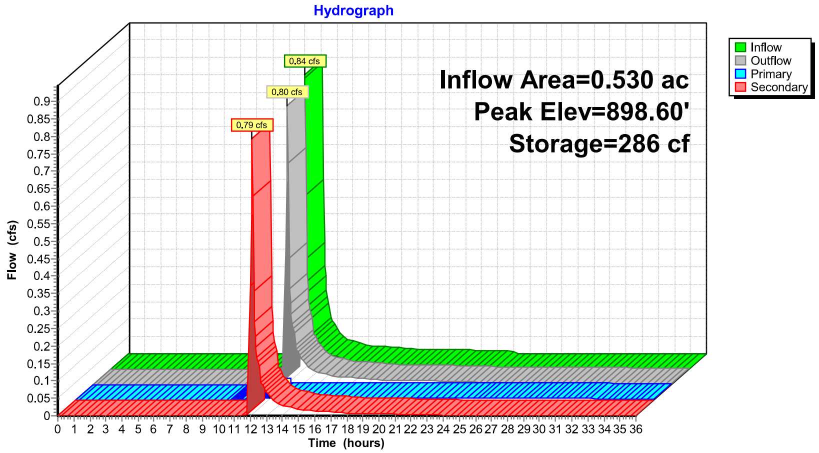
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
898.00	340	0	0
900.00	1,240	1,580	1,580

Device	Routing	Invert	Outlet Devices
#1	Device 3	898.00'	**0.500 in/hr Exfiltration over Surface area**
#2	Secondary	898.50'	**10.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#3	Primary	895.50'	**8.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 895.50' / 895.00' S= 0.0083 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.01 cfs @ 12.10 hrs HW=898.60' TW=0.00' (Dynamic Tailwater)
3=Culvert (Passes 0.01 cfs of 1.55 cfs potential flow)
1=Exfiltration (Exfiltration Controls 0.01 cfs)

Secondary OutFlow Max=0.78 cfs @ 12.10 hrs HW=898.60' TW=0.00' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Weir Controls 0.78 cfs @ 0.77 fps)

Pond B-3: BIORETENTION AREA 3



Summary for Pond B-4: BIORETENTION AREA 4

Inflow Area = 0.561 ac, 57.04% Impervious, Inflow Depth = 1.24" for 1-YR event
Inflow = 0.88 cfs @ 12.16 hrs, Volume= 0.058 af
Outflow = 0.06 cfs @ 13.49 hrs, Volume= 0.044 af, Atten= 93%, Lag= 79.6 min
Primary = 0.02 cfs @ 13.49 hrs, Volume= 0.040 af
Routed to Link DP2 :
Secondary = 0.04 cfs @ 13.49 hrs, Volume= 0.004 af
Routed to Link DP2 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 838.51' @ 13.49 hrs Surf.Area= 1,862 sf Storage= 1,549 cf

Plug-Flow detention time= 592.0 min calculated for 0.044 af (76% of inflow)
Center-of-Mass det. time= 502.9 min (1,335.2 - 832.4)

Volume	Invert	Avail.Storage	Storage Description
#1	837.00'	5,303 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

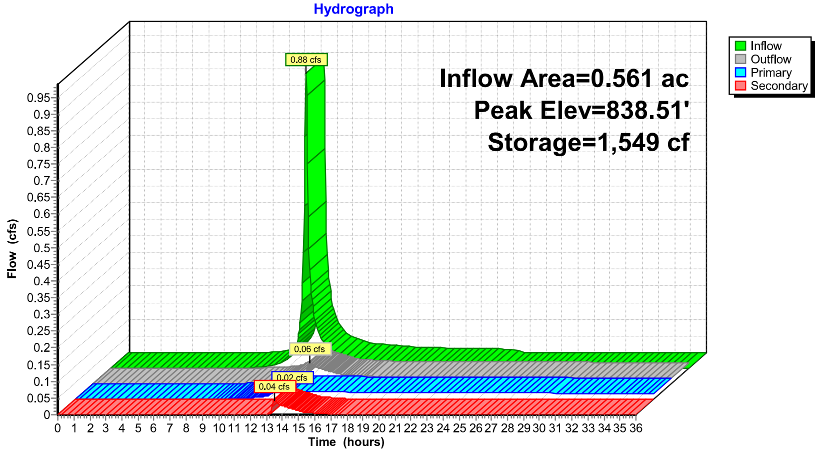
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
837.00	15	0	0
838.00	1,417	716	716
840.00	3,170	4,587	5,303

Device	Routing	Invert	Outlet Devices
#1	Device 3	837.00'	**0.500 in/hr Exfiltration over Surface area**
#2	Secondary	838.50'	**25.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#3	Primary	835.50'	**8.0" Round Culvert** L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 835.50' / 834.00' S= 0.0600 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.02 cfs @ 13.49 hrs HW=838.51' TW=0.00' (Dynamic Tailwater)
└─**3=Culvert** (Passes 0.02 cfs of 2.17 cfs potential flow)
  └─**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Secondary OutFlow Max=0.04 cfs @ 13.49 hrs HW=838.51' TW=0.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 0.04 cfs @ 0.22 fps)

Pond B-4: BIORETENTION AREA 4



Summary for Pond F1: FOREBAY 2

Inflow Area = 4.851 ac, 34.74% Impervious, Inflow Depth = 0.98" for 1-YR event
Inflow = 5.17 cfs @ 12.22 hrs, Volume= 0.397 af
Outflow = 1.78 cfs @ 12.57 hrs, Volume= 0.227 af, Atten= 66%, Lag= 21.1 min
Primary = 1.78 cfs @ 12.57 hrs, Volume= 0.227 af
Routed to Pond B-1 : BIORETENTION AREA 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 903.61' @ 12.57 hrs Surf.Area= 3,864 sf Storage= 7,829 cf

Plug-Flow detention time= 215.5 min calculated for 0.227 af (57% of inflow)
Center-of-Mass det. time= 100.3 min (948.7 - 848.4)

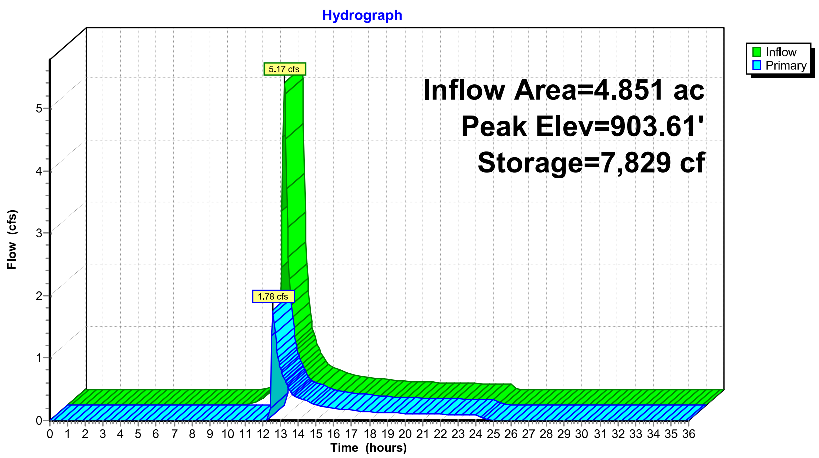
Volume	Invert	Avail.Storage	Storage Description
#1	899.00'	14,382 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
899.00	218	86.0	0	0	218
901.00	1,277	230.0	1,348	1,348	3,853
903.00	3,198	372.0	4,331	5,679	10,682
905.00	5,618	426.0	8,703	14,382	14,203

Device	Routing	Invert	Outlet Devices
#1	Primary	903.50'	**20.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=1.73 cfs @ 12.57 hrs HW=903.61' TW=903.09' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Weir Controls 1.73 cfs @ 0.80 fps)

Pond F1: FOREBAY 2



Summary for Pond F2: FOREBAY 2

Inflow Area = 4.153 ac, 38.74% Impervious, Inflow Depth = 1.04" for 1-YR event
Inflow = 5.25 cfs @ 12.19 hrs, Volume= 0.361 af
Outflow = 2.74 cfs @ 12.37 hrs, Volume= 0.231 af, Atten= 48%, Lag= 10.7 min
Primary = 2.74 cfs @ 12.37 hrs, Volume= 0.231 af
Routed to Pond B-2 : BIORETENTION AREA 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 903.65' @ 12.37 hrs Surf.Area= 3,273 sf Storage= 6,144 cf

Plug-Flow detention time= 185.4 min calculated for 0.231 af (64% of inflow)
Center-of-Mass det. time= 77.2 min (920.2 - 843.0)

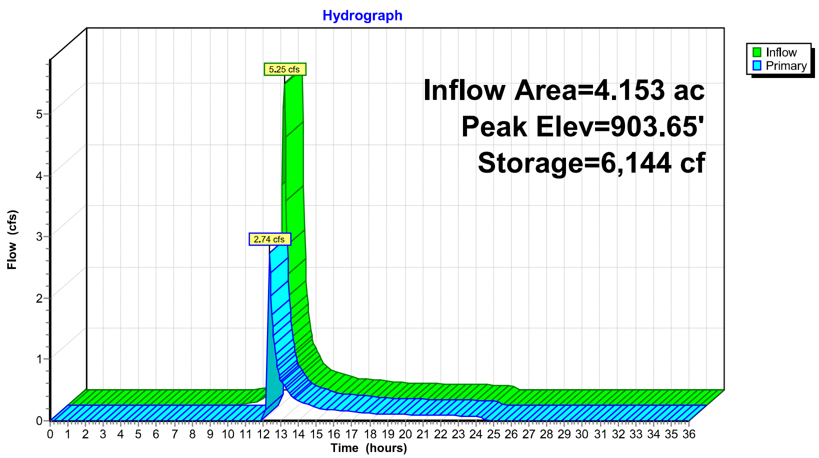
Volume	Invert	Avail.Storage	Storage Description
#1	899.00'	11,697 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
899.00	98	53.0	0	0	98
901.00	930	189.0	887	887	2,728
903.00	2,575	324.0	3,368	4,255	8,263
905.00	5,000	439.0	7,442	11,697	15,287

Device	Routing	Invert	Outlet Devices
#1	Primary	903.50'	**20.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=2.54 cfs @ 12.37 hrs HW=903.64' TW=903.11' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Weir Controls 2.54 cfs @ 0.91 fps)

Pond F2: FOREBAY 2



Summary for Pond P-1: WET POND

Inflow Area = 11.671 ac, 35.16% Impervious, Inflow Depth = 0.98" for 1-YR event
Inflow = 13.31 cfs @ 12.20 hrs, Volume= 0.956 af
Outflow = 0.30 cfs @ 18.25 hrs, Volume= 0.562 af, Atten= 98%, Lag= 363.1 min
Primary = 0.30 cfs @ 18.25 hrs, Volume= 0.562 af
Routed to Reach S-2 : OVERFLOW SWALE
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach S-2 : OVERFLOW SWALE

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Starting Elev= 894.00' Surf.Area= 12,390 sf Storage= 18,141 cf
Peak Elev= 895.78' @ 18.25 hrs Surf.Area= 21,531 sf Storage= 47,889 cf (29,748 cf above start)
Flood Elev= 900.00' Surf.Area= 35,579 sf Storage= 168,762 cf (150,621 cf above start)

Plug-Flow detention time= 1,246.1 min calculated for 0.145 af (15% of inflow)
Center-of-Mass det. time= 573.3 min (1,419.8 - 846.5)

Volume	Invert	Avail.Storage	Storage Description
#1	891.00'	168,762 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

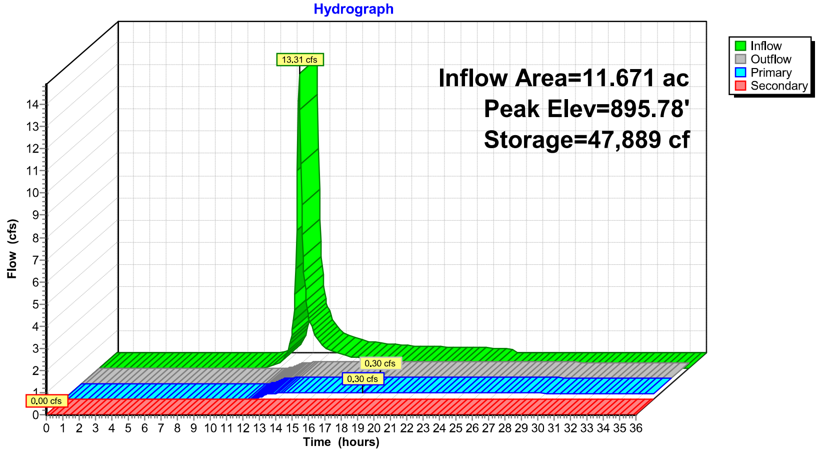
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
891.00	2,741	349.0	0	0	2,741
892.00	3,525	397.0	3,125	3,125	5,615
894.00	12,390	626.0	15,016	18,141	24,285
896.00	22,863	877.0	34,722	52,863	54,344
898.00	28,845	1,061.0	51,592	104,455	82,786
900.00	35,579	1,100.0	64,306	168,762	89,833

Device	Routing	Invert	Outlet Devices
#1	Secondary	898.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Device 5	894.00'	**3.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 5	895.80'	**12.0" Horiz. Stand Pipe** C= 0.600 Limited to weir flow at low heads
#4	Device 5	896.85'	**1.0" x 4.0" Horiz. Orifice/Grate X 13.00 columns** X 5 rows C= 0.600 in 30.0" x 30.0" Grate (29% open area)
#5	Primary	893.90'	**18.0" Round Culvert** L= 70.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 893.90' / 892.00' S= 0.0271 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.30 cfs @ 18.25 hrs HW=895.78' TW=893.54' (Dynamic Tailwater)
└**5=Culvert** (Passes 0.30 cfs of 9.03 cfs potential flow)
  ├**2=Low Flow Orifice** (Orifice Controls 0.30 cfs @ 6.19 fps)
  ├**3=Stand Pipe** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=894.00' TW=893.50' (Dynamic Tailwater)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P-1: WET POND



Summary for Pond P-2: RETENTION POND

Inflow Area = 12.358 ac, 33.20% Impervious, Inflow Depth > 0.58" for 1-YR event
Inflow = 0.72 cfs @ 12.16 hrs, Volume= 0.598 af
Outflow = 0.32 cfs @ 15.05 hrs, Volume= 0.521 af, Atten= 55%, Lag= 173.6 min
Primary = 0.32 cfs @ 15.05 hrs, Volume= 0.521 af
Routed to Link DP2 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 866.18' @ 15.05 hrs Surf.Area= 1,703 sf Storage= 3,403 cf

Plug-Flow detention time= 189.1 min calculated for 0.521 af (87% of inflow)
Center-of-Mass det. time= 91.5 min (1,478.4 - 1,386.9)

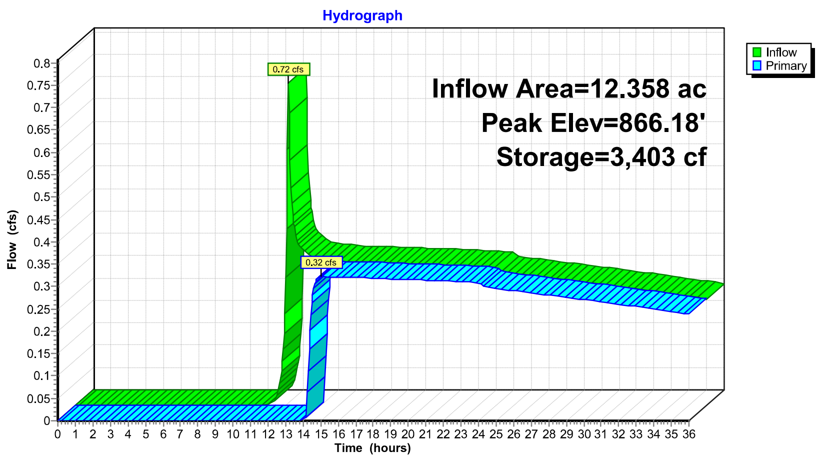
Volume	Invert	Avail.Storage	Storage Description
#1	862.00'	14,911 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
862.00	151	73.0	0	0	151
864.00	735	122.0	813	813	936
866.00	1,610	166.0	2,289	3,101	1,985
868.00	2,772	216.0	4,330	7,431	3,552
870.00	4,800	270.0	7,480	14,911	5,696

Device	Routing	Invert	Outlet Devices
#1	Primary	866.00'	**18.0" Round Culvert** L= 50.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 866.00' / 865.00' S= 0.0200 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.77 sf
#2	Primary	866.00'	**18.0" Round Culvert** L= 50.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 866.00' / 865.00' S= 0.0200 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.32 cfs @ 15.05 hrs HW=866.18' TW=0.00' (Dynamic Tailwater)
├**1=Culvert** (Barrel Controls 0.16 cfs @ 2.01 fps)
└**2=Culvert** (Barrel Controls 0.16 cfs @ 2.01 fps)

Pond P-2: RETENTION POND



Summary for Pond P-3: RENTENTION POND

Inflow Area = 0.484 ac, 0.00% Impervious, Inflow Depth = 0.63" for 1-YR event
Inflow = 0.36 cfs @ 12.17 hrs, Volume= 0.025 af
Outflow = 0.20 cfs @ 12.32 hrs, Volume= 0.021 af, Atten= 45%, Lag= 9.1 min
Primary = 0.20 cfs @ 12.32 hrs, Volume= 0.021 af
Routed to Link DP2 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 838.27' @ 12.32 hrs Surf.Area= 419 sf Storage= 282 cf

Plug-Flow detention time= 127.4 min calculated for 0.021 af (83% of inflow)
Center-of-Mass det. time= 51.5 min (923.0 - 871.5)

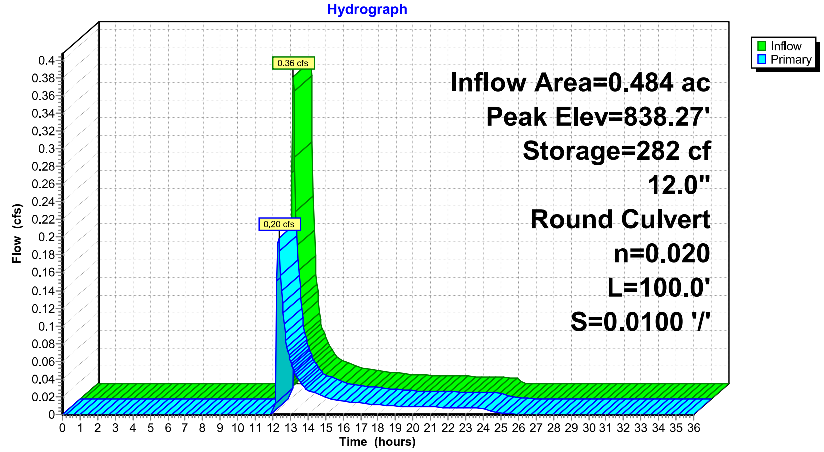
Volume	Invert	Avail.Storage	Storage Description
#1	837.00'	1,625 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
837.00	60	0	0
838.00	310	185	185
840.00	1,130	1,440	1,625

Device	Routing	Invert	Outlet Devices
#1	Primary	838.00'	**12.0" Round Culvert** L= 100.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 838.00' / 837.00' S= 0.0100 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.19 cfs @ 12.32 hrs HW=838.26' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.19 cfs @ 1.78 fps)

Pond P-3: RENTENTION POND

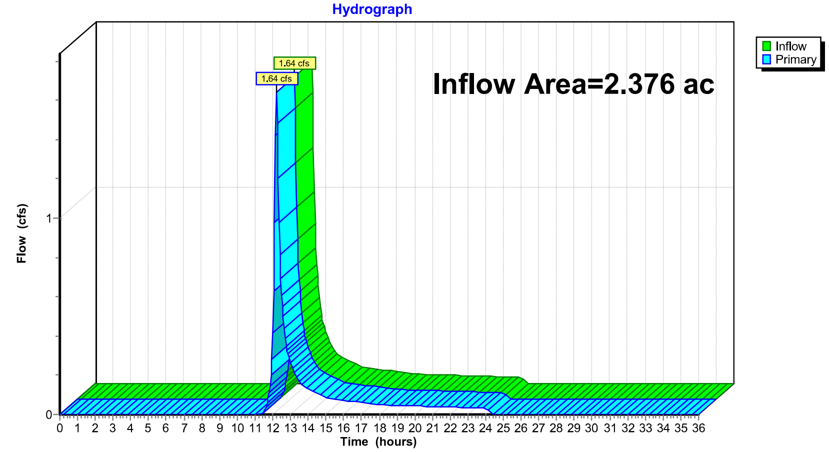


Summary for Link DP1:

Inflow Area =	2.376 ac,	0.00% Impervious,	Inflow Depth = 0.63"	for 1-YR event	
Inflow =	1.64 cfs @	12.20 hrs,	Volume=	0.125 af	
Primary =	1.64 cfs @	12.20 hrs,	Volume=	0.125 af,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP1:

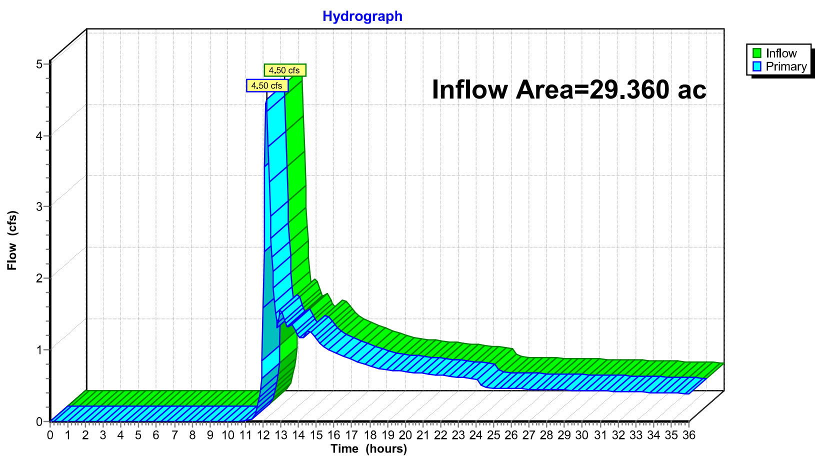


Summary for Link DP2:

Inflow Area =	29.360 ac, 26.93% Impervious, Inflow Depth > 0.59"	for 1-YR event
Inflow =	4.50 cfs @ 12.18 hrs, Volume=	1.432 af
Primary =	4.50 cfs @ 12.18 hrs, Volume=	1.432 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP2:

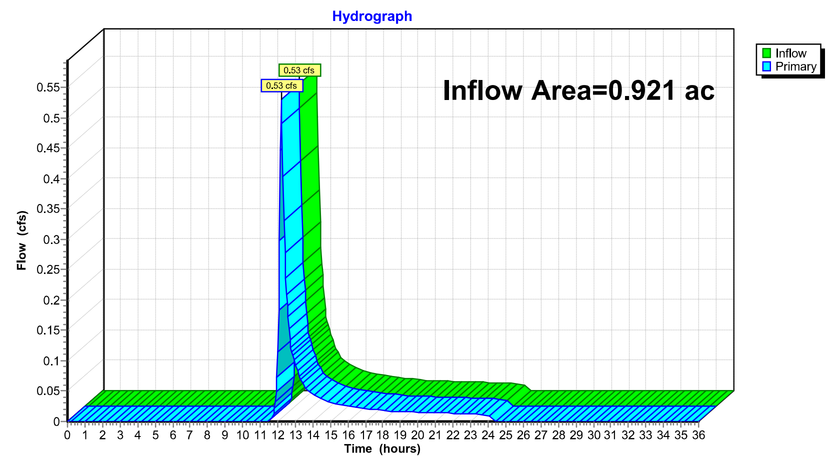


Summary for Link DP3:

Inflow Area =	0.921 ac, 5.97% Impervious, Inflow Depth = 0.55"	for 1-YR event
Inflow =	0.53 cfs @ 12.21 hrs, Volume=	0.042 af
Primary =	0.53 cfs @ 12.21 hrs, Volume=	0.042 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP3:

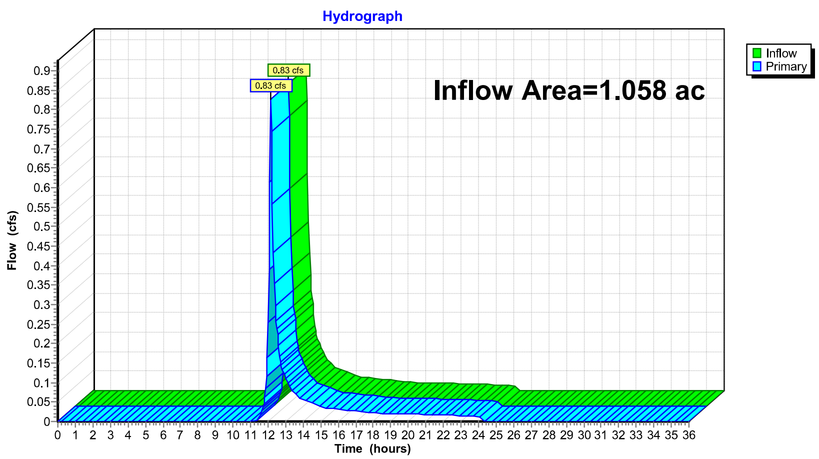


Summary for Link DP4:

Inflow Area = 1.058 ac, 0.00% Impervious, Inflow Depth = 0.63" for 1-YR event
Inflow = 0.83 cfs @ 12.16 hrs, Volume= 0.056 af
Primary = 0.83 cfs @ 12.16 hrs, Volume= 0.056 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP4:



Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment S100: Runoff Area=2.376 ac 0.00% Impervious Runoff Depth=1.85"
Flow Length=775' Tc=11.3 min CN=78 Runoff=5.11 cfs 0.366 af

Subcatchment S200: Runoff Area=4.851 ac 34.74% Impervious Runoff Depth=2.41"
Flow Length=1,171' Tc=13.3 min CN=85 Runoff=12.70 cfs 0.976 af

Subcatchment S201: Runoff Area=4.153 ac 38.74% Impervious Runoff Depth=2.50"
Flow Length=636' Tc=9.7 min CN=86 Runoff=12.56 cfs 0.866 af

Subcatchment S202: Runoff Area=0.530 ac 35.85% Impervious Runoff Depth=2.41"
Flow Length=319' Tc=2.7 min CN=85 Runoff=2.03 cfs 0.107 af

Subcatchment S203: Runoff Area=3.357 ac 0.00% Impervious Runoff Depth=1.92"
Flow Length=1,218' Tc=16.3 min CN=79 Runoff=6.45 cfs 0.538 af

Subcatchment S204: Runoff Area=0.687 ac 0.00% Impervious Runoff Depth=1.85"
Flow Length=200' Tc=7.4 min CN=78 Runoff=1.71 cfs 0.106 af

Subcatchment S205: Runoff Area=0.484 ac 0.00% Impervious Runoff Depth=1.85"
Flow Length=450' Tc=9.0 min CN=78 Runoff=1.13 cfs 0.075 af

Subcatchment S206: Runoff Area=0.561 ac 57.04% Impervious Runoff Depth=2.78"
Tc=6.0 min CN=89 Runoff=2.11 cfs 0.130 af

Subcatchment S207: Runoff Area=3.066 ac 0.00% Impervious Runoff Depth=1.85"
Flow Length=180' Tc=8.1 min CN=78 Runoff=7.41 cfs 0.472 af

Subcatchment S208: Runoff Area=11.671 ac 35.16% Impervious Runoff Depth=2.41"
Flow Length=865' Tc=11.3 min CN=85 Runoff=32.59 cfs 2.347 af

Subcatchment S300: Runoff Area=0.921 ac 5.97% Impervious Runoff Depth=1.70"
Flow Length=800' Tc=11.4 min CN=76 Runoff=1.80 cfs 0.131 af

Subcatchment S400: Runoff Area=1.058 ac 0.00% Impervious Runoff Depth=1.85"
Flow Length=210' Tc=8.1 min CN=78 Runoff=2.56 cfs 0.163 af

Reach S-1: E-W SWALE Avg. Flow Depth=0.48' Max Vel=10.63 fps Inflow=12.56 cfs 0.866 af
n=0.022 L=485.0' S=0.1299 '/' Capacity=65.06 cfs Outflow=12.48 cfs 0.866 af

Reach S-2: OVERFLOW SWALE Avg. Flow Depth=0.19' Max Vel=8.56 fps Inflow=4.19 cfs 1.903 af
n=0.022 L=120.0' S=0.1958 '/' Capacity=507.22 cfs Outflow=4.20 cfs 1.902 af

Reach S-3: ROADSIDE SWALE Avg. Flow Depth=0.22' Max Vel=5.41 fps Inflow=2.11 cfs 0.130 af
n=0.025 L=825.0' S=0.1018 '/' Capacity=50.69 cfs Outflow=1.98 cfs 0.130 af

Pond B-1: BIORETENTION AREA 1 Peak Elev=903.82' Storage=5,302 cf Inflow=12.13 cfs 0.805 af
Outflow=10.54 cfs 0.801 af

Pond B-2: BIORETENTION AREA 2 Peak Elev=903.82' Storage=4,847 cf Inflow=11.33 cfs 0.735 af
Outflow=10.71 cfs 0.732 af

Pond B-3: BIORETENTION AREA 3 Peak Elev=898.69' Storage=339 cf Inflow=2.03 cfs 0.107 af
Primary=0.01 cfs 0.014 af Secondary=1.96 cfs 0.093 af Outflow=1.97 cfs 0.107 af

Pond B-4: BIORETENTION AREA 4 Peak Elev=838.60' Storage=1,721 cf Inflow=1.98 cfs 0.130 af
Primary=0.02 cfs 0.043 af Secondary=1.88 cfs 0.070 af Outflow=1.90 cfs 0.113 af

Pond F1: FOREBAY 2 Peak Elev=903.92' Storage=9,064 cf Inflow=12.70 cfs 0.976 af
Outflow=12.13 cfs 0.805 af

Pond F2: FOREBAY 2 Peak Elev=903.93' Storage=7,114 cf Inflow=12.48 cfs 0.866 af
Outflow=11.33 cfs 0.735 af

Pond P-1: WET POND Peak Elev=896.81' Storage=72,392 cf Inflow=32.59 cfs 2.347 af
Primary=4.19 cfs 1.903 af Secondary=0.00 cfs 0.000 af Outflow=4.19 cfs 1.903 af

Pond P-2: RETENTION POND Peak Elev=866.69' Storage=4,339 cf Inflow=4.41 cfs 2.008 af
Outflow=4.40 cfs 1.931 af

Pond P-3: RENTENTION POND Peak Elev=838.62' Storage=455 cf Inflow=1.13 cfs 0.075 af
12.0" Round Culvert n=0.020 L=100.0' S=0.0100 '/' Outflow=1.00 cfs 0.070 af

Link DP1: Inflow=5.11 cfs 0.366 af
Primary=5.11 cfs 0.366 af

Link DP2: Inflow=34.69 cfs 4.764 af
Primary=34.69 cfs 4.764 af

Link DP3: Inflow=1.80 cfs 0.131 af
Primary=1.80 cfs 0.131 af

Link DP4: Inflow=2.56 cfs 0.163 af
Primary=2.56 cfs 0.163 af

Total Runoff Area = 33.715 ac Runoff Volume = 6.274 af Average Runoff Depth = 2.23"
76.38% Pervious = 25.753 ac 23.62% Impervious = 7.962 ac

Summary for Subcatchment S100:

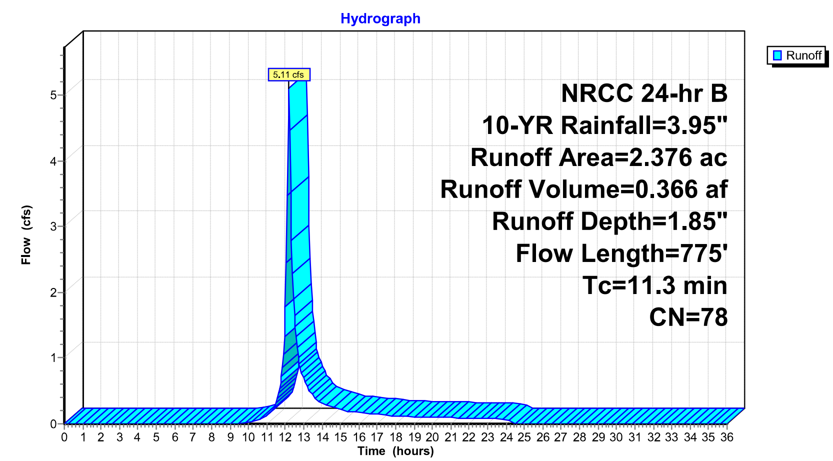
Runoff = 5.11 cfs @ 12.20 hrs, Volume= 0.366 af, Depth= 1.85"
Routed to Link DP1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 10-YR Rainfall=3.95"

Area (ac)	CN	Description
0.763	79	Woods, Fair, HSG D
1.613	78	Meadow, non-grazed, HSG D
2.376	78	Weighted Average
2.376		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	50	0.2800	0.18		**Sheet Flow, SF - WOODS** Woods: Light underbrush n= 0.400 P2= 2.68"
3.1	50	0.2800	0.27		**Sheet Flow, SF - MEADOW** Grass: Dense n= 0.240 P2= 2.68"
3.2	635	0.2272	3.34		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
0.3	40	0.2272	2.38		**Shallow Concentrated Flow, SCF - WOODS** Woodland Kv= 5.0 fps
11.3	775	Total			

Subcatchment S100:



Summary for Subcatchment S200:

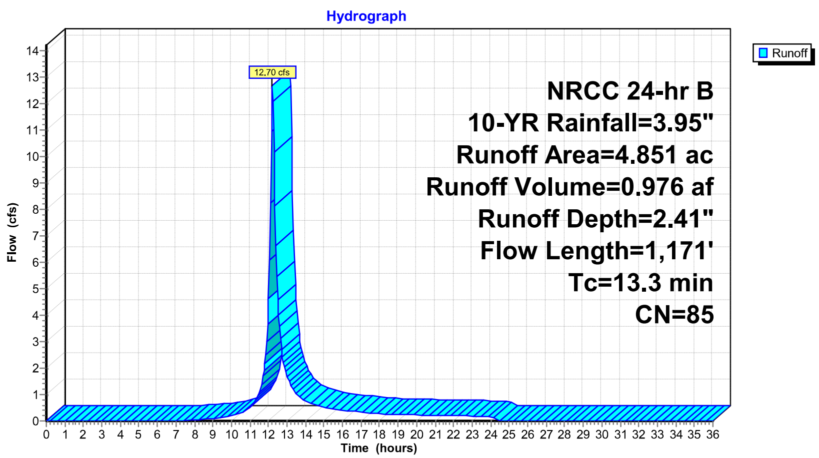
Runoff = 12.70 cfs @ 12.21 hrs, Volume= 0.976 af, Depth= 2.41"
Routed to Pond F1 : FOREBAY 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 10-YR Rainfall=3.95"

	Area (ac)	CN	Description
	0.013	79	Woods, Fair, HSG D
	3.153	78	Meadow, non-grazed, HSG D
*	1.685	98	SOLAR PANELS
	4.851	85	Weighted Average
	3.166		65.26% Pervious Area
	1.685		34.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	100	0.1500	0.24		**Sheet Flow, SF - MEADOW** Grass: Dense n= 0.240 P2= 2.68"
6.3	1,071	0.1634	2.83		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
13.3	1,171	Total			

Subcatchment S200:



Summary for Subcatchment S201:

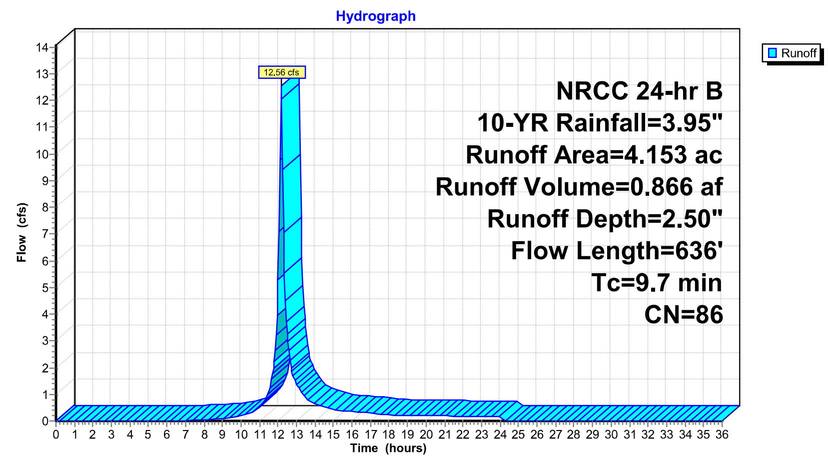
Runoff = 12.56 cfs @ 12.17 hrs, Volume= 0.866 af, Depth= 2.50"
Routed to Reach S-1 : E-W SWALE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 10-YR Rainfall=3.95"

	Area (ac)	CN	Description
	0.014	79	Woods, Fair, HSG D
	2.530	78	Meadow, non-grazed, HSG D
*	1.609	98	SOLAR PANELS
	4.153	86	Weighted Average
	2.544		61.26% Pervious Area
	1.609		38.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	100	0.1600	0.25		**Sheet Flow, SF - MEADOW** Grass: Dense n= 0.240 P2= 2.68"
2.9	536	0.1900	3.05		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
9.7	636	Total			

Subcatchment S201:



Summary for Subcatchment S202:

[49] Hint: Tc<2dt may require smaller dt

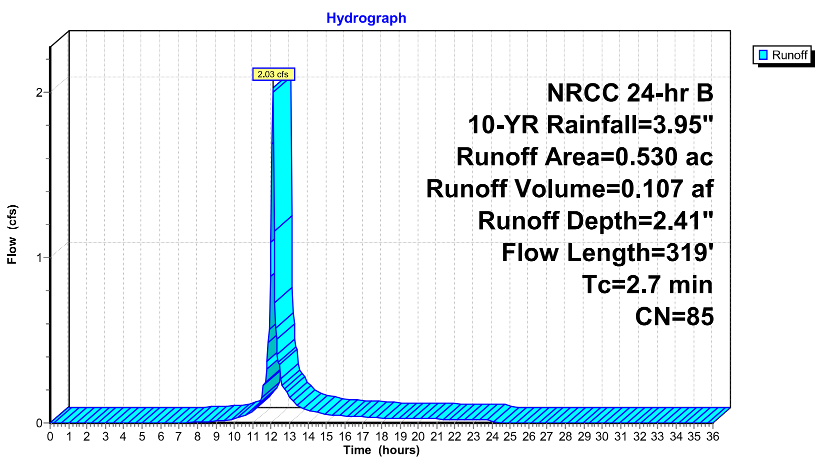
Runoff = 2.03 cfs @ 12.09 hrs, Volume= 0.107 af, Depth= 2.41"
Routed to Pond B-3 : BIORETENTION AREA 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 10-YR Rainfall=3.95"

Area (ac)	CN	Description
0.340	78	Meadow, non-grazed, HSG D
0.190	98	Paved parking, HSG D
0.530	85	Weighted Average
0.340		64.15% Pervious Area
0.190		35.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	100	0.1500	0.84		**Sheet Flow, SF - GRAVEL** Fallow n= 0.050 P2= 2.68"
0.7	219	0.1100	4.97		**Shallow Concentrated Flow, SCF - MEADOW** Grassed Waterway Kv= 15.0 fps
2.7	319	Total			

Subcatchment S202:



Summary for Subcatchment S203:

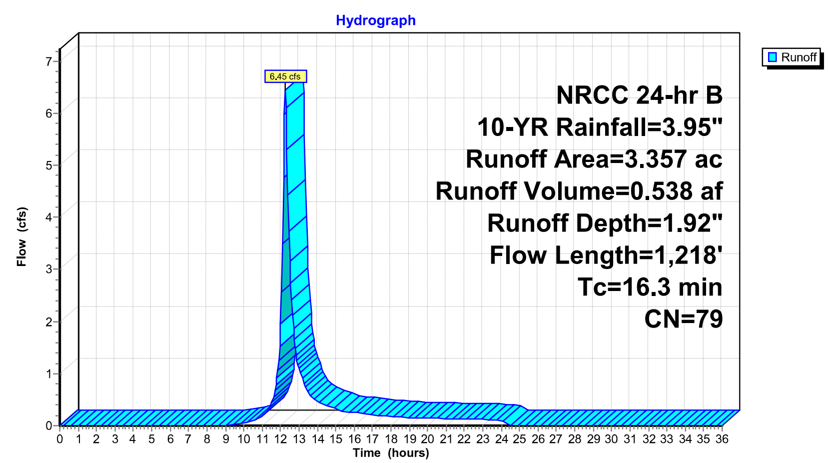
Runoff = 6.45 cfs @ 12.25 hrs, Volume= 0.538 af, Depth= 1.92"
Routed to Link DP2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 10-YR Rainfall=3.95"

Area (ac)	CN	Description
2.546	78	Meadow, non-grazed, HSG D
0.701	79	Woods, Fair, HSG D
0.110	96	Gravel surface, HSG D
3.357	79	Weighted Average
3.357		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	100	0.1900	0.17		**Sheet Flow, SF - MEADOW** Woods: Light underbrush n= 0.400 P2= 2.68"
6.8	1,118	0.1512	2.72		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
16.3	1,218	Total			

Subcatchment S203:



Summary for Subcatchment S204:

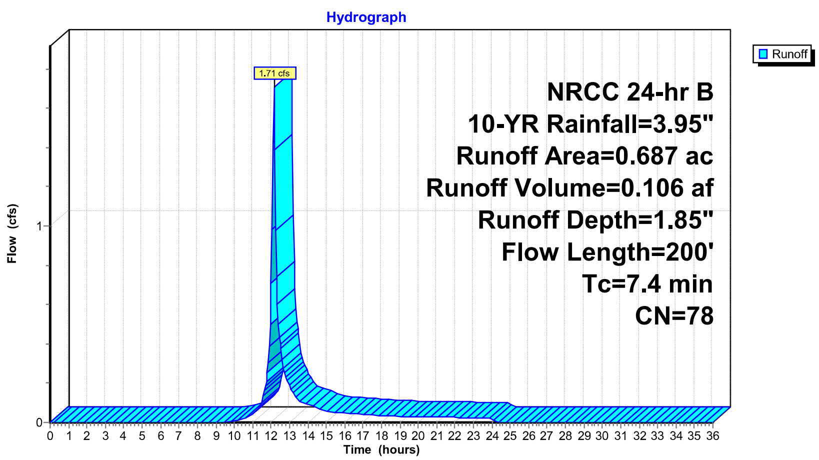
Runoff = 1.71 cfs @ 12.15 hrs, Volume= 0.106 af, Depth= 1.85"
Routed to Pond P-2 : RETENTION POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 10-YR Rainfall=3.95"

Area (ac)	CN	Description
0.687	78	Meadow, non-grazed, HSG D
0.687		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	100	0.1600	0.25		**Sheet Flow, SF - MEADOW** Grass: Dense n= 0.240 P2= 2.68"
0.6	100	0.1500	2.71		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
7.4	200	Total			

Subcatchment S204:



Summary for Subcatchment S205:

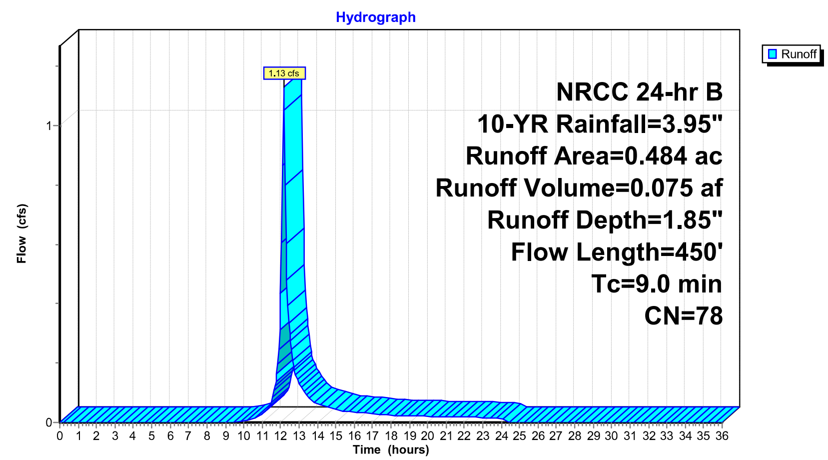
Runoff = 1.13 cfs @ 12.16 hrs, Volume= 0.075 af, Depth= 1.85"
Routed to Pond P-3 : RENTENTION POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 10-YR Rainfall=3.95"

Area (ac)	CN	Description
0.484	78	Meadow, non-grazed, HSG D
0.484		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	100	0.1700	0.25		**Sheet Flow, SF - WOODS** Grass: Dense n= 0.240 P2= 2.68"
2.4	350	0.1200	2.42		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
9.0	450	Total			

Subcatchment S205:



Summary for Subcatchment S206:

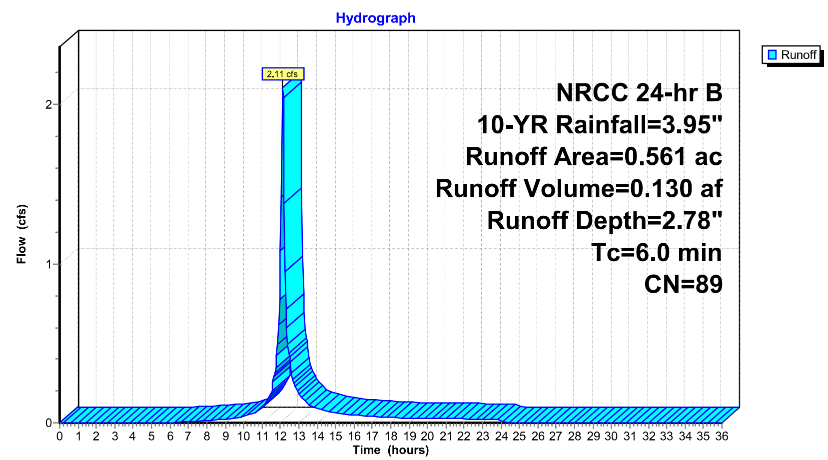
Runoff = 2.11 cfs @ 12.13 hrs, Volume= 0.130 af, Depth= 2.78"
Routed to Reach S-3 : ROADSIDE SWALE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 10-YR Rainfall=3.95"

Area (ac)	CN	Description
0.320	98	Paved parking, HSG D
0.241	78	Meadow, non-grazed, HSG D
0.561	89	Weighted Average
0.241		42.96% Pervious Area
0.320		57.04% Impervious Area

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

Subcatchment S206:



Summary for Subcatchment S207:

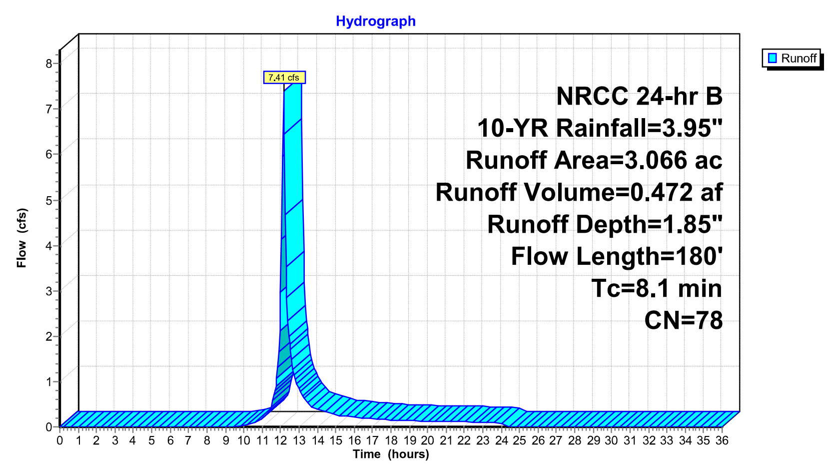
Runoff = 7.41 cfs @ 12.16 hrs, Volume= 0.472 af, Depth= 1.85"
Routed to Link DP2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 10-YR Rainfall=3.95"

Area (ac)	CN	Description
1.099	79	Woods, Fair, HSG D
1.967	78	Meadow, non-grazed, HSG D
3.066	78	Weighted Average
3.066		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	30	0.5000	0.30		**Sheet Flow, SF** Grass: Dense n= 0.240 P2= 2.68"
6.0	70	0.3000	0.20		**Sheet Flow, SF WOODS** Woods: Light underbrush n= 0.400 P2= 2.68"
0.5	80	0.3000	2.74		**Shallow Concentrated Flow, SCF** Woodland Kv= 5.0 fps
8.1	180	Total			

Subcatchment S207:



Summary for Subcatchment S208:

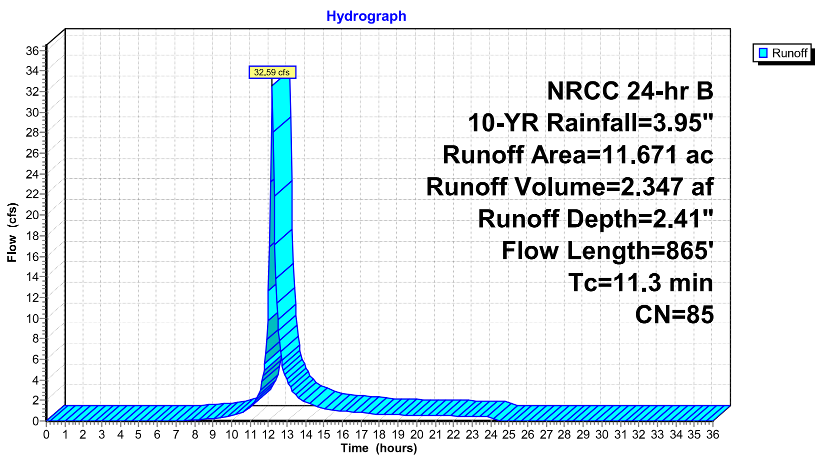
Runoff = 32.59 cfs @ 12.19 hrs, Volume= 2.347 af, Depth= 2.41"
Routed to Pond P-1 : WET POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 10-YR Rainfall=3.95"

	Area (ac)	CN	Description
	0.087	79	Woods, Fair, HSG D
	7.481	78	Meadow, non-grazed, HSG D
*	4.103	98	SOLAR PANELS
	11.671	85	Weighted Average
	7.568		64.84% Pervious Area
	4.103		35.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	100	0.1300	0.23		**Sheet Flow, SF - MEADOW** Grass: Dense n= 0.240 P2= 2.68"
3.9	765	0.2235	3.31		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
11.3	865	Total			

Subcatchment S208:



Summary for Subcatchment S300:

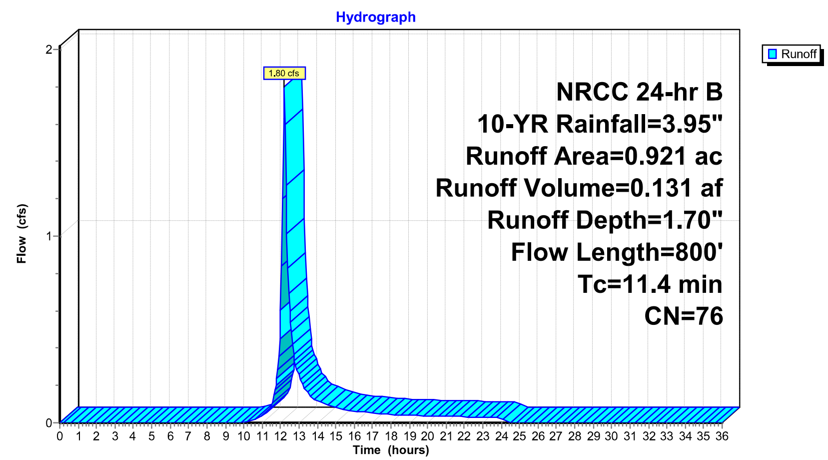
Runoff = 1.80 cfs @ 12.20 hrs, Volume= 0.131 af, Depth= 1.70"
Routed to Link DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 10-YR Rainfall=3.95"

Area (ac)	CN	Description
0.055	98	Paved parking, HSG C
0.736	71	Meadow, non-grazed, HSG C
0.130	96	Gravel surface, HSG C
0.921	76	Weighted Average
0.866		94.03% Pervious Area
0.055		5.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	100	0.1400	0.23		**Sheet Flow, SF - MEADOW** Grass: Dense n= 0.240 P2= 2.68"
0.2	100	0.1200	7.03		**Shallow Concentrated Flow, SCF - PAVED** Paved Kv= 20.3 fps
4.0	600	0.1300	2.52		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
11.4	800	Total			

Subcatchment S300:



Summary for Subcatchment S400:

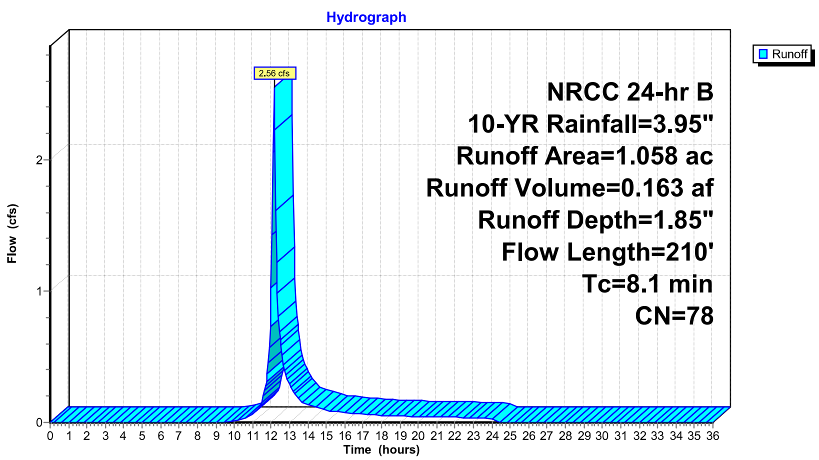
Runoff = 2.56 cfs @ 12.16 hrs, Volume= 0.163 af, Depth= 1.85"
Routed to Link DP4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 10-YR Rainfall=3.95"

Area (ac)	CN	Description
1.058	78	Meadow, non-grazed, HSG D
1.058		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.1200	0.22		**Sheet Flow, SF** Grass: Dense n= 0.240 P2= 2.68"
0.5	110	0.2272	3.34		**Shallow Concentrated Flow, SCF** Short Grass Pasture Kv= 7.0 fps
8.1	210	Total			

Subcatchment S400:



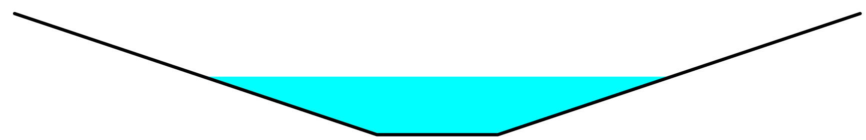
Summary for Reach S-1: E-W SWALE

Inflow Area = 4.153 ac, 38.74% Impervious, Inflow Depth = 2.50" for 10-YR event
Inflow = 12.56 cfs @ 12.17 hrs, Volume= 0.866 af
Outflow = 12.48 cfs @ 12.18 hrs, Volume= 0.866 af, Atten= 1%, Lag= 0.8 min
Routed to Pond F2 : FOREBAY 2

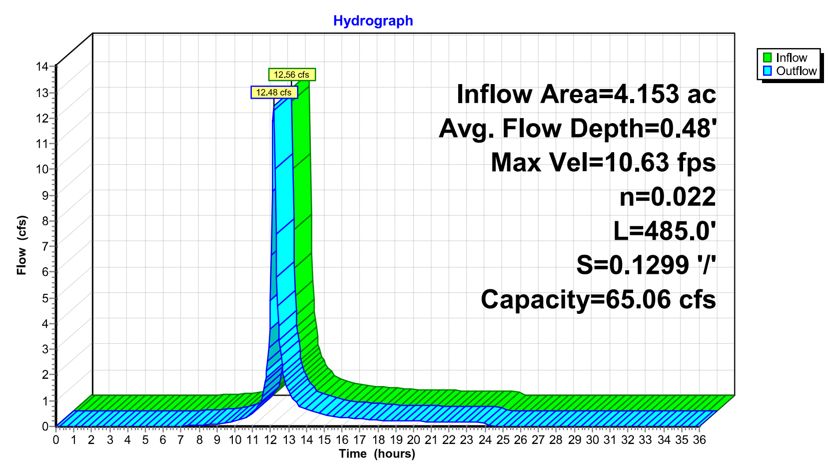
Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.63 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 3.54 fps, Avg. Travel Time= 2.3 min

Peak Storage= 567 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.48' , Surface Width= 3.88'
Bank-Full Depth= 1.00' Flow Area= 4.0 sf, Capacity= 65.06 cfs

1.00' x 1.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 3.0 '/' Top Width= 7.00'
Length= 485.0' Slope= 0.1299 '/'
Inlet Invert= 968.00', Outlet Invert= 905.00'



Reach S-1: E-W SWALE



Summary for Reach S-2: OVERFLOW SWALE

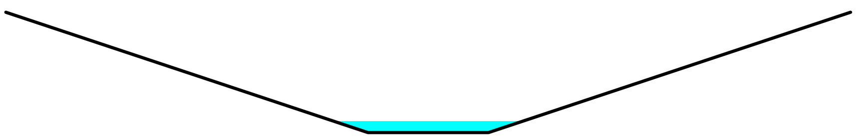
[90] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 11.671 ac, 35.16% Impervious, Inflow Depth > 1.96" for 10-YR event
Inflow = 4.19 cfs @ 12.95 hrs, Volume= 1.903 af
Outflow = 4.20 cfs @ 12.91 hrs, Volume= 1.902 af, Atten= 0%, Lag= 0.0 min
Routed to Pond P-2 : RETENTION POND

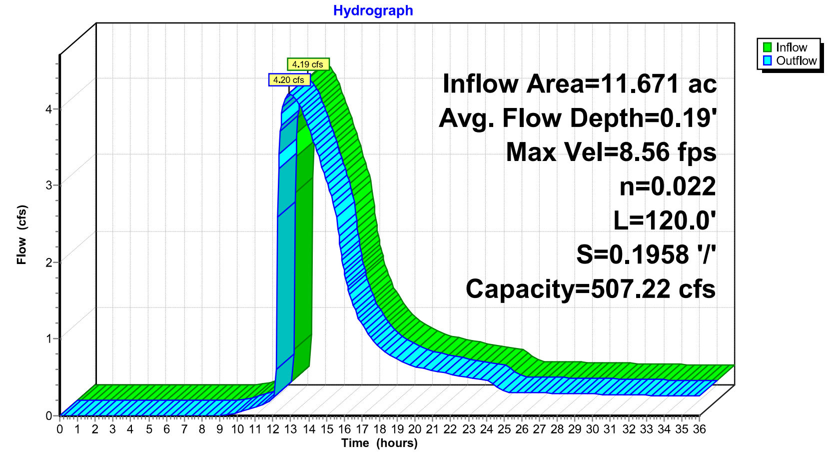
Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.56 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 4.25 fps, Avg. Travel Time= 0.5 min

Peak Storage= 59 cf @ 12.91 hrs
Average Depth at Peak Storage= 0.19' , Surface Width= 3.14'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 507.22 cfs

2.00' x 2.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 3.0 '/' Top Width= 14.00'
Length= 120.0' Slope= 0.1958 '/'
Inlet Invert= 893.50', Outlet Invert= 870.00'



Reach S-2: OVERFLOW SWALE



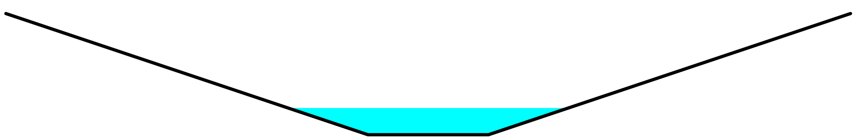
Summary for Reach S-3: ROADSIDE SWALE

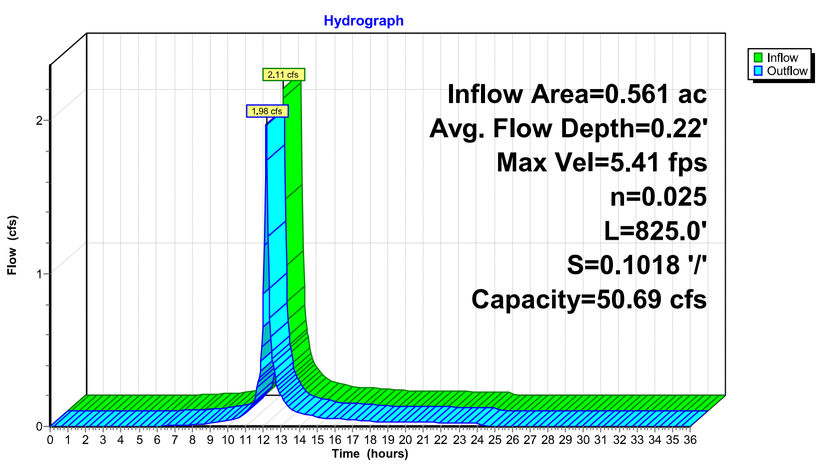
Inflow Area = 0.561 ac, 57.04% Impervious, Inflow Depth = 2.78" for 10-YR event
Inflow = 2.11 cfs @ 12.13 hrs, Volume= 0.130 af
Outflow = 1.98 cfs @ 12.15 hrs, Volume= 0.130 af, Atten= 6%, Lag= 1.5 min
Routed to Pond B-4 : BIORETENTION AREA 4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.41 fps, Min. Travel Time= 2.5 min
Avg. Velocity = 1.56 fps, Avg. Travel Time= 8.8 min

Peak Storage= 301 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.22' , Surface Width= 2.32'
Bank-Full Depth= 1.00' Flow Area= 4.0 sf, Capacity= 50.69 cfs

1.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 3.0 '/' Top Width= 7.00'
Length= 825.0' Slope= 0.1018 '/'
Inlet Invert= 924.00', Outlet Invert= 840.00'





Summary for Pond B-1: BIORETENTION AREA 1

Inflow Area = 4.851 ac, 34.74% Impervious, Inflow Depth = 1.99" for 10-YR event
Inflow = 12.13 cfs @ 12.22 hrs, Volume= 0.805 af
Outflow = 10.54 cfs @ 12.30 hrs, Volume= 0.801 af, Atten= 13%, Lag= 4.6 min
Primary = 10.54 cfs @ 12.30 hrs, Volume= 0.801 af
Routed to Link DP2 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 903.82' @ 12.30 hrs Surf.Area= 7,011 sf Storage= 5,302 cf

Plug-Flow detention time= 102.7 min calculated for 0.801 af (99% of inflow)
Center-of-Mass det. time= 99.5 min (959.7 - 860.2)

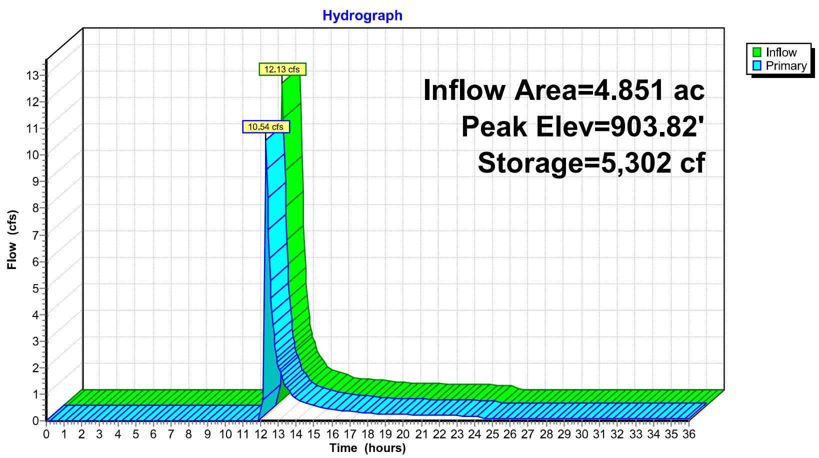
Volume	Invert	Avail.Storage	Storage Description
#1	903.00'	14,542 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
903.00	5,991	427.0	0	0	5,991
905.00	8,631	465.0	14,542	14,542	8,832

Device	Routing	Invert	Outlet Devices
#1	Primary	900.50'	**8.0" Round Culvert** L= 50.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 900.50' / 899.00' S= 0.0300 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.35 sf
#2	Primary	903.50'	**20.0' long + 15.0 '/' SideZ x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	903.00'	**0.500 in/hr Exfiltration over Surface area**

Primary OutFlow Max=10.50 cfs @ 12.30 hrs HW=903.82' TW=0.00' (Dynamic Tailwater)
1=Culvert (Passes 0.08 cfs of 2.03 cfs potential flow)
3=Exfiltration (Exfiltration Controls 0.08 cfs)
2=Broad-Crested Rectangular Weir (Weir Controls 10.42 cfs @ 1.33 fps)

Pond B-1: BIORETENTION AREA 1



Summary for Pond B-2: BIORETENTION AREA 2

Inflow Area = 4.153 ac, 38.74% Impervious, Inflow Depth = 2.12" for 10-YR event
Inflow = 11.33 cfs @ 12.19 hrs, Volume= 0.735 af
Outflow = 10.71 cfs @ 12.24 hrs, Volume= 0.732 af, Atten= 6%, Lag= 3.0 min
Primary = 10.71 cfs @ 12.24 hrs, Volume= 0.732 af
Routed to Link DP2 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 903.82' @ 12.24 hrs Surf.Area= 6,425 sf Storage= 4,847 cf

Plug-Flow detention time= 101.3 min calculated for 0.731 af (99% of inflow)
Center-of-Mass det. time= 99.3 min (950.4 - 851.1)

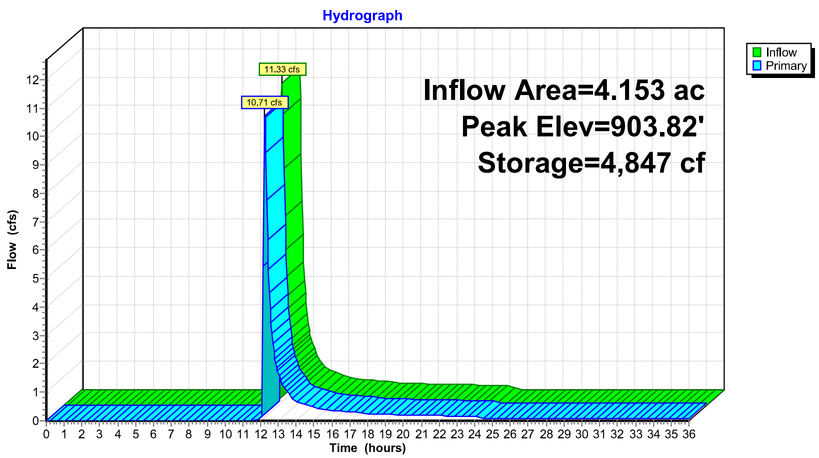
Volume	Invert	Avail.Storage	Storage Description
#1	903.00'	13,358 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
903.00	5,420	421.0	0	0	5,420
905.00	8,023	459.0	13,358	13,358	8,223

Device	Routing	Invert	Outlet Devices
#1	Primary	900.50'	**8.0" Round Culvert** L= 50.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 900.50' / 899.00' S= 0.0300 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.35 sf
#2	Primary	903.50'	**20.0' long + 15.0 '/' SideZ x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	903.00'	**0.500 in/hr Exfiltration over Surface area**

Primary OutFlow Max=10.59 cfs @ 12.24 hrs HW=903.82' TW=0.00' (Dynamic Tailwater)
1=Culvert (Passes 0.07 cfs of 2.03 cfs potential flow)
3=Exfiltration (Exfiltration Controls 0.07 cfs)
2=Broad-Crested Rectangular Weir (Weir Controls 10.51 cfs @ 1.34 fps)

Pond B-2: BIORETENTION AREA 2



Summary for Pond B-3: BIORETENTION AREA 3

Inflow Area = 0.530 ac, 35.85% Impervious, Inflow Depth = 2.41" for 10-YR event
Inflow = 2.03 cfs @ 12.09 hrs, Volume= 0.107 af
Outflow = 1.97 cfs @ 12.10 hrs, Volume= 0.107 af, Atten= 3%, Lag= 0.6 min
Primary = 0.01 cfs @ 12.10 hrs, Volume= 0.014 af
Routed to Link DP2 :
Secondary = 1.96 cfs @ 12.10 hrs, Volume= 0.093 af
Routed to Link DP2 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 898.69' @ 12.10 hrs Surf.Area= 649 sf Storage= 339 cf

Plug-Flow detention time= 58.0 min calculated for 0.107 af (100% of inflow)
Center-of-Mass det. time= 57.7 min (871.4 - 813.7)

Volume	Invert	Avail.Storage	Storage Description
#1	898.00'	1,580 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

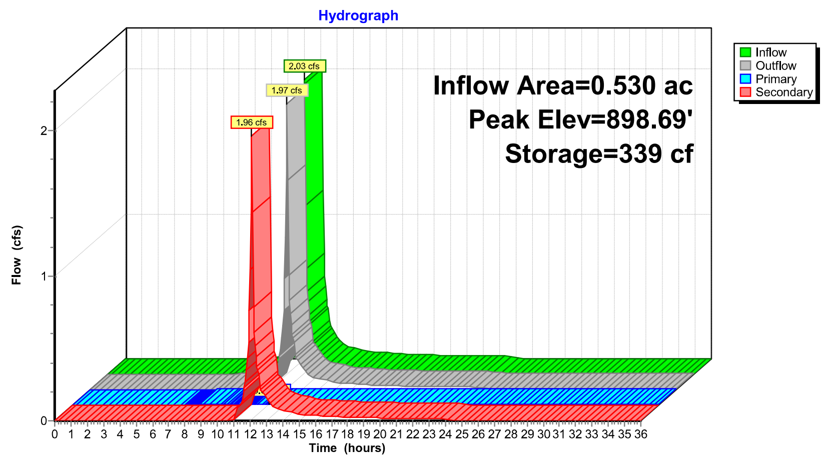
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
898.00	340	0	0
900.00	1,240	1,580	1,580

Device	Routing	Invert	Outlet Devices
#1	Device 3	898.00'	**0.500 in/hr Exfiltration over Surface area**
#2	Secondary	898.50'	**10.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#3	Primary	895.50'	**8.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 895.50' / 895.00' S= 0.0083 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.01 cfs @ 12.10 hrs HW=898.69' TW=0.00' (Dynamic Tailwater)
└─**3=Culvert** (Passes 0.01 cfs of 1.57 cfs potential flow)
  └─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Secondary OutFlow Max=1.95 cfs @ 12.10 hrs HW=898.69' TW=0.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 1.95 cfs @ 1.05 fps)

Pond B-3: BIORETENTION AREA 3



Summary for Pond B-4: BIORETENTION AREA 4

Inflow Area = 0.561 ac, 57.04% Impervious, Inflow Depth = 2.78" for 10-YR event
Inflow = 1.98 cfs @ 12.15 hrs, Volume= 0.130 af
Outflow = 1.90 cfs @ 12.18 hrs, Volume= 0.113 af, Atten= 4%, Lag= 1.4 min
Primary = 0.02 cfs @ 12.18 hrs, Volume= 0.043 af
Routed to Link DP2 :
Secondary = 1.88 cfs @ 12.18 hrs, Volume= 0.070 af
Routed to Link DP2 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 838.60' @ 12.18 hrs Surf.Area= 1,941 sf Storage= 1,721 cf

Plug-Flow detention time= 262.6 min calculated for 0.113 af (87% of inflow)
Center-of-Mass det. time= 202.1 min (1,010.8 - 808.7)

Volume	Invert	Avail.Storage	Storage Description
#1	837.00'	5,303 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

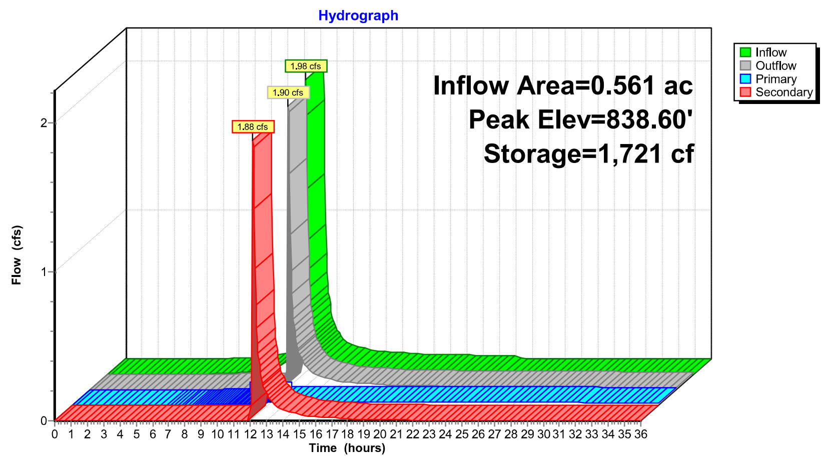
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
837.00	15	0	0
838.00	1,417	716	716
840.00	3,170	4,587	5,303

Device	Routing	Invert	Outlet Devices
#1	Device 3	837.00'	**0.500 in/hr Exfiltration over Surface area**
#2	Secondary	838.50'	**25.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#3	Primary	835.50'	**8.0" Round Culvert** L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 835.50' / 834.00' S= 0.0600 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.02 cfs @ 12.18 hrs HW=838.60' TW=0.00' (Dynamic Tailwater)
3=Culvert (Passes 0.02 cfs of 2.21 cfs potential flow)
1=Exfiltration (Exfiltration Controls 0.02 cfs)

Secondary OutFlow Max=1.82 cfs @ 12.18 hrs HW=838.60' TW=0.00' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Weir Controls 1.82 cfs @ 0.76 fps)

Pond B-4: BIORETENTION AREA 4



Summary for Pond F1: FOREBAY 2

Inflow Area = 4.851 ac, 34.74% Impervious, Inflow Depth = 2.41" for 10-YR event
Inflow = 12.70 cfs @ 12.21 hrs, Volume= 0.976 af
Outflow = 12.13 cfs @ 12.22 hrs, Volume= 0.805 af, Atten= 4%, Lag= 0.7 min
Primary = 12.13 cfs @ 12.22 hrs, Volume= 0.805 af
Routed to Pond B-1 : BIORETENTION AREA 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 903.92' @ 12.31 hrs Surf.Area= 4,222 sf Storage= 9,064 cf

Plug-Flow detention time= 109.9 min calculated for 0.805 af (83% of inflow)
Center-of-Mass det. time= 36.7 min (860.2 - 823.5)

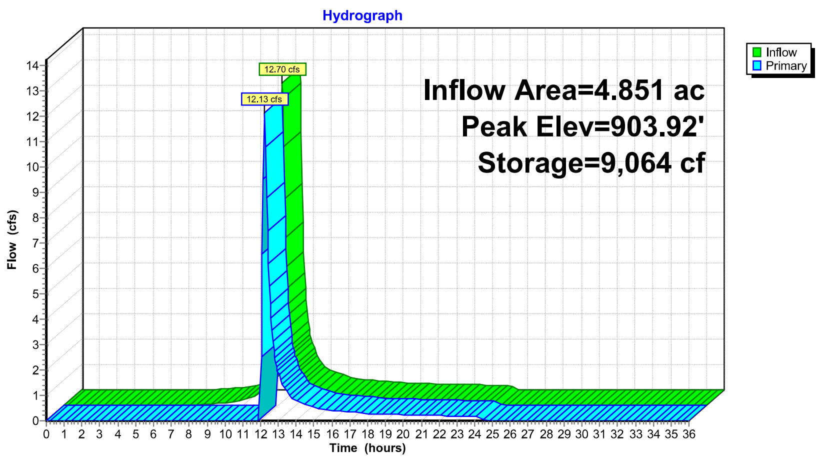
Volume	Invert	Avail.Storage	Storage Description
#1	899.00'	14,382 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
899.00	218	86.0	0	0	218
901.00	1,277	230.0	1,348	1,348	3,853
903.00	3,198	372.0	4,331	5,679	10,682
905.00	5,618	426.0	8,703	14,382	14,203

Device	Routing	Invert	Outlet Devices
#1	Primary	903.50'	**20.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=10.04 cfs @ 12.22 hrs HW=903.89' TW=903.72' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 10.04 cfs @ 1.30 fps)

Pond F1: FOREBAY 2



Summary for Pond F2: FOREBAY 2

Inflow Area = 4.153 ac, 38.74% Impervious, Inflow Depth = 2.50" for 10-YR event
Inflow = 12.48 cfs @ 12.18 hrs, Volume= 0.866 af
Outflow = 11.33 cfs @ 12.19 hrs, Volume= 0.735 af, Atten= 9%, Lag= 0.6 min
Primary = 11.33 cfs @ 12.19 hrs, Volume= 0.735 af
Routed to Pond B-2 : BIORETENTION AREA 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 903.93' @ 12.25 hrs Surf.Area= 3,603 sf Storage= 7,114 cf

Plug-Flow detention time= 98.5 min calculated for 0.734 af (85% of inflow)
Center-of-Mass det. time= 32.7 min (851.1 - 818.4)

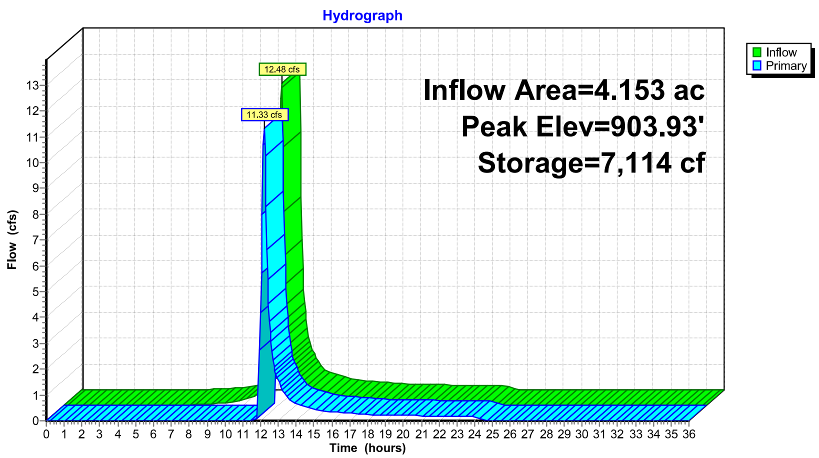
Volume	Invert	Avail.Storage	Storage Description
#1	899.00'	11,697 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
899.00	98	53.0	0	0	98
901.00	930	189.0	887	887	2,728
903.00	2,575	324.0	3,368	4,255	8,263
905.00	5,000	439.0	7,442	11,697	15,287

Device	Routing	Invert	Outlet Devices
#1	Primary	903.50'	**20.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=9.04 cfs @ 12.19 hrs HW=903.90' TW=903.79' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 9.04 cfs @ 1.12 fps)

Pond F2: FOREBAY 2



Summary for Pond P-1: WET POND

Inflow Area = 11.671 ac, 35.16% Impervious, Inflow Depth = 2.41" for 10-YR event
Inflow = 32.59 cfs @ 12.19 hrs, Volume= 2.347 af
Outflow = 4.19 cfs @ 12.95 hrs, Volume= 1.903 af, Atten= 87%, Lag= 45.6 min
Primary = 4.19 cfs @ 12.95 hrs, Volume= 1.903 af
Routed to Reach S-2 : OVERFLOW SWALE
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach S-2 : OVERFLOW SWALE

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Starting Elev= 894.00' Surf.Area= 12,390 sf Storage= 18,141 cf
Peak Elev= 896.81' @ 12.95 hrs Surf.Area= 25,210 sf Storage= 72,392 cf (54,252 cf above start)
Flood Elev= 900.00' Surf.Area= 35,579 sf Storage= 168,762 cf (150,621 cf above start)

Plug-Flow detention time= 423.1 min calculated for 1.486 af (63% of inflow)
Center-of-Mass det. time= 238.7 min (1,060.3 - 821.7)

Volume	Invert	Avail.Storage	Storage Description
#1	891.00'	168,762 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

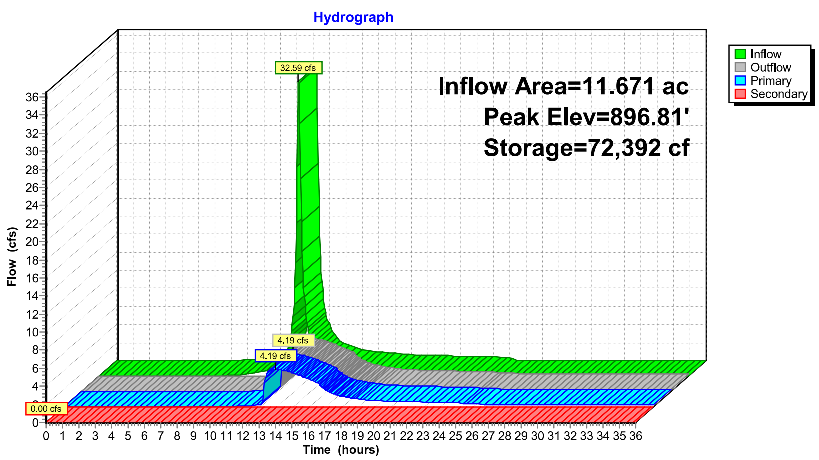
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
891.00	2,741	349.0	0	0	2,741
892.00	3,525	397.0	3,125	3,125	5,615
894.00	12,390	626.0	15,016	18,141	24,285
896.00	22,863	877.0	34,722	52,863	54,344
898.00	28,845	1,061.0	51,592	104,455	82,786
900.00	35,579	1,100.0	64,306	168,762	89,833

Device	Routing	Invert	Outlet Devices
#1	Secondary	898.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Device 5	894.00'	**3.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 5	895.80'	**12.0" Horiz. Stand Pipe** C= 0.600 Limited to weir flow at low heads
#4	Device 5	896.85'	**1.0" x 4.0" Horiz. Orifice/Grate X 13.00 columns** X 5 rows C= 0.600 in 30.0" x 30.0" Grate (29% open area)
#5	Primary	893.90'	**18.0" Round Culvert** L= 70.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 893.90' / 892.00' S= 0.0271 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.77 sf

Primary OutFlow Max=4.19 cfs @ 12.95 hrs HW=896.81' TW=893.69' (Dynamic Tailwater)
└**5=Culvert** (Passes 4.19 cfs of 11.77 cfs potential flow)
  ├**2=Low Flow Orifice** (Orifice Controls 0.39 cfs @ 7.89 fps)
  ├**3=Stand Pipe** (Orifice Controls 3.81 cfs @ 4.85 fps)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=894.00' TW=893.50' (Dynamic Tailwater)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P-1: WET POND



Summary for Pond P-2: RETENTION POND

Inflow Area = 12.358 ac, 33.20% Impervious, Inflow Depth > 1.95" for 10-YR event
Inflow = 4.41 cfs @ 12.80 hrs, Volume= 2.008 af
Outflow = 4.40 cfs @ 12.86 hrs, Volume= 1.931 af, Atten= 0%, Lag= 3.2 min
Primary = 4.40 cfs @ 12.86 hrs, Volume= 1.931 af
Routed to Link DP2 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 866.69' @ 12.86 hrs Surf.Area= 1,976 sf Storage= 4,339 cf

Plug-Flow detention time= 57.1 min calculated for 1.928 af (96% of inflow)
Center-of-Mass det. time= 17.3 min (1,066.1 - 1,048.8)

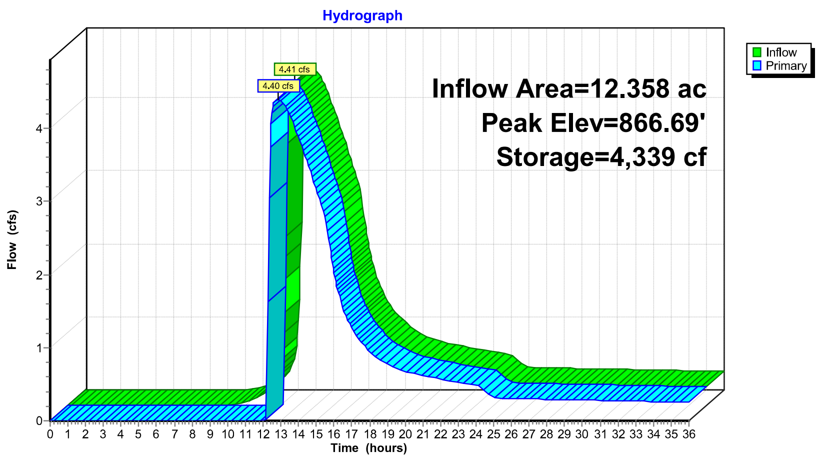
Volume	Invert	Avail.Storage	Storage Description
#1	862.00'	14,911 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
862.00	151	73.0	0	0	151
864.00	735	122.0	813	813	936
866.00	1,610	166.0	2,289	3,101	1,985
868.00	2,772	216.0	4,330	7,431	3,552
870.00	4,800	270.0	7,480	14,911	5,696

Device	Routing	Invert	Outlet Devices
#1	Primary	866.00'	**18.0" Round Culvert** L= 50.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 866.00' / 865.00' S= 0.0200 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.77 sf
#2	Primary	866.00'	**18.0" Round Culvert** L= 50.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 866.00' / 865.00' S= 0.0200 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.77 sf

Primary OutFlow Max=4.40 cfs @ 12.86 hrs HW=866.69' TW=0.00' (Dynamic Tailwater)
├**1=Culvert** (Barrel Controls 2.20 cfs @ 4.06 fps)
└**2=Culvert** (Barrel Controls 2.20 cfs @ 4.06 fps)

Pond P-2: RETENTION POND



Summary for Pond P-3: RETENTION POND

Inflow Area = 0.484 ac, 0.00% Impervious, Inflow Depth = 1.85" for 10-YR event
Inflow = 1.13 cfs @ 12.16 hrs, Volume= 0.075 af
Outflow = 1.00 cfs @ 12.21 hrs, Volume= 0.070 af, Atten= 12%, Lag= 3.0 min
Primary = 1.00 cfs @ 12.21 hrs, Volume= 0.070 af
Routed to Link DP2 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 838.62' @ 12.21 hrs Surf.Area= 563 sf Storage= 455 cf

Plug-Flow detention time= 53.1 min calculated for 0.070 af (94% of inflow)
Center-of-Mass det. time= 21.7 min (861.6 - 839.9)

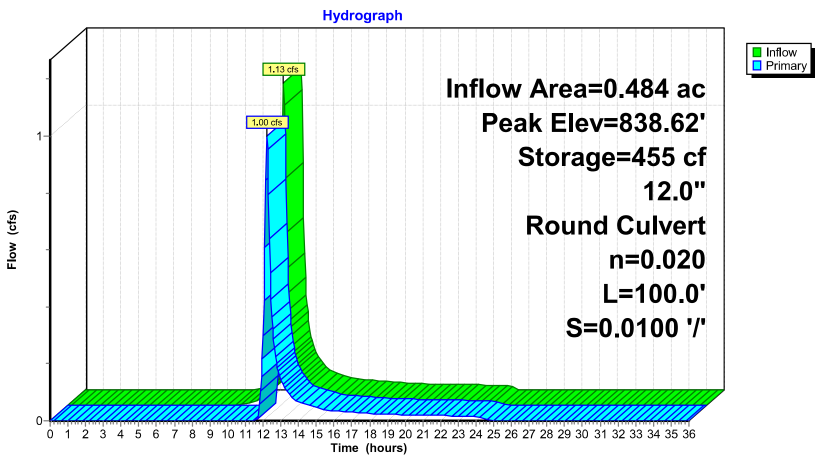
Volume	Invert	Avail.Storage	Storage Description
#1	837.00'	1,625 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
837.00	60	0	0
838.00	310	185	185
840.00	1,130	1,440	1,625

Device	Routing	Invert	Outlet Devices
#1	Primary	838.00'	**12.0" Round Culvert** L= 100.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 838.00' / 837.00' S= 0.0100 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.98 cfs @ 12.21 hrs HW=838.61' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.98 cfs @ 2.79 fps)

Pond P-3: RENTENTION POND

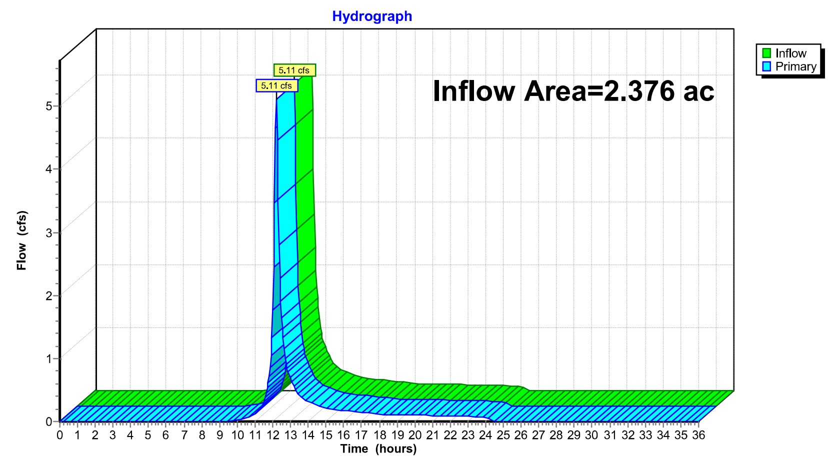


Summary for Link DP1:

Inflow Area =	2.376 ac,	0.00% Impervious,	Inflow Depth = 1.85"	for 10-YR event
Inflow =	5.11 cfs @	12.20 hrs,	Volume=	0.366 af
Primary =	5.11 cfs @	12.20 hrs,	Volume=	0.366 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP1:

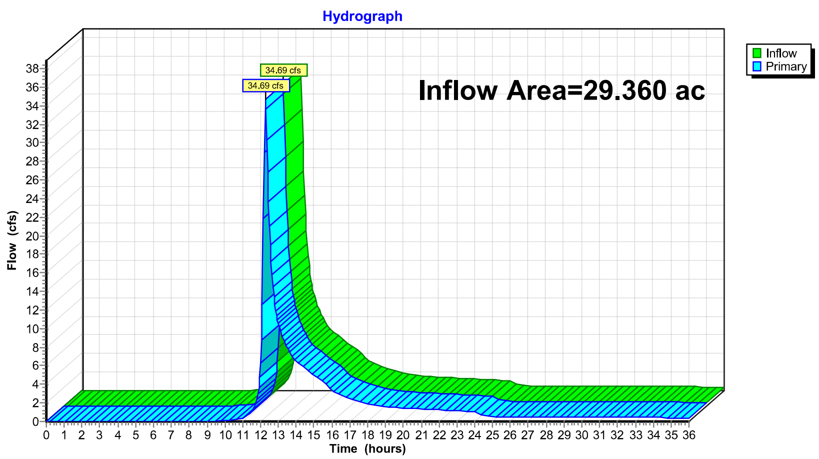


Summary for Link DP2:

Inflow Area = 29.360 ac, 26.93% Impervious, Inflow Depth > 1.95" for 10-YR event
Inflow = 34.69 cfs @ 12.27 hrs, Volume= 4.764 af
Primary = 34.69 cfs @ 12.27 hrs, Volume= 4.764 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP2:

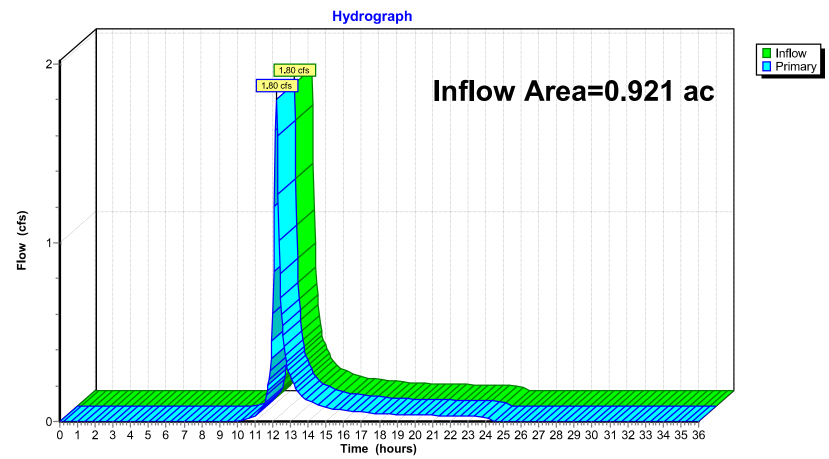


Summary for Link DP3:

Inflow Area = 0.921 ac, 5.97% Impervious, Inflow Depth = 1.70" for 10-YR event
Inflow = 1.80 cfs @ 12.20 hrs, Volume= 0.131 af
Primary = 1.80 cfs @ 12.20 hrs, Volume= 0.131 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP3:

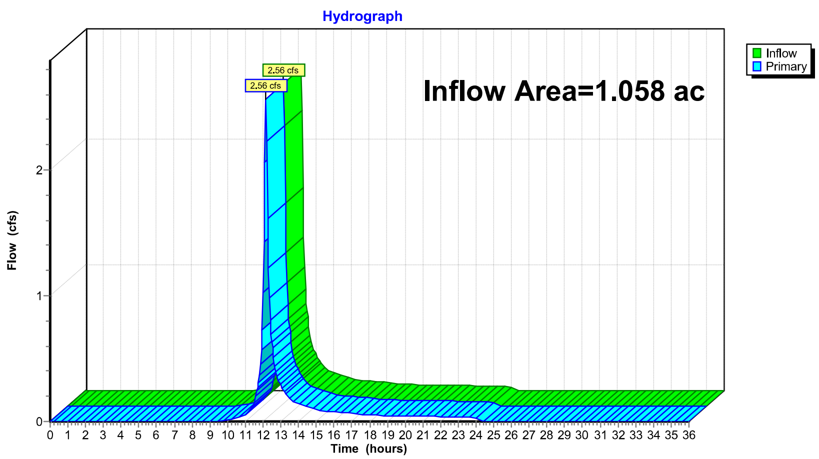


Summary for Link DP4:

Inflow Area = 1.058 ac, 0.00% Impervious, Inflow Depth = 1.85" for 10-YR event
Inflow = 2.56 cfs @ 12.16 hrs, Volume= 0.163 af
Primary = 2.56 cfs @ 12.16 hrs, Volume= 0.163 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP4:



Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment S100: Runoff Area=2.376 ac 0.00% Impervious Runoff Depth=3.56"
Flow Length=775' Tc=11.3 min CN=78 Runoff=9.81 cfs 0.705 af

Subcatchment S200: Runoff Area=4.851 ac 34.74% Impervious Runoff Depth=4.28"
Flow Length=1,171' Tc=13.3 min CN=85 Runoff=22.11 cfs 1.732 af

Subcatchment S201: Runoff Area=4.153 ac 38.74% Impervious Runoff Depth=4.39"
Flow Length=636' Tc=9.7 min CN=86 Runoff=21.53 cfs 1.519 af

Subcatchment S202: Runoff Area=0.530 ac 35.85% Impervious Runoff Depth=4.28"
Flow Length=319' Tc=2.7 min CN=85 Runoff=3.50 cfs 0.189 af

Subcatchment S203: Runoff Area=3.357 ac 0.00% Impervious Runoff Depth=3.66"
Flow Length=1,218' Tc=16.3 min CN=79 Runoff=12.25 cfs 1.024 af

Subcatchment S204: Runoff Area=0.687 ac 0.00% Impervious Runoff Depth=3.56"
Flow Length=200' Tc=7.4 min CN=78 Runoff=3.27 cfs 0.204 af

Subcatchment S205: Runoff Area=0.484 ac 0.00% Impervious Runoff Depth=3.56"
Flow Length=450' Tc=9.0 min CN=78 Runoff=2.17 cfs 0.144 af

Subcatchment S206: Runoff Area=0.561 ac 57.04% Impervious Runoff Depth=4.72"
Tc=6.0 min CN=89 Runoff=3.47 cfs 0.220 af

Subcatchment S207: Runoff Area=3.066 ac 0.00% Impervious Runoff Depth=3.56"
Flow Length=180' Tc=8.1 min CN=78 Runoff=14.20 cfs 0.910 af

Subcatchment S208: Runoff Area=11.671 ac 35.16% Impervious Runoff Depth=4.28"
Flow Length=865' Tc=11.3 min CN=85 Runoff=56.61 cfs 4.166 af

Subcatchment S300: Runoff Area=0.921 ac 5.97% Impervious Runoff Depth=3.36"
Flow Length=800' Tc=11.4 min CN=76 Runoff=3.58 cfs 0.258 af

Subcatchment S400: Runoff Area=1.058 ac 0.00% Impervious Runoff Depth=3.56"
Flow Length=210' Tc=8.1 min CN=78 Runoff=4.90 cfs 0.314 af

Reach S-1: E-W SWALE Avg. Flow Depth=0.61' Max Vel=12.20 fps Inflow=21.53 cfs 1.519 af
n=0.022 L=485.0' S=0.1299 '/' Capacity=65.06 cfs Outflow=21.38 cfs 1.519 af

Reach S-2: OVERFLOW SWALE Avg. Flow Depth=0.36' Max Vel=12.17 fps Inflow=13.53 cfs 3.709 af
n=0.022 L=120.0' S=0.1958 '/' Capacity=507.22 cfs Outflow=13.55 cfs 3.709 af

Reach S-3: ROADSIDE SWALE Avg. Flow Depth=0.29' Max Vel=6.24 fps Inflow=3.47 cfs 0.220 af
n=0.025 L=825.0' S=0.1018 '/' Capacity=50.69 cfs Outflow=3.30 cfs 0.220 af

Pond B-1: BIORETENTION AREA 1 Peak Elev=903.96' Storage=6,340 cf Inflow=21.07 cfs 1.562 af
Outflow=20.78 cfs 1.557 af

Pond B-2: BIORETENTION AREA 2 Peak Elev=903.95' Storage=5,720 cf Inflow=20.57 cfs 1.389 af
Outflow=20.00 cfs 1.385 af

Pond B-3: BIORETENTION AREA 3 Peak Elev=898.77' Storage=393 cf Inflow=3.50 cfs 0.189 af
Primary=0.01 cfs 0.015 af Secondary=3.43 cfs 0.174 af Outflow=3.43 cfs 0.189 af

Pond B-4: BIORETENTION AREA 4 Peak Elev=838.64' Storage=1,801 cf Inflow=3.30 cfs 0.220 af
Primary=0.02 cfs 0.046 af Secondary=3.17 cfs 0.157 af Outflow=3.20 cfs 0.204 af

Pond F1: FOREBAY 2 Peak Elev=904.15' Storage=10,105 cf Inflow=22.11 cfs 1.732 af
Outflow=21.07 cfs 1.562 af

Pond F2: FOREBAY 2 Peak Elev=904.14' Storage=7,887 cf Inflow=21.38 cfs 1.519 af
Outflow=20.57 cfs 1.389 af

Pond P-1: WET POND Peak Elev=897.98' Storage=103,981 cf Inflow=56.61 cfs 4.166 af
Primary=13.53 cfs 3.709 af Secondary=0.00 cfs 0.000 af Outflow=13.53 cfs 3.709 af

Pond P-2: RETENTION POND Peak Elev=867.44' Storage=5,983 cf Inflow=14.40 cfs 3.913 af
Outflow=14.25 cfs 3.836 af

Pond P-3: RENTENTION POND Peak Elev=838.93' Storage=648 cf Inflow=2.17 cfs 0.144 af
12.0" Round Culvert n=0.020 L=100.0' S=0.0100 '/' Outflow=1.90 cfs 0.139 af

Link DP1: Inflow=9.81 cfs 0.705 af
Primary=9.81 cfs 0.705 af

Link DP2: Inflow=79.13 cfs 9.244 af
Primary=79.13 cfs 9.244 af

Link DP3: Inflow=3.58 cfs 0.258 af
Primary=3.58 cfs 0.258 af

Link DP4: Inflow=4.90 cfs 0.314 af
Primary=4.90 cfs 0.314 af

Total Runoff Area = 33.715 ac Runoff Volume = 11.386 af Average Runoff Depth = 4.05"
76.38% Pervious = 25.753 ac 23.62% Impervious = 7.962 ac

Summary for Subcatchment S100:

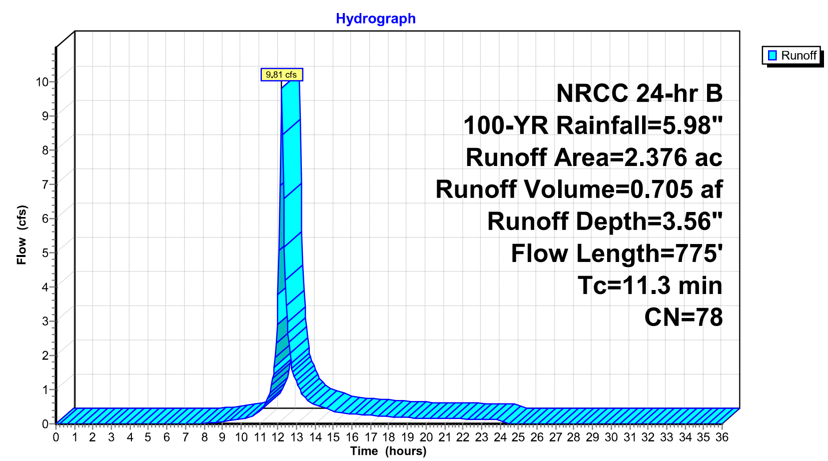
Runoff = 9.81 cfs @ 12.19 hrs, Volume= 0.705 af, Depth= 3.56"
Routed to Link DP1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 100-YR Rainfall=5.98"

Area (ac)	CN	Description
0.763	79	Woods, Fair, HSG D
1.613	78	Meadow, non-grazed, HSG D
2.376	78	Weighted Average
2.376		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	50	0.2800	0.18		**Sheet Flow, SF - WOODS** Woods: Light underbrush n= 0.400 P2= 2.68"
3.1	50	0.2800	0.27		**Sheet Flow, SF - MEADOW** Grass: Dense n= 0.240 P2= 2.68"
3.2	635	0.2272	3.34		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
0.3	40	0.2272	2.38		**Shallow Concentrated Flow, SCF - WOODS** Woodland Kv= 5.0 fps
11.3	775	Total			

Subcatchment S100:



Summary for Subcatchment S200:

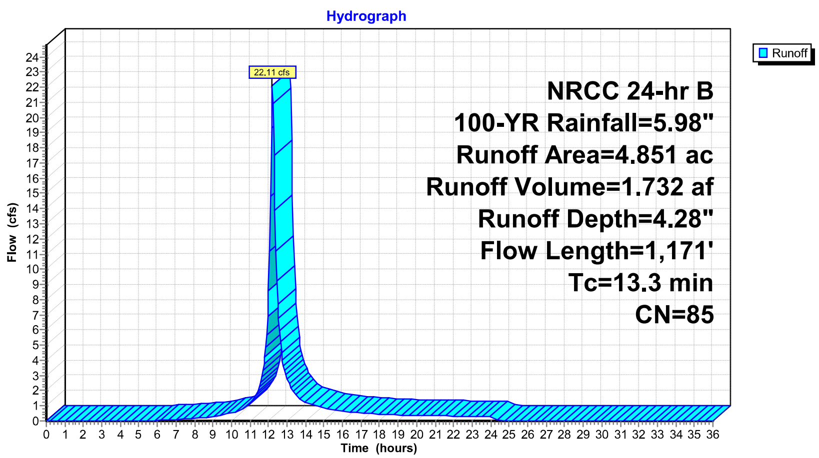
Runoff = 22.11 cfs @ 12.21 hrs, Volume= 1.732 af, Depth= 4.28"
Routed to Pond F1 : FOREBAY 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 100-YR Rainfall=5.98"

	Area (ac)	CN	Description
	0.013	79	Woods, Fair, HSG D
	3.153	78	Meadow, non-grazed, HSG D
*	1.685	98	SOLAR PANELS
	4.851	85	Weighted Average
	3.166		65.26% Pervious Area
	1.685		34.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	100	0.1500	0.24		**Sheet Flow, SF - MEADOW** Grass: Dense n= 0.240 P2= 2.68"
6.3	1,071	0.1634	2.83		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
13.3	1,171	Total			

Subcatchment S200:



Summary for Subcatchment S201:

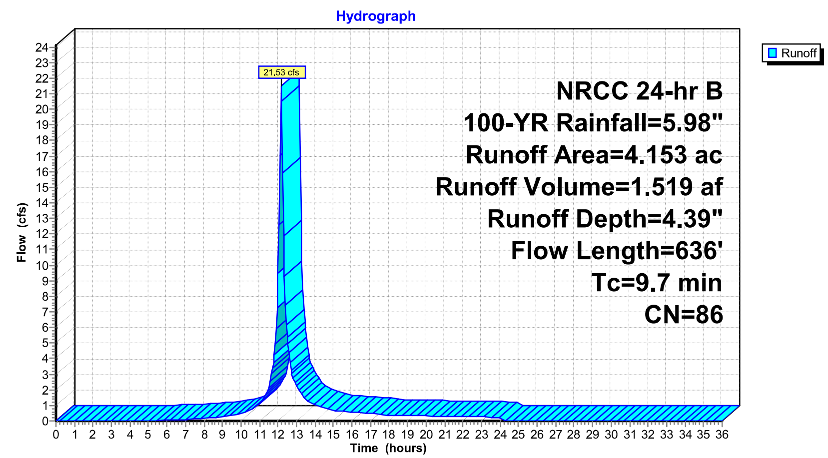
Runoff = 21.53 cfs @ 12.17 hrs, Volume= 1.519 af, Depth= 4.39"
Routed to Reach S-1 : E-W SWALE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 100-YR Rainfall=5.98"

	Area (ac)	CN	Description
	0.014	79	Woods, Fair, HSG D
	2.530	78	Meadow, non-grazed, HSG D
*	1.609	98	SOLAR PANELS
	4.153	86	Weighted Average
	2.544		61.26% Pervious Area
	1.609		38.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	100	0.1600	0.25		**Sheet Flow, SF - MEADOW** Grass: Dense n= 0.240 P2= 2.68"
2.9	536	0.1900	3.05		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
9.7	636	Total			

Subcatchment S201:



Summary for Subcatchment S202:

[49] Hint: Tc<2dt may require smaller dt

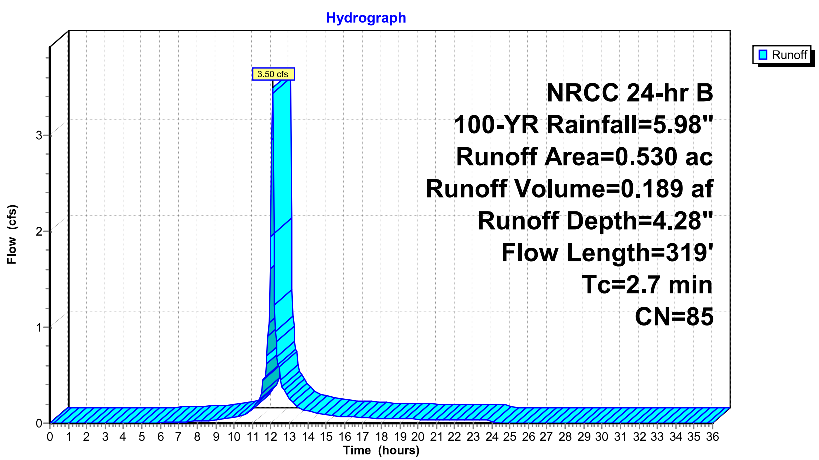
Runoff = 3.50 cfs @ 12.09 hrs, Volume= 0.189 af, Depth= 4.28"
Routed to Pond B-3 : BIORETENTION AREA 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 100-YR Rainfall=5.98"

Area (ac)	CN	Description
0.340	78	Meadow, non-grazed, HSG D
0.190	98	Paved parking, HSG D
0.530	85	Weighted Average
0.340		64.15% Pervious Area
0.190		35.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	100	0.1500	0.84		**Sheet Flow, SF - GRAVEL** Fallow n= 0.050 P2= 2.68"
0.7	219	0.1100	4.97		**Shallow Concentrated Flow, SCF - MEADOW** Grassed Waterway Kv= 15.0 fps
2.7	319	Total			

Subcatchment S202:



Summary for Subcatchment S203:

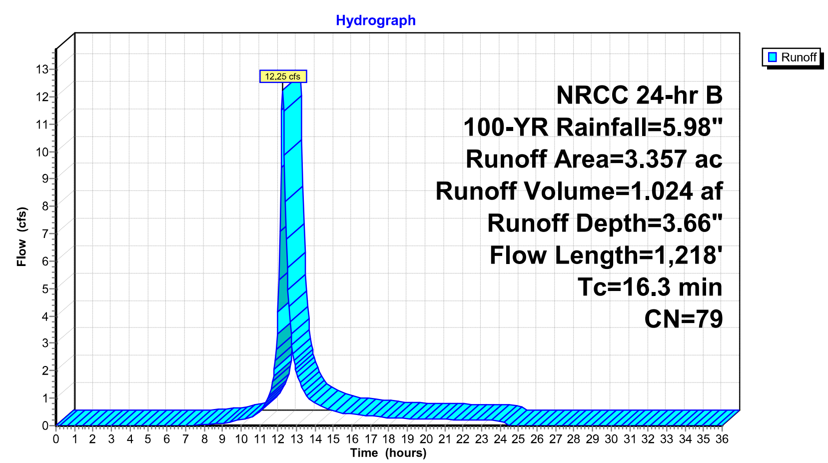
Runoff = 12.25 cfs @ 12.25 hrs, Volume= 1.024 af, Depth= 3.66"
Routed to Link DP2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 100-YR Rainfall=5.98"

Area (ac)	CN	Description
2.546	78	Meadow, non-grazed, HSG D
0.701	79	Woods, Fair, HSG D
0.110	96	Gravel surface, HSG D
3.357	79	Weighted Average
3.357		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	100	0.1900	0.17		**Sheet Flow, SF - MEADOW** Woods: Light underbrush n= 0.400 P2= 2.68"
6.8	1,118	0.1512	2.72		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
16.3	1,218	Total			

Subcatchment S203:



Summary for Subcatchment S204:

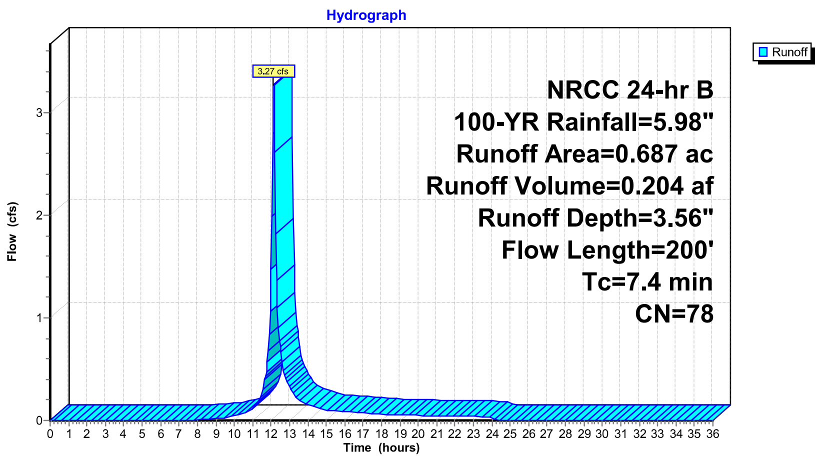
Runoff = 3.27 cfs @ 12.15 hrs, Volume= 0.204 af, Depth= 3.56"
Routed to Pond P-2 : RETENTION POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 100-YR Rainfall=5.98"

Area (ac)	CN	Description
0.687	78	Meadow, non-grazed, HSG D
0.687		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	100	0.1600	0.25		**Sheet Flow, SF - MEADOW** Grass: Dense n= 0.240 P2= 2.68"
0.6	100	0.1500	2.71		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
7.4	200	Total			

Subcatchment S204:



Summary for Subcatchment S205:

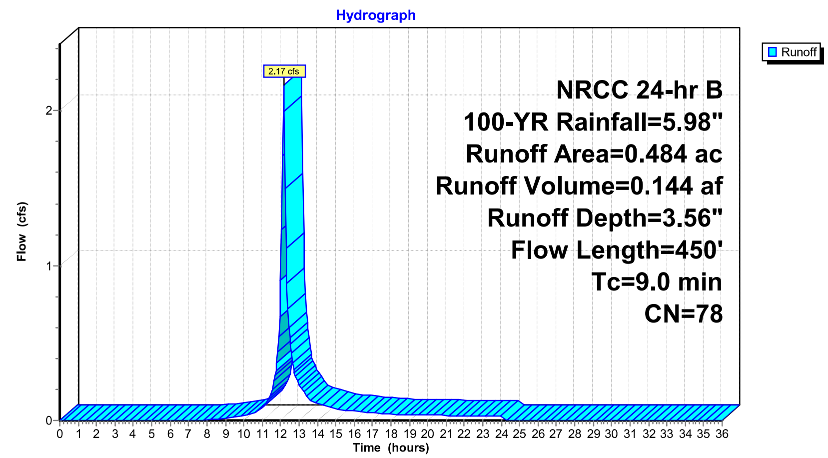
Runoff = 2.17 cfs @ 12.16 hrs, Volume= 0.144 af, Depth= 3.56"
Routed to Pond P-3 : RENTENTION POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 100-YR Rainfall=5.98"

Area (ac)	CN	Description
0.484	78	Meadow, non-grazed, HSG D
0.484		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	100	0.1700	0.25		**Sheet Flow, SF - WOODS** Grass: Dense n= 0.240 P2= 2.68"
2.4	350	0.1200	2.42		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
9.0	450	Total			

Subcatchment S205:



Summary for Subcatchment S206:

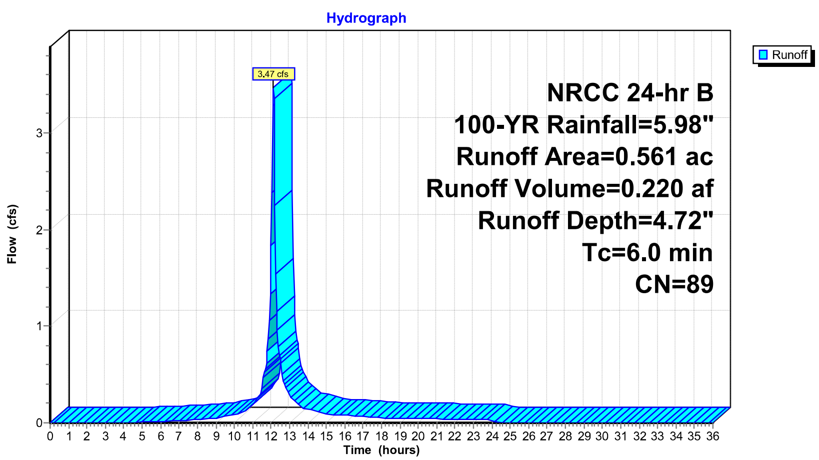
Runoff = 3.47 cfs @ 12.13 hrs, Volume= 0.220 af, Depth= 4.72"
Routed to Reach S-3 : ROADSIDE SWALE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 100-YR Rainfall=5.98"

Area (ac)	CN	Description
0.320	98	Paved parking, HSG D
0.241	78	Meadow, non-grazed, HSG D
0.561	89	Weighted Average
0.241		42.96% Pervious Area
0.320		57.04% Impervious Area

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

Subcatchment S206:



Summary for Subcatchment S207:

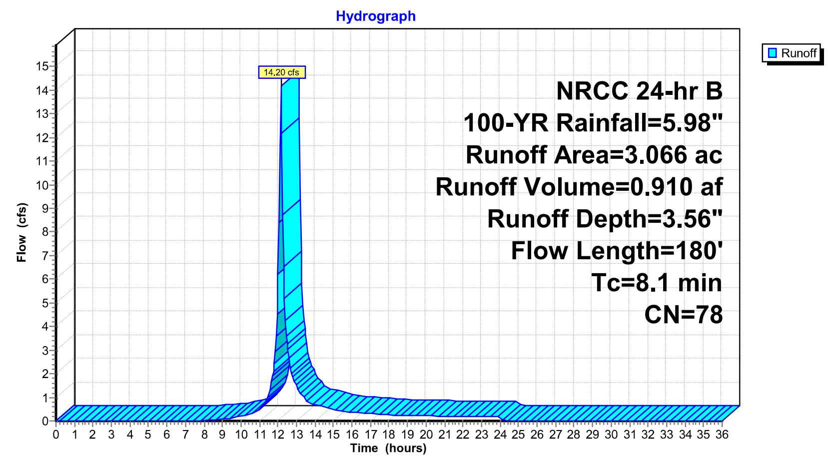
Runoff = 14.20 cfs @ 12.15 hrs, Volume= 0.910 af, Depth= 3.56"
Routed to Link DP2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 100-YR Rainfall=5.98"

Area (ac)	CN	Description
1.099	79	Woods, Fair, HSG D
1.967	78	Meadow, non-grazed, HSG D
3.066	78	Weighted Average
3.066		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	30	0.5000	0.30		**Sheet Flow, SF** Grass: Dense n= 0.240 P2= 2.68"
6.0	70	0.3000	0.20		**Sheet Flow, SF WOODS** Woods: Light underbrush n= 0.400 P2= 2.68"
0.5	80	0.3000	2.74		**Shallow Concentrated Flow, SCF** Woodland Kv= 5.0 fps
8.1	180	Total			

Subcatchment S207:



Summary for Subcatchment S208:

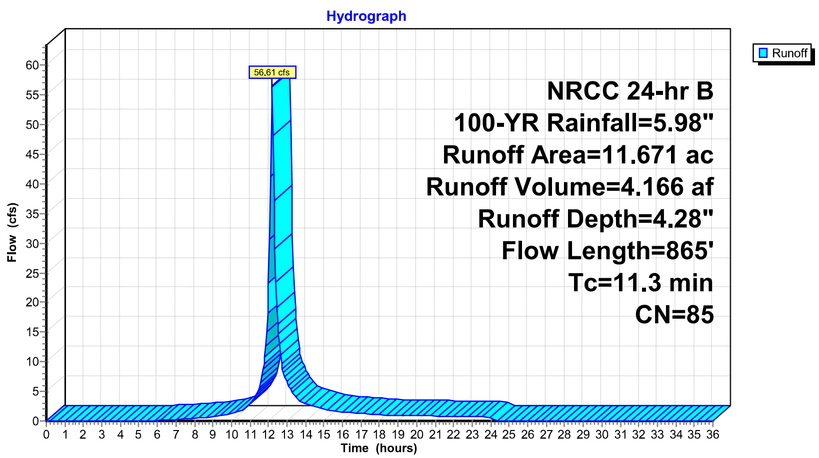
Runoff = 56.61 cfs @ 12.19 hrs, Volume= 4.166 af, Depth= 4.28"
Routed to Pond P-1 : WET POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 100-YR Rainfall=5.98"

	Area (ac)	CN	Description
	0.087	79	Woods, Fair, HSG D
	7.481	78	Meadow, non-grazed, HSG D
*	4.103	98	SOLAR PANELS
	11.671	85	Weighted Average
	7.568		64.84% Pervious Area
	4.103		35.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	100	0.1300	0.23		**Sheet Flow, SF - MEADOW** Grass: Dense n= 0.240 P2= 2.68"
3.9	765	0.2235	3.31		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
11.3	865	Total			

Subcatchment S208:



Summary for Subcatchment S300:

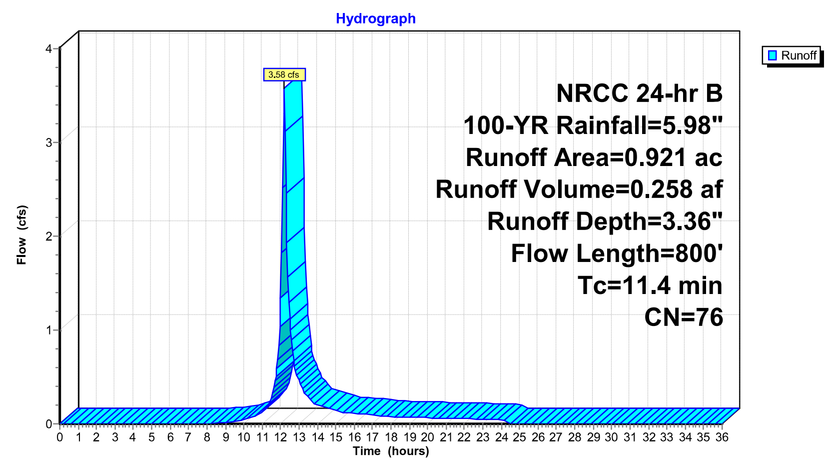
Runoff = 3.58 cfs @ 12.19 hrs, Volume= 0.258 af, Depth= 3.36"
Routed to Link DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 100-YR Rainfall=5.98"

Area (ac)	CN	Description
0.055	98	Paved parking, HSG C
0.736	71	Meadow, non-grazed, HSG C
0.130	96	Gravel surface, HSG C
0.921	76	Weighted Average
0.866		94.03% Pervious Area
0.055		5.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	100	0.1400	0.23		**Sheet Flow, SF - MEADOW** Grass: Dense n= 0.240 P2= 2.68"
0.2	100	0.1200	7.03		**Shallow Concentrated Flow, SCF - PAVED** Paved Kv= 20.3 fps
4.0	600	0.1300	2.52		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
11.4	800	Total			

Subcatchment S300:



Summary for Subcatchment S400:

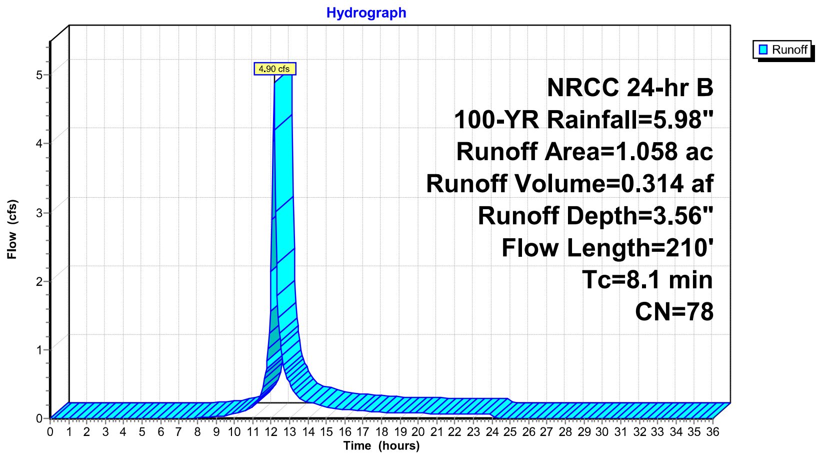
Runoff = 4.90 cfs @ 12.15 hrs, Volume= 0.314 af, Depth= 3.56"
Routed to Link DP4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B 100-YR Rainfall=5.98"

Area (ac)	CN	Description
1.058	78	Meadow, non-grazed, HSG D
1.058		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.1200	0.22		**Sheet Flow, SF** Grass: Dense n= 0.240 P2= 2.68"
0.5	110	0.2272	3.34		**Shallow Concentrated Flow, SCF** Short Grass Pasture Kv= 7.0 fps
8.1	210	Total			

Subcatchment S400:



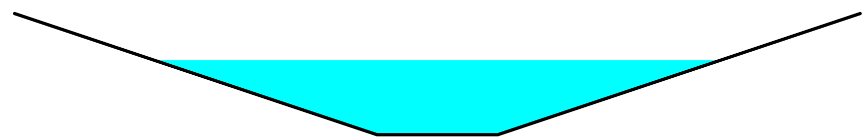
Summary for Reach S-1: E-W SWALE

Inflow Area = 4.153 ac, 38.74% Impervious, Inflow Depth = 4.39" for 100-YR event
Inflow = 21.53 cfs @ 12.17 hrs, Volume= 1.519 af
Outflow = 21.38 cfs @ 12.18 hrs, Volume= 1.519 af, Atten= 1%, Lag= 0.7 min
Routed to Pond F2 : FOREBAY 2

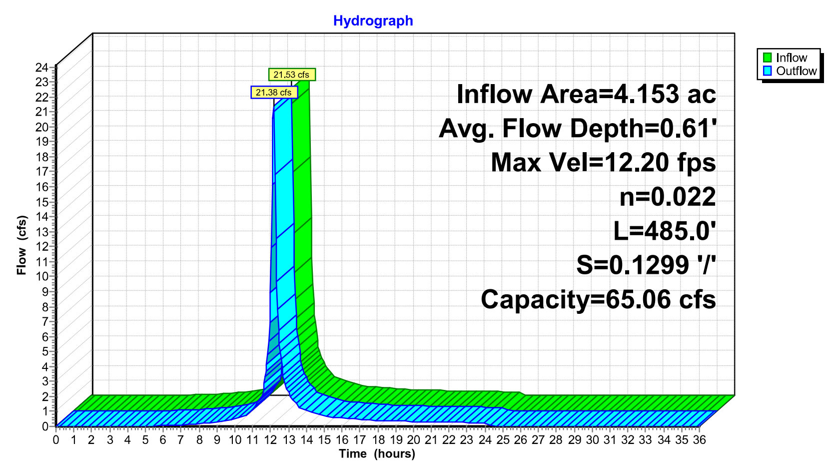
Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.20 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 4.05 fps, Avg. Travel Time= 2.0 min

Peak Storage= 846 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.61' , Surface Width= 4.69'
Bank-Full Depth= 1.00' Flow Area= 4.0 sf, Capacity= 65.06 cfs

1.00' x 1.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 3.0 '/' Top Width= 7.00'
Length= 485.0' Slope= 0.1299 '/'
Inlet Invert= 968.00', Outlet Invert= 905.00'



Reach S-1: E-W SWALE



Summary for Reach S-2: OVERFLOW SWALE

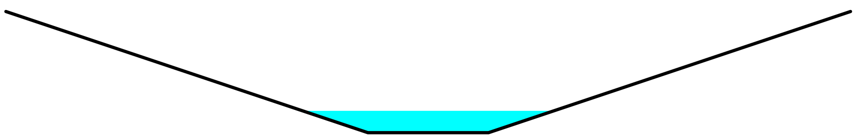
[90] Warning: Qout>Qin may require smaller dt or Finer Routing
[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=1)

Inflow Area = 11.671 ac, 35.16% Impervious, Inflow Depth > 3.81" for 100-YR event
Inflow = 13.53 cfs @ 12.58 hrs, Volume= 3.709 af
Outflow = 13.55 cfs @ 12.56 hrs, Volume= 3.709 af, Atten= 0%, Lag= 0.0 min
Routed to Pond P-2 : RETENTION POND

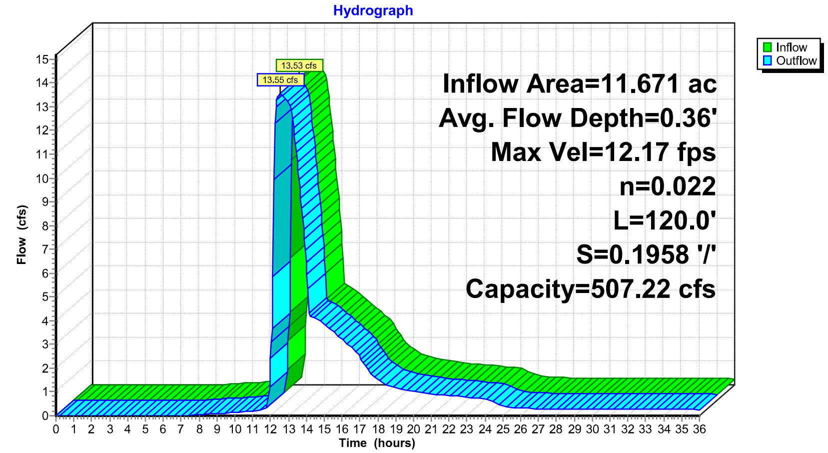
Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.17 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 4.72 fps, Avg. Travel Time= 0.4 min

Peak Storage= 134 cf @ 12.56 hrs
Average Depth at Peak Storage= 0.36' , Surface Width= 4.17'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 507.22 cfs

2.00' x 2.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 3.0 '/' Top Width= 14.00'
Length= 120.0' Slope= 0.1958 '/'
Inlet Invert= 893.50', Outlet Invert= 870.00'



Reach S-2: OVERFLOW SWALE



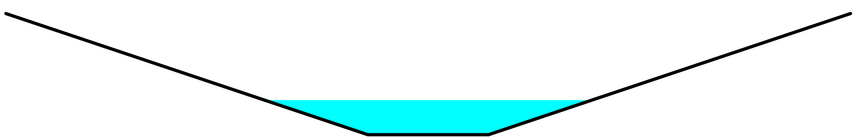
Summary for Reach S-3: ROADSIDE SWALE

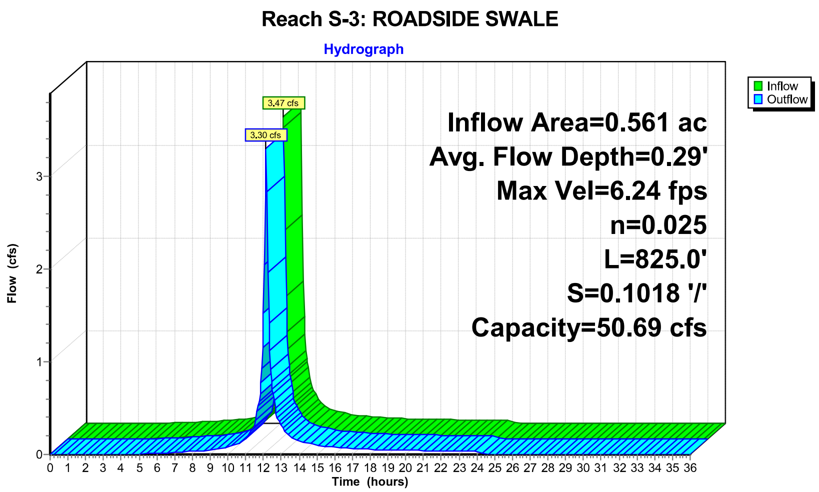
Inflow Area = 0.561 ac, 57.04% Impervious, Inflow Depth = 4.72" for 100-YR event
Inflow = 3.47 cfs @ 12.13 hrs, Volume= 0.220 af
Outflow = 3.30 cfs @ 12.15 hrs, Volume= 0.220 af, Atten= 5%, Lag= 1.4 min
Routed to Pond B-4 : BIORETENTION AREA 4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.24 fps, Min. Travel Time= 2.2 min
Avg. Velocity = 1.80 fps, Avg. Travel Time= 7.7 min

Peak Storage= 436 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.29' , Surface Width= 2.71'
Bank-Full Depth= 1.00' Flow Area= 4.0 sf, Capacity= 50.69 cfs

1.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 3.0 '/' Top Width= 7.00'
Length= 825.0' Slope= 0.1018 '/'
Inlet Invert= 924.00', Outlet Invert= 840.00'





Summary for Pond B-1: BIORETENTION AREA 1

Inflow Area = 4.851 ac, 34.74% Impervious, Inflow Depth = 3.86" for 100-YR event
Inflow = 21.07 cfs @ 12.23 hrs, Volume= 1.562 af
Outflow = 20.78 cfs @ 12.26 hrs, Volume= 1.557 af, Atten= 1%, Lag= 1.6 min
Primary = 20.78 cfs @ 12.26 hrs, Volume= 1.557 af
Routed to Link DP2 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 903.96' @ 12.26 hrs Surf.Area= 7,201 sf Storage= 6,340 cf

Plug-Flow detention time= 56.3 min calculated for 1.557 af (100% of inflow)
Center-of-Mass det. time= 54.3 min (889.5 - 835.2)

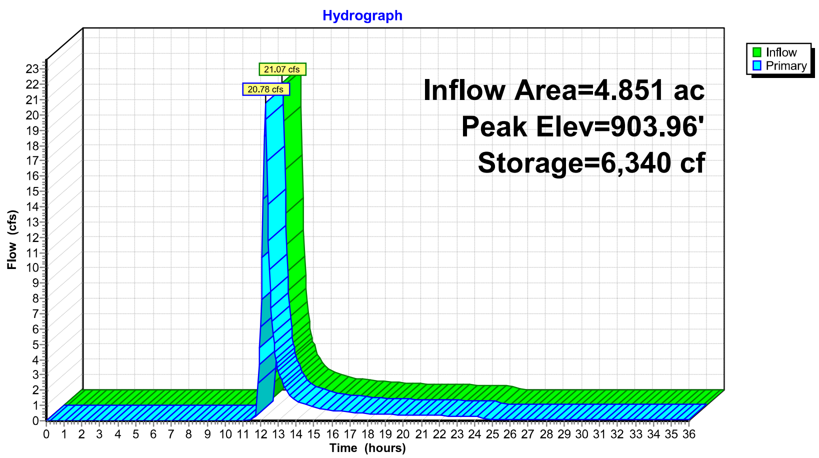
Volume	Invert	Avail.Storage	Storage Description
#1	903.00'	14,542 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
903.00	5,991	427.0	0	0	5,991
905.00	8,631	465.0	14,542	14,542	8,832

Device	Routing	Invert	Outlet Devices
#1	Primary	900.50'	**8.0" Round Culvert** L= 50.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 900.50' / 899.00' S= 0.0300 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.35 sf
#2	Primary	903.50'	**20.0' long + 15.0 '/' SideZ x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	903.00'	**0.500 in/hr Exfiltration over Surface area**

Primary OutFlow Max=20.56 cfs @ 12.26 hrs HW=903.96' TW=0.00' (Dynamic Tailwater)
—**1=Culvert** (Passes 0.08 cfs of 2.07 cfs potential flow)
　—**3=Exfiltration** (Exfiltration Controls 0.08 cfs)
—**2=Broad-Crested Rectangular Weir** (Weir Controls 20.48 cfs @ 1.66 fps)

Pond B-1: BIORETENTION AREA 1



Summary for Pond B-2: BIORETENTION AREA 2

Inflow Area = 4.153 ac, 38.74% Impervious, Inflow Depth = 4.01" for 100-YR event
Inflow = 20.57 cfs @ 12.20 hrs, Volume= 1.389 af
Outflow = 20.00 cfs @ 12.22 hrs, Volume= 1.385 af, Atten= 3%, Lag= 1.4 min
Primary = 20.00 cfs @ 12.22 hrs, Volume= 1.385 af
Routed to Link DP2 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 903.95' @ 12.22 hrs Surf.Area= 6,597 sf Storage= 5,720 cf

Plug-Flow detention time= 56.8 min calculated for 1.383 af (100% of inflow)
Center-of-Mass det. time= 55.8 min (884.1 - 828.2)

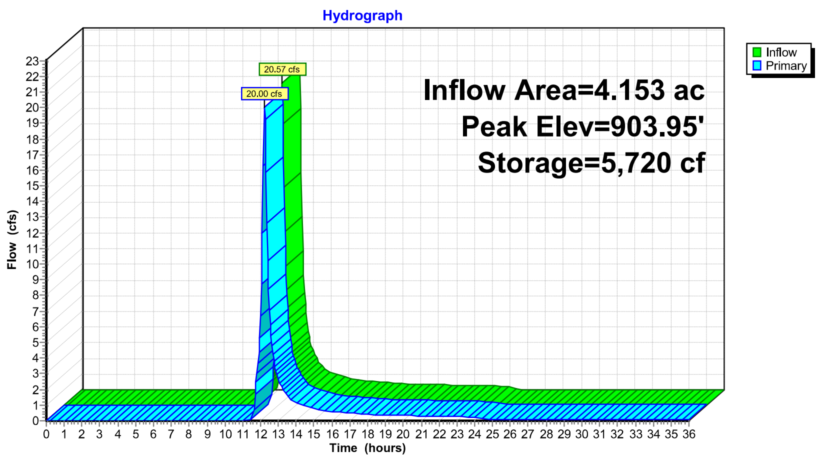
Volume	Invert	Avail.Storage	Storage Description
#1	903.00'	13,358 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
903.00	5,420	421.0	0	0	5,420
905.00	8,023	459.0	13,358	13,358	8,223

Device	Routing	Invert	Outlet Devices
#1	Primary	900.50'	**8.0" Round Culvert** L= 50.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 900.50' / 899.00' S= 0.0300 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.35 sf
#2	Primary	903.50'	**20.0' long + 15.0 '/' SideZ x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	903.00'	**0.500 in/hr Exfiltration over Surface area**

Primary OutFlow Max=19.54 cfs @ 12.22 hrs HW=903.95' TW=0.00' (Dynamic Tailwater)
1=Culvert (Passes 0.08 cfs of 2.06 cfs potential flow)
3=Exfiltration (Exfiltration Controls 0.08 cfs)
2=Broad-Crested Rectangular Weir (Weir Controls 19.47 cfs @ 1.63 fps)

Pond B-2: BIORETENTION AREA 2



Summary for Pond B-3: BIORETENTION AREA 3

Inflow Area = 0.530 ac, 35.85% Impervious, Inflow Depth = 4.28" for 100-YR event
Inflow = 3.50 cfs @ 12.09 hrs, Volume= 0.189 af
Outflow = 3.43 cfs @ 12.10 hrs, Volume= 0.189 af, Atten= 2%, Lag= 0.5 min
Primary = 0.01 cfs @ 12.10 hrs, Volume= 0.015 af
Routed to Link DP2 :
Secondary = 3.43 cfs @ 12.10 hrs, Volume= 0.174 af
Routed to Link DP2 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 898.77' @ 12.10 hrs Surf.Area= 685 sf Storage= 393 cf

Plug-Flow detention time= 36.2 min calculated for 0.189 af (100% of inflow)
Center-of-Mass det. time= 36.0 min (834.0 - 797.9)

Volume	Invert	Avail.Storage	Storage Description
#1	898.00'	1,580 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

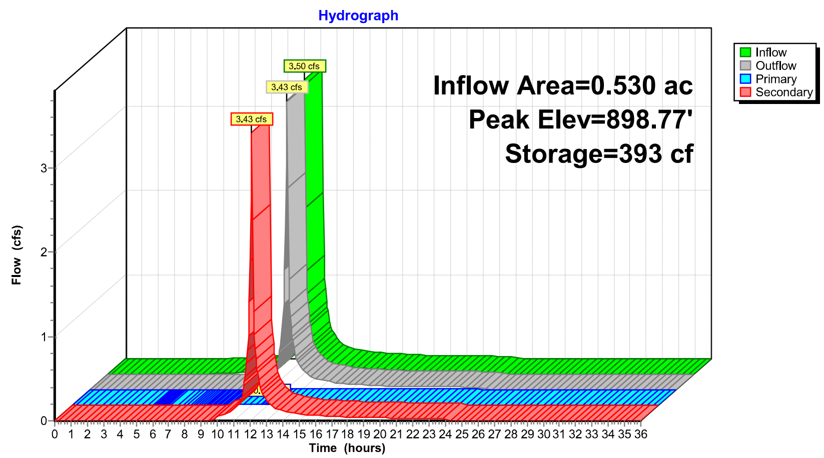
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
898.00	340	0	0
900.00	1,240	1,580	1,580

Device	Routing	Invert	Outlet Devices
#1	Device 3	898.00'	**0.500 in/hr Exfiltration over Surface area**
#2	Secondary	898.50'	**10.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#3	Primary	895.50'	**8.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 895.50' / 895.00' S= 0.0083 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.01 cfs @ 12.10 hrs HW=898.76' TW=0.00' (Dynamic Tailwater)
└─**3=Culvert** (Passes 0.01 cfs of 1.59 cfs potential flow)
  └─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Secondary OutFlow Max=3.36 cfs @ 12.10 hrs HW=898.76' TW=0.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 3.36 cfs @ 1.28 fps)

Pond B-3: BIORETENTION AREA 3



Summary for Pond B-4: BIORETENTION AREA 4

Inflow Area = 0.561 ac, 57.04% Impervious, Inflow Depth = 4.72" for 100-YR event
Inflow = 3.30 cfs @ 12.15 hrs, Volume= 0.220 af
Outflow = 3.20 cfs @ 12.17 hrs, Volume= 0.204 af, Atten= 3%, Lag= 1.0 min
Primary = 0.02 cfs @ 12.17 hrs, Volume= 0.046 af
Routed to Link DP2 :
Secondary = 3.17 cfs @ 12.17 hrs, Volume= 0.157 af
Routed to Link DP2 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 838.64' @ 12.17 hrs Surf.Area= 1,977 sf Storage= 1,801 cf

Plug-Flow detention time= 162.3 min calculated for 0.203 af (92% of inflow)
Center-of-Mass det. time= 122.3 min (915.8 - 793.5)

Volume	Invert	Avail.Storage	Storage Description
#1	837.00'	5,303 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

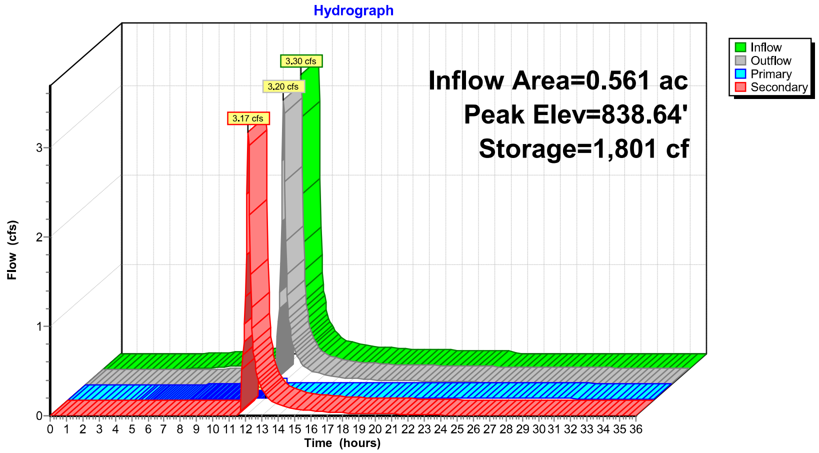
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
837.00	15	0	0
838.00	1,417	716	716
840.00	3,170	4,587	5,303

Device	Routing	Invert	Outlet Devices
#1	Device 3	837.00'	**0.500 in/hr Exfiltration over Surface area**
#2	Secondary	838.50'	**25.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#3	Primary	835.50'	**8.0" Round Culvert** L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 835.50' / 834.00' S= 0.0600 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.02 cfs @ 12.17 hrs HW=838.64' TW=0.00' (Dynamic Tailwater)
└─**3=Culvert** (Passes 0.02 cfs of 2.22 cfs potential flow)
  └─**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Secondary OutFlow Max=3.09 cfs @ 12.17 hrs HW=838.64' TW=0.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Weir Controls 3.09 cfs @ 0.90 fps)

Pond B-4: BIORETENTION AREA 4



Summary for Pond F1: FOREBAY 2

Inflow Area = 4.851 ac, 34.74% Impervious, Inflow Depth = 4.28" for 100-YR event
Inflow = 22.11 cfs @ 12.21 hrs, Volume= 1.732 af
Outflow = 21.07 cfs @ 12.23 hrs, Volume= 1.562 af, Atten= 5%, Lag= 1.3 min
Primary = 21.07 cfs @ 12.23 hrs, Volume= 1.562 af
Routed to Pond B-1 : BIORETENTION AREA 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 904.15' @ 12.26 hrs Surf.Area= 4,512 sf Storage= 10,105 cf

Plug-Flow detention time= 76.8 min calculated for 1.562 af (90% of inflow)
Center-of-Mass det. time= 27.4 min (835.2 - 807.8)

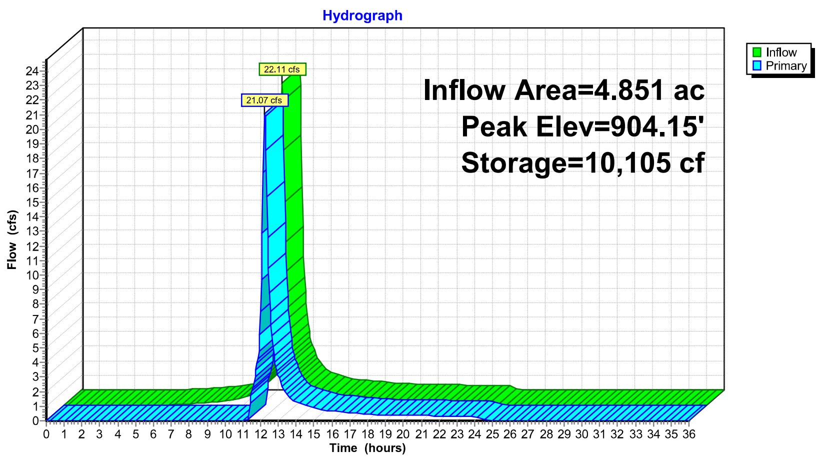
Volume	Invert	Avail.Storage	Storage Description
#1	899.00'	14,382 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
899.00	218	86.0	0	0	218
901.00	1,277	230.0	1,348	1,348	3,853
903.00	3,198	372.0	4,331	5,679	10,682
905.00	5,618	426.0	8,703	14,382	14,203

Device	Routing	Invert	Outlet Devices
#1	Primary	903.50'	**20.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=19.53 cfs @ 12.23 hrs HW=904.14' TW=903.95' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 19.53 cfs @ 1.52 fps)

Pond F1: FOREBAY 2



Summary for Pond F2: FOREBAY 2

Inflow Area = 4.153 ac, 38.74% Impervious, Inflow Depth = 4.39" for 100-YR event
Inflow = 21.38 cfs @ 12.18 hrs, Volume= 1.519 af
Outflow = 20.57 cfs @ 12.20 hrs, Volume= 1.389 af, Atten= 4%, Lag= 1.0 min
Primary = 20.57 cfs @ 12.20 hrs, Volume= 1.389 af
Routed to Pond B-2 : BIORETENTION AREA 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 904.14' @ 12.21 hrs Surf.Area= 3,856 sf Storage= 7,887 cf

Plug-Flow detention time= 69.3 min calculated for 1.387 af (91% of inflow)
Center-of-Mass det. time= 25.4 min (828.2 - 802.8)

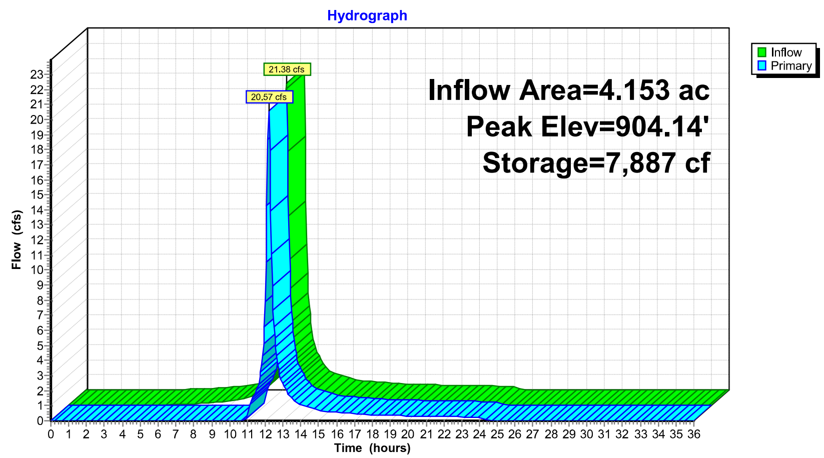
Volume	Invert	Avail.Storage	Storage Description
#1	899.00'	11,697 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
899.00	98	53.0	0	0	98
901.00	930	189.0	887	887	2,728
903.00	2,575	324.0	3,368	4,255	8,263
905.00	5,000	439.0	7,442	11,697	15,287

Device	Routing	Invert	Outlet Devices
#1	Primary	903.50'	**20.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=18.90 cfs @ 12.20 hrs HW=904.13' TW=903.95' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 18.90 cfs @ 1.50 fps)

Pond F2: FOREBAY 2



Summary for Pond P-1: WET POND

Inflow Area = 11.671 ac, 35.16% Impervious, Inflow Depth = 4.28" for 100-YR event
Inflow = 56.61 cfs @ 12.19 hrs, Volume= 4.166 af
Outflow = 13.53 cfs @ 12.58 hrs, Volume= 3.709 af, Atten= 76%, Lag= 23.4 min
Primary = 13.53 cfs @ 12.58 hrs, Volume= 3.709 af
Routed to Reach S-2 : OVERFLOW SWALE
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach S-2 : OVERFLOW SWALE

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Starting Elev= 894.00' Surf.Area= 12,390 sf Storage= 18,141 cf
Peak Elev= 897.98' @ 12.58 hrs Surf.Area= 28,793 sf Storage= 103,981 cf (85,841 cf above start)
Flood Elev= 900.00' Surf.Area= 35,579 sf Storage= 168,762 cf (150,621 cf above start)

Plug-Flow detention time= 266.7 min calculated for 3.293 af (79% of inflow)
Center-of-Mass det. time= 157.3 min (963.1 - 805.9)

Volume	Invert	Avail.Storage	Storage Description
#1	891.00'	168,762 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

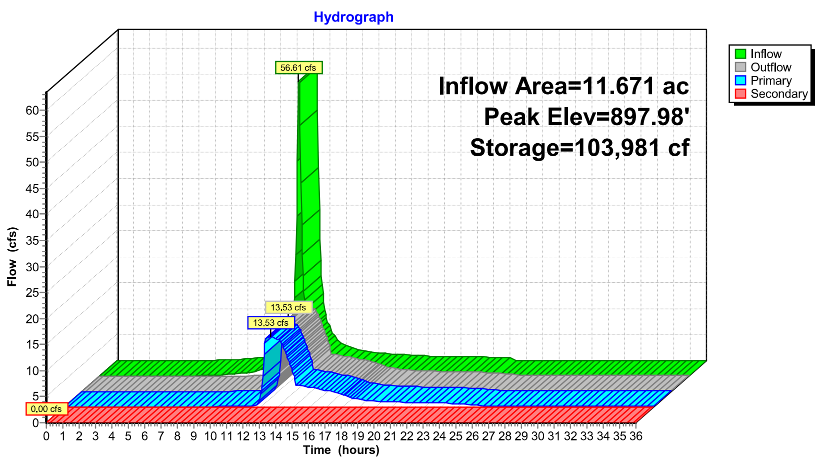
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
891.00	2,741	349.0	0	0	2,741
892.00	3,525	397.0	3,125	3,125	5,615
894.00	12,390	626.0	15,016	18,141	24,285
896.00	22,863	877.0	34,722	52,863	54,344
898.00	28,845	1,061.0	51,592	104,455	82,786
900.00	35,579	1,100.0	64,306	168,762	89,833

Device	Routing	Invert	Outlet Devices
#1	Secondary	898.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Device 5	894.00'	**3.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 5	895.80'	**12.0" Horiz. Stand Pipe** C= 0.600 Limited to weir flow at low heads
#4	Device 5	896.85'	**1.0" x 4.0" Horiz. Orifice/Grate X 13.00 columns** X 5 rows C= 0.600 in 30.0" x 30.0" Grate (29% open area)
#5	Primary	893.90'	**18.0" Round Culvert** L= 70.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 893.90' / 892.00' S= 0.0271 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.77 sf

Primary OutFlow Max=13.53 cfs @ 12.58 hrs HW=897.98' TW=893.86' (Dynamic Tailwater)
└─**5=Culvert** (Outlet Controls 13.53 cfs @ 7.65 fps)
  ├─**2=Low Flow Orifice** (Passes < 0.46 cfs potential flow)
  ├─**3=Stand Pipe** (Passes < 5.59 cfs potential flow)
  └─**4=Orifice/Grate** (Passes < 9.25 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=894.00' TW=893.50' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P-1: WET POND



Summary for Pond P-2: RETENTION POND

Inflow Area = 12.358 ac, 33.20% Impervious, Inflow Depth > 3.80" for 100-YR event
Inflow = 14.40 cfs @ 12.34 hrs, Volume= 3.913 af
Outflow = 14.25 cfs @ 12.44 hrs, Volume= 3.836 af, Atten= 1%, Lag= 6.5 min
Primary = 14.25 cfs @ 12.44 hrs, Volume= 3.836 af
Routed to Link DP2 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 867.44' @ 12.44 hrs Surf.Area= 2,416 sf Storage= 5,983 cf

Plug-Flow detention time= 31.8 min calculated for 3.836 af (98% of inflow)
Center-of-Mass det. time= 9.8 min (965.7 - 955.9)

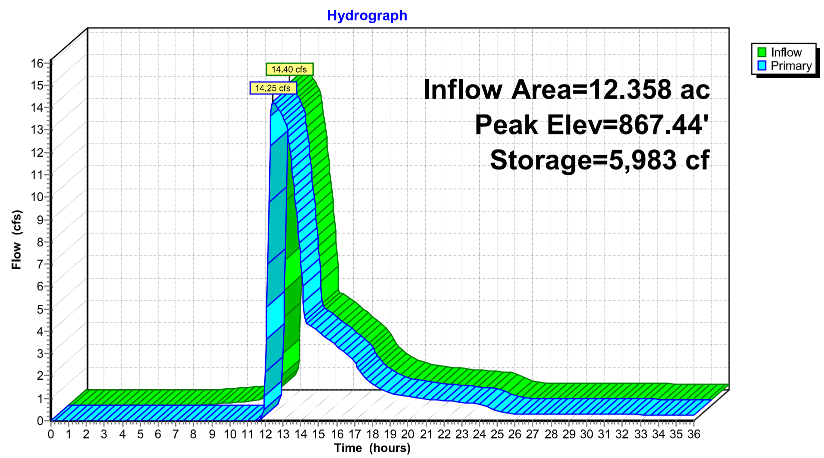
Volume	Invert	Avail.Storage	Storage Description
#1	862.00'	14,911 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
862.00	151	73.0	0	0	151
864.00	735	122.0	813	813	936
866.00	1,610	166.0	2,289	3,101	1,985
868.00	2,772	216.0	4,330	7,431	3,552
870.00	4,800	270.0	7,480	14,911	5,696

Device	Routing	Invert	Outlet Devices
#1	Primary	866.00'	**18.0" Round Culvert** L= 50.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 866.00' / 865.00' S= 0.0200 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.77 sf
#2	Primary	866.00'	**18.0" Round Culvert** L= 50.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 866.00' / 865.00' S= 0.0200 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.77 sf

Primary OutFlow Max=14.25 cfs @ 12.44 hrs HW=867.44' TW=0.00' (Dynamic Tailwater)
├─**1=Culvert** (Barrel Controls 7.13 cfs @ 5.23 fps)
└─**2=Culvert** (Barrel Controls 7.13 cfs @ 5.23 fps)

Pond P-2: RETENTION POND



Summary for Pond P-3: RENTENTION POND

Inflow Area = 0.484 ac, 0.00% Impervious, Inflow Depth = 3.56" for 100-YR event
Inflow = 2.17 cfs @ 12.16 hrs, Volume= 0.144 af
Outflow = 1.90 cfs @ 12.21 hrs, Volume= 0.139 af, Atten= 12%, Lag= 3.0 min
Primary = 1.90 cfs @ 12.21 hrs, Volume= 0.139 af
Routed to Link DP2 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 838.93' @ 12.21 hrs Surf.Area= 690 sf Storage= 648 cf

Plug-Flow detention time= 33.0 min calculated for 0.139 af (97% of inflow)
Center-of-Mass det. time= 16.1 min (837.8 - 821.7)

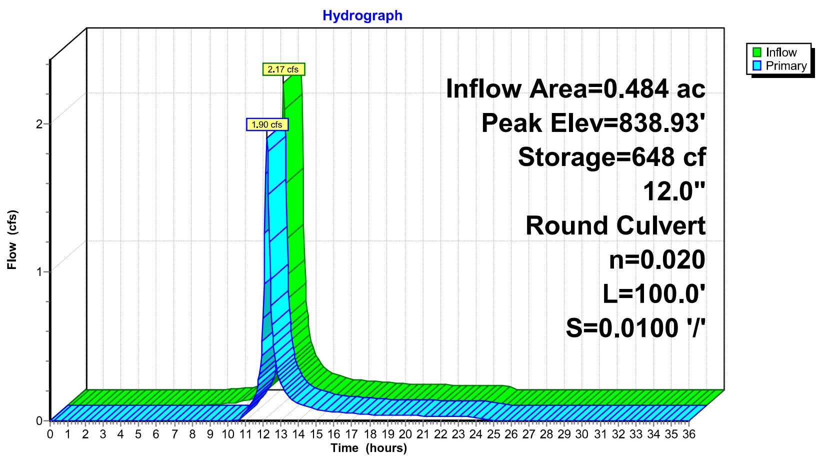
Volume	Invert	Avail.Storage	Storage Description
#1	837.00'	1,625 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
837.00	60	0	0
838.00	310	185	185
840.00	1,130	1,440	1,625

Device	Routing	Invert	Outlet Devices
#1	Primary	838.00'	**12.0" Round Culvert** L= 100.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 838.00' / 837.00' S= 0.0100 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.87 cfs @ 12.21 hrs HW=838.92' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.87 cfs @ 3.25 fps)

Pond P-3: RENTENTION POND

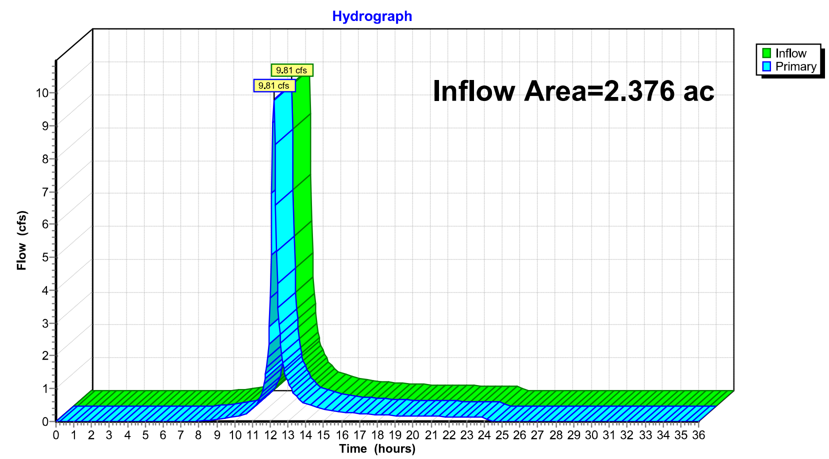


Summary for Link DP1:

Inflow Area =	2.376 ac,	0.00% Impervious, Inflow Depth = 3.56"	for 100-YR event
Inflow =	9.81 cfs @	12.19 hrs, Volume=	0.705 af
Primary =	9.81 cfs @	12.19 hrs, Volume=	0.705 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP1:

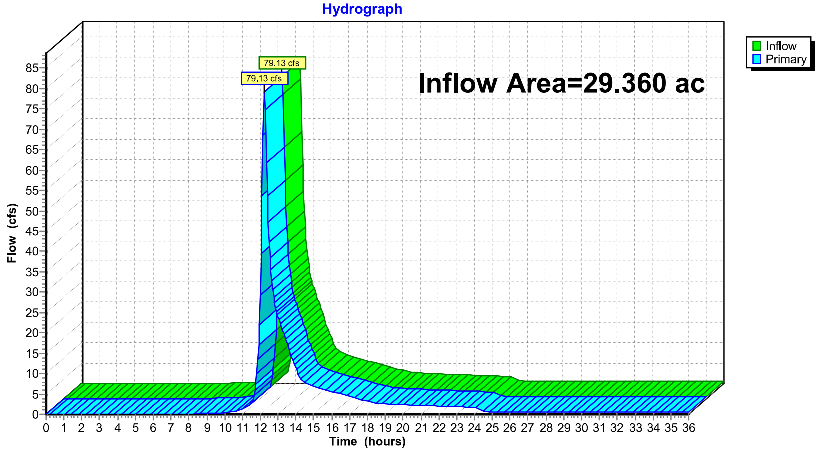


Summary for Link DP2:

Inflow Area = 29.360 ac, 26.93% Impervious, Inflow Depth > 3.78" for 100-YR event
Inflow = 79.13 cfs @ 12.23 hrs, Volume= 9.244 af
Primary = 79.13 cfs @ 12.23 hrs, Volume= 9.244 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP2:

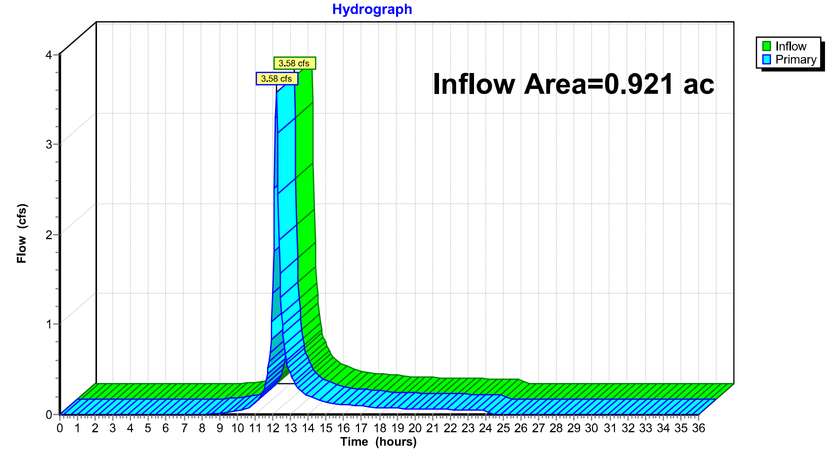


Summary for Link DP3:

Inflow Area = 0.921 ac, 5.97% Impervious, Inflow Depth = 3.36" for 100-YR event
Inflow = 3.58 cfs @ 12.19 hrs, Volume= 0.258 af
Primary = 3.58 cfs @ 12.19 hrs, Volume= 0.258 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP3:

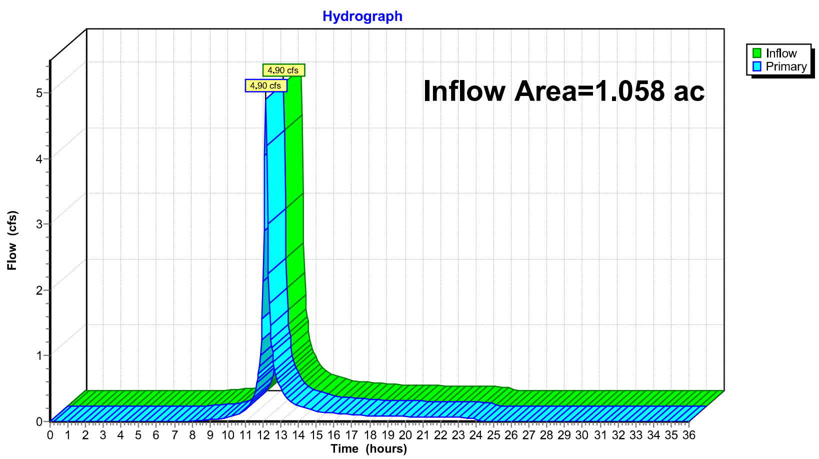


Summary for Link DP4:

Inflow Area = 1.058 ac, 0.00% Impervious, Inflow Depth = 3.56" for 100-YR event
Inflow = 4.90 cfs @ 12.15 hrs, Volume= 0.314 af
Primary = 4.90 cfs @ 12.15 hrs, Volume= 0.314 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP4:



Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment S100: Runoff Area=2.376 ac 0.00% Impervious Runoff Depth=0.09"
Flow Length=775' Tc=11.3 min CN=78 Runoff=0.08 cfs 0.017 af

Subcatchment S200: Runoff Area=4.851 ac 34.74% Impervious Runoff Depth=0.22"
Flow Length=1,171' Tc=13.3 min CN=85 Runoff=0.98 cfs 0.090 af

Subcatchment S201: Runoff Area=4.153 ac 38.74% Impervious Runoff Depth=0.25"
Flow Length=636' Tc=9.7 min CN=86 Runoff=1.13 cfs 0.086 af

Subcatchment S202: Runoff Area=0.530 ac 35.85% Impervious Runoff Depth=0.22"
Flow Length=319' Tc=2.7 min CN=85 Runoff=0.17 cfs 0.010 af

Subcatchment S203: Runoff Area=3.357 ac 0.00% Impervious Runoff Depth=0.10"
Flow Length=1,218' Tc=16.3 min CN=79 Runoff=0.15 cfs 0.028 af

Subcatchment S204: Runoff Area=0.687 ac 0.00% Impervious Runoff Depth=0.09"
Flow Length=200' Tc=7.4 min CN=78 Runoff=0.03 cfs 0.005 af

Subcatchment S205: Runoff Area=0.484 ac 0.00% Impervious Runoff Depth=0.09"
Flow Length=450' Tc=9.0 min CN=78 Runoff=0.02 cfs 0.003 af

Subcatchment S206: Runoff Area=0.561 ac 57.04% Impervious Runoff Depth=0.35"
Tc=6.0 min CN=89 Runoff=0.27 cfs 0.016 af

Subcatchment S207: Runoff Area=3.066 ac 0.00% Impervious Runoff Depth=0.09"
Flow Length=180' Tc=8.1 min CN=78 Runoff=0.12 cfs 0.022 af

Subcatchment S208: Runoff Area=11.671 ac 35.16% Impervious Runoff Depth=0.22"
Flow Length=865' Tc=11.3 min CN=85 Runoff=2.57 cfs 0.216 af

Subcatchment S300: Runoff Area=0.921 ac 5.97% Impervious Runoff Depth=0.06"
Flow Length=800' Tc=11.4 min CN=76 Runoff=0.02 cfs 0.005 af

Subcatchment S400: Runoff Area=1.058 ac 0.00% Impervious Runoff Depth=0.09"
Flow Length=210' Tc=8.1 min CN=78 Runoff=0.04 cfs 0.008 af

Reach S-1: E-W SWALE Avg. Flow Depth=0.14' Max Vel=5.48 fps Inflow=1.13 cfs 0.086 af
n=0.022 L=485.0' S=0.1299 '/' Capacity=65.06 cfs Outflow=1.12 cfs 0.086 af

Reach S-2: OVERFLOW SWALE Avg. Flow Depth=0.02' Max Vel=2.53 fps Inflow=0.12 cfs 0.179 af
n=0.022 L=120.0' S=0.1958 '/' Capacity=507.22 cfs Outflow=0.12 cfs 0.179 af

Reach S-3: ROADSIDE SWALE Avg. Flow Depth=0.07' Max Vel=2.78 fps Inflow=0.27 cfs 0.016 af
n=0.025 L=825.0' S=0.1018 '/' Capacity=50.69 cfs Outflow=0.22 cfs 0.016 af

Pond B-1: BIORETENTION AREA 1 Peak Elev=903.00' Storage=0 cf Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Pond B-2: BIORETENTION AREA 2 Peak Elev=903.00' Storage=0 cf Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Pond B-3: BIORETENTION AREA 3 Peak Elev=898.49' Storage=218 cf Inflow=0.17 cfs 0.010 af
Primary=0.01 cfs 0.010 af Secondary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.010 af

Pond B-4: BIORETENTION AREA 4 Peak Elev=837.73' Storage=381 cf Inflow=0.22 cfs 0.016 af
Primary=0.01 cfs 0.016 af Secondary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.016 af

Pond F1: FOREBAY 2 Peak Elev=902.38' Storage=3,913 cf Inflow=0.98 cfs 0.090 af
Outflow=0.00 cfs 0.000 af

Pond F2: FOREBAY 2 Peak Elev=902.80' Storage=3,763 cf Inflow=1.12 cfs 0.086 af
Outflow=0.00 cfs 0.000 af

Pond P-1: WET POND Peak Elev=894.40' Storage=23,449 cf Inflow=2.57 cfs 0.216 af
Primary=0.12 cfs 0.179 af Secondary=0.00 cfs 0.000 af Outflow=0.12 cfs 0.179 af

Pond P-2: RETENTION POND Peak Elev=866.11' Storage=3,288 cf Inflow=0.13 cfs 0.184 af
Outflow=0.12 cfs 0.110 af

Pond P-3: RENTENTION POND Peak Elev=837.88' Storage=150 cf Inflow=0.02 cfs 0.003 af
12.0" Round Culvert n=0.020 L=100.0' S=0.0100 '/' Outflow=0.00 cfs 0.000 af

Link DP1: Inflow=0.08 cfs 0.017 af
Primary=0.08 cfs 0.017 af

Link DP2: Inflow=0.27 cfs 0.186 af
Primary=0.27 cfs 0.186 af

Link DP3: Inflow=0.02 cfs 0.005 af
Primary=0.02 cfs 0.005 af

Link DP4: Inflow=0.04 cfs 0.008 af
Primary=0.04 cfs 0.008 af

Total Runoff Area = 33.715 ac Runoff Volume = 0.506 af Average Runoff Depth = 0.18"
76.38% Pervious = 25.753 ac 23.62% Impervious = 7.962 ac

Summary for Subcatchment S100:

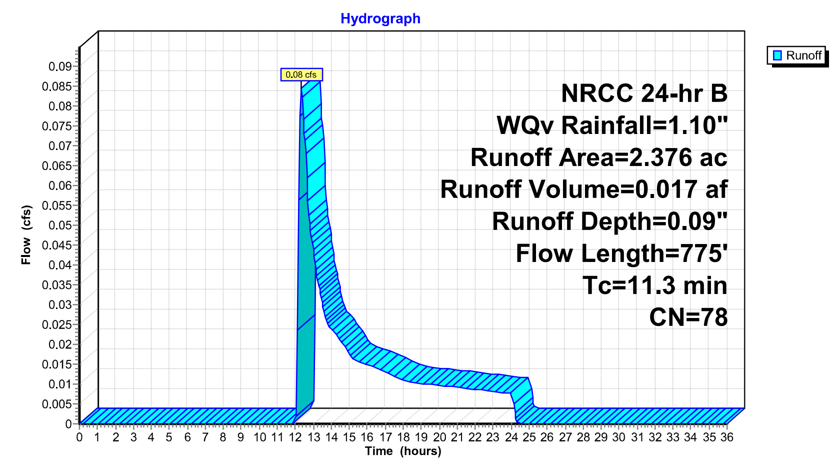
Runoff = 0.08 cfs @ 12.32 hrs, Volume= 0.017 af, Depth= 0.09"
Routed to Link DP1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B WQv Rainfall=1.10"

Area (ac)	CN	Description
0.763	79	Woods, Fair, HSG D
1.613	78	Meadow, non-grazed, HSG D
2.376	78	Weighted Average
2.376		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	50	0.2800	0.18		**Sheet Flow, SF - WOODS** Woods: Light underbrush n= 0.400 P2= 2.68"
3.1	50	0.2800	0.27		**Sheet Flow, SF - MEADOW** Grass: Dense n= 0.240 P2= 2.68"
3.2	635	0.2272	3.34		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
0.3	40	0.2272	2.38		**Shallow Concentrated Flow, SCF - WOODS** Woodland Kv= 5.0 fps
11.3	775	Total			

Subcatchment S100:



Summary for Subcatchment S200:

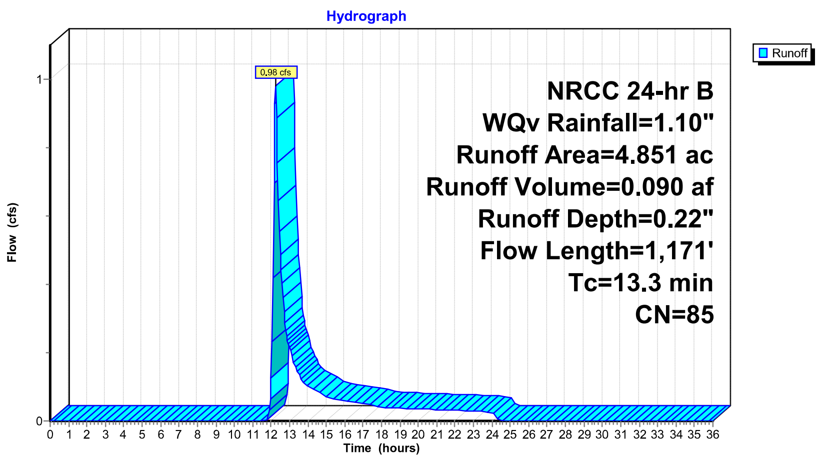
Runoff = 0.98 cfs @ 12.24 hrs, Volume= 0.090 af, Depth= 0.22"
Routed to Pond F1 : FOREBAY 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B WQv Rainfall=1.10"

	Area (ac)	CN	Description
	0.013	79	Woods, Fair, HSG D
	3.153	78	Meadow, non-grazed, HSG D
*	1.685	98	SOLAR PANELS
	4.851	85	Weighted Average
	3.166		65.26% Pervious Area
	1.685		34.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	100	0.1500	0.24		**Sheet Flow, SF - MEADOW** Grass: Dense n= 0.240 P2= 2.68"
6.3	1,071	0.1634	2.83		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
13.3	1,171	Total			

Subcatchment S200:



Summary for Subcatchment S201:

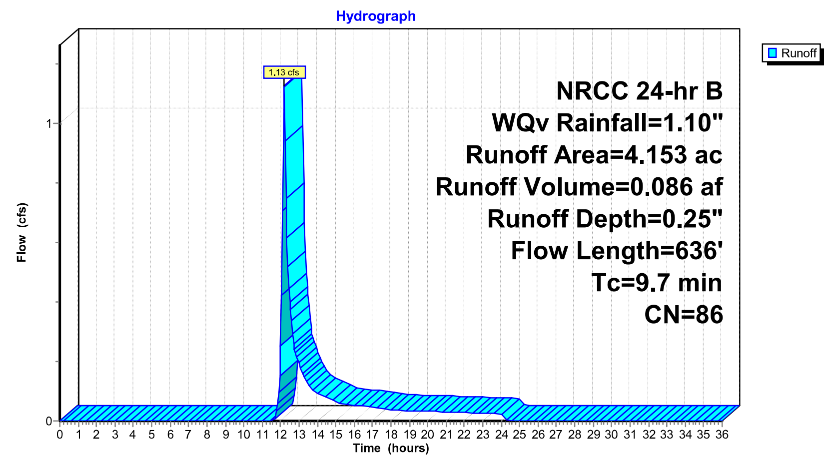
Runoff = 1.13 cfs @ 12.19 hrs, Volume= 0.086 af, Depth= 0.25"
Routed to Reach S-1 : E-W SWALE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B WQv Rainfall=1.10"

	Area (ac)	CN	Description
	0.014	79	Woods, Fair, HSG D
	2.530	78	Meadow, non-grazed, HSG D
*	1.609	98	SOLAR PANELS
	4.153	86	Weighted Average
	2.544		61.26% Pervious Area
	1.609		38.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	100	0.1600	0.25		**Sheet Flow, SF - MEADOW** Grass: Dense n= 0.240 P2= 2.68"
2.9	536	0.1900	3.05		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
9.7	636	Total			

Subcatchment S201:



Summary for Subcatchment S202:

[49] Hint: Tc<2dt may require smaller dt

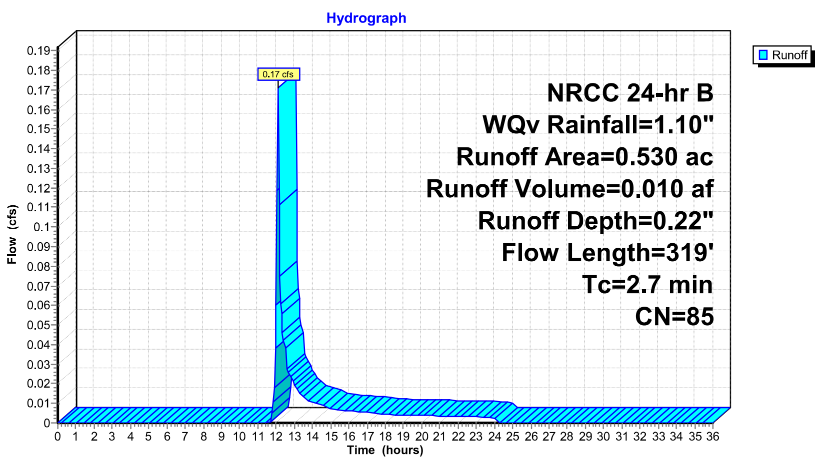
Runoff = 0.17 cfs @ 12.10 hrs, Volume= 0.010 af, Depth= 0.22"
Routed to Pond B-3 : BIORETENTION AREA 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B WQv Rainfall=1.10"

Area (ac)	CN	Description
0.340	78	Meadow, non-grazed, HSG D
0.190	98	Paved parking, HSG D
0.530	85	Weighted Average
0.340		64.15% Pervious Area
0.190		35.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	100	0.1500	0.84		**Sheet Flow, SF - GRAVEL** Fallow n= 0.050 P2= 2.68"
0.7	219	0.1100	4.97		**Shallow Concentrated Flow, SCF - MEADOW** Grassed Waterway Kv= 15.0 fps
2.7	319	Total			

Subcatchment S202:



Summary for Subcatchment S203:

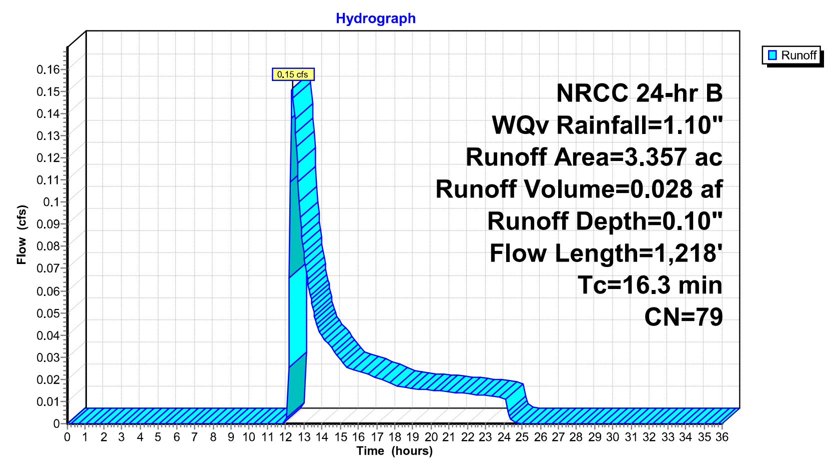
Runoff = 0.15 cfs @ 12.37 hrs, Volume= 0.028 af, Depth= 0.10"
Routed to Link DP2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B WQv Rainfall=1.10"

Area (ac)	CN	Description
2.546	78	Meadow, non-grazed, HSG D
0.701	79	Woods, Fair, HSG D
0.110	96	Gravel surface, HSG D
3.357	79	Weighted Average
3.357		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	100	0.1900	0.17		**Sheet Flow, SF - MEADOW** Woods: Light underbrush n= 0.400 P2= 2.68"
6.8	1,118	0.1512	2.72		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
16.3	1,218	Total			

Subcatchment S203:



Summary for Subcatchment S204:

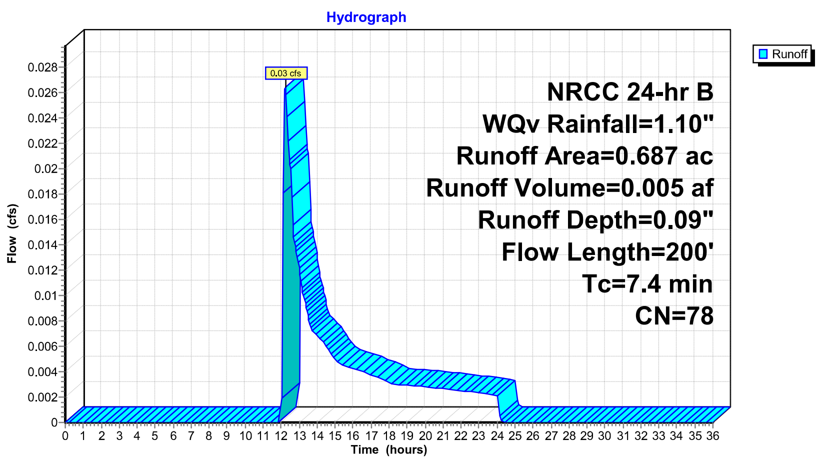
Runoff = 0.03 cfs @ 12.23 hrs, Volume= 0.005 af, Depth= 0.09"
Routed to Pond P-2 : RETENTION POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B WQv Rainfall=1.10"

Area (ac)	CN	Description
0.687	78	Meadow, non-grazed, HSG D
0.687		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	100	0.1600	0.25		**Sheet Flow, SF - MEADOW** Grass: Dense n= 0.240 P2= 2.68"
0.6	100	0.1500	2.71		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
7.4	200	Total			

Subcatchment S204:



Summary for Subcatchment S205:

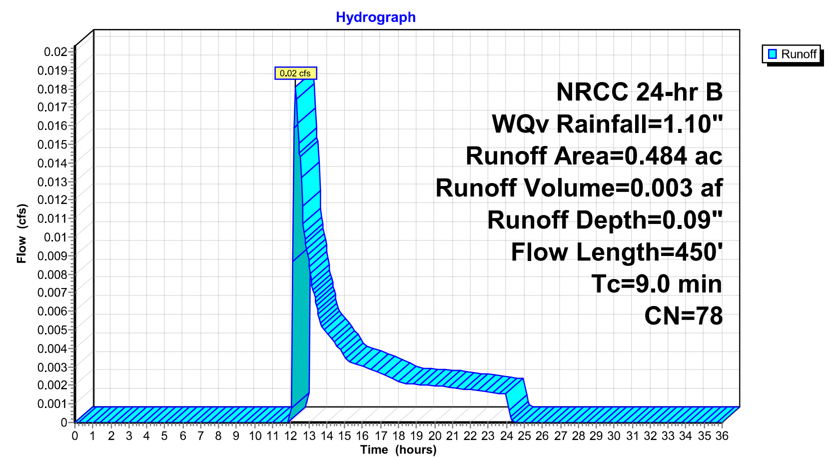
Runoff = 0.02 cfs @ 12.27 hrs, Volume= 0.003 af, Depth= 0.09"
Routed to Pond P-3 : RENTENTION POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B WQv Rainfall=1.10"

Area (ac)	CN	Description
0.484	78	Meadow, non-grazed, HSG D
0.484		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	100	0.1700	0.25		**Sheet Flow, SF - WOODS** Grass: Dense n= 0.240 P2= 2.68"
2.4	350	0.1200	2.42		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
9.0	450	Total			

Subcatchment S205:



Summary for Subcatchment S206:

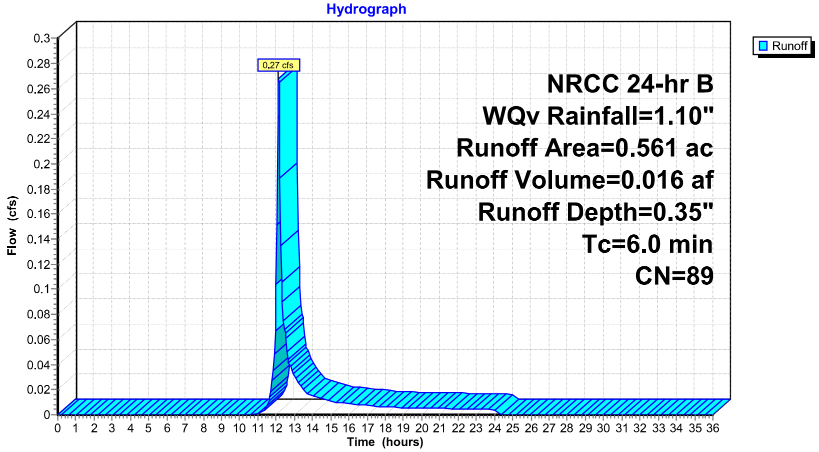
Runoff = 0.27 cfs @ 12.14 hrs, Volume= 0.016 af, Depth= 0.35"
Routed to Reach S-3 : ROADSIDE SWALE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B WQv Rainfall=1.10"

Area (ac)	CN	Description
0.320	98	Paved parking, HSG D
0.241	78	Meadow, non-grazed, HSG D
0.561	89	Weighted Average
0.241		42.96% Pervious Area
0.320		57.04% Impervious Area

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

Subcatchment S206:



Summary for Subcatchment S207:

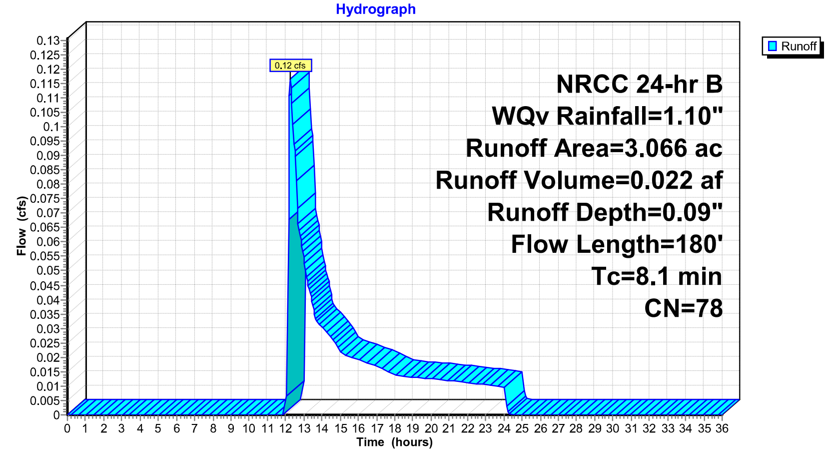
Runoff = 0.12 cfs @ 12.26 hrs, Volume= 0.022 af, Depth= 0.09"
Routed to Link DP2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B WQv Rainfall=1.10"

Area (ac)	CN	Description
1.099	79	Woods, Fair, HSG D
1.967	78	Meadow, non-grazed, HSG D
3.066	78	Weighted Average
3.066		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	30	0.5000	0.30		**Sheet Flow, SF** Grass: Dense n= 0.240 P2= 2.68"
6.0	70	0.3000	0.20		**Sheet Flow, SF WOODS** Woods: Light underbrush n= 0.400 P2= 2.68"
0.5	80	0.3000	2.74		**Shallow Concentrated Flow, SCF** Woodland Kv= 5.0 fps
8.1	180	Total			

Subcatchment S207:



Summary for Subcatchment S208:

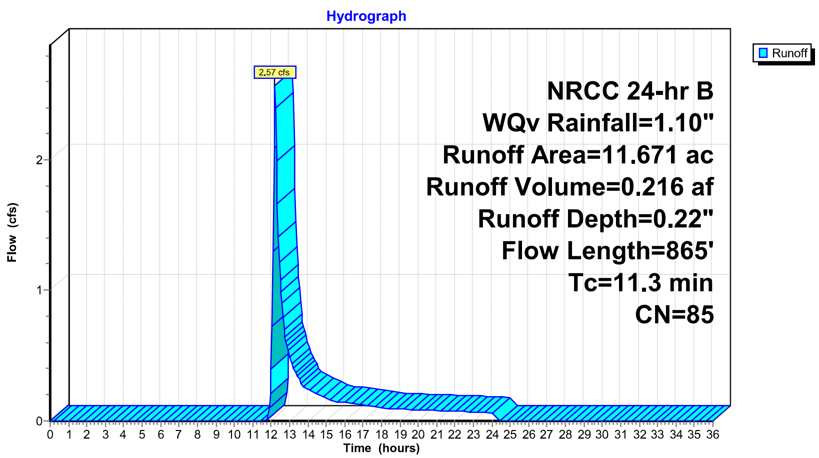
Runoff = 2.57 cfs @ 12.21 hrs, Volume= 0.216 af, Depth= 0.22"
Routed to Pond P-1 : WET POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B WQv Rainfall=1.10"

	Area (ac)	CN	Description
	0.087	79	Woods, Fair, HSG D
	7.481	78	Meadow, non-grazed, HSG D
*	4.103	98	SOLAR PANELS
	11.671	85	Weighted Average
	7.568		64.84% Pervious Area
	4.103		35.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	100	0.1300	0.23		**Sheet Flow, SF - MEADOW** Grass: Dense n= 0.240 P2= 2.68"
3.9	765	0.2235	3.31		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
11.3	865	Total			

Subcatchment S208:



Summary for Subcatchment S300:

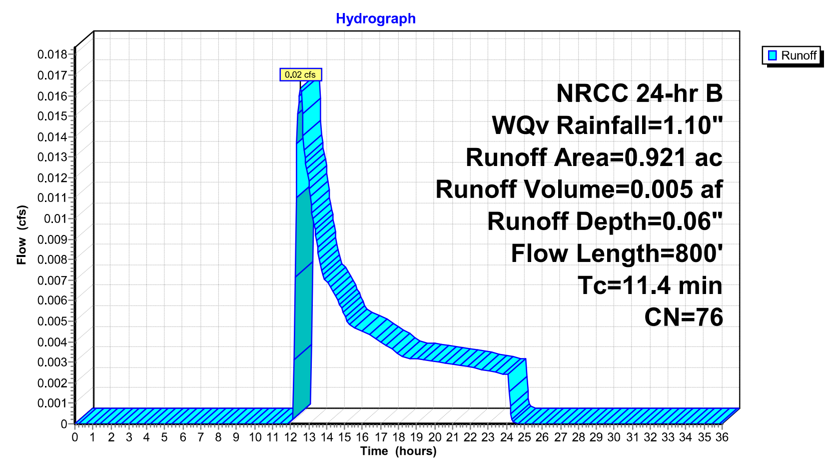
Runoff = 0.02 cfs @ 12.56 hrs, Volume= 0.005 af, Depth= 0.06"
Routed to Link DP3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B WQv Rainfall=1.10"

Area (ac)	CN	Description
0.055	98	Paved parking, HSG C
0.736	71	Meadow, non-grazed, HSG C
0.130	96	Gravel surface, HSG C
0.921	76	Weighted Average
0.866		94.03% Pervious Area
0.055		5.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	100	0.1400	0.23		**Sheet Flow, SF - MEADOW** Grass: Dense n= 0.240 P2= 2.68"
0.2	100	0.1200	7.03		**Shallow Concentrated Flow, SCF - PAVED** Paved Kv= 20.3 fps
4.0	600	0.1300	2.52		**Shallow Concentrated Flow, SCF - MEADOW** Short Grass Pasture Kv= 7.0 fps
11.4	800	Total			

Subcatchment S300:



Summary for Subcatchment S400:

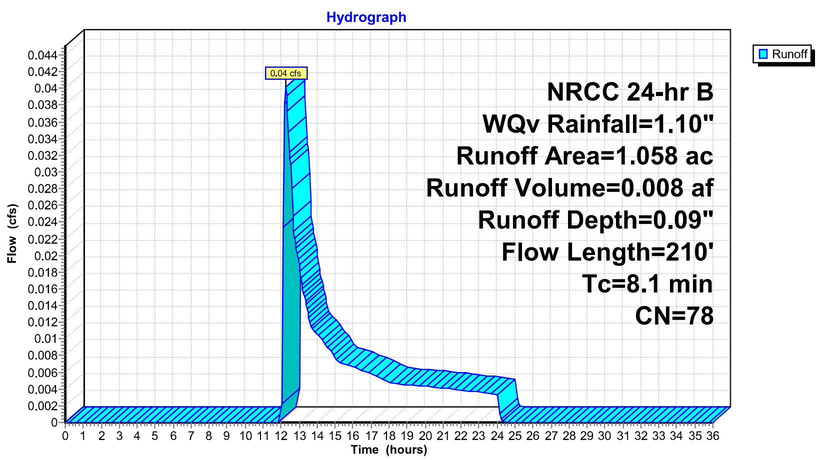
Runoff = 0.04 cfs @ 12.26 hrs, Volume= 0.008 af, Depth= 0.09"
Routed to Link DP4 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
NRCC 24-hr B WQv Rainfall=1.10"

Area (ac)	CN	Description
1.058	78	Meadow, non-grazed, HSG D
1.058		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.1200	0.22		**Sheet Flow, SF** Grass: Dense n= 0.240 P2= 2.68"
0.5	110	0.2272	3.34		**Shallow Concentrated Flow, SCF** Short Grass Pasture Kv= 7.0 fps
8.1	210	Total			

Subcatchment S400:



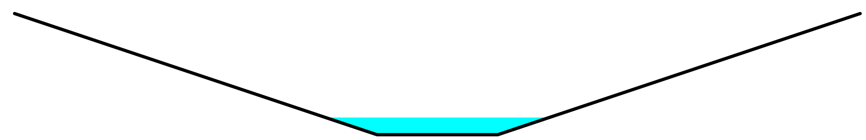
Summary for Reach S-1: E-W SWALE

Inflow Area = 4.153 ac, 38.74% Impervious, Inflow Depth = 0.25" for WQv event
Inflow = 1.13 cfs @ 12.19 hrs, Volume= 0.086 af
Outflow = 1.12 cfs @ 12.21 hrs, Volume= 0.086 af, Atten= 1%, Lag= 1.1 min
Routed to Pond F2 : FOREBAY 2

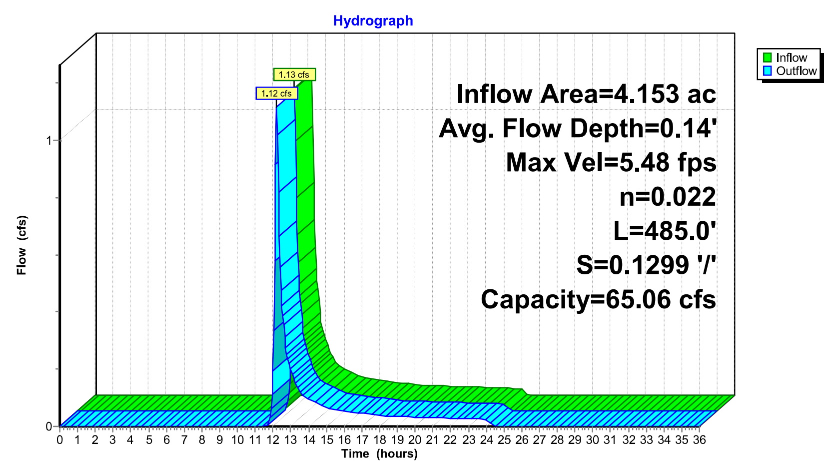
Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.48 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 2.00 fps, Avg. Travel Time= 4.0 min

Peak Storage= 99 cf @ 12.21 hrs
Average Depth at Peak Storage= 0.14' , Surface Width= 1.85'
Bank-Full Depth= 1.00' Flow Area= 4.0 sf, Capacity= 65.06 cfs

1.00' x 1.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 3.0 '/' Top Width= 7.00'
Length= 485.0' Slope= 0.1299 '/'
Inlet Invert= 968.00', Outlet Invert= 905.00'



Reach S-1: E-W SWALE



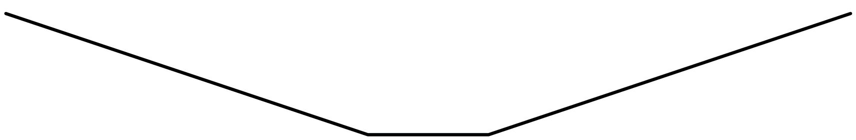
Summary for Reach S-2: OVERFLOW SWALE

Inflow Area = 11.671 ac, 35.16% Impervious, Inflow Depth > 0.18" for WQv event
Inflow = 0.12 cfs @ 16.83 hrs, Volume= 0.179 af
Outflow = 0.12 cfs @ 16.84 hrs, Volume= 0.179 af, Atten= 0%, Lag= 0.4 min
Routed to Pond P-2 : RETENTION POND

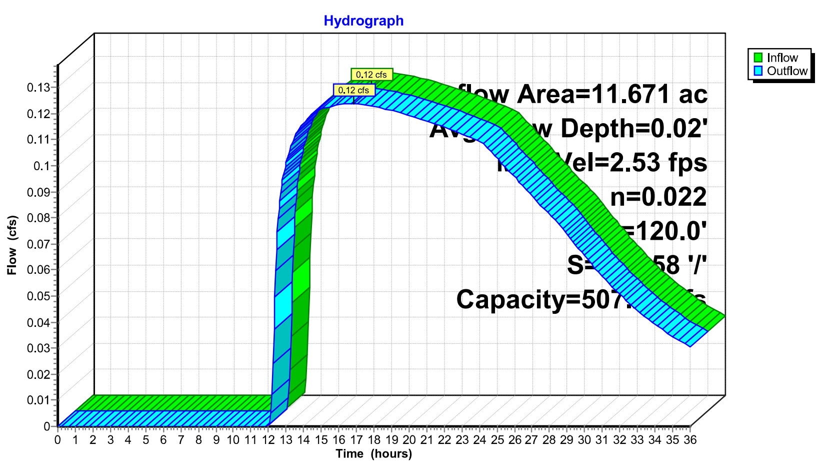
Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.53 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 2.32 fps, Avg. Travel Time= 0.9 min

Peak Storage= 6 cf @ 16.84 hrs
Average Depth at Peak Storage= 0.02' , Surface Width= 2.14'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 507.22 cfs

2.00' x 2.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 3.0 '/' Top Width= 14.00'
Length= 120.0' Slope= 0.1958 '/'
Inlet Invert= 893.50', Outlet Invert= 870.00'



Reach S-2: OVERFLOW SWALE



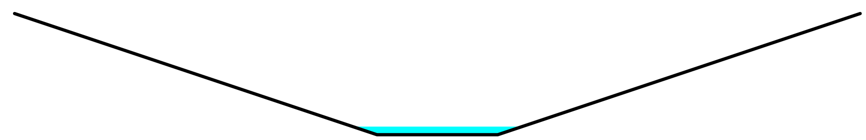
Summary for Reach S-3: ROADSIDE SWALE

Inflow Area = 0.561 ac, 57.04% Impervious, Inflow Depth = 0.35" for WQv event
Inflow = 0.27 cfs @ 12.14 hrs, Volume= 0.016 af
Outflow = 0.22 cfs @ 12.19 hrs, Volume= 0.016 af, Atten= 17%, Lag= 2.9 min
Routed to Pond B-4 : BIORETENTION AREA 4

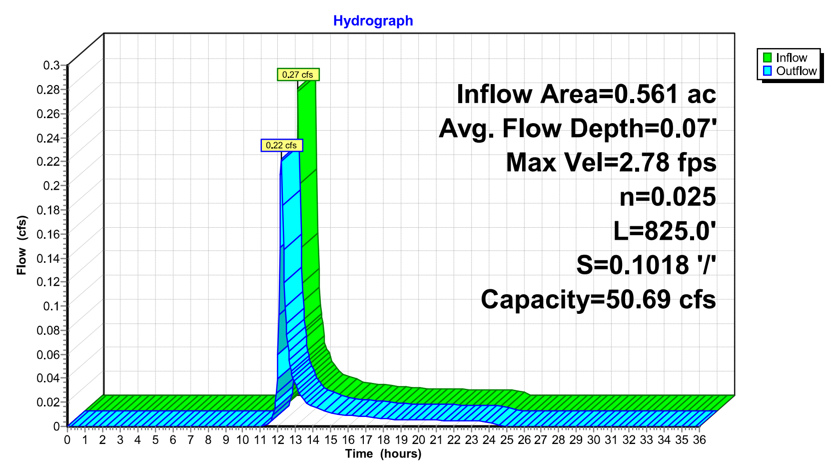
Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.78 fps, Min. Travel Time= 4.9 min
Avg. Velocity = 1.00 fps, Avg. Travel Time= 13.8 min

Peak Storage= 66 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.07' , Surface Width= 1.40'
Bank-Full Depth= 1.00' Flow Area= 4.0 sf, Capacity= 50.69 cfs

1.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 3.0 '/' Top Width= 7.00'
Length= 825.0' Slope= 0.1018 '/'
Inlet Invert= 924.00', Outlet Invert= 840.00'



Reach S-3: ROADSIDE SWALE



Summary for Pond B-1: BIORETENTION AREA 1

```
Inflow Area =     4.851 ac, 34.74% Impervious, Inflow Depth =  0.00"   for WQv event
Inflow      =     0.00 cfs @   0.00 hrs, Volume=        0.000 af
Outflow     =     0.00 cfs @   0.00 hrs, Volume=        0.000 af, Atten= 0%, Lag= 0.0 min
Primary     =     0.00 cfs @   0.00 hrs, Volume=        0.000 af
    Routed to Link DP2 :
```

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 903.00' @ 0.00 hrs Surf.Area= 5,991 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

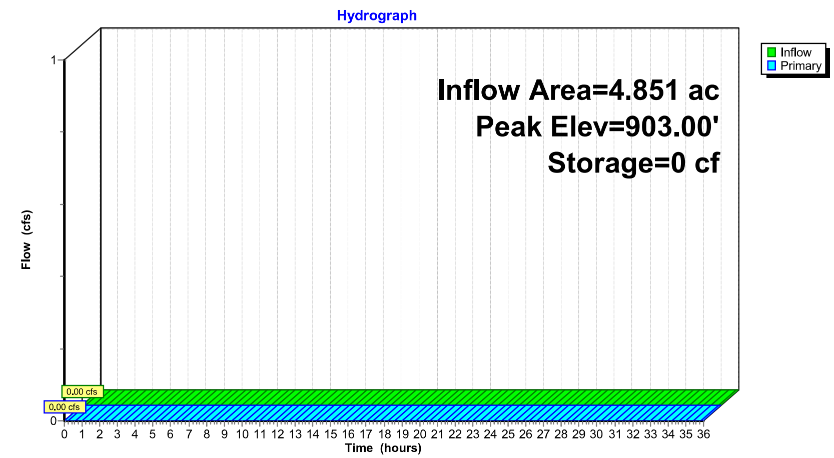
Volume	Invert	Avail.Storage	Storage Description
#1	903.00'	14,542 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
903.00	5,991	427.0	0	0	5,991
905.00	8,631	465.0	14,542	14,542	8,832

Device	Routing	Invert	Outlet Devices
#1	Primary	900.50'	**8.0" Round Culvert** L= 50.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 900.50' / 899.00' S= 0.0300 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.35 sf
#2	Primary	903.50'	**20.0' long + 15.0 '/' SideZ x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	903.00'	**0.500 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=903.00' TW=0.00' (Dynamic Tailwater)
1=Culvert (Passes 0.00 cfs of 1.82 cfs potential flow)
3=Exfiltration (Passes 0.00 cfs of 0.07 cfs potential flow)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond B-1: BIORETENTION AREA 1



Summary for Pond B-2: BIORETENTION AREA 2

Inflow Area = 4.153 ac, 38.74% Impervious, Inflow Depth = 0.00" for WQv event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link DP2 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 903.00' @ 0.00 hrs Surf.Area= 5,420 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

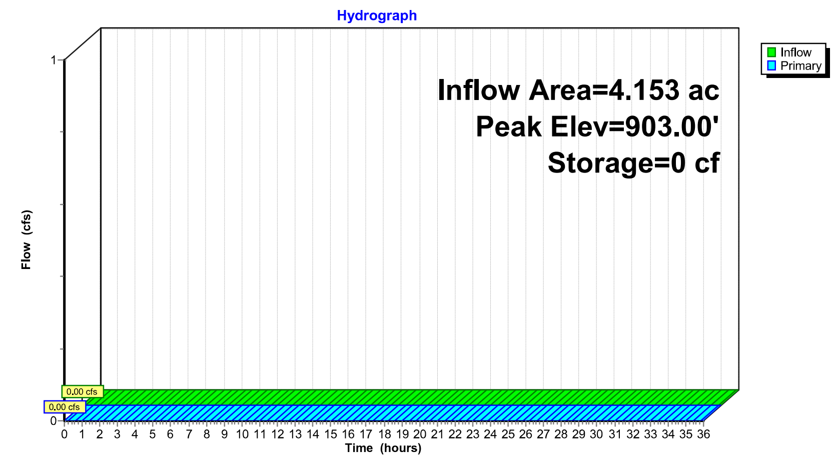
Volume	Invert	Avail.Storage	Storage Description
#1	903.00'	13,358 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
903.00	5,420	421.0	0	0	5,420
905.00	8,023	459.0	13,358	13,358	8,223

Device	Routing	Invert	Outlet Devices
#1	Primary	900.50'	**8.0" Round Culvert** L= 50.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 900.50' / 899.00' S= 0.0300 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.35 sf
#2	Primary	903.50'	**20.0' long + 15.0 '/' SideZ x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78
#3	Device 1	903.00'	**0.500 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=903.00' TW=0.00' (Dynamic Tailwater)
—**1=Culvert** (Passes 0.00 cfs of 1.82 cfs potential flow)
—**3=Exfiltration** (Passes 0.00 cfs of 0.06 cfs potential flow)
—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B-2: BIORETENTION AREA 2



Summary for Pond B-3: BIORETENTION AREA 3

Inflow Area = 0.530 ac, 35.85% Impervious, Inflow Depth = 0.22" for WQv event
Inflow = 0.17 cfs @ 12.10 hrs, Volume= 0.010 af
Outflow = 0.01 cfs @ 15.75 hrs, Volume= 0.010 af, Atten= 96%, Lag= 219.3 min
Primary = 0.01 cfs @ 15.75 hrs, Volume= 0.010 af
Routed to Link DP2 :
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link DP2 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 898.49' @ 15.75 hrs Surf.Area= 559 sf Storage= 218 cf

Plug-Flow detention time= 412.8 min calculated for 0.010 af (100% of inflow)
Center-of-Mass det. time= 413.4 min (1,298.7 - 885.3)

Volume	Invert	Avail.Storage	Storage Description
#1	898.00'	1,580 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

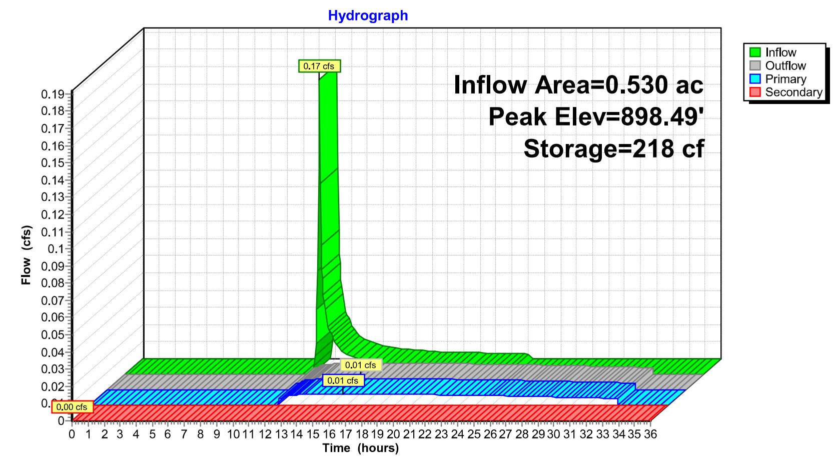
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
898.00	340	0	0
900.00	1,240	1,580	1,580

Device	Routing	Invert	Outlet Devices
#1	Device 3	898.00'	**0.500 in/hr Exfiltration over Surface area**
#2	Secondary	898.50'	**10.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#3	Primary	895.50'	**8.0" Round Culvert** L= 60.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 895.50' / 895.00' S= 0.0083 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.01 cfs @ 15.75 hrs HW=898.49' TW=0.00' (Dynamic Tailwater)
└─**3=Culvert** (Passes 0.01 cfs of 1.52 cfs potential flow)
  └─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=898.00' TW=0.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B-3: BIORETENTION AREA 3



Summary for Pond B-4: BIORETENTION AREA 4

```
Inflow Area =      0.561 ac, 57.04% Impervious, Inflow Depth = 0.35"  for WQv event
Inflow      =      0.22 cfs @  12.19 hrs,  Volume=         0.016 af
Outflow     =      0.01 cfs @  14.88 hrs,  Volume=         0.016 af,  Atten= 95%,  Lag= 161.7 min
Primary     =      0.01 cfs @  14.88 hrs,  Volume=         0.016 af
    Routed to Link DP2 :
Secondary =        0.00 cfs @   0.00 hrs,  Volume=         0.000 af
    Routed to Link DP2 :
```

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 837.73' @ 14.88 hrs Surf.Area= 1,034 sf Storage= 381 cf

Plug-Flow detention time= 412.8 min calculated for 0.016 af (99% of inflow)
Center-of-Mass det. time= 409.5 min (1,281.3 - 871.8)

Volume	Invert	Avail.Storage	Storage Description
#1	837.00'	5,303 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

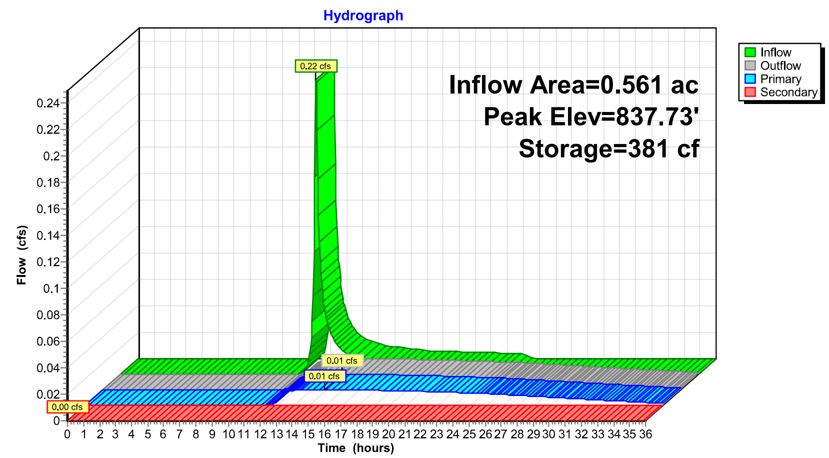
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
837.00	15	0	0
838.00	1,417	716	716
840.00	3,170	4,587	5,303

Device	Routing	Invert	Outlet Devices
#1	Device 3	837.00'	**0.500 in/hr Exfiltration over Surface area**
#2	Secondary	838.50'	**25.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#3	Primary	835.50'	**8.0" Round Culvert** L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 835.50' / 834.00' S= 0.0600 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.01 cfs @ 14.88 hrs HW=837.73' TW=0.00' (Dynamic Tailwater)
└─**3=Culvert** (Passes 0.01 cfs of 1.83 cfs potential flow)
  └─**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=837.00' TW=0.00' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B-4: BIORETENTION AREA 4



Summary for Pond F1: FOREBAY 2

Inflow Area = 4.851 ac, 34.74% Impervious, Inflow Depth = 0.22" for WQv event
Inflow = 0.98 cfs @ 12.24 hrs, Volume= 0.090 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond B-1 : BIORETENTION AREA 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 902.38' @ 24.80 hrs Surf.Area= 2,509 sf Storage= 3,913 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

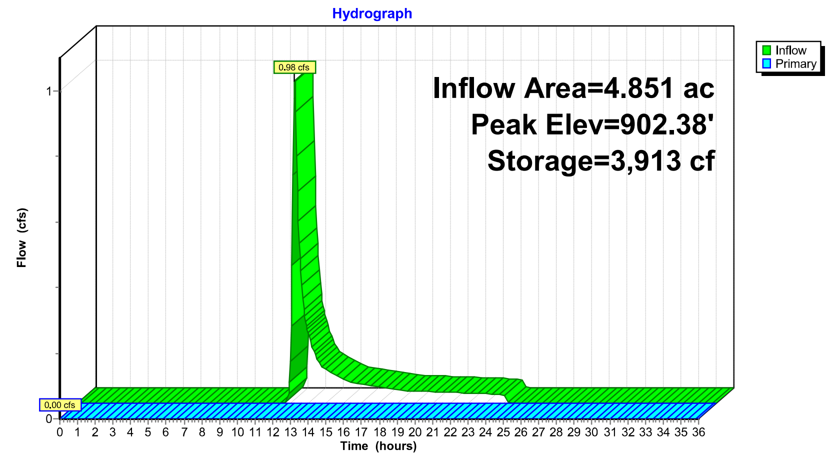
Volume	Invert	Avail.Storage	Storage Description
#1	899.00'	14,382 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
899.00	218	86.0	0	0	218
901.00	1,277	230.0	1,348	1,348	3,853
903.00	3,198	372.0	4,331	5,679	10,682
905.00	5,618	426.0	8,703	14,382	14,203

Device	Routing	Invert	Outlet Devices
#1	Primary	903.50'	**20.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=899.00' TW=903.00' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond F1: FOREBAY 2



Summary for Pond F2: FOREBAY 2

Inflow Area = 4.153 ac, 38.74% Impervious, Inflow Depth = 0.25" for WQv event
Inflow = 1.12 cfs @ 12.21 hrs, Volume= 0.086 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond B-2 : BIORETENTION AREA 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 902.80' @ 27.25 hrs Surf.Area= 2,375 sf Storage= 3,763 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

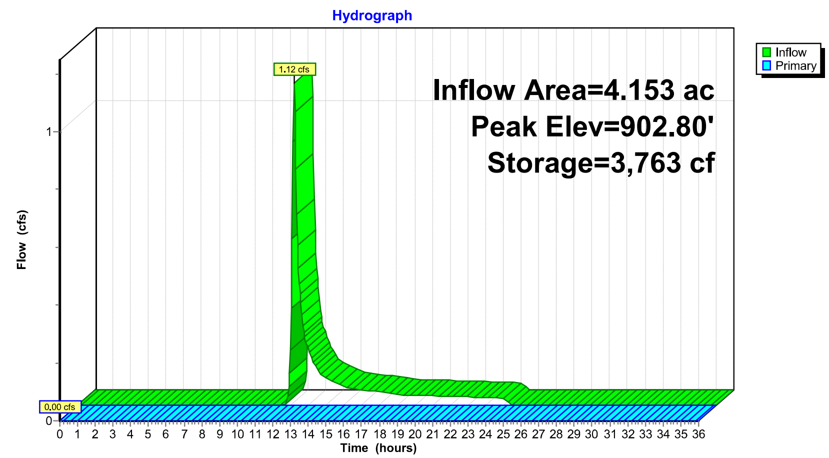
Volume	Invert	Avail.Storage	Storage Description
#1	899.00'	11,697 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
899.00	98	53.0	0	0	98
901.00	930	189.0	887	887	2,728
903.00	2,575	324.0	3,368	4,255	8,263
905.00	5,000	439.0	7,442	11,697	15,287

Device	Routing	Invert	Outlet Devices
#1	Primary	903.50'	**20.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=899.00' TW=903.00' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond F2: FOREBAY 2



Summary for Pond P-1: WET POND

Inflow Area = 11.671 ac, 35.16% Impervious, Inflow Depth = 0.22" for WQv event
Inflow = 2.57 cfs @ 12.21 hrs, Volume= 0.216 af
Outflow = 0.12 cfs @ 16.83 hrs, Volume= 0.179 af, Atten= 95%, Lag= 277.0 min
Primary = 0.12 cfs @ 16.83 hrs, Volume= 0.179 af
Routed to Reach S-2 : OVERFLOW SWALE
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach S-2 : OVERFLOW SWALE

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Starting Elev= 894.00' Surf.Area= 12,390 sf Storage= 18,141 cf
Peak Elev= 894.40' @ 16.83 hrs Surf.Area= 14,226 sf Storage= 23,449 cf (5,308 cf above start)
Flood Elev= 900.00' Surf.Area= 35,579 sf Storage= 168,762 cf (150,621 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 433.5 min (1,326.8 - 893.3)

Volume	Invert	Avail.Storage	Storage Description
#1	891.00'	168,762 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

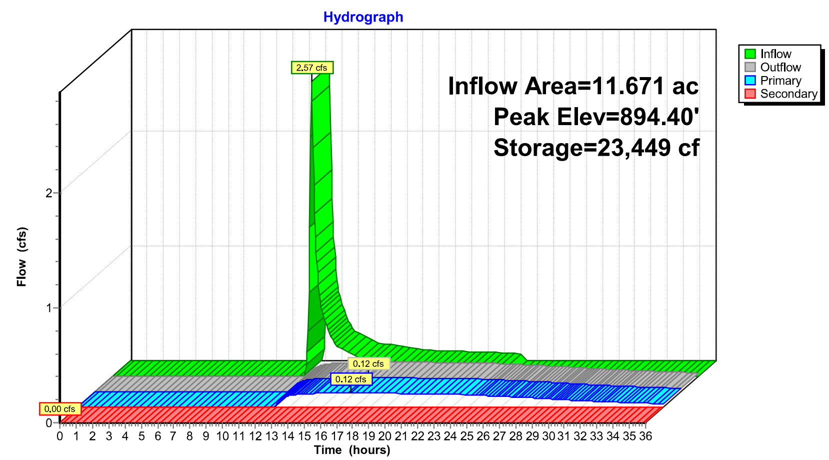
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
891.00	2,741	349.0	0	0	2,741
892.00	3,525	397.0	3,125	3,125	5,615
894.00	12,390	626.0	15,016	18,141	24,285
896.00	22,863	877.0	34,722	52,863	54,344
898.00	28,845	1,061.0	51,592	104,455	82,786
900.00	35,579	1,100.0	64,306	168,762	89,833

Device	Routing	Invert	Outlet Devices
#1	Secondary	898.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Device 5	894.00'	**3.0" Vert. Low Flow Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 5	895.80'	**12.0" Horiz. Stand Pipe** C= 0.600 Limited to weir flow at low heads
#4	Device 5	896.85'	**1.0" x 4.0" Horiz. Orifice/Grate X 13.00 columns** X 5 rows C= 0.600 in 30.0" x 30.0" Grate (29% open area)
#5	Primary	893.90'	**18.0" Round Culvert** L= 70.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 893.90' / 892.00' S= 0.0271 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.12 cfs @ 16.83 hrs HW=894.40' TW=893.52' (Dynamic Tailwater)
└─**5=Culvert** (Passes 0.12 cfs of 0.93 cfs potential flow)
  ├─**2=Low Flow Orifice** (Orifice Controls 0.12 cfs @ 2.52 fps)
  ├─**3=Stand Pipe** (Controls 0.00 cfs)
  └─**4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=894.00' TW=893.50' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P-1: WET POND



Summary for Pond P-2: RETENTION POND

Inflow Area = 12.358 ac, 33.20% Impervious, Inflow Depth > 0.18" for WQv event
Inflow = 0.13 cfs @ 16.45 hrs, Volume= 0.184 af
Outflow = 0.12 cfs @ 20.71 hrs, Volume= 0.110 af, Atten= 6%, Lag= 256.0 min
Primary = 0.12 cfs @ 20.71 hrs, Volume= 0.110 af
Routed to Link DP2 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 866.11' @ 20.71 hrs Surf.Area= 1,668 sf Storage= 3,288 cf

Plug-Flow detention time= 502.2 min calculated for 0.110 af (60% of inflow)
Center-of-Mass det. time= 250.4 min (1,568.0 - 1,317.5)

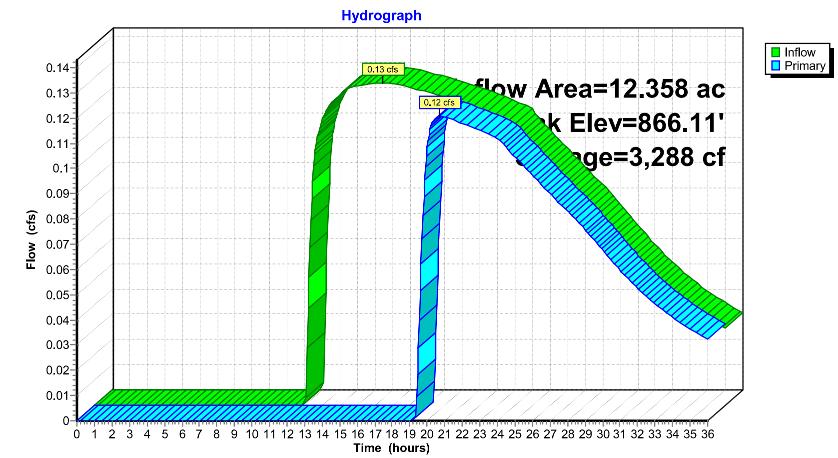
Volume	Invert	Avail.Storage	Storage Description
#1	862.00'	14,911 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
862.00	151	73.0	0	0	151
864.00	735	122.0	813	813	936
866.00	1,610	166.0	2,289	3,101	1,985
868.00	2,772	216.0	4,330	7,431	3,552
870.00	4,800	270.0	7,480	14,911	5,696

Device	Routing	Invert	Outlet Devices
#1	Primary	866.00'	**18.0" Round Culvert** L= 50.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 866.00' / 865.00' S= 0.0200 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.77 sf
#2	Primary	866.00'	**18.0" Round Culvert** L= 50.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 866.00' / 865.00' S= 0.0200 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.12 cfs @ 20.71 hrs HW=866.11' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.06 cfs @ 1.51 fps)
2=Culvert (Barrel Controls 0.06 cfs @ 1.51 fps)

Pond P-2: RETENTION POND



Summary for Pond P-3: RENTENTION POND

Inflow Area = 0.484 ac, 0.00% Impervious, Inflow Depth = 0.09" for WQv event
Inflow = 0.02 cfs @ 12.27 hrs, Volume= 0.003 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link DP2 :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 837.88' @ 24.55 hrs Surf.Area= 281 sf Storage= 150 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

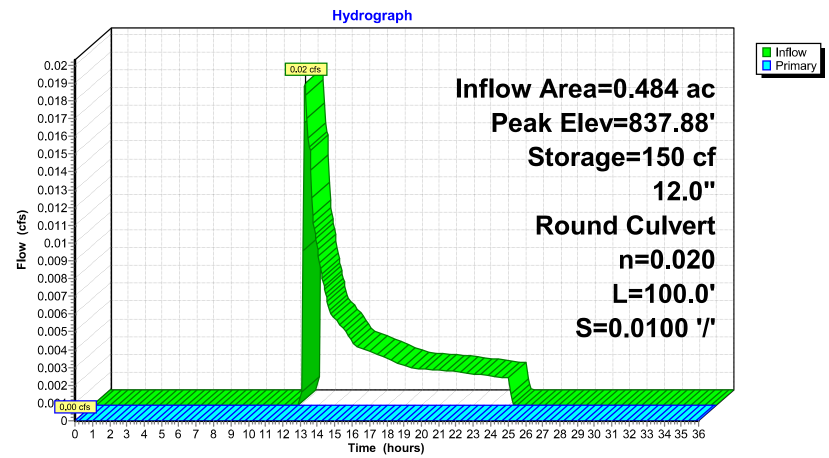
Volume	Invert	Avail.Storage	Storage Description
#1	837.00'	1,625 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
837.00	60	0	0
838.00	310	185	185
840.00	1,130	1,440	1,625

Device	Routing	Invert	Outlet Devices
#1	Primary	838.00'	**12.0" Round Culvert** L= 100.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 838.00' / 837.00' S= 0.0100 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=837.00' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)

Pond P-3: RENTENTION POND

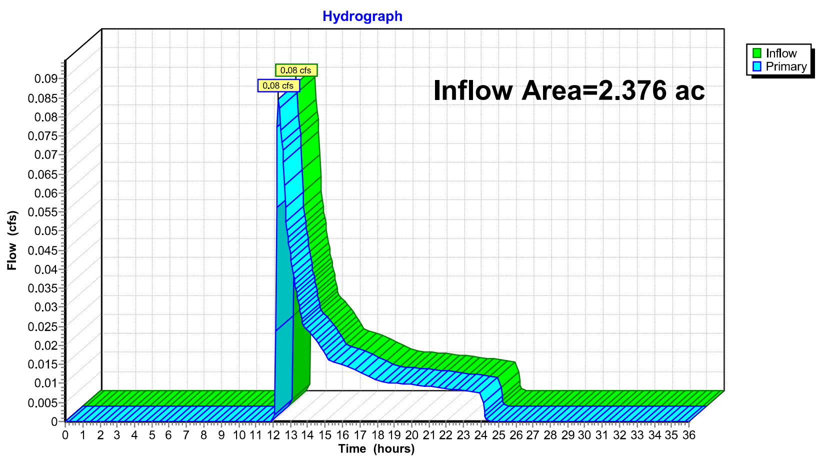


Summary for Link DP1:

Inflow Area =	2.376 ac, 0.00% Impervious, Inflow Depth = 0.09"	for WQv event
Inflow =	0.08 cfs @ 12.32 hrs, Volume=	0.017 af
Primary =	0.08 cfs @ 12.32 hrs, Volume=	0.017 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP1:

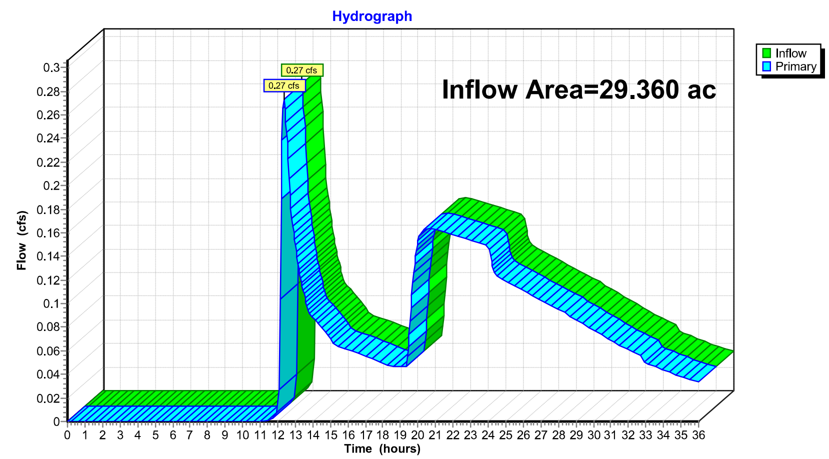


Summary for Link DP2:

Inflow Area =	29.360 ac, 26.93% Impervious, Inflow Depth > 0.08"	for WQv event
Inflow =	0.27 cfs @ 12.35 hrs, Volume=	0.186 af
Primary =	0.27 cfs @ 12.35 hrs, Volume=	0.186 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP2:

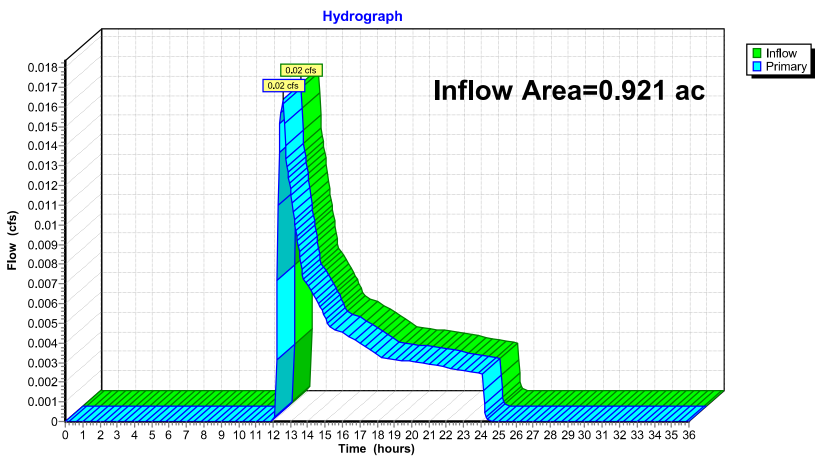


Summary for Link DP3:

Inflow Area = 0.921 ac, 5.97% Impervious, Inflow Depth = 0.06" for WQv event
Inflow = 0.02 cfs @ 12.56 hrs, Volume= 0.005 af
Primary = 0.02 cfs @ 12.56 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP3:

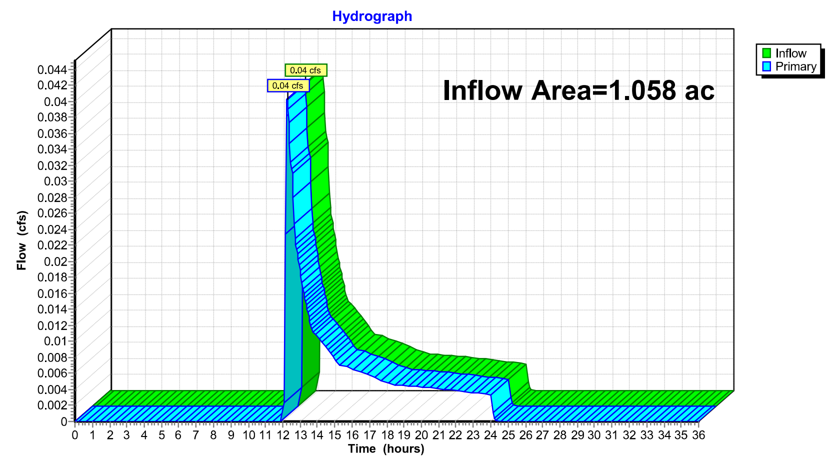


Summary for Link DP4:

Inflow Area = 1.058 ac, 0.00% Impervious, Inflow Depth = 0.09" for WQv event
Inflow = 0.04 cfs @ 12.26 hrs, Volume= 0.008 af
Primary = 0.04 cfs @ 12.26 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link DP4:



Environmental Resource Mapper

The coordinates of the point you clicked on are:

UTM 18	**Easting:**	632251.4840309622	**Northing:**	4751169.578054071
Longitude/Latitude	**Longitude:**	-73.38004679975852	**Latitude:**	42.90168921695387

The approximate address of the point you clicked on is:
12090, Hoosick Falls, New York

County: Rensselaer
Town: Hoosick
USGS Quad: EAGLE BRIDGE

If your project or action is within or near an area with a rare animal, a permit may be required if the species is listed as endangered or threatened and the department determines the action may be harmful to the species or its habitat.

If your project or action is within or near an area with rare plants and/or significant natural communities, the environmental impacts may need to be addressed.

The presence of a unique geological feature or landform near a project, unto itself, does not trigger a requirement for a NYS DEC permit. Readers are advised, however, that there is the chance that a unique feature may also show in another data layer (ie. a wetland) and thus be subject to permit jurisdiction.

Please refer to the "Need a Permit?" tab for permit information or other authorizations regarding these natural resources.

Disclaimer: If you are considering a project or action in, or near, a wetland or a stream, a NYS DEC permit may be required. The Environmental Resources Mapper does not show all natural resources which are regulated by NYS DEC, and for which permits from NYS DEC are required. For example, Regulated Tidal Wetlands, and Wild, Scenic, and Recreational Rivers, are currently not included on the maps.

Federal Aviation Administration

« OE/AAA

Notice Criteria Tool

Notice Criteria Tool - Desk Reference Guide V_2018.2.0

The requirements for filing with the Federal Aviation Administration for proposed structures vary based on a number of factors: height, proximity to an airport, location, and frequencies emitted from the structure, etc. For more details, please reference CFR Title 14 Part 77.9.

You must file with the FAA at least 45 days prior to construction if:

- your structure will exceed 200ft above ground level
- your structure will be in proximity to an airport and will exceed the slope ratio
- your structure involves construction of a traverseway (i.e. highway, railroad, waterway etc...) and once adjusted upward with the appropriate vertical distance would exceed a standard of 77.9(a) or (b)
- your structure will emit frequencies, and does not meet the conditions of the FAA Co-location Policy
- your structure will be in an instrument approach area and might exceed part 77 Subpart C
- your proposed structure will be in proximity to a navigation facility and may impact the assurance of navigation signal reception
- your structure will be on an airport or heliport
- filing has been requested by the FAA

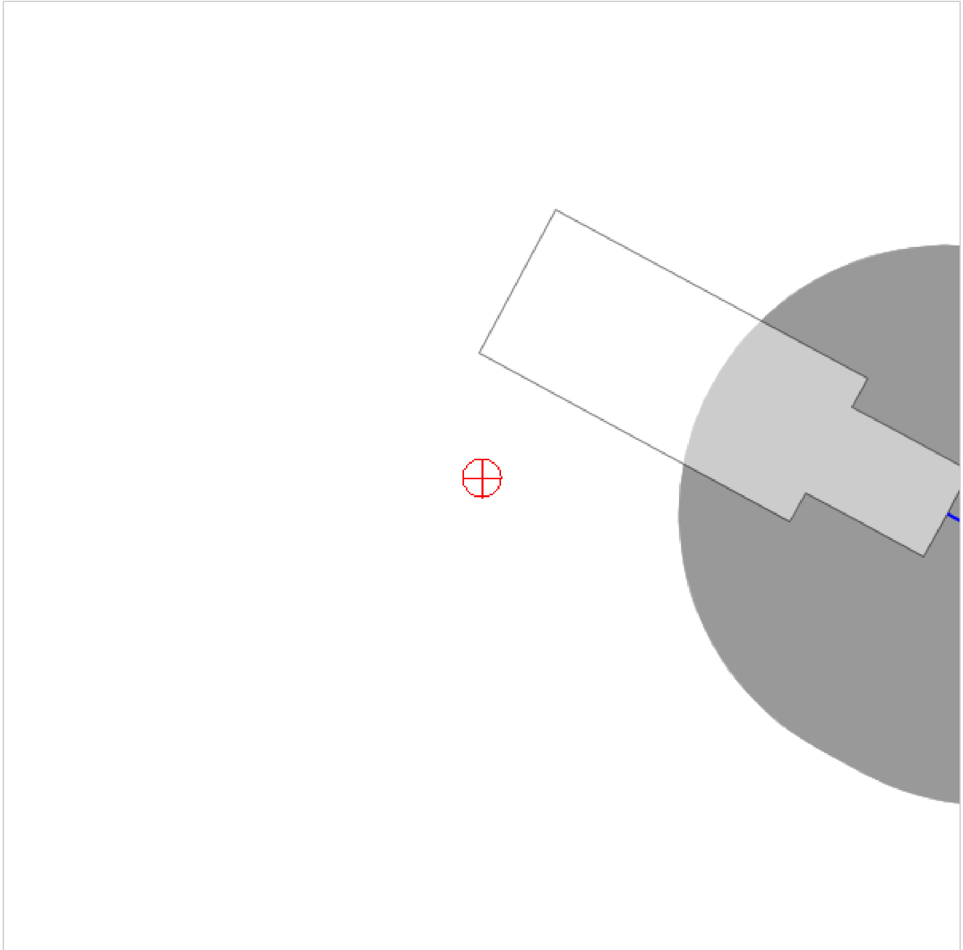
If you require additional information regarding the filing requirements for your structure, please identify and contact the appropriate FAA representative using the Air Traffic Areas of Responsibility map for Off Airport construction, or contact the FAA Airports Region / District Office for On Airport construction.

The tool below will assist in applying Part 77 Notice Criteria.

* **Structure Type:**	SOLAR | Solar Panel Please select structure type and complete location point information.
Latitude:	42 Deg 54 M 02.85 S N
Longitude:	73 Deg 22 M 55.76 S W
Horizontal Datum:	NAD83
Site Elevation (SE):	988 (nearest foot)
Structure Height :	20 (nearest foot)
Is structure on airport:	(•) No ( ) Yes

Results

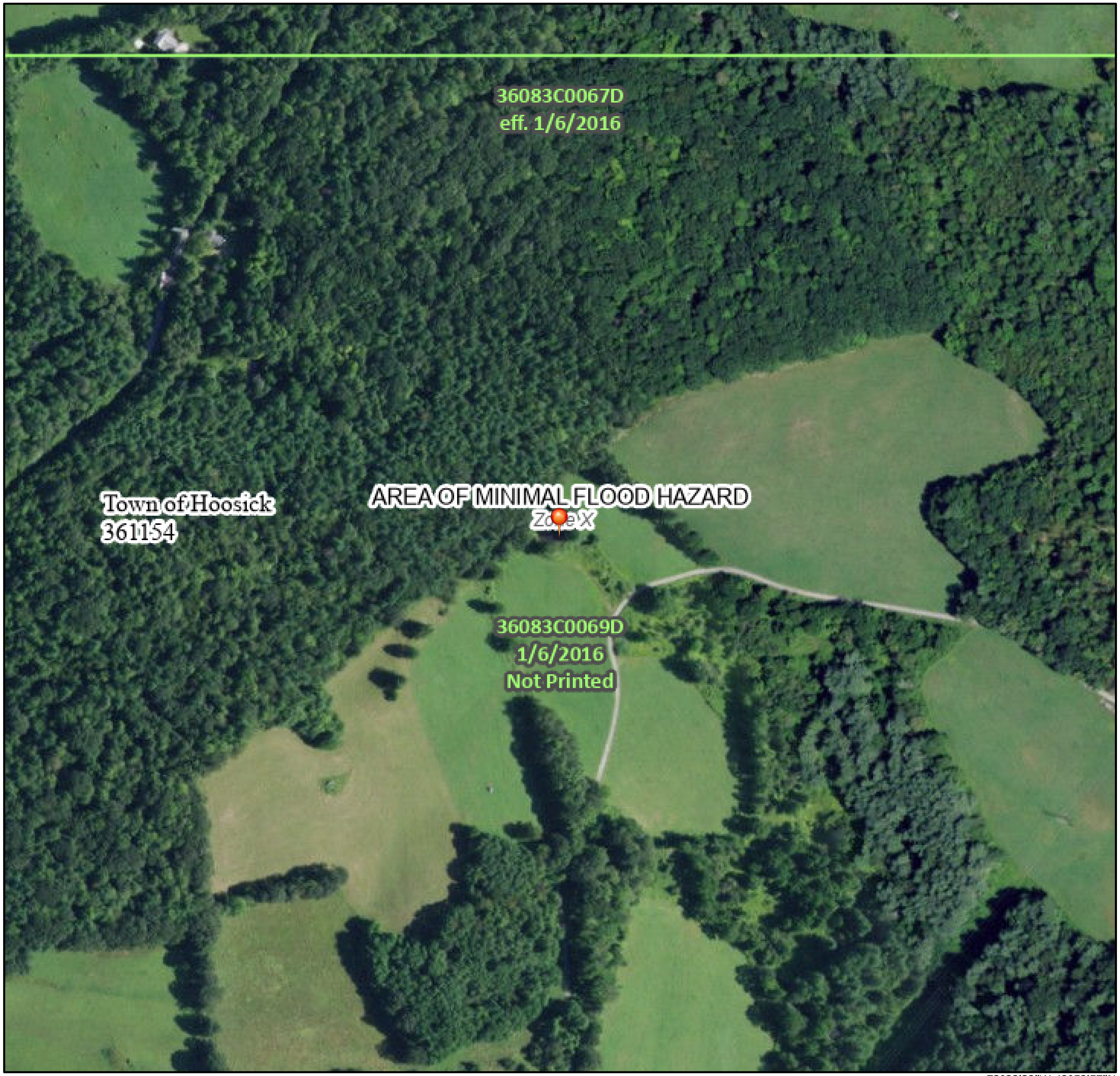
You do not exceed Notice Criteria.



National Flood Hazard Layer FIRMette

FEMA

73°23'10"W 42°54'24"N



73°22'32"W 42°53'57"N

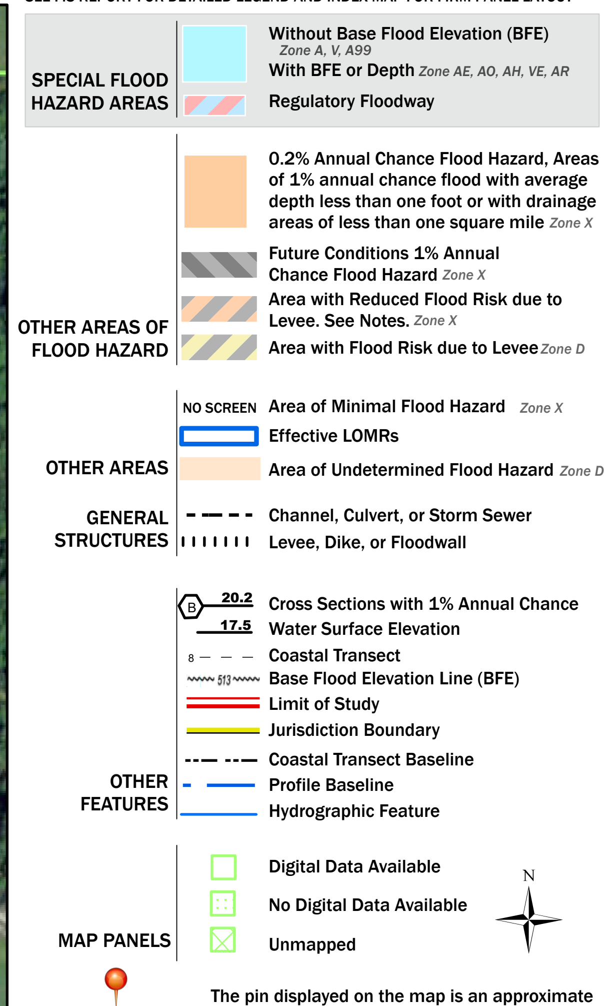
Feet 0 250 500 1,000 1,500 2,000

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

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



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

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

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 8/24/2023 at 9:24 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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

New York State
Parks, Recreation and
Historic Preservation

KATHY HOCHUL
Governor

ERIK KULLESEID
Commissioner

April 03, 2023

Laurel Mitchell
900 Route 146
Clifton Park, NY 12065

Re: NYSERDA
Wilson Hill Solar/5 MW/19.63 Acres
Tax parcel 26.-1-12.21/1 - Wilson Hill Rd, Town of Hoosick, Rensselaer County, NY
23PR02744

Dear Laurel Mitchell:

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Historic Preservation Act of 1980 (Section 14.09 of the New York Parks, Recreation and Historic Preservation Law). These comments are those of the OPRHP and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8) and its implementing regulations (6 NYCRR Part 617).

Based upon this review, it is the opinion of OPRHP that no properties, including archaeological and/or historic resources, listed in or eligible for the New York State and National Registers of Historic Places will be impacted by this project.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Roger Daniel Mackay

R. Daniel Mackay

Deputy Commissioner for Historic Preservation
Division for Historic Preservation

rev: D. Bagrow

United States Department of Agriculture

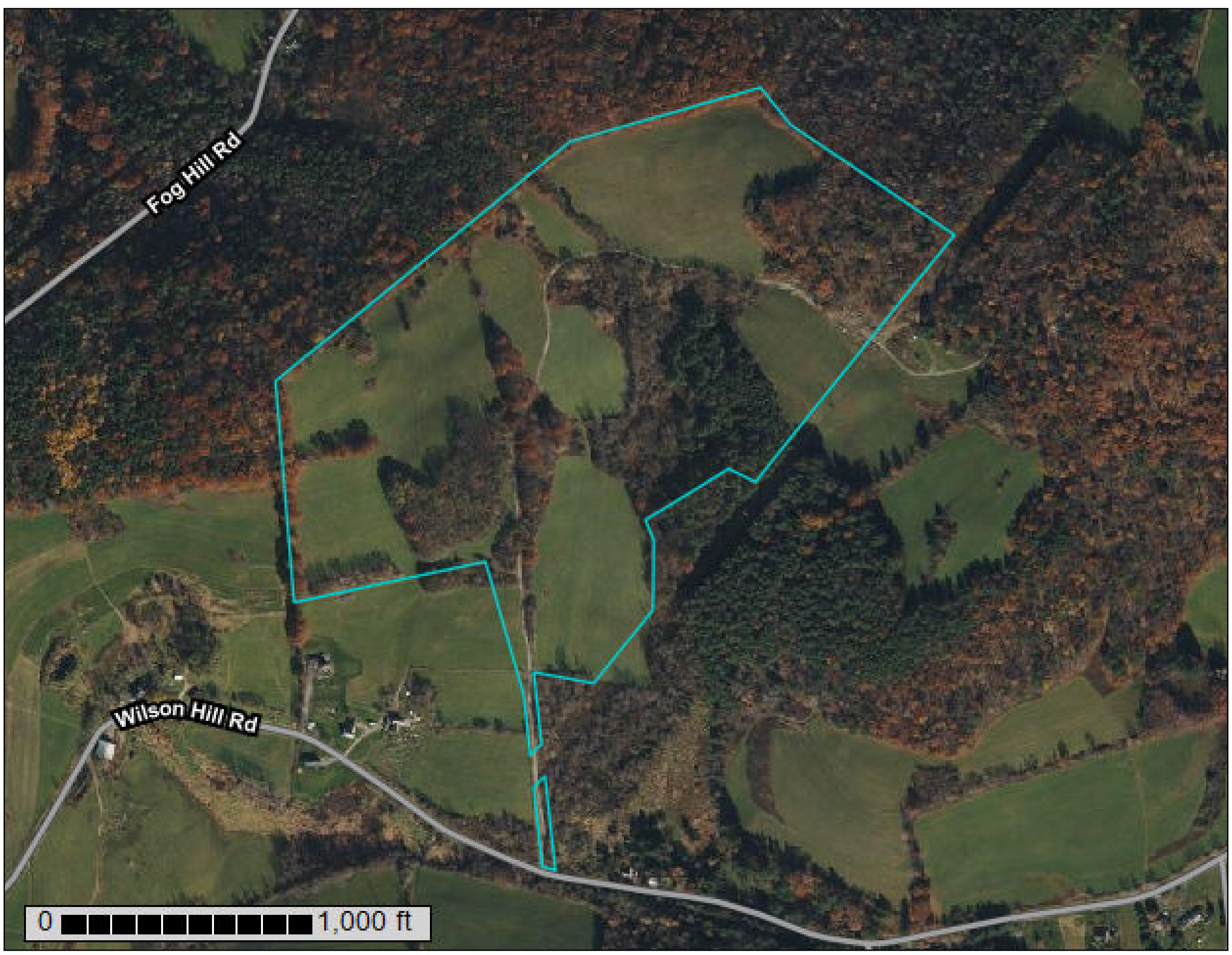
NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for

Rensselaer County, New York



August 24, 2023

Preface

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

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

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

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

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

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

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

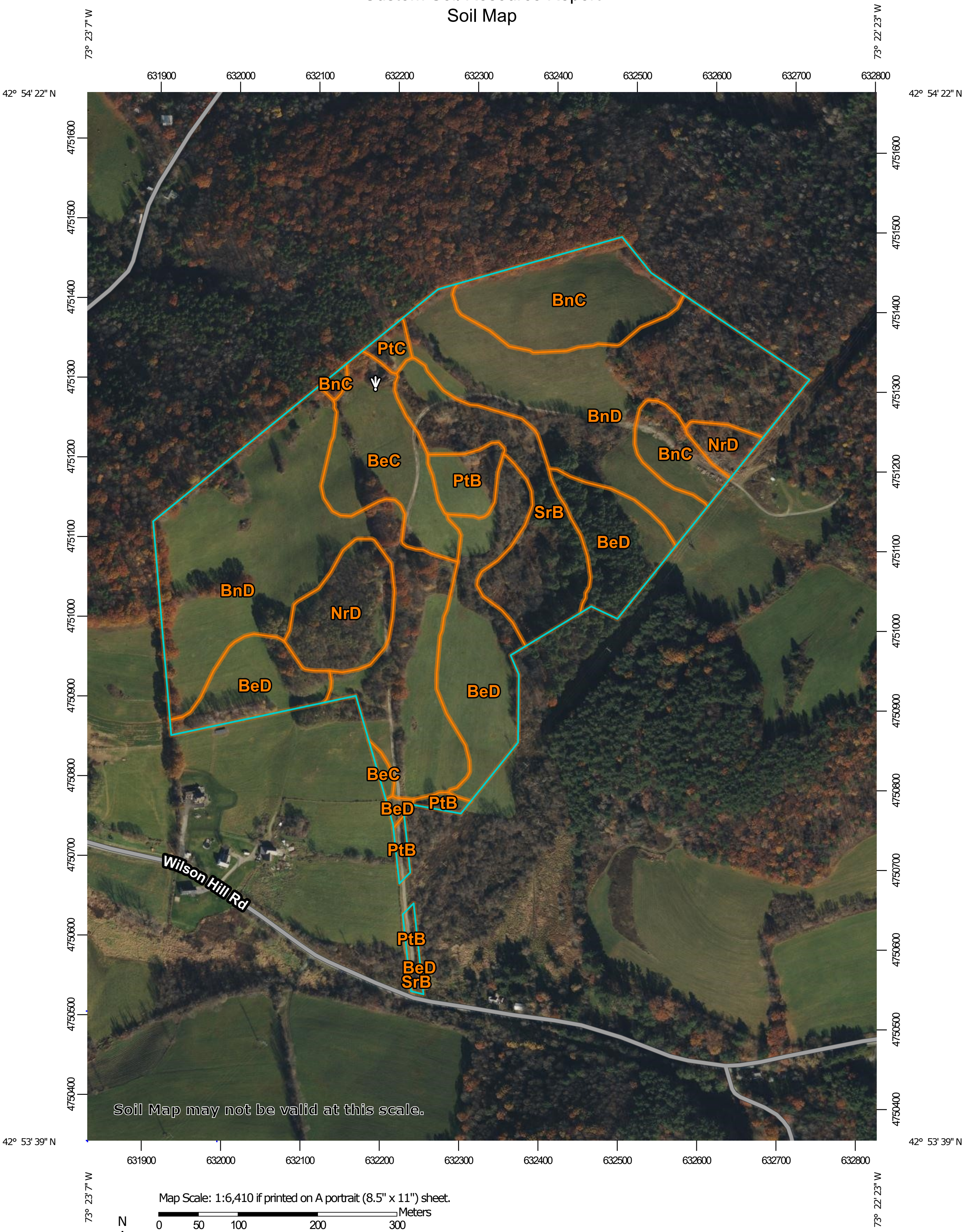
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree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

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

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

Soil Map



Map Scale: 1:6,410 if printed on A portrait (8.5" x 11") sheet.

Meters: 0, 50, 100, 200, 300

Feet: 0, 300, 600, 1200, 1800

N

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Rensselaer County, New York
Survey Area Data: Version 19, Sep 10, 2022

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

Date(s) aerial images were photographed: Aug 15, 2021—Nov 8, 2021

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BeC	Bernardston gravelly silt loam, 8 to 15 percent slopes	5.9	7.3%
BeD	Bernardston gravelly silt loam, 15 to 25 percent slopes	14.0	17.2%
BnC	Bernardston-Nassau complex, rolling	8.8	10.7%
BnD	Bernardston-Nassau complex, hilly	37.7	46.2%
NrD	Nassau-Rock outcrop complex, hilly	4.9	6.0%
PtB	Pittstown gravelly silt loam, 3 to 8 percent slopes	2.4	3.0%
PtC	Pittstown gravelly silt loam, 8 to 15 percent slopes	0.5	0.7%
SrB	Scriba silt loam, 3 to 8 percent slopes	7.3	9.0%
Totals for Area of Interest		**81.5**	**100.0%**

Map Unit Descriptions

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

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

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

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

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

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

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

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

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

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

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

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

Rensselaer County, New York

BeC—Bernardston gravelly silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9v15
Elevation: 0 to 1,000 feet
Mean annual precipitation: 36 to 44 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 115 to 195 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Bernardston and similar soils: 80 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bernardston

Setting

Landform: Drumlinoid ridges, till plains, hills
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy, acid, dense till derived mainly from phyllite, shale, slate, and schist

Typical profile

H1 - 0 to 8 inches: gravelly silt loam
H2 - 8 to 30 inches: gravelly loam
H3 - 30 to 60 inches: gravelly loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 15 to 30 inches to densic material
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C/D
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

BeD—Bernardston gravelly silt loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 9v16
Elevation: 0 to 1,000 feet
Mean annual precipitation: 36 to 44 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 115 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

Bernardston and similar soils: 80 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bernardston

Setting

Landform: Drumlinoid ridges, till plains, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy, acid, dense till derived mainly from phyllite, shale, slate, and schist

Typical profile

H1 - 0 to 8 inches: gravelly silt loam
H2 - 8 to 30 inches: gravelly loam
H3 - 30 to 60 inches: gravelly loam

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 15 to 30 inches to densic material
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C/D
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

BnC—Bernardston-Nassau complex, rolling

Map Unit Setting

National map unit symbol: 9v1c
Elevation: 0 to 1,800 feet
Mean annual precipitation: 36 to 44 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 115 to 195 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Bernardston and similar soils: 45 percent
Nassau and similar soils: 35 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bernardston

Setting

Landform: Drumlinoid ridges, till plains, hills
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy, acid, dense till derived mainly from phyllite, shale, slate, and schist

Typical profile

H1 - 0 to 8 inches: gravelly silt loam
H2 - 8 to 30 inches: gravelly loam
H3 - 30 to 60 inches: gravelly loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 15 to 30 inches to densic material
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C/D
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Description of Nassau

Setting

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

Typical profile

H1 - 0 to 7 inches: very channery silt loam
H2 - 7 to 15 inches: very channery loam
H3 - 15 to 19 inches: unweathered bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F144AY033MA - Shallow Dry Till Uplands
Hydric soil rating: No

BnD—Bernardston-Nassau complex, hilly

Map Unit Setting

National map unit symbol: 9v1d
Elevation: 0 to 1,800 feet
Mean annual precipitation: 36 to 44 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 115 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

Bernardston and similar soils: 40 percent
Nassau and similar soils: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bernardston

Setting

Landform: Drumlinoid ridges, till plains, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy, acid, dense till derived mainly from phyllite, shale, slate, and schist

Typical profile

H1 - 0 to 8 inches: gravelly silt loam
H2 - 8 to 30 inches: gravelly loam
H3 - 30 to 60 inches: gravelly loam

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 15 to 30 inches to densic material
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C/D
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Description of Nassau

Setting

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

Typical profile

H1 - 0 to 7 inches: very channery silt loam
H2 - 7 to 15 inches: very channery loam
H3 - 15 to 19 inches: unweathered bedrock

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None

Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.5 inches)

Interpretive groups

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

NrD—Nassau-Rock outcrop complex, hilly

Map Unit Setting

National map unit symbol: 9v2n
Elevation: 600 to 1,800 feet
Mean annual precipitation: 36 to 44 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 115 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

Nassau and similar soils: 40 percent
Rock outcrop: 35 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nassau

Setting

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

Typical profile

H1 - 0 to 7 inches: very channery silt loam
H2 - 7 to 15 inches: very channery loam
H3 - 15 to 19 inches: unweathered bedrock

Properties and qualities

Slope: 25 to 35 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: F144AY033MA - Shallow Dry Till Uplands
Hydric soil rating: No

Description of Rock Outcrop

Properties and qualities

Depth to restrictive feature: 0 inches to lithic bedrock

Minor Components

Alden

Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: Yes

Palms

Percent of map unit: 1 percent
Landform: Swamps, marshes
Hydric soil rating: Yes

PtB—Pittstown gravelly silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9v2s
Elevation: 100 to 1,390 feet
Mean annual precipitation: 36 to 44 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 115 to 195 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Pittstown and similar soils: 80 percent
Minor components: 1 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pittstown

Setting

Landform: Drumlinoid ridges, till plains, hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till

Typical profile

H1 - 0 to 9 inches: gravelly silt loam
H2 - 9 to 24 inches: gravelly silt loam
H3 - 24 to 60 inches: gravelly silt loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 15 to 30 inches to densic material
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F144AY037MA - Moist Dense Till Uplands
Hydric soil rating: No

Minor Components

Alden

Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: Yes

PtC—Pittstown gravelly silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9v2t
Elevation: 20 to 1,890 feet
Mean annual precipitation: 36 to 44 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 115 to 195 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Pittstown and similar soils: 80 percent
Minor components: 1 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pittstown

Setting

Landform: Hills, drumlinoid ridges, till plains
Landform position (two-dimensional): Summit

Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till

Typical profile

H1 - 0 to 9 inches: gravelly silt loam
H2 - 9 to 24 inches: gravelly silt loam
H3 - 24 to 60 inches: gravelly silt loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 15 to 30 inches to densic material
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F144AY037MA - Moist Dense Till Uplands
Hydric soil rating: No

Minor Components

Alden

Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: Yes

SrB—Scriba silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9v36
Elevation: 30 to 1,440 feet
Mean annual precipitation: 36 to 44 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 115 to 195 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Scriba and similar soils: 80 percent
Minor components: 3 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Scriba

Setting

Landform: Till plains, drumlins
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till dominated by sandstone, with lesser amounts of limestone and shale

Typical profile

H1 - 0 to 10 inches: silt loam
H2 - 10 to 21 inches: silt loam
H3 - 21 to 50 inches: gravelly silt loam
H4 - 50 to 60 inches: gravelly silt loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 12 to 21 inches to fragipan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 3.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F144AY009CT - Wet Till Depressions
Hydric soil rating: No

Minor Components

Alden

Percent of map unit: 3 percent
Landform: Depressions
Hydric soil rating: Yes

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New York Ecological Services Field Office
3817 Luker Road
Cortland, NY 13045-9385
Phone: (607) 753-9334 Fax: (607) 753-9699
Email Address: fw5es_nyfo@fws.gov

In Reply Refer To: February 20, 2023
Project Code: 2023-0047131
Project Name: Wilson Hill

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. **Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.**

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New York Ecological Services Field Office
3817 Luker Road
Cortland, NY 13045-9385
(607) 753-9334

PROJECT SUMMARY

Project Code: 2023-0047131
Project Name: Wilson Hill
Project Type: Power Gen - Solar
Project Description: power gen
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@42.90083575,-73.38041766015009,14z

Counties: Rensselaer County, New York

ENDANGERED SPECIES ACT SPECIES

There is a total of 1 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

IPAC USER CONTACT INFORMATION

Agency: Environmental Design Partnership
Name: Laurel Mitchell
Address: 900 Route 146
City: Clifton Park
State: NY
Zip: 12065
Email laurel@laurelmitchell.com
Phone: 5183477141

SECTION 7

Completed Inspection Reports