Erosion & Sediment Control /Storm Water Pollution Prevention Plan

# Orchards on Hudson - Residential

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**VHB Project #: 20578.01**

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**Forms**.....

Certification of Project Construction Contractors
Notice of Intent
Blank Notice of Intent
MS4 Acceptance Form
Blank MS4 Acceptance Form
Spill Response Procedure
Hazardous Waste/Oil Spill Report
Emergency Response Equipment Inventory
Emergency Notification Phone Numbers
Pre-construction Site Assessment Checklist
Construction Duration Inspections
Monthly Summary of Site Inspection Activities
Notice of Termination
Blank Notice of Termination

# Introduction and Instruction to Owner/Operator

On behalf of the Owner/Operator, this Erosion and Sedimentation Control / Storm Water Pollution Prevention Plan (SWPPP) has been developed for the project, as required under New York's State Pollutant Discharge Elimination System (SPDES) Permit for Construction Activites (GP-0-25-001). the proposed development of the 25.48±-acre Subject Property located at 103-107 Dock Road in the hamlet of Marlboro, Town of Marlborough, Ulster County, New York. The Subject Property spans across Dock Road with the majority of the property situated on the north side of the roadway and a small portion on the south side (see the attached Site Location Map). The Proposed Project would involve the removal of two existing single-family residences and extensive grading of the site, the majority of which was formerly used for gravel pit operations, to accommodate the development of up to 106 single-family townhomes and cottages. All requirements outlined herein shall be adhered to throughout construction.

The GP-0-25-001 permit authorizes storm water discharges to surface waters of the state for construction projects involving soil disturbances of one or more acres; including disturbance of less than one acre but part of a larger common plan of development.

This manual provides the following information, as required for the SWPPP by the SPDES Permit when applicable to the project:

- Site Description
- Development Description
- Wetland Characteristics
- Drainage Characteristics
- Soil Characteristics
- Rare and Endangered Species Data
- Construction Phasing Information
- Pollution Prevention Practices
- Erosion and Sedimentation Control BMPs
- Operations and Maintenance Plans
- Grading, Drainage and Erosion Control Plans
- SPDES Permit and Fact Sheet
- Notice of Intent (NOI) Form (to be finalized and Certified by the Owner/Operator)
- Notice of Termination (NOT) Form
- Inspection Forms, Monitoring and Reporting Requirements
- Contractor Certification Form

The general requirements (Part II. C. 1-5) for Owners/Operators with permit coverage include the following:

- Ensure all 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.
- Maintain a copy of the General Permit (GP-0-25-001), NOI, NOI Acknowledgement Letter, SWPPP, MS4 SWPPP Acceptance Form (if applicable) and inspection reports at the consruction site.
- Written authorization from NYSDEC or the regulated, traditional land use control (MS4) must be received prior to construction activity that will disturb greater than five acres of soil at one time.
- Notify the regulated traditonal land use control MS4, in writing, of any amendments or modifications to the post construction management practice component of the SWPPP, if applicable.

The NYSDEC has the right to suspend or revoke an Owner/Operator coverage under this permit at any time if the NYSDEC determines that the SWPPP does not meet the permit requirements.

Prior to construction, the Owner/Operator (under the supervision of a licensed Engineer/Landscape Architect or NYSDEC Certified Inspector), must complete the following:

- Certify that they have read and understand the terms of the SPDES Permit.
- Review this manual and coordinate any revisions with the Licensed Engineer who prepared the SWPPP.
- Review location and types of sedimentation and erosion control materials as shown on the approved Soil Erosion and Sedimentation Control Plans.
- Designate areas for stockpiles, sanitary facilities, dumpsters, wash-down, lay-down and construction trailers and appropriate erosion and sedimentation control features, which shall be approved by the Licensed Engineer, Landscape Architect, or the NYSDEC Certified Inspector.
- Identify the trained demolition contractors, site contractors and subcontractors that will be responsible for the implementation of the SWPPP and any post construction storm water management practices, if exists. A trained contractor should be on site on a daily basis when soil disturbance activities are being performed. (See the Forms section at the end of this manual.)
- Designate project contact person(s) and include contact information.

The SWPPP is a dynamic document, and must be continually updated by the Owner/Operator, under the supervision of a licensed Engineer/Landscape Architect or NYSDEC Certified Inspector, throughout construction. It is the responsibility of the Owner/Operator, under the supervision of a Licensed Engineer/Landscape

Architect or NYSDEC Certified Inspector, to update this manual and perform the activities herein, including, but not limited to:

- Perform inspections and maintenance as designated in this manual, and as required as the project phases change.
- Prepare and certify inspection reports and include reports in the SWPPP.
- Request revisions to plans, as necessary, to denote major site changes and/or changes in the site BMPs.
- Request revisions to plans to reflect changes in stockpile, sanitary facility, lay-down and other site areas.
- Maintain schedule of dates of major earthwork, stabilization and/or erosion control installations.
- Document any spills.
- Document off-site sedimentation resulting from this construction.

The following documents will need to be inserted prior to the submission to the NYSDEC:

- Signed Certification form from Contractors and Subcontractors (See Forms Section).
- Signed Notice of Intent (See NOI Forms Section).
- Signed MS4 SWPPP Acceptance Form, if applicable (See Forms Section).
- Final approved site plans including the Erosion Control Plan (See Attachment B)
- Phasing or construction schedule (See Construction Schedule and Sequence, Section IV).

The Owner/Operator, under the supervision of a Licensed Engineer, Landscape Architect, or NYSDEC Certified Inspector, must update the SWPPP throughout construction, until a Notice of Termination (NOT) Form has been submitted to the NYSDEC. From the date of submital of the NOT form, the SWPPP documents must be maintained by the site operator for a period of five years from the date of final stabilization of the site. Any changes to the approved Erosion Control Plan must be coordinated with a Licensed Engineer.

# I

# Notice of Intent (NOI) Form

The Notice of Intent (NOI) is to be submitted once a SWPPP has been developed according to all applicable requirements of the GP-0-25-001 Permit. On behalf of the Owner/Operator, VHB has prepared a majority of the NOI Form, based on the existing conditions of the site, proposed work on the site, and water quality calculations. The NOI form must be reviewed and signed by the Owner/Operator and submitted to the New York State Department of Environmental Conservation (NYSDEC) for their review. The Owner/Operator shall also advise VHB of any additional information that may not have been filled in the NOI form. The NOI does require the Local Municipality to sign an MS4 SWPPP Acceptance Form.

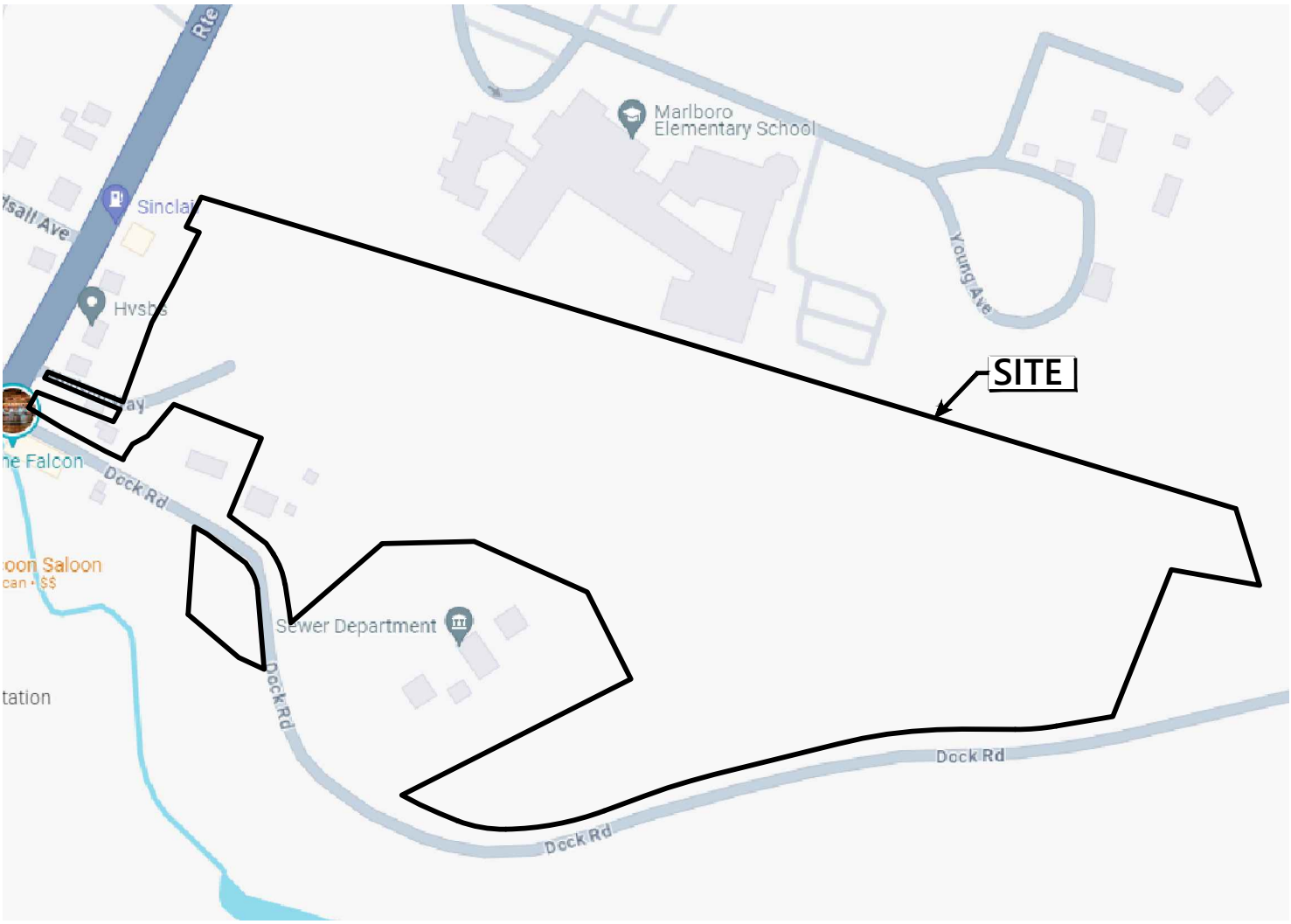
As per the requirements of the NYSDEC, this SWPPP document has been prepared, and approved by the MS4, prior to filing of the Electronic Notice of Intent (eNOI) with NYSDEC. The NYSDEC will respond to the eNOI filing with issuance of a Letter of Acknowledement (LOA), which will indicate the authorization date for discharge under this permit to commence. The owner or operator must, within five (5) business days of receipt of the LOA, send an electronic copy of the LOA to the Traditional Land Use Control MS4 Operator(s) with review authority.

The completed NOI forms can be found in the Forms Section, of this report, and blank forms also can be found on the NYS DEC website (http://www.dec.ny.gov/). The completed NOI form and MS4 Acceptance Form must be mailed to the NYSDEC Central Office in Albany (Bureau of Water Permits, 625 Broadway, 4th Floor, Albany, NY 12233-3505). The completed NOI Form and MS4 Acceptance Form must be certified and submitted by the Owner/Operator in order for it to take effect.

# II
# Project Figures

The following pages contain figures that will help establish the location and existing conditions of the site. These figures are:

- Figure 1 – Site Location Map
- Figure 2 – Site Aerial Map
- Figure 3 – Survey
- Figure 4 – FEMA Flood Map



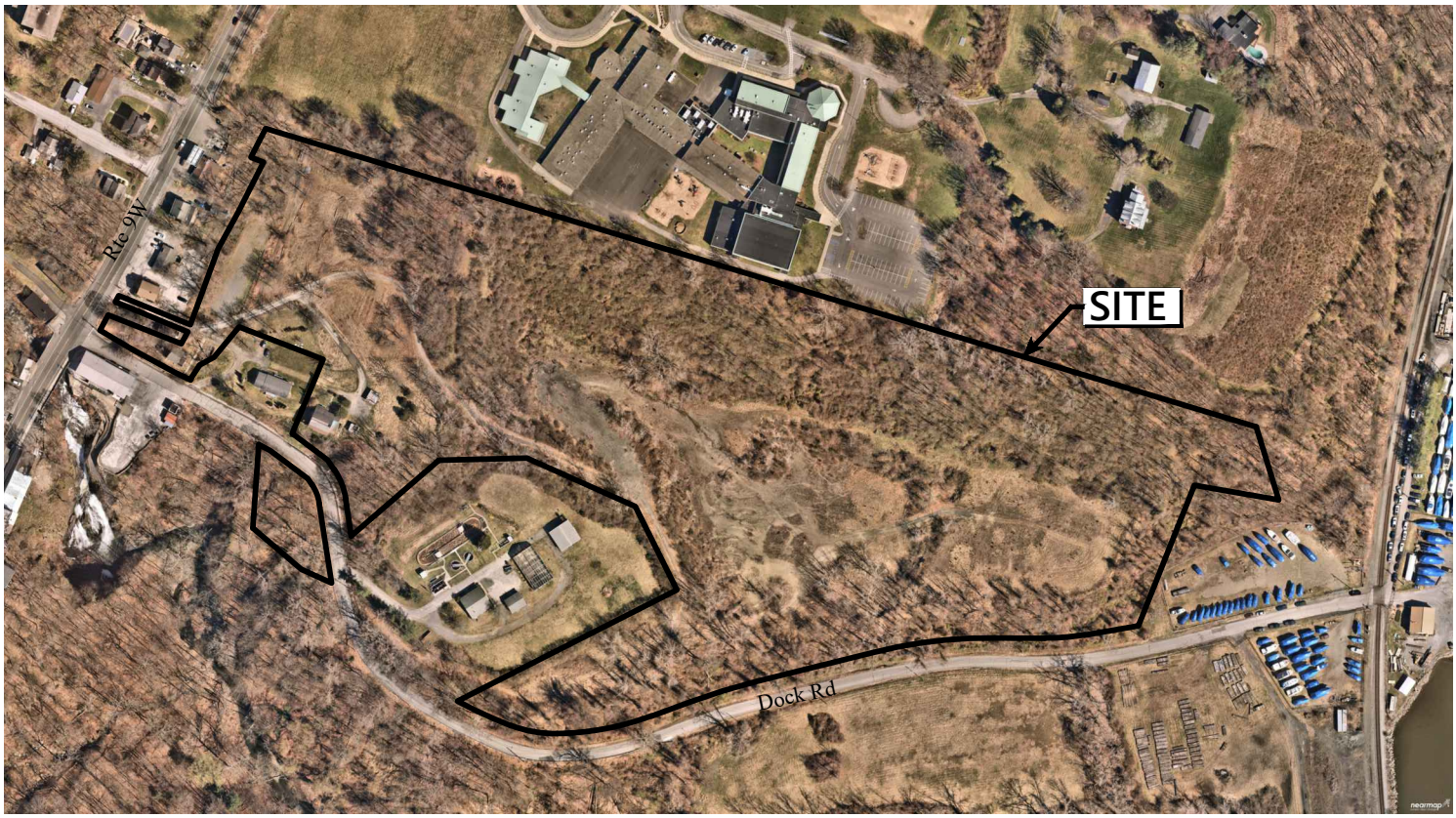

Site Location Map
Orchards on Hudson - Residential

Figure 1
September 2024

Dock Rd
Marlboro, NY 12542

.\VHB Logo.jpg

0 200 400 Feet




0 175 350 Feet

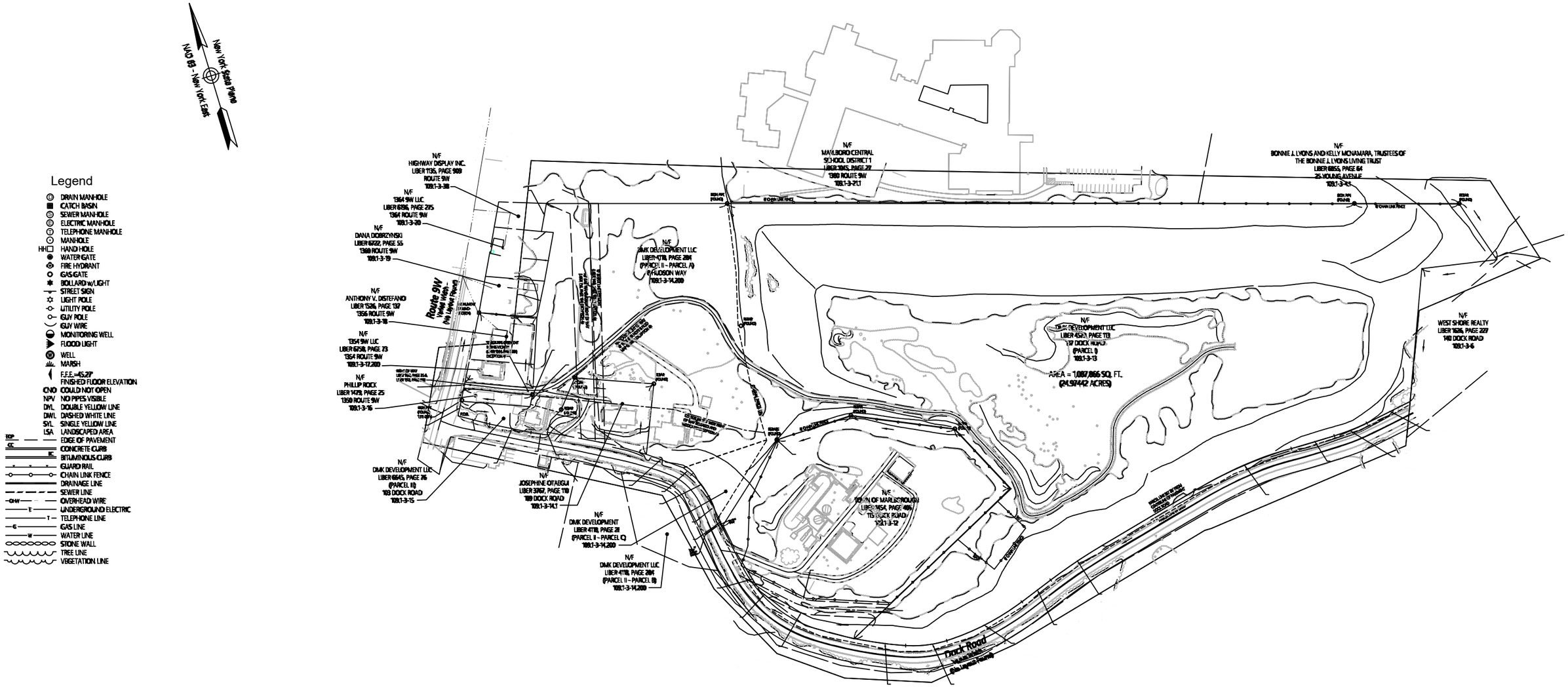
Site Aerial Map
Orchards on Hudson - Residential

Dock Rd
Marlboro, NY 12542

Figure 2
September 2024

.\VHB Logo.jpg

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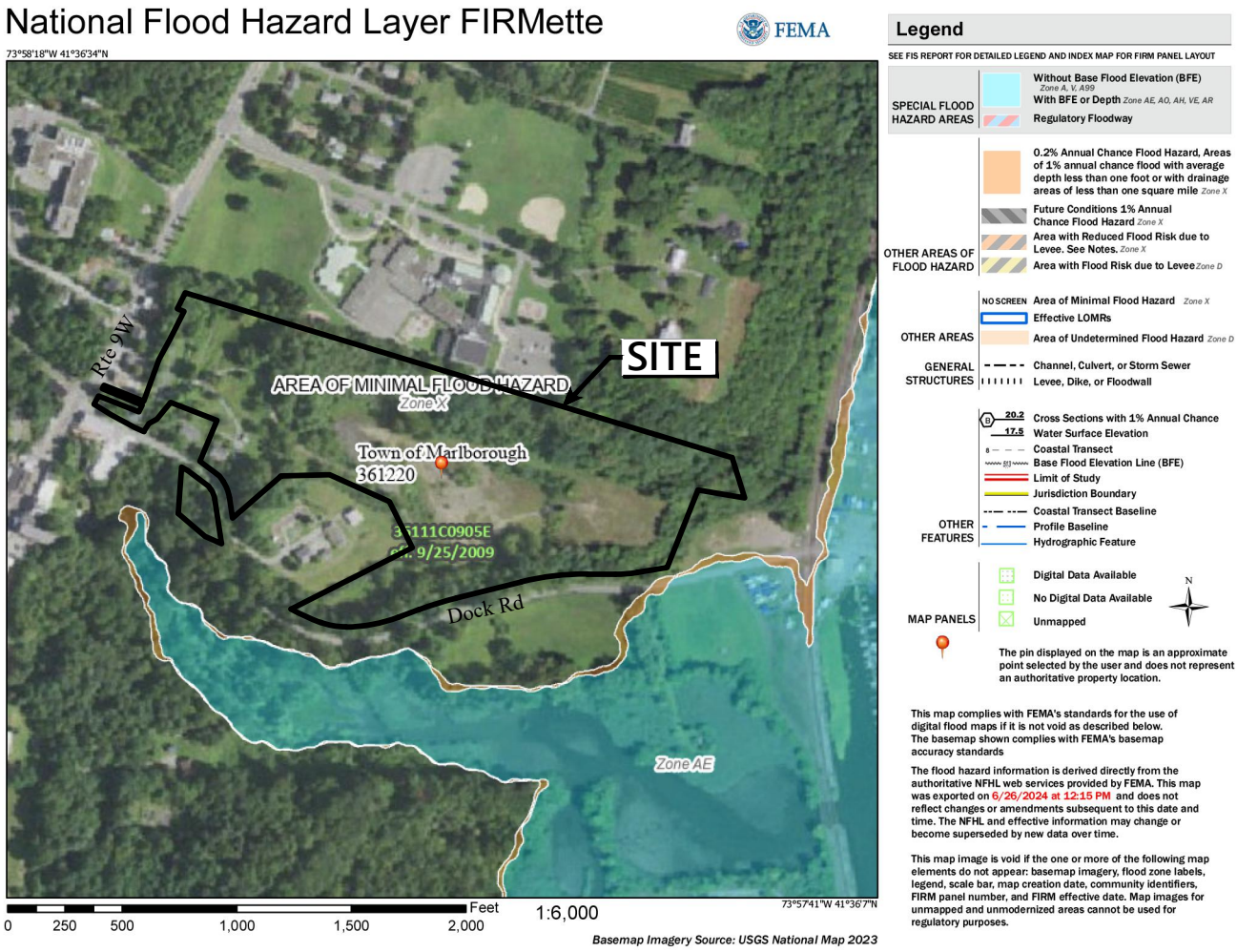



Existing Conditions Plan
Orchards on Hudson - Residential

Dock Rd
Marlboro, NY 12542

Figure 3
September 2024

.\VHB Logo.jpg




FEMA Flood Map
Orchards on Hudson - Residential

Dock Rd
Marlboro, NY 12542

Figure 4
September 2024

Map #: 36111C0905E
(Revised 09/24/2009)

0 400 800 Feet

VHB Logo.jpg

# III
# Project Description

## Site Location

The Proposed Action involves an application for special permit, site plan approval, and other approvals associated with the proposed development of the 25.48±-acre Subject Property located at 103-107 Dock Road in the hamlet of Marlboro, Town of Marlborough, Ulster County, New York. The Subject Property spans across Dock Road with the majority of the property situated on the north side of the roadway and a small portion on the south side. Ulster County Tax Map #: Section 109.1 - Block 3 - Lots 13, 14.2 and 15 and Section 108.4 - Block 3 - Lot 29.1.

Surrounding Zoning
**North:** R-1 Residential
**East:** R-1 Residential
**South:** R-1 Residential/ IND Industrial
**West:** R-1 Residential/ IND Industrial

The project site is bounded by the campus of Marlboro Elementary School to the north; A marina located at 140 Dock Road to the east; Dock Road to the south; The Hamlet of Marlboro Wastewater Treatment Facility to the southwest; Residential properties and commercial structures fronting Route 9W to the west. Section II of this report includes Figures 1 and 2 which depict the Site Location Map and Aerial Map, respectively.

## Existing Conditions

The site is currently occupied by two single-family residences however is mostly vacant land that was formerly used as a quarry. Currently, the site is not serviced by an existing on-site drainage system and all runoff either ponds on site or runs off to neighboring properties.

Section II, Figure 3 displays an existing conditions and topography plan for the project site.

## Floodplains

According to the Flood Insurance Rate Map (FIRM) prepared by the Federal Emergency Management Agency (FEMA), no portion of the site is located within the 100-year floodplain. The site is in an area of minimal flood hazard. Information obtained from the FEMA website states that the site location is within FEMA Map Number 36111C0905E.

Figure 4 in Section II of this report shows the limits of the flood plains.

## Soil Conditions

According to the NRCS soil survey for Ulster County, obtained from the USDA website, the soil is classified as 41.5 % Hoosic soils, very steep(HSF), 29.8% Riverhead fine sandy loam, 0-3% slopes(RvA), 12.1 % Chenango gravelly silt loam, 3-8 % slopes(CnB), 7.8% Raynham silt loam (Ra), 6.3% Hoosic gravelly loam 15-25% slopes (HgD) and the rest of the site is made up of Made Land(ML), , fresh water marsh(FW), and cut and fill land(CF). The surface soils on-site are within Hydrologic Soil Group A, B and D. Soil data can be found in Attachment C).

Subsurface exploration was performed by Tectonic on April 2, 2024 throughout the site. During the exploration, 27 soil borings were drilled to depths of 32 feet below existing ground surface. The site is generally underlain by native soils, consisting of coarse to fine sand with varying amounts of coarse to fine gravel and fines, and predominantly fine-grained soils with varying amounts of fine sand and gravel. Groundwater was encountered at different depths across the site at an average of nine feet below grade at the northwestern portion of the site and an average of 27 feet below grade at the southern portion of the site. See geotechnical report in Attachment C for more detail.

## Topography

The existing topography is a series of terraces with surface elevations stepping downwards from the northwest to the southeast. The site has areas of very steep slopes. In the areas of proposed developments, the surface areas range from +/- 145 feet on the western end of the site, down to +/- 63 feet at the eastern end of the site.

Topographical information is shown on the Survey plan located in Section II of this report.

## Endangered Species and Critical Habitat

The New York Natural Heritage Program's "Environmental Resource Mapper" indicates that the site in the vicinity of a rare animal. However, based on correspondence with the New York Natural Heritage Program (NYNHP), non-breeding sightings of Bald Eagle have been reported along the Hudson River in the area of Cedar Cliff, located approximately 1.2 miles to the south of the Subject Property. The NYNHP correspondence further indicates that there are no breeding records for Bald Eagle within 660-feet of the Subject Property, which is the U.S. Fish and Wildlife Service's distance threshold for determining the potential for adverse impacts to Bald Eagle nesting sites. The fish species Shortnose Sturgeon and Atlantic Sturgeon have been documented in the Lower Hudson River and therefore, could occur in the Hudson River in the vicinity of the Subject Property. The terrestrial communities of the Subject Property do not represent habitat for the two fish species and the Proposed Project would not result in adverse impacts to species habitat.

## Historic Places

The New York State Office of Parks, Recreation and Historic Preservation (OPRHP) map does not identify any archeological sensitive areas overlapping or within close proximity to the project site. According to the New York State Cultural Resource Information System (CRIS) online database, the subject property is not located within any historic districts and does not contain any designated historical buildings. See Attachment D, for the OPRHP Map.

## Proposed Project

The Proposed Action involves an application for special permit, site plan approval, and other approvals associated with the proposed development of the 25.48±-acre Subject Property located at 103-107 Dock Road in the hamlet of Marlboro, Town of Marlborough, Ulster County, New York. The Proposed Project would involve the removal of two existing single-family residences and extensive grading of the site, the majority of which was formerly used for gravel pit operations, to accommodate the development of up to 106 single-family townhomes and cottages. Each residential unit would have a garage, and visitor parking will be made available throughout the site. A clubhouse with amenities including a pool is proposed on the site towards the eastern property boundary for the use by the residents. Entry to the Subject Property would be provided from 9W in accordance with the NYS DOT requirements, with an emergency access drive off of Dock Road for emergency vehicles only. This emergency access would require an easement across the Sewer Treatment Plant property.

Sanitary waste generated by the proposed development would be handled via connection to the municipal sewer district and potable water would be provided via

connection to the Marlborough Water District. The development is proposed to utilize natural gas and electric, both to be provided by Central Hudson Gas & Electric Corp. Stormwater runoff generated at the Subject Property is proposed to be captured via two major catchment areas – the western (upper) and the eastern (lower). Stormwater runoff from each area will be collected via a system of catch basins and an on-site bioretention swale and directed to a proposed on-site underground detention chamber system which will be designed to store and infiltrate runoff.

## General Storm Water Management

All stormwater management information can be referenced in the in-depth drainage report in attachment E.

The stormwater management design for the project site will ensure that post-development peak discharge rates will not be increased from pre-development rates following construction of the proposed project. Attachment B includes site plans and details relative to the project for reference.

## Permanent Stabilization and Landscaping

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) calendar days from the date the current soil disturbance ceased to eliminate exposed soils and potential sources of erosion. For construction sites that are authorized to disturb greater than five (5) acres at one time, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) calendar days from the date the current soil disturbance ceased to eliminate exposed soils and potential sources of erosion. All areas to be planted or vegetated are to follow the approved planting plan details. Areas to be paved will be covered by bituminous pavement after final subgrades are established. Any areas disturbed as a result of construction and that are not to be planted or re-vegetated shall receive minimum six (6) inches of loam and seed. All litter, as well as debris generated by construction activities, will be removed by hand from the site and adjacent undeveloped areas.

## Project Materials

The materials or substances below are expected to be present on-site during the construction period of the proposed project:

| | |
|---|---|
| Bituminous Asphalt | Landscape Materials (Trees and Shrubs) |
| Portland Cement Concrete | Petroleum-Based Products |
| Lumber | Storm Water Structures |
| Cleaning Solvents | Erosion and Sediment Control Materials |
| Detergents | |
| Welding Supplies | |

The contractor, prior to and during the construction process, shall update this material list when necessary.

## Non-Industrial Discharges

The following non-storm water discharges may occur on this construction site:

- Fire hydrant flushing;
- Potable water including uncontaminated water line flushing;
- Pavement wash water where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used;
- Uncontaminated air conditioning or compressor condensate;
- Uncontaminated ground water or spring water;
- Foundation or footing drains where flows are not contaminated with process materials such as solvents; and
- Uncontaminated excavation dewatering

# IV
# Construction Schedule and Sequence

The following attachment is the Owner/Operator's prepared construction schedule and sequence. If revisions to the schedule and sequence are needed the Owner/Operator shall coordinate the changes with the Licensed Engineer, Landscape Architect or NYSDEC Certified Inspector. The Owner/Operator will update this construction schedule and sequence as needed and maintain a list of construction milestones.

The Site Contractor shall follow construction sequence scheduling. The sequence of actions in an Erosion and Sedimentation Control (E&SC) plan is runoff control, stabilization, and then sediment control. The management practices used in each phase of the plan must be identified on the Construction Sequence Schedule and on appropriate maps.

Erosion and sediment control provisions should be included for all construction activities as shown on the plans or as directed by the Engineer.

## General Project Phasing

Site development for the project will occur in three overlapping stages:

1. Site Preparation,
2. Construction, and
3. Final grading and Stabilization.

This project will be constructed in one single phase and will not disturb more than five acres of land.

## Site Preparation Stage

Prior to beginning any demolition or construction activities, the contractor shall install all erosion and sediment control practices as outlined in this report and on the project plans. A stabilized construction entrance will be installed, and silt fencing will be placed around the perimeter of all work areas (see the Erosion and Sediment Control plan located in Attachment B for exact locations). The silt fence will be entrenched to eliminate sediment underflow as detailed in the construction drawings. The erosion control measures will be inspected and maintained routinely throughout the duration of the project. Following the installation of erosion and sedimentation controls, the site demolition, grading and excavation may occur.

As determined by the Licensed Engineer, Landscape Architect or NYSDEC Certified Inspector, temporary berms and swales may be used to direct runoff on the site during construction. No sediment-laden water will be allowed to discharge to resource or off-site areas.

The Contractor, under the observation of a Licensed Engineer, Landscape Architect, or NYSDEC Certified Inspector, shall ensure that the erosion controls are installed correctly and will be effective. They shall be responsible to maintain and clean out any erosion control measures and add any additional measures as determined by the Licensed Engineer, Landscape Architect, NYSDEC Certified Inspector, or determined by Local Municipality.

## Construction Stage

Throughout the construction stage of the project, the contractor is required to maintain the condition of all erosion and sediment control practices. These measures should be maintained in accordance with the project plans and weekly inspections.

## Final Grading and Stabilization Phase

Upon completion of an area, the contractor shall perform all final grading and stabilization to prevent sediment runoff from leaving the site. Paved areas shall be swept clean of all sediment and debris; landscaped areas shall be permanently stabilized with vegetation in accordance with the approved landscape plan and all disturbed soil shall be restored per Table 5.2 – Soil Restoration Requirements from the New York State Stormwater Management Design Manual below. When the site is completely stabilized, a Notice of Termination will be issued to the Town of Marlboro and DEC.

**New York State Stormwater Management Design Manual (July 31, 2024)**

Chapter 5: Runoff Reduction Techniques

Section 5.1: Planning for Runoff Reduction: Preservation of Natural Features and Conservation Design

*Subsection 5.1.6: Soil Restoration*

**Table 5.2 Soil Restoration Requirements**

| Type of Soil Disturbance | Soil Restoration Requirement | | Comments/Examples |
|---|---|---|---|
| No soil disturbance | Restoration not permitted | | Preservation of Natural Features |
| Minimal soil disturbance | Restoration not required | | Clearing and grubbing |
| Areas where topsoil is stripped only - no change in grade | HSG A &B | HSG C&D | Protect area from any ongoing construction activities. |
| | apply 6 inches of topsoil | Aerate* and apply 6 inches of topsoil | |
| Areas of cut or fill | HSG A &B | HSG C & D | |
| | Aerate and apply 6 inches of topsoil | Apply full Soil Restoration ** | |
| Heavy traffic areas on site (especially in a zone 5-25 ft around buildings but not within a 5 ft perimeter around foundation walls) | Apply full Soil Restoration** de-compaction and compost enhancement) | | |
| Areas where Runoff Reduction and/or Infiltration practices are applied | Restoration not required but may be applied | | Keep construction equipment from crossing these areas. To protect newly installed practice from any ongoing construction activities construct a single-phase operation fence area |
| Redevelopment projects | Soil Restoration is required on redevelopment projects in areas where existing impervious area will be converted to pervious area | | |

*Aeration includes the use of machines such as tractor-drawn implements with coulters making a narrow slit in the soil, a roller with many spikes making indentations in the soil, or prongs which function like a mini-subsoiler.

** Refer to latest version of NYSDEC Deep-Ripping and Decompaction.

Source: New York State Stormwater Management Design Manual, July 2024

# CONSTRUCTION SCHEDULE

**(Owner/Operator to insert prepared construction schedule and sequence here)**

# V

# Spill Prevention Plan and Response Procedures

All construction personnel will be instructed regarding spill prevention practices and procedures. Notices stating these practices will be posted in the office trailer, and the site construction supervisor will be responsible for seeing that these procedures are followed.

## Material Management Practices

The following material management practices will be used to reduce the risk of spills or other accidental exposure of materials and substances to storm water runoff. These include good housekeeping practices and guidelines for the handling of hazardous products.

The following good housekeeping practices will be followed on-site during the construction period.

- Contractor/Owner to designate material storage and stockpile areas which will not interfere with site operations and erosion and sediment control measures.
- An effort will be made to store only enough products required to do the job.
- All materials stored on-site will be stored in a neat, orderly manner in their appropriate containers, and (if possible) under a roof or other enclosure.
- Products will be kept in their original containers with the original manufacturer's label.
- Substances will not be mixed with one another unless recommended by the manufacturer.
- Whenever possible, the entire product will be used before disposing of the container.
- Manufacturer's recommendations for proper use and disposal will be followed.
- The site superintendent will inspect the storage area daily to ensure proper use and disposal of materials on-site.

The following practices will reduce the risks associated with hazardous materials (e.g., petroleum products, solvents):

- A copy of all Material Safety Data Sheets (MSDS) for materials or products used during construction will be kept in the office trailer.
- Products will be kept in original containers unless they are not re-sealable.
- Original labels and material safety data (MSD sheets) containing important product information will be retained on site by the contractor in the construction trailer.
- If surplus product must be disposed, manufacturer's or local- and state-recommended methods for proper disposal will be followed.

## Product-Specific Practices

The following product-specific practices will be followed on-site. Recommendations are provided for petroleum products, solvents, paints, and other hazardous substances, and concrete. Please note that the following are general recommendations, and the Owner/Operator and Contractor are responsible for compliance with NYSDEC regulations as per the handling of the following materials.

### Petroleum Products

All on-site vehicles will be monitored for leaks and will receive regular preventive maintenance to reduce the chance of leakage. No vehicle maintenance or handling of petroleum products will occur within 100 feet of a wetland or waterway. Petroleum products will be stored in tightly sealed containers that are clearly labeled. Any asphalt substances used on-site will be applied according to manufacturer's recommendations. No petroleum-based or asphalt substances will be stored within 100 feet of a wetland or waterway.

### Fertilizers

Fertilizers will be applied only in the minimum amounts recommended by the manufacturer. Once applied, the fertilizer will be worked into the soil to limit exposure to storm water. Storage will be in a covered shed; and the contents of any partially used bags will be transferred to a sealable, plastic bin to avoid spills. No fertilizer storage will occur within 100 feet of a wetland or waterway.

### Solvents, Paints, Stucco and other Hazardous Substances

All containers will be tightly sealed and stored when not required for use. Excess materials will not be discharged to the storm sewer system but will be properly disposed according to manufacturer's instructions or state and local regulations. No storage will occur within 100 feet of a wetland or waterway.

## Concrete Trucks

Concrete trucks will not be allowed to wash out or discharge surplus concrete or drum wash water within 100 feet of wetland resources or into catch basins that are already in place.

## Concrete Truck Washout

A temporary designated concrete washout area shall be provided where concrete truck mixers and equipment can be washed after their loads have been discharged, to prevent highly alkaline runoff from entering storm drainage systems or leaching into the soil. These areas shall be either excavated or above ground construction pits. Under no circumstances will wash water from these operations be allowed to infiltrate into the soil or enter surface waters.

The washout facility shall be sized to contain solids, wash water and rainfall and must also allow for the evaporation of wash water and rainfall. Wash water shall be estimated at 7 gallons per chute and 50 gallons per hopper of the concrete pump truck and/or discharging drum. The minimum size shall be 8 feet by 8 feet at the bottom and 2 feet deep. If excavated, the sides shall be 2 feet horizontal to 1 vertical.

The facility shall be located a minimum of 100 feet from drainage swales, storm drain inlets, wetlands, streams and other surface waters. Surface water shall be prevented from entering the facility except through the access road. An appropriate gravel access road will be provided and will be sloped down to the structure. All washout facilities shall be lined to prevent leaching of liquids into the ground. The liner shall be plastic sheeting with a minimum thickness of 10 mils with no holes or tears and shall be anchored beyond the top of the pit with an earthen berm, sandbags, stone, or other structural appurtenance except at the access point. If prefabricated washouts are used, they must ensure the capture and containment of the concrete wash and be sized based on the expected frequency of concrete pours.

All concrete washout facilities shall be inspected daily. Damaged or leaking facilities shall be deactivated and repaired or replaced immediately. Excess rainwater that has accumulated over hardened concrete should be pumped to a stabilized area, such as a grass filter strip. Accumulated hard material shall be removed when 75% of the storage capacity of the structure is filled. Any excess wash water shall be pumped into a containment vessel and properly disposed of off-site. Hardened material shall be disposed of off-site in a construction/demolition landfill. The plastic liner shall be replaced with each cleaning of the washout facility. The site is to be inspected frequently to ensure that no concrete discharges are taking place in non-designated areas.

## Spill Control/Notification Practices

In addition to the good housekeeping and material management practices discussed above, the following practices will be followed for spill control, notification and cleanup.

- Manufacturer's recommended methods for spill cleanup will be clearly posted and site personnel will be informed of the procedures and the location of the information and cleanup supplies.
- Materials and equipment necessary for spill cleanup will be kept in the material storage area on-site. Equipment and materials will include, but will not be limited to, shovels, wheelbarrows, brooms, dustpans, mops, rags, gloves, goggles, kitty litter or Speedi-Dry, sand, sawdust, and plastic and metal trash containers specifically designated for this purpose.
- All spills will be cleaned up immediately after discovery.
- The spill area will be kept well ventilated and personnel will wear protective clothing to prevent injury from contact with a hazardous substance.
- Spills of toxic or hazardous material in excess of reportable quantities, as established by the New York State Department of Environmental Conservation (NYSDEC), will be reported to the NYSDEC Spill Hotline: 1-800-457-7362 (within NYS) or 1-518 457-7362 (from outside NYS) or to the National Response Center: 1-800-424-8802. The Emergency Spill Response Procedure is attached.
- The Construction Superintendent responsible for the daily operations will be the spill prevention and cleanup coordinator. He will designate at least three other site personnel to receive spill prevention and cleanup training. The names of the responsible spill personnel will be posted in the material storage area and in the on-site office trailer.

## Source Control

Trash removal, designated trash storage areas, pavement sweeping and the controlled use of deicing agents on the site will reduce the pollutant load in the site's storm water management system.

### Dust Control

Fugitive dust from large areas of unstabilized soil can be a problem during construction. On dry and windy days when dust generation is a concern or when construction activities have the potential to produce dust, a water truck will traverse the site and spray water as necessary to prevent dust from forming. Vegetative cover will also be implemented for disturbed areas that are not subject to traffic.

### Construction Trash Removal

Daily loose trash removal will prevent litter, construction debris, and construction chemicals exposed to storm water from becoming a pollutant source for storm water discharges. All loose trash will be placed in appropriate storage containers until disposed of properly off-site.

### Covered Trash/Storage Areas

Areas to be used for storing dumpsters, compactors or other raw or waste materials will be covered to prevent contact with storm water.

### Pavement Sweeping

Pavement sweeping may be required daily or even more frequently during construction where sediment tracking from construction equipment is a problem.

### Fertilizer

Fertilizer will be utilized to aid in establishing landscaping. It will be placed only in turf areas ~~a~~nd will be applied at a rate of 4 lbs. per 1,000 SF, three times per year totaling approximately 36 lbs. of fertilizer per year. It is estimated that the landscaping will be fully established after 12 months. This project will utilize slow-release fertilizer in order to limit the amount of potential nutrients that enter surrounding water systems and fertilizer use will be reduced as needed once the proposed landscaping is established and will never exceed the amounts placed during the initial establishment period.

## Waste Disposal

All waste materials will be collected and stored in securely lidded metal dumpsters leased from a licensed solid waste management company and the dumpster will be emptied as necessary. Trash will be hauled by a licensed contractor and disposed in accordance with federal, state, and local environmental regulations. No trash or construction waste will be buried on-site, and all personnel will be instructed regarding the correct procedure for waste disposal. Notices stating these practices will be posted in the office trailer and the site construction supervisor will be responsible for seeing that these procedures are followed.

### Hazardous Waste

All hazardous waste materials (e.g., petroleum products, solvents, curing compounds) will be disposed in the manner specified by local and state regulation, or by the manufacturer. Site personnel will be instructed in these practices, and the

site construction supervisor will be responsible for seeing that these procedures are followed.

### Sanitary Waste

All sanitary waste will be collected from the portable units by a licensed contractor a minimum of three times weekly and disposed in compliance with state and local regulation.

# VI

# Required Erosion and Sedimentation Control

The Owner/Operator, under the supervision of a Licensed Engineer, Landscape Architect, or NYSDEC certified inspector, will be responsible for ensuring that the specified storm water pollution control measures are installed, maintained, relocated and added to as necessary. Details of recommended storm water pollution control techniques are provided below.

## Erosion and Sedimentation Controls

The purpose of an erosion and sedimentation control program is to minimize temporary impacts to down gradient properties during the construction phase of the project by retaining sediment on site to the maximum extent practicable. The program incorporates BMPs specified in guidelines developed by the NYSDEC[1] and complies with the requirements of the SPDES General Permit for Storm Water Discharges from Construction Activities. All erosion and sediment control practices and all post-construction water quality and water quantity control practices are to be installed, inspected, and maintained as per the NYSDEC Stormwater Management Design Manual (2024) and the NYSDEC Standards and Specifications for Erosion and Sediment Control Practices (2016).
Proper implementation of the erosion and sedimentation control program will:

- Minimize exposed soil areas through temporary seeding and construction sequencing.
- Place structures to manage storm water runoff and erosion.
- Establish a permanent vegetative cover or other forms of stabilization as soon as practicable.

All manufactured control measures must be installed and maintained in accordance with the manufacturer's specifications. The following sections describe the erosion and sedimentation controls that will be used on this site. The Owner/Operator, under

1 New York State Department of Environmental Conservation (DEC). *New York Stormwater Management Design Manual*, July 2024 and *New York Standards and Specifications for Erosion and Sediment Control*, November 2016.

the observation of a licensed Engineer, Landscape Architect or NYSDEC certified inspector, will implement and add to these site conditions, when required.

## Temporary Erosion Control Practices

During construction, the contractor is required to install and maintain temporary erosion and sediment control measures to prevent sediment and debris from washing into the drainage systems and/or leaving the site. At such time that all the restoration of the construction area is completed, and the areas of disturbance are permanently stabilized, the contractor will then be permitted to remove the temporary erosion and sediment control devices.

The temporary erosion and sediment control devices will be installed prior to the start of any disturbance of the existing ground surface and will remain in place until all disturbed areas are properly stabilized. In addition to the temporary erosion and sediment control devices indicated on the Erosion and Sediment Control Details plan, the contractor shall be responsible to install any additional measures that may be needed. These additional erosion preventative measures will be installed in accordance with the "New York State Standards and Specifications for Erosion and Sediment Control."

## Stabilization Measures (Vegetative Measures)

Stabilization practices to be used on this site include mulching and temporary seeding. Stabilization practices must be initiated by the end of the next business day and completed within fourteen (14) calendar days from the date the current soil disturbance activity temporarily or permanently ceased. For projects disturbing over five (5) acres at one time, stabilization practices must be initiated by the end of the next business day and completed within seven (7) calendar days from the date the current soil disturbance activity temporarily or permanently ceased. The project has been designed to preserve existing vegetation where possible..

### Mulching

Straw mulching will be employed on all inactive and disturbed areas that will remain un-stabilized for more than the allotted completion time referenced above (fourteen (14) calendar days for projects disturbing less than five (5) acres; seven (7) calendar days for projects disturbing over five (5) acres). Mulch materials will be spread uniformly by hand or machine at a rate of approximately ninety (90) pounds per one thousand (1,000) square feet. Mulch will be spread such that at least 90 percent of the ground surface is covered. The mulch shall be anchored with wood fiber mulch (hydromulch) at 500-750 lbs./acre. The wood fiber mulch must be applied through a hydroseeder immediately after mulching. Mulching may be used with temporary or permanent seeding, or with slope stabilization techniques. Hydromulch may also be used for temporary soil stabilization.

### Temporary Seeding

A temporary vegetative cover will be established on areas of exposed soils (including stockpiles) that remain inactive and un-stabilized for a period of more than fourteen (14) days for slope stabilization in projects disturbing under five (5) acres, and seven (7) days for slope stabilization in projects disturbing over five (5) acres. The seeded surfaces will be covered with a layer of straw mulch or hydro mulch as described above

### Vegetative Slope Stabilization

Stabilization of open soil surfaces will be implemented within 14 days after grading or construction activities have temporarily or permanently ceased, unless there is sufficient snow cover to prohibit implementation. Vegetative slope stabilization will be used to minimize erosion on slopes of 3:1 or flatter. Annual grasses, such as annual rye, will be used to ensure rapid germination and production of root mass. Permanent stabilization will be completed with the planting of perennial grasses or legumes. Establishment of temporary and permanent vegetative cover may be established by hydro-seeding or sodding. A suitable topsoil, good seedbed preparation, and adequate lime, fertilizer and water will be provided for effective establishment of these vegetative stabilization methods. Mulch will also be used after permanent seeding to protect soil from the impact of falling rain and to increase the capacity of the soil to absorb water.

### Erosion Control Slope Blankets

Upon completion of final grading, any areas not covered by pavement, other forms of stabilization or landscaping and which are on slopes of 3:1 and greater will be protected with erosion control slope blankets and seeded with an erosion control seed mix. The blanket will be installed from the top of the slope, with the upper edge of the blanket secured in a trench. Blankets shall be unrolled down the slope or swale in the direction of the water flow. Edges of blanket shall be stapled with approximately four inches of overlap where two or more strip widths are required. The end of an upper blanket shall overlap the end of a lower blanket by at least six inches and both ends shall be stapled in place. The blankets will be staked and/or stapled into place as per manufacturer's recommendations. This protective measure should be inspected during installation and also before, during and after significant rain events. All damaged materials should be repaired or replaced immediately.

## Structural Practices

Structural erosion and sedimentation controls to be used throughout the project's site during construction. They include the following:

## Silt Fence Barriers

Prior to any ground disturbance the silt fence is to be put in place at the down gradient limit of work in accordance with the plan filed with the Town of Marlboro. When necessary, additional straw bale and silt fence barriers will be installed immediately down gradient of erosion-prone areas, such as the base of steep exposed slopes and around the base of stockpiles, throughout the construction phase of the project. The barriers will be entrenched into the substrate to prevent underflow.

The erosion control barriers will be inspected in accordance with the inspection requirements of the project. Any sediment that collects behind the barriers will be removed and will be either reused at the site or disposed of at a suitable offsite location. Any damaged sections of silt fence or straw bales will be repaired or replaced.

## Inlet Protection

The inlets of proposed and existing catch basins will be protected from sediment inflow throughout the construction period through the installation of Excavated Drop Inlet Protection or approved equal. Off-site catch basins will be protected from sediment inflow through the installation of Dandy Bags or approved equal**.** It should be noted that filter fabric is not an approved means of inlet protection for this project.

Installation of Dandy Bags will conform to the following:

Empty dandy bag should be placed over the grate as the grate stands on end. If using optional oil absorbents, place absorbent pillow in pouch on bottom of the unit. Attach absorbent to tether loop. Holding the lifting device (do not rely on lifting device to support entire weight of grate) place the grate into its frame.

Maintenance:

Remove all accumulated sediment and debris from the surface and vicinity of the unit after each storm event. Remove the sediment that has accumulated within the containment area of the dandy bag as needed. If using optional oil absorbents, remove and replace absorbent pillow near saturation.

Siltsacks™ may be used by surrounding them with a barrier of staked straw bales. In the latter case, a layer of filter fabric will be installed beneath the grates of the catch basins. These protection measures will be inspected in accordance with the inspection requirements of the project and will be routinely maintained until the drainage area tributary to each inlet has been vegetative stabilized and/or covered by pavement. Any sediment that collects behind the barrier or in the sacks will be removed and will be either reused onsite or disposed of at a suitable off-site location.

### Stabilized Construction Exits

A stone anti-tracking pads will be installed at each access point to the work area to prevent the off-site transport of sediment by construction vehicles. The stabilized construction exits will be at least fifty feet long and will consist of a 6-inch thick layer of crushed stone (1.5 to 2.5 inches in diameter). The stone will be placed over a layer of non-woven filter fabric. The anti-tracking pads will remain in place until a binder coat of pavement has been established in areas to be paved.

### Temporary Sediment Trap

The temporary sediment trap is to intercept sediment-laden runoff and trap the sediment in order to protect drainage ways, properties, and rights-of-way below the sediment trap from sedimentation. Sediment traps shall be located so that they can be installed prior to grading or filling in the drainage area they are to protect. Traps must not be located any closer than 20 feet from a proposed building foundation if the trap is to function during building construction. Sediment shall be removed, and the trap restored to the original dimensions when the sediment has accumulated to half of the design depth of the trap. Sediment removed from the trap shall be deposited in a protected area and in such a manner that it will not erode.

## Additional Erosion Control Measures (If Applicable)

The following controls may be implemented if directed by the Licensed Engineer/Landscape Architect, or NYSDEC Certified Inspector.

### Interior Site Erosion Controls

Additional erosion controls may be used in the central portions of the site in the event that excessive erosion occurs. Placement of temporary silt fence, straw bales or earthen berms may be used to control the movement of material within the site. If such controls are deemed necessary for adequate protection, they will be installed perpendicular to the flow direction to contain sediment. These measures will be installed to prevent perimeter erosion controls and diversion swales from becoming compromised.

The following steps will be followed to ensure that the controls are installed correctly and will be effective.

### Resource Protection

- Evaluate, mark and protect important trees and associated rooting zones, on-site septic systems absorption fields, etc.
- Temporary construction fencing will be placed around trees to remain and will be at a minimum at the drip line of the longest branch.

- Protect existing vegetated areas, by fencing off, suitable for filter strips, especially in perimeter areas.

### Surface Water Protection

- Divert off site runoff from entering disturbed areas.
- Identify bodies of water located either on site or in the vicinity of the site.
- Plan appropriate practices to protect on-site or downstream surface water. In addition, inlet protection shall be installed on proposed catch basins on site.

### Stabilized Construction Exit

- Establish a temporary construction entrance to capture mud and debris from construction vehicles before they enter the public highway.
- Stabilize bare areas (entrances, construction routes, equipment parking areas) immediately as work takes place. Top these areas with gravel or maintain vegetative cover.
- Provide wash down facilities where necessary.
- Remove sediment tracked onto public streets on a daily basis.

A description of the Stabilized Construction Exit is included in this Section and detailed on the plans located in Attachement B.

### Concrete Washout Area

- Concrete washout area to be installed as specified in Section V of this report.

### Soil Stockpiles

- Stockpile existing topsoil and other soils for future use on site if not contaminated.
- Stockpiles should be protected, stabilized and sited in a location away from the storm drains and waterbodies that is dry and stable with the surrounding area sloped at a minimum of 2 percent away from the stockpile.
- Side slopes of the stockpile shall not exceed 2H:1V.
- Upon completion of soil stockpiling, each pile shall be surrounded with silt fencing (refer to description of silt fence for details).
- Stockpile may be relocated throughout the duration of construction in order to accommodate phasing as necessary.
- Stockpile shall be covered or temporary seeded when construction ceases for more than fourteen (14) calendar days for projects disturbing less than five (5) acres. Stockpile shall be covered or temporary seeded when construction ceases for more than seven (7) calendar days for projects disturbing over five (5) acres.

### Perimeter Sediment Controls

- Silt fence material and installation must comply with the NYSDEC standard drawings and specifications. They shall also comply with the Erosion and Sedimentation Control Plan.
- Silt fencing and straw bale barriers will be entrenched to eliminate sediment underflow.
- Silt fences will be installed based on appropriate spacing intervals. This interval will decrease as the slope increases. Silt fence should be placed on or parallel to contours where there is no concentration of water flowing to the silt fence and where erosion occurs in the form of sheet erosion. On sloped areas, the area below the final silt fence shall be undisturbed ground.
- Principal sediment basins, if utilized, will be installed after construction site is assessed.
- Additional sediment traps and barriers will be installed as needed during grading.
- Erosion control blankets will be stapled and/or staked into place on slopes 3:1 or greater after disturbing area.
- The erosion control barriers will be inspected and maintained routinely throughout the duration of the project.

### Runoff Control

- Install runoff control after sediment traps are installed and before land grading starts.
- Control the runoff in each small drainage area before flow reaches runoff from entire site.
- Divert offsite or clean runoff from disturbed areas.
- Convey surface flows from highly erodible soil and steep slopes to more suitable stable areas.
- Redirect runoff from existing or proposed cut and fill slopes to reduce water velocity without causing erosion.
- Design final site drainage to prevent erosion, concentrated flows to adjacent properties, uncontrolled overflow and ponding.

### Runoff Conveyance System

- Stabilize conveyance system.
- Seed channels and streambanks at the outlet points, if exists.
- Install check dams to slow down the velocity of concentrated flow.
- Protect existing natural drainage systems and streams by maintaining vegetative buffers and by implementing other appropriate practices.

### Groundwater Recharge Measures

- Install practices to infiltrate the runoff on the site as much as possible.
- Provide groundwater recharge to maintain the hydrologic regime of the downstream water bodies and simulate predevelopment hydrology.
- Use infiltration practices to prevent concentrated flows.

### Construction Stage

The construction of the buildings, parking lot, and site appurtenances will occur during this stage. Temporary sediment traps consisting of swales and berms with stone outlet points will be constructed and maintained throughout construction as needed, in order to retain runoff on site during the construction process.

### Grading

- Limit the initial clearing and earth disturbance to that necessary to install sediment control measures. Excavation for footings, clearing, or other earth disturbance may only take place after the sediment and erosion controls are installed.
- Stockpile the existing topsoil and other soils for future use on site. The stockpiles should be protected, stabilized and sited in a location away from the storm drains and waterbodies. It should be saved on site for reuse if not contaminated. The stockpile shall be covered or temporary seeded when construction ceases for more than fourteen (14) calendar days for projects disturbing less than five (5) acres, and seven (7) calendar days for projects disturbing over five (5) acres.
- Changes in grade or removal of vegetation should not disturb established buffers and should not be allowed within any regulated distance from wetlands, the high water line of a body of water affected by tidal action, or other such protected zones.
- Avoid disturbance of steep slopes.
- Maintain undisturbed buffer to control runoff from steep slopes within sensitive areas.
- Proposed grading should not impair existing surface drainage resulting in a potential erosion hazard impacting adjacent land or waterbodies.

## Permanent Erosion Control Measures

### Permanent Seeding

Upon completion of final grading, any areas not covered by pavement, other forms of stabilization, or other methods of landscaping will be seeded with an erosion control seed mix. On slopes 4:1 and greater, loamed and seeded areas will be mulched with hay to prevent erosion prior to germination of the seed.

### Permanent Drainage Construction

- Install all proposed drainage structures.
- Install inlet protection at the newly installed drainage structures.
- Maintain the inlets free of any debris or sediment build up.

## Erosion Control (Stabilization)

- Implement erosion control practices to keep the soil in place.
- Complete stabilization for the surface of all perimeter controls and perimeter slopes.
- When activities temporarily or permanetly cease during construction, soil stockpiles and exposed soil should be stabilized by seed, mulch or other appropriate measures. The areas where soil distubance temporarily ceased, the soil stazblization 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.
- Apply temporary or permanent stabilization measures immediately on all disturbed areas where work is delayed or completed.
- Where the initiation of stabilization measures by the seventh day after construction activity temporarily or permanently ceased is precluded by snow cover or frozen ground conditions, stabilization measures shall be initiated as soon as practicable.
- For projects disturbing less than five (5) acres, where construction activity on a portion of the site is temporarily ceased, for a period of longer than fourteen (14) calendar days, temporary stabilization measures shall be provided to ensure continued stabilization. For projects disturbing over five (5) acres, where construction activity on a portion of the site is temporarily ceased, for a period of longer than seven (7) calendar days, temporary stabilization measures shall be provided to ensure continued stabilization.
- Where construction activity on a portion of the site is temporarily ceased, for a period of longer than fourteen (14) days, temporary stabilization measures shall be provided to ensure continued stabilization.
- Consult the local Soil and Water Conservation District for proper timing and application rate of seed and mulch.

## Sediment Control

- At any location where surface runoff from disturbed or graded areas may flow off the construction area, sediment control measures must be installed to prevent sediment from being transported off site. No grading, filling or other disturbance is allowed within existing drainage swales.
- Swales or other areas that transport concentrated flow should be appropriately stabilized.
- Downspout or sump pump discharges must have acceptable outfalls that are protected by splash blocks, sod, or piping as required by site conditions (i.e., no concentrated flow directed over fill slopes).

## Final Grading and Stabilization Stage

### Finalize Grading & Landscaping

- Final grading and stabilization as per the construction documents.
- All open areas, including borrow and spoil areas must be stabilized as per construction plans.
- Plan to install permanent top soil, seed, sod, mulch, riprap or other stabilization practices in the remaining disturbed areas as appropriate.
- For projects disturbing under five (5) acres at one time, stabilization must be initiated by the end of the next business day and completed within fourteen (14) calendar days from the date the current soil disturbance activity ceased; for projects disturbing over five (5) acres at one time, stabilization must be initiated by the end of the next business day and completed within seven (7) calendar days from the date the current soil disturbance activity ceased, except as noted in the GP-0-25-001.

- Remove the temporary control measures.
- StormTrap System and catch basins to be properly cleaned of sedimentation from construction activities.

### Post-construction Controls

- Catch basins, StormTrap and drain basins shall be cleaned on a regular basis to maintain the design infiltration rates.
- Identify the permanent structural or non-structural practices that will remain on the site as described in the Permanent Erosion Control Measures section above.
- Ensure that the permanent structural or non-structural practices utilized during construction are properly designed to suit the post-construction site conditions.
- In finalizing the plan, evaluate the post-construction runoff condition on the site.
- Minimize the risk of concentrated flow and erosion.

On-site runoff controls help reduce the risk of increased runoff velocity, erosion and point source discharge. In addition to the standard runoff and erosion control practices identified in NY Standards for Erosion and Sediment Control, some of the techniques discussed under on-site runoff control in the discussion of Site Preparation may be applied.

The details for the above meaures and for any additional measures that may be required can be located in the NYSDEC Specifications book.

# VII

# Inspections, Maintenance and Project Documentation

The SPDES Construction General Permit requires that the Owner/Operator, under the supervision of a Licensed Engineer, Landscape Architect or NYSDEC Certified Inspector, be responsible for implementing, inspecting and maintaining each of the storm water controls described in the plan. In addition, the Owner/Operator, under the supervision of a Licensed Engineer, Landscape Architect or NYSDEC Certified Inspector, must document compliance with the Permit throughout construction.

## Inspections

Prior to the commencement of construction activity, the Owner/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 storm water management practices included in the SWPPP. Per Part III.A.7 of the General Permit, the Owner/Operator shall have each of the Contractor(s) and Subcontractor(s) identify at least one (1) person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the Trained Contractor. The Owner/Operator shall ensure that at least one (1) Trained Contractor is on site daily when soil disturbance activities are being performed.

The Owner/Operator shall have each of the Contractors and Subcontractors identified above sign a copy of the Certification of Project Construction Contractors, enclosed in the Forms section of this Manual.

As described in Part IV, of the GP-0-25-001 Storm Water Permit, the operator shall have a Qualified Professional (Inspector) conduct an assessment of the site prior to the commencement of construction and certify in an inspection report that the appropriate erosion and sediment controls described in the SWPPP and required by Part IV.C., of this permit, have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction.

Following the commencement of construction, for construction sites where soil disturbance activities are on-going, the Qualified Professional (Inspector) shall conduct a site inspection at least once every seven (7) calendar days. For construction sites where soil disturbance activities are on-going and the owner or operator has received authorization to disturb greater than five (5) acres of soil at any one time, the qualified inspector must conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections must be separated by a minimum of two (2) full calendar days. During each inspection, the Qualified Professional (Inspector) shall record the information required by Part IV.C, of the Permit

Inspections shall include all areas of the site disturbed by construction activity and areas used for materials storage that are exposed to precipitation. The Inspector must look for evidence of, or the potential for, pollutants entering the storm water system, inspect the BMPs installed as part of the Plan, inspect the site drainage outfalls and inspect the site egress points for tracking. If, in the course of the inspection, the inspector identifies an eroded area or an area impacted by sedimentation, digital photos are required of the areas. Additional erosion and sedimentation controls will be implemented, and the SWPPP will be revised to include these changes. A digital photograph, with date stamp, will be taken after the corrective action has been completed.

For each inspection, the Inspector must complete a written inspection report in accordance with Part IV.C.4 of the Permit. A sample inspection form has been included in the Forms section of this manual. The Operator shall maintain a record of all inspection reports in a site logbook. The site logbook shall be maintained on site and be made available to the permitting authority upon request

Prior to the commencement of construction, the Operator shall certify in the site logbook that the SWPPP, prepared in accordance with Part III, of this permit, meets all Federal, State and local erosion and sediment control requirements. The Owner/Operator will maintain a copy of the General Permit (GP-0-25-001), NOI, NOI Acknowledgement Letter, SWPPP, MS4 SWPPP Acceptance form, and inspection reports on the construction site until final stabilization and the NOT has been submitted to the NYSDEC. The Operator must make available for review and copying by any person within five business days of the owner or operator receiving a written request to review the NOI, SWPPP or inspection reports. Any copying of documents will be done at the requester's expense

## Maintenance

All erosion and sedimentation controls and other protective measures identified in the SWPPP must be maintained in effective operating condition. If site inspections identify BMPs that are not operating effectively, maintenance, modification or replacement with an alternative or additional BMPs must be initiated. The qualified inspector shall notify the owner/operator and the contractor or subcontractor within one business day of the completion of an inspection 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.
The following maintenance program is proposed to ensure the effectiveness of the structural controls during the construction phase of this project:

- The on-site representative will inspect all sediment and erosion control structures and records of the inspections will be prepared and maintained on-site by the Owner/Operator.
- Silt shall be removed from behind barriers if greater than 6-inches deep or as needed.
- Paved areas of the site will be swept on an as needed basis during the site construction.
- Damaged or deteriorated items will be repaired immediately after identification.
- The underside of straw bales should be kept in close contact with the earth and reset as necessary, if applicable.
- Sediment from sediment traps or sedimentation ponds must be removed when design capacity has been reduced by 50 percent.
- Sediment that is collected in structures shall be disposed of properly and covered if stored on-site.
- Erosion control structures shall remain in place until all disturbed earth has been securely stabilized. After removal of structures, disturbed areas shall be re-graded and stabilized as necessary.

If, in the course of the inspection, the Inspector identifies an eroded area or an area impacted by sedimentation, additional erosion and sedimentation controls, will be coordinated with the Licensed Engineer or Landscape Architect, who prepared the SWPPP. The SWPPP will then be revised to include these changes.

Coordination with local Storm Water Management Officer may be required which may include additional inspections or requirements.

## Documentation

Construction drawings must be kept current in the SWPPP. If the site was built according to the SWPPP design drawing, that design drawing may be used to create the as-built drawing. An as-built drawing must be prepared prior to SWPPP termination for all projects.

The following records must be maintained as part of the Owner/Operator's SWPPP:

- Dates when major grading activities occur;
- Dates when construction activities temporarily or permanently cease on a portion of the site;
- Dates when stabilization measures are initiated;

- Inspection dates and proceses;
- SWPPP Amendment Log.

The forms in the Forms Section have been prepared by NYSDEC to collect information from Construction Storm Water Inspections and to report Quarterly Summary SWPPP Status with Permit Compliance.

# VIII

# Project Storm Water Management Practices

The Owner/Operator, under the supervision of a Licensed Engineer, Landscape Architect or NYSDEC Certified Inspector, will be responsible for ensuring that the specified water quality and water quantity control measures are installed and maintained as necessary. Details of recommended storm water pollution control techniques are provided below.

## 6-Step Storm Water Site Planning Process

As per the latest New York State Storm Water Management Design Manual, Planners and Designers must apply runoff reduction techniques as part of a comprehensive storm water management planning process. This process is intended to help maintain the pre-construction hydrologic conditions of the site using green infrastructure practices to reduce the post construction runoff from the site and reduce the need for treatment.

The proposed project has been designed to improve the existing site conditions such that total runoff potential within the designated area of disturbance is reduced. It is assumed that overbank flood (10-year storm) and extreme flood (100-year storm) requirements will be reduced in post development conditions. The Stormwater Management Report provided in Attachment E of this document outlines how this is accomplished.

The following constitutes the six-step planning process detailed in the NYS Storm Water Management Design Manual.

### Step 1 – Site Planning to Preserve Natural Features and Reduce Impervious Cover

During the site planning process of this project, consideration was given to reducing the impervious cover and preservation of buffers. The site will be improved with landscaped areas, and it is the intent of this project to install standard SMP's to ensure that the storm water is contained and treated within the site as described

throughout this report both during and post development.

### Step 2 – Determine Water Quality Treatment Volume (WQv)

The proposed drainage system for the proposed site compiles with state and local storm water management requirements. The New York State DEC Storm Water Management Design Manual requires the project to store the water quality volume (WQv) which is defined as the volume of runoff generated from the entire 90% rainfall event (Figure 4.1 – Attachment E). As such, the proposed storm water practices shall be sized to meet or exceed the volume of the 90%, or 24-hour rain event. The 90% rainfall event for this region is 1.5 inches. As outlined in the Stormwater Management Report referenced above, the proposed drainage systems provide enough storage to capture the water quality volume.

### Step 3 – Apply Runoff Reduction Techniques and Standard SMP's with RRv Capacity to Reduce Total WQv

During the design phase, this project considered the potential use of green infrastructure and SMP's with Runoff Reduction Volume (RRv) capacity techniques. As NYSDEC recognizes the use of the StormTrap system and drywells in New York as an acceptable runoff reduction technique, majority runoff from the designated area of disturbance will be directed to catch basins and area drains in connection with the StormTrap System in that area the rest of the runoff will be directed to a catch basins and area drains in connection with the drywells in that area.

The RRv capacity of each individual system is shown in the New York State Water Quality and Quantity spreadsheet found in Attachment E, the RRv capacity is achieved to reduce the total WQv.

### Step 4 – Determine the Minimum RRv Required

As shown in the Stormwater Management Report in Attachment E, the proposed drainage systems achieve the Runoff Reduction Volume (RRv) requirements with storage and infiltration which exceeds the required WQv as noted above.

### Step 5 – Apply Standard Storm Water Management Practices to Address Remaining Water Quality Volume

This step is not applicable since the proposed drainage system provides storage for runoff in excess of the RRv (See Step 2-4 above).

### Step 6 – Apply Volume and Peak Rate Control Practices if Still Needed to Meet Requirements

An analysis of the post-development hydrology for the subject property was performed in order to demonstrate the functionality of the proposed storm water system during the Overbank Flood and the Extreme Storm conditions (10-year and 100-year storms). Analytical results are outlined in the below section.

## Hydrologic Analysis Results

In order to demonstrate that the proposed storm water management system for the project is capable of accommodating post-development runoff for the Overbank Flood and Extreme Storm conditions (10-year and 100-year storm events), a model was developed using HydroCAD software to analyze these conditions.

In accordance with the NYSDEC requirements, the HydroCAD model uses the TR-20 methodology to calculate peak runoff rates for a specific design area. The program is then used to model storage over time along with infiltration through the proposed drainage systems to determine the discharge from each system during the specific rain events.

For the purpose of this model, based on the findings stated in the geotechnical report provided by Tectonic Engineering Consultants, Geologists and Land Surveyors, D.P.C, an infiltration rate of 5 inches per hour was used to model recharge rates of water leaving the structures.

The in-depth Drainage analysis report can be used to reference all pre-development and post development conditions for the site. See Attachment E for the HydroCAD model and further analysis.

The following summarizes the results of the analysis:

- The total Runoff Reduction Volume is achieved at 100% of the Water Quality Volume through available storage.
- Based on required storage and recharging of runoff and the on-site soil infiltration, the peak runoff rates for the Channel Protection, Overbank Flood and Extreme Storm Protection (2, 10- and 100-year storms respectively); all drainage area systems meet the requirement to capture, store, and decrease runoff offsite.

## Water Quality Controls

Water quality control measures are designed to minimize impact to receiving water bodies from storm water pollution. As storm water runoff travels across impervious surfaces, it collects pollutants such as sediments, oil, and trash and carries them to a receiving water body. Properly installed and maintained storm water best management practices (BMPs) can capture these pollutants and reduce the impact that the proposed development has on the environment. The BMPs selected for this project were designed based on guidelines developed in the New York State Storm Water Management Design Manual[2].

Proper implementation of the water quality control measures will:

- reduce post-construction sediment impacts; and
- promote infiltration of storm water to maintain pre-construction hydrology

All manufactured control measures must be installed and maintained in accordance with the manufacturer's specifications. The following sections describe the water quality controls that will be used on this site. The Owner/Operator, under the supervision of a Licensed Engineer, Landscape Architect or NYSDEC Certified Inspector, will implement and add to these site conditions, when required.

## Non-structural Practices

### Pavement Sweeping

The sweeping program will remove sediments and contaminants directly from paved surfaces before their release into storm water runoff. Pavement sweeping has been demonstrated to be an effective initial treatment for reducing pollutant loading into storm water[3].

### Catch Basin Cleaning

Sediments and other contaminants that are not removed by pavement sweeping are transported by storm water runoff to the site's catch basin systems. Once in the catch basin, they settle to the bottom of the system. This material will be removed on a regular basis to prevent contaminants from migrating out of the drainage system during high flow events or reducing the infiltration capacity of the devices.

2 New York State Department of Environmental Conservation (DEC). *New York Storm Water Management Design Manual*, January 2015

3 U.S. Environmental Protection Agency, 1979. *Demonstration of Nonpoint Pollution Abatement Through Improved Street Cleaning Practices.*

### StormTrap Cleaning

Material will be removed on a regular basis to prevent contaminants from migrating out of the drainage system during high flow events or reducing the infiltration capacity of the devices.

## Structural Practices

Structural erosion and sedimentation controls to be used on the site include the following:

### Landscaping

Wherever possible, existing vegetation is maintained on the site. Landscape materials installed in new planting beds and lawn areas shall be planted with native and drought-tolerant species that do not require intensive applications of fertilizer or water. When required, fertilizer and pesticide applications will be managed to prevent storm water runoff from coming in contact with these products.

## Infiltration Practices

The following infiltration practices have been selected and approved for installation at this site.

### Storm Trap System

Storm Trap System is a network of precast concrete structures with open section in the bottom slab that allow stormwater to recharge into the suitable leaching material below. Additional detail for the storm trap systems can be seen on the site plans in Attachment B. Where required, backfill under and around the structures shall be of granular material containing less than 15% fine sand, silt, and clay. An inspection and cleaning port shall be provided at the ground surface so that the drainage leaching

### Drywells

Drywells constructed from twelve-foot diameter perforated concrete rings provide storage of the required water quality volume (WQv) as well as infiltration capacity for five inches of rainfall over the site. These drywells shall be excavated to a depth sufficient to achieve six feet of penetration into suitable leaching material. Where required, backfill under and around the drywells shall be of granular material containing less than 15% fine sand, silt, and clay. Where a single drywell cannot provide sufficient storage and/or infiltration capacity, the drywells shall be connected in series with twelve-inch HDPE pipe. An inspection and cleaning port shall be provided at the ground surface so that the drywells can be maintained.

## Climate Change Consideration

In compliance with the SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-25-001), this SWPPP demonstrates consideration of the future physical risks associated with climate change as mandated by the Community Risk and Resiliency Act (CRRA), 6 NYCRR Part 490, and associated guidance. The CRRA requires applicants for certain permits, funding, and approvals to consider the impacts of climate change on their projects, and 6 NYCRR Part 490 establishes criteria for assessing physical risks and ensuring community resilience. The following elements focus on the risks posed by changing climate conditions and illustrates how these considerations are integrated into the overall site planning.

Increasing temperatures associated with climate change are projected to affect soil moisture retention and overall vegetative health, which may impact the effectiveness of erosion control measures.[4] Prolonged periods of high temperatures can lead to reduced vegetation coverage, increasing soil exposure and runoff potential. To mitigate these effects, native and drought-tolerant plant species will be incorporated into the landscaping and planting plan, ensuring long-term stability of the landscape. Increasing precipitation patterns associated with climate change present concerns regarding site drainage and stormwater infrastructure capacity. More intense rainfall events may contribute to increased runoff volumes, leading to potential erosion and sediment transport.[5] The proposed drainage improvements for the site include multiple underground detention structures and a few drywell systems. The underground detention systems are designed for calculated outflow which are less than existing. Additionally, all outfalls use level spreader to increase sheet flow and decrease the potential for erosion. The drywell systems are designed to handle a 100 year storm so there would no discharge.

Variability in precipitation, including the possibility of extended drought conditions, necessitates the consideration of soil stability and stormwater retention practices. During dry periods, soil desiccation can lead to increased erosion risk when precipitation events do occur. The proposed stormwater management plan incorporates infiltration-based solutions that will retain stormwater for gradual percolation into the subsurface, reducing the risks associated with precipitation extremes. Additionally, as previously mentioned, the landscaping plan proposes the inclusion of native and drought-tolerant plant species to help ensure long term stability of the landscape.

[4] Eekhout, J.P.C, de Vente, J. *Global impact of climate change on soil erosion and potential for adaptation through soil conservation* (March 2022). DOI: https://doi.org/10.1016/j.earscirev.2022.103921.

[5] USEPA. Climate Adaptation and Erosion & Sedimentation (May 28, 2024). Available at: https://www.epa.gov/arc-x/climate-adaptation-and-erosion-sedimentation#:~:text=Climate%20changes%2C%20such%20as%20more,sediment%20loading%20from%20stormwater%20runoff.

Increasing frequency and severity of flooding associated with climate change pose risks to site infrastructure and overall project sustainability. According to FEMA Flood Insurance Rate Maps, a small portion of the site along Green Acres Road is within the 0.2% annual chance flood hazard zone.[6] As previously noted, the proposed stormwater management system is designed to account for extreme rainfall events by implementing higher-capacity drainage components, and ensuring floodwaters can be properly conveyed away from the developed areas on-site and into the municipal storm sewer system.

Rising sea levels may impact low-lying project sites, particularly those near coastal regions or water bodies. According to the National Oceanic and Atmospheric Administration (NOAA) Sea Level Rise Viewer,[7] the Subject Property would begin to be impacted by a Mean Higher High Water (MHHW) rise of 6ft from the current conditions. Although the Green Acres Mall site is not immediately adjacent to tidal waters, groundwater table fluctuations influenced by sea level rise could affect infiltration-based stormwater systems longer term. The project design incorporates a subsurface infiltration system with storage volume that accounts for potential fluctuations in groundwater levels.

Increasing storm surges can exacerbate flooding events, particularly in coastal and nearshore environments. While the project site is located inland, storm surges from severe coastal storms could impact regional drainage infrastructure. The stormwater management system has been designed to integrate with Nassau County's existing stormwater network to ensure excess stormwater is effectively managed long term.

Shifting ecology due to climate change may result in the introduction of invasive plant species and changes in native vegetation dynamics, affecting the site's long-term ecological balance. Climate-resilient native plant species are proposed as part of the landscaping plan. Under existing conditions, the site is entirely developed and poses limited habitat for invasive plants and wildlife.

Shifting ecology due to climate change may present a challenge for maintaining the site's long-term ecological balance. Invasive plant species, which may outcompete native vegetation, disrupt plant communities, and affect soil and water dynamics, pose a risk as climate patterns change. The landscaping plan addresses this by incorporating climate-resilient native plant species, which can better withstand changing climate conditions. Currently, the developed site limits habitat diversity, reducing the immediate risk from invasive species. However, the redevelopment considers how changes in vegetation and land use could impact ecological dynamics, ensuring a sustainable environment that enhances resilience to climate impacts.

[6] FEMA. FEMA's National Flood Hazard Layer (NFHL) Viewer. Available at: https://hazards-fema.maps.arcgis.com/apps/webappviewer/index.html?id=8b0adb51996444d4879338b5529aa9cd
[7] NOAA. Sea Level Rise Viewer. Available at: https://coast.noaa.gov/digitalcoast/tools/slr.html

By incorporating these considerations into the site planning, design of control measures, and stormwater management strategies, this SWPPP ensures resilience against future climate risks. This proactive approach aligns with regulatory guidelines and supports long-term sustainability goals for the proposed project.

# IX
# Project Termination

An Owner/Operator must terminate coverage under the SPDES permit by submitting a completed Notice of Termination (NOT). The Notice of Termination may be filed if there is a completion of all construction activity identified in the SWPPP, all areas of disturbance have achieved final stabilization, all temporary structural erosion and sediment control measures have been removed, all post-construction storm water management practices have been constructed and are operational in conformance with the SWPPP, and an as-built plan has been prepared. Per Part V.A.1, a NOT must also be filed when one or more of the following requirements have been met:

- Planned shutdown with partial project completion – All soil disturbance activities have ceased; all areas disturbed as of the project shutdown date have achieved final stabilization; all temporary structural erosion and sediment control measures have been removed; all post-construction storm water management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational; and as-built drawing has been prepared.
- A new Owner/Operator has obtained coverage under GP-0-25-001 in accordance with Part I.G.
- The Owner/Operator obtains coverage under an alternative SPDES general permit or an individual SPDES permit.

A final inspection by a qualified inspector is required. The qualified inspector is required to sign the "Final Stabilization" and "Post Construction Storm Water Management Practice" sections of the NOT. A regulated traditional land use control MS4 is required to sign the MS4 Acceptance Statement on the NOT Form, if applicable.

If there are any post-construction storm water management practices, the Owner/Operator must ensure that post-construction storm water practices are properly maintained in accordance with an operations and maintenance manual to be prepared in conjunction with the NOT.

- Any post-construction storm water management practices and right of ways have been deeded to the Local Municipality, where applicable.

- There is an executed maintenance agreement with the Local Municipality that will maintain any post-construction storm water management practices, where applicable.
- If privately owned, the Owner/Operator modified the deed to include a deed covenant that requires operation and maintenance of the practices.
- If post-construction storm water management practices that are owned by a public or private institution, the Owner/Operator must have policy and procedures in place to ensure the operation and maintenance of the practices are carried out as per the operation and maintenance plan.

On behalf of the Owner/Operator VHB has prepared a majority of the NOT Form. The NOT form must be reviewed and signed by the Owner/Operator, the certified licensed inspector, and the regulated traditional land use control MS4 and submitted to the NYSDEC, when the project is to be terminated. The Owner/Operator shall also advise VHB of any additional information that may not have been filled in the NOT form. The completed NOT Form must be certified and submitted by the Owner/Operator in order for the permit to be closed.

# Attachment A
# SPDES Permit for Storm Water Discharges GP-0-25-001

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL
CONSERVATION (NYSDEC)

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

**CONSTRUCTION ACTIVITY**

Permit No. GP-0-25-001

Construction General Permit (CGP)

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

of the Environmental Conservation Law

Effective Date: January 29, 2025 Expiration Date: January 28, 2030

Scott E. Sheeley

Chief Permit Administrator

Scott E. Sheeley JAN. 29, 2025

Authorized Signature Date

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

## PREFACE

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

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

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

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

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## Part I. How to Obtain Coverage and General Requirements

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

### A. Eligibility Requirements

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

1. The *owner's or operator's construction activities* involve soil disturbances of:

    a. one or more acres; or

    b. less than one acre which are part of a *common plan of development or sale* that will ultimately disturb one or more acres; or

    c. less than one acre where NYSDEC has determined that a SPDES permit is required for *stormwater discharges* based on the potential for contribution to a violation of a *water quality standard* or for significant contribution of pollutants to *surface waters of the State*.

        i. 5,000 square feet or more, but less than one acre, and are in the New York City Watershed located east of the Hudson River, Appendix C Figure 1; or

        ii. 20,000 square feet or more, but less than one acre, within the municipal boundaries of the City of New York (NYC); or

        iii. less than 20,000 square feet which are part of a *common plan of development or sale* that will ultimately disturb 20,000 square feet or more, but less than one acre, within the municipal boundaries of NYC; or

        iv. that creates 5,000 square feet or more of *impervious area* within the municipal boundaries of NYC.

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

    a. already covered by a different SPDES permit; or

    b. covered under a different SPDES permit that was denied, terminated, or revoked; or

    c. identified in an expired individual SPDES permit that was not renewed; or

    d. required to obtain an individual SPDES permit or another general SPDES permit in accordance with Part VII.K.

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

    a. permit issued pursuant to 6 NYCRR Part 182 for the project; or

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

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

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

        i. 1-5 acres of disturbance - 20 feet; or

        ii. 5-20 acres of disturbance - 50 feet; or

iii. 20+ acres of disturbance - 100 feet.

b. NYSDEC consultation form sent to OPRHP,[1] and copied to NYSDEC's Agency Historic Preservation Officer (APO), and

i. the State Environmental Quality Review Act (SEQR) Environmental Assessment Form (EAF) with a negative declaration or the Findings Statement, with documentation of OPRHP's agreement with the resolution; or

ii. documentation from OPRHP that the *construction activity* will result in No Impact; or

iii. documentation from OPRHP providing a determination of No Adverse Impact; or

iv. a Letter of Resolution signed by the *owner or operator*, OPRHP and the DEC APO which allows for this *construction activity* to be eligible for coverage under the general permit in terms of the State Historic Preservation Act (SHPA).

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

i. No Affect; or

ii. No Adverse Affect; or

iii. Executed Memorandum of Agreement.

d. documentation that SHPA Section 14.09 has been completed by NYSDEC or another state agency.

5. If *construction activities* are subject to SEQR, the *owner or operator* must obtain documentation that SEQR has been satisfied.

6. If *construction activities* are not subject to SEQR, but subject to the equivalent environmental review from another New York State or federal agency, the

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

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

7. If *construction activities* require Uniform Procedures Act (UPA) Permits (see 6 NYCRR Part 621) from NYSDEC, or the equivalent from another New York State or federal agency, the *owner or operator* must:

    a. obtain all such necessary permits; or

    b. receive notification from NYSDEC pursuant to 6 NYCRR 621.3(a)(4) excepting Part I.A.7.a.

8. *Construction activities* are not eligible if they meet the following criteria in Part I.A.8.a. or b.:

    a. For linear transportation and linear utility project types, the *construction activities*:

        i. are within the watershed of *surface waters of the State* classified as AA or AA-S identified utilizing the Stormwater Interactive Map on NYSDEC's website; and

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

        iii. disturb two or more acres of *steep slope*.

    b. For all other project types, the *construction activities*:

        i. are within the watershed of *surface waters of the State* classified as AA or AA-S identified utilizing the Stormwater Interactive Map on NYSDEC's website; and

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

        iii. disturb one or more acres of *steep slope*.

## B. Types of *Discharges* Authorized

1. The following *stormwater discharges* are authorized under this permit:

   a. *Stormwater discharges*, including *stormwater* runoff, snowmelt runoff, and surface runoff and drainage, associated with *construction activity*, are authorized under this permit provided that appropriate *stormwater* controls are designed, installed, and maintained in accordance with Part II. and Part III.

   b. *Stormwater discharges* from construction support activities at the *construction site* (including concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, and borrow areas) if the following requirements are met:

      i. The support activity is directly related to the *construction site* required to have permit coverage for *stormwater discharges*; and

      ii. The support activity is not a commercial operation, nor does it serve multiple unrelated *construction sites*; and

      iii. The support activity does not continue to operate beyond the completion of the *construction activity* at the site it supports; and

      iv. *Stormwater* controls are implemented in accordance with Part II. and Part III. for *discharges* from the support activity areas.

2. The following non-*stormwater discharges* associated with *construction activity* are authorized under this permit:

   a. Non-*stormwater discharges* listed in 6 NYCRR 750-1.2(a)(29)(vi), with the following exception: "*Discharges* from firefighting activities are authorized only when the firefighting activities are emergencies/unplanned"; and

   b. Non-*stormwater discharges* of waters to which other components have not been added that are used in accordance with the *SWPPP* to control dust or irrigate vegetation in stabilized areas; and

   c. Uncontaminated *discharges* from *dewatering* operations

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

## C. Prohibited *Discharges*

1. Non-*stormwater discharges* prohibited under this permit include but are not limited to:

    a. Wastewater from washout of concrete; and

    b. Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds, and other construction materials; and

    c. Fuels, oils, or other *pollutants* used in vehicle and equipment operation and maintenance; and

    d. Soaps, solvents, or detergents used in vehicle and equipment washing or external building washdown; and

    e. Toxic or hazardous substances from a spill or other release.

## D. Electronic Notice of Intent (eNOI) Submittal

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

1. An eNOI may be submitted for:

    a. *construction activities* that are not part of a *common plan of development or sale*; or

b. an entire *common plan of development or sale*; or

c. separate *phase(s)* of a *common plan of development or sale* if the following requirements are met:

    i. the *common plan of development or sale* meets the eligibility requirements of Part I.A.5. or 6.; and

    ii. the *phase(s)* meet(s) all other eligibility requirements of Part I.A.; and

    iii. Part III.C. Required *SWPPP* Components by Project Type is based on the *common plan of development or sale*, not the *phase(s)*; or

d. *tree clearing* that is associated with, or will support, a *renewable energy* generation, transmission, or storage project that meets Part I.A.5. and 6., if the *tree clearing*:

    i. meets all other eligibility requirements of Part I.A.; and

    ii. will occur in NYSDEC's Regions 3-9; and

    iii. is not within ¼ mile of a bat hibernaculum protected pursuant to 6 NYCRR Part 182; and

    iv. will occur between November 1st and March 31st.

2. As prerequisites for submitting an eNOI, the *owner or operator* must:

    a. prepare a *SWPPP* for Part I.D.1.a., b., c., or d. in accordance with Part III.; and

    b. based on the following criteria, upload the following signature forms signed in accordance with Part VII.J. to the eNOI prior to submission:

        i. for all eNOIs:

            1. the SWPPP Preparer Certification Form, Appendix F, signed by the *SWPPP* preparer; and

2. the Owner/Operator Certification Form, Appendix J, signed by the *owner or operator*; and

ii. if an eNOI includes *construction activities* within the municipal boundary(ies) of *Traditional Land Use Control MS4 Operator(s)* that will *discharge* to the *MS4(s)*:

1. determine if the *Traditional Land Use Control MS4 Operator(s)* have review authority. A *Traditional Land Use Control MS4 Operator* does not have review authority where:

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

b. there is a statute exempting the *owner or operator* from zoning review by the *Traditional Land Use Control MS4 Operator*; or

c. there is no such statute per Part I.D.2.b.ii.1.b., the *Traditional Land Use Control MS4 Operator* concludes, after public hearing, that it does not have zoning review authority in accordance with Legal Memorandum LU14 Updated January 2020 “Governmental Immunity from Zoning and Other Legislation”; and

2. if the *Traditional Land Use Control MS4 Operator(s)* have review authority, submit the *SWPPP* to the *Traditional Land Use Control MS4 Operator(s)* for review and have:

a. if outside the municipal boundaries of NYC: the MS4 SWPPP Acceptance Form, Appendix G, signed by the principal executive officer or ranking elected official from the *Traditional Land Use Control MS4 Operator,* or by a duly authorized representative of that person in accordance with Part VII.J.2.; or

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

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

3. Submitting an eNOI:

a. The *owner or operator* must submit a complete Notice of Intent electronically using a NYSDEC approved form.[2]

b. The *owner or operator* is authorized to *commence construction activity* as of the authorization date indicated in the Letter of Authorization (LOA), which is sent by NYSDEC after a complete eNOI is submitted.

i. If an eNOI is received for a *SWPPP* that deviates from one of the technical standards but demonstrates *equivalence* in accordance with Part III.B.1.a.ii. or Part III.B.2.b.ii., if the *SWPPP* includes *construction activities* that are not within the municipal boundary(ies) of *Traditional Land Use Control MS4 Operator(s)*, and/or if the *SWPPP* includes *construction activities* within the municipal boundary(ies) of *Traditional Land Use Control MS4 Operator(s)* that do not have review authority in accordance with Part I.D.2.b.ii.1., the authorization date indicated in the LOA will be 60 business days after the eNOI submission date.

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

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

## E. General Requirements for *Owners or Operators* with Permit Coverage

1. As of the date the LOA is received, the *owner or operator* must make the eNOI, *SWPPP*, and LOA available for review and copying in accordance with the requirements in Part VII.H. When applicable, as of the date an updated LOA is received, the *owner or operator* must make the updated LOA available for review and copying in accordance with the requirements in Part VII.H.

2. The *owner or operator* must ensure compliance with all requirements of this permit and that the provisions of the *SWPPP*, including any changes made to the *SWPPP* in accordance with Part III.A.5., are properly implemented and maintained from the *commencement of construction activity* until:

   a. all areas of disturbance have achieved *final stabilization;* and

   b. the owner's or operator's coverage under this permit is terminated in accordance with Part V.A.5.a.

3. As of the date of the *commencement of construction activities* until Part I.E.2.a. and b. have been met, the *owner or operator* must maintain at the *construction site*, a copy of:

   a. all documentation necessary to demonstrate eligibility with this permit; and

   b. this permit; and

   c. the *SWPPP*; and

   d. the signed SWPPP Preparer Certification Form; and

   e. the signed MS4 SWPPP Acceptance Form or signed NYCDEP SWPPP Acceptance/Approval Form or signed MS4 No Jurisdiction Form (when applicable); and

   f. the signed Owner/Operator Certification Form; and

g. the eNOI; and

h. the LOA; and

i. the LOA transmittal to the Traditional Land Use Control MS4 Operator in accordance with Part I.D.3.c. (when applicable).

4. The *owner or operator* must maintain at the *construction site*, until Part I.E.2.a. and b. have been met, as of the date the documents become final or are received, a copy of the:

   a. responsible contractor's or subcontractor's certification statement(s) in accordance with Part III.A.7.; and

   b. inspection reports in accordance with Part IV.C.4. and 6.; and

   c. Request to Disturb Greater Than Five Acres and the Authorization Letter to Disturb Greater Than Five Acres in accordance with Part I.E.6. (when applicable); and

   d. Request to Continue Coverage and the Letter of Continued Coverage (LOCC) in accordance with Part I.F.2. and 4. (when applicable); and

   e. The updated LOA(s) in accordance with Part I.E.9. (when applicable).

5. The *owner or operator* must maintain the documents in Part I.E.3. and 4. in a secure location, such as a job trailer, on-site construction office, or mailbox with lock. The secure location must be accessible during normal business hours to an individual performing a compliance inspection. The documents must be paper documents unless electronic documents are accessible to the inspector during an inspection to the same extent as a paper copy stored at the site would be. If electronic documents are kept on site, the *owner or operator* must maintain functional equipment on site available to an inspector during normal hours of operation such that an inspector may view the electronic documents in a format that can be read in a similar manner as a paper record and in a legally dependable format with no less evidentiary value than their paper equivalent.

6. The *owner or operator* must meet the following requirements prior to disturbing greater than five acres of soil at any one time:

   a. The *owner or operator* must submit a written Request to Disturb Greater Than Five Acres to:

i. NYSDEC's Regional Office Division of Water staff based on the project location, Appendix E, if a *Traditional Land Use Control MS4 Operator* does not have review authority in accordance with Part I.D.2.b.ii.1.; or

ii. the *Traditional Land Use Control MS4 Operator*, if a *Traditional Land Use Control MS4 Operator* has review authority in accordance with Part I.D.2.b.ii.1.; or

iii. NYSDEC's Regional Office Division of Water staff based on the project location, Appendix E, and each involved *Traditional Land Use Control MS4 Operator*, if the project spans multiple municipalities with more than one *Traditional Land Use Control MS4 Operator* involved with review authority in accordance with Part I.D.2.b.ii.1.

b. The written Request to Disturb Greater Than Five Acres must include:

i. The SPDES permit identification number (Permit ID); and

ii. Full technical justification demonstrating why alternative methods of construction that would result in five acres of soil disturbance or less at any one time are not feasible; and

iii. The phasing plan for the project and sequencing plans for all *phases* from the *SWPPP* in accordance with Part III.B.1.d.; and

iv. Plans with locations and details of erosion and sediment control practices such that the heightened concern for erosion when disturbing greater than five acres at one time has been addressed; and

v. Acknowledgment that "the *owner or operator* will comply with the requirements in Part IV.C.2.b."; and

vi. Acknowledgment that "the *owner or operator* will comply with the requirements in Part II.B.1.b."

c. The *owner or operator* must be in receipt of an Authorization Letter to Disturb Greater Than Five Acres, which will include when the

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

i. NYSDEC, if Part I.E.6.a.i. or iii. apply; or

ii. the *Traditional Land Use Control MS4 Operator*, if Part I.E.6.a.ii. applies.

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

8. If any human remains or archaeological remains are encountered during excavation, the *owner or operator* must immediately cease, or cause to cease, all *construction activity* in the area of the remains and notify the appropriate Regional Water Engineer (RWE).[3] *Construction activity* shall not resume until written permission to do so has been received from the RWE.

9. To be authorized to implement modifications to the information previously submitted in the eNOI, the *owner or operator* must:

   a. notify NYSDEC via email at Stormwater_info@dec.ny.gov requesting access to update the eNOI; and

   b. update the eNOI to reflect the modifications and resubmit the eNOI in accordance with Part I.D.; and

   c. receive an updated LOA.

10. The eNOI, *SWPPP*, LOA, updated LOAs (when applicable), and inspection reports required by this permit are public documents that the *owner or operator* must make available for review and copying by any person within five business days of the *owner or operator* receiving a written request by any such person to review these documents. Copying of documents will be done at the requester's expense.

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

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

When applicable:

1. Upon the effective date of this permit, an *owner or operator* of *a construction activity*, with coverage under GP-0-20-001, will have interim coverage under GP-0-25-001 for 45 calendar days starting on the effective date of GP-0-25-001 so long as the *owner or operator* maintains compliance with all applicable requirements of this permit.

2. Within 30 calendar days of the effective date of this permit, the *owner or operator*, with coverage under GP-0-20-001, must submit a complete Request to Continue Coverage electronically using a NYSDEC approved form,[4] which contains the information identified in Part I.F.3. below, if:

   a. the *owner or operator* continues to implement the SMP component in conformance with the technical standards in place at the time of initial project authorization; and

   b. the *owner or operator* will comply with all non-design requirements of GP-0-25-001.

3. The Request to Continue Coverage form contains questions to: ensure eligibility requirements in Part I.A. have been met; verify *owner or operator* contact information; verify the permit identification number; verify the original eNOI submission ID, if applicable; verify Part I.F.2.a. and b.; verify the version of the Design Manual that the technical/design components conform to; and receive an updated Owner/Operator Certification Form, Appendix I.

4. The *owner or operator* has obtained continued coverage under GP-0-25-001 as of the date indicated in the LOCC, which is sent by NYSDEC after a complete Request to Continue Coverage form is submitted.

5. If the owner or operator does not submit the Request to Continue Coverage form in accordance with Part I.F.2. and 3., coverage under this permit is automatically terminated after interim coverage expires.

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

## G. Change of *Owner or Operator*

When applicable:

1. When property ownership changes, or when there is a change in operational control over the construction plans and specifications, the following process applies:

    a. The new *owner or operator* must meet the applicable prerequisites for submitting an eNOI in accordance with Part I.D.2.; and

    b. The new *owner or operator* must submit an eNOI in accordance with Part I.D.3.; and

    c. Permit coverage for the new *owner or operator* will be effective upon receipt of the LOA in accordance with Part I.D.3.b.; and

    d. The new *owner or operator*, upon receipt of their LOA, must provide their Permit ID to the original *owner or operator*; and

    e. If the original *owner or operator* will no longer be the *owner or operator* of the *construction activity* identified in the original *owner's or operator's* eNOI, the original *owner or operator*, upon receipt of the new *owner's or operator's* Permit ID in accordance with Part I.G.1.d., must submit to NYSDEC a completed eNOT in accordance with Part V. that includes the name and Permit ID of the new *owner or operator*; or

    f. If the original *owner or operator* maintains ownership of a portion of the *construction activity*, the original *owner or operator* must maintain their coverage under the permit by modifying their eNOI; modifications to the eNOI must include:

        i. the revised area of disturbance and/or *impervious area(s)*; and

        ii. the revised SMP information, if applicable; and

        iii. a narrative description of what has changed; and

        iv. the new *owner's or operator's* Permit ID for the portion of the project removed from the eNOI.

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

## Part II. Water Quality-Based Effluent Limitations

### A. Maintaining Water Quality

NYSDEC expects that compliance with the requirements of this permit will control *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 the following *water quality standards* as contained in Parts 700 through 705 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York:

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

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

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

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

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

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

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

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

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

    a. **Erosion and Sediment Controls.** At a minimum, erosion and sediment controls must be selected, designed, installed, implemented, and maintained to:

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

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

        iii. *Minimize* the amount of soil exposed during *construction activity*; and

        iv. *Minimize* the disturbance of *steep slope*; and

        v. *Minimize* sediment *discharge*s from the site; and

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

        vii. *Minimize* soil compaction. *Minimizing* soil compaction is not required

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

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

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

b. **Soil Stabilization**. In areas where soil disturbance activity has ceased, whether permanently or *temporarily ceased*, the application of soil stabilization measures must be initiated by the end of the next business day and completed within 14 calendar days from the date the current soil disturbance activity ceased. For *construction sites* that *directly discharge* to one of the 303(d) segments listed in Appendix D, or are located in one of the watersheds listed in Appendix C, or are authorized to disturb greater than five acres in accordance with Part I.E.5.a.viii., the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven calendar days from the date the soil disturbance activity ceased.

c. **Dewatering**. *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**. Select, design, install, implement, and maintain effective pollution prevention measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such measures must be selected, designed, installed, implemented, and maintained to:

i. *Minimize* the *discharge* of *pollutants* from equipment and vehicle washing, wheel wash water, and other wash waters. Soaps, detergents and solvents cannot be used; and

ii. *Minimize* the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, hazardous and toxic waste, and other materials present on the site to precipitation

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

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

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

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

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

2. The *owner or operator* of a *construction activity*, that requires SMPs in accordance with Part III.C., must design the practices to meet the applicable *sizing criteria* in Part II.C.2.a., b., c., or d.

### a. Sizing Criteria for *New Development*

i. Runoff Reduction Volume (RRv) and Water Quality Volume (WQv):

1. Reduce the total WQv by application of RR techniques and standard SMPs with RRv capacity. The total WQv must be calculated in accordance with the criteria in Section 4.2 of the DM; or

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

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

ii. Channel Protection Volume (CPv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event, remaining after runoff reduction. Where a CPv control orifice is provided, the minimum orifice size must be 3 inches, with acceptable external trash rack or orifice protection. The CPv requirement does not apply when:

   1. Reduction of the entire CPv is achieved by application of runoff reduction techniques or infiltration systems; or

   2. The 1-year post-development peak *discharge* is less than or equal to 2.0 cfs without detention or velocity controls; or

   3. The site *directly discharges* into a fifth order or larger water body (stream, river, or lake), or tidal waters, where the increase in smaller flows will not impact the stream bank or channel integrity. However, the point of *discharge* must be adequately protected against scour and erosion by the increased peak *discharge*.

iii. *Overbank* Flood Control Criteria (Qp): Requires storage to attenuate the post-development 10-year, 24-hour peak *discharge* rate (Qp) to predevelopment rates. The Qp requirement does not apply when:

1. the site *directly discharges* to tidal waters or fifth order or larger streams, or

2. A downstream analysis reveals that *overbank* control is not required.

iv. Extreme Flood Control Criteria (Qf): Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:

1. the site *directly discharges* to tidal waters or fifth order or larger streams, or

2. A downstream analysis reveals that *overbank* control is not required.

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

i. Runoff Reduction Volume (RRv) and Water Quality Volume (WQv):

1. Reduce the WQv by application of RR techniques and standard SMPs with RRv capacity. The total WQv is the runoff volume from the 1-year, 24-hour design storm over the post-developed watershed and must be calculated in accordance with the criteria in Section 4.3 of the DM; or

2. Minimum RRv and Treatment of Remaining Total WQv: *Construction activities* that cannot meet the criteria in Part II.C.2.b.i.1. due to *site limitations* must direct runoff from all newly constructed *impervious areas* to a RR technique or standard SMP with RRv capacity unless *infeasible*. The specific *site limitations* that prevent the reduction of 100% of the WQv must be documented in the *SWPPP*. For each *impervious area* that is not directed to a RR technique or standard SMP with RRv capacity, the *SWPPP* must include

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

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

ii. Channel Protection Volume (CPv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event, remaining after runoff reduction. Where a CPv control orifice is provided, the minimum orifice size must be 3 inches, with acceptable external trash rack or orifice protection. The CPv requirement does not apply when:

1. Reduction of the entire CPv is achieved by application of runoff reduction techniques or infiltration systems; or

2. The 1-year post-development peak *discharge* is less than or equal to 2.0 cfs; or

3. The site *directly discharges* to tidal waters, or a fifth order or larger water body (stream, river, or lake) where the increase in smaller flows will not impact the stream bank or channel integrity. However, the point of *discharge* must be adequately protected against scour and erosion by the increased peak *discharge*.

iii. *Overbank* Flood Control Criteria (Qp): Requires storage to attenuate the post-development 10-year, 24-hour peak *discharge* rate (Qp) to predevelopment rates. The Qp requirement does not apply when:

1. the site *directly discharges* to tidal waters or fifth order or larger streams; or

2. A downstream analysis reveals that *overbank* control is not required.

iv. Extreme Flood Control Criteria (Qf): Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:

1. the site *directly discharges* to tidal waters or fifth order or larger streams; or

2. A downstream analysis reveals that *overbank* control is not required.

**c. *Sizing Criteria* for *Redevelopment Activity***

i. Water Quality Volume (WQv): The WQv treatment objective for *redevelopment activity* must be addressed by one of the following options, as outlined in Section 9.2.1. *Redevelopment activities* located in an Enhanced Phosphorus Removal Watershed (see Part III.B.3. and Appendix C) must calculate the WQv in accordance with Section 4.3 of the DM. All other *redevelopment activities* must calculate the WQv in accordance with Section 4.2 of the DM.

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

2. Capture and treat 100% of the required WQv, for a minimum of 25% of the disturbed redevelopment *impervious area*, by implementation of standard SMPs or reduced by application of runoff reduction techniques; or

3. Capture and treat 100% of the required WQv, for a minimum of 75% of the disturbed redevelopment *impervious area*, by implementation of a volume-based alternative SMP, as defined in Section 9.4 of the DM; or

4. Capture and treat 100% of the required WQv, for a minimum of 75% of the disturbed redevelopment *impervious area*, by implementation of a flow-through alternative SMP sized to treat the peak rate of runoff from the WQv design storm; or

5. Application of a combination of 1 through 4 above that provide a weighted average of at least two of the above methods. Application of this method must be in accordance with the criteria in Section 9.2.1(A)(V) of the DM; or

6. If there is an existing SMP located on the site that captures and treats runoff from the *impervious area* that is being disturbed, the WQv treatment option selected must, at a minimum, provide treatment equal to the treatment that was being provided by the existing practice(s) if that treatment is greater than the treatment required by options 1 through 5 above.

ii. Channel Protection Volume (CPv) is not required if there is 0% change to hydrology that increases the *discharge* rate and volume from the project site.

iii. *Overbank* Flood Control (Qp) is not required if there is 0% change to hydrology that increases the *discharge* rate from the project site.

iv. Extreme Flood Control (Qf) is not required if there is 0% change to hydrology that increases the *discharge* rate from the project site.

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

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

## Part III. Stormwater Pollution Prevention Plan (SWPPP)

### A. General *SWPPP* Requirements

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

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

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

    a. The owner or operator must consider:

        i. the following physical risks due to climate change:

            (i) increasing temperature; and

            (ii) increasing precipitation; and

            (iii) increasing variability in precipitation, including chance of drought; and

            (iv) increasing frequency and severity of flooding; and

            (v) rising sea level; and

            (vi) increasing storm surge; and

            (vii) shifting ecology.

        ii. for each of the following:

            (i) overall site planning; and

            (ii) location, elevation, and sizing of:

                a. control measures and practices; and

                b. conveyance system(s); and

                c. detention system(s).

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

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

4. All *SWPPPs*, that require the SMP component in accordance with Part III.B.2., must be prepared by a *qualified professional*.

5. The *owner or operator* must keep the *SWPPP* current so that, at all times, it accurately documents the erosion and sediment control practices that are being used or will be used during construction, and all SMPs that will be constructed on the site. At a minimum, the *owner or operator* must modify the *SWPPP*, including construction drawings:

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

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

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

   d. to document the final construction conditions in an as-built drawing.

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

7. Prior to the *commencement of construction activity*, the *owner or operator* must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting, and maintaining the erosion and sediment control practices included in the *SWPPP* and the

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

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

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

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

## B. Required *SWPPP* Contents

1. Erosion and sediment control component - The *owner or operator* must prepare a *SWPPP* that includes erosion and sediment control practices.

    a. Erosion and sediment control practices must be designed:

        i. in conformance with the BB; or

        ii. *equivalent* to the BB if deviating from Part III.B.1.a.i.

    b. If the erosion and sediment control practices are designed in conformance with Part III.B.1.a.ii., the *SWPPP* must include a demonstration of *equivalence* to the BB.

    c. At a minimum, the erosion and sediment control component of the *SWPPP* must include the following:

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

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

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

        iv. A phasing plan for the project and sequencing plans for all *phases*, both of which must address clearing and grubbing, excavation and grading, utility and infrastructure installation, *final stabilization*,

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

1. The phasing plan must include:

    a. a map delineating and labeling the limits of soil disturbance for all *phases* of a project; and

    b. a table identifying the order and intended schedule of when each *phase* will begin and end its sequencing plan. The table must identify the total disturbed area for each *phase* at any one time and the total disturbed area for the overall project at any one time all on one timeline showing all overlapping quantities of disturbed area at any one time; and

2. A sequencing plan for a specific *phase* must include:

    a. a table indicating the order and intended schedule of *construction activities* within a *phase*, and corresponding construction drawings with a description of the work to be performed; and

    b. all permanent and *temporary stabilization* measures; and

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

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

vii. The dimensions, material specifications, installation details, and operation and maintenance requirements for all erosion and sediment control practices. Include the location and sizing of any

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

viii. A maintenance inspection schedule for the contractor(s) and subcontractor(s) identified in Part III.A.7. to ensure continuous and effective operation of the erosion and sediment control practices. The maintenance inspection schedule must be in accordance with the requirements in the BB technical standard; and

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

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

xi. Identification of any elements of the design that are not in conformance with the design criteria in the BB technical standard. Include the reason for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. SMP component – The *owner or operator* of *construction activity* identified in Table 2 of Appendix B must prepare a *SWPPP* that includes SMPs.

   a. SMPs must be designed in conformance with the applicable *sizing criteria* in Part II.C.2.a., c., or d.; and

   b. SMPs must be designed in conformance with the *performance criteria*:

      i. in the DM; or

      ii. *equivalent* to the DM if deviating from Part III.B.2.b.i.; or

      iii. in the New York State Stormwater Management Design Manual, dated January 2015 (2015 Design Manual), or *equivalent* to it, if the following criteria are met:

1. The eNOI is submitted in accordance with Part I.D. before January 29, 2027 for *construction activities* that are either:

    a. subject to governmental review and approval:

        i. where the *owner or operator* made any application to that governmental entity prior to the effective date of this permit; and

        ii. such application included a *SWPPP* developed using the 2015 Design Manual or *equivalent* to it; or

    b. not subject to governmental review and approval:

        i. where a fiscal allocation for the *construction activities* has been developed and approved by a governmental entity; and

        ii. the *SWPPP* was developed using the 2015 Design Manual or *equivalent* to it; and

c. If SMPs are designed in conformance with Part III.B.2.b.ii., the *SWPPP* must include the reason(s) for the deviation or alternative design and a demonstration of *equivalence* to the DM; and

d. If SMPs are designed in conformance with Part III.B.2.b.iii., the *SWPPP* must include supporting information or documentation demonstrating that Part III.B.2.b.iii.1.a. or b. apply; and

e. The SMP component of the *SWPPP* must include the following:

    i. Identification of all SMPs to be constructed as part of the project, including which option the SMP designs conform to, either Part III.B.2.b.i., ii., or iii. Include the dimensions, material specifications and installation details for each SMP; and

    ii. A site map/construction drawing(s) showing the specific location and size of each SMP; and

iii. A Stormwater Modeling and Analysis Report that includes:

(i) Map(s) showing pre-development conditions, including watershed/subcatchments boundaries, flow paths/routing, and design points; and

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

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

(iv) Summary table, with supporting calculations, which demonstrates that each SMP has been designed in conformance with the *sizing criteria* included in the DM; and

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

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

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

v. Infiltration test results, when required in accordance with Part III.B.2.a.; and

vi. An operations and maintenance plan that includes inspection and maintenance schedules and actions to ensure continuous and effective operation of each SMP. The plan must identify the entity

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

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

### C. Required *SWPPP* Components by Project Type

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

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

## Part IV. Inspection and Maintenance Requirements

### A. General Construction Site Inspection and Maintenance Requirements

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

### B. Contractor Maintenance Inspection Requirements

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

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

a. if the corrective action does not require engineering design:

    i. begin implementing corrective actions within one business day; and

    ii. complete the corrective actions within five business days; or

b. if the corrective action requires engineering design:

    i. begin the engineering design process within five business days; and

    ii. complete the corrective action in a reasonable time frame but no later than within 60 calendar days.

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

3. For *construction sites* where soil disturbance activities have been shut down with partial project completion, the *trained contractor* can stop conducting the maintenance inspections in accordance with Part IV.B.1. if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all SMPs required for the completed portion of the project have been constructed in conformance with the *SWPPP* and are operational.

**C. *Qualified Inspector* Inspection Requirements**

1. With the exception of the following *construction activities* identified in Tables 1 and 2 of Appendix B, a *qualified inspector* must conduct site inspections for all other *construction activities* identified in Tables 1 and 2 of Appendix B:

    a. the construction of a single-family residential subdivision with 25% or less *impervious cover* at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than or equal to five (5) acres and is

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

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

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

d. *construction activities* located in the New York City Watershed located east of the Hudson River, see Appendix C Figure 1, that involve soil disturbances of 5,000 square feet or more, but less than one acre.

2. The *qualified inspector* must conduct site inspections in accordance with the following timetable:

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

b. For *construction sites* where soil disturbance activities are on-going and the *owner or operator* has received authorization in accordance with Part I.E.6. to disturb greater than five (5) acres of soil at any one time, the *qualified inspector* must conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections must be separated by a minimum of two (2) full calendar days; or

c. For *construction sites* where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *qualified inspector* must conduct a site inspection at least once every thirty (30) calendar days. The *owner or operator* must notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix E) or, in areas under the jurisdiction of a *Traditional Land Use Control MS4 Operator,* the *Traditional Land Use Control MS4 Operator* (provided the *Traditional Land Use Control MS4 Operator* is not the *owner or operator* of the *construction activity*) by hard copy or email prior to reducing the inspections to this frequency and again by hard copy or email prior to re-commencing construction; or

d. For *construction sites* where soil disturbance activities have been shut down with partial project completion, the requirement to have the *qualified inspector* conduct inspections ceases if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all SMPs required for the completed portion of the project have been constructed in conformance with the *SWPPP* and are operational. The *owner or operator* must notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix E) or, in areas subject to the review authority of *Traditional Land Use Control MS4 Operator(s)* in accordance with Part I.D.2.b.ii.1., the *Traditional Land Use Control MS4 Operator(s)* (provided the *Traditional Land Use Control MS4 Operator(s)* are not the *owners or operators* of the *construction activity*) in writing prior to the shutdown and again in writing prior to resuming *construction activity*. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the *owner or operator* must terminate coverage by meeting the requirements of Part V; or

e. For *construction sites* involving soil disturbance of one (1) or more acres that *directly discharge* to one of the 303(d) segments listed in Appendix D or is located in one of the watersheds listed in Appendix C, the *qualified inspector* must conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections must be separated by a minimum of two (2) full calendar days.

3. At a minimum, the *qualified inspector* must inspect:

   a. all erosion and sediment control practices and pollution prevention measures to ensure integrity and effectiveness; and

   b. all SMPs under construction to ensure that they are constructed in conformance with the *SWPPP*; and

   c. all areas of disturbance that have not achieved *final stabilization*; and

   d. all points of *discharge* to *surface waters of the State* located within, or immediately adjacent to, the property boundaries of the *construction site*; and

   e. all points of *discharge* from the *construction site*.

4. The *qualified inspector* must prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report must include and/or address all of the following, for all *construction activities* except those listed in Part IV.C.1.:

   a. Permit identification number; and

   b. Date and time of inspection; and

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

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

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

   f. A description of the condition of all *surface waters of the State* located within, or immediately adjacent to, the property boundaries of the *construction site* which receive runoff from disturbed areas. This must include identification of any *discharges* of sediment to the *surface waters of the State*; and

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

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

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

   j. Estimates, in square feet or acres, of the following areas:

i. Total area with active soil disturbance (not requiring either *temporary stabilization* or *final stabilization*); and

ii. Total area with inactive soil disturbance (requiring either *temporary stabilization* or *final stabilization*); and

iii. Total area that has achieved *temporary stabilization*; and

iv. Total area that has achieved *final stabilization*; and

k. Current stage of construction of all SMPs and identification of all *construction activity* on site that is not in conformance with the *SWPPP* and technical standards; and

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

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

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

5. Within one business day of the completion of an inspection, the *qualified inspector* must notify the *owner or operator*, and appropriate contractor or subcontractor identified in Part III.A.7., of any corrective actions that need to be taken. The contractor or subcontractor must:

a. if the corrective action does not require engineering design:

i. begin implementing corrective actions within one business day; and

ii. complete the corrective actions within five business days; or

b. if the corrective action requires engineering design:

i. begin the engineering design process within five business days; and

ii. complete the corrective action in a reasonable time frame but no later than within 60 calendar days.

6. All inspection reports must be signed by the *qualified inspector.* In accordance with Part I.E.3., the inspection reports must be maintained on site with the *SWPPP*.

## Part V. How to Terminate CGP Coverage

### A. Electronic Notice of Termination (eNOT) Submittal

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

1. An *owner or operator* must terminate coverage when one or more of the following requirements have been met:

a. Total project completion:

i. all *construction activity* identified in the *SWPPP* has been completed; and

ii. all areas of disturbance have achieved *final stabilization*; and

iii. all temporary, structural erosion and sediment control measures have been removed; and

iv. all SMPs have been constructed in conformance with the *SWPPP* and are operational; and

v. an as-built drawing has been prepared; or

b. Planned shutdown with partial project completion:

   i. all soil disturbance activities have ceased; and

   ii. all areas disturbed as of the project shutdown date have achieved *final stabilization*; and

   iii. all temporary, structural erosion and sediment control measures have been removed; and

   iv. all SMPs required for the completed portion of the project have been constructed in conformance with the *SWPPP* and are operational; and

   v. an as-built drawing has been prepared; or

c. In accordance with Part I.G. Change of Owner or Operator; or

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

2. For *construction activities* that require *qualified inspector* inspections in accordance with Part IV.C.1. and have met Part V.A.1.a. or b., the *owner or operator* must have the *qualified inspector* perform a final site inspection prior to submitting the eNOT. The *qualified inspector* must, by signing the "Final Stabilization" and "Post-Construction Stormwater Management Practice(s)" certification statements on the eNOT, certify that all the requirements in Part V.A.1.a. or b. have been achieved.

3. For *construction activities* that are subject to the review authority of *Traditional Land Use Control MS4 Operator(s)* in accordance with Part I.D.2.b.ii.1. and meet Part V.A.1.a. or b., the *owner or operator* must have the *Traditional Land Use Control MS4 Operator(s)* sign the "MS4 Acceptance" statement on the eNOT in accordance with the requirements in Part VII.J. A *Traditional Land Use Control MS4 Operator* official, by signing this statement, determined that it is acceptable for the *owner or operator* to submit the eNOT in accordance with the requirements of this Part. A *Traditional Land Use Control MS4 Operator* can make this determination by performing a final site inspection themselves or by accepting the *qualified inspector*'s final site inspection certification(s) when required in Part V.A.2.

4. For *construction activities* that require SMPs and meet Part V.A.1.a. or b., the *owner or operator* must, prior to submitting the eNOT, ensure one of the following:

    a. for SMP(s) that were constructed by a private entity, but will be owned, operated, and maintained by a public entity, the SMP(s) and any right-of-way(s) needed to operate and maintain such practice(s) have been deeded to the municipality in which the practice(s) is located; or

    b. for SMP(s) that are privately owned, but will be operated and maintained by a public entity, an executed operation and maintenance agreement is in place with the municipality that will operate and maintain the SMP(s); or

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

    d. for SMP(s) that are owned by a public or private institution (e.g. school, university, hospital), government agency or authority, or public utility, the *owner or operator* has policies and procedures in place that ensure operation and maintenance of the practices in accordance with the operation and maintenance plan.

5. An *owner or operator* that has met the requirements of Part V.A.1., 2., 3., and 4. must request termination of coverage under this permit by submitting a complete Notice of Termination form electronically using a NYSDEC approved form.[5]

    a. The owner's or operator's coverage is terminated as of the termination date indicated in the Letter of Termination (LOT), which is sent by NYSDEC after a complete eNOT is submitted.

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

## Part VI. Record Retention and Reporting

### A. Record Retention

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

### B. Reporting

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

## Part VII. Standard Permit Requirements

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

### A. Duty to Comply

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

### B. Need to Halt or Reduce Activity Not a Defense

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

### C. Penalties

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

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

### D. False Statements

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

### E. Re-Opener Clause

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

### F. Duty to Mitigate

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

### G. Requiring Another General Permit or Individual SPDES Permit

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

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

a. the *owner or operator* is not in compliance with the conditions of this permit or does not meet the requirements for coverage under this permit; and

b. a change has occurred in the availability of demonstrated technology or practices for the control or abatement of *pollutants* applicable to the *point source*; and

c. new effluent limitation guidelines or new source performance standards are promulgated that are applicable to *point sources* authorized to *discharge* in accordance with this permit; and

d. existing effluent limitation guidelines or new source performance standards that are applicable to *point sources* authorized to *discharge* in accordance with this permit are modified; and

e. a water quality management plan containing requirements applicable to such *point sources* is approved by NYSDEC; and

f. circumstances have changed since the time of the request to be covered so that the *owner or operator* is no longer appropriately controlled under this permit, or either a temporary or permanent reduction or elimination of the authorized *discharge* is necessary; and

g. the *discharge* is in violation of section 17-0501 of the ECL; and

h. the *discharge(s)* is a significant contributor of *pollutants*. In making this determination, NYSDEC may consider the following factors:

   i. the location of the *discharge(s)* with respect to *surface waters of the State*; and

   ii. the size of the *discharge(s)*; and

   iii. the quantity and nature of the *pollutants discharged* to *surface waters of the State*; and

   iv. other relevant factors including compliance with other provisions of ECL Article 17, or the CWA.

2. When NYSDEC requires any *owner or operator* authorized by this permit to apply for an individual SPDES permit as provided for in this subdivision, it must notify the *owner or operator* in writing that a permit application is required. This notice must include a brief statement of the reasons for this decision, an application

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

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

## H. Duty to Provide Information

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

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

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

## I. Extension

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

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

## J. Signatories and Certification

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

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

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

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

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

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

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

c. For a municipality, State, Federal, or other public agency. By either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

    1. the chief executive officer of the agency; or

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

2. All reports required by this permit, and other information requested by NYSDEC, must be signed by a person described in Part VII.J.1., or by a duly authorized representative of that person. A person is a duly authorized representative only if:

    a. The authorization is made in writing by a person described in Part VII.J.1. or using the Duly Authorized Form, found on the DEC website; and

    b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and

    c. The written authorization is submitted to NYSDEC.

3. Changes to authorization. If an authorization under Part VII.J.2. is no longer accurate because a different individual or position has responsibility for the overall operation of the *construction activity*, a new authorization satisfying the requirements of Part VII.J.2. must be submitted to NYSDEC prior to or together with any reports, information, or applications to be signed by an authorized representative.

4. Certification. Any person signing a document under Part VII.J.1. or 2. must make the following certification:

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

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

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

## K. Inspection and Entry

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

1. enter upon the *owner's or operator's* premises where a regulated facility or activity is located or conducted or where records must be kept under the requirements of this permit; and

2. have access to and copy at reasonable times, any records that must be kept under the requirements of this permit, including records required to be maintained for purposes of operation and maintenance; and

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

4. sample or monitor at reasonable times, for the purposes of assuring general SPDES permit compliance or as otherwise authorized by the CWA or ECL, any substances or parameters at any location; and

5. enter upon the property of any contributor to the regulated facility or activity under authority of the *owner or operator*.

## L. Confidentiality of Information

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

## M. Other Permits May Be Required

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

## N. NYSDEC Orders or Civil Decrees/Judgments

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

## O. Property Rights

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

## P. Compliance with Interstate Standards

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

## Q. Oil and Hazardous Substance Liability

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

## R. Severability

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

## S. NYSDEC Approved Forms

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

## APPENDIX A – Abbreviations and Definitions

### Abbreviations

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

**Definitions**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

1. owned or operated by a State, city, town, village, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, *stormwater*, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA, that *discharges* to *surface waters of the State*; and

2. designed or used for collecting or conveying *stormwater*; and

3. which is not a *combined sewer system*; and

4. which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

## APPENDIX B – Required SWPPP Components by Project Type

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

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

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

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

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

**Within the municipal boundaries of NYC:**

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

**The following *construction activities*:**

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

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

**The following *construction activities*:**

- Slope stabilization
- Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics
- Spoil areas that will be covered with vegetation
- Vegetated open space (i.e. recreational parks, lawns, meadows, fields, downhill ski trails) that do not *alter hydrology from pre- to post-development* conditions
- Athletic fields (natural grass) that do not include the construction or reconstruction of *impervious area* and do not *alter hydrology from pre- to post-development* conditions
- Demolition where vegetation will be established, and no *redevelopment activity* is planned[1]
- Installation or replacement of either an overhead electric transmission line or a ski lift tower that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover*.
- Solar array field areas that have tables elevated off the ground, spaced one table width apart, do not *alter hydrology from pre- to post-development conditions*, and address water quality volume and runoff reduction volume by maintaining sheet flow on slopes less than 8%.
- Structural agricultural conservation practices as identified in Table II in the "Agricultural Best Management Practice Systems Catalogue" (dated June 2023) that do not include construction or reconstruction of *impervious area* and do not *alter hydrology from pre- to post-development* conditions.
- Temporary access roads, median crossovers, detour roads, lanes, or other temporary *impervious areas* that will be restored to pre-construction conditions once the *construction activity* is complete (in this context, "temporary" means the *impervious area* will be in place for two years or less)
- Other *construction activities* that do not include the construction or reconstruction of *impervious area*, and do not *alter hydrology from pre- to post-development* conditions, and are not listed in Table 2.

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

## Table 2
## *CONSTRUCTION ACTIVITIES* THAT REQUIRE THE PREPARATION OF A *SWPPP* THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES (SMPS)

**The following *construction activities*:**

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

## Table 2 (Continued)

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

**The following *construction activities*:**

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

## APPENDIX C – Watersheds Requiring Enhanced Phosphorus Removal

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

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

**Figure 1 - New York City Watershed East of the Hudson**

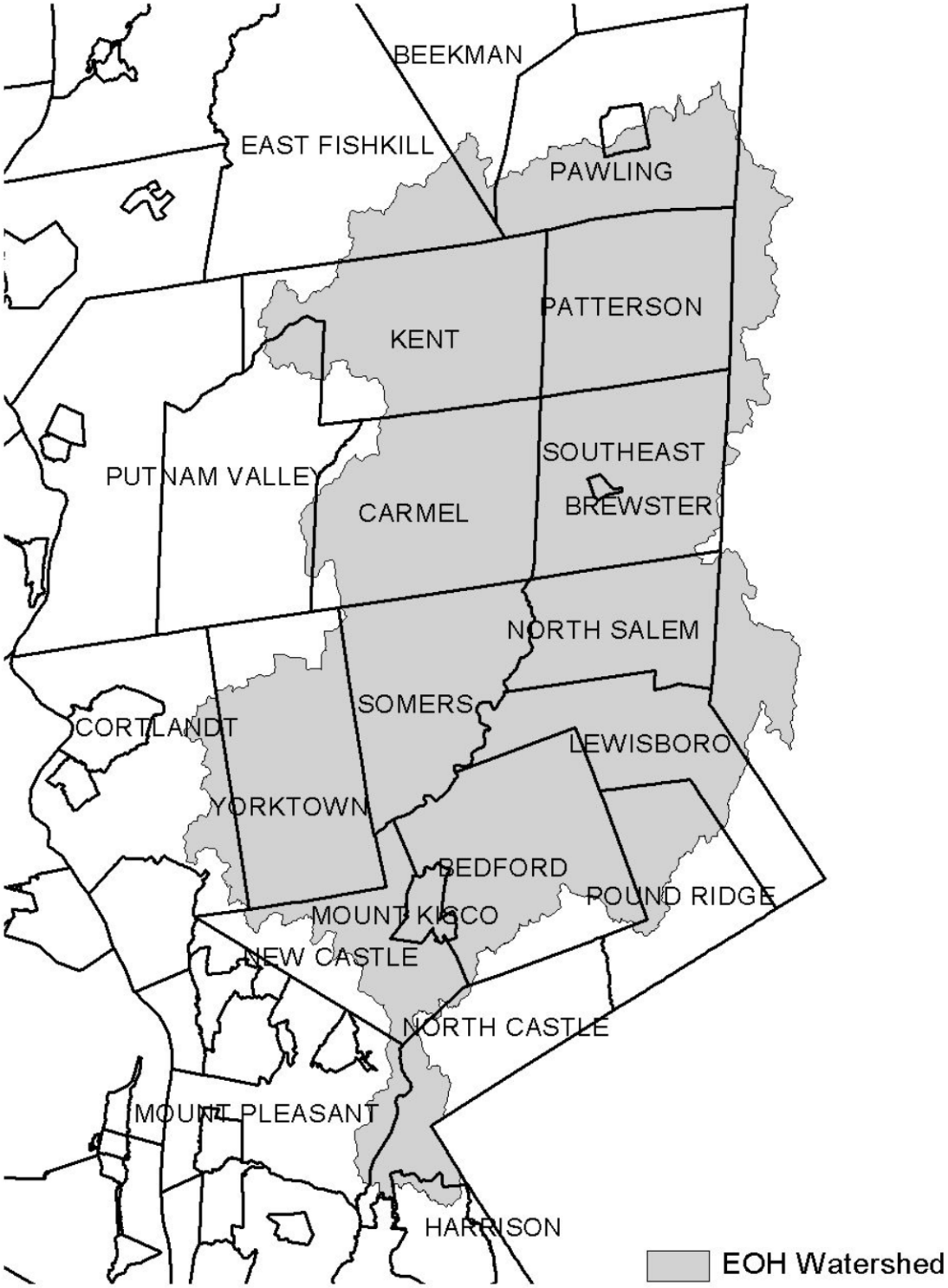


**Figure 2 - Onondaga Lake Watershed**



**Figure 3 - Greenwood Lake Watershed**

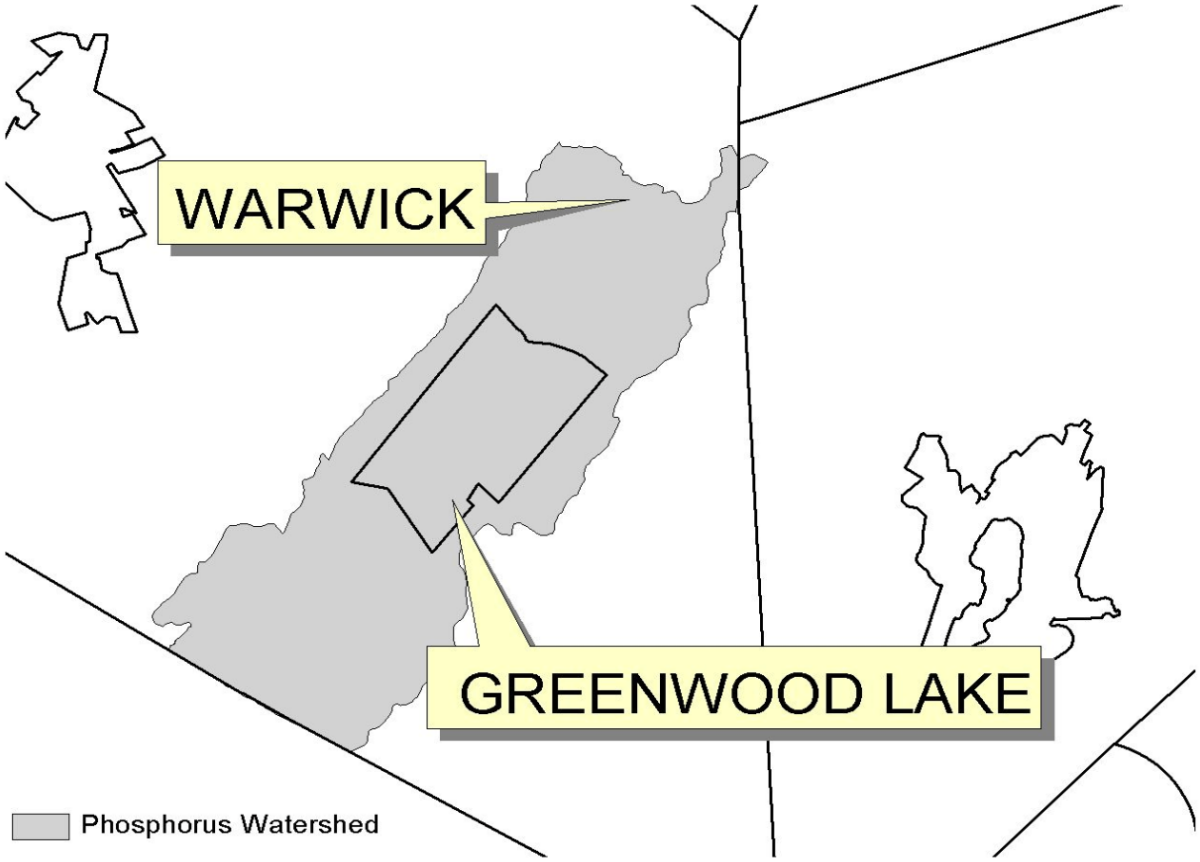


**Figure 4 - Oscawana Lake Watershed**

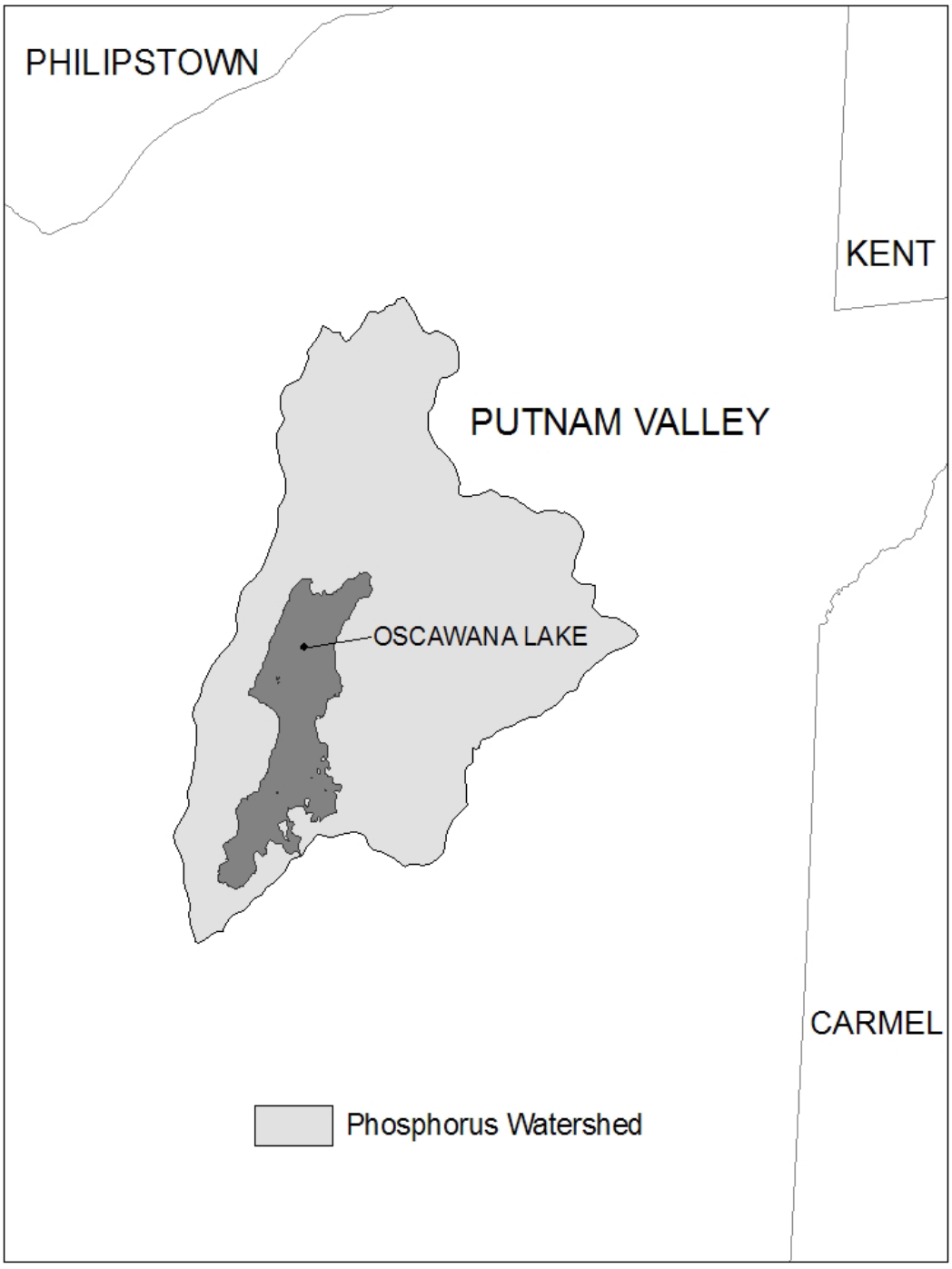
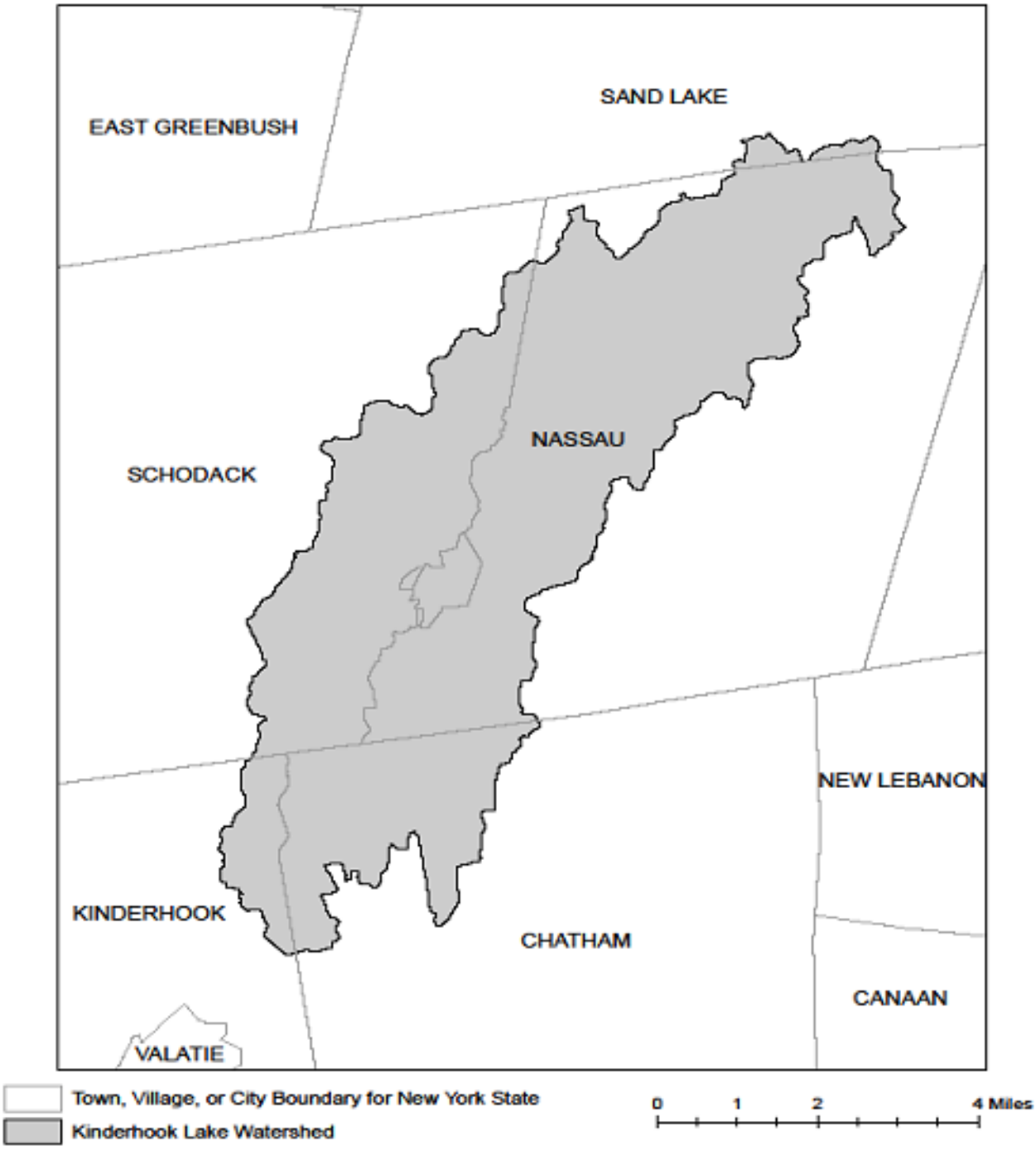


**Figure 5 - Kinderhook Lake Watershed**



## APPENDIX D – Impaired Waterbodies (by Construction Related Pollutants)

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

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

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

| | | |
|---|---|---|
| Nassau | Bannister Creek/Bay (1701-0380) | Nitrogen |
| Nassau | Beaver Lake (1702-0152) | Phosphorus |
| Nassau | Browswere Bay (1701-0383) | Nitrogen |
| Nassau | Camaans Pond (1701-0052) | Phosphorus |
| Nassau | East Meadow Brook, Upper, and tribs (1701-0211) | Silt/Sediment |
| Nassau | East Rockaway Channel (1701-0381) | Nitrogen |
| Nassau | Glen Cove Creek, Lower, and tribs (1702-0146) | Silt/Sediment |
| Nassau | Grant Park Pond (1701-0054) | Phosphorus |
| Nassau | Hempstead Bay, Broad Channel (1701-0032) | Nitrogen |
| Nassau | Hempstead Lake (1701-0015) | Phosphorus |
| Nassau | Hewlett Bay (1701-0382) | Nitrogen |
| Nassau | Hog Island Channel (1701-0220) | Nitrogen |
| Nassau | Massapequa Creek, Upper, and tribs (1701-0174) | Phosphorus |
| Nassau | Milburn/Parsonage Creeks, Upp, and tribs (1701-0212) | Phosphorus |
| Nassau | Reynolds Channel, East (1701-0215) [12] | Nitrogen |
| Nassau | Reynolds Channel, West (1701-0216) 12 | Nitrogen |
| Nassau | Tidal Tribs to Hempstead Bay (1701-0218) | Nitrogen |
| Nassau | Tribs (fresh) to East Bay (1701-0204) | Silt/Sediment |
| Nassau | Tribs (fresh) to East Bay (1701-0204) | Phosphorus |
| Nassau | Tribs to Smith Pond/Halls Pond (1701-0221) | Phosphorus |
| Nassau | Woodmere Channel (1701-0219) | Nitrogen |
| New York | Harlem Meer (1702-0103) | Phosphorus |
| New York | The Lake in Central Park (1702-0105) | Phosphorus |
| Niagara | Bergholtz Creek and tribs (0101-0004) | Phosphorus |
| Niagara | Hyde Park Lake (0101-0030) | Phosphorus |
| Niagara | Lake Ontario Shoreline, Western (0301-0053) 9 | Phosphorus |
| Niagara | Lake Ontario Shoreline, Western (0301-0072) 9 | Phosphorus |
| Oneida | Ballou, Nail Creeks (1201-0203) | Phosphorus |
| Onondaga | Ley Creek and tribs (0702-0001) 10 | Nutrients (phosphorus) |
| Onondaga | Minor Tribs to Onondaga Lake (0702-0022) 10 | Nutrients (phosphorus) |
| Onondaga | Minor Tribs to Onondaga Lake (0702-0022) 10 | Nitrogen (NH3, NO2) |
| Onondaga | Onondaga Creek, Lower (0702-0023) 10 | Nutrients (phosphorus) |
| Onondaga | Onondaga Creek, Lower, and tribs (0702-0023) | Turbidity |
| Onondaga | Onondaga Creek, Middle, and tribs (0702-0004) | Turbidity |
| Onondaga | Onondaga Creek, Upper, and tribs (0702-0024) | Turbidity |
| Ontario | Great Brook and minor tribs (0704-0034) | Phosphorus 2 |
| Ontario | Great Brook and minor tribs (0704-0034) | Silt/Sediment |

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

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

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

## APPENDIX E – List of NYSDEC Regional Offices

| 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<br>Stony Brook, NY 11790<br>Tel. (631) 444-0365 | 50 Circle Road<br>Stony Brook, NY 11790-3409<br>Tel. (631) 444-0405 |
| 2 | Bronx, Kings, New York, Queens and Richmond | 1 Hunters Point Plaza,<br>47-40 21st St.<br>Long Island City, NY 11101-5407<br>Tel. (718) 482-4997 | 1 Hunters Point Plaza,<br>47-40 21st St.<br>Long Island City, NY 11101-5407<br>Tel. (718) 482-4933 |
| 3 | Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster and Westchester | 21 South Putt Corners Road<br>New Paltz, NY 12561-1696<br>Tel. (845) 256-3059 | 220 White Plains Road, Suite 110<br>Tel. (914) 428 - 2505 |
| 4 | Albany, Columbia, Delaware, Greene, Montgomery, Otsego, Rensselaer, Schenectady and Schoharie | 1130 North Westcott Road<br>Schenectady, NY 12306-2014<br>Tel. (518) 357-2069 | 1130 North Westcott Road<br>Schenectady, NY 12306-2014<br>Tel. (518) 357-2045 |
| 5 | Clinton, Essex, Franklin, Fulton, Hamilton, Saratoga, Warren and Washington | 1115 State Route 86, Po Box 296<br>Ray Brook, NY 12977-0296<br>Tel. (518) 897-1234 | 232 Golf Course Road<br>Warrensburg, NY 12885-1172<br>Tel. (518) 623-1200 |
| 6 | HERKIMER, JEFFERSON, LEWIS, ONEIDA AND ST. LAWRENCE | STATE OFFICE BUILDING<br>317 WASHINGTON STREET<br>WATERTOWN, NY 13601-3787<br>TEL. (315) 785-2245 | STATE OFFICE BUILDING<br>207 GENESEE STREET<br>UTICA, NY 13501-2885<br>TEL. (315) 793-2554 |
| 7 | BROOME, CAYUGA, CHENANGO, CORTLAND, MADISON, ONONDAGA, OSWEGO, TIOGA AND TOMPKINS | 5786 WIDEWATERS PARKWAY<br>SYRACUSE, NY 13214-1867<br>TEL. (315) 426-7438 | 5786 WIDEWATERS PARKWAY<br>SYRACUSE, NY 13214-1867<br>TEL. (315) 426-7500 |
| 8 | CHEMUNG, GENESEE, LIVINGSTON, MONROE, ONTARIO, ORLEANS, SCHUYLER, SENECA, STEUBEN, WAYNE AND YATES | 6274 EAST AVON-LIMA<br>ROADAVON, NY 14414-9519<br>TEL. (585) 226-2466 | 6274 EAST AVON-LIMA RD.<br>AVON, NY 14414-9519<br>TEL. (585) 226-2466 |
| 9 | ALLEGANY, CATTARAUGUS, CHAUTAUQUA, ERIE, NIAGARA AND WYOMING | 700 DELAWARE AVENUE<br>BUFFALO, NY 14209-2999<br>TEL. (716) 851-7165 | 700 DELAWARE AVENUE<br>BUFFALO, NY 14209-2999<br>TEL. (716) 851-7070 |

## APPENDIX F – SWPPP Preparer Certification Form

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

# SWPPP Preparer Certification Form

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

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

**Project/Site Name:**

**eNOI Submission ID:**

**Owner/Operator Name:**

## Certification Statement – SWPPP Preparer

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

SWPPP Preparer First Name | MI | SWPPP Preparer Last Name

Signature

Date

Revised: January 2025

## APPENDIX G – MS4 SWPPP Acceptance Form

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

# MS4 SWPPP Acceptance Form

for construction activities seeking authorization under the

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

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

| |
|---|
| **I. Project Owner/Operator Information** |
| 1. Owner/Operator Name: |
| 2. Contact Person: |
| 3. Street Address: |
| 4. City/State/Zip: |
| **II. Project Site Information** |
| 5. Project/Site Name: |
| 6. Street Address: |
| 7. City/State/Zip: |
| **III. Stormwater Pollution Prevention Plan (SWPPP) Review and Acceptance Information** |
| 8. SWPPP Reviewed by: |
| 9. Title/Position: |
| 10. Date Final SWPPP Reviewed and Accepted: |
| **IV. Regulated MS4 Information** |
| 11. Name of MS4 Operator: |
| 12. MS4 SPDES Permit Identification Number: NYR20A |
| 13. Street Address: |
| 14. City/State/Zip: |
| 15. Telephone Number: |
| |

## MS4 SWPPP Acceptance Form - continued

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

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

Printed Name[1]:

Title/Position:

Signature:

Date:

**VI. Additional Information**

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

## APPENDIX H – NYCDEP SWPPP Acceptance/Approval Form

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

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

# SWPPP Acceptance/Approval

Application Number:

## I. Project Owner/Operator Information

1. Owner/Operator Name:
2. Contact Person:
3. Street Address:
4. City/State/Zip:

## II. Project Site Information

5. Project/Site Name:
6. Street Address:
7. City/State/Zip:

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

8. SWPPP Reviewed by:
9. Title/Position: /
10. Date Final SWPPP Reviewed and Accepted:
11. Acceptance/Approval Expiration Date:

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

12. Name of MS4: *CITY OF NEW YORK*
13. MS4 SPDES Permit Identification Number: *NY-0287890*
14. Contact Person:
15. Street Address: *59-17 Junction Blvd. 9th Floor*
16. City/State/Zip: *Flushing, NY 11373*
17. Telephone Number:

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

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

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

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

Printed Name:

Title/Position:

Signature:

Date:

## VI. Conditions of Acceptance/Approval and Additional Information

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

## APPENDIX I – MS4 No Jurisdiction Form

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

# MS4 No Jurisdiction Form

for construction activities seeking authorization under the

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

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

**I. Project Owner/Operator Information**

a. Owner/Operator Name:

b. Contact Person:

c. Street Address:

d. City/State/Zip:

**II. Project Site Information**

a. Project/Site Name:

b. Street Address:

c. City/State/Zip:

d. eNOI Submission ID:

**III. Traditional Land Use Control MS4 Operator Information**

a. Name of MS4 Operator:

b. MS4 SPDES Permit ID Number: NYR20A

c. Street Address:

d. City/State/Zip:

e. Telephone Number:

**IV. Certification Statement**

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

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

b. Title/Position:

c. Signature:

d. Date:

## APPENDIX J – Owner/Operator Certification Form

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

# Owner/Operator Certification Form

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

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

**Project/Site Name:** _____

**eNOI Submission ID:** _____

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

## Certification Statement - Owner/Operator

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

Owner/Operator First Name MI Owner/Operator Last Name

_____

Signature

_____

Date

Revised: January 2025

# Attachment B
# Approved Site Plans

# Site Plans

| | |
|---|---|
| Issued for | **Site Plan Application** |
| Date Issued | **August 9, 2024** |
| Latest Issue | **March 21, 2025** |

# Orchards on Hudson Residential Development

103-107 Dock Road
Marlboro, New York 12542




## Sheet Index

| No. | Drawing Title | Latest Issue |
|---|---|---|
| C1.01 | Legend and General Notes | March 21, 2025 |
| C2.00 | Removals Plan | March 21, 2025 |
| C3.00 | Overall Layout and Materials Plan | March 21, 2025 |
| C3.01 | Layout and Materials Plan | March 21, 2025 |
| C3.02 | Layout and Materials Plan | March 21, 2025 |
| C3.03 | Layout and Materials Plan | March 21, 2025 |
| C3.04 | Layout and Materials Plan | March 21, 2025 |
| C3.05 | Layout and Materials Plan | March 21, 2025 |
| C4.00 | Overall Grading and Drainage Plan | March 21, 2025 |
| C4.01 | Grading and Drainage Plan | March 21, 2025 |
| C4.02 | Grading and Drainage Plan | March 21, 2025 |
| C4.03 | Grading and Drainage Plan | March 21, 2025 |
| C4.04 | Grading and Drainage Plan | March 21, 2025 |
| C4.05 | Grading and Drainage Plan | March 21, 2025 |
| C4.06 | Main Road Plan Over Profile Station 10+00 to 15+00 | March 21, 2025 |
| C4.07 | Main Road Plan Over Profile Station 15+00 to 20+00 | March 21, 2025 |
| C4.08 | Main Road Plan Over Profile Station 20+00 to 25+00 | March 21, 2025 |
| C4.09 | Main Road Plan Over Profile Station 25+00 to 29+21 | March 21, 2025 |
| C4.10 | Side Road A and B Plan Over Profile | March 21, 2025 |
| C4.11 | Side Road C Plan Over Profile | March 21, 2025 |
| C4.12 | Fire Access Road Plan Over Profile Station 600+00 to 605+00 | March 21, 2025 |
| C4.13 | Fire Access Road Plan Over Profile Station 605+00 to 610+00 | March 21, 2025 |
| C4.14 | Fire Access Road Plan Over Profile Station 610+00 to 612+92 | March 21, 2025 |
| C5.00 | Overall Utility Plan | March 21, 2025 |
| C5.01 | Utility Plan | March 21, 2025 |
| C5.02 | Utility Plan | March 21, 2025 |
| C5.03 | Utility Plan | March 21, 2025 |
| C5.04 | Utility Plan | March 21, 2025 |
| C5.05 | Utility Plan | March 21, 2025 |
| C6.00 | Erosion and Sediment Control Plan | March 21, 2025 |
| C6.01 | Erosion and Sediment Control Plan | March 21, 2025 |
| C6.02 | Erosion and Sediment Control Plan | March 21, 2025 |
| C7.01 | Site Details 1 | March 21, 2025 |
| C7.02 | Site Details 2 | March 21, 2025 |
| C7.03 | Site Details 3 | March 21, 2025 |
| C7.04 | Site Details 4 | March 21, 2025 |
| L1.00 | Overall Planting Plan | March 21, 2025 |
| L1.01 | Planting Plan | March 21, 2025 |
| L1.02 | Planting Plan | March 21, 2025 |
| L1.03 | Planting Plan | March 21, 2025 |
| L1.04 | Planting Plan | March 21, 2025 |
| L1.05 | Planting Plan | March 21, 2025 |
| L2.00 | Planting Notes and Details | March 21, 2025 |

## Reference Drawings

| No. | Drawing Title | Latest Issue |
|---|---|---|
| SV 1 | Boundary & Topographic Survey Overall Boundary | June 3, 2024 |
| SV 2 | Boundary and Topographic Plan | June 3, 2024 |
| SV 3 | Boundary and Topographic Plan | June 3, 2024 |

**Owner/Applicant**
SDL Marlboro, LLC
561 Seventh Avenue
Suite 903
New York, New York 10018

**Assessor's Map: Section 109.1 Block 3 Lots 13, 14.2 and 15**
**Section 108.4 Block 3 Lots 29.1**

**School District**
Marlboro Central School District

vhb.com


**Geotech**
Tectonic Engineering
Consultants, Geologists &
Land Surveyors, D.P.C.
1279 Route 300, 2nd Floor
Newburgh, NY 12550
845.5667.6656

**Architect**
APPEL DESIGN GROUP
23 Vreeland Road, Suite 260
Florham Park, NJ 07932
973.994.1776


VHB Project :: 20578.01
Issued for :: Site Plan Application


\\VHB.COM\GBL\PRO\WHITEPLAINS\20578.01 LEYTONPROPERT-MARLBORO\CAD\LD\PLANSET\20578.01_CV 21 March 2025

\\vhb.com\gbl\proj\whiteplains\20578.01 leytonpropert-marlboro\cad\ld\Planset\20578.01_LG.dwg

# Legend

| Exist. | Prop. | |
|---|---|---|
| | | PROPERTY LINE |
| | | PROJECT LIMIT LINE |
| | | RIGHT-OF-WAY/PROPERTY LINE |
| | | EASEMENT |
| | | BUILDING SETBACK |
| | | PARKING SETBACK |
| 10+00 | 10+00 | BASELINE |
| | | CONSTRUCTION LAYOUT |
| | | ZONING LINE |
| | | TOWN LINE |
| | | LIMIT OF DISTURBANCE |
| | | WETLAND LINE WITH FLAG |
| | | FLOODPLAIN |
| | | GRAVEL ROAD |
| EOP | EOP | EDGE OF PAVEMENT |
| BB | BB | BITUMINOUS BERM |
| BB | BBC | BELGIUM BLOCK CURB |
| BC | MBBC | MOUNTED BELGIUM BLOCK CURB |
| CC | CC | CONCRETE CURB |
| | | SAWCUT |
| | | BUILDING |
| | | BUILDING OVERHANG |
| | EN | BUILDING ENTRANCE |
| | LD | LOADING DOCK |
| | | BOLLARD |
| D | | DUMPSTER ENCLOSURE |
| | | SIGN |
| | | DOUBLE SIGN |
| | | STEEL GUARDRAIL |
| | | WOOD GUARDRAIL |
| | | PATH |
| | | TREE LINE |
| | | WIRE FENCE |
| | | FENCE |
| | | STOCKADE FENCE |
| | | STONE WALL |
| | | RETAINING WALL |
| | | STREAM / POND / WATER COURSE |
| | | DETENTION BASIN |
| | | HAY BALES |
| | | SILT FENCE |
| | | SILT SOCK / STRAW WATTLE |
| 4 | 4 | MINOR CONTOUR |
| 20 | 20 | MAJOR CONTOUR |
| 10 | 10 | PARKING COUNT |
| C10 | C10 | COMPACT PARKING STALLS |
| DYL | DYL | DOUBLE YELLOW LINE |
| SL | STOP | STOP LINE |
| | | CROSSWALK |
| | | ACCESSIBLE CURB RAMP |
| | | ACCESSIBLE PARKING |
| VAN | VAN | VAN-ACCESSIBLE PARKING |
| | | CONCRETE |
| | | ASPHALT PAVEMENT |
| | | DRIVEWAY ASPHALT PAVEMENT |
| | | CONCRETE SIDEWALK |
| | | CONSTRUCTION ENTRANCE |
| | | PAVERS / PERMEABLE PAVERS |
| Matchline | Matchline | MATCHLINE |

| Exist. | Prop. | |
|---|---|---|
| 27.35 TC × | 27.35 TC × | TOP OF CURB ELEVATION |
| 26.85 BC × | 26.85 BC × | BOTTOM OF CURB ELEVATION |
| 132.75 × | 132.75 × | SPOT ELEVATION |
| 45.0 TW<br>38.5 BW | 45.0 TW<br>38.5 BW | TOP & BOTTOM OF WALL ELEVATION |
| | | BORING LOCATION |
| | | TEST PIT LOCATION |
| MW | MW | MONITORING WELL |
| | | FLOW ARROW |
| UD | UD | UNDERDRAIN |
| 12"D | | DRAIN |
| 6"RD | RD | ROOF DRAIN |
| 12"S | 12"S | SEWER |
| FM | FM | FORCE MAIN |
| OHW | OHW | OVERHEAD WIRE |
| 6"W | 6"W | WATER |
| 4"FP | 4"FP | FIRE PROTECTION |
| 3"G | G | GAS |
| E | E | ELECTRIC |
| STM | STM | STEAM |
| T | T | TELEPHONE |
| FA | FA | FIRE ALARM |
| CATV | CATV | CABLE TV |
| | | CATCH BASIN |
| | | AREA DRAIN |
| | | DOUBLE CATCH BASIN |
| | | GUTTER INLET |
| | | DRAIN MANHOLE |
| TD | | TRENCH DRAIN |
| | E | PLUG OR CAP |
| | CO | CLEANOUT |
| | | FLARED END SECTION |
| | | HEADWALL |
| | | DRYWELL |
| | | DRYWELL W/ INLET COVER |
| | | DRYWELL W/ MANHOLE COVER |
| | | DIFFUSION WELL W/ INLET COVER |
| | | STORM TRAP UNIT |
| S | | SANITARY MANHOLE |
| CO | CO | SANITARY CLEANOUT |
| LP | LP | SANITARY LEACHING POOL |
| | EXP | EXPANSION LEACHING POOL |
| ST/GT | ST/GT | SANITARY SEPTIC TANK/GREASE TRAP |
| CS | CS | CURB STOP & BOX |
| WV | WV | WATER VALVE & BOX |
| TSV | TSV | TAPPING SLEEVE, VALVE & BOX |
| | | SIAMESE CONNECTION |
| HYD | HYD | FIRE HYDRANT |
| WM | WM | WATER METER |
| PIV | PIV | POST INDICATOR VALVE |
| W | W | WATER WELL |
| | | THRUST BLOCKS |
| GG | GG | GAS GATE |
| GM | GM | GAS METER |
| | CMH | ELECTRIC MANHOLE |
| EM | EM | ELECTRIC METER |
| | | LIGHT POLE |
| | | LIGHT BOLLARD |
| | TMH | TELEPHONE MANHOLE |
| T | T | TRANSFORMER PAD |
| | | UTILITY POLE |
| | | GUY POLE |
| | | GUY WIRE & ANCHOR |
| HH | HH | HAND HOLE |
| PB | PB | PULL BOX |

# Abbreviations

## General

| | |
|---|---|
| ABAN | ABANDON |
| ACR | ACCESSIBLE CURB RAMP |
| APPROX | APPROXIMATE |
| BIT | BITUMINOUS |
| BS | BOTTOM OF SLOPE |
| BWLL | BROKEN WHITE LANE LINE |
| CONC | CONCRETE |
| DYCL | DOUBLE YELLOW CENTER LINE |
| EL | ELEVATION |
| ELEV | ELEVATION |
| EXIST | EXISTING |
| FDN | FOUNDATION |
| FFE | FIRST FLOOR ELEVATION |
| LA | LANDSCAPE AREA |
| LOD | LIMIT OF DISTURBANCE |
| MAX | MAXIMUM |
| MIN | MINIMUM |
| NIC | NOT IN CONTRACT |
| NTS | NOT TO SCALE |
| PERF | PERFORATED |
| PROP | PROPOSED |
| REM | REMOVE |
| RET | RETAIN |
| R&D | REMOVE AND DISPOSE |
| R&R | REMOVE AND RESET |
| SWEL | SOLID WHITE EDGE LINE |
| SWLL | SOLID WHITE LANE LINE |
| TS | TOP OF SLOPE |
| TYP | TYPICAL |

## Utility

| | |
|---|---|
| AD | AREA DRAIN |
| CB | CATCH BASIN |
| CMP | CORRUGATED METAL PIPE |
| CO | CLEANOUT |
| CPP | CORRUGATED POLYETHYLENE PIPE |
| DCB | DOUBLE CATCH BASIN |
| DMH | DRAIN MANHOLE |
| CIP | CAST IRON PIPE |
| COND | CONDUIT |
| DIP | DUCTILE IRON PIPE |
| FES | FLARED END SECTION |
| FM | FORCE MAIN |
| F&G | FRAME AND GRATE |
| F&C | FRAME AND COVER |
| GI | GUTTER INLET |
| GT | GREASE TRAP |
| HDPE | HIGH DENSITY POLYETHYLENE PIPE |
| HH | HANDHOLE |
| HW | HEADWALL |
| HYD | HYDRANT |
| INV | INVERT ELEVATION |
| \|= | INVERT ELEVATION |
| LCS | LEVEL CONTROL STRUCTURE |
| LP | LIGHT POLE |
| MES | METAL END SECTION |
| PWW | PAVED WATER WAY |
| PVC | POLYVINYLCHLORIDE PIPE |
| PIV | POST INDICATOR VALVE |
| RCP | REINFORCED CONCRETE PIPE |
| RD | ROOF DRAIN |
| R= | RIM ELEVATION |
| SMH | SEWER MANHOLE |
| ST | SEPTIC TANK |
| TSV | TAPPING SLEEVE, VALVE AND BOX |
| UD | UNDER DRAIN |
| UG | UNDERGROUND |
| UP | UTILITY POLE |

# Notes

## General

1. CONTRACTOR SHALL NOTIFY NEW YORK 811 (DIAL 811) AT LEAST 48 HOURS BEFORE EXCAVATING.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SECURITY AND JOB SAFETY. CONSTRUCTION ACTIVITIES SHALL BE IN ACCORDANCE WITH OSHA STANDARDS AND LOCAL REQUIREMENTS.
3. ACCESSIBLE ROUTES, PARKING SPACES, RAMPS, SIDEWALKS AND WALKWAYS SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE FEDERAL AMERICANS WITH DISABILITIES ACT AND WITH STATE AND LOCAL LAWS AND REGULATIONS (WHICHEVER ARE MORE STRINGENT).
4. AREAS DISTURBED DURING CONSTRUCTION AND NOT RESTORED WITH IMPERVIOUS SURFACES (BUILDINGS, PAVEMENTS, WALKS, ETC.) SHALL RECEIVE [##] INCHES TOPSOIL AND SEED UNLESS OTHERWISE NOTED ON THE LANDSCAPE PLANS.
5. WITHIN THE LIMITS OF THE BUILDING FOOTPRINT, THE SITE CONTRACTOR SHALL PERFORM EARTHWORK OPERATIONS REQUIRED UP TO SUBGRADE ELEVATIONS.
6. WORK WITHIN THE LOCAL RIGHTS-OF-WAY SHALL CONFORM TO LOCAL MUNICIPAL STANDARDS. WORK WITHIN STATE RIGHTS-OF-WAY SHALL CONFORM TO THE LATEST EDITION OF THE STATE HIGHWAY DEPARTMENTS STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.
7. UPON AWARD OF CONTRACT, CONTRACTOR SHALL MAKE NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN NECESSARY PERMITS, PAY FEES, AND POST BONDS ASSOCIATED WITH THE WORK INDICATED ON THE DRAWINGS, IN THE SPECIFICATIONS, AND IN THE CONTRACT DOCUMENTS. DO NOT CLOSE OR OBSTRUCT ROADWAYS, SIDEWALKS, AND FIRE HYDRANTS, WITHOUT APPROPRIATE PERMITS.
8. TRAFFIC SIGNAGE AND PAVEMENT MARKINGS SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES & NYS SUPPLEMENT.
9. AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
10. IN THE EVENT THAT SUSPECTED CONTAMINATED SOIL, GROUNDWATER, AND OTHER MEDIA ARE ENCOUNTERED DURING EXCAVATION AND CONSTRUCTION ACTIVITIES BASED ON VISUAL, OLFACTORY, OR OTHER EVIDENCE, THE CONTRACTOR SHALL STOP WORK IN THE VICINITY OF THE SUSPECT MATERIAL TO AVOID FURTHER SPREADING OF THE MATERIAL, AND SHALL NOTIFY THE OWNER IMMEDIATELY SO THAT THE APPROPRIATE TESTING AND SUBSEQUENT ACTION CAN BE TAKEN.
11. CONTRACTOR SHALL PREVENT DUST, SEDIMENT, AND DEBRIS FROM EXITING THE SITE AND SHALL BE RESPONSIBLE FOR CLEANUP, REPAIRS AND CORRECTIVE ACTION IF SUCH OCCURS.
12. DAMAGE RESULTING FROM CONSTRUCTION LOADS SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO OWNER.
13. CONTRACTOR SHALL CONTROL STORMWATER RUNOFF DURING CONSTRUCTION TO PREVENT ADVERSE IMPACTS TO OFF SITE AREAS, AND SHALL BE RESPONSIBLE TO REPAIR RESULTING DAMAGES, IF ANY, AT NO COST TO OWNER.
14. THE CONTRACTOR IS ADVISED THAT A COMPLETE STORM WATER POLLUTION PREVENTION PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE REQUIRED LATEST SPDES PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITY, WHICH INCLUDES REQUIREMENTS FOR THE CONTRACTOR TO COMPLETE CERTAIN CERTIFICATIONS, SCHEDULES AND OTHER DOCUMENTATION, WHICH MUST BE MAINTAINED ON SITE THROUGHOUT CONSTRUCTION. THE CONTRACTOR IS REQUIRED TO FAMILIARIZE HIMSELF WITH ALL ASPECTS OF THE SWPPP AND COORDINATE HIS/HER WORK WITH THE REQUIREMENTS, INCLUDING THE REGULARLY SCHEDULED INSPECTIONS.

## Utilities

1. THE LOCATIONS, SIZES, AND TYPES OF EXISTING UTILITIES ARE SHOWN AS AN APPROXIMATE REPRESENTATION ONLY. THE OWNER OR IT'S REPRESENTATIVE(S) HAVE NOT INDEPENDENTLY VERIFIED THIS INFORMATION AS SHOWN ON THE PLANS. THE UTILITY INFORMATION SHOWN DOES NOT GUARANTEE THE ACTUAL EXISTENCE, SERVICEABILITY, OR OTHER DATA CONCERNING THE UTILITIES, NOR DOES IT GUARANTEE AGAINST THE POSSIBILITY THAT ADDITIONAL UTILITIES MAY BE PRESENT THAT ARE NOT SHOWN ON THE PLANS. PRIOR TO ORDERING MATERIALS AND BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL VERIFY AND DETERMINE THE EXACT LOCATIONS, SIZES, AND ELEVATIONS OF THE POINTS OF CONNECTIONS TO EXISTING UTILITIES AND, SHALL CONFIRM THAT THERE ARE NO INTERFERENCES WITH EXISTING UTILITIES AND THE PROPOSED UTILITY ROUTES, INCLUDING ROUTES WITHIN THE PUBLIC RIGHTS OF WAY.
2. CONTRACTOR TO NOTE UTILITY EASEMENT RUNNING THROUGH SITE. THE CONTRACTOR SHALL TAKE CARE TO NOT DISPOSE EXISTING UTILITIES DURING CONSTRUCTION. EXISTING UTILITIES ARE TO REMAIN ACTIVE AT ALL TIMES. THE CONTRACTOR IS REQUIRED TO REOPEN TEST PITS, BY HAND, IF NECESSARY TO LOCATE UTILITIES PRIOR TO COMMERCIAL WORK.
3. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, OR EXISTING CONDITIONS DIFFER FROM THOSE SHOWN SUCH THAT THE WORK CANNOT BE COMPLETED AS INTENDED, THE LOCATION, ELEVATION, AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED IN WRITING TO THE OWNER'S REPRESENTATIVE FOR THE RESOLUTION OF THE CONFLICT AND CONTRACTOR'S FAILURE TO NOTIFY PRIOR TO PERFORMING ADDITIONAL WORK RELEASES OWNER FROM OBLIGATIONS FOR ADDITIONAL PAYMENTS WHICH OTHERWISE MAY BE WARRANTED TO RESOLVE THE CONFLICT.
4. SET CATCH BASIN RIMS, AND INVERTS OF SEWERS, DRAINS, AND DITCHES IN ACCORDANCE WITH ELEVATIONS ON THE GRADING AND UTILITY PLANS.
5. RIM ELEVATIONS FOR DRAIN AND SEWER MANHOLES, WATER VALVE COVERS, GAS GATES, ELECTRIC AND TELEPHONE PULL BOXES, AND MANHOLES, AND OTHER SUCH ITEMS, ARE APPROXIMATE AND SHALL BE SET/RESET AS FOLLOWS:
   A. PAVEMENTS AND CONCRETE SURFACES: FLUSH
   B. ALL SURFACES ALONG ACCESSIBLE ROUTES: FLUSH
   C. LANDSCAPE, TOPSOIL AND SEED, AND OTHER EARTH SURFACE AREAS: ONE INCH ABOVE SURROUNDING AREA AND TAPER EARTH TO THE RIM ELEVATION.
6. THE LOCATION, SIZE, DEPTH, AND SPECIFICATIONS FOR CONSTRUCTION OF PROPOSED PRIVATE UTILITY SERVICES SHALL BE INSTALLED ACCORDING TO THE REQUIREMENTS PROVIDED BY, AND APPROVED BY, THE RESPECTIVE UTILITY COMPANY (GAS, TELEPHONE, ELECTRIC, FIRE ALARM, ETC.). FINAL DESIGN LOADS AND LOCATIONS TO BE COORDINATED WITH OWNER AND ARCHITECT.
7. CONTRACTOR SHALL MAKE ARRANGEMENTS FOR AND SHALL BE RESPONSIBLE FOR PAYING FEES FOR POLE RELOCATION AND FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE, FIRE ALARM, AND ANY OTHER PRIVATE UTILITIES, WHETHER WORK IS PERFORMED BY CONTRACTOR OR BY THE UTILITIES COMPANY.
8. UTILITY PIPE MATERIALS SHALL BE AS NOTED ON THE PLANS.
9. CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR AND SHALL FURNISH EXCAVATION, INSTALLATION, AND BACKFILL OF ELECTRICAL FURNISHED SITEWORK RELATED ITEMS SUCH AS PULL BOXES, CONDUITS, DUCT BANKS, LIGHT POLE BASES, AND CONCRETE PADS. SITE CONTRACTOR SHALL FURNISH CONCRETE ENCASEMENT OF DUCT BANKS IF REQUIRED BY THE UTILITY COMPANY AND AS INDICATED ON THE DRAWINGS.
10. CONTRACTOR SHALL EXCAVATE AND BACKFILL TRENCHES FOR GAS IN ACCORDANCE WITH GAS COMPANY'S REQUIREMENTS.
11. ALL DRAINAGE AND SANITARY STRUCTURE INTERIOR DIAMETERS (4' MIN.) SHALL BE DETERMINED BY THE MANUFACTURER BASED ON THE PIPE CONFIGURATIONS SHOWN ON THESE PLANS AND LOCAL MUNICIPAL STANDARDS. FOR MANHOLES THAT ARE 20 FEET IN DEPTH AND GREATER, THE MINIMUM DIAMETER SHALL BE 5 FEET.

## Layout and Materials

1. DIMENSIONS ARE FROM THE FACE OF CURB, FACE OF BUILDING, FACE OF WALL, AND CENTER LINE OF PAVEMENT MARKINGS, UNLESS OTHERWISE NOTED.
2. CURB RADII ARE FIVE FEET UNLESS OTHERWISE NOTED.
3. CURBING SHALL BE CAST IN PLACE CONCRETE WITHIN THE SITE UNLESS OTHERWISE INDICATED ON THE PLANS.
4. SEE ARCHITECTURAL DRAWINGS FOR EXACT BUILDING DIMENSIONS AND DETAILS CONTIGUOUS TO THE BUILDING, INCLUDING SIDEWALKS, RAMPS, BUILDING ENTRANCES, STAIRWAYS, UTILITY PENETRATIONS, CONCRETE DOOR PADS, COMPACTOR PAD, LOADING DOCKS, BOLLARDS, ETC.
5. PROPOSED BOUNDS, GRADES, BENCHMARKS AND ANY EXISTING PROPERTY LINE MONUMENTATION DISTURBED DURING CONSTRUCTION SHALL BE SET OR RESET BY A PROFESSIONAL LICENSED SURVEYOR.
6. PRIOR TO START OF CONSTRUCTION, CONTRACTOR SHALL VERIFY EXISTING PAVEMENT ELEVATIONS AT INTERFACE WITH PROPOSED PAVEMENTS, AND EXISTING GROUND ELEVATIONS ADJACENT TO DRAINAGE OUTLETS TO ASSURE PROPER TRANSITIONS BETWEEN EXISTING AND PROPOSED FACILITIES.
7. SYMBOLS AND LEGENDS OF PROJECT FEATURES ARE GRAPHIC REPRESENTATIONS AND ARE NOT NECESSARILY SCALED TO THEIR ACTUAL DIMENSIONS OR LOCATIONS ON THE DRAWINGS. THE CONTRACTOR SHALL REFER TO THE DETAIL SHEET DIMENSIONS, MANUFACTURERS' LITERATURE, SHOP DRAWINGS AND FIELD MEASUREMENTS OF SUPPLIED PRODUCTS FOR LAYOUT OF THE PROJECT FEATURES.
8. CONTRACTOR SHALL NOT RELY SOLELY ON ELECTRONIC VERSIONS OF PLANS, SPECIFICATIONS, AND DATA FILES THAT ARE OBTAINED FROM THE DESIGNERS, BUT SHALL VERIFY LOCATION OF PROJECT FEATURES IN ACCORDANCE WITH THE PAPER COPIES OF THE PLANS AND SPECIFICATIONS THAT ARE SUPPLIED AS PART OF THE CONTRACT DOCUMENTS.

## Erosion Control

1. PRIOR TO STARTING ANY OTHER WORK ON THE SITE, THE CONTRACTOR SHALL NOTIFY APPROPRIATE AGENCIES AND SHALL INSTALL EROSION CONTROL MEASURES AS SHOWN ON THE PLANS AND AS IDENTIFIED IN FEDERAL, STATE, AND LOCAL APPROVAL DOCUMENTS PERTAINING TO THIS PROJECT.
2. CONTRACTOR SHALL INSPECT AND MAINTAIN EROSION CONTROL MEASURES, AND REMOVE SEDIMENT THEREFROM ON A WEEKLY BASIS AND WITHIN TWELVE HOURS AFTER EACH STORM EVENT AND DISPOSE OF SEDIMENTS IN AN UPLAND AREA SUCH THAT THEY DO NOT ENCUMBER OTHER DRAINAGE STRUCTURES AND PROTECTED AREAS.
3. CONTRACTOR SHALL BE FULLY RESPONSIBLE TO CONTROL CONSTRUCTION SUCH THAT SEDIMENTATION SHALL NOT AFFECT REGULATORY PROTECTED AREAS, WHETHER SUCH SEDIMENTATION IS CAUSED BY WATER, WIND, OR DIRECT DEPOSIT.
4. CONTRACTOR SHALL PERFORM CONSTRUCTION SEQUENCING SUCH THAT EARTH MATERIALS ARE EXPOSED FOR A MINIMUM OF TIME BEFORE THEY ARE COVERED, SEEDED, OR OTHERWISE STABILIZED TO PREVENT EROSION.
5. UPON COMPLETION OF CONSTRUCTION AND ESTABLISHMENT OF PERMANENT GROUND COVER, CONTRACTOR SHALL REMOVE AND DISPOSE OF EROSION CONTROL MEASURES AND CLEAN SEDIMENT AND DEBRIS FROM ENTIRE DRAINAGE AND SEWER SYSTEMS.

## Existing Conditions Information

1. BASE PLAN: THE PROPERTY LINES SHOWN WERE DETERMINED BY AN ACTUAL FIELD SURVEY CONDUCTED BY VHB ENGINEERING, SURVEYING, LANDSCAPE, ARCHITECTURE AND GEOLOGY, P.C., THE TOPOGRAPHY AND PHYSICAL FEATURES ARE BASED ON AN ACTUAL FIELD SURVEY PERFORMED ON THE GROUND BY VHB ENGINEERING, SURVEYING, LANDSCAPE, ARCHITECTURE AND GEOLOGY, P.C., ON OCTOBER 21ST, 2021 AND UPDATED ON MAY 1, 2024.
2. TOPOGRAPHY: ELEVATIONS ARE BASED ON NAVD DATUM.
3. GEOTECHNICAL DATA INCLUDING TEST PIT AND BORING LOCATIONS AND ELEVATIONS WERE OBTAINED FROM TECTONIC ENGINEERING CONSULTANTS, GEOLOGISTS & LAND SURVEYORS, D.P.C..

## Document Use

1. THESE PLANS AND CORRESPONDING CADD DOCUMENTS ARE INSTRUMENTS OF PROFESSIONAL SERVICE, AND SHALL NOT BE USED, IN WHOLE OR IN PART, FOR ANY PURPOSE OTHER THAN FOR WHICH IT WAS CREATED WITHOUT THE EXPRESSED, WRITTEN CONSENT OF VHB. ANY UNAUTHORIZED USE, REUSE, MODIFICATION OR ALTERATION, INCLUDING AUTOMATED CONVERSION OF THIS DOCUMENT SHALL BE AT THE USER'S SOLE RISK WITHOUT LIABILITY OR LEGAL EXPOSURE TO VHB.
2. CONTRACTOR SHALL NOT RELY SOLELY ON ELECTRONIC VERSIONS OF PLANS, SPECIFICATIONS, AND DATA FILES THAT ARE OBTAINED FROM THE DESIGNERS, BUT SHALL VERIFY LOCATION OF PROJECT FEATURES IN ACCORDANCE WITH THE PAPER COPIES OF THE PLANS AND SPECIFICATIONS THAT ARE SUPPLIED AS PART OF THE CONTRACT DOCUMENTS.
3. SYMBOLS AND LEGENDS OF PROJECT FEATURES ARE GRAPHIC REPRESENTATIONS AND ARE NOT NECESSARILY SCALED TO THEIR ACTUAL DIMENSIONS OR LOCATIONS ON THE DRAWINGS. THE CONTRACTOR SHALL REFER TO THE DETAIL SHEET DIMENSIONS, MANUFACTURERS' LITERATURE, SHOP DRAWINGS AND FIELD MEASUREMENTS OF SUPPLIED PRODUCTS FOR LAYOUT OF THE PROJECT FEATURES.

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# Orchards on Hudson Residential

Dock Road
Marlborough, NY

| No. | Revision | Date | Appvd. |
|---|---|---|---|
| 1 | Town Resubmission | 10/25/2025 | AL |
| 2 | Town Resubmission | 3/21/2025 | AL |

Designed by: DB
Checked by: AL

Issued for: Site Plan Approval
Date: August 9, 2024

Not Approved for Construction

Drawing Title: Legend and General Notes

Drawing Number: C1.00

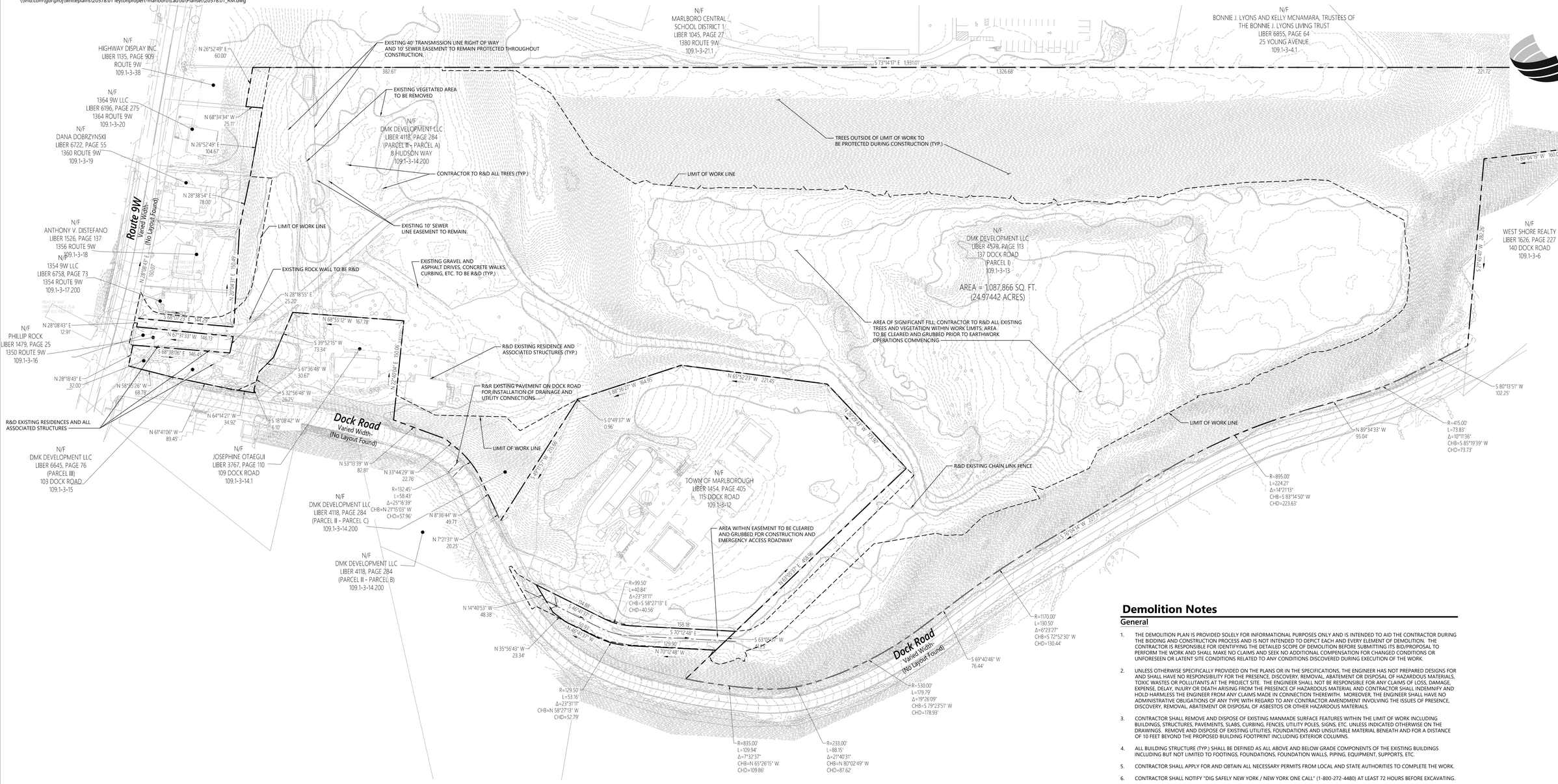
Sheet 1 of 47

Project Number: 20578.01




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Saved Thursday, March 20, 2025 1:55:48 PM DBALSANO Plotted Friday, March 21, 2025 12:37:07 PM Julien Le Goff




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## Demolition Notes

### General

1. THE DEMOLITION PLAN IS PROVIDED SOLELY FOR INFORMATIONAL PURPOSES ONLY AND IS INTENDED TO AID THE CONTRACTOR DURING THE BIDDING AND CONSTRUCTION PROCESS AND IS NOT INTENDED TO DEPICT EACH AND EVERY ELEMENT OF DEMOLITION. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING THE DETAILED SCOPE OF DEMOLITION BEFORE SUBMITTING ITS BID/PROPOSAL TO PERFORM THE WORK AND SHALL MAKE NO CLAIMS AND SEEK NO ADDITIONAL COMPENSATION FOR CHANGED CONDITIONS OR UNFORESEEN OR LATENT SITE CONDITIONS RELATED TO ANY CONDITIONS DISCOVERED DURING EXECUTION OF THE WORK.
2. UNLESS OTHERWISE SPECIFICALLY PROVIDED ON THE PLANS OR IN THE SPECIFICATIONS, THE ENGINEER HAS NOT PREPARED DESIGNS FOR AND SHALL HAVE NO RESPONSIBILITY FOR THE PRESENCE, DISCOVERY, REMOVAL, ABATEMENT OR DISPOSAL OF HAZARDOUS MATERIALS, TOXIC WASTES OR POLLUTANTS AT THE PROJECT SITE. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR ANY CLAIMS OF LOSS, DAMAGE, EXPENSE, DELAY, INJURY OR DEATH ARISING FROM THE PRESENCE OF HAZARDOUS MATERIAL AND CONTRACTOR SHALL INDEMNIFY AND HOLD HARMLESS THE ENGINEER FROM ANY CLAIMS MADE IN CONNECTION THEREWITH. MOREOVER, THE ENGINEER SHALL HAVE NO ADMINISTRATIVE OBLIGATIONS OF ANY TYPE WITH REGARD TO ANY CONTRACTOR AMENDMENT INVOLVING THE ISSUES OF PRESENCE, DISCOVERY, REMOVAL, ABATEMENT OR DISPOSAL OF ASBESTOS OR OTHER HAZARDOUS MATERIALS.
3. CONTRACTOR SHALL REMOVE AND DISPOSE OF EXISTING MANMADE SURFACE FEATURES WITHIN THE LIMIT OF WORK INCLUDING BUILDINGS, STRUCTURES, PAVEMENTS, SLABS, CURBING, FENCES, UTILITY POLES, SIGNS, ETC. UNLESS INDICATED OTHERWISE ON THE DRAWINGS. REMOVE AND DISPOSE OF EXISTING UTILITIES, FOUNDATIONS AND UNSUITABLE MATERIAL BENEATH AND FOR A DISTANCE OF 10 FEET BEYOND THE PROPOSED BUILDING FOOTPRINT INCLUDING EXTERIOR COLUMNS.
4. ALL BUILDING STRUCTURE (TYP.) SHALL BE DEFINED AS ALL ABOVE AND BELOW GRADE COMPONENTS OF THE EXISTING BUILDINGS INCLUDING BUT NOT LIMITED TO FOOTINGS, FOUNDATIONS, FOUNDATION WALLS, PIPING, EQUIPMENT, SUPPORTS, ETC.
5. CONTRACTOR SHALL APPLY FOR AND OBTAIN ALL NECESSARY PERMITS FROM LOCAL AND STATE AUTHORITIES TO COMPLETE THE WORK.
6. CONTRACTOR SHALL NOTIFY "DIG SAFELY NEW YORK / NEW YORK ONE CALL" (1-800-272-4480) AT LEAST 72 HOURS BEFORE EXCAVATING.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SECURITY AND JOB SAFETY. CONSTRUCTION ACTIVITIES SHALL BE IN ACCORDANCE WITH OSHA STANDARDS AND LOCAL REQUIREMENTS.
8. THE LOCATIONS, SIZES, AND TYPES OF EXISTING UTILITIES ARE SHOWN AS AN APPROXIMATE REPRESENTATION ONLY. THE OWNER OR ITS REPRESENTATIVE(S) HAVE NOT INDEPENDENTLY VERIFIED THIS INFORMATION AS SHOWN ON THE PLANS. THE UTILITY INFORMATION SHOWN DOES NOT GUARANTEE THE ACTUAL EXISTENCE, SERVICEABILITY, OR OTHER DATA CONCERNING THE UTILITIES, NOR DOES IT GUARANTEE AGAINST THE POSSIBILITY THAT ADDITIONAL UTILITIES MAY BE PRESENT THAT ARE NOT SHOWN ON THE PLANS. PRIOR TO ORDERING MATERIALS AND BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL VERIFY AND DETERMINE THE EXACT LOCATIONS, SIZES, AND ELEVATIONS OF THE POINTS OF CONNECTIONS TO EXISTING UTILITIES AND, SHALL CONFIRM THAT THERE ARE NO INTERFERENCES WITH EXISTING UTILITIES AND THE PROPOSED UTILITY ROUTES, INCLUDING ROUTES WITHIN THE PUBLIC RIGHTS OF WAY.
9. ALL EXISTING SIGNAGE, UTILITY POLES, GUY WIRES, STRUCTURES AND OTHER APPURTENANCES IN THE RIGHT-OF-WAY TO REMAIN AND BE PROTECTED DURING CONSTRUCTION UNLESS OTHERWISE NOTED.
10. EXISTING UTILITIES SHALL BE TERMINATED, UNLESS OTHERWISE NOTED, IN CONFORMANCE WITH LOCAL, STATE AND INDIVIDUAL UTILITY COMPANY STANDARD SPECIFICATIONS AND DETAILS. THE CONTRACTOR SHALL COORDINATE UTILITY SERVICE DISCONNECTS WITH THE UTILITY REPRESENTATIVES. EXISTING UTILITIES TO REMAIN SHALL BE MAINTAINED & PROTECT AGAINST DAMAGE DURING DEMOLITION OPERATIONS.
11. ALL EXISTING UTILITIES ALONG THE SITE FRONTAGE WITHIN THE RIGHT OF WAY SHALL REMAIN UNLESS OTHERWISE DIRECTED BY THE UTILITY OWNER. CONTRACTOR SHALL PROTECT AND MAINTAIN ALL EXISTING UTILITIES ALONG THE SITE FRONTAGE WITHIN THE RIGHT OF WAY AND SHALL COORDINATE TEMPORARY PROTECTIONS, RELOCATIONS OR MODIFICATIONS WITH THE UTILITY OWNERS.
12. CONTRACTOR SHALL DISPOSE OF DEMOLITION DEBRIS IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS, ORDINANCES AND STATUTES.
13. CONTRACTOR SHALL IDENTIFY ANY TREES WITHIN THE LIMIT OF WORK NOT IDENTIFIED ON THE EXISTING CONDITIONS PLANS. THE LOCATION AND SPECIES OF THESE TREES SHALL BE PROVIDED TO THE ENGINEER IN ORDER TO DETERMINE IF TREES SHALL REMAIN.
14. EXISTING SANITARY STRUCTURES TO BE REMOVED IN ACCORDANCE WITH APPLICABLE SCDHS AND POLLUTION CONTROL REQUIREMENTS.
15. FURNISH, ERECT AND MAINTAIN ALL TEMPORARY BARRICADES, FENCES, COVERINGS, ENCLOSURES, SIGNS AND LIGHTING AS MAY BE REQUIRED TO CARRY ON DEMOLITION WORK IN A SAFE AND LEGAL MANNER.
16. INSTALL EROSION CONTROLS MEASURES PRIOR TO DEMOLITION. MAINTAIN EROSION CONTROLS THROUGHOUT DURATION OF THE PROJECT. REFER TO SEPARATE EROSION AND SEDIMENT CONTROL PLANS AND SWPPP DOCUMENTS/PERMIT.
17. DO NOT USE EXPLOSIVES.
18. CONTRACTOR SHALL PREVENT DUST, SEDIMENT, AND DEBRIS FROM EXITING THE SITE AND SHALL BE RESPONSIBLE FOR CLEANUP, REPAIRS AND CORRECTIVE ACTION IF SUCH OCCURS. ADJOINING STREETS AND PROPERTIES TO BE KEPT FREE OF DEBRIS RESULTING FROM THE DEMOLITION AND SHALL BE CLEANED ON A DAILY BASIS OR AS NEEDED.
19. DUST CONTROL TREATMENTS SHALL BE APPLIED AS NECESSARY TO CONTROL AND REDUCE THE AMOUNT OF DUST WHICH MAY CAUSE OFF SITE DAMAGE, BE A HEALTH HAZARD TO HUMANS, WILDLIFE AND PLANT LIFE, OR POSE A HAZARD TO TRAFFIC SAFETY.
20. CONTRACTOR SHALL CONTROL STORMWATER RUNOFF DURING CONSTRUCTION TO PREVENT ADVERSE IMPACTS TO OFF SITE AREAS, AND SHALL BE RESPONSIBLE TO REPAIR RESULTING DAMAGES, IF ANY, AT NO COST TO OWNER.
21. E&S CONTROLS MUST BE INSPECTED AND REPAIRED OR REPLACED WITHIN 24 HOURS OF A SIGNIFICANT PRECIPITATION EVENT (>0.5") THROUGHOUT CONSTRUCTION.
22. HOURS OF OPERATION TO BE AS PER LOCAL ORDINANCE. CONTRACTOR TO VERIFY PRIOR TO STARTING WORK.
23. AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
24. IN THE EVENT THAT SUSPECTED CONTAMINATED SOIL, GROUNDWATER, AND OTHER MEDIA ARE ENCOUNTERED DURING EXCAVATION AND CONSTRUCTION ACTIVITIES BASED ON VISUAL, OLFACTORY, OR OTHER EVIDENCE, THE CONTRACTOR SHALL STOP WORK IN THE VICINITY OF THE SUSPECT MATERIAL TO AVOID FURTHER SPREADING OF THE MATERIAL, AND SHALL NOTIFY THE OWNER AND OWNER'S REPRESENTATIVE IMMEDIATELY SO THAT THE APPROPRIATE TESTING AND SUBSEQUENT ACTION CAN BE TAKEN.
25. DAMAGE RESULTING FROM CONSTRUCTION LOADS SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO OWNER.

0 30 60 120Feet

# Orchards on Hudson Residential

Dock Road
Marlborough, NY

| No. | Revision | Date | Apprvd. |
|---|---|---|---|
| 1 | Town Resubmission | 10/25/2025 | AL |
| 2 | Town Resubmission | 3/21/2025 | AL |

Designed by DB | Checked by AL

Issued for: **Site Plan Approval** | Date: **August 9, 2024**

**Not Approved for Construction**

Drawing Title: **Removals Plan**

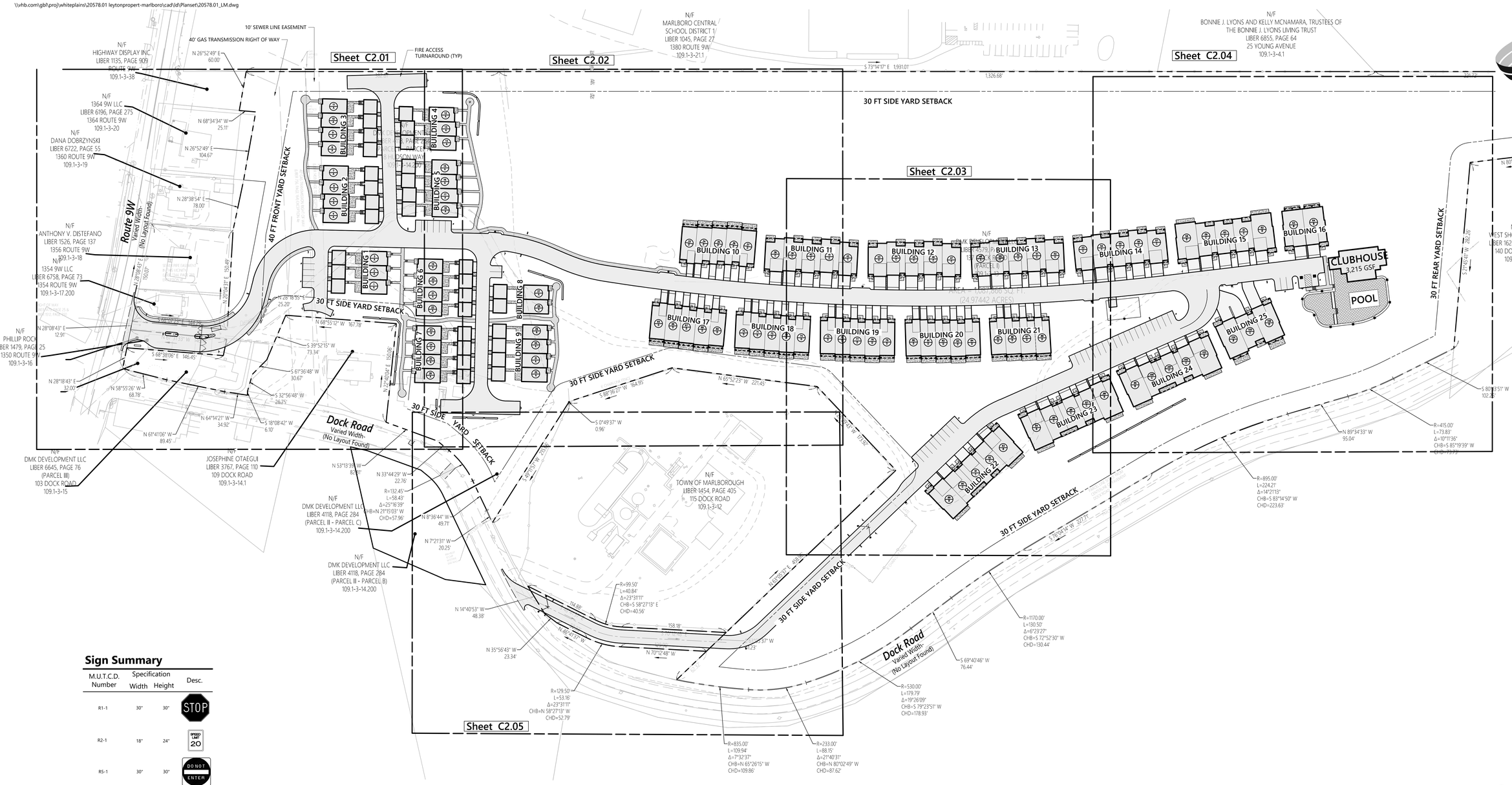



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Drawing Number: **C2.00**

Sheet 2 of 47

Project Number: **20578.01**




## Sign Summary

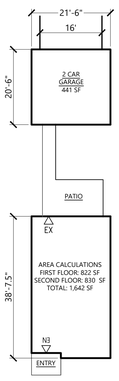
| M.U.T.C.D. Number | Specification Width | Specification Height | Desc. |
|---|---|---|---|
| R1-1 | 30" | 30" | STOP |
| R2-1 | 18" | 24" | SPEED LIMIT 20 |
| R5-1 | 30" | 30" | DO NOT ENTER |
| R7-1 | 12" | 18" | NO PARKING ANY TIME |
| R7-8 | 12" | 18" | RESERVED PARKING |

## Unit Symbol Legend

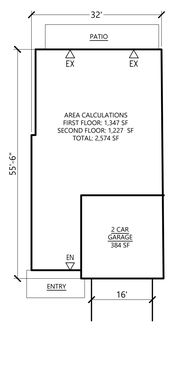
UNIT OUTLINE

UNIT NUMBER
UNIT TYPE

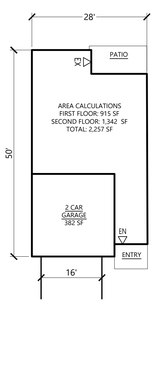
Unit A



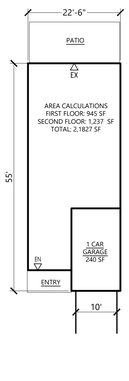

Unit B




Unit C




Unit D




## Parking Summary Chart

| Description | Size Required | Size Provided | Spaces Required | Spaces Provided |
|---|---|---|---|---|
| STANDARD SPACES | 162 SF (MIN.) | 9x18 (162 SF) | 154* | 180** |
| VISITOR PARKING SPACES * | 162 SF (MIN.) | 9x18 (162 SF) | 15 | 45 |
| STANDARD ACCESSIBLE SPACES *** | 8x19 (MIN.) | 10x19 | 2 | 2 |
| TOTAL SPACES | | | 171** | 227 |

* BASED ON SECTION 155-27 (TABLE 1) OF THE TOWN CODE, RESIDENTIAL CLUSTER USES ARE REQUIRED TO PROVIDE 1.5 SPACES FOR EACH DWELLING UNIT (ROUNDED DOWN TO A WHOLE NUMBER), PLUS 10% OF ALL OFF-STREET PARKING FOR VISITOR PARKING.
** EACH DWELLING UNIT HAS A DEDICATED ENCLOSED GARAGE PROVIDING TWO STANDARD PARKING SPACES FOR THE A/B/C UNITS AND ONE STANDARD PARKING SPACE FOR THE D UNITS.
*** 2 ADA STALLS REQUIRED FOR 26-50 TOTAL PARKING STALLS PROVIDED (ONLY APPLIED TO SURFACE VISITOR PARKING)

## Notes

### General

1. MAIL FOR ALL UNITS TO BE IN LOCATED IN THE CLUBHOUSE
2. PRIVATE TRASH PICKUP FOR EACH UNIT

## UNIT SUMMARY

| Unit | Provided |
|---|---|
| A | 32 |
| B | 12 |
| C | 33 |
| D | 29 |
| TOTAL | 106 |

## Density Calculations

PROPOSED DENSITY:
106 UNITS / 24.5 ACRES = 4.32 UNITS / ACRE

4.32 UNITS / ACRE < 6 UNITS / ACRE OK

*SECTION 155-30 STATES MAXIMUM DENSITY SHALL BE SIX DWELLING UNITS PER ACRE

NOTE: ACREAGE COUNTED TOWARD DENSITY IS TOTAL AREA MINUS THE AREA WITHIN THE EASEMENT. IN ACCORDANCE WITH THE CORRESPONDENCE FORM THE TOWN BUILDING INSPECTOR DATED JANUARY 8TH 2025 STEEP SLOPE AREAS ARE CONSIDERED MAN MADE AND NOT ENVIRONMENTALLY SENSITIVE AREAS AND THEREFORE ARE INCLUDED IN THE CALCULATION.

## Zoning Summary Chart

| | |
|---|---|
| Zoning District(S): | Residential (R) |
| Proposed Use(S): | Multiple Dwelling |
| Existing Use(S): | Vacant / Residences |
| School District: | Marlboro Central School District |

| Zoning Regulation Requirements | Required[1] | Provided |
|---|---|---|
| MINIMUM LOT AREA[2] | 3 Acres | 25.0 Acres |
| FRONT YARD SETBACK | 40 Feet | 98.90 Feet |
| SIDE YARD SETBACK (ONE/BOTH) | 30 Feet | 18.30 Feet |
| REAR YARD SETBACK | 30 Feet | 50.50 Feet |
| MINIMUM LOT WIDTH | 200 Feet | 1,839 Feet |
| MINIMUM LOT DEPTH | 100 Feet | 559 Feet |
| MAXIMUM BUILDING HEIGHT | 2 ½ Stories / 35 Feet [3] | 2 ½ Stories / 26.25 Feet [3] |
| MAXIMUM BUILDING COVERAGE | 15.0 % | 13.0 % |

[1] Zoning regulation requirements as specified in "Code of the Town of Marlborough" adopted through April 12, 2021.

[2] Minimum lot area with public water and sewer and natural gas.

[3] Per the Town of Marlborough Code the height of a structure is defined as the distance measured from the mean level of ground surrounding the building to a point midway between the highest and lowest point of the roof. In accordance with that definition the maximum height of a proposed structure is 26.25 feet. In accordance with the NYS Fire Code, aerial apparatus access roads are required if a building is 30' or higher. The NYS Fire Code defines the height of the building from grade to the eave of the roof. The proposed maximum height of a proposed structure is 20.5 feet. Therefore an aerial apparatus access road is not proposed.

0 30 60 120Feet

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Designed by DB | Checked by AL

Issued for: Site Plan Approval | Date: August 9, 2024

Not Approved for Construction

Drawing Title: Overall Layout and Materials Plan

Drawing Number: C3.00

Sheet 3 of 47

Project Number: 20578.01

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Route 9W
Varied Width
(No Layout Found)

Dock Road
Varied Width
(No Layout Found)

10' SEWER LINE EASEMENT

PROPOSED CONCRETE PATIO (TYP.)

PROPOSED CONC. SIDEWALK (TYP).

PROPOSED PAVER BAND BETWEEN DRIVEWAYS (TYP.)

PROPOSED CONCRETE PATIO (TYP.)

40 FT FRONT YARD SETBACK

40' GAS TRANSMISSION RIGHT OF WAY

PROPOSED LOT LINE MODIFICATION BOUNDARY; A NET 3,940 SF OF PROPERTY TO BE TRANSFERRED TO PROPERTY OWNER OF LOTS 109.1-3-16,17.2, & 18

PROPOSED ASPHALT PAVEMENT

TRANSITION CURB BACK UP TO 6" (EACH END TYP.)

PROPOSED PAVER BAND BETWEEN DRIVEWAYS (TYP.)

PROPOSED STREET LIGHT (TYP.)

BUILDING 1
BUILDING 2
BUILDING 3
BUILDING 4
BUILDING 5
BUILDING 6
BUILDING 7

PROPOSED CONCRETE PATIO (TYP.)

PROPOSED CONC. SIDEWALK (TYP).

PROPOSED CONCRETE PATIO (TYP.)

6' DRIVEWAY DEPTH (TYP.)

PROPOSED BOLLARD LIGHT (TYP.)

30 FT SIDE YARD SETBACK

TRANSITION CURB BACK UP TO 6" (EACH END TYP.)

PROPOSED RETAINING WALL DESIGN BY OTHERS (TYP.)

PROPOSED CONCRETE PATIO (TYP.)

PROPOSED CONC. SIDEWALK (TYP).

30 FT SIDE YARD SETBACK

PROPOSED ASPHALT PAVEMENT

POTENTIAL BUS STOP FOR SCHOOL CHILDREN OFF OF 9W

PROPOSED 15' WIDE AUTOMATIC ENTRANCE GATE

TRAFFIC LOOP

PROPOSED CALL BOX

PROPOSED MONUMENT SIGN

PROPOSED LICENSE PLATE READER

PROPOSED 22' WIDE AUTOMATIC ENTRANCE GATE

PROPOSED LOT LINE MODIFICATION BOUNDARY; A NET 3,870.50 SF OF PROPERTY TO BE TRANSFERRED TO SUBJECT PROPERTY

GAS WITNESS POST

HOUSE

SAWCUT

See Sheet C2.02

Match Line

0 10 20 40 Feet

# Orchards on Hudson Residential

Dock Road
Marlborough, NY

| No. | Revision | Date | Appvd. |
|---|---|---|---|
| 1 | Town Resubmission | 10/25/2025 | AL |
| 2 | Town Resubmission | 3/21/2025 | AL |

Designed by: DB
Checked by: AL

Issued for: Site Plan Approval
Date: August 9, 2024

Not Approved for Construction

Drawing Title: Layout and Materials Plan

Drawing Number: C3.01

Sheet 4 of 47

Project Number: 20578.01

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PROPOSED CONCRETE PATIO (TYP.)
PROPOSED RETAINING WALL DESIGN BY OTHERS (TYP.)
AREA OF STEEP SLOPES (SEE GRADING AND DRAINAGE PLANS FOR LIMIT OF DISTURBANCE)
PROPOSED CONC. SIDEWALK (TYP).
PROPOSED STREET LIGHT (TYP.)
ROADWAY TO BE WIDENED TO 26 FT AT HYDRANT (TYP.)
PROPOSED ASPHALT PAVEMENT
PROPOSED BOLLARD LIGHT (TYP.)
3' WIDE CONCRETE WALKWAY TO UNIT (TYP.)
PROPOSED PAVER BAND BETWEEN DRIVEWAYS (TYP.)
TRANSITION UP TO 6" CURB AT BOTH ENDS (TYP.)
FCC AT DRIVEWAYS; TRANSITION UP TO 6" CURB ON BOTH ENDS (TYP.)
30 FT SIDE YARD SETBACK
See Sheet C2.01
See Sheet C2.03
Match Line
Match Line
See Sheet C2.05

BUILDING 4 · BUILDING 5 · BUILDING 6 · BUILDING 7 · BUILDING 8 · BUILDING 9 · BUILDING 10 · BUILDING 11 · BUILDING 17 · BUILDING 18

S 89°39'27" W 164.95'
N 65°52'23" W 221.45'
S 0°49'37" W 0.96'

0 10 20 40 Feet

# Orchards on Hudson Residential

Dock Road
Marlborough, NY

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Drawing Number: C3.02

Sheet 5 of 47

Project Number: 20578.01

STATE OF NEW YORK · DANIEL J. LANGER · 085718 · LICENSED PROFESSIONAL ENGINEER

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0 10 20 40 Feet

# Orchards on Hudson Residential

Dock Road
Marlborough, NY

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|---|---|---|---|
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Drawing Title
**Layout and Materials Plan**

Drawing Number
**C2.03**

Sheet 6 of 47

Project Number
20578.01

STATE OF NEW YORK
ANGELA LAM
085718
LICENSED PROFESSIONAL ENGINEER

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0 10 20 40 Feet

# Orchards on Hudson Residential

Dock Road
Marlborough, NY

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Drawing Title
**Layout and Materials Plan**

Drawing Number
**C3.04**

Sheet 7 of 47

Project Number
**20578.01**

STATE OF NEW YORK
ANGELO V. LANI
088918
LICENSED PROFESSIONAL ENGINEER

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Match Line See Sheet C2.02

R7-1

S 0°49'37" W
0.96'

PROPOSED
ASPHALT PAVEMENT

SAWCUT

YARD

SETBACK

PROPOSED
ASPHALT PAVEMENT

SAWCUT

3°44'29" W
22.76'

132.45'
58.43'
°16'39"
'03" W
57.96'

N 8°36'44" W
49.71'

INV=93.44
15"CMP

N 7°21'31" W
20.25'

INV=90.67
15"CMP
W/STONE
END WALL

S 0°49'37" W 21.06'

EXISTING STP

R50'

SAWCUT

612+32.29

PROPOSED 6' HIGH BLACK
VINYL CHAIN LINK FENCE
EMERGENCY ACCESS GATE

PROPOSED
STREET LIGHT
(TYP.)

N 14°40'53" W
48.38'

20'

114.88'
S 46°41'17" E

612+00

20.32'
N 40°40'37" W

R104'

R124'

158.18'
S 70°12'48" E

CC

611+00

610+00

CC

129.90'
N 70°12'48" W

PROPOSED
EASEMENT FOR
EMERGENCY ACCESS

N 35°56'43" W
23.34'

R=129.50'
L=53.16'
Δ=23°31'11"
CHB=N 58°27'13" W
CHD=52.79'

R=99.50'
L=40.84'
Δ=23°31'11"
CHB=S 58°27'13" E
CHD=40.56'

N 67°55'27" E 638.96'

30 FT SIDE YARD SETBACK

608+00

R64'

609+00

S 20°05'37" W
41.23'

R84'

Dock Road
Varies Width
(No Layout Found)

0 10 20 40 Feet

# Orchards on Hudson Residential

Dock Road
Marlborough, NY

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Drawing Title
Layout and Materials Plan

Drawing Number
C3.05

Sheet 8 of 47

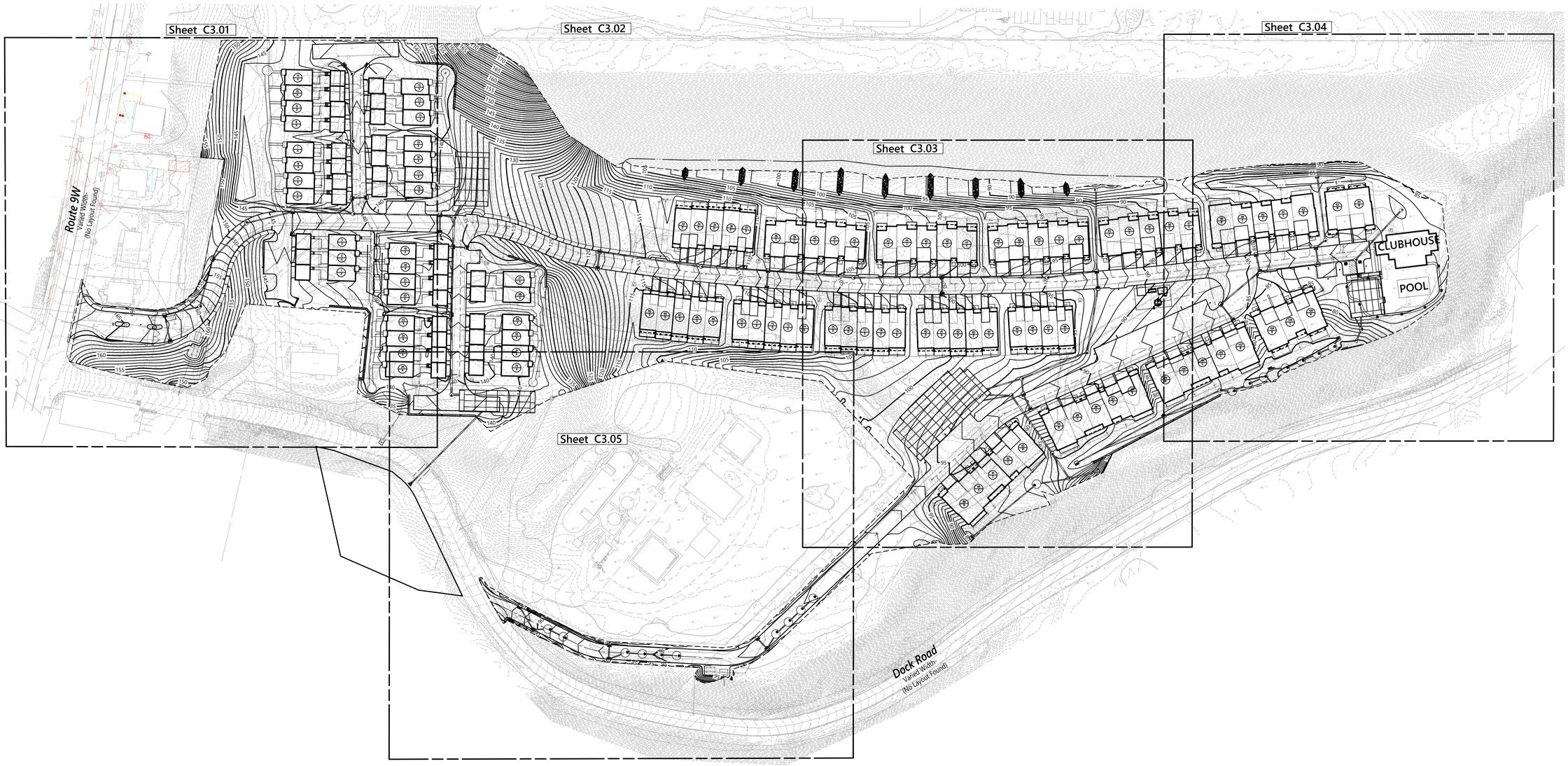
Project Number
20578.01

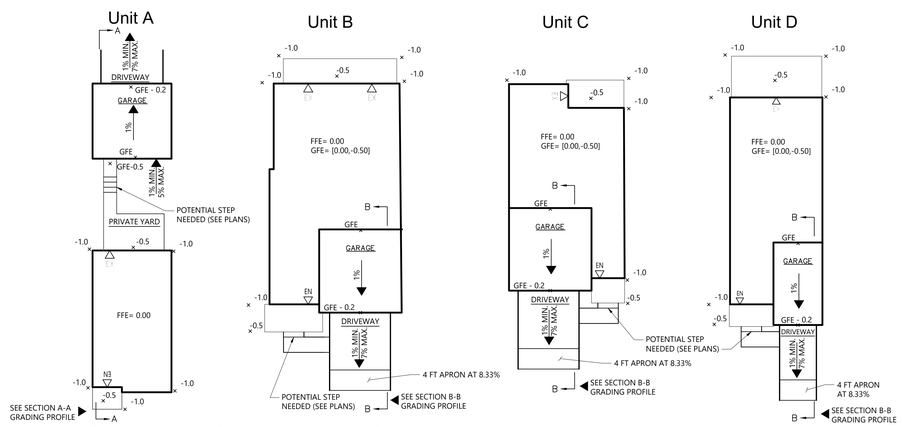
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DAVID L. LANGE
085918
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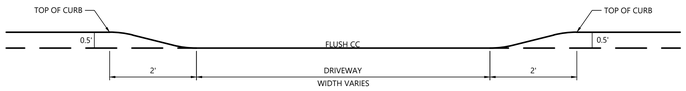
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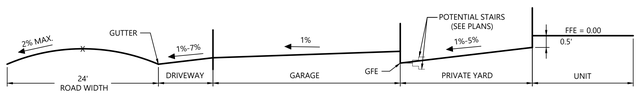

## Typical Driveway Grading Scheme (Townhouse)

N.T.S.



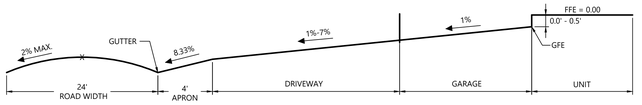

## Typical Curb Transition Section

N.T.S.




## Typical Driveway Grading Profile (Unit Type A) - Secion A-A

N.T.S.




## Typical Driveway Grading Profile (Unit Types B, C, D) - Secion B-B

N.T.S.

## Grading and Drainage Notes

1. ELEVATIONS ARE BASED ON NAVD88.
2. THE CONTRACTOR SHALL MEET LINES AND GRADES DEPICTED ON THIS PLAN OR AS DIRECTED BY THE ENGINEER. GRADE SHALL PITCH AWAY FROM BUILDINGS AND WHERE APPLICABLE SWALES SHALL BE INCORPORATED BETWEEN BUILDINGS TO TAKE WATER AWAY FROM FOUNDATIONS.
3. GRADES IN ALONG ADA WALKWAYS SHALL NOT EXCEED 5% IN THE DIRECTION OF TRAVEL AND 2% CROSS SLOPE.
4. ALL ADA ACCESS AISLES AND PARKING SPACES SHALL BE AT THE SAME LEVEL, WITH MAXIMUM SLOPES NOT GREATER THAN 2% IN ANY DIRECTION.
5. CONTRACTOR SHALL PROVIDE A SMOOTH TRANSITION BETWEEN THE ADA ACCESS AISLES/PARKING SPACES AND THE EXISTING PAVEMENT AT THE WORK LIMITS.
6. GRADES IN LANDSCAPED AREAS SHALL NOT EXCEED A SLOPE OF 3H:1V UNLESS OTHERWISE NOTED ON THE PLANS.
7. CONTRACTOR RESPONSIBLE TO PROVIDE POSITIVE DRAINAGE FLOW OVER THE SITE. BIRD BATHS AND PONDING AREAS (OTHER THAN AS DESIGNED) ARE NOT PERMITTED AND SHALL BE CORRECTED AT NO ADDITIONAL EXPENSE TO THE OWNER.
8. DRAINAGE PIPE TO BE AS FOLLOWS UNLESS OTHERWISE NOTED:
   - UNDER PAVEMENT: HDPE, SIZE AS NOTED ON PLANS
   - UNDER LANDSCAPING: HDPE, SIZE AS NOTED ON PLANS
   - ROOF DRAIN HEADERS: 6" DR-18 PVC MIN. SLOPE 1%
9. ROOF DRAIN HEADERS AND DOWN SPOUT LOCATIONS PENDING FINAL ARCHITECTURAL DESIGN.

## Earthwork Notes

1. THE CONTRACTOR SHALL PERFORM THEIR OWN CUT/FILL ANALYSIS BASED ON THE APPROVED SITE PLANS TO DETERMINE IF FILL IS NEEDED TO BE IMPORTED TO CONSTRUCT THE PROJECT.
2. THE CONTRACTOR IS PERMITTED TO UTILIZE NATIVE SOILS EXCAVATED FROM THE SITE FOR USE AS FILL MATERIAL IN OTHER AREAS OF THE SITE. NATIVE SOILS SHALL BE EXCAVATED TO A DEPTH DETERMINED BY THE GEOTECHNICAL ENGINEER FOR TESTING TO DETERMINE MAXIMUM ALLOWABLE DENSITY.
3. CUT AND REMOVE TREES, REMOVE STUMPS AND BRUSH. LEGALLY DISPOSE OF OFF-SITE. WOOD WASTES MAY BE CHIPPED AND SHREDDED ON-SITE AND REUSED ON-SITE WITH PRIOR APPROVAL OF THE ENGINEER. STRIP ALL TOPSOIL, SUBSOIL AND OTHER UNSUITABLE MATERIALS TO ITS FULL DEPTH WITHIN THE CONTRACT LIMITS. TOPSOIL FREE OF ROOTS, STUMPS AND DELETERIOUS MATERIAL CAN BE STOCKPILED FOR REUSE IN LANDSCAPED AREAS.
4. FILL SHALL BE PLACED ON LIFTS NOT GREATER THAN EIGHTEEN INCHES THICK AND COMPACTED TO A MINIMUM COMPACTION OF 95% OF THE MODIFIED PROCTOR DENSITY.
5. FILL BROUGHT TO THE SITE SHALL BE COMPRISED OF MAINLY SAND AND GRAVEL AND SHALL BE CLEAN, INERT, HARD, DURABLE GRAINS OF QUARTZ OR OTHER HARD, DURABLE ROCK, FREE FROM LOAM OR CLAY, SURFACE COATINGS AND DELETERIOUS MATERIALS. THE ALLOWABLE AMOUNT OF MATERIAL PASSING A NO. 200 SIEVE AS DETERMINED BY AASHTO-T11 OR ASTM-D422 SHALL NOT EXCEED 10 PERCENT BY WEIGHT. THE MAXIMUM PARTICLE SIZE SHALL BE 1/4-INCH (I.E., 100 PERCENT PASSING THE NO. 4 SIEVE).
6. FILL MATERIAL SHALL BE FREE OF TRASH, ICE SNOW, TREE STUMPS, ROOTS, AND ORGANIC MATERIALS.
7. THE ENGINEER/OWNER RESERVES THE RIGHT TO REJECT MATERIAL BROUGHT TO THE SITE BASED ON VISUAL INSPECTION OF THE SUITABILITY OF ALL MATERIALS. RE-TESTING OF THE MATERIALS DURING EARTHWORK OPERATIONS WOULD BE PERFORMED AT THE COST OF THE CONTRACTOR.
8. BASED ON THE GEOTECHNICAL REPORT, BED ROCK IS NOT ANTICIPATED DURING EXCAVATION OPERATIONS. SHOULD ROCK BE ENCOUNTERED, THE CONTRACTOR SHALL NOTIFY THE OWNER IN WRITING AND ADVISE OF THE PLAN TO EXCAVATE IF NECESSARY.

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0 30 60 120Feet

# Orchards on Hudson Residential

Dock Road
Marlborough, NY

| No. | Revision | Date | Appvd. |
|---|---|---|---|
| 1 | Town Resubmission | 10/25/2025 | AL |
| 2 | Town Resubmission | 3/21/2025 | AL |

Designed by DB | Checked by AL

Issued for: Site Plan Approval | Date: August 9, 2024

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Drawing Title: Overall Grading and Drainage Plan

Drawing Number: C4.00

Sheet 9 of 47

Project Number: 20578.01

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DANIEL J. LAU
095718
LICENSED PROFESSIONAL ENGINEER

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Route 9W
Varied Width-
(No Layout Found)

Dock Road
Varied Width-
(No Layout Found)

MEET EXISTING EOP

MEET EXISTING EOP

PROPOSED STEPS (TYP.)

PROPOSED STEPS (TYP.)

HOUSE

Match Line

See Sheet C3.02

0 10 20 40 Feet

# Orchards on Hudson Residential

**Dock Road**
**Marlborough, NY**

| No. | Revision | Date | Appvd. |
|---|---|---|---|
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Drawing Title: **Grading and Drainage Plan**

Drawing Number: **C4.01**

Sheet 10 of 47

Project Number: **20578.01**

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LIMITS OF DISTURBANCE (±15.5 ACRES)

PATIOS TO SLOPE 1% AWAY FROM BUILDING STEP DOWN 6" TO GRADE (TYP.)

CHECK DAM (TYP.)

STORM TRAP A1
TOS = 132.56
BOS = 124.06
INV. IN = 130.25
INV. OUT = 126.11

PROPOSED VORTECHS PRETREATMENT STRUCTURE OR APPROVED EQUAL

PROPOSED STEPS (TYP.)

PROPOSED VORTECHS PRETREATMENT STRUCTURE OR APPROVED EQUAL

STORM TRAP A2
TOS = 132.56
BOS = 124.06
INV. IN = 126.08
INV. OUT = 130.00

See Sheet C3.01
See Sheet C3.03
See Sheet C3.05
Match Line
Match Line
Match Line

0 10 20 40 Feet

# Orchards on Hudson Residential

Dock Road
Marlborough, NY

| No. | Revision | Date | Appvd. |
|---|---|---|---|
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Date
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Drawing Title
**Grading and Drainage Plan**

Drawing Number
**4.02**

Sheet 11 of 47

Project Number
**20578.01**

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0 10 20 40 Feet

# Orchards on Hudson Residential

Dock Road
Marlborough, NY

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Drawing Number: **C4.03**

Sheet 12 of 47

Project Number: 20578.01

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ANGELO V. LORE
098418
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See Sheet C3.03

Match Line

LIMITS OF DISTURBANCE (±15.5 ACRES)

PATIOS TO SLOPE 1% AWAY FROM BUILDING STEP DOWN 6" TO GRADE (TYP.)

PROPOSED VORTECHS PRETREATMENT STRUCTURE OR APPROVED EQUAL

CLUBHOUSE
FFE = 84.73

POOL
INV=76.80

INV=78.14(OVERFLOW PIPE)
INV=76.00

STORM TRAP C
TOS = 80.00
BOS = 66.00
INV. IN = 76.8
INV. OUT = 76

LEVEL SPREADER
30 FT LONG
TOP OF PLANK = 74.5

Dock Road
Varied Width
(No Layout Found)

0 10 20 40 Feet

# Orchards on Hudson Residential

Dock Road
Marlborough, NY

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Drawing Title
**Grading and Drainage Plan**

Drawing Number
**C4.04**

Sheet 13 of 47

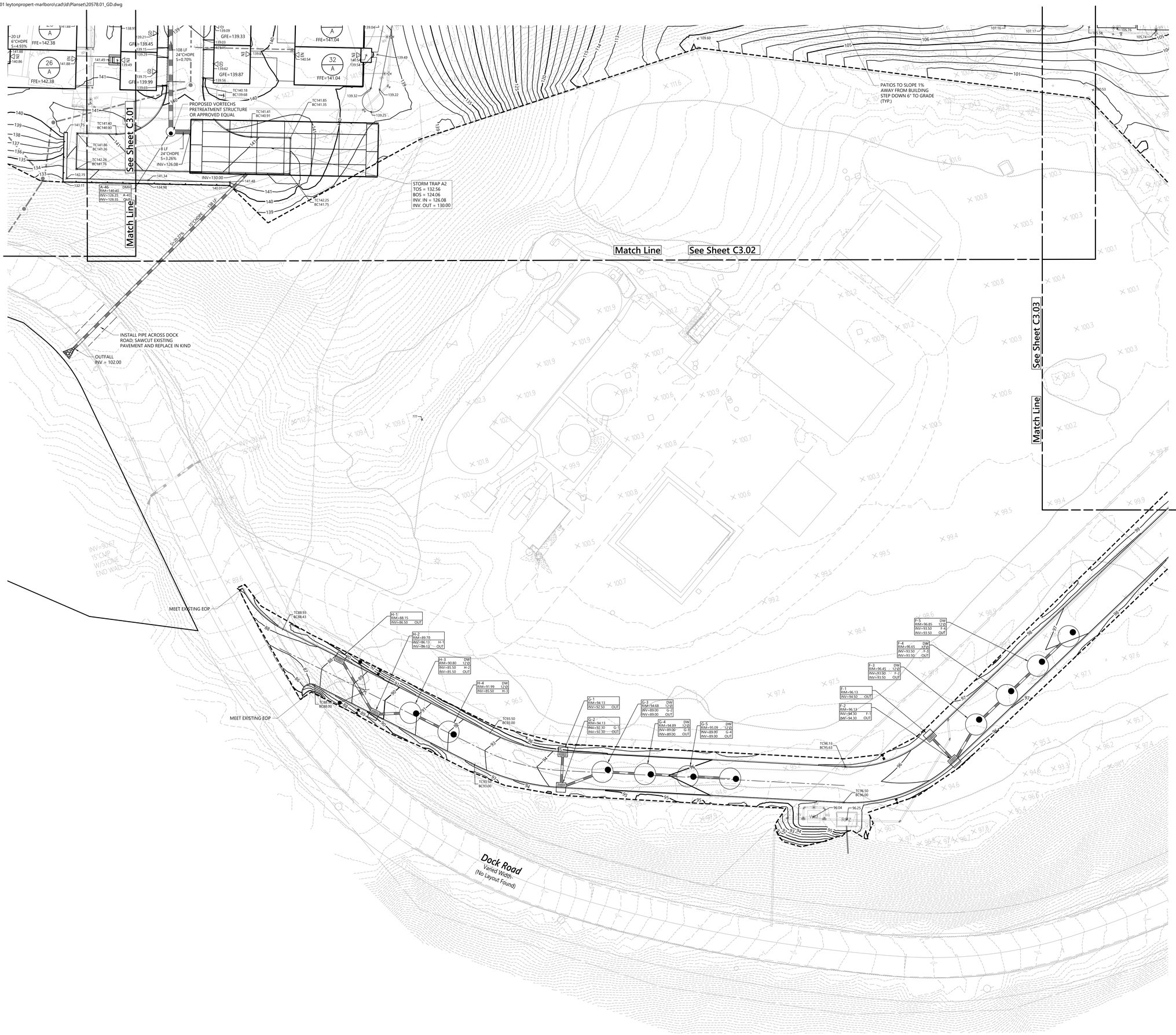
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CHELSEY V. LONG
DB0418
LICENSED PROFESSIONAL ENGINEER

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0 10 20 40 Feet

# Orchards on Hudson Residential

Dock Road
Marlborough, NY

| No. | Revision | Date | Apprvd. |
|---|---|---|---|
| 1 | Town Resubmission | 10/25/2025 | AL |
| 2 | Town Resubmission | 3/21/2025 | AL |

Designed by DB | Checked by AL

Issued for: Site Plan Approval | Date: August 9, 2024

Not Approved for Construction

Drawing Title
## Grading and Drainage Plan

Drawing Number
# C4.05

Sheet 14 of 47

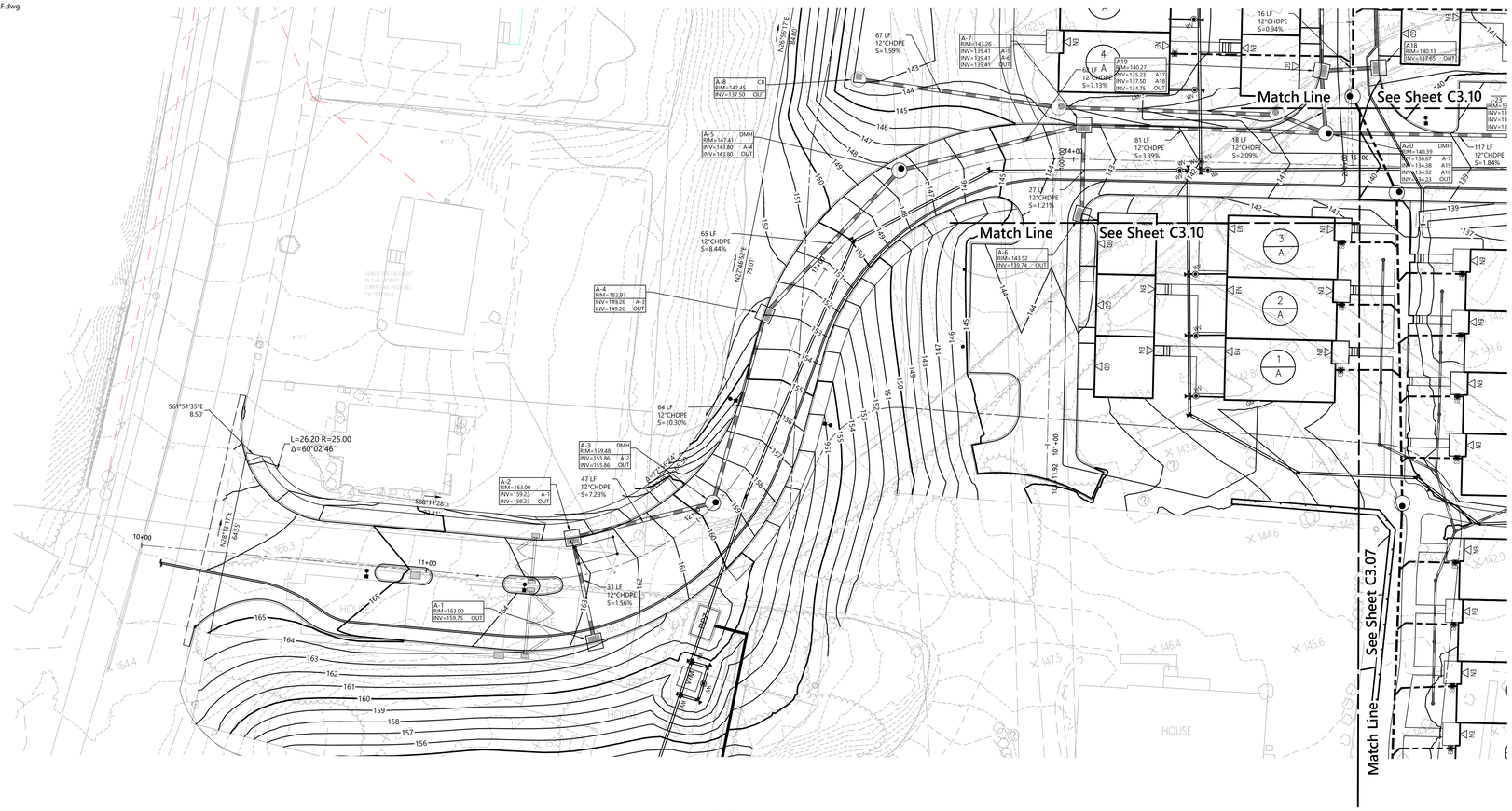
Project Number 20578.01

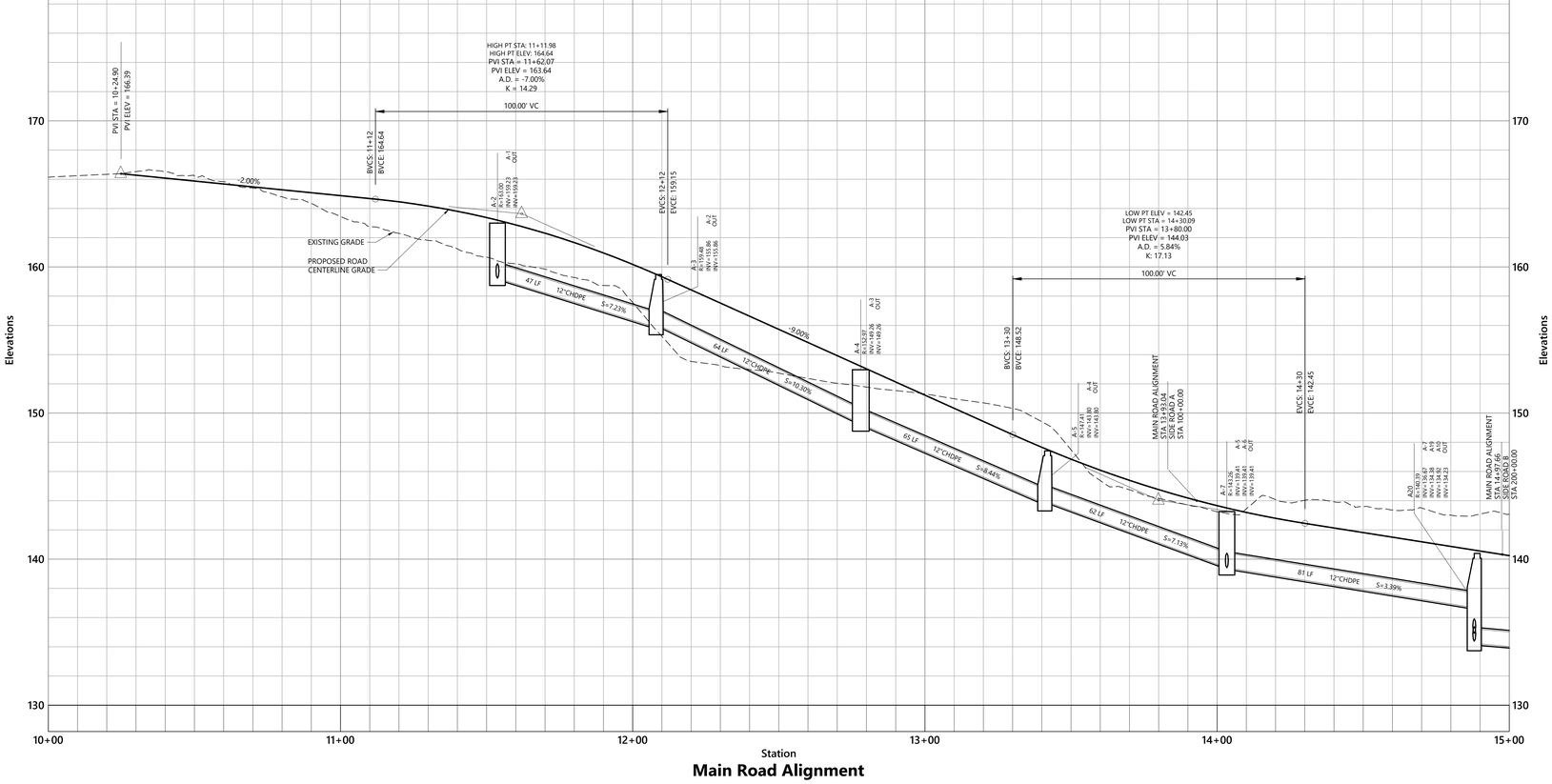
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ANGELO V. LORE
088418
LICENSED PROFESSIONAL ENGINEER

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0 10 20 40 Feet

# Orchards on Hudson Residential

Dock Road
Marlborough, NY

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Issued for: Site Plan Approval | Date: August 9, 2024

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Drawing Title
Main Road
Plan Over Profile
Station 10+00 to 15+00

Drawing Number
C4.06

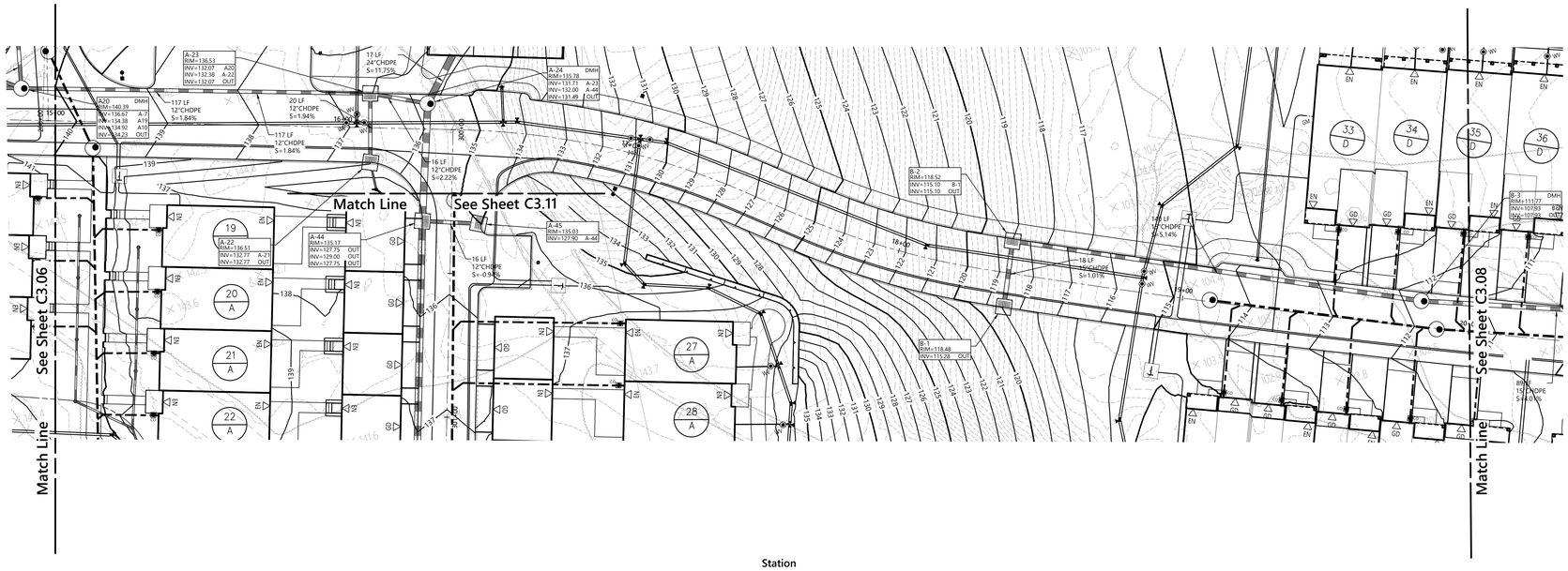
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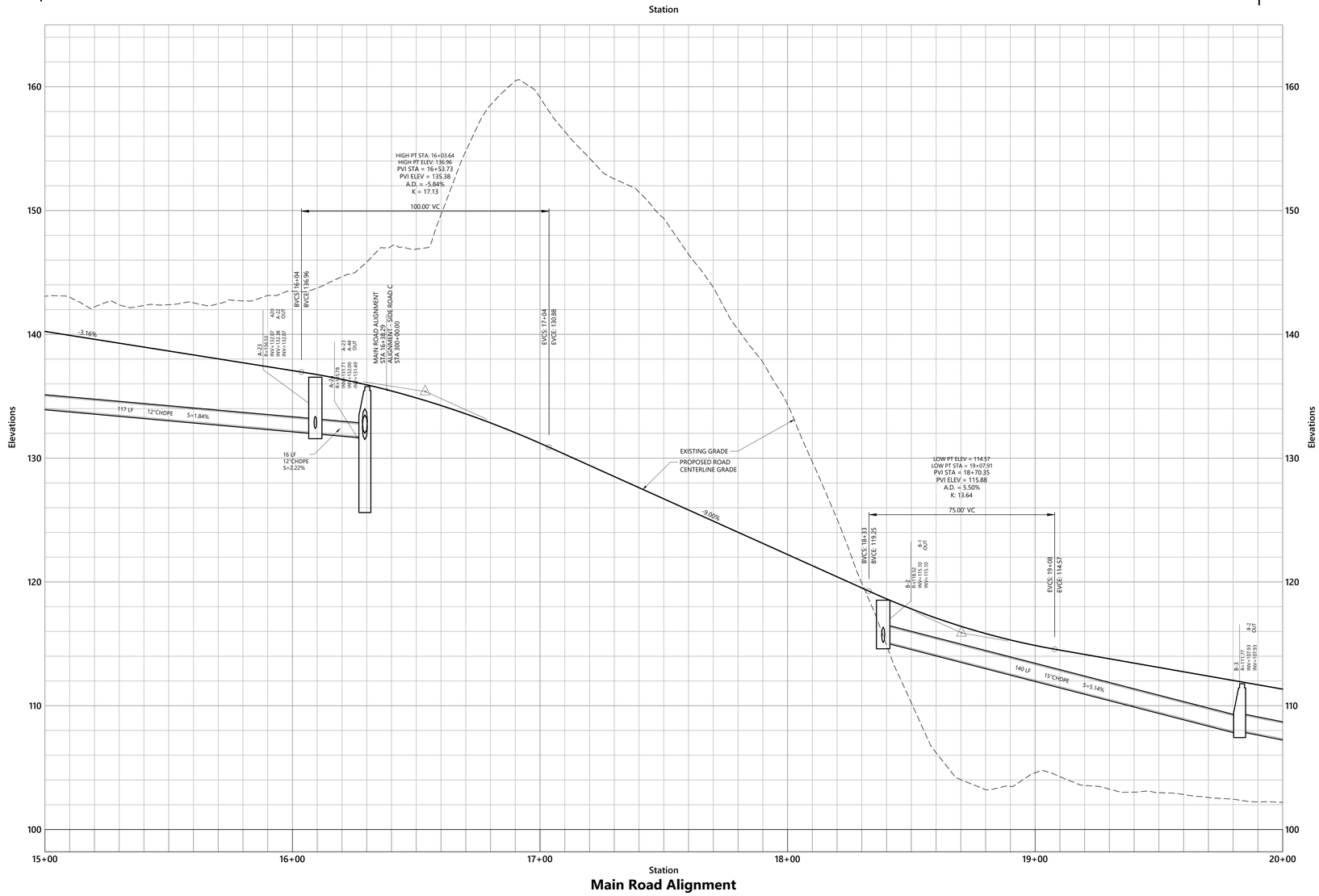
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0 10 20 40 Feet

# Orchards on Hudson Residential

Dock Road
Marlborough, NY

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Drawing Title:
Main Road
Plan Over Profile
Station 15+00 to 20+00

Drawing Number
C4.07

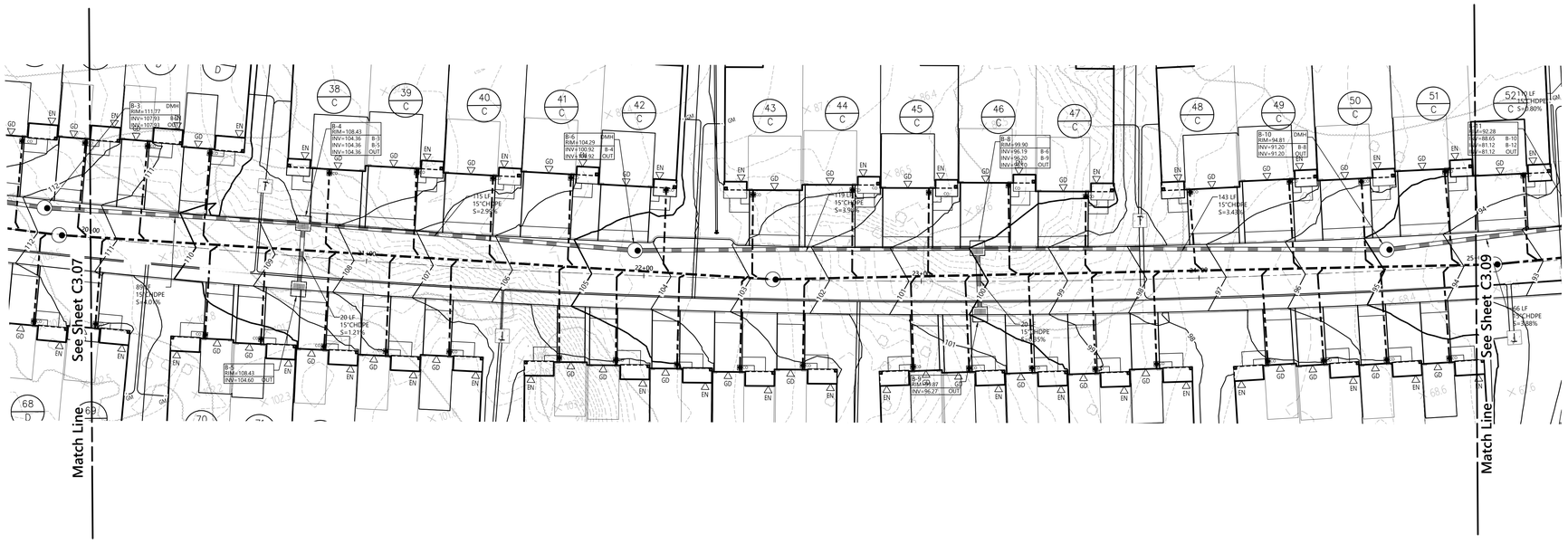
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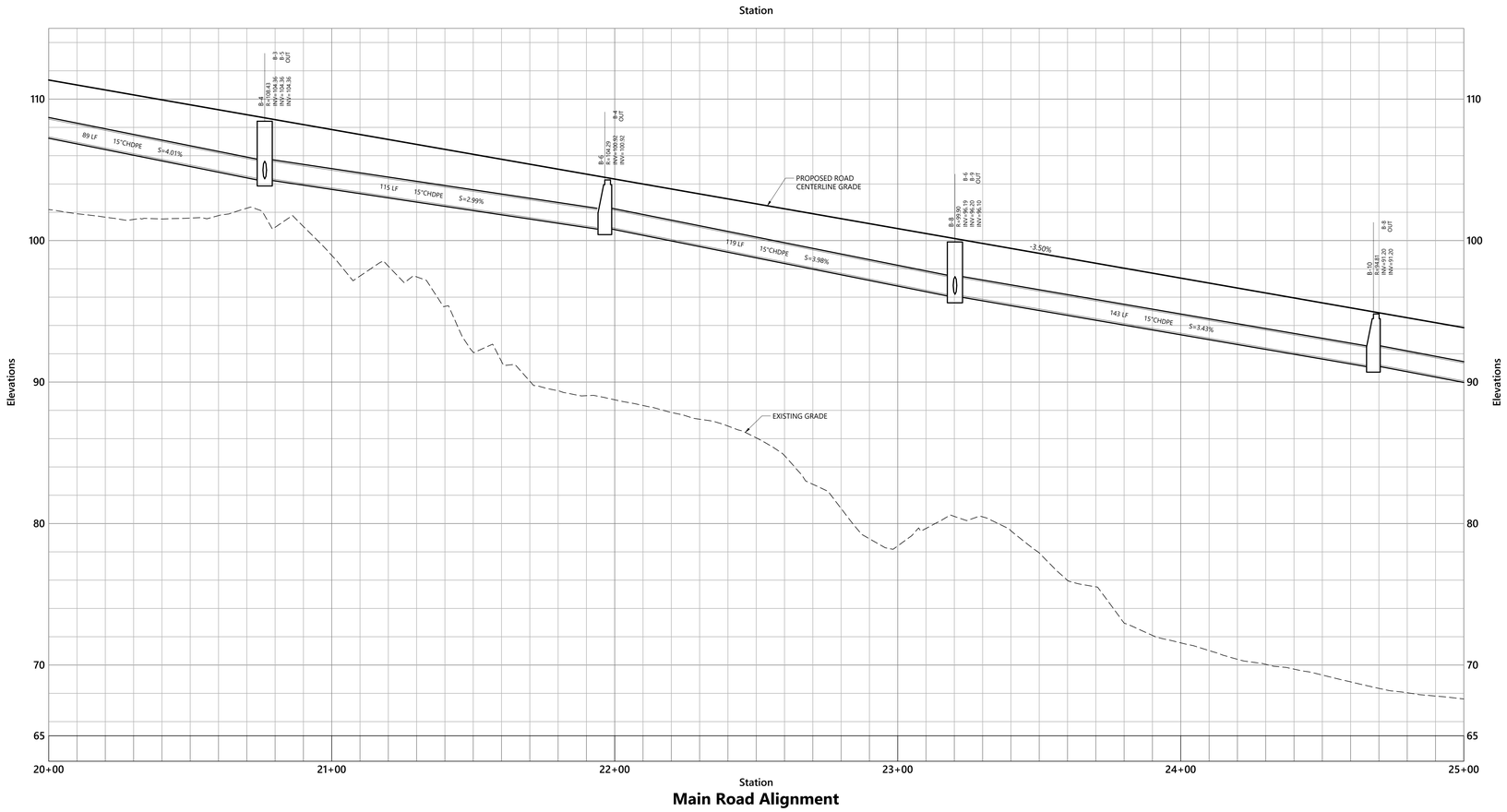
Project Number
20578.01

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# Orchards on Hudson Residential

Dock Road
Marlborough, NY

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Drawing Title
Main Road
Plan Over Profile
Station 20+00 to 25+00

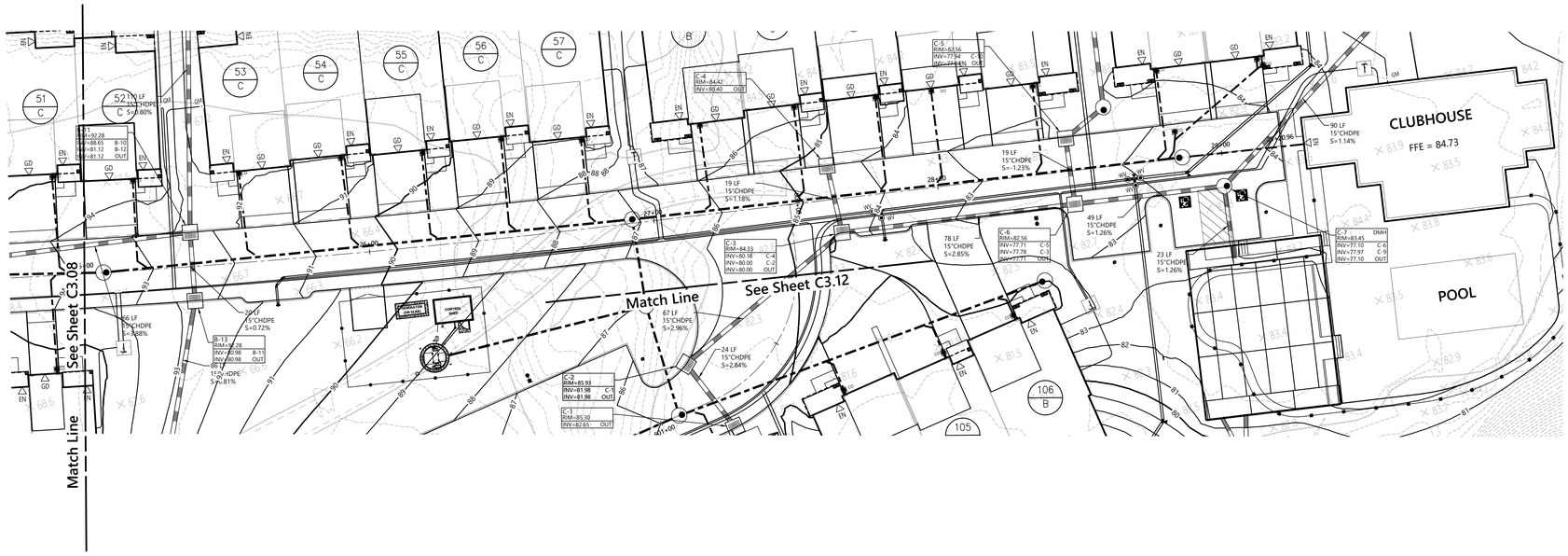
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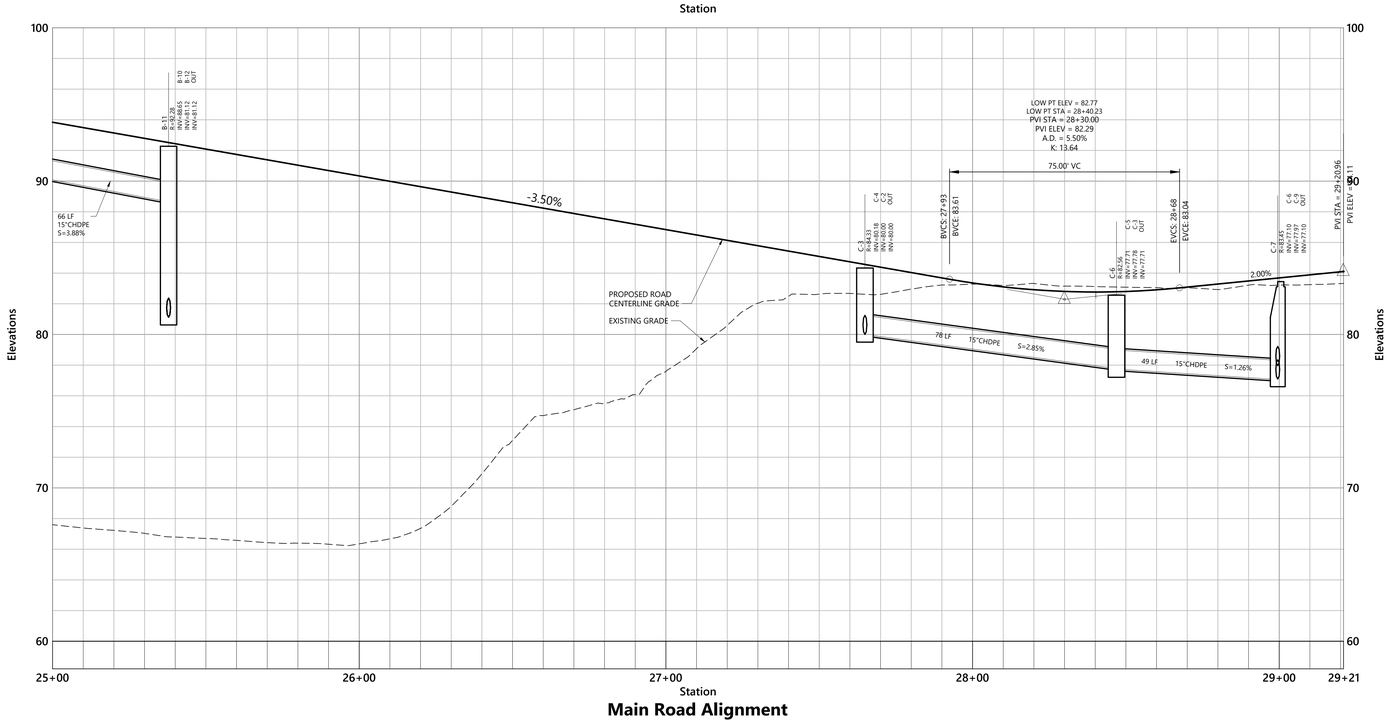
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Project Number
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**Main Road Alignment**

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# Orchards on Hudson Residential

Dock Road
Marlborough, NY

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Drawing Title
**Main Road**
**Plan Over Profile**
**Station 25+00 to 29+21**

Drawing Number
**C4.09**

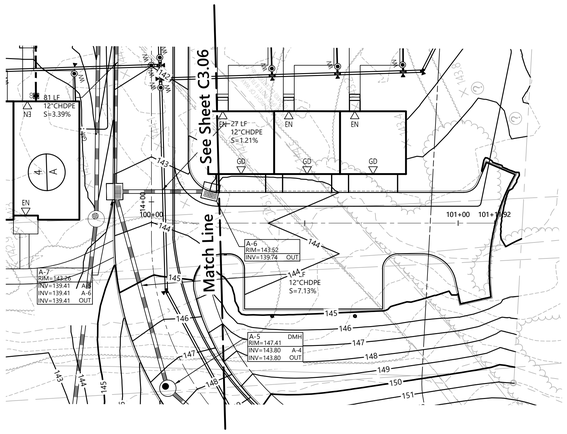
Sheet 18 of 47

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JAMES L. LAMB
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082418

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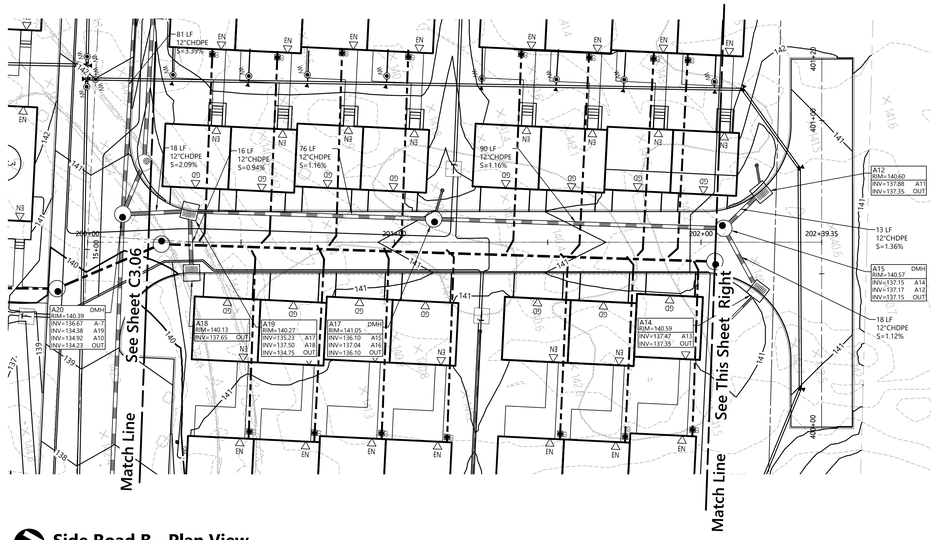
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## Side Road A - Plan View

1" = 20'

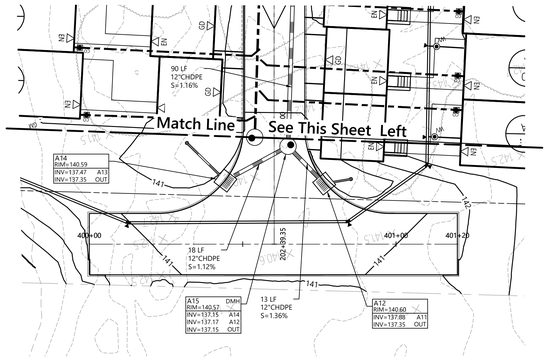
Source: VHB




## Side Road B - Plan View

1" = 20'

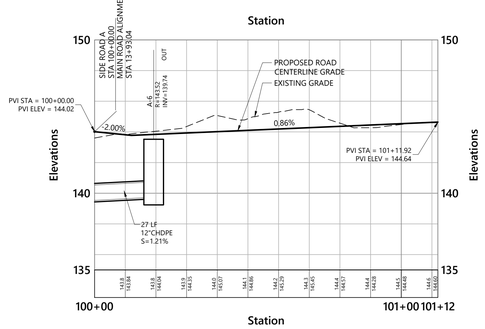
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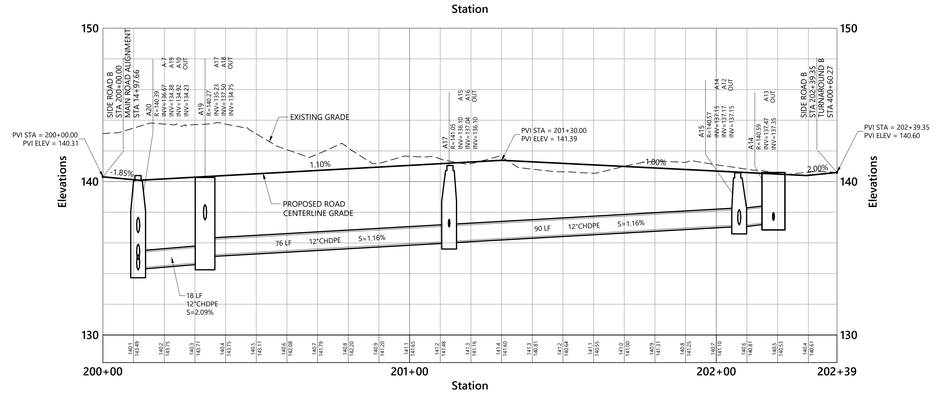

## Turnaround B - Plan View

1" = 20'

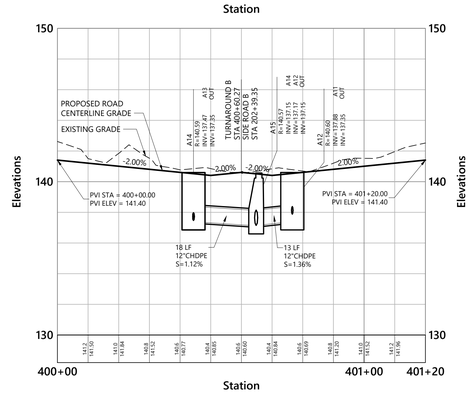
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## Side Road A




## Side Road B




## Turnaround B

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# Orchards on Hudson Residential

Dock Road
Marlborough, NY

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Drawing Title
**Side Road A and B Plan Over Profile**

Drawing Number
**C4.10**

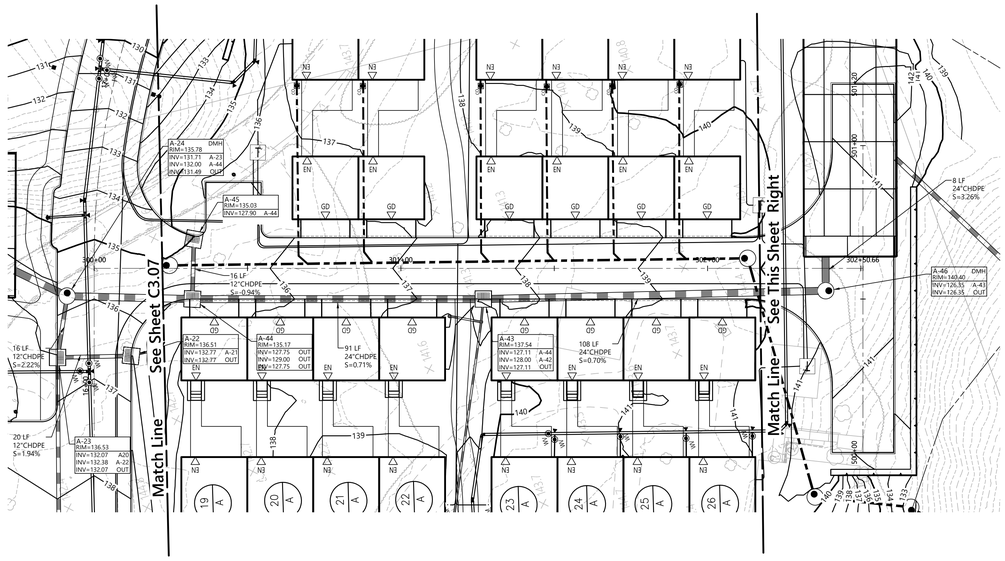
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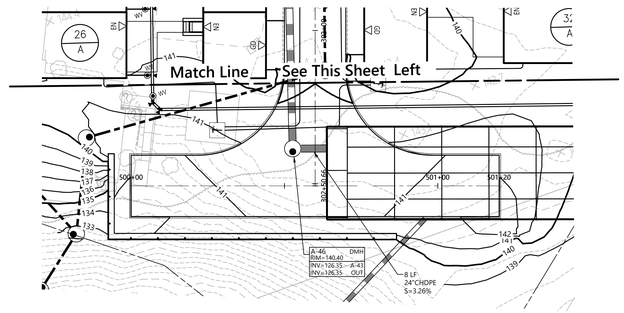
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## Side Road C - Plan View

1" = 20'

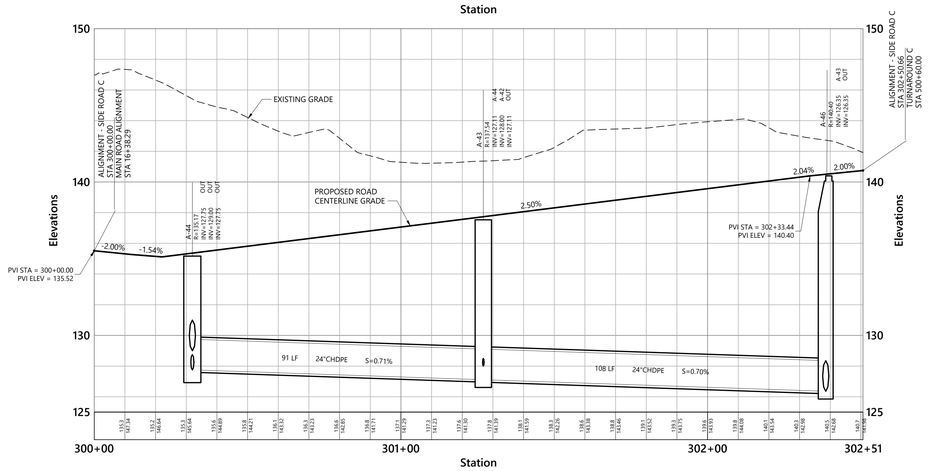
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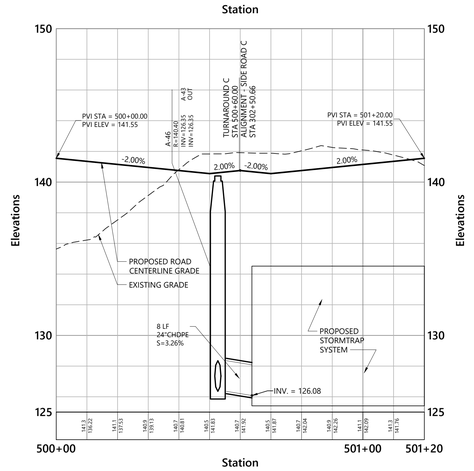



## Turnaround C - Plan View

1" = 20'

Source: VHB




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0 10 20 40 Feet

# Orchards on Hudson Residential

Dock Road
Marlborough, NY

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Drawing Title
**Side Road C**
**Plan Over Profile**

Drawing Number
**C4.11**

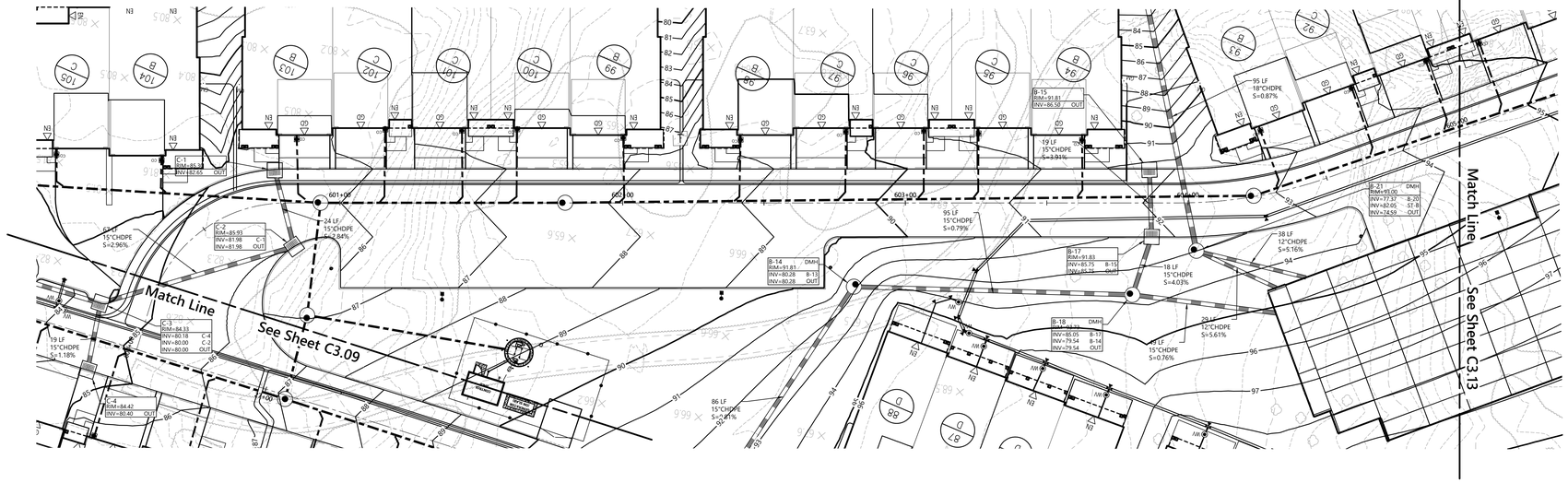
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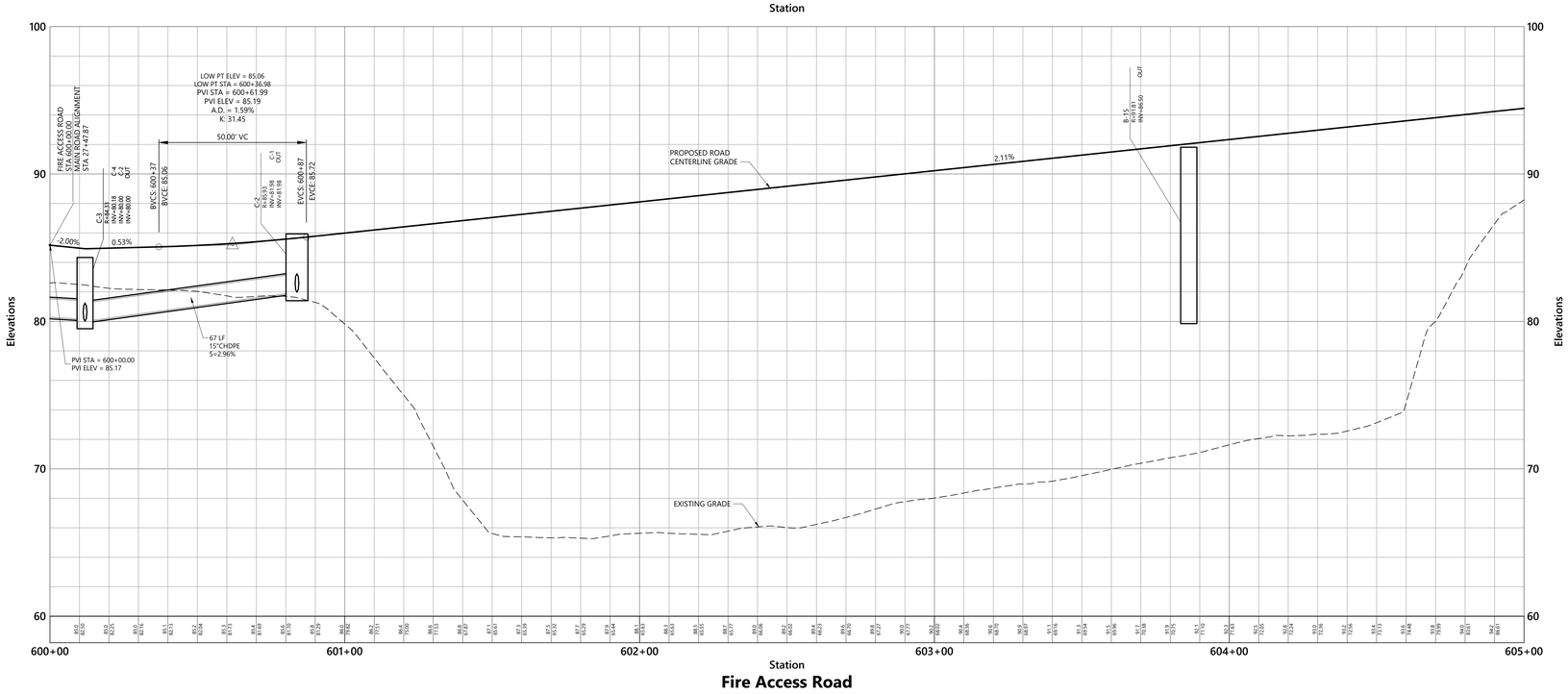
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0 10 20 40 Feet

# Orchards on Hudson Residential

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Marlborough, NY

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Drawing Title
Fire Access Road
Plan Over Profile
Station 600+00 to 605+00

Drawing Number
C4.12

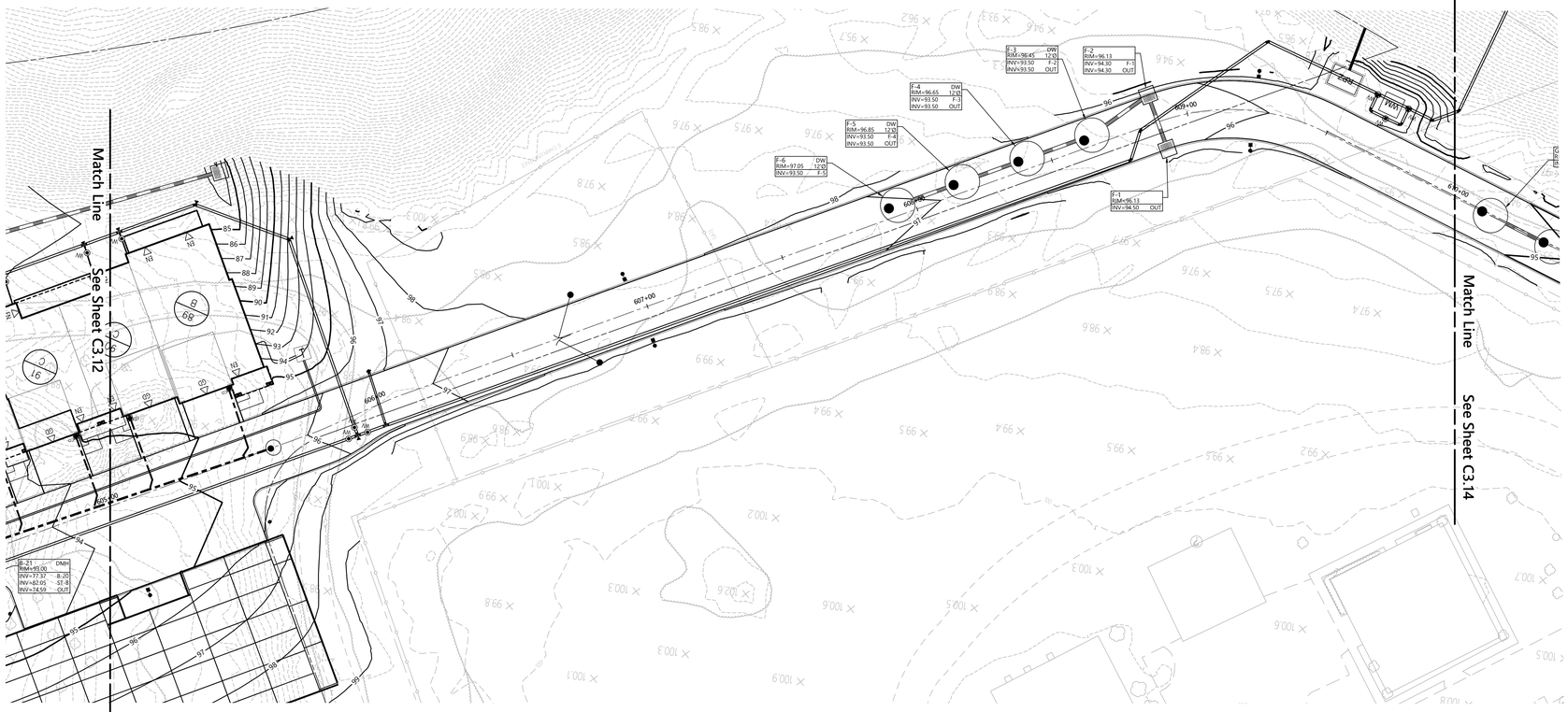
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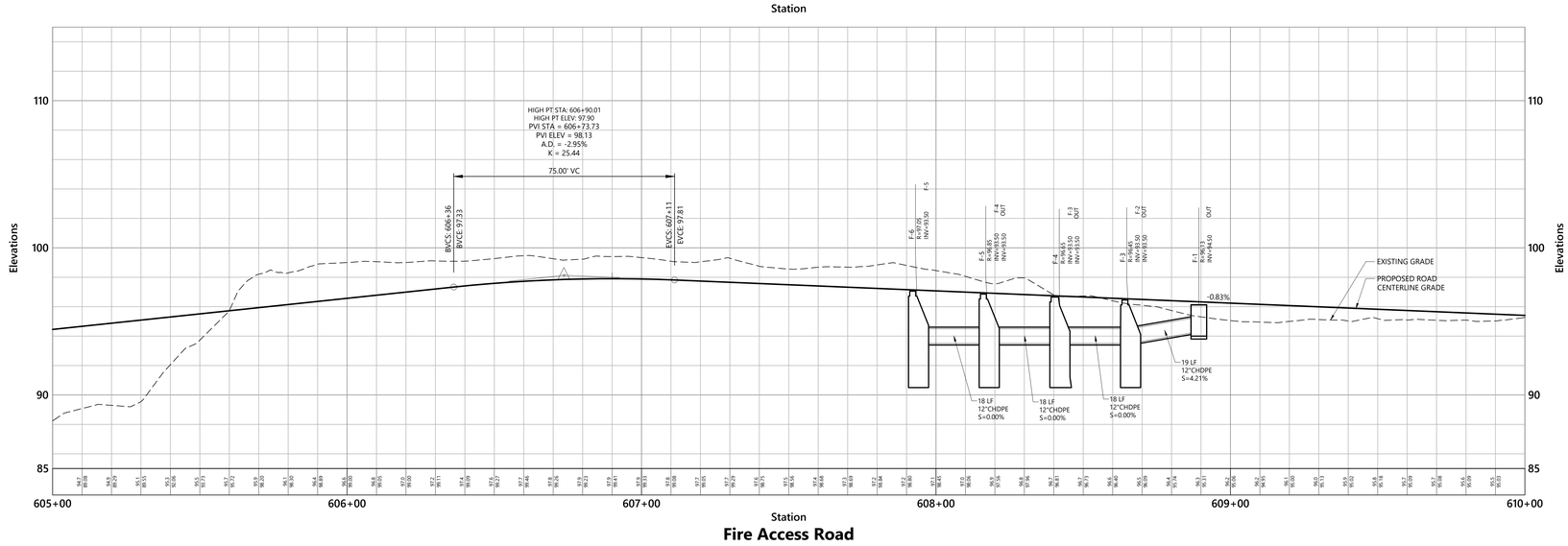
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**Fire Access Road**

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0 10 20 40 Feet

# Orchards on Hudson Residential

Dock Road
Marlborough, NY

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Drawing Title
**Fire Access Road**
**Plan Over Profile**
**Station 605+00 to 610+00**

Drawing Number
**C4.13**

Sheet 22 of 47

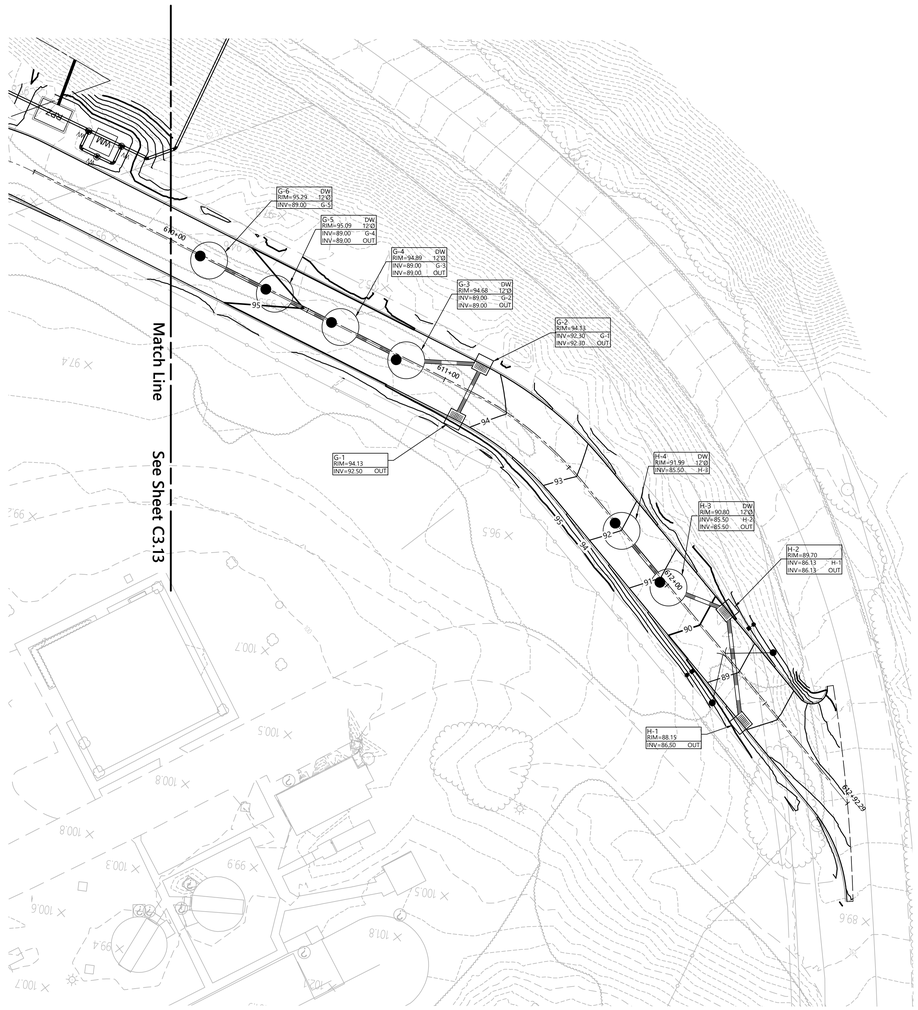
Project Number
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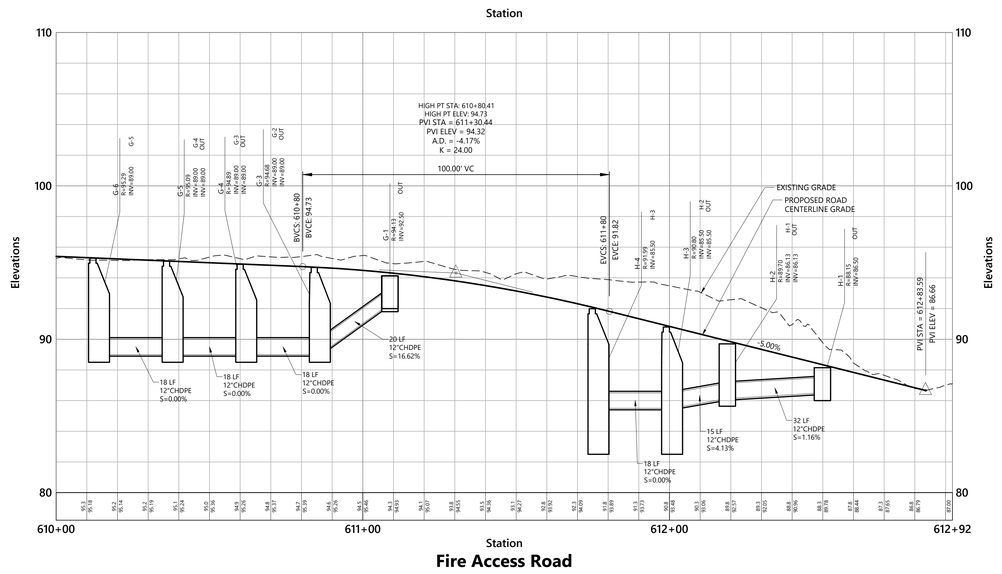
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# Orchards on Hudson Residential

Dock Road
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Drawing Title
**Fire Access Road**
**Plan Over Profile**
**Station 610+00 to 612+92**

Drawing Number
**C3.14**

Sheet 23 of 47

Project Number
**20578.01**

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Sheet C4.01

Sheet C4.02

Sheet C4.03

Sheet C4.04

Sheet C4.05

Route 9W
Varied Width -
(No Layout Found)

40 FT FRONT YARD SETBACK

30 FT SIDE YARD SETBACK

30 FT SIDE YARD SETBACK

30 FT SIDE YARD SETBACK

30 FT SIDE YARD SETBACK

30 FT SIDE YARD SETBACK

30 FT SIDE YARD SETBACK

30 FT REAR YARD SETBACK

CLUBHOUSE

POOL

Dock Road
Varied Width -
(No Layout Found)

Dock Road
Varied Width -
(No Layout Found)

Dock Road
Varied Width -
(No Layout Found)




## Key Map

1" = 300'

## Sanitary Design Flow Calculations

| Structure Use | Minimum Design Flow | Bedrooms Per Unit | Unit Count | Flow |
|---|---|---|---|---|
| RESIDENTIAL | 110 GPD/BEDROOM | 3 BEDROOMS/UNIT | 106 UNITS | 34,980 GPD |
| TOTAL | | | | 34,980 GPD |

## Notes

1. ALL DRAINAGE PIPE TO BE 15"ø UNLESS OTHERWISE NOTED ON PLAN.
2. ALL WATER PIPE TO BE 8" CLASS 52 DUCTILE IRON UNLESS OTHERWISE NOTED ON PLAN. DOMESTIC HOUSE SERVICE LINES ARE 1 ¼".
3. TRANSFORMER LOCATIONS AS WELL AS ELECTRIC AND GAS SERVICES TO BE COORDINATED WITH CENTRAL HUDSON GAS & ELECTRIC.
4. ALL WATER DISTRIBUTION SYSTEM AND SANITARY SEWER DESIGN SUBJECT TO APPROVAL BY TOWN OF MALBORO SEWER DEPARTMENT/WATER DEPARTMENT/ULSTER COUNTY HEALTH DEPARTMENT AND SHALL MEET ALL OF THE REQUIREMENTS OF THE SAME.
5. ALL SANITARY SEWER PIPING SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED:
   - MINIMUM 2 FEET OF CAST IRON PIPE FROM THE FOUNDATION WALL.
   - SANITARY HOUSE CONNECTIONS TO BE 6" DR-18 WITH MINIMUM SLOPE OF 2%.
   - SANITARY SEWER MAINS TO BE MINIMUM 8" DR-18 PVC.
6. THERE SHALL BE A MINIMUM HORIZONTAL SEPARATION SEPARATION OF 10 FEET BETWEEN SANITARY LINES AND WATER/DRAINAGE LINES.
7. WATER AND SEWER CROSSINGS SHALL MAINTAIN MINIMUM 18 INCHES VERTICAL SEPARATION.

0 30 60 120Feet

# Orchards on Hudson Residential

Dock Road
Marlborough, NY

| No. | Revision | Date | Appvd. |
|---|---|---|---|
| 1 | Town Resubmission | 10/25/2025 | AL |
| 2 | Town Resubmission | 3/21/2025 | AL |

Designed by DB | Checked by AL

Issued for: Site Plan Approval — Date: August 9, 2024

Not Approved for Construction

Drawing Title
Utility Plan

Drawing Number
C5.00

Sheet 24 of 47

Project Number
20578.01




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Saved Wednesday, March 19, 2025 4:49:14 PM DBALSANO Plotted Friday, March 21, 2025 12:45:05 PM Julien Le Goff

8" DUCTILE IRON DOMESTIC WATER SERVICE MAIN (TYP.)

1 ½" COPPER DOMESTIC WATER SERVICE TO UNITS (TYP.)

PROPOSED ELECTRIC CONNECTION FOR CLUSTER OF BUILDINGS (TYP.)

40 FT FRONT YARD SETBACK

TRANSFORMER LOCATION TO BE COORDINATED WITH CENTRAL HUDSON (TYP.)

6" PVC CLEANOUT (TYP.)

GAS CONNECTION FOR CLUSTER OF BUILDINGS

THRUST BLOCK (TYP.)

Route 9W
Varied Width
(No Layout Found)

PROPOSED ELECTRIC CONNECTION FOR CLUSTER OF BUILDINGS (TYP.)

30 FT SIDE YARD SETBACK

PROPOSED ELECTRIC AND GAS CONNECTION TO BE COORDINATED WITH CENTRAL HUDSON

INSTALL THRUST BLOCKS ON ALL BENDS IN WATER MAIN(TYP.)

8" DUCTILE IRON DOMESTIC WATER SERVICE MAIN (TYP.)

GAS CONNECTION FOR CLUSTER OF BUILDINGS

1 ½" COPPER DOMESTIC WATER SERVICE TO UNITS (TYP.)

INV = 153.38

PROPOSED RPZ DRAINPIPE

PROPOSED METER PIT AND 8" RPZ SEE DETAILS ON SHEET C6.04

INV = 153.38

APPROXIMATE LOCATION OF EXISTING 8" WATER MAIN

CONTRACTOR TO COORDINATE WATER MAIN TAPPING WITH THE TOWN OF MARLBORO WATER DEPARTMENT

ESTIMATED LOCATION OF THE EXISTING SEWER MAIN

SEWER MAIN TAP TO BE COORDINATED WITH THE TOWN OF MARLBORO SEWER DEPARTMENT. APPROXIMATE LOCATION OF SEWER MAIN BASED ON SEWER MAPS DATED NOVEMBER 1980 SHEET 4 OF 37.

30 FT SIDE YARD

Dock Road
Varied Width
(No Layout Found)

See Sheet C4.02 Match Line

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0 10 20 40 Feet

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Sheet 25 of 47

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1 ½" COPPER DOMESTIC WATER SERVICE TO UNITS (TYP.)

PROPOSED MUELLER SUPER CENTURION 250 HYDRANT(TYP.)

8" DUCTILE IRON DOMESTIC WATER SERVICE MAIN (TYP.)

2" SANITARY FORCE MAIN

THRUST BLOCK (TYP.)

CLEANOUT (TYP.)

INSTALL THRUST BLOCKS ON ALL BENDS IN WATER MAIN(TYP.)

GAS CONNECTION FOR CLUSTER OF BUILDINGS

PROPOSED ELECTRIC CONNECTION FOR CLUSTER OF BUILDINGS (TYP.)

TRANSFORMER LOCATION TO BE COORDINATED WITH CENTRAL HUDSON (TYP.)

30 FT SIDE YARD SETBACK

YARD SETBACK

See Sheet C4.01

See Sheet C4.03

Match Line

Match Line

See Sheet C4.05

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Drawing Number: **C5.02**

Sheet 26 of 47

Project Number: 20578.01




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GAS CONNECTION FOR CLUSTER OF BUILDINGS
8" DUCTILE IRON DOMESTIC WATER SERVICE MAIN (TYP.)
THRUST BLOCK (TYP.)
PROPOSED ELECTRIC CONNECTION FOR CLUSTER OF BUILIDNGS (TYP.)
INSTALL THRUST BLOCKS ON ALL BENDS IN WATER MAIN(TYP.)
PROPOSED MUELLER SUPER CENTURION 250 HYDRANT(TYP.)
CLEANOUT (TYP.)
2" SANITARY FORCE MAIN
INSTALL THRUST BLOCKS AND TEES ON ALL BENDS IN WATER MAIN(TYP.)
TRANSFORMER LOCATION TO BE COORDINATED WITH CENTRAL HUDSON (TYP.)
1 ]" COPPER DOMESTIC WATER SERVICE TO UNITS (TYP.)
30 FT SIDE YARD SETBACK
PROPOSED PUMP STATION SEE SEPARATE PLANS FOR DETA
Match Line
See Sheet C4.02
See Sheet C4.04

0 10 20 40 Feet

# Orchards on Hudson Residential

Dock Road
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See Sheet C4.03

Match Line

INSTALL THRUST BLOCKS ON ALL BENDS IN WATER MAIN(TYP.)

GAS CONNECTION FOR CLUSTER OF BUILDINGS

8" DUCTILE IRON DOMESTIC WATER SERVICE MAIN (TYP.)

THRUST BLOCK (TYP.)

TRANSFORMER LOCATION TO BE COORDINATED WITH CENTRAL HUDSON (TYP.)

CLEANOUT (TYP.)

CLUBHOUSE

POOL

30 FT REAR YARD SETBACK

PROPOSED MUELLER SUPER CENTURION 250 HYDRANT(TYP.)

PROPOSED PUMP STATION
SEE SEPARATE PLANS FOR DETAILS

PROPOSED MUELLER SUPER CENTURION 250 HYDRANT(TYP.)

8" DUCTILE IRON DOMESTIC WATER SERVICE MAIN (TYP.)

1 ¼" COPPER DOMESTIC WATER SERVICE TO UNITS (TYP.)

GAS CONNECTION FOR CLUSTER OF BUILDINGS

PROPOSED ELECTRIC CONNECTION FOR CLUSTER OF BUILDINGS (TYP.)

Dock Road

0 10 20 40 Feet

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Marlborough, NY

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Drawing Title
## Utility Plan

Drawing Number
# C5.04

Sheet 28 of 47

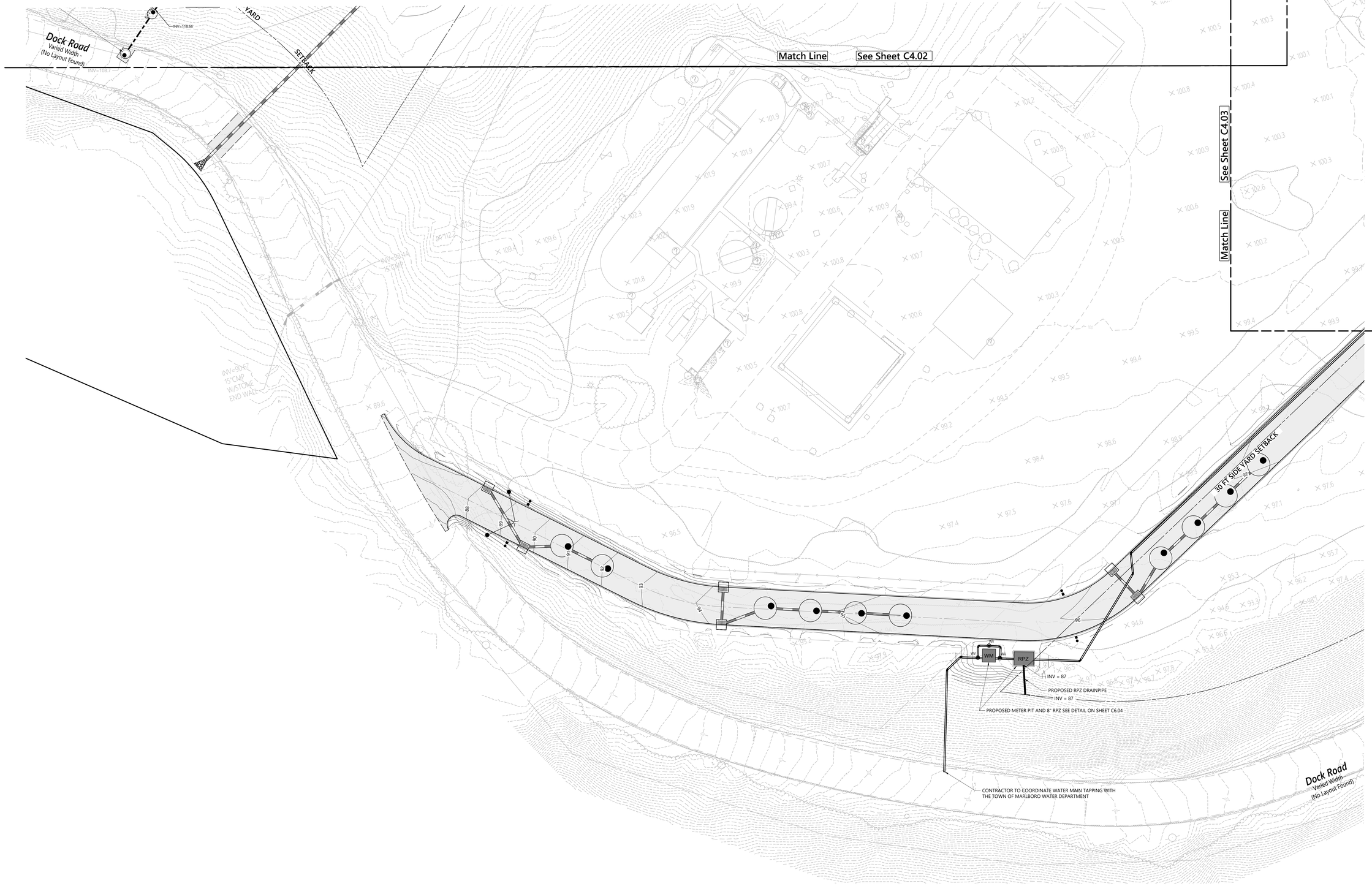
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STATE OF NEW YORK
ANGELO V. LANNI
088418
LICENSED PROFESSIONAL ENGINEER

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Sheet 29 of 47

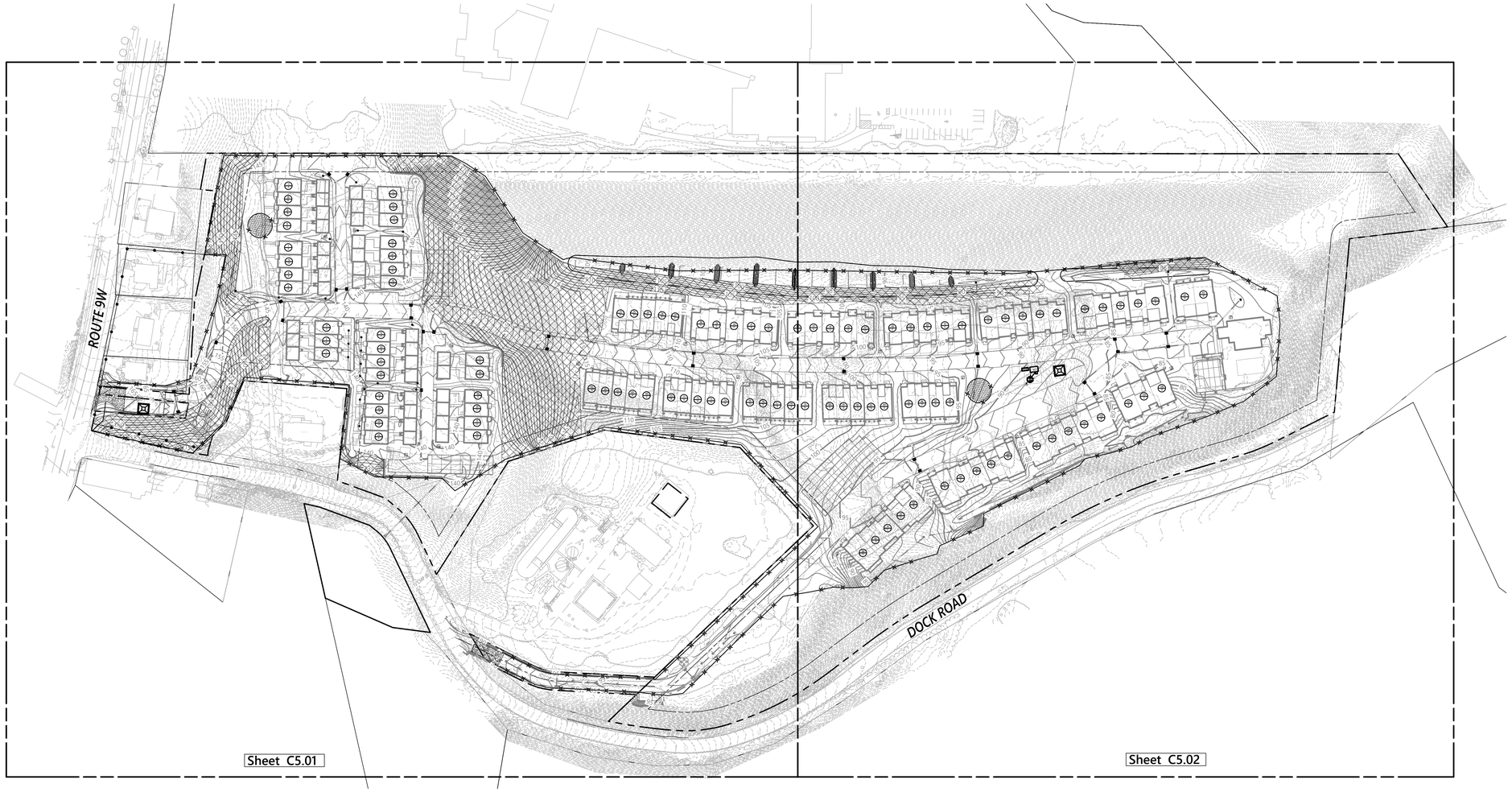
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STATE OF NEW YORK
CHRISTOPHER J. LAWLER
085718
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## Erosion Control Notes

1. PRIOR TO STARTING WORK ON THE SITE, INCLUDING DEMOLITION, CONTRACTOR SHALL NOTIFY THE APPROPRIATE AGENCIES AND INSTALL EROSION CONTROL MEASURES AS SHOWN ON THE PLANS AND AS REQUIRED BY STATE & LOCAL AGENCIES. ACTUAL EROSION CONTROL MEASURES WILL BE DICTATED BY FIELD CONDITIONS AS CONSTRUCTION PROGRESSES. EROSION CONTROL MEASURES TO BE ADJUSTED AS CONSTRUCTION PROGRESSES AS NECESSARY TO ENSURE THAT SEDIMENT IS TRAPPED ON-SITE.
2. SPECIFIC METHODS AND MATERIALS EMPLOYED IN THE INSTALLATION AND MAINTENANCE OF EROSION CONTROL MEASURES SHALL CONFORM TO "THE NEW YORK GUIDELINES FOR EROSION AND SEDIMENT CONTROL".
3. SEDIMENT BARRIERS (SILT FENCE OR APPROVED EQUAL) SHALL BE INSTALLED AS REQUIRED ALONG THE LIMITS OF DISTURBANCE FOR THE DURATION OF THE WORK. NO SEDIMENT FROM THE SITE SHALL BE PERMITTED TO WASH ONTO ADJACENT PROPERTIES, WETLANDS OR ROADS.
4. DRAINAGE INLETS INSTALLED AS PART OF THE PROJECT SHALL BE PROTECTED FROM SEDIMENT BUILDUP THROUGH THE USE OF SEDIMENT BARRIERS, SEDIMENT TRAPS, DANDY BAGS, ETC., AS REQUIRED.
5. PROPER MAINTENANCE OF EROSION CONTROL MEASURES IS TO BE PERFORMED AS INDICATED BY PERIODIC INSPECTION AND AFTER HEAVY OR PROLONGED STORMS. MAINTENANCE MEASURES INCLUDE, BUT ARE NOT LIMITED TO, CLEANING OF SEDIMENT BASINS AND TRAPS, CLEANING OR REPAIR OF SEDIMENT BARRIERS, CLEANING AND REPAIR OF BERMS AND DIVERSIONS, AND CLEANING AND REPAIR OF INLET PROTECTION.
6. APPROPRIATE MEANS SHALL BE USED TO CONTROL DUST DURING CONSTRUCTION.
7. A STABILIZED CONSTRUCTION ENTRANCE SHALL BE MAINTAINED TO PREVENT SOIL AND LOOSE DEBRIS FORM BEING TRACKED ONTO LOCAL ROADS. THE CONSTRUCTION ENTRANCE SHALL BE MAINTAINED UNTIL THE SITE IS PERMANENTLY STABILIZED.
8. SEDIMENT BARRIERS AND OTHER CONTROL MEASURES SHALL REMAIN IN PLACE UNTIL DISTURBED AREAS ARE PERMANENTLY STABILIZED. AFTER PERMANENT STABILIZATION, PAVED AREAS SHALL BE CLEANED AND DRAINAGE SYSTEMS CLEANED AND FLUSHED AS NECESSARY.
9. LOCATION AND EXTENT OF EROSION & SEDIMENT CONTROL MEASURES TO BE ADJUSTED AS NECESSARY DURING THE COURSE OF CONSTRUCTION AS CONSTRUCTION PROGRESS AND FIELD CONDITIONS DICTATE.
10. CONCRETE WASHOUT SHALL BE LOCATED A MINIMUM OF 50 FT FROM ANY DRAINAGE INLET OR CONCENTRATED FLOW. ONCE CONCRETE WASTE HAS BEEN WASHED IN THE WASHOUT AREA AND ALLOWED TO HARDEN, THE CONCRETE SHALL BE BROKEN UP AND REMOVED FROM THE SITE. CONTRACTOR SHALL REMOVE WASHED OUT CONCRETE ON A REGULAR BASIS. PLASTIC LINING SHALL BE A MINIMUM OF 10 MIL, POLYETHYLENE SHEETING AND SHALL BE FREE OF HOLES AND TEARS AND ALL OTHER DEFECTS THAT MAY COMPROMISE THE INTEGRITY OF THE LINER. CONCRETE WASHOUT FACILITIES SHALL BE CLEANED OUT ONCE 75% CAPACITY IS REACHED. STRAW BALES MAY BE SUBSTITUTED WITH ALTERNATE SECURING MEASURES SUCH AS CONCRETE BLOCKS.

## Concrete Washout Note

1. CONCRETE WASHOUT SHALL BE LOCATED A MINIMUM OF 50 FT FROM ANY DRAINAGE INLET OR CONCENTRATED FLOW. ONCE CONCRETE WASTE HAS BEEN WASHED IN THE WASHOUT AREA AND ALLOWED TO HARDEN, THE CONCRETE SHALL BE BROKEN UP AND REMOVED FROM THE SITE. CONTRACTOR SHALL REMOVE WASHED OUT CONCRETE ON A REGULAR BASIS. PLASTIC LINING SHALL BE A MINIMUM OF 10 MIL, POLYETHYLENE SHEETING AND SHALL BE FREE OF HOLES AND TEARS AND ALL OTHER DEFECTS THAT MAY COMPROMISE THE INTEGRITY OF THE LINER. CONCRETE WASHOUT FACILITIES SHALL BE CLEANED OUT ONCE 75% CAPACITY IS REACHED. STRAW BALES MAY BE SUBSTITUTED WITH ALTERNATE SECURING MEASURES SUCH AS CONCRETE BLOCKS.

## Dandy Bag Notes

INSTALLATION AND MAINTENANCE GUIDELINES (SEE DETAIL)

1. INSTALLATION:
   EMPTY DANDY BAG SHOULD BE PLACED OVER THE GRATE AS THE GRATE STANDS ON END. IF USING OPTIONAL OIL ABSORBENTS, PLACE ABSORBENT PILLOW IN POUCH ON BOTTOM OF THE UNIT. ATTACH ABSORBENT PILLOW TO TETHER LOOP. HOLDING THE LIFTING DEVICE (DO NOT RELY ON LIFTING DEVICE TO SUPPORT ENTIRE WEIGHT OF GRATE), PLACE THE GRATE INTO ITS FRAME.
2. MAINTENANCE:
   REMOVE ALL ACCUMULATED SEDIMENT AND DEBRIS FROM THE SURFACE AND VICINITY OF THE UNIT AFTER EACH STORM EVENT. REMOVE THE SEDIMENT THAT HAS ACCUMULATED WITHIN THE CONTAINMENT AREA OF THE DANDY BAG AS NEEDED. IF USING OPTIONAL OIL ABSORBENTS, REMOVE AND REPLACE ABSORBENT PILLOW WHEN NEAR SATURATION.

## Legend

- SF — SILT FENCE
- CONSTRUCTION FENCE
- CONCRETE WASHOUT AREA
- SOIL STABILIZATION BLANKETS AND OR MATTING
- STORM DRAIN INLET PROTECTION
- STABILIZED CONSTRUCTION ENTRANCE

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Drawing Title: Overall Erosion and Control Plan

Drawing Number: C6.00

Sheet 30 of 47

Project Number: 20578.01

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START TEMPORARY CONSTRUCTION FENCE (TYP)

STOCKPILE AREA TO BE RELOCATED AS NECESSARY THROUGHOUT THE DURATION OF CONSTRUCTION (TYP.)

PROVIDE SILT FENCE 10 FEET FROM TOE OF SLOPE ALONG STOCKPILE AREA (TYP.)

INLET PROTECTION TO BE INSTALLED AT ALL INLET STRUCTURES AND MAINTAINED DURING CONSTRUCTION

EROSION CONTROL BLANKET TO BE INSTALLED ON ALL SLOPES 4:1 OR GREATER (TYP)

EROSION CONTROL BLANKET TO BE INSTALLED ON ALL SLOPES 4:1 OR GREATER (TYP)

INLET PROTECTION TO BE INSTALLED AT ALL INLET STRUCTURES AND MAINTAINED DURING CONSTRUCTION

ROUTE 9W

START PROPOSED SILT FENCE (TYP.)

STABILIZED CONSTRUCTION ENTRANCE/EXIT

END PROPOSED SILT FENCE (TYP.)

PROPOSED CONCRETE TRUCK WASHOUT LOCATION TO BE MOVED AS NECESSARY THROUGHOUT CONSTRUCTION

END OF TEMPORARY CONSTRUCTION FENCE (TYP)

EROSION CONTROL BLANKET TO BE INSTALLED ON ALL SLOPES 4:1 OR GREATER (TYP)

EROSION CONTROL BLANKET TO BE INSTALLED ON ALL SLOPES 4:1 OR GREATER (TYP)

START PROPOSED SILT FENCE (TYP.)

PROPOSED CONCRETE TRUCK WASHOUT LOCATION TO BE MOVED AS NECESSARY THROUGHOUT CONSTRUCTION

STABILIZED CONSTRUCTION ENTRANCE/EXIT

END PROPOSED SILT FENCE (TYP.)

DOCK ROAD

See Sheet C5.02 Sheet Match Line

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Drawing Title
## Erosion and Control Plan

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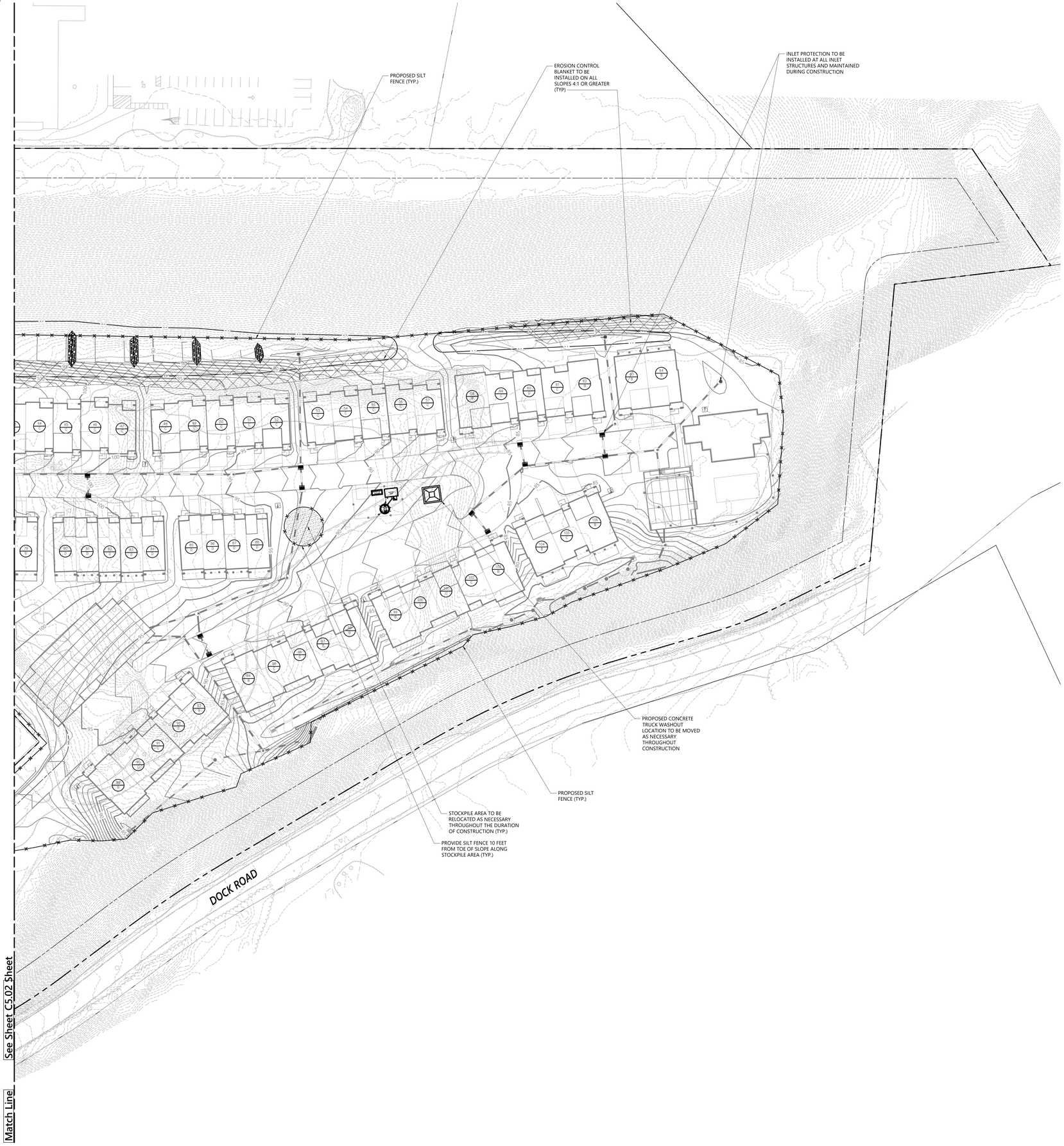
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Drawing Title
## Erosion and Residential Development

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# C6.02

Sheet 32 of 47

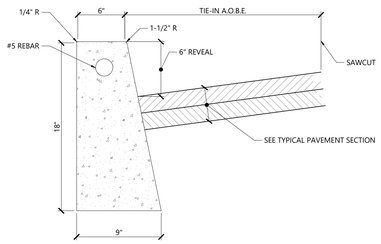
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STATE OF NEW YORK
CHELSEY L. LOWE
090618
LICENSED PROFESSIONAL ENGINEER

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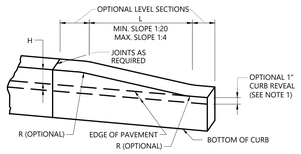

**NOTES**

1. ALL CONCRETE TO BE 4,000 PSI AIR ENTRAINED.
2. FOR LOCATION OF CURB FROM PROPERTY LINE, SEE STANDARD ROAD SECTION.
3. STEEL FORMS OR EQUAL SHALL BE USED.
4. EXPANSION JOINTS 1/2" THICK 20' O.C. SHALL BE USED.
5. ALL CONCRETE SHALL BE TAMPED IN PLACE, NO HONEYCOMB WILL BE ALLOWED. FINISH SHALL BE SMOOTH AND EVEN - RUBBED WITH A WOOD FLOAT.
6. ALL EDGES SHALL BE TOOL ROUNDED.
7. CYLINDER TESTING REQUIRED AS PER TOWN ENGINEER
8. ALL EXPANSION JOINTS SHALL BE PRE-CUT TO CURB PROFILE PRIOR TO INSTALLATION
9. ALL CONCRETE CURBS SHALL UTILIZE A #5 REBAR

## Standard Concrete Curb

2004

N.T.S. Source: VHB




### Curb Transition Lengths (L)

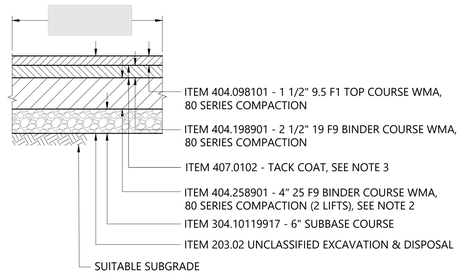
| H / SLOPE | 1:4 | 1:12 | 1:20 |
|---|---|---|---|
| 4" | 16" | 48" | 80" |
| 6" | 24" | 72" | 120" |

**NOTES:**

1. USE 1" REVEAL AND CONTINUE CURB ACROSS DRIVEWAY ENTRANCES ONLY IF SHOWN IN THE CONTRACT DOCUMENTS, OR DIRECTED BY THE ENGINEER AS A FIELD CONDITION.
2. TERMINATE CURB, CURB AND GUTTER AND ASPHALT CURB BY TRANSITIONING ON A MAXIUM SLOPE OF 1:12 TO PAVEMENT SURFACE, EXCEPT WHEN BEHIND GUIDE RAIL.

## Cast-in-Place Concrete Curb Transition

N.T.S.

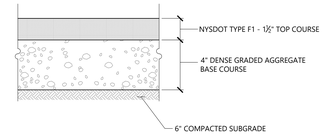



## Asphalt Pavement Construction Detail

N.T.S.

**PAVEMENT RESTORATION NOTES:**

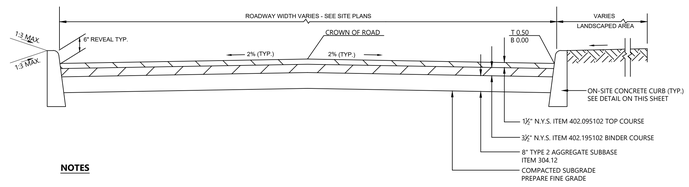
1. CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING EXISTING FLOWLINE GRADES AND RE-ESTABLISHING THESE GRADES IN THE PROPOSED CURB/FLOWLINE WORK.
2. VARY DEPTH OF ASPHALT BINDER TO ENSURE PROPOSED PAVEMENT DEPTH MATCHES ADJACENT EXISTING PAVEMENT DEPTH.
3. PLACE TACK COAT BETWEEN EVERY ASPHALT LIFT REGARDLESS OF WHEN PLACED AND AT THE JOINTS BETWEEN NEW AND EXISTING ASPHALT PAVEMENT EDGES.
4. ALL COLD JOINTS SHALL BE SEALED AS PER ITEM 633.13 - CLEANING, SEALING AND/OR FILLING JOINTS.
5. THE REMOVAL OF THE EXISTING CONCRETE CURB SHOULD BE DONE FROM THE BACK SIDE OF THE EXISTING CURB TO MINIMIZE ANY DAMAGE TO THE EXISTING PAVEMENT. CONSIDER "FACE FORMING" THE NEW CURB WHERE THE EXISTING CURB WILL BE REMOVED. THIS INVOLVES PULLING THE CURB OUT FROM THE BACK AND POURING NEW CURB UP AGAINST THE EXISTING PAVEMENT. IF ANY DAMAGE TO THE EXISTING PAVEMENT OCCURS, THE PERMITTEE SHALL REPLACE THE EXISTING PAVEMENT PER THE DETAILS SHOWN ON MD-1 OR PER NYSDOT STANDARD SHEETS.
6. SHOULD THE CONTRACTOR ENCOUNTER COMPOSITE PAVEMENT DURING CONSTRUCTION, THE CONTRACTOR SHALL REFER TO THE NYSDOT REGION 10 PAVEMENT REPAIR DETAILS INCLUDED AT THE BACK OF THIS PLAN SET.




## Bituminous Concrete Pavement Section (Driveway)

9/04

N.T.S. Source: VHB LD_430

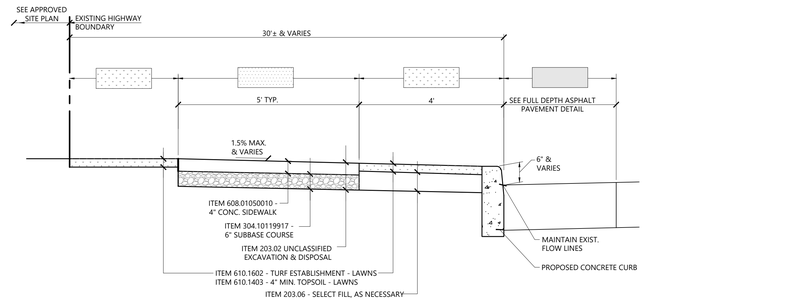



**NOTES**

1. ASPHALT SHALL BE PLACED IN ACCORDANCE WITH NYSDOT SPECIFICATIONS.
2. AGGREGATE BASE COURSE SHALL BE COMPACTED TO 95% OF THE PROCTOR DENSITY. MATERIAL SAMPLES SHALL BE PROVIDED TO 3RD PARTY INSPECTOR FOR TESTING.
3. SUBGRADE TO BE COMPACTED TO 95% OF THE MODIFIED PROCTOR DENSITY.

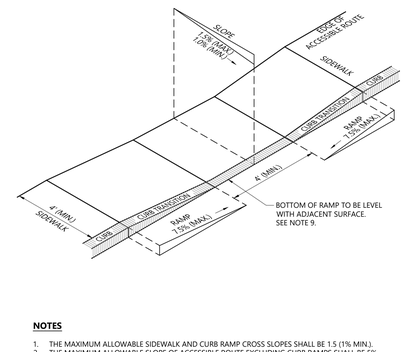
## Pavement Section - On Site Roadways

N.T.S. Source:




## Typical Sidewalk Section

N.T.S.



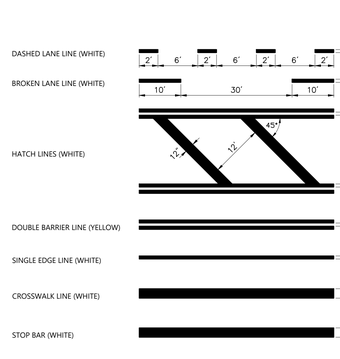

**NOTES**

1. THE MAXIMUM ALLOWABLE SIDEWALK AND CURB RAMP CROSS SLOPES SHALL BE 1.5 (1% MIN.).
2. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL BE 5%.
3. THE MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE AT CURB RAMPS SHALL BE 7.5%.
4. A MINIMUM OF 3 FEET CLEAR SHALL BE MAINTAINED AT ANY PERMANENT OBSTACLE IN ACCESSIBLE ROUTE (I.E., HYDRANTS, UTILITY POLES, TREE WELLS, SIGNS, ETC.).
5. CURB TREATMENT VARIES, SEE PLANS FOR CURB TYPE.
6. RAMP, CURB, AND ADJACENT PAVEMENTS SHALL BE GRADED TO PREVENT PONDING.
7. SEE TYPICAL SIDEWALK SECTION FOR RAMP CONSTRUCTION.
8. WHERE ACCESSIBLE ROUTES ARE LESS THAN 5' IN WIDTH (EXCLUDING CURBING) A 5' x 5' PASSING AREA SHALL BE PROVIDED AT INTERVALS NOT TO EXCEED 200 FEET.
9. ELIMINATE CURBING AT RAMP (OTHER THAN VERTICAL CURBING, WHICH SHALL BE SET FLUSH) WHERE IT ABUTS ROADWAY.

## Accessible Curb Ramp (ACR) Type 'A'

12/20

N.T.S. Source: VHB LD_500



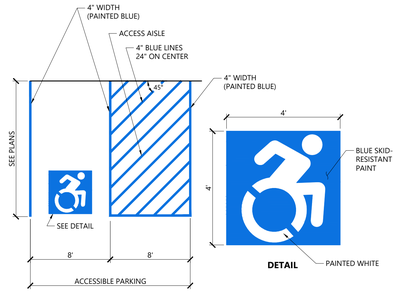

NOTES

1. ALL PAVEMENT MARKINGS (EXCEPT TRAFFIC ARROWS AND STOP BARS) SHALL BE SETFAST LOW VOC TRAFFIC MARKING PAINT OR APPROVED EQUAL AS PER NYSDOT REQUIREMENTS.

## On-Site Pavement Markings

1/16

N.T.S. Source: VHB LD_553



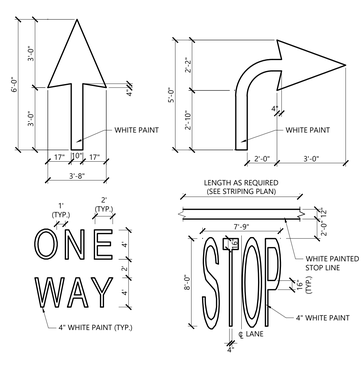

**NOTES**

1. ALL DIMENSIONS TO CENTER OF PAVEMENT STRIPING.
2. ALL SLOPES THROUGHOUT THE ACCESSIBLE PARKING AND AISLE AREAS SHALL NOT EXCEED 1.5%.
3. THE ACCESSIBLE SYMBOL DEPICTED ABOVE DOES NOT COMPLY WITH THE AMERICANS WITH DISABILITIES ACT (ADA) AND IS SHOWN FOR COMPLIANCE WITH STATE AND LOCAL REGULATIONS ONLY.

## Accessible Parking Space

12/19

N.T.S. Source: VHB LD_552C



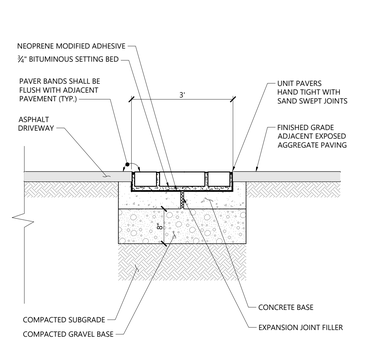

**NOTES**

1. PAVEMENT MARKINGS TO BE INSTALLED FOR ON SITE WORK IN LOCATIONS SHOWN.

## Painted Pavement Markings - On Site

1/16

N.T.S. Source: VHB LD_554




**NOTES**

1. PAVER BANDS TO BE NICOLOCK ON APPROVED EQUAL.
2. PAVERS TO BE RATE FOR VEHICLE LOADING.

## Unit Paver Band

1/16

N.T.S. Source: VHB REV

vhb.com
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Engineering, Surveying, Landscape Architecture and Geology, PC
100 Motor Parkway
Suite 350
Hauppauge, NY 11788
631.787.3400

# Orchards on Hudson Residential

Dock Road
Marlborough, NY

| No. | Revision | Date | Appvd. |
|---|---|---|---|
| 1 | Town Resubmission | 10/25/2025 | AL |
| 2 | Town Resubmission | 3/21/2025 | AL |

Designed by DB Checked by AL

Issued for: Site Plan Approval — Date: August 9, 2024

Not Approved for Construction

Drawing Title: Site Details - 1

Drawing Number: C7.00

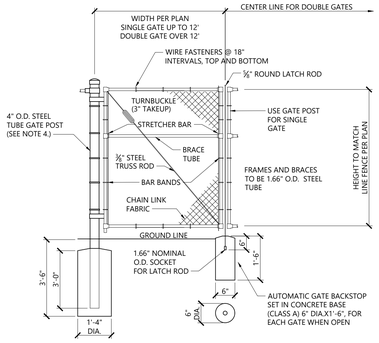
Sheet 33 of 47

Project Number: 20578.01

STATE OF NEW YORK ANGELO V. LANI 085418 LICENSED PROFESSIONAL ENGINEER

IT IS A VIOLATION OF SECTION 7209 OF ARTICLE 145 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON TO ALTER ANY DOCUMENT THAT BEARS THE SEAL OF A PROFESSIONAL ENGINEER, UNLESS THE PERSON IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER

Saved Friday, March 21, 2025 11:24:53 AM JLEGOFF Plotted Friday, March 21, 2025 12:47:35 PM Julien Le Goff



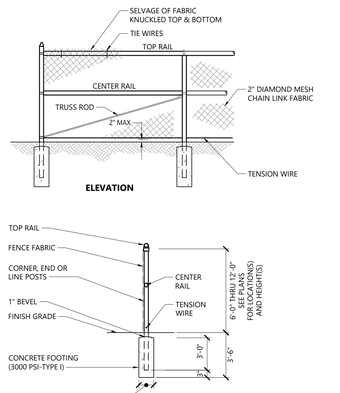

**NOTES**

1. CHAIN LINK FABRIC FOR GATES TO BE THE SAME AS REQUIRED FOR FENCE.
2. GATE POST BASE-PORTLAND CEMENT CONCRETE (3000 PSI).
3. FENCE FABRIC, POSTS, FRAMEWORKS, AND HARDWARE SHALL BE GALVANIZED STEEL PER SPECIFICATIONS.
4. GATE POSTS TO BE USED ON EACH SIDE OF SINGLE AND DOUBLE GATE OPENINGS.

## 6' Chain Link Fence Gate

12/19

N.T.S. | Source: VHB | REV | LD_482



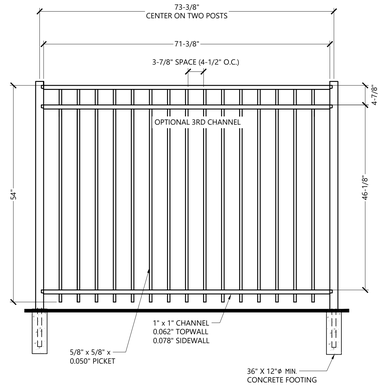

**NOTES**

1. MATERIALS TO BE SUPPLIED AND INSTALLED IN CONFORMANCE WITH "CHAIN LINK MANUFACTURER'S INSTITUTE" PRODUCT MANUAL.

## 6' Chain Link Fence

10/20

N.T.S. | Source: VHB | REV | LD_480



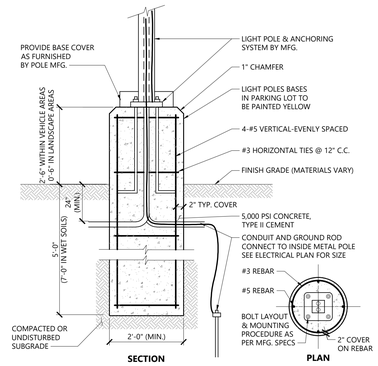

NOTES:

1. FENCING TO BE BLACK ALUMI-GUARD ALUMINUM FENCING OR APPROVED EQUAL.
2. FENCING SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS AND IN ACCORDANCE WITH ALL INDUSTRY STANDARDS.

## 4-6' High Aluminum Decorative Fence

7/17

N.T.S. | Source: VHB | LD_



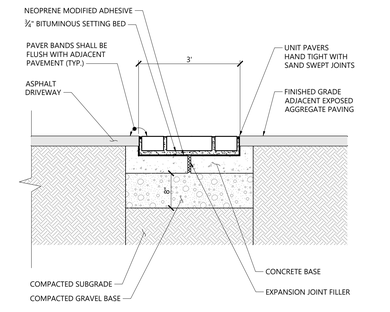

**NOTES**

IF THE CONTRACTOR PROPOSES TO USE A PRECAST BASE THAT DIFFERS FROM THIS DETAIL, SHOP DRAWINGS SHALL INCLUDE CERTIFICATION THAT THE PROPOSED BASE MEETS NYS BUILDING CODE REQUIREMENTS FOR THE LOADING AND SOIL CONDITIONS OF THIS PROJECT BY A LICENSED PROFESSIONAL ENGINEER.

## Light Pole Foundation Detail (Up to 20' Pole)

3/23

N.T.S. | Source: VHB | LD_310B




**NOTES**

1. PAVER BANDS TO BE NICOLOCK ON APPROVED EQUAL.
2. PAVERS TO BE RATE FOR VEHICLE LOADING.

## Unit Paver Band

1/16

N.T.S. | Source: VHB | REV




1. THIS DIMENSION SHALL BE A MINIMUM OF 5' FOR ACCESSIBLE SIGNAGE.
2. THIS DIMENSION SHALL BE A MAXIMUM OF 8' FOR ACCESSIBLE SIGNAGE

## Sign Post - Type 'A'

3/19

N.T.S. | Source: VHB | LD_701




1. THIS DIMENSION SHALL BE A MINIMUM OF 5' FOR ACCESSIBLE SIGNAGE.
2. THIS DIMENSION SHALL BE A MAXIMUM OF 8' FOR ACCESSIBLE SIGNAGE

## Bollard Mounted Sign

2/20

N.T.S. | Source: VHB | LD_703




**NOTES**

DETAIL PROVIDED FOR GENERAL INFORMATION ONLY. STAMPED FINAL DESIGN OF MODULAR WALL SYSTEM TO BE PROVIDED BY CONTRACTOR BASED ON GEOTECHNICAL ENGINEER'S RECOMMENDATIONS.

## Modular Retaining Wall

10/20

N.T.S. | Source: VHB | LD_750




**NOTES**

1. ILLUMINATED BOLLARD LIGHTS SHALL BE HELIO SECURITY BOLLARD WITH EMBEDDED SECURITY CORE **(MODEL NO. LBHLO-603)** MANUFACTURED BY:

   FORMS+SURFACES
   30 PINE STREET
   PITTSBURGH, PA 15223
   P. 800.451.0410
   F. 412.781.7840
   OR APPROVED EQUAL
2. NON-ILLUMINATED BOLLARD SHALL BE HELIO SECURITY BOLLARD WITH EMBEDDED SECURITY CORE **(MODEL NO. LBHLO-603-N)** MANUFACTURED BY:

   FORMS+SURFACES
   30 PINE STREET
   PITTSBURGH, PA 15223
   P. 800.451.0410
   F. 412.781.7840
   OR APPROVED EQUAL
3. BOLLARDS SHALL ALTERNATE FROM ILLUMINATED TO NON-ILLUMINATED. SEE PLAN FOR PLACEMENT
4. SEE SHEET SITE LIGHTING PLAN FOR PHOTOMETRIC CALCULATIONS




5. HELIO SECURITY BOLLARD BY FORMS+SURFACES SHALL BE FURNISHED WITH THE FOLLOWING OPTIONS:
   5.1. EMBEDDED SECURITY CORE INSTALLED PER MANUFACTURER SPECIFICATIONS
   5.2. SERIES 600 (6" ø FIXTURE)
   5.3. 3000K LED, 40 WATT DRIVER, 424 LUMENS, 360° DISTRIBUTION LIGHT FIXTURE
   5.4. FINISH TO BE SELECTED BY OWNER
6. CONTRACTOR SHALL SUBMIT TO OWNERSHIP FOR APPROVAL, THE FOLLOWING PRIOR TO ORDERING:
   6.1. FINISH / POWDERCOAT COLOR AND FINISH SAMPLE
7. SEE MEP DRAWINGS AND SPECIFICATIONS FOR VOLTAGE, WIRING ROUTING, CONDUIT RUNS, ETC.
8. PROPOSED LIGHT BOLLARDS SHALL BE INSTALLED FOLLOWING ALL RECOMMENDATIONS, GUIDELINES, & SPECIFICATIONS SET FORTH BY FORMS+SURFACES.
9. ALL PROPOSED LIGHT BOLLARDS SHALL BE INSTALLED/ WIRED IN CONFORMANCE WITH ALL APPLICABLE LOCAL AND NYS ELECTRICAL CODE REQUIREMENTS.
10. ALL PROPOSED LIGHT BOLLARDS SHALL BE INSTALLED BY A NYS LICENSED ELECTRICAL CONTRACTOR.

## Decorative Bollard - Illuminated & Non-Illuminated

10/21

N.T.S. | Source: Forms+Surfaces | LD_CUSTOM

vhb.com

vhb

**Engineering, Surveying, Landscape Architecture and Geology, PC**
100 Motor Parkway
Suite 350
Hauppauge, NY 11788
631.787.3400

# Orchards on Hudson Residential

Dock Road
Marlborough, NY

| No. | Revision | Date | Appvd. |
|---|---|---|---|
| 1 | Town Resubmission | 10/25/2025 | AL |
| 2 | Town Resubmission | 3/21/2025 | AL |

Designed by: DB | Checked by: AL

Issued for: Site Plan Approval | Date: August 9, 2024

Not Approved for Construction

Drawing Title: Site Details - 2

Drawing Number: C7.01

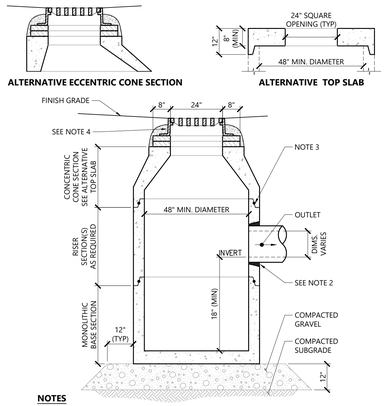
Sheet 34 of 47

Project Number: 20578.01




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Saved Friday, March 21, 2025 11:24:53 AM JLEGOFF Plotted Friday, March 21, 2025 12:47:42 PM Julien Le Goff



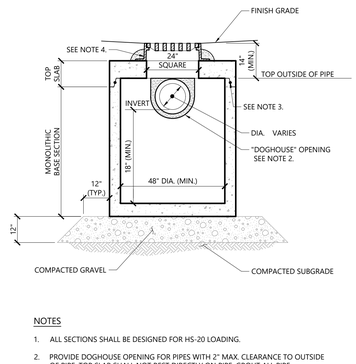

**NOTES**

1. ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING.
2. FOR HDPE, PVC, AND DI PIPE, PROVIDE FLEXIBLE BOOT CONNECTION INSTALLED PER MANUFACTURER'S RECOMMENDATIONS. FOR RCP, PROVIDE OPENINGS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE AND MORTAR CONNECTIONS.
3. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
4. CATCH BASIN FRAME AND GRATE SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR (2 BRICK COURSES TYPICALLY, 5 BRICK COURSES MAXIMUM).

## Catch Basin (CB)

11/19

N.T.S. | Source: VHB | REV | LD_100



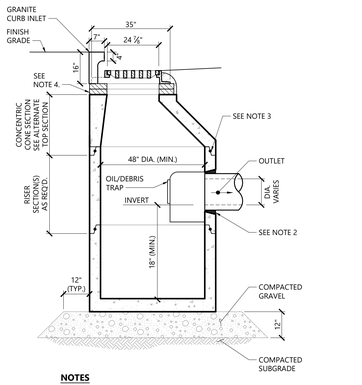

NOTES

1. ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING.
2. PROVIDE DOGHOUSE OPENING FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. TOP SLAB SHALL NOT REST DIRECTLY ON PIPE. GROUT ALL PIPE CONNECTIONS (NON-SHRINK GROUT).
3. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
4. CATCH BASIN FRAME AND GRATE (4"DEPTH) SHALL BE SET IN FULL MORTAR BED.
5. ADJUST TO FINISH GRADE WITH CLAY BRICK AND MORTAR AS REQUIRED.

## Catch Basin (CB) Shallow Cover

1/16

N.T.S. | Source: VHB | REV | LD_104



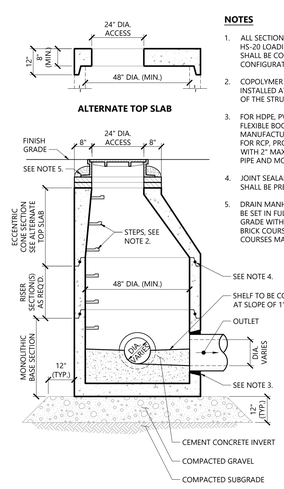

**NOTES**

1. ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING.
2. FOR HDPE, PVC, AND DI PIPE, PROVIDE FLEXIBLE BOOT CONNECTION INSTALLED PER MANUFACTURER'S RECOMMENDATIONS. FOR RCP, PROVIDE OPENINGS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE AND MORTAR CONNECTIONS.
3. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
4. CATCH BASIN FRAME AND GRATE SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR (2 BRICK COURSES TYPICALLY, 5 BRICK COURSES MAXIMUM).

## Catch Basin With Curb Inlet (CBCI)

11/19

N.T.S. | Source: VHB | REV | LD_110



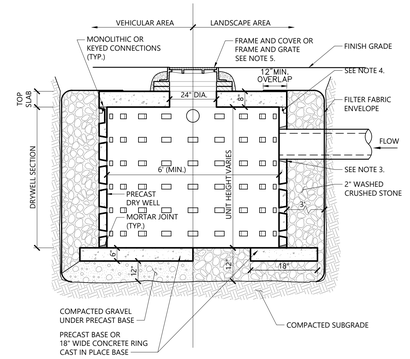

**NOTES**

1. ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING, DIAMETER OF STRUCTURES SHALL BE COORDINATED WITH PIPE CONFIGURATIONS.
2. COPOLYMER MANHOLE STEPS SHALL BE INSTALLED AT 12" O.C. FOR THE FULL DEPTH OF THE STRUCTURE.
3. FOR HDPE, PVC, AND DI PIPE, PROVIDE FLEXIBLE BOOT CONNECTION INSTALLED PER MANUFACTURER'S RECOMMENDATIONS. FOR RCP, PROVIDE OPENINGS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE AND MORTAR CONNECTIONS.
4. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
5. DRAIN MANHOLE FRAME AND COVER SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR (2 BRICK COURSES TYPICALLY, 5 BRICK COURSES MAXIMUM)

## Drain Manhole (DMH)

11/19

N.T.S. | Source: VHB | REV | LD_115



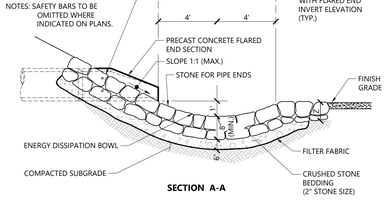

**NOTES**

1. BASE SECTION SHALL BE PRECAST CONCRETE WITH MORTARED JOINTS OR CAST IN PLACE.
2. ALL COMPONENTS SHALL BE DESIGNED FOR HS-20 LOADING.
3. PROVIDE PRECAST OPENINGS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
4. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
5. FRAME AND COVER OR GRATE SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR (2 BRICK COURSE MINIMUM, 5 BRICK COURSE MAXIMUM)

## Leaching Chamber (LC)

12/19

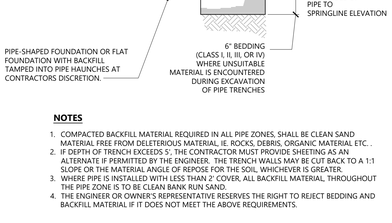
N.T.S. | Source: VHB | LD_180




## Flared End Section (FES) with Stone Protection

3/19

N.T.S. | Source: VHB | LD_134




**NOTES**

1. COMPACTED BACKFILL MATERIAL REQUIRED IN ALL PIPE ZONES, SHALL BE CLEAN SAND MATERIAL FREE FROM DELETERIOUS MATERIAL, IE. ROCKS, DEBRIS, ORGANIC MATERIAL ETC. .
2. IF DEPTH OF TRENCH EXCEEDS 5', THE CONTRACTOR MUST PROVIDE SHEETING AS AN ALTERNATE IF PERMITTED BY THE ENGINEER. THE TRENCH WALLS MAY BE CUT BACK TO A 1:1 SLOPE OR THE MATERIAL ANGLE OF REPOSE FOR THE SOIL, WHICHEVER IS GREATER.
3. WHERE PIPE IS INSTALLED WITH LESS THAN 2' COVER, ALL BACKFILL MATERIAL, THROUGHOUT THE PIPE ZONE IS TO BE CLEAN BANK RUN SAND.
4. THE ENGINEER OR OWNER'S REPRESENTATIVE RESERVES THE RIGHT TO REJECT BEDDING AND BACKFILL MATERIAL IF IT DOES NOT MEET THE ABOVE REQUIREMENTS.

## Pipe Trench Detail

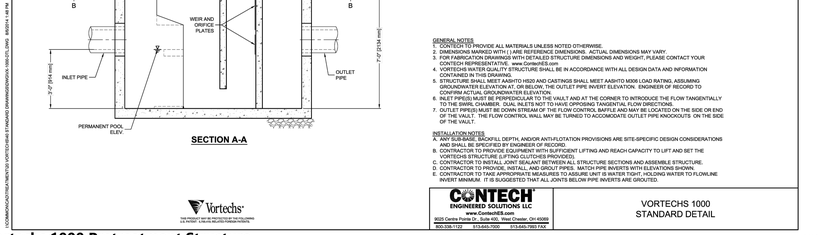
1/16

N.T.S. | Source: VHB

**Figure 3.1**
**Stone Check Dam Detail**




New York State Standards and Specifications For Erosion and Sediment Control | Page 3.3 | November 2016



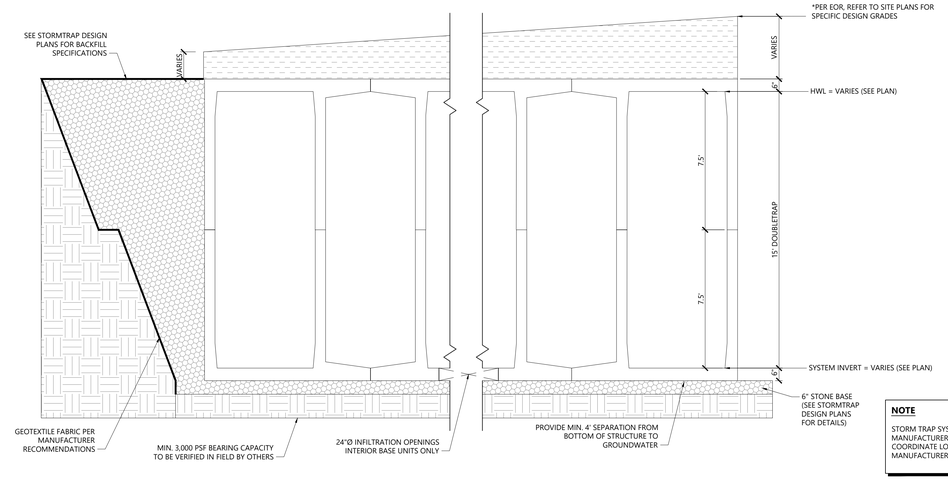




## Vortechs 1000 Pretreatment Structure

1/16

N.T.S. | Source: CONTECH




## Stormtrap Doubletrap Section Detail

11/15

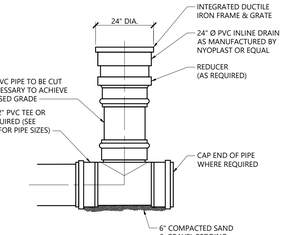
N.T.S. | Source: Stormtrap | LD_

**STORMTRAP INSTALLATION SPECIFICATIONS**

1. STORMTRAP SHALL BE INSTALLED IN ACCORDANCE WITH ASTM C891, STANDARD FOR INSTALLATION OF UNDERGROUND PRECAST CONCRETE UTILITY STRUCTURES, THE FOLLOWING ADDITIONS AND/OR EXCEPTIONS SHALL APPLY:
2. IT IS THE RESPONSIBILITY OF THE INSTALLING CONTRACTOR TO ENSURE THAT PROPER/ADEQUATE EQUIPMENT IS USED TO SET/INSTALL THE MODULES.
3. STORMTRAP MODULES CAN BE PLACED ON A LEVEL 6" FOUNDATION OF ¾" AGGREGATE EXTENDING 2'-0" PAST THE OUTSIDE OF THE SYSTEM (SEE DETAIL 1) AND SHALL BE PLACED ON PROPERLY COMPACTED SOILS (SEE SHEET 1.0 FOR SOIL BEARING CAPACITY REQUIREMENTS), AND IN ACCORDANCE WITH ASTM C891 STANDARD PRACTICE FOR INSTALLATION OF UNDERGROUND PRECAST UTILITY STRUCTURES.
4. THE STORMTRAP MODULES SHALL BE PLACED SUCH THAT THE MAXIMUM SPACE BETWEEN ADJACENT MODULES DOES NOT EXCEED ¾" (SEE DETAIL 2). IF THE SPACE EXCEEDS ¾", THE MODULES SHALL BE RESET WITH APPROPRIATE ADJUSTMENT MADE TO LINE AND GRADE TO BRING THE SPACE INTO SPECIFICATION.
5. STORMTRAP MODULES ARE NOT WATERTIGHT. IF A WATERTIGHT SOLUTION IS REQUIRED, CONTACT STORMTRAP FOR RECOMMENDATIONS. THE WATERTIGHT APPLICATION IS TO BE PROVIDED AND IMPLEMENTED BY THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT THE SELECTED WATERTIGHT SOLUTION PERFORMS AS SPECIFIED BY THE MANUFACTURER.
6. THE PERIMETER HORIZONTAL JOINT BETWEEN THE TOP AND BASE LEG CONNECTION OF THE STORMTRAP MODULES SHALL BE SEALED WITH PREFORMED MASTIC JOINT TAPE ACCORDING TO ASTM C891, 8.8 AND 8.12. (SEE DETAIL 3). THE MASTIC JOINT TAPE DOES NOT PROVIDE A WATERTIGHT SEAL.
7. ALL EXTERIOR JOINTS BETWEEN ADJACENT STORMTRAP MODULES SHALL BE SEALED WITH 8" WIDE PRE-FORMED, COLD-APPLIED, SELF-ADHERING ELASTOMERIC RESIN, BONDED TO A WOVEN , HIGHLY PUNCTURE RESISTANT POLYMER WRAP, CONFORMING TO ASTM C891 AND SHALL BE INTEGRATED WITH PRIMER SEALANT AS APPROVED BY STORMTRAP (SEE DETAILS 3 & 4). THE JOINT WRAP DOES NOT PROVIDE A WATERTIGHT SEAL. THE SOLE PURPOSE OF THE JOINT WRAP IS TO PROVIDE A SILT AND SOIL TIGHT SYSTEM. THE ADHESIVE EXTERIOR JOINT WRAP SHALL BE INSTALLED ACCORDING TO THE FOLLOWING INSTALLATION INSTRUCTIONS:
   - 7.1. USE A BRUSH OR WET CLOTH TO THOROUGHLY CLEAN THE OUTSIDE SURFACE AT THE POINT WHERE JOINT WRAP IS TO BE APPLIED.
   - 7.2. A RELEASE PAPER PROTECTS THE ADHESIVE SIDE OF THE JOINT WRAP. PLACE THE ADHESIVE TAPE (ADHESIVE SIDE DOWN) AROUND THE STRUCTURE, REMOVING THE RELEASE PAPER AS YOU GO. PRESS THE JOINT WRAP FIRMLY AGAINST THE STORMTRAP MODULE SURFACE WHEN APPLYING.
8. IF THE CONTRACTOR NEEDS TO CANCEL ANY SHIPMENTS, THEY MUST DO SO 48 HOURS PRIOR TO THEIR SCHEDULED ARRIVAL AT THE JOB SITE. IF CANCELED AFTER THAT TIME, PLEASE CONTACT THE PROJECT MANAGER.
9. IF THE STORMTRAP MODULE(S) IS DAMAGED IN ANY WAY PRIOR, DURING, OR AFTER INSTALL, STORMTRAP MUST BE CONTACTED IMMEDIATELY TO ASSESS THE DAMAGE AND TO DETERMINE WHETHER OR NOT THE MODULE(S) WILL NEED TO BE REPLACED. IF ANY MODULE ARRIVES AT THE JOBSITE DAMAGED DO NOT UNLOAD IT; CONTACT STORMTRAP IMMEDIATELY. ANY DAMAGE NOT REPORTED BEFORE THE TRUCK IS UNLOADED WILL BE THE CONTRACTOR'S RESPONSIBILITY.
10. STORMTRAP MODULES CANNOT BE ALTERED IN ANY WAY AFTER MANUFACTURING WITHOUT WRITTEN CONSENT FROM STORMTRAP.

**NOTE**

STORM TRAP SYSTEM FINAL DESIGN TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S PROJECT SPECIFIC DESIGN PLANS AND CONTRACTOR TO COORDINATE LOCATIONS OF ALL INVERTS, ELEVATIONS AND HEIGHTS WITH MANUFACTURER PRIOR TO CONSTRUCTION.




**NOTES**

1. AREA DRAINS TO BE INSTALLED IN LOCATIONS SHOWN ON PLANS AND SHALL BE SET LEVEL AND FLUSH WITH GRADE.

## Area Drain Detail

3/23

N.T.S. | Source: VHB

vhb.com
vhb
Engineering, Surveying, Landscape Architecture and Geology, PC
100 Motor Parkway
Suite 350
Hauppauge, NY 11788
631.787.3400

# Orchards on Hudson Residential

Dock Road
Marlborough, NY

| No. | Revision | Date | Appvd. |
|---|---|---|---|
| 1 | Town Resubmission | 10/25/2025 | AL |
| 2 | Town Resubmission | 3/21/2025 | AL |

Designed by: DB | Checked by: AL

Issued for: Site Plan Approval | Date: August 9, 2024

Not Approved for Construction

Drawing Title: Drainage Details

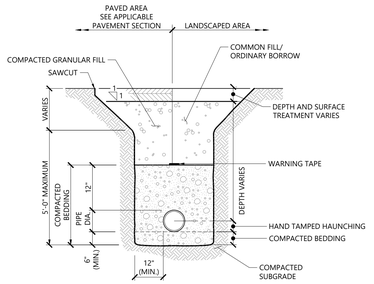
Drawing Number: C7.02

Sheet 35 of 47

Project Number: 20578.01

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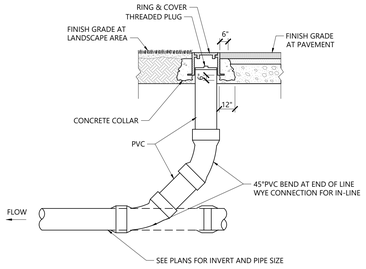

**NOTES**

1. WHERE UTILITY TRENCHES ARE CONSTRUCTED THROUGH DETENTION BASIN BERMS OR OTHER SUCH SPECIAL SECTIONS, PLACE TRENCH BACKFILL WITH MATERIALS SIMILAR TO THE SPECIAL SECTION REQUIREMENTS.
2. USE METALLIC TRACING/WARNING TAPE OVER ALL PIPES.
3. COMPACTED GRANULAR FILL MAY CONSIST OF GRAVEL, CRUSHED STONE, SAND, OR OTHER MATERIAL AS APPROVED BY ENGINEER.

## Utility Trench

11/19

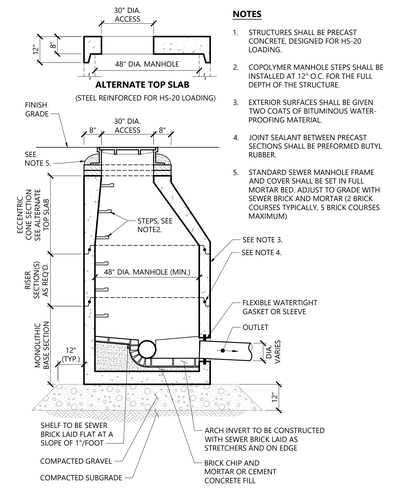
N.T.S. Source: VHB LD_300




## Cleanout (CO)

12/19

N.T.S. Source: VHB LD_303



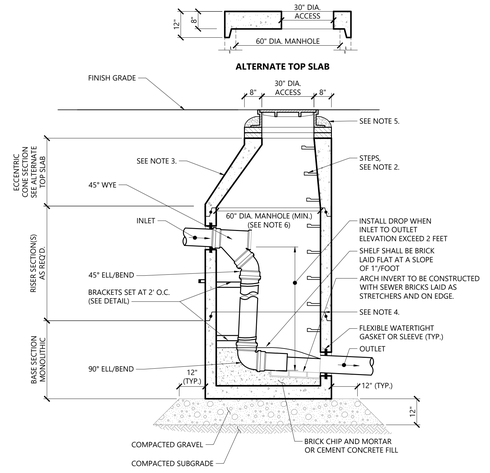

**NOTES**

1. STRUCTURES SHALL BE PRECAST CONCRETE, DESIGNED FOR HS-20 LOADING.
2. COPOLYMER MANHOLE STEPS SHALL BE INSTALLED AT 12" O.C. FOR THE FULL DEPTH OF THE STRUCTURE.
3. EXTERIOR SURFACES SHALL BE GIVEN TWO COATS OF BITUMINOUS WATER-PROOFING MATERIAL.
4. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
5. STANDARD SEWER MANHOLE FRAME AND COVER SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH SEWER BRICK AND MORTAR (2 BRICK COURSES TYPICALLY, 5 BRICK COURSES MAXIMUM)

## Sanitary Sewer Manhole (SMH)

1/16

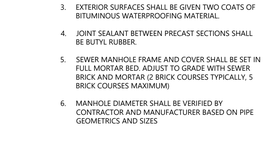
N.T.S. Source: VHB LD_200




## Interior Drop Sewer Manhole (SMH)

1/16

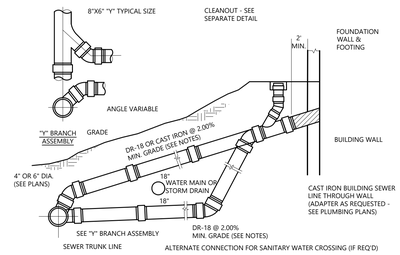
N.T.S. Source: VHB REV LD_205




**BRACKET DETAIL**

**NOTES**

1. STRUCTURE SHALL BE DESIGNED FOR HS-20 LOADING.
2. COPOLYMER MANHOLE STEPS SHALL BE INSTALLED AT 12" O.C. FOR THE FULL DEPTH OF THE STRUCTURE
3. EXTERIOR SURFACES SHALL BE GIVEN TWO COATS OF BITUMINOUS WATERPROOFING MATERIAL.
4. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE BUTYL RUBBER.
5. SEWER MANHOLE FRAME AND COVER SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH SEWER BRICK AND MORTAR (2 BRICK COURSES TYPICALLY, 5 BRICK COURSES MAXIMUM)
6. MANHOLE DIAMETER SHALL BE VERIFIED BY CONTRACTOR AND MANUFACTURER BASED ON PIPE GEOMETRICS AND SIZES




**NOTES**

1. WHERE SERVICE CONNECTIONS PASS ABOVE WATER MAINS OR STORM DRAINS WITH 18" SEPARATION, PIPE AND FITTINGS TO BE DR-18 PVC PRESSURE PIPE.
2. WHERE SERVICE CONNECTIONS PASS ABOVE WATER MAINS OR STORM DRAINS WITH LESS THAN 18" SEPARATION, PIPE AND FITTINGS TO BE CAST IRON.
3. WHERE SERVICE CONNECTIONS PASS BELOW WATER MAINS OR STORM DRAINS WITH 18" SEPARATION, PIPE AND FITTINGS TO BE DR-18.
4. WHERE SERVICE CONNECTIONS PASS BELOW WATER MAINS OR STORM DRAINS WITH LESS THAN 18" SEPARATION, PIPE AND FITTINGS TO BE DR-18 PVC PRESSURE PIPE.

## Sewer Service Connection

1/16

N.T.S. Source: VHB

vhb.com

vhb

**Engineering, Surveying, Landscape Architecture and Geology, PC**
100 Motor Parkway
Suite 350
Hauppauge, NY 11788
631.787.3400

# Orchards on Hudson Residential

**Dock Road**
**Marlborough, NY**

| No. | Revision | Date | Appvd. |
|---|---|---|---|
| 1 | Town Resubmission | 10/25/2025 | AL |
| 2 | Town Resubmission | 3/21/2025 | AL |

Designed by: DB
Checked by: AL

Issued for: **Site Plan Approval**
Date: **August 9, 2024**

**Not Approved for Construction**

Drawing Title: **Sewer Details**

Drawing Number: **C7.03**

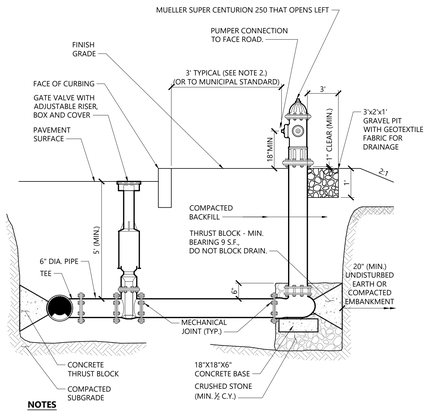
Sheet 36 of 47

Project Number: **20578.01**

STATE OF NEW YORK
JOSEPH V. LAMB
090118
LICENSED PROFESSIONAL ENGINEER

IT IS A VIOLATION OF SECTION 7209 OF ARTICLE 145 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON TO ALTER ANY DOCUMENT THAT BEARS THE SEAL OF A PROFESSIONAL ENGINEER, UNLESS THE PERSON IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER

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**NOTES**

1. CONCRETE THRUST BLOCKS TO BE USED ONLY WHERE THEY CAN BEAR ON UNDISTURBED EARTH AS SHOWN. USE CLAMPS AND TIE RODS OR OTHER ACCEPTABLE METHOD OF JOINT RESTRAINT WHERE SOIL CONDITIONS PROHIBIT THE USE OF THRUST BLOCKS.
2. HYDRANT IN SIDEWALK AREAS TO BE LOCATED TO PROVIDE MINIMUM CLEAR SIDEWALK PASSAGE WIDTH OF 3 FEET AT HYDRANT.
3. A 36-INCH CLEAR SPACE SHALL BE MAINTAINED AROUND THE CIRCUMFERENCE OF THE HYDRANT UNLESS OTHERWISE APPROVED BY AUTHORITY HAVING JURISDICTION.

## Hydrant Construction

12/19

N.T.S. Source: VHB REV LD_250

**TABLE OF DIMENSIONS**

| BENDS | B | C | D | E | F | BENDS | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 6° 11 ¼° | 8" | 15" | 12" | 24" | 12" | 6° 45° | 8" | 30" | 12" | 24" | 14" |
| 6° 22 ½° | " | 19" | " | " | 13" | 6° 90° | " | 30" | " | " | 27" |
| 8° 11 ¼° | " | 20" | " | " | 12" | 8° 45° | " | 30" | " | " | 24" |
| 8° 22 ½° | " | 22" | " | " | 17" | 8° 90° | " | 38" | " | " | 36" |
| 12° 11 ¼° | " | 30" | " | " | 15" | 12° 45° | " | 40" | " | " | 40" |
| 12° 22 ½° | " | 35" | " | " | 25" | 12° 90° | " | 60" | " | " | 52" |

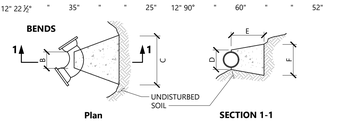
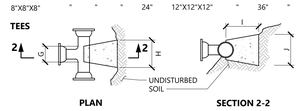



**TABLE OF DIMENSIONS**

| TEES | G | H | I | J | TEES | G | H | I | J |
|---|---|---|---|---|---|---|---|---|---|
| 6"X6"X6" | 12" | 24" | 24" | 18" | 12"X12"X6" | 12" | 24" | 24" | 18" |
| 8"X8"X6" | " | " | " | " | 12"X12"X8" | " | " | " | 24" |
| 8"X8"X8" | " | " | " | 24" | 12"X12"X12" | " | 36" | " | 36" |



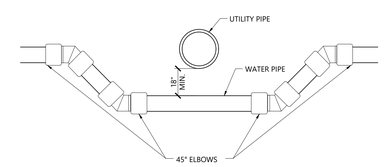

**NOTES**

1. PROVIDE BLOCKS FOR TAPPING SLEEVES, DEAD ENDS, GATE VALVES, AND VERTICAL BENDS (SAME SIZE AS REQUIRED FOR TEES). PROVIDE ANCHOR RODS AT VERTICAL BENDS AND GATE VALVES.
2. CONCRETE SHALL NOT BE PLACED AGAINST PIPE BEYOND FITTING.
3. CONCRETE SHALL BE 3,000 PSI-TYPE I.

## Concrete Thrust Block

1/16

N.T.S. Source: VHB LD_260



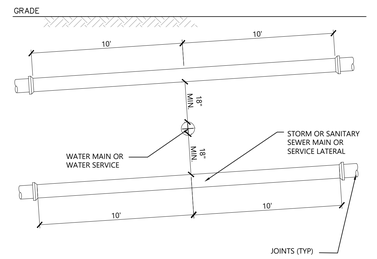

**NOTES**

WATER MAIN DROP CROSSING LOCATIONS TO BE DETERMINED IN FIELD BY ENGINEER.

## Water MainDrop Crossing Detail

1/16

N.T.S. Source: VHB



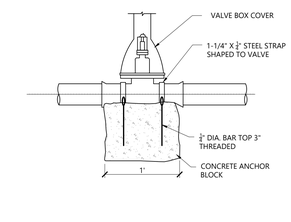

**NOTES**

1. ADEQUATE STRUCTURAL SUPPORT OF THE SEWER AND/OR WATER LINE MUST BE PROVIDED AT ALL CROSSINGS (BOTH UNDER AND OVER).
2. WHERE SEWER LINE CROSSES OVER WATER LINE, ADEQUATE STRUCTURAL SUPPORT SHALL BE PROVIDED FOR THE SEWER AND WATER LINE. SEWER LINE JOINTS SHALL BE 10 FEET FROM THE POINT OF CROSSING WHERE SEWER LINES CROSS OVER WATER LINES. IF 18 INCH SEPARATION CANNOT BE MAINTAINED, A VERTICAL SEPARATION OF AT LEAST 12 INCHES MAY BE ALLOWED ON A CASE BY CASE BASIS.
3. WHERE WATER LINE CROSSES OVER SEWER LINE AND 18 INCH SEPARATION CANNOT BE MAINTAINED, BOTH WATER AND SEWER LINES SHALL BE CONSTRUCTED OF PRESSURE PIPE AND A MINIMUM SEPARATION BETWEEN THE BOTTOM OF THE WATER LINE AND THE TOP OF THE SEWER LINE OF 12 INCHES SHALL BE MAINTAINED.
4. IN THE EVENT THAT A STORM SEWER CROSSES OVER A SANITARY SEWER, THE SANITARY SEWER MUST BE CONSTRUCTED OF CLASS 53 DIP UNLESS 18 INCH SEPARATION IS MAINTAINED. ADEQUATE STRUCTURAL SUPPORT SHALL BE PROVIDED AT STORM SEWER CROSSINGS.
5. ADEQUATE STRUCTURAL SUPPORT SHALL BE PROVIDED AT THE CROSSING OF STORM DRAIN PIPING. ADEQUATE STRUCTURAL SUPPORT SHALL BE CONCRETE CRADLE (SEE DETAIL).

## Water/Drainage/ Sewer Service Crossing

1/16

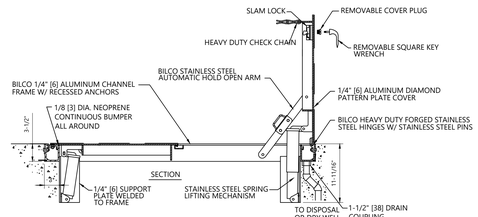
N.T.S. Source: VHB




## Valve Anchor Detail

1/16

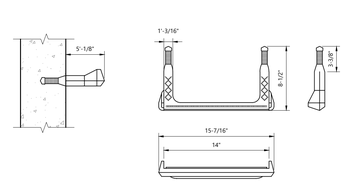
N.T.S. Source: VHB




## Bilco Door Detail

1/16

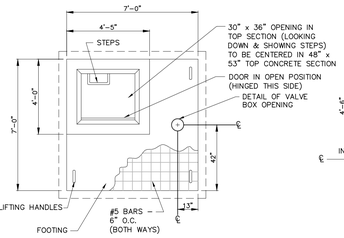
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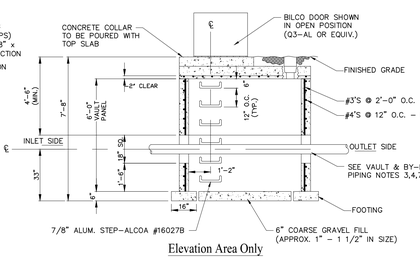

## Vault Step Detail

1/16

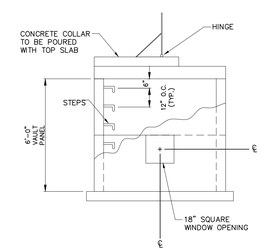
N.T.S. Source: VHB




Plan - Top Slabs



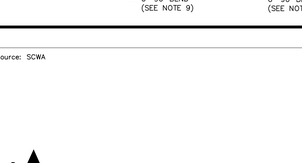

Elevation Area Only




Non-Traffic Area Only
As Viewed From Street

**Vault and By-Pass Piping Notes:**

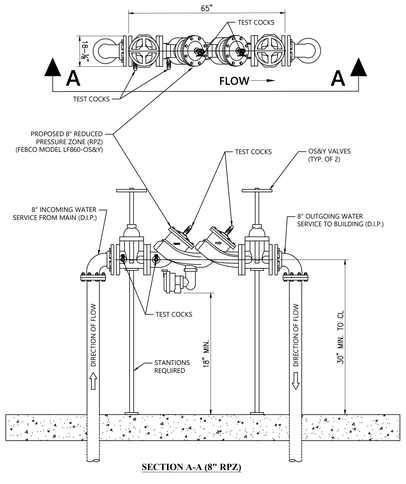
1. VAULT, VAULT PIPING AND BY-PASS TO BE INSTALLED BY SITE WORK CONTRACTOR AS SHOWN. (SEE TYPICAL VAULT AND BY-PASS PIPING.)
2. ALL MECHANICAL JOINT BENDS AND FITTINGS MUST BE RETAINED WITH RETAINING GLANDS, THREADED RODDING AND SUFFICIENT BLOCKING.
3. ALL PIPING MUST BE DUCTILE IRON CLASS 52 PIPING.
4. INLET AND OUTLET VALVES, PLUS PIPING BETWEEN VALVES, MUST EQUAL SIZE OF METER. IF REDUCTION IS REQUIRED, THE CONTRACTOR IS RESPONSIBLE FOR SUPPLYING ADEQUATE SPACE SAVER FLANGES TO ACCOMMODATE METER. METER SIZE IS TO BE DETERMINED BY THE WATER DEPARTMENT ALL VALVES TO OPEN COUNTERCLOCKWISE (RIGHT HANDED VALVES).
5. BY-PASS PIPING CAN BE ON EITHER SIDE OF VAULT DEPENDING ON FIELD CONDITIONS AND FIRE LINE LOCATION.
6. INLET AND OUTLET VALVES TO BE IN LINE WITH EACH OTHER AND AT THE SAME ELEVATION AS WINDOWS IN VAULT. IN ADDITION, PIPING MUST BE CENTERED THROUGH EIGHTEEN (18") INCH SQUARE WINDOW.
7. FIRE LINE TO BE INSTALLED ON OPPOSITE SIDE OF METER BY VAULT BY-PASS.
8. A SIX (6") INCH PIPING IS TO BE USED ON ALL BY-PASSES AND A FOUR (4") INCH BY-PASS WILL BE ACCEPTABLE ON A FOUR (4") INCH SERVICE.
9. AFTER INSTALLING PIPING THROUGH METER VAULT, THE CONTRACTOR IS REQUIRED TO BRICK UP AND CEMENT BOTH WINDOWS OF VAULT.




## Vault and By-Pass Piping System

12/98

N.T.S. Source: SCWA

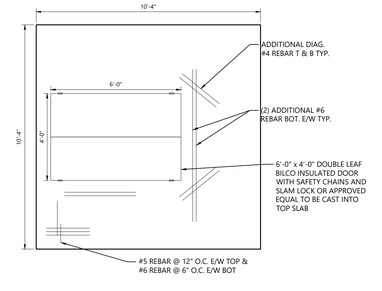



SECTION A-A (8" RPZ)

## 8" RPZ Device

1/16

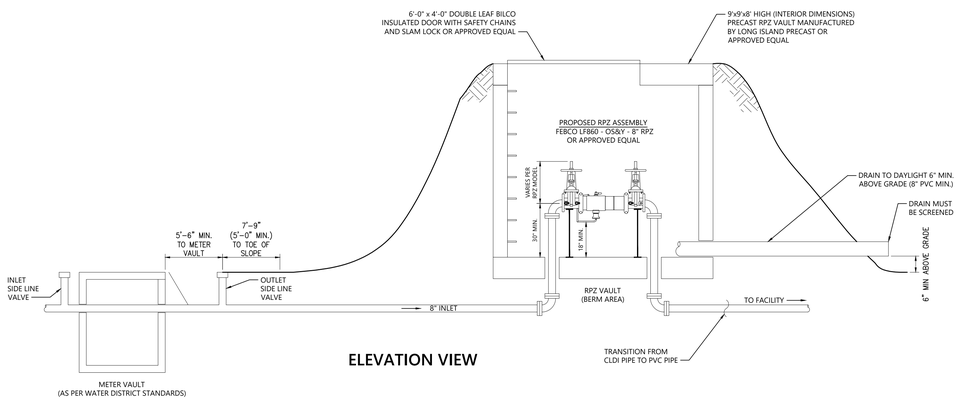
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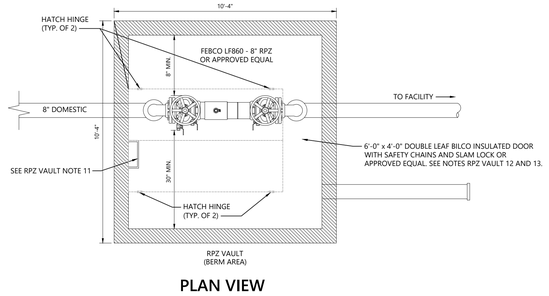

## RPZ Vault Top Slab Detail

1/16

N.T.S. Source: VHB




ELEVATION VIEW




PLAN VIEW

## RPZ Vault Notes

1. THIS DEVICE MUST BE PROTECTED AGAINST FREEZING.
2. TEST COCKS MUST BE POSITIONED TO FACILITATE TESTING (30" MINIMUM CLEARANCE).
3. ALL CONNECTIONS T'S, HOSE BIBS, IRRIGATION ETC. MUST BE INSTALLED AFTER (DOWNSTREAM) OF DEVICE.
4. DRAIN(S) CANNOT BE SUBJECT TO FLOODING AND MUST HAVE EXTERIOR SCREEN(S).
5. DRAIN PIPE SHOULD BE SIZED ACCORDING TO MANUFACTURES FLOW CURVES TO DETERMINE MAXIMUM DISCHARGE RATES.
6. DESTINATION OF DRAINAGE MUST BE SHOWN.
7. EACH RPZ MUST BE ADEQUATELY SUPPORTED TO THE CONCRETE SLAB (FLOOR) WITH PIPE STANTIONS TO PREVENT LATERAL MOVEMENT.
8. SUPPORTS MUST BE PLACED WHERE THEY WILL NOT OBSTRUCT THE FUNCTION OR ACCESS TO RELIEF VALVE.
9. EACH RPZ MUST HAVE USC FOUNDATION OF CROSS CONNECTION APPROVAL.
10. EACH RPZ MUST BE TESTED ANNUALLY.
11. ACCESS LADDER TO BE PROVIDED.
12. FULL OPENING HATCH TO ENCOMPASS CENTERLINE OF DEVICE.
13. LENGTH OF HATCH SHOULD BE LONG ENOUGH TO LIFT DEVICE THRU OPENING.
14. RPZ MUST BE A LEAD FREE MODEL.
15. ALL ASSEMBLIES MUST BE INSTALLED WITH THE MANUFACTURER-SUPPLIED RESILIENT SEATED SHUT-OFF VALVES INTEGRAL TO THE ASSEMBLY.

## RPZ in Vault - Backflow Details

N.T.S. Source: VHB

vhb.com
vhb
Engineering, Surveying, Landscape Architecture and Geology, PC
100 Motor Parkway
Suite 350
Hauppauge, NY 11788
631.787.3400

# Orchards on Hudson Residential

Dock Road
Marlborough, NY

| No. | Revision | Date | Appvd. |
|---|---|---|---|
| 1 | Town Resubmission | 10/25/2025 | AL |
| 2 | Town Resubmission | 3/21/2025 | AL |

Designed by DB Checked by AL

Issued for Date

Site Plan Approval August 9, 2024

Not Approved for Construction

Drawing Title

Water Details

Drawing Number

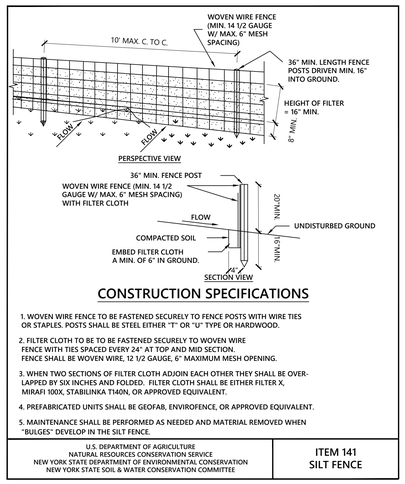
C7.04

Sheet 37 of 47

Project Number 20578.01

IT IS A VIOLATION OF SECTION 7209 OF ARTICLE 145 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON TO ALTER ANY DOCUMENT THAT BEARS THE SEAL OF A PROFESSIONAL ENGINEER, UNLESS SUCH PERSON IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER

Saved Friday, March 21, 2025 11:24:53 AM JLEGOFF Plotted Friday, March 21, 2025 12:48:12 PM Julien Le Goff



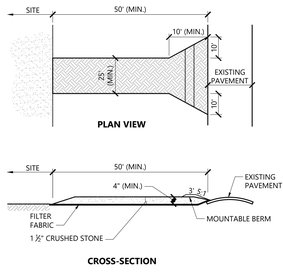

## CONSTRUCTION SPECIFICATIONS

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.
2. FILTER CLOTH TO BE TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION. FENCE SHALL BE WOVEN WIRE, 12 1/2 GAUGE, 6" MAXIMUM MESH OPENING.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.
4. PREFABRICATED UNITS SHALL BE GEOFAB, ENVIROFENCE, OR APPROVED EQUIVALENT.
5. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

| U.S. DEPARTMENT OF AGRICULTURE<br>NATURAL RESOURCES CONSERVATION SERVICE<br>NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION<br>NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE | ITEM 141<br>SILT FENCE |
|---|---|

## Silt Fence

N.T.S. Source: VHB



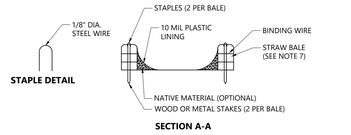

**NOTES**

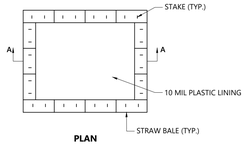
1. EXIT WIDTH SHALL BE A TWENTY-FIVE (25) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.
2. THE EXIT SHALL BE MAINTAINED IN A CONDITION WHICH SHALL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY. BERM SHALL BE PERMITTED. PERIODIC INSPECTION AND MAINTENANCE SHALL BE PROVIDED AS NEEDED.
3. STABILIZED CONSTRUCTION EXIT SHALL BE REMOVED PRIOR TO FINAL FINISH MATERIALS BEING INSTALLED.

## Stabilized Construction Exit

1/16

N.T.S. Source: VHB LD_682



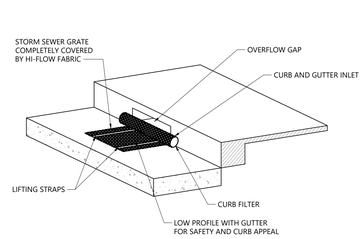

**NOTES**

1. TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE LOCATED AS SHOWN ON PLANS.
2. IN LIEU OF HAY BALES AND PLASTIC, CONTRACTOR MAY PROVIDE PREFABRICATED CONCRETE WASHOUT STRUCTURE. APPROVAL FROM ENGINEER REQUIRED PRIOR TO ON SITE ARRIVAL OF PREFABRICATED STRUCTURE.
3. ONCE CONCRETE WASTES ARE WASHED INTO THE DESIGNATED AREA AND ALLOWED TO HARDEN, THE CONCRETE SHOULD BE BROKEN UP, REMOVED, AND DISPOSED OF OFF-SITE. CONTRACTOR TO DISPOSE OF HARDENED CONCRETE ON A REGULAR BASIS.
4. A CONCRETE WASHOUT SIGN SHALL BE INSTALLED TO DESIGNATE THE TEMPORARY CONCRETE WASHOUT FACILITY.
5. PLASTIC LINING MATERIAL SHOULD BE A MINIMUM OF 10 MIL POLYETHYLENE SHEETING AND SHOULD BE FREE OF HOLES, TEARS, OR OTHER DEFECTS THAT COMPROMISE THE IMPERMEABILITY OF THE MATERIAL.
6. WASHOUT FACILITIES MUST BE CLEANED, OR NEW FACILITIES MUST BE CONSTRUCTED AND READY FOR USE ONCE THE WASHOUT IS 75% FULL.
7. STRAW BALE AND STAPLES MAY BE SUBSTITUTED WITH ALTERNATE SECURING MEASURES SUCH AS CONCRETE BLOCK.
8. IF EXCAVATED, SIDE SLOPES SHALL BE 2 HORIZONTAL TO 1 VERTICAL.

## Concrete Truck Washout

1/18

N.T.S. Source: VHB



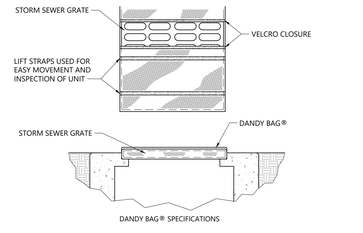

HI-FLOW DANDY BAG® (SAFETY ORANGE)

| Mechanical Properties | Test Method | Units | MARV |
|---|---|---|---|
| Grab Tensile Strength | ASTM D 4632 | kN (lbs) | 1.62 (365) X 0.89 (200) |
| Grab Tensile Elongation | ASTM D 4632 | % | 24 X 10 |
| Puncture Strength | ASTM D 4833 | kN (lbs) | 0.40 (90) |
| Mullen Burst Strength | ASTM D 3786 | kPa (psi) | 3097 (450) |
| Trapezoid Tear Strength | ASTM D 4533 | kN (lbs) | 0.51 (115) X 0.33 (75) |
| UV Resistance | ASTM D 4355 | % | 90 |
| Apparent Opening Size | ASTM D 4751 | Mm (US Std Sieve) | 0.425 (40) |
| Flow Rate | ASTM D 4491 | l/min/m (gpm/ft²) | 5907 (145) |
| Permittivity | ASTM D 4491 | Sec-1 | 2.1 |

*Note: All Dandy Bags® can be ordered with our optional oil absorbent pillows

## Detail of Curb Inlet Sediment Control Device with Curb Filter

N.T.S. Source: Dandy Products




HI-FLOW DANDY BAG® (SAFETY ORANGE)

| Mechanical Properties | Test Method | Units | MARV |
|---|---|---|---|
| Grab Tensile Strength | ASTM D 4632 | kN (lbs) | 1.62 (365) X 0.89 (200) |
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| Trapezoid Tear Strength | | kN (lbs) | 0.51 (115) X 0.33 (75) |
| UV Resistance | | % | 90 |
| Apparent Opening Size | | Mm (US Std Sieve) | 0.425 (40) |
| | | l/min/m² (gpc/min/ft.)² | 5907 (145) |
| | | Sec | 2.1 |

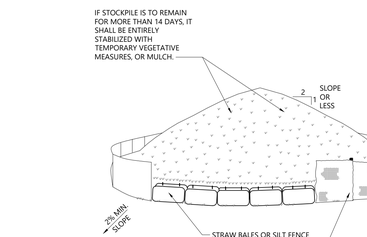
*Note: All Dandy Bags® can be ordered with our optional oil absorbent pillows

**NOTE**

THE DANDY BAG® WILL BE MANUFACTURED IN THE U.S.A. FROM A WOVEN MONOFILAMENT FABRIC THAT MEETS OR EXCEEDS THE FOLLOWING SPECIFICATIONS:

## Inlet Sediment Control Device

N.T.S. Source: Dandy Products




**NOTES**

1. AREA CHOSEN FOR STOCKPILING OPERATIONS SHALL BE DRY AND STABLE.
2. MAXIMUM SLOPE OF STOCKPILE SHALL BE 1:2.
3. UPON COMPLETION OF SOIL STOCKPILING, EACH PILE SHALL BE SURROUNDED WITH EITHER SILT FENCING OR STRAW BALES.
4. CONTRACTOR SHALL INSPECT INSTALLATIONS EVERY 7 DAYS MINIMUM AND/OR AS REQUIRED AND AFTER ANY RAINFALL EVENT OF 1/2" OR GREATER AND MAKE NECESSARY REPAIRS AS NEEDED.

## Material Stockpile Area Detail

N.T.S.




**NOTES**

1. BEGIN AT THE TOP OF BLANKET INSTALLATION AREA BY ANCHORING BLANKET IN A 6" DEEP TRENCH BACKFILL AND COMPACT TRENCH AFTER STAPLING.
2. ROLL THE BLANKET DOWN THE SWALE IN THE DIRECTION OF THE WATER FLOW.
3. THE EDGES OF BLANKETS MUST BE STAPLED WITH APPROX. 4 INCH OVERLAP WHERE 2 OR MORE STRIP WIDTHS ARE REQUIRED.
4. WHEN BLANKETS MUST BE SPLICED DOWN THE SWALE, PLACE UPPER BLANKET END OVER LOWER END WITH 6 INCH (MIN.) OVERLAP AND STAPLE BOTH TOGETHER.
5. METHOD OF INSTALLATION SHALL BE AS PER MANUFACTURER'S RECOMMENDATIONS.
6. EROSION CONTROL BLANKETS SHALL BE USED IN ALL AREAS WHERE SLOPES EXCEED 3:1.

## Erosion Control Blanket Slope Installation

1/16

N.T.S. Source: VHB LD_680




**NOTES**

1. INSTALL TREE PROTECTION FENCE AT THE DRIP LINE OF EXISTING TREES TO REMAIN.

## Tree Protection Fence

1/16

N.T.S. Source: VHB LD_610

**Figure 3.7**
**Flow Spreader Detail**






## Flow Spreader

N.T.S. Source: NYDEC LD_

vhb.com
vhb
Engineering, Surveying, Landscape Architecture and Geology, PC
100 Motor Parkway
Suite 350
Hauppauge, NY 11788
631.787.3400

# Orchards on Hudson Residential

Dock Road
Marlborough, NY

| No. | Revision | Date | Apprvd. |
|---|---|---|---|
| 1 | Town Resubmission | 10/25/2025 | AL |
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Designed by DB Checked by AL

Issued for: Site Plan Approval
Date: August 9, 2024

Not Approved for Construction

Drawing Title: Erosion and Sediment Control Details

Drawing Number: C7.05

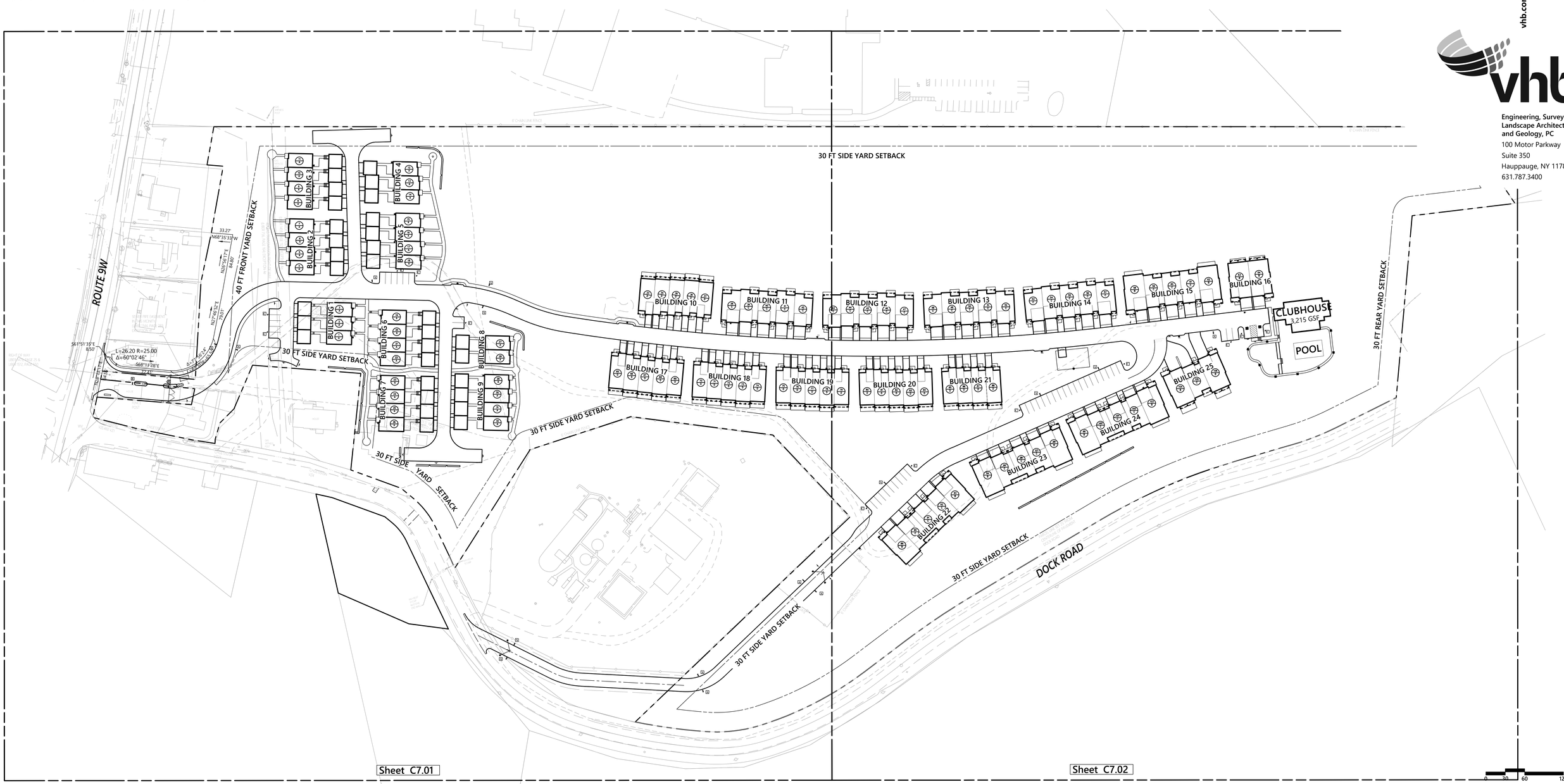
Sheet 38 of 47

Project Number: 20578.01

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Saved Friday, March 21, 2025 11:24:53 AM JLEGOFF Plotted Friday, March 21, 2025 12:48:22 PM Julien Le Goff

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Engineering, Surveying, Landscape Architecture and Geology, PC
100 Motor Parkway
Suite 350
Hauppauge, NY 11788
631.787.3400

## Calculation Summary

| Region | CalcType/ Units | Illumination Levels | | | Uniformity | |
|---|---|---|---|---|---|---|
| | | Prov. Avg | Max | Prov. Min | Provided Max/Min | Provided Avg/Min |
| Parking | Illuminance/Fc | 2.4 | 8.8 | 0.1 | 14.9 | 4.8 |
| Site Area | Illuminance/Fc | 0.6 | 15.0 | 0.0 | N/A | N/A |

## Proposed Luminaire Schedule

| Symbol | Label | Qty | Description | Arrangement | LLF | Arr. Lumens | Arr. Watts | Mounting Height |
|---|---|---|---|---|---|---|---|---|
| ●■ | A | 15 | BGP703 LED120-4S/730 DM11 DDF27 D18 SRG1 | SINGLE | 1.00 | 12000 | 79 | 15' |
| ●■ | B | 2 | BGP703 LED120-4S/730 DM11 DDF27 D18 SRG1 | SINGLE | 1.00 | 12,000 | 79 | 12' |
| ✪ | C | 12 | M-PL PATH LIGHT 1LED DESIGNER PLUS | SINGLE | 1.00 | 73 | 2 | 1.78' |

## Lighting Notes

1. LIGHTS TO BE PROVIDED AS SHOWN OR APPROVED EQUAL. IF CONTRACTOR PROPOSES DIFFERENT SITE LIGHTING THEY ARE REQUIRED TO PROVIDE PHOTOMETRICS BY MANUFACTURER WHICH DEMONSTRATES THAT IT MEETS THE REQUIREMENTS OF THE TOWN OF MARLBOROUGH.
2. MOUNTING HEIGHTS SHOWN ARE FROM GRADE OF THE SURROUNDING AREA. MOUNTING HEIGHTS FOR EACH LIGHT FIXTURE ARE SHOWN ON THE PROPOSED LUMINAIRE SCHEDULE CORRESPONDING TO THE LABELS DEPICTED ON THE PLAN.
3. ALL LIGHTING SHALL BE SHIELDED TO PREVENT SPILLAGE ON ALL RESIDENTIAL USES SURROUNDING THE SUBJECT PROPERTY AND MEET THE TOWN'S REQUIREMENTS FOR DARK SKY COMPLIANCE.
4. CONTRACTOR TO COORDINATE ALL CABLE/CONDUIT SIZES WITH ELECTRICAL ENGINEER AS WELL AS MANUFACTURER REQUIREMENTS.
5. CONTRACTOR SHALL COORDINATE WIRING OF LIGHTS PRIOR TO INSTALLATION. CARE MUST BE TAKEN TO NOT INTERFERE WITH OTHER UTILITY LINES. PULL BOXES TO BE INSTALLED AS NECESSARY TO ROUTE CABLE.
6. ALL ELECTRICAL FACILITIES SHALL MEET STANDARDS OF NATIONAL ELECTRIC CODE AND ALL OTHER APPLICABLE REQUIREMENTS.
7. TIMING CONTROL OPTION SHALL BE USED TO SENSE LIGHT LEVELS.
8. NEW SITE LIGHT POLES SHALL BE LOCATED A MINIMUM OF 2.5 FEET FROM THE FACE OF CURBS.
9. AREAS BEYOND THE CALCULATED REGION DEPICTED ON THE PLANS WILL NOT RECEIVE PROPOSED SITE LIGHTING.

AREA & ROADWAY LIGHTING

# COLONIAL® - PLED

4-SIDED TRADITIONAL LANTERN

**Luminaire**
Heavy-wall corrosion resistant low copper aluminum (A356 alloy, <0.2% copper) traditionally-styled housing and top. Minimum wall thickness is .188". Top hinges for easy access. Silicone gasket between housing and hood. Four piece clear patterned acrylic lenses, or opal white acrylic lenses provided. All hardware is stainless steel.

**Diffuser**
No Lens Open Frame is standard. Option of Clear Patterned Acrylic (CPA) or White Acrylic (WA) Lens Panels. Lenses are mechanically fastened to the frame and sealed with closed cell silicone gasketing.

**PLED* Optics**
Emitters (LED's) are arrayed on a metal core PCB panel with each emitter located on a copper thermal transfer pad and enclosed by an LED refractor. LED optics completely seal each individual emitter to meet an IP66 rating. In asymmetric distributions, a micro-reflector inside the refractor re-directs the house side emitter output towards the street side, maximizing usable light. Optional house side shields are available for full cutoff applications. Each LED refractor is sealed to the PCB with a closed cell O-ring gasket. Each LED refractor is sealed to the PCB over an emitter and all refractors are retained by an aluminum frame. Any one Panel, or group of Panels in a luminaire, have the same optical pattern. LED refractors produce standard site/area distributions. Panels are field replaceable and field rotatable in 90° increments. Quick-disconnects are provided above each panel for fast field replacement. No lens fixture option will provide "U0" no uplight optical package.

**Ambiance Low Luminance Lens**
Optional Ambiance Lens (AL) provides low luminance reduced glare distributions. Lens diffuses the PLED Optics and provides a more uniform luminance across the aperture reducing glare at all angles. Lens is provided with an aluminum frame and is sealed to the housing with high temp gasketing.

**LED Emitters**
High Power White LED's are driven between 350mA and 875mA for a maximum output of 2.5 Watts nominal. LED's are available in standard Neutral White (4000K), Cool White (5000K), or Warm White (2700K & 3000K). All Standard LED's have a minimum of 70 CRI. Consult Factory for other LED options. Lumen Maintenance at L96 at 60,000 hours (TM-21 calculated at 6x Test Time).

**True Amber LED's** TRA-True Amber LED's emit light in the amber spectral bandwidth centered on 585-590nm. True Amber has negligible blue light and is suitable for wildlife.

**LED Driver**
Constant current electronic with a power factor of >.90 and a minimum operating temperature of -40°F/-40°C. Driver(s) to carry UL and cUL recognized. Inline terminal blocks facilitate wiring between the driver and optical array. Drivers accept an input of 120-277V, 50/60Hz or 347V-480V, 50,60Hz. (0 - 10V dimmable driver is standard. Driver has a minimum of 3kV internal surge protection. Luminaire supplied with 20kV surge protector for field installation.)

**Finish**
Polyester powder coat incorporates four step iron phosphate process to prefined metal surface for maximum adhesion. Top coat is baked at 400°F for maximum hardness and exterior durability.

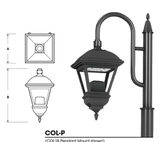
PROJECT NAME:

PROJECT TYPE:



**COL-T**
(COL-T Series Mount shown)
Fitter supplied 14.00 lead (1 1/4" R.P. (Class II Epoxy Painted).

| FIXTURE | A | B |
|---|---|---|
| COL21-T | 21" (533mm) | 10" (254mm) |
| COL18-T | 18" (457mm) | 13" (330mm) |
| COL12-T | 12" (305mm) | 19" (483mm) |



**COL-P**
(COL-P Pendant Mount shown)

| FIXTURE | A | B |
|---|---|---|
| COL21-P | 21" (533mm) | 10" (254mm) |
| COL18-P | 18" (457mm) | 13.5" (343mm) |
| COL12-P | 12" (305mm) | 24" (610mm) |

UL Listed for Wet Location

2022238

U.S. Pole Company Inc
An Employee Owned Company
660 Well Avenue Ext. Palmetto, GA 30501
Phone (877) 339-8181 www.uspoly.com

MADE IN THE USA

SUN VALLEY GROUP

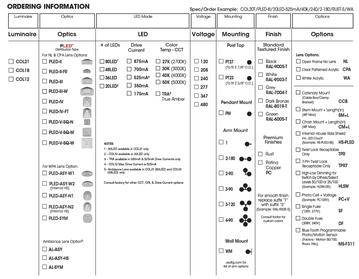
## COL SERIES - PLED

**PLED* MODULES**



90 LED Module | 48 LED Module | 24 LED Module | 20 LED Module

**ORDERING INFORMATION**




U.S. Pole Company Inc
An Employee Owned Company
660 Well Avenue Ext. Palmetto, GA 30501
Phone (877) 339-8181 www.uspoly.com

MADE IN THE USA

SUN VALLEY GROUP

PHILIPS Lighting



## Luma gen2

**BGP703 LED120-4S/730 DM11 DDF27 D18 SRG1**

LUMA GEN2 MINI, LED module 12000 lm, LED, 79 W, Power supply unit with DynaDimmer, Distribution medium 11, Glass, 70° x 37°, Programmable (via DALI or NFC) stand-alone dimming, Side-entry for diameter 42 to 60 mm

Luma gen2 is the next generation of the Luma LED luminaire family, fully optimized to become your long-term lighting and innovation partner. While keeping the distinctive design characteristics of the first generation, Luma gen2 gives you the benefits of the latest technologies thanks to its future-proof System Ready architecture, use of optimized Ledgine LED and optical platform ensuring best in class lighting performance in a broad range of applications. It also offers improved serviceability. Installation has also become easier and faster, and thanks to the Service tag, you have access to all relevant documentations onsite. Also, the cable feed-through has been redesigned and access to the gear components is easy thanks to top down tool-less access. Luma gen2 also offers all connectivity and dimming options available today and thanks to being System Ready, it can also to be paired with lighting management systems such as Interact City or existing and upcoming sensor innovations. The Luma gen2 has been developed to optimize and simplify spare part repair and maintenance work using a new plug & play GearFlex module containing all electrical components in an easy to handle and accessible box inside the housing. As a company conscious about the impact of light on the environment and biodiversity, we also equipped the Luma gen2 with dedicated light control that help with maintaining the optimal ecosystems for bats or preserve a dark night sky.

**Product data**

| General Information | | | |
|---|---|---|---|
| Lamp family code | LED120 (LED module 12000 lm) | Light source replaceable | Yes |
| | | Number of gear units | 1 unit |

Datasheet, 2024, May 31 — data subject to change

**Luma gen2**

| | |
|---|---|
| Driver included | Yes |
| Light source engine type | LED |
| Service tag | Yes |
| Product family code | BGP703 (LUMA GEN2 MINI) |
| Lighting Technology | LED |
| Value bubble | Specification |
| **Light Technical** | |
| Upward light output ratio | 0 |
| Luminous Flux | 10,800 lm |
| Standard tilt angle posttop | - |
| Standard tilt angle side entry | 0° |
| Luminous Efficacy (rated) [lm/W] | 137 lm/W |
| Correlated Color Temperature (Nom) | 3000 K |
| Color rendering index (CRI) | >70 |
| Light source color | 730 warm white |
| Optical cover type | Glass |
| Luminaire light beam spread | 70° x 37° |
| Optic type outdoor | Distribution medium 11 |
| **Operating and Electrical** | |
| Input Voltage | 220 to 240 V |
| Line Frequency | 50 to 60 Hz |
| Inrush current | 47 A |
| Inrush time | 0.25 ms |
| Power Consumption | 79 W |
| Power Factor (Function) | 0.99 |
| Connection | Connection unit 5-pole |
| Cable | - |
| Number of products on MCB of 16 A type B | 10 |
| **Temperature** | |
| Ambient temperature range | -40 to +35 °C |
| **Controls and Dimming** | |
| Dimmable | Yes |
| Driver/power unit/transformer | Power supply unit with DynaDimmer |
| Control interface | Programmable (via DALI or NFC) stand-alone dimming |
| Constant light output | No |
| **Mechanical and Housing** | |
| Housing Material | Aluminum die cast |
| Reflector material | - |
| Optic material | Polymethyl methacrylate |
| Optical cover material | Glass |
| Fixation material | Aluminum |
| Housing Color | Gray |
| Mounting device | Side-entry for diameter 42 to 60 mm |
| Optical cover shape | Flat |
| Optical cover finish | Clear |

| | |
|---|---|
| Overall length | 704 mm |
| Overall width | 295 mm |
| Overall height | 148 mm |
| Effective projected area | 0.0369 m² |
| Dimensions (Height x Width x Depth) | 148 x 295 x 704 mm |
| **Approval and Application** | |
| Ingress protection code | IP66 (Dust penetration-protected, jet-proof) |
| Mech. impact protection code | IK10 (20 J vandal-resistant) |
| Surge Protection (Common/Differential) | Luminaire surge protection level until 10 kV differential mode and 10 kV common mode |
| Sustainability rating | Lighting for circularity |
| Protection class IEC | Safety class I |
| Flammability mark | - |
| CE mark | Yes |
| ENEC mark | ENEC plus mark |
| Warranty period | 5 years |
| EU RoHS compliant | Yes |
| **Initial Performance (IEC Compliant)** | |
| Luminous flux tolerance | +/- 7% |
| Initial chromaticity | - |
| Power consumption tolerance | +/-10% |
| Init. Color Rendering Index Tolerance | +/-2 |
| **Over Time Performance (IEC Compliant)** | |
| Control gear failure rate at median useful life | 0 % |
| life 50000 h | - |
| Control gear failure rate at median useful life | 10 % |
| life 100000 h | - |
| Lumen maintenance at median useful life* | L96 |
| 50000 h | - |
| Lumen maintenance at median useful life* | L88 |
| 100000 h | - |
| **Application Conditions** | |
| Performance ambient temperature Tq | 25 °C |
| Maximum dim level | 30% |
| **Product Data** | |
| Order product name | BGP703 LED120-4S/730 DM11 DDF27 D18 SRG1 |
| Full product name | BGP703 LED120-4S/730 DM11 DDF27 D18 SRG1 |
| Full product code | 871951455897400 |
| Order code | 910505838802 |
| Material Nr. (12NC) | 910503838802 |
| Numerator - Quantity Per Pack | 1 |
| Net Weight (Piece) | 9.050 kg |
| EAN/UPC - Product/Case | 8719514558974 |

Datasheet, 2024, May 31 — 2 — data subject to change

Orchards on Hudson Residential
Dock Road
Marlborough, NY

| No. | Revision | Date | Appvd. |
|---|---|---|---|
| 1 | Town Resubmission | 10/25/2025 | AL |
| 2 | Town Resubmission | 3/21/2025 | AL |

Designed by DR | Checked by AL

Issued for: Site Plan Approval — Date: August 9, 2024

Not Approved for Construction

Drawing Title: Overall Photometric Plan

Drawing Number: C8.00

Sheet 39 of 47

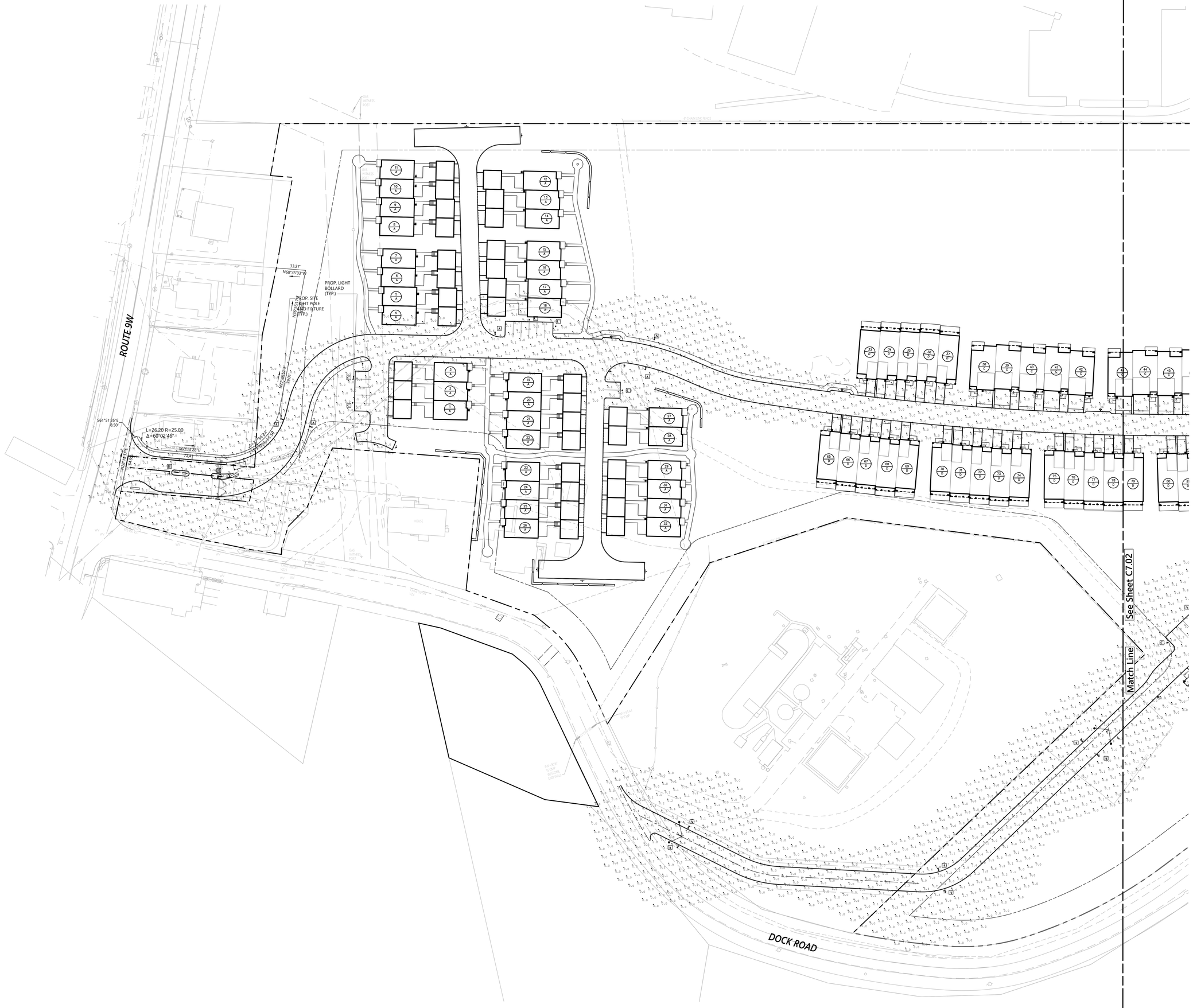
Project Number: 20578.01




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0 20 40 80 Feet

# Orchards on Hudson Residential

Dock Road
Marlborough, NY

| No. | Revision | Date | Appvd. |
|---|---|---|---|
| 1 | Town Resubmission | 10/25/2025 | AL |
| 2 | Town Resubmission | 3/21/2025 | AL |

Designed by DR | Checked by AL

Issued for: Site Plan Approval | Date: August 9, 2024

Not Approved for Construction

Drawing Title
## Photometric Plan

Drawing Number
## C8.01

Sheet 40 of 47

Project Number 20578.01

STATE OF NEW YORK
ANGELO V. LANNI
LICENSED PROFESSIONAL ENGINEER
085718

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0 20 40 80 Feet

# Orchards on Hudson Residential

Dock Road
Marlborough, NY

| No. | Revision | Date | Appvd. |
|---|---|---|---|
| 1 | Town Resubmission | 10/25/2025 | AL |
| 2 | Town Resubmission | 3/21/2025 | AL |

Designed by: DR
Checked by: AL

Issued for: Site Plan Approval
Date: August 9, 2024

Not Approved for Construction

Drawing Title
## Photometric Plan

Drawing Number
C8.02

Sheet 41 of 47

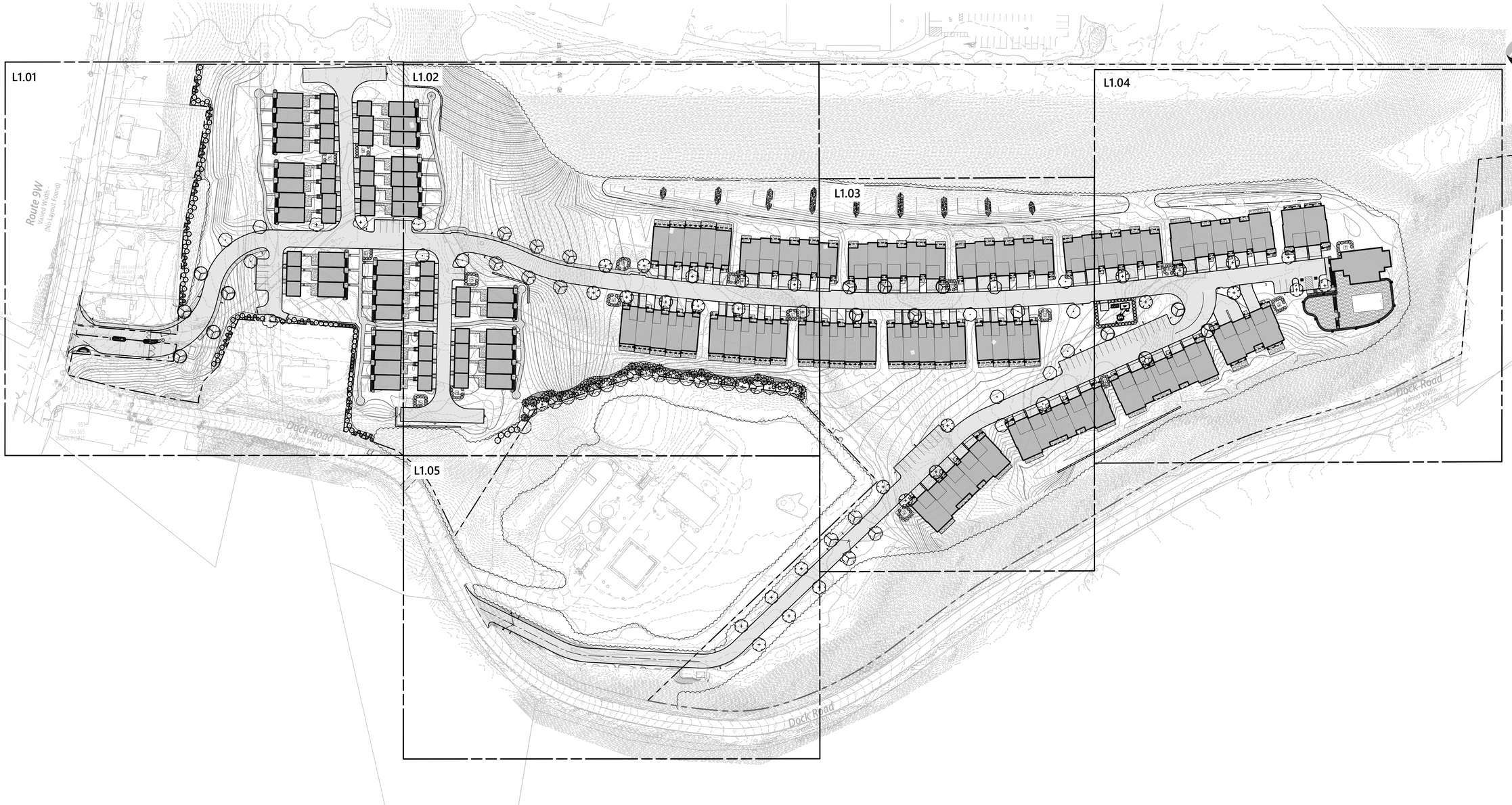
Project Number
20578.01

STATE OF NEW YORK
CHRISTOPHER J. CARUSO
085718
LICENSED PROFESSIONAL ENGINEER

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## OVERALL PLANT SCHEDULE

| CODE | QTY | BOTANICAL NAME | COMMON NAME | SIZE |
|---|---|---|---|---|
| **EVERGREEN TREES** | | | | |
| AC | 5 | Abies concolor | White Fir | 10 - 12` HT. |
| JVE | 72 | Juniperus virginiana `Emerald Sentinal` | Eastern Redcedar | 10 - 12` HT. |
| PC | 68 | Picea abies `Cupressina' | Cupressina Norway Spruce | 10 - 12` HT. |
| PG | 23 | Picea glauca | White Spruce | 10 - 12` HT. |
| **SHADE TREES** | | | | |
| ARF | 14 | Acer rubrum 'Frank Jr.' | Redpointe® Maple | 2 1/2 - 3" CAL. |
| GBA | 14 | Ginkgo biloba `Autumn Gold` TM | Maidenhair Tree | 2 1/2 - 3" CAL. |
| LL | 4 | Larix laricina | Tamarack | 2 1/2 - 3" CAL. |
| LS | 16 | Liquidambar styraciflua | Sweet Gum | 2 1/2 - 3" CAL. |
| PAM | 17 | Platanus x acerifolia 'Morton Circle' | Exclamation!™ London Plane Tree | 2 1/2 - 3" CAL. |
| QMC | 3 | Quercus muehlenbergii | Chinkapin Oak | 2 1/2 - 3" CAL. |
| QRO | 11 | Quercus robur | English Oak | 2 1/2 - 3" CAL. |
| UDJ | 15 | Ulmus davidiana japonica `Morton` | Accolade® Elm | 2 1/2 - 3" CAL. |
| **SHRUBS** | | | | |
| CG | 24 | Cornus racemosa | Gray Dogwood | 36 - 42" HT./SPD. |
| HQ | 53 | Hydrangea quercifolia | Oakleaf Hydrangea | 18 - 24" HT / SPD |
| IGG | 347 | Ilex glabra 'SMNIGAB17' | Gem Box® Inkberry Holly | 12 - 18" HT./SPD. |
| LB | 31 | Lindera benzoin | Spicebush | 30 - 36" HT./SPD. |
| PJM | 180 | Pieris japonica 'Mountain Fire' | Mountain Fire Japanese Pieris | 18 - 24" HT / SPD |
| PLS | 91 | Prunus laurocerasus `Schipkaensis` | Schipka Laurel | 30 - 36" HT./SPD. |

| CODE | QTY | BOTANICAL NAME | COMMON NAME | SIZE | SPACING |
|---|---|---|---|---|---|
| **ORNAMENTAL GRASSES** | | | | | |
| CAK | 213 | Calamagrostis x acutiflora `Karl Foerster` | Feather Reed Grass | #1 CONT. | 24" o.c. |
| DCG | 69 | Deschampsia cespitosa `Goldtau` | Gold Dew Tufted Hairgrass | 5" Plug | 12" o.c. |
| DCN | 1,487 | Deschampsia cespitosa 'Northern Lights' | Northern Lights Tufted Hair Grass | 5" Plug | 12" o.c. |
| **PERENNIALS** | | | | | |
| CMI | 600 | Carex morrowii 'Ice Dance' | Ice Dance Japanese Sedge | 5" Plug | 12" o.c. |
| NJW | 57 | Nepeta x faassenii `Junior Walker` | Junior Walker Catmint | #1 CONT. | 24" o.c. |
| PA | 260 | Polystichum acrostichoides | Christmas Fern | #1 CONT. | 18" o.c. |

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0 30 60 120 Feet

# Orchards on Hudson Residential

Dock Road
Marlborough, NY

| No. | Revision | Date | Appvd. |
|---|---|---|---|
| 1 | Town Resubmission | 10/25/2025 | AL |
| 2 | Town Resubmission | 3/21/2025 | AL |

Designed by: CN
Checked by: JCV

Issued for: Site Plan Approval
Date: August 9, 2024

Not Approved for Construction

Drawing Title: Overall Planting Plan

REGISTERED LANDSCAPE ARCHITECT — JOHN CARLOS VALDEZ — 002183 — STATE OF NEW YORK

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Drawing Number: L1.00

Sheet 42 of 48

Project Number: 20578.01

Saved Thursday, March 20, 2025 2:12:29 PM ACRESPO-CALAMIA Plotted Thursday, March 20, 2025 4:44:14 PM Ashley Crespo-Calamia

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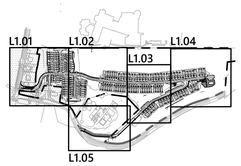
## PLANT SCHEDULE L1.01

| CODE | QTY | BOTANICAL NAME | COMMON NAME | SIZE |
|---|---|---|---|---|
| **EVERGREEN TREES** | | | | |
| JVE | 72 | Juniperus virginiana `Emerald Sentinal` | Eastern Redcedar | 10 - 12` HT. |
| PC | 68 | Picea abies 'Cupressina' | Cupressina Norway Spruce | 10 - 12` HT. |
| **SHADE TREES** | | | | |
| ARF | 5 | Acer rubrum 'Frank Jr.' | Redpointe® Maple | 2 1/2 - 3" CAL. |
| LS | 3 | Liquidambar styraciflua | Sweet Gum | 2 1/2 - 3" CAL. |
| QMC | 3 | Quercus muehlenbergii | Chinkapin Oak | 2 1/2 - 3" CAL. |
| **SHRUBS** | | | | |
| HQ | 10 | Hydrangea quercifolia | Oakleaf Hydrangea | 18 - 24" HT / SPD |
| IGG | 139 | Ilex glabra 'SMNIGAB17' | Gem Box® Inkberry Holly | 12 - 18" HT./SPD. |
| PJM | 21 | Pieris japonica 'Mountain Fire' | Mountain Fire Japanese Pieris | 18 - 24" HT / SPD |

| CODE | QTY | BOTANICAL NAME | COMMON NAME | SIZE | SPACING |
|---|---|---|---|---|---|
| **ORNAMENTAL GRASSES** | | | | | |
| DCG | 69 | Deschampsia cespitosa 'Goldtau' | Gold Dew Tufted Hairgrass | 5" Plug | 12" o.c. |
| DCN | 871 | Deschampsia cespitosa 'Northern Lights' | Northern Lights Tufted Hair Grass | 5" Plug | 12" o.c. |
| **PERENNIALS** | | | | | |
| CMI | 27 | Carex morrowii 'Ice Dance' | Ice Dance Japanese Sedge | 5" Plug | 12" o.c. |
| NJW | 25 | Nepeta x faassenii `Junior Walker` | Junior Walker Catmint | #1 CONT. | 24" o.c. |




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0 10 20 40 Feet

# Orchards on Hudson Residential

Dock Road
Marlborough, NY

| No. | Revision | Date | Appvd. |
|---|---|---|---|
| 1 | Town Resubmission | 10/25/2025 | AL |
| 2 | Town Resubmission | 3/21/2025 | AL |

Designed by: CN
Checked by: JCV

Issued for: Site Plan Approval
Date: August 9, 2024

Not Approved for Construction

Drawing Title: Planting Plan

REGISTERED LANDSCAPE ARCHITECT — JOHN C. VALENTINE — 002183 — STATE OF NEW YORK

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Drawing Number: L1.01

Sheet 43 of 48

Project Number: 20578.01

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## PLANT SCHEDULE L1.02

| CODE | QTY | BOTANICAL NAME | COMMON NAME | SIZE | SPACING |
|---|---|---|---|---|---|
| **EVERGREEN TREES** | | | | | |
| AC | 5 | Abies concolor | White Fir | 10 - 12` HT. | |
| PG | 23 | Picea glauca | White Spruce | 10 - 12` HT. | |
| **SHADE TREES** | | | | | |
| GBA | 5 | Ginkgo biloba `Autumn Gold` TM | Maidenhair Tree | 2 1/2 - 3" CAL. | |
| LL | 4 | Larix laricina | Tamarack | 2 1/2 - 3" CAL. | |
| LS | 3 | Liquidambar styraciflua | Sweet Gum | 2 1/2 - 3" CAL. | |
| PAM | 13 | Platanus x acerifolia 'Morton Circle' | Exclamation!™ London Plane Tree | 2 1/2 - 3" CAL. | |
| QRO | 11 | Quercus robur | English Oak | 2 1/2 - 3" CAL. | |
| UDJ | 6 | Ulmus davidiana japonica `Morton` | Accolade® Elm | 2 1/2 - 3" CAL. | |
| **SHRUBS** | | | | | |
| CG | 24 | Cornus racemosa | Gray Dogwood | 36 - 42" HT./SPD. | |
| HQ | 16 | Hydrangea quercifolia | Oakleaf Hydrangea | 18 - 24" HT / SPD | |
| IGG | 111 | Ilex glabra 'SMNIGAB17' | Gem Box® Inkberry Holly | 12 - 18" HT./SPD. | |
| LB | 31 | Lindera benzoin | Spicebush | 30 - 36" HT./SPD. | |
| PJM | 81 | Pieris japonica 'Mountain Fire' | Mountain Fire Japanese Pieris | 18 - 24" HT / SPD | |
| PLS | 57 | Prunus laurocerasus `Schipkaensis` | Schipka Laurel | 30 - 36" HT./SPD. | |
| **ORNAMENTAL GRASSES** | | | | | |
| DCN | 489 | Deschampsia cespitosa 'Northern Lights' | Northern Lights Tufted Hair Grass | 5" Plug | 12" o.c. |
| **PERENNIALS** | | | | | |
| CMI | 160 | Carex morrowii 'Ice Dance' | Ice Dance Japanese Sedge | 5" Plug | 12" o.c. |
| PA | 260 | Polystichum acrostichoides | Christmas Fern | #1 CONT. | 18" o.c. |

See Sheet L1.01

Match Line

EXISTING VEGETATED WOODED AREA TO REMAIN, TYP.

TOPSOIL & SEED MIX, TYP.

PROPOSED BEDLINE, TYP.

COORDINATE PROPOSED PLANTINGS WITH EXISTING CANOPY ABOVE, TYP.

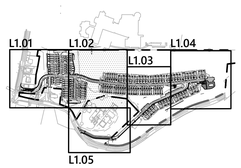
APPROXIMATE LOCATION OF EXISTING TREES, TYP.

See Sheet L1.03

Match Line

Match Line See Sheet L1.05

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**Key**
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0 10 20 40 Feet

# Orchards on Hudson Residential

Dock Road
Marlborough, NY

| No. | Revision | Date | Appvd. |
|---|---|---|---|
| 1 | Town Resubmission | 10/25/2025 | AL |
| 2 | Town Resubmission | 3/21/2025 | AL |

Designed by: CN
Checked by: JCV

Issued for: Site Plan Approval
Date: August 9, 2024

Not Approved for Construction

Drawing Title: Planting Plan

Drawing Number: L1.02

Sheet 44 of 48

Project Number: 20578.01

REGISTERED LANDSCAPE ARCHITECT
JOHN CARLO VALENTINO
092183
STATE OF NEW YORK

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## PLANT SCHEDULE L1.03

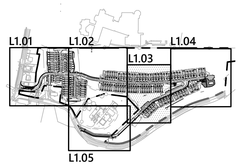
| CODE | QTY | BOTANICAL NAME | COMMON NAME | SIZE |
|---|---|---|---|---|
| **SHADE TREES** | | | | |
| ARF | 5 | Acer rubrum 'Frank Jr.' | Redpointe® Maple | 2 1/2 - 3" CAL. |
| LS | 10 | Liquidambar styraciflua | Sweet Gum | 2 1/2 - 3" CAL. |
| PAM | 4 | Platanus x acerifolia 'Morton Circle' | Exclamation!™ London Plane Tree | 2 1/2 - 3" CAL. |
| UDJ | 4 | Ulmus davidiana japonica 'Morton' | Accolade® Elm | 2 1/2 - 3" CAL. |
| **SHRUBS** | | | | |
| HQ | 14 | Hydrangea quercifolia | Oakleaf Hydrangea | 18 - 24" HT / SPD |
| IGG | 34 | Ilex glabra 'SMNIGAB17' | Gem Box® Inkberry Holly | 12 - 18" HT./SPD. |
| PJM | 34 | Pieris japonica 'Mountain Fire' | Mountain Fire Japanese Pieris | 18 - 24" HT / SPD |

| CODE | QTY | BOTANICAL NAME | COMMON NAME | SIZE | SPACING |
|---|---|---|---|---|---|
| **PERENNIALS** | | | | | |
| CMI | 264 | Carex morrowii 'Ice Dance' | Ice Dance Japanese Sedge | 5" Plug | 12" o.c. |

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0 10 20 40 Feet

# Orchards on Hudson Residential

Dock Road
Marlborough, NY

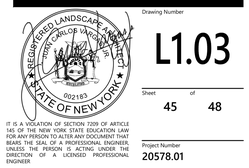
| No. | Revision | Date | Apprvd. |
|---|---|---|---|
| 1 | Town Resubmission | 10/25/2025 | AL |
| 2 | Town Resubmission | 3/21/2025 | AL |

Designed by CN | Checked by JCV

Issued for: **Site Plan Approval** | Date: **August 9, 2024**

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Drawing Title
## Planting Plan




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Drawing Number: **L1.03**

Sheet 45 of 48

Project Number: **20578.01**

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See Sheet L1.03

Match Line

EXISTING VEGETATED WOODED AREA TO REMAIN, TYP.

TOPSOIL & SEED MIX, TYP.

CLUBHOUSE
3,215 GSF
FFE = 84.73

POOL

PROPOSED BEDLINE, TYP.

Dock Road
Varied Width
(No Layout Found)

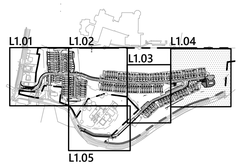
## PLANT SCHEDULE L1.04

| CODE | QTY | BOTANICAL NAME | COMMON NAME | SIZE | SPACING |
|---|---|---|---|---|---|
| **SHADE TREES** | | | | | |
| ARF | 4 | Acer rubrum 'Frank Jr.' | Redpointe® Maple | 2 1/2 - 3" CAL. | |
| GBA | 3 | Ginkgo biloba `Autumn Gold` TM | Maidenhair Tree | 2 1/2 - 3" CAL. | |
| UDJ | 5 | Ulmus davidiana japonica `Morton` | Accolade® Elm | 2 1/2 - 3" CAL. | |
| **SHRUBS** | | | | | |
| HQ | 13 | Hydrangea quercifolia | Oakleaf Hydrangea | 18 - 24" HT / SPD | |
| IGG | 62 | Ilex glabra 'SMNIGAB17' | Gem Box® Inkberry Holly | 12 - 18" HT./SPD. | |
| PJM | 44 | Pieris japonica 'Mountain Fire' | Mountain Fire Japanese Pieris | 18 - 24" HT / SPD | |
| PLS | 34 | Prunus laurocerasus `Schipkaensis` | Schipka Laurel | 30 - 36" HT./SPD. | |
| **ORNAMENTAL GRASSES** | | | | | |
| CAK | 213 | Calamagrostis x acutiflora `Karl Foerster` | Feather Reed Grass | #1 CONT. | 24" o.c. |
| DCN | 127 | Deschampsia cespitosa 'Northern Lights' | Northern Lights Tufted Hair Grass | 5" Plug | 12" o.c. |
| **PERENNIALS** | | | | | |
| CMI | 142 | Carex morrowii 'Ice Dance' | Ice Dance Japanese Sedge | 5" Plug | 12" o.c. |
| NJW | 32 | Nepeta x faassenii `Junior Walker` | Junior Walker Catmint | #1 CONT. | 24" o.c. |

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**Key**
Not To Scale

0 10 20 40 Feet

# Orchards on Hudson Residential

Dock Road
Marlborough, NY

| No. | Revision | Date | Appvd. |
|---|---|---|---|
| 1 | Town Resubmission | 10/25/2025 | AL |
| 2 | Town Resubmission | 3/21/2025 | AL |

Designed by: CN
Checked by: JCV

Issued for: Site Plan Approval
Date: August 9, 2024

Not Approved for Construction

Drawing Title: Planting Plan

REGISTERED LANDSCAPE ARCHITECT 002183 STATE OF NEW YORK

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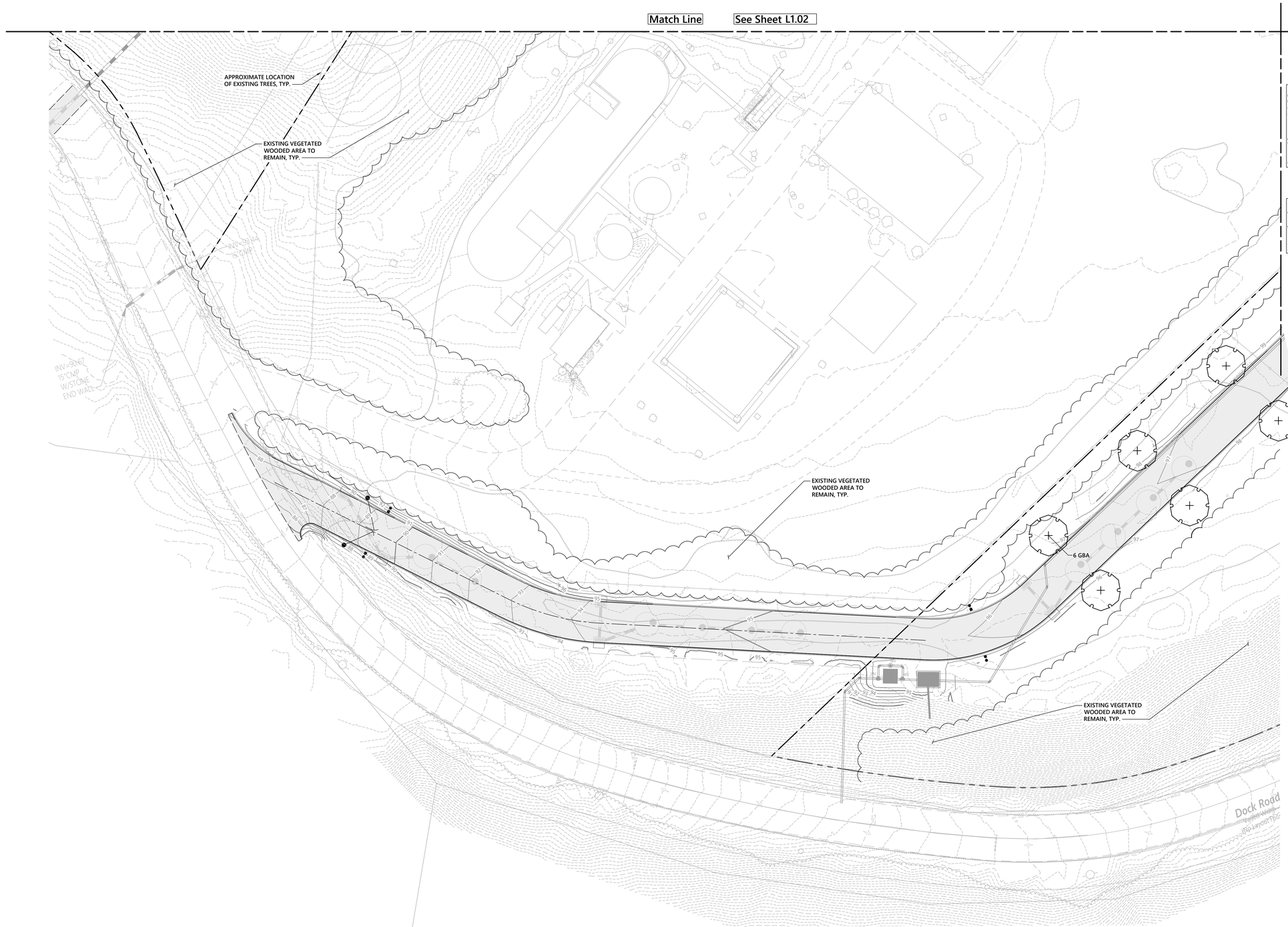
Drawing Number: L1.04

Sheet 46 of 48

Project Number: 20578.01

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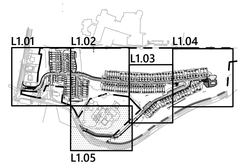

**PLANT SCHEDULE L1.05**

| CODE | QTY | BOTANICAL NAME | COMMON NAME | SIZE |
|---|---|---|---|---|
| SHADE TREES | | | | |
| GBA | 6 | Ginkgo biloba 'Autumn Gold' TM | Maidenhair Tree | 2 1/2 - 3" CAL. |

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**Engineering, Surveying, Landscape Architecture and Geology, PC**
100 Motor Parkway
Suite 350
Hauppauge, NY 11788
631.787.3400




**Key**
Not To Scale

0 10 20 40 Feet

# Orchards on Hudson Residential

**Dock Road**
**Marlborough, NY**

| No. | Revision | Date | Apprvd. |
|---|---|---|---|
| 1 | Town Resubmission | 10/25/2025 | AL |
| 2 | Town Resubmission | 3/21/2025 | AL |

Designed by CN | Checked by JCV

Issued for
**Site Plan Approval**

Date
**August 9, 2024**

**Not Approved for Construction**

Drawing Title
**Planting Plan**



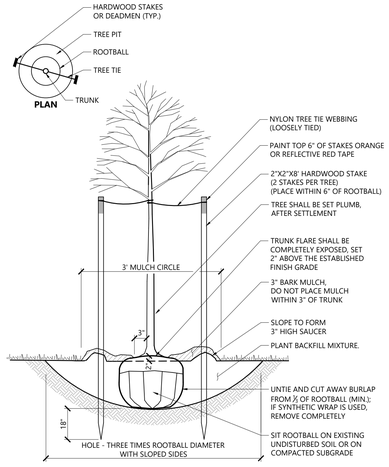

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Drawing Number
**L1.05**

Sheet 47 of 48

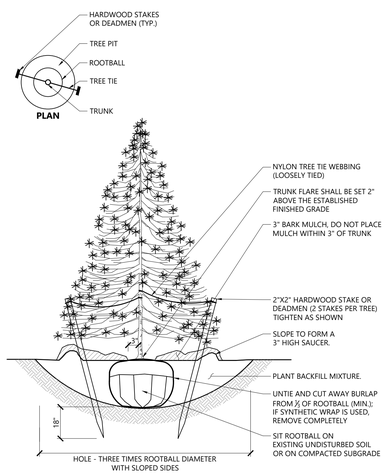
Project Number
**20578.01**

Saved Thursday, March 20, 2025 2:12:29 PM ACRESPO-CALAMIA Plotted Thursday, March 20, 2025 4:45:30 PM Ashley Crespo-Calamia



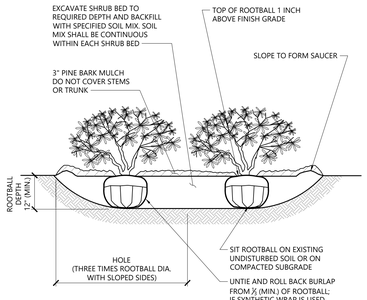

## Tree Planting (For Trees Under 4" Caliper) 9/21

N.T.S. Source: VHB LD_602




## Evergreen Tree Planting 9/21

N.T.S. Source: VHB LD_604




**NOTES**

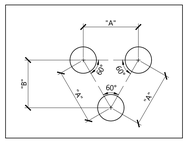
1. LOOSEN ROOTS AT THE OUTER EDGE OF ROOTBALL OF CONTAINER GROWN SHRUBS.

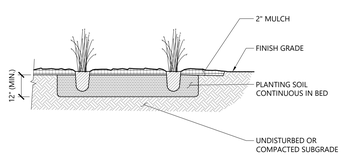
## Shrub Bed Planting 1/16

N.T.S. Source: VHB LD_601

**PLANT SPACING**

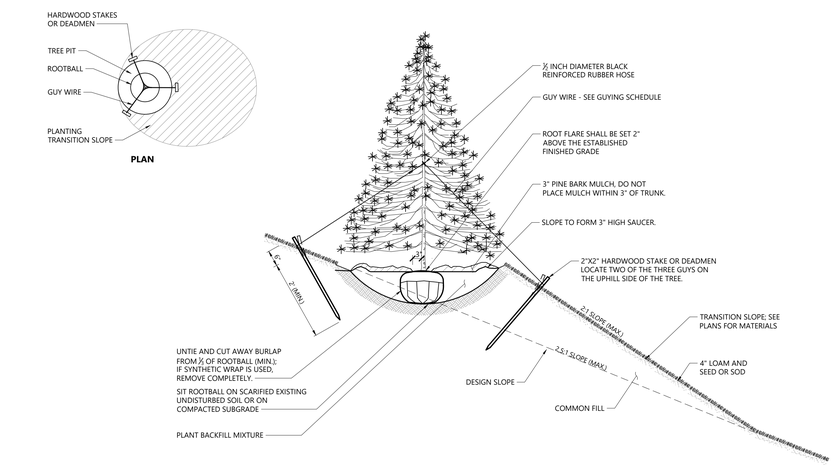
| PLANT SPACING("A") | ROW SPACING ("B") |
|---|---|
| 6 IN. O.C. | 5 IN. O.C. |
| 8 IN. O.C. | 7 IN. O.C. |
| 10 IN. O.C. | 8⅔ IN. O.C. |
| 12 IN. O.C. | 10⅓ IN. O.C. |
| 15 IN. O.C. | 13 IN. O.C. |
| 18 IN. O.C. | 16 IN. O.C. |
| 24 IN. O.C. | 21 IN. O.C. |
| 30 IN. O.C. | 26 IN. O.C. |
| 36 IN. O.C. | 30 IN. O.C. |
| 48 IN. O.C. | 42 IN. O.C. |
| 54 IN. O.C. | 48 IN. O.C. |
| 60 IN. O.C. | 54 IN. O.C. |




## Perennial and Ornamental Grass Planting 1/16

N.T.S. Source: VHB LD_618




## Tree Planting on Slope 1/16

N.T.S. Source: VHB LD_605

### Tree Protection

1. EXISTING TREES TO REMAIN SHALL BE PROTECTED WITH TEMPORARY CONSTRUCTION FENCE. ERECT FENCE AT EDGE OF THE TREE DRIPLINE PRIOR TO START OF CONSTRUCTION.
2. CONTRACTOR SHALL NOT OPERATE VEHICLES WITHIN THE TREE PROTECTION AREA. CONTRACTOR SHALL NOT STORE VEHICLES OR MATERIALS, OR DISPOSE OF ANY WASTE MATERIALS, WITHIN THE TREE PROTECTION AREA.
3. DAMAGE TO EXISTING TREES CAUSED BY THE CONTRACTOR SHALL BE REPAIRED BY A CERTIFIED ARBORIST AT THE CONTRACTOR'S EXPENSE.
4. NO UNAUTHORIZED TREE REMOVALS, UNLESS AS SPECIFIED ON CONTRACT DOCUMENTS, APPROVED BY LOCAL MUNICIPALITIES, AND LANDSCAPE ARCHITECT.

### Edge of Woods Clearing

1. EXISTING TREES TO REMAIN SHALL BE PROTECTED WITH TEMPORARY EROSION CONTROL FENCE AND HAY BALE BARRIER. ERECT BARRIER AT EDGE OF THE EARTHWORK CUT LINE PRIOR TO TREE CLEARING. LAY OUT THIS LINE BY FIELD SURVEY.

### Plant Maintenance Notes

1. CONTRACTOR SHALL PROVIDE COMPLETE MAINTENANCE OF THE LAWNS AND PLANTINGS. NO PERMANENT IRRIGATION SYSTEM IS PROPOSED FOR THIS SITE. THE CONTRACTOR SHALL SUPPLY SUPPLEMENTAL WATERING FOR NEW LAWNS AND PLANTINGS DURING THE PLANT GUARANTEE PERIOD.
2. CONTRACTOR SHALL PROVIDE ALL MATERIALS, LABOR, AND EQUIPMENT FOR THE COMPLETE LANDSCAPE MAINTENANCE WORK. WATER SHALL BE PROVIDED BY THE CONTRACTOR.
3. WATERING SHALL BE REQUIRED DURING THE GROWING SEASON, WHEN NATURAL RAINFALL IS BELOW ONE INCH PER WEEK.
4. WATER SHALL BE APPLIED IN SUFFICIENT QUANTITY TO THOROUGHLY SATURATE THE SOIL IN THE ROOT ZONE OF EACH PLANT.
5. CONTRACTOR SHALL REPLACE DEAD PLANTS AND LESS THAN 75%-ALIVE PLANTS AT THE END OF THE PLANT GUARANTEE PERIOD. CONTRACTOR SHALL TURN OVER MAINTENANCE TO THE FACILITY MAINTENANCE STAFF AT THAT TIME.

### Turf Seeding Notes:

1. **SEED MIX 'A':** UNLESS OTHERWISE NOTED, ALL DISTURBED LANDSCAPE AREAS NOT BEING PLANTED, SHALL BE SEEDED WITH THE LATEST VERSION OF THE FOLLOWING SEED MIX:

   TURF-TYPE TALL FESCUE BLEND:

   | VARIETY | PURITY % | GERM % | ORIGIN |
   |---|---|---|---|
   | 4TH MILLENNIUM SRP TALL FESCUE | 33.13 | 94 | OR |
   | RAPTOR III TALL FESCUE | 33.28 | 95 | OR |
   | AVENGER III TALL FESCUE | 32.97 | 97 | OR |

   WEEDS %: 0.00 OTHER CROP %: 0.00 INERT %: 0.62

   OR, APPROVED EQUAL

   SEEDING RATE SHALL BE 8 LBS. PER 1,000.00 SQ. FT.

2. **SEED MIX 'A' - ALTERNATE BID** - UNLESS OTHERWISE NOTED, ALL DISTURBED LANDSCAPE AREAS NOT BEING PLANTED OR MULCHED, SHALL BE **SODDED** WITH A TURF-TYPE TALL FESCUE BLEND SOD PRODUCT.
3. ALL SEEDING SHALL BE HYDRO-SEEDED WITH THE FOLLOWING ENGINEERED WOOD FIBER HYDROMULCH AS PER MANUFACTURER'S SPECIFICATIONS. SUBMIT SAMPLE & PRODUCT DATA FOR APPROVAL PRIOR TO ORDERING.

   FLEXTERRA HP-FGM - AS MANUFACTURED BY:
   PROFILE PRODUCTS
   750 W. LAKE COOK RD
   SUITE 440
   BUFFALO GROVE, IL 60089
   1-800-207-6457

   OR, APPROVED EQUAL.

4. CONTRACTOR SHALL SUBMIT SEED: SOURCE, SAMPLE, AND CERTIFIED ANALYSIS; AND HYDRO-MULCH SAMPLE & PRODUCT DATA FOR LANDSCAPE ARCHITECT APPROVAL PRIOR TO ORDERING.
5. LAWNS SHALL EXHIBIT A UNIFORM, THICK, WELL-DEVELOPED STAND OF GRASS AND SHALL NOT HAVE BARE SPOTS IN EXCESS OF FOUR INCHES IN DIAMETER. BARE SPOTS SHALL COMPRISE NO MORE THAN TWO-PERCENT (2%) OF THE TOTAL AREA OF THE LAWN.

### Planting Notes

1. ALL PROPOSED PLANTING LOCATIONS SHALL BE STAKED AS SHOWN ON THE PLANS FOR FIELD REVIEW AND APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
2. CONTRACTOR SHALL VERIFY LOCATIONS OF ALL BELOW GRADE AND ABOVE GROUND UTILITIES AND NOTIFY OWNERS REPRESENTATIVE OF CONFLICTS.
3. NO PLANT MATERIALS SHALL BE INSTALLED UNTIL ALL GRADING AND CONSTRUCTION HAS BEEN COMPLETED IN THE IMMEDIATE AREA. CONTRACTOR SHALL NOTIFY OWNER'S REPRESENTATIVE OF ANY CONFLICT.
4. A 3-INCH DEEP MULCH PER SPECIFICATION SHALL BE INSTALLED UNDER ALL TREES AND SHRUBS, AND IN ALL PLANTING BEDS, UNLESS OTHERWISE INDICATED ON THE PLANS, OR AS DIRECTED BY OWNER'S REPRESENTATIVE.
5. ALL PLANTING BACKFILL SOILS SHALL RECEIVE CERTIFIED WEED-FREE FULLY COMPOSTED LEAF MOLD SOIL AMENDMENT AT A RATE OF 33% (1 PART COMPOST TO 2 PARTS PLANTING SOIL). SUBMIT COMPOST CERTIFICATION & PRODUCT DATA PRIOR TO ORDERING FOR APPROVAL.
6. ALL TREES SHALL BE BALLED AND BURLAPPED, UNLESS OTHERWISE NOTED IN THE DRAWINGS OR SPECIFICATION, OR APPROVED BY THE OWNER'S REPRESENTATIVE.
7. FINAL QUANTITY FOR EACH PLANT TYPE SHALL BE AS GRAPHICALLY SHOWN ON THE PLAN. THIS NUMBER SHALL TAKE PRECEDENCE IN CASE OF ANY DISCREPANCY BETWEEN QUANTITIES SHOWN ON THE PLANT LIST AND ON THE PLAN. THE CONTRACTOR SHALL REPORT ANY DISCREPANCIES BETWEEN THE NUMBER OF PLANTS SHOWN ON THE PLANT LIST AND PLANT LABELS PRIOR TO BIDDING.
8. ANY PROPOSED PLANT SUBSTITUTIONS MUST BE REVIEWED BY LANDSCAPE ARCHITECT AND APPROVED IN WRITING BY THE OWNER'S REPRESENTATIVE.
9. ALL PLANT MATERIALS INSTALLED SHALL MEET THE LATEST SPECIFICATIONS OF THE "AMERICAN STANDARDS FOR NURSERY STOCK" PUBLISHED BY AMERICAN HORT AND CONTRACT DOCUMENTS.
10. ALL PLANT MATERIALS SHALL BE GUARANTEED FOR TWO YEARS FOLLOWING DATE OF FINAL ACCEPTANCE. DEAD PLANTS, AND PLANTS LESS THAN 75% ALIVE SHALL BE REPLACED. PLANT GUARANTEE DATE STARTS UPON FINAL ACCEPTANCE IN WRITING FROM LANDSCAPE ARCHITECT ACKNOWLEDGING SUCCESSFUL COMPLETION OF PROPOSED LANDSCAPE INSTALLATION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, AND PUNCH LISTS AND DEFICIENCIES HAVE BEEN RESOLVED.
11. AREAS DESIGNATED "TOPSOIL & SEED" SHALL RECEIVE MINIMUM 6" OF TOPSOIL AND SPECIFIED SEED MIX. LAWNS OVER 2:1 SLOPE SHALL BE PROTECTED WITH EROSION CONTROL FABRIC, SUBMIT PRODUCT DATA FOR APPROVAL.
12. ALL DISTURBED AREAS NOT OTHERWISE NOTED ON CONTRACT DOCUMENTS SHALL BE TOPSOIL AND SEEDED OR MULCHED AS DIRECTED BY OWNER'S REPRESENTATIVE.
13. THIS PLAN IS INTENDED FOR PLANTING PURPOSES. REFER TO SITE / CIVIL DRAWINGS FOR ALL OTHER SITE CONSTRUCTION INFORMATION.
14. ALL SPECIFIED PLANT MATERIAL IS SUBJECT TO INSPECTION AND APPROVAL BY THE LANDSCAPE ARCHITECT AT BOTH THE NURSERY AND JOBSITE PRIOR TO INSTALLATION
15. CAREFULLY DISRUPT CIRCLING ROOTS FROM ALL CONTAINER-GROWN PLANTS, EXCEPT PLUGS, VIA TOOL SCARIFICATION OR BY HAND.
16. ALL B&B MATERIALS (I.E. BURLAP, TWINE, ETC) SHALL BE ALL BIO-DEGRADABLE MATERIALS.
17. ALL PLANTINGS SHALL RECEIVE BIOSTIMULANT (MYCORRHIZAL FUNGI) HYDROGEL, AS PER MANUFACTURER'S RECOMMENDED RATES. SUBMIT PRODUCT DATA FOR APPROVAL PRIOR TO ORDERING.
18. CONTRACTOR SHALL MAINTAIN (I.E. WEEDING, MULCHING, WATERING, CUT BEDS, REPLACEMENTS, ETC) ALL LANDSCAPE PLANTS AND AREAS WITHIN CONTRACT LIMITS DURING SPRING, SUMMER, AND FALL UNTIL EXPIRATION OF GUARANTEE PERIOD.
19. LANDSCAPE CONTRACTOR SHALL SUBMIT LETTER OF AGREEMENT TO THE PROPERTY OWNER ACKNOWLEDGING AND AGREEING TO FULFILLING THE SPECIFIED CONTRACTED GUARANTEE PERIOD AND MAINTENANCE AT NO-ADDITIONAL COST TO THE OWNER. SUBMIT LETTER FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.
20. CONTRACTOR SHALL REMOVE ALL TREE STAKING AND GUYING MATERIALS PRIOR TO THE EXPIRATION OF THE PLANT WARRANTY PERIOD, OR 1 YEAR FROM THE DATE OF INSTALLATION, WHICHEVER COMES FIRST.
21. ACCEPTABLE LANDSCAPE INSTALLATION WINDOWS SHALL BE FROM: APRIL 1ST TO MAY 31ST AND SEPTEMBER 15TH TO NOVEMBER 15TH. INSTALLATION OUTSIDE OF THESE WINDOWS WILL BE AT RISK.
22. ALL NURSERY PLANT IDENTIFICATION TAGS SHALL REMAIN ON PLANT MATERIALS UNTIL PUNCH LIST, CONTRACTOR SHALL REMOVE TAGS UPON FINAL ACCEPTANCE.

### Temporary Irrigation Notes

1. CONTRACTOR SHALL PROVIDE COMPLETE IRRIGATION SYSTEM DESIGN AND INSTALLATION FOR PLANTINGS AND LAWN AREAS. DESIGN SHALL BE CERTIFIED BY A PROFESSIONAL LANDSCAPE ARCHITECT, ENGINEER, OR CERTIFIED IRRIGATION DESIGNER. DESIGN PLANS SHALL BE SUBMITTED TO OWNER'S REPRESENTATIVE FOR APPROVAL.
2. ALL LAWN AREAS SHALL BE ZONED SEPARATELY FROM PLANTING (MULCH) BEDS AREAS.
3. CONTRACTOR SHALL PROVIDE ALL MATERIALS, LABOR, AND EQUIPMENT FOR THE COMPLETE INSTALLATION OF THE IRRIGATION SYSTEM.
4. ALL IRRIGATION PIPING SHALL BE PVC, SUBMIT PIPE SIZES AND TYPES FOR APPROVAL.
5. CONTRACTOR SHALL PROVIDE DRAWINGS, MATERIAL SPECIFICATIONS, SCHEMATICS, AND OTHER LITERATURE AS MAY BE REQUIRED, FOR ALL CONDUIT, CONTROLS,TIMERS, VALVES, SPRINKLER HEADS, CONNECTORS, WIRING, RAIN GAUGE, BACKFLOW PREVENTERS ETC. TO THE OWNER'S CONSTRUCTION MANAGER FOR APPROVAL PRIOR TO INSTALLATION.
6. IRRIGATION CONTROLLER SHALL BE AN EPA WATERSENSE-LABELED WEATHER-BASED IRRIGATION CONTROLLER.
7. CONTRACTOR SHALL COORDINATE HIS/HER WORK WITH THE GENERAL CONTRACTOR AND SUB CONTRACTORS.
8. (INSIDE BUILDING) BACKFLOW PREVENTER AND METER IS REQUIRED. IT SHALL BE IN CONFORMANCE WITH STATE AND MUNICIPAL REQUIREMENTS AND INSTALLED ACCORDANCE TO THE TOWN OF MARLBOROUGH WATER DEPARTMENT.

   (OUTSIDE BUILDING) BACKFLOW PREVENTER AND METER IS REQUIRED. IT SHALL BE IN CONFORMANCE WITH STATE AND MUNICIPAL REQUIREMENTS, LOCATE THIS EQUIPMENT IN A LOCKABLE 'HOT BOX'. INSTALL IN ACCORDANCE TO THE TOWN OF MARLBOROUGH WATER DEPARTMENT.
9. SITE CONTRACTOR SHALL PROVIDE 4" SCHEDULE 40 PVC SLEEVES & PVC CAPS, BOTH ENDS, UNDER PAVEMENT TO PROVIDE ACCESS FOR IRRIGATION LINES TO ALL IRRIGATED AREAS.
10. IRRIGATION CONTRACTOR SHALL DEMONSTRATE FULL FUNCTIONALITY AND ADEQUATE WATERING OF PLANTINGS TO OWNER AND LANDSCAPE CONTRACTOR. SUBMIT WRITTEN SIGN-OFF FROM LANDSCAPE CONTRACTOR TO LANDSCAPE ARCHITECT FOR APPROVAL.

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# Orchards on Hudson Residential

**Dock Road**
**Marlborough, NY**

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| 1 | Town Resubmission | 10/25/2025 | AL |
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Designed by: CN Checked by: JCV

Issued for: **Site Plan Approval** Date: **August 9, 2024**

Not Approved for Construction

Drawing Title: **Planting Notes and Details**




Drawing Number: **L2.00**

Sheet 48 of 48

Project Number: **20578.01**

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Saved Thursday, March 20, 2025 2:12:29 PM ACRESPO-CALAMIA Plotted Thursday, March 20, 2025 4:45:37 PM Ashley Crespo-Calamia

# THE APPROVED PLANS BY THE TOWN OF MARLBORO SHALL REPLACE THE PLANS WITHIN THIS SECTION PRIOR TO START OF CONSTRUCTION.

# Attachment C
# Soils Map

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

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

# Custom Soil Resource Report for Ulster County, New York




June 27, 2024

# Preface

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

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

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

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

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

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

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CF—Cut and fill land.....13
CnB—Chenango gravelly silt loam, 3 to 8 percent slopes.....14
FW—Fresh water marsh.....15
HgD—Hoosic gravelly loam, 15 to 25 percent slopes.....17
HSF—Hoosic soils, very steep.....18
ML—Made land.....19
Ra—Raynham silt loam.....21
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# How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

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

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

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

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

# Soil Map

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

# Custom Soil Resource Report
## Soil Map




Map Scale: 1:3,680 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

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

## MAP LEGEND

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

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

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

**Water Features**
- Streams and Canals

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

**Background**
- Aerial Photography

## MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Ulster County, New York
Survey Area Data: Version 22, Sep 5, 2023

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

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

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

# Map Unit Legend

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|---|---|---|---|
| CF | Cut and fill land | 0.2 | 0.9% |
| CnB | Chenango gravelly silt loam, 3 to 8 percent slopes | 3.0 | 12.1% |
| FW | Fresh water marsh | 0.3 | 1.1% |
| HgD | Hoosic gravelly loam, 15 to 25 percent slopes | 1.6 | 6.3% |
| HSF | Hoosic soils, very steep | 10.4 | 41.5% |
| ML | Made land | 0.1 | 0.5% |
| Ra | Raynham silt loam | 1.9 | 7.8% |
| RvA | Riverhead fine sandy loam, 0 to 3 percent slopes | 7.5 | 29.8% |
| **Totals for Area of Interest** | | **25.0** | **100.0%** |

# Map Unit Descriptions

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

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

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

mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

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

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

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

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

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

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

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

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

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

# Ulster County, New York

## CF—Cut and fill land

### Map Unit Setting

*National map unit symbol:* 9xg2
*Elevation:* 160 to 1,970 feet
*Mean annual precipitation:* 41 to 62 inches
*Mean annual air temperature:* 41 to 50 degrees F
*Frost-free period:* 110 to 200 days
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Udorthents and similar soils:* 80 percent
*Minor components:* 20 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Udorthents

#### Typical profile

*H1 - 0 to 4 inches:* gravelly sandy loam
*H2 - 4 to 70 inches:* very gravelly sandy loam

#### Properties and qualities

*Slope:* 0 to 8 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Somewhat excessively drained
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to high (0.06 to 5.95 in/hr)
*Depth to water table:* About 36 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum content:* 15 percent
*Available water supply, 0 to 60 inches:* Low (about 5.5 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 6s
*Hydrologic Soil Group:* B
*Hydric soil rating:* No

### Minor Components

#### Cayuga

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

#### Tunkhannock

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

#### Lyons

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

**Bath**

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

## CnB—Chenango gravelly silt loam, 3 to 8 percent slopes

### Map Unit Setting

*National map unit symbol:* 9xg8
*Elevation:* 600 to 1,800 feet
*Mean annual precipitation:* 41 to 62 inches
*Mean annual air temperature:* 41 to 50 degrees F
*Frost-free period:* 110 to 200 days
*Farmland classification:* All areas are prime farmland

### Map Unit Composition

*Chenango and similar soils:* 80 percent
*Minor components:* 20 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Chenango

#### Setting

*Landform:* Terraces, valley trains
*Landform position (two-dimensional):* Summit
*Landform position (three-dimensional):* Tread
*Down-slope shape:* Convex
*Across-slope shape:* Convex
*Parent material:* Gravelly loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits, derived mainly from sandstone, shale, and siltstone

#### Typical profile

*H1 - 0 to 9 inches:* gravelly silt loam
*H2 - 9 to 35 inches:* gravelly silt loam
*H3 - 35 to 80 inches:* extremely gravelly sand

#### Properties and qualities

*Slope:* 3 to 8 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Well drained
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 5.95 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum content:* 1 percent
*Available water supply, 0 to 60 inches:* Low (about 4.7 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 2s

*Hydrologic Soil Group:* A
*Ecological site:* F140XY021NY - Dry Outwash
*Hydric soil rating:* No

**Minor Components**

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

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

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

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

## FW—Fresh water marsh

**Map Unit Setting**
*National map unit symbol:* 9xgg
*Elevation:* 10 to 2,400 feet
*Mean annual precipitation:* 41 to 62 inches
*Mean annual air temperature:* 41 to 50 degrees F
*Frost-free period:* 110 to 200 days
*Farmland classification:* Not prime farmland

**Map Unit Composition**
*Medisaprists and similar soils:* 45 percent
*Hydraquents and similar soils:* 35 percent
*Minor components:* 20 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Medisaprists**

**Setting**
*Landform:* Marshes, swamps
*Landform position (two-dimensional):* Toeslope
*Landform position (three-dimensional):* Talf
*Down-slope shape:* Concave
*Across-slope shape:* Concave
*Parent material:* Organic material

**Typical profile**
*H1 - 0 to 70 inches:* muck

**Properties and qualities**

*Slope:* 0 to 1 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Very poorly drained
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to very high (0.20 to 19.98 in/hr)
*Depth to water table:* About 0 inches
*Frequency of flooding:* None
*Frequency of ponding:* Frequent
*Available water supply, 0 to 60 inches:* Very high (about 22.7 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 8w
*Hydrologic Soil Group:* A/D
*Hydric soil rating:* Yes

## Description of Hydraquents

**Setting**

*Landform:* Marshes
*Landform position (two-dimensional):* Toeslope
*Landform position (three-dimensional):* Talf
*Down-slope shape:* Concave
*Across-slope shape:* Concave

**Typical profile**

*H1 - 0 to 9 inches:* gravelly loam
*H2 - 9 to 70 inches:* silt loam

**Properties and qualities**

*Slope:* 0 to 2 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Very poorly drained
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to high (0.06 to 5.95 in/hr)
*Depth to water table:* About 0 inches
*Frequency of flooding:* None
*Frequency of ponding:* Frequent
*Calcium carbonate, maximum content:* 15 percent
*Available water supply, 0 to 60 inches:* Moderate (about 7.3 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 8w
*Hydrologic Soil Group:* A/D
*Hydric soil rating:* Yes

## Minor Components

**Carlisle**

*Percent of map unit:* 5 percent
*Landform:* Marshes, swamps
*Hydric soil rating:* Yes

**Wayland**

*Percent of map unit:* 5 percent

*Landform:* Flood plains
*Hydric soil rating:* Yes

**Palms**

*Percent of map unit:* 5 percent
*Landform:* Swamps, marshes
*Hydric soil rating:* Yes

**Canandaigua**

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

## HgD—Hoosic gravelly loam, 15 to 25 percent slopes

### Map Unit Setting

*National map unit symbol:* 9xgq
*Elevation:* 100 to 1,100 feet
*Mean annual precipitation:* 41 to 62 inches
*Mean annual air temperature:* 41 to 50 degrees F
*Frost-free period:* 110 to 200 days
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Hoosic and similar soils:* 80 percent
*Minor components:* 20 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Hoosic

#### Setting

*Landform:* Deltas, terraces, outwash plains
*Landform position (two-dimensional):* Backslope
*Landform position (three-dimensional):* Riser
*Down-slope shape:* Convex
*Across-slope shape:* Convex
*Parent material:* Sandy and gravelly glaciofluvial deposits

#### Typical profile

*H1 - 0 to 8 inches:* gravelly loam
*H2 - 8 to 14 inches:* gravelly loam
*H3 - 14 to 30 inches:* very gravelly loamy sand
*H4 - 30 to 80 inches:* stratified extremely gravelly sand

#### Properties and qualities

*Slope:* 15 to 25 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Somewhat excessively drained
*Capacity of the most limiting layer to transmit water (Ksat):* High to very high (1.98 to 19.98 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 2.6 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 4e
*Hydrologic Soil Group:* A
*Ecological site:* F140XY021NY - Dry Outwash
*Hydric soil rating:* No

**Minor Components**

**Red hook**

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

**Riverhead**

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

**Castile**

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

**Plainfield**

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

## HSF—Hoosic soils, very steep

**Map Unit Setting**

*National map unit symbol:* 9xgr
*Elevation:* 100 to 1,100 feet
*Mean annual precipitation:* 41 to 62 inches
*Mean annual air temperature:* 41 to 50 degrees F
*Frost-free period:* 110 to 200 days
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Hoosic and similar soils:* 80 percent
*Minor components:* 20 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Hoosic**

**Setting**

*Landform:* Terraces, outwash plains, deltas
*Landform position (two-dimensional):* Backslope
*Landform position (three-dimensional):* Riser
*Down-slope shape:* Convex

*Across-slope shape:* Convex
*Parent material:* Sandy and gravelly glaciofluvial deposits

**Typical profile**

*H1 - 0 to 8 inches:* gravelly sandy loam
*H2 - 8 to 14 inches:* gravelly loam
*H3 - 14 to 30 inches:* very gravelly loamy sand
*H4 - 30 to 80 inches:* stratified extremely gravelly sand

**Properties and qualities**

*Slope:* 25 to 55 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Somewhat excessively drained
*Capacity of the most limiting layer to transmit water (Ksat):* High to very high (1.98 to 19.98 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 2.6 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 7e
*Hydrologic Soil Group:* A
*Ecological site:* F140XY021NY - Dry Outwash
*Hydric soil rating:* No

**Minor Components**

**Plainfield**

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

**Tunkhannock**

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

**Valois**

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

**Lordstown**

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

## ML—Made land

**Map Unit Setting**

*National map unit symbol:* 9xhb
*Elevation:* 160 to 1,970 feet
*Mean annual precipitation:* 41 to 62 inches
*Mean annual air temperature:* 41 to 50 degrees F

*Frost-free period:* 110 to 200 days
*Farmland classification:* Not prime farmland

**Map Unit Composition**

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

**Description of Udorthents**

**Typical profile**

*H1 - 0 to 4 inches:* channery loam
*H2 - 4 to 70 inches:* very gravelly sandy loam

**Properties and qualities**

*Slope:* 0 to 5 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Somewhat excessively drained
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to high (0.06 to 5.95 in/hr)
*Depth to water table:* About 24 to 36 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum content:* 15 percent
*Available water supply, 0 to 60 inches:* Low (about 5.4 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 6s
*Hydrologic Soil Group:* B
*Hydric soil rating:* No

**Minor Components**

**Canandaigua**

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

**Middlebury**

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

**Red hook**

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

**Churchville**

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

**Cambridge**

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

## Ra—Raynham silt loam

### Map Unit Setting

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

### Map Unit Composition

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

### Description of Raynham

#### Setting

*Landform:* Lake plains
*Landform position (two-dimensional):* Footslope
*Landform position (three-dimensional):* Tread
*Down-slope shape:* Concave
*Across-slope shape:* Linear
*Parent material:* Glaciolacustrine, eolian, or old alluvial deposits, comprised mainly of silt and very fine sand

#### Typical profile

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

#### Properties and qualities

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

#### Interpretive groups

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

**Minor Components**

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

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

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

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

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

## RvA—Riverhead fine sandy loam, 0 to 3 percent slopes

**Map Unit Setting**
*National map unit symbol:* 9xj7
*Elevation:* 590 to 1,970 feet
*Mean annual precipitation:* 41 to 62 inches
*Mean annual air temperature:* 41 to 50 degrees F
*Frost-free period:* 110 to 200 days
*Farmland classification:* All areas are prime farmland

**Map Unit Composition**
*Riverhead and similar soils:* 80 percent
*Minor components:* 20 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Riverhead**

**Setting**
*Landform:* Terraces, deltas
*Landform position (two-dimensional):* Summit
*Landform position (three-dimensional):* Tread
*Down-slope shape:* Convex
*Across-slope shape:* Convex
*Parent material:* Loamy glaciofluvial deposits overlying stratified sand and gravel

**Typical profile**
*H1 - 0 to 8 inches:* fine sandy loam

*H2 - 8 to 26 inches:* sandy loam
*H3 - 26 to 49 inches:* loamy sand
*H4 - 49 to 62 inches:* sand

**Properties and qualities**

*Slope:* 0 to 3 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Well drained
*Capacity of the most limiting layer to transmit water (Ksat):* High (1.98 to 5.95 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:* Low (about 5.7 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 2s
*Hydrologic Soil Group:* A
*Ecological site:* F144AY023CT - Well Drained Outwash
*Hydric soil rating:* No

**Minor Components**

**Hoosic**

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

**Plainfield**

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

**Pompton**

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

**Walpole**

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

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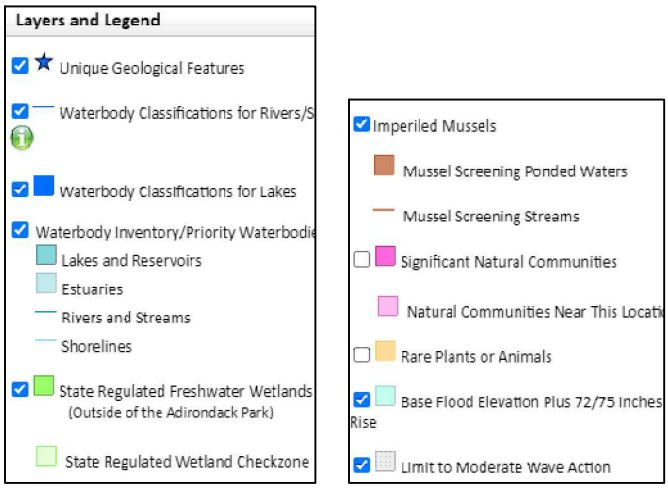
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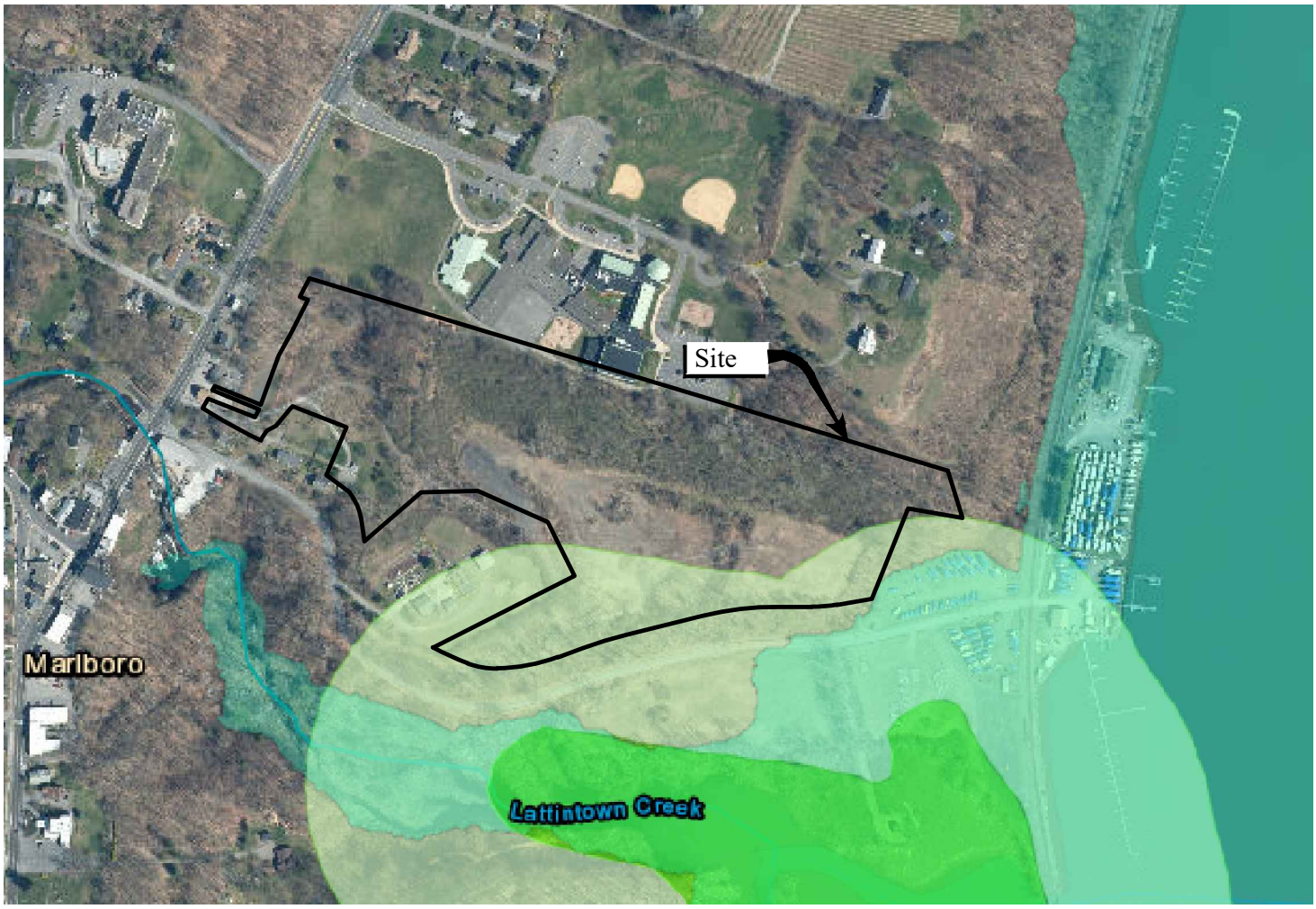
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# Attachment D
# New York Natural Heritage Program Coordination




0 250 500 Feet

NYSDEC Environmental Map

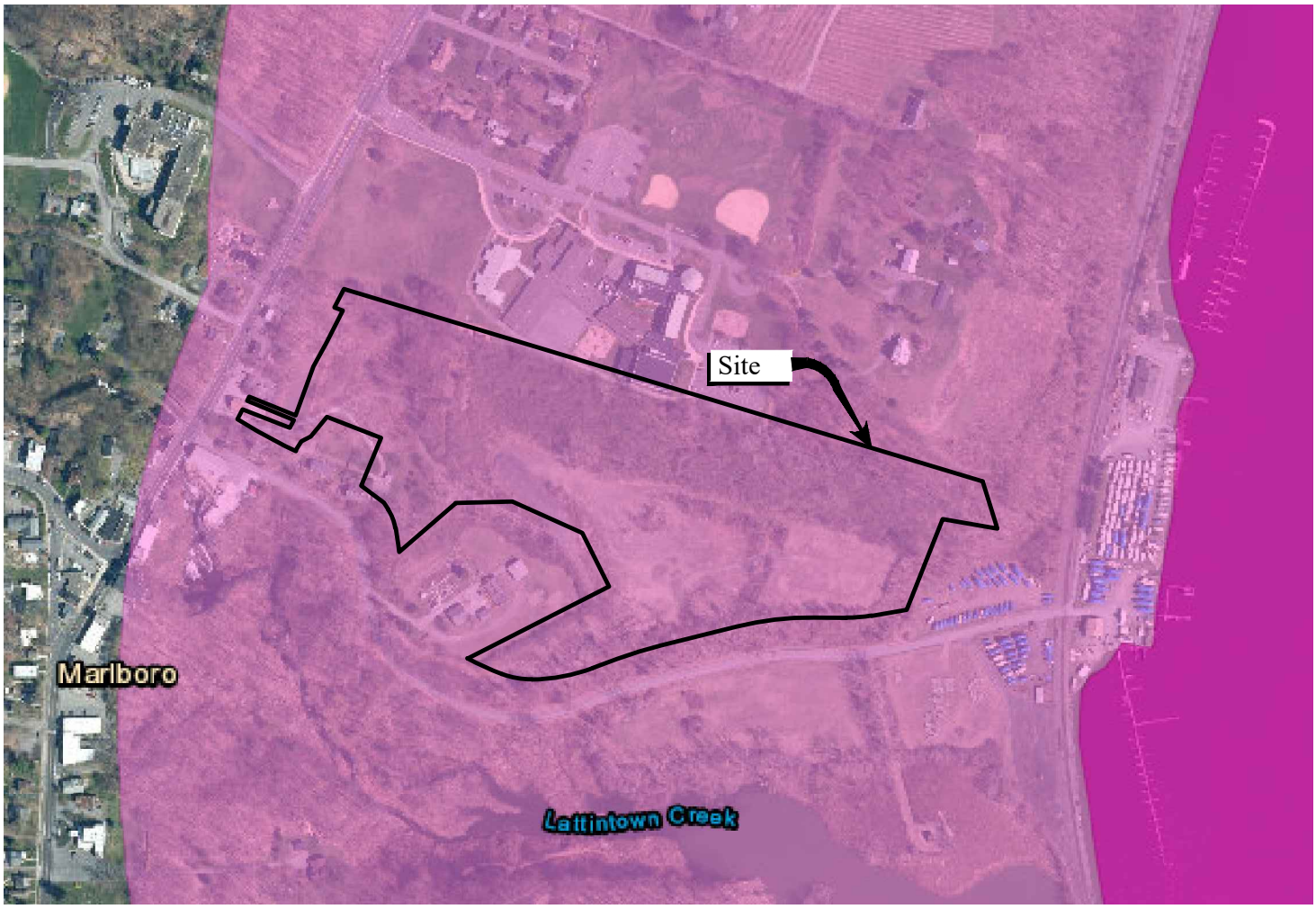
Leyton Properties - Marlboro
Dock Rd
Marlboro, NY 12542

NYSDEC
July 2024

Layers and Legend

Significant Natural Communities

Natural Communities Near This Location

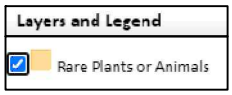


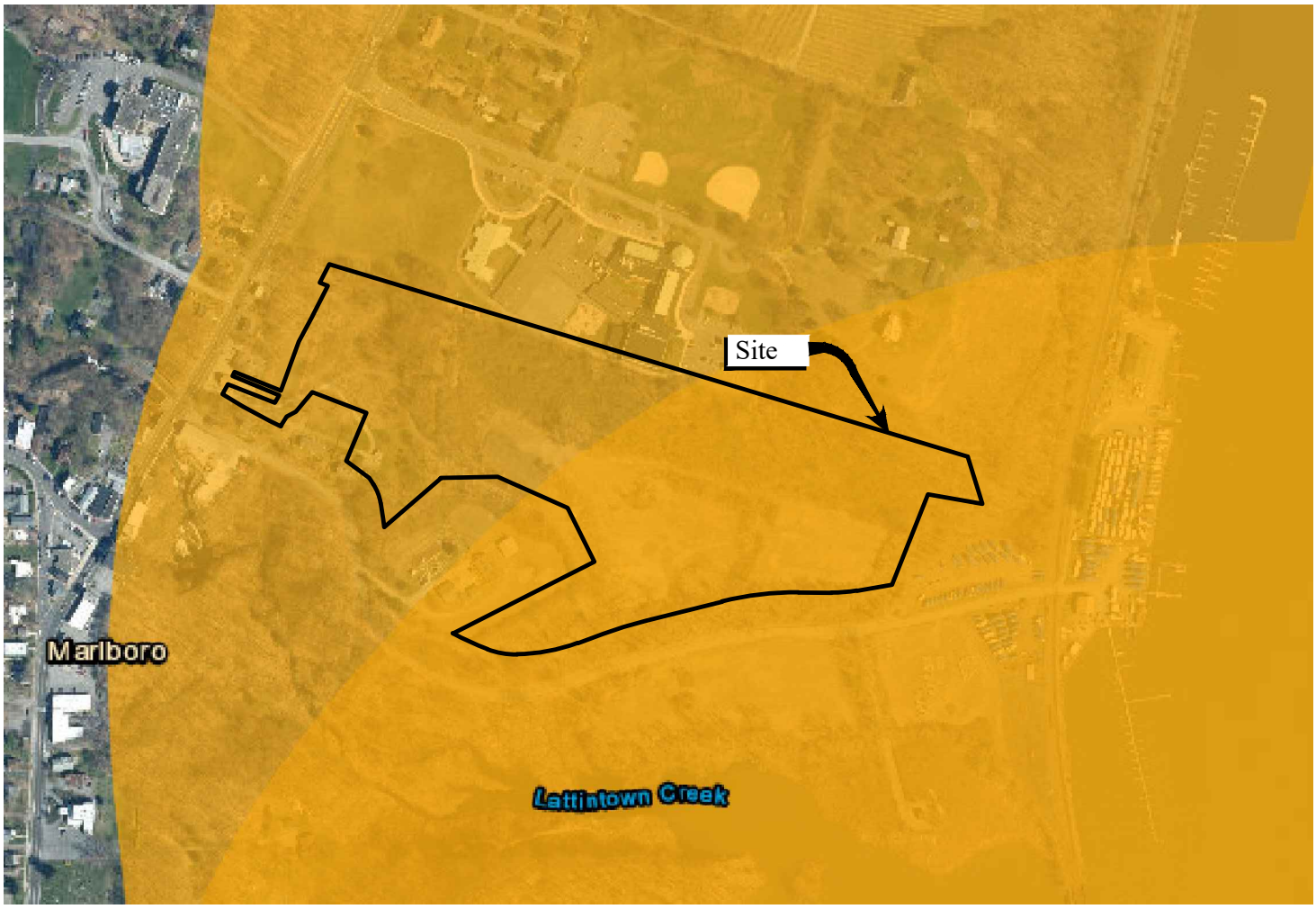

0 250 500 Feet

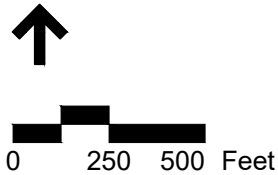
NYSDEC Environmental Map

Leyton Properties - Marlboro
Dock Rd
Marlboro, NY 12542

NYSDEC
July 2024




NYSDEC Environmental Map

Leyton Properties - Marlboro
Dock Rd
Marlboro, NY 12542

NYSDEC
July 2024

**USN Building Points (View)**

- Eligible
- Listed
- Not Eligible
- Not Eligible - Demolished
- Undetermined

**National Register Building Sites (View)**

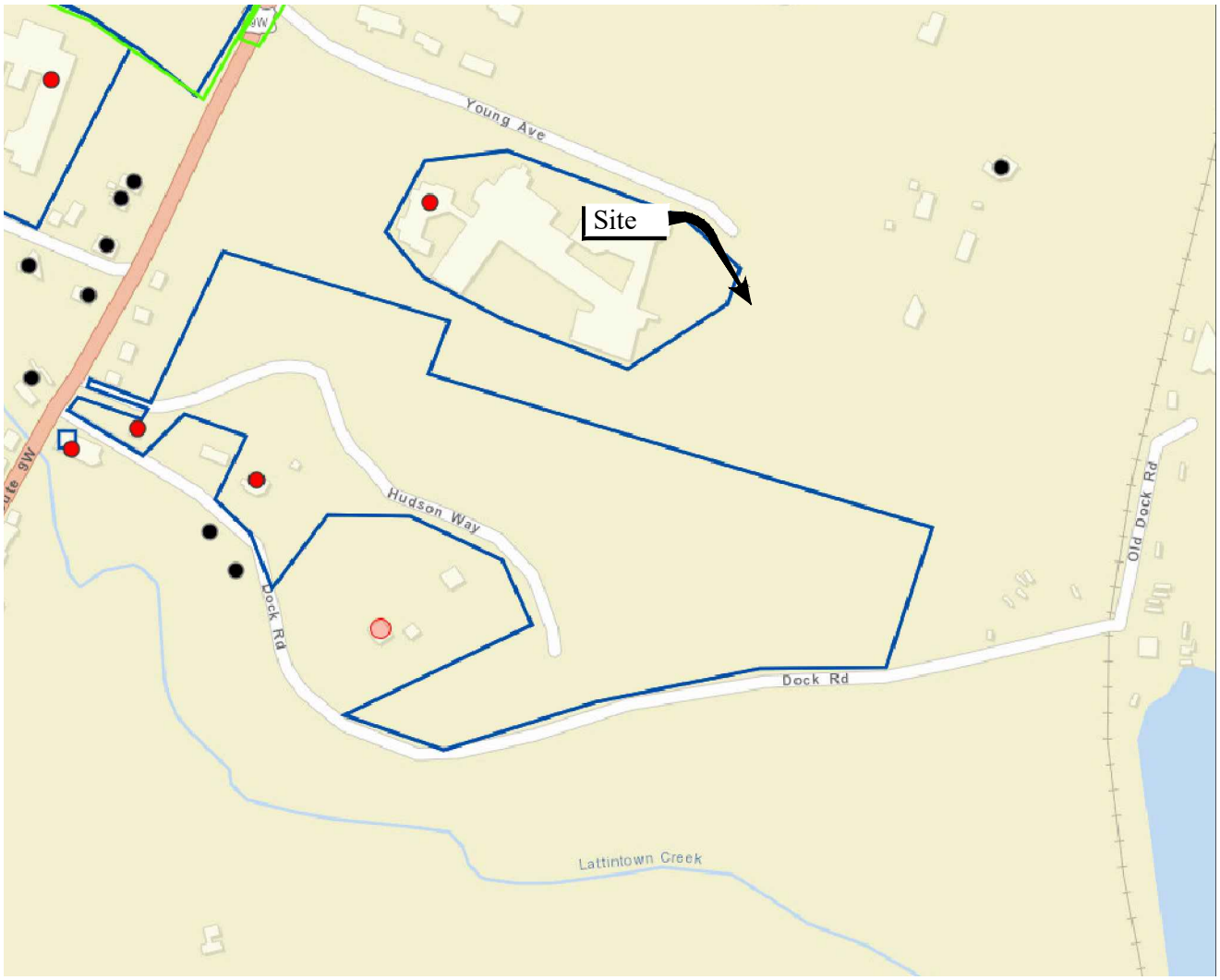
**Survey Building Areas (View)**

**USN Building Districts (View)**

- Eligible
- others

**Survey Archaeology Areas (View)**

**Consultation Projects (View)**




0 200 400 Feet

NYS Cultural Resource Information System CRIS
July 2024

Leyton Properties - Marlboro
Dock Rd
Marlboro, NY 12542

# Attachment E
# Storm Drainage Calculations

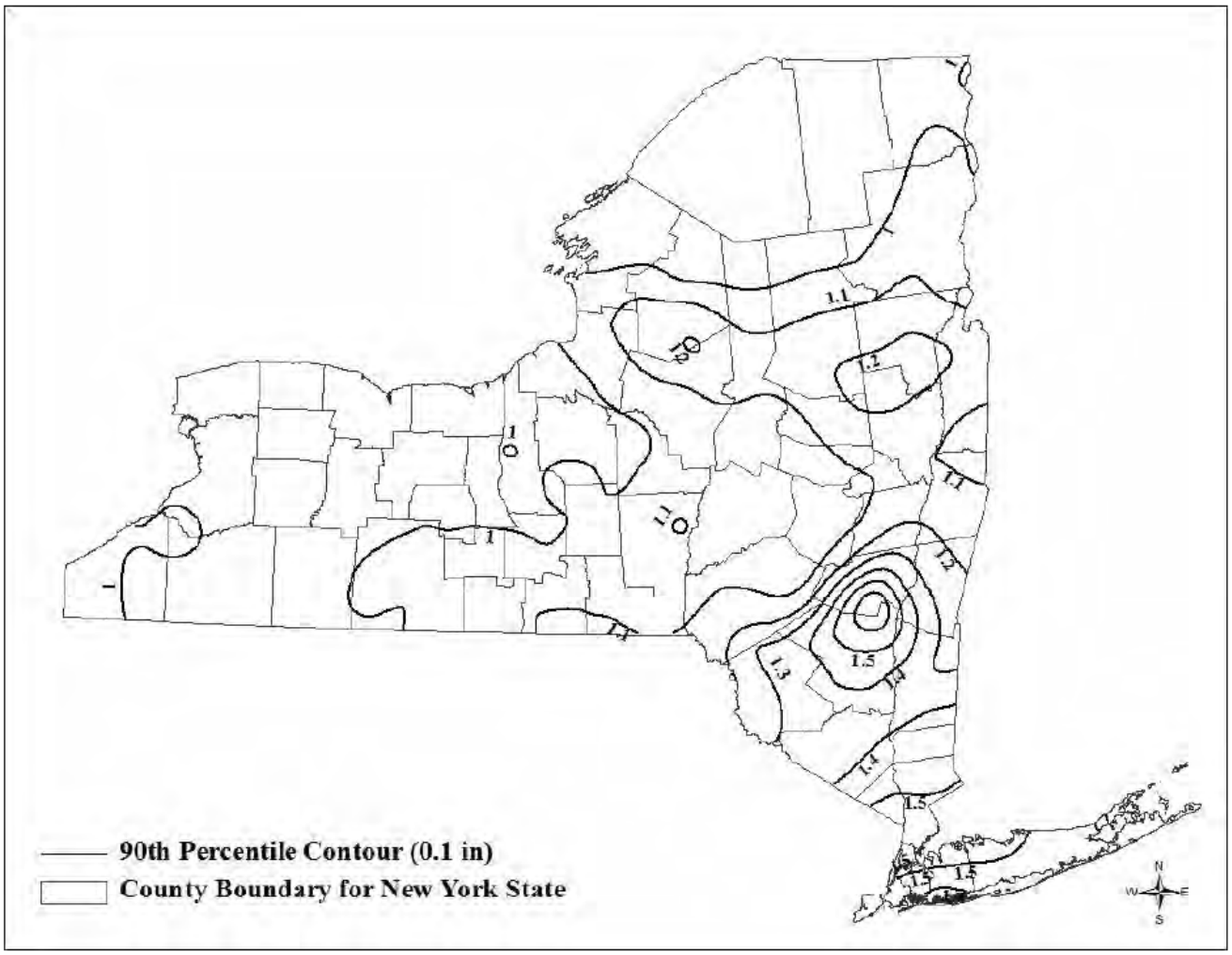
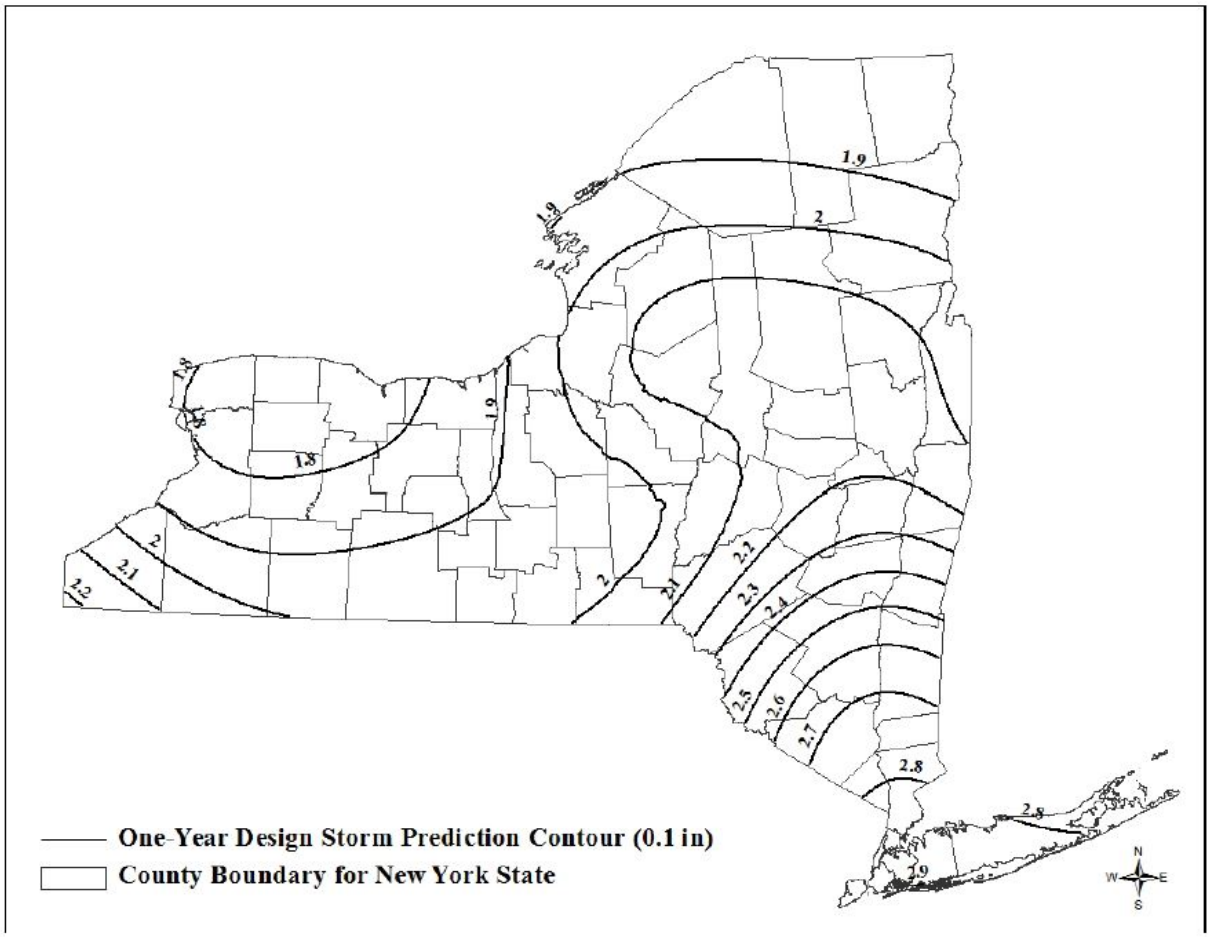



**Figure 4.1** 90th Percentile Rainfall in New York State (NYSDEC, 2013)

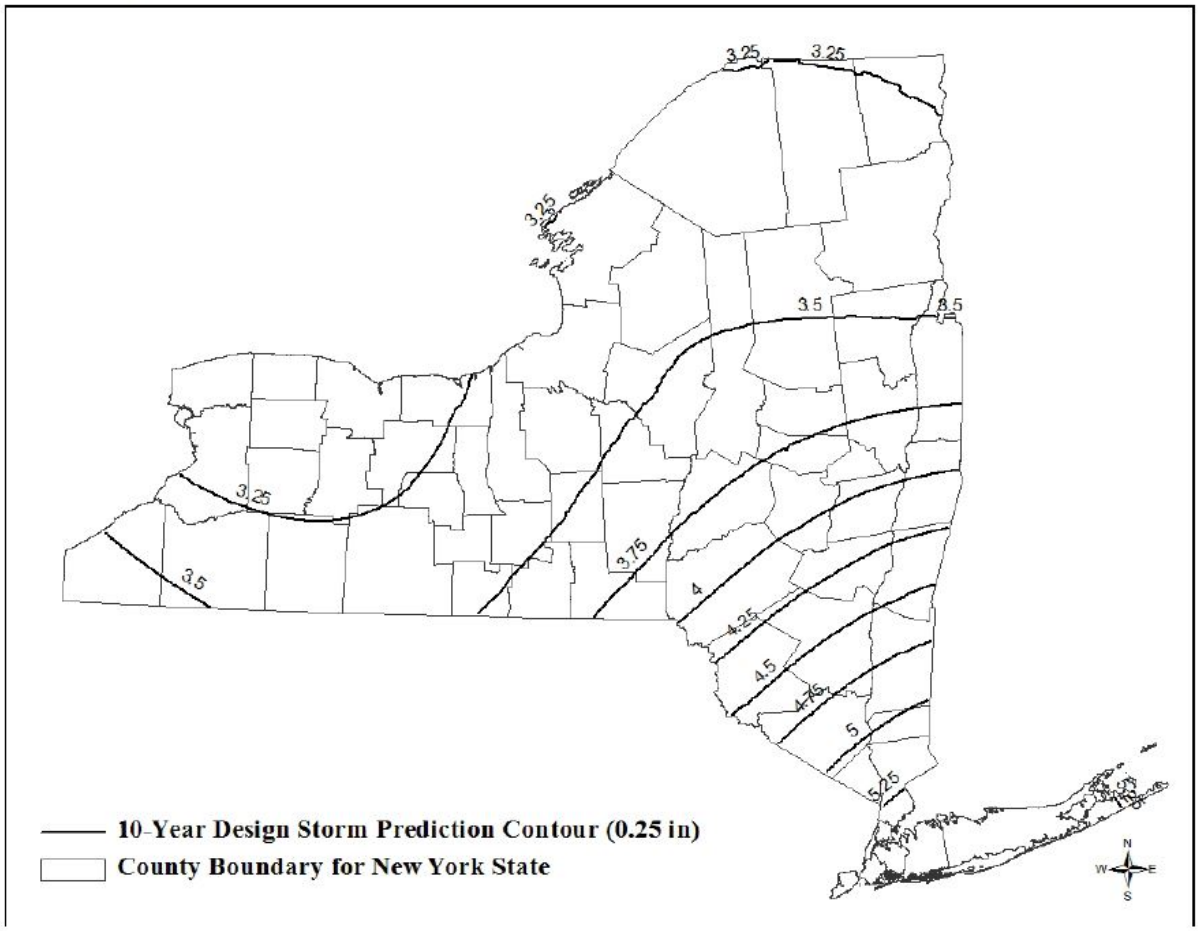
Source: New York State Stormwater Management Design Manual, July 2024

**Figure 4.2: One-Year Design Storm in New York State (NYSDEC, 2013)**



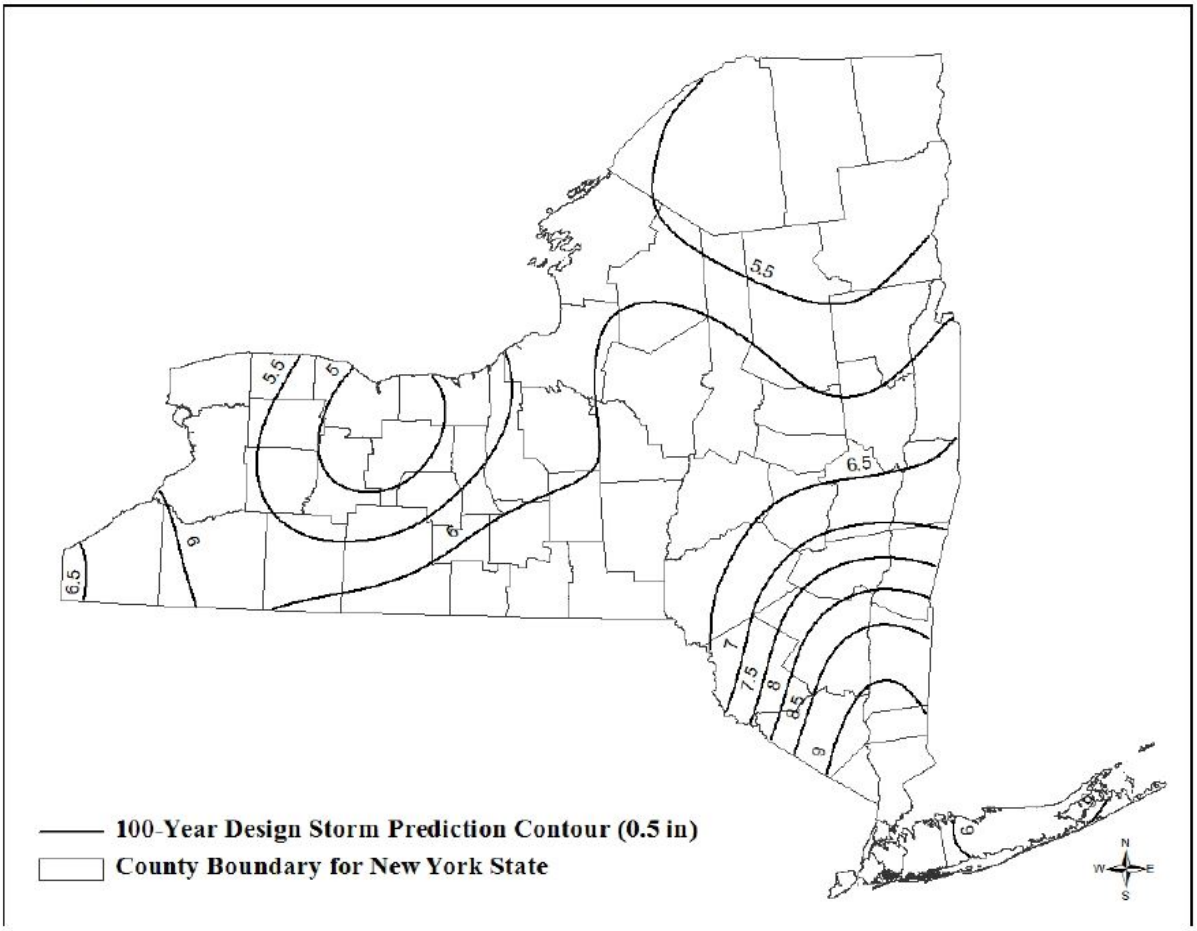

Source: New York State Stormwater Management Design Manual, July 2015

**Figure 4.3: Ten-Year Design Storm in New York State (NYSDEC, 2013)**




Source: New York State Storm Water Management Design Manual, January 2015

**Figure 4.4: One Hundred-Year Design Storm in New York State (NYSDEC, 2013)**




Source: New York State Storm Water Management Design Manual, January 2015

# Orchards on Hudson – Residential

## Dock Road
## Marlboro, New York

PREPARED FOR

**SDL Marlboro LLC**

561 Seventh Ave Suite 903
New York, NY 10018

PREPARED BY

**VHB Engineering, Surveying and Landscape Architecture, Geology, P.C.**
100 Motor Parkway
Suite 350
Hauppauge, NY 11788
631.787.3400

August 2024
Rev. March 2025

**VHB Project #: 20578.01**

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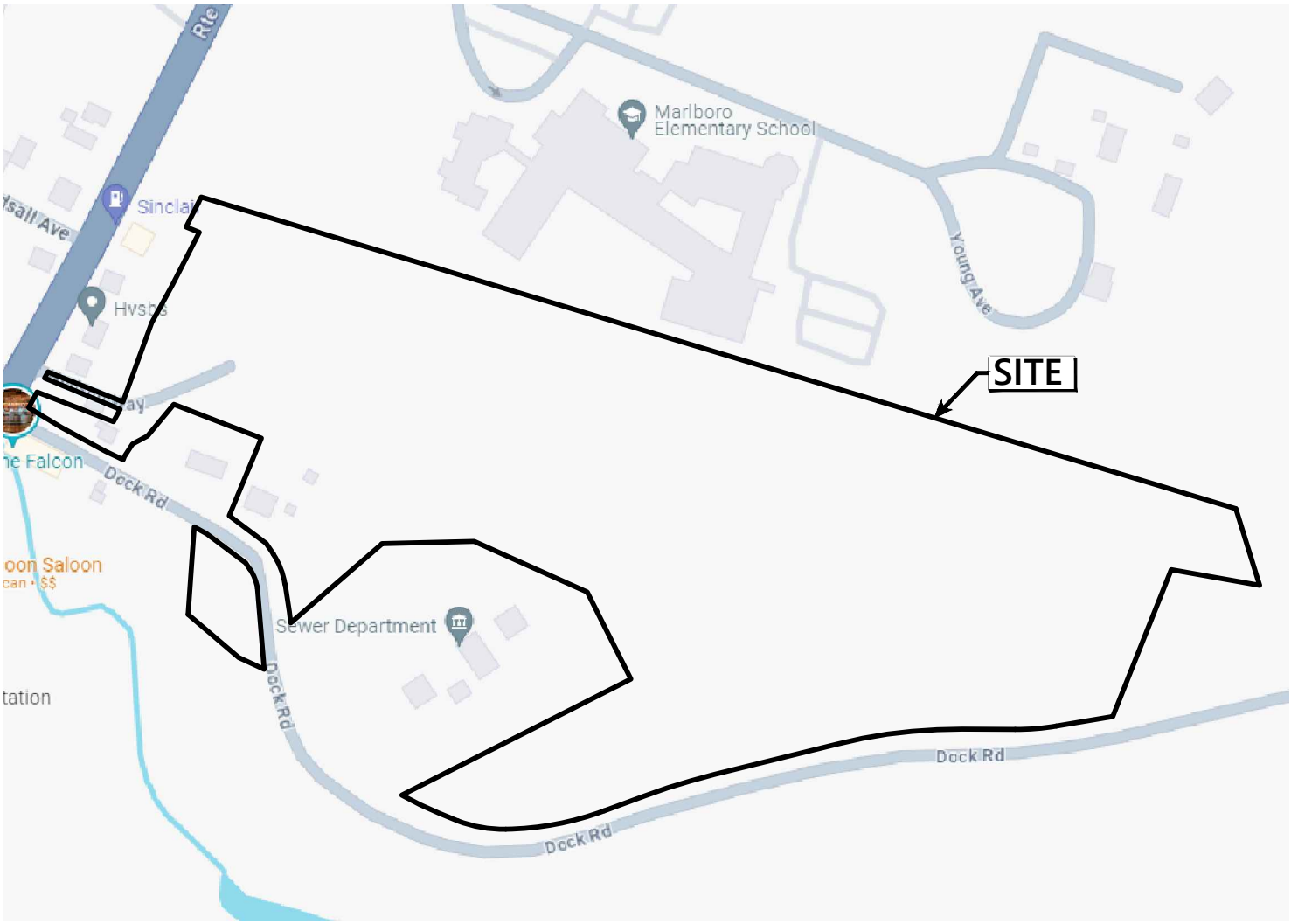
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# 1

# Project Figures

**Figure 1: Site Location Map**
**Figure 2: FEMA Floodplain Map**



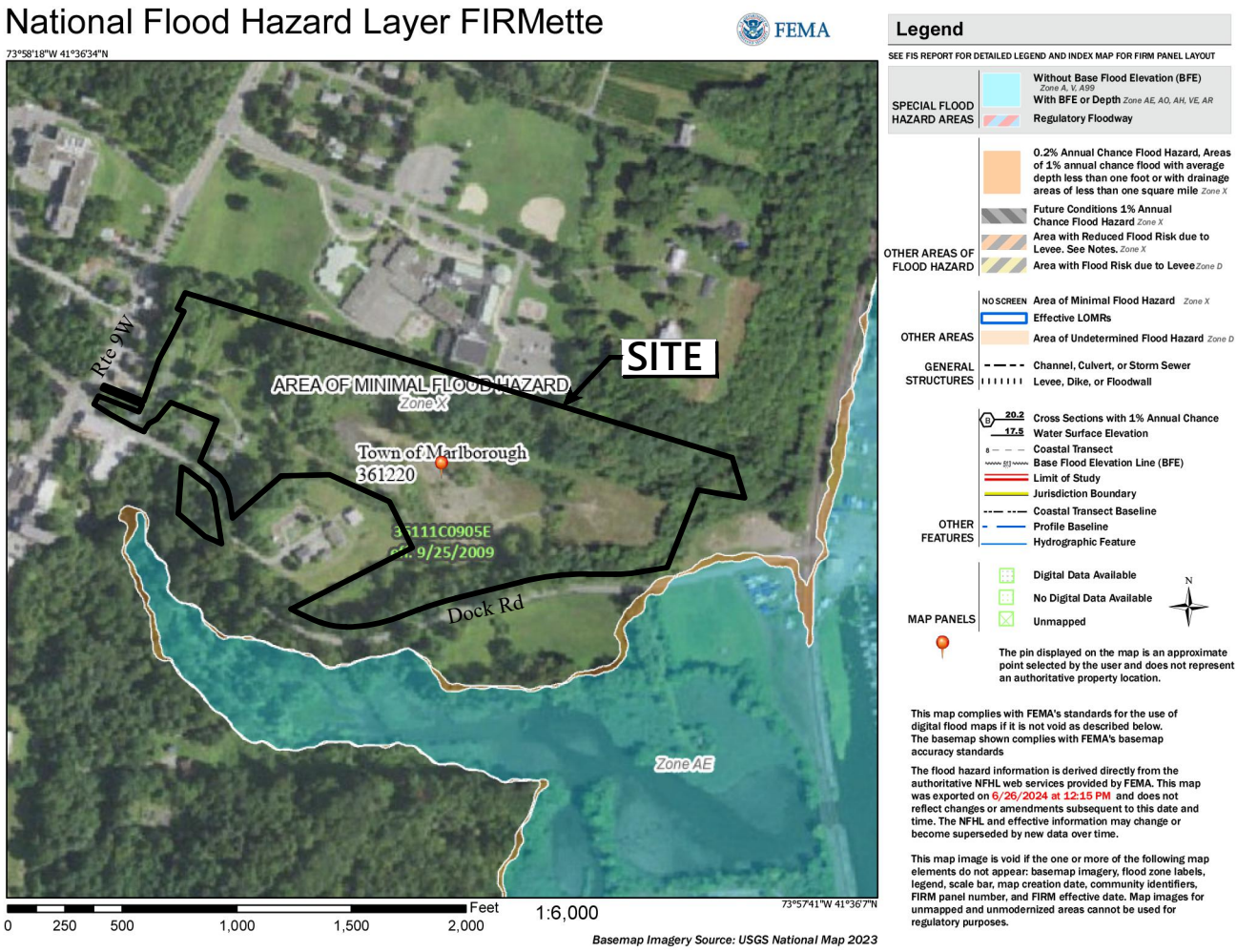

Site Location Map
Orchards on Hudson - Residential

Figure 1
September 2024

Dock Rd
Marlboro, NY 12542

.\VHB Logo.jpg

0 200 400 Feet




FEMA Flood Map
Orchards on Hudson - Residential

Dock Rd
Marlboro, NY 12542

Figure 4
September 2024

Map #: 36111C0905E
(Revised 09/24/2009)

0 400 800 Feet

VHB Logo.jpg

# 2

# Project Summary

## Site Location and Summary

The Proposed Action involves an application for site plan approval, and other approvals associated with the proposed development of the 25.48±-acre Subject Property located at 103-107 Dock Road in the hamlet of Marlboro, Town of Marlborough, Ulster County, New York. The Subject Property spans across Dock Road with most of the property situated on the north side of the roadway and a small portion on the south side. Ulster County Tax Map #: Section 109.1 - Block 3 - Lots 13, 14.2 and 15 and Section 108.4 - Block 3 - Lot 29.1. The project site is bounded by the campus of Marlboro Elementary School to the north; A marina located at 140 Dock Road to the east; Dock Road to the south; The Hamlet of Marlboro Wastewater Treatment Facility to the southwest; Residential properties and commercial structures fronting Route 9W to the west.

The site is mostly vacant and wooded with three single family residences located on the western portion. The middle portion of the site was previously mined creating a depression on the eastern side of the property. There are varying steep slopes across most of the site ranging from elevation +/-160 at the west side of Dock Road to elevation +/-11.0 at the east side.

According to the Flood Insurance Rate Map (FIRM) prepared by Federal Emergency Management Agency (FEMA), the project site is not located within a flood zone, however it is located next to a 1% Annual Chance Flood Hazard area. See the Flood map numbered 36111C0905E dated 9/25/2009 in the Project figures section, Figure two, of this report).

# Existing Conditions

**Subsurface Conditions:**

According to the NRCS soil survey for Ulster County, NY, the site consists of hydrologic soil group A and B and is made up of mostly 'Riverhead fine sandy loam, 0-3 percent slopes'(RvA), 'Hoosic soils, very steep' (HgD) and 'Chenango Gravely silt loam, 3-8 percent slopes. USDA soils report is included in Attachment A.

A subsurface geotechnical study was performed by Tectonic Engineering Consultants, Geologists & Land Surveyors, D.P.C. dated April 2, 2024. Based on the information provided in the Geotechnical Report provided, generally there are sandy soils with traces of silt and gravel present at the site. There was bedrock/auger refusal at some of the boring locations, however elevations provided are outside limits of the proposed project excavation. Percolation tests were performed at various locations on the site and infiltration rates ranged from three to seven in/hr.

**Pre-Development Hydrology:**

From a hydrological perspective, the site is divided into seven distinct subcatchments as shown in Figure B-1 in Attachment B. The predominant flow of stormwater runoff from the site is directed towards Dock Road from Subcatchment Areas B, C and D and eventually discharges directly to the Hudson River via overland flow. Subcatchment E located on the interior portion of the west side of the site discharges to the Sewage Treatment plant directly to the East. Subcatchment F located on the west side of the site discharge to Dock Road and flow along a swale on the north side of the road to a culvert that runs across the road to a lot owned by the applicant, which contains the wetlands of a tributary to the Hudson River. In addition, two subcatchment areas, A and G, as shown on the figure, discharge off site to the north and east respectively via overland flow.

Table 1 summarizes the key hydrologic parameters for each drainage area used in the existing conditions analysis.

**Table 1**
**Existing Conditions Hydrologic Data**

| Description (Drainage Area #) | Discharge Location | Study Point | Area (acres) | Curve Number (weighted average) | Time of Concentration (min) |
|---|---|---|---|---|---|
| *EX-A* | *Campus of Marlboro Elementary School* | SP1 | *2.66* | 53 | *38.2* |
| *EX-B* | *Bottom of Dock Road* | *SP4* | *13.68* | *53* | *35.8* |
| *EX-C* | *Bottom of Dock Road* | *SP6* | *4.39* | *59* | *12.8* |
| *EX-D* | *Bottom of Dock Road* | *SP5* | *0.20* | *48* | *24.8* |
| *EX-E* | *Sewage Treatment Plant* | *SP3* | *2.17* | *64* | *38.0* |
| *EX-F* | *Gutter to Culvert on Dock Road* | *SP2* | *1.34* | *63* | *6.1* |
| *EX-G* | *Marina* | *SP7* | *1.45* | *55* | *30.2* |

## Proposed Conditions

The proposed action will construct a residential development consisting of 106 townhome and cottage style units. Every home is designed to include a garage, with additional parking for guests dispersed throughout the development. A community clubhouse and swimming pool are also planned on the eastern side of the property.

The post-development conditions divide the site into nine subcatchment areas. Figure B-2 in Attachment B details the subcatchment areas and where they discharge from the site. Generally, stormwater runoff sheet flows from impervious and landscaped areas and is collected via a series of catch basins and area drains, and piped into underground detention system which are designed to hold enough runoff and discharge at rates equal to or less than predevelopment rates. Outfall pipes are connected to the detention systems and once the volume stored reaches the design

elevation, runoff is piped to engineered outfalls consisting of level spreaders designed to New York State Standards and Specifications For Erosion and Sediment Control standards.

In addition, drainage was provided along the emergency access road which utilizes a future easement on the neighboring Sewer Treatment Plan property. Runoff is collected and stored in drywell structures where it would infiltrate back into the ground.

Below is a summary of each of the post-development subcatchment areas:

**Drainage Area A-1 –** approximately 3.42-acres in area on the western most portion of the site. This area consists of the majority of the cottage style units, the western access road and landscaped areas created from excavation operations. Prior to discharge from the site, runoff will be stored in an underground detention system manufactured by StormTrap or approved equal. An overflow outlet, at a design elevation, from the StormTrap system discharges into the StormTrap system in Drainage Area A-2, utilizing available storage before eventually overflowing and discharging via a culvert below dock road as shown on the project drainage plans. The discharge point from this area is shown as Study Point 2 (SP2) on Figure B-2.

**Drainage Area A-2 –** approximately 1.16-acres in area on the southwestern portion of the site. This area consists of the cottage style units and landscaped areas. Prior to discharge from the site, runoff will be stored in an underground detention system manufactured by StormTrap or approved equal. Part of the inflow into this system includes the overflow from the StormTrap system from Area A-1 as shown in the HydroCAD model.Area A-2 will discharge via a culvert below dock road as shown on the project drainage plans. The discharge point from this area is shown as Study Point 2 (SP2) on Figure B-2.

**Drainage Area B -** is approximately 10.19 acres. It contains over half of the proposed townhome units and access drives, as well as most of the steeply inclined land in the northern section of the site. Runoff from the northern portion of this area flows into a bioswale segmented by check dams to slow the velocity of the runoff and collected at the low point before being piped to a large underground detention system by StormTrap (or approved equal) designed to detain and infiltrate stormwater runoff before its controlled release to Study Point 4 (SP4). Study Point 4 discharges into Drainage Area K at a controlled rate which eventually discharges to Study Point 6 (SP6) as depicted on Figure B-2.

**Drainage Area C –** is approximately 4.5 acres and includes additional townhome units and the proposed clubhouse as well as some access road, visitor parking and landscape areas. In addition, a portion of the northern sloped area also drains to this system. Runoff is collected and stored in an underground detention system by

StormTrap (or approved equal) designed to detain and infiltrate stormwater runoff before its controlled release to SP5. Study Point 5 discharges into Drainage Area K at a controlled rate which eventually discharges to Study Point 6 (SP6) as depicted on Figure B-2.

**Drainage Area D –** is approximately 0.14 acres and includes a section of landscaped area. Runoff from this area will be stored in a drywell system that will infiltrate stormwater runoff and resulting in 0.00 cfs of runoff

**Drainage Area E –** is approximately 0.58 acres and is comprised of paved patio area and landscape. This area will be captured in inlets and directed to seven 12' diameter drywells resulting in 0.00 cfs of runoff.

**Drainage Area F –** is approximately 0.21 acres in area and is comprised of paved roadway and landscape. This area will be captured in catch basins and directed to four 12' diameter drywells resulting in 0.00 cfs of runoff.

**Drainage Area G –** is approximately 0.15 acres in area. This area of pavement and landscape will be captured in catch basins and directed to four 12' diameter drywells, resulting in 0.00 cfs of runoff.

**Drainage Area H –** is approximately 0.07 acres in area. This area of pavement and landscape will be captured in catch basins and directed to two 12' diameter drywells, resulting in 0.00 cfs of runoff.

**Drainage Area I –** is approximately 0.16 acres in area. This area of very minimal pavement and majority landscape which runs off-site to the East towards the neighboring Sewage Treatment Plant.

**Drainage Area J –** is approximately 1.01acres in area. This area of minimal pavement and grass/woods area will direct runoff to SP2 via gutter to culvert on Dock Road depicted on Figure B-2.

**Drainage Area K –** is approximately 3.7 acres in area and is comprised of paved area (Dock Road), grass, and woods. Study Points 4 and 5 both discharge to Drainage Area K. The runoff in this area is directed to SP6 via gutter to culvert on Dock Road depicted on Figure B-2.

**Drainage Area P –** is approximately 1.45 acres in area and is comprised of wooded and grass cover. This areas runoff leads to SP7 depicted on Figure B-2.

Table 2 summarizes the key hydrologic parameters for each drainage area used in the proposed condition analysis.

## Table 2
## Proposed Condition Hydrologic Data

| Description (Drainage Area #) | Discharge Location | Study Point | Area (acres) | Curve Number (weighted average) | Time of Concentration (min) |
|---|---|---|---|---|---|
| *A-1* | *Outlet to wetland across dock road* | *SP2* | *3.42* | *76* | *28.7* |
| *A-2* | *Outlet to wetland across dock road* | *SP2* | *1.16* | *85* | *8.2* |
| *B* | *Bottom of Dock Road* | *SP4 to SP6* | *10.19* | *69* | *17.1* |
| *C* | *Bottom of Dock Road* | *SP5 to SP6* | *4.52* | *76* | *16.1* |
| *D* | *Bottom of Dock Road* | *SP4 to SP6* | *0.14* | *61* | *6.0* |
| *E* | *No discharge* | *N/A* | *0.59* | *64* | *6.0* |
| *F* | *No discharge* | *N/A* | *0.21* | *77* | *6.0* |
| *G* | *No discharge* | *N/A* | *0.15* | *85* | *6.0* |
| *H* | *No discharge* | *N/A* | *0.07* | *90* | *6.0* |
| *I* | *No discharge* | *N/A* | *0.16* | *62* | *6.0* |
| *J* | *Gutter to Culvert on Dock Road* | *SP2* | *1.01* | *65* | *6.0* |
| *K* | *Bottom of Dock Road* | *SP6* | *3.71* | *61* | *24.1* |
| *P* | *Marina* | *SP7* | *1.45* | *55* | *30.2* |

## Post Development Hydrologic Analysis

In order to demonstrate that the proposed storm water management system for the project is capable of accommodating post-development runoff for the 2-year, 10-year and 100-year storm events, a model was developed using HydroCAD software to analyze each storm condition. The system was designed to limit peak discharge for the design storm events to pre-development rates or less. To establish these flows the following 2-, 10-, and 100-year, 24-hour storm precipitation values were used in conformance with the Town of Marlborough Code (Chapter 135).

| Recurrence Interval | 24-hour Rainfall Depth |
|---|---|
| *2-Year* | *2.9"* |
| *10-Year* | *5.5"* |
| *100-Year* | *8.0"* |

In accordance with the NYSDEC requirements, the HydroCAD model uses the TR-20 methodology to calculate peak runoff rates for a specific design area. The program is then used to model storage over time in conjunction with infiltration through the proposed underground detention systems which contain controlled outlets which allow runoff below the pre-development peak discharge rate. The model also indicates the peak elevation of storage in the system during the storm.

As indicated above, the Geotechnical report indicated a range of infiltration rates between three and seven inches per hour throughout the site. An average infiltration rate of five inches per hour was used to model infiltration through the proposed detention systems.

Time of concentration and CN values were calculated under existing and proposed conditions by following TR-55 Handbook Guideline for each drainage area. Minimum time of concentration of 6 minutes is used.

Table 3 below shows the comparison of pre- and post-development peak discharge rates for the design storms. Attachment B of this report contains the hydrologic analysis for both pre- and post-development scenarios.

## Table 3
## Flows Comparison at Study Point 1

| Storm Frequency | Pre-Dev. Peak Discharge | Post-Dev. Peak Discharge | Percent Reduction |
|---|---|---|---|
| *2-Year* | *0.00 cfs* | *0.00 cfs* | *100.0%* |
| *10-Year* | *0.98 cfs* | *0.00 cfs* | *100.0%* |
| *100-Year* | *3.36 cfs* | *0.00 cfs* | *100.0%* |

## Flows Comparison at Study Point 2

| Storm Frequency | Pre-Dev. Peak Discharge | Post-Dev. Peak Discharge | Percent Reduction |
|---|---|---|---|
| *2-Year* | *0.38 cfs* | *0.38 cfs* | *0.0%* |
| *10-Year* | *2.75 cfs* | *2.29 cfs* | *16.7%* |
| *100-Year* | *5.47 cfs* | *4.61 cfs* | *15.7%* |

## Flows Comparison at Study Point 3

| Storm Frequency | Pre-Dev. Peak Discharge | Post-Dev. Peak Discharge | Percent Reduction |
|---|---|---|---|
| *2-Year* | *0.39 cfs* | *0.04 cfs* | *89.7%* |
| *10-Year* | *2. 36 cfs* | *0.31 cfs* | *86.9%* |
| *100-Year* | *4.85 cfs* | *0.65 cfs* | *86.6%* |

## Flows Comparison at Study Point 4

| Storm Frequency | Pre-Dev. Peak Discharge | Post-Dev. Peak Discharge | Percent Reduction |
|---|---|---|---|
| *2-Year* | *0.11 cfs* | *0.00 cfs* | *100.0%* |
| *10-Year* | *6.54 cfs* | *0.02 cfs* | *99.7%* |
| *100-Year* | *19.23 cfs* | *5.49 cfs* | *71.5%* |

## Flows Comparison at Study Point 5

| Storm Frequency | Pre-Dev. Peak Discharge | Post-Dev. Peak Discharge | Percent Reduction |
|---|---|---|---|
| *2-Year* | *0.00 cfs* | *0.00 cfs* | *0.0%* |
| *10-Year* | *0.07 cfs* | *1.32 cfs* | *Increase** |
| *100-Year* | *0.23 cfs* | *9.66 cfs* | *Increase** |

*See Conclusions below for explanation of increase in peak discharge.

## Flows Comparison at Study Point 6

| Storm Frequency | Pre-Dev. Peak Discharge | Post-Dev. Peak Discharge | Percent Reduction |
|---|---|---|---|
| *2-Year* | *0.52 cfs* | *0.52 cfs* | *0.0%* |
| *10-Year* | *9.11 cfs* | *4.23 cfs* | *53.6%* |
| *100-Year* | *25.61 cfs* | *20.65 cfs* | *19.4%* |

## Flows Comparison at Study Point 7

| Storm Frequency | Pre-Dev. Peak Discharge | Post-Dev. Peak Discharge | Percent Reduction |
|---|---|---|---|
| *2-Year* | *0.05 cfs* | *.05 cfs* | *0.00%* |
| *10-Year* | *1.01 cfs* | *1.01 cfs* | *0.00%* |
| *100-Year* | *2.55 cfs* | *2.55 cfs* | *0.00%* |

**Conclusions:**

All Study Points with the exception of Study Point 5, either maintain or reduce the peak flow rate for the 2-, 10-, and 100-year storms. Study Points 4 and 5 are new outfall locations within the project's site boundaries. These outfalls do not directly discharge off site. They are designed to drain into Drainage Area K (under proposed conditions) which eventually discharge off site at Study Point 6. As shown on Figure B-1, this is consistent with how the existing conditions were modeled. In accordance with Table 3 above, the discharge at Study Point 6 has been designed to result in an overall decrease in peak discharge off site.

The peak flow rate at Study Point 1 is completely reduced to 0.00 cfs since the project design no longer utilizes Study Point 1 as an outfall. Study Point 2 is able to reduce the peak flow rate despite the increase of the subcatchment area discharging to the study point due to the StormTrap system having a controlled outflow discharge, especially for the 10- and 100-year storms. Study Point 3, which is located at the Sewage Treatment Plant, significantly reduced the peak flow rate due to the decreased size in the subcatchment area contributing to the Study Point. Study Point 7 shows no increase or decrease in peak flow rate because the contributing area to the Study Point is unchanged.

# Attachment A:
# NRCS Soil Survey Information

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

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

# Custom Soil Resource Report for Ulster County, New York




June 27, 2024

# Preface

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

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

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

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

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

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

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# How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

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

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

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

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

# Soil Map

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

# Custom Soil Resource Report
## Soil Map




Map Scale: 1:3,680 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

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

## MAP LEGEND

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

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

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

**Water Features**
- Streams and Canals

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

**Background**
- Aerial Photography

## MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Ulster County, New York
Survey Area Data: Version 22, Sep 5, 2023

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

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

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

# Map Unit Legend

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|---|---|---|---|
| CF | Cut and fill land | 0.2 | 0.9% |
| CnB | Chenango gravelly silt loam, 3 to 8 percent slopes | 3.0 | 12.1% |
| FW | Fresh water marsh | 0.3 | 1.1% |
| HgD | Hoosic gravelly loam, 15 to 25 percent slopes | 1.6 | 6.3% |
| HSF | Hoosic soils, very steep | 10.4 | 41.5% |
| ML | Made land | 0.1 | 0.5% |
| Ra | Raynham silt loam | 1.9 | 7.8% |
| RvA | Riverhead fine sandy loam, 0 to 3 percent slopes | 7.5 | 29.8% |
| **Totals for Area of Interest** | | **25.0** | **100.0%** |

# Map Unit Descriptions

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

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

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

mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

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

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

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

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

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

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

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

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

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

# Ulster County, New York

## CF—Cut and fill land

### Map Unit Setting

*National map unit symbol:* 9xg2
*Elevation:* 160 to 1,970 feet
*Mean annual precipitation:* 41 to 62 inches
*Mean annual air temperature:* 41 to 50 degrees F
*Frost-free period:* 110 to 200 days
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Udorthents and similar soils:* 80 percent
*Minor components:* 20 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Udorthents

#### Typical profile

*H1 - 0 to 4 inches:* gravelly sandy loam
*H2 - 4 to 70 inches:* very gravelly sandy loam

#### Properties and qualities

*Slope:* 0 to 8 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Somewhat excessively drained
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to high (0.06 to 5.95 in/hr)
*Depth to water table:* About 36 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum content:* 15 percent
*Available water supply, 0 to 60 inches:* Low (about 5.5 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 6s
*Hydrologic Soil Group:* B
*Hydric soil rating:* No

### Minor Components

#### Cayuga

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

#### Tunkhannock

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

#### Lyons

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

**Bath**

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

## CnB—Chenango gravelly silt loam, 3 to 8 percent slopes

### Map Unit Setting

*National map unit symbol:* 9xg8
*Elevation:* 600 to 1,800 feet
*Mean annual precipitation:* 41 to 62 inches
*Mean annual air temperature:* 41 to 50 degrees F
*Frost-free period:* 110 to 200 days
*Farmland classification:* All areas are prime farmland

### Map Unit Composition

*Chenango and similar soils:* 80 percent
*Minor components:* 20 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Chenango

#### Setting

*Landform:* Terraces, valley trains
*Landform position (two-dimensional):* Summit
*Landform position (three-dimensional):* Tread
*Down-slope shape:* Convex
*Across-slope shape:* Convex
*Parent material:* Gravelly loamy glaciofluvial deposits over sandy and gravelly glaciofluvial deposits, derived mainly from sandstone, shale, and siltstone

#### Typical profile

*H1 - 0 to 9 inches:* gravelly silt loam
*H2 - 9 to 35 inches:* gravelly silt loam
*H3 - 35 to 80 inches:* extremely gravelly sand

#### Properties and qualities

*Slope:* 3 to 8 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Well drained
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 5.95 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum content:* 1 percent
*Available water supply, 0 to 60 inches:* Low (about 4.7 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 2s

*Hydrologic Soil Group:* A
*Ecological site:* F140XY021NY - Dry Outwash
*Hydric soil rating:* No

**Minor Components**

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

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

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

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

## FW—Fresh water marsh

**Map Unit Setting**
*National map unit symbol:* 9xgg
*Elevation:* 10 to 2,400 feet
*Mean annual precipitation:* 41 to 62 inches
*Mean annual air temperature:* 41 to 50 degrees F
*Frost-free period:* 110 to 200 days
*Farmland classification:* Not prime farmland

**Map Unit Composition**
*Medisaprists and similar soils:* 45 percent
*Hydraquents and similar soils:* 35 percent
*Minor components:* 20 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Medisaprists**

**Setting**
*Landform:* Marshes, swamps
*Landform position (two-dimensional):* Toeslope
*Landform position (three-dimensional):* Talf
*Down-slope shape:* Concave
*Across-slope shape:* Concave
*Parent material:* Organic material

**Typical profile**
*H1 - 0 to 70 inches:* muck

**Properties and qualities**

*Slope:* 0 to 1 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Very poorly drained
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to very high (0.20 to 19.98 in/hr)
*Depth to water table:* About 0 inches
*Frequency of flooding:* None
*Frequency of ponding:* Frequent
*Available water supply, 0 to 60 inches:* Very high (about 22.7 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 8w
*Hydrologic Soil Group:* A/D
*Hydric soil rating:* Yes

## Description of Hydraquents

**Setting**

*Landform:* Marshes
*Landform position (two-dimensional):* Toeslope
*Landform position (three-dimensional):* Talf
*Down-slope shape:* Concave
*Across-slope shape:* Concave

**Typical profile**

*H1 - 0 to 9 inches:* gravelly loam
*H2 - 9 to 70 inches:* silt loam

**Properties and qualities**

*Slope:* 0 to 2 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Very poorly drained
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to high (0.06 to 5.95 in/hr)
*Depth to water table:* About 0 inches
*Frequency of flooding:* None
*Frequency of ponding:* Frequent
*Calcium carbonate, maximum content:* 15 percent
*Available water supply, 0 to 60 inches:* Moderate (about 7.3 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 8w
*Hydrologic Soil Group:* A/D
*Hydric soil rating:* Yes

## Minor Components

**Carlisle**

*Percent of map unit:* 5 percent
*Landform:* Marshes, swamps
*Hydric soil rating:* Yes

**Wayland**

*Percent of map unit:* 5 percent

*Landform:* Flood plains
*Hydric soil rating:* Yes

**Palms**

*Percent of map unit:* 5 percent
*Landform:* Swamps, marshes
*Hydric soil rating:* Yes

**Canandaigua**

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

## HgD—Hoosic gravelly loam, 15 to 25 percent slopes

### Map Unit Setting

*National map unit symbol:* 9xgq
*Elevation:* 100 to 1,100 feet
*Mean annual precipitation:* 41 to 62 inches
*Mean annual air temperature:* 41 to 50 degrees F
*Frost-free period:* 110 to 200 days
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Hoosic and similar soils:* 80 percent
*Minor components:* 20 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Hoosic

#### Setting

*Landform:* Deltas, terraces, outwash plains
*Landform position (two-dimensional):* Backslope
*Landform position (three-dimensional):* Riser
*Down-slope shape:* Convex
*Across-slope shape:* Convex
*Parent material:* Sandy and gravelly glaciofluvial deposits

#### Typical profile

*H1 - 0 to 8 inches:* gravelly loam
*H2 - 8 to 14 inches:* gravelly loam
*H3 - 14 to 30 inches:* very gravelly loamy sand
*H4 - 30 to 80 inches:* stratified extremely gravelly sand

#### Properties and qualities

*Slope:* 15 to 25 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Somewhat excessively drained
*Capacity of the most limiting layer to transmit water (Ksat):* High to very high (1.98 to 19.98 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 2.6 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 4e
*Hydrologic Soil Group:* A
*Ecological site:* F140XY021NY - Dry Outwash
*Hydric soil rating:* No

**Minor Components**

**Red hook**

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

**Riverhead**

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

**Castile**

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

**Plainfield**

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

## HSF—Hoosic soils, very steep

**Map Unit Setting**

*National map unit symbol:* 9xgr
*Elevation:* 100 to 1,100 feet
*Mean annual precipitation:* 41 to 62 inches
*Mean annual air temperature:* 41 to 50 degrees F
*Frost-free period:* 110 to 200 days
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Hoosic and similar soils:* 80 percent
*Minor components:* 20 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Hoosic**

**Setting**

*Landform:* Terraces, outwash plains, deltas
*Landform position (two-dimensional):* Backslope
*Landform position (three-dimensional):* Riser
*Down-slope shape:* Convex

*Across-slope shape:* Convex
*Parent material:* Sandy and gravelly glaciofluvial deposits

**Typical profile**

*H1 - 0 to 8 inches:* gravelly sandy loam
*H2 - 8 to 14 inches:* gravelly loam
*H3 - 14 to 30 inches:* very gravelly loamy sand
*H4 - 30 to 80 inches:* stratified extremely gravelly sand

**Properties and qualities**

*Slope:* 25 to 55 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Somewhat excessively drained
*Capacity of the most limiting layer to transmit water (Ksat):* High to very high (1.98 to 19.98 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 2.6 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 7e
*Hydrologic Soil Group:* A
*Ecological site:* F140XY021NY - Dry Outwash
*Hydric soil rating:* No

**Minor Components**

**Plainfield**

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

**Tunkhannock**

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

**Valois**

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

**Lordstown**

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

## ML—Made land

**Map Unit Setting**

*National map unit symbol:* 9xhb
*Elevation:* 160 to 1,970 feet
*Mean annual precipitation:* 41 to 62 inches
*Mean annual air temperature:* 41 to 50 degrees F

*Frost-free period:* 110 to 200 days
*Farmland classification:* Not prime farmland

**Map Unit Composition**

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

**Description of Udorthents**

**Typical profile**

*H1 - 0 to 4 inches:* channery loam
*H2 - 4 to 70 inches:* very gravelly sandy loam

**Properties and qualities**

*Slope:* 0 to 5 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Somewhat excessively drained
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to high (0.06 to 5.95 in/hr)
*Depth to water table:* About 24 to 36 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum content:* 15 percent
*Available water supply, 0 to 60 inches:* Low (about 5.4 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 6s
*Hydrologic Soil Group:* B
*Hydric soil rating:* No

**Minor Components**

**Canandaigua**

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

**Middlebury**

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

**Red hook**

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

**Churchville**

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

**Cambridge**

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

## Ra—Raynham silt loam

### Map Unit Setting

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

### Map Unit Composition

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

### Description of Raynham

#### Setting

*Landform:* Lake plains
*Landform position (two-dimensional):* Footslope
*Landform position (three-dimensional):* Tread
*Down-slope shape:* Concave
*Across-slope shape:* Linear
*Parent material:* Glaciolacustrine, eolian, or old alluvial deposits, comprised mainly of silt and very fine sand

#### Typical profile

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

#### Properties and qualities

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

#### Interpretive groups

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

**Minor Components**

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

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

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

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

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

## RvA—Riverhead fine sandy loam, 0 to 3 percent slopes

**Map Unit Setting**
*National map unit symbol:* 9xj7
*Elevation:* 590 to 1,970 feet
*Mean annual precipitation:* 41 to 62 inches
*Mean annual air temperature:* 41 to 50 degrees F
*Frost-free period:* 110 to 200 days
*Farmland classification:* All areas are prime farmland

**Map Unit Composition**
*Riverhead and similar soils:* 80 percent
*Minor components:* 20 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Riverhead**

**Setting**
*Landform:* Terraces, deltas
*Landform position (two-dimensional):* Summit
*Landform position (three-dimensional):* Tread
*Down-slope shape:* Convex
*Across-slope shape:* Convex
*Parent material:* Loamy glaciofluvial deposits overlying stratified sand and gravel

**Typical profile**
*H1 - 0 to 8 inches:* fine sandy loam

*H2 - 8 to 26 inches:* sandy loam
*H3 - 26 to 49 inches:* loamy sand
*H4 - 49 to 62 inches:* sand

**Properties and qualities**

*Slope:* 0 to 3 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Well drained
*Capacity of the most limiting layer to transmit water (Ksat):* High (1.98 to 5.95 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:* Low (about 5.7 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 2s
*Hydrologic Soil Group:* A
*Ecological site:* F144AY023CT - Well Drained Outwash
*Hydric soil rating:* No

**Minor Components**

**Hoosic**

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

**Plainfield**

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

**Pompton**

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

**Walpole**

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

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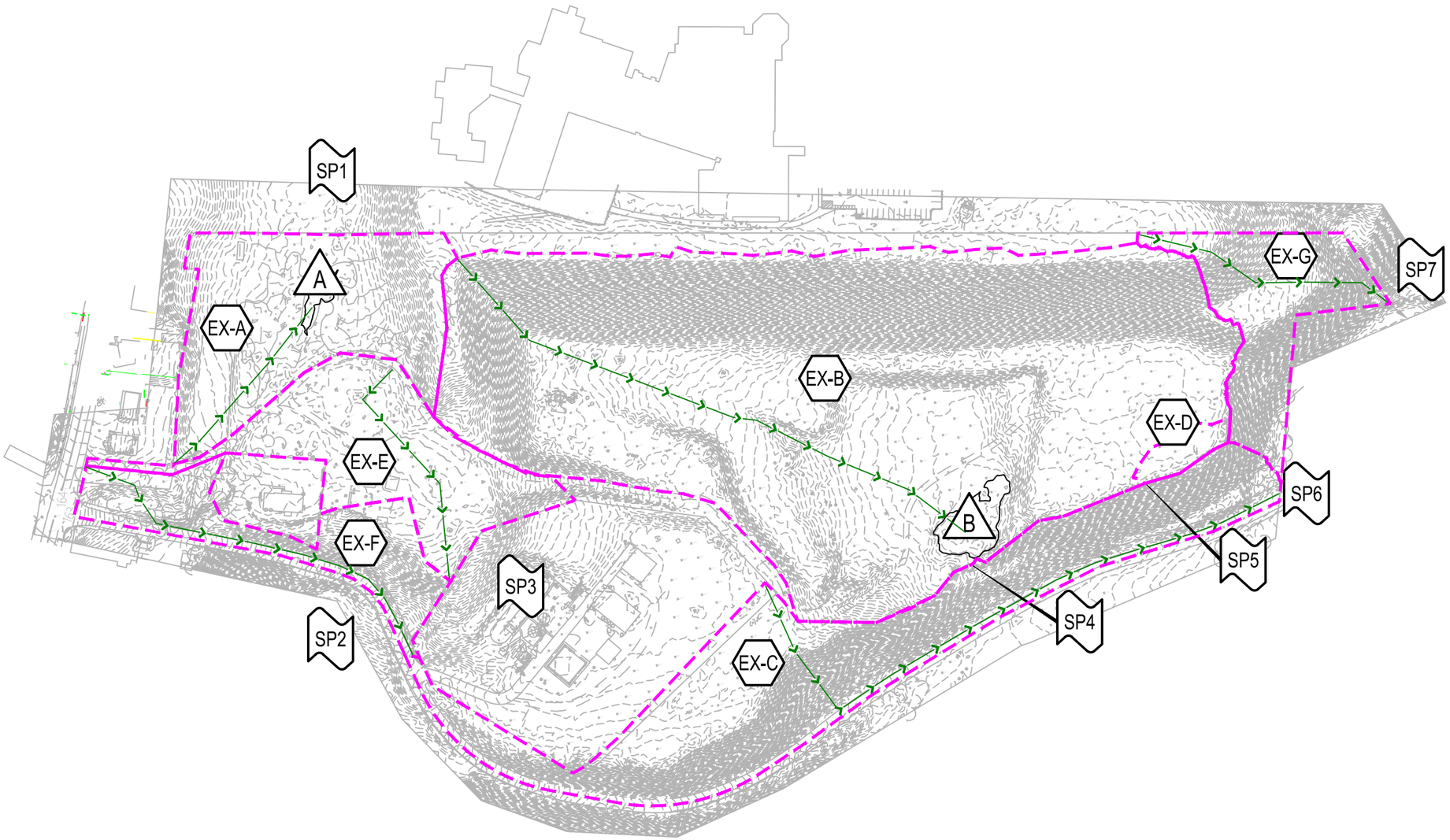
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# Attachment B:
# HydroCAD Reports




# Legend

**SYMBOLS**

X — **STUDY POINT**

X — **DRAINAGE AREA DESIGNATION**

X — **POND**

**LINETYPES**

**DRAINAGE AREA BOUNDARY**

**TIME OF CONCENTRATION FLOW LINE**

Existing Drainage Conditions
Orchards on Hudson Residential
103-107 Dock Road
Marlboro, NY

**Figure B-1**

March 2025




# Legend

**SYMBOLS**

X — **STUDY POINT**

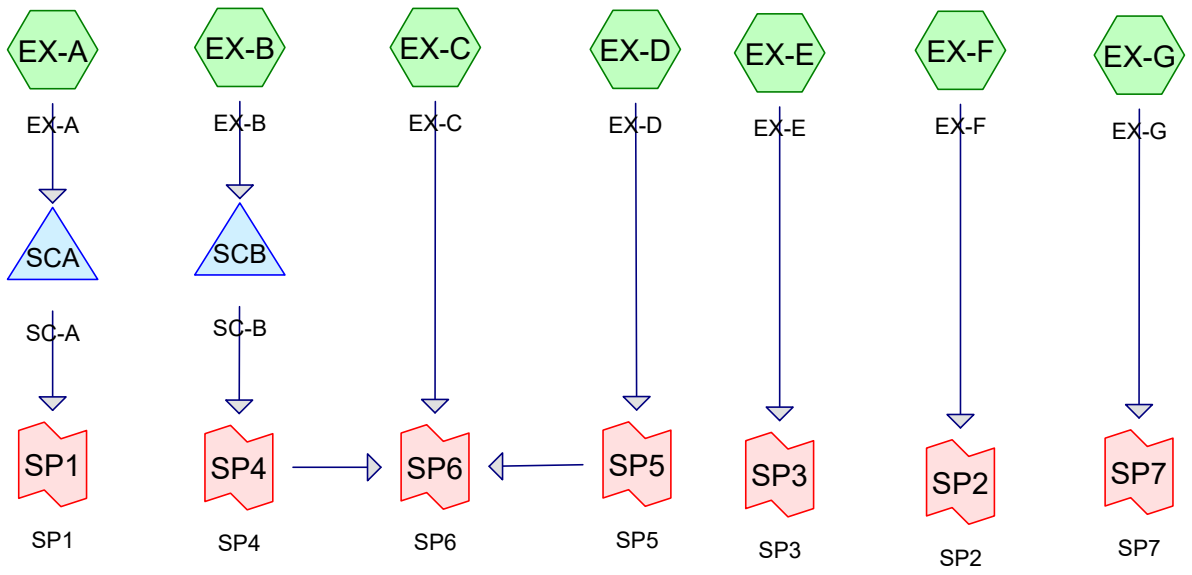
X — **DRAINAGE AREA DESIGNATION**

X — **POND**

**LINETYPES**

**DRAINAGE AREA BOUNDARY**

**TIME OF CONCENTRATION FLOW LINE**




Subcat Reach Pond Link

**Routing Diagram for 20250318_ Existing HydroCAD**
Prepared by VHB, Inc, Printed 3/20/2025
HydroCAD® 10.20-5c s/n 01038 © 2023 HydroCAD Software Solutions LLC

## Rainfall Events Listing

| Event# | Event Name | Storm Type | Curve | Mode | Duration (hours) | B/B | Depth (inches) | AMC |
|---|---|---|---|---|---|---|---|---|
| 1 | 2 Year | Type III 24-hr | | Default | 24.00 | 1 | 2.90 | 2 |
| 2 | 10 Year | Type III 24-hr | | Default | 24.00 | 1 | 5.50 | 2 |
| 3 | 100 Year | Type III 24-hr | | Default | 24.00 | 1 | 8.00 | 2 |

## Area Listing (all nodes)

| Area (acres) | CN | Description (subcatchment-numbers) |
|---|---|---|
| 0.529 | 61 | >75% Grass cover, Good, HSG B (EX-E, EX-F, EX-G) |
| 6.690 | 48 | Brush, Good, HSG B (EX-A, EX-B, EX-C, EX-D) |
| 1.379 | 98 | Paved parking, HSG B (EX-B, EX-C, EX-E, EX-F) |
| 0.107 | 98 | Unconnected roofs, HSG B (EX-F) |
| 17.212 | 55 | Woods, Good, HSG B (EX-A, EX-B, EX-C, EX-E, EX-F, EX-G) |
| **25.916** | **56** | **TOTAL AREA** |

## Soil Listing (all nodes)

| Area (acres) | Soil Group | Subcatchment Numbers |
|---|---|---|
| 0.000 | HSG A | |
| 25.916 | HSG B | EX-A, EX-B, EX-C, EX-D, EX-E, EX-F, EX-G |
| 0.000 | HSG C | |
| 0.000 | HSG D | |
| 0.000 | Other | |
| **25.916** | | **TOTAL AREA** |

## Ground Covers (all nodes)

| HSG-A (acres) | HSG-B (acres) | HSG-C (acres) | HSG-D (acres) | Other (acres) | Total (acres) | Ground Cover | Subcatchment Numbers |
|---|---|---|---|---|---|---|---|
| 0.000 | 0.529 | 0.000 | 0.000 | 0.000 | 0.529 | >75% Grass cover, Good | EX-E, EX-F, EX-G |
| 0.000 | 6.690 | 0.000 | 0.000 | 0.000 | 6.690 | Brush, Good | EX-A, EX-B, EX-C, EX-D |
| 0.000 | 1.379 | 0.000 | 0.000 | 0.000 | 1.379 | Paved parking | EX-B, EX-C, EX-E, EX-F |
| 0.000 | 0.107 | 0.000 | 0.000 | 0.000 | 0.107 | Unconnected roofs | EX-F |
| 0.000 | 17.212 | 0.000 | 0.000 | 0.000 | 17.212 | Woods, Good | EX-A, EX-B, EX-C, EX-E, EX-F, EX-G |
| **0.000** | **25.916** | **0.000** | **0.000** | **0.000** | **25.916** | **TOTAL AREA** | |

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 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 EX-A: EX-A** Runoff Area=115,880 sf 0.00% Impervious Runoff Depth=0.13"
Flow Length=348' Tc=38.2 min CN=53 Runoff=0.05 cfs 0.028 af

**Subcatchment EX-B: EX-B** Runoff Area=596,249 sf 2.33% Impervious Runoff Depth=0.13"
Flow Length=985' Tc=35.8 min CN=53 Runoff=0.27 cfs 0.145 af

**Subcatchment EX-C: EX-C** Runoff Area=191,338 sf 9.95% Impervious Runoff Depth=0.27"
Flow Length=1,029' Tc=12.8 min CN=59 Runoff=0.52 cfs 0.099 af

**Subcatchment EX-D: EX-D** Runoff Area=8,890 sf 0.00% Impervious Runoff Depth=0.05"
Flow Length=178' Slope=0.0500 '/' Tc=24.8 min CN=48 Runoff=0.00 cfs 0.001 af

**Subcatchment EX-E: EX-E** Runoff Area=94,739 sf 19.63% Impervious Runoff Depth=0.43"
Flow Length=424' Tc=38.0 min CN=64 Runoff=0.39 cfs 0.077 af

**Subcatchment EX-F: EX-F** Runoff Area=58,741 sf 22.49% Impervious Runoff Depth=0.39"
Flow Length=677' Tc=6.1 min UI Adjusted CN=63 Runoff=0.38 cfs 0.044 af

**Subcatchment EX-G: EX-G** Runoff Area=63,077 sf 0.00% Impervious Runoff Depth=0.17"
Flow Length=440' Tc=30.2 min CN=55 Runoff=0.05 cfs 0.020 af

**Pond SCA: SC-A** Peak Elev=140.52' Storage=0.002 af Inflow=0.05 cfs 0.028 af
Discarded=0.05 cfs 0.028 af Primary=0.00 cfs 0.000 af Outflow=0.05 cfs 0.028 af

**Pond SCB: SC-B** Peak Elev=65.50' Storage=0.148 af Inflow=0.27 cfs 0.145 af
Discarded=1.01 cfs 0.293 af Primary=0.11 cfs 0.001 af Outflow=1.12 cfs 0.294 af

**Link SP1: SP1** Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

**Link SP2: SP2** Inflow=0.38 cfs 0.044 af
Primary=0.38 cfs 0.044 af

**Link SP3: SP3** Inflow=0.39 cfs 0.077 af
Primary=0.39 cfs 0.077 af

**Link SP4: SP4** Inflow=0.11 cfs 0.001 af
Primary=0.11 cfs 0.001 af

**Link SP5: SP5** Inflow=0.00 cfs 0.001 af
Primary=0.00 cfs 0.001 af

**Link SP6: SP6** Inflow=0.52 cfs 0.100 af
Primary=0.52 cfs 0.100 af

**Link SP7: SP7** Inflow=0.05 cfs 0.020 af
Primary=0.05 cfs 0.020 af

**Total Runoff Area = 25.916 ac Runoff Volume = 0.414 af Average Runoff Depth = 0.19"**
**94.27% Pervious = 24.431 ac 5.73% Impervious = 1.486 ac**

## Summary for Subcatchment EX-A: EX-A

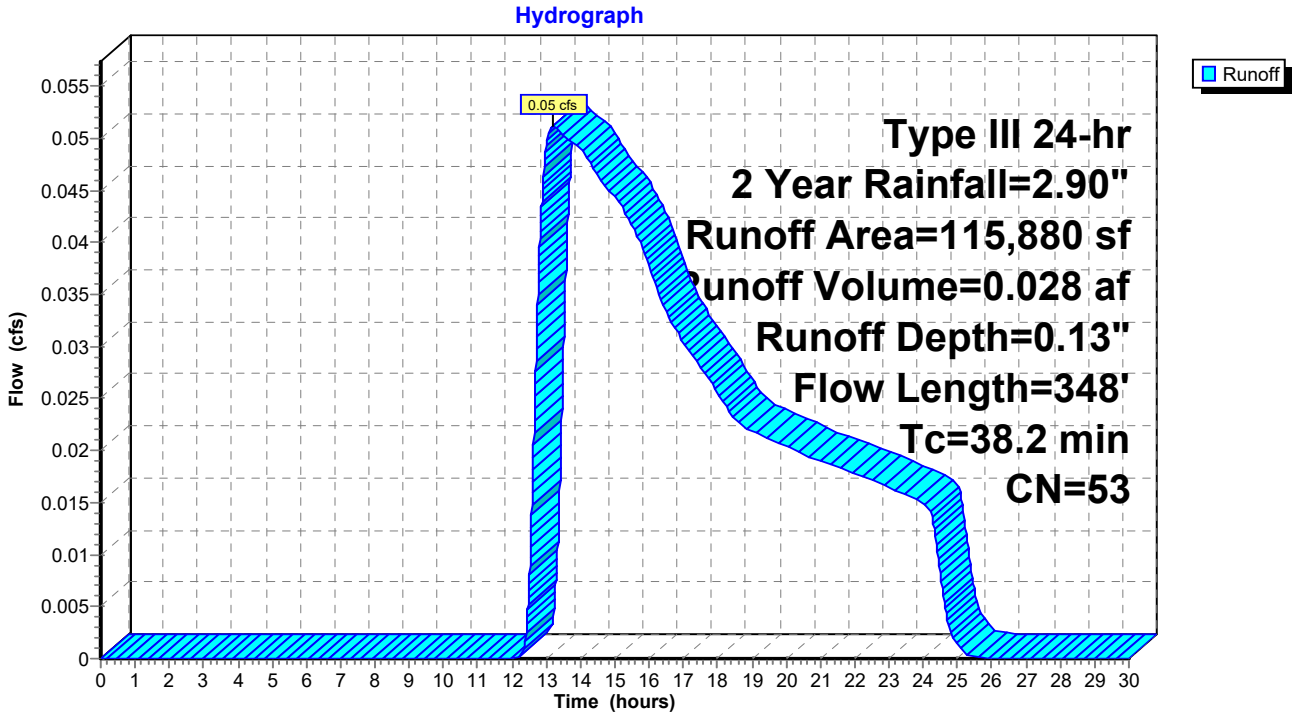
Runoff = 0.05 cfs @ 13.20 hrs, Volume= 0.028 af, Depth= 0.13"
Routed to Pond SCA : SC-A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Rainfall=2.90"

| Area (sf) | CN | Description |
|---|---|---|
| 77,914 | 55 | Woods, Good, HSG B |
| 37,966 | 48 | Brush, Good, HSG B |
| 115,880 | 53 | Weighted Average |
| 115,880 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 35.0 | 300 | 0.0600 | 0.14 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.90" |
| 3.2 | 48 | 0.0013 | 0.25 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 38.2 | 348 | Total | | | |

## Subcatchment EX-A: EX-A



## Summary for Subcatchment EX-B: EX-B

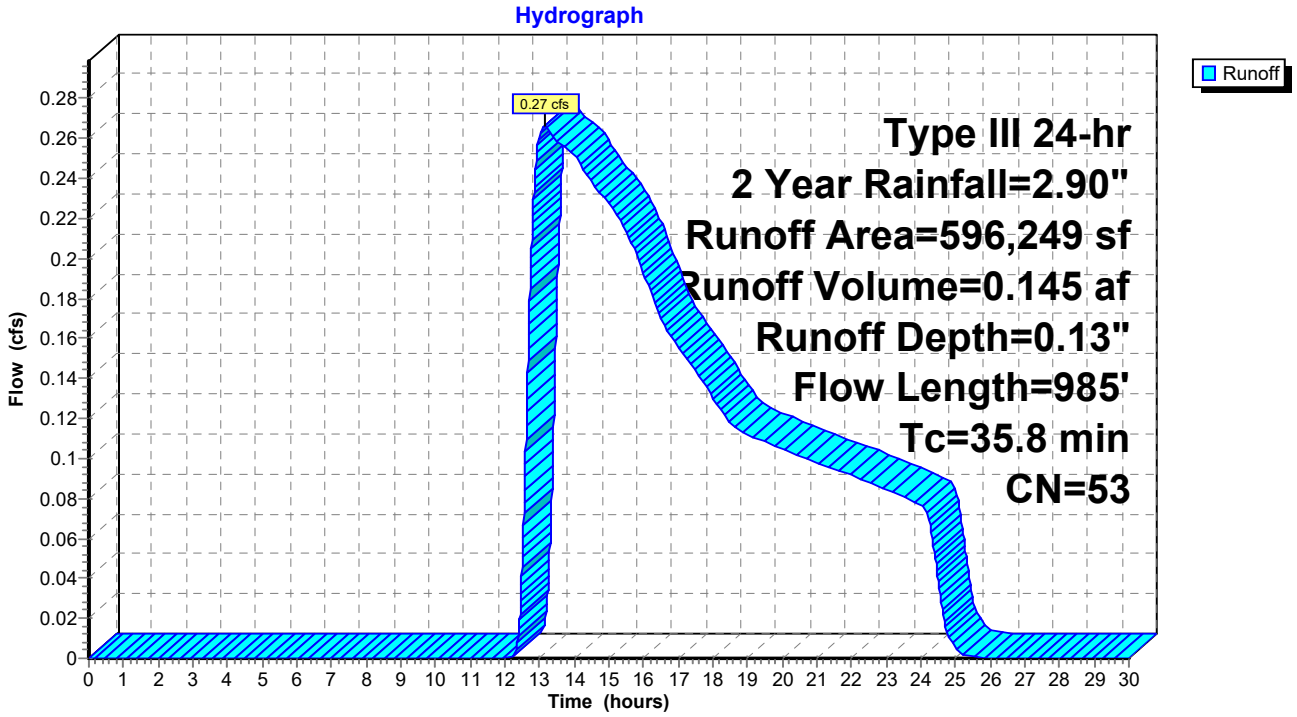
Runoff = 0.27 cfs @ 13.17 hrs, Volume= 0.145 af, Depth= 0.13"
Routed to Pond SCB : SC-B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Rainfall=2.90"

| Area (sf) | CN | Description |
|---|---|---|
| 355,686 | 55 | Woods, Good, HSG B |
| 13,877 | 98 | Paved parking, HSG B |
| 226,686 | 48 | Brush, Good, HSG B |
| 596,249 | 53 | Weighted Average |
| 582,372 | | 97.67% Pervious Area |
| 13,877 | | 2.33% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 11.1 | 181 | 0.3900 | 0.27 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.90" |
| 17.1 | 119 | 0.0568 | 0.12 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.90" |
| 2.9 | 286 | 0.0568 | 1.67 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 1.5 | 134 | 0.0860 | 1.47 | | **Shallow Concentrated Flow,** Woodland Kv= 5.0 fps |
| 1.6 | 147 | 0.0477 | 1.53 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 1.6 | 118 | 0.0297 | 1.21 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 35.8 | 985 | Total | | | |

## Subcatchment EX-B: EX-B



## Summary for Subcatchment EX-C: EX-C

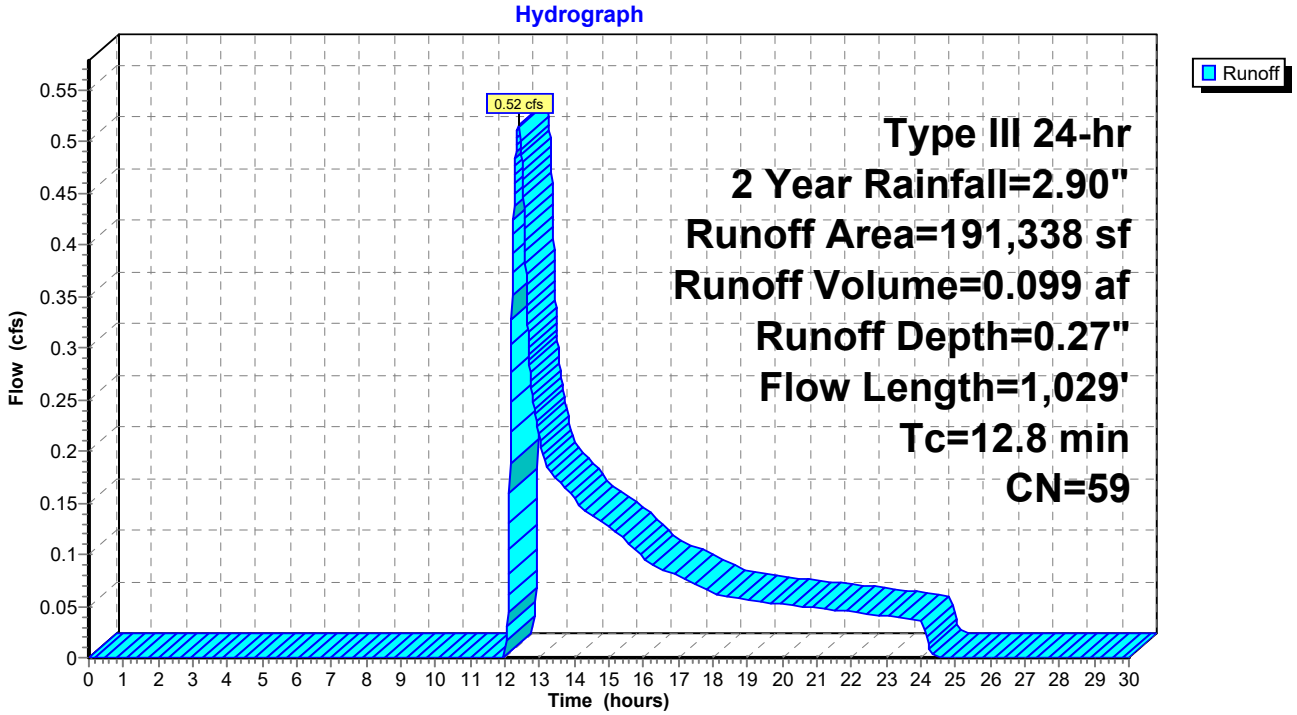
Runoff = 0.52 cfs @ 12.40 hrs, Volume= 0.099 af, Depth= 0.27"
Routed to Link SP6 : SP6

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Rainfall=2.90"

| Area (sf) | CN | Description |
|---|---|---|
| 154,448 | 55 | Woods, Good, HSG B |
| 19,034 | 98 | Paved parking, HSG B |
| 17,856 | 48 | Brush, Good, HSG B |
| 191,338 | 59 | Weighted Average |
| 172,304 | | 90.05% Pervious Area |
| 19,034 | | 9.95% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 10.2 | 202 | 0.6000 | 0.33 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.90" |
| 2.6 | 827 | 0.0700 | 5.37 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 12.8 | 1,029 | Total | | | |

## Subcatchment EX-C: EX-C



## Summary for Subcatchment EX-D: EX-D

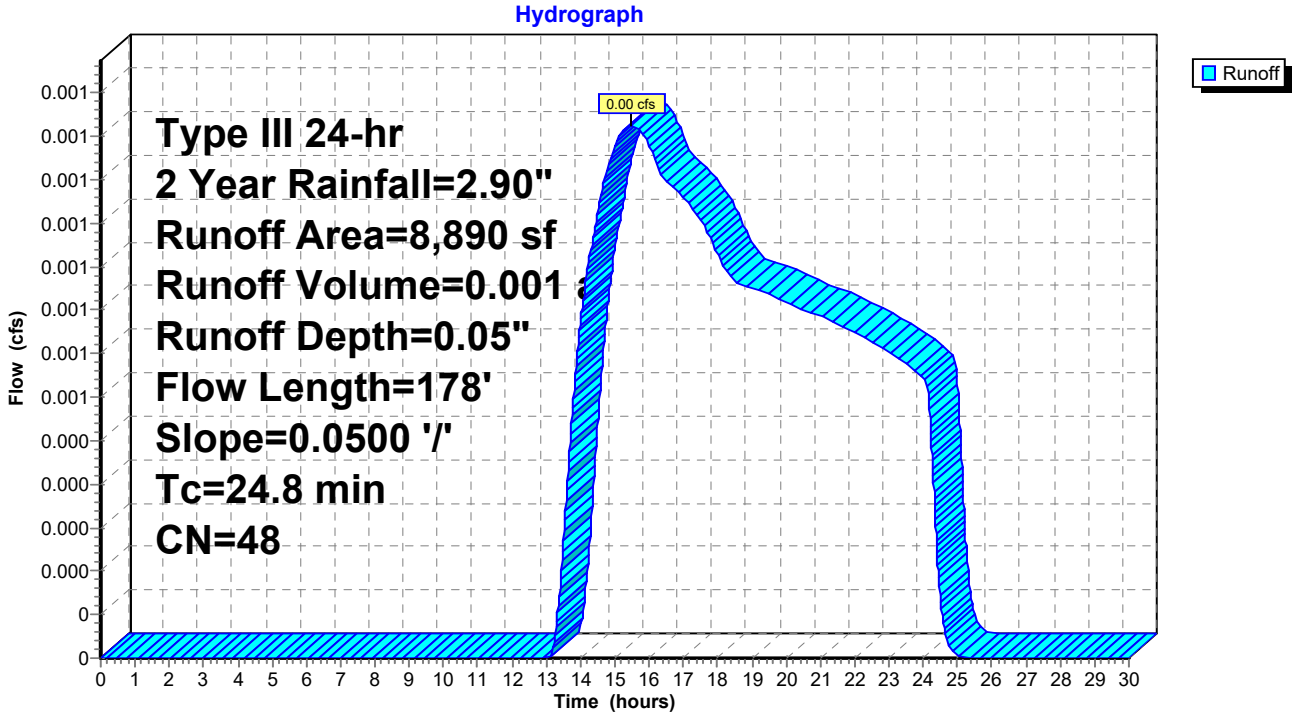
Runoff = 0.00 cfs @ 15.46 hrs, Volume= 0.001 af, Depth= 0.05"
Routed to Link SP5 : SP5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Rainfall=2.90"

| Area (sf) | CN | Description |
|---|---|---|
| 8,890 | 48 | Brush, Good, HSG B |
| 8,890 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 24.8 | 178 | 0.0500 | 0.12 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.90" |

## Subcatchment EX-D: EX-D



## Summary for Subcatchment EX-E: EX-E

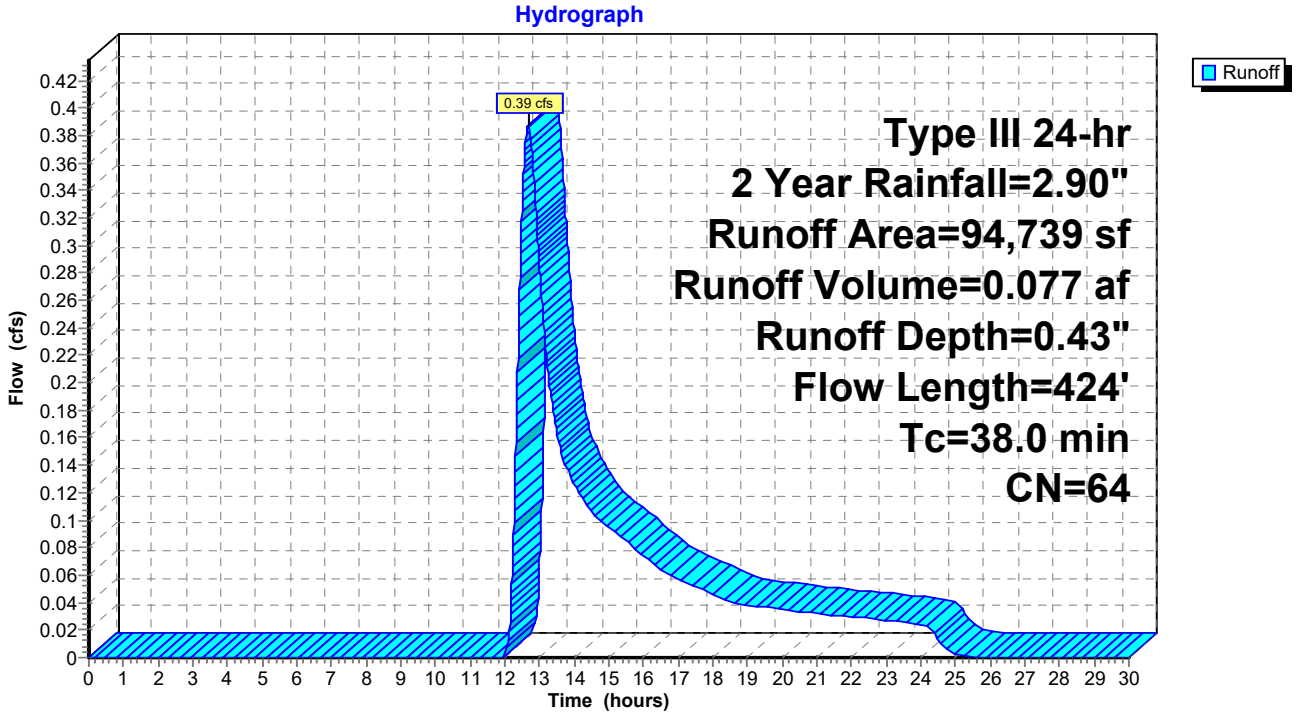
Runoff = 0.39 cfs @ 12.67 hrs, Volume= 0.077 af, Depth= 0.43"
Routed to Link SP3 : SP3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Rainfall=2.90"

| Area (sf) | CN | Description |
|---|---|---|
| 61,092 | 55 | Woods, Good, HSG B |
| 18,595 | 98 | Paved parking, HSG B |
| 15,052 | 61 | >75% Grass cover, Good, HSG B |
| 94,739 | 64 | Weighted Average |
| 76,144 | | 80.37% Pervious Area |
| 18,595 | | 19.63% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 15.5 | 71 | 0.0258 | 0.08 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.90" |
| 20.8 | 191 | 0.0125 | 0.15 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 2.90" |
| 1.7 | 162 | 0.0530 | 1.61 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 38.0 | 424 | Total | | | |

## Subcatchment EX-E: EX-E



## Summary for Subcatchment EX-F: EX-F

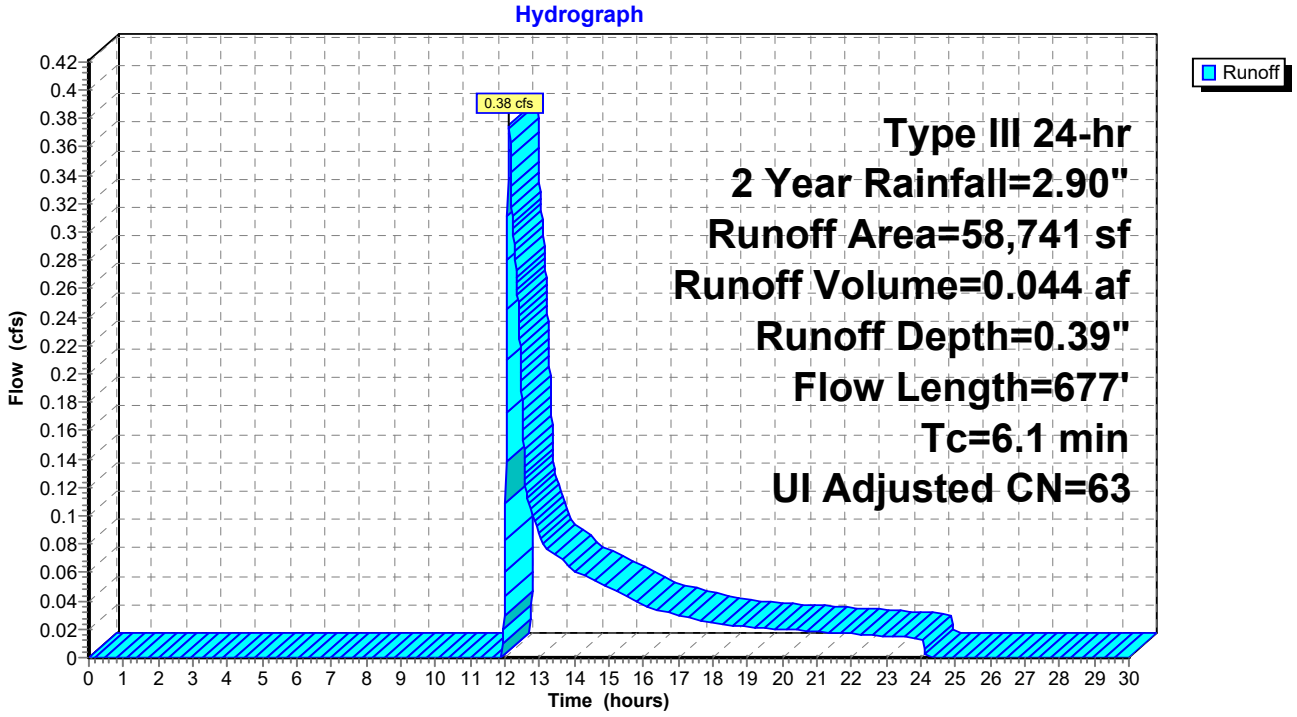
Runoff = 0.38 cfs @ 12.13 hrs, Volume= 0.044 af, Depth= 0.39"
Routed to Link SP2 : SP2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Rainfall=2.90"

| Area (sf) | CN | Adj | Description |
|---|---|---|---|
| 41,158 | 55 | | Woods, Good, HSG B |
| 4,650 | 98 | | Unconnected roofs, HSG B |
| 8,560 | 98 | | Paved parking, HSG B |
| 4,373 | 61 | | >75% Grass cover, Good, HSG B |
| 58,741 | 65 | 63 | Weighted Average, UI Adjusted |
| 45,531 | | | 77.51% Pervious Area |
| 13,210 | | | 22.49% Impervious Area |
| 4,650 | | | 35.20% Unconnected |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.6 | 100 | 0.1500 | 0.36 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 2.90" |
| 1.5 | 577 | 0.1000 | 6.42 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 6.1 | 677 | Total | | | |

## Subcatchment EX-F: EX-F



## Summary for Subcatchment EX-G: EX-G

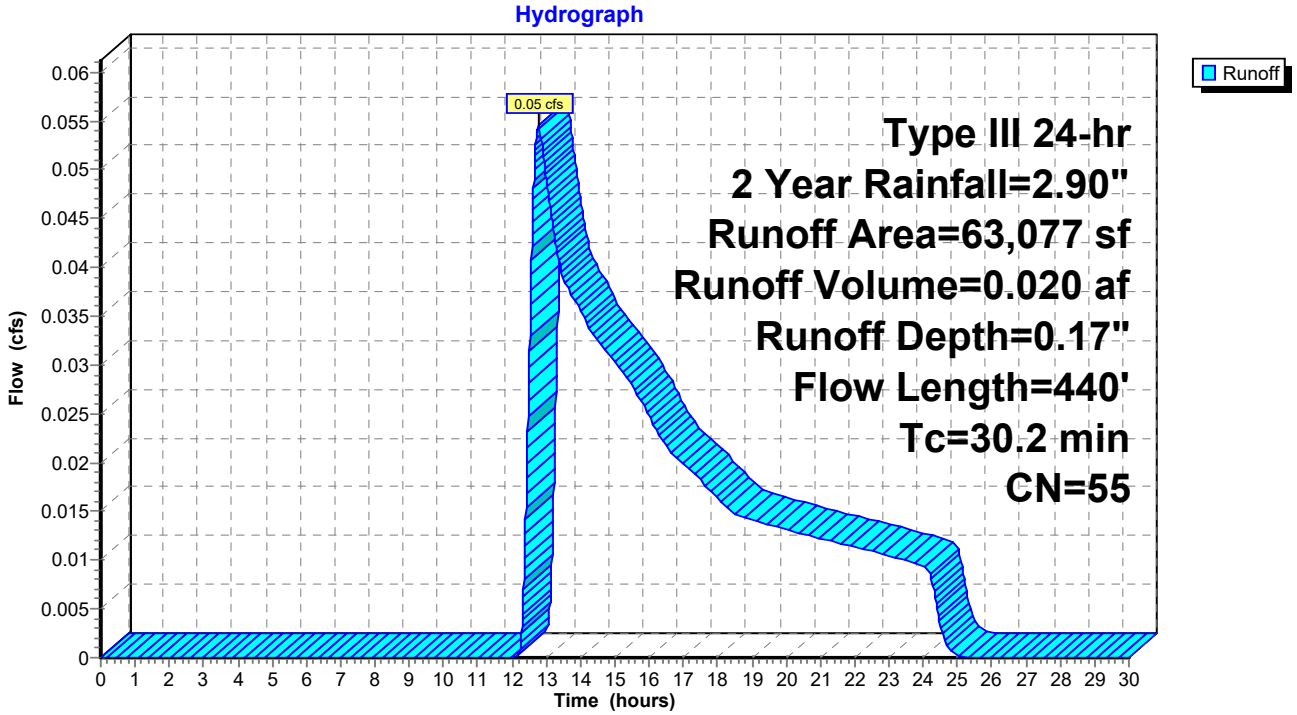
Runoff = 0.05 cfs @ 12.78 hrs, Volume= 0.020 af, Depth= 0.17"
Routed to Link SP7 : SP7

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Rainfall=2.90"

| Area (sf) | CN | Description |
|---|---|---|
| 59,457 | 55 | Woods, Good, HSG B |
| 3,620 | 61 | >75% Grass cover, Good, HSG B |
| 63,077 | 55 | Weighted Average |
| 63,077 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 22.6 | 100 | 0.0200 | 0.07 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.90" |
| 3.6 | 10 | 0.0200 | 0.05 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.90" |
| 4.0 | 330 | 0.3000 | 1.37 | | **Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps |
| 30.2 | 440 | Total | | | |

## Subcatchment EX-G: EX-G



## Summary for Pond SCA: SC-A

Inflow Area = 2.660 ac, 0.00% Impervious, Inflow Depth = 0.13" for 2 Year event
Inflow = 0.05 cfs @ 13.20 hrs, Volume= 0.028 af
Outflow = 0.05 cfs @ 14.59 hrs, Volume= 0.028 af, Atten= 10%, Lag= 82.9 min
Discarded = 0.05 cfs @ 14.59 hrs, Volume= 0.028 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link SP1 : SP1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 140.52' @ 14.59 hrs Surf.Area= 0.009 ac Storage= 0.002 af

Plug-Flow detention time= 13.9 min calculated for 0.028 af (100% of inflow)
Center-of-Mass det. time= 13.9 min ( 1,046.4 - 1,032.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 140.30' | 0.021 af | **Custom Stage Data (Conic)** Listed below (Recalc) |

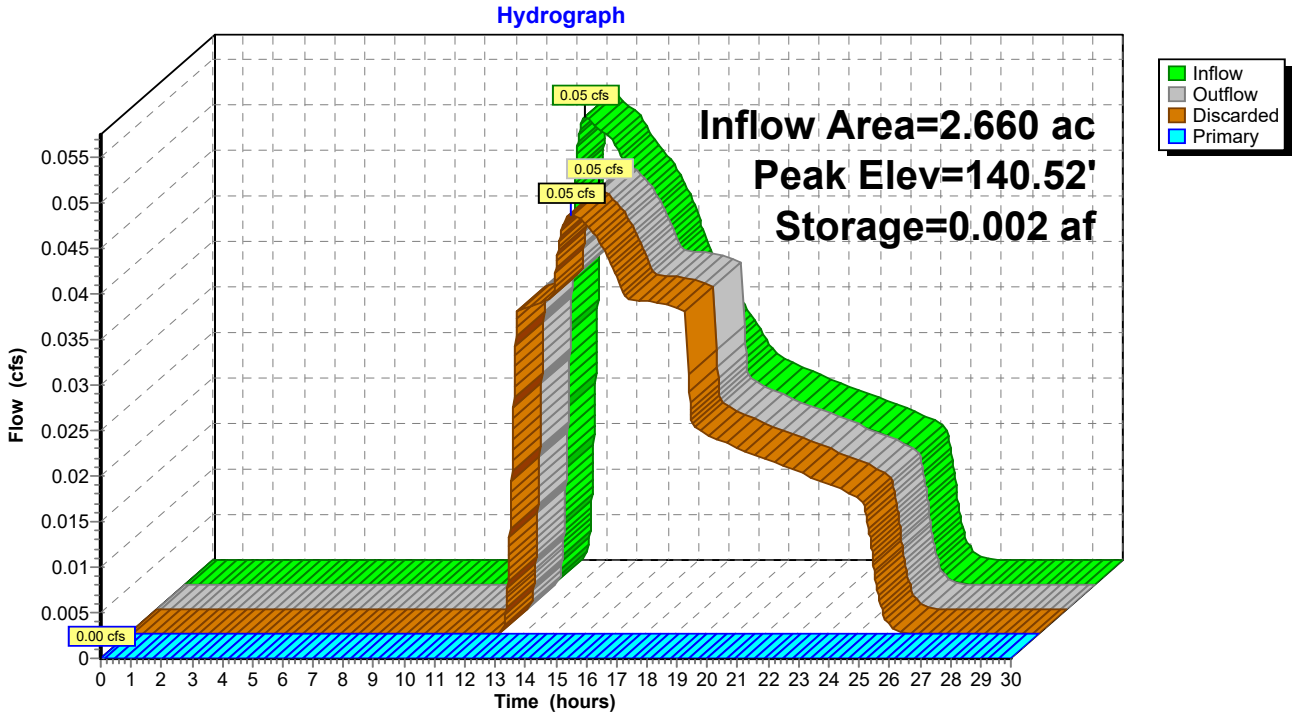
| Elevation (feet) | Surf.Area (acres) | Inc.Store (acre-feet) | Cum.Store (acre-feet) | Wet.Area (acres) |
|---|---|---|---|---|
| 140.30 | 0.007 | 0.000 | 0.000 | 0.007 |
| 140.50 | 0.007 | 0.001 | 0.001 | 0.007 |
| 141.00 | 0.088 | 0.020 | 0.021 | 0.088 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Primary | 141.00' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 140.30' | **5.000 in/hr Exfiltration over Wetted area** Phase-In= 0.01' |
| #2 | Primary | 140.90' | **135.0 deg Sharp-Crested Vee/Trap Weir** Cv= 2.48 (C= 3.10) |

**Discarded OutFlow** Max=0.05 cfs @ 14.59 hrs HW=140.52' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.05 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=140.30' TW=0.00' (Dynamic Tailwater)
↑**2=Sharp-Crested Vee/Trap Weir** ( Controls 0.00 cfs)

## Pond SCA: SC-A


Hydrograph
Inflow Area=2.660 ac
Peak Elev=140.52'
Storage=0.002 af
Inflow
Outflow
Discarded
Primary
0.05 cfs
0.05 cfs
0.05 cfs
0.00 cfs
Flow (cfs)
0.055
0.05
0.045
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
0 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
Time (hours)

## Summary for Pond SCB: SC-B

Inflow Area = 13.688 ac, 2.33% Impervious, Inflow Depth = 0.13" for 2 Year event
Inflow = 0.27 cfs @ 13.17 hrs, Volume= 0.145 af
Outflow = 1.12 cfs @ 0.00 hrs, Volume= 0.294 af, Atten= 0%, Lag= 0.0 min
Discarded = 1.01 cfs @ 0.00 hrs, Volume= 0.293 af
Primary = 0.11 cfs @ 0.00 hrs, Volume= 0.001 af
Routed to Link SP4 : SP4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Starting Elev= 65.50' Surf.Area= 0.200 ac Storage= 0.148 af
Peak Elev= 65.50' @ 0.00 hrs Surf.Area= 0.200 ac Storage= 0.148 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 63.60' | 0.148 af | **Custom Stage Data (Conic)** Listed below |

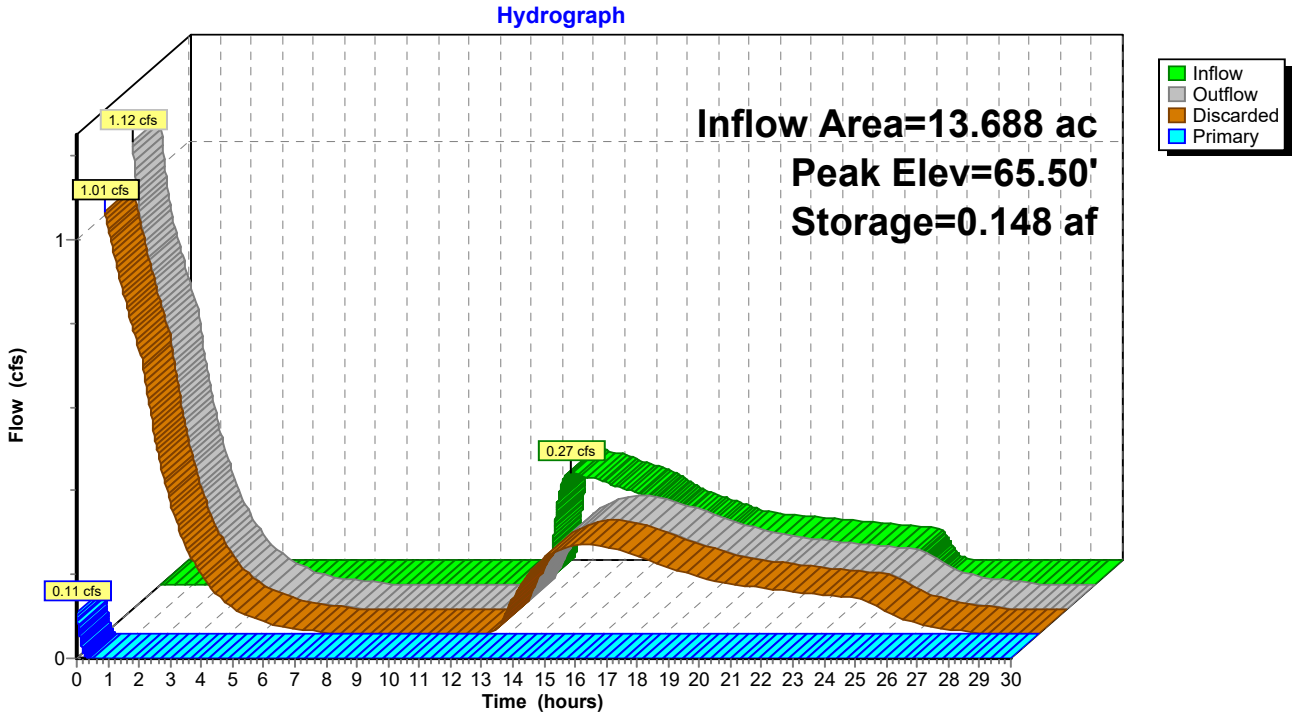
| Elevation (feet) | Surf.Area (acres) | Inc.Store (acre-feet) | Cum.Store (acre-feet) | Wet.Area (acres) |
|---|---|---|---|---|
| 63.60 | 0.001 | 0.000 | 0.000 | 0.001 |
| 65.00 | 0.130 | 0.066 | 0.066 | 0.130 |
| 65.50 | 0.200 | 0.082 | 0.148 | 0.200 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Primary | 65.50' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 63.60' | **5.000 in/hr Exfiltration over Wetted area** |
| #2 | Primary | 65.30' | **135.0 deg Sharp-Crested Vee/Trap Weir** Cv= 2.48 (C= 3.10) |

**Discarded OutFlow** Max=1.01 cfs @ 0.00 hrs HW=65.50' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 1.01 cfs)

**Primary OutFlow** Max=0.11 cfs @ 0.00 hrs HW=65.50' TW=0.00' (Dynamic Tailwater)
↑—**2=Sharp-Crested Vee/Trap Weir** (Weir Controls 0.11 cfs @ 1.11 fps)

## Pond SCB: SC-B

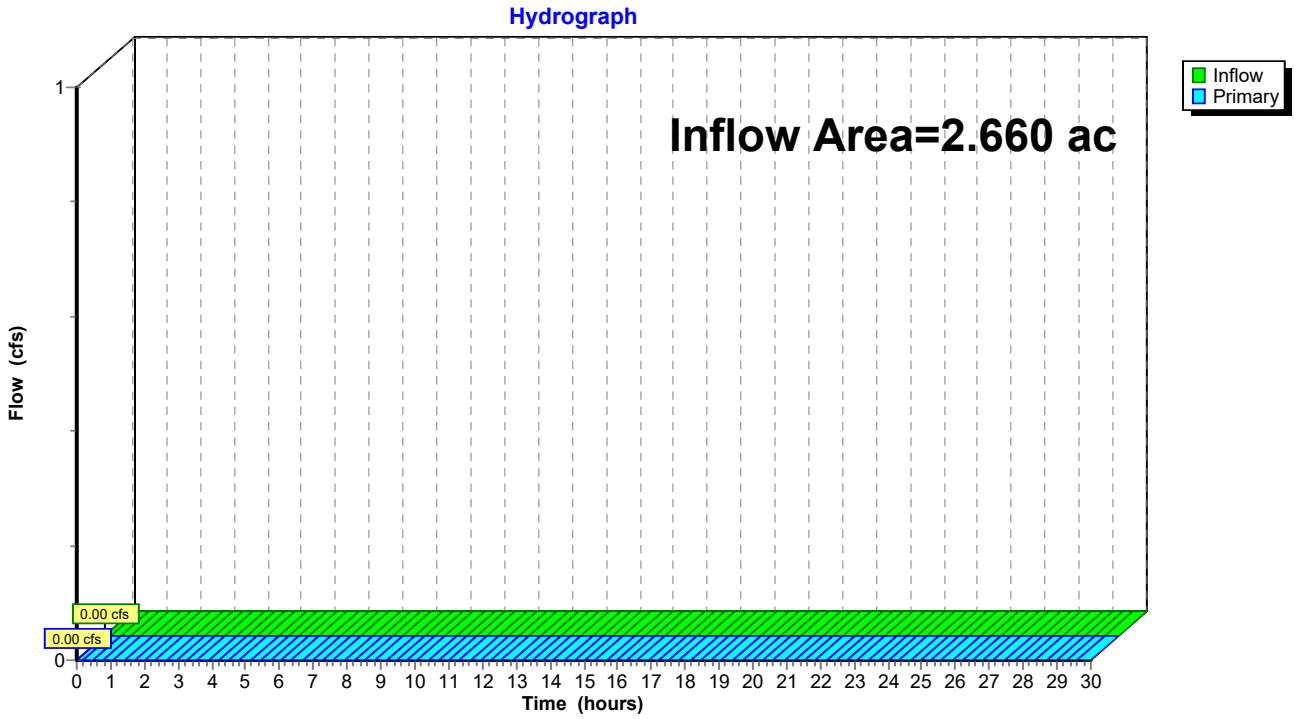

Hydrograph
Inflow Area=13.688 ac
Peak Elev=65.50'
Storage=0.148 af
Inflow
Outflow
Discarded
Primary
1.12 cfs
1.01 cfs
0.27 cfs
0.11 cfs
Flow (cfs)
Time (hours)

## Summary for Link SP1: SP1

Inflow Area = 2.660 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2 Year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

## Link SP1: SP1

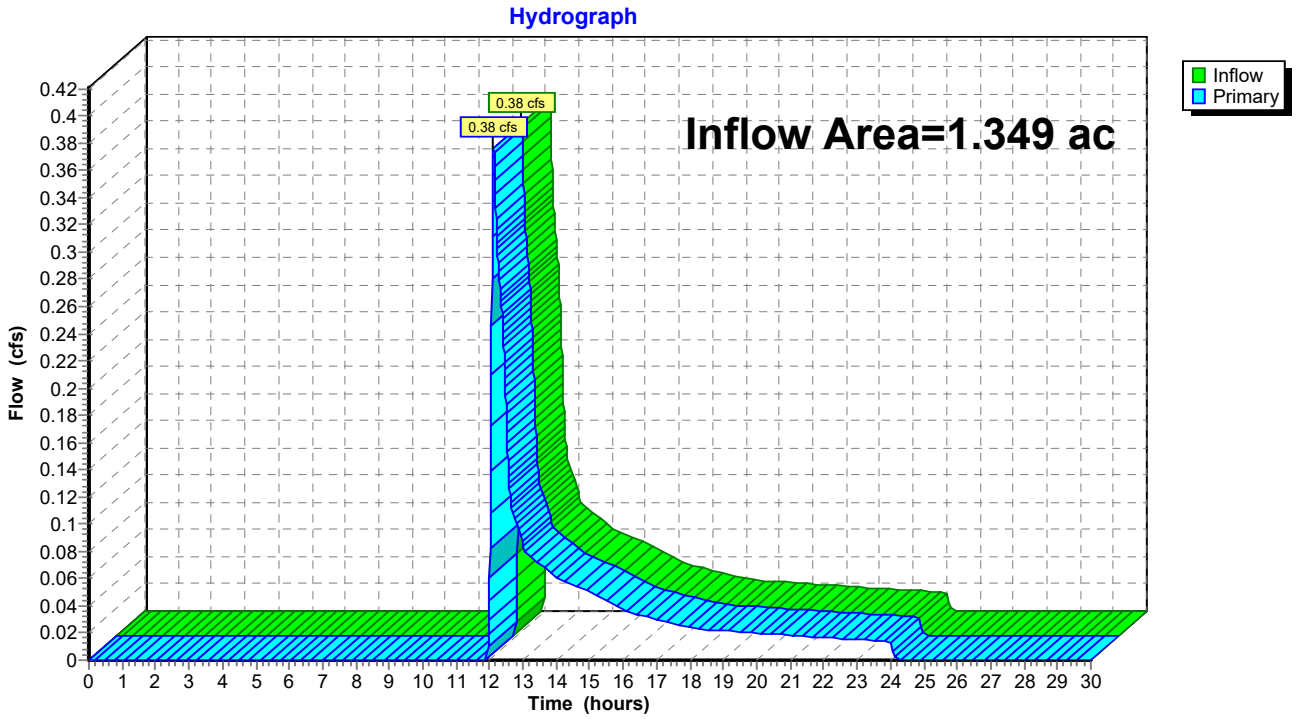


## Summary for Link SP2: SP2

Inflow Area = 1.349 ac, 22.49% Impervious, Inflow Depth = 0.39" for 2 Year event
Inflow = 0.38 cfs @ 12.13 hrs, Volume= 0.044 af
Primary = 0.38 cfs @ 12.13 hrs, Volume= 0.044 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

## Link SP2: SP2

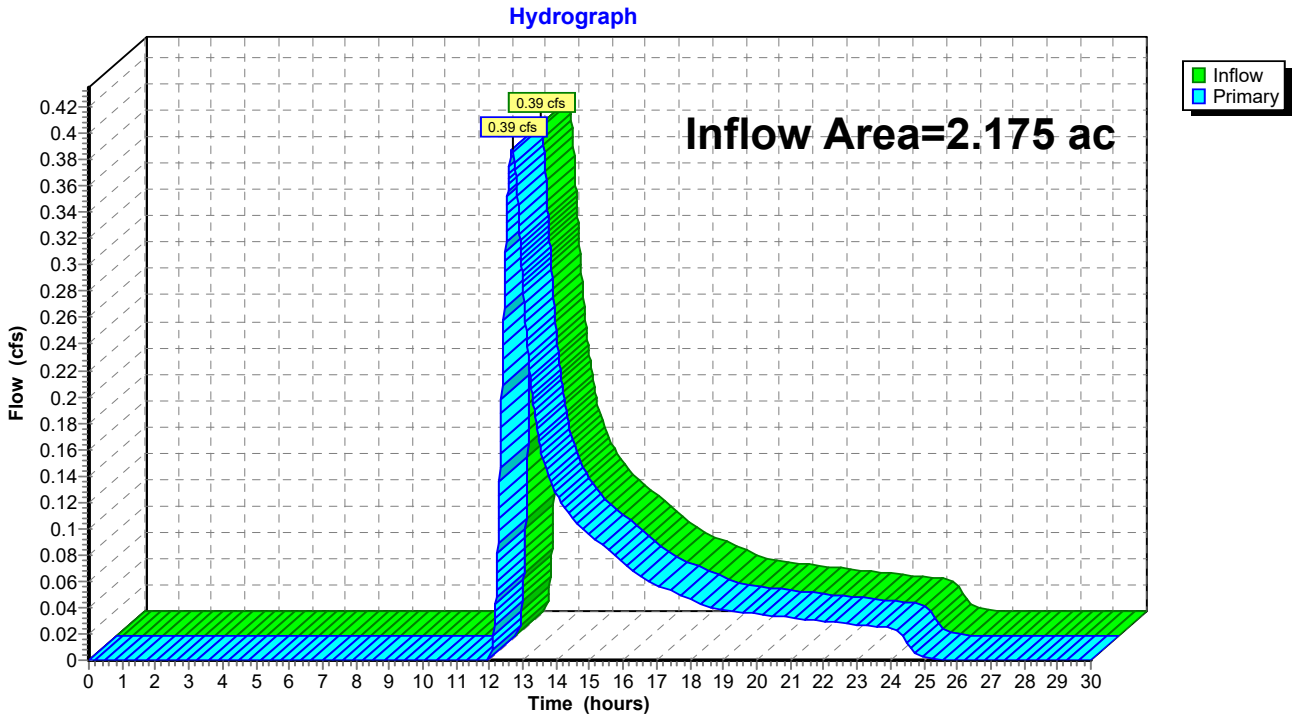


## Summary for Link SP3: SP3

Inflow Area = 2.175 ac, 19.63% Impervious, Inflow Depth = 0.43" for 2 Year event
Inflow = 0.39 cfs @ 12.67 hrs, Volume= 0.077 af
Primary = 0.39 cfs @ 12.67 hrs, Volume= 0.077 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

## Link SP3: SP3

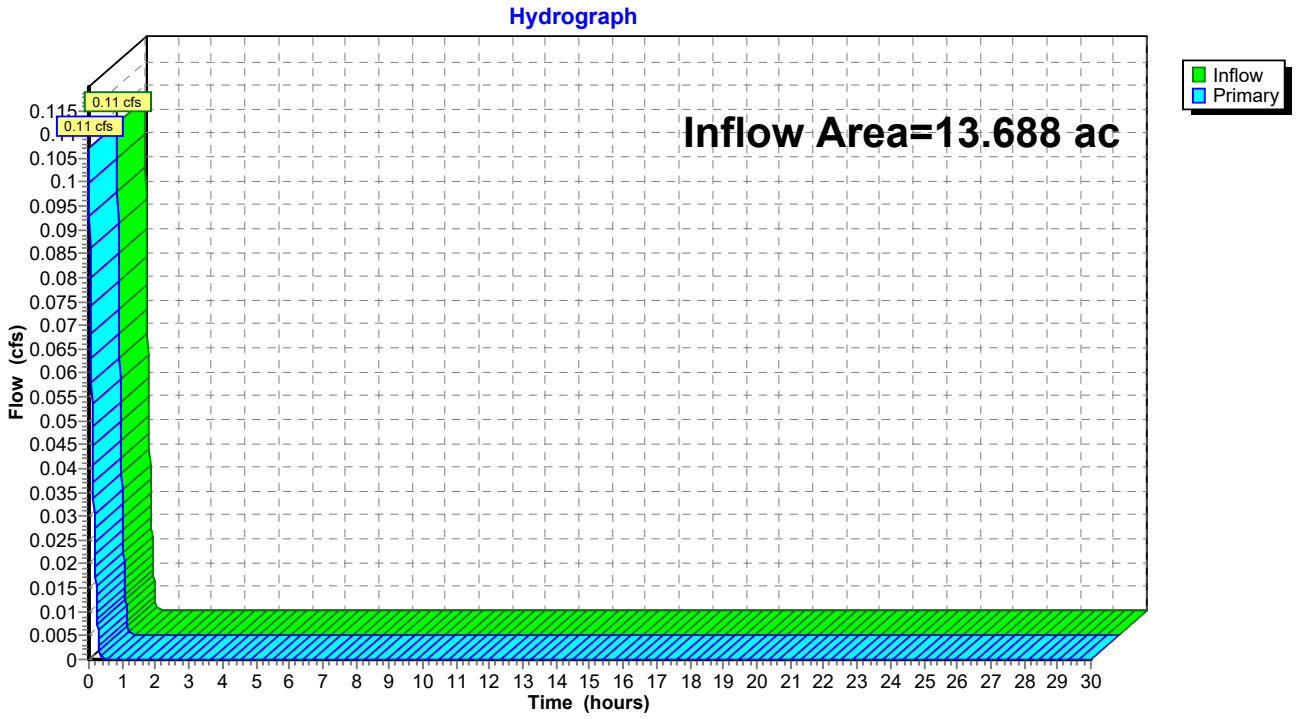


## Summary for Link SP4: SP4

Inflow Area = 13.688 ac, 2.33% Impervious, Inflow Depth = 0.00" for 2 Year event
Inflow = 0.11 cfs @ 0.00 hrs, Volume= 0.001 af
Primary = 0.11 cfs @ 0.00 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min
Routed to Link SP6 : SP6

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

## Link SP4: SP4

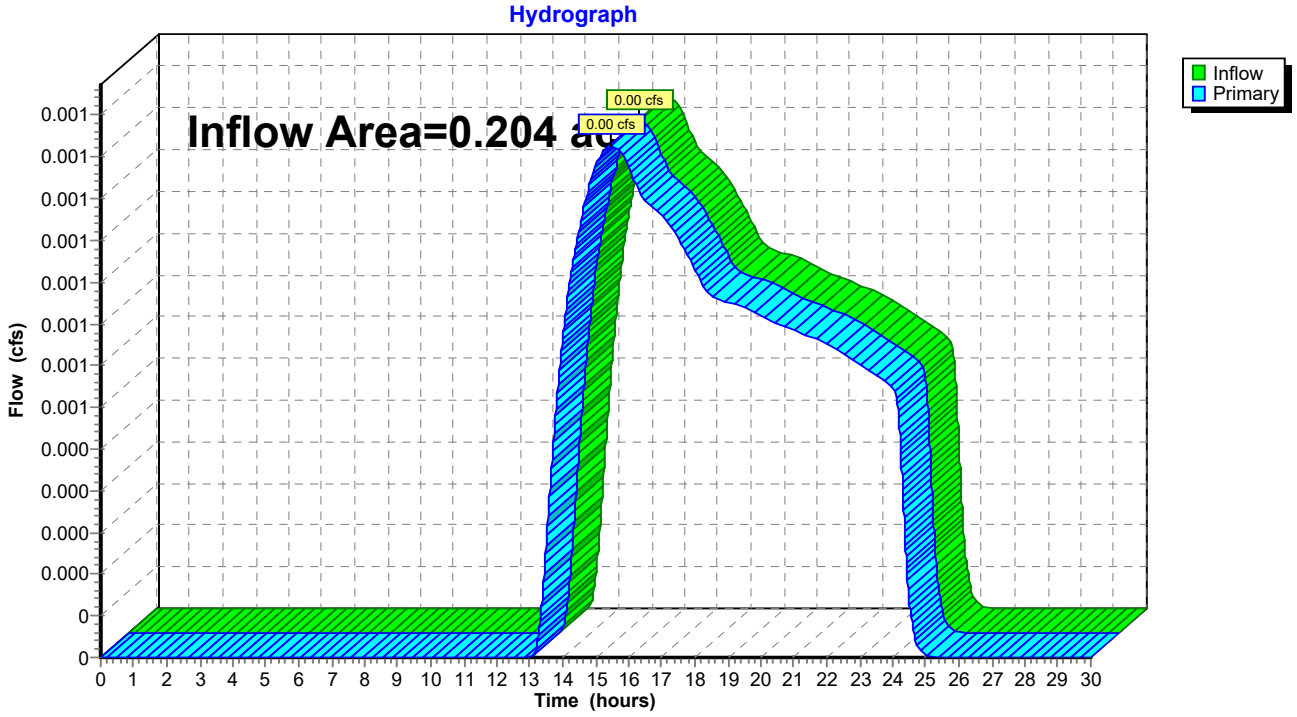


## Summary for Link SP5: SP5

Inflow Area = 0.204 ac, 0.00% Impervious, Inflow Depth = 0.05" for 2 Year event
Inflow = 0.00 cfs @ 15.46 hrs, Volume= 0.001 af
Primary = 0.00 cfs @ 15.46 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min
Routed to Link SP6 : SP6

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

## Link SP5: SP5

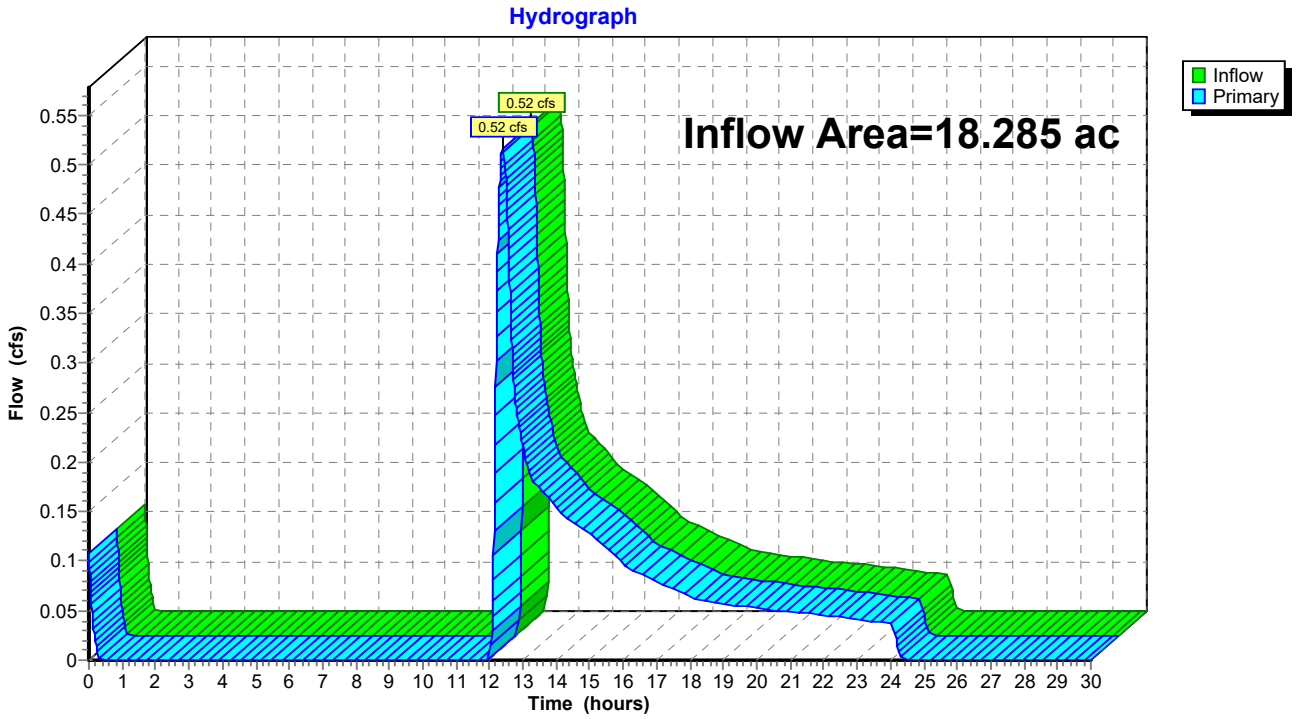


## Summary for Link SP6: SP6

Inflow Area = 18.285 ac, 4.13% Impervious, Inflow Depth = 0.07" for 2 Year event
Inflow = 0.52 cfs @ 12.40 hrs, Volume= 0.100 af
Primary = 0.52 cfs @ 12.40 hrs, Volume= 0.100 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

## Link SP6: SP6

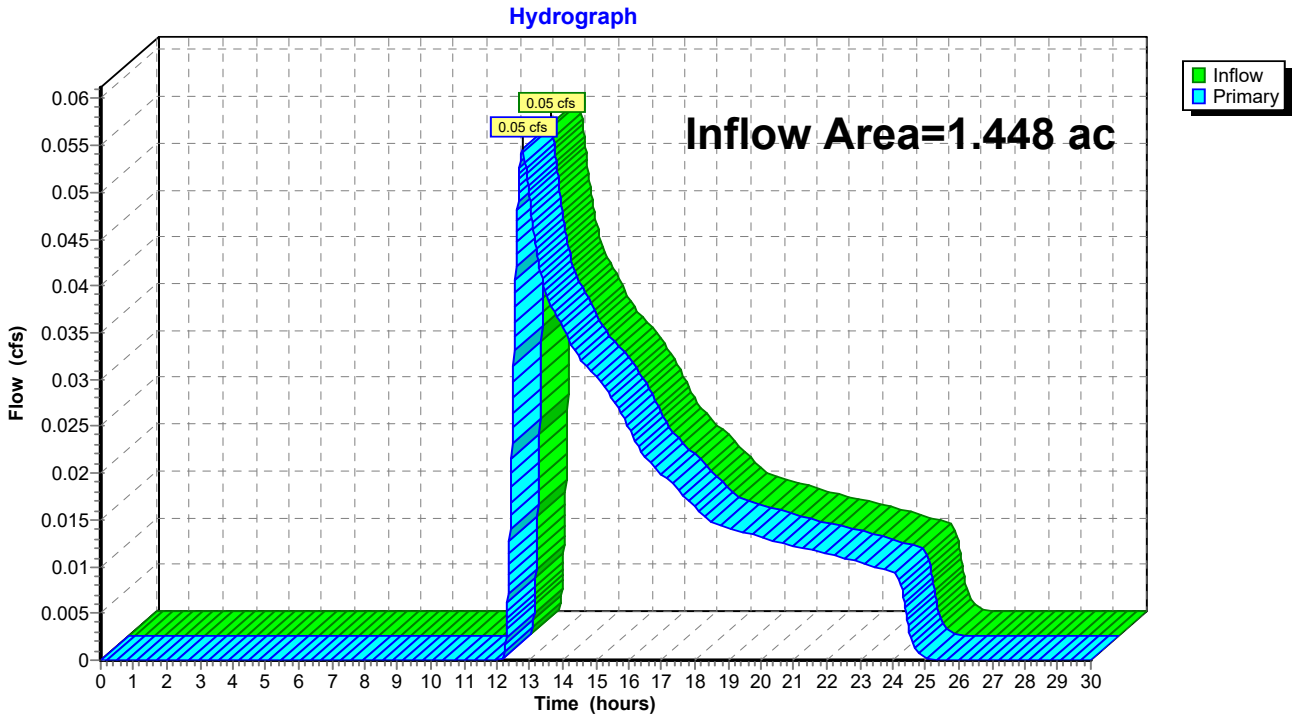


## Summary for Link SP7: SP7

Inflow Area = 1.448 ac, 0.00% Impervious, Inflow Depth = 0.17" for 2 Year event
Inflow = 0.05 cfs @ 12.78 hrs, Volume= 0.020 af
Primary = 0.05 cfs @ 12.78 hrs, Volume= 0.020 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

## Link SP7: SP7



Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 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 EX-A: EX-A** Runoff Area=115,880 sf 0.00% Impervious Runoff Depth=1.10"
Flow Length=348' Tc=38.2 min CN=53 Runoff=1.42 cfs 0.244 af

**Subcatchment EX-B: EX-B** Runoff Area=596,249 sf 2.33% Impervious Runoff Depth=1.10"
Flow Length=985' Tc=35.8 min CN=53 Runoff=7.55 cfs 1.258 af

**Subcatchment EX-C: EX-C** Runoff Area=191,338 sf 9.95% Impervious Runoff Depth=1.53"
Flow Length=1,029' Tc=12.8 min CN=59 Runoff=5.72 cfs 0.559 af

**Subcatchment EX-D: EX-D** Runoff Area=8,890 sf 0.00% Impervious Runoff Depth=0.78"
Flow Length=178' Slope=0.0500 '/' Tc=24.8 min CN=48 Runoff=0.08 cfs 0.013 af

**Subcatchment EX-E: EX-E** Runoff Area=94,739 sf 19.63% Impervious Runoff Depth=1.91"
Flow Length=424' Tc=38.0 min CN=64 Runoff=2.36 cfs 0.347 af

**Subcatchment EX-F: EX-F** Runoff Area=58,741 sf 22.49% Impervious Runoff Depth=1.83"
Flow Length=677' Tc=6.1 min UI Adjusted CN=63 Runoff=2.75 cfs 0.206 af

**Subcatchment EX-G: EX-G** Runoff Area=63,077 sf 0.00% Impervious Runoff Depth=1.24"
Flow Length=440' Tc=30.2 min CN=55 Runoff=1.01 cfs 0.150 af

**Pond SCA: SC-A** Peak Elev=141.00' Storage=0.021 af Inflow=1.42 cfs 0.244 af
Discarded=0.45 cfs 0.203 af Primary=0.98 cfs 0.041 af Outflow=1.42 cfs 0.244 af

**Pond SCB: SC-B** Peak Elev=65.50' Storage=0.148 af Inflow=7.55 cfs 1.258 af
Discarded=1.01 cfs 0.983 af Primary=6.54 cfs 0.424 af Outflow=7.55 cfs 1.406 af

**Link SP1: SP1** Inflow=0.98 cfs 0.041 af
Primary=0.98 cfs 0.041 af

**Link SP2: SP2** Inflow=2.75 cfs 0.206 af
Primary=2.75 cfs 0.206 af

**Link SP3: SP3** Inflow=2.36 cfs 0.347 af
Primary=2.36 cfs 0.347 af

**Link SP4: SP4** Inflow=6.54 cfs 0.424 af
Primary=6.54 cfs 0.424 af

**Link SP5: SP5** Inflow=0.08 cfs 0.013 af
Primary=0.08 cfs 0.013 af

**Link SP6: SP6** Inflow=9.11 cfs 0.996 af
Primary=9.11 cfs 0.996 af

**Link SP7: SP7** Inflow=1.01 cfs 0.150 af
Primary=1.01 cfs 0.150 af

**Total Runoff Area = 25.916 ac Runoff Volume = 2.777 af Average Runoff Depth = 1.29"**
**94.27% Pervious = 24.431 ac 5.73% Impervious = 1.486 ac**

## Summary for Subcatchment EX-A: EX-A

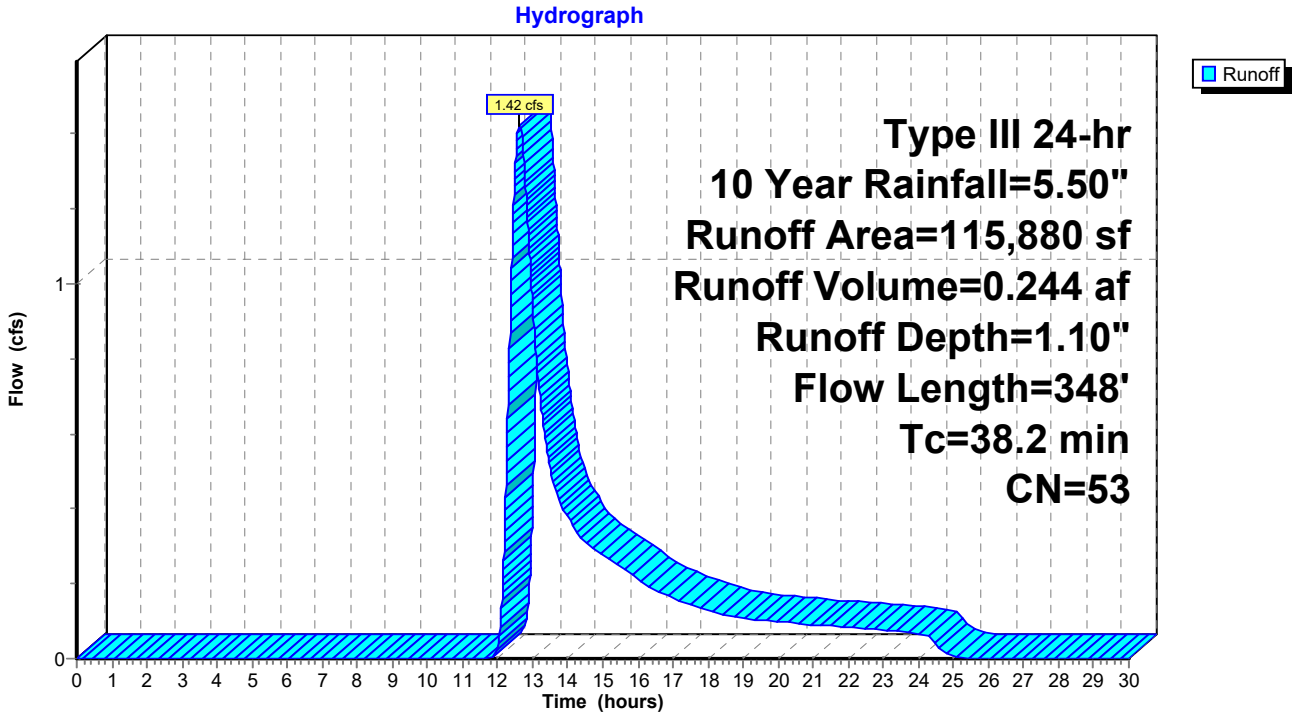
Runoff = 1.42 cfs @ 12.61 hrs, Volume= 0.244 af, Depth= 1.10"
Routed to Pond SCA : SC-A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Rainfall=5.50"

| Area (sf) | CN | Description |
|---|---|---|
| 77,914 | 55 | Woods, Good, HSG B |
| 37,966 | 48 | Brush, Good, HSG B |
| 115,880 | 53 | Weighted Average |
| 115,880 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 35.0 | 300 | 0.0600 | 0.14 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.90" |
| 3.2 | 48 | 0.0013 | 0.25 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 38.2 | 348 | Total | | | |

## Subcatchment EX-A: EX-A



## Summary for Subcatchment EX-B: EX-B

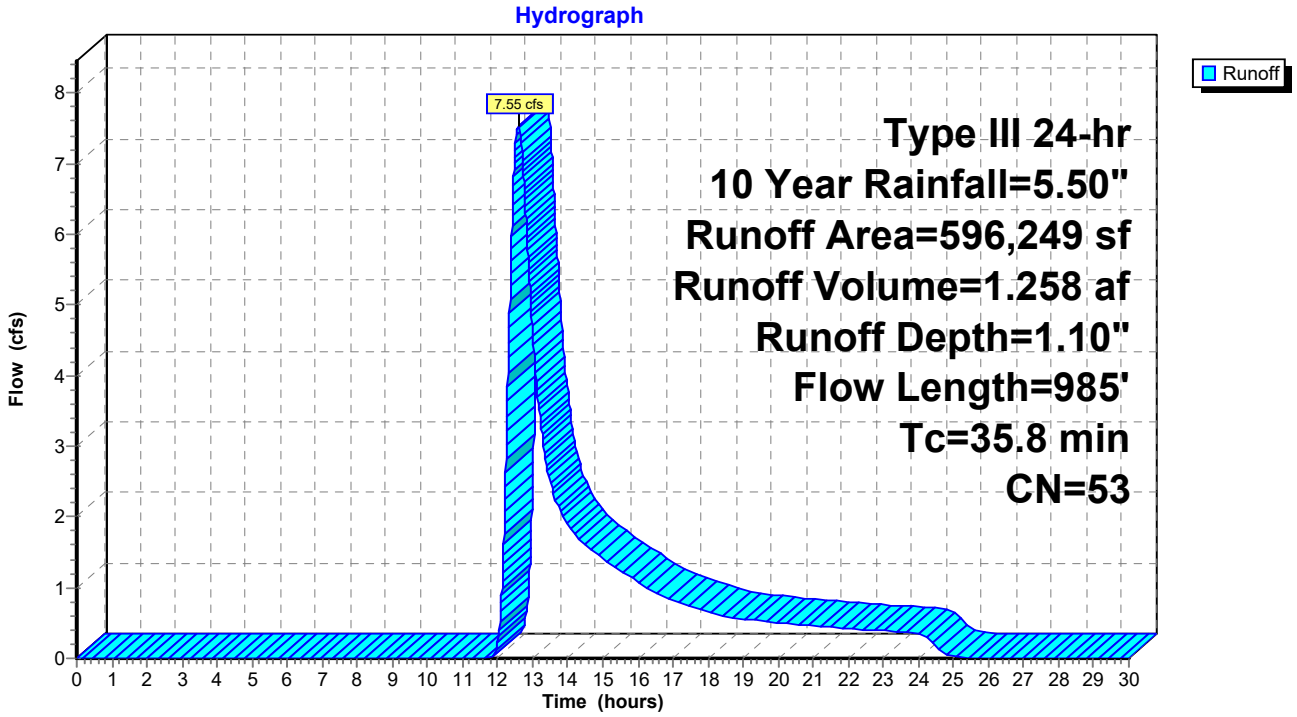
Runoff = 7.55 cfs @ 12.60 hrs, Volume= 1.258 af, Depth= 1.10"
Routed to Pond SCB : SC-B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Rainfall=5.50"

| Area (sf) | CN | Description |
|---|---|---|
| 355,686 | 55 | Woods, Good, HSG B |
| 13,877 | 98 | Paved parking, HSG B |
| 226,686 | 48 | Brush, Good, HSG B |
| 596,249 | 53 | Weighted Average |
| 582,372 | | 97.67% Pervious Area |
| 13,877 | | 2.33% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 11.1 | 181 | 0.3900 | 0.27 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.90" |
| 17.1 | 119 | 0.0568 | 0.12 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.90" |
| 2.9 | 286 | 0.0568 | 1.67 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 1.5 | 134 | 0.0860 | 1.47 | | **Shallow Concentrated Flow,** Woodland Kv= 5.0 fps |
| 1.6 | 147 | 0.0477 | 1.53 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 1.6 | 118 | 0.0297 | 1.21 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 35.8 | 985 | Total | | | |

## Subcatchment EX-B: EX-B



## Summary for Subcatchment EX-C: EX-C

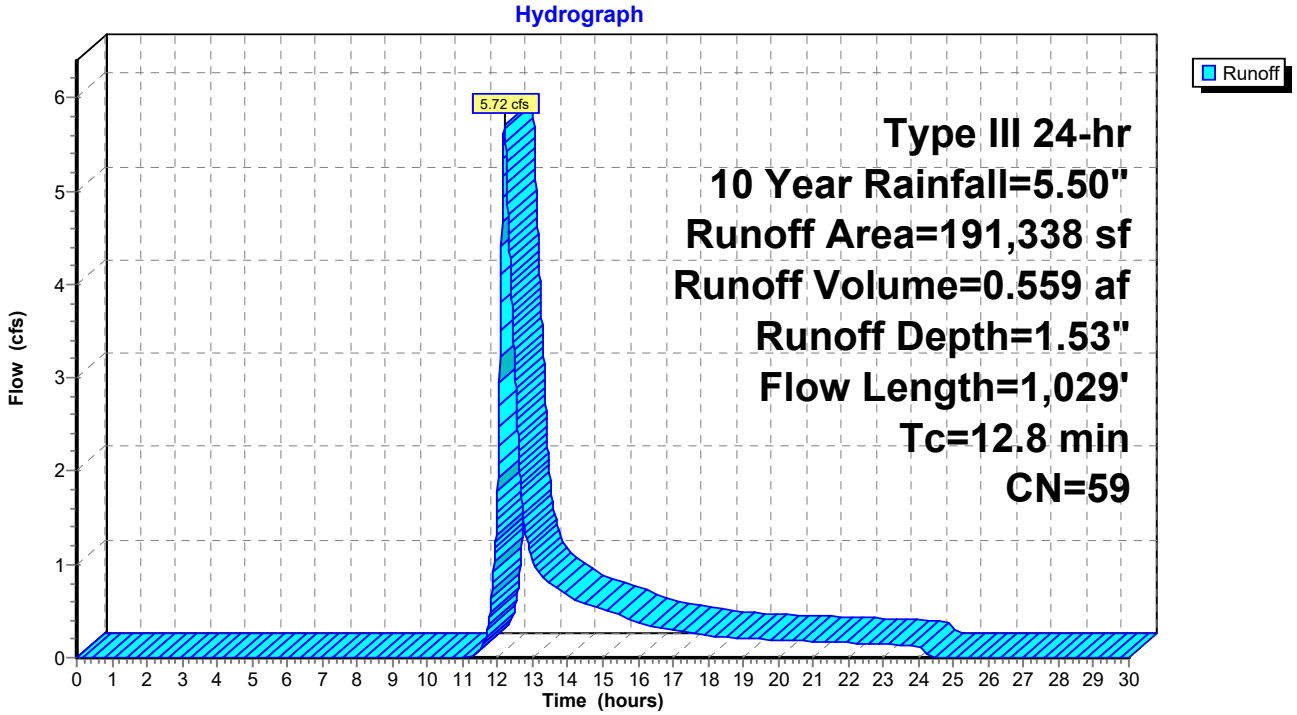
Runoff = 5.72 cfs @ 12.19 hrs, Volume= 0.559 af, Depth= 1.53"
Routed to Link SP6 : SP6

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Rainfall=5.50"

| Area (sf) | CN | Description |
|---|---|---|
| 154,448 | 55 | Woods, Good, HSG B |
| 19,034 | 98 | Paved parking, HSG B |
| 17,856 | 48 | Brush, Good, HSG B |
| 191,338 | 59 | Weighted Average |
| 172,304 | | 90.05% Pervious Area |
| 19,034 | | 9.95% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 10.2 | 202 | 0.6000 | 0.33 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.90" |
| 2.6 | 827 | 0.0700 | 5.37 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 12.8 | 1,029 | Total | | | |

## Subcatchment EX-C: EX-C



## Summary for Subcatchment EX-D: EX-D

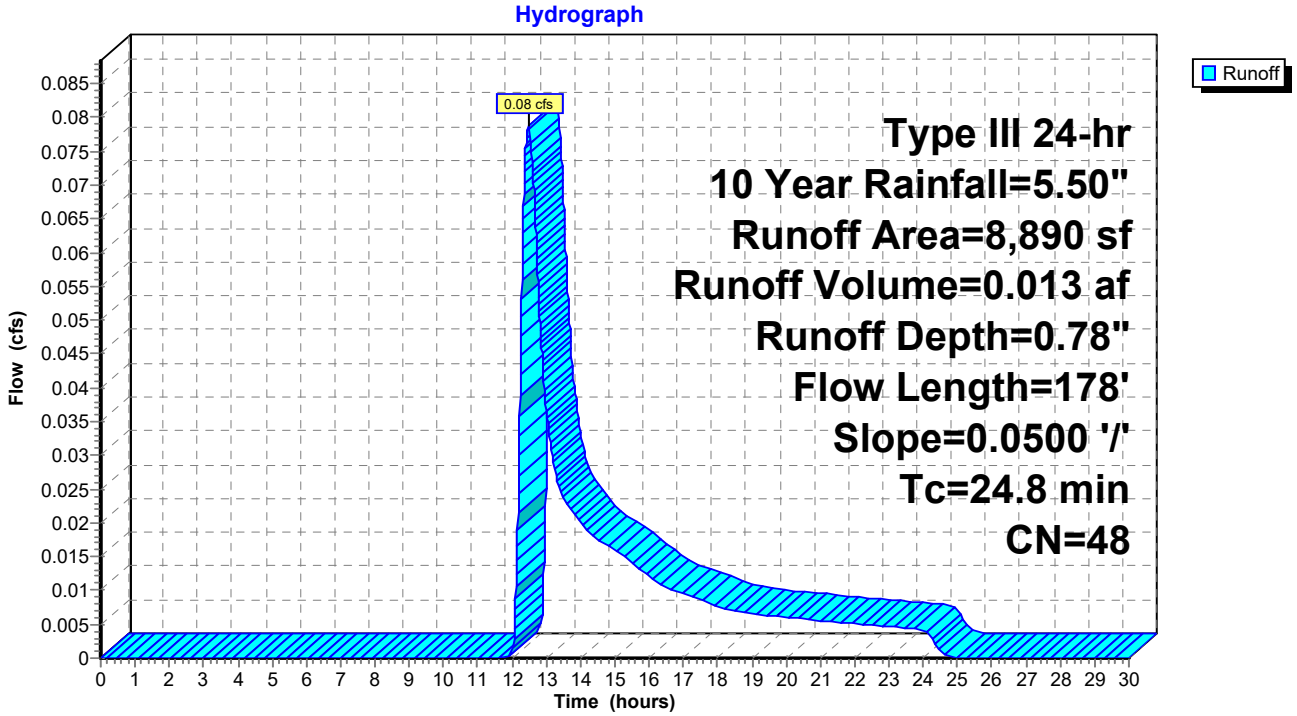
Runoff = 0.08 cfs @ 12.48 hrs, Volume= 0.013 af, Depth= 0.78"
Routed to Link SP5 : SP5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Rainfall=5.50"

| Area (sf) | CN | Description |
|---|---|---|
| 8,890 | 48 | Brush, Good, HSG B |
| 8,890 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 24.8 | 178 | 0.0500 | 0.12 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.90" |

## Subcatchment EX-D: EX-D



## Summary for Subcatchment EX-E: EX-E

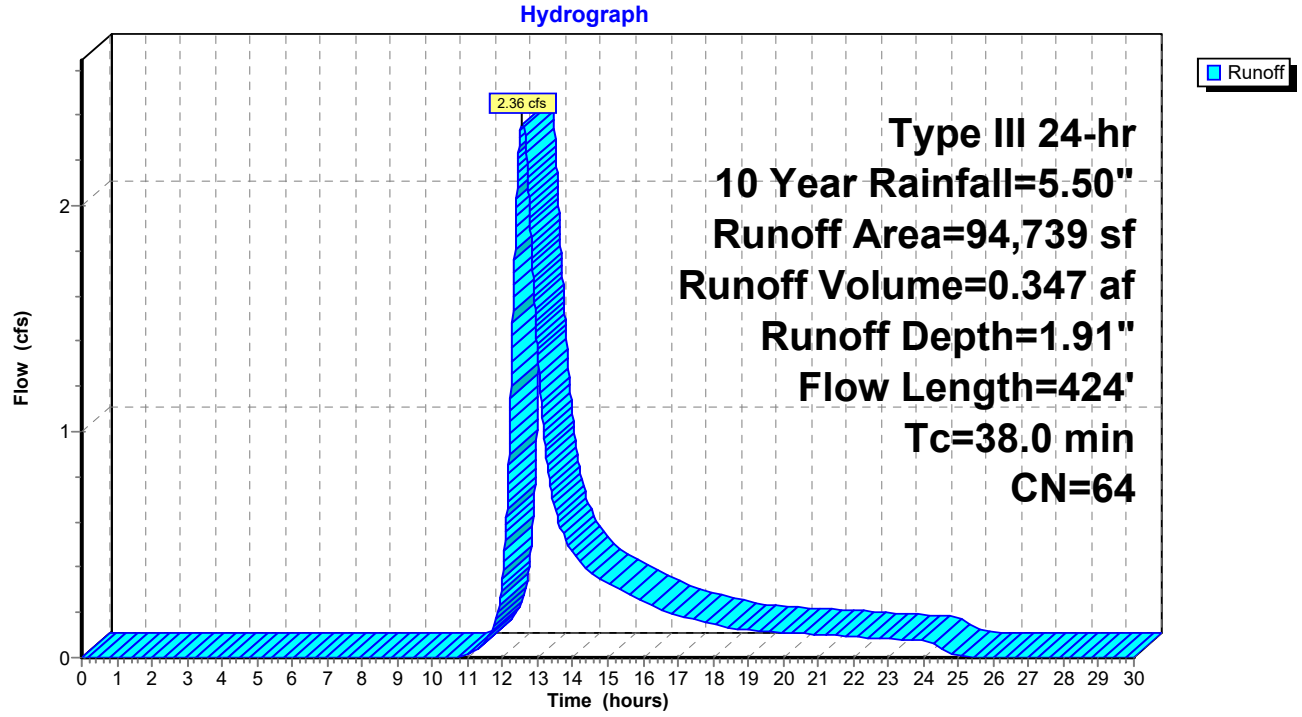
Runoff = 2.36 cfs @ 12.55 hrs, Volume= 0.347 af, Depth= 1.91"
Routed to Link SP3 : SP3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Rainfall=5.50"

| Area (sf) | CN | Description |
|---|---|---|
| 61,092 | 55 | Woods, Good, HSG B |
| 18,595 | 98 | Paved parking, HSG B |
| 15,052 | 61 | >75% Grass cover, Good, HSG B |
| 94,739 | 64 | Weighted Average |
| 76,144 | | 80.37% Pervious Area |
| 18,595 | | 19.63% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 15.5 | 71 | 0.0258 | 0.08 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.90" |
| 20.8 | 191 | 0.0125 | 0.15 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 2.90" |
| 1.7 | 162 | 0.0530 | 1.61 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 38.0 | 424 | Total | | | |

## Subcatchment EX-E: EX-E



## Summary for Subcatchment EX-F: EX-F

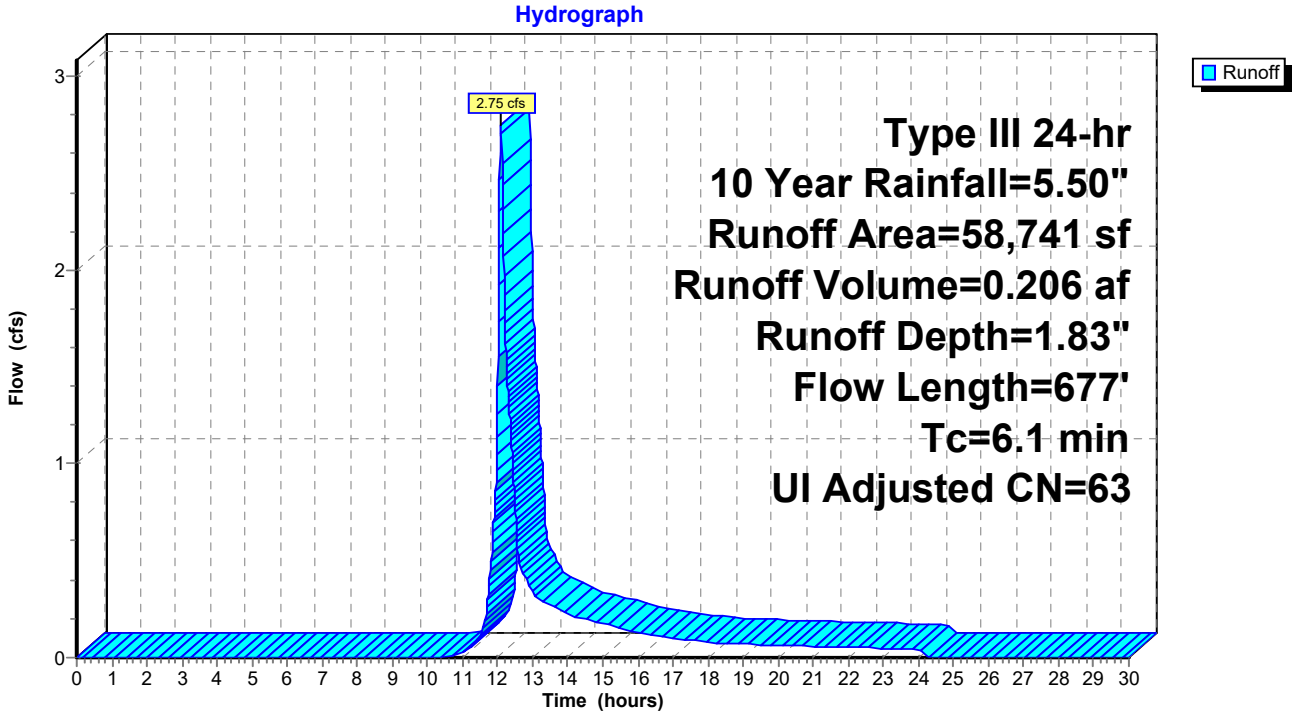
Runoff = 2.75 cfs @ 12.10 hrs, Volume= 0.206 af, Depth= 1.83"
Routed to Link SP2 : SP2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Rainfall=5.50"

| Area (sf) | CN | Adj | Description |
|---|---|---|---|
| 41,158 | 55 | | Woods, Good, HSG B |
| 4,650 | 98 | | Unconnected roofs, HSG B |
| 8,560 | 98 | | Paved parking, HSG B |
| 4,373 | 61 | | >75% Grass cover, Good, HSG B |
| 58,741 | 65 | 63 | Weighted Average, UI Adjusted |
| 45,531 | | | 77.51% Pervious Area |
| 13,210 | | | 22.49% Impervious Area |
| 4,650 | | | 35.20% Unconnected |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.6 | 100 | 0.1500 | 0.36 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 2.90" |
| 1.5 | 577 | 0.1000 | 6.42 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 6.1 | 677 | Total | | | |

## Subcatchment EX-F: EX-F



## Summary for Subcatchment EX-G: EX-G

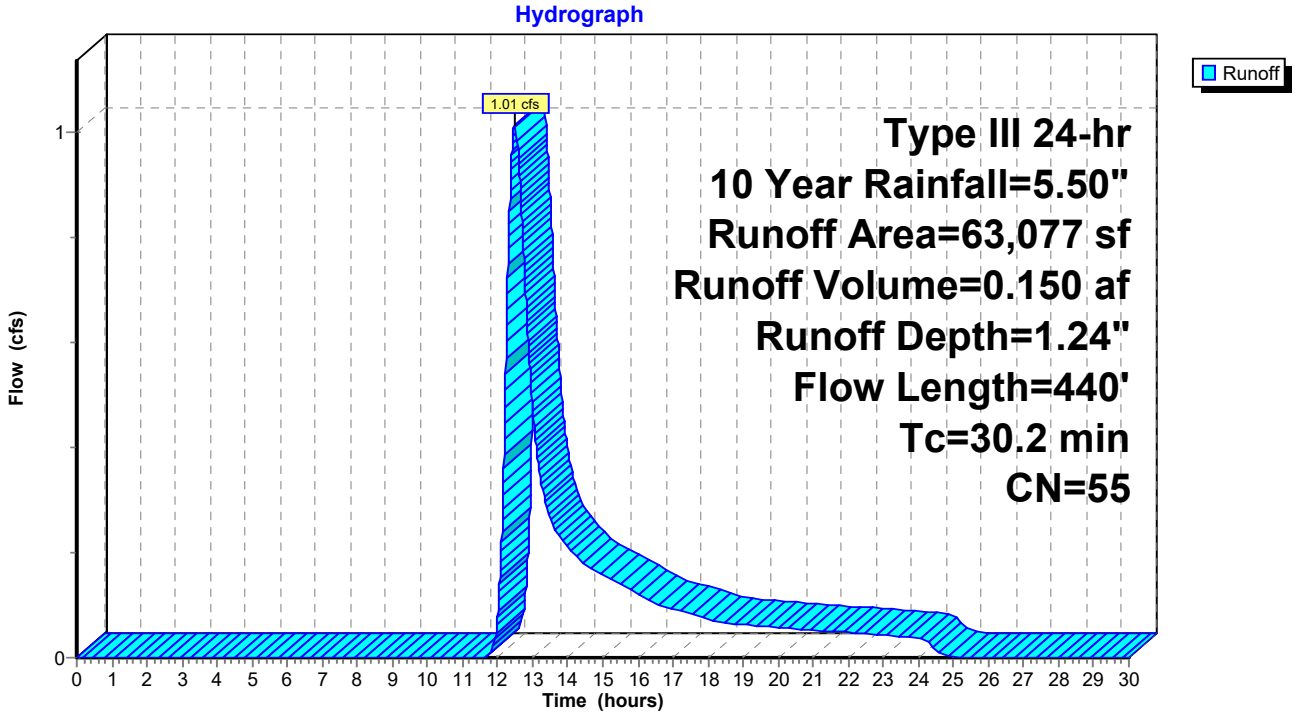
Runoff = 1.01 cfs @ 12.49 hrs, Volume= 0.150 af, Depth= 1.24"
Routed to Link SP7 : SP7

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Rainfall=5.50"

| Area (sf) | CN | Description |
|---|---|---|
| 59,457 | 55 | Woods, Good, HSG B |
| 3,620 | 61 | >75% Grass cover, Good, HSG B |
| 63,077 | 55 | Weighted Average |
| 63,077 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 22.6 | 100 | 0.0200 | 0.07 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.90" |
| 3.6 | 10 | 0.0200 | 0.05 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.90" |
| 4.0 | 330 | 0.3000 | 1.37 | | **Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps |
| 30.2 | 440 | Total | | | |

## Subcatchment EX-G: EX-G



## Summary for Pond SCA: SC-A

Inflow Area = 2.660 ac, 0.00% Impervious, Inflow Depth = 1.10" for 10 Year event
Inflow = 1.42 cfs @ 12.61 hrs, Volume= 0.244 af
Outflow = 1.42 cfs @ 12.62 hrs, Volume= 0.244 af, Atten= 0%, Lag= 0.5 min
Discarded = 0.45 cfs @ 12.56 hrs, Volume= 0.203 af
Primary = 0.98 cfs @ 12.62 hrs, Volume= 0.041 af
Routed to Link SP1 : SP1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 141.00' @ 12.56 hrs Surf.Area= 0.088 ac Storage= 0.021 af

Plug-Flow detention time= 24.0 min calculated for 0.244 af (100% of inflow)
Center-of-Mass det. time= 24.0 min ( 945.1 - 921.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 140.30' | 0.021 af | **Custom Stage Data (Conic)** Listed below (Recalc) |

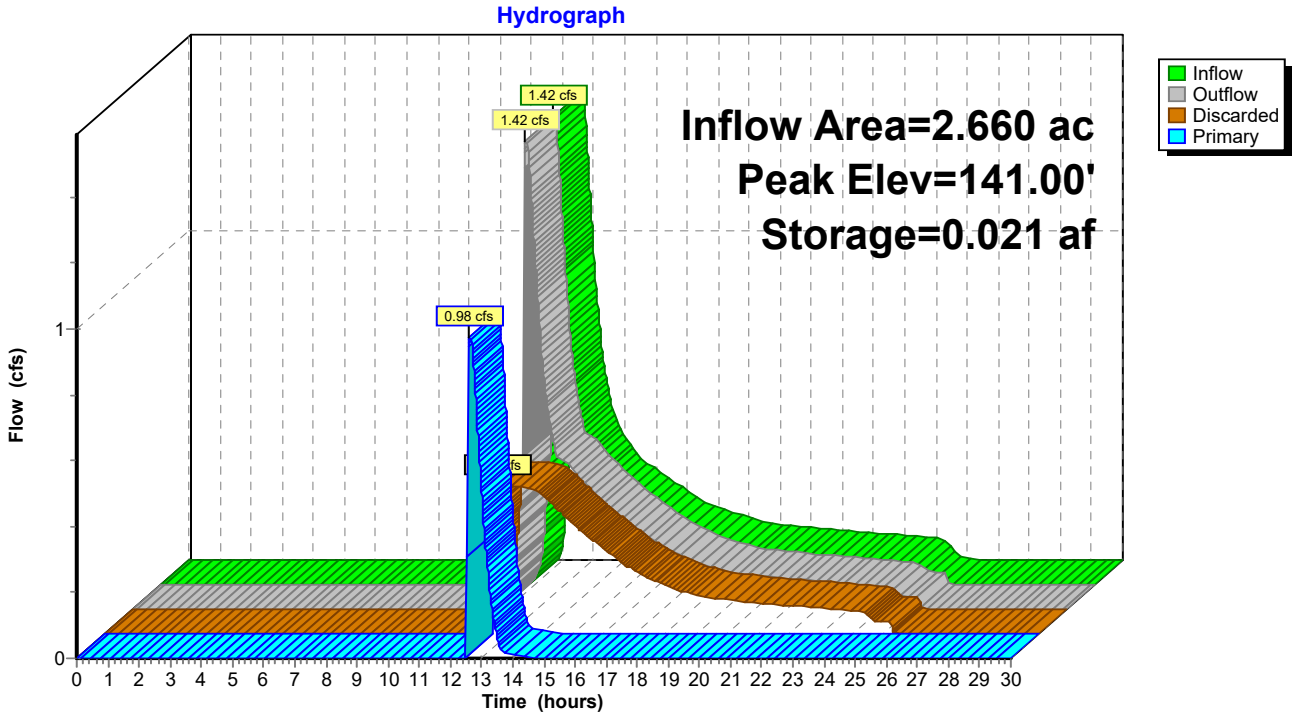
| Elevation (feet) | Surf.Area (acres) | Inc.Store (acre-feet) | Cum.Store (acre-feet) | Wet.Area (acres) |
|---|---|---|---|---|
| 140.30 | 0.007 | 0.000 | 0.000 | 0.007 |
| 140.50 | 0.007 | 0.001 | 0.001 | 0.007 |
| 141.00 | 0.088 | 0.020 | 0.021 | 0.088 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Primary | 141.00' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 140.30' | **5.000 in/hr Exfiltration over Wetted area** Phase-In= 0.01' |
| #2 | Primary | 140.90' | **135.0 deg Sharp-Crested Vee/Trap Weir** Cv= 2.48 (C= 3.10) |

**Discarded OutFlow** Max=0.45 cfs @ 12.56 hrs HW=141.00' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.45 cfs)

**Primary OutFlow** Max=0.02 cfs @ 12.62 hrs HW=141.00' TW=0.00' (Dynamic Tailwater)
↑**2=Sharp-Crested Vee/Trap Weir** (Weir Controls 0.02 cfs @ 0.78 fps)

## Pond SCA: SC-A


Hydrograph
Inflow
Outflow
Discarded
Primary
Inflow Area=2.660 ac
Peak Elev=141.00'
Storage=0.021 af
1.42 cfs
1.42 cfs
0.98 cfs
Flow (cfs)
Time (hours)

## Summary for Pond SCB: SC-B

Inflow Area = 13.688 ac, 2.33% Impervious, Inflow Depth = 1.10" for 10 Year event
Inflow = 7.55 cfs @ 12.60 hrs, Volume= 1.258 af
Outflow = 7.55 cfs @ 12.61 hrs, Volume= 1.406 af, Atten= 0%, Lag= 0.1 min
Discarded = 1.01 cfs @ 0.00 hrs, Volume= 0.983 af
Primary = 6.54 cfs @ 12.61 hrs, Volume= 0.424 af
Routed to Link SP4 : SP4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Starting Elev= 65.50' Surf.Area= 0.200 ac Storage= 0.148 af
Peak Elev= 65.50' @ 0.00 hrs Surf.Area= 0.200 ac Storage= 0.148 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 63.60' | 0.148 af | **Custom Stage Data (Conic)** Listed below |

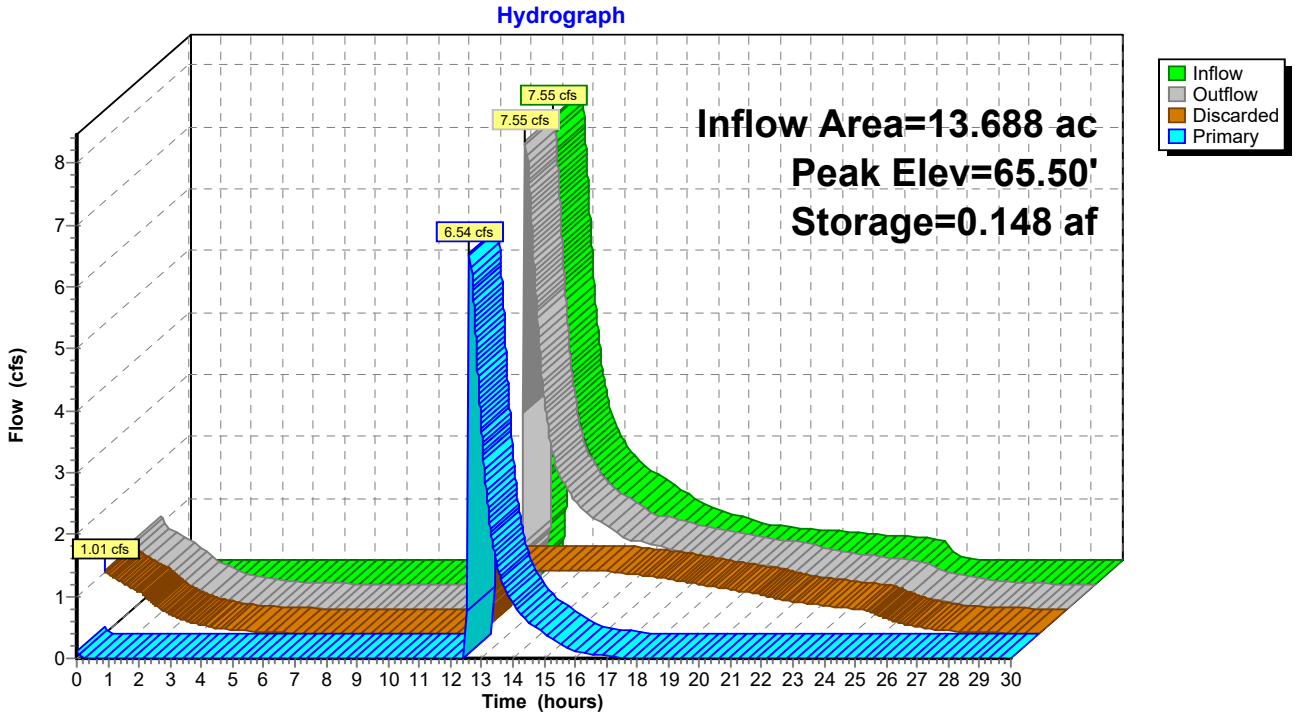
| Elevation (feet) | Surf.Area (acres) | Inc.Store (acre-feet) | Cum.Store (acre-feet) | Wet.Area (acres) |
|---|---|---|---|---|
| 63.60 | 0.001 | 0.000 | 0.000 | 0.001 |
| 65.00 | 0.130 | 0.066 | 0.066 | 0.130 |
| 65.50 | 0.200 | 0.082 | 0.148 | 0.200 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Primary | 65.50' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 63.60' | **5.000 in/hr Exfiltration over Wetted area** |
| #2 | Primary | 65.30' | **135.0 deg Sharp-Crested Vee/Trap Weir** Cv= 2.48 (C= 3.10) |

**Discarded OutFlow** Max=1.01 cfs @ 0.00 hrs HW=65.50' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 1.01 cfs)

**Primary OutFlow** Max=0.11 cfs @ 12.61 hrs HW=65.50' TW=0.00' (Dynamic Tailwater)
↑—**2=Sharp-Crested Vee/Trap Weir** (Weir Controls 0.11 cfs @ 1.11 fps)

## Pond SCB: SC-B

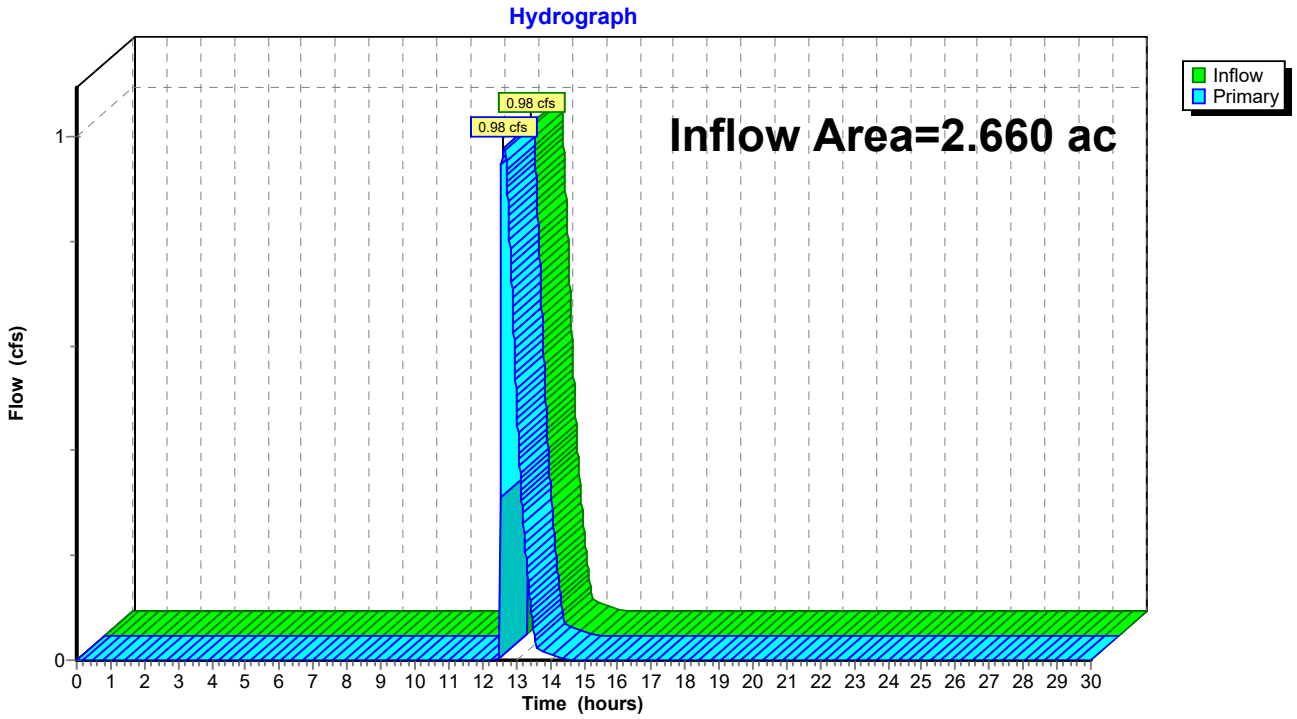

Hydrograph
Inflow
Outflow
Discarded
Primary
Inflow Area=13.688 ac
Peak Elev=65.50'
Storage=0.148 af
7.55 cfs
7.55 cfs
6.54 cfs
1.01 cfs
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

## Summary for Link SP1: SP1

Inflow Area = 2.660 ac, 0.00% Impervious, Inflow Depth = 0.19" for 10 Year event
Inflow = 0.98 cfs @ 12.62 hrs, Volume= 0.041 af
Primary = 0.98 cfs @ 12.62 hrs, Volume= 0.041 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

## Link SP1: SP1

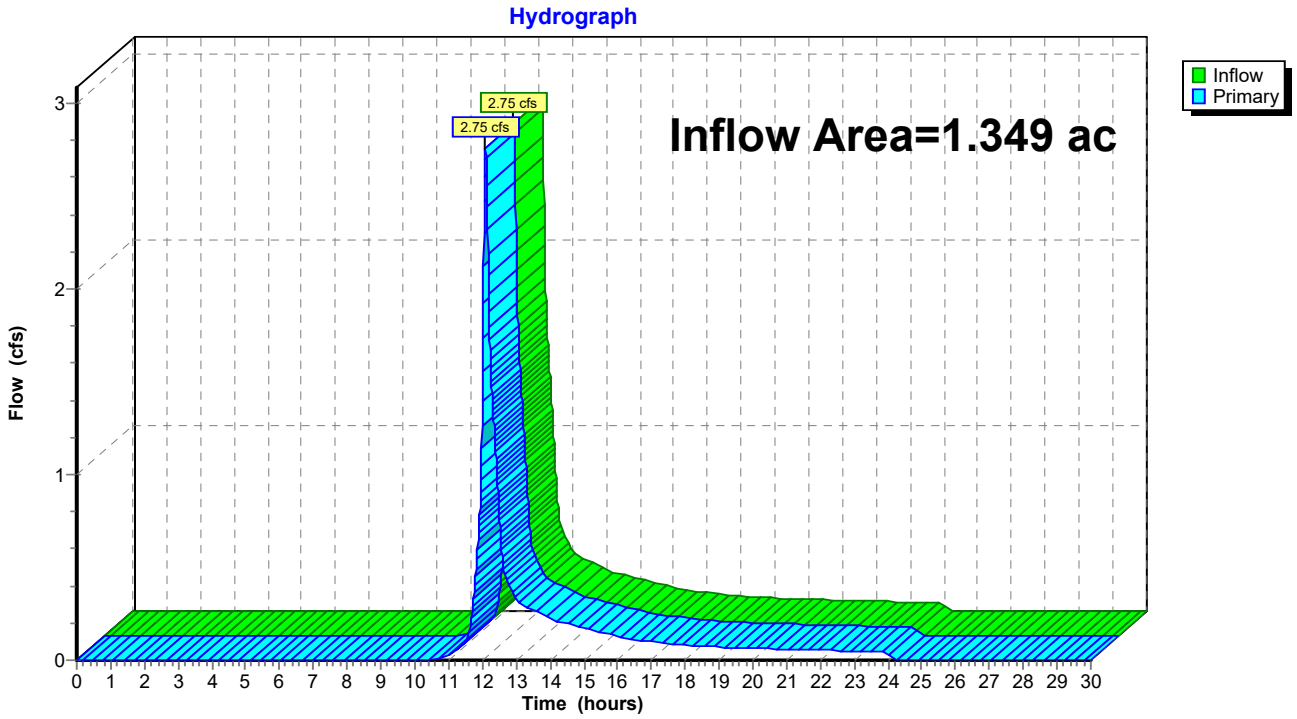


## Summary for Link SP2: SP2

Inflow Area = 1.349 ac, 22.49% Impervious, Inflow Depth = 1.83" for 10 Year event
Inflow = 2.75 cfs @ 12.10 hrs, Volume= 0.206 af
Primary = 2.75 cfs @ 12.10 hrs, Volume= 0.206 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

## Link SP2: SP2

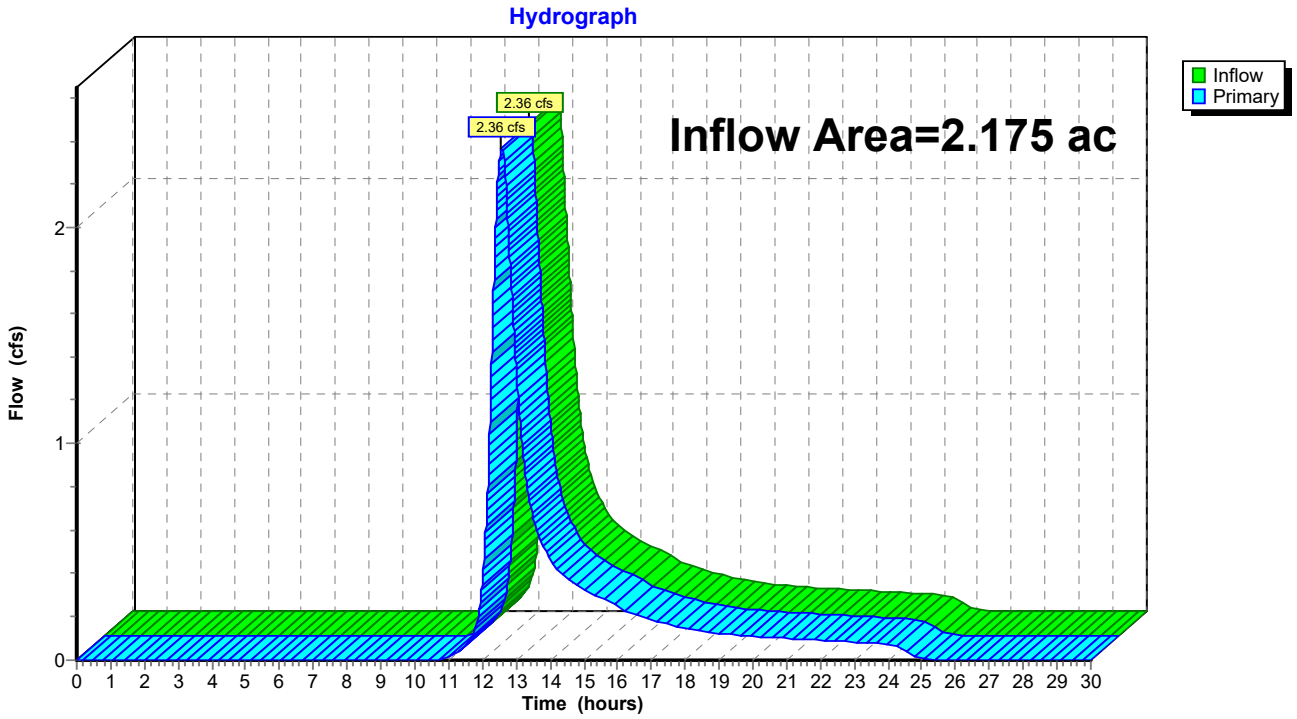


## Summary for Link SP3: SP3

Inflow Area = 2.175 ac, 19.63% Impervious, Inflow Depth = 1.91" for 10 Year event
Inflow = 2.36 cfs @ 12.55 hrs, Volume= 0.347 af
Primary = 2.36 cfs @ 12.55 hrs, Volume= 0.347 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

## Link SP3: SP3

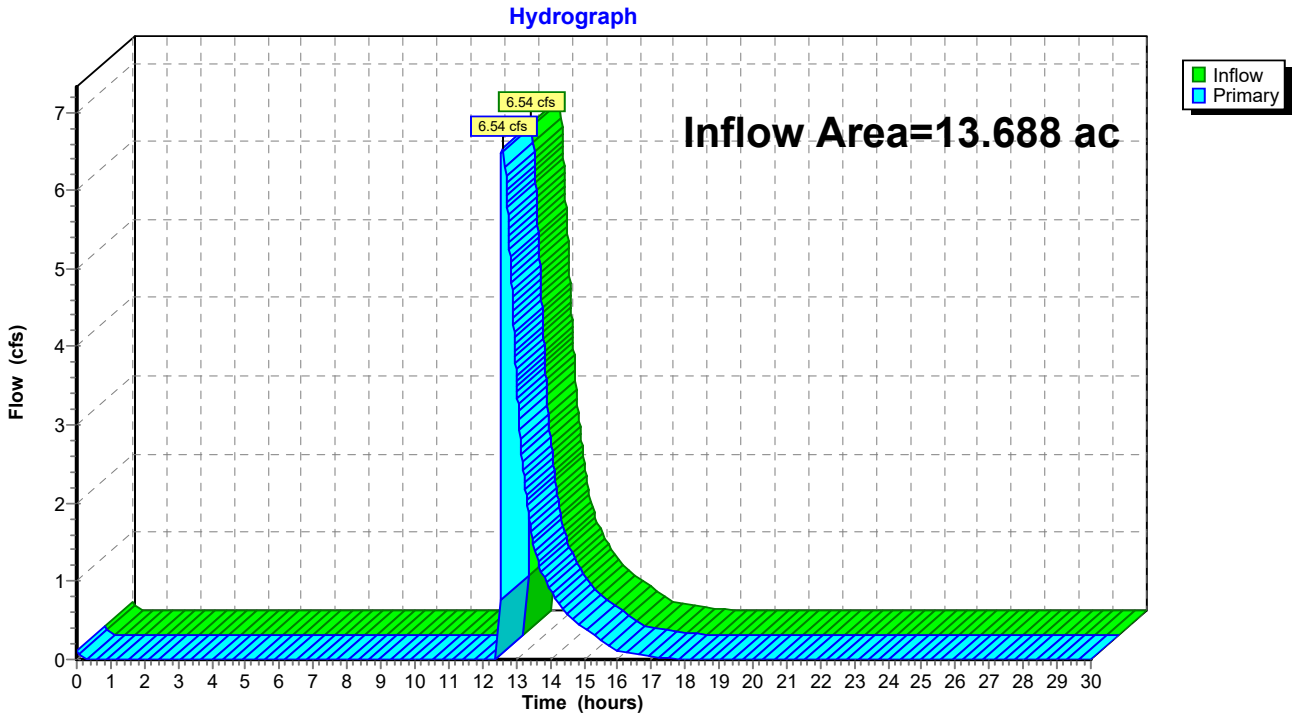


## Summary for Link SP4: SP4

Inflow Area = 13.688 ac, 2.33% Impervious, Inflow Depth = 0.37" for 10 Year event
Inflow = 6.54 cfs @ 12.61 hrs, Volume= 0.424 af
Primary = 6.54 cfs @ 12.61 hrs, Volume= 0.424 af, Atten= 0%, Lag= 0.0 min
Routed to Link SP6 : SP6

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

## Link SP4: SP4

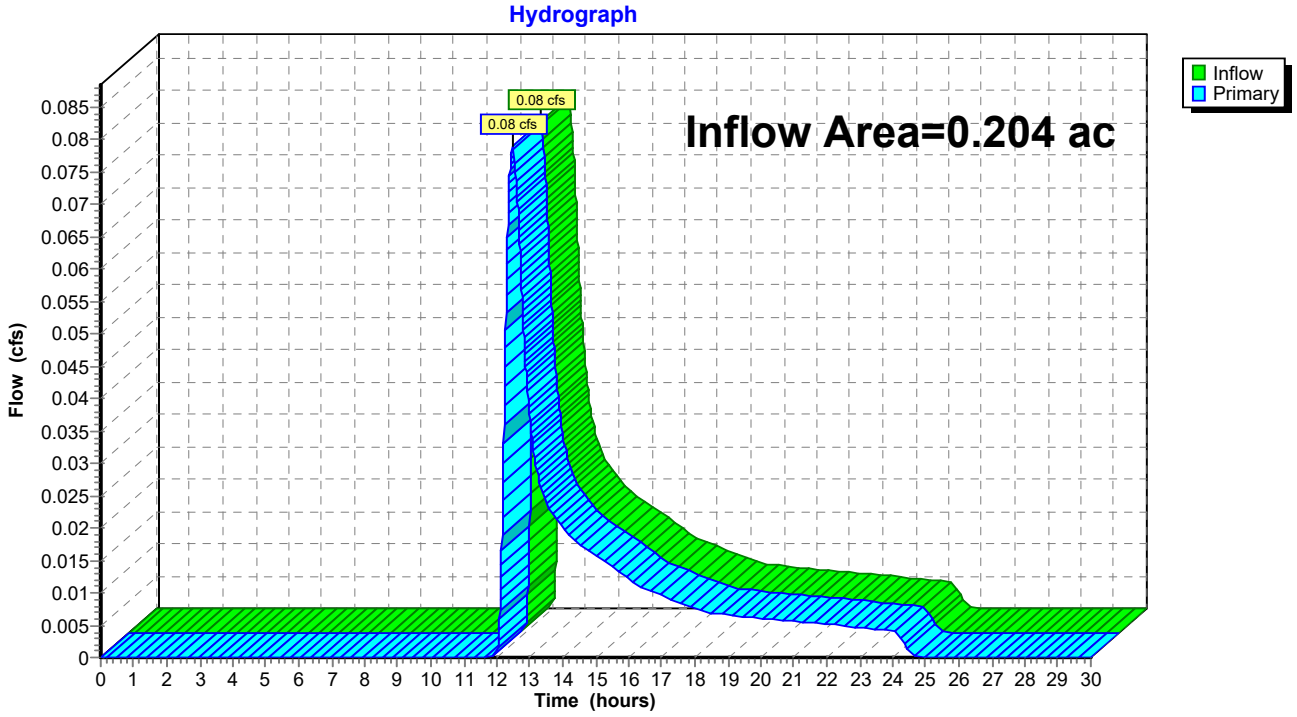


## Summary for Link SP5: SP5

Inflow Area = 0.204 ac, 0.00% Impervious, Inflow Depth = 0.78" for 10 Year event
Inflow = 0.08 cfs @ 12.48 hrs, Volume= 0.013 af
Primary = 0.08 cfs @ 12.48 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.0 min
Routed to Link SP6 : SP6

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

## Link SP5: SP5

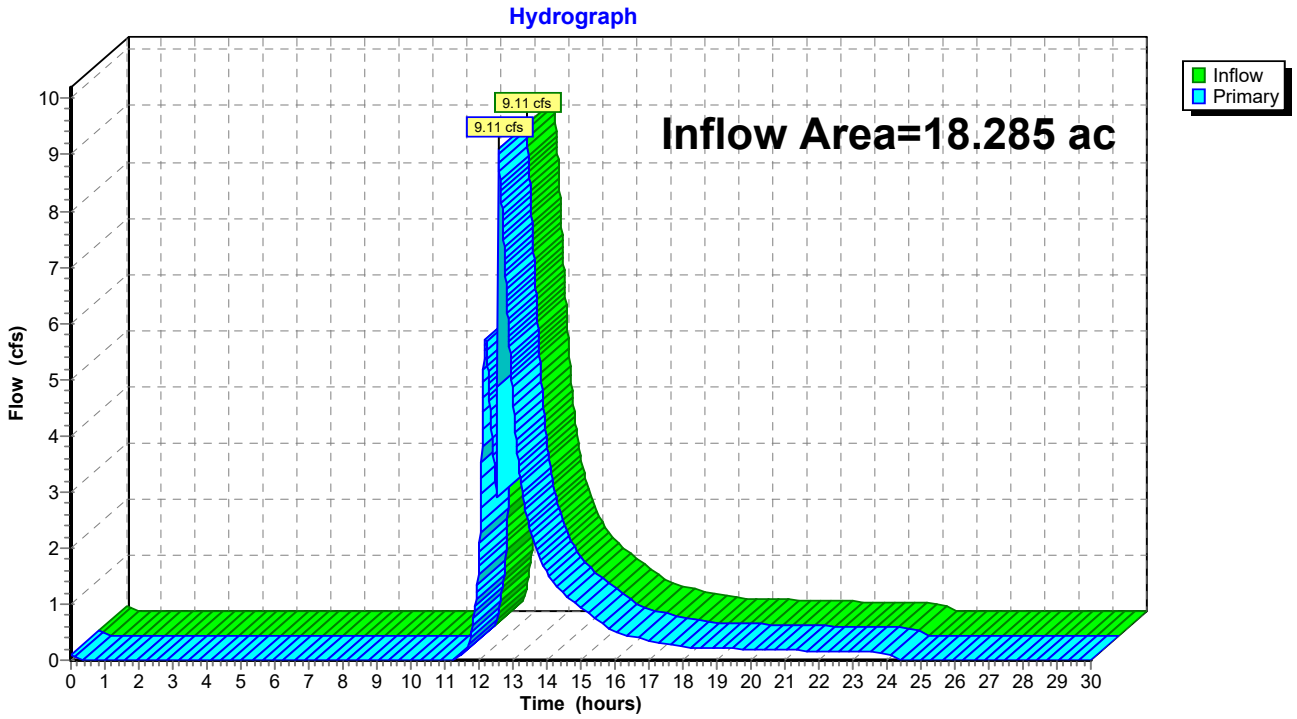


## Summary for Link SP6: SP6

Inflow Area = 18.285 ac, 4.13% Impervious, Inflow Depth = 0.65" for 10 Year event
Inflow = 9.11 cfs @ 12.56 hrs, Volume= 0.996 af
Primary = 9.11 cfs @ 12.56 hrs, Volume= 0.996 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

## Link SP6: SP6

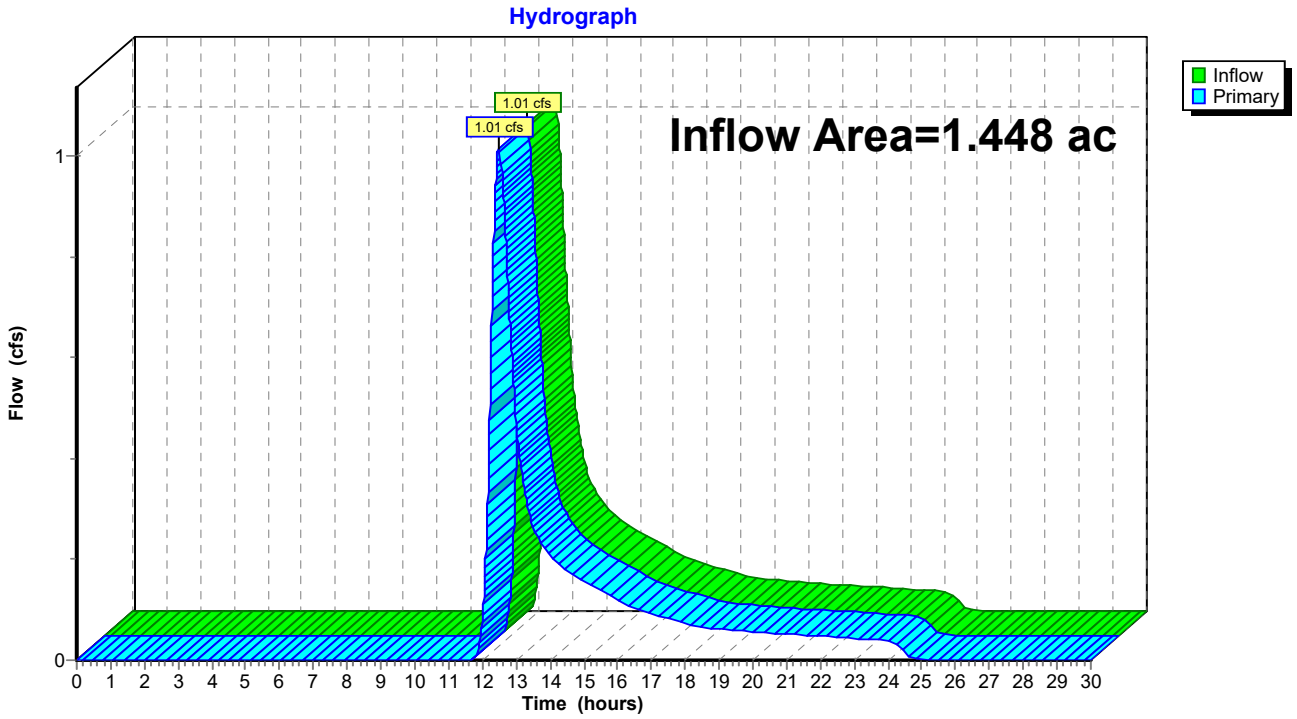


## Summary for Link SP7: SP7

Inflow Area = 1.448 ac, 0.00% Impervious, Inflow Depth = 1.24" for 10 Year event
Inflow = 1.01 cfs @ 12.49 hrs, Volume= 0.150 af
Primary = 1.01 cfs @ 12.49 hrs, Volume= 0.150 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

## Link SP7: SP7



Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 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 EX-A: EX-A** Runoff Area=115,880 sf 0.00% Impervious Runoff Depth=2.57"
Flow Length=348' Tc=38.2 min CN=53 Runoff=3.80 cfs 0.569 af

**Subcatchment EX-B: EX-B** Runoff Area=596,249 sf 2.33% Impervious Runoff Depth=2.57"
Flow Length=985' Tc=35.8 min CN=53 Runoff=20.26 cfs 2.930 af

**Subcatchment EX-C: EX-C** Runoff Area=191,338 sf 9.95% Impervious Runoff Depth=3.22"
Flow Length=1,029' Tc=12.8 min CN=59 Runoff=13.02 cfs 1.180 af

**Subcatchment EX-D: EX-D** Runoff Area=8,890 sf 0.00% Impervious Runoff Depth=2.04"
Flow Length=178' Slope=0.0500 '/' Tc=24.8 min CN=48 Runoff=0.27 cfs 0.035 af

**Subcatchment EX-E: EX-E** Runoff Area=94,739 sf 19.63% Impervious Runoff Depth=3.78"
Flow Length=424' Tc=38.0 min CN=64 Runoff=4.85 cfs 0.685 af

**Subcatchment EX-F: EX-F** Runoff Area=58,741 sf 22.49% Impervious Runoff Depth=3.67"
Flow Length=677' Tc=6.1 min UI Adjusted CN=63 Runoff=5.74 cfs 0.412 af

**Subcatchment EX-G: EX-G** Runoff Area=63,077 sf 0.00% Impervious Runoff Depth=2.78"
Flow Length=440' Tc=30.2 min CN=55 Runoff=2.55 cfs 0.336 af

**Pond SCA: SC-A** Peak Elev=141.00' Storage=0.021 af Inflow=3.80 cfs 0.569 af
Discarded=0.45 cfs 0.315 af Primary=3.36 cfs 0.254 af Outflow=3.80 cfs 0.569 af

**Pond SCB: SC-B** Peak Elev=65.50' Storage=0.148 af Inflow=20.26 cfs 2.930 af
Discarded=1.01 cfs 1.252 af Primary=19.23 cfs 1.826 af Outflow=20.24 cfs 3.078 af

**Link SP1: SP1** Inflow=3.36 cfs 0.254 af
Primary=3.36 cfs 0.254 af

**Link SP2: SP2** Inflow=5.74 cfs 0.412 af
Primary=5.74 cfs 0.412 af

**Link SP3: SP3** Inflow=4.85 cfs 0.685 af
Primary=4.85 cfs 0.685 af

**Link SP4: SP4** Inflow=19.23 cfs 1.826 af
Primary=19.23 cfs 1.826 af

**Link SP5: SP5** Inflow=0.27 cfs 0.035 af
Primary=0.27 cfs 0.035 af

**Link SP6: SP6** Inflow=25.61 cfs 3.040 af
Primary=25.61 cfs 3.040 af

**Link SP7: SP7** Inflow=2.55 cfs 0.336 af
Primary=2.55 cfs 0.336 af

**Total Runoff Area = 25.916 ac Runoff Volume = 6.147 af Average Runoff Depth = 2.85"**
**94.27% Pervious = 24.431 ac 5.73% Impervious = 1.486 ac**

## Summary for Subcatchment EX-A: EX-A

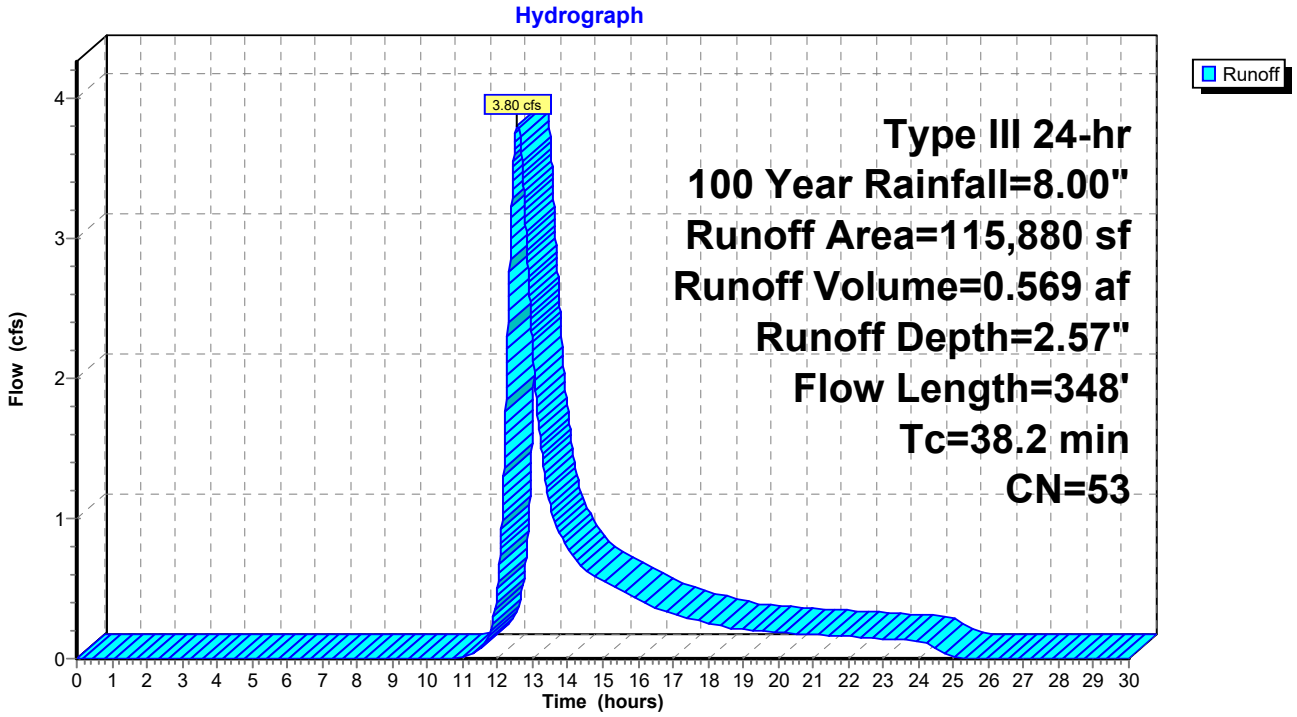
Runoff = 3.80 cfs @ 12.57 hrs, Volume= 0.569 af, Depth= 2.57"
Routed to Pond SCA : SC-A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Rainfall=8.00"

| Area (sf) | CN | Description |
|---|---|---|
| 77,914 | 55 | Woods, Good, HSG B |
| 37,966 | 48 | Brush, Good, HSG B |
| 115,880 | 53 | Weighted Average |
| 115,880 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 35.0 | 300 | 0.0600 | 0.14 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.90" |
| 3.2 | 48 | 0.0013 | 0.25 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 38.2 | 348 | Total | | | |

## Subcatchment EX-A: EX-A



## Summary for Subcatchment EX-B: EX-B

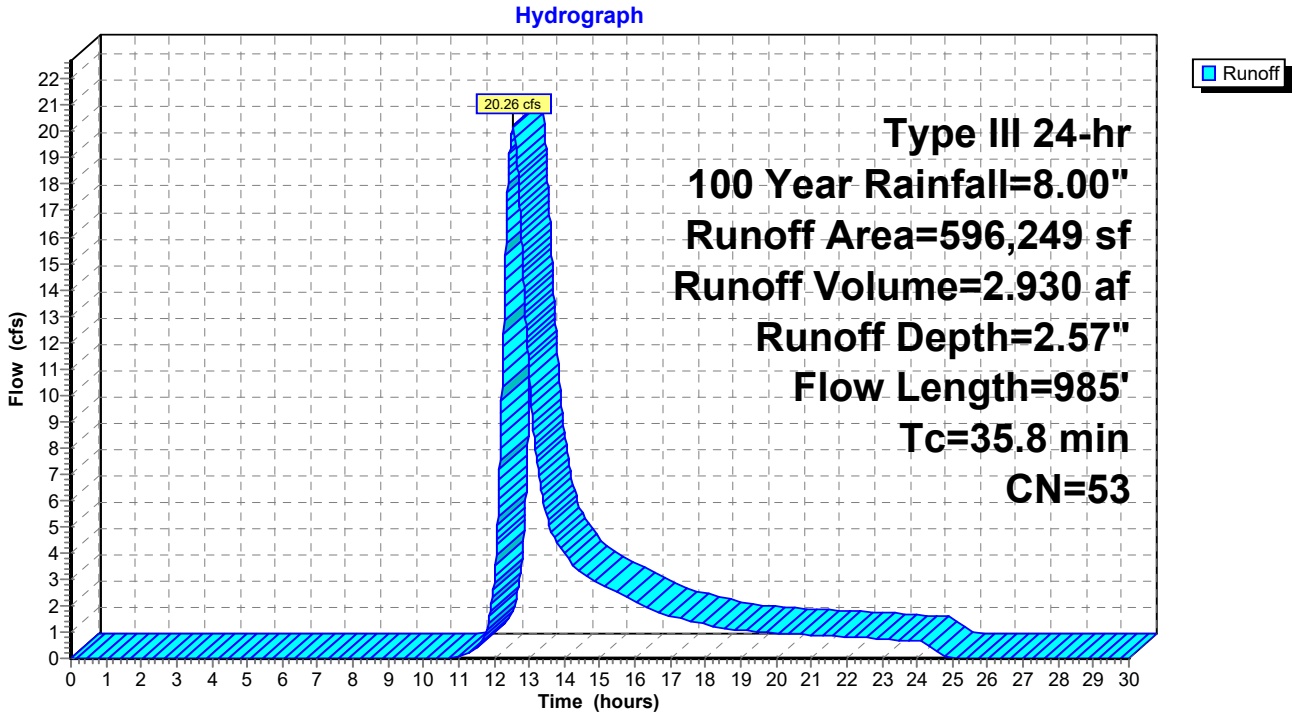
Runoff = 20.26 cfs @ 12.53 hrs, Volume= 2.930 af, Depth= 2.57"
Routed to Pond SCB : SC-B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Rainfall=8.00"

| Area (sf) | CN | Description |
|---|---|---|
| 355,686 | 55 | Woods, Good, HSG B |
| 13,877 | 98 | Paved parking, HSG B |
| 226,686 | 48 | Brush, Good, HSG B |
| 596,249 | 53 | Weighted Average |
| 582,372 | | 97.67% Pervious Area |
| 13,877 | | 2.33% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 11.1 | 181 | 0.3900 | 0.27 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.90" |
| 17.1 | 119 | 0.0568 | 0.12 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.90" |
| 2.9 | 286 | 0.0568 | 1.67 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 1.5 | 134 | 0.0860 | 1.47 | | **Shallow Concentrated Flow,** Woodland Kv= 5.0 fps |
| 1.6 | 147 | 0.0477 | 1.53 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 1.6 | 118 | 0.0297 | 1.21 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 35.8 | 985 | Total | | | |

## Subcatchment EX-B: EX-B



## Summary for Subcatchment EX-C: EX-C

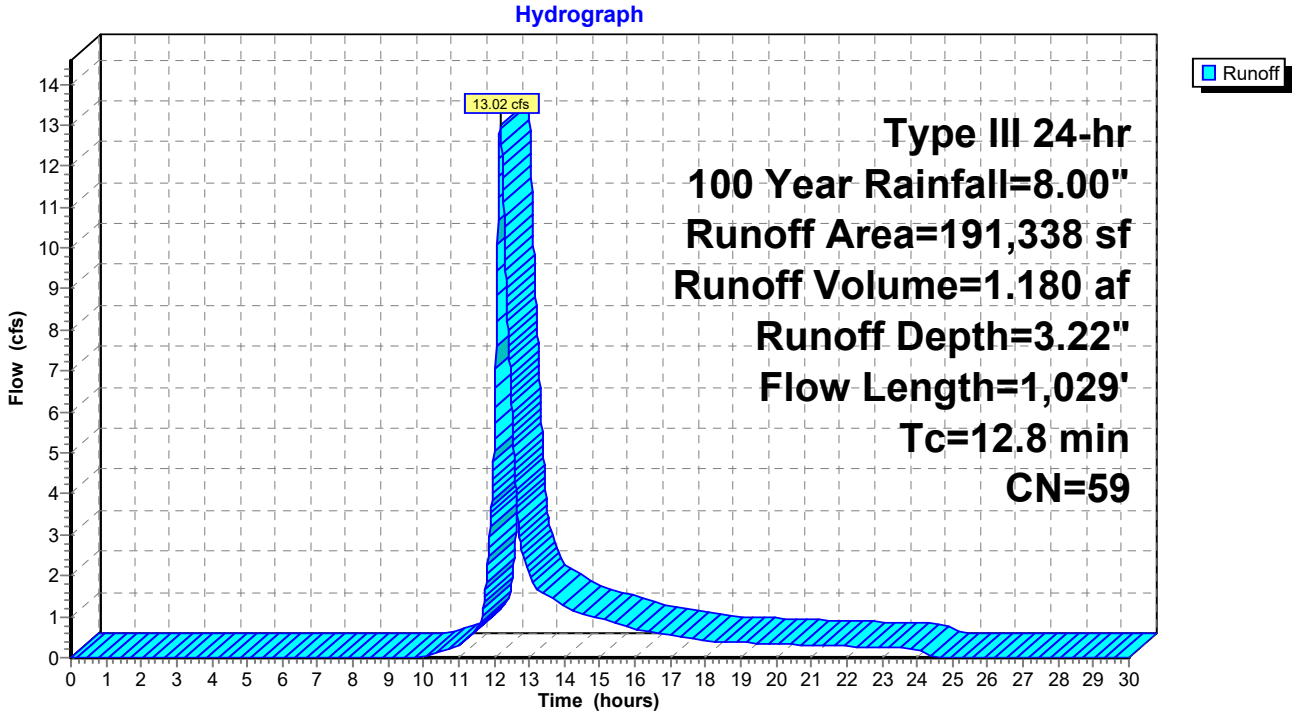
Runoff = 13.02 cfs @ 12.19 hrs, Volume= 1.180 af, Depth= 3.22"
Routed to Link SP6 : SP6

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Rainfall=8.00"

| Area (sf) | CN | Description |
|---|---|---|
| 154,448 | 55 | Woods, Good, HSG B |
| 19,034 | 98 | Paved parking, HSG B |
| 17,856 | 48 | Brush, Good, HSG B |
| 191,338 | 59 | Weighted Average |
| 172,304 | | 90.05% Pervious Area |
| 19,034 | | 9.95% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 10.2 | 202 | 0.6000 | 0.33 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.90" |
| 2.6 | 827 | 0.0700 | 5.37 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 12.8 | 1,029 | Total | | | |

## Subcatchment EX-C: EX-C



## Summary for Subcatchment EX-D: EX-D

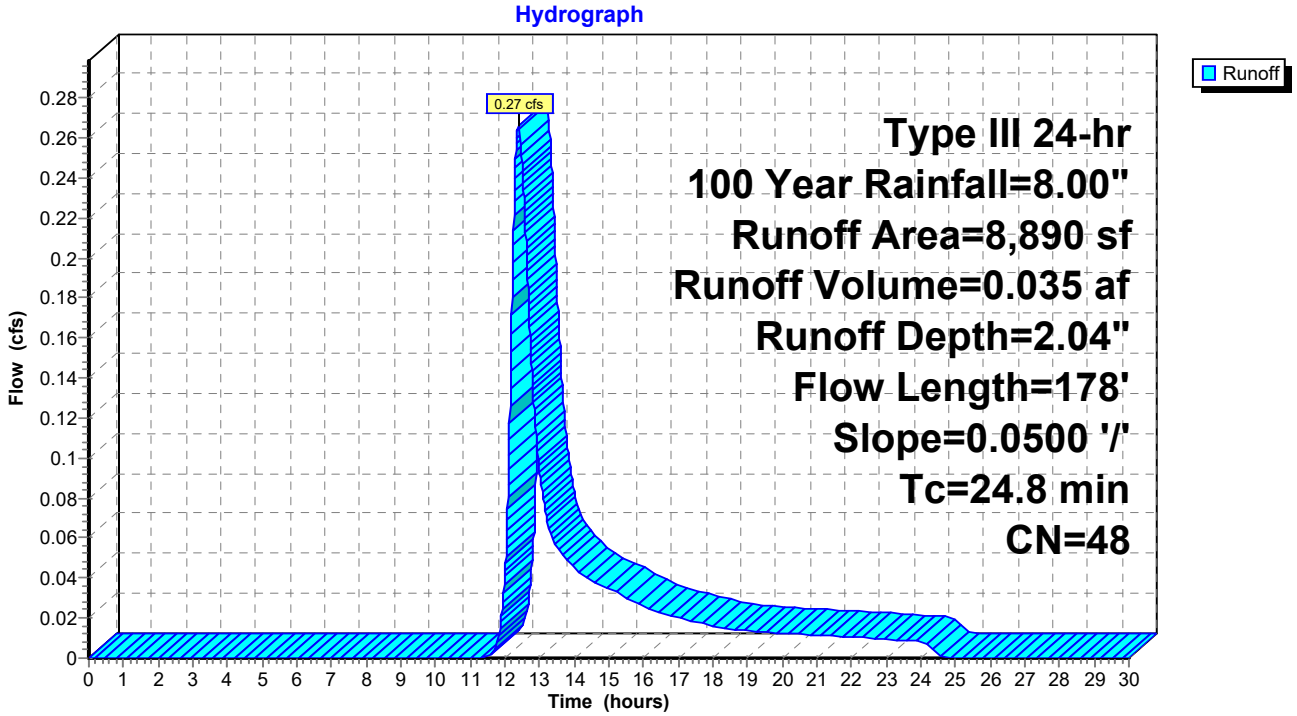
Runoff = 0.27 cfs @ 12.39 hrs, Volume= 0.035 af, Depth= 2.04"
Routed to Link SP5 : SP5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Rainfall=8.00"

| Area (sf) | CN | Description |
|---|---|---|
| 8,890 | 48 | Brush, Good, HSG B |
| 8,890 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 24.8 | 178 | 0.0500 | 0.12 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.90" |

## Subcatchment EX-D: EX-D



## Summary for Subcatchment EX-E: EX-E

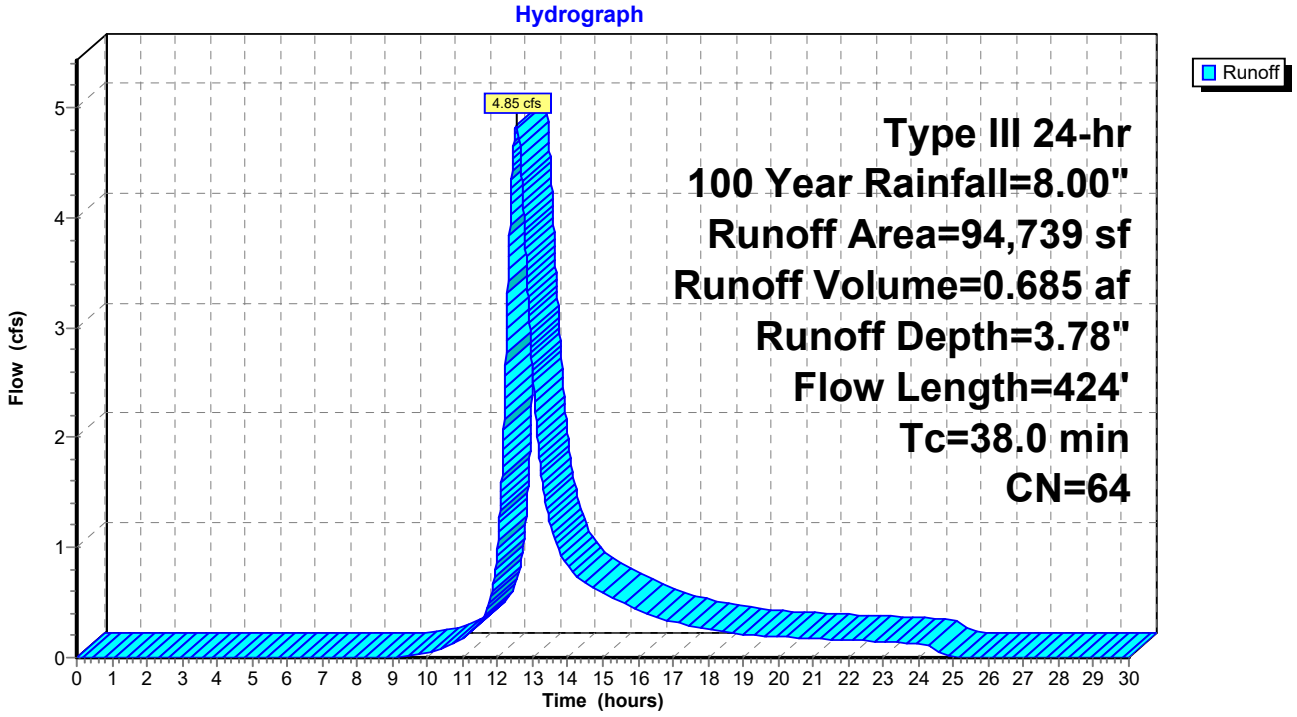
Runoff = 4.85 cfs @ 12.54 hrs, Volume= 0.685 af, Depth= 3.78"
Routed to Link SP3 : SP3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Rainfall=8.00"

| Area (sf) | CN | Description |
|---|---|---|
| 61,092 | 55 | Woods, Good, HSG B |
| 18,595 | 98 | Paved parking, HSG B |
| 15,052 | 61 | >75% Grass cover, Good, HSG B |
| 94,739 | 64 | Weighted Average |
| 76,144 | | 80.37% Pervious Area |
| 18,595 | | 19.63% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 15.5 | 71 | 0.0258 | 0.08 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.90" |
| 20.8 | 191 | 0.0125 | 0.15 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 2.90" |
| 1.7 | 162 | 0.0530 | 1.61 | | **Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps |
| 38.0 | 424 | Total | | | |

## Subcatchment EX-E: EX-E



## Summary for Subcatchment EX-F: EX-F

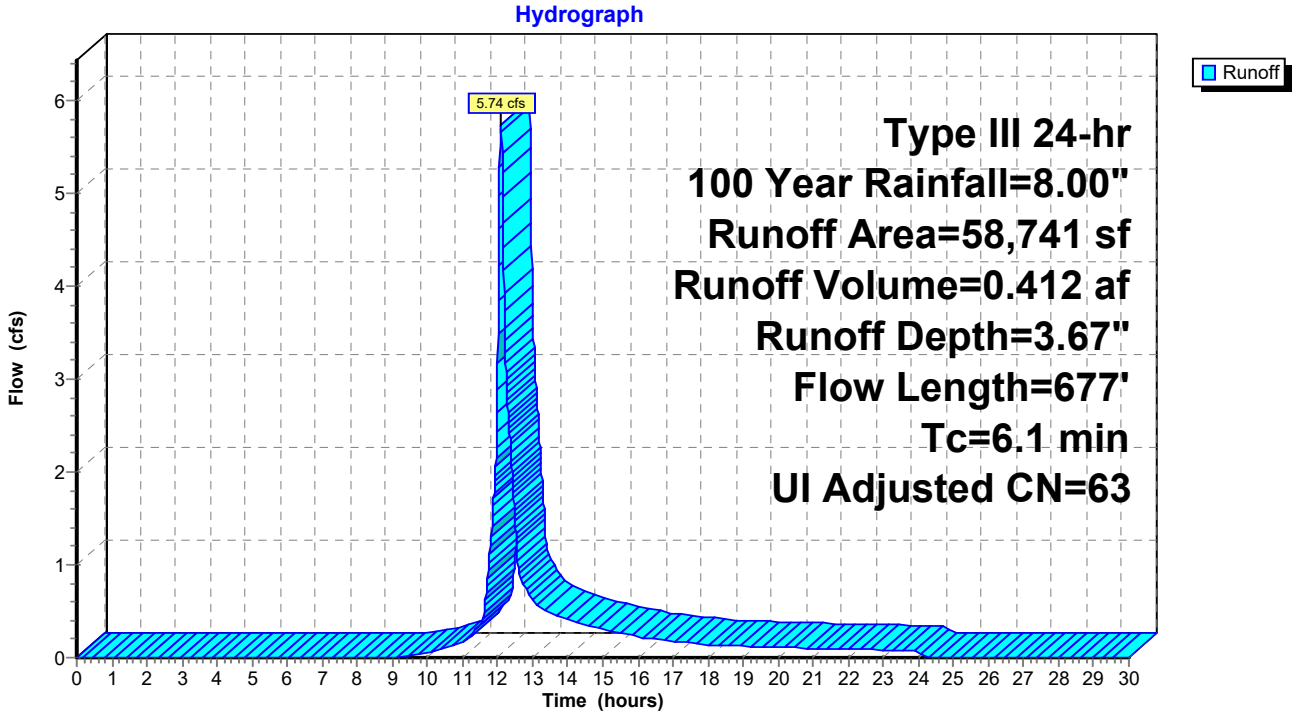
Runoff = 5.74 cfs @ 12.09 hrs, Volume= 0.412 af, Depth= 3.67"
Routed to Link SP2 : SP2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Rainfall=8.00"

| Area (sf) | CN | Adj | Description |
|---|---|---|---|
| 41,158 | 55 | | Woods, Good, HSG B |
| 4,650 | 98 | | Unconnected roofs, HSG B |
| 8,560 | 98 | | Paved parking, HSG B |
| 4,373 | 61 | | >75% Grass cover, Good, HSG B |
| 58,741 | 65 | 63 | Weighted Average, UI Adjusted |
| 45,531 | | | 77.51% Pervious Area |
| 13,210 | | | 22.49% Impervious Area |
| 4,650 | | | 35.20% Unconnected |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 4.6 | 100 | 0.1500 | 0.36 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 2.90" |
| 1.5 | 577 | 0.1000 | 6.42 | | **Shallow Concentrated Flow,** Paved Kv= 20.3 fps |
| 6.1 | 677 | Total | | | |

## Subcatchment EX-F: EX-F



## Summary for Subcatchment EX-G: EX-G

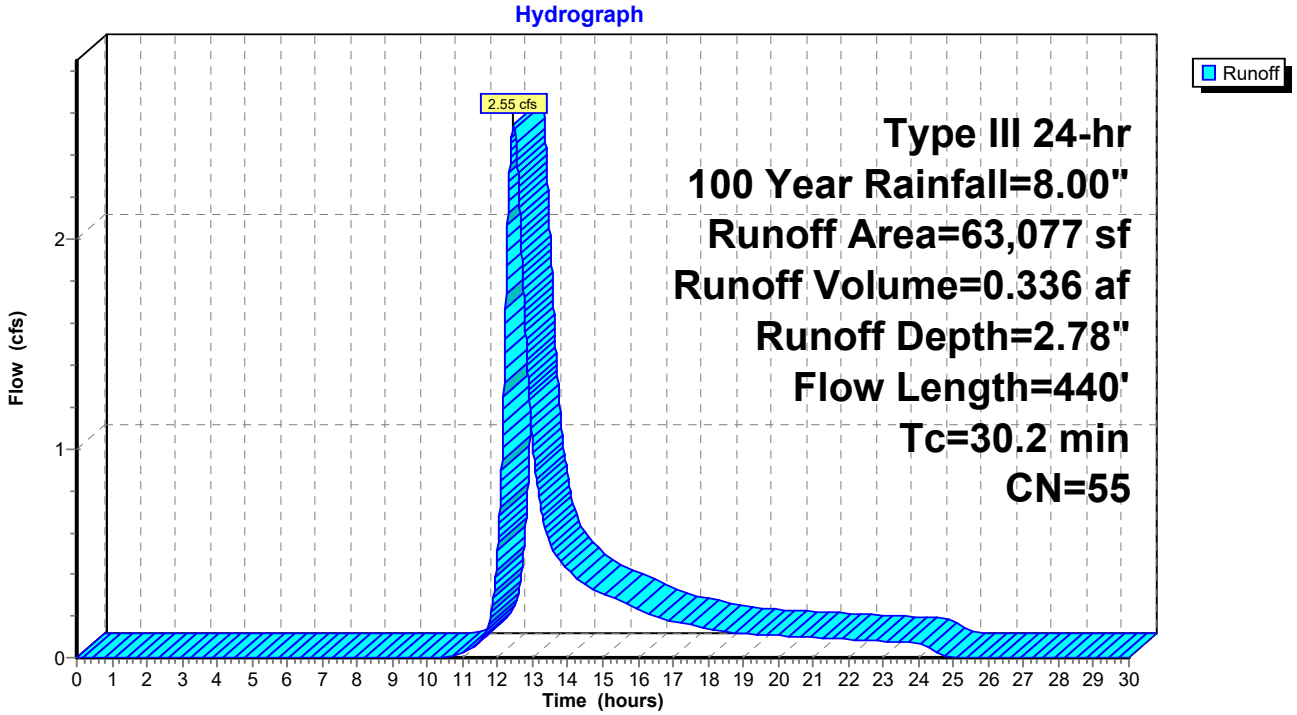
Runoff = 2.55 cfs @ 12.45 hrs, Volume= 0.336 af, Depth= 2.78"
Routed to Link SP7 : SP7

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Rainfall=8.00"

| Area (sf) | CN | Description |
|---|---|---|
| 59,457 | 55 | Woods, Good, HSG B |
| 3,620 | 61 | >75% Grass cover, Good, HSG B |
| 63,077 | 55 | Weighted Average |
| 63,077 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 22.6 | 100 | 0.0200 | 0.07 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.90" |
| 3.6 | 10 | 0.0200 | 0.05 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.90" |
| 4.0 | 330 | 0.3000 | 1.37 | | **Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps |
| 30.2 | 440 | Total | | | |

## Subcatchment EX-G: EX-G



## Summary for Pond SCA: SC-A

Inflow Area = 2.660 ac, 0.00% Impervious, Inflow Depth = 2.57" for 100 Year event
Inflow = 3.80 cfs @ 12.57 hrs, Volume= 0.569 af
Outflow = 3.80 cfs @ 12.58 hrs, Volume= 0.569 af, Atten= 0%, Lag= 0.3 min
Discarded = 0.45 cfs @ 12.25 hrs, Volume= 0.315 af
Primary = 3.36 cfs @ 12.58 hrs, Volume= 0.254 af
Routed to Link SP1 : SP1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 141.00' @ 12.25 hrs Surf.Area= 0.088 ac Storage= 0.021 af

Plug-Flow detention time= 17.2 min calculated for 0.569 af (100% of inflow)
Center-of-Mass det. time= 17.2 min ( 909.7 - 892.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 140.30' | 0.021 af | **Custom Stage Data (Conic)** Listed below (Recalc) |

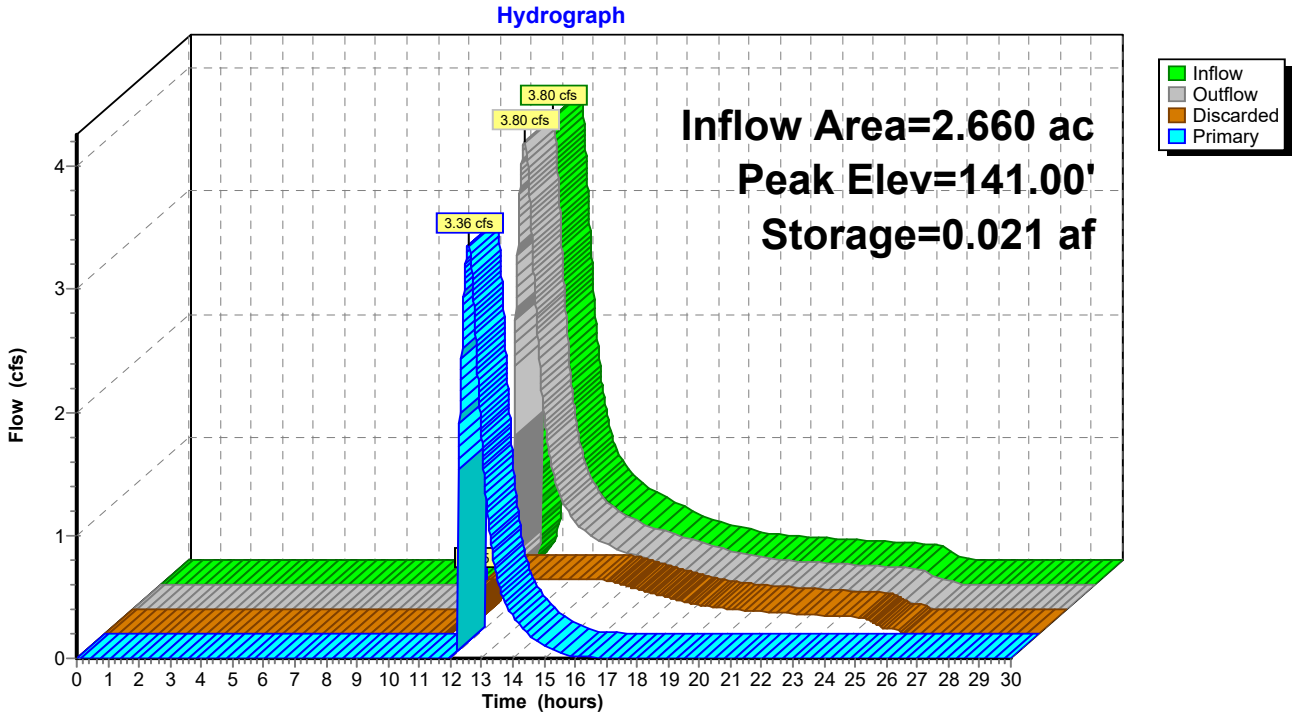
| Elevation (feet) | Surf.Area (acres) | Inc.Store (acre-feet) | Cum.Store (acre-feet) | Wet.Area (acres) |
|---|---|---|---|---|
| 140.30 | 0.007 | 0.000 | 0.000 | 0.007 |
| 140.50 | 0.007 | 0.001 | 0.001 | 0.007 |
| 141.00 | 0.088 | 0.020 | 0.021 | 0.088 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Primary | 141.00' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 140.30' | **5.000 in/hr Exfiltration over Wetted area** Phase-In= 0.01' |
| #2 | Primary | 140.90' | **135.0 deg Sharp-Crested Vee/Trap Weir** Cv= 2.48 (C= 3.10) |

**Discarded OutFlow** Max=0.45 cfs @ 12.25 hrs HW=141.00' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.45 cfs)

**Primary OutFlow** Max=0.02 cfs @ 12.58 hrs HW=141.00' TW=0.00' (Dynamic Tailwater)
↑**2=Sharp-Crested Vee/Trap Weir** (Weir Controls 0.02 cfs @ 0.78 fps)

## Pond SCA: SC-A


Hydrograph
Inflow Area=2.660 ac
Peak Elev=141.00'
Storage=0.021 af
3.80 cfs
3.80 cfs
3.36 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0 1 2 3 4
0 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

## Summary for Pond SCB: SC-B

Inflow Area = 13.688 ac, 2.33% Impervious, Inflow Depth = 2.57" for 100 Year event
Inflow = 20.26 cfs @ 12.53 hrs, Volume= 2.930 af
Outflow = 20.24 cfs @ 12.54 hrs, Volume= 3.078 af, Atten= 0%, Lag= 0.4 min
Discarded = 1.01 cfs @ 0.00 hrs, Volume= 1.252 af
Primary = 19.23 cfs @ 12.54 hrs, Volume= 1.826 af
Routed to Link SP4 : SP4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Starting Elev= 65.50' Surf.Area= 0.200 ac Storage= 0.148 af
Peak Elev= 65.50' @ 0.00 hrs Surf.Area= 0.200 ac Storage= 0.148 af

Plug-Flow detention time= 38.1 min calculated for 2.929 af (100% of inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 63.60' | 0.148 af | **Custom Stage Data (Conic)** Listed below |

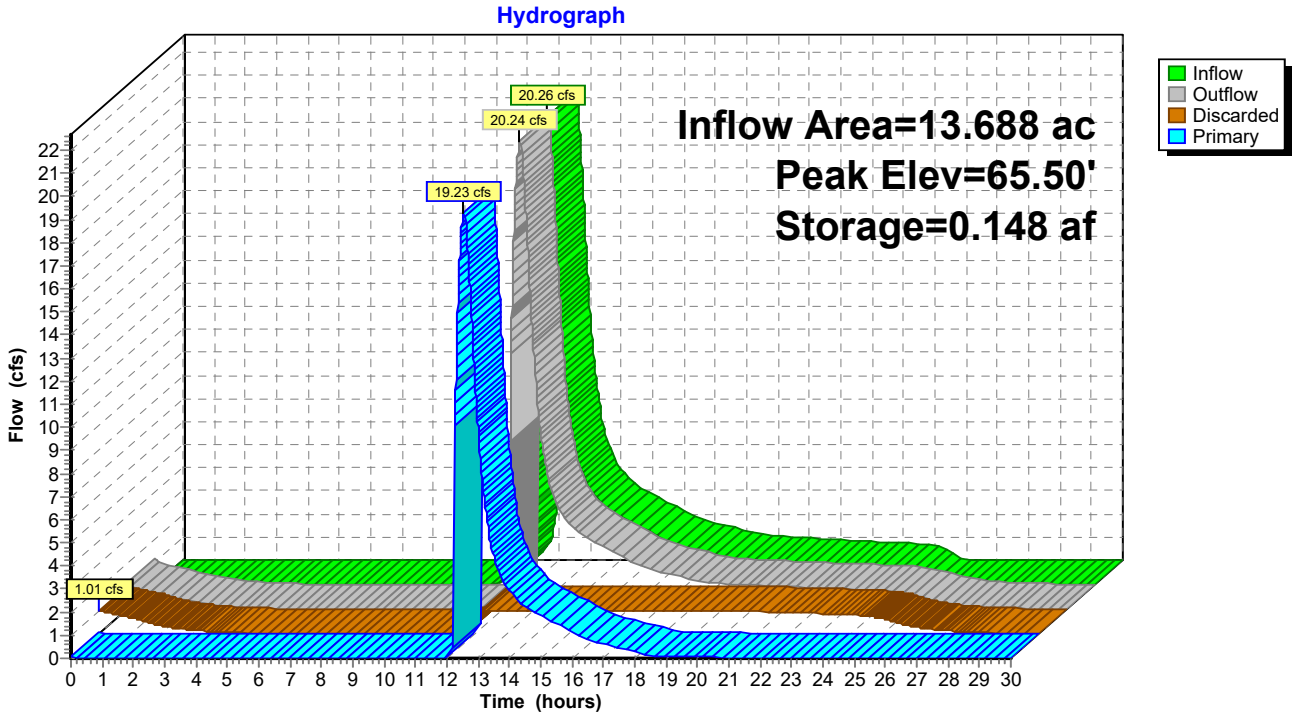
| Elevation (feet) | Surf.Area (acres) | Inc.Store (acre-feet) | Cum.Store (acre-feet) | Wet.Area (acres) |
|---|---|---|---|---|
| 63.60 | 0.001 | 0.000 | 0.000 | 0.001 |
| 65.00 | 0.130 | 0.066 | 0.066 | 0.130 |
| 65.50 | 0.200 | 0.082 | 0.148 | 0.200 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #0 | Primary | 65.50' | **Automatic Storage Overflow** (Discharged without head) |
| #1 | Discarded | 63.60' | **5.000 in/hr Exfiltration over Wetted area** |
| #2 | Primary | 65.30' | **135.0 deg Sharp-Crested Vee/Trap Weir** Cv= 2.48 (C= 3.10) |

**Discarded OutFlow** Max=1.01 cfs @ 0.00 hrs HW=65.50' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 1.01 cfs)

**Primary OutFlow** Max=0.11 cfs @ 12.54 hrs HW=65.50' TW=0.00' (Dynamic Tailwater)
↑—**2=Sharp-Crested Vee/Trap Weir** (Weir Controls 0.11 cfs @ 1.11 fps)

## Pond SCB: SC-B

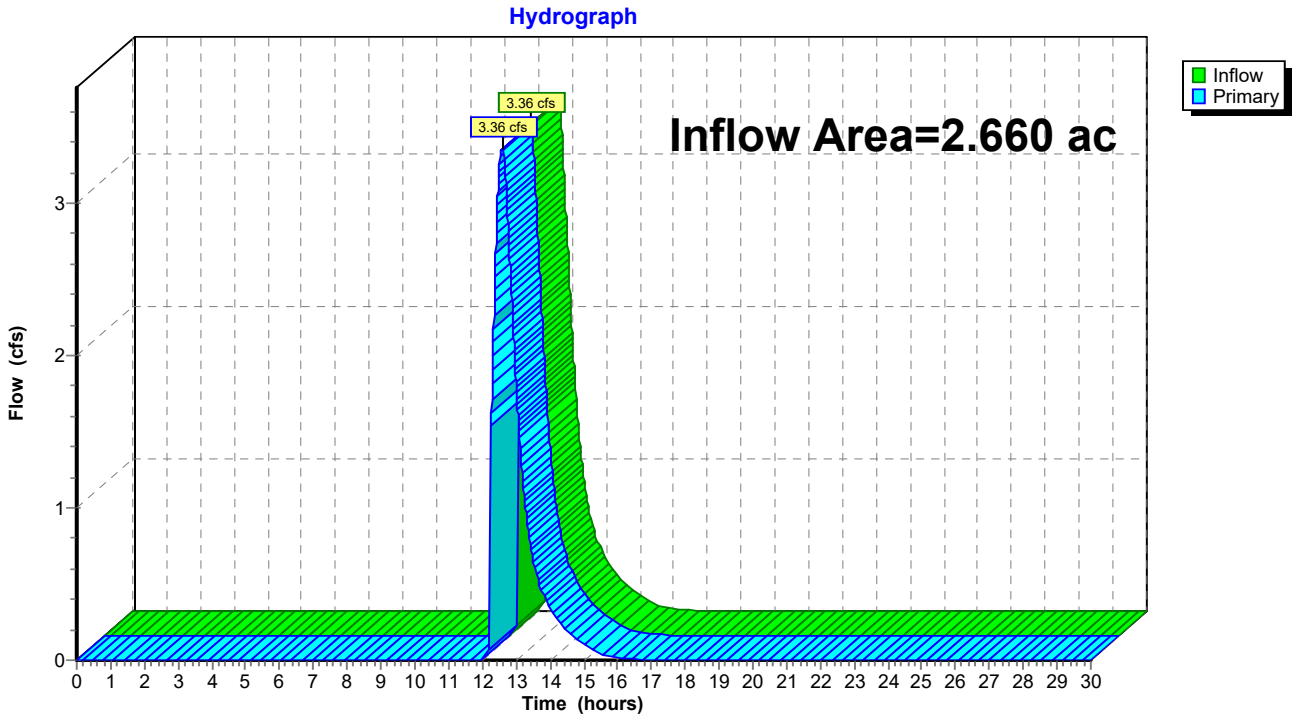

Hydrograph
Inflow
Outflow
Discarded
Primary
Inflow Area=13.688 ac
Peak Elev=65.50'
Storage=0.148 af
20.26 cfs
20.24 cfs
19.23 cfs
1.01 cfs
Flow (cfs)
Time (hours)

## Summary for Link SP1: SP1

Inflow Area = 2.660 ac, 0.00% Impervious, Inflow Depth = 1.15" for 100 Year event
Inflow = 3.36 cfs @ 12.58 hrs, Volume= 0.254 af
Primary = 3.36 cfs @ 12.58 hrs, Volume= 0.254 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

## Link SP1: SP1

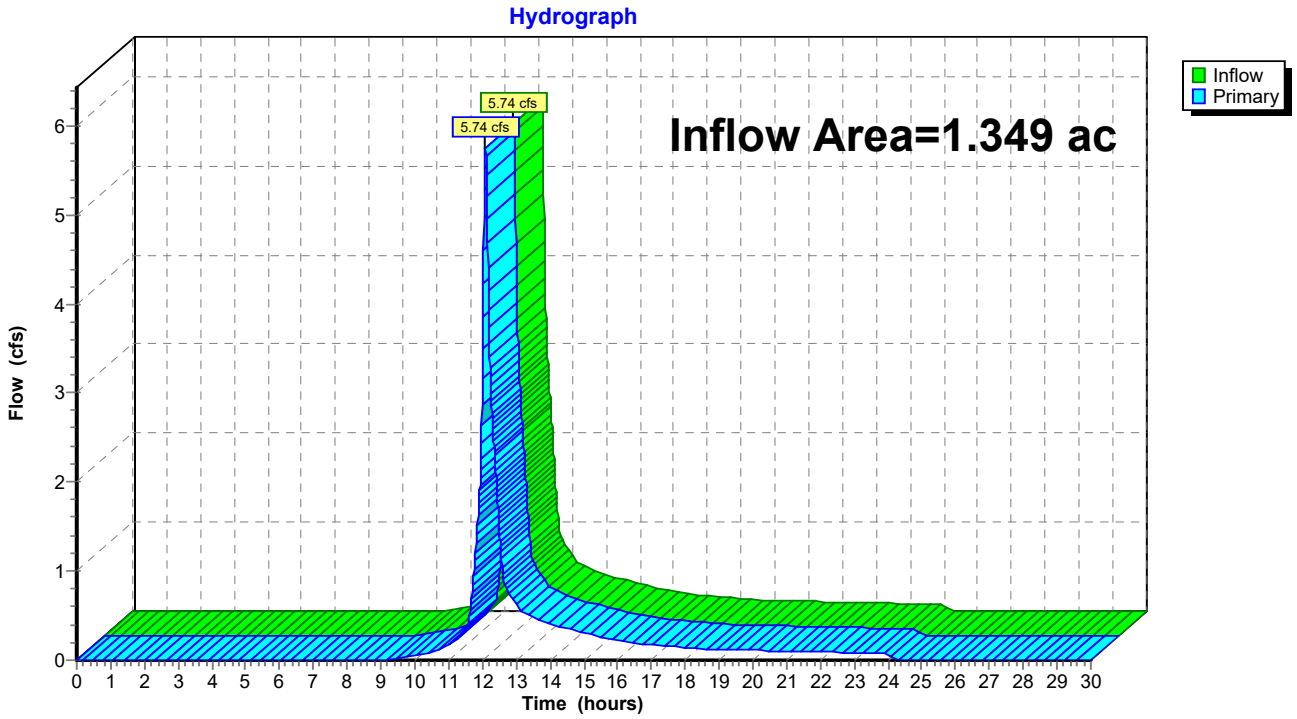


## Summary for Link SP2: SP2

Inflow Area = 1.349 ac, 22.49% Impervious, Inflow Depth = 3.67" for 100 Year event
Inflow = 5.74 cfs @ 12.09 hrs, Volume= 0.412 af
Primary = 5.74 cfs @ 12.09 hrs, Volume= 0.412 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

## Link SP2: SP2

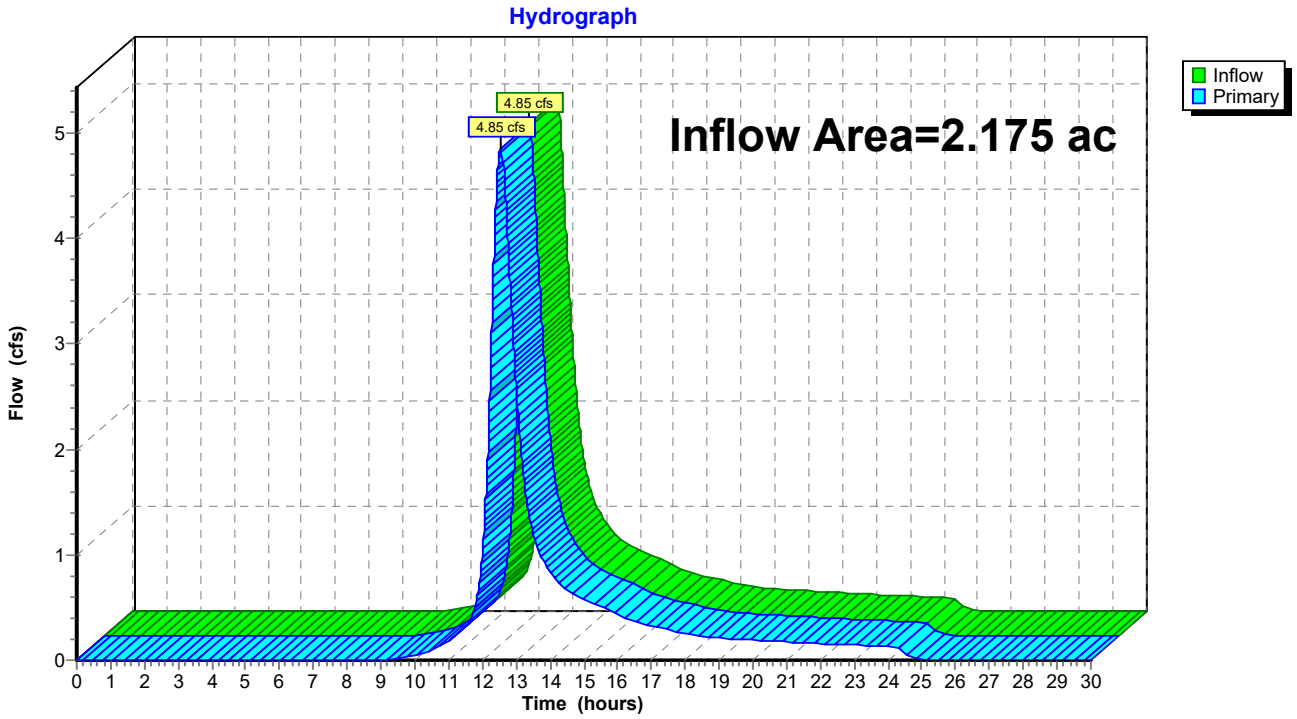


## Summary for Link SP3: SP3

Inflow Area = 2.175 ac, 19.63% Impervious, Inflow Depth = 3.78" for 100 Year event
Inflow = 4.85 cfs @ 12.54 hrs, Volume= 0.685 af
Primary = 4.85 cfs @ 12.54 hrs, Volume= 0.685 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

## Link SP3: SP3

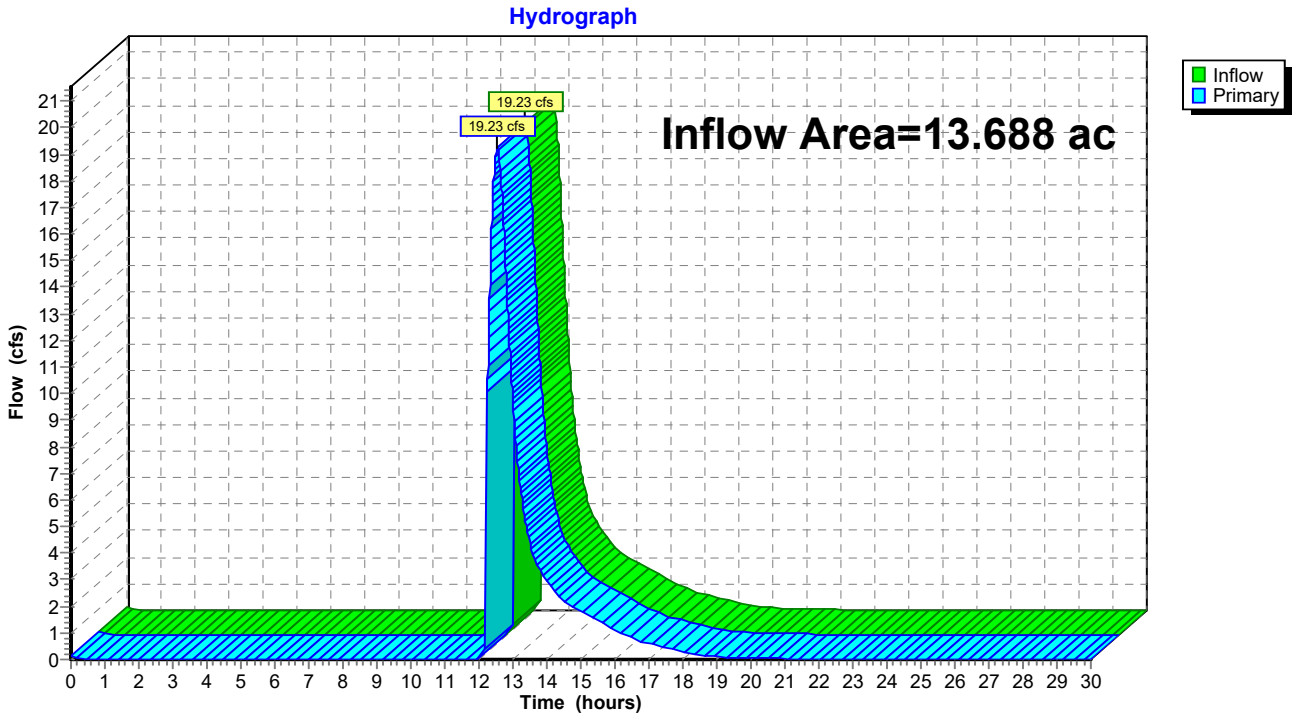


## Summary for Link SP4: SP4

Inflow Area = 13.688 ac, 2.33% Impervious, Inflow Depth = 1.60" for 100 Year event
Inflow = 19.23 cfs @ 12.54 hrs, Volume= 1.826 af
Primary = 19.23 cfs @ 12.54 hrs, Volume= 1.826 af, Atten= 0%, Lag= 0.0 min
Routed to Link SP6 : SP6

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

## Link SP4: SP4

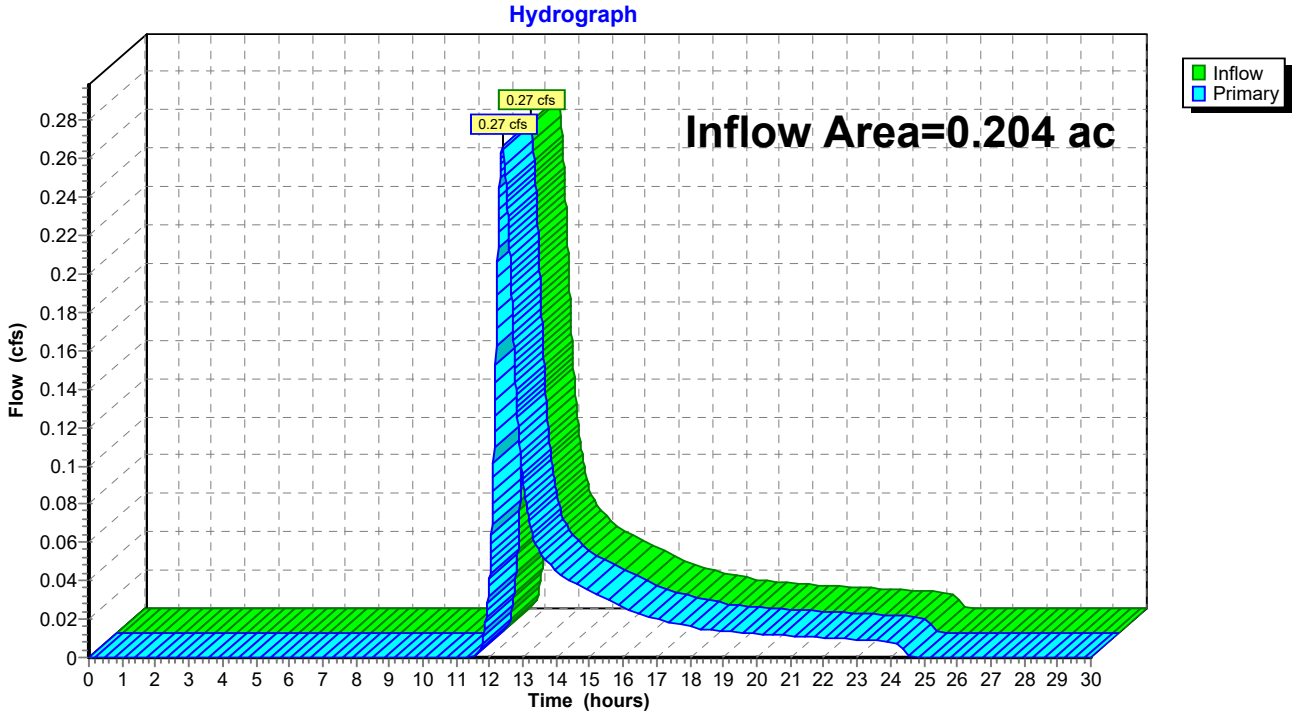


## Summary for Link SP5: SP5

Inflow Area = 0.204 ac, 0.00% Impervious, Inflow Depth = 2.04" for 100 Year event
Inflow = 0.27 cfs @ 12.39 hrs, Volume= 0.035 af
Primary = 0.27 cfs @ 12.39 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.0 min
Routed to Link SP6 : SP6

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

## Link SP5: SP5

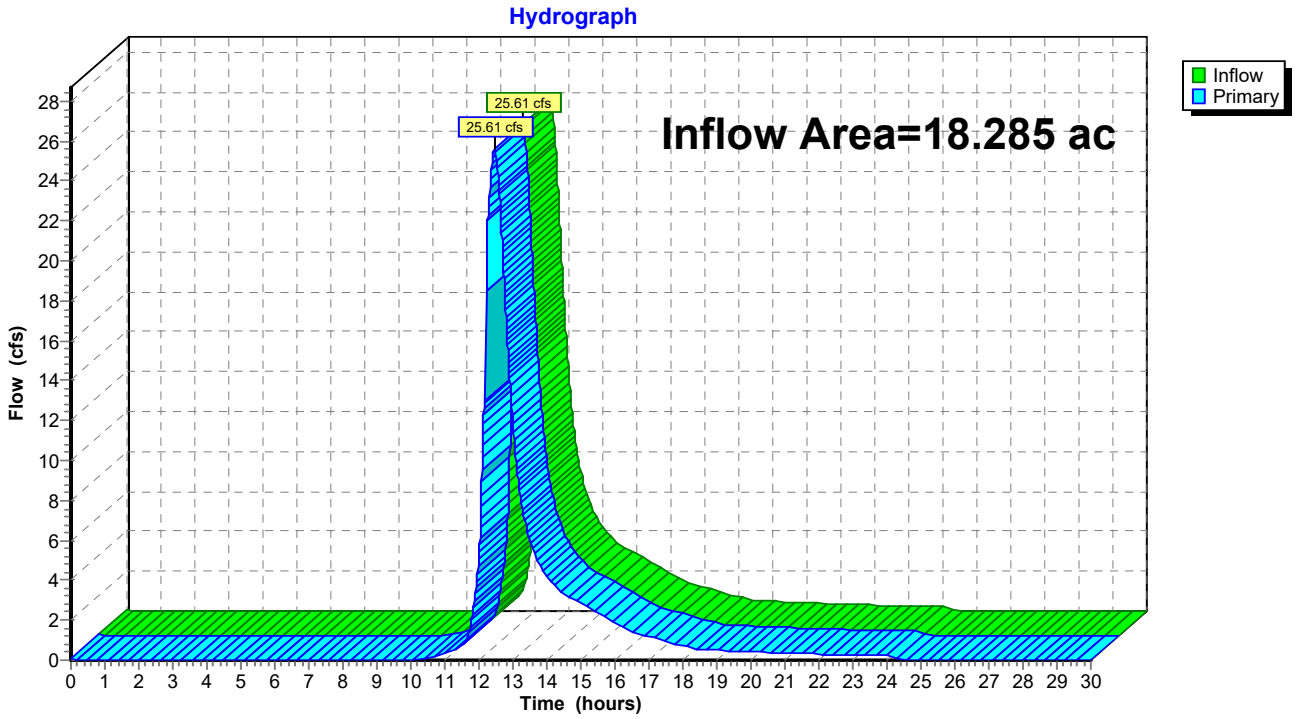


## Summary for Link SP6: SP6

Inflow Area = 18.285 ac, 4.13% Impervious, Inflow Depth = 2.00" for 100 Year event
Inflow = 25.61 cfs @ 12.46 hrs, Volume= 3.040 af
Primary = 25.61 cfs @ 12.46 hrs, Volume= 3.040 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

## Link SP6: SP6

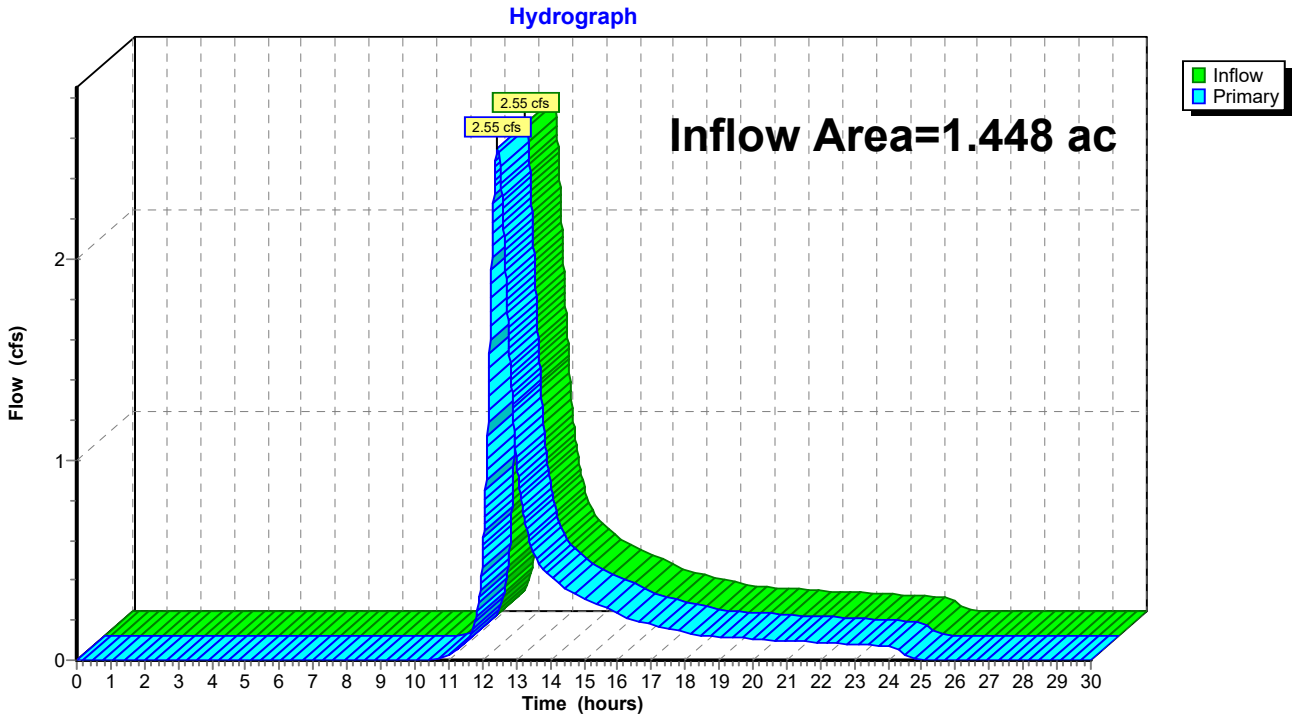


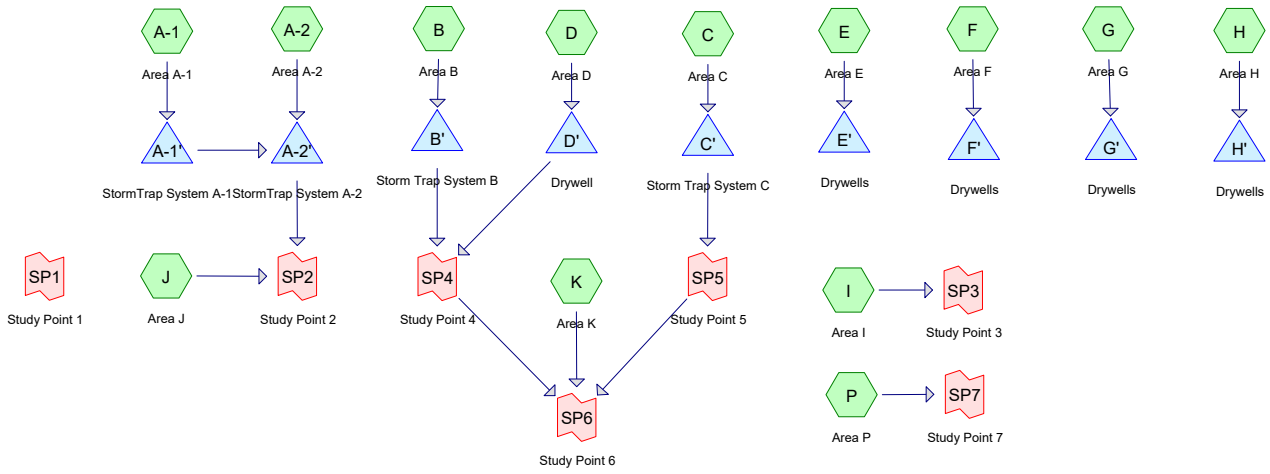
## Summary for Link SP7: SP7

Inflow Area = 1.448 ac, 0.00% Impervious, Inflow Depth = 2.78" for 100 Year event
Inflow = 2.55 cfs @ 12.45 hrs, Volume= 0.336 af
Primary = 2.55 cfs @ 12.45 hrs, Volume= 0.336 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

## Link SP7: SP7






Subcat Reach Pond Link

**Routing Diagram for 20250224_HydroCAD**
Prepared by VHB, Inc, Printed 3/20/2025
HydroCAD® 10.20-5c s/n 01038 © 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 | 2 year | Type III 24-hr | | Default | 24.00 | 1 | 2.90 | 2 |
| 2 | 10 year | Type III 24-hr | | Default | 24.00 | 1 | 5.50 | 2 |
| 3 | 100 year | Type III 24-hr | | Default | 24.00 | 1 | 8.00 | 2 |

## Area Listing (all nodes)

| Area (acres) | CN | Description (subcatchment-numbers) |
|---|---|---|
| 10.048 | 61 | >75% Grass cover, Good, HSG B (A-1, A-2, B, C, D, E, F, G, H, I, J, K, P) |
| 4.464 | 98 | Paved parking, HSG B (A-1, A-2, B, C, E, I, J, K) |
| 0.244 | 98 | Paved parking, HSG C (F, G, H) |
| 3.248 | 98 | Roofs, HSG B (A-1, A-2, B, C) |
| 8.775 | 55 | Woods, Good, HSG B (B, C, J, K, P) |
| **26.780** | **70** | **TOTAL AREA** |

## Soil Listing (all nodes)

| Area (acres) | Soil Group | Subcatchment Numbers |
|---|---|---|
| 0.000 | HSG A | |
| 26.535 | HSG B | A-1, A-2, B, C, D, E, F, G, H, I, J, K, P |
| 0.244 | HSG C | F, G, H |
| 0.000 | HSG D | |
| 0.000 | Other | |
| **26.780** | | **TOTAL AREA** |

## Ground Covers (all nodes)

| HSG-A (acres) | HSG-B (acres) | HSG-C (acres) | HSG-D (acres) | Other (acres) | Total (acres) | Ground Cover | Subcatchment Numbers |
|---|---|---|---|---|---|---|---|
| 0.000 | 10.048 | 0.000 | 0.000 | 0.000 | 10.048 | >75% Grass cover, Good | A-1, A-2, B, C, D, E, F, G, H, I, J, K, P |
| 0.000 | 4.464 | 0.244 | 0.000 | 0.000 | 4.708 | Paved parking | A-1, A-2, B, C, E, F, G, H, I, J, K |
| 0.000 | 3.248 | 0.000 | 0.000 | 0.000 | 3.248 | Roofs | A-1, A-2, B, C |
| 0.000 | 8.775 | 0.000 | 0.000 | 0.000 | 8.775 | Woods, Good | B, C, J, K, P |
| **0.000** | **26.535** | **0.244** | **0.000** | **0.000** | **26.780** | **TOTAL AREA** | |

## Pipe Listing (all 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 | A-1 | 0.00 | 0.00 | 302.0 | 0.0100 | 0.018 | 0.0 | 12.0 | 0.0 | |
| 2 | A-2 | 0.00 | 0.00 | 136.0 | 0.0200 | 0.018 | 0.0 | 8.0 | 0.0 | |
| 3 | A-2 | 0.00 | 0.00 | 120.0 | 0.0070 | 0.018 | 0.0 | 12.0 | 0.0 | |
| 4 | B | 0.00 | 0.00 | 351.0 | 0.0100 | 0.013 | 0.0 | 15.0 | 0.0 | |
| 5 | C | 0.00 | 0.00 | 261.0 | 0.0100 | 0.018 | 0.0 | 15.0 | 0.0 | |

Time span=0.00-40.00 hrs, dt=0.01 hrs, 4001 points x 3
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 A-1: Area A-1** Runoff Area=148,850 sf 40.68% Impervious Runoff Depth=0.95"
Flow Length=533' Tc=28.7 min CN=76 Runoff=2.07 cfs 0.270 af

**Subcatchment A-2: Area A-2** Runoff Area=50,510 sf 63.92% Impervious Runoff Depth=1.50"
Flow Length=353' Tc=8.2 min CN=85 Runoff=1.89 cfs 0.145 af

**Subcatchment B: Area B** Runoff Area=444,006 sf 28.05% Impervious Runoff Depth=0.62"
Flow Length=1,308' Tc=17.1 min CN=69 Runoff=4.35 cfs 0.524 af

**Subcatchment C: Area C** Runoff Area=196,979 sf 46.24% Impervious Runoff Depth=0.95"
Flow Length=466' Tc=16.1 min CN=76 Runoff=3.48 cfs 0.357 af

**Subcatchment D: Area D** Runoff Area=6,149 sf 0.00% Impervious Runoff Depth=0.33"
Tc=6.0 min CN=61 Runoff=0.03 cfs 0.004 af

**Subcatchment E: Area E** Runoff Area=25,556 sf 8.84% Impervious Runoff Depth=0.43"
Tc=6.0 min CN=64 Runoff=0.19 cfs 0.021 af

**Subcatchment F: Area F** Runoff Area=9,340 sf 42.21% Impervious Runoff Depth=1.00"
Tc=6.0 min CN=77 Runoff=0.24 cfs 0.018 af

**Subcatchment G: Area G** Runoff Area=6,607 sf 65.72% Impervious Runoff Depth=1.50"
Tc=6.0 min CN=85 Runoff=0.27 cfs 0.019 af

**Subcatchment H: Area H** Runoff Area=3,035 sf 77.86% Impervious Runoff Depth=1.89"
Tc=6.0 min CN=90 Runoff=0.15 cfs 0.011 af

**Subcatchment I: Area I** Runoff Area=6,887 sf 1.45% Impervious Runoff Depth=0.36"
Tc=6.0 min CN=62 Runoff=0.04 cfs 0.005 af

**Subcatchment J: Area J** Runoff Area=44,065 sf 14.19% Impervious Runoff Depth=0.46"
Flow Length=647' Tc=6.0 min CN=65 Runoff=0.38 cfs 0.039 af

**Subcatchment K: Area K** Runoff Area=161,465 sf 11.69% Impervious Runoff Depth=0.33"
Flow Length=1,080' Tc=24.1 min CN=61 Runoff=0.52 cfs 0.101 af

**Subcatchment P: Area P** Runoff Area=63,077 sf 0.00% Impervious Runoff Depth=0.17"
Flow Length=440' Tc=30.2 min CN=55 Runoff=0.05 cfs 0.020 af

**Pond A-1': StormTrap System A-1** Peak Elev=125.74' Storage=3,794 cf Inflow=2.07 cfs 0.270 af
Discarded=0.41 cfs 0.270 af Primary=0.00 cfs 0.000 af Outflow=0.41 cfs 0.270 af

**Pond A-2': StormTrap System A-2** Peak Elev=125.14' Storage=1,680 cf Inflow=1.89 cfs 0.145 af
Discarded=0.37 cfs 0.145 af Primary=0.00 cfs 0.000 af Outflow=0.37 cfs 0.145 af

**Pond B': Storm Trap System B** Peak Elev=72.31' Storage=5,953 cf Inflow=4.35 cfs 0.524 af
Discarded=0.94 cfs 0.524 af Primary=0.00 cfs 0.000 af Outflow=0.94 cfs 0.524 af

**Pond C': Storm Trap System C** Peak Elev=69.36' Storage=6,909 cf Inflow=3.48 cfs 0.357 af
Discarded=0.32 cfs 0.357 af Primary=0.00 cfs 0.000 af Outflow=0.32 cfs 0.357 af

**Pond D': Drywell** Peak Elev=74.41' Storage=0.000 af Inflow=0.03 cfs 0.004 af
Discarded=0.01 cfs 0.004 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.004 af

**Pond E': Drywells** Peak Elev=65.56' Storage=0.002 af Inflow=0.19 cfs 0.021 af
Outflow=0.09 cfs 0.021 af

**Pond F': Drywells** Peak Elev=91.41' Storage=0.004 af Inflow=0.24 cfs 0.018 af
Outflow=0.05 cfs 0.018 af

**Pond G': Drywells** Peak Elev=86.47' Storage=0.005 af Inflow=0.27 cfs 0.019 af
Outflow=0.05 cfs 0.019 af

**Pond H': Drywells** Peak Elev=80.59' Storage=0.003 af Inflow=0.15 cfs 0.011 af
Outflow=0.03 cfs 0.011 af

**Link SP1: Study Point 1**
Primary=0.00 cfs 0.000 af

**Link SP2: Study Point 2** Inflow=0.38 cfs 0.039 af
Primary=0.38 cfs 0.039 af

**Link SP3: Study Point 3** Inflow=0.04 cfs 0.005 af
Primary=0.04 cfs 0.005 af

**Link SP4: Study Point 4** Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

**Link SP5: Study Point 5** Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

**Link SP6: Study Point 6** Inflow=0.52 cfs 0.101 af
Primary=0.52 cfs 0.101 af

**Link SP7: Study Point 7** Inflow=0.05 cfs 0.020 af
Primary=0.05 cfs 0.020 af

**Total Runoff Area = 26.780 ac Runoff Volume = 1.535 af Average Runoff Depth = 0.69"**
**70.29% Pervious = 18.823 ac 29.71% Impervious = 7.957 ac**

## Summary for Subcatchment A-1: Area A-1

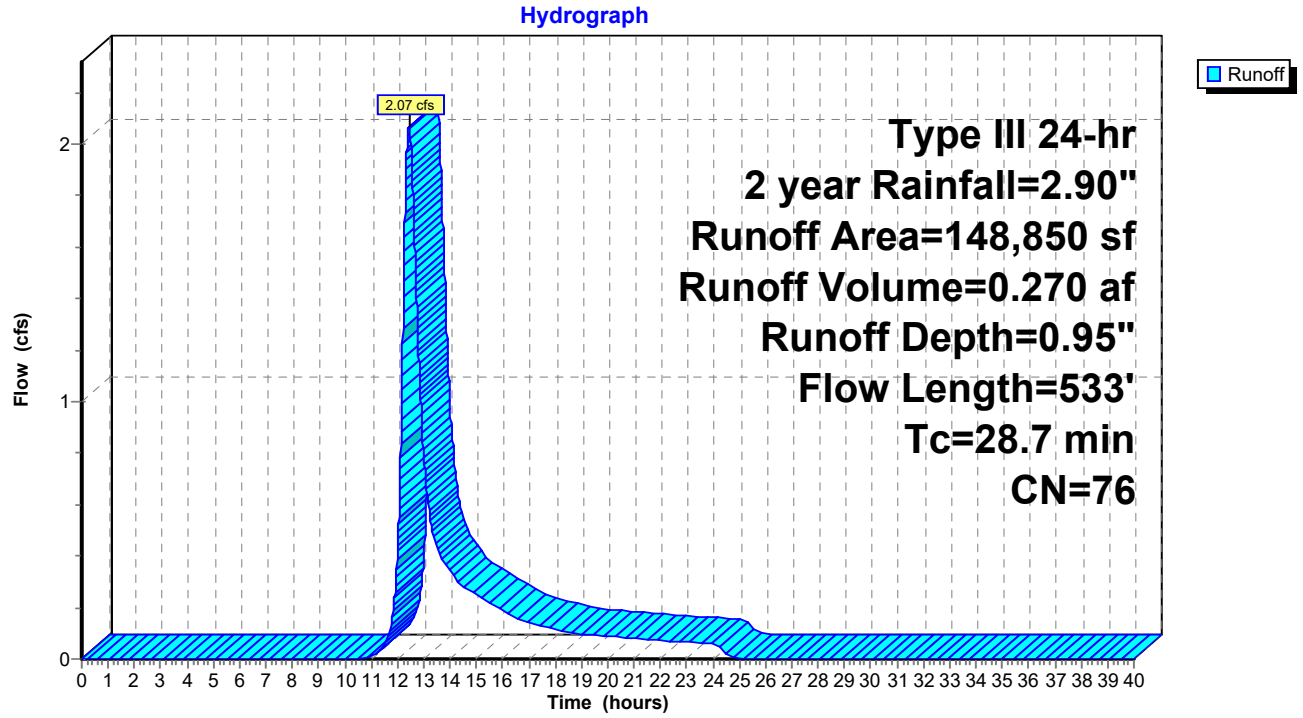
Runoff = 2.07 cfs @ 12.44 hrs, Volume= 0.270 af, Depth= 0.95"
Routed to Pond A-1' : StormTrap System A-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 year Rainfall=2.90"

| Area (sf) | CN | Description |
|---|---|---|
| 37,875 | 98 | Paved parking, HSG B |
| 88,292 | 61 | >75% Grass cover, Good, HSG B |
| 22,683 | 98 | Roofs, HSG B |
| 148,850 | 76 | Weighted Average |
| 88,292 | | 59.32% Pervious Area |
| 60,558 | | 40.68% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.9 | 41 | 0.2668 | 0.17 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.90" |
| 23.3 | 190 | 0.0094 | 0.14 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 2.90" |
| 1.5 | 302 | 0.0100 | 3.28 | 2.57 | **Pipe Channel, Pipe to StormTrap** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.018 Corrugated PE, corrugated interior |
| 28.7 | 533 | Total | | | |

## Subcatchment A-1: Area A-1



## Summary for Subcatchment A-2: Area A-2

[47] Hint: Peak is 153% of capacity of segment #2

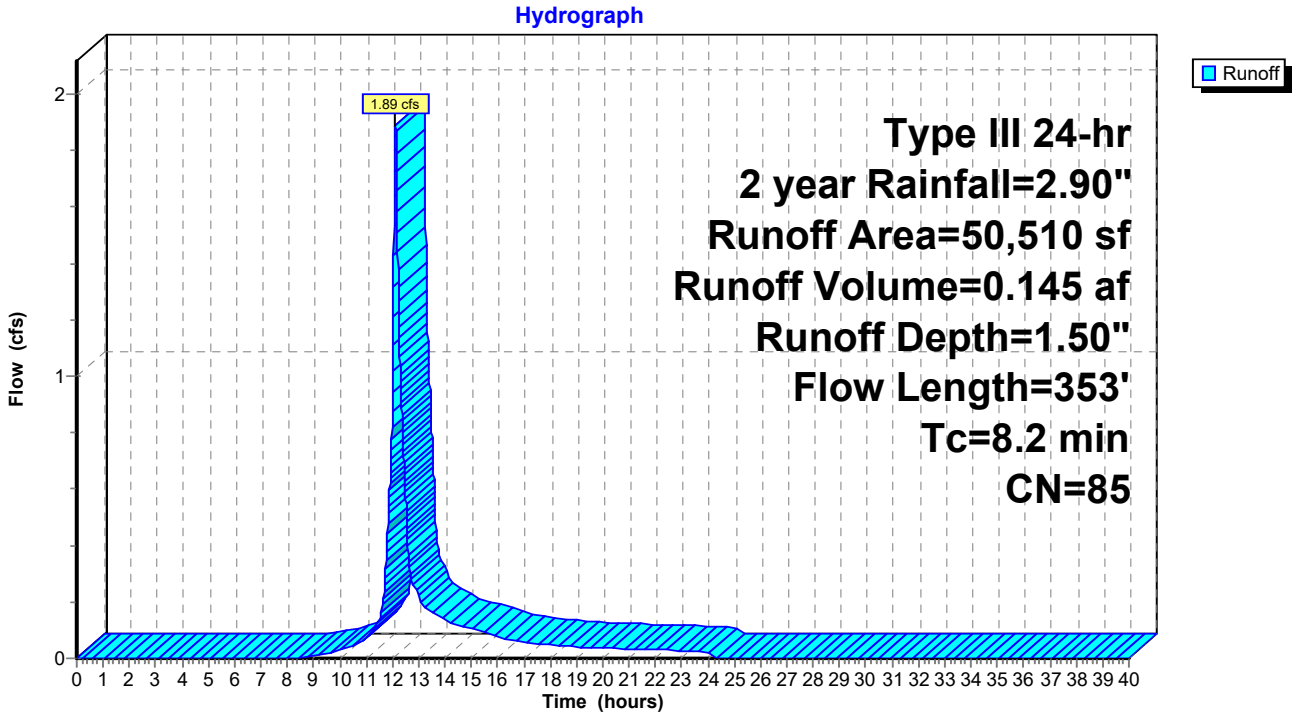
Runoff = 1.89 cfs @ 12.12 hrs, Volume= 0.145 af, Depth= 1.50"
Routed to Pond A-2' : StormTrap System A-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 year Rainfall=2.90"

| Area (sf) | CN | Description |
|---|---|---|
| 14,641 | 98 | Paved parking, HSG B |
| 18,226 | 61 | >75% Grass cover, Good, HSG B |
| 17,643 | 98 | Roofs, HSG B |
| 50,510 | 85 | Weighted Average |
| 18,226 | | 36.08% Pervious Area |
| 32,284 | | 63.92% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.9 | 97 | 0.0510 | 0.23 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 2.90" |
| 0.6 | 136 | 0.0200 | 3.54 | 1.23 | **Pipe Channel, Area Drain Pipes** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.018 Corrugated PE, corrugated interior |
| 0.7 | 120 | 0.0070 | 2.74 | 2.15 | **Pipe Channel, Pipe to StormTrap** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.018 Corrugated PE, corrugated interior |
| 8.2 | 353 | Total | | | |

## Subcatchment A-2: Area A-2



## Summary for Subcatchment B: Area B

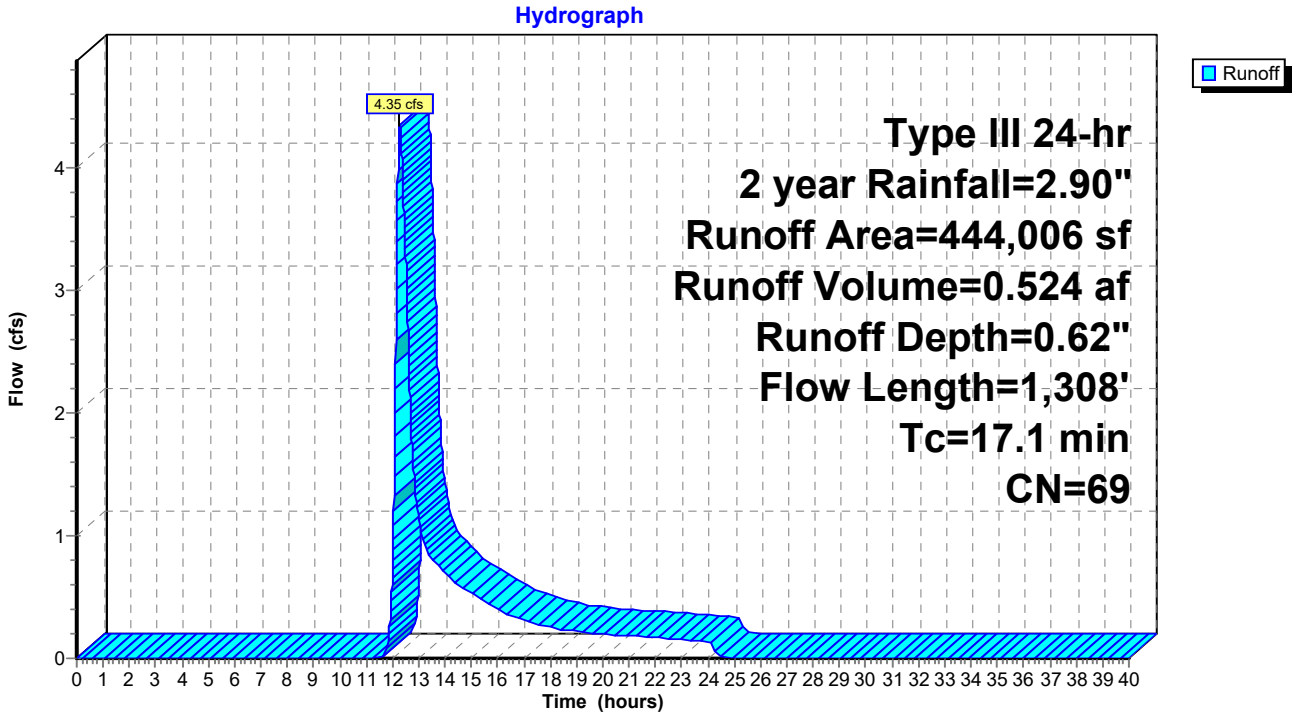
Runoff = 4.35 cfs @ 12.28 hrs, Volume= 0.524 af, Depth= 0.62"
Routed to Pond B' : Storm Trap System B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 year Rainfall=2.90"

| Area (sf) | CN | Description |
|---|---|---|
| 68,081 | 98 | Paved parking, HSG B |
| 180,566 | 61 | >75% Grass cover, Good, HSG B |
| 56,445 | 98 | Roofs, HSG B |
| 138,914 | 55 | Woods, Good, HSG B |
| 444,006 | 69 | Weighted Average |
| 319,480 | | 71.95% Pervious Area |
| 124,526 | | 28.05% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 14.3 | 100 | 0.2500 | 0.12 | | **Sheet Flow, Wooded Hill**<br>Woods: Dense underbrush n= 0.800 P2= 2.90" |
| 1.4 | 210 | 0.2500 | 2.50 | | **Shallow Concentrated Flow, Wooded Hill Slope**<br>Woodland Kv= 5.0 fps |
| 0.3 | 647 | 0.0348 | 36.88 | 457,149.18 | **Channel Flow, BIOSWALE**<br>Area= 12,397.0 sf Perim= 1,234.0' r= 10.05'<br>n= 0.035 Riprap, 6-inch |
| 1.1 | 351 | 0.0100 | 5.26 | 6.46 | **Pipe Channel, PIPES TO STORMTRAP**<br>15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31'<br>n= 0.013 Corrugated PE, smooth interior |
| 17.1 | 1,308 | Total | | | |

## Subcatchment B: Area B



## Summary for Subcatchment C: Area C

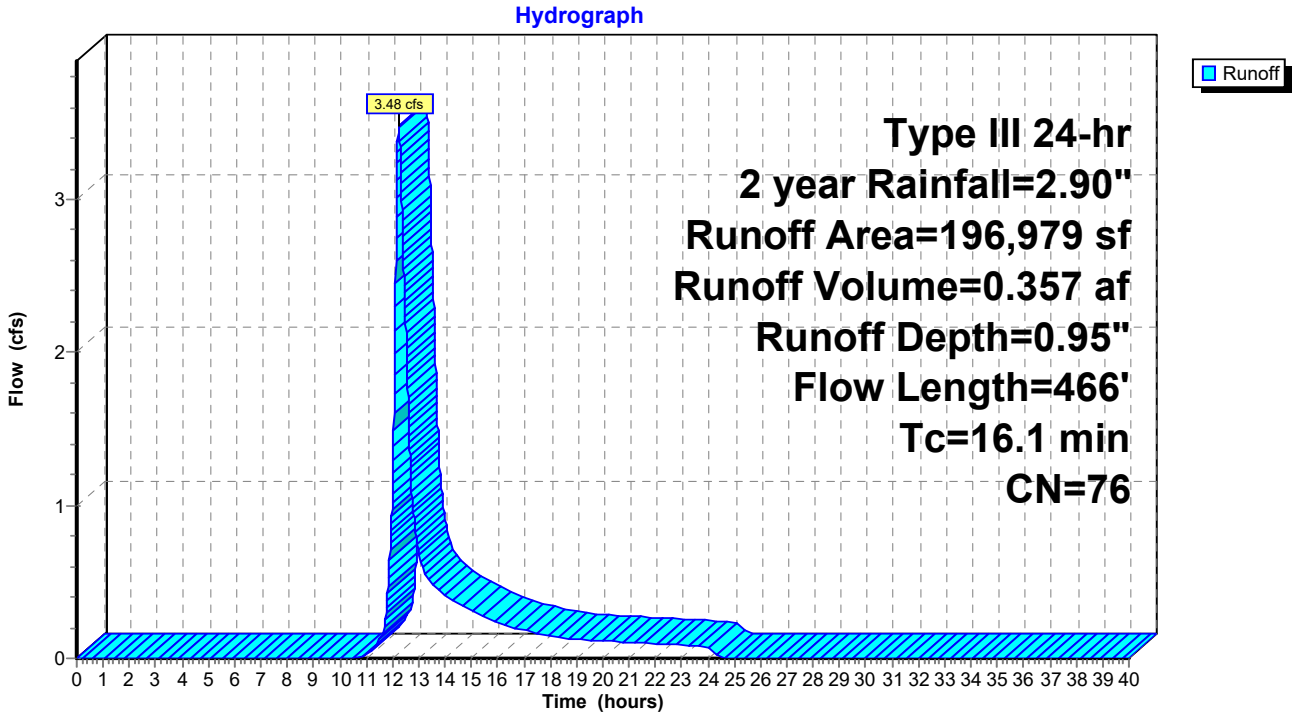
Runoff = 3.48 cfs @ 12.24 hrs, Volume= 0.357 af, Depth= 0.95"
Routed to Pond C' : Storm Trap System C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 year Rainfall=2.90"

| Area (sf) | CN | Description |
|---|---|---|
| 46,357 | 98 | Paved parking, HSG B |
| 45,781 | 61 | >75% Grass cover, Good, HSG B |
| 44,731 | 98 | Roofs, HSG B |
| 60,110 | 55 | Woods, Good, HSG B |
| 196,979 | 76 | Weighted Average |
| 105,891 | | 53.76% Pervious Area |
| 91,088 | | 46.24% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 13.3 | 100 | 0.3000 | 0.13 | | **Sheet Flow, Wooded Hill Slope**<br>Woods: Dense underbrush n= 0.800 P2= 2.90" |
| 0.2 | 40 | 0.3000 | 2.74 | | **Shallow Concentrated Flow, Wooded Hill Slope**<br>Woodland Kv= 5.0 fps |
| 1.5 | 65 | 0.0200 | 0.71 | | **Shallow Concentrated Flow, Swale**<br>Woodland Kv= 5.0 fps |
| 1.1 | 261 | 0.0100 | 3.80 | 4.67 | **Pipe Channel, PIPES TO STORMTRAP**<br>15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31'<br>n= 0.018 Corrugated PE, corrugated interior |
| 16.1 | 466 | Total | | | |

## Subcatchment C: Area C



## Summary for Subcatchment D: Area D

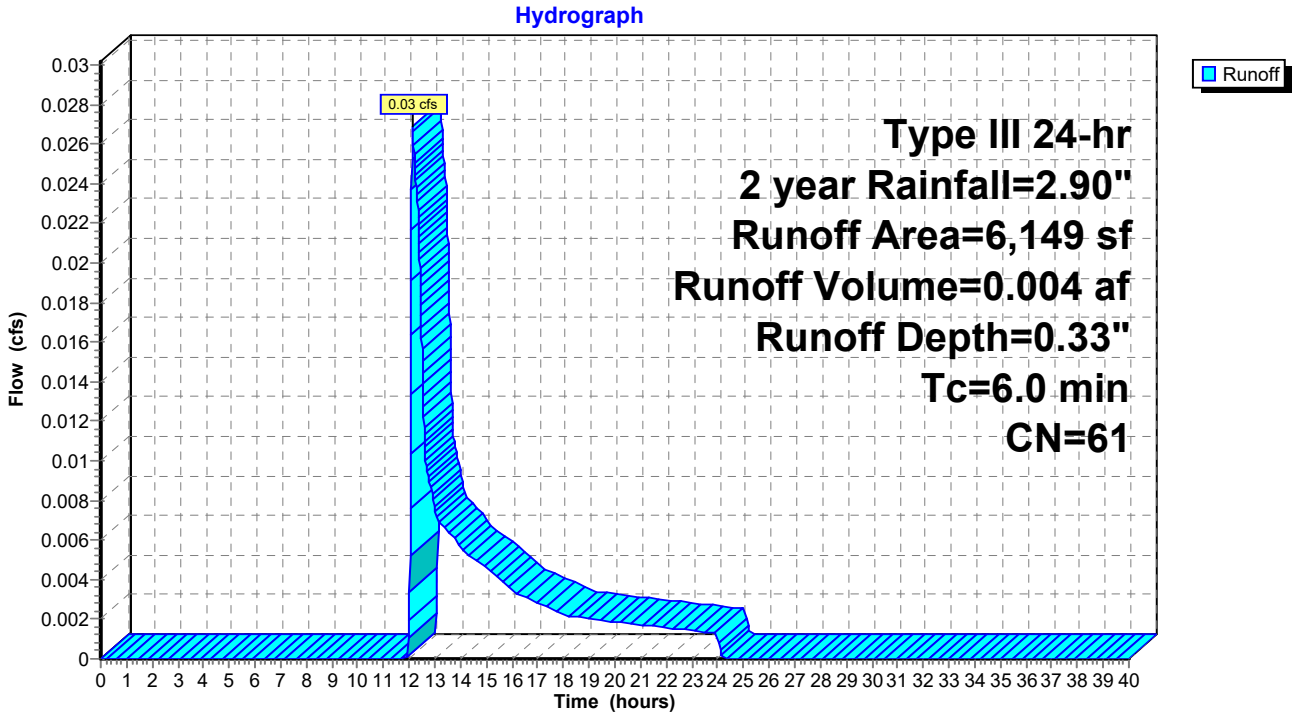
Runoff = 0.03 cfs @ 12.14 hrs, Volume= 0.004 af, Depth= 0.33"
Routed to Pond D' : Drywell

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 year Rainfall=2.90"

| Area (sf) | CN | Description |
|---|---|---|
| 6,149 | 61 | >75% Grass cover, Good, HSG B |
| 6,149 | | 100.00% Pervious Area |

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

### Subcatchment D: Area D



## Summary for Subcatchment E: Area E

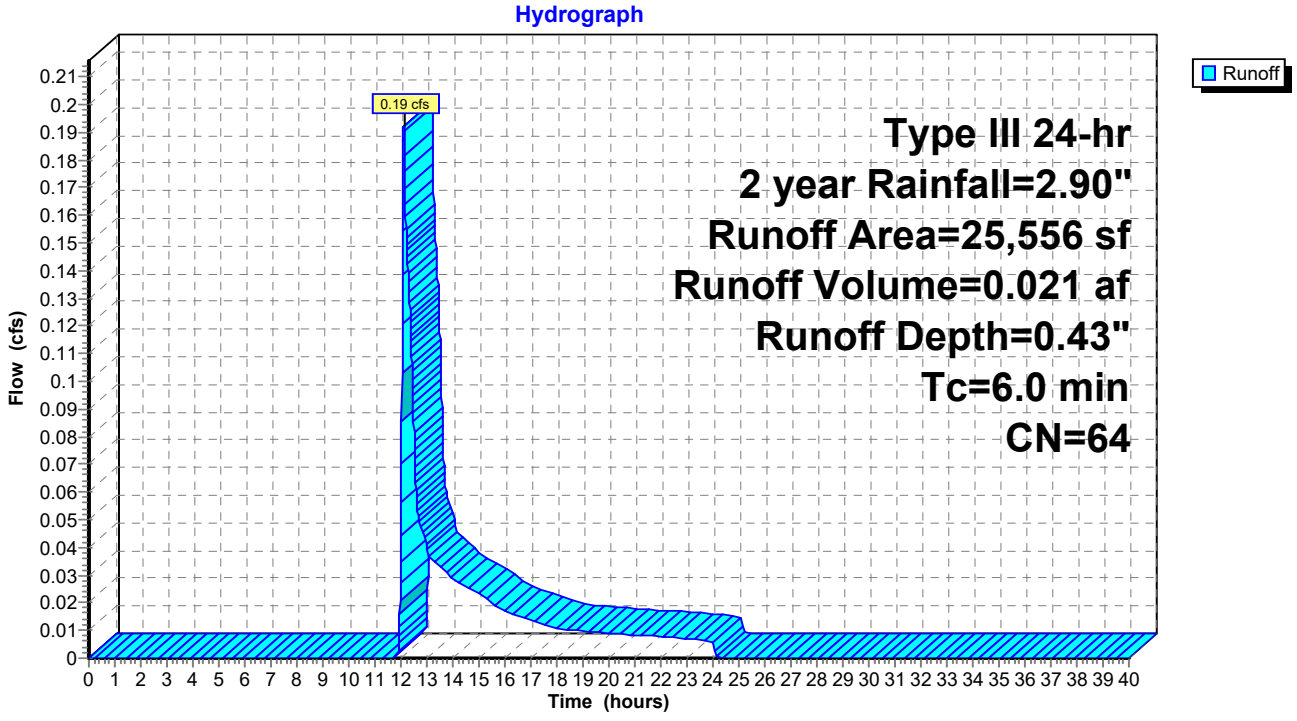
Runoff = 0.19 cfs @ 12.12 hrs, Volume= 0.021 af, Depth= 0.43"
Routed to Pond E' : Drywells

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 year Rainfall=2.90"

| Area (sf) | CN | Description |
|---|---|---|
| 2,259 | 98 | Paved parking, HSG B |
| 23,297 | 61 | >75% Grass cover, Good, HSG B |
| 25,556 | 64 | Weighted Average |
| 23,297 | | 91.16% Pervious Area |
| 2,259 | | 8.84% Impervious Area |

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

### Subcatchment E: Area E



## Summary for Subcatchment F: Area F

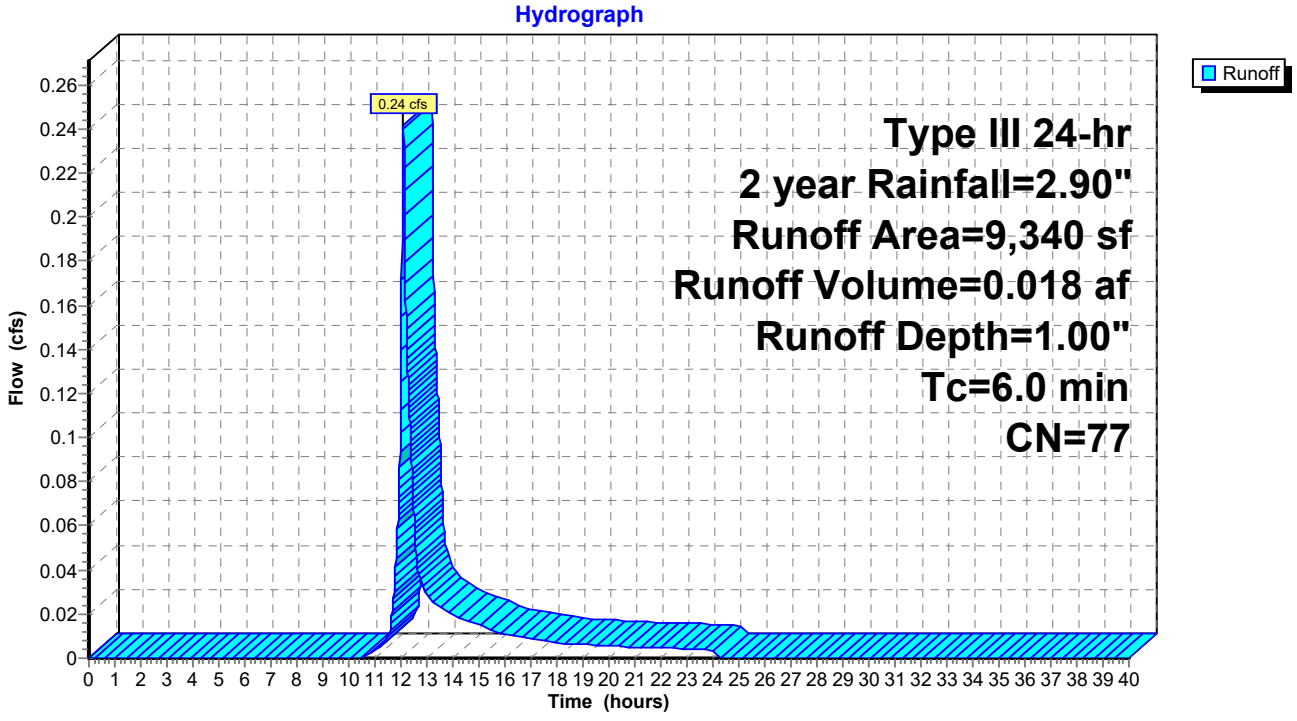
Runoff = 0.24 cfs @ 12.09 hrs, Volume= 0.018 af, Depth= 1.00"
Routed to Pond F' : Drywells

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 year Rainfall=2.90"

| Area (sf) | CN | Description |
|---|---|---|
| 3,942 | 98 | Paved parking, HSG C |
| 5,398 | 61 | >75% Grass cover, Good, HSG B |
| 9,340 | 77 | Weighted Average |
| 5,398 | | 57.79% Pervious Area |
| 3,942 | | 42.21% Impervious Area |

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

### Subcatchment F: Area F



## Summary for Subcatchment G: Area G

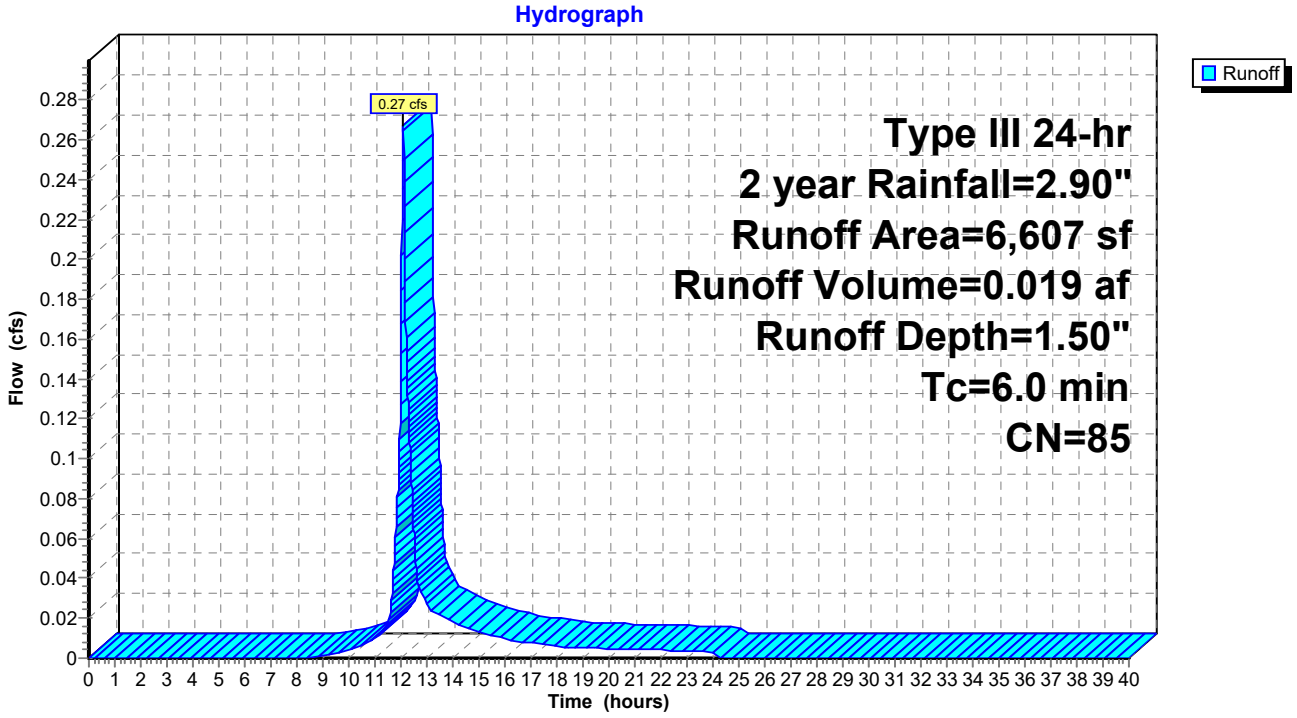
Runoff = 0.27 cfs @ 12.09 hrs, Volume= 0.019 af, Depth= 1.50"
Routed to Pond G' : Drywells

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 year Rainfall=2.90"

| Area (sf) | CN | Description |
|---|---|---|
| 4,342 | 98 | Paved parking, HSG C |
| 2,265 | 61 | >75% Grass cover, Good, HSG B |
| 6,607 | 85 | Weighted Average |
| 2,265 | | 34.28% Pervious Area |
| 4,342 | | 65.72% Impervious Area |

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

### Subcatchment G: Area G



## Summary for Subcatchment H: Area H

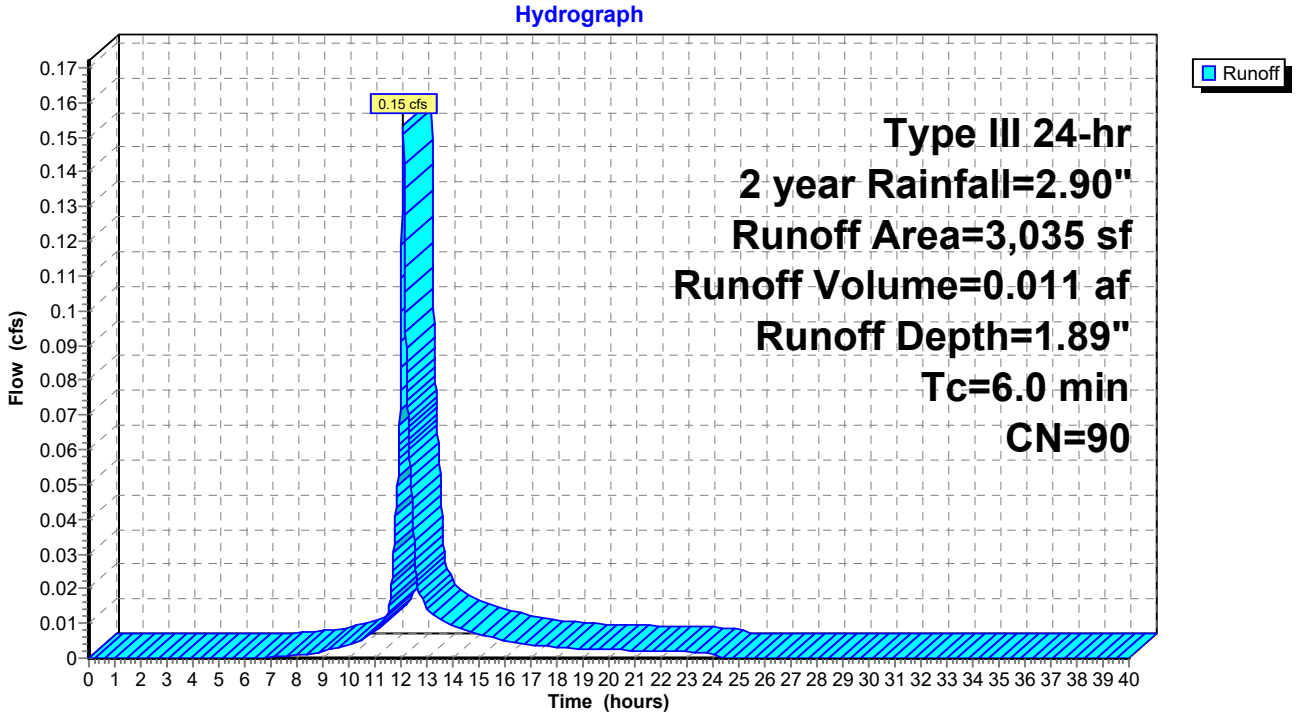
Runoff = 0.15 cfs @ 12.09 hrs, Volume= 0.011 af, Depth= 1.89"
Routed to Pond H' : Drywells

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 year Rainfall=2.90"

| Area (sf) | CN | Description |
|---|---|---|
| 2,363 | 98 | Paved parking, HSG C |
| 672 | 61 | >75% Grass cover, Good, HSG B |
| 3,035 | 90 | Weighted Average |
| 672 | | 22.14% Pervious Area |
| 2,363 | | 77.86% Impervious Area |

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

### Subcatchment H: Area H



## Summary for Subcatchment I: Area I

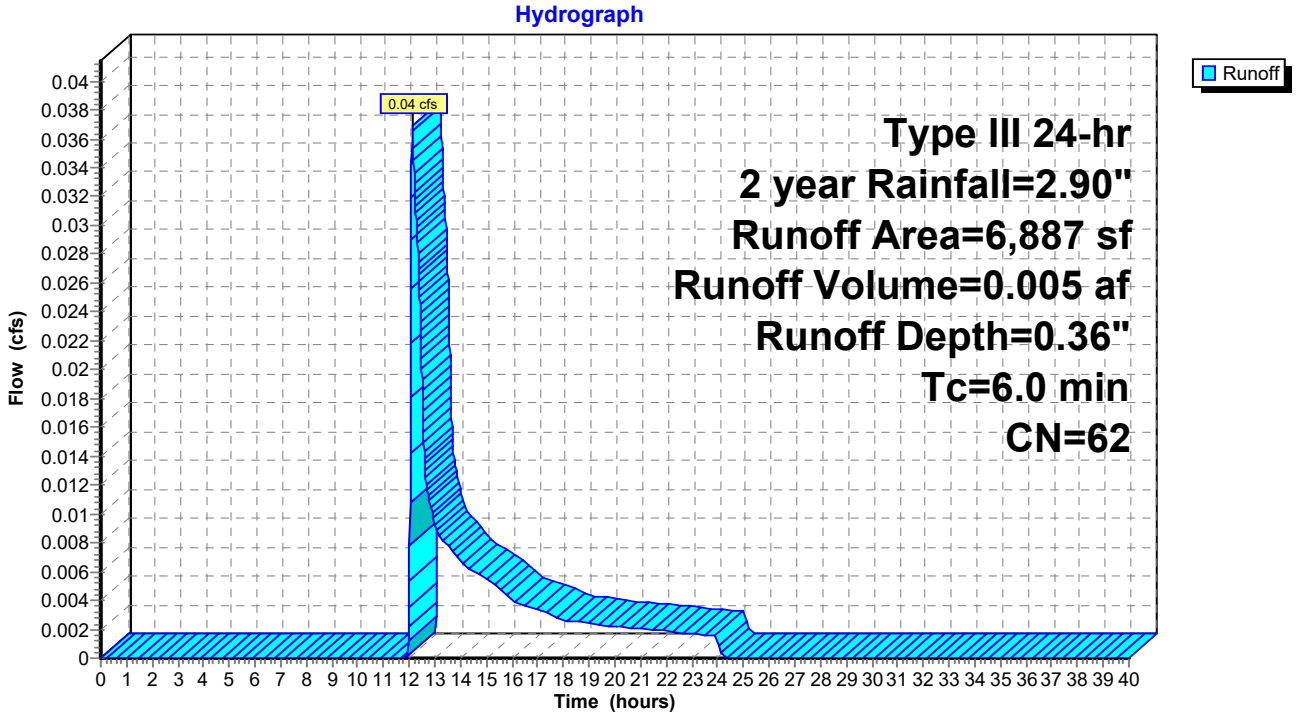
Runoff = 0.04 cfs @ 12.13 hrs, Volume= 0.005 af, Depth= 0.36"
Routed to Link SP3 : Study Point 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 year Rainfall=2.90"

| Area (sf) | CN | Description |
|---|---|---|
| 100 | 98 | Paved parking, HSG B |
| 6,787 | 61 | >75% Grass cover, Good, HSG B |
| 6,887 | 62 | Weighted Average |
| 6,787 | | 98.55% Pervious Area |
| 100 | | 1.45% Impervious Area |

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

### Subcatchment I: Area I



## Summary for Subcatchment J: Area J

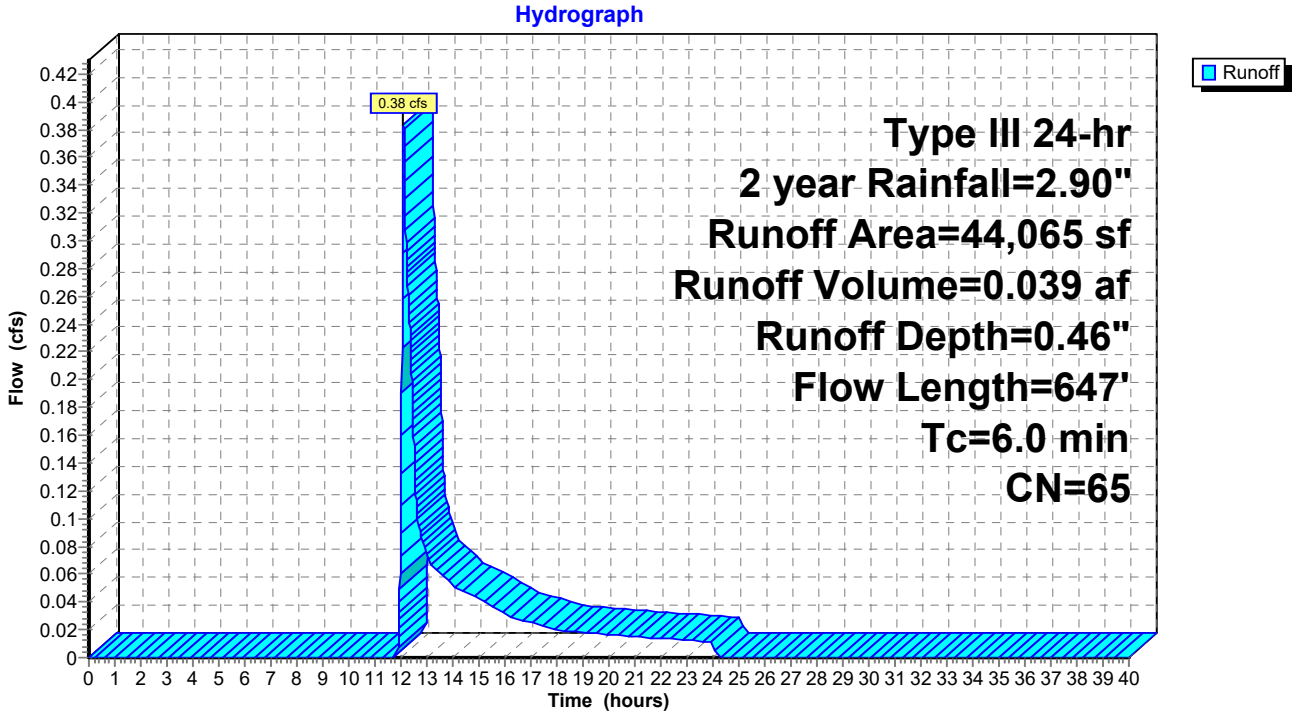
Runoff = 0.38 cfs @ 12.11 hrs, Volume= 0.039 af, Depth= 0.46"
Routed to Link SP2 : Study Point 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 year Rainfall=2.90"

| Area (sf) | CN | Description |
|---|---|---|
| 6,254 | 98 | Paved parking, HSG B |
| 10,778 | 55 | Woods, Good, HSG B |
| 27,033 | 61 | >75% Grass cover, Good, HSG B |
| 44,065 | 65 | Weighted Average |
| 37,811 | | 85.81% Pervious Area |
| 6,254 | | 14.19% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.5 | 70 | 0.1500 | 0.34 | | **Sheet Flow, Dock Road Grass** Grass: Short n= 0.150 P2= 2.90" |
| 0.3 | 30 | 0.1000 | 1.96 | | **Sheet Flow, Dock Road** Smooth surfaces n= 0.011 P2= 2.90" |
| 1.4 | 547 | 0.1000 | 6.42 | | **Shallow Concentrated Flow, Dock Road Gutter** Paved Kv= 20.3 fps |
| 5.2 | 647 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment J: Area J



## Summary for Subcatchment K: Area K

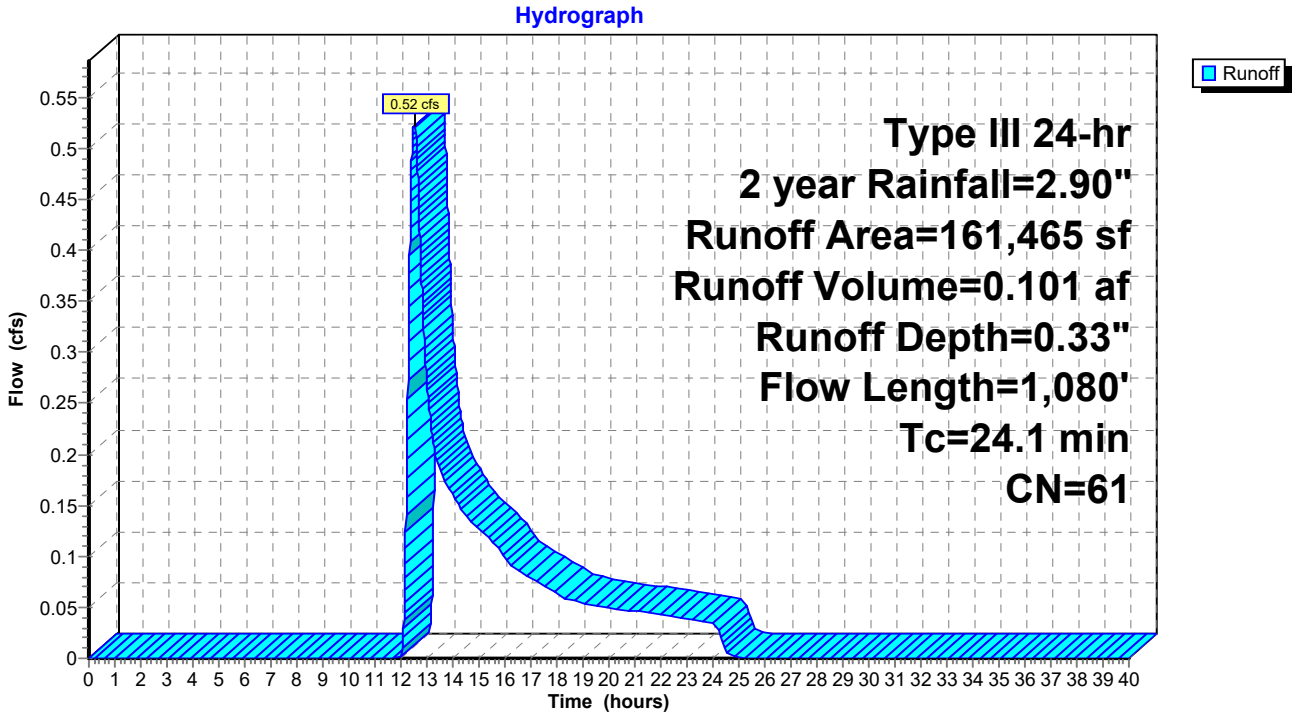
Runoff = 0.52 cfs @ 12.51 hrs, Volume= 0.101 af, Depth= 0.33"
Routed to Link SP6 : Study Point 6

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 year Rainfall=2.90"

| Area (sf) | CN | Description |
|---|---|---|
| 18,878 | 98 | Paved parking, HSG B |
| 112,994 | 55 | Woods, Good, HSG B |
| 29,593 | 61 | >75% Grass cover, Good, HSG B |
| 161,465 | 61 | Weighted Average |
| 142,587 | | 88.31% Pervious Area |
| 18,878 | | 11.69% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 15.9 | 76 | 0.0100 | 0.08 | | **Sheet Flow,** Grass: Dense n= 0.240 P2= 2.90" |
| 4.7 | 25 | 0.2500 | 0.09 | | **Sheet Flow, Steep Slope - Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 2.90" |
| 0.6 | 50 | 0.3000 | 1.37 | | **Shallow Concentrated Flow, Steep Slope Concentrated Flow** Forest w/Heavy Litter Kv= 2.5 fps |
| 2.9 | 929 | 0.0700 | 5.37 | | **Shallow Concentrated Flow, Dock Road Gutter Flow** Paved Kv= 20.3 fps |
| 24.1 | 1,080 | Total | | | |

## Subcatchment K: Area K



## Summary for Subcatchment P: Area P

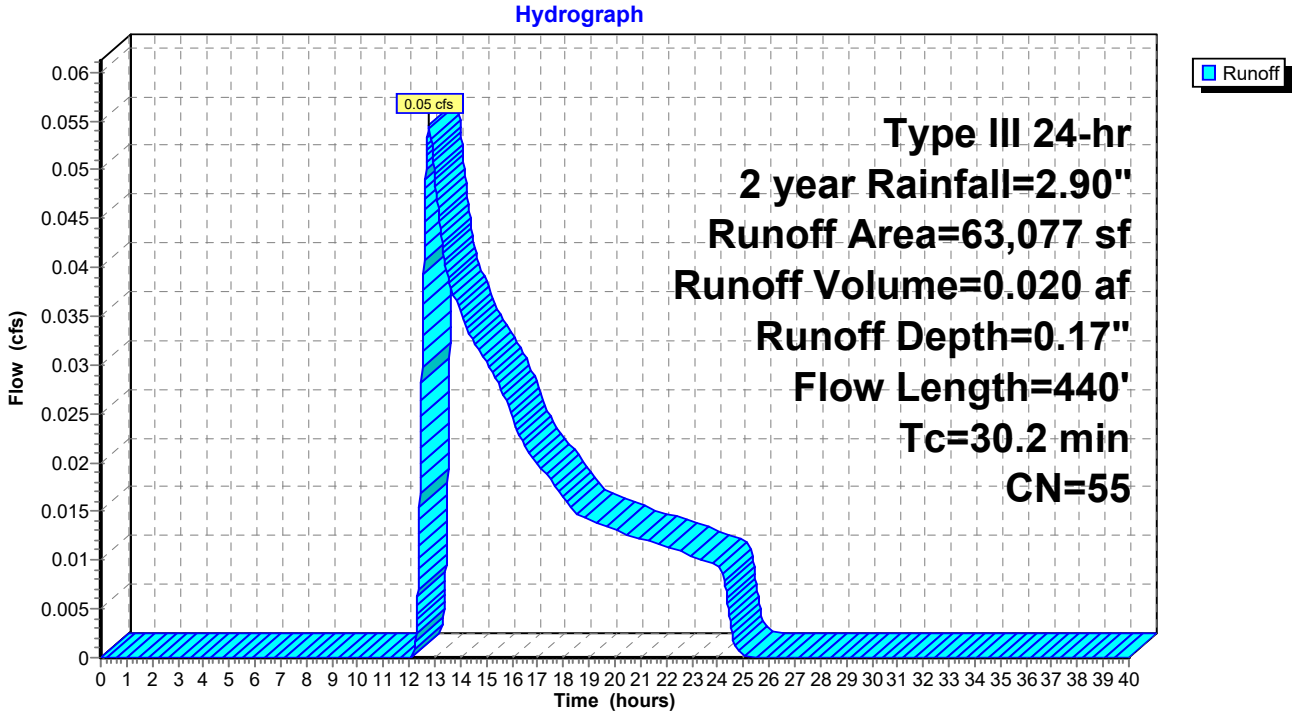
Runoff = 0.05 cfs @ 12.78 hrs, Volume= 0.020 af, Depth= 0.17"
Routed to Link SP7 : Study Point 7

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 year Rainfall=2.90"

| Area (sf) | CN | Description |
|---|---|---|
| 59,457 | 55 | Woods, Good, HSG B |
| 3,620 | 61 | >75% Grass cover, Good, HSG B |
| 63,077 | 55 | Weighted Average |
| 63,077 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 22.6 | 100 | 0.0200 | 0.07 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.90" |
| 3.6 | 10 | 0.0200 | 0.05 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.90" |
| 4.0 | 330 | 0.3000 | 1.37 | | **Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps |
| 30.2 | 440 | Total | | | |

### Subcatchment P: Area P



## Summary for Pond A-1': StormTrap System A-1

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=317)

Inflow Area = 3.417 ac, 40.68% Impervious, Inflow Depth = 0.95" for 2 year event
Inflow = 2.07 cfs @ 12.44 hrs, Volume= 0.270 af
Outflow = 0.41 cfs @ 12.01 hrs, Volume= 0.270 af, Atten= 80%, Lag= 0.0 min
Discarded = 0.41 cfs @ 12.01 hrs, Volume= 0.270 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond A-2' : StormTrap System A-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 125.74' @ 13.58 hrs Surf.Area= 3,537 sf Storage= 3,794 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 80.1 min ( 962.7 - 882.6 )

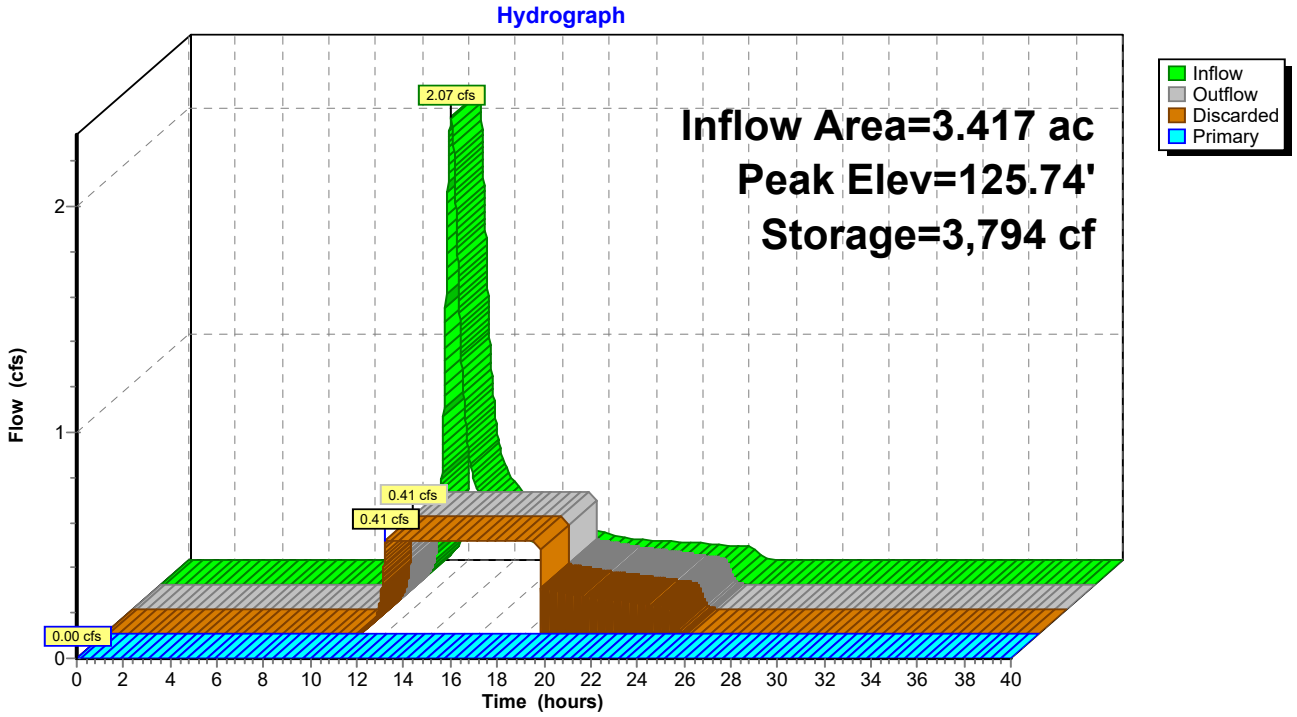
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 124.06' | 27,235 cf | **StormTrap DoubleTrap 8-6** x 16<br>Inside= 101.7"W x 102.0"H => 66.71 sf x 15.40'L = 1,027.0 cf<br>Outside= 101.7"W x 114.0"H => 80.55 sf x 15.40'L = 1,240.2 cf<br>16 Chambers in 4 Rows<br>33.92' x 61.58' Core + 6.66' Border = 47.23' x 74.90' System |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 124.06' | **5.000 in/hr Exfiltration over Surface area** Phase-In= 0.01' |
| #2 | Primary | 132.00' | **24.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |

**Discarded OutFlow** Max=0.41 cfs @ 12.01 hrs HW=124.56' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.41 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=124.26' TW=124.25' (Dynamic Tailwater)
↑—**2=Orifice/Grate** ( Controls 0.00 cfs)

## Pond A-1': StormTrap System A-1



## Summary for Pond A-2': StormTrap System A-2

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=466)

Inflow Area = 4.577 ac, 46.57% Impervious, Inflow Depth = 0.38" for 2 year event
Inflow = 1.89 cfs @ 12.12 hrs, Volume= 0.145 af
Outflow = 0.37 cfs @ 11.78 hrs, Volume= 0.145 af, Atten= 80%, Lag= 0.0 min
Discarded = 0.37 cfs @ 11.78 hrs, Volume= 0.145 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link SP2 : Study Point 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 125.14' @ 12.60 hrs Surf.Area= 3,199 sf Storage= 1,680 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 27.9 min ( 860.5 - 832.6 )

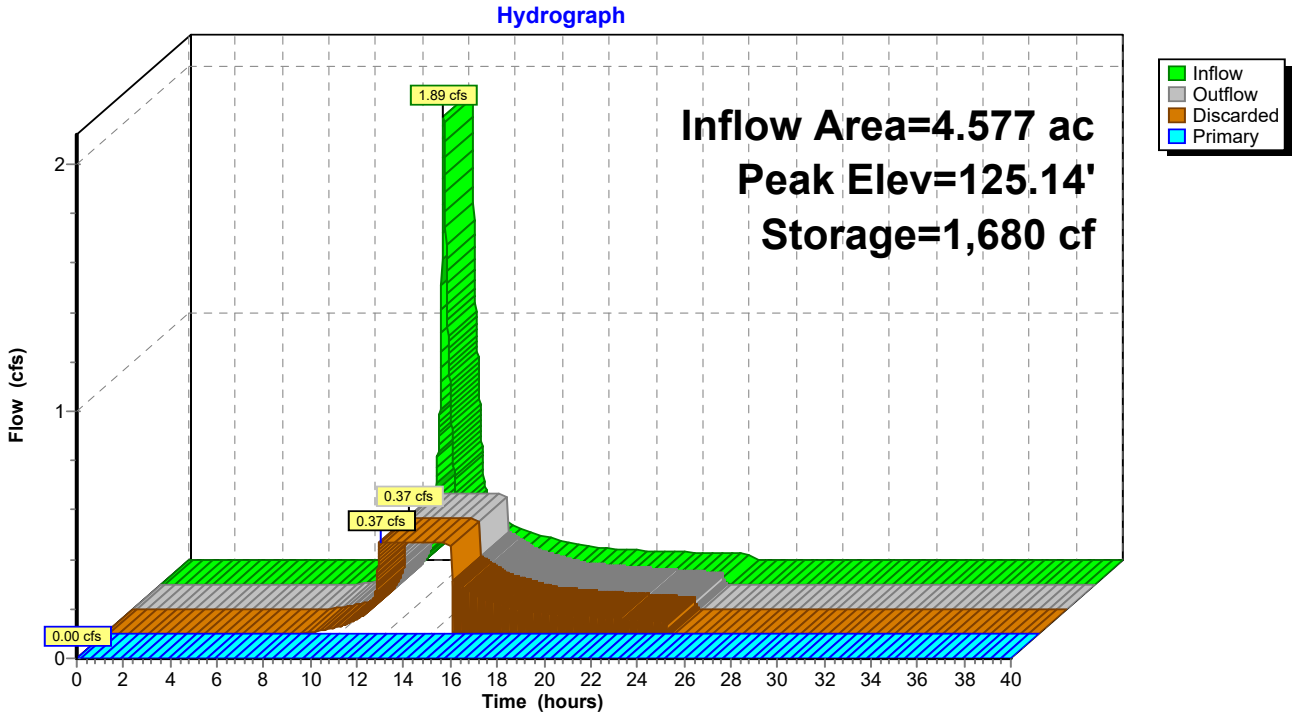
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 124.06' | 24,501 cf | **StormTrap DoubleTrap 8-6** x 12<br>Inside= 101.7"W x 102.0"H => 66.71 sf x 15.40'L = 1,027.0 cf<br>Outside= 101.7"W x 114.0"H => 80.55 sf x 15.40'L = 1,240.2 cf<br>12 Chambers in 2 Rows<br>16.96' x 92.38' Core + 6.66' Border = 30.27' x 105.69' System |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 124.06' | **5.000 in/hr Exfiltration over Surface area** Phase-In= 0.01' |
| #2 | Primary | 129.00' | **24.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |

**Discarded OutFlow** Max=0.37 cfs @ 11.78 hrs HW=124.56' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.37 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=124.25' TW=0.00' (Dynamic Tailwater)
↑—**2=Orifice/Grate** ( Controls 0.00 cfs)

## Pond A-2': StormTrap System A-2



## Summary for Pond B': Storm Trap System B

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=366)

Inflow Area = 10.193 ac, 28.05% Impervious, Inflow Depth = 0.62" for 2 year event
Inflow = 4.35 cfs @ 12.28 hrs, Volume= 0.524 af
Outflow = 0.94 cfs @ 12.03 hrs, Volume= 0.524 af, Atten= 78%, Lag= 0.0 min
Discarded = 0.94 cfs @ 12.03 hrs, Volume= 0.524 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link SP4 : Study Point 4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 72.31' @ 13.20 hrs Surf.Area= 8,092 sf Storage= 5,953 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 51.6 min ( 949.5 - 897.9 )

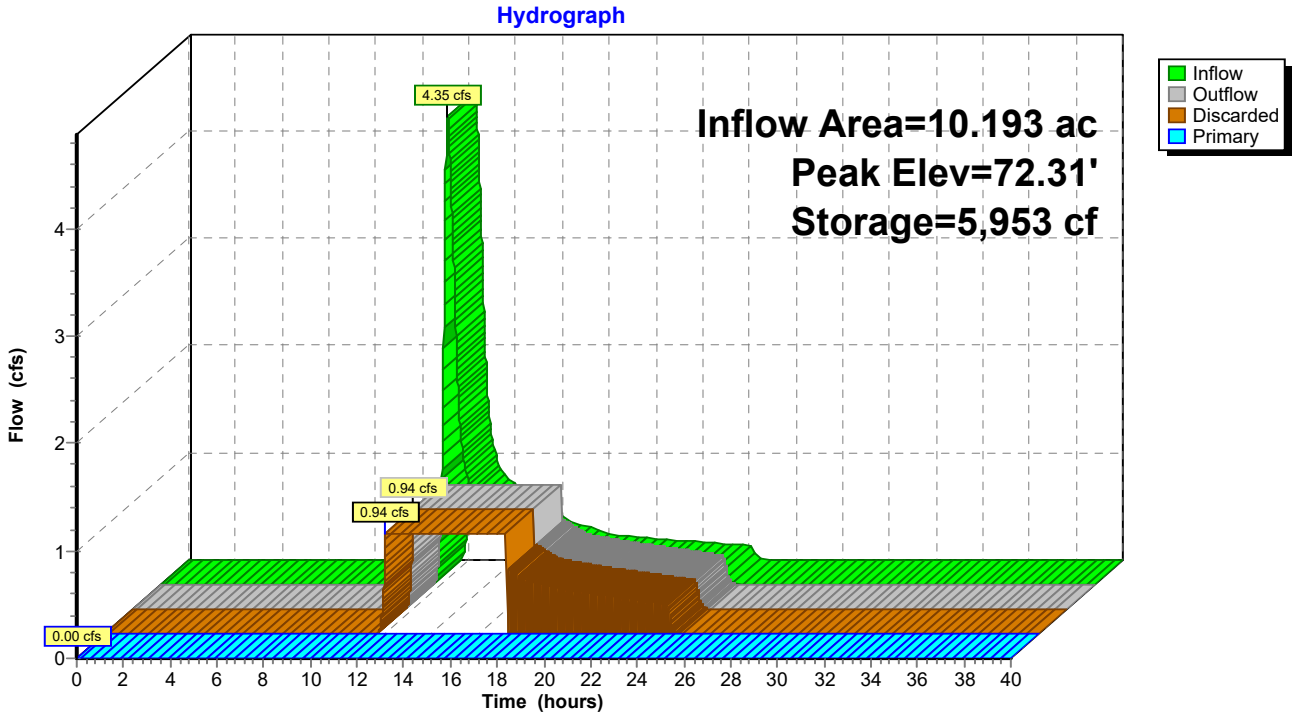
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 71.00' | 109,769 cf | **StormTrap DoubleTrap 15-0** x 45<br>Inside= 101.7"W x 180.0"H => 117.67 sf x 15.40'L = 1,811.6 cf<br>Outside= 101.7"W x 192.0"H => 135.67 sf x 15.40'L = 2,088.7 cf<br>45 Chambers in 9 Rows<br>76.31' x 76.98' Core + 6.66' Border = 89.63' x 90.29' System |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 71.00' | **5.000 in/hr Exfiltration over Surface area** |
| #2 | Primary | 79.00' | **12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |

**Discarded OutFlow** Max=0.94 cfs @ 12.03 hrs HW=71.50' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.94 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=71.32' TW=0.00' (Dynamic Tailwater)
↑—**2=Orifice/Grate** ( Controls 0.00 cfs)

## Pond B': Storm Trap System B



## Summary for Pond C': Storm Trap System C

Inflow Area = 4.522 ac, 46.24% Impervious, Inflow Depth = 0.95" for 2 year event
Inflow = 3.48 cfs @ 12.24 hrs, Volume= 0.357 af
Outflow = 0.32 cfs @ 11.77 hrs, Volume= 0.357 af, Atten= 91%, Lag= 0.0 min
Discarded = 0.32 cfs @ 11.77 hrs, Volume= 0.357 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link SP5 : Study Point 5

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 69.36' @ 15.03 hrs Surf.Area= 2,733 sf Storage= 6,909 cf

Plug-Flow detention time= 228.8 min calculated for 0.357 af (100% of inflow)
Center-of-Mass det. time= 228.8 min ( 1,099.7 - 870.9 )

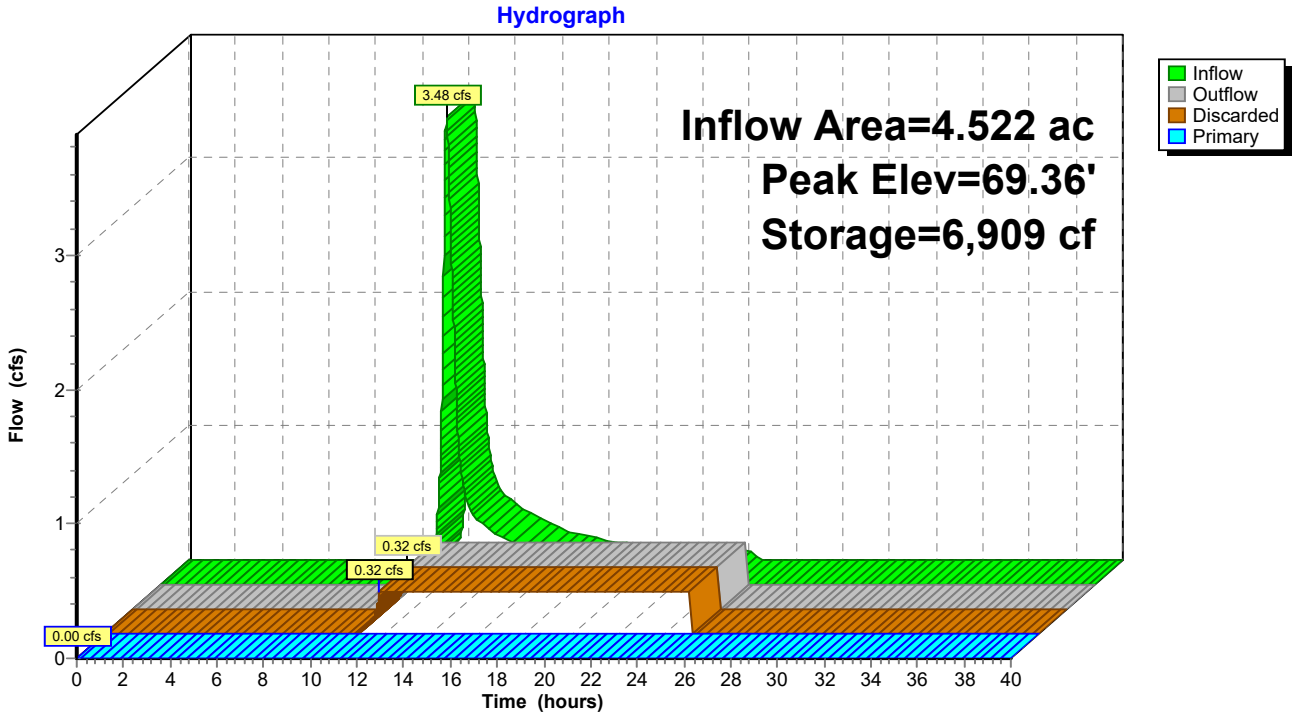
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 66.00' | 33,796 cf | **StormTrap DoubleTrap 14-0** x 10<br>Inside= 101.7"W x 168.0"H => 109.55 sf x 15.40'L = 1,686.7 cf<br>Outside= 101.7"W x 180.0"H => 127.19 sf x 15.40'L = 1,958.2 cf<br>10 Chambers in 2 Rows<br>16.96' x 76.98' Core + 6.66' Border = 30.27' x 90.29' System |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 66.00' | **5.000 in/hr Exfiltration over Surface area** |
| #2 | Primary | 76.00' | **15.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |

**Discarded OutFlow** Max=0.32 cfs @ 11.77 hrs HW=66.50' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.32 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=66.30' TW=0.00' (Dynamic Tailwater)
↑—**2=Orifice/Grate** ( Controls 0.00 cfs)

## Pond C': Storm Trap System C



## Summary for Pond D': Drywell

Inflow Area = 0.141 ac, 0.00% Impervious, Inflow Depth = 0.33" for 2 year event
Inflow = 0.03 cfs @ 12.14 hrs, Volume= 0.004 af
Outflow = 0.01 cfs @ 12.19 hrs, Volume= 0.004 af, Atten= 51%, Lag= 3.1 min
Discarded = 0.01 cfs @ 12.19 hrs, Volume= 0.004 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link SP4 : Study Point 4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 74.41' @ 12.54 hrs Surf.Area= 0.003 ac Storage= 0.000 af

Plug-Flow detention time= 5.4 min calculated for 0.004 af (100% of inflow)
Center-of-Mass det. time= 5.4 min ( 934.0 - 928.7 )

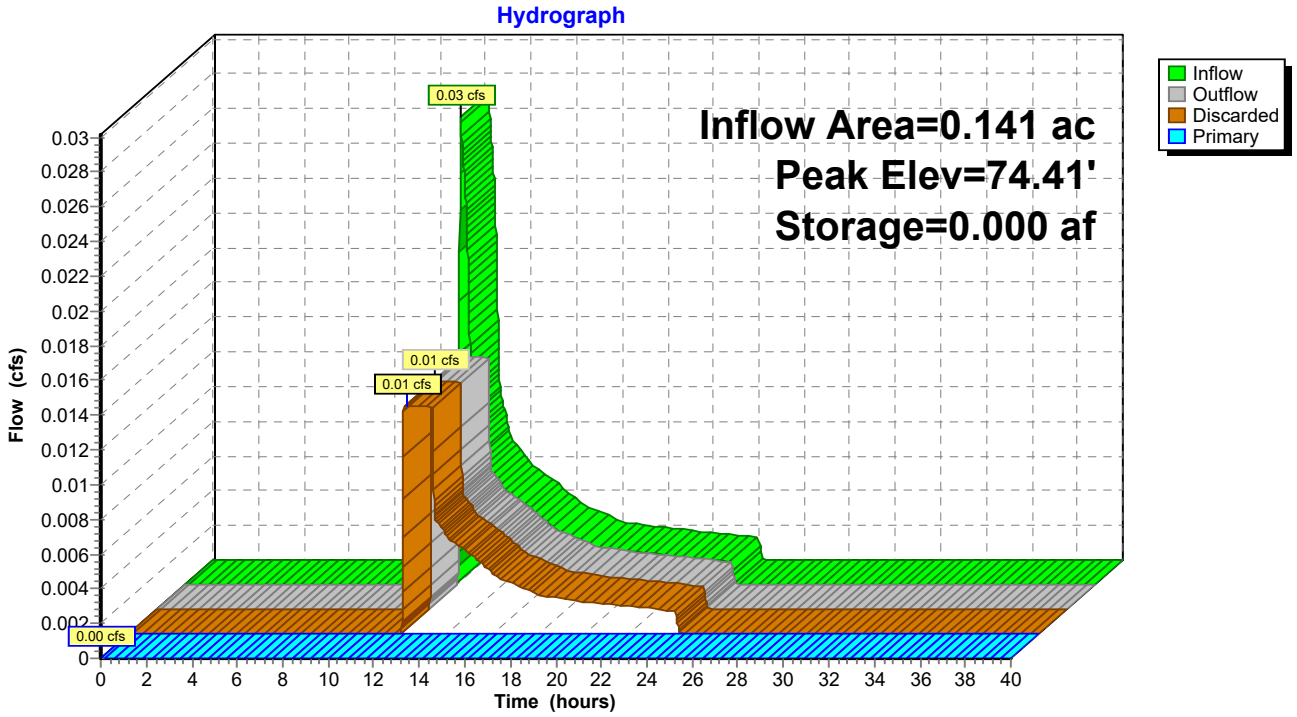
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 74.27' | 0.013 af | **12.00'D x 5.00'H Vertical Cone/Cylinder** |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 74.27' | **5.000 in/hr Exfiltration over Surface area** Phase-In= 0.01' |
| #2 | Primary | 77.27' | **18.0" Vert. Outlet Pipe** C= 0.600 Limited to weir flow at low heads |

**Discarded OutFlow** Max=0.01 cfs @ 12.19 hrs HW=74.32' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=74.27' TW=0.00' (Dynamic Tailwater)
↑—**2=Outlet Pipe** ( Controls 0.00 cfs)

## Pond D': Drywell



## Summary for Pond E': Drywells

Inflow Area = 0.587 ac, 8.84% Impervious, Inflow Depth = 0.43" for 2 year event
Inflow = 0.19 cfs @ 12.12 hrs, Volume= 0.021 af
Outflow = 0.09 cfs @ 12.23 hrs, Volume= 0.021 af, Atten= 52%, Lag= 6.7 min
Discarded = 0.09 cfs @ 12.23 hrs, Volume= 0.021 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 65.56' @ 12.48 hrs Surf.Area= 0.018 ac Storage= 0.002 af

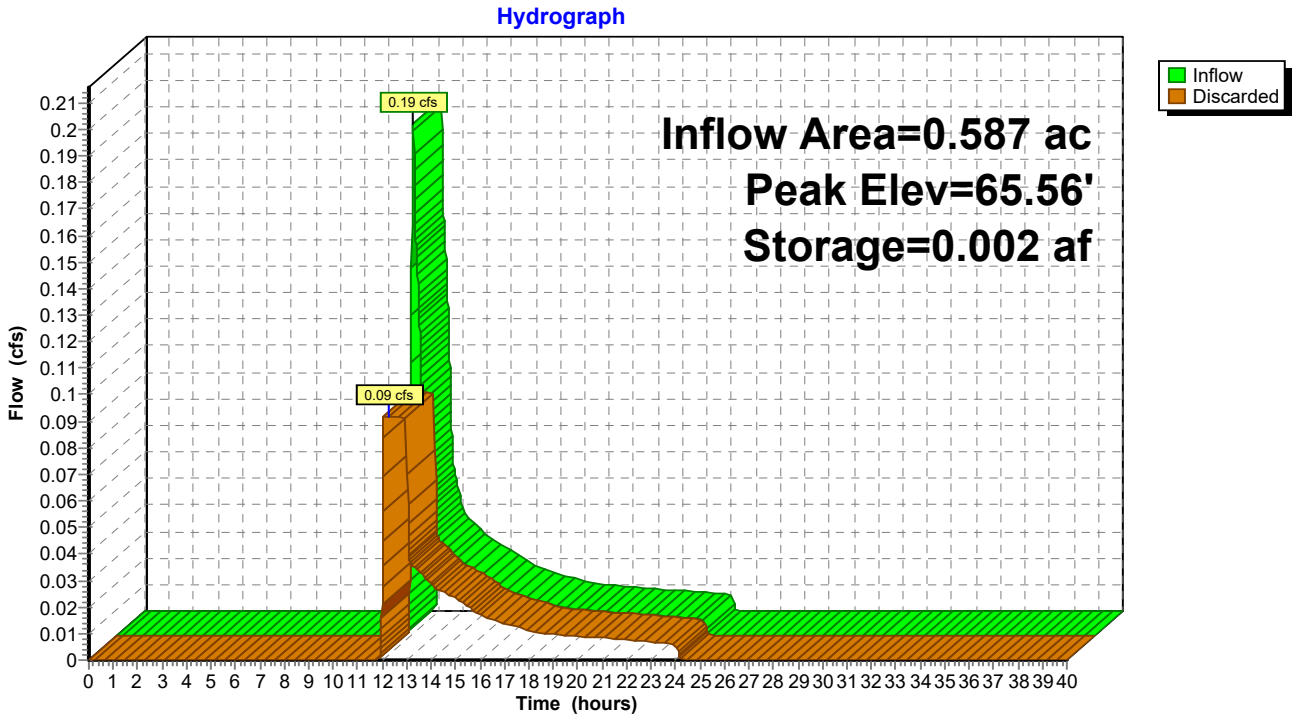
Plug-Flow detention time= 4.5 min calculated for 0.021 af (100% of inflow)
Center-of-Mass det. time= 4.5 min ( 915.5 - 911.0 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 65.45' | 0.127 af | **12.00'D x 7.00'H Vertical Cone/Cylinder**x 7 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 65.45' | **5.000 in/hr Exfiltration over Surface area** Phase-In= 0.01' |

**Discarded OutFlow** Max=0.09 cfs @ 12.23 hrs HW=65.52' (Free Discharge)
**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

## Pond E': Drywells



## Summary for Pond F': Drywells

Inflow Area = 0.214 ac, 42.21% Impervious, Inflow Depth = 1.00" for 2 year event
Inflow = 0.24 cfs @ 12.09 hrs, Volume= 0.018 af
Outflow = 0.05 cfs @ 12.02 hrs, Volume= 0.018 af, Atten= 78%, Lag= 0.0 min
Discarded = 0.05 cfs @ 12.02 hrs, Volume= 0.018 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 91.41' @ 12.55 hrs Surf.Area= 0.010 ac Storage= 0.004 af

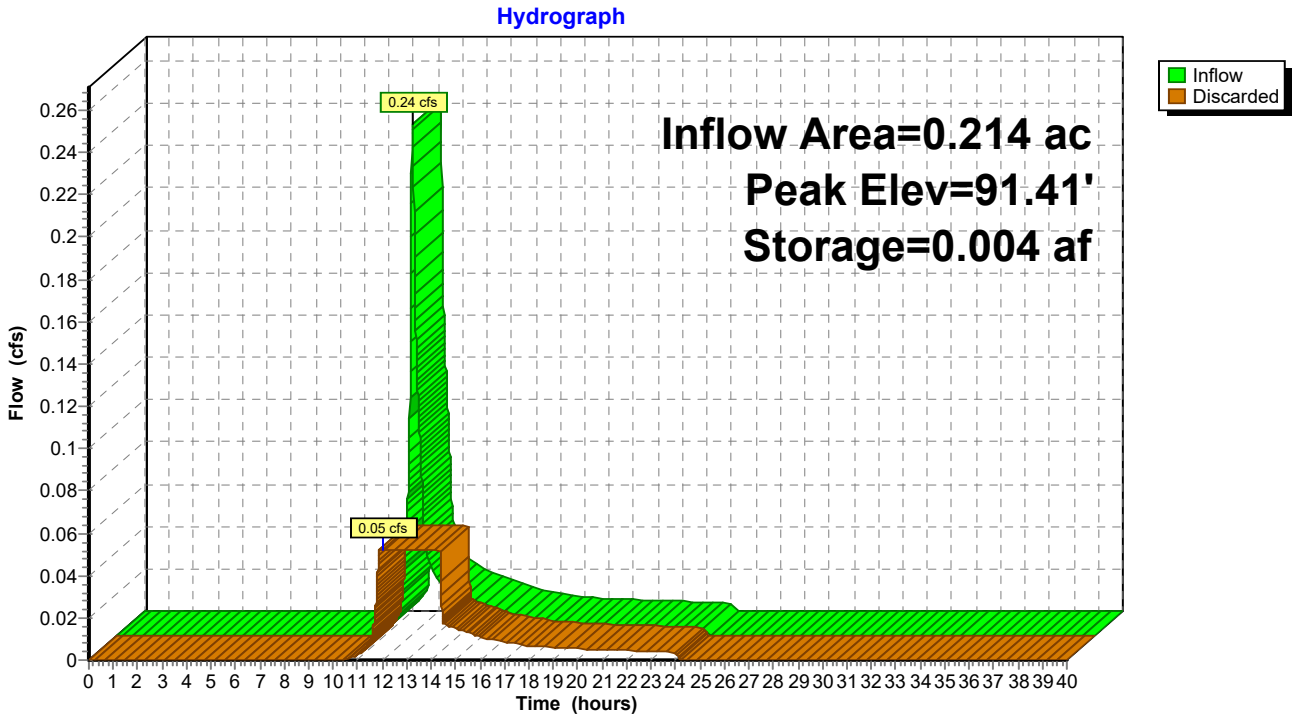
Plug-Flow detention time= 21.3 min calculated for 0.018 af (100% of inflow)
Center-of-Mass det. time= 21.3 min ( 879.4 - 858.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 91.00' | 0.052 af | **12.00'D x 5.00'H Drywell** x 4 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 91.00' | **5.000 in/hr Exfiltration over Surface area** Phase-In= 0.01' |

**Discarded OutFlow** Max=0.05 cfs @ 12.02 hrs HW=91.05' (Free Discharge)
**1=Exfiltration** (Exfiltration Controls 0.05 cfs)

## Pond F': Drywells



## Summary for Pond G': Drywells

Inflow Area = 0.152 ac, 65.72% Impervious, Inflow Depth = 1.50" for 2 year event
Inflow = 0.27 cfs @ 12.09 hrs, Volume= 0.019 af
Outflow = 0.05 cfs @ 11.97 hrs, Volume= 0.019 af, Atten= 80%, Lag= 0.0 min
Discarded = 0.05 cfs @ 11.97 hrs, Volume= 0.019 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 86.47' @ 12.55 hrs Surf.Area= 0.010 ac Storage= 0.005 af

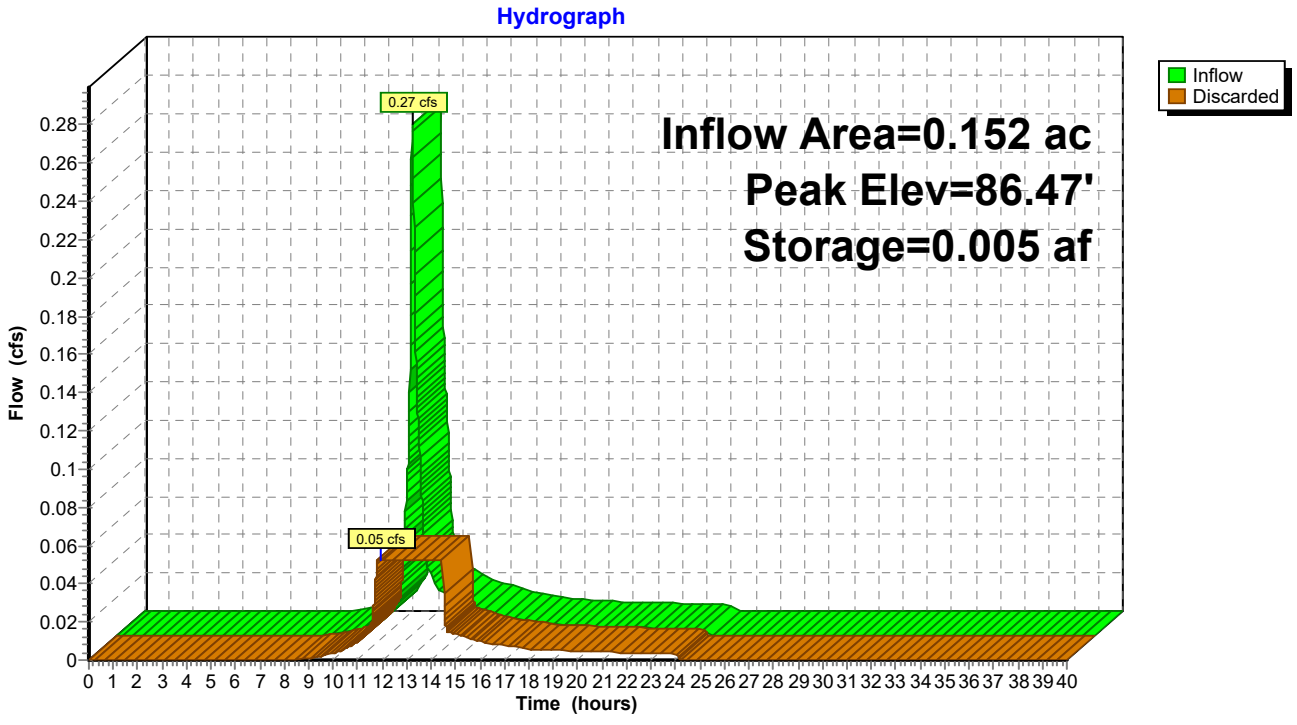
Plug-Flow detention time= 24.9 min calculated for 0.019 af (100% of inflow)
Center-of-Mass det. time= 24.9 min ( 855.4 - 830.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 86.00' | 0.052 af | **12.00'D x 5.00'H Drywell** x 4 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 86.00' | **5.000 in/hr Exfiltration over Surface area** Phase-In= 0.01' |

**Discarded OutFlow** Max=0.05 cfs @ 11.97 hrs HW=86.05' (Free Discharge)
**1=Exfiltration** (Exfiltration Controls 0.05 cfs)

## Pond G': Drywells



## Summary for Pond H': Drywells

Inflow Area = 0.070 ac, 77.86% Impervious, Inflow Depth = 1.89" for 2 year event
Inflow = 0.15 cfs @ 12.09 hrs, Volume= 0.011 af
Outflow = 0.03 cfs @ 11.89 hrs, Volume= 0.011 af, Atten= 83%, Lag= 0.0 min
Discarded = 0.03 cfs @ 11.89 hrs, Volume= 0.011 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 80.59' @ 12.56 hrs Surf.Area= 0.005 ac Storage= 0.003 af

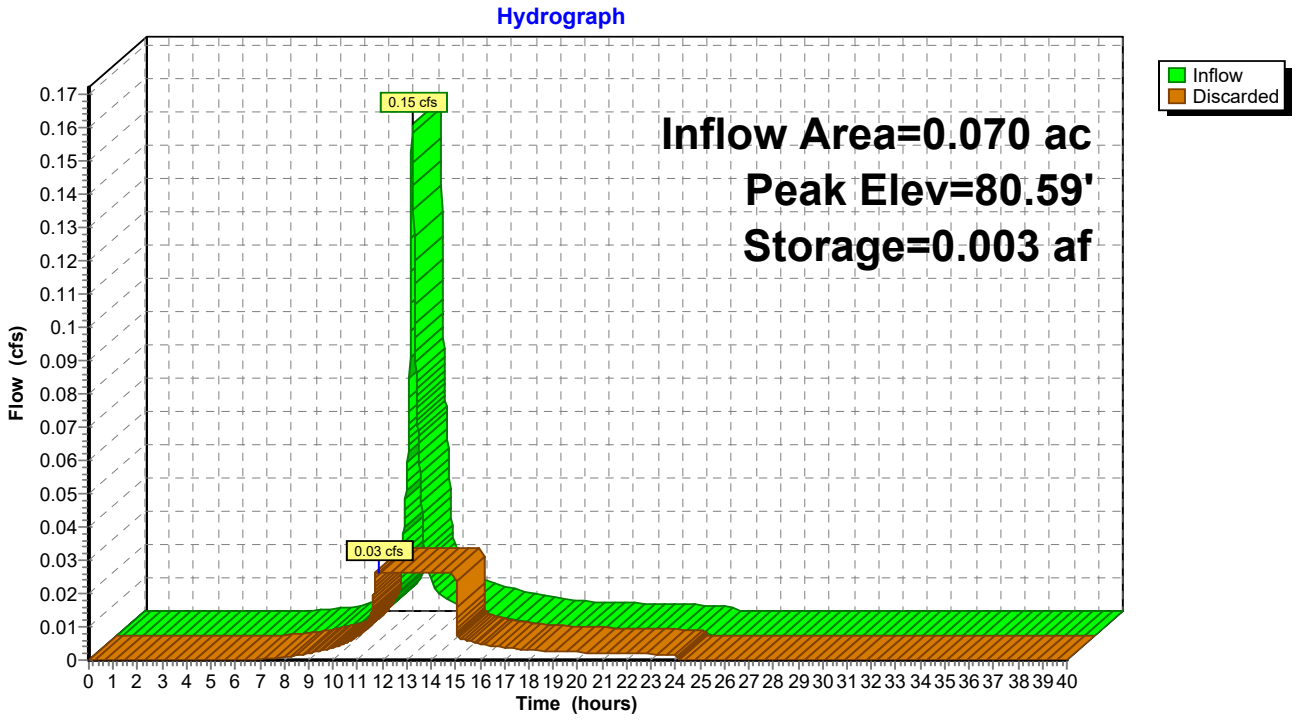
Plug-Flow detention time= 31.8 min calculated for 0.011 af (100% of inflow)
Center-of-Mass det. time= 31.8 min ( 842.6 - 810.8 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 80.00' | 0.026 af | **12.00'D x 5.00'H Drywell** x 2 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 80.00' | **5.000 in/hr Exfiltration over Surface area** Phase-In= 0.01' |

**Discarded OutFlow** Max=0.03 cfs @ 11.89 hrs HW=80.05' (Free Discharge)
**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

## Pond H': Drywells



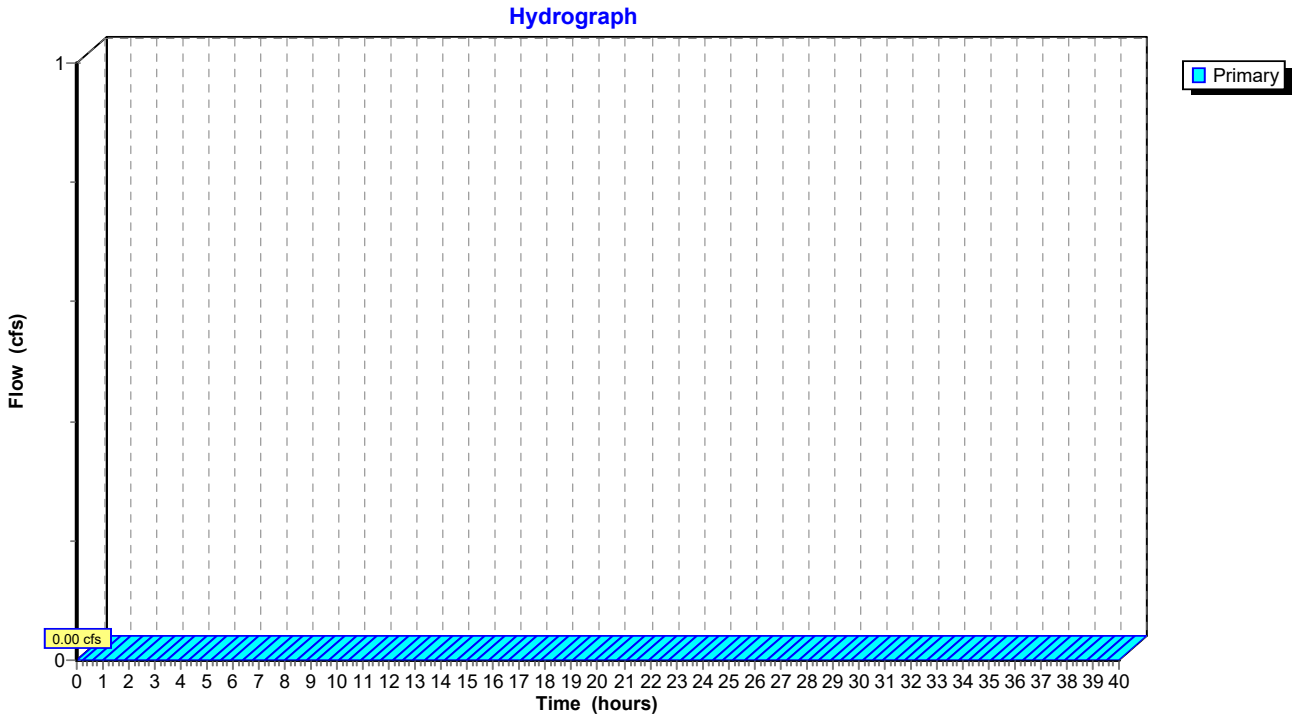
## Summary for Link SP1: Study Point 1

[43] Hint: Has no inflow (Outflow=Zero)

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

## Link SP1: Study Point 1

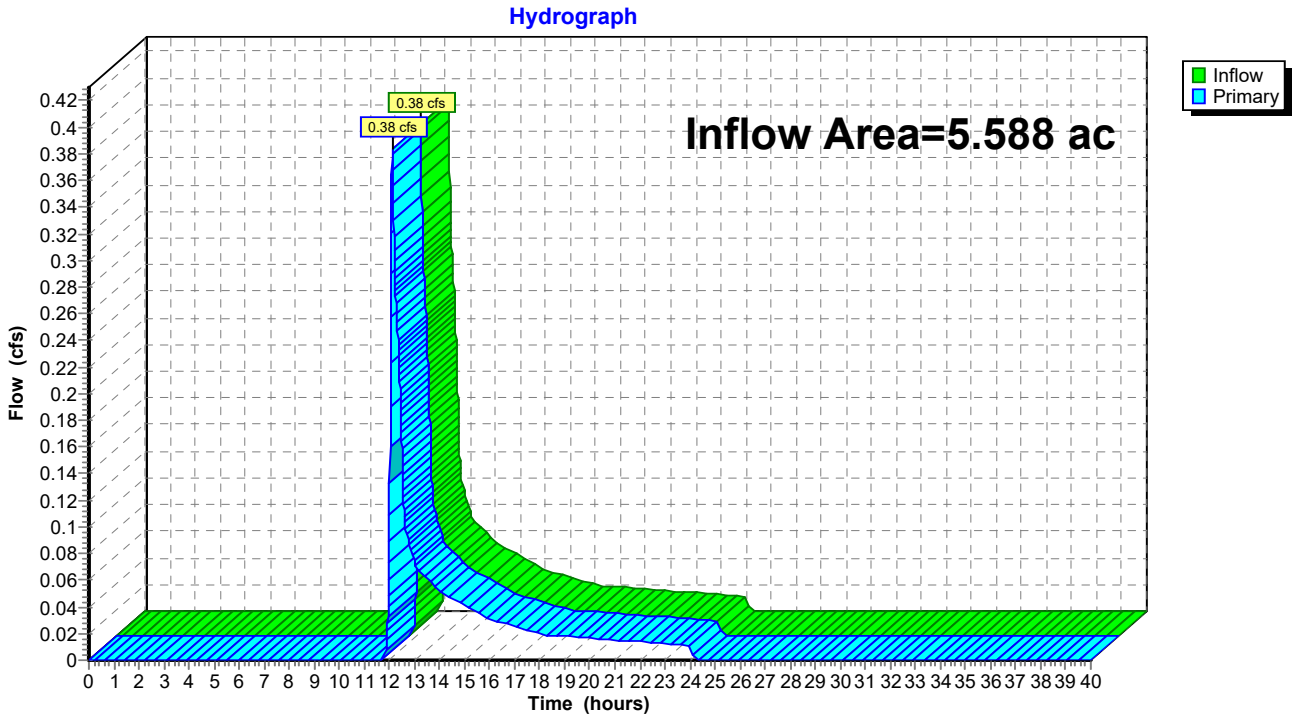


## Summary for Link SP2: Study Point 2

Inflow Area = 5.588 ac, 40.71% Impervious, Inflow Depth = 0.08" for 2 year event
Inflow = 0.38 cfs @ 12.11 hrs, Volume= 0.039 af
Primary = 0.38 cfs @ 12.11 hrs, Volume= 0.039 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

## Link SP2: Study Point 2

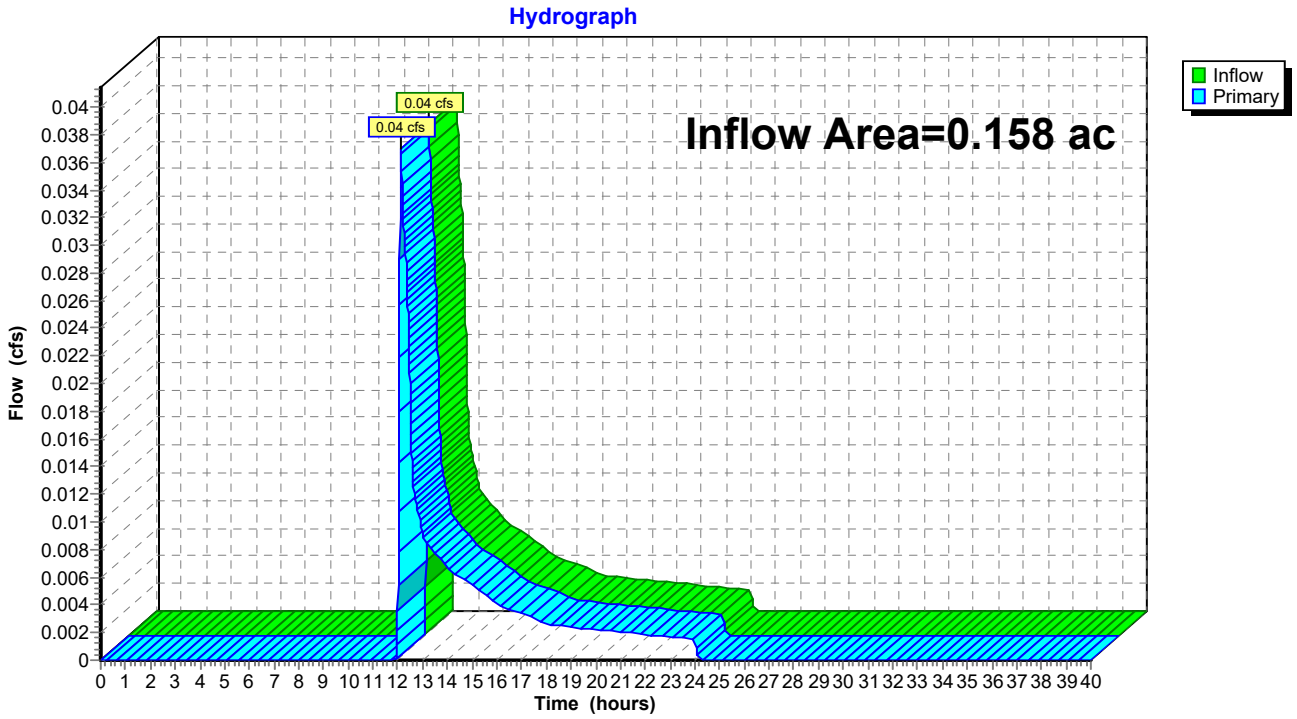


## Summary for Link SP3: Study Point 3

Inflow Area = 0.158 ac, 1.45% Impervious, Inflow Depth = 0.36" for 2 year event
Inflow = 0.04 cfs @ 12.13 hrs, Volume= 0.005 af
Primary = 0.04 cfs @ 12.13 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

## Link SP3: Study Point 3

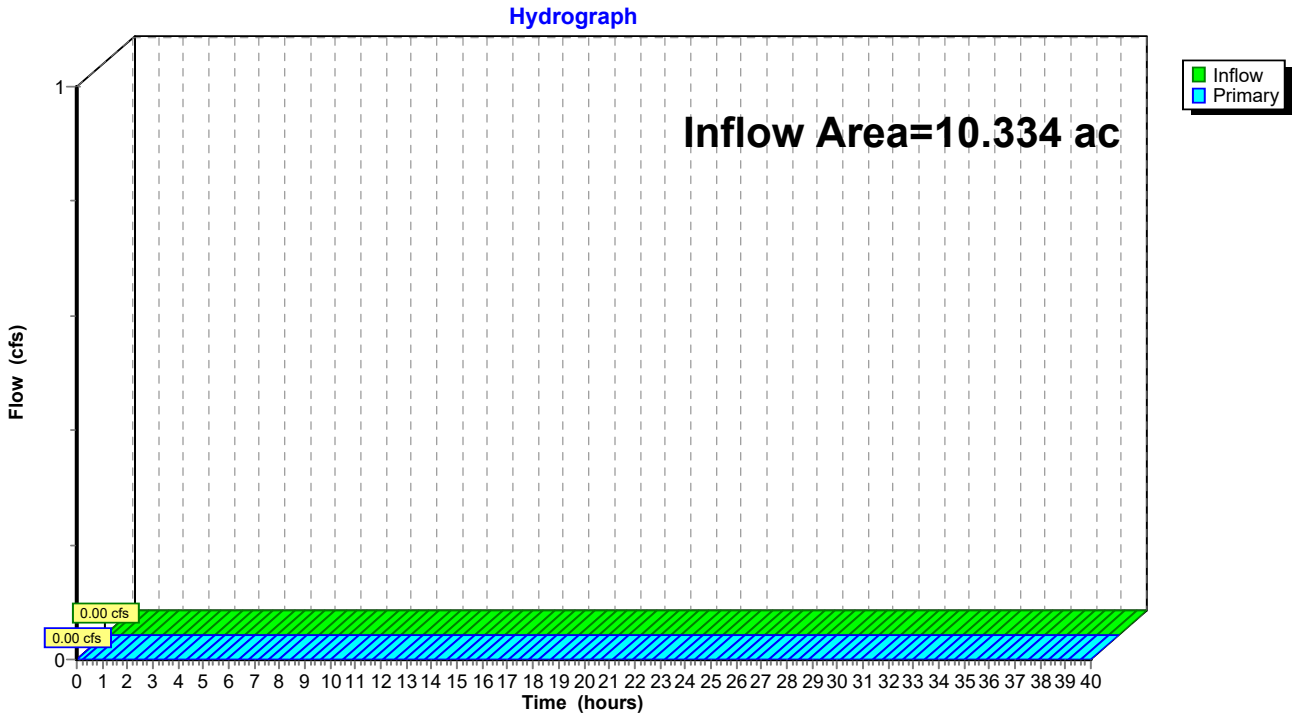


## Summary for Link SP4: Study Point 4

Inflow Area = 10.334 ac, 27.66% Impervious, Inflow Depth = 0.00" for 2 year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Routed to Link SP6 : Study Point 6

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

## Link SP4: Study Point 4

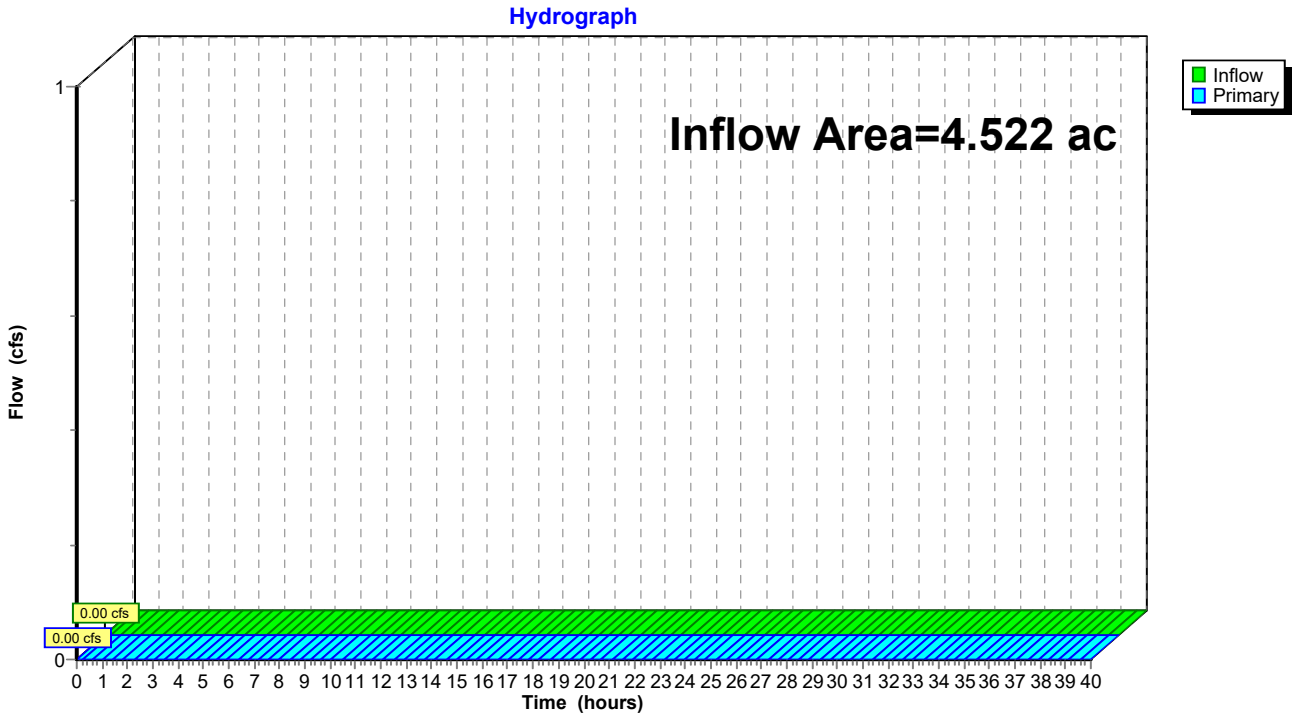


## Summary for Link SP5: Study Point 5

Inflow Area = 4.522 ac, 46.24% Impervious, Inflow Depth = 0.00" for 2 year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Routed to Link SP6 : Study Point 6

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

## Link SP5: Study Point 5

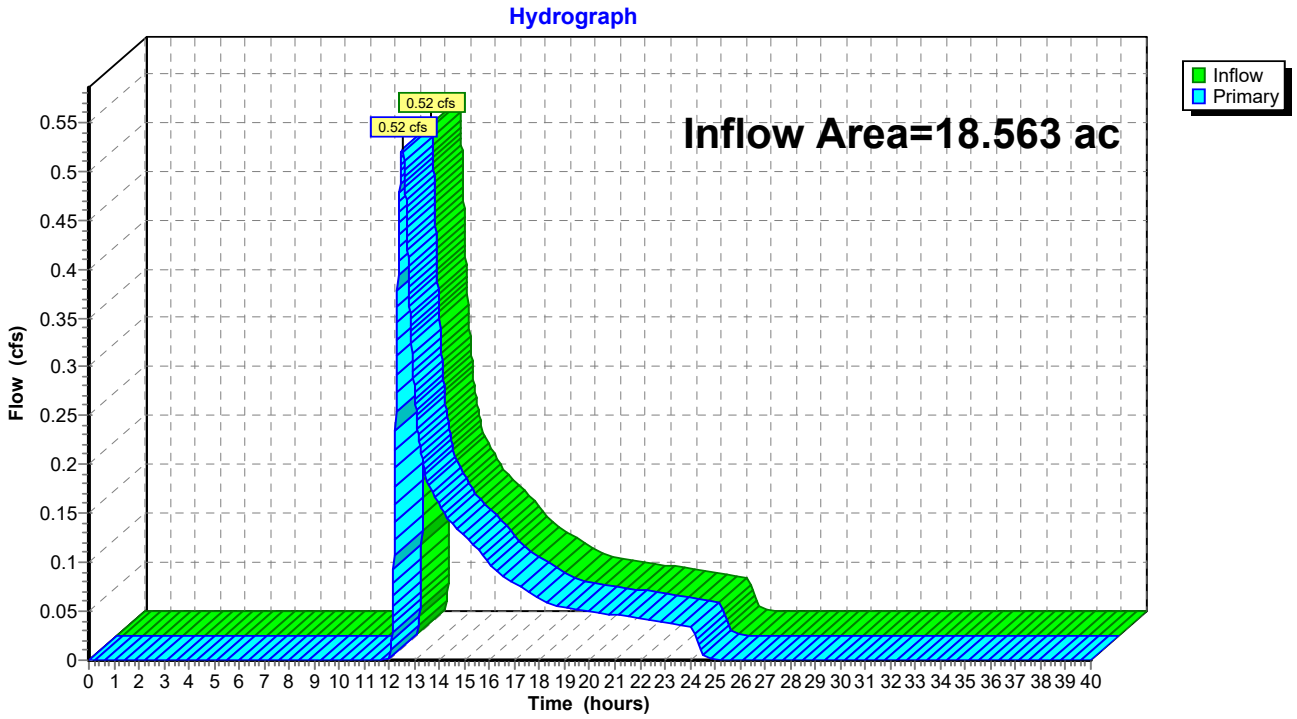


## Summary for Link SP6: Study Point 6

Inflow Area = 18.563 ac, 29.00% Impervious, Inflow Depth = 0.07" for 2 year event
Inflow = 0.52 cfs @ 12.51 hrs, Volume= 0.101 af
Primary = 0.52 cfs @ 12.51 hrs, Volume= 0.101 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

## Link SP6: Study Point 6

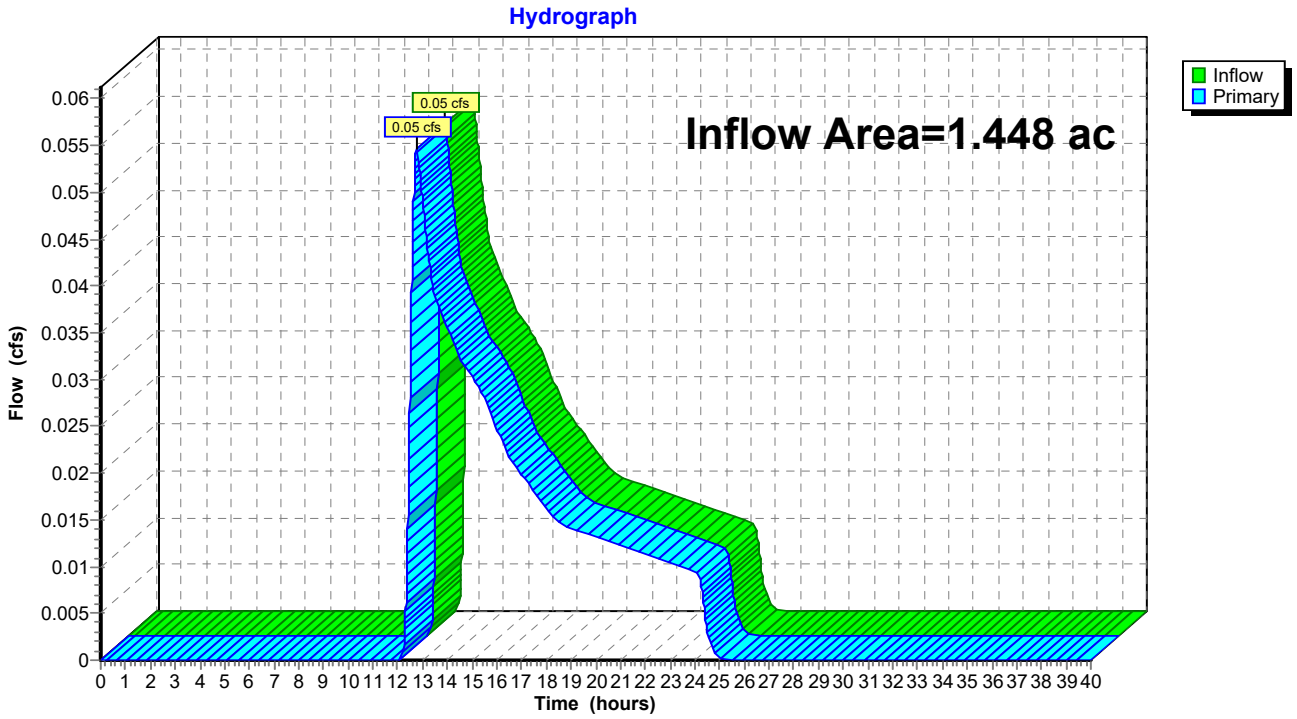


## Summary for Link SP7: Study Point 7

Inflow Area = 1.448 ac, 0.00% Impervious, Inflow Depth = 0.17" for 2 year event
Inflow = 0.05 cfs @ 12.78 hrs, Volume= 0.020 af
Primary = 0.05 cfs @ 12.78 hrs, Volume= 0.020 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

## Link SP7: Study Point 7



Time span=0.00-40.00 hrs, dt=0.01 hrs, 4001 points x 3
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 A-1: Area A-1** Runoff Area=148,850 sf 40.68% Impervious Runoff Depth=2.95"
Flow Length=533' Tc=28.7 min CN=76 Runoff=6.83 cfs 0.841 af

**Subcatchment A-2: Area A-2** Runoff Area=50,510 sf 63.92% Impervious Runoff Depth=3.83"
Flow Length=353' Tc=8.2 min CN=85 Runoff=4.77 cfs 0.370 af

**Subcatchment B: Area B** Runoff Area=444,006 sf 28.05% Impervious Runoff Depth=2.33"
Flow Length=1,308' Tc=17.1 min CN=69 Runoff=19.63 cfs 1.978 af

**Subcatchment C: Area C** Runoff Area=196,979 sf 46.24% Impervious Runoff Depth=2.95"
Flow Length=466' Tc=16.1 min CN=76 Runoff=11.53 cfs 1.113 af

**Subcatchment D: Area D** Runoff Area=6,149 sf 0.00% Impervious Runoff Depth=1.68"
Tc=6.0 min CN=61 Runoff=0.26 cfs 0.020 af

**Subcatchment E: Area E** Runoff Area=25,556 sf 8.84% Impervious Runoff Depth=1.91"
Tc=6.0 min CN=64 Runoff=1.26 cfs 0.094 af

**Subcatchment F: Area F** Runoff Area=9,340 sf 42.21% Impervious Runoff Depth=3.05"
Tc=6.0 min CN=77 Runoff=0.77 cfs 0.054 af

**Subcatchment G: Area G** Runoff Area=6,607 sf 65.72% Impervious Runoff Depth=3.83"
Tc=6.0 min CN=85 Runoff=0.67 cfs 0.048 af

**Subcatchment H: Area H** Runoff Area=3,035 sf 77.86% Impervious Runoff Depth=4.36"
Tc=6.0 min CN=90 Runoff=0.34 cfs 0.025 af

**Subcatchment I: Area I** Runoff Area=6,887 sf 1.45% Impervious Runoff Depth=1.76"
Tc=6.0 min CN=62 Runoff=0.31 cfs 0.023 af

**Subcatchment J: Area J** Runoff Area=44,065 sf 14.19% Impervious Runoff Depth=1.99"
Flow Length=647' Tc=6.0 min CN=65 Runoff=2.29 cfs 0.168 af

**Subcatchment K: Area K** Runoff Area=161,465 sf 11.69% Impervious Runoff Depth=1.68"
Flow Length=1,080' Tc=24.1 min CN=61 Runoff=4.23 cfs 0.519 af

**Subcatchment P: Area P** Runoff Area=63,077 sf 0.00% Impervious Runoff Depth=1.24"
Flow Length=440' Tc=30.2 min CN=55 Runoff=1.01 cfs 0.150 af

**Pond A-1': StormTrap System A-1** Peak Elev=131.12' Storage=21,019 cf Inflow=6.83 cfs 0.841 af
Discarded=0.41 cfs 0.841 af Primary=0.00 cfs 0.000 af Outflow=0.41 cfs 0.841 af

**Pond A-2': StormTrap System A-2** Peak Elev=126.86' Storage=6,639 cf Inflow=4.77 cfs 0.370 af
Discarded=0.37 cfs 0.370 af Primary=0.00 cfs 0.000 af Outflow=0.37 cfs 0.370 af

**Pond B': Storm Trap System B** Peak Elev=78.41' Storage=50,603 cf Inflow=19.63 cfs 1.978 af
Discarded=0.94 cfs 1.978 af Primary=0.00 cfs 0.000 af Outflow=0.94 cfs 1.978 af

**Pond C': Storm Trap System C** Peak Elev=76.55' Storage=24,262 cf Inflow=11.53 cfs 1.113 af
Discarded=0.32 cfs 0.795 af Primary=1.32 cfs 0.232 af Outflow=1.63 cfs 1.028 af

**Pond D': Drywell** Peak Elev=77.34' Storage=0.008 af Inflow=0.26 cfs 0.020 af
Discarded=0.01 cfs 0.017 af Primary=0.02 cfs 0.002 af Outflow=0.04 cfs 0.020 af

**Pond E': Drywells** Peak Elev=67.65' Storage=0.040 af Inflow=1.26 cfs 0.094 af
Outflow=0.09 cfs 0.094 af

**Pond F': Drywells** Peak Elev=93.26' Storage=0.024 af Inflow=0.77 cfs 0.054 af
Outflow=0.05 cfs 0.054 af

**Pond G': Drywells** Peak Elev=87.87' Storage=0.019 af Inflow=0.67 cfs 0.048 af
Outflow=0.05 cfs 0.048 af

**Pond H': Drywells** Peak Elev=81.92' Storage=0.010 af Inflow=0.34 cfs 0.025 af
Outflow=0.03 cfs 0.025 af

**Link SP1: Study Point 1**
Primary=0.00 cfs 0.000 af

**Link SP2: Study Point 2** Inflow=2.29 cfs 0.168 af
Primary=2.29 cfs 0.168 af

**Link SP3: Study Point 3** Inflow=0.31 cfs 0.023 af
Primary=0.31 cfs 0.023 af

**Link SP4: Study Point 4** Inflow=0.02 cfs 0.002 af
Primary=0.02 cfs 0.002 af

**Link SP5: Study Point 5** Inflow=1.32 cfs 0.232 af
Primary=1.32 cfs 0.232 af

**Link SP6: Study Point 6** Inflow=4.23 cfs 0.753 af
Primary=4.23 cfs 0.753 af

**Link SP7: Study Point 7** Inflow=1.01 cfs 0.150 af
Primary=1.01 cfs 0.150 af

**Total Runoff Area = 26.780 ac Runoff Volume = 5.403 af Average Runoff Depth = 2.42"**
**70.29% Pervious = 18.823 ac 29.71% Impervious = 7.957 ac**

## Summary for Subcatchment A-1: Area A-1

[47] Hint: Peak is 265% of capacity of segment #3

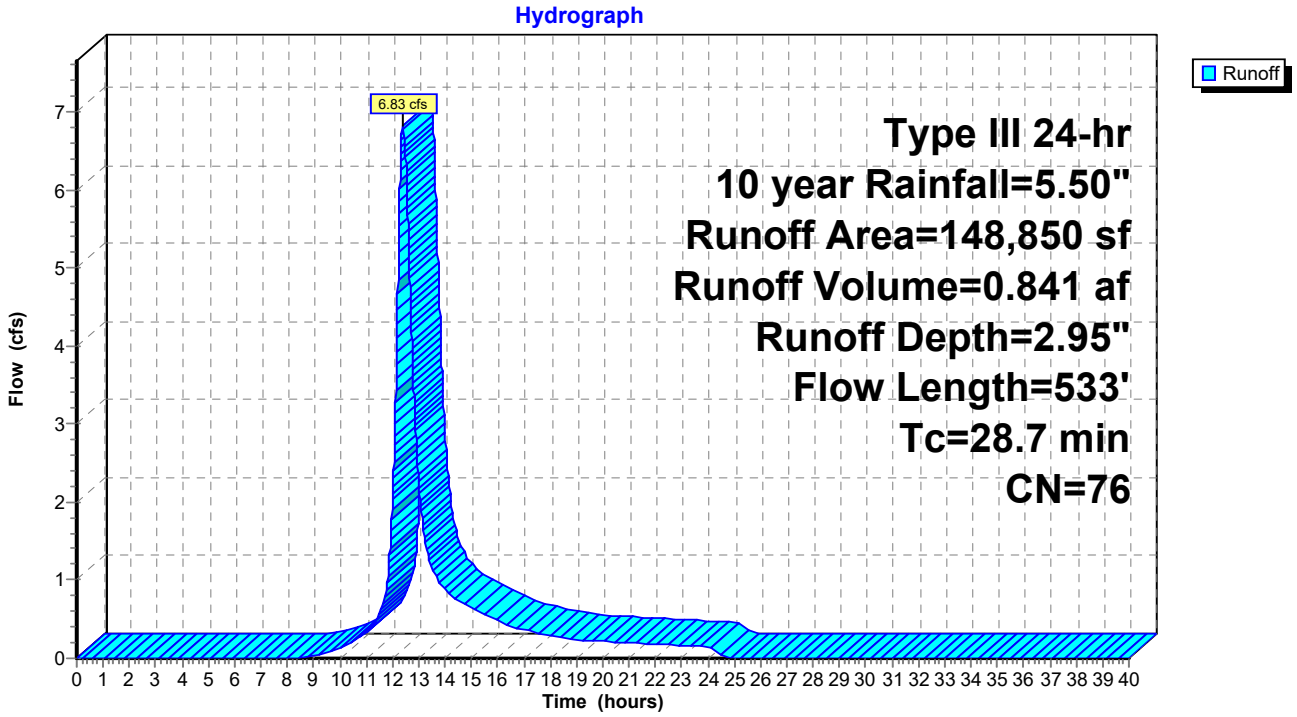
Runoff = 6.83 cfs @ 12.40 hrs, Volume= 0.841 af, Depth= 2.95"
Routed to Pond A-1' : StormTrap System A-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 year Rainfall=5.50"

| Area (sf) | CN | Description |
|---|---|---|
| 37,875 | 98 | Paved parking, HSG B |
| 88,292 | 61 | >75% Grass cover, Good, HSG B |
| 22,683 | 98 | Roofs, HSG B |
| 148,850 | 76 | Weighted Average |
| 88,292 | | 59.32% Pervious Area |
| 60,558 | | 40.68% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.9 | 41 | 0.2668 | 0.17 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.90" |
| 23.3 | 190 | 0.0094 | 0.14 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 2.90" |
| 1.5 | 302 | 0.0100 | 3.28 | 2.57 | **Pipe Channel, Pipe to StormTrap** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.018 Corrugated PE, corrugated interior |
| 28.7 | 533 | Total | | | |

## Subcatchment A-1: Area A-1



## Summary for Subcatchment A-2: Area A-2

[47] Hint: Peak is 386% of capacity of segment #2
[47] Hint: Peak is 221% of capacity of segment #3

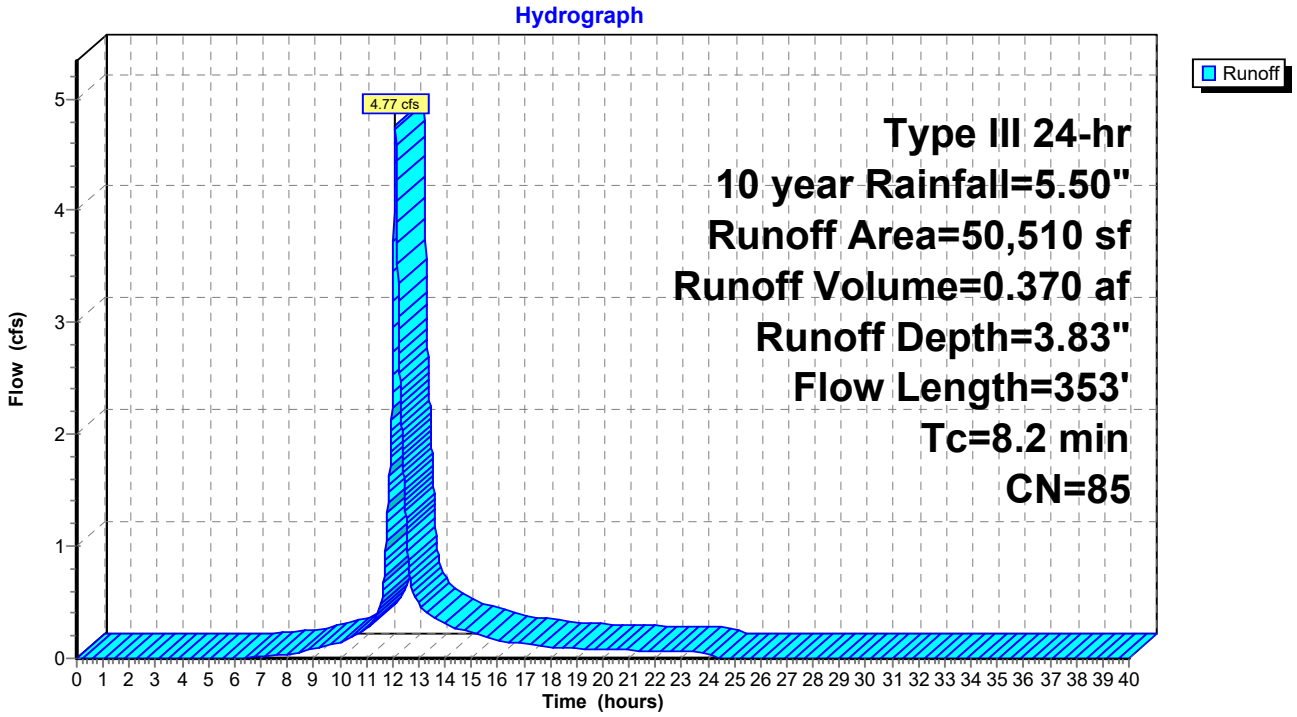
Runoff = 4.77 cfs @ 12.11 hrs, Volume= 0.370 af, Depth= 3.83"
Routed to Pond A-2' : StormTrap System A-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 year Rainfall=5.50"

| Area (sf) | CN | Description |
|---|---|---|
| 14,641 | 98 | Paved parking, HSG B |
| 18,226 | 61 | >75% Grass cover, Good, HSG B |
| 17,643 | 98 | Roofs, HSG B |
| 50,510 | 85 | Weighted Average |
| 18,226 | | 36.08% Pervious Area |
| 32,284 | | 63.92% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.9 | 97 | 0.0510 | 0.23 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 2.90" |
| 0.6 | 136 | 0.0200 | 3.54 | 1.23 | **Pipe Channel, Area Drain Pipes** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.018 Corrugated PE, corrugated interior |
| 0.7 | 120 | 0.0070 | 2.74 | 2.15 | **Pipe Channel, Pipe to StormTrap** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.018 Corrugated PE, corrugated interior |
| 8.2 | 353 | Total | | | |

## Subcatchment A-2: Area A-2



## Summary for Subcatchment B: Area B

[47] Hint: Peak is 304% of capacity of segment #4

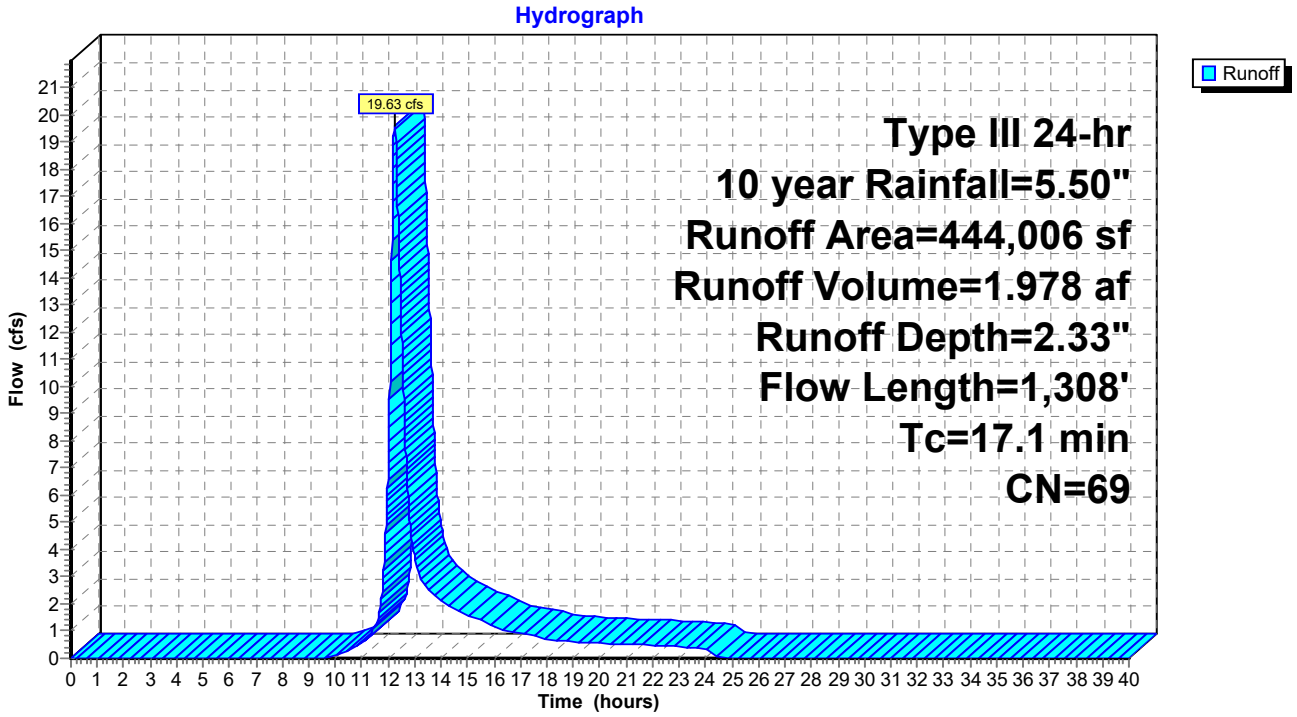
Runoff = 19.63 cfs @ 12.25 hrs, Volume= 1.978 af, Depth= 2.33"
Routed to Pond B' : Storm Trap System B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 year Rainfall=5.50"

| Area (sf) | CN | Description |
|---|---|---|
| 68,081 | 98 | Paved parking, HSG B |
| 180,566 | 61 | >75% Grass cover, Good, HSG B |
| 56,445 | 98 | Roofs, HSG B |
| 138,914 | 55 | Woods, Good, HSG B |
| 444,006 | 69 | Weighted Average |
| 319,480 | | 71.95% Pervious Area |
| 124,526 | | 28.05% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 14.3 | 100 | 0.2500 | 0.12 | | **Sheet Flow, Wooded Hill**<br>Woods: Dense underbrush n= 0.800 P2= 2.90" |
| 1.4 | 210 | 0.2500 | 2.50 | | **Shallow Concentrated Flow, Wooded Hill Slope**<br>Woodland Kv= 5.0 fps |
| 0.3 | 647 | 0.0348 | 36.88 | 457,149.18 | **Channel Flow, BIOSWALE**<br>Area= 12,397.0 sf Perim= 1,234.0' r= 10.05'<br>n= 0.035 Riprap, 6-inch |
| 1.1 | 351 | 0.0100 | 5.26 | 6.46 | **Pipe Channel, PIPES TO STORMTRAP**<br>15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31'<br>n= 0.013 Corrugated PE, smooth interior |
| 17.1 | 1,308 | Total | | | |

## Subcatchment B: Area B



## Summary for Subcatchment C: Area C

[47] Hint: Peak is 247% of capacity of segment #4

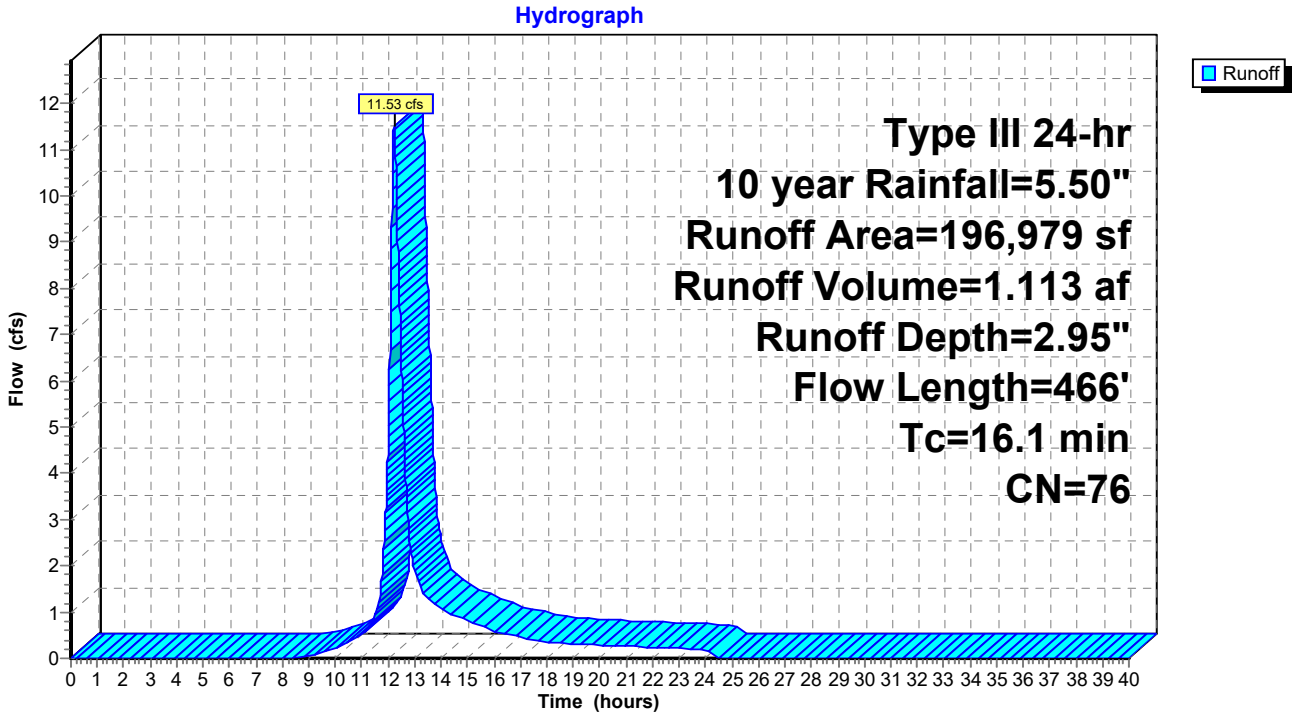
Runoff = 11.53 cfs @ 12.22 hrs, Volume= 1.113 af, Depth= 2.95"
Routed to Pond C' : Storm Trap System C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 year Rainfall=5.50"

| Area (sf) | CN | Description |
|---|---|---|
| 46,357 | 98 | Paved parking, HSG B |
| 45,781 | 61 | >75% Grass cover, Good, HSG B |
| 44,731 | 98 | Roofs, HSG B |
| 60,110 | 55 | Woods, Good, HSG B |
| 196,979 | 76 | Weighted Average |
| 105,891 | | 53.76% Pervious Area |
| 91,088 | | 46.24% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 13.3 | 100 | 0.3000 | 0.13 | | **Sheet Flow, Wooded Hill Slope**<br>Woods: Dense underbrush n= 0.800 P2= 2.90" |
| 0.2 | 40 | 0.3000 | 2.74 | | **Shallow Concentrated Flow, Wooded Hill Slope**<br>Woodland Kv= 5.0 fps |
| 1.5 | 65 | 0.0200 | 0.71 | | **Shallow Concentrated Flow, Swale**<br>Woodland Kv= 5.0 fps |
| 1.1 | 261 | 0.0100 | 3.80 | 4.67 | **Pipe Channel, PIPES TO STORMTRAP**<br>15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31'<br>n= 0.018 Corrugated PE, corrugated interior |
| 16.1 | 466 | Total | | | |

## Subcatchment C: Area C



## Summary for Subcatchment D: Area D

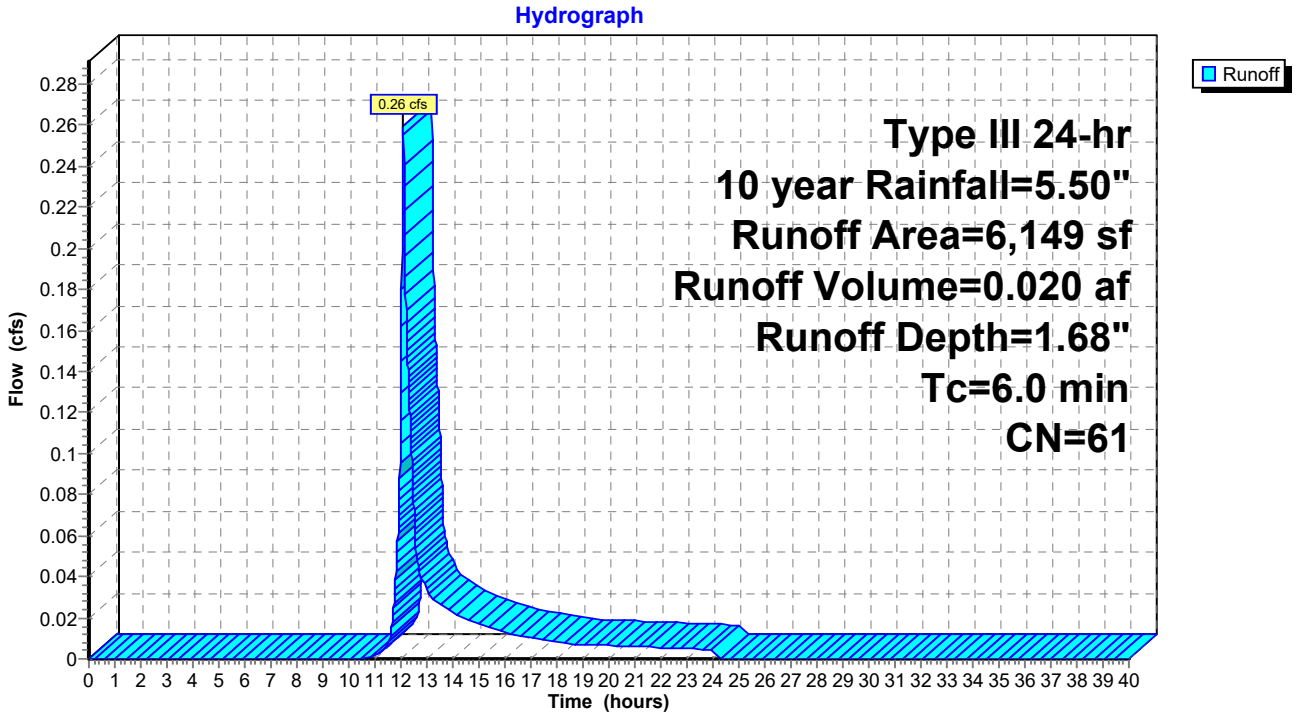
Runoff = 0.26 cfs @ 12.10 hrs, Volume= 0.020 af, Depth= 1.68"
Routed to Pond D' : Drywell

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 year Rainfall=5.50"

| Area (sf) | CN | Description |
|---|---|---|
| 6,149 | 61 | >75% Grass cover, Good, HSG B |
| 6,149 | | 100.00% Pervious Area |

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

### Subcatchment D: Area D



## Summary for Subcatchment E: Area E

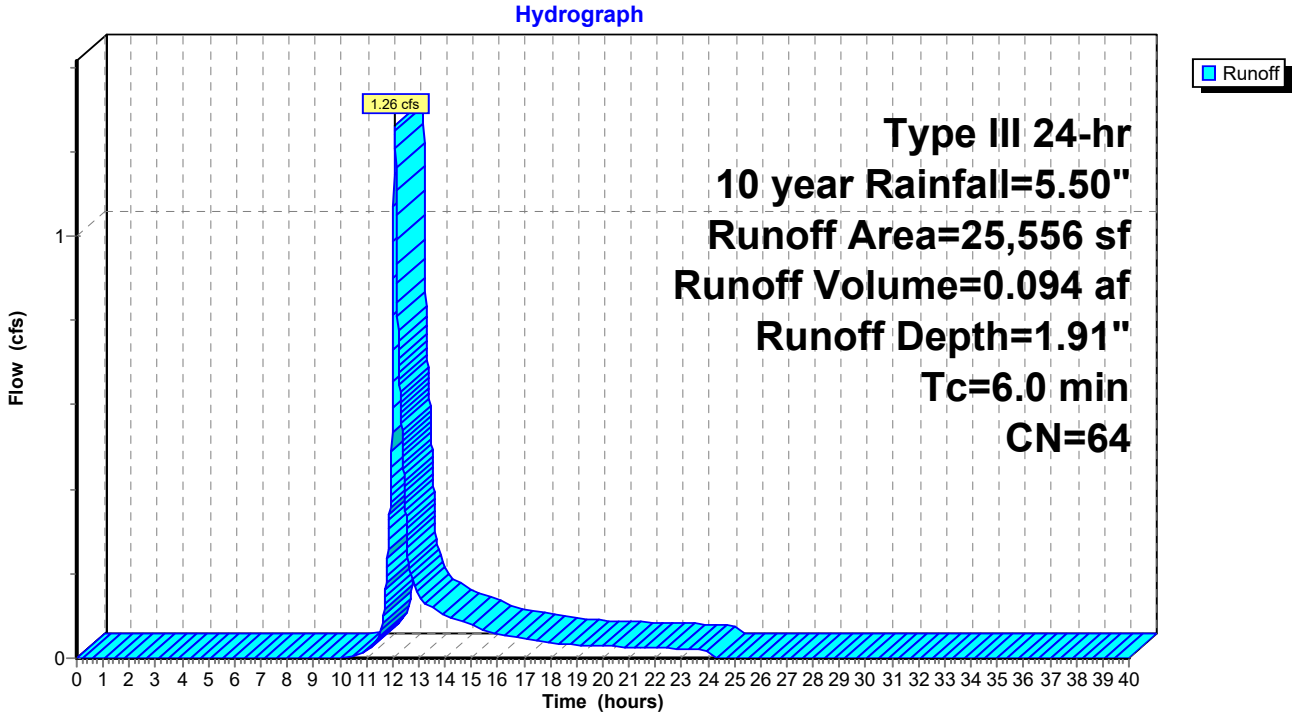
Runoff = 1.26 cfs @ 12.09 hrs, Volume= 0.094 af, Depth= 1.91"
Routed to Pond E' : Drywells

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 year Rainfall=5.50"

| Area (sf) | CN | Description |
|---|---|---|
| 2,259 | 98 | Paved parking, HSG B |
| 23,297 | 61 | >75% Grass cover, Good, HSG B |
| 25,556 | 64 | Weighted Average |
| 23,297 | | 91.16% Pervious Area |
| 2,259 | | 8.84% Impervious Area |

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

### Subcatchment E: Area E



## Summary for Subcatchment F: Area F

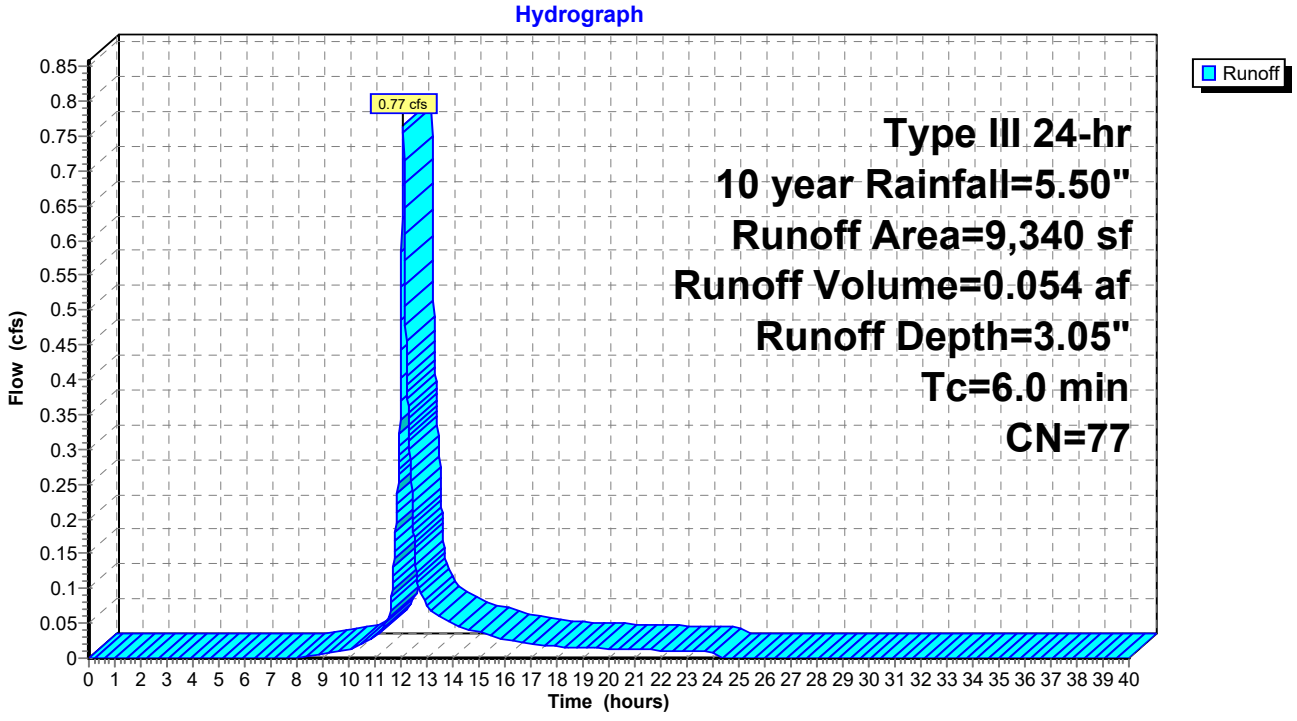
Runoff = 0.77 cfs @ 12.09 hrs, Volume= 0.054 af, Depth= 3.05"
Routed to Pond F' : Drywells

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 year Rainfall=5.50"

| Area (sf) | CN | Description |
|---|---|---|
| 3,942 | 98 | Paved parking, HSG C |
| 5,398 | 61 | >75% Grass cover, Good, HSG B |
| 9,340 | 77 | Weighted Average |
| 5,398 | | 57.79% Pervious Area |
| 3,942 | | 42.21% Impervious Area |

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

### Subcatchment F: Area F



## Summary for Subcatchment G: Area G

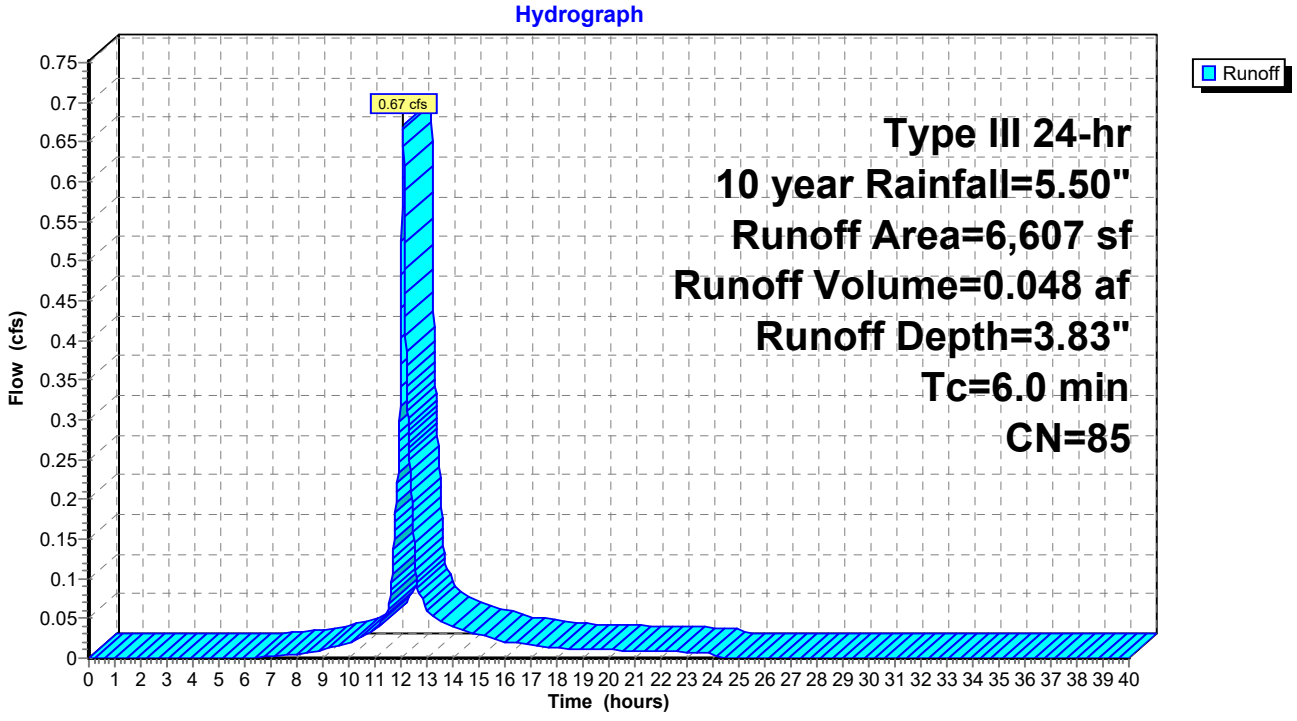
Runoff = 0.67 cfs @ 12.09 hrs, Volume= 0.048 af, Depth= 3.83"
Routed to Pond G' : Drywells

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 year Rainfall=5.50"

| Area (sf) | CN | Description |
|---|---|---|
| 4,342 | 98 | Paved parking, HSG C |
| 2,265 | 61 | >75% Grass cover, Good, HSG B |
| 6,607 | 85 | Weighted Average |
| 2,265 | | 34.28% Pervious Area |
| 4,342 | | 65.72% Impervious Area |

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

### Subcatchment G: Area G



## Summary for Subcatchment H: Area H

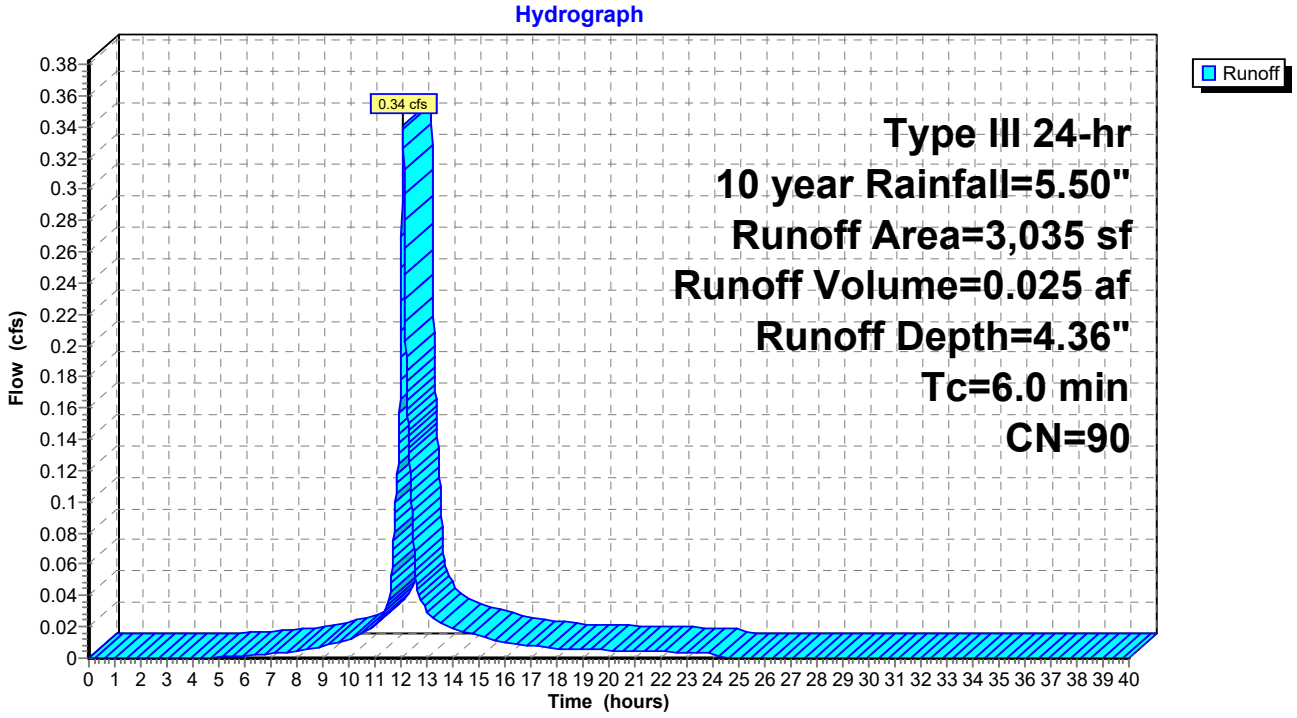
Runoff = 0.34 cfs @ 12.08 hrs, Volume= 0.025 af, Depth= 4.36"
Routed to Pond H' : Drywells

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 year Rainfall=5.50"

| Area (sf) | CN | Description |
|---|---|---|
| 2,363 | 98 | Paved parking, HSG C |
| 672 | 61 | >75% Grass cover, Good, HSG B |
| 3,035 | 90 | Weighted Average |
| 672 | | 22.14% Pervious Area |
| 2,363 | | 77.86% Impervious Area |

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

### Subcatchment H: Area H



## Summary for Subcatchment I: Area I

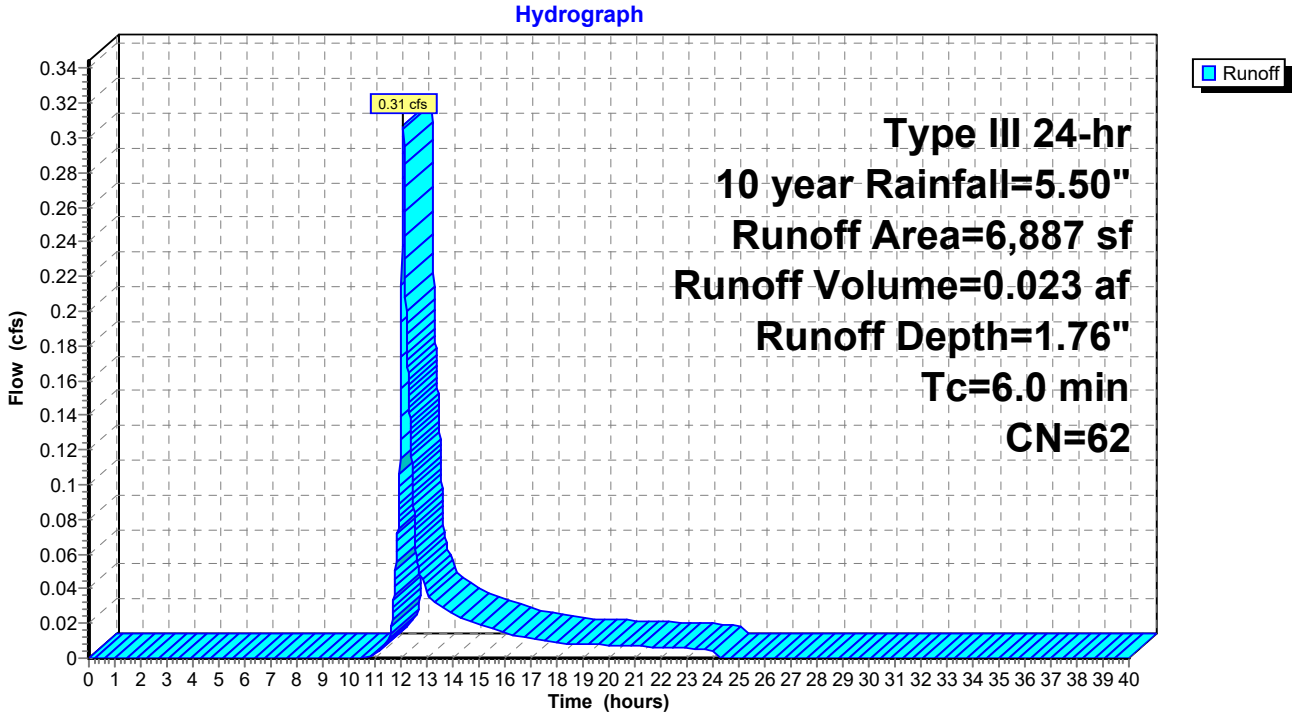
Runoff = 0.31 cfs @ 12.10 hrs, Volume= 0.023 af, Depth= 1.76"
Routed to Link SP3 : Study Point 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 year Rainfall=5.50"

| Area (sf) | CN | Description |
|---|---|---|
| 100 | 98 | Paved parking, HSG B |
| 6,787 | 61 | >75% Grass cover, Good, HSG B |
| 6,887 | 62 | Weighted Average |
| 6,787 | | 98.55% Pervious Area |
| 100 | | 1.45% Impervious Area |

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

## Subcatchment I: Area I



## Summary for Subcatchment J: Area J

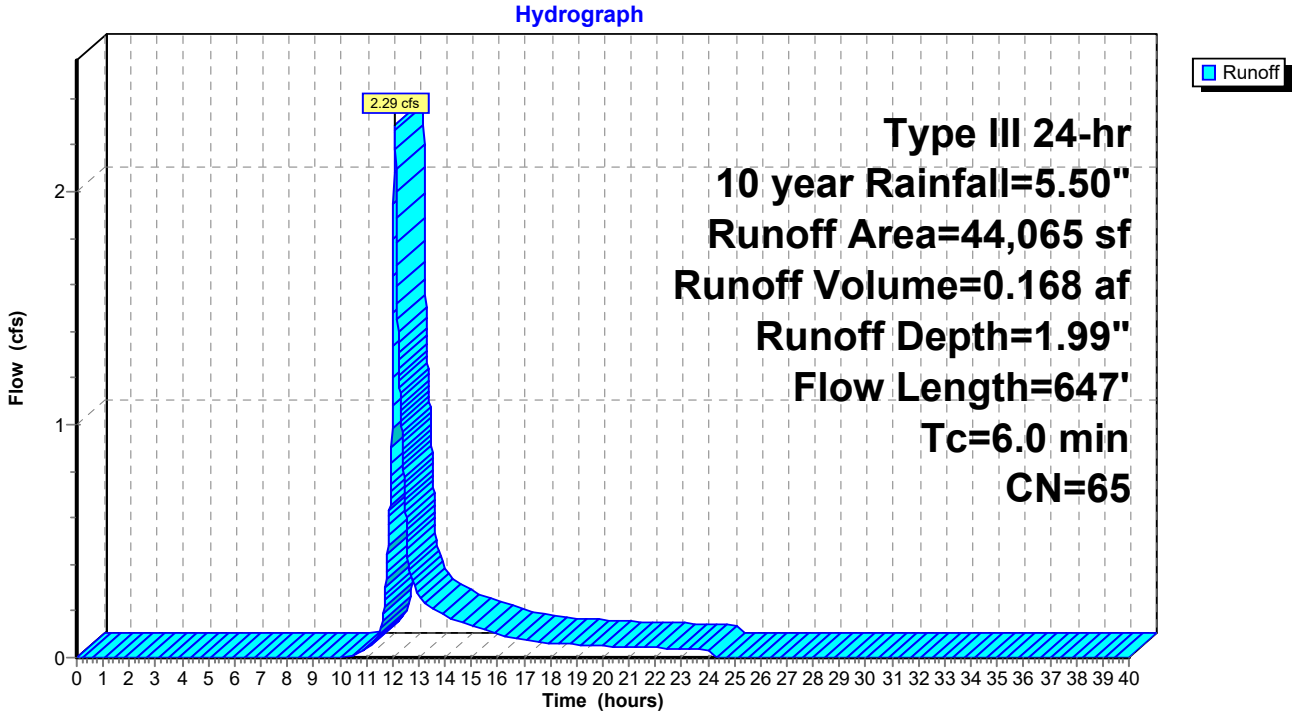
Runoff = 2.29 cfs @ 12.09 hrs, Volume= 0.168 af, Depth= 1.99"
Routed to Link SP2 : Study Point 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 year Rainfall=5.50"

| Area (sf) | CN | Description |
|---|---|---|
| 6,254 | 98 | Paved parking, HSG B |
| 10,778 | 55 | Woods, Good, HSG B |
| 27,033 | 61 | >75% Grass cover, Good, HSG B |
| 44,065 | 65 | Weighted Average |
| 37,811 | | 85.81% Pervious Area |
| 6,254 | | 14.19% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.5 | 70 | 0.1500 | 0.34 | | **Sheet Flow, Dock Road Grass** Grass: Short n= 0.150 P2= 2.90" |
| 0.3 | 30 | 0.1000 | 1.96 | | **Sheet Flow, Dock Road** Smooth surfaces n= 0.011 P2= 2.90" |
| 1.4 | 547 | 0.1000 | 6.42 | | **Shallow Concentrated Flow, Dock Road Gutter** Paved Kv= 20.3 fps |
| 5.2 | 647 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment J: Area J



## Summary for Subcatchment K: Area K

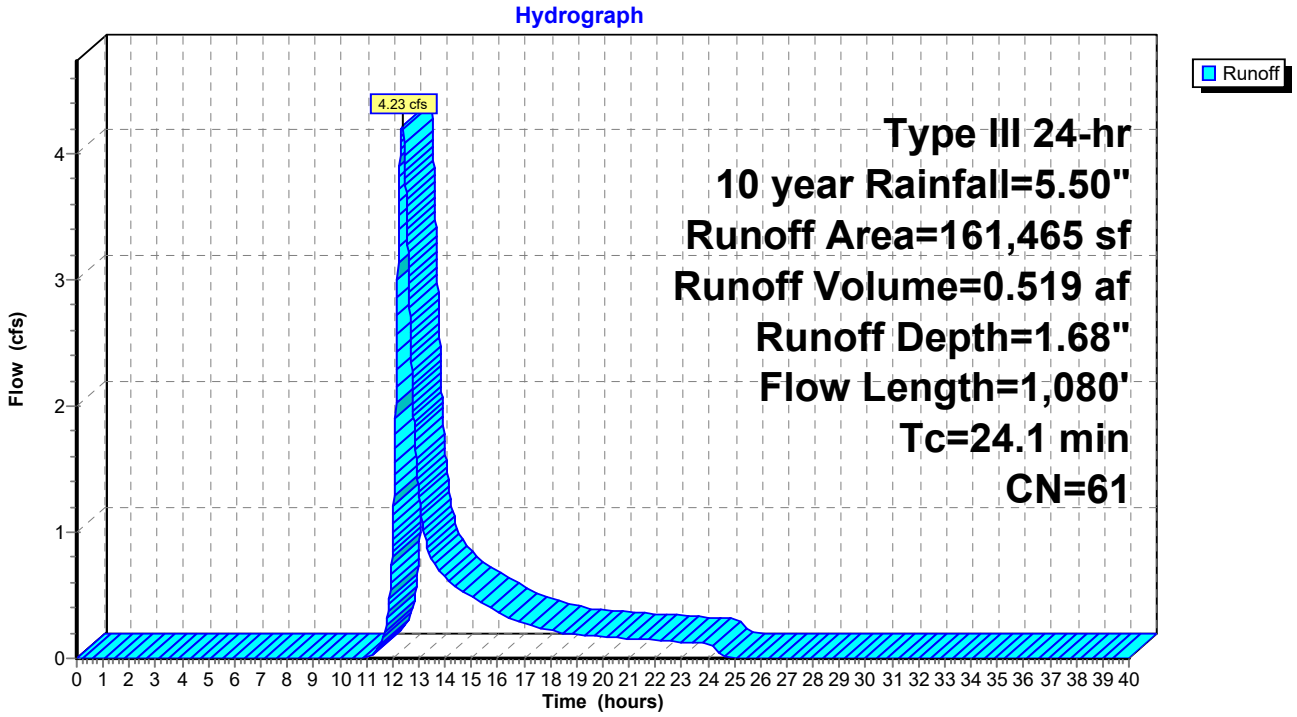
Runoff = 4.23 cfs @ 12.37 hrs, Volume= 0.519 af, Depth= 1.68"
Routed to Link SP6 : Study Point 6

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 year Rainfall=5.50"

| Area (sf) | CN | Description |
|---|---|---|
| 18,878 | 98 | Paved parking, HSG B |
| 112,994 | 55 | Woods, Good, HSG B |
| 29,593 | 61 | >75% Grass cover, Good, HSG B |
| 161,465 | 61 | Weighted Average |
| 142,587 | | 88.31% Pervious Area |
| 18,878 | | 11.69% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 15.9 | 76 | 0.0100 | 0.08 | | **Sheet Flow,** Grass: Dense n= 0.240 P2= 2.90" |
| 4.7 | 25 | 0.2500 | 0.09 | | **Sheet Flow, Steep Slope - Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 2.90" |
| 0.6 | 50 | 0.3000 | 1.37 | | **Shallow Concentrated Flow, Steep Slope Concentrated Flow** Forest w/Heavy Litter Kv= 2.5 fps |
| 2.9 | 929 | 0.0700 | 5.37 | | **Shallow Concentrated Flow, Dock Road Gutter Flow** Paved Kv= 20.3 fps |
| 24.1 | 1,080 | Total | | | |

## Subcatchment K: Area K



## Summary for Subcatchment P: Area P

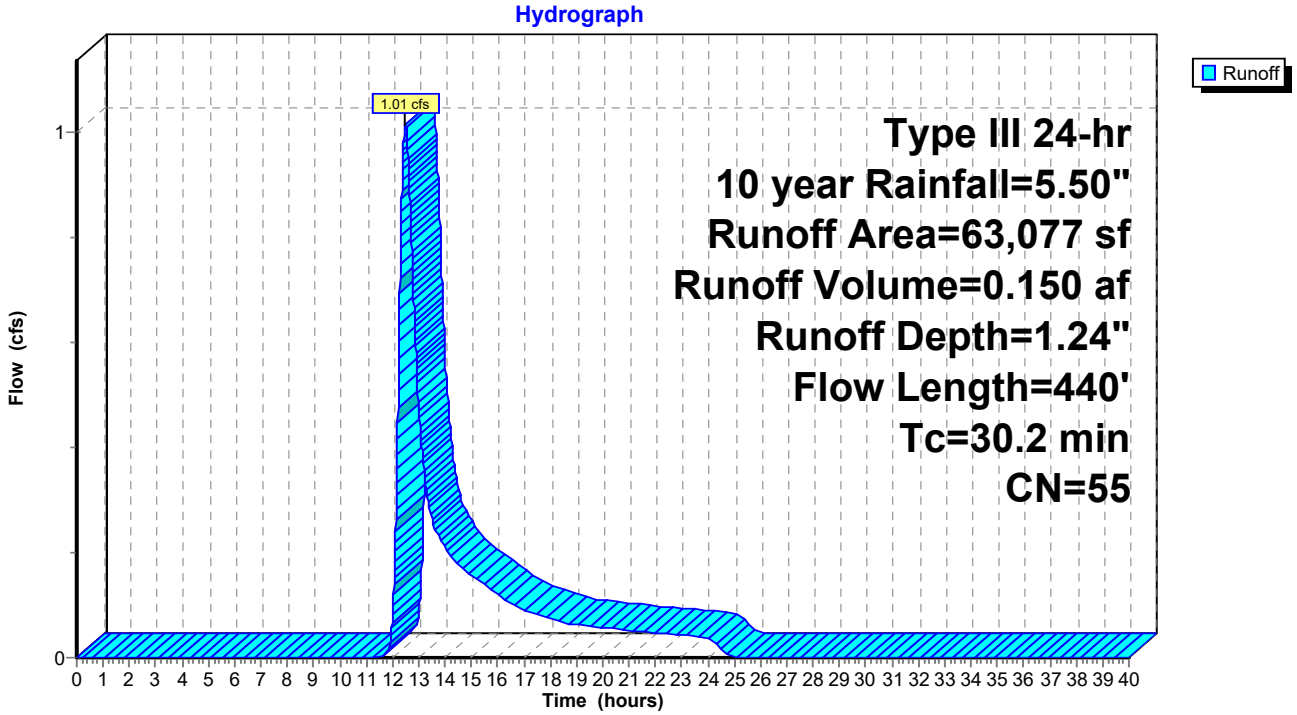
Runoff = 1.01 cfs @ 12.49 hrs, Volume= 0.150 af, Depth= 1.24"
Routed to Link SP7 : Study Point 7

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 year Rainfall=5.50"

| Area (sf) | CN | Description |
|---|---|---|
| 59,457 | 55 | Woods, Good, HSG B |
| 3,620 | 61 | >75% Grass cover, Good, HSG B |
| 63,077 | 55 | Weighted Average |
| 63,077 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 22.6 | 100 | 0.0200 | 0.07 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.90" |
| 3.6 | 10 | 0.0200 | 0.05 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.90" |
| 4.0 | 330 | 0.3000 | 1.37 | | **Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps |
| 30.2 | 440 | Total | | | |

### Subcatchment P: Area P



## Summary for Pond A-1': StormTrap System A-1

Inflow Area = 3.417 ac, 40.68% Impervious, Inflow Depth = 2.95" for 10 year event
Inflow = 6.83 cfs @ 12.40 hrs, Volume= 0.841 af
Outflow = 0.41 cfs @ 11.23 hrs, Volume= 0.841 af, Atten= 94%, Lag= 0.0 min
Discarded = 0.41 cfs @ 11.23 hrs, Volume= 0.841 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond A-2' : StormTrap System A-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 131.12' @ 16.46 hrs Surf.Area= 3,537 sf Storage= 21,019 cf

Plug-Flow detention time= 511.0 min calculated for 0.841 af (100% of inflow)
Center-of-Mass det. time= 511.0 min ( 1,360.0 - 849.0 )

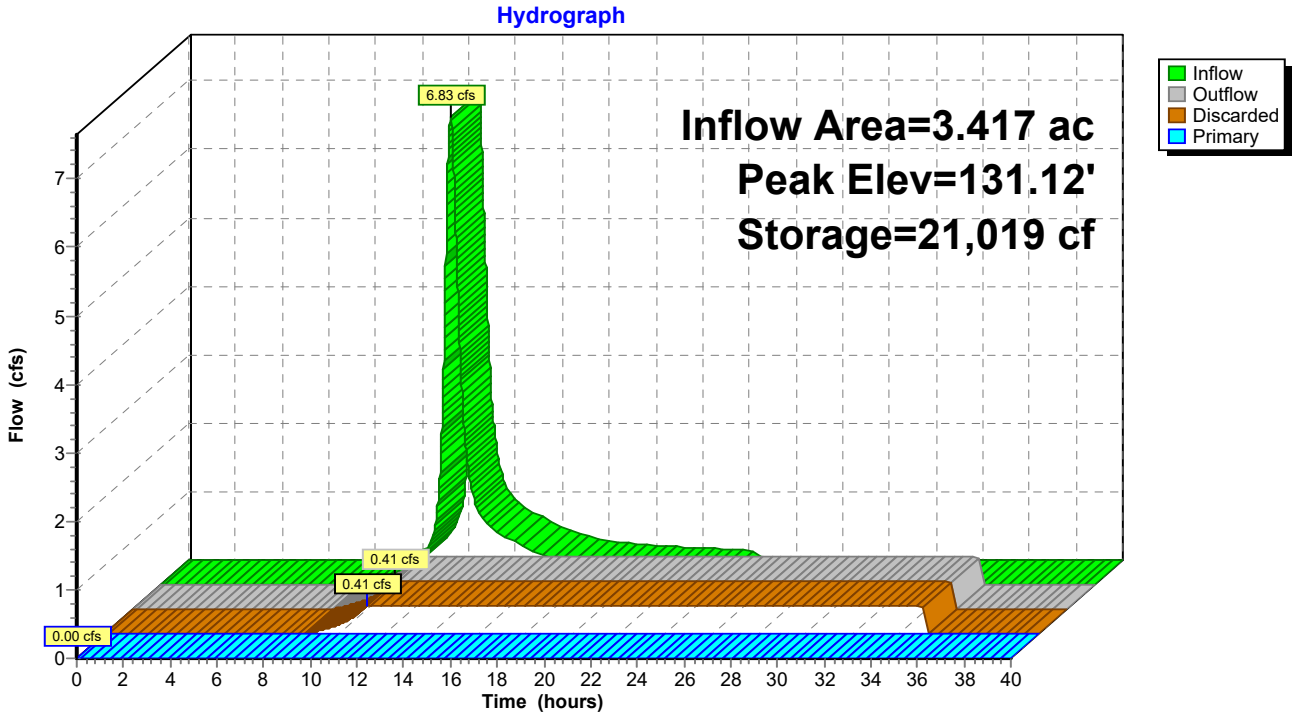
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 124.06' | 27,235 cf | **StormTrap DoubleTrap 8-6** x 16<br>Inside= 101.7"W x 102.0"H => 66.71 sf x 15.40'L = 1,027.0 cf<br>Outside= 101.7"W x 114.0"H => 80.55 sf x 15.40'L = 1,240.2 cf<br>16 Chambers in 4 Rows<br>33.92' x 61.58' Core + 6.66' Border = 47.23' x 74.90' System |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 124.06' | **5.000 in/hr Exfiltration over Surface area** Phase-In= 0.01' |
| #2 | Primary | 132.00' | **24.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |

**Discarded OutFlow** Max=0.41 cfs @ 11.23 hrs HW=124.56' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.41 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=124.26' TW=124.25' (Dynamic Tailwater)
↑**2=Orifice/Grate** ( Controls 0.00 cfs)

## Pond A-1': StormTrap System A-1



## Summary for Pond A-2': StormTrap System A-2

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=129)

Inflow Area = 4.577 ac, 46.57% Impervious, Inflow Depth = 0.97" for 10 year event
Inflow = 4.77 cfs @ 12.11 hrs, Volume= 0.370 af
Outflow = 0.37 cfs @ 11.34 hrs, Volume= 0.370 af, Atten= 92%, Lag= 0.0 min
Discarded = 0.37 cfs @ 11.34 hrs, Volume= 0.370 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link SP2 : Study Point 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 126.86' @ 13.51 hrs Surf.Area= 3,199 sf Storage= 6,639 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 152.6 min ( 958.5 - 805.9 )

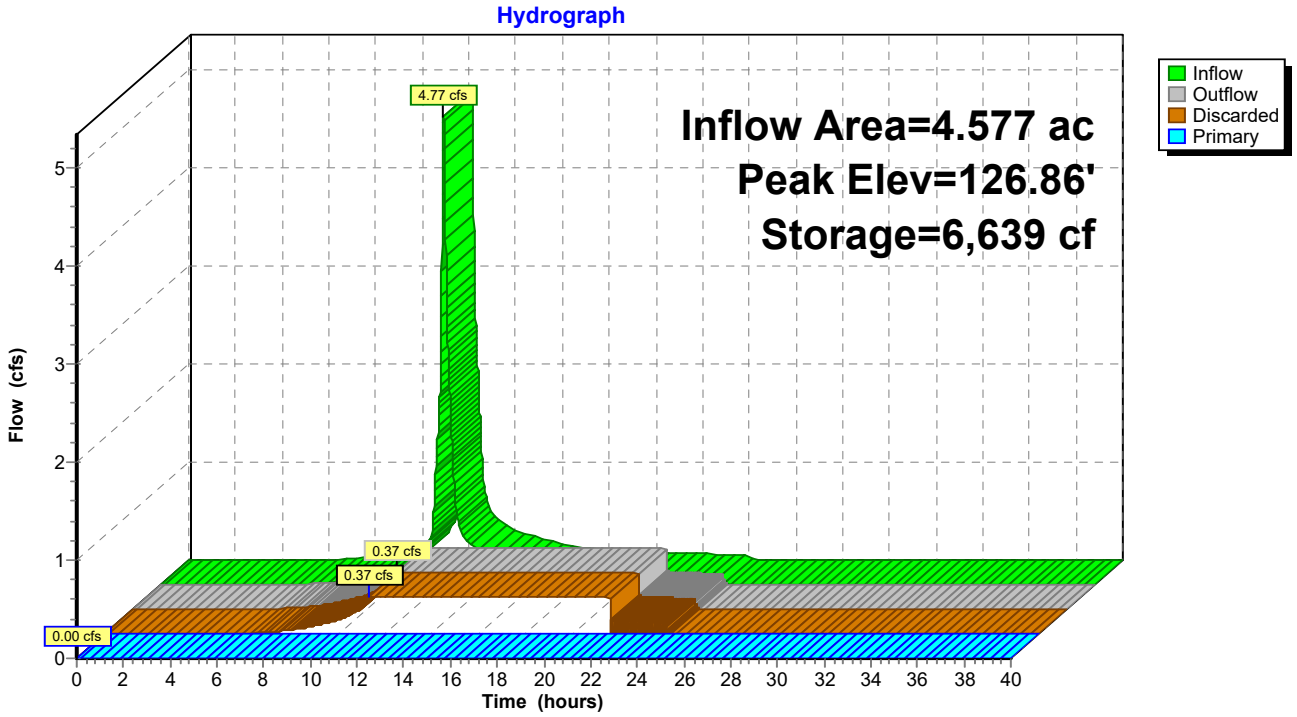
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 124.06' | 24,501 cf | **StormTrap DoubleTrap 8-6** x 12<br>Inside= 101.7"W x 102.0"H => 66.71 sf x 15.40'L = 1,027.0 cf<br>Outside= 101.7"W x 114.0"H => 80.55 sf x 15.40'L = 1,240.2 cf<br>12 Chambers in 2 Rows<br>16.96' x 92.38' Core + 6.66' Border = 30.27' x 105.69' System |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 124.06' | **5.000 in/hr Exfiltration over Surface area** Phase-In= 0.01' |
| #2 | Primary | 129.00' | **24.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |

**Discarded OutFlow** Max=0.37 cfs @ 11.34 hrs HW=124.56' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.37 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=124.25' TW=0.00' (Dynamic Tailwater)
↑—**2=Orifice/Grate** ( Controls 0.00 cfs)

## Pond A-2': StormTrap System A-2



## Summary for Pond B': Storm Trap System B

Inflow Area = 10.193 ac, 28.05% Impervious, Inflow Depth = 2.33" for 10 year event
Inflow = 19.63 cfs @ 12.25 hrs, Volume= 1.978 af
Outflow = 0.94 cfs @ 11.37 hrs, Volume= 1.978 af, Atten= 95%, Lag= 0.0 min
Discarded = 0.94 cfs @ 11.37 hrs, Volume= 1.978 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link SP4 : Study Point 4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 78.41' @ 16.89 hrs Surf.Area= 8,092 sf Storage= 50,603 cf

Plug-Flow detention time= 556.5 min calculated for 1.977 af (100% of inflow)
Center-of-Mass det. time= 556.7 min ( 1,412.0 - 855.4 )

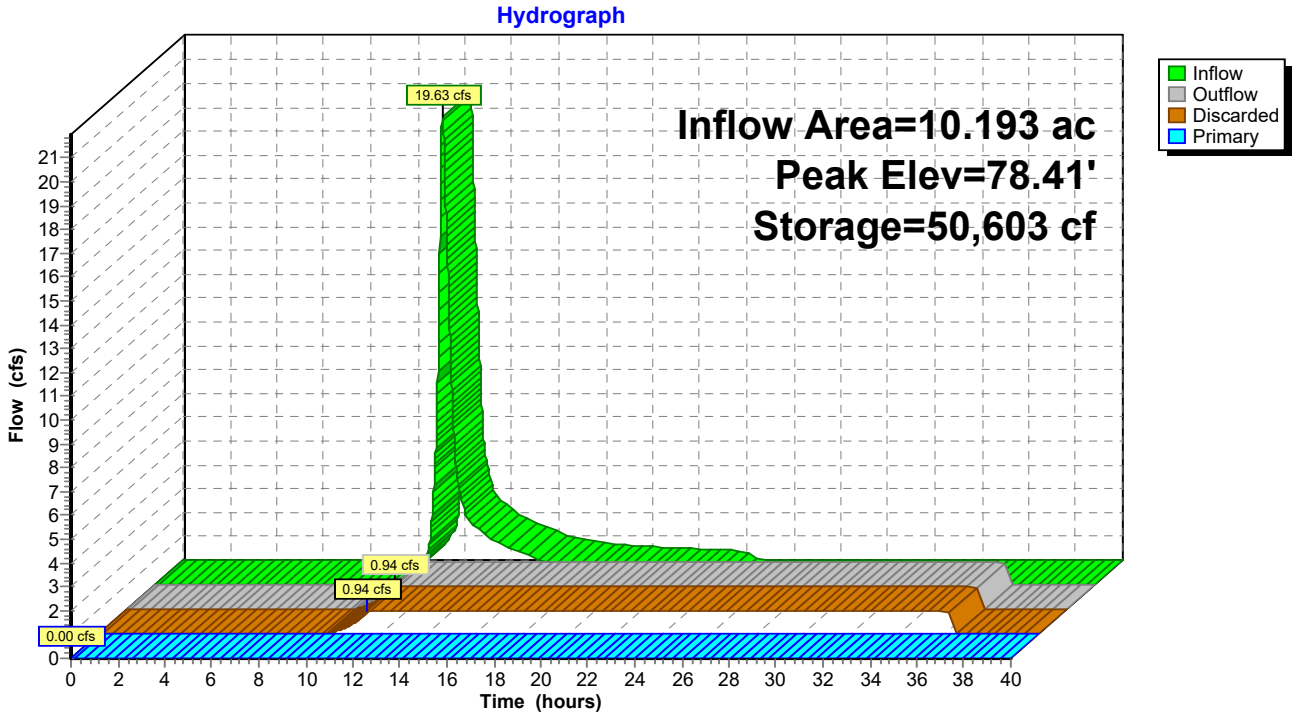
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 71.00' | 109,769 cf | **StormTrap DoubleTrap 15-0** x 45<br>Inside= 101.7"W x 180.0"H => 117.67 sf x 15.40'L = 1,811.6 cf<br>Outside= 101.7"W x 192.0"H => 135.67 sf x 15.40'L = 2,088.7 cf<br>45 Chambers in 9 Rows<br>76.31' x 76.98' Core + 6.66' Border = 89.63' x 90.29' System |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 71.00' | **5.000 in/hr Exfiltration over Surface area** |
| #2 | Primary | 79.00' | **12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |

**Discarded OutFlow** Max=0.94 cfs @ 11.37 hrs HW=71.50' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.94 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=71.32' TW=0.00' (Dynamic Tailwater)
↑—**2=Orifice/Grate** ( Controls 0.00 cfs)

## Pond B': Storm Trap System B



## Summary for Pond C': Storm Trap System C

Inflow Area = 4.522 ac, 46.24% Impervious, Inflow Depth = 2.95" for 10 year event
Inflow = 11.53 cfs @ 12.22 hrs, Volume= 1.113 af
Outflow = 1.63 cfs @ 13.13 hrs, Volume= 1.028 af, Atten= 86%, Lag= 54.8 min
Discarded = 0.32 cfs @ 10.42 hrs, Volume= 0.795 af
Primary = 1.32 cfs @ 13.13 hrs, Volume= 0.232 af
Routed to Link SP5 : Study Point 5

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 76.55' @ 13.13 hrs Surf.Area= 2,733 sf Storage= 24,262 cf

Plug-Flow detention time= 550.5 min calculated for 1.027 af (92% of inflow)
Center-of-Mass det. time= 511.3 min ( 1,348.6 - 837.3 )

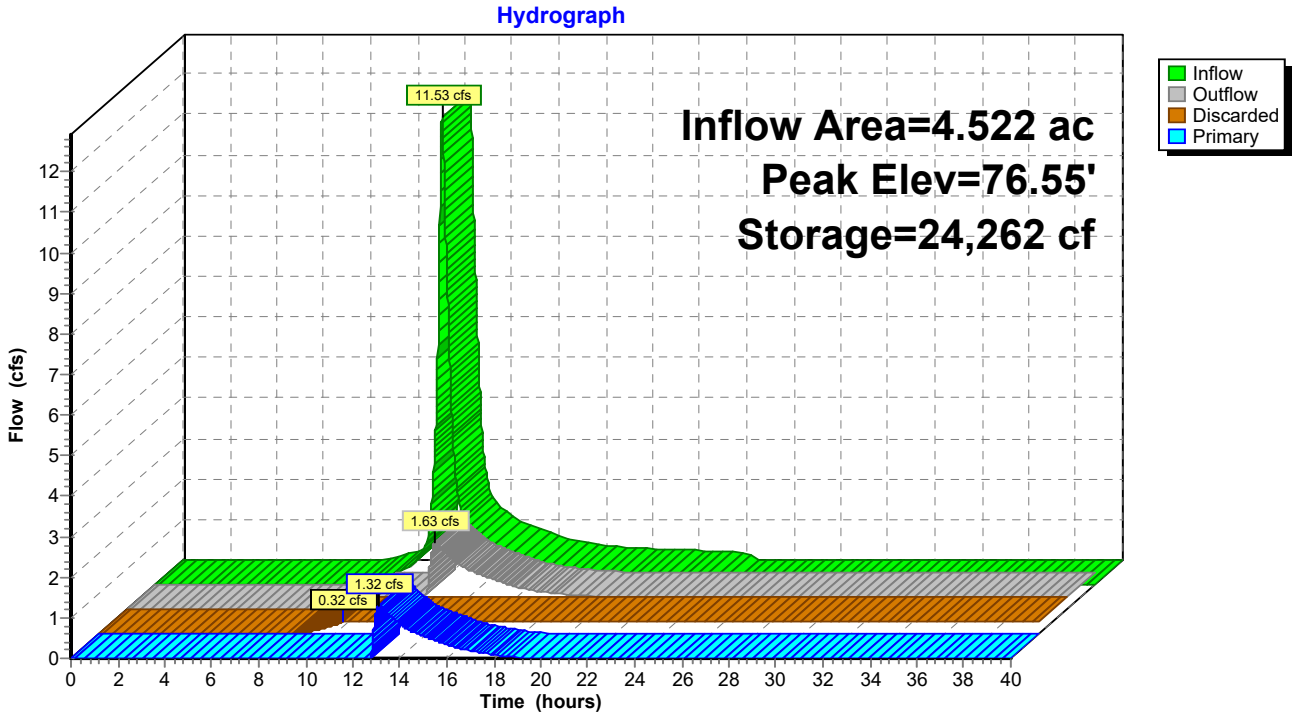
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 66.00' | 33,796 cf | **StormTrap DoubleTrap 14-0** x 10<br>Inside= 101.7"W x 168.0"H => 109.55 sf x 15.40'L = 1,686.7 cf<br>Outside= 101.7"W x 180.0"H => 127.19 sf x 15.40'L = 1,958.2 cf<br>10 Chambers in 2 Rows<br>16.96' x 76.98' Core + 6.66' Border = 30.27' x 90.29' System |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 66.00' | **5.000 in/hr Exfiltration over Surface area** |
| #2 | Primary | 76.00' | **15.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |

**Discarded OutFlow** Max=0.32 cfs @ 10.42 hrs HW=66.50' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.32 cfs)

**Primary OutFlow** Max=1.32 cfs @ 13.13 hrs HW=76.55' TW=0.00' (Dynamic Tailwater)
↑**2=Orifice/Grate** (Orifice Controls 1.32 cfs @ 2.53 fps)

## Pond C': Storm Trap System C



## Summary for Pond D': Drywell

Inflow Area = 0.141 ac, 0.00% Impervious, Inflow Depth = 1.68" for 10 year event
Inflow = 0.26 cfs @ 12.10 hrs, Volume= 0.020 af
Outflow = 0.04 cfs @ 12.90 hrs, Volume= 0.020 af, Atten= 86%, Lag= 48.4 min
Discarded = 0.01 cfs @ 11.77 hrs, Volume= 0.017 af
Primary = 0.02 cfs @ 12.90 hrs, Volume= 0.002 af
Routed to Link SP4 : Study Point 4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 77.34' @ 12.90 hrs Surf.Area= 0.003 ac Storage= 0.008 af

Plug-Flow detention time= 260.7 min calculated for 0.020 af (100% of inflow)
Center-of-Mass det. time= 260.7 min ( 1,126.5 - 865.8 )

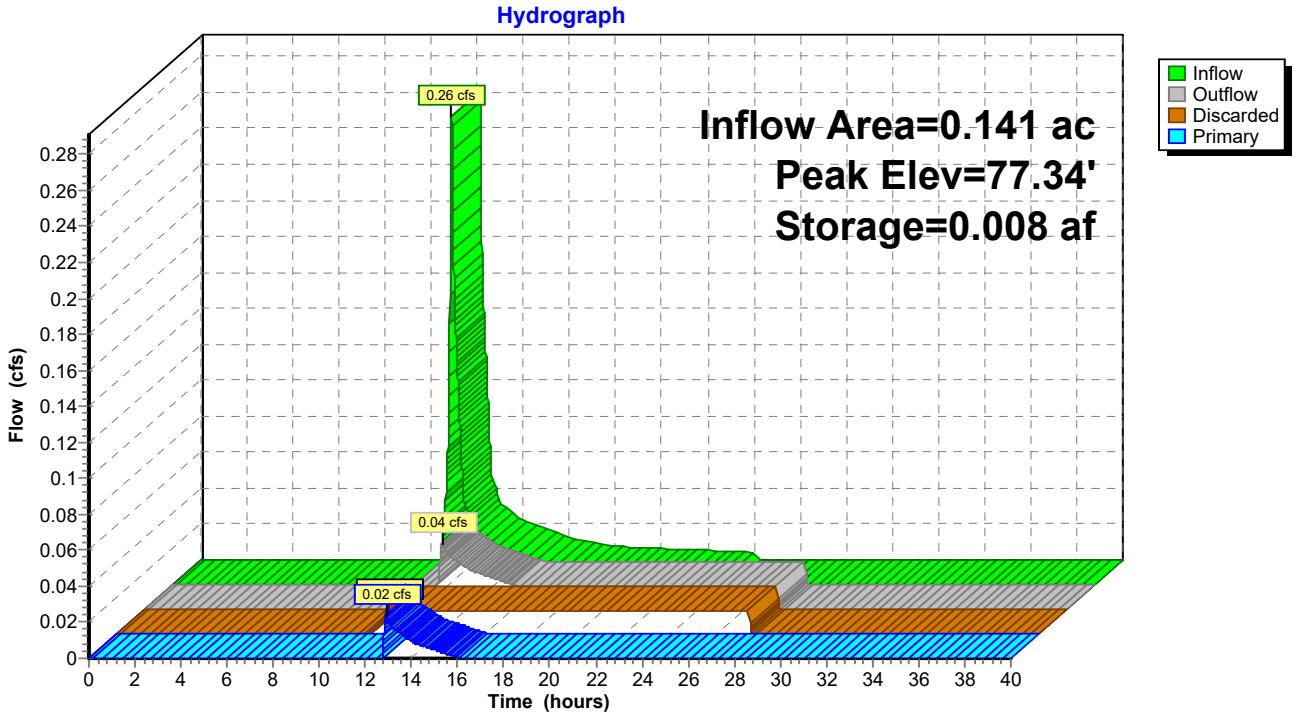
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 74.27' | 0.013 af | **12.00'D x 5.00'H Vertical Cone/Cylinder** |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 74.27' | **5.000 in/hr Exfiltration over Surface area** Phase-In= 0.01' |
| #2 | Primary | 77.27' | **18.0" Vert. Outlet Pipe** C= 0.600 Limited to weir flow at low heads |

**Discarded OutFlow** Max=0.01 cfs @ 11.77 hrs HW=74.32' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

**Primary OutFlow** Max=0.02 cfs @ 12.90 hrs HW=77.34' TW=0.00' (Dynamic Tailwater)
↑—**2=Outlet Pipe** (Orifice Controls 0.02 cfs @ 0.87 fps)

## Pond D': Drywell



## Summary for Pond E': Drywells

Inflow Area = 0.587 ac, 8.84% Impervious, Inflow Depth = 1.91" for 10 year event
Inflow = 1.26 cfs @ 12.09 hrs, Volume= 0.094 af
Outflow = 0.09 cfs @ 11.83 hrs, Volume= 0.094 af, Atten= 93%, Lag= 0.0 min
Discarded = 0.09 cfs @ 11.83 hrs, Volume= 0.094 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 67.65' @ 14.35 hrs Surf.Area= 0.018 ac Storage= 0.040 af

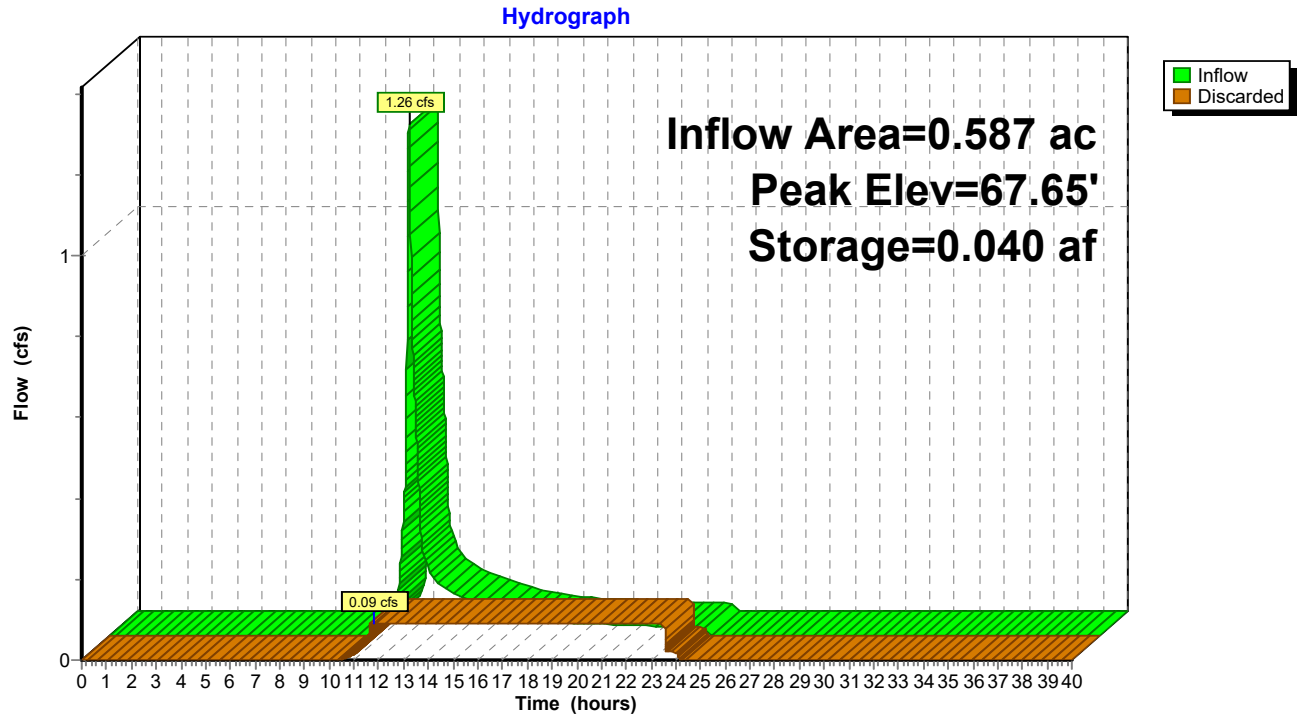
Plug-Flow detention time= 193.3 min calculated for 0.094 af (100% of inflow)
Center-of-Mass det. time= 193.3 min ( 1,051.0 - 857.7 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 65.45' | 0.127 af | **12.00'D x 7.00'H Vertical Cone/Cylinder**x 7 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 65.45' | **5.000 in/hr Exfiltration over Surface area** Phase-In= 0.01' |

**Discarded OutFlow** Max=0.09 cfs @ 11.83 hrs HW=65.52' (Free Discharge)
**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

## Pond E': Drywells



## Summary for Pond F': Drywells

Inflow Area = 0.214 ac, 42.21% Impervious, Inflow Depth = 3.05" for 10 year event
Inflow = 0.77 cfs @ 12.09 hrs, Volume= 0.054 af
Outflow = 0.05 cfs @ 11.70 hrs, Volume= 0.054 af, Atten= 93%, Lag= 0.0 min
Discarded = 0.05 cfs @ 11.70 hrs, Volume= 0.054 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 93.26' @ 13.86 hrs Surf.Area= 0.010 ac Storage= 0.024 af

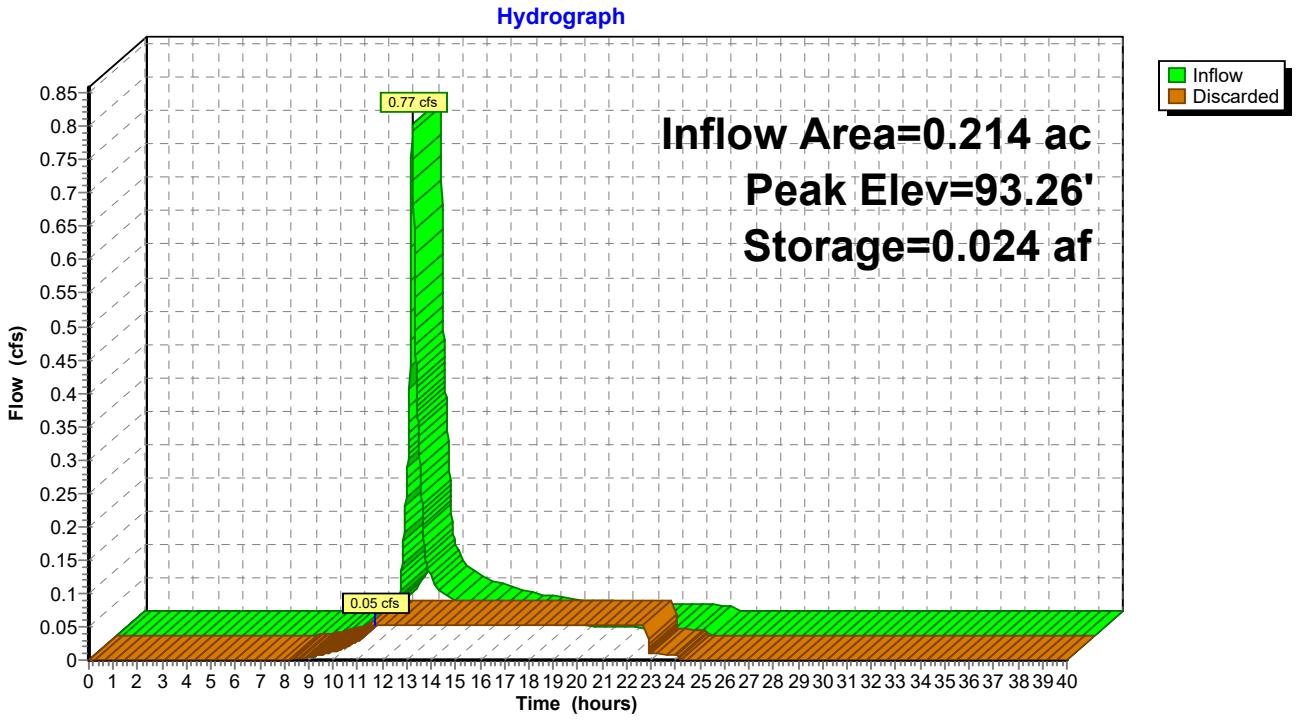
Plug-Flow detention time= 181.8 min calculated for 0.054 af (100% of inflow)
Center-of-Mass det. time= 181.8 min ( 1,007.2 - 825.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 91.00' | 0.052 af | **12.00'D x 5.00'H Drywell** x 4 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 91.00' | **5.000 in/hr Exfiltration over Surface area** Phase-In= 0.01' |

**Discarded OutFlow** Max=0.05 cfs @ 11.70 hrs HW=91.05' (Free Discharge)
**1=Exfiltration** (Exfiltration Controls 0.05 cfs)

## Pond F': Drywells



## Summary for Pond G': Drywells

Inflow Area = 0.152 ac, 65.72% Impervious, Inflow Depth = 3.83" for 10 year event
Inflow = 0.67 cfs @ 12.09 hrs, Volume= 0.048 af
Outflow = 0.05 cfs @ 11.68 hrs, Volume= 0.048 af, Atten= 92%, Lag= 0.0 min
Discarded = 0.05 cfs @ 11.68 hrs, Volume= 0.048 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 87.87' @ 13.26 hrs Surf.Area= 0.010 ac Storage= 0.019 af

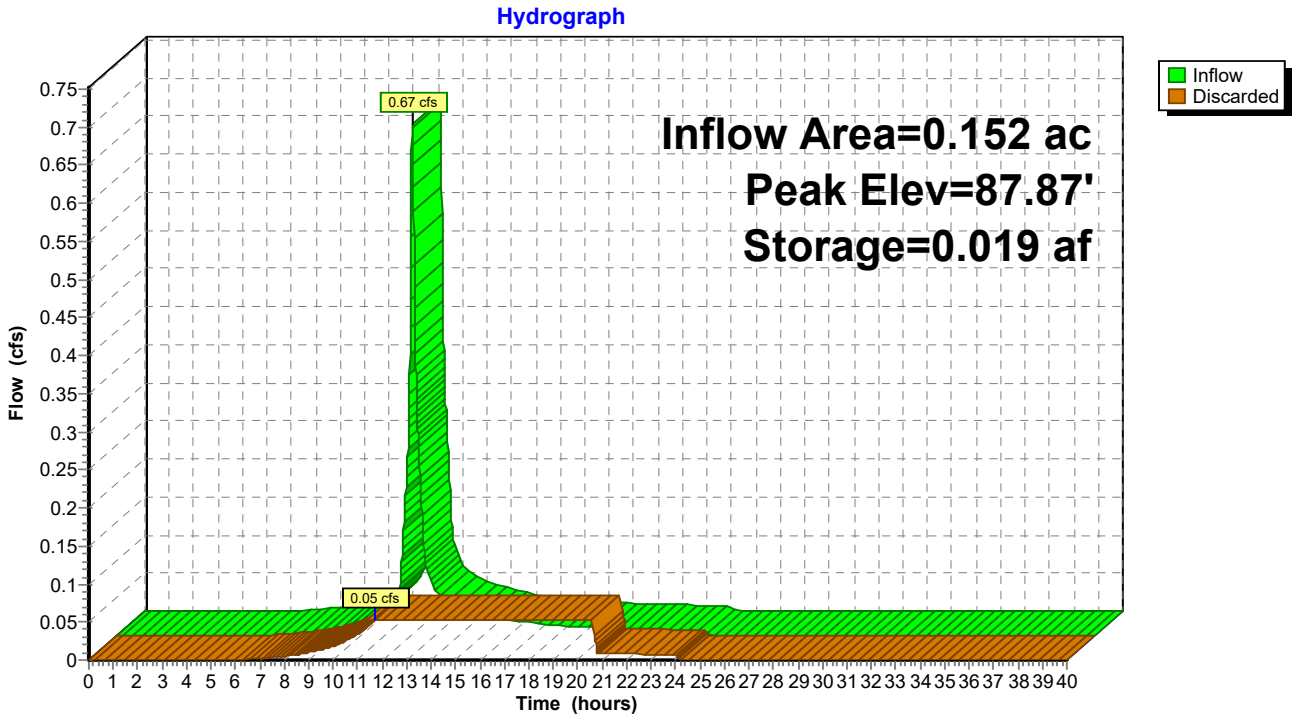
Plug-Flow detention time= 134.6 min calculated for 0.048 af (100% of inflow)
Center-of-Mass det. time= 134.6 min ( 938.5 - 803.9 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 86.00' | 0.052 af | **12.00'D x 5.00'H Drywell** x 4 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 86.00' | **5.000 in/hr Exfiltration over Surface area** Phase-In= 0.01' |

**Discarded OutFlow** Max=0.05 cfs @ 11.68 hrs HW=86.05' (Free Discharge)
**1=Exfiltration** (Exfiltration Controls 0.05 cfs)

## Pond G': Drywells



## Summary for Pond H': Drywells

Inflow Area = 0.070 ac, 77.86% Impervious, Inflow Depth = 4.36" for 10 year event
Inflow = 0.34 cfs @ 12.08 hrs, Volume= 0.025 af
Outflow = 0.03 cfs @ 11.63 hrs, Volume= 0.025 af, Atten= 92%, Lag= 0.0 min
Discarded = 0.03 cfs @ 11.63 hrs, Volume= 0.025 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 81.92' @ 13.17 hrs Surf.Area= 0.005 ac Storage= 0.010 af

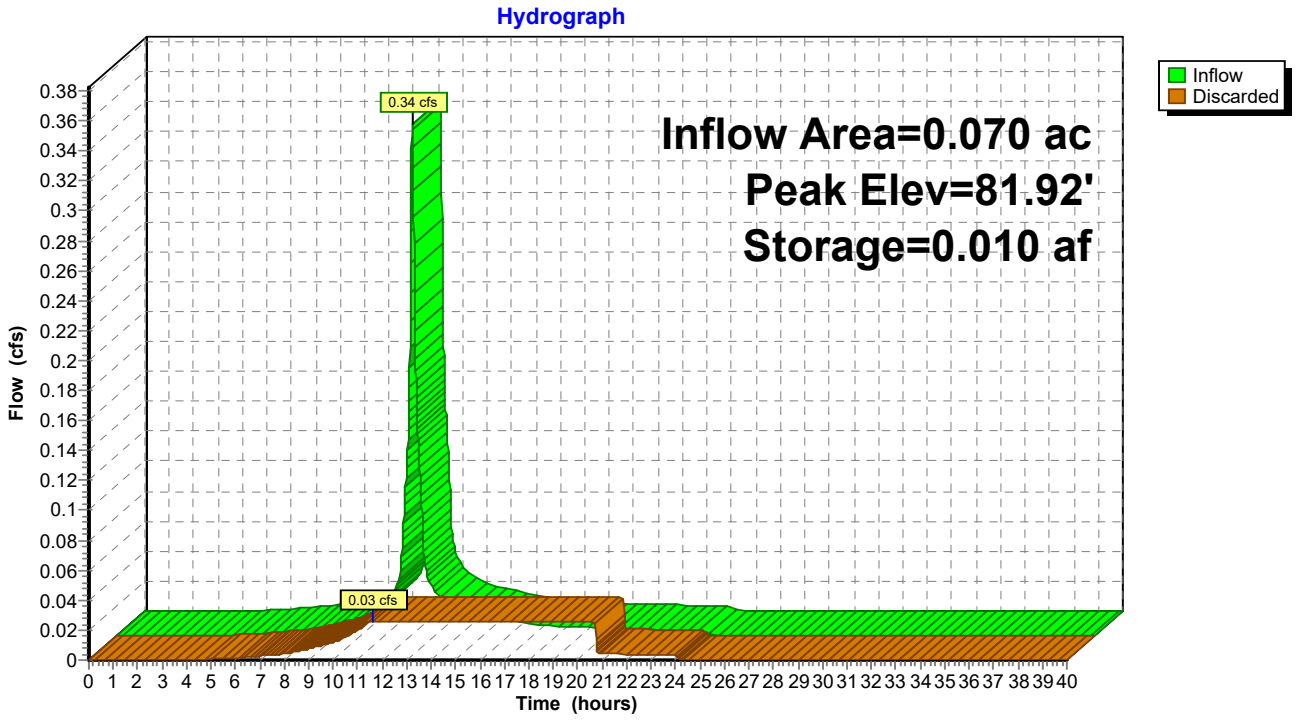
Plug-Flow detention time= 132.5 min calculated for 0.025 af (100% of inflow)
Center-of-Mass det. time= 132.5 min ( 920.1 - 787.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 80.00' | 0.026 af | **12.00'D x 5.00'H Drywell** x 2 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 80.00' | **5.000 in/hr Exfiltration over Surface area** Phase-In= 0.01' |

**Discarded OutFlow** Max=0.03 cfs @ 11.63 hrs HW=80.05' (Free Discharge)
**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

## Pond H': Drywells



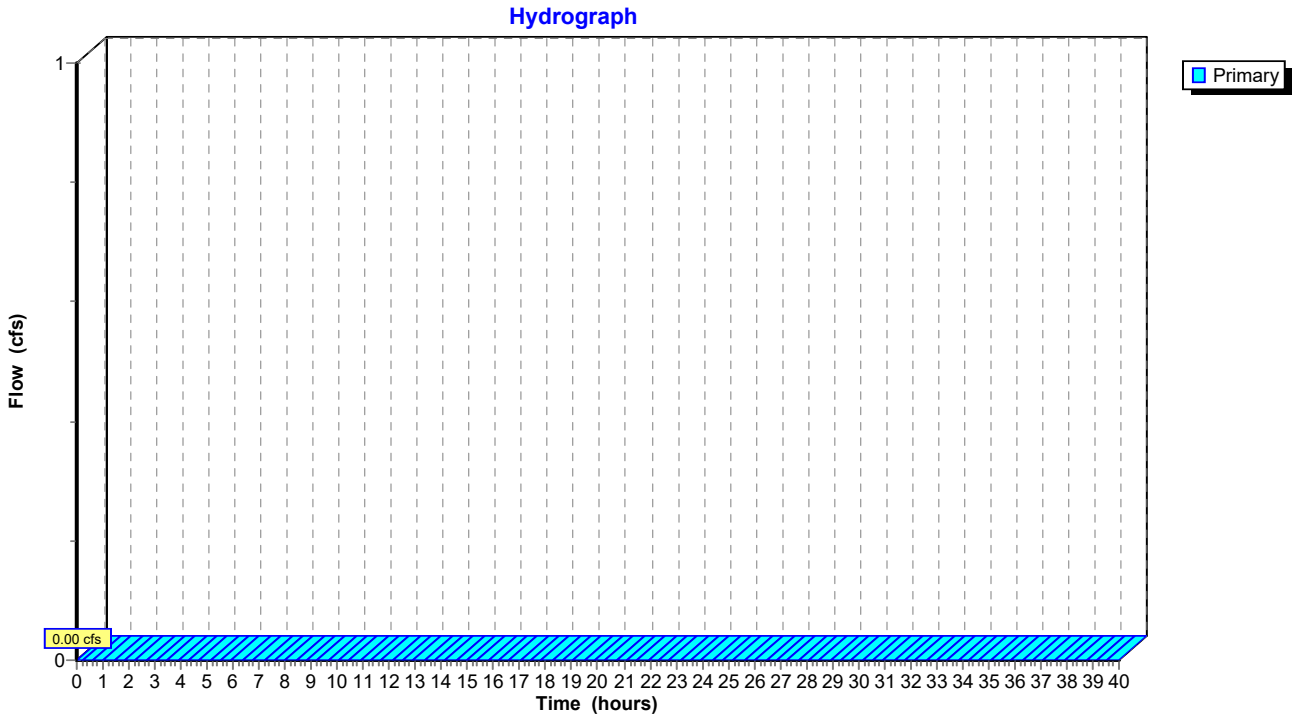
## Summary for Link SP1: Study Point 1

[43] Hint: Has no inflow (Outflow=Zero)

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

## Link SP1: Study Point 1

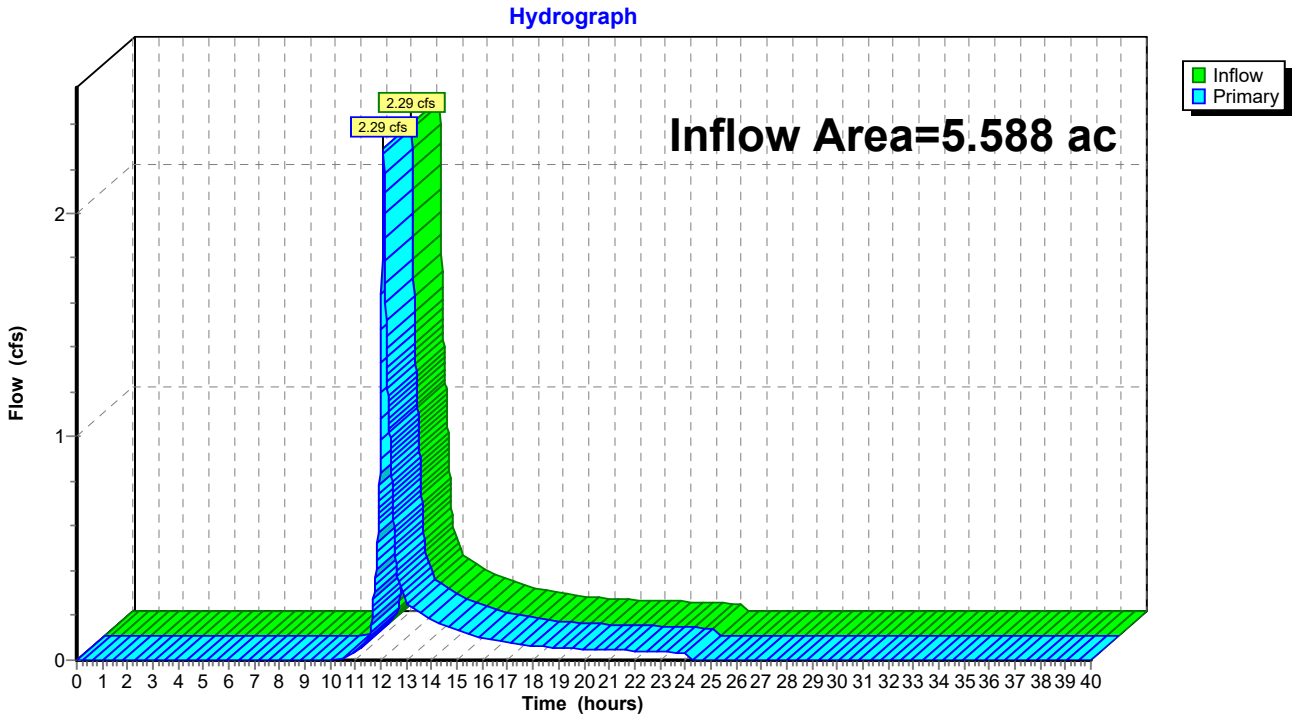


## Summary for Link SP2: Study Point 2

Inflow Area = 5.588 ac, 40.71% Impervious, Inflow Depth = 0.36" for 10 year event
Inflow = 2.29 cfs @ 12.09 hrs, Volume= 0.168 af
Primary = 2.29 cfs @ 12.09 hrs, Volume= 0.168 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

## Link SP2: Study Point 2

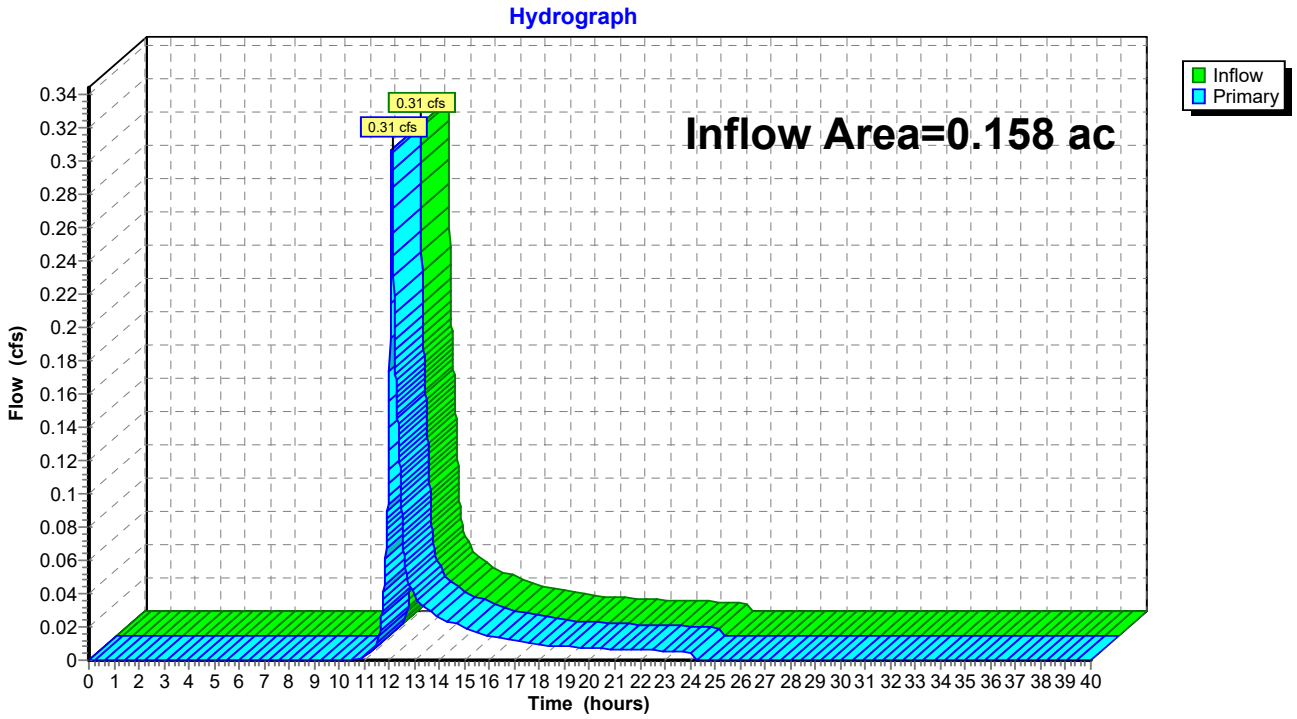


## Summary for Link SP3: Study Point 3

Inflow Area = 0.158 ac, 1.45% Impervious, Inflow Depth = 1.76" for 10 year event
Inflow = 0.31 cfs @ 12.10 hrs, Volume= 0.023 af
Primary = 0.31 cfs @ 12.10 hrs, Volume= 0.023 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

## Link SP3: Study Point 3

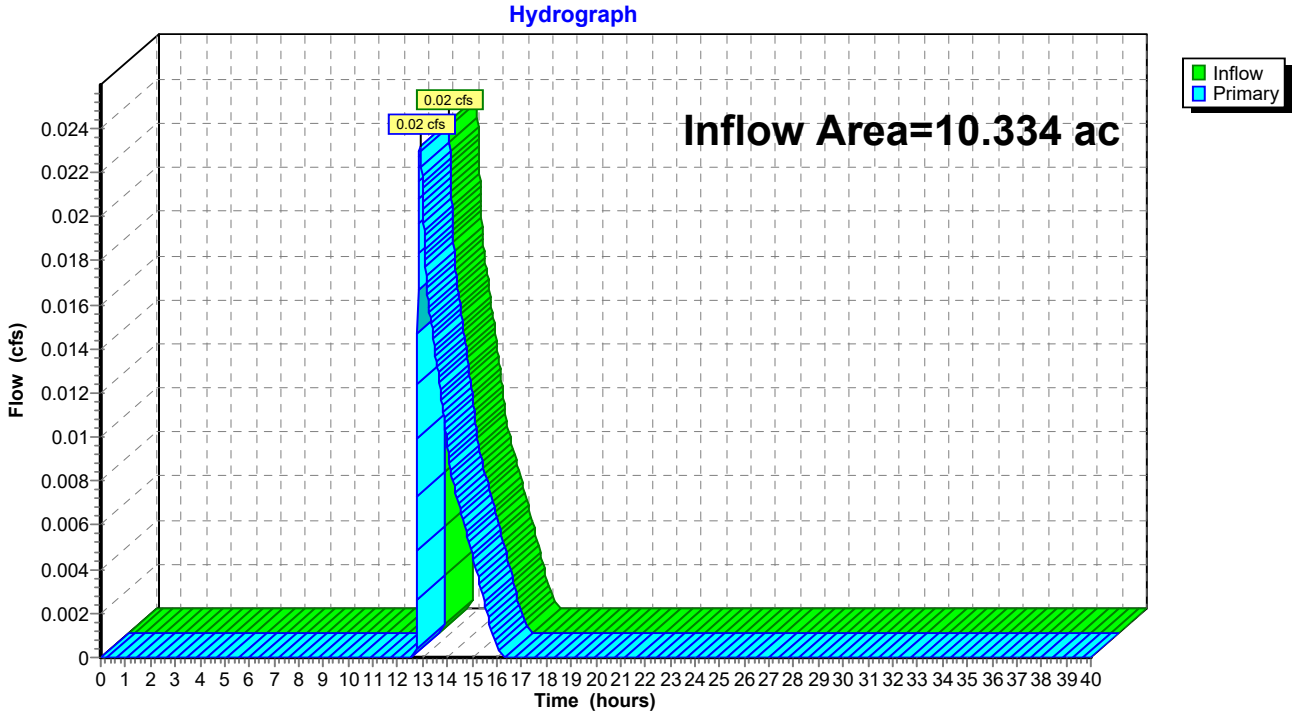


## Summary for Link SP4: Study Point 4

Inflow Area = 10.334 ac, 27.66% Impervious, Inflow Depth = 0.00" for 10 year event
Inflow = 0.02 cfs @ 12.90 hrs, Volume= 0.002 af
Primary = 0.02 cfs @ 12.90 hrs, Volume= 0.002 af, Atten= 0%, Lag= 0.0 min
Routed to Link SP6 : Study Point 6

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

## Link SP4: Study Point 4

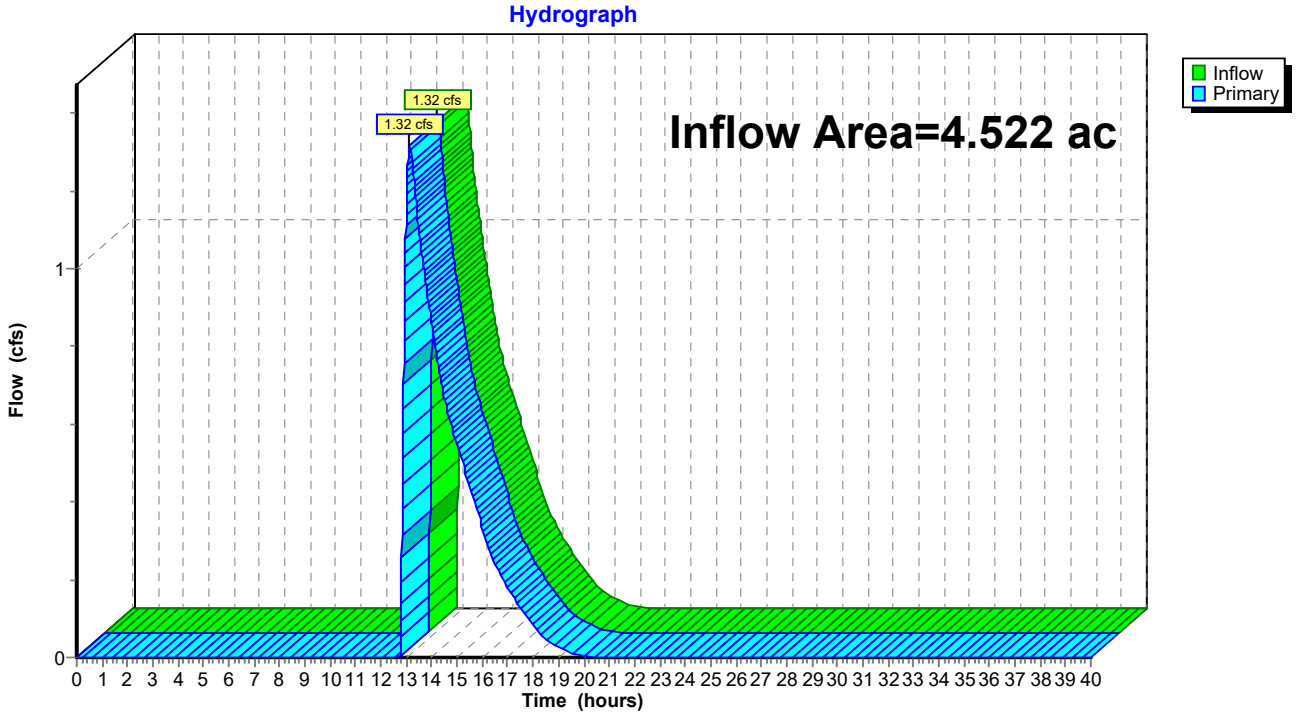


## Summary for Link SP5: Study Point 5

Inflow Area = 4.522 ac, 46.24% Impervious, Inflow Depth = 0.62" for 10 year event
Inflow = 1.32 cfs @ 13.13 hrs, Volume= 0.232 af
Primary = 1.32 cfs @ 13.13 hrs, Volume= 0.232 af, Atten= 0%, Lag= 0.0 min
Routed to Link SP6 : Study Point 6

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

## Link SP5: Study Point 5

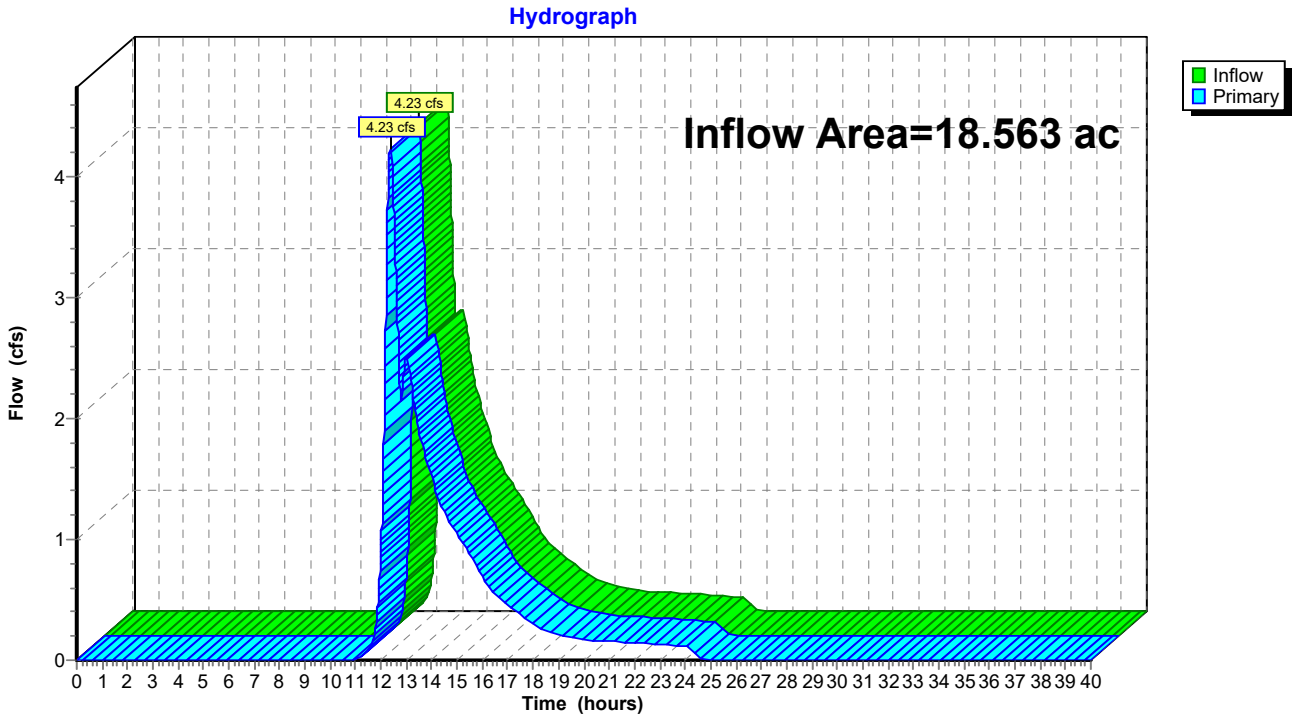


## Summary for Link SP6: Study Point 6

Inflow Area = 18.563 ac, 29.00% Impervious, Inflow Depth = 0.49" for 10 year event
Inflow = 4.23 cfs @ 12.37 hrs, Volume= 0.753 af
Primary = 4.23 cfs @ 12.37 hrs, Volume= 0.753 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

## Link SP6: Study Point 6

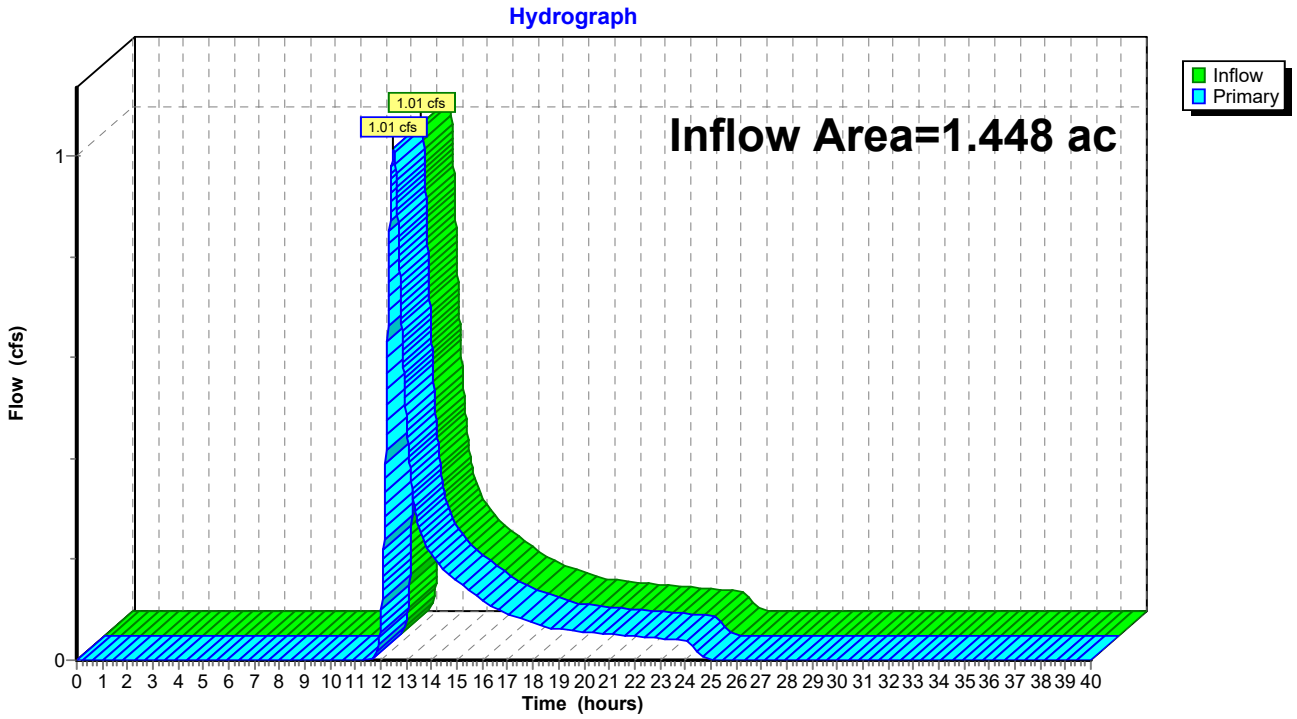


## Summary for Link SP7: Study Point 7

Inflow Area = 1.448 ac, 0.00% Impervious, Inflow Depth = 1.24" for 10 year event
Inflow = 1.01 cfs @ 12.49 hrs, Volume= 0.150 af
Primary = 1.01 cfs @ 12.49 hrs, Volume= 0.150 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

## Link SP7: Study Point 7



Time span=0.00-40.00 hrs, dt=0.01 hrs, 4001 points x 3
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 A-1: Area A-1** Runoff Area=148,850 sf 40.68% Impervious Runoff Depth=5.16"
Flow Length=533' Tc=28.7 min CN=76 Runoff=11.89 cfs 1.469 af

**Subcatchment A-2: Area A-2** Runoff Area=50,510 sf 63.92% Impervious Runoff Depth=6.21"
Flow Length=353' Tc=8.2 min CN=85 Runoff=7.56 cfs 0.600 af

**Subcatchment B: Area B** Runoff Area=444,006 sf 28.05% Impervious Runoff Depth=4.35"
Flow Length=1,308' Tc=17.1 min CN=69 Runoff=37.31 cfs 3.695 af

**Subcatchment C: Area C** Runoff Area=196,979 sf 46.24% Impervious Runoff Depth=5.16"
Flow Length=466' Tc=16.1 min CN=76 Runoff=20.09 cfs 1.944 af

**Subcatchment D: Area D** Runoff Area=6,149 sf 0.00% Impervious Runoff Depth=3.44"
Tc=6.0 min CN=61 Runoff=0.56 cfs 0.041 af

**Subcatchment E: Area E** Runoff Area=25,556 sf 8.84% Impervious Runoff Depth=3.78"
Tc=6.0 min CN=64 Runoff=2.59 cfs 0.185 af

**Subcatchment F: Area F** Runoff Area=9,340 sf 42.21% Impervious Runoff Depth=5.27"
Tc=6.0 min CN=77 Runoff=1.32 cfs 0.094 af

**Subcatchment G: Area G** Runoff Area=6,607 sf 65.72% Impervious Runoff Depth=6.21"
Tc=6.0 min CN=85 Runoff=1.07 cfs 0.079 af

**Subcatchment H: Area H** Runoff Area=3,035 sf 77.86% Impervious Runoff Depth=6.81"
Tc=6.0 min CN=90 Runoff=0.52 cfs 0.040 af

**Subcatchment I: Area I** Runoff Area=6,887 sf 1.45% Impervious Runoff Depth=3.56"
Tc=6.0 min CN=62 Runoff=0.65 cfs 0.047 af

**Subcatchment J: Area J** Runoff Area=44,065 sf 14.19% Impervious Runoff Depth=3.89"
Flow Length=647' Tc=6.0 min CN=65 Runoff=4.61 cfs 0.328 af

**Subcatchment K: Area K** Runoff Area=161,465 sf 11.69% Impervious Runoff Depth=3.44"
Flow Length=1,080' Tc=24.1 min CN=61 Runoff=9.19 cfs 1.064 af

**Subcatchment P: Area P** Runoff Area=63,077 sf 0.00% Impervious Runoff Depth=2.78"
Flow Length=440' Tc=30.2 min CN=55 Runoff=2.55 cfs 0.336 af

**Pond A-1': StormTrap System A-1** Peak Elev=132.94' Storage=26,853 cf Inflow=11.89 cfs 1.469 af
Discarded=0.41 cfs 1.024 af Primary=4.80 cfs 0.444 af Outflow=5.21 cfs 1.469 af

**Pond A-2': StormTrap System A-2** Peak Elev=129.86' Storage=15,265 cf Inflow=7.56 cfs 1.045 af
Discarded=0.37 cfs 0.640 af Primary=4.04 cfs 0.405 af Outflow=4.41 cfs 1.045 af

**Pond B': Storm Trap System B** Peak Elev=81.57' Storage=73,681 cf Inflow=37.31 cfs 3.695 af
Discarded=0.94 cfs 2.364 af Primary=5.44 cfs 1.331 af Outflow=6.38 cfs 3.695 af

**Pond C': Storm Trap System C** Peak Elev=79.30' Storage=30,889 cf Inflow=20.09 cfs 1.944 af
Discarded=0.32 cfs 0.833 af Primary=9.66 cfs 0.994 af Outflow=9.97 cfs 1.827 af

**Pond D': Drywell** Peak Elev=77.58' Storage=0.009 af Inflow=0.56 cfs 0.041 af
Discarded=0.01 cfs 0.021 af Primary=0.49 cfs 0.019 af Outflow=0.50 cfs 0.041 af

**Pond E': Drywells** Peak Elev=71.31' Storage=0.107 af Inflow=2.59 cfs 0.185 af
Outflow=0.09 cfs 0.185 af

**Pond F': Drywells** Peak Elev=95.86' Storage=0.050 af Inflow=1.32 cfs 0.094 af
Outflow=0.05 cfs 0.094 af

**Pond G': Drywells** Peak Elev=89.62' Storage=0.038 af Inflow=1.07 cfs 0.079 af
Outflow=0.05 cfs 0.079 af

**Pond H': Drywells** Peak Elev=83.53' Storage=0.018 af Inflow=0.52 cfs 0.040 af
Outflow=0.03 cfs 0.040 af

**Link SP1: Study Point 1**
Primary=0.00 cfs 0.000 af

**Link SP2: Study Point 2** Inflow=4.61 cfs 0.734 af
Primary=4.61 cfs 0.734 af

**Link SP3: Study Point 3** Inflow=0.65 cfs 0.047 af
Primary=0.65 cfs 0.047 af

**Link SP4: Study Point 4** Inflow=5.49 cfs 1.350 af
Primary=5.49 cfs 1.350 af

**Link SP5: Study Point 5** Inflow=9.66 cfs 0.994 af
Primary=9.66 cfs 0.994 af

**Link SP6: Study Point 6** Inflow=20.65 cfs 3.409 af
Primary=20.65 cfs 3.409 af

**Link SP7: Study Point 7** Inflow=2.55 cfs 0.336 af
Primary=2.55 cfs 0.336 af

**Total Runoff Area = 26.780 ac Runoff Volume = 9.920 af Average Runoff Depth = 4.45"**
**70.29% Pervious = 18.823 ac 29.71% Impervious = 7.957 ac**

## Summary for Subcatchment A-1: Area A-1

[47] Hint: Peak is 462% of capacity of segment #3

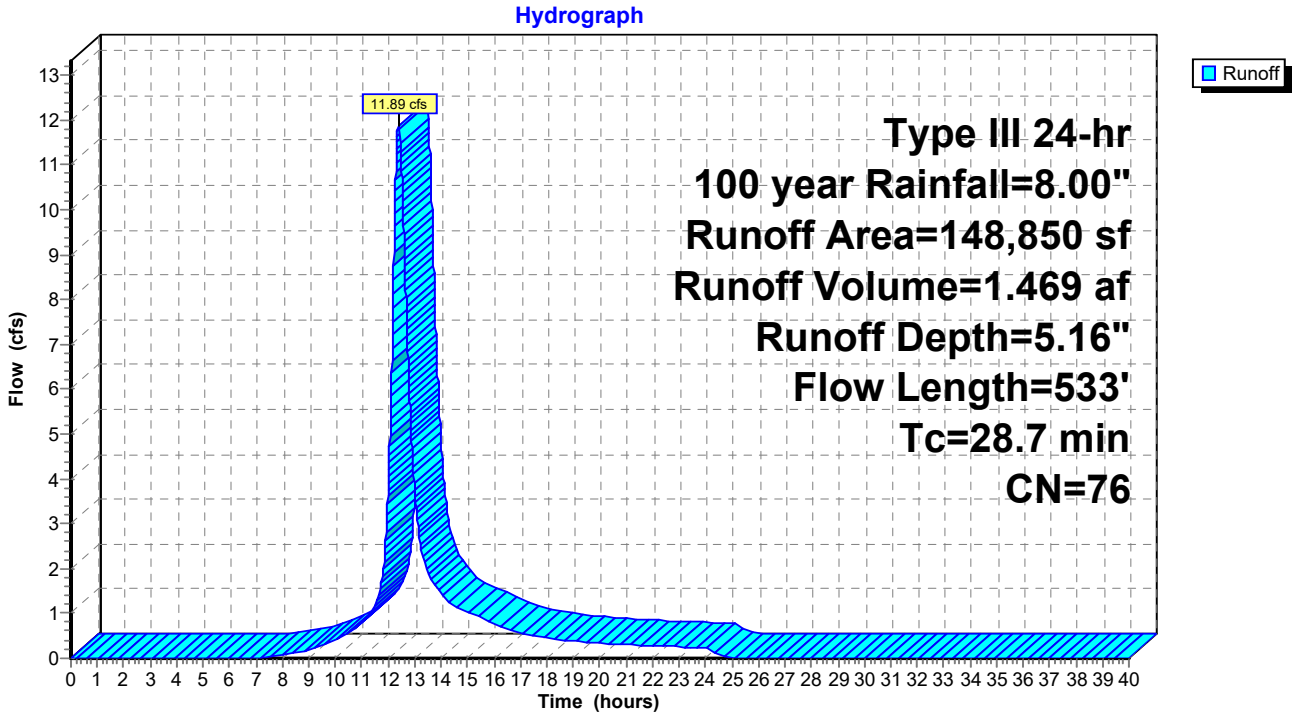
Runoff = 11.89 cfs @ 12.40 hrs, Volume= 1.469 af, Depth= 5.16"
Routed to Pond A-1' : StormTrap System A-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 year Rainfall=8.00"

| Area (sf) | CN | Description |
|---|---|---|
| 37,875 | 98 | Paved parking, HSG B |
| 88,292 | 61 | >75% Grass cover, Good, HSG B |
| 22,683 | 98 | Roofs, HSG B |
| 148,850 | 76 | Weighted Average |
| 88,292 | | 59.32% Pervious Area |
| 60,558 | | 40.68% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.9 | 41 | 0.2668 | 0.17 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.90" |
| 23.3 | 190 | 0.0094 | 0.14 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 2.90" |
| 1.5 | 302 | 0.0100 | 3.28 | 2.57 | **Pipe Channel, Pipe to StormTrap** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.018 Corrugated PE, corrugated interior |
| 28.7 | 533 | Total | | | |

## Subcatchment A-1: Area A-1



## Summary for Subcatchment A-2: Area A-2

[47] Hint: Peak is 613% of capacity of segment #2
[47] Hint: Peak is 351% of capacity of segment #3

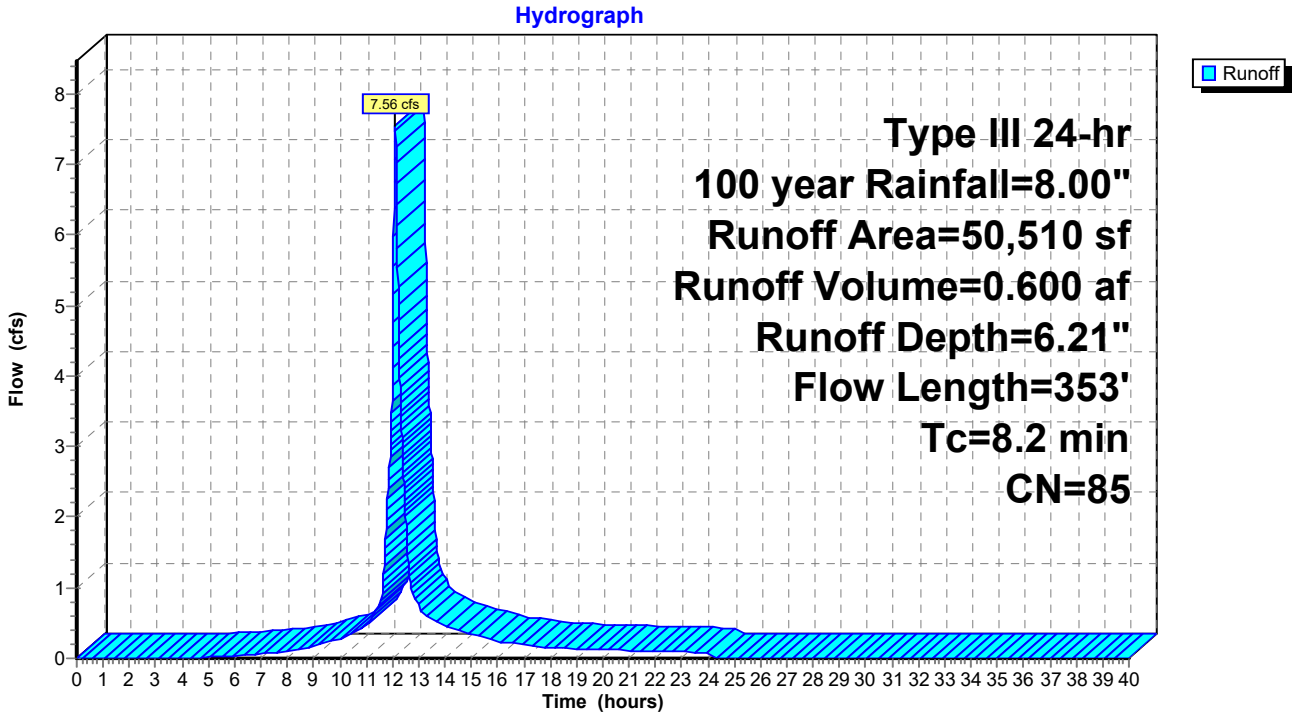
Runoff = 7.56 cfs @ 12.11 hrs, Volume= 0.600 af, Depth= 6.21"
Routed to Pond A-2' : StormTrap System A-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 year Rainfall=8.00"

| Area (sf) | CN | Description |
|---|---|---|
| 14,641 | 98 | Paved parking, HSG B |
| 18,226 | 61 | >75% Grass cover, Good, HSG B |
| 17,643 | 98 | Roofs, HSG B |
| 50,510 | 85 | Weighted Average |
| 18,226 | | 36.08% Pervious Area |
| 32,284 | | 63.92% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 6.9 | 97 | 0.0510 | 0.23 | | **Sheet Flow,** Grass: Short n= 0.150 P2= 2.90" |
| 0.6 | 136 | 0.0200 | 3.54 | 1.23 | **Pipe Channel, Area Drain Pipes** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.018 Corrugated PE, corrugated interior |
| 0.7 | 120 | 0.0070 | 2.74 | 2.15 | **Pipe Channel, Pipe to StormTrap** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.018 Corrugated PE, corrugated interior |
| 8.2 | 353 | Total | | | |

## Subcatchment A-2: Area A-2



## Summary for Subcatchment B: Area B

[47] Hint: Peak is 578% of capacity of segment #4

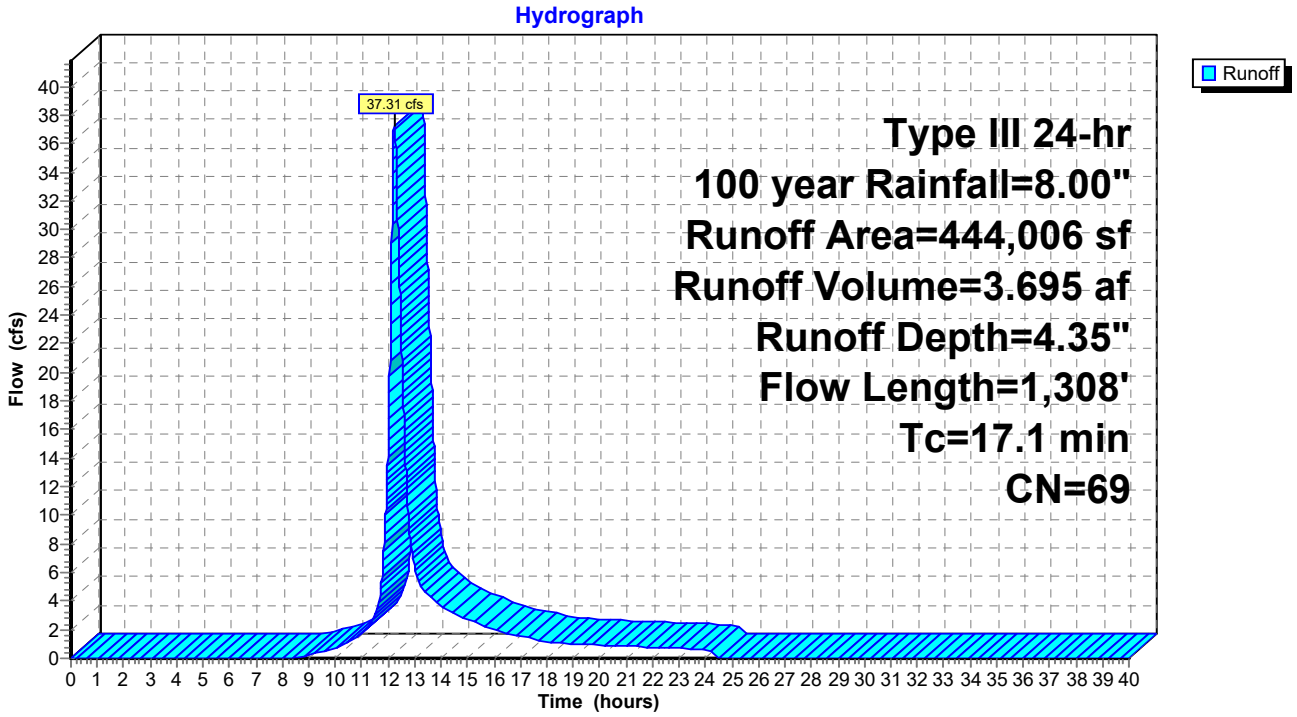
Runoff = 37.31 cfs @ 12.24 hrs, Volume= 3.695 af, Depth= 4.35"
Routed to Pond B' : Storm Trap System B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 year Rainfall=8.00"

| Area (sf) | CN | Description |
|---|---|---|
| 68,081 | 98 | Paved parking, HSG B |
| 180,566 | 61 | >75% Grass cover, Good, HSG B |
| 56,445 | 98 | Roofs, HSG B |
| 138,914 | 55 | Woods, Good, HSG B |
| 444,006 | 69 | Weighted Average |
| 319,480 | | 71.95% Pervious Area |
| 124,526 | | 28.05% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 14.3 | 100 | 0.2500 | 0.12 | | **Sheet Flow, Wooded Hill**<br>Woods: Dense underbrush n= 0.800 P2= 2.90" |
| 1.4 | 210 | 0.2500 | 2.50 | | **Shallow Concentrated Flow, Wooded Hill Slope**<br>Woodland Kv= 5.0 fps |
| 0.3 | 647 | 0.0348 | 36.88 | 457,149.18 | **Channel Flow, BIOSWALE**<br>Area= 12,397.0 sf Perim= 1,234.0' r= 10.05'<br>n= 0.035 Riprap, 6-inch |
| 1.1 | 351 | 0.0100 | 5.26 | 6.46 | **Pipe Channel, PIPES TO STORMTRAP**<br>15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31'<br>n= 0.013 Corrugated PE, smooth interior |
| 17.1 | 1,308 | Total | | | |

## Subcatchment B: Area B



## Summary for Subcatchment C: Area C

[47] Hint: Peak is 431% of capacity of segment #4

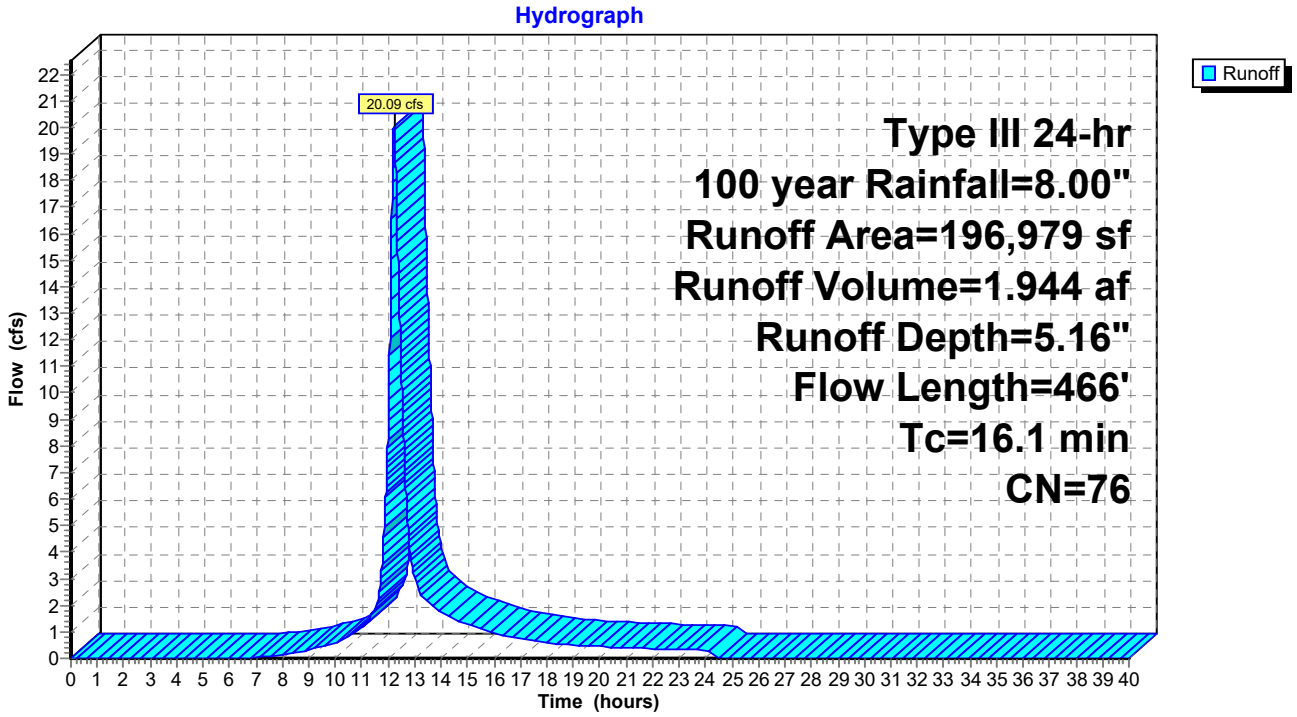
Runoff = 20.09 cfs @ 12.22 hrs, Volume= 1.944 af, Depth= 5.16"
Routed to Pond C' : Storm Trap System C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 year Rainfall=8.00"

| Area (sf) | CN | Description |
|---|---|---|
| 46,357 | 98 | Paved parking, HSG B |
| 45,781 | 61 | >75% Grass cover, Good, HSG B |
| 44,731 | 98 | Roofs, HSG B |
| 60,110 | 55 | Woods, Good, HSG B |
| 196,979 | 76 | Weighted Average |
| 105,891 | | 53.76% Pervious Area |
| 91,088 | | 46.24% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 13.3 | 100 | 0.3000 | 0.13 | | **Sheet Flow, Wooded Hill Slope**<br>Woods: Dense underbrush n= 0.800 P2= 2.90" |
| 0.2 | 40 | 0.3000 | 2.74 | | **Shallow Concentrated Flow, Wooded Hill Slope**<br>Woodland Kv= 5.0 fps |
| 1.5 | 65 | 0.0200 | 0.71 | | **Shallow Concentrated Flow, Swale**<br>Woodland Kv= 5.0 fps |
| 1.1 | 261 | 0.0100 | 3.80 | 4.67 | **Pipe Channel, PIPES TO STORMTRAP**<br>15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31'<br>n= 0.018 Corrugated PE, corrugated interior |
| 16.1 | 466 | Total | | | |

## Subcatchment C: Area C



## Summary for Subcatchment D: Area D

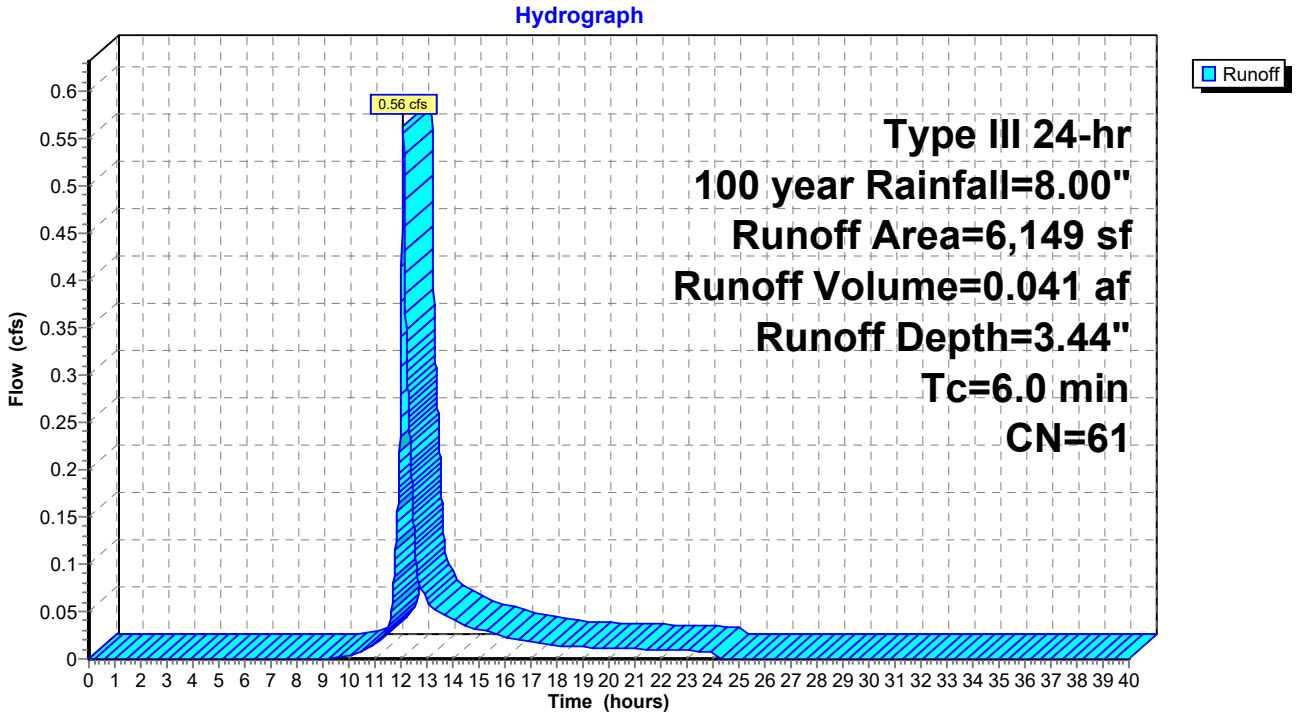
Runoff = 0.56 cfs @ 12.09 hrs, Volume= 0.041 af, Depth= 3.44"
Routed to Pond D' : Drywell

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 year Rainfall=8.00"

| Area (sf) | CN | Description |
|---|---|---|
| 6,149 | 61 | >75% Grass cover, Good, HSG B |
| 6,149 | | 100.00% Pervious Area |

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

### Subcatchment D: Area D



## Summary for Subcatchment E: Area E

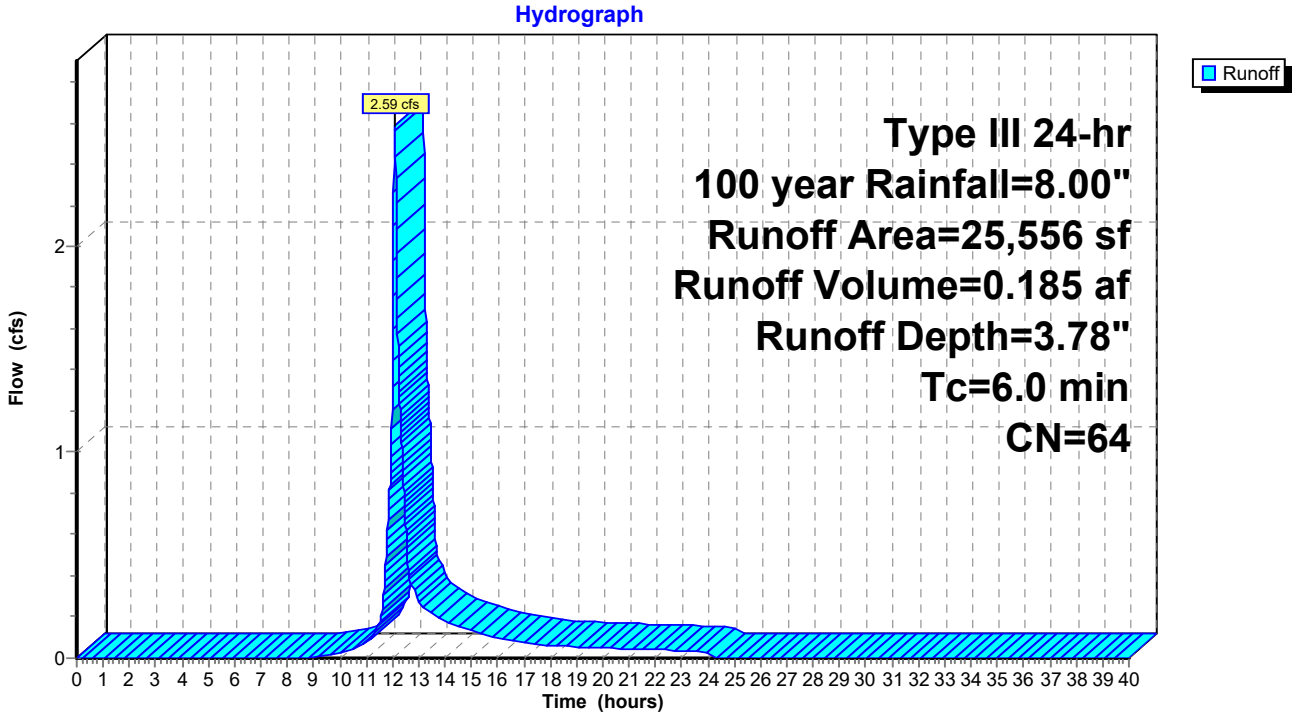
Runoff = 2.59 cfs @ 12.09 hrs, Volume= 0.185 af, Depth= 3.78"
Routed to Pond E' : Drywells

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 year Rainfall=8.00"

| Area (sf) | CN | Description |
|---|---|---|
| 2,259 | 98 | Paved parking, HSG B |
| 23,297 | 61 | >75% Grass cover, Good, HSG B |
| 25,556 | 64 | Weighted Average |
| 23,297 | | 91.16% Pervious Area |
| 2,259 | | 8.84% Impervious Area |

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

### Subcatchment E: Area E



## Summary for Subcatchment F: Area F

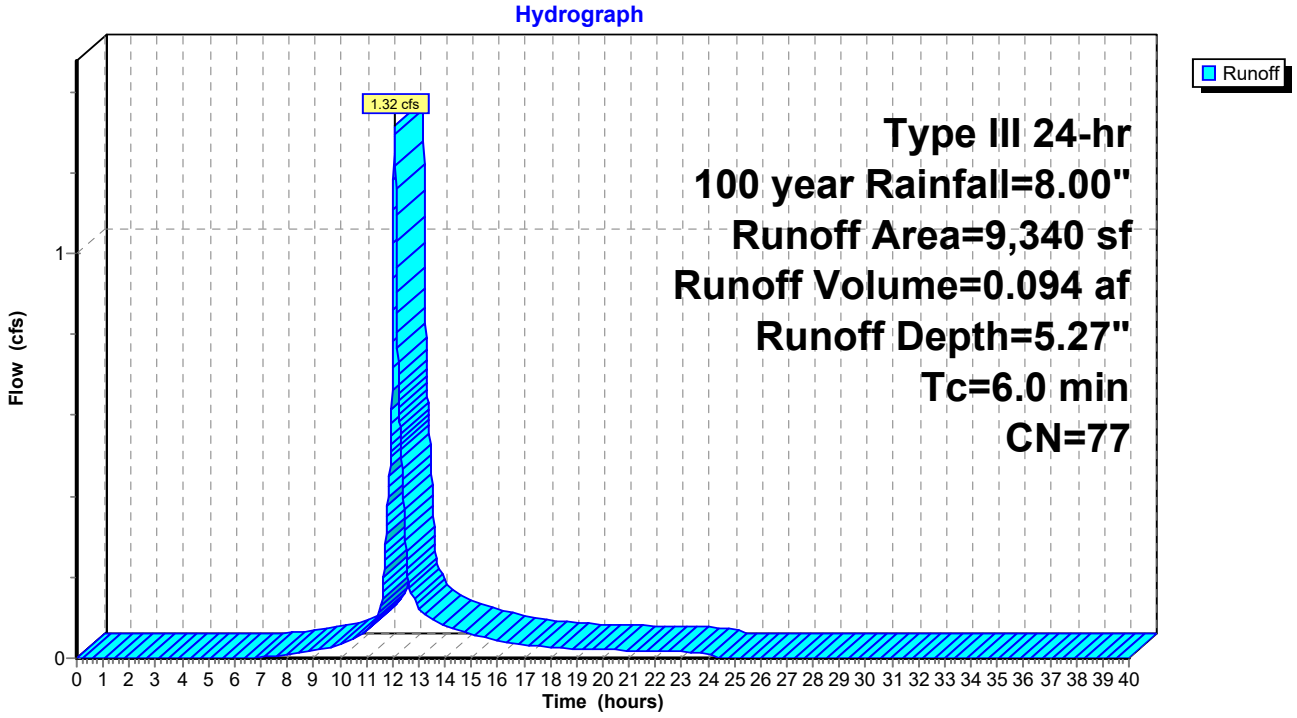
Runoff = 1.32 cfs @ 12.09 hrs, Volume= 0.094 af, Depth= 5.27"
Routed to Pond F' : Drywells

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 year Rainfall=8.00"

| Area (sf) | CN | Description |
|---|---|---|
| 3,942 | 98 | Paved parking, HSG C |
| 5,398 | 61 | >75% Grass cover, Good, HSG B |
| 9,340 | 77 | Weighted Average |
| 5,398 | | 57.79% Pervious Area |
| 3,942 | | 42.21% Impervious Area |

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

### Subcatchment F: Area F



## Summary for Subcatchment G: Area G

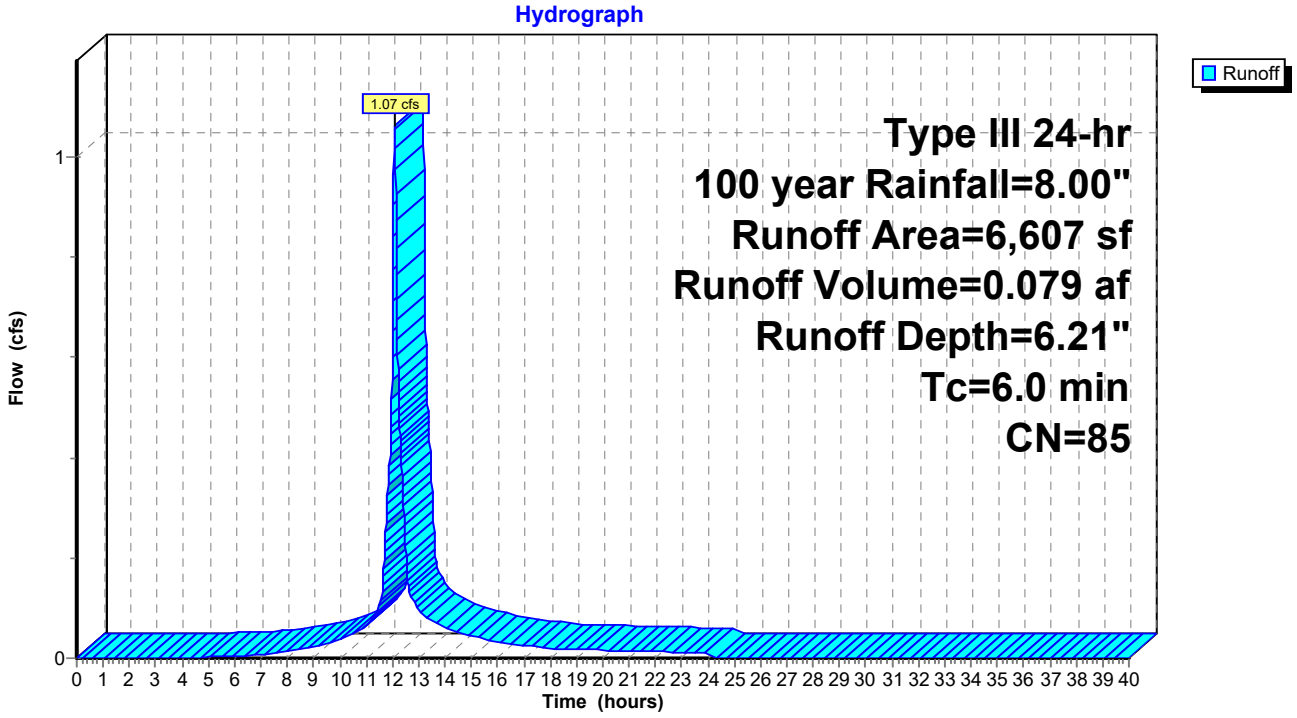
Runoff = 1.07 cfs @ 12.09 hrs, Volume= 0.079 af, Depth= 6.21"
Routed to Pond G' : Drywells

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 year Rainfall=8.00"

| Area (sf) | CN | Description |
|---|---|---|
| 4,342 | 98 | Paved parking, HSG C |
| 2,265 | 61 | >75% Grass cover, Good, HSG B |
| 6,607 | 85 | Weighted Average |
| 2,265 | | 34.28% Pervious Area |
| 4,342 | | 65.72% Impervious Area |

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

### Subcatchment G: Area G



## Summary for Subcatchment H: Area H

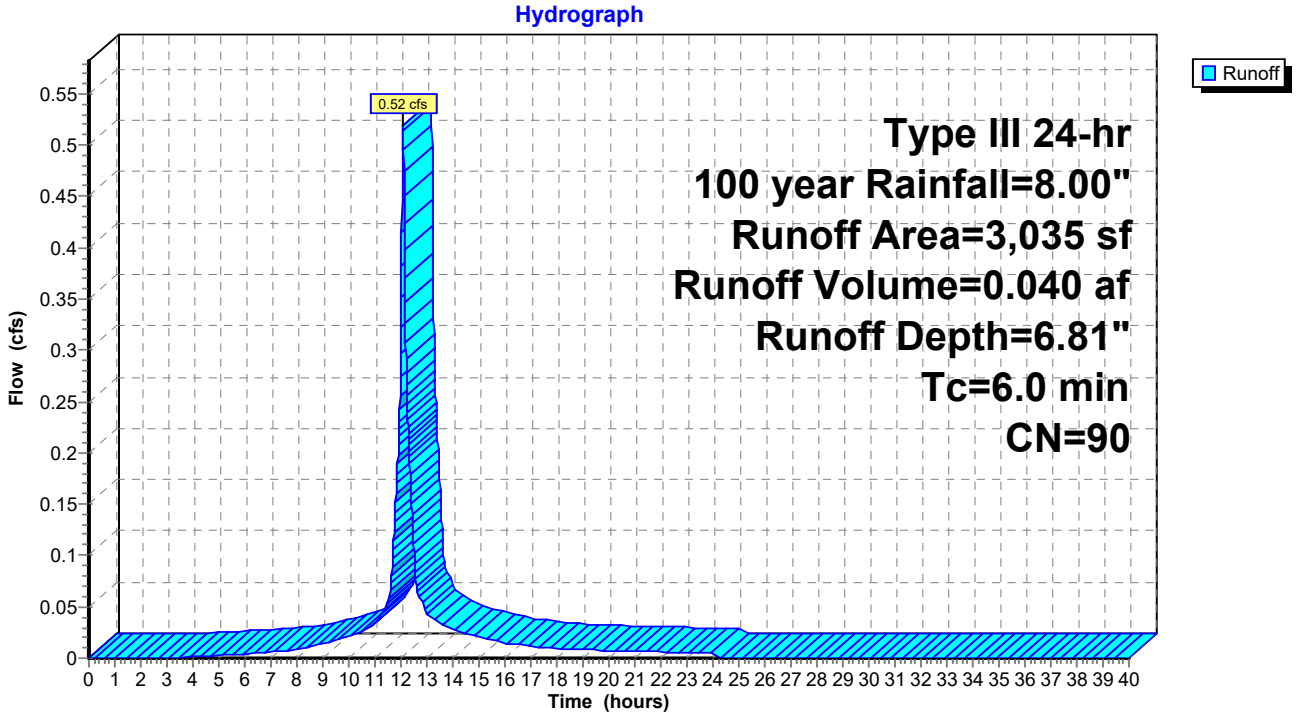
Runoff = 0.52 cfs @ 12.08 hrs, Volume= 0.040 af, Depth= 6.81"
Routed to Pond H' : Drywells

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 year Rainfall=8.00"

| Area (sf) | CN | Description |
|---|---|---|
| 2,363 | 98 | Paved parking, HSG C |
| 672 | 61 | >75% Grass cover, Good, HSG B |
| 3,035 | 90 | Weighted Average |
| 672 | | 22.14% Pervious Area |
| 2,363 | | 77.86% Impervious Area |

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

### Subcatchment H: Area H



## Summary for Subcatchment I: Area I

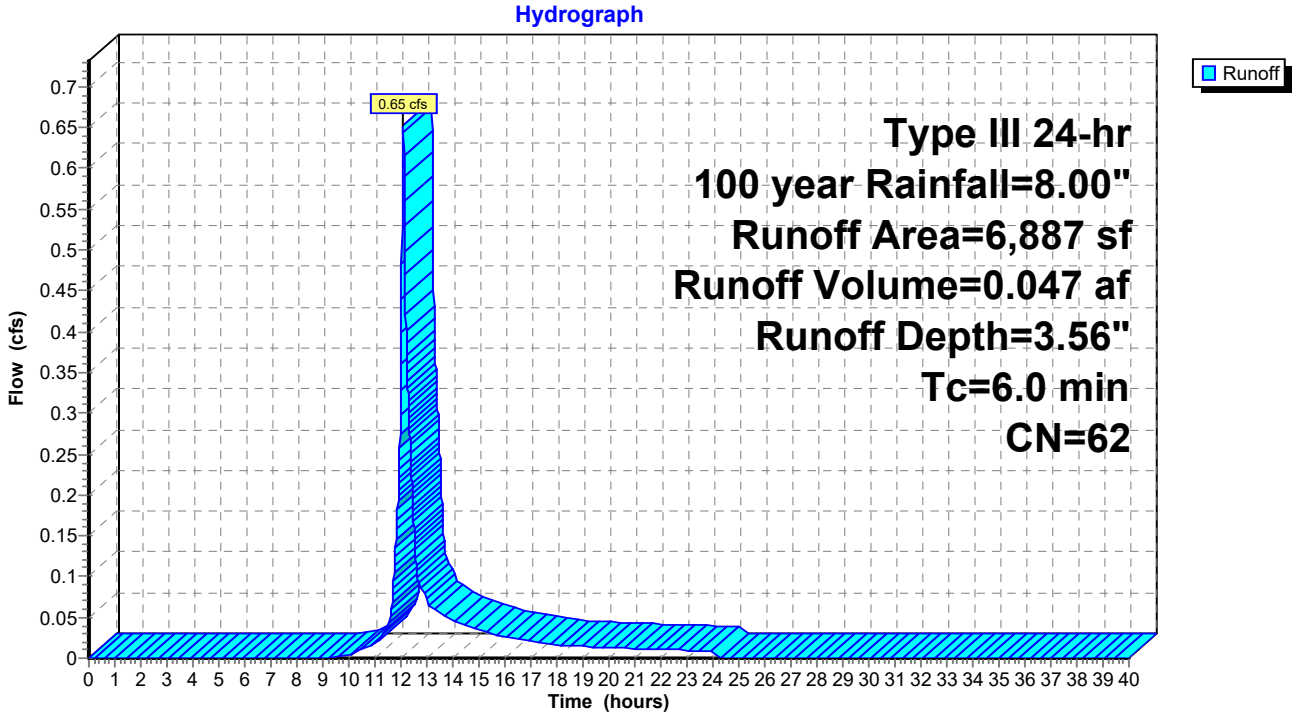
Runoff = 0.65 cfs @ 12.09 hrs, Volume= 0.047 af, Depth= 3.56"
Routed to Link SP3 : Study Point 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 year Rainfall=8.00"

| Area (sf) | CN | Description |
|---|---|---|
| 100 | 98 | Paved parking, HSG B |
| 6,787 | 61 | >75% Grass cover, Good, HSG B |
| 6,887 | 62 | Weighted Average |
| 6,787 | | 98.55% Pervious Area |
| 100 | | 1.45% Impervious Area |

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

### Subcatchment I: Area I



## Summary for Subcatchment J: Area J

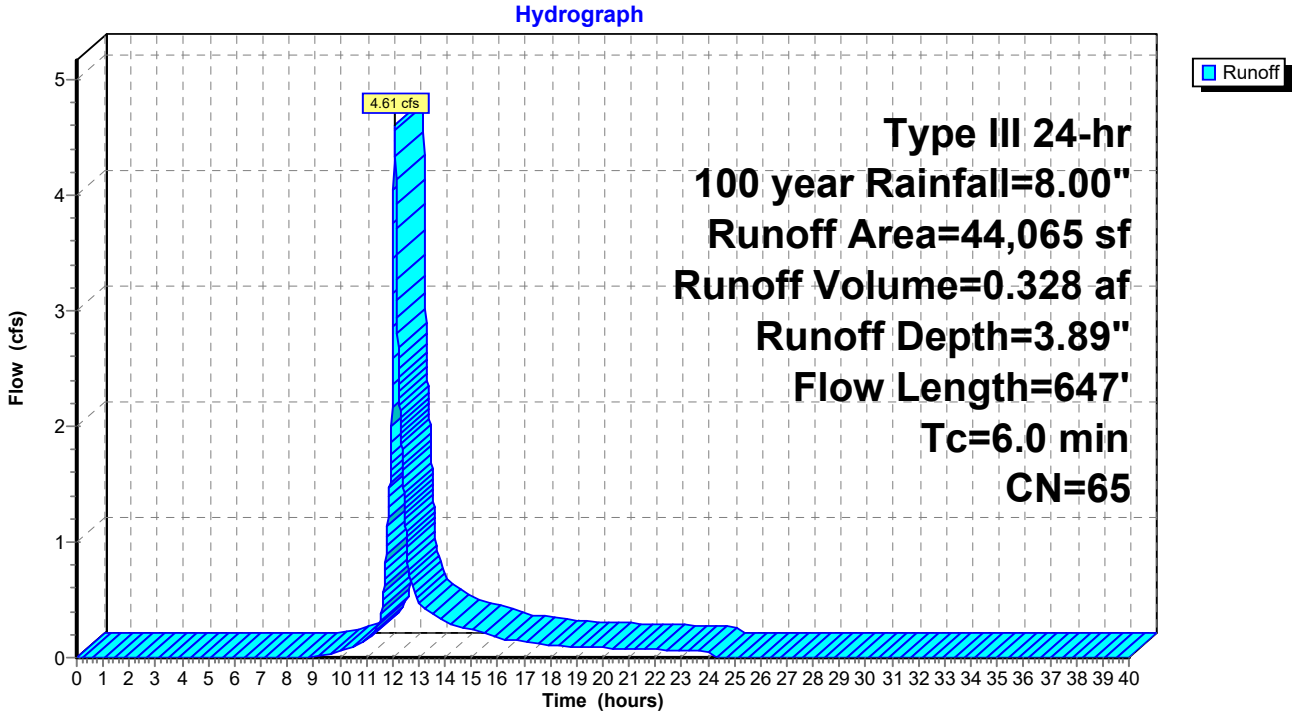
Runoff = 4.61 cfs @ 12.09 hrs, Volume= 0.328 af, Depth= 3.89"
Routed to Link SP2 : Study Point 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 year Rainfall=8.00"

| Area (sf) | CN | Description |
|---|---|---|
| 6,254 | 98 | Paved parking, HSG B |
| 10,778 | 55 | Woods, Good, HSG B |
| 27,033 | 61 | >75% Grass cover, Good, HSG B |
| 44,065 | 65 | Weighted Average |
| 37,811 | | 85.81% Pervious Area |
| 6,254 | | 14.19% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.5 | 70 | 0.1500 | 0.34 | | **Sheet Flow, Dock Road Grass** Grass: Short n= 0.150 P2= 2.90" |
| 0.3 | 30 | 0.1000 | 1.96 | | **Sheet Flow, Dock Road** Smooth surfaces n= 0.011 P2= 2.90" |
| 1.4 | 547 | 0.1000 | 6.42 | | **Shallow Concentrated Flow, Dock Road Gutter** Paved Kv= 20.3 fps |
| 5.2 | 647 | Total, Increased to minimum Tc = 6.0 min | | | |

## Subcatchment J: Area J



## Summary for Subcatchment K: Area K

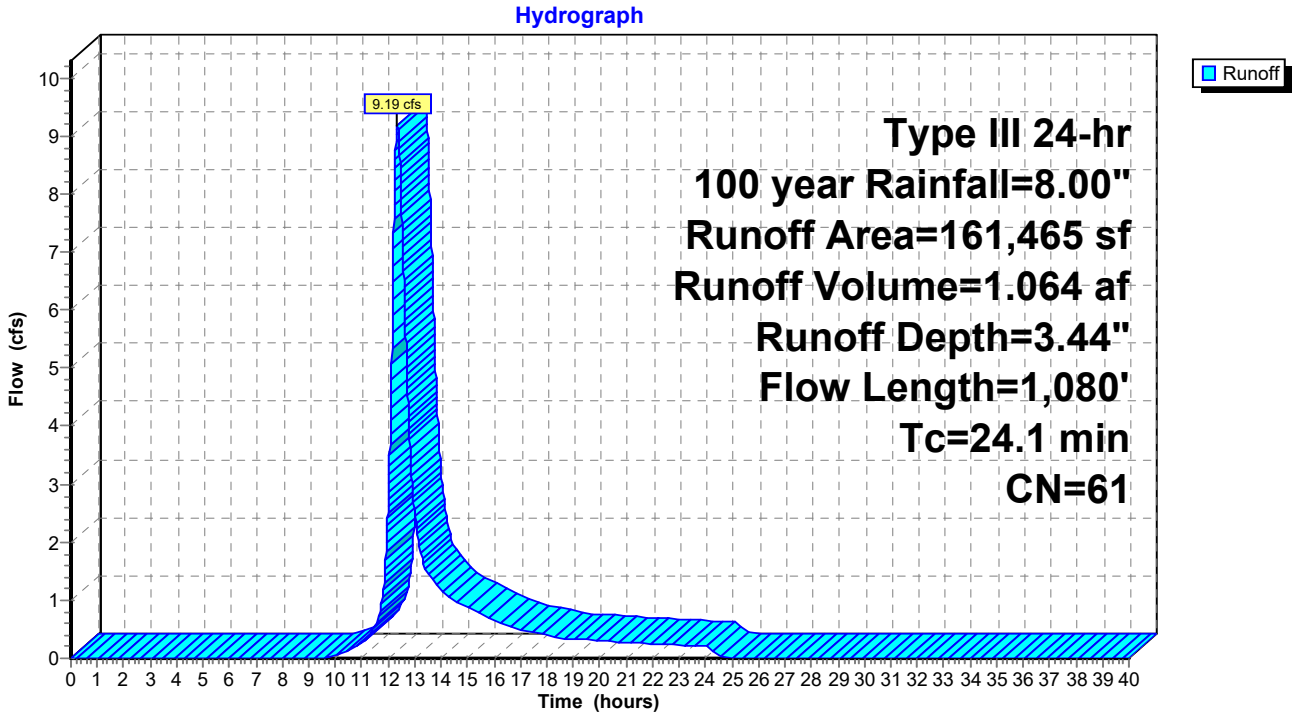
Runoff = 9.19 cfs @ 12.35 hrs, Volume= 1.064 af, Depth= 3.44"
Routed to Link SP6 : Study Point 6

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 year Rainfall=8.00"

| Area (sf) | CN | Description |
|---|---|---|
| 18,878 | 98 | Paved parking, HSG B |
| 112,994 | 55 | Woods, Good, HSG B |
| 29,593 | 61 | >75% Grass cover, Good, HSG B |
| 161,465 | 61 | Weighted Average |
| 142,587 | | 88.31% Pervious Area |
| 18,878 | | 11.69% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 15.9 | 76 | 0.0100 | 0.08 | | **Sheet Flow,** Grass: Dense n= 0.240 P2= 2.90" |
| 4.7 | 25 | 0.2500 | 0.09 | | **Sheet Flow, Steep Slope - Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 2.90" |
| 0.6 | 50 | 0.3000 | 1.37 | | **Shallow Concentrated Flow, Steep Slope Concentrated Flow** Forest w/Heavy Litter Kv= 2.5 fps |
| 2.9 | 929 | 0.0700 | 5.37 | | **Shallow Concentrated Flow, Dock Road Gutter Flow** Paved Kv= 20.3 fps |
| 24.1 | 1,080 | Total | | | |

## Subcatchment K: Area K



## Summary for Subcatchment P: Area P

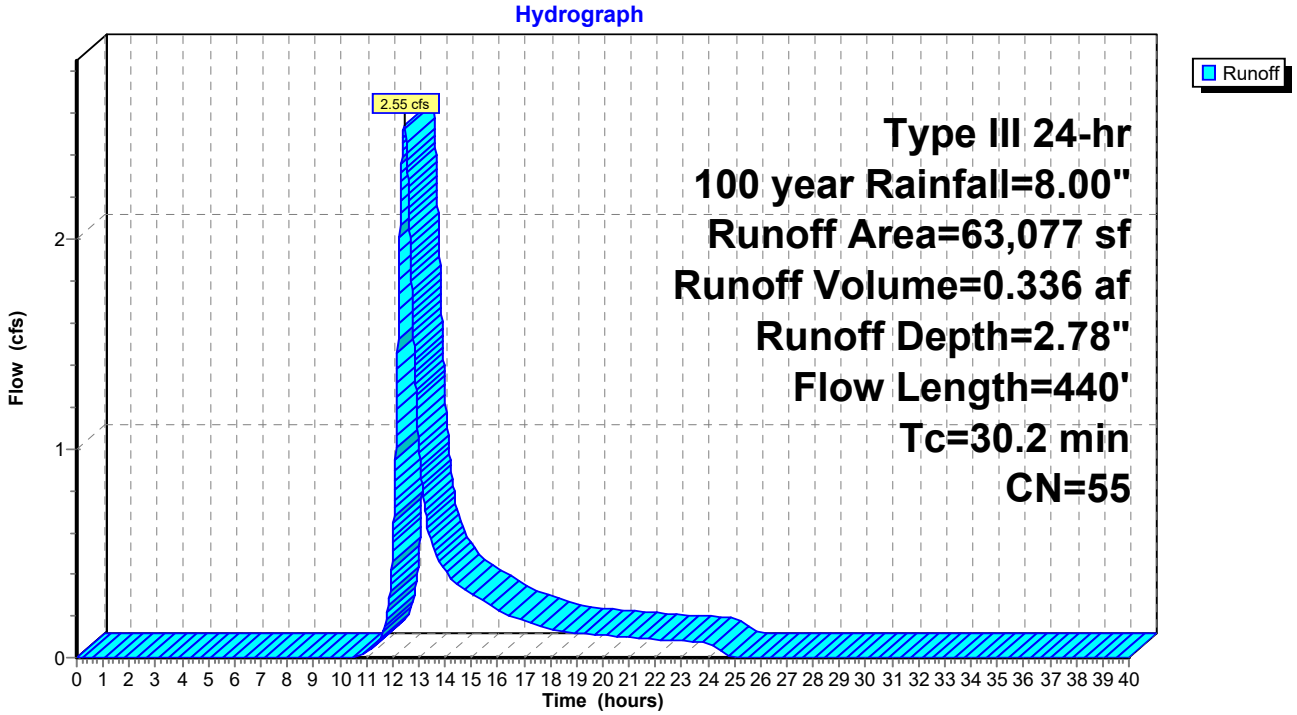
Runoff = 2.55 cfs @ 12.45 hrs, Volume= 0.336 af, Depth= 2.78"
Routed to Link SP7 : Study Point 7

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 year Rainfall=8.00"

| Area (sf) | CN | Description |
|---|---|---|
| 59,457 | 55 | Woods, Good, HSG B |
| 3,620 | 61 | >75% Grass cover, Good, HSG B |
| 63,077 | 55 | Weighted Average |
| 63,077 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 22.6 | 100 | 0.0200 | 0.07 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.90" |
| 3.6 | 10 | 0.0200 | 0.05 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.90" |
| 4.0 | 330 | 0.3000 | 1.37 | | **Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps |
| 30.2 | 440 | Total | | | |

### Subcatchment P: Area P



## Summary for Pond A-1': StormTrap System A-1

Inflow Area = 3.417 ac, 40.68% Impervious, Inflow Depth = 5.16" for 100 year event
Inflow = 11.89 cfs @ 12.40 hrs, Volume= 1.469 af
Outflow = 5.21 cfs @ 12.85 hrs, Volume= 1.469 af, Atten= 56%, Lag= 27.1 min
Discarded = 0.41 cfs @ 10.01 hrs, Volume= 1.024 af
Primary = 4.80 cfs @ 12.85 hrs, Volume= 0.444 af
Routed to Pond A-2' : StormTrap System A-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 132.94' @ 12.85 hrs Surf.Area= 3,537 sf Storage= 26,853 cf

Plug-Flow detention time= 425.3 min calculated for 1.468 af (100% of inflow)
Center-of-Mass det. time= 425.5 min ( 1,258.5 - 833.0 )

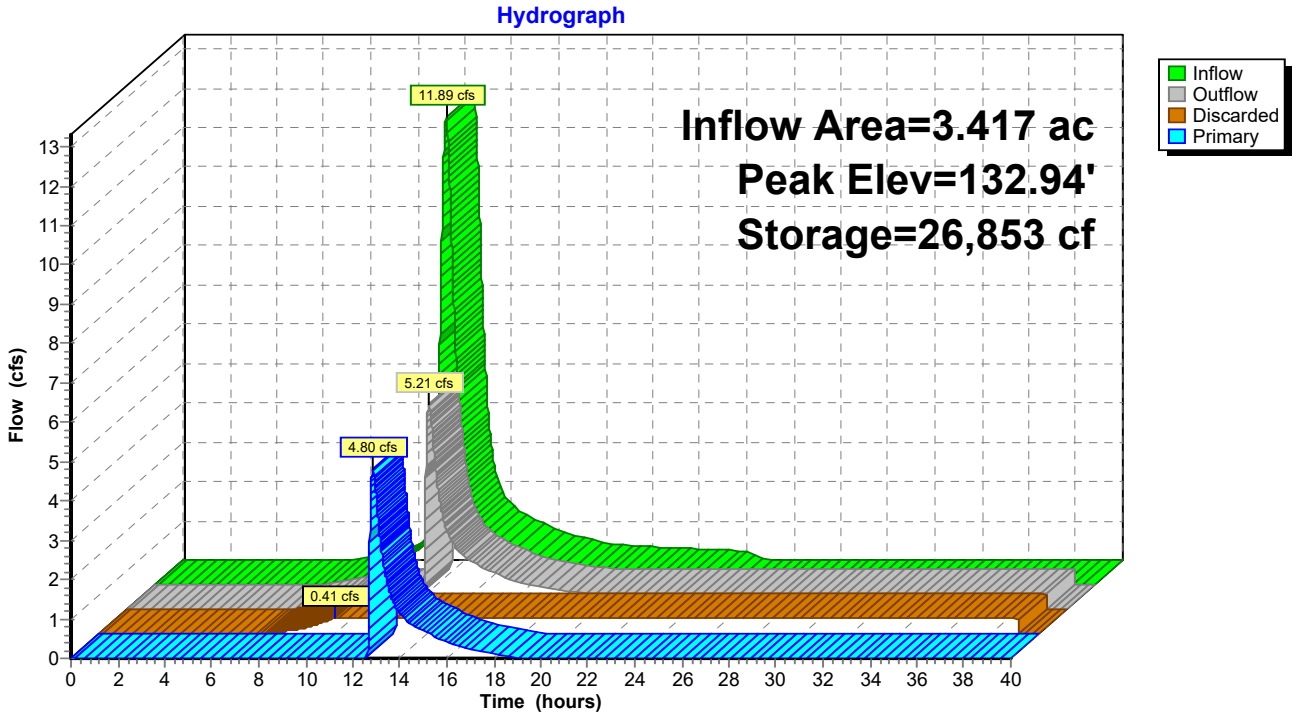
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 124.06' | 27,235 cf | **StormTrap DoubleTrap 8-6** x 16<br>Inside= 101.7"W x 102.0"H => 66.71 sf x 15.40'L = 1,027.0 cf<br>Outside= 101.7"W x 114.0"H => 80.55 sf x 15.40'L = 1,240.2 cf<br>16 Chambers in 4 Rows<br>33.92' x 61.58' Core + 6.66' Border = 47.23' x 74.90' System |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 124.06' | **5.000 in/hr Exfiltration over Surface area** Phase-In= 0.01' |
| #2 | Primary | 132.00' | **24.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |

**Discarded OutFlow** Max=0.41 cfs @ 10.01 hrs HW=124.56' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.41 cfs)

**Primary OutFlow** Max=4.80 cfs @ 12.85 hrs HW=132.94' TW=129.47' (Dynamic Tailwater)
↑—**2=Orifice/Grate** (Orifice Controls 4.80 cfs @ 3.30 fps)

## Pond A-1': StormTrap System A-1



## Summary for Pond A-2': StormTrap System A-2

Inflow Area = 4.577 ac, 46.57% Impervious, Inflow Depth = 2.74" for 100 year event
Inflow = 7.56 cfs @ 12.11 hrs, Volume= 1.045 af
Outflow = 4.41 cfs @ 13.05 hrs, Volume= 1.045 af, Atten= 42%, Lag= 56.1 min
Discarded = 0.37 cfs @ 10.53 hrs, Volume= 0.640 af
Primary = 4.04 cfs @ 13.05 hrs, Volume= 0.405 af
Routed to Link SP2 : Study Point 2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 129.86' @ 13.05 hrs Surf.Area= 3,199 sf Storage= 15,265 cf

Plug-Flow detention time= 215.1 min calculated for 1.045 af (100% of inflow)
Center-of-Mass det. time= 215.2 min ( 1,027.9 - 812.7 )

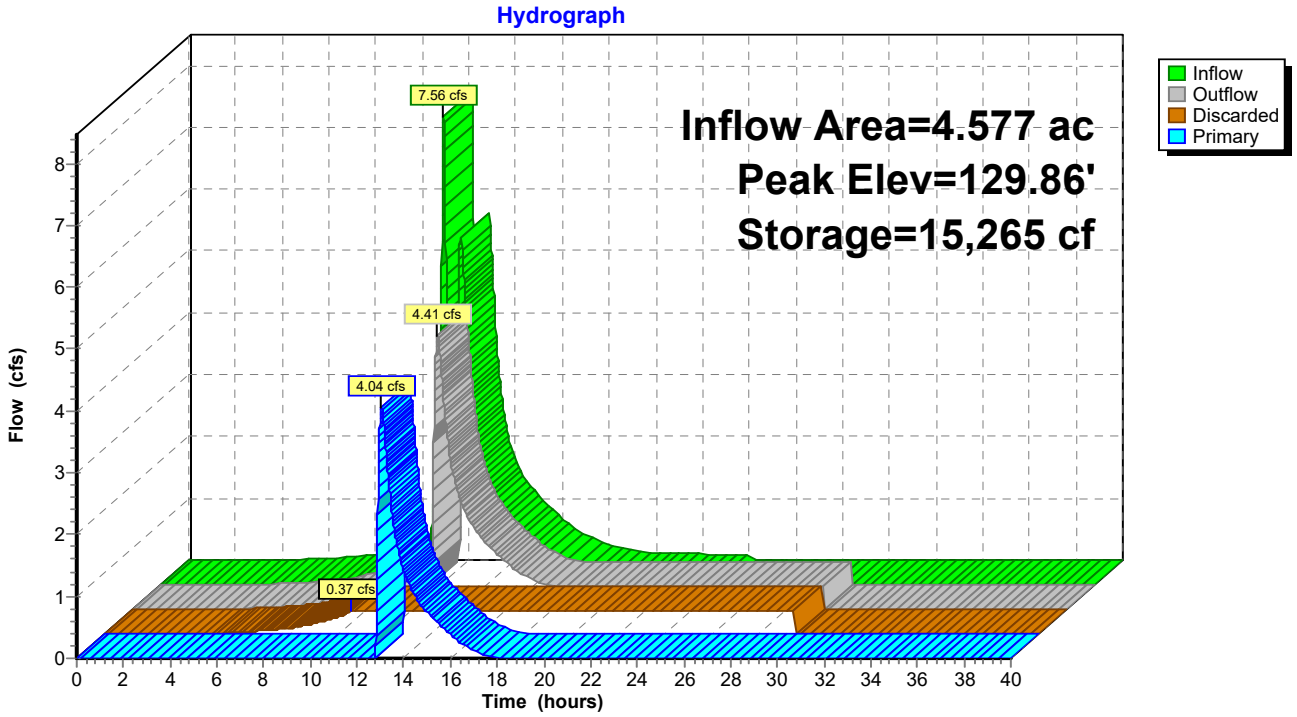
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 124.06' | 24,501 cf | **StormTrap DoubleTrap 8-6** x 12<br>Inside= 101.7"W x 102.0"H => 66.71 sf x 15.40'L = 1,027.0 cf<br>Outside= 101.7"W x 114.0"H => 80.55 sf x 15.40'L = 1,240.2 cf<br>12 Chambers in 2 Rows<br>16.96' x 92.38' Core + 6.66' Border = 30.27' x 105.69' System |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 124.06' | **5.000 in/hr Exfiltration over Surface area** Phase-In= 0.01' |
| #2 | Primary | 129.00' | **24.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |

**Discarded OutFlow** Max=0.37 cfs @ 10.53 hrs HW=124.56' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.37 cfs)

**Primary OutFlow** Max=4.04 cfs @ 13.05 hrs HW=129.86' TW=0.00' (Dynamic Tailwater)
↑—**2=Orifice/Grate** (Orifice Controls 4.04 cfs @ 3.15 fps)

## Pond A-2': StormTrap System A-2



## Summary for Pond B': Storm Trap System B

Inflow Area = 10.193 ac, 28.05% Impervious, Inflow Depth = 4.35" for 100 year event
Inflow = 37.31 cfs @ 12.24 hrs, Volume= 3.695 af
Outflow = 6.38 cfs @ 13.01 hrs, Volume= 3.695 af, Atten= 83%, Lag= 46.4 min
Discarded = 0.94 cfs @ 10.28 hrs, Volume= 2.364 af
Primary = 5.44 cfs @ 13.01 hrs, Volume= 1.331 af
Routed to Link SP4 : Study Point 4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 81.57' @ 13.01 hrs Surf.Area= 8,092 sf Storage= 73,681 cf

Plug-Flow detention time= 424.4 min calculated for 3.694 af (100% of inflow)
Center-of-Mass det. time= 424.5 min ( 1,261.7 - 837.2 )

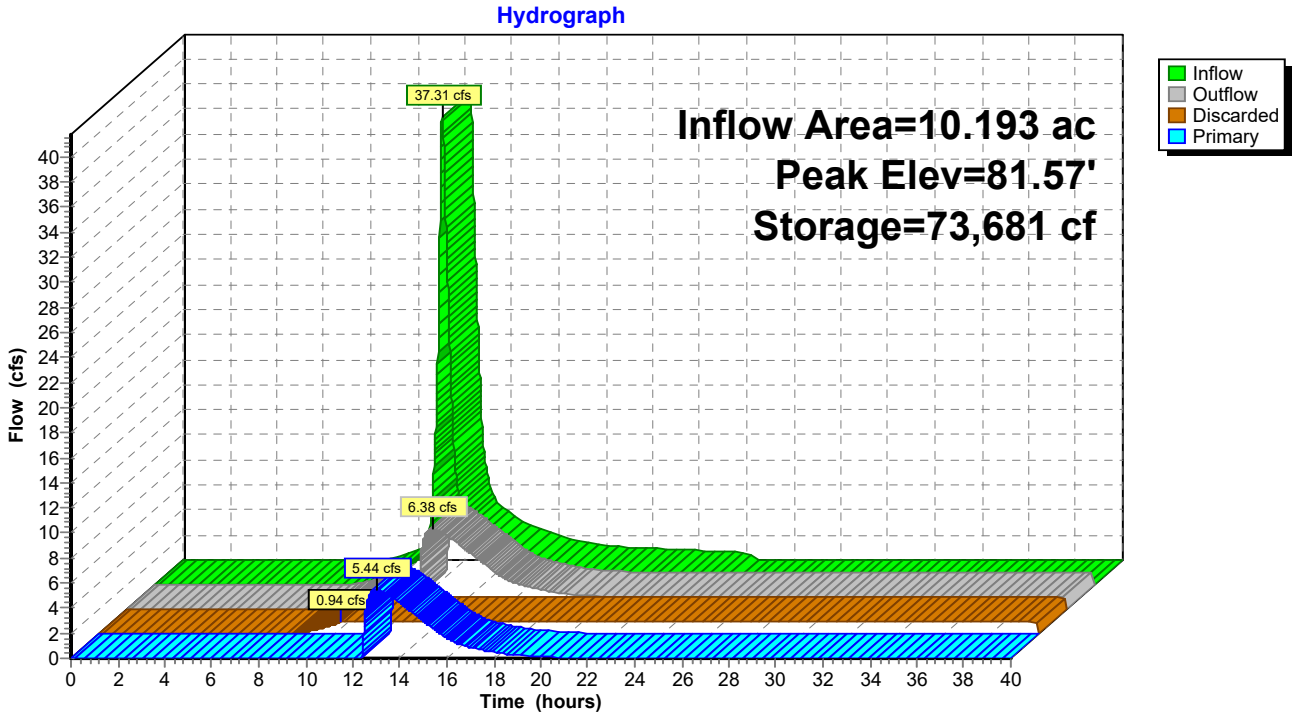
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 71.00' | 109,769 cf | **StormTrap DoubleTrap 15-0** x 45<br>Inside= 101.7"W x 180.0"H => 117.67 sf x 15.40'L = 1,811.6 cf<br>Outside= 101.7"W x 192.0"H => 135.67 sf x 15.40'L = 2,088.7 cf<br>45 Chambers in 9 Rows<br>76.31' x 76.98' Core + 6.66' Border = 89.63' x 90.29' System |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 71.00' | **5.000 in/hr Exfiltration over Surface area** |
| #2 | Primary | 79.00' | **12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |

**Discarded OutFlow** Max=0.94 cfs @ 10.28 hrs HW=71.50' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.94 cfs)

**Primary OutFlow** Max=5.44 cfs @ 13.01 hrs HW=81.57' TW=0.00' (Dynamic Tailwater)
↑—**2=Orifice/Grate** (Orifice Controls 5.44 cfs @ 6.93 fps)

## Pond B': Storm Trap System B



## Summary for Pond C': Storm Trap System C

Inflow Area = 4.522 ac, 46.24% Impervious, Inflow Depth = 5.16" for 100 year event
Inflow = 20.09 cfs @ 12.22 hrs, Volume= 1.944 af
Outflow = 9.97 cfs @ 12.52 hrs, Volume= 1.827 af, Atten= 50%, Lag= 18.3 min
Discarded = 0.32 cfs @ 9.06 hrs, Volume= 0.833 af
Primary = 9.66 cfs @ 12.52 hrs, Volume= 0.994 af
Routed to Link SP5 : Study Point 5

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 79.30' @ 12.52 hrs Surf.Area= 2,733 sf Storage= 30,889 cf

Plug-Flow detention time= 323.1 min calculated for 1.827 af (94% of inflow)
Center-of-Mass det. time= 291.0 min ( 1,112.4 - 821.3 )

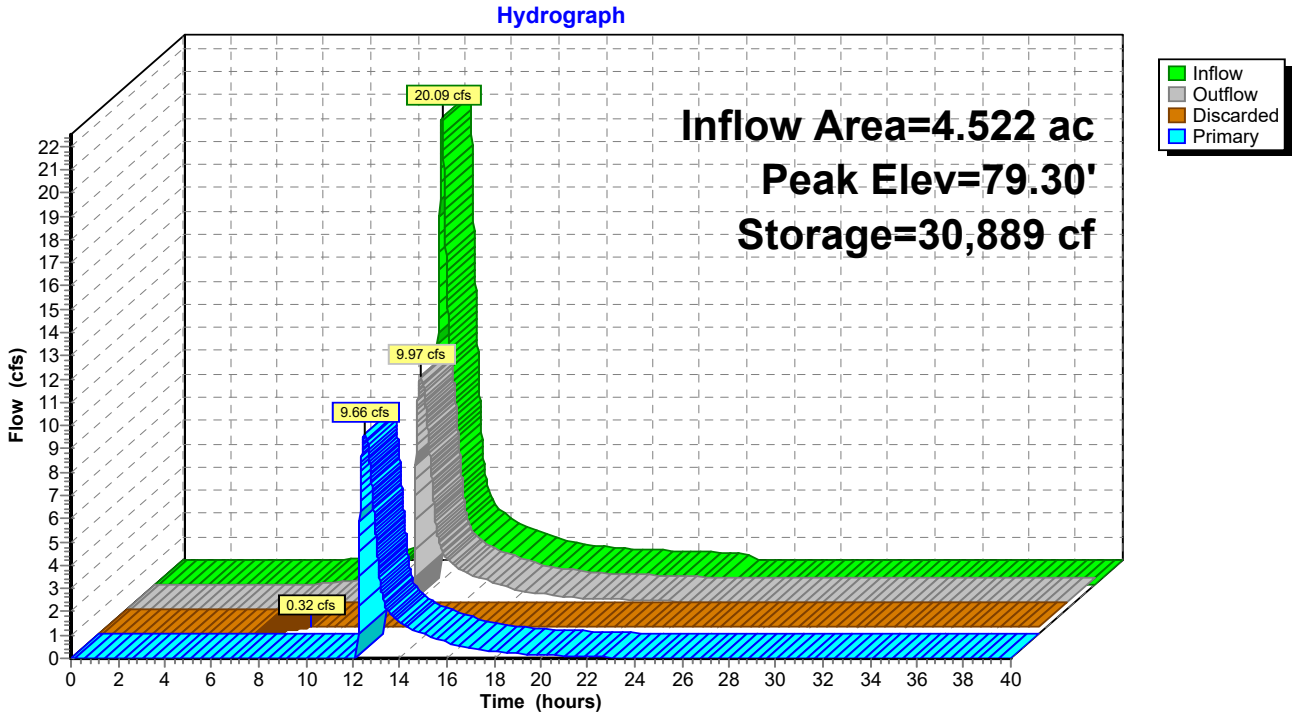
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 66.00' | 33,796 cf | **StormTrap DoubleTrap 14-0** x 10<br>Inside= 101.7"W x 168.0"H => 109.55 sf x 15.40'L = 1,686.7 cf<br>Outside= 101.7"W x 180.0"H => 127.19 sf x 15.40'L = 1,958.2 cf<br>10 Chambers in 2 Rows<br>16.96' x 76.98' Core + 6.66' Border = 30.27' x 90.29' System |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 66.00' | **5.000 in/hr Exfiltration over Surface area** |
| #2 | Primary | 76.00' | **15.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads |

**Discarded OutFlow** Max=0.32 cfs @ 9.06 hrs HW=66.50' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.32 cfs)

**Primary OutFlow** Max=9.66 cfs @ 12.52 hrs HW=79.30' TW=0.00' (Dynamic Tailwater)
↑**2=Orifice/Grate** (Orifice Controls 9.66 cfs @ 7.87 fps)

## Pond C': Storm Trap System C



## Summary for Pond D': Drywell

Inflow Area = 0.141 ac, 0.00% Impervious, Inflow Depth = 3.44" for 100 year event
Inflow = 0.56 cfs @ 12.09 hrs, Volume= 0.041 af
Outflow = 0.50 cfs @ 12.14 hrs, Volume= 0.041 af, Atten= 11%, Lag= 2.6 min
Discarded = 0.01 cfs @ 11.27 hrs, Volume= 0.021 af
Primary = 0.49 cfs @ 12.14 hrs, Volume= 0.019 af
Routed to Link SP4 : Study Point 4

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 77.58' @ 12.14 hrs Surf.Area= 0.003 ac Storage= 0.009 af

Plug-Flow detention time= 166.2 min calculated for 0.041 af (100% of inflow)
Center-of-Mass det. time= 166.2 min ( 1,010.2 - 843.9 )

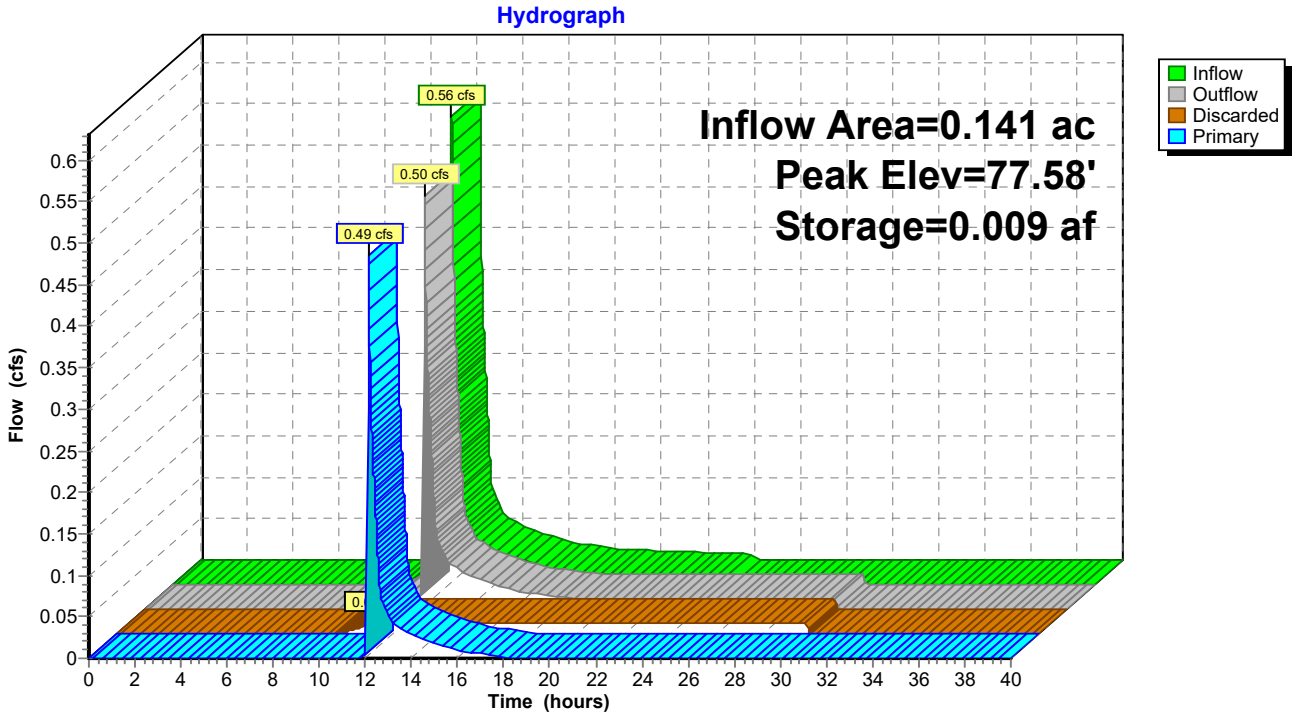
| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 74.27' | 0.013 af | **12.00'D x 5.00'H Vertical Cone/Cylinder** |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 74.27' | **5.000 in/hr Exfiltration over Surface area** Phase-In= 0.01' |
| #2 | Primary | 77.27' | **18.0" Vert. Outlet Pipe** C= 0.600 Limited to weir flow at low heads |

**Discarded OutFlow** Max=0.01 cfs @ 11.27 hrs HW=74.32' (Free Discharge)
**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

**Primary OutFlow** Max=0.48 cfs @ 12.14 hrs HW=77.57' TW=0.00' (Dynamic Tailwater)
**2=Outlet Pipe** (Orifice Controls 0.48 cfs @ 1.88 fps)

## Pond D': Drywell



## Summary for Pond E': Drywells

Inflow Area = 0.587 ac, 8.84% Impervious, Inflow Depth = 3.78" for 100 year event
Inflow = 2.59 cfs @ 12.09 hrs, Volume= 0.185 af
Outflow = 0.09 cfs @ 11.51 hrs, Volume= 0.185 af, Atten= 96%, Lag= 0.0 min
Discarded = 0.09 cfs @ 11.51 hrs, Volume= 0.185 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 71.31' @ 16.23 hrs Surf.Area= 0.018 ac Storage= 0.107 af

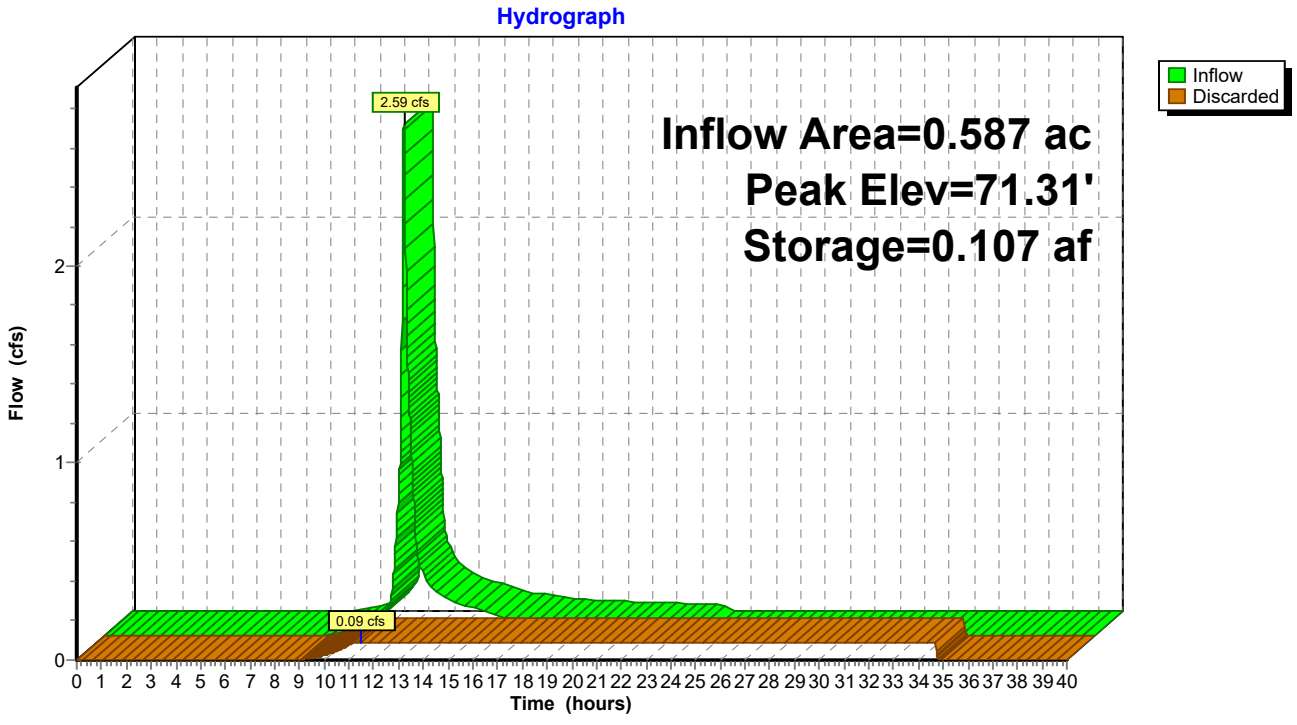
Plug-Flow detention time= 515.8 min calculated for 0.185 af (100% of inflow)
Center-of-Mass det. time= 515.8 min ( 1,353.2 - 837.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 65.45' | 0.127 af | **12.00'D x 7.00'H Vertical Cone/Cylinder**x 7 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 65.45' | **5.000 in/hr Exfiltration over Surface area** Phase-In= 0.01' |

**Discarded OutFlow** Max=0.09 cfs @ 11.51 hrs HW=65.52' (Free Discharge)
**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

## Pond E': Drywells



## Summary for Pond F': Drywells

Inflow Area = 0.214 ac, 42.21% Impervious, Inflow Depth = 5.27" for 100 year event
Inflow = 1.32 cfs @ 12.09 hrs, Volume= 0.094 af
Outflow = 0.05 cfs @ 11.18 hrs, Volume= 0.094 af, Atten= 96%, Lag= 0.0 min
Discarded = 0.05 cfs @ 11.18 hrs, Volume= 0.094 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 95.86' @ 15.42 hrs Surf.Area= 0.010 ac Storage= 0.050 af

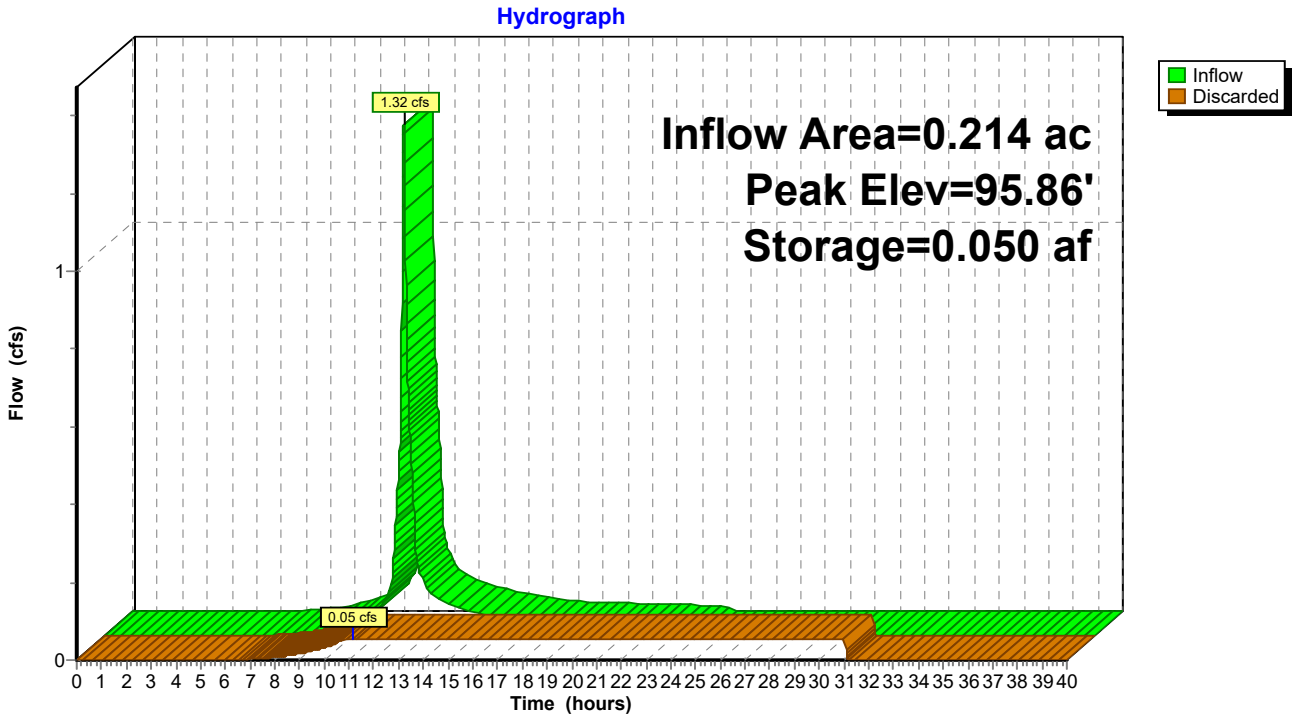
Plug-Flow detention time= 401.6 min calculated for 0.094 af (100% of inflow)
Center-of-Mass det. time= 401.6 min ( 1,211.3 - 809.7 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 91.00' | 0.052 af | **12.00'D x 5.00'H Drywell** x 4 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 91.00' | **5.000 in/hr Exfiltration over Surface area** Phase-In= 0.01' |

**Discarded OutFlow** Max=0.05 cfs @ 11.18 hrs HW=91.05' (Free Discharge)
**1=Exfiltration** (Exfiltration Controls 0.05 cfs)

## Pond F': Drywells



## Summary for Pond G': Drywells

Inflow Area = 0.152 ac, 65.72% Impervious, Inflow Depth = 6.21" for 100 year event
Inflow = 1.07 cfs @ 12.09 hrs, Volume= 0.079 af
Outflow = 0.05 cfs @ 11.21 hrs, Volume= 0.079 af, Atten= 95%, Lag= 0.0 min
Discarded = 0.05 cfs @ 11.21 hrs, Volume= 0.079 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 89.62' @ 14.44 hrs Surf.Area= 0.010 ac Storage= 0.038 af

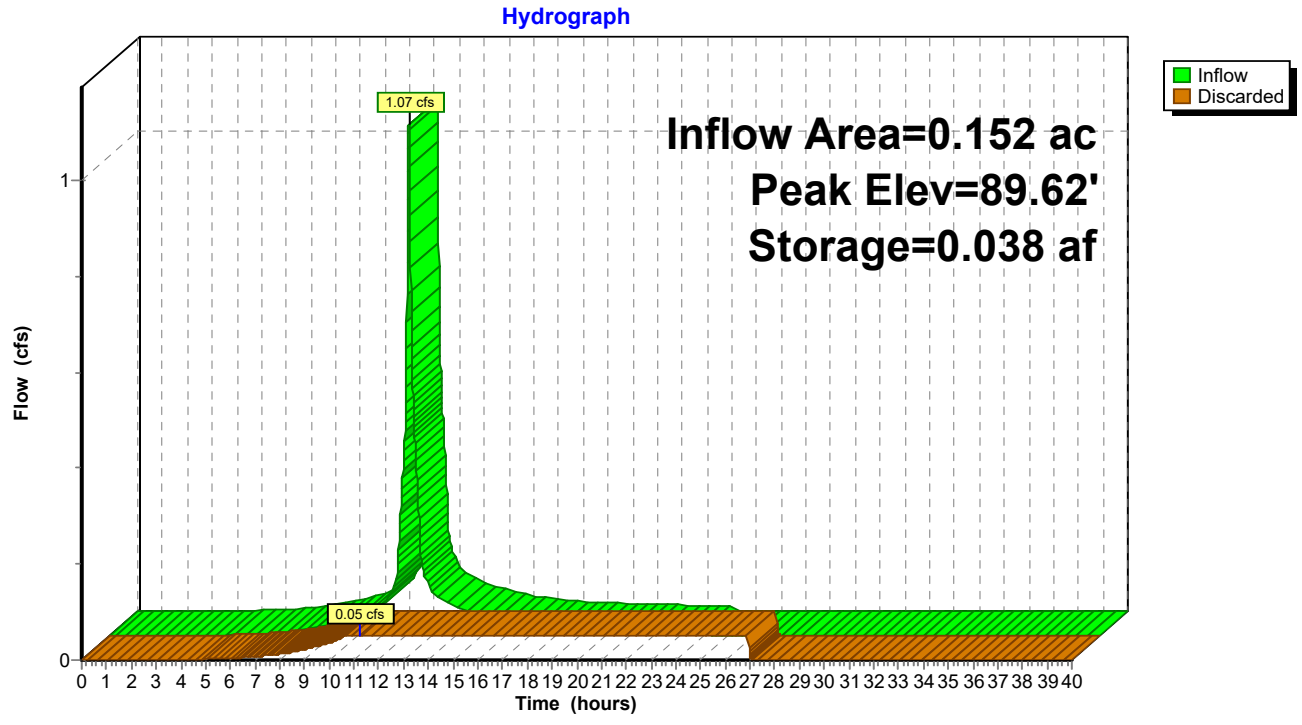
Plug-Flow detention time= 280.9 min calculated for 0.079 af (100% of inflow)
Center-of-Mass det. time= 280.9 min ( 1,071.3 - 790.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 86.00' | 0.052 af | **12.00'D x 5.00'H Drywell** x 4 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 86.00' | **5.000 in/hr Exfiltration over Surface area** Phase-In= 0.01' |

**Discarded OutFlow** Max=0.05 cfs @ 11.21 hrs HW=86.05' (Free Discharge)
**1=Exfiltration** (Exfiltration Controls 0.05 cfs)

### Pond G': Drywells



## Summary for Pond H': Drywells

Inflow Area = 0.070 ac, 77.86% Impervious, Inflow Depth = 6.81" for 100 year event
Inflow = 0.52 cfs @ 12.08 hrs, Volume= 0.040 af
Outflow = 0.03 cfs @ 11.06 hrs, Volume= 0.040 af, Atten= 95%, Lag= 0.0 min
Discarded = 0.03 cfs @ 11.06 hrs, Volume= 0.040 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 83.53' @ 14.21 hrs Surf.Area= 0.005 ac Storage= 0.018 af

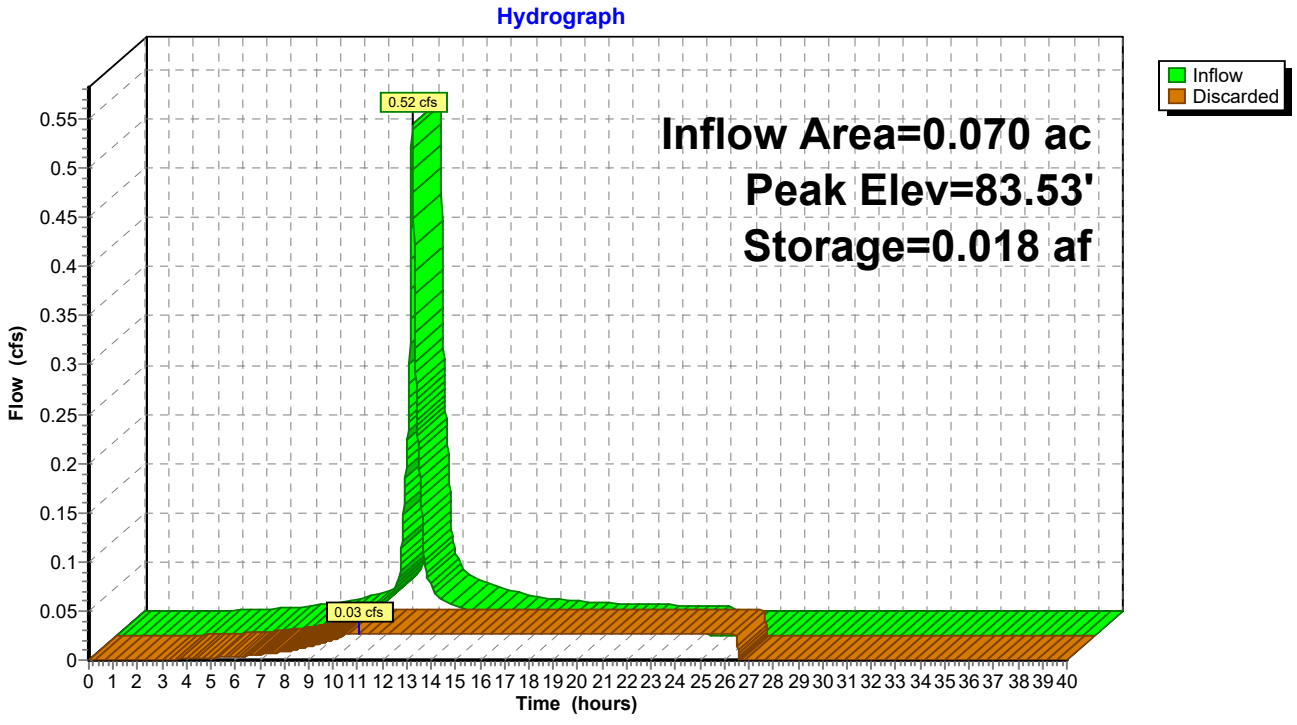
Plug-Flow detention time= 263.2 min calculated for 0.040 af (100% of inflow)
Center-of-Mass det. time= 263.1 min ( 1,039.1 - 775.9 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 80.00' | 0.026 af | **12.00'D x 5.00'H Drywell** x 2 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 80.00' | **5.000 in/hr Exfiltration over Surface area** Phase-In= 0.01' |

**Discarded OutFlow** Max=0.03 cfs @ 11.06 hrs HW=80.05' (Free Discharge)
**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

## Pond H': Drywells



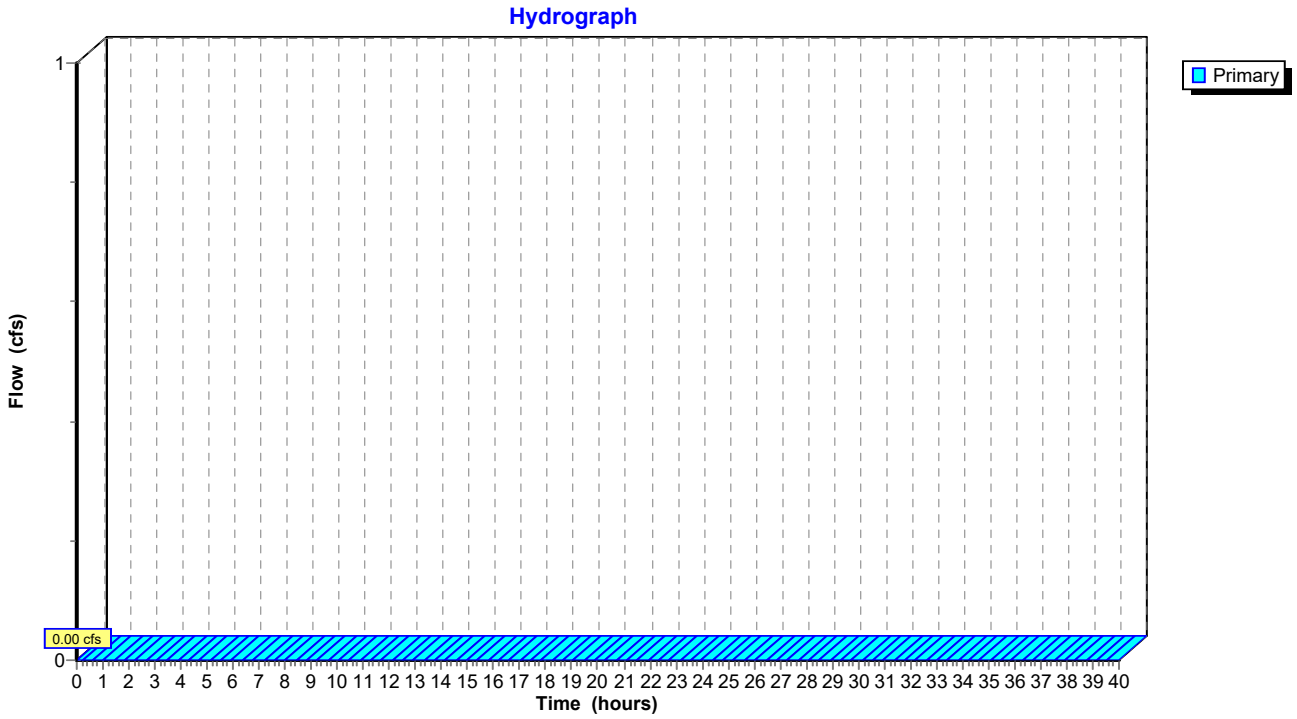
## Summary for Link SP1: Study Point 1

[43] Hint: Has no inflow (Outflow=Zero)

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

## Link SP1: Study Point 1

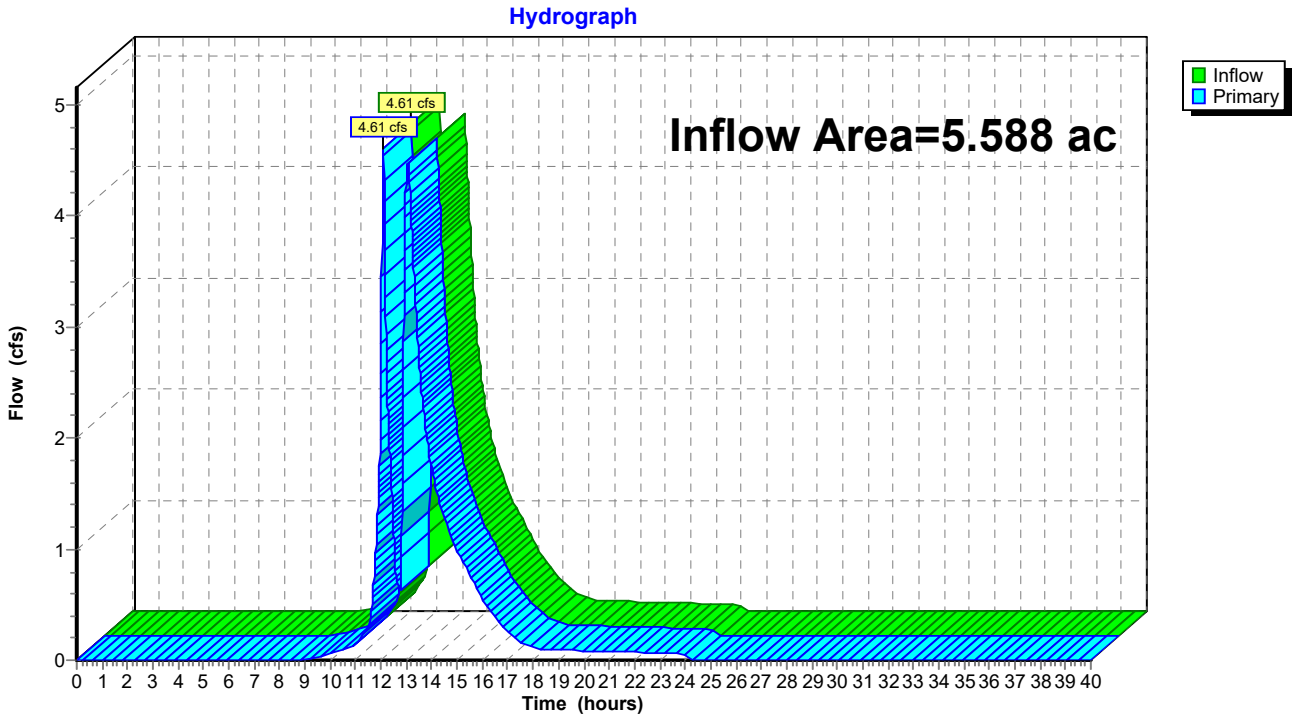


## Summary for Link SP2: Study Point 2

Inflow Area = 5.588 ac, 40.71% Impervious, Inflow Depth = 1.58" for 100 year event
Inflow = 4.61 cfs @ 12.09 hrs, Volume= 0.734 af
Primary = 4.61 cfs @ 12.09 hrs, Volume= 0.734 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

## Link SP2: Study Point 2

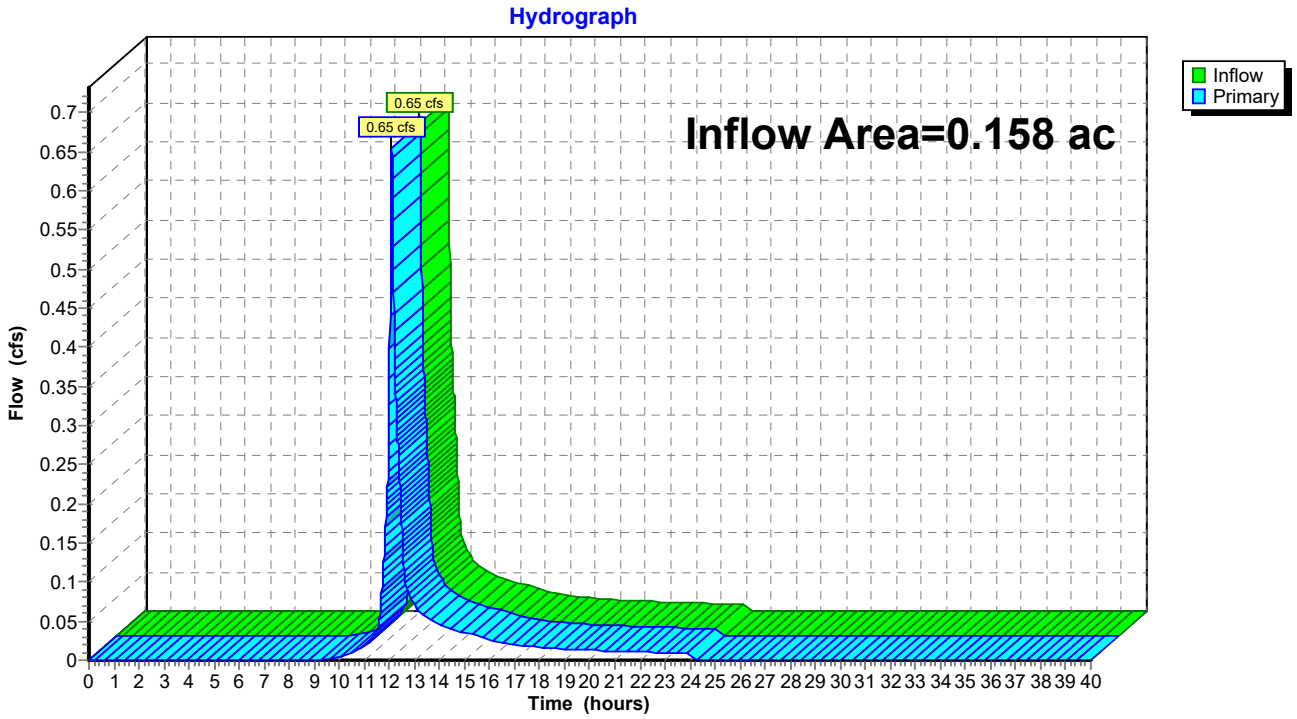


## Summary for Link SP3: Study Point 3

Inflow Area = 0.158 ac, 1.45% Impervious, Inflow Depth = 3.56" for 100 year event
Inflow = 0.65 cfs @ 12.09 hrs, Volume= 0.047 af
Primary = 0.65 cfs @ 12.09 hrs, Volume= 0.047 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

## Link SP3: Study Point 3

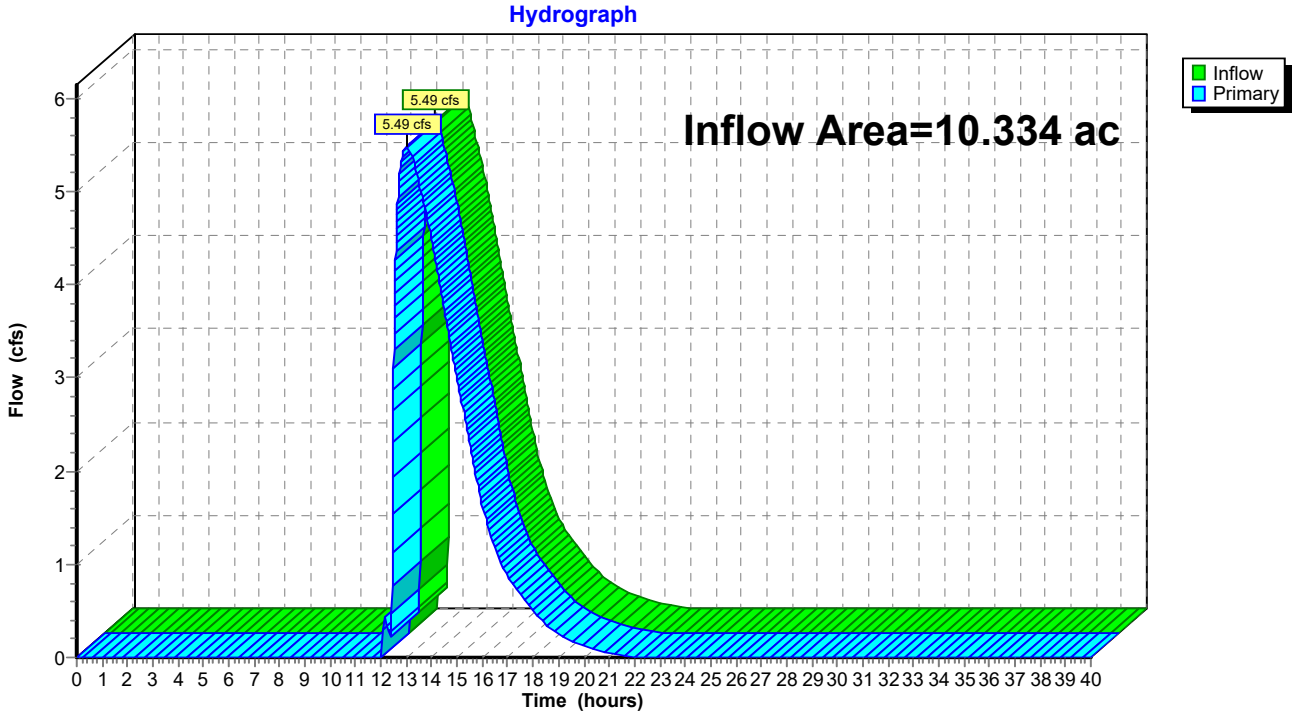


## Summary for Link SP4: Study Point 4

Inflow Area = 10.334 ac, 27.66% Impervious, Inflow Depth = 1.57" for 100 year event
Inflow = 5.49 cfs @ 13.00 hrs, Volume= 1.350 af
Primary = 5.49 cfs @ 13.00 hrs, Volume= 1.350 af, Atten= 0%, Lag= 0.0 min
Routed to Link SP6 : Study Point 6

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

## Link SP4: Study Point 4

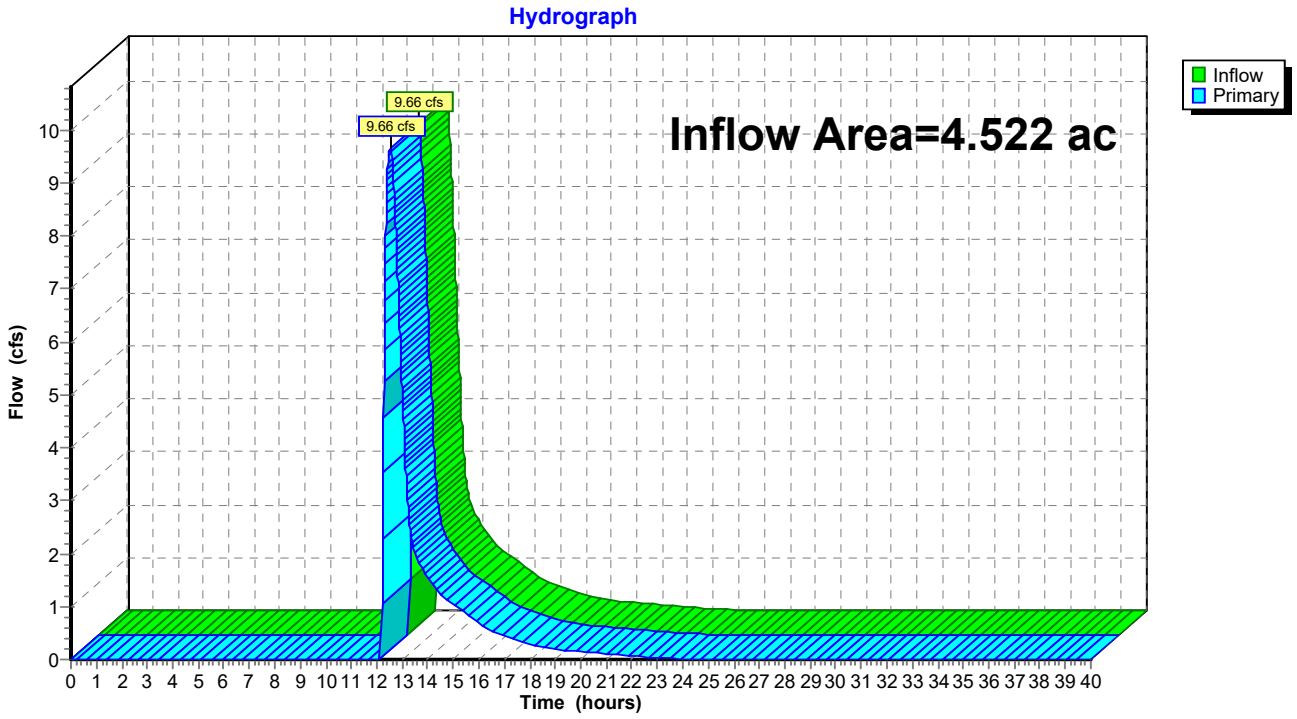


## Summary for Link SP5: Study Point 5

Inflow Area = 4.522 ac, 46.24% Impervious, Inflow Depth = 2.64" for 100 year event
Inflow = 9.66 cfs @ 12.52 hrs, Volume= 0.994 af
Primary = 9.66 cfs @ 12.52 hrs, Volume= 0.994 af, Atten= 0%, Lag= 0.0 min
Routed to Link SP6 : Study Point 6

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

## Link SP5: Study Point 5

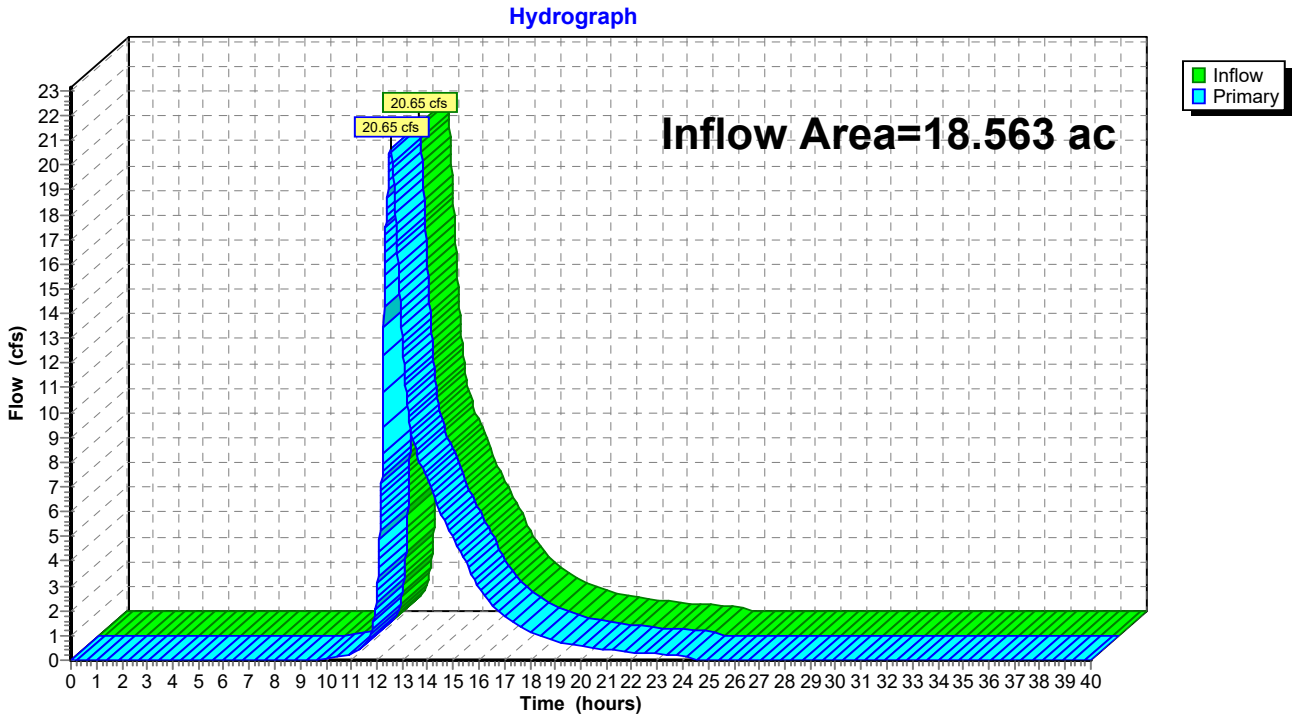


## Summary for Link SP6: Study Point 6

Inflow Area = 18.563 ac, 29.00% Impervious, Inflow Depth = 2.20" for 100 year event
Inflow = 20.65 cfs @ 12.54 hrs, Volume= 3.409 af
Primary = 20.65 cfs @ 12.54 hrs, Volume= 3.409 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

## Link SP6: Study Point 6

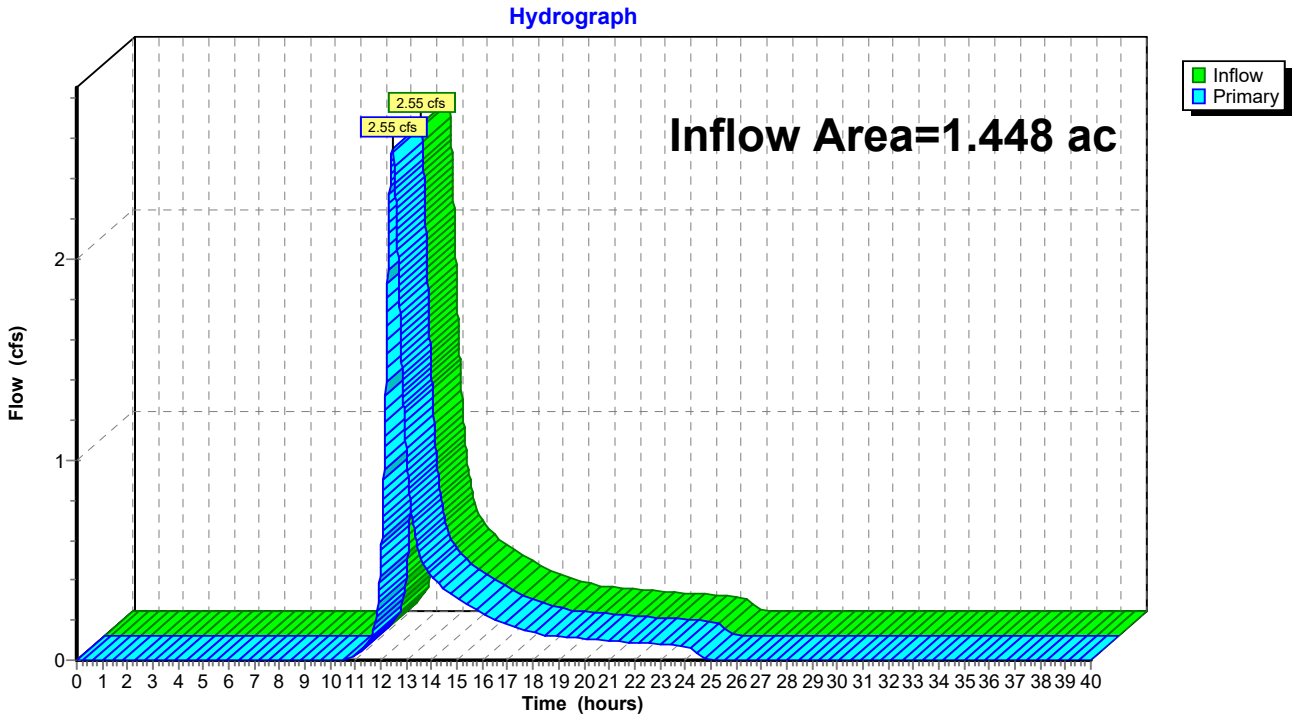


## Summary for Link SP7: Study Point 7

Inflow Area = 1.448 ac, 0.00% Impervious, Inflow Depth = 2.78" for 100 year event
Inflow = 2.55 cfs @ 12.45 hrs, Volume= 0.336 af
Primary = 2.55 cfs @ 12.45 hrs, Volume= 0.336 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-40.00 hrs, dt= 0.01 hrs

## Link SP7: Study Point 7



# Attachment C:
# Operations and Maintenance

# Operations & Maintenance Plan

The Site Operator is responsible for the operation and maintenance of the installed stormwater management practices to ensure proper functionality throughout the life of the system. Regular maintenance of stormwater management practices is important for flood control, structural integrity, and water quality. The following lists all procedures for inspection and maintenance for post-development Stormwater Management Practices:

**StormTrap/ Drywell and Catch Basin System:**

*Inspection Requirements:*

Drainage structures should be inspected at least once per year to ensure proper operation. Common system deficiencies which may occur over time, include but are not limited to:

- Excessive debris, silt or sediment build-up inside of structure/piping
- Cracks or other damage to the structure
- Collapsed or blocked pipes
- Excessive ponding around leaching structures

*Maintenance Requirements:*

Should problems be encountered during inspection, maintenance is required as follows:

- Debris, silt and sediment buildup shall be removed from structures.
- Pipes shall be cleaned of debris and/or sediment.
- Repair to existing structures/piping.

The Site Operator is required to maintain a log of all inspections and/or maintenance that is performed on the system. The log shall include all pertinent information necessary to record the results of the inspections as well as any necessary repair to the system.

**Landscape Areas:**

*Inspection Requirements:*

Landscaped areas should be inspected at least twice per year to ensure proper operation. Common system deficiencies which may occur over time, include but are not limited to:

- Dead plants or turf areas resulting from drought or illness.
- Erosion from surface runoff.
- Sediment build-up in low areas.

*Maintenance Requirements:*

- Re-seeding/watering of dead lawn areas.
- Removal of sediment build-up.
- Re-grading and re-establishment of landscaping in eroded areas.
- Mowing and general landscape maintenance as required.

**Parking Areas:**

*Inspection Requirements:*

Parking and paved areas should be inspected at least twice per year to ensure proper operation. Common system deficiencies which may occur over time, include but are not limited to:

- Broken pavement or sink holes around drainage inlets.
- Evidence of ponding in intermittent low areas.
- Sand and Salt build up from snow operations.

*Maintenance Requirements:*

- Repairing of any damaged pavement or low areas.
- Sweeping and removing any sediment or debris on the pavement as necessary.

The Site Operator is required to maintain a log of all inspections and/or maintenance that is performed on the system. The log shall include all pertinent information necessary to record the results of the inspections as well as any necessary repair to the system.

# NYS Water Quality and Quantity Required
# Post Development - Study Point 2

**Input:**

| | | | | |
|---|---|---|---|---|
| Total Drainage Area | 243,413.2800 | square feet | 5.59 | acres |
| Impervious Area | 99,093.5463 | square feet | 2.27 | acres |
| Pervious Area | 144,319.7337 | square feet | 3.31 | acres |
| Rainfall as per Local Agency | N/A | inches | N/A | feet |
| P = 90% NYS rainfall | 1.5 | inches / day | | |
| i - 1-year storm | 2.8 | inches / day | | |
| i - 10-year storm | 5.0 | inches / day | | |
| i - 100-year storm | 9.0 | inches / day | | |
| % of WQv Provided by Infiltration Practices | 100 | percent | | |

**Provided Storage**

| Type | # of Chambers | CF | Provided (CF) |
|---|---|---|---|
| Storm Trap A Higher | 16 | 1,027.00 | 16,432 |
| Storm Trap A Lower | 12 | 1,027.00 | 12,324 |
| **Total Cubic Feet Provided** | | | **28,756** |

**Step 2: Total Pre-Treatment Volume (% of Water Quality Treatment Volume)**

**Pre-Treatment volume based on infiltration rate (fc) of underlying soils** — **fc = 5 inches per hour**

| | |
|---|---|
| If fc is < 2.0 inches per hour | 25% of WQv to be provided |
| If fc is > 2.0 inches per hour | 50% of WQv to be provided |
| If fc is > 5.0 inches per hour | 100% of WQv to be provided |

| | | | | |
|---|---|---|---|---|
| **Total Pre-Treatment Volume** | | **=** | **0.1454** | **acre-feet** |
| | | = | 6,335 | cubic feet |
| **PROVIDED** | **WQv** | **=** | **0.6601** | **acre-feet** |
| | | | 28,756 | cubic feet |

**Step 3: Total Water Quality Treatment Volume (WQv)**

**WQv = [(P)*(Rv)*(A)]/12**

**Total WQv = WQv + Pre-Treatment Volume**

| | | | |
|---|---|---|---|
| P | | 1.5 | inches |
| Rv | | 0.4164 | percent |
| A | | 5.59 | acres |
| **WQv** | **=** | **0.2908** | **acre-feet** |
| | = | 12,669.3570 | cubic feet |
| **Total WQv** | **=** | **0.4363** | **acre-feet** |
| | = | 19,004.0354 | cubic feet |

**Step 4-5: Calculate Runoff Reduction Volume (RRv)**

**RRv = (% of WQv Provided By Practice)(WQv Provided)**

| | | | |
|---|---|---|---|
| **RRv** | **=** | **0.6601** | **acre-feet** |
| | | 28,756 | cubic feet |

**Is RRV > WQv?** **Yes, No Other Practices Needed**

**Step 6: Apply Standard Practices**

**Not Applicable**

**Step 7: Apply Peak Flow Control Practices**

**Not Applicable**

# NYS Water Quality and Quantity Required
# Post Development - Study Point 6

**Input:**

| | | | | |
|---|---|---|---|---|
| Total Drainage Area | 808,604.2800 | square feet | 18.56 | acres |
| Impervious Area | 234,495.2412 | square feet | 5.38 | acres |
| Pervious Area | 574,109.0388 | square feet | 13.18 | acres |
| Rainfall as per Local Agency | N/A | inches | N/A | feet |
| P = 90% NYS rainfall | 1.5 | inches / day | | |
| i - 1-year storm | 2.8 | inches / day | | |
| i - 10-year storm | 5.0 | inches / day | | |
| i - 100-year storm | 9.0 | inches / day | | |
| % of WQv Provided by Infiltration Practices | 100 | percent | | |

**Provided Storage as per Local Agency**

| Type | # of Chambers Provided | CF/Galley | Provided (CF) |
|---|---|---|---|
| Drywell -12' Diameter x 5' ED | 1 | 100.88 | **504.40** |
| Storm Trap B | 45 | 1,811.60 | 81,522 |
| Storm Trap C | 10 | 1,686.70 | 16,867 |
| **Total Cubic Feet Provided** | | | **98,893** |

**Step 2: Total Pre-Treatment Volume (% of Water Quality Treatment Volume)**

**Pre-Treatment volume based on infiltration rate (fc) of underlying soils** **fc = 5 inches per hour**

| | |
|---|---|
| If fc is < 2.0 inches per hour | 25% of WQv to be provided |
| If fc is > 2.0 inches per hour | 50% of WQv to be provided |
| If fc is > 5.0 inches per hour | 100% of WQv to be provided |

| | | | |
|---|---|---|---|
| **Total Pre-Treatment Volume** | **=** | **0.3608** | **acre-feet** |
| | = | 15,717 | cubic feet |

**WQv Provided by Infiltration**

| | | | | |
|---|---|---|---|---|
| **PROVIDED** | **WQv** | **=** | **2.2703** | **acre-feet** |
| | | | 98,893 | cubic feet |

**Step 3: Total Water Quality Treatment Volume (WQv)**

**WQv = [(P)*(Rv)*(A)]/12**

**Total WQv = WQv + Pre-Treatment Volume**

| | | | |
|---|---|---|---|
| P | | 1.5 | inches |
| Rv | | 0.3110 | percent |
| A | | 18.56 | acres |
| **WQv** | **=** | **0.7216** | **acre-feet** |
| | = | 31,434.4914 | cubic feet |
| **Total WQv** | **=** | **1.0825** | **acre-feet** |
| | = | 47,151.7371 | cubic feet |

**Step 4-5: Calculate Runoff Reduction Volume (RRv)**

**RRv = (% of WQv Provided By Practice)(WQv Provided)**

| | | | |
|---|---|---|---|
| **RRv** | **=** | **2.2703** | **acre-feet** |
| | | 98,893 | cubic feet |

**Is RRV > WQv?** **Yes, No Other Practices Needed**

**Step 6: Apply Standard Practices**

**Not Applicable**

**Step 7: Apply Peak Flow Control Practices**

**Not Applicable**

# Attachment C:
# Operations and Maintenance

# Operations & Maintenance Plan

The Site Operator is responsible for the operation and maintenance of the installed stormwater management practices to ensure proper functionality throughout the life of the system. Regular maintenance of stormwater management practices is important for flood control, structural integrity, and water quality. The following lists all procedures for inspection and maintenance for post-development Stormwater Management Practices:

**StormTrap/ Drywell and Catch Basin System:**

*Inspection Requirements:*

Drainage structures should be inspected at least once per year to ensure proper operation. Common system deficiencies which may occur over time, include but are not limited to:

- Excessive debris, silt or sediment build-up inside of structure/piping
- Cracks or other damage to the structure
- Collapsed or blocked pipes
- Excessive ponding around leaching structures

*Maintenance Requirements:*

Should problems be encountered during inspection, maintenance is required as follows:

- Debris, silt and sediment buildup shall be removed from structures.
- Pipes shall be cleaned of debris and/or sediment.
- Repair to existing structures/piping.

The Site Operator is required to maintain a log of all inspections and/or maintenance that is performed on the system. The log shall include all pertinent information necessary to record the results of the inspections as well as any necessary repair to the system.

**Landscape Areas:**

*Inspection Requirements:*

Landscaped areas should be inspected at least twice per year to ensure proper operation. Common system deficiencies which may occur over time, include but are not limited to:

- Dead plants or turf areas resulting from drought or illness.
- Erosion from surface runoff.
- Sediment build-up in low areas.

*Maintenance Requirements:*

- Re-seeding/watering of dead lawn areas.
- Removal of sediment build-up.
- Re-grading and re-establishment of landscaping in eroded areas.
- Mowing and general landscape maintenance as required.

**Parking Areas:**

*Inspection Requirements:*

Parking and paved areas should be inspected at least twice per year to ensure proper operation. Common system deficiencies which may occur over time, include but are not limited to:

- Broken pavement or sink holes around drainage inlets.
- Evidence of ponding in intermittent low areas.
- Sand and Salt build up from snow operations.

*Maintenance Requirements:*

- Repairing of any damaged pavement or low areas.
- Sweeping and removing any sediment or debris on the pavement as necessary.

The Site Operator is required to maintain a log of all inspections and/or maintenance that is performed on the system. The log shall include all pertinent information necessary to record the results of the inspections as well as any necessary repair to the system.

# Attachment F
# Maintenance Agreements

# Attachment G
# Operations & Maintenance Manual

# Operations & Maintenance Plan

The Site Operator is responsible for the operation and maintenance of the installed stormwater management practices to ensure proper functionality throughout the life of the system. Regular maintenance of stormwater management practices is important for flood control, structural integrity, and water quality. The following lists all procedures for inspection and maintenance for post-development Stormwater Management Practices:

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- Cracks or other damage to the structure
- Collapsed or blocked pipes
- Excessive ponding around leaching structures

*Maintenance Requirements:*

Should problems be encountered during inspection, maintenance is required as follows:

- Debris, silt and sediment buildup shall be removed from structures.
- Pipes shall be cleaned of debris and/or sediment.
- Repair to existing structures/piping.

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- Dead plants or turf areas resulting from drought or illness.
- Erosion from surface runoff.
- Sediment build-up in low areas.

*Maintenance Requirements:*

- Re-seeding/watering of dead lawn areas.
- Removal of sediment build-up.
- Re-grading and re-establishment of landscaping in eroded areas.
- Mowing and general landscape maintenance as required.

**Parking Areas:**

*Inspection Requirements:*

Parking and paved areas should be inspected at least twice per year to ensure proper operation. Common system deficiencies which may occur over time, include but are not limited to:

- Broken pavement or sink holes around drainage inlets.
- Evidence of ponding in intermittent low areas.
- Sand and Salt build up from snow operations.

*Maintenance Requirements:*

- Repairing of any damaged pavement or low areas.
- Sweeping and removing any sediment or debris on the pavement as necessary.

The Site Operator is required to maintain a log of all inspections and/or maintenance that is performed on the system. The log shall include all pertinent information necessary to record the results of the inspections as well as any necessary repair to the system.

# Attachment H
# SWPPP Amendment Log

**Attachment H – SWPPP Amendment Log**

| No. | Description of the Amendment | Date of Amendment | Amendment Prepared by [Name(s) and Title] |
|---|---|---|---|
| 1 | | XX/XX/2022 | XXXXXXX, PE<br>Project Manager |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

# Forms

**CERTIFICATION OF PROJECT CONSTRUCTION CONTRACTORS**

**SDL Marlboro LLC**
**561 Seventh Ave Suite 903**
**New York, NY 10018**

The following certification shall be signed by each contractor and subcontractor responsible for on-site activities, or any other subcontractor who will perform any action that may reasonably be expected to cause or have the potential to cause pollution of the waters of New York. All contractors shall provide a representative who has received proper erosion control training.

"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 storm water 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."

---

| **Owner/Operator Representative** | **Trained Contractor** | **Trained Subcontractor (If Necessary)** |
|---|---|---|
| _____ | _____ | _____ |
| Name | Name | Name |
| _____ | _____ | _____ |
| Signature and Date | Signature and Date | Signature and Date |
| _____ | _____ | _____ |
| Title/Responsible For | Title/Responsible For | Title/Responsible For |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| Company and Address | Company and Address | Company and Address |
| _____ | _____ | _____ |
| Telephone Number | Telephone Number | Telephone Number |

# Spill Response Procedure

**Initial Notification**

In the event of a spill, the facility and/or construction manager or supervisor will be notified immediately.

Facility Manager: (name) _____

(phone) _____

Construction Manager: (name) _____

(phone) _____

**Assessment - Initial Containment**

The supervisor or manager will assess the incident and initiate containment control measures with the appropriate spill containment equipment included in the spill kit kept on-site. The supervisor will first contact the Southampton Fire Department and then notify the Suffolk County Police Department and Suffolk County Health Department. The fire department is ultimately responsible for matters of public health and safety and should be notified immediately.

| | |
|---|---|
| Fire Department: | 911 or (845) 236-4121 |
| Police Department: | (845) 338-3640 |
| Ulster County Health Department: | (845) 340-3150 |

**Further Notification**

Based on the assessment from the Fire Chief, additional notification to a cleanup contractor may be made. The New York Department of Environmental Conservation and the EPA may be notified depending upon the nature and severity of the spill. The Fire Chief will be responsible for determining the level of cleanup and notification required. The attached list of emergency phone numbers shall be posted in the main construction/facility office and readily accessible to all employees.

NYSDEC Spill Hotline: 1-800-457-7362 (within NYS)

National Response Center: 1-800-424-8802 / (518) 457-7362 (outside NYS)

For further information, contact:

New York State Department of Environmental Conservation

Division of Environmental Remediation

Bureau of Spill Prevention & Response

625 Broadway – 11th Floor

Albany, NY 12233-7020

(518) 402-9546

**HAZARDOUS WASTE / OIL SPILL REPORT**

Date____/_____/_____ Time_____ AM / PM

Exact location (Transformer #)_____

Type of equipment_____Make_____Size_____

S / N_____Weather Conditions_____

On or near water ☐ Yes If yes, name of body of water_____
☐ No

Type of chemical / oil spilled_____

Amount of chemical / oil spilled_____

Cause of spill_____

_____

_____

Measures taken to contain or clean up spill_____

_____

_____

Amount of chemical / oil recovered_____Method_____

Material collected as a result of clean up

_____drums containing_____

_____drums containing_____

_____drums containing_____

Location and method of debris disposal_____

_____

Name and address of any person, firm, or corporation suffering damages_____

_____

Procedures, method, and precautions instituted to prevent a similar occurrence from recurring____

_____

Spill reported to General Office by_____Time_____AM / PM

Spill reported to DEC / National Response Center by_____

DEC Date____/_____/_____ Time_____ AM / PM Inspector_____

NRC Date____/_____/_____ Time_____ AM / PM Inspector_____

Additional comments_____

_____

_____

**EMERGENCY RESPONSE EQUIPMENT**
**INVENTORY**

The following equipment and materials shall be maintained at all times and stored in a secure area for construction activities emergency response need.

| | | |
|---|---|---|
| -- | SORBENT PADS | 5 PADS |
| -- | SAND BAGS (empty) | 10 |
| -- | SPEEDI-DRI ABSORBENT | 5 40# BAGS |
| -- | SHOVEL | 1 |
| -- | PICK | 1 |
| -- | PRY BAR | 1 |

The following items shall be placed in a convenient, readily accessible location on site.

| | | |
|---|---|---|
| -- | STRAW BALES & GRADE STAKES | 10 |
| -- | SAND | 2 CUBIC YARDS |

**EMERGENCY NOTIFICATION PHONE NUMBERS**

1. SUPERVISOR/MANAGER
   NAME: _____ BEEPER: _____
   PHONE: _____ HOME PHONE: _____

   ALTERNATE:
   NAME: _____ BEEPER: _____
   PHONE: _____ HOME PHONE: _____

2. TOWN OF MARLBOROUGH FIRE DEPARTMENT
   EMERGENCY: 911
   BUSINESS: 1-845-236-4121

3. ULSTER COUNTY POLICE DEPARTMENT
   EMERGENCY: 911
   GENERAL NUMBER: 1-845-338-3640

4. CLEANUP CONTRACTOR: _____
   ADDRESS: _____
   PHONE: _____

5. NEW YORK DEPARTMENT OF ENVIRONMENTAL CONSERVATION
   EMERGENCY: 1-800-457-7362
   OUTSIDE NEW YORK: 1-518-457-7362

6. NATIONAL RESPONSE CENTER
   PHONE: 1-800-424-8802

   ALTERNATE: U.S. ENVIRONMENTAL PROTECTION AGENCY
   BUSINESS: 1-212-637-3660

7. ULSTER COUNTY HEALTH DEPARTMENT
   PHONE: 1-845-340-3150