STORMWATER POLLUTION PREVENTION PLAN

Regency Commons
166 Klein Road
Town of Amherst, New York

Prepared for:

Regency Homes, LLC
4899 Meyer Road
Pendleton, New York 14120

Prepared by:

GPI

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Job No. WNY-2021052.00

June 2023
~~September 2022~~
~~August 2022~~

REVISION SCHEDULE

This storm water pollution prevention plan (SWPPP) should be revised and updated to address changes in site conditions, new or revised government regulations, and additional on-site storm water pollution controls.

All revisions to the SWPPP must be documented on the SWPPP Revision Documentation Form. The authorized facility representative who approves the SWPPP should be an individual at or near the top of the facility's management organization, such as the president, vice president, construction manager, site supervisor, or environmental manager. The signature of this representative attests that the SWPPP revision information is true and accurate. Previous authors and facility representatives are not responsible for the revisions.

SWPPP Revision Documentation Form

Date	Author	Description

Table of Contents

EXHIBITS

1. Project Location Map
2. NYSDEC Environmental Resource Map
3. FEMA Firmette
4. Site Soil Map
5. CRIS Map

APPENDICES

A. SPDES General Permit, GP-0-20-001
B. Notice of Intent (NOI) and Acknowledgement Letter
C. Pre-Dev Drainage Delineation Map and Pre-Development Peak Flow Analysis
D. Post Dev Drainage Delineation Map and Post-Development Peak Flow Analysis
E. Storm Sewer Sizing Analysis and Pretreatment Chambers
F. Temporary Erosion Control Measures
G. Site Inspection Log Book
H. Notice of Termination (NOT) Form
I. Green Infrastructure and CPv Calculations
J. Bioretention Area Specifications
K. Wetland Delineation and Determination of No Jurisdiction Letter

DESIGN DRAWINGS

1. INTRODUCTION

1.1 REPORT OBJECTIVES

The purpose of this plan is to document the means and methods for controlling runoff and pollutants from the Project Site during and after construction activities. The principal objective of a SWPPP is to comply with the State Pollution Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activities by planning and implementing the following practices:

Reduction or elimination of erosion and sediment loading to waterbodies during construction;
Control of the impact of stormwater runoff on the water quality of the receiving waters;
Control of the increased volume and peak rate of runoff during and after construction; and
Maintenance of stormwater controls during and after construction.

The SWPPP is prepared in accordance with the following guidance documents:

New York State Standards and Specifications for Erosion and Sediment Control, New York State Department of Environmental Conservation, November 2016; New York State Stormwater Management Design Manual, New York State Department of Environmental Conservation, January 2015; and SPDES General Permit for Stormwater Discharges from Construction Activities, GP-0-20-001.

A copy of *SPDES General Permit for Stormwater Discharges from Construction Activities, GP-0-20-001*, is provided in Appendix A. A copy of the Notice of Intent (NOI) form is provided in Appendix B.

1.2 CONTACT INFORMATION

Client referred to herein as “the Owner” and selected Contractor(s), shall maintain a copy of this SWPPP on site for the duration of the construction process.

For additional information regarding this project, contact the following:

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1.3 GENERAL PROJECT DESCRIPTION

The proposed development, Regency Commons, is located along the northern side of Klein Road at 166 Klein Road, between Bentley Court and Kingswaye Drive in the Town of Amherst (SBL: 56.10-13-1). The project site is bounded on the north by a National Grid Easement, beyond which is forested property owned by the Town of Amherst; on the west by single family residential lots fronting Kingswaye Drive; the east by single family residential lots fronting on Bentley Court; and bounded on the south by Klein Road, beyond which are single family residential lots.

The subdivision will consist of a total of eighteen (18) single family homes. It is estimated that the population for the proposed development will be 54 persons (18 single family residences x 3.0 people/residence). The project is scheduled for a construction start in late 2022. See Exhibit 1 - Project Location Map and Design Drawings – Site Plan.

The existing site currently is utilized as a single-family residential lot with a wooded area. Generated storm water runoff flows northeast to the existing Town ditch 4 located along the northeastern property boundary of the residential properties on Bentley Court. The stormwater is conveyed by Town ditch 4 to the north and then west through wetlands and to Hopkins Road. Stormwater runoff for the proposed site will partially mimic the existing undeveloped site conditions. Runoff from a portion of the site will be conveyed to the northwest corner of the site, via new stormsewers or overland flow, to a bioretention area. The bioretention area will outlet to a wet pond before discharging to the existing Town ditch 4 along the northeast side of the proposed site. Runoff generated on the east side of the site will also be conveyed to Town ditch 4. Runoff generated on the east side of the site will be conveyed to the existing storm sewer system along Klein Road; and from the south side first to a dry swale at the southeast corner of the site before discharging to the existing storm sewer system along Klein Road.

The proposed onsite stormwater management facilities will be designed in accordance with the Town of Amherst's stormwater policies and the SPDES General Permit for Stormwater Discharges from Construction Activities, GP-0-20-001. The stormwater management system will contain one (1) bioretention area, one (1) wet pond, one (1) dry swale, and a series of catch basins/yard drains to meet all water quality and water quantity requirements.

2. EXISTING SITE CONDITIONS

2.1 LOCATION

The entire project site is located in the Town of Amherst, Erie County, New York and encompasses the parcel with SBL number 56.10-13-1. The project location in relation to major roads is provided on Exhibit 1 – Project Location Map.

2.2 SITE DESCRIPTION

The overall project site (± 5.24 acres) currently consists of a single-family home and a wooded area. The topography of the entire site is generally flat with a decrease in grade towards the northeast.

Based on a review of NYSDEC Environmental Resource Mapper, there are NYSDEC regulated wetlands, and regulated adjacent (100-foot buffer) area within the project area. No federal

wetlands were mapped within the project area. A wetland delineation was performed by Earth Dimensions, Inc in 2015 and revised in 2020. Their delineation indicated that three wetland areas, ±0.11, ±0.40, and ±0.42 acres in size and ditch were present within the proposed project site. However, based on the determination by the US Army Corp of Engineers these wetland areas and ditch were designated as excluded waters as defined in the Navigable Water Protection Rule. Therefore, these are not regulated under Section 404 of the CWA. A copy of the mapping is included in Exhibit 2 – NYSDEC Environmental Resource map. A copy of the Jurisdictional Determination letter and wetland mapping is included in Appendix K – Wetland Delineation and Determination of No Jurisdiction Letter.

According to the National Flood Insurance Program Flood Insurance Rate Map (FIRM) the proposed site does not contain any mapped FEMA floodplains. A copy of the mapping is included in Exhibit 3 –FEMA Firmette Map.

2.3 SOILS

Based on the Erie County Soils Survey, the proposed site is considered to contain 100% Type 'D' soil which is described as poorly drained soil. A copy of the mapping is included in Exhibit 4 – Site Soil Map.

SOIL SYMBOL	SOIL NAME & DESCRIPTION	HYDROLOGIC SOIL GROUP
La	Lakemont silt loam, 0 to 3 percent slopes	D
Ut	Urban land-Odessa, 0 to 3 percent slopes	D

2.4 HISTORIC PLACES

According to the information available on the New York State Historic Preservation Office (SHPO) Cultural Resources Information System (CRIS) website, the project site does not contain any buildings, archaeological sites, or districts, which are listed on the National Register of Historic Places, or that have been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation (NYSOPRHP) to be eligible for listing on the State Register of Historic Places. In addition, the proposed site does not fall within an area that has been designated as sensitive for archaeologically sites. A copy of the mapping is included in Exhibit 5 – CRIS Map.

2.5 STORMWATER RUNOFF

Stormwater runoff under pre-developed conditions generally sheet flows across the site in a northeasterly direction to Town ditch 4 along the northeast corner of the property. Upon review of the topography it was determined that some offsite areas from adjacent properties to the west sheet flow onto the subject parcel. See Appendix C – Predevelopment Drainage Delineation Figure.

3. PROPOSED SITE CONDITIONS

3.1 GENERAL SITE IMPROVEMENTS

The proposed site development will include construction of the following:

- 18 single family homes
- Roadway and driveways
- Stormwater management system consisting of receivers, and yard drains
- One bioretention area, wet pond, and dry swale
- Gravity sanitary sewer
- Fire and domestic water service
- On-site utilities
- Landscaping

Under proposed conditions, the impervious area will increase from 3 percent to 33 percent of the development area due to the roadway, driveways, and building construction.

3.2 WATERSHED BOUNDARY

The post developed watershed boundary includes the same total drainage area for the pre-developed watershed. The proposed drainage areas are broken up into several areas. Approximately ±2.25 acres of the site will be treated by the bioretention area before flowing into the wet pond, along with an additional ±0.39 acres from the site also flowing into the wet pond. Based on topography of the surrounding area it is assumed that an offsite drainage area of approximately ±0.32 acres will be collected by the proposed rear yard storm sewers and be conveyed into the bioretention area and wet pond. The wet pond will discharge to the existing Town ditch 4, along with an addition ±0.98 acres of the eastern portion of the site. The western ±0.92 acres of the site will discharge directly to the existing storm sewer system along Klein Road and the southern ± 0.68 area will flow to a dry swale before discharging to the existing storm sewer system along the north side of Klein Road. The post-construction watershed delineation maps can be found in Appendix D.

4. HYDROLOGIC AND HYDRAULIC ANALYSIS

4.1 STORMWATER MANAGEMENT

Stormwater runoff generated within the onsite and offsite areas will be collected by the on-site stormwater piping system and conveyed to the proposed bioretention area, wet pond, or dry swale as per the NYSDEC requirements. The NYSDEC Stormwater Management Design Manual mandates that the stormwater runoff rate from a post developed 1, 10 and 100-year storm event cannot exceed the runoff rate from the predeveloped 1, 10 and 100-year storm event.

Onsite and offsite stormwater will be conveyed to the bioretention area, wet pond, or dry swale via a proposed storm sewer system or will sheet flow into these facilities. The bioretention area has been designed with a 6-in underdrain and outlet structure that allows for 0.5-ft of ponding to meet water quality requirements for the site before flowing into the wet pond. The wet pond has been designed with an outlet structure consisting of a 5-inch vertical orifice and an angled 24x24-inch grate to allow for the facility to contain the 100-year storm and meet water quantity, channel protection, overbank and extreme flood control requirements. A 12-in HDPE pipe will outlet from the pond and discharge into the existing Town ditch 4 that flows to the roadside storm system located along the east side of Hopkins. The dry swale is designed with an outlet structure consisting of a 6-inch vertical orifice and a horizontal 24x24-inch grate to allow for the facility to contain the 100-year storm. A 12-in HDPE pipe will outlet from the dry swale and discharge into the existing storm sewer system located along the north side of Klein.

Hydrographs representing pre-development and post-development runoff have been generated using the Soil Conservation Service-TR-55 and TR-20 methodology utilizing HydroCAD software. Hydrographs for the 1, 10, 25 and 100-year 24 hour storm events under existing conditions and the 1, 10, 25 and 100-year 24 hour storm events under proposed conditions were generated and are included in Appendix C and D. The post developed discharge rates from the site for the 25-year storm is equal to or less than the existing runoff rates for the 10-year storm event, per Town of Amherst requirements; in addition, the post 100-year storm event is equal to or less than the pre 100-year storm event per NYSDEC requirements.

The following table summarizes these pre-development and post development peak runoff conditions for the project site:

Stormwater Management Runoff Tables

BIORETENTION AREA:

	Peak Runoff Rate (cfs)	**High Water Elevation (ft)**
1 Year	1.35	586.30
10 Year	4.45	586.54
25 Year	5.90	586.63
100 Year	7.62	586.90

WET POND:

	Peak Runoff Rate (cfs)	**High Water Elevation (ft)**
1 Year	0.17	582.81
10 Year	0.65	583.67
25 Year	0.80	584.21
100 Year	3.66	584.73

DRY SWALE:

	Peak Runoff Rate (cfs)	**High Water Elevation (ft)**
1 Year	0.71	584.14
10 Year	1.54	584.26
25 Year	1.77	585.74
100 Year	3.57	585.90

SUMMARY TABLE:

	TOTAL SITE RUNOFF RATES	
	Pre-Developed Peak Runoff Rate (cfs)	**Post- Developed Peak Runoff Rate (cfs)**
1-Year	1.52	1.27
10-Year: Overbank Flood Protection Volume	**5.23**	3.54
25-Year	7.51	**4.88**
100-Year: Extreme Flood Protection Volume	**12.30**	**8.41**

4.2 STORMWATER CONVEYANCE SYSTEM

Stormwater from the roofs will be conducted though downspouts that will convey water to the on-site collection system. Catch basins located within the paved areas will collect stormwater runoff from the associated grass and paved areas. Stormwater will be discharged to the proposed bioretention areas and wet pond at the northwest corner of the site or to the dry swale at the southwest corner of the site. Storm sewers are sized for a 10-year storm event. See Appendix E for storm sewer sizing calculations.

4.3 WATER QUALITY VOLUME (WQv)

Water Quality Volume (WQv) is the volume of runoff generated from the entire 90th percentile rain event and is directly related to the amount of impervious cover constructed at a site. During construction, site hydrology will change due to clearing, stripping and grading. Once construction is complete the site will be converted to an 18-lot development with an increase in impervious area. Impervious surfaces accumulate pollutants deposited from the atmosphere, leaked from vehicles, or windblown in from adjacent areas. During storm events, these pollutants quickly wash off, and are rapidly delivered to downstream waters.

Total Water Quality Volume required for this site: 6,207 ft^3 (0.14 ac-ft.)

Water Quality Volume provided by the Wet Pond = 16,750 ft^3 (0.385 ac-ft.)

Total Water Quality Volume provided = 0.39 ac-ft.

Total WQv and RRv (see section 5.4) provided = 0.39 ac-ft + 0.039 ac-ft

$(WQv + RRv)_{provided}$ 0.43 ac-ft ≥ $WQv_{required}$ 0.14 ac-ft

Stormwater Quality Volume calculations can be found in Appendix E.

4.3.1 PRETREATMENT CHAMBERS

Pretreatment of stormwater before entering a stormwater facility is required as it is utilized to trap coarse elements before they enter a stormwater facility, thus reducing the maintenance burden and ensuring a long-lived practice.

The pretreatment units proposed for this site will be Unistorm model 6R by Environment 21 or approved equal. Calculations for this unit have been included in Appendix E.

4.4 RUNOFF REDUCTION REQUIREMENTS (RRv)

Runoff Reduction volume (RRv) is defined as the reduction of the total water quality volume by the application of green infrastructure techniques and SMP's that aim to replicate pre-development hydrology. Along with a good site plan that reduces disturbance and minimizes impervious area, the following techniques as described by the NYS Stormwater Management Design Manual, may be implemented to achieve runoff reduction.

- Conservation of Natural Areas
- Sheetflow to Riparian Buffers or filter strips
- Vegetated Open Swales
- Tree Planting/Tree box
- Disconnection of Rooftop Runoff
- Stream Daylighting
- Rain Gardens
- Green Roofs
- Stormwater Planters
- Rain Tanks/Cisterns
- Porous Pavement
- Standard SMPs with RRv Capacity; Infiltration Practices, Bioretention Practice, Dry Swale (Open Channel Practice)

While some construction activities cannot achieve 100% of runoff reduction due to site limitations that prevent the use of an infiltration technique and/or infiltration reduction of the total WQ, a minimum runoff reduction volume shall be achieved.

Total Minimum Runoff Reduction required for this site: 1,110 ft^3 (0.03 ac-ft)

Total RRv provided by Bioretention Areas: 1,680 ft^3 (0.039 ac-ft.)

$RRv_{provided}$ 0.04 ac-ft ≥ RRv_{min} 0.03 ac-ft

Additional RRv practices were looked at and determined to be unfeasible due to the poor infiltration qualities of the site soils and the required fill necessary. 100% of the Water Quality Volume was not reduced for this site due to the poor infiltration qualities of the site soils (Type D) and limited head available. See Appendix E for complete calculations.

4.5 CHANNEL PROTECTION VOLUME (CPv)

Channel Protection Volumes Requirements (CPv) are designed components to protect stream channels from erosion by providing 24-hour extended detention of the one-year, 24-hour storm event, remained from runoff reduction.

Total Channel Protection Volume for this site: 0.258 ac-ft

CPv Water Elevation: 583.61

Provided CPv Volume: 0.258 ac-ft

CPv Orifice sized to release an average of 0.130 cfs

Size orifice diameter at 2.56”

Per the NYSDEC regulations, the diameter of pipe required to minimize the CPv release from the site is susceptible to clogging and freezing. Due to concerns from clogging and freezing a 5” diameter orifice with a trash rack will be utilized.

See Appendix E for complete calculations.

5. EROSION CONTROL MEASURES

5.1 GENERAL

Structural erosion and sediment control measures are classified as either temporary or permanent, according to how they are used. Temporary structural measures shall be used during construction to prevent offsite sedimentation. Permanent structural measures shall be utilized following construction and shall be implemented to convey surface water safely to the existing drainage ways present in the pre-development condition. The permanent structural measures shall remain in-place and continue to function after the completion of construction. General construction notes and maintenance plan for implementing the temporary and permanent stormwater erosion control structures during and after construction have been developed for the site. The proposed temporary and permanent stormwater and erosion control structures for the project are depicted on the attached drawings.

The owner or operator shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the trained contractor. The owner or operator shall ensure that at least one trained contractor is on site on a daily basis when soil disturbance activities are being performed. Erosion control measures shall be inspected weekly by a qualified professional experienced in erosion and sedimentation control techniques until the site is completely stabilized. If more than 5 acres are disturbed at any one time the inspection frequency by a qualified professional shall increase to twice weekly. Inspections of erosion control structures are described under Section 8.0 – Site Assessment and Inspection and shall be in accordance with SPDES General Permit for Stormwater Discharges from Construction Activities, GP-0-20-001. The Owner is responsible for filing a Notice of Intent (NOI) Form electronically (eNOI) with NYSDEC prior to commencement of construction activities for the project site. Construction activities may begin five (5) business days following the filing of the eNOI unless otherwise notified by the NYSDEC. A copy of the signed NOI and the NYSDEC acknowledgement letter is provided as Appendix B.

5.2 TEMPORARY STRUCTURE MEASURES

This subsection describes the specific temporary control measures that are to be implemented and additional measures that may be added during construction to reduce and/or eliminate erosion and sedimentation during the construction phase of this project. Standard details are presented in Appendix F, as well as, shown on the accompanying drawings.

5.2.1 EARTH DIKE

A temporary berm or ridge of compacted soil located in such a manner as to channel water to a desired location. The purpose of an earth dike is to direct runoff to a sediment trapping device, thereby reducing the potential for erosion and off-site sedimentation. Earth dikes can also be used for diverting clean water away from disturbed areas.

5.2.2 TEMPORARY SWALE

A temporary excavated drainage way. The purpose of a temporary swale is to prevent runoff from entering disturbed areas by intercepting and diverting it to a stabilized outlet to intercept sediment laden water and divert it to a sediment trapping device.

5.2.3 PERIMETER DIKE/SWALE

A temporary of soil excavated from an adjoining swale located along the perimeter of the site or disturbed area. The purpose of a perimeter dike/swale is to prevent off site storm runoff from entering a disturbed area to prevent sediment laden storm runoff from leaving the construction site or disturbed area.

5.2.4 SILT FENCE

A temporary barrier of geotextile fabric (filter cloth) shall be used to intercept sediment-laden runoff along the borders of disturbed site areas during construction. The geotextile filter fabric fence requires periodic maintenance and should be checked for tears or clogging with silt or debris. Silt can be removed from the woven filter cloth with a stiff brush if clogging occurs.

5.2.5 STONE CHECK DAMS

Stone check dams shall be used to limit erosion by reducing velocities within drainage channels. The check dams shall be spaced as necessary, so the crest of the downstream dam is at the elevation of the toe of the upstream dam. Stone for check dams shall consist of a well-graded mixture of field stone or rough quarry stone the meets the grading requirements of NYSDOT Item 620.03M – Stone Filling (light). The maximum drainage area above the check dam shall not exceed two acres.

5.2.6 SILT SOCK

A temporary sediment control practice composed of a degradable geotextile mesh tube filled with compost filter media to filter sediment and other pollutants associated with construction activity to prevent their migration offsite. This practice can be used in place of Silt Fence. Silt should be removed when it accumulated to half the above ground height of the sock.

5.2.7 SEDIMENT TRAPS

A temporary sediment trap shall be utilized during construction to intercept sediment-laden runoff and retain sediment prior to discharge. Temporary sediment traps shall be installed in the areas of construction prior to any earth disturbance. The sediment traps shall be placed where they will collect runoff prior to leaving the site and will consist of excavating a large depression into existing soils. Sediment traps will be limited to maximum drainage areas of 2 acres and provide sediment storage volume of 3,600 cubic feet (cf) for each acre of drainage area.

5.2.8 STABILIZED CONSTRUCTION ENTRANCE

A stabilized pad of aggregate underlain with filter cloth shall be positioned at points where traffic will be entering or leaving the construction site area onto public roads. This measure will reduce the tracking of soils onto public roads or streets. A standard detail for a stabilized construction entrance is presented in Appendix G, as well as, shown on the accompanying drawings.

5.2.9 CONSTRUCTION ROAD STABILIZATION

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

5.2.10 DUST CONTROL

The control of dust resulting from land–disturbing activities on construction roads, access points, and other disturbed areas subject to surface dust movement and dust blowing where off-site damage may occur if dust is not controlled. To prevent surface and air movement of dust from disturbed soil surfaces that may cause off-site damage, health hazards, and traffic safety problems.

5.2.11 STORM DRAIN INLET PROTECTION

A permeable barrier installed around inlets in the form of a fence, berm or excavation around an opening, thereby reducing the sediment content of sediment laden water.

5.2.12 SEDIMENT BASIN

A temporary barrier or dam constructed across a drainage way or at other suitable locations to intercept sediment laden runoff and to trap and retain the sediment.

5.2.13 SUMP PIT

A temporary pit which is constructed to trap and filter water for pumping to a suitable drainage area.

5.2.14 SEDIMENT FILTER BAGS

Sediment filter bags shall be utilized during construction to filter water being pumped during excavation. The filter bags lie on the vegetated ground and sediment-laden water is pumped into the bag. The bag's geotextile filter cloth acts as a baffler to the sediment, retaining the sediment inside of the filter bag, and discharging the sediment free water.

5.2.15 TEMPORARY SEED & MULCH

Temporary seed and mulch will be applied within 100-ft of all wetlands and culvert crossings. Annual rye seed and 90% mulch coverage will be applied. Notes and application tables are provided on the accompanying drawings.

5.2.16 CONRETE WASHOUT PIT

A temporary concrete washout pit will be installed on the construction site in a location accessible to all construction vehicles. This washout pit shall be utilized to deter spillage/dumping of concrete waste and wastewater onto project site. This concrete washout pit shall be cleaned of accumulated debris on an as needed basis. Debris shall be disposed of at an appropriate landfill.

5.3 PERMANENT STRUCTURAL MEASURES

5.3.1 LAND GRADING

Reshaping of the existing land surface in accordance with a plan as determined by engineering survey and layout.

5.3.2 SURFACE ROUGHENING

Roughening a bare soil surface whether through creating horizontal grooves across a slope, stair-stepping, or tracking with construction equipment. To aid the establishment of vegetative cover from seed, to reduce runoff velocity and increase infiltration, and to reduce erosion and provide for trapping of sediment.

5.3.3 WET POND

One (1) wet pond is to be constructed in accordance with the design plans to meet channel protection volume, overbank flood control, extreme flood control, and water quantity requirements before discharging into natural occurring waterbodies.

5.3.4 BIORETENTION AREA

The proposed bioretention areas are designed to treat the runoff from the site. The bioretention area is constructed with the ability to pond a maximum of 6-inches of water, a mulch layer, a 30-inch soil media layer, an 8-inch stone drainage layer and a minimum 6-inch underdrain system. The bioretention will be planted with select vegetation native to the project site that will stabilize the ponding area, promote infiltration and uptake pollutants. See Appendix J for Bioretention specs and standard details.

5.3.5 STORMWATER PRETREATMENT UNITS

Maintenance frequency will be driven by site conditions. Quarterly visual inspections are recommended, at which time the accumulation of pollutants can be determined. On average annual removal of accumulated pollutants is required. Maintenance is to be performed by the Owner. During construction the contractor should inspect the units bimonthly and clean as needed. Upon completion of construction the units should be cleaned thoroughly.

5.4 MAINTENANCE OF TEMPORARY AND PERMANENT CONTROL STRUCTURES

5.4.1 TEMPORARY & PERMANENT STORMWATER FACILITIES DURING CONSTRUCTION

Temporary stormwater and erosion control structures must be constructed in accordance with their design intent and maintained to prevent sediment-laden runoff from leaving the site during construction. In general, the temporary structures during construction should be inspected by a qualified professional at least one every seven calendar-days for disturbance

areas under five acres and twice every seven calendar-days for sites with disturbance areas greater than five acres, and maintained as follows:

a. Stabilized construction entrance: Inspect weekly and after each rainfall event. Maintain the entrance in a condition that will prevent tracking of sediment onto public rights-of-way or streets. This may require periodic top dressing with additional aggregate. All sediment spilled, dropped, or washed onto public rights-of-way must be removed immediately. When necessary, wheels must be cleaned to remove sediment prior to entrance onto public rights-of-way. When washing is required, it shall be done on an area stabilized with aggregate, which drains into an approved sediment-trapping device. All sediment shall be prevented from entering storm drains, ditches, or watercourses.

b. Silt fence, straw bale dike, and sediment traps: Inspect weekly and after each rainfall event. Remove accumulated sediment when the sediment reaches 50% of capacity; clean, repair, or replace as needed.

c. Check dams: Inspect after each runoff event. Remove sediment accumulated behind the dam when the sediment reaches 50% of the check dam's capacity, to allow channel to drain and prevent large flows from carrying sediment over the dam. Replace stones as needed to maintain design cross section.

d. Sediment filter bags: Inspect daily when being utilized. Cease pumping and remove and replace sediment filter bag when sediment reaches 50% of the filter bag's capacity.

e. Disturbed soil areas: In areas where soil disturbance activities have been temporarily or permanently ceased, temporary and/or permanent soil stabilization measures shall be installed and/or implemented within seven (7) days from the date the soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the most current version of the technical standards, New York Standards and Specifications for Erosion and Sediment Control.

   Temporary seed and mulch within 100-ft of wetlands and culvert crossings within 48 hours of a rainfall event or before an expected rainfall event. Inspect every seven calendar days and after each rainfall event. Repair any eroded sediment to original contours and reseed and mulch as needed.

5.4.2 PERMANENT STORMWATER FACILITIES AFTER CONSTRUCTION

Permanent stormwater control structures must be constructed in accordance with their design intent and maintained on a routine basis to remain effective. In general, the structures after construction should be inspected periodically and maintained as follows:

a. Storm drainage systems: Inspect semi-annually and after every heavy rainfall to ensure structural integrity, detect vandalism and damage, and for cleaning. Clean, repair, or replace stormwater drainage components (culverts) as required.

b. Riprap outlet protection: Inspect semi-annually and after every heavy rainfall to ensure structural integrity and to verify that stone is not by-passed, or developing excessive scour at the stone base, or that sediment has not built up. Remove sediment accumulated within the riprap stone aprons at inlets and outlets of culverts and replace stone, as required.

c. Permanent Lawns and Landscaped Areas: Inspect and maintain on a regular basis, consistent with favorable plant growth, soil, and climatic conditions to insure soil protection and structural integrity of the sites plant cover. Maintenance involves regular seasonal work for mowing, fertilizing, liming, watering, pruning, fire controls, weed and pest control, re-seeding, and timely repairs, as required. Maintenance of vegetative areas shall also include removal of debris and protection from unintended uses or traffic.

d. Check dams: Inspect after each runoff event. Remove sediment accumulated behind the dam when the sediment reaches 50% of the check dam's capacity, to allow channel to drain and prevent large flows from carrying sediment over the dam. Replace stones as needed to maintain design cross section.

e. The proposed bioretention areas are to be maintained as required in the NYS SMDM and as a component of the property landscaping and shall be maintained on a regular basis. Mulching, weeding and plant replacement shall occur on an annual basis. Sediment must be removed when accumulation depth exceeds one inch. Any erosion of the bioretention berm must be repaired as soon as possible to prevent diversion around the bioretention area.

   In accordance with the New York State Stormwater Management Design Manual, a sign of no less than 18" by 24" must be placed, and remain, in the immediate vicinity of the bioretention area with the following information:

   Stormwater Management Practice (NAME OF THE PRACTICE)
   Project Identification (SPDES PERMIT # _____)
   Must be Maintained in Accordance with O&M Plan
   DO NOT REMOVE OR ALTER

   See Appendix J for Bioretention specs and standard details.

f. The proposed wet pond is to be maintained as required in the NYS SMDM and as a component of the property landscaping and shall be maintained on a regular basis. Inspect periodically and make any repairs necessary. Maintenance is to be performed by the Owner and a maintenance agreement shall be completed with the MS4.

5.5 CONSTRUCTION SCHEDULE

a. Obtain plan approval, MS4 approval and signature of SWPPP Acceptance Form, and submittal of eNOI to the NYSDEC.
b. Hold pre-construction conference at least one week prior to starting construction.
c. Flag clearing limits and/or other sensitive areas for protection in accordance with erosion control plan. Vegetation should be preserved as much to the extent possible along the property boundary.
d. Install stabilized construction entrances and silt fence where shown on Erosion and Sediment Control Plans.
e. Install all remaining temporary erosion and sediment control practices as designed on plans.
f. Demolish existing residence.
g. The limits of Town Ditch 4 will be cleared of all vegetation above the waterline for the entire limits within the subject parcel.

h. Clear, strip, stockpile, and seed topsoil stockpile from proposed subdivision, single family homes, bioretention, dry swale, and wet pond, as shown on the SWPPP Plan.
i. The proposed bioretention area may be excavated during the start of construction with no soil media layers installed until the end of construction or the bioretention area shall be protected during construction to ensure that the soil media does not become clogged. The bioretention area must be fully operational as per NYSDEC requirements at the end of construction.
j. Install stormwater drainage inlets and piping.
k. Place excavated material in areas requiring fill. Fill placed in the future roadway is to be compacted. Topsoil to be stockpiled where shown on Erosion and Sediment Control Plan or in an area approved by Town Engineer. Stockpiled material to be enclosed by silt fence/sock. Stockpiles shall undergo temporary stabilization methods within 14 days of inactivity.
l. Install site utilities, storm sewers, and waterlines.
m. Grade, topsoil and seed right-of-way as soon as practical upon completion of utilities installation.
n. Construct residential homes.
o. Grade, topsoil, and seed lawns as soon as practical upon completion of the homes.
p. Once all disturbed areas are vegetated, all temporary sediment control measures can be removed. Site contractor must have the entire site stabilized prior to withdrawing from site.

6. SITE WASTE MANAGEMENT AND SPILL PREVENTION

The following sections provide a description of pollution prevention measures utilized to control litter, construction chemicals, and construction debris from becoming a pollutant source to stormwater discharges. In addition, storage practices to minimize the exposure of materials to stormwater, as well as spill prevention and response measures are described in this section.

6.1 GENERAL

The following information describes Spill Prevention, Containment, and Countermeasure Planning for the project.
Personnel responsible for the oversight of the petroleum products and hazardous or controlled substances include:

a. Construction Manager
b. Job-site coordination designated by the Construction Manager

6.2 PETROLEUM PRODUCTS AND HAZARDOUS OR CONTROLLED SUBSTANCES

Petroleum products and hazardous or controlled substances will be stored at a temporary storage staging area approved by the Town Engineer. It is anticipated that the following hazardous or controlled substances and petroleum products may be stored on site, within regulatory approved containers.

a. Gasoline
b. Diesel Fuel
c. Equipment oils and lubricants
d. Commercial Fertilizer

6.3 POLLUTION PREVENTION

The following sections provide a description of pollution prevention measures that will be used to control litter, construction chemicals, and construction debris from becoming a pollutant source to the stormwater discharges. In addition, storage practices to minimize the exposure of materials to stormwater as well as spill prevention and response measure are detailed.

6.3.1 MATERIAL DELIVERY AND STORAGE

a. Locate material storage and delivery areas at a minimum distance of 100 feet away from any drain inlet and surface water bodies.
b. Keep inventory low.
c. Store dry chemicals and bagged materials on pallets.
d. Store all flammable products away from any heat and/or ignition source.
e. Provide secondary containment for liquids.
f. Keep designated storage areas clean and well organized. Contractor to conduct weekly inspections to check for damaged containers, leaks, etc.
g. Comply with State and Local requirements for storage of hazardous waste.
h. During the wet season, cover chemicals, drums, and bagged materials to prevent contact with rainwater (e.g. tarps, bins, structures).
I. During the wet season, cover secondary containment areas to prevent accumulation of water.
j. Keep chemicals labeled and in original containers.
k. Train employees and contractors on the proper use of storage area.

6.3.2 SPILL PREVENTION AND CONTROL

a. Notify all construction workers of the location of materials used to cleanup spills.
b. Store spill cleanup materials on site and near potential spill areas.
c. Keep commercially available spill kits for construction equipment on site.
d. Keep drums, barrels, temporary storage bags, or equivalent materials for containment and transportation on site.
e. Keep absorbent pads, oil booms, mat, or equivalent materials on site.
f. Keep washable, reusable rags for cleaning up small lubricant leaks on site.
g. Train employees and subcontractors on proper spill prevention and control methods.
h. Never hose down or bury dry material spills. Cleanup as much as possible and dispose of properly.
i. In the event of a spill occurrence, the following actions are to be taken:

Document the spill and report to the project Construction Manager and Town Designated Inspector.

For spills less than 5 gallons on an impervious surface, attempt to confine and clean the spill.

For spills greater than 5 gallons, attempt to confine the spill and call a remediation contractor if assistance is required with product recovery and containment.

For spills greater than 5 gallons, report to NYSDEC Region 9 Spill Prevention and response (716-851-7220) within two hours of discovery.

Provide written documentation of the spill.

Disposal of recovered materials must be conducted in accordance with State and Federal regulations.

6.3.3 SOLID WASTE MANAGEMENT

a. Provide as many waste bins as needed to keep the site clean of litter and waste.
b. During the wet season, waste bins must be covered to prevent runoff from trash.
c. Collect trash on a daily basis.
d. Arrange for regular waste collection by a licensed trash hauler.
e. Segregate and recycle waste materials (e.g. paints, solvents, oil, etc.).
f. Provide covered waste binds for disposal of all empty products (e.g. paints, solvents, glues, pesticides, etc.).
g. Locate waste container storage area(s) at a minimum distance of 100 feet away from any drain inlet and surface water bodies.
h. Provide secondary containment for hazardous waste containers.
i. Comply with all Local and State solid waste disposal and nuisance requirements.
j. Do not hose out waste containers on site.
k. Train employees and subcontractors to use proper solid waste management.

6.3.4 VEHICLE & EQUIPMENT MAINTENANCE

a. Do not discharge vehicle/machinery wash waters or solvents to storm drains or to surface water bodies.
b. Locate areas for fueling and maintenance at a minimum distance of 100 feet away from any drain inlet and surface water bodies.
c. Any equipment which must be refueled in the field will be refueled from tanks carried to the work site by truck.
d. Prevent spills and leaks during fueling and maintenance operations.
e. Inspect and maintain vehicles regularly to minimize leaks and drips; place drip pans or absorbent materials under leak-prone machinery when idle.
f. Comply with Federal, State, and Local requirements for fuel storage tanks.

6.3.5 LANDSCAPING OPERATIONS

a. Carefully follow manufacturer recommended usage instructions for the application of all fertilizer.
b. Disposal of trees, brush, or other debris in any stream corridor, wetland, or surface water is prohibited.
c. Avoid applications of fertilizers prior to storm events.
d. Apply fertilizers in multiple smaller applications, as opposed to on large application.
e. Train employees and subcontractors in the proper use of landscaped materials and chemicals.

6.3.6 CONCRETE MANAGEMENT

a. Avoid mixing excess amounts of concrete or fresh cement on site.
b. Store concrete, grout, and mortar under cover and away from drainage areas.
c. Designate a wash out area on site and ensure that material cannot flow to storm drains, open ditches, streets, or surface water bodies by constructing a temporary pit or bermed area.
d. Concrete from washout area should be allowed to set. Upon completion of the concrete work, the contractor shall break up, remove, and haul away solid concrete that has accumulated in the washout.
e. Train employees and subcontractors in proper concrete waste management.

6.3.7 SANITARY/SEPTIC WASTE MANAGEMENT

a. Located sanitary facilities for convenient access and at a minimum of 100 feet away from drain inlets and surface water bodies.
b. Untreated raw wastewater may not be discharged to land, the storm drain system, or to surface water bodies.
c. Sanitary/septic facilities should be maintained in good working order by a licensed service.
d. Arrange regular waste collection by a licensed hauler before facilities overflow.
e. If washing out of interior or portable toilets is needed, ensure that wash water is discharged to land and does not flow into street, the storm drain system, or surface water bodies.

7. SITE ASSESSMENT AND INSPECTION

7.1 INITIAL INSPECTION

The owner or operator shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the trained contractor. The Owner shall have a qualified professional conduct an assessment of the site prior to the commencement of construction. A qualified professional shall include professional engineers, licensed landscape architects, certified erosion control specialists, or an individual with practical applied construction experience who possesses familiarity with BMP's and erosion and sediment control techniques. The qualified professional shall certify that the appropriate erosion and sediment control methods as described in this SWPPP and as required by the permit have been adequately installed or implemented to ensure overall preparedness of the site for commencement of construction. The qualified professional shall meet the requirements of the *SPDES General Permit for Stormwater Runoff from Construction Activities, GP-0-20-001*.

7.2 INSPECTIONS AND RECORDS DURING CONSTRUCTION

7.2.1 INSPECTION FREQUENCY

After commencement of construction, the owner or operator shall ensure that at least one trained contractor is on site on a daily basis when soil disturbance activities are being performed. Further, the Owner shall have a qualified professional perform site inspections weekly for sites with disturbance areas of less than five (5) acres and twice weekly for sites with disturbance areas of greater than five (5) acres. Prior to filing a Notice of Termination (NOT) form with NYSDEC for each project site or at the end of the permit term, the Owner shall have the qualified professional perform a final site inspection. The acting MS4 may perform periodic inspections of the site throughout the duration of the project.

7.2.2 RECORDS DURING INSPECTION

A site map shall be maintained at each project site indicating the extent of all disturbed on-site areas and drainage ways throughout the duration of construction. The site map shall contain all areas expected to undergo initial disturbance or significant site work within every inspection period. The map shall indicate all areas of the site that have undergone temporary or permanent stabilization. All disturbed areas that have not undergone active site work since the previous inspection period shall be noted on the map. All sediment control measures shall be inspected and the degree of accumulation as a percentage of the sediment storage volume

shall be recorded. Any maintenance required for installed erosion and sediment control structures shall be noted, and documentation of areas where adjustments are needed to those measures shall be provided. Any deficiencies identified with the implementation of the SWPPP shall be recorded. Digital photographs, with date stamp, shall be taken to clearly show the condition of all practices that have been identified as needing corrective actions. The qualified inspector shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The qualified inspector shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The qualified inspector shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.

Inspections shall be emailed to the owner/operator as well as the acting MS4. A copy of the reports shall also be maintained on site.

7.2.3 INSPECTION LOG BOOK

The Owner and selected Contractor(s) shall maintain an inspection logbook, which shall contain a record of all inspection reports for each project site. The logbook shall be maintained on site and shall be made available to the permitting authority upon request. The Owner and/or selected Contractor shall post at the site, in a publicly accessible location, a summary of the site inspection activities on a monthly basis. A copy of the Site Inspection Log Book is provided in Appendix G.

7.2.4 CERTIFICATIONS AND NOTICE OF TERMINATION

At the final site inspection, the qualified professional shall certify that all post-construction practices have been installed per the plans, that the site has undergone final stabilization using either a vegetative or structural stabilization methods, that all temporary erosion and sedimentation measures have been removed, and that all catch basins are free of debris and accumulation of sediment. In addition, a Level 1 Inspection, as defined by the NYSDEC Maintenance Guidance Document, shall be performed and signed of by a professional engineer. The Owner shall certify that the requirements of the permit have been satisfied within 48 hours of actually meeting such requirements and submit a Notice of Termination (NOT) form and Level 1 Inspection Report to the acting MS4 for their approval and signature before submittal to the NYSDEC. A copy of a typical NOT form is provided in Appendix H.

7.2.5 RECORDS RETENTION

The Owner/Operator shall retain a copy of the NOI, Acknowledgement Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for at least five (5) years from the date that the NOT is submitted.

8. SWPPP CERTIFICATION & SITE CONTRACT INFORMATION

8.1 OWNER'S CERTIFICATION & CONTACT INFORMATION

Regency Homes, Inc. ("the Owner") agrees that the recommendations within this Report and accompanying documents support the requirements set forth by the New York State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Runoff from Construction Activities, GP-0-20-001. The Owner agrees to employ a Contractor who will follow the recommendations of this SWPPP and any requirements set forth by SPDES General Permit GP-0-20-001. The Owner acknowledges the following certification statement referenced from SPDES General Permit GP-0-20-001:

Certification Statement

"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 the qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the systems, 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 sure that false statements made herein are punishable as a Class A misdemeanor to Section 210.45 of the Penal Law."

Owner Regency Homes, LLC

Owner's Representative: _____ Date: _____
Elliot Lasky

Title: Owner

Address: 4899 Meyer Road

Pendleton, NY 14120

Phone: 716-867-0900

Fax: _____

8.2 ENGINEER'S CERTIFICATION & CONTACT INFORMATION

Greenman-Pedersen, Inc. understands that the Owner intends to utilize this SWPPP to support an application for a New York State Pollutant Discharge Elimination System 9SPDES) General Permit for Stormwater Runoff from Construction Activity, GP-0-20-001. The SWPPP has been prepared in accordance with the standards outlined in Section 1.1 of this Report and the permit conditions of SPDES General Permit GP-0-20-001. Greenman-Pedersen, LLC acknowledges the following certification statement referenced from SPDES General Permit GP-0-20-001:

Certification Statement

Greenman-Pedersen, Inc.
Engineering and Construction Services
4950 Genesee Street, Suite 100
Buffalo, New York 14225

Phone: (716) 633-4844
Fax: (716) 633-4940

Prepared By: E. Donner Date: 8/16/2022
Elizabeth Donner, PE, CPESC
Project Engineer

Checked By: _____ Date: _____
Robyn Cierniak, CPESC
Project Engineer

8.3 CONTRACTOR'S/SUB-CONTRACTOR'S CERTIFICATION & CONTACT INFORMATION

All Contractors and Sub-Contractors agree to the following certification statement referenced from SPDES General Permit GP-0-20-001:

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

Contractor:_____

Contractor's Representative:_____ Date:_____

Title:_____

Description of SWPPP Responsibility:_____

[1]Company's Trained Contractor:_____

Address:_____

_____

_____

Phone:_____

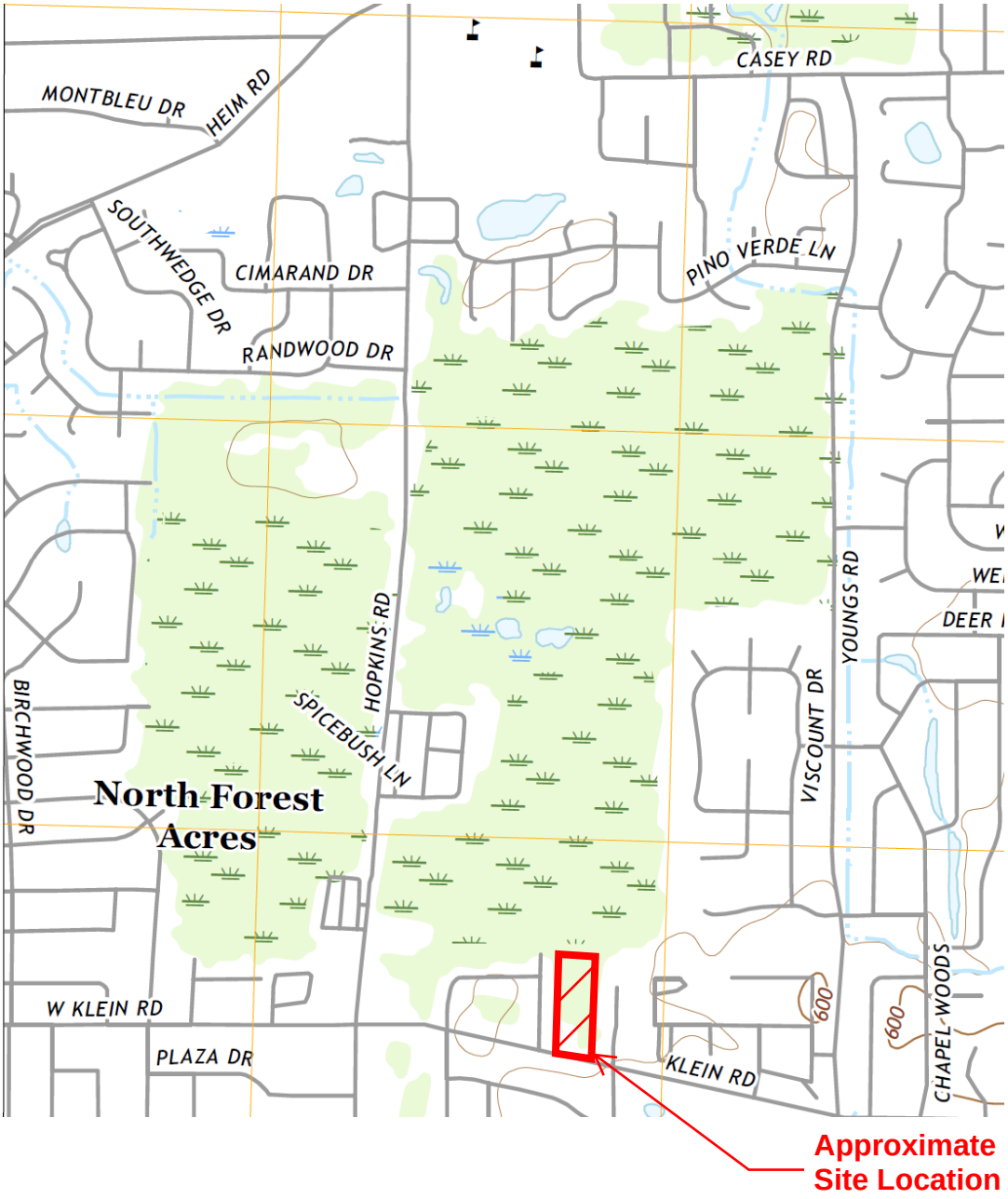
Fax:_____

[1]Trained Contractor is an employee from the contracting (construction) company that has received four (4) hours of NYS Department of Environmental Conservation endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) years. The *trained contractor* will be responsible for the day to day implementation of the SWPPP.

EXHIBITS

EXHIBIT 1

SITE LOCATION MAP

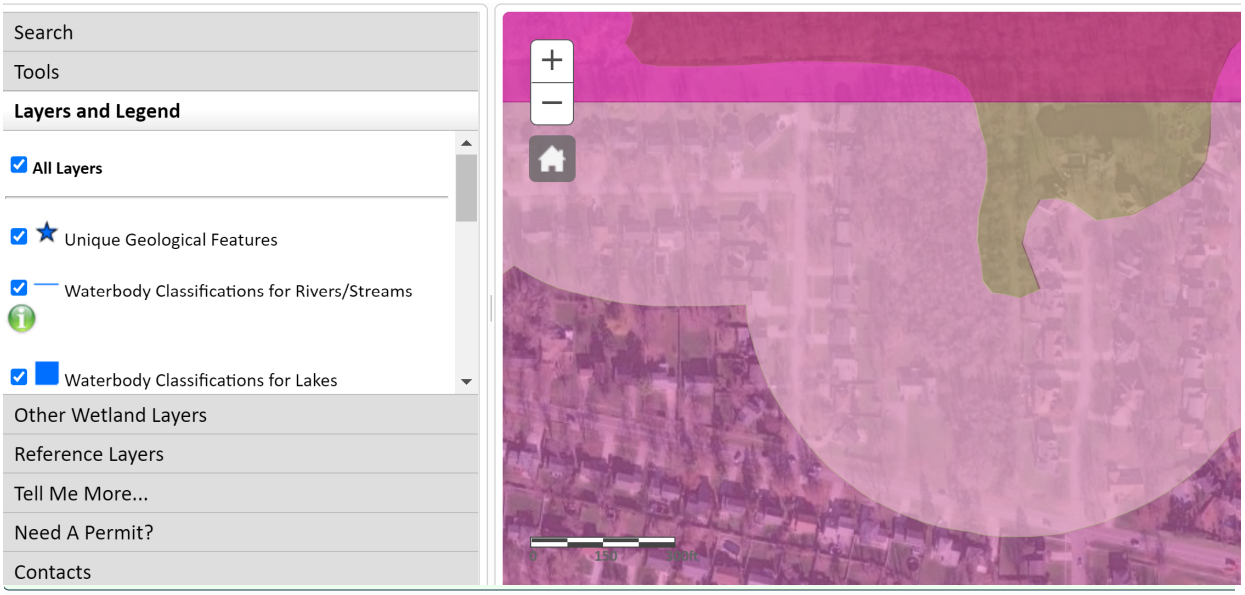


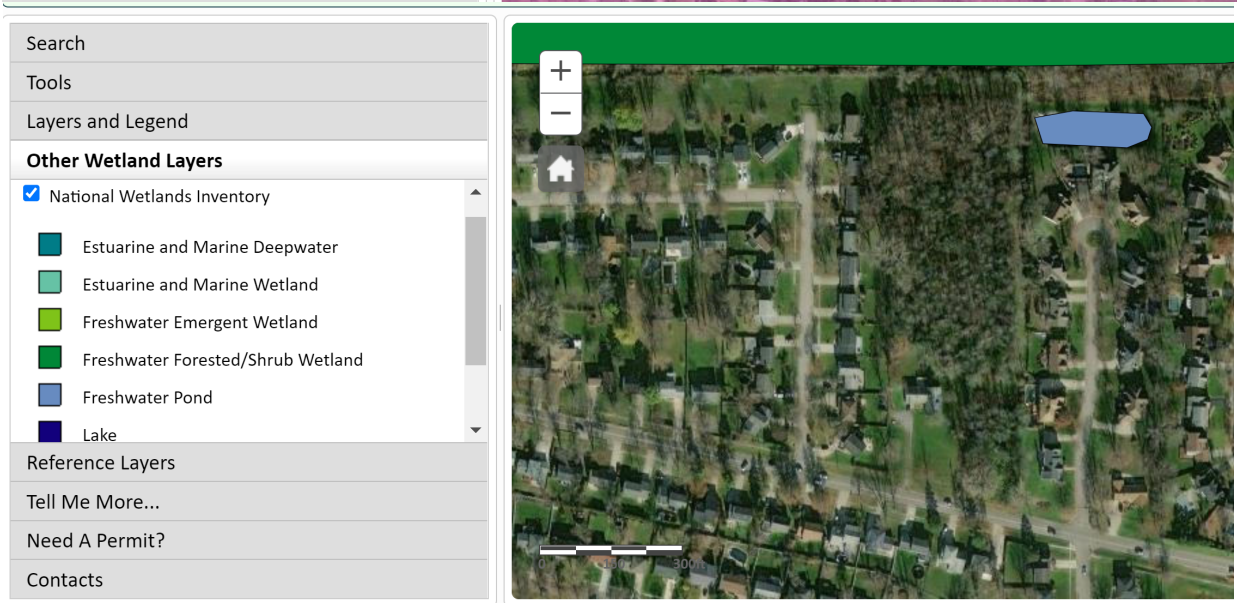
Project Location Map

GPI Greenman-Pedersen, Inc. Engineering and Construction Services	REGENCY COMMONS 166 KLEIN ROAD TOWN OF AMHERST, NY		
PROJECT NO. WNY-2021052.00	SCALE: NTS	August 2022	EXHIBIT 1

EXHIBIT 2

NYSDEC ENVIRONMENTAL RESOURCE MAP





Environmental Resource Mapper

Greenman-Pedersen, Inc.
Engineering and Construction Services

REGENCY COMMONS
166 KLEIN ROAD
TOWN OF AMHERST, NY

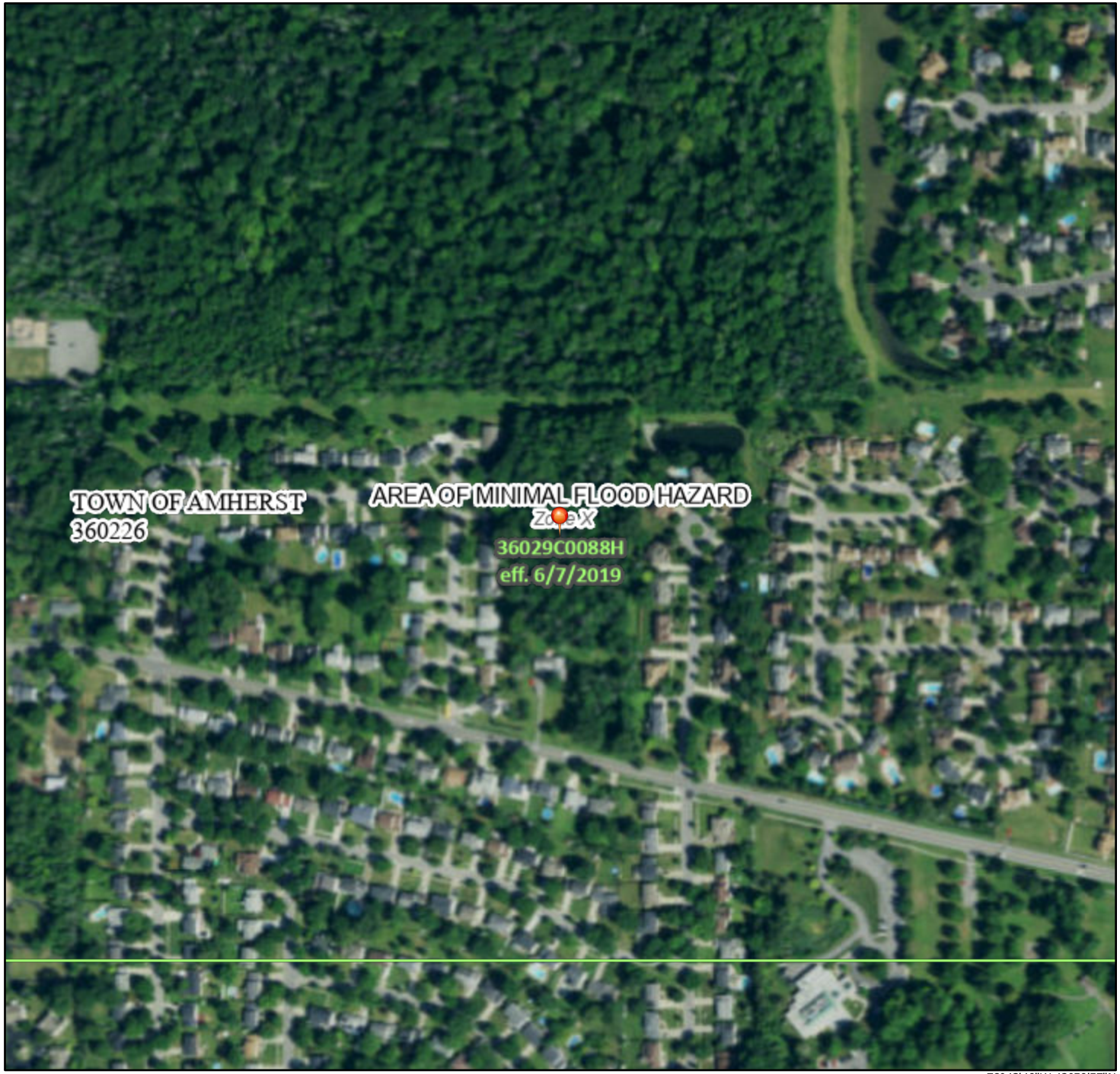
PROJECT NO. WNY-2021052.00	SCALE: NTS	August 2022	EXHIBIT 2

EXHIBIT 3

FEMA Firmette

National Flood Hazard Layer FIRMette

78°44'17"W 43°0'24"N



78°43'40"W 42°59'57"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

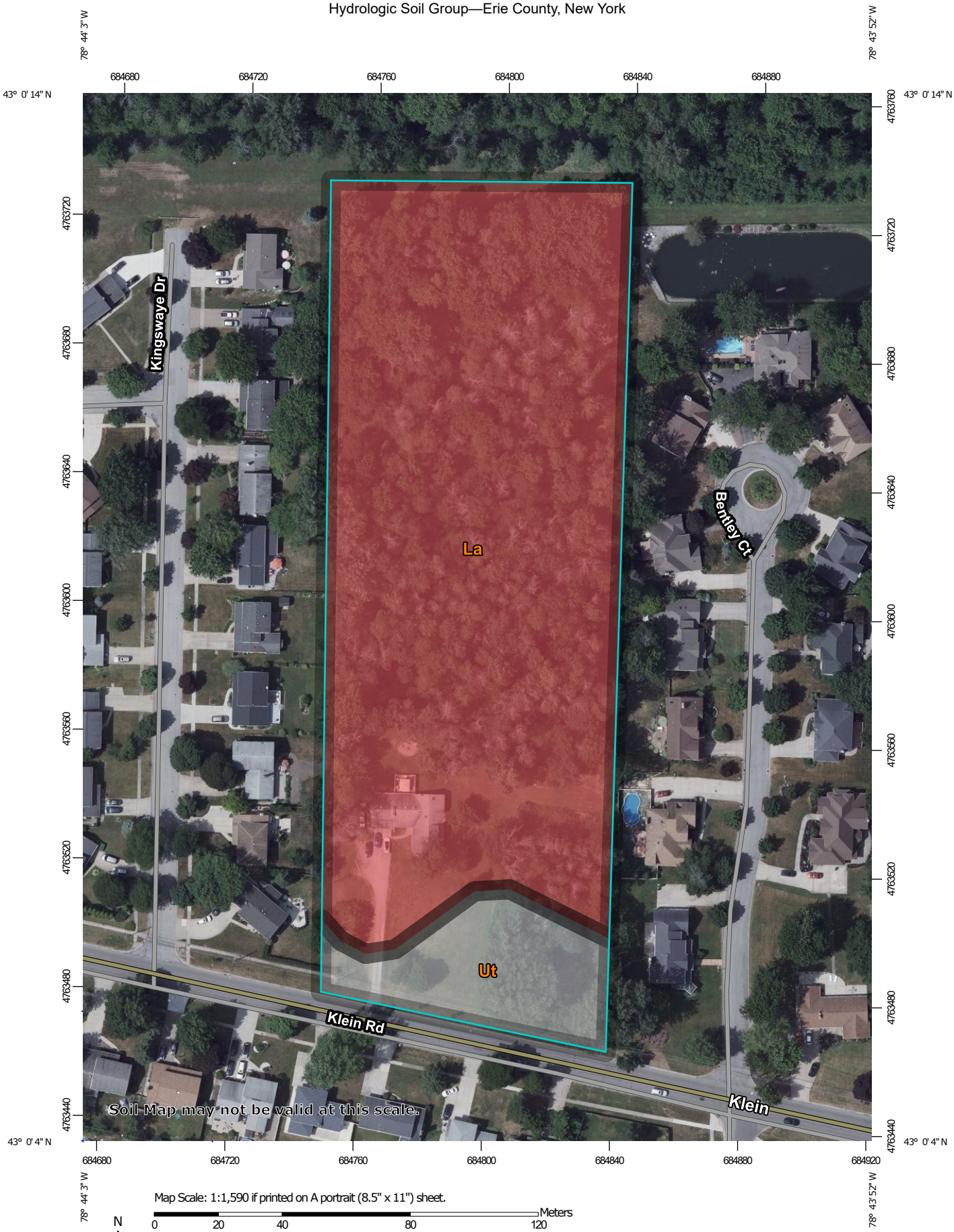
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 8/8/2022 at 2:52 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

EXHIBIT 4

SITE SOIL MAP


78° 44' 3" W
78° 43' 52" W
43° 0' 14" N
43° 0' 4" N
684680
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684840
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4763440
Kingsway Dr
Bentley Ct
Klein Rd
Klein
La
Ut
Soil Map may not be valid at this scale.
Map Scale: 1:1,590 if printed on A portrait (8.5" x 11") sheet.
N
Meters
0 20 40 80 120
Feet
0 50 100 200 300
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Erie County, New York
Survey Area Data: Version 21, Aug 29, 2021

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

Date(s) aerial images were photographed: Jul 4, 2020—Jul 10, 2020

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
La	Lakemont silt loam, 0 to 3 percent slopes	D	5.2	88.2%
Ut	Urban land-Odessa complex, 0 to 3 percent slopes		0.7	11.8%
Totals for Area of Interest			**5.9**	**100.0%**

Description

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

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

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

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

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

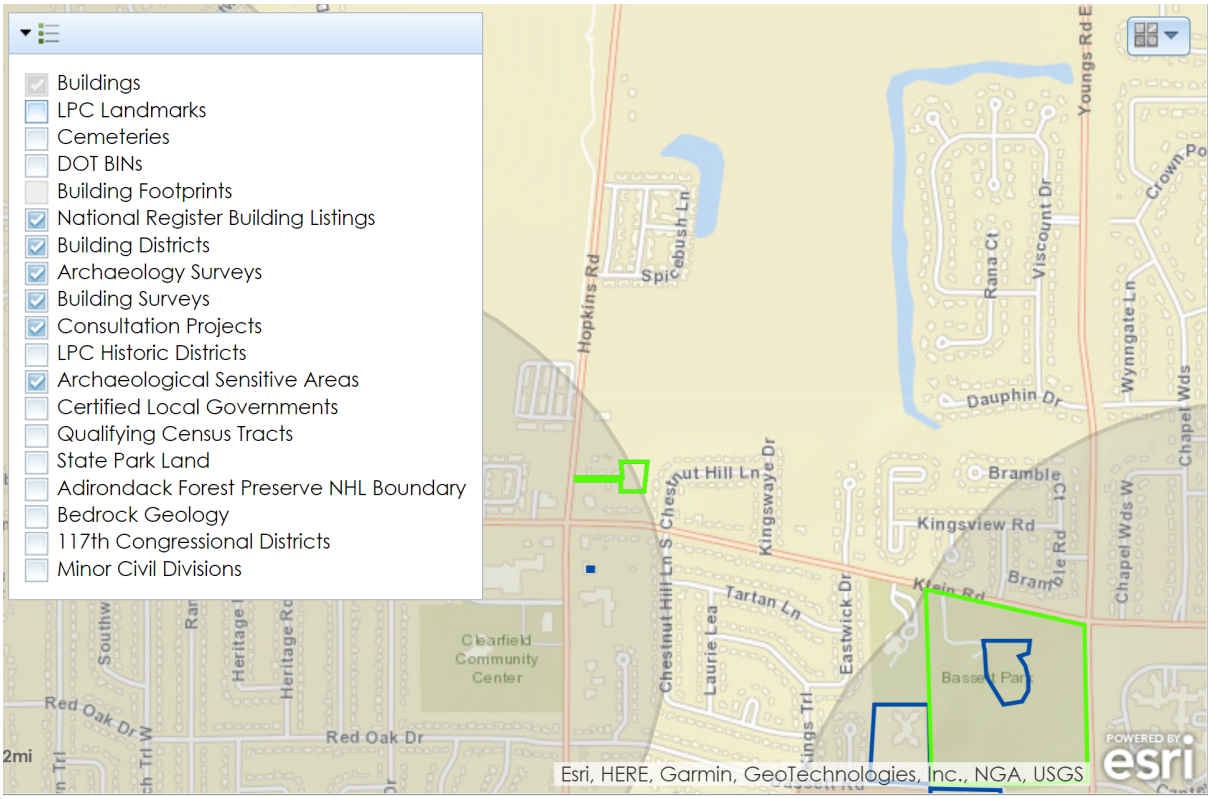
Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over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

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

EXHIBIT 5

NY STATE OFFICE OF PARKS, RECREATION AND

HISTORIC PRESERVATION MAP



CRIS Mapper

GPI Greenman-Pedersen, Inc. Engineering and Construction Services	REGENCY COMMONS 166 KLEIN ROAD TOWN OF AMHERST, NY		
PROJECT NO. WNY-2021052.00	SCALE: NTS	August 2022	EXHIBIT 5

APPENDIX A

SPDES CONSTRUCTION GENERAL PERMIT

GP-0-20-001

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

CONSTRUCTION ACTIVITY

Permit No. GP- 0-20-001

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

of the Environmental Conservation Law

Effective Date: January 29, 2020

Expiration Date: January 28, 2025

John J. Ferguson

Chief Permit Administrator

1-23-20

Authorized Signature

Date

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

PREFACE

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

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

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

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

Table of Contents

Part 1. PERMIT COVERAGE AND LIMITATIONS

A. Permit Application

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

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

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

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

B. Effluent Limitations Applicable to Discharges from Construction Activities

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

(i) Wastewater from washout of concrete;

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

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

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

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

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

C. Post-construction Stormwater Management Practice Requirements

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

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

a. Sizing Criteria for New Development

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

c. Sizing Criteria for Redevelopment Activity

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

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

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

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

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

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

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

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

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

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

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

D. Maintaining Water Quality

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

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

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

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

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

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

E. Eligibility Under This General Permit

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

d. Documentation that:

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

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

Part II. PERMIT COVERAGE

A. How to Obtain Coverage

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

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

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

B. Notice of Intent (NOI) Submittal

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

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

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

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

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

C. Permit Authorization

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

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

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

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

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

c. the final SWPPP has been prepared, and

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

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

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

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

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

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

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

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

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

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

D. General Requirements For Owners or Operators With Permit Coverage

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

F. Change of Owner or Operator

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

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

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

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

Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General SWPPP Requirements

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

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

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

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

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

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

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

d. to document the final construction conditions.

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

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

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

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

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

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

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

B. Required SWPPP Contents

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

e. Infiltration test results, when required; and

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

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

C. Required SWPPP Components by Project Type

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

Part IV. INSPECTION AND MAINTENANCE REQUIREMENTS

A. General Construction Site Inspection and Maintenance Requirements

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

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

B. Contractor Maintenance Inspection Requirements

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

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

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

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

C. Qualified Inspector Inspection Requirements

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

a. Date and time of inspection;

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

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

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

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

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

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

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

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

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

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

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

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

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

Part V. TERMINATION OF PERMIT COVERAGE

A. Termination of Permit Coverage

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

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

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

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

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

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

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

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

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

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

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

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

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

Part VI. REPORTING AND RETENTION RECORDS

A. Record Retention

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

B. Addresses

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

Part VII. STANDARD PERMIT CONDITIONS

A. Duty to Comply

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

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

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

B. Continuation of the Expired General Permit

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

C. Enforcement

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

D. Need to Halt or Reduce Activity Not a Defense

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

E. Duty to Mitigate

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

F. Duty to Provide Information

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

G. Other Information

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

H. Signatory Requirements

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

I. Property Rights

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

J. Severability

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

K. Requirement to Obtain Coverage Under an Alternative Permit

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

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

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

L. Proper Operation and Maintenance

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

M. Inspection and Entry

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

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

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

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

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

N. Permit Actions

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

O. Definitions

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

P. Re-Opener Clause

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

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

Q. Penalties for Falsification of Forms and Reports

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

R. Other Permits

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

APPENDIX A – Acronyms and Definitions

Acronyms

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

Definitions

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

APPENDIX B – Required SWPPP Components by Project Type

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

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

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

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

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

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

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

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

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

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

Table 2

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

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

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

Table 2 (Continued)

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

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

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

APPENDIX C – Watersheds Requiring Enhanced Phosphorus Removal

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

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

Figure 1 - New York City Watershed East of the Hudson

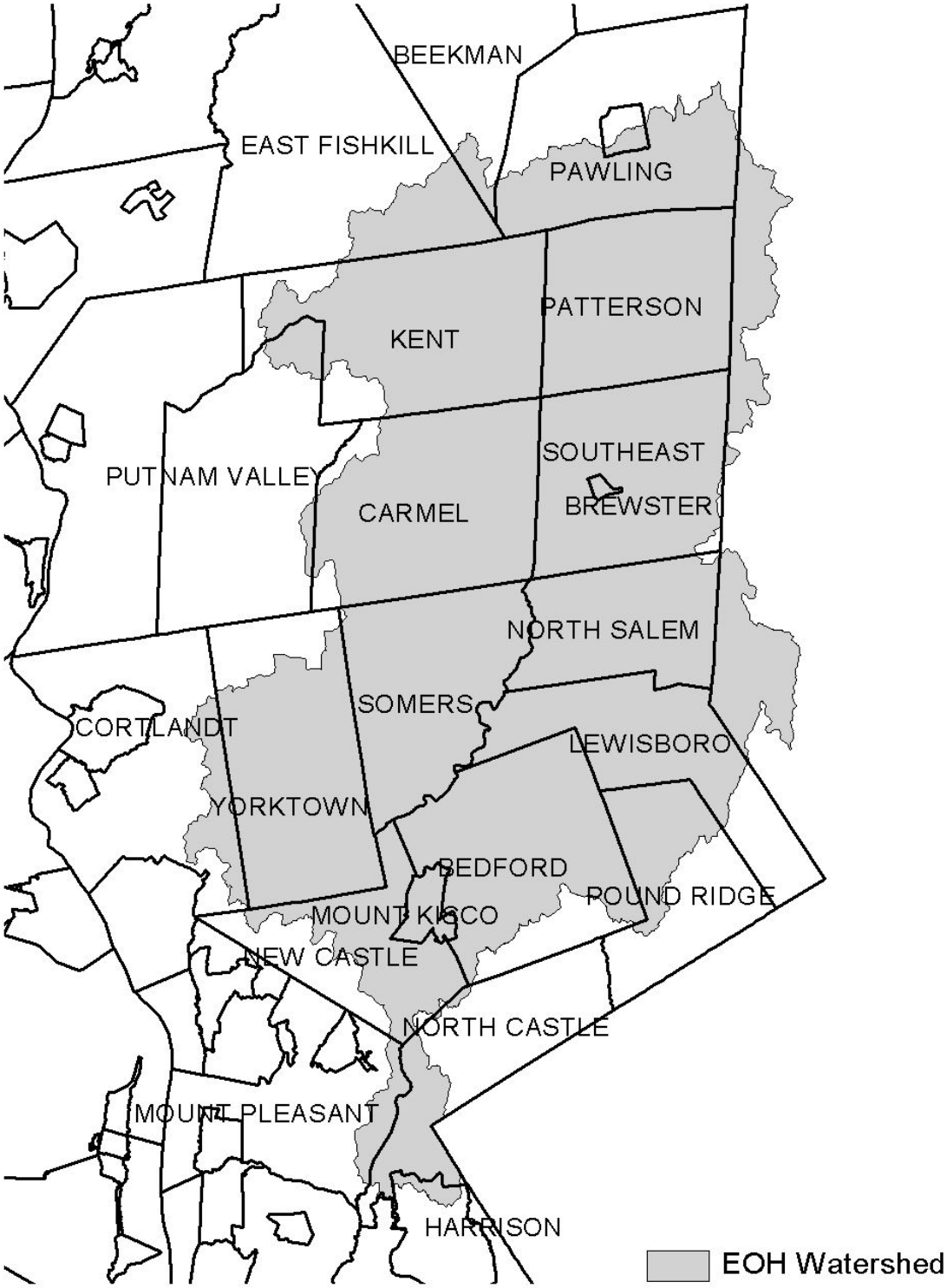


Figure 2 - Onondaga Lake Watershed

Figure 3 - Greenwood Lake Watershed

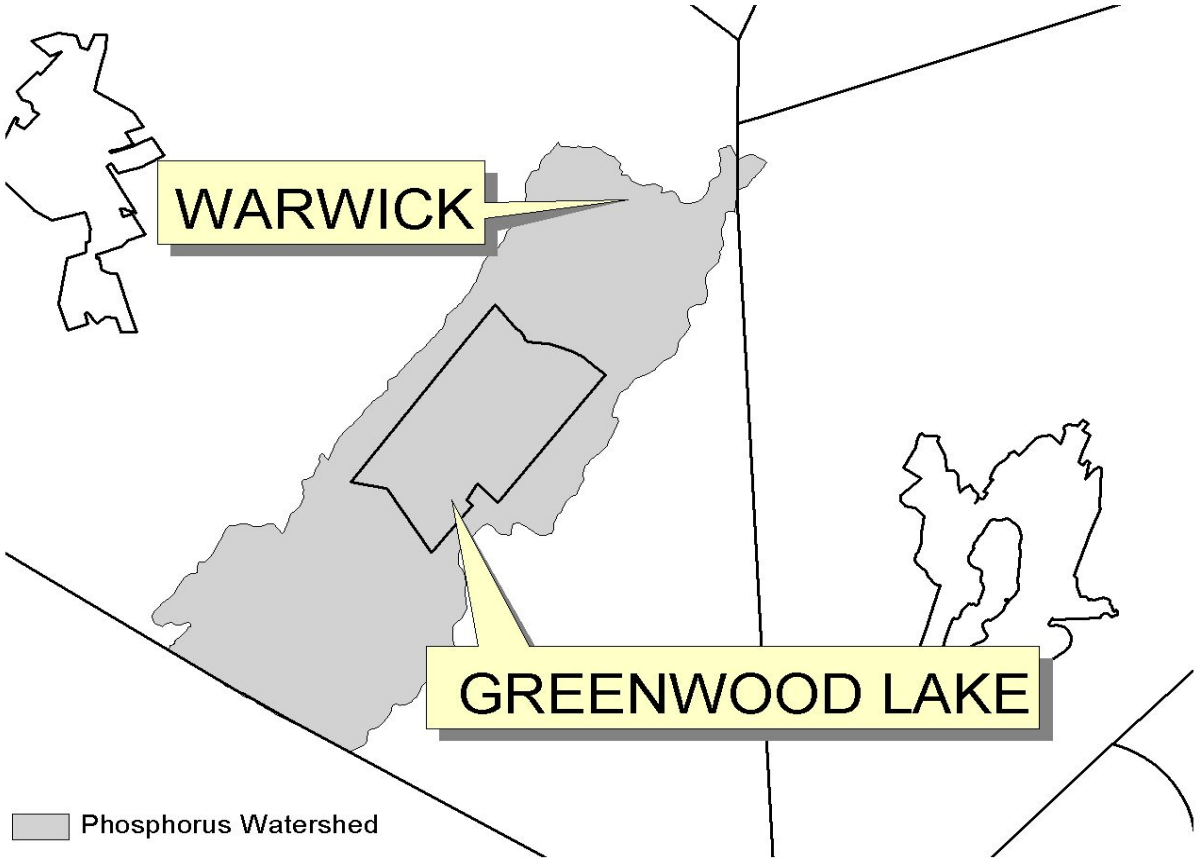


Figure 4 - Oscawana Lake Watershed

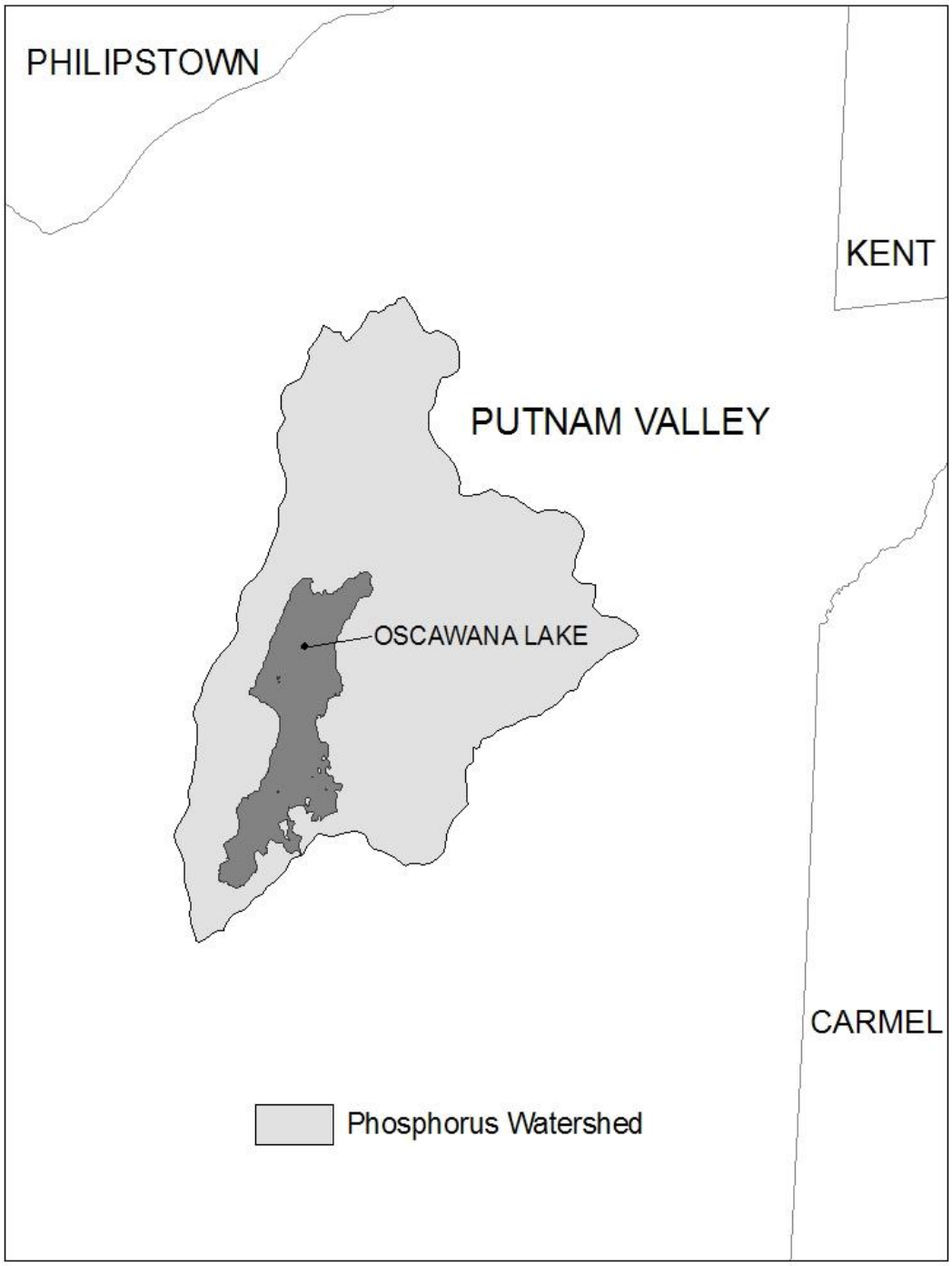
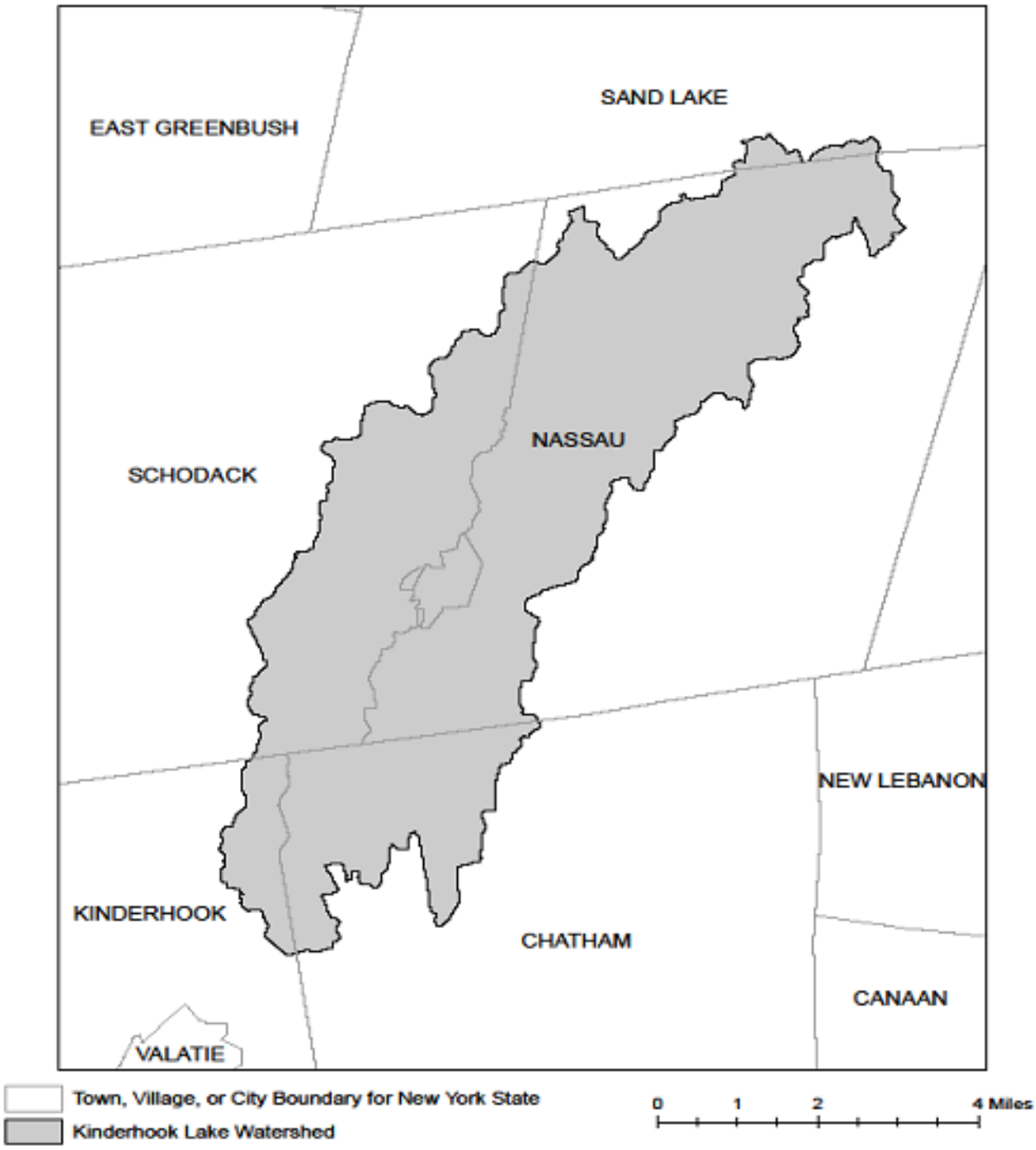


Figure 5 - Kinderhook Lake Watershed



APPENDIX D – Watersheds with Lower Disturbance Threshold

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

APPENDIX F – List of NYS DEC Regional Offices

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

APPENDIX B

NYSDEC NOTICE OF INTENT, ACKNOWLEDGMENT LETTER, AND MS4 ACCEPTANCE FORM

NOI for coverage under Stormwater General Permit for Construction Activity

version 1.35

(Submission #: HPK-ZKFC-WZNMA, version 1)

Details

Originally Started By	Elizabeth J Hartz
Alternate Identifier	Regency Commons
Submission ID	HPK-ZKFC-WZNMA
Submission Reason	New
Status	Draft

Form Input

Owner/Operator Information

Owner/Operator Name (Company/Private Owner/Municipality/Agency/Institution, etc.)
Regency Homes, LLC

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

Owner/Operator Contact Person First Name
Elliot

Owner/Operator Mailing Address
4899 Meyer Road

City
Pendleton

State
NY

Zip
14120

Phone
716-867-0900

Email
elasky@forbesdevcorp.com

Federal Tax ID
NONE PROVIDED

Project Location

Project/Site Name
Regency Commons

Street Address (Not P.O. Box)
166 Klein Road

Side of Street
North

City/Town/Village (THAT ISSUES BUILDING PERMIT)
Amherst

State
NY

Zip
14221

DEC Region
9

County
ERIE

Name of Nearest Cross Street
Bentley Court

Distance to Nearest Cross Street (Feet)
95

Project In Relation to Cross Street
West

Tax Map Numbers Section-Block-Parcel
56.10-13-1

Tax Map Numbers
NONE PROVIDED

1. Coordinates

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

Navigate to your location and click on the map to get the X,Y coordinates
43.002604,-78.73274099999999

Project Details

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

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

Pre-Development Existing Landuse
Single Family Home

Post-Development Future Land Use
Single Family Subdivision (Please answer 3a)

3a. If Single Family Subdivision was selected in question 3, enter the number of subdivision lots.
18

---

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

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

Total Site Area (acres)
5.24

Total Area to be Disturbed (acres)
4.95

Existing Impervious Area to be Disturbed (acres)
0.03

Future Impervious Area Within Disturbed Area (acres)
1.61

5. Do you plan to disturb more than 5 acres of soil at any one time?
Yes

---

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

A (%)
0

B (%)
0

C (%)
0

D (%)
100

7. Is this a phased project?
No

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

Start Date
11/01/2022

End Date
12/31/2023

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

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

Other Waterbody Type Off Site Description
NONE PROVIDED

9b. If "wetland" was selected in 9A, how was the wetland identified?
Regulatory Map

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

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

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

If No, skip question 13.

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

If Yes, what is the acreage to be disturbed?
NONE PROVIDED

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area?
Yes

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

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

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

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

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

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

Required SWPPP Components

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

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

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

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

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

SWPPP Preparer
Greenman-Pedersen, Inc.

Contact Name (Last, Space, First)
Donner, Elizabeth

Mailing Address
4950 Genesee Street

City
Buffalo

State
NY

Zip
14225

Phone
716-633-4844

Email
edonner@gpinet.com

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

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

Please upload the SWPPP Preparer Certification
Appendix B SWPPP Certification_Unsigned.pdf - 08/16/2022 11:42 AM
Comment
NONE PROVIDED

Erosion & Sediment Control Criteria

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

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

Temporary Structural
Silt Fence
Stabilized Construction Entrance
Storm Drain Inlet Protection

Biotechnical
None

Vegetative Measures
Mulching
Protecting Vegetation
Seeding
Topsoiling

Permanent Structural
Land Grading
Rock Outlet Protection

Other
Silt Sock

Post-Construction Criteria

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

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.
Cul-de-sac Reduction
Preservation of Buffers
Sidewalk Reduction

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

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout). (Acre-feet)
0.14

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

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

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

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29. (acre-feet)
0.039

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

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

32. Provide the Minimum RRv required based on HSG. [Minimum RRv Required = (P) (0.95) (Ai) / 12, Ai=(s) (Aic)] (acre-feet)
0.025

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

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

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

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

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

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

33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question #29. (acre-feet)
0.39

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

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a).
.43

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

If Yes, go to question 36.

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

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

CPv Required (acre-feet)
0.258

CPv Provided (acre-feet)
0.258

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

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

Overbank Flood Control Criteria (Qp)

Pre-Development (CFS)
5.23

Post-Development (CFS)
3.84

Total Extreme Flood Control Criteria (Qf)

Pre-Development (CFS)
12.30

Post-Development (CFS)
8.74

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

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

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

39. Use this space to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). (See question #32a) This space can also be used for other pertinent project information.
100% of the Water Quality Volume was not reduced for this site due to the poor infiltration qualities of the site soils (Type D) and limited head available.

Post-Construction SMP Identification

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

RR Techniques (Area Reduction)

Round to the nearest tenth

Total Contributing Acres for Conservation of Natural Area (RR-1)
0

Total Contributing Impervious Acres for Conservation of Natural Area (RR-1)
0

Total Contributing Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2)
0

Total Contributing Impervious Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2)
0

Total Contributing Acres for Tree Planting/Tree Pit (RR-3)
0

Total Contributing Impervious Acres for Tree Planting/Tree Pit (RR-3)
0

Total Contributing Acres for Disconnection of Rooftop Runoff (RR-4)
0

RR Techniques (Volume Reduction)

Total Contributing Impervious Acres for Disconnection of Rooftop Runoff (RR-4)
0

Total Contributing Impervious Acres for Vegetated Swale (RR-5)
0

Total Contributing Impervious Acres for Rain Garden (RR-6)
0

Total Contributing Impervious Acres for Stormwater Planter (RR-7)
0

Total Contributing Impervious Acres for Rain Barrel/Cistern (RR-8)
0

Total Contributing Impervious Acres for Porous Pavement (RR-9)
0

Total Contributing Impervious Acres for Green Roof (RR-10)
0

Standard SMPs with RRv Capacity

Total Contributing Impervious Acres for Infiltration Trench (I-1)
0

Total Contributing Impervious Acres for Infiltration Basin (I-2)
0

Total Contributing Impervious Acres for Dry Well (I-3)
0

Total Contributing Impervious Acres for Underground Infiltration System (I-4)
0

Total Contributing Impervious Acres for Bioretention (F-5)
1.26

Total Contributing Impervious Acres for Dry Swale (O-1)
0

Standard SMPs

Total Contributing Impervious Acres for Micropool Extended Detention (P-1)
0

Total Contributing Impervious Acres for Wet Pond (P-2)
1.26

Total Contributing Impervious Acres for Wet Extended Detention (P-3)
0

Total Contributing Impervious Acres for Multiple Pond System (P-4)
0

Total Contributing Impervious Acres for Pocket Pond (P-5)
0

Total Contributing Impervious Acres for Surface Sand Filter (F-1)
0

Total Contributing Impervious Acres for Underground Sand Filter (F-2)
0

Total Contributing Impervious Acres for Perimeter Sand Filter (F-3)
0

Total Contributing Impervious Acres for Organic Filter (F-4)
0

Total Contributing Impervious Acres for Shallow Wetland (W-1)
0

Total Contributing Impervious Acres for Extended Detention Wetland (W-2)
0

Total Contributing Impervious Acres for Pond/Wetland System (W-3)
0

Total Contributing Impervious Acres for Pocket Wetland (W-4)
0

Total Contributing Impervious Acres for Wet Swale (O-2)
0

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

Total Contributing Impervious Area for Hydrodynamic
0

Total Contributing Impervious Area for Wet Vault
0

Total Contributing Impervious Area for Media Filter
0

"Other" Alternative SMP?
0

Total Contributing Impervious Area for "Other"
0

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

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

Manufacturer of Alternative SMP
0

Name of Alternative SMP
0

Other Permits

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

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

If Other, then identify
NONE PROVIDED

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

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

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

MS4 SWPPP Acceptance

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

If No, skip question 44

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

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

MS4 Acceptance Form Upload
NONE PROVIDED
Comment
NONE PROVIDED

Owner/Operator Certification

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

Upload Owner/Operator Certification Form
NONE PROVIDED
Comment
NONE PROVIDED

Attachments

Date	Attachment Name	Context	User
8/16/2022 11:42 AM	Appendix B SWPPP Certification_Unsigned.pdf	Attachment	Elizabeth Hartz

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Owner/Operator Certification Form

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

Project/Site Name: Regency Commons

eNOI Submission Number: HPK-ZKFC-WZNMA

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

Certification Statement - Owner/Operator

I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Owner/Operator First Name M.I. Last Name

_____

Signature

_____

Date

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

SWPPP Preparer Certification Form

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

Project Site Information

Project/Site Name

Regency Commons

Owner/Operator Information

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

Regency Homes, LLC

Certification Statement – SWPPP Preparer

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

First name	MI	Last Name
Elizabeth		Donner

E. Donner

Signature

8/19/2022

Date

Revised: January 2020

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

MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance Form

for

Construction Activities Seeking Authorization Under SPDES General Permit

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

I. Project Owner/Operator Information
1. Owner/Operator Name: Regency Builders, LLC
2. Contact Person: Elliot Lasky
3. Street Address: 4899 Meyer Road
4. City/State/Zip: Pendleton, NY 14120
II. Project Site Information
5. Project/Site Name: Regency Commons
6. Street Address: 166 Klein Road
7. City/State/Zip: Amherst, NY 14221
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: Town of Amherst
12. MS4 SPDES Permit Identification Number: NYR20A _____
13. Contact Person:
14. Street Address:
15. City/State/Zip:
16. Telephone Number:

(NYS DEC - MS4 SWPPP Acceptance Form - January 2010)

MS4 SWPPP Acceptance Form - continued

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

I hereby certify that the final Stormwater Pollution Prevention Plan (SWPPP) for the construction project identified in question 5 has been reviewed and meets the substantive requirements in the SPDES General Permit For Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s).
Note: The MS4, through the acceptance of the SWPPP, assumes no responsibility for the accuracy and adequacy of the design included in the SWPPP. In addition, review and acceptance of the SWPPP by the MS4 does not relieve the owner/operator or their SWPPP preparer of responsibility or liability for errors or omissions in the plan.

Printed Name:

Title/Position:

Signature:

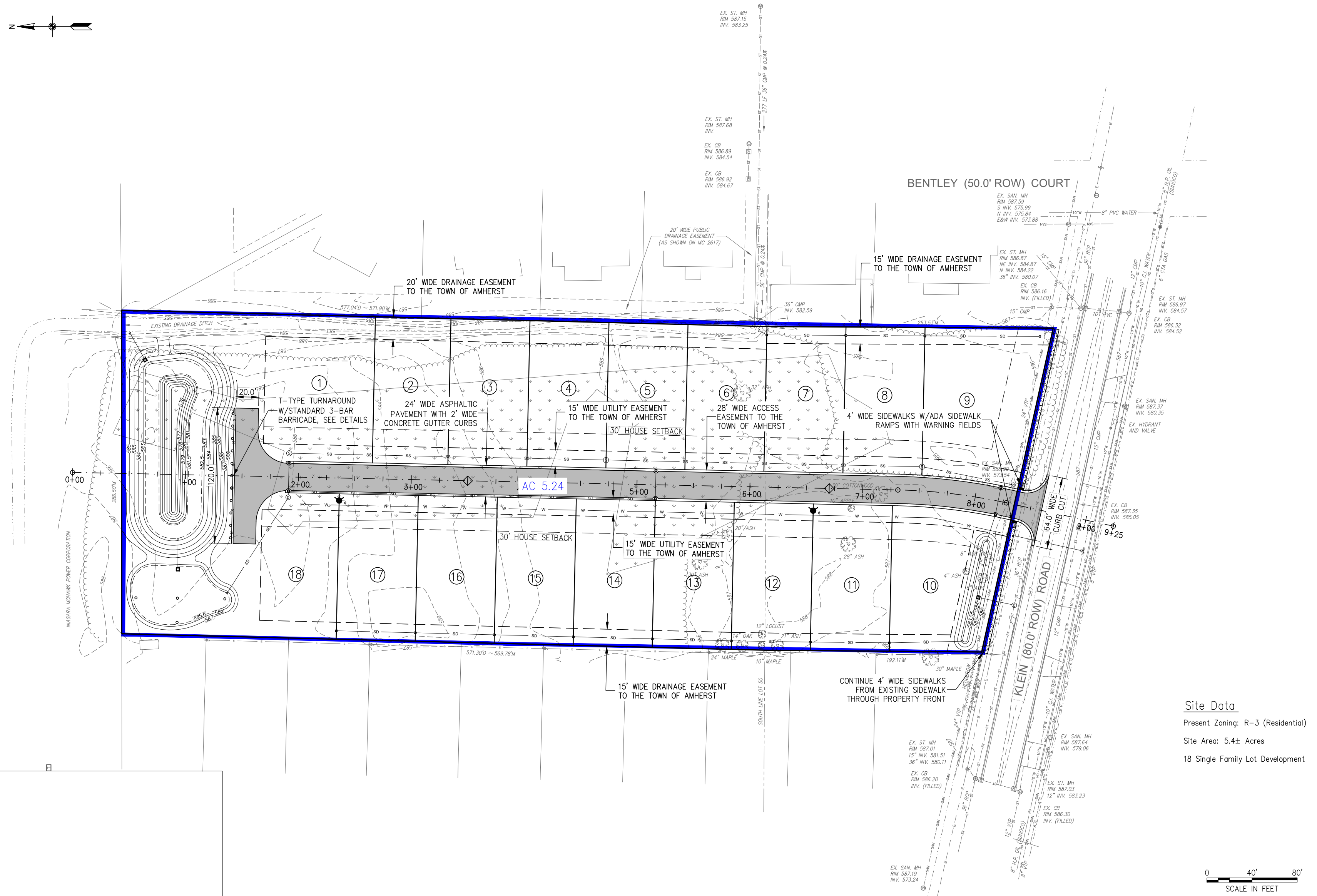
Date:

VI. Additional Information

APPENDIX C

PRE-DEVELOPMENT DRAINAGE DELINEATION MAP

AND PEAK FLOW ANALYSIS



Site Data

Present Zoning: R-3 (Residential)

Site Area: 5.4± Acres

18 Single Family Lot Development

FOR OFFICIAL TOWN USE

GPI Engineering Design Planning Construction Management

Greenman - Pedersen, Inc.
4950 Genesee Street, Suite 100
Buffalo, NY, 14225

PREPARED FOR

Regency Builders, LLC
4899 Meyer Road
Pendelton, New York 14120

REGENCY COMMONS

166 Klein Road
Town of Amherst, New York

WARNING: ALTERATIONS TO THIS DOCUMENT NOT CONFORMING TO SECTION 7209, SUBDIVISION 2, STATE EDUCATION LAW, ARE PROHIBITED

REVISIONS		
####	####	####
####	####	####
####	####	####
####	####	####
NO.	REVISION	DATE

08/2022

DRAWN/DESIGN BY	CHECKED BY
DV	KZ

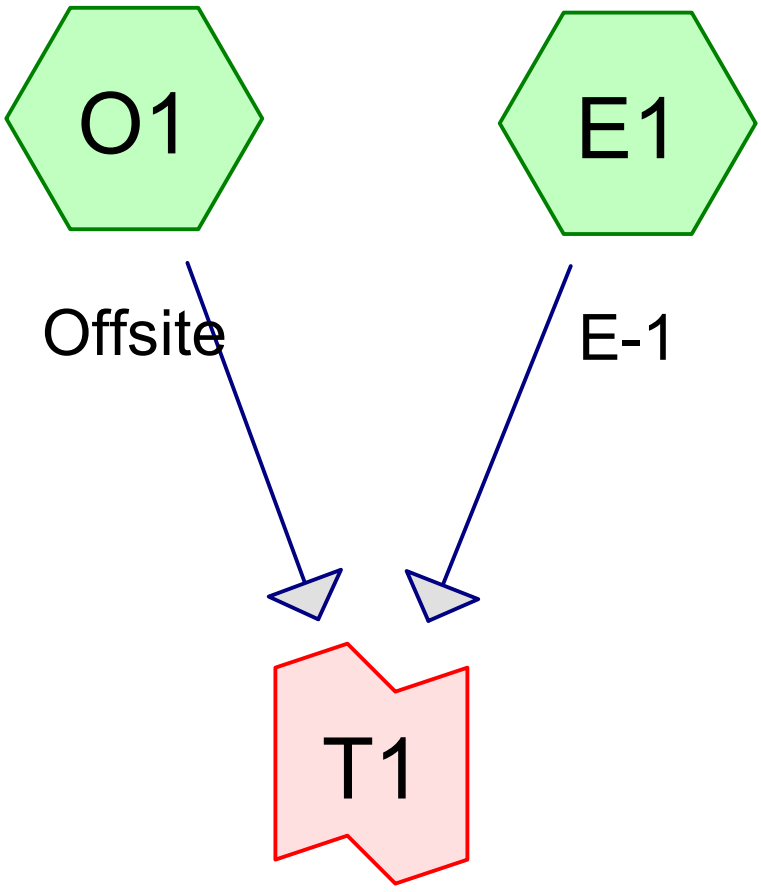
PROPOSED SITE PLAN

SCALE: AS NOTED

WNY-2021052.00

02

PRE-DEV



Pre-Dev Total

Subcat Reach Pond Link

Routing Diagram for 166 Klein Road HydroCAD
Prepared by Greenman Pedersen, Inc, Printed 8/17/2022

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-yr	Type II 24-hr		Default	24.00	1	1.81	2
2	10-yr	Type II 24-hr		Default	24.00	1	3.09	2
3	25-yr	Type II 24-hr		Default	24.00	1	3.77	2
4	100-yr	Type II 24-hr		Default	24.00	1	5.11	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3.980	80	>75% Grass cover, Good, HSG D (E1)
0.160	98	Paved parking, HSG D (E1)
1.970	77	Woods, Good, HSG D (E1, O1)
6.110	**80**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
6.110	HSG D	E1, O1
0.000	Other	
6.110		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	3.980	0.000	3.980	>75% Grass cover, Good	E1
0.000	0.000	0.000	0.160	0.000	0.160	Paved parking	E1
0.000	0.000	0.000	1.970	0.000	1.970	Woods, Good	E1, O1
0.000	**0.000**	**0.000**	**6.110**	**0.000**	**6.110**	**TOTAL AREA**	

Time span=3.00-20.00 hrs, dt=0.05 hrs, 341 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment E1: E-1 Runoff Area=5.230 ac 3.06% Impervious Runoff Depth>0.39"
Flow Length=764' Tc=60.0 min CN=80 Runoff=1.06 cfs 0.170 af

Subcatchment O1: Offsite Runoff Area=0.880 ac 0.00% Impervious Runoff Depth>0.30"
Flow Length=50' Slope=0.0200 '/' Tc=26.0 min CN=77 Runoff=0.23 cfs 0.022 af

Link T1: Pre-Dev Total Inflow=1.15 cfs 0.192 af
Primary=1.15 cfs 0.192 af

Total Runoff Area = 6.110 ac Runoff Volume = 0.192 af Average Runoff Depth = 0.38"
97.38% Pervious = 5.950 ac 2.62% Impervious = 0.160 ac

Summary for Subcatchment E1: E-1

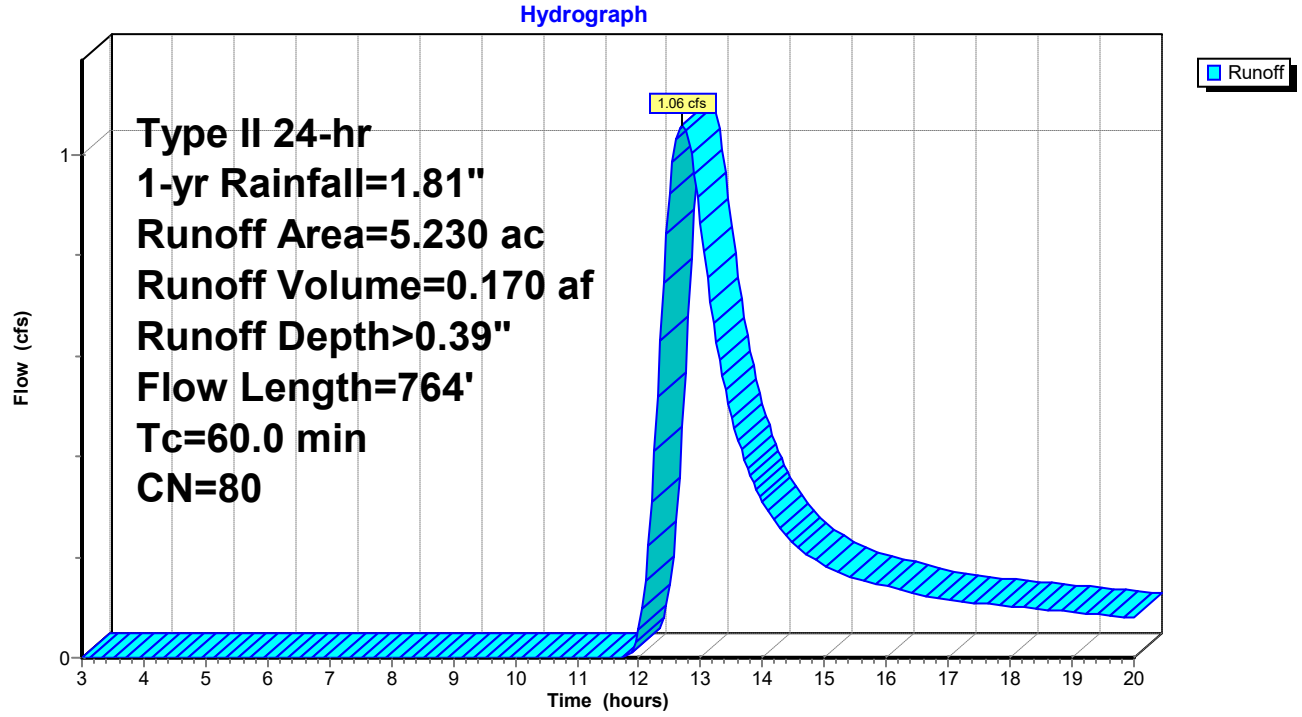
Runoff = 1.06 cfs @ 12.71 hrs, Volume= 0.170 af, Depth> 0.39"
Routed to Link T1 : Pre-Dev Total

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=1.81"

Area (ac)	CN	Description
1.090	77	Woods, Good, HSG D
3.980	80	>75% Grass cover, Good, HSG D
0.160	98	Paved parking, HSG D
5.230	80	Weighted Average
5.070		96.94% Pervious Area
0.160		3.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
43.2	150	0.0127	0.06		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 2.18"
7.0	183	0.0077	0.44		**Shallow Concentrated Flow, Shallow Conc.** Woodland Kv= 5.0 fps
9.8	431	0.0024	0.73		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
60.0	764	Total			

Subcatchment E1: E-1



Summary for Subcatchment O1: Offsite

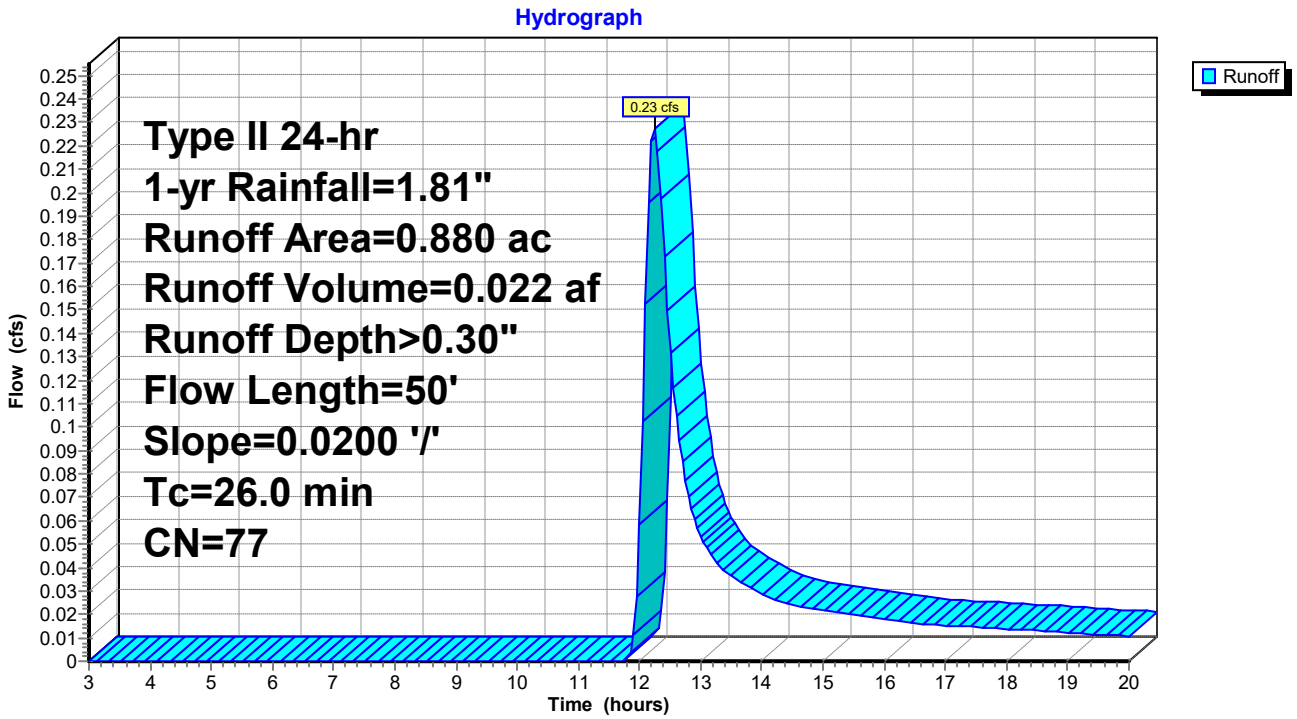
Runoff = 0.23 cfs @ 12.24 hrs, Volume= 0.022 af, Depth> 0.30"
Routed to Link T1 : Pre-Dev Total

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=1.81"

Area (ac)	CN	Description
0.880	77	Woods, Good, HSG D
0.880		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.0	50	0.0200	0.03		**Sheet Flow, SHEET FLOW** Woods: Dense underbrush n= 0.800 P2= 2.18"

Subcatchment O1: Offsite

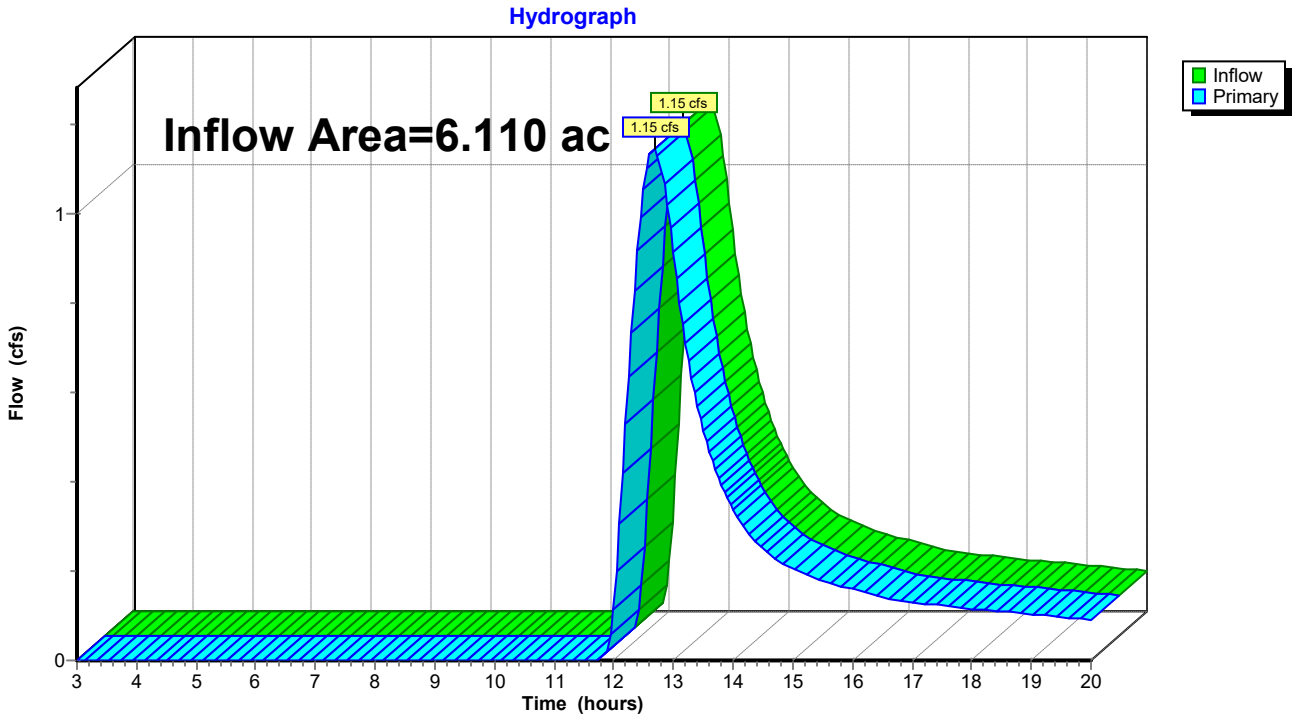


Summary for Link T1: Pre-Dev Total

Inflow Area = 6.110 ac, 2.62% Impervious, Inflow Depth > 0.38" for 1-yr event
Inflow = 1.15 cfs @ 12.68 hrs, Volume= 0.192 af
Primary = 1.15 cfs @ 12.68 hrs, Volume= 0.192 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 3.00-20.00 hrs, dt= 0.05 hrs

Link T1: Pre-Dev Total



Time span=3.00-20.00 hrs, dt=0.05 hrs, 341 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment E1: E-1 Runoff Area=5.230 ac 3.06% Impervious Runoff Depth>1.18"
Flow Length=764' Tc=60.0 min CN=80 Runoff=3.56 cfs 0.513 af

Subcatchment O1: Offsite Runoff Area=0.880 ac 0.00% Impervious Runoff Depth>1.02"
Flow Length=50' Slope=0.0200 '/' Tc=26.0 min CN=77 Runoff=0.91 cfs 0.075 af

Link T1: Pre-Dev Total Inflow=3.89 cfs 0.588 af
Primary=3.89 cfs 0.588 af

Total Runoff Area = 6.110 ac Runoff Volume = 0.588 af Average Runoff Depth = 1.15"
97.38% Pervious = 5.950 ac 2.62% Impervious = 0.160 ac

Summary for Subcatchment E1: E-1

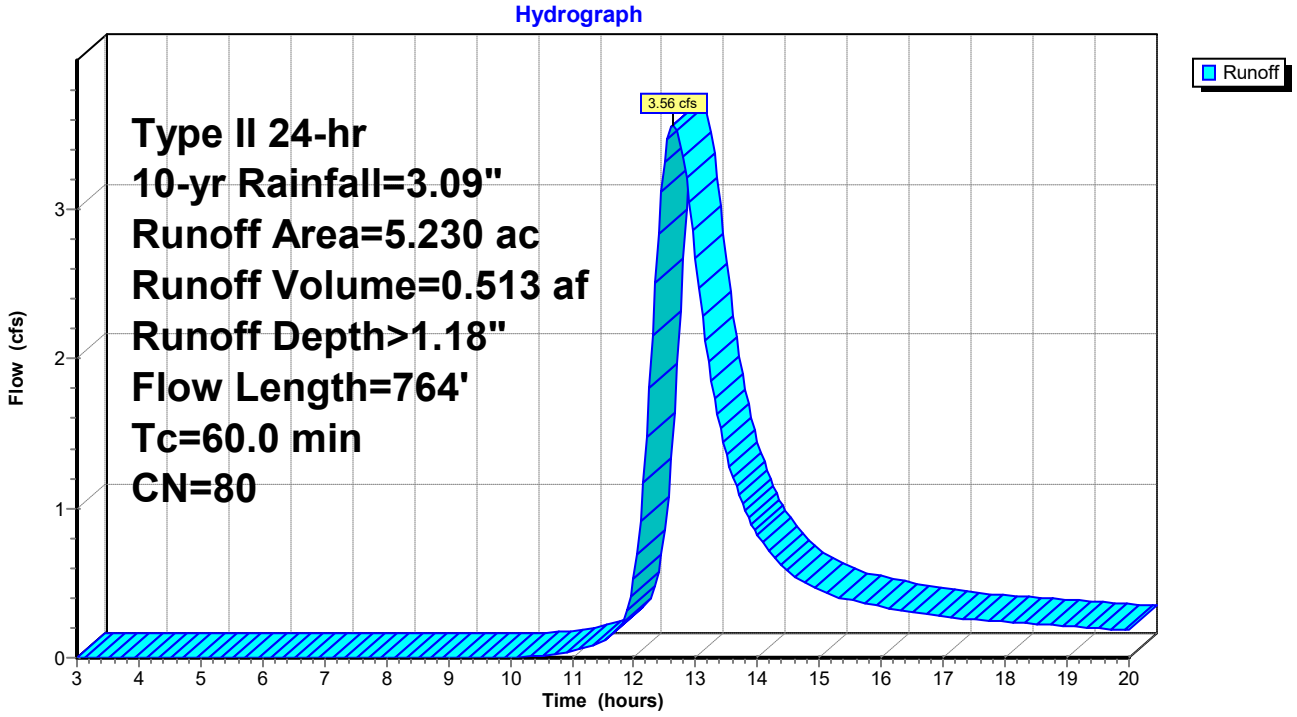
Runoff = 3.56 cfs @ 12.64 hrs, Volume= 0.513 af, Depth> 1.18"
Routed to Link T1 : Pre-Dev Total

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.09"

Area (ac)	CN	Description
1.090	77	Woods, Good, HSG D
3.980	80	>75% Grass cover, Good, HSG D
0.160	98	Paved parking, HSG D
5.230	80	Weighted Average
5.070		96.94% Pervious Area
0.160		3.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
43.2	150	0.0127	0.06		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 2.18"
7.0	183	0.0077	0.44		**Shallow Concentrated Flow, Shallow Conc.** Woodland Kv= 5.0 fps
9.8	431	0.0024	0.73		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
60.0	764	Total			

Subcatchment E1: E-1



Summary for Subcatchment O1: Offsite

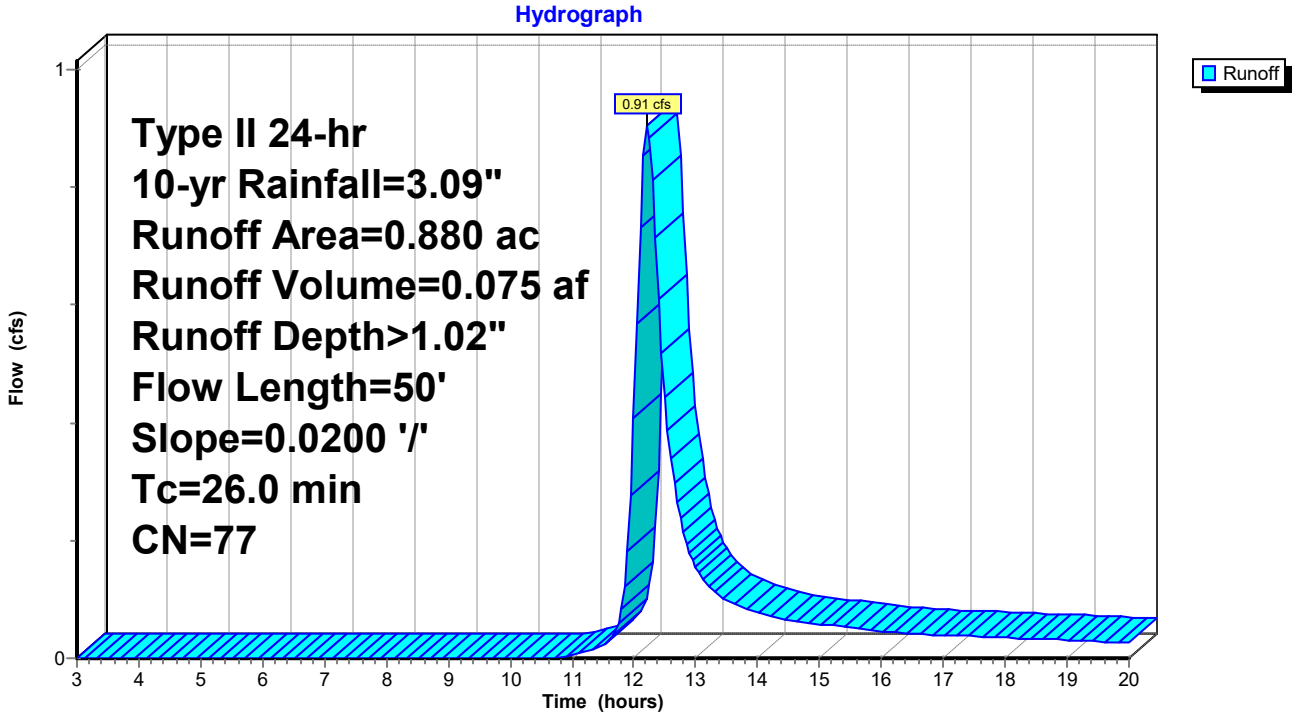
Runoff = 0.91 cfs @ 12.21 hrs, Volume= 0.075 af, Depth> 1.02"
Routed to Link T1 : Pre-Dev Total

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.09"

Area (ac)	CN	Description
0.880	77	Woods, Good, HSG D
0.880		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.0	50	0.0200	0.03		**Sheet Flow, SHEET FLOW** Woods: Dense underbrush n= 0.800 P2= 2.18"

Subcatchment O1: Offsite

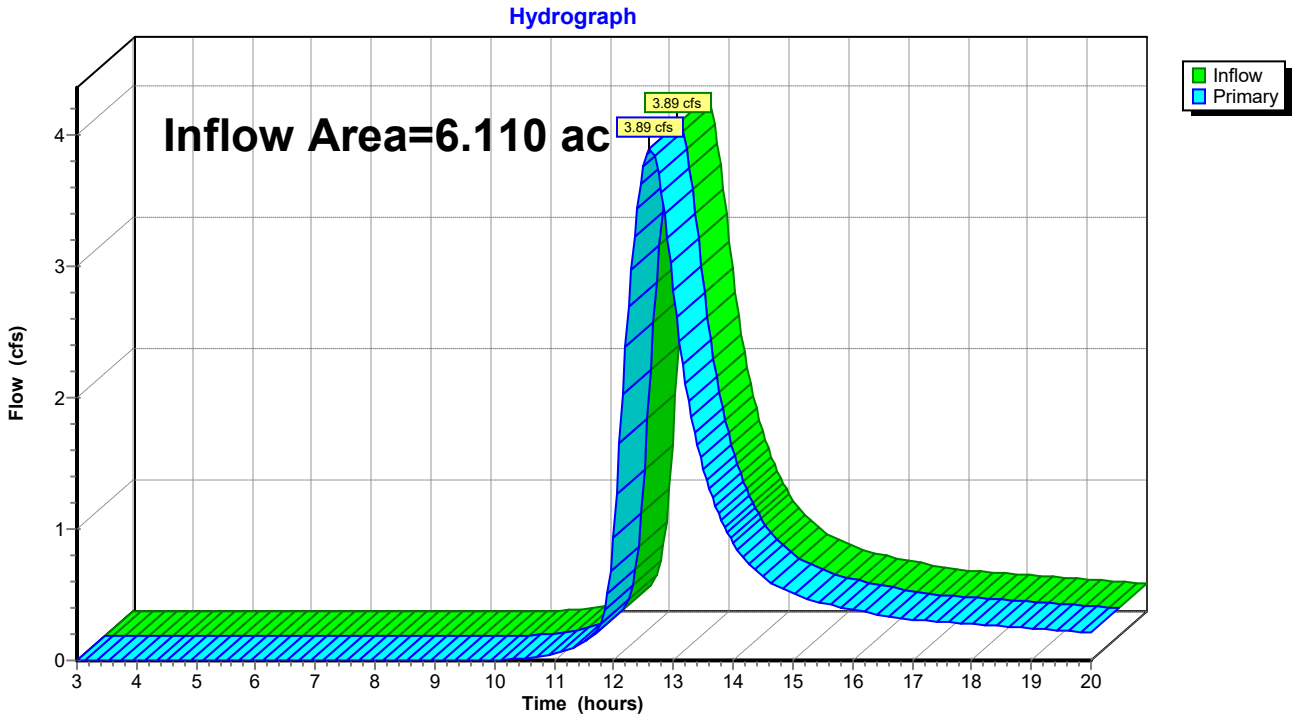


Summary for Link T1: Pre-Dev Total

Inflow Area = 6.110 ac, 2.62% Impervious, Inflow Depth > 1.15" for 10-yr event
Inflow = 3.89 cfs @ 12.60 hrs, Volume= 0.588 af
Primary = 3.89 cfs @ 12.60 hrs, Volume= 0.588 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 3.00-20.00 hrs, dt= 0.05 hrs

Link T1: Pre-Dev Total



Time span=3.00-20.00 hrs, dt=0.05 hrs, 341 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment E1: E-1 Runoff Area=5.230 ac 3.06% Impervious Runoff Depth>1.67"
Flow Length=764' Tc=60.0 min CN=80 Runoff=5.12 cfs 0.727 af

Subcatchment O1: Offsite Runoff Area=0.880 ac 0.00% Impervious Runoff Depth>1.48"
Flow Length=50' Slope=0.0200 '/' Tc=26.0 min CN=77 Runoff=1.34 cfs 0.109 af

Link T1: Pre-Dev Total Inflow=5.58 cfs 0.836 af
Primary=5.58 cfs 0.836 af

Total Runoff Area = 6.110 ac Runoff Volume = 0.836 af Average Runoff Depth = 1.64"
97.38% Pervious = 5.950 ac 2.62% Impervious = 0.160 ac

Summary for Subcatchment E1: E-1

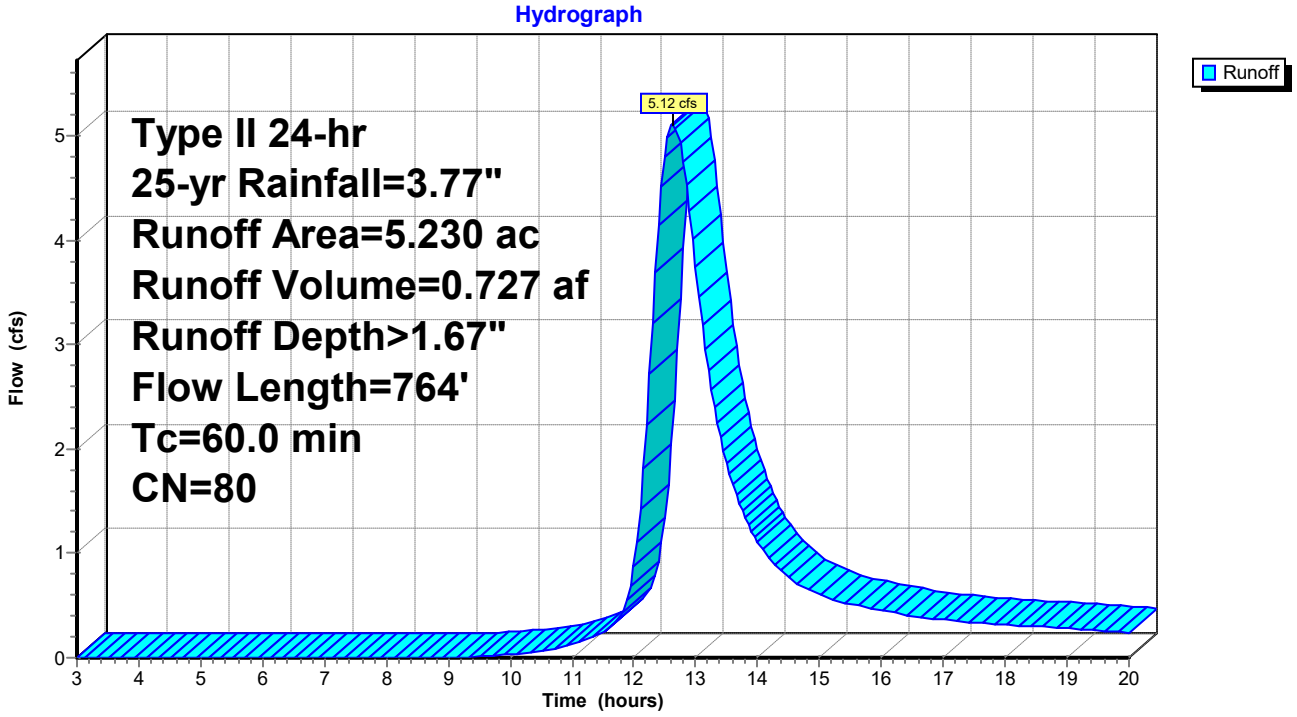
Runoff = 5.12 cfs @ 12.62 hrs, Volume= 0.727 af, Depth> 1.67"
Routed to Link T1 : Pre-Dev Total

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=3.77"

Area (ac)	CN	Description
1.090	77	Woods, Good, HSG D
3.980	80	>75% Grass cover, Good, HSG D
0.160	98	Paved parking, HSG D
5.230	80	Weighted Average
5.070		96.94% Pervious Area
0.160		3.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
43.2	150	0.0127	0.06		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 2.18"
7.0	183	0.0077	0.44		**Shallow Concentrated Flow, Shallow Conc.** Woodland Kv= 5.0 fps
9.8	431	0.0024	0.73		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
60.0	764	Total			

Subcatchment E1: E-1



Summary for Subcatchment O1: Offsite

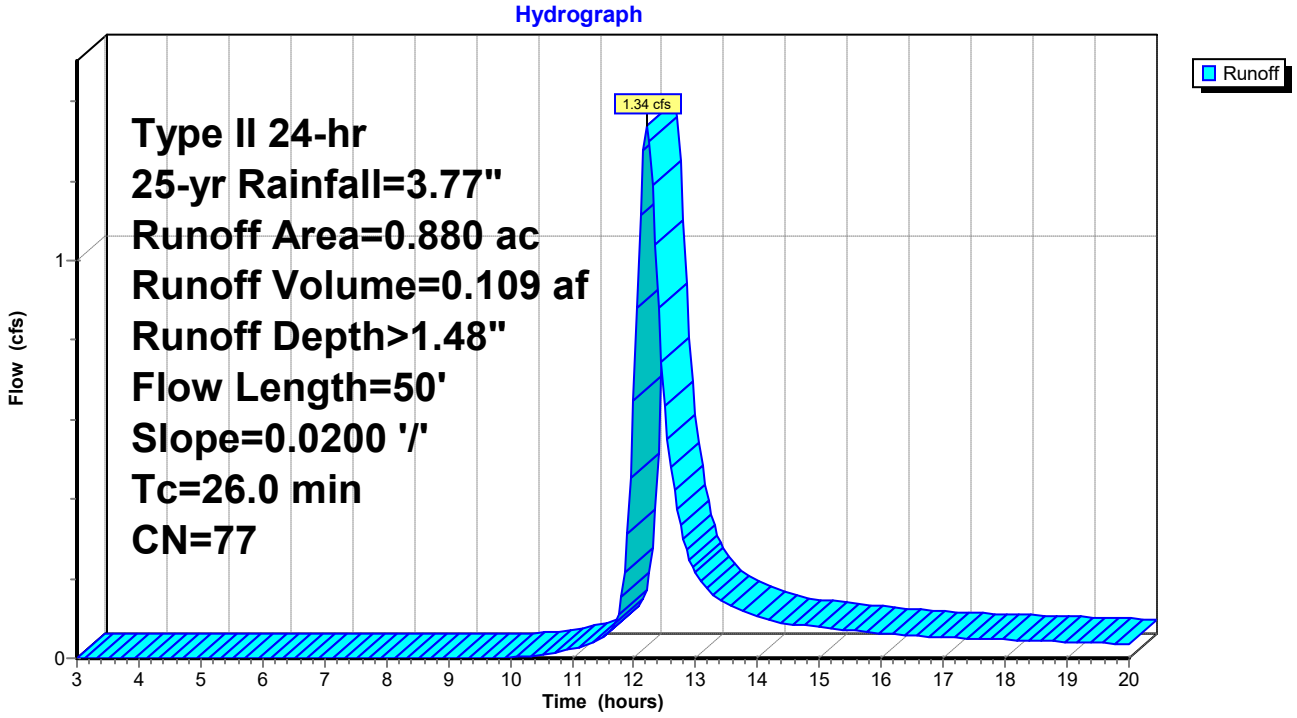
Runoff = 1.34 cfs @ 12.21 hrs, Volume= 0.109 af, Depth> 1.48"
Routed to Link T1 : Pre-Dev Total

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=3.77"

Area (ac)	CN	Description
0.880	77	Woods, Good, HSG D
0.880		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.0	50	0.0200	0.03		**Sheet Flow, SHEET FLOW** Woods: Dense underbrush n= 0.800 P2= 2.18"

Subcatchment O1: Offsite

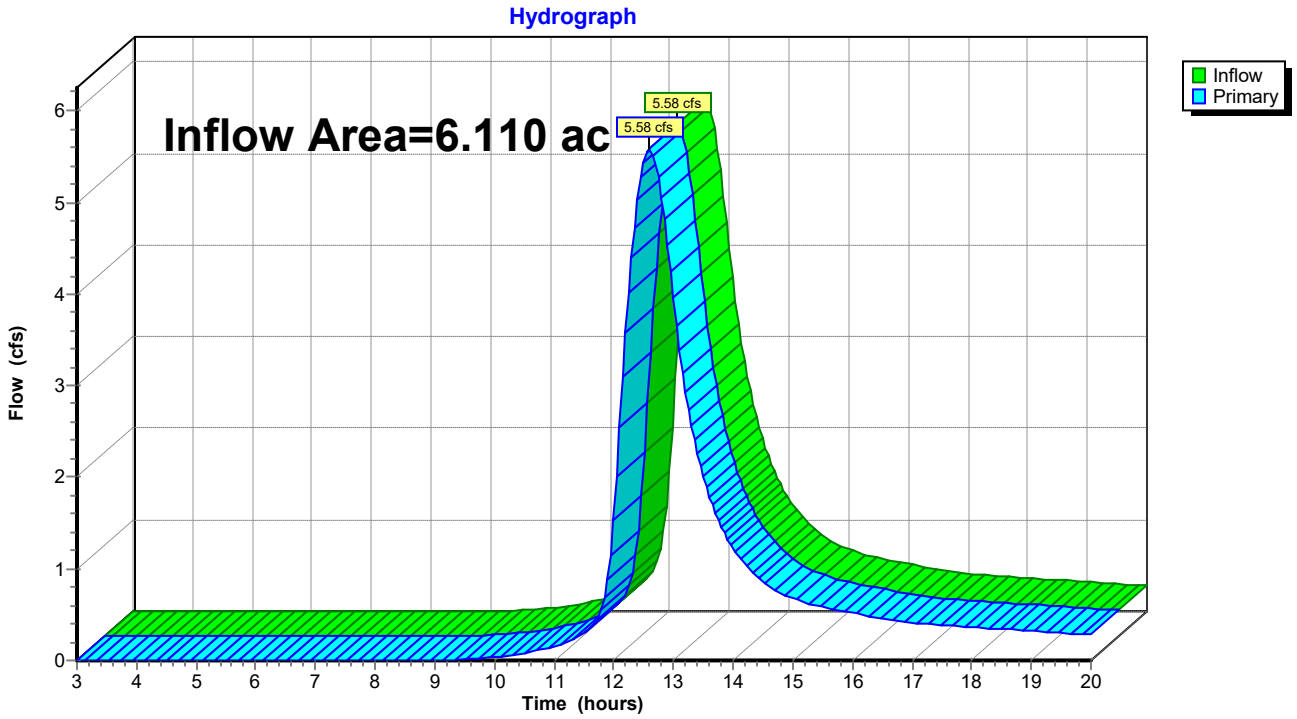


Summary for Link T1: Pre-Dev Total

Inflow Area = 6.110 ac, 2.62% Impervious, Inflow Depth > 1.64" for 25-yr event
Inflow = 5.58 cfs @ 12.60 hrs, Volume= 0.836 af
Primary = 5.58 cfs @ 12.60 hrs, Volume= 0.836 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 3.00-20.00 hrs, dt= 0.05 hrs

Link T1: Pre-Dev Total



Time span=3.00-20.00 hrs, dt=0.05 hrs, 341 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment E1: E-1 Runoff Area=5.230 ac 3.06% Impervious Runoff Depth>2.72"
Flow Length=764' Tc=60.0 min CN=80 Runoff=8.36 cfs 1.184 af

Subcatchment O1: Offsite Runoff Area=0.880 ac 0.00% Impervious Runoff Depth>2.49"
Flow Length=50' Slope=0.0200 '/' Tc=26.0 min CN=77 Runoff=2.26 cfs 0.182 af

Link T1: Pre-Dev Total Inflow=9.14 cfs 1.367 af
Primary=9.14 cfs 1.367 af

Total Runoff Area = 6.110 ac Runoff Volume = 1.367 af Average Runoff Depth = 2.68"
97.38% Pervious = 5.950 ac 2.62% Impervious = 0.160 ac

Summary for Subcatchment E1: E-1

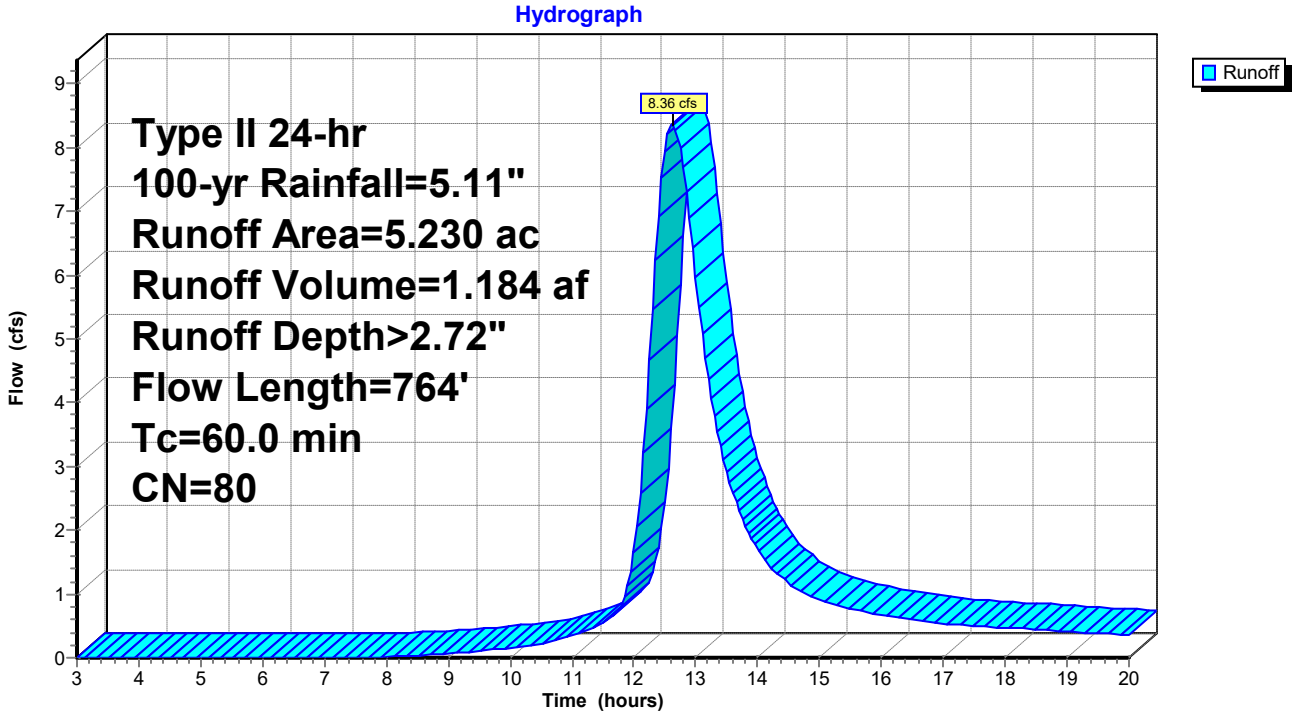
Runoff = 8.36 cfs @ 12.62 hrs, Volume= 1.184 af, Depth> 2.72"
Routed to Link T1 : Pre-Dev Total

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.11"

Area (ac)	CN	Description
1.090	77	Woods, Good, HSG D
3.980	80	>75% Grass cover, Good, HSG D
0.160	98	Paved parking, HSG D
5.230	80	Weighted Average
5.070		96.94% Pervious Area
0.160		3.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
43.2	150	0.0127	0.06		**Sheet Flow, Sheet Flow** Woods: Light underbrush n= 0.400 P2= 2.18"
7.0	183	0.0077	0.44		**Shallow Concentrated Flow, Shallow Conc.** Woodland Kv= 5.0 fps
9.8	431	0.0024	0.73		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
60.0	764	Total			

Subcatchment E1: E-1



Summary for Subcatchment O1: Offsite

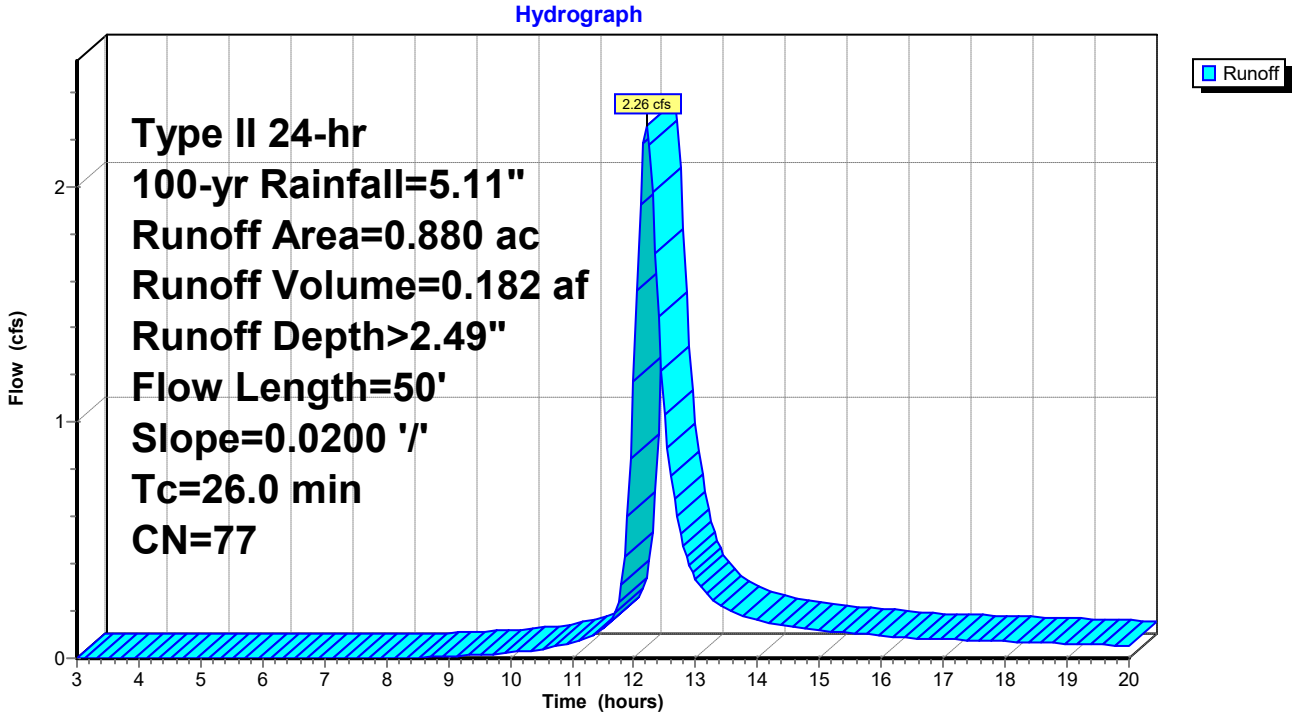
Runoff = 2.26 cfs @ 12.20 hrs, Volume= 0.182 af, Depth> 2.49"
Routed to Link T1 : Pre-Dev Total

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.11"

Area (ac)	CN	Description
0.880	77	Woods, Good, HSG D
0.880		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.0	50	0.0200	0.03		**Sheet Flow, SHEET FLOW** Woods: Dense underbrush n= 0.800 P2= 2.18"

Subcatchment O1: Offsite



Summary for Link T1: Pre-Dev Total

Inflow Area = 6.110 ac, 2.62% Impervious, Inflow Depth > 2.68" for 100-yr event
Inflow = 9.14 cfs @ 12.58 hrs, Volume= 1.367 af
Primary = 9.14 cfs @ 12.58 hrs, Volume= 1.367 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 3.00-20.00 hrs, dt= 0.05 hrs

Link T1: Pre-Dev Total

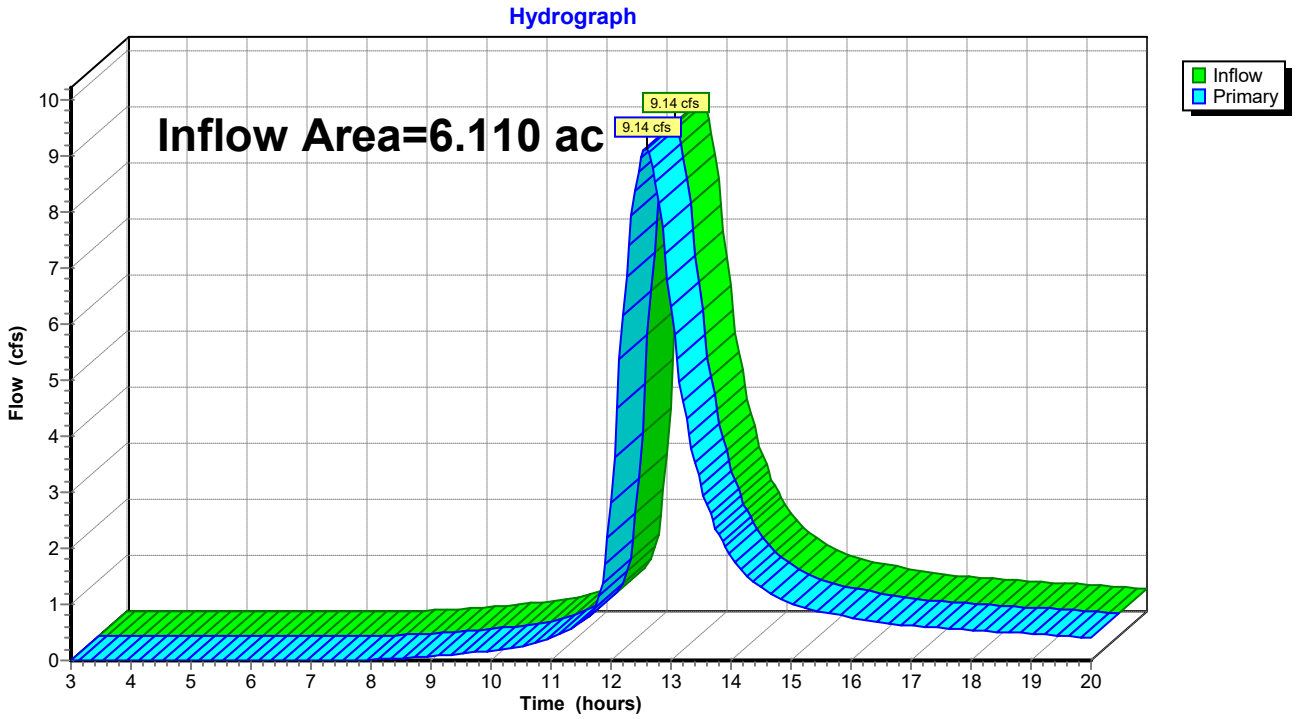
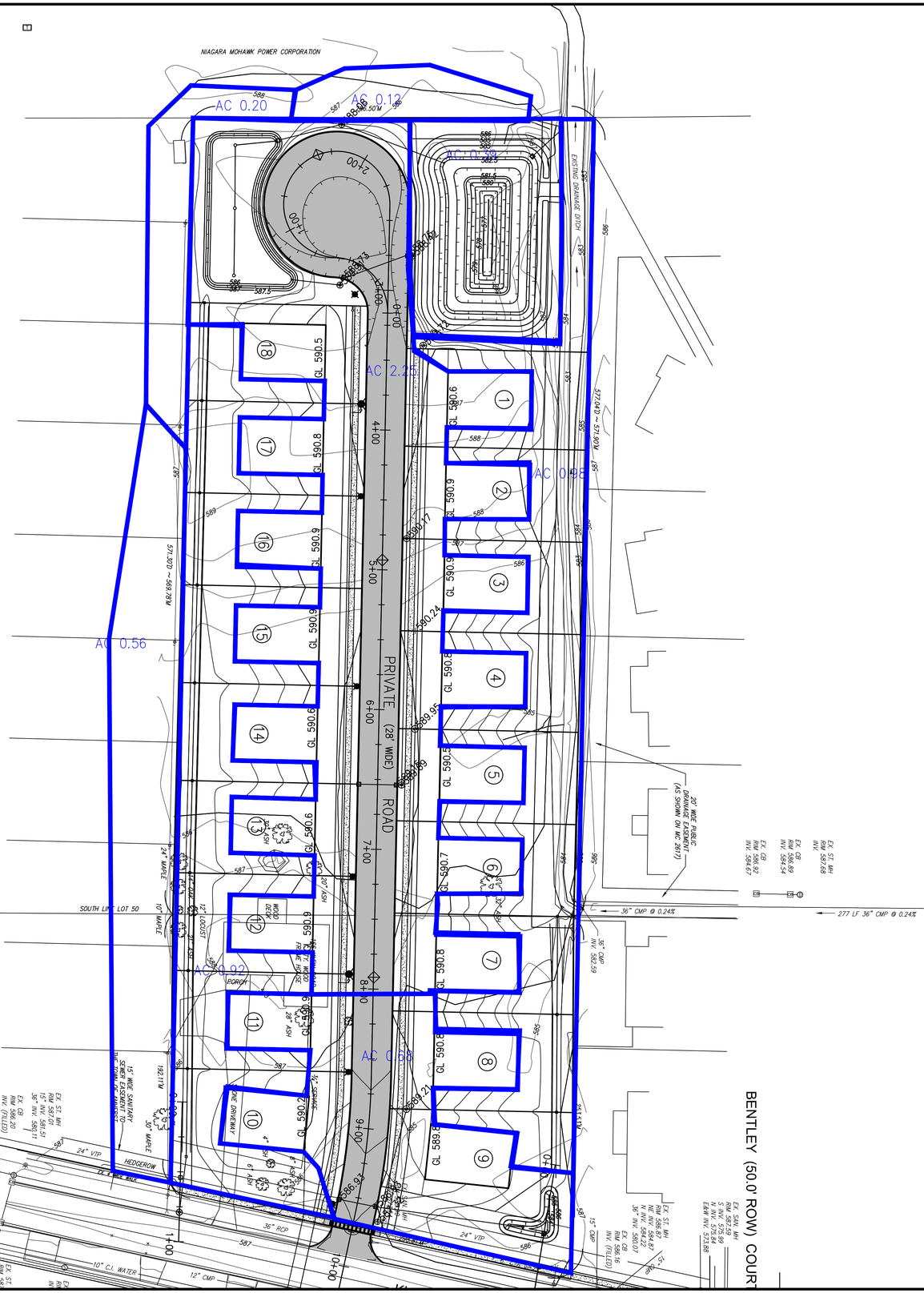


TABLE OF CONTENTS

APPENDIX D

POST DEVELOPMENT DRAINAGE DELINEATION MAP AND

PEAK FLOW ANALYSIS



N:\2021\WNY-20210520.00 165 Klein Road Subdivision\CADD\Design Plans\xx Post Dev Drainage Delineation.dwg Thursday, 8 June 2023 12:39PM

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REVISIONS								
NO.								
REVISION								
DATE								

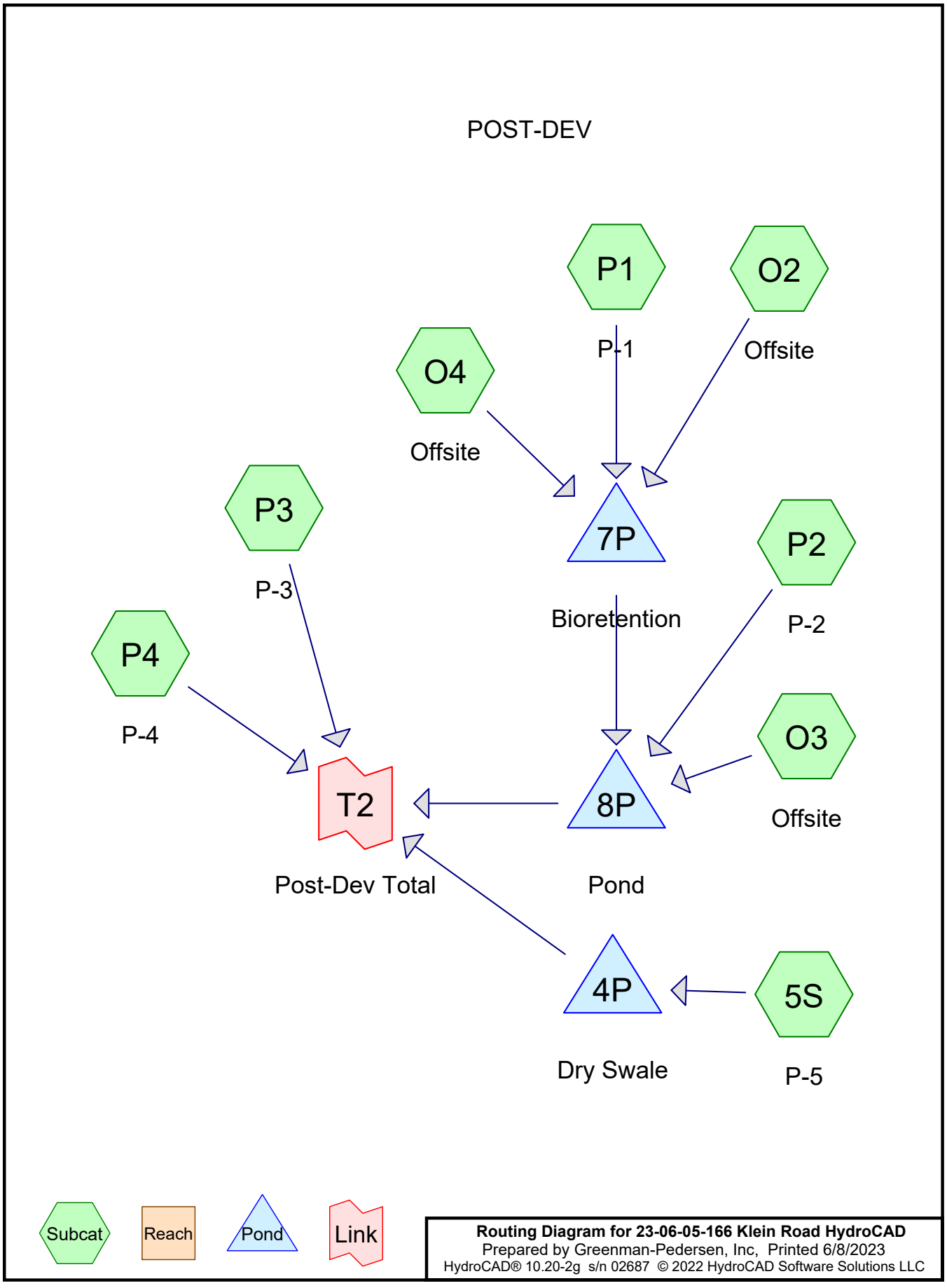
Date

DRAWN/DESIGN BY	CHECKED BY
Drawn	Checked

Post Dev Drainage Delineation

SCALE: Scale

xx



Routing Diagram for 23-06-05-166 Klein Road HydroCAD
Prepared by Greenman-Pedersen, Inc, Printed 6/8/2023

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-yr	Type II 24-hr		Default	24.00	1	1.81	2
2	10-yr	Type II 24-hr		Default	24.00	1	3.09	2
3	25-yr	Type II 24-hr		Default	24.00	1	3.77	2
4	100-yr	Type II 24-hr		Default	24.00	1	5.11	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3.610	80	>75% Grass cover, Good, HSG D (5S, P1, P2, P3, P4)
1.610	98	Paved parking, HSG D (5S, P1)
0.880	77	Woods, Good, HSG D (O2, O3, O4)
6.100	**84**	**TOTAL AREA**

Time span=3.00-30.00 hrs, dt=0.03 hrs, 901 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 5S: P-5 Runoff Area=0.700 ac 50.00% Impervious Runoff Depth=0.87"
Flow Length=137' Tc=13.2 min CN=89 Runoff=0.84 cfs 0.051 af

Subcatchment O2: Offsite Runoff Area=0.200 ac 0.00% Impervious Runoff Depth=0.35"
Flow Length=100' Slope=0.0200 '/' Tc=45.3 min CN=77 Runoff=0.03 cfs 0.006 af

Subcatchment O3: Offsite Runoff Area=0.120 ac 0.00% Impervious Runoff Depth=0.35"
Flow Length=100' Slope=0.0300 '/' Tc=38.5 min CN=77 Runoff=0.02 cfs 0.004 af

Subcatchment O4: Offsite Runoff Area=0.560 ac 0.00% Impervious Runoff Depth=0.35"
Flow Length=200' Slope=0.0200 '/' Tc=50.0 min CN=77 Runoff=0.09 cfs 0.016 af

Subcatchment P1: P-1 Runoff Area=2.160 ac 58.33% Impervious Runoff Depth=1.00"
Flow Length=621' Tc=22.5 min CN=91 Runoff=2.24 cfs 0.180 af

Subcatchment P2: P-2 Runoff Area=0.440 ac 0.00% Impervious Runoff Depth=0.45"
Flow Length=70' Slope=0.0200 '/' Tc=9.9 min CN=80 Runoff=0.29 cfs 0.017 af

Subcatchment P3: P-3 Runoff Area=0.860 ac 0.00% Impervious Runoff Depth=0.45"
Flow Length=613' Tc=16.6 min CN=80 Runoff=0.43 cfs 0.032 af

Subcatchment P4: P-4 Runoff Area=1.060 ac 0.00% Impervious Runoff Depth=0.45"
Flow Length=866' Tc=38.3 min CN=80 Runoff=0.30 cfs 0.040 af

Pond 4P: Dry Swale Peak Elev=584.14' Storage=188 cf Inflow=0.84 cfs 0.051 af
Outflow=0.71 cfs 0.051 af

Pond 7P: Bioretention Peak Elev=586.61' Storage=4,319 cf Inflow=2.28 cfs 0.202 af
Outflow=0.55 cfs 0.114 af

Pond 8P: Pond Peak Elev=582.81' Storage=1,975 cf Inflow=0.60 cfs 0.134 af
Outflow=0.17 cfs 0.120 af

Link T2: Post-Dev Total Inflow=1.27 cfs 0.243 af
Primary=1.27 cfs 0.243 af

Total Runoff Area = 6.100 ac Runoff Volume = 0.345 af Average Runoff Depth = 0.68"
73.61% Pervious = 4.490 ac 26.39% Impervious = 1.610 ac

Summary for Subcatchment 5S: P-5

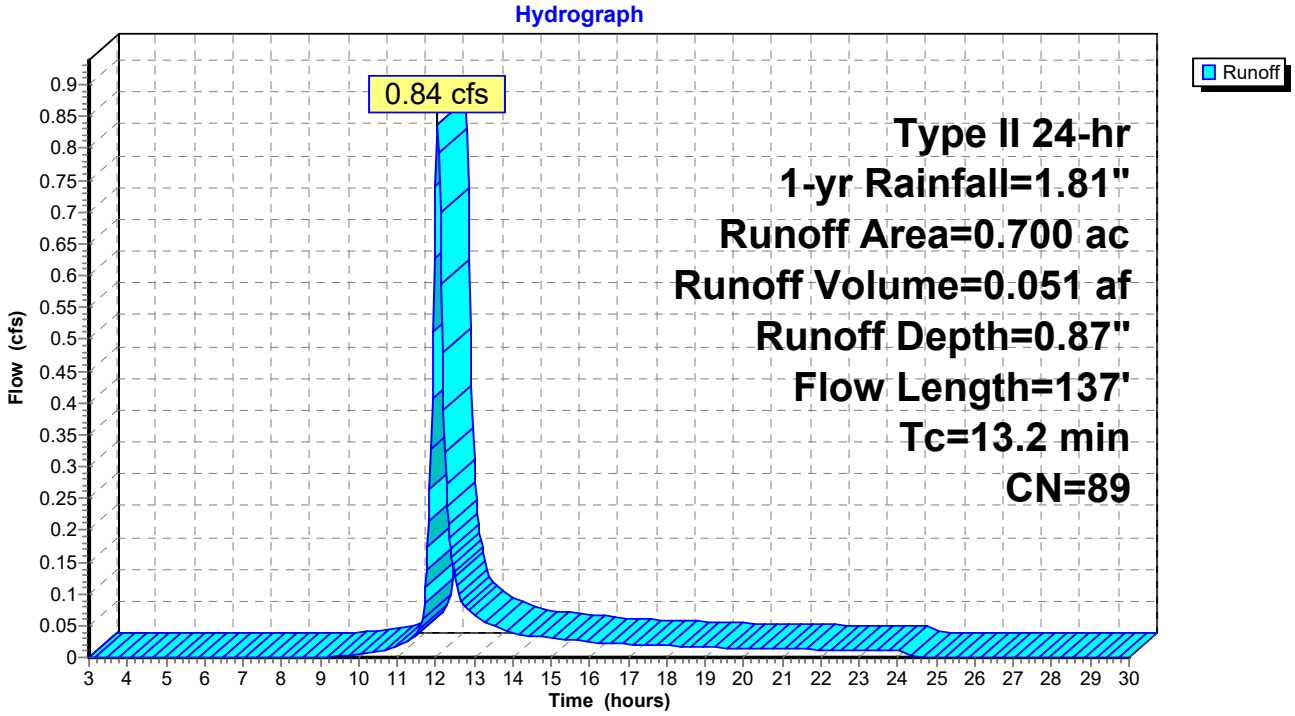
Runoff = 0.84 cfs @ 12.05 hrs, Volume= 0.051 af, Depth= 0.87"
Routed to Pond 4P : Dry Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Type II 24-hr 1-yr Rainfall=1.81"

Area (ac)	CN	Description
0.350	98	Paved parking, HSG D
0.350	80	>75% Grass cover, Good, HSG D
0.700	89	Weighted Average
0.350		50.00% Pervious Area
0.350		50.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	51	0.0330	0.07		**Sheet Flow, Sheet Flow** Grass: Bermuda n= 0.410 P2= 2.18"
0.5	86	0.0200	2.87		**Shallow Concentrated Flow, Shallow Conc Flow** Paved Kv= 20.3 fps
13.2	137	Total			

Subcatchment 5S: P-5



Summary for Subcatchment O2: Offsite

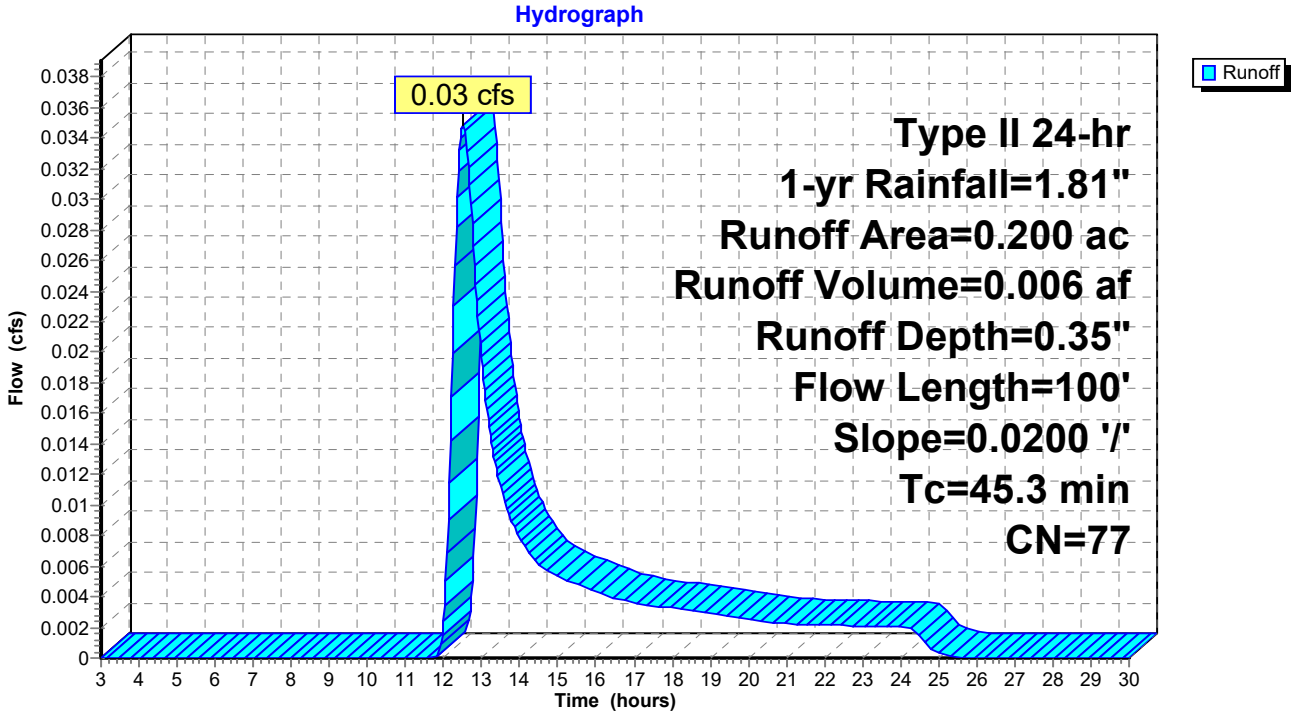
Runoff = 0.03 cfs @ 12.53 hrs, Volume= 0.006 af, Depth= 0.35"
Routed to Pond 7P : Bioretention

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Type II 24-hr 1-yr Rainfall=1.81"

Area (ac)	CN	Description
0.200	77	Woods, Good, HSG D
0.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
45.3	100	0.0200	0.04		**Sheet Flow, SHEET FLOW** Woods: Dense underbrush n= 0.800 P2= 2.18"

Subcatchment O2: Offsite



Summary for Subcatchment O3: Offsite

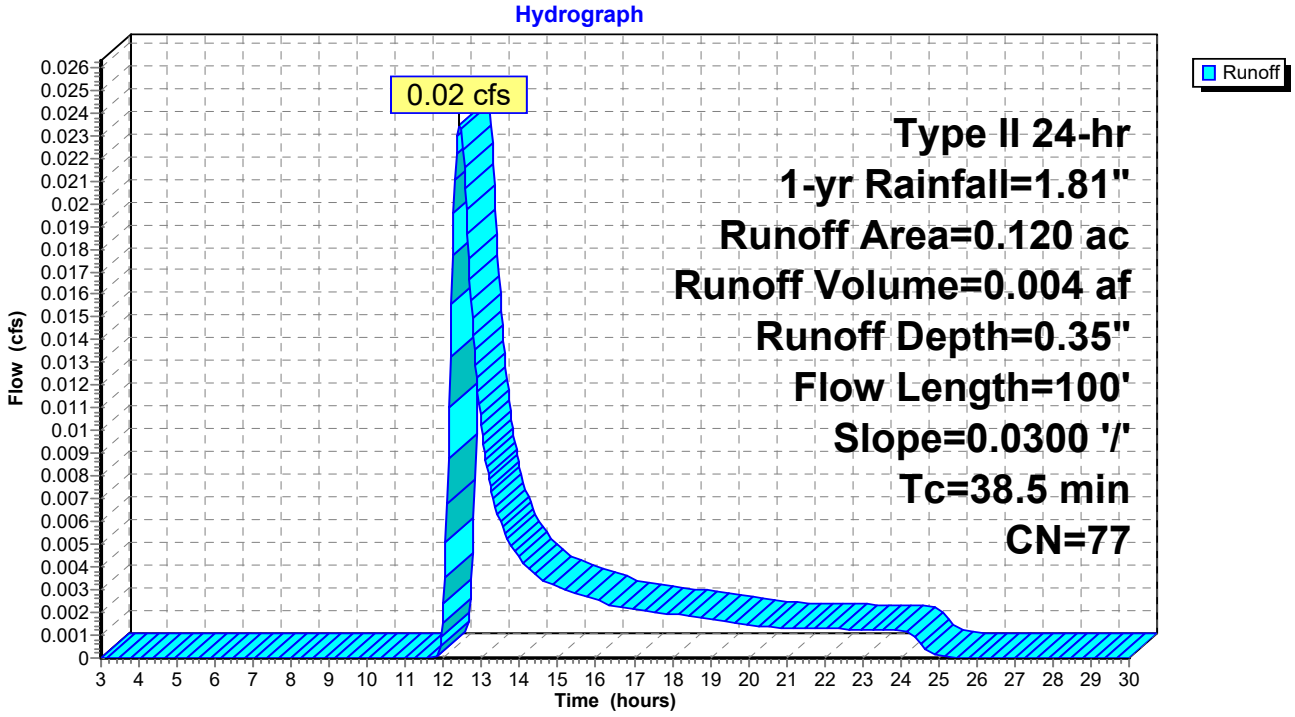
Runoff = 0.02 cfs @ 12.42 hrs, Volume= 0.004 af, Depth= 0.35"
Routed to Pond 8P : Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Type II 24-hr 1-yr Rainfall=1.81"

Area (ac)	CN	Description
0.120	77	Woods, Good, HSG D
0.120		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.5	100	0.0300	0.04		**Sheet Flow, SHEET FLOW** Woods: Dense underbrush n= 0.800 P2= 2.18"

Subcatchment O3: Offsite



Summary for Subcatchment O4: Offsite

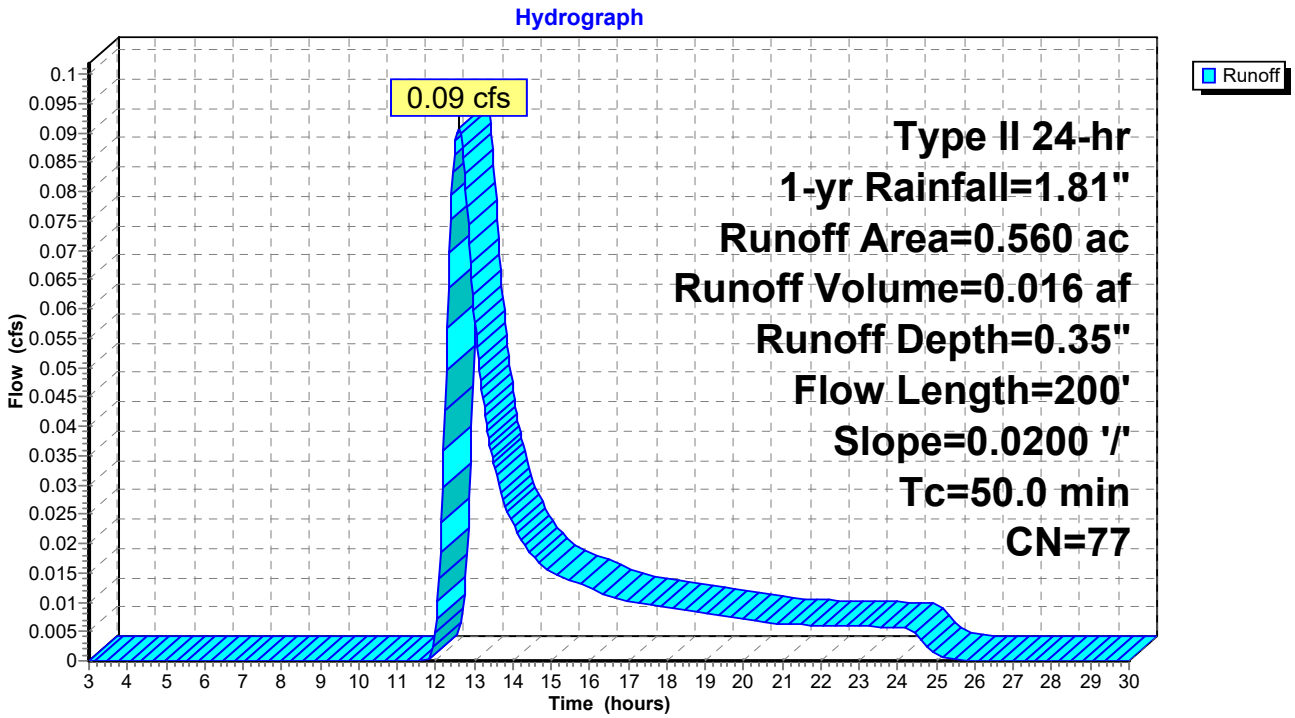
Runoff = 0.09 cfs @ 12.60 hrs, Volume= 0.016 af, Depth= 0.35"
Routed to Pond 7P : Bioretention

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Type II 24-hr 1-yr Rainfall=1.81"

Area (ac)	CN	Description
0.560	77	Woods, Good, HSG D
0.560		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
45.3	100	0.0200	0.04		**Sheet Flow, Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 2.18"
4.7	100	0.0200	0.35		**Shallow Concentrated Flow, Shallow Conc** Forest w/Heavy Litter Kv= 2.5 fps
50.0	200	Total			

Subcatchment O4: Offsite



Summary for Subcatchment P1: P-1

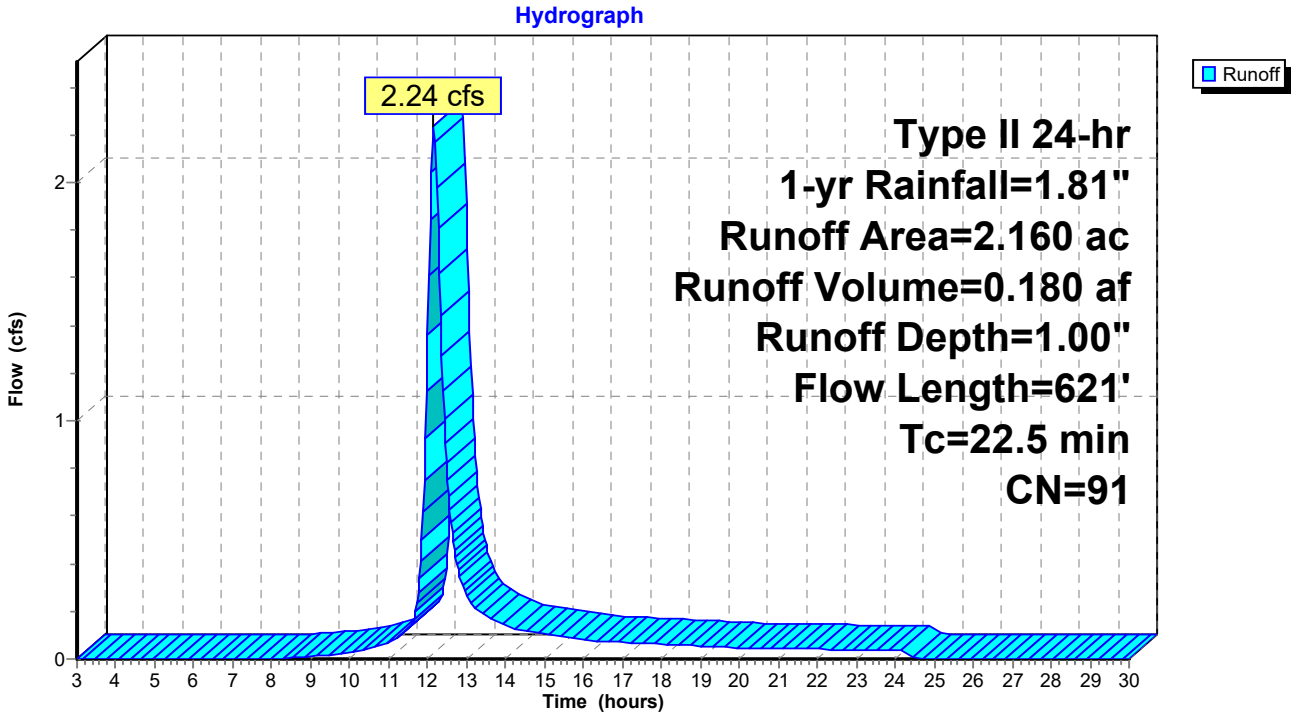
Runoff = 2.24 cfs @ 12.16 hrs, Volume= 0.180 af, Depth= 1.00"
Routed to Pond 7P : Bioretention

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Type II 24-hr 1-yr Rainfall=1.81"

Area (ac)	CN	Description
0.900	80	>75% Grass cover, Good, HSG D
1.260	98	Paved parking, HSG D
2.160	91	Weighted Average
0.900		41.67% Pervious Area
1.260		58.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	54	0.0190	0.05		**Sheet Flow, Sheet Flow** Grass: Bermuda n= 0.410 P2= 2.18"
0.6	70	0.0090	1.93		**Shallow Concentrated Flow, Shallow Conc Flow** Paved Kv= 20.3 fps
5.4	497	0.0020	1.53	1.88	**Pipe Channel, Pipe Flow** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.020 Corrugated PE, corrugated interior
22.5	621	Total			

Subcatchment P1: P-1



Summary for Subcatchment P2: P-2

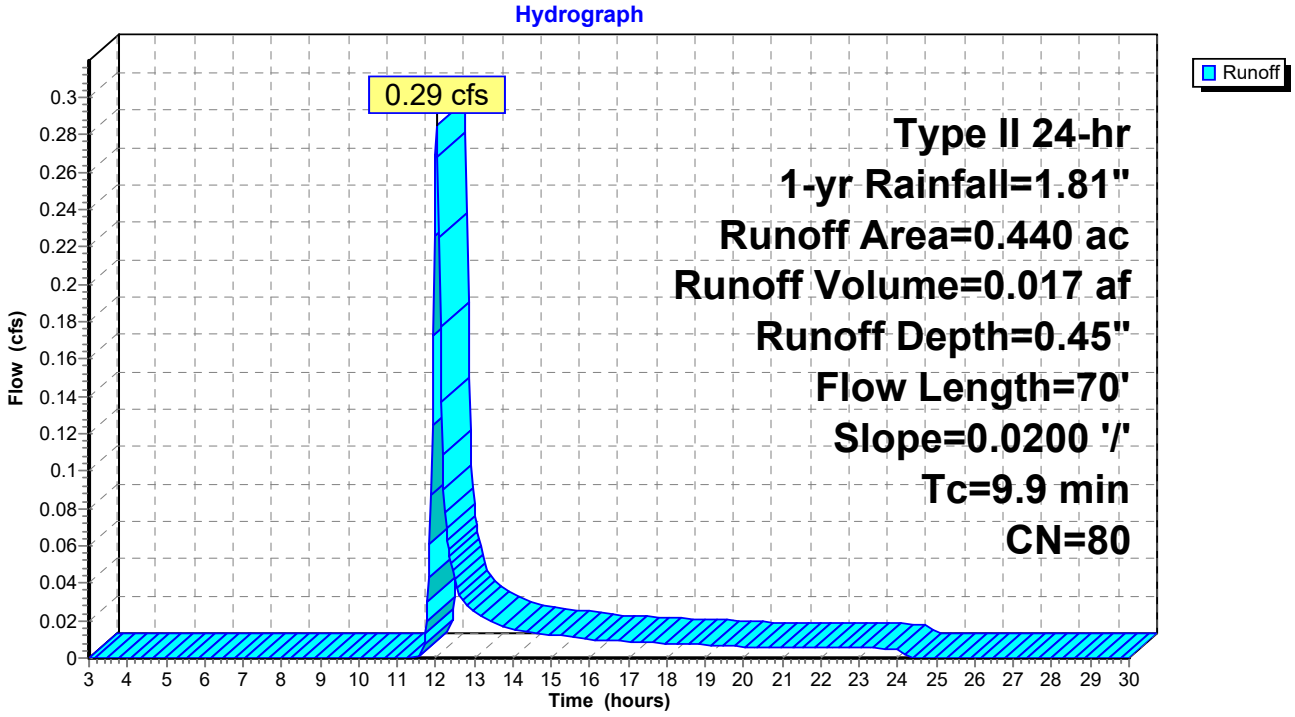
Runoff = 0.29 cfs @ 12.03 hrs, Volume= 0.017 af, Depth= 0.45"
Routed to Pond 8P : Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Type II 24-hr 1-yr Rainfall=1.81"

Area (ac)	CN	Description
0.440	80	>75% Grass cover, Good, HSG D
0.440		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	70	0.0200	0.12		**Sheet Flow, Sheet Flow** Cultivated: Residue>20% n= 0.170 P2= 2.18"

Subcatchment P2: P-2



Summary for Subcatchment P3: P-3

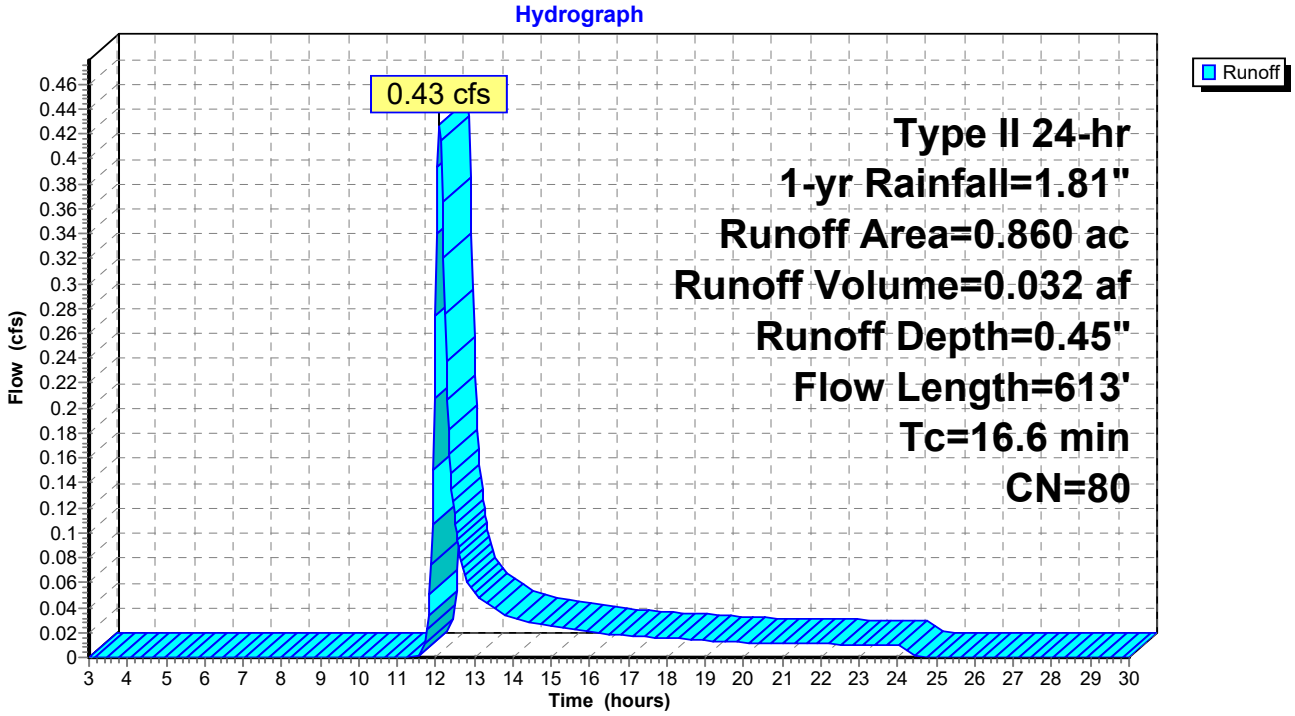
Runoff = 0.43 cfs @ 12.11 hrs, Volume= 0.032 af, Depth= 0.45"
Routed to Link T2 : Post-Dev Total

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Type II 24-hr 1-yr Rainfall=1.81"

Area (ac)	CN	Description
0.860	80	>75% Grass cover, Good, HSG D
0.000	98	Paved parking, HSG D
0.860	80	Weighted Average
0.860		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	57	0.0300	0.07		**Sheet Flow, Sheet Flow** Grass: Bermuda n= 0.410 P2= 2.18"
2.2	556	0.0200	4.17	3.28	**Pipe Channel, Pipe Flow** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.020 Corrugated PE, corrugated interior
16.6	613	Total			

Subcatchment P3: P-3



Summary for Subcatchment P4: P-4

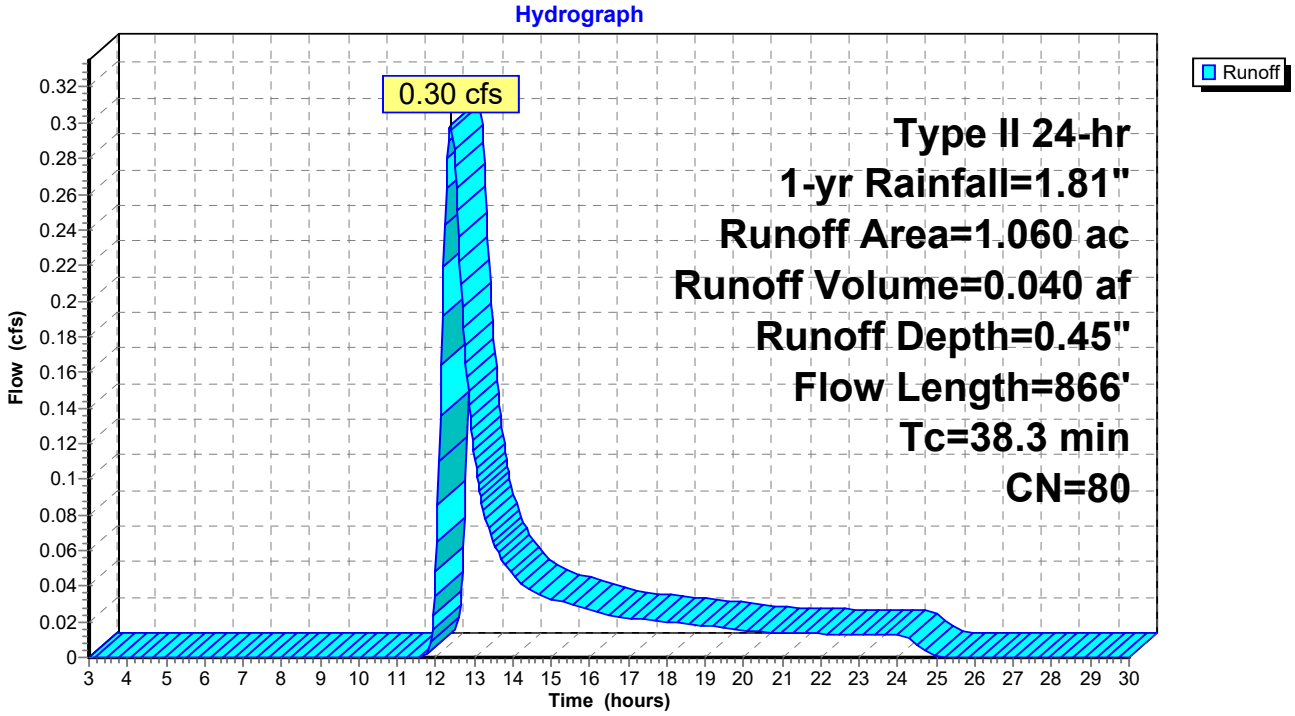
Runoff = 0.30 cfs @ 12.39 hrs, Volume= 0.040 af, Depth= 0.45"
Routed to Link T2 : Post-Dev Total

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Type II 24-hr 1-yr Rainfall=1.81"

Area (ac)	CN	Description
1.060	80	>75% Grass cover, Good, HSG D
1.060		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	54	0.0200	0.06		**Sheet Flow, Sheet Flow** Grass: Bermuda n= 0.410 P2= 2.18"
2.4	250	0.0035	1.74	1.37	**Pipe Channel, Pipe Flow** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.020 Corrugated PE, corrugated interior
19.7	562	0.0010	0.47		**Shallow Concentrated Flow, Ditch** Grassed Waterway Kv= 15.0 fps
38.3	866	Total			

Subcatchment P4: P-4



Summary for Pond 4P: Dry Swale

Inflow Area = 0.700 ac, 50.00% Impervious, Inflow Depth = 0.87" for 1-yr event
Inflow = 0.84 cfs @ 12.05 hrs, Volume= 0.051 af
Outflow = 0.71 cfs @ 12.12 hrs, Volume= 0.051 af, Atten= 16%, Lag= 3.9 min
Primary = 0.71 cfs @ 12.12 hrs, Volume= 0.051 af
Routed to Link T2 : Post-Dev Total

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 584.14' @ 12.12 hrs Surf.Area= 446 sf Storage= 188 cf

Plug-Flow detention time= 4.6 min calculated for 0.051 af (100% of inflow)
Center-of-Mass det. time= 4.5 min (844.0 - 839.5)

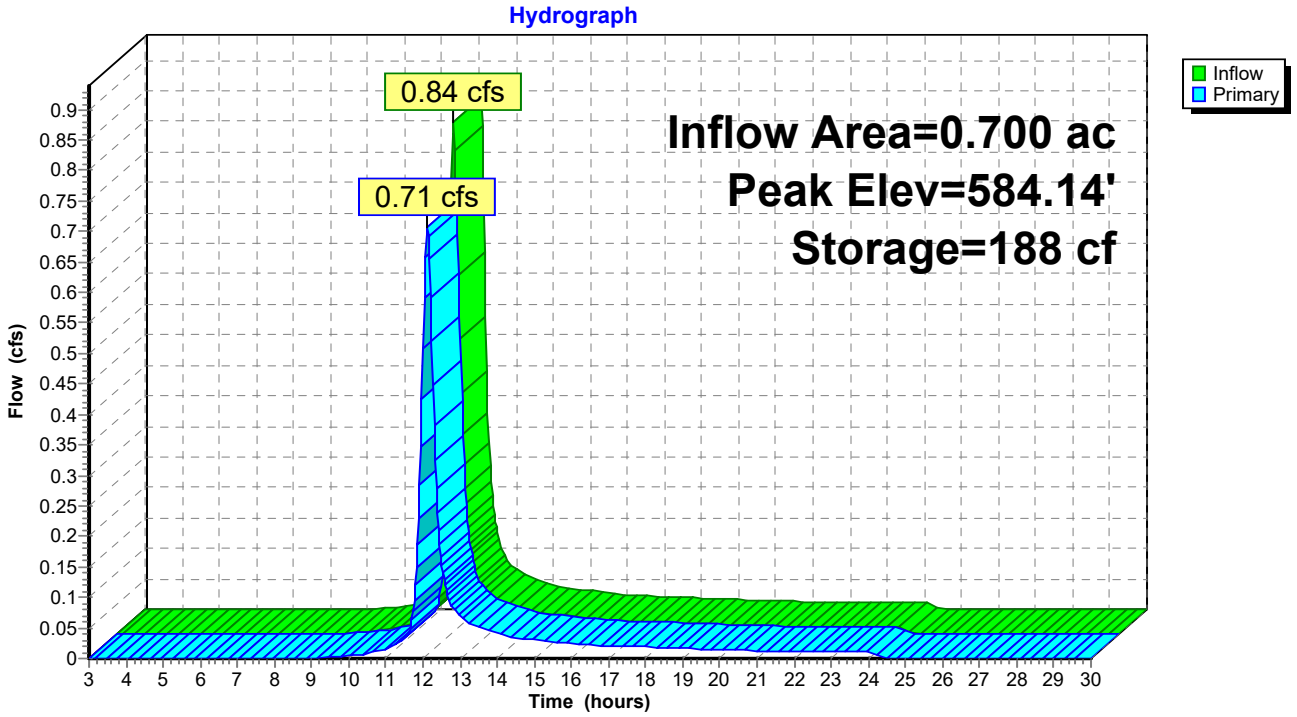
Volume	Invert	Avail.Storage	Storage Description
#1	583.55'	964 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
583.55	40	0	0
584.00	495	120	120
585.00	150	323	443
586.00	893	522	964

Device	Routing	Invert	Outlet Devices
#1	Primary	581.64'	**12.0" Round Culvert** L= 41.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 581.64' / 581.50' S= 0.0034 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.79 sf
#2	Device 1	583.55'	**7.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	585.74'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.71 cfs @ 12.12 hrs HW=584.14' (Free Discharge)
└**1=Culvert** (Passes 0.71 cfs of 3.79 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.71 cfs @ 2.64 fps)
  └**3=Grate** (Controls 0.00 cfs)

Pond 4P: Dry Swale



Summary for Pond 7P: Bioretention

Inflow Area = 2.920 ac, 43.15% Impervious, Inflow Depth = 0.83" for 1-yr event
Inflow = 2.28 cfs @ 12.16 hrs, Volume= 0.202 af
Outflow = 0.55 cfs @ 12.71 hrs, Volume= 0.114 af, Atten= 76%, Lag= 33.1 min
Primary = 0.55 cfs @ 12.71 hrs, Volume= 0.114 af
Routed to Pond 8P : Pond

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 586.61' @ 12.71 hrs Surf.Area= 4,632 sf Storage= 4,319 cf

Plug-Flow detention time= 244.8 min calculated for 0.114 af (57% of inflow)
Center-of-Mass det. time= 123.9 min (971.9 - 848.0)

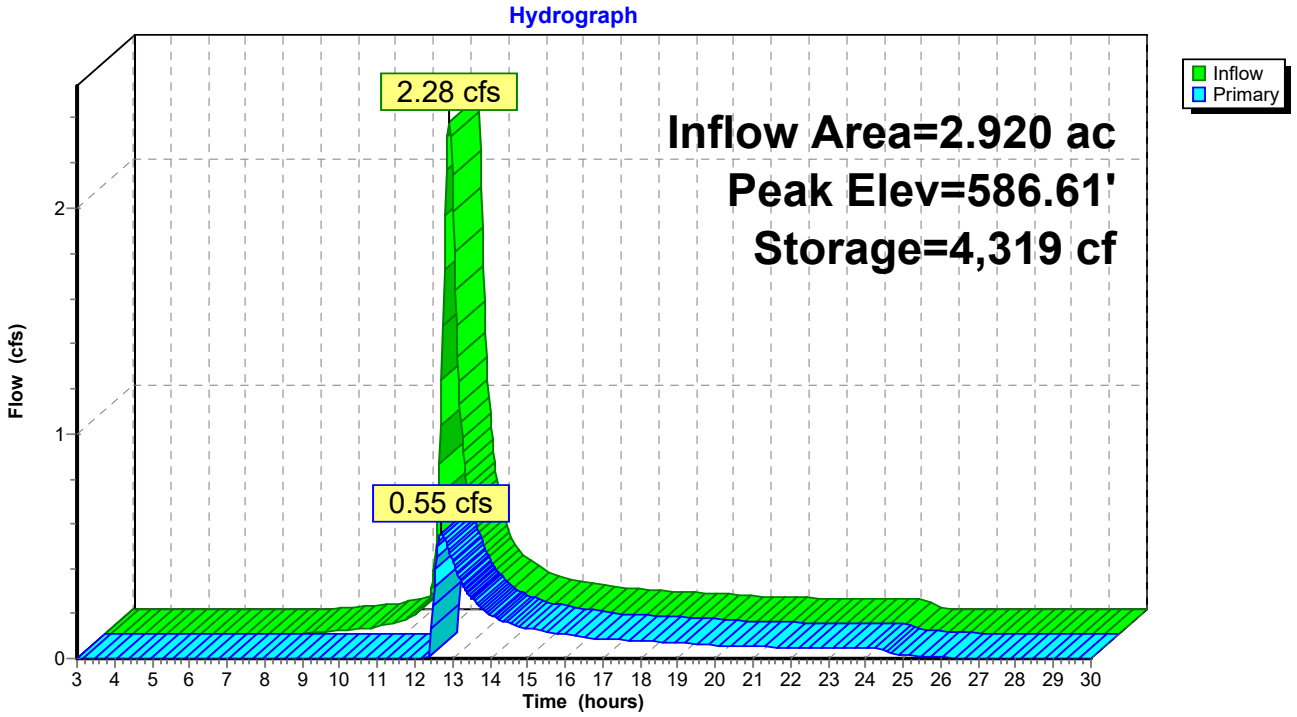
Volume	Invert	Avail.Storage	Storage Description
#1	585.60'	8,724 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
585.60	3,931	0	0
587.50	5,252	8,724	8,724

Device	Routing	Invert	Outlet Devices
#1	Primary	582.75'	**15.0" Round Culvert** L= 123.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 582.75' / 582.50' S= 0.0020 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	586.50'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.55 cfs @ 12.71 hrs HW=586.61' (Free Discharge)
↑—**1=Culvert** (Passes 0.55 cfs of 7.97 cfs potential flow)
↑—**2=Orifice/Grate** (Weir Controls 0.55 cfs @ 1.08 fps)

Pond 7P: Bioretention



Summary for Pond 8P: Pond

Inflow Area = 3.480 ac, 36.21% Impervious, Inflow Depth = 0.46" for 1-yr event
Inflow = 0.60 cfs @ 12.70 hrs, Volume= 0.134 af
Outflow = 0.17 cfs @ 14.50 hrs, Volume= 0.120 af, Atten= 71%, Lag= 107.9 min
Primary = 0.17 cfs @ 14.50 hrs, Volume= 0.120 af
Routed to Link T2 : Post-Dev Total

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 582.81' @ 14.50 hrs Surf.Area= 6,682 sf Storage= 1,975 cf

Plug-Flow detention time= 218.0 min calculated for 0.120 af (89% of inflow)
Center-of-Mass det. time= 165.7 min (1,124.8 - 959.1)

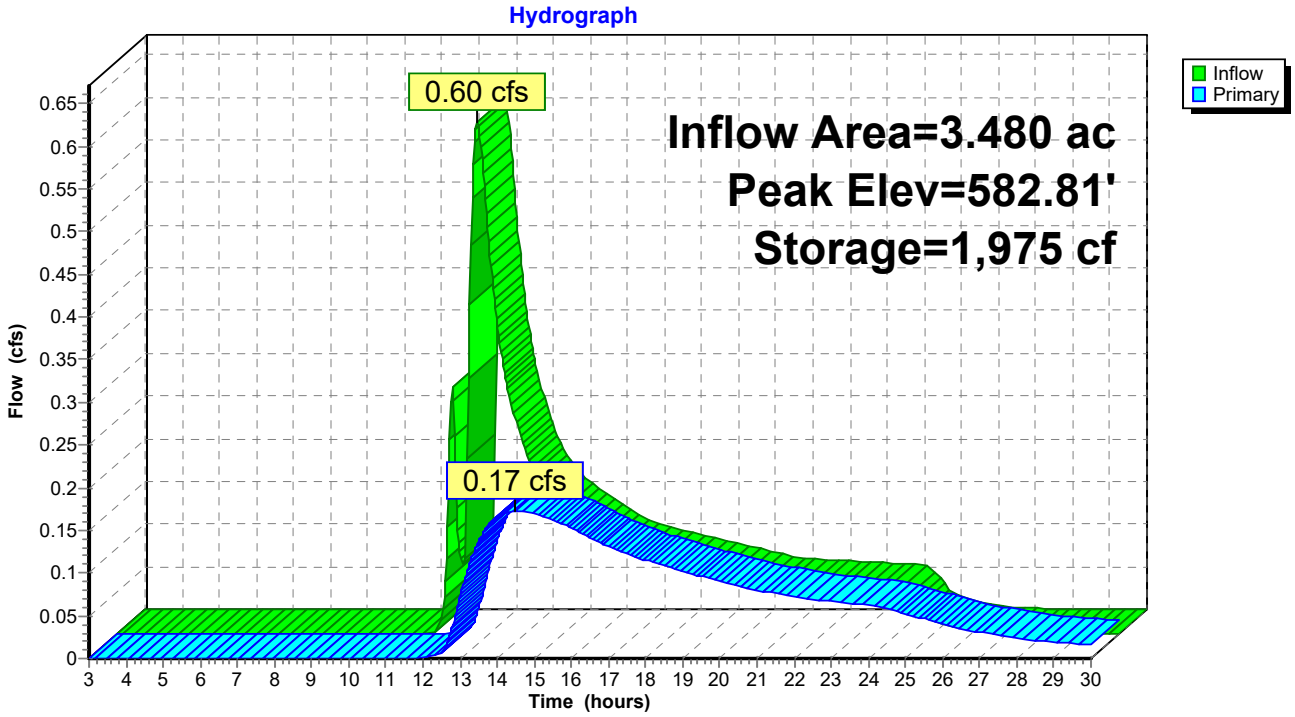
Volume	Invert	Avail.Storage	Storage Description
#1	582.50'	20,085 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
582.50	6,245	0	0
585.00	9,823	20,085	20,085

Device	Routing	Invert	Outlet Devices
#1	Primary	582.50'	**12.0" Round Culvert** L= 33.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 582.50' / 582.40' S= 0.0030 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.79 sf
#2	Device 1	582.50'	**5.0" Vert. 5" Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	584.30'	**24.0" W x 24.0" H 14° 24" Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.17 cfs @ 14.50 hrs HW=582.81' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.17 cfs @ 1.27 fps)
└**2=5" Orifice** (Passes 0.17 cfs of 0.20 cfs potential flow)
└**3=24" Grate** (Controls 0.00 cfs)

Pond 8P: Pond

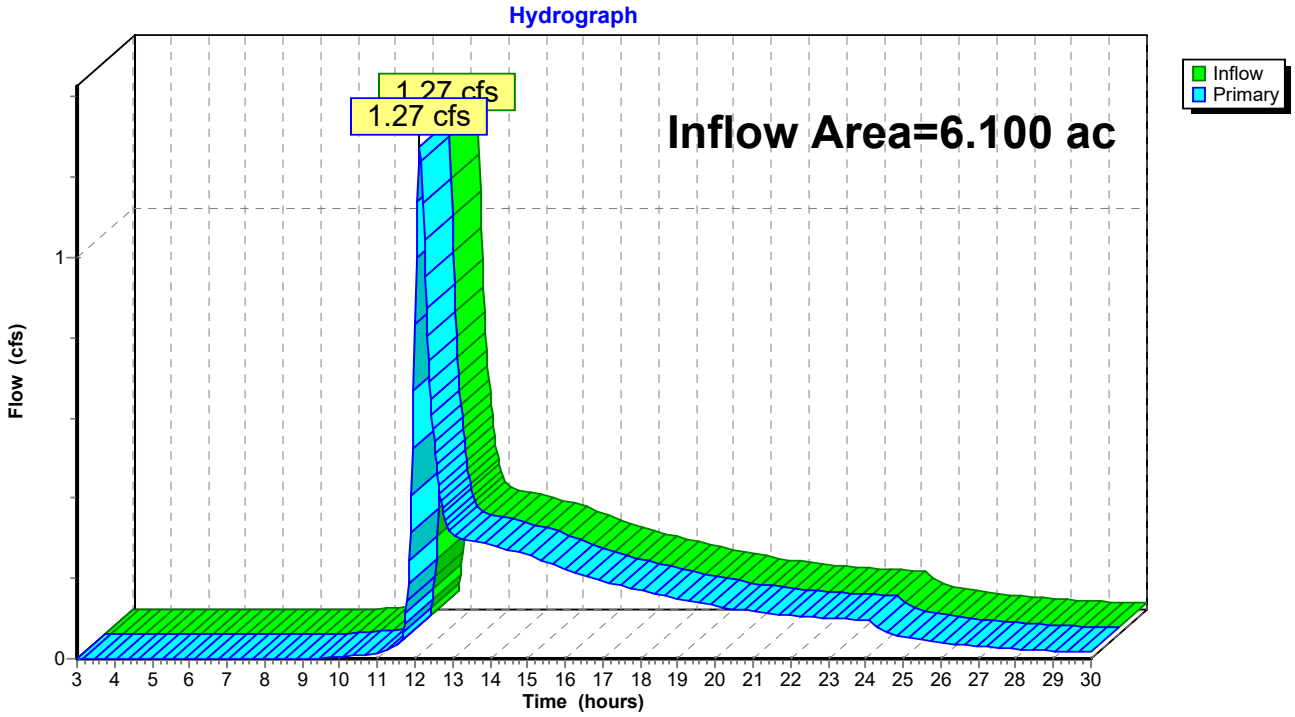

Hydrograph
Inflow
Primary
0.60 cfs
0.17 cfs
Inflow Area=3.480 ac
Peak Elev=582.81'
Storage=1,975 cf
Flow (cfs)
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
0.55
0.6
0.65
3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Time (hours)

Summary for Link T2: Post-Dev Total

Inflow Area = 6.100 ac, 26.39% Impervious, Inflow Depth > 0.48" for 1-yr event
Inflow = 1.27 cfs @ 12.13 hrs, Volume= 0.243 af
Primary = 1.27 cfs @ 12.13 hrs, Volume= 0.243 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs

Link T2: Post-Dev Total



Time span=3.00-30.00 hrs, dt=0.03 hrs, 901 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 5S: P-5 Runoff Area=0.700 ac 50.00% Impervious Runoff Depth=1.98"
Flow Length=137' Tc=13.2 min CN=89 Runoff=1.88 cfs 0.116 af

Subcatchment O2: Offsite Runoff Area=0.200 ac 0.00% Impervious Runoff Depth=1.13"
Flow Length=100' Slope=0.0200 '/' Tc=45.3 min CN=77 Runoff=0.14 cfs 0.019 af

Subcatchment O3: Offsite Runoff Area=0.120 ac 0.00% Impervious Runoff Depth=1.13"
Flow Length=100' Slope=0.0300 '/' Tc=38.5 min CN=77 Runoff=0.09 cfs 0.011 af

Subcatchment O4: Offsite Runoff Area=0.560 ac 0.00% Impervious Runoff Depth=1.13"
Flow Length=200' Slope=0.0200 '/' Tc=50.0 min CN=77 Runoff=0.37 cfs 0.053 af

Subcatchment P1: P-1 Runoff Area=2.160 ac 58.33% Impervious Runoff Depth=2.16"
Flow Length=621' Tc=22.5 min CN=91 Runoff=4.77 cfs 0.388 af

Subcatchment P2: P-2 Runoff Area=0.440 ac 0.00% Impervious Runoff Depth=1.32"
Flow Length=70' Slope=0.0200 '/' Tc=9.9 min CN=80 Runoff=0.89 cfs 0.048 af

Subcatchment P3: P-3 Runoff Area=0.860 ac 0.00% Impervious Runoff Depth=1.32"
Flow Length=613' Tc=16.6 min CN=80 Runoff=1.38 cfs 0.094 af

Subcatchment P4: P-4 Runoff Area=1.060 ac 0.00% Impervious Runoff Depth=1.32"
Flow Length=866' Tc=38.3 min CN=80 Runoff=1.00 cfs 0.116 af

Pond 4P: Dry Swale Peak Elev=585.26' Storage=509 cf Inflow=1.88 cfs 0.116 af
Outflow=1.54 cfs 0.116 af

Pond 7P: Bioretention Peak Elev=586.91' Storage=5,759 cf Inflow=5.00 cfs 0.460 af
Outflow=4.08 cfs 0.372 af

Pond 8P: Pond Peak Elev=583.67' Storage=8,317 cf Inflow=4.36 cfs 0.432 af
Outflow=0.65 cfs 0.415 af

Link T2: Post-Dev Total Inflow=3.54 cfs 0.742 af
Primary=3.54 cfs 0.742 af

Total Runoff Area = 6.100 ac Runoff Volume = 0.846 af Average Runoff Depth = 1.66"
73.61% Pervious = 4.490 ac 26.39% Impervious = 1.610 ac

Summary for Subcatchment 5S: P-5

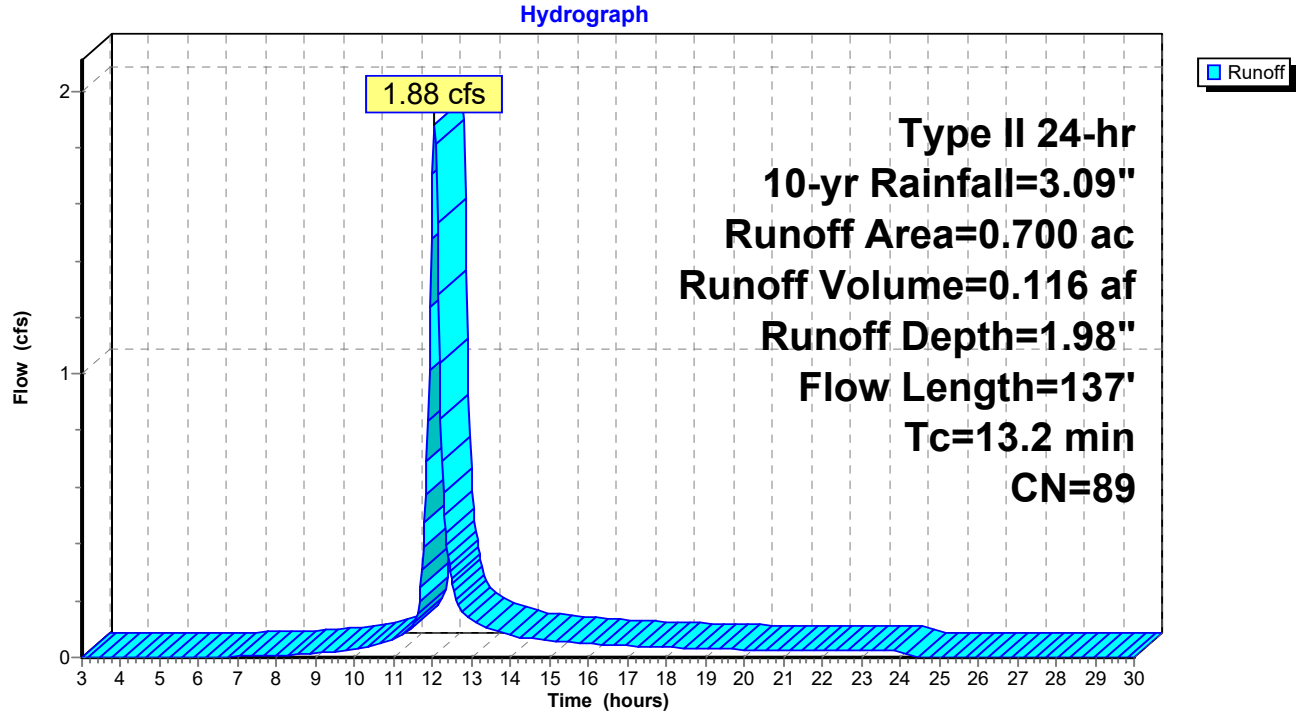
Runoff = 1.88 cfs @ 12.05 hrs, Volume= 0.116 af, Depth= 1.98"
Routed to Pond 4P : Dry Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Type II 24-hr 10-yr Rainfall=3.09"

Area (ac)	CN	Description
0.350	98	Paved parking, HSG D
0.350	80	>75% Grass cover, Good, HSG D
0.700	89	Weighted Average
0.350		50.00% Pervious Area
0.350		50.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	51	0.0330	0.07		**Sheet Flow, Sheet Flow** Grass: Bermuda n= 0.410 P2= 2.18"
0.5	86	0.0200	2.87		**Shallow Concentrated Flow, Shallow Conc Flow** Paved Kv= 20.3 fps
13.2	137	Total			

Subcatchment 5S: P-5



Summary for Subcatchment O2: Offsite

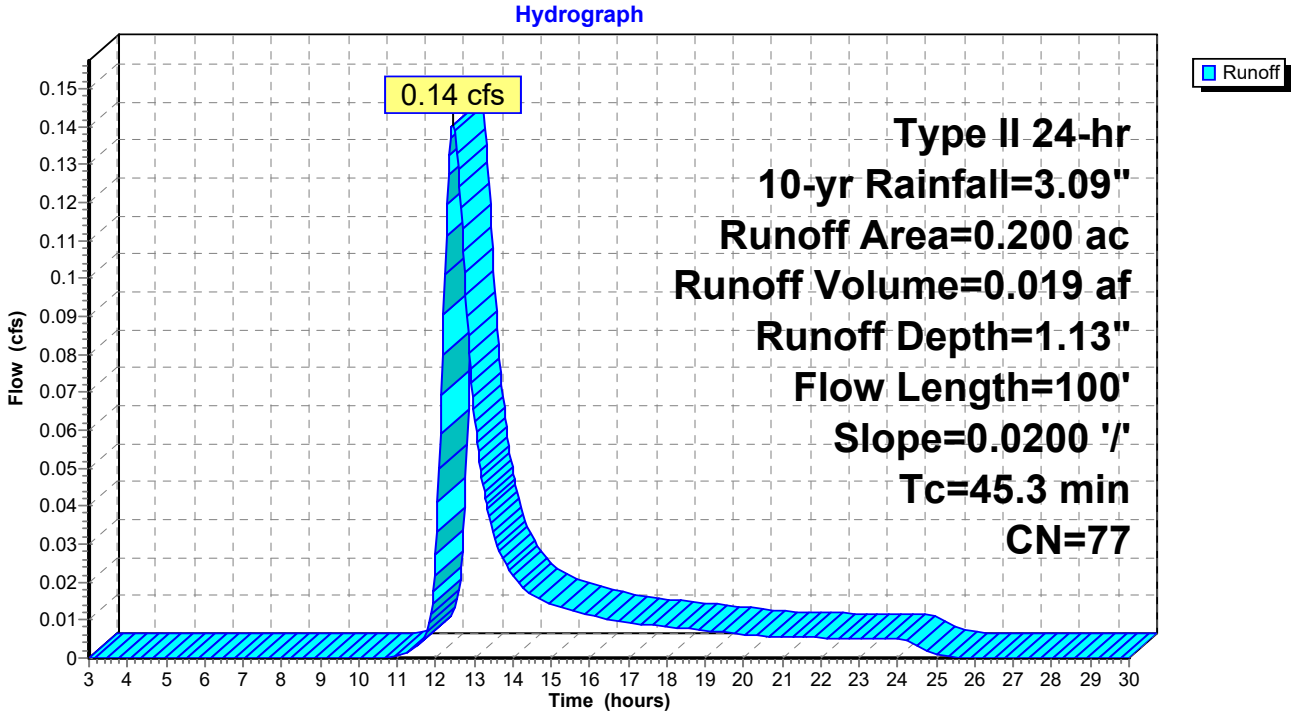
Runoff = 0.14 cfs @ 12.45 hrs, Volume= 0.019 af, Depth= 1.13"
Routed to Pond 7P : Bioretention

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Type II 24-hr 10-yr Rainfall=3.09"

Area (ac)	CN	Description
0.200	77	Woods, Good, HSG D
0.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
45.3	100	0.0200	0.04		**Sheet Flow, SHEET FLOW** Woods: Dense underbrush n= 0.800 P2= 2.18"

Subcatchment O2: Offsite



Summary for Subcatchment O3: Offsite

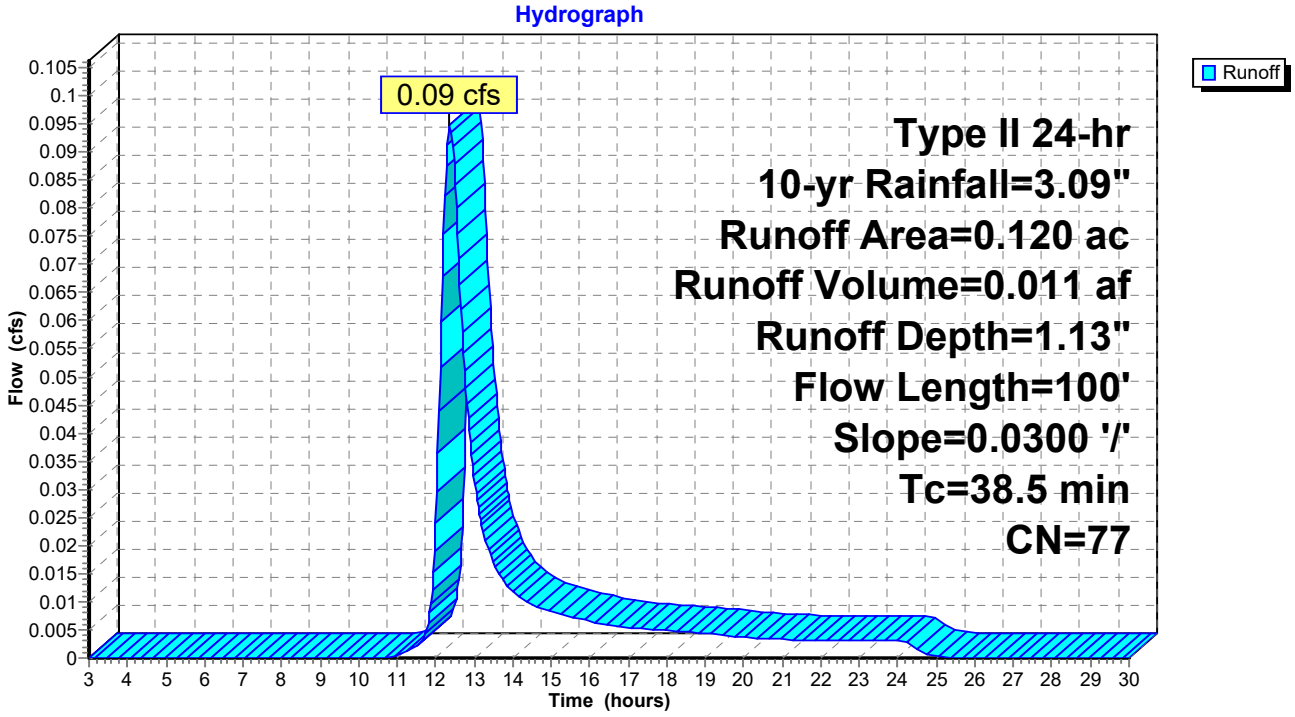
Runoff = 0.09 cfs @ 12.37 hrs, Volume= 0.011 af, Depth= 1.13"
Routed to Pond 8P : Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Type II 24-hr 10-yr Rainfall=3.09"

Area (ac)	CN	Description
0.120	77	Woods, Good, HSG D
0.120		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.5	100	0.0300	0.04		**Sheet Flow, SHEET FLOW** Woods: Dense underbrush n= 0.800 P2= 2.18"

Subcatchment O3: Offsite



Summary for Subcatchment O4: Offsite

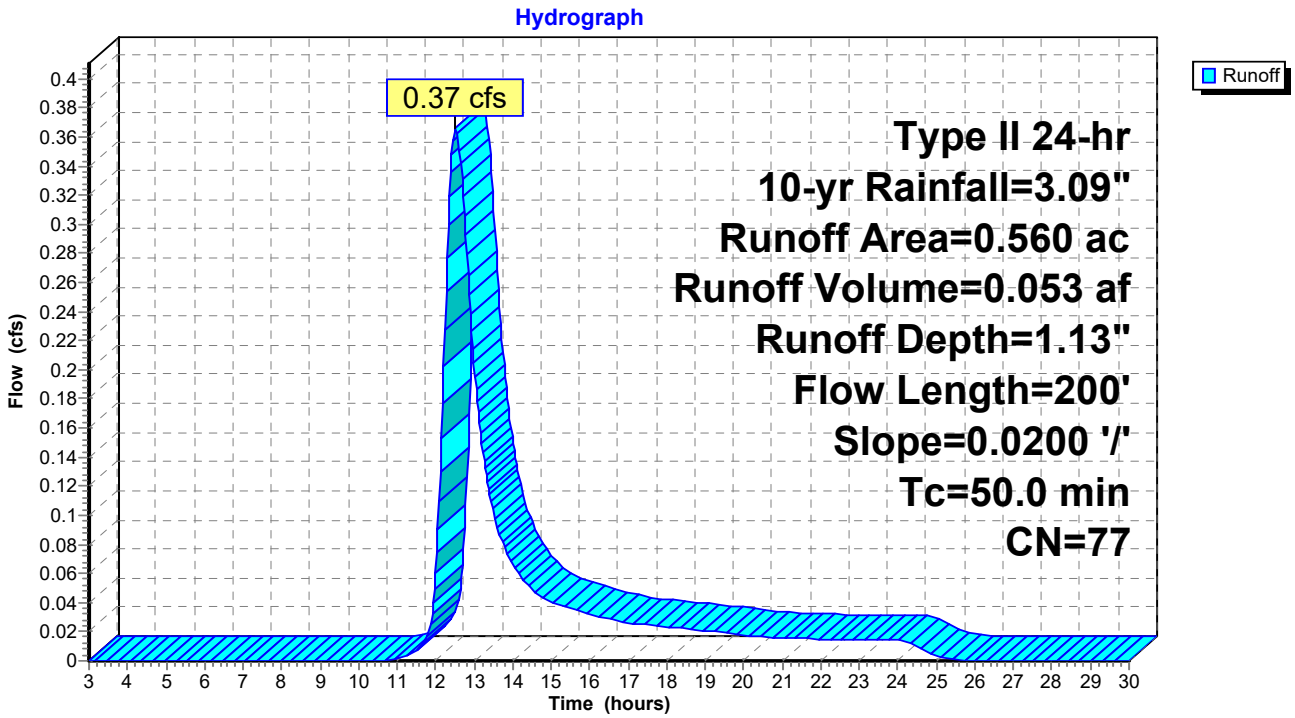
Runoff = 0.37 cfs @ 12.52 hrs, Volume= 0.053 af, Depth= 1.13"
Routed to Pond 7P : Bioretention

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Type II 24-hr 10-yr Rainfall=3.09"

Area (ac)	CN	Description
0.560	77	Woods, Good, HSG D
0.560		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
45.3	100	0.0200	0.04		**Sheet Flow, Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 2.18"
4.7	100	0.0200	0.35		**Shallow Concentrated Flow, Shallow Conc** Forest w/Heavy Litter Kv= 2.5 fps
50.0	200	Total			

Subcatchment O4: Offsite



Summary for Subcatchment P1: P-1

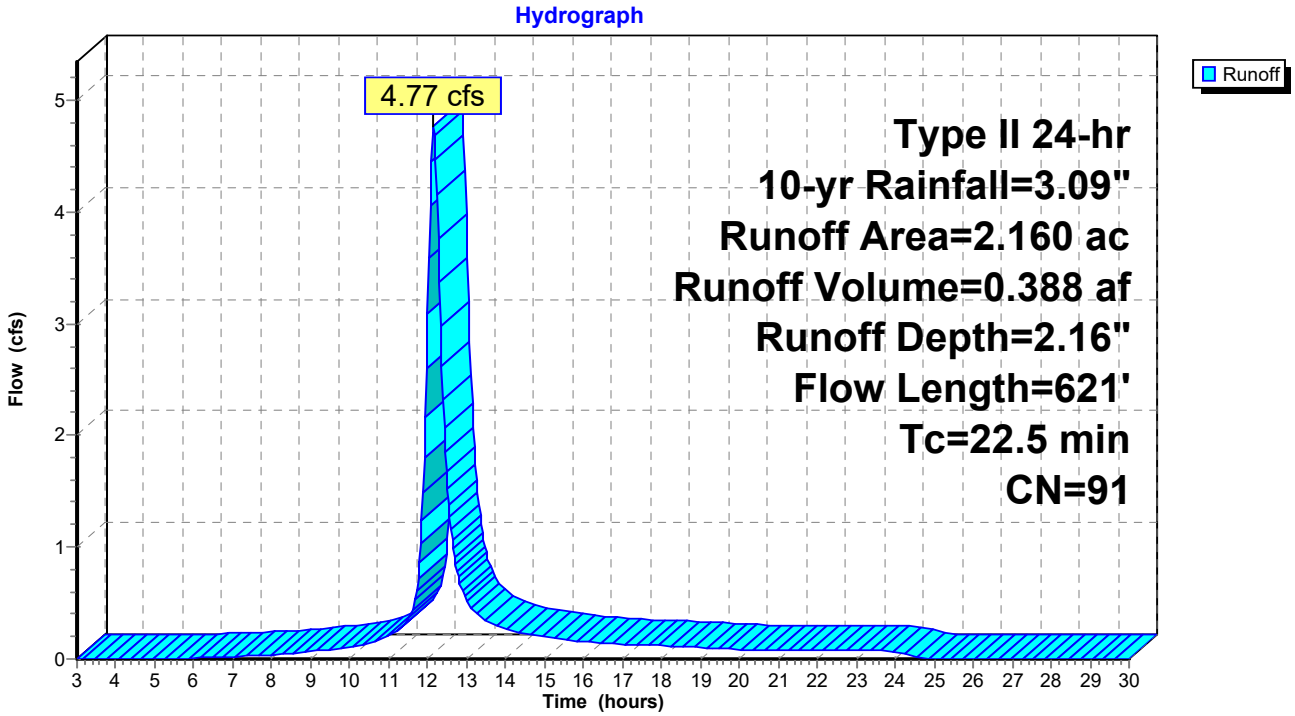
Runoff = 4.77 cfs @ 12.15 hrs, Volume= 0.388 af, Depth= 2.16"
Routed to Pond 7P : Bioretention

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Type II 24-hr 10-yr Rainfall=3.09"

Area (ac)	CN	Description
0.900	80	>75% Grass cover, Good, HSG D
1.260	98	Paved parking, HSG D
2.160	91	Weighted Average
0.900		41.67% Pervious Area
1.260		58.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	54	0.0190	0.05		**Sheet Flow, Sheet Flow** Grass: Bermuda n= 0.410 P2= 2.18"
0.6	70	0.0090	1.93		**Shallow Concentrated Flow, Shallow Conc Flow** Paved Kv= 20.3 fps
5.4	497	0.0020	1.53	1.88	**Pipe Channel, Pipe Flow** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.020 Corrugated PE, corrugated interior
22.5	621	Total			

Subcatchment P1: P-1



Summary for Subcatchment P2: P-2

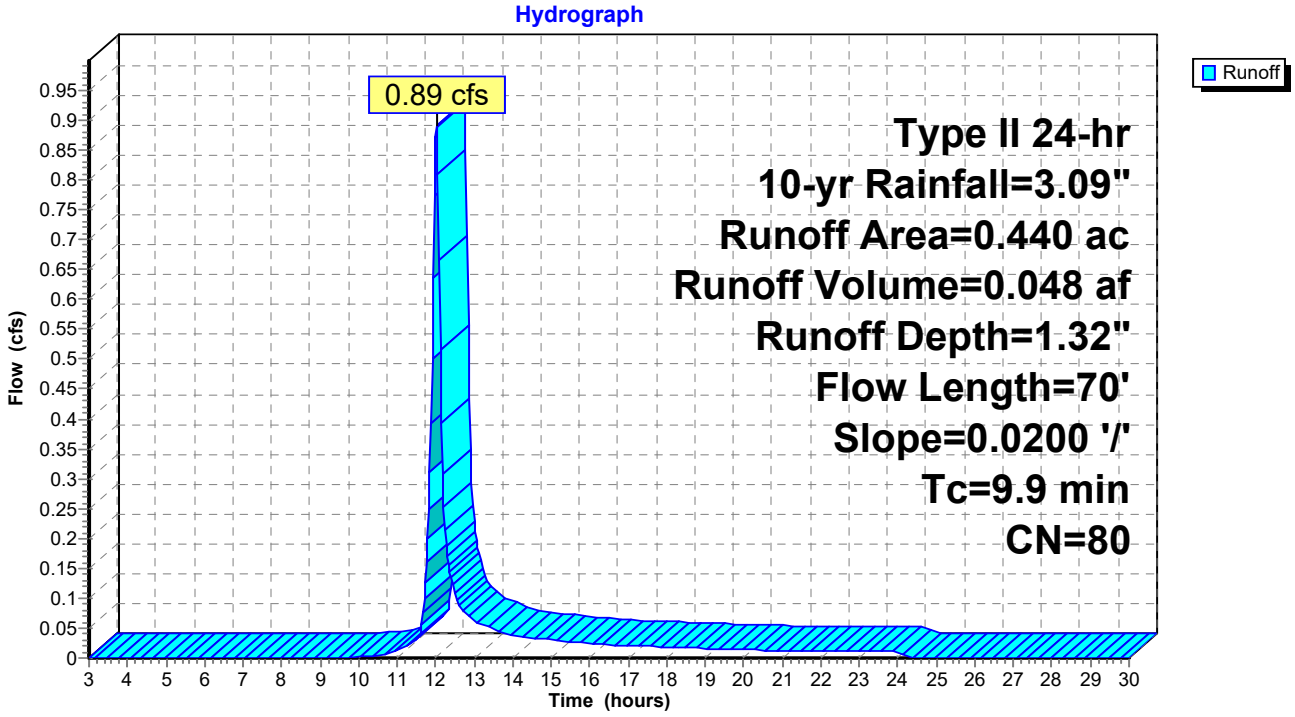
Runoff = 0.89 cfs @ 12.02 hrs, Volume= 0.048 af, Depth= 1.32"
Routed to Pond 8P : Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Type II 24-hr 10-yr Rainfall=3.09"

Area (ac)	CN	Description
0.440	80	>75% Grass cover, Good, HSG D
0.440		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	70	0.0200	0.12		**Sheet Flow, Sheet Flow** Cultivated: Residue>20% n= 0.170 P2= 2.18"

Subcatchment P2: P-2



Summary for Subcatchment P3: P-3

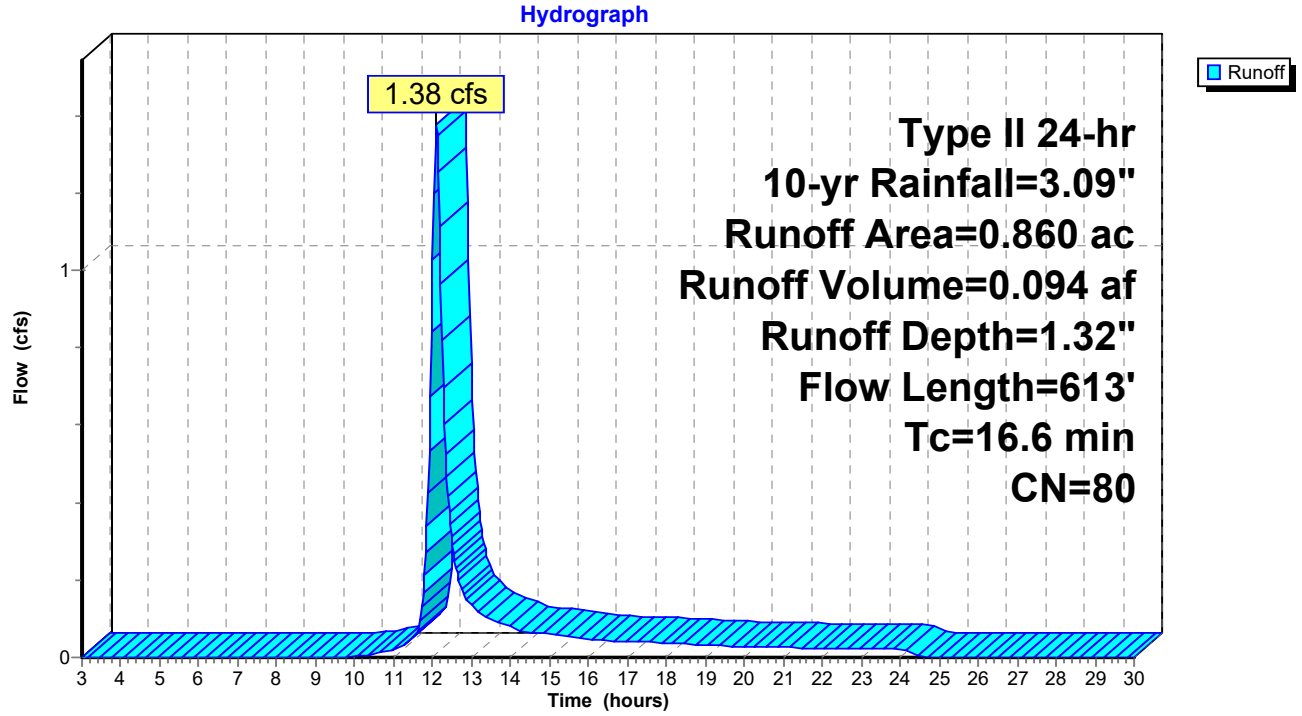
Runoff = 1.38 cfs @ 12.09 hrs, Volume= 0.094 af, Depth= 1.32"
Routed to Link T2 : Post-Dev Total

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Type II 24-hr 10-yr Rainfall=3.09"

Area (ac)	CN	Description
0.860	80	>75% Grass cover, Good, HSG D
0.000	98	Paved parking, HSG D
0.860	80	Weighted Average
0.860		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	57	0.0300	0.07		**Sheet Flow, Sheet Flow** Grass: Bermuda n= 0.410 P2= 2.18"
2.2	556	0.0200	4.17	3.28	**Pipe Channel, Pipe Flow** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.020 Corrugated PE, corrugated interior
16.6	613	Total			

Subcatchment P3: P-3



Summary for Subcatchment P4: P-4

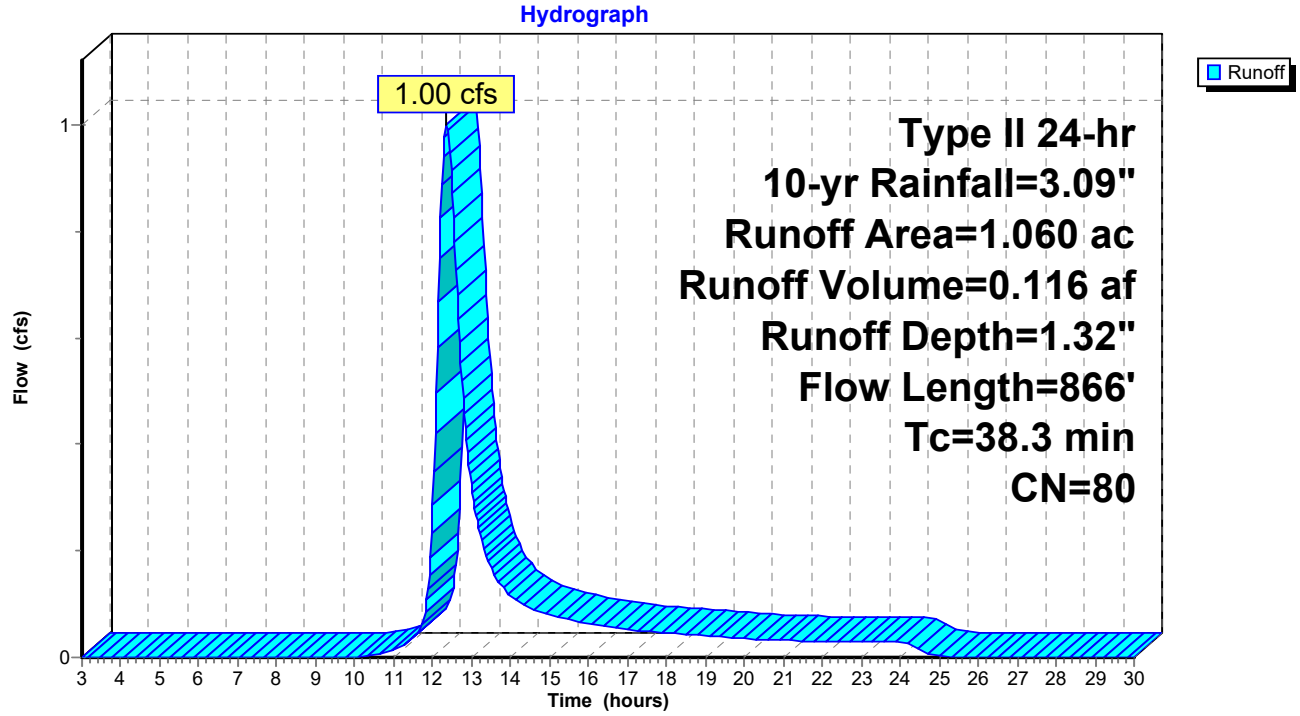
Runoff = 1.00 cfs @ 12.36 hrs, Volume= 0.116 af, Depth= 1.32"
Routed to Link T2 : Post-Dev Total

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Type II 24-hr 10-yr Rainfall=3.09"

Area (ac)	CN	Description
1.060	80	>75% Grass cover, Good, HSG D
1.060		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	54	0.0200	0.06		**Sheet Flow, Sheet Flow** Grass: Bermuda n= 0.410 P2= 2.18"
2.4	250	0.0035	1.74	1.37	**Pipe Channel, Pipe Flow** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.020 Corrugated PE, corrugated interior
19.7	562	0.0010	0.47		**Shallow Concentrated Flow, Ditch** Grassed Waterway Kv= 15.0 fps
38.3	866	Total			

Subcatchment P4: P-4



Summary for Pond 4P: Dry Swale

Inflow Area = 0.700 ac, 50.00% Impervious, Inflow Depth = 1.98" for 10-yr event
Inflow = 1.88 cfs @ 12.05 hrs, Volume= 0.116 af
Outflow = 1.54 cfs @ 12.12 hrs, Volume= 0.116 af, Atten= 18%, Lag= 4.3 min
Primary = 1.54 cfs @ 12.12 hrs, Volume= 0.116 af
Routed to Link T2 : Post-Dev Total

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 585.26' @ 12.12 hrs Surf.Area= 347 sf Storage= 509 cf

Plug-Flow detention time= 4.6 min calculated for 0.115 af (100% of inflow)
Center-of-Mass det. time= 4.6 min (820.7 - 816.1)

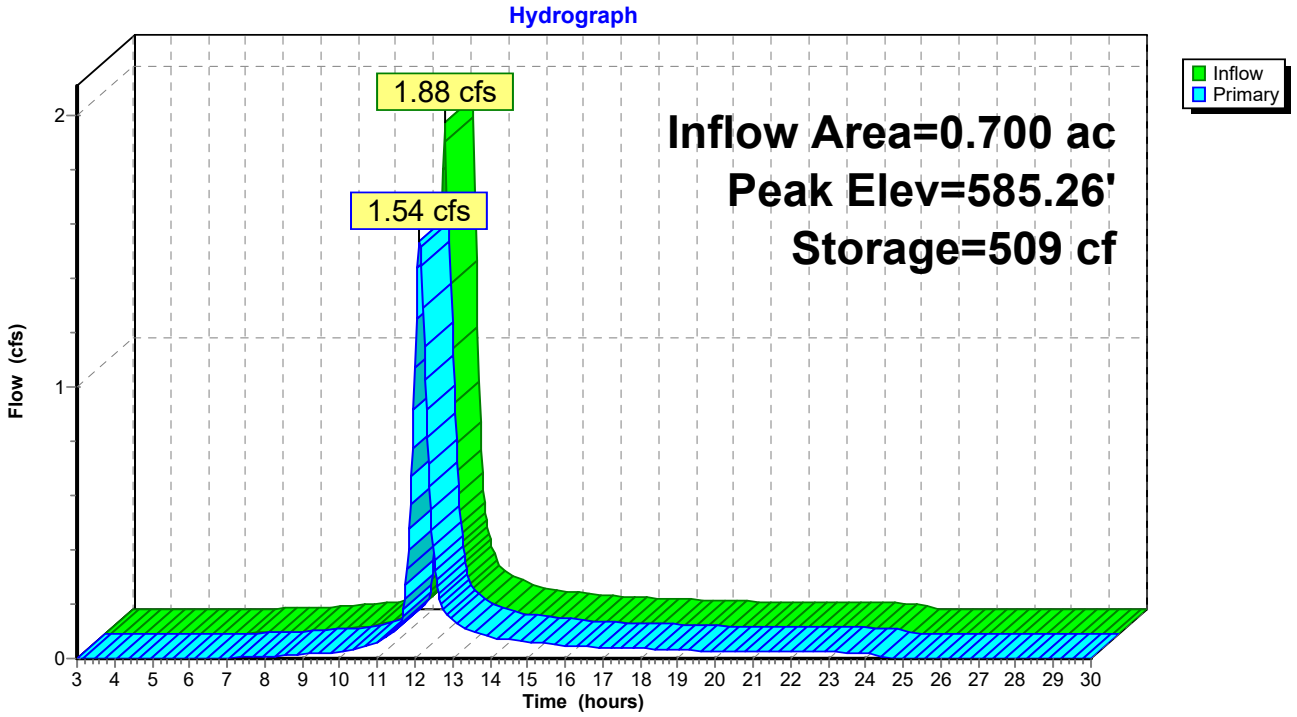
Volume	Invert	Avail.Storage	Storage Description
#1	583.55'	964 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
583.55	40	0	0
584.00	495	120	120
585.00	150	323	443
586.00	893	522	964

Device	Routing	Invert	Outlet Devices
#1	Primary	581.64'	**12.0" Round Culvert** L= 41.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 581.64' / 581.50' S= 0.0034 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.79 sf
#2	Device 1	583.55'	**7.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	585.74'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.54 cfs @ 12.12 hrs HW=585.26' (Free Discharge)
└**1=Culvert** (Passes 1.54 cfs of 4.91 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 1.54 cfs @ 5.74 fps)
  └**3=Grate** (Controls 0.00 cfs)

Pond 4P: Dry Swale



Summary for Pond 7P: Bioretention

Inflow Area = 2.920 ac, 43.15% Impervious, Inflow Depth = 1.89" for 10-yr event
Inflow = 5.00 cfs @ 12.16 hrs, Volume= 0.460 af
Outflow = 4.08 cfs @ 12.28 hrs, Volume= 0.372 af, Atten= 18%, Lag= 7.2 min
Primary = 4.08 cfs @ 12.28 hrs, Volume= 0.372 af
Routed to Pond 8P : Pond

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 586.91' @ 12.28 hrs Surf.Area= 4,844 sf Storage= 5,759 cf

Plug-Flow detention time= 133.7 min calculated for 0.372 af (81% of inflow)
Center-of-Mass det. time= 53.1 min (880.8 - 827.7)

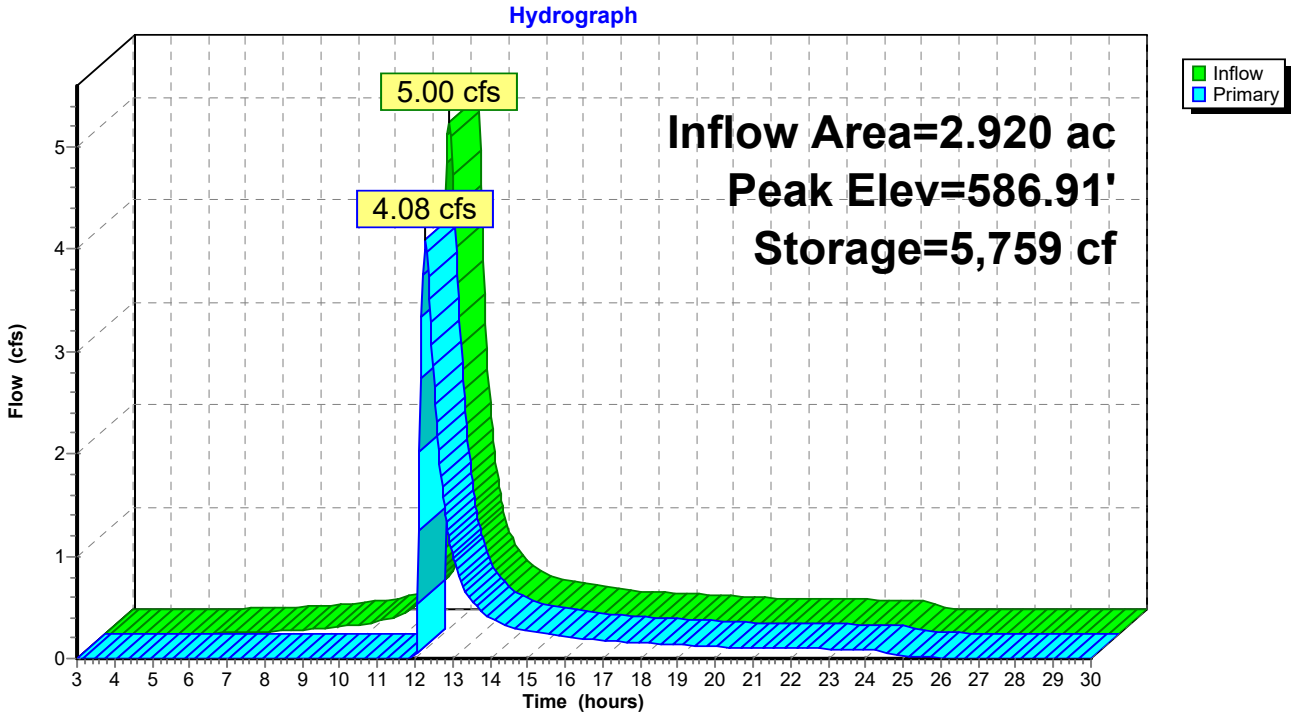
Volume	Invert	Avail.Storage	Storage Description
#1	585.60'	8,724 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
585.60	3,931	0	0
587.50	5,252	8,724	8,724

Device	Routing	Invert	Outlet Devices
#1	Primary	582.75'	**15.0" Round Culvert** L= 123.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 582.75' / 582.50' S= 0.0020 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	586.50'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.07 cfs @ 12.28 hrs HW=586.91' (Free Discharge)
↑—**1=Culvert** (Passes 4.07 cfs of 8.38 cfs potential flow)
↑—**2=Orifice/Grate** (Weir Controls 4.07 cfs @ 2.10 fps)

Pond 7P: Bioretention



Summary for Pond 8P: Pond

Inflow Area = 3.480 ac, 36.21% Impervious, Inflow Depth = 1.49" for 10-yr event
Inflow = 4.36 cfs @ 12.27 hrs, Volume= 0.432 af
Outflow = 0.65 cfs @ 13.47 hrs, Volume= 0.415 af, Atten= 85%, Lag= 71.9 min
Primary = 0.65 cfs @ 13.47 hrs, Volume= 0.415 af
Routed to Link T2 : Post-Dev Total

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 583.67' @ 13.47 hrs Surf.Area= 7,925 sf Storage= 8,317 cf

Plug-Flow detention time= 182.8 min calculated for 0.415 af (96% of inflow)
Center-of-Mass det. time= 160.5 min (1,037.3 - 876.8)

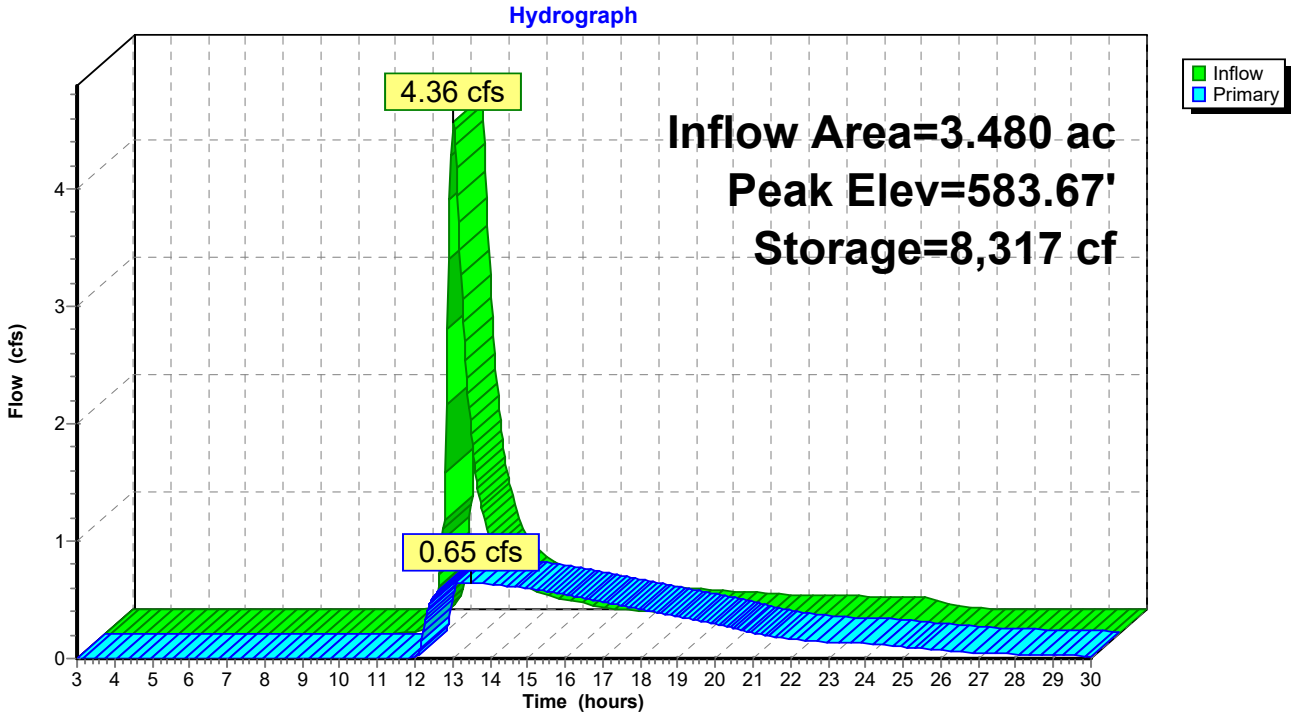
Volume	Invert	Avail.Storage	Storage Description
#1	582.50'	20,085 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
582.50	6,245	0	0
585.00	9,823	20,085	20,085

Device	Routing	Invert	Outlet Devices
#1	Primary	582.50'	**12.0" Round Culvert** L= 33.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 582.50' / 582.40' S= 0.0030 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.79 sf
#2	Device 1	582.50'	**5.0" Vert. 5" Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	584.30'	**24.0" W x 24.0" H 14° 24" Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.65 cfs @ 13.47 hrs HW=583.67' (Free Discharge)
└**1=Culvert** (Passes 0.65 cfs of 1.99 cfs potential flow)
  ├**2=5" Orifice** (Orifice Controls 0.65 cfs @ 4.73 fps)
  └**3=24" Grate** (Controls 0.00 cfs)

Pond 8P: Pond

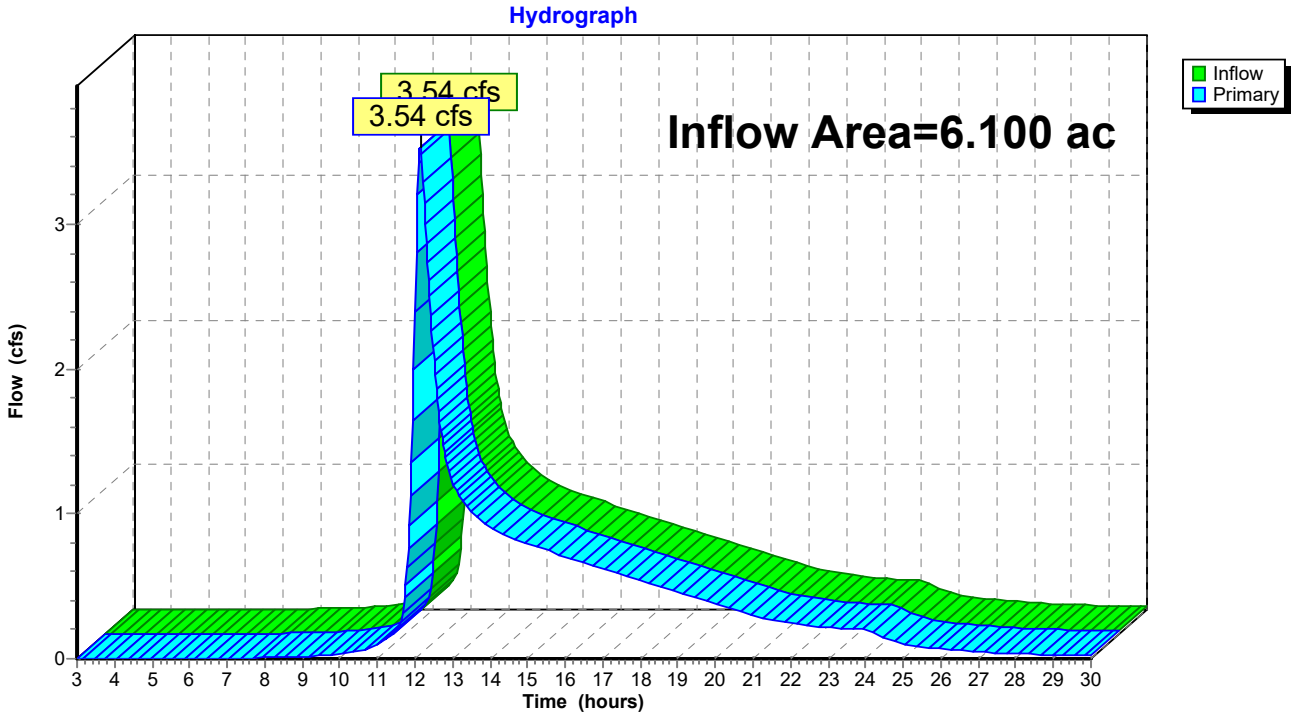

Hydrograph
4.36 cfs
0.65 cfs
Inflow Area=3.480 ac
Peak Elev=583.67'
Storage=8,317 cf
Inflow
Primary
Flow (cfs)
0
1
2
3
4
3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Time (hours)

Summary for Link T2: Post-Dev Total

Inflow Area = 6.100 ac, 26.39% Impervious, Inflow Depth > 1.46" for 10-yr event
Inflow = 3.54 cfs @ 12.14 hrs, Volume= 0.742 af
Primary = 3.54 cfs @ 12.14 hrs, Volume= 0.742 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs

Link T2: Post-Dev Total



Time span=3.00-30.00 hrs, dt=0.03 hrs, 901 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 5S: P-5 Runoff Area=0.700 ac 50.00% Impervious Runoff Depth=2.61"
Flow Length=137' Tc=13.2 min CN=89 Runoff=2.45 cfs 0.152 af

Subcatchment O2: Offsite Runoff Area=0.200 ac 0.00% Impervious Runoff Depth=1.63"
Flow Length=100' Slope=0.0200 '/' Tc=45.3 min CN=77 Runoff=0.21 cfs 0.027 af

Subcatchment O3: Offsite Runoff Area=0.120 ac 0.00% Impervious Runoff Depth=1.63"
Flow Length=100' Slope=0.0300 '/' Tc=38.5 min CN=77 Runoff=0.14 cfs 0.016 af

Subcatchment O4: Offsite Runoff Area=0.560 ac 0.00% Impervious Runoff Depth=1.63"
Flow Length=200' Slope=0.0200 '/' Tc=50.0 min CN=77 Runoff=0.54 cfs 0.076 af

Subcatchment P1: P-1 Runoff Area=2.160 ac 58.33% Impervious Runoff Depth=2.80"
Flow Length=621' Tc=22.5 min CN=91 Runoff=6.14 cfs 0.504 af

Subcatchment P2: P-2 Runoff Area=0.440 ac 0.00% Impervious Runoff Depth=1.85"
Flow Length=70' Slope=0.0200 '/' Tc=9.9 min CN=80 Runoff=1.26 cfs 0.068 af

Subcatchment P3: P-3 Runoff Area=0.860 ac 0.00% Impervious Runoff Depth=1.85"
Flow Length=613' Tc=16.6 min CN=80 Runoff=1.96 cfs 0.133 af

Subcatchment P4: P-4 Runoff Area=1.060 ac 0.00% Impervious Runoff Depth=1.85"
Flow Length=866' Tc=38.3 min CN=80 Runoff=1.43 cfs 0.164 af

Pond 4P: Dry Swale Peak Elev=585.74' Storage=757 cf Inflow=2.45 cfs 0.152 af
Outflow=1.77 cfs 0.152 af

Pond 7P: Bioretention Peak Elev=587.02' Storage=6,291 cf Inflow=6.50 cfs 0.607 af
Outflow=5.81 cfs 0.519 af

Pond 8P: Pond Peak Elev=584.21' Storage=12,776 cf Inflow=6.23 cfs 0.604 af
Outflow=0.80 cfs 0.586 af

Link T2: Post-Dev Total Inflow=4.88 cfs 1.035 af
Primary=4.88 cfs 1.035 af

Total Runoff Area = 6.100 ac Runoff Volume = 1.140 af Average Runoff Depth = 2.24"
73.61% Pervious = 4.490 ac 26.39% Impervious = 1.610 ac

Summary for Subcatchment 5S: P-5

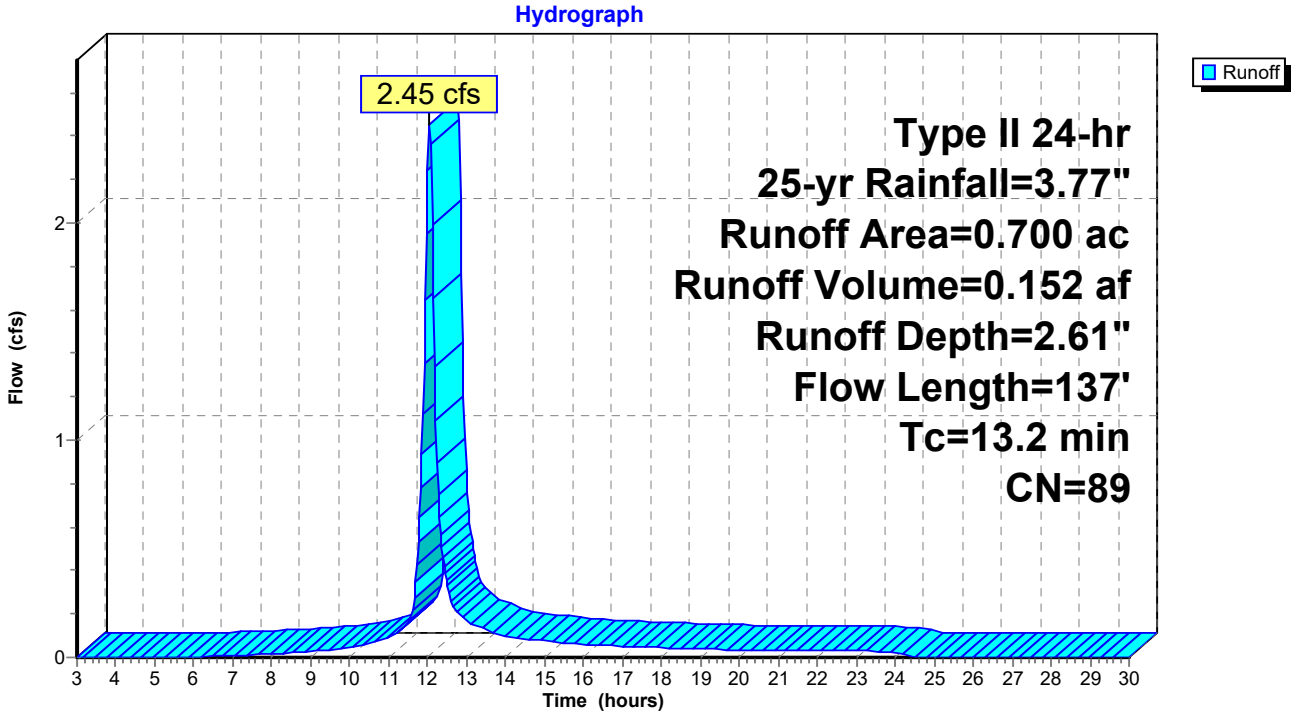
Runoff = 2.45 cfs @ 12.05 hrs, Volume= 0.152 af, Depth= 2.61"
Routed to Pond 4P : Dry Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Type II 24-hr 25-yr Rainfall=3.77"

Area (ac)	CN	Description
0.350	98	Paved parking, HSG D
0.350	80	>75% Grass cover, Good, HSG D
0.700	89	Weighted Average
0.350		50.00% Pervious Area
0.350		50.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	51	0.0330	0.07		**Sheet Flow, Sheet Flow** Grass: Bermuda n= 0.410 P2= 2.18"
0.5	86	0.0200	2.87		**Shallow Concentrated Flow, Shallow Conc Flow** Paved Kv= 20.3 fps
13.2	137	Total			

Subcatchment 5S: P-5



Summary for Subcatchment O2: Offsite

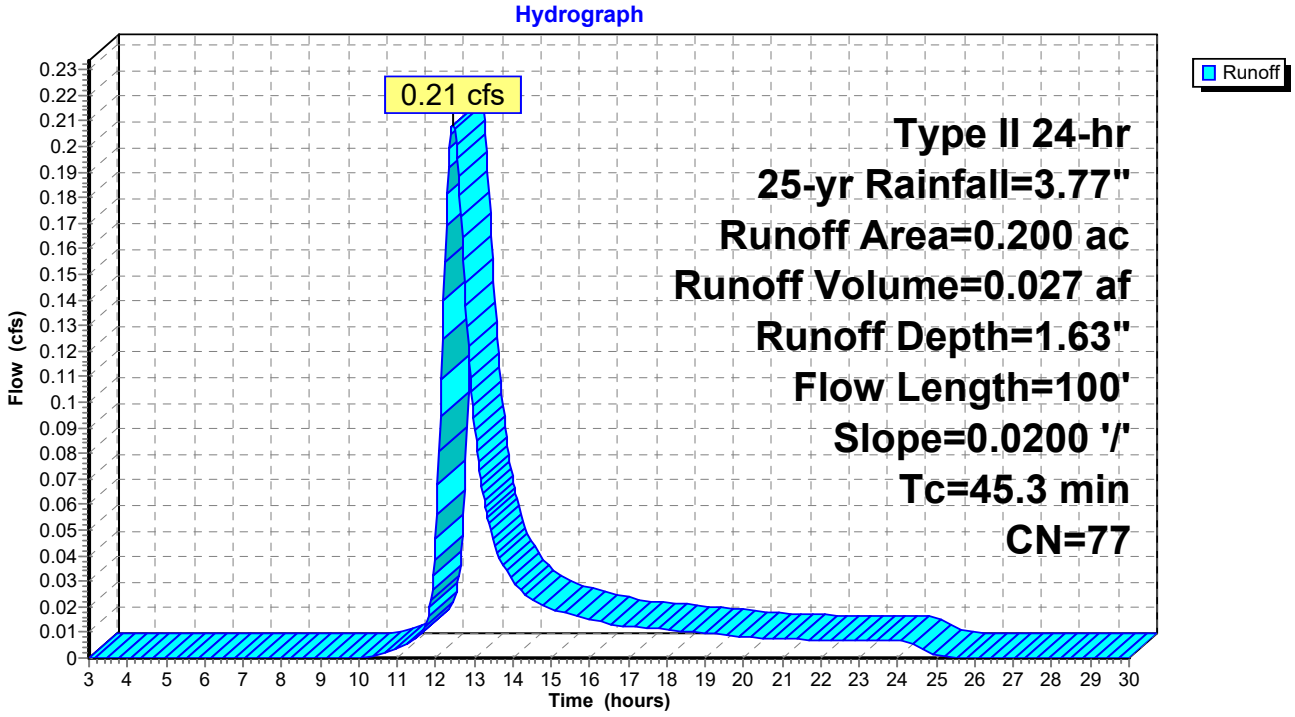
Runoff = 0.21 cfs @ 12.44 hrs, Volume= 0.027 af, Depth= 1.63"
Routed to Pond 7P : Bioretention

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Type II 24-hr 25-yr Rainfall=3.77"

Area (ac)	CN	Description
0.200	77	Woods, Good, HSG D
0.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
45.3	100	0.0200	0.04		**Sheet Flow, SHEET FLOW** Woods: Dense underbrush n= 0.800 P2= 2.18"

Subcatchment O2: Offsite



Summary for Subcatchment O3: Offsite

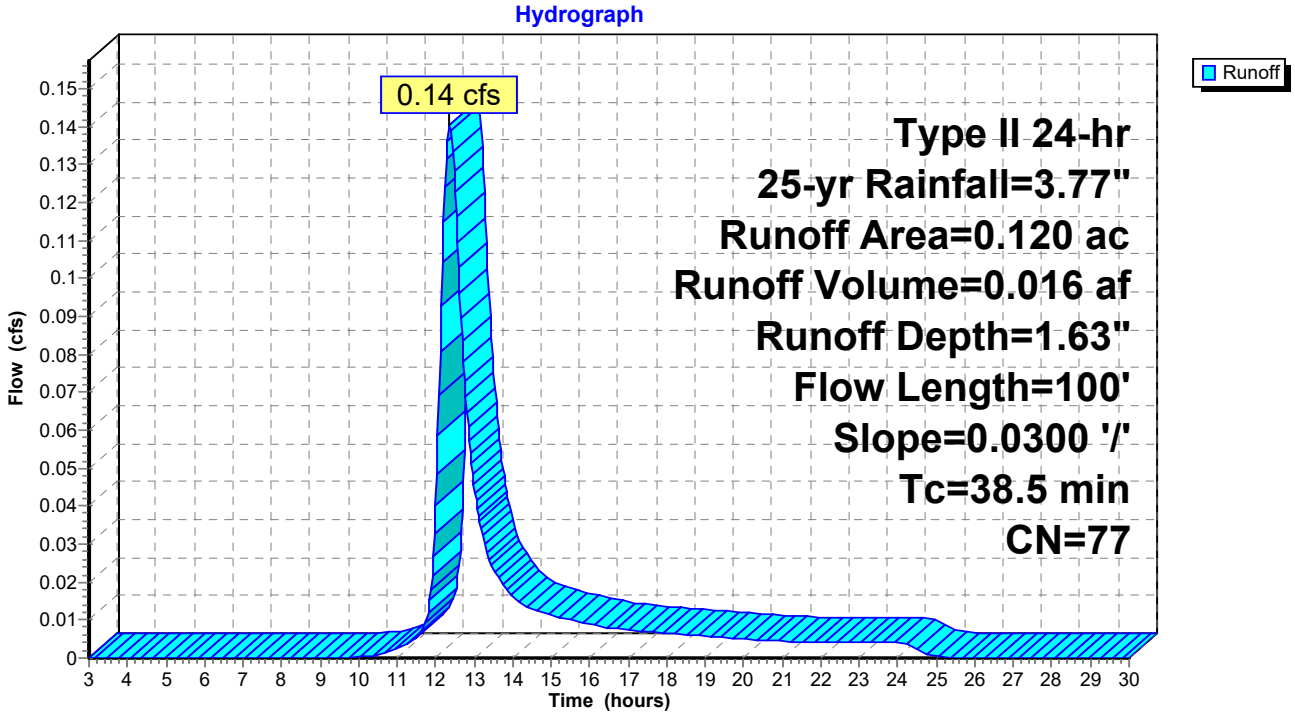
Runoff = 0.14 cfs @ 12.36 hrs, Volume= 0.016 af, Depth= 1.63"
Routed to Pond 8P : Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Type II 24-hr 25-yr Rainfall=3.77"

Area (ac)	CN	Description
0.120	77	Woods, Good, HSG D
0.120		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.5	100	0.0300	0.04		**Sheet Flow, SHEET FLOW** Woods: Dense underbrush n= 0.800 P2= 2.18"

Subcatchment O3: Offsite



Summary for Subcatchment O4: Offsite

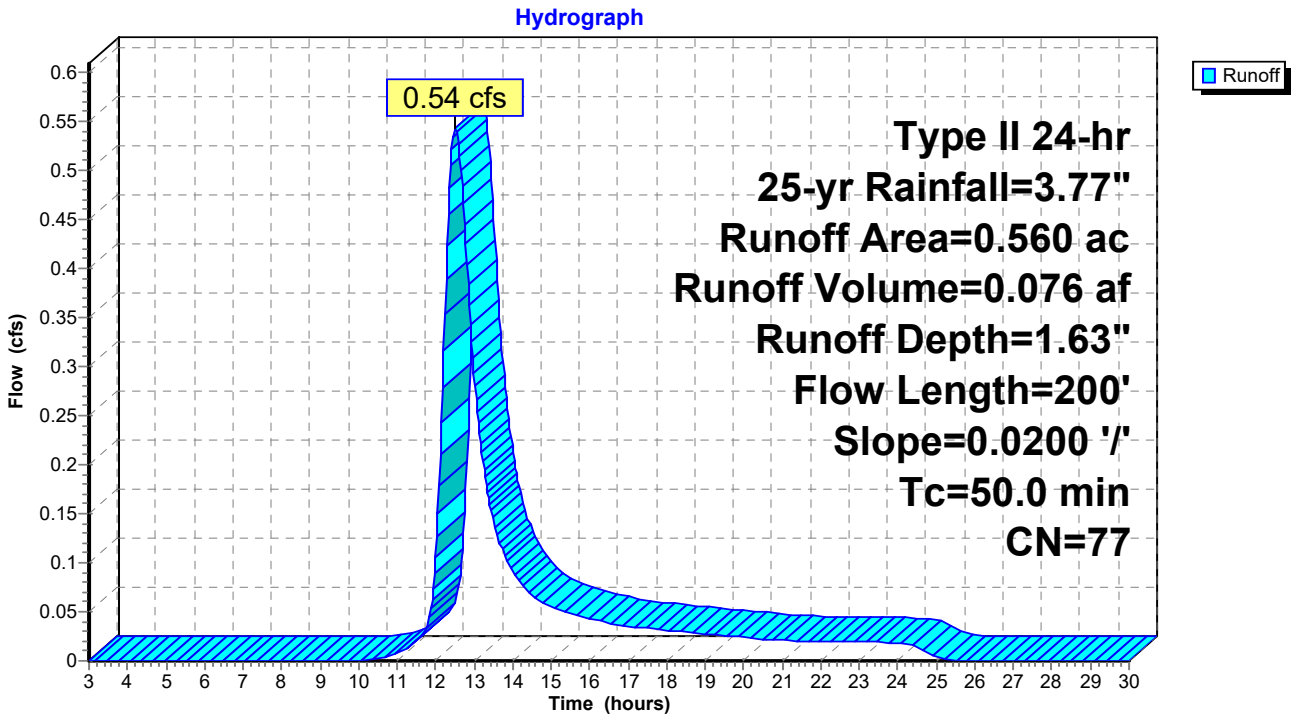
Runoff = 0.54 cfs @ 12.51 hrs, Volume= 0.076 af, Depth= 1.63"
Routed to Pond 7P : Bioretention

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Type II 24-hr 25-yr Rainfall=3.77"

Area (ac)	CN	Description
0.560	77	Woods, Good, HSG D
0.560		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
45.3	100	0.0200	0.04		**Sheet Flow, Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 2.18"
4.7	100	0.0200	0.35		**Shallow Concentrated Flow, Shallow Conc** Forest w/Heavy Litter Kv= 2.5 fps
50.0	200	Total			

Subcatchment O4: Offsite



Summary for Subcatchment P1: P-1

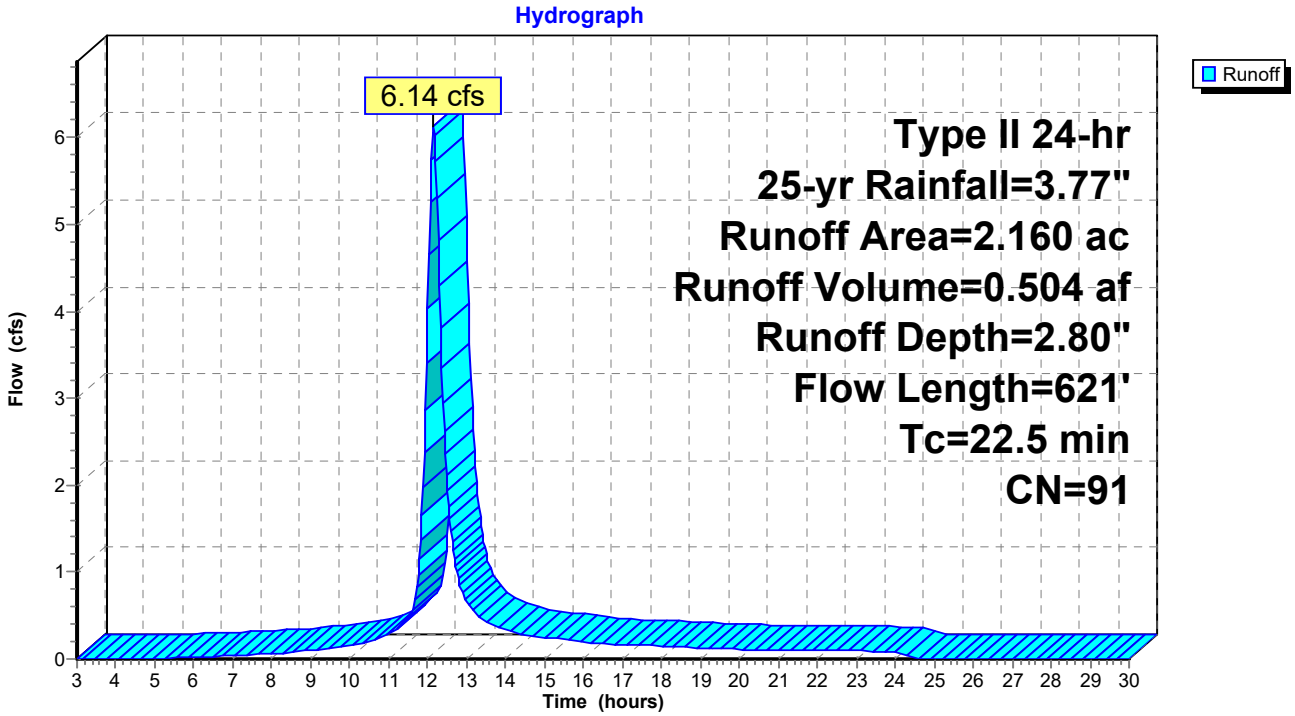
Runoff = 6.14 cfs @ 12.15 hrs, Volume= 0.504 af, Depth= 2.80"
Routed to Pond 7P : Bioretention

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Type II 24-hr 25-yr Rainfall=3.77"

Area (ac)	CN	Description
0.900	80	>75% Grass cover, Good, HSG D
1.260	98	Paved parking, HSG D
2.160	91	Weighted Average
0.900		41.67% Pervious Area
1.260		58.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	54	0.0190	0.05		**Sheet Flow, Sheet Flow** Grass: Bermuda n= 0.410 P2= 2.18"
0.6	70	0.0090	1.93		**Shallow Concentrated Flow, Shallow Conc Flow** Paved Kv= 20.3 fps
5.4	497	0.0020	1.53	1.88	**Pipe Channel, Pipe Flow** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.020 Corrugated PE, corrugated interior
22.5	621	Total			

Subcatchment P1: P-1



Summary for Subcatchment P2: P-2

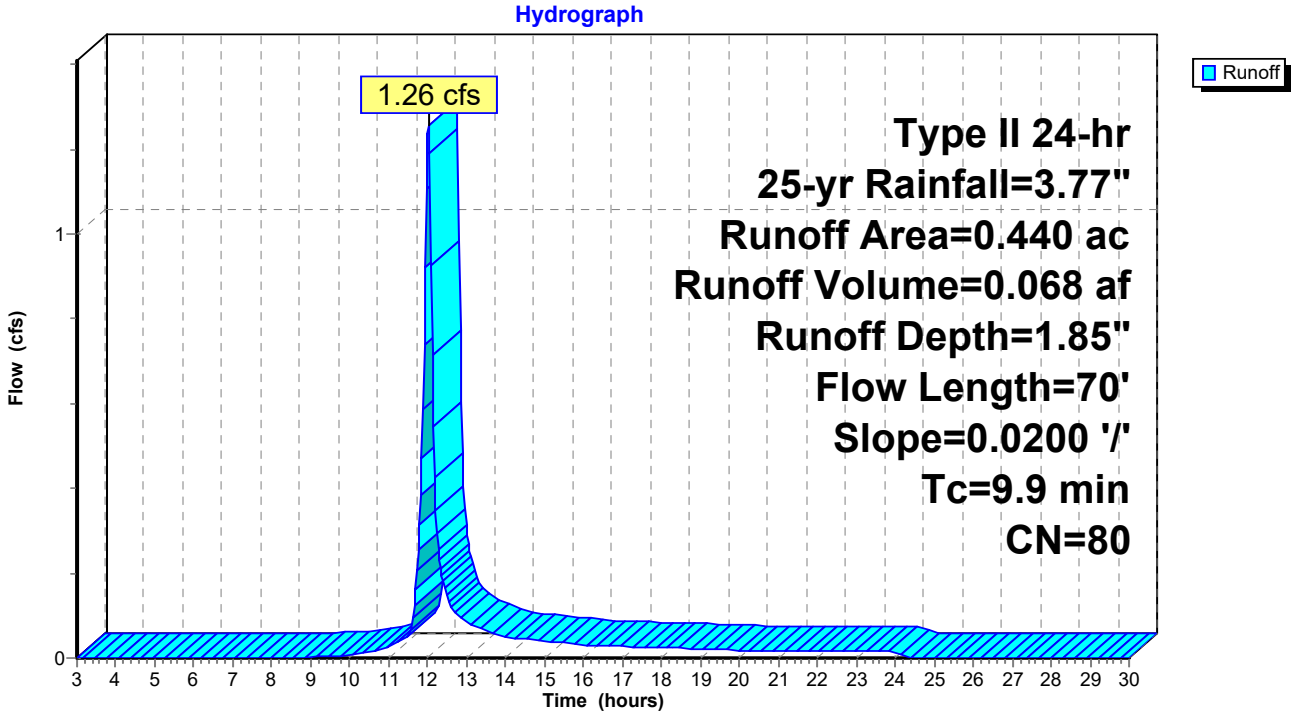
Runoff = 1.26 cfs @ 12.02 hrs, Volume= 0.068 af, Depth= 1.85"
Routed to Pond 8P : Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Type II 24-hr 25-yr Rainfall=3.77"

Area (ac)	CN	Description
0.440	80	>75% Grass cover, Good, HSG D
0.440		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	70	0.0200	0.12		**Sheet Flow, Sheet Flow** Cultivated: Residue>20% n= 0.170 P2= 2.18"

Subcatchment P2: P-2



Summary for Subcatchment P3: P-3

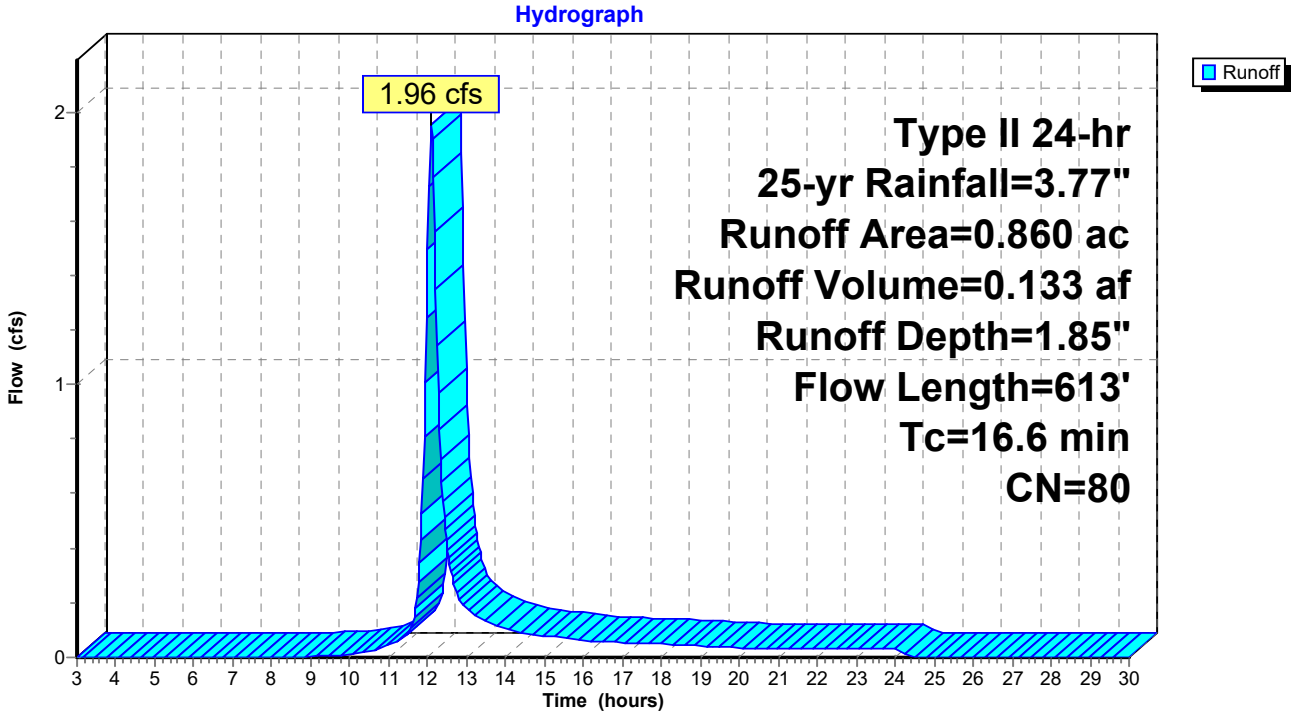
Runoff = 1.96 cfs @ 12.09 hrs, Volume= 0.133 af, Depth= 1.85"
Routed to Link T2 : Post-Dev Total

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Type II 24-hr 25-yr Rainfall=3.77"

Area (ac)	CN	Description
0.860	80	>75% Grass cover, Good, HSG D
0.000	98	Paved parking, HSG D
0.860	80	Weighted Average
0.860		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	57	0.0300	0.07		**Sheet Flow, Sheet Flow** Grass: Bermuda n= 0.410 P2= 2.18"
2.2	556	0.0200	4.17	3.28	**Pipe Channel, Pipe Flow** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.020 Corrugated PE, corrugated interior
16.6	613	Total			

Subcatchment P3: P-3



Summary for Subcatchment P4: P-4

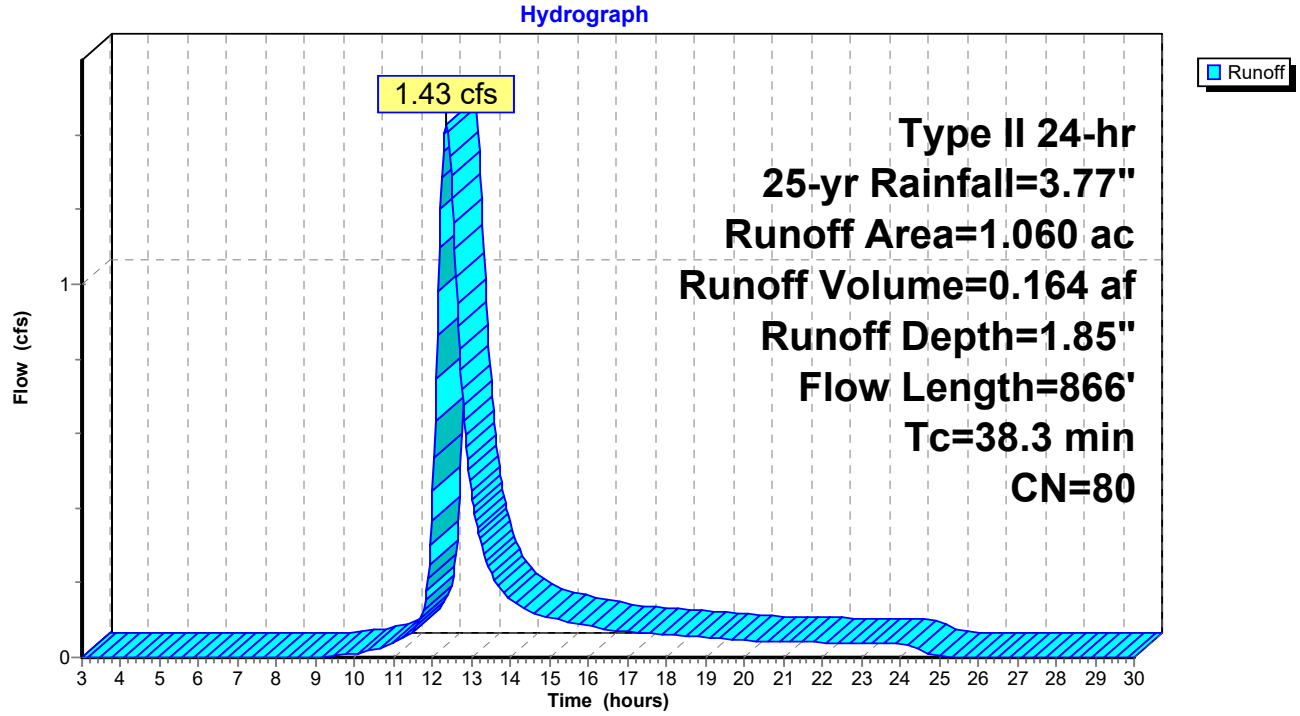
Runoff = 1.43 cfs @ 12.35 hrs, Volume= 0.164 af, Depth= 1.85"
Routed to Link T2 : Post-Dev Total

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Type II 24-hr 25-yr Rainfall=3.77"

Area (ac)	CN	Description
1.060	80	>75% Grass cover, Good, HSG D
1.060		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	54	0.0200	0.06		**Sheet Flow, Sheet Flow** Grass: Bermuda n= 0.410 P2= 2.18"
2.4	250	0.0035	1.74	1.37	**Pipe Channel, Pipe Flow** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.020 Corrugated PE, corrugated interior
19.7	562	0.0010	0.47		**Shallow Concentrated Flow, Ditch** Grassed Waterway Kv= 15.0 fps
38.3	866	Total			

Subcatchment P4: P-4



Summary for Pond 4P: Dry Swale

Inflow Area = 0.700 ac, 50.00% Impervious, Inflow Depth = 2.61" for 25-yr event
Inflow = 2.45 cfs @ 12.05 hrs, Volume= 0.152 af
Outflow = 1.77 cfs @ 12.14 hrs, Volume= 0.152 af, Atten= 28%, Lag= 5.6 min
Primary = 1.77 cfs @ 12.14 hrs, Volume= 0.152 af
Routed to Link T2 : Post-Dev Total

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 585.74' @ 12.14 hrs Surf.Area= 699 sf Storage= 757 cf

Plug-Flow detention time= 4.9 min calculated for 0.152 af (100% of inflow)
Center-of-Mass det. time= 4.9 min (813.2 - 808.3)

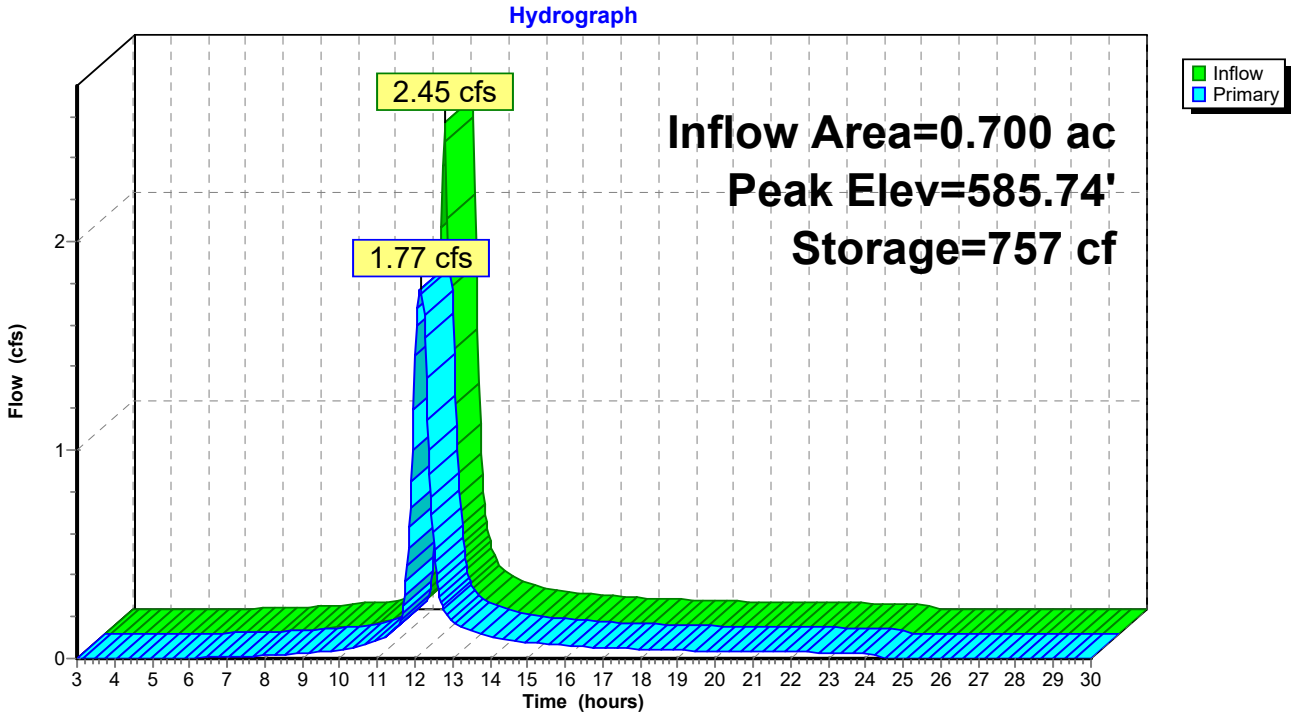
Volume	Invert	Avail.Storage	Storage Description
#1	583.55'	964 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
583.55	40	0	0
584.00	495	120	120
585.00	150	323	443
586.00	893	522	964

Device	Routing	Invert	Outlet Devices
#1	Primary	581.64'	**12.0" Round Culvert** L= 41.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 581.64' / 581.50' S= 0.0034 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.79 sf
#2	Device 1	583.55'	**7.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	585.74'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.77 cfs @ 12.14 hrs HW=585.73' (Free Discharge)
↑└**1=Culvert** (Passes 1.77 cfs of 5.32 cfs potential flow)
↑└**2=Orifice/Grate** (Orifice Controls 1.77 cfs @ 6.62 fps)
└**3=Grate** (Controls 0.00 cfs)

Pond 4P: Dry Swale



Summary for Pond 7P: Bioretention

Inflow Area = 2.920 ac, 43.15% Impervious, Inflow Depth = 2.49" for 25-yr event
Inflow = 6.50 cfs @ 12.16 hrs, Volume= 0.607 af
Outflow = 5.81 cfs @ 12.24 hrs, Volume= 0.519 af, Atten= 11%, Lag= 5.2 min
Primary = 5.81 cfs @ 12.24 hrs, Volume= 0.519 af
Routed to Pond 8P : Pond

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 587.02' @ 12.24 hrs Surf.Area= 4,919 sf Storage= 6,291 cf

Plug-Flow detention time= 111.8 min calculated for 0.519 af (85% of inflow)
Center-of-Mass det. time= 45.3 min (866.1 - 820.8)

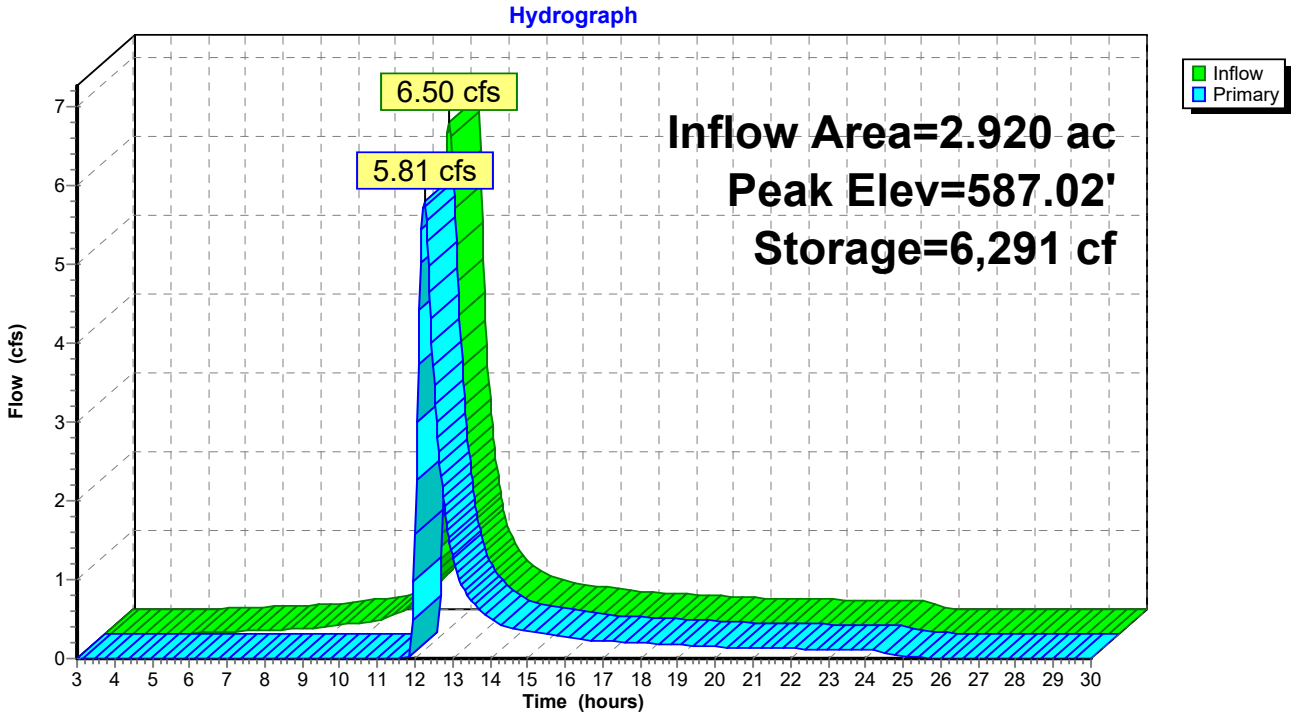
Volume	Invert	Avail.Storage	Storage Description
#1	585.60'	8,724 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
585.60	3,931	0	0
587.50	5,252	8,724	8,724

Device	Routing	Invert	Outlet Devices
#1	Primary	582.75'	**15.0" Round Culvert** L= 123.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 582.75' / 582.50' S= 0.0020 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	586.50'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.80 cfs @ 12.24 hrs HW=587.02' (Free Discharge)
↑—**1=Culvert** (Passes 5.80 cfs of 8.52 cfs potential flow)
↑—**2=Orifice/Grate** (Weir Controls 5.80 cfs @ 2.36 fps)

Pond 7P: Bioretention



Summary for Pond 8P: Pond

Inflow Area = 3.480 ac, 36.21% Impervious, Inflow Depth = 2.08" for 25-yr event
Inflow = 6.23 cfs @ 12.23 hrs, Volume= 0.604 af
Outflow = 0.80 cfs @ 13.51 hrs, Volume= 0.586 af, Atten= 87%, Lag= 76.4 min
Primary = 0.80 cfs @ 13.51 hrs, Volume= 0.586 af
Routed to Link T2 : Post-Dev Total

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 584.21' @ 13.51 hrs Surf.Area= 8,693 sf Storage= 12,776 cf

Plug-Flow detention time= 208.6 min calculated for 0.586 af (97% of inflow)
Center-of-Mass det. time= 191.0 min (1,053.7 - 862.7)

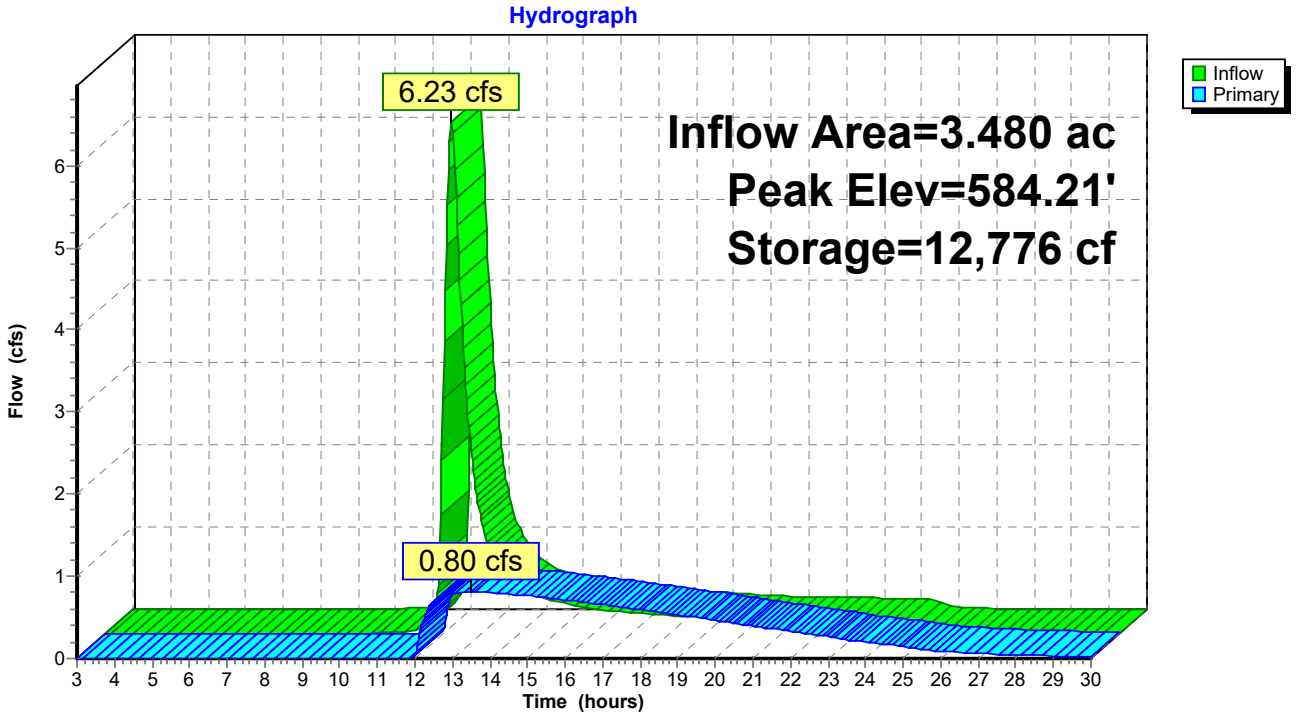
Volume	Invert	Avail.Storage	Storage Description
#1	582.50'	20,085 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
582.50	6,245	0	0
585.00	9,823	20,085	20,085

Device	Routing	Invert	Outlet Devices
#1	Primary	582.50'	**12.0" Round Culvert** L= 33.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 582.50' / 582.40' S= 0.0030 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.79 sf
#2	Device 1	582.50'	**5.0" Vert. 5" Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	584.30'	**24.0" W x 24.0" H 14° 24" Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.80 cfs @ 13.51 hrs HW=584.21' (Free Discharge)
└**1=Culvert** (Passes 0.80 cfs of 2.85 cfs potential flow)
  ├**2=5" Orifice** (Orifice Controls 0.80 cfs @ 5.90 fps)
  └**3=24" Grate** (Controls 0.00 cfs)

Pond 8P: Pond

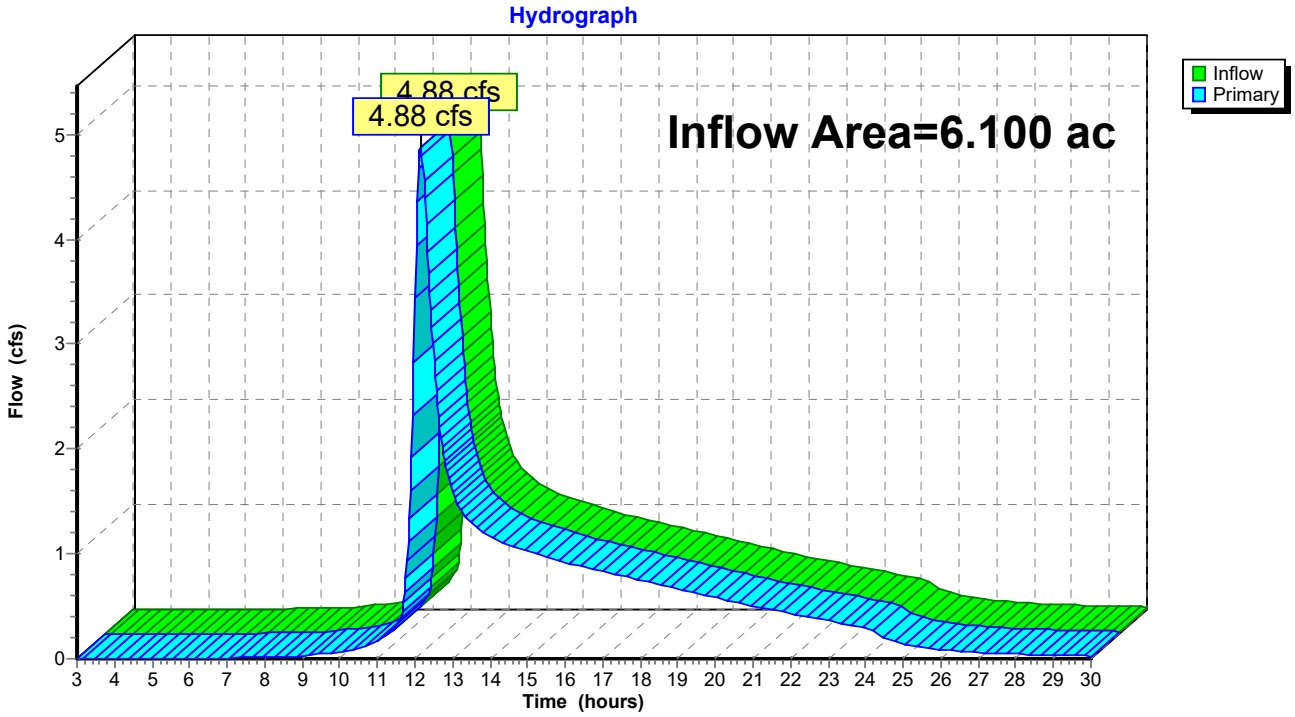

Hydrograph
6.23 cfs
0.80 cfs
Inflow Area=3.480 ac
Peak Elev=584.21'
Storage=12,776 cf
Inflow
Primary
Flow (cfs)
0
1
2
3
4
5
6
3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Time (hours)

Summary for Link T2: Post-Dev Total

Inflow Area = 6.100 ac, 26.39% Impervious, Inflow Depth > 2.04" for 25-yr event
Inflow = 4.88 cfs @ 12.15 hrs, Volume= 1.035 af
Primary = 4.88 cfs @ 12.15 hrs, Volume= 1.035 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs

Link T2: Post-Dev Total



Time span=3.00-30.00 hrs, dt=0.03 hrs, 901 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 5S: P-5 Runoff Area=0.700 ac 50.00% Impervious Runoff Depth=3.88"
Flow Length=137' Tc=13.2 min CN=89 Runoff=3.58 cfs 0.226 af

Subcatchment O2: Offsite Runoff Area=0.200 ac 0.00% Impervious Runoff Depth=2.72"
Flow Length=100' Slope=0.0200 '/' Tc=45.3 min CN=77 Runoff=0.35 cfs 0.045 af

Subcatchment O3: Offsite Runoff Area=0.120 ac 0.00% Impervious Runoff Depth=2.72"
Flow Length=100' Slope=0.0300 '/' Tc=38.5 min CN=77 Runoff=0.24 cfs 0.027 af

Subcatchment O4: Offsite Runoff Area=0.560 ac 0.00% Impervious Runoff Depth=2.72"
Flow Length=200' Slope=0.0200 '/' Tc=50.0 min CN=77 Runoff=0.92 cfs 0.127 af

Subcatchment P1: P-1 Runoff Area=2.160 ac 58.33% Impervious Runoff Depth=4.09"
Flow Length=621' Tc=22.5 min CN=91 Runoff=8.82 cfs 0.736 af

Subcatchment P2: P-2 Runoff Area=0.440 ac 0.00% Impervious Runoff Depth=2.99"
Flow Length=70' Slope=0.0200 '/' Tc=9.9 min CN=80 Runoff=2.01 cfs 0.110 af

Subcatchment P3: P-3 Runoff Area=0.860 ac 0.00% Impervious Runoff Depth=2.99"
Flow Length=613' Tc=16.6 min CN=80 Runoff=3.16 cfs 0.214 af

Subcatchment P4: P-4 Runoff Area=1.060 ac 0.00% Impervious Runoff Depth=2.99"
Flow Length=866' Tc=38.3 min CN=80 Runoff=2.33 cfs 0.264 af

Pond 4P: Dry Swale Peak Elev=585.90' Storage=881 cf Inflow=3.58 cfs 0.226 af
Outflow=3.57 cfs 0.226 af

Pond 7P: Bioretention Peak Elev=587.30' Storage=7,695 cf Inflow=9.47 cfs 0.908 af
Outflow=7.62 cfs 0.820 af

Pond 8P: Pond Peak Elev=584.73' Storage=17,490 cf Inflow=8.24 cfs 0.957 af
Outflow=3.66 cfs 0.937 af

Link T2: Post-Dev Total Inflow=8.41 cfs 1.642 af
Primary=8.41 cfs 1.642 af

Total Runoff Area = 6.100 ac Runoff Volume = 1.749 af Average Runoff Depth = 3.44"
73.61% Pervious = 4.490 ac 26.39% Impervious = 1.610 ac

Summary for Subcatchment 5S: P-5

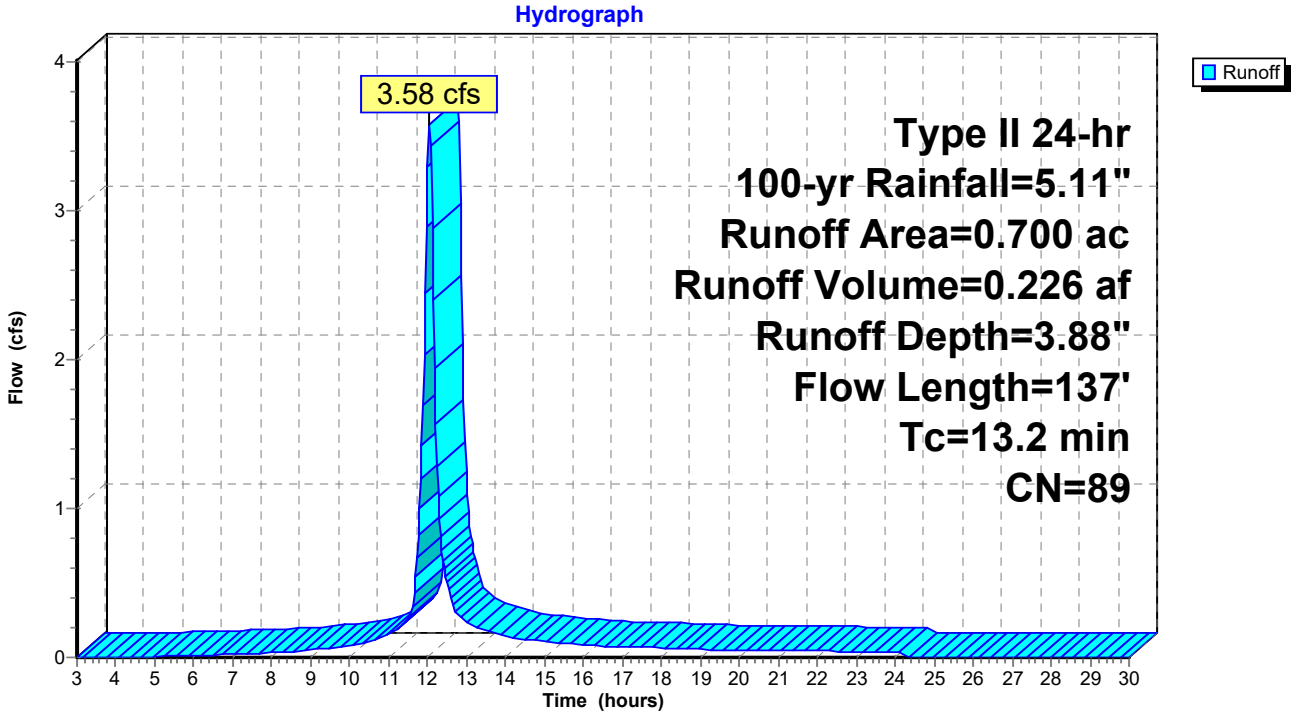
Runoff = 3.58 cfs @ 12.05 hrs, Volume= 0.226 af, Depth= 3.88"
Routed to Pond 4P : Dry Swale

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Type II 24-hr 100-yr Rainfall=5.11"

Area (ac)	CN	Description
0.350	98	Paved parking, HSG D
0.350	80	>75% Grass cover, Good, HSG D
0.700	89	Weighted Average
0.350		50.00% Pervious Area
0.350		50.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	51	0.0330	0.07		**Sheet Flow, Sheet Flow** Grass: Bermuda n= 0.410 P2= 2.18"
0.5	86	0.0200	2.87		**Shallow Concentrated Flow, Shallow Conc Flow** Paved Kv= 20.3 fps
13.2	137	Total			

Subcatchment 5S: P-5



Summary for Subcatchment O2: Offsite

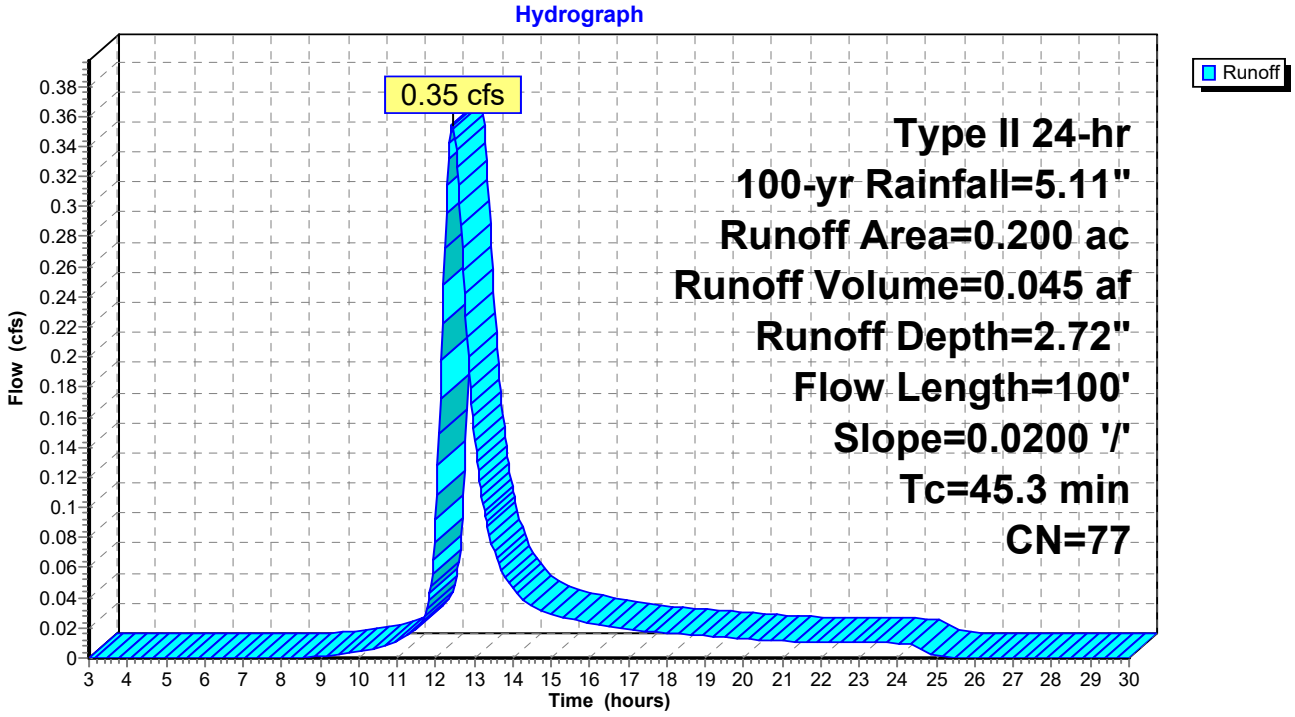
Runoff = 0.35 cfs @ 12.43 hrs, Volume= 0.045 af, Depth= 2.72"
Routed to Pond 7P : Bioretention

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Type II 24-hr 100-yr Rainfall=5.11"

Area (ac)	CN	Description
0.200	77	Woods, Good, HSG D
0.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
45.3	100	0.0200	0.04		**Sheet Flow, SHEET FLOW** Woods: Dense underbrush n= 0.800 P2= 2.18"

Subcatchment O2: Offsite



Summary for Subcatchment O3: Offsite

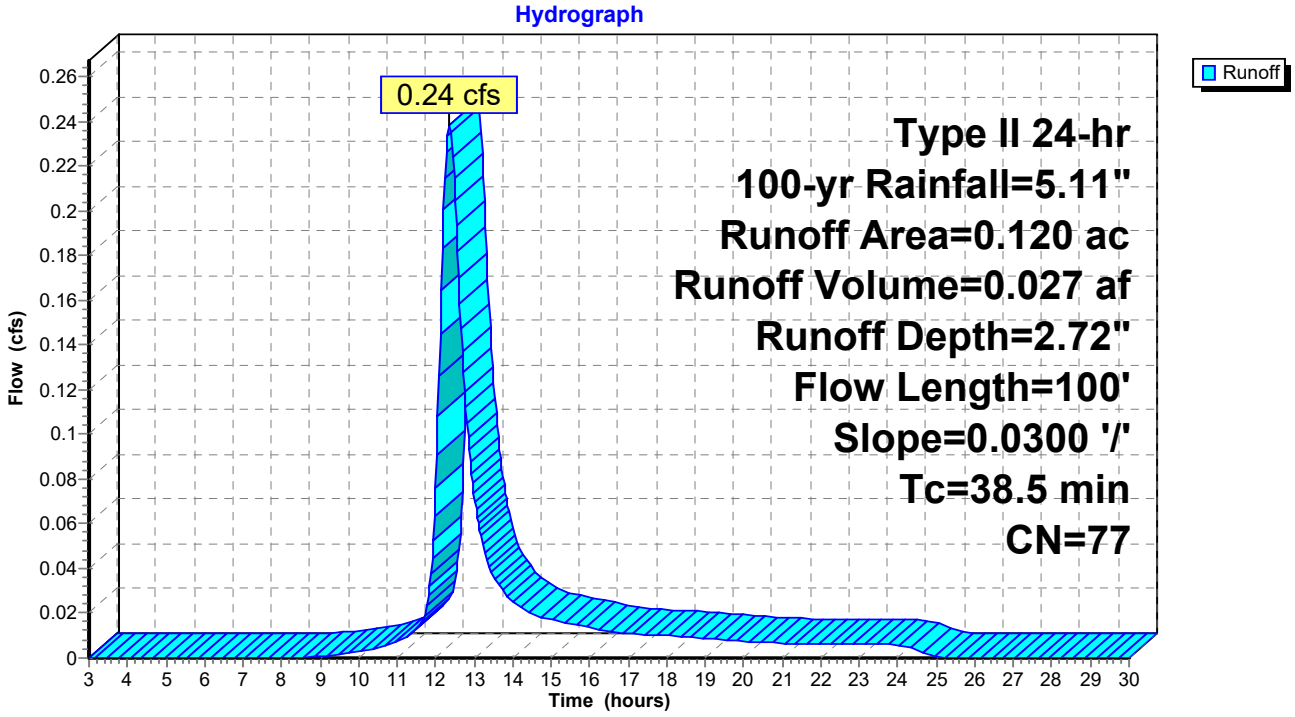
Runoff = 0.24 cfs @ 12.35 hrs, Volume= 0.027 af, Depth= 2.72"
Routed to Pond 8P : Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Type II 24-hr 100-yr Rainfall=5.11"

Area (ac)	CN	Description
0.120	77	Woods, Good, HSG D
0.120		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.5	100	0.0300	0.04		**Sheet Flow, SHEET FLOW** Woods: Dense underbrush n= 0.800 P2= 2.18"

Subcatchment O3: Offsite



Summary for Subcatchment O4: Offsite

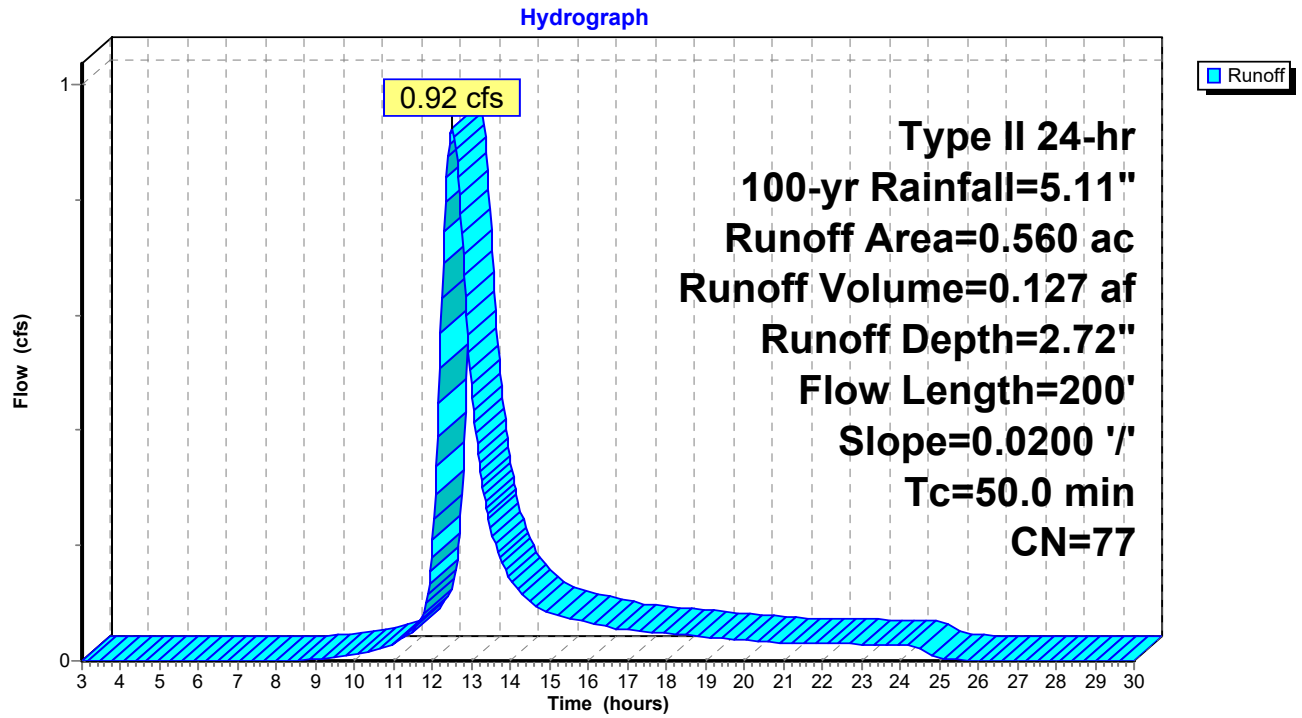
Runoff = 0.92 cfs @ 12.50 hrs, Volume= 0.127 af, Depth= 2.72"
Routed to Pond 7P : Bioretention

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Type II 24-hr 100-yr Rainfall=5.11"

Area (ac)	CN	Description
0.560	77	Woods, Good, HSG D
0.560		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
45.3	100	0.0200	0.04		**Sheet Flow, Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 2.18"
4.7	100	0.0200	0.35		**Shallow Concentrated Flow, Shallow Conc** Forest w/Heavy Litter Kv= 2.5 fps
50.0	200	Total			

Subcatchment O4: Offsite



Summary for Subcatchment P1: P-1

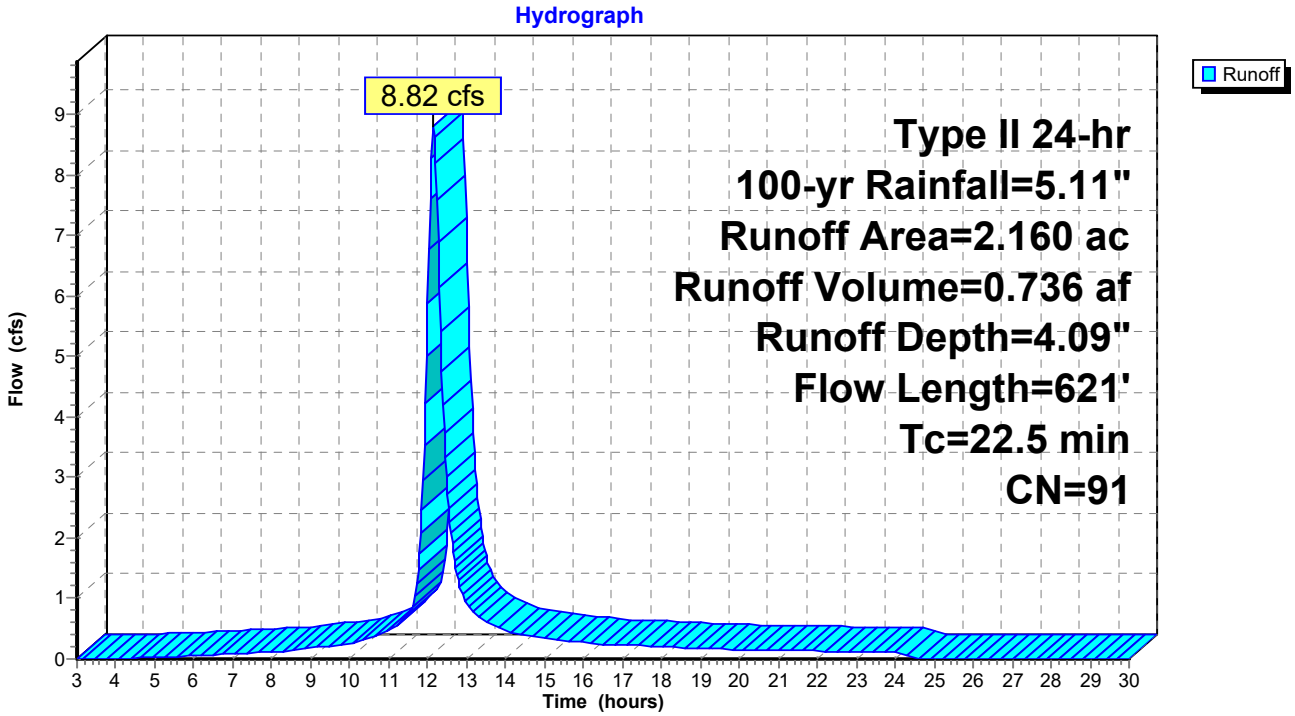
Runoff = 8.82 cfs @ 12.15 hrs, Volume= 0.736 af, Depth= 4.09"
Routed to Pond 7P : Bioretention

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Type II 24-hr 100-yr Rainfall=5.11"

Area (ac)	CN	Description
0.900	80	>75% Grass cover, Good, HSG D
1.260	98	Paved parking, HSG D
2.160	91	Weighted Average
0.900		41.67% Pervious Area
1.260		58.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	54	0.0190	0.05		**Sheet Flow, Sheet Flow** Grass: Bermuda n= 0.410 P2= 2.18"
0.6	70	0.0090	1.93		**Shallow Concentrated Flow, Shallow Conc Flow** Paved Kv= 20.3 fps
5.4	497	0.0020	1.53	1.88	**Pipe Channel, Pipe Flow** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.020 Corrugated PE, corrugated interior
22.5	621	Total			

Subcatchment P1: P-1



Summary for Subcatchment P2: P-2

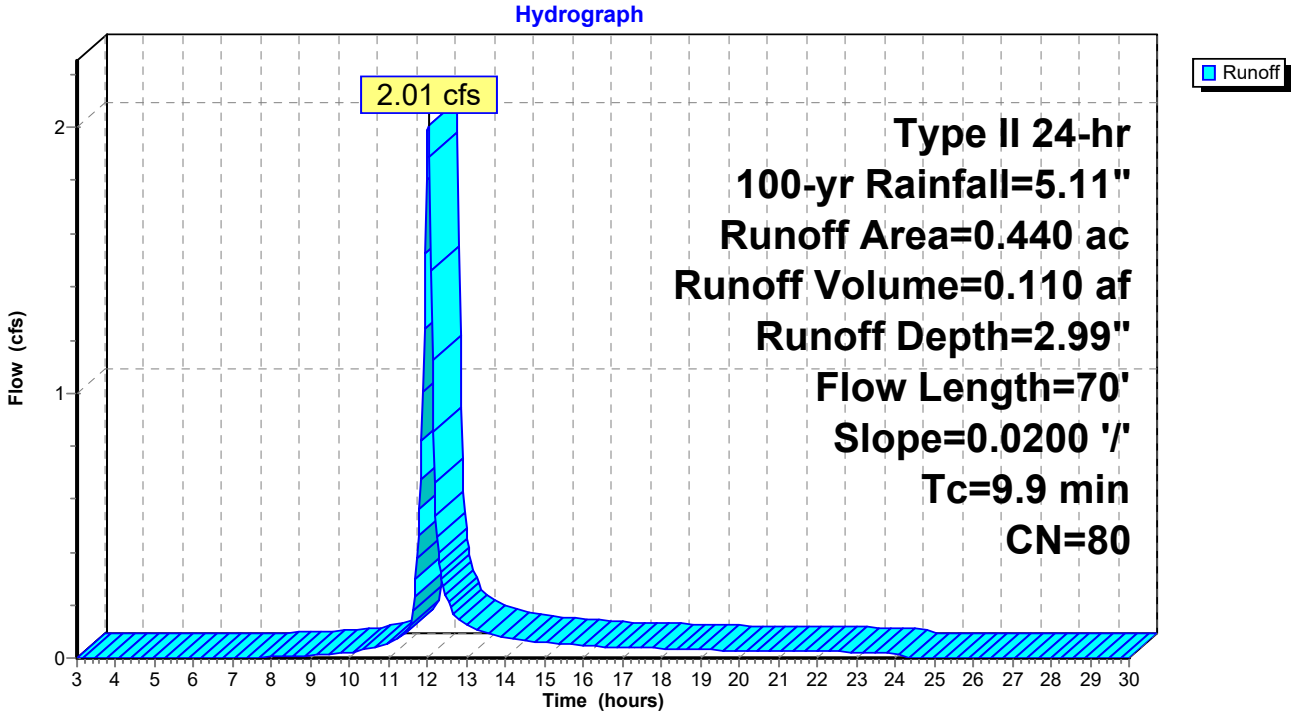
Runoff = 2.01 cfs @ 12.02 hrs, Volume= 0.110 af, Depth= 2.99"
Routed to Pond 8P : Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Type II 24-hr 100-yr Rainfall=5.11"

Area (ac)	CN	Description
0.440	80	>75% Grass cover, Good, HSG D
0.440		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	70	0.0200	0.12		**Sheet Flow, Sheet Flow** Cultivated: Residue>20% n= 0.170 P2= 2.18"

Subcatchment P2: P-2



Summary for Subcatchment P3: P-3

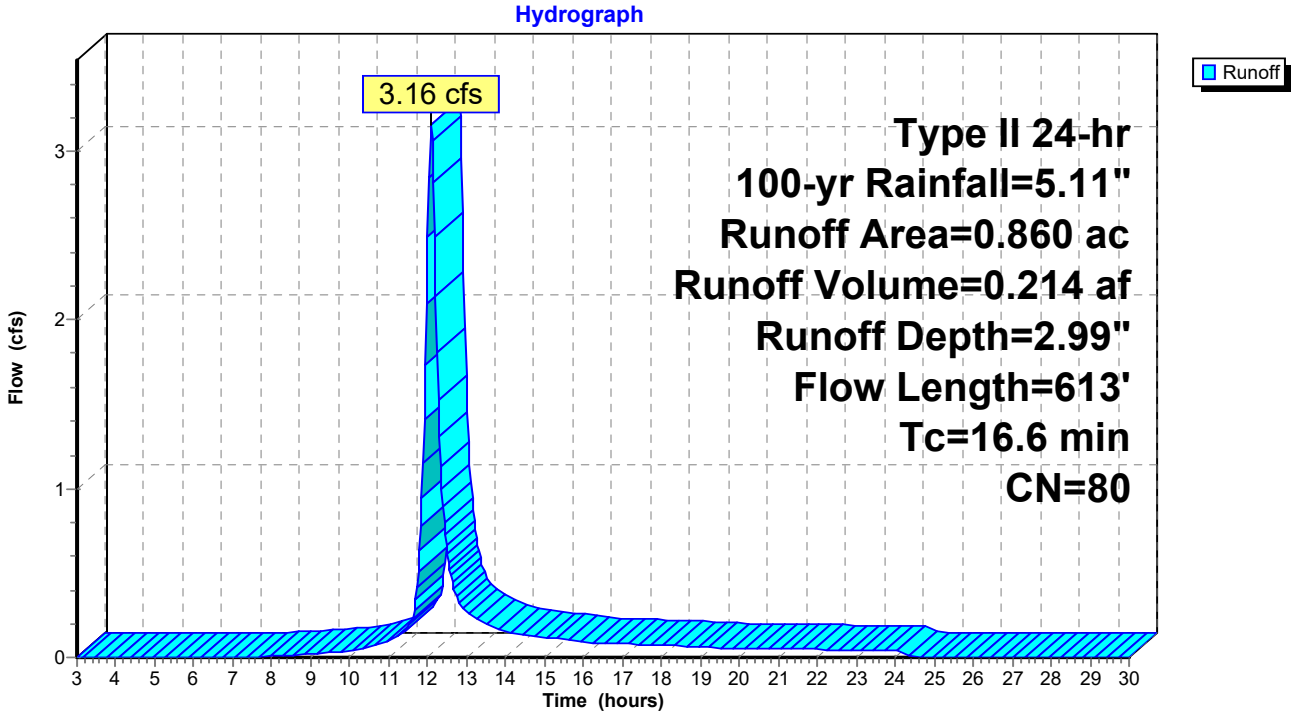
Runoff = 3.16 cfs @ 12.09 hrs, Volume= 0.214 af, Depth= 2.99"
Routed to Link T2 : Post-Dev Total

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Type II 24-hr 100-yr Rainfall=5.11"

Area (ac)	CN	Description
0.860	80	>75% Grass cover, Good, HSG D
0.000	98	Paved parking, HSG D
0.860	80	Weighted Average
0.860		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	57	0.0300	0.07		**Sheet Flow, Sheet Flow** Grass: Bermuda n= 0.410 P2= 2.18"
2.2	556	0.0200	4.17	3.28	**Pipe Channel, Pipe Flow** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.020 Corrugated PE, corrugated interior
16.6	613	Total			

Subcatchment P3: P-3



Summary for Subcatchment P4: P-4

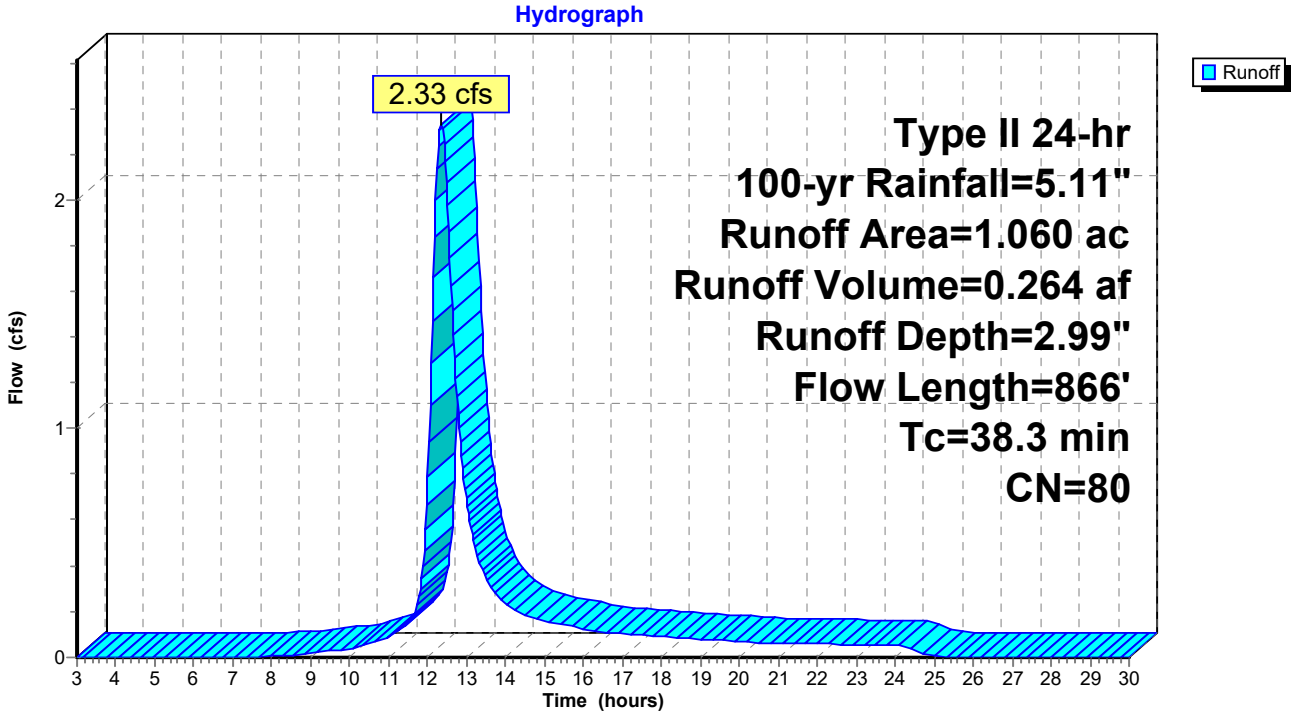
Runoff = 2.33 cfs @ 12.34 hrs, Volume= 0.264 af, Depth= 2.99"
Routed to Link T2 : Post-Dev Total

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Type II 24-hr 100-yr Rainfall=5.11"

Area (ac)	CN	Description
1.060	80	>75% Grass cover, Good, HSG D
1.060		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	54	0.0200	0.06		**Sheet Flow, Sheet Flow** Grass: Bermuda n= 0.410 P2= 2.18"
2.4	250	0.0035	1.74	1.37	**Pipe Channel, Pipe Flow** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.020 Corrugated PE, corrugated interior
19.7	562	0.0010	0.47		**Shallow Concentrated Flow, Ditch** Grassed Waterway Kv= 15.0 fps
38.3	866	Total			

Subcatchment P4: P-4



Summary for Pond 4P: Dry Swale

Inflow Area = 0.700 ac, 50.00% Impervious, Inflow Depth = 3.88" for 100-yr event
Inflow = 3.58 cfs @ 12.05 hrs, Volume= 0.226 af
Outflow = 3.57 cfs @ 12.07 hrs, Volume= 0.226 af, Atten= 0%, Lag= 1.3 min
Primary = 3.57 cfs @ 12.07 hrs, Volume= 0.226 af
Routed to Link T2 : Post-Dev Total

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 585.90' @ 12.07 hrs Surf.Area= 821 sf Storage= 881 cf

Plug-Flow detention time= 4.7 min calculated for 0.226 af (100% of inflow)
Center-of-Mass det. time= 4.6 min (801.7 - 797.1)

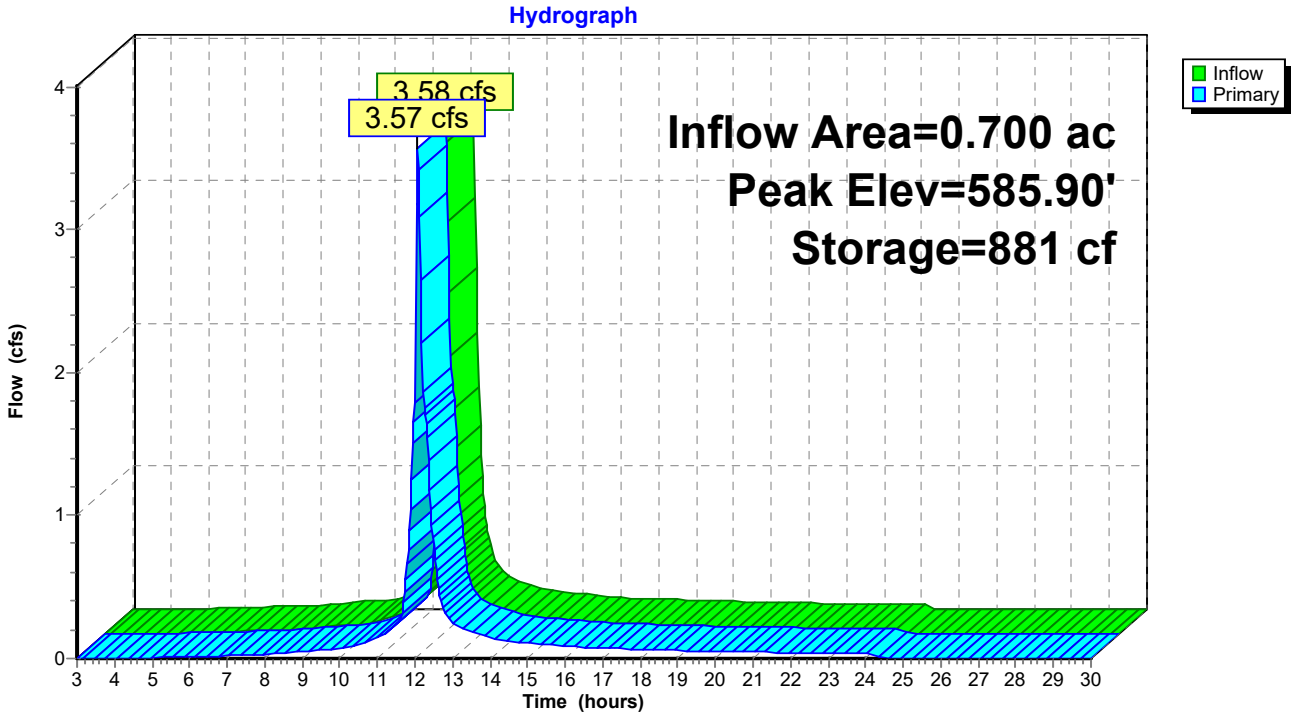
Volume	Invert	Avail.Storage	Storage Description
#1	583.55'	964 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
583.55	40	0	0
584.00	495	120	120
585.00	150	323	443
586.00	893	522	964

Device	Routing	Invert	Outlet Devices
#1	Primary	581.64'	**12.0" Round Culvert** L= 41.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 581.64' / 581.50' S= 0.0034 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.79 sf
#2	Device 1	583.55'	**7.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	585.74'	**24.0" x 24.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.52 cfs @ 12.07 hrs HW=585.90' (Free Discharge)
└**1=Culvert** (Passes 3.52 cfs of 5.45 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 1.85 cfs @ 6.91 fps)
  └**3=Grate** (Weir Controls 1.68 cfs @ 1.31 fps)

Pond 4P: Dry Swale



Summary for Pond 7P: Bioretention

Inflow Area = 2.920 ac, 43.15% Impervious, Inflow Depth = 3.73" for 100-yr event
Inflow = 9.47 cfs @ 12.15 hrs, Volume= 0.908 af
Outflow = 7.62 cfs @ 12.28 hrs, Volume= 0.820 af, Atten= 20%, Lag= 7.6 min
Primary = 7.62 cfs @ 12.28 hrs, Volume= 0.820 af
Routed to Pond 8P : Pond

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 587.30' @ 12.28 hrs Surf.Area= 5,114 sf Storage= 7,695 cf

Plug-Flow detention time= 88.6 min calculated for 0.819 af (90% of inflow)
Center-of-Mass det. time= 39.0 min (849.9 - 810.9)

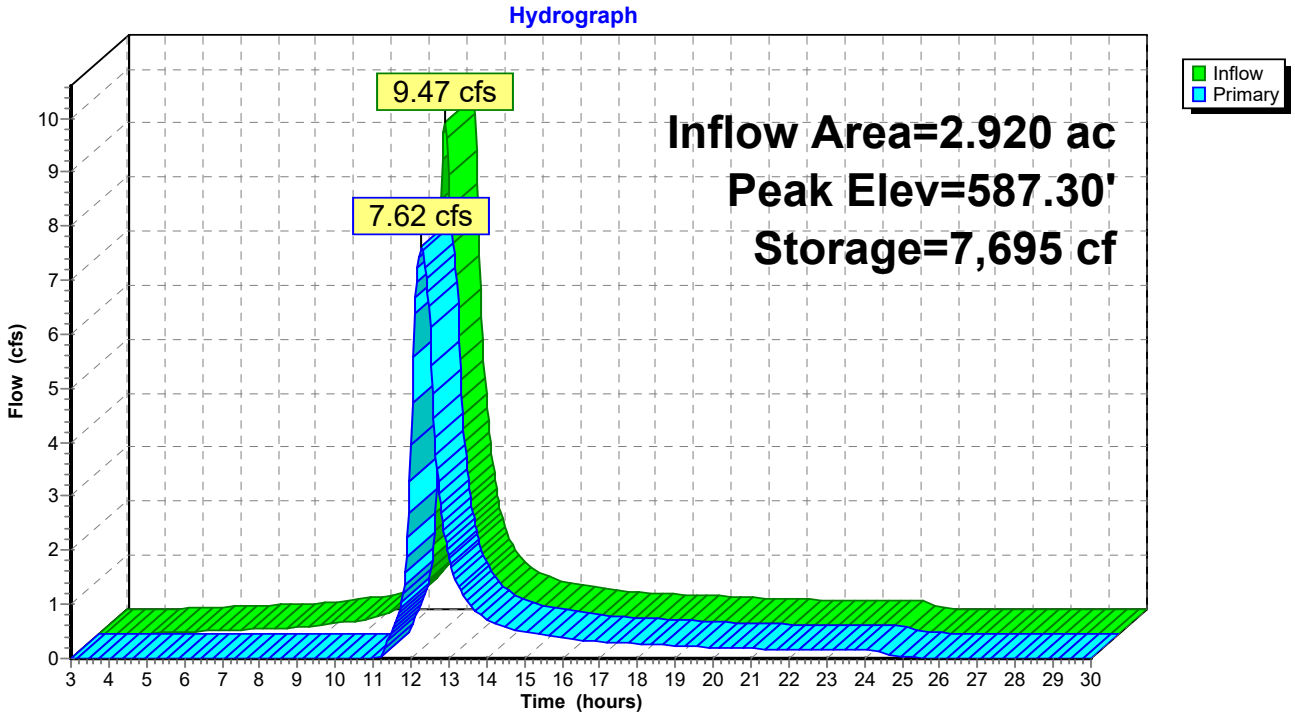
Volume	Invert	Avail.Storage	Storage Description
#1	585.60'	8,724 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
585.60	3,931	0	0
587.50	5,252	8,724	8,724

Device	Routing	Invert	Outlet Devices
#1	Primary	582.75'	**15.0" Round Culvert** L= 123.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 582.75' / 582.50' S= 0.0020 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	586.50'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=7.61 cfs @ 12.28 hrs HW=587.30' (Free Discharge)
↑—**1=Culvert** (Passes 7.61 cfs of 8.88 cfs potential flow)
↑—**2=Orifice/Grate** (Orifice Controls 7.61 cfs @ 4.31 fps)

Pond 7P: Bioretention



Summary for Pond 8P: Pond

Inflow Area = 3.480 ac, 36.21% Impervious, Inflow Depth = 3.30" for 100-yr event
Inflow = 8.24 cfs @ 12.26 hrs, Volume= 0.957 af
Outflow = 3.66 cfs @ 12.71 hrs, Volume= 0.937 af, Atten= 56%, Lag= 26.7 min
Primary = 3.66 cfs @ 12.71 hrs, Volume= 0.937 af
Routed to Link T2 : Post-Dev Total

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 584.73' @ 12.71 hrs Surf.Area= 9,437 sf Storage= 17,490 cf

Plug-Flow detention time= 178.1 min calculated for 0.936 af (98% of inflow)
Center-of-Mass det. time= 165.5 min (1,012.3 - 846.8)

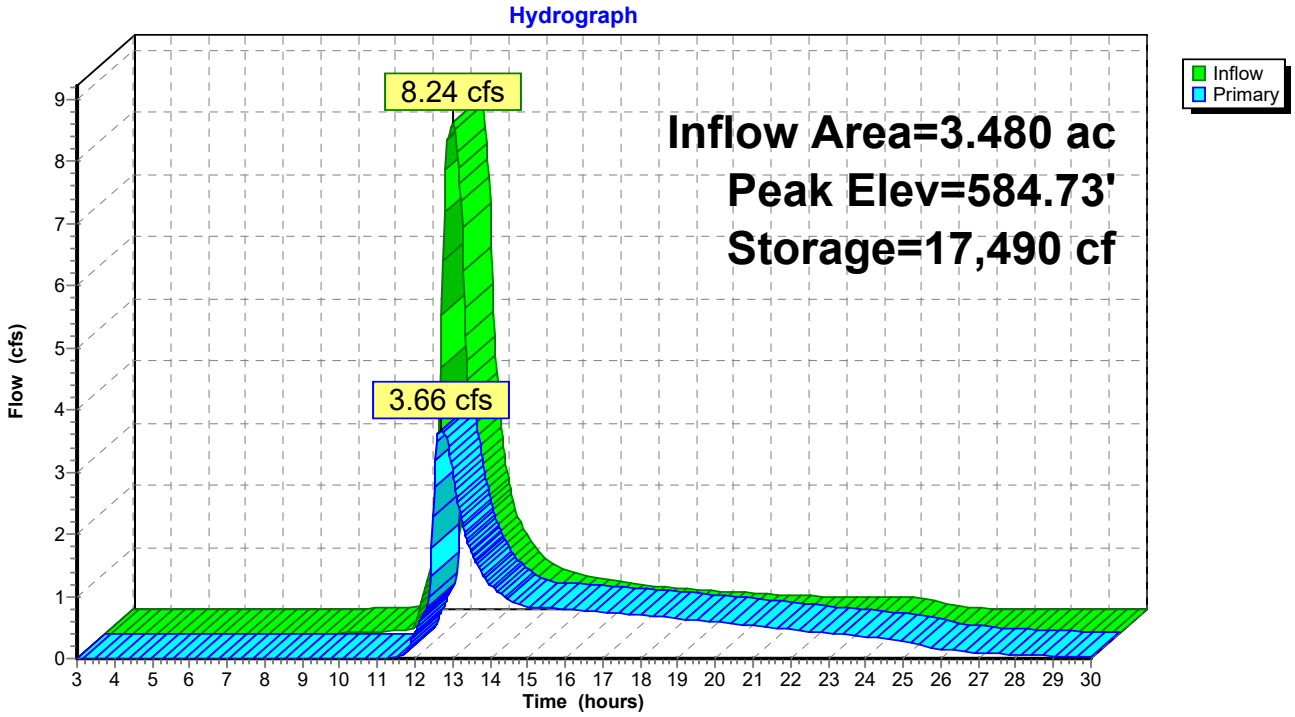
Volume	Invert	Avail.Storage	Storage Description
#1	582.50'	20,085 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
582.50	6,245	0	0
585.00	9,823	20,085	20,085

Device	Routing	Invert	Outlet Devices
#1	Primary	582.50'	**12.0" Round Culvert** L= 33.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 582.50' / 582.40' S= 0.0030 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.79 sf
#2	Device 1	582.50'	**5.0" Vert. 5" Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	584.30'	**24.0" W x 24.0" H 14° 24" Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.66 cfs @ 12.71 hrs HW=584.73' (Free Discharge)
└**1=Culvert** (Barrel Controls 3.66 cfs @ 4.66 fps)
└**2=5" Orifice** (Passes < 0.93 cfs potential flow)
└**3=24" Grate** (Passes < 3.06 cfs potential flow)

Pond 8P: Pond


Hydrograph
8.24 cfs
3.66 cfs
Inflow Area=3.480 ac
Peak Elev=584.73'
Storage=17,490 cf
Inflow
Primary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9
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 T2: Post-Dev Total

Inflow Area = 6.100 ac, 26.39% Impervious, Inflow Depth > 3.23" for 100-yr event
Inflow = 8.41 cfs @ 12.09 hrs, Volume= 1.642 af
Primary = 8.41 cfs @ 12.09 hrs, Volume= 1.642 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 3.00-30.00 hrs, dt= 0.03 hrs

Link T2: Post-Dev Total

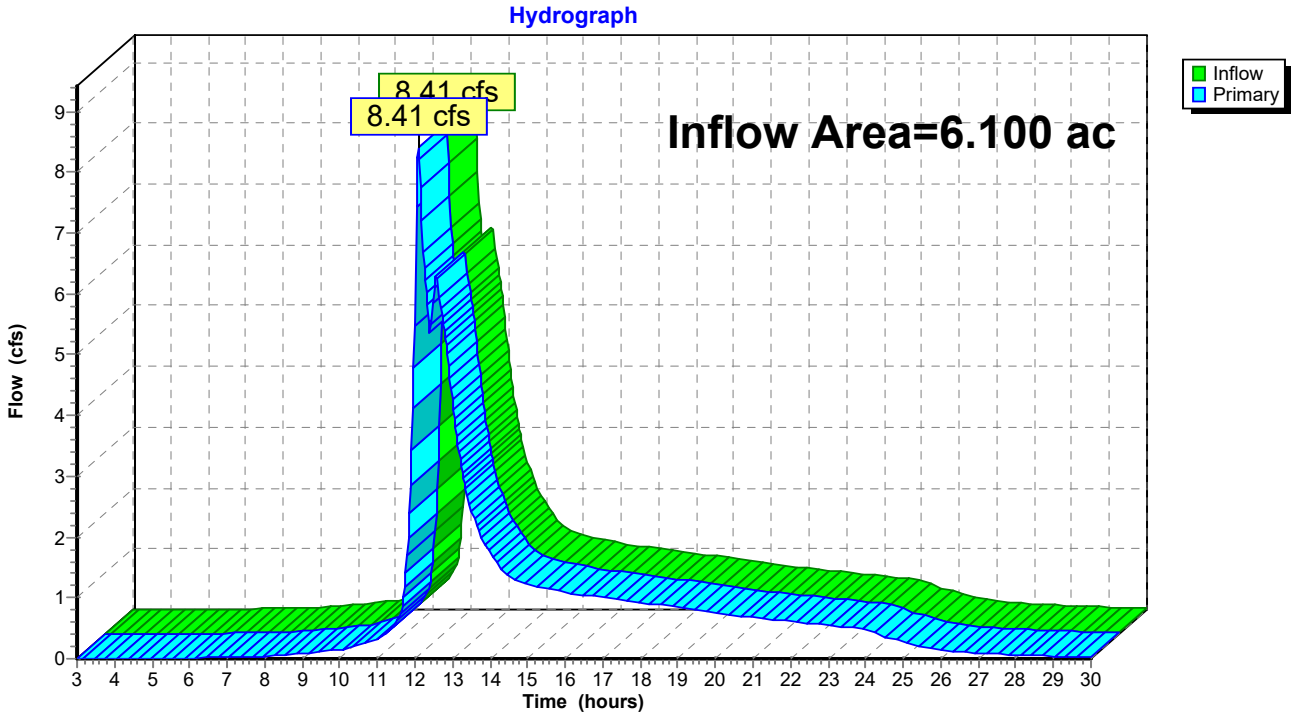


TABLE OF CONTENTS

APPENDIX E

STORM SEWER SIZING CALCULATIONS

& PRETREAMENT CHAMBERS

N:\2021\WNY-2021052.00 166 Klein Road Subdivision\CADD\Design Plans\xx Receiver Drainage Areas.dwg Thursday, 8 June 2023 4:40PM

GPI Engineering Design Planning Construction Management
(716) 633-4844 GPINET.COM
Greenman - Pedersen, Inc.
4950 Genesee Street, Suite 100
Buffalo, NY, 14225

PREPARED FOR
Client
Client Adress
Client City

REGENCY COMMONS
%%
Project Adress
Project Town

STATE OF NEW YORK
GREENMAN PEDERSEN, INC.
No. 131
LICENSED PROFESSIONAL ENGINEER

REVISIONS

NO.	REVISION	DATE

Date

DRAWN/DESIGN BY	CHECKED BY
Drawn	Checked

Receiver Drainage Areas

SCALE: Scale

xx

DRAINAGE COMPUTATIONS

SEWER LOCATION			TRIBUTARY AREA		RUNOFF COEFFICIENT			TIME OF CONCENTRATION			REQUIRED CAPACITY		DESIGN n = 0.012					PROFILE				EXISTING CAPACITY	
STREET	FROM	TO	A (ac)	ΣA (ac)	C	CA	ΣCA	IN CHANNEL (sec)	IN CHANNEL (min)	Tc (min)	i (in/hr)	q (cfs)	D (in)	V (fps)	Q_{full} (cfs)	LENGTH (ft)	s (%)					Q (cfs)	% REQ'D
	LD RCVR 2	BY RCVR 1	0.13	0.13	0.20	0.03	0.03	48.85	0.81	20.00	3.08	0.08	8	1.43	0.77	70	0.35%	0.25					
	BY RVCR 1	LD RCVR 1	0.11	0.24	0.20	0.02	0.05	27.77	0.46	20.81	2.95	0.15	8	1.73	0.77	48	0.35%	0.17					
	LD RCVR 1	DITCH	0.03	0.27	0.20	0.01	0.06	6.22	0.10	21.28	2.89	0.17	8	1.77	0.77	11	0.35%	0.04					
	RCVR 6	RCVR 5	0.27	0.27	0.70	0.19	0.19	11.23	0.19	16.00	3.38	0.64	12	2.49	2.28	28	0.35%	0.10					
	RCVR 5	DRY SWALE	0.32	0.59	0.70	0.22	0.41	34.47	0.57	16.19	3.35	1.39	12	3.05	2.28	105	0.35%	0.37					
	LD RCVR 3	BY RCVR 2	0.13	0.13	0.20	0.03	0.03	45.91	0.77	15.00	3.48	0.09	6	1.52	0.36	70	0.35%	0.25					
	BY RCVR 2	BY RCVR3	0.16	0.29	0.20	0.03	0.06	37.37	0.62	15.77	3.39	0.20	6	1.87	0.36	70	0.35%	0.25					
	BY RCVR 3	BY RCVR 4	0.19	0.48	0.20	0.04	0.10	33.13	0.55	16.39	3.34	0.32	8	2.11	0.77	70	0.35%	0.25					
	BY RCVR 4	BY RCVR 5	0.16	0.64	0.20	0.03	0.13	30.90	0.52	16.94	3.29	0.42	8	2.27	0.77	70	0.35%	0.25					
	BY RCVR 5	BY RCVR 6	0.17	0.81	0.20	0.03	0.16	29.35	0.49	17.46	3.25	0.53	8	2.38	0.77	70	0.35%	0.25					
	BY RCVR 6	BY RCVR 7	0.16	0.97	0.20	0.03	0.19	28.36	0.47	17.94	3.21	0.62	8	2.47	0.77	70	0.35%	0.25					
	BY RCVR 7	BY RCVR 8	0.18	1.15	0.20	0.04	0.23	27.74	0.46	18.42	3.18	0.73	8	2.52	0.77	70	0.35%	0.25					
	BY RCVR 8	LD RCVR 4	0.14	1.29	0.20	0.03	0.26	29.32	0.49	18.88	3.15	0.81	12	2.66	2.28	78	0.35%	0.27					
	LD RCRV 4	ST MH 3	0.17	1.46	0.20	0.03	0.29	9.11	0.15	19.37	3.11	0.91	12	2.74	2.28	25	0.35%	0.09					
	RCVR 4	RCVR 3	0.63	0.63	0.65	0.41	0.41	11.50	0.19	16.50	3.32	1.36	12	2.44	1.73	28	0.20%	0.06					
	RCVR 3	ST MH 2	0.60	1.23	0.65	0.39	0.80	1.75	0.03	16.69	3.31	2.65	15	2.86	3.13	5	0.20%	0.01					
	ST MH 2	ST MH 1		1.23			0.80	113.64	1.89	16.72	3.31	2.64	15	2.86	3.13	325	0.20%	0.65					
	ST MH 1	RCVR 2		1.23			0.80	1.76	0.03	18.61	3.16	2.53	15	2.84	3.13	5	0.20%	0.01					
	RCVR 2	RCVR 1	0.33	1.56	0.65	0.21	1.01	9.20	0.15	18.64	3.16	3.20	18	3.04	5.09	28	0.20%	0.06					
	RCVR 1	PRETREAT	0.34	1.90	0.65	0.22	1.24	1.58	0.03	18.80	3.15	3.89	18	3.17	5.09	5	0.20%	0.01					
	PRETREAT	BIO		1.90			1.24	31.52	0.53	18.82	3.15	3.89	18	3.17	5.09	100	0.20%	0.20					

COMPUTED BY: EJD DATE: 08/04/22

CHECKED BY: DATE:

LOCATION: REGENCY COMMONS

166 KLEIN ROAD

SHEET 1

OF 1

STORMWATER PRE-TREATMENT CHAMBER WORKSHEET

Stormwater Treatment Chamber No.	1

PROJECT DATA

Project Name:	Regency Commons
Project Number:	WNY-2021052.00
Municipality:	Town of Amherst
Engineer:	Greenman-Pedersen, Inc.
Designer:	EJD
E-mail:	edonner@gpinet.com
Data Entry Date:	Tuesday, August 16, 2022

REQUIRED TREATMENT BEFORE BYPASSING (RTBB)

Design Storm:	90% Rainfall Event
Rainfall, *in*:	1.00
Water Quality Volume (WQ_v), *ac-ft*:	0.1001
Runoff, *in*:	0.63
RTBB, *cfs*:	**1.24**

DESIGN STORM HYDROLOGY

Return Interval, *yrs*:	10	Area, *ac*:	1.91	C
Storm Intensity, *in/hr*:	3.15	% Impervious:	64.3%	0.90
CA:	1.24			
Peak Runoff, *cfs*:	3.91	% Pervious:	35.7%	0.20

TREATMENT CHAMBER

Structure:	PreTreat 1
Rim:	589.40
Inlet Invert(s):	586.07
Outlet Invert:	586.07

OUTLET PIPE

Pipe Material:	HDPE
Pipe Diameter, *in*:	18
Pipe Length, *ft*:	35
Pipe Slope, *%*:	0.20
Downstream Inv.:	586.00

INLET PIPE 1

Pipe Material:	HDPE
Pipe Diameter, *in*:	18
Pipe Length, *ft*:	5
Pipe Slope, *%*:	0.20

PIPE VELOCITY

Area, *sf*:	1.77
Flow, *cfs*:	3.91
Velocity, *fps*:	3.18

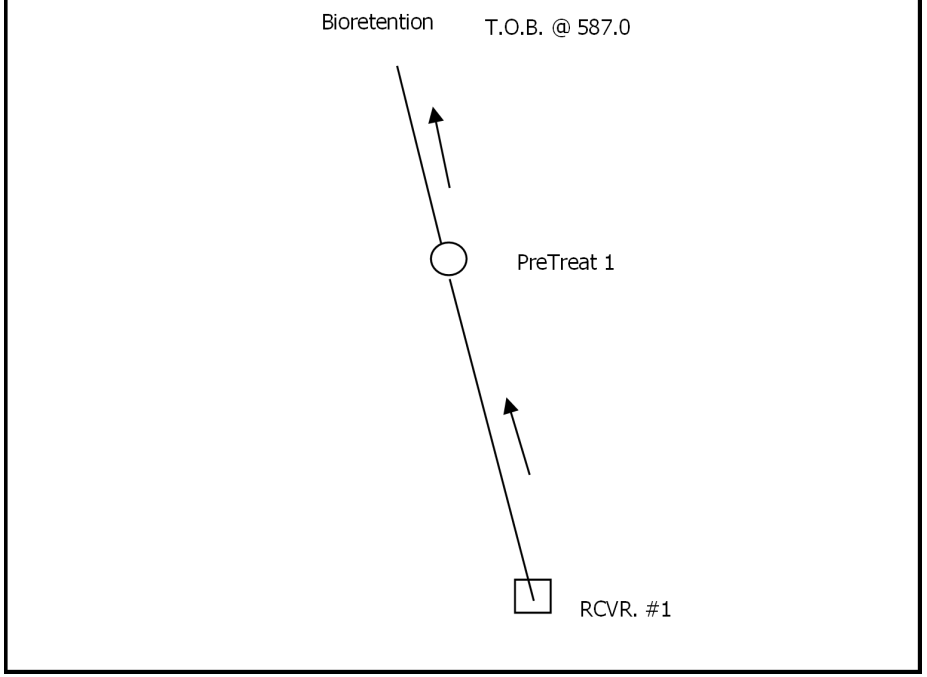
INLET PIPE 2

Pipe Material:	HDPE
Pipe Diameter, *in*:	
Pipe Length, *ft*:	
Pipe Slope, *%*:	

PIPE VELOCITY

Area, *sf*:	
Flow, *cfs*:	
Velocity, *fps*:	

SKETCH



UPSTREAM

Structure(s):	RCVR 1
Rim(s):	588.73
Outlet Invert(s):	586.08
Outlet Dia.(s), *in*:	18

DOWNSTREAM

Top Of Bank Elev.:	587.00
Outlet Type:	Mitered End
Interval, *yrs*:	10
WSE:	586.00

APPENDIX F

TEMPORARY EROSION CONTROL MEASURES

STANDARD AND SPECIFICATIONS FOR EARTH DIKE

Definition & Scope

A **temporary** berm or ridge of compacted soil, located in such a manner as to channel water to a desired location. Its purpose is to direct runoff to a sediment trapping device, thereby reducing the potential for erosion and off site sedimentation. Earth dikes can also be used for diverting clean water away from disturbed areas.

Conditions Where Practice Applies

Earth dikes are often constructed across disturbed areas and around construction sites such as graded parking lots and subdivisions. The dikes shall remain in place until the disturbed areas are permanently stabilized.

Design Criteria

See Figure 3.5 on page 3.15 for details.

General

	Dike A	Dike B
Drainage Area	<5 Ac	5-10 Ac
Dike Height	18 in.	36 in.
Dike Width	24 in.	36 in.
Flow Width	4 ft.	6 ft.
Flow Depth in Channel	8 in.	15 in.
Side Slopes	2:1 or flatter	2:1 or flatter
Grade	0.5% Min. 10% Max.	0.5% Min. 10% Max.

For drainage areas larger than 10 acres, refer to the Standard and Specifications for Diversion on page 3.9.

Stabilization

Stabilization of the dike shall be completed within 2 days of installation in accordance with the standard and specifications for seed and straw mulch or straw mulch only if not in seeding season. The flow channel shall be stabilized as per the following criteria:

Type of Treatment	Channel Grade[1]	Flow Channel	
		A (<5 Ac.)	B (5-10 Ac.)
1	0.5-3.0%	Seed & Straw Mulch	Seed & Straw Mulch
2	3.1-5.0%	Seed & Straw Mulch	Seed and cover with RECP, sod, or lined with plastic or 2" stone
3	5.1-8.0%	Seed and cover with RECP, Sod, or line with plastic or 2 in. stone	Line with 4-8 in. rip-rap or, geotextile
4	8.1-10%	Line with 4-8 in. rip-rap or geotextile	Site Specific Design

[1] In highly erodible soils, as defined by the local approving agency, refer to the next higher slope grade for type of stabilization.

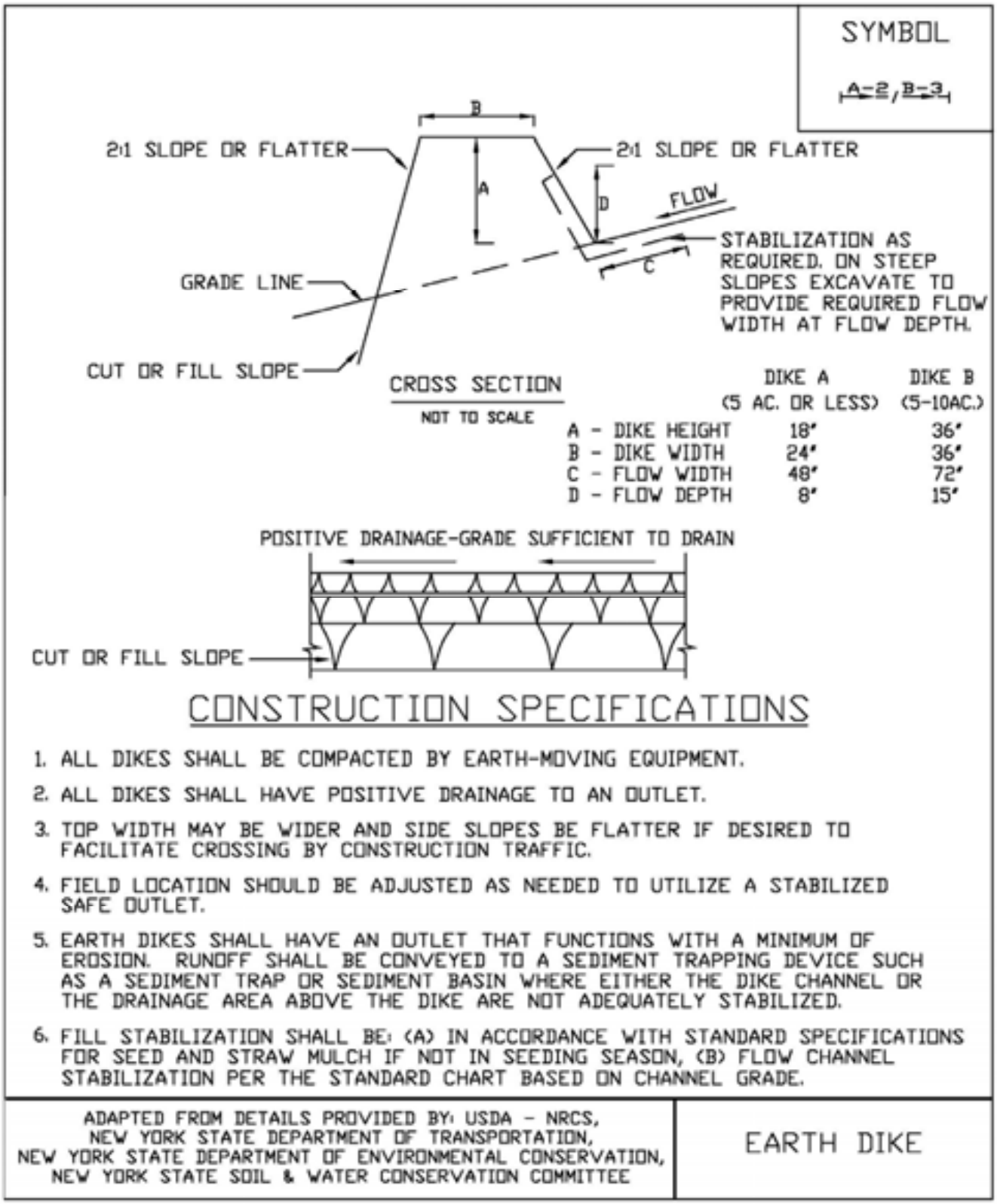
Outlet

Earth dikes shall have an outlet that functions with a minimum of erosion.

Runoff shall be conveyed to a sediment trapping device until the drainage area above the dike is adequately stabilized.

The on-site location may need to be adjusted to meet field conditions in order to utilize the most suitable outlet.

Figure 3.5
Earth Dike Detail



STANDARD AND SPECIFICATIONS FOR CONSTRUCTION DITCH

Definition & Scope

A **temporary** excavated drainage way to intercept sediment laden water and divert it to a sediment trapping device or to prevent runoff from entering disturbed areas by intercepting and diverting it to a stabilized outlet.

Conditions Where Practice Applies

Construction ditches are constructed:

1. to divert flows from entering a disturbed area.
2. intermittently across disturbed areas to shorten overland flow distances.
3. to direct sediment laden water along the base of slopes to a trapping device.
4. to transport offsite flows across disturbed areas such as rights-of-way.

Ditches collecting runoff from disturbed areas shall remain in place until the disturbed areas are permanently stabilized.

Design Criteria

See Figure 3.2 on page 3.6 for details.

General

	Ditch A	Ditch B
Drainage Area	<5 Ac	5-10 Ac
Bottom Width of Flow Channel	4 ft.	6 ft.
Depth of Flow Channel	1 ft.	1 ft.
Side Slopes	2:1 or flatter	2:1 or flatter
Grade	0.5% Min. 10% Max.	0.5% Min. 10% Max.

For drainage areas larger than 10 acres, refer to the Standard and Specification for Grassed Waterways on page 3.23 and 3.24.

Stabilization

Stabilization of the ditch shall be completed within 2 days of installation in accordance with the appropriate standard and specifications for vegetative stabilization or stabilization with mulch as determined by the time of year. The flow channel shall be stabilized as per the following criteria:

The seeding for vegetative stabilization shall be in accordance with the standard on Page 4.78. The seeded area will be mulched in accordance with the standard on Page 4.39.

Type of Treatment	Channel Grade[1]	Flow Channel	
		A (<5 Ac.)	B (5-10 Ac.)
1	0.5-3.0%	Seed & Straw Mulch	Seed & Straw Mulch
2	3.1-5.0%	Seed & Straw Mulch	Seed and cover with RECP[2], Sod, or lined with plastic or 2" stone
3	5.1-8.0%	Seed and cover with RECP[2], Sod, or line with plastic or 2 in. stone	Line with 4-8 in. rip-rap or, geotextile
4	8.1-10%	Line with 4-8 in. rip-rap or geotextile	Site Specific Design

1 In highly erodible soils, as defined by the local approving agency, refer to the next higher slope grade for type of stabilization.
2 Rolled Erosion Control Product.

Outlet

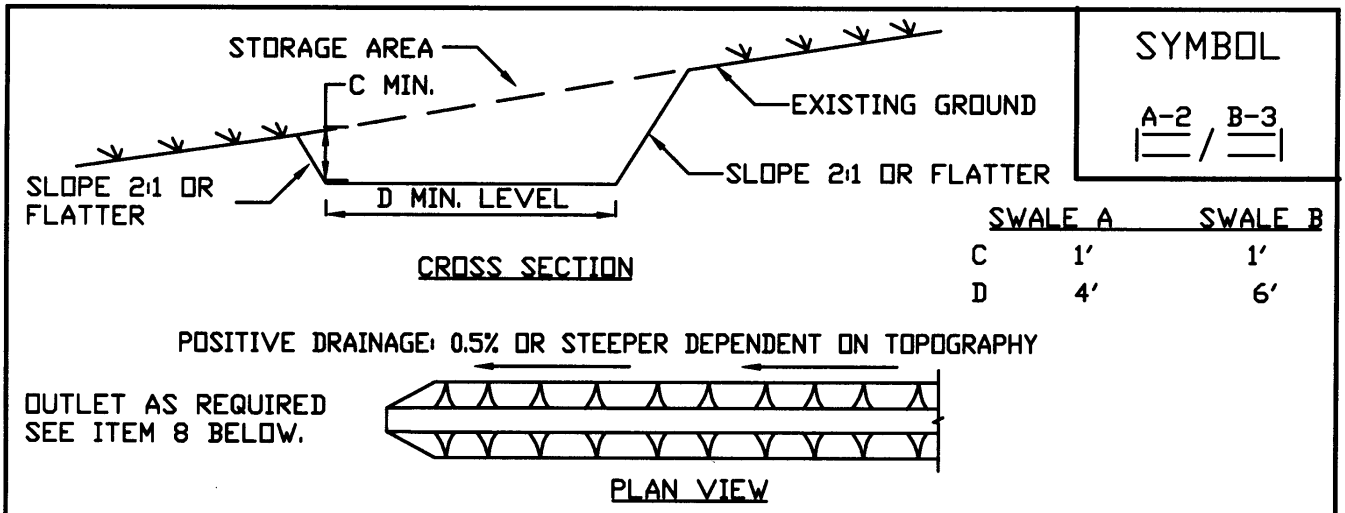
Ditch shall have an outlet that functions with a minimum of erosion, and dissipates runoff velocity prior to discharge off the site.

Runoff shall be conveyed to a sediment trapping device such as a sediment trap or sediment basin until the drainage area above the ditch is adequately stabilized.

The on-site location may need to be adusted to meet field conditions in order to utilize the most suitable outlet condition.

If a ditch is used to divert clean water flows from entering a disturbed area, a sediment trapping device may not be needed.

Figure 5A.2
Temporary Swale



CONSTRUCTION SPECIFICATIONS

1. ALL TEMPORARY SWALES SHALL HAVE UNINTERUPTED POSITIVE GRADE TO AN OUTLET.
2. DIVERTED RUNOFF FROM A DISTURBED AREA SHALL BE CONVEYED TO A SEDIMENT TRAPPING DEVICE.
3. DIVERTED RUNOFF FROM AN UNDISTURBED AREA SHALL OUTLET DIRECTLY INTO AN UNDISTURBED STABILIZED AREA AT NON-EROSIVE VELOCITY.
4. ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED AND DISPOSED OF SO AS NOT TO INTERFERE WITH THE PROPER FUNCTIONING OF THE SWALE.
5. THE SWALE SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE, AND CROSS SECTION AS REQUIRED TO MEET THE CRITERIA SPECIFIED HEREIN AND BE FREE OF BANK PROJECTIONS OR OTHER IRREGULARITIES WHICH WILL IMPEDE NORMAL FLOW.
6. FILLS SHALL BE COMPACTED BY EARTH MOVING EQUIPMENT.
7. ALL EARTH REMOVED AND NOT NEEDED FOR CONSTRUCTION SHALL BE PLACED SO THAT IT WILL NOT INTERFERE WITH THE FUNCTIONING OF THE SWALE.
8. STABILIZATION SHALL BE AS PER THE FLOW CHANNEL STABILIZATION CHART BELOW:

TYPE OF TREATMENT	CHANNEL GRADE	A(5 AC. OR LESS)	B(5 AC -10AC)
1	0.5-3.0%	SEED AND STRAW MULCH	SEED AND STRAW MULCH
2	3.1-5.0%	SEED AND STRAW MULCH	SEED AND COVER USING RECP
3	5.1-8.0%	SEED AND COVER WITH RECP	LINED WITH 4-8" RIP-RAP OR GEOTEXTILE
4	8.1-20.%	LINED WITH 4-8" RIP-RAP OR GEOTEXTILE	ENGINEERED DESIGN

9. PERIODIC INSPECTION AND REQUIRED MAINTENANCE MUST BE PROVIDED AFTER EACH RAIN EVENT.

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS,
NEW YORK STATE DEPARTMENT OF TRANSPORTATION,
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION,
NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

TEMPORARY SWALE

STANDARD AND SPECIFICATIONS FOR PERIMETER DIKE/SWALE

Definition

A temporary ridge of soil excavated from an adjoining swale located along the perimeter of the site or disturbed area.

Purpose

The purpose of a perimeter dike/swale is to prevent off site storm runoff from entering a disturbed area and to prevent sediment laden storm runoff from leaving the construction site or disturbed area.

Conditions Where Practice Applies

Perimeter dike/swale is constructed to divert flows from entering a disturbed area, or along tops of slopes to prevent flows from eroding the slope, or along base of slopes to direct sediment laden flows to a trapping device.

The perimeter dike/swale shall remain in place until the disturbed areas are permanently stabilized.

Design Criteria

See Figure 5A.3 on page 5A.8 for details.

The perimeter dike/swale shall not be constructed outside the property lines without obtaining legal easements from affected adjacent property owners. A design is not required for perimeter dike/swale. The following criteria shall be used:

Drainage area – Less than 2 acres (for drainage areas larger than 2 acres but less than 10 acres, see earth dike or temporary swale; for drainage areas larger than 10 acres, see standard and specifications for diversion).

Height – 18 inches minimum from bottom of swale to top of dike evenly divided between dike height and swale depth.

Bottom width of dike – 2 feet minimum.

Width of swale – 2 feet minimum.

Grade – Dependent upon topography, but shall have positive drainage (sufficient grade to drain) to an adequate outlet. Maximum allowable grade not to exceed 8 percent.

Stabilization – The disturbed area of the dike and swale shall be stabilized within 7 days of installation, in accordance with the standard and specifications for temporary swales.

Outlet

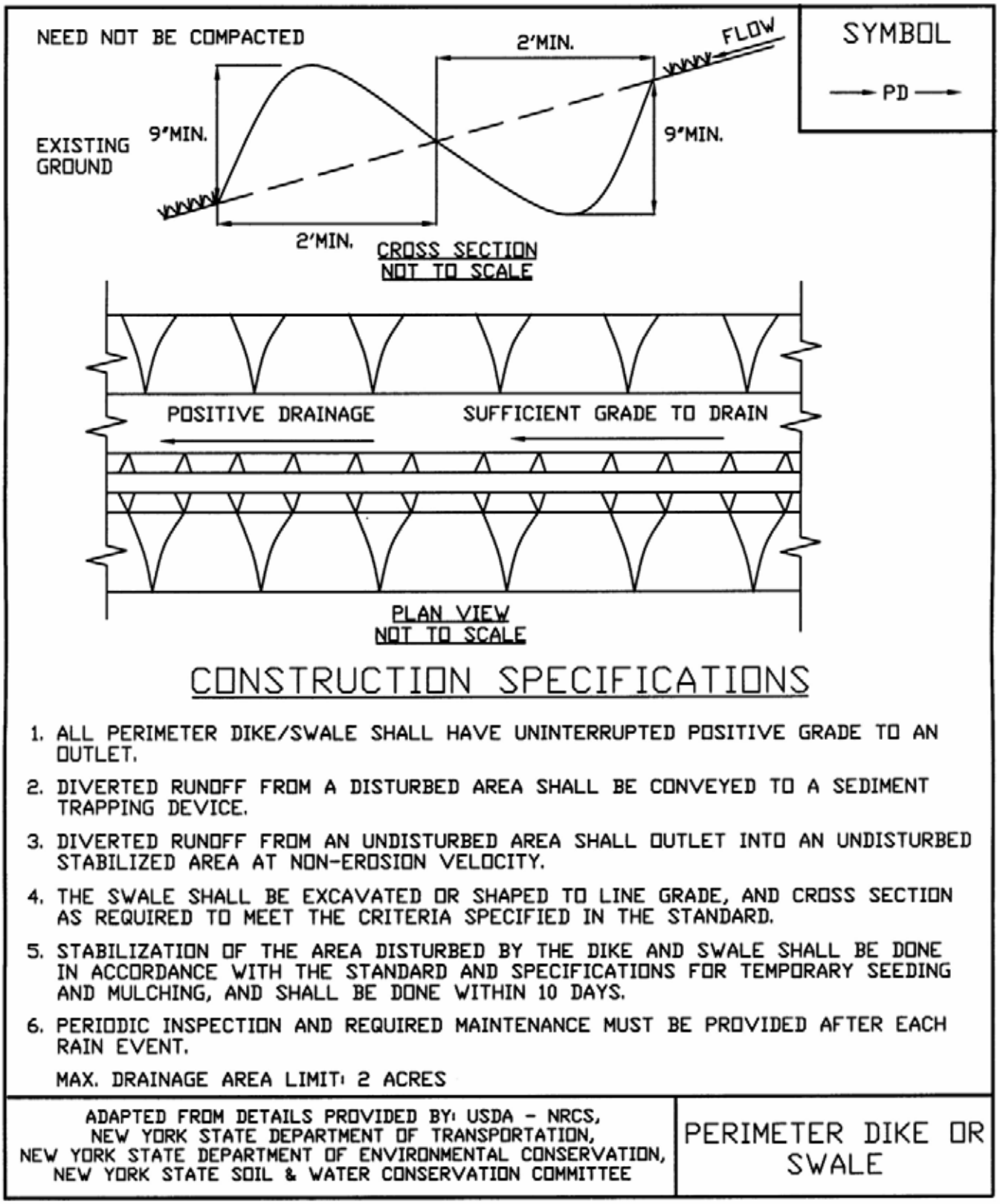
1. Perimeter dike/swale shall have a stabilized outlet.

2. Diverted runoff from a protected or stabilized upland area shall outlet directly onto an undisturbed stabilized area.

3. Diverted runoff from a disturbed or exposed upland area shall be conveyed to a sediment trapping device such as a sediment trap, sediment basin, or to an area protected by any of these practices.

4. The on-site location may need to be adjusted to meet field conditions in order to utilize the most suitable outlet.

Figure 5A.3
Perimeter Dike/Swale



CONSTRUCTION SPECIFICATIONS

1. ALL PERIMETER DIKE/SWALE SHALL HAVE UNINTERRUPTED POSITIVE GRADE TO AN OUTLET.
2. DIVERTED RUNOFF FROM A DISTURBED AREA SHALL BE CONVEYED TO A SEDIMENT TRAPPING DEVICE.
3. DIVERTED RUNOFF FROM AN UNDISTURBED AREA SHALL OUTLET INTO AN UNDISTURBED STABILIZED AREA AT NON-EROSION VELOCITY.
4. THE SWALE SHALL BE EXCAVATED OR SHAPED TO LINE GRADE, AND CROSS SECTION AS REQUIRED TO MEET THE CRITERIA SPECIFIED IN THE STANDARD.
5. STABILIZATION OF THE AREA DISTURBED BY THE DIKE AND SWALE SHALL BE DONE IN ACCORDANCE WITH THE STANDARD AND SPECIFICATIONS FOR TEMPORARY SEEDING AND MULCHING, AND SHALL BE DONE WITHIN 10 DAYS.
6. PERIODIC INSPECTION AND REQUIRED MAINTENANCE MUST BE PROVIDED AFTER EACH RAIN EVENT.

MAX. DRAINAGE AREA LIMIT: 2 ACRES

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS,
NEW YORK STATE DEPARTMENT OF TRANSPORTATION,
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION,
NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

PERIMETER DIKE OR SWALE

STANDARD AND SPECIFICATIONS FOR STRAW BALE DIKE

Definition & Scope

A **temporary** barrier of straw, or similar material, used to intercept sediment laden runoff from small drainage areas of disturbed soil to reduce runoff velocity and effect deposition of the transported sediment load. Straw bale dikes have an estimated design life of three (3) months.

Condition Where Practice Applies

The straw bale dike is used where:

1. No other practice is feasible.
2. There is no concentration of water in a channel or other drainageway above the barrier.
3. Erosion would occur in the form of sheet erosion.
4. Length of slope above the straw bale dike does not exceed the following limits with the bale placed 10 feet from the toe of the slope:

Constructed Slope	Percent Slope	Slope Length (ft.)
2:1	50	25
3:1	33	50
4:1	25	75

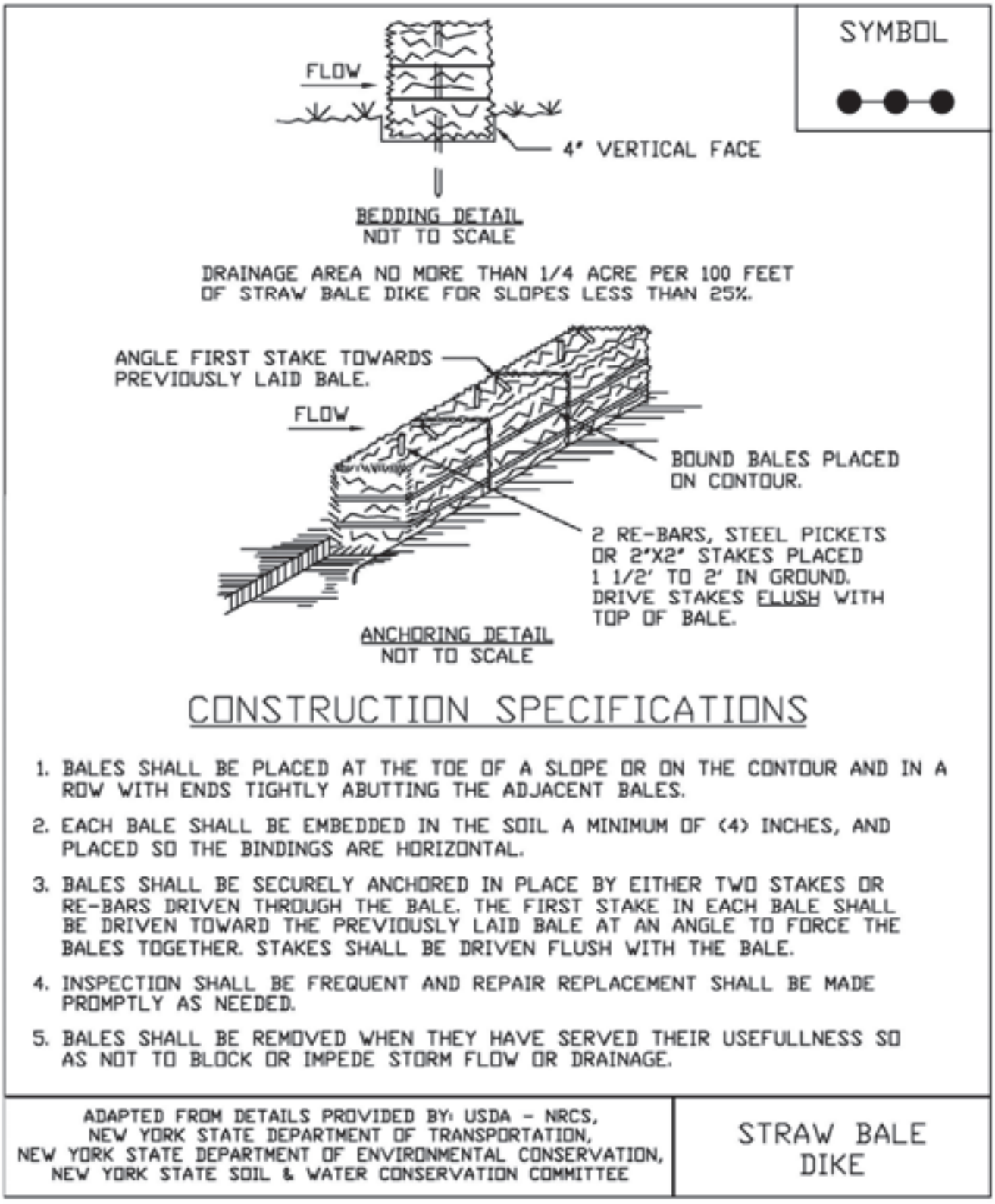
Where slope gradient changes through the drainage area, steepness refers to the steepest slope section contributing to the straw bale dike.

The practice may also be used for a single family lot if the slope is less than 15 percent. The contributing drainage areas in this instance shall be less than one quarter of an acre per 100 feet of dike and the length of slope above the dike shall be less than 100 feet.

Design Criteria

The above table is adequate, in general, for a one-inch rainfall event. Larger storms could cause failure of this practice. Use of this practice in sensitive areas for longer than one month should be specifically designed to store expected runoff. All bales shall be placed on the contour with cut edge of bale adhering to the ground. See Figure 5.34 on page 5.64 for details.

Figure 5.34
Straw Bale Dike



STANDARD AND SPECIFICATIONS FOR SILT FENCE

Definition & Scope

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

Conditions Where Practice Applies

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

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

Design Criteria

1. Design computations are not required for installations of 1 month or less. Longer installation periods should be designed for expected runoff.
2. All silt fences shall be placed as close to the disturbed area as possible, but at least 10 feet from the toe of a slope steeper than 3H:1V, to allow for maintenance and roll down. The area beyond the fence must be undisturbed or stabilized.
3. The type of silt fence specified for each location on the plan shall not exceed the maximum slope length and maximum fence length requirements shown in the following table:

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

Standard Silt Fence (SF) is fabric rolls stapled to wooden stakes driven 16 inches in the ground.
Reinforced Silt Fence (RSF) is fabric placed against welded wire fabric with anchored steel posts driven 16 inches in the ground.
Super Silt Fence (SSF) is fabric placed against chain link fence as support backing with posts driven 3 feet in the ground.

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

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

Criteria for Silt Fence Materials

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

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

2. Fence Posts (for fabricated units): The length shall be a minimum of 36 inches long. Wood posts will be of sound quality hardwood with a minimum cross sectional area of 3.5 square inches. Steel posts will be standard T and U section weighing not less than 1.00 pound per linear foot. Posts for super silt fence shall be standard chain link fence posts.

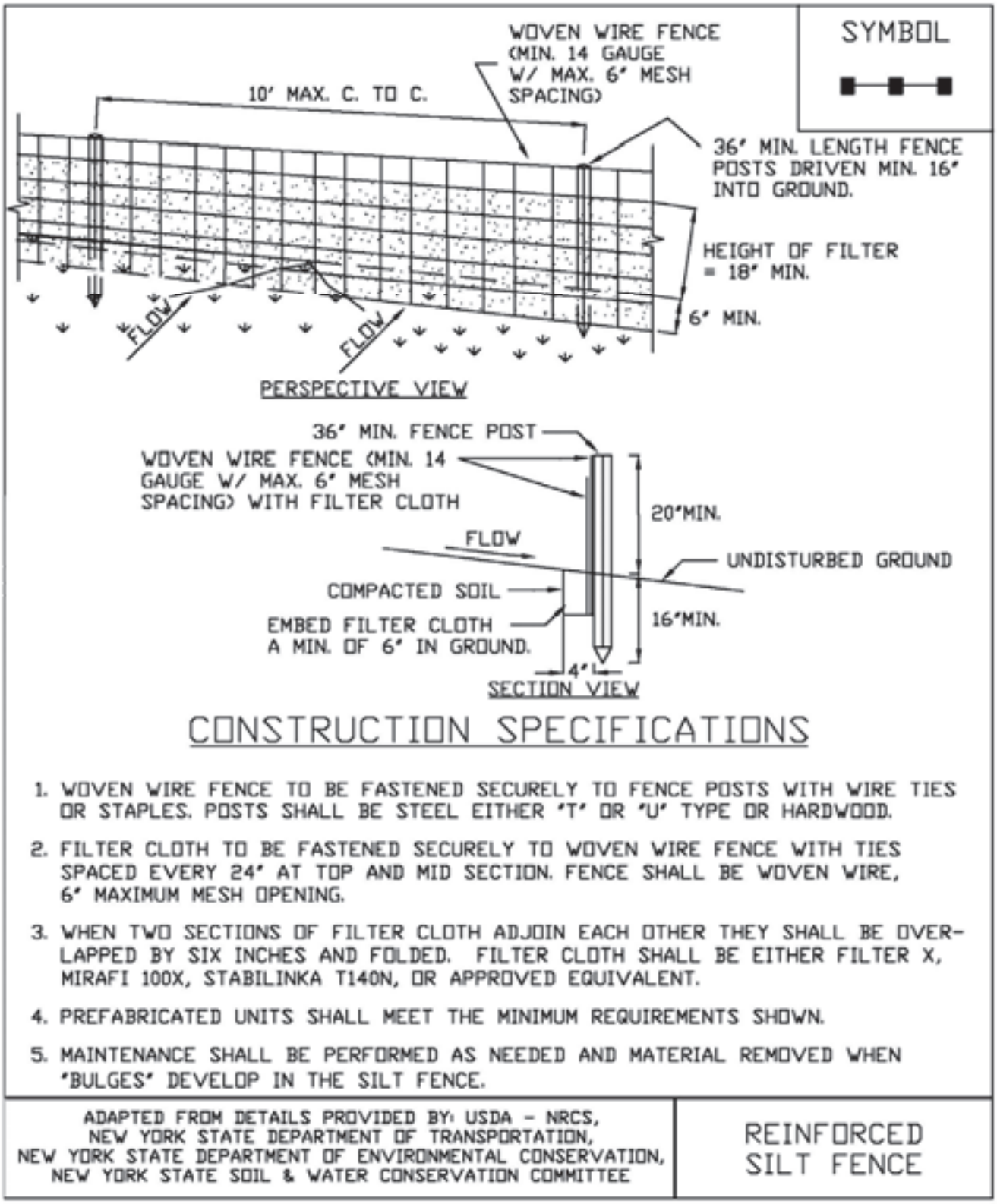
3. Wire Fence for reinforced silt fence: Wire fencing shall be a minimum 14 gage with a maximum 6 in. mesh opening, or as approved.

4. Prefabricated silt fence is acceptable as long as all material specifications are met.

Super Silt Fence

Reinforced Silt Fence

Figure 5.30
Reinforced Silt Fence



STANDARD AND SPECIFICATIONS FOR COMPOST FILTER SOCK

Definition & Scope

A **temporary** sediment control practice composed of a degradable geotextile mesh tube filled with compost filter media to filter sediment and other pollutants associated with construction activity to prevent their migration offsite.

Condition Where Practice Applies

Compost filter socks can be used in many construction site applications where erosion will occur in the form of sheet erosion and there is no concentration of water flowing to the sock. In areas with steep slopes and/or rocky terrain, soil conditions must be such that good continuous contact between the sock and the soil is maintained throughout its length. For use on impervious surfaces such as road pavement or parking areas, proper anchorage must be provided to prevent shifting of the sock or separation of the contact between the sock and the pavement. Compost filter socks are utilized both at the site perimeter as well as within the construction areas. These socks may be filled after placement by blowing compost into the tube pneumatically, or filled at a staging location and moved into its designed location.

Design Criteria

1. Compost filter socks will be placed on the contour with both terminal ends of the sock extended 8 feet upslope at a 45 degree angle to prevent bypass flow.

2. Diameters designed for use shall be 12" – 32" except that 8" diameter socks may be used for residential lots to control areas less than 0.25 acres.

3. The flat dimension of the sock shall be at least 1.5 times the nominal diameter.

4. The **Maximum Slope Length** (in feet) above a compost filter sock shall not exceed the following limits:

Dia. (in.)	Slope %						
	2	5	10	20	25	33	50
8	225*	200	100	50	20	—	—
12	250	225	125	65	50	40	25
18	275	250	150	70	55	45	30
24	350	275	200	130	100	60	35
32	450	325	275	150	120	75	50
* Length in feet							

5. The compost infill shall be well decomposed (matured at least 3 months), weed-free, organic matter. It shall be aerobically composted, possess no objectionable odors, and contain less than 1%, by dry weight, of man-made foreign matter. The physical parameters of the compost shall meet the standards listed in Table 5.2 - Compost Standards Table. **Note: All biosolids compost produced in New York State (or approved for importation) must meet NYS DEC's 6 NYCRR Part 360 (Solid Waste Management Facilities) requirements. The Part 360 requirements are equal to or more stringent than 40 CFR Part 503 which ensure safe standards for pathogen reduction and heavy metals content. When using compost filter socks adjacent to surface water, the compost should have a low nutrient value.**

6. The compost filter sock fabric material shall meet the

7. Compost filter socks shall be anchored in earth with 2" x 2" wooden stakes driven 12" into the soil on 10 foot centers on the centerline of the sock. On uneven terrain, effective ground contact can be enhanced by the placement of a fillet of filter media on the disturbed area side of the compost sock.

8. All specific construction details and material specifications shall appear on the erosion and sediment control constructions drawings when compost filter socks are included in the plan.

Maintenance

1. Traffic shall not be permitted to cross filter socks.

2. Accumulated sediment shall be removed when it reaches half the above ground height of the sock and disposed of in accordance with the plan.

3. Socks shall be inspected weekly and after each runoff event. Damaged socks shall be repaired in the manner required by the manufacturer or replaced within 24 hours of inspection notification.

4. Biodegradable filter socks shall be replaced after 6 months; photodegradable filter socks after 1 year. Polypropylene socks shall be replaced according to the manufacturer's recommendations.

5. Upon stabilization of the area contributory to the sock, stakes shall be removed. The sock may be left in place and vegetated or removed in accordance with the stabilization plan. For removal the mesh can be cut and the compost spread as an additional mulch to act as a soil supplement.

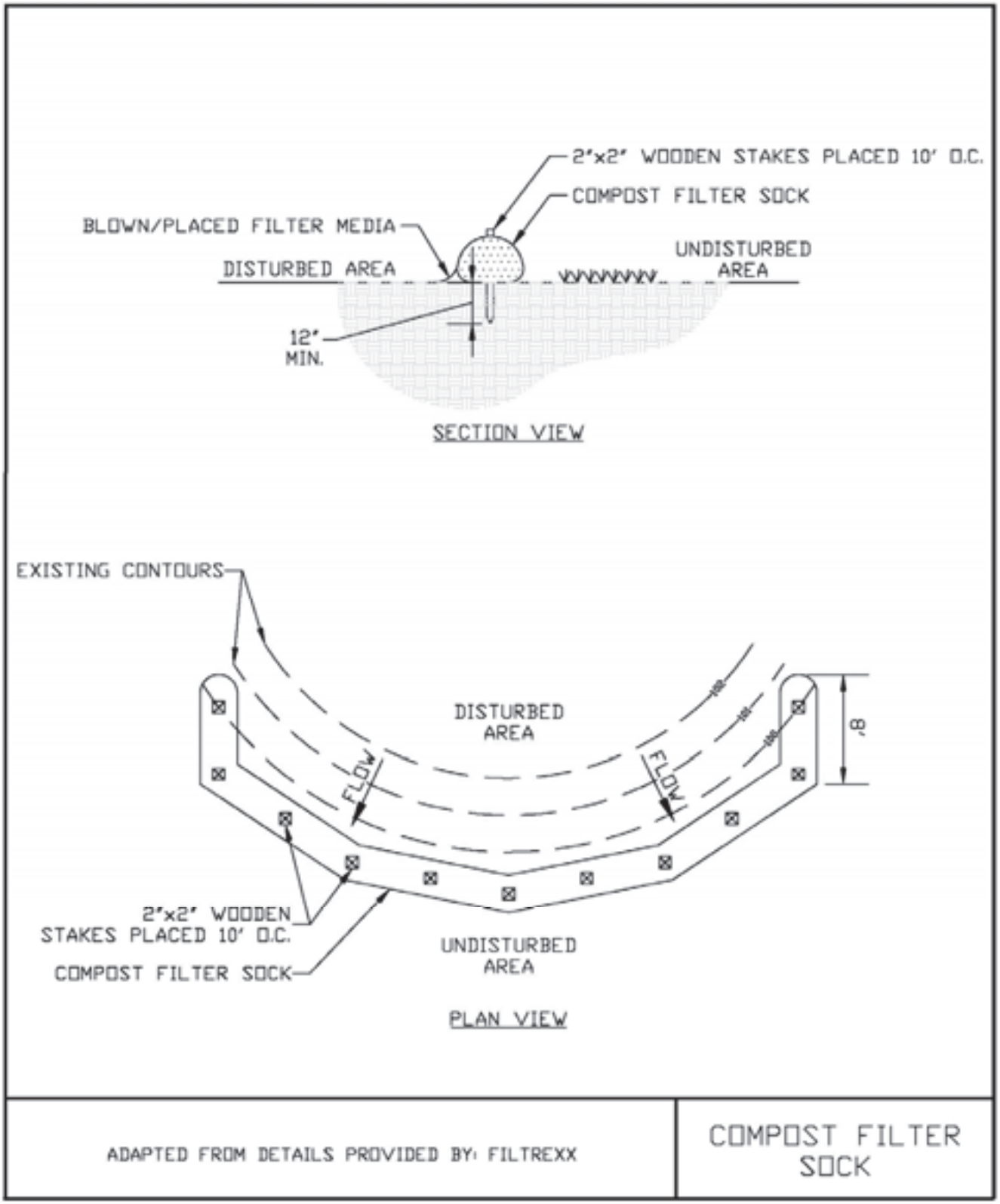
Table 5.1 - Compost Sock Fabric Minimum Specifications Table

Material Type	3 mil HDPE	5 mil HDPE	5 mil HDPE	Multi-Filament Polypropylene (MFPP)	Heavy Duty Multi-Filament Polypropylene (HDMFPP)
Material Characteristics	Photodegradable	Photodegradable	Biodegradable	Photodegradable	Photodegradable
Sock Diameters	12" 18"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"
Mesh Opening	3/8"	3/8"	3/8"	3/8"	1/8"
Tensile Strength		26 psi	26 psi	44 psi	202 psi
Ultraviolet Stability % Original Strength (ASTM G-155)	23% at 1000 hr.	23% at 1000 hr.		100% at 1000 hr.	100% at 1000 hr.
Minimum Functional Longevity	6 months	9 months	6 months	1 year	2 years

Table 5.2 - Compost Standards Table

Organic matter content	25% - 100% (dry weight)
Organic portion	Fibrous and elongated
pH	6.0 – 8.0
Moisture content	30% - 60%
Particle size	100% passing a 1" screen and 10 - 50% passing a 3/8" screen
Soluble salt concentration	5.0 dS/m (mmhos/cm) maximum

Figure 5.2
Compost Filter Sock



STANDARD AND SPECIFICATIONS FOR CHECK DAM

Definition & Scope

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

Conditions Where Practice Applies

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

Design Criteria

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

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

Side Slopes: Shall be 2:1 or flatter.

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

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

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

Example:

For a channel with a 4% slope and 2 ft. high stone check dams, they are spaced as follows:

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

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

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

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

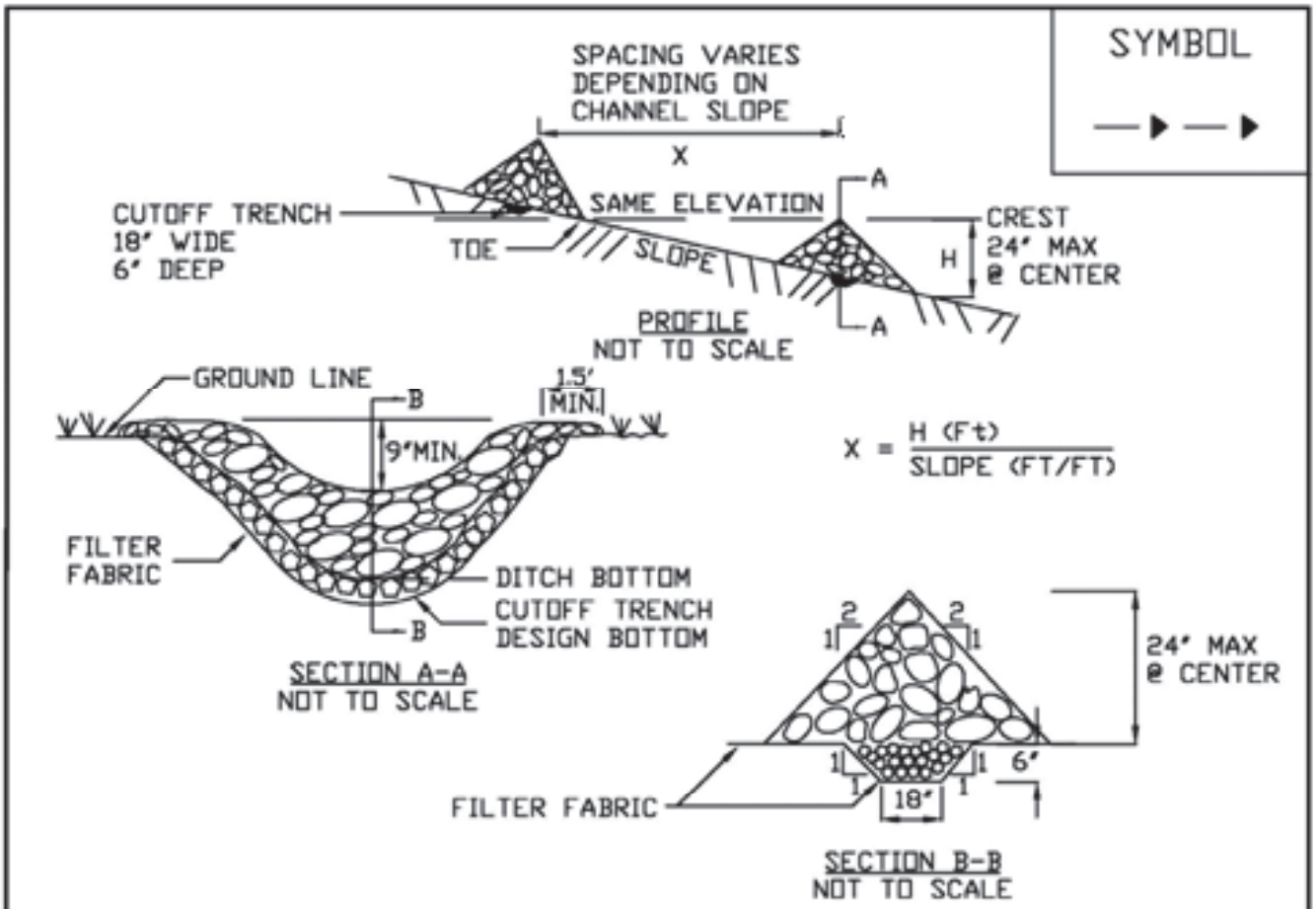
For filter sock or fiber roll check dams: The check dams will be anchored by staking the dam to the earth contact surface. The dam will extend to the top of the bank. The check dam will have a splash apron of NYS DOT #2 crushed stone extending a minimum 3 feet downstream from the dam and 1 foot up the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

Maintenance

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

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

Figure 3.1
Stone Check Dam Detail



CONSTRUCTION SPECIFICATIONS

1. STONE WILL BE PLACED ON A FILTER FABRIC FOUNDATION TO THE LINES, GRADES AND LOCATIONS SHOWN IN THE PLAN.
2. SET SPACING OF CHECK DAMS TO ASSUME THAT THE ELEVATIONS OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION OF THE TOE OF THE UPSTREAM DAM.
3. EXTEND THE STONE A MINIMUM OF 1.5 FEET BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM.
4. PROTECT THE CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH STONE OR LINER AS APPROPRIATE.
5. ENSURE THAT CHANNEL APPURTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONE.

MAXIMUM DRAINAGE AREA 2 ACRES.

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS,
NEW YORK STATE DEPARTMENT OF TRANSPORTATION,
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION,
NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

STONE CHECK DAM

STANDARD AND SPECIFICATIONS FOR TURBIDITY CURTAIN

Definition & Scope

A **temporary** flexible, impenetrable barrier used to trap sediment in water bodies. This curtain is weighted at the bottom to achieve closure while supported at the top through a flotation system and used to prevent the migration of silt from a work site in a water environment into the larger body of water. Top bar float has to support weight of curtain material. Bottom anchor has to be flexible so that it will lie along the contour of the water body bottom.

Condition Where Practice Applies

A turbidity curtain is generally used when construction activity occurs within a waterbody or along its shoreline and is of short duration, generally less than one month. Curtains are used in calm water surfaces and not in areas of flowing water. **Turbidity curtains are not to be used across flowing watercourses.**

Design Criteria

The turbidity curtain shall be located beyond the lateral limits of the construction site and firmly anchored in place. The alignment should be set as close to the work area as possible but not so close as to be disturbed by applicable construction equipment. The height of the curtain shall be 20 percent greater than the depth of the water to allow for water level fluctuations. The area that the turbidity curtain protects shall not contain large culverts or drainage areas that if flows occur behind the curtain would cause a breach or lost contact at the bottom surface.

If water depths at the design alignment are minimal, the toe can be anchored in place by staking.

See Figure 5.35 on page 5.66.

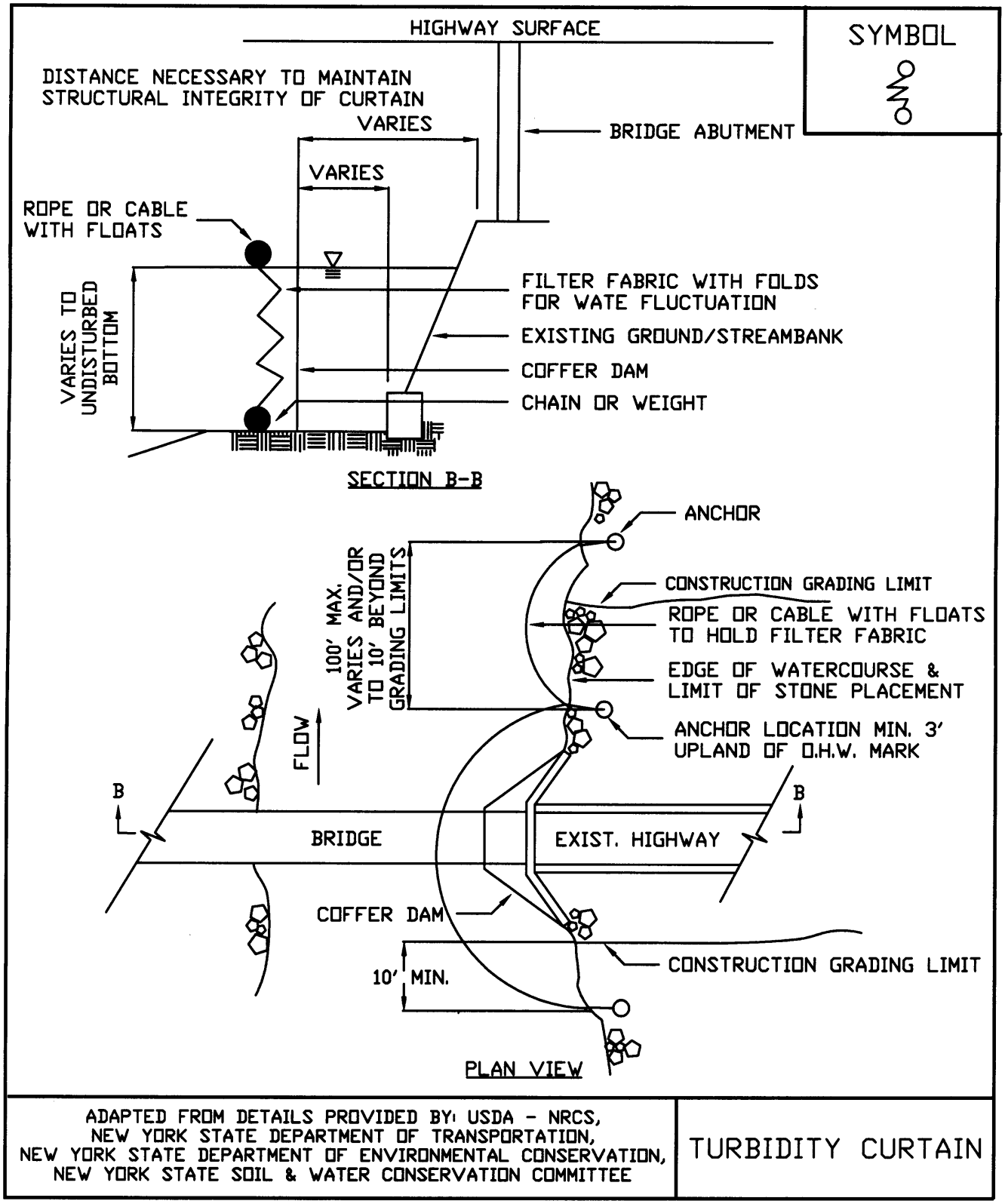
Construction Specifications

The area of proposed installation of the curtain shall be inspected for obstacles and impediments that could damage the curtain or impair its effectiveness to retain sediment. All materials shall be removed so they cannot enter the waterbody. Shallow installations can be made by securing the curtain by staking rather than using a flotation system. Supplemental anchors of the turbidity curtain toe shall be used, as needed, depending on water surface disturbances such as boats and wave action by winds.

Maintenance

The turbidity curtain shall be inspected daily and repaired or replaced immediately. It is not normally necessary to remove sediment deposited behind the curtain; but, when necessary, removal is usually done by hand prior to removal of the barrier. All removed silt is stabilized away from the waterbody. The barrier shall be removed by carefully pulling it toward the construction site to minimize the release of attached sediment. Any floating construction or natural debris shall be immediately removed to prevent damage to the curtain. If the curtain is oriented in a manner that faces the prevailing winds, frequent checks of the anchorage shall be made.

Figure 5A.15
Turbidity Curtain



STANDARD AND SPECIFICATIONS FOR SEDIMENT TRAP

Definition & Scope

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

Conditions Where Practice Applies

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

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

Design Criteria

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

Drainage Area

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

Location

Sediment traps shall be located so that they can be installed prior to grading or filling in the drainage area they are to protect. Traps must **not be located any closer than 20 feet** from a proposed building foundation if the trap is to function during building construction. Locate traps to obtain maximum storage benefit from the terrain and for ease of cleanout and disposal of the trapped sediment.

Trap Size

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

Trap Cleanout

Sediment shall be removed and the trap restored to the original dimensions when the sediment has accumulated to ½ of the design depth of traps I-II, and 1/3 the depth for trap III. Sediment removed from the trap shall be deposited in a protected area and in such a manner that it will not erode.

Embankment

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

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

Excavation

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

Outlet

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

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

All traps must be seeded and mulched immediately after construction.

Trap Details Needed on Erosion and Sediment Control Plans

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

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

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

Type of Sediment Traps

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

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

I. Pipe Outlet Sediment Trap

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

No holes or slits will be allowed within six (6) inches of the top of the horizontal barrel. All pipe connections shall be watertight. The riser shall be wrapped with ½ to ¼ inch hardware cloth wire then wrapped with filter cloth with a sieve size between #40-80 and secured with strapping or connecting band at the top and bottom of the cloth. The cloth shall cover an area at least six (6) inches above the highest hole and six (6) inches below the lowest hole. The top of the riser pipe shall not be covered with filter cloth. The riser shall have a base with sufficient weight to prevent flotation of the riser. Two approved bases are:

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

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

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

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

Minimum Sizes

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

[1] Barrel diameter may be same size as riser diameter

II. Stone Outlet Sediment Trap

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

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

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

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

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

III. Compost Sock Sediment Trap

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

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

Design criteria for Compost Sock Sediment Trap

1. The maximum drainage area tributary to the trap shall be 5 acres.

2. The minimum settled height above ground shall be 2.0 feet formed by staking 3 compost filter socks in a pyramid as shown in Figure 5.28 on page 5.52.

3. The storage volume provided in the compost sock sediment trap shall be 3,600 cubic feet per tributary drainage acre.

4. If necessary, additional storage area can be created by excavating a sump 1 foot deep beginning at least 5 feet away from the inside sock.

5. All compost filter sock materials, mesh, and compost, will meet the material specifications listed in the Compost Filter Sock standard. No spillway is required.

6. Compost filter sock sediment traps shall be inspected weekly and after every rainfall event. Sediment shall be removed when it reaches one third, 1/3, the height of the trap.

7. The maximum limit of use for a compost sock sediment trap is one (1) year. The existing trap shall be replaced if there is a need for a trap beyond that time limit.

8. Upon completion of the work, the compost sock sediment trap shall be removed. The compost within the socks may be used during cleanup as a vegetative growth medium in accordance with the site stabilization plan.

Figure 5A.16(1)
Pipe Outlet Sediment Trap: ST-I

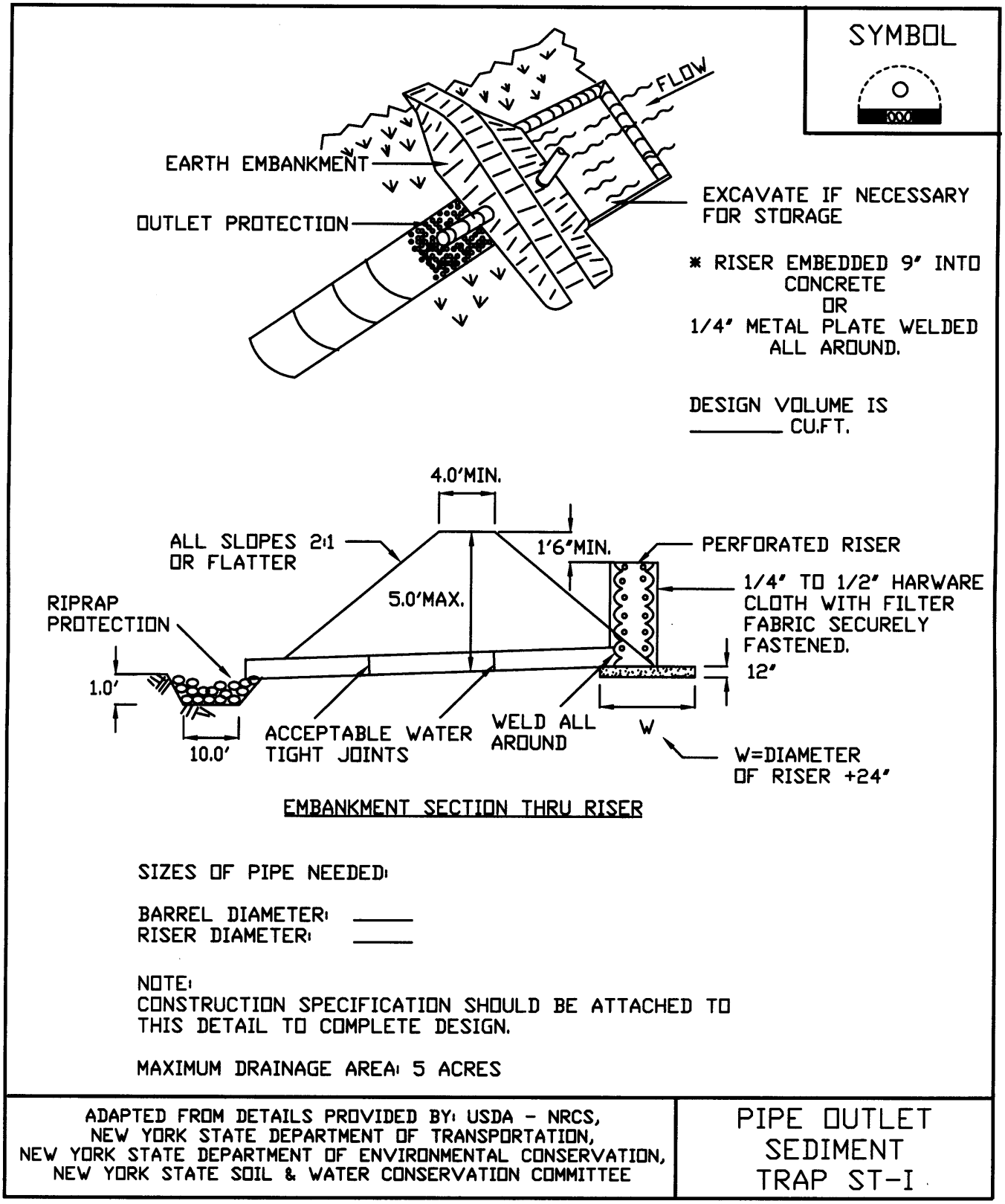


Figure 5A.16(2)
Pipe Outlet Sediment Trap: ST-I—Construction Specifications

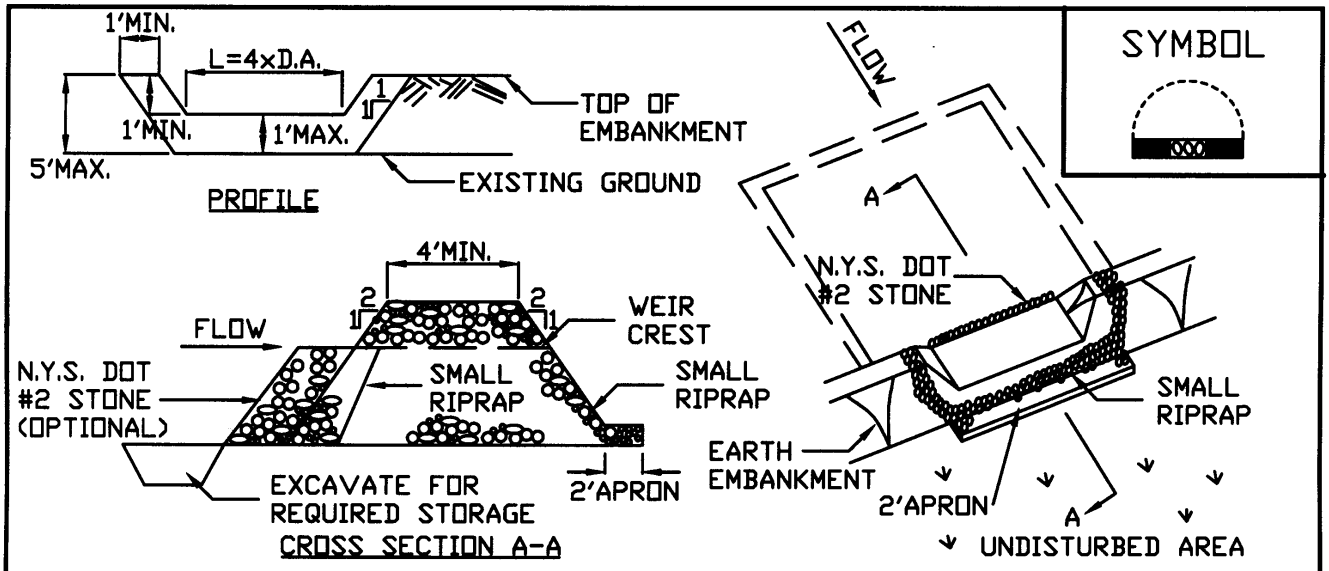
SYMBOL

CONSTRUCTION SPECIFICATIONS

1. AREA UNDER EMBANKMENT SHALL BE CLEARED, GRUBBED AND STRIPPED OF ANY VEGETATION AND ROOT MAT. THE POOL AREA SHALL BE CLEARED.
2. THE FILL MATERIAL FOR THE EMBANKMENT SHALL BE FREE OF ROOTS OR OTHER WOODY VEGETATION AS WELL AS OVER-SIZED STONES, ROCKS, ORGANIC MATERIAL, OR OTHER OBJECTIONABLE MATERIAL. THE EMBANKMENT SHALL BE COMPACTED BY TRAVERSING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED.
3. VOLUME OF SEDIMENT STORAGE SHALL BE 3600 CUBIC FEET PER ACRE OF CONTRIBUTORY DRAINAGE.
4. SEDIMENT SHALL BE REMOVED AND TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE TRAP. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND STABILIZED.
5. THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NEEDED.
6. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND SEDIMENT ARE CONTROLLED.
7. THE STRUCTURE SHALL BE REMOVED AND AREA STABILIZED WHEN THE DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.
8. ALL FILL SLOPES SHALL BE 2:1 OR FLATTER; CUT SLOPES 1:1 OR FLATTER.
9. ALL PIPE CONNECTIONS SHALL BE WATERTIGHT.
10. THE TOP 2/3 OF THE RISER SHALL BE PERFORATED WITH ONE (1) INCH DIAMETER HOLES OR SLITS SPACED SIX (6) INCHES VERTICALLY AND HORIZONTALLY AND PLACED IN THE CONCAVE PORTION OF PIPE. NO HOLES WILL BE ALLOWED WITHIN SIX (6) INCHES OF THE HORIZONTAL BARREL.
11. THE RISER SHALL BE WRAPPED WITH 1/4 TO 1/2 INCH HARDWARE CLOTH WIRE THEN WRAPPED WITH FILTER CLOTH (HAVING AN EQUIVALENT SIEVE SIZE OF 40-80). THE FILTER CLOTH SHALL EXTEND SIX (6) INCHES ABOVE THE HIGHEST HOLE AND SIX (6) INCHES BELOW THE LOWEST HOLE. WHERE ENDS OF THE FILTER CLOTH COME TOGETHER, THEY SHALL BE OVER-LAPPED, FOLDED AND STAPLED TO PREVENT BYPASS.
12. STRAPS OR CONNECTING BANDS SHALL BE USED TO HOLD THE FILTER CLOTH AND WIRE FABRIC IN PLACE. THEY SHALL BE PLACED AT THE TOP AND BOTTOM OF THE CLOTH.
13. FILL MATERIAL AROUND THE PIPE SPILLWAY SHALL BE HAND COMPACTED IN FOUR (4) INCH LAYERS. A MINIMUM OF TWO (2) FEET OF HAND COMPACTED BACKFILL SHALL BE PLACED OVER THE PIPE SPILLWAY BEFORE CROSSING IT WITH CONSTRUCTION EQUIPMENT.
14. THE RISER SHALL BE ANCHORED WITH EITHER A CONCRETE BASE OR STEEL PLATE BASE TO PREVENT FLOTATION. FOR CONCRETE BASED THE DEPTH SHALL BE TWELVE (12) INCHES WITH THE RISER EMBEDDED NINE (9) INCHES. A 1/4 INCH MINIMUM THICKNESS STEEL PLATE SHALL BE ATTACHED TO THE RISER BY A CONTINUOUS WELD AROUND THE BOTTOM TO FORM A WATERTIGHT CONNECTION AND THEN PLACE TWO (2) FEET OF STONE, GRAVEL, OR TAMPED EARTH ON THE PLATE.

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE	PIPE OUTLET SEDIMENT TRAP ST-I

Figure 5A.19
Stone Outlet Sediment Trap: ST-IV



OPTION: A ONE FOOT LAYER OF N.Y.S. DOT #2 STONE MAY BE PLACED ON THE UPSTREAM SIDE OF THE RIPRAP INPLACE OF THE EMBEDDED FILTER CLOTH.

CONSTRUCTION SPECIFICATIONS

1. AREA UNDER EMBANKMENT SHALL BE CLEARED, GRUBBED AND STRIPPED OF ANY VEGETATION AND ROOT MAT. THE POOL AREA SHALL BE CLEARED.
2. THE FILL MATERIAL FOR THE EMBANKMENT SHALL BE FREE OF ROOTS AND OTHER WOODY VEGETATION AS WELL AS OVER-SIZED STONES, ROCKS, ORGANIC MATERIAL OR OTHER OBJECTIONABLE MATERIAL. THE EMBANKMENT SHALL BE COMPACTED BY TRAVERSING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED.
3. ALL CUT AND FILL SLOPES SHALL BE 2:1 OR FLATTER.
4. THE STONE USED IN THE OUTLET SHALL BE SMALL RIPRAP 4"-8" ALONG WITH A 1' THICKNESS OF 2" AGGREGATE PLACED ON THE UP-GRADE SIDE ON THE SMALL RIPRAP OR EMBEDDED FILTER CLOTH IN THE RIPRAP.
5. SEDIMENT SHALL BE REMOVED AND TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE TRAP. IT SHALL BE PLACED ON SITE AND STABILIZED.
6. THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NEEDED.
7. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND SEDIMENT ARE CONTROLLED.
8. THE STRUCTURE SHALL BE REMOVED AND THE AREA STABILIZED WHEN THE DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

MAXIMUM DRAINAGE AREA 5 ACRES

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE	STONE OUTLET SEDIMENT TRAP ST-IV

Figure 5A.202)
Riprap Outlet Sediment Trap: ST-V—Construction Specifications

SYMBOL

CONSTRUCTION SPECIFICATIONS

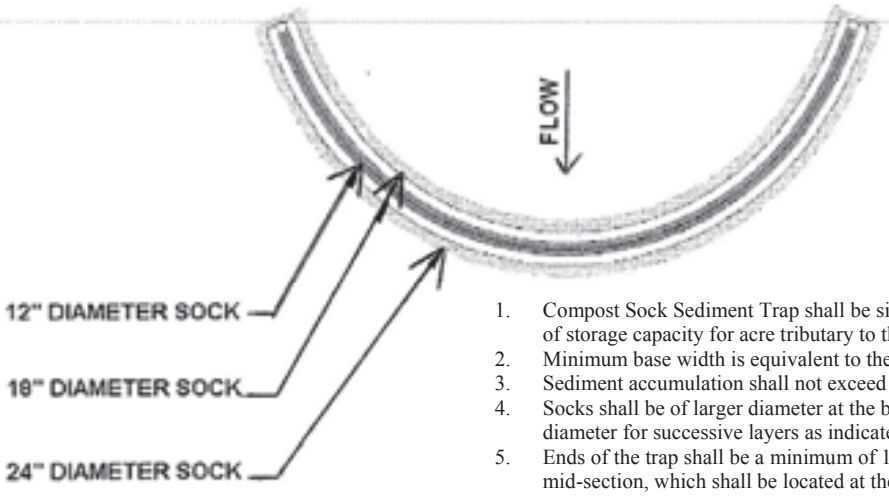
1. THE AREA UNDER EMBANKMENT SHALL BE CLEARED, GRUBBED AND STRIPPED OF ANY VEGETATION AND ROOT MAT. THE POOL AREA SHALL BE CLEARED.
2. THE FILL MATERIAL FOR THE EMBANKMENT SHALL BE FREE OF ROOTS OR OTHER WOODY VEGETATION AS WELL AS OVER-SIZED STONES, ROCKS, ORGANIC MATERIAL OR OTHER OBJECTIONABLE MATERIAL.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

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS,
NEW YORK STATE DEPARTMENT OF TRANSPORTATION,
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION,
NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

RIPRAP OUTLET
SEDIMENT TRAP
ST-V

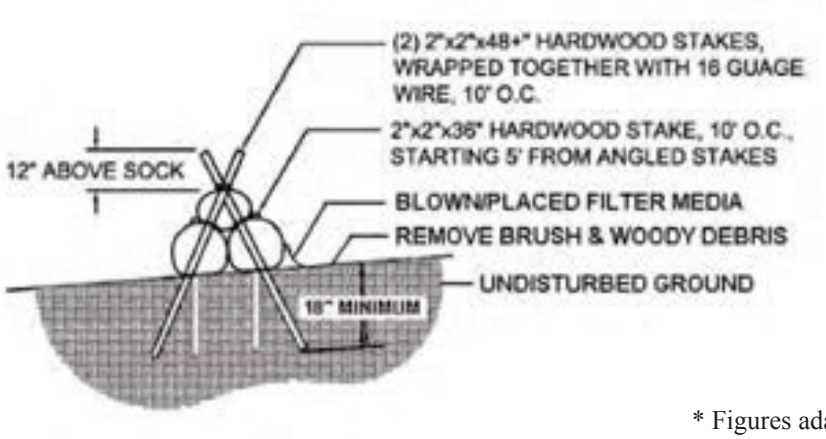
Figure 5.28
Compost Filter Sock Sediment Trap: ST-III

Plan View



1. Compost Sock Sediment Trap shall be sized to provide 3,600 cubic feet of storage capacity for acre tributary to the trap.
2. Minimum base width is equivalent to the height.
3. Sediment accumulation shall not exceed 1/3 the total height of the trap.
4. Socks shall be of larger diameter at the base of the trap and decrease in diameter for successive layers as indicated to the left.
5. Ends of the trap shall be a minimum of 1 foot higher in elevation that the mid-section, which shall be located at the point of discharge.

Staking Detail



* Figures adapted from Filtrexx

Specifications:

1. Sock infill and filter media material shall meet the standards of Table 5.1 on page 5.8 . Compost shall meet the compost filter sock standard of Table 5.2 on page 5.8.

2. Compost sock sediment traps shall not exceed three socks in height and shall be stacked in pyramidal form as shown above. Minimum trap height is one 24 inch diameter sock. Additional storage may be provided by means of an excavated sump 12 inches deep extending 1 to 3 feet upslope of the socks along the lower side of the trap.

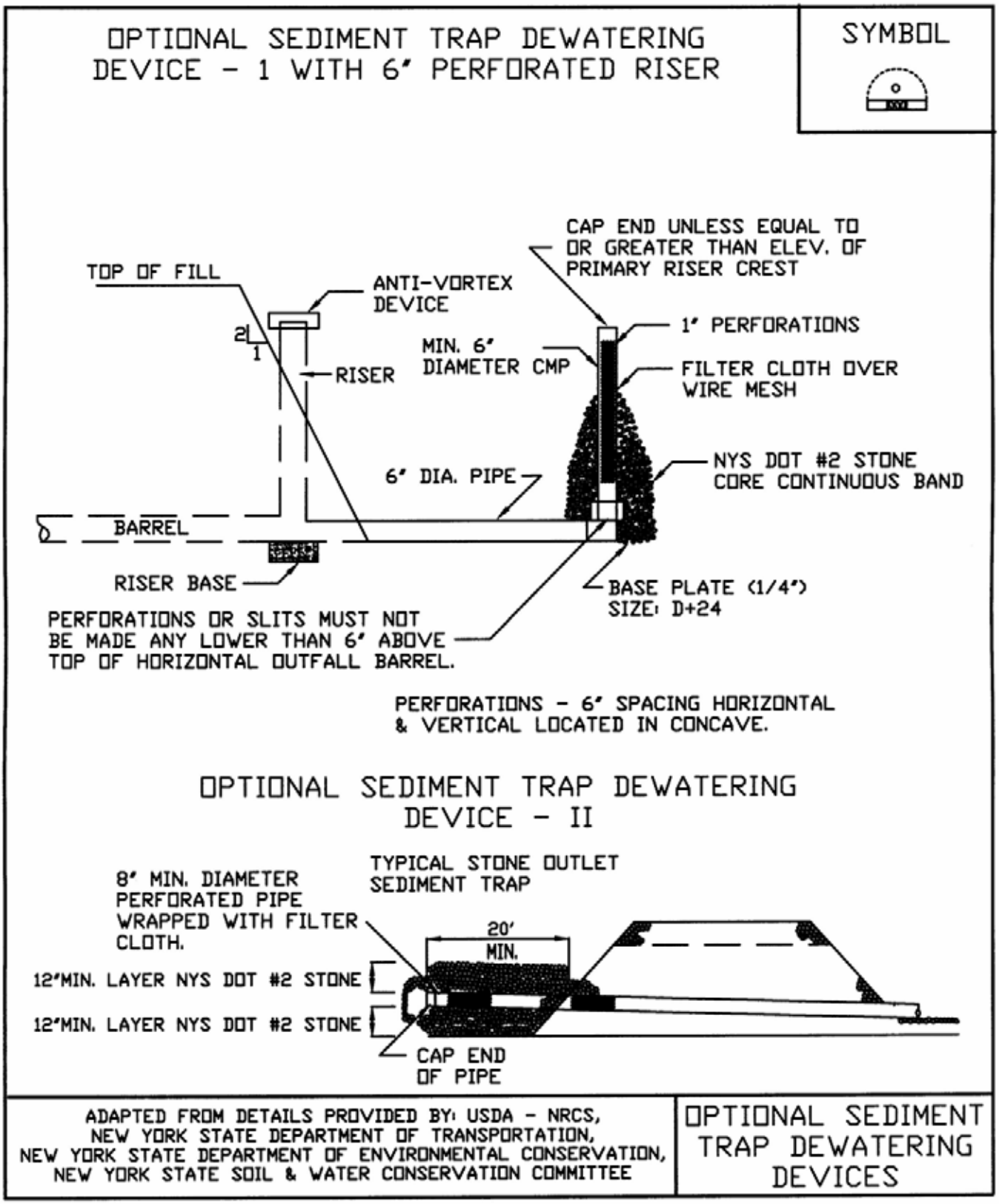
3. Compost sock sediment traps shall provide 3,600 cubic feet storage capacity with 12 inches of freeboard for each tributary drainage acreage. (See manufacturer for anticipated settlement.)

4. The maximum tributary drainage area is 5.0 acres. Since compost socks are "flow-through," no spillway is required.

5. Compost sock sediment traps shall be inspected weekly and after each runoff event. Sediment shall be removed when it reaches 1/3 the height of the socks.

6. Photodegradable and biodegradable socks shall not be used for more than 1 year.

Figure 5A.21
Optional Sediment Trap Dewatering Devices



STANDARD AND SPECIFICATIONS FOR STABILIZED CONSTRUCTION ACCESS

Definition & Scope

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

Conditions Where Practice Applies

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

Design Criteria

See Figure 2.1 on page 2.31 for details.

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

Thickness: Not less than six (6) inches.

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

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

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

Criteria for Geotextile: The geotextile shall be woven or nonwoven fabric consisting only of continuous chain polymeric filaments or yarns of polyester. The fabric shall be inert to commonly encountered chemicals, hydro-carbons, mildew, rot resistant, and conform to the fabric properties as shown:

Fabric Properties[3]	Light Duty[1] Roads Grade Subgrade	Heavy Duty[2] Haul Roads Rough Graded	Test Method
Grab Tensile Strength (lbs)	200	220	ASTM D1682
Elongation at Failure (%)	50	60	ASTM D1682
Mullen Burst Strength (lbs)	190	430	ASTM D3786
Puncture Strength (lbs)	40	125	ASTM D751 Modified
Equivalent	40-80	40-80	US Std Sieve
Opening Size			CW-02215
Aggregate Depth	6	10	-

[1]Light Duty Road: Area sites that have been graded to subgrade and where most travel would be single axle vehicles and an occasional multi-axle truck. Acceptable materials are Trevira Spunbond 1115, Mirafi 100X, Typar 3401, or equivalent.

[2]Heavy Duty Road: Area sites with only rough grading, and where most travel would be multi-axle vehicles. Acceptable materials are Trevira Spunbond 1135, Mirafi 600X, or equivalent.

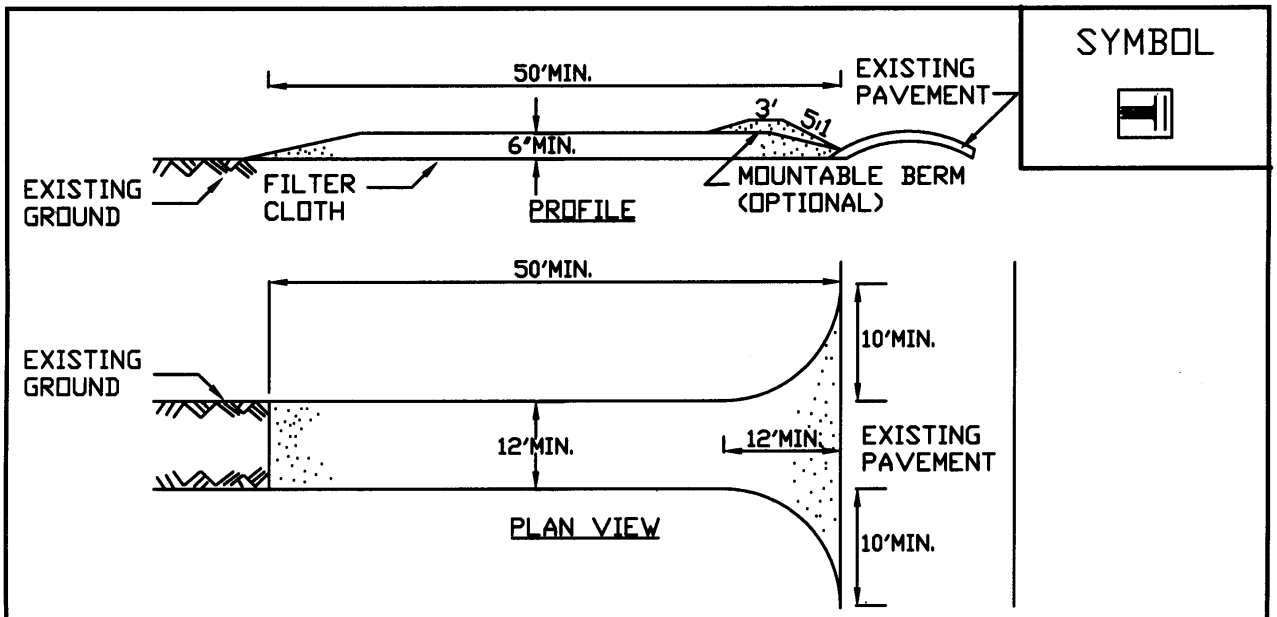
[3]Fabrics not meeting these specifications may be used only when design procedure and supporting documentation are supplied to determine aggregate depth and fabric strength.

Maintenance

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

When necessary, wheels must be cleaned to remove sediment prior to entrance onto public rights-of-way. When washing is required, it shall be done on an area stabilized with aggregate, which drains into an approved sediment-trapping device. All sediment shall be prevented from entering storm drains, ditches, or watercourses.

Figure 5A.35
Stabilized Construction Entrance



CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 1-4 INCH STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. GEOTEXTILE - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACTED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON A AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE	STABILIZED CONSTRUCTION ENTRANCE

STANDARD AND SPECIFICATIONS FOR CONSTRUCTION ROAD STABILIZATION

Definition & Scope

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

Conditions Where Practice Applies

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

Design Criteria

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

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

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

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

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

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

Construction Specifications

1. Clear and strip roadbed and parking areas of all vegetation, roots, and other objectionable material.

2. Locate parking areas on naturally flat areas as available. Keep grades sufficient for drainage, but not more than 2 to 3 percent.

3. Provide surface drainage and divert excess runoff to stabilized areas.

4. Maintain cut and fill slopes to 2:1 or flatter and stabilized with vegetation as soon as grading is accomplished.

5. Spread 6-inch layer of sub-base material evenly over the full width of the road and smooth to avoid depressions.

6. Provide appropriate sediment control measures to prevent offsite sedimentation.

Maintenance

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

STANDARD AND SPECIFICATIONS FOR TEMPORARY ACCESS WATERWAY CROSSING

Definition & Scope

A temporary access waterway crossing is a structure placed across a waterway to provide access for construction purposes for a period of less than one year. Consideration should be given to stream flow capacity and velocity anticipated during the period of time that the temporary structures will be in place. Temporary access crossings shall not be utilized to maintain traffic for the general public. The purpose of the temporary access waterway crossing is to provide safe, environmentally sound access across a waterway for construction equipment by establishing minimum standards and specifications for the design, construction, maintenance, and removal of the structure. This standard and specification may represent a channel constriction, thus, the temporary nature of waterway access crossing must be stressed. They should be planned to be in service for the shortest practical period of time and removed as soon as their function is completed.

Conditions Where Practice Applies

This standard and specification for temporary access waterway crossings is applicable in non-tidal waterways. It provides designs based on waterway geometry rather than the drainage area contributing to the point of crossing.

The principal consideration for development of the standard and specifications is concern for erosion and sediment control, tracking soil into waterways, blocking fish passage and destruction of aquatic habitat. Structural utility and safety must also be considered when designing temporary access waterway crossings to withstand expected loads.

The three types of standard temporary access waterway crossings are bridges, culverts, and fords.

General Requirements

1. In-Stream Excavation: In-Stream excavation shall be limited to only that necessary to allow installation of the standard methods as presented in Subsection "Temporary Access Waterway Crossing Methods."

2. Elimination of Fish Migration Barriers: Of the two basic methods presented in Subsection "Temporary Access Waterway Crossing Methods," bridges pose the least potential for creating barriers to aquatic migration. The construction of any specific crossing method as presented in Subsection "Temporary Access Waterway Crossing Methods," shall not cause a significant water level difference between the upstream and downstream water surface elevations. Fish spawning or migration within waterways generally occurs between October 1 to May 31 for water classified for trout and from March 15 to July 15 for other streams. Fish spawning or migration dates can vary across New York and restrictions imposed by the NYS Department of Environmental Conservation may vary and must be checked.

3. Crossing Alignment: The temporary waterway crossing shall be at right angles to the stream. Where approach conditions dictate, the crossing may vary 15 degrees from a line drawn perpendicular to the centerline of the stream at the intended crossing location.

4. Road Approaches: The centerline of both roadway approaches shall coincide with the crossing alignment centerline for a minimum distance of 50 feet from each bank of the waterway being crossed. If physical or right-of-way restraints preclude the 50 feet minimum, a shorter distance may be provided. All fill materials associated with the roadway approach shall be limited to a maximum height of 2 feet above the existing flood plain elevation.

5. Surface Water Diverting Structure: A water diverting structure such as a swale shall be constructed (across the roadway on both roadway approaches) 50 feet (maximum) on either side of the waterway crossing. This will prevent roadway surface runoff from directly entering the waterway. The 50 feet is measured from the top of the waterway bank. Design criteria for this diverting structure shall be in accordance with the "Standard and Specification" for

the individual design standard of choice. If the roadway approach is constructed with a reverse grade away from the waterway, a separate diverting structure is not required.

6. Road Width: All crossings shall have one traffic lane. The minimum width shall be 12 feet with a maximum width of 20 feet.

7. Time of Operation: All temporary crossing shall be removed within 14 calendar days after the structure is no longer needed. Unless prior written approval is obtained, all structures shall be removed within one year from the date of the installation.

8. Materials

A. Aggregate: There shall be no earth or soil materials used for construction within the waterway channel. NYS DOT specifications for coarse aggregate designation No. 4 (2" to 4"), also referenced as AASHTO designation No. 1, shall be the minimum acceptable aggregate size for temporary crossings. Larger aggregates will be allowed.

B. Filter Cloth: Filter cloth is a fabric consisting of either woven or nonwoven plastic, polypropylene, or nylon used to distribute the load, retain fines, allow increased drainage of the aggregate and reduce mixing of the aggregate with the subgrade soil. The designer shall specify the appropriate filter fabric/cloth for a specific use.

Temporary Access Waterway Crossing Methods

The following criteria for erosion and sediment control shall be considered when selecting a specific temporary access waterway crossing standard method:

1. Site aesthetics: Select a standard design method that will least disrupt the existing terrain of the stream reach. Consider the effort that will be required to restore the area after the temporary crossing is removed.

2. Site location: Locate the temporary crossing where there will be the least disturbance to the soils of the existing waterway banks. When possible, locate the crossing at a point receiving minimal surface runoff.

3. Physical site constraints: The physical constraints of a site may preclude the selection of one or more of the standard methods.

4. Time of year: The time of year may preclude the selection of one or more of the standard methods due to fish spawning or migration restrictions.

5. Vehicular loads and traffic patterns: Vehicular loads, traffic patterns, and frequency of crossing should be considered in choosing a specific method.

6. Maintenance of crossing: The standard methods will require various amounts of maintenance. The bridge method should require the least maintenance, whereas the ford method will probably require more intensive maintenance.

7. Removal of the Structure: Ease of removal and subsequent damage to the waterway should be primary factors in considering the choice of a standard method.

Temporary Access Bridge (Figure 2.2 on page 2.36)

A temporary access bridge is a structure made of wood, metal, or other materials, which provides access across a stream or waterway.

Considerations:

1. This is the preferred method for temporary access waterway crossings. Normally, bridge construction causes the least disturbance to the waterway bed and banks when compared to the other access waterway crossings.

2. Most bridges can be quickly removed and reused.

3. Temporary access bridges pose the least chance for interference with fish migration when compared to the other temporary access waterway crossings.

4. Span width will be limited by the length of the bridging material and weight of equipment that will drive over the temporary bridge. Spans of over 10 feet are difficult to construct.

5. Restrictions and Permits: A permit from the New York State Department of Environmental Conservation, Division of Environmental Permits, Regional Permit Administrator, will be needed to install and remove temporary access culverts in streams with a classification of C(T) and higher. Installation and removal may not be permitted during the period of time from the start of trout spawning until the eggs have hatched. In some instances, restrictions may also be applied to bass spawning waters.

Construction Specifications:

1. Restriction: Construction, use, or removal of a temporary access bridge will not normally have any time of year restrictions if construction, use, or

removal does not disturb the stream or its banks.

2. Bridge Placement: A temporary bridge structure shall be constructed at or above bank elevation to prevent the entrapment of floating materials and debris.

3. Abutments: Abutments shall be placed parallel to and on stable banks.

4. Bridge Span: Bridges shall be constructed to span the entire channel. If a footing, pier, or bridge support is constructed within the waterway, a stream- disturbance permit may be required.

5. Stringers: Stringers shall either be logs, saw timber, pre-stressed concrete beams, metal beams, or other approved materials.

6. Deck Material: Decking shall be of sufficient strength to support the anticipated load. All decking members shall be placed perpendicular to the stringers, butted tightly, and securely fastened to the stringers. Decking materials must be butted tightly to prevent any soil material tracked onto the bridge from falling into the waterway below.

7. Run Planks (optional): Run planking shall be securely fastened to the length of the span. One run plank shall be provided for each track of the equipment wheels. Although run planks are optional, they may be necessary to properly distribute loads.

8. Curbs or Fenders: Curbs or fenders may be installed along the outer sides of the deck. Curbs or fenders are an option, which will provide additional safety.

9. Bridge Anchors: Bridges shall be securely anchored at only one end using steel cable or chain. Anchoring at only one end will prevent channel obstruction in the event that floodwaters float the bridge. Acceptable anchors are large trees, large boulders, or driven steel anchors. Anchoring shall be sufficient to prevent the bridge from floating downstream and possibly causing an obstruction to the flow.

10. Stabilization: All areas disturbed during installation shall be stabilized within 14 calendar days of that disturbance in accordance with the Standard and Specification for Temporary Construction Area Seeding on page 4.58.

Bridge Maintenance Requirements

1. Inspection: Periodic inspection shall be performed by the user to ensure that the bridge, streambed, and streambanks are maintained and not damaged.

2. Maintenance: Maintenance shall be performed, as needed to ensure that the structure complies with the standard and specifications. This shall include removal and disposal of any trapped sediment or debris. Sediment shall be disposed of outside of the floodplain and stabilized.

Bridge Removal and Clean-Up Requirements

1. Removal: When the temporary bridge is no longer needed, all structures including abutments and other bridging materials shall be removed within 14 calendar days. In all cases, the bridge materials shall be removed within one year of installation.

2. Final Clean-Up: Final clean-up shall consist of removal of the temporary bridge from the waterway, protection of banks from erosion, and removal of all construction materials. All removed materials shall be stored outside the waterway floodplain.

3. Method: Removal of the bridge and clean-up of the area shall be accomplished without construction equipment working in the waterway channel.

4. Final Stabilization: All areas disturbed during removal shall be stabilized within 14 calendar days of that disturbance in accordance with the Standard and Specifications for Permanent Construction Area Planting on page 4.42.

Temporary Access Culvert (Figure 2.3 on page 2.37)

A temporary access culvert is a structure consisting of a section(s) of circular pipe, pipe arches, or oval pipes of reinforcing concrete, corrugated metal, or structural plate, which is used to convey flowing water through the crossing.

Considerations

1. Temporary culverts are used where a) the channel is too wide for normal bridge construction, b) anticipated loading may prove unsafe for single span bridges, or c) access is not needed from bank to bank.

2. This temporary waterway crossing method is normally preferred over a ford type of crossing, since disturbance to the waterway is only during construction and removal of the culvert.

3. Temporary culverts can be salvaged and reused.

Construction Specifications

1. Restrictions and Permits: A permit from the New York State Department of Environmental

Conservation, Division of Environmental Permits, Regional Permit Administrator, will be needed to install and remove temporary access culverts in streams with a classification of C(T) and higher. Installation and removal may not be permitted during the period of time from the start of trout spawning until the eggs have hatched. In some instances, restrictions may also be applied to bass spawning waters.

2. Culvert Strength: All culverts shall be strong enough to support their cross sectional area under maximum expected loads.

3. Culvert Size: The size of the culvert pipe shall be the largest pipe diameter that will fit into the existing channel without major excavation of the waterway channel or without major approach fills. If a channel width exceeds 3 feet, additional pipes may be used until the cross sectional area of the pipes is greater than 60 percent of the cross sectional area of the existing channel. The minimum size culvert that may be used is 12-inch diameter pipe.

4. Culvert Length: The culvert(s) shall extend a minimum of one foot beyond the upstream and downstream toe of the aggregate placed around the culvert. In no case shall the culvert exceed 40 feet in length.

5. Filter Cloth: Filter cloth shall be placed on the streambed and streambanks prior to placement of the pipe culvert(s) and aggregate. The filter cloth shall cover the streambed and extend a minimum six inches and a maximum one foot beyond the end of the culvert and bedding material. Filter cloth reduces settlement and improves crossing stability.

6. Culvert Placement: The invert elevation of the culvert shall be installed on the natural streambed grade to minimize interference with fish migration (free passage of fish).

7. Culvert Protection: The culvert(s) shall be covered with a minimum of one foot of aggregate. If multiple culverts are used, they shall be separated by at least 12 in. of compacted aggregate fill. At the minimum, the bedding and fill material used in the construction of the temporary access culvert crossings shall conform with the aggregate requirements cited in the General Requirements subsection.

8. Stabilization: All areas disturbed during culvert installation shall be stabilized within 14 calendar days of the disturbance in accordance with the Standard for Permanent Construction Area Plantings.

Culvert Maintenance Requirements

1. Inspection: Periodic inspection shall be performed to ensure that the culverts, streambed, and streambanks are not damaged, and that sediment is not entering the stream or blocking fish passage or migration.

2. Maintenance: Maintenance shall be performed, as needed in a timely manner to ensure that structures are in compliance with this standard and specification. This shall include removal and disposal of any trapped sediment or debris. Sediment shall be disposed of and stabilized outside the waterway flood plain.

Culvert Removal and Clean-Up Requirements

1. Removal: When the crossing has served its purpose, all structures, including culverts, bedding, and filter cloth materials shall be removed within 14 calendar days. In all cases, the culvert materials shall
be removed within one year of installation. No structure shall be removed during the spawning season (generally October 1 through May 31 for trout waters and March 15 through July 15 for other waters).

2. Final Clean-Up: Final clean-up shall consist of removal of the temporary structure from the waterway, removal of all construction materials, restoration of original stream channel cross section, and protection of the streambanks from erosion. Removed material shall be stored outside of the waterway floodplain.

3. Method: Removal of the structure and clean-up of the area shall be accomplished without construction equipment working in the waterway channel.

4. Final Stabilization: All areas disturbed during culvert removal shall be stabilized within 14 calendar days of the disturbance in accordance with the Standard for Permanent Construction Area Plantings.

NOTE: Any temporary access crossing shall conform to the technical requirements of this Standard and Specifications as well as any specific requirement imposed by the New York State Department of Environmental Conservation and the US Army Corps of Engineers. Permits may be required for streambank disturbance.

Figure 5A.36
Temporary Access Bridge

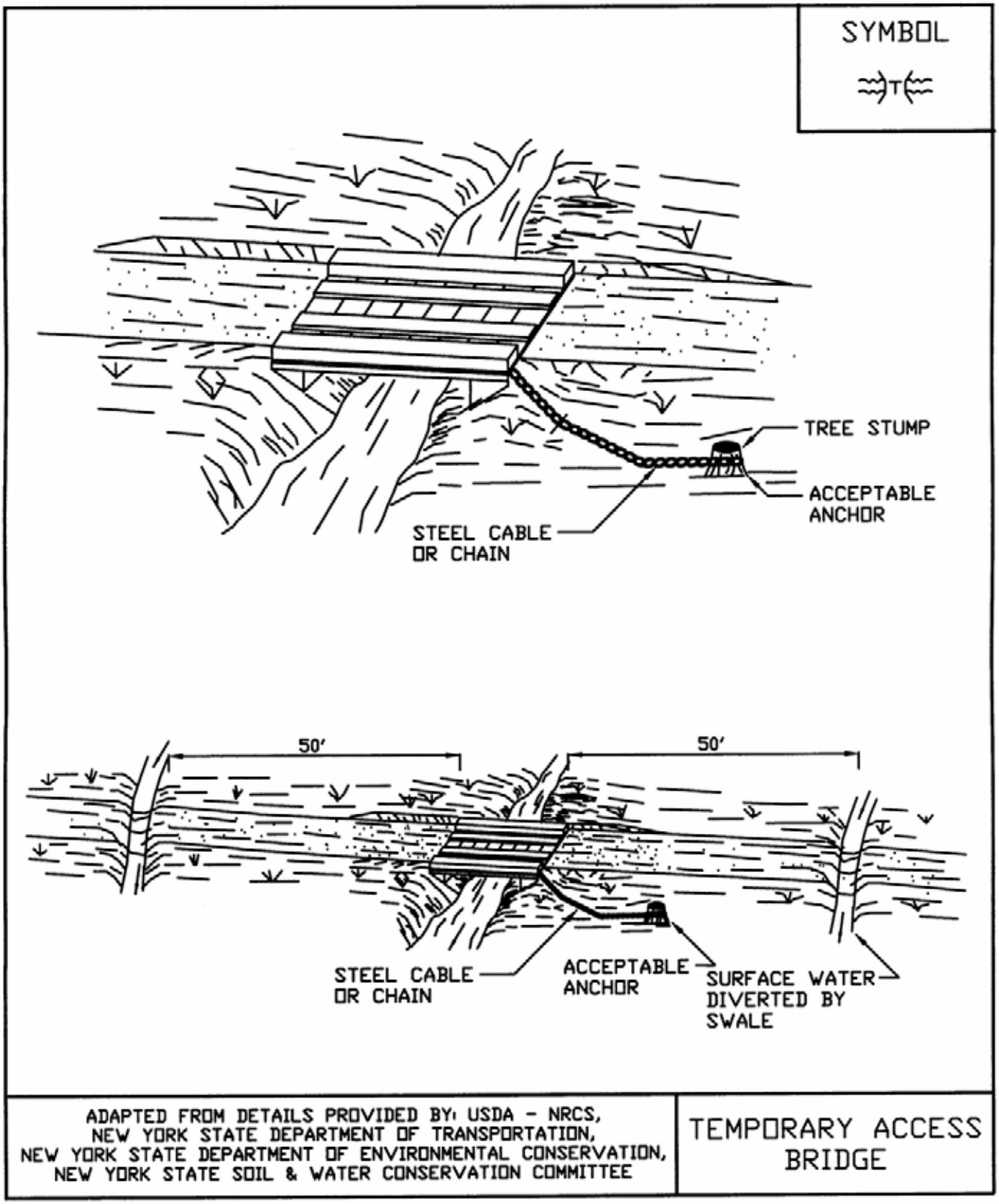


Figure 5A.37
Temporary Access Culvert

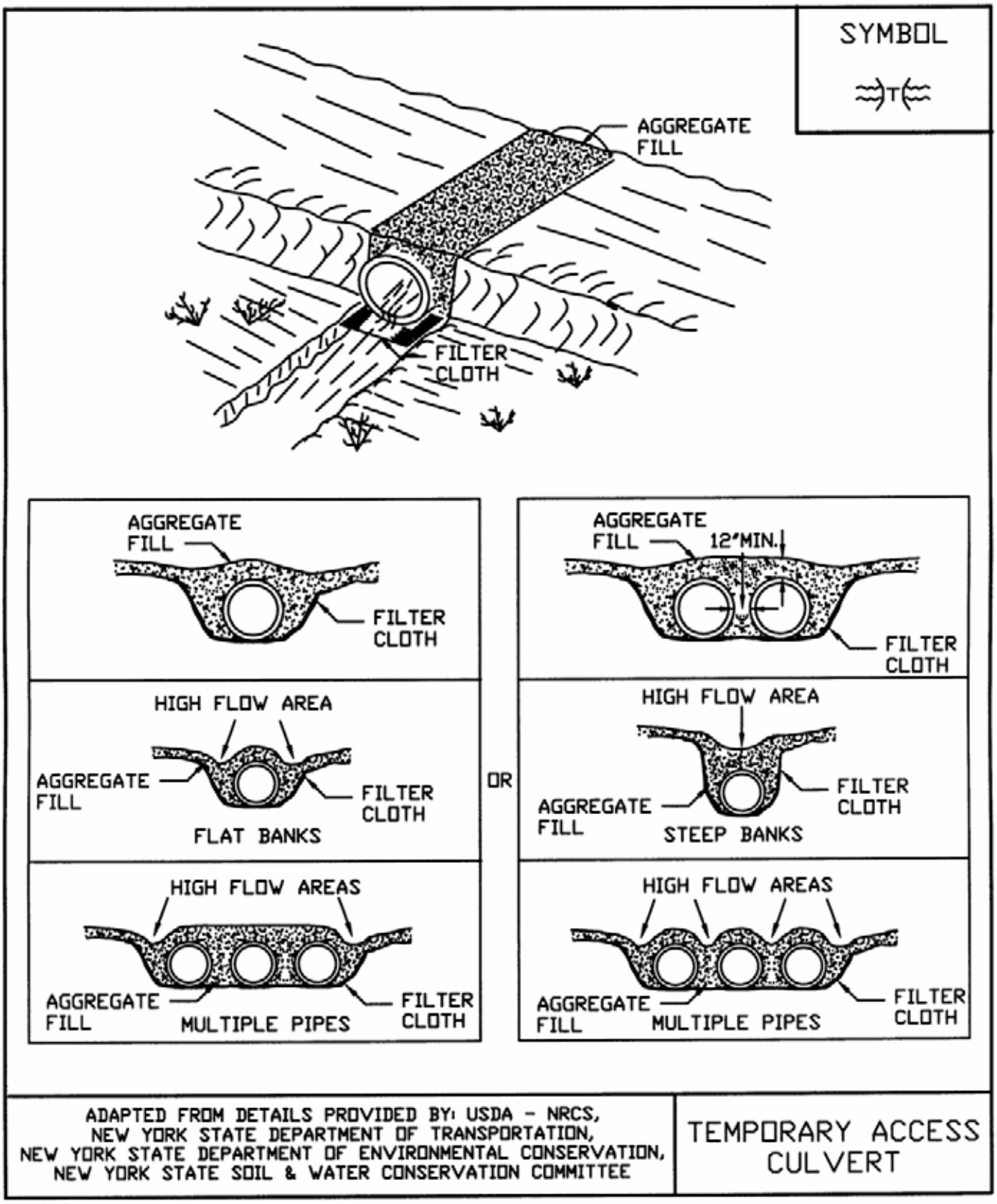
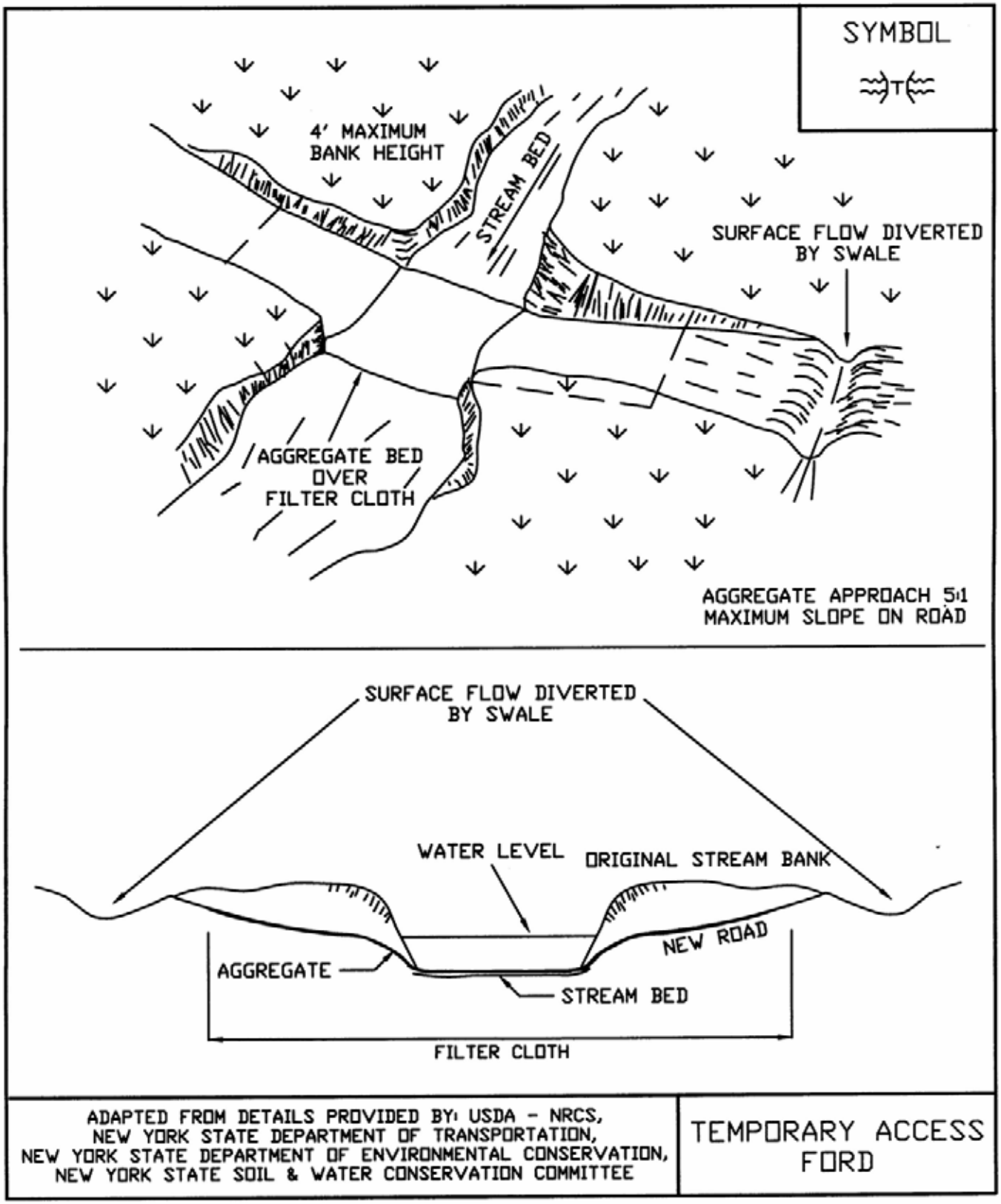


Figure 5A.38
Temporary Access Ford



STANDARD AND SPECIFICATIONS FOR DUST CONTROL

Definition & Scope

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

Conditions Where Practice Applies

On construction roads, access points, and other disturbed areas subject to surface dust movement and dust blowing where off-site damage may occur if dust is not controlled.

Design Criteria

Construction operations should be scheduled to minimize the amount of area disturbed at one time. Buffer areas of vegetation should be left where practical. Temporary or permanent stabilization measures shall be installed. No specific design criteria is given; see construction specifications below for common methods of dust control.

Water quality must be considered when materials are selected for dust control. Where there is a potential for the material to wash off to a stream, ingredient information must be provided to the NYSDEC.

No polymer application shall take place without written approval from the NYSDEC.

Construction Specifications

A. **Non-driving Areas** – These areas use products and materials applied or placed on soil surfaces to prevent airborne migration of soil particles.

Vegetative Cover – For disturbed areas not subject to traffic, vegetation provides the most practical method of dust control (see Section 3).

Mulch (including gravel mulch) – Mulch offers a fast effective means of controlling dust. This can also include rolled erosion control blankets.

Spray adhesives – These are products generally composed of polymers in a liquid or solid form that are mixed with water to form an emulsion that is sprayed on the soil surface with typical hydroseeding equipment. The mixing ratios and application rates will be in accordance with the manufacturer's recommendations for the specific soils on the site. In no case should the application of these adhesives be made on wet soils or if there is a probability of precipitation within 48 hours of its proposed use. Material Safety Data Sheets will be provided to all applicators and others working with the material.

B. **Driving Areas** – These areas utilize water, polymer emulsions, and barriers to prevent dust movement from the traffic surface into the air.

Sprinkling – The site may be sprayed with water until the surface is wet. This is especially effective on haul roads and access route to provide short term limited dust control.

Polymer Additives – These polymers are mixed with water and applied to the driving surface by a water truck with a gravity feed drip bar, spray bar or automated distributor truck. The mixing ratios and application rates will be in accordance with the manufacturer's recommendations. Incorporation of the emulsion into the soil will be done to the appropriate depth based on expected traffic. Compaction after incorporation will be by vibratory roller to a minimum of 95%. The prepared surface shall be moist and no application of the polymer will be made if there is a probability of precipitation within 48 hours of its proposed use. Material Safety Data Sheets will be provided to all applicators working with the material.

Barriers – Woven geo-textiles can be placed on the driving surface to effectively reduce dust throw and particle migration on haul roads. Stone can also be used for construction roads for effective dust control.

Windbreak – A silt fence or similar barrier can control air currents at intervals equal to ten times the barrier height. Preserve existing wind barrier vegetation as much as practical.

Maintenance

Maintain dust control measures through dry weather periods until all disturbed areas are stabilized.

All Stormwater Pollution Prevention Plans must contain the NYS DEC issued “Conditions for Use” and “Application Instructions” for any polymers used on the site. This information can be obtained from the NYS DEC website.

Maintenance

Maintain dust control measures through dry weather periods until all disturbed areas are stabilized.

STANDARD AND SPECIFICATIONS FOR CONCRETE TRUCK WASHOUT

Definition & Scope

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

Conditions Where Practice Applies

Washout facilities shall be provided for every project where concrete will be poured or otherwise formed on the site. This facility will receive highly alkaline wash water from the cleaning of chutes, mixers, hoppers, vibrators, placing equipment, trowels, and screeds. Under no circumstances will wash water from these operations be allowed to infiltrate into the soil or enter surface waters.

Design Criteria

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

Location: Locate the facility a minimum of 100 feet from drainage swales, storm drain inlets, wetlands, streams and other surface waters. Prevent surface water from entering the structure except for the access road. Provide appropriate access with a gravel access road sloped down to the structure. Signs shall be placed to direct drivers to the facility after their load is discharged.

Liner: All washout facilities will be lined to prevent leaching of liquids into the ground. The liner shall be plastic sheeting with a minimum thickness of 10 mils with no holes or tears, and anchored beyond the top of the pit with an earthen berm, sand bags, stone, or other structural appurtenance except at the access point.

If pre-fabricated washouts are used they must ensure the capture and containment of the concrete wash and be sized based on the expected frequency of concrete pours. They shall be sited as noted in the location criteria.

Maintenance

- All concrete washout facilities shall be inspected daily. Damaged or leaking facilities shall be deactivated and repaired or replaced immediately. Excess rainwater that has accumulated over hardened concrete should be pumped to a stabilized area, such as a grass filter strip.
- Accumulated hardened material shall be removed when 75% of the storage capacity of the structure is filled. Any excess wash water shall be pumped into a containment vessel and properly disposed of off site.
- Dispose of the hardened material off-site in a construction/demolition landfill. On-site disposal may be allowed if this has been approved and accepted as part of the projects SWPPP. In that case, the material should be recycled as specified, or buried and covered with a minimum of 2 feet of clean compacted earthfill that is permanently stabilized to prevent erosion.
- The plastic liner shall be replaced with each cleaning of the washout facility.
- Inspect the project site frequently to ensure that no concrete discharges are taking place in non-designated areas.

STANDARD AND SPECIFICATIONS FOR WINTER STABILIZATION

Definition & Scope

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

Conditions Where Practice Applies

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

Design Criteria

1. Prepare a snow management plan with adequate storage for snow and control of melt water, requiring cleared snow to be stored in a manner not affecting ongoing construction activities.

2. Enlarge and stabilize access points to provide for snow management and stockpiling. Snow management activities must not destroy or degrade installed erosion and sediment control practices.

3. A minimum 25 foot buffer shall be maintained from all perimeter controls such as silt fence. Mark silt fence with tall stakes that are visible above the snow pack.

4. Edges of disturbed areas that drain to a waterbody within 100 feet will have 2 rows of silt fence, 5 feet apart, installed on the contour.

5. Drainage structures must be kept open and free of snow and ice dams. All debris, ice dams, or debris from plowing operations, that restrict the flow of runoff and meltwater, shall be removed.

6. Sediment barriers must be installed at all appropriate perimeter and sensitive locations. Silt fence and other practices requiring earth disturbance must be installed before the ground freezes.

7. Soil stockpiles must be protected by the use of established vegetation, anchored straw mulch, rolled stabilization matting, or other durable covering. A barrier must be installed at least 15 feet from the toe of the stockpile to prevent soil migration and to capture loose soil.

8. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures should be initiated by the end of the next business day and completed within three (3) days. Rolled erosion control blankets must be used on all slopes 3 horizontal to 1 vertical or steeper.

9. If straw mulch alone is used for temporary stabilization, it shall be applied at double the standard rate of 2 tons per acre, making the application rate 4 tons per acre. Other manufactured mulches should be applied at double the manufacturer's recommended rate.

10. To ensure adequate stabilization of disturbed soil in advance of a melt event, areas of disturbed soil should be stabilized at the end of each work day unless:

    a. work will resume within 24 hours in the same area and no precipitation is forecast or;

    b. the work is in disturbed areas that collect and retain runoff, such as open utility trenches, foundation excavations, or water management areas.

11. Use stone paths to stabilize access perimeters of buildings under construction and areas where construction vehicle traffic is anticipated. Stone paths should be a minimum 10 feet in width but wider as necessary to accommodate equipment.

Maintenance

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

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

APPENDIX G

SITE INSPECTION LOG BOOK

STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM
FOR CONSTRUCTION ACTIVITIES

CONSTRUCTION SITE LOG BOOK

Table of Contents

Properly completing forms such as those contained in this document meet the inspection requirement of NYSDEC SPDES GP for Construction Activities. Completed forms shall be kept on site at all times and made available to authorities upon request.

I. PRE-CONSTRUCTION MEETING DOCUMENTS

Project Name _____
Permit No. _____**Date of Authorization**_____
Name of Operator _____
Prime Contractor _____

a. Preamble to Site Assessment and Inspections -The Following Information To Be Read By All Person's Involved in The Construction of Stormwater Related Activities:

The Operator agrees to have a qualified professional[1] conduct an assessment of the site prior to the commencement of construction[2] and certify in this inspection report that the appropriate erosion and sediment controls described in the SWPPP have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction.

Prior to the commencement of construction, the Operator shall certify in this site logbook that the SWPPP has been prepared in accordance with the State's standards and meets all Federal, State and local erosion and sediment control requirements.

When construction starts, site inspections shall be conducted by the qualified professional at least every 7 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater (Construction Duration Inspections). The Operator shall maintain a record of all inspection reports in this site logbook. The site logbook shall be maintained on site and be made available to the permitting authorities upon request. The Operator shall post at the site, in a publicly accessible location, a summary of the site inspection activities on a monthly basis (Monthly Summary Report).

The operator shall also prepare a written summary of compliance with this general permit at a minimum frequency of every three months (Operator's Compliance Response Form), while coverage exists. The summary should address the status of achieving each component of the SWPPP.

Prior to filing the Notice of Termination or the end of permit term, the Operator shall have a qualified professional perform a final site inspection. The qualified professional shall certify that the site has undergone final stabilization[3] using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed. In addition, the Operator must identify and certify that all permanent structures described in the SWPPP have been constructed and provide the owner(s) with an operation and maintenance plan that ensures the structure(s) continuously functions as designed.

1 "Qualified Professional means a person knowledgeable in the principles and practice of erosion and sediment controls, such as a Certified Professional in Erosion and Sediment Control (CPESC), soil scientist, licensed engineer or someone working under the direction and supervision of a licensed engineer (person must have experience in the principles and practices of erosion and sediment control).

2 "Commencement of construction" means the initial removal of vegetation and disturbance of soils associated with clearing, grading or excavating activities or other construction activities.

3 "Final stabilization" means that all soil-disturbing activities at the site have been completed and a uniform, perennial vegetative cover with a density of eighty (80) percent has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures.

b. Operators Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who 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. Further, I hereby certify that the SWPPP meets all Federal, State, and local erosion and sediment control requirements. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law. "

Name (please print):_____

Title _____**Date:**_____

Address: _____

Phone: _____ **Email:**_____

Signature:_____

c. Qualified Professional's Credentials & Certification

" I hereby certify that I meet the criteria set forth in the General Permit to conduct site inspections for this project and that the appropriate erosion and sediment controls described in the SWPPP and as described in the following Pre-construction Site Assessment Checklist have been adequately installed or implemented, ensuring the overall preparedness of this site for the commencement of construction."

Name (please print):_____

Title _____**Date:**_____

Address: _____

Phone: _____ **Email:**_____

Signature:_____

d. Pre-construction Site Assessment Checklist (NOTE: Provide comments below as necessary)

1. Notice of Intent, SWPPP, and Contractors Certification:

Yes No NA

[ ] [ ] [ ] Has a Notice of Intent been filed with the NYS Department of Conservation?
[ ] [ ] [ ] Is the SWPPP on-site? Where?_____
[ ] [ ] [ ] Is the Plan current? What is the latest revision date?_____
[ ] [ ] [ ] Is a copy of the NOI (with brief description) onsite? Where?_____
[ ] [ ] [ ] Have all contractors involved with stormwater related activities signed a contractor's certification?

Pre-construction Site Assessment Checklist (continued)

2. Resource Protection

Yes No NA

[ ] [ ] [ ] Are construction limits clearly flagged or fenced?

[ ] [ ] [ ] Important trees and associated rooting zones, on-site septic system absorption fields, existing vegetated areas suitable for filter strips, especially in perimeter areas, have been flagged for protection.

[ ] [ ] [ ] Creek crossings installed prior to land-disturbing activity, including clearing and blasting.

3. Surface Water Protection

Yes No NA

[ ] [ ] [ ] Clean stormwater runoff has been diverted from areas to be disturbed.

[ ] [ ] [ ] Bodies of water located either on site or in the vicinity of the site have been identified and protected.

[ ] [ ] [ ] Appropriate practices to protect on-site or downstream surface water are installed.

[ ] [ ] [ ] Are clearing and grading operations divided into areas <5 acres?

4. Stabilized Construction Entrance

Yes No NA

[ ] [ ] [ ] A temporary construction entrance to capture mud and debris from construction vehicles before they enter the public highway has been installed.

[ ] [ ] [ ] Other access areas (entrances, construction routes, equipment parking areas) are stabilized immediately as work takes place with gravel or other cover.

[ ] [ ] [ ] Sediment tracked onto public streets is removed or cleaned on a regular basis.

5. Perimeter Sediment Controls

Yes No NA

[ ] [ ] [ ] Silt fence material and installation comply with the standard drawing and specifications.

[ ] [ ] [ ] Silt fences are installed at appropriate spacing intervals

[ ] [ ] [ ] Sediment/detention basin was installed as first land disturbing activity.

[ ] [ ] [ ] Sediment traps and barriers are installed.

6. Pollution Prevention for Waste and Hazardous Materials

Yes No NA

[ ] [ ] [ ] The Operator or designated representative has been assigned to implement the spill prevention avoidance and response plan.

[ ] [ ] [ ] The plan is contained in the SWPPP on page _____

[ ] [ ] [ ] Appropriate materials to control spills are onsite. Where? _____

II. CONSTRUCTION DURATION INSPECTIONS

a. Directions:
Inspection Forms will be filled out during the entire construction phase of the project.
Required Elements:

(1) On a site map, indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period;

(2) Indicate on a site map all areas of the site that have undergone temporary or permanent stabilization;

(3) Indicate all disturbed site areas that have not undergone active site work during the previous 14-day period;

Inspect all sediment control practices and record the approximate degree of sediment accumulation as a percentage of sediment storage volume (for example, 10 percent, 20 percent, 50 percent);

(5) Inspect all erosion and sediment control practices and record all maintenance requirements such as verifying the integrity of barrier or diversion systems (earthen berms or silt fencing) and containment systems (sediment basins and sediment traps). Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching. Document any excessive deposition of sediment or ponding water along barrier or diversion systems. Record the depth of sediment within containment structures, any erosion near outlet and overflow structures, and verify the ability of rock filters around perforated riser pipes to pass water; and

(6) Immediately report to the Operator any deficiencies that are identified with the implementation of the SWPPP.

SITE PLAN/SKETCH

_____ _____

Inspector (print name) **Date of Inspection**

_____ _____

Qualified Professional (print name) **Qualified Professional Signature**

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

Maintaining Water Quality

Yes No NA

[ ] [ ] [ ] Is there an increase in turbidity causing a substantial visible contrast to natural conditions?

[ ] [ ] [ ] Is there residue from oil and floating substances, visible oil film, or globules or grease?

[ ] [ ] [ ] All disturbance is within the limits of the approved plans.

[ ] [ ] [ ] Have receiving lake/bay, stream, and/or wetland been impacted by silt from project?

Housekeeping

1. General Site Conditions

Yes No NA

[ ] [ ] [ ] Is construction site litter and debris appropriately managed?

[ ] [ ] [ ] Are facilities and equipment necessary for implementation of erosion and sediment control in working order and/or properly maintained?

[ ] [ ] [ ] Is construction impacting the adjacent property?

[ ] [ ] [ ] Is dust adequately controlled?

2. Temporary Stream Crossing

Yes No NA

[ ] [ ] [ ] Maximum diameter pipes necessary to span creek without dredging are installed.

[ ] [ ] [ ] Installed non-woven geotextile fabric beneath approaches.

[ ] [ ] [ ] Is fill composed of aggregate (no earth or soil)?

[ ] [ ] [ ] Rock on approaches is clean enough to remove mud from vehicles & prevent sediment from entering stream during high flow.

Runoff Control Practices

1. Excavation Dewatering

Yes No NA

[ ] [ ] [ ] Upstream and downstream berms (sandbags, inflatable dams, etc.) are installed per plan.

[ ] [ ] [ ] Clean water from upstream pool is being pumped to the downstream pool.

[ ] [ ] [ ] Sediment laden water from work area is being discharged to a silt-trapping device.

[ ] [ ] [ ] Constructed upstream berm with one-foot minimum freeboard.

2. Level Spreader

Yes No NA

[ ] [ ] [ ] Installed per plan.

[ ] [ ] [ ] Constructed on undisturbed soil, not on fill, receiving only clear, non-sediment laden flow.

[ ] [ ] [ ] Flow sheets out of level spreader without erosion on downstream edge.

3. Interceptor Dikes and Swales

Yes No NA

[ ] [ ] [ ] Installed per plan with minimum side slopes 2H:1V or flatter.

[ ] [ ] [ ] Stabilized by geotextile fabric, seed, or mulch with no erosion occurring.

[ ] [ ] [ ] Sediment-laden runoff directed to sediment trapping structure

Runoff Control Practices (continued)

4. Stone Check Dam

Yes No NA

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

5. Rock Outlet Protection

Yes No NA

[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Installed concurrently with pipe installation.

Soil Stabilization

1. Topsoil and Spoil Stockpiles

Yes No NA

[ ] [ ] [ ] Stockpiles are stabilized with vegetation and/or mulch.
[ ] [ ] [ ] Sediment control is installed at the toe of the slope.

2. Revegetation

Yes No NA

[ ] [ ] [ ] Temporary seedings and mulch have been applied to idle areas.
[ ] [ ] [ ] 4 inches minimum of topsoil has been applied under permanent seedings

Sediment Control

1. Stabilized Construction Entrance

Yes No NA

[ ] [ ] [ ] Stone is clean enough to effectively remove mud from vehicles.
[ ] [ ] [ ] Installed per standards and specifications?
[ ] [ ] [ ] Does all traffic use the stabilized entrance to enter and leave site?
[ ] [ ] [ ] Is adequate drainage provided to prevent ponding at entrance?

2. Silt Fence

Yes No NA

[ ] [ ] [ ] Installed on Contour, 10 feet from toe of slope (not across conveyance channels).
[ ] [ ] [ ] Joints constructed by wrapping the two ends together for continuous support.
[ ] [ ] [ ] Fabric buried 6 inches minimum.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.

Sediment accumulation is ___% of design capacity.

Sediment Control (continued)

3. Storm Drain Inlet Protection (Use for Stone & Block; Filter Fabric; Curb; or, Excavated practices)

Yes No NA

[ ] [ ] [ ] Installed concrete blocks lengthwise so open ends face outward, not upward.
[ ] [ ] [ ] Placed wire screen between No. 3 crushed stone and concrete blocks.
[ ] [ ] [ ] Drainage area is 1acre or less.
[ ] [ ] [ ] Excavated area is 900 cubic feet.
[ ] [ ] [ ] Excavated side slopes should be 2:1.
[ ] [ ] [ ] 2" x 4" frame is constructed and structurally sound.
[ ] [ ] [ ] Posts 3-foot maximum spacing between posts.
[ ] [ ] [ ] Fabric is embedded 1 to 1.5 feet below ground and secured to frame/posts with staples at max 8-inch spacing.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.

Sediment accumulation ___% of design capacity.

4. Temporary Sediment Trap

Yes No NA

[ ] [ ] [ ] Outlet structure is constructed per the approved plan or drawing.
[ ] [ ] [ ] Geotextile fabric has been placed beneath rock fill.

Sediment accumulation is ___% of design capacity.

5. Temporary Sediment Basin

Yes No NA

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

Sediment accumulation is ___% of design capacity.

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

CONSTRUCTION DURATION INSPECTIONS
b. Modifications to the SWPPP (To be completed as described below)

The Operator shall amend the SWPPP whenever:
1. There is a significant change in design, construction, operation, or maintenance which may have a significant effect on the potential for the discharge of pollutants to the waters of the United States and which has not otherwise been addressed in the SWPPP; or
2. The SWPPP proves to be ineffective in:
a. Eliminating or significantly minimizing pollutants from sources identified in the SWPPP and as required by this permit; or
b. Achieving the general objectives of controlling pollutants in stormwater discharges from permitted construction activity; and
3. Additionally, the SWPPP shall be amended to identify any new contractor or subcontractor that will implement any measure of the SWPPP.

Modification & Reason:

III. Monthly Summary of Site Inspection Activities

Name of Permitted Facility:	Today's Date:	Reporting Month:
Location:	Permit Identification #:	
Name and Telephone Number of Site Inspector:		

Date of Inspection	Regular / Rainfall based Inspection	Name of Inspector	Items of Concern

Owner/Operator Certification:

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

_____ _____

Signature of Permittee or Duly Authorized Representative Name of Permittee or Duly Authorized Representative date

Duly authorized representatives must have written authorization, submitted to DEC, to sign any permit documents.

APPENDIX H

NOTICE OF TERMINATION FORM

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505
(NOTE: Submit completed form to address above)

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

Please indicate your permit identification number: NYR ___ ___ ___ ___ ___ ___

I. Owner or Operator Information

1. Owner/Operator Name:

2. Street Address:

3. City/State/Zip:

4. Contact Person: | 4a.Telephone:

5. Contact Person E-Mail:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/Zip:

8. County:

III. Reason for Termination

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

9b. ☐ Permit coverage has been transferred to new owner/operator. Indicate new owner/operator's permit identification number: NYR ___ ___ ___ ___ ___ ___
(Note: Permit coverage can not be terminated by owner identified in I.1. above until new owner/operator obtains coverage under the general permit)

9c. ☐ Other (Explain on Page 2)

IV. Final Site Information:

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

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

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

_____

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

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

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

☐ Post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain practice(s) have been deeded to the municipality.

☐ Executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s).

☐ For post-construction stormwater management practices that are privately owned, the deed of record has been modified to include a deed covenant that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

☐ For post-construction stormwater management practices that are owned by a public or private institution (e.g. school, college, university), or government agency or authority, policy and procedures are in place that ensures operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

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

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

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

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

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

Printed Name:

Title/Position:

Signature:	Date:

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

VII. Qualified Inspector Certification - Final Stabilization:

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

Printed Name:	
Title/Position:	
Signature:	Date:

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

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

Printed Name:	
Title/Position:	
Signature:	Date:

IX. Owner or Operator Certification

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

Printed Name:	
Title/Position:	
Signature:	Date:

(NYS DEC Notice of Termination - January 2010)

APPENDIX I
GREEN INFRASTRUCTURE
& CPv CALCULATIONS

Channel Protection Requirements (CP_v)

For stream channel protection, provide 24 hours of extended detention (T) for the one-year event.

Areas tributary to pond:

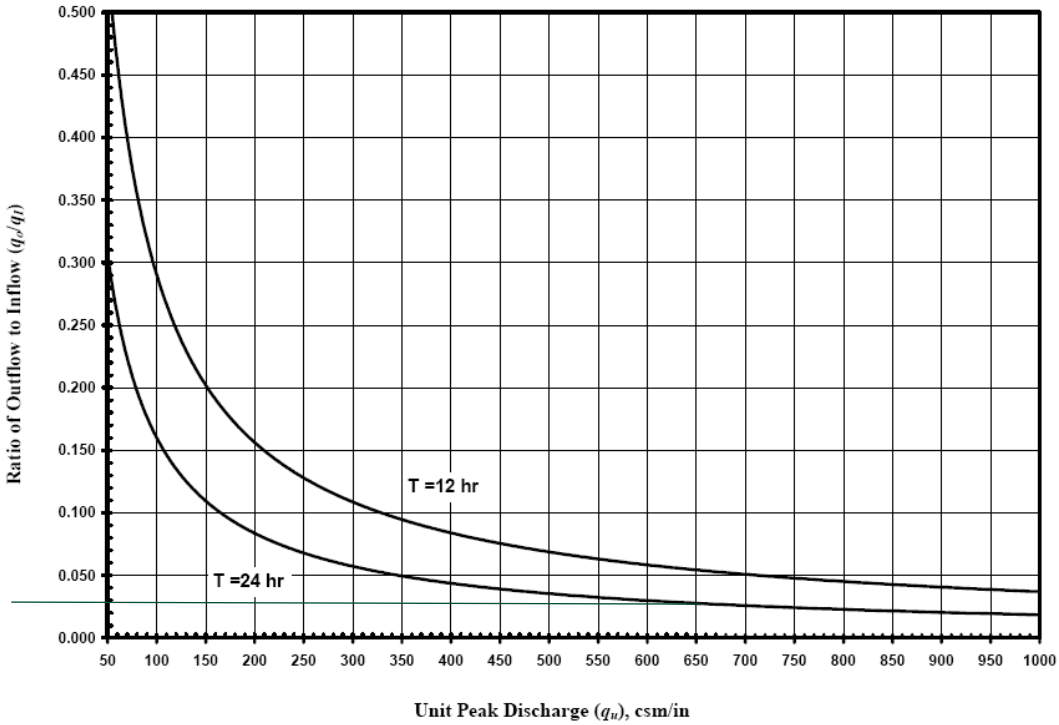
P- 1 (Area 5.23 acres, CN = 86, Tc = 0.35 hr.)

Determine the Unit Peak Discharge, q_u, in cubic feet per second per square mile per year (CSM/IN).

From TR-20 analysis of 1 – year storm

q_u= 631.47 csm/in

Knowing q_u & A required detention time of T = 24 hours, determine ratio of pond outflow to pond inflow q_o/q_I from Fig. 8.5 below:



Detention Time vs. Discharge Ratios

(Source: NYSDEC Stormwater Management Design Manual, MDE 2000 Figure 8.5)

q_o/q_I= 0.029

Runoff Q in inches

Q = 0.92 inch, From TR-20 analysis of 1 – year storm.

Determine the ratio of volume of storage to volume of runoff V_s/V_R

V_s/V_R = 0.683 - 1.43*(q_o/q_I) + 1.64*$(q_o/q_I)2 - 0.804 * (q_o/q_i)^3$ =0.642889

Determine Channel Protection Volume CP_v

$CP_v = V_s = (\frac{V_s}{V_R}) * Q_d * A/12 =$ 0.258 acre-ft

The above normal water storage of 0.258 acre-ft is to be released over 24 hours

(0.258 acre-ft * 43,560 ft²/acre) / (24 hours*3,600 second/hour) = 0.130 cfs.

Compile a stage-storage relationship for the pond.

Storage for Dry Detention Basin:

Active storage for Pond A					
ELEV. (ft.)	AREA (sq. ft.)	AVE. AREA (sq. ft.)	DEPTH INCREMENT	INCREMENTAL VOLUME	CUMULATIVE VOLUME
582.47	7,800				0.000
		9,025.0	1.53	0.31699	
584.00	10,250				0.317
		11,125.0	1.00	0.25539	
585.00	12,000				0.572

Set CP_V Elevation

From above CP_V = 0.258 acre-ft.

From stage-storage table, the interpolated CPv of 0.258 acre-ft of storage above the primary outlet (572.47) occurs at an elevation of 583.61 ft.

Provided CPv volume:

From stage-storage table, to interpolated CPv of 0.258 ac-ft of storage occurs below the secondary outlet located at 583.61.

Size CP_V Orifice

- Size to release an average of 0.130 cfs
- Set invert of orifice at outlet invert = 583.61 ft
- Head = (583.61 ft – 582.47ft)/ 2 = 0.213 ft
- Use orifice equation to compute cross sectional area & diameter
- Q = CA*(2GH)^0.5 =0.130 cfs
- A = (.130 cfs)/[0.6*(2*32.2 ft/sec²*0.570)^0.5] = 0.0357 ft²
- Diameter = 2.56 inch → size up to 5” due to freezing/clogging potential

Version 1.8
Last Updated: 11/09/2015

Total Water Quality Volume Calculation
WQv(acre-feet) = [(P)(Rv)(A)] /12

Is this project subject to Chapter 10 of the NYS Design Manual (i.e. WQv is equal to post-development 1 year runoff volume)?.....	

Design Point:		
P=	1.00	*inch*

Breakdown of Subcatchments

Catchment Number	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Rv	WQv *(ft^3)*	Description
1	2.16	1.26	58%	0.58	4,508	Bioretention
2	0.44	0.00	0%	0.05	80	Wet Pond
3	0.86		0%	0.05	156	
4	0.70	0.35	50%	0.50	1,271	Dry Swale
5	1.06		0%	0.05	192	
6						
7						
8						
9						
10						
Subtotal (1-30)	5.22	1.61	31%	0.33	**6,207**	**Subtotal 1**
Total	5.22	1.61	31%	0.33	**6,207**	**Initial WQv**	**0.14**	**af**

Identify Runoff Reduction Techniques By Area

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

Recalculate WQv after application of Area Reduction Techniques

	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Runoff Coefficient Rv	WQv *(ft^3)*		
"<<Initial WQv"	5.22	1.61	31%	0.33	6,207		
Subtract Area	0.00	0.00					
WQv adjusted after Area Reductions	**5.22**	**1.61**	31%	0.33	6,207		
Disconnection of Rooftops		0.00					
Adjusted WQv after Area Reduction and Rooftop Disconnect	5.22	1.61	31%	0.33	**6,207**	**0.14**	**af**
WQv reduced by Area Reduction techniques					0	**0.00**	**af**

Minimum RRv

Enter the Soils Data for the site		
Soil Group	Acres	S
A		55%
B		40%
C		30%
D	**13.72**	20%
Total Area	13.72	
Calculate the Minimum RRv		
S =	**0.20**	
Impervious =	1.71	*acre*
Precipitation	1	*in*
Rv	0.95	
Minimum RRv	**1,179**	***ft3***
	0.03	af

Bioretention Worksheet

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

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

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

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

Design Point:	

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
1	2.16	1.26	0.58	0.58	4508.46	1.00	Bioretention
Enter Impervious Area Reduced by Disconnection of Rooftops			58%	0.58	4,508	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.						*ft^3*	

Soil Information			
Soil Group	D		
Soil Infiltration Rate		*in/hour*	
Using Underdrains?	Yes	*Okay*	

Calculate the Minimum Filter Area				
		Value	Units	Notes
WQv		4,508	*ft^3*	
Enter Depth of Soil Media	*df*	2.5	*ft*	*2.5-4 ft*
Enter Hydraulic Conductivity	*k*	0.5	*ft/day*	
Enter Average Height of Ponding	*hf*	0.5	*ft*	*6 inches max.*
Enter Filter Time	*tf*	2	*days*	
Required Filter Area	***Af***	**3757**	***ft^2***	

Determine Actual Bio-Retention Area			
Filter Width	100	*ft*	
Filter Length	35	*ft*	
Filter Area	3500	*ft^2*	
Actual Volume Provided	4200	*ft^3*	

Determine Runoff Reduction				
Is the Bioretention contributing flow to another practice?		Yes	Select Practice	Other/Standard SMP
RRv	1,680			
RRv applied	**1,680**	***ft^3***	***This is 40% of the storage provided or WQv whichever is less.***	
Volume Treated	0	*ft^3*	*This is the portion of the WQv that is not reduced in the practice.*	
Volume Directed	2,828	*ft^3*	This volume is directed another practice	

Runoff Reduction Volume and Treated volumes						
	Runoff Reduction Techiques/Standard SMPs		**Total Contributing Area**	**Total Contributing Impervious Area**	**WQv Reduced (RRv)**	**WQv Treated**
			(acres)	**(acres)**	**cf**	**cf**
Area/Volume Reduction	Conservation of Natural Areas	RR-1	0.00	0.00		
	Sheetflow to Riparian Buffers/Filter Strips	RR-2	0.00	0.00		
	Tree Planting/Tree Pit	RR-3	0.00	0.00		
	Disconnection of Rooftop Runoff	RR-4		0.00		
	Vegetated Swale	RR-5	0.00	0.00	0	
	Rain Garden	RR-6	0.00	0.00	0	
	Stormwater Planter	RR-7	0.00	0.00	0	
	Rain Barrel/Cistern	RR-8	0.00	0.00	0	
	Porous Pavement	RR-9	0.00	0.00	0	
	Green Roof (Intensive & Extensive)	RR-10	0.00	0.00	0	
Standard SMPs w/RRv Capacity	Infiltration Trench	I-1	0.00	0.00	0	0
	Infiltration Basin	I-2	0.00	0.00	0	0
	Dry Well	I-3	0.00	0.00	0	0
	Underground Infiltration System	I-4				
	Bioretention & Infiltration Bioretention	F-5	2.16	1.26	1680	2828
	Dry swale	O-1	0.00	0.00	0	0
Standard SMPs	Micropool Extended Detention (P-1)	P-1				
	Wet Pond (P-2)	P-2				16750
	Wet Extended Detention (P-3)	P-3				
	Multiple Pond system (P-4)	P-4				
	Pocket Pond (p-5)	P-5				
	Surface Sand filter (F-1)	F-1				
	Underground Sand filter (F-2)	F-2				
	Perimeter Sand Filter (F-3)	F-3				
	Organic Filter (F-4	F-4				
	Shallow Wetland (W-1)	W-1				
	Extended Detention Wetland (W-2	W-2				
	Pond/Wetland System (W-3)	W-3				
	Pocket Wetland (W-4)	W-4				
	Wet Swale (O-2)	O-2				
Totals by Area Reduction →			0.00	0.00	0	
Totals by Volume Reduction →			0.00	0.00	0	
Totals by Standard SMP w/RRV →			2.16	1.26	1680	2828
Totals by Standard SMP →			0.00	0.00		16750
Totals (Area + Volume + all SMPs) →			2.16	1.26	1,680	19,578

NOI QUESTIONS

#	NOI Question	Reported Value	
		cf	af
28	Total Water Quality Volume (WQv) Required	6207	*0.143*
30	Total RRV Provided	1680	*0.039*
31	Is RRv Provided ≥WQv Required?	No	
32	Minimum RRv	1110	*0.025*
32a	Is RRv Provided ≥ Minimum RRv Required?	Yes	
33a	Total WQv Treated	16750	*0.385*
34	Sum of Volume Reduced & Treated	18430	*0.423*
34	Sum of Volume Reduced and Treated	18430	*0.423*
35	Is Sum RRv Provided and WQv Provided ≥WQv Required?	Yes	

Apply Peak Flow Attenuation			
36	Channel Protection	*Cpv*	
37	Overbank	*Qp*	
37	Extreme Flood Control	*Qf*	
	Are Quantity Control requirements met?		

APPENDIX J

BIORETENTION SPECS

H.2 Bioretention

Planting Soil Bed Characteristics

The characteristics of the soil for the bioretention facility are perhaps as important as the facility location, size, and treatment volume. The soil must be permeable enough to allow runoff to filter through the media, while having characteristics suitable to promote and sustain a robust vegetative cover crop. In addition, much of the nutrient pollutant uptake (nitrogen and phosphorus) is accomplished through adsorption and microbial activity within the soil profile. Therefore, the soils must balance soil chemistry and physical properties to support biotic communities above and below ground.

The planting soil should be a sandy loam, loamy sand, loam (USDA), or a loam/sand mix (should contain a minimum 35 to 60% sand, by volume). The clay content for these soils should by less than 25% by volume. Soils should fall within the SM, or ML classifications of the Unified Soil Classification System (USCS). A permeability of at least 1.0 feet per day (0.5"/hr) is required (a conservative value of 0.5 feet per day is used for design). The soil should be free of stones, stumps, roots, or other woody material over 1" in diameter. Brush or seeds from noxious weeds. Placement of the planting soil should be in lifts of 12 to 18", loosely compacted (tamped lightly with a dozer or backhoe bucket). The specific characteristics are presented in Table H.2.

Table H.2 Planting Soil Characteristics

Parameter	Value
PH range	5.2 to 7.00
Organic matter	1.5 to 4.0%
Magnesium	35 lbs. per acre, minimum
Phosphorus (P_2O_5)	75 lbs. per acre, minimum
Potassium (K_2O)	85 lbs. per acre, minimum
Soluble salts	≤ 500 ppm
Clay	10 to 25%
Silt	30 to 55%
Sand	35 to 60%

Table H.3 Planting Plan Design Considerations
Native plant species should be specified over exotic or foreign species.
Appropriate vegetation should be selected based on the zone of hydric tolerance (see Figure H.1).
Species layout should generally be random and natural.
A canopy should be established with an understory of shrubs and herbaceous materials.
Woody vegetation should not be specified in the vicinity of inflow locations.
Trees should be planted primarily along the perimeter of the bioretention area.
Urban stressors (e.g., wind, sun, exposure, insect and disease infestation, drought) should be considered when laying out the planting plan.
Noxious weeds should not be specified.
Aesthetics and visual characteristics should be a prime consideration.
Traffic and safety issues must be considered.
Existing and proposed utilities must be identified and considered.

Plant Material Guidance

Plant materials should conform to the American Standard Nursery Stock, published by the American Association of Nurserymen, and should be selected from certified, reputable nurseries. Planting specifications should be prepared by the designer and should include a sequence of construction, a description of the contractor's responsibilities, a planting schedule and installation specifications, initial maintenance, and a warranty period and expectations of plant survival. Table H.4 presents some typical issues for planting specifications.

Table H.4 Planting Specification Issues for Bioretention Areas	
Specification Element	**Elements**
Sequence of Construction	Describe site preparation activities, soil amendments, etc.; address erosion and sediment control procedures; specify step-by-step procedure for plant installation through site clean-up.
Contractor's Responsibilities	Specify the contractors responsibilities, such as watering, care of plant material during transport, timeliness of installation, repairs due to vandalism, etc.
Planting Schedule and Specifications	Specify the materials to be installed, the type of materials (e.g., B&B, bare root, containerized); time of year of installations, sequence of installation of types of plants; fertilization, stabilization seeding, if required; watering and general care.
Maintenance	Specify inspection periods; mulching frequency (annual mulching is most common); removal and replacement of dead and diseased vegetation; treatment of diseased trees; watering schedule after initial installation (once per day for 14 days is common); repair and replacement of staking and wires.
Warranty	Specify the warranty period, the required survival rate, and expected condition of plant species at the end of the warranty period.

Table H.5 Native Plant Guide for Stormwater Management Areas (NY)						
Plant Name	**Zone**	**Form**	**Available**	**Inundation Tolerance**	**Wildlife Value**	**Notes**
Trees and Shrubs						
American Elm *(Ulmus americana)*	4,5,6	Dec. Tree	yes	Irregular-seasonal saturation	High. Food (seeds,browsing), cover, nesting for birds & mammals	Susceptible to diesease (short-lived). Sun to full shade, tolerates drought and wind/ice damage.
Arrowwood Viburrium *(Viburrium dentatum)*	3,4	Dec. Shrub	yes	yes	High. Songbirds and mammals	Grows best in sun to partial shade
Bald Cypress *(Taxodium distichum)*	3,4	Dec. Tree	yes	yes	Little food value, but good perching site for waterfowl	Forested Coastal Plain. North of normal range. Tolerates drought.
Bayberry *(Myrica pensylvanica)*	4,5,6	Dec. Shrub	yes	yes	High. Nesting, food, cover. Berries last into winter	Coastal Plain only. Roots fix N_2 Tolerates slightly acidic soils.
Black Ash *(Fraxinus nigra)*	3,4,5	Dec. Tree	yes	Irregular-seasonal saturation	High. Food (seeds, sap), cover, nesting for birds & mammals. Fruit persists in winter	Rapid growth. Requires full sun. Susceptible to wind/ice damage & disease. Tolerates drought and infrequent flooding by salt water.
Black Cherry *(Prunus serotina)*	5,6	Dec. Tree	yes	no	High. Food	Moist soils or wet bottomland areas
Blackgum or Sourgum *(Nyssa sylvatica)*	4,5,6	Dec. Tree	yes	yes	High. Songbirds, egrets, herons, raccoons, owls	Can be difficult to transplant. Prefers sun to partial shade
Black Willow *(Salix nigra)*	3,4,5	Dec. Tree	yes	yes	High. Browsing and cavity nesters.	Rapid growth, stabilizes stream-banks. Full sun
Buttonbush *(Cepahlanthus occidentalis)*	2,3,4,5	Dec. Shrub	yes	yes	High. Ducks and shorebirds. Seeds, nectar and nesting.	Full sun to partial shade. Will grow in dry areas.
Common Spice Bush *(Lindera benzoin)*	3,4,5	Dec. Shrub	yes	yes	Very high. Songbirds	Shade and rich soils. Tolerates acidic soils. Good understory species

Table H.5 Native Plant Guide for Stormwater Management Areas (NY)

Plant Name	Zone	Form	Available	Inundation Tolerance	Wildlife Value	Notes
Eastern Cottonwood *(Populus deltoides)*	4,5	Dec. Tree	yes	yes	Moderate. Cover, food.	Shallow rooted, subject to windthrow. Invasive roots. Rapid growth.
Eastern Hemlock *(Tsuga canadensis)*	5,6	Conif. Tree	yes	yes	Moderate. Mostly cover and some food	Tolerates all sun/shade conditions. Tolerates acidic soil.
Eastern Red Cedar *(Juniperus virginiana)*	4,5,6	Conif. Tree	yes	no	High. Fruit for birds. Some cover.	Full sun to partial shade. Common in wetlands, shrub bogs and edge of stream
Elderberry *(Sambucus canadensis)*	3,4,5,6	Dec. Shrub	yes	yes	Extremely high. Food and cover, birds and mammals.	Full sun to partial shade.
Green Ash, Red Ash *(Fraxinus pennsylvania)*	4,5	Dec. Tree	yes	yes	Moderate. Songbirds.	Rapid growing streambank stabilizer. Full sun to partial shade.
Hackenberry *(Celtis occidentalis)*	5,6	Dec. Tree	yes	some	High. Food and cover	Full sun to partial shade.
Larch, Tamarack *(Larix latricina)*	3,4	Conif. Tree	no	yes	Low. Nest tree and seeds.	Rapid initial growth. Full sun, acidic boggy soil.
Pin Oak *(Quercus palustris)*	3,4,5,6	Dec. Tree	yes	yes	High. Tolerates acidic soil	Gypsy moth target. Prefers well drained, sandy soils.
Red Choke Berry *(Pyrus arbutifolia)*	3,4,5	Dec. Shrub	no	yes	Moderate. Songbirds.	Bank stabilizer. Partial sun.
Red Maple *(Acer rubrum)*	3,4,5,6	Dec. Tree	yes	yes	High seeds and browse. Tolerates acidic soil.	Rapid growth.
River Birch *(Betula nigra)*	3,4,5	Dec. Tree	yes	yes	Low. Good for cavity nesters.	Bank erosion control. Full sun.
Shadowbush, Serviceberry *(Amelanchier*	4,5,6	Dec. Shrub	yes	yes	High. Nesting, cover, food. Birds and	Prefers partial shade. Common in forested

Table H.5 Native Plant Guide for Stormwater Management Areas (NY)

Plant Name	Zone	Form	Available	Inundation Tolerance	Wildlife Value	Notes
canadensis)					mammals.	wetlands and upland woods.
Silky Dogwood *(Cornus amomium)*	3,4,5	Dec. Shrub	yes	yes	High. Songbirds, mammals.	Shade and drought tolerant. Good bank stabilizer.
Slippery Elm *(Ulnus rubra)*	3,4,5	Dec. Tree	rare	yes	High. Food (seeds, buds) for birds & mammals (browse). Nesting	Rapid growth, no salinity tolerance. Tolerant to shade and drought.
Smooth Alder *(Alnus serrulata)*	3,4,5	Dec. Tree	no	yes	High. Food, cover.	Rapid growth. Stabilizes streambanks.
Speckled Alder *(Alnus rugosa)*	3,4	Dec. Shrub	yes	yes	High. Cover, browse for deer, seeds for bird.	
Swamp White Oak *(Quercus bicolor)*	3,4,5	Dec. Tree	yes	yes	High. Mast	Full sun to partial shade. Good bottomland tree.
Swamp Rose *(Rosa Palustrus)*	3,4	Dec. Shrub		Irregular, seasonal, or regularly saturated	High. Food (hips) for birds including turkey, ruffed grouse and mammals. Fox cover.	Prefers full sun. Easy to establish. Low salt tolerance.
Sweetgum *(Liquidambar styraciflua)*	4,5,6	Dec. Tree	yes	yes	Moderate. Songbirds	Tolerates acid or clay soils. Sun to partial shade.
Sycamore *(Platanus occidentalis)*	4,5,6,	Dec. Tree	yes	yes	Low. Food, cavities for nesting.	Rapid growth. Common in floodplains and alluvial woodlands.
Tulip Tree *(Liriodendron tulipifera)*	5,6	Dec. Tree	yes	no	Moderate. Seeds and nest sites	Full sun to partial shade. Well drained soils. Rapid growth.
Tupelo *(Nyssa sylvatica vari biflora)*	3,4,5	Dec. Tree	yes	yes	High. Seeds and nest sites	Ornamental

Table H.5 Native Plant Guide for Stormwater Management Areas (NY)						
Plant Name	**Zone**	**Form**	**Available**	**Inundation Tolerance**	**Wildlife Value**	**Notes**
White Ash *(Fraxinus americana)*	5,6	Dec. Tree	yes	no	High. Food	All sunlight conditions. Well drained soils.
Winterberry *(Ilex verticillata)*	3,4,5	Dec. Shrub	yes	yes	High. Cover and fruit for birds. Holds berries into winter.	Full sun to partial shade. Seasonally flooded areas.
Witch Hazel *(Hamamelis virginiana)*	4,5	Dec. Shrub	yes	no	Low. Food for squirrels, deer, and ruffed grouse.	Prefers shade. Ornamental.
Herbaceous Plants						
Arrow arum *(Peltandra virginica)*	2,3	Emergent	yes	up to 1 ft.	High. Berries are eaten by wood ducks.	Full sun to partial shade.
Arrowhead, Duck Potato *(Saggitaria latifolia)*	2,3	Emergent	yes	up to 1 ft.	Moderate. Tubers and seeds eaten by ducks.	Aggressive colonizer.
Big Bluestem (*Andropogon gerardi*)	4,5	Perimeter	yes	Irregular or seasonal inundation.	High. Seeds for songbirds. Food for deer	Requires full sun.
Birdfoot deervetch (*Lotus Corniculatus*)	4,5,6	Perimeter	yes	Infrequent inundation	High. Food for birds.	Full sun. Nitrogen fixer.
Blue Flag Iris *(Iris versicolor)*	2,3	Emergent	yes	Regular or permanently, up to ½ ft or saturated	Moderate. Food muskrat and wildfowl. Cover, marshbirds	Slow growth. Full sun to partial shade. Tolerates clay. Fresh to moderately brackish water.
Blue Joint (*Calamagrotis canadensis*)	2,3,4	Emergent	yes	Regular or permanent inundation up to 0.5 ft.	Moderate. Food for game birds and moose.	Tolerates partial shade
Broomsedge *(Andropogon virginicus)*	2,3	Perimeter	yes	up to 3 in.	High. Songbirds and browsers. Winter food and cover.	Tolerant of fluctuation water levels & partial shade.
Bushy Beardgrass *(Andropogon glomeratus)*	2,3	Emergent	yes	up to 1 ft.		Requires full sun.
Cardinal flower (*Lobelia cardinalis*)	4,5,6	Perimeter	yes	Some. Tolerates saturation up to 100% of season.	High. Nectar for hummingbird, oriole, butterflies.	Tolerates partial shade

Table H.5 Native Plant Guide for Stormwater Management Areas (NY)						
Plant Name	**Zone**	**Form**	**Available**	**Inundation Tolerance**	**Wildlife Value**	**Notes**
Cattail *(Typha sp.)*	2,3	Emergent	yes	up to 1 ft.	Low. Except as cover	Aggressive. May eliminate other species. Volunteer. High pollutant treatment
Coontail *(Ceratophyllum demersum)*	1	Submergent	no	yes	Low food value. Good habitat and shelter for fish and invertebrates.	Free floating SAV. Shade tolerant. Rapid growth.
Common Three-Square *(Scirpus pungens)*	2	Emergent	yes	up to 6 in.	High. Seeds, cover. Waterfowl and fish.	High metal removal.
Duckweed *(Lemma sp.)*	1,2	Submergent/ Emergent	yes	yes	High. Food for waterfowl and fish.	High metal removal.
Fowl mannagrass (*Glyceria striata*)	4,5	Perimeter	yes	Irregular or seasonal inundation	High. Food for waterfowl, muskrat, and deer.	Partial to full shade.
Hardstem Bulrush *(Scirpus acutus)*	2	Emergent	yes	up to 3 ft.	High. Cover, food (achenes, rhizomes) ducks, geese, muskrat, fish. Nesting for bluegill and bass.	Quick to establish, fresh to brackish. Good for sediment stabilization and erosion control.
Giant Burreed *(Sparganium eurycarpum)*	2,3	Emergent	rare	Regular to permanently inundated. up to 1 ft.	High. Food (seeds, plant) waterfowl, beaver & other mammals. Cover for marshbirds, waterfowl.	Rapid spreading . Tolerates partial sun. Good for shoreline stabilization.. Salinity <0.5 ppt
Lizard's Tail *(Saururus cernuus)*	2	Emergent	yes	up to 1 ft.	Low, except wood ducks.	Rapid growth. Shade tolerant
Long-leaved Pond Weed *(Potamogeton nodosus)*	1,2	Rooted submerged aquatic	yes	up to 1-6 ft. depending on turbidity	High. Food (seeds, roots) waterfowl, aquatic fur-bearers, deer, moose. Habitat for fish	Rapid spread. Salinity <0.5 ppt. Flowers float on surface, Aug.-Sept.

Table H.5 Native Plant Guide for Stormwater Management Areas (NY)						
Plant Name	**Zone**	**Form**	**Available**	**Inundation Tolerance**	**Wildlife Value**	**Notes**
Marsh Hibiscus *(Hibiscus moscheutos)*	2,3	Emergent	yes	up to 3 in.	Low. Nectar.	Full sun. Can tolerate periodic dryness.
Pickerelweed *(Pontederia cordata)*	2,3	Emergent	yes	up to 1 ft.	Moderate. Ducks. Nectar for butterflies.	Full sun to partial shade.
Pond Weed, Sago *(Potamogeton pectinatus*	1	Submergent	yes	yes	Extremely high. Waterfowl, marsh and shorebirds.	Removes heavy metals.
Redtop (*Agrostis alba*)	3,4,5	Perimeter	yes	Up to 25% of season	Moderate. Rabbits and some birds.	Quickly established but not highly competitive.
Rice Cutgrass *(Leersia oryzoides)*	2,3	Emergent	yes	up to 3 in.	High. Food and cover.	Full sun although tolerant of shade. Shoreline stabilization.
Sedges *(Carex spp.)*	2,3	Emergent	yes	up to 3 in.	High waterfowl, songbirds.	Many wetland and upland species.
Tufted Hairgrass (*Deschampsia caespitosa*)	3,4,5	Perimeter	yes	Regular to irregular inundation.	High.	Full sun. May become invasive.
Soft-stem Bulrush *(Scirpus validus)*	2,3	Emergent	yes	up to 1 ft.	Moderate. Good cover and food.	Full sun. Aggressive colonizer. High pollutant removal.
Smartweed *(Polygonum spp.)*	2,3,4	Emergent	yes	up to 1 ft.	High. Waterfowl, songbirds. Seeds and cover.	Fast colonizer. Avoid weedy aliens such as *P. perfoliatum.*
Soft Rush *(Juncus effusus)*	2,3,4	Emergent	yes	up to 3 in.	Moderate.	Tolerates wet or dry conditions.
Spatterdock *(Nuphar luteum)*	2	Emergent	yes	up to 3 ft.	Moderate for food but high for cover.	Fast colonizer. Tolerant of fluctuating water levels.
Switchgrass *(Panicum virgatum)*	2,3,4,5,6	Perimeter	yes	up to 3 in.	High. Seeds, cover for waterfowl, songbirds.	Tolerates wet/dry conditions.

Table H.5 Native Plant Guide for Stormwater Management Areas (NY)						
Plant Name	**Zone**	**Form**	**Available**	**Inundation Tolerance**	**Wildlife Value**	**Notes**
Sweet Flag *(Acorus calamus)*	2,3	Herbaceous	yes	up to 3 in.	Low.	Tolerant of dry periods. Not a rapid colonizer. Tolerates acidic conditions.
Waterweed *(Elodea canadensis)*	1	Submergent	yes	yes	Low.	Good water oxygenator. High nutrient, copper, manganese and chromium removal.
Wild Celery *(Valisneria americana)*	1	Submergent	yes	yes	High. Food for waterfowl. Habitat for fish and invertebrates.	Tolerant of murkey water and high nutrient loads.
Wild Rice *(Zizania aquatica)*	2	Emergent	yes	up to 1 ft.	High. Food for birds.	Prefers full sun
Wool Grass *(Scirpus cyperinus)*	2,3	Emergent	yes	Irregularly to seasonally indundated	Moderate. Cover, Food.	Requires full sun. Can tolerate acidic soils, drought. Colonizes disturbed areas, moderate growth.

Appendix K

Wetland Delineation and Determination of No Jurisdiction Letter

Wetland and Waterbody Delineation Report

for

166 KLEIN ROAD

Town of Amherst

Erie County, New York

for

Elite Construction Development Corporation

EARTH DIMENSIONS, INC.
Soils Investigations • Wetland Delineations

November 3, 2015
EDI Project Code: **W1J15a**

REPORT SUMMARIZING
THE RESULTS OF
A WETLAND AND WATERBODY DELINEATION SURVEY OF

166 KLEIN ROAD

Prepared for Submission to:

U.S. ARMY CORPS OF ENGINEERS
1776 NIAGARA STREET
BUFFALO, NEW YORK 14207

AND

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
270 MICHIGAN AVENUE
BUFFALO, NEW YORK 14203

Prepared By:

EARTH DIMENSIONS, INC.
1091 JAMISON ROAD
ELMA, NEW YORK 14059

Prepared For:

JAY AYOUB
ELITE CONSTRUCTION DEVELOPMENT CORPORATION
230 PALMDALE DRIVE
WILLIAMSVILLE, NEW YORK 14221

REPORT DATE: November 3, 2015

EDI PROJECT CODE: W1J15a

PROJECT INFORMATION

Project Name	166 Klein Road
Street Address	166 Klein Road
SBL Number	56.10-13-1
Town	Amherst
County	Erie
State	New York
Latitude/Longitude (NAD83)	43.00292°N, 78.73273°W
Investigation Area	5.41± Acres
USGS 7.5 Minute Topographical Map	Clarence Center Quadrangle
Waterway	UNT to Ransom Creek
Hydrologic Unit Code	04120104
Date of Delineation	November 3, 2015
Consultant	Earth Dimensions, Inc. 1091 Jamison Road Elma, New York 14095
Point of Contact	Scott Livingstone (716)655-1717 slivingstone@earthdimensions.com
Engineer	N/A
Property Owner	John Rinaldo
Authority	Section 404
Permit/Letter Being Requested	Jurisdictional Determination

TABLE OF CONTENTS

ACKNOWLEDGEMENTS

Elite Construction Development Corporation has retained Earth Dimensions, Inc. (EDI) to complete a wetland delineation study for 166 Klein Road located in the Town of Amherst, County of Erie and State of New York. EDI would like to thank Copy Market, Inc. for providing the duplicating and binding services.

EXECUTIVE SUMMARY

Elite Construction Development Corporation has proposed the development of a 5.41± acre site located on the north side of Klein Road in the Town of Amherst, County of Erie, and State of New York. Elite Construction Development Corporation has retained Earth Dimensions, Inc. (EDI) to complete a wetland delineation report that would allow the U.S. Army Corps of Engineers (USACE) and New York State Department of Environmental Conservation (NYSDEC) to determine their jurisdictional authority over the investigation area, pursuant to Section 404 of the Clean Water Act and Articles 15 (Protection of Waters) and 24 (Freshwater Wetlands) of the New York State Environmental Conservation Law.

A preliminary review of available information pertaining to vegetation, soils, and hydrology in the project area was implemented prior to conducting a field investigation at the site. Sources of information included the United States Geological Survey (USGS), Natural Resources Conservation Service (NRCS), National Wetland Inventory (NWI), and NYSDEC Freshwater Wetland maps. The NRCS map indicates the presence of hydric soils and therefore the potential wetlands under federal jurisdiction. The NYSDEC map indicates the potential for wetland under state jurisdiction.

EDI applied methodology specified by the Corps of Engineers Wetlands Delineation Manual (January 1987) and Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region Version 2.0 (January 2012) to perform a delineation of Federal jurisdictional wetlands within the site. EDI identified two (2) wetland areas totaling 0.48± acre within the investigation area. One (1) linear drainage feature was identified along the eastern limits of the property during the investigation. The identification number of the wetlands, their acreage and boundary flags are as follows:

TABLE 1: WETLAND SUMMARY

Wetland Identification #	Geographic Center (NAD83)		Boundary Flag #	Total Acreage On-site	Wetland Type (Cowardin)	Wetland Type (Reschke)	Jurisdictional Determination
	Latitude	Longitude					
Wetland 1	43.00263	78.73274	W1-1 through W1-14	0.33±	PFO1E	Hardwood Swamp	Non-jurisdictional
Wetland 2	43.00355	78.73276	W2-1 through W2-12	0.15±	PFO1B	Hardwood Swamp	Non-jurisdictional
Total Wetland Acreage:				0.48±			

TABLE 2: STREAM & DRAINAGE SUMMARY

Stream Identification #	Waterway	DEC Class	Linear Feet On-site	Highwater Width (Ft)	Flow Regime	Substrate	Classification (Cowardin)	Jurisdictional Determination
Stream 1	UNT to Ransom Creek	N/A	587.3 feet	3 feet	Perennial	silt, detritus	R2UB4	Jurisdictional

SECTION I: INTRODUCTION

Elite Construction Development Corporation has proposed the development of a 5.41± acre site on the north side of Klein Road in the Town of Amherst, County of Erie, and State of New York. The project has been given the name 166 Klein Road and is located on USGS 7.5 minute quadrangle map indexed as Clarence Center/2002 DeLorme (Figure 1). The field work was completed on November 3, 2015 using a hand held Garmin GPSmap 62s to locate wetland and drainage boundaries.

Elite Construction Development Corporation has retained Earth Dimensions, Inc. (EDI) to complete a wetland delineation study at this site. The investigation was designed to facilitate a determination of the extent of USACE and NYSDEC jurisdiction over the project area pursuant to Section 404 of the Clean Water Act and Articles 15 (Protection of Waters) and 24 (Freshwater Wetlands) of the New York State Environmental Conservation Law.

EDI has performed a wetland delineation study at the site under guidelines specified by the *Corps of Engineers Wetlands Delineation Manual*, dated January 1987 (referred to hereafter as the Corps Manual) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region version 2.0* (January 2012) (referred to hereafter as the Northcentral and Northeast Regional Supplement). The purpose of this report is to present EDI's methods, results, conclusions and recommendations with respect to the 166 Klein Road project site.

SECTION II: SITE DESCRIPTION

The 166 Klein Road project area is comprised of a 5.41± acre rectangular shaped investigation area on the north side of Klein Road, east of Hopkins Road and west of Youngs Road, and is outlined on Figure 1 and depicted on the Wetland Delineation Map included in Appendix A (Figure 8).

The natural topography of the 166 Klein Road site is flat to gently sloping. The upland within the investigation area consisted of mown lawn and successional northern hardwood communities. The wetland areas were found to consist of hardwood swamp communities. The vegetative communities of the investigation area are described according to *Ecological Communities of New York State* (Edinger et al. 2014).

SECTION III: PRELIMINARY DATA REVIEW

A. SUMMARY OF FINDINGS

Several sources of information may be reviewed to facilitate the completion of a wetland delineation study. In some cases it is even possible to make a preliminary office wetland determination based upon available vegetation, soils, and hydrologic information for a project area. EDI completed a preliminary review of several data sources at the onset of this study. The results of the review are summarized as follows:

1. USGS 7.5 MINUTE TOPOGRAPHICAL MAP

Figure 1 depicts the 166 Klein Road project site on the Clarence Center/2002 DeLorme quadrangle map. The figure depicts the flat to gently sloping topography of the site. No linear drainage features are shown within the investigation area.

2. USFWS NATIONAL WETLANDS INVENTORY MAP

Figure 2 depicts the National Wetlands Inventory (NWI) map obtained from the USFWS Wetland Mapper http://www.fws.gov/wetlands/Data/Mapper.html which shows no wetlands mapped within the investigation area.

3. NATURAL RESOURCES CONSERVATION SERVICE SOILS MAP

Figure 3 presents the project area outlined on a copy of the Erie County Soil Survey map from the National Cooperative Soil Survey. As shown on that figure, the site has the following soil types:

Soil Conservation Service Legend

Map Unit Symbol	Map Unit Name	Hydric Soil/Inclusions?
La	Lakemont silt loam, 0 to 3% slopes	Hydric Soil
Ut	Urban land-Odessa complex	Inclusions Possible

Lakemont silt loam: The Lakemont series consists of deep, poorly drained and very poorly drained soils of lake plains. They are nearly level soils formed in very slowly permeable reddish colored clayey lacustrine sediments. Slope ranges from 0 to 3 percent. Permeability is moderately slow in the surface

and very slow in the subsoil sand substratum. Mean annual temperature is about 48°F and mean annual precipitation is about 34 inches.

Urban land-Odessa complex: This complex consists of nearly level areas of Urban land and somewhat poorly drained Odessa soils. The Odessa soils formed in clayey lake-laid sediments. The typical area of this complex is 60% Urban land that is mostly covered by concrete, asphalt, buildings or other impervious surfaces, about 25% Odessa soils, and 15% other soils.

The U.S. Department of Agriculture's National Technical Committee for Hydric Soils Criteria has developed a list of soils that often display hydric soil characteristics. Hydric soil typically forms in places of the landscape where surface water periodically collects for some time and/or where groundwater discharges are sufficient to create waterlogged or anaerobic soils. Such anaerobic soils can support the growth and survival of hydrophytic vegetation that is tolerant of such conditions. Lakemont is a hydric soil and therefore may support wetland vegetation. Wetland hydrologic conditions, hydric soils, and hydrophytic vegetation are the three criteria of a wetland.

4. NYSDEC Freshwater Wetlands Map

The NYSDEC Freshwater Wetlands map obtained from the online NYSDEC Environmental Resource Mapper displays state jurisdictional Freshwater Wetland CC-10 within and adjacent to the investigation area.

B. RESULTS OF AGENCY INFORMATION REVIEW

The preliminary data review revealed that USACE may have jurisdiction over wetlands at the project location. The evidence consisted of hydric soils and soils with possible hydric inclusions depicted within the project area as shown on the NRCS map (Figure 3). NYSDEC may also have jurisdiction over wetlands at the project location as shown on the NYSDEC Resource Mapper (Figure 4). Therefore, it was considered necessary to perform a field investigation at the site in order to determine the presence of federal and/or state protected wetlands. The methods specified in the Corps of Engineers Wetlands Delineation Manual (January 1987) and Northcentral and Northeast Regional Supplement Version 2.0 (January 2012) were employed during the field investigation. Procedures, results, and conclusions of the wetland delineation study are presented in the remainder of this report.

SECTION IV: FIELD INVESTIGATION PROCEDURES

WETLANDS

Step 1

EDI applied methodology specified by the 1987 Corps of Engineers Wetlands Delineation Manual and Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0, January 2012) to perform a delineation of Federal jurisdictional wetlands within the site. EDI used the Level 2 Routine Determination method (on-site inspection necessary) since insufficient information was available for making a determination for the entire project area. This methodology is consistent with Part IV, Section D of the Corps Manual.

Step 2

EDI's initial evaluation of the project area revealed that no atypical situations existed. If an atypical situation had existed, EDI would have used methodology outlined in Part IV, Section F of the Corps manual and/or Section 5 of the Northcentral and Northeast Supplement.

Step 3

EDI made the determination that normal environmental conditions were present, as the area was not lacking hydrophytic vegetation or hydrologic indicators due to annual, seasonal or long-term fluctuations in precipitation, surface water, or groundwater levels. The Northcentral and Northeast Supplement defines the growing season as beginning when one of the following indicators of biological activity are evident in a given year: (1) above-ground growth and development of vascular plants and/or (2) soil temperature measured at 12" below ground surface reaches 41°F. The end of the growing season is defined as the point at which deciduous species lose their leaves or the last herbaceous plants cease flowering and their leaves become dry or brown, whichever comes latest.

Step 4

In order to accurately identify the limits of various vegetative communities and extent of wetlands on-site, a routine determination method was used. As depicted in Appendix A and included in Appendix B, four (4) data points were used to characterize the site.

Step 5

The plant community inhabiting each observation point was characterized in accordance with methods specified in the Northcentral and Northeast Regional Supplement. Dominant plant species were identified within four vegetative strata (i.e. herb, sapling/shrub, tree and liana (woody vines) at each sampling point. The Northcentral and Northeast Regional Supplement defines the vegetative strata in the following manner:

Herb – A non-woody individual of a macrophytic species. Seedlings of woody plants (including vines) that are less than 3.28 feet in height are considered to be herbs.

Sapling/Shrub – A layer of vegetation composed of woody plants < 3.0 inches in diameter at breast height but greater than 3.28 feet in height, exclusive of woody vines.

Tree – A woody plant > 3.0 inches in diameter at breast height, regardless of height (exclusive of woody vines)

Liana – A layer of vegetation in forested plant communities that consist of woody vines greater than 3.28 feet in height.

As outlined in the manual, the quadrant sizes used for the vegetative strata were (i) a 3.28-foot radius for herbs; (ii) a ten-foot radius for saplings/shrubs and woody vines; and (iii) a 30-foot radius for trees. Dominant plant species were estimated using aerial coverage methods. Dominant species are defined in the Corps Manual as the most abundant plant species that when ranked in descending order of abundance and cumulatively totaled immediately exceed 50 percent of the total dominance measure for the stratum, plus any additional species comprising 20 percent or more of the total dominance measure.

The wetland indicator status (OBL, FACW, FAC, FACU, or UPL) listed for each identified species by the U.S. Fish and Wildlife Service in the National List of Plant Species that Occur in Wetlands: Northeast (Region 1) was recorded. The U.S. Fish and Wildlife wetland indicator status listings are defined as follows:

OBL – Plants that occur almost always (estimated probability >99 percent) in wetlands under natural conditions, but which may also occur rarely (estimated probability < 1 percent) in nonwetlands.

FACW – Plants that occur usually (estimated probability >67 percent to 99 percent) in wetlands, but also occur (estimated probability 1 percent to 33 percent) in nonwetlands.

FAC – Plants with a similar likelihood (estimated probability 33 percent to 67 percent) of occurring in both wetlands and nonwetlands.

FACU – Plants that occur sometimes (estimated probability 1 percent to <33 percent) in wetlands, but occur more often (estimated probability >67 percent to 99 percent) in nonwetlands.

UPL – Plants that occur rarely (estimated probability < 1 percent) in wetlands, but occur almost always (estimated probability >99 percent) in nonwetlands under natural conditions.

The plant community data was summarized on the data forms provided in the Northcentral and Northeast Regional Supplement included in this report as Appendix B.

Step 6

Plant data from each observation point were tested against the hydrophytic vegetation criterion specified in the Corps Manual and Northcentral and Northeast Regional Supplement. The Northcentral and Northeast Regional Supplement identifies a four-tiered approach for making a determination of whether or not the hydrophytic vegetation criteria is met for a sample plot. Indicator 1 (Rapid Test for Hydrophytic Vegetation) was first applied to determine if all dominant species across all strata are rated OBL and/or FACW. If Indicator 1 did not meet the hydrophytic vegetation criteria, Indicator 2 was then applied (dominance test); if greater than 50% of all plant species across all strata were rated OBL, FACW, or FAC, the hydrophytic vegetation criteria was considered met. In rare cases, when Indicators 1 and 2 did not meet the hydrophytic vegetation criteria but soils and hydrology criteria were met, Indicators 3 (Prevalence Index) and 4 (Morphological Adaptations) were used to make a final determination. All observation points that met the hydrophytic vegetation criterion were considered potential wetlands. Soils were then characterized.

Step 7

The Corps Manual specifies that soils need not be characterized (and are assumed hydric soils) at sampling points meeting the hydrophytic vegetation criterion if: (i) all dominant plant species have an indicator status of OBL, or (ii) all dominant species have an indicator status of OBL and/or FACW, and the wetland boundary is abrupt (at least one dominant OBL species must be present). All observation points sampled during this field investigation were examined directly for soil and hydrologic characteristics.

Step 8

At observation points requiring a soil evaluation, soil borings were performed by an EDI Soil Scientist using methods specified in the Northcentral and Northeast Regional Supplement. Soil pits were dug using a tile spade. Testpits were generally dug to a depth of 20 inches below ground surface. Soils were examined for any of the hydric soil indicators, as outlined in the Field Indicators of Hydric Soils in the United States. A determination was made as to whether or not the hydric soil criterion was met. Soils data was recorded on the data forms included in Appendix B of this report.

Step 9

EDI's Soil Scientist examined hydrologic indicators using methods specified by the Northcentral and Northeast Regional Supplement at each observation point. The wetland hydrology criterion was met if: (i) one or more primary field indicators was materially present, (ii) available hydrologic records provided necessary evidence, or (iii) two or more secondary indicators were present. Results were recorded on data forms taken from the Corps Manual and are included in this report as Appendix B.

Step 10

A wetland determination was made for every observation point. If a sample plot met the hydrophytic vegetation, hydric soil, and wetland hydrology criteria, the area was considered to be wetland.

Step 11

Based on the results of the transected data, wetland boundaries were established for each identified wetland using survey ribbon labeled "wetland delineation" and numbered consecutively along each wetland boundary. As outlined in the Corps Manual, the placement of flags was based on the limits of areas where all three parameters were met. Wetland flags were labeled W1-1 through W1-14 and W2-1 through W2-12.

STREAMS & DRAINAGES

The federally regulated Ordinary High Water (OHW) mark of streams within the Project area were delineated utilizing the definitional criteria as presented in Title 33, Code of Federal Regulations, Part 328, and the USACE Regulatory Guidance Letter 05-05 – Guidance on Ordinary

High Water Mark Identification. Each stream is categorized in regard to its flow regime as perennial, intermittent, or ephemeral, as defined by the USACE. The Ordinary High Water (OHW) mark for each stream is surveyed using the handheld Garmin GPSmap 62s. Each stream is assigned a letter designation, and survey points are numbered consecutively. Substrate characteristics and water depth are noted. Streams classified as AA, A, B, C, C(t) and C(ts) in the State of New York are regulated by NYSDEC under Article 15 Use and Protection of Waters. Streams are given classifications which designate the level of protection afforded to each waterbody. Class AA and A are assigned to sources of drinking water. Class B streams are best suited for swimming and other contact recreation, but not drinking water. Class C streams identify waters that support fishing and non-contact activities. A classification with (t) designates a stream with the potential to support trout populations. A classification of (ts) identifies waters that may support trout spawning. Class D waters are the lowest classification, and are often highly imperiled.

SECTION V: RESULTS AND CONCLUSIONS

Earth Dimensions, Inc. (EDI) has completed a wetland delineation study at 166 Klein Road located in the Town of Amherst, County of Erie, and State of New York. A field investigation was conducted by a Soil Scientist and a Wetland Ecologist from EDI. The wetland delineation study identified two (2) wetlands totaling 0.48 ± acre present within the site. In addition, a 587.3 foot linear ditch was identified along the eastern property limits. No open waterbodies were identified within the investigation area.

Figure 7 depicts the vegetative communities as they existed at the time of the investigation. The uplands within the investigation area were comprised of mown lawn and successional northern hardwood communities. The wetland areas were found to consist of hardwood swamp communities. The vegetative communities of the investigation area are described according to Ecological Communities of New York State (Edinger et al. 2014). No data was taken in the mown lawn community, however, species present were consistent with descriptions provided by Reschke.

The successional northern hardwood community was dominated by the following species: green ash (*Fraxinus pennsylvanica*), eastern cottonwood (*Populus deltoides*), black cherry (*Prunus serotina*), common buckthorn (*Rhamnus cathartica*), Tatarian honeysuckle (*Lonicera tatarica*) and common red raspberry (*Rubus ideaus*).

Wetland W1 is a 0.33± acre hardwood swamp dominated by green ash (*Fraxinus pennsylvanica*), common buckthorn (*Rhamnus cathartica*), calico aster (*Symphyotrichum lateriflorum*) and poison ivy (*Toxicodendron radicans*). Soils within wetland W1 are mapped as Lakemont Silt Loam and had a soil color of 10YR3/1 with 5% 10YR5/8 mottles. The texture is silt loam. This soil fits the NRCS F6 indicator (Redox Dark Surface). Wetland W1 has no apparent connection to drainages on-site and is therefore considered isolated and non-jurisdictional.

Wetland W2 is a 0.15± acre hardwood swamp dominated by silver maple (*Acer saccharinum*), red maple (*Acer rubrum*), green ash (*Fraxinus pennsylvanica*) and fowl mannagrass (*Glyceria striata*). Soils within wetland W1 are mapped as Lakemont Silt Loam and had a topsoil color of 10YR2/1 and a subsoil color of 10YR6/1 with 5% 10YR5/6 mottles. The texture is silt loam and very fine sandy loam.

This soil fits the NRCS S4 indicator (Sandy Gleyed Matrix). Wetland W1 has no apparent connection to drainages on-site and is therefore considered isolated and non-jurisdictional.

Drainage 1 is identified as an unnamed tributary to Ransom Creek and flows northerly along the eastern limits of the investigation area, before turning westerly off-site to the northeast. This perennial channel is not identified by NYSDEC standards. The substrate consists of silt and detritus, with sparse vegetation along the banks. Within the project area, drainage S1 is approximately 3 feet wide (8 feet at top of bank) with an average water depth of 6 inches.

A map which depicts the site boundaries and the location of all observation points established during the field survey is included as Figure 8 in Appendix A of this report. Data forms are included as Appendix B. Appendix C includes representative photographs of the project area. Appendix D notes the references used during the preparation of this report and during the field investigation. Appendix E provides the names, addresses and phone numbers of the survey personnel involved in the wetland delineation study.

SECTION VI: RECOMMENDATIONS

Two (2) wetland areas and one (1) linear drainage were identified during the course of a field investigation based upon the three parameter technique (vegetation, soils, and hydrology) outlined in the Corps Manual and Northcentral and Northeast Regional Supplement. It is EDI's professional opinion that the two wetland areas identified do not have a connection to Waters of the U.S. and are therefore non-jurisdictional. The unnamed tributary to Ransom Creek is assumed to be regulated by the USACE under Section 404 of the Clean Water Act. In a letter dated October 19, 2015, NYSDEC determined that wetland W2 is not connected to NYSDEC Freshwater Wetland CC-10. The letter stated that NYSDEC has no jurisdiction over any portion of the property under Article 24 of New York Conservation Law. USACE and NYSDEC approach their regulatory analyses by first considering avoidance of wetlands and minimization of wetland losses. EDI recommends the following:

(1) Submit this report to USACE with a request for a wetland boundary confirmation and jurisdictional determination.

(2) If no impacts are proposed to federal wetlands or drainages based on the outcome of the jurisdictional determination, it is the professional opinion of EDI that the project may proceed without the need for Section 404 Permit.

(3) If any federally jurisdictional wetland impacts are proposed, it is EDI's recommendation that a Joint Application for Permit and supporting documentation be submitted to the USACE and NYSDEC with a request for a Section 404 Permit and Section 401 Water Quality Certification.

166 KLEIN ROAD

APPENDIX A - FIGURES

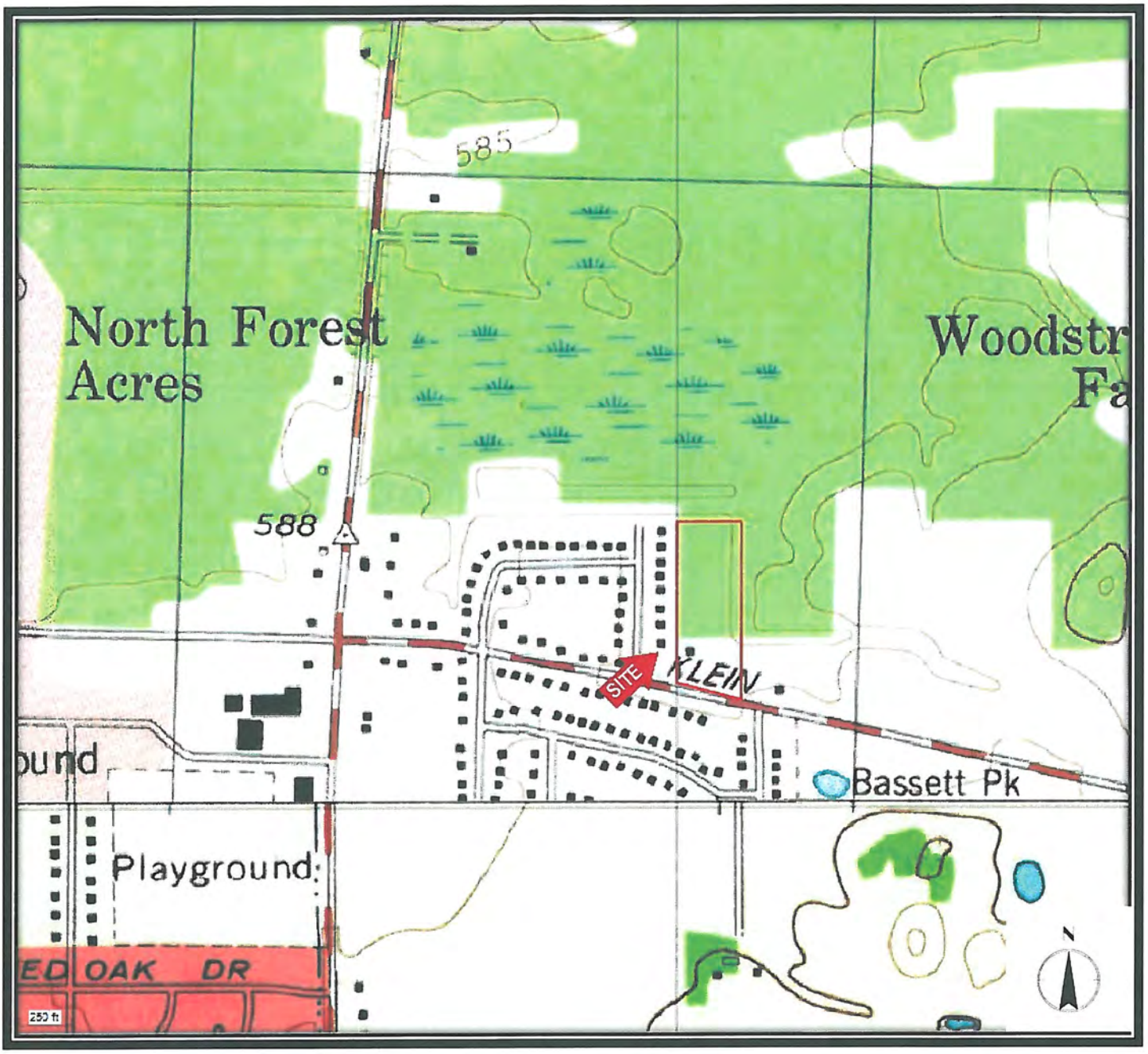


FIGURE 1: USGS 7.5 MINUTE TOPOGRAPHICAL MAP

Clarence Center Quadrangle / 2002 DeLorme

166 Klein Road

Town of Amherst, Erie County, New York

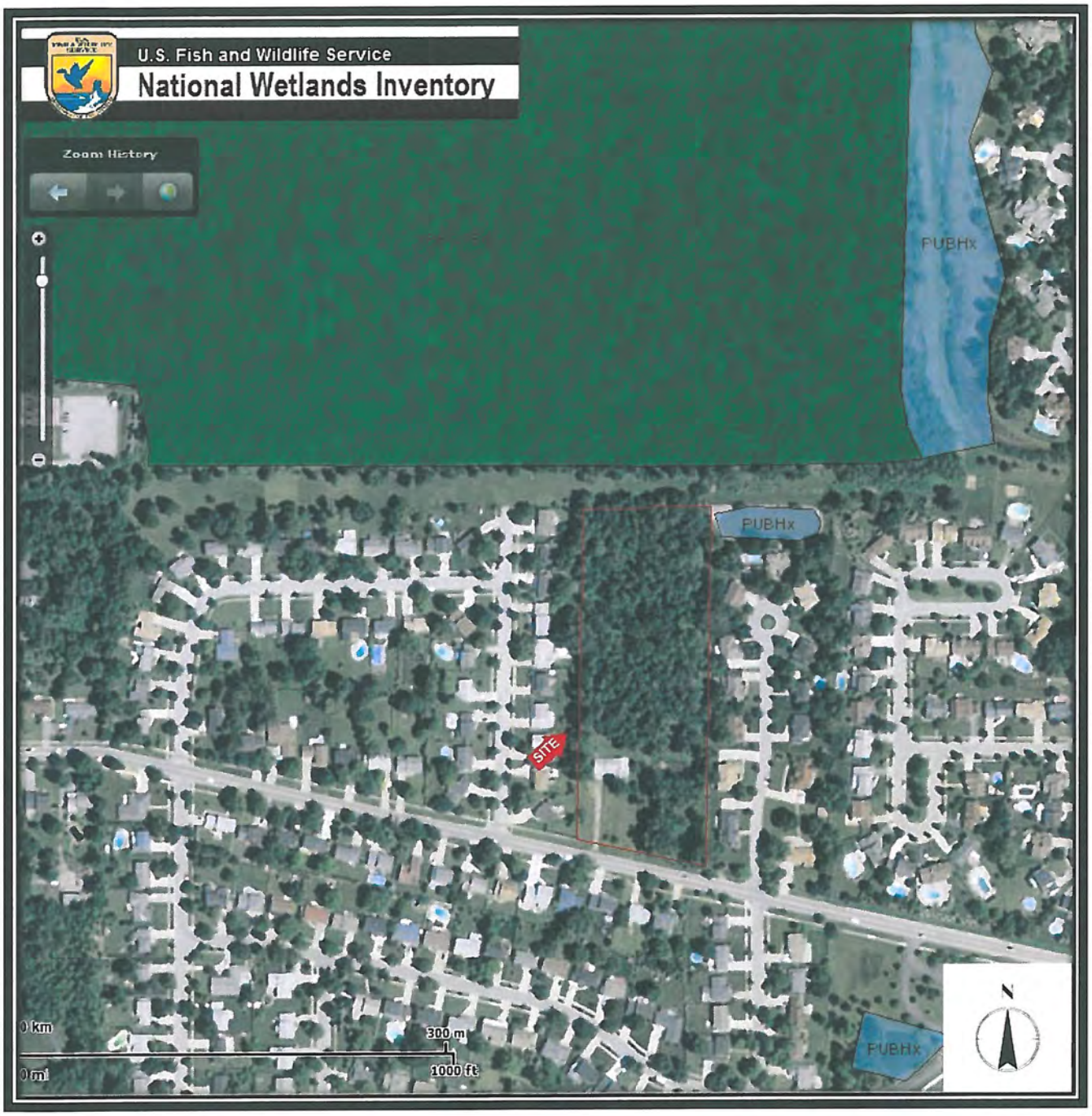


FIGURE 2: NATIONAL WETLANDS INVENTORY MAP

http://www.fws.gov/wetlands/data/mapper.HTML (Visited 10/21/15)

166 Klein Road

Town of Amherst, Erie County, New York

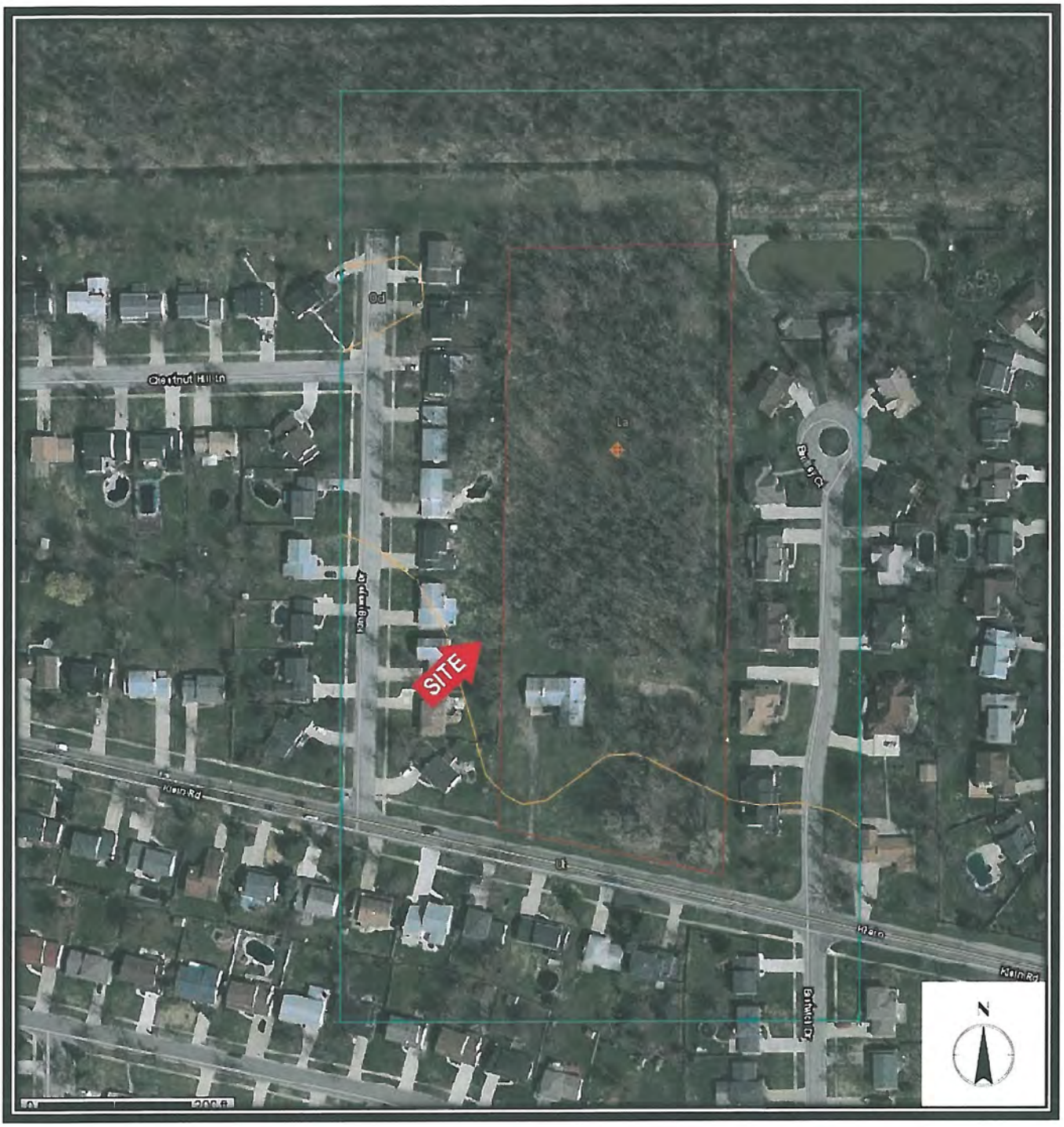


FIGURE 3: NRCS ERIE COUNTY SOIL SURVEY MAP

http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx (Visited 10/21/15)

166 Klein Road

Town of Amherst, Erie County, New York

FIGURE 4: NYSDEC ENVIRONMENTAL RESOURCE MAPPER

http://www.dec.ny.gov/imsmaps/ERM/viewer.htm (Visited 10/21/15)

166 Klein Road

Town of Amherst, Erie County, New York

FIGURE 5: AERIAL PHOTOGRAPH

http://gis2.erie.gov/HTML5/ErieCountyNY/PublicLaunchPage.aspx (Visited 10/21/15)

166 Klein Road

Town of Amherst, Erie County, New York

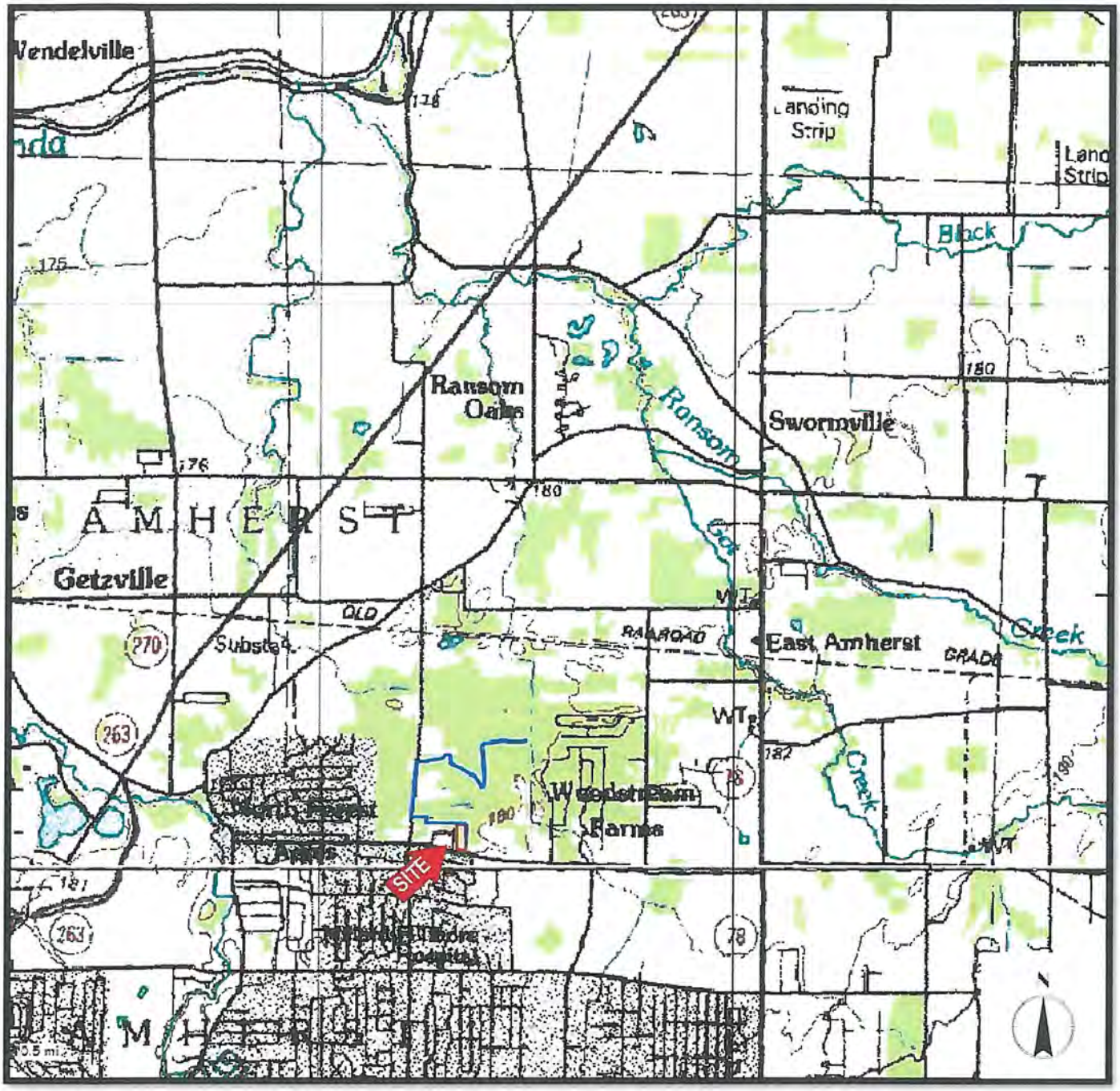


FIGURE 6: DRAINAGE MAP

Clarence Center Quadrangle / 2002 DeLorme

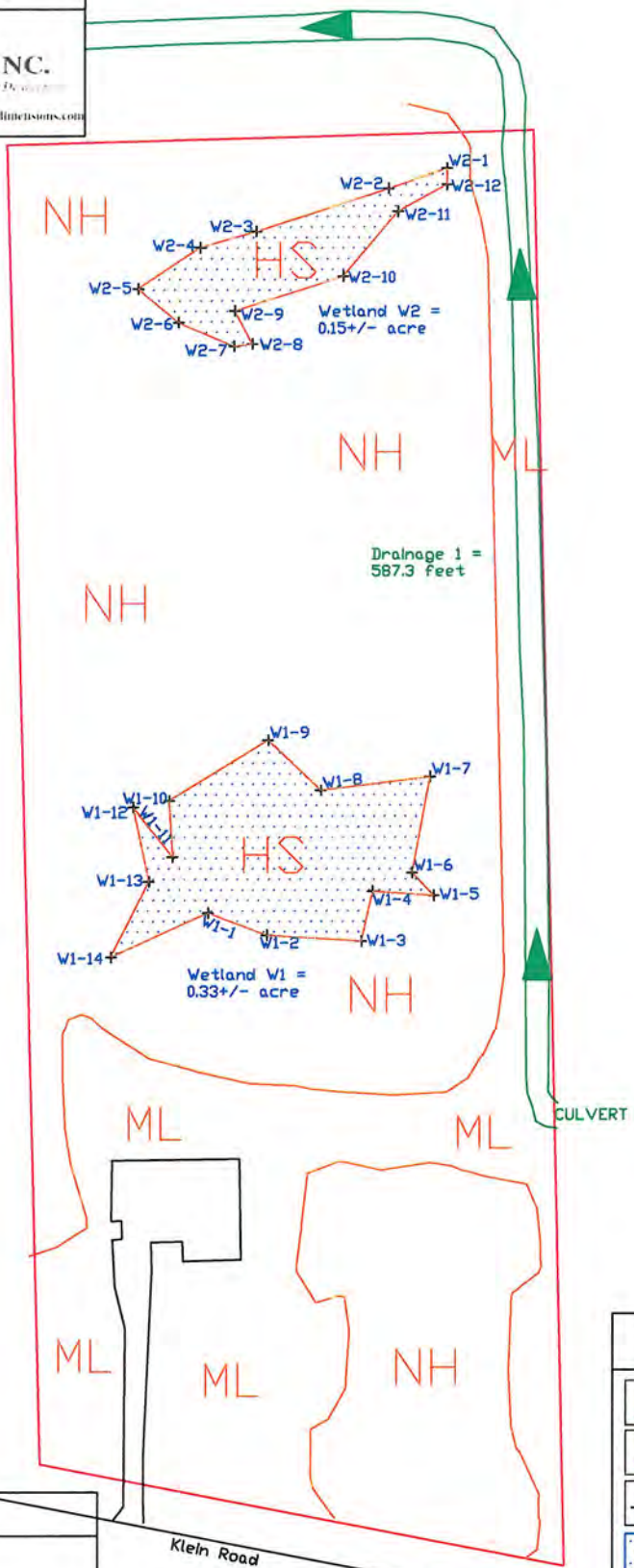
166 Klein Road

Town of Amherst, Erie County, New York

Figure 8 - Wetland Delineation Map

Town of Amherst Erie County, New York

EARTH DIMENSIONS, INC.
1091 Jamison Road • Elma New York 14059
(716) 655-1717 • Fax (716) 655-2915 • www.earthdimensions.com



LEGEND

- Limits of Investigation
- Community Boundary
- W1-1 Wetland Boundary Flag
- Wetland Area
- ML Mown Lawn
- NH Northern Hardwood
- HS Hardwood Swamp

Scale: 0 50' 100'

Map Date: November 3, 2015/ TJS for EDI
Revised:

Base Map Provided By: GPSMap 62s

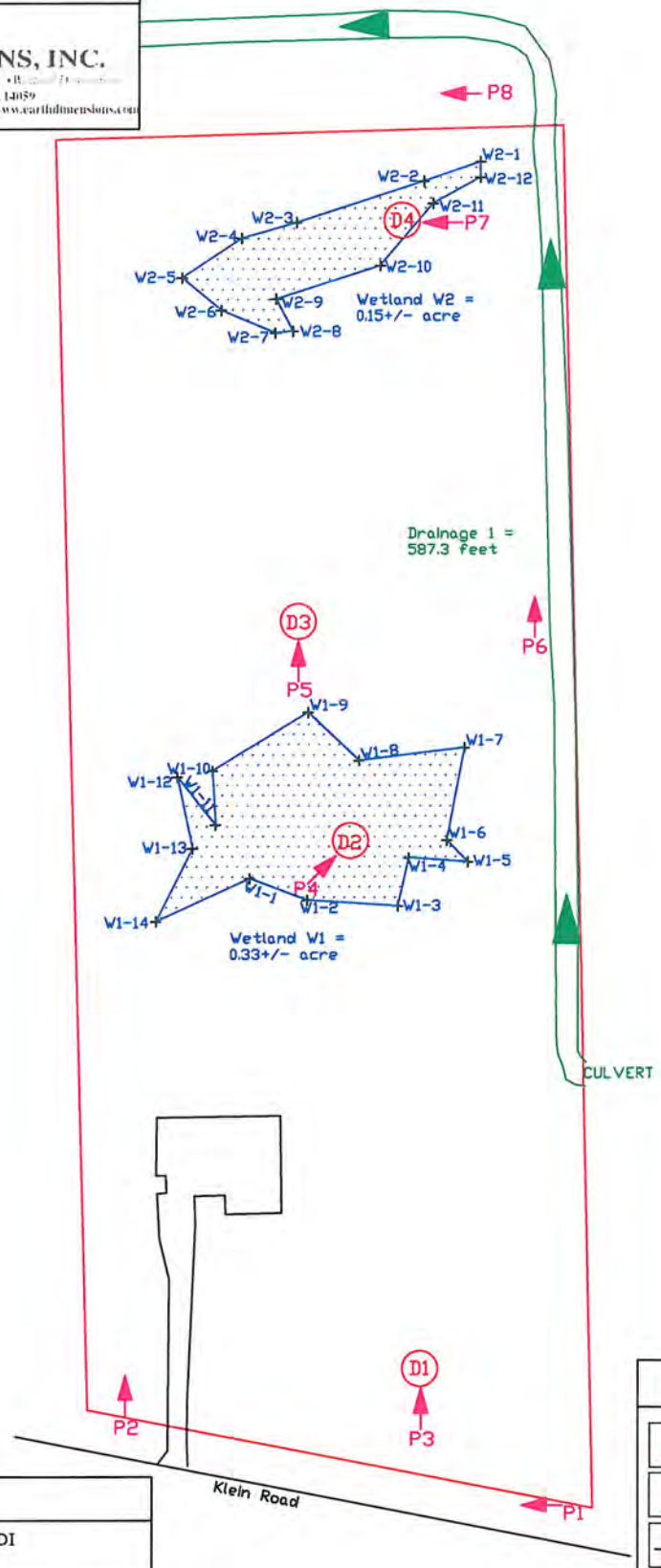
File Name: Delineation map.dwg

EDI Project Code: W1J15a

Figure 8 - Wetland Delineation Map

Town of Amherst Erie County, New York

EARTH DIMENSIONS, INC.
1091 Jamison Road • Elma New York 14059
(716) 655-1717 • Fax (716) 655-2915 • www.earthdimensions.com



166 Klein Road
LEGEND

- Limits of Investigation
- Drainages
- W1-1 Wetland Boundary Flag
- Wetland Area
- P1 Photo Location
- D1 Data Point Location

Scale: 0 50' 100'

Map Date: November 3, 2015/ TJS for EDI
Revised:

Base Map Provided By: GPSMap 62s

File Name: Delineation map.dwg

EDI Project Code: W1J15a

N
W E
S

166 KLEIN ROAD

APPENDIX B - DATA FORMS

Project Code: W1J15A

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: 166 Klein Road Town/County: Amherst/Erie County Sampling Date: 11/03/2015

Applicant/Owner: Elite Construction Development Corp. State: New York Sampling Point: D1

Investigator(s): Scott Livingstone & Tom Somerville Section, Township, Range: 56.10-13-1

Landform (hillslope, terrace, etc.): Flat plain Local relief (concave, convex, none): CONVEX Slope (%): 3

Subregion (LRR or MLRA) LRRL Lat: Long: Datum: NAD83

Soil Map Unit Name: ~~Lakemont silt loam, 0-3 percent slopes~~ URBAN LAND-ORPARK COMPLEX NW I classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS : Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?** Yes	No X
Hydric Soil Present?	Yes X	No	
Wetland Hydrology Present?	Yes	No X	If yes, optional Wetland Site ID:

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season W ater Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	No X	Depth (inches): N/A
Water Table Present?	Yes	No X	Depth (inches): N/A
Saturation Present? (includes capillary fringe)	Yes	No X	Depth (inches): N/A

Wetland Hydrology Present? Yes No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Project Code: W1J15a

VEGETATION : Use scientific names of plants. Sampling Point: D1

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus pennsylvanica	30	Y	FACW
2. Populus deltoides	20	Y	FAC
3. Ulmus americana	12	N	FACW
4.			
5.			
6.			
7.			
	62	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')			
1. Rhamnus Cathartica	30	Y	FAC
2. Fraxinus pennsylvanica	8	N	FACW
3. Acer Saccharinum	3	N	FACW
4.			
5.			
6.			
7.			
	41	= Total Cover	

Herb Stratum (Plot size: 5')			
1. Rhamnus Cathartica	3	N	FAC
2. Symphyotrichum cricides	3	N	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	6	= Total Cover	

Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW , or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW , or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- __ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- __ 3 - Prevalence Index is < 3.0[1]
- __ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- __ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Community Type: Successional N. Hardwood

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

Photo # P3 **Direction of Photo** North

No hydrology present

Project Code: W1J15A

SOIL Sampling Point: D1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 3/1	100					L	
7-12	10YR 6/1	100					LFS	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- X Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L, M)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: NONE

Depth (inches): N/A

Hydric Soil Present? Yes X No ___

Remarks:

* NOTE - CONDITION IS APPARENTLY RELICT AS AREA IS CONVEX & CLEARLY DOES NOT HAVE WETLAND HYDROLOGY

Project Code: W1J15A

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: 166 Klein Road Town/County: Amherst/Erie County Sampling Date: 11/03/2015

Applicant/Owner: Elite Construction Development Corp. State: New York Sampling Point: DZ

Investigator(s): Scott Livingstone & Tom Somerville Section, Township, Range: 56.10-13-1

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): CONCAVE Slope (%): 2-1

Subregion (LRR or MLRA) LRRL Lat: _____ Long: _____ Datum: NAD83

Soil Map Unit Name: Lakemont silt loam, 0-3 percent slopes NW I classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS : Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	If yes, optional Wetland Site ID: W1

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season W ater Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): N/A

Water Table Present? Yes _____ No X Depth (inches): N/A

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): N/A

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Project Code: W1J15a

VEGETATION : Use scientific names of plants. Sampling Point: D2

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus pennsylvanica	60	Y	FACW
2. Ulmus americana	10	N	FACW
3.			
4.			
5.			
6.			
7.			
	70	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')			
1. Rhamnus cathartica	15	Y	FAC
2. Quercus bicolor	5	N	FACW
3. Fraxinus pennsylvanica	3	N	FACW
4.			
5.			
6.			
7.			
	23	= Total Cover	

Herb Stratum (Plot size: 5')			
1. Symphyotrichum lutiflorum	20	Y	FAC
2. Polygonum virginianum	11	N	FAC
3. Poa palustris	7	N	FACW
4. Glyceria striata	4	N	OBL
5. Geum aleppicum	3	N	FAC
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	45	= Total Cover	

Woody Vine Stratum (Plot size: 30')			
1. Toxicodendron radicans	10	Y	FAC
2.			
3.			
4.			
	10	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW , or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW , or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

__ 3 - Prevalence Index is < 3.0[1]

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Community Type: Hardwood Swamp

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

Photo # P4 **Direction of Photo** Northeast

Project Code: W1J15A

SOIL

Sampling Point: D2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18"	10YR3/1	95	10YR5/8	5	C	M	SiL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L, M)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: NONE

Depth (inches): N/A

Hydric Soil Present? Yes X No ___

Remarks:

Project Code: W1J15A

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: 166 Klein Road Town/County: Amherst/Erie County Sampling Date: 11/03/2015

Applicant/Owner: Elite Construction Development Corp. State: New York Sampling Point: D3

Investigator(s): Scott Livingstone & Tom Somerville Section, Township, Range: 56.10-13-1

Landform (hillslope, terrace, etc.): U.T. SLOPE Local relief (concave, convex, none): CONVEX Slope (%): 3.5

Subregion (LRR or MLRA) LRRL Lat: _____ Long: _____ Datum: NAD83

Soil Map Unit Name: Lakemont silt loam, 0-3 percent slopes NW I classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS : Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

* MISMAP - AREA IS A WELL DRAINED SOIL INCLUSION APPARENTLY PART OF A DISSECTED BEACH RIDGE

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- __ Surface Water (A1)
- __ High Water Table (A2)
- __ Saturation (A3)
- __ Water Marks (B1)
- __ Sediment Deposits (B2)
- __ Drift Deposits (B3)
- __ Algal Mat or Crust (B4)
- __ Iron Deposits (B5)
- __ Inundation Visible on Aerial Imagery (B7)
- __ Sparsely Vegetated Concave Surface (B8)
- __ Water-Stained Leaves (B9)
- __ Aquatic Fauna (B13)
- __ Marl Deposits (B15)
- __ Hydrogen Sulfide Odor (C1)
- __ Oxidized Rhizospheres on Living Roots (C3)
- __ Presence of Reduced Iron (C4)
- __ Recent Iron Reduction in Tilled Soils (C6)
- __ Thin Muck Surface (C7)
- __ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- __ Surface Soil Cracks (B6)
- __ Drainage Patterns (B10)
- __ Moss Trim Lines (B16)
- __ Dry-Season W ater Table (C2)
- __ Crayfish Burrows (C8)
- __ Saturation Visible on Aerial Imagery (C9)
- __ Stunted or Stressed Plants (D1)
- __ Geomorphic Position (D2)
- __ Shallow Aquitard (D3)
- __ Microtopographic Relief (D4)
- __ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches): N/A
Water Table Present?	Yes _____	No X	Depth (inches): N/A
Saturation Present? (includes capillary fringe)	Yes _____	No X	Depth (inches): N/A

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Project Code: W1J15a

VEGETATION : Use scientific names of plants. Sampling Point: D3

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Prunus serotina	35	Y	FACU
2. Fraxinus pennsylvanica	27	Y	FACW
3. Acer rubrum	8	N	FAC
4.			
5.			
6.			
7.			
	71	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')			
1. Lonicera tatarica	18	Y	FACU
2. Rhamnus cathartica	10	N	FAC
3. Cornus amomum	2	N	FACW
4.			
5.			
6.			
7.			
	40	= Total Cover	

Herb Stratum (Plot size: 5')			
1. Rubus idaeus	40	Y	FACW
2. Rubus allegheniensis	10	N	FACU
3. Potentilla simplex	8	N	FACU
4. Carex blanda	7	N	FAC
5. Geum aleppicum	5	N	FAC
6. Geum canadense	4	N	FAC
7. Solidago juncea	2	N	FACU
8.			
9.			
10.			
11.			
12.			
	76	= Total Cover	

Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW , or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW , or FAC: 25% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is < 3.0[1]

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Community Type: Successional N. Hardwood

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

Photo # P5 **Direction of Photo** North

Project Code: W1J15A

SOIL

Sampling Point: D3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 4/3	100					SiL	
8-12	10YR 5/4	100					LvFS	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L, M)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: NONE

Depth (inches): N/A

Hydric Soil Present? Yes _____ No X

Remarks:

REMNANT BEACH RIDGE

Project Code: W1J15A

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: 166 Klein Road Town/County: Amherst/Erie County Sampling Date: 11/03/2015

Applicant/Owner: Elite Construction Development Corp. State: New York Sampling Point: DP4

Investigator(s): Scott Livingstone & Tom Somerville Section, Township, Range: 56.10-13-1

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR or MLRA) LRRL Lat: _____ Long: _____ Datum: NAD83

Soil Map Unit Name: Lakemont silt loam, 0-3 percent slopes NW I classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS : Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes Y No _____
Hydric Soil Present?	Yes Y	No _____	
Wetland Hydrology Present?	Yes Y	No _____	If yes, optional Wetland Site ID: WZ

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season W ater Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches): N/A
Water Table Present?	Yes _____	No X	Depth (inches): N/A
Saturation Present? (includes capillary fringe)	Yes _____	No X	Depth (inches): N/A

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Project Code: W1J15a

VEGETATION : Use scientific names of plants. Sampling Point: D4

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer Saccharinum	40	Y	FACW
2. Acer rubrum	28	Y	FAC
3. Fraxinus pennsylvanica	5	N	FACW
4. Populus deltoides	5	N	FAC
5.			
6.			
7.			
	78	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')			
1. Fraxinus pennsylvanica	10	Y	FACW
2. Ulmus americana	8	N	FACW
3. Lindera benzoin	7	N	FACW
4. Rhamnus cathartica	1	N	FAC
5.			
6.			
7.			
	26	= Total Cover	

Herb Stratum (Plot size: 5')			
1. Glyceria striata	8	Y	OBL
2. Symphyotrichum lateriflorum	5	N	FAC
3. Carex pensylvanica	3	N	NI
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	16	= Total Cover	

Woody Vine Stratum (Plot size: 30')			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals:	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

__ 3 - Prevalence Index is < 3.0[1]

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Community Type: Hardwood Swamp

Hydrophytic Vegetation Present? Yes X No __

Remarks: (Include photo numbers here or on a separate sheet.)

Photo # P7 **Direction of Photo** West

Project Code: W1J15A

SOIL Sampling Point: D4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-9	10YR 3/1	100					S,L	
10-18	10YR 6/1	95	10YR 5/6	5	C	M	vfSL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- X Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L, M)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: rock

Depth (inches): N/A

Hydric Soil Present? Yes X No ___

Remarks:

166 KLEIN ROAD

APPENDIX C - SITE PHOTOGRAPHS

Photo 1: Facing west. Depicts the southern limits of the investigation area along Klein Road.

Photo 2: Facing north. Depicts the western limits of the investigation area from Klein Road.

Photo 3: Facing north. Depicts the successional northern hardwood community at data point D1.

Photo 4: Facing northeast. Depicts the hardwood swamp community of wetland W1 at data point D2.

Photo 5: Facing north. Depicts the successional northern hardwood community at data point D3.

Photo 6: Facing north. Depicts the unnamed tributary to Ransom Creek along the eastern property limits.

Photo 7: Facing west. Depicts the hardwood swamp community of wetland W2 at data point D4.

Photo 8: Facing west. Depicts the northern limits of the investigation area.

166 KLEIN ROAD

APPENDIX D - REFERENCES

INFORMATIONAL REFERENCES USED BY EARTH DIMENSIONS INC.

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166 Klein Road

Appendix E - Wetland Investigation Personnel

Soils and Hydrology Sampling
Scott Livingstone, Senior Soil Scientist
Earth Dimensions, Inc.
1091 Jamison Road
Elma, New York 14059
(716) 655-1717

Vegetation Sampling
Tom Somerville, Ecologist
Earth Dimensions, Inc.
1091 Jamison Road
Elma, New York 14059
(716) 655-1717

Report Preparation
Tom Somerville, Ecologist
Earth Dimensions, Inc.
1091 Jamison Road
Elma, New York 14059
(716) 655-1717

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, BUFFALO DISTRICT
1776 NIAGARA STREET
BUFFALO, NEW YORK 14207-3199

December 15, 2020

Regulatory Branch

SUBJECT: Determination of No Jurisdiction, Department of Army Application No. LRB-2015-01255

Mohammad Qasaymeh
33 Sanctuary Court
Buffalo, New York 14221

Dear Mr. Qasaymeh:

This pertains to the wetland delineation and walkover submitted on your behalf by Earth Dimensions, Inc for a recent request for a jurisdictional determination for the parcel of land located 166 Klein Road, Town of Amherst, Erie County, New York.

Section 404 of the Clean Water Act (CWA) establishes Corps of Engineers jurisdiction over the discharge of dredged or fill material into waters of the United States, including wetlands, as defined in 33 CFR Part 328.3.

I am hereby verifying the Federal wetland/waters boundary as shown on the attached wetland delineation map dated October 29, 2019. This verification will remain valid for a period of five (5) years from the date of this correspondence unless new information warrants revision of the delineation before the expiration. At the end of this period, a new wetland delineation will be required if a project has not been completed on this property or additional impacts are proposed for WOUS. Further this delineation/determination has been conducted to identify the limits of the Corps CWA jurisdiction for the particular site identified in this request. This delineation/determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985, as amended. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resource Conservation Service prior to starting work.

Based upon my review of the submitted delineation and on-site observations, I have determined that aquatic resources Wetland 1, 2, 3 and Ditch 1 on the parcel are excluded waters as defined in the Navigable Waters Protection Rule. Therefore, these are not regulated under Section 404 of the CWA. Accordingly, you do not need Department of the Army authorization to commence work in these areas.

I encourage you to contact the appropriate state and local governmental officials to ensure that the proposed work complies with their requirements.

Regulatory Branch
SUBJECT: Determination of No Jurisdiction, Department of Army Application No. LRB-2015-01255

Finally, this letter contains an approved JD for the subject parcel. If you object to this JD, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and Request for Appeal (RFA) form. If you request to appeal the above JD, you must submit a completed RFA form within 60 days of the date on this letter to the Great Lakes/Ohio River Division Office at the following address:

Suzanne Chubb
Regulatory Appeals Review Officer
US Army Corps of Engineers
Great Lakes and Ohio River Division
550 Main Street, Room 10-714
Cincinnati, Ohio 45202-3222
Phone: 513-684-7261 Fax: 513-684-2460

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 C.F.R. part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by February 13, 2021.

It is not necessary to submit an RFA to the Division office if you do not object to the determination in this letter.

Questions pertaining to this matter should be directed to me at (716) 879-4279 by writing to the following address: U.S. Army Corps of Engineers Regulatory Branch 1776 Niagara Street, Buffalo, New York 14207 or by e-mail at: Joseph.M.Rowley@usace.army.mil.

Sincerely,

Joseph Rowley
Physical Scientist

Enclosures
cc:

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Mohammad Qasaymeh	File Number: LRB-2015-01255	Date: December 15, 2020
Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/CECW/Pages/reg_materials.aspx or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- **OBJECT:** If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- **APPEAL:** If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- **ACCEPT:** You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.

- **APPEAL:** If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:	If you only have questions regarding the appeal process you may also contact:
Joseph Rowley U.S. Army Corps of Engineers 1776 Niagara Street Buffalo, New York 14207 Joseph.M.Rowley@usace.army.mil 716-879-4279	Suzanne Chubb Regulatory Appeals Review Officer US Army Corps of Engineers Great Lakes and Ohio River Division 550 Main Street, Room 10-714 Cincinnati, Ohio 45202-3222 Phone: 513-684-7261 Fax: 513-684-2460

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

	Date:	Telephone number:
_____ Signature of appellant or agent.		

U.S. ARMY CORPS OF ENGINEERS
REGULATORY PROGRAM
APPROVED JURISDICTIONAL DETERMINATION FORM (INTERIM)
NAVIGABLE WATERS PROTECTION RULE

I. ADMINISTRATIVE INFORMATION

Completion Date of Approved Jurisdictional Determination (AJD): 15-DEC-2020
ORM Number: LRB-2015-01255 (Qasaymeh, Mohammad)
Associated JDs: N/A or ORM numbers and identifiers (e.g. HQS-2020-00001-MSW-MITSITE)
Review Area Location[1]:
State/Territory: NY City: Amherst County: Erie County
Center Coordinates of Review Area: Latitude 43.002604 Longitude -78.732741

II. FINDINGS

A. Summary: Check all that apply. At least one box from the following list MUST be selected. Complete the corresponding sections/tables and summarize data sources.

- ☐ The review area is comprised entirely of dry land (i.e., there are no waters or water features, including wetlands, of any kind in the entire review area). Rationale: N/A or describe rationale.
- ☐ There are "navigable waters of the United States" within Rivers and Harbors Act jurisdiction within the review area (complete table in section II.B).
- ☐ There are "waters of the United States" within Clean Water Act jurisdiction within the review area (complete appropriate tables in section II.C).
- ☒ There are waters or water features excluded from Clean Water Act jurisdiction within the review area (complete table in section II.D).

B. Rivers and Harbors Act of 1899 Section 10 (§ 10)[2]

§ 10 Name	§ 10 Size	§ 10 Criteria	Rationale for § 10 Determination
N/A	N/A	N/A	N/A

C. Clean Water Act Section 404

Territorial Seas and Traditional Navigable Waters ((a)(1) waters)[3]

(a)(1) Name	(a)(1) Size	(a)(1) Criteria	Rationale for (a)(1) Determination
N/A	N/A	N/A	N/A

Tributaries ((a)(2) waters):

(a)(2) Name	(a)(2) Size	(a)(2) Criteria	Rationale for (a)(2) Determination
N/A	N/A	N/A	N/A

Lakes and ponds, and impoundments of jurisdictional waters ((a)(3) waters):

(a)(3) Name	(a)(3) Size	(a)(3) Criteria	Rationale for (a)(3) Determination
N/A	N/A	N/A	N/A

Adjacent wetlands ((a)(4) waters):

(a)(4) Name	(a)(4) Size	(a)(4) Criteria	Rationale for (a)(4) Determination
N/A	N/A	N/A	N/A

[1] Map(s)/Figure(s) are attached to the AJD provided to the requestor.
[2] If the navigable water is not subject to the ebb and flow of the tide or included on the District's list of Rivers and Harbors Act Section 10 navigable waters list, do NOT use this document to make the determination. The District must continue to follow the procedure outlined in 33 CFR part 329.14 to make a Rivers and Harbors Act Section 10 navigability determination.
[3] A stand-alone TNW determination is completed independently of a request for an AJD. A stand-alone TNW determination is conducted for a specific segment of river or stream or other type of waterbody, such as a lake, where independent upstream or downstream limits or lake borders are established. A stand-alone TNW determination should be completed following applicable guidance and should NOT be documented on the AJD form.
[4] Some excluded waters, such as (b)(2) and (b)(4), may not be specifically identified on the AJD form unless a requestor specifically asks a Corps district to do so. Corps Districts may, in case-by-case instances, choose to identify some or all of these waters within the review area.
[5] Because of the broad nature of the (b)(1) exclusion and in an effort to collect data on specific types of waters that would be covered by the (b)(1) exclusion, four sub-categories of (b)(1) exclusions were administratively created for the purposes of the AJD Form. These four sub-categories are not new exclusions, but are simply administrative distinctions and remain (b)(1) exclusions as defined by the NWPR.

D. Excluded Waters or Features

Excluded waters ((b)(1) – (b)(12))[4]:

Exclusion Name	Exclusion Size	Exclusion[5]	Rationale for Exclusion Determination
Ditch 1	700 feet	(b)(5) Ditch that is not an (a)(1) or (a)(2) water, and those portions of a ditch constructed in an (a)(4) water that do not satisfy the conditions of (c)(1)	Ditch 1 was a drainage feature observed during the April 2016 site visit. It appeared the ditch was excavated to alleviate rear yard drainage. However, during the site visit no bed or banks were observed within the ditch. In addition, no water or flow was observed in the ditch even though water was observed in the surrounding area and delineated wetlands. The ditch is not found on the USGS Clarence Center Quad. The ditch was vegetated and significantly covered in leaf litter with old fill piles and woody debris (cut logs) found throughout. The ditch is perched significantly higher in elevation then the maintained Town of Amherst ditch to the North. The ditch doesn't contribute direct flow to an A(1) water or is an A(1) water, the ditch was not constructed in a tributary, doesn't relocate a tributary nor or was the ditch constructed in an adjacent wetland. Finally, the ditch doesn't contribute perennial or intermittent flow during a particular year.
Wetland 1	0.417 acres	(b)(1) Non-adjacent wetland	In the delineation report, it states Wetland 2 is a hard wood swamp pocket located in the North portion of the delineated parcel. The soils are mapped potentially hydric. Vegetation found within this wetland is a mix of non-hydric and hydrophtic vegetation. A review of aerial imagery and other in-house resources show no drainage patterns coming or going from wetland 1. This was confirmed during the site visit. Wetland 1 is more than 41 linear feet from Ditch 1 and 100 linear feet from an excavated, maintained Town of Amherst ditch to the West. No A(1)-A(3) waters were identified directly abutting Wetland 1 during the site visit or an in-house review of aerial imagery, topo maps, the NYSDEC environmental resource or USFWS Wetland mapper. The wetland is a shallow surface concave depression that collects water and holds it long enough to provide wetland characteristics but does not drain to A (1) – A(3) waters. No natural or artificial barriers between Wetland 1 and A(1) – A(3) waters were found during the site visit. The wetland is not inundated by an A(1) – A(3) waters. Also, the NRCS/USDA Web Soil Survey "Flood Frequency Class" rating is "none" which means, "….flooding is not probable. The chance of flooding is nearly 0 percent in any year". All resources reviewed support the determination that Wetland 1 doesn't directly abut an A(1)-A(3) waters, is not separated from an A(1)-A(3) waters by a natural or man-made feature and is not adjacent to an A(1)-A(3) waters.
Wetland 2	0.398 acres	(b)(1) Non-adjacent wetland	In the delineation report, it states Wetland 2 is a hard wood/scrub-shrub swamp pocket located in the Center

[1] Map(s)/Figure(s) are attached to the AJD provided to the requestor.
[2] If the navigable water is not subject to the ebb and flow of the tide or included on the District's list of Rivers and Harbors Act Section 10 navigable waters list, do NOT use this document to make the determination. The District must continue to follow the procedure outlined in 33 CFR part 329.14 to make a Rivers and Harbors Act Section 10 navigability determination.
[3] A stand-alone TNW determination is completed independently of a request for an AJD. A stand-alone TNW determination is conducted for a specific segment of river or stream or other type of waterbody, such as a lake, where independent upstream or downstream limits or lake borders are established. A stand-alone TNW determination should be completed following applicable guidance and should NOT be documented on the AJD form.
[4] Some excluded waters, such as (b)(2) and (b)(4), may not be specifically identified on the AJD form unless a requestor specifically asks a Corps district to do so. Corps Districts may, in case-by-case instances, choose to identify some or all of these waters within the review area.
[5] Because of the broad nature of the (b)(1) exclusion and in an effort to collect data on specific types of waters that would be covered by the (b)(1) exclusion, four sub-categories of (b)(1) exclusions were administratively created for the purposes of the AJD Form. These four sub-categories are not new exclusions, but are simply administrative distinctions and remain (b)(1) exclusions as defined by the NWPR.

			portion of the delineated parcel. The soils are mapped potentially hydric. Vegetation found within this wetland is a mix of non-hydric and hydrophtic vegetation. A review of aerial imagery and other in-house resources show no drainage patterns coming or going from wetland 2. This was confirmed during the site visit. Wetland 2 is more than 60 linear feet from Ditch 1 and 350 linear feet from an excavated, maintained Town of Amherst ditch to the West. No A(1)-A(3) waters were identified directly abutting Wetland 1 during the site visit or an in-house review of aerial imagery, topo maps, the NYSDEC environmental resource or USFWS Wetland mapper. The wetland is a shallow surface concave depression that collects water and holds it long enough to provide wetland characteristics but does not drain to A (1) – A(3) waters. No natural or artificial barriers between Wetland 2 and A(1) – A(3) waters were found during the site visit. The wetland is not inundated by an A(1) – A(3) waters. Also, the NRCS/USDA Web Soil Survey "Flood Frequency Class" rating is "none" which means, "….flooding is not probable. The chance of flooding is nearly 0 percent in any year". All resources reviewed support the determination that Wetland 1 doesn't directly abut an A(1)-A(3) waters, is not separated from an A(1)-A(3) waters by a natural or man-made feature and is not adjacent to an A(1)-A(3) waters.
Wetland 3	0.11 acres	(b)(1) Non-adjacent wetland	In the delineation report, it states Wetland 3 is a hard wood/scrub-shrub swamp pocket located in the Eastern portion of the delineated parcel. The soils are mapped potentially hydric. Vegetation found within this wetland is a mix of non-hydric and hydrophtic vegetation. A review of aerial imagery and other in-house resources show no drainage patterns coming or going from wetland 3. This was confirmed during the site visit. Wetland 3 is more than 31 linear feet from Ditch 1 and 550 linear feet from an excavated, maintained Town of Amherst ditch to the West. In addition, Wetland 3 is more than 150 linear feet from Klein Road to the East but no open drainage is located along the road. No A(1)-A(3) waters were identified directly abutting Wetland 3 during the site visit or an in-house review of aerial imagery, topo maps, the NYSDEC environmental resource or USFWS Wetland mapper. The wetland is a shallow surface concave depression that collects water and holds it long enough to provide wetland characteristics but does not drain to A (1) – A(3) waters. No natural or artificial barriers between Wetland 3 and A(1) – A(3) waters were found during the site visit. The wetland is not inundated by an A(1) – A(3) waters. Also, the NRCS/USDA Web Soil Survey "Flood Frequency Class" rating is "none" which means, "….flooding is not probable. The chance of flooding is

[1] Map(s)/Figure(s) are attached to the AJD provided to the requestor.
[2] If the navigable water is not subject to the ebb and flow of the tide or included on the District's list of Rivers and Harbors Act Section 10 navigable waters list, do NOT use this document to make the determination. The District must continue to follow the procedure outlined in 33 CFR part 329.14 to make a Rivers and Harbors Act Section 10 navigability determination.
[3] A stand-alone TNW determination is completed independently of a request for an AJD. A stand-alone TNW determination is conducted for a specific segment of river or stream or other type of waterbody, such as a lake, where independent upstream or downstream limits or lake borders are established. A stand-alone TNW determination should be completed following applicable guidance and should NOT be documented on the AJD form.
[4] Some excluded waters, such as (b)(2) and (b)(4), may not be specifically identified on the AJD form unless a requestor specifically asks a Corps district to do so. Corps Districts may, in case-by-case instances, choose to identify some or all of these waters within the review area.
[5] Because of the broad nature of the (b)(1) exclusion and in an effort to collect data on specific types of waters that would be covered by the (b)(1) exclusion, four sub-categories of (b)(1) exclusions were administratively created for the purposes of the AJD Form. These four sub-categories are not new exclusions, but are simply administrative distinctions and remain (b)(1) exclusions as defined by the NWPR.

			nearly 0 percent in any year". All resources reviewed support the determination that Wetland 3 doesn't directly abut an A(1)-A(3) waters, is not separated from an A(1)-A(3) waters by a natural or man-made feature and is not adjacent to an A(1)-A(3) waters.

III. SUPPORTING INFORMATION

A. Select/enter all resources that were used to aid in this determination and attach data/maps to this document and/or references/citations in the administrative record, as appropriate.

_X_ Information submitted by, or on behalf of, the applicant/consultant: *Wetland delineation dated November 3, 2015 submitted by Earth Dimensions, Inc. Also, an additional walkover report dated October 29, 2019 submitted by Earth Dimensions, Inc.*
Rationale: The reports submitted by EDI contained accurate, completed data sheets, photographs, NWI map, web soil survey with hydric soil ratings and other supporting information.
___ Data sheets prepared by the Corps: *Title(s) and/or date(s).*
__X Photographs: Photographs included within the delineation report; Google Earth, ESRI
__X Corps Site visit(s) conducted on: April 2016
___ Previous Jurisdictional Determinations (AJDs or PJDs): N/A
___ Antecedent Precipitation Tool: *provide detailed discussion in Section III.B.*
_X_ USDA NRCS Soil Survey: USDA/NRCS Web Soil Survey – Accessed Dec 10, 2020
_x_ USFWS NWI maps: USFWS Wetland Mapper – Accessed Dec 10, 2020
_X_ USGS topographic maps: USGS Clarence Center Quad – delineated parcel located

Other data sources used to aid in this determination:

Data Source (select)	Name and/or date and other relevant information
USGS Sources	N/A.
USDA Sources	N/A.
NOAA Sources	N/A.
USACE Sources	ORM Maps – Accessed Dec 10, 2020
State/Local/Tribal Sources	NYSDEC Freshwater Wetland Maps – no State regulated wetlands are within the vicinity of the delineated parcel – Accessed Dec 10, 2020
Other Sources	N/A.

B. Typical year assessment(s): N/A

C. Additional comments to support AJD: N/A

[1] Map(s)/Figure(s) are attached to the AJD provided to the requestor.
[2] If the navigable water is not subject to the ebb and flow of the tide or included on the District's list of Rivers and Harbors Act Section 10 navigable waters list, do NOT use this document to make the determination. The District must continue to follow the procedure outlined in 33 CFR part 329.14 to make a Rivers and Harbors Act Section 10 navigability determination.
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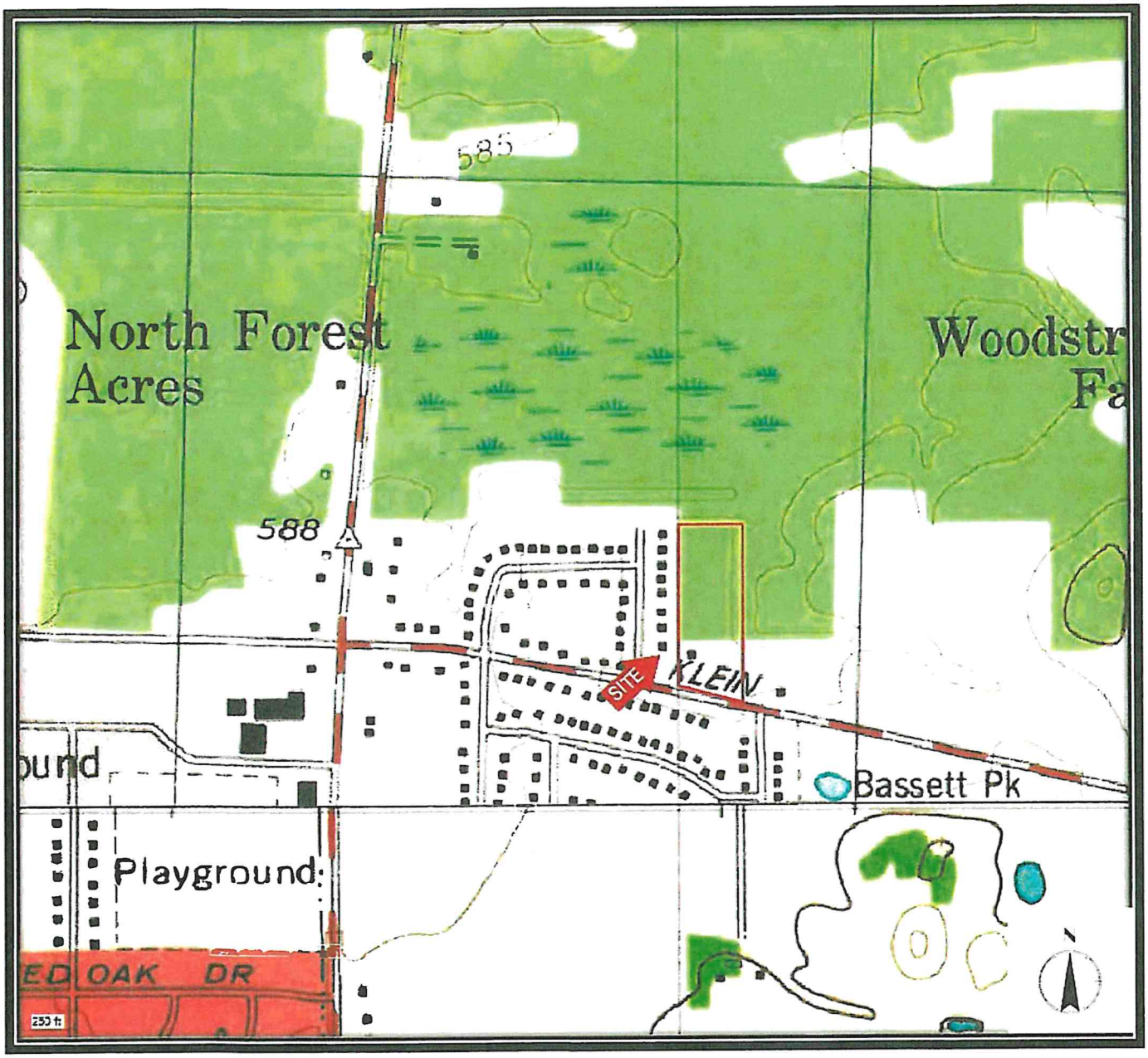


FIGURE 1: USGS 7.5 MINUTE TOPOGRAPHICAL MAP

Clarence Center Quadrangle / 2002 DeLorme

166 Klein Road

Town of Amherst, Erie County, New York

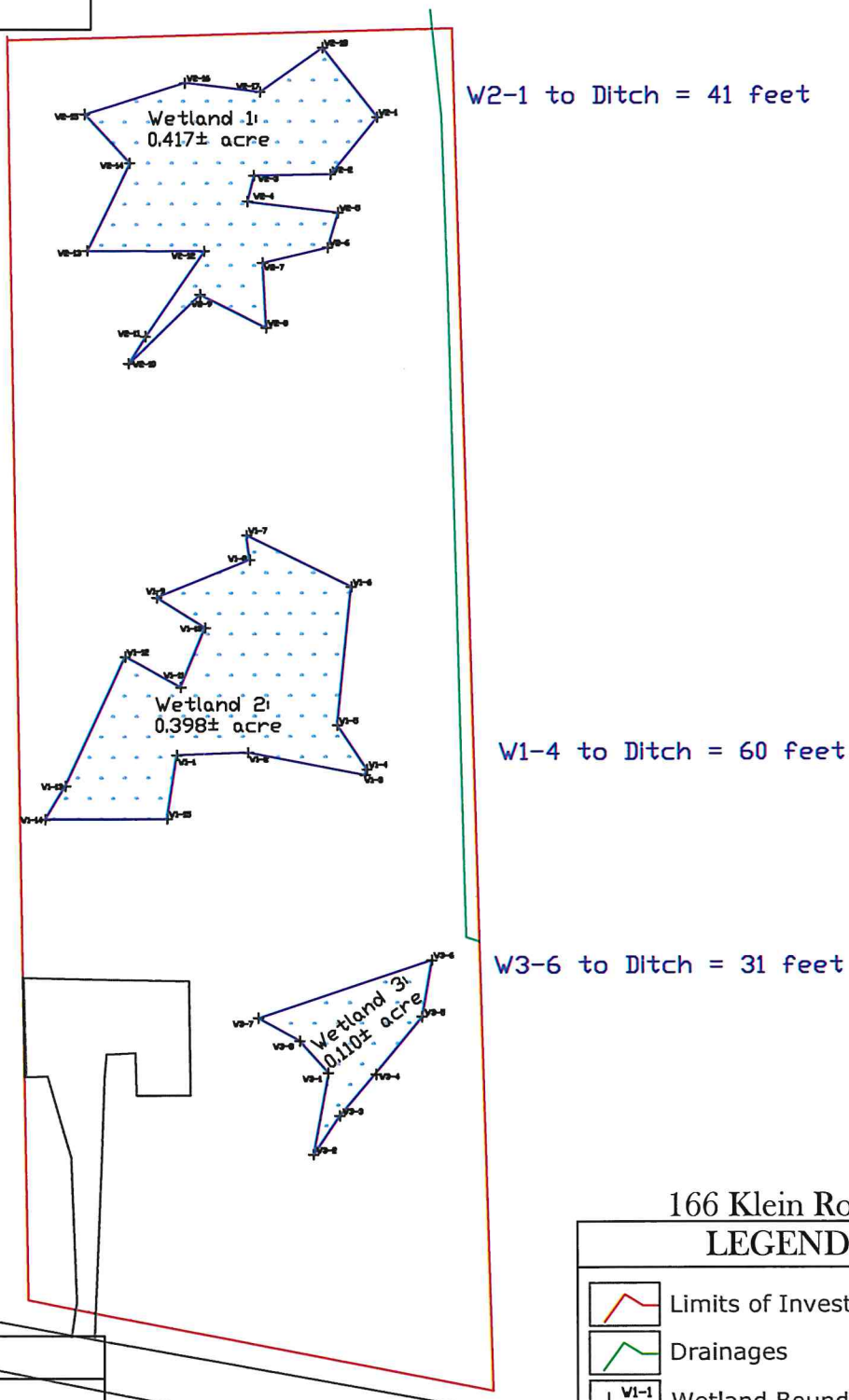
Qasaymeh, Mohammad
LRB 2015-1255
County: Erie County
Quad: Clarence Center
Sheet 1 of 2

Figure 8 - Wetland Delineation Map

Town of Amherst Erie County, New York

EARTH DIMENSIONS, INC.
Soil & Hydrogeologic Investigations • Wetland Delineations

Qasaymeh, Mohammad
LRB 2015-1255
County: Erie County
Quad: Clarence Center
Sheet 2 of 2



LEGEND

- Limits of Investigation
- Drainages
- W1-1 Wetland Boundary Flag
- Wetland Area
- P1 Photo Location
- D1 Data Point Location

Scale: 0 50' 100'

Map Date: November 3, 2015/ TJS for EDI
Revised: June 30, 2020

Base Map Provided By: GPSMap 62s

File Name: Delineation map.dwg

EDI Project Code: W1J15a

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DESIGN DRAWINGS