STORMWATER MANAGEMENT PLAN WITH STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

AND

EROSION CONTROL PLAN

FOR

CONNECTICUT SITING COUNCIL

WIND PROSPECT

PROSPECT, CONNECTICUT

Prepared for:

BNE Energy Inc.
Producer of green clean energy

BNE Energy
29 South Main Street
Town Center, Suite 200
West Hartford, CT 06107

by:

ZAPATA
TRUST • INTEGRITY • QUALITY

6302 Fairview Road, Suite 600
Charlotte, NC 28210

MARCH 2011

STORMWATER MANAGEMENT PLAN WITH STORMWATER POLLUTION PREVENTION PLAN (SWPPP) AND EROSION CONTROL PLAN

WIND PROSPECT

PROSPECT, CONNECTICUT

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Contact Information / Responsible Parties:

Permittee(s):
BNE Energy
29 South Main Street
Town Center, Suite 200
West Hartford, CT 06107
(800) 450-0503

Contractor Co-Permittee:
To be determined

Contractor Operator(s):
To be determined

Stormwater Manager and SWPPP Contact(s):
BNE Energy
29 South Main Street
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Section 1.0
PROJECT INTRODUCTION

1.0 PROJECT INTRODUCTION

Project/Site Information:

Project/Site Name: Wind Prospect

Location: 178 New Haven Road
Prospect, Connecticut

Latitude/Longitude:	Latitude:	Longitude:
	41º 28' 31" N	72º 58' 20" W

Method for determining latitude/longitude: Google Earth

1.1 SITE SUMMARY

1.1.1 Existing Conditions

Located at 178 New Haven Road the project site currently consists of approximately 67.5 acres of primarily undeveloped property. Development on the property is limited to a telecommunications tower, height approximately 160 feet, in the southeast corner of the property. The Property is located approximately 1,760 feet from the Prospect and Bethany town line and approximately 430 feet from the New Naugatuck reservoir. The surrounding land uses are mixed, consisting of both commercial and residential development. The site is currently accessed via Kluge Road. This access point will be maintained throughout the construction process. Currently, there are no structural stormwater discharge points. All stormwater flows over land to discharge points off site.

1.1.2 Project Description

The developer plans to install two wind turbines at the property: both in the western portion of the property with one in the southwest corner and one in northwestern portion of the Property. In addition to the two turbines, the project will include construction of temporary equipment lay-down areas for both turbines, crane assembly area, access road, permanent facility support building and associated ground equipment including an electrical collector yard and associated utility infrastructure so that the turbines can be interconnected to the electrical grid. Following completion of the project, all temporary structures will be removed and the site returned to pre-construction conditions.

1.2 PROJECT OWNER AND OPERATOR

The project owner and operator, BNE Energy, will be the responsible entity for completing the project. The address and telephone is:

BNE Energy
29 South Main Street
Town Center Suite 200
West Hartford, CT 06107
(800) 450-0503

1.3 PERMIT COVERAGE AND ELIGIBILITY

The U.S. Environmental Protection Agency (EPA) requires a National Pollutant Discharge Elimination System (NPDES) General Permit for stormwater discharges from construction sites that disturb more than one acre of land or from smaller sites that are part of a larger, common plan of development. For the purposes of the NPDES program, construction activities are defined as clearing, excavating, grading, or other land disturbing activities.

The General Permit for the Discharge of Stormwater and dewatering Wastewaters associated with Construction Activities (CGP) authorizes stormwater discharges from construction activities which result in the disturbance of one or more acres of land area on a site regardless of project phasing. In the case of a larger plan of development, the estimate of total acres of site disturbance shall include, but is not limited to, road and utility construction, individual lot construction, and all other construction associated with the overall plan, regardless of the individual parties responsible for the construction of these various elements. These conditions are subject to the conditions outlined in DEP-PED-GP-015. The effective dates of this CGP are April 9, 2010 thru October 1, 2011, and cover all areas of Connecticut. This CGP includes provisions for the development of this Stormwater Pollution Prevention Plan (SWPPP) to maximize the potential benefits of pollution prevention and sediment and erosion control measures at a construction site.

CGP eligibility is limited to discharges from "large" and "small" construction activity as defined in Section 3 of 2010 Connecticut General Permit for the Discharge of Stormwater and Dewatering Wastewaters. A copy of DEP-PED-GP-015 is included in Appendix J of this document. The permittee has requested coverage under this CGP by submission of a complete and accurate General Permit Registration Form and Transmittal. Copies of these are included in Appendix A. A map detailing the limits of disturbance, for the disturbed area indicated on the registration form, and covered under this CGP, is included in Appendix D. The permittee is granted coverage under this CGP when they have received a Letter of Coverage (LOC) from DEP. A copy of the LOC is to be included in Appendix A.

1.4 CERTIFICATION REQUIREMENTS

All permittees and operators are required to sign a SWPPP certification as a condition of the CGP. The signed certifications confirm that the contractor has been informed that a SWPPP has been prepared for the project and they will be required to perform necessary actions tat have been identified to comply with both the SWPPP and the CGP. No permittee or operator shall commence work on this project site until they have familiarized themselves with this plan and signed the appropriate SWPPP certification. It may be necessary for the contractor to implement additional erosion control and pollution prevention measures not previously identified to maintain compliance with the CGP. The following signed SWPPP certifications are included in Appendix B:

- Preparer
- Permittee and Co-Permittee
- Operator
- Inspector

1.5 COASTAL CONSISTENCY REVIEW

After review of the applicable policies and standards in Connecticut's Coastal Management Act (CCMA), codified in Sections 22a-90 through 22a-112 of the Connecticut General Statutes (CGS), as amended, it has been determined that this project does not require a coastal consistency review.

1.6 ENDANGERED OR THREATENED SPECIES

The existence and/or mitigation for endangered or threatened species is discussed within the comprehensive assessment of all potential environmental impacts associated with Wind Prospect.

1.7 SOILS, SLOPES, VEGETATION, AND CURRENT DRAINAGE PATTERNS

1.7.1 Soil type(s)

Based upon a review of typical geologic conditions and the National Soil Cooperative Survey, the soils have been classified as (1) Ridgebury, Leicester, and Whitman soils - Extremely stony; (2) Canton and Charlton 3 to 15 percent slopes - extremely stony; (3) Paxton and Montauk fine sandy loams ranging from 3 to 25 percent slopes; and (4) Paxton and Montauk fine sandy loams ranging from 8 to 15 percent slopes - very stony.

1.7.2 Slopes

The project site consists of varying slope conditions ranging from relatively flat conditions in the area of the existing cell tower to steep slopes along the northern and western property boundary.

1.7.3 Drainage Patterns

Existing site topography is such that runoff migrates, typically via overland sheet flow, through the site to a delineated wetland area. These wetlands generally occur on the hillside where the topographical gradient subsides and the seasonal high groundwater persists long enough for reducing soil conditions to exist. Additional drainage patterns were identified through several hillside seepage areas that were delineated on side slopes with exfiltrated groundwater.

1.7.4 Vegetation

The majority of the property is covered by second growth, upland forest, but also includes several forested hillside seep wetlands and watercourses as well as nine acres of early old field meadow habitat situated at the highest elevation on the property.

1.8 SITE FEATURES AND SENSITIVE AREAS TO BE PROTECTED

1.8.1 Receiving Waters and TMDL Applicability

New Naugatuck Reservoir, located approximately 430 feet to the west / southwest of the property boundary and approximately 1200 feet from the nearest proposed tower location. This water body is not considered impaired and is not listed on the most current 303(d) listing of impaired waterways.

Also adjacent to the property to the north a watercourse flows from beneath New Haven Road. While not shown as a perennial watercourse on USGS mapping, field observations indicate this watercourse may be perennial.

1.8.2 Wetlands

Within to the property boundary a wetland has been identified and delineated. Mitigation and impacts are discussed in the environmental assessment completed by VHB, Inc.

1.9 FINAL STABILIZATION AND TERMINATION OF COVERAGE

At the completion of a construction project registered pursuant to Section 4 of the general permit, a Notice of Termination must be filed with the commissioner. A project shall be considered complete after the site has been stabilized for at least three months following the cessation of construction activities. A site is not considered stabilized until there is no active erosion or sedimentation present and no disturbed areas remain exposed.

The termination notice shall be filed on forms prescribed and provided by the commissioner and shall include the following: (1) The permit number as provided to the permittee on the permit certificate; (2) The name of the registrant as reported on the general permit registration form DEP-PED-REG-015; (3) The address of the completed construction site; (4) The date all storm drainage structures were cleaned of construction debris pursuant to Section 6(b)(6)(C)(iv) of the general permit, the date of completion of construction, and the date of the final inspections pursuant to Section 6(b)(6)(D) of this general permit; (5) A description of the post-construction activities at the site; and (6) Signature of the permittee. The termination form should be filed with the commissioner at the following address:

Water Permitting & Enforcement Division
Bureau of Materials Management & Compliance Assurance
Department of Environmental Protection
79 Elm Street
Hartford, Ct 06106-5127

1.10 RETENTION OF RECORDS

The SWPPP document will be maintained by the contractor in the appropriate construction office or location from the date the construction is initiated until the project is concluded. Records will be maintained during grading operations, construction activities either temporarily or permanently cease, stabilization measures are initiated and final stabilization is achieved. The project owner will maintain the SWPPP for a period of three years following termination of coverage. Records to be maintained include but are not limited to:

- SWPPP and any amendments
- Copy of permit and/or certification of coverage
- General Permit Registration Form
- All reports and actions required
- Site inspection records
- Contractor certifications
- Notice of Termination

Section 2.0
CONSTRUCTION ACTIVITIES

2.0 CONSTRUCTION ACTIVITIES

2.1 DESCRIPTION OF CONSTRUCTION ACTIVITY

Prior to construction BNE will complete all pre-construction planning activities. BNE will continue to consult with municipalities, state agencies and federal agencies, as applicable, and will conduct site surveys to determine construction methodologies and procedures to minimize adverse effects to the environment and public.

Construction will typically consist of activities such as:

- Surveys to stake access roads and structural locations
- Wetland delineation
- Geotechnical investigations
- Establishment of construction staging area
- Installation of sediment and erosion control devices
- Excavation and installation of access roads
- Excavation and installation of lay-down and equipment assembly areas
- Excavation and installation of foundations and erection of new structures
- Installation of conductors
- Restoration of site, including re-establishment of vegetative areas

2.2 CONSTRUCTION SITE ESTIMATES

The following are estimates of the construction site:

Property Area: 67.5 acres
Area to be disturbed: 9.79 acres
Total Project area: 18.7 acres
Percentage impervious area before construction: 1.4%
Runoff coefficient before construction: 71
Percentage impervious area after construction: 8.7%
Runoff coefficient after construction: 72
Summary of peak flows: See 2.3.3
Summary of groundwater recharge: 0.014 AC-FT

2.3 PROPOSED STORMWATER MANAGEMENT PRACTICES

2.3.1 Stormwater Treatment Practices

Permanent structural controls will not be required for the treatment of stormwater runoff. Following construction of the tower units, the site will be returned to pre-construction conditions. The constructed access road will remain in place; however the width will be reduced by approximately one-half. The swale constructed as part of the Erosion and Sediment Control Plan will remain in place and will be converted to a water quality swale. Once site conditions and vegetation have been reestablished, stormwater discharges will return to the pre-construction state for quality and quantity.

2.3.2 Flood Control and Peak Runoff Attenuation Management Practices

Construction within the project area is such that flooding caused by an increase in impervious area or the reconfiguration of stormwater conveyance through the drainage area is not a primary concern. The total increase in impervious area is approximately one percent. Permanent stormwater conveyance structures such a storm drains, catch basin, and the like are not planned for this development. Upon completion of the construction of the two towers, the site will be returned to pre-construction conditions.

2.3.3 10 Year Storm

	Pre-Construction	**Post Construction**
Description	Basin 1a	Basin 1a
Time of concentration (Tc)	7.6 min	6.0 min
Percent impervious	0%	0%
NRCS runoff curve	70	89
Peak rates	0.63 cfs @12.10 hrs, depth > 2.04"	1.22 cfs @12.09 hrs, depth > 3.77"

Hydrograph routing – See Appendix K

	Pre-Construction	**Post Construction**
Description	Basin 1b	Basin 1b
Time of concentration (Tc)	25.5 min	25.5 min
Percent impervious	0%	0%
NRCS runoff curve	70	70
Peak rates	5.53 cfs @12.37 hrs, depth > 2.04"	5.53 cfs @12.37 hrs, depth > 2.04"

Hydrograph routing – See Appendix K

	Pre-Construction	**Post Construction**
Description	Basin 2a	Basin 2a
Time of concentration (Tc)	6.0 min	6.0 min
Percent impervious	0%	0%
NRCS runoff curve	70	89
Peak rates	0.51 cfs @ 12.10 hrs, depth > 2.04"	0.92 cfs @ 12.09 hrs, depth > 3.77"

Hydrograph routing – See Appendix K

	Pre-Construction	**Post Construction**
Description	Basin 2b	Basin 2b
Time of concentration (Tc)	21.0 min	21.0 min
Percent impervious	0%	0%
NRCS runoff curve	70	70
Peak rates	7.60 cfs @ 12.31 hrs, depth > 2.04"	7.60 cfs @ 12.31 hrs, depth > 2.04"

Hydrograph routing – See Appendix K

	Pre-Construction	**Post Construction**
Description	Basin 3a	Basin 3a
Time of concentration (Tc)	6.0 min	6.0 min
Percent impervious	0%	0%
NRCS runoff curve	70	89
Peak rates	0.44 cfs @12.10 hrs, depth > 2.04"	0.76 cfs @12.09 hrs, depth > 3.77"

Hydrograph routing – See Appendix K

	Pre-Construction	**Post Construction**
Description	Basin 3b	Basin 3b
Time of concentration (Tc)	22.8 min	22.8 min
Percent impervious	0%	0%
NRCS runoff curve	71	71
Peak rates	6.42 cfs @12.33hrs, depth > 2.12"	6.42 cfs @12.33 hrs, depth > 2.12"

Hydrograph routing – See Appendix K

	Pre-Construction	**Post Construction**
Description	Basin 4	Basin 4
Time of concentration (Tc)	13.6 min	13.6 min
Percent impervious	0%	1.0%
NRCS runoff curve	74	77
Peak rates	10.71 cfs @ 12.20 hrs, depth > 2.36"	11.94 cfs @ 12.19 hrs, depth > 2.62"

Hydrograph routing – See Appendix K

2.3.4 25 Year Storm

	Pre-Construction	**Post Construction**
Description	Basin 1a	Basin 1a
Time of concentration (Tc)	7.6 min	6.0 min
Percent impervious	0%	0%
NRCS runoff curve	70	89
Peak rates	0.78 cfs @12.11 hrs, depth > 2.49"	1.39 cfs @12.09 hrs, depth > 4.35"

Hydrograph routing – See Appendix K

	Pre-Construction	**Post Construction**
Description	Basin 1b	Basin 1b
Time of concentration (Tc)	25.5 min	25.5 min
Percent impervious	0%	0%
NRCS runoff curve	70	70
Peak rates	6.83 cfs @12.37 hrs, depth > 2.49"	6.83 cfs @12.37 hrs, depth > 2.49"

Hydrograph routing – See Appendix K

	Pre-Construction	**Post Construction**
Description	Basin 2a	Basin 2a
Time of concentration (Tc)	6.0 min	6.0 min
Percent impervious	0%	0%
NRCS runoff curve	70	89
Peak rates	0.63 cfs @ 12.10 hrs, depth > 2.49"	1.06 cfs @ 12.09 hrs, depth > 4.35"

Hydrograph routing – See Appendix K

	Pre-Construction	**Post Construction**
Description	Basin 2b	Basin 2b
Time of concentration (Tc)	21.0 min	21.0 min
Percent impervious	0%	0%
NRCS runoff curve	70	70
Peak rates	9.39 cfs @ 12.30 hrs, depth > 2.49"	9.39 cfs @ 12.30 hrs, depth > 2.49"

Hydrograph routing – See Appendix K

	Pre-Construction	**Post Construction**
Description	Basin 3a	Basin 3a
Time of concentration (Tc)	6.0 min	6.0 min
Percent impervious	0%	0%
NRCS runoff curve	70	89
Peak rates	0.54 cfs @12.10 hrs, depth > 2.49"	0.86 cfs @12.09 hrs, depth > 4.35"

Hydrograph routing – See Appendix K

	Pre-Construction	**Post Construction**
Description	Basin 3b	Basin 3b
Time of concentration (Tc)	22.8 min	22.8 min
Percent impervious	0%	0%
NRCS runoff curve	71	71
Peak rates	7.89 cfs @12.33hrs, depth > 2.58"	7.89 cfs @12.33 hrs, depth > 2.58"

Hydrograph routing – See Appendix K

	Pre-Construction	**Post Construction**
Description	Basin 4	Basin 4
Time of concentration (Tc)	13.6 min	13.6 min
Percent impervious	0%	1.0%
NRCS runoff curve	74	77
Peak rates	12.97 cfs @ 12.19 hrs, depth > 2.85"	14.28 cfs @ 12.19 hrs, depth > 3.13"

Hydrograph routing – See Appendix K

2.3.5 100 Year Storm

	Pre-Construction	**Post Construction**
Description	Basin 1a	Basin 1a
Time of concentration (Tc)	7.6 min	6.0 min
Percent impervious	0%	0%
NRCS runoff curve	70	89
Peak rates	1.18 cfs @12.11 hrs, depth > 3.70"	1.83 cfs @12.09 hrs, depth > 5.81"

Hydrograph routing – See Appendix K

	Pre-Construction	**Post Construction**
Description	Basin 1b	Basin 1b
Time of concentration (Tc)	25.5 min	25.5 min
Percent impervious	0%	0%
NRCS runoff curve	70	70
Peak rates	10.25 cfs @12.36 hrs, depth > 3.70"	10.25 cfs @12.36 hrs, depth > 3.70"

Hydrograph routing – See Appendix K

	Pre-Construction	**Post Construction**
Description	Basin 2a	Basin 2a
Time of concentration (Tc)	6.0 min	6.0 min
Percent impervious	0%	0%
NRCS runoff curve	70	89
Peak rates	0.94 cfs @ 12.09 hrs, depth > 3.70"	1.39 cfs @ 12.09 hrs, depth > 5.81"

Hydrograph routing – See Appendix K

	Pre-Construction	**Post Construction**
Description	Basin 2b	Basin 2b
Time of concentration (Tc)	21.0 min	21.0 min
Percent impervious	0%	0%
NRCS runoff curve	70	70
Peak rates	14.10 cfs @ 12.30 hrs, depth > 3.70"	14.10 cfs @ 12.30 hrs, depth > 3.70"

Hydrograph routing – See Appendix K

	Pre-Construction	**Post Construction**
Description	Basin 3a	Basin 3a
Time of concentration (Tc)	6.0 min	6.0 min
Percent impervious	0%	0%
NRCS runoff curve	70	89
Peak rates	0.81 cfs @12.09 hrs, depth > 3.70"	1.14 cfs @12.09 hrs, depth > 5.81"

Hydrograph routing – See Appendix K

	Pre-Construction	**Post Construction**
Description	Basin 3b	Basin 3b
Time of concentration (Tc)	22.8 min	22.8 min
Percent impervious	0%	0%
NRCS runoff curve	71	71
Peak rates	11.76 cfs @12.32hrs, depth > 3.81"	11.76 cfs @12.32 hrs, depth > 3.81"

Hydrograph routing – See Appendix K

	Pre-Construction	**Post Construction**
Description	Basin 4	Basin 4
Time of concentration (Tc)	13.6 min	13.6 min
Percent impervious	0%	1.0%
NRCS runoff curve	74	77
Peak rates	18.82 cfs @ 12.19 hrs, depth > 4.13"	20.25 cfs @ 12.19 hrs, depth > 4.46"

Hydrograph routing – See Appendix K

2.3.6 Pond Peak Runoff Attenuation

	Pond 1	**Pond 2**
Contributing Basins	1a, 2a, & 3a	4
Pre-Construction 10-yr	1.58 cfs	10.71 cfs
Post-Construction 10-yr	1.56 cfs	9.58 cfs
Pre-Construction 25-yr	1.95 cfs	12.97 cfs
Post-Construction 25-yr	1.71 cfs	11.05 cfs
Pre-Construction 100-yr	2.93 cfs	18.82 cfs
Post-Construction 100-yr	2.78 cfs	18.69 cfs

Hydrograph routing – See Appendix K

Section 3.0
BEST MANAGEMENT PRACTICES

3.0 BEST MANAGEMENT PRACTICES

Soil erosion and sediment controls are measures that are used to reduce the amount of soil particles that are carried from a land area and deposited in receiving waters. This section provides a general description of the most appropriate control measures proposed for the Project. The permittee's construction contractor(s) and their subcontractors will be responsible for amending the erosion and sediment controls in the SWPPP for their portion(s) of the project. Based on field conditions at the time of construction, the contractors or subcontractors may adjust the locations and types of BMPs so that erosion and sedimentation are controlled to the maximum extent practicable. However, in no case will modifications to the SWPPP result in any less stringent erosion and sedimentation control measures than specified herein.

Any revision to the SWPPP will be recorded on the Record of Revisions form. The application of the techniques in the field will be determined by the professional judgment of the permittee's field construction personnel and will depend on site-specific conditions. All applicable soil erosion and sediment control measures will be implemented in accordance with this SWPPP and the Permit prior to commencement of field construction activities. Measures will be maintained during and after the construction activity, until final stabilization of the soil is accomplished. Upon final stabilization of disturbed areas, all temporary soil erosion and sediment control measures will be removed.

3.1 STRUCTURAL CONTROL PRACTICES

Structural control practices divert flows from exposed soils, store water flow, or otherwise limit runoff from exposed areas of the site. Such practices may include silt fences, drainage swales, sediment traps, check dams, subsurface drains, pipe slope drains, rock outlet protection (rip-rap), reinforced soil retaining systems, and temporary or permanent sediment basins. Some of these practices may be used as both temporary and permanent control measures. Structural control practices should be placed in upland areas to the degree practicable to prevent erosion and reduce sedimentation in lower elevation areas.

3.2 TEMPORARY EROSION CONTROL PRACTICES

Erosion and sediment control measures will be in place prior to the initiation of soil disturbing activities and will be maintained throughout construction. The contractor may need erosion control measures in other locations of the project as work progresses to keep sediment from leaving the construction site. These measures will be determined by the contractor in the field; if measures are changed in the field, the SWPPP must be modified accordingly. All temporary erosion controls will be removed after the protected area is finally stabilized. The minimum temporary erosion and sediment control practices that will be used for the Project are discussed in the following sections.

3.2.1 Sediment Fence (GSF)

Will retain sediment from small disturbed areas. Sediment fence will be placed along slopes as shown on construction details. The contractor will use his best judgment to install additional sediment fence as necessary to prevent loss of sediment. Refer to section 5-11 of 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.

Maintenance: Inspect the silt fence at least once a week and within 24 hours of the end of a storm with a rainfall amount of 0.5 inches or greater to determine maintenance needs. When used for dewatering operations, inspect frequently before, during and after pumping operations. Remove the sediment deposits, or if room allows, install a second silt fence up slope from the existing fence when deposits reach approximately one half the height of the existing fence. Replace or repair within 24 hours of an observed failure. Refer to Connecticut Guidelines for Soil Erosion and Sediment Control figure GF-5 for troubleshooting failures. Maintain silt fence until the contributing area is stabilized.

3.2.2 Hay Bale Barrier (HB)

Will retain sediment from small disturbed areas. Hay bales will be placed along slopes as shown on construction details. The contractor will use his best judgment to install additional hay bales as necessary to prevent loss of sediment. Refer to section 5-11 of 2002 Connecticut Guidelines for Soil and Sediment Control.

Maintenance: Inspect the hay bale barrier at least once a week and within 24 hours of the end of a storm with a rainfall amount of 0.5 inches or greater to determine maintenance needs. When used for dewatering operations, inspect frequently before, during and after pumping operations. Remove the sediment deposits, or if room allows, install a secondary barrier up slope from the existing barrier when deposits reach approximately one half the height of the barrier. Replace or repair within 24 hours of an observed failure. Refer to Connecticut Guidelines for Soil Erosion and Sediment Control figure HB-5 for troubleshooting failures. Maintain hay bale barrier until the contributing area is stabilized.

3.2.3 Stone Check Dam (SCD)

Will be used to reduce velocity of concentrated flows, thus reducing of the drainage way.

Maintenance: Inspect the stone check dam at least once a week and within 24 hours of the end of a storm with a rainfall amount of 0.5 inches or greater to determine maintenance needs. Remove the sediment deposits when deposits reach approximately one half the height of the Check dam. Replace or repair within 24 hours of an observed failure. Maintain until the contributing area is stabilized.

3.2.4 Temporary Pipe Slope Drain (TSD)

Will be used to carry water over excessive changes in grade. TSD's will convey concentrated stromwater runoff flows without causing erosion problems either on or at the toe of the slope.

Maintenance: Inspect the temporary pipe slope drain at least once a week and within 24 hours of the end of a storm with a rainfall amount of 0.5 inches or greater to determine maintenance needs. Repair damage as necessary. Avoid the placement of any material on the top of the pipe and prevent vehicular traffic from crossing the slope drain.

3.2.5 Temporary Diversion (TD)

Will be used to divert sediment laden runoff from a disturbed area to a sediment trapping facility.

Maintenance: When the temporary diversion is located within close proximity to on going construction activities, inspect the diversion at the end of each work day and immediately repair damage caused by construction equipment. Otherwise, inspect the temporary diversion and associated measures at least once a week and within 24 hours of the end of a storm with a rainfall amount of 0.5 inches or greater to determine maintenance needs. Repair within 24 hours of an observed failure.

3.2.6 Temporary Fill Berm (TFB)

Will be used to divert runoff from unprotected fill slopes during construction to a stabilized outlet or sediment trapping facility.

Maintenance: Inspect the temporary fill berm and associated controls at the end of each work day to ensure the criteria for installing the measures have been met. Determine if repair or modification is needed. This measure is temporary and under most situations will be covered the next work day. Maintenance requirements should be minimal. The contractor should avoid placing other material over the berm and construction traffic should not be allowed to cross.

3.2.7 Temporary Sediment Trap (TST)

Will be used to detain sediment laden runoff from small disturbed areas long enough to allow the majority of sediment to settle out.

Maintenance: Inspect the temporary sediment trap and associated controls at least once a week and within 24 hours of the end of a storm with a rainfall amount of 0.5 inches or greater to determine maintenance needs. Check the outlet to verify that it is structurally sound and has not been damaged by erosion or construction equipment. The height of the stone outlet should be maintained at least 1 foot below the crest of the embankment. When sediment has accumulated more than one quarter of the minimum wet storage volume, dewater and remove sediment as necessary to restore the trap to its original dimensions.

3.2.8 Construction Entrance (CE)

Will be used to reduce tracking of sediment off site to paved areas.

Maintenance: Maintain the entrance in a condition which will prevent tracking and washing of sediment onto paved surfaces. Provide periodic top dressing with additional stone or additional length as required. Immediately remove all sediment spilled, dropped, washed or tracked onto paved surfaces.

3.2.9 Tree Protection (TP)

Will be used to ensure the survival of existing desirable trees for their effectiveness in soil erosion and sediment control during construction.

Maintenance: Inspect tree protection zones weekly during site construction for damage to the tree crown, trunk and root system. When trees have been damaged or the protection zone has been compromised, consult an arborist licensed in CT to determine how damage should be addressed.

3.2.10 Temporary Erosion Control Blankets (ECB)

Will be used to provide temporary surface protection to disturbed soils to absorb raindrop impact and to reduce sheet and rill erosion.

Maintenance: Inspect temporary erosion control blankets at least once a week and within 24 hours of the end of a storm with a rainfall amount of 0.5 inches or greater to determine maintenance needs. Repair any dislodged or failed blankets immediately.

3.3 SOIL STABILIZATION PRACTICES

Soil stabilization involves covering disturbed soils with grass, mulch, straw, geotextiles, trees, vines, or shrubs. Stabilization practices for exposed disturbed soils are extremely important while conducting construction activities. Vegetative cover serves to reduce the erosion potential by absorbing the energy of raindrops, promoting infiltration in lieu of runoff, and reducing the velocity of runoff. Stabilization measures shall be initiated as soon as practicable, but no more than 14 days after construction activities have temporarily or permanently ceased on any portion of the site.

3.4 MAINTENANCE AND INSPECTIONS

All erosion and sediment control devices shall be installed pursuant to the specifications in the construction details. They will be maintained so that they remain effective at all times.

Erosion and sediment control devices will be inspected by qualified personnel at least once every seven calendar days or at least once every 14 calendar days and within 24 hours of each 0.5-inch or greater rainfall event. During each inspection, the construction inspector will complete the Inspection and Maintenance Report Form located in the appendix. This form will be copied and used as necessary. Ineffective temporary erosion control measures will be repaired or replaced before the next storm event or as soon as practicable. The permittee will immediately install additional temporary erosion control devices in any area deemed in need of protection.

Following temporary or final stabilization, inspections must be conducted at least once a month. If construction has been halted due to frozen conditions, regular inspections are not mandatory until one month before the expected thaw. If vegetation establishment is not satisfactory, special steps to correct the problem will be implemented such as over seeding, mulching, sodding, or the use of erosion control blankets. Once a definable area of the construction site has been finally stabilized, no further inspection requirements apply to that area.

3.5 FINAL STABILIZATION

3.5.1 Seeding

The contractor will be responsible for labor, materials, tools, equipment, and other related items required for preparing ground, providing for sowing of seeds, fertilizing, mulching and top dressing, and other management practices required for erosion control and to achieve final stabilization. It will be the contractor's responsibility to make sure that the soil seedbed is not blown, washed, or otherwise removed from the site. The contractor will make repairs (including replacement of lost topsoil and mulch) to the seedbed preparation site in the event of heavy rain,

wind, or other natural events that cause damage. When practicable, native plant species should be used for landscaping.

3.5.2 Fertilizer

Soil in areas of disturbance may need supplementation from fertilizer. Soil tests may be necessary to determine the most appropriate fertilizer for each location. Once applied, the fertilizer will be worked into the soil to limit exposure to stromwater. Fertilizer spills will be cleaned up immediately and will not be applied along or in a waterway.

3.5.3 Mulching

Mulching will be used in conjunction with both temporary and permanent seeding practices to enhance success by providing erosion protection prior to the onset of vegetative growth. Mulches enhance plant establishment by moderating soil temperatures and conserving moisture. After seeding, straw or hay mulch will be applied at a rate of two to three tons per acre on the disturbed areas. Other forms of mulch will be applied at a rate designated by the Project Engineer. Mulch will not be applied in wetlands, on lawns, and areas where hydro-mulch is used. Mulch will be anchored immediately after placement on steep slopes and stream banks. Mulch will be held in place by a very thin covering of topsoil, small brush, pins, stakes, wire mesh, asphalt binder, or other adhesive material approved by the project engineer.

3.5.4 Topsoiling

Topsoil should be applied in areas where the subsoil or existing surface soil does not provide an adequate growth medium for the desired vegetation, where soil is too shallow to provide adequate rooting depth, or where the soil contains substances toxic to the desired vegetation. Topsoil shall be reasonably free from subsoil and stumps, roots, brush, stones, and clay lumps or similar objects.

3.5.5 Temporary Control Removal

Temporary erosion controls will be left in place until the Project site is stabilized with a uniform vegetative cover of 70 percent density of the native background vegetative cover on all unpaved areas. Following re-vegetation, the permittee will conduct periodic site visits to make sure that vegetation establishment is satisfactory. If sufficient vegetative cover has not been achieved, additional restoration measures will be implemented. Inspection results will be documented using the Inspection and Maintenance Report Form found in the appendix. All temporary soil erosion and sediment control measures will be removed and disposed of after final site stabilization is achieved and before submitting the NOT.

Section 4.0
GOOD HOUSEKEEPING BMP'S

4.0 GOOD HOUSKEEPING BMP'S

4.1 POTENTIAL SOURCES OF POLLUTION

Potential exists for construction sediment to be contained in any runoff that occurs on the project site. This sediment is a result of clearing and grading activities.

4.2 CONTROLS TO REDUCE POLLUTION FROM THE CONSTRUCTION SITE

Minimize Disturbed Area, Protect Natural Features, and Soil:
This project will not be mass graded. Only areas required for construction activities will be graded. This practice will reduce sediment transport into receiving bodies.

4.2.1 Material Handling and Waste Management

The contractor will establish control measures to prevent discharge and dispose of construction and sanitary waste on site.

4.2.2 Establish Proper Building Material Staging Areas

The contractor will establish a permanent staging area within the project site for materials and equipment storage.

4.2.3 Allowable Non-Stormwater Discharge Management

Non-stormwater discharges are allowable provided the non-stormwater component of the discharge is in compliance applicable state regulation. Prior to any non storm discharge, the appropriate BMP will be installed and inspected.

4.2.4 Maintenance of Controls

All erosion and sediment control practices will be checked for stability and operation following every runoff-producing rainfall, but in no case less than once every week. Any needed repairs will be made immediately to maintain all practices as designed.

All sediment control features shall be maintained until final stabilization has been obtained.

Contractor will maintain appropriate recording keepings as required by DEP-PED-GP-015. Maintenance records shall describe repair, replacement, and maintenance of BMPs undertaken based on the inspections and maintenance procedures described above and the individual requirements of the BMPs. Actions related to the findings of inspections should reference the specific inspection report. Records should describe actions taken, dates completed, and note the party that completed the work.

During construction the contractor will be responsible for maintaining integrity of all permanent and temporary structures. Prior to submittal of NOT, the contractor and owner will inspect permanent structures to remain in place and correct all noted deficiencies. Upon acceptance from contractor, the owner will maintain responsibility for inspection of the structure semi-annually.

Section 5.0

HAZARDOUS SUBSTANCE OR OIL SPILL REPORTING

5.0 HAZARDOUS SUBSTANCE OR OIL SPILL REPORTING

The Spill Prevention Control and Countermeasure Plan (SPCC), which describes measures to prevent, control, and minimize impacts from a spill of a hazardous, toxic, or petroleum substance during construction of the proposed project. This plan identifies the potentially hazardous materials to be used during this project, describes the transport, storage, and disposal procedures for these substances, and outlines the procedures to be followed in the event of a spill of a contaminating or toxic substance.

As per 40 CFR 112, a Spill Prevention Control and Countermeasures Plan (SPCC) must be prepared if the construction site will have 1,320 gallons of above ground storage capacity (or 42,000 gallons in underground storage not regulated by UST rules) or more in 55-gallon-sized (or larger) containers. This would include any temporary tanks or fueling trucks used to "store" petroleum on-site. The truck would be subject to the SPCC Plan rules when parked on the construction site and used for "storage." If, at any time, a subcontractor's cumulative above ground storage capacity on-site exceeds 1,320 gallons, the subcontractor shall maintain a certified SPCC Plan (40 CFR 112).

5.1 MATERIAL MANAGEMENT PRACTICES

Properly managing materials on the construction site will greatly reduce the potential for stormwater pollution of materials. Good housekeeping, along with proper use and storage of construction materials, form the basis for proper management of potentially hazardous materials.

5.2 NON-PETROLEUM PRODUCTS

Due to the chemical makeup of specific products, certain handling and storage procedures are required to promote the safety of handlers and prevent the possibility of pollution. Care shall be taken to follow all directions and warnings for products used on the site. All pertinent information can be found on the MSDS for each product. The MSDS will be kept on-site.

5.3 PETROLEUM PRODUCTS

On-site vehicles will be monitored for leaks and receive regular maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers that are clearly labeled. Preferably, the containers will be stored in a covered truck or trailer that provides secondary containment for the products. Bulk storage tanks having a capacity of greater than 55 gallons will be provided with secondary containment. Containment can be provided by a temporary earthen berm or other means. After each rainfall event, the contractor shall inspect the contents of the secondary containment area for excess water. If no sheen is visible, the collected water can be pumped to the ground in a manner that does not cause scouring. If any sheen is present, it must be treated prior to discharging the water. Otherwise, the contaminated water must be transported and disposed off-site in accordance with local, state, and federal requirements. Bulk fuel or lubricating oil dispensers shall not have a self-locking mechanism that allows for unsupervised fueling. Fueling operations shall be observed to immediately detect and contain spills. No waste oil or other petroleum-based products will be disposed of on-site (e.g. buried, poured, etc.), but shall be taken off-site for proper disposal.

5.4 SPILL CONTROL AND CLEAN UP

In addition to the material management practices discussed previously, the following spill control and cleanup practices will be adhered to prevent stormwater pollution in the event of a spill:

- Personnel on-site will be made aware of cleanup procedures and the location of spill cleanup.
- Equipment spills will be contained and cleaned up immediately after discovery.
- Manufacturer methods for spill cleanup of a material will be followed as described on the material's MSDS.
- Materials and equipment needed for cleanup procedures will be kept readily available on the site, either at an equipment storage area or on contractor's trucks; equipment to be kept on the site will include, but not be limited to, brooms, dust pans, shovels, granular absorbents, sand, saw dust, absorbent pads and booms, plastic and metal trash containers, gloves, and goggles.
- Toxic, hazardous or petroleum product spills required to be reported by regulation will be documented to the appropriate federal, state, and local agencies.
- Spills will be documented and a record of the spills will be kept with this SWPPP.

The federal reportable spill quantity for petroleum products is defined in 40 CFR 110 as any oil spill that:

- violates applicable water quality standards;
- causes a film or sheen upon or discoloration of the water surface or adjoining shoreline; or
- causes a sludge or emulsion to be deposited beneath the surface of the water or adjoining shorelines.

Section 6.0
SWPPP APPENDICES

6.0 SWPPP APPENDICES

Attach the following documentation to the SWPPP in the following appendices.

Appendix A – Permit Coverage

- Submitted General Permit Registration Form and Transmittal
- Issued CT Letter of Coverage
- Other applicable permits

Appendix B – Certifications

- Preparer
- Permittee or Co-Permittee
- Operator
- Inspector

Appendix C – Pre-Construction Meeting – Items to be added upon completion of meeting includes:

- Agenda
- Attendees
- Minutes

Appendix D – Maps and Drawings

- Site Maps
- Site Plan

Appendix E – Construction Records

- Construction Activities and Control Installation Log

Appendix F – Inspection and Maintenance Records

- Inspection & Maintenance Log
- Inspection Report
- Maintenance Report

Appendix G – Hazardous Material or Oil Spill Records

- Spill Report

Appendix H – Update Records

- Plan Update Description
- Plan Update Log

Appendix I – Copy of CT DEP Notice of Termination (Form DHEC 2610, 04/1998)

Appendix J – Connecticut General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities (DEP-PED-GP-015)

Appendix K – Supporting Calculations

Appendix A

PERMIT COVERAGE

General Permit Registration Form for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities

Please complete this form in accordance with the general permit (DEP-PED-GP-015) in order to ensure the proper handling of your registration. Print or type unless otherwise noted. You must submit the *Permit Application Transmittal Form* (DEP-APP-001) and the registration fee along with this form.

DEP USE ONLY
Application No. _____
Permit No. _____
Facility I.D. _____

Part I: Registration Type

Enter a check mark in the appropriate box identifying the registration type.

This registration is for (check one):	Please identify any existing permit number in the space provided:
☐ A *new* general permit registration	Existing permit number:
☐ A *modification* of an existing general permit	***GSN***

Part II: Fee Information

☐ ***Registration only***	A registration fee of $625.00 is to be submitted with *each* registration that you are submitting at least 30 days before the initiation of construction activities.
☐ ***Registration and Plan Review***	All construction projects that result in the disturbance of ten or more acres require the submittal of a Stormwater Pollution Control Plan and a $625.00 plan review fee. The plan and the fee must be submitted 30 days prior to initiation of the construction activity. $625.00 registration fee + $625.00 review fee = $1,250.00 total fee

For municipalities, a 50% discount applies. The registration will not be processed without the fee. The fee shall be non-refundable and shall be paid by certified check or money order payable to the Department of Environmental Protection.

Part III: Registrant Information

1. Fill in the name of the registrant(s) as indicated on the *Permit Application Transmittal Form* (DEP-APP-001):

   Registrant:

   Phone: ext. Fax:

   ☐ Check here if there are co-registrants. If so, label and attach additional sheet(s) with the required information as supplied above.

Part III: Registrant Information (cont.)

2. List primary contact for departmental correspondence and inquiries, if different than the registrant.

   Name:

   Mailing Address:

   City/Town: State: Zip Code:

   Business Phone: ext. Fax:

   Site Phone: Emergency Phone:

   Contact Person: Title:

   Association (e.g. developer, general or site contractor, etc.):

3. List owner of the property on which the activity will take place, if different from registrant:

   Name:

   Mailing Address:

   City/Town: State: Zip Code:

   Business Phone: ext. Fax:

   Contact Person: Title:

4. List developer, if different from registrant or primary contact:

   Name:

   Mailing Address:

   City/Town: State: Zip Code:

   Business Phone: ext. Fax:

   Contact Person: Title:

5. Name and address of general contractor:

   Name:

   Mailing Address:

   City/Town: State: Zip Code:

   Business Phone: ext. Fax:

   Site Phone: Off-hours Phone:

   Contact Person: Title:

6. List any engineer(s) or other consultant(s) employed or retained to assist in preparing the registration and Stormwater Pollution Plan.

   ☐ Check here if additional sheets are necessary, and label and attach them to this sheet.

   Name:

   Mailing Address:

   City/Town: State: Zip Code:

   Business Phone: ext. Fax:

   Contact Person: Title:

   Service Provided:

Part IV: Site Information

1. Site or Project Name (if any):
   Street Address or Description of Location:
   City/Town: State: Zip Code:
2. Brief description of construction activity:
3. Start Date: Anticipated Completion Date:
4. Estimated total number of acres to be disturbed:

Part V: Stormwater Discharge Information

1. Where does stormwater discharge to:
   ☐ Municipal Separate Storm System? ☐ Yes ☐ No (Name):
   ☐ Surface water body or wetlands? ☐ Yes ☐ No (Name):
2. Is the discharge located less than 500 feet from a tidal wetland, which is not a fresh-tidal wetland?
   ☐ Yes ☐ No
3. Name of the watershed where the site is located OR nearest waterbody to which it discharges:
4. Is construction in accordance with the Guidelines established under Section 22a-329 of the Soil Erosion and Sedimentation Act? ☐ Yes ☐ No
5. Is construction in accordance with local soil erosion and sediment ordinances? ☐ Yes ☐ No
   Note: A copy of this registration and the Stormwater Pollution Control Plan must be available to the town wetlands enforcement officials, wetlands commission, or their equivalent.
6. Will the construction project disturb over ten acres? ☐ Yes ☐ No
   If yes, enclose a copy of the Stormwater Pollution Control Plan and plan review fee.
7. Has the construction project been reviewed for compliance with the following DEP programs?
   a. Coastal Management Act (Section 22a-92 of the Connecticut General Statutes) ☐ Yes ☐ No
   b. Endangered and Threatened Species (Section 26-306 of the Connecticut General Statutes) ☐ Yes ☐ No
   c. State and Federal Historic Preservation statutes? ☐ Yes ☐ No

Part VI: Supporting Documents

Check the box by the attachments being submitted as verification that *all* applicable attachments have been submitted with this registration form. When submitting any supporting documents, please label the documents as indicated in this part (e.g., Attachment A, etc.) and be sure to include the registrant's name as indicated on the *Permit Application Transmittal Form*.

☐	Attachment A:	An 8 1/2" x 11" copy of the relevant portion or a full-sized original of a USGS Quadrangle Map indicating the exact location of the facility or site. Indicate the quadrangle name on the map. (To obtain a copy of the relevant USGS Quadrangle Map, call your town hall or DEP Maps and Publications Sales at 860-424-3555.)
☐	Attachment B:	A copy of the Stormwater Pollution Control Plan and plan review fee of $500.00, if the construction project disturbs over 10 acres

Part VII: Environmental Professional Certification

The following certification must be signed by a professional engineer, licensed to practice in Connecticut.

"I certify that I have thoroughly and completely reviewed the Stormwater Pollution Control Plan for the site. I further certify, based on such review and in my professional judgment, that the Stormwater Pollution Control Plan has been prepared in accordance with the Connecticut Guidelines for Soil Erosion and Sediment Control, as amended, and the conditions for the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities and the controls required for such Plan are appropriate for the site. I am aware that there are significant penalties for false statements in this certification, including the possibility of fine and imprisonment for knowingly making false statements."

Signature of Professional Engineer	Date
Name of Professional Engineer (print or type)	P. E. Number (if applicable)

Affix P. E. Stamp Here

Part VIII: Registrant Certification

The registrant *and* the individual(s) responsible for actually preparing the registration must sign this part. A registration will be considered incomplete unless all required signatures are provided.

"I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief. I certify that this general permit registration is on complete and accurate forms as prescribed by the commissioner without alteration of the text. I understand that a false statement made in the submitted information may be punishable as a criminal offense, in accordance with section 22a-6 of the Connecticut General Statutes, pursuant to section 53a-157b of the Connecticut General Statutes, and in accordance with any other applicable statute.

I also certify under penalty of law that I have read and understand all conditions of the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities, that all conditions for eligibility for authorization under the general permit are met, all terms and conditions of the general permit are being met for all discharges which have been initiated and are the subject of this registration, and that a system is in place to ensure that all terms and conditions of this general permit will continue to be met for all discharges authorized by this general permit at the site. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowingly making false statements."

Signature of Registrant	Date
Name of Registrant (print or type)	Title (if applicable)
Signature of Preparer (if different than above)	Date
Name of Preparer (print or type)	Title (if applicable)

☐ Check here if additional signatures are necessary.
If so, please reproduce this sheet and attach signed copies to this sheet.

Note: Please submit the *Permit Application Transmittal Form*, the Registration Form, Fee(s), and all Supporting Documents to:

CENTRAL PERMIT PROCESSING UNIT
DEPARTMENT OF ENVIRONMENTAL PROTECTION
79 ELM STREET
HARTFORD, CT 06106-5127

Note: If discharging to municipal separate storm sewer, send a copy of this completed registration form to the owner or operator of that system.

If discharging to a public drinking water supply watershed or aquifer area, send a copy of this completed registration form to the appropriate water company.

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Central Permit Processing Unit
79 Elm Street
Hartford, CT 06106-5127

CPPU USE ONLY
App #:_____
Doc #:_____
Check #:_____
_____

Permit Application Transmittal Form

Please complete this transmittal form in accordance with the instructions in order to ensure the proper handling of your application(s) and the associated fee(s). Print legibly or type.

Part I: Applicant Information:

- **If an applicant is a corporation, limited liability company, limited partnership, limited liability partnership, or a statutory trust, it must be registered with the Secretary of State. If applicable, applicant's name shall be stated **exactly** as it is registered with the Secretary of State.*
- *If an applicant is an individual, provide the legal name (include suffix) in the following format: First Name; Middle Initial; Last Name; Suffix (Jr, Sr., II, III, etc.).*

Applicant:
Mailing Address:
City/Town: State: Zip Code:
Business Phone: ext.: Fax:
Contact Person: Phone: ext.
E-Mail:
Applicant (check one): ☐ individual ☐ *company ☐ federal gov't ☐ state agency ☐ municipality
*If a company, list company type (e.g., corporation, limited partnership, etc.):
☐ Check if any co-applicants. If so, attach additional sheet(s) with the required information as supplied above.

Please provide the following information to be used for *billing purposes only*, if different:
Company/Individual Name:
Mailing Address:
City/Town: State: Zip Code:
Contact Person: Phone: ext.

Part II: Project Information

Brief Description of Project: *(Example: Development of a 50 slip marina on Long Island Sound)*

Location (City/Town):

Other Project Related Permits (*not* included with this form):

Permit Description	Issuing Authority	Submittal Date	Issuance Date	Denial Date	Permit #

Part III: Individual Permit Application and Fee Information

New, Mod. or Renew	Individual Permit Applications	Initial Fees	No. of Permits Applied For	Total Initial Fees	Original + Required Copies
	AIR EMISSIONS				
	New Source Review	$940.00			1 + 0
	Title V Operating Permits	none			1 + 0
	Title IV	none			1 + 0
	Clean Air Interstate Rule (CAIR)	none			1 + 0
	WATER DISCHARGES				
	To Groundwater	$1300.00			1 + 1
	To Sanitary Sewer (POTW)	$1300.00			1 + 1
	To Surface Water (NPDES)	$1300.00			1 + 2
	INLAND WATER RESOURCES-multiple permits 1 + 6 total copies				
	Dam Construction	none			1 + 2
	Flood Management Certification	none			1 + 1
	Inland 401 Water Quality Certification	none			1 + 5
	Inland Wetlands and Watercourses	none			
	Stream Channel Encroachment Lines	★			
	Water Diversion	★			1 + 5
	OFFICE OF LONG ISLAND SOUND PROGRAMS				
	Certificate of Permission	$375.00			1 + 3
	Coastal 401 Water Quality Certification	none			1 + 3
	Structures and Dredging/Tidal Wetlands	$660.00			1 + 3
	WASTE MANAGEMENT				
	Aerial Pesticide Application	★			1 + 2
	Aquatic Pesticide Application	$200.00			1 + 0
	CGS Section 22a-454 Waste Facilities	★			1 + 1
	Hazardous Waste Treatment, Storage and Disposal Facilities	★			1 + 1
	Marine Terminal License	$125.00			1 + 0
	Stewardship	$4000.00			1 + 1
	Solid Waste Facilities	★			1 + 1
	Waste Transportation	★			1 + 0
		Subtotal ➡			
	GENERAL PERMITS and AUTHORIZATIONS	Subtotals Page 3 ➡			
	Enter subtotals from Part IV, pages 3 & 4 & 5 of this form	Subtotals Page 4 ➡			
		Subtotals Page 5 ➡			
		TOTAL ➡			
	☐ Indicate whether municipal discount or state waiver applies.	Less Applicable Discount ➡			
		AMOUNT REMITTED ➡			
	Check # ➡	Check or money order should be made payable to: "Department of Environmental Protection"			

★ **See fee schedule on individual application.**

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Part IV: General Permit Registrations and Requests for Other Authorizations Application and Fee Information

✓	General Permits and Other Authorizations	Initial Fees	No. of Permits Applied For	Total Initial Fees	Original + Required Copies
	AIR EMISSIONS				
☐	Limit Potential to Emit from Major Stationary Sources of Air Pollution	$5000.00			1 + 0
☐	Ionizing Radiation Registration	$200.00			1 + 0
☐	Emergency/Temporary Authorization	★★			★★
☐	Other, (please specify):				
	WATER DISCHARGES				
☐	Domestic Sewage	$500.00			1 + 0
☐	Food Processing Wastewater	$500.00			1 + 0
☐	Groundwater Remediation Wastewater to a Sanitary Sewer	$500.00			1 + 0
☐ ☐	Groundwater Remediation Wastewater to a Surface Water Registration Only Approval of Registration by DEP	 $625.00 $1250.00			1 + 0
☐ ☐	Hydrostatic Pressure Testing Wastewater Registration Only Approval of Registration by DEP (natural gas pipelines)	 $625.00 $1250.00			1 + 0
☐ ☐	Miscellaneous Discharges of Sewer Compatible Wastewater Flow < 5,000 gpd and fire sprinkler system testwater Flow > 5,000 gpd	 $500.00 $1000.00			1 + 1
☐	Non-Contact Cooling and Heat Pump Water (Minor)	$625.00			1 + 1
☐	Photographic Processing Wastewater (Minor)	$100.00			1 + 0
☐	Printing & Publishing Wastewater (Minor) Flow < 40 gpd	$500.00 $100.00			1 + 0
☐	Stormwater Associated with Commercial Activities	$500.00			1 + 0
☐	Stormwater Associated with Industrial Activities	$500.00			1 + 0
☐ ☐	Stormwater & Dewatering Wastewaters-Construction Activities 5 – 10 acres > 10 acres	 $625.00 $1250.00			1 + 0
☐	Stormwater from Small Municipal Separate Storm Sewer Systems (MS4)	$250.00			1 + 0
☐	Swimming Pool Wastewater - Public Pools and Contractors	$500.00			1 + 0
☐	Tumbling or Cleaning of Parts Wastewater (Minor)	$1000.00			1 + 1
☐ ☐	Vehicle Maintenance Wastewater Registration Only Approval of Registration by DEP	 $500.00 $1000.00			1 + 0
☐	Water Treatment Wastewater	$625.00			1 + 0
☐	Emergency/Temporary Authorization - Discharge to POTW	$1500.00			1 + 0
☐	Emergency/Temporary Authorization - Discharge to Surface Water	$1500.00			1 + 0
☐	Emergency/Temporary Authorization - Discharge to Groundwater	$1500.00			1 + 0
☐	Other, (please specify):				
	Note: Carry subtotals over to Part III, page 2 of this form. Subtotal ➡				

★★ **Contact the specific permit program for this information (Contact numbers are provided in the instructions).**

Part IV: General Permit Registrations and Requests for Other Authorizations (continued)

✓	General Permits and Other Authorizations	Initial Fees	No. of Permits Applied For	Total Initial Fee	Original + Required Copies
	AQUIFER PROTECTION PROGRAM				
☐	Registration for Regulated Activities	$625.00			1 + 0
☐	Permit Application to Add a Regulated Activity	$1250.00			1 + 0
☐	Exemption Application from Registration	$1250.00			1 + 0
	INLAND WATER RESOURCES				
☐	Dam Safety Repair and Alteration	$1000.00			1 + 2
☐	Diversion of Water for Consumptive Use: Reauthorization Categories	$1000.00			1 + 2
☐	Diversion of Water for Consumptive Use: Authorization Required	$2500.00			1 + 5
☐	Diversion of Water for Consumptive Use: Filing Only	$1500.00			1 + 4
☐	Habitat Conservation	$1000.00			1 + 2
☐	Lake, Pond and Basin Dredging	$1000.00			1 + 2
☐	Minor Grading	$1000.00			1 + 2
☐	Minor Structures	$1000.00			1 + 2
☐	Utilities and Drainage	$1000.00			1 + 2
☐	Emergency/Temporary Authorization	★★			★★
☐	Other, (please specify):				
	OFFICE OF LONG ISLAND SOUND PROGRAMS				
☐	4/40 Docks	$700.00			1 + 1
☐	Beach Grading	$100.00			1 + 1
☐	Coastal Remedial Activities Required by Order	$700.00			1 + 1
☐	Marina and Mooring Field Reconfiguration	$700.00			1 + 1
☐	Non-harbor Moorings	$100.00			1 + 1
☐	Osprey Platforms and Perch Poles	none			1 + 1
☐	Pump-out Facilities (no fee for Clean Vessel Act grant recipients)	$100.00			1 + 1
☐	Removal of Derelict Structures	$100.00			1 + 1
☐	Residential Flood Hazard Mitigation	$100.00			1 + 1
☐	Swim Floats	$100.00			1 + 1
☐	Emergency/Temporary Authorization	★★			★★
☐	Other, (please specify):				
	Note: Carry subtotals over to Part III, page 2 of this form.	Subtotal ➡			

★ See fee schedule on registration/application. ★★ Contact the specific permit program for this information.

Part IV: General Permit Registrations and Requests for Other Authorizations (continued)

✓	General Permits and Other Authorizations	Initial Fees	No. of Permits Applied For	Total Initial Fee	Original + Required Copies
	WASTE MANAGEMENT				
☐	Addition of Grass Clippings at Registered Leaf Composting Facilities	$500.00			1 + 0
☐	Asbestos Disposal Authorization	$300.00			1 + 0
	Certain Recycling Facilities				
☐	Drop-site Recycling Facility	$200.00			1 + 0
☐	Limited Processing Recycling Facility	$500.00			1 + 0
☐	Recyclables Transfer Facility	$500.00			1 + 0
☐	Single Item Recycling Facility	$500.00			1 + 0
	Contaminated Soil and/or Staging Management (Staging/Transfer)				
☐	Registration Only	$250.00			1 + 0
☐	Approval of Registration by DEP	$1500.00			1 + 0
☐	Connecticut Solid Waste Demonstration Project	$1000.00			1 + 0
☐	Disassembling Used Electronics	$400.00			1 + 0
☐	Leaf Composting Facility	none			1 + 1
☐	Municipal Transfer Station	$800.00			1 + 1
☐	One Day Collection of Certain Wastes and Household Hazardous Waste	$1000.00			1 + 0
☐	Special Waste Authorization	$660.00			1 + 0
☐	Storage and Distribution of Two (2) Inch Nominal Tire Chip Aggregate	$500.00			1 + 0
☐	Storage and Processing of Asphalt Roofing Shingle Waste and/or Storage and Distribution of Ground Asphalt Aggregate	★			1 + 0
☐	Storage and Processing of Scrap Tires for Beneficial Use	$1000.00			1 + 0
☐	Emergency/Temporary Authorization	★★			★★
☐	Other, (please specify):				
	REMEDIATION				
☐	In Situ Groundwater Remediation: Enhance Aerobic Biodegradation	★			1 + 2
	Note: Carry subtotals over to Part III, page 2 of this form.	Subtotal ➡			

★See fee schedule on registration/application. ★★Contact the specific permit program for this information.

In conformance with the ADA, individuals with disabilities who need information in an alternative format to allow them to benefit and/or participate in the agency's programs and services, should call 860-424-3051 or 860-418-5937, or e-mail Marcia Z. Bonitto, ADA Coordinator at Marcia.Bonitto@ct.gov.

Applicant Compliance Information

DEP ONLY
App. No. _____
Co./Ind. No. _____

Applicant Name:
(as indicated on the *Permit Application Transmittal Form*)

If you answer *yes* to any of the questions below, you must complete the Table of Enforcement Actions on the reverse side of this sheet as directed in the instructions for your permit application.

A. During the five years immediately preceding submission of this application, has the applicant been convicted in any jurisdiction of a criminal violation of any environmental law?

☐ Yes ☐ No

B. During the five years immediately preceding submission of this application, has a civil penalty been imposed upon the applicant in any state, including Connecticut, or federal judicial proceeding for any violation of an environmental law?

☐ Yes ☐ No

C. During the five years immediately preceding submission of this application, has a civil penalty exceeding five thousand dollars been imposed on the applicant in any state, including Connecticut, or federal administrative proceeding for any violation of an environmental law?

☐ Yes ☐ No

D. During the five years immediately preceding submission of this application, has any state, including Connecticut, or federal court issued any order or entered any judgement to the applicant concerning a violation of any environmental law?

☐ Yes ☐ No

E. During the five years immediately preceding submission of this application, has any state, including Connecticut, or federal administrative agency issued any order to the applicant concerning a violation of any environmental law?

☐ Yes ☐ No

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Table of Enforcement Actions

(1) Type of Action	(2a) Date Commenced	(2b) Date Terminated	(3) Jurisdiction	(4) Case/Docket/ Order No.	(5) Description of Violation

☐ Check the box if additional sheets are attached. Copies of this form may be duplicated for additional space.

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Applicant Background Information

Please enter a check mark by the entity which best describes the applicant and complete the requested information. **You must choose one of the following.**

☐ **Corporation**

1. Parent Corporation
   Name:
   Mailing Address:
   City/Town: State: Zip Code: -
   Business Phone: - - ext. Fax: - -
   Contact Person: Title:
2. Subsidiary Corporation:
   Name:
   Mailing Address:
   City/Town: State: Zip Code: -
   Business Phone: - - ext. Fax: - -
   Contact Person: Title:
3. Directors:
   Name:
   Mailing Address:
   City/Town: State: Zip Code: -
   Business Phone: - - ext. Fax: - -

   Name:
   Mailing Address:
   City/Town: State: Zip Code: -
   Business Phone: - - ext. Fax: - -

   ☐ Please enter a check mark, if additional sheets are necessary. If so, label and attach additional sheet(s) to this sheet with the required information as supplied above.
4. Officers:
   Name:
   Mailing Address:
   City/Town: State: Zip Code: -
   Business Phone: - - ext. Fax: - -

   ☐ Please enter a check mark, if additional sheets are necessary. If so, label and attach additional sheet(s) to this sheet with the required information as supplied above.

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Applicant Background Information (continued)

☐ **Limited Liability Company**

1. List each member.

Name:
Mailing Address:
City/Town: State: Zip Code: -
Business Phone: - - ext. Fax: - -

Name:
Mailing Address:
City/Town: State: Zip Code: -
Business Phone: - - ext. Fax: - -

Name:
Mailing Address:
City/Town: State: Zip Code: -
Business Phone: - - ext. Fax: - -

☐ Please enter a check mark, if additional sheets are necessary. If so, label and attach additional sheet(s) to this sheet with the required information as supplied above.

2. List any manager(s) who, through the articles of organization, are vested the management of the business, property and affairs of the limited liability company.

Name:
Mailing Address:
City/Town: State: Zip Code: -
Business Phone: - - ext. Fax: - -

Name:
Mailing Address:
City/Town: State: Zip Code: -
Business Phone: - - ext. Fax: - -

Name:
Mailing Address:
City/Town: State: Zip Code: -
Business Phone: - - ext. Fax: - -

☐ Please enter a check mark, if additional sheets are necessary. If so, label and attach additional sheet(s) to this sheet with the required information as supplied above.

Applicant Background Information (continued)

☐ **Limited Partnership**

1. General Partners:

   Name:

   Mailing Address:

   City/Town: State: Zip Code: -

   Business Phone: - - ext. Fax: - -

   Name:

   Mailing Address:

   City/Town: State: Zip Code: -

   Business Phone: - - ext. Fax: - -

   Name:

   Mailing Address:

   City/Town: State: Zip Code: -

   Business Phone: - - ext. Fax: - -

   ☐ Please enter a check mark, if additional sheets are necessary. If so, label and attach additional sheet(s) to this sheet with the required information as supplied above.

2. Limited Partners:

   Name:

   Mailing Address:

   City/Town: State: Zip Code: -

   Business Phone: - - ext. Fax: - -

   Name:

   Mailing Address:

   City/Town: State: Zip Code: -

   Business Phone: - - ext. Fax: - -

   Name:

   Mailing Address:

   City/Town: State: Zip Code: -

   Business Phone: - - ext. Fax: - -

   ☐ Please enter a check mark, if additional sheets are necessary. If so, label and attach additional sheet(s) to this sheet with the required information as supplied above.

Applicant Background Information (continued)

☐ **General Partnership**

1. General Partners:

Name:
Mailing Address:
City/Town: State: Zip Code: -
Business Phone: - - ext. Fax: - -

Name:
Mailing Address:
City/Town: State: Zip Code: -
Business Phone: - - ext. Fax: - -

Name:
Mailing Address:
City/Town: State: Zip Code: -
Business Phone: - - ext. Fax: - -

Name:
Mailing Address:
City/Town: State: Zip Code: -
Business Phone: - - ext. Fax: - -

Name:
Mailing Address:
City/Town: State: Zip Code: -
Business Phone: - - ext. Fax: - -

Name:
Mailing Address:
City/Town: State: Zip Code: -
Business Phone: - - ext. Fax: - -

Name:
Mailing Address:
City/Town: State: Zip Code: -
Business Phone: - - ext. Fax: - -

☐ Please enter a check mark, if additional sheets are necessary. If so, label and attach additional sheet(s) to this sheet with the required information as supplied above.

Applicant Background Information (continued)

☐ **Voluntary Association**

1. List authorized persons of association or list all members of association.

Name:
Mailing Address:
City/Town: State: Zip Code: -
Business Phone: - - ext. Fax: - -

Name:
Mailing Address:
City/Town: State: Zip Code: -
Business Phone: - - ext. Fax: - -

Name:
Mailing Address:
City/Town: State: Zip Code: -
Business Phone: - - ext. Fax: - -

Name:
Mailing Address:
City/Town: State: Zip Code: -
Business Phone: - - ext. Fax: - -

Name:
Mailing Address:
City/Town: State: Zip Code: -
Business Phone: - - ext. Fax: - -

☐ Please enter a check mark, if additional sheets are necessary. If so, label and attach additional sheet(s) to this sheet with the required information as supplied above.

☐ **Individual or Other Business Type**

1. Name:
Mailing Address:
City/Town: State: Zip Code: -
Business Phone: - - ext. Fax: - -

2. State other names by which the applicant is known, including business names.
Name:

☐ Please enter a check mark, if additional sheets are necessary. If so, label and attach additional sheet(s) to this sheet with the required information as supplied above.

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Appendix B

CERTIFICATIONS

PREPARER'S CERTIFICATION

Project:	Wind Prospect
Project Location:	178 New Haven Road Prospect, Connecticut
Permittee:	BNE Energy
	29 South Main Street Town Center Suite 200 West Hartford, CT 06107 (800) 450-0503
Contractor:	To Be Determined
Preparer:	Shane Smith, PE
	Zapata Incorporated 6302 Fairview Road, Suite 600 Charlotte, North Carolina 28210
Phone:	704-358-8240
Fax:	704-358-8342

Certification Statement:
I certify that I have thoroughly and completely reviewed the Stormwater Pollution Control Plan for the site. I further certify, based on such review and in my professional judgment, that the Stormwater Pollution Control Plan has been prepared in accordance with the Connecticut Guidelines for Soil Erosion and Sediment Control, as amended, and the conditions for the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities issued on October 1, 2002 (or as reissued or modified), and the controls required for such Plan are appropriate for the site. I am aware that there are significant penalties for false statements in this certification, including the possibility of fine and imprisonment for knowingly making false statements.

Name:	Shane Smith, PE
Company:	Zapata Incorporated
Title:	Civil Engineer
Signature:	
Date:	

CONTRACTOR / CO-PERMITTEE CERTIFICATION

Project:	Wind Prospect
Project Location:	178 New Haven Road Prospect, Connecticut
Contractor:	
Address:	
Phone:	
Fax:	

Certification Statement:
I certify by my signature below that I participated in a pre-construction conference with the individual who is responsible for the operational control of this Stormwater Pollution Prevention Plan (SWPPP). I accept the terms and conditions of this SWPPP as required by the general National Pollutant Discharge Elimination System issued to the Owner/Operator of the construction activity for which I have been contracted to perform construction related professional services. Further, by my signature below, I understand that I am becoming a Co-permittee with the Owner/Operator and other contractors that have become Co-permittees to the general NPDES permit issued to the Owner/Operator of the facility for which I have been contracted to perform professional construction services. As a Co-permittee, I understand that I, and my company, as the case may be, am legally accountable to the Connecticut Department Environmental Protection to ensure compliance with the terms and conditions of this SWPPP. I also understand that DEP enforcement actions may be taken against any specific Co-permittee or combination of Co-permittees if the terms and conditions of this SWPPP are not met. Therefore, having understood the above information, I am signing this certification and am receiving Co-permittee status to the aforementioned general NPDES permit.

Company Official's Signature:

Name: _____ Title: _____
(Please print) (Please print)

Signature: _____ Date: _____

CONTRACTOR / OPERATOR CERTIFICATION

Project:	Wind Prospect
Project Location:	178 New Haven Road Prospect, Connecticut
Contractor:	
Address:	
Phone:	
Fax:	

Certification Statement:
I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief. I certify that this permit registration is on complete and accurate forms as prescribed by the commissioner without alteration of the text. I understand that a false statement made in the submitted information may be punishable as a criminal offense, in accordance with Section 22a-6 of the Connecticut General Statutes, pursuant to Section 53a-157b of the Bureau of Materials Management & Compliance Assurance DEP-PED-GP-015 10 of 24 Connecticut General Statutes, and in accordance with any other applicable statute. I also certify under penalty of law that I have read and understand all conditions of the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities issued on October 1, 2002 (or as reissued or modified), that all conditions for eligibility for authorization under the general permit are met, all terms and conditions of the general permit are being met for all discharges which have been initiated and are the subject of this registration, and that a system is in place to ensure that all terms and conditions of this general permit will continue to be met for all discharges authorized by this general permit at the site. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowingly making false statements.

Corporate Official's Signature:

Name: _____ Title: _____
(Please print) (Please print)

Signature: _____ Date: _____

INSPECTOR CERTIFICATION

Project:	Wind Prospect
Project Location:	178 New Haven Road Prospect, Connecticut
Contractor:	
Address:	
Phone:	
Fax:	

Certification Statement:
I certify that I have thoroughly and completely reviewed the Stormwater Pollution Control Plan for the site. I further certify, based on such review and in my professional judgment, that the Stormwater Pollution Control Plan has been prepared in accordance with the Connecticut Guidelines for Soil Erosion and Sediment Control, as amended, and the conditions for the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities issued on October 1, 2002 (or as reissued or modified), and the controls required for such Plan are appropriate for the site. I am aware that there are significant penalties for false statements in this certification, including the possibility of fine and imprisonment for knowingly making false statements.

Inspector's Signature:

Name: _____ Title: _____
(Please print) (Please print)

Signature: _____ Date: _____

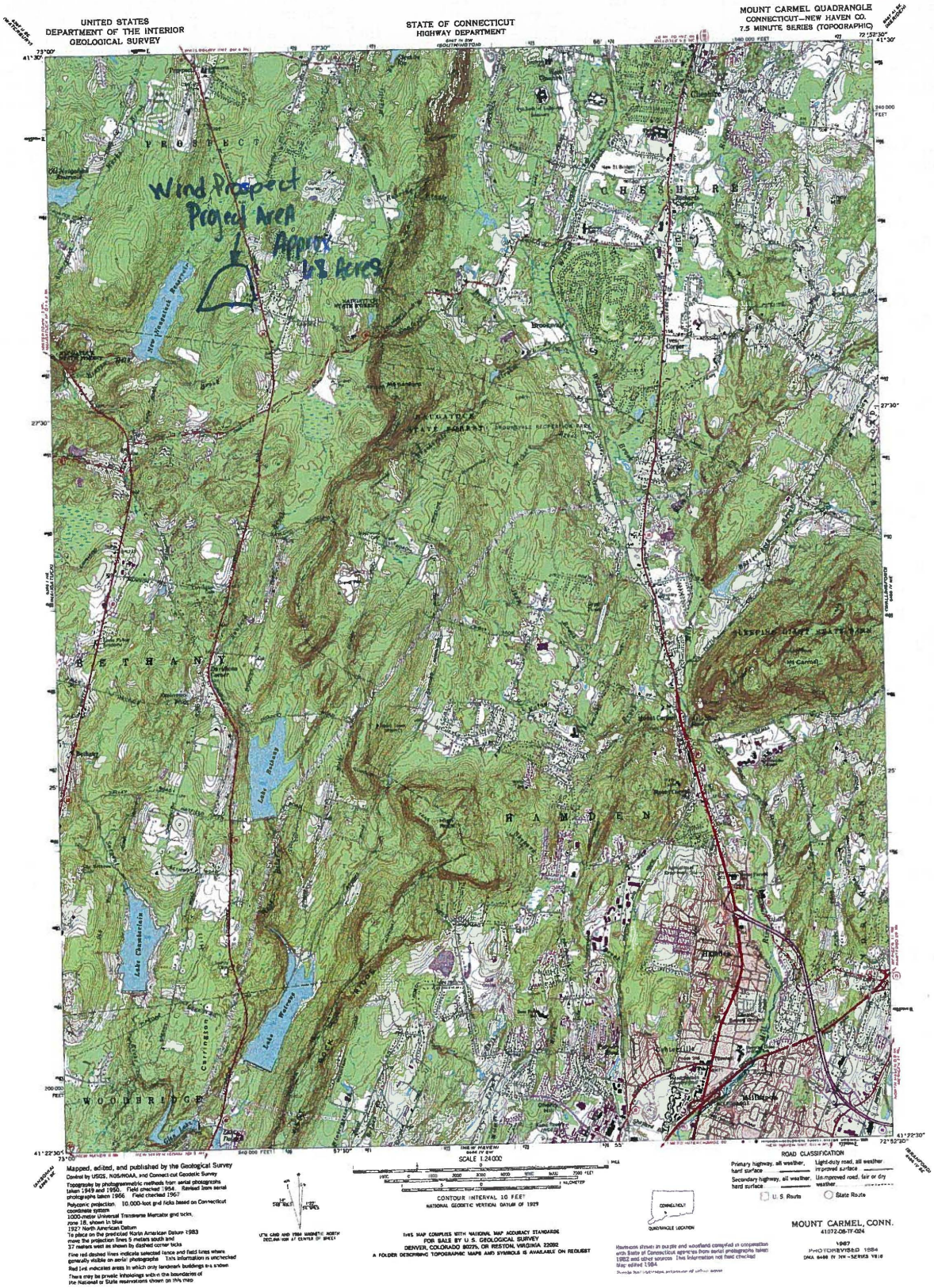
Appendix C

PRE-CONSTRUCTION MEETING

Although a pre-construction meeting is not a requirement for this CGP, a meeting will be conducted. A copy of this documentation should be kept in this appendix.

Appendix D

MAPS AND DRAWINGS


UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
STATE OF CONNECTICUT
HIGHWAY DEPARTMENT
MOUNT CARMEL QUADRANGLE
CONNECTICUT—NEW HAVEN CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
Wind Prospect
Project Area
Approx
48 Acres
PROSPECT
CHESHIRE
BETHANY
HAMDEN
WOODBRIDGE
Lake Chamberlain
Lake Watrous
Lake Pinney
Mapped, edited, and published by the Geological Survey
SCALE 1:24000
CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
ROAD CLASSIFICATION
MOUNT CARMEL, CONN.
41072-C6-TF-024
1967
PHOTOREVISED 1984

Latitude and Longitude

Applicant Name:
(as indicated on the *Permit Application Transmittal Form*)

Method of latitude and longitude determination (check one):

☐ Global Positioning System (GPS) ☐ USGS Map ☑ Other (please specify) Google Earth

In the table below, label each point for which latitude and longitude were measured, being consistent with identification numbers assigned throughout the application (e.g., 100, 101, etc.). For renewals or modifications of existing permits, please provide the existing permit number. Also provide: a brief description of the point (e.g., monitoring well, pipe outlet, air stack, etc.); latitude and longitude in degrees, minutes and seconds (e.g., 41E 16' 29"); and the name of the USGS quadrangle map(s) the points described are located on.

ID Number	Permit Number	Description	Latitude	Longitude	Quad Map Name	For DEP Use Only: GIS ID
1		Property Centerpoint	41°28'31" N	72°58'20" W		

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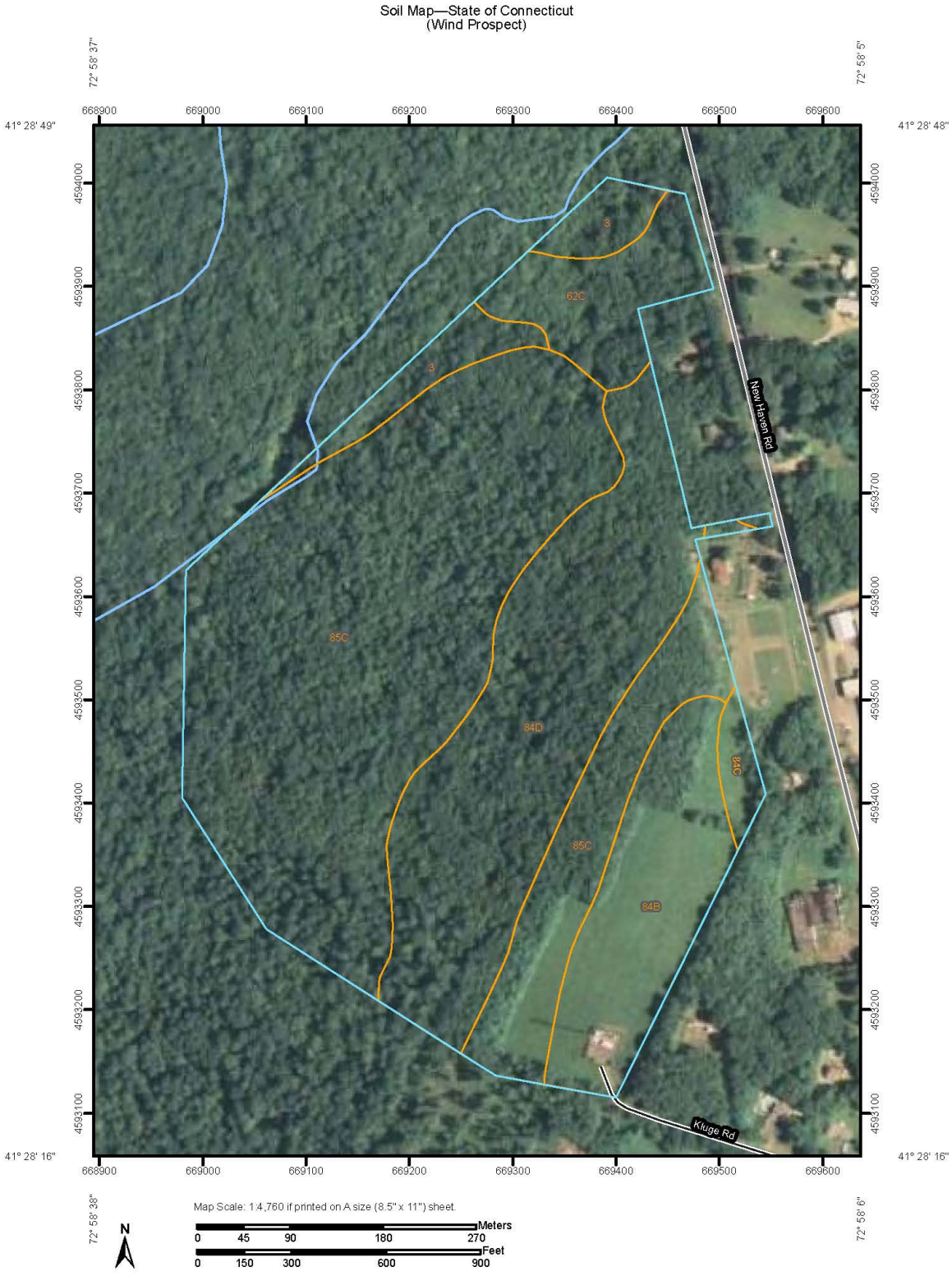
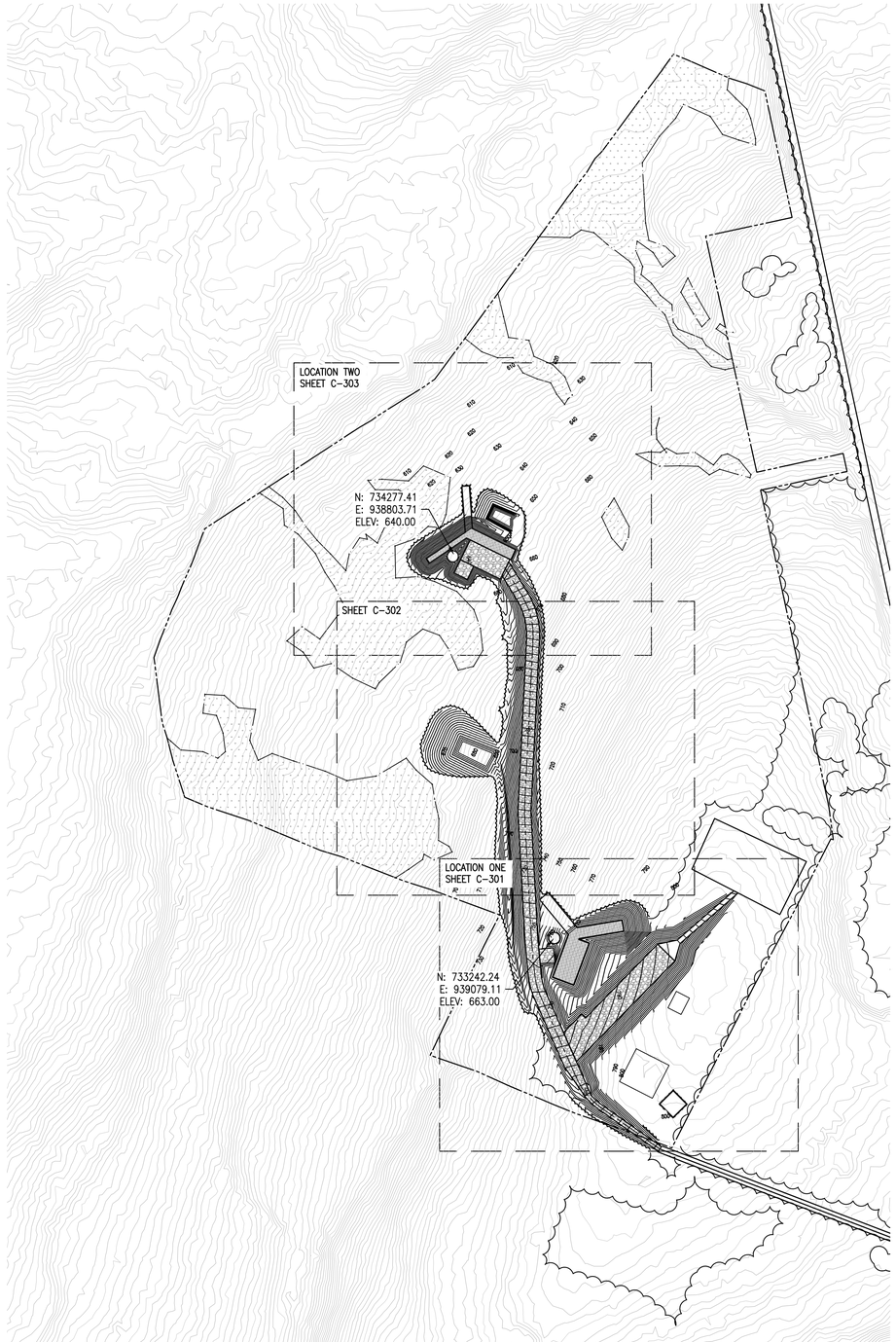

Soil Map—State of Connecticut
(Wind Prospect)
72° 58' 37"
72° 58' 5"
668900
669000
669100
669200
669300
669400
669500
669600
41° 28' 49"
41° 28' 48"
4594000
4593900
4593800
4593700
4593600
4593500
4593400
4593300
4593200
4593100
41° 28' 16"
72° 58' 38"
72° 58' 6"
3
62C
3
85C
84D
84C
85C
84B
New Haven Rd
Kluge Rd
Map Scale: 1:4,760 if printed on A size (8.5" x 11") sheet.
N
Meters
0 45 90 180 270
Feet
0 150 300 600 900
USDA
Natural Resources
Conservation Service
Web Soil Survey
National Cooperative Soil Survey
8/17/2010
Page 1 of 3

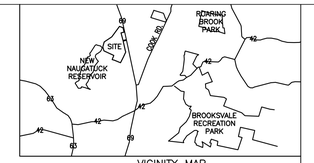
Map Unit Legend

State of Connecticut (CT600)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
3	Ridgebury, Leicester, and Whitman soils, extremely stony	3.5	4.4%
62C	Canton and Charlton soils, 3 to 15 percent slopes, extremely stony	4.9	6.1%
84B	Paxton and Montauk fine sandy loams, 3 to 8 percent slopes	8.9	11.1%
84C	Paxton and Montauk fine sandy loams, 8 to 15 percent slopes	1.0	1.3%
84D	Paxton and Montauk fine sandy loams, 15 to 25 percent slopes	19.7	24.6%
85C	Paxton and Montauk fine sandy loams, 8 to 15 percent slopes, very stony	42.0	52.5%
Totals for Area of Interest		**80.0**	**100.0%**

GRADING NOTES:

1. DISCREPANCIES SHOULD BE NOTED AND GUIDANCE OBTAINED FROM THE ENGINEER PRIOR TO CONTINUING WORK.
2. GENERAL CONTRACTOR IS RESPONSIBLE FOR LOCATING AND AVOIDING ALL EXISTING UNDERGROUND UTILITIES.
3. GENERAL CONTRACTOR TO MONITOR STORM WATER RUNOFF DURING AND AFTER CONSTRUCTION TO ENSURE PROPER DRAINAGE.
4. ALL GRADES SHOWN ON PLANS TO BE FIELD-VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. SHOULD ANY DISCREPANCIES EXIST, NOTIFY THE ENGINEER PRIOR TO CONSTRUCTION.
5. ALL SURFACES SHALL HAVE A SLOPE AS INDICATED ON DRAWINGS.
6. GENERAL CONTRACTOR TO ENSURE POSITIVE DRAINAGE AWAY FROM TOWER PADS.
7. MASS GRADING WILL NOT BE CONDUCTED ON THIS SITE.
8. ALL EROSION CONTROL STRUCTURES TO BE INSTALLED PRIOR TO CONSTRUCTION.
9. CONTRACTOR IS RESPONSIBLE FOR PLACING BARRICADES, USING FLAG MEN, ETC. AS NECESSARY TO INSURE SAFETY TO THE PUBLIC.
10. ALL PAVEMENT CUTS, CONCRETE OR ASPHALT, ARE TO BE REPLACED ACCORDING TO STANDARDS OF THE CONNECTICUT DEPARTMENT OF TRANSPORTATION.
11. SHORING WILL BE ACCORDING TO OSHA TRENCHING STANDARDS PART 1926, SUBPART P, OR AS AMENDED.





VICINITY MAP

LEGEND

- CULVERT PIPE
- DITCH LINE
- EXISTING TOPO
- NEW TOPO
- WETLAND LIMITS
- VEGETATION
- POST CONSTRUCTION VEGETATION LINE
- COMPACTED EARTH
- WETLAND
- GRAVEL
- LAYDOWN AREA

THIS PROJECT WILL HAVE NO TEMPORARY DIRECT WETLAND IMPACT. APPROPRIATE MITIGATION PROCEDURES AND REQUIRED PERMITS WILL BE OBTAINED PRIOR TO CONSTRUCTION.

0 100' 200'

BNE Energy Inc.
Producer of green clean energy

MARK	DESCRIPTION	DATE	APPR.
1	CONNECTICUT SITING COUNCIL SUBMISSION	11-04-10	TLK
2	INCORPORATED REQUESTED REVISIONS	01-31-11	TLK
3	INCORPORATED REQUESTED REVISIONS	03-08-11	MLC

NOT FOR CONSTRUCTION - CONNECTICUT SITING COUNCIL USE ONLY

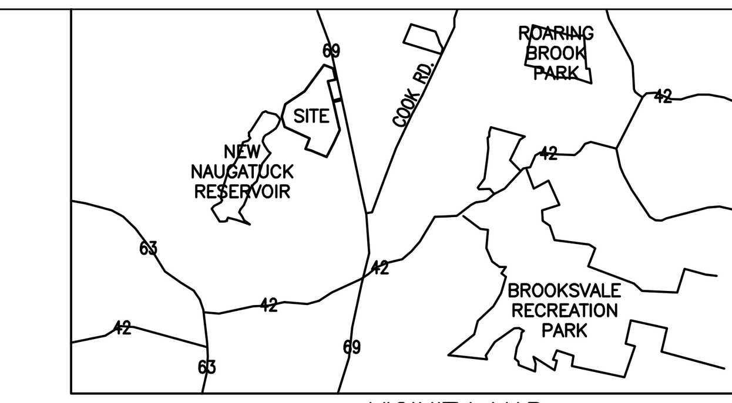
DESIGNED BY: RSS
DWN BY: RSW
CKD BY: TLK
SUBMITTED BY: ZAPATA INC.
DATE: 03-08-11
OWNER: BNE ENERGY
PARCEL NO.: TAX MAP 112, BLOCK 86, LOT 17.8
PLOT SCALE: 1=100' (1:1200)
PLOT DATE: 03-08-11
FILE NUMBER: 13253
ACCEPTANCE:
SIZE: ANSI D
FILE NAME: M:\Projects\BNE Energy Inc\Data\Cads\13253-01 Prospect\C300_GRAD.dwg

ZAPATA ENGINEERING
6301 FAIRVIEW ROAD #650 PHONE: (704) 366-8540
CHARLOTTE, NC 28210 FAX: (704) 366-8542
ZAPATAENGINEERING.COM WWW.ZAPATAINC.COM

WIND PROSPECT
CONNECTICUT

GRADING PLAN

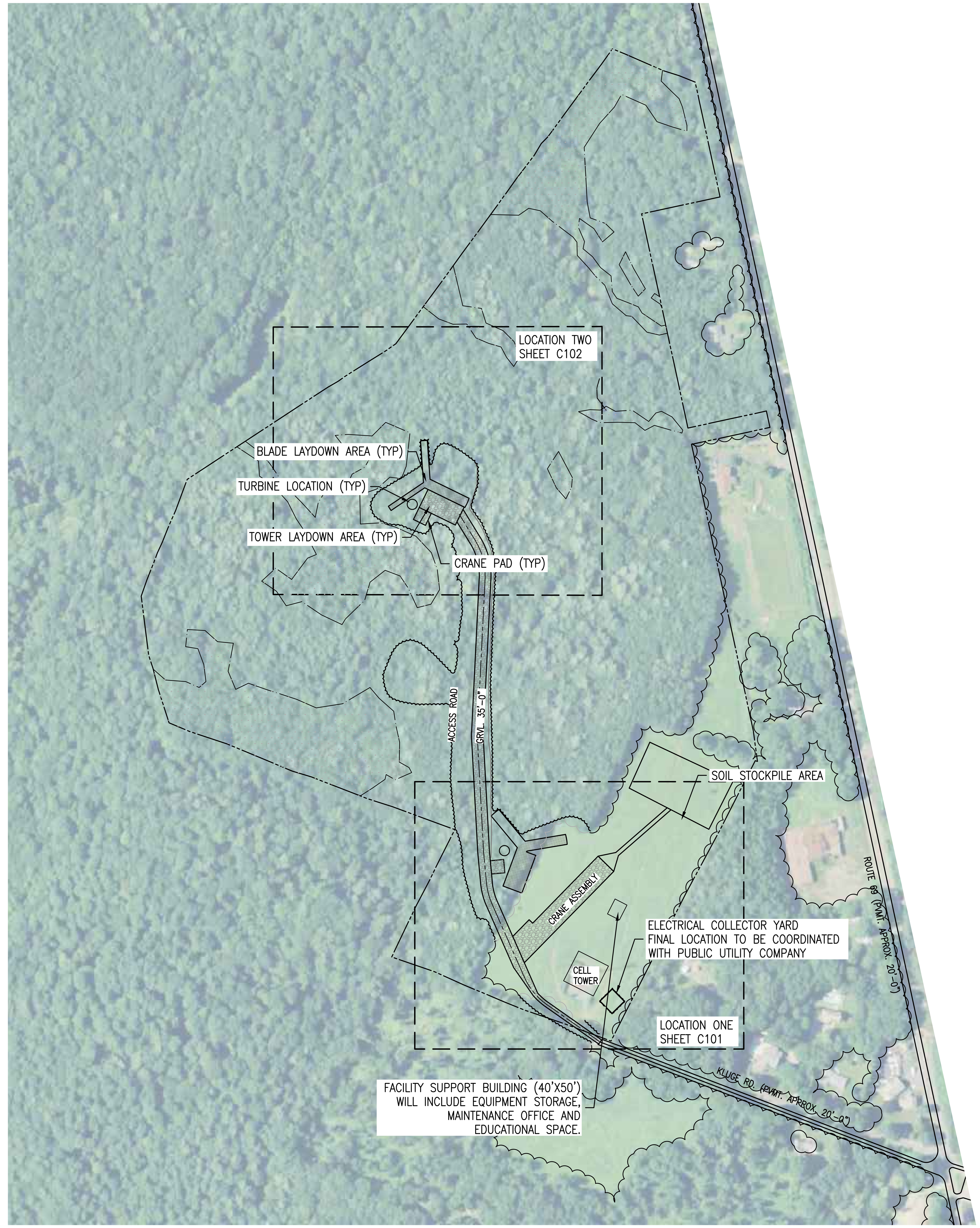
SHEET IDENTIFICATION
C-300



VICINITY MAP

LEGEND

- PROJECT BOUNDARY LINE
- EXISTING VEGETATION
- WETLAND LIMITS
- POST CONSTRUCTION VEGETATION LINE
- COMPACTED FILL
- WETLANDS
- GRAVEL



GENERAL NOTES

1. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SECURITY AND JOB SAFETY. CONSTRUCTION ACTIVITIES SHALL BE IN ACCORDANCE WITH OSHA STANDARDS, LOCAL REQUIREMENTS AND GOVERNMENT REQUIREMENTS.
2. AREAS DISTURBED DURING CONSTRUCTION AND NOT RESTORED WITH IMPERVIOUS SURFACES (BUILDINGS, PAVEMENTS, WALKS, ETC.) SHALL RECEIVE SIX INCHES OF TOPSOIL AND SHALL BE SEEDED, UNLESS OTHERWISE NOTED.
3. UPON AWARD OF CONTRACT, CONTRACTOR SHALL MAKE NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN NECESSARY PERMITS, PAY FEES, AND POST BONDS ASSOCIATED WITH THE WORK INDICATED ON THE DRAWINGS, IN THE SPECIFICATIONS, AND IN THE CONTRACT DOCUMENTS.
4. TRAFFIC SIGNAGE AND PAVEMENT MARKINGS SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, UNLESS OTHERWISE INDICATED.
5. AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE AS SOON AS PRACTICABLE.
6. IN THE EVENT THAT SUSPECTED CONTAMINATED SOILS ARE ENCOUNTERED DURING EXCAVATION AND CONSTRUCTION ACTIVITIES BASED ON VISUAL, OLFACTORY, OR OTHER EVIDENCE, THE CONTRACTOR SHALL STOP WORK IN THE VICINITY OF THE SUSPECT MATERIAL TO AVOID FURTHER SPREADING OF THE MATERIAL, AND SHALL NOTIFY THE OWNER IMMEDIATELY SO THAT THE APPROPRIATE TESTING AND SUBSEQUENT ACTION CAN BE TAKEN.
7. CONTRACTOR SHALL PREVENT DUST, SEDIMENT, AND DEBRIS FROM EXITING THE SITE AND SHALL BE RESPONSIBLE FOR CLEANUP, REPAIRS AND CORRECTIVE ACTION IF SUCH OCCURS. CONTRACTOR SHALL DISPOSE OF DEBRIS IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS, ORDINANCES, AND STATUTES.
8. DAMAGE RESULTING FROM CONSTRUCTION LOADS SHALL BE REPAIRED BY THE CONTRACTOR.
9. CONTRACTOR SHALL CONTROL STORMWATER RUNOFF DURING CONSTRUCTION TO PREVENT ADVERSE IMPACTS TO OFF SITE AREAS, AND SHALL BE RESPONSIBLE TO REPAIR RESULTING DAMAGES, IF ANY. ALL PAVEMENT, DITCHES, CURB AND GUTTER, UTILITIES, DRIVEWAYS, SIDEWALKS, SIGNS, FENCES, ETC. DISTURBED DURING CONSTRUCTION SHALL BE REPAIRED AND/OR RESTORED.
10. ALL ON SITE VEHICLE TRANSPORTATION ROUTES SHALL BE TEMPORARILY STABILIZED WITH STONE IMMEDIATELY AFTER GRADING TO PROVIDE READY ACCESS FOR EMERGENCY VEHICLES TO TRAVEL THROUGH AND AROUND THE CONSTRUCTION SITE DURING BOTH DRY AND WET WEATHER.
11. EXCESS EXCAVATION MATERIAL SHALL BE LEGALLY DISPOSED OF OFF SITE BY THE CONTRACTOR OR IN ON SITE AREAS APPROVED BY THE OWNER. NO SPOILS SHALL BE STORED ON SITE BEYOND SUBSTANTIAL COMPLETION.
12. DEWATERING SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
13. CONTRACTOR IS RESPONSIBLE FOR THE COORDINATION AND SEQUENCING OF DEMOLITION AS DESCRIBED BY THESE DOCUMENTS AND SPECIFICATIONS. CONTRACTOR IS TO OBTAIN ALL PERMITS.
14. CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF DEMOLITION OR RELOCATION WITH APPLICABLE UTILITY COMPANIES, IE, GAS, CABLE, POWER, TELEPHONE, WATER, SEWER, ETC.
15. EQUIPMENT OPERATION, ACTIVITIES, OR PROCESSES PERFORMED BY THE CONTRACTOR SHALL BE IN ACCORDANCE WITH ALL FEDERAL AND STATE AIR EMISSION AND PERFORMANCE LAWS AND STANDARDS.
16. CONTRACTOR IS RESPONSIBLE FOR TRAFFIC CONTROL DURING CONSTRUCTION.
17. BURNING WILL NOT BE ALLOWED ON THE PROJECT SITE UNLESS AUTHORIZED IN WRITING BY THE OWNER. THE SPECIFIC TIME, LOCATION AND MANNER OF BURNING SHALL BE SUBJECT TO APPROVAL.
18. SOLID WASTES (EXCLUDING CLEARING DEBRIS) SHALL BE PLACED IN CONTAINERS WHICH ARE EMPTIED ON A REGULAR SCHEDULE. HANDLING, STORAGE, AND DISPOSAL SHALL BE CONDUCTED TO PREVENT CONTAMINATION. SEGREGATION MEASURES SHALL BE EMPLOYED SO THAT NO HAZARDOUS OR TOXIC WASTE WILL BECOME CO-MINGLED WITH SOLID WASTE. THE CONTRACTOR SHALL TRANSPORT SOLID WASTE OFF SITE AND DISPOSE OF IT IN COMPLIANCE WITH FEDERAL, STATE AND LOCAL REQUIREMENTS FOR SOLID WASTE DISPOSAL. A SUBTITLE D RCRA PERMITTED LANDFILL SHALL BE THE MINIMUM ACCEPTABLE OFFSITE SOLID WASTE DISPOSAL OPTION. THE CONTRACTOR SHALL VERIFY THAT THE SELECTED TRANSPORTERS AND DISPOSAL FACILITIES HAVE THE NECESSARY PERMITS AND LICENSES TO OPERATE. THE CONTRACTOR SHALL COMPLY WITH FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS PERTAINING TO THE USE OF LANDFILL AREAS.
19. PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL MARK THE AREAS THAT NEED NOT BE DISTURBED UNDER THIS CONTRACT. ISOLATED AREAS WITHIN THE GENERAL WORK AREA WHICH ARE NOT TO BE DISTURBED SHALL BE MARKED OR FENCED. MONUMENTS AND MARKERS SHALL BE PROTECTED BEFORE CONSTRUCTION OPERATIONS COMMENCE.
20. THE CONTRACTOR SHALL MONITOR CONSTRUCTION ACTIVITIES TO PREVENT POLLUTION OF SURFACE AND GROUND WATERS AND SHALL COMPLY WITH THE CLEAN WATER ACT SECTION 404 REGULATIONS.
21. CONTRACTOR SHALL ESTABLISH AND VERIFY POINT OF BEGINNING (P.O.B) AND STAKE SITE AS INDICATED ON CONSTRUCTION DOCUMENTS PRIOR TO COMMENCEMENT OF CONSTRUCTION. NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES.
22. ALL DIMENSIONS ARE TO BACK OF CURB, FACE OF BUILDING, OR CENTERLINE UNLESS OTHERWISE NOTED.
23. ALL DETAILS SHALL BE CONSTRUCTED IN STRICT COMPLIANCE WITH SPECIFICATIONS AND CONSTRUCTION DOCUMENTS.

LAYOUT AND MATERIALS NOTES

1. PRIOR TO START OF CONSTRUCTION, CONTRACTOR SHALL VERIFY EXISTING PAVEMENT ELEVATIONS AT INTERFACE WITH PROPOSED PAVEMENTS AND EXISTING GROUND ELEVATIONS TO ASSURE PROPER TRANSITIONS BETWEEN EXISTING AND PROPOSED FACILITIES.
2. SYMBOLS AND LEGENDS OF PROJECT FEATURES ARE GRAPHIC REPRESENTATIONS AND ARE NOT NECESSARILY SCALED TO THEIR ACTUAL DIMENSIONS OR LOCATIONS ON THE DRAWINGS. THE CONTRACTOR SHALL REFER TO THE DETAIL SHEET DIMENSIONS, MANUFACTURERS' LITERATURE, SHOP DRAWINGS, AND FIELD MEASUREMENTS OF SUPPLIED PRODUCTS FOR LAYOUT OF THE PROJECT FEATURES.
3. CONTRACTOR SHALL NOT RELY SOLELY ON ELECTRONIC VERSIONS OF PLANS, SPECIFICATIONS, AND DATA FILES THAT ARE OBTAINED FROM THE DESIGNERS, BUT SHALL VERIFY LOCATION OF PROJECT FEATURES IN ACCORDANCE WITH THE PAPER COPIES OF THE PLANS AND SPECIFICATIONS THAT ARE SUPPLIED AS PART OF THE CONTRACT DOCUMENTS.

TREE AREA TO BE CLEARED: 249901 SQ. FT. / 5.74 ACRES
AREA TO BE DISTURBED: 426366 SQ. FT. / 9.79 ACRES
AREA WITHIN 100' WETLAND OFFSET: 48050 SQ. FT. / 1.10 ACRES

THIS PROJECT WILL HAVE NO TEMPORARY DIRECT WETLAND IMPACT. APPROPRIATE MITIGATION PROCEDURES AND REQUIRED PERMITS WILL BE OBTAINED PRIOR TO CONSTRUCTION.

0 100' 200'

BNE Energy Inc.
Producer of green clean energy

MARK	DESCRIPTION	DATE	APPR.
3	INCORPORATED REQUESTED REVISIONS	03-08-11	MLC
2	INCORPORATED REQUESTED REVISIONS	01-31-11	TLK
1	CONNECTICUT SITING COUNCIL SUBMISSION	11-04-10	TLK

NOT FOR CONSTRUCTION - CONNECTICUT SITING COUNCIL USE ONLY

DESIGNED BY: RSS | DATE: 03-08-11
DWN BY: RSW | CKD BY: TLK | OWNER: BNE ENERGY
SUBMITTED BY: ZAPATA INC. | PARCEL NO.: TAX MAP 112, BLOCK 95, LOT 178
PLOT SCALE: AS SHOWN | PLOT DATE: 03-08-11 | FILE NUMBER: 1355
SIZE: ANSI D | FILE NAME:

ZAPATA
6302 FAIRVIEW ROAD #600 PHONE: (704) 358-8240
CHARLOTTE, NC 28210 FAX: (704) 358-8342
ZAPATA@ZAPATAINC.COM WWW.ZAPATAINC.COM

WIND PROSPECT
CONNECTICUT

SITE PLAN WITH AERIAL IMAGREY

SHEET IDENTIFICATION
C-002

Appendix E

CONSTRUCTION RECORDS

During the construction of the project, a log should be kept that documents the specific activities, relative to this plan, that happen on the site. This should include when BMPs (controls) are installed and when construction of facilities is initiated.

INSPECTOR CERTIFICATION

Project:	Wind Prospect
Project Location:	178 New Haven Road Prospect, Connecticut
Contractor:	
Address:	
Phone:	
Fax:	

CONSTRUCTION ACTIVITIES / EROSION & SEDIMENT CONTROLS INSTALLATION LOG

Start Date	Completion Date	Construction Activity or E&SC Controls Installed	Operator

Appendix F

INSPECTION AND MAINTENANCE RECORDS

INSPECTOR CERTIFICATION

Project:	Wind Prospect
Project Location:	178 New Haven Road Prospect, Connecticut
Contractor:	
Address:	
Phone:	
Fax:	

CONSTRUCTION INSPECTION & MAINTENANCE LOG

Date	Activity	Description	(1) Report No.
	☐ Inspection ☐ Maintenance	By: ______________________	
	☐ Inspection ☐ Maintenance	By: ______________________	
	☐ Inspection ☐ Maintenance	By: ______________________	
	☐ Inspection ☐ Maintenance	By: ______________________	
	☐ Inspection ☐ Maintenance	By: ______________________	
	☐ Inspection ☐ Maintenance	By: ______________________	
	☐ Inspection ☐ Maintenance	By: ______________________	
	☐ Inspection ☐ Maintenance	By: ______________________	
	☐ Inspection ☐ Maintenance	By: ______________________	
	☐ Inspection ☐ Maintenance	By: ______________________	

CONSTRUCTION SITE INSPECTION REPORT

General Information				
Project Name:	Wind Prospect			
Location:	178 New Haven Road Prospect, Connecticut			
CT DEP Tracking No.		(1) Report No.		
Date of Inspection:		Start / End Time:		
Inspector's Name(s):				
Inspector's Title(s):				
Inspector's Contact Information:				
Describe present phase of construction:				
Type of Inspection: ❑ Regular ❑ Pre-storm event ❑ During storm event ❑ Post-storm event				
Weather Information				
Has it rained since the last inspection? ❑Yes ❑No If yes, provide: Storm Start Date & Time: Storm Duration (hrs): Approximate Rainfall (in):				
Weather at time of this inspection?				
Discharge Information (A)				
Do you suspect that discharges may have occurred since the last inspection? ❑Yes ❑No				
Are there any discharges at the time of inspection? ❑Yes ❑No				
Describe location of any discharges from the site:				

SITE-SPECIFIC BMPs

(B)	BMP Description	BMP Installed and Operating Properly?	Corrective Action Needed	Date for corrective action / responsible party
1		❑Yes ❑No		
2		❑Yes ❑No		
3		❑Yes ❑No		
4		❑Yes ❑No		
5		❑Yes ❑No		
6		❑Yes ❑No		
7		❑Yes ❑No		
8		❑Yes ❑No		
9		❑Yes ❑No		
10		❑Yes ❑No		
11		❑Yes ❑No		
12		❑Yes ❑No		
13		❑Yes ❑No		
14		❑Yes ❑No		
15		❑Yes ❑No		
16		❑Yes ❑No		
17		❑Yes ❑No		
18		❑Yes ❑No		
19		❑Yes ❑No		

OVERALL SITE ISSUES

(C)	BMP/activity	Implemented?	Maintained?	Corrective Action	Date for corrective action/responsible person
1	Are all slopes and disturbed areas not actively being worked properly stabilized?	❑Yes ❑No	❑Yes ❑No		
2	Are natural resource areas (e.g., streams, wetlands, mature trees, etc.) protected with barriers or similar BMPs?	❑Yes ❑No	❑Yes ❑No		
3	Are perimeter controls and sediment barriers adequately installed (keyed into substrate) and maintained?	❑Yes ❑No	❑Yes ❑No		
4	Are discharge points and receiving waters free of sediment deposits?	❑Yes ❑No	❑Yes ❑No		
5	Are storm drain inlets properly protected?	❑Yes ❑No	❑Yes ❑No		
6	Is there evidence of sediment being tracked into the street?	❑Yes ❑No	❑Yes ❑No		
7	Is trash/litter from work areas collected and placed in covered	❑Yes ❑No	❑Yes ❑No		

(C)	BMP/activity	Implemented?	Maintained?	Corrective Action	Date for corrective action/responsible person
	dumpsters?				
8	Are washout facilities (e.g., paint, stucco, concrete) available, clearly marked, and maintained?	❑Yes ❑No	❑Yes ❑No		
9	Are vehicle and equipment fueling, cleaning, and maintenance areas free of spills, leaks, or any other deleterious material?	❑Yes ❑No	❑Yes ❑No		
10	Are materials that are potential stormwater contaminants stored inside or under cover?	❑Yes ❑No	❑Yes ❑No		
11	Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled?	❑Yes ❑No	❑Yes ❑No		
12	(Other)	❑Yes ❑No	❑Yes ❑No		

(C)	BMP/activity	Implemented?	Maintained?	Corrective Action	Date for corrective action/responsible person
13	(Other)	❑Yes ❑No	❑Yes ❑No		

GENERAL INSPECTION COMMENTS AND EXPLANATION

General Inspection Comments (D)
Is other descriptive information attached to this inspection report? ❑Yes ❑No

Plan Information (E)
Were all current plan BMP's in place at the time of inspection? ❑Yes ❑No
Are additional BMP's required? ❑Yes ❑No
Does the plan need to be updated? ❑Yes ❑No
Explanation of additional BMP and Plan update requirements:

Certification statement:
I certify that I have thoroughly and completely reviewed the Stormwater Pollution Control Plan for the site. I further certify, based on such review and in my professional judgment, that the Stormwater Pollution Control Plan has been prepared in accordance with the Connecticut Guidelines for Soil Erosion and Sediment Control, as amended, and the conditions for the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities issued on October 1, 2002 (or as reissued or modified), and the controls required for such Plan are appropriate for the site. I am aware that there are significant penalties for false statements in this certification, including the possibility of fine and imprisonment for knowingly making false statements.

Name: _____
(Please print)
Signature: _____

Title: _____ Date: _____

.

CONSTRUCTION SITE MAINTENANCE REPORT

General Information				
Project Name:	Wind Prospect			
Location:	178 New Haven Road Prospect, Connecticut			
CT DEP Tracking No.:		(1) Report No.		
Date of Maintenance:		Start / End Time:		
Describe present phase of construction:				
Type of Maintenance: ❑ Regular ❑ Pre-storm event ❑ Post-storm event ❑ Plan Update				
Maintenance Information				
Inspection Report Reference (No., Item)	Maintenance performed:			
Performed by:				
Inspection Report Reference (No., Item)	Maintenance performed:			
Performed by:				
Inspection Report Reference (No., Item)	Maintenance performed:			
Performed by:				
Inspection Report Reference (No., Item)	Maintenance performed:			
Performed by:				
Inspection Report Reference (No., Item)	Maintenance performed:			
Performed by:				

Inspection Report Reference (No., Item)	Maintenance performed:
Performed by:	
Inspection Report Reference (No., Item)	Maintenance performed:
Performed by:	
Inspection Report Reference (No., Item)	Maintenance performed:
Performed by:	
Inspection Report Reference (No., Item)	Maintenance performed:
Performed by:	
Inspection Report Reference (No., Item)	Maintenance performed:
Performed by:	
Inspection Report Reference (No., Item)	Maintenance performed:
Performed by:	
Inspection Report Reference (No., Item)	Maintenance performed:
Performed by:	
Inspection Report Reference (No., Item)	Maintenance performed:
Performed by:	

Certification statement:
I certify that I have thoroughly and completely reviewed the Stormwater Pollution Control Plan for the site. I further certify, based on such review and in my professional judgment, that the Stormwater Pollution Control Plan has been prepared in accordance with the Connecticut Guidelines for Soil Erosion and Sediment Control, as amended, and the conditions for the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities issued on October 1, 2002 (or as reissued or modified), and the controls required for such Plan are appropriate for the site. I am aware that there are significant penalties for false statements in this certification, including the possibility of fine and imprisonment for knowingly making false statements.

Name: _____

Signature: _____

Title: _____ Date: _____

Appendix G

HAZARDOUS MATERIAL OR OIL SPILL RECORDS

HAZARDOUS SUBSTANCE/OIL SPILL DISCHARGE EVENT

General Information			
Project Name:	Wind Prospect		
Location:	178 New Haven Road Prospect, Connecticut		
CT DEP Tracking No.:		(2) Discharge Report No.	
Date of Event:		Time of Event:	
Responsible Party:			
Substance Discharged:			
Description of Event			
Is other descriptive information attached to this inspection report? ❑Yes ❑No			
Control and Containment Measures Implemented			

Counter Measures Proposed
Does the SWPPP need to be updated? ❑Yes ❑No
Explanation of additional BMP and SWPPP update requirements:

Certification statement:
I certify that I have thoroughly and completely reviewed the Stormwater Pollution Control Plan for the site. I further certify, based on such review and in my professional judgment, that the Stormwater Pollution Control Plan has been prepared in accordance with the Connecticut Guidelines for Soil Erosion and Sediment Control, as amended, and the conditions for the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities issued on October 1, 2002 (or as reissued or modified), and the controls required for such Plan are appropriate for the site. I am aware that there are significant penalties for false statements in this certification, including the possibility of fine and imprisonment for knowingly making false statements.

Name: _____

Signature: _____

Company: _____

Title: _____ Date: _____

Appendix H

UPDATE RECORDS

PLAN UPDATE DESCRIPTION

General Information			
Project Name:	Wind Prospect		
Location:	178 New Haven Road Prospect, Connecticut		
CT DEP Tracking No.		Revision No.	
Section:		Date:	
Description of Revision			
Reason for Revision			
Revision Requested By: ❑ Inspection ❑ Maintenance ❑ Agency Inspection ❑ Other: _____			

PLAN UPDATE LOG

Revision No.	Description -	
Section:	Date of Revision :	
By:		
Revision No.	Description -	
Section:	Date of Revision :	
By:		

Revision No.	Description -	
Section:	Date of Revision :	
By:		
Revision No.	Description -	
Section:	Date of Revision :	
By:		
Revision No.	Description -	
Section:	Date of Revision :	
By:		

Certification statement:
I certify that I have thoroughly and completely reviewed the Stormwater Pollution Control Plan for the site. I further certify, based on such review and in my professional judgment, that the Stormwater Pollution Control Plan has been prepared in accordance with the Connecticut Guidelines for Soil Erosion and Sediment Control, as amended, and the conditions for the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities issued on October 1, 2002 (or as reissued or modified), and the controls required for such Plan are appropriate for the site. I am aware that there are significant penalties for false statements in this certification, including the possibility of fine and imprisonment for knowingly making false statements.

Name: _____

Signature: _____

Company: _____

Title: _____ Date: _____

Appendix I

CT DEP NOTICE OF TERMINATION (NOT)

General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities

Notice of Termination Form

Please complete and submit this form in accordance with the general permit (DEP-PED-GP-015) in order to ensure the proper handling of your termination. Print or type unless otherwise noted.

Note: Ensure that for commercial and industrial facilities, registrations under the *General Permit for the Discharge of Stormwater Associated with Industrial Activity* (DEP-PED-GP-014) or the *General Permit for the Discharge of Stormwater from Commercial Activities* (DEP-PED-GP-004) have been filed where applicable. For questions about the applicability of these general permits, please call the Department at 860-424-3018.

Part I: Registrant Information

1. Permit number: ***GSN***
2. Fill in the name of the registrant(s) as indicated on the registration certificate:

   Registrant:
3. Site Address:

   City/Town: State: Zip Code:
4. Date all storm drainage structures were cleaned of construction sediment:

   Date of Completion of Construction:

   Date of Last Inspection (must be at least three months after final stabilization pursuant to Section 6(b)(6)(D) of the general permit):
5. Check the post-construction activities at the site (check all that apply):

   ☐ Industrial ☐ Residential ☐ Commercial ☐ Capped Landfill

   ☐ Other (describe):

Part II: Certification

"I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that a false statement made in this document or its attachments may be punishable as a criminal offense, in accordance with Section 22a-6 of the Connecticut General Statutes, pursuant to Section 53a-157b of the Connecticut General Statutes, and in accordance with any other applicable statute."

Signature of Permittee	Date
Name of Permittee (print or type)	Title (if applicable)

Note: Please submit this Notice of Termination Form to:

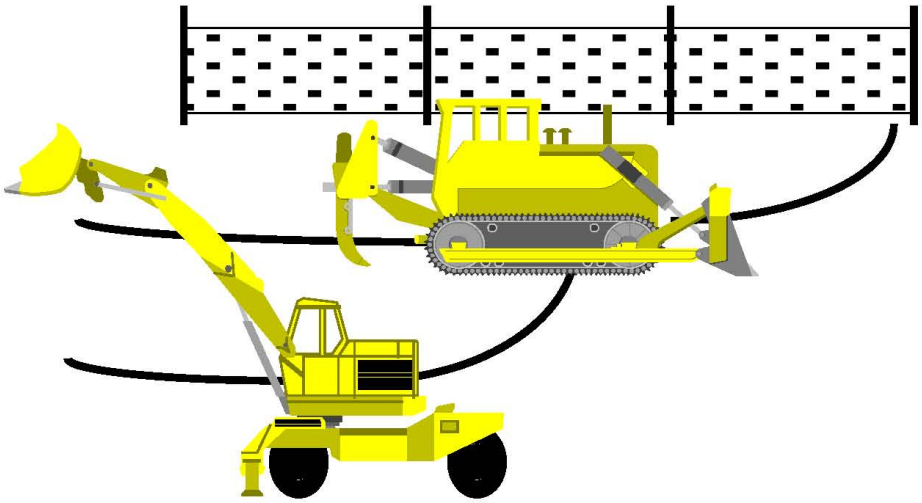
STORMWATER PERMIT COORDINATOR
BUREAU OF WATER MANAGEMENT
DEPARTMENT OF ENVIRONMENTAL PROTECTION
79 ELM STREET
HARTFORD, CT 06106-5127

Appendix J

CONNECTICUT GENERAL PERMIT FOR THE DISCHARGE OF STORMWATER AND DEWATERING WASTEWATERS ASSOCIATED WITH CONSTRUCTION ACTIVITIES (DEP-PED-GP-015)

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF MATERIALS MANAGEMENT & COMPLIANCE ASSURANCE
WATER PERMITTING & ENFORCEMENT DIVISION
860-424-3018

General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities



Issuance Date: April 9, 2010
Expiration Date: October 1, 2011

Printed on recycled paper

General Permit for Discharge of Stormwater and Dewatering Wastewaters from Construction Activities

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General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities

Section 1. Authority

This general permit is issued under the authority of Section 22a-430b of Connecticut General Statutes.

Section 2. Definitions

The definitions of terms used in this general permit shall be the same as the definitions contained in Section 22a-423 of the Connecticut General Statutes and Section 22a-430-3(a) of the Regulations of Connecticut State Agencies. As used in this general permit, the following definitions shall apply:

"*Authorized activity*" means any activity authorized under this general permit.

"*Coastal area*" means coastal area as defined in Section 22a-93(5) of the Connecticut General Statutes.

"*Coastal waters*" means coastal waters as defined in Section 22a-29 of the Connecticut General Statutes.

"*Commissioner*" means commissioner as defined in Section 22a-2(b) of the Connecticut General Statutes.

"*Construction activities*" means activities including but not limited to clearing and grubbing, grading, excavation, and dewatering.

"*Department*" means the department of environmental protection.

"*Developer*" means a person who or municipality which is responsible, either solely or through contract, for the design and construction of a project site.

"*Dewatering wastewater*" means wastewater generated from the lowering of the groundwater table, the pumping of accumulated stormwater from an excavation, or the pumping of surface water from a cofferdam, or pumping of other surface water that has been diverted into a construction site.

"*Disturbance*" means the execution of any of the construction activities defined above.

"*Erosion*" means the detachment and movement of soil or rock fragments by water, wind, ice and gravity.

"*Fresh-tidal wetland*" means a tidal wetland with an average salinity level of less than 0.5 parts per thousand.

"*Guidelines*" means the Connecticut Guidelines for Soil Erosion and Sediment Control, as amended, or as may be amended, established pursuant to Section 22a-328 of the Connecticut General Statutes.

"*High tide line*" means high tide line as defined in Section 22a-359(c) of the Connecticut General Statutes.

"*Individual permit*" means a permit issued to a named permittee under Section 22a-430 of the Connecticut General Statutes.

"*Inland wetland*" means wetlands as defined in Section 22a-38 of the Connecticut General Statutes.

"*Municipal separate storm sewer*" means conveyances for stormwater (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels or storm drains) owned or operated by any municipality and discharging directly to surface waters of the state.

"Municipality" means a city, town or borough of the state.

"*Permittee*" means any person who or municipality which initiates, creates or maintains a discharge in accordance with Section 3 of this general permit.

"*Person*" means person as defined in Section 22a-423 of the Connecticut General Statutes.

"*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, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged.

"*Registrant*" means a person who or municipality which files a registration.

"*Registration*" means a registration form filed with the commissioner pursuant to Section 4 of this general permit.

"*Retain*" means to permanently hold on-site with no subsequent point-source release as in a detention system where there is a temporary holding or delaying of the delivery of stormwater downstream.

"*Sediment*" means solid material, either mineral or organic, that is in suspension, is transported, or has been moved from its site of origin by erosion.

"*Site*" means geographically contiguous land or water on which a authorized activity takes place or on which an activity for which authorization is sought under this general permit is proposed to take place. Non-contiguous land or water owned by the same person and connected by a right-of-way, which such person controls, and to which the public does not have access shall be deemed the same site.

"*Soil*" means any unconsolidated mineral and organic material of any origin.

"*Stabilize*" means the use of pavement, establishment of vegetation, use of geotextile materials, use or organic of inorganic mulching materials, or retention of existing vegetation to prevent erosion.

"*Stormwater*" means waters consisting of precipitation runoff.

"*Tidal wetland*" means a wetland as that term is defined in Section 22a-29(2) of the Connecticut General Statutes.

"*Total disturbance*" means the total area on a site that will be exposed or susceptible to erosion during the course of a project.

"*Total sediment load*" means the total amount of sediment carried by stormwater runoff on an annualized basis.

"*Upland soils*" means soils which are not designated as poorly drained, very poorly drained, alluvial, or flood plain by the National Cooperative Soils Survey, as may be amended from time to time, of the Soil Conservation Service of the United States Department of Agriculture and/or the Inland Wetlands Commission of the community in which the project will take place.

"*Water company*" means water company as defined in Section 25-32a of the Connecticut General Statutes.

Section 3. Authorization Under This General Permit

(a) Eligible Activities

The following activity is authorized by this general permit, provided the requirements of subsection (b) of this section are satisfied:

The discharge of stormwater and dewatering wastewater from construction activities which result in the disturbance of one or more total acres of land area on a site regardless of project phasing. In the case of a larger plan of development (such as a subdivision), the estimate of total acres of site disturbance shall include, but is not limited to, road and utility construction, individual lot construction (i.e. house, driveway, septic system, etc.), and all other construction associated with the overall plan, regardless of the individual parties responsible for construction of these various elements.

(b) Requirements for Authorization

This general permit authorizes the activity listed in subsection (a) of this section provided:

(1) Coastal Management Act

Such activity must be consistent with all applicable goals and policies in Section 22a-92 of the Connecticut General Statutes, and must not cause adverse impacts to coastal resources as defined in Section 22a-93(15) of the Connecticut General Statutes.

(2) Endangered and Threatened Species

Such activity must not threaten the continued existence of any species listed pursuant to Section 26-306 of the Connecticut General Statutes as endangered or threatened and must not result in the destruction or adverse modification of habitat designated as essential to such species.

(3) Historic Places

Such activity must at all times be in compliance with State and Federal Historic Preservation statutes, regulations and policies including identification of any potential impacts on property listed or eligible for listing on the State and/or National Registers of Historic Places and a description of measures necessary to avoid or minimize those impacts.

(4) The stormwater is *not* discharged to a Publicly Owned Treatment Works or to ground water;

(5) The discharge shall *not* cause pollution due to acute or chronic toxicity to aquatic and marine life, impair the biological integrity of aquatic or marine ecosystems, or result in an unacceptable risk to human health.

(6) Any construction site that is registered under the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities, issued October 1, 1997, is authorized by this general permit provided that the site continues to meet the conditions listed in Section 6 of this general permit.

(c) Registration

Pursuant to Section 4 of this general permit, a completed registration with respect to the construction activity shall be filed with the commissioner 30 days prior to the commencement of the activity unless exempted by Section 3(d) of this general permit.

(d) Small Construction

For construction projects with a total disturbed area (regardless of phasing) of between one and five acres, the permittee shall agree to adhere to the erosion and sediment control land use regulations of the town in which the construction activity is conducted. No registration pursuant to Section 4 of this general permit shall be required for such construction activity as long as it receives town review and written approval of its erosion and sediment control measures and follows the Guidelines. If no review is conducted by the town, the permittee must register and comply with Section 6.

(e) Geographic Area

This general permit applies throughout the State of Connecticut.

(f) Effective Date and Expiration Date of this General Permit

The modification of this general permit is **effective on April 9, 2010**, and **expires on October 1, 2011**.

(g) Effective Date of Authorization

Any activity is authorized by this general permit on the date the general permit becomes effective or on the date the activity is initiated, whichever is later.

(h) Revocation of an Individual Permit

If an activity is eligible for authorization under this general permit and such activity is presently authorized by an individual permit, the existing individual permit may be revoked by the commissioner upon a written request by the permittee. If the commissioner revokes such individual permit in writing, such revocation shall take effect on the effective date of authorization of such activity under this general permit.

(i) Issuance of an Individual Permit

If the commissioner issues an individual permit under Section 22a-430 of the Connecticut General Statutes, authorizing an activity authorized by this general permit, this general permit shall cease to authorize that activity beginning on the date such individual permit is issued.

Section 4. Registration Requirements

(a) Who Must File a Registration

With the exception noted below or in Section 3(d) of this general permit, any person who or municipality which initiates, creates, originates or maintains a discharge described in Section 3(a) of this general permit shall file with the commissioner a registration form that meets the requirements of Section 4 of this general permit along with the applicable fee at least thirty (30) days before the initiation of construction activities.

If a site has been previously registered under the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities issued October 1, 1997 or October 1, 2002 and modified April 8, 2004, the permittee does *not* need to submit a new registration under this general permit, unless the ownership of the site has been transferred.

If the site for which a registration is submitted under this permit is owned by one person or municipality but is leased or, in some other way, the legal responsibility of another person or municipality (the developer), the developer is responsible for submitting the registration required by this permit. The registrant is responsible for compliance with all conditions of this permit.

(b) Scope of Registration

A registrant shall register on one registration form only those discharges that are operated by such permittee on one site.

(c) Contents of Registration

(1) Fees

(A) The registration fee of $625.00 shall be submitted with a registration form, provided that the registration fee for a municipality shall be $312.50. A registration shall not be deemed complete and no activity shall be authorized by this general permit (with the exception of activities previously registered under the general permit issued October 1, 1997 or October 1, 2002 and modified April 8, 2004), unless the registration fee has been paid in full.

(B) Registrants required to submit a stormwater pollution control plan (Plan) in accordance with Section 6(b)(3)(C) of this permit shall pay an additional plan review fee of $625.00 with the submittal of the Plan, the registration form and registration fee, provided that the plan review fee for a municipality shall be $312.50.

(C) The registration fee and plan review fee shall be paid by check or money order payable to the **Department of Environmental Protection**.

(D) The registration fee and plan review fee are non-refundable.

(2) Registration Form

A registration shall be filed on forms prescribed and provided by the commissioner and shall include the following:

(A) Legal name, address, and telephone number of the registrant. If the registrant is a person (as defined in Section 2) transacting business in Connecticut and is registered with the Connecticut Secretary of the State, provide the exact name as registered with the Connecticut Secretary of the State.

(B) Legal name, address and telephone number of the owner of the property on which the activity will take place.

(C) Legal name, address and telephone number of the primary contact for departmental correspondence and inquiries, if different from the registrant.

(D) Legal name, address and telephone number of the developer of the property on which the subject activity is to take place.

(E) Legal name, address and daytime and off-hours telephone numbers of the general contractor or other representative, if different from the developer.

(F) Legal name, address and telephone number of any consultant(s) or engineer(s) retained by the permittee to prepare the registration and Stormwater Pollution Control Plan.

(G) Location address or description of the site with respect to which the registration is submitted.

(H) The estimated duration of the construction activity.

(I) A brief description of the construction activity, including, but not limited to:

(i) Number of acres disturbed.

(ii) Assurance that construction is in accordance with the Guidelines and local erosion and sediment control ordinances.

(iii) A determination of whether or not a coastal consistency review is necessary for the activity.

(iv) Assurance that there are no endangered or threatened species suspected or known to be impacted by the activity.

(J) A brief description of the stormwater discharge, including:

(i) The name of the municipal separate storm sewer system or immediate surface water body or wetland to which the stormwater runoff discharges, and whether or not the site discharges within 500 feet of a tidal wetland.

(ii) The name of the watershed or nearest waterbody to which the site discharges.

(K) An 8 ½" by 11" copy of the relevant portion or a full-sized original of a United States Geological Survey (USGS) quadrangle map, with a scale of 1:24,000, showing the exact location of the site and the area within a one mile radius of the site. Identify the quadrangle name on such copy.

(L) For all sites that will disturb 10 acres or more (regardless of phasing), a copy of the Stormwater Pollution Control Plan shall be submitted (with the $625.00 plan review fee) in accordance with Section 6(b)(3)(C) of this general permit.

(M) The signature of the registrant and of the individual or individuals responsible for actually preparing the registration, each of whom shall certify in writing as follows:

"I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief. I certify that this permit registration is on complete and accurate forms as prescribed by the commissioner without alteration of the text. I understand that a false statement made in the submitted information may be punishable as a criminal offense, in accordance with Section 22a-6 of the Connecticut General Statutes, pursuant to Section 53a-157b of the

Connecticut General Statutes, and in accordance with any other applicable statute.

I also certify under penalty of law that I have read and understand all conditions of the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities issued on October 1, 2002 (or as reissued or modified), that all conditions for eligibility for authorization under the general permit are met, all terms and conditions of the general permit are being met for all discharges which have been initiated and are the subject of this registration, and that a system is in place to ensure that all terms and conditions of this general permit will continue to be met for all discharges authorized by this general permit at the site. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowingly making false statements."

(N) The following certification must be signed by a professional engineer, licensed to practice in Connecticut:

"I certify that I have thoroughly and completely reviewed the Stormwater Pollution Control Plan for the site. I further certify, based on such review and on my professional judgment, that the Stormwater Pollution Control Plan has been prepared in accordance with the Connecticut Guidelines for Soil Erosion and Sediment Control, as amended, and the conditions for the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities issued on October 1, 2002 (or as reissued or modified), and the controls required for such Plan are appropriate for the site. I am aware that there are significant penalties for false statements in this certification, including the possibility of fine and imprisonment for knowingly making false statements."

(d) Where to File a Registration

A registration shall be filed with the commissioner at the following address:

CENTRAL PERMIT PROCESSING UNIT
DEPARTMENT OF ENVIRONMENTAL PROTECTION
79 ELM STREET
HARTFORD, CT 06106-5127

(e) Additional Information

The commissioner may require a registrant to submit additional information that the commissioner reasonably deems necessary to evaluate the consistency of the subject activity with the requirements for authorization under this general permit.

(f) Additional Notification

For discharges through a municipal separate storm sewer system authorized by this general permit, a copy of the registration shall also be submitted to the owner and operator of that system.

For discharges within a public drinking water supply watershed or aquifer area, a copy of the registration and the Plan described in Section 6(b) of this general permit shall be submitted to the water company.

In addition, a copy of this registration and the Plan shall be available upon request to the local wetlands agency or its equivalent, or its duly authorized agent.

(g) Action by Commissioner

(1) The commissioner may reject without prejudice a registration if he determines that it does not satisfy the requirements of Section 4(c) of this general permit or more than 30 days have elapsed since the commissioner requested that the registrant submit additional information or the required fee and the registrant has not submitted such information or fee. Any registration refiled after such a rejection shall be accompanied by the fee specified in Section 4(c)(1) of this general permit.

(2) The commissioner may disapprove a registration if he finds that the subject activity is inconsistent with the requirements for authorization under Section 3(b) of this general permit, or for any other reason provided by law.

(3) Disapproval of a registration under this subsection shall constitute notice to the registrant that the subject activity must be authorized under an individual permit.

(4) Rejection or disapproval of a registration shall be in writing.

Section 5. Termination Requirements

(a) Notice of Termination

At the completion of a construction project registered pursuant to Section 4 of this general permit, a Notice of Termination must be filed with the commissioner. A project shall be considered complete after the site has been stabilized for at least three months following the cessation of construction activities. A site is not considered stabilized until there is no active erosion or sedimentation present and no disturbed areas remain exposed.

(b) Termination Form

A termination notice shall be filed on forms prescribed and provided by the commissioner and shall include the following:

(1) The permit number as provided to the permittee on the permit certificate.

(2) The name of the registrant as reported on the general permit registration form (DEP-PED-REG-015).

(3) The address of the completed construction site.

(4) The date all storm drainage structures were cleaned of construction debris pursuant to Section 6(b)(6)(C)(iv) of this general permit, the date of completion of construction, and the date of the final inspections pursuant to Section 6(b)(6)(D) of this general permit.

(5) A description of the post-construction activities at the site.

(6) Signature of the permittee.

(c) Where to File a Termination Form

A termination form shall be filed with the commissioner at the following address:

WATER PERMITTING & ENFORCEMENT DIVISION
BUREAU OF MATERIALS MANAGEMENT & COMPLIANCE ASSURANCE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
79 ELM STREET
HARTFORD, CT 06106-5127

Section 6. Conditions of this General Permit

The permittee shall at all times continue to meet the requirements for authorization set forth in Section 3 of this general permit. In addition, a permittee shall assure that authorized activities are conducted in accordance with the following conditions:

(a) Conditions Applicable to Certain Discharges

(1) Any person who or municipality that discharges stormwater into coastal tidal waters for which a permit is required under either the Structures and Dredging Act in accordance with Section 22a-361 of the Connecticut General Statutes or the Tidal Wetlands Act in accordance with Section 22a-32 of the Connecticut General Statutes, shall obtain such permit(s) from the commissioner. A tidal wetland permit is required for the placement of any sediment upon tidal wetland, whether it is deposited directly or indirectly.

(2) Any site which has a post-construction stormwater discharge that is located less than 500 feet from a tidal wetlands which is not a fresh-tidal wetland, shall discharge such stormwater through a system designed to retain the volume of stormwater runoff generated by 1 inch of rainfall on the site.

(b) Stormwater Pollution Control Plan

A registrant shall develop a Stormwater Pollution Control Plan ("Plan") for each site authorized by this general permit. Once the construction activity begins, the permittee shall perform all actions required by such Plan and shall maintain compliance with the Plan thereafter. The Plan shall be designed to address two components of stormwater pollution: (1) pollution caused by soil erosion and sedimentation during and after construction; and (2) stormwater pollution caused by use of the site after construction is completed, including, but not limited to, parking lots, roadways and the maintenance of grassed areas.

(1) Development of Plan

(A) The registrant shall develop a Plan for the site. Plans shall be prepared in accordance with sound engineering practices. The Plan shall ensure and demonstrate compliance with the Guidelines.

(B) For any stormwater discharges that were permitted under the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities issued October 1, 1997 or October 1, 2002 and modified April 8, 2004, the existing Plan shall be updated in accordance with subsection (b)(6) of this section. The permittee shall maintain compliance with such Plan thereafter.

(2) Deadlines for Plan Preparation and Compliance

For construction activities authorized by this general permit that are initiated after the date of issuance of this general permit, the registrant shall prepare the Plan no later than thirty days before the date of initiation of the construction activity.

(3) Signature and Plan Review

(A) The Plan shall be signed by the registrant in accordance with Section 6(h) of this general permit. The Plan shall be certified by all contractors and subcontractors in accordance with subsection (b)6(E) of this section.

(B) The registrant shall provide a copy of the Plan, and the registration form required in Section 4 of this general permit to the following persons immediately upon request:

(i) the commissioner;

(ii) the local agency approving sediment and erosion plans, grading plans, or stormwater management plans, and the local official responsible for enforcement of such plans;

(iii) in the case of a stormwater discharge through a municipal separate storm sewer system, the municipal operator of the system;

(iv) in the case of a stormwater discharge located within a public drinking water supply watershed or aquifer area, the water company.

The registrant shall also provide a copy of the Plan to all contractors or developers conducting construction activities on individual lots or buildings within the overall plan of development, regardless of ownership. These additional contractors or developers shall sign the certification in Section 6(b)(6)(E)(ii).

For all registrants or permittees submitting a Plan in accordance with subsection (b)(3)(B)(i) of this section, a plan review fee of $625.00 shall be submitted with the Plan.

(C) For construction activities that result in the disturbance of ten or more total acres of land area on a site (regardless of phasing), the Plan shall be submitted to the commissioner no later than thirty days before the initiation of construction activities. Plans shall be submitted in conjunction with the registration submitted in compliance with Section 4 of this general permit.

(D) The commissioner may notify the registrant at any time that the Plan and/or the site do not meet one or more of the minimum requirements of this permit. Within 7 days of such notice, or such other time as the commissioner may allow, the permittee shall make the required changes to the Plan and perform all actions required by such revised Plan. Within 15 days of such notice, or such other time as the commissioner may allow, the permittee shall submit to the commissioner a written certification that the requested changes have been made and implemented and such other information as the commissioner requires, in accordance with Sections 6(g) and 6(h) of this general permit.

(4) Keeping Plans Current

The permittee shall amend the Plan whenever there is a change in contractors or subcontractors at the site, or a change in design, construction, operation, or maintenance at the site which has the potential for the discharge of pollutants to the waters of the state and which has not otherwise been addressed in the Plan or if the actions required by the Plan fail to prevent pollution.

(5) Failure to Prepare, Maintain or Amend Plan

In no event shall failure to complete, maintain or update a Plan in accordance with subsections (b)(1) and (b)(4) of this section relieve a permittee of responsibility to implement any actions required to protect the waters of the state and to comply with all conditions of the permit, including but not limited to installation and maintenance of all controls and management measures described in subsection (b)(6)(C) of this section and in the Guidelines.

(6) Contents of the Plan

The Plan shall include, at a minimum the following items:

(A) Site Description

(i) A description of the nature of the construction activity;

(ii) Estimates of the total area of the site and the total area of the site that is expected to be disturbed by construction activities;

(iii) An estimate, including calculations if any, of the average runoff coefficient of the site after construction activities are completed and existing data describing the soil or the quality of any discharge from the site;

(iv) A site map indicating drainage patterns and approximate slopes anticipated after major grading activities, areas of soil disturbance, the location of major structural and non-structural controls identified in the Plan, the location of areas where stabilization practices are expected to occur, areas which will be vegetated following construction, surface waters (including inland wetlands, tidal wetlands, and fresh-tidal wetlands), and locations where stormwater is discharged to a surface water (both during and post-construction); and

(v) The name of the immediate receiving water(s) and the ultimate receiving water(s) of the discharges authorized by this general permit and areal extent of wetland acreage on the site.

(B) Construction Sequencing

Each Plan shall clearly identify the expected sequence of major construction activities on the site, including but not limited to installation of erosion and sediment control measures, clearing, grubbing, grading, cut and fill operations, drainage and utility installation, and paving and stabilization operations. This section shall include an estimated timetable for all activities, which shall be revised in accordance with subsection (4) above as necessary. Wherever possible, the site shall be phased to avoid the disturbance of over five acres at one time. The Plan shall clearly show the limits of disturbance for the entire activity and for each phase. Any Plan that shows a site disturbance of over ten acres total (regardless of phasing) requires submittal of the Plan to the commissioner, in accordance with subsection (b)(3)(C) of this section.

(C) Controls

Each Plan shall include a description of appropriate controls and measures that will be performed at the site to prevent pollution of the waters of the state. The Plan shall clearly describe for each major activity identified in subsection (b)(6)(B) of this section, the appropriate control measures and the timing during the construction process that the measures would be implemented. (For example, perimeter controls for one portion of the site will be installed after the clearing and grubbing necessary for installation of the measure, but before the clearing and grubbing for the remaining portions of the site. Perimeter controls will be actively maintained until final stabilization of those portions of the site upgradient of the perimeter control. Temporary perimeter controls will be removed after final stabilization.) Controls shall be designed in accordance with the Guidelines. Use of controls to comply with subsection (b)(6)(C)(i) of this section that are not included in the Guidelines must be approved by the commissioner or his designated agent. The description of controls shall address the following minimum components:

(i) Erosion and Sediment Controls

1) Stabilization Practices

The Plan shall include a description of interim and permanent stabilization practices, including a schedule for implementing the practices. Site plans shall ensure that existing vegetation is preserved where attainable and that disturbed portions of the site are stabilized. Stabilization practices may include but not be limited to: silt fences, temporary seeding, permanent seeding, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of trees, preservation of mature vegetation, and other vegetative and non-structural measures as may be identified by the Guidelines. Where construction activities have permanently ceased or have temporarily been suspended for more than seven days, or when final grades are reached in any portion of the site, stabilization practices shall be implemented within three days. Areas that will remain disturbed but inactive for at least thirty days shall receive temporary seeding in accordance with the Guidelines. Areas that will remain disturbed beyond the planting season, shall receive long-term, non-vegetative stabilization sufficient to protect the site through the winter. In all cases, stabilization measures shall be implemented as soon as possible in accordance with the Guidelines. Areas to be graded with slopes steeper than 3:1 (horizontal:vertical) and higher than 15 feet shall be graded with appropriate slope benches in accordance with the Guidelines.

2) Structural Practices

The Plan shall include a description of structural practices to divert flows away from exposed soils, store flows or otherwise limit runoff and the discharge of pollutants from the site. Such practices include but may not be limited to earth dikes (diversions), drainage swales, sediment traps, check dams, subsurface drains, pipe slope drains, level spreaders, storm drain inlet protection, outlet protection, reinforced soil retained systems, gabions, and temporary or permanent sediment basins and chambers. Unless otherwise specifically approved in writing, structural measures shall be installed on upland soils.

At a minimum, for discharge points that serve an area with between 2 and 5 disturbed acres at one time, a sediment basin, sediment trap, or other control as may be defined in the Guidelines for such drainage area, designed in accordance with the Guidelines, shall be designed and installed. All sediment traps or basins shall provide a minimum of 134 cubic yards of water storage per acre drained and shall be maintained until final stabilization of the contributing area. This requirement shall not apply to flows from off-site areas and flows from the

site that are either undisturbed or have undergone final stabilization where such flows are diverted around the sediment trap or basin. Any exceptions must be approved in writing by the commissioner.

For discharge points that serve an area with more than five (5) disturbed acres at one time, a sediment basin designed in accordance with the Guidelines, shall be designed and installed, which basin shall provide a minimum of 134 cubic yards of water storage per acre drained and which basin shall be maintained until final stabilization of the contributing area. This requirement shall not apply to flows from off-site areas and flows from the site that are either undisturbed or have undergone final stabilization where such flows are diverted around the sediment basin. Outlet structures from sedimentation basins shall not encroach upon a wetland. Any exceptions must be approved in writing by the commissioner.

3) Maintenance

Maintenance shall be performed in accordance with the Guidelines, provided that, if additional maintenance is required to protect the waters of the state from pollution, the Plan shall include a description of the procedures to maintain in good and effective operating conditions all erosion and sediment control measures, including vegetation, and all other protective measures identified in the site plan.

(ii) Dewatering Wastewaters

Where feasible and appropriate, dewatering wastewaters shall be infiltrated into the ground. Dewatering wastewaters discharged to surface waters shall be discharged in a manner that minimizes the discoloration of the receiving waters. Each plan shall include a description of the operational and structural practices that will be used to ensure that all dewatering wastewaters will not cause scouring or erosion or contain suspended solids in amounts that could reasonably be expected to cause pollution of waters of the State.

(iii) Post Construction Stormwater Management

Each plan must include a description of measures that will be installed during the construction process to control pollutants in stormwater discharges that will occur after construction operations have been completed. Unless otherwise specifically provided by the commissioner in writing, structural measures shall be placed on upland soils. This general permit only addresses the installation of stormwater management measures, and not the ultimate operation and maintenance of such structures included in such measures after the construction activities have been completed and the site has

undergone final stabilization. The following measures must be implemented:

1) For construction activities initiated after October 1, 1992, the permittee shall install post-construction stormwater management measures designed to remove suspended solids and floatables (i.e. oil and grease, other floatable liquids, floatable solids, trash, etc.) from stormwater. A goal of 80 percent removal of total sediment load from the stormwater discharge shall be used in designing and installing stormwater management measures. Such measures may include but are not limited to: stormwater detention structures (including wet ponds); stormwater retention structures; flow attenuation by use of open vegetated swales and natural depressions; infiltration of runoff on-site; vegetated buffer strips; sediment removal chambers or structures; and sequential systems (which combine several practices). Provisions shall be included to address the maintenance of any system installed.

2) Velocity dissipation devices shall be placed at discharge locations and along the length of any outfall channel as necessary to provide a non-erosive velocity flow from the structure to a water course so that the natural physical and biological characteristics and functions are maintained and protected (e.g., maintenance of hydrologic conditions, such as the hydrodynamics present prior to the initiation of construction activities).

3) Any site which has a post-construction stormwater discharge located less than 500 feet from a tidal wetlands which is not a fresh-tidal wetland, shall discharge such stormwater through a system designed to retain the volume of stormwater runoff generated by 1 inch of rainfall on the site.

(iv) Other Controls

A description of other controls used at the site. The following controls must be implemented:

1) Waste Disposal

A description of best management practices to be performed at the site, which practices shall ensure that no litter, debris, building materials, or similar materials are discharged to waters of the State.

2) Off-site vehicle tracking of sediments and the generation of dust shall be minimized.

3) All post-construction stormwater structures shall be cleaned of construction sediment and any remaining silt fence shall be removed prior to filing of a termination notice pursuant to Section 5 of this general permit.

(D) Inspection

A description of the inspection procedures that must be addressed and implemented in the following manner:

Qualified personnel (provided by the permittee) shall inspect disturbed areas of the construction activity that have not been finally stabilized, structural control measures, and locations where vehicles enter or exit the site at least once every seven calendar days and within 24 hours of the end of a storm that is 0.1 inches or greater. Where sites have been temporarily or finally stabilized, such inspection shall be conducted at least once every month for three months.

(i) Disturbed areas and areas used for storage of materials that are exposed to precipitation shall be inspected for evidence of, or the potential for, pollutants entering the drainage system. Erosion and sediment control measures shall be observed to ensure that they are operating correctly. Where discharge locations or points are assessable, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters. Locations where vehicles enter or exit the site shall be inspected for evidence of off-site sediment tracking.

(ii) Based on the results of the inspection, the description of potential sources and pollution prevention measures identified in the Plan shall be revised as appropriate as soon as practicable after such inspection. Such modifications shall provide for timely implementation of any changes to the site within 24 hours and implementation of any changes to the Plan within 3 calendar days following the inspection. The Plan shall be revised and the site controls updated in accordance with sound engineering practices, the Guidelines, and subsections (4) and (6)(C)(i) 3) of this section.

(iii) A report summarizing the scope of the inspection, name(s) and qualifications of personnel making the inspection, the date(s) of the inspection, major observations relating to the implementation of the Plan, and actions taken shall be made and retained as part of the Plan for at least three years after the date of inspection. The report shall be signed by the permittee or his/her authorized representative in accordance with the requirements of Section 6(h) of this general permit.

(E) Contractors

(i) The Plan shall clearly identify each contractor and subcontractor that will perform actions on the site which may reasonably be expected

to cause or have the potential to cause pollution of the waters of the State, and shall include a copy of the certification statement shown below signed by each such contractor and subcontractor. All certifications shall be included in the Plan.

(ii) Subdivisions

Where individual lots in a subdivision or other common plan of development are conveyed or otherwise the responsibility of another contractor, those individual lot contractors shall be required to comply with the provisions of this general permit and shall sign the certification statement below regardless of lot size or disturbed area. The permittee shall provide a copy of the Plan to each of these contractors.

(iii) Certification Statement

The Plan shall include the following certification signed by each contractor and subcontractor identified in the Plan as described above:

"I certify under penalty of the law that I have read and understand the terms and conditions of the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities. I understand that as a contractor or subcontractor at the site, I am authorized by this general permit, and must comply with the terms and conditions of this permit, including but not limited to the requirements of the Stormwater Pollution Control Plan prepared for the site."

The certification shall include the name and title of the person providing the signature; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification is made.

(c) Reporting and Record Keeping Requirements

(1) The permittee shall retain copies of the Plan and all reports required by this general permit, and records of all data used to complete the registration to be authorized by this general permit, for a period of at least three years from the date that construction at the site is completed unless the commissioner specifies another time period in writing.

(2) The permittee shall retain an updated copy of the Plan required by this general permit at the construction site from the date construction is initiated at the site until the date construction at the site is completed.

(3) Upon completion of construction, for sites authorized by the General Permit for the Discharge of Stormwater Associated with Commercial Activity or the General Permit for the Discharge of Stormwater Associated with Industrial Activity, the Plan shall be kept as an appendix to the Stormwater Management

Plan or Stormwater Pollution Prevention Plan (as applicable) for a period of at least three years from the date of completion of construction.

(d) Regulations of Connecticut State Agencies Incorporated into this General Permit

The permittee shall comply with the following Regulations of Connecticut State Agencies which are hereby incorporated into this general permit, as if fully set forth herein:

(1) Section 22a-430-3:

Subsection (b) General - subparagraph (1)(D) and subdivisions (2),(3),(4) and (5)
Subsection (c) Inspection and Entry
Subsection (d) Effect of a Permit - subdivisions (1) and (4)
Subsection (e) Duty to Comply
Subsection (f) Proper Operation and Maintenance
Subsection (g) Sludge Disposal
Subsection (h) Duty to Mitigate
Subsection (I) Facility Modifications, Notification - subdivisions (1) and (4)
Subsection (j) Monitoring, Records and Report Requirements - subdivisions (1), (6), (7), (8), (9) and (11) (except subparagraphs (9) (A) (2) and (9) (c)
Subsection (k) Bypass
Subsection (m) Effluent Limitation Violations
Subsection (n) Enforcement
Subsection (p) Spill Prevention and Control
Subsection (q) Instrumentation, Alarms, Flow Recorders
Subsection (r) Equalization

(2) Section 22a-430-4

Subsection (t) Prohibitions
Subsection (p) Revocation, Denial, Modification
Appendices

(e) Reliance on Registration

In evaluating the registrant's registration, the commissioner has relied on information provided by the registrant. If such information proves to be false or incomplete, the registrant's authorization may be suspended or revoked in accordance with law, and the commissioner may take any other legal action provided by law.

(f) Duty to Correct and Report Violations

Upon learning of a violation of a condition of this general permit, a permittee shall immediately take all reasonable action to determine the cause of such violation, correct and mitigate the results of such violation, prevent further such violation, and report in writing such violation and such corrective action to the commissioner within five (5) days of the permittee's learning of such violation. Such information shall be filed in accordance with the certification requirements prescribed in Section 6(h) of this general permit.

(g) Duty to Provide Information

If the commissioner requests any information pertinent to the authorized activity or to compliance with this general permit or with the permittee's authorization under this general permit, the permittee shall provide such information within fifteen (15) days of such request. Such information shall be filed in accordance with the certification requirements prescribed in Section 6(h) of this general permit.

(h) Certification of Documents

Any document, including but not limited to any notice, information or report, which is submitted to the commissioner under this general permit shall be signed by the permittee, or a duly authorized representative of the permittee, and by the individual or individuals responsible for actually preparing such document, each of whom shall certify in writing as follows:

"I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that a false statement made in this document or its attachments may be punishable as a criminal offense, in accordance with Section 22a-6 of the Connecticut General Statutes, pursuant to Section 53a-157b of the Connecticut General Statutes, and in accordance with any other applicable statute."

(i) Date of Filing

For purposes of this general permit, the date of filing with the commissioner of any document is the date such document is received by the commissioner. The word "day" as used in this general permit means the calendar day; if any date specified in the general permit falls on a Saturday, Sunday, or legal holiday, such deadline shall be the next business day thereafter.

(j) False Statements

Any false statement in any information submitted pursuant to this general permit may be punishable as a criminal offense, in accordance with Section 22a-6 of the Connecticut General Statutes, pursuant to Section 53a-157b of the Connecticut General Statutes.

(k) Correction of Inaccuracies

Within fifteen (15) days after the date a permittee becomes aware of a change in any information in any material submitted pursuant to this general permit, or becomes aware that any such information is inaccurate or misleading or that any relevant information has been omitted, such permittee shall correct the inaccurate or misleading information or supply the omitted information in writing to the commissioner. Such information shall be filed in accordance with the certification requirements prescribed in Section 6(h) of this general permit.

(l) Transfer of Authorization

Authorizations under this general permit are non-transferable. However, any person or municipality registering a discharge that has previously been registered under this permit may adopt by reference the Plan developed by the previous permittee. The new permittee shall amend the Plan as required by Section 6(b)(4) prior to submitting a new registration.

(m) Other Applicable Law

Nothing in this general permit shall relieve the permittee of the obligation to comply with any other applicable federal, state and local law, including but not limited to the obligation to obtain any other authorizations required by such law.

(n) Other Rights

This general permit is subject to and does not derogate any present or future rights or powers of the State of Connecticut and conveys no rights in real or personal property nor any exclusive privileges, and is subject to all public and private rights and to any federal, state, and local laws pertinent to the property or activity affected by such general permit. In conducting any activity authorized hereunder, the permittee may not cause pollution, impairment, or destruction of the air, water, or other natural resources of this state. The issuance of this general permit shall not create any presumption that this general permit should or will be renewed.

Section 7. Commissioner's Powers

(a) Abatement of Violations

The commissioner may take any action provided by law to abate a violation of this general permit, including but not limited to penalties of up to $25,000 per violation per day under Chapter 446k of the Connecticut General Statutes, for such violation. The commissioner may, by summary proceedings or otherwise and for any reason provided by law, including violation of this general permit, revoke a permittee's authorization hereunder in accordance with Sections 22a-3a-2 through 22a-3a-6, inclusive, of the Regulations of Connecticut State Agencies. Nothing herein shall be construed to affect any remedy available to the commissioner by law.

(b) General Permit Revocation, Suspension, or Modification

The commissioner may, for any reason provided by law, by summary proceedings or otherwise, revoke or suspend this general permit or modify to establish any appropriate conditions, schedules of compliance, or other provisions which may be necessary to protect human health or the environment.

(c) Filing of an Individual Application

If the commissioner notifies a permittee in writing that such permittee must obtain an individual permit if he wishes to continue lawfully conducting the authorized activity, the permittee must file an application for an individual permit within thirty (30) days of receiving the commissioner's notice. While such application is pending before the commissioner, the permittee shall comply with the terms and conditions of this general permit and the subject approval of registration. Nothing herein shall affect the commissioner's power to revoke a permittee's authorization under this general permit at any time.

Issued Date: April 9, 2010

AMEY W. MARRELLA
Commissioner

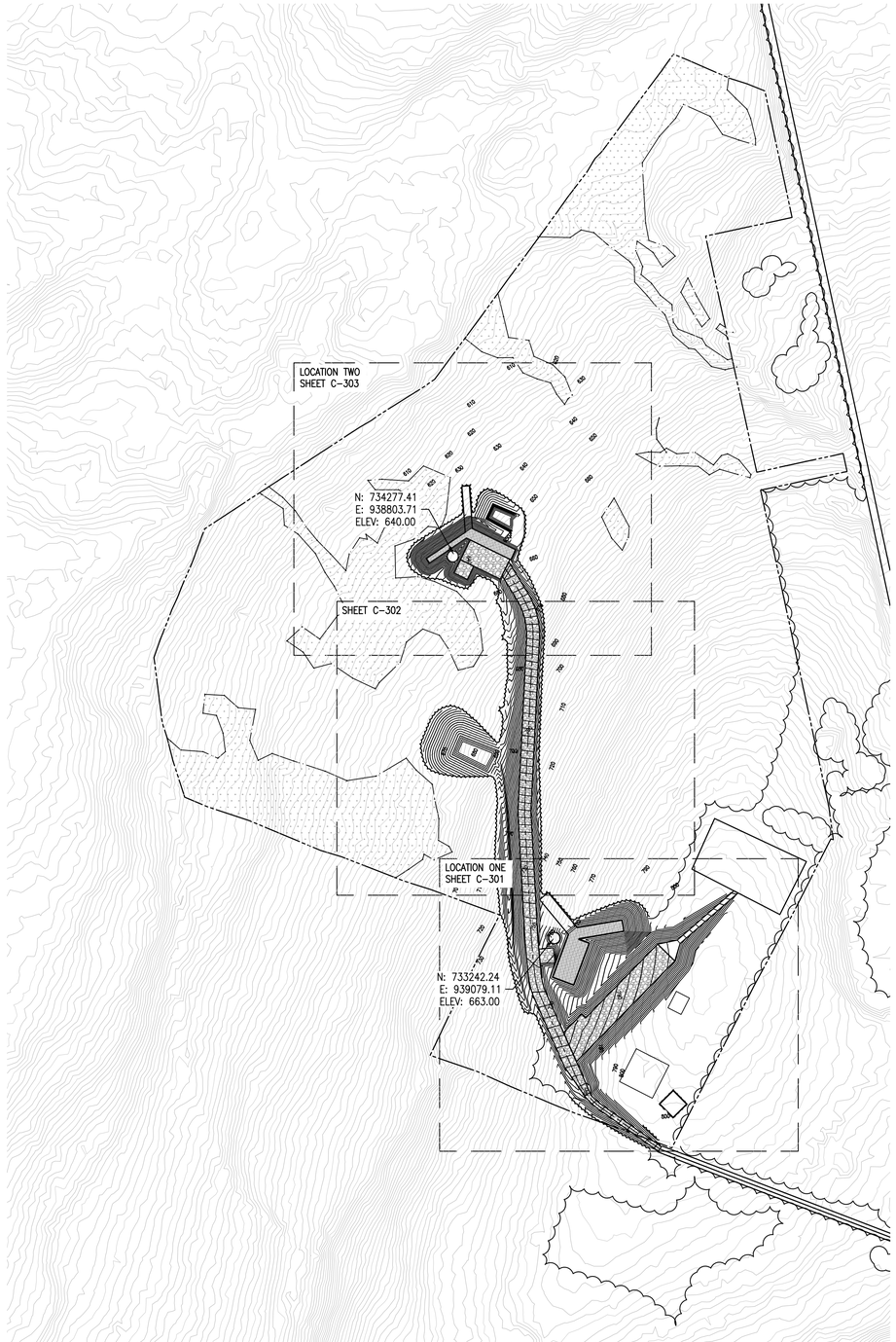
This is a true and accurate copy of the general permit executed on April 9, 2010 by the Commissioner of the Department of Environmental Protection.

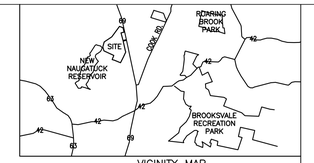
Appendix K

SUPPORTING CALCULATIONS

GRADING NOTES:

1. DISCREPANCIES SHOULD BE NOTED AND GUIDANCE OBTAINED FROM THE ENGINEER PRIOR TO CONTINUING WORK.
2. GENERAL CONTRACTOR IS RESPONSIBLE FOR LOCATING AND AVOIDING ALL EXISTING UNDERGROUND UTILITIES.
3. GENERAL CONTRACTOR TO MONITOR STORM WATER RUNOFF DURING AND AFTER CONSTRUCTION TO ENSURE PROPER DRAINAGE.
4. ALL GRADES SHOWN ON PLANS TO BE FIELD-VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. SHOULD ANY DISCREPANCIES EXIST, NOTIFY THE ENGINEER PRIOR TO CONSTRUCTION.
5. ALL SURFACES SHALL HAVE A SLOPE AS INDICATED ON DRAWINGS.
6. GENERAL CONTRACTOR TO ENSURE POSITIVE DRAINAGE AWAY FROM TOWER PADS.
7. MASS GRADING WILL NOT BE CONDUCTED ON THIS SITE.
8. ALL EROSION CONTROL STRUCTURES TO BE INSTALLED PRIOR TO CONSTRUCTION.
9. CONTRACTOR IS RESPONSIBLE FOR PLACING BARRICADES, USING FLAG MEN, ETC. AS NECESSARY TO INSURE SAFETY TO THE PUBLIC.
10. ALL PAVEMENT CUTS, CONCRETE OR ASPHALT, ARE TO BE REPLACED ACCORDING TO STANDARDS OF THE CONNECTICUT DEPARTMENT OF TRANSPORTATION.
11. SHORING WILL BE ACCORDING TO OSHA TRENCHING STANDARDS PART 1926, SUBPART P, OR AS AMENDED.





VICINITY MAP

LEGEND

- CULVERT PIPE
- DITCH LINE
- EXISTING TOPO
- NEW TOPO
- WETLAND LIMITS
- VEGETATION
- POST CONSTRUCTION VEGETATION LINE
- COMPACTED EARTH
- WETLAND
- GRAVEL
- LAYDOWN AREA

THIS PROJECT WILL HAVE NO TEMPORARY DIRECT WETLAND IMPACT. APPROPRIATE MITIGATION PROCEDURES AND REQUIRED PERMITS WILL BE OBTAINED PRIOR TO CONSTRUCTION.

0 100' 200'

BNE Energy Inc.
Producer of green clean energy

MARK	DESCRIPTION	DATE	APPR.
1	CONNECTICUT SITING COUNCIL SUBMISSION	11-04-10	TLK
2	INCORPORATED REQUESTED REVISIONS	01-31-11	TLK
3	INCORPORATED REQUESTED REVISIONS	03-08-11	MLC

NOT FOR CONSTRUCTION - CONNECTICUT SITING COUNCIL USE ONLY

DESIGNED BY: RSS
DWN BY: RSW
CKD BY: TLK
SUBMITTED BY: ZAPATA INC.
DATE: 03-08-11
OWNER: BNE ENERGY
PARCEL NO.: TAX MAP 112, BLOCK 86, LOT 17.8
PLOT SCALE: 1=100' (1:1200)
PLOT DATE: 03-08-11
FILE NUMBER: 13253
ACCEPTANCE:
SIZE: ANSI D
FILE NAME: M:\Projects\BNE Energy Inc\Data\Cads\13253-01 Prospect\C300_GRAD.dwg

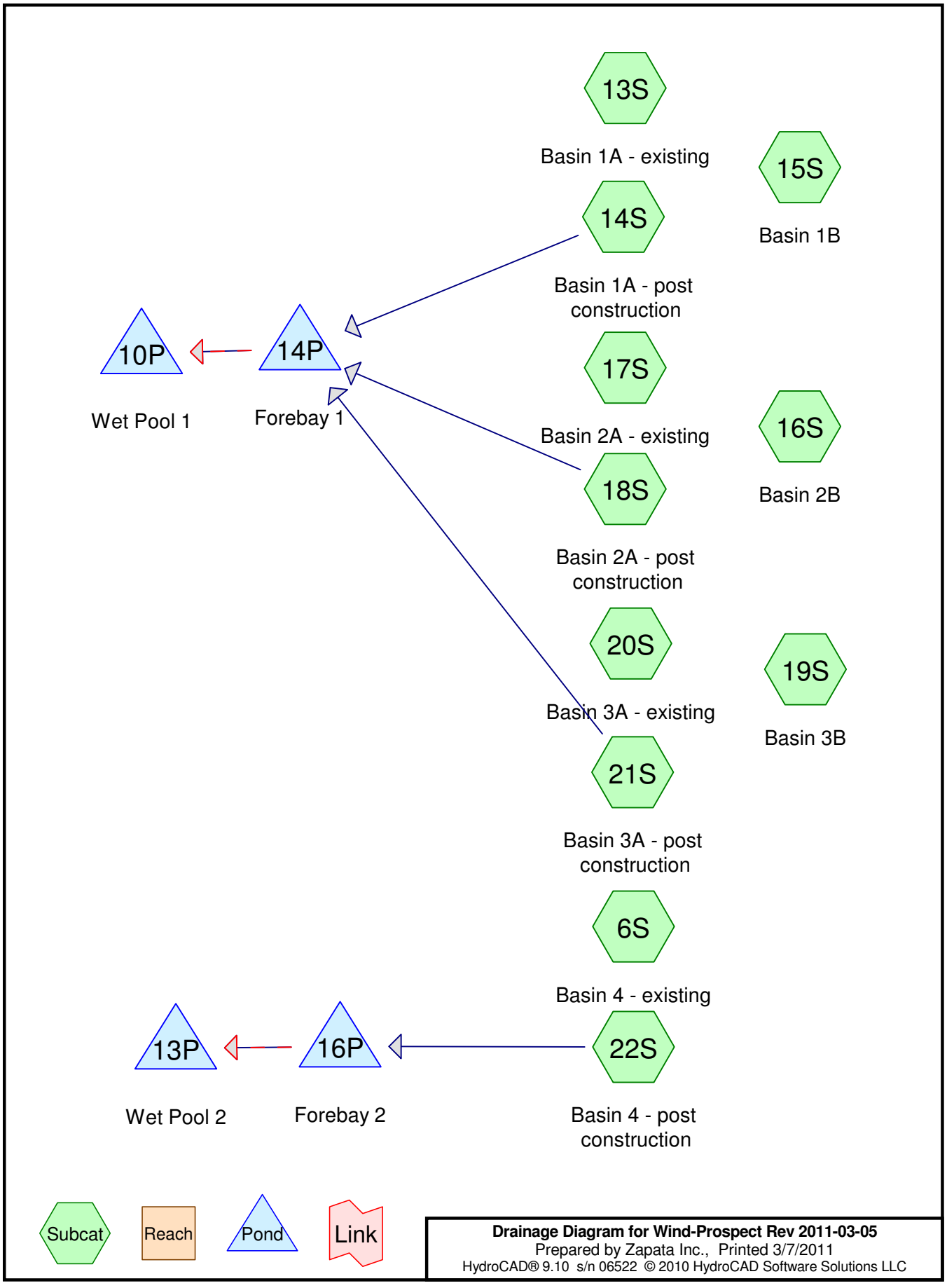
ZAPATA ENGINEERING
6301 FAIRVIEW ROAD #650 PHONE: (704) 366-8540
CHARLOTTE, NC 28210 FAX: (704) 366-8542
ZAPATAENGINEERING.COM WWW.ZAPATAINC.COM

WIND PROSPECT
CONNECTICUT

GRADING PLAN

SHEET IDENTIFICATION
C-300

PRE-DEVELOPMENT
DRAINAGE AREA HYDROGRAPHS


13S
Basin 1A - existing
15S
Basin 1B
14S
Basin 1A - post construction
10P
14P
Wet Pool 1
Forebay 1
17S
Basin 2A - existing
16S
Basin 2B
18S
Basin 2A - post construction
20S
19S
Basin 3A - existing
Basin 3B
21S
Basin 3A - post construction
6S
Basin 4 - existing
13P
16P
22S
Wet Pool 2
Forebay 2
Basin 4 - post construction
Subcat
Reach
Pond
Link
Drainage Diagram for Wind-Prospect Rev 2011-03-05
Prepared by Zapata Inc., Printed 3/7/2011
HydroCAD® 9.10 s/n 06522 © 2010 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
14.310	70	Woods, Good, HSG C (6S, 13S, 15S, 16S, 17S, 19S, 20S)
8.140	74	Pasture/grassland/range, Good, HSG C (6S, 19S, 22S)
1.850	89	Gravel roads, HSG C (6S, 14S, 18S, 21S, 22S)
0.050	98	Unconnected roofs, HSG C (22S)
24.350	73	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
24.350	HSG C	6S, 13S, 14S, 15S, 16S, 17S, 18S, 19S, 20S, 21S, 22S
0.000	HSG D	
0.000	Other	
24.350		**TOTAL AREA**

Land-Use Listing (all nodes)

Area (acres)	Land Use	Subcatchment Numbers
0.050	Commercial Roof	22S
1.310	Driveway	14S, 18S, 21S, 22S
0.540	Industrial General	6S, 22S
22.450	Rural open/forest	6S, 13S, 15S, 16S, 17S, 19S, 20S, 22S
24.350	**TOTAL**	

Pollutant Concentrations

Line#	Land Use	TSS (mg/l)	TP (mg/l)	TN (mg/l)
1	Commercial Roof	9.00	0.14	2.10
2	Driveway	173.00	0.56	2.10
3	Industrial General	149.00	0.32	3.97
4	Rural open/forest	51.00	0.11	1.78

Subcatchment Loading

Line#	Subcat Number	TSS (pounds)	TP (pounds)	TN (pounds)
1	6S	150.53	0.32	5.08
2	13S	6.82	0.01	0.24
3	14S	42.88	0.14	0.52
4	15S	91.78	0.20	3.20
5	16S	116.26	0.25	4.06
6	17S	5.18	0.01	0.18
7	18S	32.53	0.11	0.39
8	19S	101.27	0.22	3.53
9	20S	4.47	0.01	0.16
10	21S	26.62	0.09	0.32
11	22S	210.71	0.53	5.76
	TOTAL	**789.06**	**1.88**	**23.44**

Time span=1.00-48.00 hrs, dt=0.05 hrs, 941 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 6S: Basin 4 - existing Runoff Area=4.990 ac 0.00% Impervious Runoff Depth=1.10"
Flow Length=590' Tc=13.6 min CN=74 Runoff=4.78 cfs 0.459 af

Subcatchment 13S: Basin 1A - existing Runoff Area=0.290 ac 0.00% Impervious Runoff Depth=0.89"
Flow Length=88' Slope=0.2000 '/' Tc=7.6 min CN=70 Runoff=0.25 cfs 0.021 af

Subcatchment 14S: Basin 1A - post Runoff Area=0.290 ac 0.00% Impervious Runoff Depth=2.17"
Flow Length=238' Tc=6.0 min CN=89 Runoff=0.72 cfs 0.053 af

Subcatchment 15S: Basin 1B Runoff Area=3.900 ac 0.00% Impervious Runoff Depth=0.89"
Flow Length=942' Tc=25.5 min CN=70 Runoff=2.22 cfs 0.288 af

Subcatchment 16S: Basin 2B Runoff Area=4.940 ac 0.00% Impervious Runoff Depth=0.89"
Flow Length=670' Slope=0.2500 '/' Tc=21.0 min CN=70 Runoff=3.04 cfs 0.365 af

Subcatchment 17S: Basin 2A - existing Runoff Area=0.220 ac 0.00% Impervious Runoff Depth=0.89"
Flow Length=20' Slope=0.2500 '/' Tc=6.0 min CN=70 Runoff=0.20 cfs 0.016 af

Subcatchment 18S: Basin 2A - post Runoff Area=0.220 ac 0.00% Impervious Runoff Depth=2.17"
Flow Length=470' Tc=6.0 min CN=89 Runoff=0.54 cfs 0.040 af

Subcatchment 19S: Basin 3B Runoff Area=4.140 ac 0.00% Impervious Runoff Depth=0.94"
Flow Length=581' Tc=22.8 min CN=71 Runoff=2.65 cfs 0.324 af

Subcatchment 20S: Basin 3A - existing Runoff Area=0.190 ac 0.00% Impervious Runoff Depth=0.89"
Flow Length=20' Slope=0.2500 '/' Tc=6.0 min CN=70 Runoff=0.18 cfs 0.014 af

Subcatchment 21S: Basin 3A - post Runoff Area=0.180 ac 0.00% Impervious Runoff Depth=2.17"
Flow Length=420' Tc=6.0 min CN=89 Runoff=0.45 cfs 0.033 af

Subcatchment 22S: Basin 4 - post Runoff Area=4.990 ac 1.00% Impervious Runoff Depth=1.28"
Flow Length=590' Tc=13.6 min CN=77 Runoff=5.70 cfs 0.534 af

Pond 10P: Wet Pool 1 Peak Elev=4.55' Storage=4,199 cf Inflow=1.71 cfs 0.125 af
Primary=1.04 cfs 0.125 af Secondary=0.00 cfs 0.000 af Outflow=1.04 cfs 0.125 af

Pond 13P: Wet Pool 2 Peak Elev=4.68' Storage=11,890 cf Inflow=5.70 cfs 0.534 af
Primary=4.81 cfs 0.534 af Secondary=0.00 cfs 0.000 af Outflow=4.81 cfs 0.534 af

Pond 14P: Forebay 1 Peak Elev=4.06' Storage=1,780 cf Inflow=1.71 cfs 0.125 af
Outflow=1.71 cfs 0.125 af

Pond 16P: Forebay 2 Peak Elev=4.11' Storage=2,428 cf Inflow=5.70 cfs 0.534 af
Outflow=5.70 cfs 0.534 af

Total Runoff Area = 24.350 ac Runoff Volume = 2.147 af Average Runoff Depth = 1.06"
99.79% Pervious = 24.300 ac 0.21% Impervious = 0.050 ac

Summary for Subcatchment 6S: Basin 4 - existing

Runoff = 4.78 cfs @ 12.20 hrs, Volume= 0.459 af, Depth= 1.10"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.30"

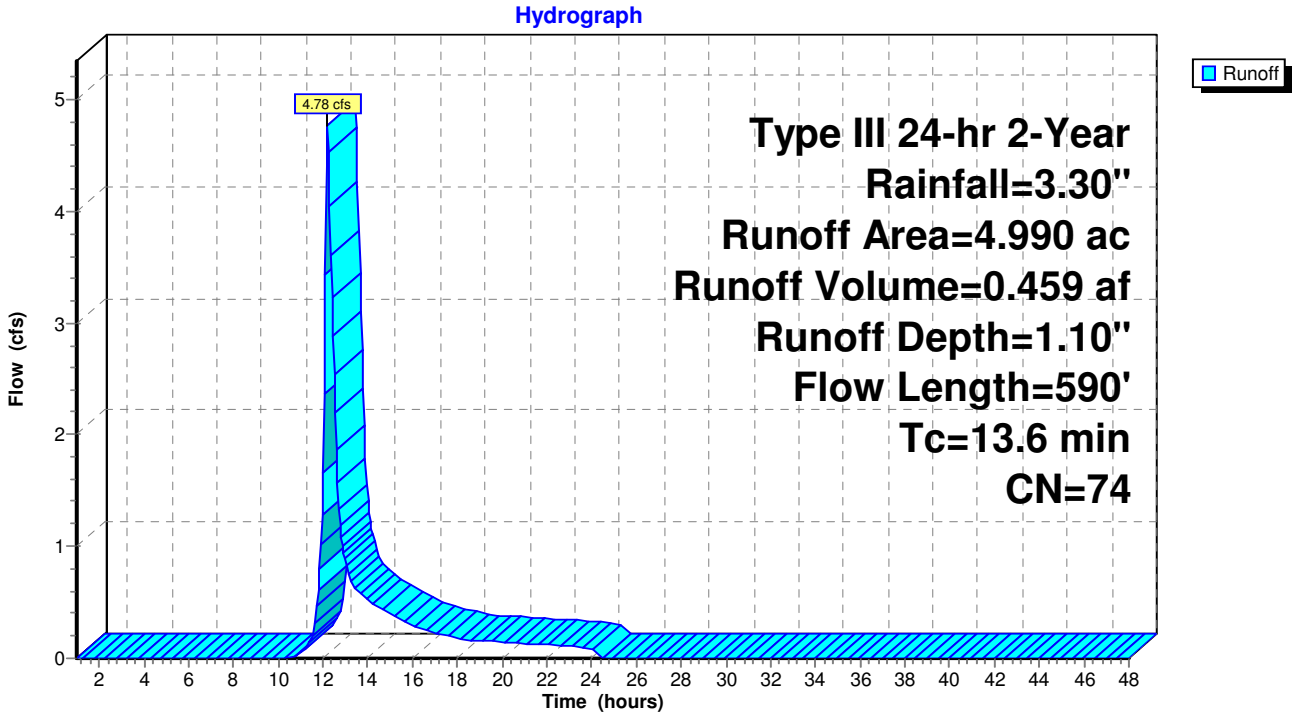
Area (ac)	CN	Description	Land Use
1.550	70	Woods, Good, HSG C	Rural open/forest
3.170	74	Pasture/grassland/range, Good, HSG C	Rural open/forest
0.270	89	Gravel roads, HSG C	Industrial General
4.990	74	Weighted Average	
4.990		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	300	0.0900	0.44		**Sheet Flow,** Range n= 0.130 P2= 3.30"
2.2	290	0.2000	2.24		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.6	590	Total			

Pollutant Loading for 1.10" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
0.270	Industrial General	10.06	0.02	0.27
4.720	Rural open/forest	60.22	0.13	2.10
4.990	Total	70.28	0.15	2.37

Subcatchment 6S: Basin 4 - existing



Summary for Subcatchment 13S: Basin 1A - existing

Runoff = 0.25 cfs @ 12.12 hrs, Volume= 0.021 af, Depth= 0.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.30"

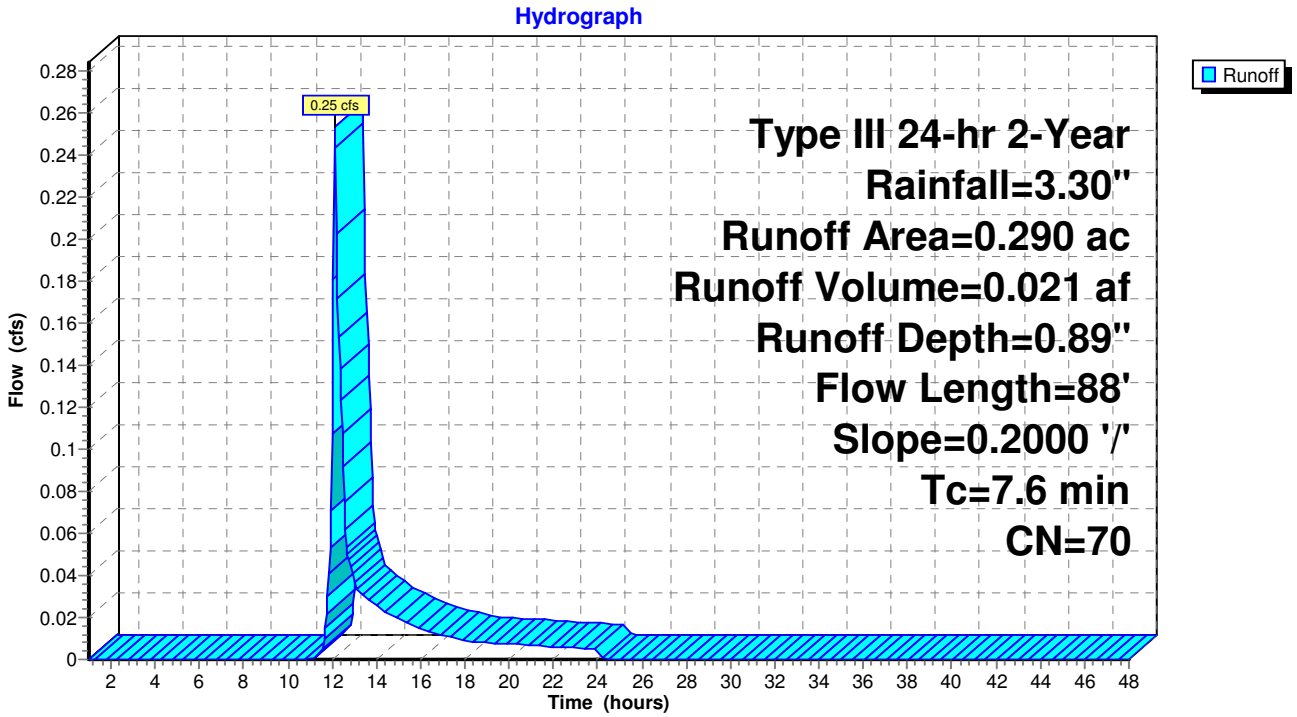
Area (ac)	CN	Description	Land Use
0.290	70	Woods, Good, HSG C	Rural open/forest
0.290		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	88	0.2000	0.19		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"

Pollutant Loading for 0.89" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
0.290	Rural open/forest	2.97	0.01	0.10
0.290	Total	2.97	0.01	0.10

Subcatchment 13S: Basin 1A - existing



Summary for Subcatchment 14S: Basin 1A - post construction

Area to drain to Pond 1.

Runoff = 0.72 cfs @ 12.09 hrs, Volume= 0.053 af, Depth= 2.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.30"

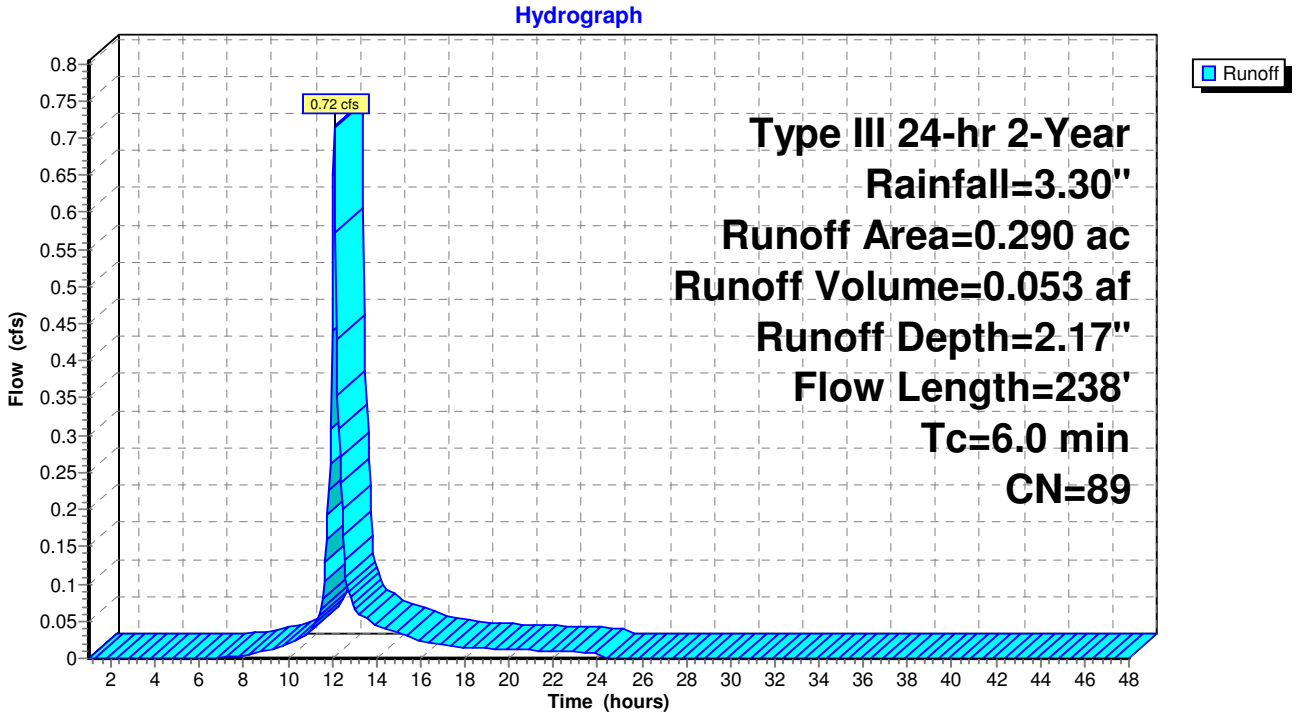
Area (ac)	CN	Description	Land Use
0.290	89	Gravel roads, HSG C	Driveway
0.290		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	88	0.1000	2.59		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
0.3	150	0.0500	9.42	120.54	**Channel Flow,** Area= 12.8 sf Perim= 26.0' r= 0.49' n= 0.022 Earth, clean & straight
0.9	238	Total, Increased to minimum Tc = 6.0 min			

Pollutant Loading for 2.17" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
0.290	Driveway	24.71	0.08	0.30
0.290	Total	24.71	0.08	0.30

Subcatchment 14S: Basin 1A - post construction



Summary for Subcatchment 15S: Basin 1B

Area to be diverted around development via ditch.

Runoff = 2.22 cfs @ 12.40 hrs, Volume= 0.288 af, Depth= 0.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.30"

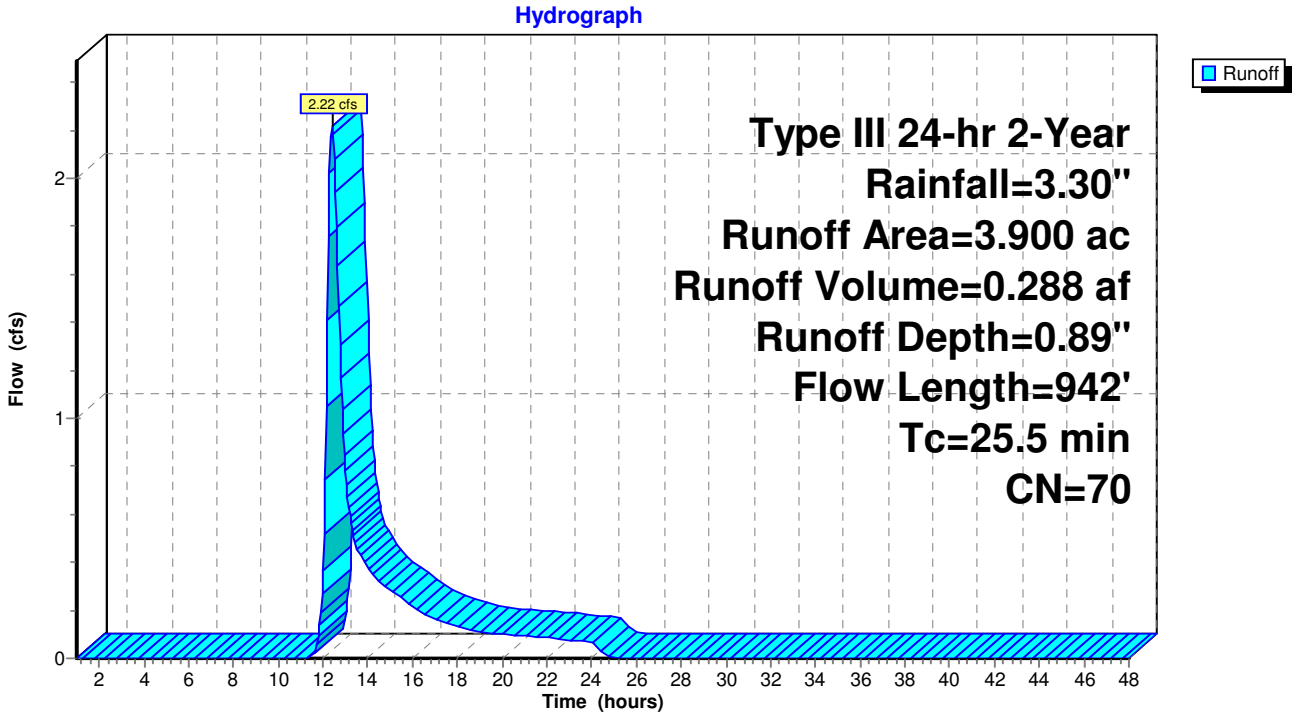
Area (ac)	CN	Description	Land Use
3.900	70	Woods, Good, HSG C	Rural open/forest
3.900		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.3	300	0.2000	0.25		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
5.2	642	0.1700	2.06		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
25.5	942	Total			

Pollutant Loading for 0.89" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
3.900	Rural open/forest	39.98	0.09	1.40
3.900	Total	39.98	0.09	1.40

Subcatchment 15S: Basin 1B



Summary for Subcatchment 16S: Basin 2B

Area to be diverted around development area via ditch and pipes.

Runoff = 3.04 cfs @ 12.33 hrs, Volume= 0.365 af, Depth= 0.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.30"

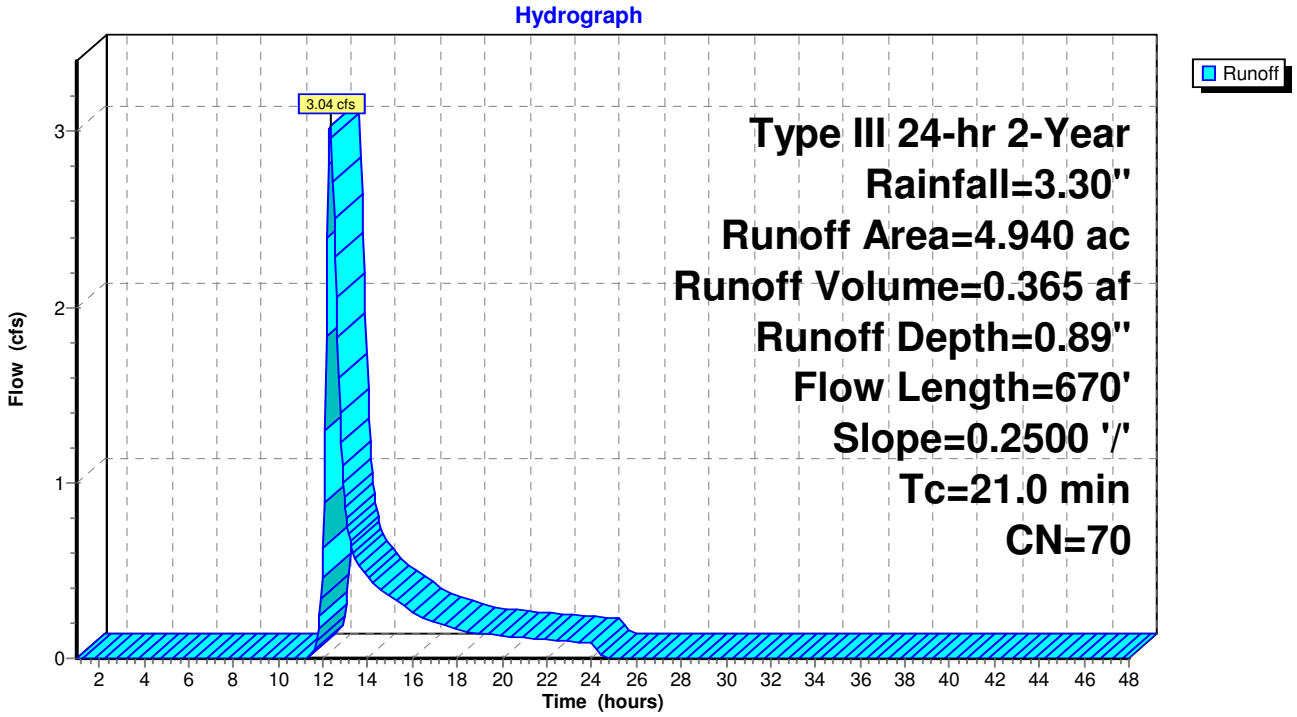
Area (ac)	CN	Description	Land Use
4.940	70	Woods, Good, HSG C	Rural open/forest
4.940		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.5	300	0.2500	0.27		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
2.5	370	0.2500	2.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
21.0	670	Total			

Pollutant Loading for 0.89" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
4.940	Rural open/forest	50.64	0.11	1.77
4.940	Total	50.64	0.11	1.77

Subcatchment 16S: Basin 2B



Summary for Subcatchment 17S: Basin 2A - existing

Runoff = 0.20 cfs @ 12.10 hrs, Volume= 0.016 af, Depth= 0.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.30"

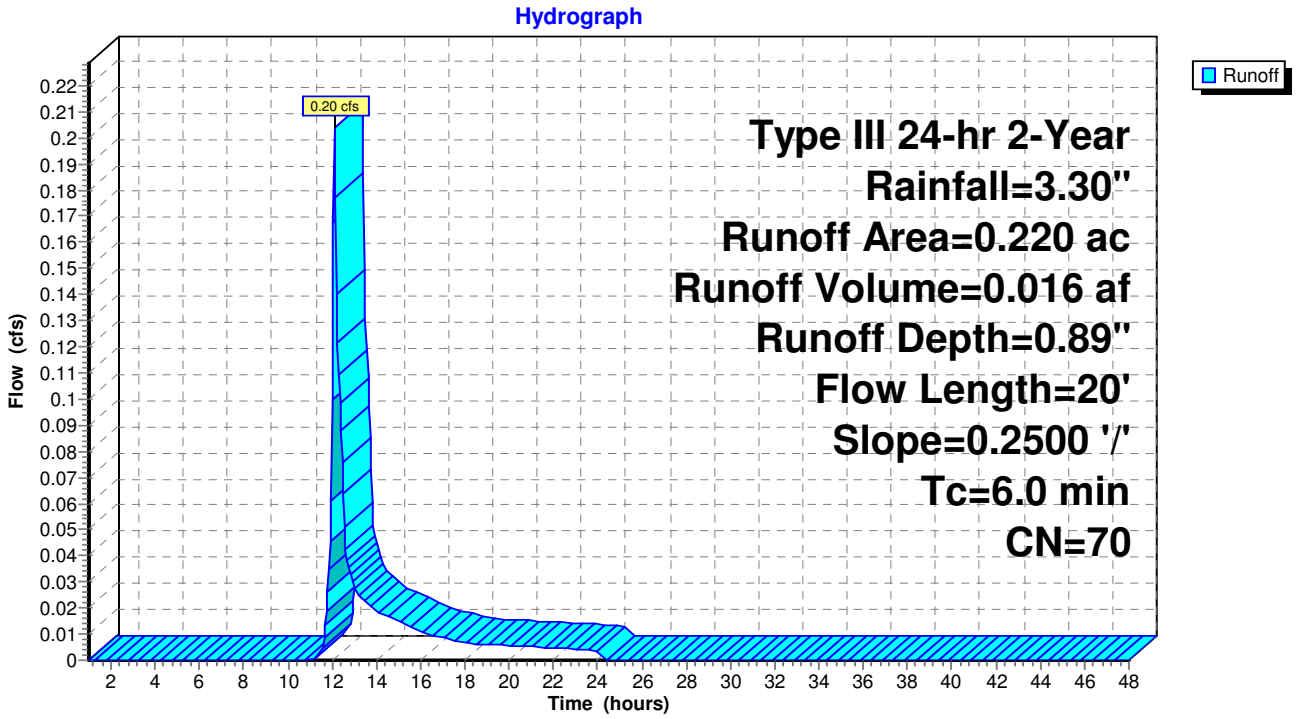
Area (ac)	CN	Description	Land Use
0.220	70	Woods, Good, HSG C	Rural open/forest
0.220		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	20	0.2500	0.16		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
2.1	20	Total, Increased to minimum Tc = 6.0 min			

Pollutant Loading for 0.89" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
0.220	Rural open/forest	2.26	0.00	0.08
0.220	Total	2.26	0.00	0.08

Subcatchment 17S: Basin 2A - existing



Summary for Subcatchment 18S: Basin 2A - post construction

Area to drain to Water Quality Swale.

Runoff = 0.54 cfs @ 12.09 hrs, Volume= 0.040 af, Depth= 2.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.30"

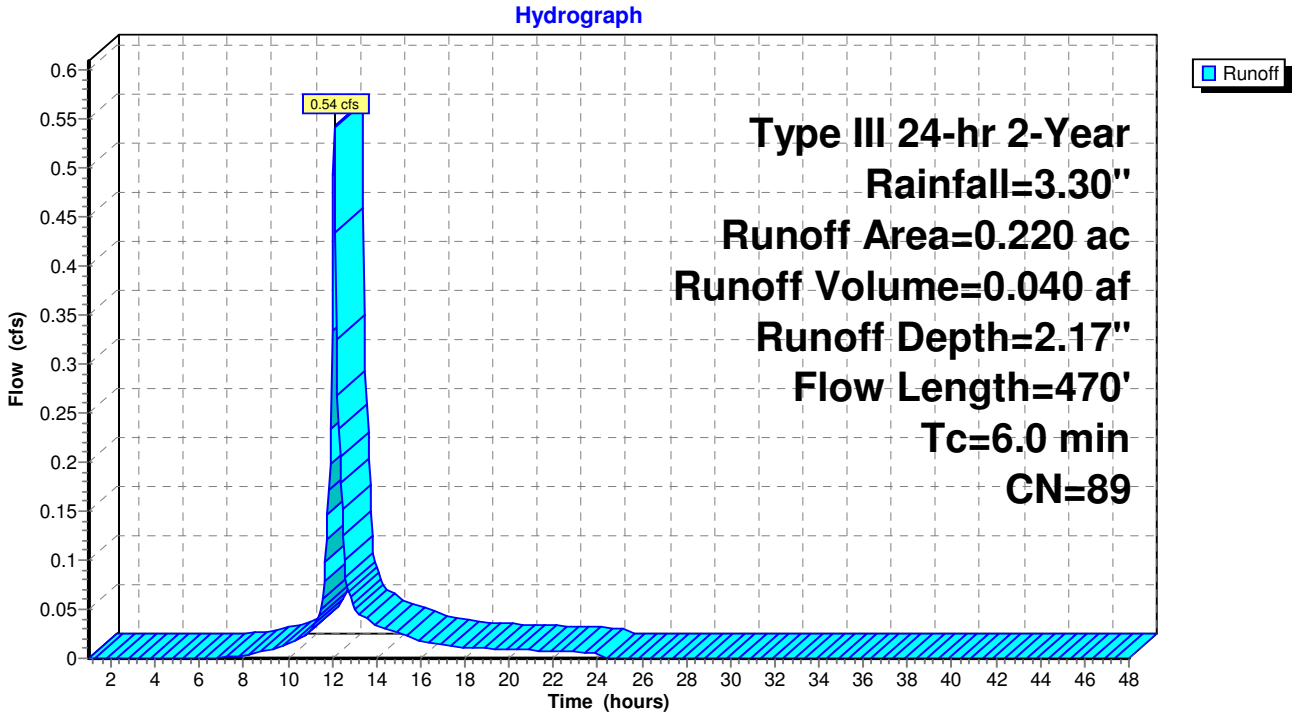
Area (ac)	CN	Description	Land Use
0.220	89	Gravel roads, HSG C	Driveway
0.220		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	20	0.0100	0.77		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
0.8	450	0.0500	9.42	120.54	**Channel Flow,** Area= 12.8 sf Perim= 26.0' r= 0.49' n= 0.022 Earth, clean & straight
1.2	470	Total, Increased to minimum Tc = 6.0 min			

Pollutant Loading for 2.17" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
0.220	Driveway	18.74	0.06	0.23
0.220	Total	18.74	0.06	0.23

Subcatchment 18S: Basin 2A - post construction



Summary for Subcatchment 19S: Basin 3B

Area to be diverted around development area via ditch and pipes.

Runoff = 2.65 cfs @ 12.35 hrs, Volume= 0.324 af, Depth= 0.94"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.30"

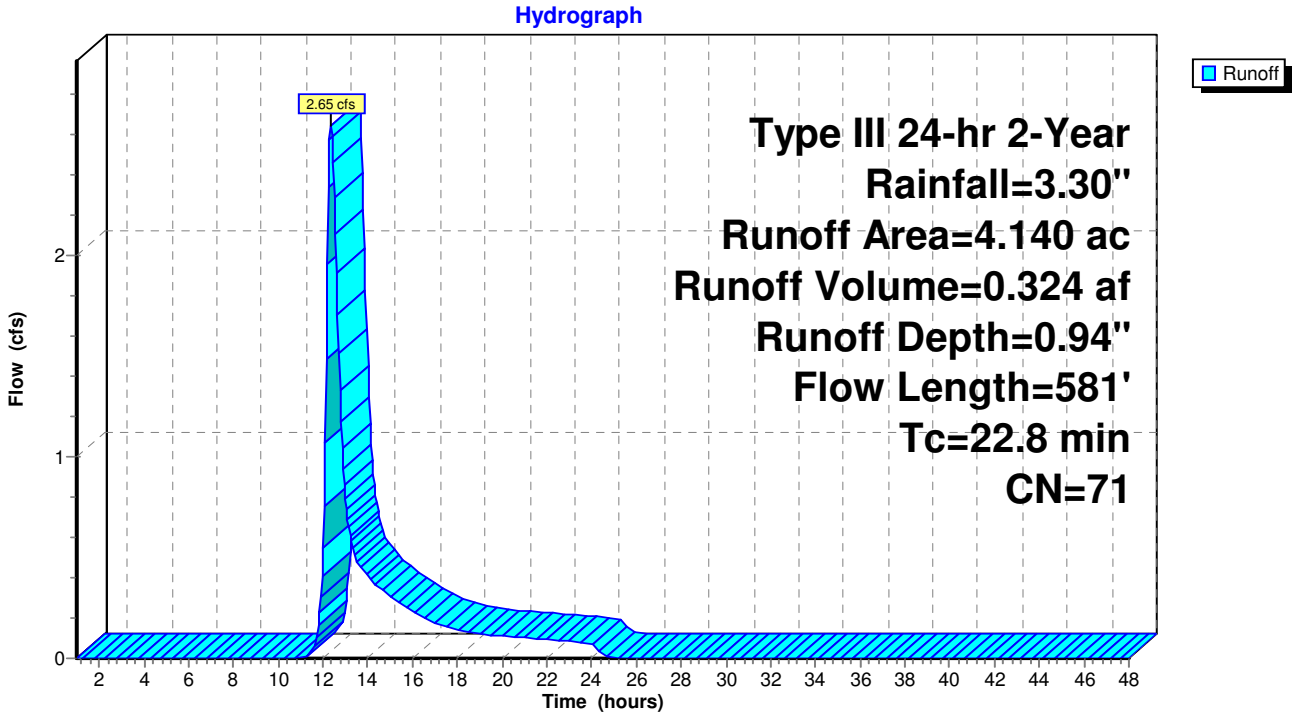
Area (ac)	CN	Description	Land Use
3.220	70	Woods, Good, HSG C	Rural open/forest
0.920	74	Pasture/grassland/range, Good, HSG C	Rural open/forest
4.140	71	Weighted Average	
4.140		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.9	300	0.0670	0.24		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.30"
1.9	281	0.2500	2.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
22.8	581	Total			

Pollutant Loading for 0.94" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
4.140	Rural open/forest	44.92	0.10	1.57
4.140	Total	44.92	0.10	1.57

Subcatchment 19S: Basin 3B



Summary for Subcatchment 20S: Basin 3A - existing

Runoff = 0.18 cfs @ 12.10 hrs, Volume= 0.014 af, Depth= 0.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.30"

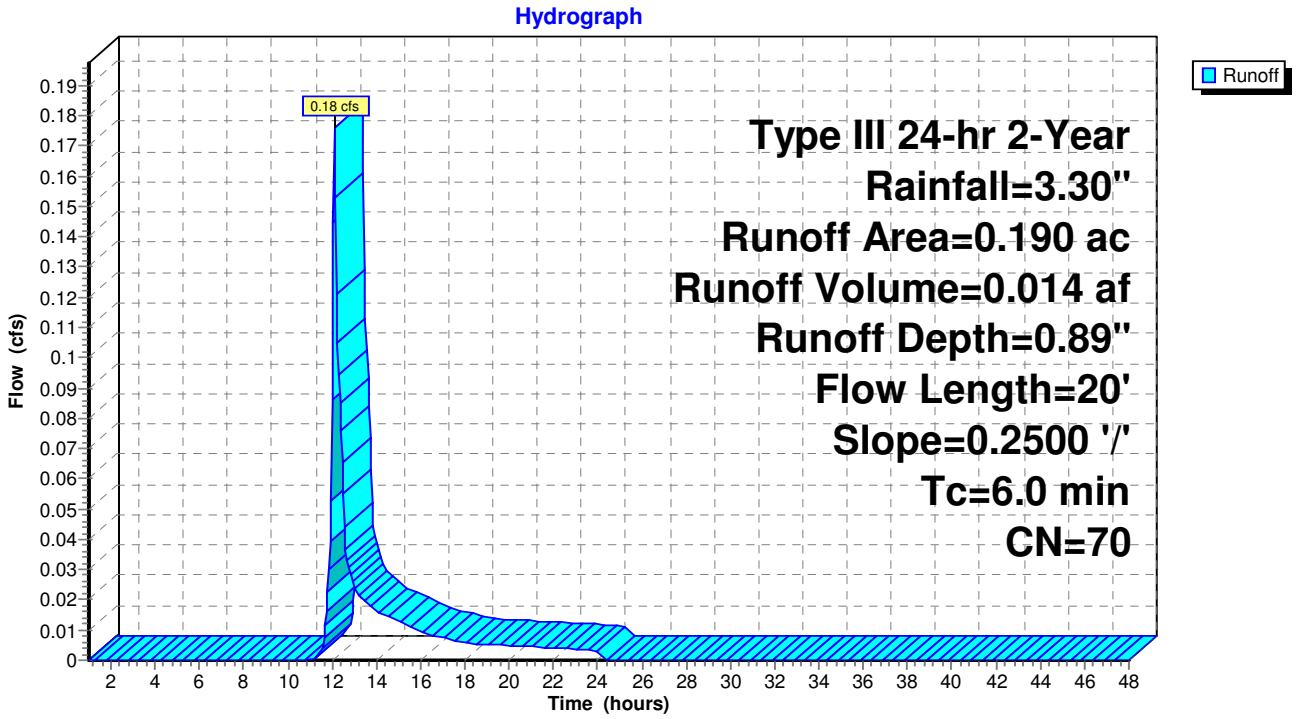
Area (ac)	CN	Description	Land Use
0.190	70	Woods, Good, HSG C	Rural open/forest
0.190		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	20	0.2500	0.16		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
2.1	20	Total, Increased to minimum Tc = 6.0 min			

Pollutant Loading for 0.89" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
0.190	Rural open/forest	1.95	0.00	0.07
0.190	Total	1.95	0.00	0.07

Subcatchment 20S: Basin 3A - existing



Summary for Subcatchment 21S: Basin 3A - post construction

Area to drain to Water Quality Swale.

Runoff = 0.45 cfs @ 12.09 hrs, Volume= 0.033 af, Depth= 2.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.30"

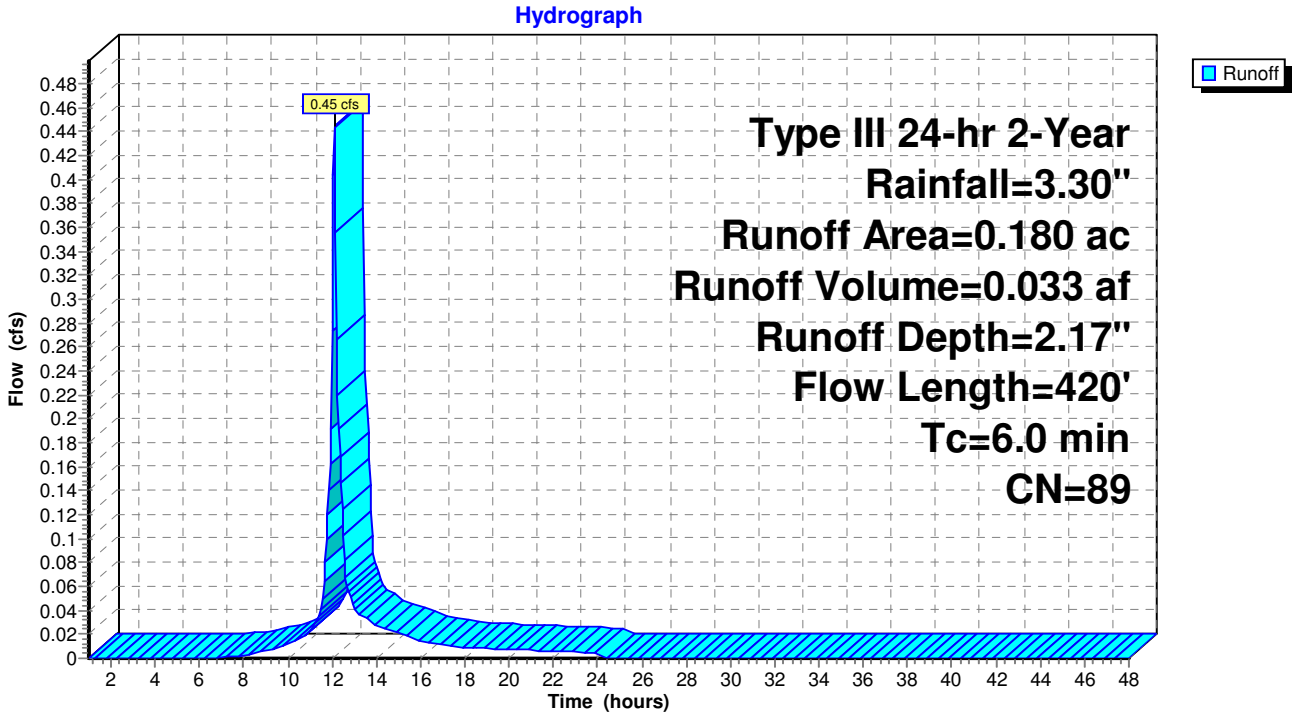
Area (ac)	CN	Description	Land Use
0.180	89	Gravel roads, HSG C	Driveway
0.180		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	20	0.0100	0.77		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
0.7	400	0.0500	9.42	120.54	**Channel Flow,** Area= 12.8 sf Perim= 26.0' r= 0.49' n= 0.022 Earth, clean & straight
1.1	420	Total, Increased to minimum Tc = 6.0 min			

Pollutant Loading for 2.17" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
0.180	Driveway	15.33	0.05	0.19
0.180	Total	15.33	0.05	0.19

Subcatchment 21S: Basin 3A - post construction



Summary for Subcatchment 22S: Basin 4 - post construction

Area to drain to Water Quality Swales.

Runoff = 5.70 cfs @ 12.20 hrs, Volume= 0.534 af, Depth= 1.28"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.30"

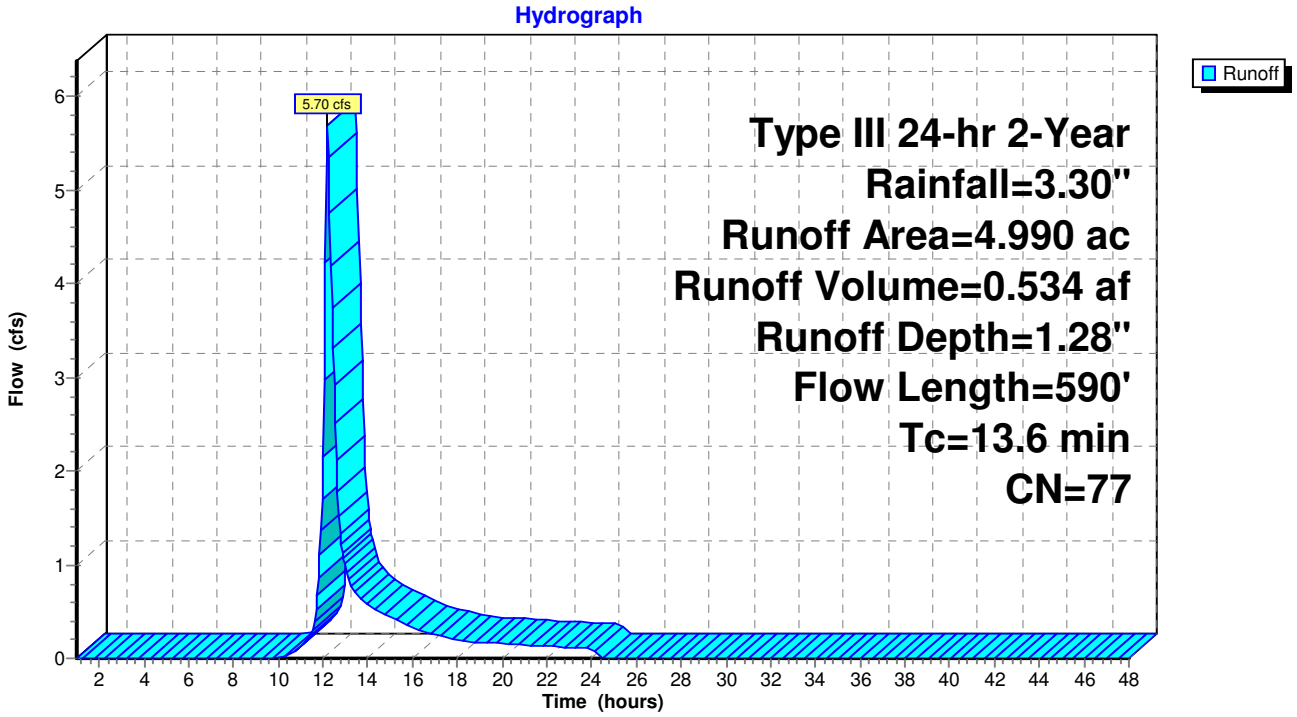
Area (ac)	CN	Description	Land Use
4.050	74	Pasture/grassland/range, Good, HSG C	Rural open/forest
0.270	89	Gravel roads, HSG C	Industrial General
0.620	89	Gravel roads, HSG C	Driveway
0.050	98	Unconnected roofs, HSG C	Commercial Roof
4.990	77	Weighted Average	
4.940		99.00% Pervious Area	
0.050		1.00% Impervious Area	
0.050		100.00% Unconnected	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	300	0.0900	0.44		**Sheet Flow,** Range n= 0.130 P2= 3.30"
2.2	290	0.2000	2.24		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.6	590	Total			

Pollutant Loading for 1.28" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
0.050	Commercial Roof	0.13	0.00	0.03
0.620	Driveway	31.20	0.10	0.38
0.270	Industrial General	11.70	0.03	0.31
4.050	Rural open/forest	60.09	0.13	2.10
4.990	Total	103.13	0.26	2.82

Subcatchment 22S: Basin 4 - post construction



Summary for Pond 10P: Wet Pool 1

Pond for Basins 1, 2, & 3

[81] Warning: Exceeded Pond 14P by 0.51' @ 12.20 hrs

Inflow Area = 0.690 ac, 0.00% Impervious, Inflow Depth = 2.17" for 2-Year event
Inflow = 1.71 cfs @ 12.10 hrs, Volume= 0.125 af
Outflow = 1.04 cfs @ 12.22 hrs, Volume= 0.125 af, Atten= 39%, Lag= 6.9 min
Primary = 1.04 cfs @ 12.22 hrs, Volume= 0.125 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Starting Elev= 4.00' Surf.Area= 1,564 sf Storage= 3,208 cf
Peak Elev= 4.55' @ 12.22 hrs Surf.Area= 1,822 sf Storage= 4,199 cf (991 cf above start)

Plug-Flow detention time= 327.8 min calculated for 0.051 af (41% of inflow)
Center-of-Mass det. time= 35.3 min (846.2 - 810.9)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	7,259 cf	**Custom Stage Data (Prismatic)** Listed below

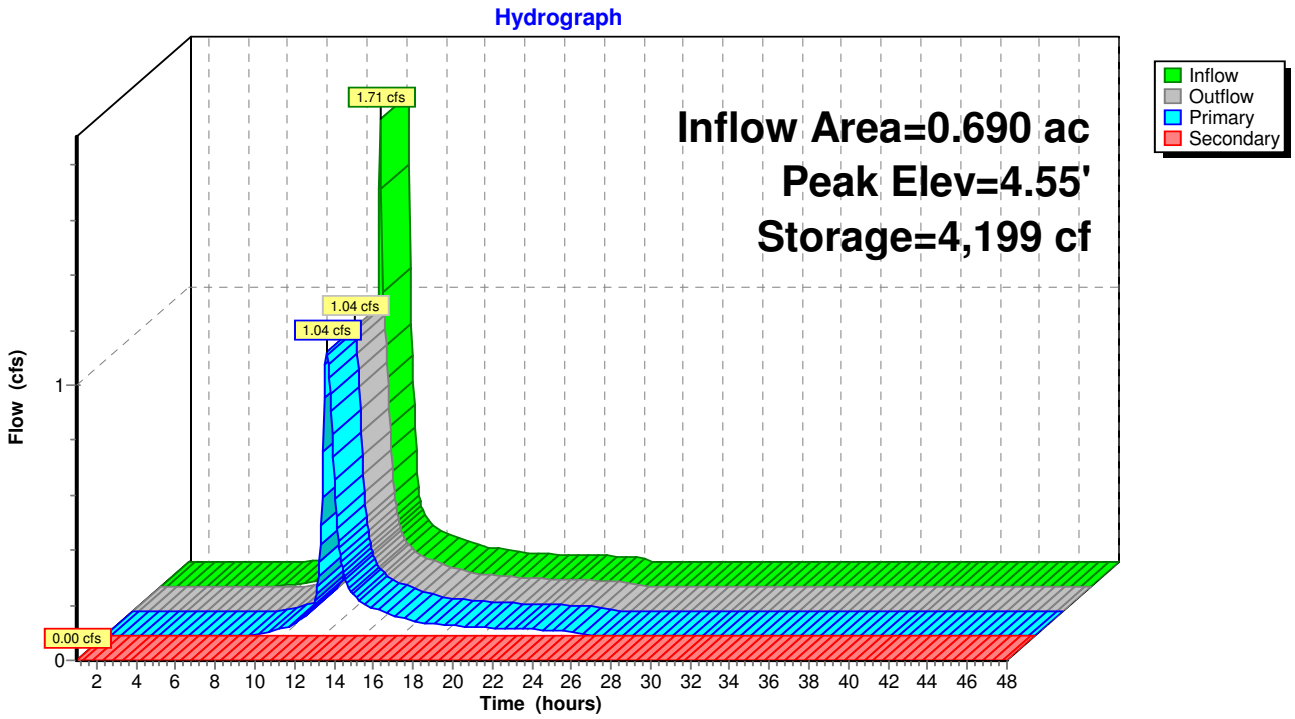
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	220	0	0
1.00	448	334	334
2.00	748	598	932
3.00	1,120	934	1,866
4.00	1,564	1,342	3,208
5.00	2,032	1,798	5,006
6.00	2,474	2,253	7,259

Device	Routing	Invert	Outlet Devices
#1	Primary	4.00'	**6.0" Vert. Orifice/Grate X 2.00** C= 0.600
#2	Secondary	5.25'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)**
			Head (feet) 0.00 0.75
			Width (feet) 10.00 10.00

Primary OutFlow Max=1.03 cfs @ 12.22 hrs HW=4.55' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 1.03 cfs @ 2.63 fps)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=4.00' (Free Discharge)
↑—**2=Custom Weir/Orifice** (Controls 0.00 cfs)

Pond 10P: Wet Pool 1



Summary for Pond 13P: Wet Pool 2

Pond for Basin 4.

[81] Warning: Exceeded Pond 16P by 0.58' @ 12.30 hrs

Inflow Area = 4.990 ac, 1.00% Impervious, Inflow Depth = 1.28" for 2-Year event
Inflow = 5.70 cfs @ 12.21 hrs, Volume= 0.534 af
Outflow = 4.81 cfs @ 12.31 hrs, Volume= 0.534 af, Atten= 16%, Lag= 6.1 min
Primary = 4.81 cfs @ 12.31 hrs, Volume= 0.534 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Starting Elev= 4.00' Surf.Area= 3,608 sf Storage= 9,176 cf
Peak Elev= 4.68' @ 12.31 hrs Surf.Area= 4,114 sf Storage= 11,890 cf (2,714 cf above start)

Plug-Flow detention time= 235.0 min calculated for 0.323 af (61% of inflow)
Center-of-Mass det. time= 24.2 min (882.7 - 858.5)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	17,850 cf	**Custom Stage Data (Prismatic)** Listed below

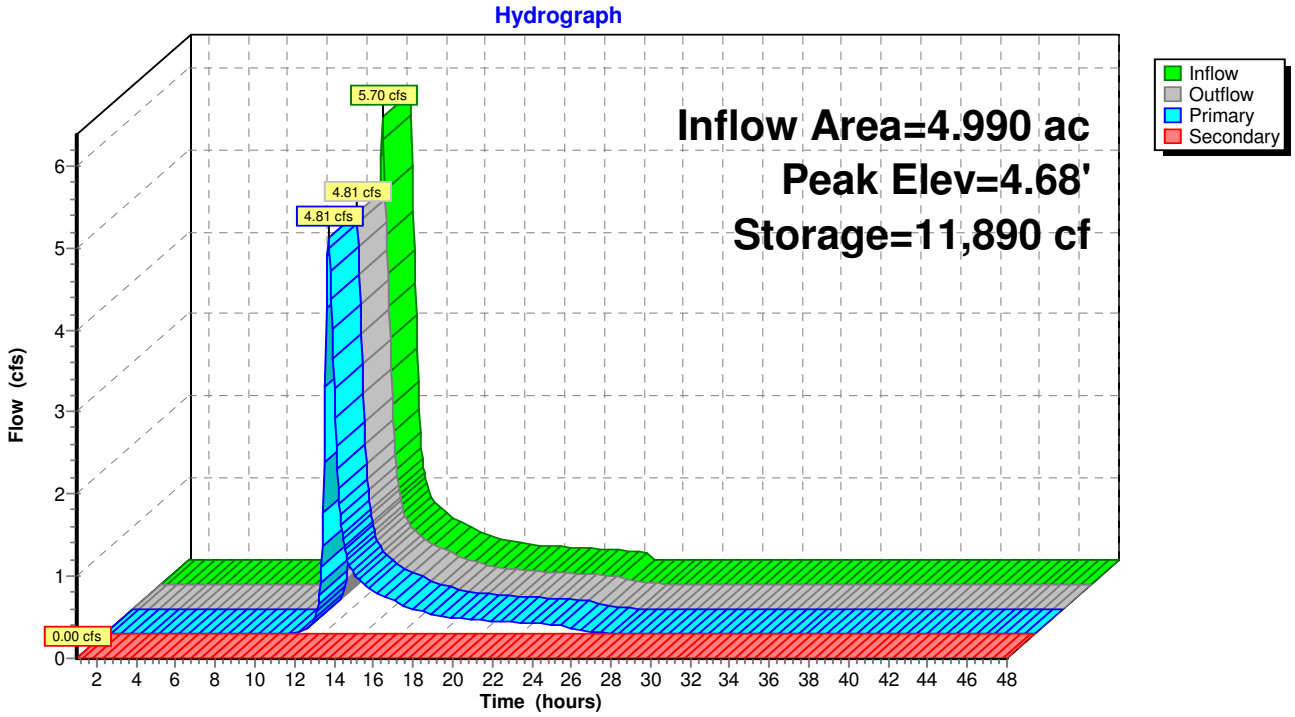
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	1,160	0	0
1.00	1,664	1,412	1,412
2.00	2,240	1,952	3,364
3.00	2,888	2,564	5,928
4.00	3,608	3,248	9,176
5.00	4,350	3,979	13,155
6.00	5,040	4,695	17,850

Device	Routing	Invert	Outlet Devices
#1	Secondary	5.50'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.50 Width (feet) 11.00 11.00
#2	Primary	4.00'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600

Primary OutFlow Max=4.79 cfs @ 12.31 hrs HW=4.68' (Free Discharge)
↑—**2=Orifice/Grate** (Orifice Controls 4.79 cfs @ 2.81 fps)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=4.00' (Free Discharge)
↑—**1=Custom Weir/Orifice** (Controls 0.00 cfs)

Pond 13P: Wet Pool 2



Summary for Pond 14P: Forebay 1

Pond for Basins 1, 2, & 3

Inflow Area = 0.690 ac, 0.00% Impervious, Inflow Depth = 2.17" for 2-Year event
Inflow = 1.71 cfs @ 12.09 hrs, Volume= 0.125 af
Outflow = 1.71 cfs @ 12.10 hrs, Volume= 0.125 af, Atten= 0%, Lag= 0.6 min
Primary = 1.71 cfs @ 12.10 hrs, Volume= 0.125 af

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Starting Elev= 4.00' Surf.Area= 986 sf Storage= 1,712 cf
Peak Elev= 4.06' @ 12.10 hrs Surf.Area= 1,008 sf Storage= 1,780 cf (68 cf above start)

Plug-Flow detention time= 157.3 min calculated for 0.086 af (68% of inflow)
Center-of-Mass det. time= 1.1 min (810.9 - 809.9)

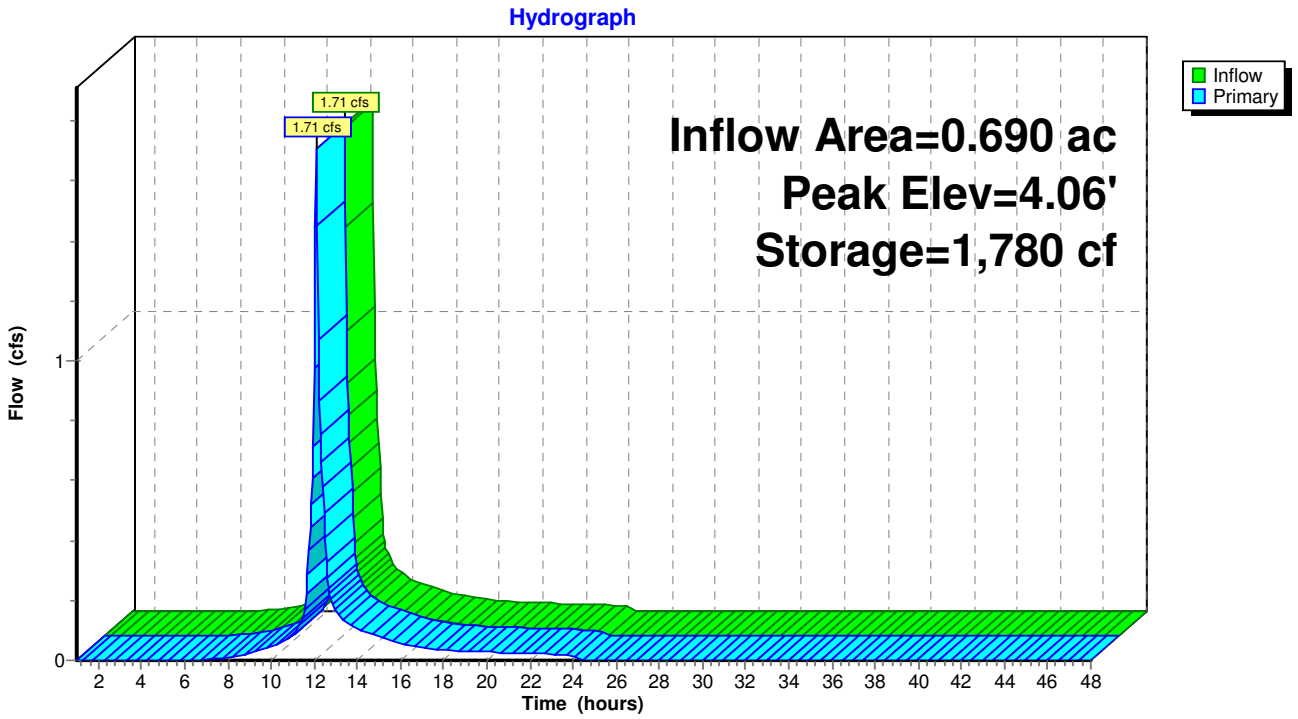
Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	4,429 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	50	0	0
1.00	176	113	113
2.00	374	275	388
3.00	644	509	897
4.00	986	815	1,712
5.00	1,368	1,177	2,889
6.00	1,712	1,540	4,429

Device	Routing	Invert	Outlet Devices
#1	Primary	4.00'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 2.00 Width (feet) 34.00 40.00 46.00

Primary OutFlow Max=1.54 cfs @ 12.10 hrs HW=4.06' (Free Discharge)
↑—**1=Custom Weir/Orifice** (Weir Controls 1.54 cfs @ 0.78 fps)

Pond 14P: Forebay 1



Summary for Pond 16P: Forebay 2

Pond for Basin 4.

[88] Warning: Qout>Qin may require Finer Routing>1

Inflow Area = 4.990 ac, 1.00% Impervious, Inflow Depth = 1.28" for 2-Year event
Inflow = 5.70 cfs @ 12.20 hrs, Volume= 0.534 af
Outflow = 5.70 cfs @ 12.21 hrs, Volume= 0.534 af, Atten= 0%, Lag= 0.3 min
Primary = 5.70 cfs @ 12.21 hrs, Volume= 0.534 af

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Starting Elev= 4.00' Surf.Area= 1,232 sf Storage= 2,264 cf
Peak Elev= 4.11' @ 12.21 hrs Surf.Area= 1,279 sf Storage= 2,428 cf (164 cf above start)

Plug-Flow detention time= 65.8 min calculated for 0.482 af (90% of inflow)
Center-of-Mass det. time= 0.8 min (858.5 - 857.7)

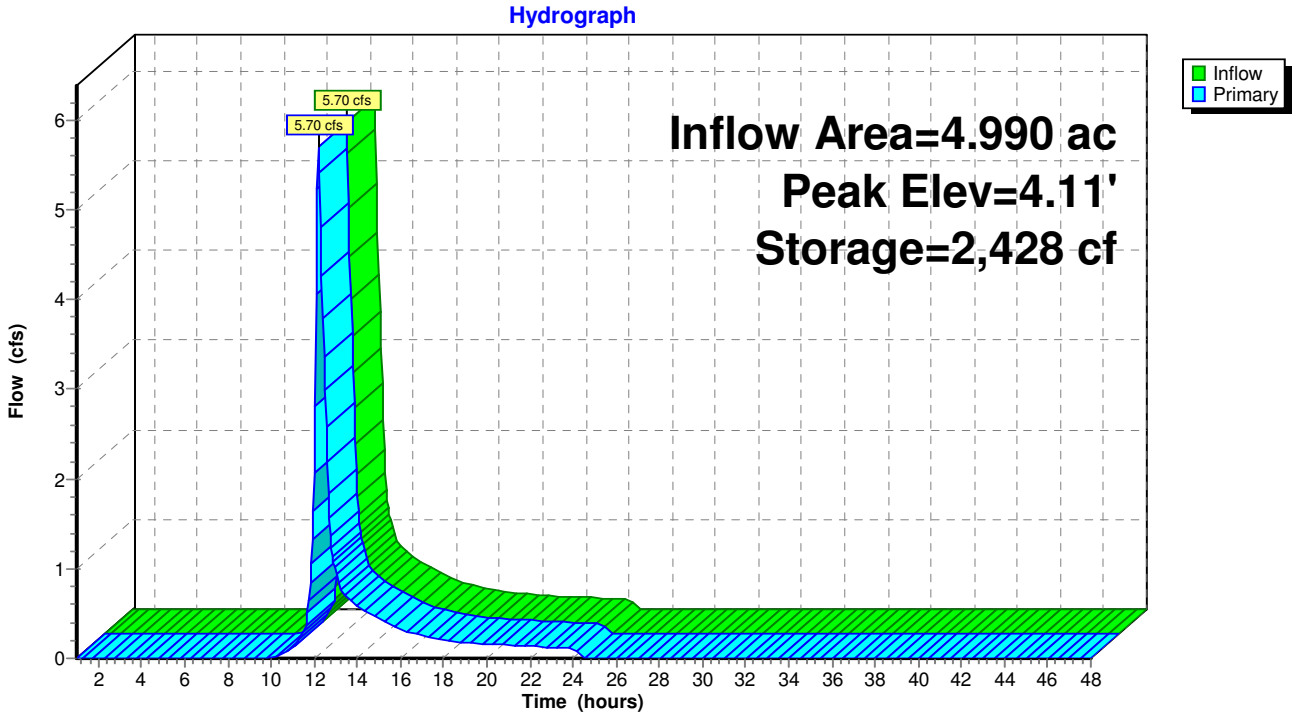
Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	5,538 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	80	0	0
1.00	260	170	170
2.00	512	386	556
3.00	836	674	1,230
4.00	1,232	1,034	2,264
5.00	1,650	1,441	3,705
6.00	2,016	1,833	5,538

Device	Routing	Invert	Outlet Devices
#1	Primary	4.00'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 2.00 Width (feet) 44.00 50.00 56.00

Primary OutFlow Max=5.51 cfs @ 12.21 hrs HW=4.11' (Free Discharge)
↑—**1=Custom Weir/Orifice** (Weir Controls 5.51 cfs @ 1.10 fps)

Pond 16P: Forebay 2



Time span=1.00-48.00 hrs, dt=0.05 hrs, 941 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 6S: Basin 4 - existing Runoff Area=4.990 ac 0.00% Impervious Runoff Depth=2.36"
Flow Length=590' Tc=13.6 min CN=74 Runoff=10.71 cfs 0.983 af

Subcatchment 13S: Basin 1A - existing Runoff Area=0.290 ac 0.00% Impervious Runoff Depth=2.04"
Flow Length=88' Slope=0.2000 '/' Tc=7.6 min CN=70 Runoff=0.63 cfs 0.049 af

Subcatchment 14S: Basin 1A - post Runoff Area=0.290 ac 0.00% Impervious Runoff Depth=3.77"
Flow Length=238' Tc=6.0 min CN=89 Runoff=1.22 cfs 0.091 af

Subcatchment 15S: Basin 1B Runoff Area=3.900 ac 0.00% Impervious Runoff Depth=2.04"
Flow Length=942' Tc=25.5 min CN=70 Runoff=5.53 cfs 0.662 af

Subcatchment 16S: Basin 2B Runoff Area=4.940 ac 0.00% Impervious Runoff Depth=2.04"
Flow Length=670' Slope=0.2500 '/' Tc=21.0 min CN=70 Runoff=7.60 cfs 0.838 af

Subcatchment 17S: Basin 2A - existing Runoff Area=0.220 ac 0.00% Impervious Runoff Depth=2.04"
Flow Length=20' Slope=0.2500 '/' Tc=6.0 min CN=70 Runoff=0.51 cfs 0.037 af

Subcatchment 18S: Basin 2A - post Runoff Area=0.220 ac 0.00% Impervious Runoff Depth=3.77"
Flow Length=470' Tc=6.0 min CN=89 Runoff=0.92 cfs 0.069 af

Subcatchment 19S: Basin 3B Runoff Area=4.140 ac 0.00% Impervious Runoff Depth=2.12"
Flow Length=581' Tc=22.8 min CN=71 Runoff=6.42 cfs 0.730 af

Subcatchment 20S: Basin 3A - existing Runoff Area=0.190 ac 0.00% Impervious Runoff Depth=2.04"
Flow Length=20' Slope=0.2500 '/' Tc=6.0 min CN=70 Runoff=0.44 cfs 0.032 af

Subcatchment 21S: Basin 3A - post Runoff Area=0.180 ac 0.00% Impervious Runoff Depth=3.77"
Flow Length=420' Tc=6.0 min CN=89 Runoff=0.76 cfs 0.057 af

Subcatchment 22S: Basin 4 - post Runoff Area=4.990 ac 1.00% Impervious Runoff Depth=2.62"
Flow Length=590' Tc=13.6 min CN=77 Runoff=11.94 cfs 1.091 af

Pond 10P: Wet Pool 1 Peak Elev=4.93' Storage=4,887 cf Inflow=2.93 cfs 0.217 af
Primary=1.56 cfs 0.217 af Secondary=0.00 cfs 0.000 af Outflow=1.56 cfs 0.217 af

Pond 13P: Wet Pool 2 Peak Elev=5.21' Storage=14,153 cf Inflow=11.95 cfs 1.091 af
Primary=9.58 cfs 1.091 af Secondary=0.00 cfs 0.000 af Outflow=9.58 cfs 1.091 af

Pond 14P: Forebay 1 Peak Elev=4.09' Storage=1,815 cf Inflow=2.90 cfs 0.217 af
Outflow=2.93 cfs 0.217 af

Pond 16P: Forebay 2 Peak Elev=4.19' Storage=2,535 cf Inflow=11.94 cfs 1.091 af
Outflow=11.95 cfs 1.091 af

Total Runoff Area = 24.350 ac Runoff Volume = 4.640 af Average Runoff Depth = 2.29"
99.79% Pervious = 24.300 ac 0.21% Impervious = 0.050 ac

Summary for Subcatchment 6S: Basin 4 - existing

Runoff = 10.71 cfs @ 12.20 hrs, Volume= 0.983 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.00"

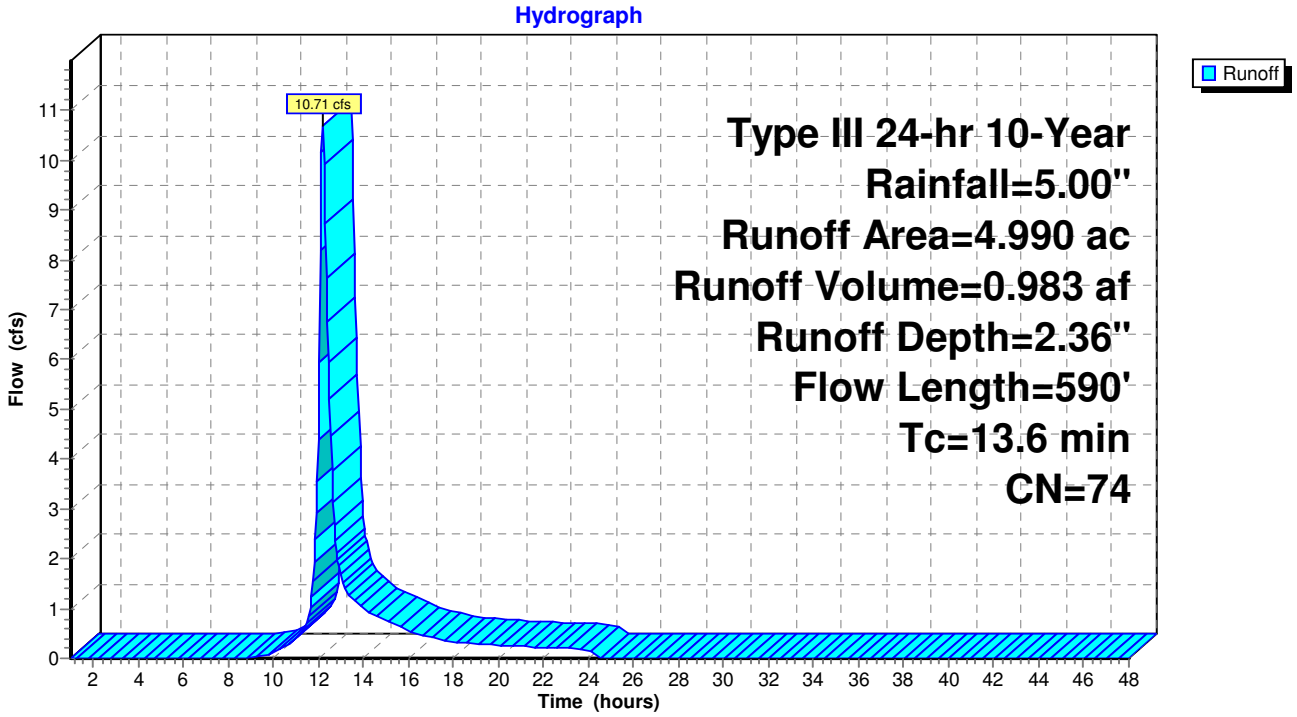
Area (ac)	CN	Description	Land Use
1.550	70	Woods, Good, HSG C	Rural open/forest
3.170	74	Pasture/grassland/range, Good, HSG C	Rural open/forest
0.270	89	Gravel roads, HSG C	Industrial General
4.990	74	Weighted Average	
4.990		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	300	0.0900	0.44		**Sheet Flow,** Range n= 0.130 P2= 3.30"
2.2	290	0.2000	2.24		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.6	590	Total			

Pollutant Loading for 2.36" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
0.270	Industrial General	21.55	0.05	0.57
4.720	Rural open/forest	128.97	0.28	4.50
4.990	Total	150.53	0.32	5.08

Subcatchment 6S: Basin 4 - existing



Summary for Subcatchment 13S: Basin 1A - existing

Runoff = 0.63 cfs @ 12.12 hrs, Volume= 0.049 af, Depth= 2.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.00"

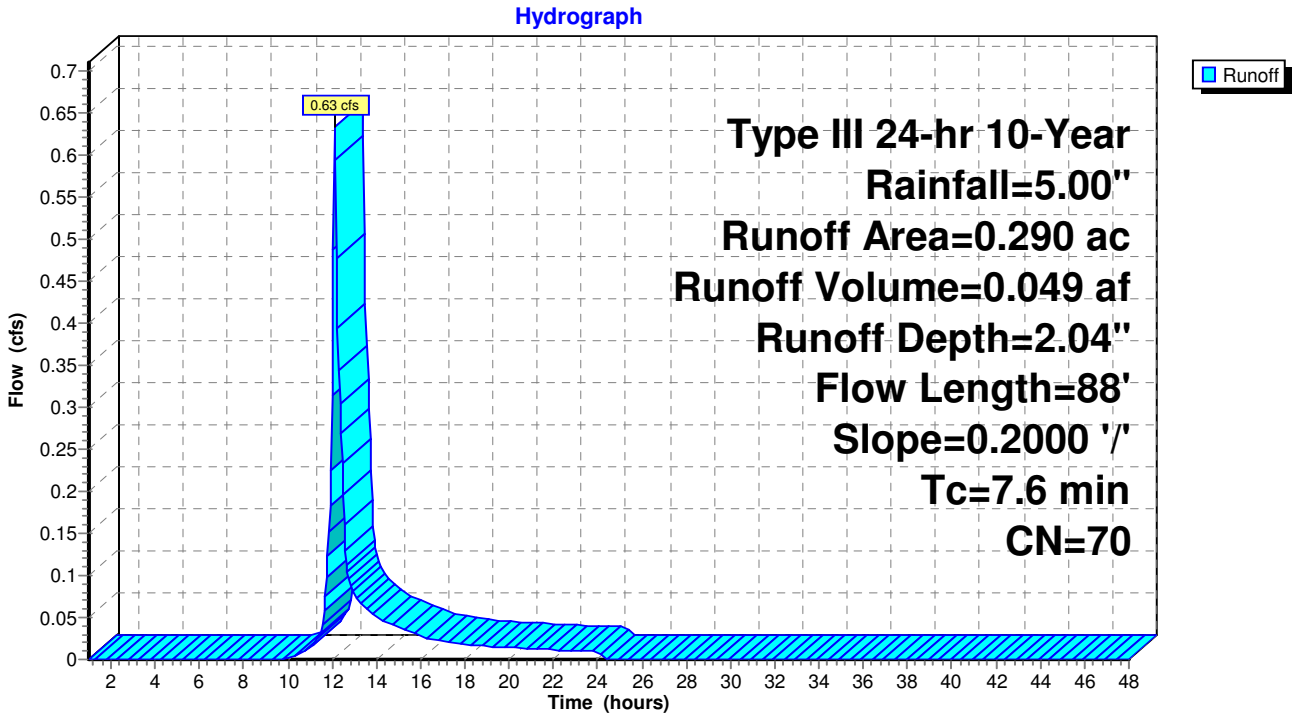
Area (ac)	CN	Description	Land Use
0.290	70	Woods, Good, HSG C	Rural open/forest
0.290		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	88	0.2000	0.19		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"

Pollutant Loading for 2.04" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
0.290	Rural open/forest	6.82	0.01	0.24
0.290	Total	6.82	0.01	0.24

Subcatchment 13S: Basin 1A - existing



Summary for Subcatchment 14S: Basin 1A - post construction

Area to drain to Pond 1.

Runoff = 1.22 cfs @ 12.09 hrs, Volume= 0.091 af, Depth= 3.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.00"

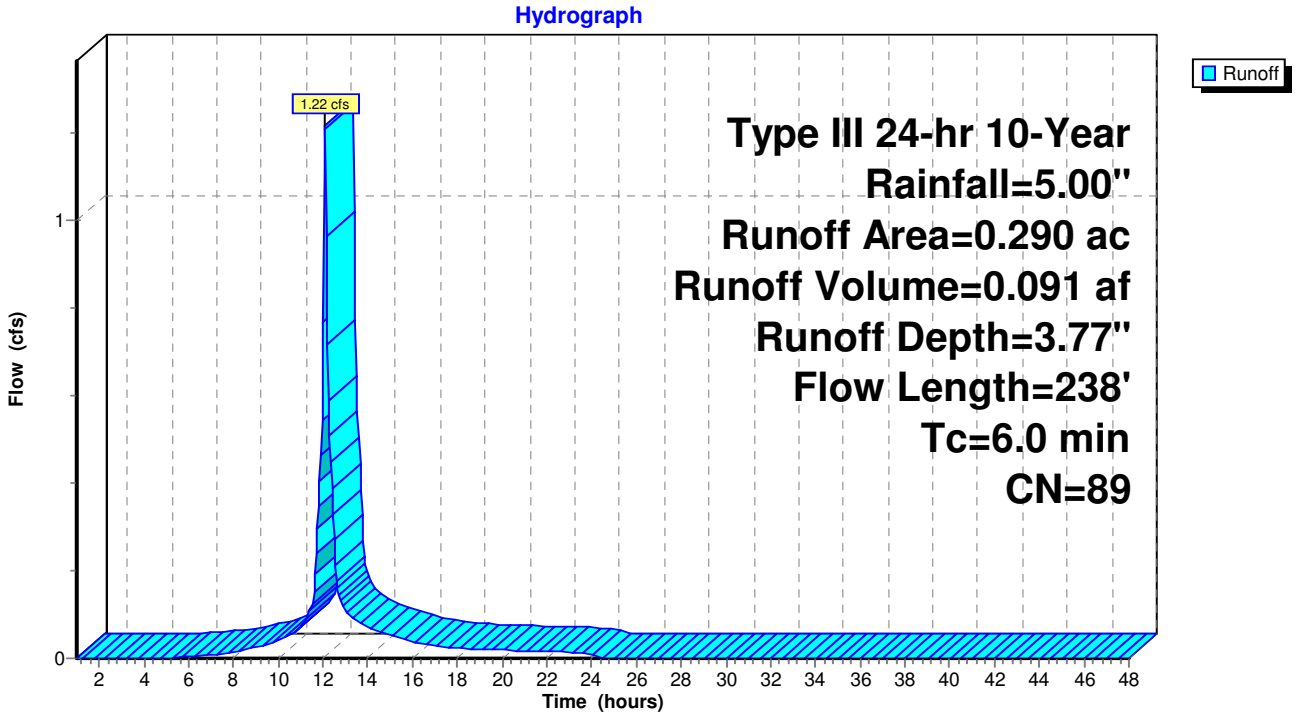
Area (ac)	CN	Description	Land Use
0.290	89	Gravel roads, HSG C	Driveway
0.290		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	88	0.1000	2.59		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
0.3	150	0.0500	9.42	120.54	**Channel Flow,** Area= 12.8 sf Perim= 26.0' r= 0.49' n= 0.022 Earth, clean & straight
0.9	238	Total, Increased to minimum Tc = 6.0 min			

Pollutant Loading for 3.77" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
0.290	Driveway	42.88	0.14	0.52
0.290	Total	42.88	0.14	0.52

Subcatchment 14S: Basin 1A - post construction



Summary for Subcatchment 15S: Basin 1B

Area to be diverted around development via ditch.

Runoff = 5.53 cfs @ 12.37 hrs, Volume= 0.662 af, Depth= 2.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.00"

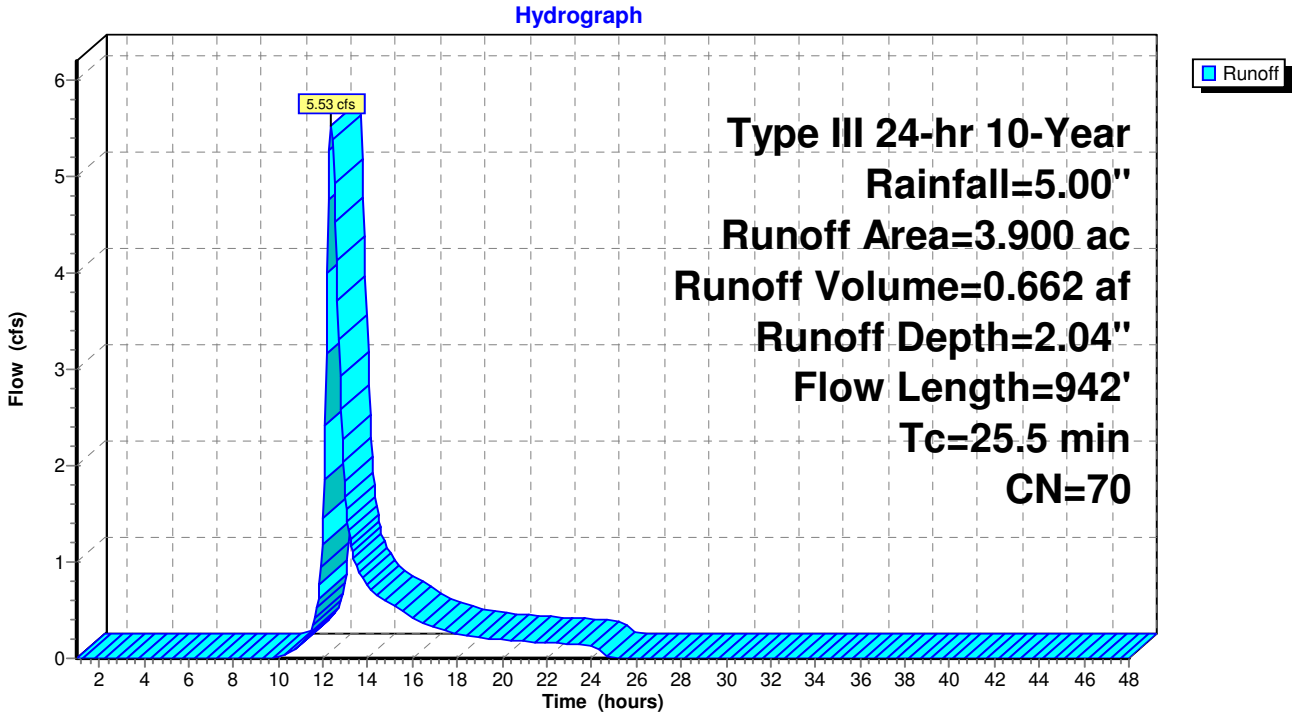
Area (ac)	CN	Description	Land Use
3.900	70	Woods, Good, HSG C	Rural open/forest
3.900		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.3	300	0.2000	0.25		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
5.2	642	0.1700	2.06		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
25.5	942	Total			

Pollutant Loading for 2.04" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
3.900	Rural open/forest	91.78	0.20	3.20
3.900	Total	91.78	0.20	3.20

Subcatchment 15S: Basin 1B



Summary for Subcatchment 16S: Basin 2B

Area to be diverted around development area via ditch and pipes.

Runoff = 7.60 cfs @ 12.31 hrs, Volume= 0.838 af, Depth= 2.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.00"

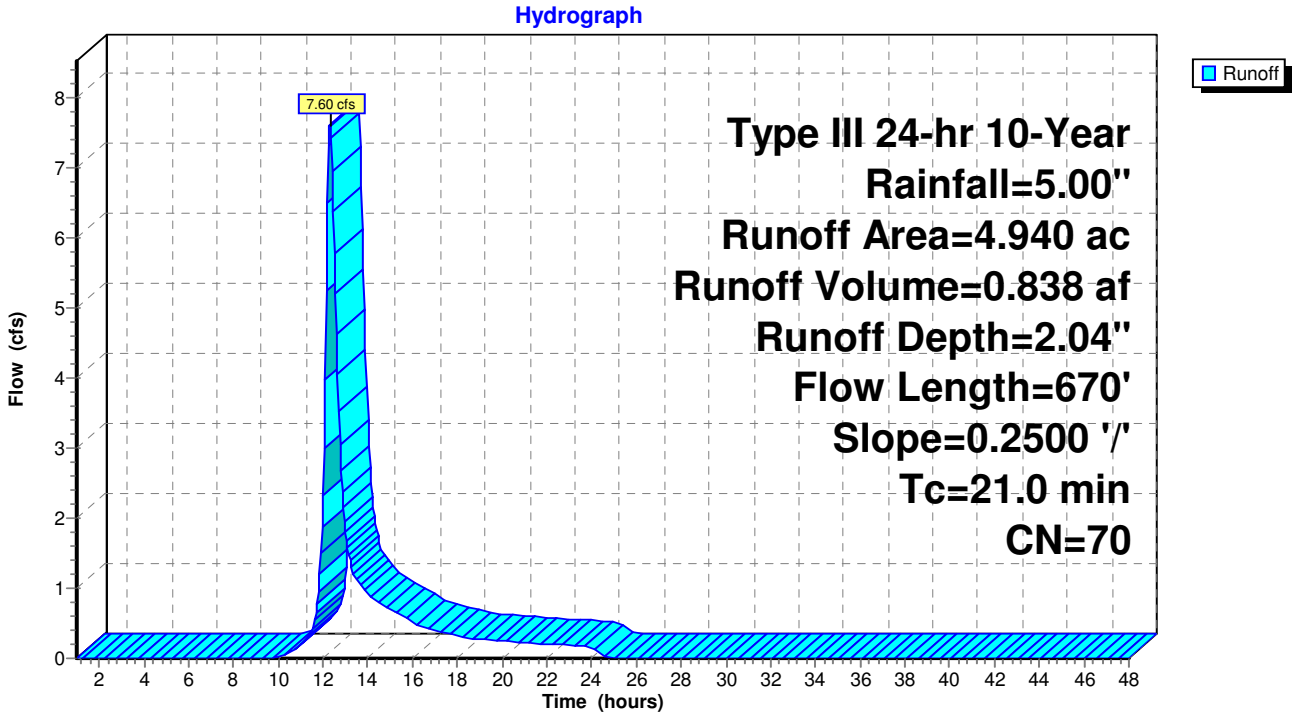
Area (ac)	CN	Description	Land Use
4.940	70	Woods, Good, HSG C	Rural open/forest
4.940		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.5	300	0.2500	0.27		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
2.5	370	0.2500	2.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
21.0	670	Total			

Pollutant Loading for 2.04" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
4.940	Rural open/forest	116.26	0.25	4.06
4.940	Total	116.26	0.25	4.06

Subcatchment 16S: Basin 2B



Summary for Subcatchment 17S: Basin 2A - existing

Runoff = 0.51 cfs @ 12.10 hrs, Volume= 0.037 af, Depth= 2.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.00"

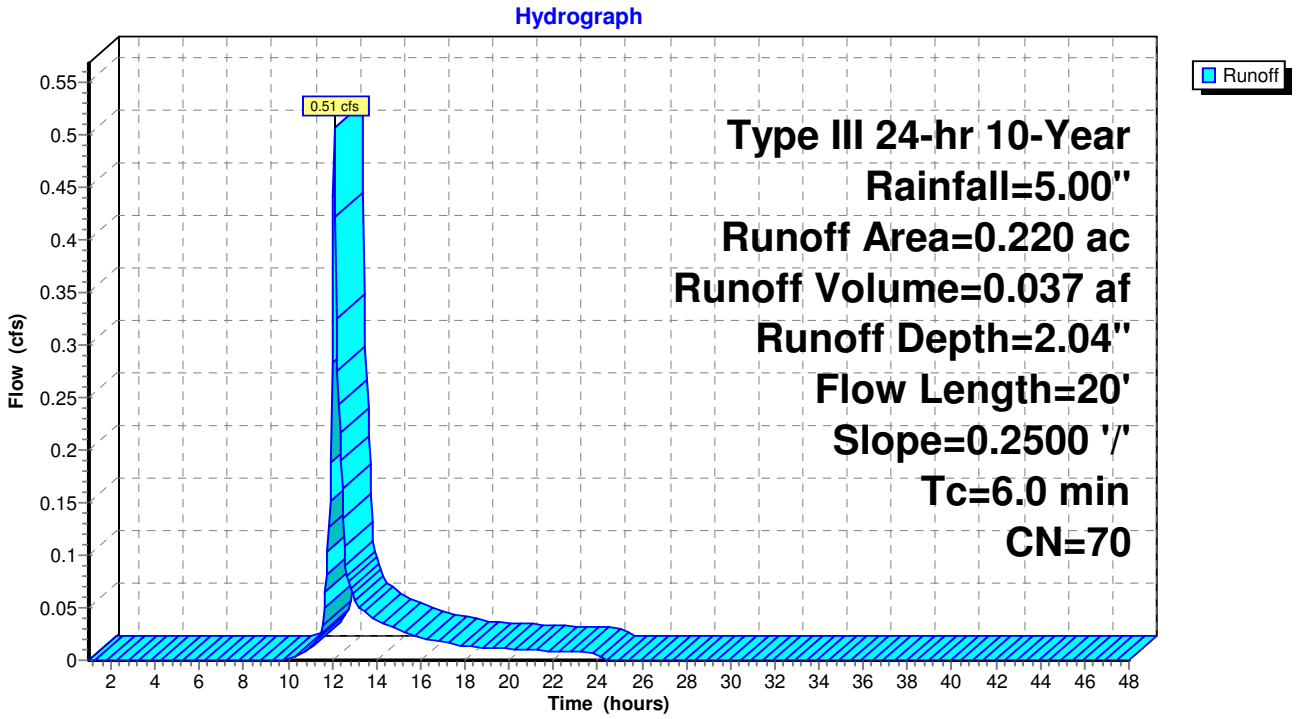
Area (ac)	CN	Description	Land Use
0.220	70	Woods, Good, HSG C	Rural open/forest
0.220		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	20	0.2500	0.16		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
2.1	20	Total, Increased to minimum Tc = 6.0 min			

Pollutant Loading for 2.04" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
0.220	Rural open/forest	5.18	0.01	0.18
0.220	Total	5.18	0.01	0.18

Subcatchment 17S: Basin 2A - existing



Summary for Subcatchment 18S: Basin 2A - post construction

Area to drain to Water Quality Swale.

Runoff = 0.92 cfs @ 12.09 hrs, Volume= 0.069 af, Depth= 3.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.00"

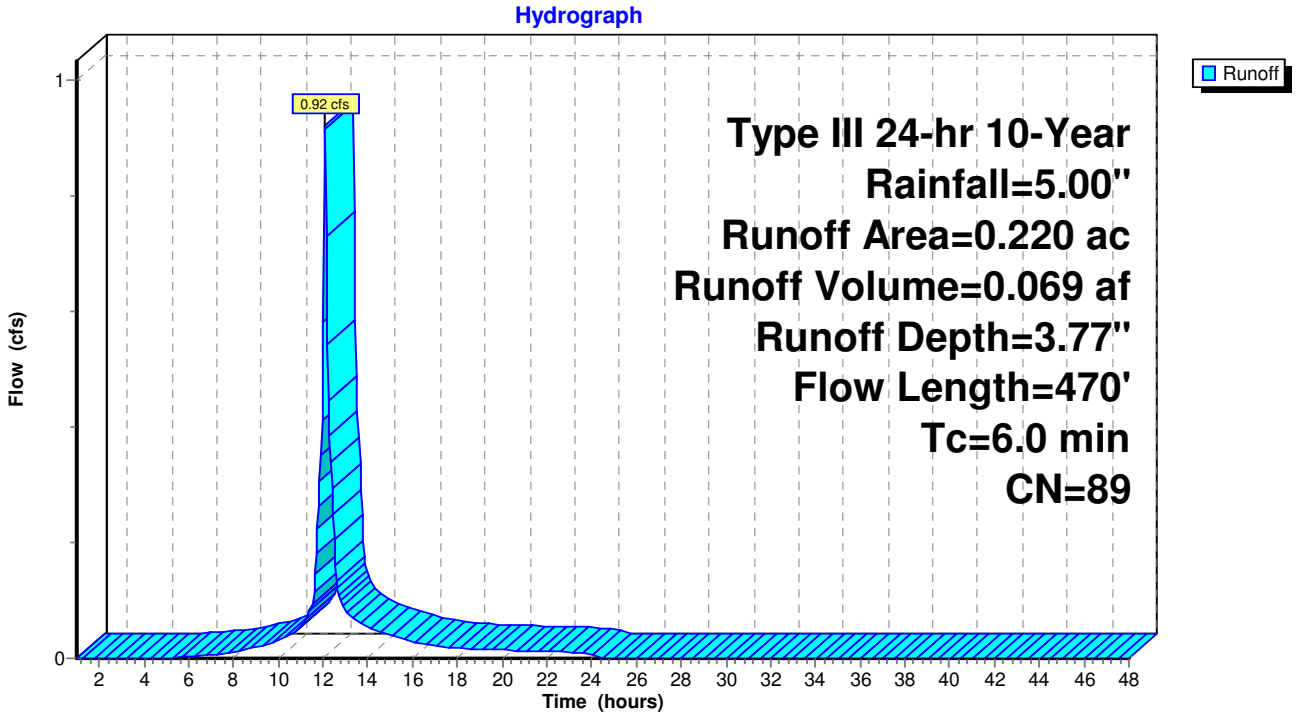
Area (ac)	CN	Description	Land Use
0.220	89	Gravel roads, HSG C	Driveway
0.220		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	20	0.0100	0.77		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
0.8	450	0.0500	9.42	120.54	**Channel Flow,** Area= 12.8 sf Perim= 26.0' r= 0.49' n= 0.022 Earth, clean & straight
1.2	470	Total, Increased to minimum Tc = 6.0 min			

Pollutant Loading for 3.77" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
0.220	Driveway	32.53	0.11	0.39
0.220	Total	32.53	0.11	0.39

Subcatchment 18S: Basin 2A - post construction



Summary for Subcatchment 19S: Basin 3B

Area to be diverted around development area via ditch and pipes.

Runoff = 6.42 cfs @ 12.33 hrs, Volume= 0.730 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.00"

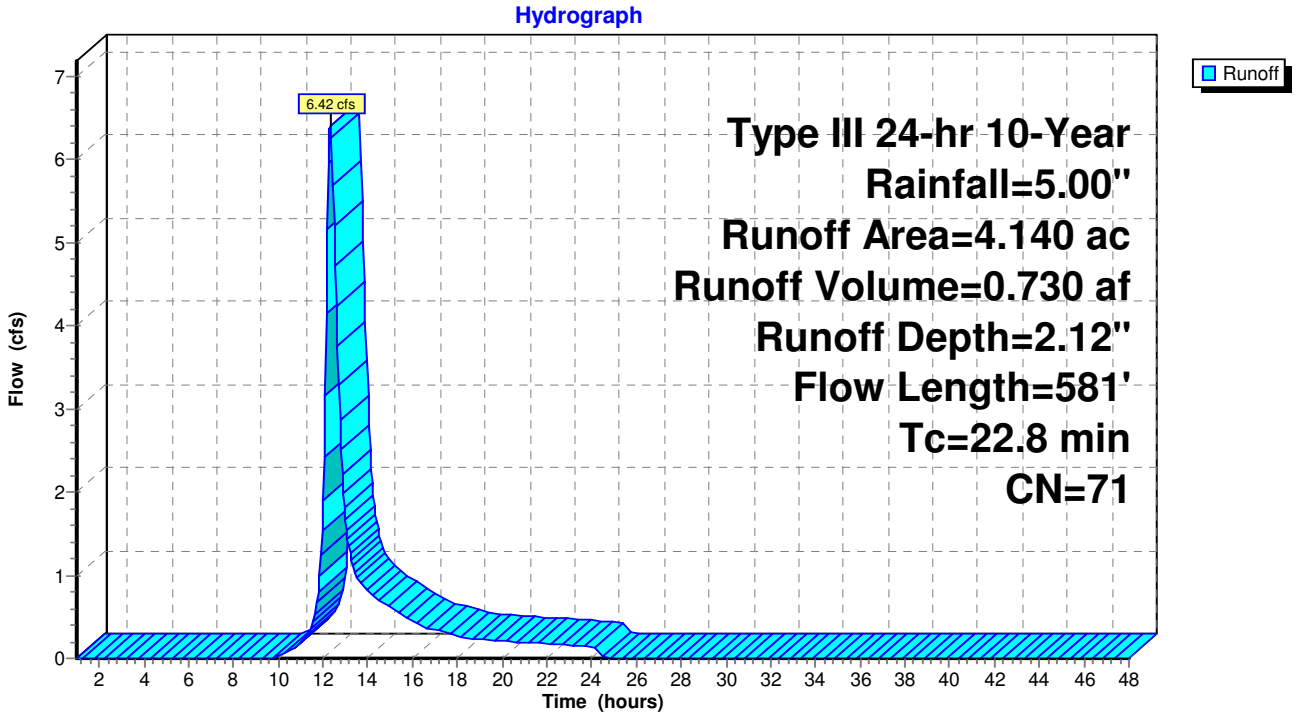
Area (ac)	CN	Description	Land Use
3.220	70	Woods, Good, HSG C	Rural open/forest
0.920	74	Pasture/grassland/range, Good, HSG C	Rural open/forest
4.140	71	Weighted Average	
4.140		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.9	300	0.0670	0.24		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.30"
1.9	281	0.2500	2.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
22.8	581	Total			

Pollutant Loading for 2.12" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
4.140	Rural open/forest	101.27	0.22	3.53
4.140	Total	101.27	0.22	3.53

Subcatchment 19S: Basin 3B



Summary for Subcatchment 20S: Basin 3A - existing

Runoff = 0.44 cfs @ 12.10 hrs, Volume= 0.032 af, Depth= 2.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.00"

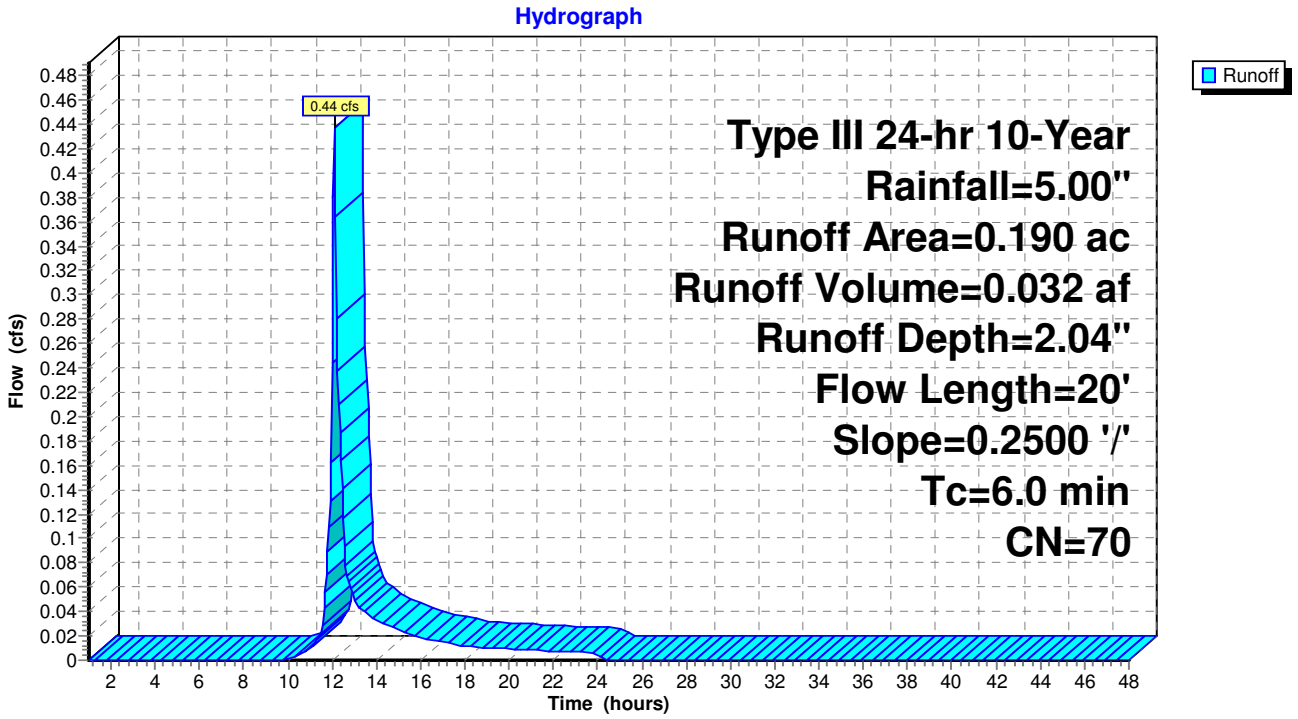
Area (ac)	CN	Description	Land Use
0.190	70	Woods, Good, HSG C	Rural open/forest
0.190		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	20	0.2500	0.16		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
2.1	20	Total, Increased to minimum Tc = 6.0 min			

Pollutant Loading for 2.04" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
0.190	Rural open/forest	4.47	0.01	0.16
0.190	Total	4.47	0.01	0.16

Subcatchment 20S: Basin 3A - existing



Summary for Subcatchment 21S: Basin 3A - post construction

Area to drain to Water Quality Swale.

Runoff = 0.76 cfs @ 12.09 hrs, Volume= 0.057 af, Depth= 3.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.00"

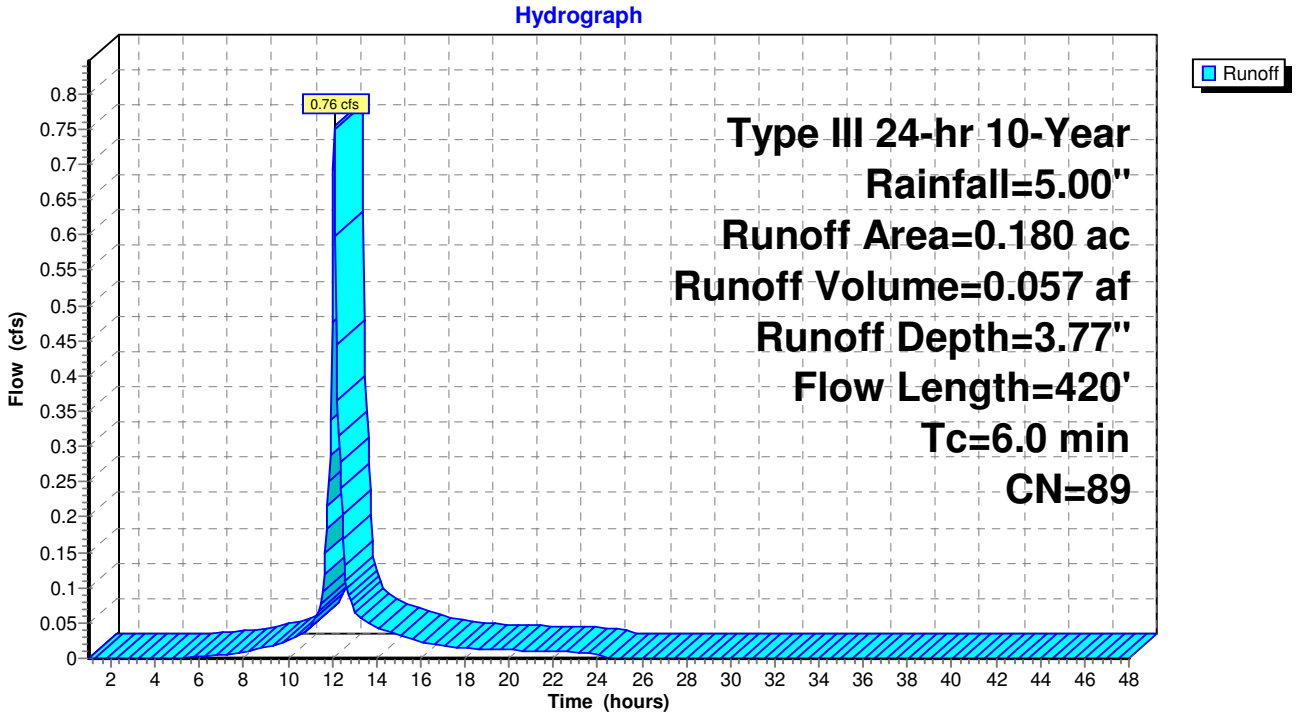
Area (ac)	CN	Description	Land Use
0.180	89	Gravel roads, HSG C	Driveway
0.180		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	20	0.0100	0.77		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
0.7	400	0.0500	9.42	120.54	**Channel Flow,** Area= 12.8 sf Perim= 26.0' r= 0.49' n= 0.022 Earth, clean & straight
1.1	420	Total, Increased to minimum Tc = 6.0 min			

Pollutant Loading for 3.77" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
0.180	Driveway	26.62	0.09	0.32
0.180	Total	26.62	0.09	0.32

Subcatchment 21S: Basin 3A - post construction



Summary for Subcatchment 22S: Basin 4 - post construction

Area to drain to Water Quality Swales.

Runoff = 11.94 cfs @ 12.19 hrs, Volume= 1.091 af, Depth= 2.62"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.00"

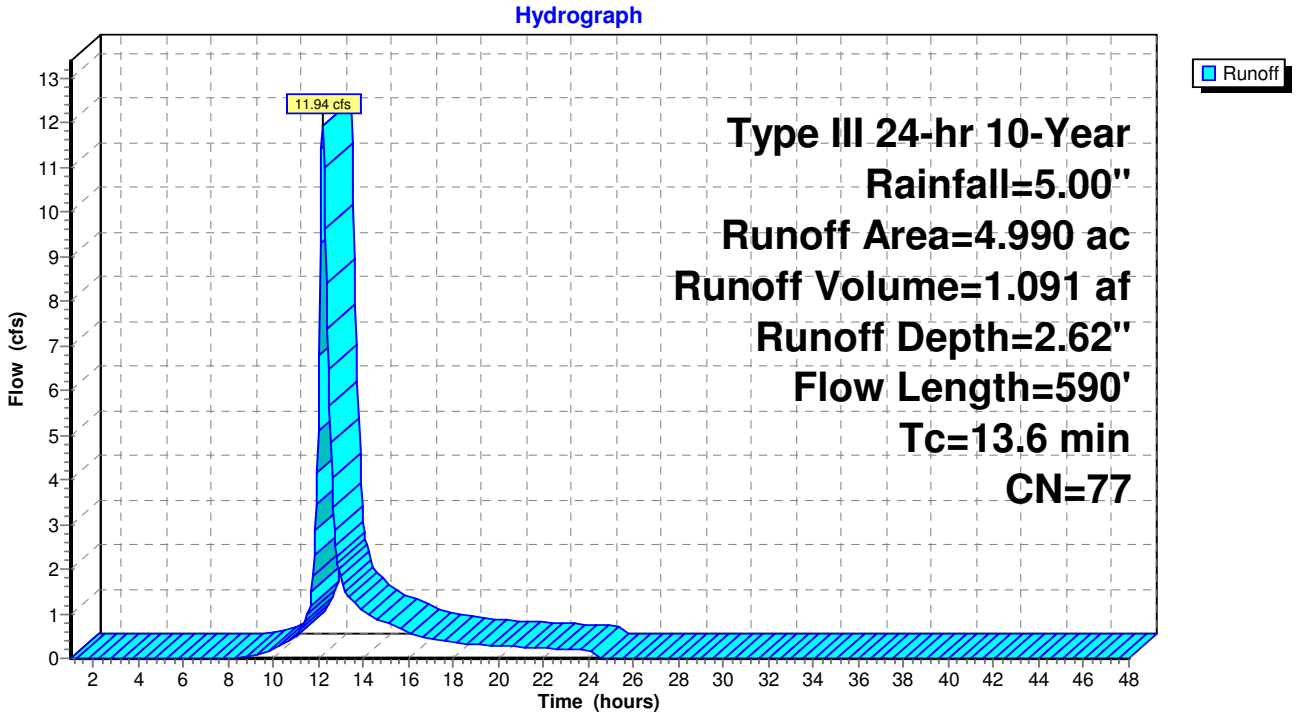
Area (ac)	CN	Description	Land Use
4.050	74	Pasture/grassland/range, Good, HSG C	Rural open/forest
0.270	89	Gravel roads, HSG C	Industrial General
0.620	89	Gravel roads, HSG C	Driveway
0.050	98	Unconnected roofs, HSG C	Commercial Roof
4.990	77	Weighted Average	
4.940		99.00% Pervious Area	
0.050		1.00% Impervious Area	
0.050		100.00% Unconnected	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	300	0.0900	0.44		**Sheet Flow,** Range n= 0.130 P2= 3.30"
2.2	290	0.2000	2.24		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.6	590	Total			

Pollutant Loading for 2.62" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
0.050	Commercial Roof	0.27	0.00	0.06
0.620	Driveway	63.76	0.21	0.77
0.270	Industrial General	23.91	0.05	0.64
4.050	Rural open/forest	122.77	0.26	4.29
4.990	Total	210.71	0.53	5.76

Subcatchment 22S: Basin 4 - post construction



Summary for Pond 10P: Wet Pool 1

Pond for Basins 1, 2, & 3

[81] Warning: Exceeded Pond 14P by 0.88' @ 12.25 hrs

Inflow Area = 0.690 ac, 0.00% Impervious, Inflow Depth = 3.77" for 10-Year event
Inflow = 2.93 cfs @ 12.10 hrs, Volume= 0.217 af
Outflow = 1.56 cfs @ 12.24 hrs, Volume= 0.217 af, Atten= 47%, Lag= 8.3 min
Primary = 1.56 cfs @ 12.24 hrs, Volume= 0.217 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Starting Elev= 4.00' Surf.Area= 1,564 sf Storage= 3,208 cf
Peak Elev= 4.93' @ 12.24 hrs Surf.Area= 2,001 sf Storage= 4,887 cf (1,679 cf above start)

Plug-Flow detention time= 200.3 min calculated for 0.143 af (66% of inflow)
Center-of-Mass det. time= 29.8 min (825.2 - 795.4)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	7,259 cf	**Custom Stage Data (Prismatic)** Listed below

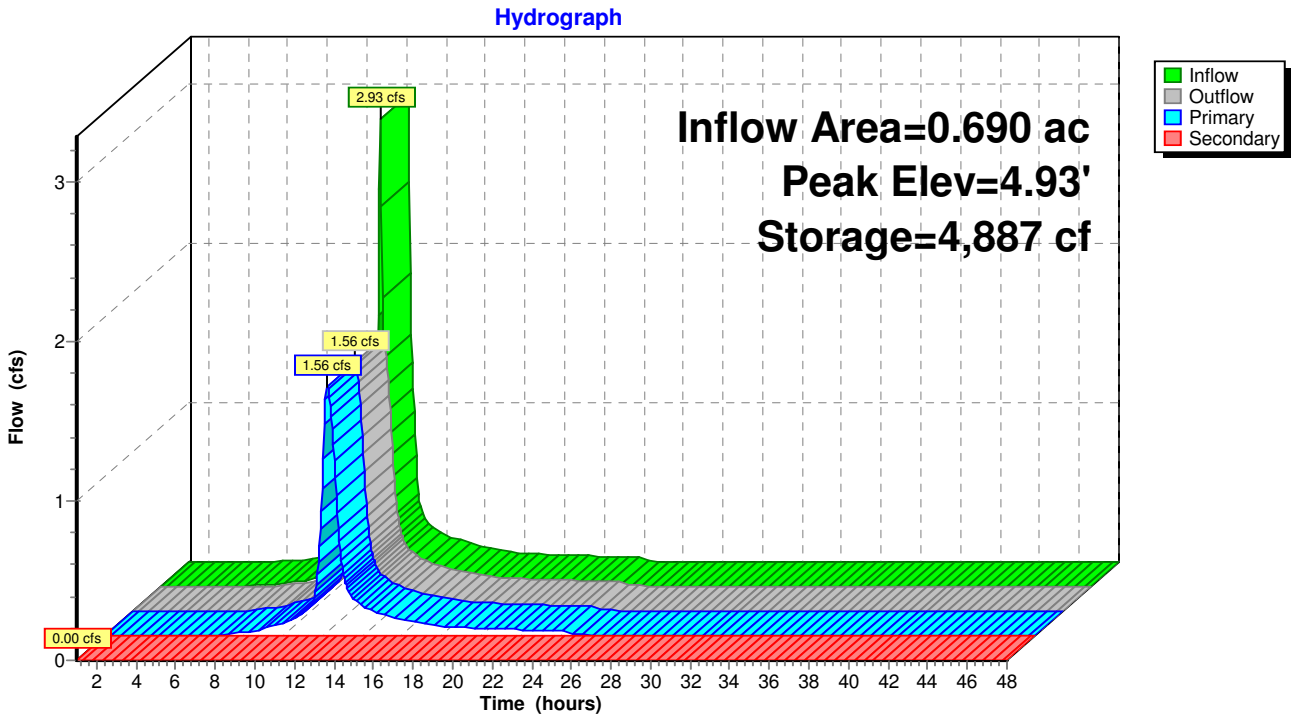
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	220	0	0
1.00	448	334	334
2.00	748	598	932
3.00	1,120	934	1,866
4.00	1,564	1,342	3,208
5.00	2,032	1,798	5,006
6.00	2,474	2,253	7,259

Device	Routing	Invert	Outlet Devices
#1	Primary	4.00'	**6.0" Vert. Orifice/Grate X 2.00** C= 0.600
#2	Secondary	5.25'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)**
			Head (feet) 0.00 0.75
			Width (feet) 10.00 10.00

Primary OutFlow Max=1.56 cfs @ 12.24 hrs HW=4.93' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 1.56 cfs @ 3.97 fps)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=4.00' (Free Discharge)
↑—**2=Custom Weir/Orifice** (Controls 0.00 cfs)

Pond 10P: Wet Pool 1



Summary for Pond 13P: Wet Pool 2

Pond for Basin 4.

[81] Warning: Exceeded Pond 16P by 1.05' @ 12.30 hrs

Inflow Area = 4.990 ac, 1.00% Impervious, Inflow Depth = 2.62" for 10-Year event
Inflow = 11.95 cfs @ 12.20 hrs, Volume= 1.091 af
Outflow = 9.58 cfs @ 12.31 hrs, Volume= 1.091 af, Atten= 20%, Lag= 6.8 min
Primary = 9.58 cfs @ 12.31 hrs, Volume= 1.091 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Starting Elev= 4.00' Surf.Area= 3,608 sf Storage= 9,176 cf
Peak Elev= 5.21' @ 12.31 hrs Surf.Area= 4,497 sf Storage= 14,153 cf (4,977 cf above start)

Plug-Flow detention time= 129.7 min calculated for 0.879 af (81% of inflow)
Center-of-Mass det. time= 18.0 min (855.5 - 837.5)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	17,850 cf	**Custom Stage Data (Prismatic)** Listed below

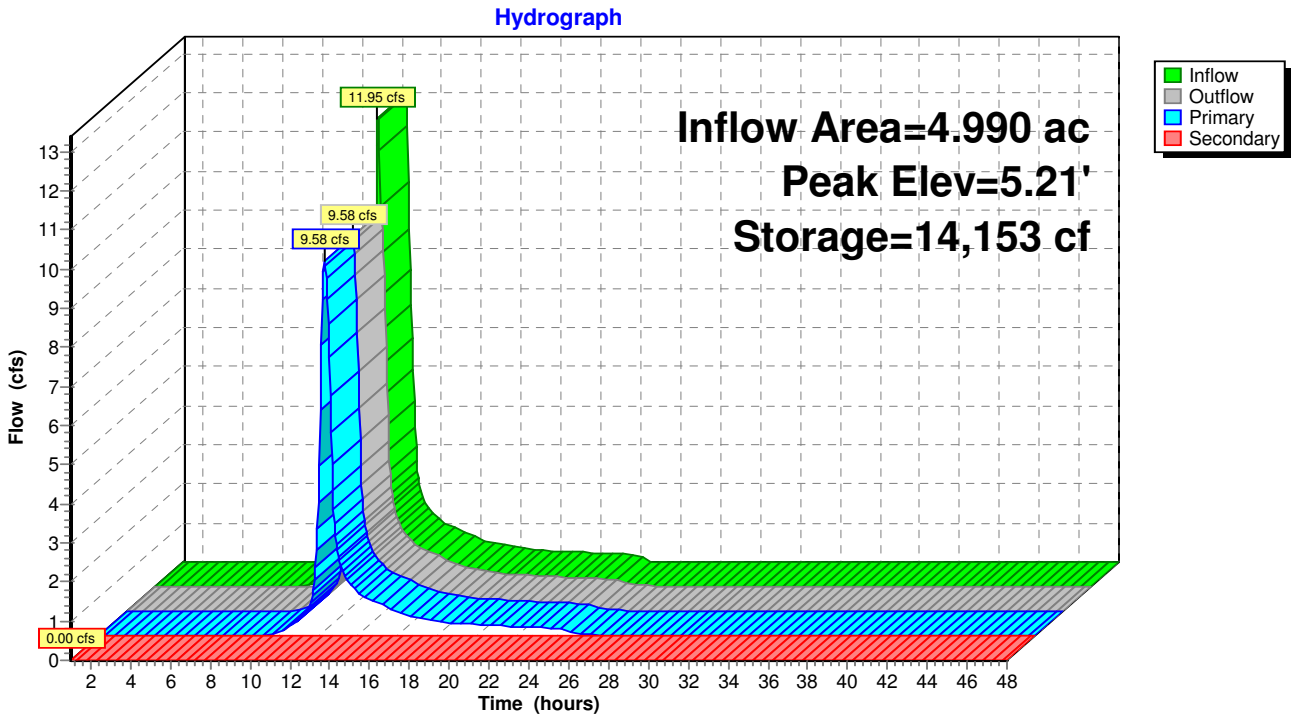
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	1,160	0	0
1.00	1,664	1,412	1,412
2.00	2,240	1,952	3,364
3.00	2,888	2,564	5,928
4.00	3,608	3,248	9,176
5.00	4,350	3,979	13,155
6.00	5,040	4,695	17,850

Device	Routing	Invert	Outlet Devices
#1	Secondary	5.50'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.50 Width (feet) 11.00 11.00
#2	Primary	4.00'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600

Primary OutFlow Max=9.55 cfs @ 12.31 hrs HW=5.21' (Free Discharge)
↑—**2=Orifice/Grate** (Orifice Controls 9.55 cfs @ 4.05 fps)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=4.00' (Free Discharge)
↑—**1=Custom Weir/Orifice** (Controls 0.00 cfs)

Pond 13P: Wet Pool 2



Summary for Pond 14P: Forebay 1

Pond for Basins 1, 2, & 3

[88] Warning: Qout>Qin may require Finer Routing>1

Inflow Area = 0.690 ac, 0.00% Impervious, Inflow Depth = 3.77" for 10-Year event
Inflow = 2.90 cfs @ 12.09 hrs, Volume= 0.217 af
Outflow = 2.93 cfs @ 12.10 hrs, Volume= 0.217 af, Atten= 0%, Lag= 0.5 min
Primary = 2.93 cfs @ 12.10 hrs, Volume= 0.217 af

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Starting Elev= 4.00' Surf.Area= 986 sf Storage= 1,712 cf
Peak Elev= 4.09' @ 12.10 hrs Surf.Area= 1,019 sf Storage= 1,815 cf (103 cf above start)

Plug-Flow detention time= 112.6 min calculated for 0.177 af (82% of inflow)
Center-of-Mass det. time= 1.0 min (795.4 - 794.4)

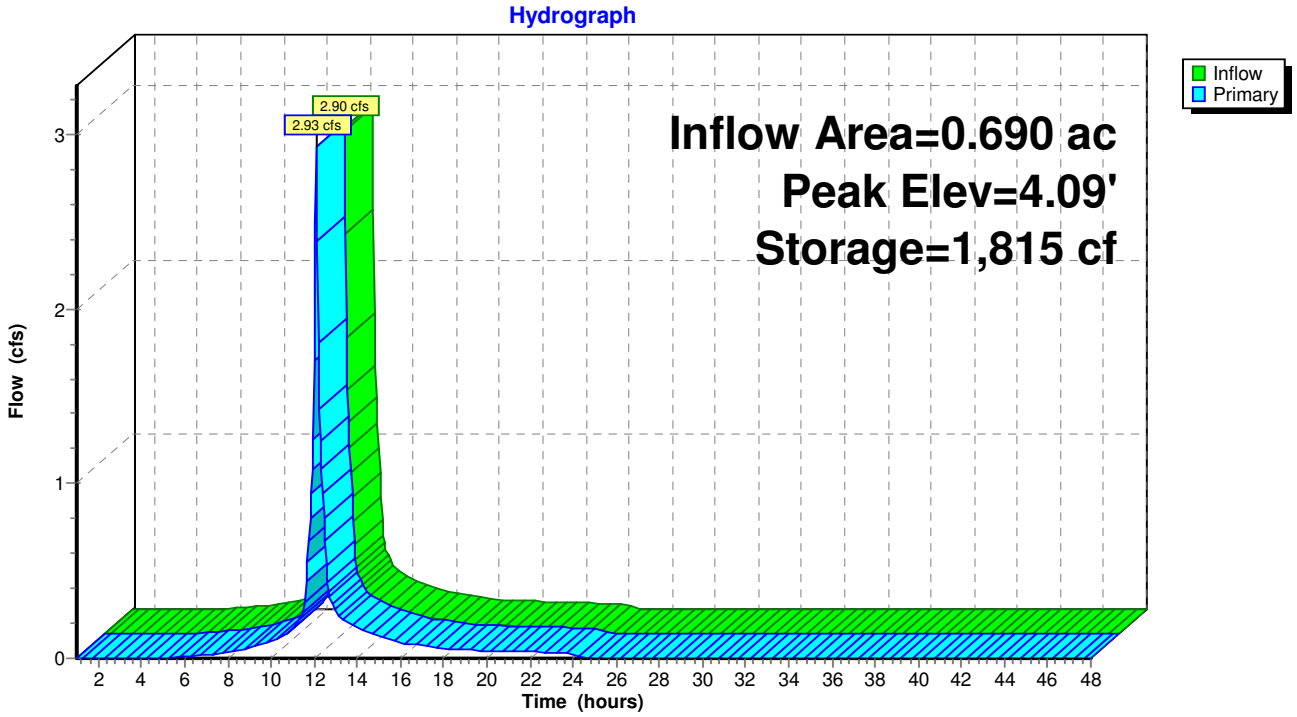
Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	4,429 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	50	0	0
1.00	176	113	113
2.00	374	275	388
3.00	644	509	897
4.00	986	815	1,712
5.00	1,368	1,177	2,889
6.00	1,712	1,540	4,429

Device	Routing	Invert	Outlet Devices
#1	Primary	4.00'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 2.00 Width (feet) 34.00 40.00 46.00

Primary OutFlow Max=2.86 cfs @ 12.10 hrs HW=4.09' (Free Discharge)
↑—**1=Custom Weir/Orifice** (Weir Controls 2.86 cfs @ 0.96 fps)

Pond 14P: Forebay 1



Summary for Pond 16P: Forebay 2

Pond for Basin 4.

[88] Warning: Qout>Qin may require Finer Routing>1

Inflow Area = 4.990 ac, 1.00% Impervious, Inflow Depth = 2.62" for 10-Year event
Inflow = 11.94 cfs @ 12.19 hrs, Volume= 1.091 af
Outflow = 11.95 cfs @ 12.20 hrs, Volume= 1.091 af, Atten= 0%, Lag= 0.3 min
Primary = 11.95 cfs @ 12.20 hrs, Volume= 1.091 af

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Starting Elev= 4.00' Surf.Area= 1,232 sf Storage= 2,264 cf
Peak Elev= 4.19' @ 12.20 hrs Surf.Area= 1,311 sf Storage= 2,535 cf (271 cf above start)

Plug-Flow detention time= 37.5 min calculated for 1.039 af (95% of inflow)
Center-of-Mass det. time= 0.7 min (837.5 - 836.8)

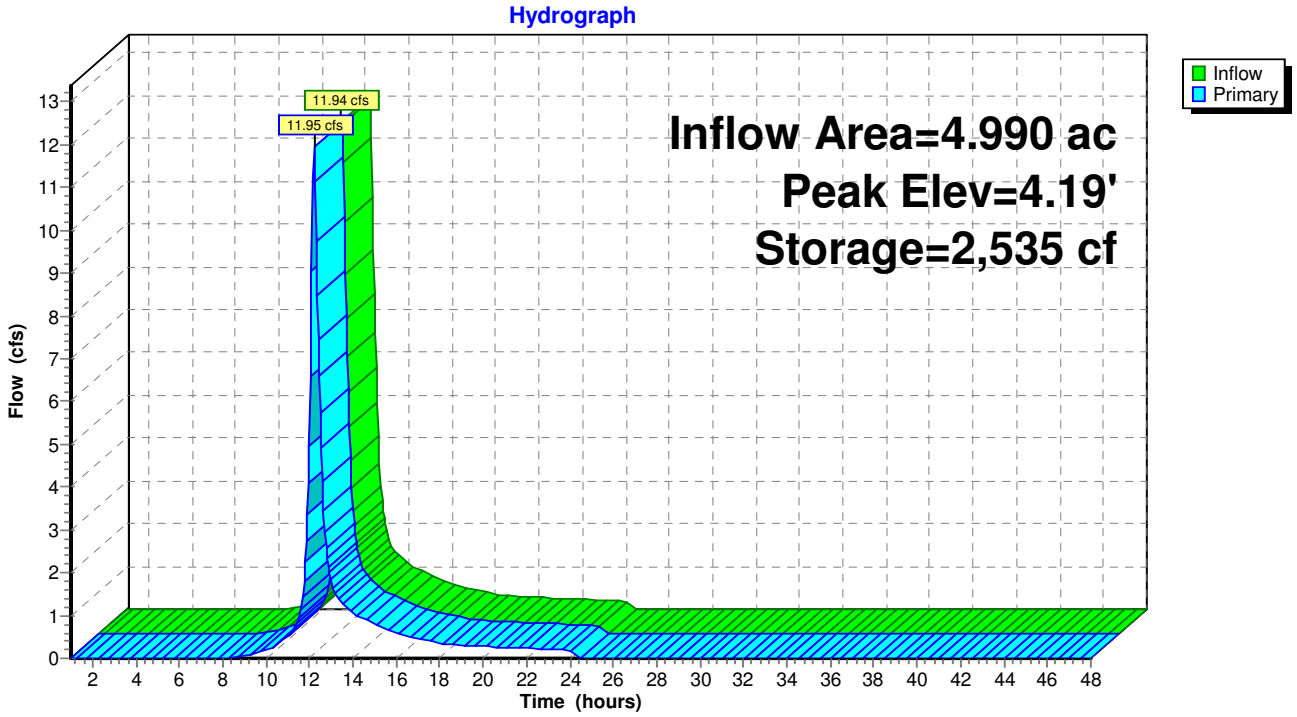
Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	5,538 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	80	0	0
1.00	260	170	170
2.00	512	386	556
3.00	836	674	1,230
4.00	1,232	1,034	2,264
5.00	1,650	1,441	3,705
6.00	2,016	1,833	5,538

Device	Routing	Invert	Outlet Devices
#1	Primary	4.00'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 2.00 Width (feet) 44.00 50.00 56.00

Primary OutFlow Max=11.84 cfs @ 12.20 hrs HW=4.19' (Free Discharge)
↑—**1=Custom Weir/Orifice** (Weir Controls 11.84 cfs @ 1.42 fps)

Pond 16P: Forebay 2



Time span=1.00-48.00 hrs, dt=0.05 hrs, 941 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 6S: Basin 4 - existing Runoff Area=4.990 ac 0.00% Impervious Runoff Depth=2.85"
Flow Length=590' Tc=13.6 min CN=74 Runoff=12.97 cfs 1.186 af

Subcatchment 13S: Basin 1A - existing Runoff Area=0.290 ac 0.00% Impervious Runoff Depth=2.49"
Flow Length=88' Slope=0.2000 '/' Tc=7.6 min CN=70 Runoff=0.78 cfs 0.060 af

Subcatchment 14S: Basin 1A - post Runoff Area=0.290 ac 0.00% Impervious Runoff Depth=4.35"
Flow Length=238' Tc=6.0 min CN=89 Runoff=1.39 cfs 0.105 af

Subcatchment 15S: Basin 1B Runoff Area=3.900 ac 0.00% Impervious Runoff Depth=2.49"
Flow Length=942' Tc=25.5 min CN=70 Runoff=6.83 cfs 0.810 af

Subcatchment 16S: Basin 2B Runoff Area=4.940 ac 0.00% Impervious Runoff Depth=2.49"
Flow Length=670' Slope=0.2500 '/' Tc=21.0 min CN=70 Runoff=9.39 cfs 1.026 af

Subcatchment 17S: Basin 2A - existing Runoff Area=0.220 ac 0.00% Impervious Runoff Depth=2.49"
Flow Length=20' Slope=0.2500 '/' Tc=6.0 min CN=70 Runoff=0.63 cfs 0.046 af

Subcatchment 18S: Basin 2A - post Runoff Area=0.220 ac 0.00% Impervious Runoff Depth=4.35"
Flow Length=470' Tc=6.0 min CN=89 Runoff=1.06 cfs 0.080 af

Subcatchment 19S: Basin 3B Runoff Area=4.140 ac 0.00% Impervious Runoff Depth=2.58"
Flow Length=581' Tc=22.8 min CN=71 Runoff=7.89 cfs 0.890 af

Subcatchment 20S: Basin 3A - existing Runoff Area=0.190 ac 0.00% Impervious Runoff Depth=2.49"
Flow Length=20' Slope=0.2500 '/' Tc=6.0 min CN=70 Runoff=0.54 cfs 0.039 af

Subcatchment 21S: Basin 3A - post Runoff Area=0.180 ac 0.00% Impervious Runoff Depth=4.35"
Flow Length=420' Tc=6.0 min CN=89 Runoff=0.86 cfs 0.065 af

Subcatchment 22S: Basin 4 - post Runoff Area=4.990 ac 1.00% Impervious Runoff Depth=3.13"
Flow Length=590' Tc=13.6 min CN=77 Runoff=14.28 cfs 1.303 af

Pond 10P: Wet Pool 1 Peak Elev=5.07' Storage=5,161 cf Inflow=3.34 cfs 0.250 af
Primary=1.71 cfs 0.250 af Secondary=0.00 cfs 0.000 af Outflow=1.71 cfs 0.250 af

Pond 13P: Wet Pool 2 Peak Elev=5.45' Storage=15,266 cf Inflow=14.32 cfs 1.303 af
Primary=11.05 cfs 1.303 af Secondary=0.00 cfs 0.000 af Outflow=11.05 cfs 1.303 af

Pond 14P: Forebay 1 Peak Elev=4.09' Storage=1,823 cf Inflow=3.32 cfs 0.250 af
Outflow=3.34 cfs 0.250 af

Pond 16P: Forebay 2 Peak Elev=4.21' Storage=2,570 cf Inflow=14.28 cfs 1.303 af
Outflow=14.32 cfs 1.303 af

Total Runoff Area = 24.350 ac Runoff Volume = 5.609 af Average Runoff Depth = 2.76"
99.79% Pervious = 24.300 ac 0.21% Impervious = 0.050 ac

Summary for Subcatchment 6S: Basin 4 - existing

Runoff = 12.97 cfs @ 12.19 hrs, Volume= 1.186 af, Depth= 2.85"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.60"

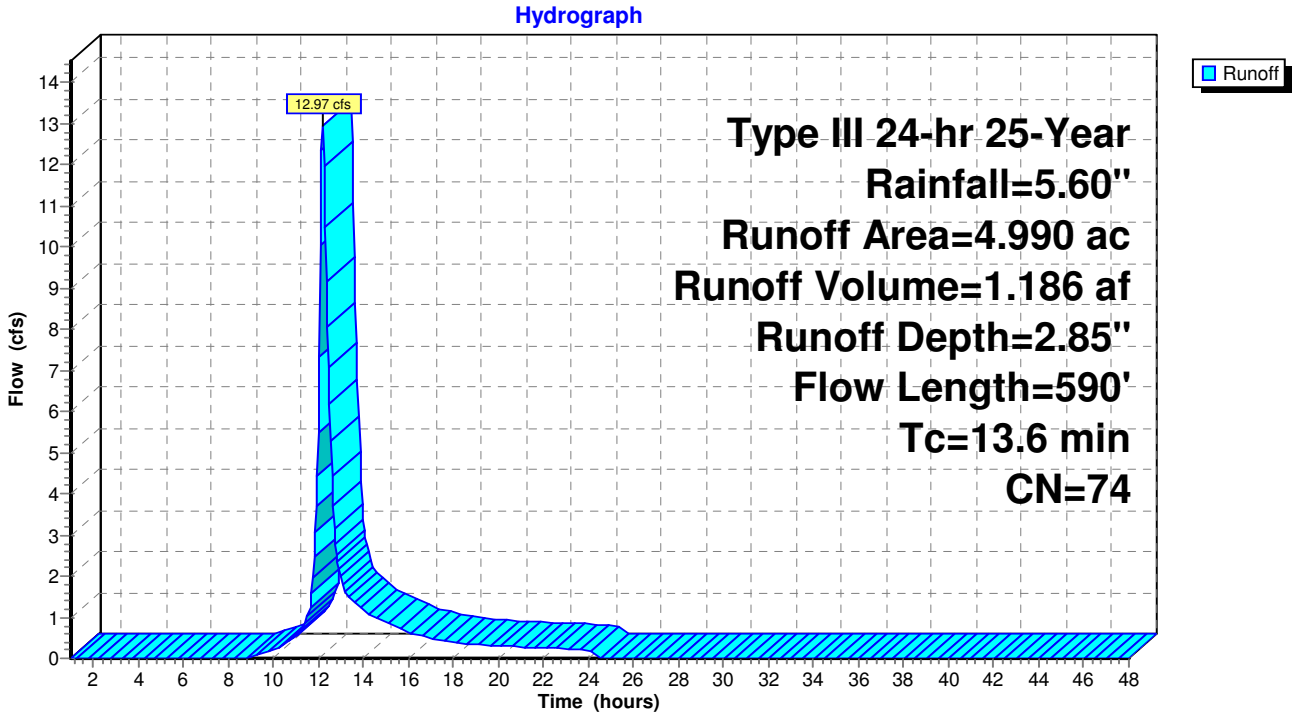
Area (ac)	CN	Description	Land Use
1.550	70	Woods, Good, HSG C	Rural open/forest
3.170	74	Pasture/grassland/range, Good, HSG C	Rural open/forest
0.270	89	Gravel roads, HSG C	Industrial General
4.990	74	Weighted Average	
4.990		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	300	0.0900	0.44		**Sheet Flow,** Range n= 0.130 P2= 3.30"
2.2	290	0.2000	2.24		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.6	590	Total			

Pollutant Loading for 2.85" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
0.270	Industrial General	26.00	0.06	0.69
4.720	Rural open/forest	155.55	0.34	5.43
4.990	Total	181.55	0.39	6.12

Subcatchment 6S: Basin 4 - existing



Summary for Subcatchment 13S: Basin 1A - existing

Runoff = 0.78 cfs @ 12.11 hrs, Volume= 0.060 af, Depth= 2.49"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.60"

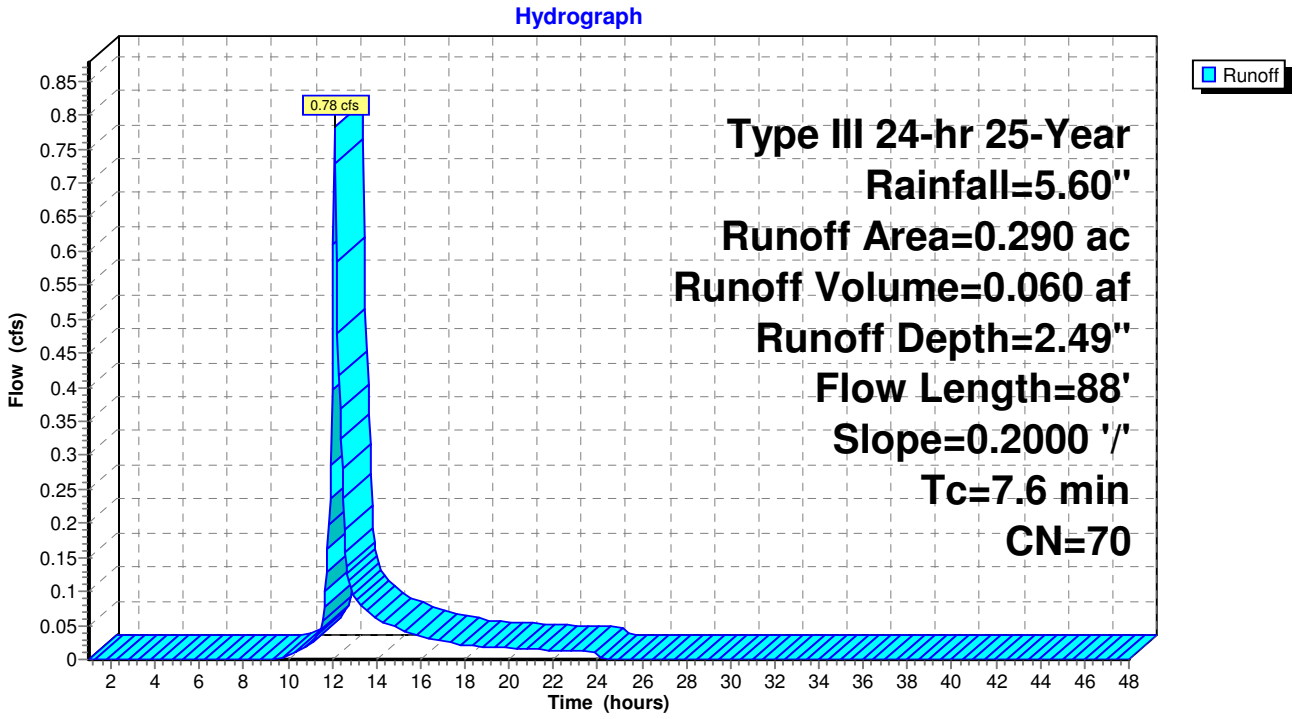
Area (ac)	CN	Description	Land Use
0.290	70	Woods, Good, HSG C	Rural open/forest
0.290		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	88	0.2000	0.19		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"

Pollutant Loading for 2.49" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
0.290	Rural open/forest	8.35	0.02	0.29
0.290	Total	8.35	0.02	0.29

Subcatchment 13S: Basin 1A - existing



Summary for Subcatchment 14S: Basin 1A - post construction

Area to drain to Pond 1.

Runoff = 1.39 cfs @ 12.09 hrs, Volume= 0.105 af, Depth= 4.35"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.60"

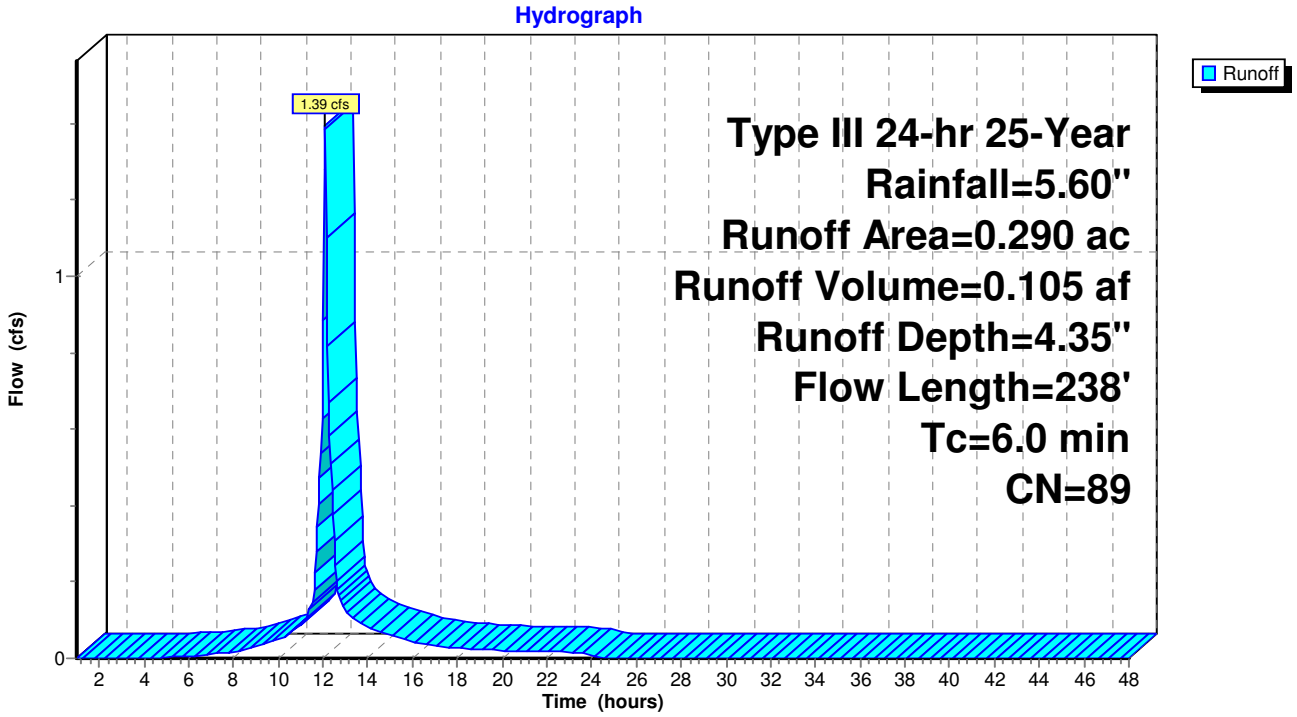
Area (ac)	CN	Description	Land Use
0.290	89	Gravel roads, HSG C	Driveway
0.290		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	88	0.1000	2.59		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
0.3	150	0.0500	9.42	120.54	**Channel Flow,** Area= 12.8 sf Perim= 26.0' r= 0.49' n= 0.022 Earth, clean & straight
0.9	238	Total, Increased to minimum Tc = 6.0 min			

Pollutant Loading for 4.35" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
0.290	Driveway	49.44	0.16	0.60
0.290	Total	49.44	0.16	0.60

Subcatchment 14S: Basin 1A - post construction



Summary for Subcatchment 15S: Basin 1B

Area to be diverted around development via ditch.

Runoff = 6.83 cfs @ 12.37 hrs, Volume= 0.810 af, Depth= 2.49"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.60"

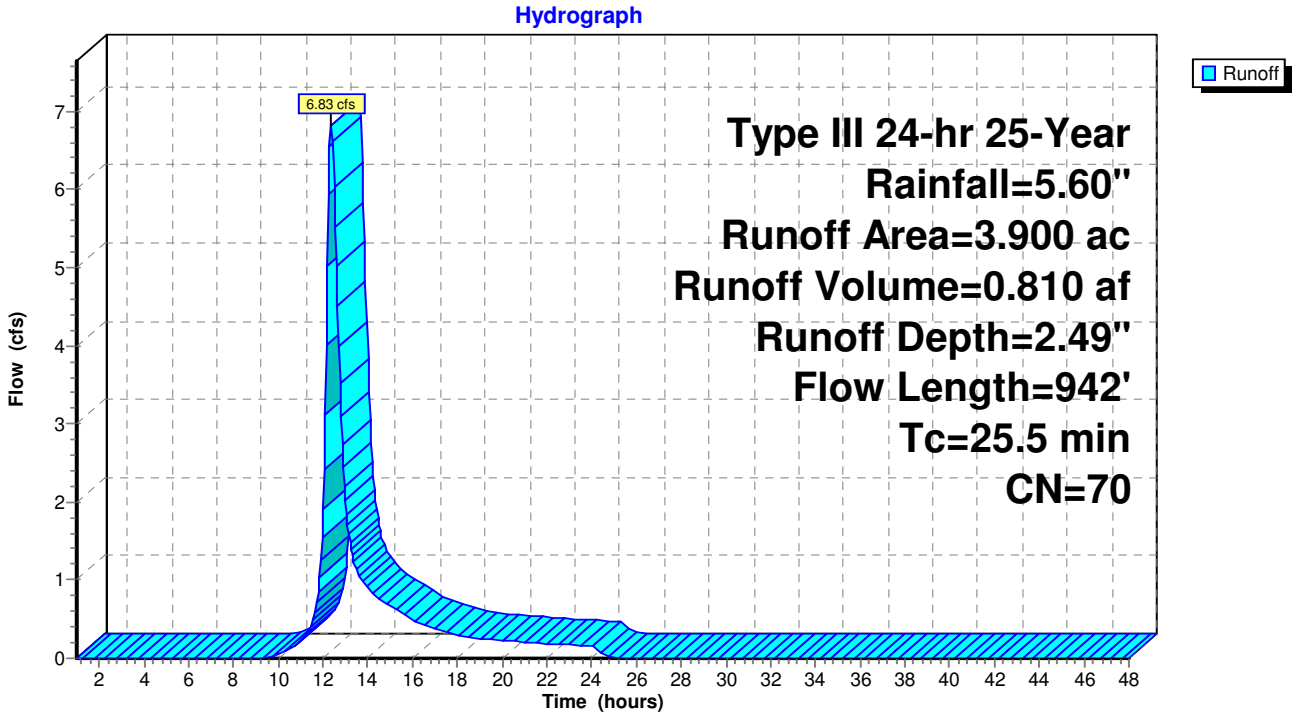
Area (ac)	CN	Description	Land Use
3.900	70	Woods, Good, HSG C	Rural open/forest
3.900		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.3	300	0.2000	0.25		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
5.2	642	0.1700	2.06		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
25.5	942	Total			

Pollutant Loading for 2.49" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
3.900	Rural open/forest	112.30	0.24	3.92
3.900	Total	112.30	0.24	3.92

Subcatchment 15S: Basin 1B



Summary for Subcatchment 16S: Basin 2B

Area to be diverted around development area via ditch and pipes.

Runoff = 9.39 cfs @ 12.30 hrs, Volume= 1.026 af, Depth= 2.49"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.60"

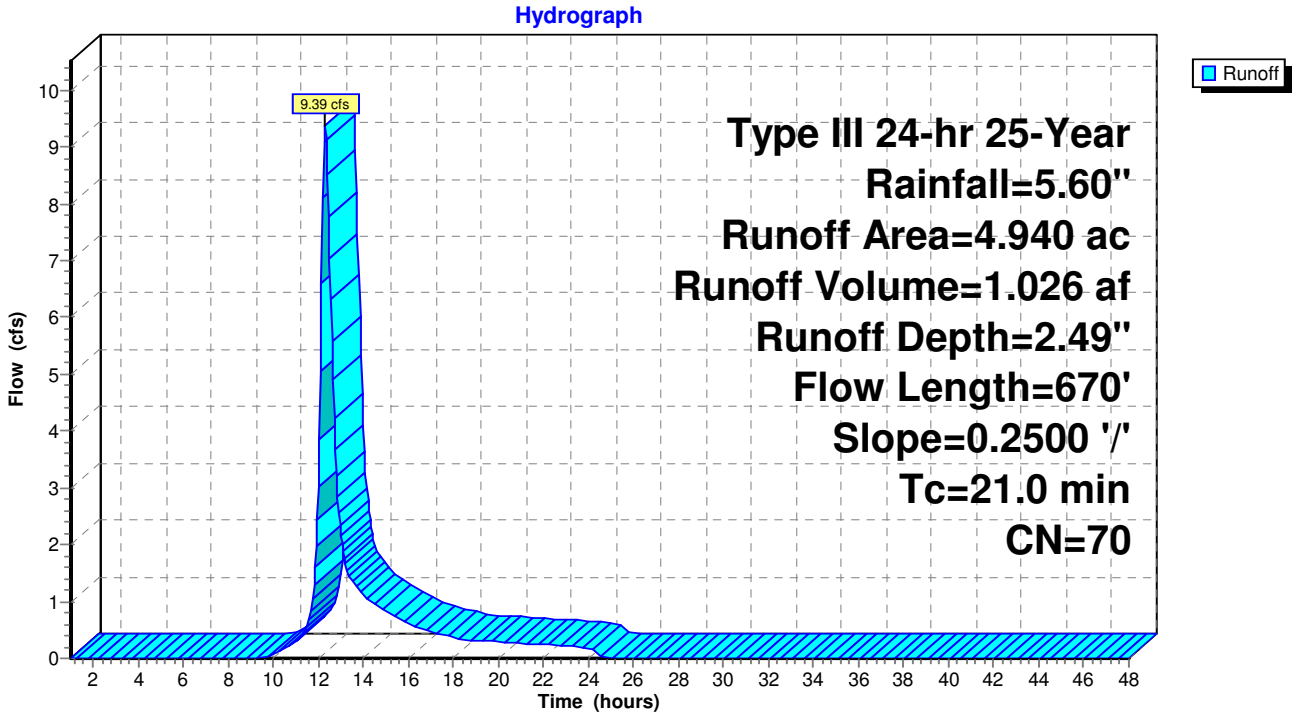
Area (ac)	CN	Description	Land Use
4.940	70	Woods, Good, HSG C	Rural open/forest
4.940		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.5	300	0.2500	0.27		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
2.5	370	0.2500	2.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
21.0	670	Total			

Pollutant Loading for 2.49" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
4.940	Rural open/forest	142.25	0.31	4.96
4.940	Total	142.25	0.31	4.96

Subcatchment 16S: Basin 2B



Summary for Subcatchment 17S: Basin 2A - existing

Runoff = 0.63 cfs @ 12.10 hrs, Volume= 0.046 af, Depth= 2.49"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.60"

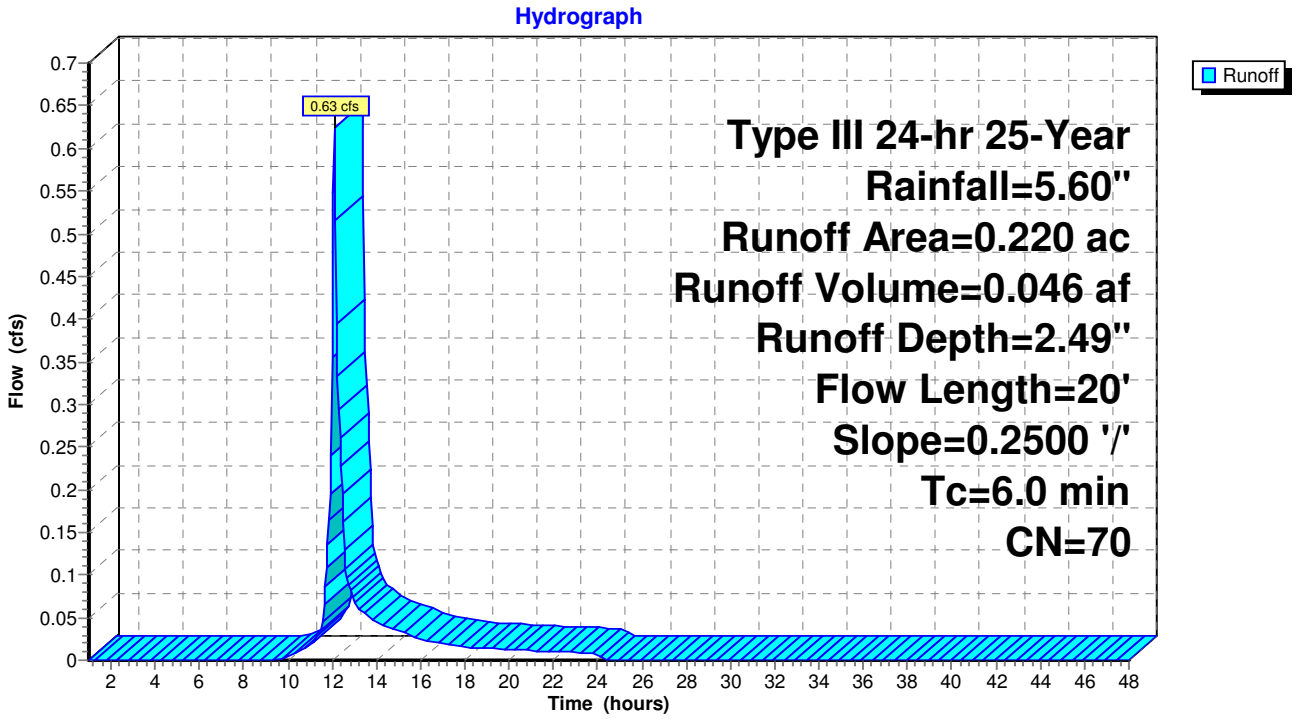
Area (ac)	CN	Description	Land Use
0.220	70	Woods, Good, HSG C	Rural open/forest
0.220		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	20	0.2500	0.16		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
2.1	20	Total, Increased to minimum Tc = 6.0 min			

Pollutant Loading for 2.49" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
0.220	Rural open/forest	6.33	0.01	0.22
0.220	Total	6.33	0.01	0.22

Subcatchment 17S: Basin 2A - existing



Summary for Subcatchment 18S: Basin 2A - post construction

Area to drain to Water Quality Swale.

Runoff = 1.06 cfs @ 12.09 hrs, Volume= 0.080 af, Depth= 4.35"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.60"

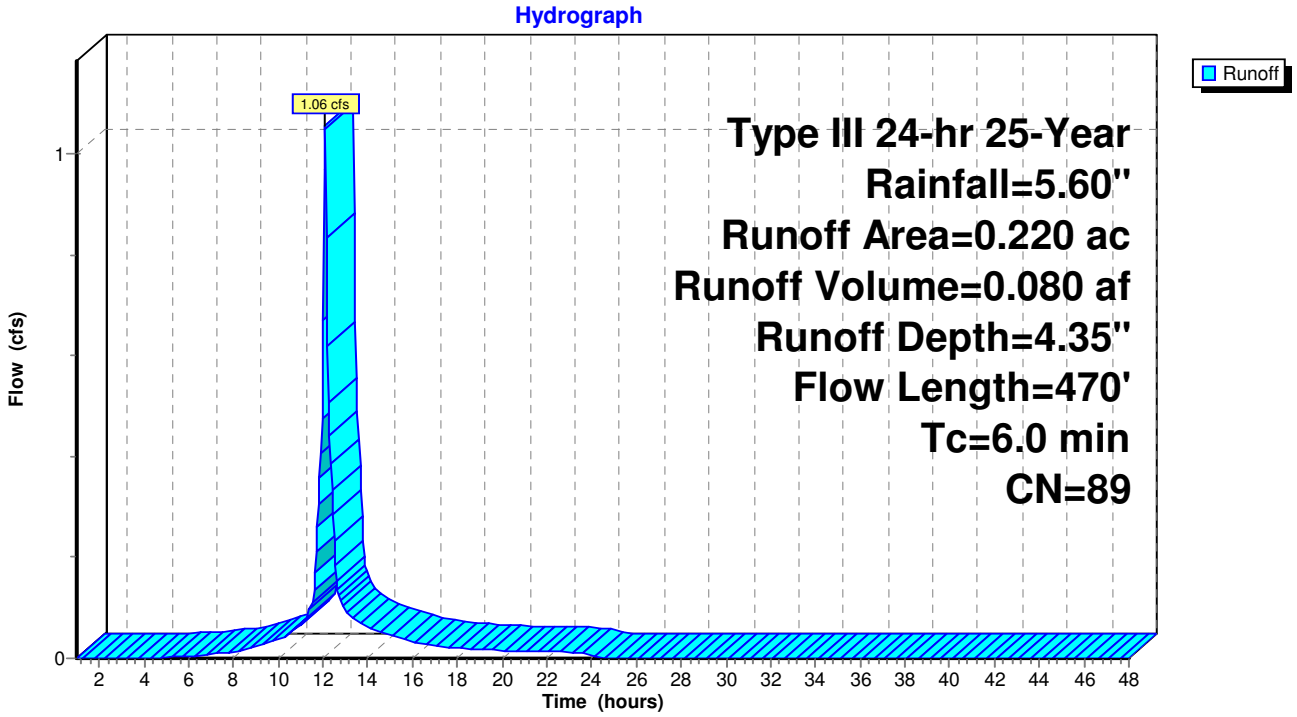
Area (ac)	CN	Description	Land Use
0.220	89	Gravel roads, HSG C	Driveway
0.220		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	20	0.0100	0.77		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
0.8	450	0.0500	9.42	120.54	**Channel Flow,** Area= 12.8 sf Perim= 26.0' r= 0.49' n= 0.022 Earth, clean & straight
1.2	470	Total, Increased to minimum Tc = 6.0 min			

Pollutant Loading for 4.35" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
0.220	Driveway	37.51	0.12	0.46
0.220	Total	37.51	0.12	0.46

Subcatchment 18S: Basin 2A - post construction



Summary for Subcatchment 19S: Basin 3B

Area to be diverted around development area via ditch and pipes.

Runoff = 7.89 cfs @ 12.33 hrs, Volume= 0.890 af, Depth= 2.58"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.60"

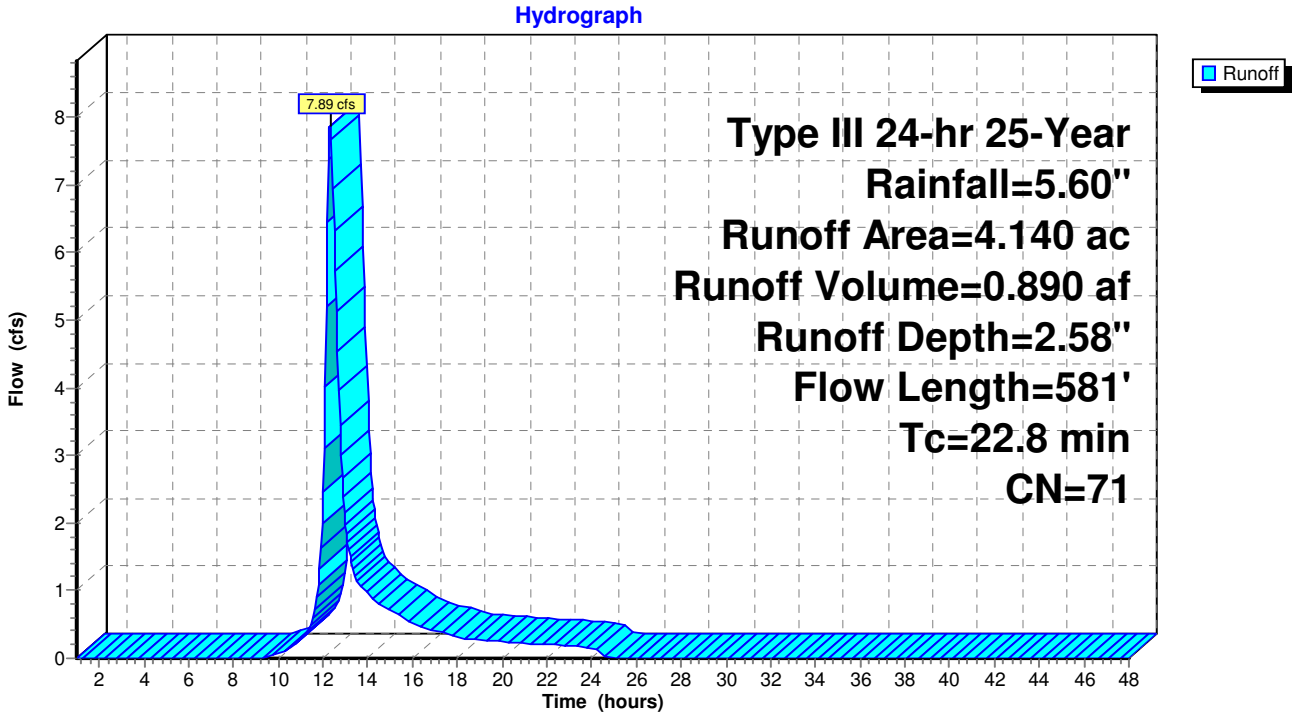
Area (ac)	CN	Description	Land Use
3.220	70	Woods, Good, HSG C	Rural open/forest
0.920	74	Pasture/grassland/range, Good, HSG C	Rural open/forest
4.140	71	Weighted Average	
4.140		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.9	300	0.0670	0.24		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.30"
1.9	281	0.2500	2.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
22.8	581	Total			

Pollutant Loading for 2.58" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
4.140	Rural open/forest	123.44	0.27	4.31
4.140	Total	123.44	0.27	4.31

Subcatchment 19S: Basin 3B



Summary for Subcatchment 20S: Basin 3A - existing

Runoff = 0.54 cfs @ 12.10 hrs, Volume= 0.039 af, Depth= 2.49"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.60"

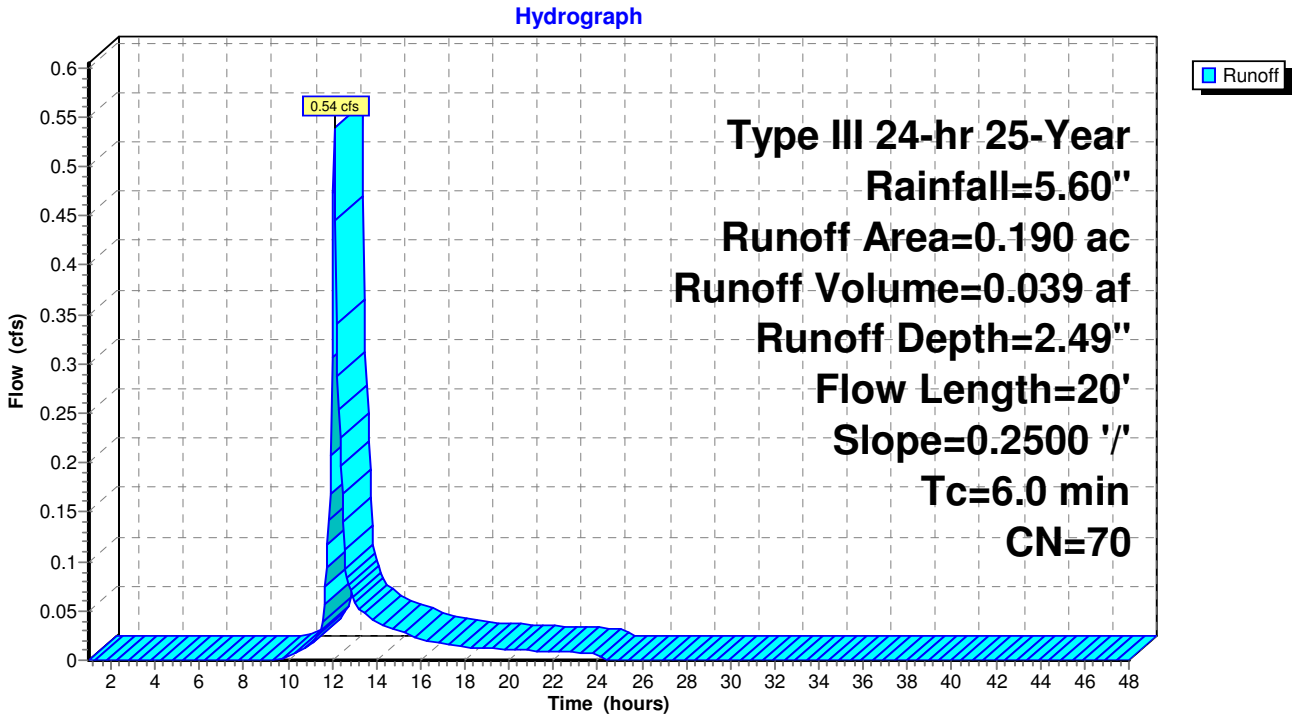
Area (ac)	CN	Description	Land Use
0.190	70	Woods, Good, HSG C	Rural open/forest
0.190		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	20	0.2500	0.16		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
2.1	20	Total, Increased to minimum Tc = 6.0 min			

Pollutant Loading for 2.49" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
0.190	Rural open/forest	5.47	0.01	0.19
0.190	Total	5.47	0.01	0.19

Subcatchment 20S: Basin 3A - existing



Summary for Subcatchment 21S: Basin 3A - post construction

Area to drain to Water Quality Swale.

Runoff = 0.86 cfs @ 12.09 hrs, Volume= 0.065 af, Depth= 4.35"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.60"

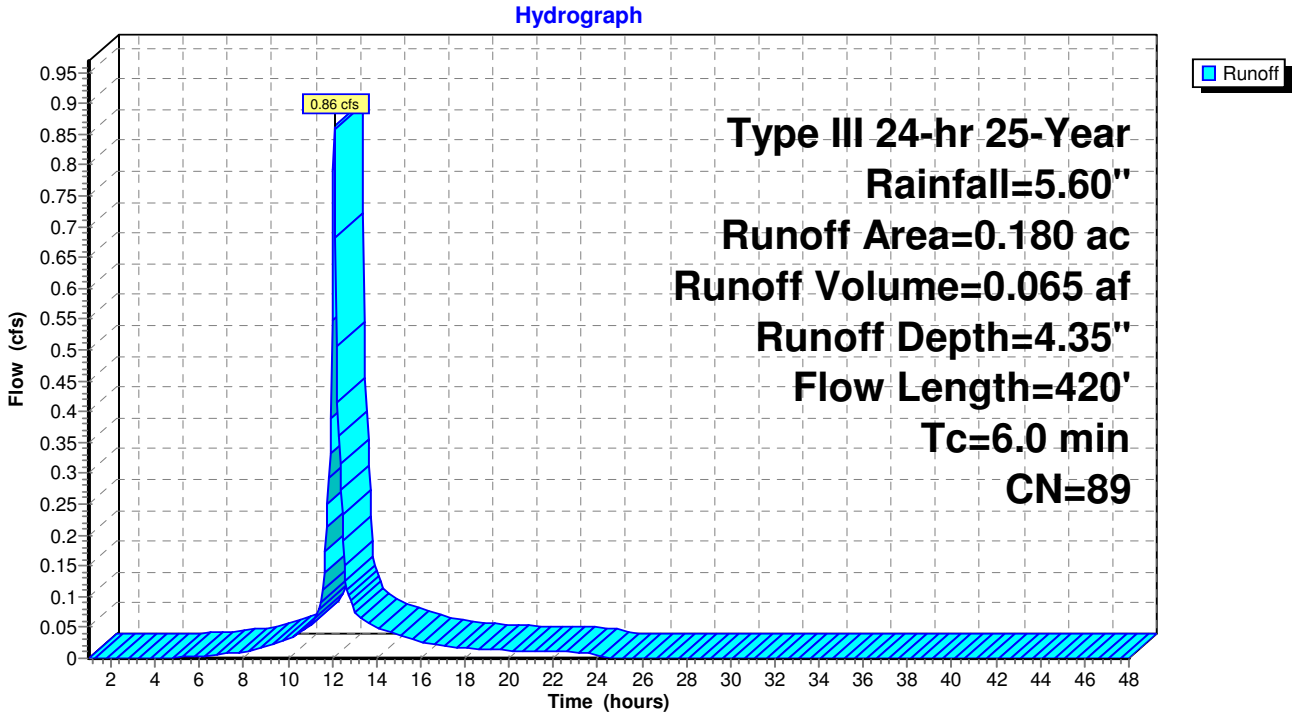
Area (ac)	CN	Description	Land Use
0.180	89	Gravel roads, HSG C	Driveway
0.180		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	20	0.0100	0.77		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
0.7	400	0.0500	9.42	120.54	**Channel Flow,** Area= 12.8 sf Perim= 26.0' r= 0.49' n= 0.022 Earth, clean & straight
1.1	420	Total, Increased to minimum Tc = 6.0 min			

Pollutant Loading for 4.35" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
0.180	Driveway	30.69	0.10	0.37
0.180	Total	30.69	0.10	0.37

Subcatchment 21S: Basin 3A - post construction



Summary for Subcatchment 22S: Basin 4 - post construction

Area to drain to Water Quality Swales.

Runoff = 14.28 cfs @ 12.19 hrs, Volume= 1.303 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.60"

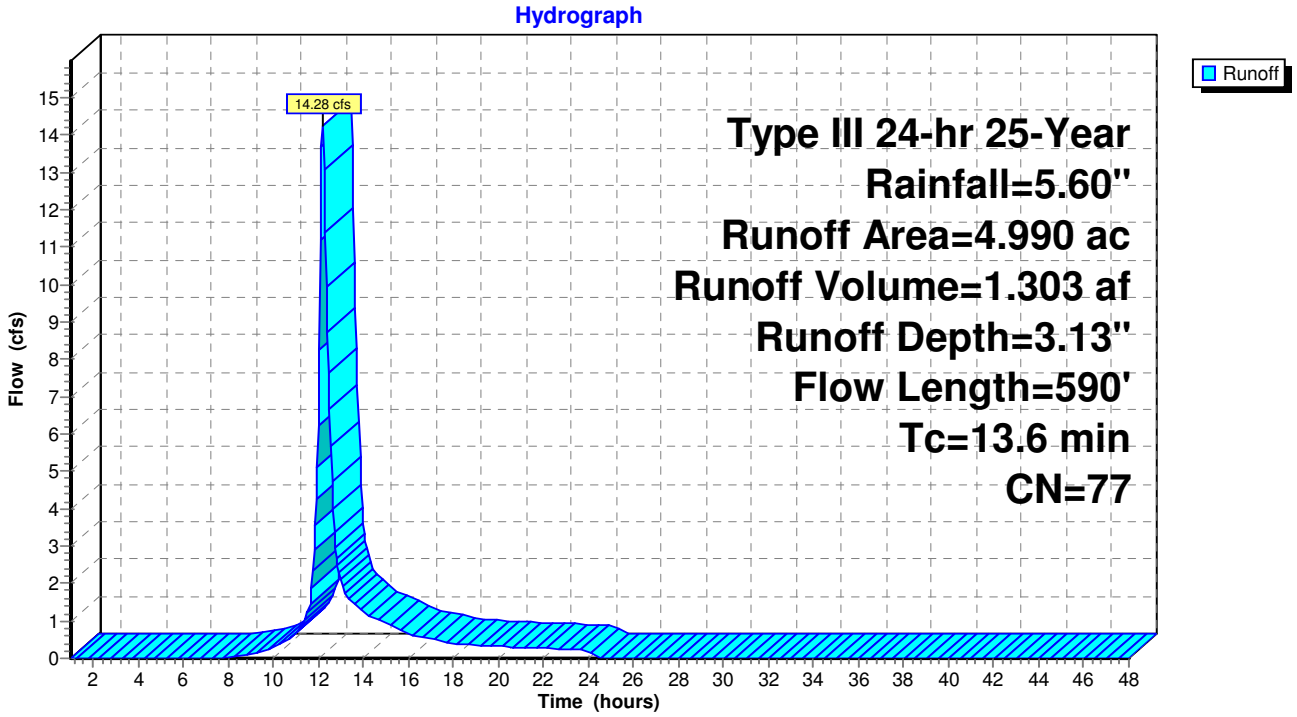
Area (ac)	CN	Description	Land Use
4.050	74	Pasture/grassland/range, Good, HSG C	Rural open/forest
0.270	89	Gravel roads, HSG C	Industrial General
0.620	89	Gravel roads, HSG C	Driveway
0.050	98	Unconnected roofs, HSG C	Commercial Roof
4.990	77	Weighted Average	
4.940		99.00% Pervious Area	
0.050		1.00% Impervious Area	
0.050		100.00% Unconnected	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	300	0.0900	0.44		**Sheet Flow,** Range n= 0.130 P2= 3.30"
2.2	290	0.2000	2.24		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.6	590	Total			

Pollutant Loading for 3.13" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
0.050	Commercial Roof	0.32	0.00	0.07
0.620	Driveway	76.14	0.25	0.92
0.270	Industrial General	28.56	0.06	0.76
4.050	Rural open/forest	146.61	0.32	5.12
4.990	Total	251.63	0.63	6.88

Subcatchment 22S: Basin 4 - post construction



Summary for Pond 10P: Wet Pool 1

Pond for Basins 1, 2, & 3

[81] Warning: Exceeded Pond 14P by 1.01' @ 12.25 hrs

Inflow Area = 0.690 ac, 0.00% Impervious, Inflow Depth = 4.35" for 25-Year event
Inflow = 3.34 cfs @ 12.10 hrs, Volume= 0.250 af
Outflow = 1.71 cfs @ 12.25 hrs, Volume= 0.250 af, Atten= 49%, Lag= 9.0 min
Primary = 1.71 cfs @ 12.25 hrs, Volume= 0.250 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Starting Elev= 4.00' Surf.Area= 1,564 sf Storage= 3,208 cf
Peak Elev= 5.07' @ 12.25 hrs Surf.Area= 2,062 sf Storage= 5,161 cf (1,953 cf above start)

Plug-Flow detention time= 182.4 min calculated for 0.176 af (70% of inflow)
Center-of-Mass det. time= 28.8 min (820.2 - 791.5)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	7,259 cf	**Custom Stage Data (Prismatic)** Listed below

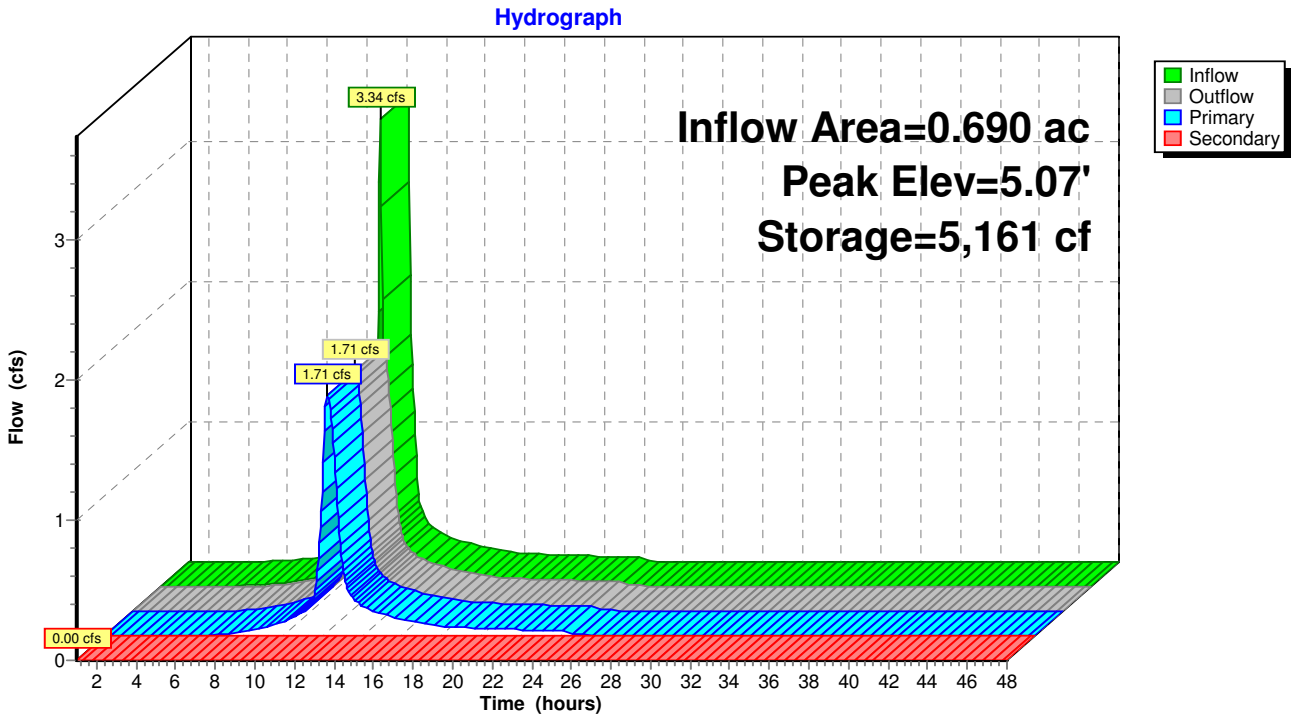
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	220	0	0
1.00	448	334	334
2.00	748	598	932
3.00	1,120	934	1,866
4.00	1,564	1,342	3,208
5.00	2,032	1,798	5,006
6.00	2,474	2,253	7,259

Device	Routing	Invert	Outlet Devices
#1	Primary	4.00'	**6.0" Vert. Orifice/Grate X 2.00** C= 0.600
#2	Secondary	5.25'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)**
			Head (feet) 0.00 0.75
			Width (feet) 10.00 10.00

Primary OutFlow Max=1.71 cfs @ 12.25 hrs HW=5.07' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 1.71 cfs @ 4.35 fps)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=4.00' (Free Discharge)
↑—**2=Custom Weir/Orifice** (Controls 0.00 cfs)

Pond 10P: Wet Pool 1



Summary for Pond 13P: Wet Pool 2

Pond for Basin 4.

[81] Warning: Exceeded Pond 16P by 1.27' @ 12.35 hrs

Inflow Area = 4.990 ac, 1.00% Impervious, Inflow Depth = 3.13" for 25-Year event
Inflow = 14.32 cfs @ 12.20 hrs, Volume= 1.303 af
Outflow = 11.05 cfs @ 12.32 hrs, Volume= 1.303 af, Atten= 23%, Lag= 7.4 min
Primary = 11.05 cfs @ 12.32 hrs, Volume= 1.303 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Starting Elev= 4.00' Surf.Area= 3,608 sf Storage= 9,176 cf
Peak Elev= 5.45' @ 12.32 hrs Surf.Area= 4,660 sf Storage= 15,266 cf (6,090 cf above start)

Plug-Flow detention time= 116.1 min calculated for 1.092 af (84% of inflow)
Center-of-Mass det. time= 17.0 min (849.3 - 832.3)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	17,850 cf	**Custom Stage Data (Prismatic)** Listed below

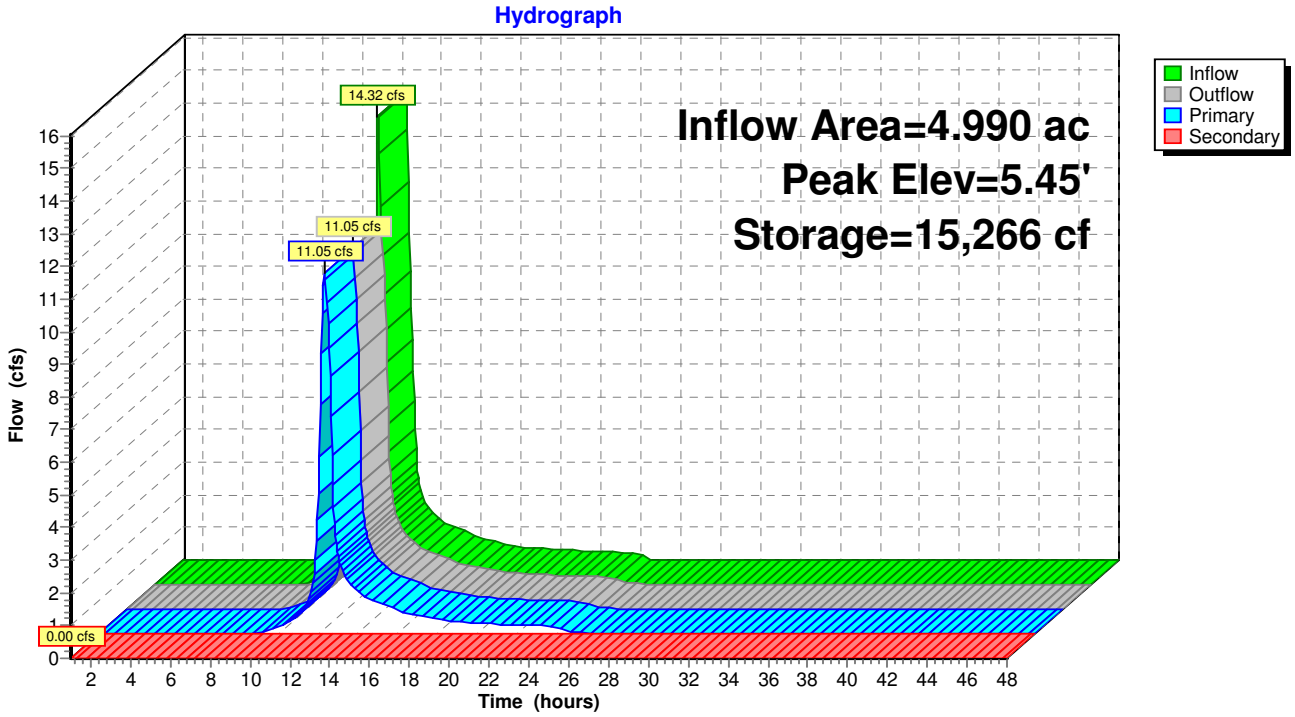
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	1,160	0	0
1.00	1,664	1,412	1,412
2.00	2,240	1,952	3,364
3.00	2,888	2,564	5,928
4.00	3,608	3,248	9,176
5.00	4,350	3,979	13,155
6.00	5,040	4,695	17,850

Device	Routing	Invert	Outlet Devices
#1	Secondary	5.50'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.50 Width (feet) 11.00 11.00
#2	Primary	4.00'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600

Primary OutFlow Max=11.01 cfs @ 12.32 hrs HW=5.44' (Free Discharge)
↑—**2=Orifice/Grate** (Orifice Controls 11.01 cfs @ 4.67 fps)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=4.00' (Free Discharge)
↑—**1=Custom Weir/Orifice** (Controls 0.00 cfs)

Pond 13P: Wet Pool 2



Summary for Pond 14P: Forebay 1

Pond for Basins 1, 2, & 3

[88] Warning: Qout>Qin may require Finer Routing>1

Inflow Area = 0.690 ac, 0.00% Impervious, Inflow Depth = 4.35" for 25-Year event
Inflow = 3.32 cfs @ 12.09 hrs, Volume= 0.250 af
Outflow = 3.34 cfs @ 12.10 hrs, Volume= 0.250 af, Atten= 0%, Lag= 0.4 min
Primary = 3.34 cfs @ 12.10 hrs, Volume= 0.250 af

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Starting Elev= 4.00' Surf.Area= 986 sf Storage= 1,712 cf
Peak Elev= 4.09' @ 12.10 hrs Surf.Area= 1,022 sf Storage= 1,823 cf (111 cf above start)

Plug-Flow detention time= 104.6 min calculated for 0.211 af (84% of inflow)
Center-of-Mass det. time= 1.0 min (791.5 - 790.5)

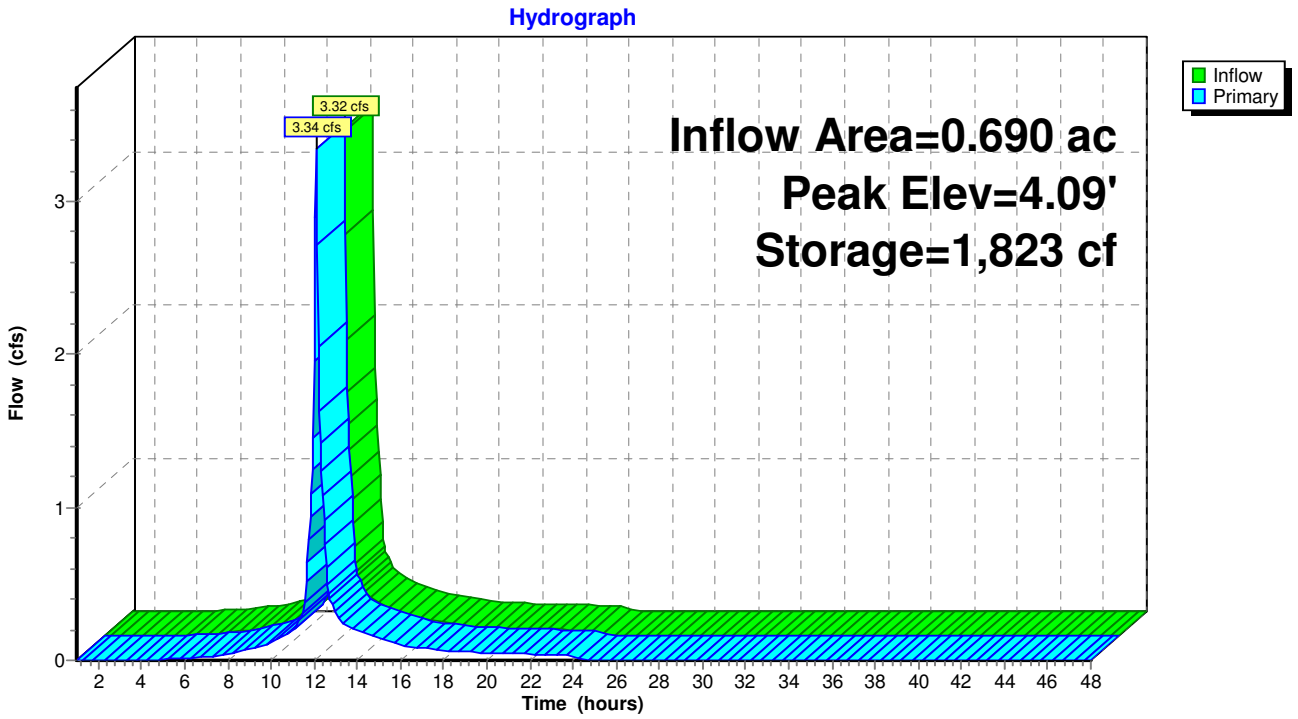
Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	4,429 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	50	0	0
1.00	176	113	113
2.00	374	275	388
3.00	644	509	897
4.00	986	815	1,712
5.00	1,368	1,177	2,889
6.00	1,712	1,540	4,429

Device	Routing	Invert	Outlet Devices
#1	Primary	4.00'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 2.00 Width (feet) 34.00 40.00 46.00

Primary OutFlow Max=3.21 cfs @ 12.10 hrs HW=4.09' (Free Discharge)
↑—**1=Custom Weir/Orifice** (Weir Controls 3.21 cfs @ 1.00 fps)

Pond 14P: Forebay 1



Summary for Pond 16P: Forebay 2

Pond for Basin 4.

[88] Warning: Qout>Qin may require Finer Routing>1

Inflow Area = 4.990 ac, 1.00% Impervious, Inflow Depth = 3.13" for 25-Year event
Inflow = 14.28 cfs @ 12.19 hrs, Volume= 1.303 af
Outflow = 14.32 cfs @ 12.20 hrs, Volume= 1.303 af, Atten= 0%, Lag= 0.3 min
Primary = 14.32 cfs @ 12.20 hrs, Volume= 1.303 af

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Starting Elev= 4.00' Surf.Area= 1,232 sf Storage= 2,264 cf
Peak Elev= 4.21' @ 12.20 hrs Surf.Area= 1,321 sf Storage= 2,570 cf (306 cf above start)

Plug-Flow detention time= 32.6 min calculated for 1.249 af (96% of inflow)
Center-of-Mass det. time= 0.7 min (832.3 - 831.7)

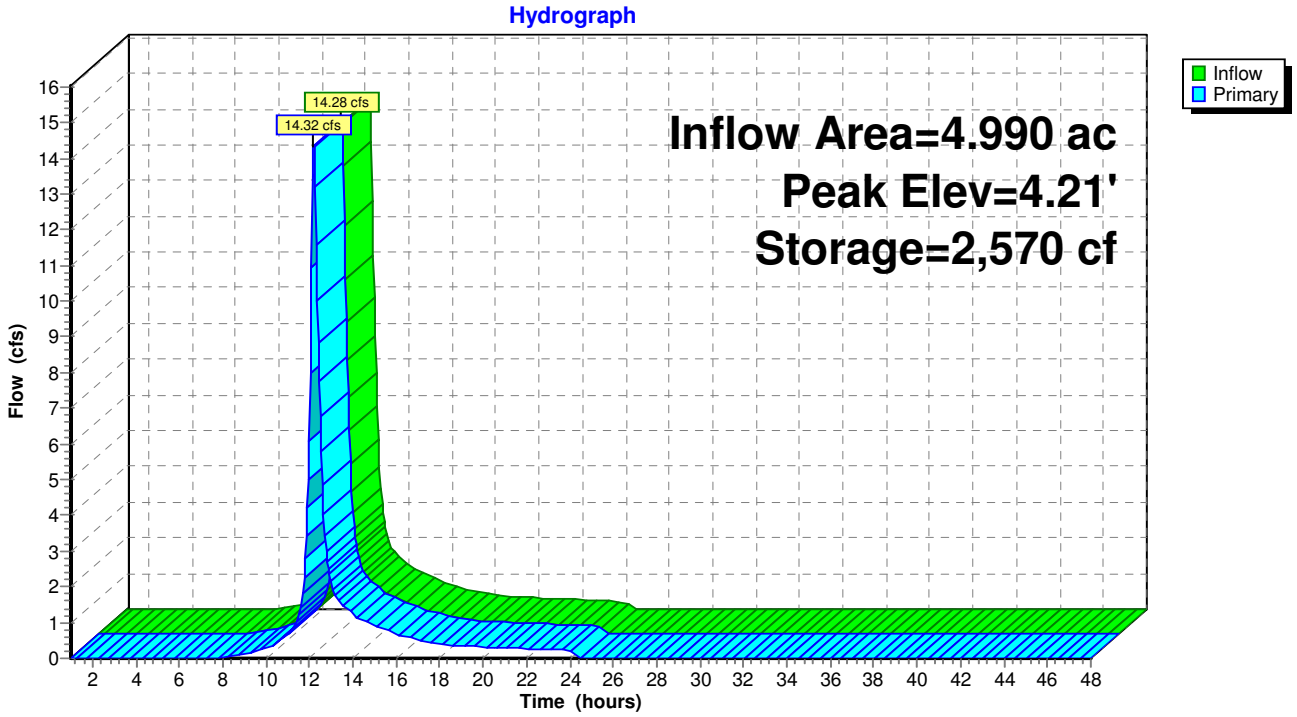
Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	5,538 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	80	0	0
1.00	260	170	170
2.00	512	386	556
3.00	836	674	1,230
4.00	1,232	1,034	2,264
5.00	1,650	1,441	3,705
6.00	2,016	1,833	5,538

Device	Routing	Invert	Outlet Devices
#1	Primary	4.00'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 2.00 Width (feet) 44.00 50.00 56.00

Primary OutFlow Max=14.18 cfs @ 12.20 hrs HW=4.21' (Free Discharge)
↑—**1=Custom Weir/Orifice** (Weir Controls 14.18 cfs @ 1.50 fps)

Pond 16P: Forebay 2



Time span=1.00-48.00 hrs, dt=0.05 hrs, 941 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 6S: Basin 4 - existing Runoff Area=4.990 ac 0.00% Impervious Runoff Depth=4.13"
Flow Length=590' Tc=13.6 min CN=74 Runoff=18.82 cfs 1.717 af

Subcatchment 13S: Basin 1A - existing Runoff Area=0.290 ac 0.00% Impervious Runoff Depth=3.70"
Flow Length=88' Slope=0.2000 '/' Tc=7.6 min CN=70 Runoff=1.18 cfs 0.089 af

Subcatchment 14S: Basin 1A - post Runoff Area=0.290 ac 0.00% Impervious Runoff Depth=5.81"
Flow Length=238' Tc=6.0 min CN=89 Runoff=1.83 cfs 0.140 af

Subcatchment 15S: Basin 1B Runoff Area=3.900 ac 0.00% Impervious Runoff Depth=3.70"
Flow Length=942' Tc=25.5 min CN=70 Runoff=10.25 cfs 1.203 af

Subcatchment 16S: Basin 2B Runoff Area=4.940 ac 0.00% Impervious Runoff Depth=3.70"
Flow Length=670' Slope=0.2500 '/' Tc=21.0 min CN=70 Runoff=14.10 cfs 1.524 af

Subcatchment 17S: Basin 2A - existing Runoff Area=0.220 ac 0.00% Impervious Runoff Depth=3.70"
Flow Length=20' Slope=0.2500 '/' Tc=6.0 min CN=70 Runoff=0.94 cfs 0.068 af

Subcatchment 18S: Basin 2A - post Runoff Area=0.220 ac 0.00% Impervious Runoff Depth=5.81"
Flow Length=470' Tc=6.0 min CN=89 Runoff=1.39 cfs 0.106 af

Subcatchment 19S: Basin 3B Runoff Area=4.140 ac 0.00% Impervious Runoff Depth=3.81"
Flow Length=581' Tc=22.8 min CN=71 Runoff=11.76 cfs 1.314 af

Subcatchment 20S: Basin 3A - existing Runoff Area=0.190 ac 0.00% Impervious Runoff Depth=3.70"
Flow Length=20' Slope=0.2500 '/' Tc=6.0 min CN=70 Runoff=0.81 cfs 0.059 af

Subcatchment 21S: Basin 3A - post Runoff Area=0.180 ac 0.00% Impervious Runoff Depth=5.81"
Flow Length=420' Tc=6.0 min CN=89 Runoff=1.14 cfs 0.087 af

Subcatchment 22S: Basin 4 - post Runoff Area=4.990 ac 1.00% Impervious Runoff Depth=4.46"
Flow Length=590' Tc=13.6 min CN=77 Runoff=20.25 cfs 1.853 af

Pond 10P: Wet Pool 1 Peak Elev=5.33' Storage=5,758 cf Inflow=4.35 cfs 0.334 af
Primary=1.97 cfs 0.326 af Secondary=0.81 cfs 0.007 af Outflow=2.78 cfs 0.334 af

Pond 13P: Wet Pool 2 Peak Elev=5.79' Storage=16,887 cf Inflow=20.29 cfs 1.853 af
Primary=12.91 cfs 1.771 af Secondary=5.78 cfs 0.081 af Outflow=18.69 cfs 1.853 af

Pond 14P: Forebay 1 Peak Elev=4.11' Storage=1,844 cf Inflow=4.36 cfs 0.334 af
Outflow=4.35 cfs 0.334 af

Pond 16P: Forebay 2 Peak Elev=4.27' Storage=2,650 cf Inflow=20.25 cfs 1.853 af
Outflow=20.29 cfs 1.853 af

Total Runoff Area = 24.350 ac Runoff Volume = 8.160 af Average Runoff Depth = 4.02"
99.79% Pervious = 24.300 ac 0.21% Impervious = 0.050 ac

Summary for Subcatchment 6S: Basin 4 - existing

Runoff = 18.82 cfs @ 12.19 hrs, Volume= 1.717 af, Depth= 4.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.10"

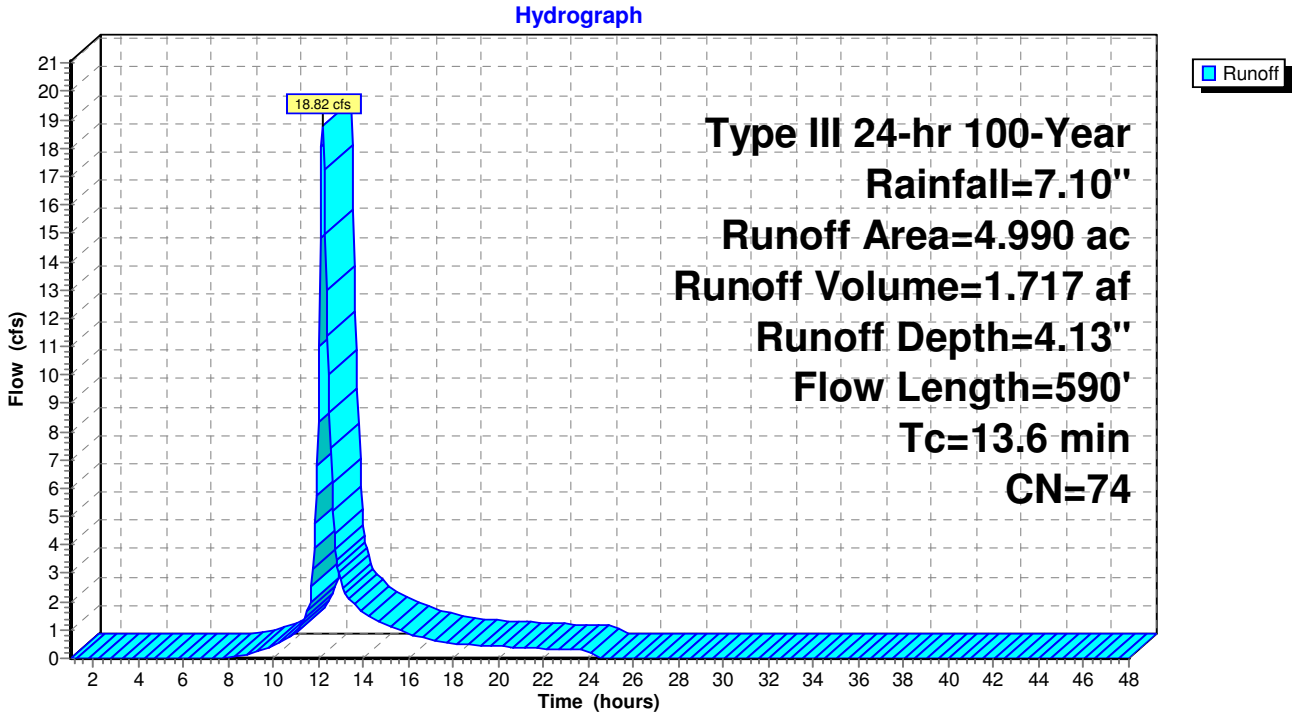
Area (ac)	CN	Description	Land Use
1.550	70	Woods, Good, HSG C	Rural open/forest
3.170	74	Pasture/grassland/range, Good, HSG C	Rural open/forest
0.270	89	Gravel roads, HSG C	Industrial General
4.990	74	Weighted Average	
4.990		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	300	0.0900	0.44		**Sheet Flow,** Range n= 0.130 P2= 3.30"
2.2	290	0.2000	2.24		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.6	590	Total			

Pollutant Loading for 4.13" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
0.270	Industrial General	37.65	0.08	1.00
4.720	Rural open/forest	225.26	0.49	7.86
4.990	Total	262.90	0.57	8.87

Subcatchment 6S: Basin 4 - existing



Summary for Subcatchment 13S: Basin 1A - existing

Runoff = 1.18 cfs @ 12.11 hrs, Volume= 0.089 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.10"

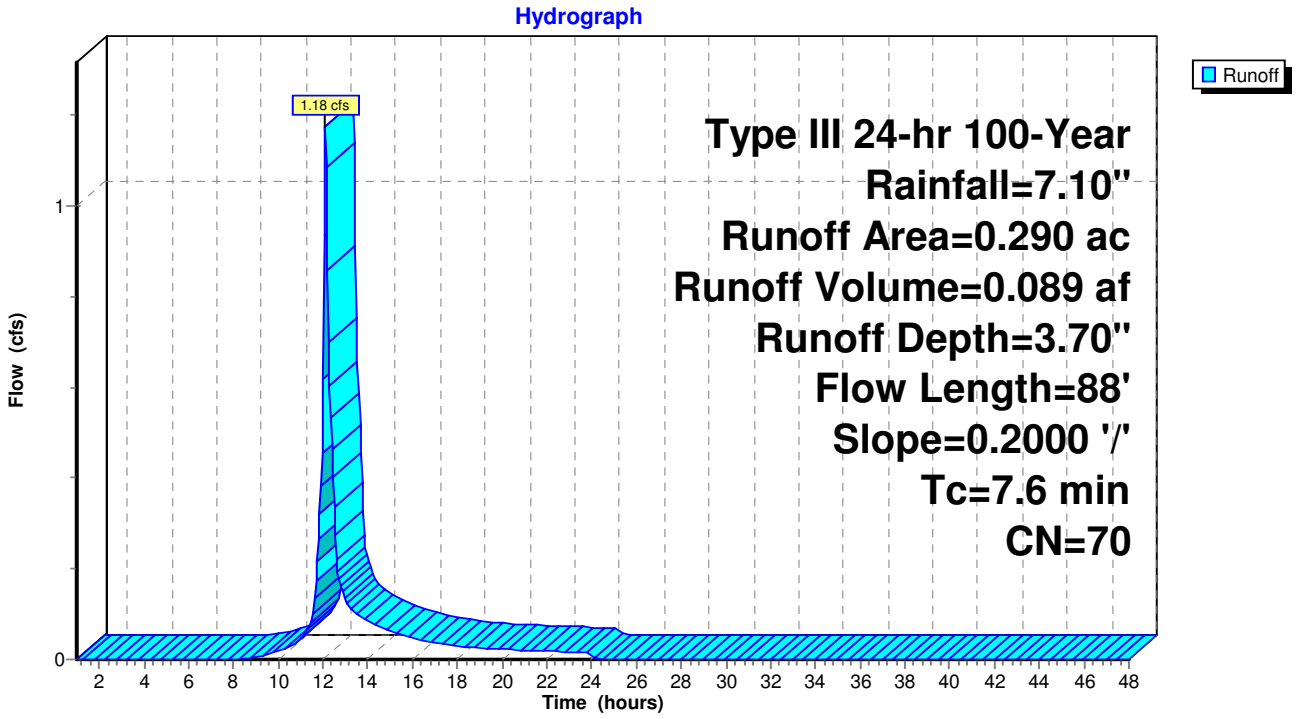
Area (ac)	CN	Description	Land Use
0.290	70	Woods, Good, HSG C	Rural open/forest
0.290		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	88	0.2000	0.19		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"

Pollutant Loading for 3.70" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
0.290	Rural open/forest	12.41	0.03	0.43
0.290	Total	12.41	0.03	0.43

Subcatchment 13S: Basin 1A - existing



Summary for Subcatchment 14S: Basin 1A - post construction

Area to drain to Pond 1.

Runoff = 1.83 cfs @ 12.09 hrs, Volume= 0.140 af, Depth= 5.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.10"

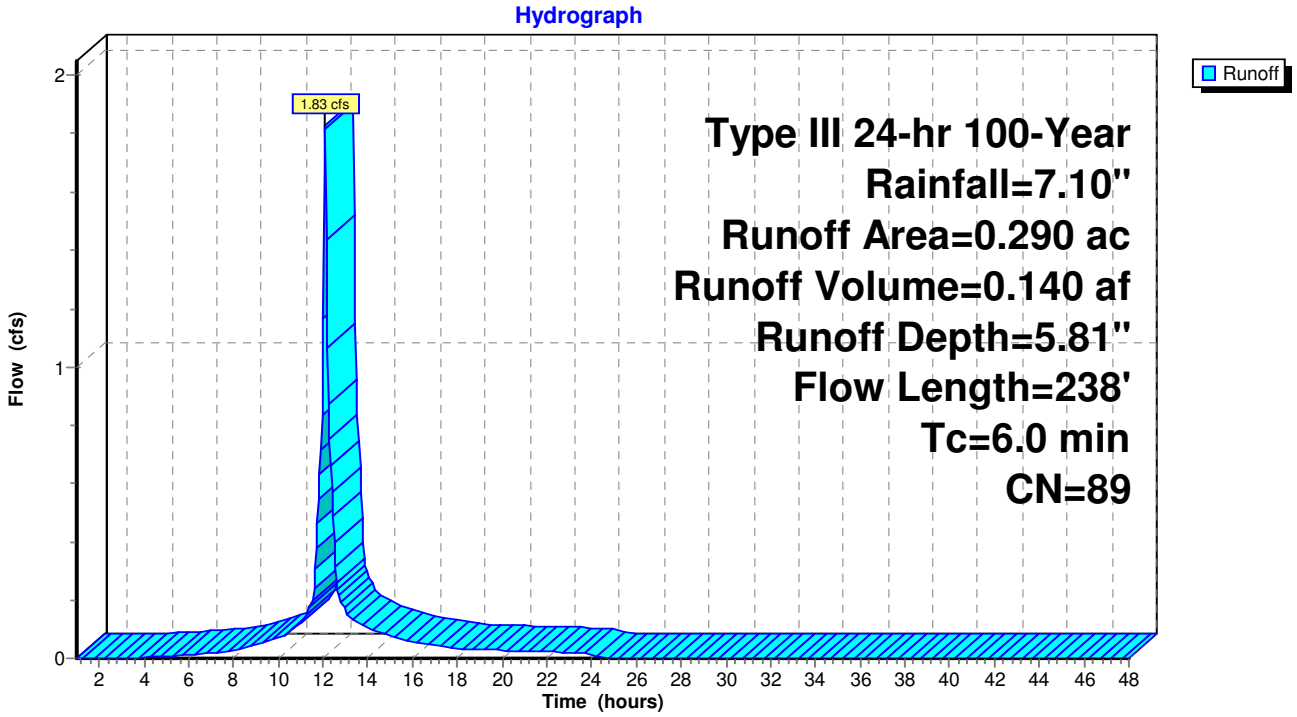
Area (ac)	CN	Description	Land Use
0.290	89	Gravel roads, HSG C	Driveway
0.290		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	88	0.1000	2.59		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
0.3	150	0.0500	9.42	120.54	**Channel Flow,** Area= 12.8 sf Perim= 26.0' r= 0.49' n= 0.022 Earth, clean & straight
0.9	238	Total, Increased to minimum Tc = 6.0 min			

Pollutant Loading for 5.81" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
0.290	Driveway	66.01	0.21	0.80
0.290	Total	66.01	0.21	0.80

Subcatchment 14S: Basin 1A - post construction



Summary for Subcatchment 15S: Basin 1B

Area to be diverted around development via ditch.

Runoff = 10.25 cfs @ 12.36 hrs, Volume= 1.203 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.10"

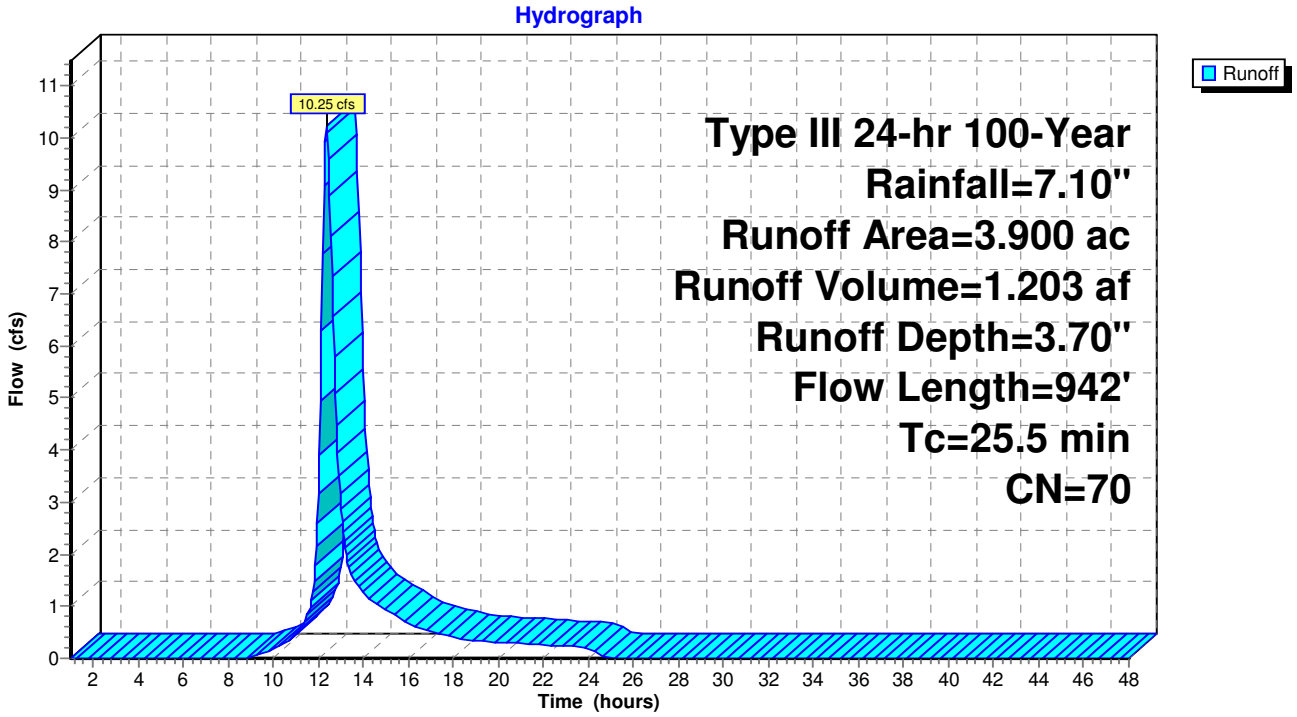
Area (ac)	CN	Description	Land Use
3.900	70	Woods, Good, HSG C	Rural open/forest
3.900		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.3	300	0.2000	0.25		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
5.2	642	0.1700	2.06		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
25.5	942	Total			

Pollutant Loading for 3.70" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
3.900	Rural open/forest	166.85	0.36	5.82
3.900	Total	166.85	0.36	5.82

Subcatchment 15S: Basin 1B



Summary for Subcatchment 16S: Basin 2B

Area to be diverted around development area via ditch and pipes.

Runoff = 14.10 cfs @ 12.30 hrs, Volume= 1.524 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.10"

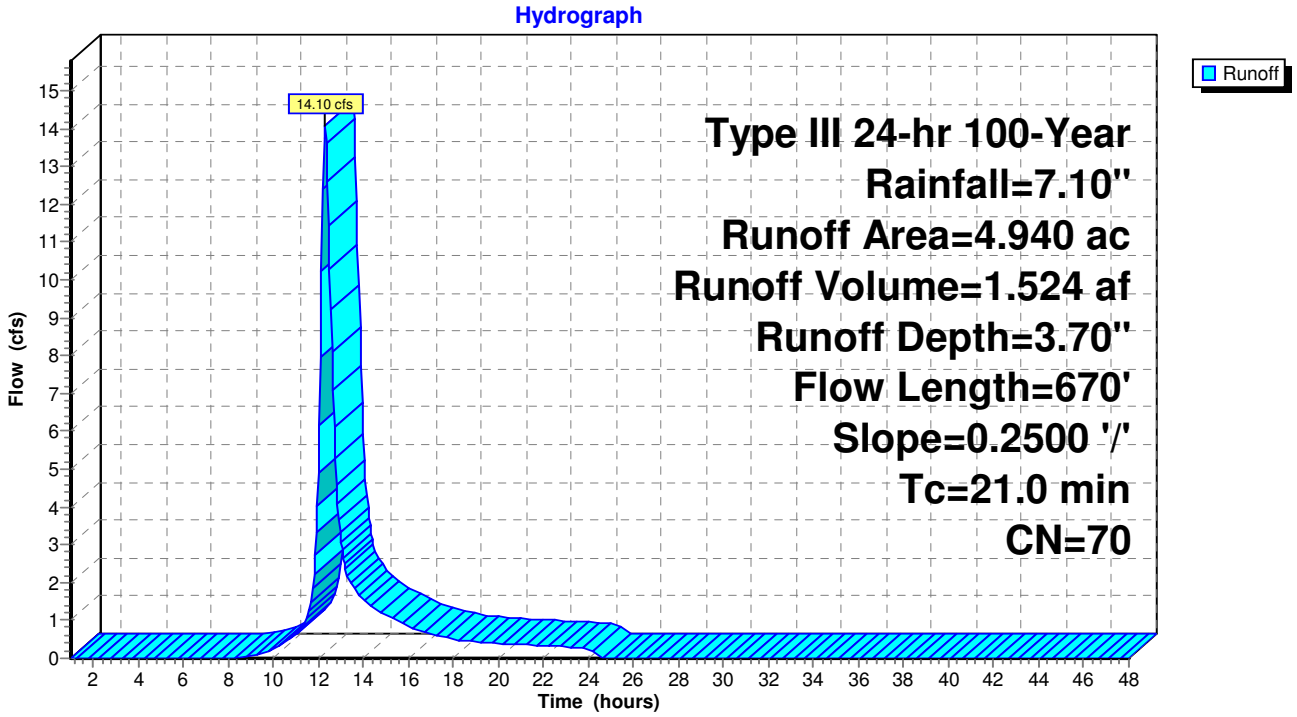
Area (ac)	CN	Description	Land Use
4.940	70	Woods, Good, HSG C	Rural open/forest
4.940		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.5	300	0.2500	0.27		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
2.5	370	0.2500	2.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
21.0	670	Total			

Pollutant Loading for 3.70" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
4.940	Rural open/forest	211.34	0.46	7.38
4.940	Total	211.34	0.46	7.38

Subcatchment 16S: Basin 2B



Summary for Subcatchment 17S: Basin 2A - existing

Runoff = 0.94 cfs @ 12.09 hrs, Volume= 0.068 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.10"

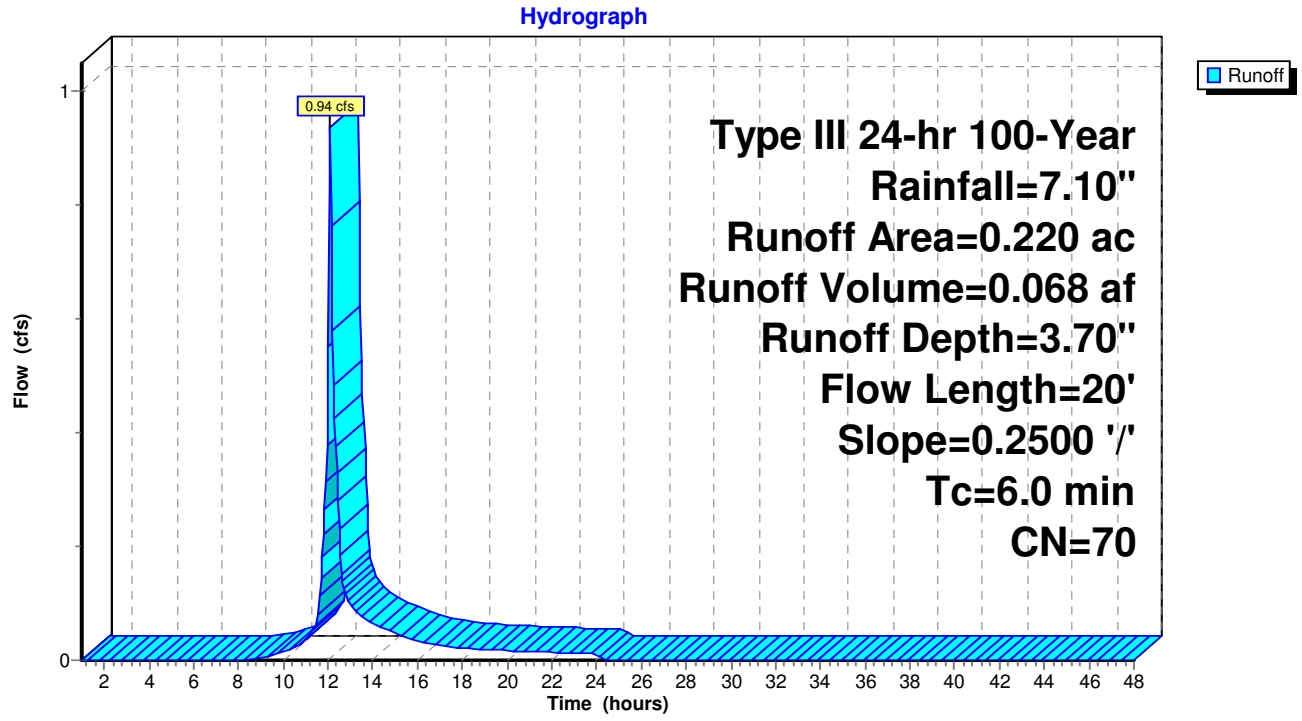
Area (ac)	CN	Description	Land Use
0.220	70	Woods, Good, HSG C	Rural open/forest
0.220		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	20	0.2500	0.16		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
2.1	20	Total, Increased to minimum Tc = 6.0 min			

Pollutant Loading for 3.70" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
0.220	Rural open/forest	9.41	0.02	0.33
0.220	Total	9.41	0.02	0.33

Subcatchment 17S: Basin 2A - existing



Summary for Subcatchment 18S: Basin 2A - post construction

Area to drain to Water Quality Swale.

Runoff = 1.39 cfs @ 12.09 hrs, Volume= 0.106 af, Depth= 5.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.10"

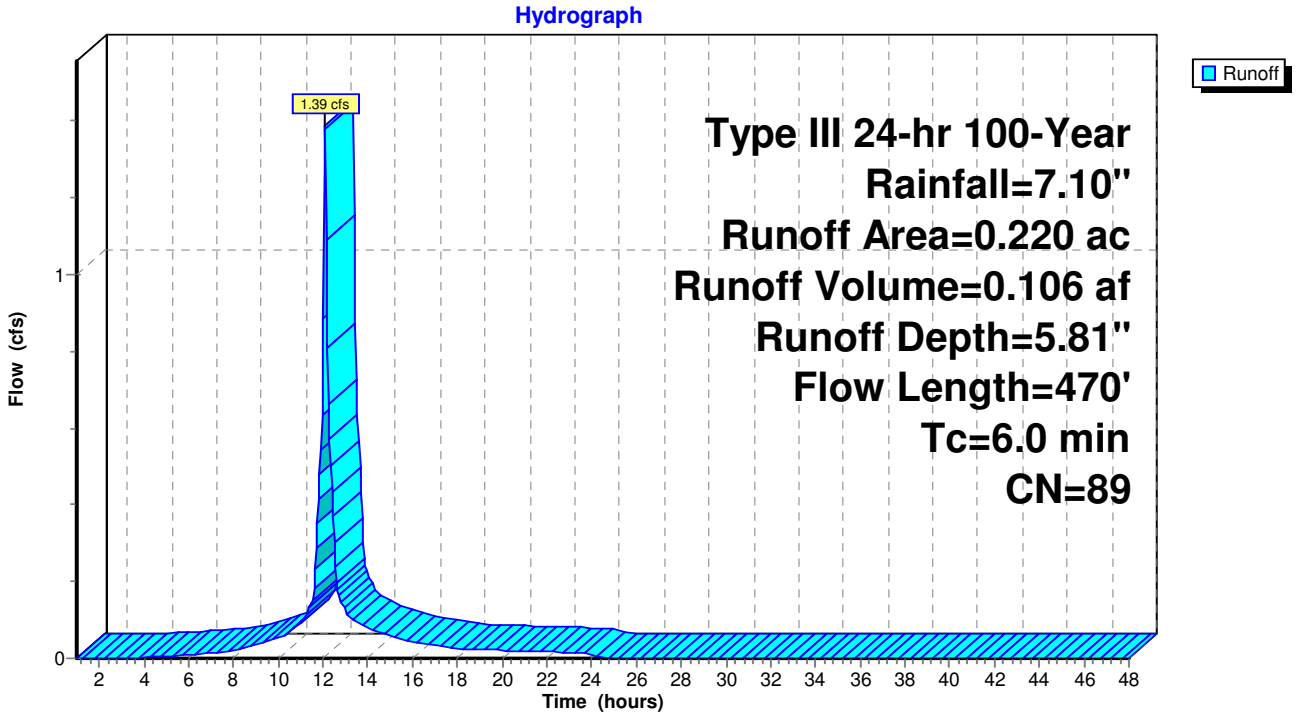
Area (ac)	CN	Description	Land Use
0.220	89	Gravel roads, HSG C	Driveway
0.220		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	20	0.0100	0.77		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
0.8	450	0.0500	9.42	120.54	**Channel Flow,** Area= 12.8 sf Perim= 26.0' r= 0.49' n= 0.022 Earth, clean & straight
1.2	470	Total, Increased to minimum Tc = 6.0 min			

Pollutant Loading for 5.81" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
0.220	Driveway	50.07	0.16	0.61
0.220	Total	50.07	0.16	0.61

Subcatchment 18S: Basin 2A - post construction



Summary for Subcatchment 19S: Basin 3B

Area to be diverted around development area via ditch and pipes.

Runoff = 11.76 cfs @ 12.32 hrs, Volume= 1.314 af, Depth= 3.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.10"

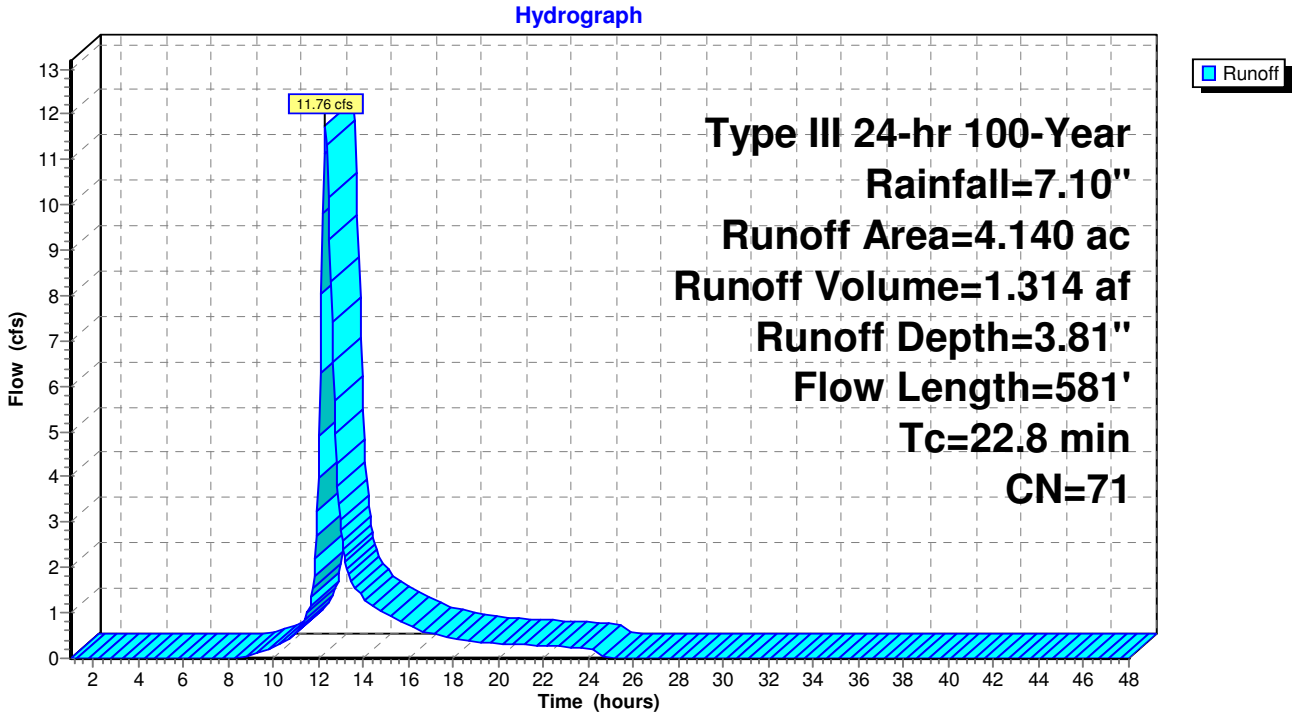
Area (ac)	CN	Description	Land Use
3.220	70	Woods, Good, HSG C	Rural open/forest
0.920	74	Pasture/grassland/range, Good, HSG C	Rural open/forest
4.140	71	Weighted Average	
4.140		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.9	300	0.0670	0.24		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.30"
1.9	281	0.2500	2.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
22.8	581	Total			

Pollutant Loading for 3.81" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
4.140	Rural open/forest	182.19	0.39	6.36
4.140	Total	182.19	0.39	6.36

Subcatchment 19S: Basin 3B



Summary for Subcatchment 20S: Basin 3A - existing

Runoff = 0.81 cfs @ 12.09 hrs, Volume= 0.059 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.10"

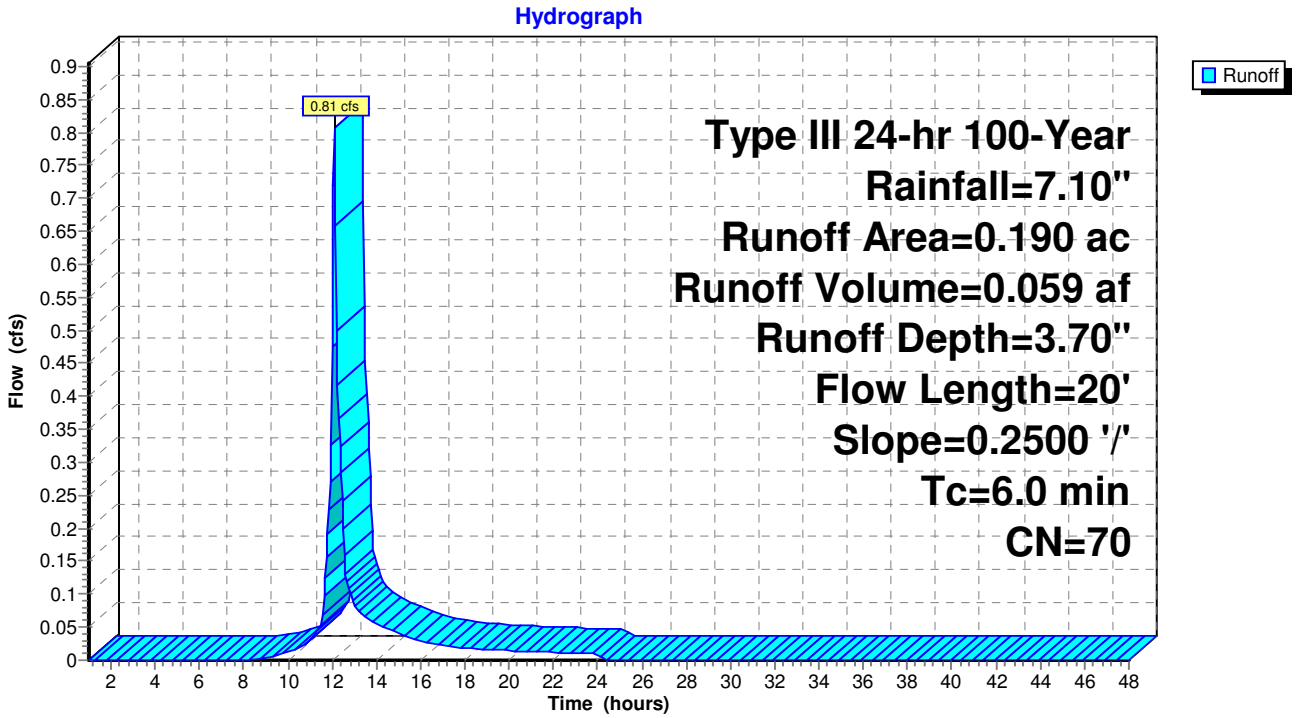
Area (ac)	CN	Description	Land Use
0.190	70	Woods, Good, HSG C	Rural open/forest
0.190		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	20	0.2500	0.16		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
2.1	20	Total, Increased to minimum Tc = 6.0 min			

Pollutant Loading for 3.70" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
0.190	Rural open/forest	8.13	0.02	0.28
0.190	Total	8.13	0.02	0.28

Subcatchment 20S: Basin 3A - existing



Summary for Subcatchment 21S: Basin 3A - post construction

Area to drain to Water Quality Swale.

Runoff = 1.14 cfs @ 12.09 hrs, Volume= 0.087 af, Depth= 5.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.10"

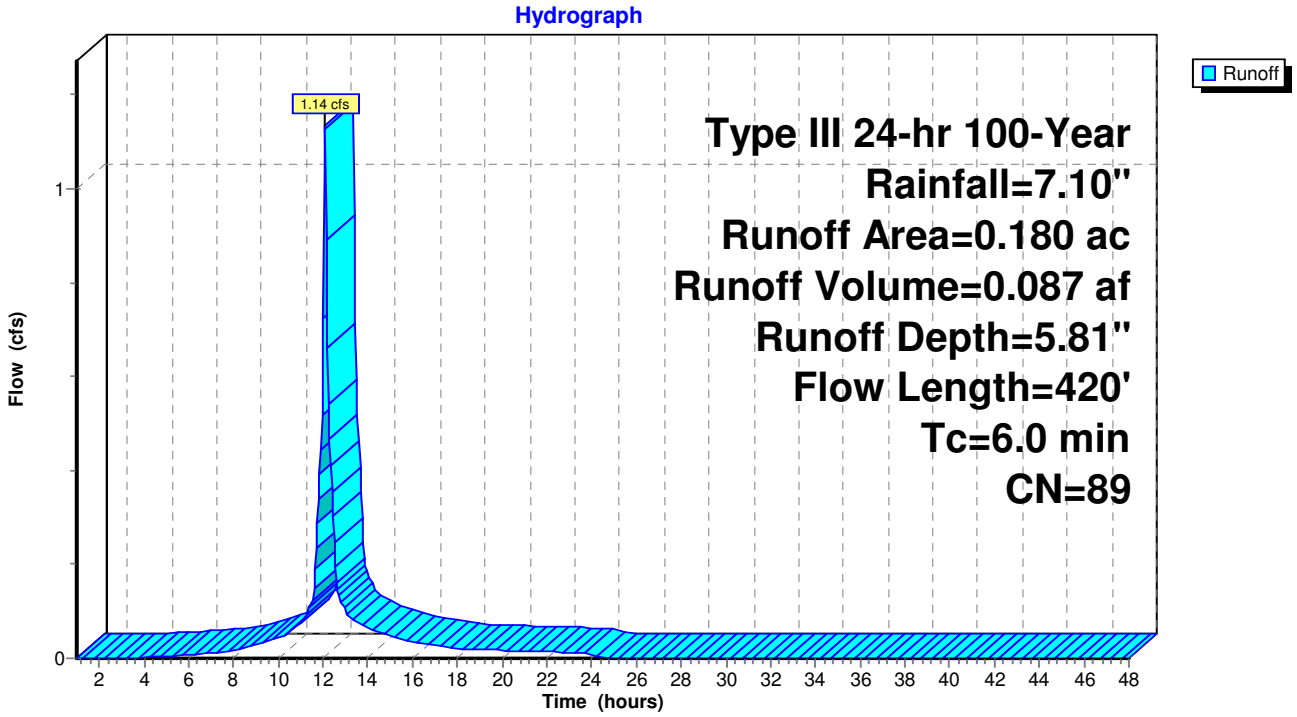
Area (ac)	CN	Description	Land Use
0.180	89	Gravel roads, HSG C	Driveway
0.180		100.00% Pervious Area	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	20	0.0100	0.77		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
0.7	400	0.0500	9.42	120.54	**Channel Flow,** Area= 12.8 sf Perim= 26.0' r= 0.49' n= 0.022 Earth, clean & straight
1.1	420	Total, Increased to minimum Tc = 6.0 min			

Pollutant Loading for 5.81" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
0.180	Driveway	40.97	0.13	0.50
0.180	Total	40.97	0.13	0.50

Subcatchment 21S: Basin 3A - post construction



Summary for Subcatchment 22S: Basin 4 - post construction

Area to drain to Water Quality Swales.

Runoff = 20.25 cfs @ 12.19 hrs, Volume= 1.853 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=7.10"

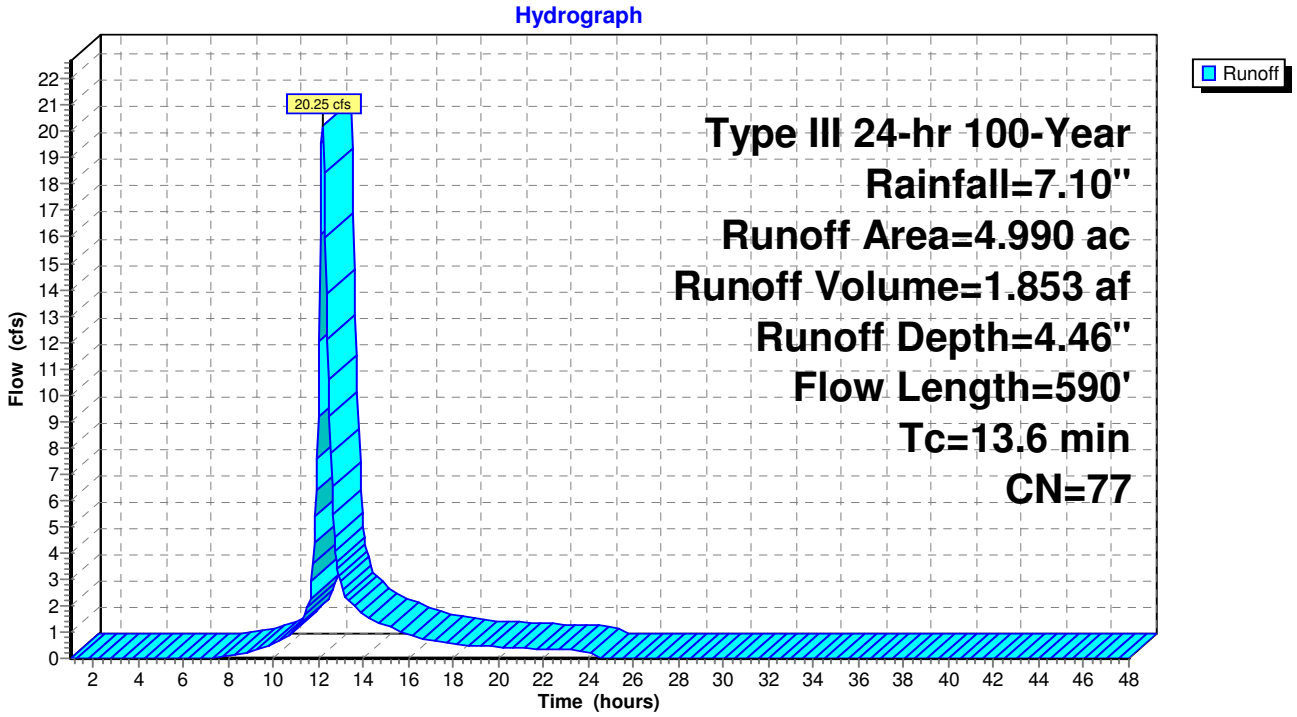
Area (ac)	CN	Description	Land Use
4.050	74	Pasture/grassland/range, Good, HSG C	Rural open/forest
0.270	89	Gravel roads, HSG C	Industrial General
0.620	89	Gravel roads, HSG C	Driveway
0.050	98	Unconnected roofs, HSG C	Commercial Roof
4.990	77	Weighted Average	
4.940		99.00% Pervious Area	
0.050		1.00% Impervious Area	
0.050		100.00% Unconnected	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	300	0.0900	0.44		**Sheet Flow,** Range n= 0.130 P2= 3.30"
2.2	290	0.2000	2.24		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.6	590	Total			

Pollutant Loading for 4.46" runoff

Area (acres)	Land Use	TSS (pounds)	TP (pounds)	TN (pounds)
0.050	Commercial Roof	0.45	0.01	0.11
0.620	Driveway	108.31	0.35	1.31
0.270	Industrial General	40.62	0.09	1.08
4.050	Rural open/forest	208.56	0.45	7.28
4.990	Total	357.94	0.89	9.78

Subcatchment 22S: Basin 4 - post construction



Summary for Pond 10P: Wet Pool 1

Pond for Basins 1, 2, & 3

[81] Warning: Exceeded Pond 14P by 1.25' @ 12.20 hrs

Inflow Area = 0.690 ac, 0.00% Impervious, Inflow Depth = 5.81" for 100-Year event
Inflow = 4.35 cfs @ 12.09 hrs, Volume= 0.334 af
Outflow = 2.78 cfs @ 12.21 hrs, Volume= 0.334 af, Atten= 36%, Lag= 7.1 min
Primary = 1.97 cfs @ 12.21 hrs, Volume= 0.326 af
Secondary = 0.81 cfs @ 12.21 hrs, Volume= 0.007 af

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Starting Elev= 4.00' Surf.Area= 1,564 sf Storage= 3,208 cf
Peak Elev= 5.33' @ 12.21 hrs Surf.Area= 2,180 sf Storage= 5,758 cf (2,550 cf above start)

Plug-Flow detention time= 157.6 min calculated for 0.260 af (78% of inflow)
Center-of-Mass det. time= 26.6 min (810.3 - 783.7)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	7,259 cf	**Custom Stage Data (Prismatic)** Listed below

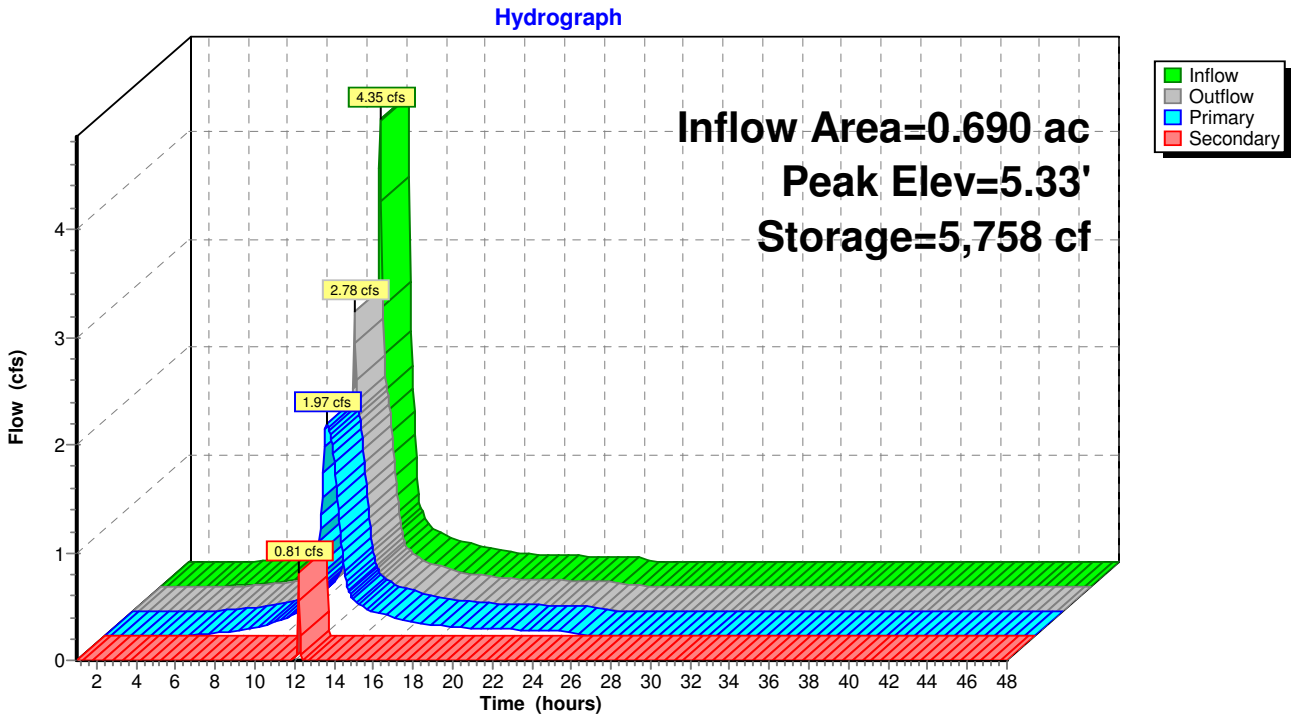
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	220	0	0
1.00	448	334	334
2.00	748	598	932
3.00	1,120	934	1,866
4.00	1,564	1,342	3,208
5.00	2,032	1,798	5,006
6.00	2,474	2,253	7,259

Device	Routing	Invert	Outlet Devices
#1	Primary	4.00'	**6.0" Vert. Orifice/Grate X 2.00** C= 0.600
#2	Secondary	5.25'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)**
			Head (feet) 0.00 0.75
			Width (feet) 10.00 10.00

Primary OutFlow Max=1.96 cfs @ 12.21 hrs HW=5.33' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 1.96 cfs @ 5.00 fps)

Secondary OutFlow Max=0.71 cfs @ 12.21 hrs HW=5.33' (Free Discharge)
↑—**2=Custom Weir/Orifice** (Weir Controls 0.71 cfs @ 0.91 fps)

Pond 10P: Wet Pool 1



Summary for Pond 13P: Wet Pool 2

Pond for Basin 4.

[81] Warning: Exceeded Pond 16P by 1.54' @ 12.25 hrs

Inflow Area = 4.990 ac, 1.00% Impervious, Inflow Depth = 4.46" for 100-Year event
Inflow = 20.29 cfs @ 12.19 hrs, Volume= 1.853 af
Outflow = 18.69 cfs @ 12.26 hrs, Volume= 1.853 af, Atten= 8%, Lag= 4.2 min
Primary = 12.91 cfs @ 12.26 hrs, Volume= 1.771 af
Secondary = 5.78 cfs @ 12.26 hrs, Volume= 0.081 af

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Starting Elev= 4.00' Surf.Area= 3,608 sf Storage= 9,176 cf
Peak Elev= 5.79' @ 12.26 hrs Surf.Area= 4,899 sf Storage= 16,887 cf (7,711 cf above start)

Plug-Flow detention time= 91.2 min calculated for 1.640 af (89% of inflow)
Center-of-Mass det. time= 14.9 min (837.1 - 822.2)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	17,850 cf	**Custom Stage Data (Prismatic)** Listed below

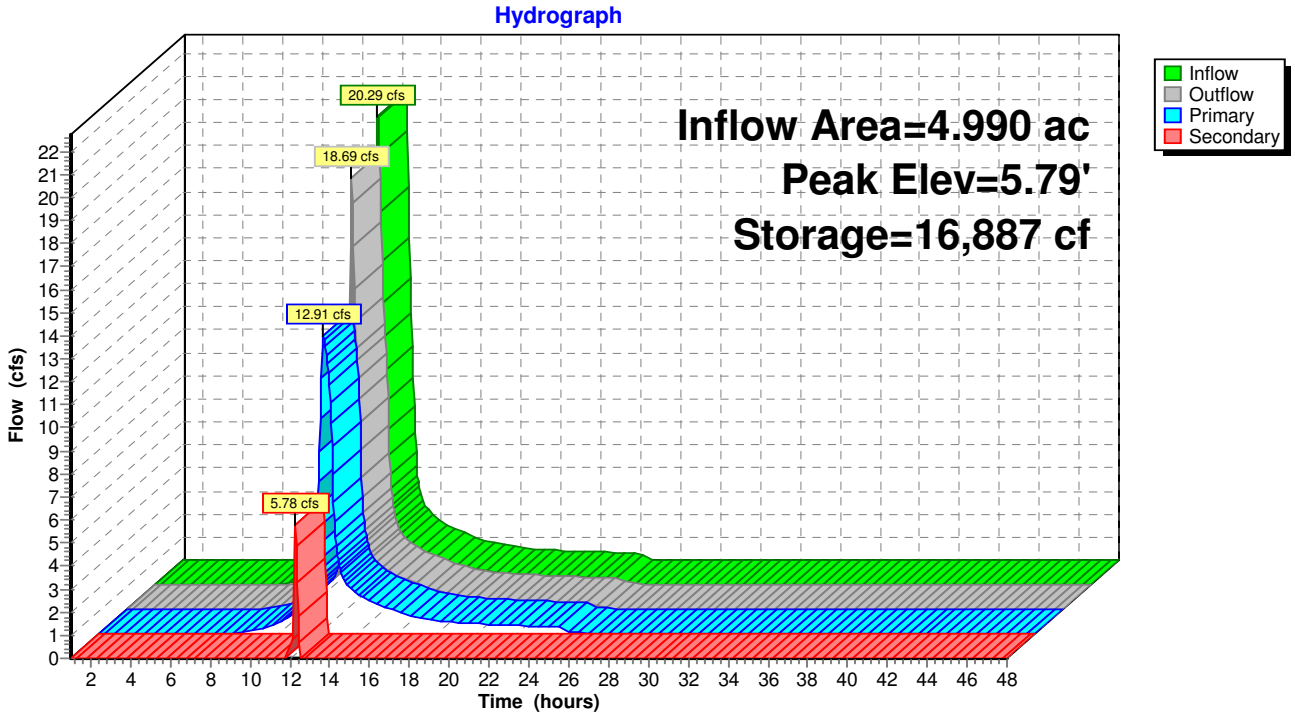
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	1,160	0	0
1.00	1,664	1,412	1,412
2.00	2,240	1,952	3,364
3.00	2,888	2,564	5,928
4.00	3,608	3,248	9,176
5.00	4,350	3,979	13,155
6.00	5,040	4,695	17,850

Device	Routing	Invert	Outlet Devices
#1	Secondary	5.50'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.50 Width (feet) 11.00 11.00
#2	Primary	4.00'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600

Primary OutFlow Max=12.85 cfs @ 12.26 hrs HW=5.78' (Free Discharge)
↑—**2=Orifice/Grate** (Orifice Controls 12.85 cfs @ 5.46 fps)

Secondary OutFlow Max=5.46 cfs @ 12.26 hrs HW=5.78' (Free Discharge)
↑—**1=Custom Weir/Orifice** (Weir Controls 5.46 cfs @ 1.75 fps)

Pond 13P: Wet Pool 2



Summary for Pond 14P: Forebay 1

Pond for Basins 1, 2, & 3

Inflow Area = 0.690 ac, 0.00% Impervious, Inflow Depth = 5.81" for 100-Year event
Inflow = 4.36 cfs @ 12.09 hrs, Volume= 0.334 af
Outflow = 4.35 cfs @ 12.09 hrs, Volume= 0.334 af, Atten= 0%, Lag= 0.4 min
Primary = 4.35 cfs @ 12.09 hrs, Volume= 0.334 af

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Starting Elev= 4.00' Surf.Area= 986 sf Storage= 1,712 cf
Peak Elev= 4.11' @ 12.09 hrs Surf.Area= 1,029 sf Storage= 1,844 cf (132 cf above start)

Plug-Flow detention time= 88.9 min calculated for 0.295 af (88% of inflow)
Center-of-Mass det. time= 0.9 min (783.7 - 782.7)

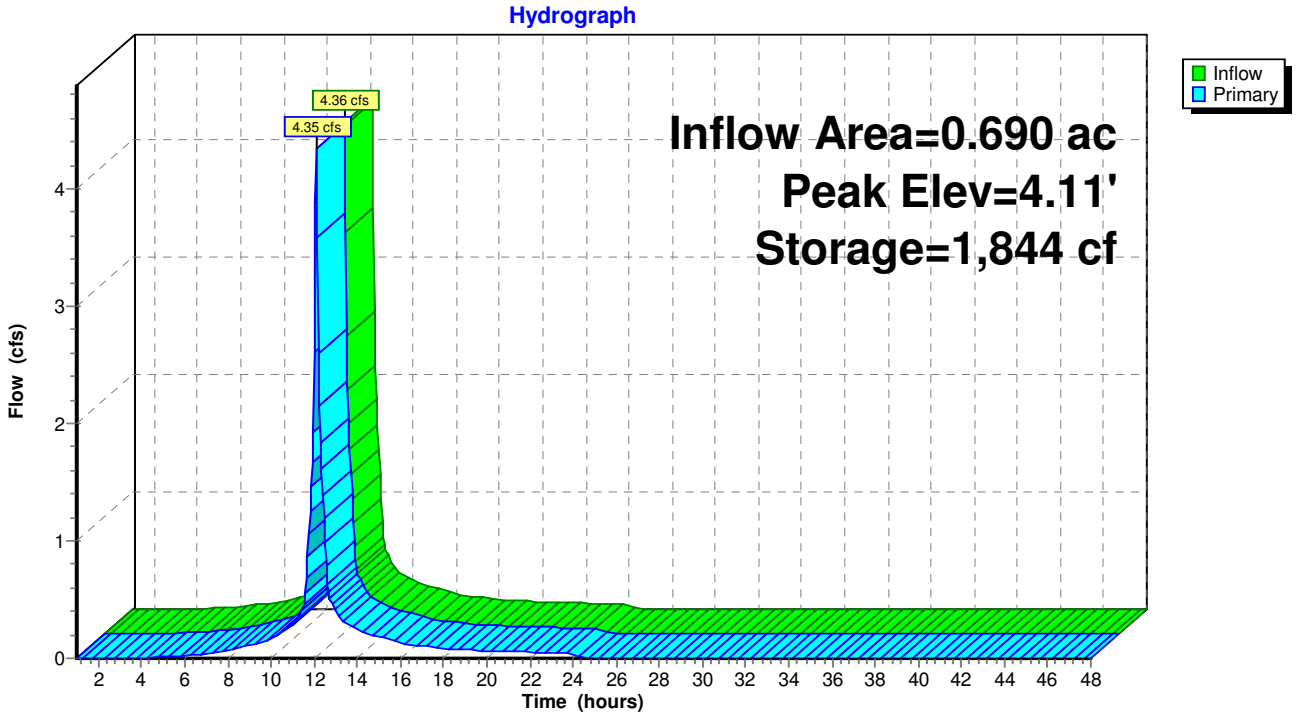
Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	4,429 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	50	0	0
1.00	176	113	113
2.00	374	275	388
3.00	644	509	897
4.00	986	815	1,712
5.00	1,368	1,177	2,889
6.00	1,712	1,540	4,429

Device	Routing	Invert	Outlet Devices
#1	Primary	4.00'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 2.00 Width (feet) 34.00 40.00 46.00

Primary OutFlow Max=4.16 cfs @ 12.09 hrs HW=4.11' (Free Discharge)
↑—**1=Custom Weir/Orifice** (Weir Controls 4.16 cfs @ 1.09 fps)

Pond 14P: Forebay 1



Summary for Pond 16P: Forebay 2

Pond for Basin 4.

[88] Warning: Qout>Qin may require Finer Routing>1

Inflow Area = 4.990 ac, 1.00% Impervious, Inflow Depth = 4.46" for 100-Year event
Inflow = 20.25 cfs @ 12.19 hrs, Volume= 1.853 af
Outflow = 20.29 cfs @ 12.19 hrs, Volume= 1.853 af, Atten= 0%, Lag= 0.3 min
Primary = 20.29 cfs @ 12.19 hrs, Volume= 1.853 af

Routing by Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.05 hrs
Starting Elev= 4.00' Surf.Area= 1,232 sf Storage= 2,264 cf
Peak Elev= 4.27' @ 12.19 hrs Surf.Area= 1,344 sf Storage= 2,650 cf (386 cf above start)

Plug-Flow detention time= 25.1 min calculated for 1.801 af (97% of inflow)
Center-of-Mass det. time= 0.6 min (822.2 - 821.6)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	5,538 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
0.00	80	0	0
1.00	260	170	170
2.00	512	386	556
3.00	836	674	1,230
4.00	1,232	1,034	2,264
5.00	1,650	1,441	3,705
6.00	2,016	1,833	5,538

Device	Routing	Invert	Outlet Devices
#1	Primary	4.00'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 2.00 Width (feet) 44.00 50.00 56.00

Primary OutFlow Max=20.10 cfs @ 12.19 hrs HW=4.27' (Free Discharge)
↑—**1=Custom Weir/Orifice** (Weir Controls 20.10 cfs @ 1.68 fps)

Pond 16P: Forebay 2