Park Place at Westchester Airport

TOWN OF NORTH CASTLE

WESTCHESTER COUNTY, NEW YORK

Stormwater Pollution Prevention Plan

AKRF Project Number: 80202

Prepared for:

11 New King Street, LLC
11 New King Street
White Plains, NY 10604

Prepared by:

AKRF

AKRF Engineering, P.C.
440 Park Avenue South
New York, NY 10016
212-696-0670

OCTOBER 2010
Revised January 2011
Revised November 26, 2014
Revised December 9, 2014

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1.0 OBJECTIVE

AKRF Engineering, P.C. (AKRF) prepared this Stormwater Pollution Prevention Plan (SWPPP) in accordance with the following applicable rules, regulations and guidance documents:

- New York State Department of Environmental Conservation (NYSDEC) Stormwater Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activities Permit No. GP-0-10-001 (SPDES GP-0-10-001);
- New York State Stormwater Management Design Manual, dated August 2010 produced by the NYSDEC;
- New York State Standards and Specifications for Erosion and Sediment Control, dated August 2005 produced by NYSDEC;
- City of New York, Watershed Rules and Regulations for the Protection from Contamination, Degradation and Pollution of the New York City Water Supply and its Sources;
- Town of North Castle, Stormwater, Soil Erosion and Sediment Control (Town Code Chapter 173) Management Code

The objectives of this SWPPP are to:

1. Outline Owner and Contractor responsibilities to maintain compliance with SPDES GP-0-10-001, including required inspections, maintenance, forms, and certifications.
2. Outline measures to install, inspect, and maintain erosion and sediment control measures for the proposed project. The objective of these measures is to eliminate or significantly minimize pollutant discharges to the adjacent surface water bodies during construction activities.
3. Demonstrate that the post construction water quality treatment practices as proposed are designed to capture and treat the stormwater runoff from the proposed project.
4. Specify post construction stormwater management structures on-site such that the proposed peak flows do not exceed the pre–development peak flows, thus providing channel protection, overbank flood control, and control of the peak discharge control from the extreme storm event.
5. Incorporate green infrastructure techniques in order to replicate pre-development hydrology by maintaining pre-construction infiltration, peak runoff flow and discharge volume.
6. Provide a long term inspection and maintenance plan that will ensure the long term operation of the proposed practices.

2.0 OWNER/APPLICANT'S RESPONSIBILITIES

11 New King Street, LLC, the "Owner/Applicant", is responsible to ensure that the Contractor installs and maintains the erosion and sediment control measures in accordance with this SWPPP. The Owner/Applicant is also responsible to ensure that the appropriate forms and certifications contained herein are completed prior to and throughout the duration of demolition and construction activities. The Owner/Applicant shall keep a copy of this document, associated attachments, and any inspection reports generated on-site for the duration of the project and for a minimum of 5 years from the date that the site achieves final stabilization. During this time period it is the Owner/Applicant's responsibility to conform to any changes or updates to the current regulations as they apply to the project.

The Owner/Applicant should ensure that the provisions of the SWPPP are implemented from the commencement of construction activity until all areas of disturbance have achieved final stabilization and the Notice of Termination (NOT) has been submitted to the appropriate NYSDEC office.

The Owner/Applicant should maintain a copy of the General Permit (SPDES GP-0-10-001), Notice of Intent (NOI), NOI acknowledgement letter, SWPPP, MS4, and SWPPP Acceptance Form and Inspection Reports at the construction site until all disturbed areas have achieved final stabilization and the Notice of Termination has been submitted to the NYSDEC. The documents must be maintained in a secure location, such as a project trailer, on-site construction office, or mailbox with lock; that is accessible during normal working hours to an individual performing a compliance inspection.

3.0 CONTRACTOR'S RESPONSIBILITIES

The Contractor is responsible for implementing this SWPPP and related project specifications and reviewing all forms, certifications, and contract drawings, in order to become familiar with all aspects related to the SPDES GP-0-10-001. The Contractor shall retain a signed copy of this SWPPP and all associated attachments on-site from the initiation of demolition and proposed construction activities to the date of final stabilization. The Contractor is responsible for completing the certification contained herein Appendix A, prior to the commencement of demolition and proposed construction activities. Each of the Subcontractors involved in the implementation of erosion and sediment control measures must also complete a certification. The Contractor is responsible for each of the Subcontractors employed by the Contractor that are involved in the implementation of erosion and sediment controls or earthwork.

It is the duty of the Contractor to properly install and maintain all erosion and sediment control measures on the site as per this SWPPP. The Contractor shall also be responsible for the inspection of all erosion and sediment control measures for the proposed project by a "Trained Contractor" as per this SWPPP. Should the Owner, an owner's representative, or any local authority having jurisdiction deem that the SWPPP or the Contractor's implementation of the SWPPP proves to be ineffective in eliminating or significantly minimizing the pollutants or achieving the goals of the SPDES GP-0-10-001, the Contractor shall take any necessary action to conform to the objectives of the permit at no additional cost to the Owner.

It is the duty of the Contractor to properly inspect and maintain all erosion and sediment control measures installed on the site as per this SWPPP. Any revision to the SWPPP in design, demolition and construction activities, inspection, or maintenance shall be reflected by the Contractor in the on-site copy of the SWPPP in a timely manner. At the beginning of this work, the Contractor must designate a qualified inspector. The Contractor shall coordinate with the Resident Engineer to ensure that all of the inspection requirements are in conformance with this SWPPP and the requirements of the SPDES GP-0-10-001. On a monthly basis, copies of all inspection forms and maintenance records shall be organized and filed accordingly by the Contractor.

4.0 PRE-DEVELOPMENT CONDITIONS

The proposed project site is located at 11 New King Street in the Town of North Castle, New York. The site is situated to the east of New York State Route 120, north of Airport Road and to the west of New King Street. Further west of Route 120 is U.S. Highway 684 and Rye Lake. Rye Lake is part of Kensico Reservoir which is part of the New York City Department of Environmental Protection (NYCDEP) East of Hudson (EOH) watershed. The NYCDEP water supply system provides drinking water to 9 million people within New York City and other municipalities.

The phosphorous load to the reservoirs from the contributing drainage basins results in exceedances of the phosphorous water quality values established by the NYSDEC and set forth in its Technical and Operational Guidance Series (TOGS) as determined by the NYCDEP. Therefore NYSDEC and NYCDEP have identified phosphorous as a pollutant of concern within the EOH watershed and have established specific design criteria as outlined in the NYSSDM "Enhanced Phosphorous Removal" standards.

The project development comprises of two tax map parcels within the Industrial AA (IND-AA) zoning district. The existing flag lot, designated as Block 4, Lot 14B, is approximately 2.47 acres and is currently developed with a one-story office building, associated parking area, and a two-way driveway which provides access from New King Street. The existing lot contains minimal slopes stretching from New King Street to the edge of the existing development but has moderate to steep slopes (15% or greater) beyond and extending to the western property line. A NYCDEP delineated watercourse traverses the eastern portion of the site through an existing 36-in. diameter culvert. This culvert is located beneath the existing driveway which connects the parking area to New King Street. A wetland, delineated by AKRF staff and to be confirmed by Town staff, also traverses the site along the southern and western boundary lines.

The proposed project will also involve the use of a portion of the adjoining property, designated as Block 4, Lot 13A, located to the northwest of Lot 14B. The portion of this property which is planned for drainage use is currently undeveloped and consists of trees and low-lying brush located within moderately to steep slopes. This area is bound by Town delineated wetlands to the west and a parking area to the east.

4.1 Existing Soil Conditions

The following soils are found on the property and adjacent sites based on the United States Department of Agriculture (USDA) Natural Resource Conservation Service Soil Survey of Putnam and Westchester Counties, New York.

4.1.1 USDA Soil Description

Below is a list of on-site soil types and associated descriptions as determined by United States Department of Agriculture "Soil Survey of Putnam and Westchester Counties, New York". (See Sheet No. D-1 Pre-Development Stormwater Map in Appendix B)

Woodbridge Loam (WdB)

This soil is gently sloping, very deep, and moderately well drained. It formed in compact glacial till derived from schist, gneiss, and granite and is located on the lower parts of hillsides in the uplands. Slope of the Woodbridge Loam soil ranges from 3 to 8 percent slope. The water table of this soil mapping unit is between 1.5 to 2.5 feet below the surface from November to May. Bedrock is at a depth of more than 60 inches. Included with this soil mapping are small areas of the poorly drained and very poorly drained Sun soils, areas of well drained Paxton soils, the somewhat poorly drained Ridgebury soils, bouldery or very stony areas, and areas of soils with a friable substratum.

Ridgebury Loam (RdB)

Ridgebury loam consists of gently sloping, very deep soil that is poorly drained to somewhat poorly drained. Slope of the Ridgebury loam ranges on the project site from 3 to 8 percent slope. The water table is perched from November to May and is located at a depth of 0 to 1.5 feet. Permeability is moderate or moderately rapid in the surface layer and subsoil and slow or very slow in the substratum. Bedrock is at a depth of more than 60 inches. Ridgebury loam is present on along both the east and west boundary line.

Udorthents, Smoothed (Ub)

Udorthents, smoothed consists of very deep soil that is excessively drained to moderately well-drained. Slope of the Udorthents soil ranges from 0 to 25 percent slope. Many characteristics cannot be defined for this soil because there is a high variable composition. Fill material can be present at depths greater than 20 inches over the original soil. The Udorthents soil comprises the majority of the total soil on the site.

Table 4-1
Project Site Soil Types

Symbol	Soil Series Name	Hydrologic Soil Group	Drainage Characteristics
WdB	Woodbridge loam 2 to 8 percent slopes	C	Moderately well drained. Permeability is moderate in the surface layer and subsoil and slow or very slow in the substratum. Erosion hazard is moderate, surface runoff medium, and water capacity moderate. "K" Factor: 0.24 to 0.32.
RdB	Ridgebury loam, 3 to 8 percent slopes	C	Gently sloping, very deep and poorly drained soil located on lower parts of hillsides and along small drainage ways. Permeability is moderate or moderately rapid in the surface layer and subsoil and slow or very slow in the substratum. Erosion factor is slight, surface runoff medium and water capacity moderate. K factor: 0.24 to 0.32.
Ub	Udorthents, smoothed		Very deep, excessively drained to moderately well-drained soil located near urban areas, highways, and borrow areas. It is comprised of alternating layers of material ranging from sand to silt loam. Properties are extremely variable and merit onsite investigation to determine properties for given site.

Source: Soil Survey of Putnam and Westchester Counties, New York, USDA Soil Conservation Service.

Note: "K" Factor given indicates the erosion potential of each soil type. This indicates the susceptibility of a soil to sheet and rill erosion by water. Values of "K" range from 0.05 to 0.69. The higher the value the more susceptible the soil to erosion

4.1.2 Geotechnical Results

Test pits and soil borings were performed throughout the proposed development areas to help determine the feasibility of certain types of stormwater treatment practices and those that will offer the best performance, see Table 4-2 and 4-3. Test pits locations were survey located and can be found on the Pre-Development Drainage Map (Appendix B). NYCDEP and AKRF staff was present to witness the soil testing.

Deep test holes were performed in the northwest area of the project and generally indicated seasonal high groundwater varying from 3-foot 6 inches below grade to 8 feet below grade. Therefore, percolation testing was not performed in these areas. Borings were performed throughout the site, to provide information for the building foundation and pavement design. However, the information was also used to evaluate the potential for green infrastructure design.

Table 4-2
Project Site Deep Test Results

Deep Test Hole Number	Description
1	10’ Total Depth, 6’ Groundwater Seepage
2	8’ Total Depth, 6’ Groundwater Seepage, 3’-6” Mottling Observed
3	11’ Total Depth, 7’ Groundwater Seepage
4	9’ Total Depth, 8’ Groundwater Seepage

Table 4-3
Project Site Boring Results

Boring Number	Description
1	44’ Total Depth, 25’-6” Groundwater Seepage
2	51’ Total Depth, 10.5’ Groundwater Seepage
3	36’ Total Depth, 16’ Groundwater Seepage
4	45’-2” Total Depth, 26’-6” Groundwater Seepage
5	30’-4” Total Depth, Water level not recorded
6	31’ Total Depth, 18’ Groundwater Seepage

4.2 Existing Natural Resources

Located within the project site are a Town designated wetland and a class “A” watercourse, as designated by NYSDEC. Approximately 18,680 square feet (sf) (0.428 acres) of the wetland is on Lot 14B, and approximately 3,200 sf (0.073 acres) of the wetland is on Lot 13A. The town designated wetland was delineated by a field survey conducted by AKRF. The wetland was found to be present within the undeveloped southern portion of the project site and outside the western borders of the property along Route 120. A wetland is mapped along the unnamed stream outside the eastern project boundary near New King Street. These designated wetland areas are protected by town defined wetland setbacks. A reservoir stem is located at the outlet of the existing 60-in. diameter culvert on the west side of NYS Route 120. NYCDEP requires a 300 foot boundary line setback from a reservoir stem.

4.2.1 Watercourses

All state waters are assigned a class and standard designation based on existing or expected best usage. Streams that are designated as C(t) or higher (i.e., C(ts), B, or A) are collectively referred to as protected streams and are subject to the stream protection provisions of the Protection of Waters regulations.

The primary stream that traverses across the eastern portion of the project site flows through an existing 36-in. diameter culvert beneath the existing driveway. This perennial stream is listed as Class A by the NYSDEC and is therefore subject to the provisions of the Protection of Waters Program (6 NYCRR Part 608). The classification AA or A is assigned to waters used as a source of drinking water. The stream's proximity to the Kensico Reservoir, which is part of the NYCDEP water supply system, accounts for this designation. This stream is also subject to the Town of North Castle Code which regulates watercourses and disturbance activities within 100 feet of watercourses.

The secondary on-site drainage feature is identified as the Town designated wetland portion which stretches along the southern property line from east to west. This secondary drainage feature does not demonstrate perennial or intermittent flow and is more accurately termed an ephemeral drainageway, conveying surface runoff during or immediately following a rain event only. It is not mapped by NYSDEC and is therefore not regulated at the state level pursuant to the Protection of Waters Program.

Section 18-39(c)(6) of the Watershed Rules and Regulations prohibits impervious surfaces within 100 feet of a watercourse. NYCDEP staff members were present at the project site during the delineation of the watercourse. This information is shown on Sheet No. C-2 - Existing Conditions, see Appendix C.

4.2.2 Reservoir Stem

The NYCDEP regulates activities within a 300-foot radius of a reservoir stem. This setback helps to limit activities to areas within close proximity to downstream water supply reservoirs. The reservoir stem associated with this project is located to the northwest of the project site at the discharge point of the watercourse into Rye Lake, part of the Kensico Reservoir. The reservoir stem was determined using the elevation of the Kensico Dam, as provided by NYCDEP, and survey locating the elevation along the reservoir edge within the proximity of the tributary stream. The surveyor then delineated a 500-foot segment of the tributary stream. A 300-foot radius from the 500-foot segment was then drawn on the plans to show the reservoir stem setback. The project site is located within this reservoir stem setback however, the building and associated impervious surfaces has been situated outside of this required setback zone.

4.2.3 Wetlands

The project site contains wetlands located along the east, west, and south property lines. These two wetland areas were delineated by the Town of North Castle and survey located. The wetland area to the east of the property follows the delineation of the NYCDEP defined watercourse and stretches through the adjacent property to the north until it reaches an existing 60-in. diameter culvert located to the northwest of the site. This culvert conveys water beneath New York State Route 120 and towards Rye Lake.

The town delineated wetland area located along the south and west property lines conveys water to an existing 36-in. diameter culvert located off-site. This culvert conveys water beneath New York State Route 120 and towards Rye Lake

Wetlands are defined at the Federal level as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Wetlands generally include "swamps, marshes, bogs, and similar areas" (Federal Register, 1982). Wetlands are regulated at the Federal level by the Army Corps of Engineers (ACOE) pursuant to Section 404 of the Clean Water Act and its implementing regulations. Wetlands are also regulated at the local level by the Town of North Castle, Town Code §209. The Town also regulates disturbance activities within a 100-foot buffer surrounding wetlands to protect their function and values.

4.3 Existing Utilities

Based on discussions with the Town of North Castle personnel there is no existing water service from New King Street, Route 120, or Airport Road. The project site is currently located outside of any existing water districts. An existing well is located on the slate patio in the rear of the existing building which currently provides potable water to the office building.

Sanitary sewage is discharged through a 3" PVC force main that runs under the driveway to the sanitary manhole located approximately 14 feet from the eastern most property line. At this point the sanitary flows are connected to the municipal sanitary system which runs beneath New King Street to the south.

There is an existing 1,000-gallon underground storage tank located along the southeast corner of the existing building. This fuel tank is used to provide heat and hot water to the existing facility.

4.4 Existing Stormwater

There are no existing stormwater management systems on-site and therefore, no existing treatment practices. The existing subwatersheds have been delineated in order to understand existing stormwater runoff flow conditions (See Sheet No. D-1 in Appendix B). Pre-development hydrologic routing calculations can be found in Appendix D of this report.

Therefore the majority of stormwater runoff is conveyed via overland flow from paved surfaces. Stormwater flows from rooftops, over paved areas and bare soil, and through sloped lawns collecting and transporting soil, animal waste, salt, pesticides, fertilizers, oil and grease, debris and other potential pollutants.

Potential Sources of Water Pollution

The existing subsurface sewage treatment systems are no longer functional and have been abandoned for several years and therefore are not a contributing source of pollution runoff. Roof leaders convey stormwater runoff from the office buildings to the lawn areas, where flow is spread out. Potential pollution sources within the watersheds include sand and salt from roadway and parking lot runoff, pesticide and fertilizers, and grass clippings.

Sand and salt is typically used for de-icing on the project site and adjacent paved surfaces. Since there is no existing stormwater management system, accumulated sediment could potentially be transported to the adjacent waterbodies.

Many of the NYC Water Supply streams, lakes and reservoirs are impacted from intensifying land use. In addition to increased levels of phosphorous, chloride concentrations due to de-icing operations are increasingly found at higher levels in surface waters. Not only is chloride conveyed via surface water runoff, but it also infiltrates through the soil and intercepts the groundwater table, which is the contributing base flow of streams. In its annual report, New York City DEP has reported steady increases in conductivity of most reservoirs in the Croton Watershed since the early 1990s, most likely a result of increased development and associated pollutants (e.g., increased use of road salt).

Potential short-term and long-term impacts of runoff carrying fertilizers, pesticides, and other chemicals from lawns, roadways and other impervious surfaces and sedimentation is that it can be toxic to plants and animals.

Design Point 1

Design Point 1 is located along New York State Route 120 at the inlet of an existing 36-in. diameter culvert which is located within an existing stormwater wetland just beyond the southwest property line. This existing 36-in. diameter culvert conveys stormwater from a portion of the project site and the adjoining Westchester Airport property (located to the south) beneath NYS Route 120 towards Rye Lake which is part of the Kensico Reservoir. Stormwater flow across the south end of the property and a portion of the roof of the existing office building (Pre1) drains to the town designated wetland located along the western property line. From here, stormwater runoff is conveyed off-site to an existing 36-in. diameter culvert which directs stormwater under New York State Route 120.

The contributing drainage area consists of land use types varying from wooded areas, landscaped areas, and impervious surfaces from the existing buildings, surface drive and walkway areas. Currently stormwater runoff is conveyed via overland flow to this design point and at no point is runoff collected into on-site existing stormwater structures.

Design Point 2

Design Point 2 is located along New York State Route 120 at the inlet of an existing 60-in. diameter culvert which is located within an existing town designated wetland and NYCDEP designated watercourse. This existing 60-inch (in.) diameter culvert is located northwest of the property line just west of lot 13A.

The existing watercourse which traverses south to north at the existing driveway entrance for 11 New King Street is conveyed under the drive, via a 38 linear foot, 36-in. diameter culvert. This watercourse traverses through the adjoining property, crossing beneath the existing driveway through a stone culvert and over a concrete spillway, before eventually leading to a 60-in. diameter culvert downstream. This existing 60-in. diameter culvert conveys stormwater, from a portion of the project site and the adjoining properties to the north, beneath NYS Route 120 towards Rye Lake, a portion of the Kensico Reservoir.

The contributing drainage area consists of land use types varying from wooded areas, landscaped areas, and impervious surfaces from the existing buildings, surface drive and walkway areas. The stormwater flows contributing from the associated parking area and a portion of the existing building (Pre2), are directed northwest, overland towards the town designated wetland. A portion of the stormwater runoff is conveyed via overland sheet flow, before discharging into the watercourse at the stream edge, while the majority of the overland flow collects into a town designated wetland located to the west of Lot 13A. After ponding in this area, stormwater runoff is conveyed to the north and discharges into the watercourse in the area of the existing 60-in. diameter culvert.

The existing watercourse appears to be in stable condition with minimal erosion issues, as a majority of the stream banks are rock-lined. In many cases the degree of stream movement is limited by these rock-lined banks allowing little opportunity to meander. These attributes are suggestive of a stream system with relatively low sensitivity to hydrologic changes.

Design Point 3

Design Point 3 is located in the eastern portion of the site adjacent to the watercourse. In the pre-development condition, this drainage area consists of a portion of the existing one-story building, a portion of the associated parking area and driveway, and wooded/landscaped areas.

Stormwater runoff from the eastern portion of the project site, including the eastern portion of the associated parking and driveway leading towards New King Street (Pre3), is conveyed via overland flow to the NYCDEP watercourse located off-site. Runoff then flows within the watercourse through the existing 36-in. diameter culvert, beneath the existing driveway, and eventually to the existing 60-in. diameter culvert which conveys water under New York State Route 120. In the pre-development condition, stormwater runoff from the impervious surface is not collected or treated within a stormwater facility.

5.0 PROPOSED PROJECT DESCRIPTION

11 New King Street, LLC (the Applicant) proposes to construct a parking structure (proposed project) at 11 New King Street (project site) in the Town of North Castle, Westchester County to alleviate an existing parking shortage at Westchester County Airport.

The project site is located in the southern portion of the Town of North Castle, near the Connecticut state line and Westchester County Airport. (see Figure 5-1, Site Location Map). The proposed project would involve the construction of a multi-level parking structure with a building footprint of approximately 51,000 square feet. This project would also involve the construction of associated paved areas for on-site drive lanes and site access from New King Street. The site is currently developed with an approximately 9,700-square-foot one-story office building, an associated parking area, and a driveway which provides access from New King Street.

5.1 Anticipated Permits

The following is a list of anticipated permits for the construction activities associated with the proposed project.

5.1.1 New York State Department of Environmental Conservation

The project work will result in more than 5,000 square feet of disturbance within the New York City East of Hudson Watershed. This will require coverage under the SPDES General Permit for New Construction GP-0-10-001. This SWPPP is being prepared in compliance with the requirements of the New York State Stormwater Management Design Manual (NYSSMDM).

5.1.2 Westchester County Department of Health

The existing well is located within the footprint of the proposed building therefore a new well will be located on-site. Westchester County Department of Health approval will be required for the new on-site well.

5.1.3 New York City Department of Environmental Protection

In conformance with Section 18-37(d) of the Watershed Rules and Regulations (WRR), the applicant will be required to notify the Department of the modification to the existing sanitary sewer connection and submit associated engineering drawings. The proposed building will require a pump chamber and associated force main to pump sewage from the new building to the municipal sewer system located along New King Street. This connection will be made at an existing manhole located along the edge of the existing driveway, at the southeastern most property line.

NYCDEP review and approval of the SWPPP is required according to Section 18-39(b)(3)(iii) of the Watershed Rules and Regulations.

A variance will be necessary from Section 18-39(a)(4)(iii) of the Watershed Rules and Regulations. The proposed impervious surface will be increased within the limiting distance of 100 feet of a watercourse or wetland to meet the town requirements of driveway width of 24 ft. The 24 foot wide driveway is also necessary to address safety concerns.

5.1.4 Town of North Castle

The town is considered a regulated, land use control under the Municipal Separate Storm Sewer System (MS4) program and therefore the review and approval of the SWPPP is required prior to submission to NYSDEC.

The following table is a complete list of all permits required for the proposed project.

Table 5-1
Required Permits, Approvals and Involved Agencies

Approval/Permit/Review	Involved Agency
Town of North Castle	
Site Plan Approval	Planning Board
Wetland Permit	Planning Board
Tree Removal Permit	Planning Board
Zoning Text Amendment	Town Board
Sanitary Sewer Connection	Building Department
Westchester County	
Sanitary Sewer Connection	Department of Health (WCDOH)
Water Supply Well	WCDOH
Roadway/Signal Improvements	Department of Public Works (WCDPW)
New York City	
SWPPP	Department of Environmental Protection (NYCDEP)
Sanitary Sewer Connection	NYCDEP
Limiting Distance Disturbance	NYCDEP
New York State	
Roadway/Signal Improvements (NYS Route 120)	Department of Transportation (NYSDOT)
SPDES Permit (GP-0-10-001)	Department of Environmental Conservation (NYSDEC)
Federal	
Height Limitation	Federal Aviation Administration (FAA)
Notice of Proposed Construction or Alteration	FAA
Nationwide Permit, if applicable	U.S. Army Corps of Engineers (USACE)

6.0 POST-CONSTRUCTION STORMWATER PRACTICES

Post-construction stormwater practices that provide water quality and quantity control are required to meet pollutant removal goals, reduce runoff volume, reduce channel erosion, prevent overbank flooding, and control extreme floods. These controls help mitigate the effects of development by controlling suspended solids content and peak flows of runoff from developed sites. The NYSDEC has developed unified sizing criteria to size stormwater management measures. However, as previously mentioned, the project is located within the NYCDEP East of Hudson Watershed where the stormwater management design must also address specific NYCDEP requirements. The NYCDEP requirement for the treatment volume, also referred to as water quality volume (WQv), is to capture and treat the runoff generated from a 1-year, 24-hour storm event. The NYSDEC requirements for overbank flood and extreme storm are the same as NYCDEP requirements for attenuating the larger storm events.

The NYSDEC requirement for Water Quality Volume (WQv) for enhanced phosphorous removal is to capture the calculated runoff from the 1-year, 24-hour design storm. The method for calculating the runoff volume is based on the USDA NRCS Technical Release 20 and Technical Release 55. The stormwater treatment practices have been designed to meet the current WRR, including the requirement that the stormwater ponds be designed to capture and treat the runoff generated from the 1-year, 24-hour storm event from new impervious surfaces based on the requirements of Chapter 10 – Enhanced Phosphorous Removal Standards outlined in the NYSSMDM.

6.1 Regulations

6.1.1 NYSDEC Sizing Criteria

The following table is representative of the storm design criteria required within the New York State Stormwater Management Design Manual.

Table 6-1
NYSDEC Uniform Sizing Criteria

Water Quality Volume (WQv)	WQv = Detention of the 1 year storm event
Runoff Reduction Volume (RRv)	RRv = Reduction of the total WQv by application of green infrastructure techniques and SMPs to replicate pre-development hydrology.
Channel Protection (Cpv)	Cpv = 24 hour extended detention of post-developed 1-year, 24-hour storm event.
Overbank Flood (Qp)	Control the peak discharge from the 10-year storm to 10-year predevelopment rates.
Extreme Storm (Qf)	Control the peak discharge from the 100-year storm to 100-year predevelopment rates. Safely pass the 100-year storm event.

As the project is within the NYCDEP East of Hudson Watershed, the requirements and guidelines within the New York State Stormwater Management Design Manual Chapter 10 – Phosphorous Removal Enhancement was used to design the stormwater management system.

6.1.2 New York City Department of Environmental Protection Requirements

The project is located within the Kensico Reservoir watershed, which is part of New York City’s surface water drinking water supply. NYCDEP is currently operating under a Memorandum of Agreement with the United States Environmental Protection Agency for filtration avoidance. Under this agreement certain provisions regarding impervious surface and stormwater runoff were incorporated within the City of New York, Rules and Regulations for the Protection from Contamination, Degradation and Pollution of the New York City Water Supply and its Sources (WRR) promulgated in 1997 and revised most recently in April 2010. The stormwater design criteria of the NYSSMDM are now referenced in the WRR. The WRR has additional criteria, such as the stormwater treatment practices must be designed to be in series. However, generally, the sizing and design criteria follow the state requirements.

6.1.3 Town

The Town of North Castle is a regulated, traditional land use control MS4, therefore the review and acknowledgement of the SWPPP is required.

6.2 Five-step process for site planning and stormwater management practice (SMP) selection

6.2.1 Step 1: Site Planning to preserve natural features and reduce impervious cover

The development of the stormwater management system for the proposed project site involves the use of green infrastructure practices, where feasible. The project area is 2.8 acres with approximately 33,447 square feet (sf) (0.77 acres) of existing impervious surface. The proposed automated parking garage design was a major factor in reducing the building footprint from the typical multi-level self-park system. The proposed project includes 55,924 sf (1.28 acres) of impervious surface, or 25,229 sf (0.64 acres) of new impervious surface. The proposed stormwater plan will also include approximately 10,786 (0.27 acre) of impervious surfaces from the existing office building roof runoff and associated parking area from adjacent Lot 13A.

The parking, drop-off, and traffic queuing areas are all located internal to the building. Therefore, runoff from the parking areas is not connected to the stormwater system and hence, decreasing the likelihood for oil and grease type pollutants to enter the storm system.

The following site planning practices were used to help determine the site plan and stormwater management system design.

Planning Practice 1: Preservation of Undisturbed Areas

The first approach to the overall design at Park Place is the preservation of undisturbed site area in order to maintain natural features and native vegetative areas. This technique coincides with Better Site Design (BSD) practice #1: preservation of undisturbed and BSD practice #3: reduction of clearing and grading. Both practices ensure that unnecessary earthwork is performed and instead help to limit overall site disturbance by developing in areas where disturbance has already occurred. Where possible the project has been designed to re-use existing impervious areas (i.e., driveway entrance, driveway) and has eliminated any disturbance of the presently undisturbed wetlands along the south and west property lines.

Planning Practice 2: Preservation of Buffers

The project site is situated in an area where Town delineated wetlands and NYCDEP designated wetlands greatly minimize the developable area on site. Currently, stormwater runoff from impervious surfaces located within wetland and watercourse buffers discharge directly to the waterbodies without any treatment. The project has been designed such that all runoff on impervious surfaces is treated by a series of water quality treatment methods before discharging downstream.

Planning Practice 3: Reduction of Clearing and Grading

The proposed building and associated impervious surfaces have been situated on the project site such that there will be no disturbance to existing wetland areas and hence, no clearing or grading is expected within these areas. The building has also been designed as a tiered structure which will work most efficiently with the existing site topography and thus minimize clearing and grading areas to the greatest extent possible.

Planning Practice 4: Locating Sites in Less Sensitive Areas

By constructing the new development in an area already disturbed, the project has helped to maintain the site's natural character and existing habitat. Also, while the proposed project will increase impervious surface, the project will provide stormwater quality and quantity controls where there are presently none. By treating runoff through a series of stormwater treatment facilities the stormwater quality will be improved and will thus, improve the surrounding watercourse and wetland areas.

Planning Practice 6: Soil Restoration

Prior to final site stabilization the on-site soils will be modified or restored in order to reintroduce oxygen into compacted soils and improve the water storage within the soil. This process will subsequently help reduce runoff by allowing for a greater potential for infiltration and evapotranspiration.

Planning Practice 8: Roadway Reduction

The driveway travel lanes at the Park Place development have been designed to provide adequate safety and conveyance throughout the site. Originally four car exit lanes were designed to leave the building, however after evaluating the travel patterns the two lane exit was reduced to only one lane. Also, the fire access lane and maintenance path have both been designed to consist of permeable pavers in order to decrease impervious cover and increase site infiltration.

6.2.2 Step 2: Determine Water Quality Treatment Volume

Water quality volume has been calculated based upon the site layout and contributing drainage areas utilizing Chapter 9 – Redevelopment Project design criteria depicted in the NYSDEC Stormwater Management Design Manual. As the project is within the NYCDEP East of Hudson Watershed, the requirements and guidelines within the New York State Stormwater Management Design Manual Chapter 10 – Phosphorous Removal Enhancement was used to design the stormwater management system.

The project is located within the NYCDEP East of Hudson Watershed where the stormwater management design must also address specific NYCDEP requirements. The NYCDEP requirement for the treatment volume, also referred to as water quality volume (WQv), is to capture and treat the runoff generated from a 1-year, 24-hour storm event.

The calculated WQv required is derived from a summation of 100%WQv of the proposed impervious area from pervious area and 25%WQv of the proposed impervious area from existing impervious area. Appendix E provides the supporting calculations for WQv and RRv for the project.

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

In order to achieve the requirements for the Runoff Reduction Volume (RRv), the proposed project site must use green infrastructure techniques and practices to meet the required water quality volume (WQv) as determined in the NYSSMDM. The water quality volume required to be achieved for the Park Place development is 9,176 cubic feet (CF). By providing permeable pavement as an impervious area reduction practice, the project was able to reduce the required water quality volume. By providing stormwater planter areas the project was able to treat 4,268 CF.

Green infrastructure practices or SMPs with runoff reduction capacity are required for the water quality volume associated with the new impervious area (pervious to impervious) of 6,391 CF. There are limiting site conditions that do not warrant the ability to reduce the runoff to pre-construction conditions, however the project has been designed to reduce a percentage of the runoff from impervious areas of the proposed development. Since this is not able to meet the required standard for RRv, the NYSSMDM allows for projects to reduce the required runoff reduction volume where additional efforts are not feasible. This reduction is based on a Hydrologic Soil Group(s) (HSG) of the site and is defined as the Specific Reduction Factor (S). The project site is located in HSG C soil, therefore the percent reduction factor is 0.30. The reduction factor for this site decreases the required RRv to 1,917 CF. According to the revised reduction factor the provided green infrastructure measures implemented on the site are sufficient to meet the allowable RRv. The comparison calculations for RRv and WQv can be found in Appendix E of this report.

Along with treating for water quality and quantity during the major storm events on the proposed project site, the NYSSMDM requires the applicant to achieve a runoff reduction volume. This volume is achieved through infiltration, groundwater recharge, reuse, recycle, evaporation/evapotranspiration of 100-percent of the post-development water quality volumes in order to replicate pre-development hydrology by maintaining pre-construction infiltration, peak runoff flow, discharge volume, as well as minimizing concentrated flow. This requirement can be accomplished by application of on-site green infrastructure techniques, standard stormwater management practices with runoff reduction capacity, and good operation and maintenance.

Infrastructure Technique 9: Stormwater Planters

The proposed development will be designed to have stormwater planter systems along the perimeter of the parking structure. These stormwater planters will be designed to treat the stormwater runoff from the roof of the proposed structure. The roof leaders will be routed to these areas for water quality treatment and nutrient intake before releasing into the proposed stormwater conveyance system.

Infrastructure Technique 11: Permeable Pavement

As discussed earlier, in the areas where high traffic is not expected (i.e. fire access lane, maintenance path), permeable pavers will be installed in place of conventional paving. This will help to reduce stormwater runoff from these areas and improve water quality and quantity downstream. The use of permeable pavers will reduce the amount of stormwater runoff through promoting infiltration.

Non-structural Stormwater Best Management Practices

Below is a list of nonstructural stormwater management practices that will be implemented throughout the project site:

- Long term soil stabilization through landscaping and maintenance in the developed areas. Prevention of soil loss, through establishment of vegetation and a landscape plan that will increase the amount of tree canopy and healthy ground cover. The landscape plan will also maximize the travel time of stormwater runoff and minimize concentrated flows.

- The grounds maintenance program limits the potential for excessive nutrient loading, specifically controlling the application of phosphate-based fertilizers.
- There is a potential for an increase in pollutants associated with open parking areas such as petroleum, antifreeze, and refuse. These pollutants are picked up through stormwater flows and carried downstream, thus increasing pollutant loading in the stream and reducing water quality. This project however, is designed to provide multiple levels of parking within the building. By doing so, the impervious cover or impervious footprint will be decreased from a development of equal parking volumes. It will also allow for the pollutants, associated with parking areas, to be collected internally and discharged to the sanitary system rather than into the watershed.
- For those driving surfaces located at the entrance to the proposed building, a high level of maintenance and good housekeeping practices will be implemented at the site.

Catch basins with deep sump and hood will be installed at the downstream end of all proposed catch basins. This will trap floatables and debris within the catch basin. The deep sumps will trap the petroleum and antifreeze attached to sediment particles. The accumulated material will be cleaned out of the catch basins in accordance with the long term inspection and maintenance plan.

6.2.4 Step 4: Apply Standard Stormwater Management Practices to Address Remaining Water Quality Volume

The remainder of the WQv is achieved by Surface Sand Filter and Pocket Wetland. Each of these practices has been designed in accordance with NYSDEC standards. The practices are proposed in a series to increase the runoff treatment.

Proposed Surface Sand Filter (F-1 per the NYSSMDM)

The following parameters were used in designing and sizing the surface sand filter system:

- Off-Line System – Stormwater runoff is conveyed via a storm pipe network, therefore the Sand Filter is designed off-line. A flow-splitter diversion structure has been designed to divert the runoff from the 1-year, 24 hour storm.
- Overflow – An overflow structure has been provided to convey stormwater to Pocket Wetland W-4. A stabilized rip-rap spillway has also been provided to convey stormwater from the larger storm events.
- Underdrain – A 6-inch diameter perforated pipe placed in a gravel layer, is proposed to collect stormwater that has filtered through the sand layer. Geotextile filter fabric will be placed between the gravel layer and sand layer.
- Groundwater Table – A 2-ft. separation between the filter bottom and the seasonal high groundwater table has been provided.
- Pretreatment (Sedimentation Basin) – A sedimentation basin will provide pretreatment at the inlet point. This will provide primary settling for the larger

particulates. The sedimentation basin will be sized to contain 25% of the WQv. The depth of the sedimentation basin is four feet. The outfall from the inlet pipe will be stabilized with rip rap to minimize erosion of the ponds' sideslopes. A fixed depth marker will be installed to assist in the long term inspection and maintenance plan. This will help determine the depth of sediment accumulation and when maintenance is required.

- Treatment Basin Sizing - The complete system, including sedimentation basin, is designed to hold and treat at least 75% of the water quality volume and will consist of a surface sand filter which will have a coefficient of permeability of 3.5 ft/day.
- Filter Media – The proposed filter media will consist of a medium sand meeting ASTM C-33 concrete sand.
- Side-Slopes - The side slopes for the sedimentation basin and the surface sand filter are 3:1(H:1).
- Vegetation – Landscape plans include various grass species for the sideslopes and bottom of the surface sand filter. The plant variety will provide treatment through filtering and nutrient uptake. See Landscape Plans.
- Geometry – Both pretreatment and the surface sand filter have been designed with a length to width ratio of 1.5:1 as required by NYSSMDM.
- Energy Dissipater - A rip rap velocity dissipater will be installed at the outlet that discharges into the sedimentation basin.
- Outlet control structure – The pre-cast concrete structure is designed with a low flow orifice that will detain the 1-year, 24-hour storm event.
- Maintenance – As specified in the Operation and Maintenance section of the SWPPP a legally binding and enforceable maintenance agreement shall be executed with the Town and the applicant/operator.

Proposed Pocket Wetland (W-4 per the NYSSMDM)

The following parameters were used in designing and sizing the pocket wetland (W-4):

- Water Quality Volume – The WQv is equivalent to the runoff from the 1-year, 24-hour storm event. A detention time of 33 hours has been provided.
- Wetland – The proposed pocket wetland is not located within NYSDEC jurisdictional waters, including wetlands.
- Pond Embankment – The proposed pocket wetland would not consist of a dam as it is excavated system below the existing grading.
- Forebay – A forebay is provided as the proposed pocket wetland to store a minimum of 10% of the WQv.
- Side-Slopes – The side slopes for the pocket wetland are 4:1(H:1) , therefore a pond safety bench is not required. However, an aquatic bench has been provided to help establish wetland vegetation.
- Micropool - A micropool will be provided at the outlet in order to protect the low flow pipe from clogging and prevent sediment resuspension. This area will range from four to six feet in depth and will be able to store a minimum of 10% of the

WQv. The contributing drainage area from the proposed roof leader extension from the existing office building Lot 13B is less than 10% of the total design storm flow discharges directly to the micropool.

- Water Quality Volume – At a minimum 25% of the water quality volume will be in deepwater zones with a depth greater than four feet.
- Vegetation – Landscape plans include various grass species for the sideslopes and emergent wetland species. The plant variety will provide treatment through nutrient uptake. Minimum elements of a plan include: delineation of pondscaping zones, selection of corresponding plant species, planting plan, sequence for preparing the wetland bed and sources of plant material.
- Landscaping – Native plants that promote phosphorous and nitrogen uptake will be specified in the final landscaping plans.
- Permanent pool – 50% of the water quality volume will be provided in the permanent pool, as required for stormwater wetlands designed for extended detention. The seasonal groundwater table will be intercepted to provide a permanent pool.
- Geometry – The pocket wetland has been designed with a length to width ratio of 2:1 as required by NYSSMDM. A minimum Surface Area: Drainage Area of 1:100 has been provided.
- Pond Buffer – A pond buffer of at least 25 ft has been provided around the pond maximum water surface elevation.
- Energy Dissipater - A rip rap velocity dissipater will be installed at the inlet and outlet of the lower pond. The lower pond discharges to the existing NYCDEP delineated watercourse where the banks are in stable condition. This will eliminate the potential for erosion of the stream bed.
- Emergency overflow - Safe conveyance of the 100-year storm flow will be provided through a rip rap lined overflow spillway. The elevation is determined by the 100-yr flood elevation and located such that stormwater flows will not adversely impact surrounding properties.
- Maintenance access – A 10-foot minimum width access path will be provided for long term maintenance of the stormwater ponds. The path will be constructed of grasspavers in order to decrease impervious surface and increase infiltration.
- Outlet control structure – The pre-cast concrete structure is designed with a low flow orifice that will detain the 1-year, 24-hour storm event for a minimum of 24 hours, meeting the NYSDEC and NYCDEP requirements. The larger storm events will also be conveyed through an opening at the top of the outlet control structure designed to attenuate the larger storm events.
- The outlet control structure is located within the embankment, providing safe egress for maintenance.
- Freeboard – 1-ft of freeboard above the 100-year storm elevation.
- Pond Drain – A drain pipe would be part of the outlet control structure so that the pond could be completely drained for maintenance.

- Maintenance Agreement – An Operation and Maintenance Plan as outlined in the SWPPP would be developed into a legally binding and enforceable agreement with Town as a condition of the site plan approval.

Table 6-1
Stormwater Management Practices

Water Quality Volume Required*			**9,176 cf**	
Standard Practices for Water Quality Treatment				
Practice	**Contributing Drainage Area (sf)**		**Water Quality Volume Provided (cf)**	
Surface Sand Filter**	86,352		12,775	
Pocket Wetland***	113,943		4,908	
Green Infrastructure for Water Quality Treatment				
Stormwater Planters	**Contributing Roof Area (sf)**	**Stormwater Planter Size (sf)**	**Water Quality Volume Provided (cf)**	**Runoff Reduction Volume Provided (45%WQv) (cf)**
North Planters	8,979	665	592	266
East Planters (A)	8,979	727	647	291
East Planters (B)	8,979	510	454	204
South Planters	8,979	1,849	1,646	741
West Planters	8,979	1,044	929	418
Total	44,895	4,795	4,268	1,920
Other Green Infrastructure				
Grass Pavers	**Drainage Area (sf)**	**Surface Area (sf)**		
Fire Truck Access Path	4,040	3,576		
Fire Truck Access Pull-Off	1,060	315		
Maintenance Path	8,000	4,306		
Total Green Infrastructure Area		**11,427**		
Total WQv Provided			**21,951**	
Notes: * Includes driveway, building, concrete pads ** Includes Sedimentation Basin *** Includes extended detention				

6.2.5 Step 5: Apply Volume and Peak Rate Control Practices

The channel protection volume, overbank flood control and extreme flood control for the project have been satisfied via Surface Sand Filter and Pocket Wetland. The rainfall values in Table 6-2 have been utilized in the hydrologic analyses for the project. Summary Tables 6-3 provides a comparison of the peak flow rates that occur under existing and developed conditions.

Table 6-2
Rainfall Values

Rainfall Value (inches)	24-hour Storm Event (Year)
3.2	1
3.6	2
5.0	10
6.5	25
7.5	50
9.0	100
Source: Northeast Regional Climate Center	

Table 6-3
Runoff Flow Analysis

Design Point	Pre-Existing Conditions (cfs)	Existing Conditions (cfs)	Proposed Project (cfs)	Change in Flow Rate			
				Existing to Proposed		Pre-Existing to Proposed	
1-year storm							
DP1	4.42	4.72	4.17	-0.55	-12%	-0.25	-6%
DP2	1.90	3.12	0.42	-2.7	-87%	-1.48	-78%
DP3	1.55	2.27	0.98	-1.29	-57%	-0.57	-37%
10-year storm							
DP1	10.95	11.38	10.22	-1.16	-10%	-0.73	-7%
DP2	4.57	6.15	2.68	-3.47	-56%	-1.89	-41%
DP3	3.61	4.58	2.14	-2.44	-53%	-1.47	-41%
25-year storm							
DP1	17.01	17.51	15.83	-1.68	-10%	-1.18	-7%
DP2	7.02	8.74	6.24	-2.5	-29%	-0.78	-11%
DP3	5.49	6.56	3.17	-3.39	-52%	-2.32	-42%
100-year storm							
DP1	27.60	28.16	25.66	-2.5	-9%	-1.94	-7%
DP2	11.27	13.06	9.87	-3.19	-24%	-1.4	-12%
DP3	8.81	9.87	4.93	-4.94	-50%	-3.88	-44%

Tables 6-4 and 6-5 provide the drainage areas for each design point for pre-developed and post-developed conditions, respectively.

Table 6-4
Pre-Development Drainage Area

Design Point	Subcatchment	Total Area (square feet)
DP-1	PRE 1	261,194
DP-2	PRE 2	85,244
DP-3	PRE 3	61,828

Table 6-5
Post-Development Drainage Area

Design Point	Subcatchment	Total Area (square feet)
DP-1	POST 1	248,549
DP-2	POST 2A	4,907
	POST 2B	14,630
	POST 2C	44,895
	POST 2D	8,410
	POST 2E	13,510
	POST 2F	4,258
	POST 2G	23,333
	POST 2H	14,691
DP-3	POST 3A	33,605
	POST 3B	5,082

6.2.5.1. Design Analysis

In order to evaluate the pre- and post-development drainage conditions, the site has been delineated into three (3) discharge analysis points based on pre-development hydrology; Design Points 1, 2, & 3. These points were analyzed to evaluate the effects of the proposed development on surface stormwater runoff. The design points and their pre- and post-development contributing subcatchment areas are shown on Pre- and Post-Development Stormwater Maps, Sheet Nos. D-1 and D-2 found in Appendix B.

To analyze the peak flow in pre-and post-development conditions HydroCAD®, a computer aided design tool is used to evaluate and analyze the stormwater runoff from the site. The program also models the surface flow through the proposed stormwater practices determining the plug-flow and center-of-mass detention time within the ponds. A simultaneous routing process is used to evaluate the impacts associated with stormwater practices in series. The program is based on United State Department of Agriculture, Natural Resources Conservation Service (NRCS) Technical Releases TR20 and TR55. TR55 and TR20 are tools that were developed to calculate the volume and peak discharge rates of stormwater runoff generated in different rainfall events over a 24-hour period. Runoff volumes and rates are calculated by determining the curve numbers (CN) and calculating the time of concentration (Tc) for each subcatchment area depending on the given rainfall value. The CN values are based on the TR55 table and the hydrologic soil group, cover type, hydrologic condition and antecedent runoff condition. The Tc represents the time it takes for surface water to travel the hydraulically most distant point within the subcatchment area. The post-development hydrologic analysis can be found in Appendix F.

The following rainfall values for Westchester County, shown in Table 6-2, were used in the analysis. For the purposes of the hydrologic analysis the runoff was based on Type III rainfall distribution for the northeast region. The following rainfall values are based on the 24-hour storm event. These values represent the rainfall distribution for various 24-hour storm frequencies.

6.2.5.2. Design Point 1

The proposed development area contributing to Design Point 1 includes the following proposed surfaces: a portion of the fire access lane, two concrete pads at building emergency access doors, landscaped areas, and wooded areas. Permeable pavers, such as Turfstone™ are proposed in the fire access lane.

The existing and proposed drainage areas do differ in size because of the location of the proposed building and required treatment. The roof leaders for the proposed structure will collect and convey stormwater runoff to the north side of the building and discharge ultimately to Design Point 2. For this reason, the proposed impervious surface within the Design Point 1 drainage area is decreased in proposed conditions and stormwater flows are reduced from existing conditions.

Therefore, a stormwater treatment practice is not proposed for this drainage area. The results of the pre- and post-development flows demonstrate that the impact of the proposed permeable pavers is minimal. The proposed condition will improve the stormwater quality and quantity at Design Point 1.

6.2.5.3. Design Point 2

The proposed development area contributing to Design Point 2 includes the following proposed surfaces: the proposed building, the driveway and associated drive lanes, the maintenance access path, the fire access lane, multiple concrete pads for utilities, new landscaped areas, and the existing building on the adjoining property to the north. The location of the new building is such that there will be an increase in impervious surface coverage, total drainage area, and post stormwater flows conveyed to Design Point 2.

Increases in impervious surfaces associated with the proposed project will also indirectly reduce groundwater recharge. This reduction in groundwater recharge may, in turn, result in lower rates of base flow, that portion of a stream's flow not directly associated with storm events, upstream of the proposed outfall location.

The contributing drainage area to the proposed stormwater facilities (approximately. 2.7 acres), along with the high seasonal groundwater table makes the stormwater pocket wetland (W-4) the most suitable method for stormwater treatment. In accordance with Section 18-39(c)(6) of the Watershed Rules and Regulations, "If an activity requiring a stormwater pollution prevention plan will result in impervious surfaces covering twenty percent (20%) or more of the drainage area for which a stormwater management practice is designed, the stormwater pollution prevention plan shall provide for stormwater runoff from that drainage area to be treated by two different types of stormwater management practices in series". Therefore, to address the stormwater runoff from the proposed development, two stormwater facilities are proposed; a stormwater surface sand filter to treat the water quality volume and a stormwater wetland (W-4) which will treat water quality volume conveyed from the surface sand filter and attenuate the flows from the larger storm events. These stormwater facilities are designed in series to capture and treat the stormwater runoff from the 1-year, 24-hour storm event in accordance with NYSDEC and NYCDEP requirements for treatment of phosphorous pollutants. These stormwater ponds also provide attenuation of peak flows from the larger storm events.

Due to the associated drive and building layout, and the existing topography, two stormwater ponds could not be placed on the project site; therefore the stormwater facilities were located on the adjoining property to the north. The ponds are referred to as Ponds W-4, and F-1 in the HydroCAD® analysis.

The stormwater ponds have been designed to capture and treat the stormwater runoff associated with the 1-year, 24-hour storm event and to meet the required elements of the NYSSMDM design criteria for stormwater ponds, specifically for surface sand filter design (F-1) and pocket wetland (W-4).

The stormwater runoff from post-development contributing drainage areas 2A, 2B, and 2C, a total of 1.5 acres, will collect and convey stormwater through a conventional stormwater collection system (i.e., pipes, manholes, catch basins) to a flow diversion structure (Structure # 6, see Sheet No. C-5 in Appendix C). The stormwater volume of a 1-year storm event will be diverted into a surface sand filter for water quality treatment of the stormwater runoff. Per the requirements of the NYSSMDM, the flow diversion structure is designed as an off-line device which will direct the water quality volume into the surface sand filter system.

The proposed project would disturb a portion of the steep slopes (>25%) on the western and northern sides of the project site. A majority of the existing steep slopes were created by soil filling during previous site development and do not include appropriate measures to minimize erosion and environmental impacts. The proposed development plan includes removal of the fill material comprising the steep slopes, and engineering measures to construct a new slope network that will minimize project-related and future environmental impacts.

The stormwater flows leaving the surface sand filter will then get discharged to the larger pocket wetland located slightly down gradient. Stormwater runoff volumes larger than the 1-year storm will by-pass the sedimentation basin and discharge directly into the pocket wetland. The post-development contributing drainage areas 2D and 2E, a total of 0.5 acres, will provide additional overland flows to the sedimentation basin and surface sand filter during all rain events. Also, post-development contributing drainage areas 2F and 2G, a total of 0.6 acres will provide additional stormwater runoff directly to the pocket wetland via piped roof leaders (from drainage area 2F) and overland flow (from drainage area 2G). The pocket wetland will serve as the second level of water quality and water quantity control before stormwater is discharged off-site and into the existing watercourse to the north.

6.2.5.4. Design Point 3

The proposed design area contributing to Design Point 3 will result in a reduction of the drainage area as well as eliminate the impervious surface runoff to this design point. The proposed condition will redirect the stormwater flows from the impervious surfaces into a conventional collection system and treat the runoff in the series of ponds discussed in Section 6.3.2. Therefore, a stormwater treatment practice is not proposed for this drainage area. The results of the pre- and post-development flows demonstrate that the impact of the proposed condition will improve the stormwater quality and quantity at Design Point 3.

6.3 Pollutant Loading Analysis

The proposed stormwater management practices have been designed based on the NYSDEC stormwater sizing criteria to treat the full water quality volume and are capable of 80% TSS removal and 40% TP removal.

6.4 Potential Pollutants

De-icing Materials

There is a reduction of paved asphalt area from existing conditions therefore there would be a decrease in potential pollutant loading due to the reduce application area. The following guidance, based on guidance from the NYS Office of the Attorney General, would be observed with the primary duty to protect human life and safety.

1. Total Phosphorus Guidance:

Winter Road Maintenance Deicers:

- Endorsed – Deicer products that contain 50 parts per million total phosphorus (ppm) or less.
- Discouraged – Deicer products that contain more than 100 ppm total phosphorus.
- Avoid – Any deicer that contains greater than 250 ppm total phosphorus should not be used or applied.

2. Reducing the use of sand as a treatment material should be a primary goal of environmentally responsible road maintenance because sand usage is responsible for much of the phosphorus introduced into the reservoirs from winter road maintenance. The use of sand also degrades aquatic habitat in streams, wetlands and rivers.

Herbicide, Pesticide, Fertilizer, and Fungicide

Fertilizer and pesticide application will be performed in accordance with NYSDEC application rates and be applied by a certified company. Fertilizer will be applied so that the vegetation can be quickly established; however, repeat use is not anticipated once vegetation has been sufficiently established. A more detailed plan for fertilization and pesticide application will be presented with the final landscaping plan. Fungicide and herbicides use are not anticipated. Manual weeding will be performed to avoid the use of chemicals that can potentially be harmful to water quality.

The proposed stormwater management system and non-structural practices will provide adequate mitigation of potential impacts including potential secondary impacts to the Kensico Reservoir and the reservoir stem.

6.5 Summary

The proposed stormwater management system has been designed to treat the Water Quality Volume (WQv) and attenuate the larger storm events to pre-development conditions. The project is designed based on Chapter 10 of the NYSSMDM.

The proposed project incorporates stormwater management practices as well as green infrastructure techniques that will treat runoff from the proposed project. These practices, designed in accordance with the regulations established by NYSDEC and NYCDEP, will include water quality treatment, peak flow attenuation, and temporary and permanent erosion and sediment control measures. The proposed facilities will be sufficient to mitigate the potential impacts of the proposed project related to the quantity and quality of stormwater runoff.

6.6 Variance

A variance from Section 28-39(a)(4)(iii) of the WRR is required for this project. The existing paved driveway is approximately 20 feet wide in the area of the existing 36 inch diameter culvert. However, to comply with the Town Code, the minimum width of an access driveway to a site with more than 21 parking spaces shall be 24 feet.

Article IX §213-44G of the Town Code states that access drives for ingress and egress to and from the parking areas for sites located in commercial districts shall be designed in conformance with the width standards, as well as the grade and surface standards provided in § 213-47. The driveway width requirement for a parking area with more than 21 parking spaces is 24 feet. The driveway surface shall be improved and suitably maintained to the extent deemed necessary by the Town Engineer to avoid nuisances of dust, erosion or excessive water flow across public ways or adjacent lands.

Therefore the applicant is requesting a variance so that the driveway will meet the Town Code and provide safe travel conditions for vehicular traffic. Shuttle busses will be used to transport passengers to and from Westchester County Airport. Various driveway alternatives were reviewed, including keeping the existing driveway width of 20.7 feet, however, 24 feet, or two 12-foot travel lanes, would meet the Town Code and provide a safe buffer width for passing vehicles. The 3.3-foot additional impervious surface is the minimum necessary to afford relief from the Town Code. There will be no disturbance to the water course or to the existing culvert for the proposed driveway widening.

Stormwater runoff currently flows across the asphalt driveway and directly discharges to the watercourse and wetland areas. With the proposed driveway widening, stormwater runoff would be directed to catch basins with deep sumps, rain garden, surface sand filter and a pocket wetland. The practices have been designed to treat 100% of the water quality volume from the entire existing and proposed asphalt pavement within the contributing drainage area. However, only 25% of the WQv from the existing impervious surfaces would be required. In addition to treating the larger WQv, the stormwater management system is designed to capture existing impervious surfaces from the adjacent Lot 13A. Stormwater runoff from the roof and paved surfaces currently flow overland towards the watercourse, causing erosive conditions in some areas of the lawn. Stormwater treatment practices do not exist at the site, therefore this would be a significant improvement over existing conditions and would go beyond the design requirements.

7.0 TEMPORARY EROSION AND SEDIMENT CONTROLS

The proposed new building will be arranged on the project site to maximize the use of the existing site topography and in order to utilize previously disturbed (cleared/regraded) areas for the new building and the proposed circulation network. The proposed ‘Site Plan’ and ‘Paving, Grading and Drainage Plan’ are shown on the large-scale plans (Sheet No. C-4 and C-5 in Appendix C).

The majority of the proposed development will be located within the existing developed area, which has moderate slopes of 25% or less. Disturbance to slopes greater than 25 percent would be minimized, totaling approximately 0.21 acres.

Table 7-1 indicates the acreage of disturbance by slope category.

Table 7-1
Slope Disturbance

Slope Category	Acreage of Disturbance
0-25 percent	2.55 acres
25-35 percent	0.14 acres
35 percent or greater	0.07 acres

The proposed project will require excavation of soil and the grading of topography, which will result in the exposure of soil to natural forces. Several soil types located on the project site have moderate erosion potential, including the Charlton and Ridgebury loam. If not properly managed, the temporary exposure of bare soil accelerates the potential for erosion. This acceleration in soil erosion could potentially lead to siltation of the on- and off-site wetlands, ponds, and off-site watercourses. This may cause a reduction in surface water quality. Measures to avoid impacts from the proposed project are discussed below.

Section 213-17 (Hilltops, ridgelines and steep slopes) of the Town of North Castle Code requires that a building permit be attained prior to disturbing a slope category (25% or greater). The appropriate plans and permits will be submitted to the Town of North Castle for approval prior to initiating site development. The current engineering design plans include measures to minimize erosion and sedimentation, protect against possible slope failure and landslides, minimize stormwater runoff and flooding, and meet or exceed all applicable regulations for slope disturbance.

The proposed site plan for the Park Place project would result in the alteration of the geology, soils, and topography of a portion of the property. Specifically, the proposed area of disturbance will occur on approximately120,846 square feet (2.77 acres), of which approximately 86,767 square feet (1.99 acres) of the approximately 2.74 acres of land owned by the applicant.

The proposed project will require the excavation of approximately 25,475 cubic yards of earth material. Of the total excavated material, only 400 cubic yards will be used as fill in the regrading of the construction area. The net excess material of 25,076 cubic yards is to be disposed off-site.

7.1 Erosion and Sediment Control Practices

The following are specific erosion control measures as identified in the large scale drawings prepared for this project. Please refer to the large scale Erosion and Sediment Control drawing in Appendix C.

7.1.1 Stabilized Construction Entrance / Exit (SCE)

The construction entrance/exit shall have a stabilized aggregate pad underlain with filter cloth to prevent construction vehicles from tracking sediment off-site. Stabilized construction entrances are located at specific transition areas between concrete/asphalt to exposed earth.

7.1.2 Silt Fence

Silt fence shall be installed on the down gradient edge of disturbed areas parallel to existing or proposed contours or along the property line as perimeter control. Silt fence are to be used where stakes can be properly driven into the ground as per the Silt Fence detail in the New York State Standards and Specifications for Erosion and Sediment Control and as shown on the drawings (See large scale drawings Appendix C).

Silt fence controls sediment runoff where the soil has been disturbed by slowing the flow of water and encouraging the deposition of sediment before the water passes through the straw bale or silt fence. Built-up sediment shall be removed from silt fences when it has reached one-third the height of the bale/fence and properly disposed.

7.1.3 Storm Drain Inlet Protection

Inlet protection shall be installed at all inlets where the surrounding area has been disturbed. The inlet protection shall be constructed in accordance with NYSDEC Standards and Specifications for Erosion and Sediment Control. Typically they should be constructed to pass stormwater through, but prevent silt and sediment from entering the drainage system.

7.1.4 Stockpile Detail

Stockpiled soil is to be protected, stabilized, and sited in accordance with the Soil Stockpile Detail, as shown on the detail sheets in Appendix C. Soil stockpiles and exposed soil shall be stabilized by seed, mulch, or other appropriate measures, when activities temporarily cease during construction for 7 days or more in accordance with NYSDEC requirements.

7.1.5 Dust Control

During the demolition and construction process, debris and any disturbed earth shall be wet down with water, if necessary to control dust. After demolition and construction activities, all disturbed areas shall be covered and/or vegetated to provide for dust control on the site.

7.1.6 Temporary Seeding and Stabilization

In areas where demolition and construction activities, clearing, and grubbing have ceased, temporary seeding or permanent landscaping shall be performed to control sediment laden runoff and provide stabilization to control erosion during storm events. This temporary seeding/stabilization or permanent landscaping shall be in place no later than 14 days after demolition and construction activity has ceased.

7.1.7 Sump Pit

A temporary pit is constructed to trap and filter water for pumping to a suitable discharge area. The purpose is to remove excessive water from excavations. Sump pits are constructed when water collects during the excavation phase of construction.

7.1.8 Dewatering

Due to the depth of excavation for the building foundation and proximity to on-site watercourses and wetland areas, there may be areas of construction where the groundwater table will be intercepted and dewatering activities will take place. Site-specific practices and appropriate filtering devices should be employed by the contractor so as to avoid discharging turbid water to the surface waters of the State of New York.

A sediment tank may be used in conjunction with other practices that will settle and filter the sediment from the stormwater runoff. The sediment tank is a compartmented tank container to which sediment laden water is pumped to trap and retain the sediment. The purpose of the tank is to trap and retain sediment prior to pumping the water to drainage ways, adjoining properties, and rights-of-way below the sediment tank site. In conjunction with the portable sediment tank, the mechanical filtering devices may be necessary to filter out the finer particulates. A permit may be required for such activities, therefore the contractor must coordinate with the resident engineer.

7.1.9 Perimeter Dike/Swale

The purpose of a perimeter dike/swale is to prevent off-site storm runoff from entering a disturbed area and to prevent sediment laden storm runoff from leaving the construction site or disturbed area. It can be used to convey stormwater runoff from the work area to a proposed sediment basin.

7.1.10 Temporary Sediment Basin

The purpose of a sediment basin is to intercept sediment-laden runoff and filter the sediment laden stormwater runoff leaving the disturbed area in order to protect drainage ways, properties, and rights-of-way below the sediment basin. The basin will be installed down gradient of construction operations which expose critical areas to soil erosion. The basin shall be maintained until the disturbed area is protected against erosion by permanent stabilization.

7.1.11 Materials Handling

The Contractor must store construction and waste materials as far as practical from any environmentally sensitive areas. Where possible, materials shall be stored in a covered area to minimize any potential runoff. The Contractor shall incorporate storage practices to minimize exposure of the materials to stormwater, and spill prevention and response where practicable. Prior to commencing any construction activities the contractor shall obtain all necessary permits or verify that all permits have been obtained.

7.2 Sequence of Construction

The phasing of the project is important for the construction of the proposed development. The protection of the natural resources, specifically the watercourse and wetland areas, have also been carefully factored into the development of the sequence of construction.

A pre-construction meeting shall be held with representatives of the Town, NYCDEP, the Resident Engineer, and the Contractor prior to any site disturbance. Any potential changes to the Erosion and Sediment Control Plan should be discussed at this time.

Sequence of Construction Activities

1. A pre-construction meeting shall be held with representatives of NYCDEP, certified professional trained contractor, the town, the resident engineer, and the contractor prior to any site disturbance.
2. Prior to clearing and grubbing activities the contractor shall install stabilized construction entrance/exit and construction access area as shown on the plan.

3. Install silt fence as indicated on the erosion and sediment control plan.
4. Disconnect all utility connections to existing one story building and remove building and associated appurtenances in accordance with demolition plan. Pavement demolition shall not be performed until Temporary Sediment Basin is installed.
5. Clear and grub in area of proposed temporary sediment basins. Any topsoil shall be stockpiled on-site as shown on drawing.
6. Rough grade proposed temporary sediment basin and associated stormwater structures. Install 6" of topsoil, seed, and stabilize with rolled erosion control product (RECP).
7. Soil stockpile should be located on grassy areas in accordance with detail.
8. Install perimeter dike/swale 1 and 2 starting at the temporary sediment basins as shown on plan.
9. Begin clearing and grubbing in the area of the proposed building footprint. Stockpile fill material in designated area as shown on plan.
10. Begin construction of building and associated driveway and stormwater infrastructure.
11. Install inlet protection.
12. Once building and paved surfaces are complete, complete final grading in adjacent areas. Stabilize with rolled erosion control product.
13. Complete final grading in basins and install vegetation in accordance with landscape plan.
14. Once final grade is achieved in proposed landscaped areas temporary seeding and mulching shall be done immediately.

8.0 INSPECTION AND MAINTENANCE

8.1 Inspections and Record Keeping During Construction

Once the contract has been let, the name, address, and phone number of responsible parties for maintenance will be provided to the NYSDEC. The following is a description of the maintenance and inspection practices that will be implemented as part of the project. Maintenance and inspection is important to ensure that the stabilization and structural practices that are part of the SWPPP continue to be effective in preventing sediment and other pollutants from entering the stormwater system. It is the responsibility of the owner or operator to ensure that inspections are completed in accordance with NYSDEC regulations.

8.1.1 Erosion and Sediment Control Inspection Report

As a part of the SWPPP inspection and maintenance activities during construction, the Erosion and Sediment Control Inspection Report shall be updated and kept on-site. A sample Erosion and Sediment Control Inspection Report is provided in Appendix H of this report.

Inspections would be conducted by the qualified inspector periodically according to the schedule required by the SPDES GP-0-10-001. During each inspection, the qualified inspector would record the areas of disturbance, deficiencies in erosion and sediment control practices, required maintenance, and areas of temporary or permanent stabilization. The need for modifications to the Erosion and Sediment Control Plan should be identified and implemented immediately.

The Erosion and Sediment Control Inspection Report will be completed by a qualified inspector to fully document each inspection. A qualified inspector is a person knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), licensed Landscape Architect, or other NYSDEC endorsed individual(s). It also means someone working under the direct supervision of the licensed Professional Engineer or licensed Landscape Architect, provided the person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that an individual performing the site inspection has received four hours of training, which has been endorsed by the NYSDEC, from a Soil and Water Conservation District, CPESC, Inc., or other NYSDEC endorsed entity, in proper erosion and sediment control principles no later than two years from the date SPDES GP-0-10-001 is issued. After receiving the initial training, an individual working under the direct supervision of the licensed Professional Engineer or licensed Landscape Architect shall receive four hours of training every three years.

8.1.2 Inspections

Inspections shall be conducted by the qualified inspector periodically according to the following schedule:

1. When construction activities are ongoing, the qualified inspector shall conduct a site inspection at least once every seven (7) calendar days.
2. When construction activities are ongoing and the owner or operator has received authorization in accordance with Part II.C.3 of GP-0-10-001 to disturb greater than five acres of soil at any one time, the qualified inspector shall conduct at least two site inspections every seven calendar days. When performing two inspections every seven calendar days, the inspections shall be separated by a minimum of two full calendar days.
3. If soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and temporary stabilization measures have been applied to all disturbed areas, the qualified inspector shall conduct a site inspection at least once every thirty (30) calendar days. The owner or operator shall notify the Regional Office stormwater contact person in writing prior to reducing the frequency of inspections.
4. If soil disturbance activities have been shut down with partial project completion, the qualified inspector can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved final stabilization and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The owner or operator shall notify the Regional Office stormwater contact person in writing prior to the shutdown. If soil disturbance activities have not resumed within 2 years from the date of shutdown, the owner or operator shall have the qualified inspector(s) perform a final inspection and certify that all disturbed areas have achieved final stabilization, and all temporary, structural erosion and sediment control measures have been removed, and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by

signing the "Final Stabilization" and "Post-Construction Stormwater Management Practice" certification statements on the Notice of Termination (NOT). The owner or operator shall then submit the completed NOT form in accordance with NYSDEC regulations.

During each inspection, the qualified inspector should fill out the Erosion and Sediment Control Inspection Report as directed below:

On the Erosion and Sediment Control Inspection Report site map show the following:

- Disturbed site areas and drainage pathways.
- Site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period.
- Site areas that have undergone temporary or permanent stabilization.
- In areas where soil disturbance activity has been temporarily or permanently ceased, temporary and/or permanent soil stabilization measures shall be installed and/or implemented within seven (7) days from the date the soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the most current version of the technical standard, New York State Standards and Specifications for Erosion and Sediment Control.
- Photographs, including date stamp, of any deficiencies and recommendations.
- As deficiencies are fixed by the contractor, a photograph, include date stamp, should be included in the report.
- Photograph of each outfall during a rain event.

Record the following information on the Erosion and Sediment Control Inspection Report:

- For each structural measure, circle YES, NO, or N/A (not applicable) to indicate if the pollutant control measure is in conformance with specifications.
- For each structural measure, circle YES, NO, or N/A to indicate whether the structural measure is performing effectively in minimizing stormwater pollution.
- Inspect all sediment control practices and record the approximate degree of sediment accumulation as a percentage of the sediment storage volume in the allocated location on the Inspection Form Chart (i.e., 10 percent, 20 percent, and 50 percent).
- A description of the condition of the runoff at all points of discharge from the construction site. This shall include identification of any discharges of sediment from the construction site. Include discharges from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;
- A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the construction site which receive runoff from disturbed areas. This shall include identification of any discharges of sediment to the surface waterbody;

The qualified inspector will give a brief explanation for all locations where he/she has noted that the structural practice was either not in conformance with specifications or in need of repair. This should be noted in the Erosion and Sediment Control Inspection

Report. The qualified inspector will then give a brief recommendation for soil erosion and sediment control practices that were not installed properly or are not functioning as designed and need to be reinstalled or replaced.

8.1.3 Erosion And Sediment Control Maintenance Measures

All maintenance described below shall be completed in accordance with the New York State Standards and Specifications for Erosion and Sediment Control. Any material removed from erosion and sediment control measure shall be properly disposed.

All measures will be maintained in good working order; if repairs are found to be necessary, the qualified inspector shall notify the owner or operator and appropriate contractor (and subcontractor) of any corrective actions needed within one business day. The contractor (or subcontractor) shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.

A maintenance inspection report, titled “Erosion and Sediment Control Inspection Report,” will be made after each inspection conducted by a qualified inspector.

Disturbed areas and materials storage areas will be inspected for evidence of potential pollutants entering stormwater systems. Within one business day of the completion of the inspection, the qualified inspector shall notify the owner or operator and the appropriate contractor (or subcontractor) of any corrective actions that need to be taken. The contractor (or subcontractor) shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.

A Monthly Summary of Site Inspection Activities will be prepared and kept on file with completed Erosion and Sediment Control Inspection Report. A Record of Stabilization and Construction Activities will be prepared and kept on file with the completed Construction Duration Inspection Forms.

The following are the maintenance requirements for each practice that will be implemented at the site.

8.1.4 Stabilized Construction Entrance/Exit

The stabilized construction entrance/exit shall be maintained in a condition that will prevent the tracking or flow of sediment onto public rights-of-way. All sediment spilled, dropped, washed or tracked onto public rights-of-way must be removed immediately; streets shall be swept as needed. The gravel pad shall be replaced as necessary. Sediment tracked onto public streets should be removed or cleaned on a daily basis.

8.1.5 Silt Fence

Maintenance of all silt fence shall be performed as needed. If a silt fence is knocked down, it shall be replaced immediately. When a silt fence appears deteriorated or ineffective and/or built up sediment reaches one-third the height of the bale or fence, the silt fence shall be replaced and/or cleaned accordingly. When “bulges” of material develop on the fence, they shall be removed.

Silt fence controls sediment runoff where the soil has been disturbed by slowing the flow of water and encouraging the deposition of sediment before the water passes through the silt fence. Built-up sediment shall be removed from silt fences when it has reached one-third the height of the fence and properly disposed.

8.1.6 Sump Pit

The sump pit will be inspected for proper control of runoff and sediment materials. Clean water should be pumped to a grassy area. If the contractor notices any visible contrast in the water, proper filtration shall be provided to release off site.

8.1.7 Soil Stockpile Detail

The silt fencing should be inspected for bulges and proper installation. The soil stockpile should be stabilized with grass or rolled erosion control blanket.

8.1.8 Storm Drain Inlet Protection

Maintenance and inspection of the filter fabric cloth beneath inlet grates in paved areas or the filter fabric drop inlet protection around the drop inlet shall be conducted. The filter fabric cloth shall be cleaned to allow water to pass and prevent clogging the drainage structure. The drainage inlet protection should be inspected for integrity and visible sediment buildup. Collected sediment should be removed from the drainage inlet protection and shall be disposed of properly in accordance with all applicable local, state, and federal requirements.

8.1.9 Dust Control

Maintain all dust control measures through dry weather periods until all disturbed areas are stabilized.

8.1.10 Soil Stabilization

To ensure that the site is properly seeded and stabilized, the Contractor must initiate stabilization measures as soon as practicable in areas of the site where construction activities have permanently ceased and in no case more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased. The Contractor will be responsible for the maintenance of the vegetated cover for the duration of construction activities. The areas shall be monitored to ensure that vegetation achieves good coverage over the entire disturbed section. Additional seeding shall be completed as needed. Watering shall be provided as needed.

In areas where soil disturbance activity has been temporarily or permanently ceased, temporary and/or permanent soil stabilization measures shall be installed and/or implemented within seven days from the date the soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the most current version of the technical standard, New York State Standards and Specifications for Erosion and Sediment Control.

8.1.11 Perimeter Dike/Swale

The dike/swale should be properly stabilized with rolled erosion control blanket or other stabilization measures. Any rilling or areas of cutting should be immediately stabilized. Further investigation as to the cause should also be performed to determine if other upstream erosion and sediment control measures are needed. When accumulated sediment reached a depth of 1/3 of the total depth of the swale, this material shall be removed and properly disposed.

8.1.12 Temporary Sediment Basin

Any rilling and erosion of the basin sideslopes should be evaluated and adequate stabilization should be provided. Rolled erosion control blankets or other stabilization practices should be installed on the sideslopes. The outlet structure should be inspected for damages, accumulation of sediment, trash and debris, and overall performance. If sediment-laden stormwater is leaving the basin then additional erosion and sediment control practices may be required.

8.2 Post-Construction Operation and Maintenance

Following completion of construction, a long term inspection and maintenance program will be implemented to ensure the proper function of the stormwater management system. The program will be carried out by the facilities manager. A detailed checklist of pond inspection and maintenance is included in the Appendix I.

The stormwater conveyance system maintenance program will include the following:

- Litter and debris will be removed from catch basins, vegetated swales, ponds, and the outlet control structures.
- The stormwater management system should be inspected after each major storm event (greater than 1-year, 24-hour storm) to ensure the small orifices and inlets remain open.
- Silt will be cleaned from catch basins and other drainage structures when the depth exceeds half of the depth of the sump.
- Use of road salt for maintenance of driveway areas will be minimized.

In addition to inspection and maintenance of the stormwater management system, inspection of the overall site for areas of potential contamination will also be noted. Maintenance of existing landscaped areas is performed consistently throughout the year. Pest control would follow an Integrated Pest Management program in conjunction with guidance from the Cornell Cooperative Extension Agency, applicable regulations, and best practices. All potential pollutants, such as petroleum products, chemicals, etc, will be properly stored in designated areas that will minimize contact with precipitation.

Post-Construction Operation and Maintenance

Following completion of construction, a long term inspection and maintenance program would be implemented to ensure the proper function of the stormwater management system. The program would be carried out by the facilities manager. A detailed checklist of pond inspection and maintenance is included in Appendix I of the SWPPP.

Below is a breakdown of the maintenance programs designed for the different proposed stormwater facilities:

Surface Sand Filter (F-1)

Sedimentation Basin (Pretreatment)

- A fixed vertical sediment depth marker would be installed in the forebay to measure sediment deposition over time.

Surface Sand Filter

- Maintenance responsibility for the filtering system would be vested with a responsible authority by means of a legally binding and enforceable instrument that is executed as a condition of plan approval. A legally binding and enforceable maintenance agreement shall be executed between the facility owner and the local review authority to ensure the following:
    a. Sediment shall be cleaned out of the sedimentation chamber when it accumulates to a depth of more than six inches. Vegetation within the sedimentation chamber shall be limited to a height of 18 inches. The sediment chamber outlet devices shall be cleaned/repaired when drawdown times exceed 36 hours. Trash and debris shall be removed as necessary.
    b. Silt/sediment shall be removed from the filter bed when the accumulation exceeds one inch. When the filtering capacity of the filter diminishes substantially (i.e., when water ponds on the surface of the filter bed for more than 48 hours), the top few inches of discolored material shall be removed and shall be replaced with fresh material. The removed sediments shall be disposed in an acceptable manner (i.e., landfill).
- Surface sand filters that have a grass cover should be mowed a minimum of three times per growing season to maintain maximum grass heights less than 12 inches.
- Remove sediment/gross solids from sedimentation chamber and filter surface annually or when depth exceeds 3 inches.
- Sediment will be removed from stormwater ponds as needed, but at a minimum of every five years. A backhoe or excavator will be used to remove sediment accumulation from the bottom of the detention pond. However, vehicles shall be prevented from traversing the sideslopes to the extent possible to avoid damaging established vegetation. Repairs to the embankment should be done with hand tools to the extent practical.
- Provide stone drop (at least 6 inches) at the inlet.
- Eroded areas and gullies will be restored and re-seeded as soon as possible.

Pocket Wetland Pond (W-4)

- Maintenance responsibility for a pond and its buffer shall be vested with a responsible authority by means of a legally binding and enforceable maintenance agreement that is executed as a condition of plan approval.
- The principal spillway shall be equipped with a removable trash rack, and generally accessible from dry land.
- If a minimum coverage of 50% is not achieved in the planted wetland zones after the second growing season, a reinforcement planting is required. Eroded areas and gullies will be restored and re-seeded as soon as possible.
- Sediment removal at the inlets shall occur every 3 years or after 30% of pipe end section stone has been filled.
- Sediment removal from the main basin every 5 years or when the minimum water depth approaches 3 feet. More regular maintenance will help ensure that the system is achieving the highest removal of phosphorus. A backhoe or excavator will be used to remove sediment accumulation from the bottom of the detention pond. However, vehicles shall be prevented from traversing the sideslopes to the extent possible to avoid damaging established vegetation. Repairs to the embankment should be done with hand tools to the extent practical.

- The side slopes of the pond will be mowed at a minimum twice a year. If necessary, invasive woody vegetation around and in the pond will be removed to prevent it from becoming established within the pond.

Stormwater Planters

A regular and thorough inspection regime is vital to the proper and efficient function of stormwater planters. The following operation and maintenance program would be implemented:

- Debris and trash removal should be conducted on a weekly or monthly basis, depending on likelihood of accumulation.
- Following construction, planters should be inspected after each storm event greater than 0.5 inches, and at least twice in the first six months. Subsequently, inspections should be conducted seasonally and after storm events equal to or greater than the 1-year storm event.
- Routine maintenance activities include pruning and replacing dead or dying vegetation, plant thinning, and erosion repair.
- The soil surface should be inspected for evidence of sediment build-up from the connected impervious surface and for surface ponding. Attention should be paid to additional seasonal maintenance needs as well as the first growing season.

Permeable Pavers

- Permeable pavements are highly susceptible to clogging and subject to owner neglect. Individual owners need to be educated to ensure that proper maintenance and winter operation activities will allow the system to function properly.
- The type of permeable paving and the location of the site dictate the required maintenance level and failure rate. Concrete grid pavers and plastic modular blocks require less maintenance because they are not clogged by sediment as easily as porous asphalt and concrete. Typical maintenance activities for permeable paving are summarized below.

Activity	**Schedule**
Ensure that paving area is clean of debris	Monthly
Ensure that paving dewaters between storms	Monthly and after storms >0.5 in.
Ensure that the area is clean of sediments	Monthly
Mow upland and adjacent areas, and seed bare areas	As needed
Vacuum sweep frequently to keep surface free of sediments	Typically 3 to 4 times a year
Inspect the surface for deterioration or spalling	Annual

When maintenance of permeable paving areas is required, the cause of the maintenance should be understood prior to commencing repairs so unnecessary difficulties and recurring costs can be avoided (Ferguson, 2005). Generally, routine vacuum sweeping and high-pressure washing (with proper disposal of removed material and washwater) can maintain infiltration rates when clogged or crusted material is removed. Signs can also be posted visibly within a permeable paving area to prevent such activities as resurfacing, the use of abrasives, and to restrict truck parking.

Rain Garden

Rain gardens are intended to be relatively low maintenance. However, these practices may be subject to

sedimentation and invasive plant species which could create maintenance problems. If the recharge ability is lost by accumulation of fine sediment, mosquito breeding may occur. Adequate arrangements for long-term maintenance of these systems and updated inventories of their location are essential for the long-term performance of these practices. Rain gardens should be treated as a component of the landscaping, with routine maintenance specified through a legally binding maintenance agreement.

- Routine maintenance would include the occasional replacement of plants, mulching, weeding and thinning to maintain the desired appearance. Weeding and watering are essential the first year, and would be minimized with the use of a weed-free mulch layer.
- The landscapers would be educated regarding the purpose and maintenance requirements of the rain garden, so the desirable aspects of ponded water are recognized and maintained.
- Keeping the garden weeded is one of the most important tasks, especially in the first couple of years while the native plants are establishing their root systems. Once the rain garden has matured, the garden area should be free of bare areas except where outlet structure is located. Keep plants pruned if they start to get “leggy” and floppy. Cut off old flower heads after a plant is done blooming.
- Inspect for sediment accumulations or heavy organic matter where runoff enters the garden and remove as necessary. The top few inches of planting soil should be removed and replaced when water ponds for more than 48 hours. Blockages may cause diversion of flow around the garden. Make sure all appropriate elevations have been maintained, no settlement has occurred and no low spots have been created.

WEST NILE VIRUS

Recent field observations conclude that constructed wetlands and stormwater management ponds actually pose a low risk in spreading the West Nile Virus since the mosquito species that are found in wetlands and stormwater management ponds tend not to be the variety that are known to carry the West Nile Virus. Within a healthy aquatic ecosystem, other aquatic invertebrates (dragonfly larvae and other species) prey on mosquito larvae thereby reducing mosquito populations. The SWPPP submitted to the NYSDEC and NYCDEP will include a regular maintenance schedule to be implemented at the completion of construction. This may include the stocking of the ponds with species to feed on potential mosquito larvae, and possible aeration systems to be exercised during periods of minimal flow through the ponds.

SWPPP APPENDIX A

CONTRACTOR'S CERTIFICATION

OWNER'S CERTIFICATION

CONTRACTOR’S CERTIFICATION

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

SIGNED: ______________________ DATE: ______________________

NAME: ______________________

FIRM: ______________________

ADDRESS: ______________________

____

PHONE: ______________________

SITE: ______________________

SWPPP
IMPLEMENTER’S NAME: ______________________

SWPPP
IMPLEMETER’S TITLE: ______________________

CONTRACTOR’S SCOPE: ______________________

TRAINED
CONTRACTOR’S NAME: ______________________

TRAINED
CONTRACTOR’S TITLE: ______________________

*The SWPPP Implementer must be a trained contractor responsible for SWPPP implementation, an employee of the firm who has received training in accordance with SPEDES GP-0-10-001.

OWNER'S CERTIFICATION

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

NAME: ______________________________

FIRM: ______________________________

ADDRESS: ______________________________

____

PHONE: ______________________________

SITE: ______________________________

SWPPP APPENDIX B

PRE- AND POST-DEVELOPMENT STORMWATER MAPS

WQV & RRV DRAINAGE AREA MAP

PARK PLACE

11 New King Street

Town of North Castle New York

11 New King Street LLC
11 New King Street,
White Plains, NY
10604

KG&D architects
kaeyer, garment & davidson architects, pc
285 main street mount kisco, new york 10549
p: 914.666.5900 f: 914.666.0051 kgdarchitects.com

AKRF
AKRF ENGINEERING, P.C.
440 PARK AVENUE SOUTH
NEW YORK, NY 10016
Tel:(212)696-0670
Fax:(212)726-0942

DEIS SUBMISSION

PROJECT NORTH

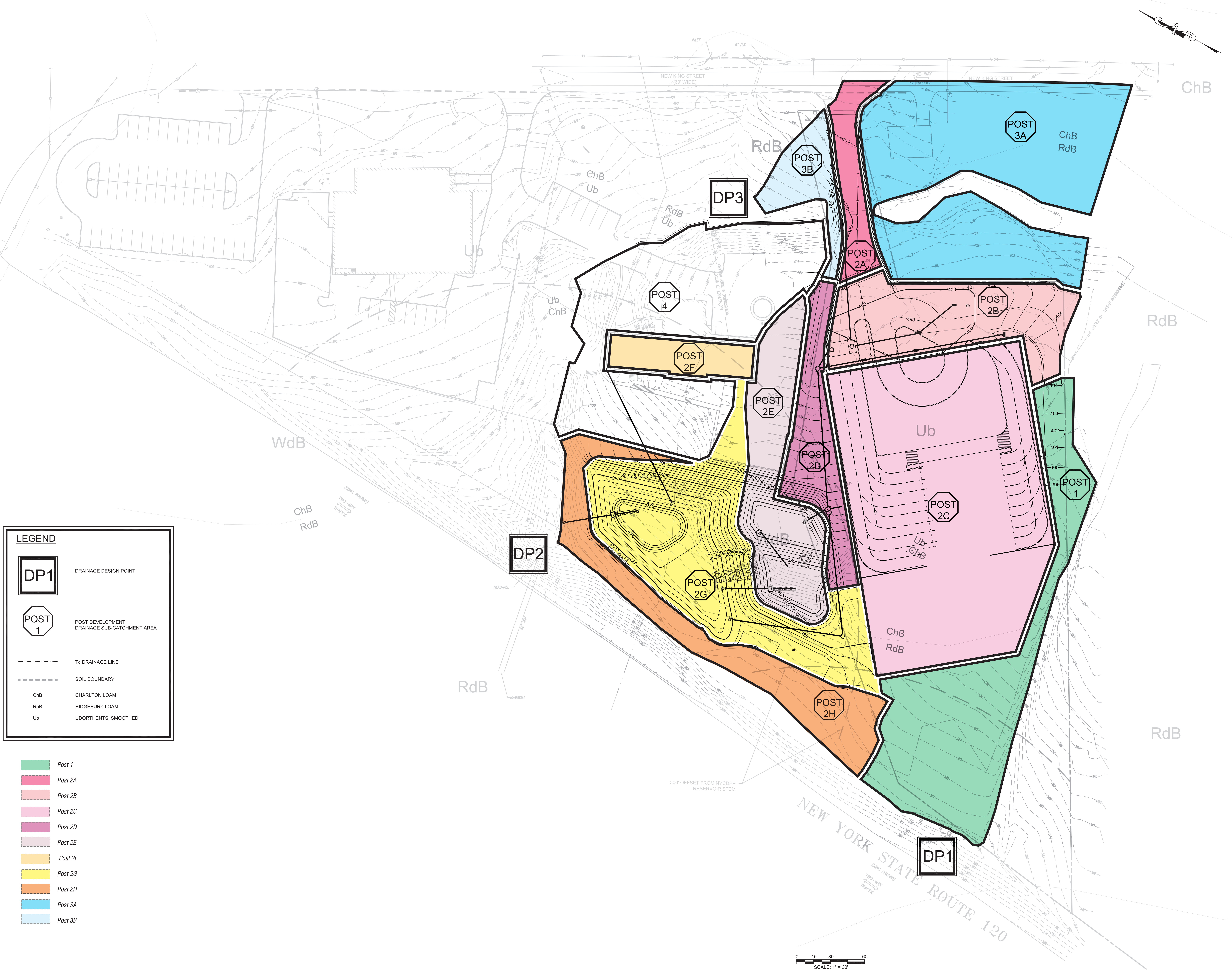
WRITTEN DIMENSIONS ON THIS DRAWING SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS. CONTRACTOR SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS AND CONDITIONS ON THE JOB AND THIS OFFICE MUST BE NOTIFIED OF ANY VARIATIONS FROM DIMENSIONS AND CONDITIONS SHOWN BY THESE DRAWINGS. SHOP DETAILS MUST BE SUBMITTED TO THIS OFFICE FOR APPROVAL BEFORE PROCEEDING WITH FABRICATION.

No.	Date	Issue
2	09-30-10	DEIS SUBMISSION
1	06-15-09	SITE PLAN SUBMISSION

Sheet Title

PRE-DEVELOPMENT STORMWATER MAP

Job No.	Sheet No.
2007-0632	D-1
Date 08-25-10	
Scale 1"=30'	
Drawn/Checked JR/AM	



PARK PLACE

11 New King Street

Town of North Castle, New York

11 New King Street LLC
11 New King Street,
White Plains, NY
10604

KG&D architects

kaeyer, garment & davidson architects, pc
285 main street mount kisco, new york 10549
p: 914.666.5900 f: 914.666.0051 kgdarchitects.com

AKRF

AKRF ENGINEERING, P.C.
440 PARK AVENUE SOUTH
NEW YORK, NY 10016
Tel:(212)696-0670
Fax:(212)726-0942

FEIS SUBMISSION

PROJECT NORTH

No.	Date	Issue
4	08-21-11	REVISION PER DEIS COMMENTS
3	01-24-11	REVISION PER DEIS COMMENTS
2	10-26-10	DEIS SUBMISSION
1	06-15-09	SITE PLAN SUBMISSION

Sheet Title

POST-DEVELOPMENT STORMWATER MAP

Job No.	Sheet No.
2007-0632	D-2
Date: 08-25-10	
Scale: 1"=30'	
Drawn/Checked: JR/AM	

SURVEYOR'S LEGEND

123	EXISTING CONTOUR
X FF=123.45	FINISHED FLOOR ELEVATION
X 123.45	EXISTING SPOT ELEVATION
X TC 123.45	EXIST. TOP OF CURB ELEVATION
X G 122.95	EXIST. GUTTER ELEVATION
X TW 123.45	EXIST. TOP OF WALL ELEVATION
X BW 122.95	EXIST. BOTTOM OF WALL ELEVATION
	HYDRANT
WV	WATER VALVE
GV	GAS VALVE
OH	OVERHEAD WIRES
T	UNCONFIRMED LOC. UNDERGROUND TELE. LINE PER UTILITY MARKOUT (SEE NOTE #3)
C	UNCONFIRMED LOC. UNDERGROUND CABLE LINE PER UTILITY MARKOUT (SEE NOTE #3)
	UTILITY POLE
	UTILITY POLE/LIGHT POLE
	GUY WIRE
	MONITORING WELL
G	GAS METER
E	ELECTRIC METER
	SIGN
	BOLLARD
E.O.P.	EDGE OF PAVEMENT
C.L.F.	CHAIN LINK FENCE
L.S.A.	LANDSCAPED AREA
E.O.P.	EDGE OF PAVEMENT
D.C.	DEPRESSED CURB
B.B.	BELGIAN BLOCK
DE	DEAD (NON-LIVING)
CH	CHERRY
MA	MAPLE
LO	LOCUST
TU	TULIP
GI	GINGKO
MAG	MAGNOLIA
LI	LILAC
TU	TULIP
N.P.V.	NO PIPES VISIBLE
M.C.	METAL COVER
	AREA LIGHT
	LAMP POST
C/O	CLEAN OUT
1.0'	DENOTES OFFSET OF STRUCTURE AT GROUND LEVEL RELATIVE TO PROPERTY LINE
12" T	DENOTES UNKNOWN TREE SPECIES AND TRUNK DIAMETER
15" MA	DENOTES DECIDUOUS TREE SPECIES AND TRUNK DIAMETER
15" PINE	DENOTES CONIFEROUS TREE SPECIES AND TRUNK DIAMETER
DEP	DENOTES WATERCOURSE BOUNDARY FLAG AET BY NYCDEP (12.16.11) (SEE NOTE #11)
	DENOTES FEDERAL WETLAND BOUNDARY FLAG SET BY AKRF, JD CONFIRMED BY USACE (SEE NOTE #11)
	DELINEATION LINE
	UNKNOWN MANHOLE
	SANITARY MANHOLE
	STONE WALL
AC	AIR CONDITIONING UNIT
	DENOTES SOIL BORING/TEST PIT
	WELL
	BASKETBALL HOOP

DELINEATION LINE SET BY NYCDEP DATED DECEMBER 16, 2011 (SEE NOTE #11)

FEDERAL WETLAND BOUNDARY - DELINEATED BY AKRF, CONFIRMED BY USACE - JD ISSUED 2/1/12 (PERMIT APPLICATION #NAN-2011-0486-ESO)

WETLAND DELINEATION LINE SET BY TOWN (SEE C1 GENERAL NOTE 13)

100' OFFSET FROM WETLAND DELINEATION LINE

NYCDEP INTERMITTENT STREAM

NYCDEP INTERMITTENT STREAM 50' BUFFER

300' OFFSET FROM NYCDEP RESERVOIR STEM

EXISTING PROPERTY LINE

EXISTING PROPERTY LINE ADJACENT PROPERTY

LIMIT OF DISTURBANCE

PROPOSED BUILDING ENVELOPE (BUILDING SETBACK LINE)

PROPOSED MULTI-LEVEL PARKING FACILITY

PROPOSED BELGIAN BLOCK CURBING

STORMWATER DRAINAGE EASEMENT

PROPOSED DRAINAGE FLOW DIRECTION

PROPOSED ASPHALT DRIVEWAY

PROPOSED TURFSTONE PAVERS

PROPOSED GRASSPAVERS

PROPOSED STORMWATER PLANTERS

PROPOSED CONCRETE PAVEMENT

PROPOSED GUIDE RAIL

PROPOSED BUILDING COLUMN

PROPOSED SIGN

PROPOSED TRENCH DRAIN

PROPOSED DRAINAGE MANHOLE

PROPOSED CATCH BASIN

PROPOSED SITE LIGHTING

PROPOSED RIP RAP OUTLET PROTECTION

PROPOSED END SECTION

PROPOSED DRAINAGE STRUCTURE NUMBER

PROPOSED HIGH POINT

WQv & RRv LEGEND:

SITE:

EXISTING IMPERVIOUS TO NEW IMPERVIOUS

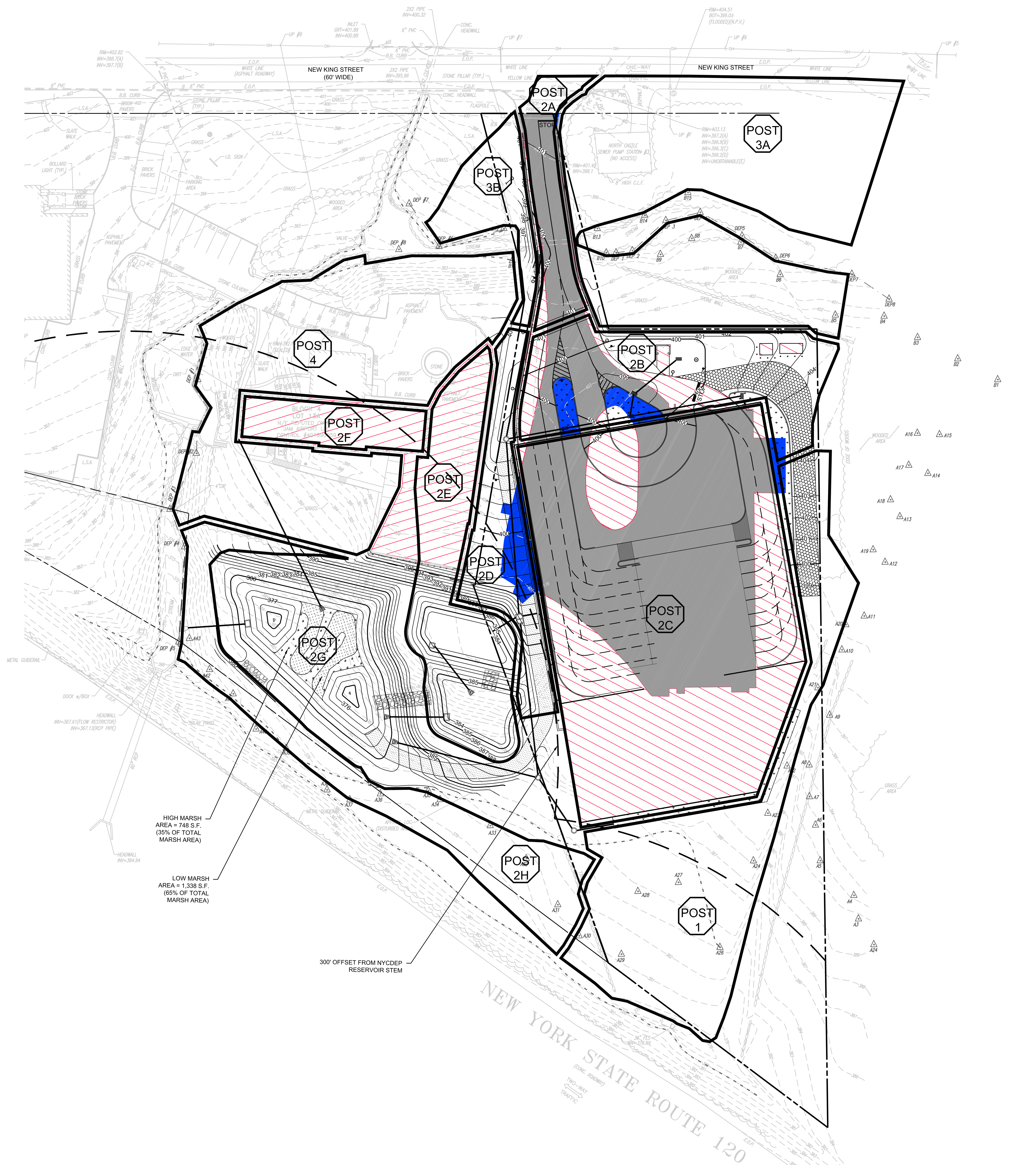
EXISTING IMPERVIOUS TO NEW PERVIOUS

EXISTING PERVIOUS TO NEW IMPERVIOUS

OFF-SITE:

EXISTING IMPERVIOUS TO REMAIN

DRAINAGE AREA DELINEATION



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KG&D architects
kaeyer, garment & davidson architects, pc
285 main street mount kisco, new york 10549
p: 914.666.5900 f: 914.666.0051 kgdarchitects.com

AKRF
AKRF ENGINEERING, P.C.
440 PARK AVENUE SOUTH
NEW YORK, NY 10016
Tel:(212)696-0670
Fax:(212)726-0942

FEIS SUBMISSION

PROJECT NORTH

WRITTEN DIMENSIONS ON THIS DRAWING SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS. CONTRACTOR SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS AND CONDITIONS ON THE JOB AND THIS OFFICE MUST BE NOTIFIED OF ANY VARIATIONS FROM DIMENSIONS AND CONDITIONS SHOWN BY THESE DRAWINGS. SHOP DETAILS MUST BE SUBMITTED TO THIS OFFICE FOR APPROVAL BEFORE PROCEEDING WITH FABRICATION.

No.	Date	Issue
6	10-15-14	FEIS SUBMISSION
5	05-30-14	FEIS SUBMISSION
4	08-21-11	REVISION PER DEIS COMMENTS
3	01-24-11	REVISION PER DEIS COMMENTS
2	10-26-10	DEIS SUBMISSION
1	06-15-09	SITE PLAN SUBMISSION

Sheet Title

WQv & RRv Drainage Area Map

Job No. 2007-0632	Sheet No.
Date 08-25-10	D-3
Scale 1"=30'	
Drawn/Checked JH/SK	

SWPPP APPENDIX C

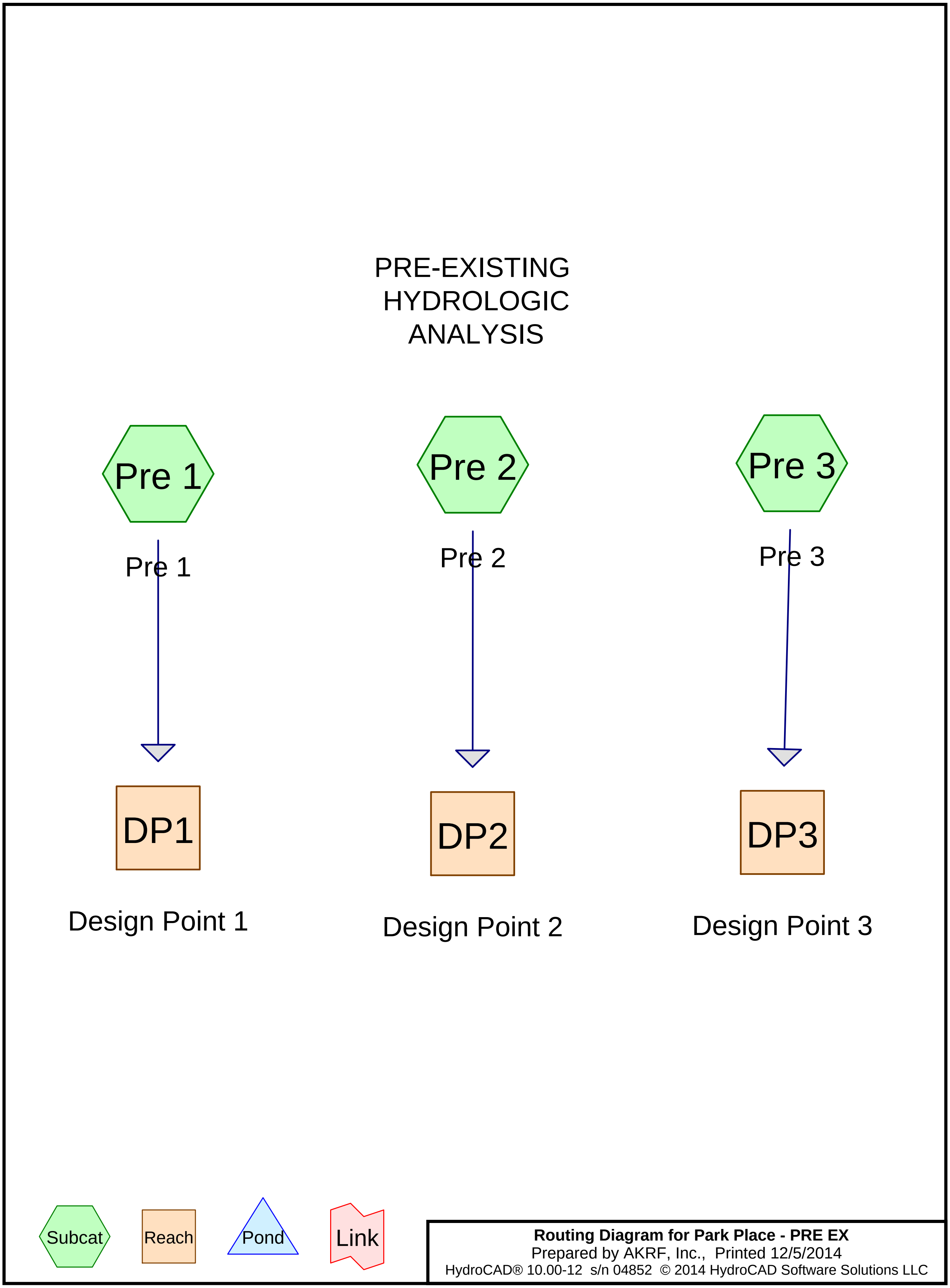
DRAWINGS

THE LARGE SCALE DRAWINGS ARE INCLUDED IN THE FEIS SUBMISSION AS A SEPARATE ATTACHMENT

SWPPP APPENDIX D

PRE-EXISTING AND EXISTING

HYDROLOGIC ROUTING CALCULATIONS



Routing Diagram for Park Place - PRE EX
Prepared by AKRF, Inc., Printed 12/5/2014
HydroCAD® 10.00-12 s/n 04852 © 2014 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.915	79	50-75% Grass cover, Fair, HSG C (Pre 2, Pre 3)
2.210	74	>75% Grass cover, Good, HSG C (Pre 1)
6.248	73	Woods, Fair, HSG C (Pre 1, Pre 2, Pre 3)
9.372	**74**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
9.372	HSG C	Pre 1, Pre 2, Pre 3
0.000	HSG D	
0.000	Other	
9.372		**TOTAL AREA**

Time span=5.00-100.00 hrs, dt=0.05 hrs, 1901 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment Pre 1: Pre 1 Runoff Area=261,194 sf 0.00% Impervious Runoff Depth=0.98"
Flow Length=605' Tc=18.8 min CN=73 Runoff=4.42 cfs 0.491 af

Subcatchment Pre 2: Pre 2 Runoff Area=85,244 sf 0.00% Impervious Runoff Depth=1.04"
Flow Length=394' Tc=10.7 min CN=74 Runoff=1.90 cfs 0.169 af

Subcatchment Pre 3: Pre 3 Runoff Area=61,828 sf 0.00% Impervious Runoff Depth=1.09"
Flow Length=150' Slope=0.0530 '/' Tc=8.8 min CN=75 Runoff=1.55 cfs 0.129 af

Reach DP1: Design Point 1 Inflow=4.42 cfs 0.491 af
Outflow=4.42 cfs 0.491 af

Reach DP2: Design Point 2 Inflow=1.90 cfs 0.169 af
Outflow=1.90 cfs 0.169 af

Reach DP3: Design Point 3 Inflow=1.55 cfs 0.129 af
Outflow=1.55 cfs 0.129 af

Total Runoff Area = 9.372 ac Runoff Volume = 0.790 af Average Runoff Depth = 1.01"
100.00% Pervious = 9.372 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment Pre 1: Pre 1

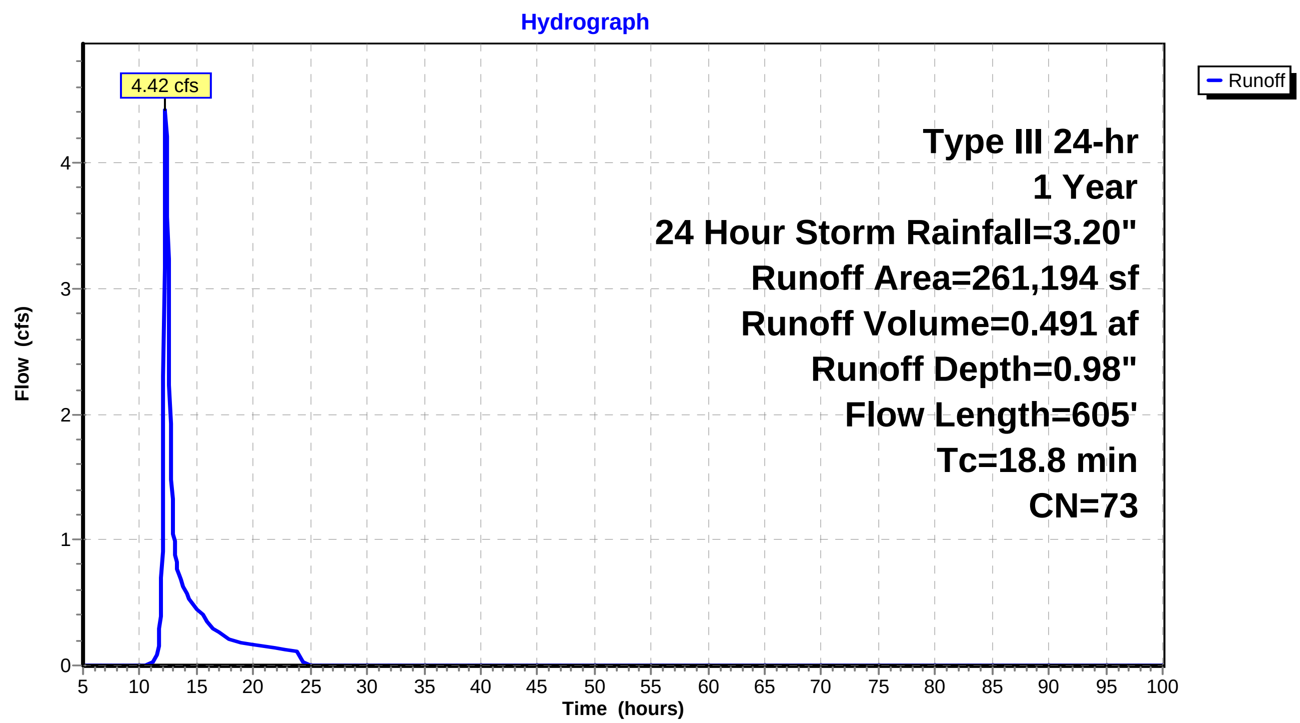
Runoff = 4.42 cfs @ 12.29 hrs, Volume= 0.491 af, Depth= 0.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 Year, 24 Hour Storm Rainfall=3.20"

Area (sf)	CN	Description
164,940	73	Woods, Fair, HSG C
96,254	74	>75% Grass cover, Good, HSG C
261,194	73	Weighted Average
261,194		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.8	250	0.0400	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.0	105	0.0667	1.81		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.0	250	0.0760	1.38		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
18.8	605	Total			

Subcatchment Pre 1: Pre 1



Summary for Subcatchment Pre 2: Pre 2

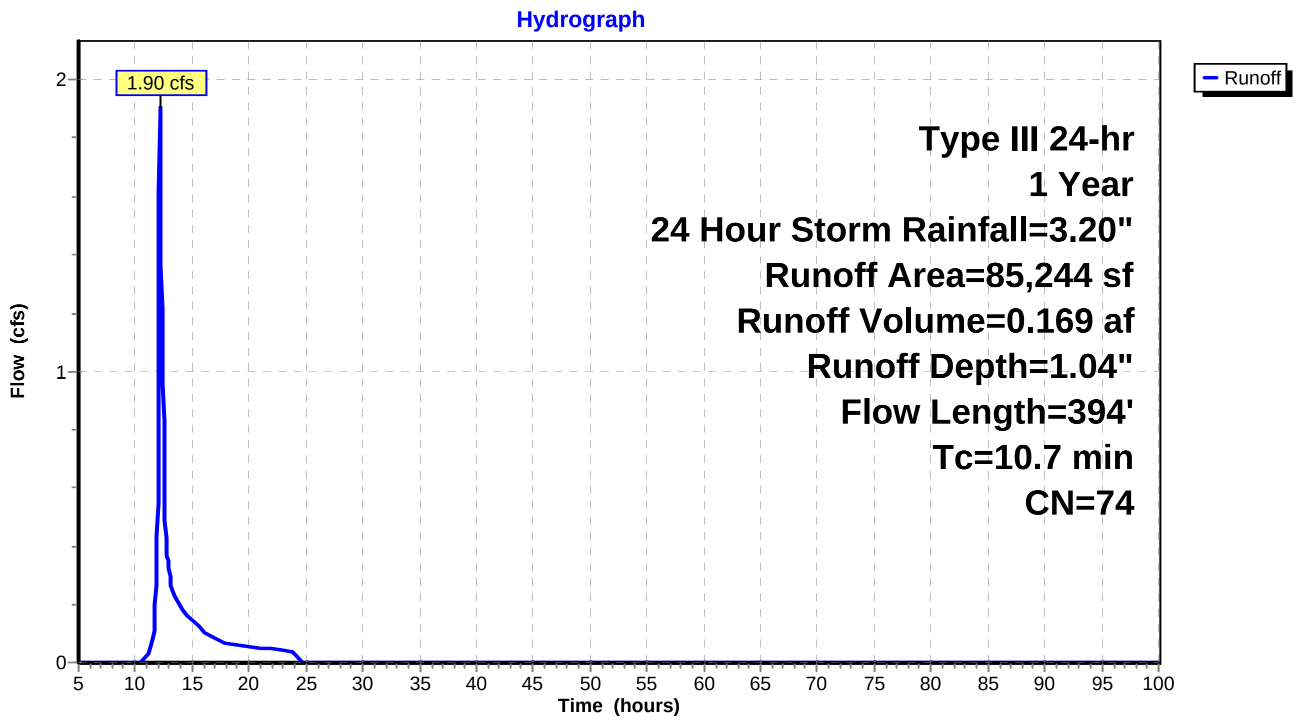
Runoff = 1.90 cfs @ 12.16 hrs, Volume= 0.169 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 Year, 24 Hour Storm Rainfall=3.20"

Area (sf)	CN	Description
0	98	Paved parking, HSG C
64,912	73	Woods, Fair, HSG C
20,332	79	50-75% Grass cover, Fair, HSG C
85,244	74	Weighted Average
85,244		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	150	0.0500	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.7	244	0.1200	2.42		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.7	394	Total			

Subcatchment Pre 2: Pre 2



Summary for Subcatchment Pre 3: Pre 3

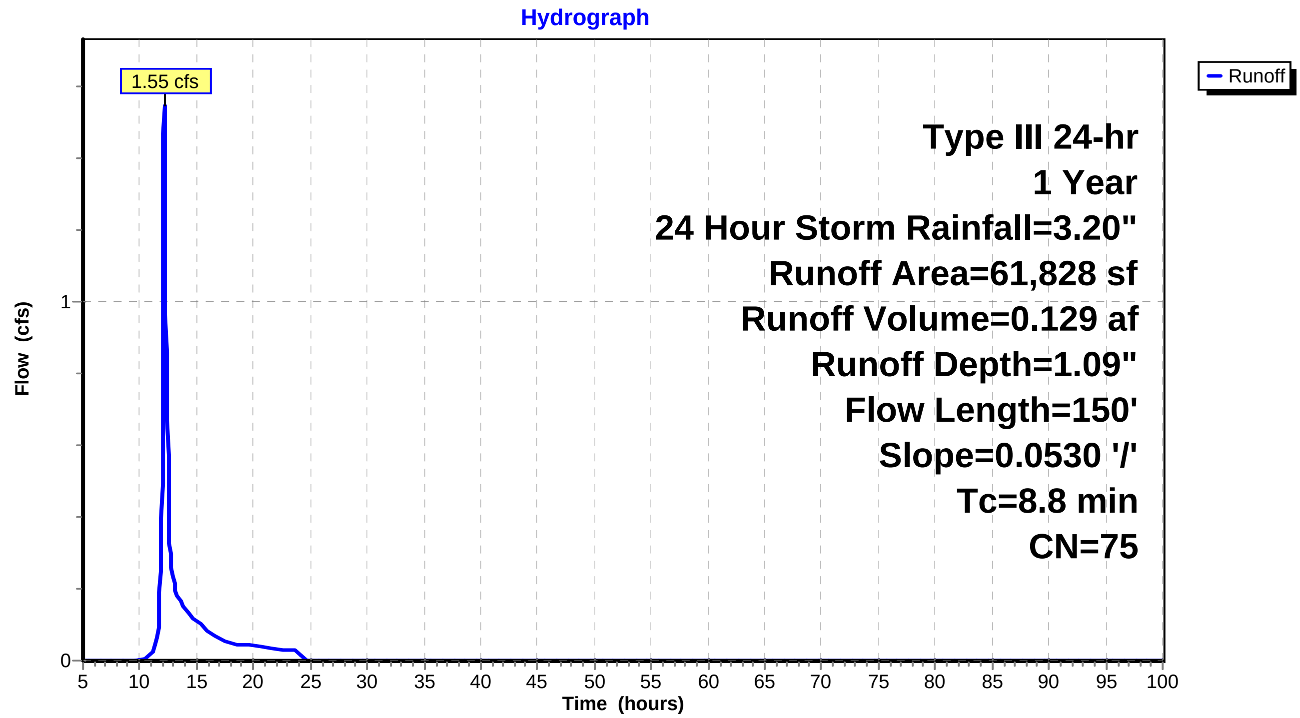
Runoff = 1.55 cfs @ 12.14 hrs, Volume= 0.129 af, Depth= 1.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 Year, 24 Hour Storm Rainfall=3.20"

Area (sf)	CN	Description
42,320	73	Woods, Fair, HSG C
19,508	79	50-75% Grass cover, Fair, HSG C
61,828	75	Weighted Average
61,828		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	150	0.0530	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"

Subcatchment Pre 3: Pre 3

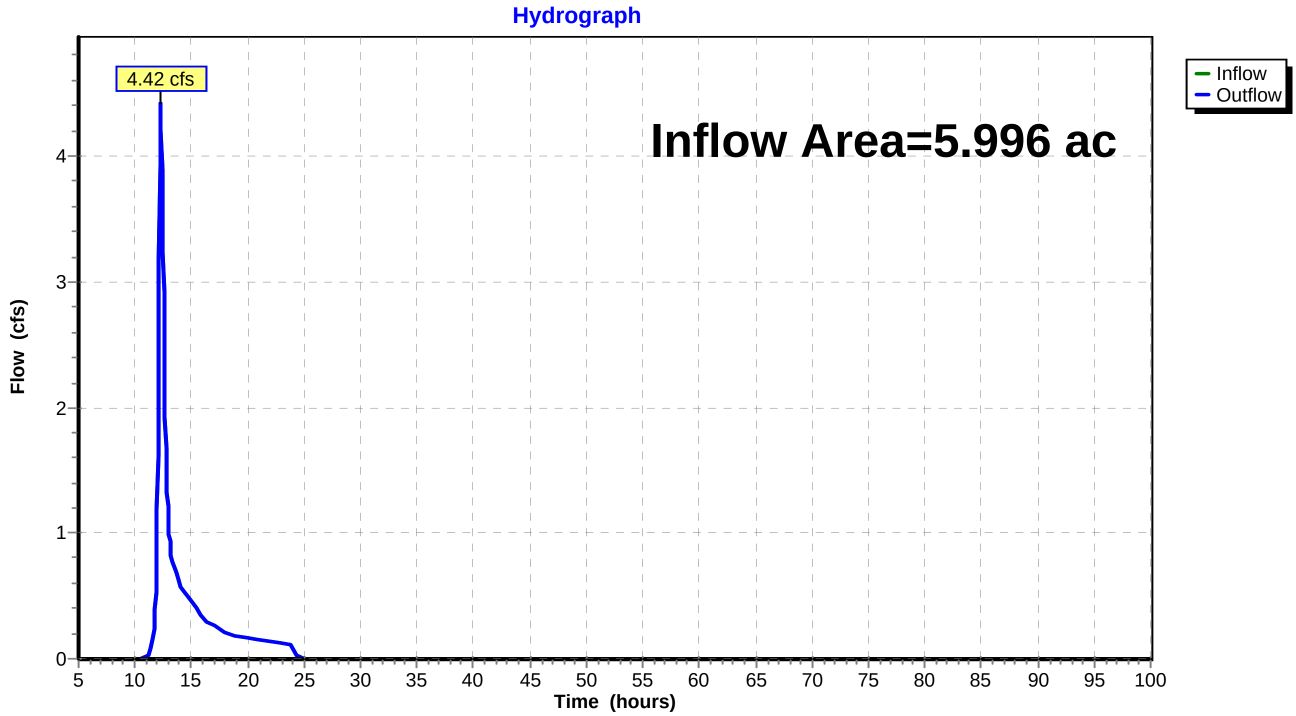


Summary for Reach DP1: Design Point 1

Inflow Area = 5.996 ac, 0.00% Impervious, Inflow Depth = 0.98" for 1 Year, 24 Hour Storm event
Inflow = 4.42 cfs @ 12.29 hrs, Volume= 0.491 af
Outflow = 4.42 cfs @ 12.29 hrs, Volume= 0.491 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-100.00 hrs, dt= 0.05 hrs

Reach DP1: Design Point 1

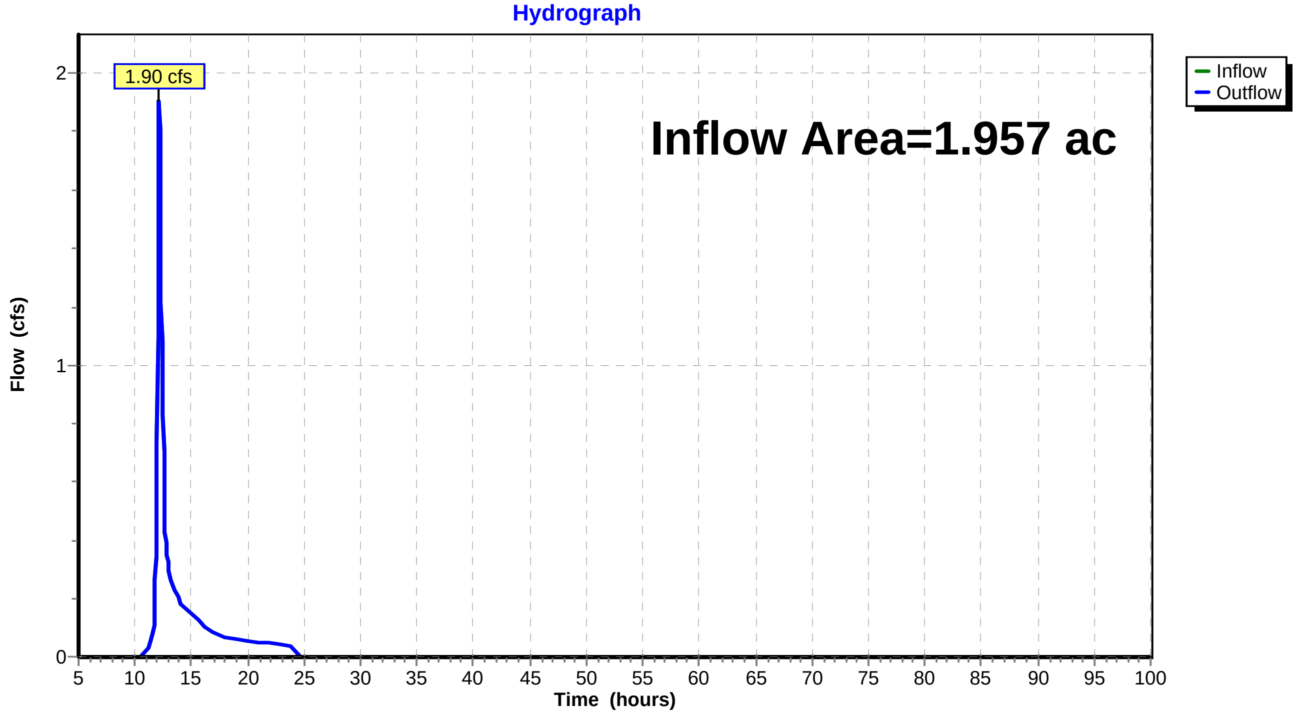


Summary for Reach DP2: Design Point 2

Inflow Area =	1.957 ac,	0.00% Impervious,	Inflow Depth = 1.04"	for 1 Year, 24 Hour Storm event
Inflow =	1.90 cfs @	12.16 hrs,	Volume=	0.169 af
Outflow =	1.90 cfs @	12.16 hrs,	Volume=	0.169 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-100.00 hrs, dt= 0.05 hrs

Reach DP2: Design Point 2

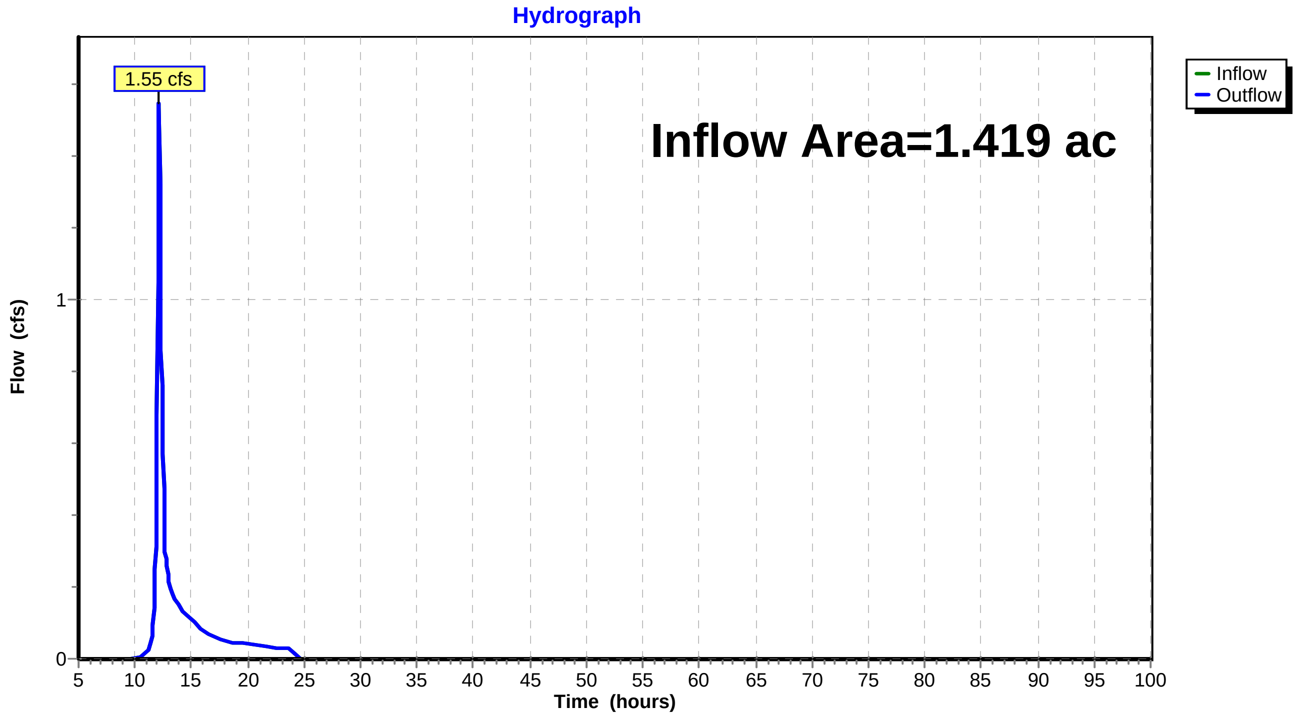


Summary for Reach DP3: Design Point 3

Inflow Area =	1.419 ac,	0.00% Impervious,	Inflow Depth = 1.09"	for 1 Year, 24 Hour Storm event	
Inflow =	1.55 cfs @	12.14 hrs,	Volume=	0.129 af	
Outflow =	1.55 cfs @	12.14 hrs,	Volume=	0.129 af,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-100.00 hrs, dt= 0.05 hrs

Reach DP3: Design Point 3



Time span=5.00-100.00 hrs, dt=0.05 hrs, 1901 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment Pre 1: Pre 1 Runoff Area=261,194 sf 0.00% Impervious Runoff Depth=1.25"
Flow Length=605' Tc=18.8 min CN=73 Runoff=5.75 cfs 0.623 af

Subcatchment Pre 2: Pre 2 Runoff Area=85,244 sf 0.00% Impervious Runoff Depth=1.31"
Flow Length=394' Tc=10.7 min CN=74 Runoff=2.46 cfs 0.214 af

Subcatchment Pre 3: Pre 3 Runoff Area=61,828 sf 0.00% Impervious Runoff Depth=1.37"
Flow Length=150' Slope=0.0530 '/' Tc=8.8 min CN=75 Runoff=1.98 cfs 0.162 af

Reach DP1: Design Point 1 Inflow=5.75 cfs 0.623 af
Outflow=5.75 cfs 0.623 af

Reach DP2: Design Point 2 Inflow=2.46 cfs 0.214 af
Outflow=2.46 cfs 0.214 af

Reach DP3: Design Point 3 Inflow=1.98 cfs 0.162 af
Outflow=1.98 cfs 0.162 af

Total Runoff Area = 9.372 ac Runoff Volume = 0.999 af Average Runoff Depth = 1.28"
100.00% Pervious = 9.372 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment Pre 1: Pre 1

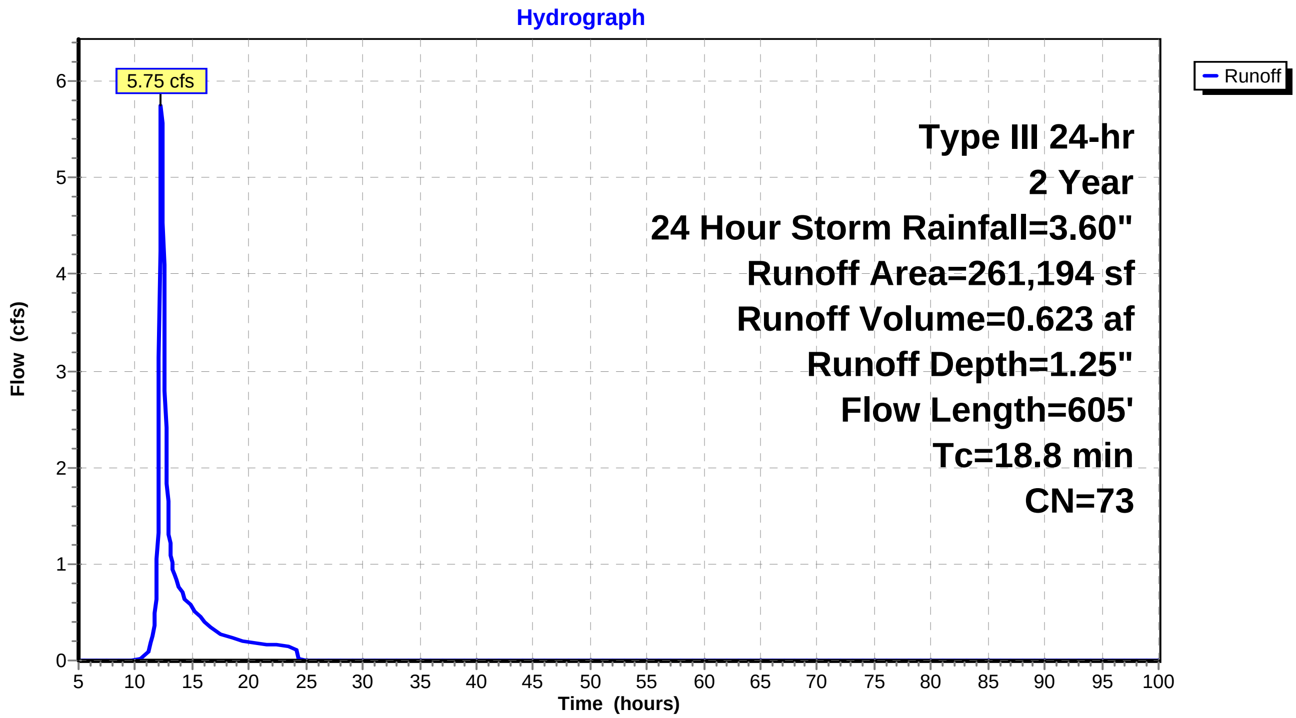
Runoff = 5.75 cfs @ 12.28 hrs, Volume= 0.623 af, Depth= 1.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year, 24 Hour Storm Rainfall=3.60"

Area (sf)	CN	Description
164,940	73	Woods, Fair, HSG C
96,254	74	>75% Grass cover, Good, HSG C
261,194	73	Weighted Average
261,194		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.8	250	0.0400	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.0	105	0.0667	1.81		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.0	250	0.0760	1.38		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
18.8	605	Total			

Subcatchment Pre 1: Pre 1



Summary for Subcatchment Pre 2: Pre 2

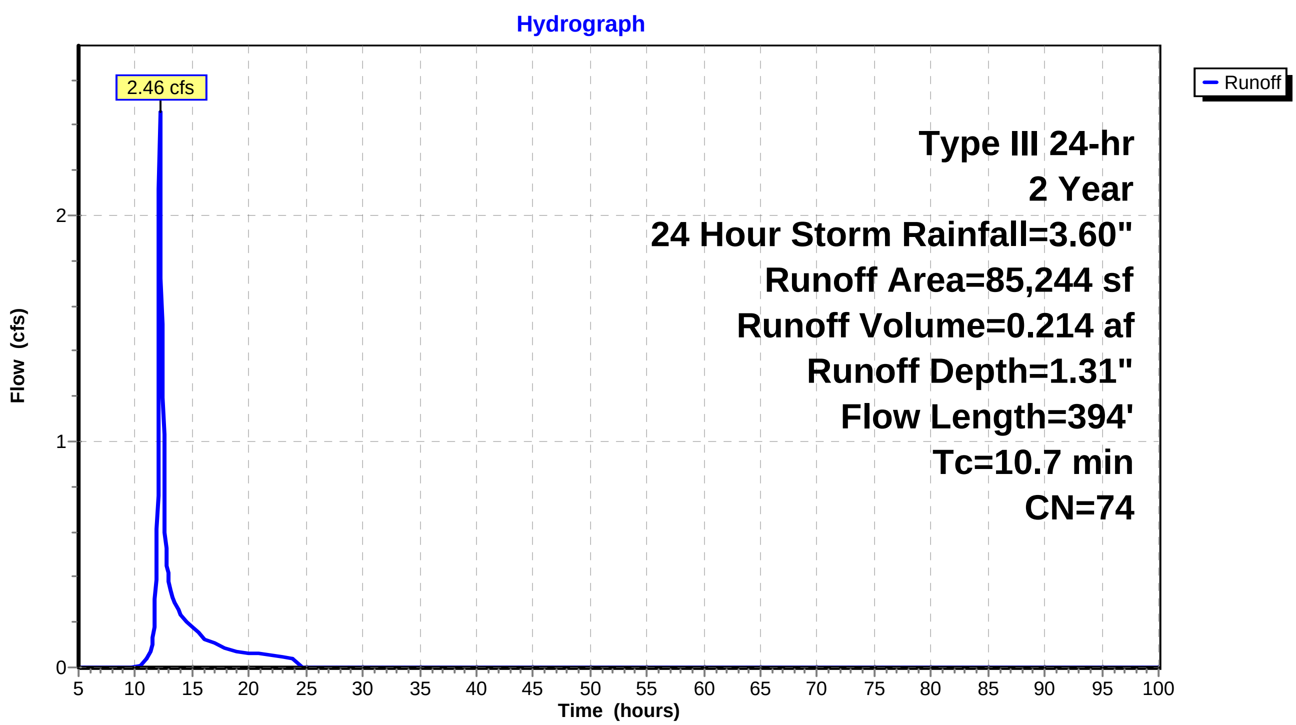
Runoff = 2.46 cfs @ 12.16 hrs, Volume= 0.214 af, Depth= 1.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year, 24 Hour Storm Rainfall=3.60"

Area (sf)	CN	Description
0	98	Paved parking, HSG C
64,912	73	Woods, Fair, HSG C
20,332	79	50-75% Grass cover, Fair, HSG C
85,244	74	Weighted Average
85,244		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	150	0.0500	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.7	244	0.1200	2.42		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.7	394	Total			

Subcatchment Pre 2: Pre 2



Summary for Subcatchment Pre 3: Pre 3

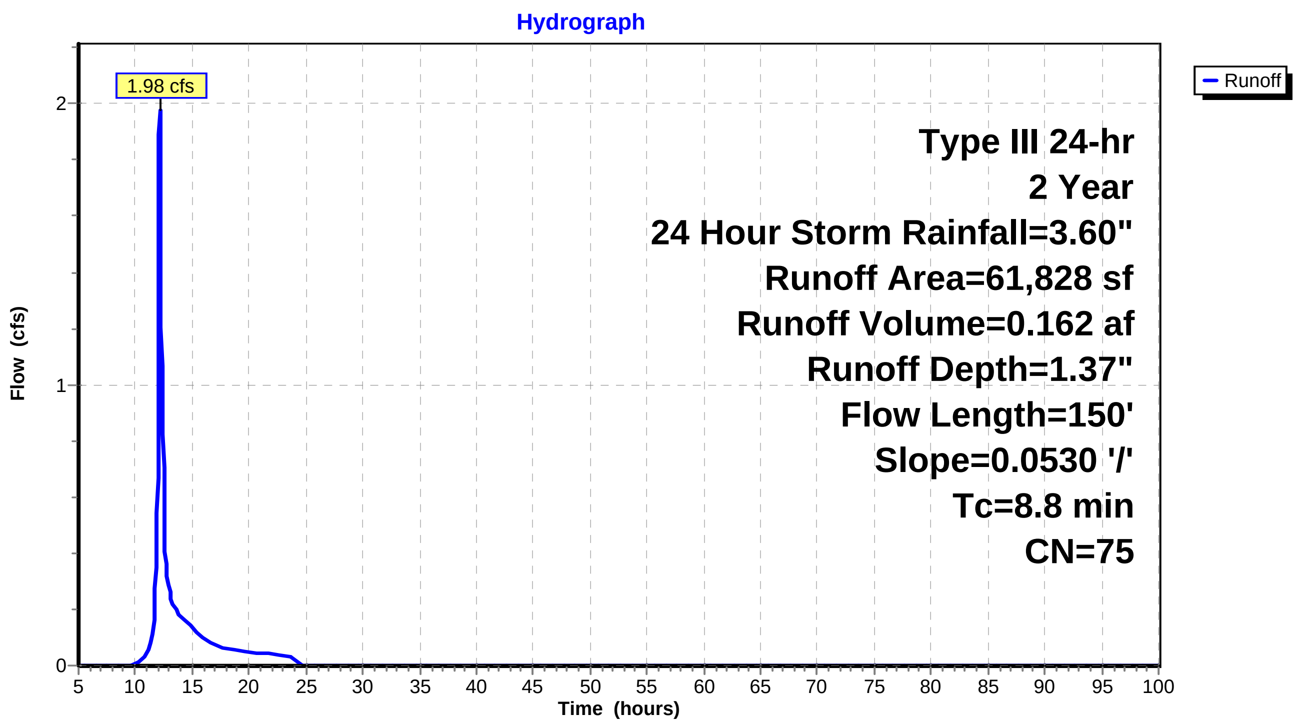
Runoff = 1.98 cfs @ 12.13 hrs, Volume= 0.162 af, Depth= 1.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year, 24 Hour Storm Rainfall=3.60"

Area (sf)	CN	Description
42,320	73	Woods, Fair, HSG C
19,508	79	50-75% Grass cover, Fair, HSG C
61,828	75	Weighted Average
61,828		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	150	0.0530	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"

Subcatchment Pre 3: Pre 3

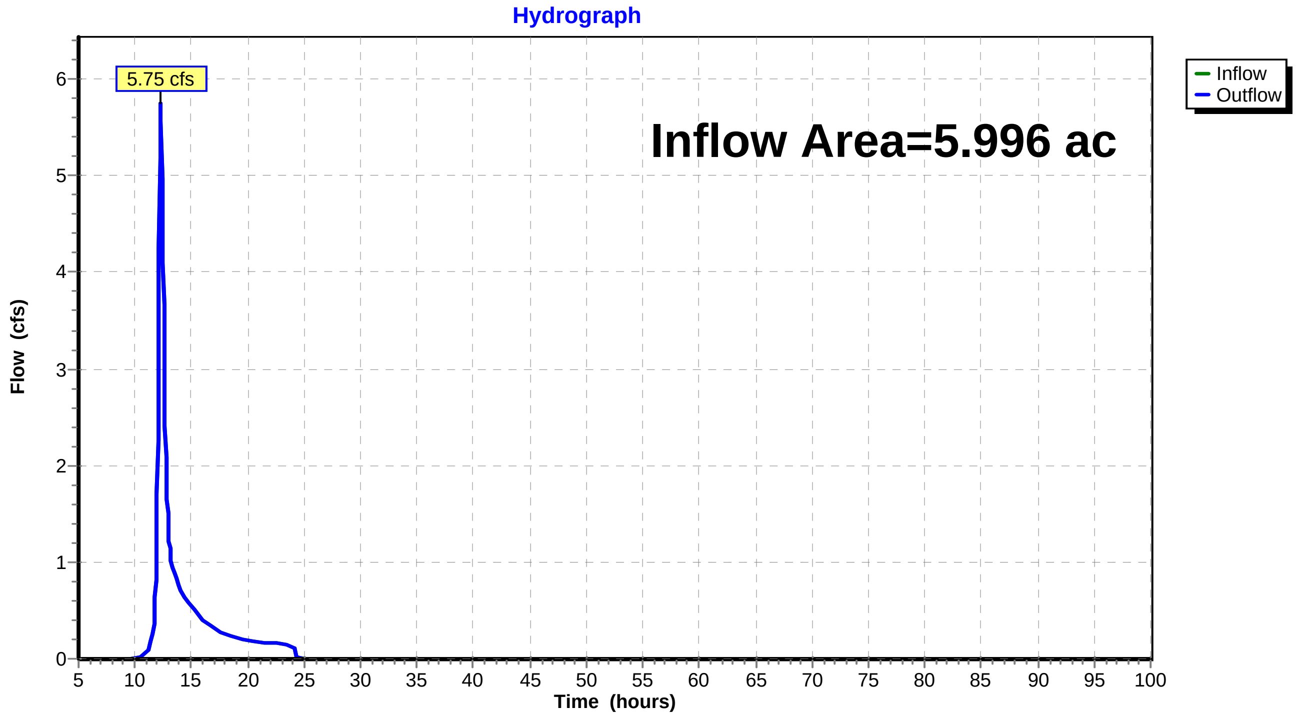


Summary for Reach DP1: Design Point 1

Inflow Area = 5.996 ac, 0.00% Impervious, Inflow Depth = 1.25" for 2 Year, 24 Hour Storm event
Inflow = 5.75 cfs @ 12.28 hrs, Volume= 0.623 af
Outflow = 5.75 cfs @ 12.28 hrs, Volume= 0.623 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-100.00 hrs, dt= 0.05 hrs

Reach DP1: Design Point 1

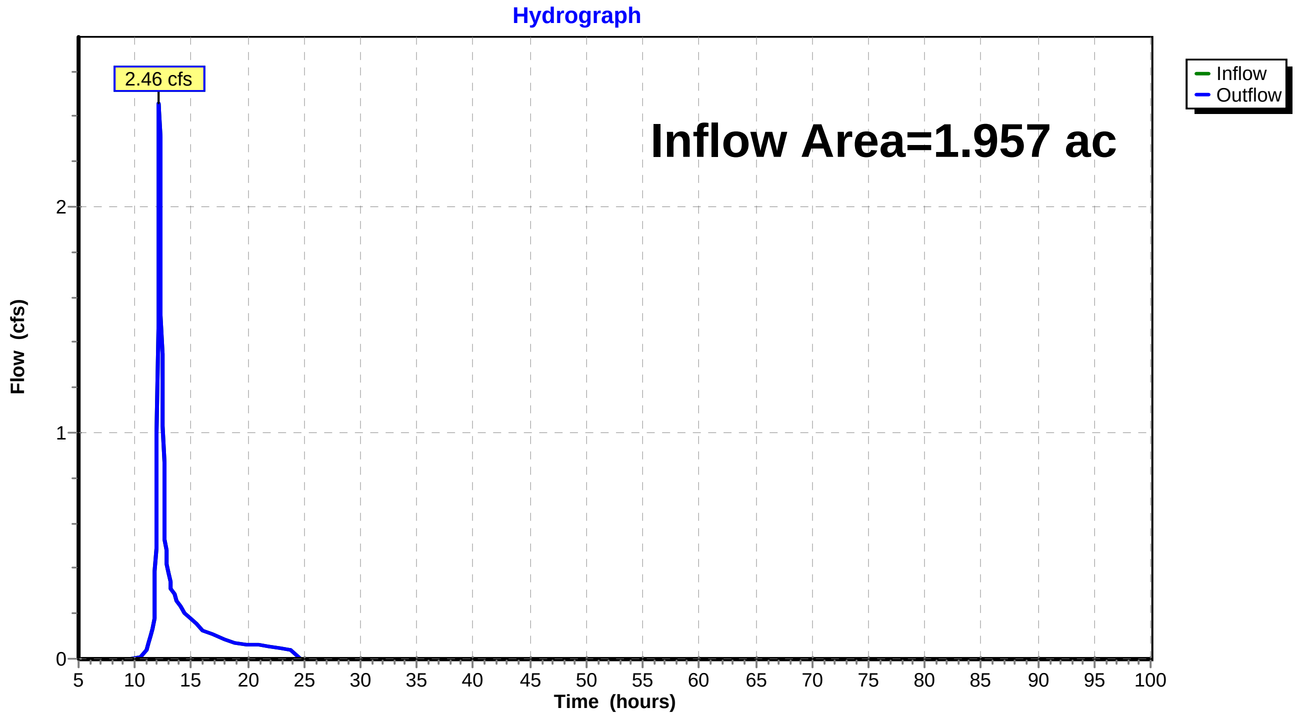


Summary for Reach DP2: Design Point 2

Inflow Area = 1.957 ac, 0.00% Impervious, Inflow Depth = 1.31" for 2 Year, 24 Hour Storm event
Inflow = 2.46 cfs @ 12.16 hrs, Volume= 0.214 af
Outflow = 2.46 cfs @ 12.16 hrs, Volume= 0.214 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-100.00 hrs, dt= 0.05 hrs

Reach DP2: Design Point 2

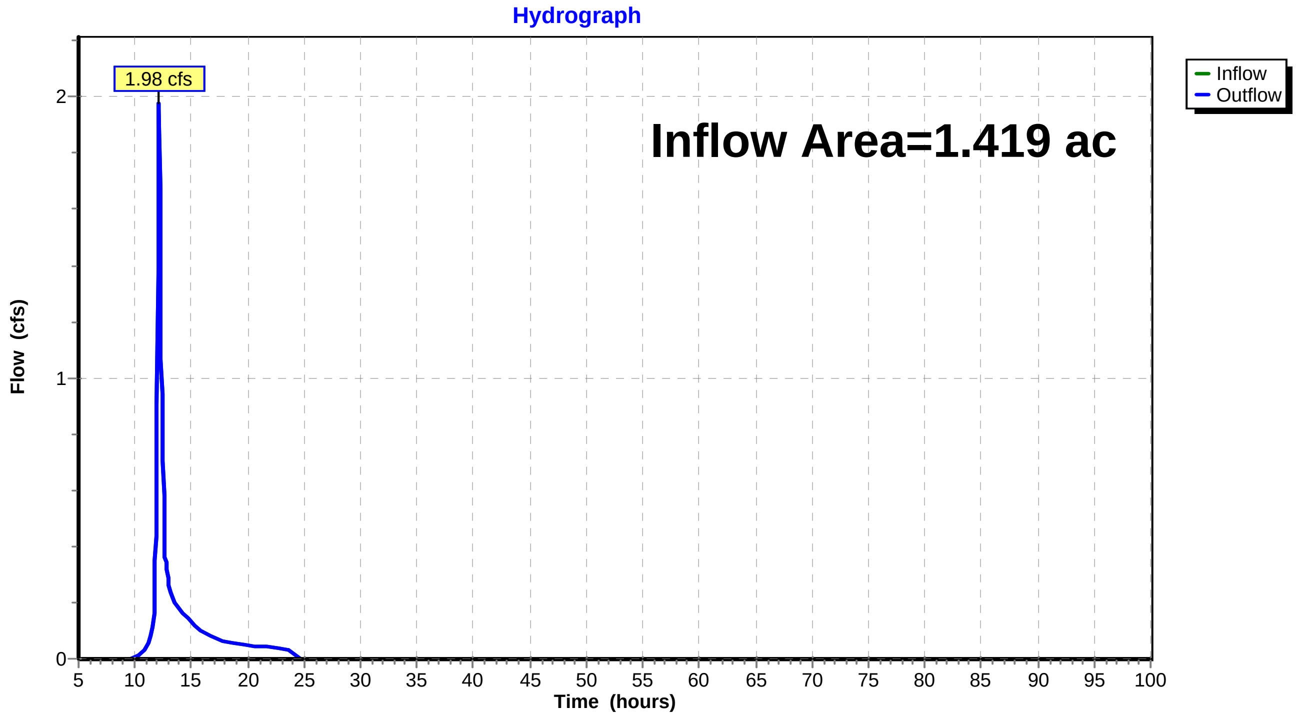


Summary for Reach DP3: Design Point 3

Inflow Area =	1.419 ac,	0.00% Impervious,	Inflow Depth = 1.37"	for 2 Year, 24 Hour Storm event	
Inflow =	1.98 cfs @	12.13 hrs,	Volume=	0.162 af	
Outflow =	1.98 cfs @	12.13 hrs,	Volume=	0.162 af,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-100.00 hrs, dt= 0.05 hrs

Reach DP3: Design Point 3



Time span=5.00-100.00 hrs, dt=0.05 hrs, 1901 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment Pre 1: Pre 1 Runoff Area=261,194 sf 0.00% Impervious Runoff Depth=2.28"
Flow Length=605' Tc=18.8 min CN=73 Runoff=10.95 cfs 1.140 af

Subcatchment Pre 2: Pre 2 Runoff Area=85,244 sf 0.00% Impervious Runoff Depth=2.36"
Flow Length=394' Tc=10.7 min CN=74 Runoff=4.57 cfs 0.386 af

Subcatchment Pre 3: Pre 3 Runoff Area=61,828 sf 0.00% Impervious Runoff Depth=2.45"
Flow Length=150' Slope=0.0530 '/' Tc=8.8 min CN=75 Runoff=3.61 cfs 0.290 af

Reach DP1: Design Point 1 Inflow=10.95 cfs 1.140 af
Outflow=10.95 cfs 1.140 af

Reach DP2: Design Point 2 Inflow=4.57 cfs 0.386 af
Outflow=4.57 cfs 0.386 af

Reach DP3: Design Point 3 Inflow=3.61 cfs 0.290 af
Outflow=3.61 cfs 0.290 af

Total Runoff Area = 9.372 ac Runoff Volume = 1.815 af Average Runoff Depth = 2.32"
100.00% Pervious = 9.372 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment Pre 1: Pre 1

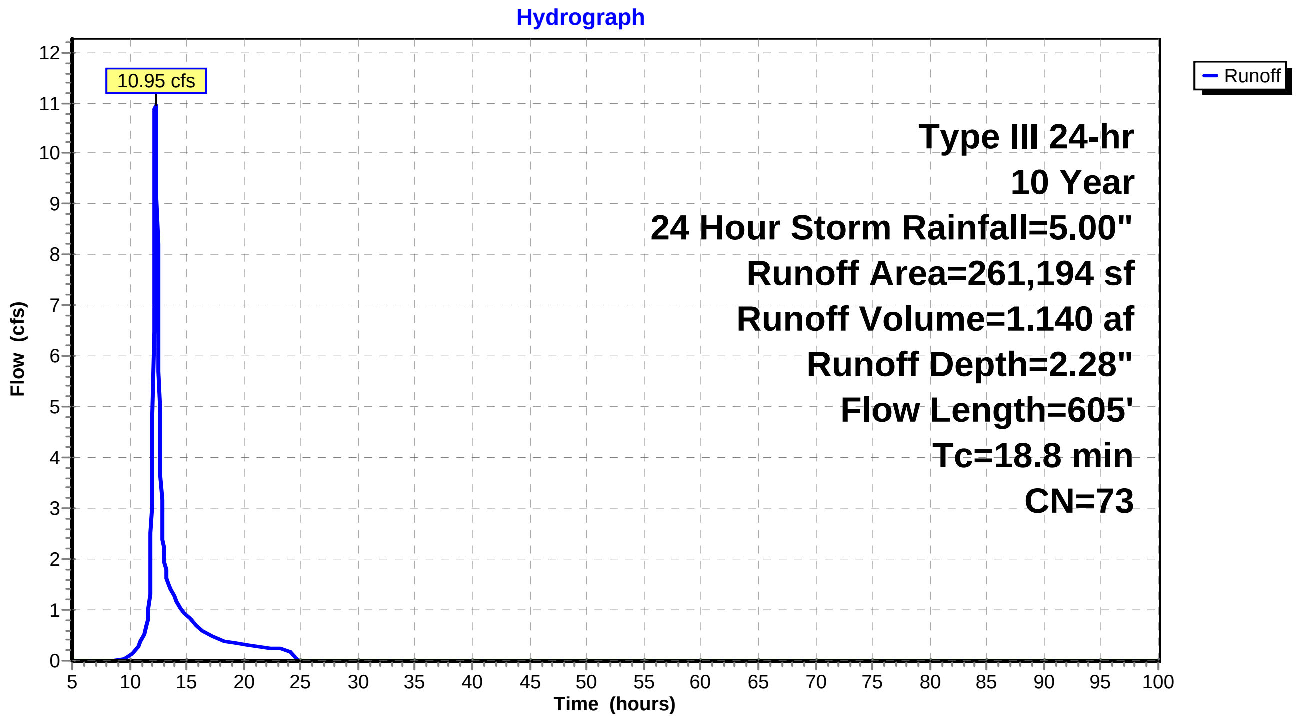
Runoff = 10.95 cfs @ 12.27 hrs, Volume= 1.140 af, Depth= 2.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year, 24 Hour Storm Rainfall=5.00"

Area (sf)	CN	Description
164,940	73	Woods, Fair, HSG C
96,254	74	>75% Grass cover, Good, HSG C
261,194	73	Weighted Average
261,194		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.8	250	0.0400	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.0	105	0.0667	1.81		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.0	250	0.0760	1.38		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
18.8	605	Total			

Subcatchment Pre 1: Pre 1



Summary for Subcatchment Pre 2: Pre 2

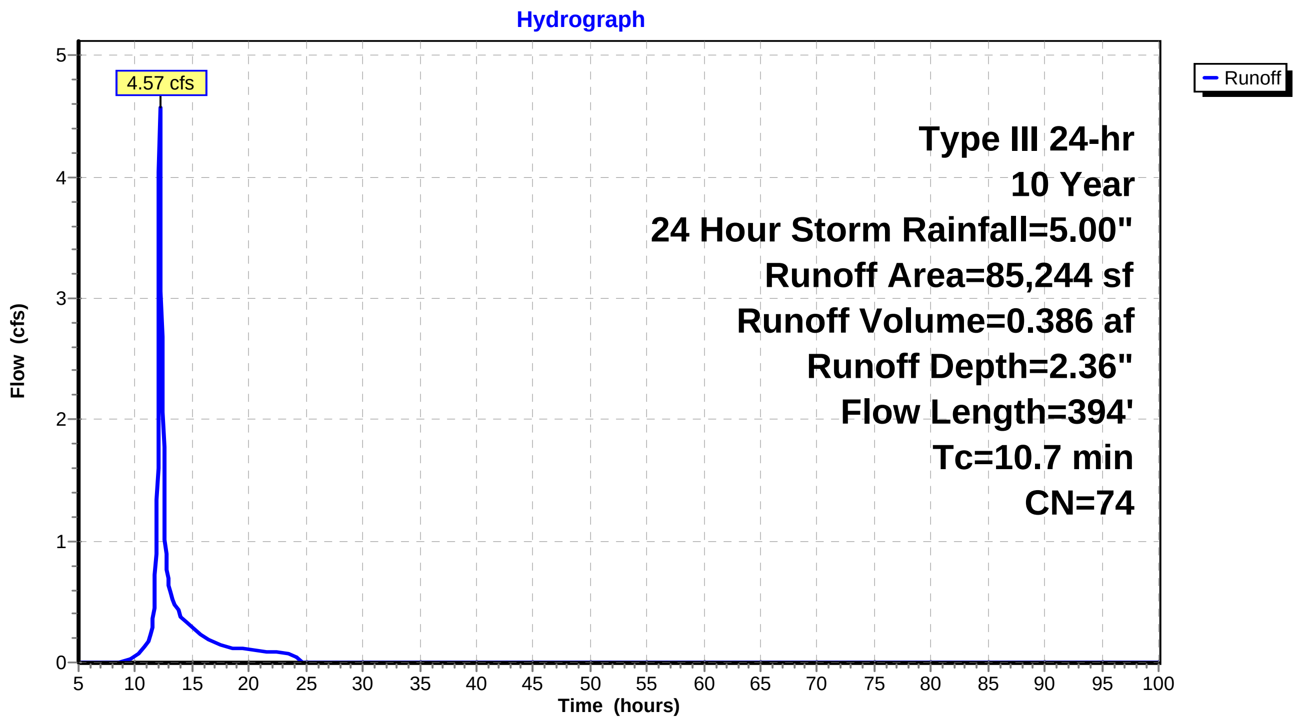
Runoff = 4.57 cfs @ 12.16 hrs, Volume= 0.386 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year, 24 Hour Storm Rainfall=5.00"

Area (sf)	CN	Description
0	98	Paved parking, HSG C
64,912	73	Woods, Fair, HSG C
20,332	79	50-75% Grass cover, Fair, HSG C
85,244	74	Weighted Average
85,244		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	150	0.0500	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.7	244	0.1200	2.42		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.7	394	Total			

Subcatchment Pre 2: Pre 2



Summary for Subcatchment Pre 3: Pre 3

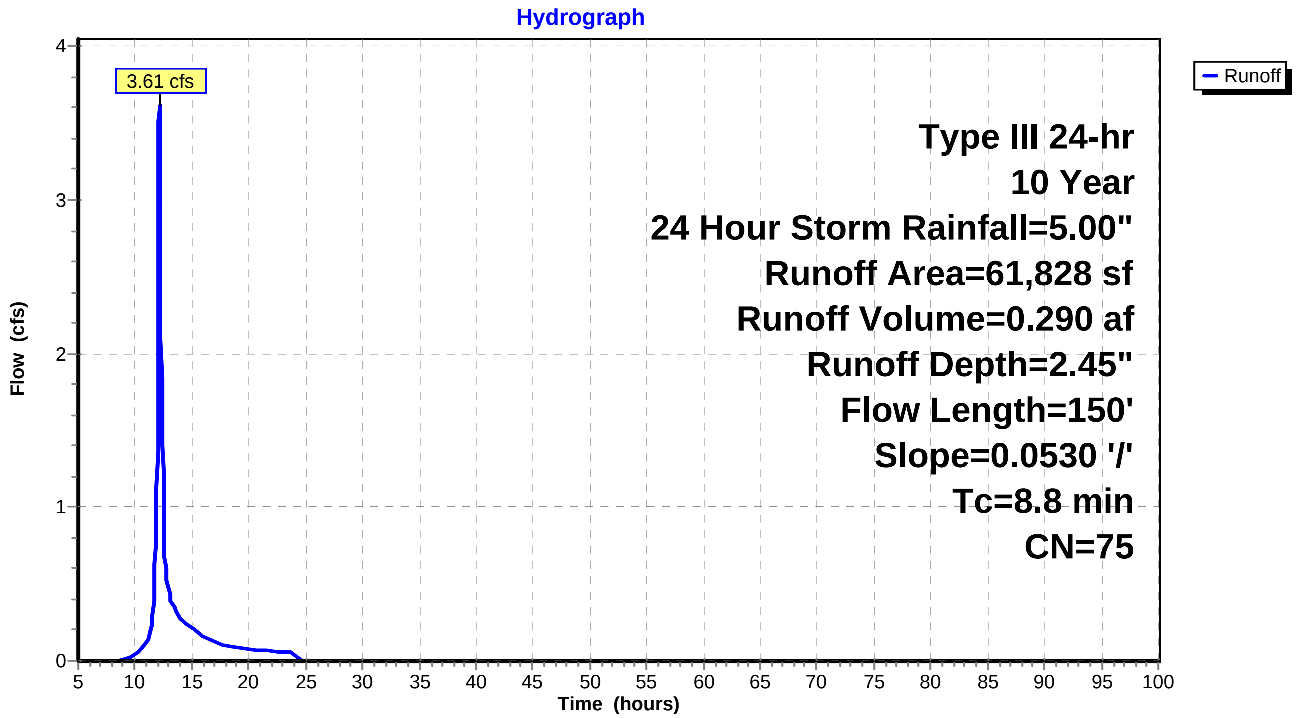
Runoff = 3.61 cfs @ 12.13 hrs, Volume= 0.290 af, Depth= 2.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year, 24 Hour Storm Rainfall=5.00"

Area (sf)	CN	Description
42,320	73	Woods, Fair, HSG C
19,508	79	50-75% Grass cover, Fair, HSG C
61,828	75	Weighted Average
61,828		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	150	0.0530	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"

Subcatchment Pre 3: Pre 3

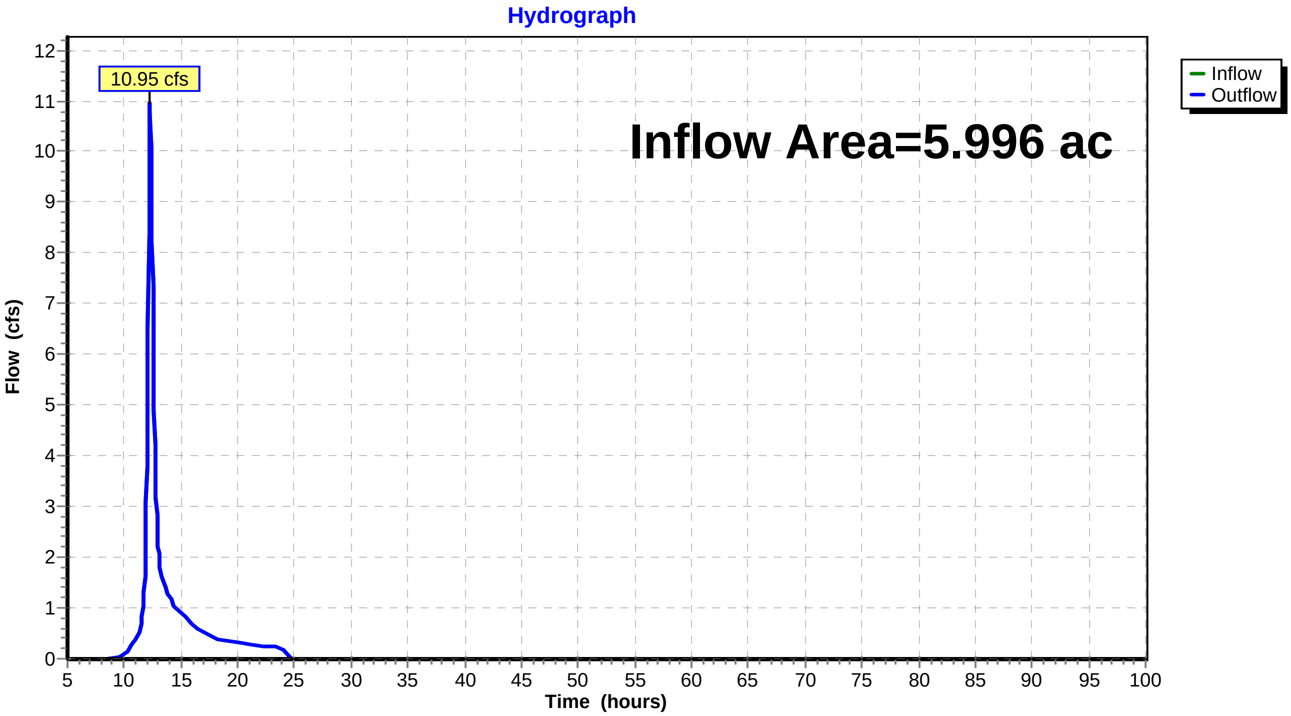


Summary for Reach DP1: Design Point 1

Inflow Area =	5.996 ac,	0.00% Impervious,	Inflow Depth = 2.28"	for 10 Year, 24 Hour Storm event	
Inflow =	10.95 cfs @	12.27 hrs,	Volume=	1.140 af	
Outflow =	10.95 cfs @	12.27 hrs,	Volume=	1.140 af,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-100.00 hrs, dt= 0.05 hrs

Reach DP1: Design Point 1

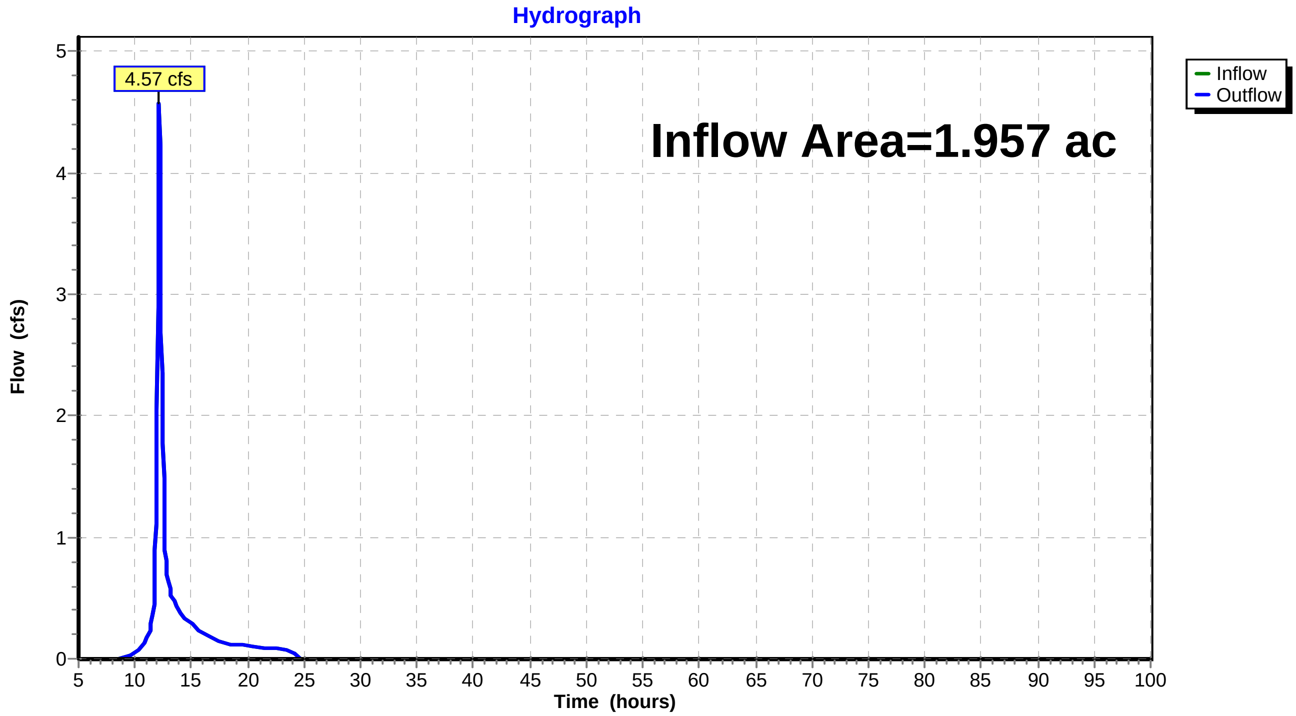


Summary for Reach DP2: Design Point 2

Inflow Area = 1.957 ac, 0.00% Impervious, Inflow Depth = 2.36" for 10 Year, 24 Hour Storm event
Inflow = 4.57 cfs @ 12.16 hrs, Volume= 0.386 af
Outflow = 4.57 cfs @ 12.16 hrs, Volume= 0.386 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-100.00 hrs, dt= 0.05 hrs

Reach DP2: Design Point 2

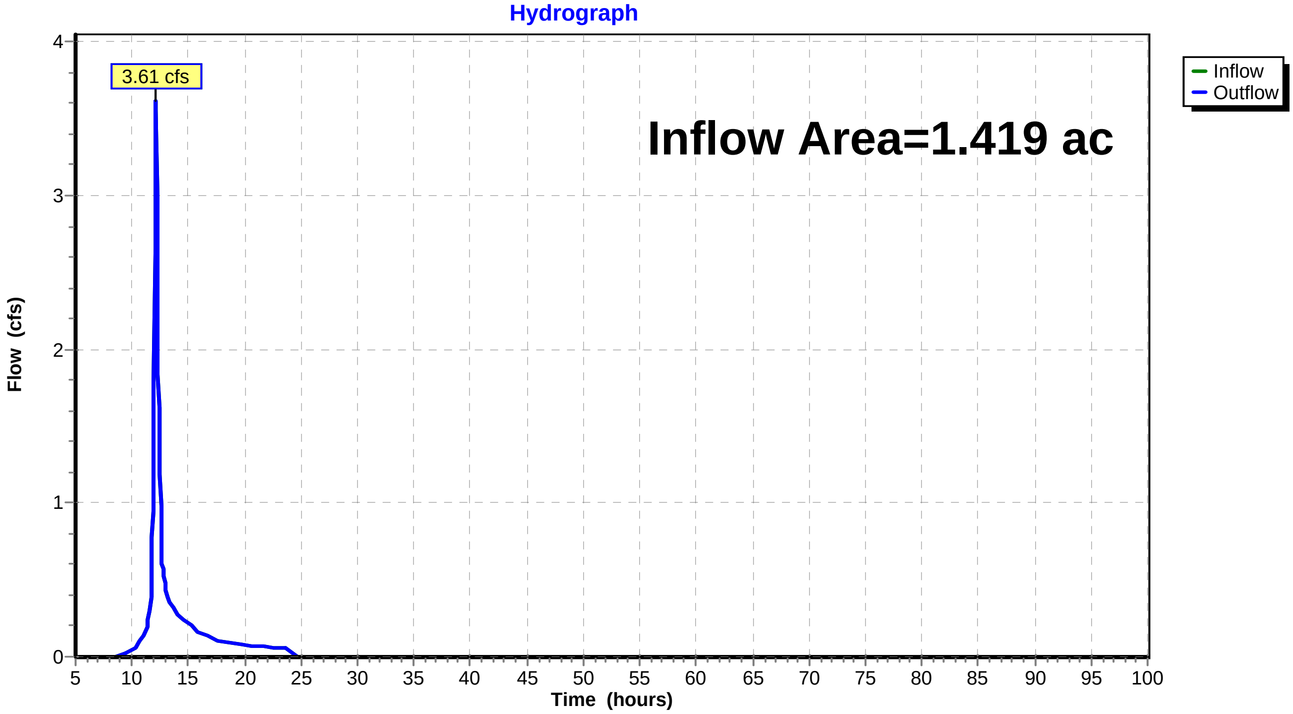


Summary for Reach DP3: Design Point 3

Inflow Area = 1.419 ac, 0.00% Impervious, Inflow Depth = 2.45" for 10 Year, 24 Hour Storm event
Inflow = 3.61 cfs @ 12.13 hrs, Volume= 0.290 af
Outflow = 3.61 cfs @ 12.13 hrs, Volume= 0.290 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-100.00 hrs, dt= 0.05 hrs

Reach DP3: Design Point 3



Time span=5.00-100.00 hrs, dt=0.05 hrs, 1901 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment Pre 1: Pre 1 Runoff Area=261,194 sf 0.00% Impervious Runoff Depth=3.51"
Flow Length=605' Tc=18.8 min CN=73 Runoff=17.01 cfs 1.753 af

Subcatchment Pre 2: Pre 2 Runoff Area=85,244 sf 0.00% Impervious Runoff Depth=3.61"
Flow Length=394' Tc=10.7 min CN=74 Runoff=7.02 cfs 0.589 af

Subcatchment Pre 3: Pre 3 Runoff Area=61,828 sf 0.00% Impervious Runoff Depth=3.71"
Flow Length=150' Slope=0.0530 '/' Tc=8.8 min CN=75 Runoff=5.49 cfs 0.439 af

Reach DP1: Design Point 1 Inflow=17.01 cfs 1.753 af
Outflow=17.01 cfs 1.753 af

Reach DP2: Design Point 2 Inflow=7.02 cfs 0.589 af
Outflow=7.02 cfs 0.589 af

Reach DP3: Design Point 3 Inflow=5.49 cfs 0.439 af
Outflow=5.49 cfs 0.439 af

Total Runoff Area = 9.372 ac Runoff Volume = 2.781 af Average Runoff Depth = 3.56"
100.00% Pervious = 9.372 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment Pre 1: Pre 1

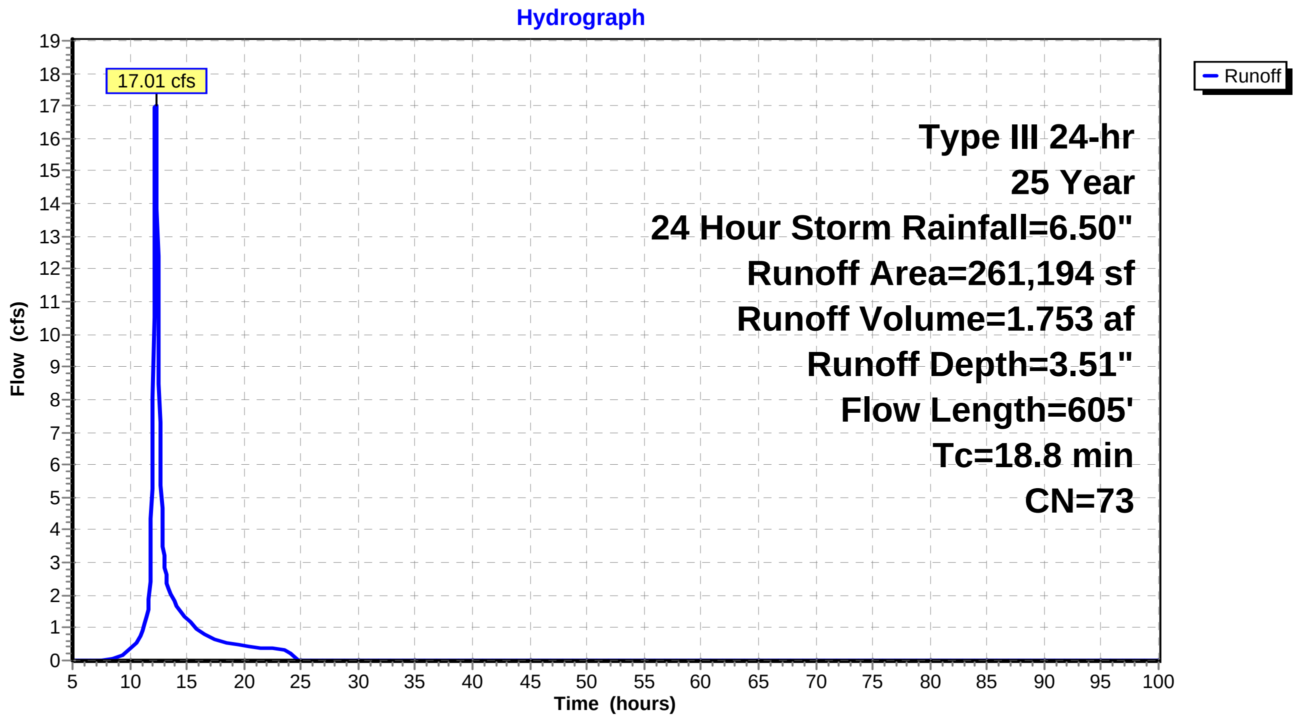
Runoff = 17.01 cfs @ 12.26 hrs, Volume= 1.753 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year, 24 Hour Storm Rainfall=6.50"

Area (sf)	CN	Description
164,940	73	Woods, Fair, HSG C
96,254	74	>75% Grass cover, Good, HSG C
261,194	73	Weighted Average
261,194		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.8	250	0.0400	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.0	105	0.0667	1.81		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.0	250	0.0760	1.38		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
18.8	605	Total			

Subcatchment Pre 1: Pre 1



Summary for Subcatchment Pre 2: Pre 2

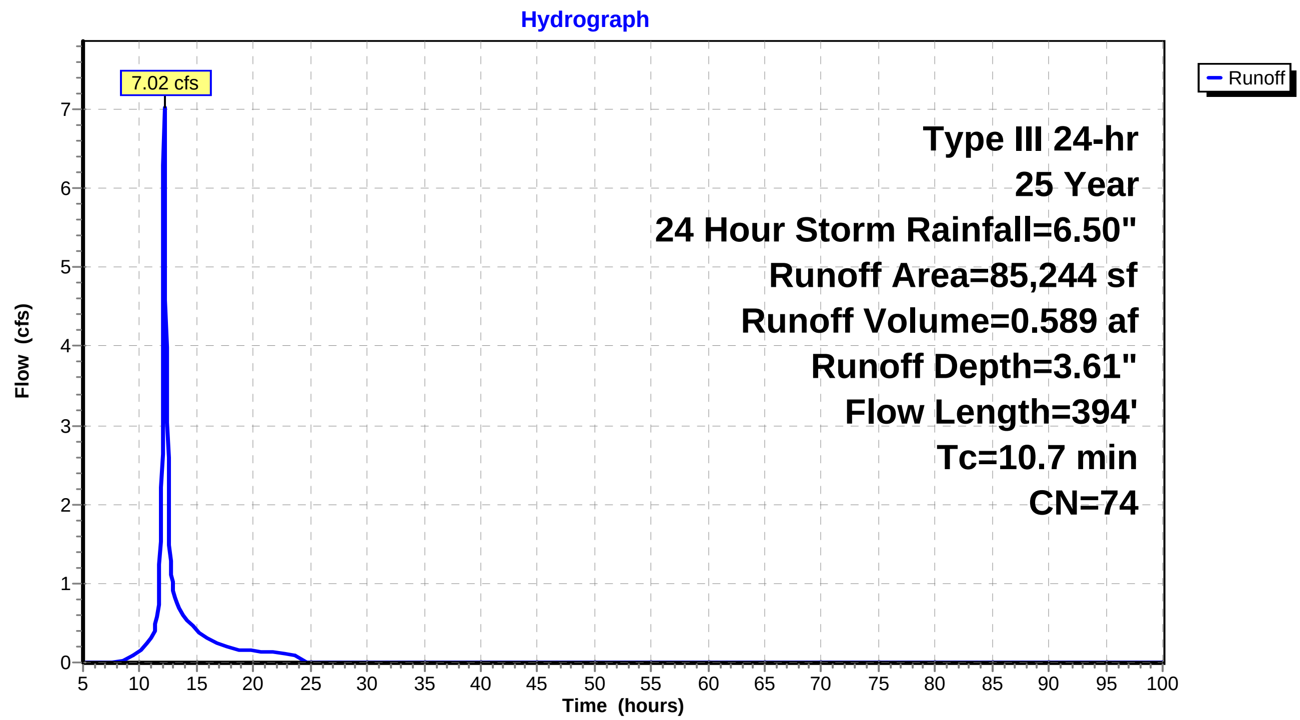
Runoff = 7.02 cfs @ 12.15 hrs, Volume= 0.589 af, Depth= 3.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year, 24 Hour Storm Rainfall=6.50"

Area (sf)	CN	Description
0	98	Paved parking, HSG C
64,912	73	Woods, Fair, HSG C
20,332	79	50-75% Grass cover, Fair, HSG C
85,244	74	Weighted Average
85,244		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	150	0.0500	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.7	244	0.1200	2.42		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.7	394	Total			

Subcatchment Pre 2: Pre 2



Summary for Subcatchment Pre 3: Pre 3

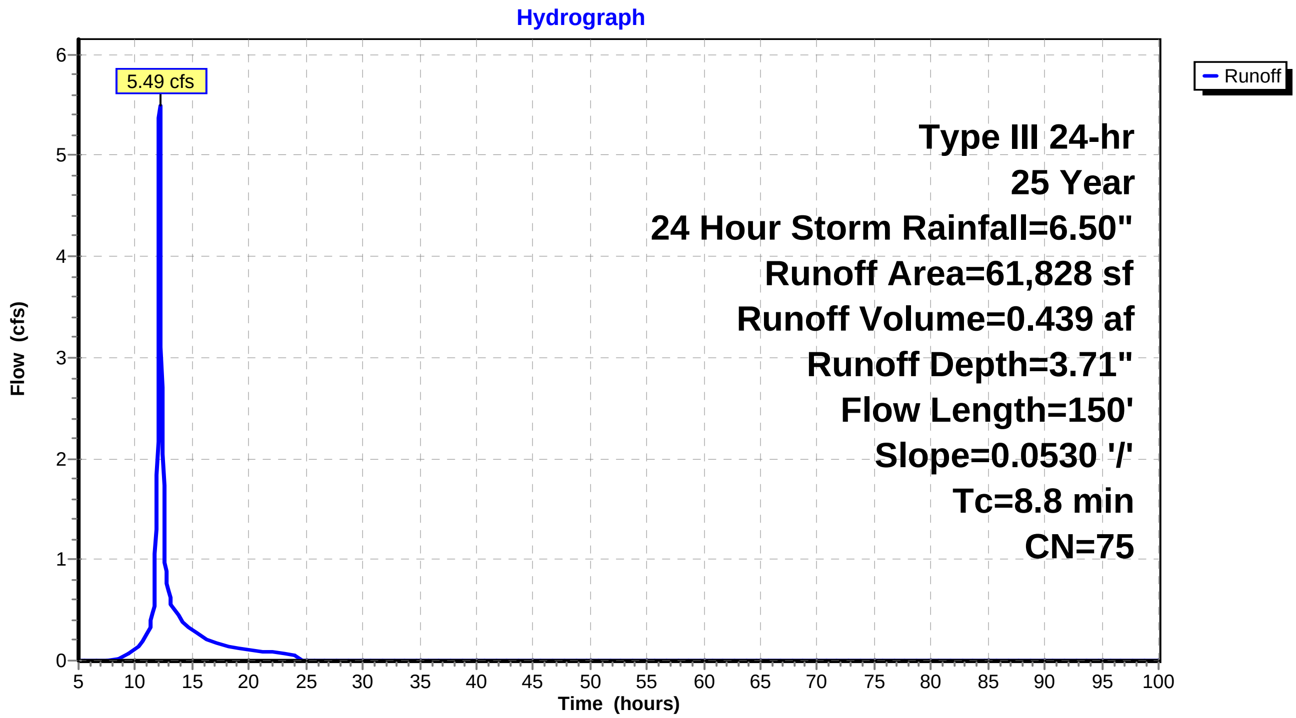
Runoff = 5.49 cfs @ 12.13 hrs, Volume= 0.439 af, Depth= 3.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year, 24 Hour Storm Rainfall=6.50"

Area (sf)	CN	Description
42,320	73	Woods, Fair, HSG C
19,508	79	50-75% Grass cover, Fair, HSG C
61,828	75	Weighted Average
61,828		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	150	0.0530	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"

Subcatchment Pre 3: Pre 3

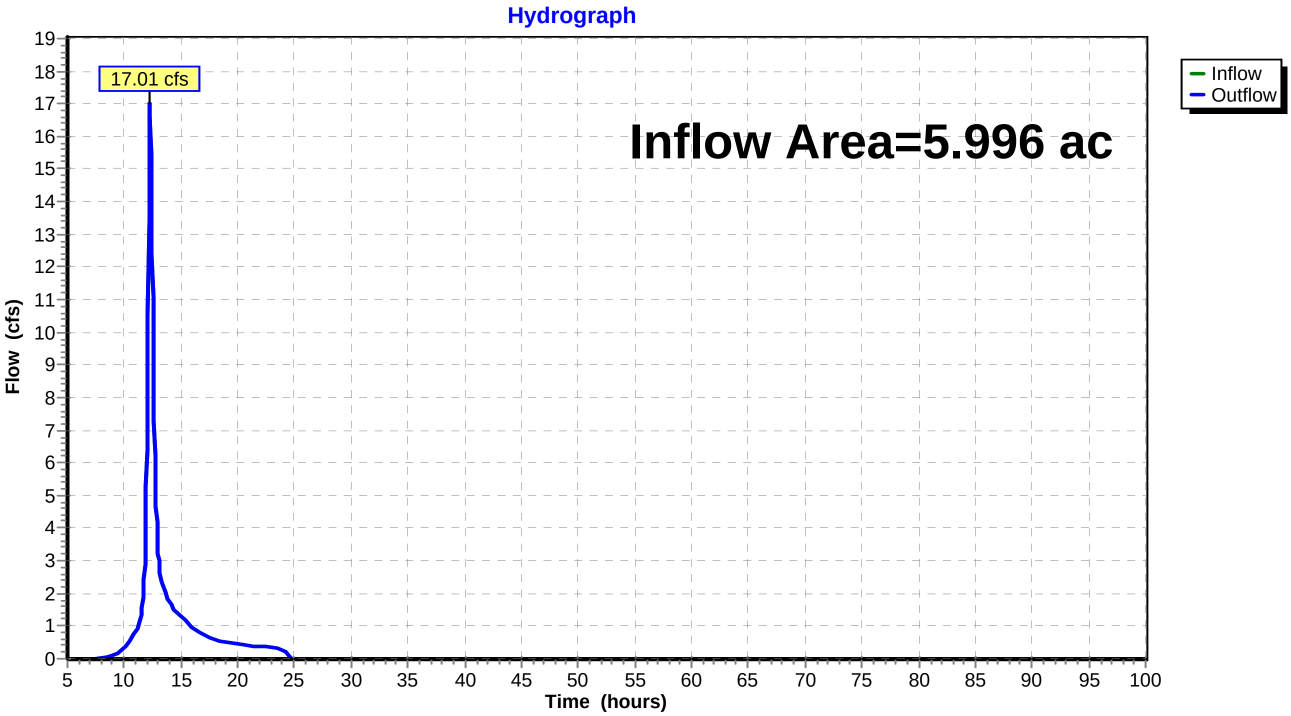


Summary for Reach DP1: Design Point 1

Inflow Area =	5.996 ac,	0.00% Impervious,	Inflow Depth = 3.51"	for 25 Year, 24 Hour Storm event	
Inflow =	17.01 cfs @	12.26 hrs,	Volume=	1.753 af	
Outflow =	17.01 cfs @	12.26 hrs,	Volume=	1.753 af,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-100.00 hrs, dt= 0.05 hrs

Reach DP1: Design Point 1

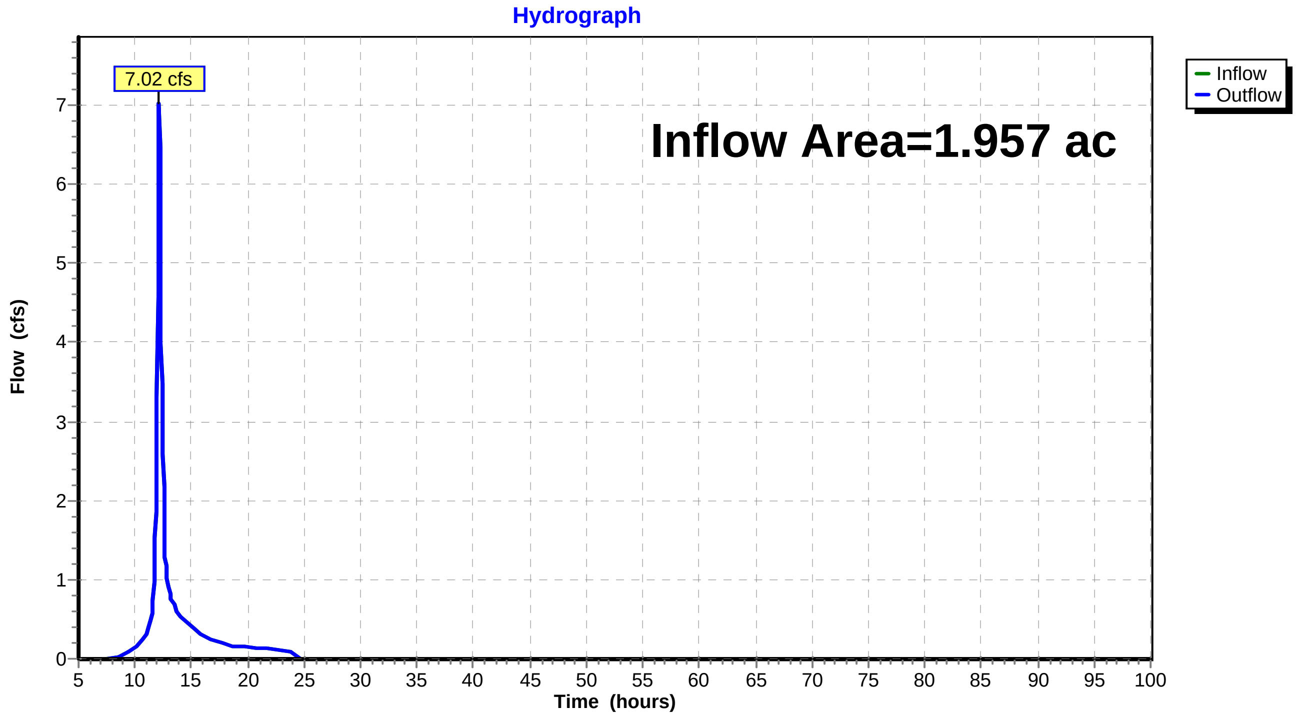


Summary for Reach DP2: Design Point 2

Inflow Area = 1.957 ac, 0.00% Impervious, Inflow Depth = 3.61" for 25 Year, 24 Hour Storm event
Inflow = 7.02 cfs @ 12.15 hrs, Volume= 0.589 af
Outflow = 7.02 cfs @ 12.15 hrs, Volume= 0.589 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-100.00 hrs, dt= 0.05 hrs

Reach DP2: Design Point 2

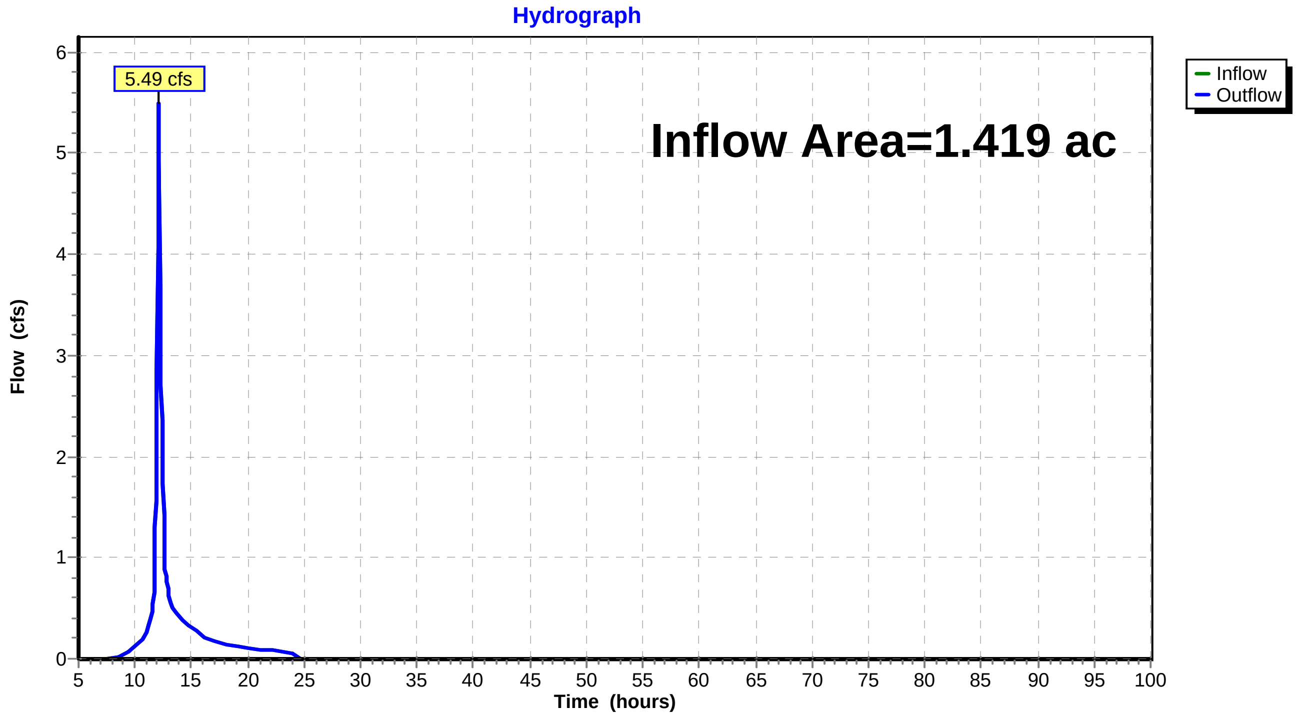


Summary for Reach DP3: Design Point 3

Inflow Area =	1.419 ac,	0.00% Impervious, Inflow Depth = 3.71"	for 25 Year, 24 Hour Storm event	
Inflow =	5.49 cfs @	12.13 hrs, Volume=	0.439 af	
Outflow =	5.49 cfs @	12.13 hrs, Volume=	0.439 af, Atten= 0%, Lag= 0.0 min	

Routing by Stor-Ind+Trans method, Time Span= 5.00-100.00 hrs, dt= 0.05 hrs

Reach DP3: Design Point 3



Time span=5.00-100.00 hrs, dt=0.05 hrs, 1901 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment Pre 1: Pre 1 Runoff Area=261,194 sf 0.00% Impervious Runoff Depth=4.37"
Flow Length=605' Tc=18.8 min CN=73 Runoff=21.20 cfs 2.183 af

Subcatchment Pre 2: Pre 2 Runoff Area=85,244 sf 0.00% Impervious Runoff Depth=4.48"
Flow Length=394' Tc=10.7 min CN=74 Runoff=8.71 cfs 0.731 af

Subcatchment Pre 3: Pre 3 Runoff Area=61,828 sf 0.00% Impervious Runoff Depth=4.59"
Flow Length=150' Slope=0.0530 '/' Tc=8.8 min CN=75 Runoff=6.83 cfs 0.543 af

Reach DP1: Design Point 1 Inflow=21.20 cfs 2.183 af
Outflow=21.20 cfs 2.183 af

Reach DP2: Design Point 2 Inflow=8.71 cfs 0.731 af
Outflow=8.71 cfs 0.731 af

Reach DP3: Design Point 3 Inflow=6.83 cfs 0.543 af
Outflow=6.83 cfs 0.543 af

Total Runoff Area = 9.372 ac Runoff Volume = 3.457 af Average Runoff Depth = 4.43"
100.00% Pervious = 9.372 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment Pre 1: Pre 1

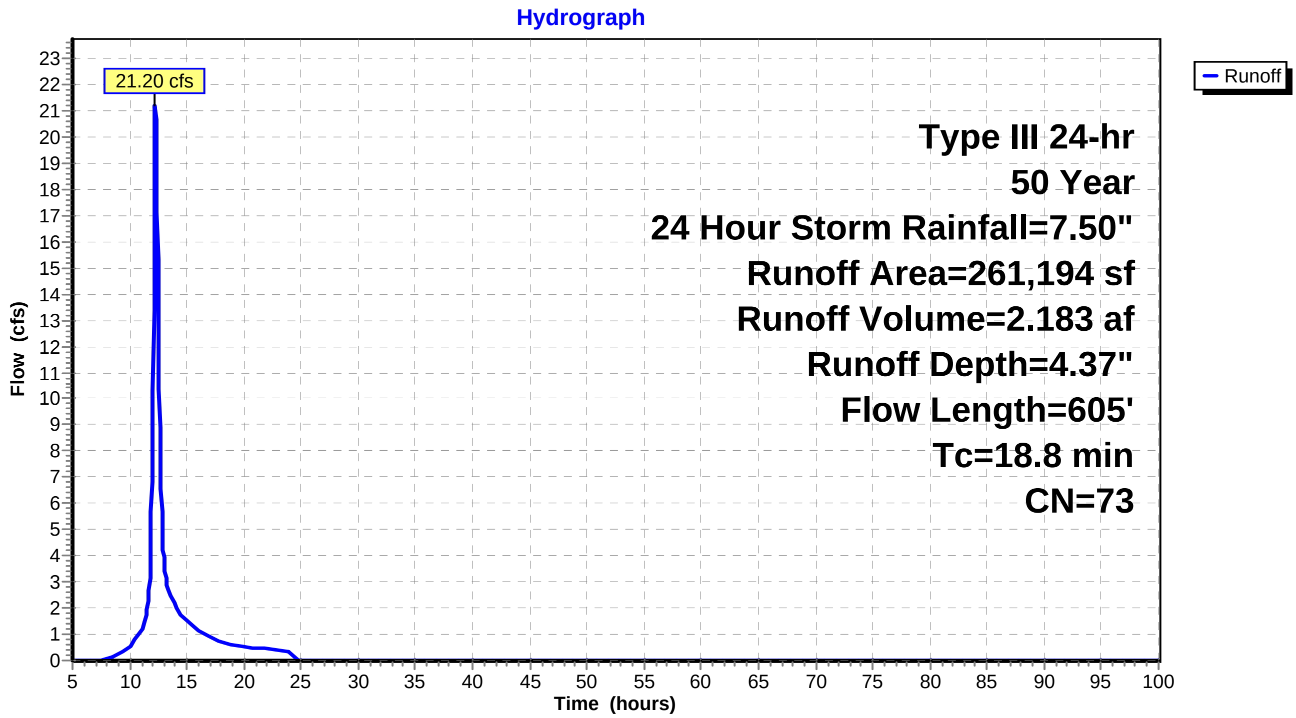
Runoff = 21.20 cfs @ 12.26 hrs, Volume= 2.183 af, Depth= 4.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Year, 24 Hour Storm Rainfall=7.50"

Area (sf)	CN	Description
164,940	73	Woods, Fair, HSG C
96,254	74	>75% Grass cover, Good, HSG C
261,194	73	Weighted Average
261,194		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.8	250	0.0400	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.0	105	0.0667	1.81		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.0	250	0.0760	1.38		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
18.8	605	Total			

Subcatchment Pre 1: Pre 1



Summary for Subcatchment Pre 2: Pre 2

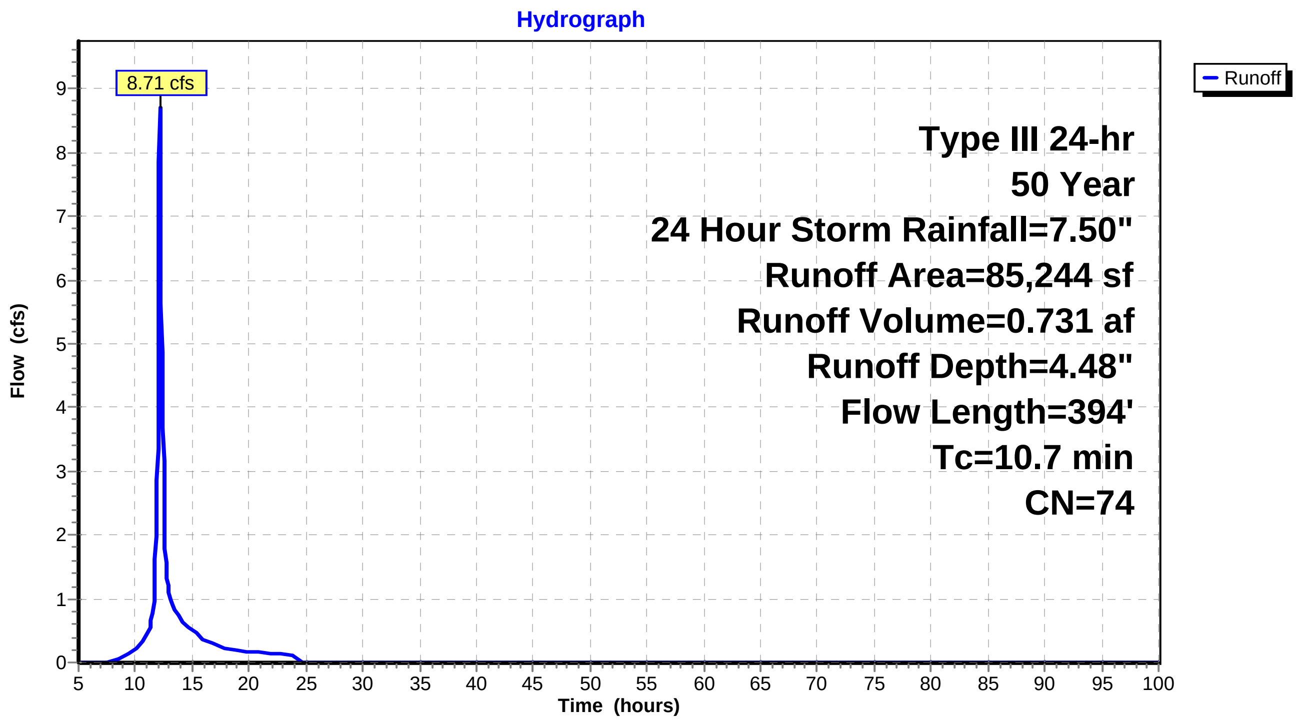
Runoff = 8.71 cfs @ 12.15 hrs, Volume= 0.731 af, Depth= 4.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Year, 24 Hour Storm Rainfall=7.50"

Area (sf)	CN	Description
0	98	Paved parking, HSG C
64,912	73	Woods, Fair, HSG C
20,332	79	50-75% Grass cover, Fair, HSG C
85,244	74	Weighted Average
85,244		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	150	0.0500	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.7	244	0.1200	2.42		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.7	394	Total			

Subcatchment Pre 2: Pre 2



Summary for Subcatchment Pre 3: Pre 3

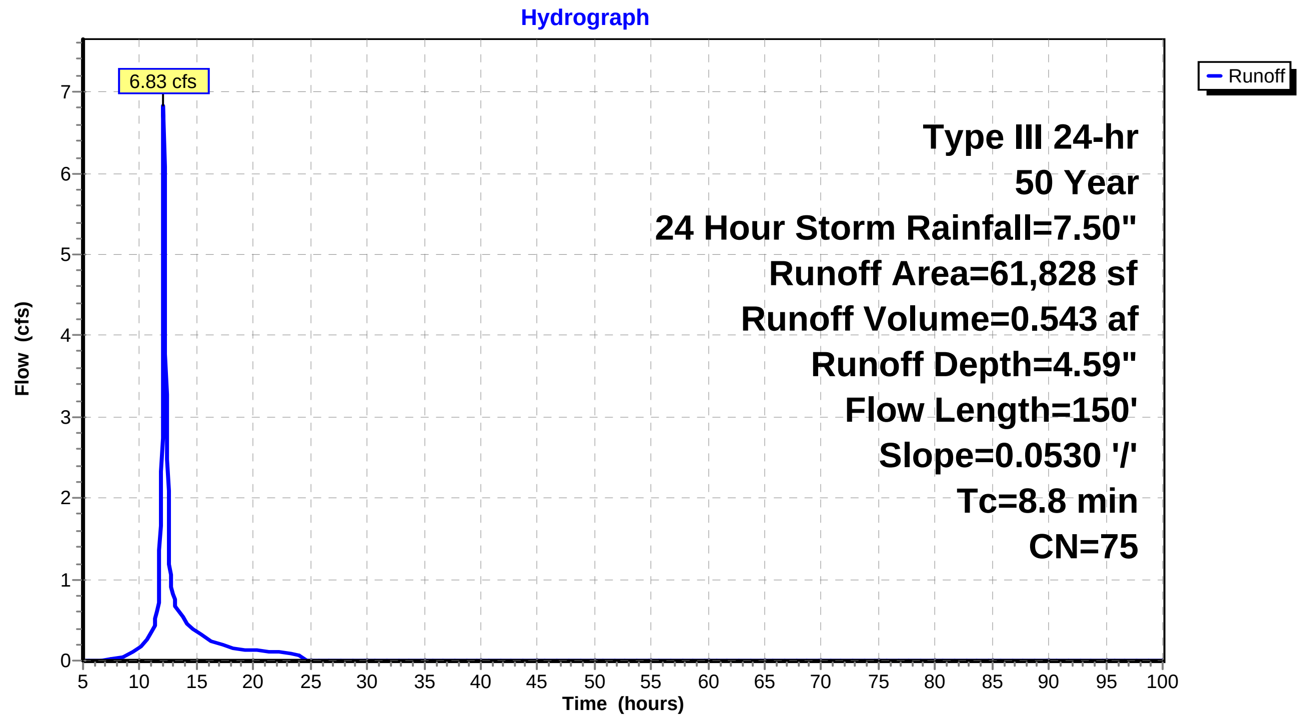
Runoff = 6.83 cfs @ 12.12 hrs, Volume= 0.543 af, Depth= 4.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Year, 24 Hour Storm Rainfall=7.50"

Area (sf)	CN	Description
42,320	73	Woods, Fair, HSG C
19,508	79	50-75% Grass cover, Fair, HSG C
61,828	75	Weighted Average
61,828		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	150	0.0530	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"

Subcatchment Pre 3: Pre 3

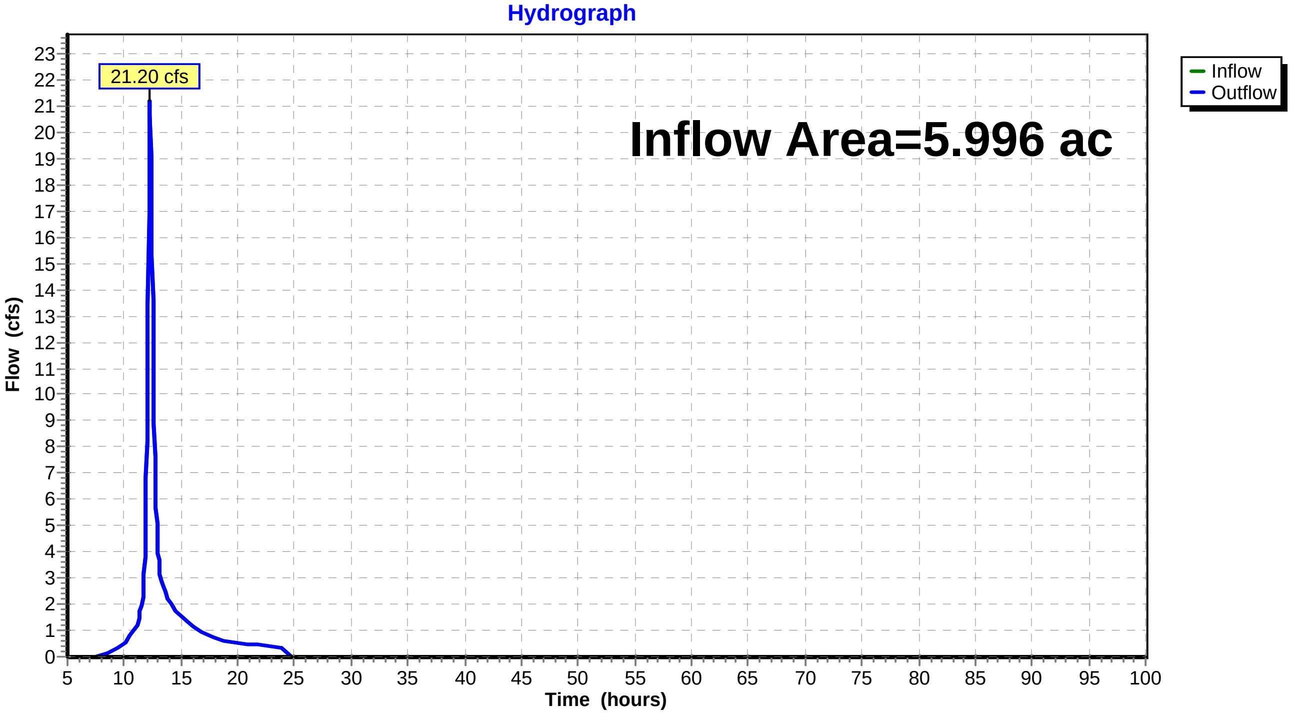


Summary for Reach DP1: Design Point 1

Inflow Area =	5.996 ac,	0.00% Impervious,	Inflow Depth = 4.37"	for 50 Year, 24 Hour Storm event
Inflow =	21.20 cfs @	12.26 hrs,	Volume=	2.183 af
Outflow =	21.20 cfs @	12.26 hrs,	Volume=	2.183 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-100.00 hrs, dt= 0.05 hrs

Reach DP1: Design Point 1

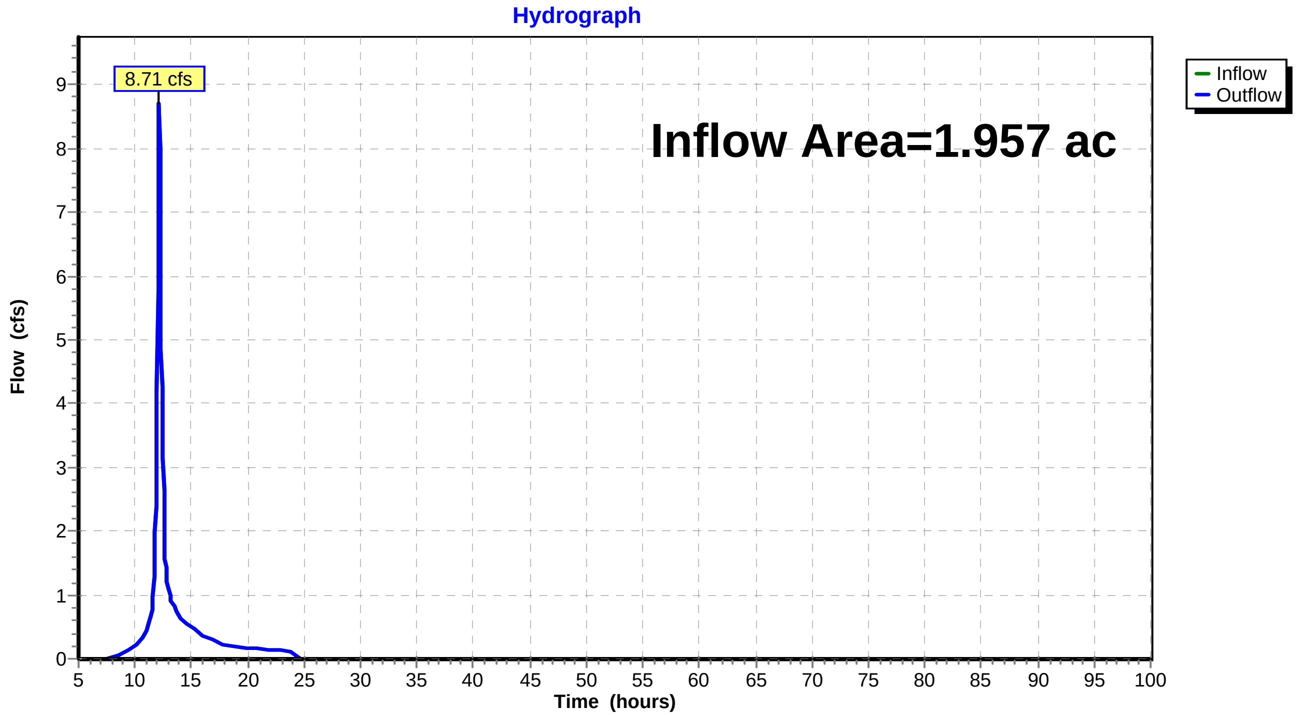


Summary for Reach DP2: Design Point 2

Inflow Area = 1.957 ac, 0.00% Impervious, Inflow Depth = 4.48" for 50 Year, 24 Hour Storm event
Inflow = 8.71 cfs @ 12.15 hrs, Volume= 0.731 af
Outflow = 8.71 cfs @ 12.15 hrs, Volume= 0.731 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-100.00 hrs, dt= 0.05 hrs

Reach DP2: Design Point 2

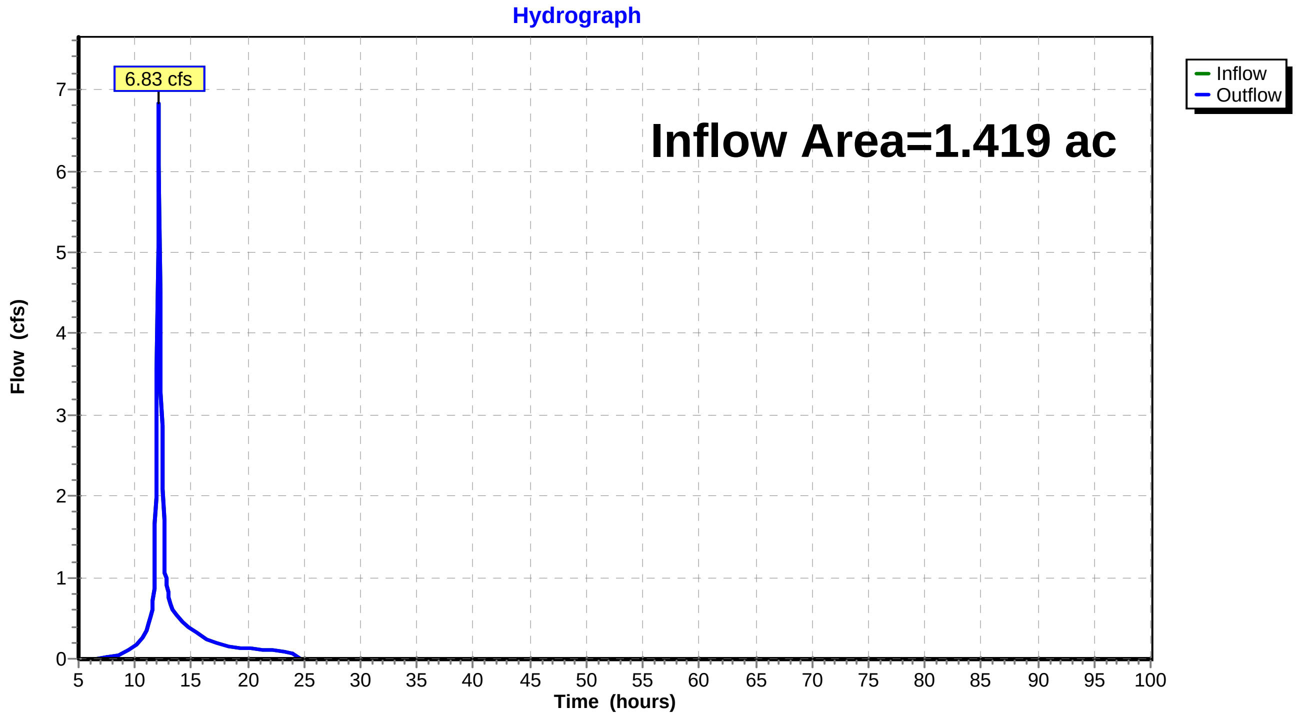


Summary for Reach DP3: Design Point 3

Inflow Area = 1.419 ac, 0.00% Impervious, Inflow Depth = 4.59" for 50 Year, 24 Hour Storm event
Inflow = 6.83 cfs @ 12.12 hrs, Volume= 0.543 af
Outflow = 6.83 cfs @ 12.12 hrs, Volume= 0.543 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-100.00 hrs, dt= 0.05 hrs

Reach DP3: Design Point 3



Time span=5.00-100.00 hrs, dt=0.05 hrs, 1901 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment Pre 1: Pre 1 Runoff Area=261,194 sf 0.00% Impervious Runoff Depth=5.71"
Flow Length=605' Tc=18.8 min CN=73 Runoff=27.60 cfs 2.851 af

Subcatchment Pre 2: Pre 2 Runoff Area=85,244 sf 0.00% Impervious Runoff Depth=5.83"
Flow Length=394' Tc=10.7 min CN=74 Runoff=11.27 cfs 0.951 af

Subcatchment Pre 3: Pre 3 Runoff Area=61,828 sf 0.00% Impervious Runoff Depth=5.95"
Flow Length=150' Slope=0.0530 '/' Tc=8.8 min CN=75 Runoff=8.81 cfs 0.704 af

Reach DP1: Design Point 1 Inflow=27.60 cfs 2.851 af
Outflow=27.60 cfs 2.851 af

Reach DP2: Design Point 2 Inflow=11.27 cfs 0.951 af
Outflow=11.27 cfs 0.951 af

Reach DP3: Design Point 3 Inflow=8.81 cfs 0.704 af
Outflow=8.81 cfs 0.704 af

Total Runoff Area = 9.372 ac Runoff Volume = 4.506 af Average Runoff Depth = 5.77"
100.00% Pervious = 9.372 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment Pre 1: Pre 1

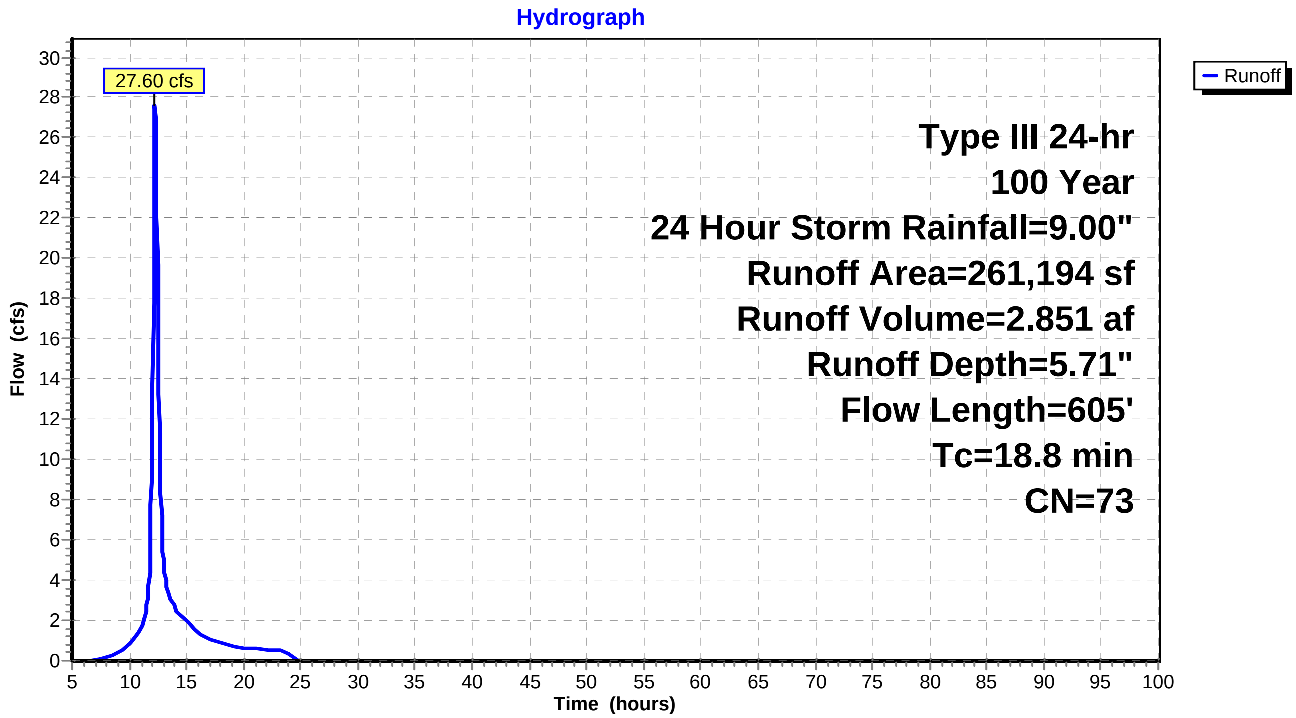
Runoff = 27.60 cfs @ 12.26 hrs, Volume= 2.851 af, Depth= 5.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year, 24 Hour Storm Rainfall=9.00"

Area (sf)	CN	Description
164,940	73	Woods, Fair, HSG C
96,254	74	>75% Grass cover, Good, HSG C
261,194	73	Weighted Average
261,194		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.8	250	0.0400	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.0	105	0.0667	1.81		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.0	250	0.0760	1.38		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
18.8	605	Total			

Subcatchment Pre 1: Pre 1



Summary for Subcatchment Pre 2: Pre 2

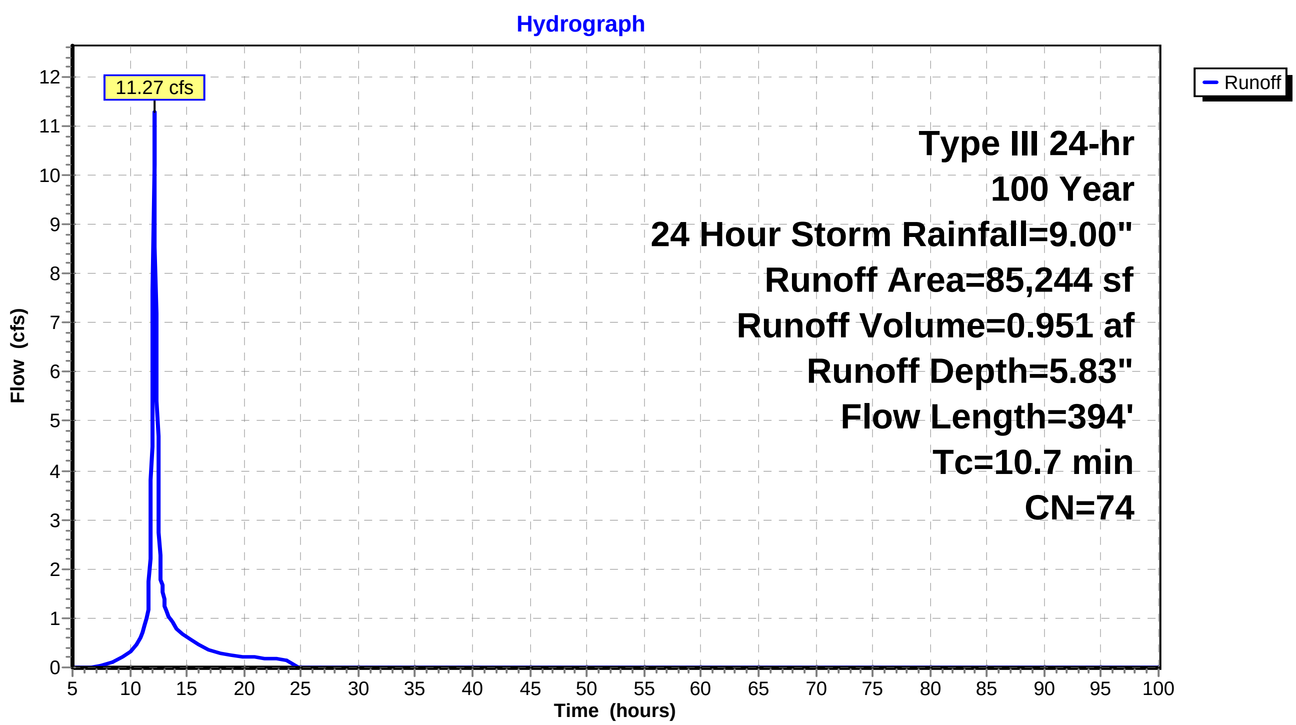
Runoff = 11.27 cfs @ 12.15 hrs, Volume= 0.951 af, Depth= 5.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year, 24 Hour Storm Rainfall=9.00"

Area (sf)	CN	Description
0	98	Paved parking, HSG C
64,912	73	Woods, Fair, HSG C
20,332	79	50-75% Grass cover, Fair, HSG C
85,244	74	Weighted Average
85,244		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	150	0.0500	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.7	244	0.1200	2.42		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.7	394	Total			

Subcatchment Pre 2: Pre 2



Summary for Subcatchment Pre 3: Pre 3

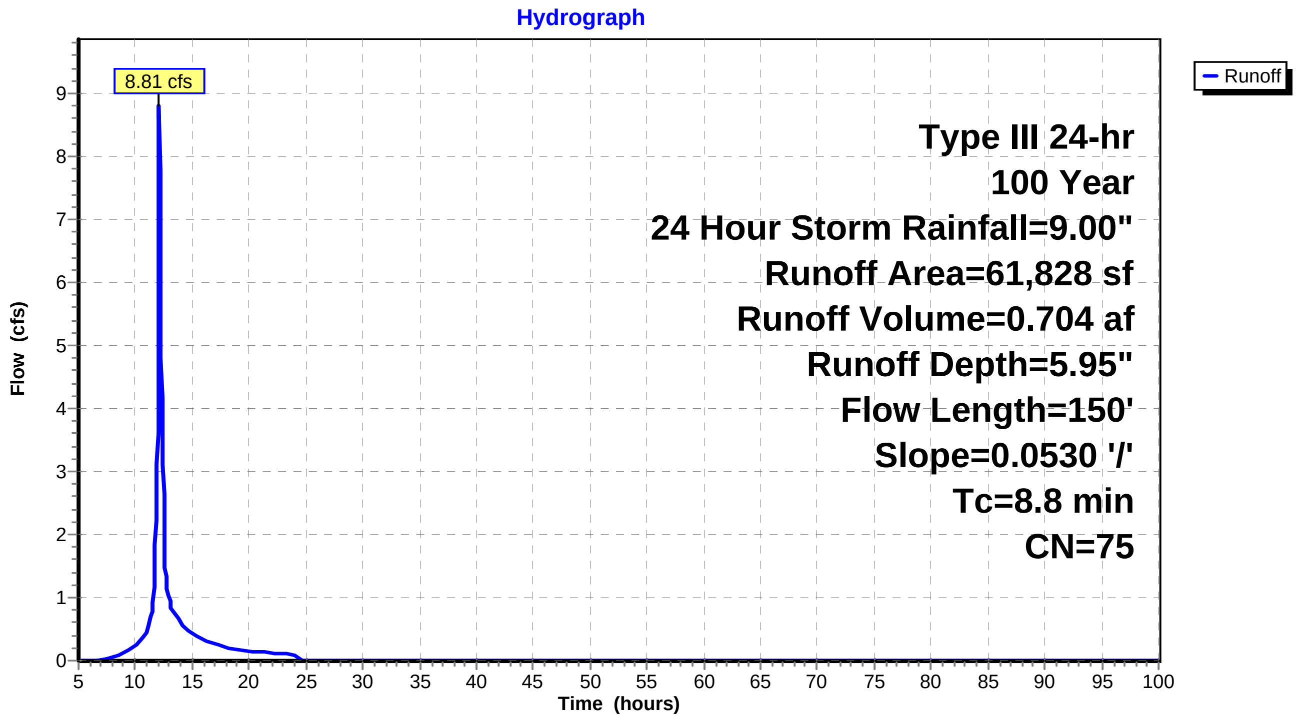
Runoff = 8.81 cfs @ 12.12 hrs, Volume= 0.704 af, Depth= 5.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-100.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year, 24 Hour Storm Rainfall=9.00"

Area (sf)	CN	Description
42,320	73	Woods, Fair, HSG C
19,508	79	50-75% Grass cover, Fair, HSG C
61,828	75	Weighted Average
61,828		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	150	0.0530	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"

Subcatchment Pre 3: Pre 3

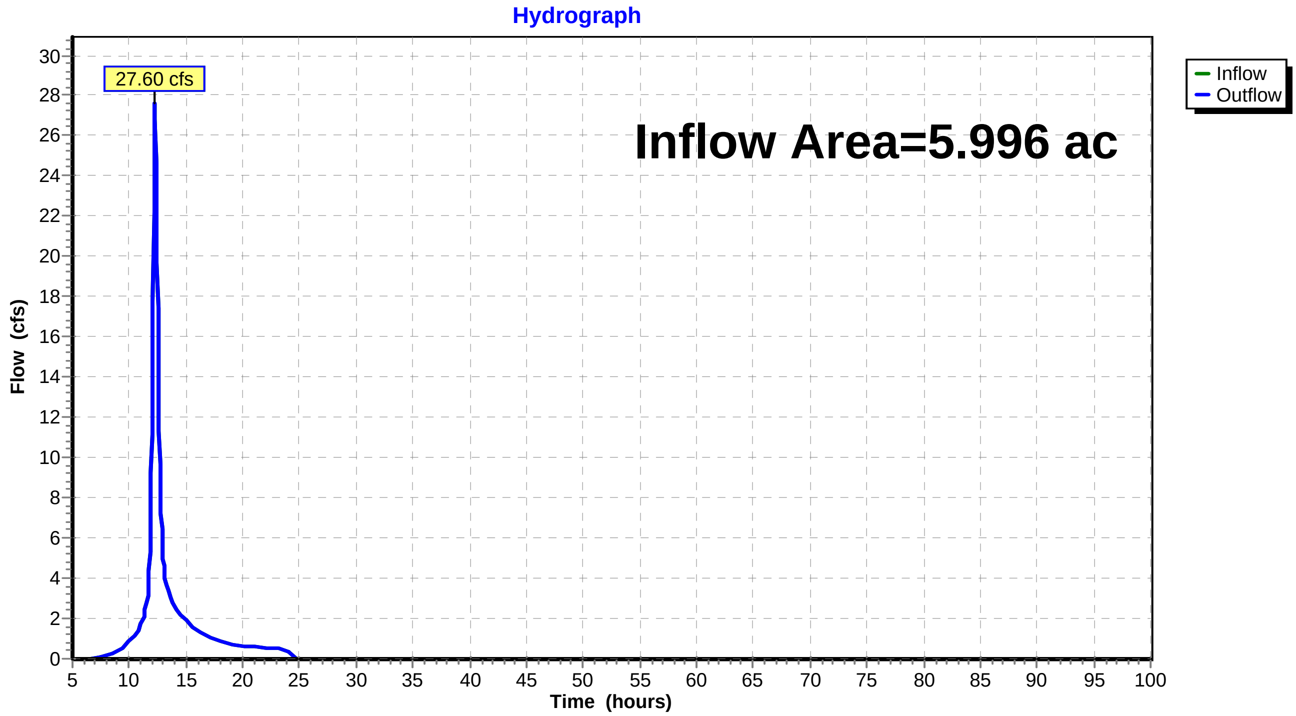


Summary for Reach DP1: Design Point 1

Inflow Area =	5.996 ac,	0.00% Impervious, Inflow Depth = 5.71"	for 100 Year, 24 Hour Storm event	
Inflow =	27.60 cfs @	12.26 hrs, Volume=	2.851 af	
Outflow =	27.60 cfs @	12.26 hrs, Volume=	2.851 af,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-100.00 hrs, dt= 0.05 hrs

Reach DP1: Design Point 1

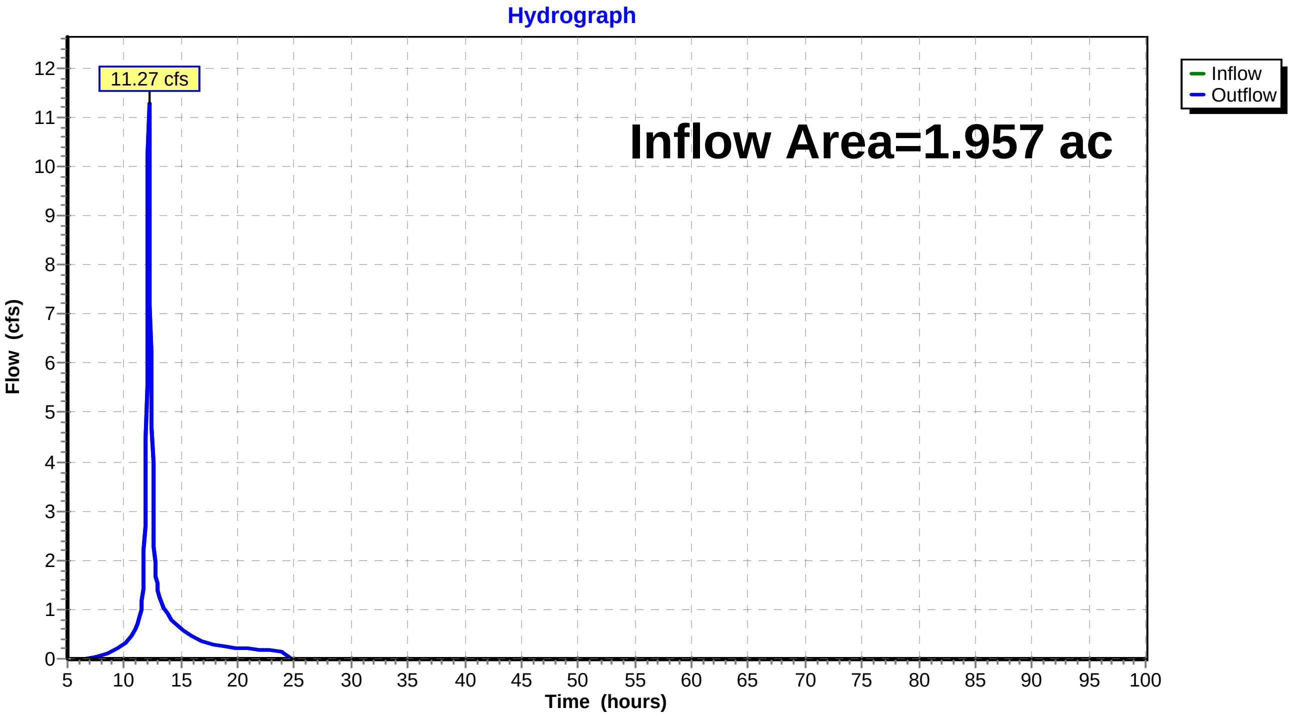


Summary for Reach DP2: Design Point 2

Inflow Area =	1.957 ac,	0.00% Impervious,	Inflow Depth = 5.83"	for 100 Year, 24 Hour Storm event	
Inflow =	11.27 cfs @	12.15 hrs,	Volume=	0.951 af	
Outflow =	11.27 cfs @	12.15 hrs,	Volume=	0.951 af,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-100.00 hrs, dt= 0.05 hrs

Reach DP2: Design Point 2

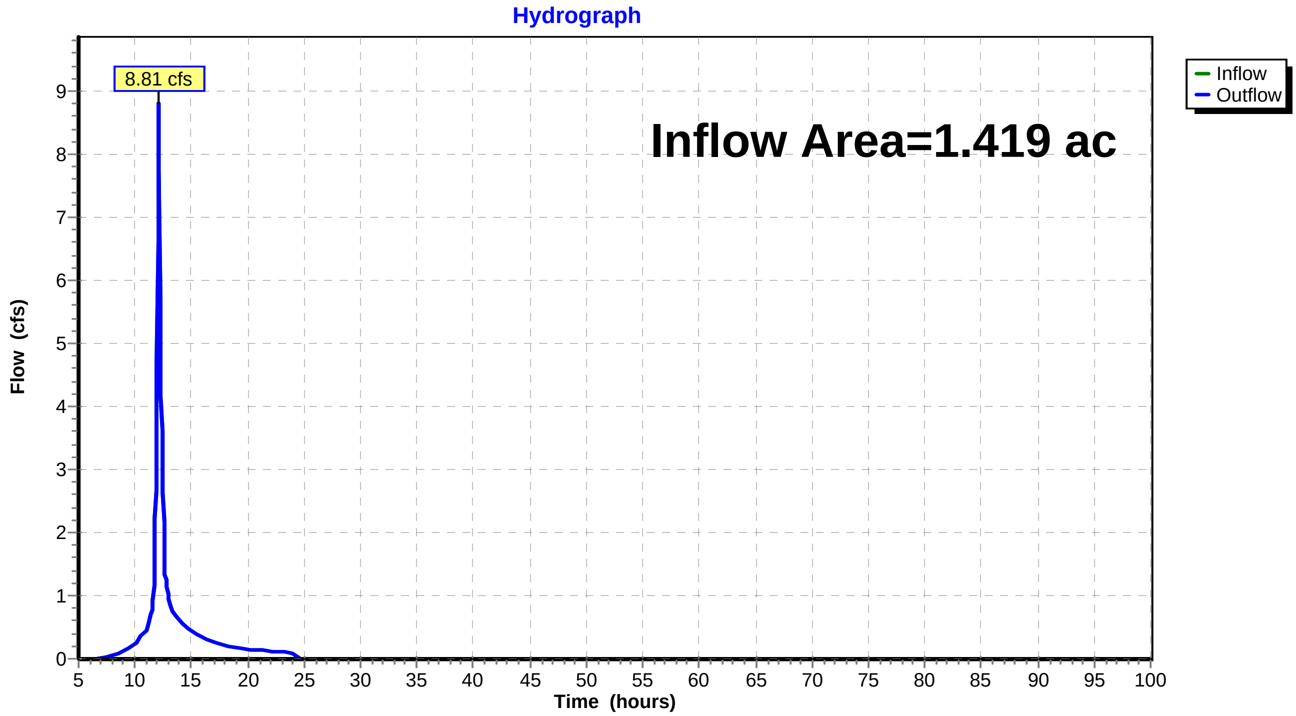


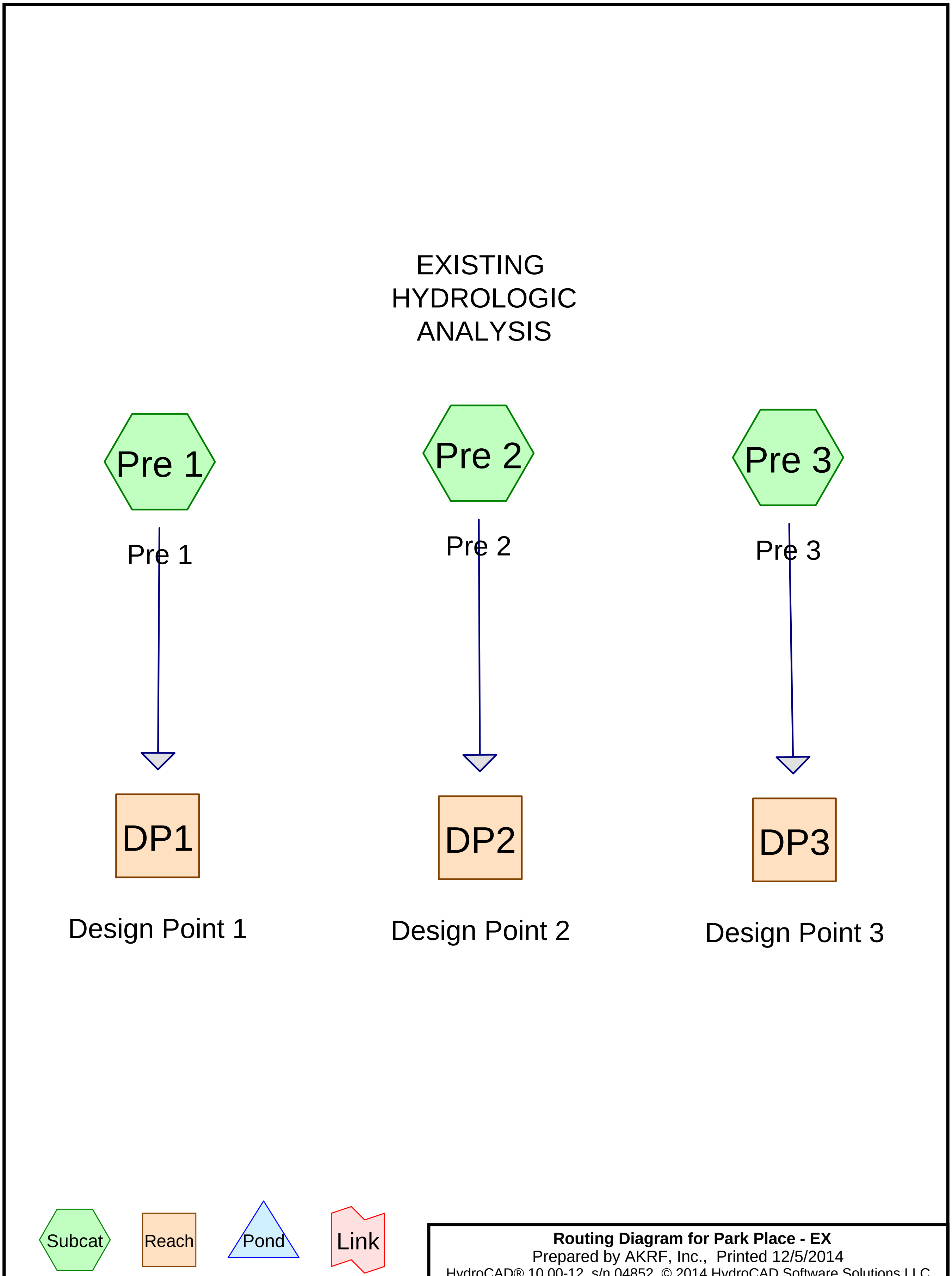
Summary for Reach DP3: Design Point 3

Inflow Area = 1.419 ac, 0.00% Impervious, Inflow Depth = 5.95" for 100 Year, 24 Hour Storm event
Inflow = 8.81 cfs @ 12.12 hrs, Volume= 0.704 af
Outflow = 8.81 cfs @ 12.12 hrs, Volume= 0.704 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-100.00 hrs, dt= 0.05 hrs

Reach DP3: Design Point 3





Routing Diagram for Park Place - EX
Prepared by AKRF, Inc., Printed 12/5/2014
HydroCAD® 10.00-12 s/n 04852 © 2014 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
39,840	79	50-75% Grass cover, Fair, HSG C (Pre 2, Pre 3)
96,254	74	>75% Grass cover, Good, HSG C (Pre 1)
51,412	98	Paved parking, HSG C (Pre 1, Pre 2, Pre 3)
220,760	73	Woods, Fair, HSG C (Pre 1, Pre 2, Pre 3)
408,266	**77**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
408,266	HSG C	Pre 1, Pre 2, Pre 3
0	HSG D	
0	Other	
408,266		**TOTAL AREA**

Time span=5.00-72.00 hrs, dt=0.05 hrs, 1341 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment Pre 1: Pre 1 Runoff Area=261,194 sf 1.36% Impervious Runoff Depth=1.04"
Flow Length=605' Tc=18.8 min CN=74 Runoff=4.72 cfs 22,583 cf

Subcatchment Pre 2: Pre 2 Runoff Area=85,244 sf 36.20% Impervious Runoff Depth=1.61"
Flow Length=394' Tc=10.7 min CN=83 Runoff=3.12 cfs 11,431 cf

Subcatchment Pre 3: Pre 3 Runoff Area=61,828 sf 27.47% Impervious Runoff Depth=1.54"
Flow Length=150' Slope=0.0530 '/' Tc=8.8 min CN=82 Runoff=2.27 cfs 7,925 cf

Reach DP1: Design Point 1 Inflow=4.72 cfs 22,583 cf
Outflow=4.72 cfs 22,583 cf

Reach DP2: Design Point 2 Inflow=3.12 cfs 11,431 cf
Outflow=3.12 cfs 11,431 cf

Reach DP3: Design Point 3 Inflow=2.27 cfs 7,925 cf
Outflow=2.27 cfs 7,925 cf

Total Runoff Area = 408,266 sf Runoff Volume = 41,939 cf Average Runoff Depth = 1.23"
87.41% Pervious = 356,854 sf 12.59% Impervious = 51,412 sf

Summary for Subcatchment Pre 1: Pre 1

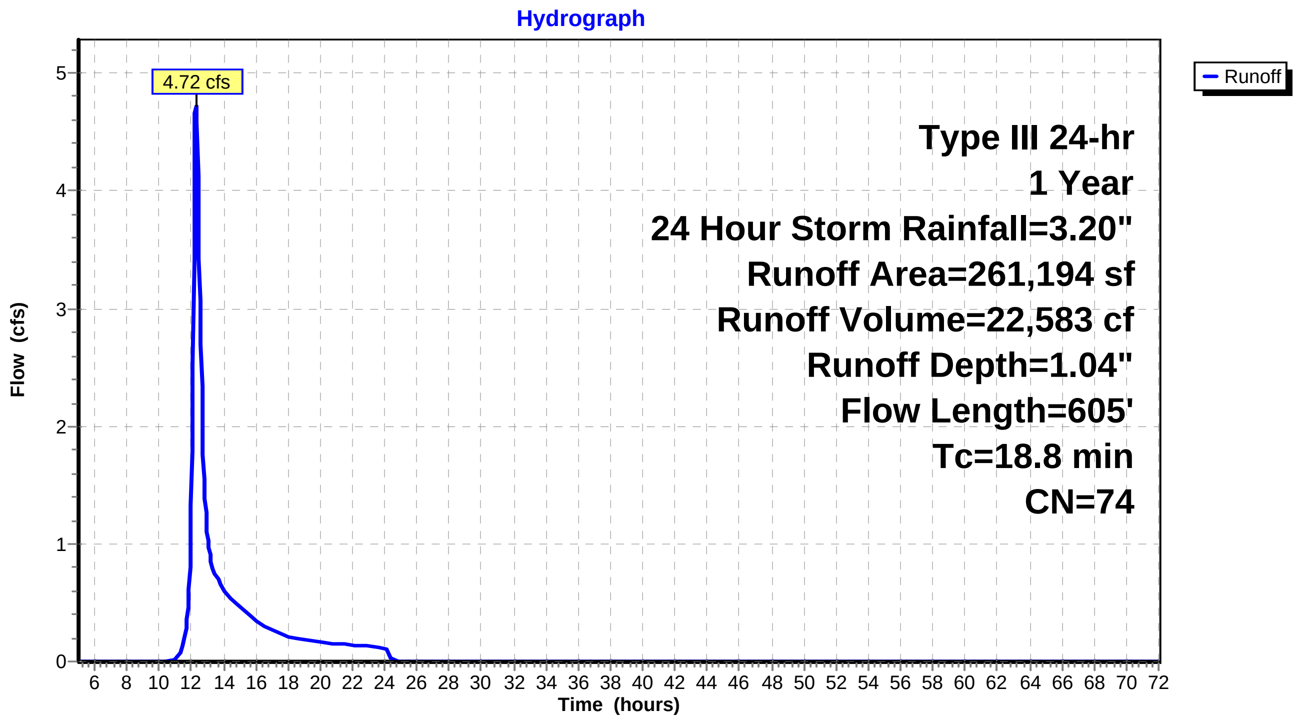
Runoff = 4.72 cfs @ 12.28 hrs, Volume= 22,583 cf, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 Year, 24 Hour Storm Rainfall=3.20"

Area (sf)	CN	Description
3,564	98	Paved parking, HSG C
161,376	73	Woods, Fair, HSG C
96,254	74	>75% Grass cover, Good, HSG C
261,194	74	Weighted Average
257,630		98.64% Pervious Area
3,564		1.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.8	250	0.0400	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.0	105	0.0667	1.81		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.0	250	0.0760	1.38		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
18.8	605	Total			

Subcatchment Pre 1: Pre 1



Summary for Subcatchment Pre 2: Pre 2

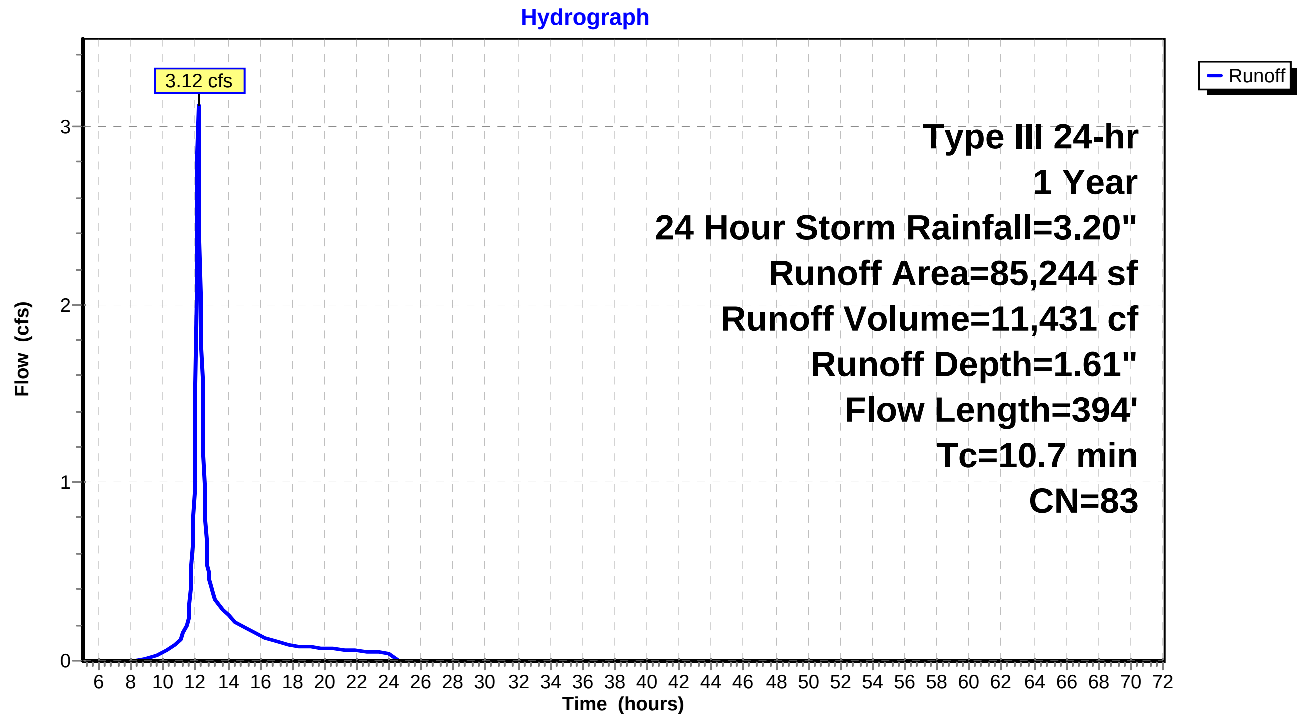
Runoff = 3.12 cfs @ 12.15 hrs, Volume= 11,431 cf, Depth= 1.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 Year, 24 Hour Storm Rainfall=3.20"

Area (sf)	CN	Description
30,862	98	Paved parking, HSG C
34,050	73	Woods, Fair, HSG C
20,332	79	50-75% Grass cover, Fair, HSG C
85,244	83	Weighted Average
54,382		63.80% Pervious Area
30,862		36.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	150	0.0500	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.7	244	0.1200	2.42		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.7	394	Total			

Subcatchment Pre 2: Pre 2



Summary for Subcatchment Pre 3: Pre 3

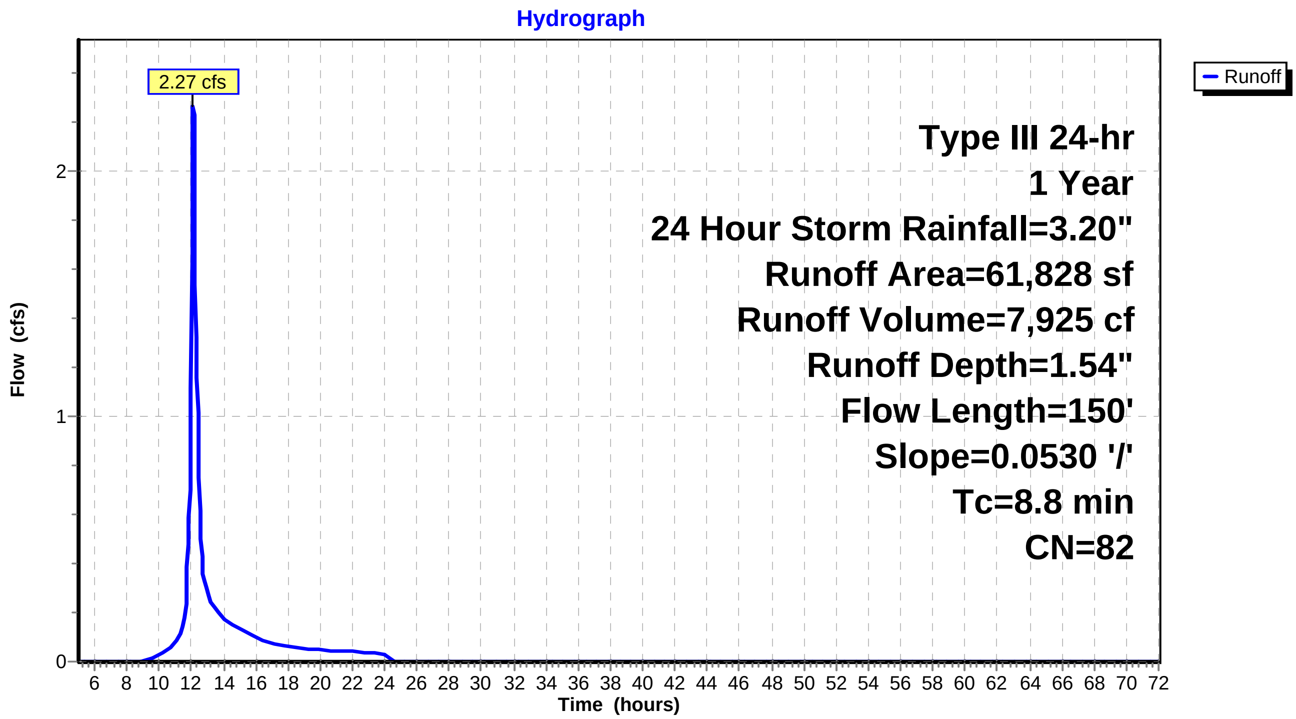
Runoff = 2.27 cfs @ 12.13 hrs, Volume= 7,925 cf, Depth= 1.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 1 Year, 24 Hour Storm Rainfall=3.20"

Area (sf)	CN	Description
16,986	98	Paved parking, HSG C
25,334	73	Woods, Fair, HSG C
19,508	79	50-75% Grass cover, Fair, HSG C
61,828	82	Weighted Average
44,842		72.53% Pervious Area
16,986		27.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	150	0.0530	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"

Subcatchment Pre 3: Pre 3

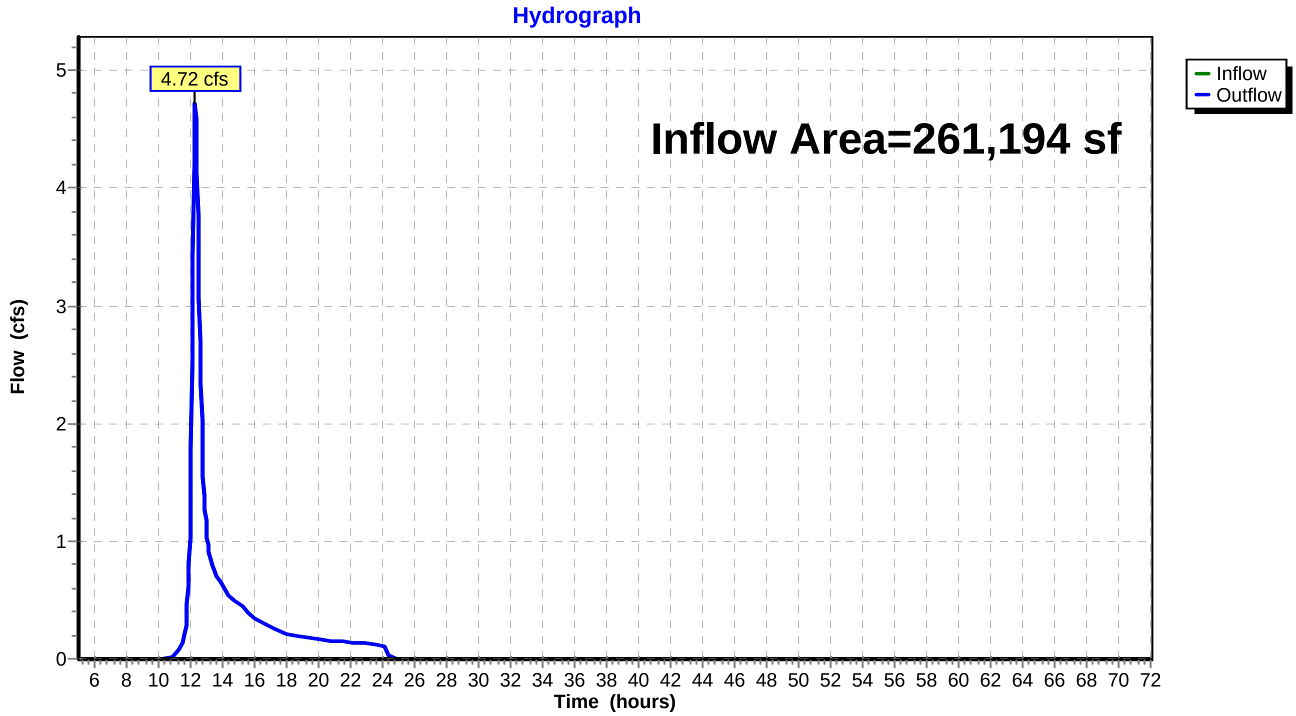


Summary for Reach DP1: Design Point 1

Inflow Area =	261,194 sf,	1.36% Impervious,	Inflow Depth = 1.04"	for 1 Year, 24 Hour Storm event
Inflow =	4.72 cfs @	12.28 hrs, Volume=	22,583 cf	
Outflow =	4.72 cfs @	12.28 hrs, Volume=	22,583 cf, Atten= 0%, Lag= 0.0 min	

Routing by Stor-Ind+Trans method, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs

Reach DP1: Design Point 1

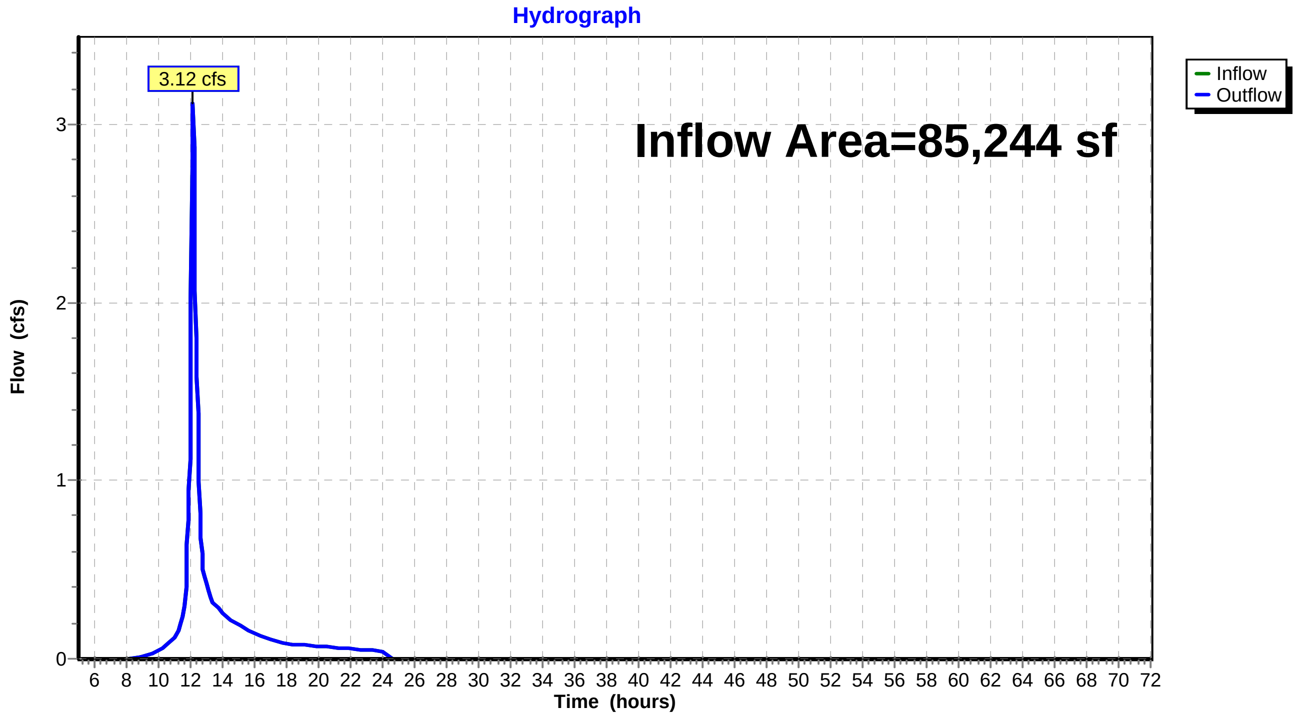


Summary for Reach DP2: Design Point 2

Inflow Area =	85,244 sf,	36.20% Impervious,	Inflow Depth = 1.61"	for 1 Year, 24 Hour Storm event
Inflow =	3.12 cfs @	12.15 hrs, Volume=	11,431 cf	
Outflow =	3.12 cfs @	12.15 hrs, Volume=	11,431 cf, Atten= 0%, Lag= 0.0 min	

Routing by Stor-Ind+Trans method, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs

Reach DP2: Design Point 2

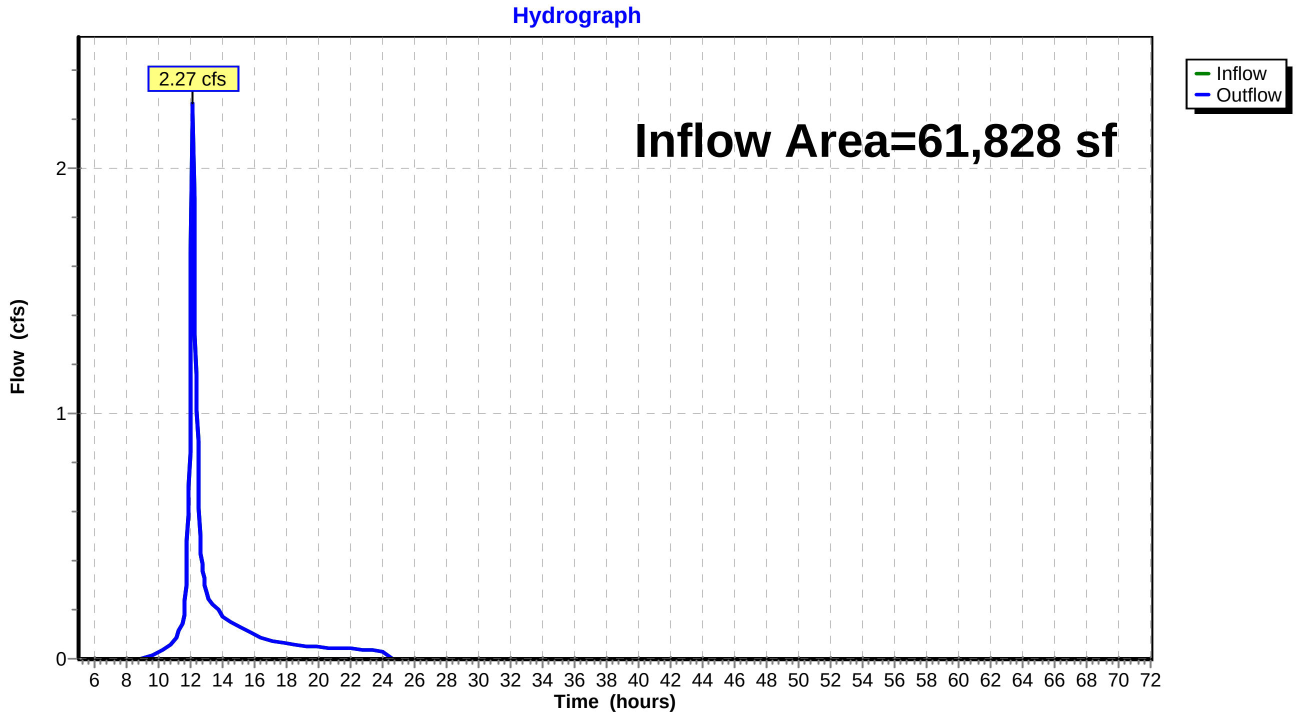


Summary for Reach DP3: Design Point 3

Inflow Area = 61,828 sf, 27.47% Impervious, Inflow Depth = 1.54" for 1 Year, 24 Hour Storm event
Inflow = 2.27 cfs @ 12.13 hrs, Volume= 7,925 cf
Outflow = 2.27 cfs @ 12.13 hrs, Volume= 7,925 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs

Reach DP3: Design Point 3



Time span=5.00-72.00 hrs, dt=0.05 hrs, 1341 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment Pre 1: Pre 1 Runoff Area=261,194 sf 1.36% Impervious Runoff Depth=1.31"
Flow Length=605' Tc=18.8 min CN=74 Runoff=6.09 cfs 28,501 cf

Subcatchment Pre 2: Pre 2 Runoff Area=85,244 sf 36.20% Impervious Runoff Depth=1.94"
Flow Length=394' Tc=10.7 min CN=83 Runoff=3.78 cfs 13,802 cf

Subcatchment Pre 3: Pre 3 Runoff Area=61,828 sf 27.47% Impervious Runoff Depth=1.87"
Flow Length=150' Slope=0.0530 '/' Tc=8.8 min CN=82 Runoff=2.76 cfs 9,612 cf

Reach DP1: Design Point 1 Inflow=6.09 cfs 28,501 cf
Outflow=6.09 cfs 28,501 cf

Reach DP2: Design Point 2 Inflow=3.78 cfs 13,802 cf
Outflow=3.78 cfs 13,802 cf

Reach DP3: Design Point 3 Inflow=2.76 cfs 9,612 cf
Outflow=2.76 cfs 9,612 cf

Total Runoff Area = 408,266 sf Runoff Volume = 51,915 cf Average Runoff Depth = 1.53"
87.41% Pervious = 356,854 sf 12.59% Impervious = 51,412 sf

Summary for Subcatchment Pre 1: Pre 1

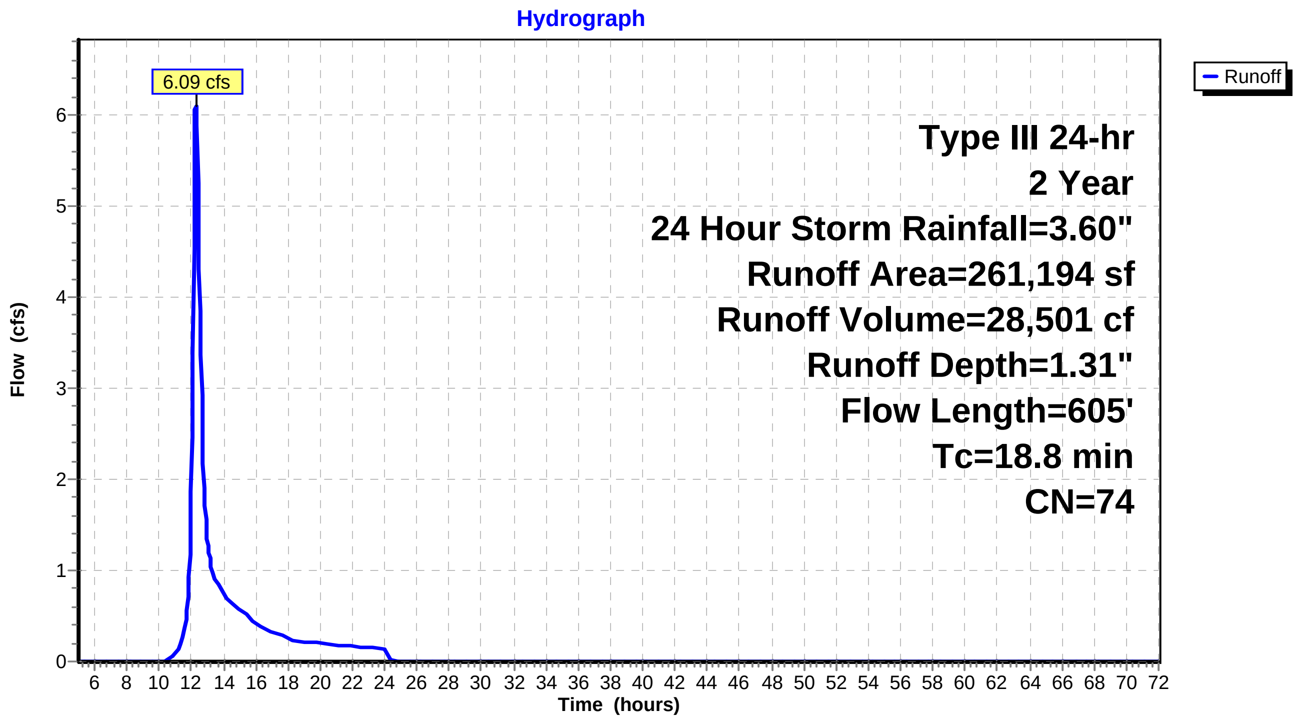
Runoff = 6.09 cfs @ 12.28 hrs, Volume= 28,501 cf, Depth= 1.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year, 24 Hour Storm Rainfall=3.60"

Area (sf)	CN	Description
3,564	98	Paved parking, HSG C
161,376	73	Woods, Fair, HSG C
96,254	74	>75% Grass cover, Good, HSG C
261,194	74	Weighted Average
257,630		98.64% Pervious Area
3,564		1.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.8	250	0.0400	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.0	105	0.0667	1.81		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.0	250	0.0760	1.38		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
18.8	605	Total			

Subcatchment Pre 1: Pre 1



Summary for Subcatchment Pre 2: Pre 2

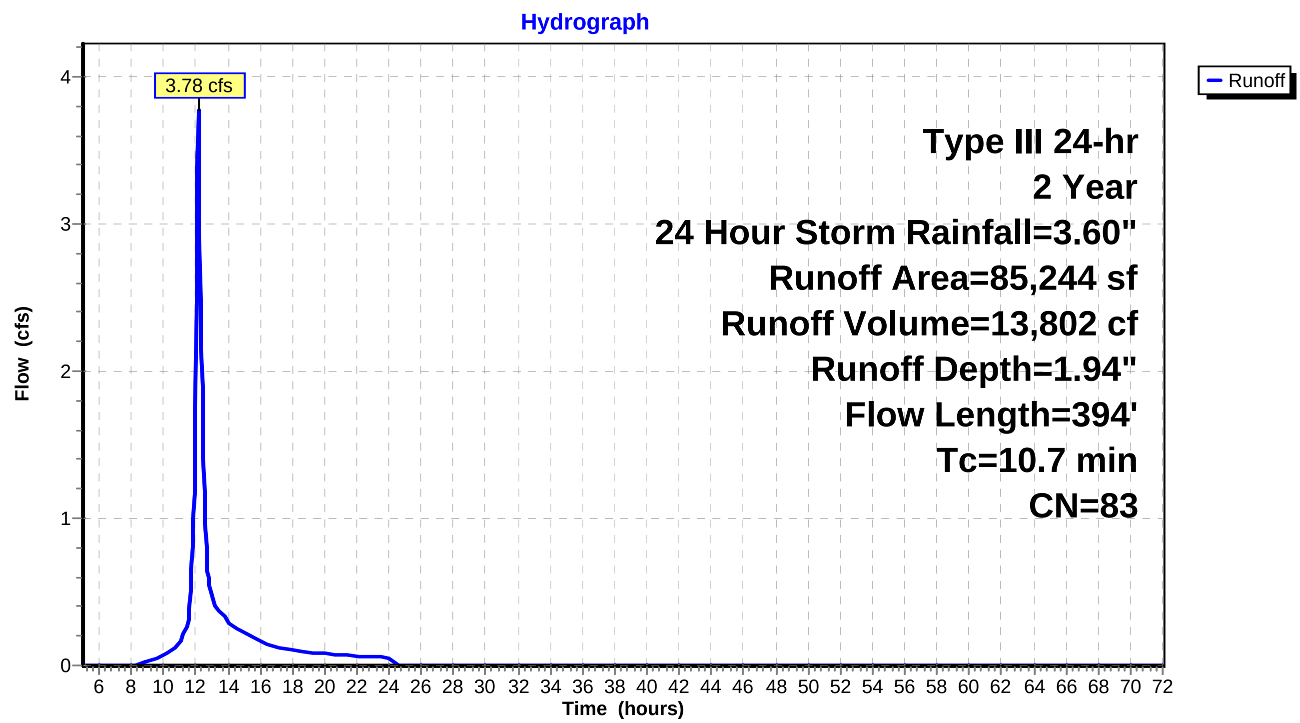
Runoff = 3.78 cfs @ 12.15 hrs, Volume= 13,802 cf, Depth= 1.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year, 24 Hour Storm Rainfall=3.60"

Area (sf)	CN	Description
30,862	98	Paved parking, HSG C
34,050	73	Woods, Fair, HSG C
20,332	79	50-75% Grass cover, Fair, HSG C
85,244	83	Weighted Average
54,382		63.80% Pervious Area
30,862		36.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	150	0.0500	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.7	244	0.1200	2.42		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.7	394	Total			

Subcatchment Pre 2: Pre 2



Summary for Subcatchment Pre 3: Pre 3

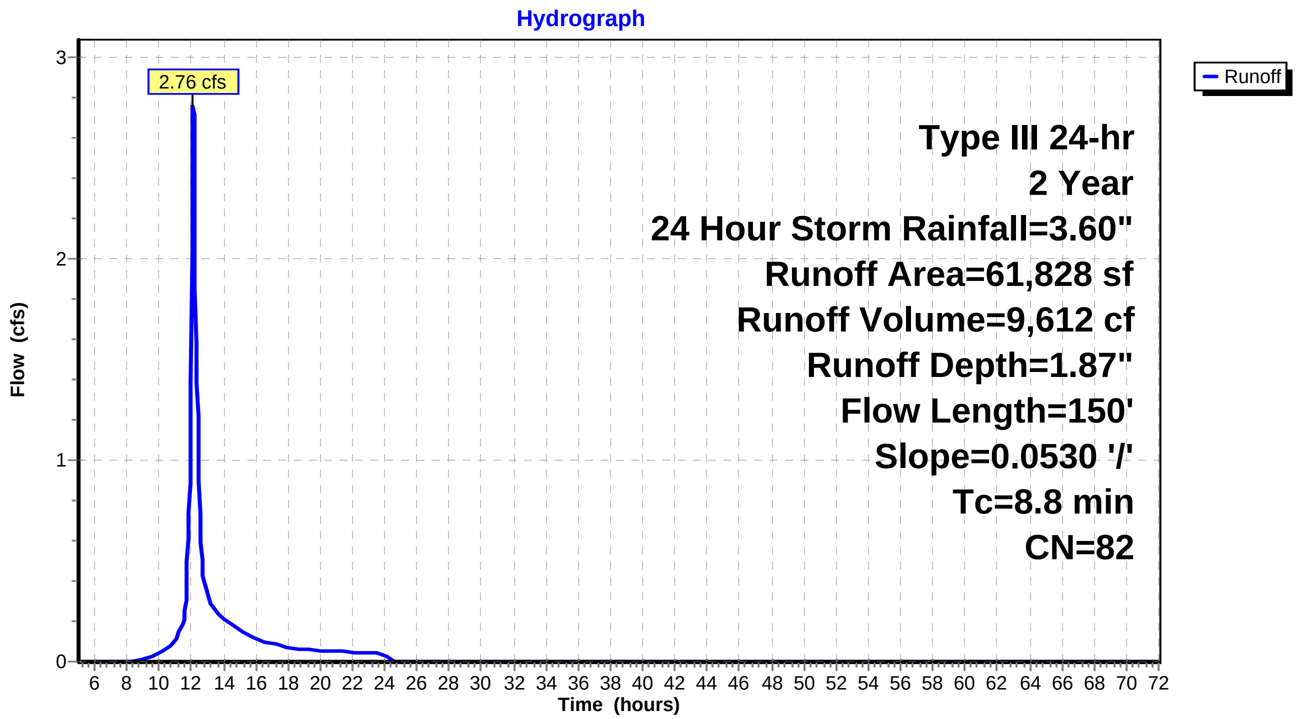
Runoff = 2.76 cfs @ 12.13 hrs, Volume= 9,612 cf, Depth= 1.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year, 24 Hour Storm Rainfall=3.60"

Area (sf)	CN	Description
16,986	98	Paved parking, HSG C
25,334	73	Woods, Fair, HSG C
19,508	79	50-75% Grass cover, Fair, HSG C
61,828	82	Weighted Average
44,842		72.53% Pervious Area
16,986		27.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	150	0.0530	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"

Subcatchment Pre 3: Pre 3

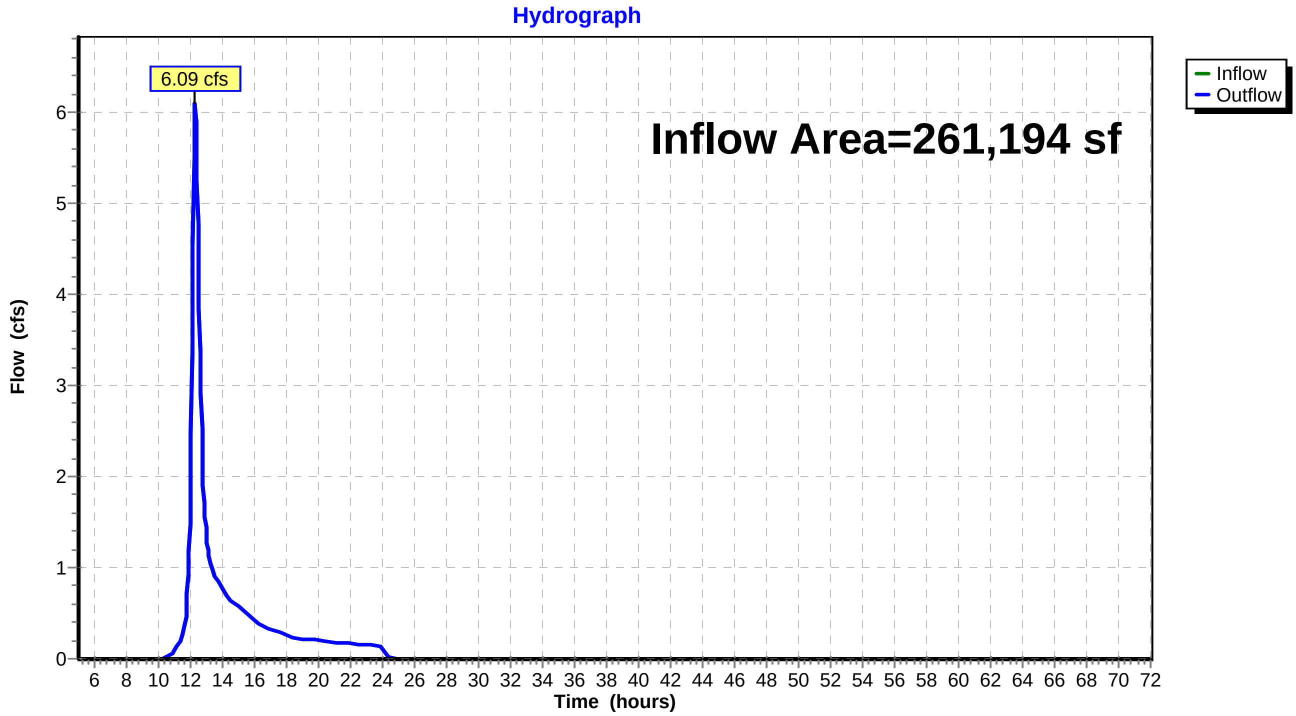


Summary for Reach DP1: Design Point 1

Inflow Area = 261,194 sf, 1.36% Impervious, Inflow Depth = 1.31" for 2 Year, 24 Hour Storm event
Inflow = 6.09 cfs @ 12.28 hrs, Volume= 28,501 cf
Outflow = 6.09 cfs @ 12.28 hrs, Volume= 28,501 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs

Reach DP1: Design Point 1

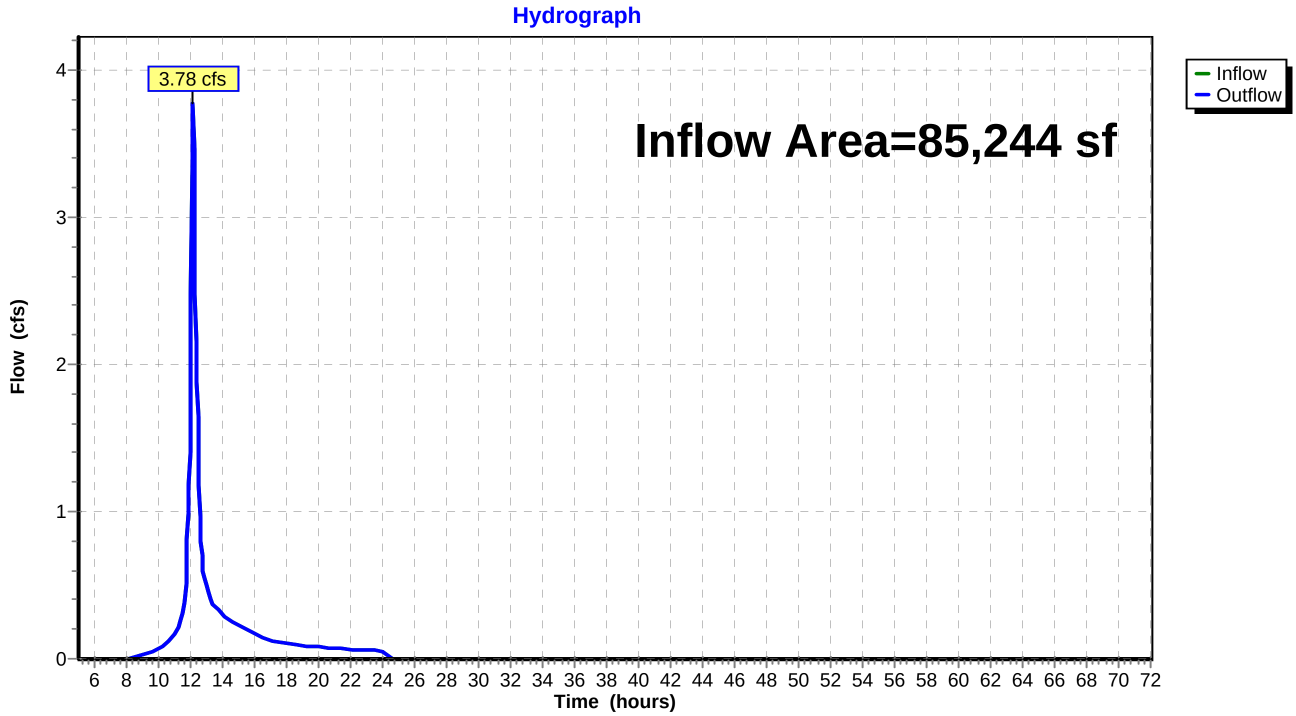


Summary for Reach DP2: Design Point 2

Inflow Area = 85,244 sf, 36.20% Impervious, Inflow Depth = 1.94" for 2 Year, 24 Hour Storm event
Inflow = 3.78 cfs @ 12.15 hrs, Volume= 13,802 cf
Outflow = 3.78 cfs @ 12.15 hrs, Volume= 13,802 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs

Reach DP2: Design Point 2

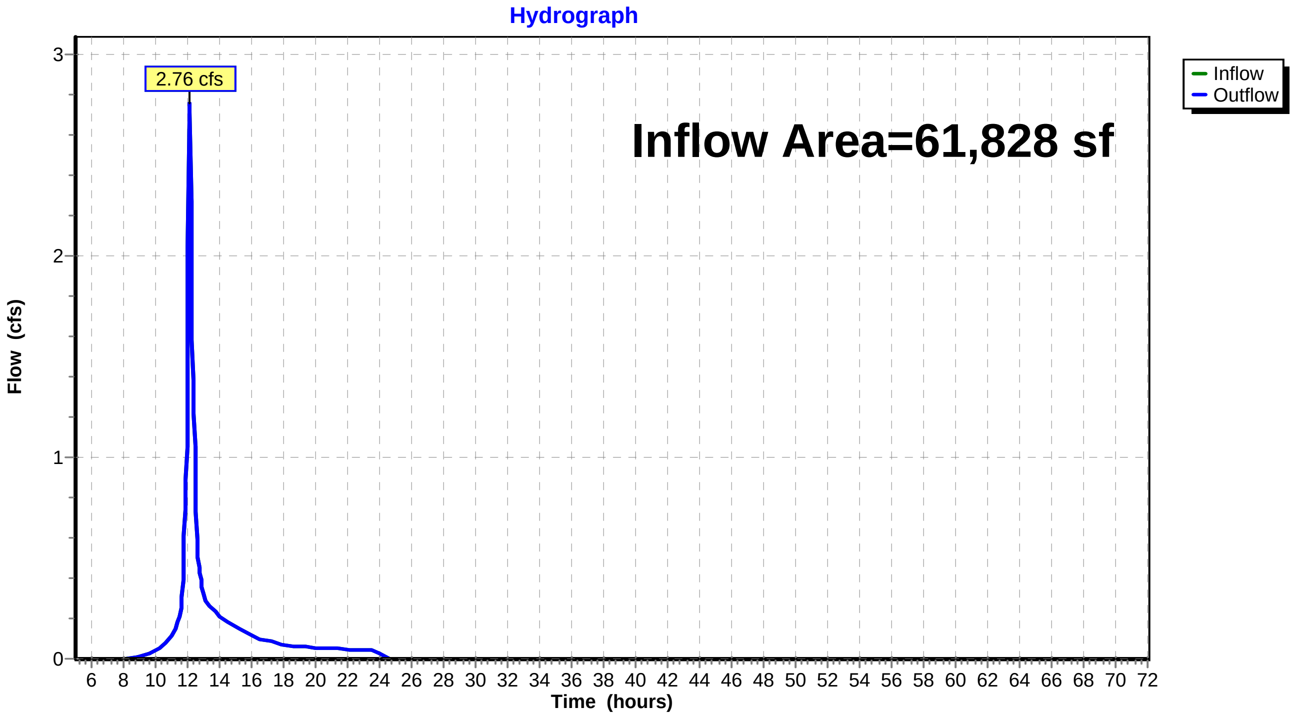


Summary for Reach DP3: Design Point 3

Inflow Area = 61,828 sf, 27.47% Impervious, Inflow Depth = 1.87" for 2 Year, 24 Hour Storm event
Inflow = 2.76 cfs @ 12.13 hrs, Volume= 9,612 cf
Outflow = 2.76 cfs @ 12.13 hrs, Volume= 9,612 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs

Reach DP3: Design Point 3



Time span=5.00-72.00 hrs, dt=0.05 hrs, 1341 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment Pre 1: Pre 1 Runoff Area=261,194 sf 1.36% Impervious Runoff Depth=2.36"
Flow Length=605' Tc=18.8 min CN=74 Runoff=11.38 cfs 51,461 cf

Subcatchment Pre 2: Pre 2 Runoff Area=85,244 sf 36.20% Impervious Runoff Depth=3.17"
Flow Length=394' Tc=10.7 min CN=83 Runoff=6.15 cfs 22,548 cf

Subcatchment Pre 3: Pre 3 Runoff Area=61,828 sf 27.47% Impervious Runoff Depth=3.08"
Flow Length=150' Slope=0.0530 '/' Tc=8.8 min CN=82 Runoff=4.58 cfs 15,864 cf

Reach DP1: Design Point 1 Inflow=11.38 cfs 51,461 cf
Outflow=11.38 cfs 51,461 cf

Reach DP2: Design Point 2 Inflow=6.15 cfs 22,548 cf
Outflow=6.15 cfs 22,548 cf

Reach DP3: Design Point 3 Inflow=4.58 cfs 15,864 cf
Outflow=4.58 cfs 15,864 cf

Total Runoff Area = 408,266 sf Runoff Volume = 89,873 cf Average Runoff Depth = 2.64"
87.41% Pervious = 356,854 sf 12.59% Impervious = 51,412 sf

Summary for Subcatchment Pre 1: Pre 1

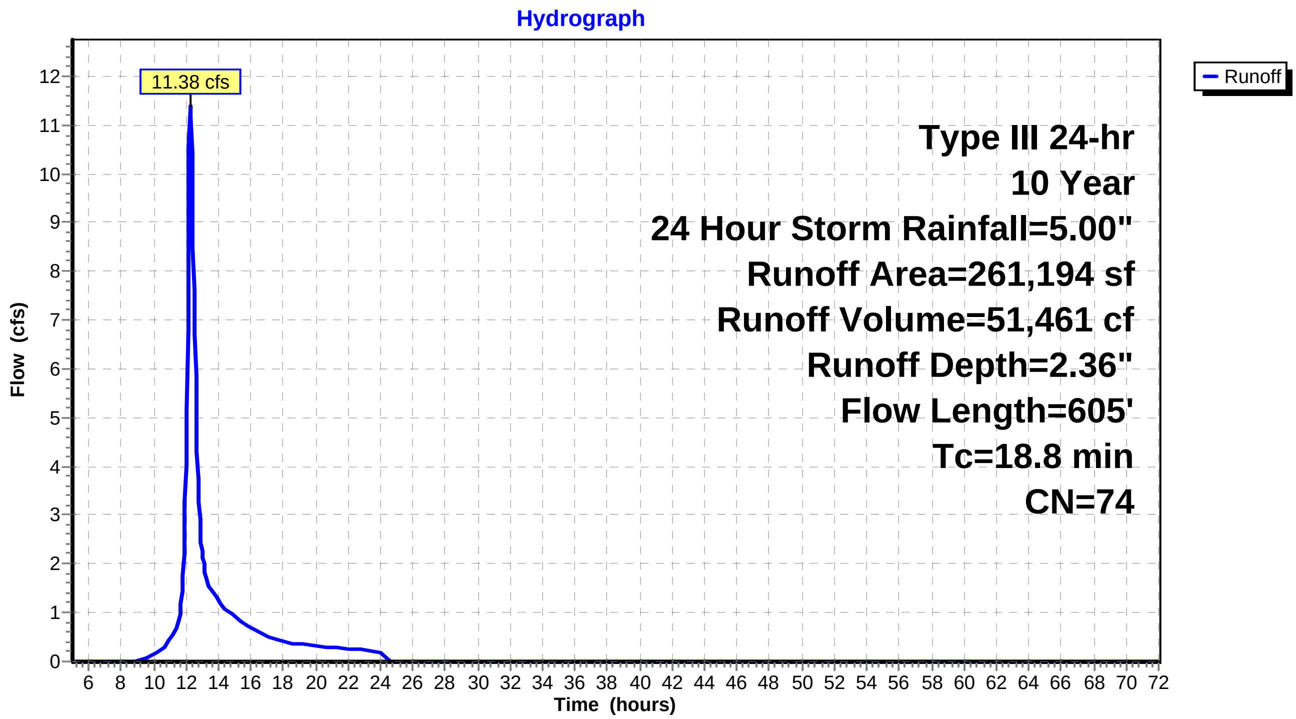
Runoff = 11.38 cfs @ 12.27 hrs, Volume= 51,461 cf, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year, 24 Hour Storm Rainfall=5.00"

Area (sf)	CN	Description
3,564	98	Paved parking, HSG C
161,376	73	Woods, Fair, HSG C
96,254	74	>75% Grass cover, Good, HSG C
261,194	74	Weighted Average
257,630		98.64% Pervious Area
3,564		1.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.8	250	0.0400	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.0	105	0.0667	1.81		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.0	250	0.0760	1.38		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
18.8	605	Total			

Subcatchment Pre 1: Pre 1



Summary for Subcatchment Pre 2: Pre 2

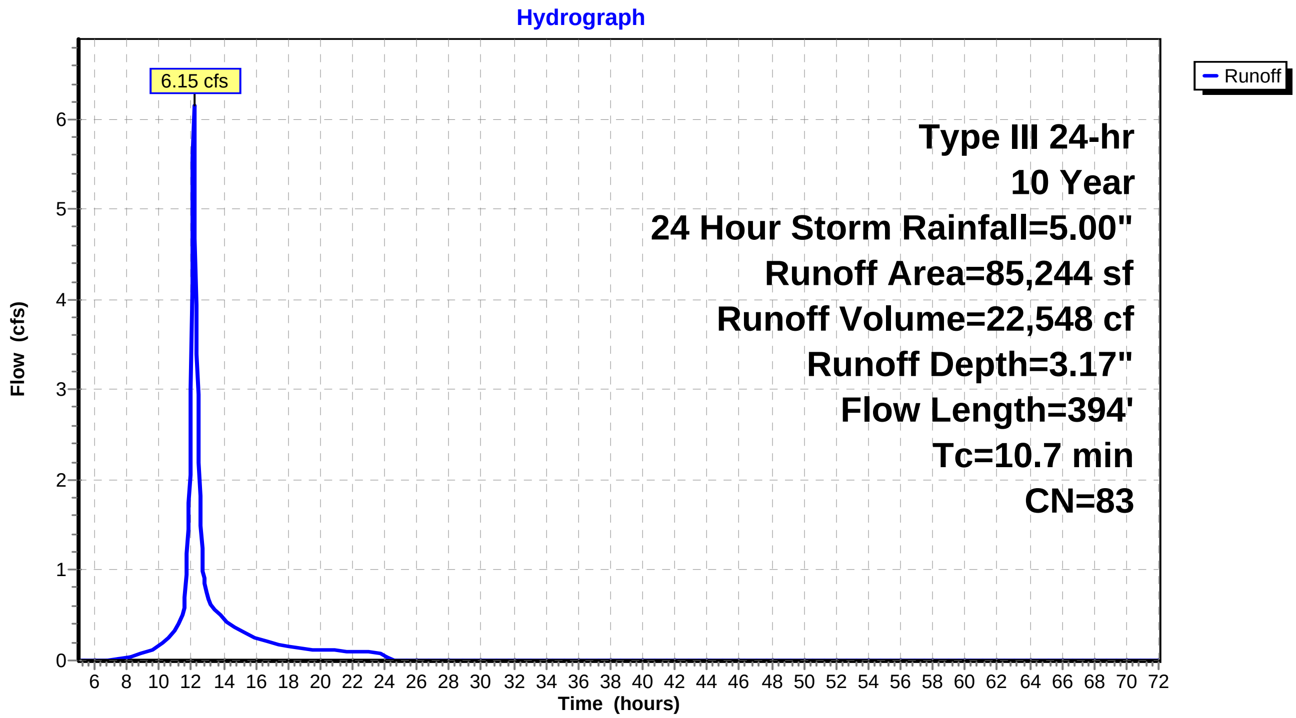
Runoff = 6.15 cfs @ 12.15 hrs, Volume= 22,548 cf, Depth= 3.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year, 24 Hour Storm Rainfall=5.00"

Area (sf)	CN	Description
30,862	98	Paved parking, HSG C
34,050	73	Woods, Fair, HSG C
20,332	79	50-75% Grass cover, Fair, HSG C
85,244	83	Weighted Average
54,382		63.80% Pervious Area
30,862		36.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	150	0.0500	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.7	244	0.1200	2.42		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.7	394	Total			

Subcatchment Pre 2: Pre 2



Summary for Subcatchment Pre 3: Pre 3

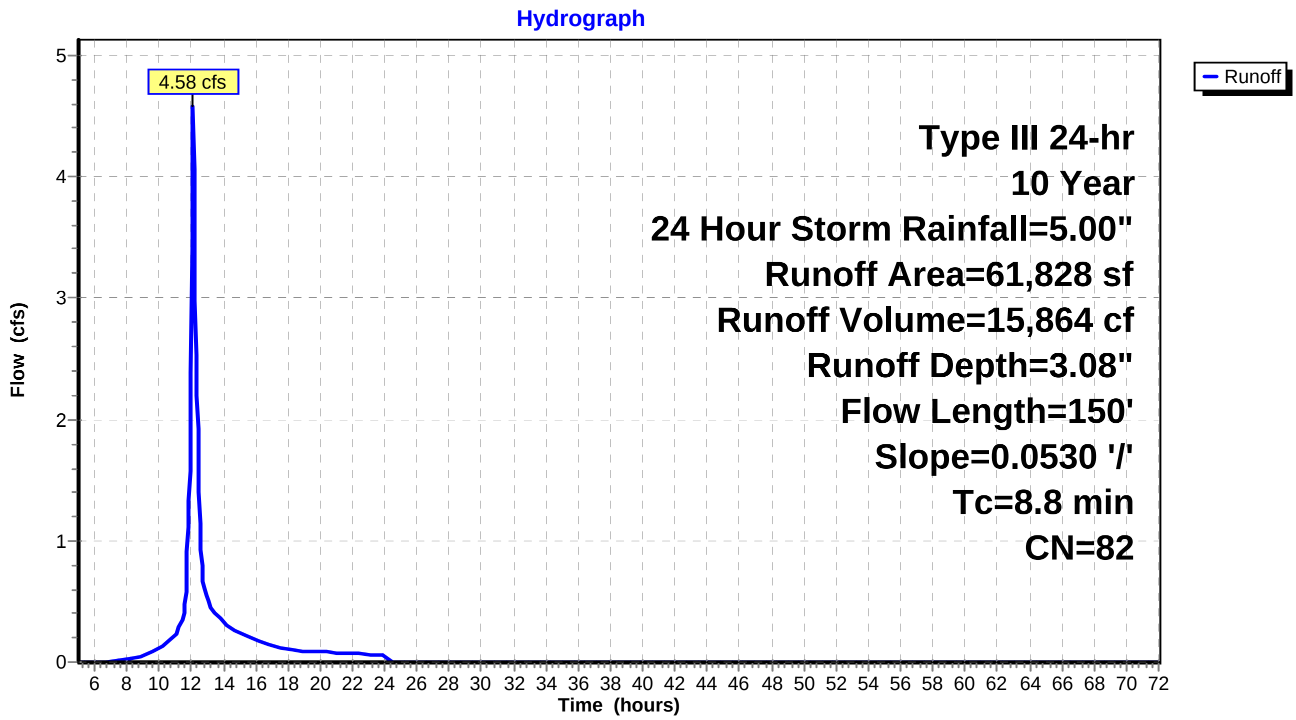
Runoff = 4.58 cfs @ 12.12 hrs, Volume= 15,864 cf, Depth= 3.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year, 24 Hour Storm Rainfall=5.00"

Area (sf)	CN	Description
16,986	98	Paved parking, HSG C
25,334	73	Woods, Fair, HSG C
19,508	79	50-75% Grass cover, Fair, HSG C
61,828	82	Weighted Average
44,842		72.53% Pervious Area
16,986		27.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	150	0.0530	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"

Subcatchment Pre 3: Pre 3

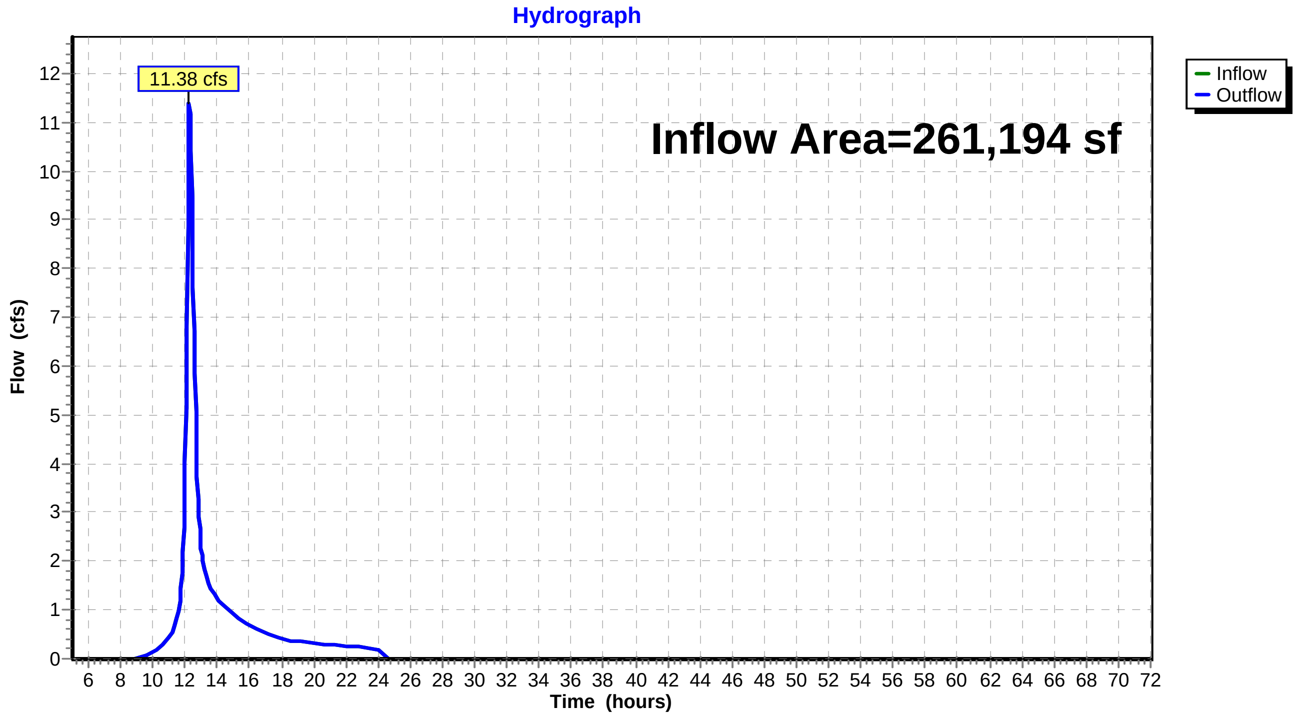


Summary for Reach DP1: Design Point 1

Inflow Area =	261,194 sf,	1.36% Impervious,	Inflow Depth = 2.36"	for 10 Year, 24 Hour Storm event
Inflow =	11.38 cfs @	12.27 hrs, Volume=	51,461 cf	
Outflow =	11.38 cfs @	12.27 hrs, Volume=	51,461 cf, Atten= 0%, Lag= 0.0 min	

Routing by Stor-Ind+Trans method, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs

Reach DP1: Design Point 1

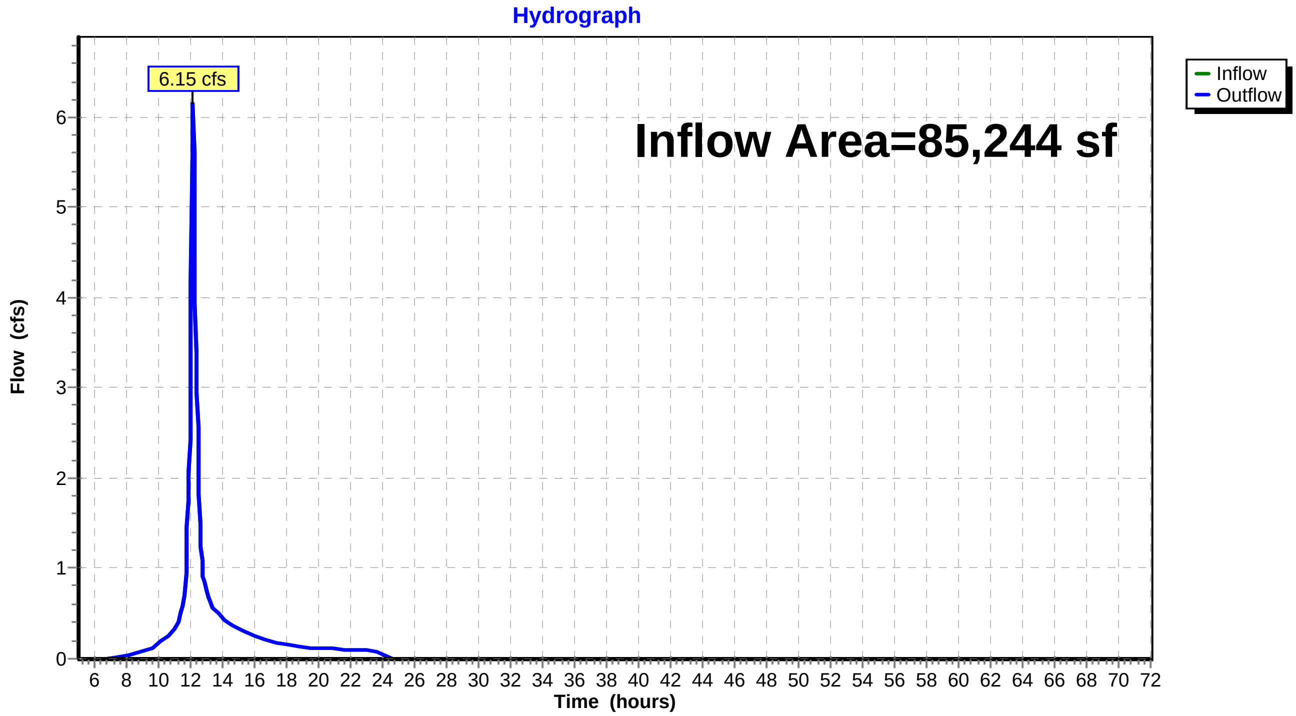


Summary for Reach DP2: Design Point 2

Inflow Area = 85,244 sf, 36.20% Impervious, Inflow Depth = 3.17" for 10 Year, 24 Hour Storm event
Inflow = 6.15 cfs @ 12.15 hrs, Volume= 22,548 cf
Outflow = 6.15 cfs @ 12.15 hrs, Volume= 22,548 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs

Reach DP2: Design Point 2

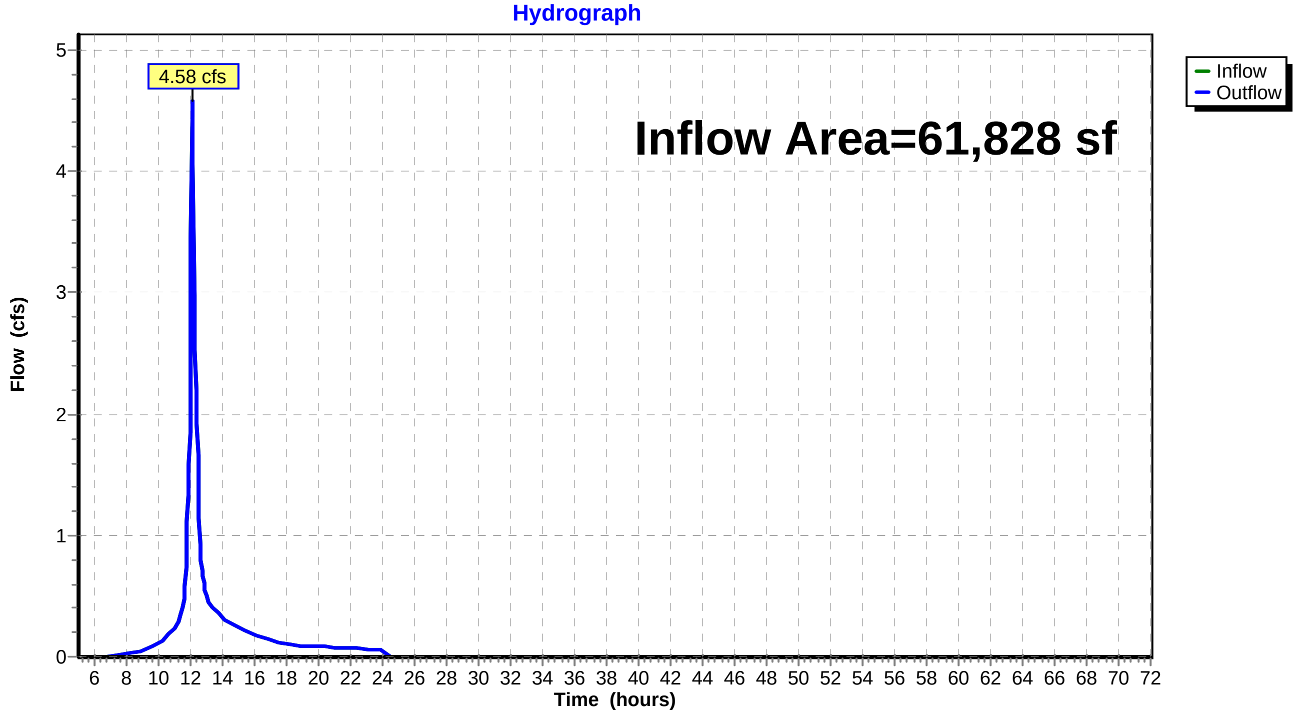


Summary for Reach DP3: Design Point 3

Inflow Area =	61,828 sf,	27.47% Impervious,	Inflow Depth = 3.08"	for 10 Year, 24 Hour Storm event	
Inflow =	4.58 cfs @	12.12 hrs,	Volume=	15,864 cf	
Outflow =	4.58 cfs @	12.12 hrs,	Volume=	15,864 cf,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs

Reach DP3: Design Point 3



Time span=5.00-72.00 hrs, dt=0.05 hrs, 1341 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment Pre 1: Pre 1	Runoff Area=261,194 sf 1.36% Impervious Runoff Depth=3.61" Flow Length=605' Tc=18.8 min CN=74 Runoff=17.51 cfs 78,568 cf
Subcatchment Pre 2: Pre 2	Runoff Area=85,244 sf 36.20% Impervious Runoff Depth=4.56" Flow Length=394' Tc=10.7 min CN=83 Runoff=8.74 cfs 32,376 cf
Subcatchment Pre 3: Pre 3	Runoff Area=61,828 sf 27.47% Impervious Runoff Depth=4.45" Flow Length=150' Slope=0.0530 '/' Tc=8.8 min CN=82 Runoff=6.56 cfs 22,925 cf
Reach DP1: Design Point 1	Inflow=17.51 cfs 78,568 cf Outflow=17.51 cfs 78,568 cf
Reach DP2: Design Point 2	Inflow=8.74 cfs 32,376 cf Outflow=8.74 cfs 32,376 cf
Reach DP3: Design Point 3	Inflow=6.56 cfs 22,925 cf Outflow=6.56 cfs 22,925 cf

Total Runoff Area = 408,266 sf Runoff Volume = 133,869 cf Average Runoff Depth = 3.93"
87.41% Pervious = 356,854 sf 12.59% Impervious = 51,412 sf

Summary for Subcatchment Pre 1: Pre 1

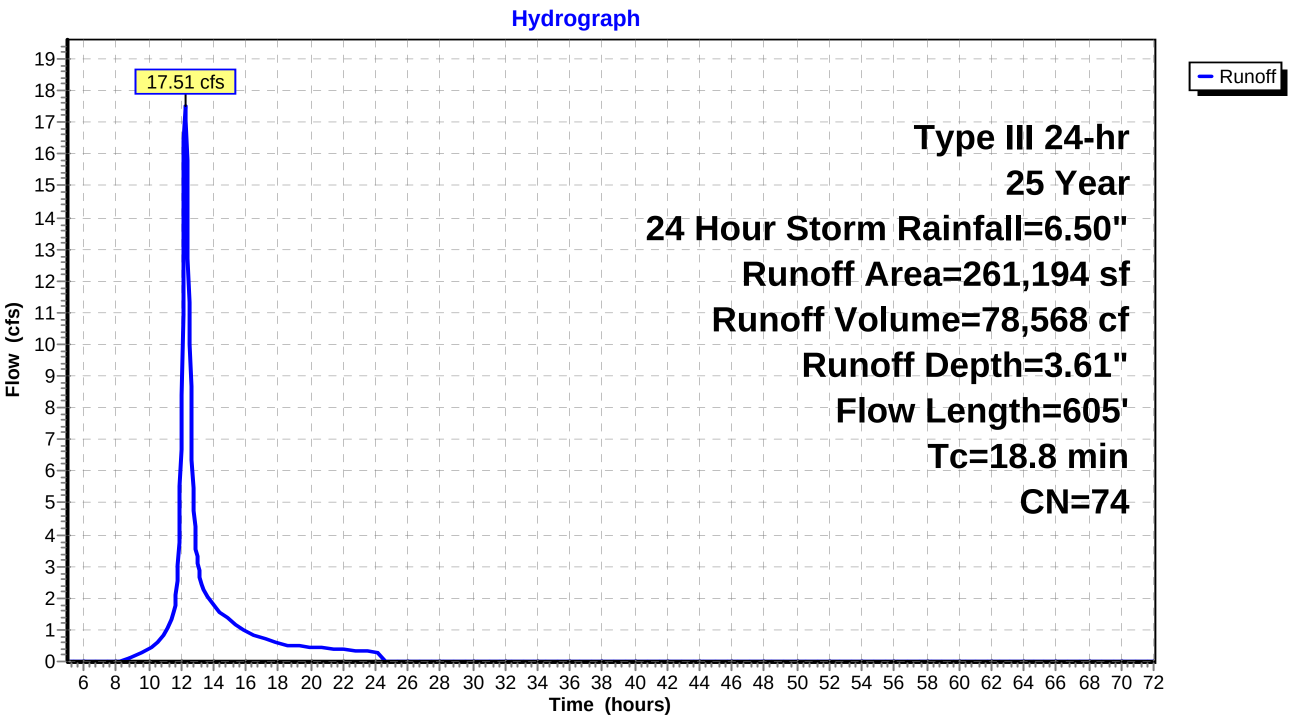
Runoff = 17.51 cfs @ 12.26 hrs, Volume= 78,568 cf, Depth= 3.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year, 24 Hour Storm Rainfall=6.50"

Area (sf)	CN	Description
3,564	98	Paved parking, HSG C
161,376	73	Woods, Fair, HSG C
96,254	74	>75% Grass cover, Good, HSG C
261,194	74	Weighted Average
257,630		98.64% Pervious Area
3,564		1.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.8	250	0.0400	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.0	105	0.0667	1.81		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.0	250	0.0760	1.38		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
18.8	605	Total			

Subcatchment Pre 1: Pre 1



Summary for Subcatchment Pre 2: Pre 2

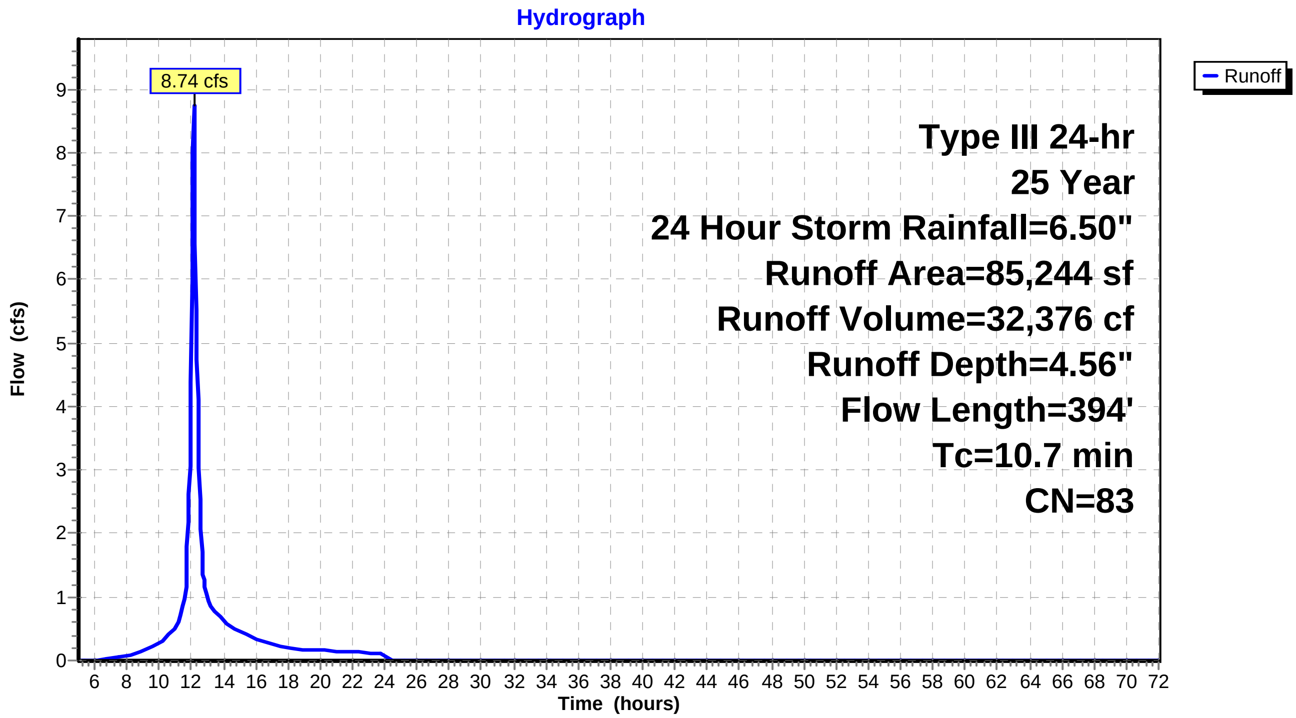
Runoff = 8.74 cfs @ 12.15 hrs, Volume= 32,376 cf, Depth= 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year, 24 Hour Storm Rainfall=6.50"

Area (sf)	CN	Description
30,862	98	Paved parking, HSG C
34,050	73	Woods, Fair, HSG C
20,332	79	50-75% Grass cover, Fair, HSG C
85,244	83	Weighted Average
54,382		63.80% Pervious Area
30,862		36.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	150	0.0500	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.7	244	0.1200	2.42		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.7	394	Total			

Subcatchment Pre 2: Pre 2



Summary for Subcatchment Pre 3: Pre 3

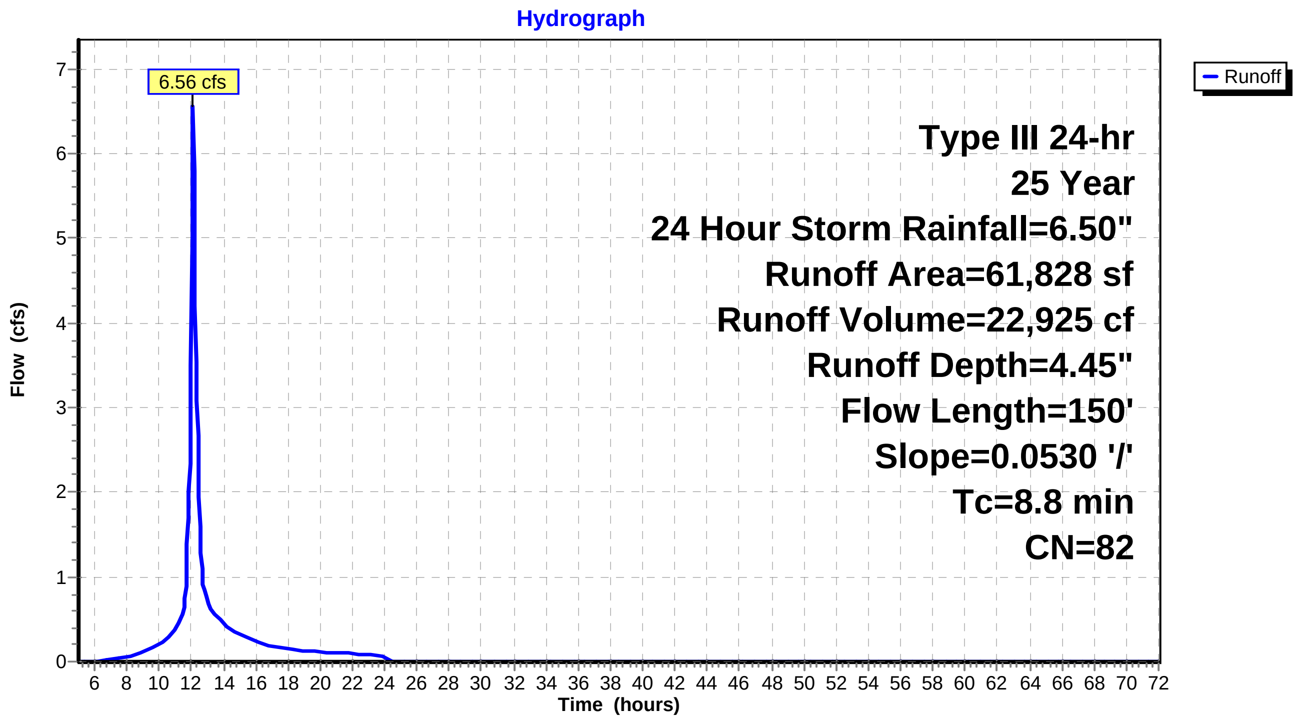
Runoff = 6.56 cfs @ 12.12 hrs, Volume= 22,925 cf, Depth= 4.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 Year, 24 Hour Storm Rainfall=6.50"

Area (sf)	CN	Description
16,986	98	Paved parking, HSG C
25,334	73	Woods, Fair, HSG C
19,508	79	50-75% Grass cover, Fair, HSG C
61,828	82	Weighted Average
44,842		72.53% Pervious Area
16,986		27.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	150	0.0530	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"

Subcatchment Pre 3: Pre 3

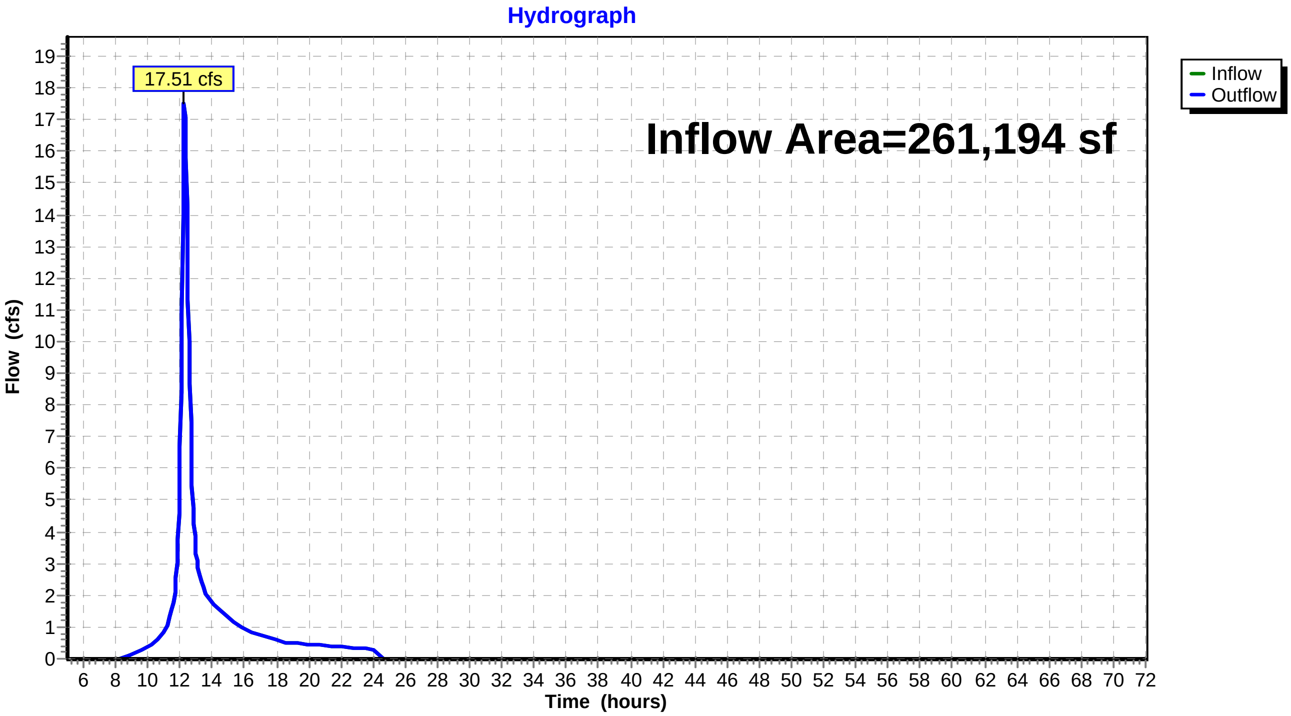


Summary for Reach DP1: Design Point 1

Inflow Area = 261,194 sf, 1.36% Impervious, Inflow Depth = 3.61" for 25 Year, 24 Hour Storm event
Inflow = 17.51 cfs @ 12.26 hrs, Volume= 78,568 cf
Outflow = 17.51 cfs @ 12.26 hrs, Volume= 78,568 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs

Reach DP1: Design Point 1

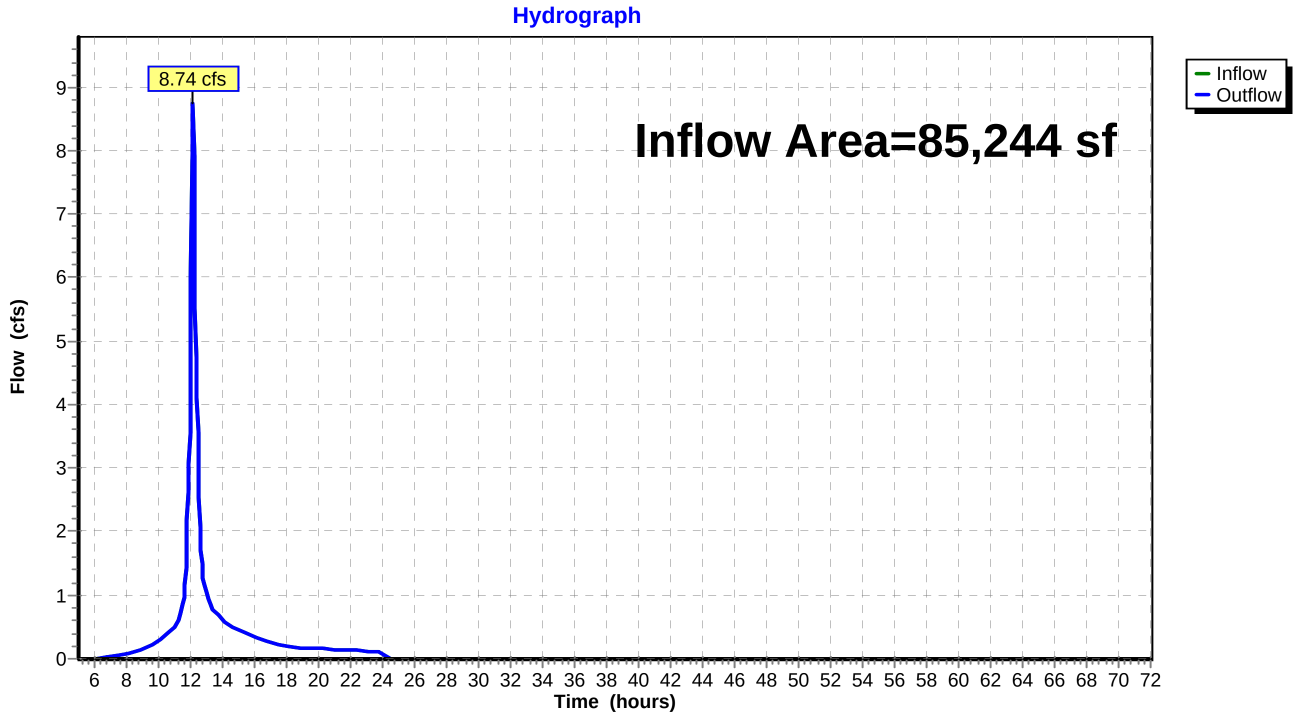


Summary for Reach DP2: Design Point 2

Inflow Area = 85,244 sf, 36.20% Impervious, Inflow Depth = 4.56" for 25 Year, 24 Hour Storm event
Inflow = 8.74 cfs @ 12.15 hrs, Volume= 32,376 cf
Outflow = 8.74 cfs @ 12.15 hrs, Volume= 32,376 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs

Reach DP2: Design Point 2

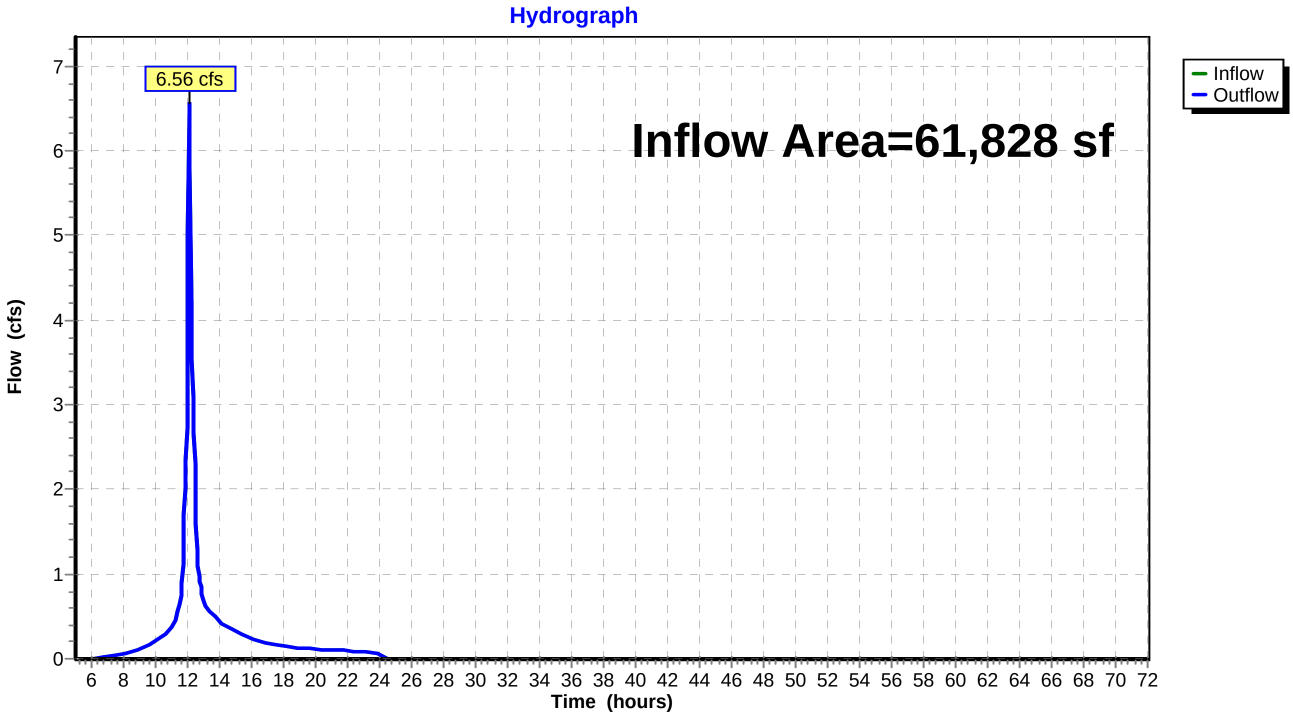


Summary for Reach DP3: Design Point 3

Inflow Area = 61,828 sf, 27.47% Impervious, Inflow Depth = 4.45" for 25 Year, 24 Hour Storm event
Inflow = 6.56 cfs @ 12.12 hrs, Volume= 22,925 cf
Outflow = 6.56 cfs @ 12.12 hrs, Volume= 22,925 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs

Reach DP3: Design Point 3



Time span=5.00-72.00 hrs, dt=0.05 hrs, 1341 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment Pre 1: Pre 1 Runoff Area=261,194 sf 1.36% Impervious Runoff Depth=4.48"
Flow Length=605' Tc=18.8 min CN=74 Runoff=21.73 cfs 97,535 cf

Subcatchment Pre 2: Pre 2 Runoff Area=85,244 sf 36.20% Impervious Runoff Depth>5.50"
Flow Length=394' Tc=10.7 min CN=83 Runoff=10.47 cfs 39,079 cf

Subcatchment Pre 3: Pre 3 Runoff Area=61,828 sf 27.47% Impervious Runoff Depth=5.39"
Flow Length=150' Slope=0.0530 '/' Tc=8.8 min CN=82 Runoff=7.89 cfs 27,753 cf

Reach DP1: Design Point 1 Inflow=21.73 cfs 97,535 cf
Outflow=21.73 cfs 97,535 cf

Reach DP2: Design Point 2 Inflow=10.47 cfs 39,079 cf
Outflow=10.47 cfs 39,079 cf

Reach DP3: Design Point 3 Inflow=7.89 cfs 27,753 cf
Outflow=7.89 cfs 27,753 cf

Total Runoff Area = 408,266 sf Runoff Volume = 164,367 cf Average Runoff Depth = 4.83"
87.41% Pervious = 356,854 sf 12.59% Impervious = 51,412 sf

Summary for Subcatchment Pre 1: Pre 1

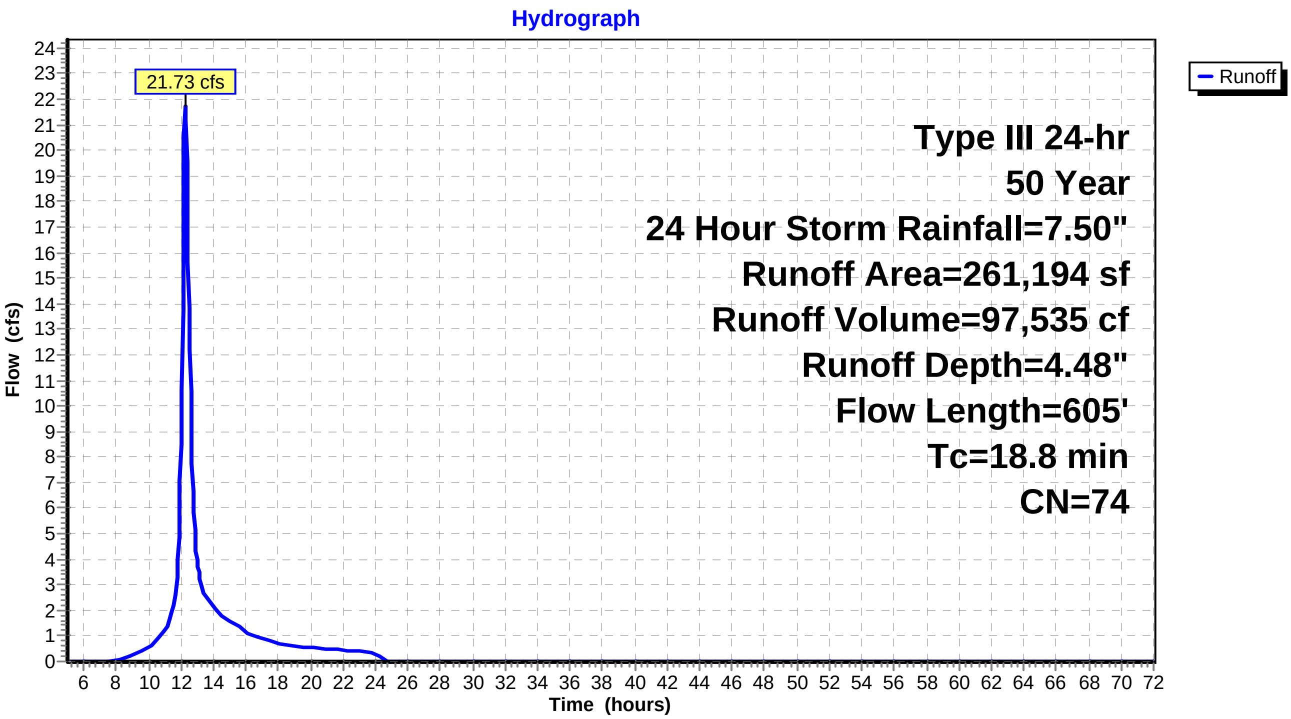
Runoff = 21.73 cfs @ 12.26 hrs, Volume= 97,535 cf, Depth= 4.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Year, 24 Hour Storm Rainfall=7.50"

Area (sf)	CN	Description
3,564	98	Paved parking, HSG C
161,376	73	Woods, Fair, HSG C
96,254	74	>75% Grass cover, Good, HSG C
261,194	74	Weighted Average
257,630		98.64% Pervious Area
3,564		1.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.8	250	0.0400	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.0	105	0.0667	1.81		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.0	250	0.0760	1.38		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
18.8	605	Total			

Subcatchment Pre 1: Pre 1



Summary for Subcatchment Pre 2: Pre 2

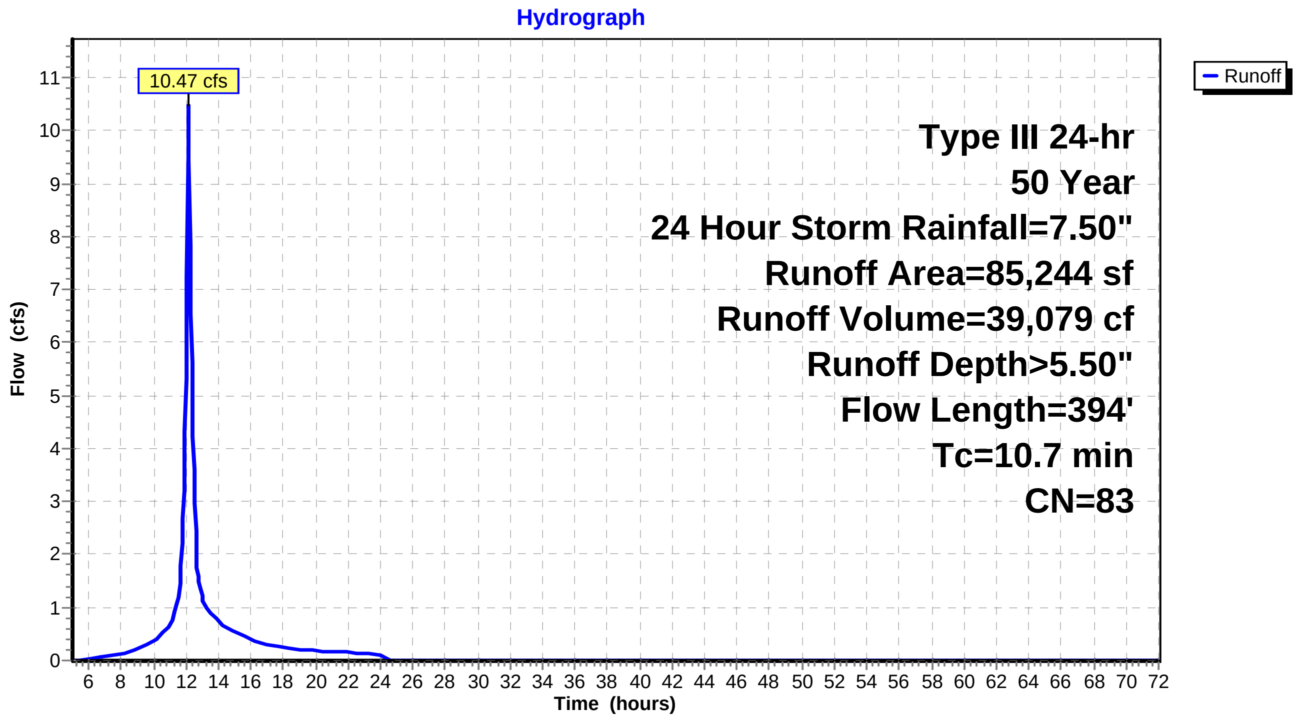
Runoff = 10.47 cfs @ 12.15 hrs, Volume= 39,079 cf, Depth> 5.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Year, 24 Hour Storm Rainfall=7.50"

Area (sf)	CN	Description
30,862	98	Paved parking, HSG C
34,050	73	Woods, Fair, HSG C
20,332	79	50-75% Grass cover, Fair, HSG C
85,244	83	Weighted Average
54,382		63.80% Pervious Area
30,862		36.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	150	0.0500	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.7	244	0.1200	2.42		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.7	394	Total			

Subcatchment Pre 2: Pre 2



Summary for Subcatchment Pre 3: Pre 3

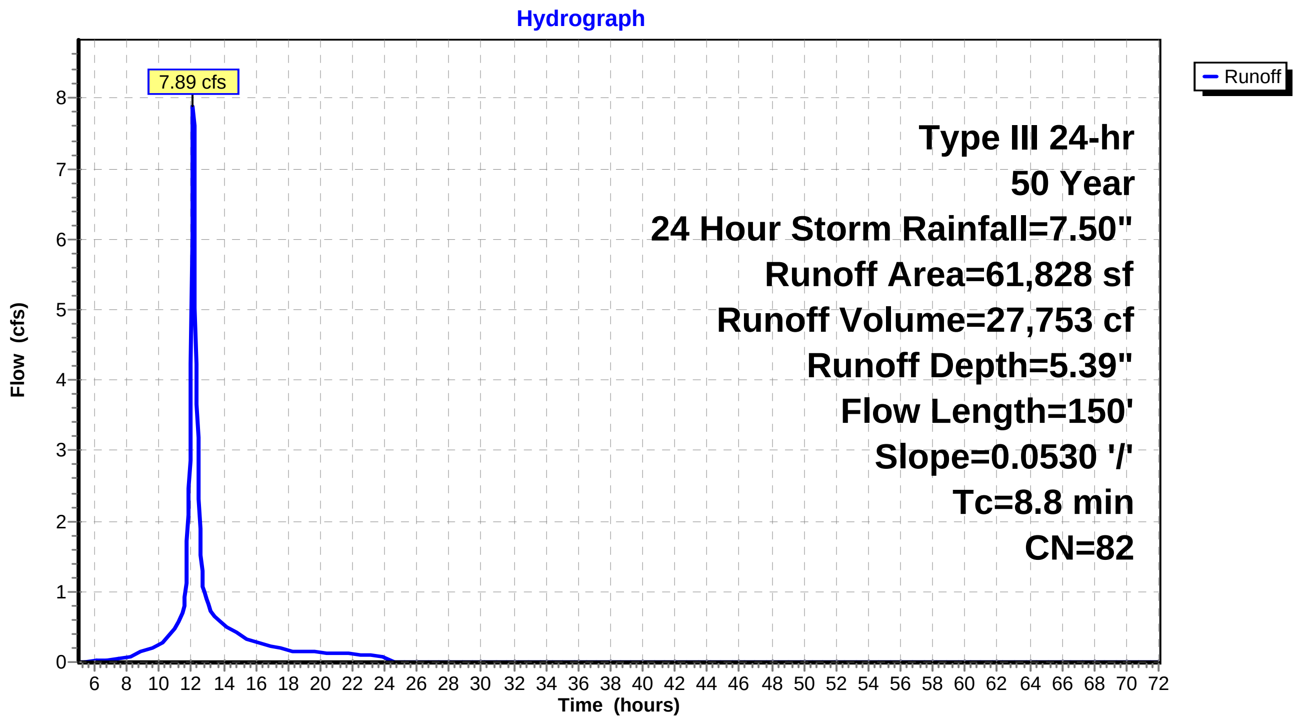
Runoff = 7.89 cfs @ 12.12 hrs, Volume= 27,753 cf, Depth= 5.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 Year, 24 Hour Storm Rainfall=7.50"

Area (sf)	CN	Description
16,986	98	Paved parking, HSG C
25,334	73	Woods, Fair, HSG C
19,508	79	50-75% Grass cover, Fair, HSG C
61,828	82	Weighted Average
44,842		72.53% Pervious Area
16,986		27.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	150	0.0530	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"

Subcatchment Pre 3: Pre 3

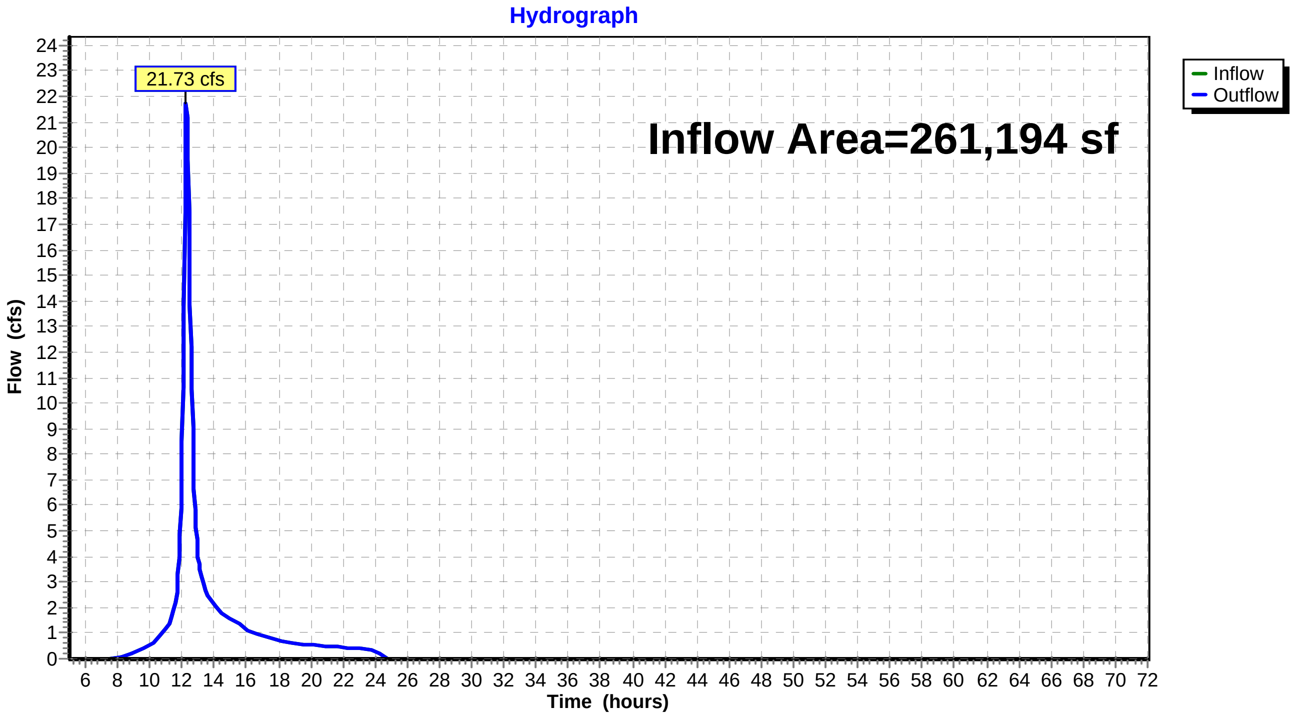


Summary for Reach DP1: Design Point 1

Inflow Area = 261,194 sf, 1.36% Impervious, Inflow Depth = 4.48" for 50 Year, 24 Hour Storm event
Inflow = 21.73 cfs @ 12.26 hrs, Volume= 97,535 cf
Outflow = 21.73 cfs @ 12.26 hrs, Volume= 97,535 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs

Reach DP1: Design Point 1

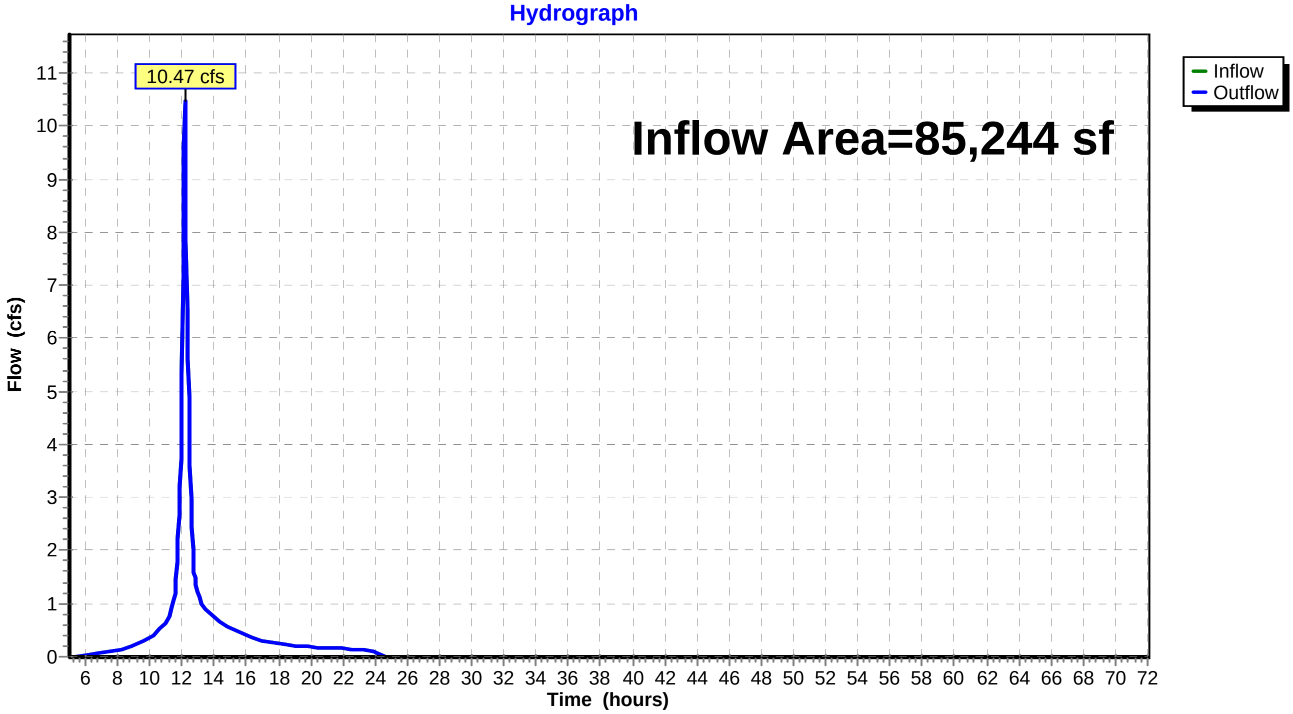


Summary for Reach DP2: Design Point 2

Inflow Area = 85,244 sf, 36.20% Impervious, Inflow Depth > 5.50" for 50 Year, 24 Hour Storm event
Inflow = 10.47 cfs @ 12.15 hrs, Volume= 39,079 cf
Outflow = 10.47 cfs @ 12.15 hrs, Volume= 39,079 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs

Reach DP2: Design Point 2

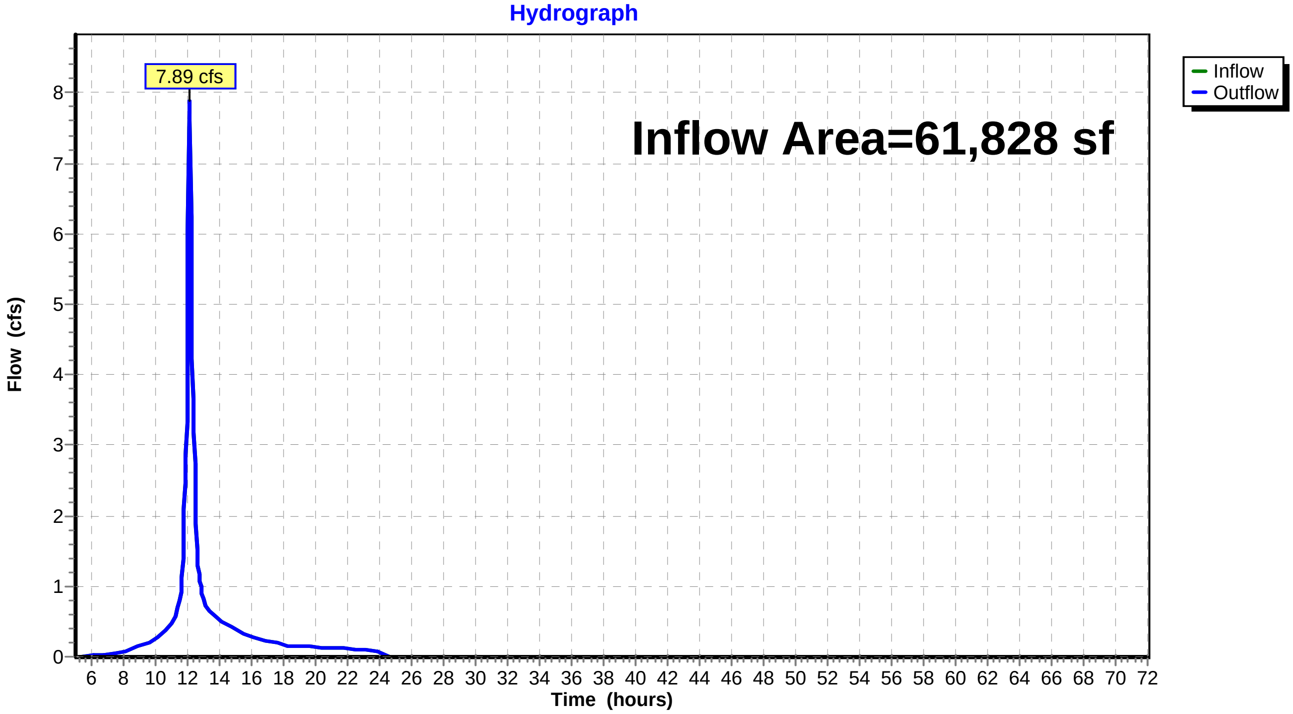


Summary for Reach DP3: Design Point 3

Inflow Area = 61,828 sf, 27.47% Impervious, Inflow Depth = 5.39" for 50 Year, 24 Hour Storm event
Inflow = 7.89 cfs @ 12.12 hrs, Volume= 27,753 cf
Outflow = 7.89 cfs @ 12.12 hrs, Volume= 27,753 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs

Reach DP3: Design Point 3



Time span=5.00-72.00 hrs, dt=0.05 hrs, 1341 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment Pre 1: Pre 1 Runoff Area=261,194 sf 1.36% Impervious Runoff Depth=5.83"
Flow Length=605' Tc=18.8 min CN=74 Runoff=28.16 cfs 126,875 cf

Subcatchment Pre 2: Pre 2 Runoff Area=85,244 sf 36.20% Impervious Runoff Depth>6.93"
Flow Length=394' Tc=10.7 min CN=83 Runoff=13.06 cfs 49,255 cf

Subcatchment Pre 3: Pre 3 Runoff Area=61,828 sf 27.47% Impervious Runoff Depth>6.81"
Flow Length=150' Slope=0.0530 '/' Tc=8.8 min CN=82 Runoff=9.87 cfs 35,101 cf

Reach DP1: Design Point 1 Inflow=28.16 cfs 126,875 cf
Outflow=28.16 cfs 126,875 cf

Reach DP2: Design Point 2 Inflow=13.06 cfs 49,255 cf
Outflow=13.06 cfs 49,255 cf

Reach DP3: Design Point 3 Inflow=9.87 cfs 35,101 cf
Outflow=9.87 cfs 35,101 cf

Total Runoff Area = 408,266 sf Runoff Volume = 211,231 cf Average Runoff Depth = 6.21"
87.41% Pervious = 356,854 sf 12.59% Impervious = 51,412 sf

Summary for Subcatchment Pre 1: Pre 1

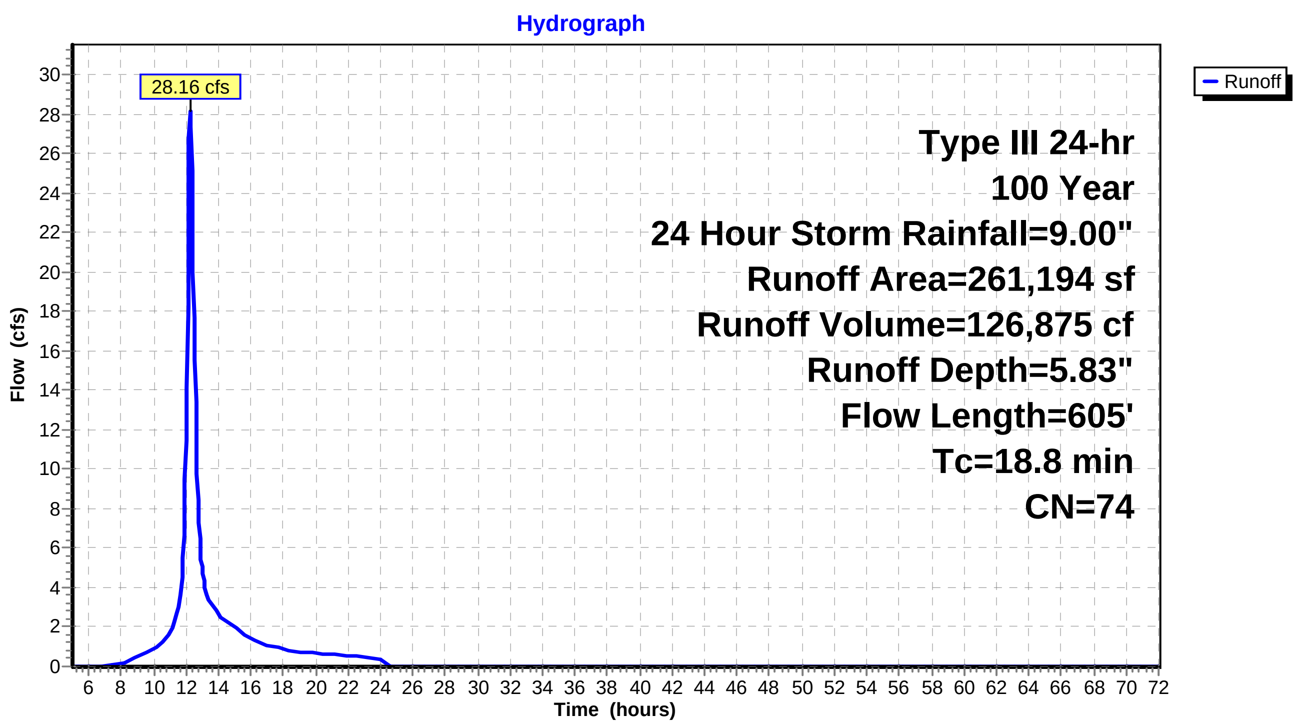
Runoff = 28.16 cfs @ 12.26 hrs, Volume= 126,875 cf, Depth= 5.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year, 24 Hour Storm Rainfall=9.00"

Area (sf)	CN	Description
3,564	98	Paved parking, HSG C
161,376	73	Woods, Fair, HSG C
96,254	74	>75% Grass cover, Good, HSG C
261,194	74	Weighted Average
257,630		98.64% Pervious Area
3,564		1.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.8	250	0.0400	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.0	105	0.0667	1.81		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.0	250	0.0760	1.38		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
18.8	605	Total			

Subcatchment Pre 1: Pre 1



Summary for Subcatchment Pre 2: Pre 2

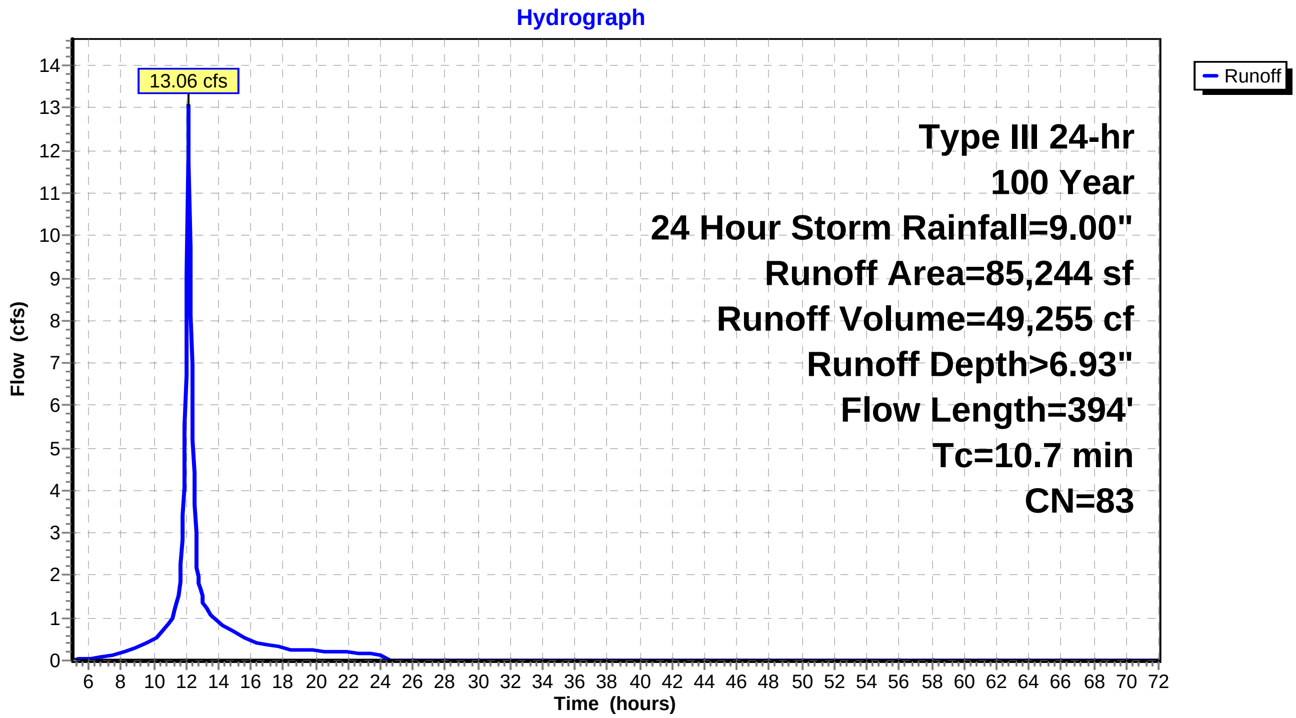
Runoff = 13.06 cfs @ 12.15 hrs, Volume= 49,255 cf, Depth> 6.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year, 24 Hour Storm Rainfall=9.00"

Area (sf)	CN	Description
30,862	98	Paved parking, HSG C
34,050	73	Woods, Fair, HSG C
20,332	79	50-75% Grass cover, Fair, HSG C
85,244	83	Weighted Average
54,382		63.80% Pervious Area
30,862		36.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	150	0.0500	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.7	244	0.1200	2.42		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.7	394	Total			

Subcatchment Pre 2: Pre 2



Summary for Subcatchment Pre 3: Pre 3

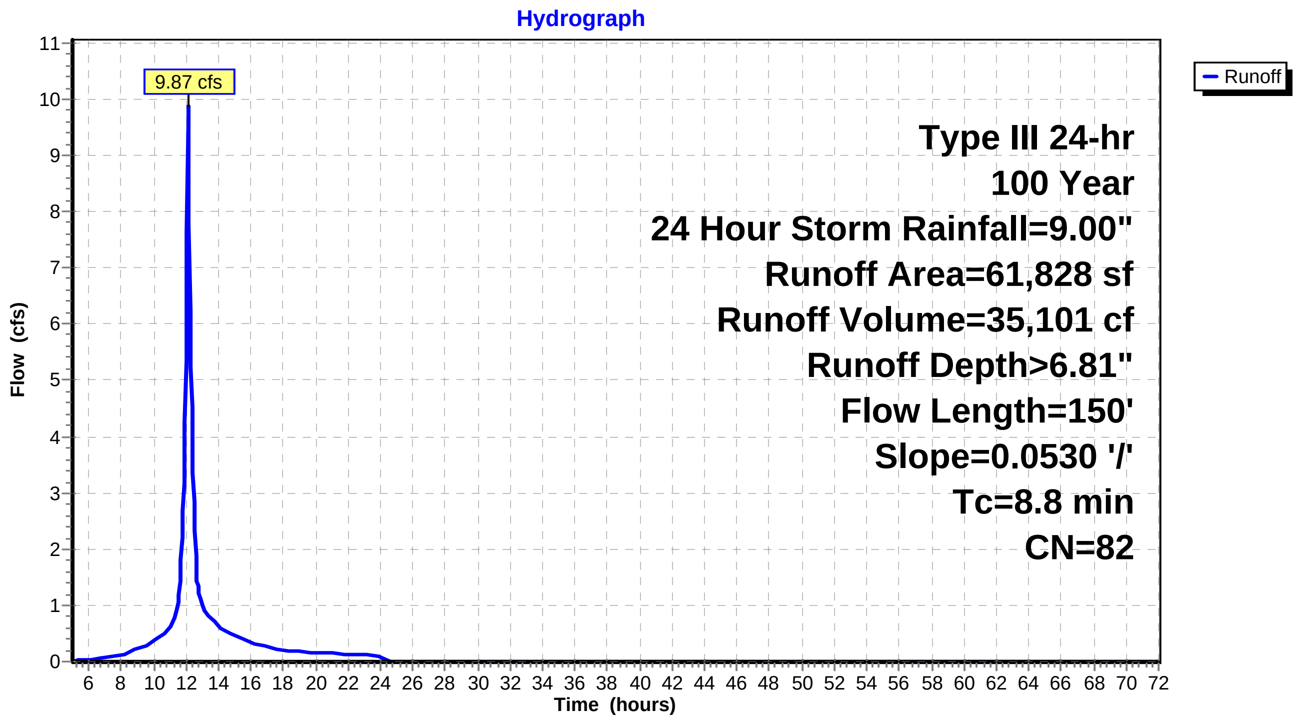
Runoff = 9.87 cfs @ 12.12 hrs, Volume= 35,101 cf, Depth> 6.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year, 24 Hour Storm Rainfall=9.00"

Area (sf)	CN	Description
16,986	98	Paved parking, HSG C
25,334	73	Woods, Fair, HSG C
19,508	79	50-75% Grass cover, Fair, HSG C
61,828	82	Weighted Average
44,842		72.53% Pervious Area
16,986		27.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	150	0.0530	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"

Subcatchment Pre 3: Pre 3

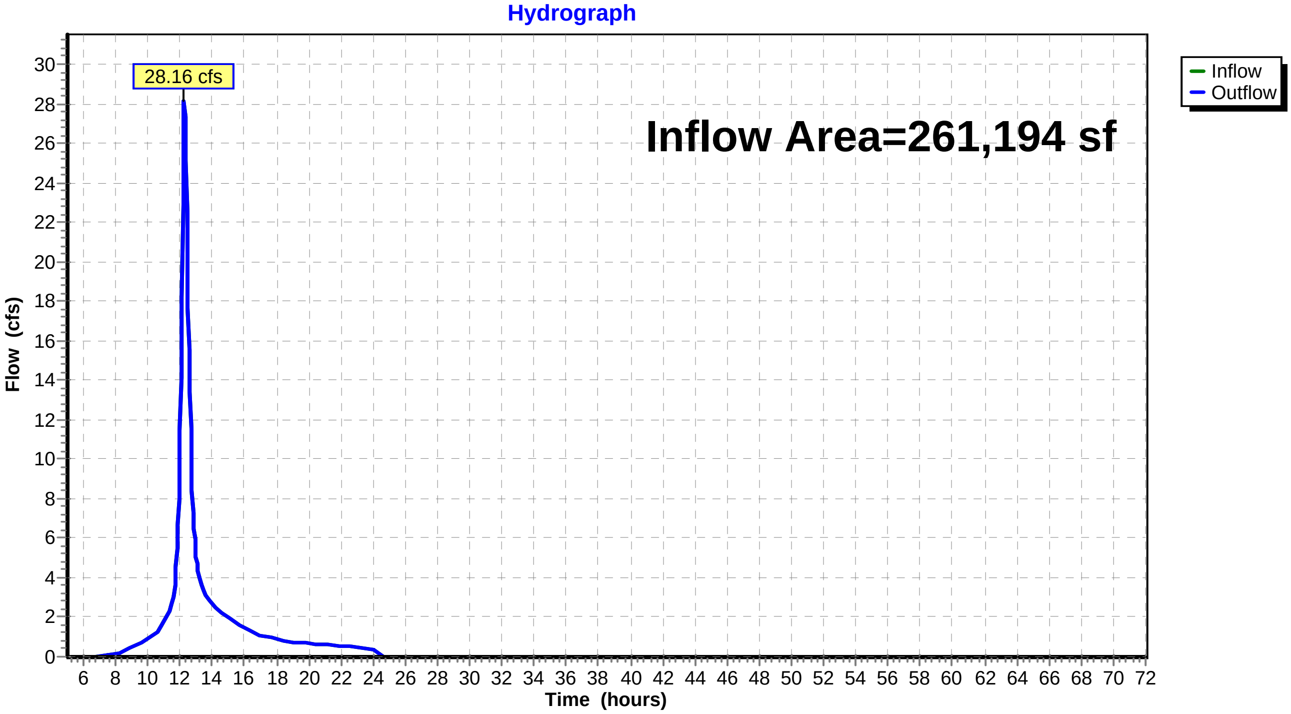


Summary for Reach DP1: Design Point 1

Inflow Area = 261,194 sf, 1.36% Impervious, Inflow Depth = 5.83" for 100 Year, 24 Hour Storm event
Inflow = 28.16 cfs @ 12.26 hrs, Volume= 126,875 cf
Outflow = 28.16 cfs @ 12.26 hrs, Volume= 126,875 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs

Reach DP1: Design Point 1

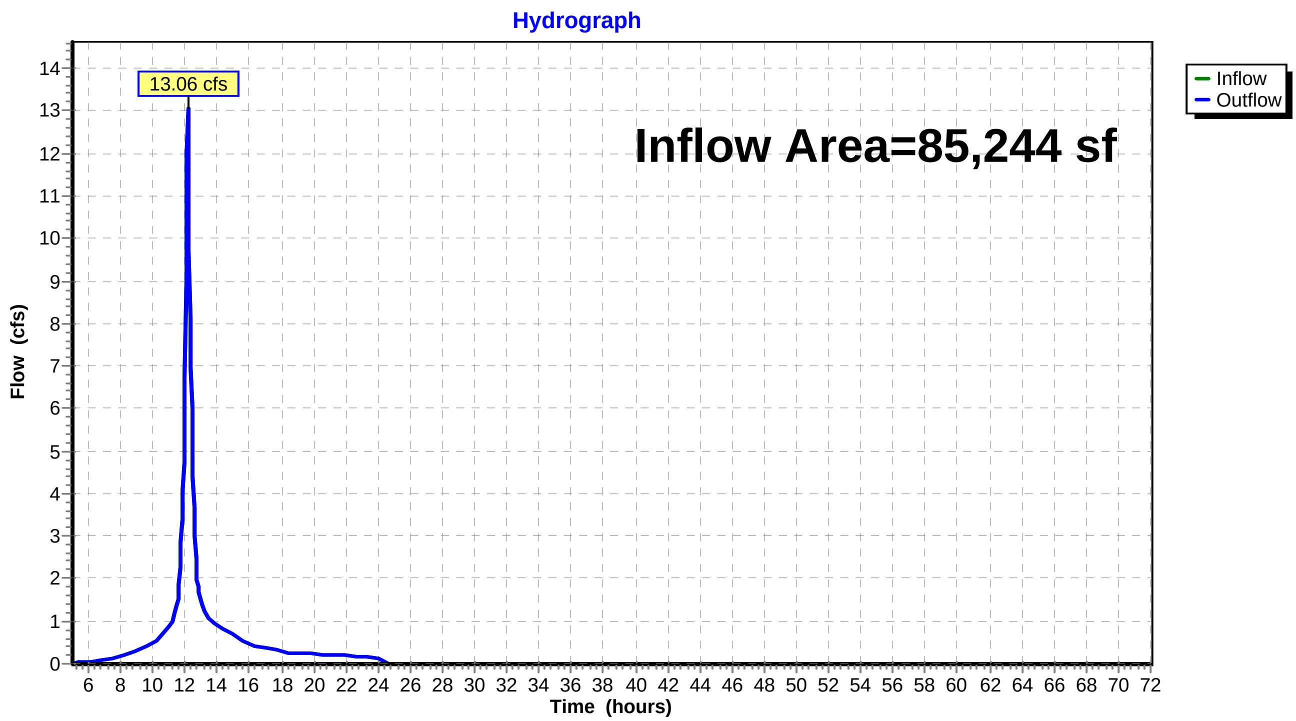


Summary for Reach DP2: Design Point 2

Inflow Area =	85,244 sf,	36.20% Impervious,	Inflow Depth > 6.93"	for 100 Year, 24 Hour Storm event	
Inflow =	13.06 cfs @	12.15 hrs,	Volume=	49,255 cf	
Outflow =	13.06 cfs @	12.15 hrs,	Volume=	49,255 cf,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs

Reach DP2: Design Point 2

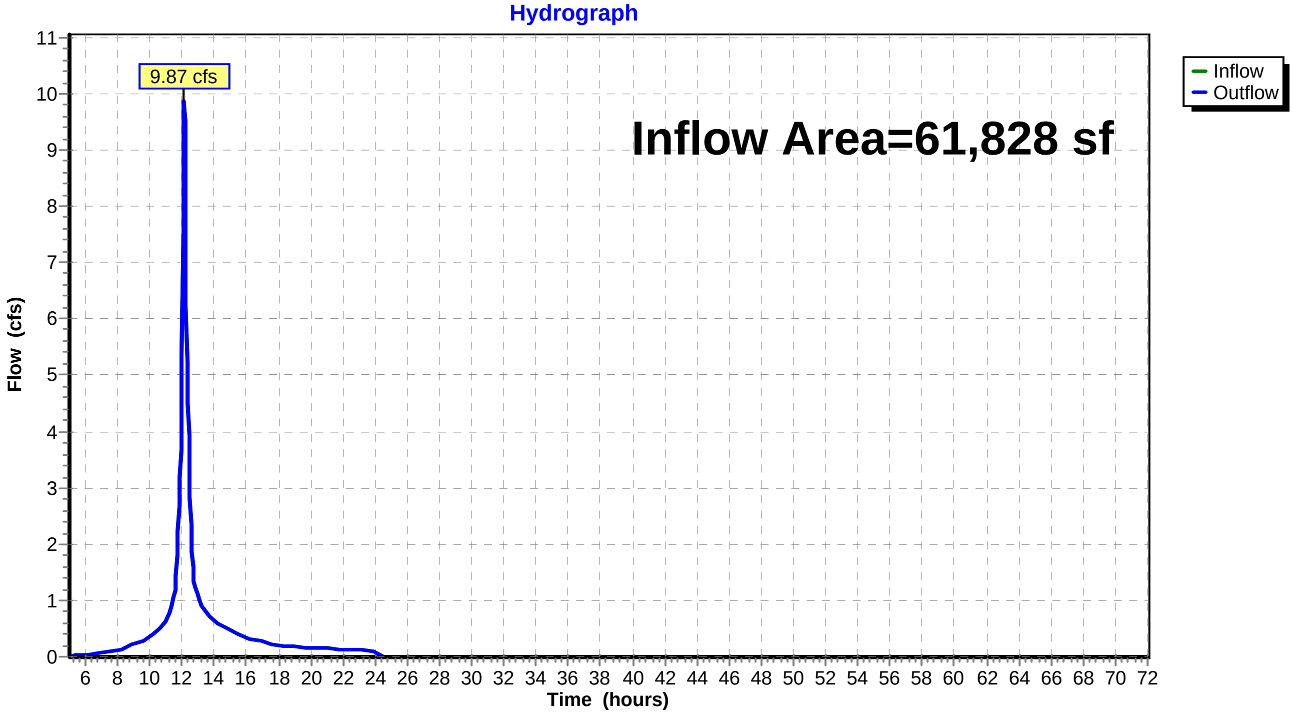


Summary for Reach DP3: Design Point 3

Inflow Area = 61,828 sf, 27.47% Impervious, Inflow Depth > 6.81" for 100 Year, 24 Hour Storm event
Inflow = 9.87 cfs @ 12.12 hrs, Volume= 35,101 cf
Outflow = 9.87 cfs @ 12.12 hrs, Volume= 35,101 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-72.00 hrs, dt= 0.05 hrs

Reach DP3: Design Point 3



SWPPP APPENDIX E

STORMWATER CALCULATIONS

REQUIRED WQv & RRv CALCULATIONS:

Breakdown of subcatchments											
[1]Catchment Number	Total Area (ft^2) [1]	New Impervious Area (ft^2) [2]	WQv For New Impervious Area (ft^3) [3] = (3.2")*0.95*[2]/12	Redeveloped Area (ft^2) [4] = [1] - [2]	Redeveloped Impervious Area (ft^2) [5]	Percent Impervious for Redeveloped % [6] = 100*[5]/[4]	Rv For Redeveloped Area [7] = 0.009*[6] + .05	[2]WQv For Redeveloped Area (ft^3) [8] = 0.25*(3.2")*[7]*[4]/12	Required WQv (ft^3) [9] = [3] + [8]	[3]Required RRv (ft^3) [10] = [3]	[4]Required minRRv (ft^3) [11] = S*[10]
2A	4,907	580	147	4,327	4,327	100.0	0.95	274	**421**	147	44
2B	14,630	2,660	674	11,970	3,462	28.9	0.31	248	**921**	674	202
2C	44,895	21,989	5,571	22,906	22,906	100.0	0.95	1,451	**7,021**	5,571	1,671
2D	8,410	0	0	8,410	0	0.0	0.05	28	**28**	0	0
2E	13,510	0	0	13,510	5,415	40.1	0.41	370	**370**	0	0
2F	4,258	0	0	4,258	4,258	100.0	0.95	270	**270**	0	0
2G	23,333	0	0	23,333	1,113	4.8	0.09	145	**145**	0	0
TOTAL	**113,943**	25,229	6,391	88,714	41,481	**-**	-	2,785	**9,176**	6,391	**1,917**

[1] - Refer to enclosed "D-3 - WQv & RRv Drainage Area Map" for a depiction of catchment areas and new/redeveloped impervious areas within each catchment.

[2] - Required WQv for redeveloped area is 25% of the WQv per Section 9.3.2.B.II of the NYSSMDM.

[3] - RRV is only required for new impervious area.

[4] - S=0.30 as the site is located in HSG C soils.

Post-Development Drainage Areas

	Subcatcment Area	
Stormwater Practice	**Subcatchment**	**Area (sq ft)**
Surface Sand Filter	2A	4,907
	2B	14,630
	2C	44,895
	2D	8,410
	2E	13,510
	TOTAL	**86,352**
Pocket Wetland	2A	4,907
	2B	14,630
	2C	44,895
	2D	8,410
	2E	13,510
	2F	4,258
	2G	23,333
	TOTAL	**113,943**
North Planters	Contributing Roof Area	8,979
East Planters (A)	Contributing Roof Area	8,979
East Planters (B)	Contributing Roof Area	8,979
South Planters	Contributing Roof Area	8,979
West Planters	Contributing Roof Area	8,979
	Total	**44,895**

STORMWATER PLANTER SIZING CALCULATIONS

Af = WQv*(df) / [k*(hf+df) (tf)]   Where df=1.5 ft, k=4 ft/day, hf=0.5 ft, tf=0.167 days
WQv = 0.89*Af

Stormwater Planters	Contributing Roof Area	Stormwater Planter Size	Water Quality Volume Provided	Runoff Reduction Volume Provided
	(sf)	(sf)	(cf)	(cf)
North Planters	8,979	665	592	266
East Planters (A)	8,979	727	647	291
East Planters (B)	8,979	510	454	204
South Planters	8,979	1,849	1,646	741
West Planters	8,979	1,044	929	418
Total	44,895	4,795	4,268	1,920

RRv Provided by Stormwater Planters = 1,920 cf
1,920 cf > 1,917 cf (minRRv)

SURFACE SAND FILTER SIZING CALCULATIONS

Sand Filter treats runoff from Drainage Areas 2A, 2B, 2C, 2D, & 2E
WQv for Drainage Areas 2A, 2B, 2C, 2D, & 2E = 8,761 cf
Total Required WQv for Sand Filter: 8,761 cf - 4,268 (WQv Provided by Stormwater Planters) = **4,493 cf**

Sedimentation Basin:
Required As = 0.0081*WQv, I > 75%
As = 0.0081*4,493 = 37 sf
Provided As = 1,219 sf > 37 sf

Calculate Required WQv Provided in Sedimentation Basin:
Required 25% WQv Pretreatment: 0.25*4,493 = 1,124 cf

Chart : Sedimentation Basin Volume (Pretreatment)

					1	2	1-2=3
Contour Elevation	**Contour Area**		**Depth**	**Total Volume**	**Cumulative Total Volume**	**Required Sedimentation Basin Volme**	**Net Volume Provided**
	Proposed	**Average**					
(ft)	(ft^2)	(ft^2)	(ft)	(ft^3)	(ft^3)	(ft^3)	(ft^3)
384	1,219						
		1,475	1	1,475	1,475	1,124	351
385	1,730						
		2,022	1	2,022	3,496	1,124	2,372
386	2,313						
		2,632	1	2,632	**6,128**	1,124	5,004
387	2,951						
				6,128			

Provided Volume = 6,128 cf > 1,124 cf

Surface Sand Filter:
Af = WQv*(df) / [k*(hf+df) (tf)]   Where df=1.5 ft, k=3.5 ft/day, hf=1.5 ft, tf=1.67 days
Required Af = 0.086*WQv = 0.086*4,493 cf = 387 sf

Provided Af = 1,386 sf > 387 sf

Calculate Required WQv Provided in Sand Filter:
Required 75% WQv Including Pretreatment: 0.75*4,493 cf = 3,370 cf

Chart : Surface Sand Filter (Treatment)

						1	2	1-2=3
Contour Elevation	**Contour Area**		**Depth**	**Total Volume**	**Sediment Basin Volume Provided**	**(1)Cumulative Total Volume**	**Required Sand Filter Volume**	**Net Volume Provided**
	Proposed	**Average**						
(ft)	(ft^2)	(ft^2)	(ft)	(ft^3)	(ft^3)	(ft^3)	(ft^3)	(ft^3)
384	1,386							
		1,645	1	1,645	1,475	3,119	3,370	-251
385	1,903							
		2,193	1	2,193	2,022	7,334	3,370	3,964
386	2,483							
		2,809	1	2,809	2,632	**12,775**	3,370	9,405
387	3,135							
				6,647				

NOTE: (1) Cumulative total volume = Sediment Basin Volume + Surface Sand Filter Volume
Provided Volume = 12,775cf > 3,370 cf

POCKET WETLAND SIZING CALCULATIONS

Pocket Wetland treats runoff from Drainage Areas 2A, 2B, 2C, 2D, 2E, 2F, & 2G
WQv for Drainage Areas 2A, 2B, 2C, 2D, 2E, 2F, & 2G = 9,176 cf
Total Required WQv for Sand Filter: 9,176 cf - 4,268 (WQv Provided by Stormwater Planters) = **4,908 cf**

Calculate Required WQv Provided in Forebay:
Required forebay volume = 10% WQv = 0.10*4,908cf = 491 cf

Chart : Forebay Storage Volume:

Contour	Contour Area		Depth	Total Volume	Cumulative Total Volume	Required Forebay Volume	Net Volume Provided
Elev.	Proposed	Average					
(ft)	(ft^2)	(ft^2)	(ft)	(ft^3)	(ft^3)	(ft^3)	(ft^3)
374	2						
		64	1	64	64	491	-428
375	125						
		279	1	279	342	491	-149
376	432						
		637	1	637	979	491	488
377	842						
		1,109	1	1,109	2,088	491	1,597
378	1,376						
				2,088			

Provided Forebay Storage volume = 2,088 cf > 491 cf

Calculate Required WQv Provided in Permanent Pools:
Required Permanent Pool Storage Volume = 50%WQV = 0.50*4,908 cf = 2,454 cf

Chart : Permanent Pool Storage Volume

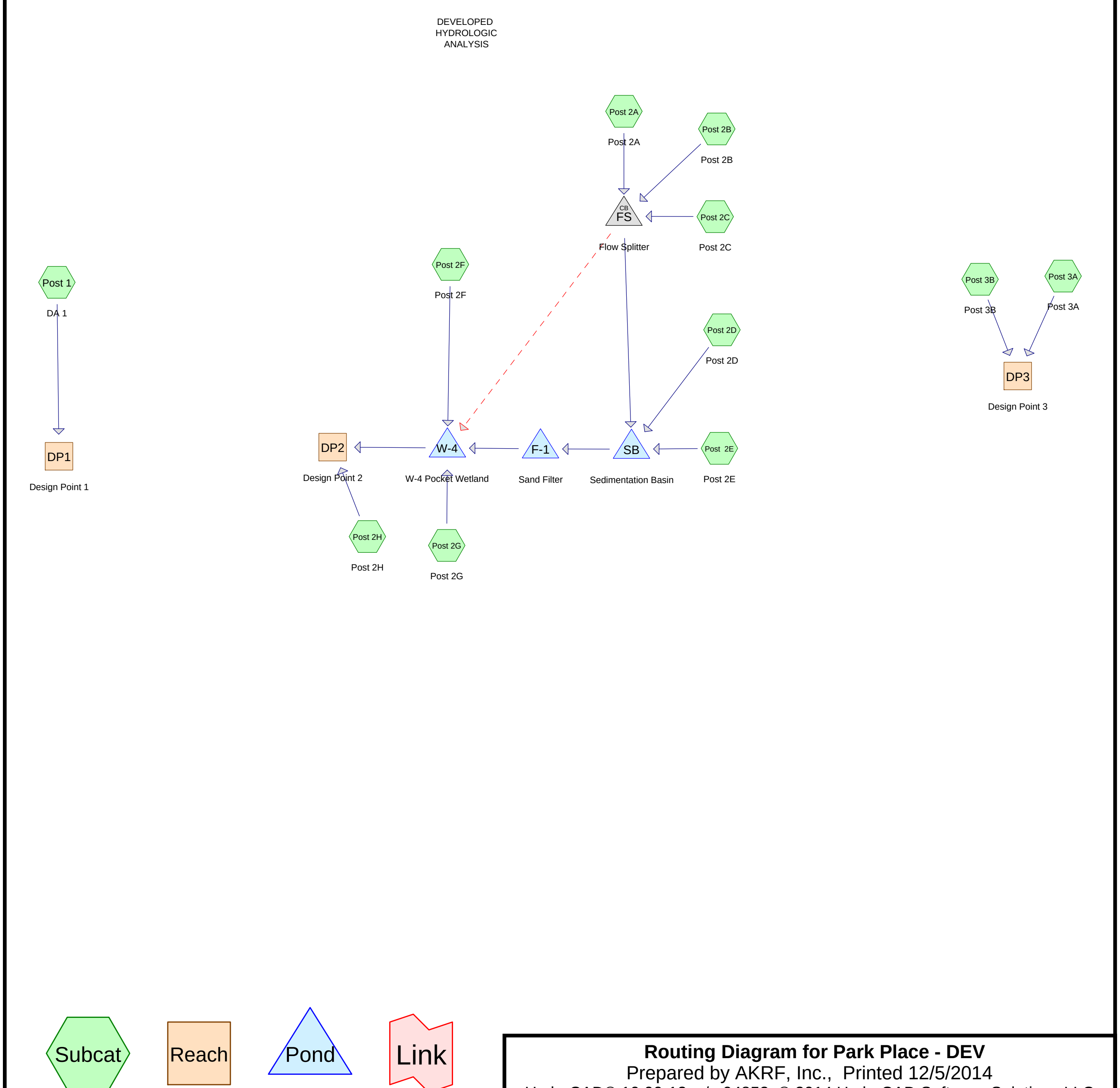
Contour	Contour Area		Depth	Total Volume	Total Volume Forebay Provided	Cumulative Total Volume	Required Permanent Pool Volume	Net Volume Provided
Elev.	Proposed	Average						
(ft)	(ft^2)	(ft^2)	(ft)	(ft^3)	(ft^3)	(ft^3)	(ft^3)	(ac-ft)
374	2							
		53	1	53	64	116	2,454	-2,338
375	103							
		243	1	243	279	637	2,454	-1,817
376	382							
		604	1	604	637	1,878	2,454	-577
377	825							
		1,084	1	1,084	1,109	4,071	2,454	1,617
378	1,343							
				1,983				

Provided Permanent Pool Storage Volume = Forebay Storage Volume + Micropool Storage Volume = 2,088 cf + 1,983 cf = 4,071 cf > 2,454 cf

Breakdown of Marsh
Total Marsh Area Provided = **2,086** sf
Low Marsh Area = **1,338 sf** (65% of Total Marsh Area)
High Marsh Area = **748 sf** (35% of Total Marsh Area)

SWPPP APPENDIX F

POST-DEVELOPMENT HYDROLOGIC ROUTING CALCULATIONS



Routing Diagram for Park Place - DEV
Prepared by AKRF, Inc., Printed 12/5/2014
HydroCAD® 10.00-12 s/n 04852 © 2014 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
46,053	79	50-75% Grass cover, Fair, HSG C (Post 2E, Post 2D, Post 2G, Post 3A, Post 3B)
93,499	74	>75% Grass cover, Good, HSG C (Post 1, Post 2B)
8,150	89	Gravel roads, HSG C (Post 1, Post 2B, Post 2D, Post 2G)
6,122	98	Paved parking (Post 2B)
60,172	98	Paved parking, HSG C (Post 2E, Post 2A, Post 2C, Post 2G, Post 3A)
4,258	98	Roofs, HSG C (Post 2F)
197,616	73	Woods, Fair, HSG C (Post 1, Post 2H, Post 3A, Post 3B)
415,870	**78**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
409,748	HSG C	Post 2E, Post 1, Post 2A, Post 2B, Post 2C, Post 2D, Post 2F, Post 2G, Post 2H, Post 3A, Post 3B
0	HSG D	
6,122	Other	Post 2B
415,870		**TOTAL AREA**

Time span=0.00-60.00 hrs, dt=0.10 hrs, 601 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment Post 2E: Post 2E Runoff Area=13,510 sf 40.08% Impervious Runoff Depth=1.91"
Flow Length=130' Tc=1.3 min CN=87 Runoff=0.70 cfs 2,156 cf

Subcatchment Post 1: DA 1 Runoff Area=248,549 sf 0.00% Impervious Runoff Depth=0.98"
Flow Length=605' Tc=18.8 min CN=73 Runoff=4.17 cfs 20,356 cf

Subcatchment Post 2A: Post 2A Runoff Area=4,907 sf 100.00% Impervious Runoff Depth=2.97"
Flow Length=150' Slope=0.0100 '/' Tc=1.9 min CN=98 Runoff=0.34 cfs 1,213 cf

Subcatchment Post 2B: Post 2B Runoff Area=14,630 sf 41.85% Impervious Runoff Depth=1.84"
Flow Length=346' Tc=11.0 min CN=86 Runoff=0.57 cfs 2,237 cf

Subcatchment Post 2C: Post 2C Runoff Area=44,895 sf 100.00% Impervious Runoff Depth=2.97"
Flow Length=100' Slope=0.1350 '/' Tc=0.5 min CN=98 Runoff=3.34 cfs 11,102 cf

Subcatchment Post 2D: Post 2D Runoff Area=8,410 sf 0.00% Impervious Runoff Depth=1.54"
Flow Length=200' Tc=4.5 min CN=82 Runoff=0.33 cfs 1,078 cf

Subcatchment Post 2F: Post 2F Runoff Area=4,258 sf 100.00% Impervious Runoff Depth=2.97"
Flow Length=119' Slope=0.1687 '/' Tc=0.1 min CN=98 Runoff=0.32 cfs 1,053 cf

Subcatchment Post 2G: Post 2G Runoff Area=23,333 sf 4.77% Impervious Runoff Depth=1.47"
Flow Length=112' Tc=0.9 min CN=81 Runoff=0.94 cfs 2,856 cf

Subcatchment Post 2H: Post 2H Runoff Area=14,691 sf 0.00% Impervious Runoff Depth=0.98"
Flow Length=353' Tc=10.5 min CN=73 Runoff=0.29 cfs 1,203 cf

Subcatchment Post 3A: Post 3A Runoff Area=33,605 sf 11.43% Impervious Runoff Depth=1.27"
Flow Length=110' Tc=11.9 min CN=78 Runoff=0.89 cfs 3,566 cf

Subcatchment Post 3B: Post 3B Runoff Area=5,082 sf 0.00% Impervious Runoff Depth=1.09"
Flow Length=100' Slope=0.0850 '/' Tc=5.3 min CN=75 Runoff=0.14 cfs 463 cf

Reach DP1: Design Point 1 Inflow=4.17 cfs 20,356 cf
Outflow=4.17 cfs 20,356 cf

Reach DP2: Design Point 2 Inflow=0.42 cfs 21,495 cf
Outflow=0.42 cfs 21,495 cf

Reach DP3: Design Point 3 Inflow=0.98 cfs 4,029 cf
Outflow=0.98 cfs 4,029 cf

Pond F-1: Sand Filter Peak Elev=387.00' Storage=6,656 cf Inflow=2.62 cfs 17,227 cf
Outflow=0.13 cfs 17,224 cf

Pond FS: Flow Splitter Peak Elev=387.72' Inflow=3.99 cfs 14,553 cf
Primary=3.99 cfs 14,553 cf Secondary=0.00 cfs 0 cf Outflow=3.99 cfs 14,553 cf

Pond SB: Sedimentation Basin Peak Elev=387.38' Storage=7,287 cf Inflow=4.94 cfs 17,787 cf
Outflow=2.62 cfs 17,227 cf

Pond W-4: W-4 Pocket Wetland Peak Elev=378.60' Storage=3,109 cf Inflow=1.31 cfs 21,133 cf
Outflow=0.16 cfs 20,292 cf

Total Runoff Area = 415,870 sf Runoff Volume = 47,285 cf Average Runoff Depth = 1.36"
83.04% Pervious = 345,318 sf 16.96% Impervious = 70,552 sf

Summary for Subcatchment Post 2E: Post 2E

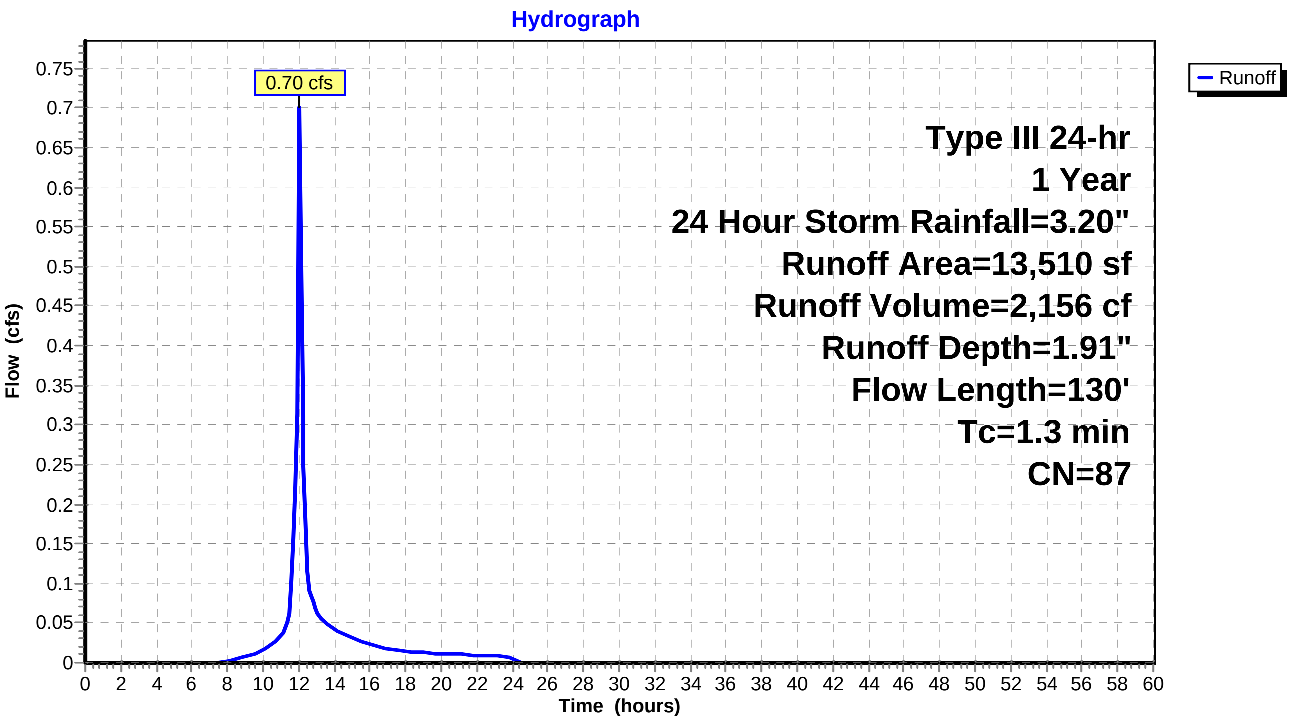
Runoff = 0.70 cfs @ 12.02 hrs, Volume= 2,156 cf, Depth= 1.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 1 Year, 24 Hour Storm Rainfall=3.20"

Area (sf)	CN	Description
5,415	98	Paved parking, HSG C
8,095	79	50-75% Grass cover, Fair, HSG C
13,510	87	Weighted Average
8,095		59.92% Pervious Area
5,415		40.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0200	1.44		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.1	30	0.3800	9.92		**Shallow Concentrated Flow, Pavement** Unpaved Kv= 16.1 fps
1.3	130	Total			

Subcatchment Post 2E: Post 2E



Summary for Subcatchment Post 1: DA 1

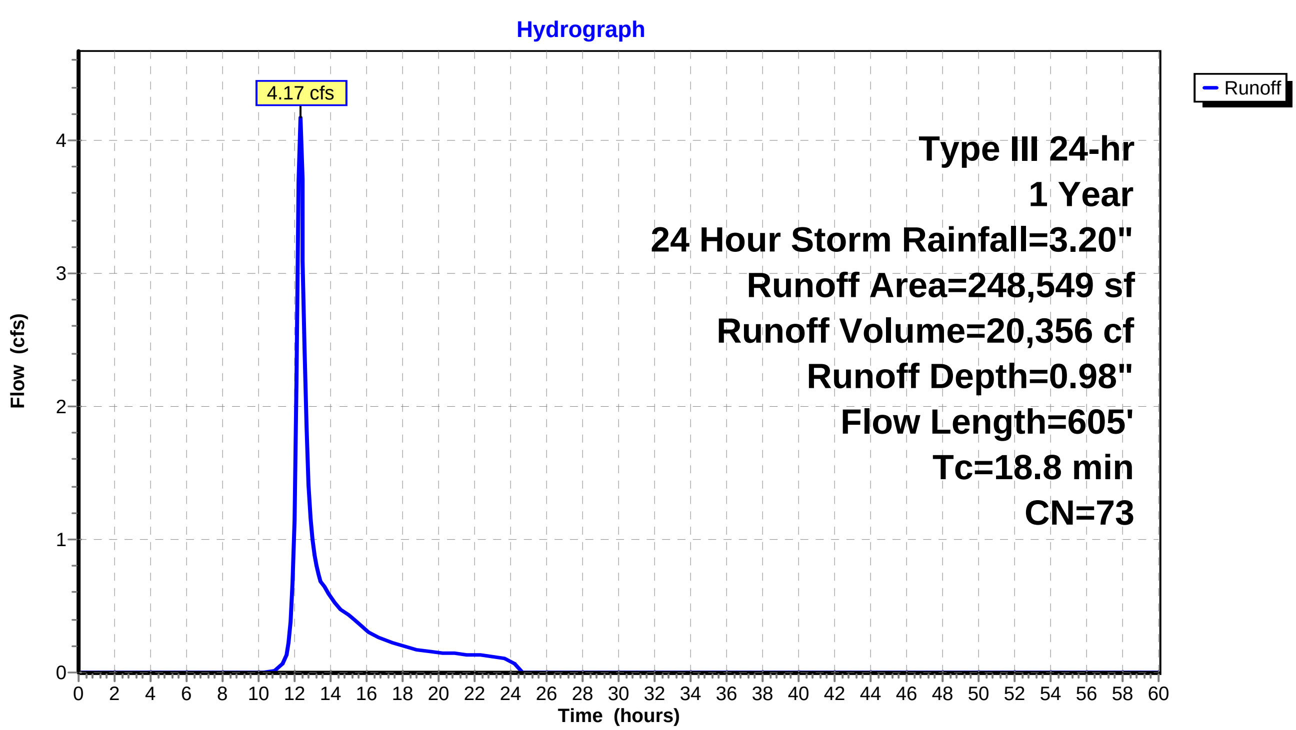
Runoff = 4.17 cfs @ 12.30 hrs, Volume= 20,356 cf, Depth= 0.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 1 Year, 24 Hour Storm Rainfall=3.20"

Area (sf)	CN	Description
159,708	73	Woods, Fair, HSG C
1,496	89	Gravel roads, HSG C
87,345	74	>75% Grass cover, Good, HSG C
248,549	73	Weighted Average
248,549		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.8	250	0.0400	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.0	105	0.0667	1.81		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.0	250	0.0760	1.38		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
18.8	605	Total			

Subcatchment Post 1: DA 1



Summary for Subcatchment Post 2A: Post 2A

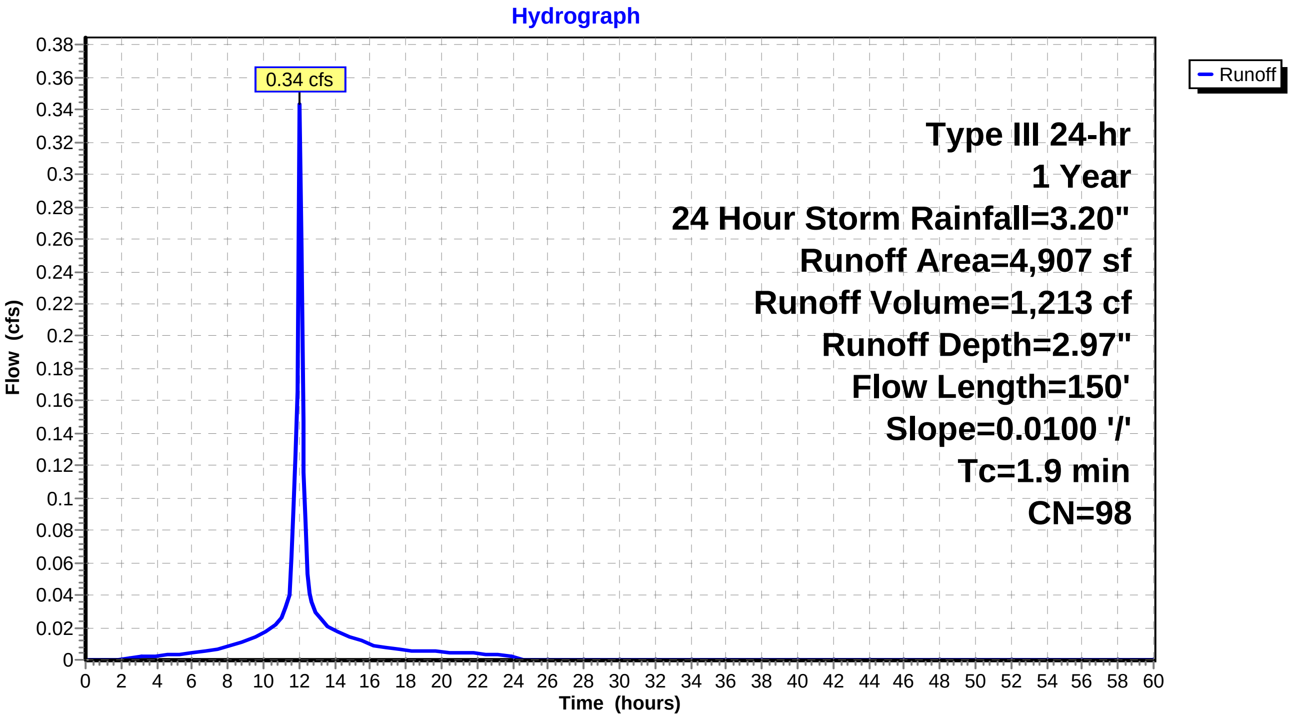
Runoff = 0.34 cfs @ 12.02 hrs, Volume= 1,213 cf, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 1 Year, 24 Hour Storm Rainfall=3.20"

Area (sf)	CN	Description
4,907	98	Paved parking, HSG C
4,907		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	100	0.0100	1.09		**Sheet Flow, Pavement** Smooth surfaces n= 0.011 P2= 3.50"
0.4	50	0.0100	2.03		**Shallow Concentrated Flow, Pavement** Paved Kv= 20.3 fps
1.9	150	Total			

Subcatchment Post 2A: Post 2A



Summary for Subcatchment Post 2B: Post 2B

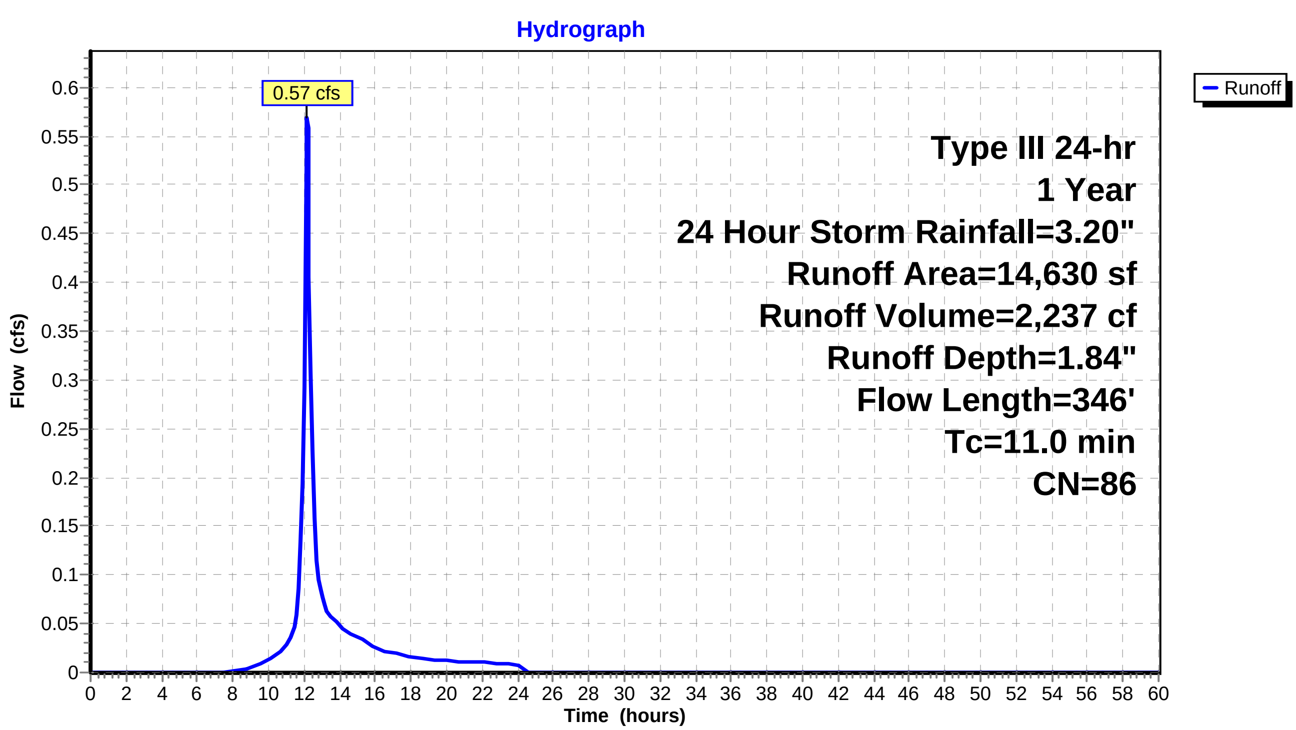
Runoff = 0.57 cfs @ 12.17 hrs, Volume= 2,237 cf, Depth= 1.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 1 Year, 24 Hour Storm Rainfall=3.20"

Area (sf)	CN	Description
6,122	98	Paved parking
6,154	74	>75% Grass cover, Good, HSG C
2,354	89	Gravel roads, HSG C
14,630	86	Weighted Average
8,508		58.15% Pervious Area
6,122		41.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	100	0.0400	0.16		**Sheet Flow, Landscaped area** Grass: Dense n= 0.240 P2= 3.50"
0.7	246	0.0100	5.90	4.63	**Pipe Channel, Pipe** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
11.0	346	Total			

Subcatchment Post 2B: Post 2B



Summary for Subcatchment Post 2C: Post 2C

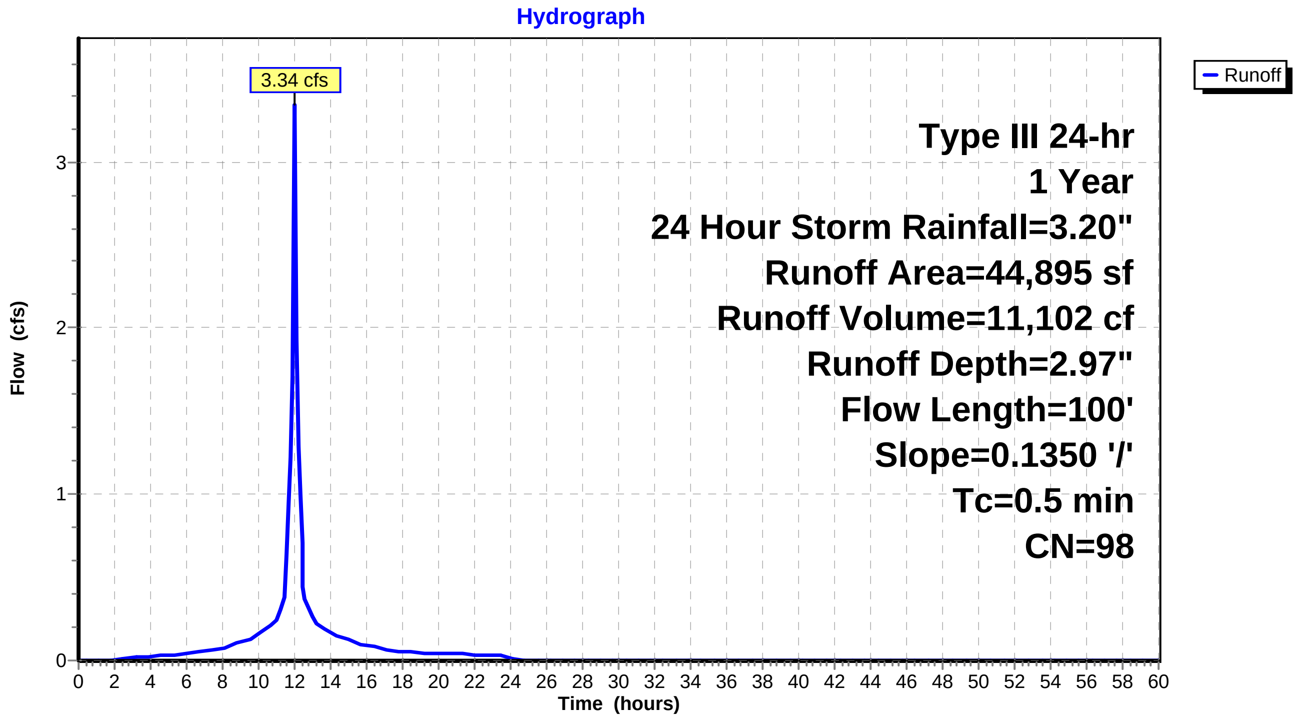
Runoff = 3.34 cfs @ 12.00 hrs, Volume= 11,102 cf, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 1 Year, 24 Hour Storm Rainfall=3.20"

Area (sf)	CN	Description
44,895	98	Paved parking, HSG C
44,895		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1350	3.09		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"

Subcatchment Post 2C: Post 2C



Summary for Subcatchment Post 2D: Post 2D

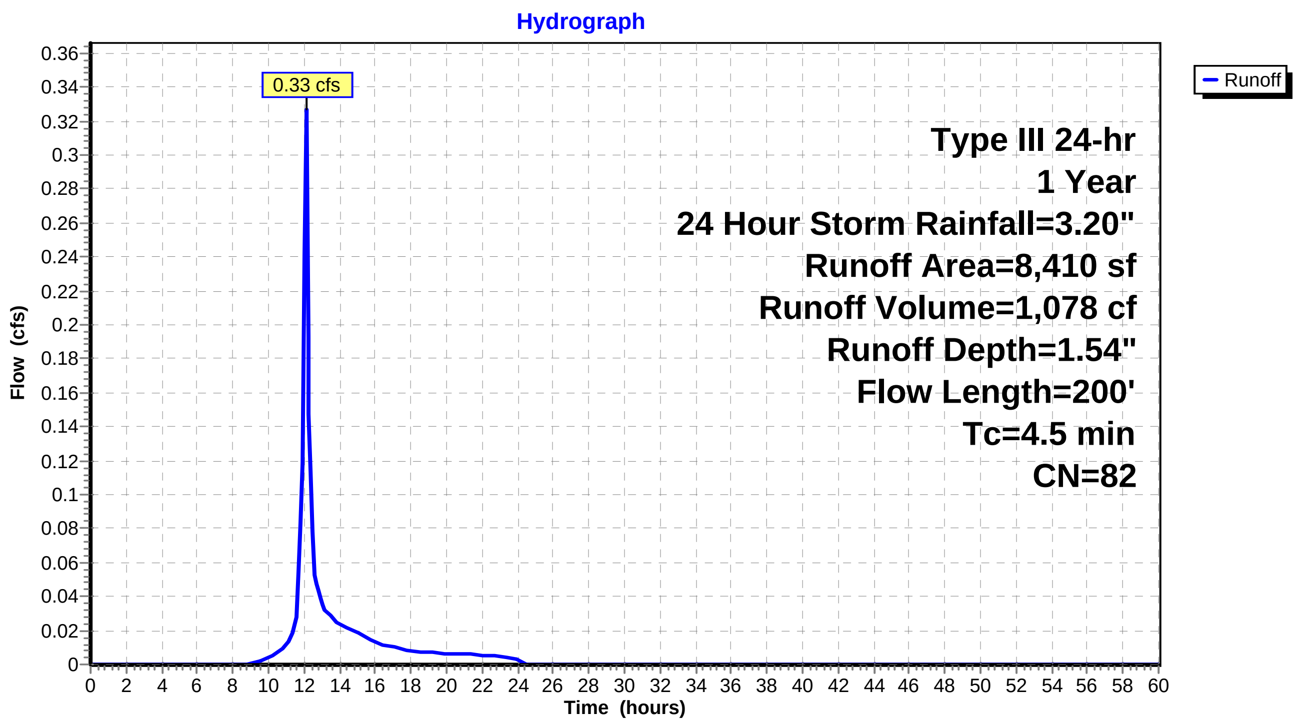
Runoff = 0.33 cfs @ 12.09 hrs, Volume= 1,078 cf, Depth= 1.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 1 Year, 24 Hour Storm Rainfall=3.20"

Area (sf)	CN	Description
6,293	79	50-75% Grass cover, Fair, HSG C
2,117	89	Gravel roads, HSG C
8,410	82	Weighted Average
8,410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	50	0.1000	0.20		**Sheet Flow, Landscaped** Grass: Dense n= 0.240 P2= 3.50"
0.4	150	0.0860	5.95		**Shallow Concentrated Flow, Maintenance Drive** Paved Kv= 20.3 fps
4.5	200	Total			

Subcatchment Post 2D: Post 2D



Summary for Subcatchment Post 2F: Post 2F

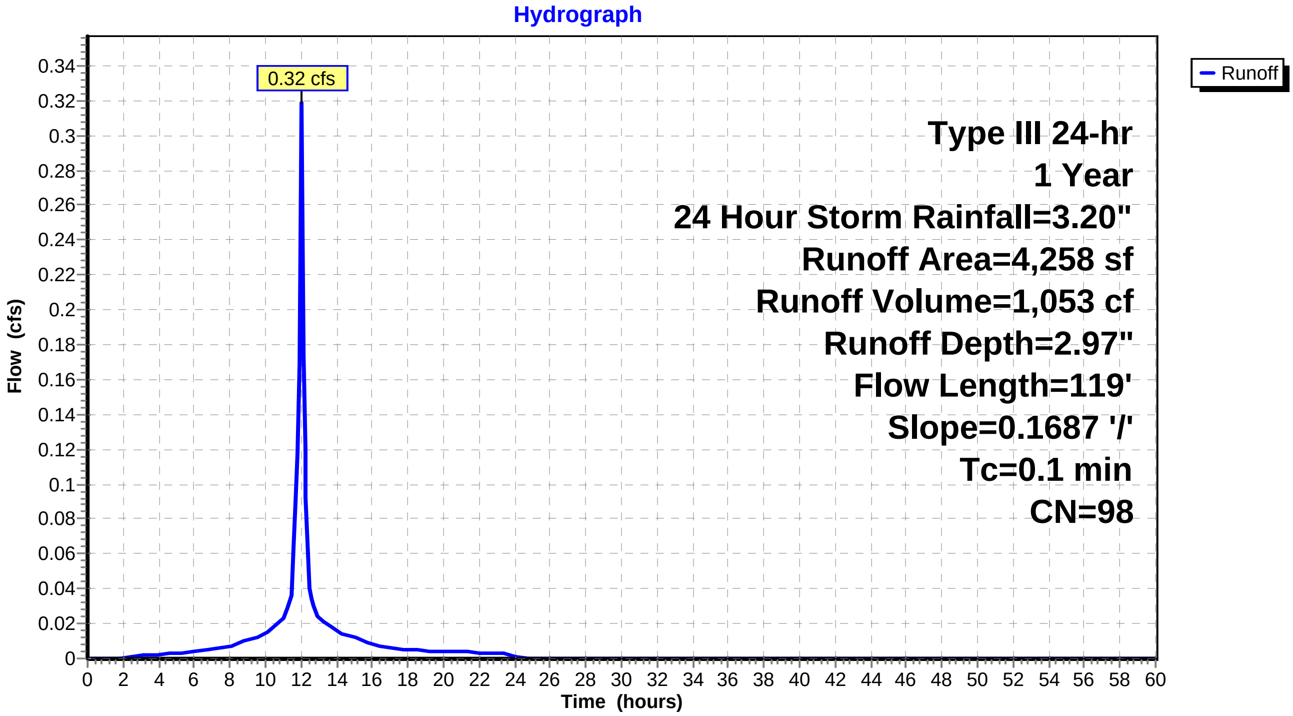
Runoff = 0.32 cfs @ 12.00 hrs, Volume= 1,053 cf, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 1 Year, 24 Hour Storm Rainfall=3.20"

Area (sf)	CN	Description
4,258	98	Roofs, HSG C
4,258		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	119	0.1687	14.22	4.96	**Pipe Channel, Roof Leader** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.013 Corrugated PE, smooth interior

Subcatchment Post 2F: Post 2F



Summary for Subcatchment Post 2G: Post 2G

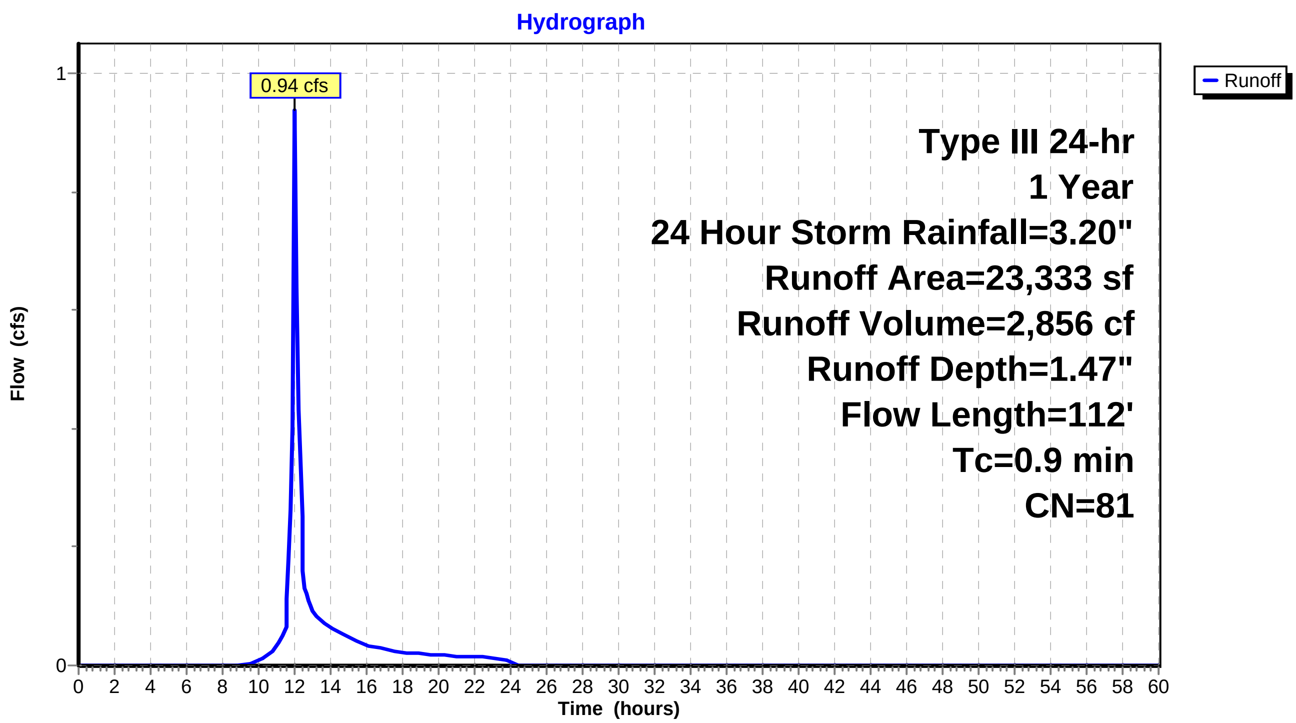
Runoff = 0.94 cfs @ 12.01 hrs, Volume= 2,856 cf, Depth= 1.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 1 Year, 24 Hour Storm Rainfall=3.20"

Area (sf)	CN	Description
1,113	98	Paved parking, HSG C
20,037	79	50-75% Grass cover, Fair, HSG C
2,183	89	Gravel roads, HSG C
23,333	81	Weighted Average
22,220		95.23% Pervious Area
1,113		4.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	80	0.0250	1.50		**Sheet Flow, Pavement** Smooth surfaces n= 0.011 P2= 3.50"
0.0	32	0.4600	10.92		**Shallow Concentrated Flow, Landscaped** Unpaved Kv= 16.1 fps
0.9	112	Total			

Subcatchment Post 2G: Post 2G



Summary for Subcatchment Post 2H: Post 2H

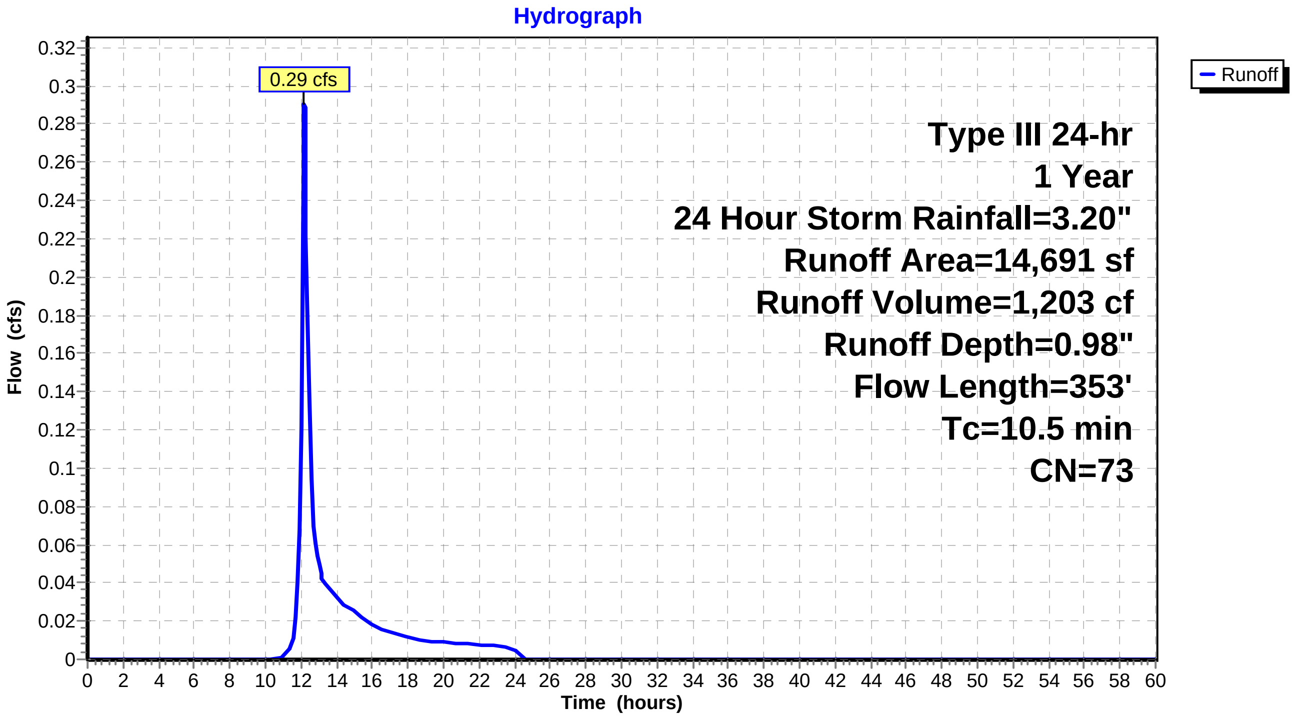
Runoff = 0.29 cfs @ 12.18 hrs, Volume= 1,203 cf, Depth= 0.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 1 Year, 24 Hour Storm Rainfall=3.20"

Area (sf)	CN	Description
14,691	73	Woods, Fair, HSG C
14,691		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0600	0.19		**Sheet Flow, Landscaped** Grass: Dense n= 0.240 P2= 3.50"
1.7	253	0.0260	2.42		**Shallow Concentrated Flow, Grassed waterway** Grassed Waterway Kv= 15.0 fps
10.5	353	Total			

Subcatchment Post 2H: Post 2H



Summary for Subcatchment Post 3A: Post 3A

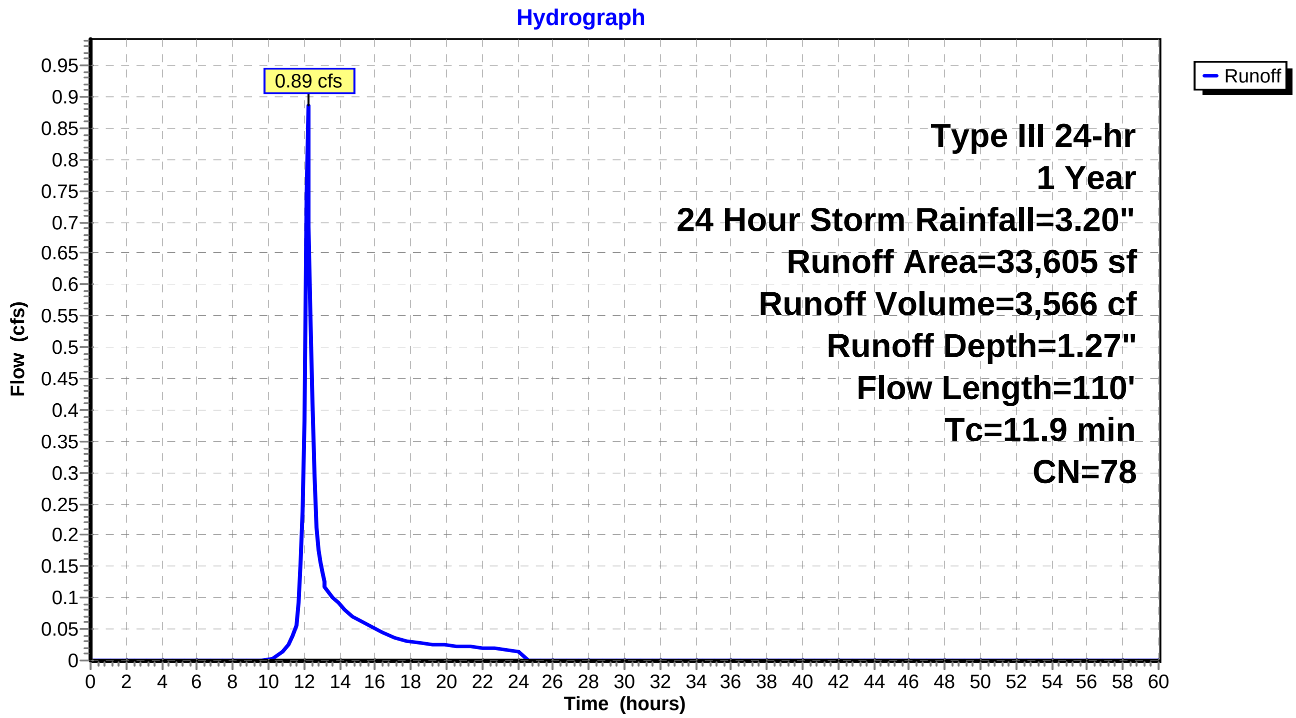
Runoff = 0.89 cfs @ 12.19 hrs, Volume= 3,566 cf, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 1 Year, 24 Hour Storm Rainfall=3.20"

Area (sf)	CN	Description
3,842	98	Paved parking, HSG C
20,173	73	Woods, Fair, HSG C
9,590	79	50-75% Grass cover, Fair, HSG C
33,605	78	Weighted Average
29,763		88.57% Pervious Area
3,842		11.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	67	0.0600	0.25		**Sheet Flow, Landscaped** Grass: Short n= 0.150 P2= 3.50"
7.5	43	0.0460	0.10		**Sheet Flow, Wooded** Woods: Light underbrush n= 0.400 P2= 3.50"
11.9	110	Total			

Subcatchment Post 3A: Post 3A



Summary for Subcatchment Post 3B: Post 3B

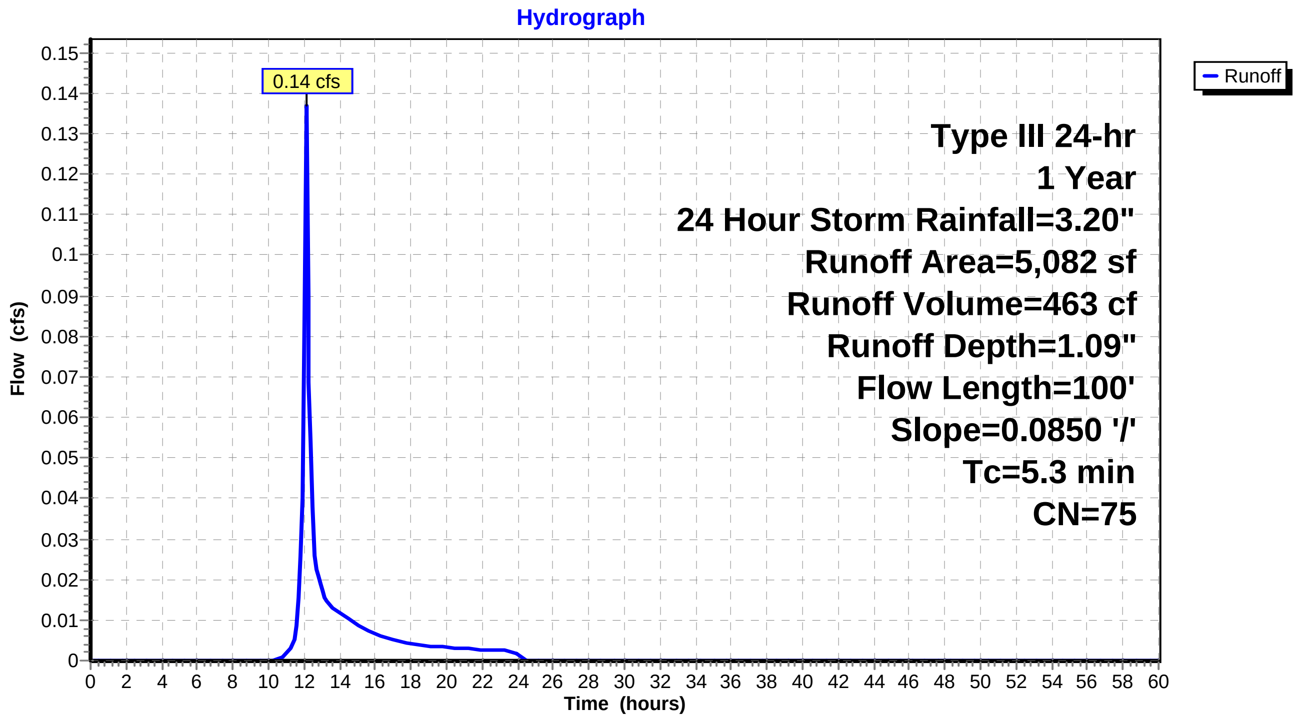
Runoff = 0.14 cfs @ 12.10 hrs, Volume= 463 cf, Depth= 1.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 1 Year, 24 Hour Storm Rainfall=3.20"

Area (sf)	CN	Description
3,044	73	Woods, Fair, HSG C
2,038	79	50-75% Grass cover, Fair, HSG C
5,082	75	Weighted Average
5,082		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	100	0.0850	0.32		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"

Subcatchment Post 3B: Post 3B

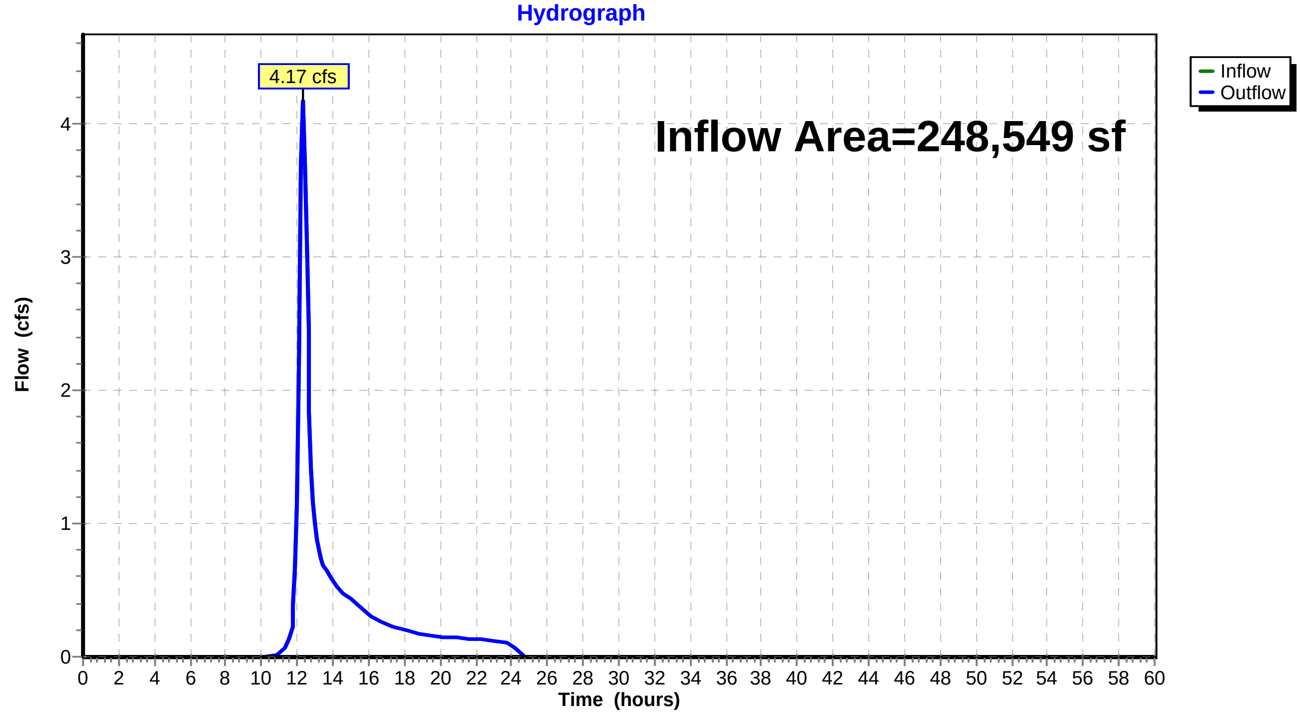


Summary for Reach DP1: Design Point 1

Inflow Area = 248,549 sf, 0.00% Impervious, Inflow Depth = 0.98" for 1 Year, 24 Hour Storm event
Inflow = 4.17 cfs @ 12.30 hrs, Volume= 20,356 cf
Outflow = 4.17 cfs @ 12.30 hrs, Volume= 20,356 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3

Reach DP1: Design Point 1

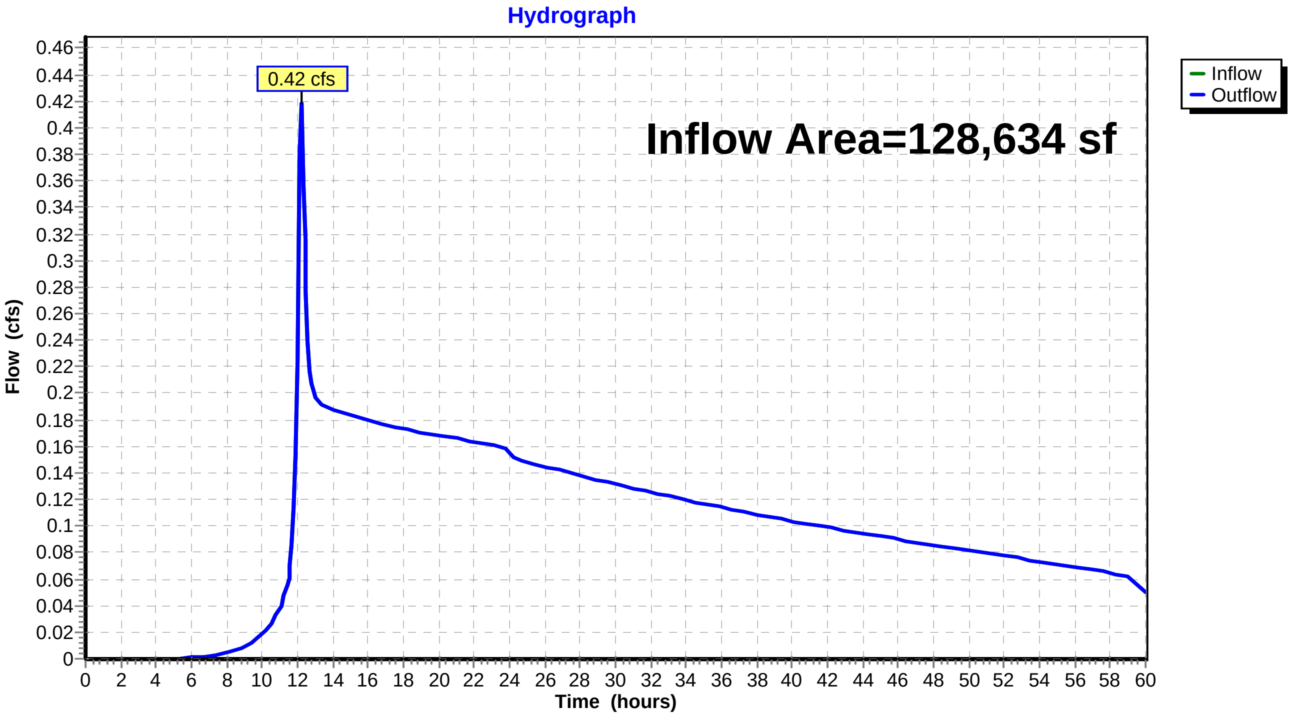


Summary for Reach DP2: Design Point 2

Inflow Area =	128,634 sf,	51.86% Impervious,	Inflow Depth > 2.01"	for 1 Year, 24 Hour Storm event
Inflow =	0.42 cfs @	12.19 hrs, Volume=	21,495 cf	
Outflow =	0.42 cfs @	12.19 hrs, Volume=	21,495 cf, Atten= 0%, Lag= 0.0 min	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3

Reach DP2: Design Point 2

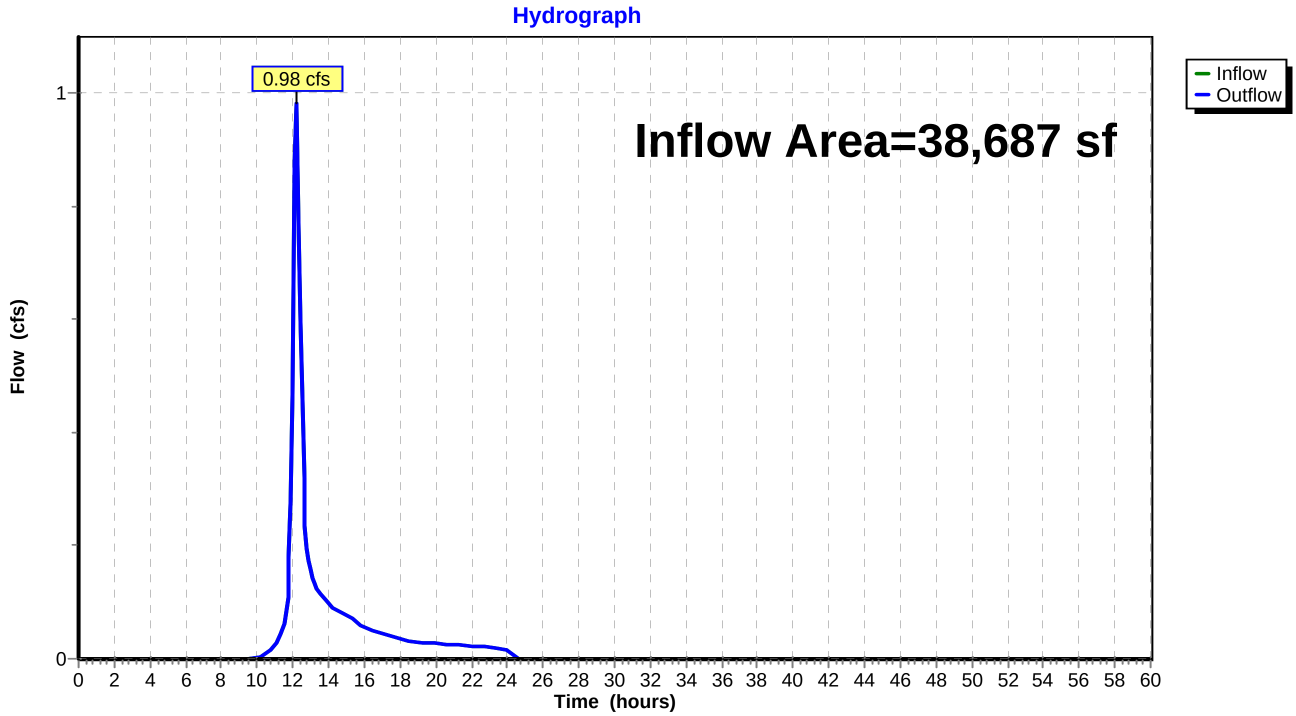


Summary for Reach DP3: Design Point 3

Inflow Area = 38,687 sf, 9.93% Impervious, Inflow Depth = 1.25" for 1 Year, 24 Hour Storm event
Inflow = 0.98 cfs @ 12.18 hrs, Volume= 4,029 cf
Outflow = 0.98 cfs @ 12.18 hrs, Volume= 4,029 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3

Reach DP3: Design Point 3



Summary for Pond F-1: Sand Filter

Inflow Area = 86,352 sf, 71.03% Impervious, Inflow Depth > 2.39" for 1 Year, 24 Hour Storm event
Inflow = 2.62 cfs @ 12.23 hrs, Volume= 17,227 cf
Outflow = 0.13 cfs @ 17.00 hrs, Volume= 17,224 cf, Atten= 95%, Lag= 286.6 min
Primary = 0.13 cfs @ 17.00 hrs, Volume= 17,224 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3
Peak Elev= 387.00' @ 17.00 hrs Surf.Area= 3,137 sf Storage= 6,656 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 581.0 min (1,896.9 - 1,315.8)

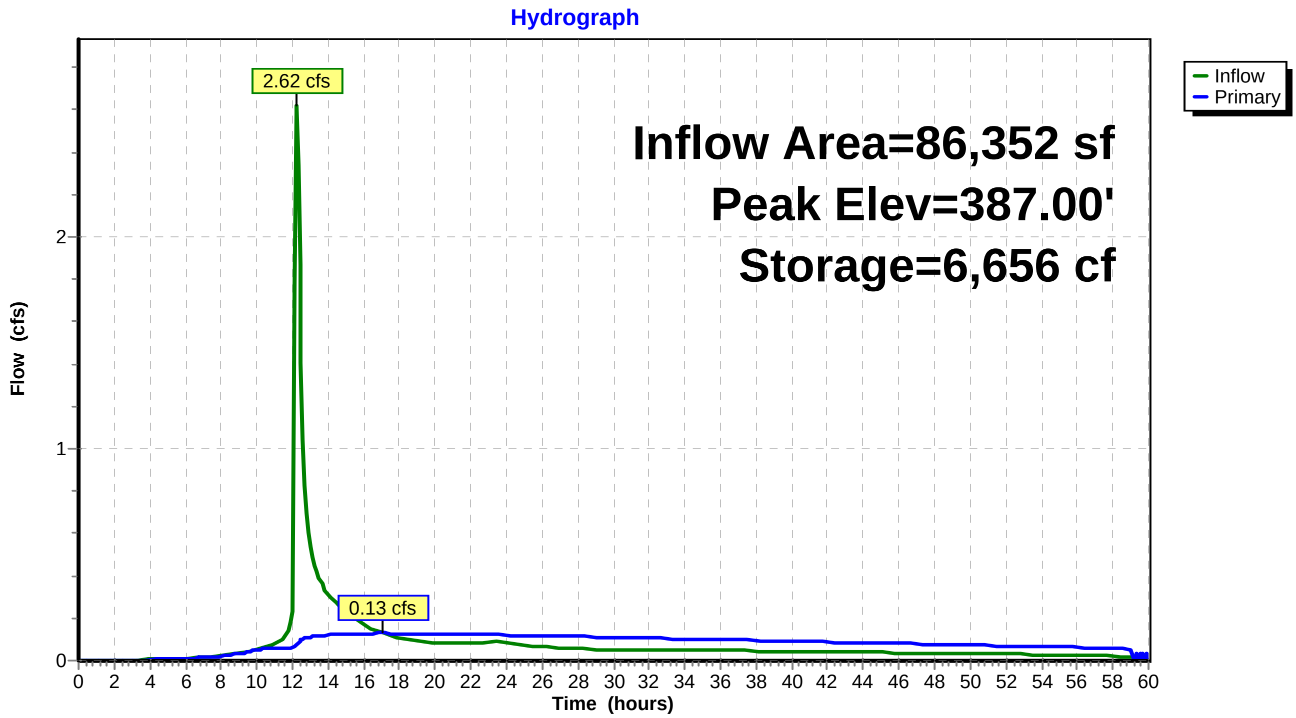
Volume	Invert	Avail.Storage	Storage Description
#1	384.00'	10,072 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
384.00	1,386	0	0
385.00	1,903	1,645	1,645
386.00	2,483	2,193	3,838
387.00	3,135	2,809	6,647
388.00	3,716	3,426	10,072

Device	Routing	Invert	Outlet Devices
#1	Primary	381.50'	**10.0" Round Culvert** L= 38.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 381.50' / 377.00' S= 0.1184 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf
#2	Device 1	384.00'	**1.750 in/hr Sand Filter Bed over Surface area**
#3	Device 1	387.00'	**24.0" x 24.0" Horiz. Overflow Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.13 cfs @ 17.00 hrs HW=387.00' TW=378.60' (Dynamic Tailwater)
1=Culvert (Passes 0.13 cfs of 4.68 cfs potential flow)
2=Sand Filter Bed (Exfiltration Controls 0.13 cfs)
3=Overflow Grate (Weir Controls 0.00 cfs @ 0.18 fps)

Pond F-1: Sand Filter



Stage-Area-Storage for Pond F-1: Sand Filter

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
384.00	1,386	0	386.65	2,907	5,589
384.05	1,412	70	386.70	2,939	5,735
384.10	1,438	141	386.75	2,972	5,883
384.15	1,464	214	386.80	3,005	6,033
384.20	1,489	288	386.85	3,037	6,184
384.25	1,515	363	386.90	3,070	6,336
384.30	1,541	439	386.95	3,102	6,491
384.35	1,567	517	387.00	3,135	6,647
384.40	1,593	596	387.05	3,164	6,804
384.45	1,619	676	387.10	3,193	6,963
384.50	1,645	758	387.15	3,222	7,123
384.55	1,670	840	387.20	3,251	7,285
384.60	1,696	925	387.25	3,280	7,448
384.65	1,722	1,010	387.30	3,309	7,613
384.70	1,748	1,097	387.35	3,338	7,779
384.75	1,774	1,185	387.40	3,367	7,947
384.80	1,800	1,274	387.45	3,396	8,116
384.85	1,825	1,365	387.50	3,426	8,287
384.90	1,851	1,457	387.55	3,455	8,459
384.95	1,877	1,550	387.60	3,484	8,632
385.00	1,903	1,645	387.65	3,513	8,807
385.05	1,932	1,740	387.70	3,542	8,983
385.10	1,961	1,838	387.75	3,571	9,161
385.15	1,990	1,936	387.80	3,600	9,340
385.20	2,019	2,037	387.85	3,629	9,521
385.25	2,048	2,138	387.90	3,658	9,703
385.30	2,077	2,242	387.95	3,687	9,887
385.35	2,106	2,346	388.00	**3,716**	**10,072**
385.40	2,135	2,452			
385.45	2,164	2,560			
385.50	2,193	2,669			
385.55	2,222	2,779			
385.60	2,251	2,891			
385.65	2,280	3,004			
385.70	2,309	3,119			
385.75	2,338	3,235			
385.80	2,367	3,353			
385.85	2,396	3,472			
385.90	2,425	3,592			
385.95	2,454	3,714			
386.00	2,483	3,838			
386.05	2,516	3,962			
386.10	2,548	4,089			
386.15	2,581	4,217			
386.20	2,613	4,347			
386.25	2,646	4,479			
386.30	2,679	4,612			
386.35	2,711	4,746			
386.40	2,744	4,883			
386.45	2,776	5,021			
386.50	2,809	5,161			
386.55	2,842	5,302			
386.60	2,874	5,445			

Summary for Pond FS: Flow Splitter

Inflow Area =	64,432 sf,	86.80% Impervious,	Inflow Depth = 2.71"	for 1 Year, 24 Hour Storm event
Inflow =	3.99 cfs @	12.01 hrs, Volume=	14,553 cf	
Outflow =	3.99 cfs @	12.01 hrs, Volume=	14,553 cf,	Atten= 0%, Lag= 0.0 min
Primary =	3.99 cfs @	12.01 hrs, Volume=	14,553 cf	
Secondary =	0.00 cfs @	0.00 hrs, Volume=	0 cf	

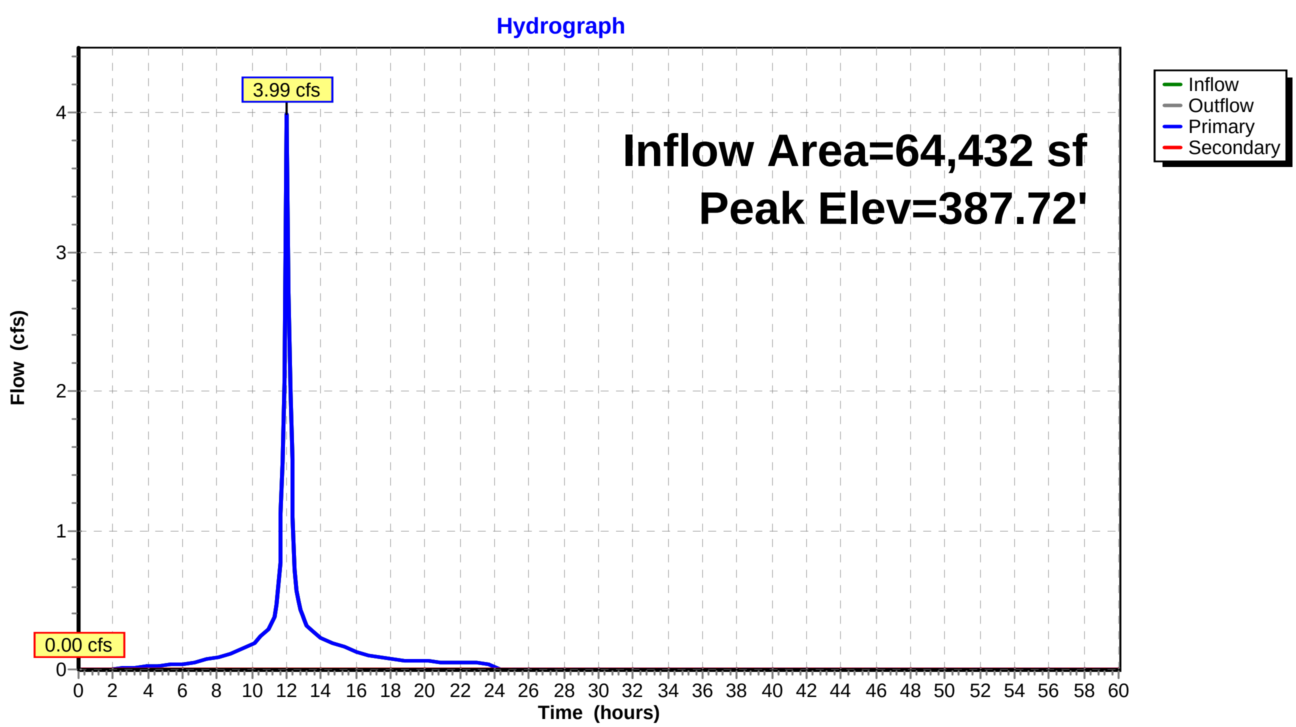
Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3
Peak Elev= 387.72' @ 12.05 hrs
Flood Elev= 392.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	386.00'	**15.0" Round Culvert to Sed Basin** L= 20.0' Ke= 0.900 Inlet / Outlet Invert= 386.00' / 384.00' S= 0.1000 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Secondary	387.80'	**24.0" Round Culvert** L= 106.0' Ke= 0.900 Inlet / Outlet Invert= 387.80' / 381.00' S= 0.0642 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=3.87 cfs @ 12.01 hrs HW=387.62' TW=386.93' (Dynamic Tailwater)
1=Culvert to Sed Basin (Inlet Controls 3.87 cfs @ 3.15 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=386.00' TW=378.00' (Dynamic Tailwater)
2=Culvert (Controls 0.00 cfs)

Pond FS: Flow Splitter



Stage-Area-Storage for Pond FS: Flow Splitter

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
386.00	**0**	388.12	0	390.24	0
386.04	0	388.16	0	390.28	0
386.08	0	388.20	0	390.32	0
386.12	0	388.24	0	390.36	0
386.16	0	388.28	0	390.40	0
386.20	0	388.32	0	390.44	0
386.24	0	388.36	0	390.48	0
386.28	0	388.40	0	390.52	0
386.32	0	388.44	0	390.56	0
386.36	0	388.48	0	390.60	0
386.40	0	388.52	0	390.64	0
386.44	0	388.56	0	390.68	0
386.48	0	388.60	0	390.72	0
386.52	0	388.64	0	390.76	0
386.56	0	388.68	0	390.80	0
386.60	0	388.72	0	390.84	0
386.64	0	388.76	0	390.88	0
386.68	0	388.80	0	390.92	0
386.72	0	388.84	0	390.96	0
386.76	0	388.88	0	391.00	0
386.80	0	388.92	0	391.04	0
386.84	0	388.96	0	391.08	0
386.88	0	389.00	0	391.12	0
386.92	0	389.04	0	391.16	0
386.96	0	389.08	0	391.20	0
387.00	0	389.12	0	391.24	0
387.04	0	389.16	0	391.28	0
387.08	0	389.20	0	391.32	0
387.12	0	389.24	0	391.36	0
387.16	0	389.28	0	391.40	0
387.20	0	389.32	0	391.44	0
387.24	0	389.36	0	391.48	0
387.28	0	389.40	0	391.52	0
387.32	0	389.44	0	391.56	0
387.36	0	389.48	0	391.60	0
387.40	0	389.52	0	391.64	0
387.44	0	389.56	0	391.68	0
387.48	0	389.60	0	391.72	0
387.52	0	389.64	0	391.76	0
387.56	0	389.68	0	391.80	0
387.60	0	389.72	0	391.84	0
387.64	0	389.76	0	391.88	0
387.68	0	389.80	0	391.92	0
387.72	0	389.84	0	391.96	0
387.76	0	389.88	0	392.00	0
387.80	0	389.92	0		
387.84	0	389.96	0		
387.88	0	390.00	0		
387.92	0	390.04	0		
387.96	0	390.08	0		
388.00	0	390.12	0		
388.04	0	390.16	0		
388.08	0	390.20	0		

Summary for Pond SB: Sedimentation Basin

Inflow Area = 86,352 sf, 71.03% Impervious, Inflow Depth = 2.47" for 1 Year, 24 Hour Storm event
Inflow = 4.94 cfs @ 12.01 hrs, Volume= 17,787 cf
Outflow = 2.62 cfs @ 12.23 hrs, Volume= 17,227 cf, Atten= 47%, Lag= 12.8 min
Primary = 2.62 cfs @ 12.23 hrs, Volume= 17,227 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3
Peak Elev= 387.38' @ 12.23 hrs Surf.Area= 3,164 sf Storage= 7,287 cf

Plug-Flow detention time= 561.2 min calculated for 17,227 cf (97% of inflow)
Center-of-Mass det. time= 542.2 min (1,315.8 - 773.7)

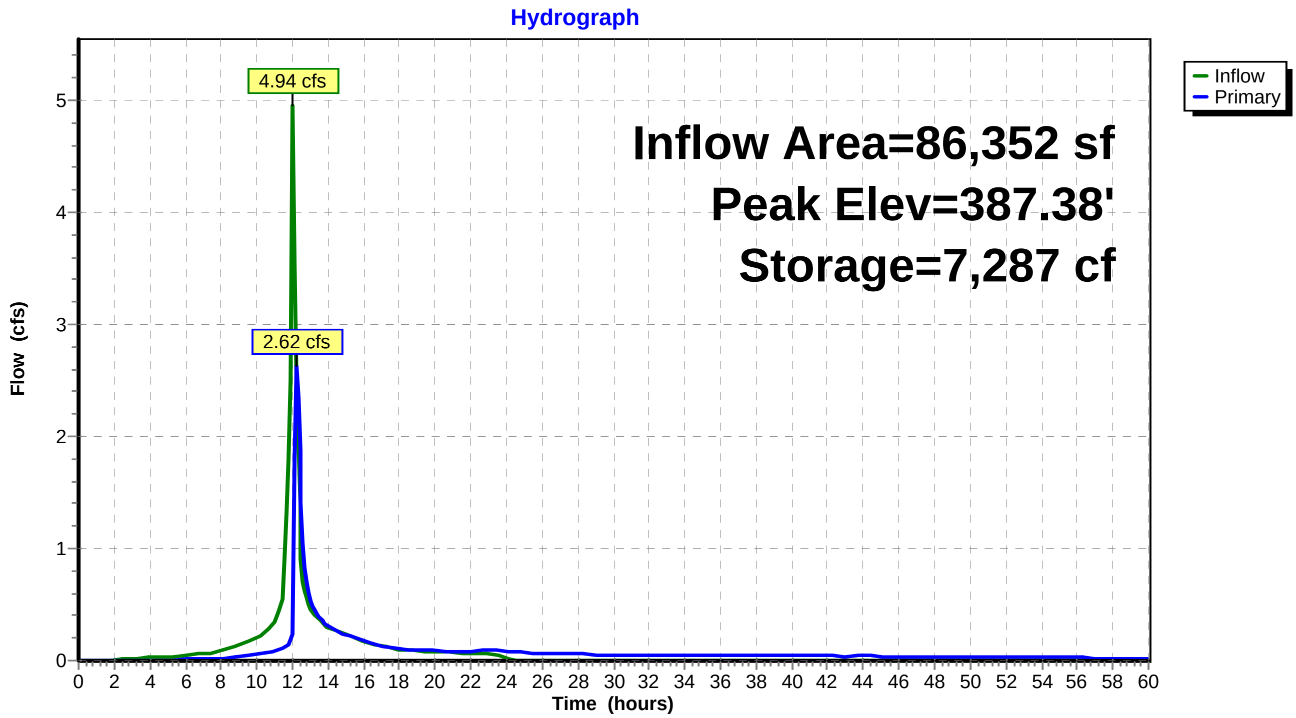
Volume	Invert	Avail.Storage	Storage Description
#1	384.00'	9,361 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
384.00	1,219	0	0
385.00	1,730	1,475	1,475
386.00	2,313	2,022	3,496
387.00	2,951	2,632	6,128
388.00	3,514	3,233	9,361

Device	Routing	Invert	Outlet Devices
#1	Primary	382.00'	**10.0" Round Culvert** L= 38.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 382.00' / 377.00' S= 0.1316 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf
#2	Device 1	384.00'	**0.4" Vert. Standpipe Perforations X 4.00 columns** X 12 rows with 3.0" cc spacing C= 0.600
#3	Device 1	387.00'	**12.0" Horiz. Standpipe Riser Opening** C= 0.600 Limited to weir flow at low heads
#4	Primary	387.50'	**15.0' long Overflow Spillway** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=2.55 cfs @ 12.23 hrs HW=387.37' TW=384.96' (Dynamic Tailwater)
1=Culvert (Passes 2.55 cfs of 3.21 cfs potential flow)
2=Standpipe Perforations (Orifice Controls 0.26 cfs @ 6.31 fps)
3=Standpipe Riser Opening (Weir Controls 2.28 cfs @ 1.98 fps)
4=Overflow Spillway (Controls 0.00 cfs)

Pond SB: Sedimentation Basin



Stage-Area-Storage for Pond SB: Sedimentation Basin

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
384.00	1,219	0	386.65	2,728	5,134
384.05	1,245	62	386.70	2,760	5,271
384.10	1,270	124	386.75	2,792	5,410
384.15	1,296	189	386.80	2,823	5,551
384.20	1,321	254	386.85	2,855	5,693
384.25	1,347	321	386.90	2,887	5,836
384.30	1,372	389	386.95	2,919	5,981
384.35	1,398	458	387.00	2,951	6,128
384.40	1,423	528	387.05	2,979	6,276
384.45	1,449	600	387.10	3,007	6,426
384.50	1,475	673	387.15	3,035	6,577
384.55	1,500	748	387.20	3,064	6,729
384.60	1,526	823	387.25	3,092	6,883
384.65	1,551	900	387.30	3,120	7,039
384.70	1,577	978	387.35	3,148	7,195
384.75	1,602	1,058	387.40	3,176	7,353
384.80	1,628	1,139	387.45	3,204	7,513
384.85	1,653	1,221	387.50	3,233	7,674
384.90	1,679	1,304	387.55	3,261	7,836
384.95	1,704	1,389	387.60	3,289	8,000
385.00	1,730	1,475	387.65	3,317	8,165
385.05	1,759	1,562	387.70	3,345	8,332
385.10	1,788	1,650	387.75	3,373	8,500
385.15	1,817	1,741	387.80	3,401	8,669
385.20	1,847	1,832	387.85	3,430	8,840
385.25	1,876	1,925	387.90	3,458	9,012
385.30	1,905	2,020	387.95	3,486	9,186
385.35	1,934	2,116	388.00	**3,514**	**9,361**
385.40	1,963	2,213			
385.45	1,992	2,312			
385.50	2,022	2,412			
385.55	2,051	2,514			
385.60	2,080	2,617			
385.65	2,109	2,722			
385.70	2,138	2,828			
385.75	2,167	2,936			
385.80	2,196	3,045			
385.85	2,226	3,156			
385.90	2,255	3,268			
385.95	2,284	3,381			
386.00	2,313	3,496			
386.05	2,345	3,612			
386.10	2,377	3,730			
386.15	2,409	3,850			
386.20	2,441	3,971			
386.25	2,473	4,094			
386.30	2,504	4,219			
386.35	2,536	4,345			
386.40	2,568	4,472			
386.45	2,600	4,601			
386.50	2,632	4,732			
386.55	2,664	4,865			
386.60	2,696	4,999			

Summary for Pond W-4: W-4 Pocket Wetland

Inflow Area = 113,943 sf, 58.55% Impervious, Inflow Depth > 2.23" for 1 Year, 24 Hour Storm event
Inflow = 1.31 cfs @ 12.01 hrs, Volume= 21,133 cf
Outflow = 0.16 cfs @ 17.26 hrs, Volume= 20,292 cf, Atten= 88%, Lag= 314.9 min
Primary = 0.16 cfs @ 17.26 hrs, Volume= 20,292 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3
Peak Elev= 378.60' @ 17.26 hrs Surf.Area= 5,581 sf Storage= 3,109 cf

Plug-Flow detention time= 278.2 min calculated for 20,258 cf (96% of inflow)
Center-of-Mass det. time= 206.0 min (1,902.2 - 1,696.2)

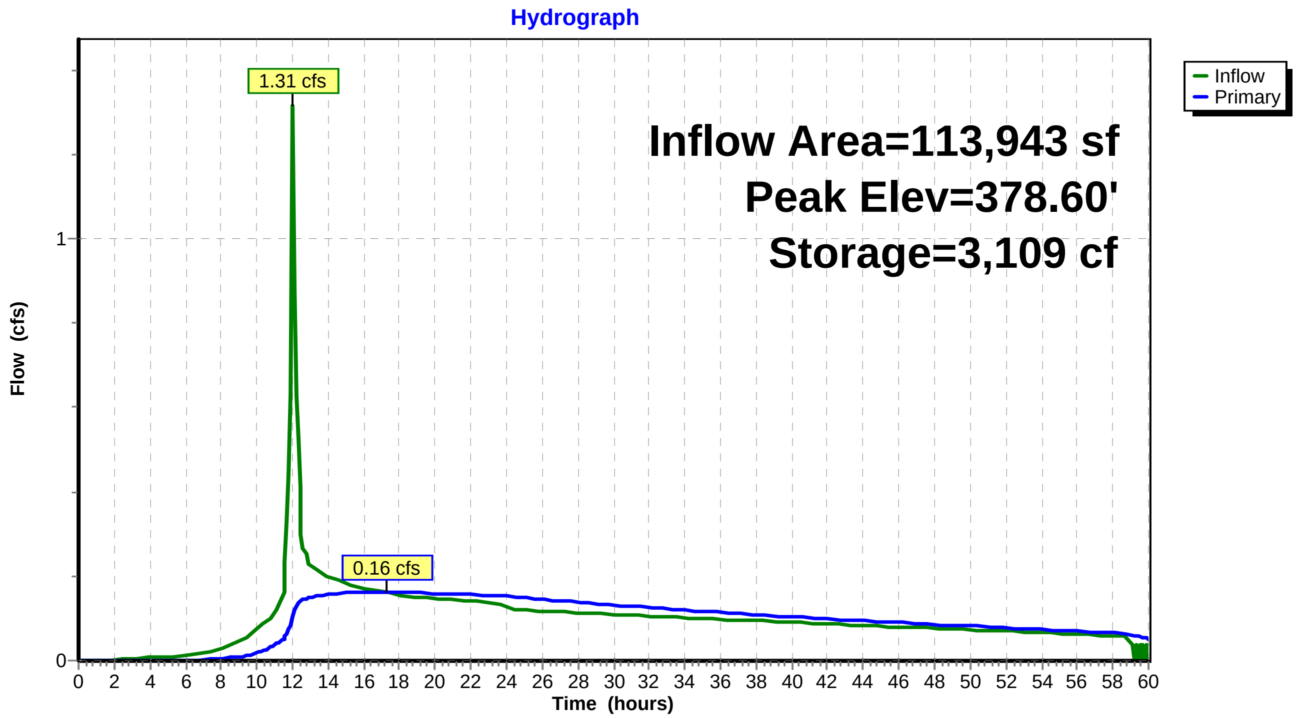
Volume	Invert	Avail.Storage	Storage Description
#1	378.00'	20,808 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
378.00	4,855	0	0
379.00	6,074	5,465	5,465
380.00	7,618	6,846	12,311
381.00	9,377	8,498	20,808

Device	Routing	Invert	Outlet Devices
#1	Primary	373.00'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 373.00' / 372.60' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	378.00'	**3.0" Vert. Low Flow Orifice** C= 0.600
#3	Device 1	378.70'	**36.0" W x 6.0" H Vert. High Flow Orifice (36Wx6H)** C= 0.600

Primary OutFlow Max=0.16 cfs @ 17.26 hrs HW=378.60' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.16 cfs of 8.49 cfs potential flow)
  ├─**2=Low Flow Orifice** (Orifice Controls 0.16 cfs @ 3.30 fps)
  └─**3=High Flow Orifice (36Wx6H)** (Controls 0.00 cfs)

Pond W-4: W-4 Pocket Wetland



Stage-Area-Storage for Pond W-4: W-4 Pocket Wetland

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
378.00	4,855	0
378.05	4,916	244
378.10	4,977	492
378.15	5,038	742
378.20	5,099	995
378.25	5,160	1,252
378.30	5,221	1,511
378.35	5,282	1,774
378.40	5,343	2,040
378.45	5,404	2,308
378.50	5,465	2,580
378.55	5,525	2,855
378.60	5,586	3,132
378.65	5,647	3,413
378.70	5,708	3,697
378.75	5,769	3,984
378.80	5,830	4,274
378.85	5,891	4,567
378.90	5,952	4,863
378.95	6,013	5,162
379.00	6,074	5,465
379.05	6,151	5,770
379.10	6,228	6,080
379.15	6,306	6,393
379.20	6,383	6,710
379.25	6,460	7,031
379.30	6,537	7,356
379.35	6,614	7,685
379.40	6,692	8,018
379.45	6,769	8,354
379.50	6,846	8,695
379.55	6,923	9,039
379.60	7,000	9,387
379.65	7,078	9,739
379.70	7,155	10,095
379.75	7,232	10,454
379.80	7,309	10,818
379.85	7,386	11,185
379.90	7,464	11,556
379.95	7,541	11,932
380.00	7,618	12,311
380.05	7,706	12,694
380.10	7,794	13,081
380.15	7,882	13,473
380.20	7,970	13,869
380.25	8,058	14,270
380.30	8,146	14,675
380.35	8,234	15,085
380.40	8,322	15,498
380.45	8,410	15,917
380.50	8,498	16,339
380.55	8,585	16,766
380.60	8,673	17,198
380.65	8,761	17,634
380.70	8,849	18,074
380.75	8,937	18,519
380.80	9,025	18,968
380.85	9,113	19,421
380.90	9,201	19,879
380.95	9,289	20,341
381.00	**9,377**	**20,808**

Time span=0.00-60.00 hrs, dt=0.10 hrs, 601 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment Post 2E: Post 2E Runoff Area=13,510 sf 40.08% Impervious Runoff Depth=2.27"
Flow Length=130' Tc=1.3 min CN=87 Runoff=0.83 cfs 2,558 cf

Subcatchment Post 1: DA 1 Runoff Area=248,549 sf 0.00% Impervious Runoff Depth=1.25"
Flow Length=605' Tc=18.8 min CN=73 Runoff=5.41 cfs 25,835 cf

Subcatchment Post 2A: Post 2A Runoff Area=4,907 sf 100.00% Impervious Runoff Depth=3.37"
Flow Length=150' Slope=0.0100 '/' Tc=1.9 min CN=98 Runoff=0.39 cfs 1,376 cf

Subcatchment Post 2B: Post 2B Runoff Area=14,630 sf 41.85% Impervious Runoff Depth=2.19"
Flow Length=346' Tc=11.0 min CN=86 Runoff=0.68 cfs 2,666 cf

Subcatchment Post 2C: Post 2C Runoff Area=44,895 sf 100.00% Impervious Runoff Depth=3.37"
Flow Length=100' Slope=0.1350 '/' Tc=0.5 min CN=98 Runoff=3.77 cfs 12,594 cf

Subcatchment Post 2D: Post 2D Runoff Area=8,410 sf 0.00% Impervious Runoff Depth=1.87"
Flow Length=200' Tc=4.5 min CN=82 Runoff=0.40 cfs 1,307 cf

Subcatchment Post 2F: Post 2F Runoff Area=4,258 sf 100.00% Impervious Runoff Depth=3.37"
Flow Length=119' Slope=0.1687 '/' Tc=0.1 min CN=98 Runoff=0.36 cfs 1,194 cf

Subcatchment Post 2G: Post 2G Runoff Area=23,333 sf 4.77% Impervious Runoff Depth=1.79"
Flow Length=112' Tc=0.9 min CN=81 Runoff=1.15 cfs 3,480 cf

Subcatchment Post 2H: Post 2H Runoff Area=14,691 sf 0.00% Impervious Runoff Depth=1.25"
Flow Length=353' Tc=10.5 min CN=73 Runoff=0.38 cfs 1,527 cf

Subcatchment Post 3A: Post 3A Runoff Area=33,605 sf 11.43% Impervious Runoff Depth=1.57"
Flow Length=110' Tc=11.9 min CN=78 Runoff=1.10 cfs 4,407 cf

Subcatchment Post 3B: Post 3B Runoff Area=5,082 sf 0.00% Impervious Runoff Depth=1.37"
Flow Length=100' Slope=0.0850 '/' Tc=5.3 min CN=75 Runoff=0.17 cfs 581 cf

Reach DP1: Design Point 1 Inflow=5.41 cfs 25,835 cf
Outflow=5.41 cfs 25,835 cf

Reach DP2: Design Point 2 Inflow=0.52 cfs 25,195 cf
Outflow=0.52 cfs 25,195 cf

Reach DP3: Design Point 3 Inflow=1.22 cfs 4,989 cf
Outflow=1.22 cfs 4,989 cf

Pond F-1: Sand Filter Peak Elev=387.05' Storage=6,806 cf Inflow=3.20 cfs 19,812 cf
Outflow=0.42 cfs 19,815 cf

Pond FS: Flow Splitter Peak Elev=388.09' Inflow=4.53 cfs 16,637 cf
Primary=4.32 cfs 16,541 cf Secondary=0.21 cfs 95 cf Outflow=4.53 cfs 16,637 cf

Pond SB: Sedimentation Basin Peak Elev=387.52' Storage=7,754 cf Inflow=5.46 cfs 20,407 cf
Outflow=3.20 cfs 19,812 cf

Pond W-4: W-4 Pocket Wetland Peak Elev=378.78' Storage=4,163 cf Inflow=1.78 cfs 24,585 cf
Outflow=0.41 cfs 23,668 cf

Total Runoff Area = 415,870 sf Runoff Volume = 57,528 cf Average Runoff Depth = 1.66"
83.04% Pervious = 345,318 sf 16.96% Impervious = 70,552 sf

Summary for Subcatchment Post 2E: Post 2E

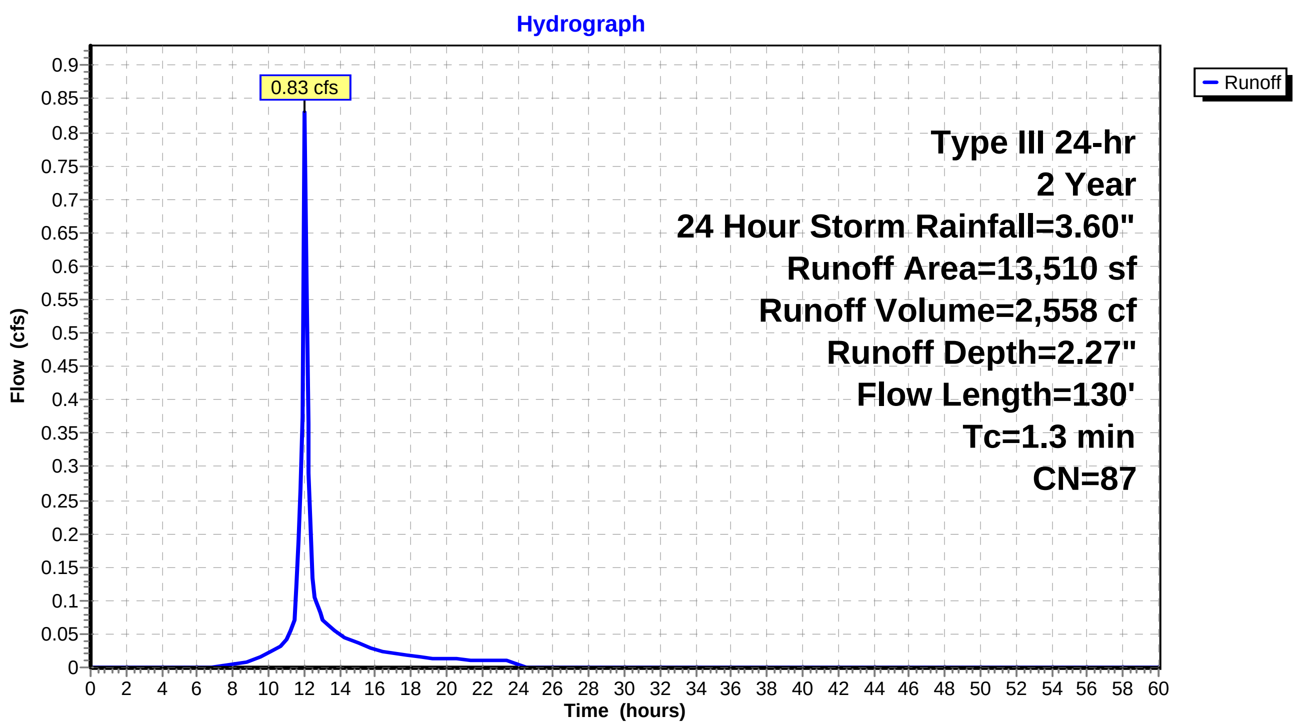
Runoff = 0.83 cfs @ 12.01 hrs, Volume= 2,558 cf, Depth= 2.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 2 Year, 24 Hour Storm Rainfall=3.60"

Area (sf)	CN	Description
5,415	98	Paved parking, HSG C
8,095	79	50-75% Grass cover, Fair, HSG C
13,510	87	Weighted Average
8,095		59.92% Pervious Area
5,415		40.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0200	1.44		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.1	30	0.3800	9.92		**Shallow Concentrated Flow, Pavement** Unpaved Kv= 16.1 fps
1.3	130	Total			

Subcatchment Post 2E: Post 2E



Summary for Subcatchment Post 1: DA 1

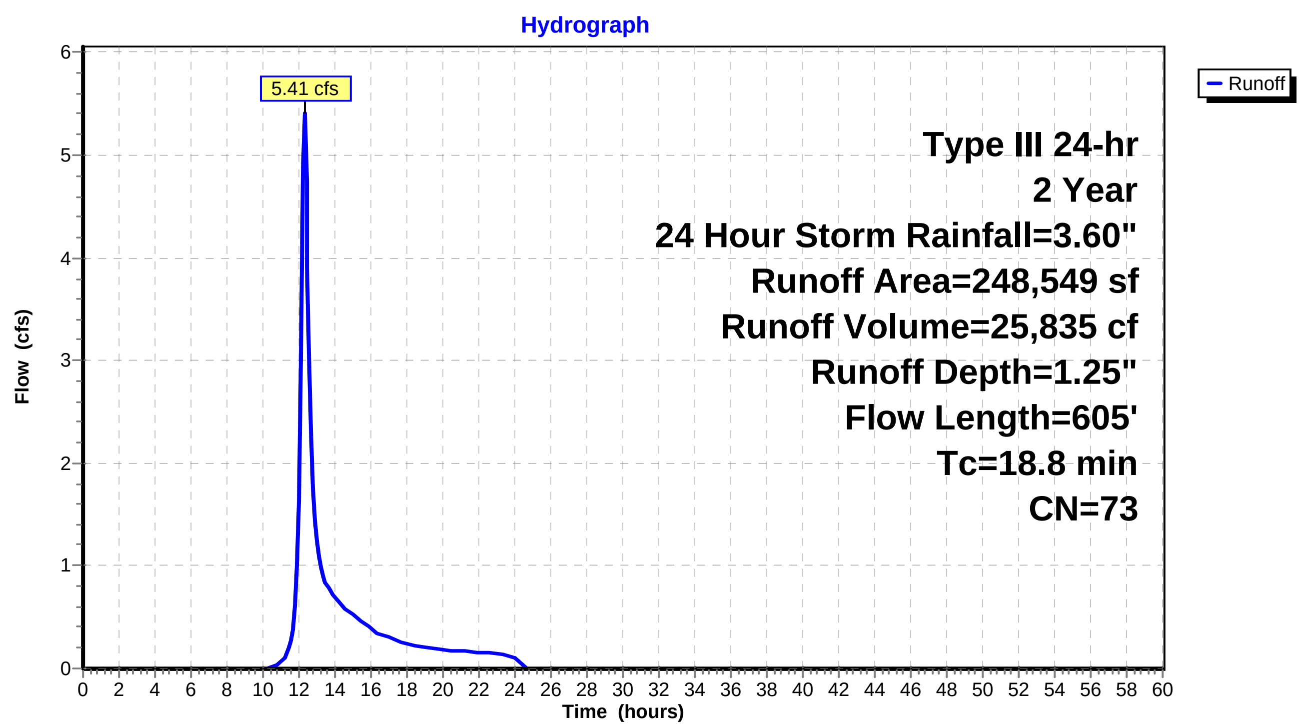
Runoff = 5.41 cfs @ 12.29 hrs, Volume= 25,835 cf, Depth= 1.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 2 Year, 24 Hour Storm Rainfall=3.60"

Area (sf)	CN	Description
159,708	73	Woods, Fair, HSG C
1,496	89	Gravel roads, HSG C
87,345	74	>75% Grass cover, Good, HSG C
248,549	73	Weighted Average
248,549		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.8	250	0.0400	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.0	105	0.0667	1.81		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.0	250	0.0760	1.38		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
18.8	605	Total			

Subcatchment Post 1: DA 1



Summary for Subcatchment Post 2A: Post 2A

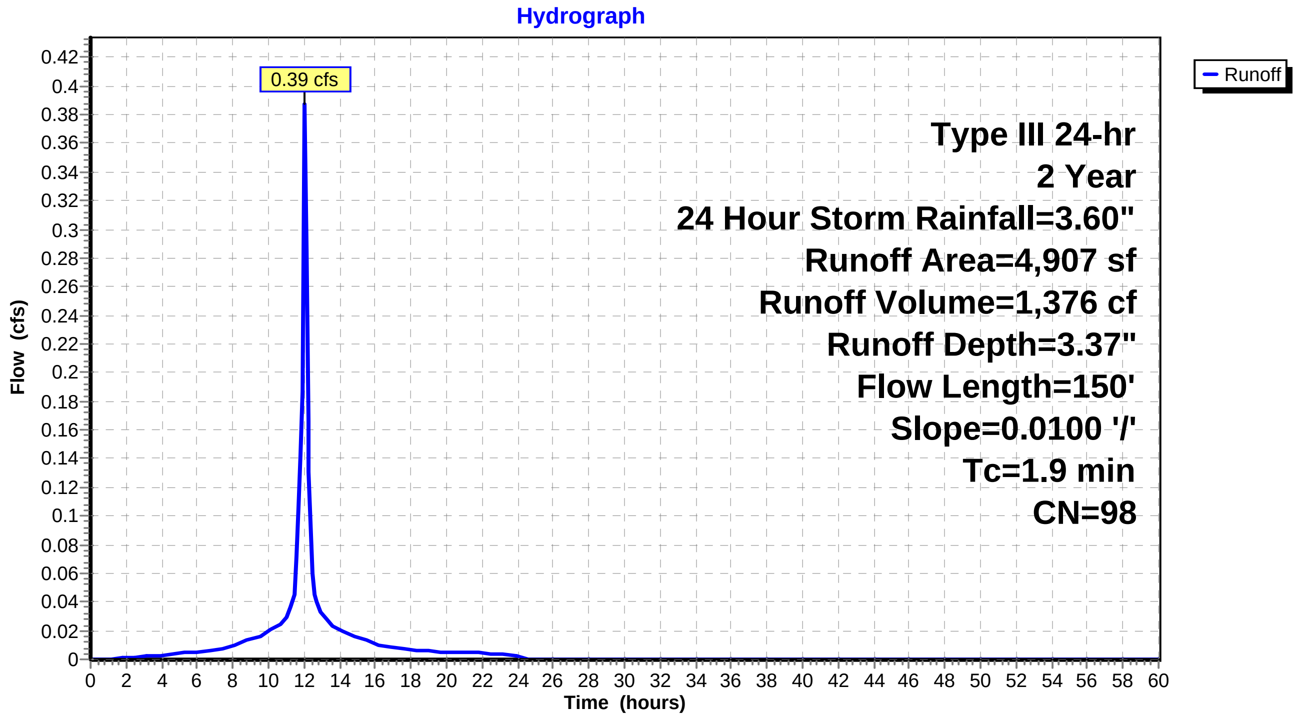
Runoff = 0.39 cfs @ 12.02 hrs, Volume= 1,376 cf, Depth= 3.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 2 Year, 24 Hour Storm Rainfall=3.60"

Area (sf)	CN	Description
4,907	98	Paved parking, HSG C
4,907		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	100	0.0100	1.09		**Sheet Flow, Pavement** Smooth surfaces n= 0.011 P2= 3.50"
0.4	50	0.0100	2.03		**Shallow Concentrated Flow, Pavement** Paved Kv= 20.3 fps
1.9	150	Total			

Subcatchment Post 2A: Post 2A



Summary for Subcatchment Post 2B: Post 2B

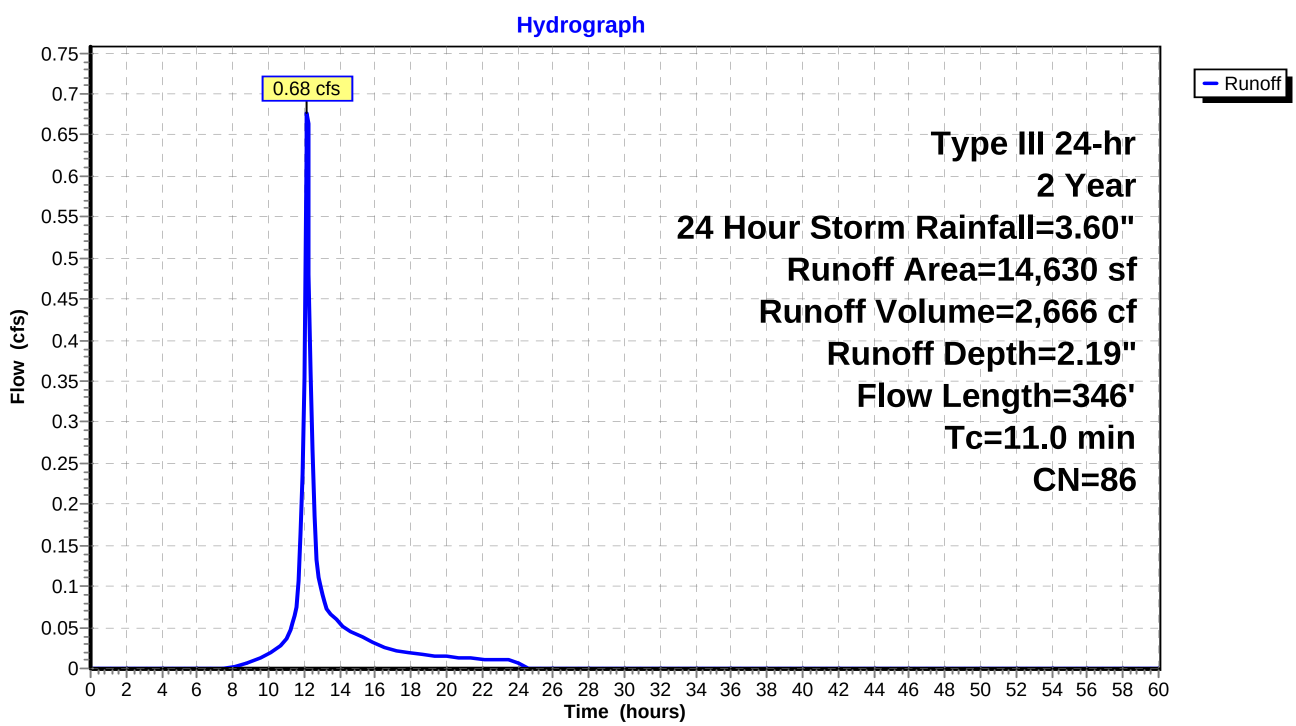
Runoff = 0.68 cfs @ 12.16 hrs, Volume= 2,666 cf, Depth= 2.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 2 Year, 24 Hour Storm Rainfall=3.60"

Area (sf)	CN	Description
6,122	98	Paved parking
6,154	74	>75% Grass cover, Good, HSG C
2,354	89	Gravel roads, HSG C
14,630	86	Weighted Average
8,508		58.15% Pervious Area
6,122		41.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	100	0.0400	0.16		**Sheet Flow, Landscaped area** Grass: Dense n= 0.240 P2= 3.50"
0.7	246	0.0100	5.90	4.63	**Pipe Channel, Pipe** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
11.0	346	Total			

Subcatchment Post 2B: Post 2B



Summary for Subcatchment Post 2C: Post 2C

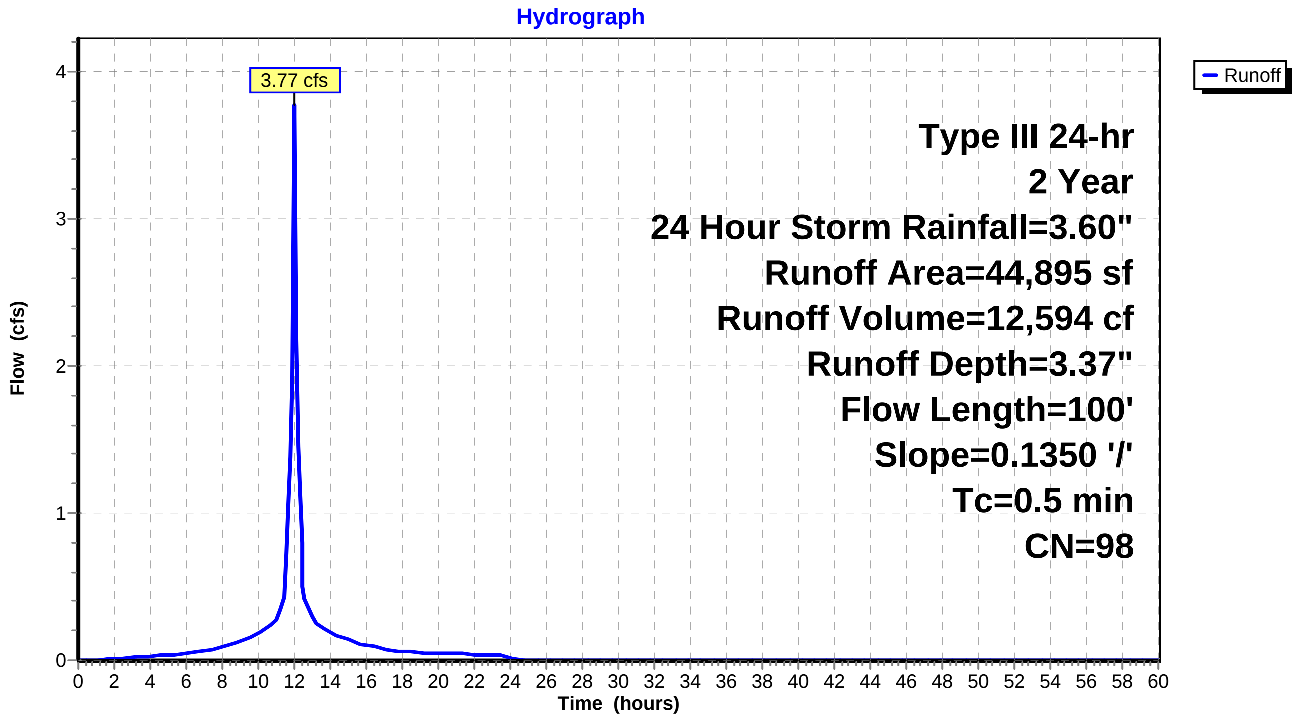
Runoff = 3.77 cfs @ 12.00 hrs, Volume= 12,594 cf, Depth= 3.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 2 Year, 24 Hour Storm Rainfall=3.60"

Area (sf)	CN	Description
44,895	98	Paved parking, HSG C
44,895		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1350	3.09		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"

Subcatchment Post 2C: Post 2C



Summary for Subcatchment Post 2D: Post 2D

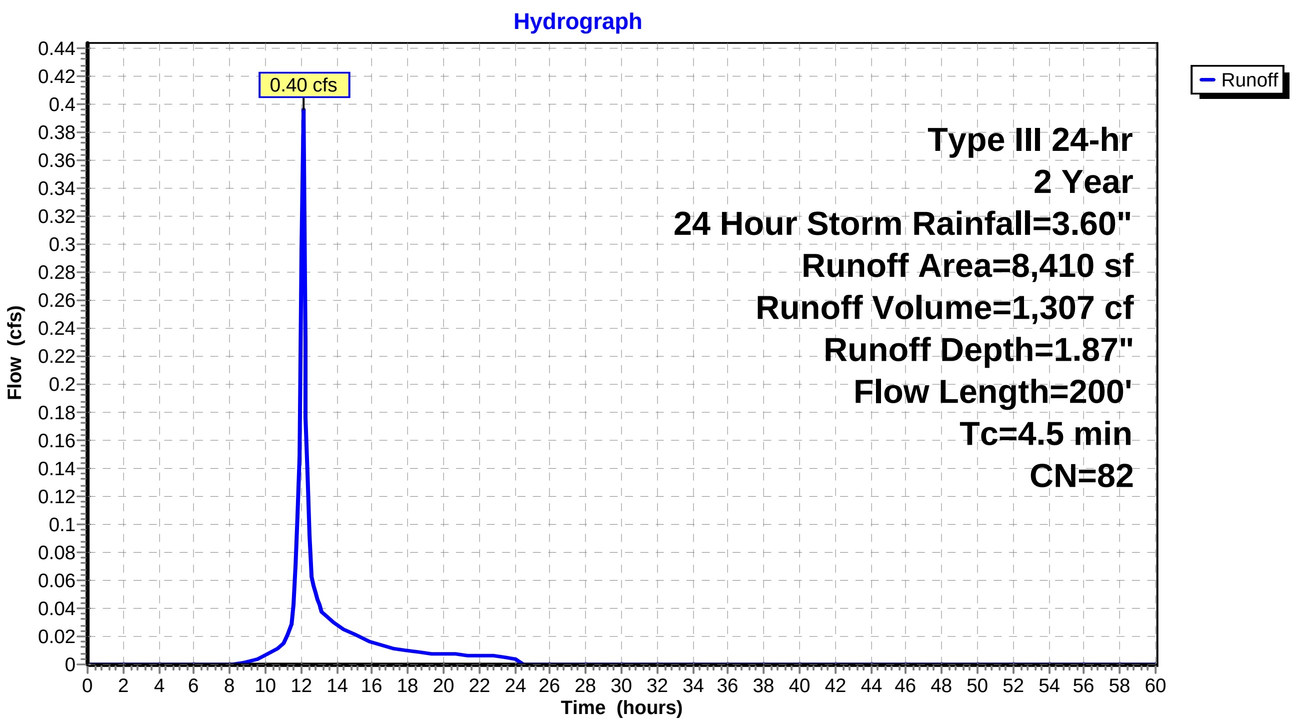
Runoff = 0.40 cfs @ 12.09 hrs, Volume= 1,307 cf, Depth= 1.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 2 Year, 24 Hour Storm Rainfall=3.60"

Area (sf)	CN	Description
6,293	79	50-75% Grass cover, Fair, HSG C
2,117	89	Gravel roads, HSG C
8,410	82	Weighted Average
8,410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	50	0.1000	0.20		**Sheet Flow, Landscaped** Grass: Dense n= 0.240 P2= 3.50"
0.4	150	0.0860	5.95		**Shallow Concentrated Flow, Maintenance Drive** Paved Kv= 20.3 fps
4.5	200	Total			

Subcatchment Post 2D: Post 2D



Summary for Subcatchment Post 2F: Post 2F

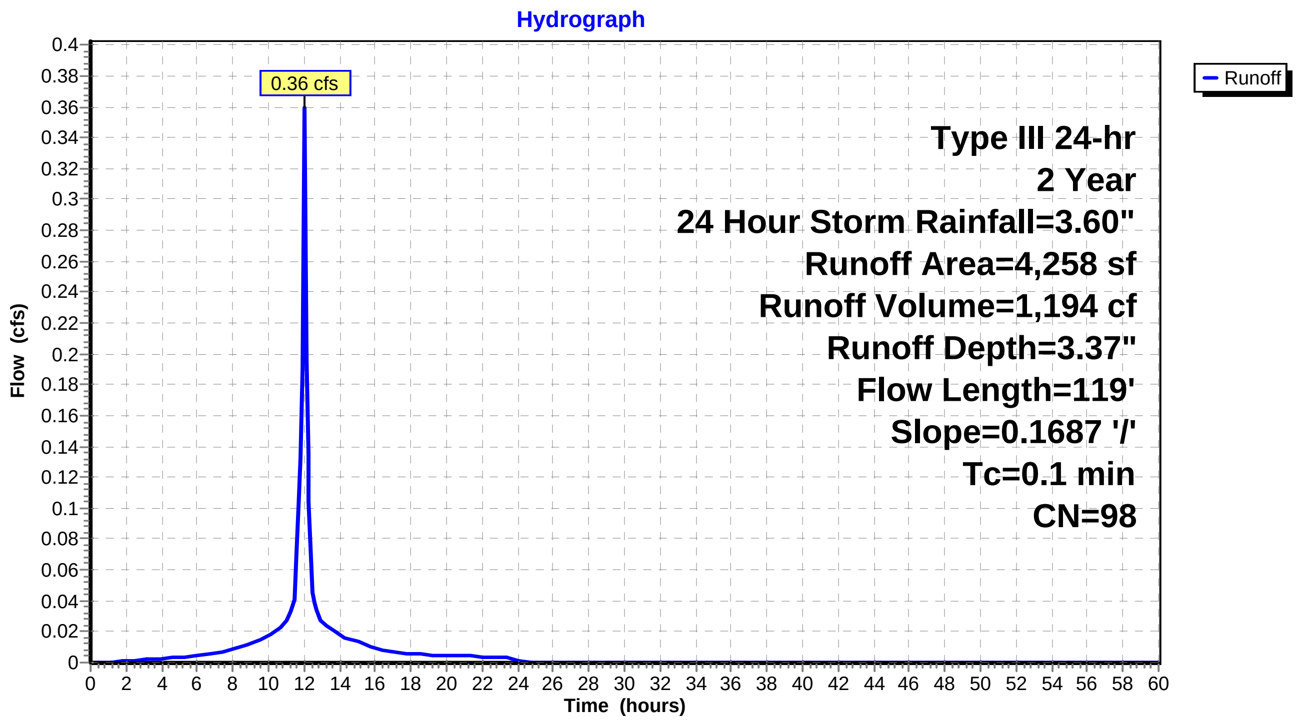
Runoff = 0.36 cfs @ 12.00 hrs, Volume= 1,194 cf, Depth= 3.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 2 Year, 24 Hour Storm Rainfall=3.60"

Area (sf)	CN	Description
4,258	98	Roofs, HSG C
4,258		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	119	0.1687	14.22	4.96	**Pipe Channel, Roof Leader** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.013 Corrugated PE, smooth interior

Subcatchment Post 2F: Post 2F



Summary for Subcatchment Post 2G: Post 2G

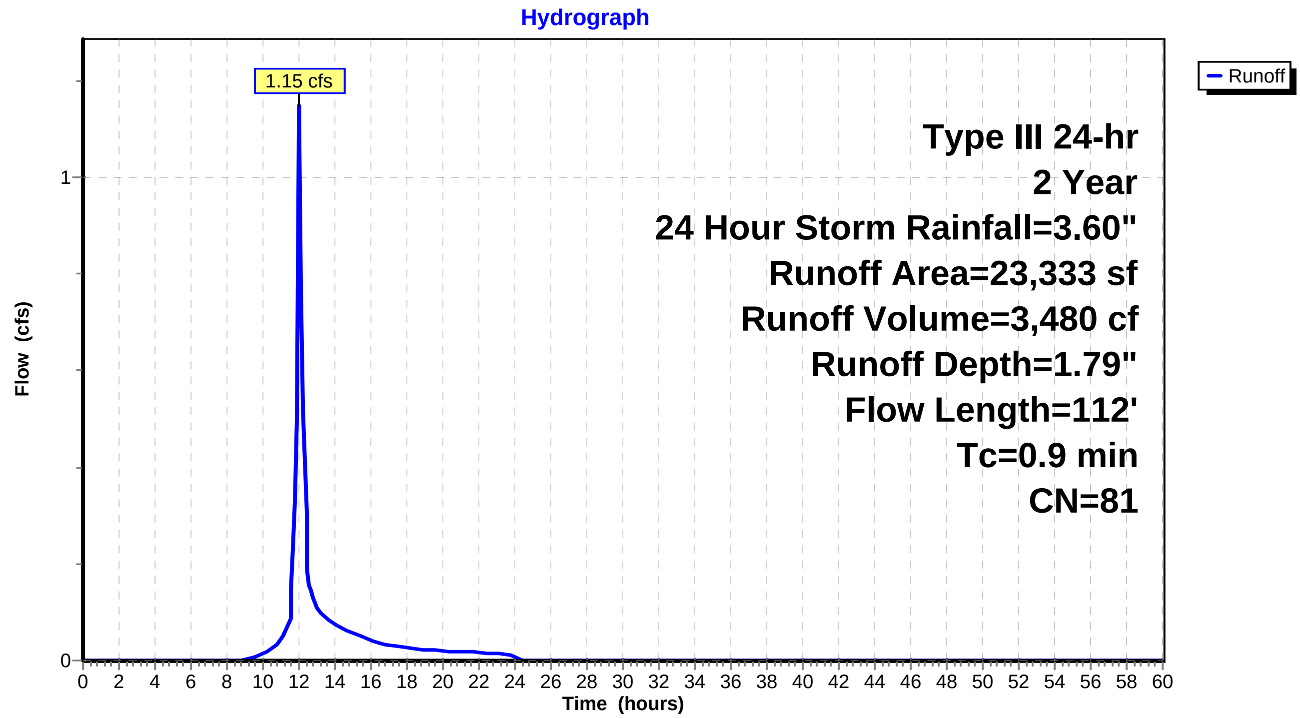
Runoff = 1.15 cfs @ 12.01 hrs, Volume= 3,480 cf, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 2 Year, 24 Hour Storm Rainfall=3.60"

Area (sf)	CN	Description
1,113	98	Paved parking, HSG C
20,037	79	50-75% Grass cover, Fair, HSG C
2,183	89	Gravel roads, HSG C
23,333	81	Weighted Average
22,220		95.23% Pervious Area
1,113		4.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	80	0.0250	1.50		**Sheet Flow, Pavement** Smooth surfaces n= 0.011 P2= 3.50"
0.0	32	0.4600	10.92		**Shallow Concentrated Flow, Landscaped** Unpaved Kv= 16.1 fps
0.9	112	Total			

Subcatchment Post 2G: Post 2G



Summary for Subcatchment Post 2H: Post 2H

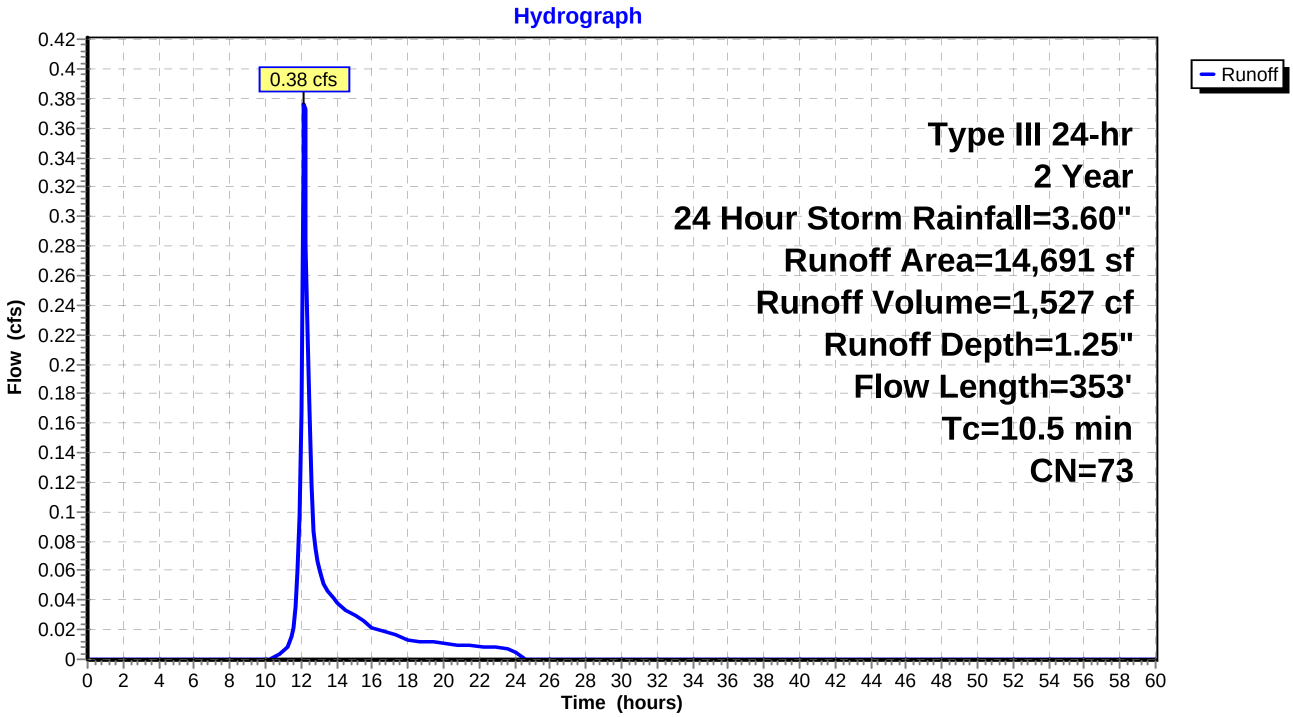
Runoff = 0.38 cfs @ 12.18 hrs, Volume= 1,527 cf, Depth= 1.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 2 Year, 24 Hour Storm Rainfall=3.60"

Area (sf)	CN	Description
14,691	73	Woods, Fair, HSG C
14,691		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0600	0.19		**Sheet Flow, Landscaped** Grass: Dense n= 0.240 P2= 3.50"
1.7	253	0.0260	2.42		**Shallow Concentrated Flow, Grassed waterway** Grassed Waterway Kv= 15.0 fps
10.5	353	Total			

Subcatchment Post 2H: Post 2H



Summary for Subcatchment Post 3A: Post 3A

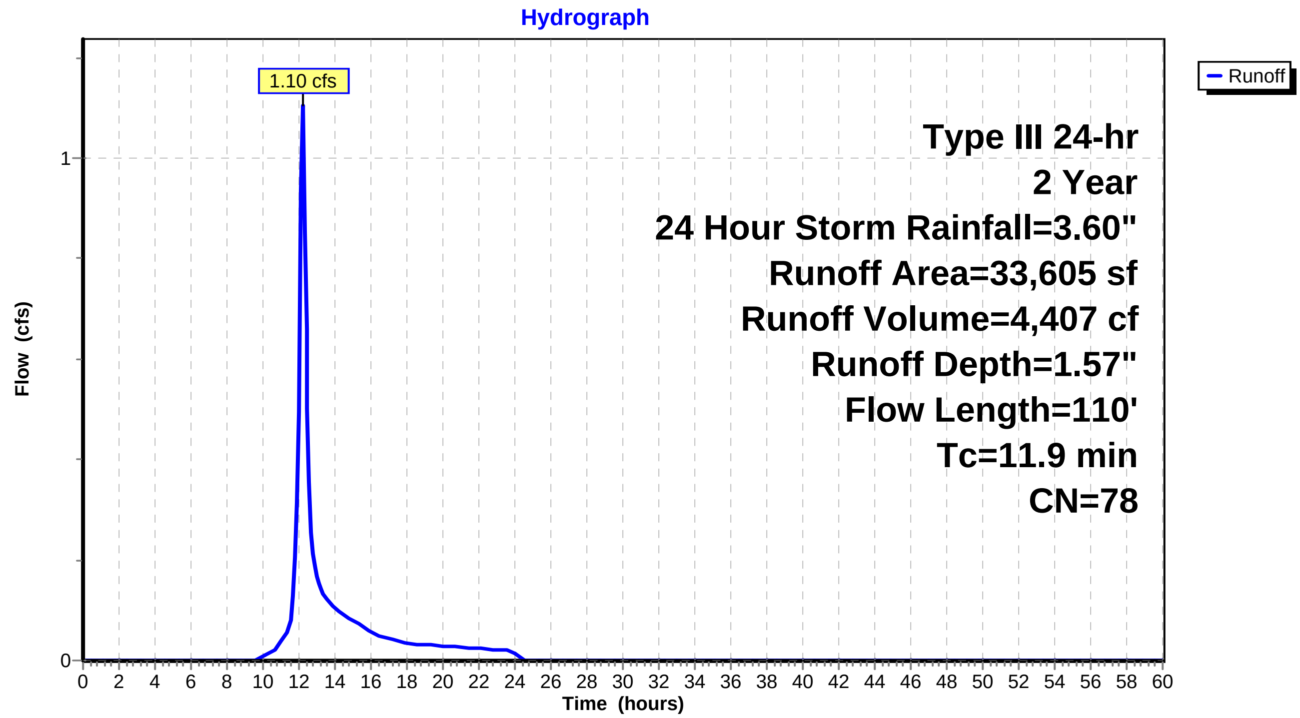
Runoff = 1.10 cfs @ 12.19 hrs, Volume= 4,407 cf, Depth= 1.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 2 Year, 24 Hour Storm Rainfall=3.60"

Area (sf)	CN	Description
3,842	98	Paved parking, HSG C
20,173	73	Woods, Fair, HSG C
9,590	79	50-75% Grass cover, Fair, HSG C
33,605	78	Weighted Average
29,763		88.57% Pervious Area
3,842		11.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	67	0.0600	0.25		**Sheet Flow, Landscaped** Grass: Short n= 0.150 P2= 3.50"
7.5	43	0.0460	0.10		**Sheet Flow, Wooded** Woods: Light underbrush n= 0.400 P2= 3.50"
11.9	110	Total			

Subcatchment Post 3A: Post 3A



Summary for Subcatchment Post 3B: Post 3B

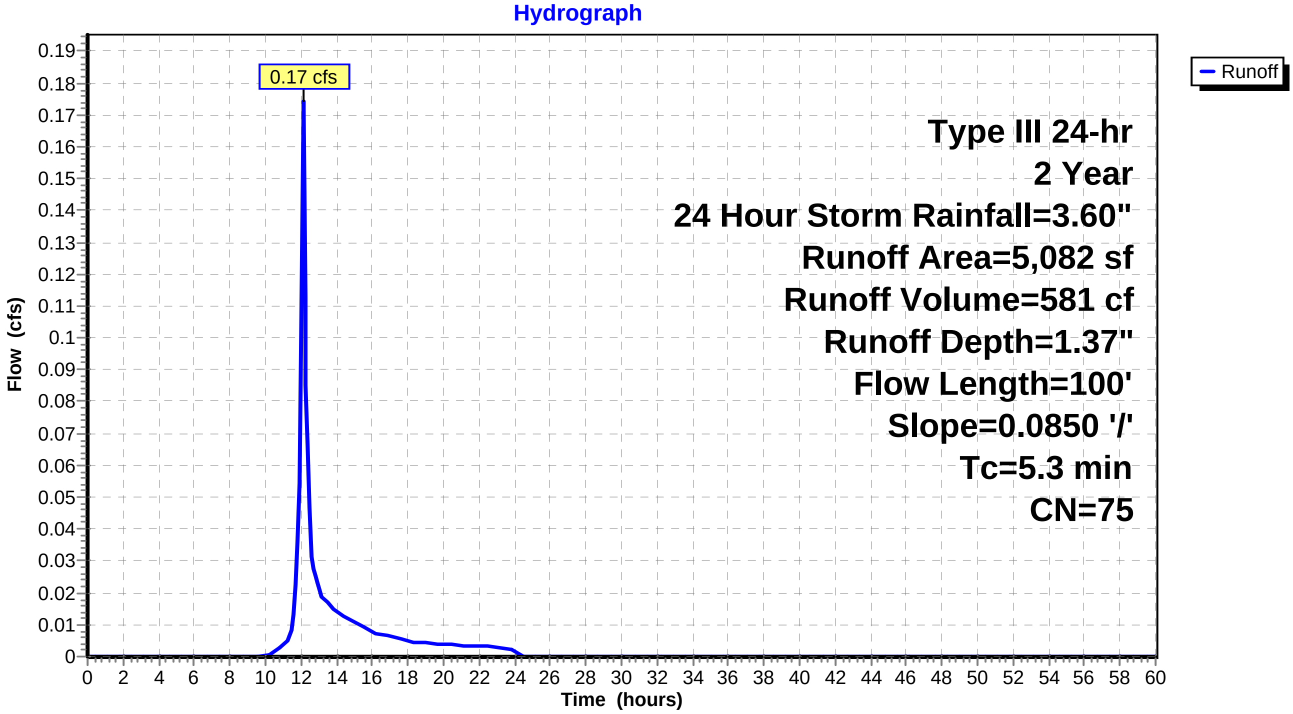
Runoff = 0.17 cfs @ 12.10 hrs, Volume= 581 cf, Depth= 1.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 2 Year, 24 Hour Storm Rainfall=3.60"

Area (sf)	CN	Description
3,044	73	Woods, Fair, HSG C
2,038	79	50-75% Grass cover, Fair, HSG C
5,082	75	Weighted Average
5,082		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	100	0.0850	0.32		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"

Subcatchment Post 3B: Post 3B

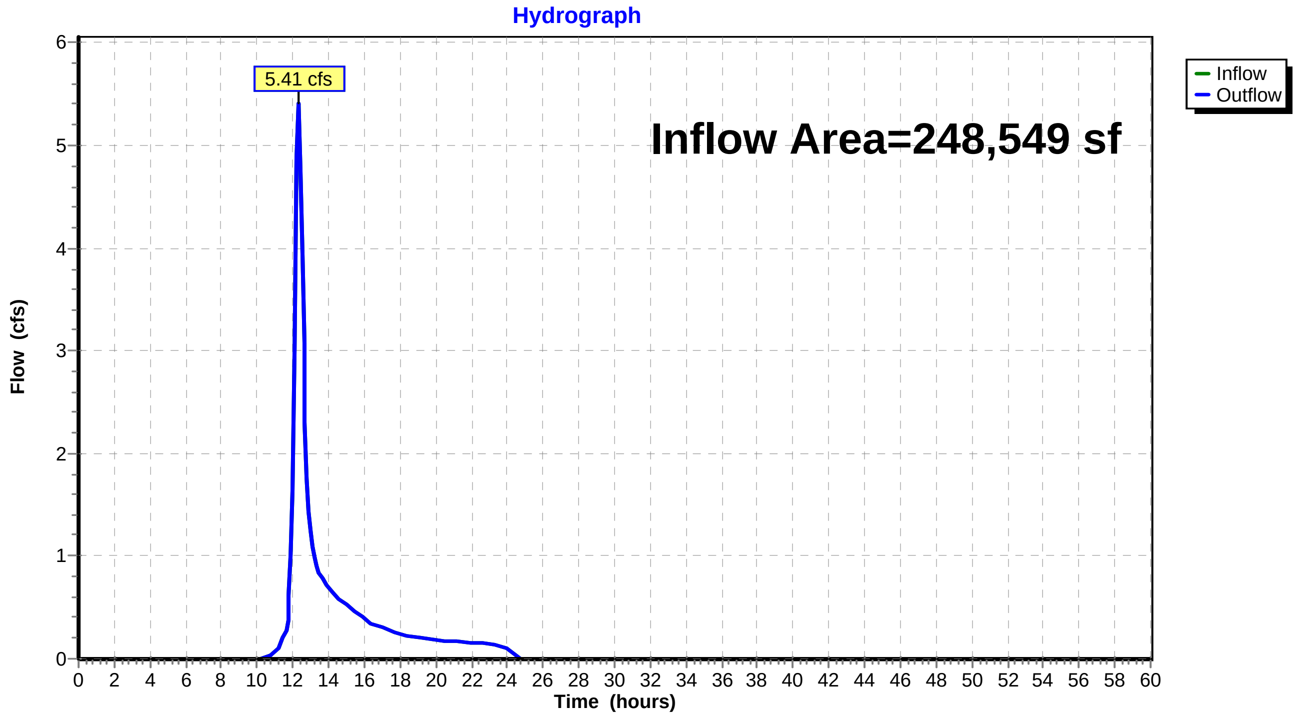


Summary for Reach DP1: Design Point 1

Inflow Area = 248,549 sf, 0.00% Impervious, Inflow Depth = 1.25" for 2 Year, 24 Hour Storm event
Inflow = 5.41 cfs @ 12.29 hrs, Volume= 25,835 cf
Outflow = 5.41 cfs @ 12.29 hrs, Volume= 25,835 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3

Reach DP1: Design Point 1

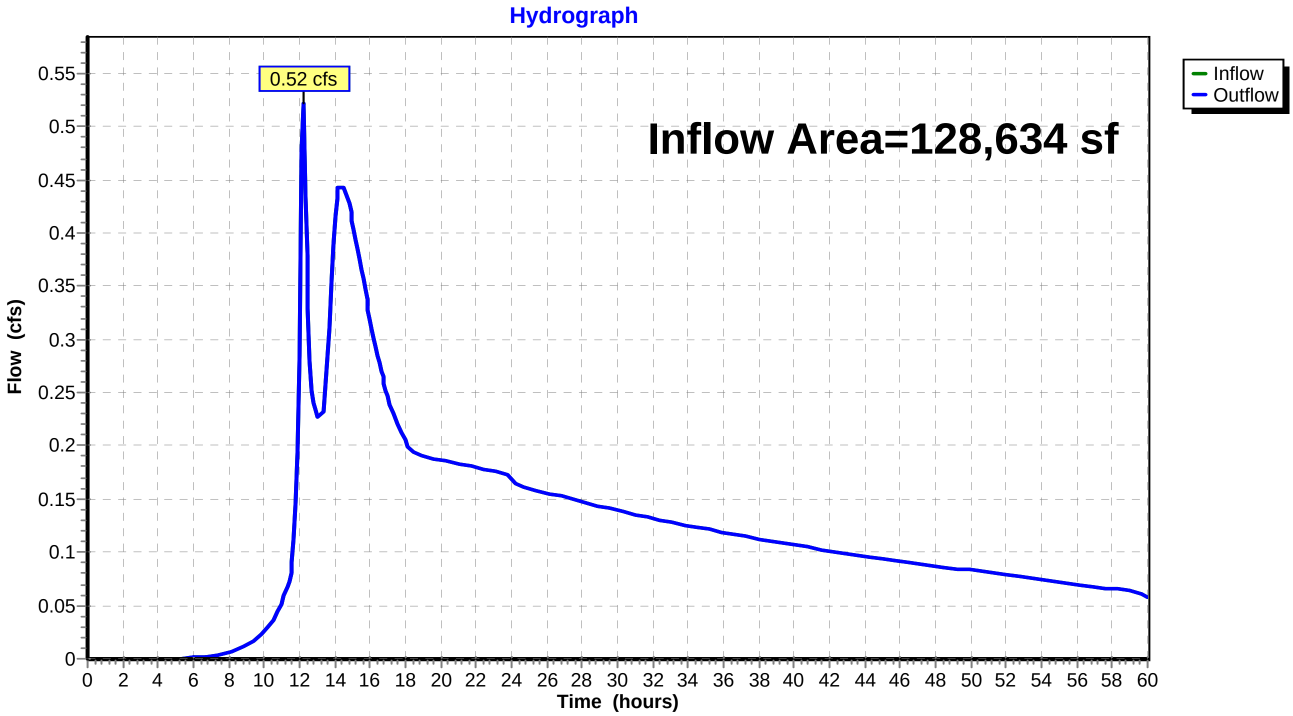


Summary for Reach DP2: Design Point 2

Inflow Area = 128,634 sf, 51.86% Impervious, Inflow Depth > 2.35" for 2 Year, 24 Hour Storm event
Inflow = 0.52 cfs @ 12.18 hrs, Volume= 25,195 cf
Outflow = 0.52 cfs @ 12.18 hrs, Volume= 25,195 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3

Reach DP2: Design Point 2

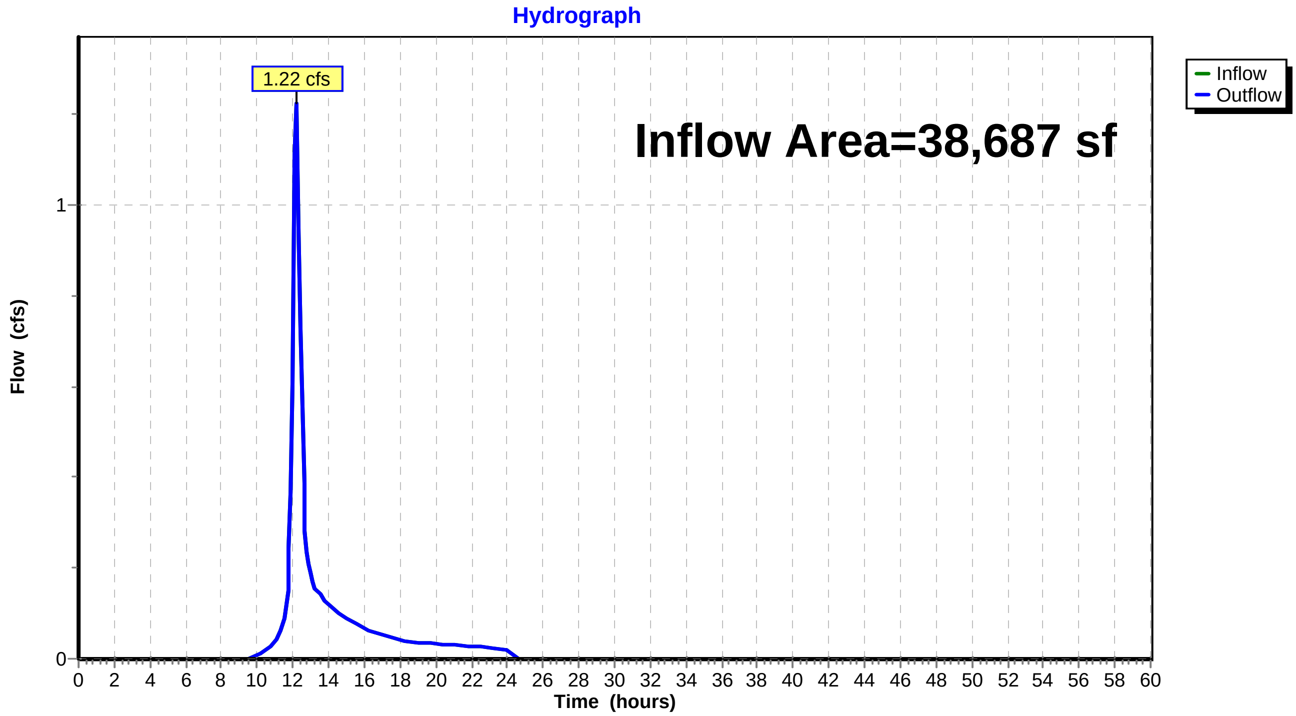


Summary for Reach DP3: Design Point 3

Inflow Area =	38,687 sf,	9.93% Impervious,	Inflow Depth = 1.55"	for 2 Year, 24 Hour Storm event
Inflow =	1.22 cfs @	12.18 hrs, Volume=	4,989 cf	
Outflow =	1.22 cfs @	12.18 hrs, Volume=	4,989 cf, Atten= 0%, Lag= 0.0 min	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3

Reach DP3: Design Point 3



Summary for Pond F-1: Sand Filter

Inflow Area = 86,352 sf, 71.03% Impervious, Inflow Depth > 2.75" for 2 Year, 24 Hour Storm event
Inflow = 3.20 cfs @ 12.19 hrs, Volume= 19,812 cf
Outflow = 0.42 cfs @ 13.53 hrs, Volume= 19,815 cf, Atten= 87%, Lag= 80.4 min
Primary = 0.42 cfs @ 13.53 hrs, Volume= 19,815 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3
Peak Elev= 387.05' @ 13.53 hrs Surf.Area= 3,164 sf Storage= 6,806 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 529.2 min (1,783.1 - 1,253.9)

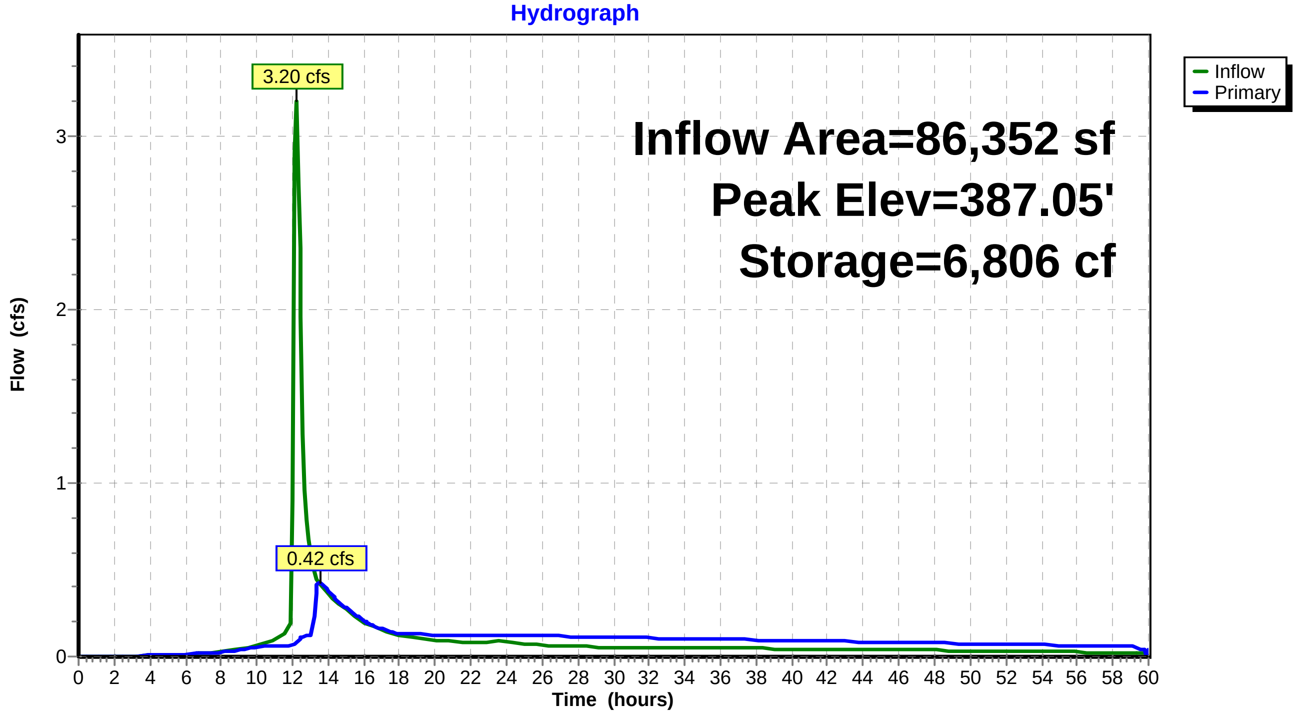
Volume	Invert	Avail.Storage	Storage Description
#1	384.00'	10,072 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
384.00	1,386	0	0
385.00	1,903	1,645	1,645
386.00	2,483	2,193	3,838
387.00	3,135	2,809	6,647
388.00	3,716	3,426	10,072

Device	Routing	Invert	Outlet Devices
#1	Primary	381.50'	**10.0" Round Culvert** L= 38.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 381.50' / 377.00' S= 0.1184 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf
#2	Device 1	384.00'	**1.750 in/hr Sand Filter Bed over Surface area**
#3	Device 1	387.00'	**24.0" x 24.0" Horiz. Overflow Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.42 cfs @ 13.53 hrs HW=387.05' TW=378.71' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.42 cfs of 4.70 cfs potential flow)
  ├─**2=Sand Filter Bed** (Exfiltration Controls 0.13 cfs)
  └─**3=Overflow Grate** (Weir Controls 0.30 cfs @ 0.73 fps)

Pond F-1: Sand Filter



Stage-Area-Storage for Pond F-1: Sand Filter

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
384.00	1,386	0
384.05	1,412	70
384.10	1,438	141
384.15	1,464	214
384.20	1,489	288
384.25	1,515	363
384.30	1,541	439
384.35	1,567	517
384.40	1,593	596
384.45	1,619	676
384.50	1,645	758
384.55	1,670	840
384.60	1,696	925
384.65	1,722	1,010
384.70	1,748	1,097
384.75	1,774	1,185
384.80	1,800	1,274
384.85	1,825	1,365
384.90	1,851	1,457
384.95	1,877	1,550
385.00	1,903	1,645
385.05	1,932	1,740
385.10	1,961	1,838
385.15	1,990	1,936
385.20	2,019	2,037
385.25	2,048	2,138
385.30	2,077	2,242
385.35	2,106	2,346
385.40	2,135	2,452
385.45	2,164	2,560
385.50	2,193	2,669
385.55	2,222	2,779
385.60	2,251	2,891
385.65	2,280	3,004
385.70	2,309	3,119
385.75	2,338	3,235
385.80	2,367	3,353
385.85	2,396	3,472
385.90	2,425	3,592
385.95	2,454	3,714
386.00	2,483	3,838
386.05	2,516	3,962
386.10	2,548	4,089
386.15	2,581	4,217
386.20	2,613	4,347
386.25	2,646	4,479
386.30	2,679	4,612
386.35	2,711	4,746
386.40	2,744	4,883
386.45	2,776	5,021
386.50	2,809	5,161
386.55	2,842	5,302
386.60	2,874	5,445

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
386.65	2,907	5,589
386.70	2,939	5,735
386.75	2,972	5,883
386.80	3,005	6,033
386.85	3,037	6,184
386.90	3,070	6,336
386.95	3,102	6,491
387.00	3,135	6,647
387.05	3,164	6,804
387.10	3,193	6,963
387.15	3,222	7,123
387.20	3,251	7,285
387.25	3,280	7,448
387.30	3,309	7,613
387.35	3,338	7,779
387.40	3,367	7,947
387.45	3,396	8,116
387.50	3,426	8,287
387.55	3,455	8,459
387.60	3,484	8,632
387.65	3,513	8,807
387.70	3,542	8,983
387.75	3,571	9,161
387.80	3,600	9,340
387.85	3,629	9,521
387.90	3,658	9,703
387.95	3,687	9,887
388.00	**3,716**	**10,072**

Summary for Pond FS: Flow Splitter

Inflow Area =	64,432 sf,	86.80% Impervious,	Inflow Depth = 3.10"	for 2 Year, 24 Hour Storm event	
Inflow =	4.53 cfs @	12.01 hrs,	Volume=	16,637 cf	
Outflow =	4.53 cfs @	12.01 hrs,	Volume=	16,637 cf,	Atten= 0%, Lag= 0.0 min
Primary =	4.32 cfs @	12.01 hrs,	Volume=	16,541 cf	
Secondary =	0.21 cfs @	12.01 hrs,	Volume=	95 cf	

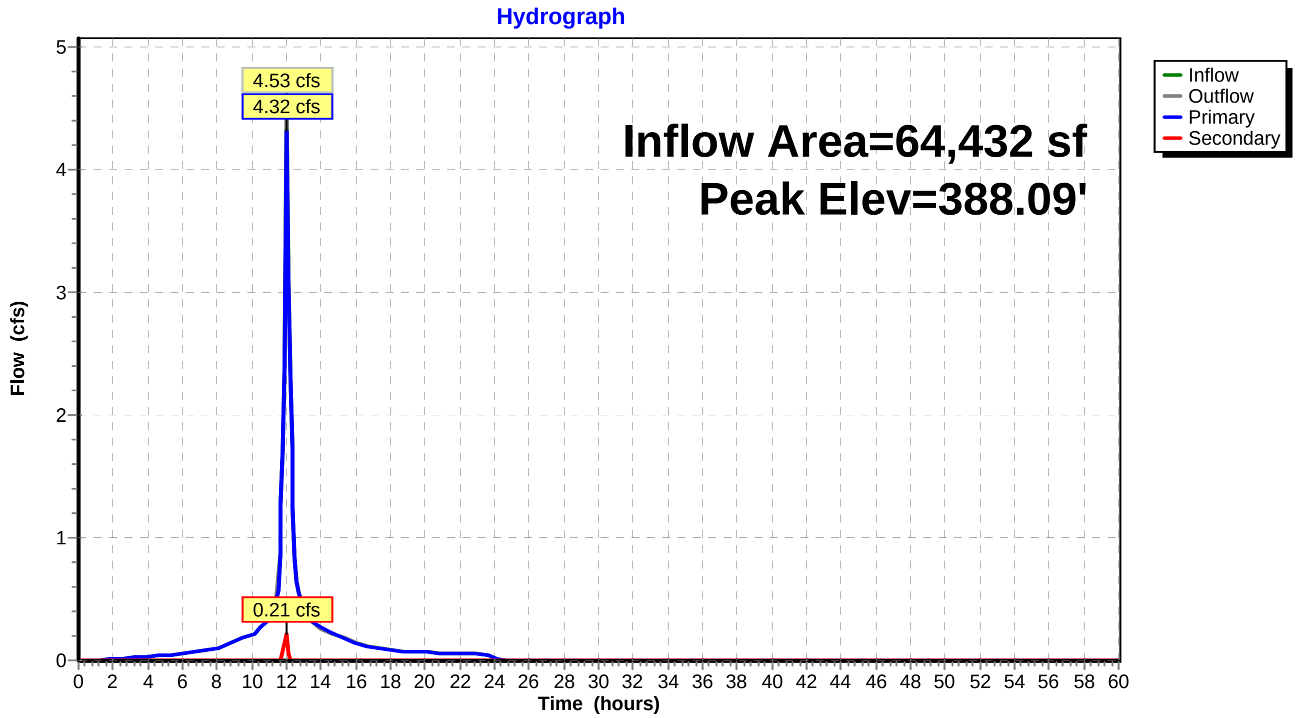
Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3
Peak Elev= 388.09' @ 12.04 hrs
Flood Elev= 392.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	386.00'	**15.0" Round Culvert to Sed Basin** L= 20.0' Ke= 0.900 Inlet / Outlet Invert= 386.00' / 384.00' S= 0.1000 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Secondary	387.80'	**24.0" Round Culvert** L= 106.0' Ke= 0.900 Inlet / Outlet Invert= 387.80' / 381.00' S= 0.0642 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=4.18 cfs @ 12.01 hrs HW=388.00' TW=387.19' (Dynamic Tailwater)
└─**1=Culvert to Sed Basin** (Inlet Controls 4.18 cfs @ 3.41 fps)

Secondary OutFlow Max=0.19 cfs @ 12.01 hrs HW=388.00' TW=378.38' (Dynamic Tailwater)
└─**2=Culvert** (Inlet Controls 0.19 cfs @ 1.20 fps)

Pond FS: Flow Splitter



Stage-Area-Storage for Pond FS: Flow Splitter

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
386.00	**0**	388.12	0	390.24	0
386.04	0	388.16	0	390.28	0
386.08	0	388.20	0	390.32	0
386.12	0	388.24	0	390.36	0
386.16	0	388.28	0	390.40	0
386.20	0	388.32	0	390.44	0
386.24	0	388.36	0	390.48	0
386.28	0	388.40	0	390.52	0
386.32	0	388.44	0	390.56	0
386.36	0	388.48	0	390.60	0
386.40	0	388.52	0	390.64	0
386.44	0	388.56	0	390.68	0
386.48	0	388.60	0	390.72	0
386.52	0	388.64	0	390.76	0
386.56	0	388.68	0	390.80	0
386.60	0	388.72	0	390.84	0
386.64	0	388.76	0	390.88	0
386.68	0	388.80	0	390.92	0
386.72	0	388.84	0	390.96	0
386.76	0	388.88	0	391.00	0
386.80	0	388.92	0	391.04	0
386.84	0	388.96	0	391.08	0
386.88	0	389.00	0	391.12	0
386.92	0	389.04	0	391.16	0
386.96	0	389.08	0	391.20	0
387.00	0	389.12	0	391.24	0
387.04	0	389.16	0	391.28	0
387.08	0	389.20	0	391.32	0
387.12	0	389.24	0	391.36	0
387.16	0	389.28	0	391.40	0
387.20	0	389.32	0	391.44	0
387.24	0	389.36	0	391.48	0
387.28	0	389.40	0	391.52	0
387.32	0	389.44	0	391.56	0
387.36	0	389.48	0	391.60	0
387.40	0	389.52	0	391.64	0
387.44	0	389.56	0	391.68	0
387.48	0	389.60	0	391.72	0
387.52	0	389.64	0	391.76	0
387.56	0	389.68	0	391.80	0
387.60	0	389.72	0	391.84	0
387.64	0	389.76	0	391.88	0
387.68	0	389.80	0	391.92	0
387.72	0	389.84	0	391.96	0
387.76	0	389.88	0	392.00	0
387.80	0	389.92	0		
387.84	0	389.96	0		
387.88	0	390.00	0		
387.92	0	390.04	0		
387.96	0	390.08	0		
388.00	0	390.12	0		
388.04	0	390.16	0		
388.08	0	390.20	0		

Summary for Pond SB: Sedimentation Basin

Inflow Area = 86,352 sf, 71.03% Impervious, Inflow Depth = 2.84" for 2 Year, 24 Hour Storm event
Inflow = 5.46 cfs @ 12.01 hrs, Volume= 20,407 cf
Outflow = 3.20 cfs @ 12.19 hrs, Volume= 19,812 cf, Atten= 41%, Lag= 10.4 min
Primary = 3.20 cfs @ 12.19 hrs, Volume= 19,812 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3
Peak Elev= 387.52' @ 12.20 hrs Surf.Area= 3,246 sf Storage= 7,754 cf

Plug-Flow detention time= 500.3 min calculated for 19,812 cf (97% of inflow)
Center-of-Mass det. time= 482.5 min (1,253.9 - 771.4)

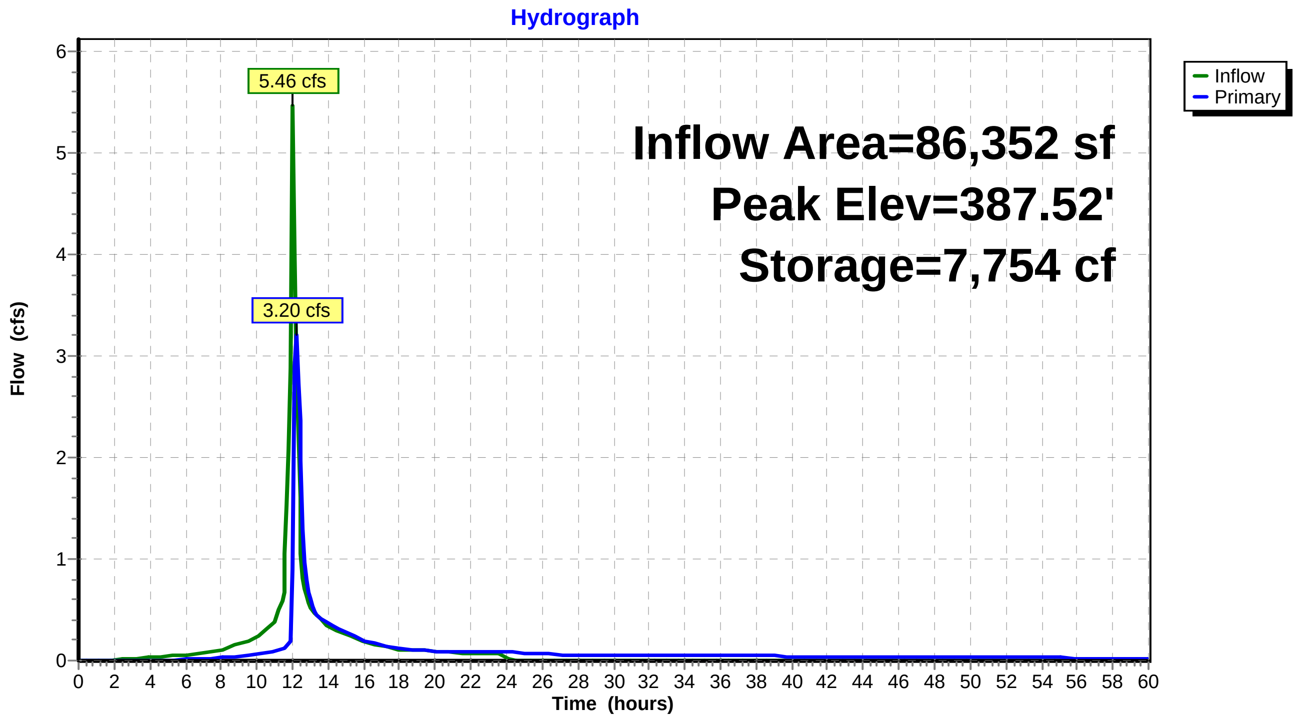
Volume	Invert	Avail.Storage	Storage Description
#1	384.00'	9,361 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
384.00	1,219	0	0
385.00	1,730	1,475	1,475
386.00	2,313	2,022	3,496
387.00	2,951	2,632	6,128
388.00	3,514	3,233	9,361

Device	Routing	Invert	Outlet Devices
#1	Primary	382.00'	**10.0" Round Culvert** L= 38.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 382.00' / 377.00' S= 0.1316 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf
#2	Device 1	384.00'	**0.4" Vert. Standpipe Perforations X 4.00 columns** X 12 rows with 3.0" cc spacing C= 0.600
#3	Device 1	387.00'	**12.0" Horiz. Standpipe Riser Opening** C= 0.600 Limited to weir flow at low heads
#4	Primary	387.50'	**15.0' long Overflow Spillway** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=3.13 cfs @ 12.19 hrs HW=387.52' TW=385.22' (Dynamic Tailwater)
1=Culvert (Passes 3.00 cfs of 3.14 cfs potential flow)
2=Standpipe Perforations (Orifice Controls 0.27 cfs @ 6.43 fps)
3=Standpipe Riser Opening (Orifice Controls 2.73 cfs @ 3.47 fps)
4=Overflow Spillway (Weir Controls 0.14 cfs @ 0.46 fps)

Pond SB: Sedimentation Basin



Stage-Area-Storage for Pond SB: Sedimentation Basin

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
384.00	1,219	0	386.65	2,728	5,134
384.05	1,245	62	386.70	2,760	5,271
384.10	1,270	124	386.75	2,792	5,410
384.15	1,296	189	386.80	2,823	5,551
384.20	1,321	254	386.85	2,855	5,693
384.25	1,347	321	386.90	2,887	5,836
384.30	1,372	389	386.95	2,919	5,981
384.35	1,398	458	387.00	2,951	6,128
384.40	1,423	528	387.05	2,979	6,276
384.45	1,449	600	387.10	3,007	6,426
384.50	1,475	673	387.15	3,035	6,577
384.55	1,500	748	387.20	3,064	6,729
384.60	1,526	823	387.25	3,092	6,883
384.65	1,551	900	387.30	3,120	7,039
384.70	1,577	978	387.35	3,148	7,195
384.75	1,602	1,058	387.40	3,176	7,353
384.80	1,628	1,139	387.45	3,204	7,513
384.85	1,653	1,221	387.50	3,233	7,674
384.90	1,679	1,304	387.55	3,261	7,836
384.95	1,704	1,389	387.60	3,289	8,000
385.00	1,730	1,475	387.65	3,317	8,165
385.05	1,759	1,562	387.70	3,345	8,332
385.10	1,788	1,650	387.75	3,373	8,500
385.15	1,817	1,741	387.80	3,401	8,669
385.20	1,847	1,832	387.85	3,430	8,840
385.25	1,876	1,925	387.90	3,458	9,012
385.30	1,905	2,020	387.95	3,486	9,186
385.35	1,934	2,116	388.00	**3,514**	**9,361**
385.40	1,963	2,213			
385.45	1,992	2,312			
385.50	2,022	2,412			
385.55	2,051	2,514			
385.60	2,080	2,617			
385.65	2,109	2,722			
385.70	2,138	2,828			
385.75	2,167	2,936			
385.80	2,196	3,045			
385.85	2,226	3,156			
385.90	2,255	3,268			
385.95	2,284	3,381			
386.00	2,313	3,496			
386.05	2,345	3,612			
386.10	2,377	3,730			
386.15	2,409	3,850			
386.20	2,441	3,971			
386.25	2,473	4,094			
386.30	2,504	4,219			
386.35	2,536	4,345			
386.40	2,568	4,472			
386.45	2,600	4,601			
386.50	2,632	4,732			
386.55	2,664	4,865			
386.60	2,696	4,999			

Summary for Pond W-4: W-4 Pocket Wetland

Inflow Area = 113,943 sf, 58.55% Impervious, Inflow Depth > 2.59" for 2 Year, 24 Hour Storm event
Inflow = 1.78 cfs @ 12.01 hrs, Volume= 24,585 cf
Outflow = 0.41 cfs @ 14.39 hrs, Volume= 23,668 cf, Atten= 77%, Lag= 142.8 min
Primary = 0.41 cfs @ 14.39 hrs, Volume= 23,668 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3
Peak Elev= 378.78' @ 14.39 hrs Surf.Area= 5,807 sf Storage= 4,163 cf

Plug-Flow detention time= 269.5 min calculated for 23,668 cf (96% of inflow)
Center-of-Mass det. time= 197.5 min (1,791.1 - 1,593.6)

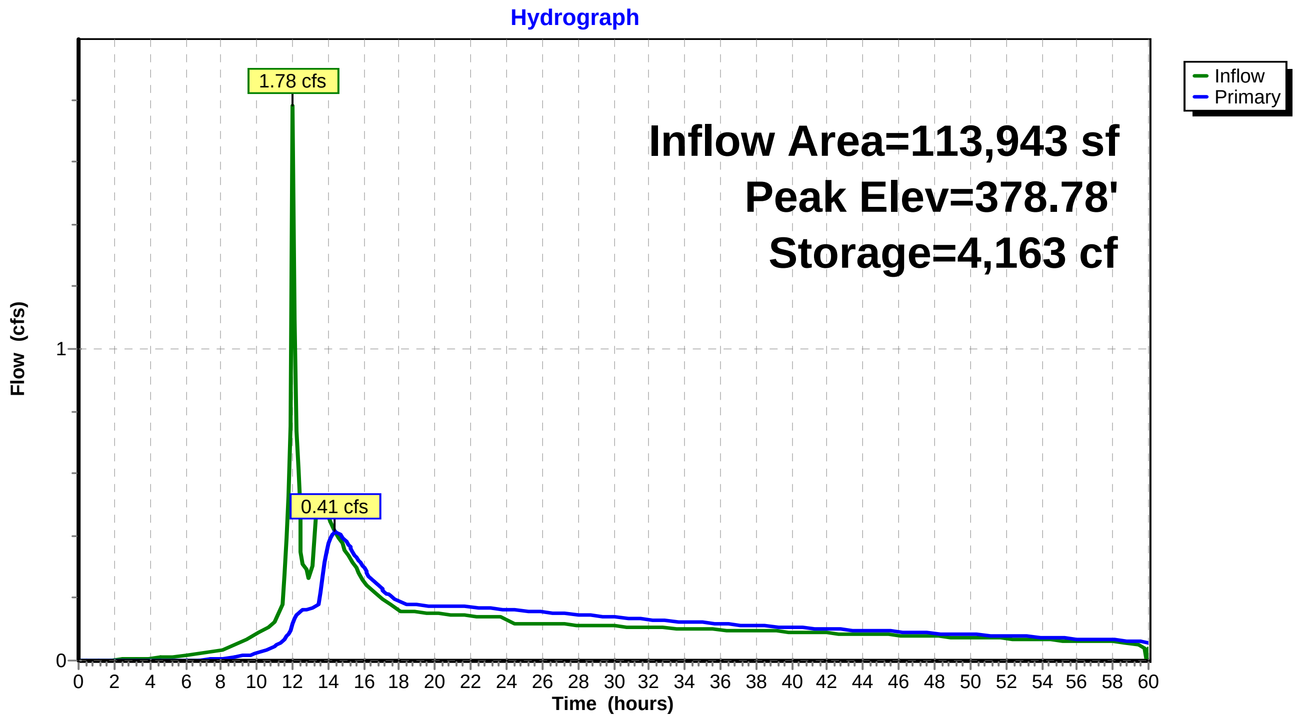
Volume	Invert	Avail.Storage	Storage Description
#1	378.00'	20,808 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
378.00	4,855	0	0
379.00	6,074	5,465	5,465
380.00	7,618	6,846	12,311
381.00	9,377	8,498	20,808

Device	Routing	Invert	Outlet Devices
#1	Primary	373.00'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 373.00' / 372.60' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	378.00'	**3.0" Vert. Low Flow Orifice** C= 0.600
#3	Device 1	378.70'	**36.0" W x 6.0" H Vert. High Flow Orifice (36Wx6H)** C= 0.600

Primary OutFlow Max=0.41 cfs @ 14.39 hrs HW=378.78' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.41 cfs of 8.64 cfs potential flow)
  ├─**2=Low Flow Orifice** (Orifice Controls 0.19 cfs @ 3.90 fps)
  └─**3=High Flow Orifice (36Wx6H)** (Orifice Controls 0.22 cfs @ 0.91 fps)

Pond W-4: W-4 Pocket Wetland



Stage-Area-Storage for Pond W-4: W-4 Pocket Wetland

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
378.00	4,855	0
378.05	4,916	244
378.10	4,977	492
378.15	5,038	742
378.20	5,099	995
378.25	5,160	1,252
378.30	5,221	1,511
378.35	5,282	1,774
378.40	5,343	2,040
378.45	5,404	2,308
378.50	5,465	2,580
378.55	5,525	2,855
378.60	5,586	3,132
378.65	5,647	3,413
378.70	5,708	3,697
378.75	5,769	3,984
378.80	5,830	4,274
378.85	5,891	4,567
378.90	5,952	4,863
378.95	6,013	5,162
379.00	6,074	5,465
379.05	6,151	5,770
379.10	6,228	6,080
379.15	6,306	6,393
379.20	6,383	6,710
379.25	6,460	7,031
379.30	6,537	7,356
379.35	6,614	7,685
379.40	6,692	8,018
379.45	6,769	8,354
379.50	6,846	8,695
379.55	6,923	9,039
379.60	7,000	9,387
379.65	7,078	9,739
379.70	7,155	10,095
379.75	7,232	10,454
379.80	7,309	10,818
379.85	7,386	11,185
379.90	7,464	11,556
379.95	7,541	11,932
380.00	7,618	12,311
380.05	7,706	12,694
380.10	7,794	13,081
380.15	7,882	13,473
380.20	7,970	13,869
380.25	8,058	14,270
380.30	8,146	14,675
380.35	8,234	15,085
380.40	8,322	15,498
380.45	8,410	15,917
380.50	8,498	16,339
380.55	8,585	16,766
380.60	8,673	17,198
380.65	8,761	17,634
380.70	8,849	18,074
380.75	8,937	18,519
380.80	9,025	18,968
380.85	9,113	19,421
380.90	9,201	19,879
380.95	9,289	20,341
381.00	**9,377**	**20,808**

Time span=0.00-60.00 hrs, dt=0.10 hrs, 601 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment Post 2E: Post 2E Runoff Area=13,510 sf 40.08% Impervious Runoff Depth=3.57"
Flow Length=130' Tc=1.3 min CN=87 Runoff=1.29 cfs 4,016 cf

Subcatchment Post 1: DA 1 Runoff Area=248,549 sf 0.00% Impervious Runoff Depth=2.28"
Flow Length=605' Tc=18.8 min CN=73 Runoff=10.22 cfs 47,234 cf

Subcatchment Post 2A: Post 2A Runoff Area=4,907 sf 100.00% Impervious Runoff Depth=4.76"
Flow Length=150' Slope=0.0100 '/' Tc=1.9 min CN=98 Runoff=0.54 cfs 1,948 cf

Subcatchment Post 2B: Post 2B Runoff Area=14,630 sf 41.85% Impervious Runoff Depth=3.47"
Flow Length=346' Tc=11.0 min CN=86 Runoff=1.06 cfs 4,227 cf

Subcatchment Post 2C: Post 2C Runoff Area=44,895 sf 100.00% Impervious Runoff Depth=4.76"
Flow Length=100' Slope=0.1350 '/' Tc=0.5 min CN=98 Runoff=5.27 cfs 17,820 cf

Subcatchment Post 2D: Post 2D Runoff Area=8,410 sf 0.00% Impervious Runoff Depth=3.08"
Flow Length=200' Tc=4.5 min CN=82 Runoff=0.65 cfs 2,158 cf

Subcatchment Post 2F: Post 2F Runoff Area=4,258 sf 100.00% Impervious Runoff Depth=4.76"
Flow Length=119' Slope=0.1687 '/' Tc=0.1 min CN=98 Runoff=0.50 cfs 1,690 cf

Subcatchment Post 2G: Post 2G Runoff Area=23,333 sf 4.77% Impervious Runoff Depth=2.99"
Flow Length=112' Tc=0.9 min CN=81 Runoff=1.92 cfs 5,805 cf

Subcatchment Post 2H: Post 2H Runoff Area=14,691 sf 0.00% Impervious Runoff Depth=2.28"
Flow Length=353' Tc=10.5 min CN=73 Runoff=0.71 cfs 2,792 cf

Subcatchment Post 3A: Post 3A Runoff Area=33,605 sf 11.43% Impervious Runoff Depth=2.71"
Flow Length=110' Tc=11.9 min CN=78 Runoff=1.92 cfs 7,594 cf

Subcatchment Post 3B: Post 3B Runoff Area=5,082 sf 0.00% Impervious Runoff Depth=2.45"
Flow Length=100' Slope=0.0850 '/' Tc=5.3 min CN=75 Runoff=0.32 cfs 1,037 cf

Reach DP1: Design Point 1 Inflow=10.22 cfs 47,234 cf
Outflow=10.22 cfs 47,234 cf

Reach DP2: Design Point 2 Inflow=2.68 cfs 38,641 cf
Outflow=2.68 cfs 38,641 cf

Reach DP3: Design Point 3 Inflow=2.14 cfs 8,631 cf
Outflow=2.14 cfs 8,631 cf

Pond F-1: Sand Filter Peak Elev=387.23' Storage=7,367 cf Inflow=5.67 cfs 28,314 cf
Outflow=2.92 cfs 28,186 cf

Pond FS: Flow Splitter Peak Elev=388.48' Inflow=6.40 cfs 23,995 cf
Primary=4.38 cfs 22,828 cf Secondary=2.03 cfs 1,167 cf Outflow=6.40 cfs 23,995 cf

Pond SB: Sedimentation Basin Peak Elev=387.66' Storage=8,196 cf Inflow=6.19 cfs 29,002 cf
Outflow=5.67 cfs 28,314 cf

Pond W-4: W-4 Pocket Wetland Peak Elev=379.07' Storage=5,909 cf Inflow=4.54 cfs 36,848 cf
Outflow=2.42 cfs 35,849 cf

Total Runoff Area = 415,870 sf Runoff Volume = 96,321 cf Average Runoff Depth = 2.78"
83.04% Pervious = 345,318 sf 16.96% Impervious = 70,552 sf

Summary for Subcatchment Post 2E: Post 2E

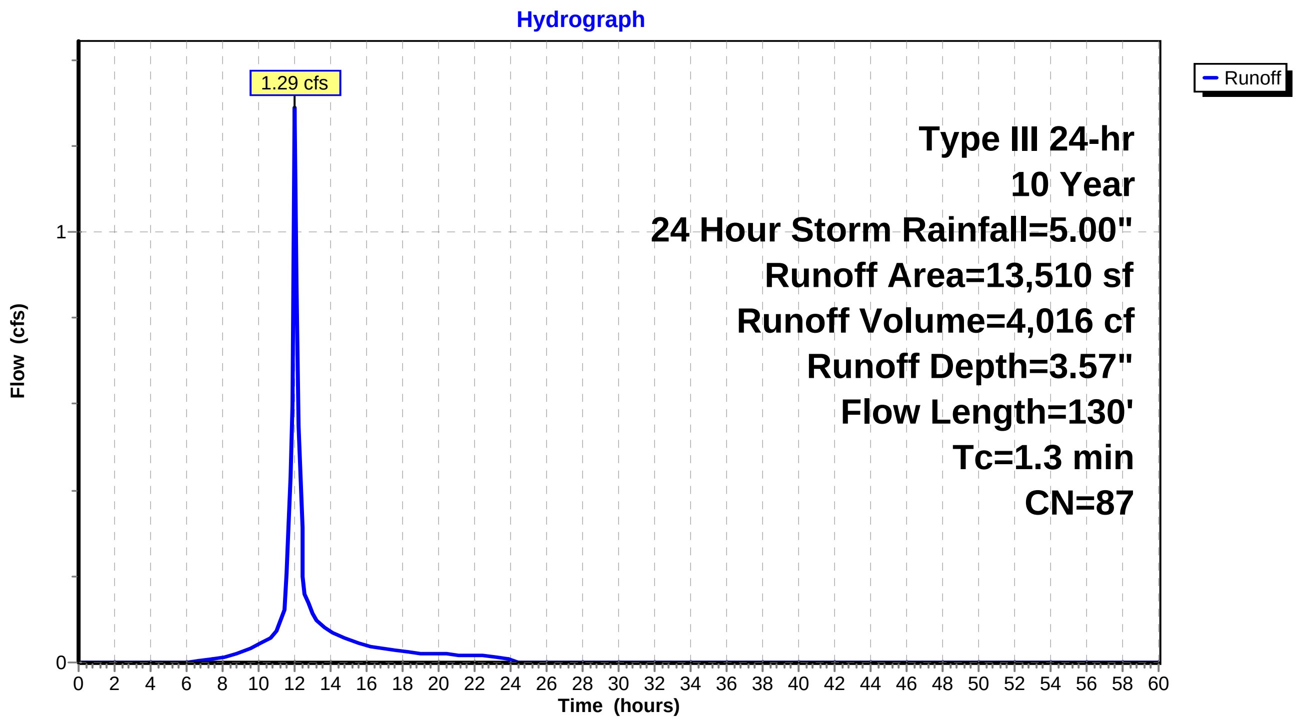
Runoff = 1.29 cfs @ 12.01 hrs, Volume= 4,016 cf, Depth= 3.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 10 Year, 24 Hour Storm Rainfall=5.00"

Area (sf)	CN	Description
5,415	98	Paved parking, HSG C
8,095	79	50-75% Grass cover, Fair, HSG C
13,510	87	Weighted Average
8,095		59.92% Pervious Area
5,415		40.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0200	1.44		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.1	30	0.3800	9.92		**Shallow Concentrated Flow, Pavement** Unpaved Kv= 16.1 fps
1.3	130	Total			

Subcatchment Post 2E: Post 2E



Summary for Subcatchment Post 1: DA 1

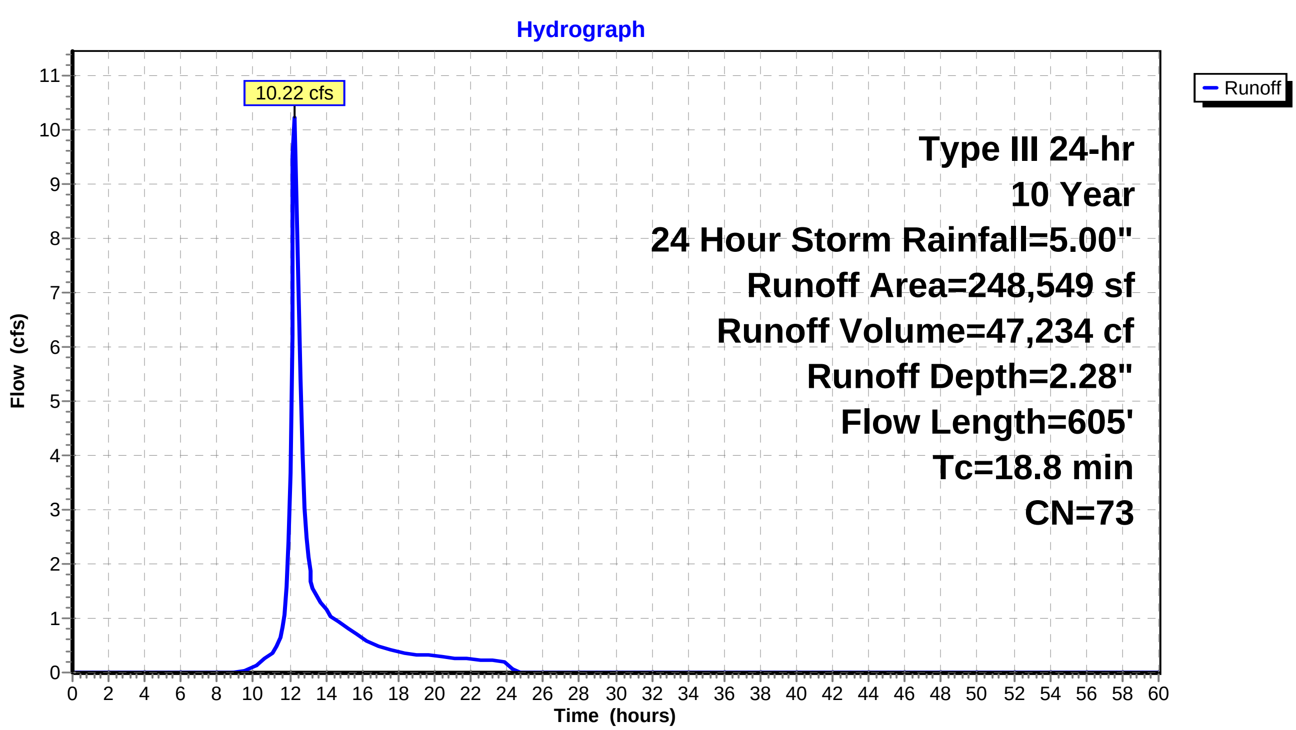
Runoff = 10.22 cfs @ 12.28 hrs, Volume= 47,234 cf, Depth= 2.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 10 Year, 24 Hour Storm Rainfall=5.00"

Area (sf)	CN	Description
159,708	73	Woods, Fair, HSG C
1,496	89	Gravel roads, HSG C
87,345	74	>75% Grass cover, Good, HSG C
248,549	73	Weighted Average
248,549		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.8	250	0.0400	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.0	105	0.0667	1.81		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.0	250	0.0760	1.38		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
18.8	605	Total			

Subcatchment Post 1: DA 1



Summary for Subcatchment Post 2A: Post 2A

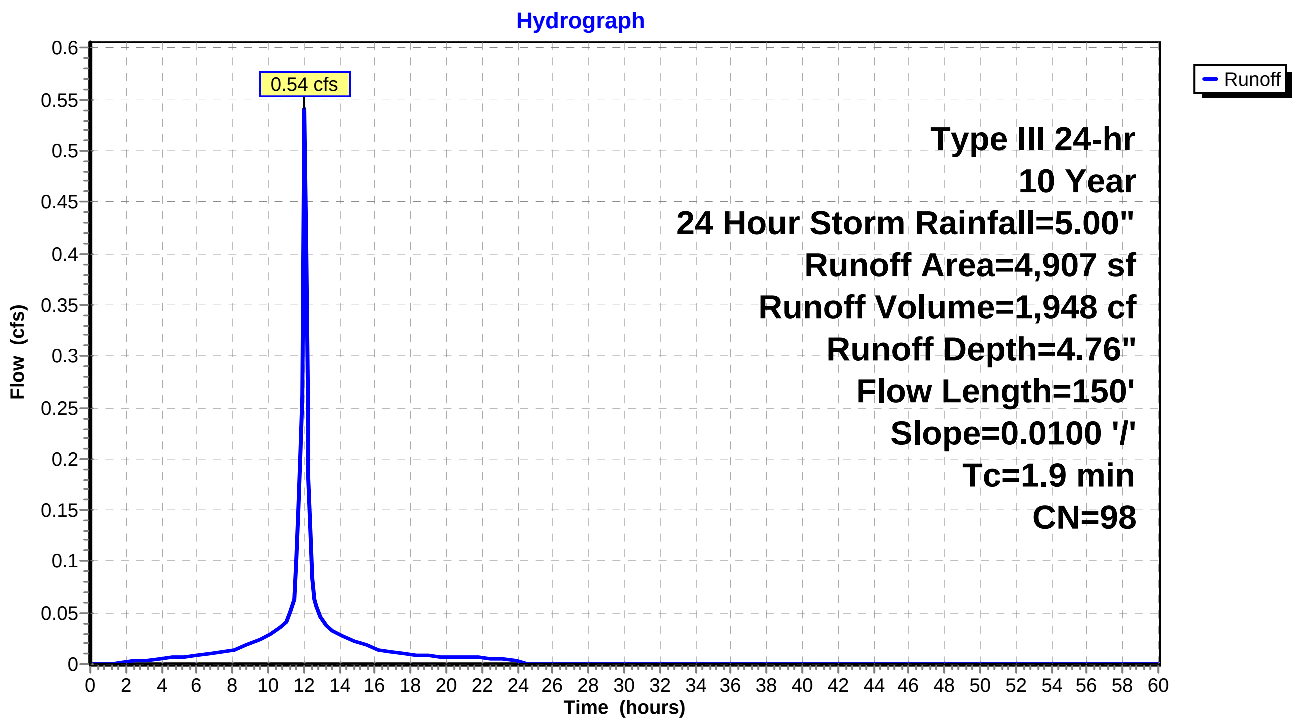
Runoff = 0.54 cfs @ 12.02 hrs, Volume= 1,948 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 10 Year, 24 Hour Storm Rainfall=5.00"

Area (sf)	CN	Description
4,907	98	Paved parking, HSG C
4,907		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	100	0.0100	1.09		**Sheet Flow, Pavement** Smooth surfaces n= 0.011 P2= 3.50"
0.4	50	0.0100	2.03		**Shallow Concentrated Flow, Pavement** Paved Kv= 20.3 fps
1.9	150	Total			

Subcatchment Post 2A: Post 2A



Summary for Subcatchment Post 2B: Post 2B

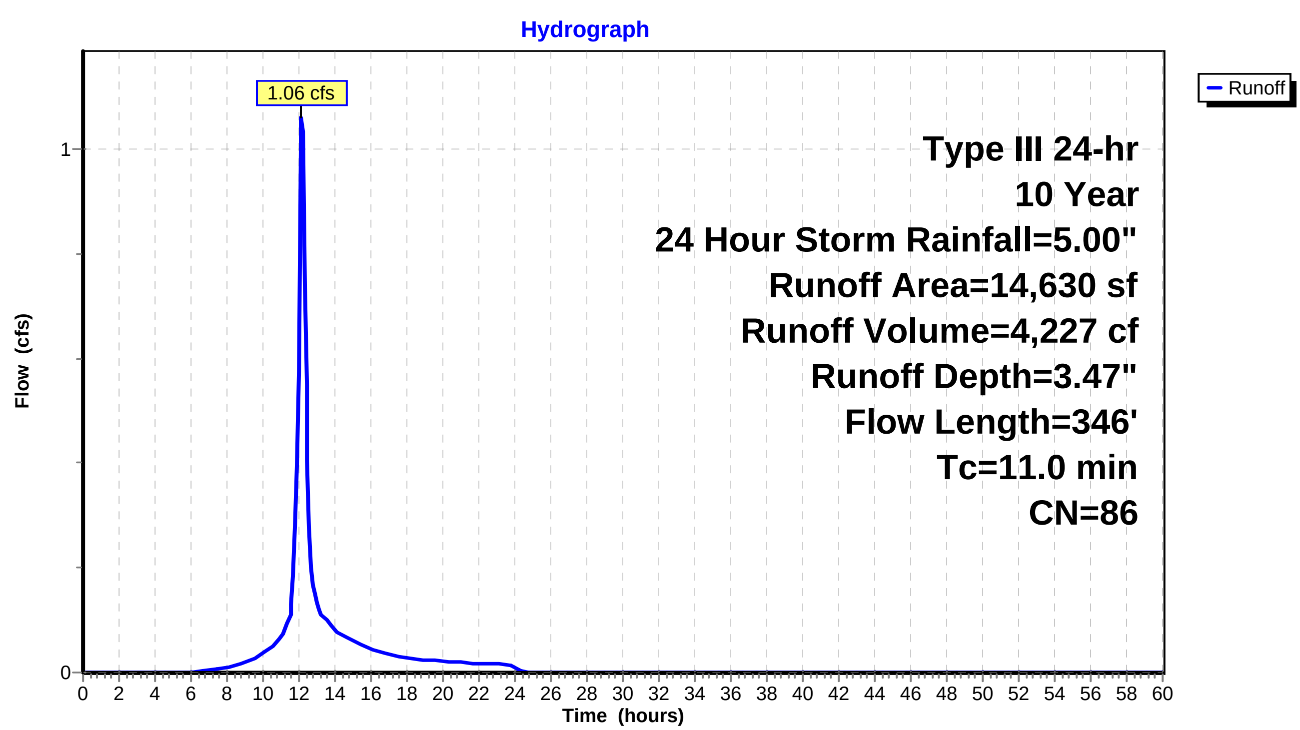
Runoff = 1.06 cfs @ 12.16 hrs, Volume= 4,227 cf, Depth= 3.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 10 Year, 24 Hour Storm Rainfall=5.00"

Area (sf)	CN	Description
6,122	98	Paved parking
6,154	74	>75% Grass cover, Good, HSG C
2,354	89	Gravel roads, HSG C
14,630	86	Weighted Average
8,508		58.15% Pervious Area
6,122		41.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	100	0.0400	0.16		**Sheet Flow, Landscaped area** Grass: Dense n= 0.240 P2= 3.50"
0.7	246	0.0100	5.90	4.63	**Pipe Channel, Pipe** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
11.0	346	Total			

Subcatchment Post 2B: Post 2B



Summary for Subcatchment Post 2C: Post 2C

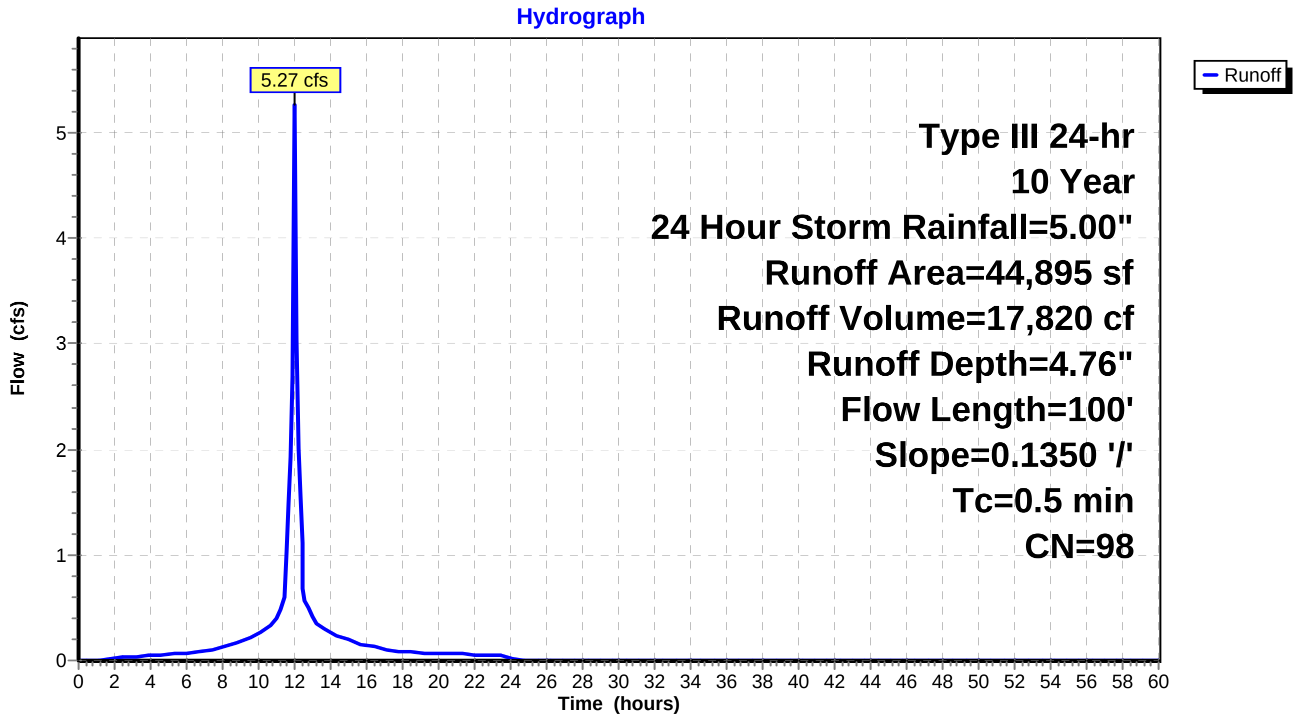
Runoff = 5.27 cfs @ 12.00 hrs, Volume= 17,820 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 10 Year, 24 Hour Storm Rainfall=5.00"

Area (sf)	CN	Description
44,895	98	Paved parking, HSG C
44,895		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1350	3.09		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"

Subcatchment Post 2C: Post 2C



Summary for Subcatchment Post 2D: Post 2D

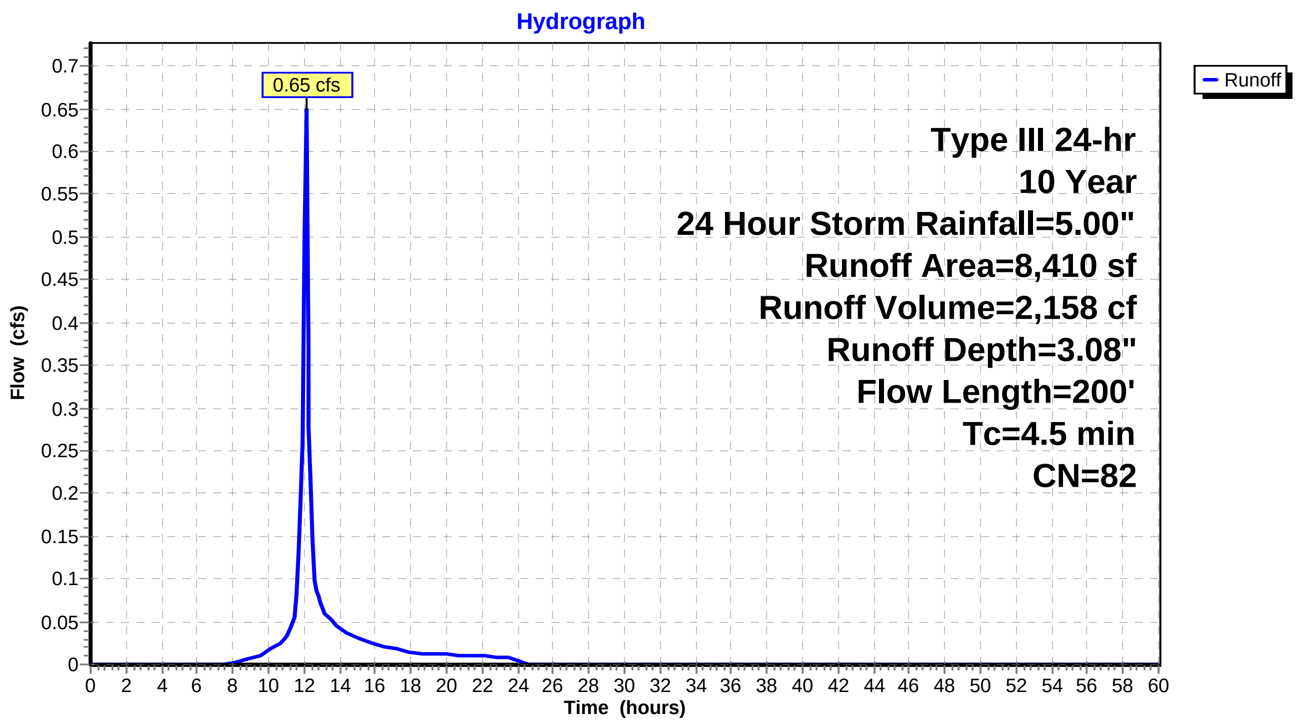
Runoff = 0.65 cfs @ 12.08 hrs, Volume= 2,158 cf, Depth= 3.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 10 Year, 24 Hour Storm Rainfall=5.00"

Area (sf)	CN	Description
6,293	79	50-75% Grass cover, Fair, HSG C
2,117	89	Gravel roads, HSG C
8,410	82	Weighted Average
8,410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	50	0.1000	0.20		**Sheet Flow, Landscaped** Grass: Dense n= 0.240 P2= 3.50"
0.4	150	0.0860	5.95		**Shallow Concentrated Flow, Maintenance Drive** Paved Kv= 20.3 fps
4.5	200	Total			

Subcatchment Post 2D: Post 2D



Summary for Subcatchment Post 2F: Post 2F

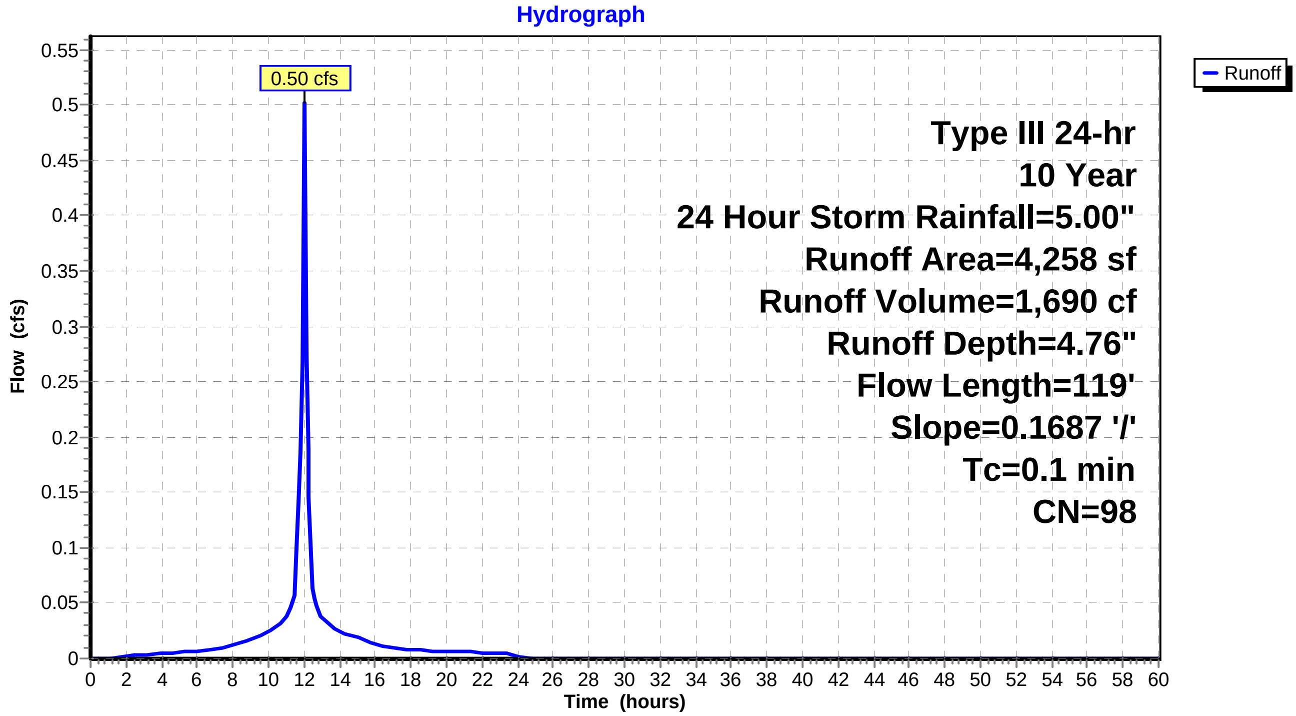
Runoff = 0.50 cfs @ 12.00 hrs, Volume= 1,690 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 10 Year, 24 Hour Storm Rainfall=5.00"

Area (sf)	CN	Description
4,258	98	Roofs, HSG C
4,258		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	119	0.1687	14.22	4.96	**Pipe Channel, Roof Leader** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.013 Corrugated PE, smooth interior

Subcatchment Post 2F: Post 2F



Summary for Subcatchment Post 2G: Post 2G

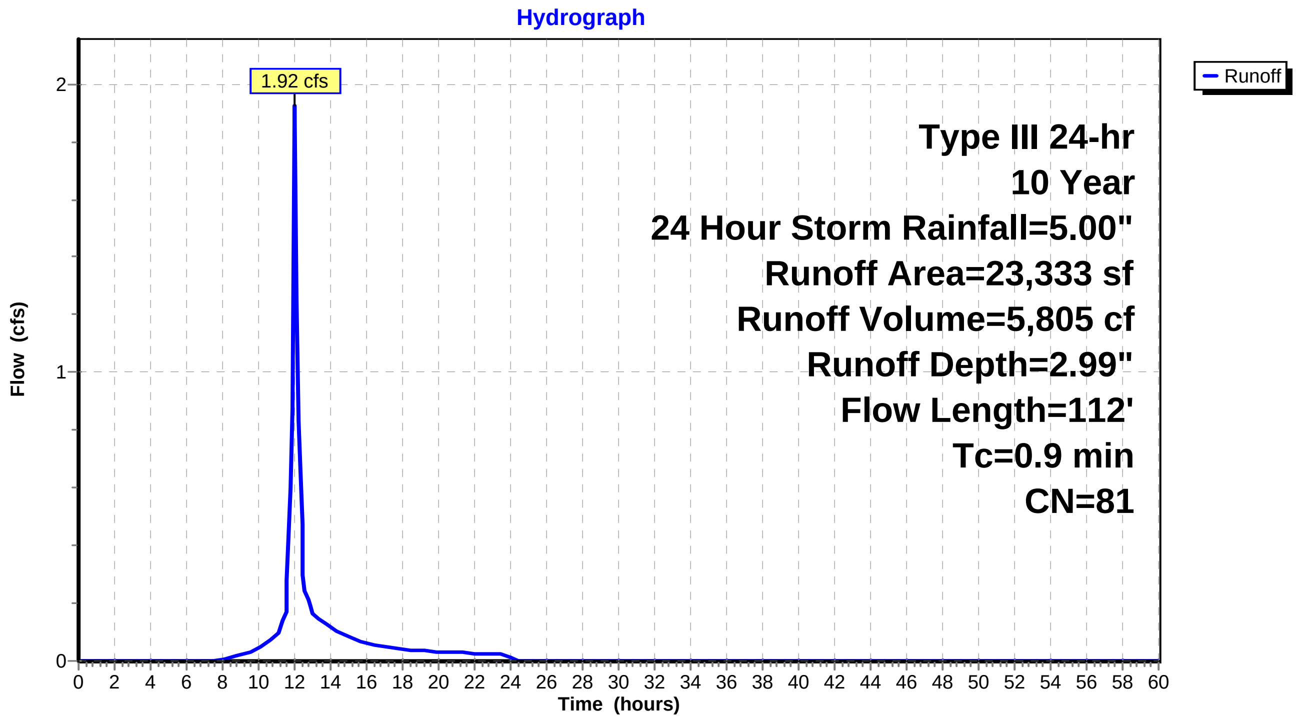
Runoff = 1.92 cfs @ 12.01 hrs, Volume= 5,805 cf, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 10 Year, 24 Hour Storm Rainfall=5.00"

Area (sf)	CN	Description
1,113	98	Paved parking, HSG C
20,037	79	50-75% Grass cover, Fair, HSG C
2,183	89	Gravel roads, HSG C
23,333	81	Weighted Average
22,220		95.23% Pervious Area
1,113		4.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	80	0.0250	1.50		**Sheet Flow, Pavement** Smooth surfaces n= 0.011 P2= 3.50"
0.0	32	0.4600	10.92		**Shallow Concentrated Flow, Landscaped** Unpaved Kv= 16.1 fps
0.9	112	Total			

Subcatchment Post 2G: Post 2G



Summary for Subcatchment Post 2H: Post 2H

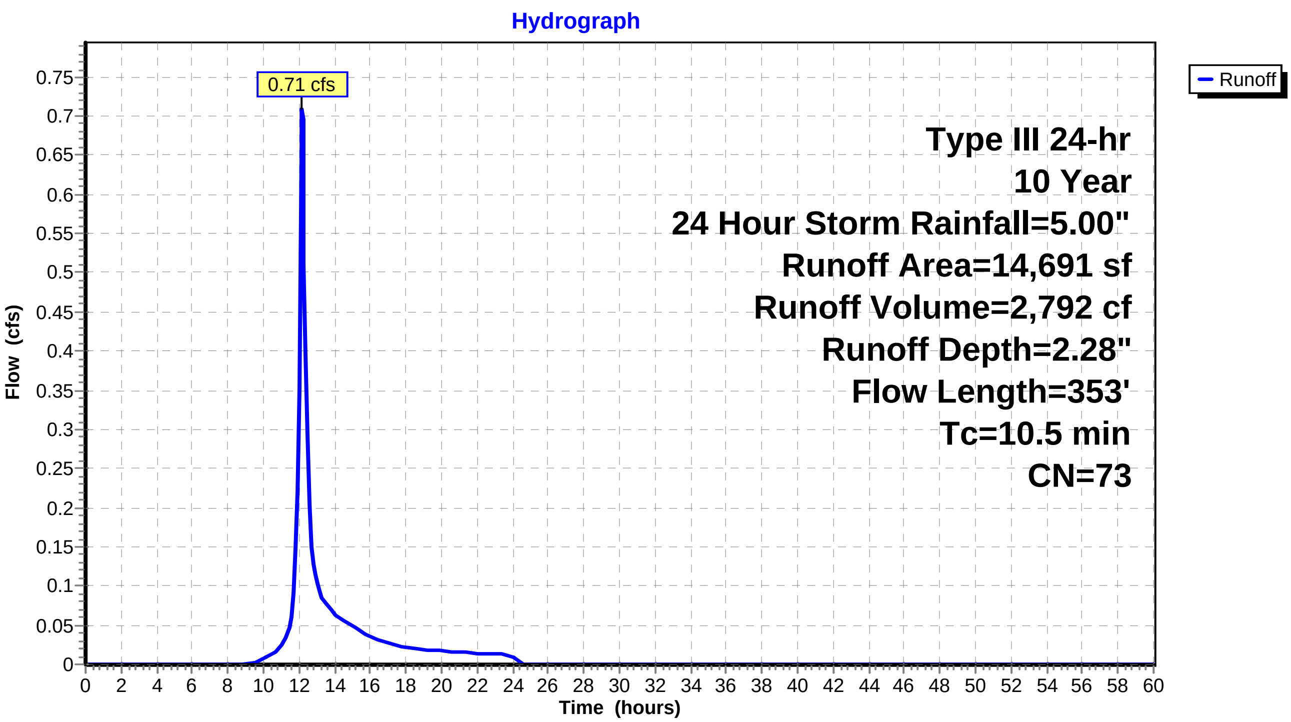
Runoff = 0.71 cfs @ 12.16 hrs, Volume= 2,792 cf, Depth= 2.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 10 Year, 24 Hour Storm Rainfall=5.00"

Area (sf)	CN	Description
14,691	73	Woods, Fair, HSG C
14,691		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0600	0.19		**Sheet Flow, Landscaped** Grass: Dense n= 0.240 P2= 3.50"
1.7	253	0.0260	2.42		**Shallow Concentrated Flow, Grassed waterway** Grassed Waterway Kv= 15.0 fps
10.5	353	Total			

Subcatchment Post 2H: Post 2H



Summary for Subcatchment Post 3A: Post 3A

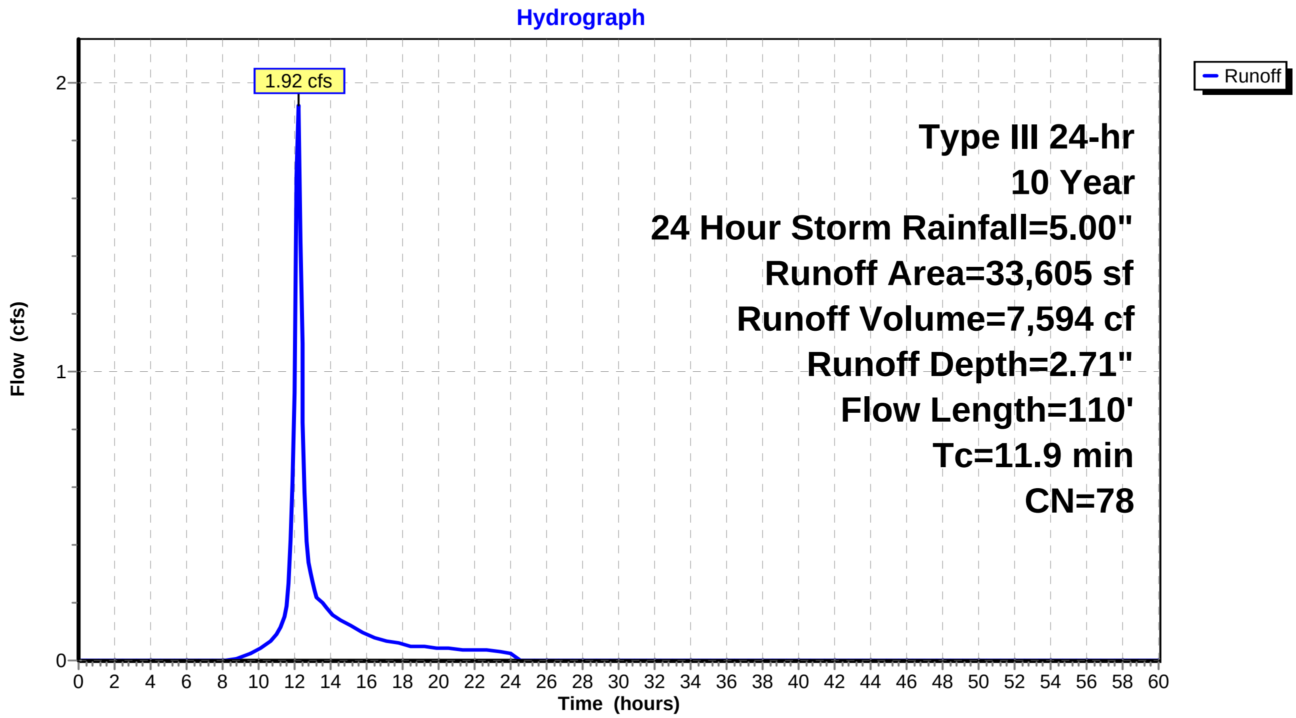
Runoff = 1.92 cfs @ 12.18 hrs, Volume= 7,594 cf, Depth= 2.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 10 Year, 24 Hour Storm Rainfall=5.00"

Area (sf)	CN	Description
3,842	98	Paved parking, HSG C
20,173	73	Woods, Fair, HSG C
9,590	79	50-75% Grass cover, Fair, HSG C
33,605	78	Weighted Average
29,763		88.57% Pervious Area
3,842		11.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	67	0.0600	0.25		**Sheet Flow, Landscaped** Grass: Short n= 0.150 P2= 3.50"
7.5	43	0.0460	0.10		**Sheet Flow, Wooded** Woods: Light underbrush n= 0.400 P2= 3.50"
11.9	110	Total			

Subcatchment Post 3A: Post 3A



Summary for Subcatchment Post 3B: Post 3B

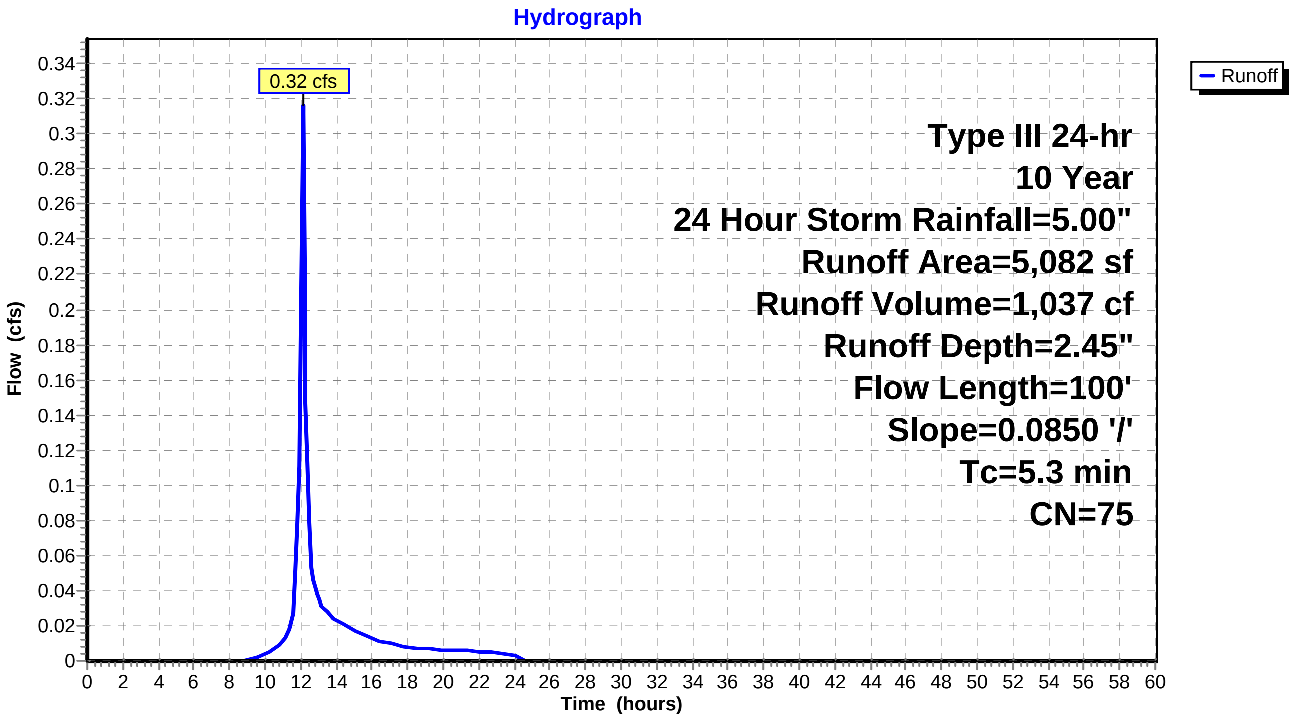
Runoff = 0.32 cfs @ 12.10 hrs, Volume= 1,037 cf, Depth= 2.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 10 Year, 24 Hour Storm Rainfall=5.00"

Area (sf)	CN	Description
3,044	73	Woods, Fair, HSG C
2,038	79	50-75% Grass cover, Fair, HSG C
5,082	75	Weighted Average
5,082		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	100	0.0850	0.32		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"

Subcatchment Post 3B: Post 3B

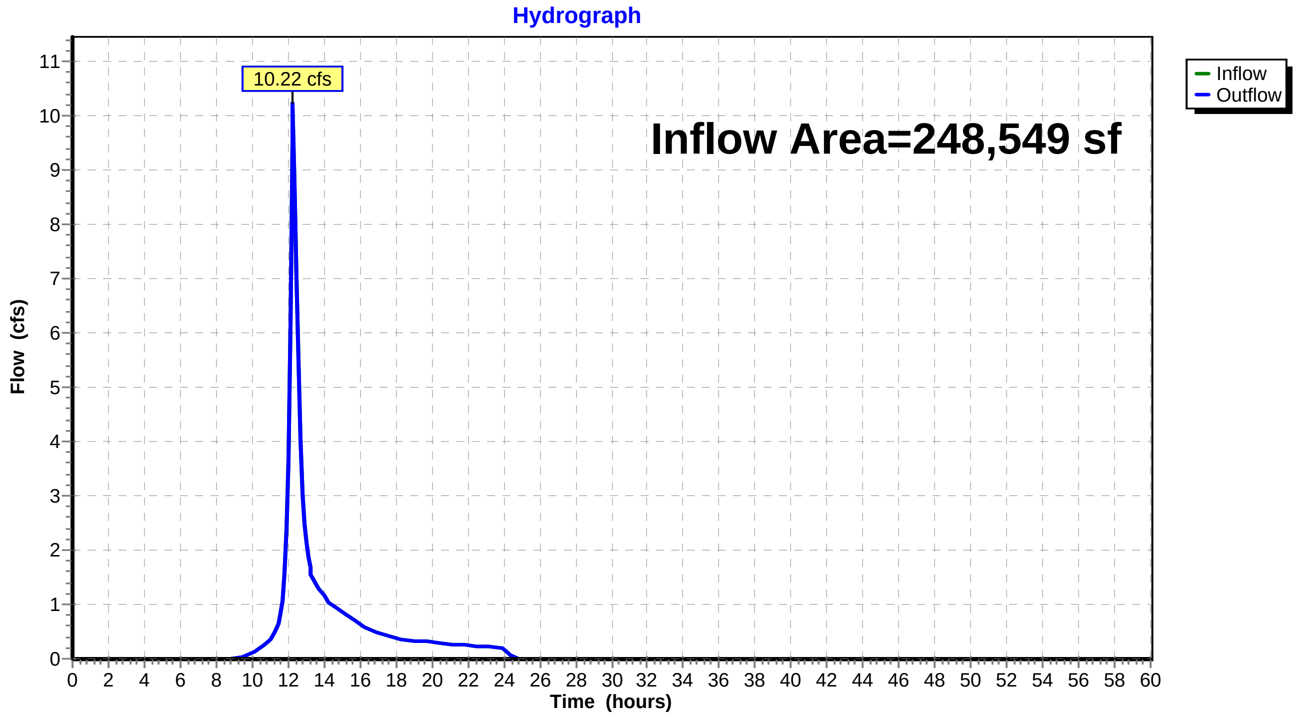


Summary for Reach DP1: Design Point 1

Inflow Area = 248,549 sf, 0.00% Impervious, Inflow Depth = 2.28" for 10 Year, 24 Hour Storm event
Inflow = 10.22 cfs @ 12.28 hrs, Volume= 47,234 cf
Outflow = 10.22 cfs @ 12.28 hrs, Volume= 47,234 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3

Reach DP1: Design Point 1

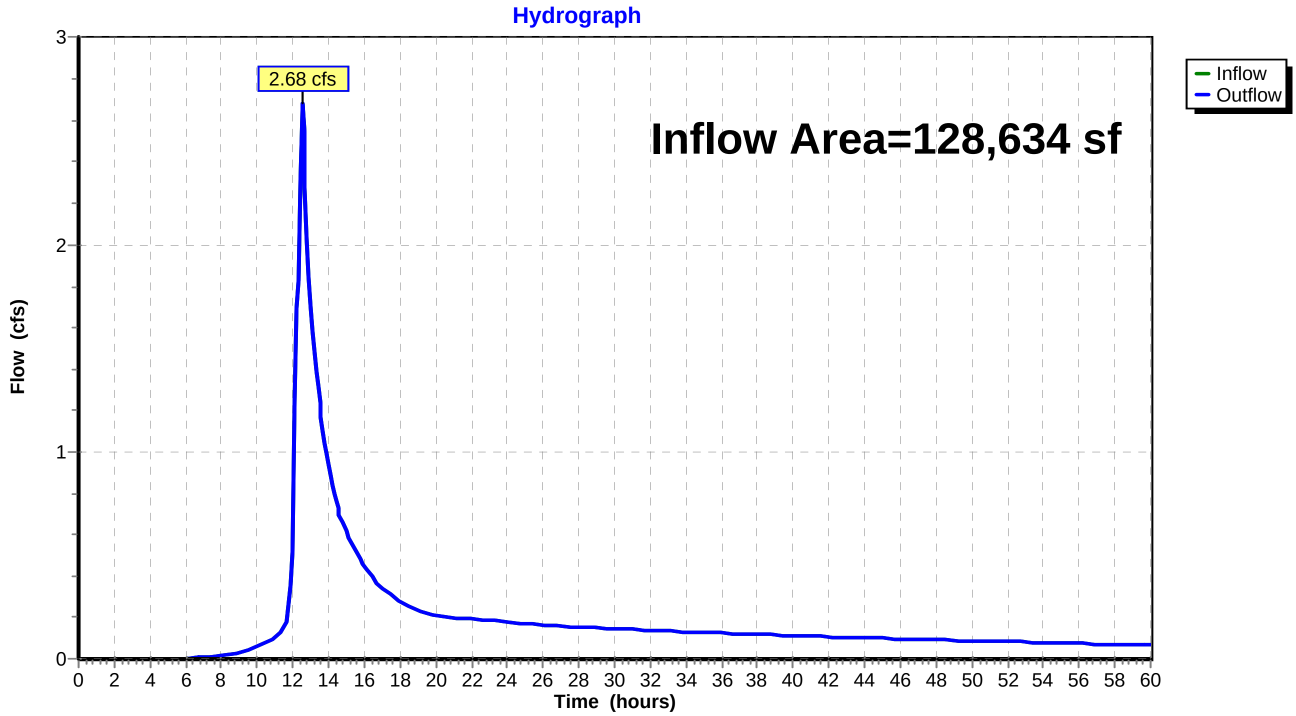


Summary for Reach DP2: Design Point 2

Inflow Area = 128,634 sf, 51.86% Impervious, Inflow Depth > 3.60" for 10 Year, 24 Hour Storm event
Inflow = 2.68 cfs @ 12.52 hrs, Volume= 38,641 cf
Outflow = 2.68 cfs @ 12.52 hrs, Volume= 38,641 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3

Reach DP2: Design Point 2

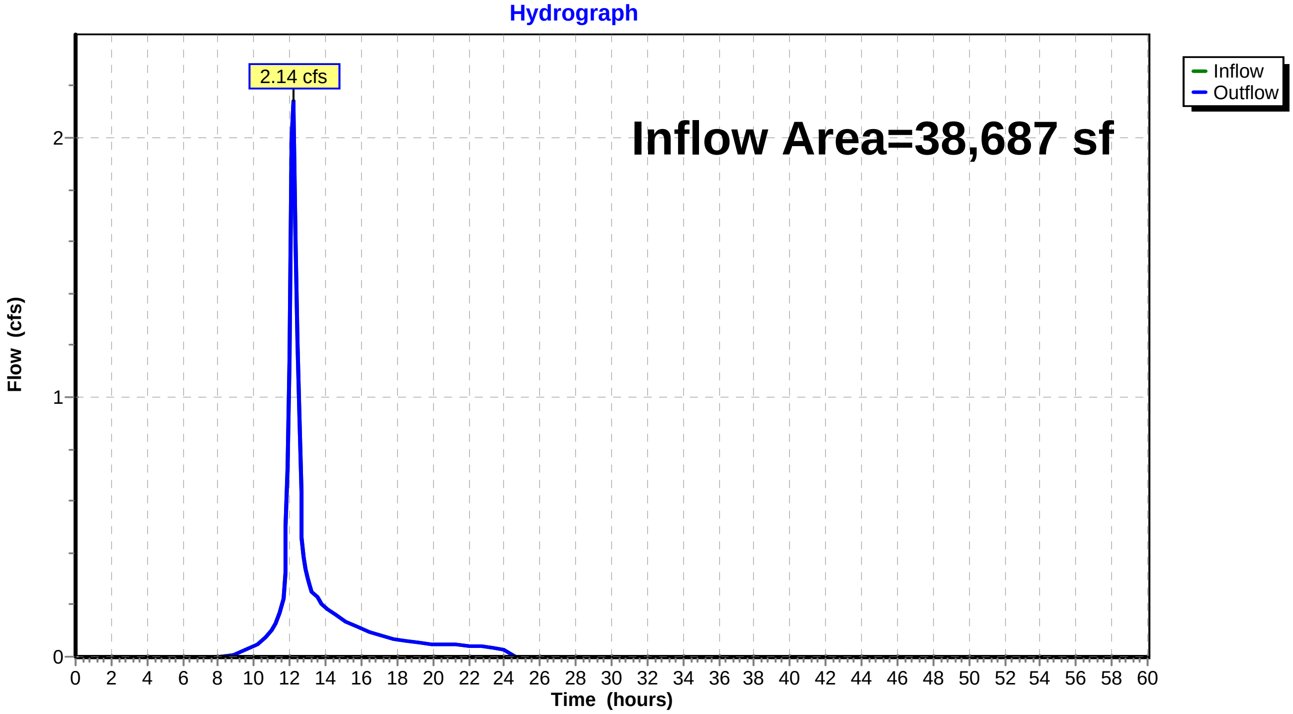


Summary for Reach DP3: Design Point 3

Inflow Area = 38,687 sf, 9.93% Impervious, Inflow Depth = 2.68" for 10 Year, 24 Hour Storm event
Inflow = 2.14 cfs @ 12.17 hrs, Volume= 8,631 cf
Outflow = 2.14 cfs @ 12.17 hrs, Volume= 8,631 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3

Reach DP3: Design Point 3



Summary for Pond F-1: Sand Filter

Inflow Area = 86,352 sf, 71.03% Impervious, Inflow Depth > 3.93" for 10 Year, 24 Hour Storm event
Inflow = 5.67 cfs @ 12.10 hrs, Volume= 28,314 cf
Outflow = 2.92 cfs @ 12.42 hrs, Volume= 28,186 cf, Atten= 48%, Lag= 19.2 min
Primary = 2.92 cfs @ 12.42 hrs, Volume= 28,186 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3
Peak Elev= 387.23' @ 12.42 hrs Surf.Area= 3,266 sf Storage= 7,367 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 389.5 min (1,515.0 - 1,125.6)

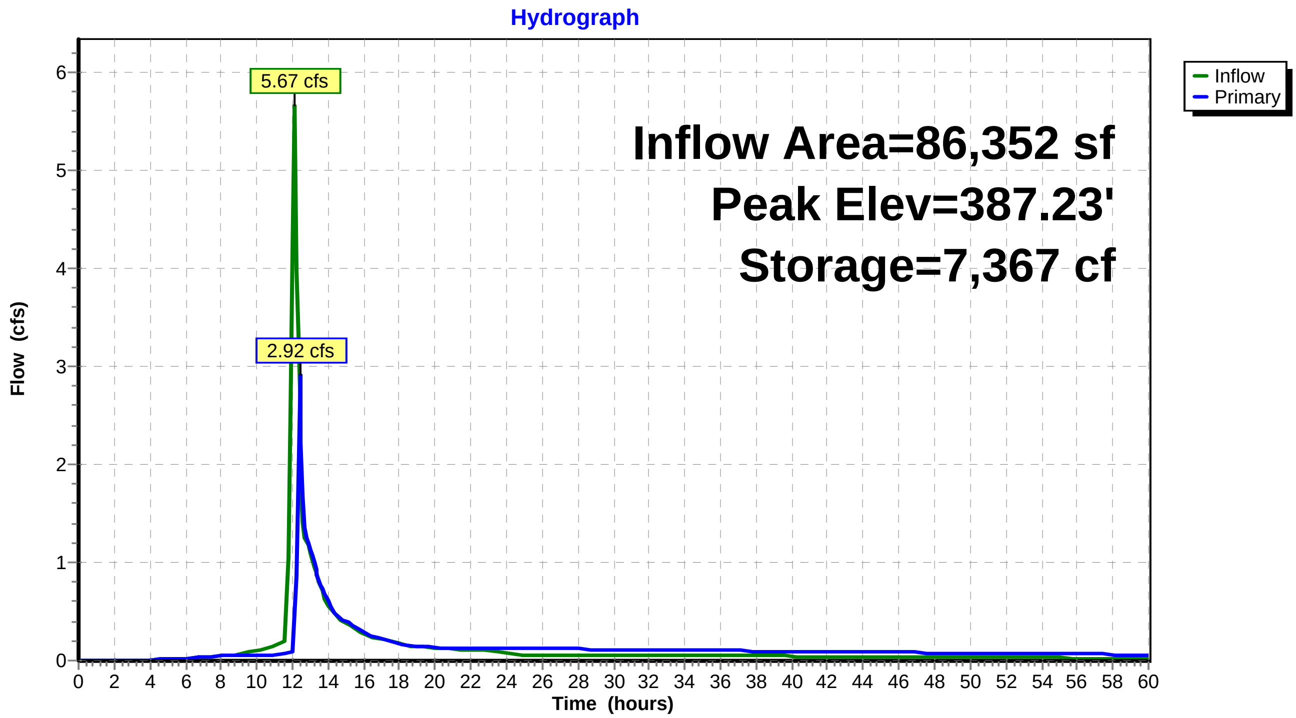
Volume	Invert	Avail.Storage	Storage Description
#1	384.00'	10,072 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
384.00	1,386	0	0
385.00	1,903	1,645	1,645
386.00	2,483	2,193	3,838
387.00	3,135	2,809	6,647
388.00	3,716	3,426	10,072

Device	Routing	Invert	Outlet Devices
#1	Primary	381.50'	**10.0" Round Culvert** L= 38.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 381.50' / 377.00' S= 0.1184 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf
#2	Device 1	384.00'	**1.750 in/hr Sand Filter Bed over Surface area**
#3	Device 1	387.00'	**24.0" x 24.0" Horiz. Overflow Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.78 cfs @ 12.42 hrs HW=387.22' TW=379.02' (Dynamic Tailwater)
└**1=Culvert** (Passes 2.78 cfs of 4.77 cfs potential flow)
  ├**2=Sand Filter Bed** (Exfiltration Controls 0.13 cfs)
  └**3=Overflow Grate** (Weir Controls 2.65 cfs @ 1.52 fps)

Pond F-1: Sand Filter



Stage-Area-Storage for Pond F-1: Sand Filter

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
384.00	1,386	0
384.05	1,412	70
384.10	1,438	141
384.15	1,464	214
384.20	1,489	288
384.25	1,515	363
384.30	1,541	439
384.35	1,567	517
384.40	1,593	596
384.45	1,619	676
384.50	1,645	758
384.55	1,670	840
384.60	1,696	925
384.65	1,722	1,010
384.70	1,748	1,097
384.75	1,774	1,185
384.80	1,800	1,274
384.85	1,825	1,365
384.90	1,851	1,457
384.95	1,877	1,550
385.00	1,903	1,645
385.05	1,932	1,740
385.10	1,961	1,838
385.15	1,990	1,936
385.20	2,019	2,037
385.25	2,048	2,138
385.30	2,077	2,242
385.35	2,106	2,346
385.40	2,135	2,452
385.45	2,164	2,560
385.50	2,193	2,669
385.55	2,222	2,779
385.60	2,251	2,891
385.65	2,280	3,004
385.70	2,309	3,119
385.75	2,338	3,235
385.80	2,367	3,353
385.85	2,396	3,472
385.90	2,425	3,592
385.95	2,454	3,714
386.00	2,483	3,838
386.05	2,516	3,962
386.10	2,548	4,089
386.15	2,581	4,217
386.20	2,613	4,347
386.25	2,646	4,479
386.30	2,679	4,612
386.35	2,711	4,746
386.40	2,744	4,883
386.45	2,776	5,021
386.50	2,809	5,161
386.55	2,842	5,302
386.60	2,874	5,445
386.65	2,907	5,589
386.70	2,939	5,735
386.75	2,972	5,883
386.80	3,005	6,033
386.85	3,037	6,184
386.90	3,070	6,336
386.95	3,102	6,491
387.00	3,135	6,647
387.05	3,164	6,804
387.10	3,193	6,963
387.15	3,222	7,123
387.20	3,251	7,285
387.25	3,280	7,448
387.30	3,309	7,613
387.35	3,338	7,779
387.40	3,367	7,947
387.45	3,396	8,116
387.50	3,426	8,287
387.55	3,455	8,459
387.60	3,484	8,632
387.65	3,513	8,807
387.70	3,542	8,983
387.75	3,571	9,161
387.80	3,600	9,340
387.85	3,629	9,521
387.90	3,658	9,703
387.95	3,687	9,887
388.00	**3,716**	**10,072**

Summary for Pond FS: Flow Splitter

Inflow Area = 64,432 sf, 86.80% Impervious, Inflow Depth = 4.47" for 10 Year, 24 Hour Storm event
Inflow = 6.40 cfs @ 12.01 hrs, Volume= 23,995 cf
Outflow = 6.40 cfs @ 12.01 hrs, Volume= 23,995 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.38 cfs @ 12.01 hrs, Volume= 22,828 cf
Secondary = 2.03 cfs @ 12.01 hrs, Volume= 1,167 cf

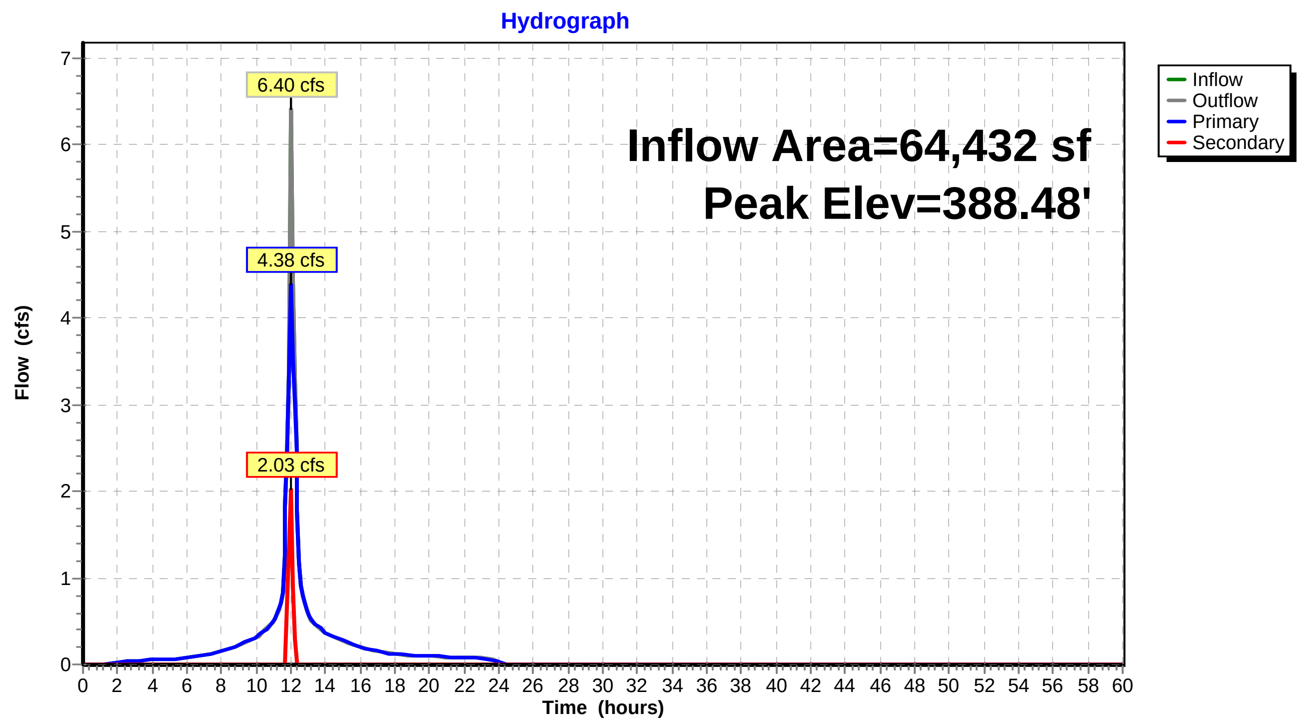
Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3
Peak Elev= 388.48' @ 12.02 hrs
Flood Elev= 392.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	386.00'	**15.0" Round Culvert to Sed Basin** L= 20.0' Ke= 0.900 Inlet / Outlet Invert= 386.00' / 384.00' S= 0.1000 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Secondary	387.80'	**24.0" Round Culvert** L= 106.0' Ke= 0.900 Inlet / Outlet Invert= 387.80' / 381.00' S= 0.0642 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=4.33 cfs @ 12.01 hrs HW=388.45' TW=387.59' (Dynamic Tailwater)
└─**1=Culvert to Sed Basin** (Inlet Controls 4.33 cfs @ 3.53 fps)

Secondary OutFlow Max=1.82 cfs @ 12.01 hrs HW=388.43' TW=378.65' (Dynamic Tailwater)
└─**2=Culvert** (Inlet Controls 1.82 cfs @ 2.14 fps)

Pond FS: Flow Splitter



Stage-Area-Storage for Pond FS: Flow Splitter

Elevation (feet)	Storage (cubic-feet)
386.00	**0**
386.04	0
386.08	0
386.12	0
386.16	0
386.20	0
386.24	0
386.28	0
386.32	0
386.36	0
386.40	0
386.44	0
386.48	0
386.52	0
386.56	0
386.60	0
386.64	0
386.68	0
386.72	0
386.76	0
386.80	0
386.84	0
386.88	0
386.92	0
386.96	0
387.00	0
387.04	0
387.08	0
387.12	0
387.16	0
387.20	0
387.24	0
387.28	0
387.32	0
387.36	0
387.40	0
387.44	0
387.48	0
387.52	0
387.56	0
387.60	0
387.64	0
387.68	0
387.72	0
387.76	0
387.80	0
387.84	0
387.88	0
387.92	0
387.96	0
388.00	0
388.04	0
388.08	0
388.12	0
388.16	0
388.20	0
388.24	0
388.28	0
388.32	0
388.36	0
388.40	0
388.44	0
388.48	0
388.52	0
388.56	0
388.60	0
388.64	0
388.68	0
388.72	0
388.76	0
388.80	0
388.84	0
388.88	0
388.92	0
388.96	0
389.00	0
389.04	0
389.08	0
389.12	0
389.16	0
389.20	0
389.24	0
389.28	0
389.32	0
389.36	0
389.40	0
389.44	0
389.48	0
389.52	0
389.56	0
389.60	0
389.64	0
389.68	0
389.72	0
389.76	0
389.80	0
389.84	0
389.88	0
389.92	0
389.96	0
390.00	0
390.04	0
390.08	0
390.12	0
390.16	0
390.20	0
390.24	0
390.28	0
390.32	0
390.36	0
390.40	0
390.44	0
390.48	0
390.52	0
390.56	0
390.60	0
390.64	0
390.68	0
390.72	0
390.76	0
390.80	0
390.84	0
390.88	0
390.92	0
390.96	0
391.00	0
391.04	0
391.08	0
391.12	0
391.16	0
391.20	0
391.24	0
391.28	0
391.32	0
391.36	0
391.40	0
391.44	0
391.48	0
391.52	0
391.56	0
391.60	0
391.64	0
391.68	0
391.72	0
391.76	0
391.80	0
391.84	0
391.88	0
391.92	0
391.96	0
392.00	0

Summary for Pond SB: Sedimentation Basin

Inflow Area = 86,352 sf, 71.03% Impervious, Inflow Depth = 4.03" for 10 Year, 24 Hour Storm event
Inflow = 6.19 cfs @ 12.01 hrs, Volume= 29,002 cf
Outflow = 5.67 cfs @ 12.10 hrs, Volume= 28,314 cf, Atten= 8%, Lag= 4.9 min
Primary = 5.67 cfs @ 12.10 hrs, Volume= 28,314 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3
Peak Elev= 387.66' @ 12.12 hrs Surf.Area= 3,322 sf Storage= 8,196 cf

Plug-Flow detention time= 374.1 min calculated for 28,314 cf (98% of inflow)
Center-of-Mass det. time= 359.3 min (1,125.6 - 766.3)

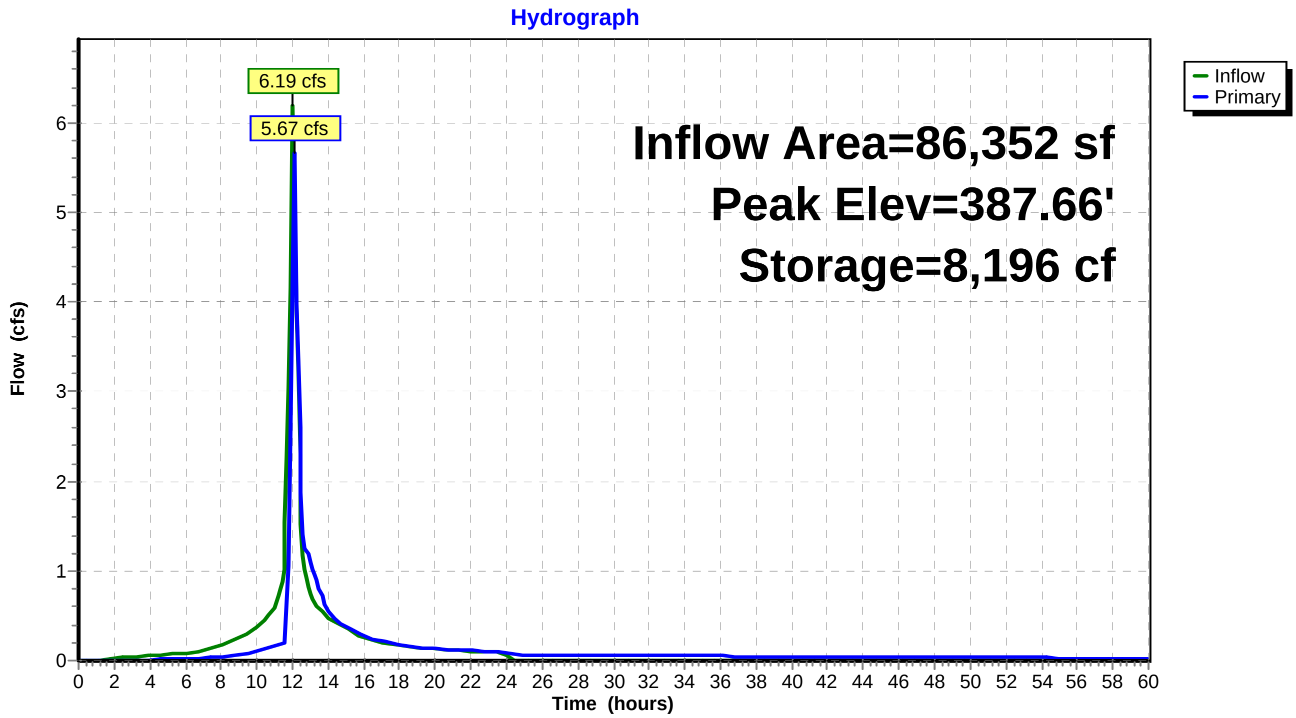
Volume	Invert	Avail.Storage	Storage Description
#1	384.00'	9,361 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
384.00	1,219	0	0
385.00	1,730	1,475	1,475
386.00	2,313	2,022	3,496
387.00	2,951	2,632	6,128
388.00	3,514	3,233	9,361

Device	Routing	Invert	Outlet Devices
#1	Primary	382.00'	**10.0" Round Culvert** L= 38.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 382.00' / 377.00' S= 0.1316 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf
#2	Device 1	384.00'	**0.4" Vert. Standpipe Perforations X 4.00 columns** X 12 rows with 3.0" cc spacing C= 0.600
#3	Device 1	387.00'	**12.0" Horiz. Standpipe Riser Opening** C= 0.600 Limited to weir flow at low heads
#4	Primary	387.50'	**15.0' long Overflow Spillway** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=5.61 cfs @ 12.10 hrs HW=387.66' TW=386.21' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.50 cfs @ 4.58 fps)
2=Standpipe Perforations (Passes < 0.24 cfs potential flow)
3=Standpipe Riser Opening (Passes < 3.06 cfs potential flow)
4=Overflow Spillway (Weir Controls 3.11 cfs @ 1.34 fps)

Pond SB: Sedimentation Basin



Stage-Area-Storage for Pond SB: Sedimentation Basin

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
384.00	1,219	0	386.65	2,728	5,134
384.05	1,245	62	386.70	2,760	5,271
384.10	1,270	124	386.75	2,792	5,410
384.15	1,296	189	386.80	2,823	5,551
384.20	1,321	254	386.85	2,855	5,693
384.25	1,347	321	386.90	2,887	5,836
384.30	1,372	389	386.95	2,919	5,981
384.35	1,398	458	387.00	2,951	6,128
384.40	1,423	528	387.05	2,979	6,276
384.45	1,449	600	387.10	3,007	6,426
384.50	1,475	673	387.15	3,035	6,577
384.55	1,500	748	387.20	3,064	6,729
384.60	1,526	823	387.25	3,092	6,883
384.65	1,551	900	387.30	3,120	7,039
384.70	1,577	978	387.35	3,148	7,195
384.75	1,602	1,058	387.40	3,176	7,353
384.80	1,628	1,139	387.45	3,204	7,513
384.85	1,653	1,221	387.50	3,233	7,674
384.90	1,679	1,304	387.55	3,261	7,836
384.95	1,704	1,389	387.60	3,289	8,000
385.00	1,730	1,475	387.65	3,317	8,165
385.05	1,759	1,562	387.70	3,345	8,332
385.10	1,788	1,650	387.75	3,373	8,500
385.15	1,817	1,741	387.80	3,401	8,669
385.20	1,847	1,832	387.85	3,430	8,840
385.25	1,876	1,925	387.90	3,458	9,012
385.30	1,905	2,020	387.95	3,486	9,186
385.35	1,934	2,116	388.00	**3,514**	**9,361**
385.40	1,963	2,213			
385.45	1,992	2,312			
385.50	2,022	2,412			
385.55	2,051	2,514			
385.60	2,080	2,617			
385.65	2,109	2,722			
385.70	2,138	2,828			
385.75	2,167	2,936			
385.80	2,196	3,045			
385.85	2,226	3,156			
385.90	2,255	3,268			
385.95	2,284	3,381			
386.00	2,313	3,496			
386.05	2,345	3,612			
386.10	2,377	3,730			
386.15	2,409	3,850			
386.20	2,441	3,971			
386.25	2,473	4,094			
386.30	2,504	4,219			
386.35	2,536	4,345			
386.40	2,568	4,472			
386.45	2,600	4,601			
386.50	2,632	4,732			
386.55	2,664	4,865			
386.60	2,696	4,999			

Summary for Pond W-4: W-4 Pocket Wetland

Inflow Area = 113,943 sf, 58.55% Impervious, Inflow Depth > 3.88" for 10 Year, 24 Hour Storm event
Inflow = 4.54 cfs @ 12.01 hrs, Volume= 36,848 cf
Outflow = 2.42 cfs @ 12.54 hrs, Volume= 35,849 cf, Atten= 47%, Lag= 31.8 min
Primary = 2.42 cfs @ 12.54 hrs, Volume= 35,849 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3
Peak Elev= 379.07' @ 12.54 hrs Surf.Area= 6,186 sf Storage= 5,909 cf

Plug-Flow detention time= 196.3 min calculated for 35,849 cf (97% of inflow)
Center-of-Mass det. time= 137.3 min (1,481.5 - 1,344.1)

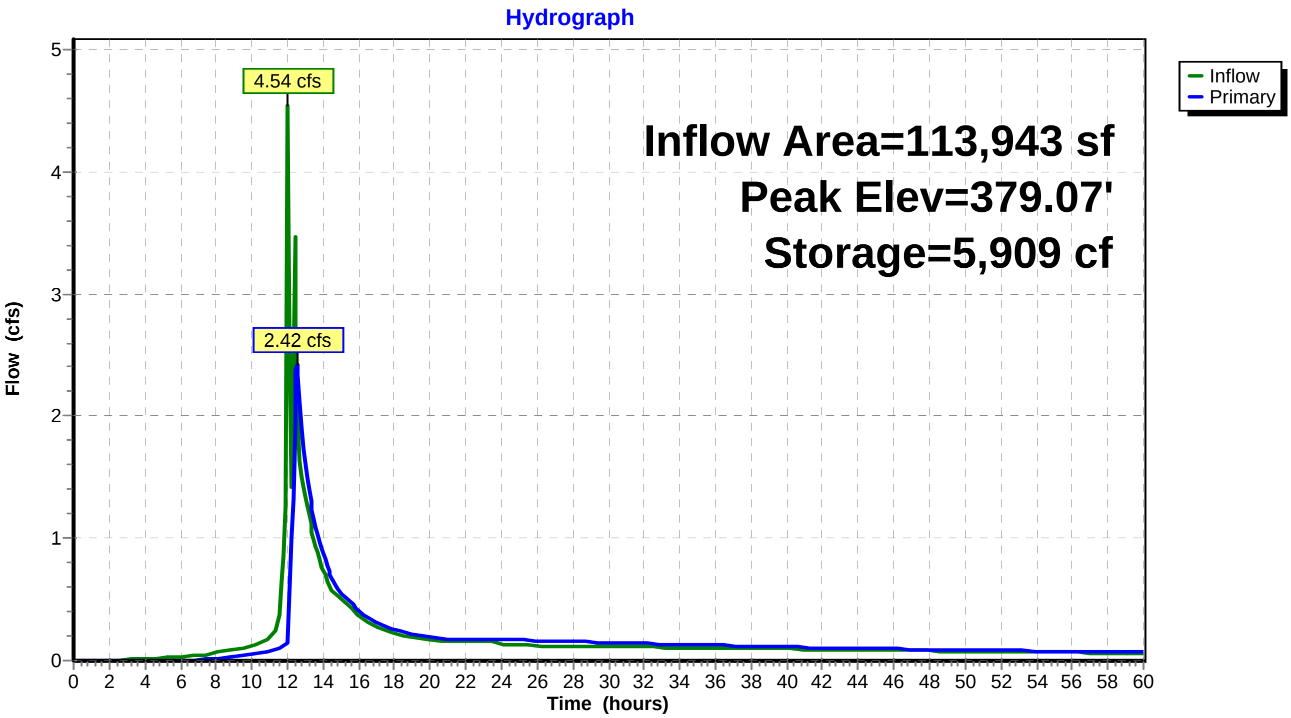
Volume	Invert	Avail.Storage	Storage Description
#1	378.00'	20,808 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
378.00	4,855	0	0
379.00	6,074	5,465	5,465
380.00	7,618	6,846	12,311
381.00	9,377	8,498	20,808

Device	Routing	Invert	Outlet Devices
#1	Primary	373.00'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 373.00' / 372.60' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	378.00'	**3.0" Vert. Low Flow Orifice** C= 0.600
#3	Device 1	378.70'	**36.0" W x 6.0" H Vert. High Flow Orifice (36Wx6H)** C= 0.600

Primary OutFlow Max=2.36 cfs @ 12.54 hrs HW=379.07' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 2.36 cfs of 8.88 cfs potential flow)
  ├─**2=Low Flow Orifice** (Orifice Controls 0.23 cfs @ 4.67 fps)
  └─**3=High Flow Orifice (36Wx6H)** (Orifice Controls 2.13 cfs @ 1.94 fps)

Pond W-4: W-4 Pocket Wetland



Stage-Area-Storage for Pond W-4: W-4 Pocket Wetland

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
378.00	4,855	0
378.05	4,916	244
378.10	4,977	492
378.15	5,038	742
378.20	5,099	995
378.25	5,160	1,252
378.30	5,221	1,511
378.35	5,282	1,774
378.40	5,343	2,040
378.45	5,404	2,308
378.50	5,465	2,580
378.55	5,525	2,855
378.60	5,586	3,132
378.65	5,647	3,413
378.70	5,708	3,697
378.75	5,769	3,984
378.80	5,830	4,274
378.85	5,891	4,567
378.90	5,952	4,863
378.95	6,013	5,162
379.00	6,074	5,465
379.05	6,151	5,770
379.10	6,228	6,080
379.15	6,306	6,393
379.20	6,383	6,710
379.25	6,460	7,031
379.30	6,537	7,356
379.35	6,614	7,685
379.40	6,692	8,018
379.45	6,769	8,354
379.50	6,846	8,695
379.55	6,923	9,039
379.60	7,000	9,387
379.65	7,078	9,739
379.70	7,155	10,095
379.75	7,232	10,454
379.80	7,309	10,818
379.85	7,386	11,185
379.90	7,464	11,556
379.95	7,541	11,932
380.00	7,618	12,311
380.05	7,706	12,694
380.10	7,794	13,081
380.15	7,882	13,473
380.20	7,970	13,869
380.25	8,058	14,270
380.30	8,146	14,675
380.35	8,234	15,085
380.40	8,322	15,498
380.45	8,410	15,917
380.50	8,498	16,339
380.55	8,585	16,766
380.60	8,673	17,198
380.65	8,761	17,634
380.70	8,849	18,074
380.75	8,937	18,519
380.80	9,025	18,968
380.85	9,113	19,421
380.90	9,201	19,879
380.95	9,289	20,341
381.00	**9,377**	**20,808**

Time span=0.00-60.00 hrs, dt=0.10 hrs, 601 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment Post 2E: Post 2E Runoff Area=13,510 sf 40.08% Impervious Runoff Depth=5.00"
Flow Length=130' Tc=1.3 min CN=87 Runoff=1.78 cfs 5,626 cf

Subcatchment Post 1: DA 1 Runoff Area=248,549 sf 0.00% Impervious Runoff Depth=3.51"
Flow Length=605' Tc=18.8 min CN=73 Runoff=15.83 cfs 72,657 cf

Subcatchment Post 2A: Post 2A Runoff Area=4,907 sf 100.00% Impervious Runoff Depth=6.26"
Flow Length=150' Slope=0.0100 '/' Tc=1.9 min CN=98 Runoff=0.71 cfs 2,560 cf

Subcatchment Post 2B: Post 2B Runoff Area=14,630 sf 41.85% Impervious Runoff Depth=4.89"
Flow Length=346' Tc=11.0 min CN=86 Runoff=1.47 cfs 5,957 cf

Subcatchment Post 2C: Post 2C Runoff Area=44,895 sf 100.00% Impervious Runoff Depth=6.26"
Flow Length=100' Slope=0.1350 '/' Tc=0.5 min CN=98 Runoff=6.86 cfs 23,425 cf

Subcatchment Post 2D: Post 2D Runoff Area=8,410 sf 0.00% Impervious Runoff Depth=4.45"
Flow Length=200' Tc=4.5 min CN=82 Runoff=0.93 cfs 3,118 cf

Subcatchment Post 2F: Post 2F Runoff Area=4,258 sf 100.00% Impervious Runoff Depth=6.26"
Flow Length=119' Slope=0.1687 '/' Tc=0.1 min CN=98 Runoff=0.65 cfs 2,222 cf

Subcatchment Post 2G: Post 2G Runoff Area=23,333 sf 4.77% Impervious Runoff Depth=4.34"
Flow Length=112' Tc=0.9 min CN=81 Runoff=2.78 cfs 8,443 cf

Subcatchment Post 2H: Post 2H Runoff Area=14,691 sf 0.00% Impervious Runoff Depth=3.51"
Flow Length=353' Tc=10.5 min CN=73 Runoff=1.10 cfs 4,295 cf

Subcatchment Post 3A: Post 3A Runoff Area=33,605 sf 11.43% Impervious Runoff Depth=4.02"
Flow Length=110' Tc=11.9 min CN=78 Runoff=2.84 cfs 11,269 cf

Subcatchment Post 3B: Post 3B Runoff Area=5,082 sf 0.00% Impervious Runoff Depth=3.71"
Flow Length=100' Slope=0.0850 '/' Tc=5.3 min CN=75 Runoff=0.48 cfs 1,572 cf

Reach DP1: Design Point 1 Inflow=15.83 cfs 72,657 cf
Outflow=15.83 cfs 72,657 cf

Reach DP2: Design Point 2 Inflow=6.24 cfs 53,689 cf
Outflow=6.24 cfs 53,689 cf

Reach DP3: Design Point 3 Inflow=3.17 cfs 12,841 cf
Outflow=3.17 cfs 12,841 cf

Pond F-1: Sand Filter Peak Elev=387.43' Storage=8,036 cf Inflow=6.68 cfs 37,218 cf
Outflow=4.92 cfs 37,007 cf

Pond FS: Flow Splitter Peak Elev=388.73' Inflow=8.41 cfs 31,943 cf
Primary=4.73 cfs 29,207 cf Secondary=3.68 cfs 2,736 cf Outflow=8.41 cfs 31,943 cf

Pond SB: Sedimentation Basin Peak Elev=387.72' Storage=8,390 cf Inflow=7.27 cfs 37,951 cf
Outflow=6.68 cfs 37,218 cf

Pond W-4: W-4 Pocket Wetland Peak Elev=379.49' Storage=8,657 cf Inflow=8.42 cfs 50,407 cf
Outflow=5.56 cfs 49,394 cf

Total Runoff Area = 415,870 sf Runoff Volume = 141,143 cf Average Runoff Depth = 4.07"
83.04% Pervious = 345,318 sf 16.96% Impervious = 70,552 sf

Summary for Subcatchment Post 2E: Post 2E

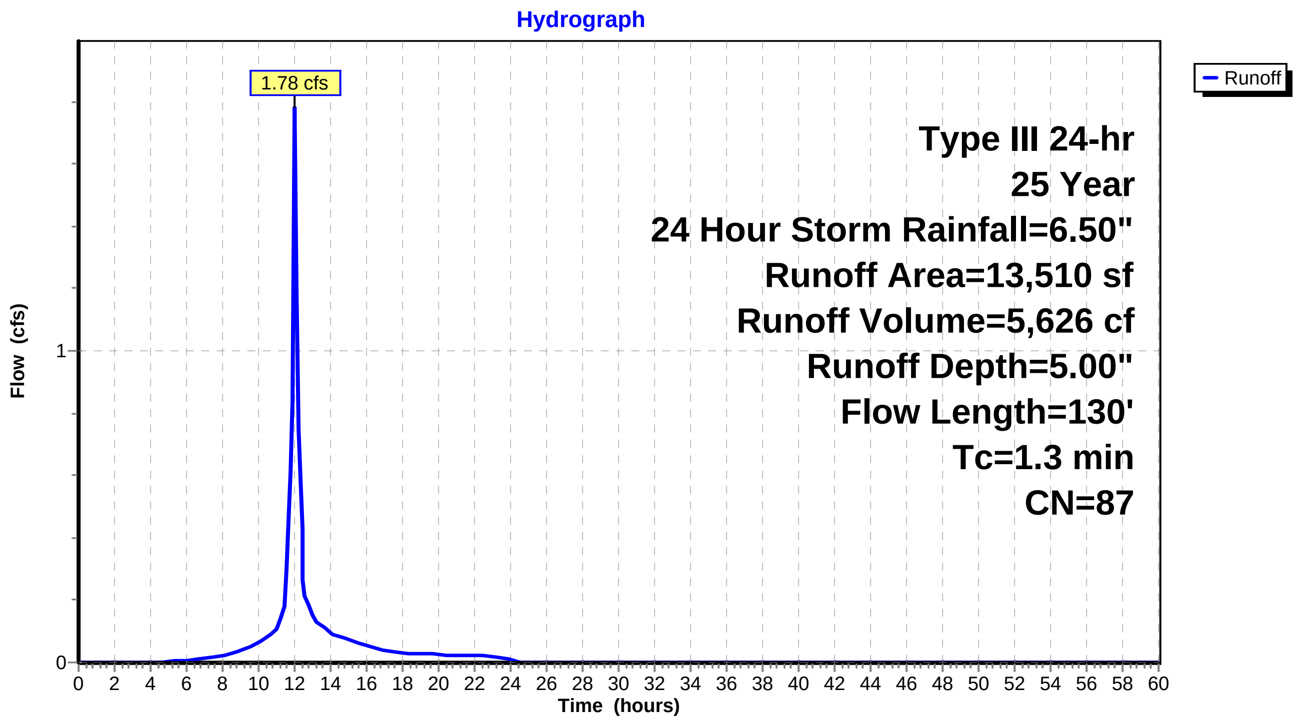
Runoff = 1.78 cfs @ 12.01 hrs, Volume= 5,626 cf, Depth= 5.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 25 Year, 24 Hour Storm Rainfall=6.50"

Area (sf)	CN	Description
5,415	98	Paved parking, HSG C
8,095	79	50-75% Grass cover, Fair, HSG C
13,510	87	Weighted Average
8,095		59.92% Pervious Area
5,415		40.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0200	1.44		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.1	30	0.3800	9.92		**Shallow Concentrated Flow, Pavement** Unpaved Kv= 16.1 fps
1.3	130	Total			

Subcatchment Post 2E: Post 2E



Summary for Subcatchment Post 1: DA 1

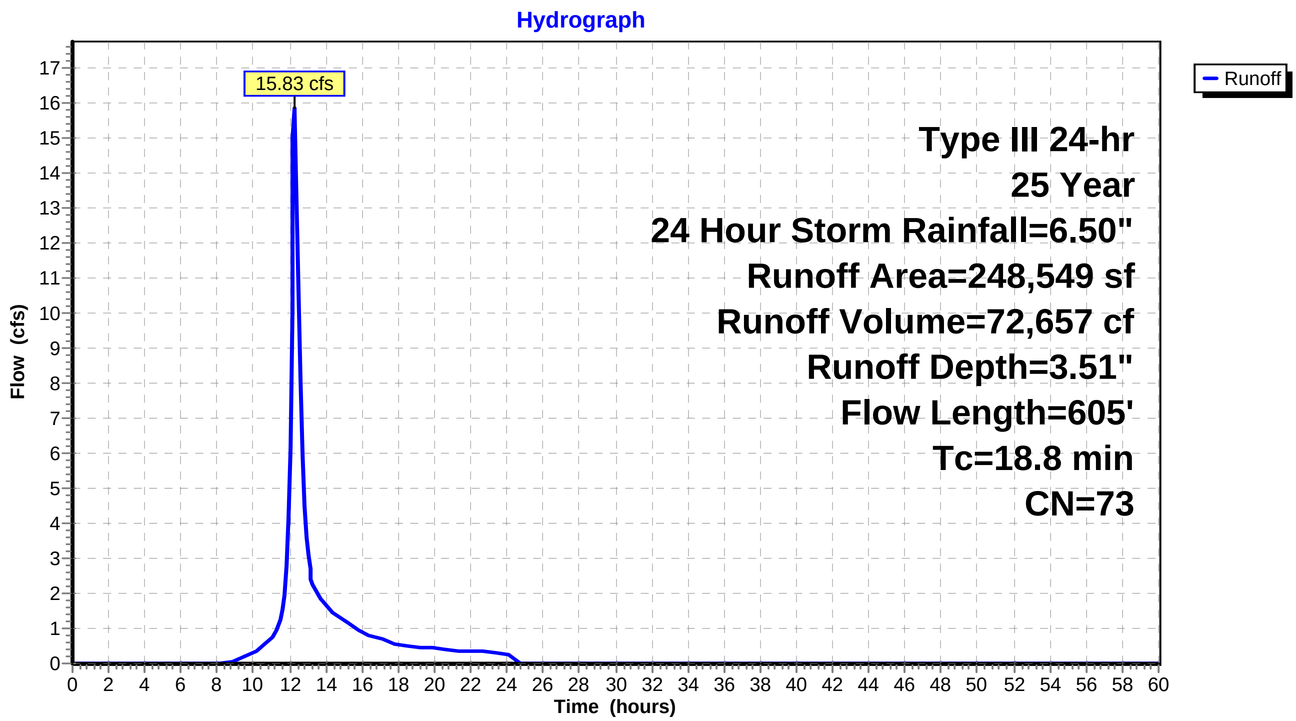
Runoff = 15.83 cfs @ 12.27 hrs, Volume= 72,657 cf, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 25 Year, 24 Hour Storm Rainfall=6.50"

Area (sf)	CN	Description
159,708	73	Woods, Fair, HSG C
1,496	89	Gravel roads, HSG C
87,345	74	>75% Grass cover, Good, HSG C
248,549	73	Weighted Average
248,549		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.8	250	0.0400	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.0	105	0.0667	1.81		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.0	250	0.0760	1.38		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
18.8	605	Total			

Subcatchment Post 1: DA 1



Summary for Subcatchment Post 2A: Post 2A

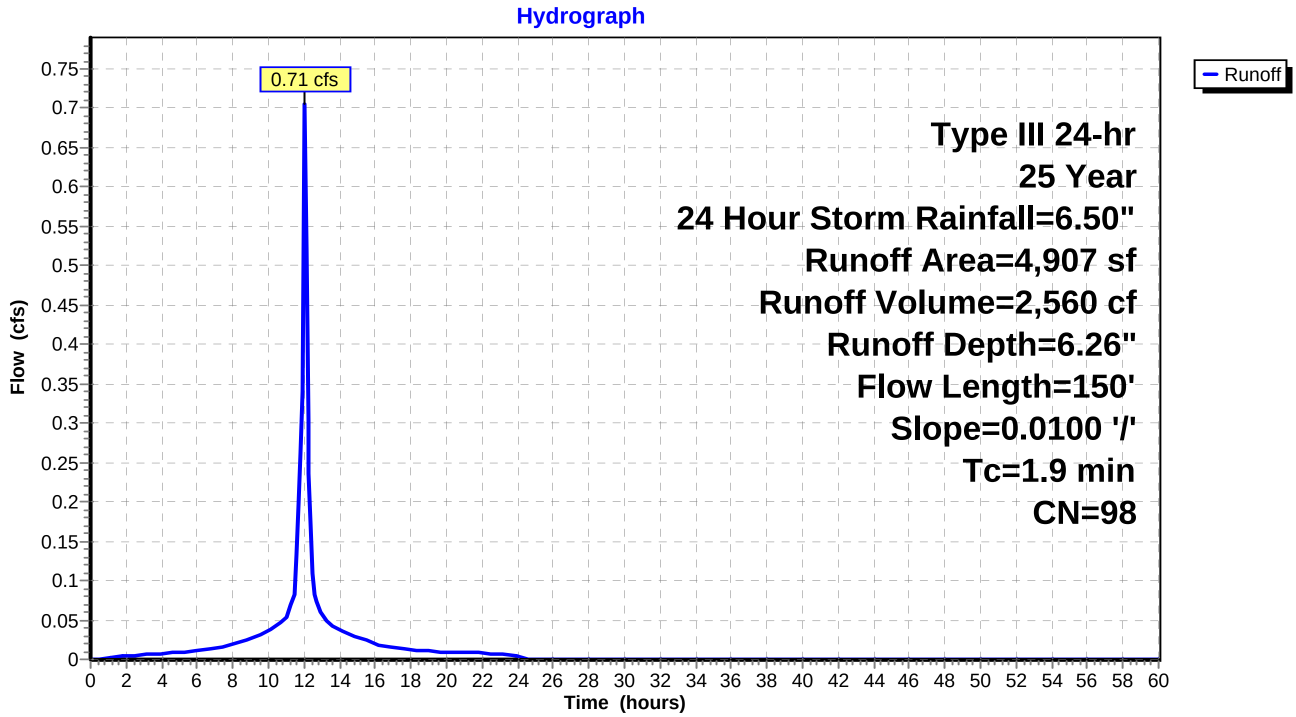
Runoff = 0.71 cfs @ 12.02 hrs, Volume= 2,560 cf, Depth= 6.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 25 Year, 24 Hour Storm Rainfall=6.50"

Area (sf)	CN	Description
4,907	98	Paved parking, HSG C
4,907		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	100	0.0100	1.09		**Sheet Flow, Pavement** Smooth surfaces n= 0.011 P2= 3.50"
0.4	50	0.0100	2.03		**Shallow Concentrated Flow, Pavement** Paved Kv= 20.3 fps
1.9	150	Total			

Subcatchment Post 2A: Post 2A



Summary for Subcatchment Post 2B: Post 2B

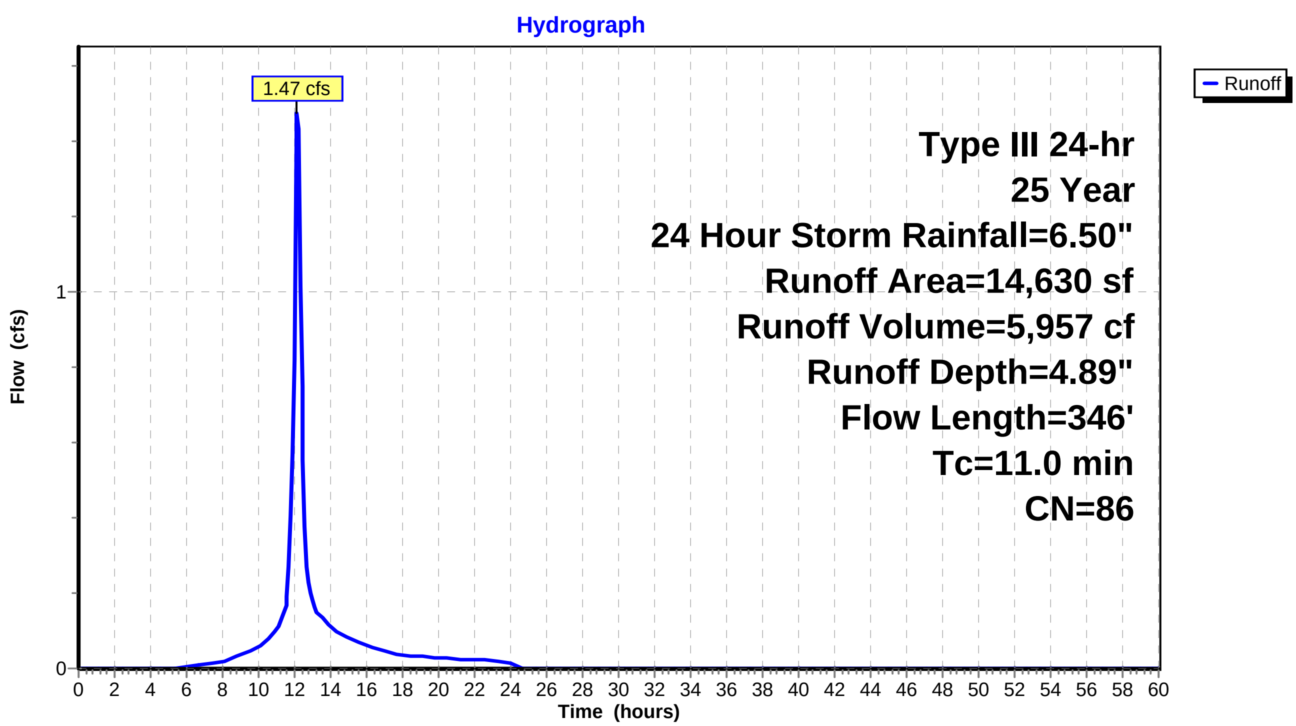
Runoff = 1.47 cfs @ 12.16 hrs, Volume= 5,957 cf, Depth= 4.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 25 Year, 24 Hour Storm Rainfall=6.50"

Area (sf)	CN	Description
6,122	98	Paved parking
6,154	74	>75% Grass cover, Good, HSG C
2,354	89	Gravel roads, HSG C
14,630	86	Weighted Average
8,508		58.15% Pervious Area
6,122		41.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	100	0.0400	0.16		**Sheet Flow, Landscaped area** Grass: Dense n= 0.240 P2= 3.50"
0.7	246	0.0100	5.90	4.63	**Pipe Channel, Pipe** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
11.0	346	Total			

Subcatchment Post 2B: Post 2B



Summary for Subcatchment Post 2C: Post 2C

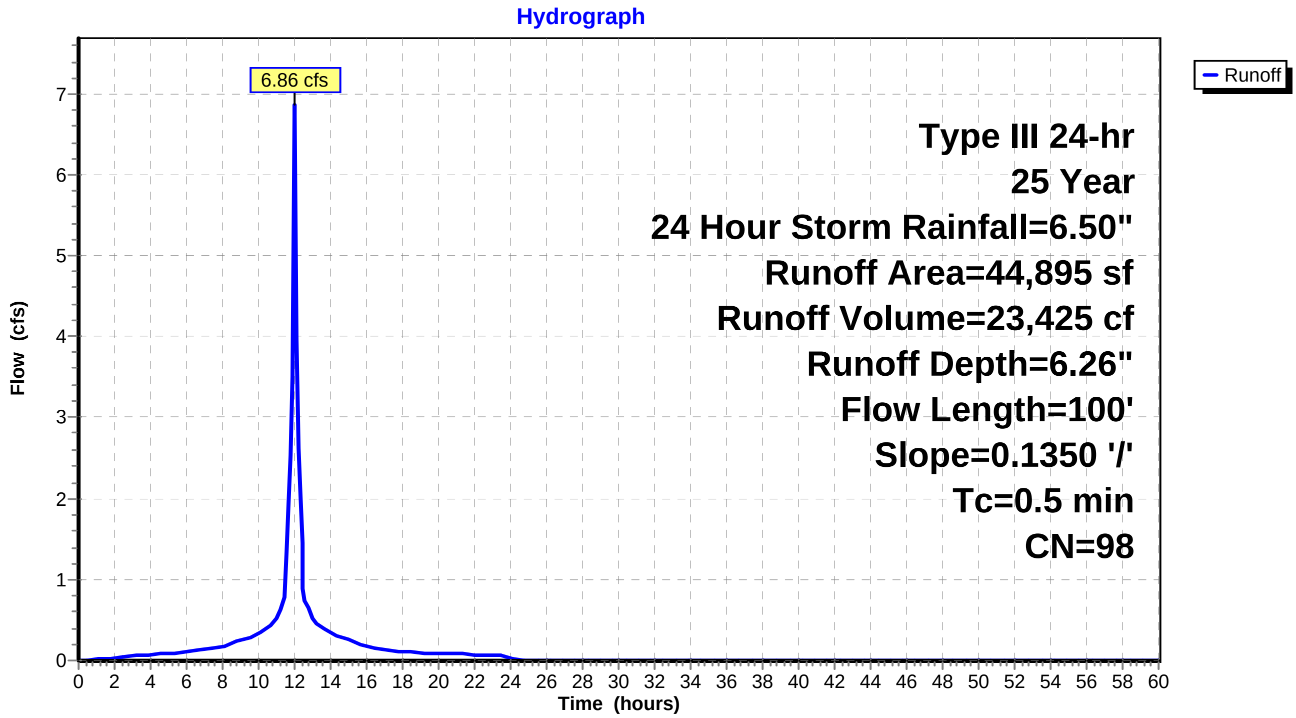
Runoff = 6.86 cfs @ 12.00 hrs, Volume= 23,425 cf, Depth= 6.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 25 Year, 24 Hour Storm Rainfall=6.50"

Area (sf)	CN	Description
44,895	98	Paved parking, HSG C
44,895		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1350	3.09		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"

Subcatchment Post 2C: Post 2C



Summary for Subcatchment Post 2D: Post 2D

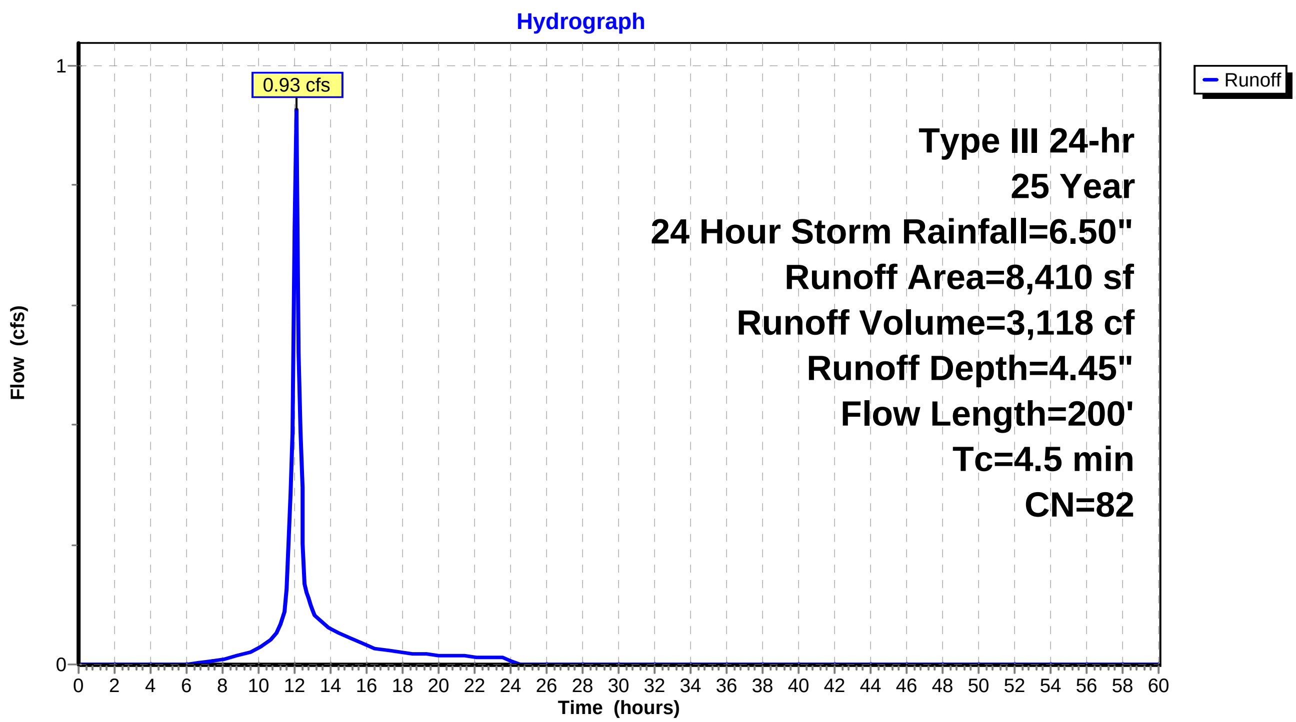
Runoff = 0.93 cfs @ 12.08 hrs, Volume= 3,118 cf, Depth= 4.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 25 Year, 24 Hour Storm Rainfall=6.50"

Area (sf)	CN	Description
6,293	79	50-75% Grass cover, Fair, HSG C
2,117	89	Gravel roads, HSG C
8,410	82	Weighted Average
8,410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	50	0.1000	0.20		**Sheet Flow, Landscaped** Grass: Dense n= 0.240 P2= 3.50"
0.4	150	0.0860	5.95		**Shallow Concentrated Flow, Maintenance Drive** Paved Kv= 20.3 fps
4.5	200	Total			

Subcatchment Post 2D: Post 2D



Summary for Subcatchment Post 2F: Post 2F

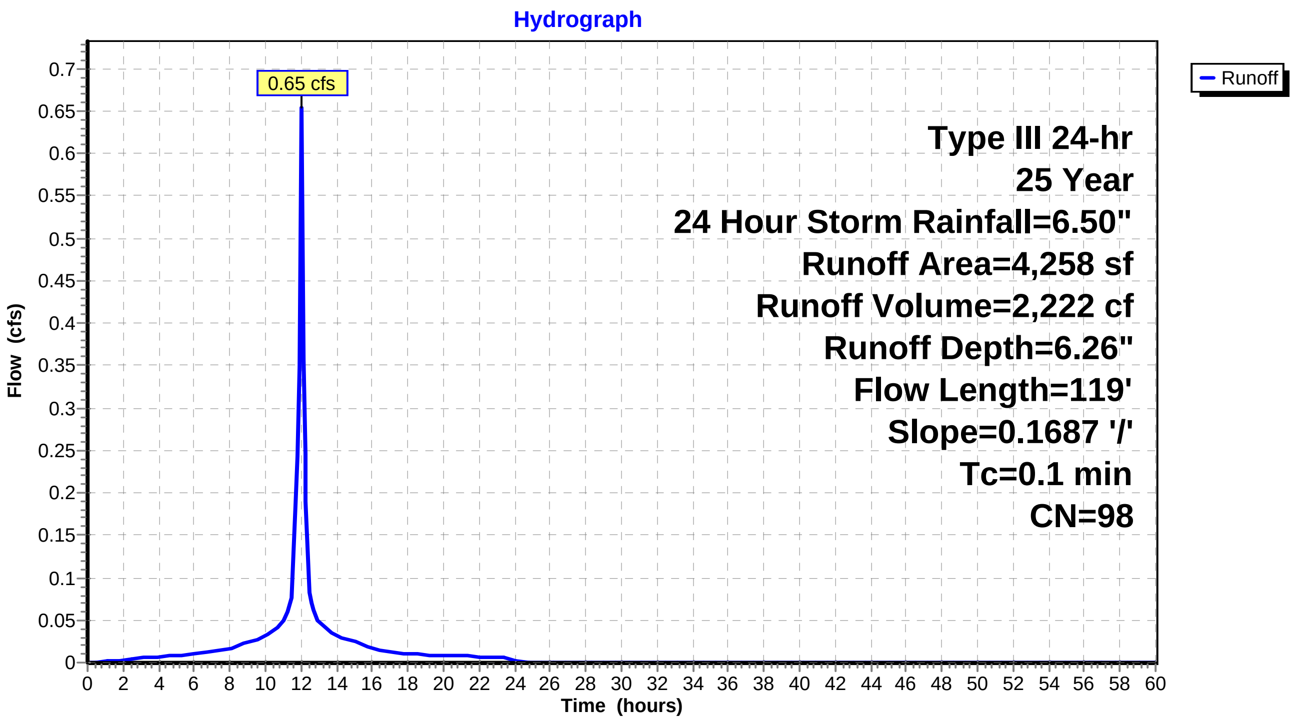
Runoff = 0.65 cfs @ 12.00 hrs, Volume= 2,222 cf, Depth= 6.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 25 Year, 24 Hour Storm Rainfall=6.50"

Area (sf)	CN	Description
4,258	98	Roofs, HSG C
4,258		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	119	0.1687	14.22	4.96	**Pipe Channel, Roof Leader** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.013 Corrugated PE, smooth interior

Subcatchment Post 2F: Post 2F



Summary for Subcatchment Post 2G: Post 2G

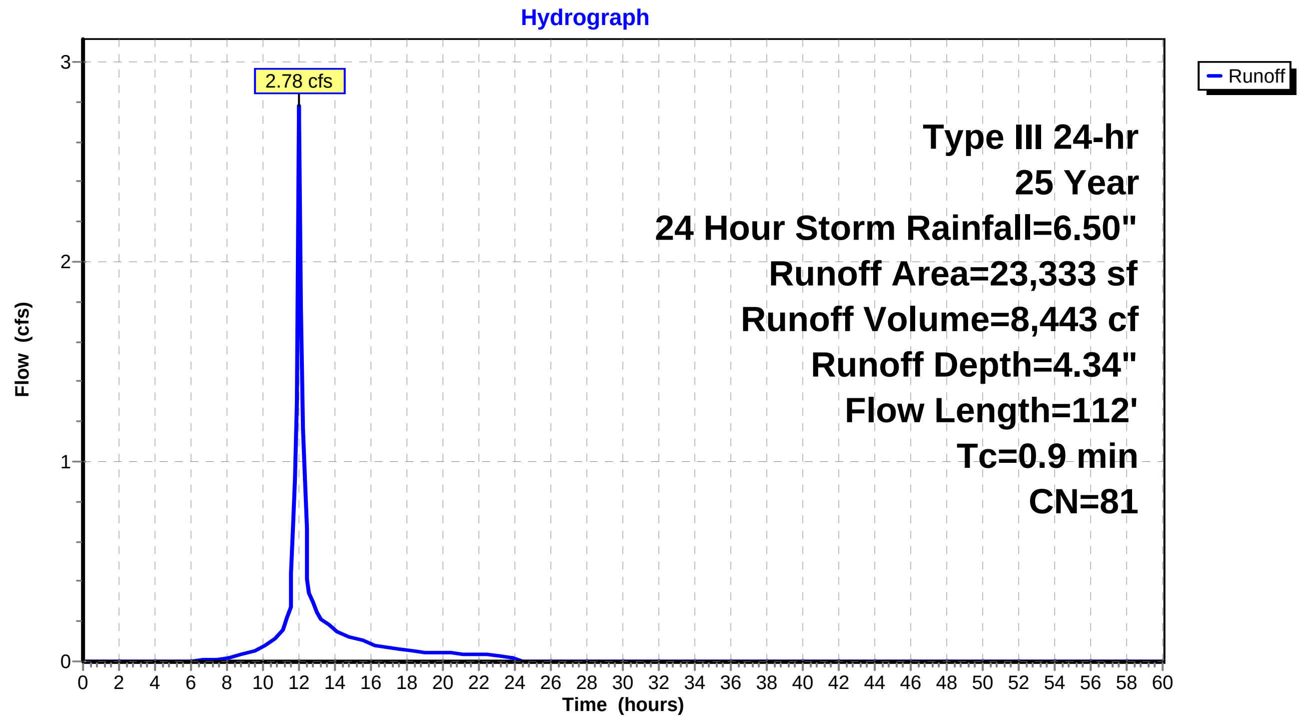
Runoff = 2.78 cfs @ 12.01 hrs, Volume= 8,443 cf, Depth= 4.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 25 Year, 24 Hour Storm Rainfall=6.50"

Area (sf)	CN	Description
1,113	98	Paved parking, HSG C
20,037	79	50-75% Grass cover, Fair, HSG C
2,183	89	Gravel roads, HSG C
23,333	81	Weighted Average
22,220		95.23% Pervious Area
1,113		4.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	80	0.0250	1.50		**Sheet Flow, Pavement** Smooth surfaces n= 0.011 P2= 3.50"
0.0	32	0.4600	10.92		**Shallow Concentrated Flow, Landscaped** Unpaved Kv= 16.1 fps
0.9	112	Total			

Subcatchment Post 2G: Post 2G



Summary for Subcatchment Post 2H: Post 2H

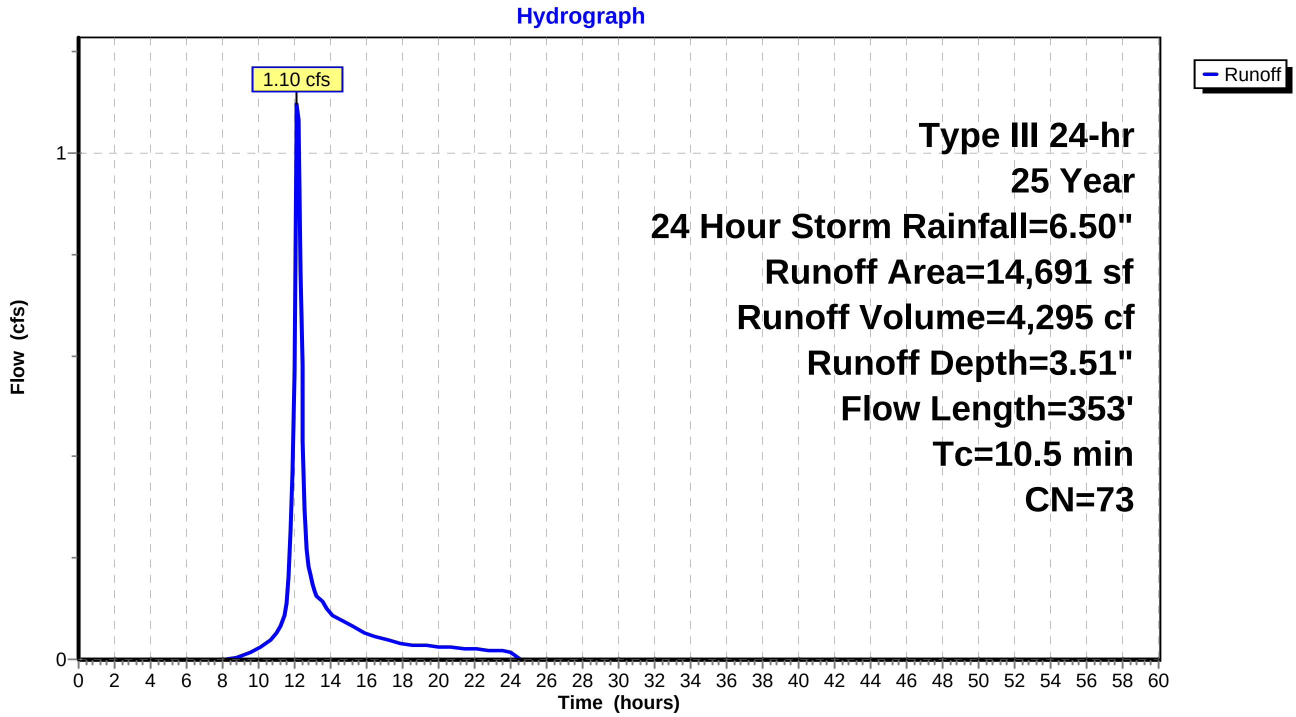
Runoff = 1.10 cfs @ 12.16 hrs, Volume= 4,295 cf, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 25 Year, 24 Hour Storm Rainfall=6.50"

Area (sf)	CN	Description
14,691	73	Woods, Fair, HSG C
14,691		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0600	0.19		**Sheet Flow, Landscaped** Grass: Dense n= 0.240 P2= 3.50"
1.7	253	0.0260	2.42		**Shallow Concentrated Flow, Grassed waterway** Grassed Waterway Kv= 15.0 fps
10.5	353	Total			

Subcatchment Post 2H: Post 2H



Summary for Subcatchment Post 3A: Post 3A

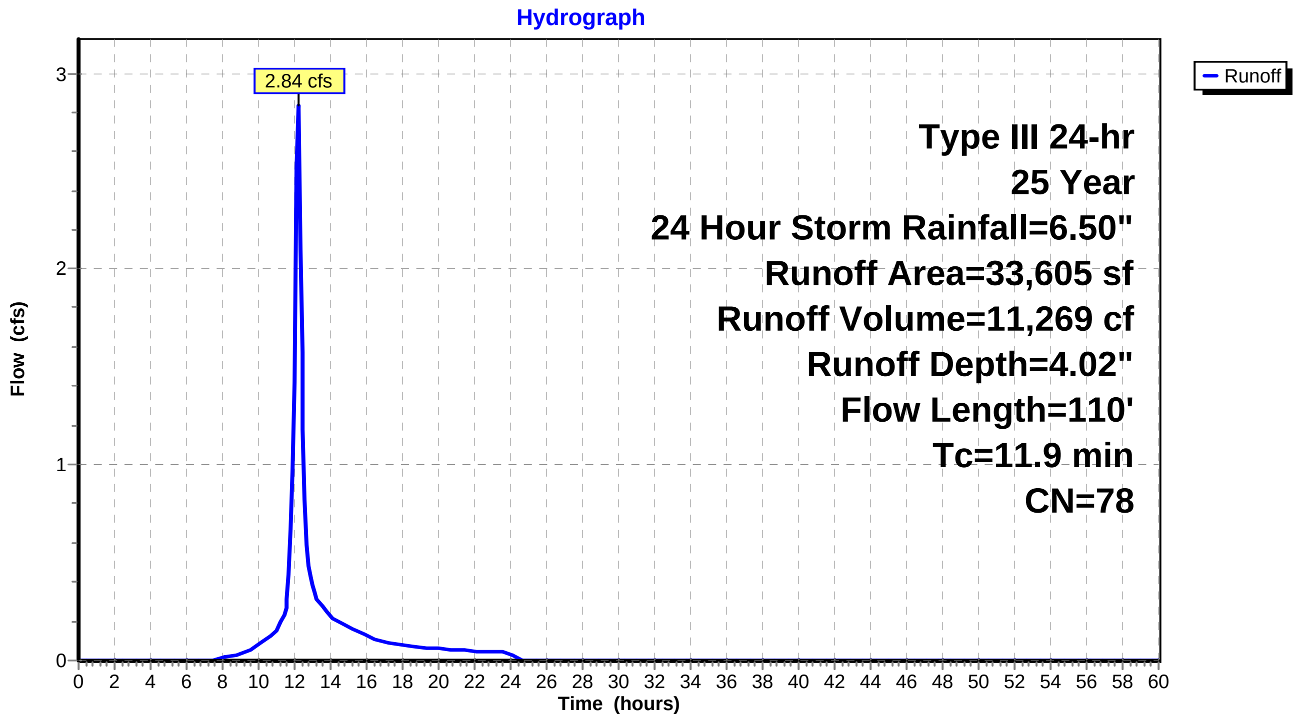
Runoff = 2.84 cfs @ 12.18 hrs, Volume= 11,269 cf, Depth= 4.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 25 Year, 24 Hour Storm Rainfall=6.50"

Area (sf)	CN	Description
3,842	98	Paved parking, HSG C
20,173	73	Woods, Fair, HSG C
9,590	79	50-75% Grass cover, Fair, HSG C
33,605	78	Weighted Average
29,763		88.57% Pervious Area
3,842		11.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	67	0.0600	0.25		**Sheet Flow, Landscaped** Grass: Short n= 0.150 P2= 3.50"
7.5	43	0.0460	0.10		**Sheet Flow, Wooded** Woods: Light underbrush n= 0.400 P2= 3.50"
11.9	110	Total			

Subcatchment Post 3A: Post 3A



Summary for Subcatchment Post 3B: Post 3B

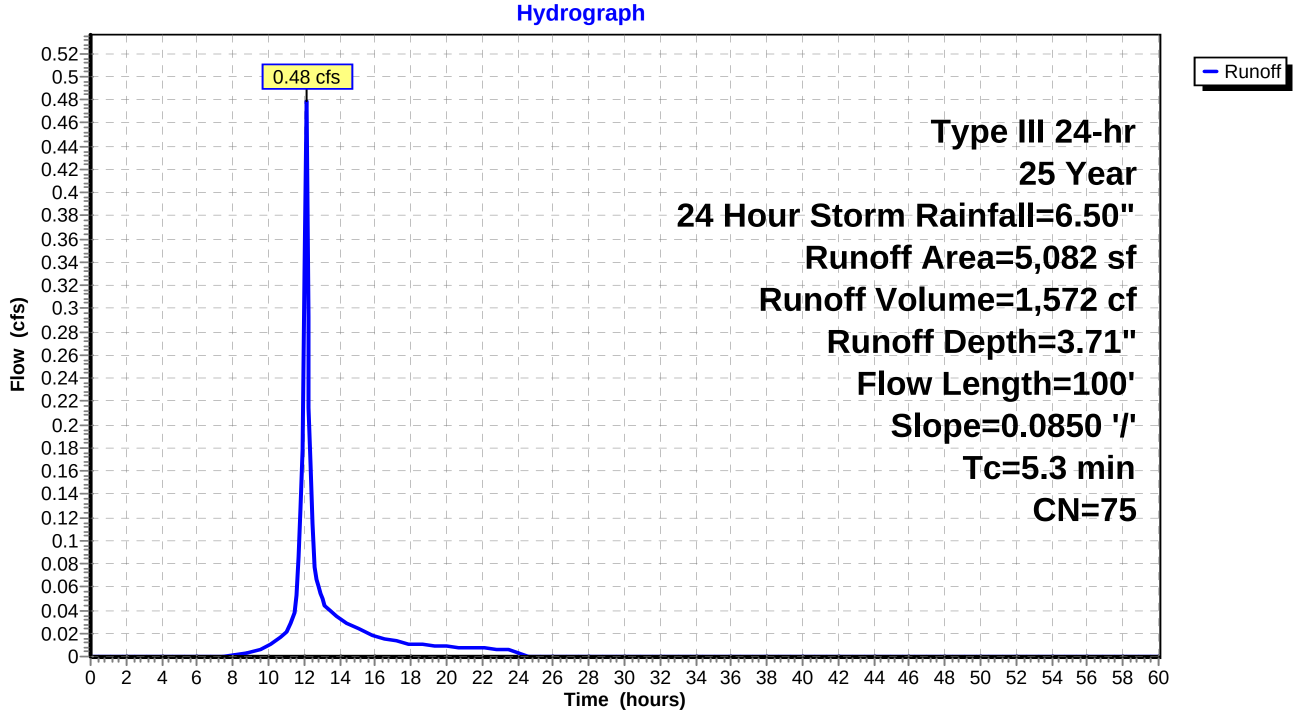
Runoff = 0.48 cfs @ 12.09 hrs, Volume= 1,572 cf, Depth= 3.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 25 Year, 24 Hour Storm Rainfall=6.50"

Area (sf)	CN	Description
3,044	73	Woods, Fair, HSG C
2,038	79	50-75% Grass cover, Fair, HSG C
5,082	75	Weighted Average
5,082		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	100	0.0850	0.32		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"

Subcatchment Post 3B: Post 3B

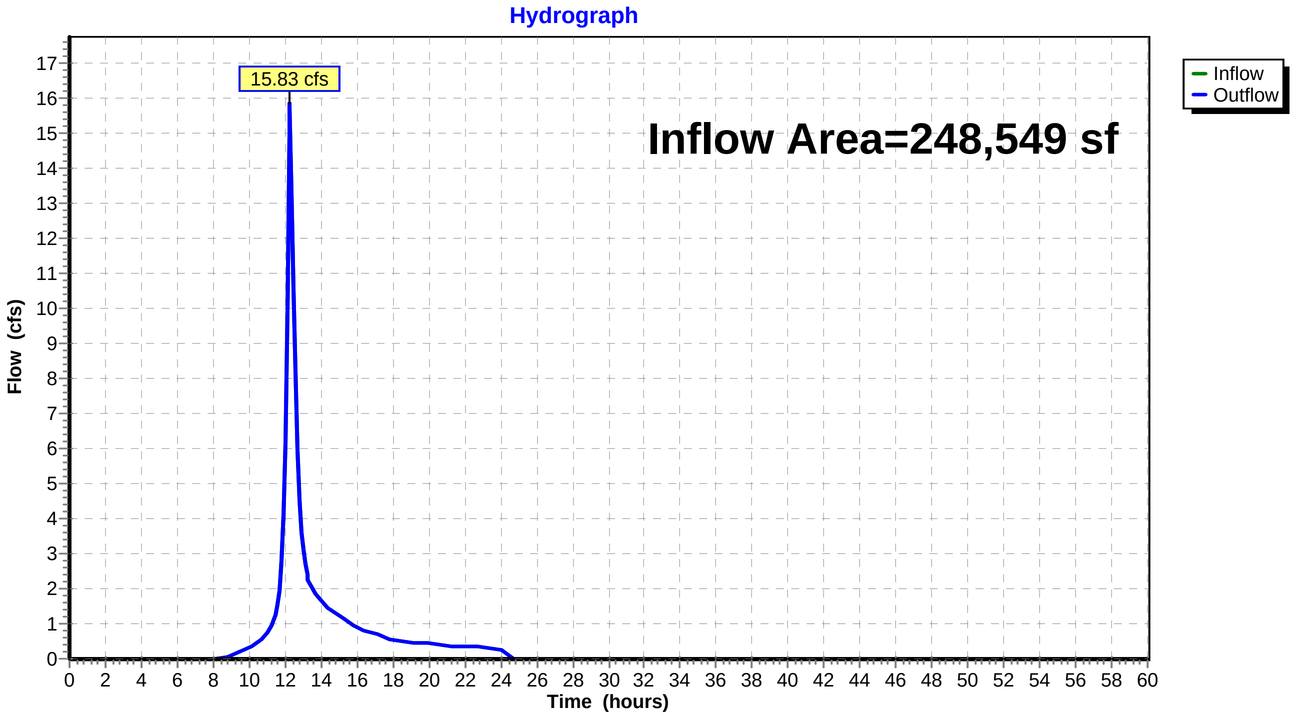


Summary for Reach DP1: Design Point 1

Inflow Area = 248,549 sf, 0.00% Impervious, Inflow Depth = 3.51" for 25 Year, 24 Hour Storm event
Inflow = 15.83 cfs @ 12.27 hrs, Volume= 72,657 cf
Outflow = 15.83 cfs @ 12.27 hrs, Volume= 72,657 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3

Reach DP1: Design Point 1

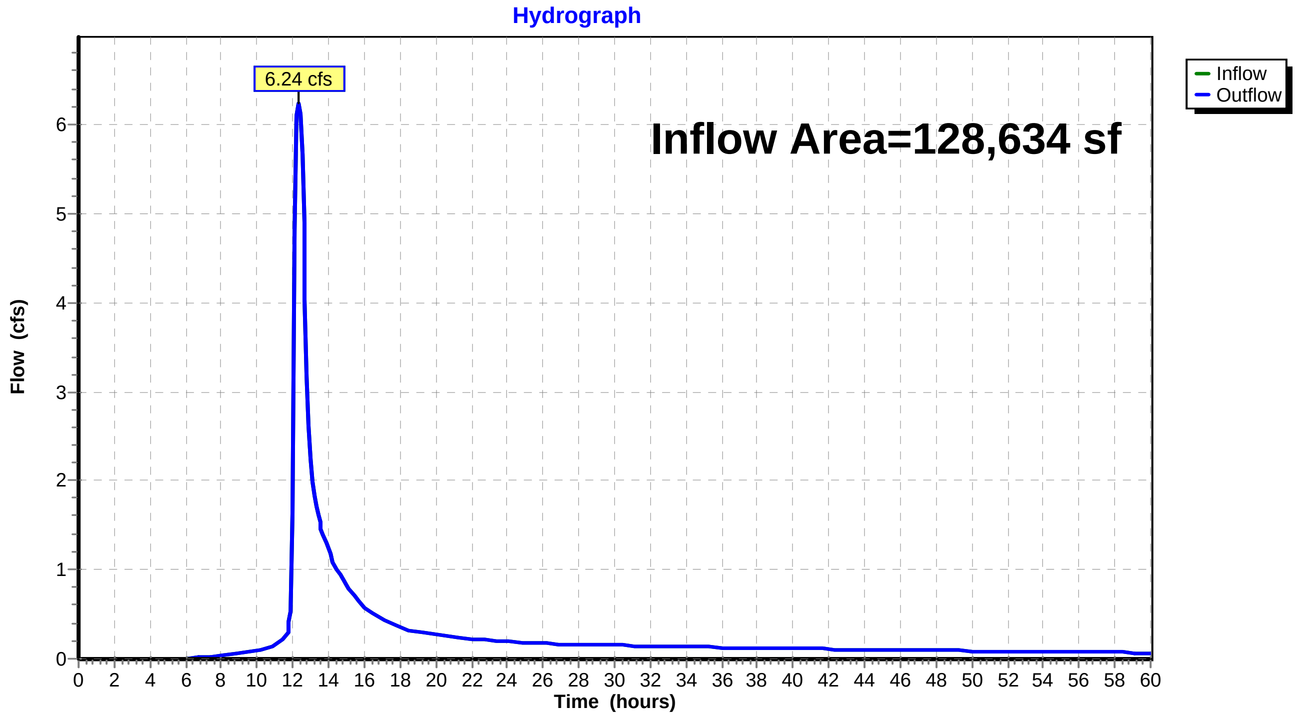


Summary for Reach DP2: Design Point 2

Inflow Area = 128,634 sf, 51.86% Impervious, Inflow Depth > 5.01" for 25 Year, 24 Hour Storm event
Inflow = 6.24 cfs @ 12.30 hrs, Volume= 53,689 cf
Outflow = 6.24 cfs @ 12.30 hrs, Volume= 53,689 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3

Reach DP2: Design Point 2

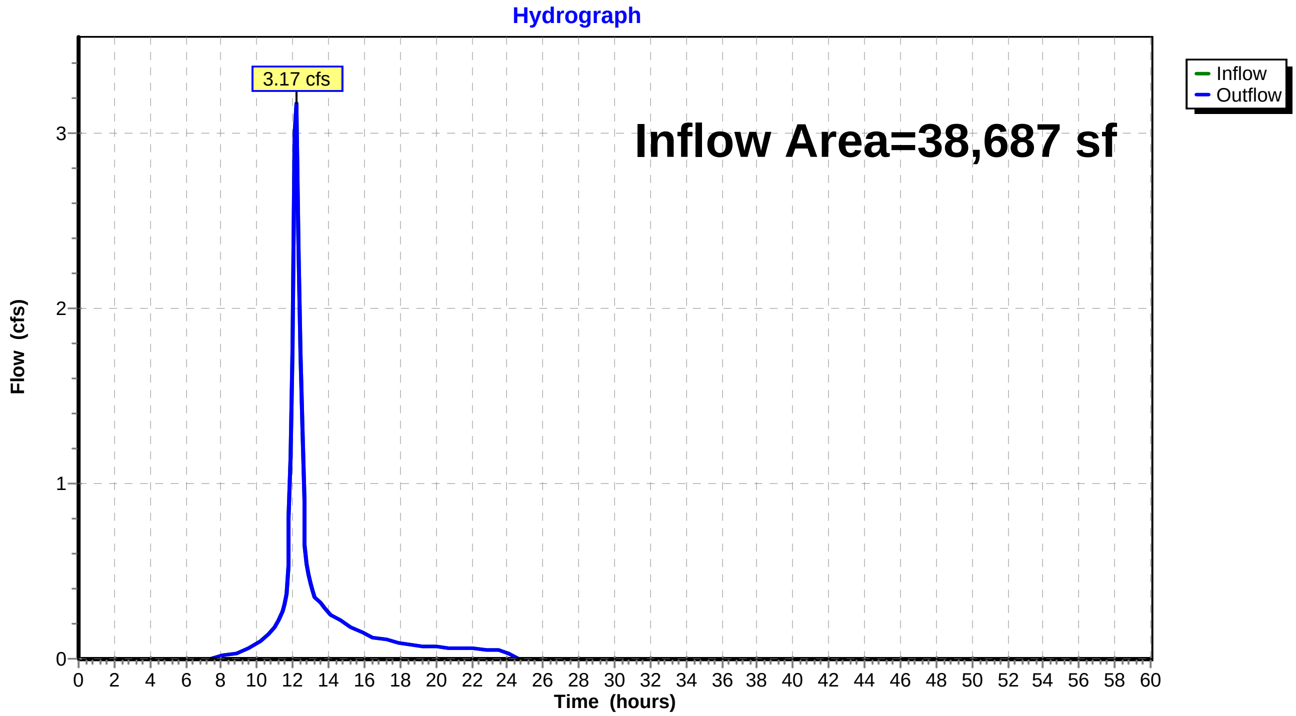


Summary for Reach DP3: Design Point 3

Inflow Area = 38,687 sf, 9.93% Impervious, Inflow Depth = 3.98" for 25 Year, 24 Hour Storm event
Inflow = 3.17 cfs @ 12.16 hrs, Volume= 12,841 cf
Outflow = 3.17 cfs @ 12.16 hrs, Volume= 12,841 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3

Reach DP3: Design Point 3



Summary for Pond F-1: Sand Filter

Inflow Area = 86,352 sf, 71.03% Impervious, Inflow Depth > 5.17" for 25 Year, 24 Hour Storm event
Inflow = 6.68 cfs @ 12.06 hrs, Volume= 37,218 cf
Outflow = 4.92 cfs @ 12.25 hrs, Volume= 37,007 cf, Atten= 26%, Lag= 11.2 min
Primary = 4.92 cfs @ 12.25 hrs, Volume= 37,007 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3
Peak Elev= 387.43' @ 12.23 hrs Surf.Area= 3,383 sf Storage= 8,036 cf

Plug-Flow detention time= 316.5 min calculated for 37,007 cf (99% of inflow)
Center-of-Mass det. time= 302.4 min (1,350.9 - 1,048.5)

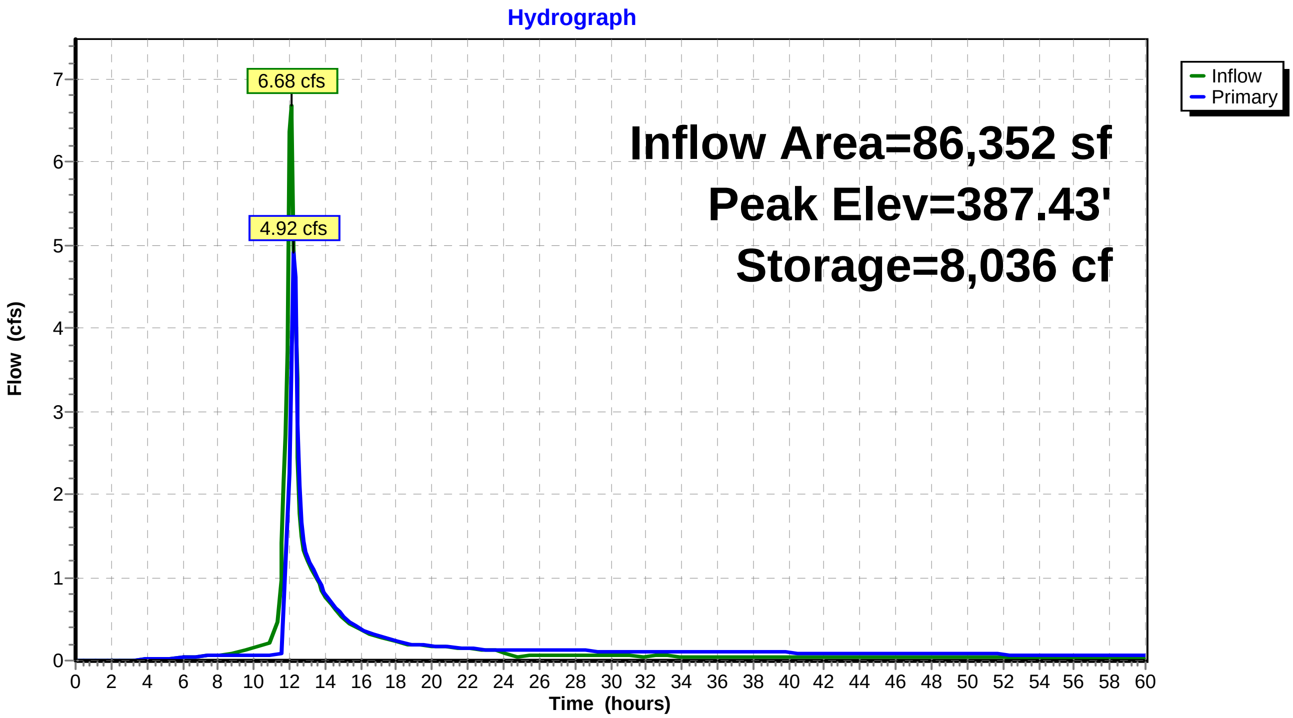
Volume	Invert	Avail.Storage	Storage Description
#1	384.00'	10,072 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
384.00	1,386	0	0
385.00	1,903	1,645	1,645
386.00	2,483	2,193	3,838
387.00	3,135	2,809	6,647
388.00	3,716	3,426	10,072

Device	Routing	Invert	Outlet Devices
#1	Primary	381.50'	**10.0" Round Culvert** L= 38.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 381.50' / 377.00' S= 0.1184 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf
#2	Device 1	384.00'	**1.750 in/hr Sand Filter Bed over Surface area**
#3	Device 1	387.00'	**24.0" x 24.0" Horiz. Overflow Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.86 cfs @ 12.25 hrs HW=387.41' TW=379.44' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 4.86 cfs @ 8.91 fps)
  ├─**2=Sand Filter Bed** (Passes < 0.14 cfs potential flow)
  └─**3=Overflow Grate** (Passes < 6.75 cfs potential flow)

Pond F-1: Sand Filter



Stage-Area-Storage for Pond F-1: Sand Filter

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
384.00	1,386	0	386.65	2,907	5,589
384.05	1,412	70	386.70	2,939	5,735
384.10	1,438	141	386.75	2,972	5,883
384.15	1,464	214	386.80	3,005	6,033
384.20	1,489	288	386.85	3,037	6,184
384.25	1,515	363	386.90	3,070	6,336
384.30	1,541	439	386.95	3,102	6,491
384.35	1,567	517	387.00	3,135	6,647
384.40	1,593	596	387.05	3,164	6,804
384.45	1,619	676	387.10	3,193	6,963
384.50	1,645	758	387.15	3,222	7,123
384.55	1,670	840	387.20	3,251	7,285
384.60	1,696	925	387.25	3,280	7,448
384.65	1,722	1,010	387.30	3,309	7,613
384.70	1,748	1,097	387.35	3,338	7,779
384.75	1,774	1,185	387.40	3,367	7,947
384.80	1,800	1,274	387.45	3,396	8,116
384.85	1,825	1,365	387.50	3,426	8,287
384.90	1,851	1,457	387.55	3,455	8,459
384.95	1,877	1,550	387.60	3,484	8,632
385.00	1,903	1,645	387.65	3,513	8,807
385.05	1,932	1,740	387.70	3,542	8,983
385.10	1,961	1,838	387.75	3,571	9,161
385.15	1,990	1,936	387.80	3,600	9,340
385.20	2,019	2,037	387.85	3,629	9,521
385.25	2,048	2,138	387.90	3,658	9,703
385.30	2,077	2,242	387.95	3,687	9,887
385.35	2,106	2,346	388.00	**3,716**	**10,072**
385.40	2,135	2,452			
385.45	2,164	2,560			
385.50	2,193	2,669			
385.55	2,222	2,779			
385.60	2,251	2,891			
385.65	2,280	3,004			
385.70	2,309	3,119			
385.75	2,338	3,235			
385.80	2,367	3,353			
385.85	2,396	3,472			
385.90	2,425	3,592			
385.95	2,454	3,714			
386.00	2,483	3,838			
386.05	2,516	3,962			
386.10	2,548	4,089			
386.15	2,581	4,217			
386.20	2,613	4,347			
386.25	2,646	4,479			
386.30	2,679	4,612			
386.35	2,711	4,746			
386.40	2,744	4,883			
386.45	2,776	5,021			
386.50	2,809	5,161			
386.55	2,842	5,302			
386.60	2,874	5,445			

Summary for Pond FS: Flow Splitter

Inflow Area =	64,432 sf,	86.80% Impervious,	Inflow Depth = 5.95"	for 25 Year, 24 Hour Storm event
Inflow =	8.41 cfs @	12.01 hrs, Volume=	31,943 cf	
Outflow =	8.41 cfs @	12.01 hrs, Volume=	31,943 cf, Atten= 0%, Lag= 0.0 min	
Primary =	4.73 cfs @	12.01 hrs, Volume=	29,207 cf	
Secondary =	3.68 cfs @	12.01 hrs, Volume=	2,736 cf	

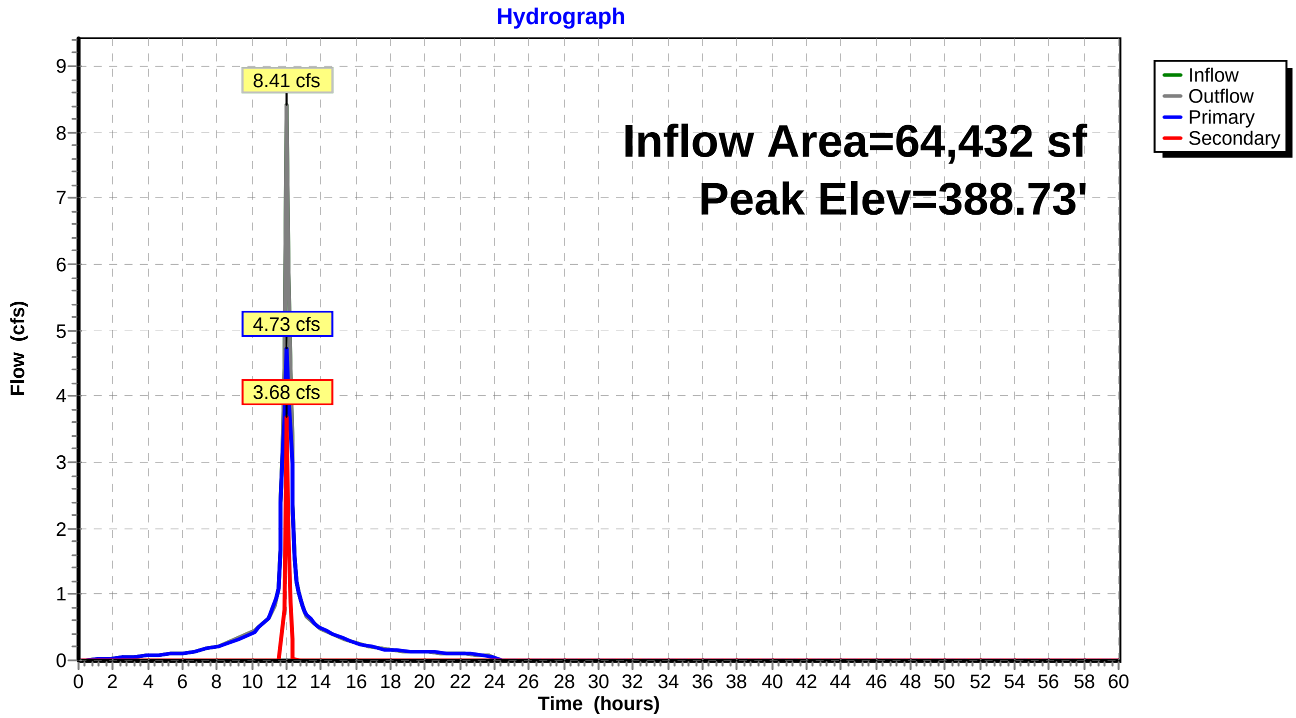
Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3
Peak Elev= 388.73' @ 12.02 hrs
Flood Elev= 392.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	386.00'	**15.0" Round Culvert to Sed Basin** L= 20.0' Ke= 0.900 Inlet / Outlet Invert= 386.00' / 384.00' S= 0.1000 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Secondary	387.80'	**24.0" Round Culvert** L= 106.0' Ke= 0.900 Inlet / Outlet Invert= 387.80' / 381.00' S= 0.0642 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=4.66 cfs @ 12.01 hrs HW=388.70' TW=387.70' (Dynamic Tailwater)
└─**1=Culvert to Sed Basin** (Inlet Controls 4.66 cfs @ 3.80 fps)

Secondary OutFlow Max=3.41 cfs @ 12.01 hrs HW=388.69' TW=378.94' (Dynamic Tailwater)
└─**2=Culvert** (Inlet Controls 3.41 cfs @ 2.53 fps)

Pond FS: Flow Splitter



Stage-Area-Storage for Pond FS: Flow Splitter

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
386.00	**0**	388.12	0	390.24	0
386.04	0	388.16	0	390.28	0
386.08	0	388.20	0	390.32	0
386.12	0	388.24	0	390.36	0
386.16	0	388.28	0	390.40	0
386.20	0	388.32	0	390.44	0
386.24	0	388.36	0	390.48	0
386.28	0	388.40	0	390.52	0
386.32	0	388.44	0	390.56	0
386.36	0	388.48	0	390.60	0
386.40	0	388.52	0	390.64	0
386.44	0	388.56	0	390.68	0
386.48	0	388.60	0	390.72	0
386.52	0	388.64	0	390.76	0
386.56	0	388.68	0	390.80	0
386.60	0	388.72	0	390.84	0
386.64	0	388.76	0	390.88	0
386.68	0	388.80	0	390.92	0
386.72	0	388.84	0	390.96	0
386.76	0	388.88	0	391.00	0
386.80	0	388.92	0	391.04	0
386.84	0	388.96	0	391.08	0
386.88	0	389.00	0	391.12	0
386.92	0	389.04	0	391.16	0
386.96	0	389.08	0	391.20	0
387.00	0	389.12	0	391.24	0
387.04	0	389.16	0	391.28	0
387.08	0	389.20	0	391.32	0
387.12	0	389.24	0	391.36	0
387.16	0	389.28	0	391.40	0
387.20	0	389.32	0	391.44	0
387.24	0	389.36	0	391.48	0
387.28	0	389.40	0	391.52	0
387.32	0	389.44	0	391.56	0
387.36	0	389.48	0	391.60	0
387.40	0	389.52	0	391.64	0
387.44	0	389.56	0	391.68	0
387.48	0	389.60	0	391.72	0
387.52	0	389.64	0	391.76	0
387.56	0	389.68	0	391.80	0
387.60	0	389.72	0	391.84	0
387.64	0	389.76	0	391.88	0
387.68	0	389.80	0	391.92	0
387.72	0	389.84	0	391.96	0
387.76	0	389.88	0	392.00	0
387.80	0	389.92	0		
387.84	0	389.96	0		
387.88	0	390.00	0		
387.92	0	390.04	0		
387.96	0	390.08	0		
388.00	0	390.12	0		
388.04	0	390.16	0		
388.08	0	390.20	0		

Summary for Pond SB: Sedimentation Basin

Inflow Area = 86,352 sf, 71.03% Impervious, Inflow Depth = 5.27" for 25 Year, 24 Hour Storm event
Inflow = 7.27 cfs @ 12.02 hrs, Volume= 37,951 cf
Outflow = 6.68 cfs @ 12.06 hrs, Volume= 37,218 cf, Atten= 8%, Lag= 2.6 min
Primary = 6.68 cfs @ 12.06 hrs, Volume= 37,218 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3
Peak Elev= 387.72' @ 12.09 hrs Surf.Area= 3,355 sf Storage= 8,390 cf

Plug-Flow detention time= 295.4 min calculated for 37,156 cf (98% of inflow)
Center-of-Mass det. time= 286.3 min (1,048.5 - 762.2)

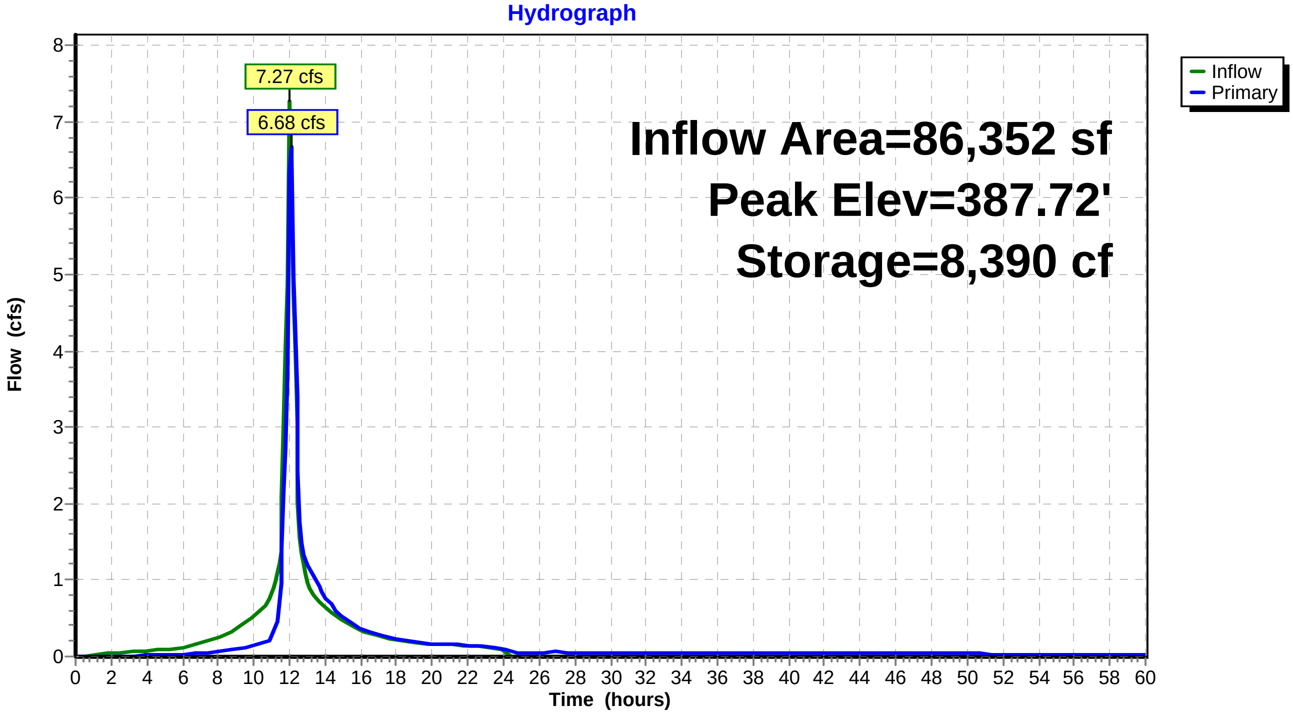
Volume	Invert	Avail.Storage	Storage Description
#1	384.00'	9,361 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
384.00	1,219	0	0
385.00	1,730	1,475	1,475
386.00	2,313	2,022	3,496
387.00	2,951	2,632	6,128
388.00	3,514	3,233	9,361

Device	Routing	Invert	Outlet Devices
#1	Primary	382.00'	**10.0" Round Culvert** L= 38.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 382.00' / 377.00' S= 0.1316 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf
#2	Device 1	384.00'	**0.4" Vert. Standpipe Perforations X 4.00 columns** X 12 rows with 3.0" cc spacing C= 0.600
#3	Device 1	387.00'	**12.0" Horiz. Standpipe Riser Opening** C= 0.600 Limited to weir flow at low heads
#4	Primary	387.50'	**15.0' long Overflow Spillway** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=6.49 cfs @ 12.06 hrs HW=387.71' TW=387.11' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.61 cfs @ 2.94 fps)
2=Standpipe Perforations (Passes < 0.16 cfs potential flow)
3=Standpipe Riser Opening (Passes < 2.93 cfs potential flow)
4=Overflow Spillway (Weir Controls 4.89 cfs @ 1.57 fps)

Pond SB: Sedimentation Basin



Stage-Area-Storage for Pond SB: Sedimentation Basin

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
384.00	1,219	0
384.05	1,245	62
384.10	1,270	124
384.15	1,296	189
384.20	1,321	254
384.25	1,347	321
384.30	1,372	389
384.35	1,398	458
384.40	1,423	528
384.45	1,449	600
384.50	1,475	673
384.55	1,500	748
384.60	1,526	823
384.65	1,551	900
384.70	1,577	978
384.75	1,602	1,058
384.80	1,628	1,139
384.85	1,653	1,221
384.90	1,679	1,304
384.95	1,704	1,389
385.00	1,730	1,475
385.05	1,759	1,562
385.10	1,788	1,650
385.15	1,817	1,741
385.20	1,847	1,832
385.25	1,876	1,925
385.30	1,905	2,020
385.35	1,934	2,116
385.40	1,963	2,213
385.45	1,992	2,312
385.50	2,022	2,412
385.55	2,051	2,514
385.60	2,080	2,617
385.65	2,109	2,722
385.70	2,138	2,828
385.75	2,167	2,936
385.80	2,196	3,045
385.85	2,226	3,156
385.90	2,255	3,268
385.95	2,284	3,381
386.00	2,313	3,496
386.05	2,345	3,612
386.10	2,377	3,730
386.15	2,409	3,850
386.20	2,441	3,971
386.25	2,473	4,094
386.30	2,504	4,219
386.35	2,536	4,345
386.40	2,568	4,472
386.45	2,600	4,601
386.50	2,632	4,732
386.55	2,664	4,865
386.60	2,696	4,999
386.65	2,728	5,134
386.70	2,760	5,271
386.75	2,792	5,410
386.80	2,823	5,551
386.85	2,855	5,693
386.90	2,887	5,836
386.95	2,919	5,981
387.00	2,951	6,128
387.05	2,979	6,276
387.10	3,007	6,426
387.15	3,035	6,577
387.20	3,064	6,729
387.25	3,092	6,883
387.30	3,120	7,039
387.35	3,148	7,195
387.40	3,176	7,353
387.45	3,204	7,513
387.50	3,233	7,674
387.55	3,261	7,836
387.60	3,289	8,000
387.65	3,317	8,165
387.70	3,345	8,332
387.75	3,373	8,500
387.80	3,401	8,669
387.85	3,430	8,840
387.90	3,458	9,012
387.95	3,486	9,186
388.00	**3,514**	**9,361**

Summary for Pond W-4: W-4 Pocket Wetland

Inflow Area = 113,943 sf, 58.55% Impervious, Inflow Depth > 5.31" for 25 Year, 24 Hour Storm event
Inflow = 8.42 cfs @ 12.10 hrs, Volume= 50,407 cf
Outflow = 5.56 cfs @ 12.37 hrs, Volume= 49,394 cf, Atten= 34%, Lag= 16.1 min
Primary = 5.56 cfs @ 12.37 hrs, Volume= 49,394 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3
Peak Elev= 379.49' @ 12.37 hrs Surf.Area= 6,838 sf Storage= 8,657 cf

Plug-Flow detention time= 152.2 min calculated for 49,394 cf (98% of inflow)
Center-of-Mass det. time= 105.9 min (1,304.1 - 1,198.2)

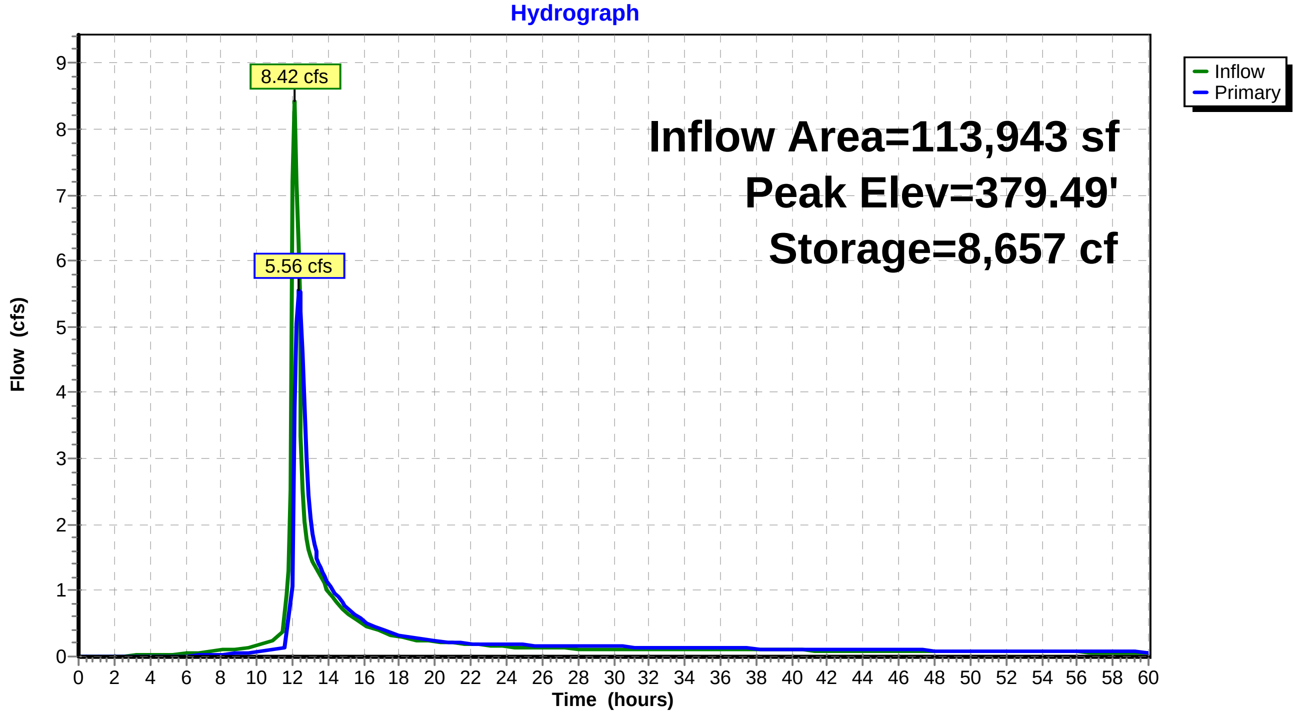
Volume	Invert	Avail.Storage	Storage Description
#1	378.00'	20,808 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
378.00	4,855	0	0
379.00	6,074	5,465	5,465
380.00	7,618	6,846	12,311
381.00	9,377	8,498	20,808

Device	Routing	Invert	Outlet Devices
#1	Primary	373.00'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 373.00' / 372.60' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	378.00'	**3.0" Vert. Low Flow Orifice** C= 0.600
#3	Device 1	378.70'	**36.0" W x 6.0" H Vert. High Flow Orifice (36Wx6H)** C= 0.600

Primary OutFlow Max=5.52 cfs @ 12.37 hrs HW=379.49' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 5.52 cfs of 9.21 cfs potential flow)
  ├─**2=Low Flow Orifice** (Orifice Controls 0.28 cfs @ 5.62 fps)
  └─**3=High Flow Orifice (36Wx6H)** (Orifice Controls 5.24 cfs @ 3.49 fps)

Pond W-4: W-4 Pocket Wetland



Stage-Area-Storage for Pond W-4: W-4 Pocket Wetland

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
378.00	4,855	0	380.65	8,761	17,634
378.05	4,916	244	380.70	8,849	18,074
378.10	4,977	492	380.75	8,937	18,519
378.15	5,038	742	380.80	9,025	18,968
378.20	5,099	995	380.85	9,113	19,421
378.25	5,160	1,252	380.90	9,201	19,879
378.30	5,221	1,511	380.95	9,289	20,341
378.35	5,282	1,774	381.00	**9,377**	**20,808**
378.40	5,343	2,040			
378.45	5,404	2,308			
378.50	5,465	2,580			
378.55	5,525	2,855			
378.60	5,586	3,132			
378.65	5,647	3,413			
378.70	5,708	3,697			
378.75	5,769	3,984			
378.80	5,830	4,274			
378.85	5,891	4,567			
378.90	5,952	4,863			
378.95	6,013	5,162			
379.00	6,074	5,465			
379.05	6,151	5,770			
379.10	6,228	6,080			
379.15	6,306	6,393			
379.20	6,383	6,710			
379.25	6,460	7,031			
379.30	6,537	7,356			
379.35	6,614	7,685			
379.40	6,692	8,018			
379.45	6,769	8,354			
379.50	6,846	8,695			
379.55	6,923	9,039			
379.60	7,000	9,387			
379.65	7,078	9,739			
379.70	7,155	10,095			
379.75	7,232	10,454			
379.80	7,309	10,818			
379.85	7,386	11,185			
379.90	7,464	11,556			
379.95	7,541	11,932			
380.00	7,618	12,311			
380.05	7,706	12,694			
380.10	7,794	13,081			
380.15	7,882	13,473			
380.20	7,970	13,869			
380.25	8,058	14,270			
380.30	8,146	14,675			
380.35	8,234	15,085			
380.40	8,322	15,498			
380.45	8,410	15,917			
380.50	8,498	16,339			
380.55	8,585	16,766			
380.60	8,673	17,198			

Time span=0.00-60.00 hrs, dt=0.10 hrs, 601 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment Post 2E: Post 2E Runoff Area=13,510 sf 40.08% Impervious Runoff Depth=5.96"
Flow Length=130' Tc=1.3 min CN=87 Runoff=2.11 cfs 6,714 cf

Subcatchment Post 1: DA 1 Runoff Area=248,549 sf 0.00% Impervious Runoff Depth=4.37"
Flow Length=605' Tc=18.8 min CN=73 Runoff=19.72 cfs 90,505 cf

Subcatchment Post 2A: Post 2A Runoff Area=4,907 sf 100.00% Impervious Runoff Depth=7.26"
Flow Length=150' Slope=0.0100 '/' Tc=1.9 min CN=98 Runoff=0.81 cfs 2,969 cf

Subcatchment Post 2B: Post 2B Runoff Area=14,630 sf 41.85% Impervious Runoff Depth=5.85"
Flow Length=346' Tc=11.0 min CN=86 Runoff=1.74 cfs 7,129 cf

Subcatchment Post 2C: Post 2C Runoff Area=44,895 sf 100.00% Impervious Runoff Depth=7.26"
Flow Length=100' Slope=0.1350 '/' Tc=0.5 min CN=98 Runoff=7.93 cfs 27,163 cf

Subcatchment Post 2D: Post 2D Runoff Area=8,410 sf 0.00% Impervious Runoff Depth=5.39"
Flow Length=200' Tc=4.5 min CN=82 Runoff=1.11 cfs 3,775 cf

Subcatchment Post 2F: Post 2F Runoff Area=4,258 sf 100.00% Impervious Runoff Depth=7.26"
Flow Length=119' Slope=0.1687 '/' Tc=0.1 min CN=98 Runoff=0.76 cfs 2,576 cf

Subcatchment Post 2G: Post 2G Runoff Area=23,333 sf 4.77% Impervious Runoff Depth=5.27"
Flow Length=112' Tc=0.9 min CN=81 Runoff=3.36 cfs 10,251 cf

Subcatchment Post 2H: Post 2H Runoff Area=14,691 sf 0.00% Impervious Runoff Depth=4.37"
Flow Length=353' Tc=10.5 min CN=73 Runoff=1.37 cfs 5,349 cf

Subcatchment Post 3A: Post 3A Runoff Area=33,605 sf 11.43% Impervious Runoff Depth=4.93"
Flow Length=110' Tc=11.9 min CN=78 Runoff=3.46 cfs 13,808 cf

Subcatchment Post 3B: Post 3B Runoff Area=5,082 sf 0.00% Impervious Runoff Depth=4.59"
Flow Length=100' Slope=0.0850 '/' Tc=5.3 min CN=75 Runoff=0.59 cfs 1,945 cf

Reach DP1: Design Point 1 Inflow=19.72 cfs 90,505 cf
Outflow=19.72 cfs 90,505 cf

Reach DP2: Design Point 2 Inflow=7.91 cfs 63,945 cf
Outflow=7.91 cfs 63,945 cf

Reach DP3: Design Point 3 Inflow=3.87 cfs 15,753 cf
Outflow=3.87 cfs 15,753 cf

Pond F-1: Sand Filter Peak Elev=387.68' Storage=8,915 cf Inflow=7.45 cfs 42,942 cf
Outflow=4.98 cfs 42,715 cf

Pond FS: Flow Splitter Peak Elev=388.87' Inflow=9.75 cfs 37,262 cf
Primary=4.99 cfs 33,195 cf Secondary=4.77 cfs 4,068 cf Outflow=9.75 cfs 37,262 cf

Pond SB: Sedimentation Basin Peak Elev=387.75' Storage=8,509 cf Inflow=8.01 cfs 43,684 cf
Outflow=7.45 cfs 42,942 cf

Pond W-4: W-4 Pocket Wetland Peak Elev=379.75' Storage=10,483 cf Inflow=13.91 cfs 59,610 cf
Outflow=6.75 cfs 58,595 cf

Total Runoff Area = 415,870 sf Runoff Volume = 172,186 cf Average Runoff Depth = 4.97"
83.04% Pervious = 345,318 sf 16.96% Impervious = 70,552 sf

Summary for Subcatchment Post 2E: Post 2E

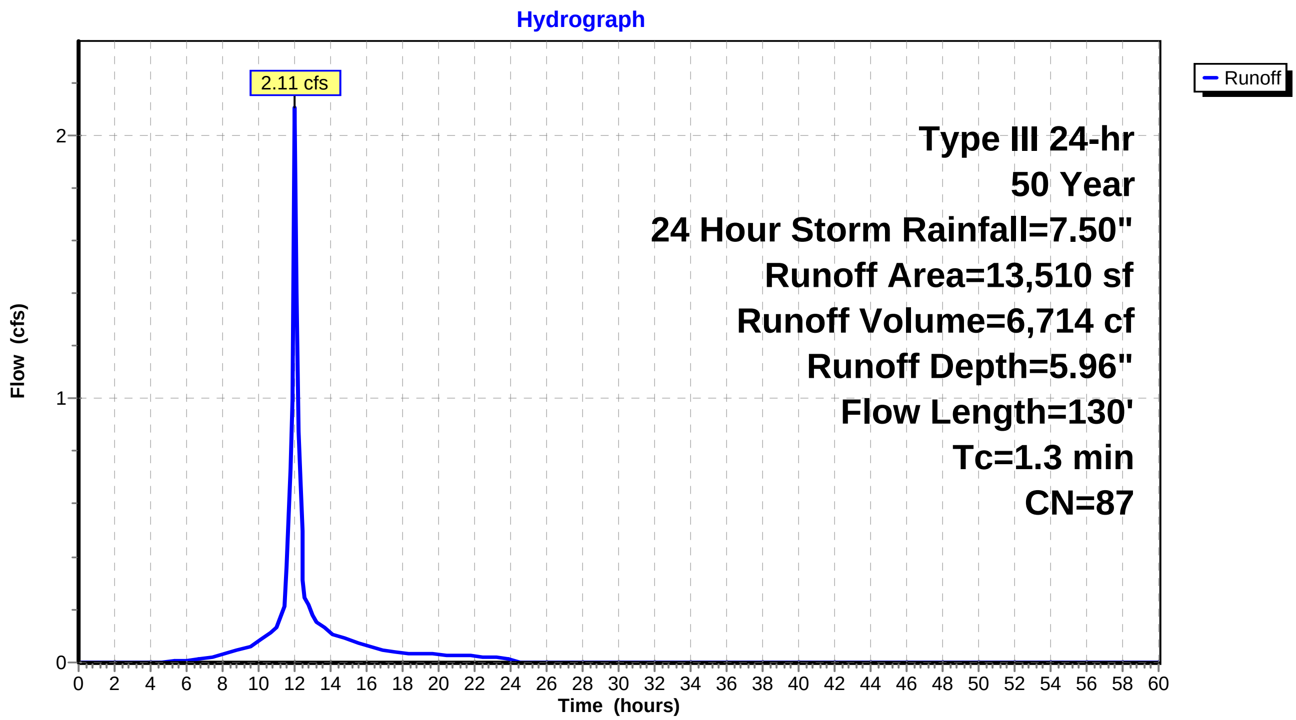
Runoff = 2.11 cfs @ 12.01 hrs, Volume= 6,714 cf, Depth= 5.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 50 Year, 24 Hour Storm Rainfall=7.50"

Area (sf)	CN	Description
5,415	98	Paved parking, HSG C
8,095	79	50-75% Grass cover, Fair, HSG C
13,510	87	Weighted Average
8,095		59.92% Pervious Area
5,415		40.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0200	1.44		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.1	30	0.3800	9.92		**Shallow Concentrated Flow, Pavement** Unpaved Kv= 16.1 fps
1.3	130	Total			

Subcatchment Post 2E: Post 2E



Summary for Subcatchment Post 1: DA 1

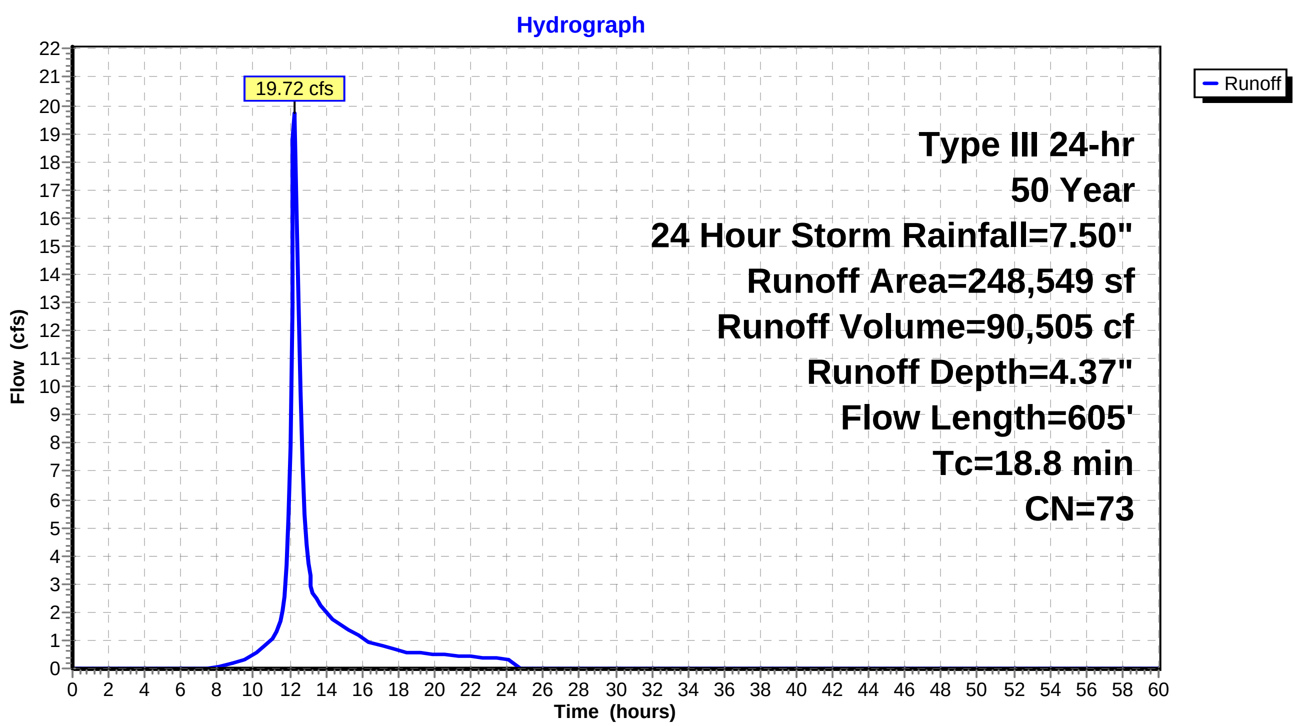
Runoff = 19.72 cfs @ 12.27 hrs, Volume= 90,505 cf, Depth= 4.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 50 Year, 24 Hour Storm Rainfall=7.50"

Area (sf)	CN	Description
159,708	73	Woods, Fair, HSG C
1,496	89	Gravel roads, HSG C
87,345	74	>75% Grass cover, Good, HSG C
248,549	73	Weighted Average
248,549		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.8	250	0.0400	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.0	105	0.0667	1.81		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.0	250	0.0760	1.38		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
18.8	605	Total			

Subcatchment Post 1: DA 1



Summary for Subcatchment Post 2A: Post 2A

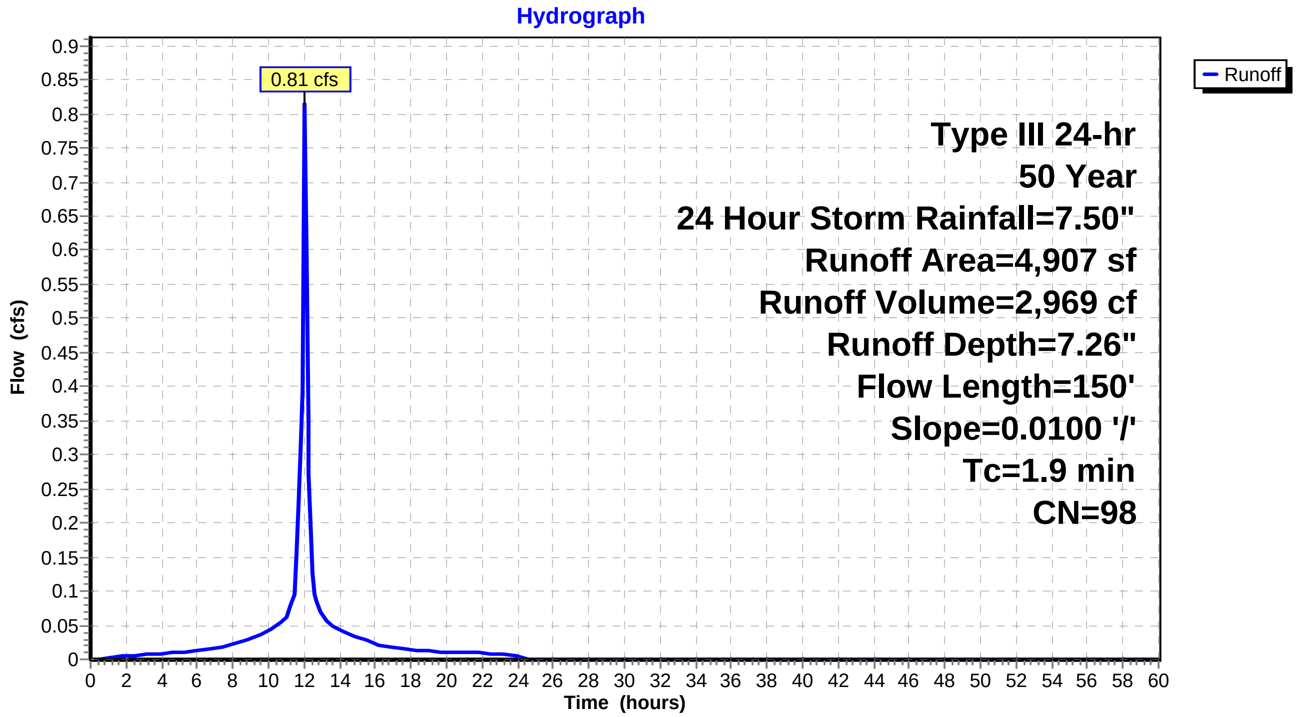
Runoff = 0.81 cfs @ 12.02 hrs, Volume= 2,969 cf, Depth= 7.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 50 Year, 24 Hour Storm Rainfall=7.50"

Area (sf)	CN	Description
4,907	98	Paved parking, HSG C
4,907		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	100	0.0100	1.09		**Sheet Flow, Pavement** Smooth surfaces n= 0.011 P2= 3.50"
0.4	50	0.0100	2.03		**Shallow Concentrated Flow, Pavement** Paved Kv= 20.3 fps
1.9	150	Total			

Subcatchment Post 2A: Post 2A



Summary for Subcatchment Post 2B: Post 2B

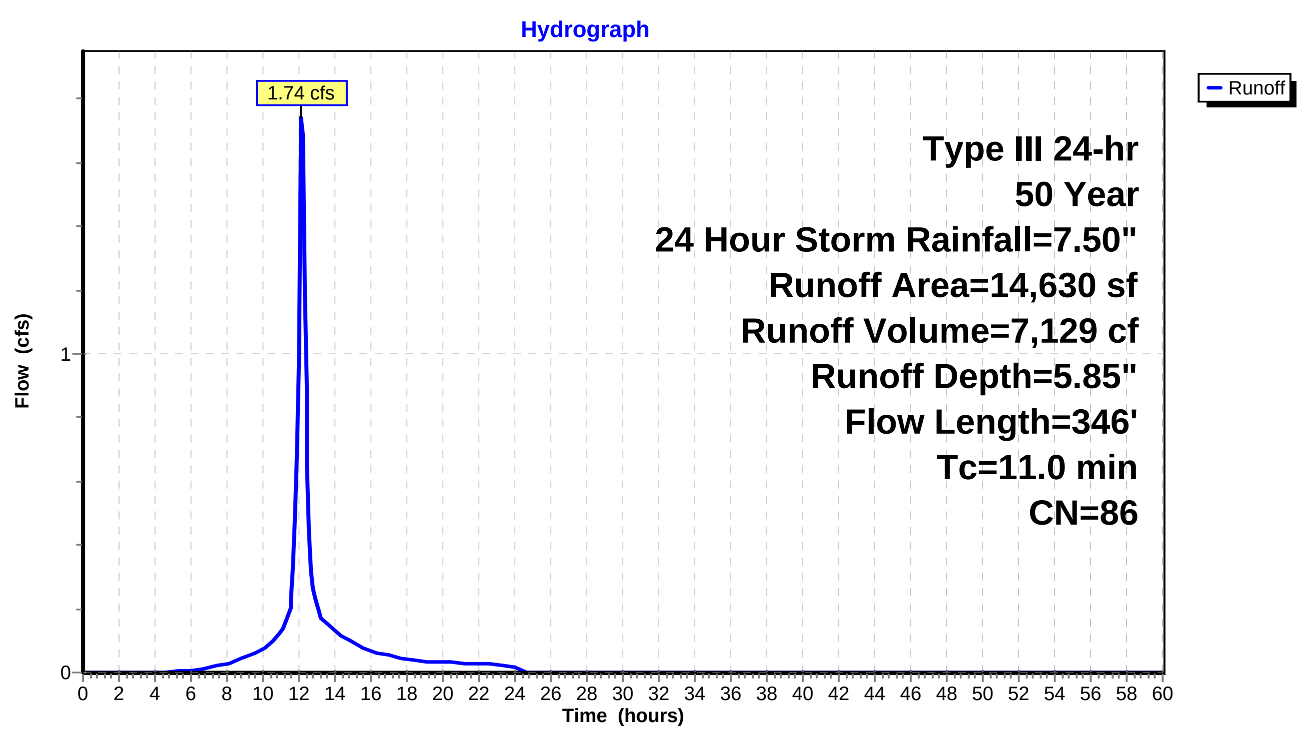
Runoff = 1.74 cfs @ 12.16 hrs, Volume= 7,129 cf, Depth= 5.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 50 Year, 24 Hour Storm Rainfall=7.50"

Area (sf)	CN	Description
6,122	98	Paved parking
6,154	74	>75% Grass cover, Good, HSG C
2,354	89	Gravel roads, HSG C
14,630	86	Weighted Average
8,508		58.15% Pervious Area
6,122		41.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	100	0.0400	0.16		**Sheet Flow, Landscaped area** Grass: Dense n= 0.240 P2= 3.50"
0.7	246	0.0100	5.90	4.63	**Pipe Channel, Pipe** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
11.0	346	Total			

Subcatchment Post 2B: Post 2B



Summary for Subcatchment Post 2C: Post 2C

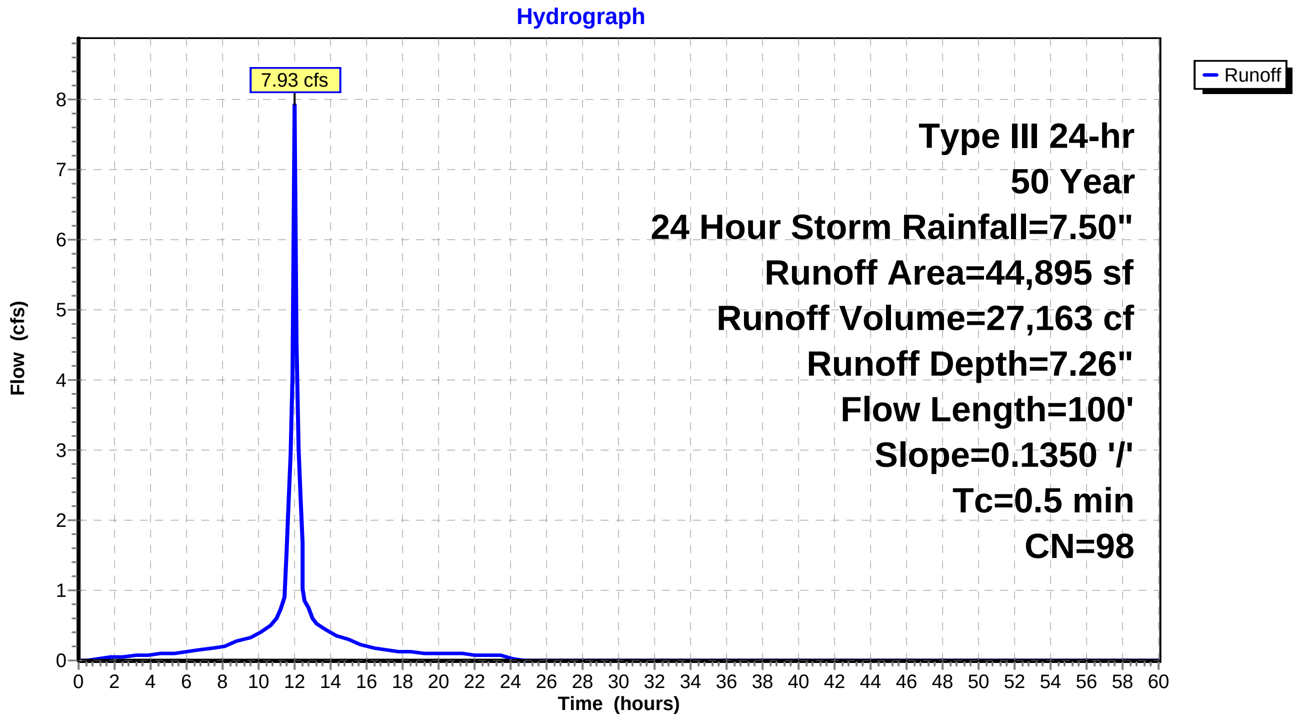
Runoff = 7.93 cfs @ 12.00 hrs, Volume= 27,163 cf, Depth= 7.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 50 Year, 24 Hour Storm Rainfall=7.50"

Area (sf)	CN	Description
44,895	98	Paved parking, HSG C
44,895		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1350	3.09		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"

Subcatchment Post 2C: Post 2C



Summary for Subcatchment Post 2D: Post 2D

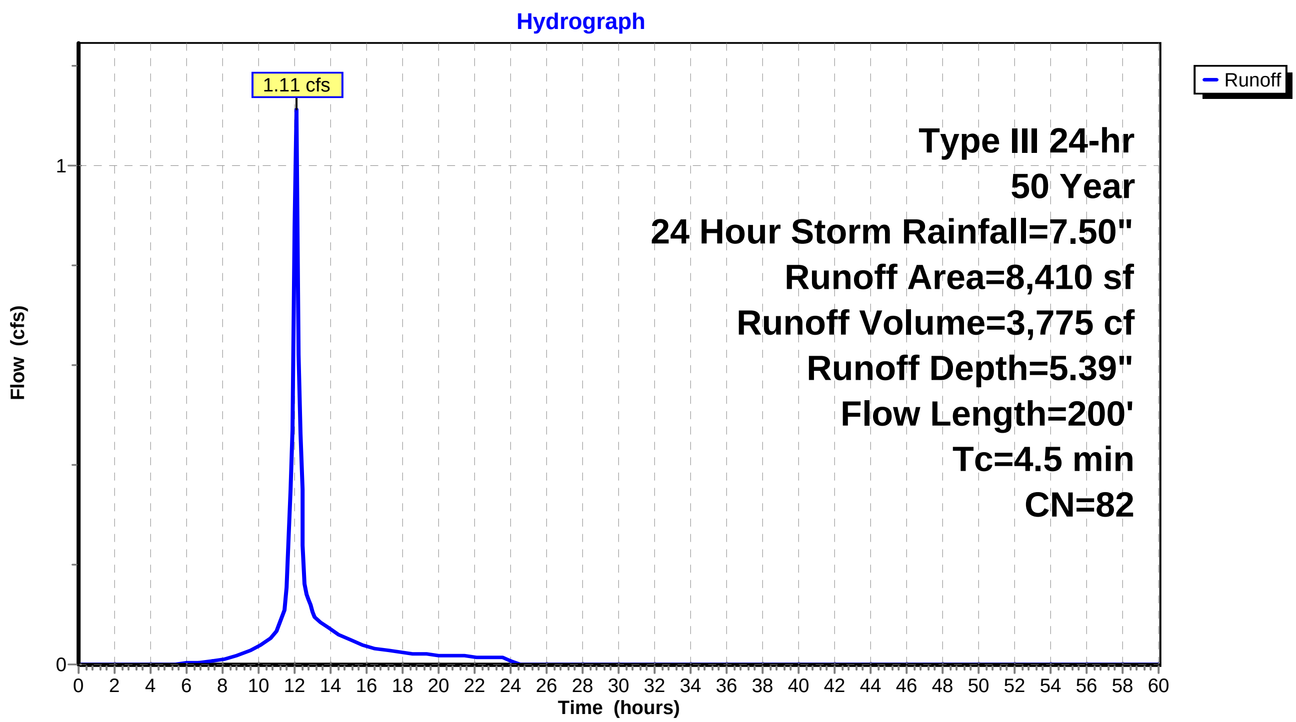
Runoff = 1.11 cfs @ 12.08 hrs, Volume= 3,775 cf, Depth= 5.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 50 Year, 24 Hour Storm Rainfall=7.50"

Area (sf)	CN	Description
6,293	79	50-75% Grass cover, Fair, HSG C
2,117	89	Gravel roads, HSG C
8,410	82	Weighted Average
8,410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	50	0.1000	0.20		**Sheet Flow, Landscaped** Grass: Dense n= 0.240 P2= 3.50"
0.4	150	0.0860	5.95		**Shallow Concentrated Flow, Maintenance Drive** Paved Kv= 20.3 fps
4.5	200	Total			

Subcatchment Post 2D: Post 2D



Summary for Subcatchment Post 2F: Post 2F

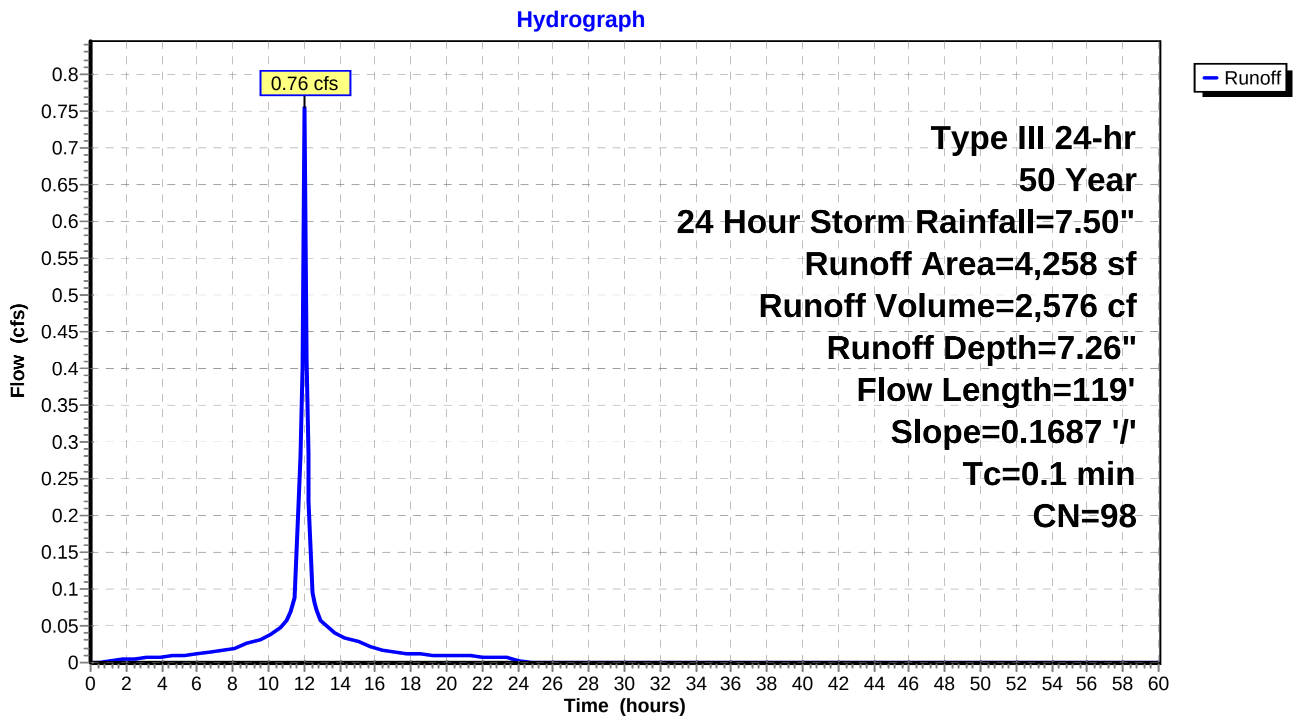
Runoff = 0.76 cfs @ 12.00 hrs, Volume= 2,576 cf, Depth= 7.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 50 Year, 24 Hour Storm Rainfall=7.50"

Area (sf)	CN	Description
4,258	98	Roofs, HSG C
4,258		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	119	0.1687	14.22	4.96	**Pipe Channel, Roof Leader** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.013 Corrugated PE, smooth interior

Subcatchment Post 2F: Post 2F



Summary for Subcatchment Post 2G: Post 2G

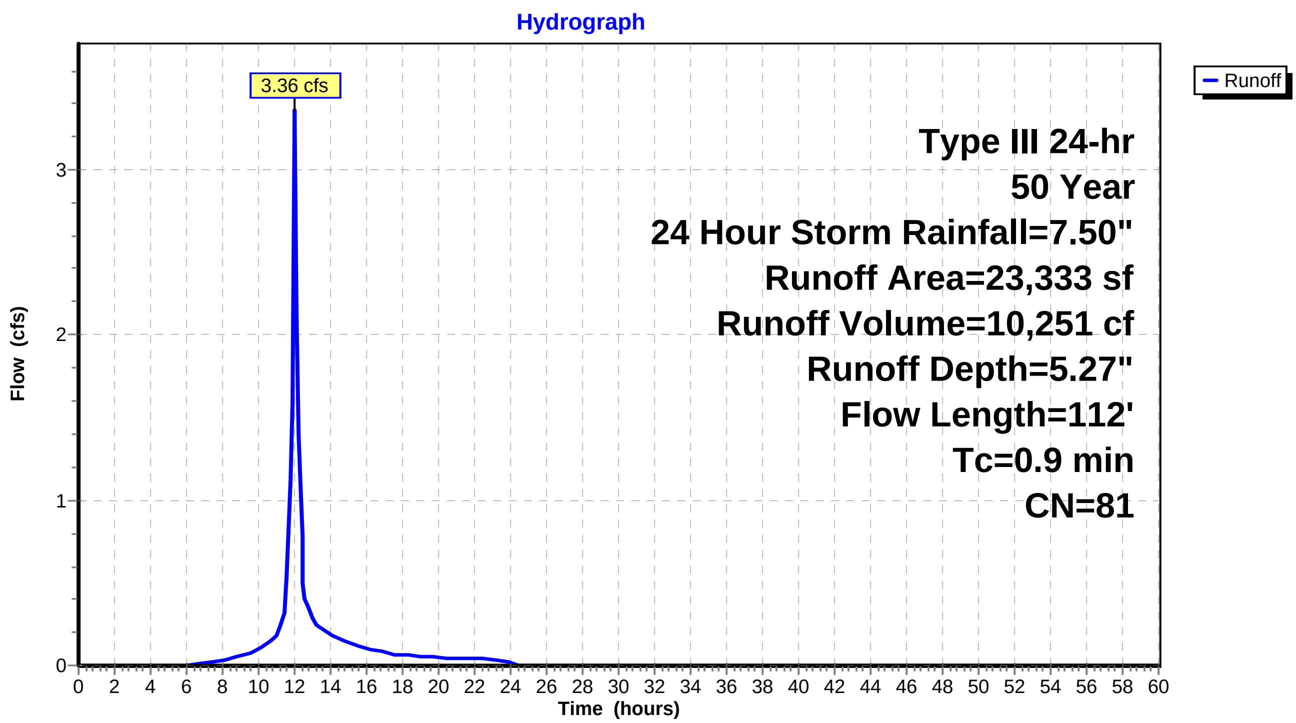
Runoff = 3.36 cfs @ 12.01 hrs, Volume= 10,251 cf, Depth= 5.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 50 Year, 24 Hour Storm Rainfall=7.50"

Area (sf)	CN	Description
1,113	98	Paved parking, HSG C
20,037	79	50-75% Grass cover, Fair, HSG C
2,183	89	Gravel roads, HSG C
23,333	81	Weighted Average
22,220		95.23% Pervious Area
1,113		4.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	80	0.0250	1.50		**Sheet Flow, Pavement** Smooth surfaces n= 0.011 P2= 3.50"
0.0	32	0.4600	10.92		**Shallow Concentrated Flow, Landscaped** Unpaved Kv= 16.1 fps
0.9	112	Total			

Subcatchment Post 2G: Post 2G



Summary for Subcatchment Post 2H: Post 2H

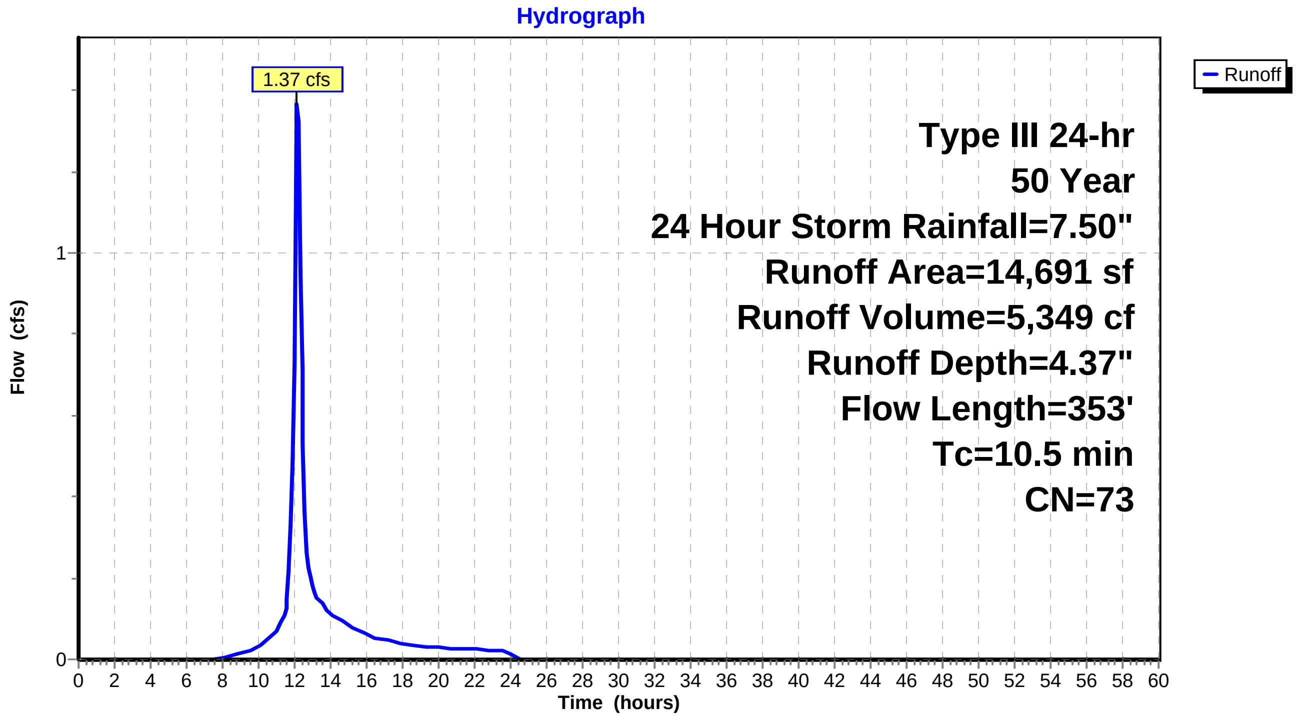
Runoff = 1.37 cfs @ 12.15 hrs, Volume= 5,349 cf, Depth= 4.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 50 Year, 24 Hour Storm Rainfall=7.50"

Area (sf)	CN	Description
14,691	73	Woods, Fair, HSG C
14,691		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0600	0.19		**Sheet Flow, Landscaped** Grass: Dense n= 0.240 P2= 3.50"
1.7	253	0.0260	2.42		**Shallow Concentrated Flow, Grassed waterway** Grassed Waterway Kv= 15.0 fps
10.5	353	Total			

Subcatchment Post 2H: Post 2H



Summary for Subcatchment Post 3A: Post 3A

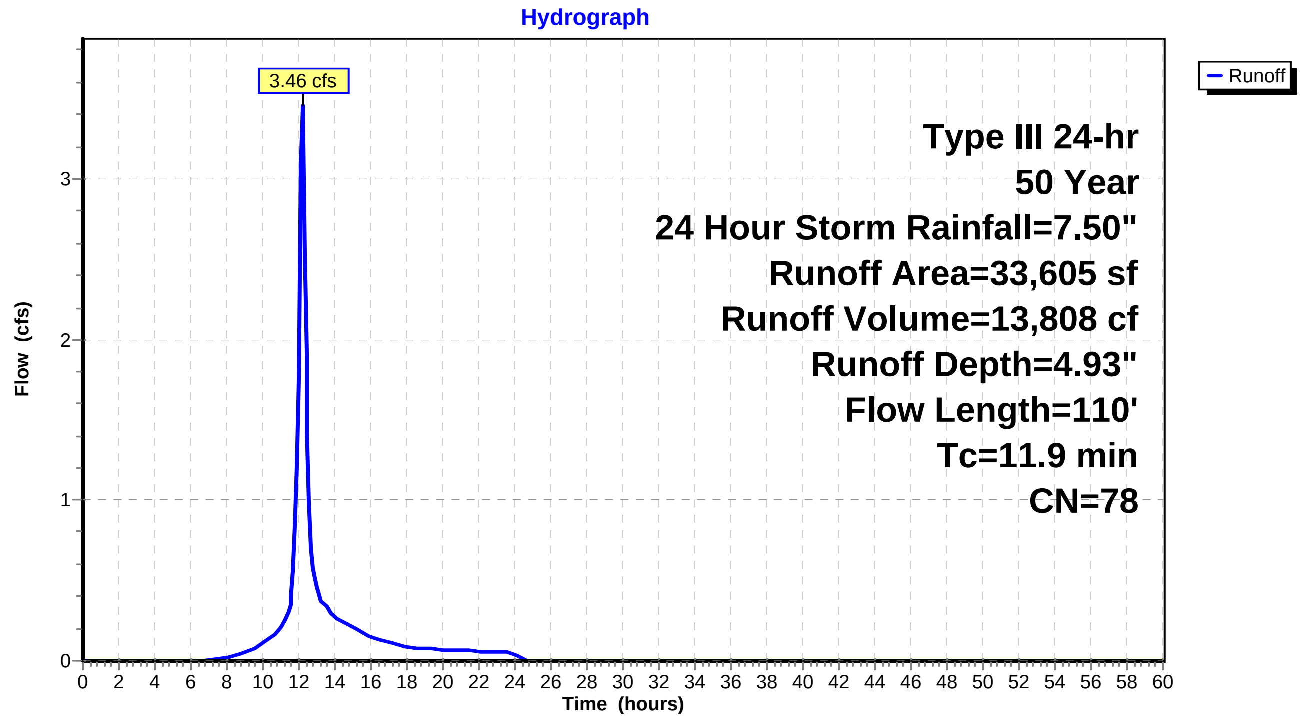
Runoff = 3.46 cfs @ 12.18 hrs, Volume= 13,808 cf, Depth= 4.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 50 Year, 24 Hour Storm Rainfall=7.50"

Area (sf)	CN	Description
3,842	98	Paved parking, HSG C
20,173	73	Woods, Fair, HSG C
9,590	79	50-75% Grass cover, Fair, HSG C
33,605	78	Weighted Average
29,763		88.57% Pervious Area
3,842		11.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	67	0.0600	0.25		**Sheet Flow, Landscaped** Grass: Short n= 0.150 P2= 3.50"
7.5	43	0.0460	0.10		**Sheet Flow, Wooded** Woods: Light underbrush n= 0.400 P2= 3.50"
11.9	110	Total			

Subcatchment Post 3A: Post 3A



Summary for Subcatchment Post 3B: Post 3B

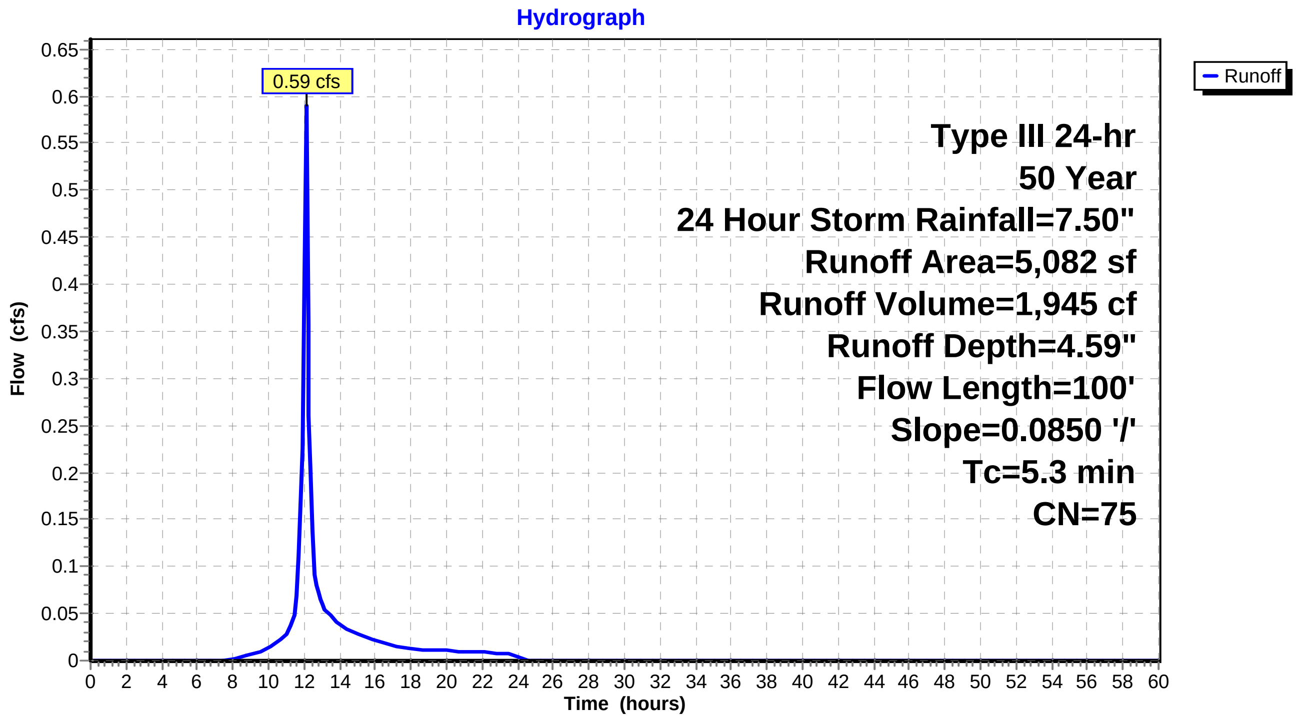
Runoff = 0.59 cfs @ 12.09 hrs, Volume= 1,945 cf, Depth= 4.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 50 Year, 24 Hour Storm Rainfall=7.50"

Area (sf)	CN	Description
3,044	73	Woods, Fair, HSG C
2,038	79	50-75% Grass cover, Fair, HSG C
5,082	75	Weighted Average
5,082		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	100	0.0850	0.32		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"

Subcatchment Post 3B: Post 3B

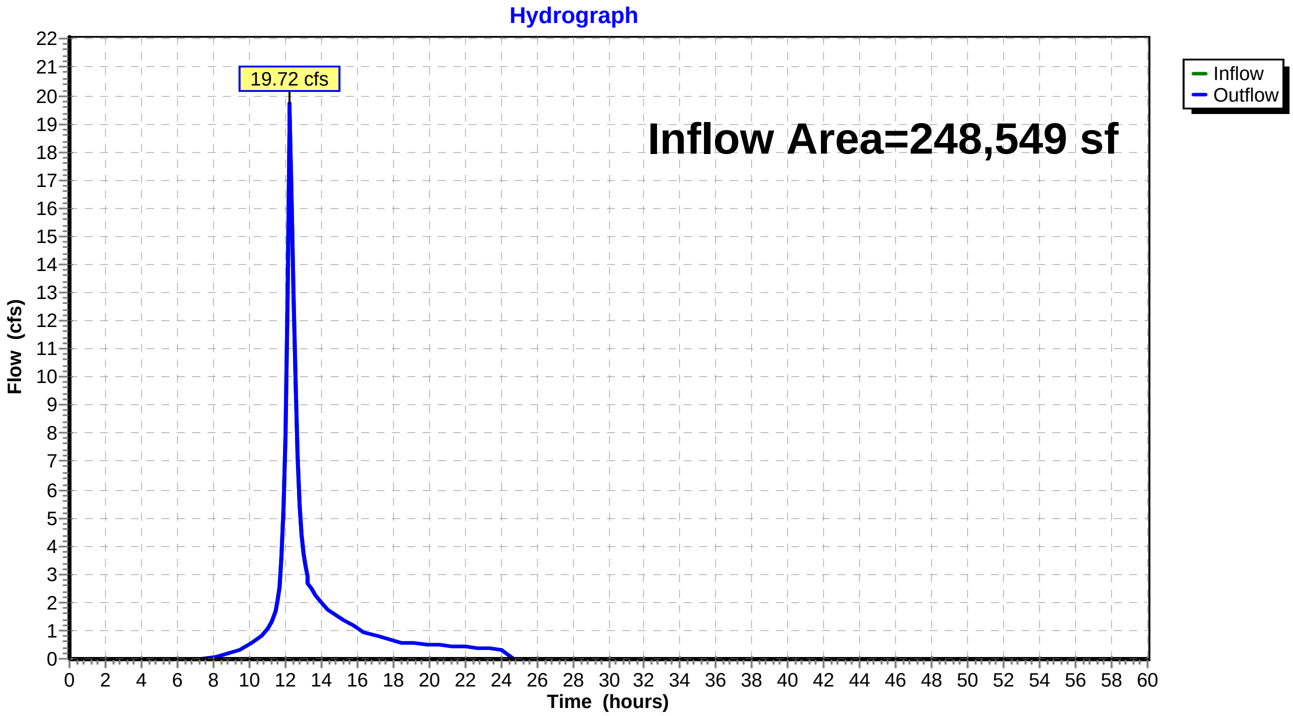


Summary for Reach DP1: Design Point 1

Inflow Area = 248,549 sf, 0.00% Impervious, Inflow Depth = 4.37" for 50 Year, 24 Hour Storm event
Inflow = 19.72 cfs @ 12.27 hrs, Volume= 90,505 cf
Outflow = 19.72 cfs @ 12.27 hrs, Volume= 90,505 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3

Reach DP1: Design Point 1

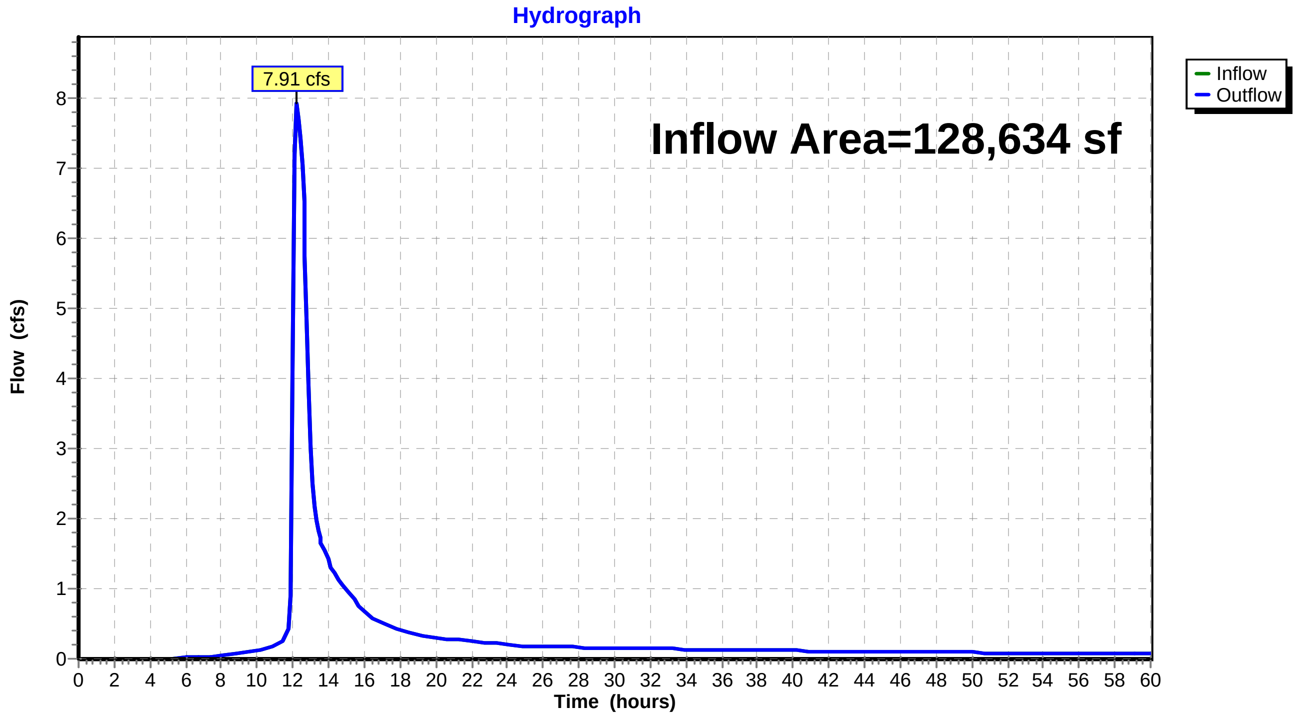


Summary for Reach DP2: Design Point 2

Inflow Area = 128,634 sf, 51.86% Impervious, Inflow Depth > 5.97" for 50 Year, 24 Hour Storm event
Inflow = 7.91 cfs @ 12.23 hrs, Volume= 63,945 cf
Outflow = 7.91 cfs @ 12.23 hrs, Volume= 63,945 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3

Reach DP2: Design Point 2

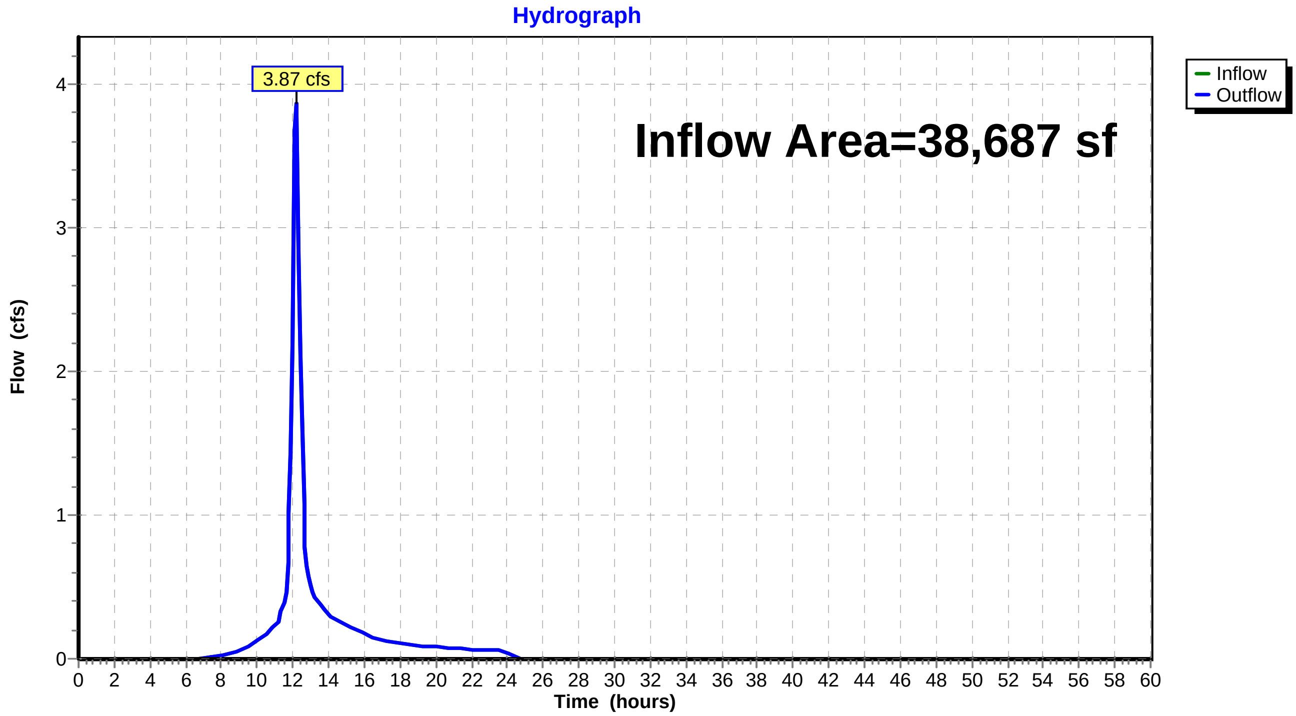


Summary for Reach DP3: Design Point 3

Inflow Area = 38,687 sf, 9.93% Impervious, Inflow Depth = 4.89" for 50 Year, 24 Hour Storm event
Inflow = 3.87 cfs @ 12.16 hrs, Volume= 15,753 cf
Outflow = 3.87 cfs @ 12.16 hrs, Volume= 15,753 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3

Reach DP3: Design Point 3



Summary for Pond F-1: Sand Filter

Inflow Area = 86,352 sf, 71.03% Impervious, Inflow Depth > 5.97" for 50 Year, 24 Hour Storm event
Inflow = 7.45 cfs @ 12.06 hrs, Volume= 42,942 cf
Outflow = 4.98 cfs @ 12.24 hrs, Volume= 42,715 cf, Atten= 33%, Lag= 10.5 min
Primary = 4.98 cfs @ 12.24 hrs, Volume= 42,715 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3
Peak Elev= 387.68' @ 12.24 hrs Surf.Area= 3,530 sf Storage= 8,915 cf

Plug-Flow detention time= 279.0 min calculated for 42,715 cf (99% of inflow)
Center-of-Mass det. time= 265.7 min (1,280.2 - 1,014.5)

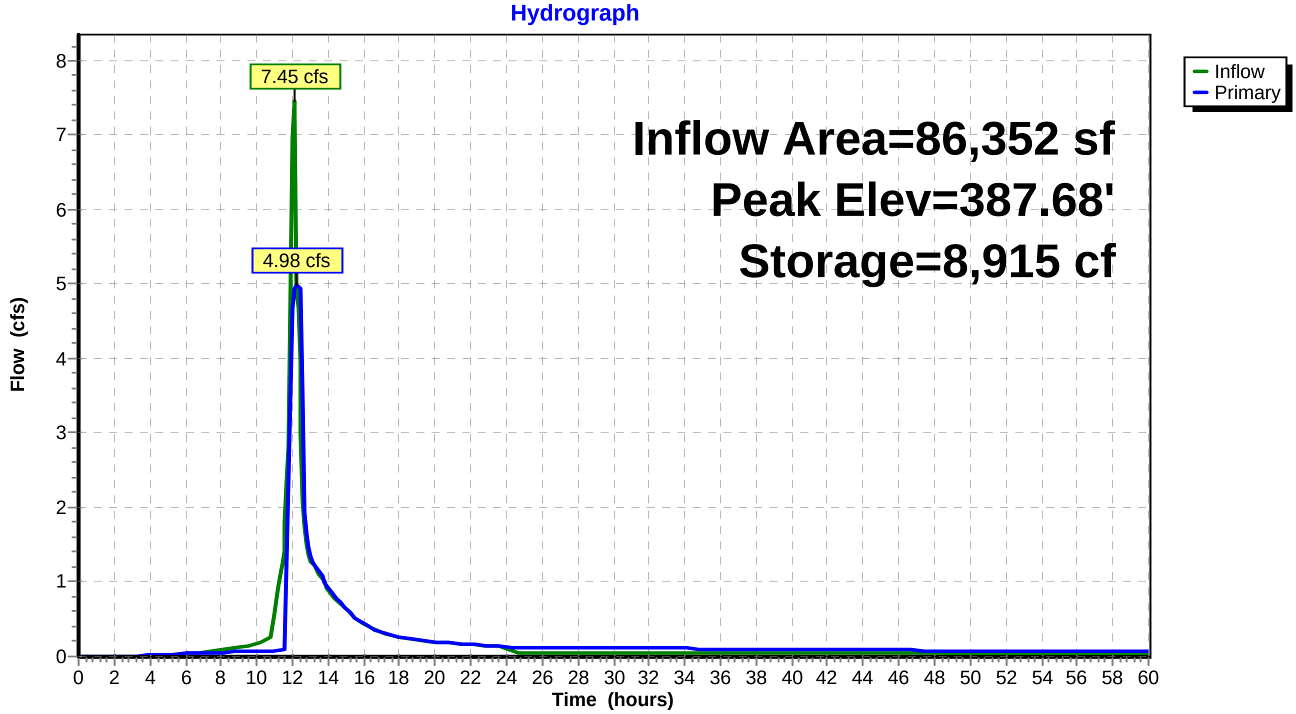
Volume	Invert	Avail.Storage	Storage Description
#1	384.00'	10,072 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
384.00	1,386	0	0
385.00	1,903	1,645	1,645
386.00	2,483	2,193	3,838
387.00	3,135	2,809	6,647
388.00	3,716	3,426	10,072

Device	Routing	Invert	Outlet Devices
#1	Primary	381.50'	**10.0" Round Culvert** L= 38.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 381.50' / 377.00' S= 0.1184 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf
#2	Device 1	384.00'	**1.750 in/hr Sand Filter Bed over Surface area**
#3	Device 1	387.00'	**24.0" x 24.0" Horiz. Overflow Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.97 cfs @ 12.24 hrs HW=387.66' TW=379.72' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.97 cfs @ 9.11 fps)
2=Sand Filter Bed (Passes < 0.14 cfs potential flow)
3=Overflow Grate (Passes < 14.19 cfs potential flow)

Pond F-1: Sand Filter



Stage-Area-Storage for Pond F-1: Sand Filter

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
384.00	1,386	0
384.05	1,412	70
384.10	1,438	141
384.15	1,464	214
384.20	1,489	288
384.25	1,515	363
384.30	1,541	439
384.35	1,567	517
384.40	1,593	596
384.45	1,619	676
384.50	1,645	758
384.55	1,670	840
384.60	1,696	925
384.65	1,722	1,010
384.70	1,748	1,097
384.75	1,774	1,185
384.80	1,800	1,274
384.85	1,825	1,365
384.90	1,851	1,457
384.95	1,877	1,550
385.00	1,903	1,645
385.05	1,932	1,740
385.10	1,961	1,838
385.15	1,990	1,936
385.20	2,019	2,037
385.25	2,048	2,138
385.30	2,077	2,242
385.35	2,106	2,346
385.40	2,135	2,452
385.45	2,164	2,560
385.50	2,193	2,669
385.55	2,222	2,779
385.60	2,251	2,891
385.65	2,280	3,004
385.70	2,309	3,119
385.75	2,338	3,235
385.80	2,367	3,353
385.85	2,396	3,472
385.90	2,425	3,592
385.95	2,454	3,714
386.00	2,483	3,838
386.05	2,516	3,962
386.10	2,548	4,089
386.15	2,581	4,217
386.20	2,613	4,347
386.25	2,646	4,479
386.30	2,679	4,612
386.35	2,711	4,746
386.40	2,744	4,883
386.45	2,776	5,021
386.50	2,809	5,161
386.55	2,842	5,302
386.60	2,874	5,445
386.65	2,907	5,589
386.70	2,939	5,735
386.75	2,972	5,883
386.80	3,005	6,033
386.85	3,037	6,184
386.90	3,070	6,336
386.95	3,102	6,491
387.00	3,135	6,647
387.05	3,164	6,804
387.10	3,193	6,963
387.15	3,222	7,123
387.20	3,251	7,285
387.25	3,280	7,448
387.30	3,309	7,613
387.35	3,338	7,779
387.40	3,367	7,947
387.45	3,396	8,116
387.50	3,426	8,287
387.55	3,455	8,459
387.60	3,484	8,632
387.65	3,513	8,807
387.70	3,542	8,983
387.75	3,571	9,161
387.80	3,600	9,340
387.85	3,629	9,521
387.90	3,658	9,703
387.95	3,687	9,887
388.00	**3,716**	**10,072**

Summary for Pond FS: Flow Splitter

Inflow Area = 64,432 sf, 86.80% Impervious, Inflow Depth = 6.94" for 50 Year, 24 Hour Storm event
Inflow = 9.75 cfs @ 12.01 hrs, Volume= 37,262 cf
Outflow = 9.75 cfs @ 12.01 hrs, Volume= 37,262 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.99 cfs @ 12.01 hrs, Volume= 33,195 cf
Secondary = 4.77 cfs @ 12.01 hrs, Volume= 4,068 cf

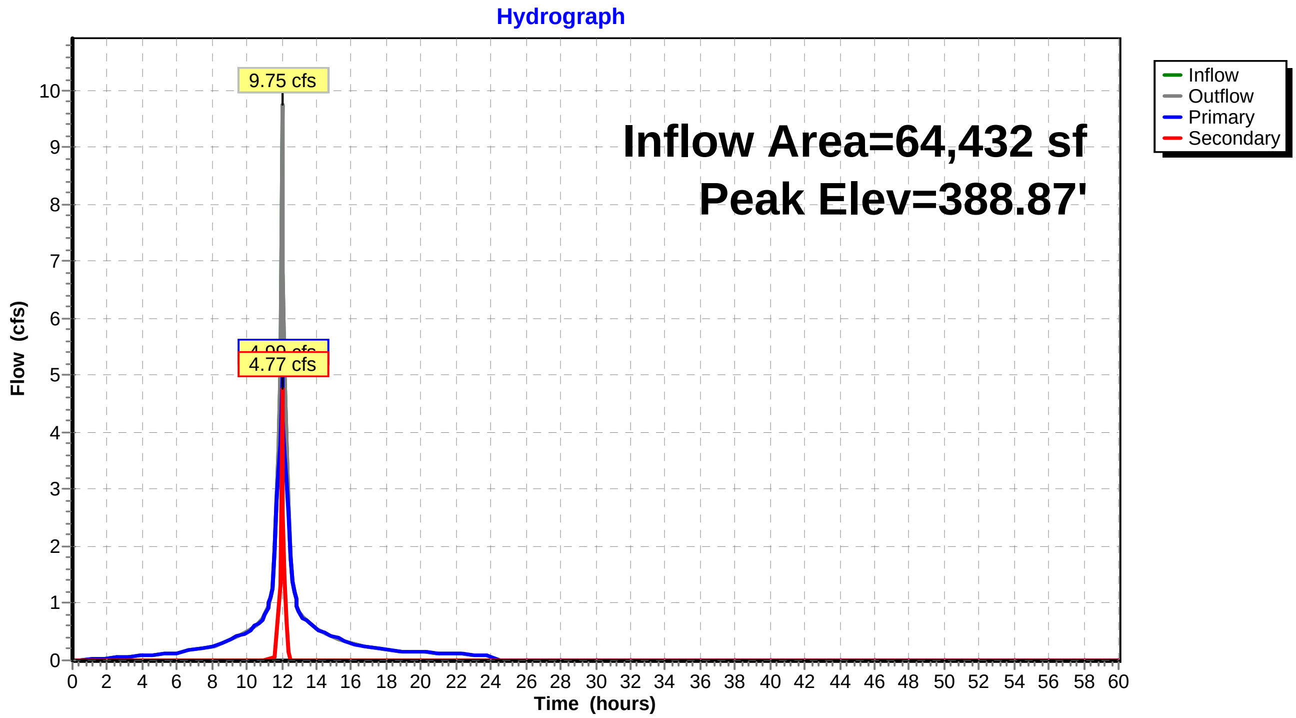
Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3
Peak Elev= 388.87' @ 12.01 hrs
Flood Elev= 392.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	386.00'	**15.0" Round Culvert to Sed Basin** L= 20.0' Ke= 0.900 Inlet / Outlet Invert= 386.00' / 384.00' S= 0.1000 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Secondary	387.80'	**24.0" Round Culvert** L= 106.0' Ke= 0.900 Inlet / Outlet Invert= 387.80' / 381.00' S= 0.0642 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=4.91 cfs @ 12.01 hrs HW=388.84' TW=387.73' (Dynamic Tailwater)
1=Culvert to Sed Basin (Inlet Controls 4.91 cfs @ 4.00 fps)

Secondary OutFlow Max=4.46 cfs @ 12.01 hrs HW=388.83' TW=379.22' (Dynamic Tailwater)
2=Culvert (Inlet Controls 4.46 cfs @ 2.73 fps)

Pond FS: Flow Splitter



Stage-Area-Storage for Pond FS: Flow Splitter

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
386.00	**0**	388.12	0	390.24	0
386.04	0	388.16	0	390.28	0
386.08	0	388.20	0	390.32	0
386.12	0	388.24	0	390.36	0
386.16	0	388.28	0	390.40	0
386.20	0	388.32	0	390.44	0
386.24	0	388.36	0	390.48	0
386.28	0	388.40	0	390.52	0
386.32	0	388.44	0	390.56	0
386.36	0	388.48	0	390.60	0
386.40	0	388.52	0	390.64	0
386.44	0	388.56	0	390.68	0
386.48	0	388.60	0	390.72	0
386.52	0	388.64	0	390.76	0
386.56	0	388.68	0	390.80	0
386.60	0	388.72	0	390.84	0
386.64	0	388.76	0	390.88	0
386.68	0	388.80	0	390.92	0
386.72	0	388.84	0	390.96	0
386.76	0	388.88	0	391.00	0
386.80	0	388.92	0	391.04	0
386.84	0	388.96	0	391.08	0
386.88	0	389.00	0	391.12	0
386.92	0	389.04	0	391.16	0
386.96	0	389.08	0	391.20	0
387.00	0	389.12	0	391.24	0
387.04	0	389.16	0	391.28	0
387.08	0	389.20	0	391.32	0
387.12	0	389.24	0	391.36	0
387.16	0	389.28	0	391.40	0
387.20	0	389.32	0	391.44	0
387.24	0	389.36	0	391.48	0
387.28	0	389.40	0	391.52	0
387.32	0	389.44	0	391.56	0
387.36	0	389.48	0	391.60	0
387.40	0	389.52	0	391.64	0
387.44	0	389.56	0	391.68	0
387.48	0	389.60	0	391.72	0
387.52	0	389.64	0	391.76	0
387.56	0	389.68	0	391.80	0
387.60	0	389.72	0	391.84	0
387.64	0	389.76	0	391.88	0
387.68	0	389.80	0	391.92	0
387.72	0	389.84	0	391.96	0
387.76	0	389.88	0	392.00	0
387.80	0	389.92	0		
387.84	0	389.96	0		
387.88	0	390.00	0		
387.92	0	390.04	0		
387.96	0	390.08	0		
388.00	0	390.12	0		
388.04	0	390.16	0		
388.08	0	390.20	0		

Summary for Pond SB: Sedimentation Basin

Inflow Area = 86,352 sf, 71.03% Impervious, Inflow Depth = 6.07" for 50 Year, 24 Hour Storm event
Inflow = 8.01 cfs @ 12.02 hrs, Volume= 43,684 cf
Outflow = 7.45 cfs @ 12.06 hrs, Volume= 42,942 cf, Atten= 7%, Lag= 2.6 min
Primary = 7.45 cfs @ 12.06 hrs, Volume= 42,942 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3
Peak Elev= 387.75' @ 12.11 hrs Surf.Area= 3,375 sf Storage= 8,509 cf

Plug-Flow detention time= 265.4 min calculated for 42,942 cf (98% of inflow)
Center-of-Mass det. time= 254.4 min (1,014.5 - 760.1)

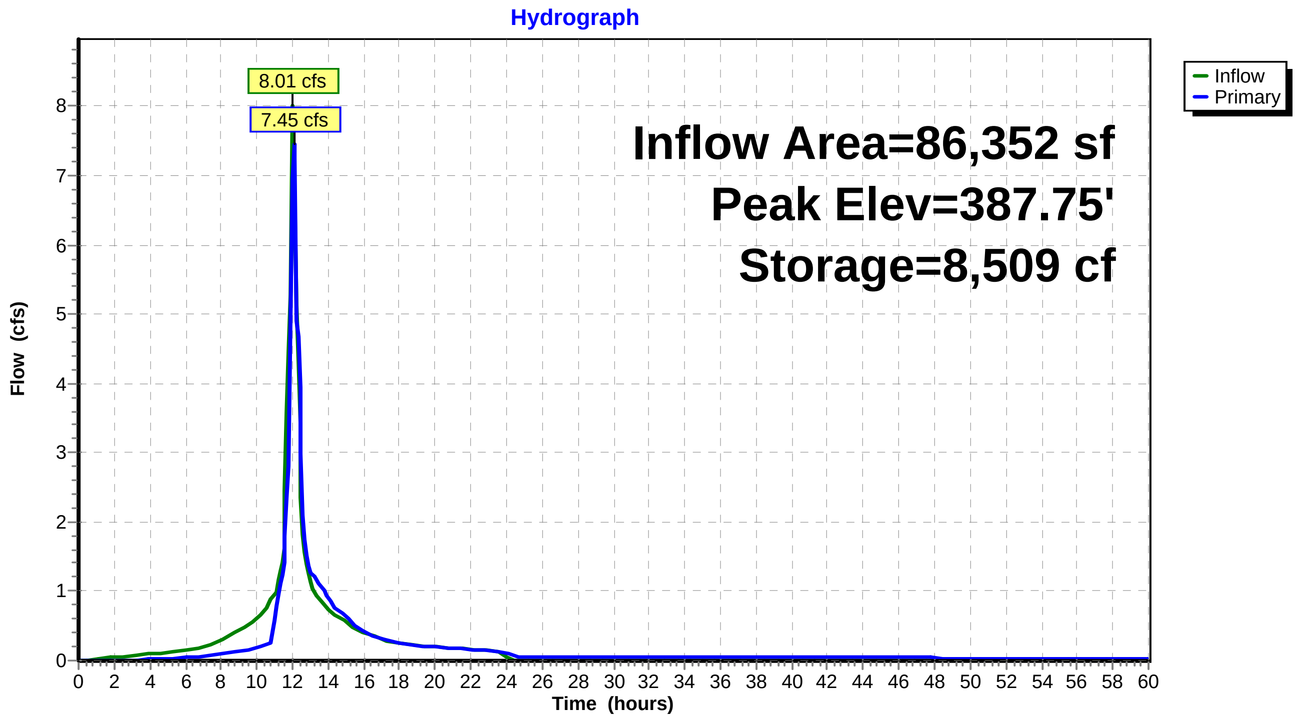
Volume	Invert	Avail.Storage	Storage Description
#1	384.00'	9,361 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
384.00	1,219	0	0
385.00	1,730	1,475	1,475
386.00	2,313	2,022	3,496
387.00	2,951	2,632	6,128
388.00	3,514	3,233	9,361

Device	Routing	Invert	Outlet Devices
#1	Primary	382.00'	**10.0" Round Culvert** L= 38.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 382.00' / 377.00' S= 0.1316 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf
#2	Device 1	384.00'	**0.4" Vert. Standpipe Perforations X 4.00 columns** X 12 rows with 3.0" cc spacing C= 0.600
#3	Device 1	387.00'	**12.0" Horiz. Standpipe Riser Opening** C= 0.600 Limited to weir flow at low heads
#4	Primary	387.50'	**15.0' long Overflow Spillway** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=7.30 cfs @ 12.06 hrs HW=387.74' TW=387.46' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.10 cfs @ 2.02 fps)
2=Standpipe Perforations (Passes < 0.11 cfs potential flow)
3=Standpipe Riser Opening (Passes < 2.01 cfs potential flow)
4=Overflow Spillway (Weir Controls 6.20 cfs @ 1.71 fps)

Pond SB: Sedimentation Basin



Stage-Area-Storage for Pond SB: Sedimentation Basin

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
384.00	1,219	0	386.65	2,728	5,134
384.05	1,245	62	386.70	2,760	5,271
384.10	1,270	124	386.75	2,792	5,410
384.15	1,296	189	386.80	2,823	5,551
384.20	1,321	254	386.85	2,855	5,693
384.25	1,347	321	386.90	2,887	5,836
384.30	1,372	389	386.95	2,919	5,981
384.35	1,398	458	387.00	2,951	6,128
384.40	1,423	528	387.05	2,979	6,276
384.45	1,449	600	387.10	3,007	6,426
384.50	1,475	673	387.15	3,035	6,577
384.55	1,500	748	387.20	3,064	6,729
384.60	1,526	823	387.25	3,092	6,883
384.65	1,551	900	387.30	3,120	7,039
384.70	1,577	978	387.35	3,148	7,195
384.75	1,602	1,058	387.40	3,176	7,353
384.80	1,628	1,139	387.45	3,204	7,513
384.85	1,653	1,221	387.50	3,233	7,674
384.90	1,679	1,304	387.55	3,261	7,836
384.95	1,704	1,389	387.60	3,289	8,000
385.00	1,730	1,475	387.65	3,317	8,165
385.05	1,759	1,562	387.70	3,345	8,332
385.10	1,788	1,650	387.75	3,373	8,500
385.15	1,817	1,741	387.80	3,401	8,669
385.20	1,847	1,832	387.85	3,430	8,840
385.25	1,876	1,925	387.90	3,458	9,012
385.30	1,905	2,020	387.95	3,486	9,186
385.35	1,934	2,116	388.00	**3,514**	**9,361**
385.40	1,963	2,213			
385.45	1,992	2,312			
385.50	2,022	2,412			
385.55	2,051	2,514			
385.60	2,080	2,617			
385.65	2,109	2,722			
385.70	2,138	2,828			
385.75	2,167	2,936			
385.80	2,196	3,045			
385.85	2,226	3,156			
385.90	2,255	3,268			
385.95	2,284	3,381			
386.00	2,313	3,496			
386.05	2,345	3,612			
386.10	2,377	3,730			
386.15	2,409	3,850			
386.20	2,441	3,971			
386.25	2,473	4,094			
386.30	2,504	4,219			
386.35	2,536	4,345			
386.40	2,568	4,472			
386.45	2,600	4,601			
386.50	2,632	4,732			
386.55	2,664	4,865			
386.60	2,696	4,999			

Summary for Pond W-4: W-4 Pocket Wetland

Inflow Area = 113,943 sf, 58.55% Impervious, Inflow Depth > 6.28" for 50 Year, 24 Hour Storm event
Inflow = 13.91 cfs @ 12.02 hrs, Volume= 59,610 cf
Outflow = 6.75 cfs @ 12.33 hrs, Volume= 58,595 cf, Atten= 51%, Lag= 18.3 min
Primary = 6.75 cfs @ 12.33 hrs, Volume= 58,595 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3
Peak Elev= 379.75' @ 12.33 hrs Surf.Area= 7,238 sf Storage= 10,483 cf

Plug-Flow detention time= 133.4 min calculated for 58,595 cf (98% of inflow)
Center-of-Mass det. time= 93.1 min (1,228.9 - 1,135.8)

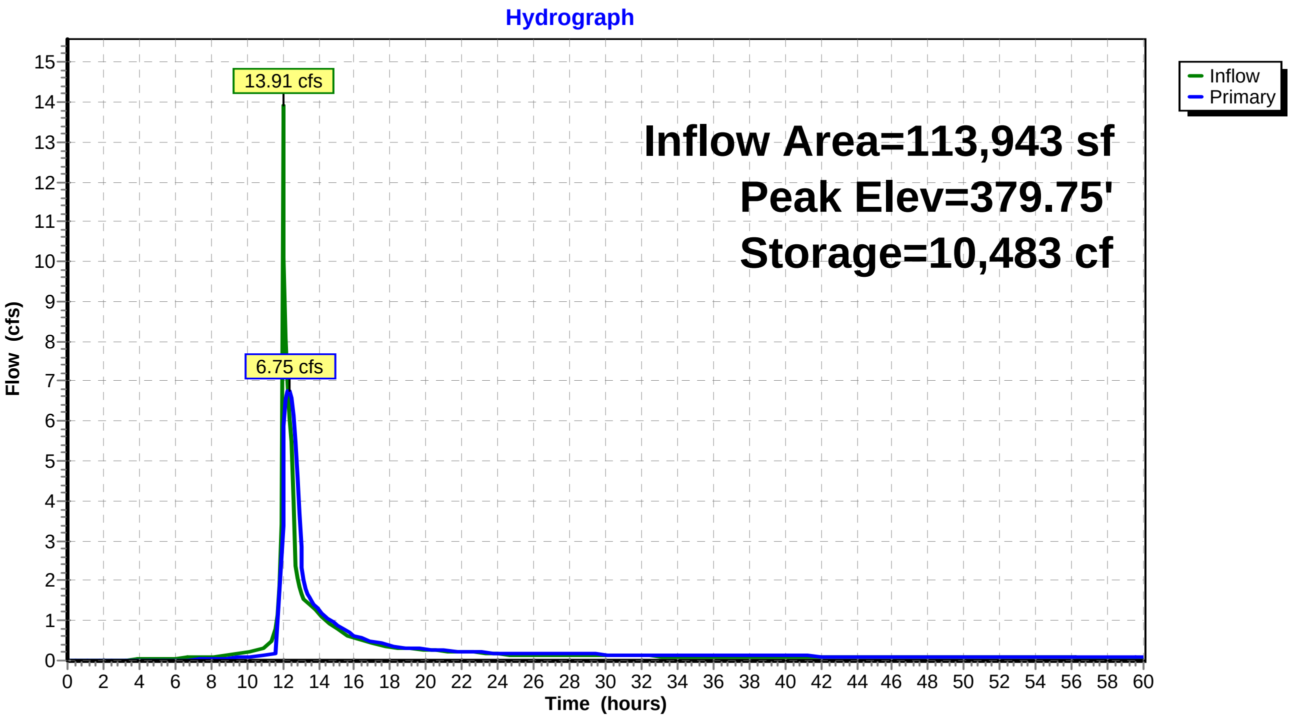
Volume	Invert	Avail.Storage	Storage Description
#1	378.00'	20,808 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
378.00	4,855	0	0
379.00	6,074	5,465	5,465
380.00	7,618	6,846	12,311
381.00	9,377	8,498	20,808

Device	Routing	Invert	Outlet Devices
#1	Primary	373.00'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 373.00' / 372.60' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	378.00'	**3.0" Vert. Low Flow Orifice** C= 0.600
#3	Device 1	378.70'	**36.0" W x 6.0" H Vert. High Flow Orifice (36Wx6H)** C= 0.600

Primary OutFlow Max=6.73 cfs @ 12.33 hrs HW=379.75' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 6.73 cfs of 9.41 cfs potential flow)
  ├─**2=Low Flow Orifice** (Orifice Controls 0.30 cfs @ 6.13 fps)
  └─**3=High Flow Orifice (36Wx6H)** (Orifice Controls 6.43 cfs @ 4.28 fps)

Pond W-4: W-4 Pocket Wetland



Stage-Area-Storage for Pond W-4: W-4 Pocket Wetland

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
378.00	4,855	0	380.65	8,761	17,634
378.05	4,916	244	380.70	8,849	18,074
378.10	4,977	492	380.75	8,937	18,519
378.15	5,038	742	380.80	9,025	18,968
378.20	5,099	995	380.85	9,113	19,421
378.25	5,160	1,252	380.90	9,201	19,879
378.30	5,221	1,511	380.95	9,289	20,341
378.35	5,282	1,774	381.00	**9,377**	**20,808**
378.40	5,343	2,040			
378.45	5,404	2,308			
378.50	5,465	2,580			
378.55	5,525	2,855			
378.60	5,586	3,132			
378.65	5,647	3,413			
378.70	5,708	3,697			
378.75	5,769	3,984			
378.80	5,830	4,274			
378.85	5,891	4,567			
378.90	5,952	4,863			
378.95	6,013	5,162			
379.00	6,074	5,465			
379.05	6,151	5,770			
379.10	6,228	6,080			
379.15	6,306	6,393			
379.20	6,383	6,710			
379.25	6,460	7,031			
379.30	6,537	7,356			
379.35	6,614	7,685			
379.40	6,692	8,018			
379.45	6,769	8,354			
379.50	6,846	8,695			
379.55	6,923	9,039			
379.60	7,000	9,387			
379.65	7,078	9,739			
379.70	7,155	10,095			
379.75	7,232	10,454			
379.80	7,309	10,818			
379.85	7,386	11,185			
379.90	7,464	11,556			
379.95	7,541	11,932			
380.00	7,618	12,311			
380.05	7,706	12,694			
380.10	7,794	13,081			
380.15	7,882	13,473			
380.20	7,970	13,869			
380.25	8,058	14,270			
380.30	8,146	14,675			
380.35	8,234	15,085			
380.40	8,322	15,498			
380.45	8,410	15,917			
380.50	8,498	16,339			
380.55	8,585	16,766			
380.60	8,673	17,198			

Time span=0.00-60.00 hrs, dt=0.10 hrs, 601 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment Post 2E: Post 2E Runoff Area=13,510 sf 40.08% Impervious Runoff Depth=7.43"
Flow Length=130' Tc=1.3 min CN=87 Runoff=2.59 cfs 8,360 cf

Subcatchment Post 1: DA 1 Runoff Area=248,549 sf 0.00% Impervious Runoff Depth=5.71"
Flow Length=605' Tc=18.8 min CN=73 Runoff=25.66 cfs 118,176 cf

Subcatchment Post 2A: Post 2A Runoff Area=4,907 sf 100.00% Impervious Runoff Depth=8.76"
Flow Length=150' Slope=0.0100 '/' Tc=1.9 min CN=98 Runoff=0.98 cfs 3,582 cf

Subcatchment Post 2B: Post 2B Runoff Area=14,630 sf 41.85% Impervious Runoff Depth=7.30"
Flow Length=346' Tc=11.0 min CN=86 Runoff=2.15 cfs 8,904 cf

Subcatchment Post 2C: Post 2C Runoff Area=44,895 sf 100.00% Impervious Runoff Depth=8.76"
Flow Length=100' Slope=0.1350 '/' Tc=0.5 min CN=98 Runoff=9.52 cfs 32,772 cf

Subcatchment Post 2D: Post 2D Runoff Area=8,410 sf 0.00% Impervious Runoff Depth=6.81"
Flow Length=200' Tc=4.5 min CN=82 Runoff=1.39 cfs 4,775 cf

Subcatchment Post 2F: Post 2F Runoff Area=4,258 sf 100.00% Impervious Runoff Depth=8.76"
Flow Length=119' Slope=0.1687 '/' Tc=0.1 min CN=98 Runoff=0.91 cfs 3,108 cf

Subcatchment Post 2G: Post 2G Runoff Area=23,333 sf 4.77% Impervious Runoff Depth=6.69"
Flow Length=112' Tc=0.9 min CN=81 Runoff=4.22 cfs 13,010 cf

Subcatchment Post 2H: Post 2H Runoff Area=14,691 sf 0.00% Impervious Runoff Depth=5.71"
Flow Length=353' Tc=10.5 min CN=73 Runoff=1.78 cfs 6,985 cf

Subcatchment Post 3A: Post 3A Runoff Area=33,605 sf 11.43% Impervious Runoff Depth=6.32"
Flow Length=110' Tc=11.9 min CN=78 Runoff=4.39 cfs 17,705 cf

Subcatchment Post 3B: Post 3B Runoff Area=5,082 sf 0.00% Impervious Runoff Depth=5.95"
Flow Length=100' Slope=0.0850 '/' Tc=5.3 min CN=75 Runoff=0.76 cfs 2,521 cf

Reach DP1: Design Point 1 Inflow=25.66 cfs 118,176 cf
Outflow=25.66 cfs 118,176 cf

Reach DP2: Design Point 2 Inflow=9.87 cfs 79,502 cf
Outflow=9.87 cfs 79,502 cf

Reach DP3: Design Point 3 Inflow=4.93 cfs 20,225 cf
Outflow=4.93 cfs 20,225 cf

Pond F-1: Sand Filter Peak Elev=387.93' Storage=9,799 cf Inflow=8.06 cfs 51,063 cf
Outflow=5.08 cfs 50,825 cf

Pond FS: Flow Splitter Peak Elev=389.08' Inflow=11.76 cfs 45,258 cf
Primary=5.31 cfs 38,676 cf Secondary=6.45 cfs 6,591 cf Outflow=11.76 cfs 45,258 cf

Pond SB: Sedimentation Basin Peak Elev=387.92' Storage=9,069 cf Inflow=9.05 cfs 51,812 cf
Outflow=8.06 cfs 51,063 cf

Pond W-4: W-4 Pocket Wetland Peak Elev=380.16' Storage=13,531 cf Inflow=16.51 cfs 73,535 cf
Outflow=8.26 cfs 72,517 cf

Total Runoff Area = 415,870 sf Runoff Volume = 219,899 cf Average Runoff Depth = 6.35"
83.04% Pervious = 345,318 sf 16.96% Impervious = 70,552 sf

Summary for Subcatchment Post 2E: Post 2E

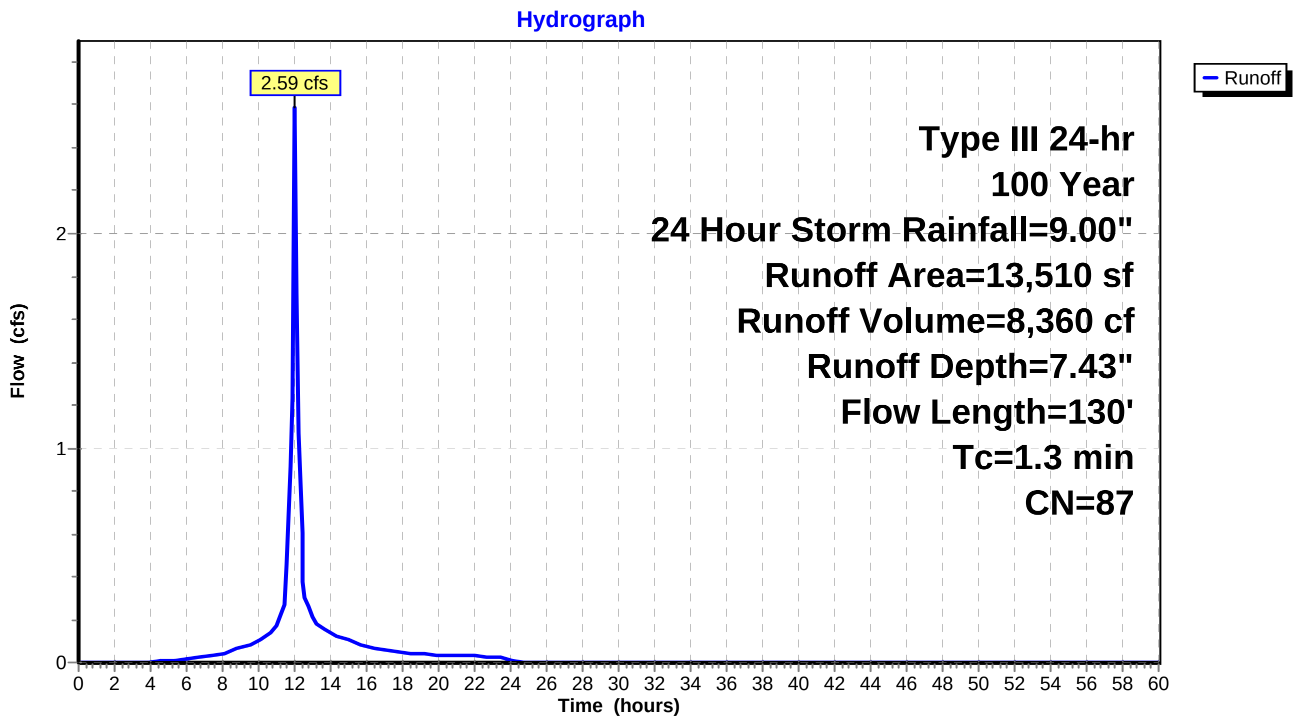
Runoff = 2.59 cfs @ 12.01 hrs, Volume= 8,360 cf, Depth= 7.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 100 Year, 24 Hour Storm Rainfall=9.00"

Area (sf)	CN	Description
5,415	98	Paved parking, HSG C
8,095	79	50-75% Grass cover, Fair, HSG C
13,510	87	Weighted Average
8,095		59.92% Pervious Area
5,415		40.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0200	1.44		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"
0.1	30	0.3800	9.92		**Shallow Concentrated Flow, Pavement** Unpaved Kv= 16.1 fps
1.3	130	Total			

Subcatchment Post 2E: Post 2E



Summary for Subcatchment Post 1: DA 1

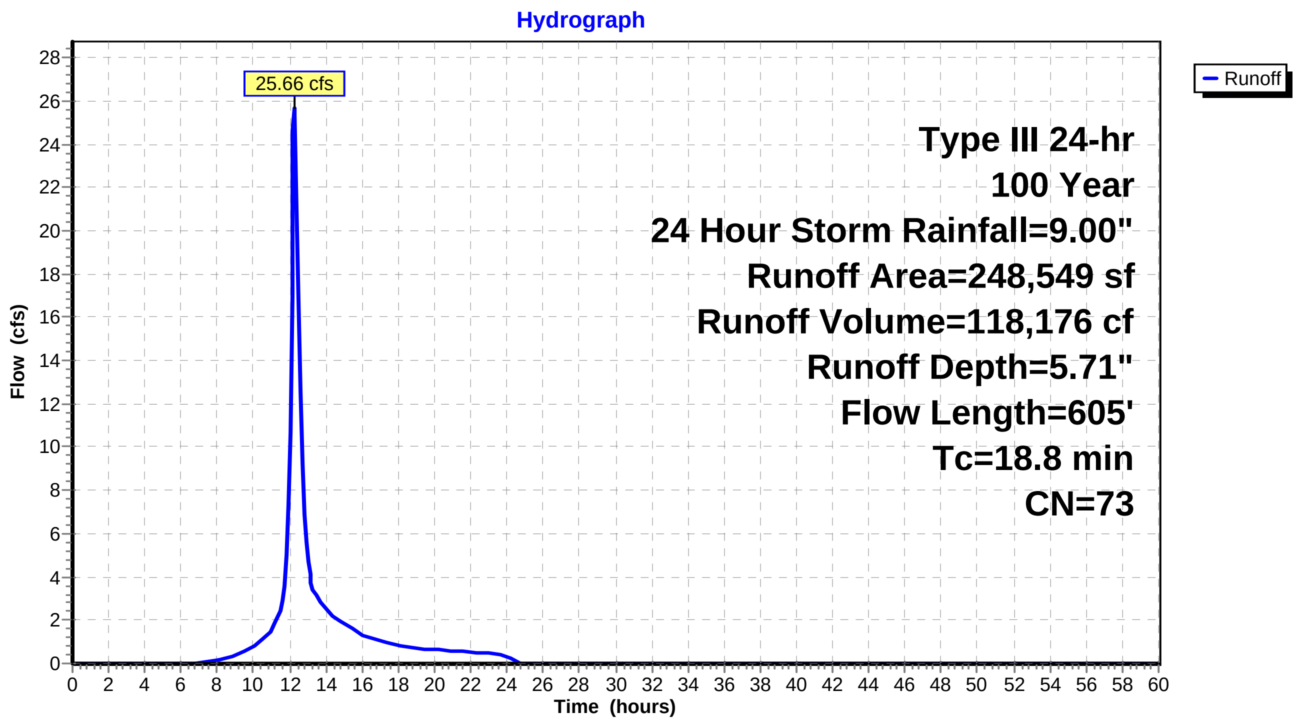
Runoff = 25.66 cfs @ 12.27 hrs, Volume= 118,176 cf, Depth= 5.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 100 Year, 24 Hour Storm Rainfall=9.00"

Area (sf)	CN	Description
159,708	73	Woods, Fair, HSG C
1,496	89	Gravel roads, HSG C
87,345	74	>75% Grass cover, Good, HSG C
248,549	73	Weighted Average
248,549		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.8	250	0.0400	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.0	105	0.0667	1.81		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.0	250	0.0760	1.38		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
18.8	605	Total			

Subcatchment Post 1: DA 1



Summary for Subcatchment Post 2A: Post 2A

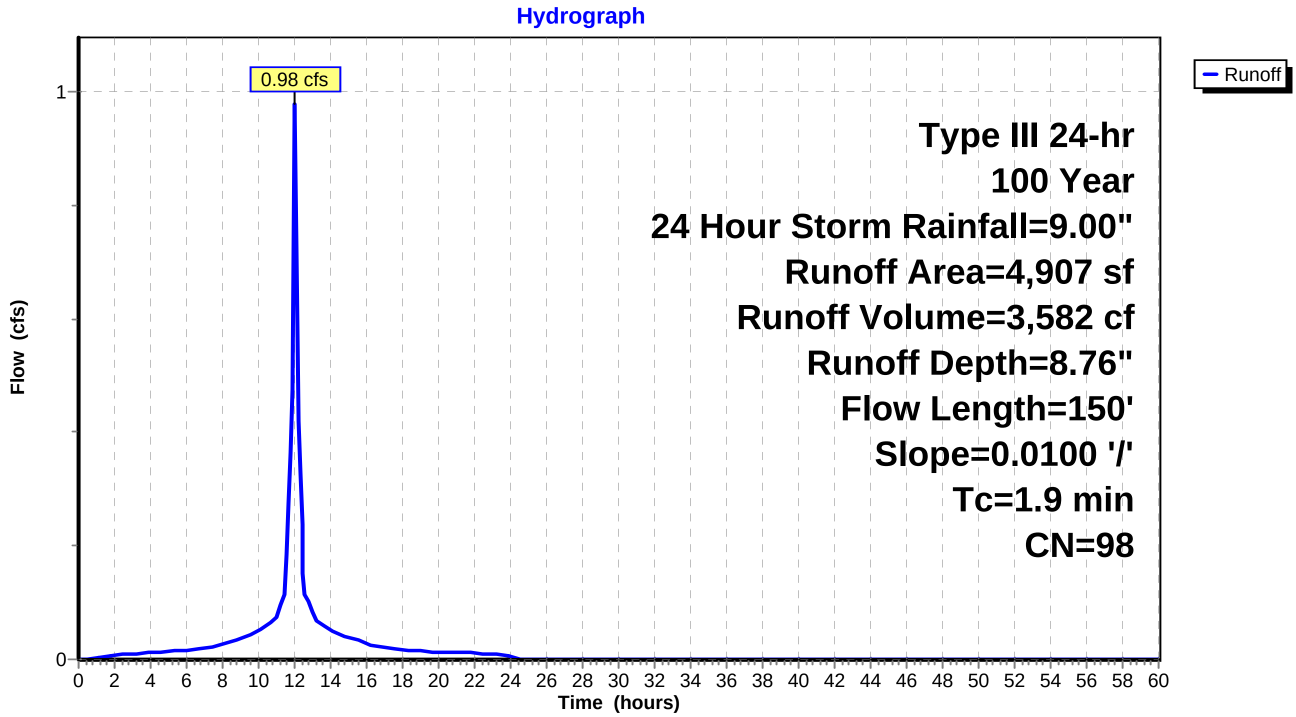
Runoff = 0.98 cfs @ 12.02 hrs, Volume= 3,582 cf, Depth= 8.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 100 Year, 24 Hour Storm Rainfall=9.00"

Area (sf)	CN	Description
4,907	98	Paved parking, HSG C
4,907		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	100	0.0100	1.09		**Sheet Flow, Pavement** Smooth surfaces n= 0.011 P2= 3.50"
0.4	50	0.0100	2.03		**Shallow Concentrated Flow, Pavement** Paved Kv= 20.3 fps
1.9	150	Total			

Subcatchment Post 2A: Post 2A



Summary for Subcatchment Post 2B: Post 2B

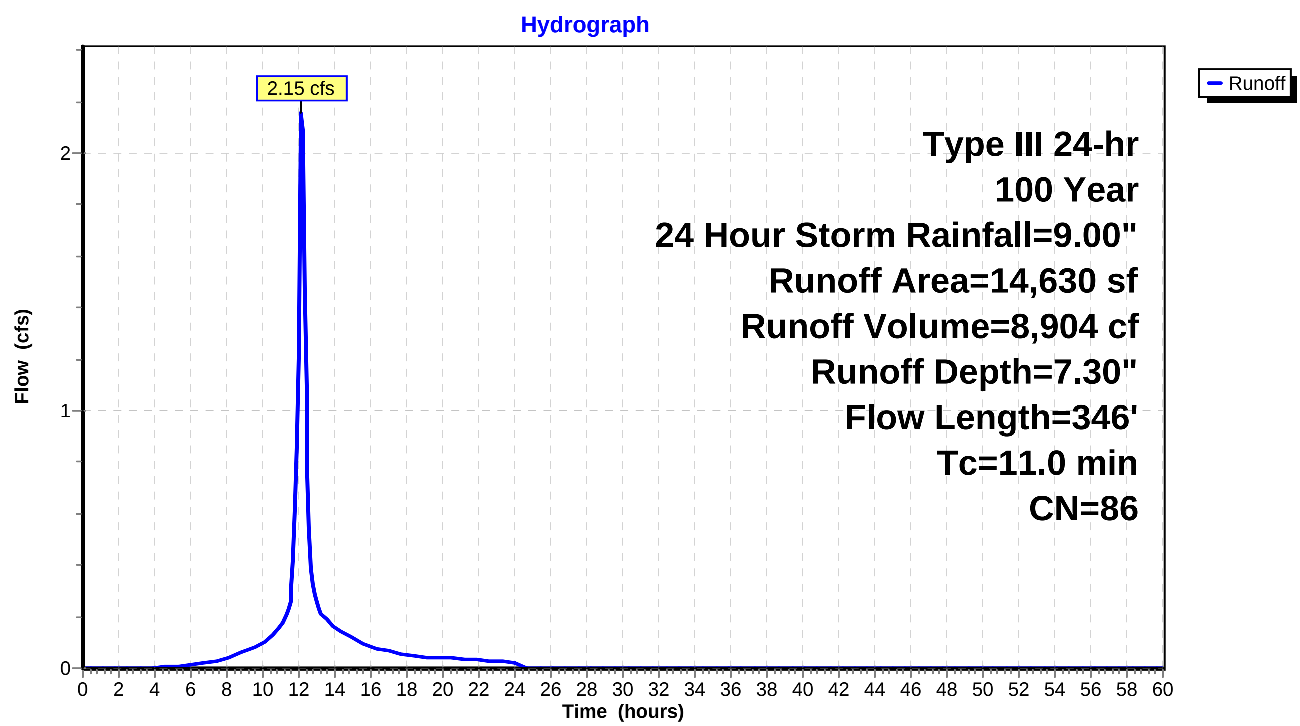
Runoff = 2.15 cfs @ 12.15 hrs, Volume= 8,904 cf, Depth= 7.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 100 Year, 24 Hour Storm Rainfall=9.00"

Area (sf)	CN	Description
6,122	98	Paved parking
6,154	74	>75% Grass cover, Good, HSG C
2,354	89	Gravel roads, HSG C
14,630	86	Weighted Average
8,508		58.15% Pervious Area
6,122		41.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	100	0.0400	0.16		**Sheet Flow, Landscaped area** Grass: Dense n= 0.240 P2= 3.50"
0.7	246	0.0100	5.90	4.63	**Pipe Channel, Pipe** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
11.0	346	Total			

Subcatchment Post 2B: Post 2B



Summary for Subcatchment Post 2C: Post 2C

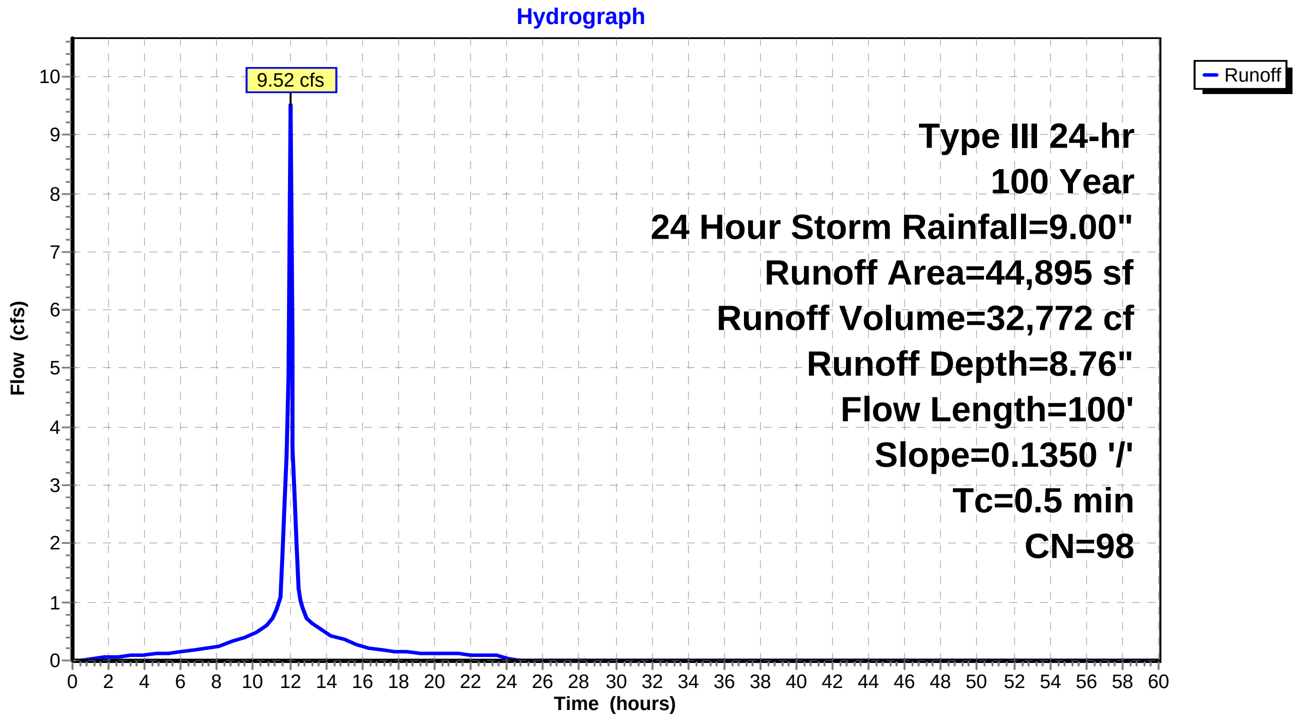
Runoff = 9.52 cfs @ 12.00 hrs, Volume= 32,772 cf, Depth= 8.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 100 Year, 24 Hour Storm Rainfall=9.00"

Area (sf)	CN	Description
44,895	98	Paved parking, HSG C
44,895		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.1350	3.09		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.50"

Subcatchment Post 2C: Post 2C



Summary for Subcatchment Post 2D: Post 2D

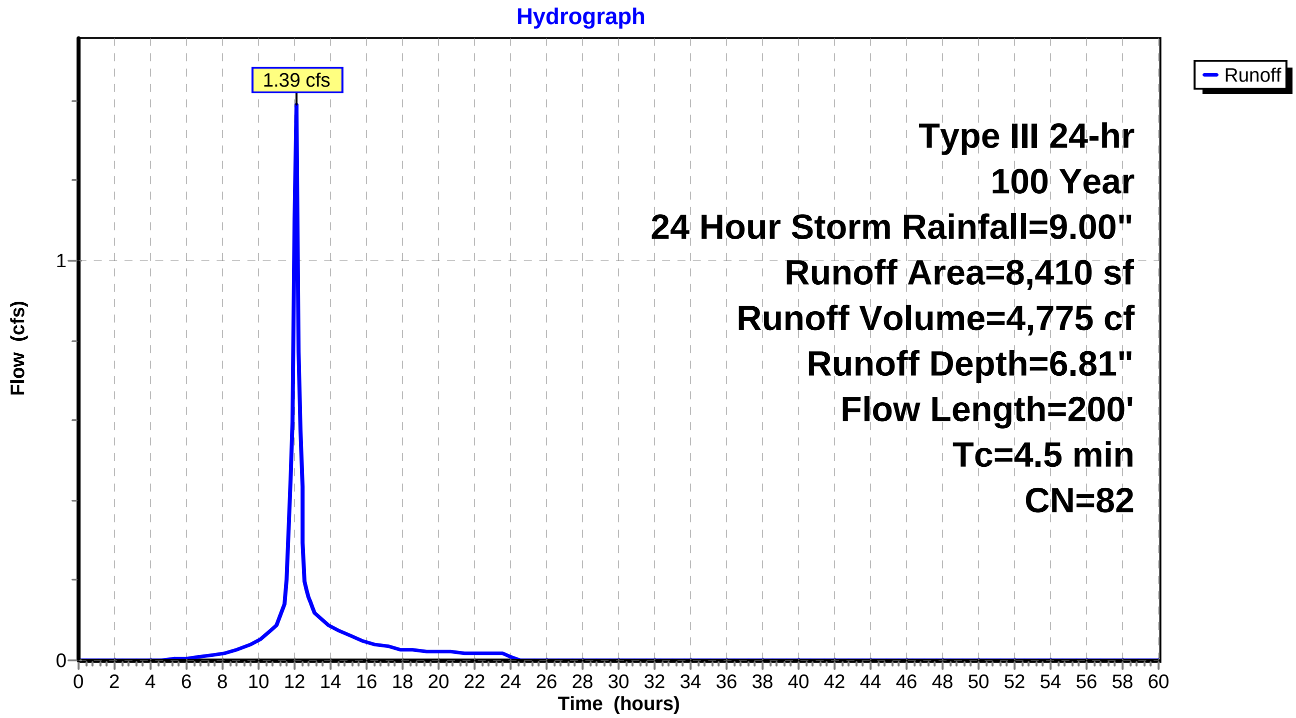
Runoff = 1.39 cfs @ 12.08 hrs, Volume= 4,775 cf, Depth= 6.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 100 Year, 24 Hour Storm Rainfall=9.00"

Area (sf)	CN	Description
6,293	79	50-75% Grass cover, Fair, HSG C
2,117	89	Gravel roads, HSG C
8,410	82	Weighted Average
8,410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	50	0.1000	0.20		**Sheet Flow, Landscaped** Grass: Dense n= 0.240 P2= 3.50"
0.4	150	0.0860	5.95		**Shallow Concentrated Flow, Maintenance Drive** Paved Kv= 20.3 fps
4.5	200	Total			

Subcatchment Post 2D: Post 2D



Summary for Subcatchment Post 2F: Post 2F

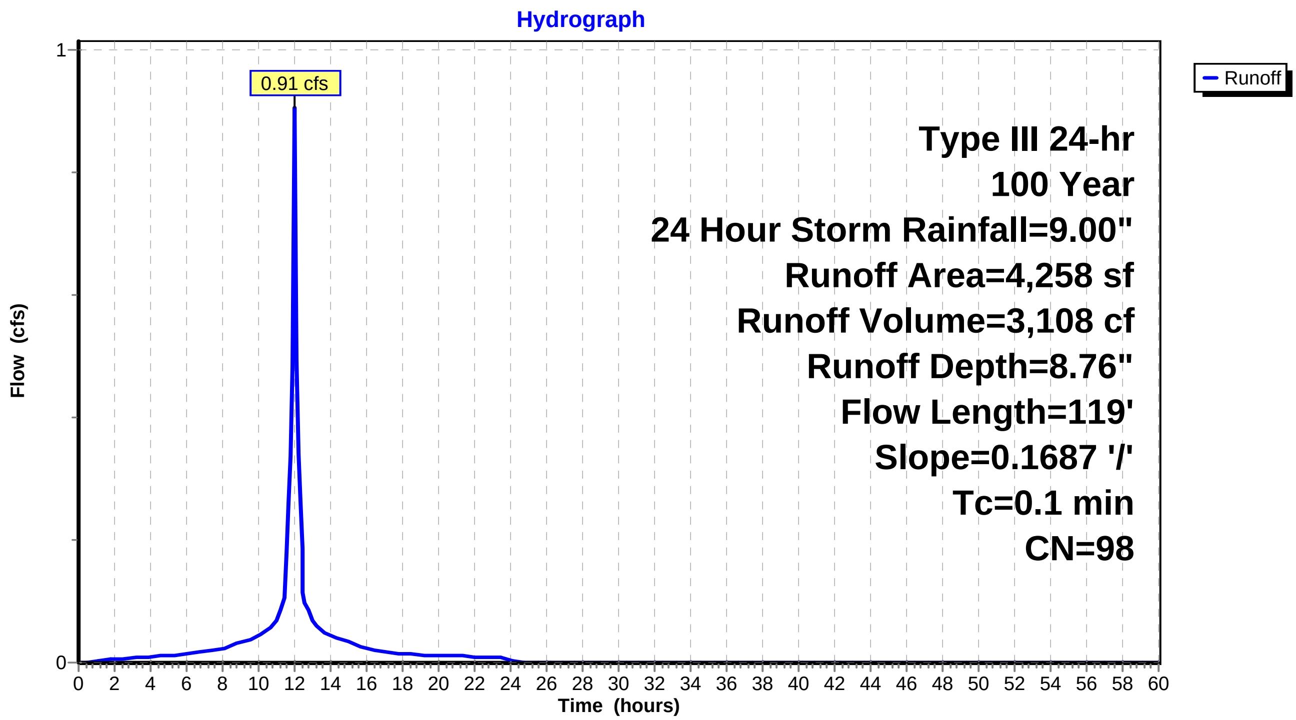
Runoff = 0.91 cfs @ 12.00 hrs, Volume= 3,108 cf, Depth= 8.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 100 Year, 24 Hour Storm Rainfall=9.00"

Area (sf)	CN	Description
4,258	98	Roofs, HSG C
4,258		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	119	0.1687	14.22	4.96	**Pipe Channel, Roof Leader** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.013 Corrugated PE, smooth interior

Subcatchment Post 2F: Post 2F



Summary for Subcatchment Post 2G: Post 2G

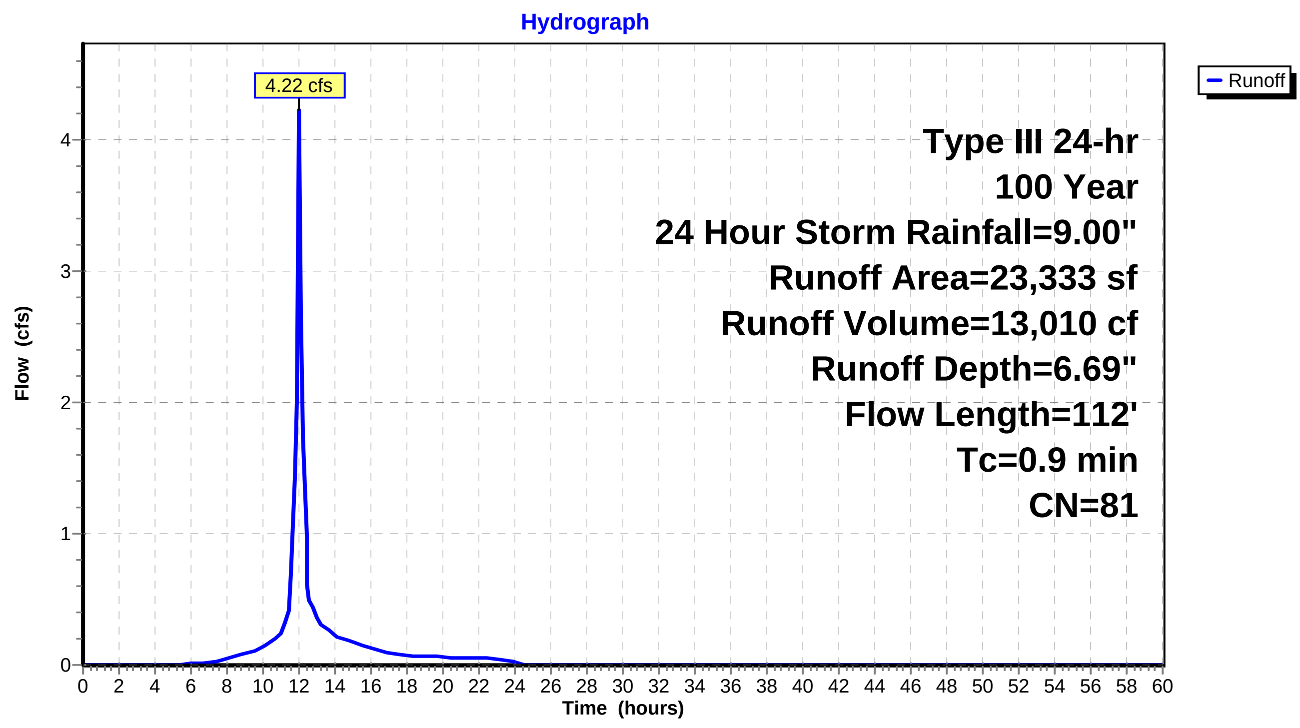
Runoff = 4.22 cfs @ 12.01 hrs, Volume= 13,010 cf, Depth= 6.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 100 Year, 24 Hour Storm Rainfall=9.00"

Area (sf)	CN	Description
1,113	98	Paved parking, HSG C
20,037	79	50-75% Grass cover, Fair, HSG C
2,183	89	Gravel roads, HSG C
23,333	81	Weighted Average
22,220		95.23% Pervious Area
1,113		4.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	80	0.0250	1.50		**Sheet Flow, Pavement** Smooth surfaces n= 0.011 P2= 3.50"
0.0	32	0.4600	10.92		**Shallow Concentrated Flow, Landscaped** Unpaved Kv= 16.1 fps
0.9	112	Total			

Subcatchment Post 2G: Post 2G



Summary for Subcatchment Post 2H: Post 2H

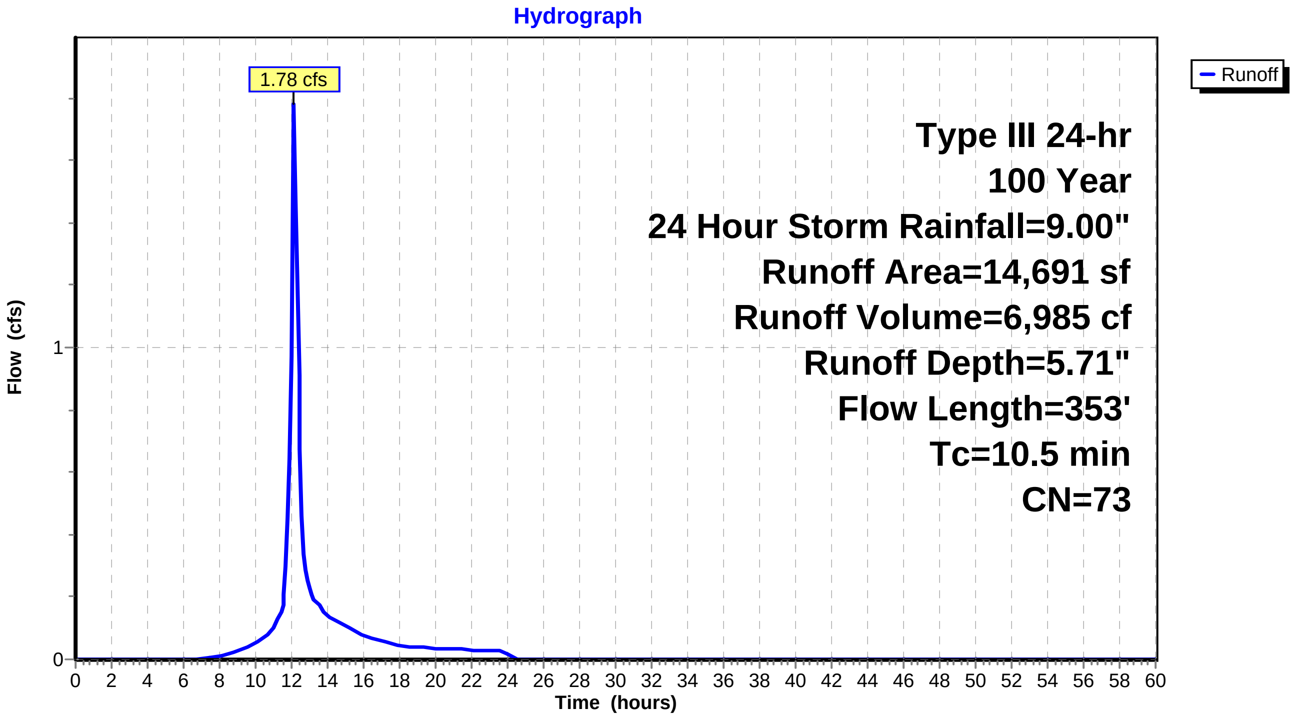
Runoff = 1.78 cfs @ 12.15 hrs, Volume= 6,985 cf, Depth= 5.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 100 Year, 24 Hour Storm Rainfall=9.00"

Area (sf)	CN	Description
14,691	73	Woods, Fair, HSG C
14,691		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0600	0.19		**Sheet Flow, Landscaped** Grass: Dense n= 0.240 P2= 3.50"
1.7	253	0.0260	2.42		**Shallow Concentrated Flow, Grassed waterway** Grassed Waterway Kv= 15.0 fps
10.5	353	Total			

Subcatchment Post 2H: Post 2H



Summary for Subcatchment Post 3A: Post 3A

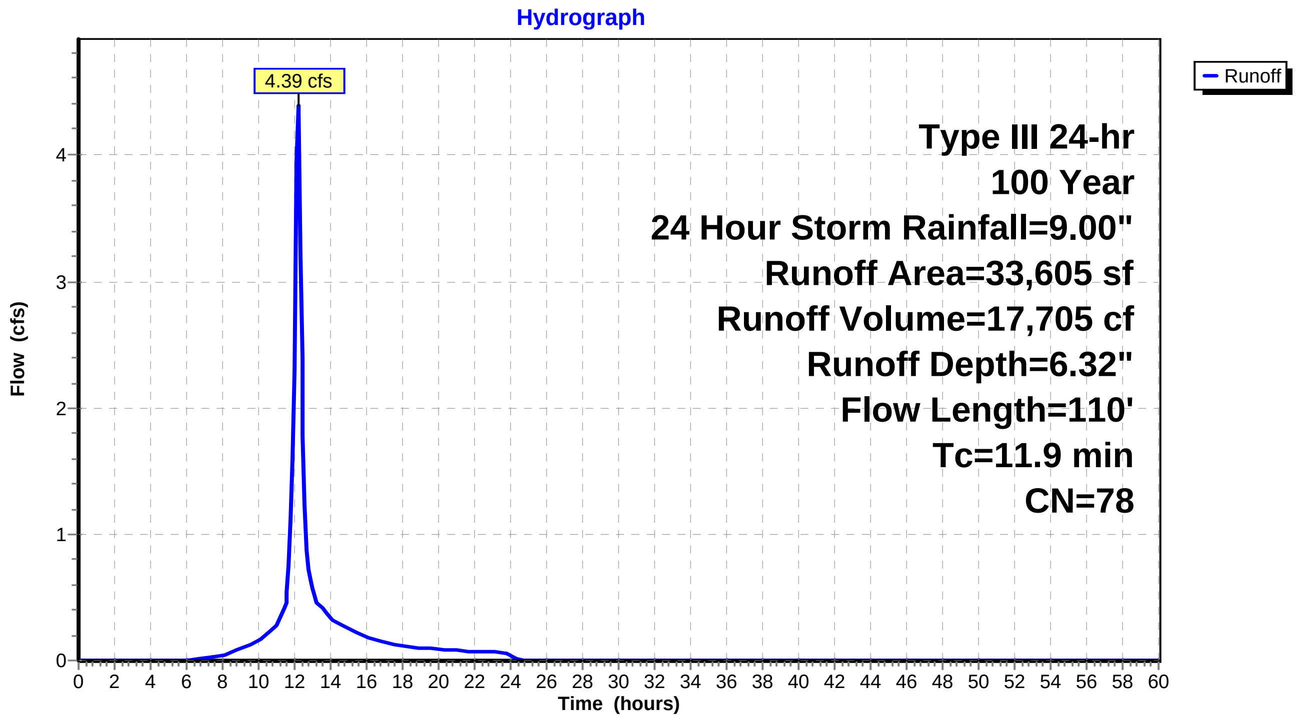
Runoff = 4.39 cfs @ 12.18 hrs, Volume= 17,705 cf, Depth= 6.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 100 Year, 24 Hour Storm Rainfall=9.00"

Area (sf)	CN	Description
3,842	98	Paved parking, HSG C
20,173	73	Woods, Fair, HSG C
9,590	79	50-75% Grass cover, Fair, HSG C
33,605	78	Weighted Average
29,763		88.57% Pervious Area
3,842		11.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	67	0.0600	0.25		**Sheet Flow, Landscaped** Grass: Short n= 0.150 P2= 3.50"
7.5	43	0.0460	0.10		**Sheet Flow, Wooded** Woods: Light underbrush n= 0.400 P2= 3.50"
11.9	110	Total			

Subcatchment Post 3A: Post 3A



Summary for Subcatchment Post 3B: Post 3B

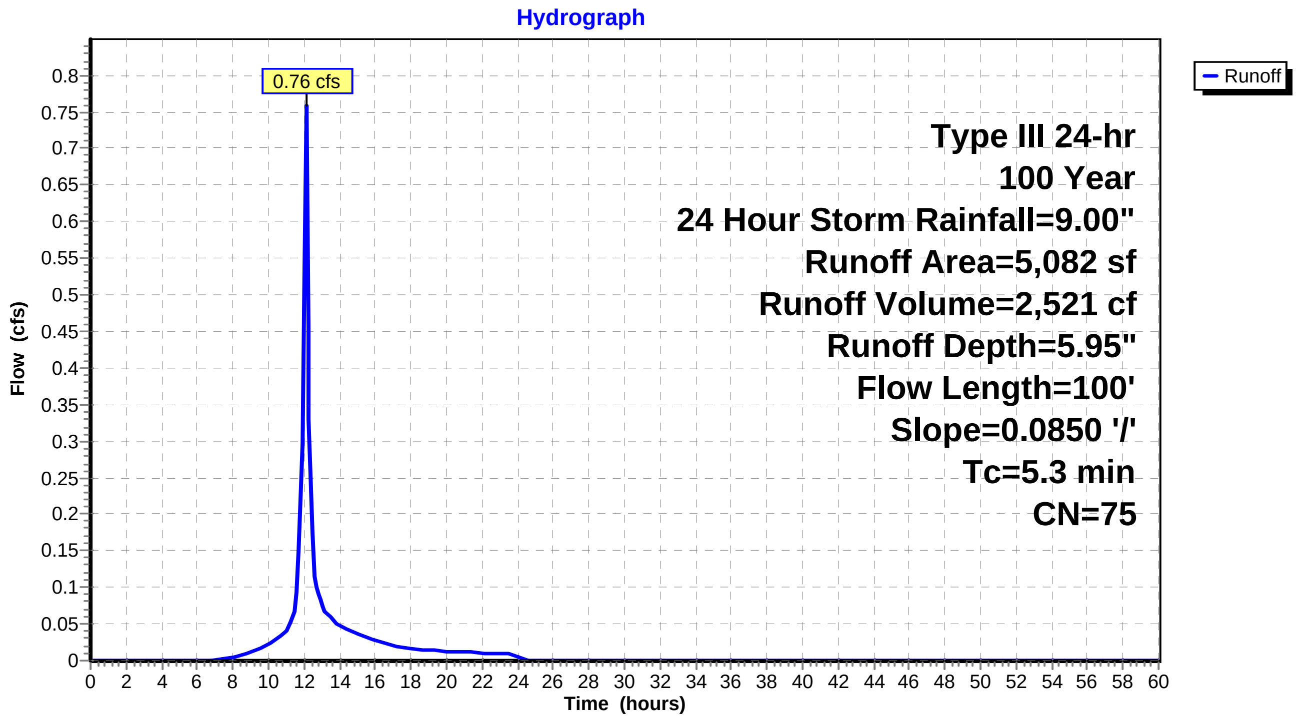
Runoff = 0.76 cfs @ 12.09 hrs, Volume= 2,521 cf, Depth= 5.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs
Type III 24-hr 100 Year, 24 Hour Storm Rainfall=9.00"

Area (sf)	CN	Description
3,044	73	Woods, Fair, HSG C
2,038	79	50-75% Grass cover, Fair, HSG C
5,082	75	Weighted Average
5,082		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	100	0.0850	0.32		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"

Subcatchment Post 3B: Post 3B

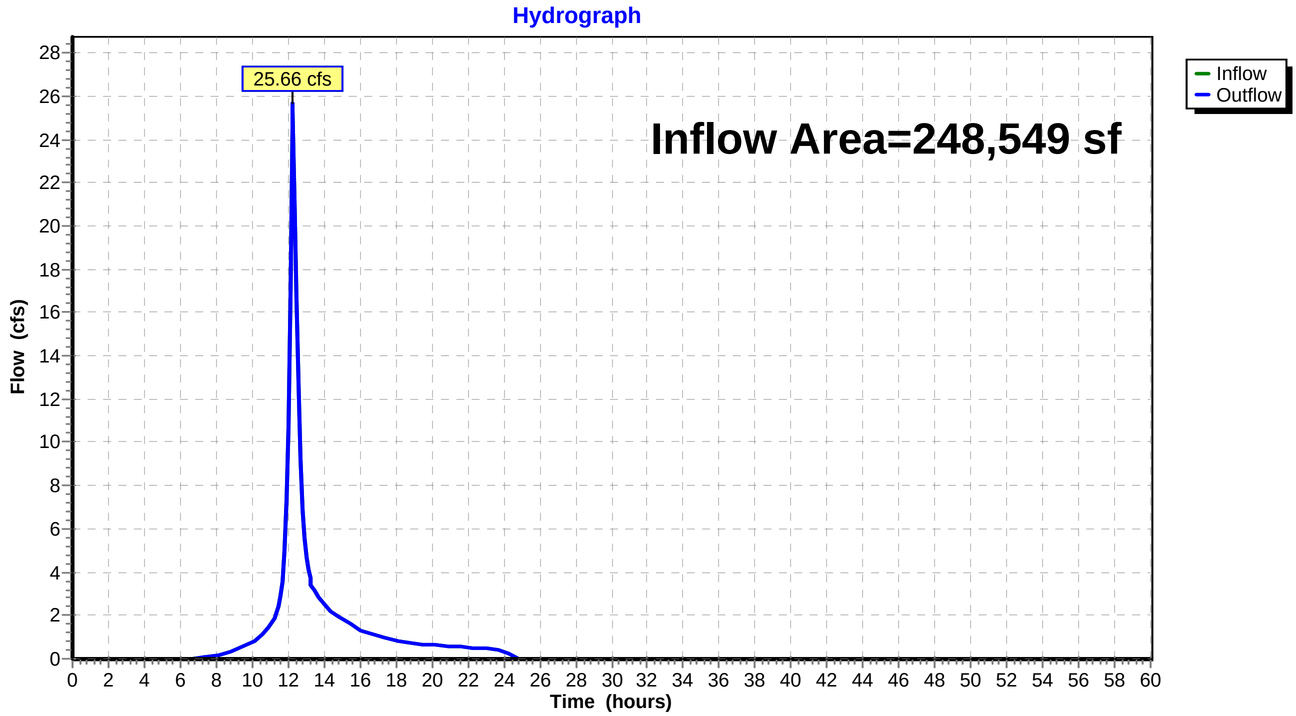


Summary for Reach DP1: Design Point 1

Inflow Area =	248,549 sf,	0.00% Impervious,	Inflow Depth = 5.71"	for 100 Year, 24 Hour Storm event	
Inflow =	25.66 cfs @	12.27 hrs,	Volume=	118,176 cf	
Outflow =	25.66 cfs @	12.27 hrs,	Volume=	118,176 cf,	Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3

Reach DP1: Design Point 1

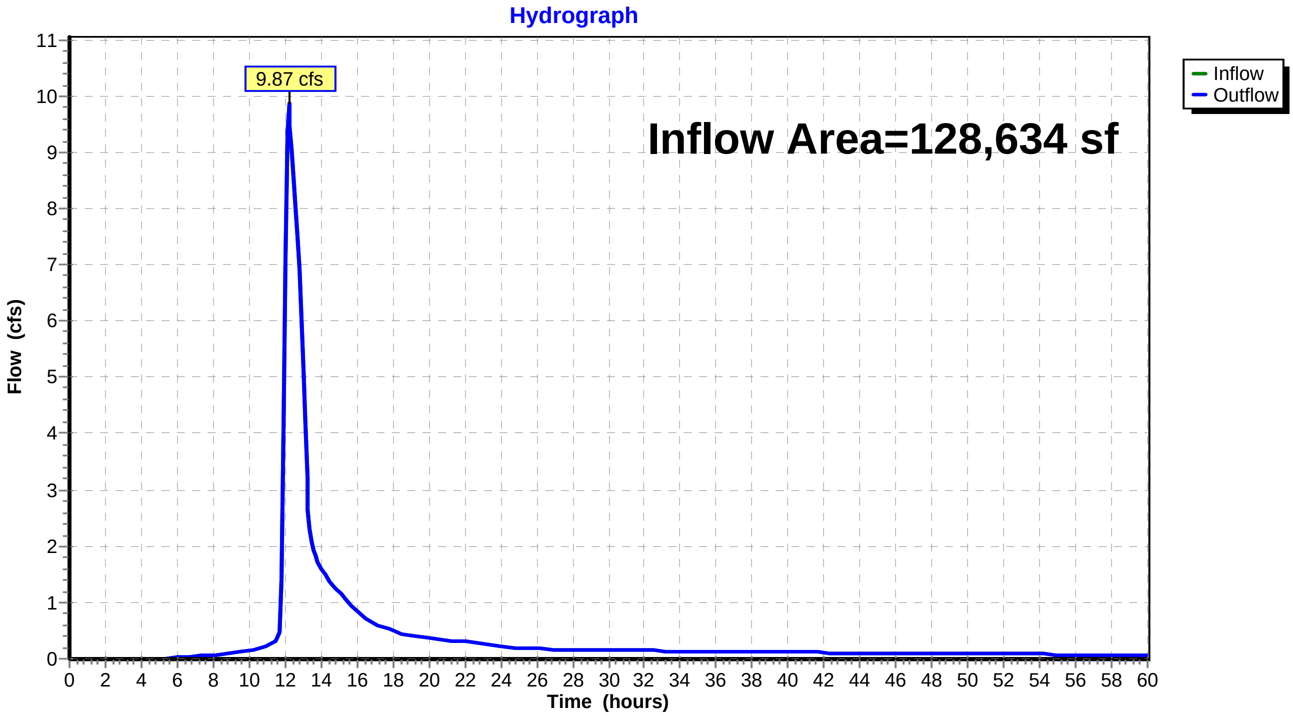


Summary for Reach DP2: Design Point 2

Inflow Area = 128,634 sf, 51.86% Impervious, Inflow Depth > 7.42" for 100 Year, 24 Hour Storm event
Inflow = 9.87 cfs @ 12.21 hrs, Volume= 79,502 cf
Outflow = 9.87 cfs @ 12.21 hrs, Volume= 79,502 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3

Reach DP2: Design Point 2

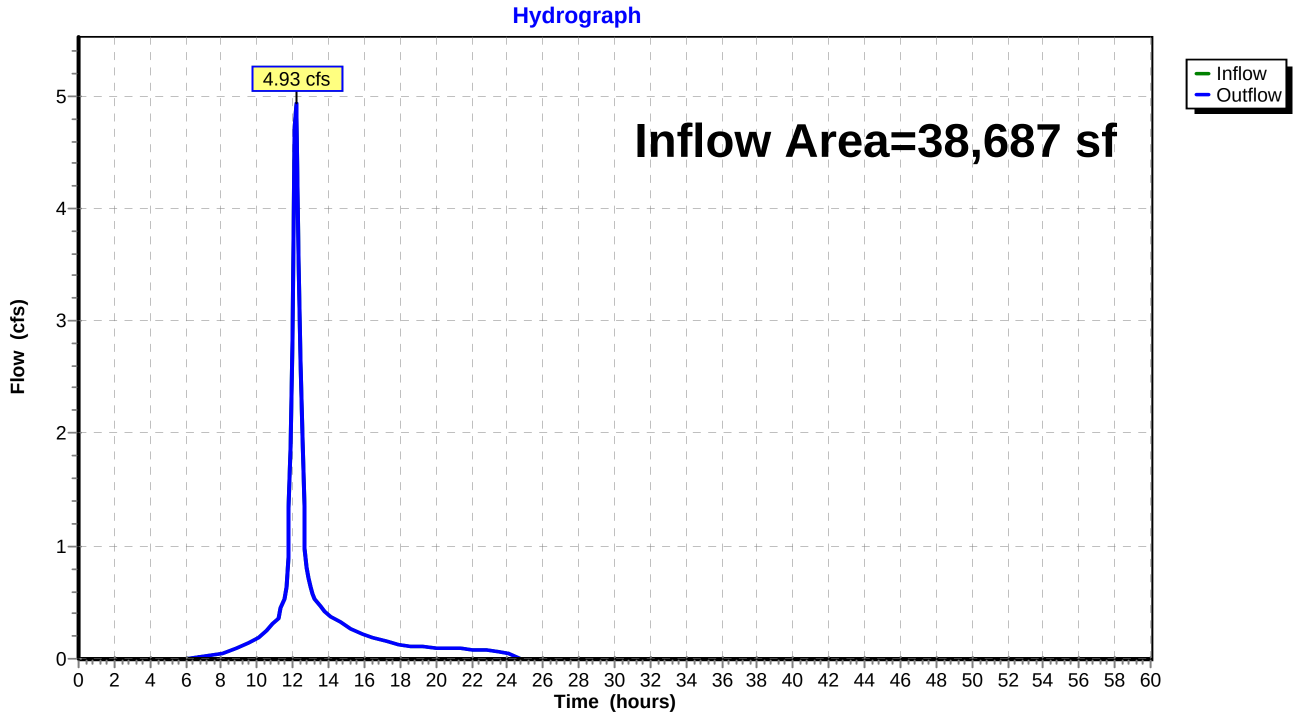


Summary for Reach DP3: Design Point 3

Inflow Area = 38,687 sf, 9.93% Impervious, Inflow Depth = 6.27" for 100 Year, 24 Hour Storm event
Inflow = 4.93 cfs @ 12.16 hrs, Volume= 20,225 cf
Outflow = 4.93 cfs @ 12.16 hrs, Volume= 20,225 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3

Reach DP3: Design Point 3



Summary for Pond F-1: Sand Filter

Inflow Area = 86,352 sf, 71.03% Impervious, Inflow Depth > 7.10" for 100 Year, 24 Hour Storm event
Inflow = 8.06 cfs @ 12.02 hrs, Volume= 51,063 cf
Outflow = 5.08 cfs @ 12.22 hrs, Volume= 50,825 cf, Atten= 37%, Lag= 11.8 min
Primary = 5.08 cfs @ 12.22 hrs, Volume= 50,825 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3
Peak Elev= 387.93' @ 12.22 hrs Surf.Area= 3,673 sf Storage= 9,799 cf

Plug-Flow detention time= 240.5 min calculated for 50,825 cf (100% of inflow)
Center-of-Mass det. time= 228.6 min (1,207.3 - 978.7)

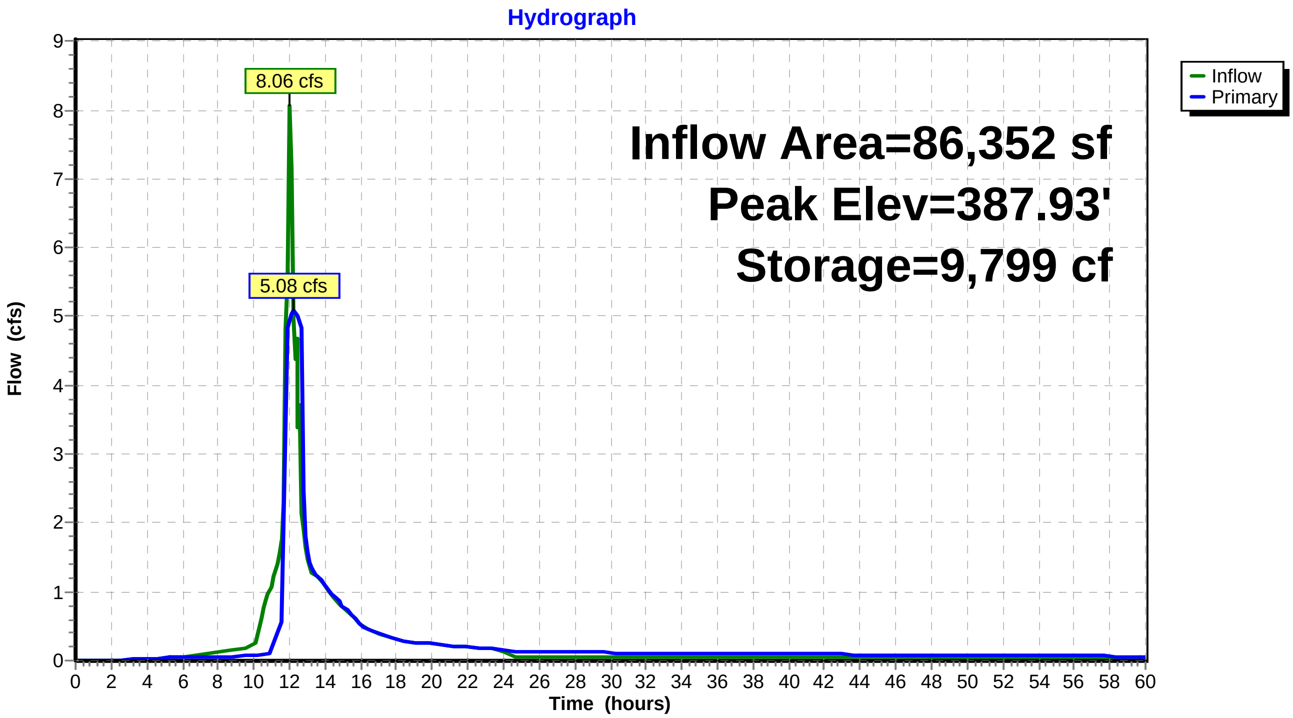
Volume	Invert	Avail.Storage	Storage Description
#1	384.00'	10,072 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
384.00	1,386	0	0
385.00	1,903	1,645	1,645
386.00	2,483	2,193	3,838
387.00	3,135	2,809	6,647
388.00	3,716	3,426	10,072

Device	Routing	Invert	Outlet Devices
#1	Primary	381.50'	**10.0" Round Culvert** L= 38.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 381.50' / 377.00' S= 0.1184 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf
#2	Device 1	384.00'	**1.750 in/hr Sand Filter Bed over Surface area**
#3	Device 1	387.00'	**24.0" x 24.0" Horiz. Overflow Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.08 cfs @ 12.22 hrs HW=387.91' TW=380.13' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 5.08 cfs @ 9.31 fps)
  ├─**2=Sand Filter Bed** (Passes < 0.15 cfs potential flow)
  └─**3=Overflow Grate** (Passes < 18.42 cfs potential flow)

Pond F-1: Sand Filter



Stage-Area-Storage for Pond F-1: Sand Filter

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
384.00	1,386	0
384.05	1,412	70
384.10	1,438	141
384.15	1,464	214
384.20	1,489	288
384.25	1,515	363
384.30	1,541	439
384.35	1,567	517
384.40	1,593	596
384.45	1,619	676
384.50	1,645	758
384.55	1,670	840
384.60	1,696	925
384.65	1,722	1,010
384.70	1,748	1,097
384.75	1,774	1,185
384.80	1,800	1,274
384.85	1,825	1,365
384.90	1,851	1,457
384.95	1,877	1,550
385.00	1,903	1,645
385.05	1,932	1,740
385.10	1,961	1,838
385.15	1,990	1,936
385.20	2,019	2,037
385.25	2,048	2,138
385.30	2,077	2,242
385.35	2,106	2,346
385.40	2,135	2,452
385.45	2,164	2,560
385.50	2,193	2,669
385.55	2,222	2,779
385.60	2,251	2,891
385.65	2,280	3,004
385.70	2,309	3,119
385.75	2,338	3,235
385.80	2,367	3,353
385.85	2,396	3,472
385.90	2,425	3,592
385.95	2,454	3,714
386.00	2,483	3,838
386.05	2,516	3,962
386.10	2,548	4,089
386.15	2,581	4,217
386.20	2,613	4,347
386.25	2,646	4,479
386.30	2,679	4,612
386.35	2,711	4,746
386.40	2,744	4,883
386.45	2,776	5,021
386.50	2,809	5,161
386.55	2,842	5,302
386.60	2,874	5,445
386.65	2,907	5,589
386.70	2,939	5,735
386.75	2,972	5,883
386.80	3,005	6,033
386.85	3,037	6,184
386.90	3,070	6,336
386.95	3,102	6,491
387.00	3,135	6,647
387.05	3,164	6,804
387.10	3,193	6,963
387.15	3,222	7,123
387.20	3,251	7,285
387.25	3,280	7,448
387.30	3,309	7,613
387.35	3,338	7,779
387.40	3,367	7,947
387.45	3,396	8,116
387.50	3,426	8,287
387.55	3,455	8,459
387.60	3,484	8,632
387.65	3,513	8,807
387.70	3,542	8,983
387.75	3,571	9,161
387.80	3,600	9,340
387.85	3,629	9,521
387.90	3,658	9,703
387.95	3,687	9,887
388.00	**3,716**	**10,072**

Summary for Pond FS: Flow Splitter

Inflow Area =	64,432 sf, 86.80% Impervious,	Inflow Depth = 8.43"	for 100 Year, 24 Hour Storm event
Inflow =	11.76 cfs @ 12.01 hrs,	Volume= 45,258 cf	
Outflow =	11.76 cfs @ 12.01 hrs,	Volume= 45,258 cf,	Atten= 0%, Lag= 0.0 min
Primary =	5.31 cfs @ 12.00 hrs,	Volume= 38,676 cf	
Secondary =	6.45 cfs @ 12.01 hrs,	Volume= 6,591 cf	

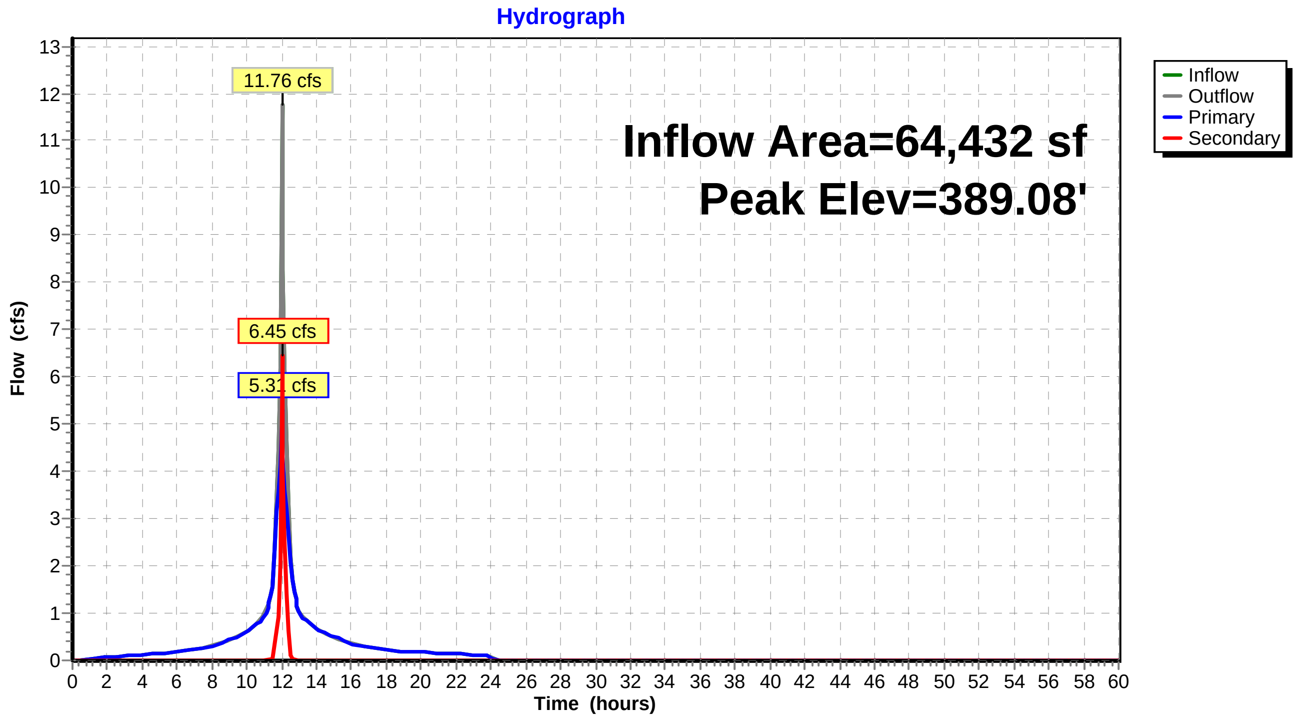
Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3
Peak Elev= 389.08' @ 12.02 hrs
Flood Elev= 392.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	386.00'	**15.0" Round Culvert to Sed Basin** L= 20.0' Ke= 0.900 Inlet / Outlet Invert= 386.00' / 384.00' S= 0.1000 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Secondary	387.80'	**24.0" Round Culvert** L= 106.0' Ke= 0.900 Inlet / Outlet Invert= 387.80' / 381.00' S= 0.0642 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf

Primary OutFlow Max=5.29 cfs @ 12.00 hrs HW=389.06' TW=387.77' (Dynamic Tailwater)
└─**1=Culvert to Sed Basin** (Inlet Controls 5.29 cfs @ 4.31 fps)

Secondary OutFlow Max=6.03 cfs @ 12.01 hrs HW=389.03' TW=379.67' (Dynamic Tailwater)
└─**2=Culvert** (Inlet Controls 6.03 cfs @ 2.98 fps)

Pond FS: Flow Splitter



Stage-Area-Storage for Pond FS: Flow Splitter

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
386.00	**0**	388.12	0	390.24	0
386.04	0	388.16	0	390.28	0
386.08	0	388.20	0	390.32	0
386.12	0	388.24	0	390.36	0
386.16	0	388.28	0	390.40	0
386.20	0	388.32	0	390.44	0
386.24	0	388.36	0	390.48	0
386.28	0	388.40	0	390.52	0
386.32	0	388.44	0	390.56	0
386.36	0	388.48	0	390.60	0
386.40	0	388.52	0	390.64	0
386.44	0	388.56	0	390.68	0
386.48	0	388.60	0	390.72	0
386.52	0	388.64	0	390.76	0
386.56	0	388.68	0	390.80	0
386.60	0	388.72	0	390.84	0
386.64	0	388.76	0	390.88	0
386.68	0	388.80	0	390.92	0
386.72	0	388.84	0	390.96	0
386.76	0	388.88	0	391.00	0
386.80	0	388.92	0	391.04	0
386.84	0	388.96	0	391.08	0
386.88	0	389.00	0	391.12	0
386.92	0	389.04	0	391.16	0
386.96	0	389.08	0	391.20	0
387.00	0	389.12	0	391.24	0
387.04	0	389.16	0	391.28	0
387.08	0	389.20	0	391.32	0
387.12	0	389.24	0	391.36	0
387.16	0	389.28	0	391.40	0
387.20	0	389.32	0	391.44	0
387.24	0	389.36	0	391.48	0
387.28	0	389.40	0	391.52	0
387.32	0	389.44	0	391.56	0
387.36	0	389.48	0	391.60	0
387.40	0	389.52	0	391.64	0
387.44	0	389.56	0	391.68	0
387.48	0	389.60	0	391.72	0
387.52	0	389.64	0	391.76	0
387.56	0	389.68	0	391.80	0
387.60	0	389.72	0	391.84	0
387.64	0	389.76	0	391.88	0
387.68	0	389.80	0	391.92	0
387.72	0	389.84	0	391.96	0
387.76	0	389.88	0	392.00	0
387.80	0	389.92	0		
387.84	0	389.96	0		
387.88	0	390.00	0		
387.92	0	390.04	0		
387.96	0	390.08	0		
388.00	0	390.12	0		
388.04	0	390.16	0		
388.08	0	390.20	0		

Summary for Pond SB: Sedimentation Basin

Inflow Area = 86,352 sf, 71.03% Impervious, Inflow Depth = 7.20" for 100 Year, 24 Hour Storm event
Inflow = 9.05 cfs @ 12.02 hrs, Volume= 51,812 cf
Outflow = 8.06 cfs @ 12.02 hrs, Volume= 51,063 cf, Atten= 11%, Lag= 0.5 min
Primary = 8.06 cfs @ 12.02 hrs, Volume= 51,063 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3
Peak Elev= 387.92' @ 12.30 hrs Surf.Area= 3,467 sf Storage= 9,069 cf

Plug-Flow detention time= 227.3 min calculated for 50,978 cf (98% of inflow)
Center-of-Mass det. time= 221.2 min (978.7 - 757.6)

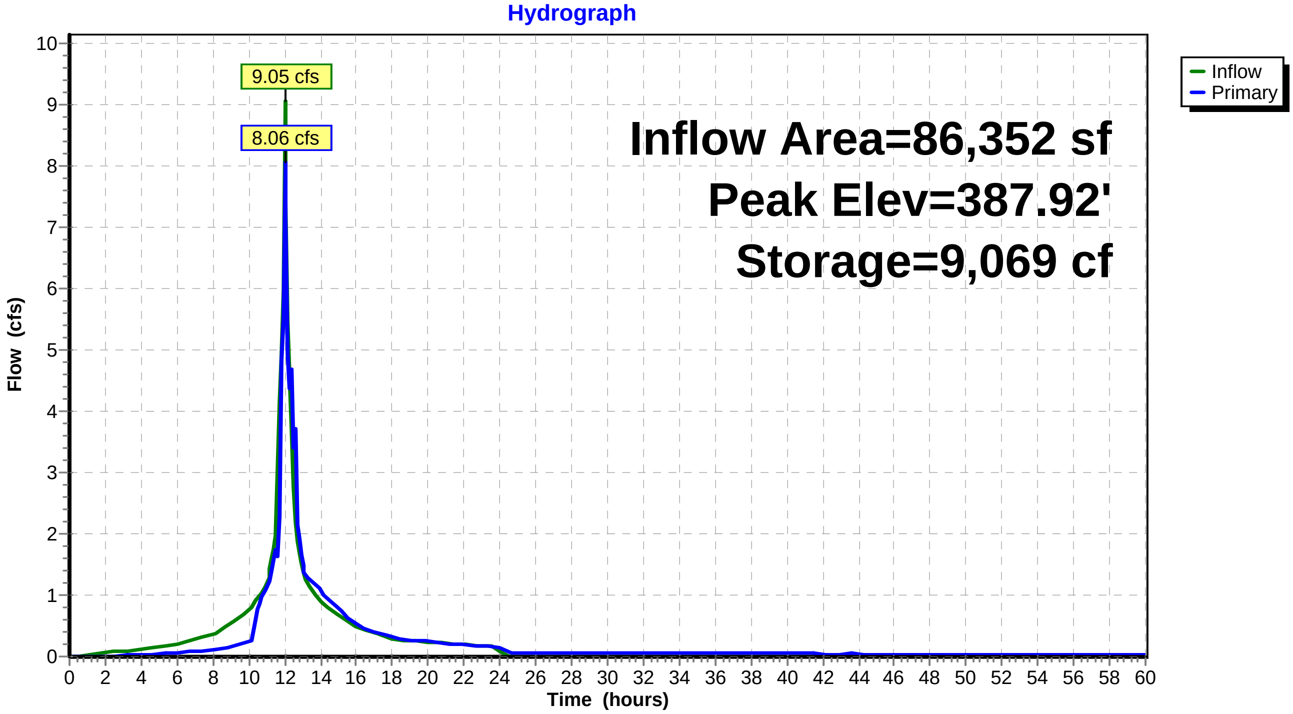
Volume	Invert	Avail.Storage	Storage Description
#1	384.00'	9,361 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
384.00	1,219	0	0
385.00	1,730	1,475	1,475
386.00	2,313	2,022	3,496
387.00	2,951	2,632	6,128
388.00	3,514	3,233	9,361

Device	Routing	Invert	Outlet Devices
#1	Primary	382.00'	**10.0" Round Culvert** L= 38.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 382.00' / 377.00' S= 0.1316 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf
#2	Device 1	384.00'	**0.4" Vert. Standpipe Perforations X 4.00 columns** X 12 rows with 3.0" cc spacing C= 0.600
#3	Device 1	387.00'	**12.0" Horiz. Standpipe Riser Opening** C= 0.600 Limited to weir flow at low heads
#4	Primary	387.50'	**15.0' long Overflow Spillway** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=7.86 cfs @ 12.02 hrs HW=387.79' TW=387.63' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.83 cfs @ 1.52 fps)
2=Standpipe Perforations (Passes < 0.08 cfs potential flow)
3=Standpipe Riser Opening (Passes < 1.51 cfs potential flow)
4=Overflow Spillway (Weir Controls 7.03 cfs @ 1.64 fps)

Pond SB: Sedimentation Basin



Stage-Area-Storage for Pond SB: Sedimentation Basin

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
384.00	1,219	0
384.05	1,245	62
384.10	1,270	124
384.15	1,296	189
384.20	1,321	254
384.25	1,347	321
384.30	1,372	389
384.35	1,398	458
384.40	1,423	528
384.45	1,449	600
384.50	1,475	673
384.55	1,500	748
384.60	1,526	823
384.65	1,551	900
384.70	1,577	978
384.75	1,602	1,058
384.80	1,628	1,139
384.85	1,653	1,221
384.90	1,679	1,304
384.95	1,704	1,389
385.00	1,730	1,475
385.05	1,759	1,562
385.10	1,788	1,650
385.15	1,817	1,741
385.20	1,847	1,832
385.25	1,876	1,925
385.30	1,905	2,020
385.35	1,934	2,116
385.40	1,963	2,213
385.45	1,992	2,312
385.50	2,022	2,412
385.55	2,051	2,514
385.60	2,080	2,617
385.65	2,109	2,722
385.70	2,138	2,828
385.75	2,167	2,936
385.80	2,196	3,045
385.85	2,226	3,156
385.90	2,255	3,268
385.95	2,284	3,381
386.00	2,313	3,496
386.05	2,345	3,612
386.10	2,377	3,730
386.15	2,409	3,850
386.20	2,441	3,971
386.25	2,473	4,094
386.30	2,504	4,219
386.35	2,536	4,345
386.40	2,568	4,472
386.45	2,600	4,601
386.50	2,632	4,732
386.55	2,664	4,865
386.60	2,696	4,999
386.65	2,728	5,134
386.70	2,760	5,271
386.75	2,792	5,410
386.80	2,823	5,551
386.85	2,855	5,693
386.90	2,887	5,836
386.95	2,919	5,981
387.00	2,951	6,128
387.05	2,979	6,276
387.10	3,007	6,426
387.15	3,035	6,577
387.20	3,064	6,729
387.25	3,092	6,883
387.30	3,120	7,039
387.35	3,148	7,195
387.40	3,176	7,353
387.45	3,204	7,513
387.50	3,233	7,674
387.55	3,261	7,836
387.60	3,289	8,000
387.65	3,317	8,165
387.70	3,345	8,332
387.75	3,373	8,500
387.80	3,401	8,669
387.85	3,430	8,840
387.90	3,458	9,012
387.95	3,486	9,186
388.00	**3,514**	**9,361**

Summary for Pond W-4: W-4 Pocket Wetland

Inflow Area = 113,943 sf, 58.55% Impervious, Inflow Depth > 7.74" for 100 Year, 24 Hour Storm event
Inflow = 16.51 cfs @ 12.01 hrs, Volume= 73,535 cf
Outflow = 8.26 cfs @ 12.30 hrs, Volume= 72,517 cf, Atten= 50%, Lag= 17.2 min
Primary = 8.26 cfs @ 12.30 hrs, Volume= 72,517 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.10 hrs / 3
Peak Elev= 380.16' @ 12.30 hrs Surf.Area= 7,895 sf Storage= 13,531 cf

Plug-Flow detention time= 113.8 min calculated for 72,517 cf (99% of inflow)
Center-of-Mass det. time= 80.4 min (1,150.8 - 1,070.4)

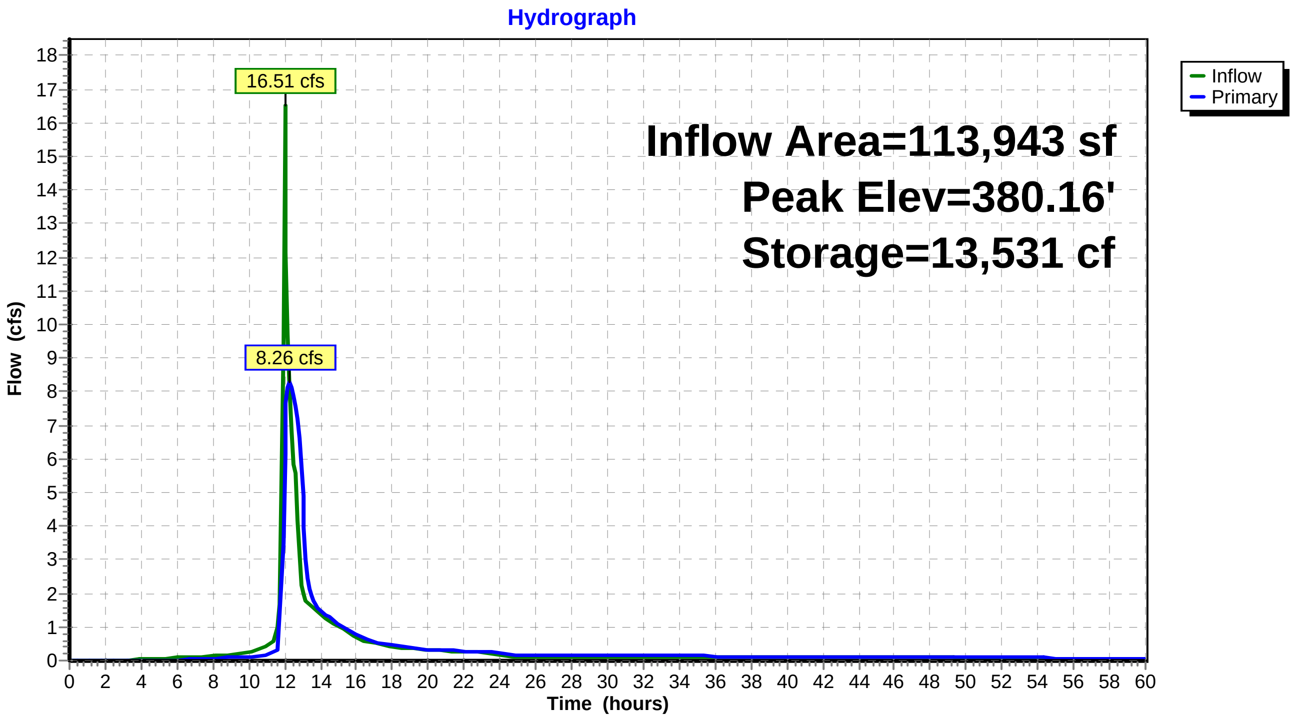
Volume	Invert	Avail.Storage	Storage Description
#1	378.00'	20,808 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
378.00	4,855	0	0
379.00	6,074	5,465	5,465
380.00	7,618	6,846	12,311
381.00	9,377	8,498	20,808

Device	Routing	Invert	Outlet Devices
#1	Primary	373.00'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 373.00' / 372.60' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	378.00'	**3.0" Vert. Low Flow Orifice** C= 0.600
#3	Device 1	378.70'	**36.0" W x 6.0" H Vert. High Flow Orifice (36Wx6H)** C= 0.600

Primary OutFlow Max=8.26 cfs @ 12.30 hrs HW=380.16' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 8.26 cfs of 9.72 cfs potential flow)
  ├─**2=Low Flow Orifice** (Orifice Controls 0.34 cfs @ 6.86 fps)
  └─**3=High Flow Orifice (36Wx6H)** (Orifice Controls 7.92 cfs @ 5.28 fps)

Pond W-4: W-4 Pocket Wetland



Stage-Area-Storage for Pond W-4: W-4 Pocket Wetland

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
378.00	4,855	0
378.05	4,916	244
378.10	4,977	492
378.15	5,038	742
378.20	5,099	995
378.25	5,160	1,252
378.30	5,221	1,511
378.35	5,282	1,774
378.40	5,343	2,040
378.45	5,404	2,308
378.50	5,465	2,580
378.55	5,525	2,855
378.60	5,586	3,132
378.65	5,647	3,413
378.70	5,708	3,697
378.75	5,769	3,984
378.80	5,830	4,274
378.85	5,891	4,567
378.90	5,952	4,863
378.95	6,013	5,162
379.00	6,074	5,465
379.05	6,151	5,770
379.10	6,228	6,080
379.15	6,306	6,393
379.20	6,383	6,710
379.25	6,460	7,031
379.30	6,537	7,356
379.35	6,614	7,685
379.40	6,692	8,018
379.45	6,769	8,354
379.50	6,846	8,695
379.55	6,923	9,039
379.60	7,000	9,387
379.65	7,078	9,739
379.70	7,155	10,095
379.75	7,232	10,454
379.80	7,309	10,818
379.85	7,386	11,185
379.90	7,464	11,556
379.95	7,541	11,932
380.00	7,618	12,311
380.05	7,706	12,694
380.10	7,794	13,081
380.15	7,882	13,473
380.20	7,970	13,869
380.25	8,058	14,270
380.30	8,146	14,675
380.35	8,234	15,085
380.40	8,322	15,498
380.45	8,410	15,917
380.50	8,498	16,339
380.55	8,585	16,766
380.60	8,673	17,198
380.65	8,761	17,634
380.70	8,849	18,074
380.75	8,937	18,519
380.80	9,025	18,968
380.85	9,113	19,421
380.90	9,201	19,879
380.95	9,289	20,341
381.00	**9,377**	**20,808**

SWPPP APPENDIX H

EROSION AND SEDIMENT CONTROL INSPECTION REPORT

Project Name: ____________________________ **Date:** _________________________

Project Number: ____________________________ **Logged by:** _________________________

Weather: ____

SITE PLAN/SKETCH

Provide a concise sketch indicating construction activities, location and description of stormwater runoff from the site, stabilization activities, and soil erosion and sediment control BMPs. Indicate BMPs improperly installed or in need of repair. The inspector shall notify the contractor(s) and subcontractor(s) of necessary repairs of BMPs required within one business day of this inspection.

Maintain Water Quality

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

Housekeeping

1. General Site Conditions

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

2. Temporary Stream Crossing

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

Runoff Control Practices

1. Excavation Dewatering

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

2. Level Spreader

Yes	No	NA	
[ ]	[ ]	[ ]	Installed per plan.
[ ]	[ ]	[ ]	Constructed on undisturbed soil, not on fill, receiving only clear, non-sediment laden flow.
[ ]	[ ]	[ ]	Flow sheets out of level spreader without erosion on downstream edge.

3. Interceptor Dikes and Swales

Yes	No	NA	
[ ]	[ ]	[ ]	Installed per plan with minimum side slopes 2H:1V or flatter.
[ ]	[ ]	[ ]	Stabilized by geotextile fabric, seed, or mulch with no erosion occurring.
[ ]	[ ]	[ ]	Sediment-laden runoff directed to sediment trapping structure.

4. Stone Check Dam

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

5. Rock Outlet Protection

Yes	**No**	**NA**	
[ ]	[ ]	[ ]	Installed per plan.
[ ]	[ ]	[ ]	Installed concurrently with pipe installation.

Soil Stabilization

1. Topsoil and Spoil Stockpiles

Yes	**No**	**NA**	
[ ]	[ ]	[ ]	Stockpiles are stabilized with vegetation and/or mulch.
[ ]	[ ]	[ ]	Sediment control is installed at the toe of the slope.

2. Revegetation

Yes	**No**	**NA**	
[ ]	[ ]	[ ]	Temporary seeding and mulch have been applied to idle areas.
[ ]	[ ]	[ ]	4 inches minimum of topsoil has been applied under permanent seeding.

Sediment Control

1. Stabilized Construction Entrance

Yes	**No**	**NA**	
[ ]	[ ]	[ ]	Stone is clean enough to effectively remove mud from vehicles.
[ ]	[ ]	[ ]	Installed per standards and specifications?
[ ]	[ ]	[ ]	Does all traffic use the stabilized entrance to enter and leave site?
[ ]	[ ]	[ ]	Is adequate drainage provided to prevent ponding at entrance?

2. Silt Fence

Yes	**No**	**NA**	
[ ]	[ ]	[ ]	Installed on Contour, 10 feet from toe of slope (not across conveyance channels).
[ ]	[ ]	[ ]	Joints constructed by wrapping the two ends together for continuous support.
[ ]	[ ]	[ ]	Fabric buried 6 inches minimum.
[ ]	[ ]	[ ]	Posts are stable, fabric is tight and without rips or frayed areas.

Sediment accumulation is % of design capacity.

3. Storm Drain Inlet Protection (Use for Stone & Block; Filter Fabric; Curb; or, Excavated practices)

Yes	**No**	**NA**	
[ ]	[ ]	[ ]	Installed concrete blocks lengthwise so open ends face outward, not upward.
[ ]	[ ]	[ ]	Placed wire screen between No. 3 crushed stone and concrete blocks.
[ ]	[ ]	[ ]	Drainage area is 1acre or less.
[ ]	[ ]	[ ]	Excavated area is 900 cubic feet.
[ ]	[ ]	[ ]	Excavated side slopes should be 2:1.
[ ]	[ ]	[ ]	2” x 4” frame is constructed and structurally sound.
[ ]	[ ]	[ ]	Posts 3-foot maximum spacing between posts.
[ ]	[ ]	[ ]	Fabric is embedded 1 to 1.5 feet below ground and secured to frame/posts with staples at max 8-inch spacing.
[ ]	[ ]	[ ]	Posts are stable, fabric is tight and without rips or frayed areas. Sediment accumulation % of design capacity.

4. Temporary Sediment Trap

Yes	**No**	**NA**	
[ ]	[ ]	[ ]	Outlet structure is constructed per the approved plan or drawing.
[ ]	[ ]	[ ]	Geotextile fabric has been placed beneath rock fill. Sediment accumulation is % of design capacity.

5. Temporary Sediment Basin

Yes	**No**	**NA**	
[ ]	[ ]	[ ]	Basin and outlet structure constructed per the approved plan.
[ ]	[ ]	[ ]	Basin side slopes are stabilized with seed/mulch.
[ ]	[ ]	[ ]	Drainage structure flushed and basin surface restored upon removal of sediment basin facility. Sediment accumulation is % of design capacity.

Note: Not all erosion and sediment control practices are included in this listing. Add additional pages to this list as required by site specific design.

Construction inspection checklists for post-development stormwater management practices can be found in the SWPPP.

RECOMMENDATIONS

____
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b. Modifications to the SWPPP (To be completed as described below)

The Operator shall amend the SWPPP whenever:

1. There is a significant change in design, construction, operation, or maintenance which may have a significant effect on the potential for the discharge of pollutants to the waters of the United States and which has not otherwise been addressed in the SWPPP; or

2. The SWPPP proves to be ineffective in:

   a. Eliminating or significantly minimizing pollutants from sources identified in the SWPPP and as required by this permit; or

   b. Achieving the general objectives of controlling pollutants in stormwater discharges from permitted construction activity; and

3. Additionally, the SWPPP shall be amended to identify any new contractor or subcontractor that will implement any measure of the SWPPP.

MODIFICATION & REASON:

Qualified Inspector (print name) Date of Inspection

Qualified Professional (print name) Qualified Professional Signature

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

SWPPP APPENDIX H

INSPECTION AND MAINTENANCE FORMS FOR POST-CONSTRUCTION PRACTICES

STORMWATER PLANTER

SURFACE SAND FILTER

STORMWATER POCKET WETLAND POND

Stormwater Planter Operation, Maintenance and Management Inspection Checklist

Project: ______________________

Location: ______________________

Site Status: ______________________

Date: ______________________

Time: ______________________

Inspector: ______________________

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
1. Debris / Trash Cleanout (Monthly)		
Stormwater planter clean of debris		
No dumping of yard wastes into practice		
Litter (branches, etc.) have been removed		
2. Vegetation (Monthly)		
Pruning and replacing dead or dying vegetation, plant thinning, and erosion repair		
Fertilized per specifications		
Plant composition according to approved plans		
No placement of inappropriate plants		
No evidence of erosion		
3. Dewatering (Monthly, After Major Storms)		
Dewaters between storms		
Planters should be inspected after each storm event greater than 0.5 inches, and at least twice in the first six months		
No evidence of standing water		
4. Sediment Deposition (Annual)		
Stormwater planter clean of sediments		
5. Outlet/Overflow Spillway (Annual, After Major Storms)		
Good condition, no need for repair		
No evidence of erosion		
No evidence of any blockages		
6. Integrity of Filter Bed (Annual)		
Filter bed has not been blocked or filled inappropriately		

Comments:

____

____

Actions to be Taken:

____

____

____

Sand/Organic Filter Operation, Maintenance and Management
Inspection Checklist

Project: ______________________
Location: ______________________
Site Status: ______________________
Date: ______________________
Time: ______________________
Inspector: ______________________

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
1. Debris Cleanout (Monthly)		
Contributing areas clean of debris		
Filtration facility clean of debris		
Inlet and outlets clear of debris		
2. Oil and Grease (Monthly)		
No evidence of filter surface clogging		
Activities in drainage area minimize oil and grease entry		
3. Vegetation (Monthly)		
Contributing drainage area stabilized		
No evidence of erosion		
Area mowed and clipping removed		
4. Water Retention Where Required (Monthly)		
Water holding chambers at normal pool		
No evidence of leakage		
5. Sediment Deposition (Annual)		
Filter chamber free of sediments		
Sedimentation chamber not more than half full of sediments		
6. Structural Components (Annual)		
No evidence of structural deterioration		
Any grates are in good condition		
No evidence of spalling or cracking of structural parts		
7. Outlet/Overflow Spillway (Annual)		
Good condtion, no need for repairs		
No evidence of erosion (if draining into a natural channel)		
8. Overflow Function of Facility (Annual)		
Evidence of flow bypassing facility		
No noticeable odors outside of facility		

Comments:

Actions to be Taken:

STORMWATER POCKET WETLAND		
Project Name:	**Location:**	
Site Status:	**Weather Condition:**	
Inspector: **Date:**	**Time:**	
Maintenance Item	**Satisfactory/ Unsatisfactory**	**Comments**
Embankment and emergency spillway (Annual, After Major Storms)		
1. Vegetation and ground cover adequate		
2. Embankment erosion		
3. Animal burrows		
4. Unauthorized planting		
5. Cracking, bulging, or sliding of dam		
a. Upstream face		
b. Downstream face		
c. At or beyond toe downstream/downstream		
d. Emergency spillway		
6. Pond, toe & chimney drains clear and functioning		
7. Seeps/leaks on downstream face		
8. Slope protection or riprap failure		
9. Vertical/horizontal alignment of top of dam As-Built		
10. Emergency spillway clear of obstructions and debris		
Riser and principal spillway (Annual)		
Type: Reinforced concrete ______		
Corrugated pipe ________		
1. Low flow orifice obstructed		
2. Low flow trash rack.		

STORMWATER POCKET WETLAND

Project Name:	**Location:**
Site Status:	**Weather Condition:**

Inspector:	**Date:**	**Time:**

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
a. Debris removal necessary		
b. Corrosion control		
3. Weir trash rack maintenance		
a. Debris removal necessary		
b. corrosion control		
4. Excessive sediment accumulation insider riser		
5. Concrete/masonry condition riser and barrels		
a. cracks or displacement		
b. Minor spalling (<1")		
c. Major spalling (exposed rebar)		
d. Joint failures		
e. Water tightness		
6. Metal pipe condition		
7. Control valve		
a. Operational/exercised		
b. Chained and locked		
8. Pond drain valve		
a. Operational/exercised		
b. Chained and locked		
9. Outfall channels functioning		

STORMWATER POCKET WETLAND		
Project Name:	**Location:**	
Site Status:	**Weather Condition:**	
Inspector: **Date:**	**Time:**	
Maintenance Item	**Satisfactory/ Unsatisfactory**	**Comments**
Permanent Pool (monthly)		
1. Undesirable vegetative growth		
2. Floating or floatable debris removal required		
3. Visible pollution		
4. Shoreline problem		
Sediment Forebay		
1.Sedimentation noted		
2. Sediment cleanout when depth < 50% design depth		
Dry Pond Areas		
1. Vegetation adequate		
2. Undesirable vegetative growth		
3. Undesirable woody vegetation		
4. Low flow channels clear of obstructions		
5. Standing water or wet spots		
6. Sediment and / or trash accumulation		
Condition of Outfalls (Annual, After Major Storms)		
1. Riprap failures		
2. Slope erosion		
3. Storm drain pipes		
4. Endwalls / Headwalls		

STORMWATER POCKET WETLAND		
Project Name:	**Location:**	
Site Status:	**Weather Condition:**	
Inspector: **Date:**	**Time:**	
Maintenance Item	**Satisfactory/ Unsatisfactory**	**Comments**
Other (monthly)		
1. Encroachment on pond, wetland or easement area		
2. Complaints from residents		
3.Aesthetics		
a. Grass growing required		
b. Graffiti removal needed		
4. Conditions of maintenance access routes.		
5. Signs of hydrocarbon build-up		
6. Any public hazards (specify)		
Wetland Vegetation (Annual)		
1. Vegetation healthy and growing		
Wetland maintaining 50% surface area coverage of wetland plants after the second growing season. (If unsatisfactory, reinforcement plantings needed)		
2. Dominant wetland plants:		
Survival of desired wetland plant species		
Distribution according to landscaping plan?		
3. Evidence of invasive species		
4. Maintenance of adequate water depths for desired wetland plant species		
5. Harvesting of emergent plantings needed		

STORMWATER POCKET WETLAND		
Project Name:	**Location:**	
Site Status:	**Weather Condition:**	
Inspector: **Date:**	**Time:**	
Maintenance Item	**Satisfactory/ Unsatisfactory**	**Comments**
6. Have sediment accumulations reduced pool volume significantly or are plants choked with sediment?		
7. Eutrophication level of the wetland.		

Comments: ____

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Actions to be Taken: ____

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