West Windsor Township Major Site Plan Application
Baseball Ballpark at Meadows Neighborhood, Lake Campus
Stormwater Report

Prepared For:

Princeton University

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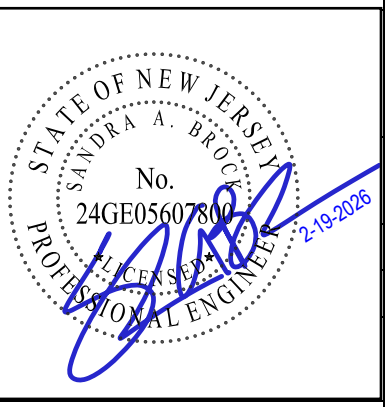


July 8, 2024, Revised October 1, 2024, December 10, 2025, February 19, 2026

STORMWATER REPORT

Complies with the NJDEP – New Jersey Administrative Code (N.J.A.C.) 7:8 last amended July 17, 2023; NJDEP Delaware and Raritan Canal Commission Seventh Edition Regulations for the Review Zone of The Delaware and Raritan Canal State Park Subchapter 8; The Land Development Standards of the County of Mercer, New Jersey Storm Water Management Amendment adopted June 12, 2024;
and the West Windsor Township Stormwater Control Requirements (Article XXI)

Project Name:	West Windsor Township Major Site Plan Baseball Ballpark at Meadows Neighborhood on the Lake Campus South
Project Location:	Tax Map Block 3, Lot 1.0113, Zone E West Windsor, NJ 08540
Prepared for:	The Trustees of Princeton University (the Applicant)
Nitsch Project:	#12683.4
Date Prepared:	July 8, 2024, Revised October 1, 2024, December 10, 2025, February 19, 2026



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Attachment A: **Stormwater Management Standards Documentation**

A1 - Major Development Stormwater Summary
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Attachment B: **Existing Conditions – HydroCAD Calculations**
Drainage Map Flow Chart – (Full Size Map in Plan Set)

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Drainage Map Flow Chart – (Size Map Full in Plan Set)

Attachment D: **Closed Drainage System Calculations**

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Attachment F: **Methodology and HydroCAD Technical Information**

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Attachment H: **New Jersey Department of Agriculture Data Entry Forms**

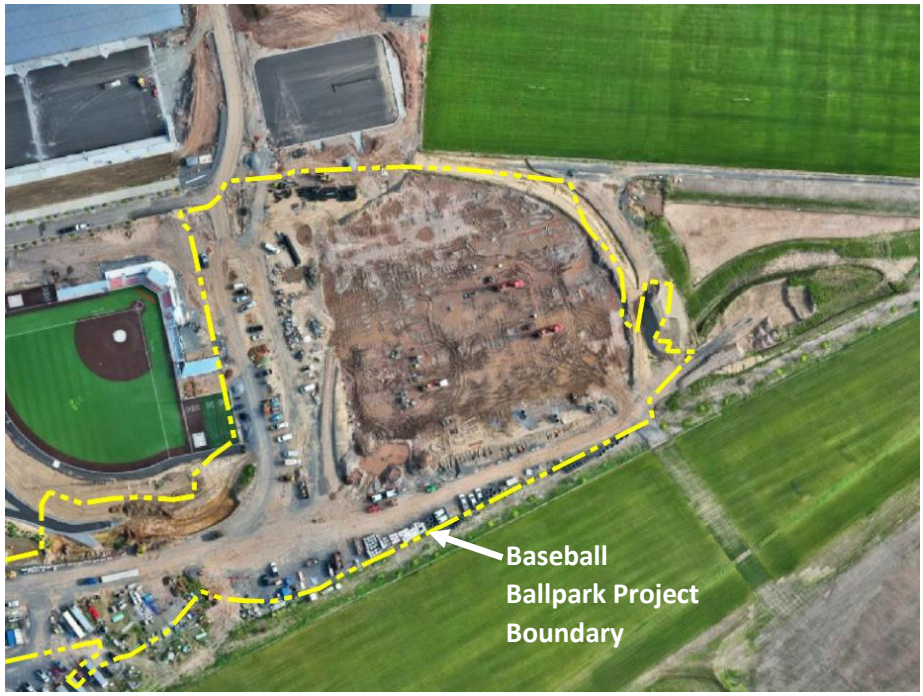
Attachment I: **Updated Lake Campus South Stormwater Operations and Maintenance Plan**

SECTION 0: SUMMARY OF DESIGN CHANGES

2/19/2026: Due to the proposed reduction in the size of the approved ballpark, the site layout and design changed, prompting changes to the stormwater features on the Baseball Ballpark site. These changes include, but are not limited to, adjustments in watershed delineations, drainage pipe configuration and layout, sizes and inverts of BMPs, and peak discharge rates. These changes are reflected in the Stormwater Plans that accompany this report. Any changes made to this report to reflect the updated design are depicted in **RED**.

SECTION 1: PROJECT OVERVIEW

Overall Project (Baseball Ballpark and previous Princeton Lake Campus Master Planning)	The proposed Baseball Ballpark (Ballpark) site is located on the Lake Campus within the previously approved Lake Campus South project limits. *<u>Background:</u> Nitsch Engineering had previously prepared a Stormwater Report to analyze the stormwater drainage conditions that will occur as part of the Trustees of Princeton University's West Windsor Township Major Site Plan - Lake Campus South Submission.* *As described during the General Development Plan (GDP) Submission, the proposed Lake Campus Site Development project includes new landscape, pedestrian and bicycle infrastructure, the Yard open space, Tiger Lane which connects the development to Washington Road, a reconstructed Nursery Drive for bicycle, pedestrian, and service vehicles, and athletics facilities including a cross country course and three new full-size rugby fields. Additionally, vertical projects include a graduate student housing building project, racquet center and softball Ballpark, a parking garage, central utilities building (CUB) and three future projects that have building sites but were not being designed at that time (Administration, Barn, Athletic Operations and Haaga House).* *The project included three campus watersheds, one watershed that is directed towards Washington Road and encompasses the northwest corner of the site, the central portion of the project is in a watershed that drains to the northeast towards an existing wetland system north of Nursery Drive. The third watershed drains to a stream which drains east, beneath Lower Harrison Street towards the Millstone River. The watersheds all discharge to Lake Carnegie at multiple discharge locations outside of the project site. The stormwater management system is proposed to support each of these projects independently while considering a holistic view of stormwater management for the Lake Campus.* The Ballpark site is located within the third watershed described above and discharges to the Regional Swale and then into Meadow Basins prior to discharging to a stream which drains beneath Lower Harrison Street. The site includes a new Ballpark, pedestrian and emergency access to the Ballpark, and robust stormwater management systems. No parking or vehicular driveways are proposed. See Figure 1 DA-EX and Figure 2 DA-PR for watershed area and stormwater management facilities. Figure DA-RC shows the approximate drainage areas contributing to BMPs contributing to meeting the groundwater recharge requirement which corresponds to each of the NJDEP GSR-32 spreadsheets submitted. This Stormwater Report analyzes only the drainage conditions associated with Ballpark defined further in the next section.

Project Area	 Figure 1 – Baseball Ballpark Site Location shown on Aerial Phone June 2024

SECTION 2: EXISTING STORMWATER CONDITIONS

Existing Drainage Infrastructure	Existing conditions on and adjacent to the Ballpark site include improvements constructed or under construction approved under the Lake Campus South project. Substantially completed improvements include Closed Drainage System, Regional Swale, Stormtrap SW Storage Structure, Meadow Basins, Outlet protection, etc. A 2024 as-built of the Lake Campus closed drainage system and videos of the pipe and structures have been performed. This information is currently being reviewed. There are no drainage structures within the proposed footprint of the Ballpark.
On-site Soil Investigations	For the Lake Campus South project Soil Testing was performed by Carlin Simpson and Associates for the drainage design in Fall 2020. For the Ballpark Carlin Simpson performed additional preliminary stormwater soil testing in December 2023. Additional Soil Testing was performed in June 2024 and used for the stormwater design. See **Attachment E** geotechnical soils report entitled "Supplemental Subsurface Soil and Groundwater Investigation Proposed Ballpark – Stormwater Management Update Princeton University", dated June 18, 2024. Generally, groundwater was not encountered in the borings or test pits, for the purpose of this stormwater design, groundwater is assumed to be at refusal or the bottom of the boring. At the Ballpark site groundwater elevations are at depths ranging from 11.5' to 18.75 (elevations +63.5 (north side) to +71.0 (south side). The assumed groundwater level is the seasonal high groundwater used in this design.

On-site Soil Investigations	Where stormwater infiltration is desired, the bottom of the new system shall be at least two (2) feet above the estimated seasonal high groundwater level. The proposed elevation of the playing field is at elevation 81.0, the elevation to the south (Cross Country) raises up elevation 90 and the elevation to the north (Tennis Courts) drops to elevation 76. The NRCS designation of the soil series at the Ballpark Site includes the following classifications: GASB: Galloway variant soils, 0 to 5 percent slopes, HSG rating of A BHSGB: Birdsboro gravelly solum variant soils, 0 to 6 percent slopes, HSG rating of A LbnC2: Lansdale channery loam, 6 to 12 percent slopes, eroded, HSG rating of B LbhB: Lansdale sandy loam, 2 to 6 percent slopes, HSG rating of B The majority of the Ballpark site is Lansdale soil (HSG rating of B). Group A soils have a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission. Group B soils have a moderate infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of silt or sandy loam. See **Attachment E** for the NRCS map.
SECTION 3: PROPOSED STORMWATER CONDITIONS	
Baseball Ballpark Stormwater Description	The Project includes the construction of a Baseball Ballpark and associated site landscaping, appurtenant utilities, and stormwater improvements developed as part of the Project. The Ballpark project is designed to meet West Windsor Township Stormwater Control Article (Article XXI) and NJ DEP Performance Standards for Stormwater Management Measures (7:8 5) by managing stormwater on site via the use of surface and subsurface stormwater management facilities. The Ballpark project includes a stormwater management system to mitigate the runoff from the proposed changes at the Ballpark site before discharging to the Lake Campus Stormwater system to less than the “existing” conditions as approved in the Lake Campus South submission. The Ballpark Site includes flows to the Softball Drainage System (Design Point 1), towards the Tennis Courts (Design Point 2), to the Regional Swale from the Cross-Country Track (Design Point 4) along with the flow from the majority of the Ballpark Site, including the new Baseball Ballpark and pedestrian paths and gathering areas, to the Region Swale (Design Point 3). This Project will meet current regulations and decrease the previous runoff discharges established in the Lake Campus South Submission. The proposed site does not include parking, roadways, driveways, or other areas with regular vehicular traffic at the Ballpark site. Water quality treatment of runoff is not required for this site. The project does include a series of pedestrian paths and access for emergency vehicles. Princeton University is taking advantage of the location and size of the Ballpark to provide an enhanced stormwater system to provide capacity for not only the Ballpark but for future projects at Lake Campus. This capacity exists in the subsurface stormwater management under the baseball playing field.

Baseball Ballpark Stormwater Description

The storage in these basins being proposed can provide volume for future developments. This SW Report includes an evaluation of a potential future building roof (30,000 square feet of roof area) to demonstrate the proposed design has excess capacity. Any future building will need to provide updated calculations based on the actual project.

Land Use Table

Table 1. Proposed land use (in acres)

Land Use	Existing Site square feet (acres)	Proposed Site square feet (acres)	Change square feet (acres)
Landscape Areas	874,356 (20.07)	695,880 (15.98)	-178,476 (-4.09)
Synthetic Turf Field	0.00	142,621 (3.27)	142,621 (+3.27)
Buildings/Ballpark	0.00	14,949 (0.34)	14,949 (+0.34)
Porous Pavement	0.00	25,415 (0.58)	25,415 (+0.58)
Pavement	9,741 (0.22)	5,229 (0.12)	-4,512 (-0.10)
Total	884,097 (20.30)	884,097 (20.30)	-

Table 2. Proposed land use (in acres) – with **Future** Lake Campus Project

Land Use	Existing Site square feet (acres)	Proposed Site square feet (acres)	Change square feet (acres)
Landscape Areas	874,356 (20.07)	695,880 (15.98)	-178,476 (-4.09)
Synthetic Turf Field	0.00	142,621 (3.27)	142,621 (+3.27)
Buildings/Ballpark	0.00	14,949 (0.34)	14,949 (+0.34)
Porous Pavement	0.00	25,415 (0.58)	25,415 (+0.58)
Pavement	9,741 (0.22)	5,229 (0.12)	-4,512 (-0.10)
Future Building	0.00	30,000 (0.69)	30,000(+0.69)
Total	20.30	20.99	

Stormwater Management Systems

Non-Structural stormwater management strategies

Non-Structural stormwater management strategies include Best Management Practices (BMPs) with a focus on green infrastructure (GI) techniques that will be used to mitigate changes in runoff patterns and rates, promote decentralized recharge where feasible, and provide water quality treatment even when not required. The Project will also implement long-term pollution prevention and source control measures, including inspections and maintenance of stormwater BMPs.

The Project has been designed using environmentally sensitive site design and low impact development (LID) techniques.

This design prevents the generation of stormwater and non-point source pollution as is no regular vehicular traffic within the Ballpark Site. The site promotes walking and biking and attendees the Ballpark would arrive by foot, bicycles, Princeton Transportation, or by passenger vehicle. If by passenger vehicle, the attendees would park in the nearby parking garage and then walk to the Ballpark.

Stormwater Management Systems	Stormwater systems have been designed to model natural hydrologic features to the extent practicable, including promoting recharge throughout the site by creating decentralized LID stormwater management techniques and promoting recharge through the use of a variety of porous pavement systems with storage and infiltration potential. The project also includes an underground infiltration basin within the Ballpark under a portion of synthetic turf field. **BMP Definitions:** • *Non-Structural stormwater management strategies*: Non-Structural stormwater management strategies include Best Management Practices (BMPs) with a focus on low impact development (LID) and green infrastructure (GI) techniques that will be used to mitigate changes in runoff, promote recharge where feasible, and provide water quality treatment. The Project will also implement long-term pollution prevention and source control measures, including inspections and maintenance of stormwater BMPs. The Project has been designed using environmentally sensitive site design and LID techniques. This design prevents the generation of stormwater and non-point source pollution by protecting the existing stormwater basin and adjacent wooded areas, disconnecting flow paths, treating and promoting recharge of stormwater at its source, and protecting natural processes. Stormwater systems have been designed to model natural hydrologic features to the extent practicable, including promoting recharge throughout the site by creating decentralized porous pavement systems. The stormwater management approach for the Ballpark site was to develop decentralized porous surfaces to provide infiltration where rain falls; the porous surfaces include walkways, a restricted access path, concourse areas, and the synthetic field. The Ballpark's impervious stands, roof, and synthetic turf field are directed to an infiltration basin under the synthetic turf field. The following BMPs are located within the Ballpark site and are included in **New Jersey Administrative Code (N.J.A.C.) Stormwater Management 7:8 (last amended July 17, 2023)** Table 5-1 Green Infrastructure BMPs for Groundwater Recharge, Stormwater Runoff Quality, and/or Stormwater Runoff Quantity: • Porous Paving System: Porous Pavement – Walk from Ballpark to Garage Mitigates runoff quality, runoff quantity, provides recharge (if no underdrain). Minimum depth to seasonal high groundwater is 2 feet. • Porous Paving System: Stepped Porous Paver System with Storage at Restricted Use Path Mitigates runoff quality, runoff quantity, provides recharge (if no underdrain). Minimum depth to seasonal high groundwater is 2 feet. • Porous Paving System: Porous Paver System with Storage at the Concourse (entrance to Ballpark) Mitigates runoff quality, runoff quantity, provides recharge (if no underdrain). Minimum depth to seasonal high groundwater is 2 feet. **N.J.A.C. Stormwater Management 7:8** Table 5-2 Green Infrastructure BMPs for Stormwater Runoff Quality *(or for Groundwater Recharge and/or Stormwater Runoff Quantity, and/or Stormwater Runoff Quantity with a Waiver or Variance from NJAC 7-8-5-3)* • Infiltration Basin for Stormwater Runoff Quantity: Underground Infiltration Basin System at Field Mitigates runoff quality, runoff quantity, provides recharge (if no underdrain). Minimum depth to seasonal high groundwater is 2 feet.

Stormwater Management System - continued	**Campus Stormwater Management Systems:** The discharge from the Ballpark site will discharge to the Lake Campus stormwater management system. The Ballpark Site will discharge less runoff and volume to the Lake Campus system than previously proposed. The following previously approved stormwater system is included for context and for information only. ***Lake Campus Background: Downstream and Conveyance Stability Summary*** • *Regional Swale* *The Regional Swale is located just east of the Ballpark and is the Design Point for Ballpark Site. This Regional Swale discharges to the Meadow Infiltration Basins.* • *Stormwater Meadow Infiltration Basins* o *Infiltration basins are stormwater management systems constructed with highly permeable components designed to both maximize the removal of pollutants from stormwater and to promote groundwater recharge. Pollutants are treated through settling, filtration of the runoff through, and biological and chemical activity within, the components.* o *The Meadow Infiltration Basins are located east of the Rugby Fields. These are surface basins with side slopes of approximately 5:1 and a flat bottom. The basins have emergency spillways, and an outlet control structure discharging to a rip-rapped outfall near Nursery Road. This series of infiltration basins will serve as management for the Project site.* ***Swale Design Summary*** *Lake Campus South includes one swale for conveyance. These are not designed as water quality swales, but are intended to be grassed, naturalized, shallow ditches to convey runoff from the new cross-country course around the proposed athletic fields.* *The swales were designed to the standards set out in The Standards for Soil Erosion and Sedimentation Control in New Jersey (the Standards) for grassed waterways. The velocity of water conveyed by the swale was checked at the end, with the maximum contributing drainage area.* *As per the guidelines in the Standards, the 10-year storm was used for the contributing drainage areas contributing to each swale. The swale is designed with a 6-foot-wide bottom, 1-foot deep, and with side slopes of 3:1. At each point, Chezy and Manning's formulas for open channel flow were used to solve for the flow depth and velocity in the swale at the flows given by the contributing drainage areas in the 10-year storm.* *The velocities for the swale adjacent to the cross-country field was 1.8 feet per second, while the velocity for the swale adjacent to the athletic field was generally negligible (intended as a route for water around the athletic field and does not have a significant contributing area). In areas of sandy loam, as per the Standards, this is within the acceptable range for non-erosive velocities for the soil texture in the area.* ***Pipe Outlet and Scour Protection Summary*** *Conduit Outlet Protection, in accordance with the Standards for Soil Erosion and Sediment Control in New Jersey (the Standards), is provided at all pipe outlets that discharge to a surface basin or daylight in a basin side slope and terminate in a Flared End Section. The*

Stormwater Management System - continued	*protection used in all cases is a horizontal rip-rap apron, shown on the stormwater plans and details.* *The length, width, depth, and stone size of the rip-rap aprons are based on the flow through the pipe in the 25-year storm (**see Attachment D**), pipe size, and downstream conditions. Details of calculations are included in Attachment A, and a table is provided with the rip-rap apron detail on the stormwater plans.* ***Emergency Spillway Summary*** *Emergency spillways are provided for the meadow infiltration.* *Flow over the spillways and stability criteria downstream were evaluated in accordance with the Standards for Soil Erosion and Sediment Control in New Jersey (the Standards). Flow over the outlet areas and maximum discharge were in accordance with the requirements of the Standards for Off-Site Stability. Most of the emergency spillways have no flow in the 25-year storm, and thus demonstrated stability according to the Standards. Scour holes are provided for the larger stormwater basins, in accordance with the details provided, on the toe of the downstream slope. These areas will allow for additional protection of downstream conditions at the larger stormwater basins.*
Stormwater Management During Construction	Construction stormwater management information is referenced on "Legend and General Notes Plan" sheet C-100. The plan notes that the Contractor is required to submit a NPDES Construction General Permit prior to construction and prepare a Stormwater Pollution Prevention Plan (SWPP) in accordance with the NPDES regulations. The SWPP will include requirements for stormwater during construction.
SECTION 4: Stormwater Management Analysis	
Methodology	Nitsch Engineering completed a hydrologic analysis of the existing project site utilizing Soil Conservation Service (SCS) Runoff Curve Number (CN) methodology. **See Attachment F** for further information on methodology.
HydroCAD	The HydroCAD computer program includes SCS and TR-20 methods to model the drainage systems. Nitsch Engineering utilizes HydroCAD in our design calculations. **See Attachments B and C** for detailed information including HydroCAD outputs.
Precipitation Data	Nitsch Engineering, Inc. used the following for precipitation data. The New Jersey 24 Hour Rainfall Frequency Data for Mercer County is as follows with Regulatory Adjustments:

Precipitation Data

Table 3: Rainfall Data (NOAA Type C – Mercer County)

Storm Event	Table 4.1 Rainfall 24 Hr Rainfall	Current Adjustment	Future Adjustment
1-year	2.74 inches		
2-year	3.31 inches	3.34 in	3.84 in
10-year	5.01 inches	5.11 in	5.86 in
100-year	8.33 inches	8.66 in	11.33 in

Note: *SCS Type II 24-hour storm, two-hour NJDEP distribution was used for NJDEP water quality storm (1.25" in 2 hours). See HydroCAD calculations in Attachment D.*

Existing and Proposed Hydrological Design Points

See Figure 1 CSW-EX1 Existing Watershed Areas and Figure 2 CSW-PR1 - Proposed Watershed Areas for design point locations.

Design Point 1: Softball Field See: Figure 1 and 2 are included in this Report and also included as a scaled plan in the plan set.

Design Point 2: Tennis Court See: The drainage area to DP-2 is being reduced. No new impervious area proposed. This Design Point does not require reduction in rates as no work is being performed in this and the area is being reduced.

Design Point 3: Ballpark Area to the Regional Swale: Drainage area to DP-3 is being mitigated. See Table 4a below.

Design Point 4: Cross-Country to Regional Swale See: Drainage area to DP-1 is unchanged. This drainage area was included for information only.

Peak Runoff Rates

Table 4a: Peak Rates of Runoff in Cubic Feet per Second (cfs) – Current Storm

	Storm Event	2-year Current	10-year Current	100-year Current
DP-1* (Softball)	Existing	1.38	4.43	12.30
	Allowable	N/A	N/A	N/A
	Proposed	1.13	3.52	9.68
DP-2* (Tennis)	Existing	0.67	1.83	4.76
	Allowable	N/A	N/A	N/A
	Proposed	0.27	0.52	1.11
DP-3 (Regional Swale)	Existing	2.07	7.75	22.91
	Allowable	**1.03**	**5.81**	**18.33**
	Proposed	1.03	3.33	15.06
DP-4* (Cross-County)	Existing	2.38	8.91	26.60
	Allowable	N/A	N/A	N/A
	Proposed	2.38	8.91	26.60

Peak Runoff Rates

*No new work proposed with proposed drainage area, drainage area reduced in size to this Design Point.

Allowable Peak rates for the 2-, 10-, and 100-year, 24-hour storm events equal 50%, 75%, and 80% of their pre-development peak discharge rates, respectively. See **Attachments B and C** for calculations.

Table 4b: Peak Rates of Runoff in Cubic Feet per Second (cfs) – 2100 Year Storm

	Storm Event	2-year 2100	10-year 2100	100-year 2100
DP-1* (Softball)	Existing	2.15	5.95	18.92
	Allowable	N/A	N/A	N/A
	Proposed	1.73	4.71	14.83
DP-2* (Tennis)	Existing	0.96	2.40	7.19
	Allowable	N/A	N/A	N/A
	Proposed	0.34	0.64	1.58
DP-3 (Regional Swale)	Existing	3.45	10.66	35.72
	Allowable	**1.73**	**8.00**	**28.58**
	Proposed	1.52	5.88	24.43
DP-4* (Cross-County)	Existing	3.95	12.29	41.60
	Allowable	N/A	N/A	N/A
	Proposed	3.95	12.29	41.60

*No new work proposed with proposed drainage area, drainage area reduced in size to this Design Point.
Allowable Peak rates for the 2-, 10-, and 100-year, 24-hour storm events equal 50%, 75%, and 80% of their pre-development peak discharge rates, respectively. See **Attachments B and C** for calculations.

Closed Drainage System

There is a limited proposed closed drainage system for the Ballpark Site and consists of area drains, catch basins, drainage manholes, and outlet control structure connected with corrugated polyethylene pipe. The closed drainage does not convey runoff from the surfaces to the various design points except for two area drains (AB B10 and AB B11). The closed drainage system is generally acting as an overflow or a redundant system for the porous pavements systems. The overflows are designed with HydroCAD. Future closed drainage system components are shown for information to provide conveyance for future upstream projects and are labeled as future. Refer to **Attachment D** for more information on the design.

NJDEP Stormwater Management Requirements	
Standard: Peak Rate Attenuation	The proposed stormwater management system is designed so that the post-development peak discharge rates do not exceed pre-development peak discharge rates. To prevent storm damage and downstream flooding, the proposed stormwater management practices will mitigate peak runoff rates for the 2-, 10-, and 100-year, 24-hour storm events at 50%, 75%, and 80% of their pre-development peak discharge rates for both the adjusted rainfall depths and for the estimated 2100 year rainfall depths, respectively. Therefore, the proposed system will meet or exceed the NJDEP Stormwater Management Guidelines. Refer to the above Table 3 and **Attachment B and C** for more information.
Standard: Groundwater Recharge	The environmentally sensitive site design includes low impact development techniques and stormwater BMP treatment trains. The geotechnical report in **Attachment E** has noted that the site soils are consistent with HSG A and B soils and that 100 percent of the difference between the site's pre- and post-development 2-Year runoff volumes is infiltrated. An NJGRS spreadsheet has been included in **Attachment A**, demonstrating compliance with the standard. Figure for Recharge
Standard: Water Quality Treatment	The proposed Ballpark site does not include any Regulated Vehicle Surfaces that would require water quality treatment under N.J.A.C 7.8. The design will provide removal of 80% of the average annual post-construction load of Total Suspended Solids (TSS) to meet DRCC regulations. Stormwater BMPs include 3 porous paver systems with storage below and an infiltration basin that recharges of 1.25 inch, 2-hour storm over the project site and removes 80% of total suspended solids. The main pedestrian path will be a porous paver systems (a porous paver system and Grasscrete system). The proposed main pedestrian will also provide access for emergency vehicles. TSS removal calculations have been provided in **Attachment A**.
Standard: Stormwater Management Measure Maintenance Plan	A post-construction operation and maintenance plan was previously approved for the Lake Campus South Project. Additional information for the Ballpark project has been added to the previously submitted O&M Plan to have information in a single location for Meadows Neighborhood. The O&M Plan will be implemented to ensure that stormwater management systems function as designed. Source control and stormwater BMP operation requirements for the academic campus are summarized in a Stormwater Management Measure Maintenance Plan. See Attachment J for the Updated Lake Campus South Stormwater Operations and Maintenance Plan.
Standard: Nonstructural Stormwater Management Strategies	The NJDEP Stormwater Management Standards require low impact design and nonstructural stormwater management strategies into the design. The NJDEP Nonstructural Structural Strategies Point System (NSPS) is found in **Attachment G**. 1. Protect areas that provide water quality benefits or areas particularly susceptible to erosion and sediment loss. **An erosion and sediment control plan has been prepared for the project to support the prevention of sediment loss during construction. Additionally, perimeter construction areas, adjacent stormwater swales, and downstream stormwater basins are proposed to be protected throughout construction.**

Standard: Nonstructural Stormwater Management Strategies - continued	2. Minimize impervious surfaces and break up or disconnect the flow of runoff over impervious surfaces; **Green infrastructure techniques have been incorporated into the design to support a decentralized stormwater management approach and disconnect the flow of runoff over impervious surfaces.** 3. Maximize the protection of natural drainage features and vegetation; **An erosion and sediment control plan has been prepared for the project to support the prevention of sediment loss during construction. Additionally, perimeter construction areas, adjacent stormwater swales, and downstream stormwater basins are proposed to be protected throughout construction.** 4. Minimize the decrease in the "time of concentration" from pre-construction to postconstruction. "Time of concentration" is defined as the time it takes for runoff to travel from the hydraulically most distant point of the drainage area to the point of interest within a watershed; **Decrease in time of concentration has been minimized to the extent practicable based on the proposed development conditions with the use of decentralized green infrastructure techniques to disconnect the flow of runoff over impervious surface.** 5. Minimize land disturbance including clearing and grading; **The site is currently disturbed and part of an on-going construction site. The disturbed areas will be stabilized during this project.** 6. Minimize soil compaction; **Soil compaction within planting areas is minimized to allow for plant growth and uptake landscaped areas.** 7. Provide low-maintenance landscaping that encourages retention and planting of native vegetation and minimizes the use of lawns, fertilizers and pesticides; **Refer to the landscape plans for information on plantings and plant maintenance.** 8. Provide vegetated open-channel conveyance systems discharging into and through stable vegetated areas; and **Green infrastructure techniques providing decentralized stormwater management using a variety of porous pavement systems throughout the site. BMPs have been incorporated into the site design to support a decentralized stormwater management approach and disconnect the flow of runoff over impervious surfaces**. 9. Provide other source controls to prevent or minimize the use or exposure of pollutants at the site in order to prevent or minimize the release of those pollutants into stormwater runoff. These source controls include, but are not limited to:

Standard: Nonstructural Stormwater Management Strategies - continued	a. Site design features that help to prevent accumulation of trash and debris in drainage systems; b. Site design features that help to prevent discharge of trash and debris from drainage systems; and c. Site design features that help to prevent and/or contain spills or other harmful accumulations of pollutants at industrial or commercial developments. d. When establishing vegetation after land disturbance, applying fertilizer in accordance with the requirements established under the Soil Erosion and Sediment Control Act, N.J.S.A. 4:24-39 et seq., and implementing rules. **The proposed combination of green infrastructure techniques discharging to regional stormwater management systems supports the removal of trash and debris from the proposed and existing drainage systems.**

West Windsor Township Stormwater Management Requirements

The design complies with the Stormwater Control Ordinance (SCO, Article XXI § 200-99 thru 111.1). Refer to Attachment A1 Major Development Stormwater Summary for information on the BMPs. Attachments A2-A4 include information on Drawdown, Recharge and TSS Removal. Attachment G includes Nonstructural BMP calculations.

Section 5: DELAWARE AND RARITAN CANAL COMMISSION STORMWATER MANAGEMENT REQUIREMENTS

The design complies with the Delaware and Raritan Canal Commission (DRCC) Seventh Edition Regulations for the review Zone of The Delaware and Raritan Canal Commission State Park Subchapter 8.

Stream Corridor (N.J.A.C. 7:45-9.1(a)):

The Delaware and Raritan Canal is located approximately 1,000 feet to the west of the project site. No other mapped watercourses or floodplains lie directly on the project site. Therefore, this project is not subject to Stream Corridor impact review.

Stormwater Runoff Quantity (N.J.A.C. 7:45-8.6(a)):

	Storm Event	2100 Year 2-Yr Cubic Ft	2100 Year 10-Yr Cubic Ft	2100 Year 100-Yr Cubic Ft
DP-1* (Softball)	Existing	7,744	18,994	59,208
	Allowable	N/A	N/A	N/A
	Proposed	5,681	13,838	42,942
DP-2* (Tennis)	Existing	2,787	6,354	18,844
	Allowable	N/A	N/A	N/A
	Proposed	1,009	1,842	4,475
DP-3 (Regional Swale)	Existing	14,554	39,013	128,266
	Allowable	N/A	N/A	N/A
	Proposed	23,006	54,616	176,190
DP-4* (Cross-County)	Existing	20,648	55,646	183,556
	Allowable	N/A	N/A	N/A
	Proposed	20,648	55,646	183,556

The proposed stormwater management system for the development has been designed so that the post-development peak discharge rates do not exceed pre-development peak discharge rates. To prevent storm damage and downstream flooding, the proposed stormwater management practices will mitigate peak runoff rates for the 2-, 10-, and 100-year, 24-hour storm events at 50%, 75%, and 80% of their pre-development peak discharge rates, respectively as shown in the **Table A** below. Therefore, the proposed system will meet or exceed the Stormwater Runoff Quantity requirements.

Stormwater Runoff Quantity (N.J.A.C. 7:45-8.6(a)):	Table A: Preliminary Peak Rates of Runoff in Cubic Feet per Second (cfs) Refer to **Attachment B and C** for more information on the calculations.
Water Quality (N.J.A.C. 7:45-8.7):	The Ballpark site is located within DRCC's Zone B and the proposed stormwater will discharge to the approved stormwater management system for Lake Campus. There is no direct discharge to the Canal. The proposed stormwater management system has been designed to remove a minimum of 80% of the average annual post-construction load of Total Suspended Solids (TSS). Stormwater BMPs include an infiltration basin and the various porous pavement systems with storage will capture the required water quality volume (1.25 inch, 2-hour storm over the project site) and remove a minimum of 80% of average annual post-construction load of Total Suspended Solids (TSS). Proposed impervious areas including porous pavement systems, synthetic turf field, and the Ballpark's stands and roof will be captured and a minimum of 1.25-inch storm will be recharged. The proposed Baseball site does not have any vehicular drives or parking areas that adds to the TSS loading.
Groundwater Recharge (N.J.A.C. 7:45-8.5):	The environmentally sensitive site design includes low impact development techniques, and stormwater BMP treatment trains. The geotechnical report in **Attachment E** has noted that the site soils are consistent with HSG A and B soils. That 100 percent of the difference between the site's pre- and post-development 2-Year runoff volumes be infiltrated. An NJGRS spreadsheet has been included in **Attachment A**, demonstrating compliance with the standard.
Non-Structural Methods (N.J.A.C. 7:45-8.4):	The NJDEP Stormwater Management Standards require to the maximum extent practicable, the standards in this subchapter shall be met by incorporating nonstructural stormwater management strategies into the design. 1. Protect areas that provide water quality benefits or areas particularly susceptible to erosion and sediment loss; **An erosion and sediment control plan have been prepared for the project to support the prevention of sediment loss during construction.** 2. Minimize impervious surfaces and break up or disconnect the flow of runoff over impervious surfaces; **Green infrastructure techniques have been incorporated into the design to support a decentralized stormwater management approach and disconnect the flow of runoff over impervious surfaces.** 3. Maximize the protection of natural drainage features and vegetation; **An erosion and sediment control plan have been prepared for the project to support the prevention of sediment loss during construction.** 4. Minimize the decrease in the "time of concentration" from pre-construction to postconstruction. "Time of concentration" is defined as the time it takes for runoff to travel from the hydraulically most distant point of the drainage area to the point of interest within a watershed; **Time of concentration has been minimized to the extent practicable based on the proposed development conditions with the use of green infrastructure techniques to disconnect the flow of runoff over impervious surface.**

Non-Structural Methods (N.J.A.C. 7:45-8.4) - continued:	5. Minimize land disturbance including clearing and grading; **Land disturbance activities are minimized to the extent practicable and are defined further in the erosion and sediment control plans.** 6. Minimize soil compaction; **Soil compaction within the bioretention facilities is minimized to allow for plant growth and uptake in the bioretention soils.** 7. Provide low-maintenance landscaping that encourages retention and planting of native vegetation and minimizes the use of lawns, fertilizers and pesticides; **Refer to the landscape plans for information on plantings and plant maintenance.** 8. Provide vegetated open-channel conveyance systems discharging into and through stable vegetated areas; and **The design includes a variety of porous pavement systems including porous pavement, porous paver system and Grasscrete paver system. All new walks, paths, and entrance concourse are porous pavement systems.** 9. Provide other source controls to prevent or minimize the use or exposure of pollutants at the site in order to prevent or minimize the release of those pollutants into stormwater runoff. These source controls include, but are not limited to: a. Site design features that help to prevent accumulation of trash and debris in drainage systems; b. Site design features that help to prevent discharge of trash and debris from drainage systems; and c. Site design features that help to prevent and/or contain spills or other harmful accumulations of pollutants at industrial or commercial developments. d. When establishing vegetation after land disturbance, applying fertilizer in accordance with the requirements established under the Soil Erosion and Sediment Control Act, N.J.S.A. 4:24-39 et seq., and implementing rules. **The proposed combination of green infrastructure techniques discharging or infiltrating to subsurface stormwater management systems supports the removal of trash and debris from the proposed and existing drainage systems.**
Stormwater Management Maintenance Plan (N.J.A.C. 7:45-8.8):	A post-construction operation and maintenance plan has been prepared in conformance with N.J.A.C. 7:45-8.8 and will be implemented to ensure that stormwater management systems function as designed. Source controls and stormwater BMP's (i.e. manufactured treatment devices, bioretention and subsurface extended detention) operation requirements for the academic campus are summarized in a Stormwater Management Measure Maintenance Plan provided under a separate cover.

Section 6: Mercer County Stormwater Management Requirements

The design complies with stormwater management hydraulic calculations requirements found in The Land Development Standards of the County of Mercer, New Jersey Stormwater Management Amendment, June 12, 2024.

Land Development Standards Section 9.7 states: "*Stormwater Management Practices in each drainage area, individually or collectively, must be sized for all areas tributary to the drainage area for which they are designed, and satisfy the requirements for management of both 'current' and 'projected' design storms. The*

County aligns its expectations for projects with those contained within the New Jersey state stormwater regulations [NJAC 7:8], which require the use of Green Infrastructure and Low Impact Development Methods for mitigating Stormwater Water within the proposed site. The design criteria and standards found below focus on the details most pertinent to a project as it relates to and impacts existing County drainage structures and systems."

Land Development Standards Section 9.13 Stormwater Runoff Quantity Standards: "*When calculating stormwater runoff volumes and rates for the respective design storms in the Post-Development Conditions, all "open space" lands within the Limit of Disturbance, including basin areas, shall be assumed to be in "poor" condition. If the land cover has changed from that which existed in the Pre- Development condition, such as a lawn area being converted to a basin with a top layer of sand or thick vegetation, a different set of Curve Numbers may apply, but in all cases the Curve Number corresponding to the "Poor" condition shall be applied."*

Table B: Peak Rates of Runoff in Cubic Feet per Second (cfs) – 2100 Year Storm

	Storm Event	2-year 2100	10-year 2100	100-year 2100
DP-3 (Regional Swale)	Existing	3.45	10.66	35.72
	NJDEP Allowable	**1.73**	**8.00**	**28.58**
	Proposed	1.52	4.88	24.43

Large Format sheets of pre- and post- development hydrograph flow charts have been provided in the plan set, and included in Attachment B and C of the Stormwater Report. Attachment A6 includes conduit outlet protection summary demonstrating compliance with the Standard for Offsite Stability, Point of Discharge Method for Demonstrating Stability. Reno Mattress is incorporated at the outlet to the Regional Swale.

Point of Discharge Stability Analysis. The flow into the Regional Swale is being reduced based on the proposed green infrastructure provided as part of the Ballpark project.

The conduit outlet protection is protected with reno mattresses and are spaced no closer than 50 feet horizontally to avoid re-mixing of flows. The downstream topography shows a broad, uniform outlet area where flows will not concentrate, and where existing overland flow for the site will already concentrate.

Section 7: Conclusion

In conclusion, the Project's stormwater management system will reduce peak runoff rates for the Baseball Ballpark development through the widespread use of green infrastructure stormwater management BMPs and improve the water quality of stormwater being discharged from the Site through both filtration and recharge through the use of decentralized stormwater management systems. Environmentally sensitive site design and low impact development and green infrastructure techniques will be implemented throughout the Site.

The Project is being designed to meet or exceed the:

- NJDEP – New Jersey Administrative Code (N.J.A.C.) 7:8 revised July 17, 2023;
- Delaware and Raritan Canal Commission Seventh Edition Regulations for the Review Zone of The Delaware and Raritan Canal State Park Subchapter 8;
- The Land Development Standards of the County of Mercer, New Jersey Storm Water Management Amendment adopted June 12, 2024;
- West Windsor Township Stormwater Control Requirements (Article XXI § 200-99 thru 111.1).

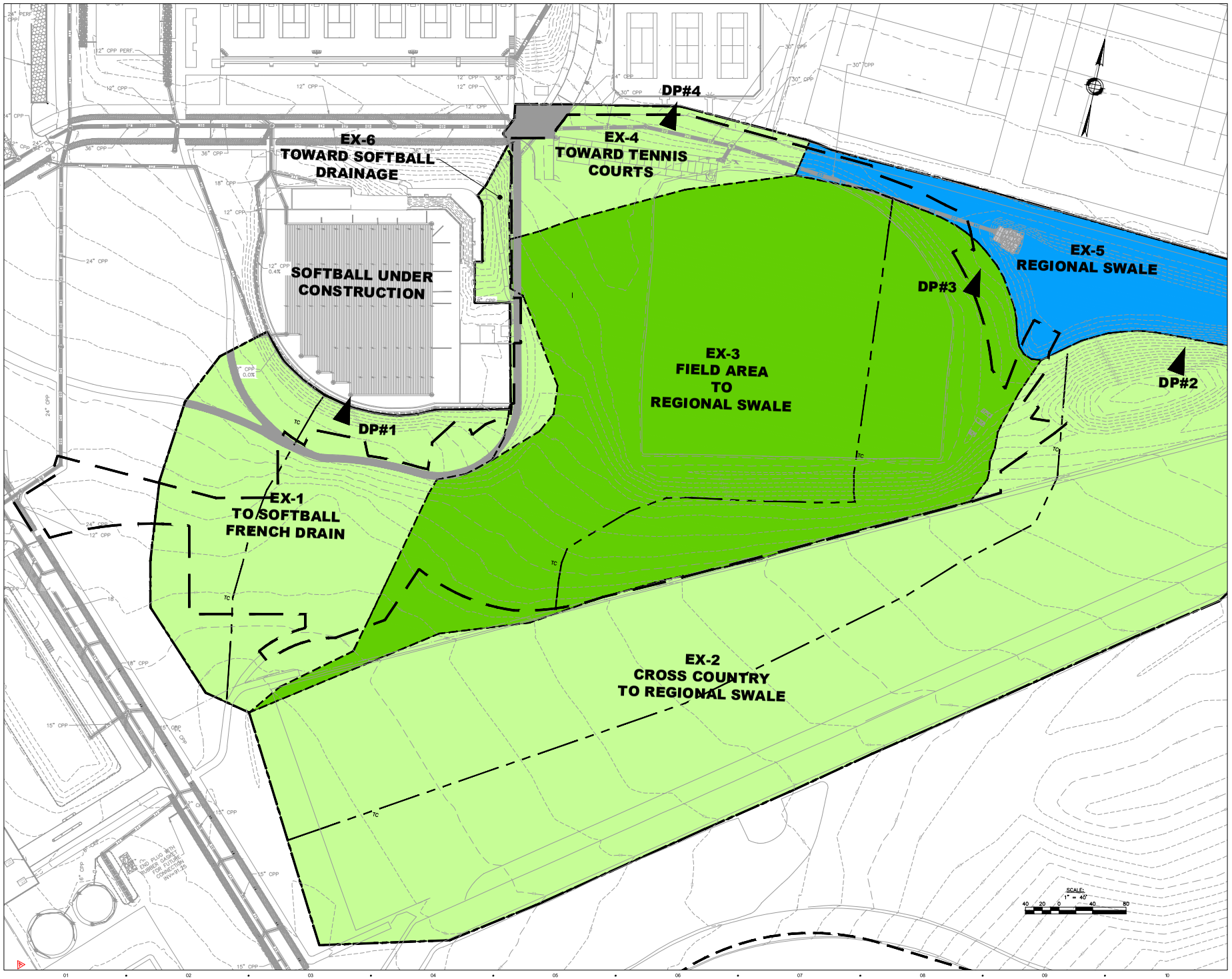
FIGURES

Figure 1 DA-EX- Existing Watershed Areas

Figure 2 DA-PR- Proposed Watershed Areas

Figure 3 USGS Location Map

Figure 4 DA-RC - Groundwater Recharge BMP Location Drainage Area Map



PENDULUM

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WEST WINDSOR TOWNSHIP
MAJOR SITE PLAN
APPLICATION BASEBALL
BALLPARK

Date: **10-09-2024**

ISSUE/REVISION

I/R	DATE	DESCRIPTION
6	12-10-2025	Reduced Building Size
5	03-12-2025	Revised per WWT Technical Compliance Review
4	02-05-2025	WWT Resolution Compliance
3	11-23-2024	Issued to DRPC and MCPB
2	10-09-2024	Revised per Technical Review Committee Meeting
1	07-08-2024	WWT Preliminary Final Major Site Plan Application

KEY PLAN

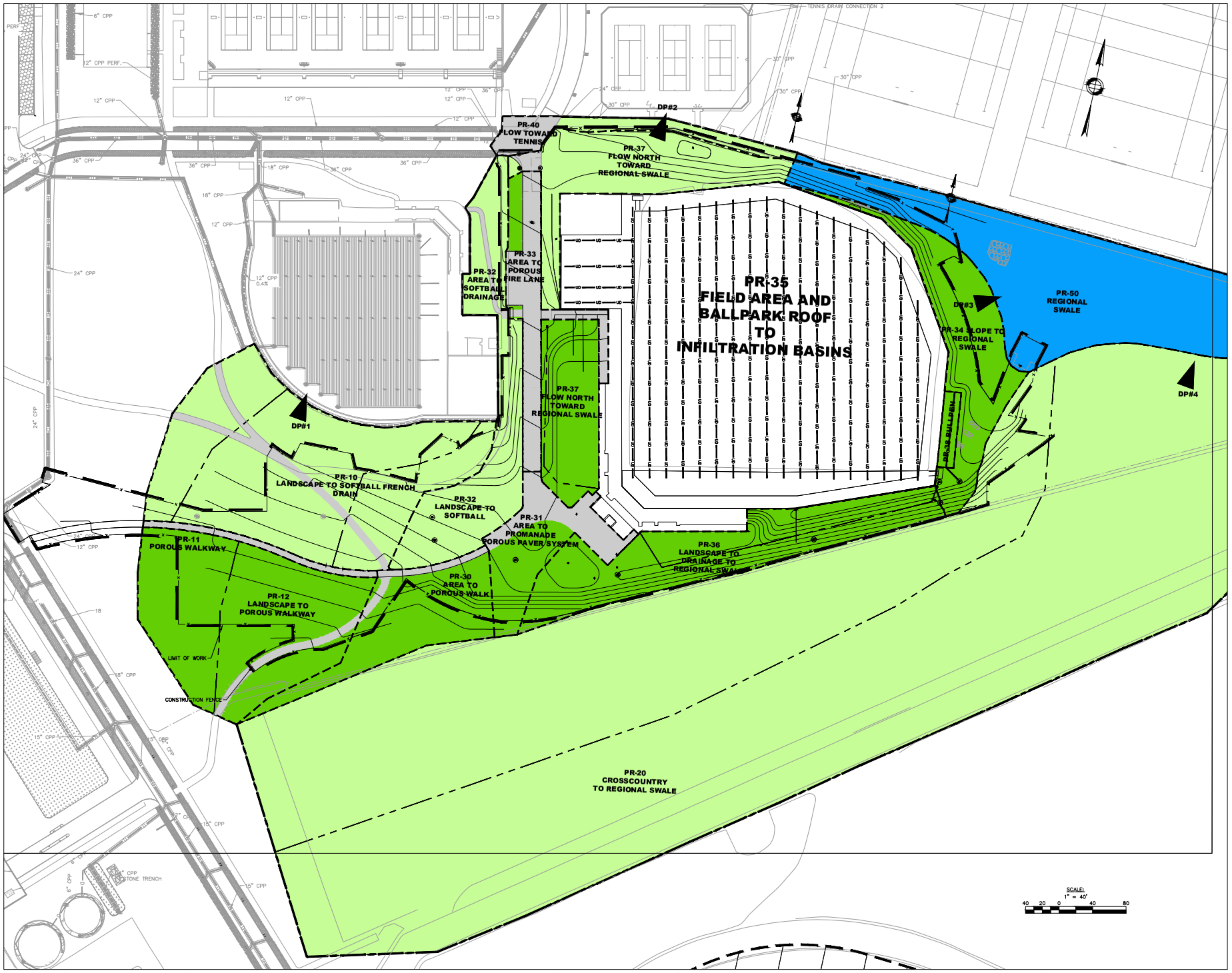
SHEET TITLE
DRAINAGE AREAS
EXISTING

SHEET NUMBER
CSW EX1

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FULL SIZE PLAN INCLUDED IN PLAN SET

FIGURE 1 - EXISTING DRAINAGE AREAS



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KEY PLAN



SHEET TITLE
DRAINAGE AREAS PROPOSED

SHEET NUMBER
CSW PR1

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FULL SIZE PLAN INCLUDED IN PLAN SET

FIGURE 2 - PROPOSED DRAINAGE AREAS

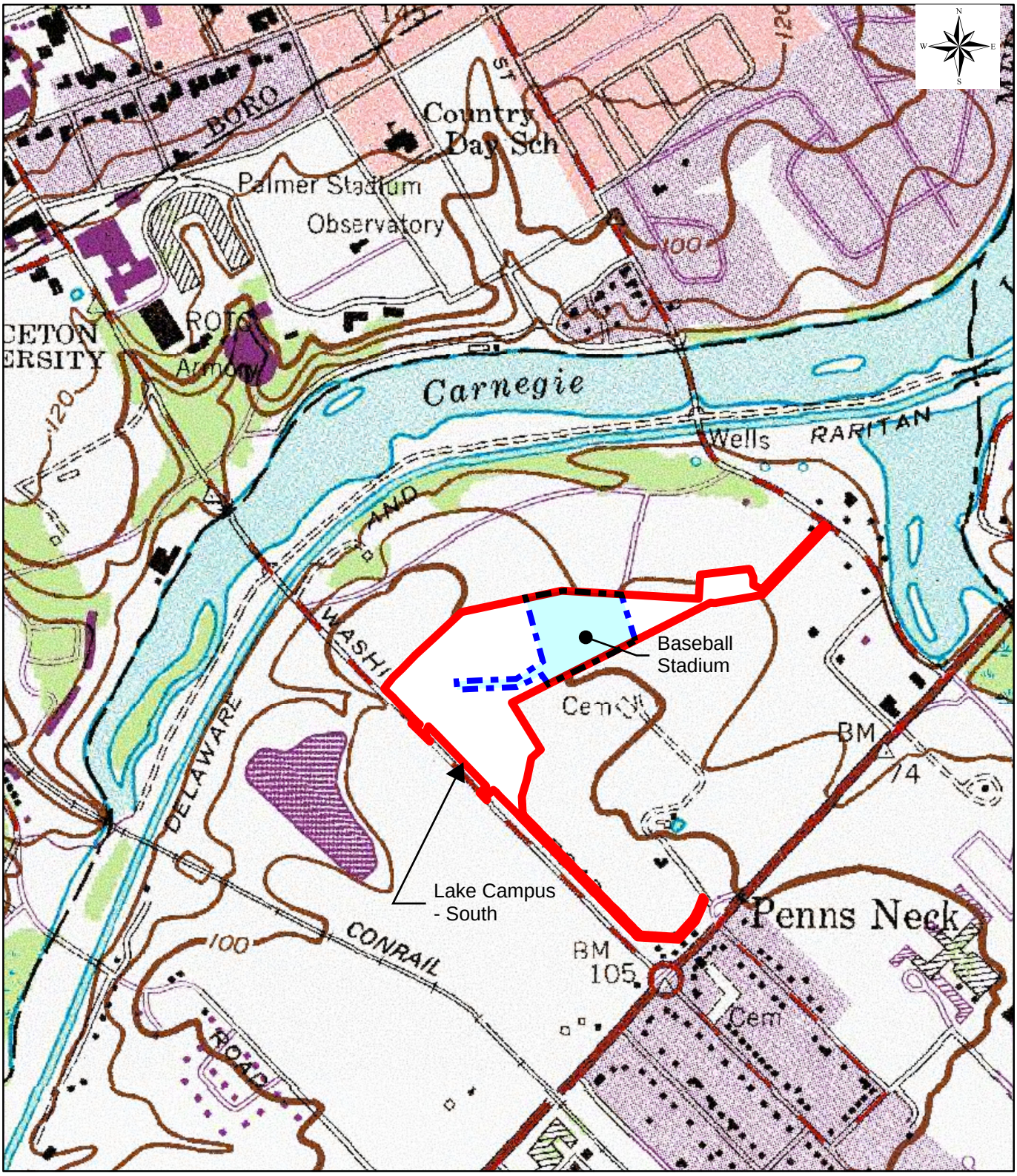


Figure 3: USGS Location Map
Lake Campus South (B)
West Windsor, New Jersey

Data Source: NJOGIS
Nitsch Project #12683

Nitsch Engineering

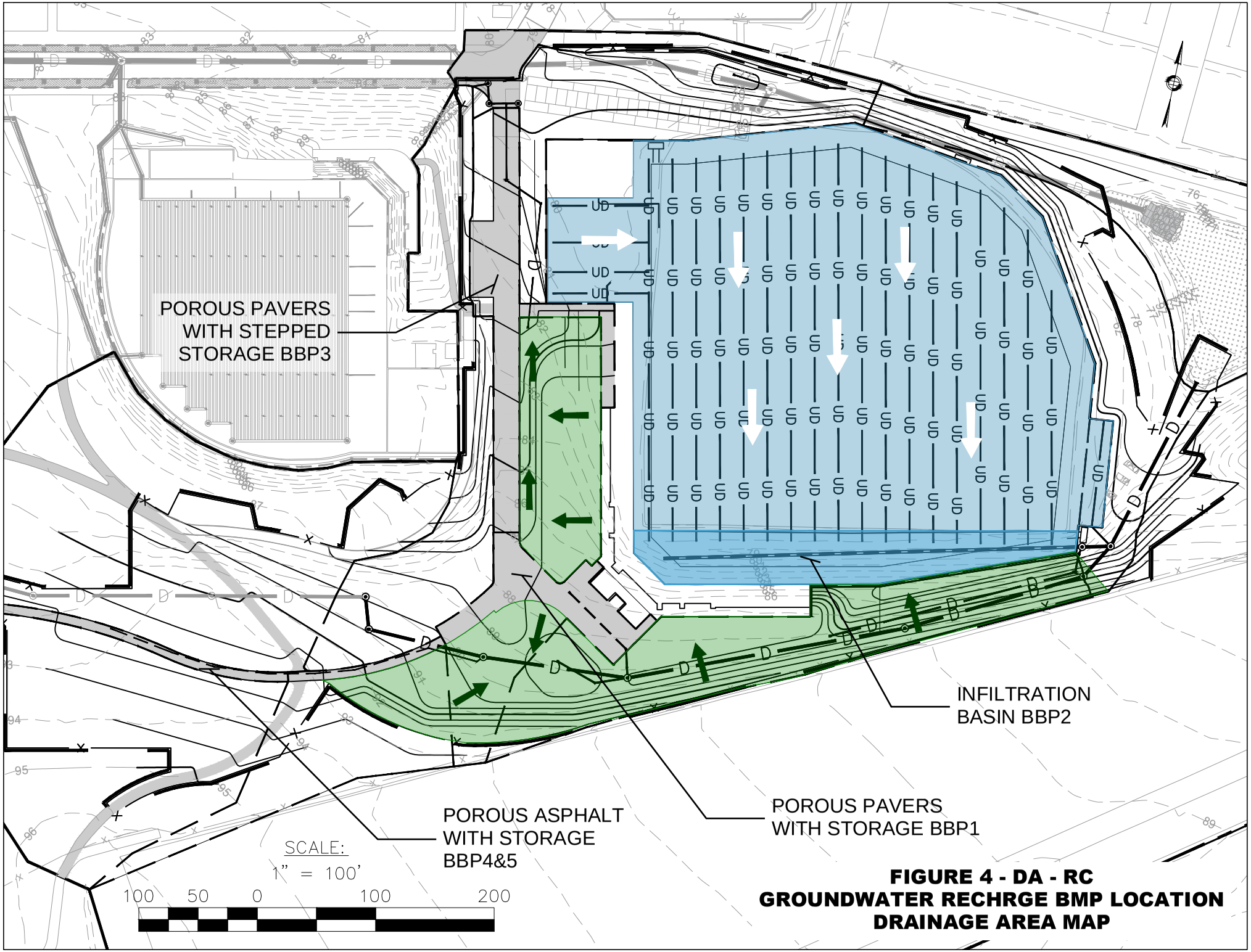


FIGURE 4 - DA - RC
GROUNDWATER RECHRGE BMP LOCATION
DRAINAGE AREA MAP

ATTACHMENT A

Stormwater Management Standards Documentation

A1 - Major Development Stormwater Summary

A2 - TSS Removal Calculations

A3 - Drain Down Time Calculation

A4 - NJGRS Recharge Calculation

A5 - Conduit Outlet Protection Summary

A6- BMP Drainage Area Summary

Attachment D – Major Development Stormwater Summary

General Information

1. Project Name: Princeton University Baseball Ballpark — Lot & Block Info:
2. Municipality: West Windsor — County: Mercer — Block 3, Lot 1.0113
3. Site Location (State Plane Coordinates – NAD83) — E: 452628.018 — N: 548188.225
4. Date of Final Approval for Construction by Municipality (MM/DD/YYYY): _____
   Date of Certificate of Occupancy (MM/DD/YYYY): _____
5. Project Type (place an "x" after all that apply)
   Residential ☐ Commercial ☐ Industrial ☐ Other (please specify) Educational - Athletic
6. Soil Conservation District Project #: MCSCD #2024-6647-WW
7. Did the project require a NJDEP Land Use Permit? Yes ○ No ◉ Land Use Permit #: _____
8. Did the project require any mitigation measures? Yes ○ No ◉
   If yes, which standard was mitigated? _____

Site Design Specifications

1. Site Area (acres): 8.5 Area of Disturbance (acres): 8.5 Area of Proposed Impervious (acres): 0.57*
2. List all Hydrologic Soil Groups: A and B, Majority of the site is B soils.
3. Identify the Quantities of Each Type of Best Management Practices (BMPs) Incorporated into the Site Design:

   Bioretention Systems _____ Constructed Wetlands _____ Dry Wells _____ Extended Detention Basins _____
   Infiltration Basins 1 _____ Combination Infiltration/Detention Basins _____ Manufactured Treatment Devices _____
   Pervious Paving Systems 3 _____ Sand Filters _____ Vegetative Filter Strips _____ Wet Ponds _____
   Grass Swales _____ Subsurface Gravel Wetlands _____ Other: _____

Storm Event Information

1. Storm Event – Rainfall (inches) / Duration (hours) Water Quality Design Storm: _____
   2 year: 3.84 10 year: 5.86 100 year: 11.33
2. Runoff Computation Method (mark one):
   NRCS Dimensionless Unit Hydrograph ☑ NRCS Delmarva Unit Hydrograph ☐ Rational Method ☐
   Modified Rational Method ☐ Other (describe):

BMP Specifications (answer all that apply) - If more than one BMP, see reverse side

1. BMP Name: Baseball Field Infiltration Basin (BB-P2) Type of BMP: Infiltration Basin
   Location (mark one): Surface ○ Subsurface ◉ Is forebay part of the design? Yes ○ No ◉
2. Owner (mark one): Public ○ Private ◉
   If private, Owner's Name: Princeton University's Facilities Operations Owner's Telephone No.: 609-258-6682
3. BMP Completion Date (MM/DD/YYYY): TBD
4. Does the BMP have an underdrain? Yes ◉ No ○
5. What is the Water Quality Design Storm Drain Down Time (hours)? 2.87
   What is the Design Soil Permeability (inches/hour): 0.50 inch/hour
6. What is the Seasonal High Water Table Depth from the BMP bottom (feet)? 5+ Month Obtained: November
7. Groundwater Recharge Methodology (mark one): 2-Year Difference ◉ NJGRS ○ Other ○ N/A ○
8. Was Groundwater Mounding analyzed? Yes ○ No ◉ If yes, Methodology: _____
9. Was a Maintenance Plan submitted? Yes ◉ No ○ Is the BMP deed restricted? Yes ◉ No ○

Name of Person Completing This Form: Sandra A. Brock, PE Signature: _____
Title: _____ Date: _____

Comments: _____

_____

_____

BMP Specifications (answer all that apply) – Attach more pages if necessary

1. BMP Name: Porous Paver Pavement at Entry Concourse (BB-P1) Type of BMP: Porous Pavement with Storage
   Location (mark one): Surface ○ Subsurface ◉ Is forebay part of the design? Yes ○ No ◉
2. Owner (mark one): Public ○ Private ◉
   If private, Owner's Name: Princeton University's Facilities Operations Owner's Telephone No.: 609-258-6682
3. BMP Completion Date (MM/DD/YYYY): TBD
4. Does the BMP have an underdrain? Yes ◉ No ○
5. What is the Water Quality Design Storm Drain Down Time (hours)? 2.43
   What is the Design Soil Permeability (inches/hour): 0.5 inch/hour
6. What is the Seasonal High Water Table Depth from the BMP bottom (feet)? 10'+ Month Obtained: Novemeber
7. Groundwater Recharge Methodology (mark one): 2-Year Difference ○ NJGRS ○ Other ○ N/A ○
8. Was Groundwater Mounding analyzed? Yes ○ No ◉ If yes, Methodology: _____
9. Was a Maintenance Plan submitted? Yes ◉ No ○ Is the BMP deed restricted? Yes ◉ No ○

BMP Specifications (answer all that apply) - Attach more pages if necessary

1. BMP Name: Main Walkway Porous Paver System with stepped storage (BB-P3) Type of BMP: Porous Pavement with Storage
   Location (mark one): Surface ○ Subsurface ◉ Is forebay part of the design? Yes ○ No ◉
2. Owner (mark one): Public ○ Private ◉
   If private, Owner's Name: Princeton University's Facilities Operation Owner's Telephone No.: 609-258-6682
3. BMP Completion Date (MM/DD/YYYY): TBD
4. Does the BMP have an underdrain? Yes ◉ No ○
5. What is the Water Quality Design Storm Drain Down Time (hours)? 4.17
   What is the Design Soil Permeability (inches/hour): 0.50
6. What is the Seasonal High Water Table Depth from the BMP bottom (feet)? 10+ Month Obtained: November
7. Groundwater Recharge Methodology (mark one): 2-Year Difference ◉ NJGRS ○ Other ○ N/A ○
8. Was Groundwater Mounding analyzed? Yes ○ No ◉ If yes, Methodology: _____
9. Was a Maintenance Plan submitted? Yes ◉ No ○ Is the BMP deed restricted? Yes ◉ No ○

BMP Specifications (answer all that apply) - Attach more pages if necessary

1. BMP Name: Porous Pavement Walk with Storage (BB-P4 and BB-P5) Type of BMP: Porous Pavement with Storage
   Location (mark one): Surface ○ Subsurface ◉ Is forebay part of the design? Yes ○ No ◉
2. Owner (mark one): Public ○ Private ◉
   If private, Owner's Name: Princeton University's Facilities Operation Owner's Telephone No.: 609-258-6682
3. BMP Completion Date (MM/DD/YYYY): TBD
4. Does the BMP have an underdrain? Yes ◉ No ○
5. What is the Water Quality Design Storm Drain Down Time (hours)? 2.07
   What is the Design Soil Permeability (inches/hour): 0.50
6. What is the Seasonal High Water Table Depth from the BMP bottom (feet)? 10+ Month Obtained: November
7. Groundwater Recharge Methodology (mark one): 2-Year Difference ◉ NJGRS ○ Other ○ N/A ○
8. Was Groundwater Mounding analyzed? Yes ○ No ◉ If yes, Methodology: _____
9. Was a Maintenance Plan submitted? Yes ◉ No ○ Is the BMP deed restricted? Yes ◉ No ○

Name of Person Completing This Form: _____ Signature: _____

Title: _____ Date: _____

Attachment A1 - Major Development Stormwater Summary

Attachment A1 - Major Development Stormwater Summary

Basin Specifications

Project Name:	Princeton University - Baseball Ballpark
Name of Person Filling Out This Form:	Yusuf Alobaidli **Rev. by Emma Helfrich**
Signature:	Checked - SAB
Title:	Senior Project Designer
Date:	6/27/2024 **Rev. 2/9/2026**

Basin ID	Type of Basin	Surface/ Subsurface	Basin Construction Completion Date	Drain Down Time (hr.)	Top Elevation	100 yr WSEL	Assumed Season High Water Table Depth from Bottom of Basin (ft.)	Groundwater Recharge Methodology	Groundwater Mounding Analysis	Groundwater Mounding Analysis Used (If Applicable)	Maintenance Plan Submitted	Is the Basin Deed Restricted?
BB-P1	Infiltration Basin	Subsurface	2026	2.47	86.00	84.04	6.7	See NJGRS - Attachment A4	No		Yes	Yes*
BB-P2	Infiltration Basin	Subsurface	2026	2.87	79.66	78.27	10.0	See NJGRS - Attachment A4	No		Yes	Yes*
BB-4P	Pervious Paving System	Surface	2026	0.49	89.00	88.20	16.0	See NJGRS - Attachment A4	No		Yes	Yes*
BB-5P	Pervious Paving System	Surface	2026	0.91	92.00	91.16	19.0	See NJGRS - Attachment A4	No		Yes	Yes*
BB-P3	*See Individual Cells Information Below*											
NOTE: Basin 33A removed 12/10/2025												
33B	Pervious Paving System	Surface	2026	4.15	85.53	84.14	14	See NJGRS - Attachment A4	No		Yes	Yes*
33C	Pervious Paving System	Surface	2026	4.15	85.11	83.87	14	See NJGRS - Attachment A4	No		Yes	Yes*
33D	Pervious Paving System	Surface	2026	4.15	84.70	83.70	14	See NJGRS - Attachment A4	No		Yes	Yes*
33E	Pervious Paving System	Surface	2026	4.15	84.28	83.28	14	See NJGRS - Attachment A4	No		Yes	Yes*
33F	Pervious Paving System	Surface	2026	4.15	83.87	82.88	14	See NJGRS - Attachment A4	No		Yes	Yes*
33G	Pervious Paving System	Surface	2026	2.07	83.04	82.05	14	See NJGRS - Attachment A4	No		Yes	Yes*
33H	Pervious Paving System	Surface	2026	2.07	82.11	80.16	14	See NJGRS - Attachment A4	No		Yes	Yes*
33I	Pervious Paving System	Surface	2026	2.07	81.16	80.22	15	See NJGRS - Attachment A4	No		Yes	Yes*
33J	Pervious Paving System	Surface	2026	2.07	80.36	79.43	14.1	See NJGRS - Attachment A4	No		Yes	Yes*
33K	Pervious Paving System	Surface	2026	2.07	79.98	79.06	13.9	See NJGRS - Attachment A4	No		Yes	Yes*
*** A DRCC Conservation and Maintenance Restriction has been recorded for the basins as shown on the November 6, 2024 approved plans.**												
NOTE: Revisions dated 2/19/2026 clouded.												

Attachment A2 - TSS Removal Calculations

NOTE: The project contains NO "Regulated Vehicle Surfaces", TSS Removal Calculations included to meet DRCC requirements. Impervious areas include - synthetic turf field, ballpark impervious areas, and various permeable pavement systems (pedestrian walkways, emergency access areas, and entrance concourse)

INSTRUCTIONS:
1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Location: Baseball Ballpark - Synthetic Turf Field and Ballpark (No Regulated Vehicle Surface)

Note: Project limit of work does not include any vehicular areas. Form included for information only.

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Infiltration Basin	0.80	1.00	0.80	0.20
	0.00	0.20	0.00	0.20
	0.00	0.20	0.00	0.20
	0.00	0.20	0.00	0.20
	0.00	0.20	0.00	0.20

Total TSS Removal = 80%

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: Princeton Lake Campus
Prepared By: YAA ECH
Date: 6/25/2024 Revised 12/10/2025

*Equals remaining load from previous BMP (E) which enters the BMP

*TSS removal rate for extended detention basin is assumed as highest. Refer to TSS removal table sheet and NJDEP BMP Manual for more detailed calculation.
**TSS removal rate for wet pond is assumed as lowest. Refer to TSS removal table sheet and NJDEP BMP manual for more detailed calculation

NOTE: The project contains NO "Regulated Vehicle Surfaces", TSS Removal Calculations included to meet DRCC requirements. Impervious areas include - synthetic turf field, ballpark impervious areas, and various permeable pavement systems (pedestrian walkways, emergency access areas, and entrance concourse)

INSTRUCTIONS:
1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Location: Main Pedestrian Path, Emergency Access

Note: Project limit of work does not include any vehicular areas. Form included for information only.

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Pervious Paving System	**0.80**	**1.00**	**0.80**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**
	0.00	**0.20**	**0.00**	**0.20**

Total TSS Removal = **80%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project:	Princeton Lake Campus	
Prepared By:	YAA	ECH
Date:	6/25/2024	Revised 12/10/2025

*Equals remaining load from previous BMP (E) which enters the BMP

*TSS removal rate for extended detention basin is assumed as highest. Refer to TSS removal table sheet and NJDEP BMP Manual for more detailed calculation.
**TSS removal rate for wet pond is assumed as lowest. Refer to TSS removal table sheet and NJDEP BMP manual for more detailed calculation

Attachment A3 -
72-hour Drawdown Calculations

Name	Required Recharge	Bottom Area	Hyd. Conductivity	Texture Class	Drain Down Time	Lowest Outlet Elevation	Storage at this Elevation (check)
BB-P1	516	6390	0.5	Sandy Loam	1.94	82.00	2556
BB-P2	13430	14517	0.5	Sandy Loam	22.20	75.00	1677
BB-4P	135	1571	0.5	Sandy Loam	2.06	88.00	628
BB-5P	347	2298	0.5	Sandy Loam	3.62	91.00	804
33B	47	550	0.5	Sandy Loam	2.05	83.79	57
33C	47	550	0.5	Sandy Loam	2.05	83.38	59
33D	47	550	0.5	Sandy Loam	2.05	83.01	68
33E	47	550	0.5	Sandy Loam	2.05	82.54	57
33F	47	550	0.5	Sandy Loam	2.05	82.15	62
33G	95	1100	0.5	Sandy Loam	2.07	81.35	136
33H	307	1631	0.5	Sandy Loam	6.70	80.60	320
33I	211	1855	0.5	Sandy Loam	4.60	79.45	215
33J	138	1100	0.5	Sandy Loam	3.01	78.70	150
33K	87	734	0.5	Sandy Loam	1.90	78.30	94

BB-P1

Step No.				
1	Method:	**Dynamic: In-Situ**		
2	Required Recharge Volume (in cubic feet):	*516*	as determined by the	Dynamic: In-Situ Method
3	Bottom Area (in Sq.Ft.)	*6390*		

		Hydraulic Conductivity Rate:	In-Situ Saturated Hydraulic Conductivity Rate
4a	ONLY - If using Dynamic: In-Situ Method --> Enter Hydraulic Conductivity Rate	*0.5*	0.5

	Texture Class	NRCS Hydrologic Soil Group (HSG)	Infiltration Rate (Inches/Hour)	
4b	Sandy Loam	B	0.50	**Hours**

$Time_{drawdown}$ = 1.94

72-Hour Drawdown Requirement Check: ***OK***

BB-P2

Step No.				
1	Method:	**Dynamic: In-Situ**		
2	Required Recharge Volume (in cubic feet):	*13430*	as determined by the	Dynamic: In-Situ Method
3	Bottom Area (in Sq.Ft.)	*14517*		

		Hydraulic Conductivity Rate:	In-Situ Saturated Hydraulic Conductivity Rate
4a	ONLY - If using Dynamic: In-Situ Method --> Enter Hydraulic Conductivity Rate	*0.5*	0.5

	Texture Class	NRCS Hydrologic Soil Group (HSG)	Infiltration Rate (Inches/Hour)	
4b	Sandy Loam	B	0.50	**Hours**

$Time_{drawdown}$ = 22.20

72-Hour Drawdown Requirement Check: ***OK***

BB-4P

Step No.				
1	Method:	**Dynamic: In-Situ**		
2	Required Recharge Volume (in cubic feet):	*135*	as determined by the	Dynamic: In-Situ Method
3	Bottom Area (in Sq.Ft.)	*1571*		

		Hydraulic Conductivity Rate:	In-Situ Saturated Hydraulic Conductivity Rate
4a	ONLY - If using Dynamic: In-Situ Method --> Enter Hydraulic Conductivity Rate	*0.5*	0.5

	Texture Class	NRCS Hydrologic Soil Group (HSG)	Infiltration Rate (Inches/Hour)	
4b	Sandy Loam	B	0.50	**Hours**

$Time_{drawdown}$ = 2.06

72-Hour Drawdown Requirement Check: ***OK***

BB-5P

Step No.				
1	Method:	**Dynamic: In-Situ**		
2	Required Recharge Volume (in cubic feet):	*347*	as determined by the	Dynamic: In-Situ Method
3	Bottom Area (in Sq.Ft.)	*2298*		

		Hydraulic Conductivity Rate:	In-Situ Saturated Hydraulic Conductivity Rate
4a	ONLY - If using Dynamic: In-Situ Method --> Enter Hydraulic Conductivity Rate	*0.5*	0.5

	Texture Class	NRCS Hydrologic Soil Group (HSG)	Infiltration Rate (Inches/Hour)	
4b	Sandy Loam	B	0.50	**Hours**

$Time_{drawdown}$ = 3.62

72-Hour Drawdown Requirement Check: ***OK***

Step No.				
1	Method:	**Dynamic: In-Situ**		
2	Required Recharge Volume (in cubic feet):	*47*	as determined by the	Dynamic: In-Situ Method
3	Bottom Area (in Sq.Ft.)	*550*		

		Hydraulic Conductivity Rate:	In-Situ Saturated Hydraulic Conductivity Rate
4a	ONLY - If using Dynamic: In-Situ Method --> Enter Hydraulic Conductivity Rate	*0.5*	0.5

	Texture Class	NRCS Hydrologic Soil Group (HSG)	Infiltration Rate (Inches/Hour)	
4b	Sandy Loam	B	0.50	**Hours**

$Time_{drawdown}$ = 2.05

72-Hour Drawdown Requirement Check: ***OK***

Step No.				
1	Method:	**Dynamic: In-Situ**		
2	Required Recharge Volume (in cubic feet):	*47*	as determined by the	Dynamic: In-Situ Method
3	Bottom Area (in Sq.Ft.)	*550*		

		Hydraulic Conductivity Rate:	In-Situ Saturated Hydraulic Conductivity Rate
4a	ONLY - If using Dynamic: In-Situ Method --> Enter Hydraulic Conductivity Rate	*0.5*	0.5

	Texture Class	NRCS Hydrologic Soil Group (HSG)	Infiltration Rate (Inches/Hour)	
4b	Sandy Loam	B	0.50	**Hours**

$Time_{drawdown}$ = 2.05

72-Hour Drawdown Requirement Check: ***OK***

Step No.				
1	Method:	**Dynamic: In-Situ**		
2	Required Recharge Volume (in cubic feet):	*47*	as determined by the	Dynamic: In-Situ Method
3	Bottom Area (in Sq.Ft.)	*550*		

		Hydraulic Conductivity Rate:	In-Situ Saturated Hydraulic Conductivity Rate
4a	ONLY - If using Dynamic: In-Situ Method --> Enter Hydraulic Conductivity Rate	*0.5*	0.5

	Texture Class	NRCS Hydrologic Soil Group (HSG)	Infiltration Rate (Inches/Hour)	
4b	Sandy Loam	B	0.50	**Hours**

$Time_{drawdown}$ = 2.05

72-Hour Drawdown Requirement Check: ***OK***

Step No.				
1	Method:	**Dynamic: In-Situ**		
2	Required Recharge Volume (in cubic feet):	*47*	as determined by the	Dynamic: In-Situ Method
3	Bottom Area (in Sq.Ft.)	*550*		

		Hydraulic Conductivity Rate:	In-Situ Saturated Hydraulic Conductivity Rate
4a	ONLY - If using Dynamic: In-Situ Method --> Enter Hydraulic Conductivity Rate	*0.5*	0.5

	Texture Class	NRCS Hydrologic Soil Group (HSG)	Infiltration Rate (Inches/Hour)	
4b	Sandy Loam	B	0.50	**Hours**

$Time_{drawdown}$ = 2.05

72-Hour Drawdown Requirement Check: ***OK***

Step No.				
1	Method:	**Dynamic: In-Situ**		
2	Required Recharge Volume (in cubic feet):	*47*	as determined by the	Dynamic: In-Situ Method
3	Bottom Area (in Sq.Ft.)	*550*		

		Hydraulic Conductivity Rate:	In-Situ Saturated Hydraulic Conductivity Rate
4a	ONLY - If using Dynamic: In-Situ Method --> Enter Hydraulic Conductivity Rate	*0.5*	0.5

	Texture Class	NRCS Hydrologic Soil Group (HSG)	Infiltration Rate (Inches/Hour)	
4b	Sandy Loam	B	0.50	**Hours**

$Time_{drawdown}$ = 2.05

72-Hour Drawdown Requirement Check: ***OK***

Step No.				
1	Method:	**Dynamic: In-Situ**		
2	Required Recharge Volume (in cubic feet):	*95*	as determined by the	Dynamic: In-Situ Method
3	Bottom Area (in Sq.Ft.)	*1100*		

		Hydraulic Conductivity Rate:	In-Situ Saturated Hydraulic Conductivity Rate
4a	ONLY - If using Dynamic: In-Situ Method --> Enter Hydraulic Conductivity Rate	*0.5*	0.5

	Texture Class	NRCS Hydrologic Soil Group (HSG)	Infiltration Rate (Inches/Hour)	
4b	Sandy Loam	B	0.50	**Hours**

$Time_{drawdown}$ = 2.07

72-Hour Drawdown Requirement Check: ***OK***

33H

Step No.				
1	Method:	**Dynamic: In-Situ**		
2	Required Recharge Volume (in cubic feet):	*307*	as determined by the	Dynamic: In-Situ Method
3	Bottom Area (in Sq.Ft.)	*1100*		

		Hydraulic Conductivity Rate:	In-Situ Saturated Hydraulic Conductivity Rate
4a	ONLY - If using Dynamic: In-Situ Method --> Enter Hydraulic Conductivity Rate	*0.5*	0.5

	Texture Class	NRCS Hydrologic Soil Group (HSG)	Infiltration Rate (Inches/Hour)	
4b	Sandy Loam	B	0.50	**Hours**

$Time_{drawdown}$ = 6.70

72-Hour Drawdown Requirement Check: ***OK***

Step No.				
1	Method:	**Dynamic: In-Situ**		
2	Required Recharge Volume (in cubic feet):	*211*	as determined by the	Dynamic: In-Situ Method
3	Bottom Area (in Sq.Ft.)	*1100*		

		Hydraulic Conductivity Rate:	In-Situ Saturated Hydraulic Conductivity Rate
4a	ONLY - If using Dynamic: In-Situ Method --> Enter Hydraulic Conductivity Rate	*0.5*	0.5

	Texture Class	NRCS Hydrologic Soil Group (HSG)	Infiltration Rate (Inches/Hour)	
4b	Sandy Loam	B	0.50	**Hours**

$Time_{drawdown}$ = 4.60

72-Hour Drawdown Requirement Check: ***OK***

Step No.				
1	Method:	**Dynamic: In-Situ**		
2	Required Recharge Volume (in cubic feet):	*138*	as determined by the	Dynamic: In-Situ Method
3	Bottom Area (in Sq.Ft.)	*1100*		

		Hydraulic Conductivity Rate:	In-Situ Saturated Hydraulic Conductivity Rate
4a	ONLY - If using Dynamic: In-Situ Method --> Enter Hydraulic Conductivity Rate	*0.5*	0.5

	Texture Class	NRCS Hydrologic Soil Group (HSG)	Infiltration Rate (Inches/Hour)	
4b	Sandy Loam	B	0.50	**Hours**

$Time_{drawdown}$ = 3.01

72-Hour Drawdown Requirement Check: ***OK***

Step No.				
1	Method:	**Dynamic: In-Situ**		
2	Required Recharge Volume (in cubic feet):	*87*	as determined by the	Dynamic: In-Situ Method
3	Bottom Area (in Sq.Ft.)	*1100*		

		Hydraulic Conductivity Rate:	In-Situ Saturated Hydraulic Conductivity Rate
4a	ONLY - If using Dynamic: In-Situ Method --> Enter Hydraulic Conductivity Rate	*0.5*	0.5

	Texture Class	NRCS Hydrologic Soil Group (HSG)	Infiltration Rate (Inches/Hour)	
4b	Sandy Loam	B	0.50	**Hours**

$Time_{drawdown}$ = 1.90

72-Hour Drawdown Requirement Check: ***OK***

Attachment A4 - NJGRS Recharge Computations

New Jersey Groundwater Recharge Spreadsheet Version 2.0 November 2003

Annual Groundwater Recharge Analysis (based on GSR-32)

Select Township ↓	Average Annual P (in)	Climatic Factor
MERCER CO., WEST WINDSOR TWP	44.9	1.43

Project Name:	Princeton- Lake Campus South (E
Description:	Baseball Ballpark
Analysis Date:	12/10/25

Pre-Developed Conditions

Land Segment	Area (acres)	TR-55 Land Cover	Soil	Annual Recharge (in)	Annual Recharge (cu.ft)
1	20.07	Open space	Lansdale	13.1	952,837
2	0.22	Impervious areas	Lansdale	0.0	-
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
Total =	20.3			Total Annual Recharge (in)	Total Annual Recharge (cu-ft)
				12.9	952,837

Post-Developed Conditions

Land Segment	Area (acres)	TR-55 Land Cover	Soil	Annual Recharge (in)	Annual Recharge (cu.ft)
1	15.56	Open space	Lansdale	13.1	738,722
2	4.73	Impervious areas	Lansdale	0.0	-
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
Total =	20.3			Total Annual Recharge (in)	Total Annual Recharge (cu.ft)
		Annual Recharge Requirements Calculation ↓		10.0	738,722
		% of Pre-Developed Annual Recharge to Preserve =	100%	Total Impervious Area (sq.ft)	206,039
		Post-Development Annual Recharge Deficit=	*214,115*	(cubic feet)	

Procedure to fill the Pre-Development and Post-Development Conditions Tables

For each land segment, first enter the area, then select TR-55 Land Cover, then select Soil. Start from the top of the table and proceed downward. Don't leave blank rows (with A=0) in between your segment entries. Rows with A=0 will not be displayed or used in calculations. For impervious areas outside of standard lots select "Impervious Areas" as the Land Cover. Soil type for impervious areas are only required if an infiltration facility will be built within these areas.

Recharge Efficiency Parameters Calculations (area averages)

RWC=	5.35	(in)	DRWC=	4.46	(in)
ERWC =	1.52	(in)	EDRWC=	1.27	(in)

Project Name	Description	Analysis Date	BMP or LID Type
Princeton- Lake Campus S	Baseball Ballpark	12/10/25	Summation of subsurface bioretention and permeable pavers dead sto

Recharge BMP Input Parameters

Parameter	Symbol	Value	Unit
BMP Area	ABMP	39932.0	sq.ft
BMP Effective Depth, this is the design variable	dBMP	3.2	in
Upper level of the BMP surface (negative if above ground)	dBMPu	0.0	in
Depth of lower surface of BMP, must be>=dBMPu	dEXC	12.0	in
Post-development Land Segment Location of BMP , Input Zero if Location is distributed or undetermined	SegBMP	0	unitless

Root Zone Water capacity Calculated Parameters

Parameter	Symbol	Value	Unit
Empty Portion of RWC under Post-D Natural Recharge	ERWC	1.52	in
ERWC Modified to consider dEXC	EDRWC	1.27	in
Empty Portion of RWC under Infilt. BMP	RERWC	1.06	in

Recharge Design Parameters

Parameter	Symbol	Value	Unit
Inches of Runoff to capture	Qdesign	0.63	in
Inches of Rainfall to capture	Pdesign	0.78	in
Recharge Provided Avg. over Imp. Area		12.5	in
Runoff Captured Avg. over imp. Area		25.7	in

BMP Calculated Size Parameters

ABMP/Aimp	Aratio	0.19	unitless
BMP Volume	VBMP	10,570	cu.ft

CALCULATION CHECK MESSAGES

Volume Balance-> OK
dBMP Check---> OK
dEXC Check---> OK

BMP Location---> Location is selected as distributed or undetermined

Parameters from Annual Recharge Worksheet

Post-D Deficit Recharge (or desired recharge volume)	Vdef	214,115	cu.ft
Post-D Impervious Area (or target Impervious Area)	Aimp	206,039	sq.ft
Root Zone Water Capacity	RWC	5.35	in
RWC Modified to consider dEXC	DRWC	4.46	in
Climatic Factor	C-factor	1.43	no units
Average Annual P	Pavg	44.9	in
Recharge Requirement over Imp. Area	dr	12.5	in

System Performance Calculated Parameters

Annual BMP Recharge Volume		214,115	cu.ft
Avg BMP Recharge Efficiency		48.6%	Represents % Infiltration Recharged
%Rainfall became Runoff		77.7%	%
%Runoff Infiltrated		73.6%	%
%Runoff Recharged		35.7%	%
%Rainfall Recharged		27.8%	%

OTHER NOTES

Pdesign is accurate only after BMP dimensions are updated to make rech volume= deficit volume. The portion of BMP infiltration prior to filling and the area occupied by BMP are ignored in these calculations. Results are sensetive to dBMP, make sure dBMP selected is small enough for BMP to empty in less than 3 days. For land Segment Location of BMP if you select "impervious areas" RWC will be minimal but not zero as determined by the soil type and a shallow root zone for this Land Cover allowing consideration of lateral flow and other losses.

How to solve for different recharge volumes: By default the spreadsheet assigns the values of total deficit recharge volume "Vdef" and total proposed impervious area "Aimp" from the "Annual Recharge" sheet to "Vdef" and "Aimp" on this page. This allows solution for a single BMP to handle the entire recharge requirement assuming the runoff from entire impervious area is available to the BMP.
To solve for a smaller BMP or a LID-IMP to recharge only part of the recharge requirement, set Vdef to your target value and Aimp to impervious area directly connected to your infiltration facility and then solve for ABMP or dBMP. To go back to the default configuration clik the "Default Vdef & Aimp" button.

Attachment A5 -
Conduit Outlet Protection Calculations

OUTLET PROTECTION SIZING

Project No.	12683	**Calc By**	YAA **ECH**
Subject	Outlet Protection Sizing Calcs	**Date**	6/25/2024 **Revised 12/10/2025**
Location	Regional Swale	**Checked by**	
		Date	

FES-B-1

Q=Design Discharge, (ft^3/s)	=	34.6	cfs
D=Culvert Diameter, (ft)	=	2.00	ft
TW=Tailwater Depth, (ft)	=	0.4	ft, (0.2xD for unknow tailwater, or enter known tailwater)
			(Tailwater depth is to be limited to between 0.4D and 1.0D)

Riprap Apron Sizing

$$If\ T_W < \frac{1}{2}D_o \qquad L_a = 1.8\left(\frac{q}{{D_o}^{0.5}}\right) + 7D_o \qquad W_a = 3W_o + L_A$$

$$If\ T_W \geq \frac{1}{2}D_o \qquad L_a = 3\left(\frac{q}{{D_o}^{0.5}}\right) \qquad W_a = 3W_o + 0.4L_A$$

$$Where\ q = \frac{Q}{{D_o}^{0.5}}$$

Apron Dimensions

L_a	=	**30**	**ft**
W_a	=	**36**	**ft**
d_{50}	=	**26.59**	**inches**

ATTACHMENT A6 -
DRAINAGE AREA TABULTATIONS

Summary:

Total Drainage Area: 20.30 acres
Total Disturbed Area: 8.76 acres
Drainage Areas to Proposed BMPs

Porous Walkway 1

Pervious: 0.95 acres
Impervious: 0.09 acres
Total: 1.04 acres

Porous Walkway 2

Pervious: 0.39 acres
Impervious: 0.04 acres
Total: 0.43 acres

Plaza/Promenade

Pervious: 0.17 acres
Impervious: 0.15 acres
Total: 0.32 acres

Fire Lane

Pervious: 0.04 acres
Impervious: 0.25 acres
Total: 0.29 acres

Bullpen

Pervious: 0.00 acres
Impervious: 0.04 acres
Total: 0.04 acres

Baseball Infiltration Basin

Pervious: 0.34 acres
Impervious: 3.58 acres
Total: 3.91 acres

See the following pages for a comprehensive breakdown of land use for each delineated subbasin in both the pre- and post-development conditions.

Existing Conditions:

EX-1 (TO SOFTBALL FRENCH DRAIN)		
	Square Feet (SF)	Acres
Total Area	107,438	2.47
Landscape	103,252	2.37
Stadium/Field	-	0.00
Pavement	4,186	0.10
Porous Pavement	-	0.00
Total Impervious	4,186	0.10

EX-2 (CROSS COUNTRY TO REGIONAL SWALE)		
	Square Feet (SF)	Acres
Total Area	391,756	8.99
Landscape	391,756	8.99
Stadium/Field	-	0.00
Pavement	-	0.00
Porous Pavement	-	0.00
Total Impervious	-	0.00

EX-3 FIELD AREA TO REGIONAL SWALE		
	Square Feet (SF)	Acres
Total Area	272,378	6.25
Landscape	271,887	6.24
Stadium/Field	-	0.00
Pavement	491	0.01
Porous Pavement	-	0.00
Total Impervious	491	0.01

EX-4 (TOWARDS TENNIS COURTS)		
	Square Feet (SF)	Acres
Total Area	36,888	0.85
Landscape	33,347	0.77
Stadium/Field	-	0.00
Pavement	3,541	0.08
Porous Pavement	-	0.00
Total Impervious	3,541	0.08

EX-5 (REGIONAL SWALE)		
Square Feet (SF)		Acres
Total Area	62,331	1.43
Landscape	62,331	1.43
Stadium/Field	-	0.00
Pavement	-	0.00
Porous Pavement	-	0.00
Total Impervious	-	0.00

EX-6 (TOWARD SOFTBALL DRAINAGE)		
Square Feet (SF)		Acres
Total Area	13,306	0.31
Landscape	11,783	0.27
Stadium/Field	-	0.00
Pavement	1,523	0.03
Porous Pavement	-	0.00
Total Impervious	1,523	0.03

Total Areas		
Square Feet (SF)		Acres
Total Area	884,096	20.30
Landscape	874,355	20.07
Stadium/Field	-	0.00
Pavement	9,741	0.22
Porous Pavement	-	0.00
Total Impervious	9,741	0.22

Proposed Conditions:

PR-10 (LANDSCAPE TO SOFTBALL FRENCH DRAIN)		
	Square Feet	Acres
Total Area	61,785	1.42
Landscape	58,109	1.33
Stadium/Field	-	0.00
Pavement	-	0.00
Porous Pavement	3,676	0.08
Total Imp	3,676	0.08

PR-11 (POROUS WALKWAY)		
	Square Feet	Acres
Total Area	2,299	0.05
Landscape	-	0.00
Stadium/Field	-	0.00
Pavement	-	0.00
Porous Pavement	2,299	0.05
Total Imp	2,299	0.05

PR-12 (LANDSCAPE TO POROUS WALKWAY)		
		Acres
Total Area	43,047	0.99
Landscape	41,325	0.95
Stadium/Field	-	0.00
Pavement	-	0.00
Porous Pavement	1,722	0.04
Total Imp	1,722	0.04

PR-20 (CROSSCOUNTRY TO REGIONAL SWALE)		
	Square Feet	Acres
Total Area	391,772	8.99
Landscape	391,772	8.99
Stadium/Field	-	0.00
Pavement	-	0.00
Porous Pavement	-	0.00
Total Imp	-	0.00

PR-30 (LANDSCAPE AND WALKWAY TO POROUS WALKWAY)		
	Square Feet	Acres
Total Area	18,645	0.43
Landscape	17,074	0.39
Stadium/Field	-	0.00
Pavement	-	0.00
Porous Pavement	1,571	0.04
Total Imp	1,571	0.04

PR-31 (AREA TO PROMANADE POROUS PAVER SYSTEM)		
	Square Feet	Acres
Total Area	13,728	0.32
Landscape	7,337	0.17
Stadium/Field	-	0.00
Pavement	-	0.00
Porous Pavement	6,391	0.15
Total Imp	6,391	0.15

PR-32 (AREA TO SOFTBALL DRAINAGE)		
	Square Feet	Acres
Total Area	25,435	0.58
Landscape	24,637	0.57
Stadium/Field	-	0.00
Pavement	798	0.02
Porous Pavement		0.00
Total Imp	798	0.02

PR-33 (AREA TO POROUS FIRE LANE)		
	Square Feet	Acres
Total Area	12,819	0.29
Landscape	1,718	0.04
Stadium/Field	-	0.00
Pavement	1,931	0.04
Porous Pavement	9,170	0.21
Total Imp	11,101	0.25

PR-34 (SLOPE TO REGIONAL SWALE)		
	Square Feet	Acres
Total Area	21,534	0.49
Landscape	21,534	0.49
Stadium/Field	-	0.00
Pavement	-	0.00
Porous Pavement	-	0.00
Total Imp	-	0.00

PR-35 (FIELD AREA AND STADIUM ROOF TO INFILTRATION BASINS)		
	Square Feet	Acres
Total Area	155,772	3.58
Landscape	-	0.00
Stadium/Field	155,772	3.58
Pavement	-	0.00
Porous Pavement	-	0.00
Total Imp	155,772	3.58

PR-36 (LANDSCAPE TO DRAINAGE TO REGIONAL SWALE)		
	Square Feet	Acres
Total Area	29,400	0.67
Landscape	29,400	0.67
Stadium/Field	-	0.00
Pavement	-	0.00
Porous Pavement	-	0.00
Total Imp	-	0.00

PR-37 (LANDSCAPE TO DRAINAGE TO REGIONAL SWALE)		
	Square Feet	Acres
Total Area	36,789	0.84
Landscape	36,789	0.84
Stadium/Field	-	0.00
Pavement	371	0.01
Porous Pavement	-	0.00
Total Imp	371	0.00

PR-38 (BULLPEN)

Square Feet		Acres
Total Area	1,798	0.04
Landscape	-	0.00
Stadium/Field	1,798	0.04
Pavement	-	0.00
Porous Pavement	-	0.00
Total Imp	1,798	0.04

PR-40 (FLOW TOWARDS TENNIS)		
Square Feet		Acres
Total Area	29,315	0.67
Landscape	26,229	0.60
Stadium/Field	-	0.00
Pavement	2,500	0.06
Porous Pavement	586	0.01
Total Imp	3,086	0.07

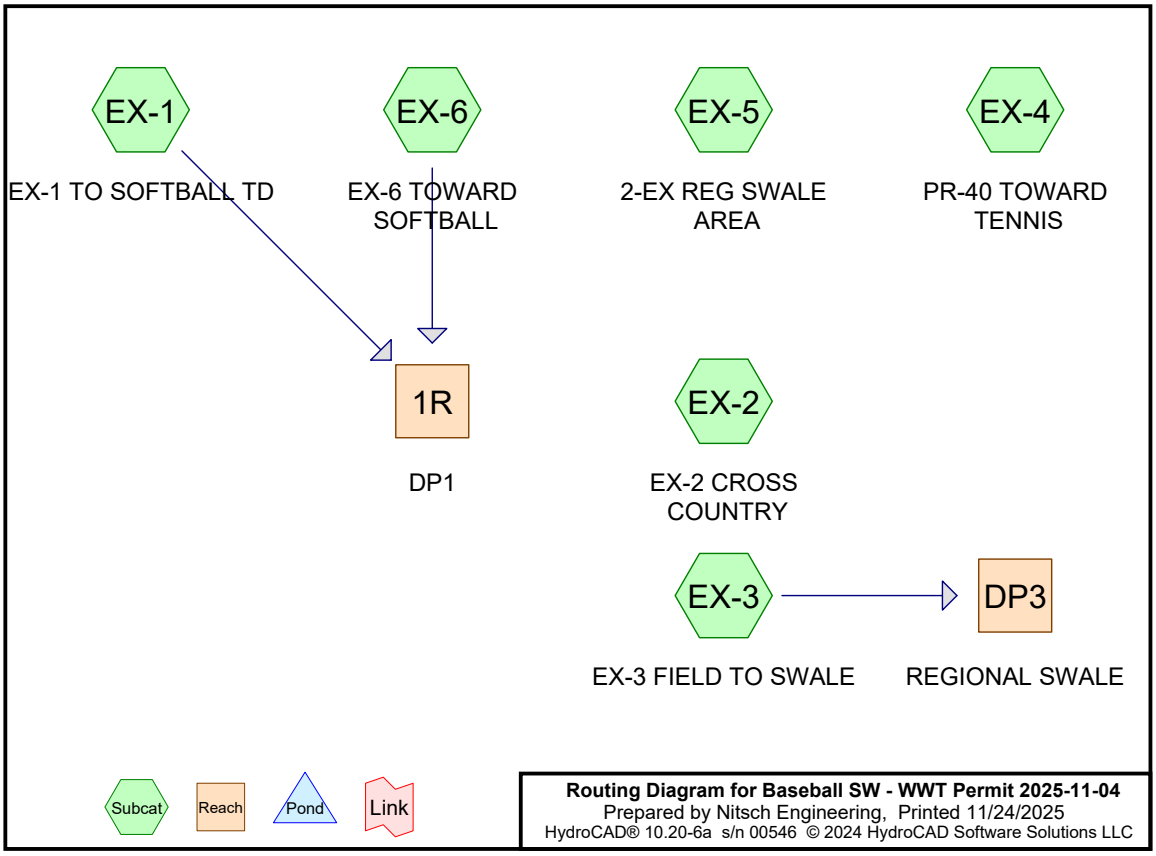
PR-50 (REGIONAL SWALE)		
Square Feet		Acres
Total Area	62,111	1.43
Landscape	62,111	1.43
Stadium/Field	-	0.00
Pavement	-	0.00
Porous Pavement	-	0.00
Total Imp	-	0.00

SITE TOTAL AREAS		
Square Feet		Acres
Total Area	884,096	20.30
Landscape	666,842	15.30
Stadium/Field	157,570	3.62
Pavement	5,815	0.13
Porous Pavement	25,429	0.57
Total Imp	188,214	4.32
Total	884,096	20.30

ATTACHMENT B

Drainage Map Flow Chart – Large Format

Existing Conditions – HydroCAD Calculations



Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1.25 inch	NJ DEP 2-hr		Default	2.00	1	1.25	2
2	2 Yr	NOAA 24-hr	C	Default	24.00	1	3.34	2
3	10 Yr	NOAA 24-hr	C	Default	24.00	1	5.11	2
4	100 Yr	NOAA 24-hr	C	Default	24.00	1	8.66	2
5	2100 - 2 Yr	NOAA 24-hr	C	Default	24.00	1	3.84	2
6	2100 - 10 Yr	NOAA 24-hr	C	Default	24.00	1	5.86	2
7	2100 - 100 Yr	NOAA 24-hr	C	Default	24.00	1	11.33	2

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
874,356	61	>75% Grass cover, Good, HSG B (EX-1, EX-2, EX-3, EX-4, EX-5, EX-6)
491	98	Paved parking, HSG A (EX-3)
1,523	98	Paved parking, HSG B (EX-6)
7,727	98	Paved roads w/curbs & sewers, HSG B (EX-1, EX-4)
884,097	**61**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
491	HSG A	EX-3
883,606	HSG B	EX-1, EX-2, EX-3, EX-4, EX-5, EX-6
0	HSG C	
0	HSG D	
0	Other	
884,097		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Subcatchment Numbers
0	874,356	0	0	0	874,356	>75% Grass cover, Good	EX-1, EX-2, EX-3, EX-4, EX-5, EX-6
491	1,523	0	0	0	2,014	Paved parking	EX-3, EX-6
0	7,727	0	0	0	7,727	Paved roads w/curbs & sewers	EX-1, EX-4
491	**883,606**	**0**	**0**	**0**	**884,097**	**TOTAL AREA**	

Time span=0.00-20.00 hrs, dt=0.01 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentEX-1: EX-1 TO SOFTBALLTD Runoff Area=107,438 sf 3.90% Impervious Runoff Depth=0.04"
Flow Length=388' Tc=10.9 min CN=61/98 Runoff=0.24 cfs 361 cf

SubcatchmentEX-2: EX-2 CROSS COUNTRY Runoff Area=391,756 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=1,178' Tc=25.5 min CN=61/0 Runoff=0.00 cfs 0 cf

SubcatchmentEX-3: EX-3 FIELD TO SWALE Runoff Area=272,378 sf 0.18% Impervious Runoff Depth=0.00"
Flow Length=800' Tc=16.3 min CN=61/98 Runoff=0.02 cfs 42 cf

SubcatchmentEX-4: PR-40 TOWARD TENNIS Runoff Area=36,888 sf 9.60% Impervious Runoff Depth=0.10"
Tc=6.0 min CN=61/98 Runoff=0.24 cfs 305 cf

SubcatchmentEX-5: 2-EX REG SWALE AREA Runoff Area=62,331 sf 0.00% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=61/0 Runoff=0.00 cfs 0 cf

SubcatchmentEX-6: EX-6 TOWARD SOFTBALL Runoff Area=13,306 sf 11.45% Impervious Runoff Depth=0.12"
Tc=6.0 min CN=61/98 Runoff=0.10 cfs 131 cf

Reach 1R: DP1 Inflow=0.33 cfs 492 cf
Outflow=0.33 cfs 492 cf

Reach DP3: REGIONAL SWALE Inflow=0.02 cfs 42 cf
Outflow=0.02 cfs 42 cf

Total Runoff Area = 884,097 sf Runoff Volume = 840 cf Average Runoff Depth = 0.01"
98.90% Pervious = 874,356 sf 1.10% Impervious = 9,741 sf

Summary for Subcatchment EX-1: EX-1 TO SOFTBALL TD

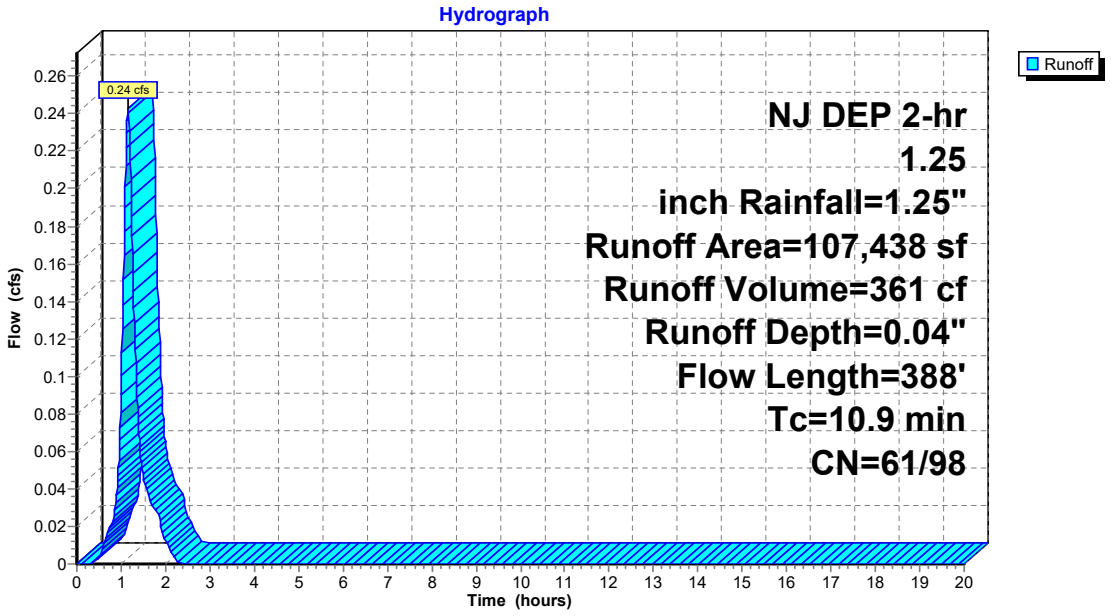
Runoff = 0.24 cfs @ 1.15 hrs, Volume= 361 cf, Depth= 0.04"
Routed to Reach 1R : DP1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr 1.25 inch Rainfall=1.25"

Area (sf)	CN	Description
103,252	61	>75% Grass cover, Good, HSG B
4,186	98	Paved roads w/curbs & sewers, HSG B
107,438	62	Weighted Average
103,252	61	96.10% Pervious Area
4,186	98	3.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0150	0.13		**Sheet Flow, SHEET FLOW** Grass: Short n= 0.150 P2= 3.34"
4.7	338	0.0290	1.19		**Shallow Concentrated Flow, SHALLOW FLOW** Short Grass Pasture Kv= 7.0 fps
10.9	388	Total			

Subcatchment EX-1: EX-1 TO SOFTBALL TD



Summary for Subcatchment EX-2: EX-2 CROSS COUNTRY

[45] Hint: Runoff=Zero

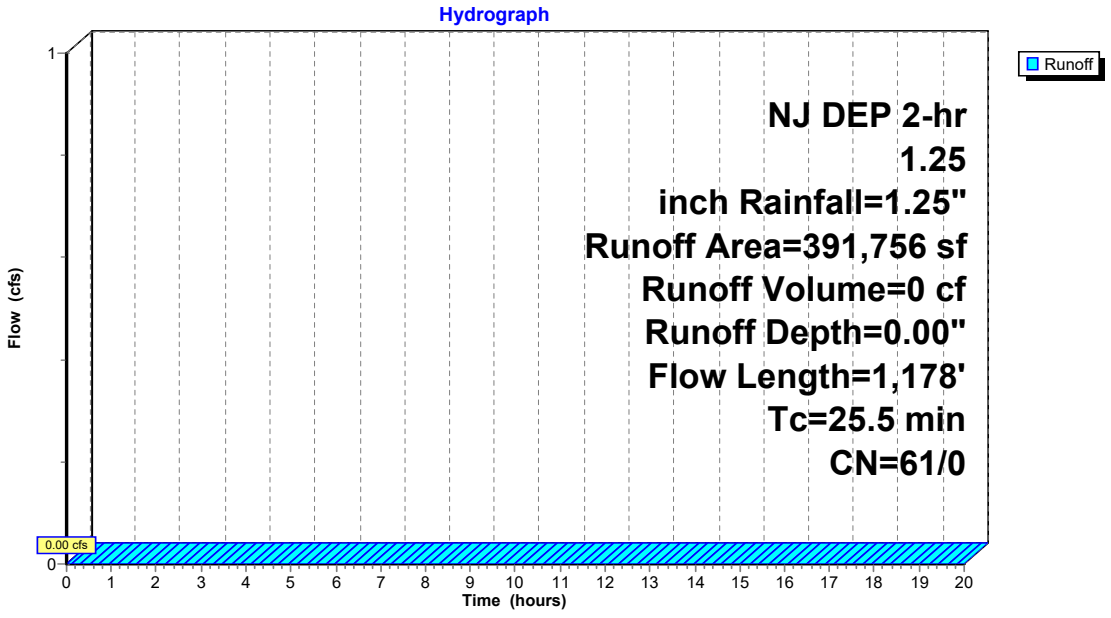
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr 1.25 inch Rainfall=1.25"

Area (sf)	CN	Description
391,756	61	>75% Grass cover, Good, HSG B
391,756	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	50	0.0200	0.15		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.34"
20.0	1,128	0.0180	0.94		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
25.5	1,178	Total			

Subcatchment EX-2: EX-2 CROSS COUNTRY



Summary for Subcatchment EX-3: EX-3 FIELD TO SWALE

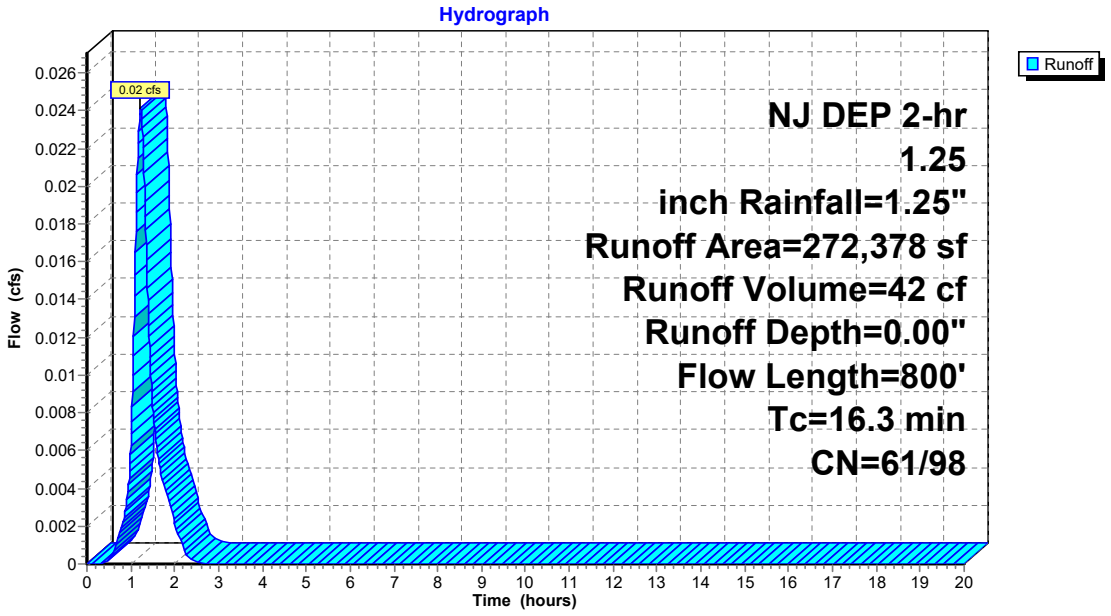
Runoff = 0.02 cfs @ 1.22 hrs, Volume= 42 cf, Depth= 0.00"
Routed to Reach DP3 : REGIONAL SWALE

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr 1.25 inch Rainfall=1.25"

Area (sf)	CN	Description
271,887	61	>75% Grass cover, Good, HSG B
491	98	Paved parking, HSG A
272,378	61	Weighted Average
271,887	61	99.82% Pervious Area
491	98	0.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	50	0.0700	0.25		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.34"
13.0	750	0.0190	0.96		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
16.3	800	Total			

Subcatchment EX-3: EX-3 FIELD TO SWALE



Summary for Subcatchment EX-4: PR-40 TOWARD TENNIS

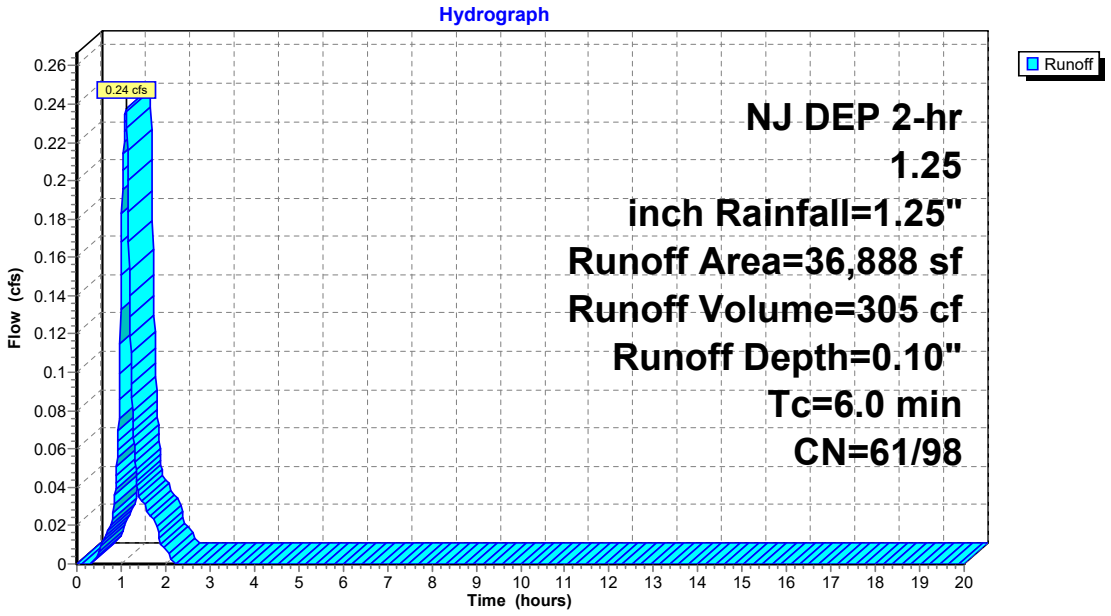
Runoff = 0.24 cfs @ 1.11 hrs, Volume= 305 cf, Depth= 0.10"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr 1.25 inch Rainfall=1.25"

Area (sf)	CN	Description
33,347	61	>75% Grass cover, Good, HSG B
3,541	98	Paved roads w/curbs & sewers, HSG B
36,888	65	Weighted Average
33,347	61	90.40% Pervious Area
3,541	98	9.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum**

Subcatchment EX-4: PR-40 TOWARD TENNIS



Summary for Subcatchment EX-5: 2-EX REG SWALE AREA

[45] Hint: Runoff=Zero

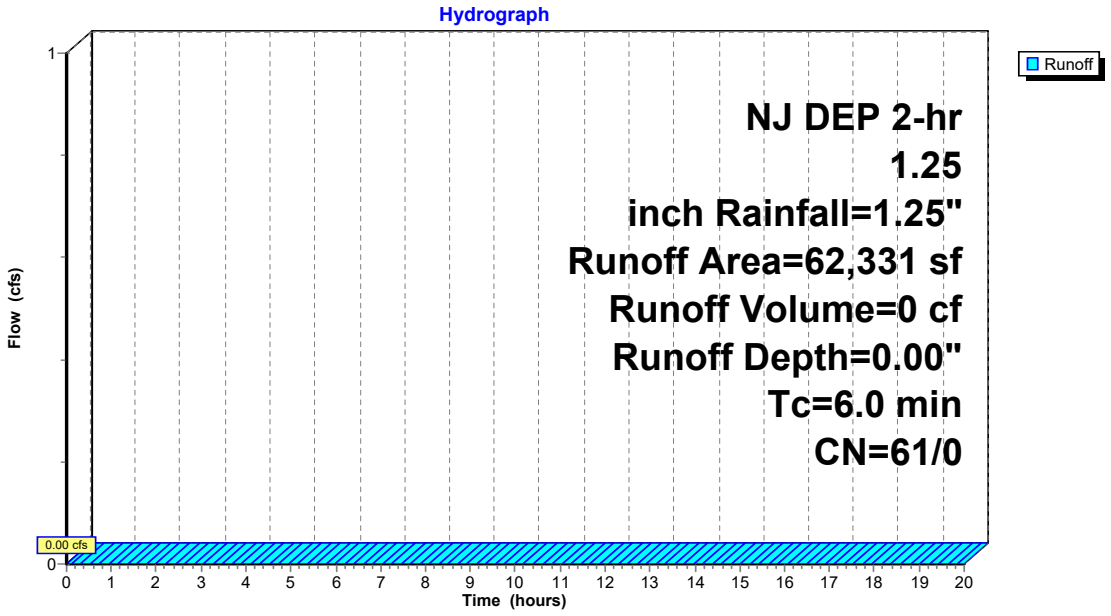
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr 1.25 inch Rainfall=1.25"

Area (sf)	CN	Description
62,331	61	>75% Grass cover, Good, HSG B
62,331	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment EX-5: 2-EX REG SWALE AREA



Summary for Subcatchment EX-6: EX-6 TOWARD SOFTBALL

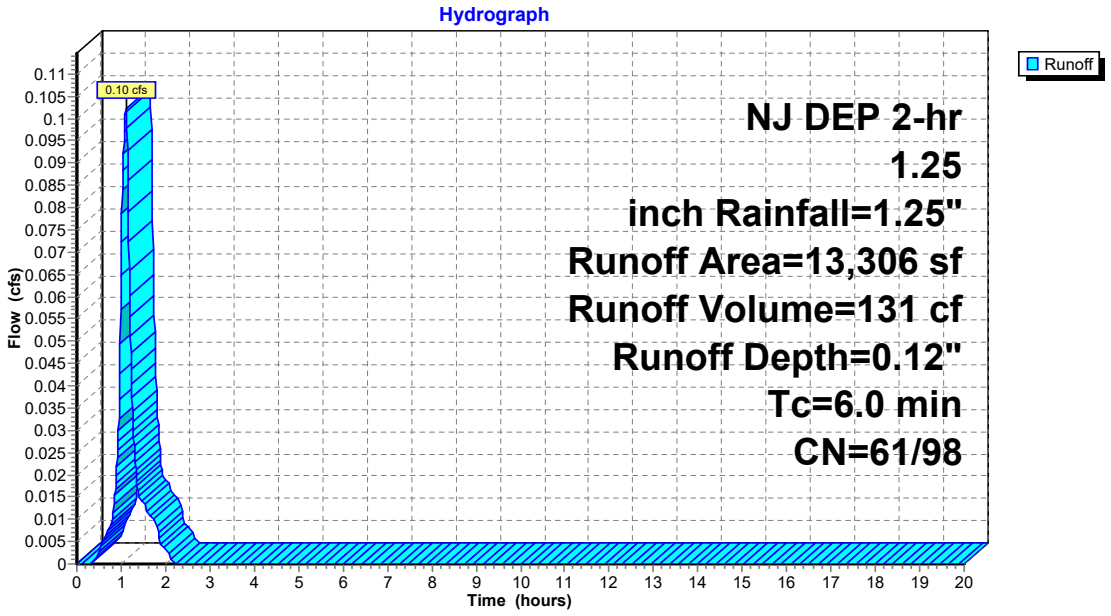
Runoff = 0.10 cfs @ 1.11 hrs, Volume= 131 cf, Depth= 0.12"
Routed to Reach 1R : DP1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr 1.25 inch Rainfall=1.25"

Area (sf)	CN	Description
11,783	61	>75% Grass cover, Good, HSG B
1,523	98	Paved parking, HSG B
13,306	65	Weighted Average
11,783	61	88.55% Pervious Area
1,523	98	11.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment EX-6: EX-6 TOWARD SOFTBALL



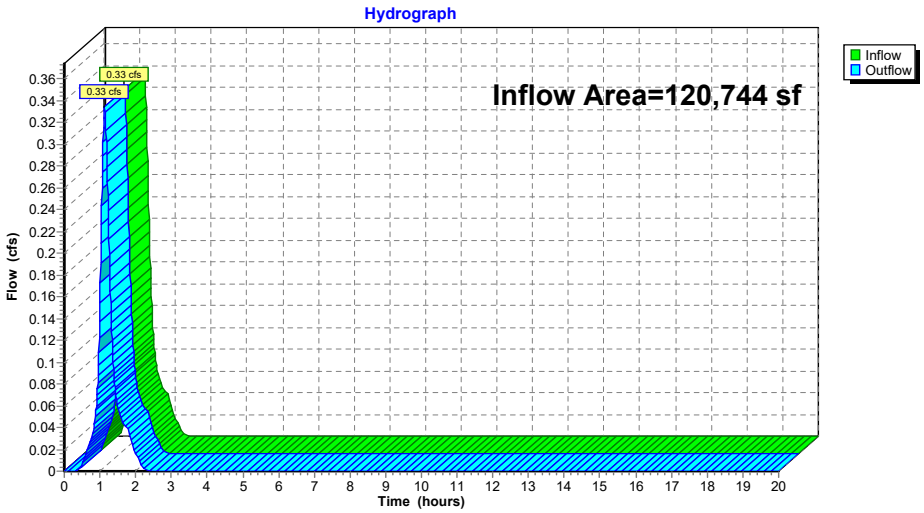
Summary for Reach 1R: DP1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 120,744 sf, 4.73% Impervious, Inflow Depth = 0.05" for 1.25 inch event
Inflow = 0.33 cfs @ 1.13 hrs, Volume= 492 cf
Outflow = 0.33 cfs @ 1.13 hrs, Volume= 492 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs

Reach 1R: DP1



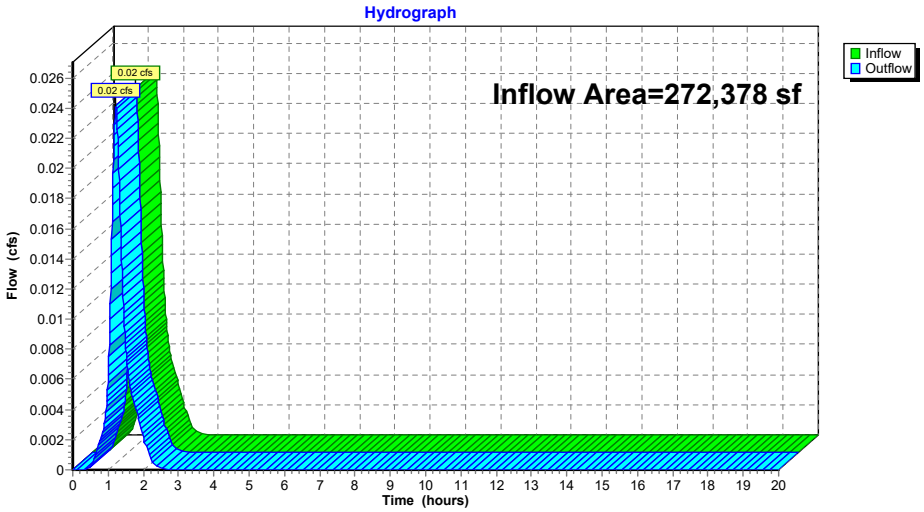
Summary for Reach DP3: REGIONAL SWALE

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 272,378 sf, 0.18% Impervious, Inflow Depth = 0.00" for 1.25 inch event
Inflow = 0.02 cfs @ 1.22 hrs, Volume= 42 cf
Outflow = 0.02 cfs @ 1.22 hrs, Volume= 42 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs

Reach DP3: REGIONAL SWALE



Time span=0.00-20.00 hrs, dt=0.01 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentEX-1: EX-1 TO SOFTBALL TD Runoff Area=107,438 sf 3.90% Impervious Runoff Depth>0.53"
Flow Length=388' Tc=10.9 min CN=61/98 Runoff=1.20 cfs 4,735 cf

SubcatchmentEX-2: EX-2 CROSS COUNTRY Runoff Area=391,756 sf 0.00% Impervious Runoff Depth>0.43"
Flow Length=1,178' Tc=25.5 min CN=61/0 Runoff=2.38 cfs 13,935 cf

SubcatchmentEX-3: EX-3 FIELD TO SWALE Runoff Area=272,378 sf 0.18% Impervious Runoff Depth>0.43"
Flow Length=800' Tc=16.3 min CN=61/98 Runoff=2.07 cfs 9,854 cf

SubcatchmentEX-4: PR-40 TOWARD TENNIS Runoff Area=36,888 sf 9.60% Impervious Runoff Depth>0.67"
Tc=6.0 min CN=61/98 Runoff=0.67 cfs 2,070 cf

SubcatchmentEX-5: 2-EX REG SWALE AREA Runoff Area=62,331 sf 0.00% Impervious Runoff Depth>0.43"
Tc=6.0 min CN=61/0 Runoff=0.72 cfs 2,248 cf

SubcatchmentEX-6: EX-6 TOWARD SOFTBALL Runoff Area=13,306 sf 11.45% Impervious Runoff Depth>0.72"
Tc=6.0 min CN=61/98 Runoff=0.26 cfs 798 cf

Reach 1R: DP1 Inflow=1.38 cfs 5,533 cf
Outflow=1.38 cfs 5,533 cf

Reach DP3: REGIONAL SWALE Inflow=2.07 cfs 9,854 cf
Outflow=2.07 cfs 9,854 cf

Total Runoff Area = 884,097 sf Runoff Volume = 33,640 cf Average Runoff Depth = 0.46"
98.90% Pervious = 874,356 sf 1.10% Impervious = 9,741 sf

Summary for Subcatchment EX-1: EX-1 TO SOFTBALL TD

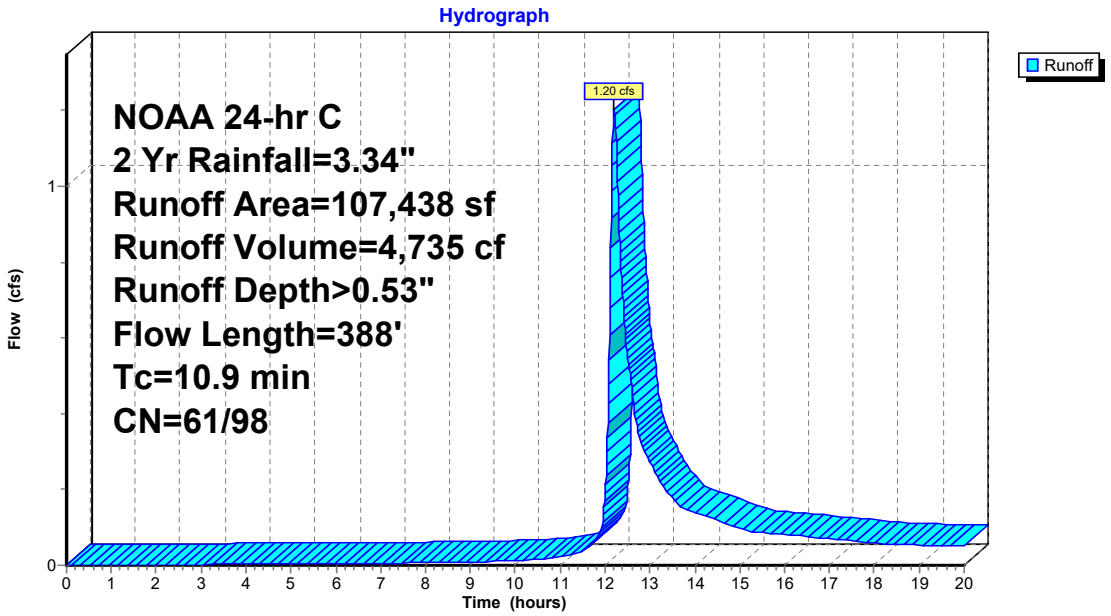
Runoff = 1.20 cfs @ 12.21 hrs, Volume= 4,735 cf, Depth> 0.53"
Routed to Reach 1R : DP1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2 Yr Rainfall=3.34"

Area (sf)	CN	Description
103,252	61	>75% Grass cover, Good, HSG B
4,186	98	Paved roads w/curbs & sewers, HSG B
107,438	62	Weighted Average
103,252	61	96.10% Pervious Area
4,186	98	3.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0150	0.13		**Sheet Flow, SHEET FLOW** Grass: Short n= 0.150 P2= 3.34"
4.7	338	0.0290	1.19		**Shallow Concentrated Flow, SHALLOW FLOW** Short Grass Pasture Kv= 7.0 fps
10.9	388	Total			

Subcatchment EX-1: EX-1 TO SOFTBALL TD



Summary for Subcatchment EX-2: EX-2 CROSS COUNTRY

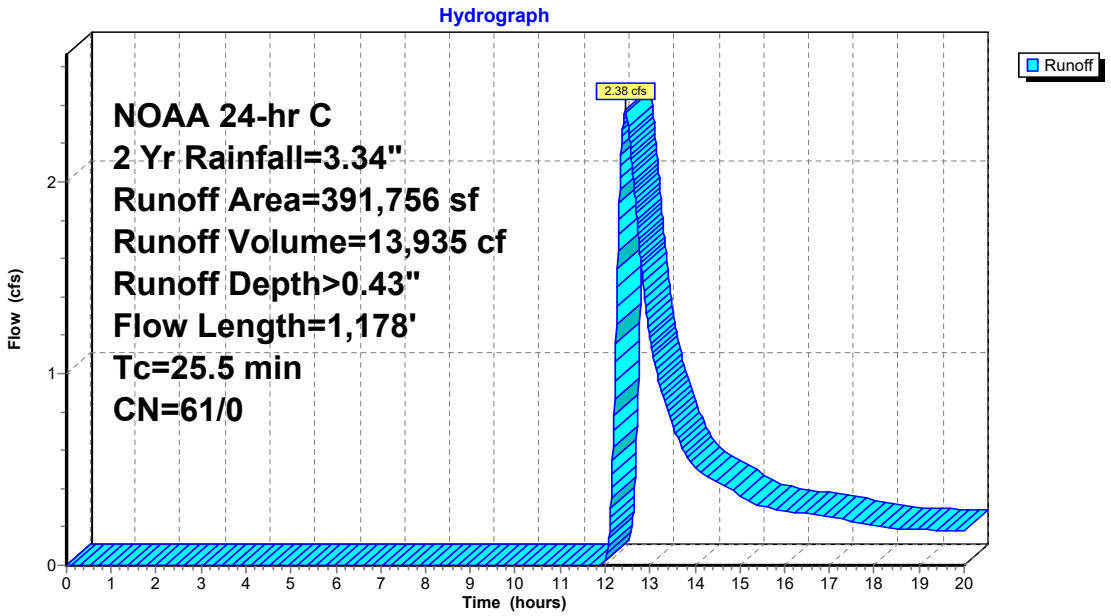
Runoff = 2.38 cfs @ 12.45 hrs, Volume= 13,935 cf, Depth> 0.43"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2 Yr Rainfall=3.34"

Area (sf)	CN	Description
391,756	61	>75% Grass cover, Good, HSG B
391,756	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	50	0.0200	0.15		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.34"
20.0	1,128	0.0180	0.94		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
25.5	1,178	Total			

Subcatchment EX-2: EX-2 CROSS COUNTRY



Summary for Subcatchment EX-3: EX-3 FIELD TO SWALE

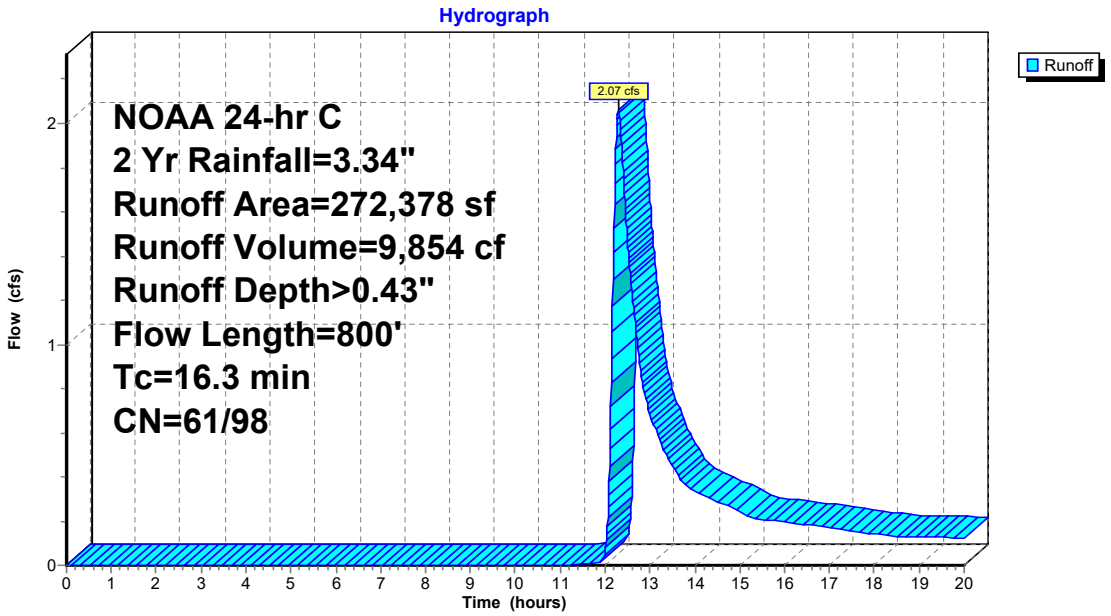
Runoff = 2.07 cfs @ 12.30 hrs, Volume= 9,854 cf, Depth> 0.43"
Routed to Reach DP3 : REGIONAL SWALE

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2 Yr Rainfall=3.34"

Area (sf)	CN	Description
271,887	61	>75% Grass cover, Good, HSG B
491	98	Paved parking, HSG A
272,378	61	Weighted Average
271,887	61	99.82% Pervious Area
491	98	0.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	50	0.0700	0.25		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.34"
13.0	750	0.0190	0.96		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
16.3	800	Total			

Subcatchment EX-3: EX-3 FIELD TO SWALE



Summary for Subcatchment EX-4: PR-40 TOWARD TENNIS

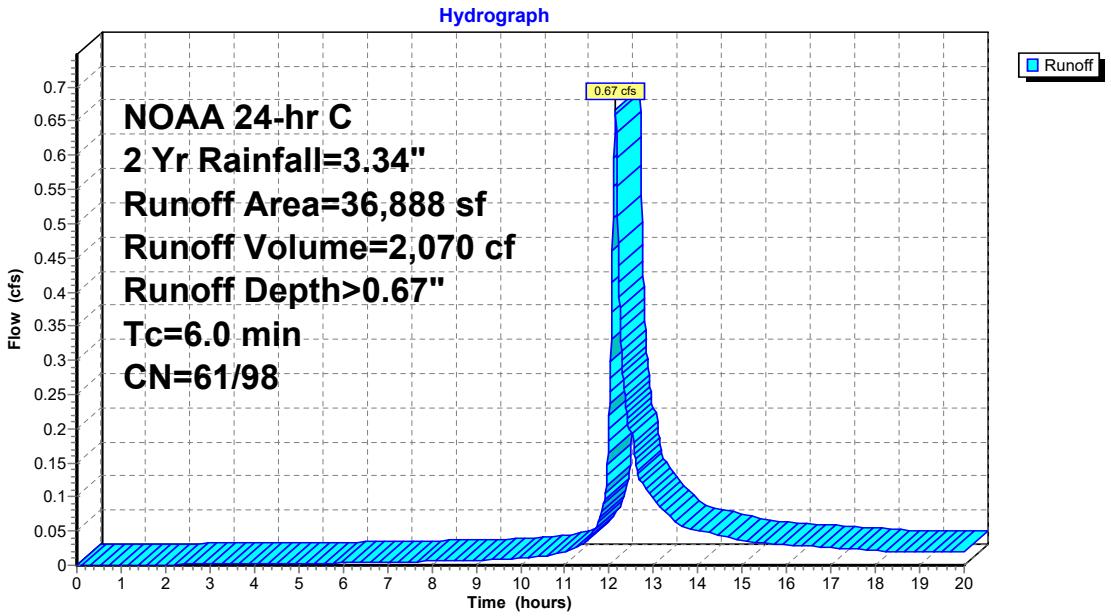
Runoff = 0.67 cfs @ 12.14 hrs, Volume= 2,070 cf, Depth> 0.67"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2 Yr Rainfall=3.34"

Area (sf)	CN	Description
33,347	61	>75% Grass cover, Good, HSG B
3,541	98	Paved roads w/curbs & sewers, HSG B
36,888	65	Weighted Average
33,347	61	90.40% Pervious Area
3,541	98	9.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum**

Subcatchment EX-4: PR-40 TOWARD TENNIS



Summary for Subcatchment EX-5: 2-EX REG SWALE AREA

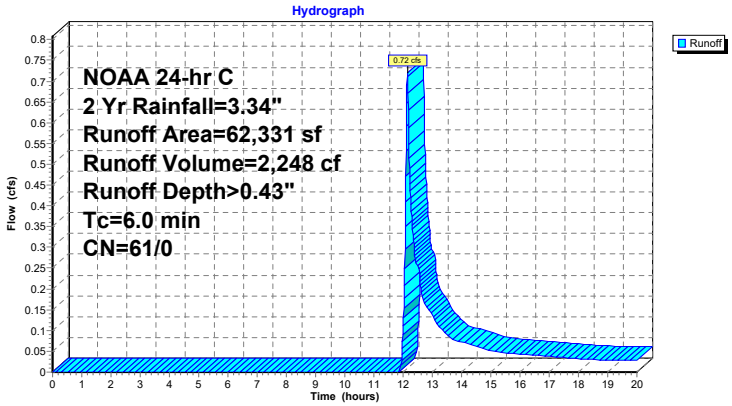
Runoff = 0.72 cfs @ 12.15 hrs, Volume= 2,248 cf, Depth> 0.43"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2 Yr Rainfall=3.34"

Area (sf)	CN	Description
62,331	61	>75% Grass cover, Good, HSG B
62,331	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment EX-5: 2-EX REG SWALE AREA



Summary for Subcatchment EX-6: EX-6 TOWARD SOFTBALL

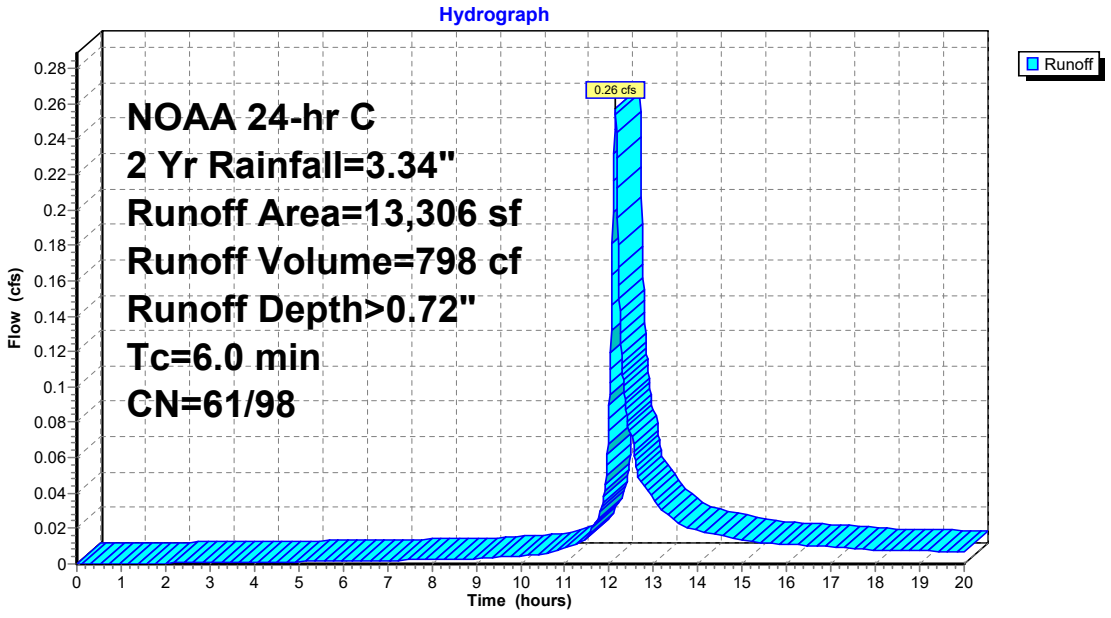
Runoff = 0.26 cfs @ 12.14 hrs, Volume= 798 cf, Depth> 0.72"
Routed to Reach 1R : DP1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2 Yr Rainfall=3.34"

Area (sf)	CN	Description
11,783	61	>75% Grass cover, Good, HSG B
1,523	98	Paved parking, HSG B
13,306	65	Weighted Average
11,783	61	88.55% Pervious Area
1,523	98	11.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment EX-6: EX-6 TOWARD SOFTBALL



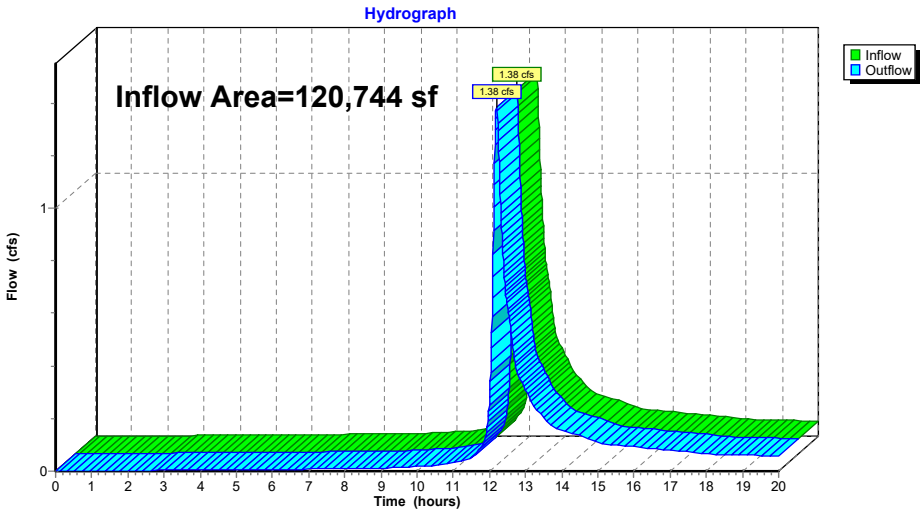
Summary for Reach 1R: DP1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 120,744 sf, 4.73% Impervious, Inflow Depth > 0.55" for 2 Yr event
Inflow = 1.38 cfs @ 12.20 hrs, Volume= 5,533 cf
Outflow = 1.38 cfs @ 12.20 hrs, Volume= 5,533 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs

Reach 1R: DP1



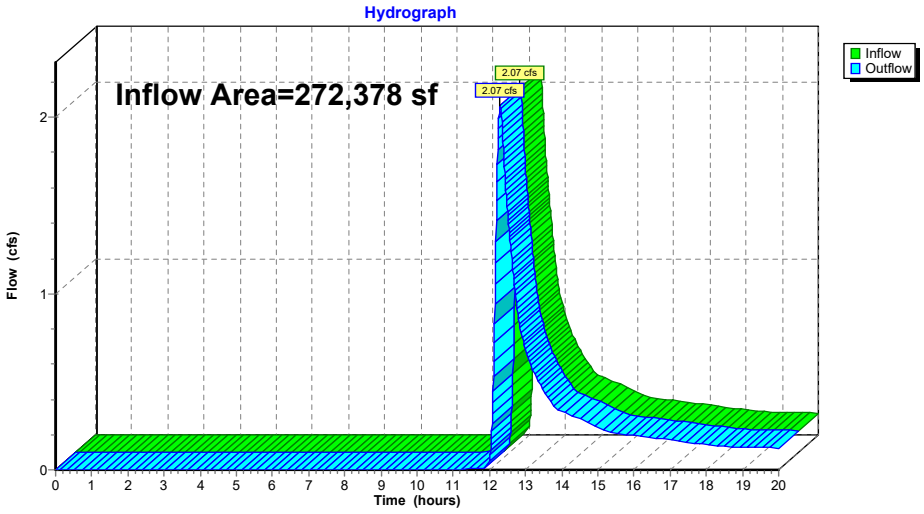
Summary for Reach DP3: REGIONAL SWALE

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 272,378 sf, 0.18% Impervious, Inflow Depth > 0.43" for 2 Yr event
Inflow = 2.07 cfs @ 12.30 hrs, Volume= 9,854 cf
Outflow = 2.07 cfs @ 12.30 hrs, Volume= 9,854 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs

Reach DP3: REGIONAL SWALE



Time span=0.00-20.00 hrs, dt=0.01 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentEX-1: EX-1 TO SOFTBALL TD Runoff Area=107,438 sf 3.90% Impervious Runoff Depth>1.41"
Flow Length=388' Tc=10.9 min CN=61/98 Runoff=3.92 cfs 12,612 cf

SubcatchmentEX-2: EX-2 CROSS COUNTRY Runoff Area=391,756 sf 0.00% Impervious Runoff Depth>1.27"
Flow Length=1,178' Tc=25.5 min CN=61/0 Runoff=8.91 cfs 41,426 cf

SubcatchmentEX-3: EX-3 FIELD TO SWALE Runoff Area=272,378 sf 0.18% Impervious Runoff Depth>1.28"
Flow Length=800' Tc=16.3 min CN=61/98 Runoff=7.75 cfs 29,080 cf

SubcatchmentEX-4: PR-40 TOWARD TENNIS Runoff Area=36,888 sf 9.60% Impervious Runoff Depth>1.60"
Tc=6.0 min CN=61/98 Runoff=1.83 cfs 4,925 cf

SubcatchmentEX-5: 2-EX REG SWALE AREA Runoff Area=62,331 sf 0.00% Impervious Runoff Depth>1.28"
Tc=6.0 min CN=61/0 Runoff=2.60 cfs 6,659 cf

SubcatchmentEX-6: EX-6 TOWARD SOFTBALL Runoff Area=13,306 sf 11.45% Impervious Runoff Depth>1.66"
Tc=6.0 min CN=61/98 Runoff=0.68 cfs 1,845 cf

Reach 1R: DP1 Inflow=4.43 cfs 14,456 cf
Outflow=4.43 cfs 14,456 cf

Reach DP3: REGIONAL SWALE Inflow=7.75 cfs 29,080 cf
Outflow=7.75 cfs 29,080 cf

Total Runoff Area = 884,097 sf Runoff Volume = 96,546 cf Average Runoff Depth = 1.31"
98.90% Pervious = 874,356 sf 1.10% Impervious = 9,741 sf

Summary for Subcatchment EX-1: EX-1 TO SOFTBALL TD

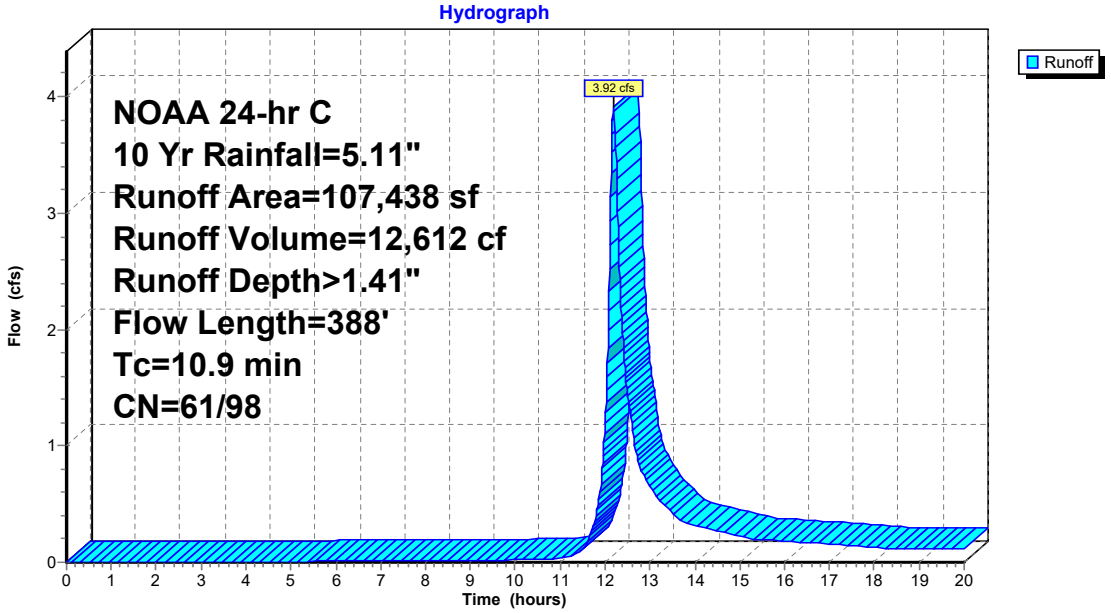
Runoff = 3.92 cfs @ 12.19 hrs, Volume= 12,612 cf, Depth> 1.41"
Routed to Reach 1R : DP1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10 Yr Rainfall=5.11"

Area (sf)	CN	Description
103,252	61	>75% Grass cover, Good, HSG B
4,186	98	Paved roads w/curbs & sewers, HSG B
107,438	62	Weighted Average
103,252	61	96.10% Pervious Area
4,186	98	3.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0150	0.13		**Sheet Flow, SHEET FLOW** Grass: Short n= 0.150 P2= 3.34"
4.7	338	0.0290	1.19		**Shallow Concentrated Flow, SHALLOW FLOW** Short Grass Pasture Kv= 7.0 fps
10.9	388	Total			

Subcatchment EX-1: EX-1 TO SOFTBALL TD



Summary for Subcatchment EX-2: EX-2 CROSS COUNTRY

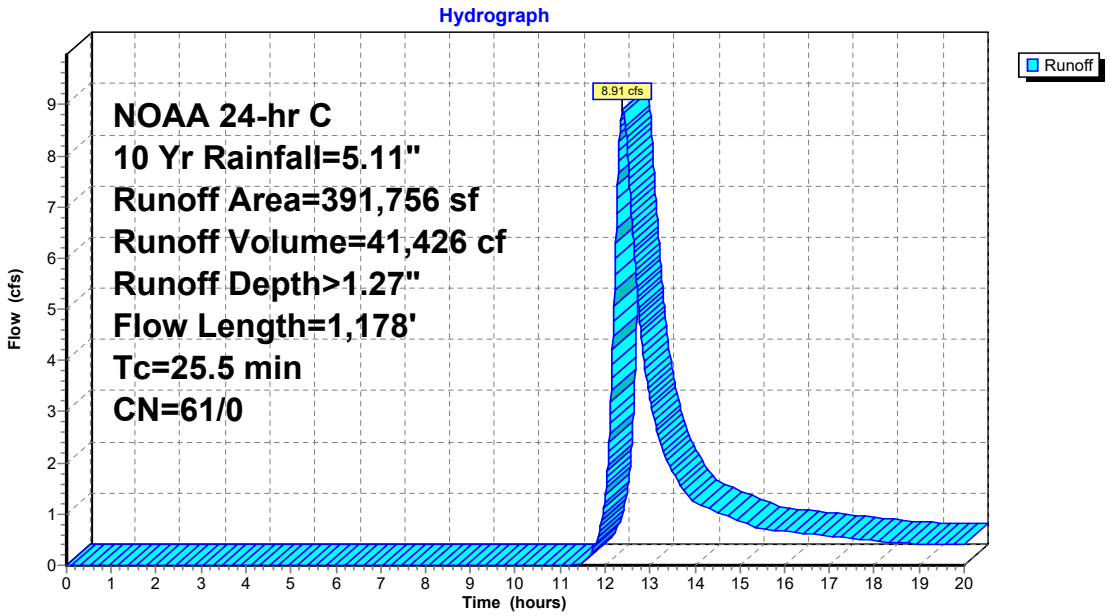
Runoff = 8.91 cfs @ 12.39 hrs, Volume= 41,426 cf, Depth> 1.27"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10 Yr Rainfall=5.11"

Area (sf)	CN	Description
391,756	61	>75% Grass cover, Good, HSG B
391,756	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	50	0.0200	0.15		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.34"
20.0	1,128	0.0180	0.94		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
25.5	1,178	Total			

Subcatchment EX-2: EX-2 CROSS COUNTRY



Summary for Subcatchment EX-3: EX-3 FIELD TO SWALE

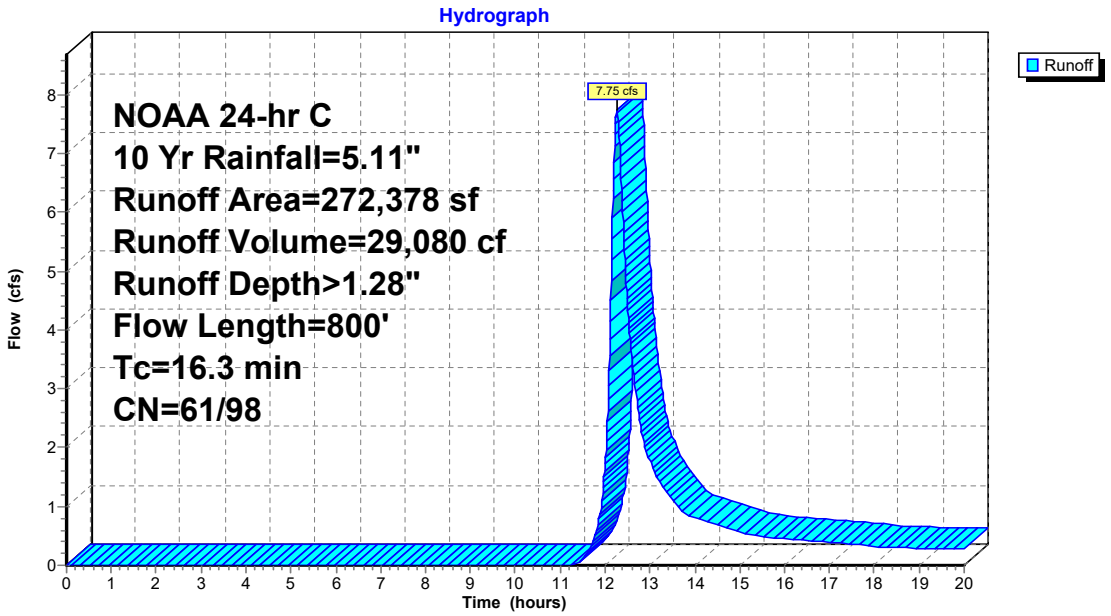
Runoff = 7.75 cfs @ 12.26 hrs, Volume= 29,080 cf, Depth> 1.28"
Routed to Reach DP3 : REGIONAL SWALE

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10 Yr Rainfall=5.11"

Area (sf)	CN	Description
271,887	61	>75% Grass cover, Good, HSG B
491	98	Paved parking, HSG A
272,378	61	Weighted Average
271,887	61	99.82% Pervious Area
491	98	0.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	50	0.0700	0.25		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.34"
13.0	750	0.0190	0.96		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
16.3	800	Total			

Subcatchment EX-3: EX-3 FIELD TO SWALE



Summary for Subcatchment EX-4: PR-40 TOWARD TENNIS

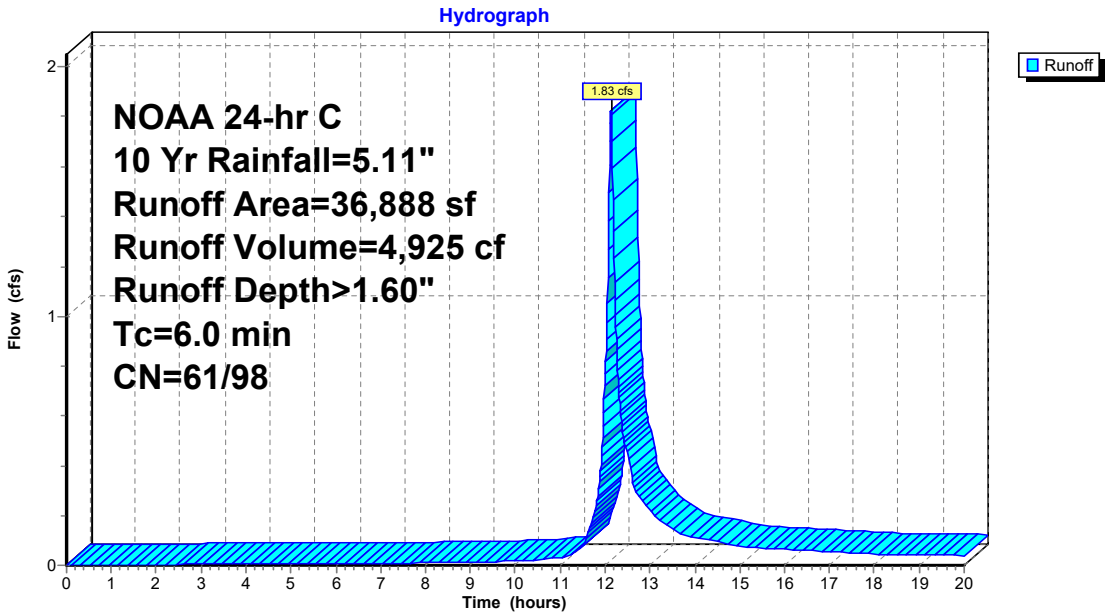
Runoff = 1.83 cfs @ 12.14 hrs, Volume= 4,925 cf, Depth> 1.60"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10 Yr Rainfall=5.11"

Area (sf)	CN	Description
33,347	61	>75% Grass cover, Good, HSG B
3,541	98	Paved roads w/curbs & sewers, HSG B
36,888	65	Weighted Average
33,347	61	90.40% Pervious Area
3,541	98	9.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum**

Subcatchment EX-4: PR-40 TOWARD TENNIS



Summary for Subcatchment EX-5: 2-EX REG SWALE AREA

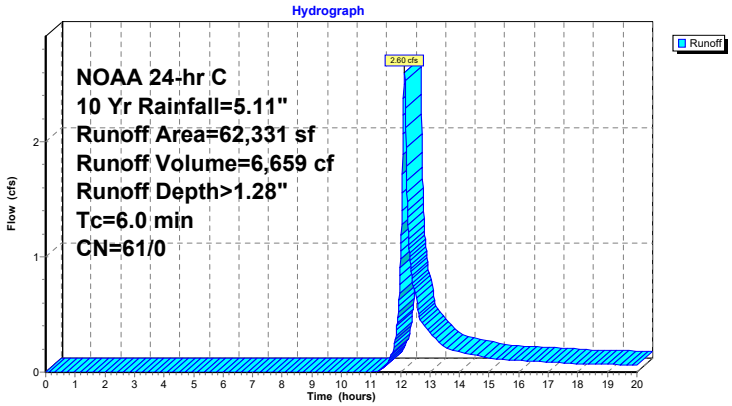
Runoff = 2.60 cfs @ 12.14 hrs, Volume= 6,659 cf, Depth> 1.28"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10 Yr Rainfall=5.11"

Area (sf)	CN	Description
62,331	61	>75% Grass cover, Good, HSG B
62,331	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment EX-5: 2-EX REG SWALE AREA



Summary for Subcatchment EX-6: EX-6 TOWARD SOFTBALL

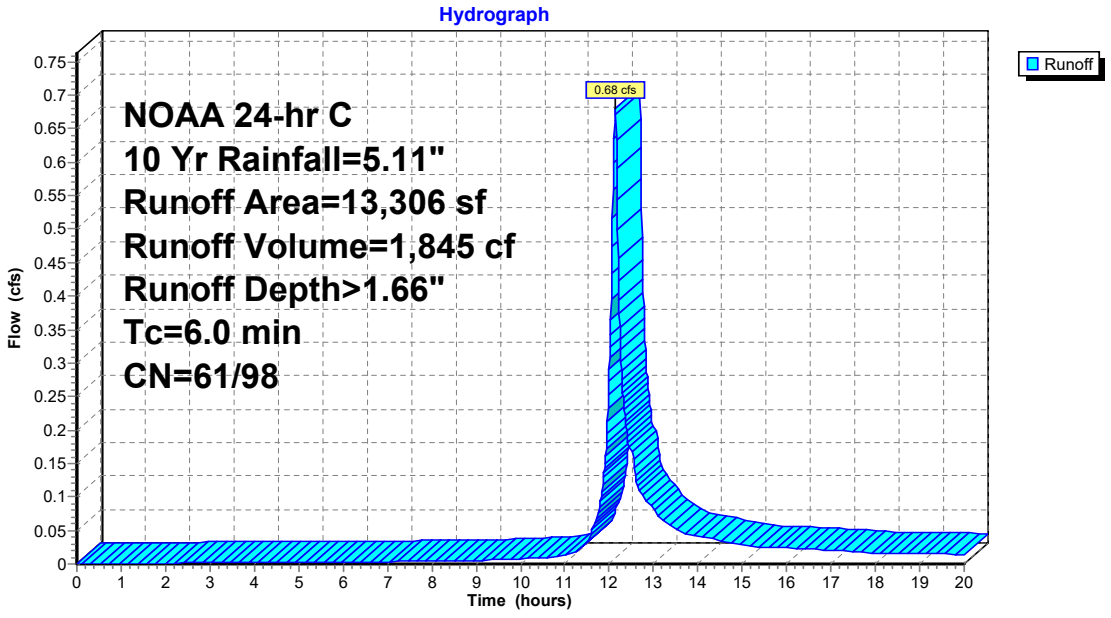
Runoff = 0.68 cfs @ 12.14 hrs, Volume= 1,845 cf, Depth> 1.66"
Routed to Reach 1R : DP1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10 Yr Rainfall=5.11"

Area (sf)	CN	Description
11,783	61	>75% Grass cover, Good, HSG B
1,523	98	Paved parking, HSG B
13,306	65	Weighted Average
11,783	61	88.55% Pervious Area
1,523	98	11.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment EX-6: EX-6 TOWARD SOFTBALL



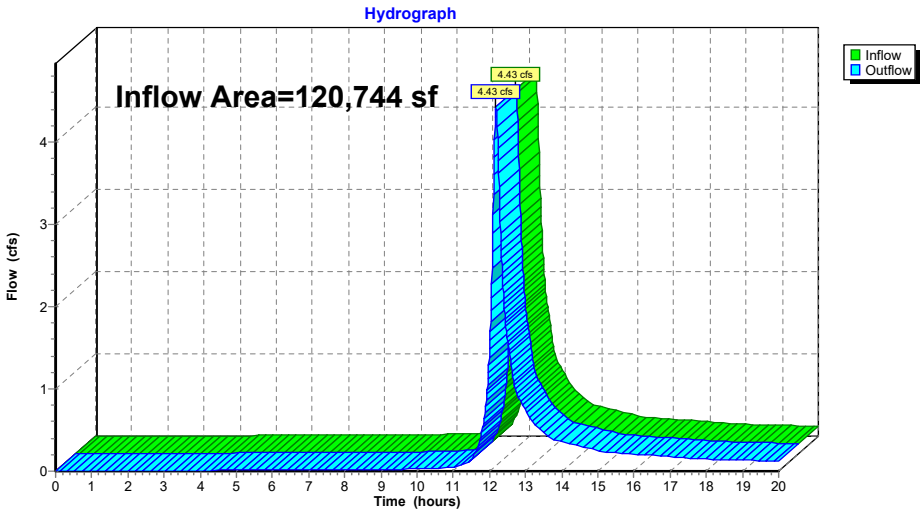
Summary for Reach 1R: DP1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 120,744 sf, 4.73% Impervious, Inflow Depth > 1.44" for 10 Yr event
Inflow = 4.43 cfs @ 12.18 hrs, Volume= 14,456 cf
Outflow = 4.43 cfs @ 12.18 hrs, Volume= 14,456 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs

Reach 1R: DP1



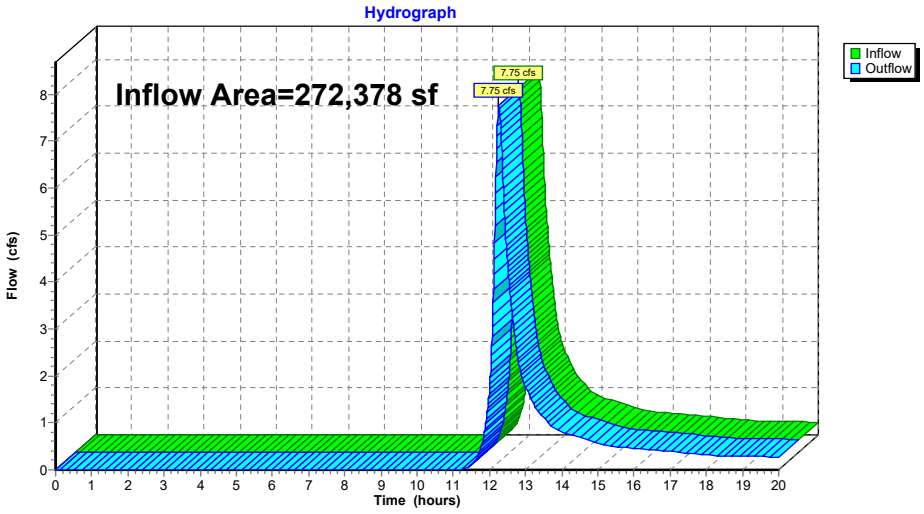
Summary for Reach DP3: REGIONAL SWALE

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 272,378 sf, 0.18% Impervious, Inflow Depth > 1.28" for 10 Yr event
Inflow = 7.75 cfs @ 12.26 hrs, Volume= 29,080 cf
Outflow = 7.75 cfs @ 12.26 hrs, Volume= 29,080 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs

Reach DP3: REGIONAL SWALE



Time span=0.00-20.00 hrs, dt=0.01 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentEX-1: EX-1 TO SOFTBALL TD Runoff Area=107,438 sf 3.90% Impervious Runoff Depth>3.78"
Flow Length=388' Tc=10.9 min CN=61/98 Runoff=10.97 cfs 33,845 cf

SubcatchmentEX-2: EX-2 CROSS COUNTRY Runoff Area=391,756 sf 0.00% Impervious Runoff Depth>3.59"
Flow Length=1,178' Tc=25.5 min CN=61/0 Runoff=26.60 cfs 117,146 cf

SubcatchmentEX-3: EX-3 FIELD TO SWALE Runoff Area=272,378 sf 0.18% Impervious Runoff Depth>3.61"
Flow Length=800' Tc=16.3 min CN=61/98 Runoff=22.91 cfs 81,940 cf

SubcatchmentEX-4: PR-40 TOWARD TENNIS Runoff Area=36,888 sf 9.60% Impervious Runoff Depth>4.04"
Tc=6.0 min CN=61/98 Runoff=4.76 cfs 12,409 cf

SubcatchmentEX-5: 2-EX REG SWALE AREA Runoff Area=62,331 sf 0.00% Impervious Runoff Depth>3.62"
Tc=6.0 min CN=61/0 Runoff=7.49 cfs 18,790 cf

SubcatchmentEX-6: EX-6 TOWARD SOFTBALL Runoff Area=13,306 sf 11.45% Impervious Runoff Depth>4.12"
Tc=6.0 min CN=61/98 Runoff=1.74 cfs 4,565 cf

Reach 1R: DP1 Inflow=12.30 cfs 38,411 cf
Outflow=12.30 cfs 38,411 cf

Reach DP3: REGIONAL SWALE Inflow=22.91 cfs 81,940 cf
Outflow=22.91 cfs 81,940 cf

Total Runoff Area = 884,097 sf Runoff Volume = 268,696 cf Average Runoff Depth = 3.65"
98.90% Pervious = 874,356 sf 1.10% Impervious = 9,741 sf

Summary for Subcatchment EX-1: EX-1 TO SOFTBALL TD

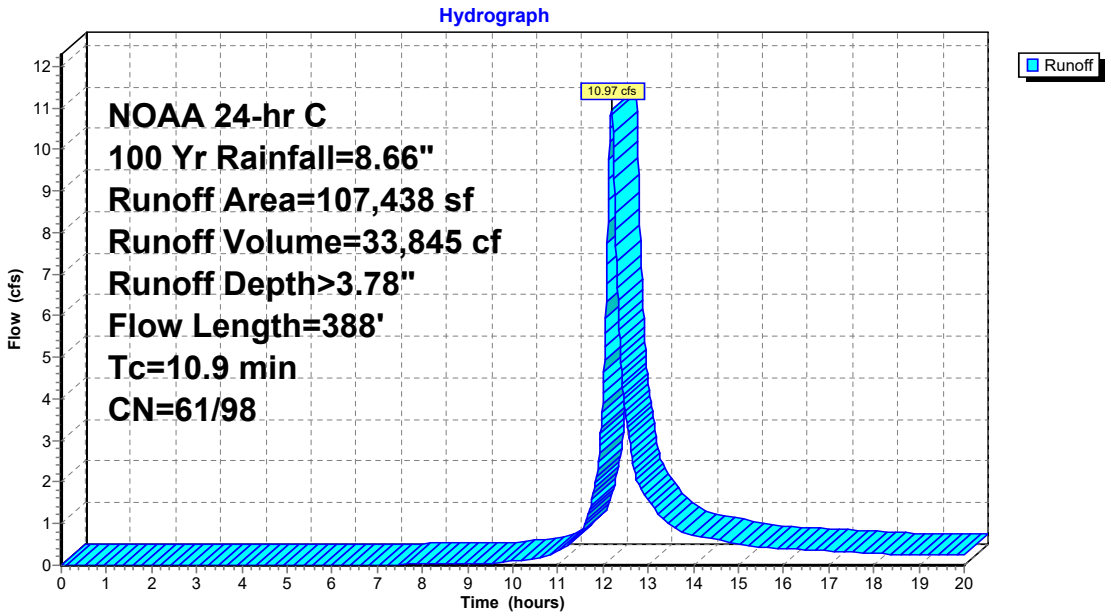
Runoff = 10.97 cfs @ 12.19 hrs, Volume= 33,845 cf, Depth> 3.78"
Routed to Reach 1R : DP1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100 Yr Rainfall=8.66"

Area (sf)	CN	Description
103,252	61	>75% Grass cover, Good, HSG B
4,186	98	Paved roads w/curbs & sewers, HSG B
107,438	62	Weighted Average
103,252	61	96.10% Pervious Area
4,186	98	3.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0150	0.13		**Sheet Flow, SHEET FLOW** Grass: Short n= 0.150 P2= 3.34"
4.7	338	0.0290	1.19		**Shallow Concentrated Flow, SHALLOW FLOW** Short Grass Pasture Kv= 7.0 fps
10.9	388	Total			

Subcatchment EX-1: EX-1 TO SOFTBALL TD



Summary for Subcatchment EX-2: EX-2 CROSS COUNTRY

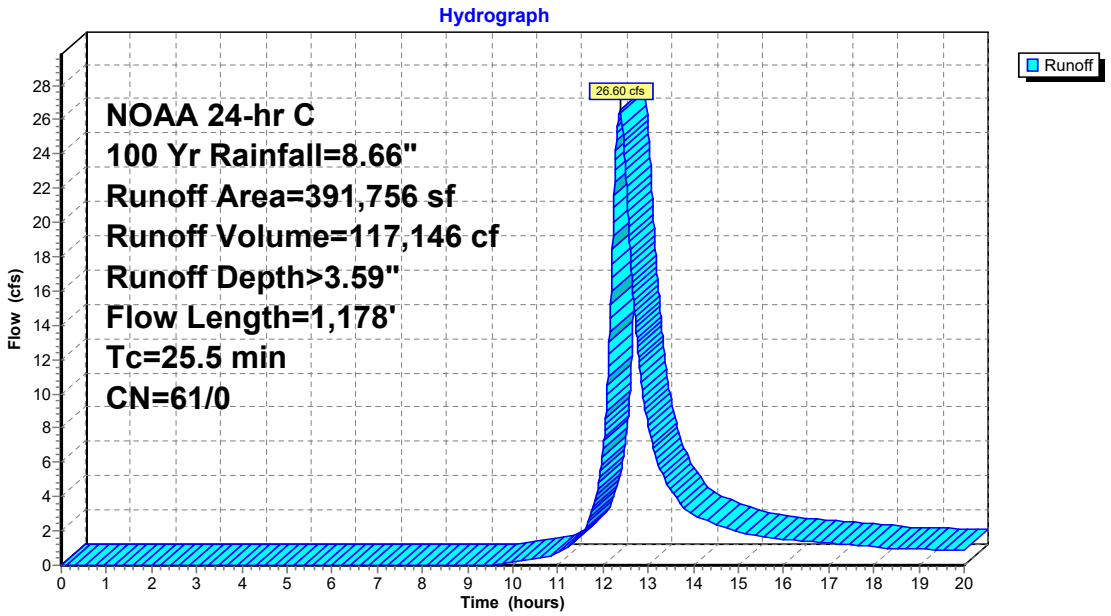
Runoff = 26.60 cfs @ 12.38 hrs, Volume= 117,146 cf, Depth> 3.59"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100 Yr Rainfall=8.66"

Area (sf)	CN	Description
391,756	61	>75% Grass cover, Good, HSG B
391,756	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	50	0.0200	0.15		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.34"
20.0	1,128	0.0180	0.94		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
25.5	1,178	Total			

Subcatchment EX-2: EX-2 CROSS COUNTRY



Summary for Subcatchment EX-3: EX-3 FIELD TO SWALE

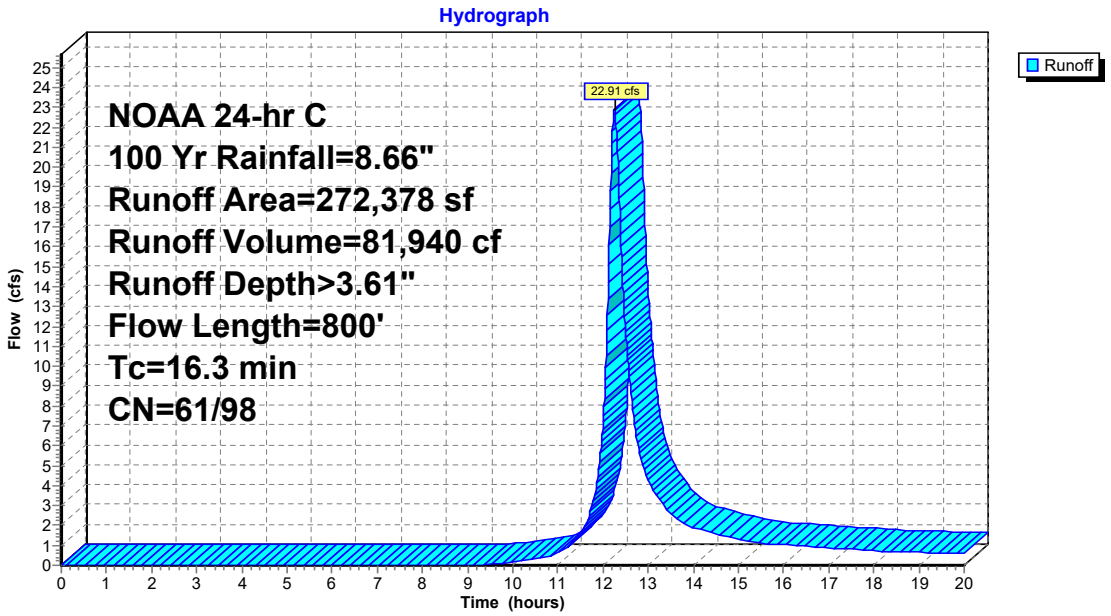
Runoff = 22.91 cfs @ 12.26 hrs, Volume= 81,940 cf, Depth> 3.61"
Routed to Reach DP3 : REGIONAL SWALE

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100 Yr Rainfall=8.66"

Area (sf)	CN	Description
271,887	61	>75% Grass cover, Good, HSG B
491	98	Paved parking, HSG A
272,378	61	Weighted Average
271,887	61	99.82% Pervious Area
491	98	0.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	50	0.0700	0.25		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.34"
13.0	750	0.0190	0.96		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
16.3	800	Total			

Subcatchment EX-3: EX-3 FIELD TO SWALE



Summary for Subcatchment EX-4: PR-40 TOWARD TENNIS

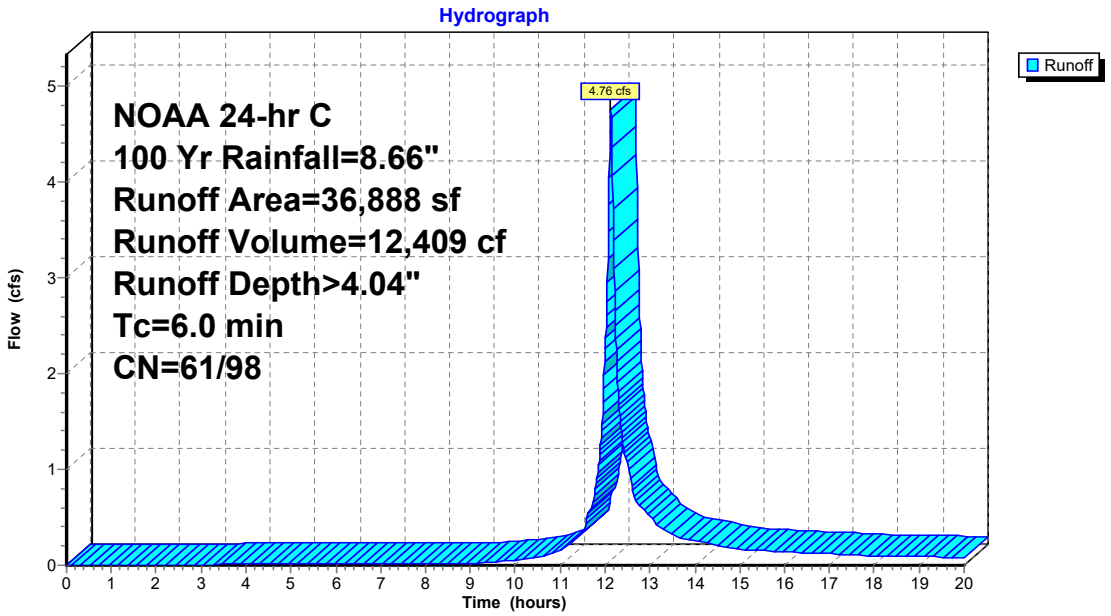
Runoff = 4.76 cfs @ 12.13 hrs, Volume= 12,409 cf, Depth> 4.04"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100 Yr Rainfall=8.66"

Area (sf)	CN	Description
33,347	61	>75% Grass cover, Good, HSG B
3,541	98	Paved roads w/curbs & sewers, HSG B
36,888	65	Weighted Average
33,347	61	90.40% Pervious Area
3,541	98	9.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum**

Subcatchment EX-4: PR-40 TOWARD TENNIS



Summary for Subcatchment EX-5: 2-EX REG SWALE AREA

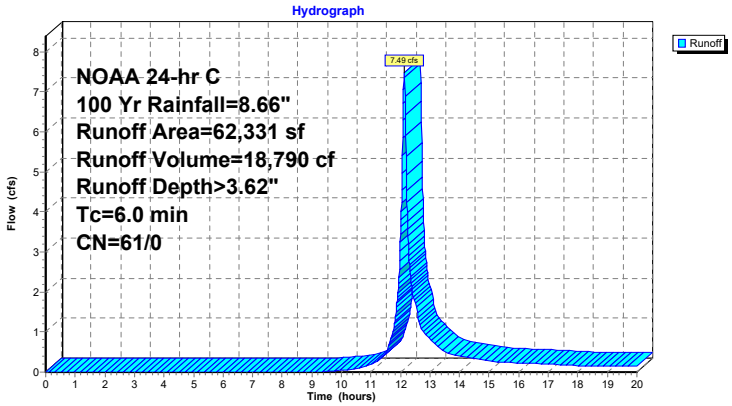
Runoff = 7.49 cfs @ 12.13 hrs, Volume= 18,790 cf, Depth> 3.62"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100 Yr Rainfall=8.66"

Area (sf)	CN	Description
62,331	61	>75% Grass cover, Good, HSG B
62,331	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment EX-5: 2-EX REG SWALE AREA



Summary for Subcatchment EX-6: EX-6 TOWARD SOFTBALL

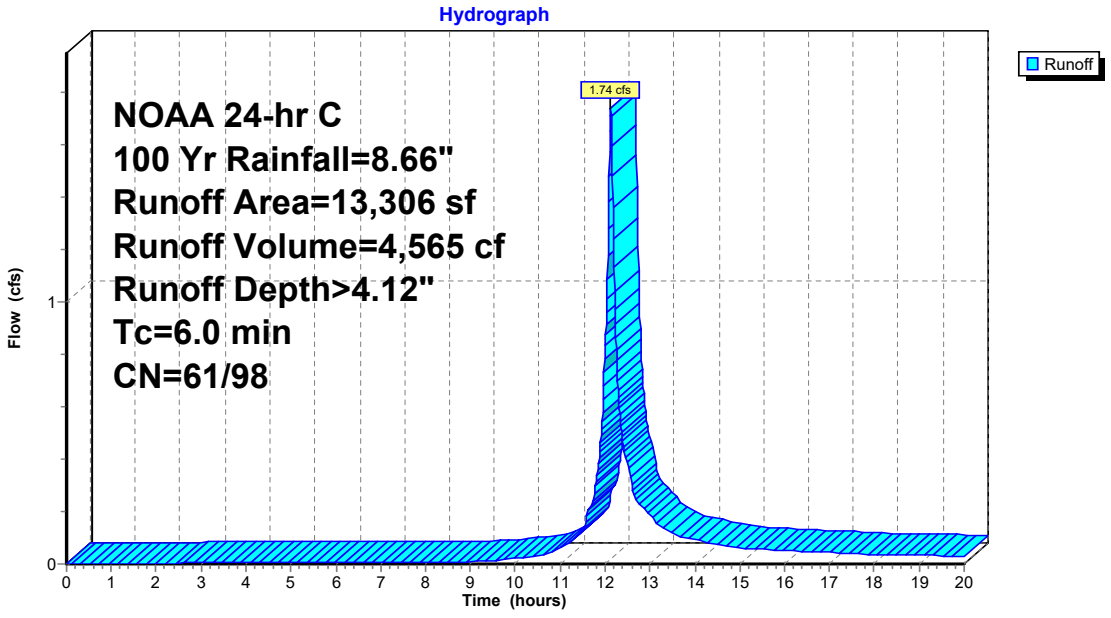
Runoff = 1.74 cfs @ 12.13 hrs, Volume= 4,565 cf, Depth> 4.12"
Routed to Reach 1R : DP1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100 Yr Rainfall=8.66"

Area (sf)	CN	Description
11,783	61	>75% Grass cover, Good, HSG B
1,523	98	Paved parking, HSG B
13,306	65	Weighted Average
11,783	61	88.55% Pervious Area
1,523	98	11.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment EX-6: EX-6 TOWARD SOFTBALL



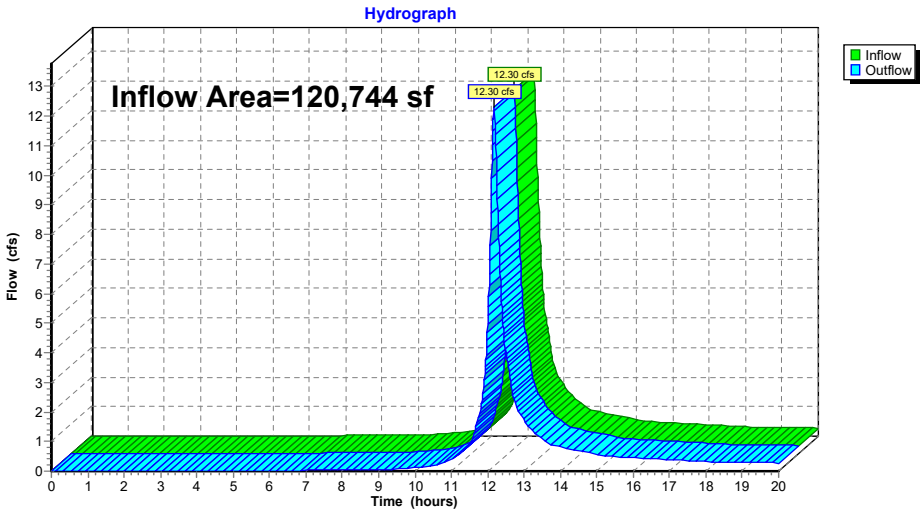
Summary for Reach 1R: DP1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 120,744 sf, 4.73% Impervious, Inflow Depth > 3.82" for 100 Yr event
Inflow = 12.30 cfs @ 12.18 hrs, Volume= 38,411 cf
Outflow = 12.30 cfs @ 12.18 hrs, Volume= 38,411 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs

Reach 1R: DP1



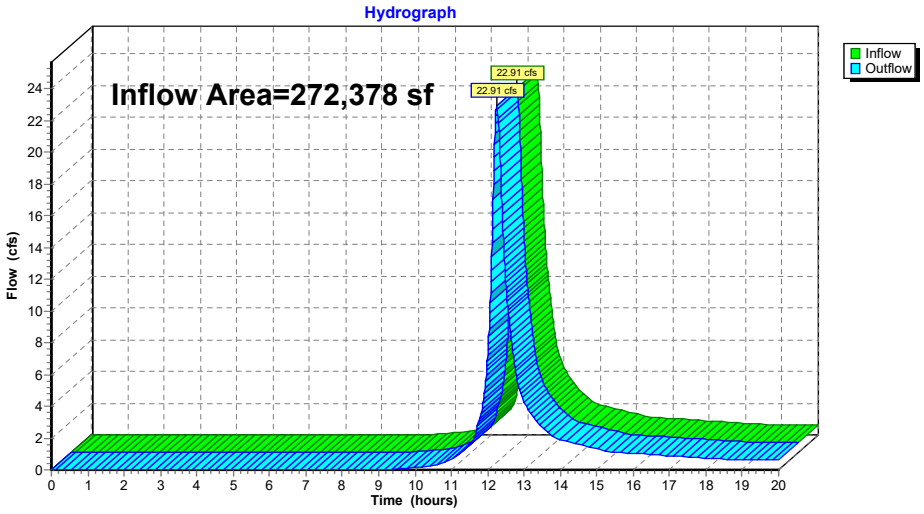
Summary for Reach DP3: REGIONAL SWALE

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 272,378 sf, 0.18% Impervious, Inflow Depth > 3.61" for 100 Yr event
Inflow = 22.91 cfs @ 12.26 hrs, Volume= 81,940 cf
Outflow = 22.91 cfs @ 12.26 hrs, Volume= 81,940 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs

Reach DP3: REGIONAL SWALE



Time span=0.00-20.00 hrs, dt=0.01 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentEX-1: EX-1 TO SOFTBALL TD Runoff Area=107,438 sf 3.90% Impervious Runoff Depth>0.75"
Flow Length=388' Tc=10.9 min CN=61/98 Runoff=1.88 cfs 6,682 cf

SubcatchmentEX-2: EX-2 CROSS COUNTRY Runoff Area=391,756 sf 0.00% Impervious Runoff Depth>0.63"
Flow Length=1,178' Tc=25.5 min CN=61/0 Runoff=3.95 cfs 20,648 cf

SubcatchmentEX-3: EX-3 FIELD TO SWALE Runoff Area=272,378 sf 0.18% Impervious Runoff Depth>0.64"
Flow Length=800' Tc=16.3 min CN=61/98 Runoff=3.45 cfs 14,554 cf

SubcatchmentEX-4: PR-40 TOWARD TENNIS Runoff Area=36,888 sf 9.60% Impervious Runoff Depth>0.91"
Tc=6.0 min CN=61/98 Runoff=0.96 cfs 2,787 cf

SubcatchmentEX-5: 2-EX REG SWALE AREA Runoff Area=62,331 sf 0.00% Impervious Runoff Depth>0.64"
Tc=6.0 min CN=61/0 Runoff=1.19 cfs 3,326 cf

SubcatchmentEX-6: EX-6 TOWARD SOFTBALL Runoff Area=13,306 sf 11.45% Impervious Runoff Depth>0.96"
Tc=6.0 min CN=61/98 Runoff=0.37 cfs 1,062 cf

Reach 1R: DP1 Inflow=2.15 cfs 7,744 cf
Outflow=2.15 cfs 7,744 cf

Reach DP3: REGIONAL SWALE Inflow=3.45 cfs 14,554 cf
Outflow=3.45 cfs 14,554 cf

Total Runoff Area = 884,097 sf Runoff Volume = 49,058 cf Average Runoff Depth = 0.67"
98.90% Pervious = 874,356 sf 1.10% Impervious = 9,741 sf

Summary for Subcatchment EX-1: EX-1 TO SOFTBALL TD

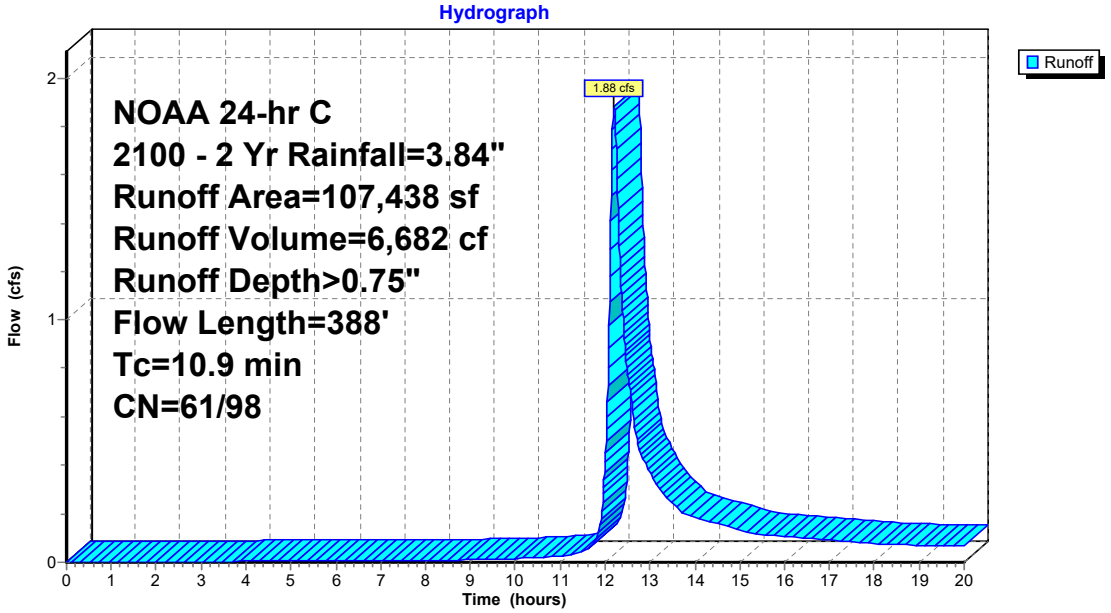
Runoff = 1.88 cfs @ 12.20 hrs, Volume= 6,682 cf, Depth> 0.75"
Routed to Reach 1R : DP1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 2 Yr Rainfall=3.84"

Area (sf)	CN	Description
103,252	61	>75% Grass cover, Good, HSG B
4,186	98	Paved roads w/curbs & sewers, HSG B
107,438	62	Weighted Average
103,252	61	96.10% Pervious Area
4,186	98	3.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0150	0.13		**Sheet Flow, SHEET FLOW** Grass: Short n= 0.150 P2= 3.34"
4.7	338	0.0290	1.19		**Shallow Concentrated Flow, SHALLOW FLOW** Short Grass Pasture Kv= 7.0 fps
10.9	388	Total			

Subcatchment EX-1: EX-1 TO SOFTBALL TD



Summary for Subcatchment EX-2: EX-2 CROSS COUNTRY

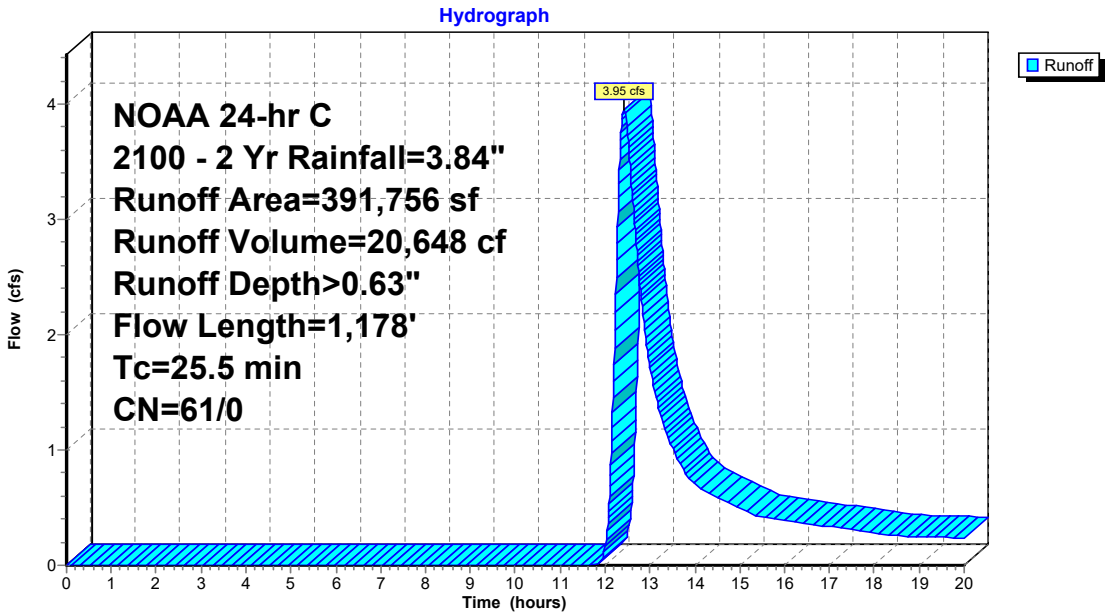
Runoff = 3.95 cfs @ 12.44 hrs, Volume= 20,648 cf, Depth> 0.63"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 2 Yr Rainfall=3.84"

Area (sf)	CN	Description
391,756	61	>75% Grass cover, Good, HSG B
391,756	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	50	0.0200	0.15		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.34"
20.0	1,128	0.0180	0.94		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
25.5	1,178	Total			

Subcatchment EX-2: EX-2 CROSS COUNTRY



Summary for Subcatchment EX-3: EX-3 FIELD TO SWALE

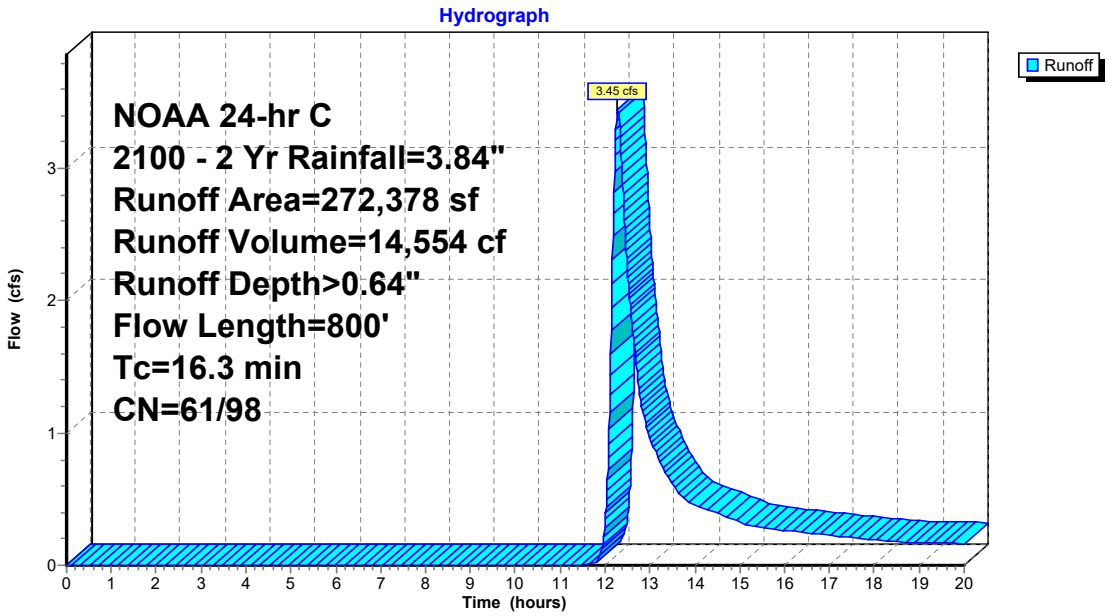
Runoff = 3.45 cfs @ 12.28 hrs, Volume= 14,554 cf, Depth> 0.64"
Routed to Reach DP3 : REGIONAL SWALE

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 2 Yr Rainfall=3.84"

Area (sf)	CN	Description
271,887	61	>75% Grass cover, Good, HSG B
491	98	Paved parking, HSG A
272,378	61	Weighted Average
271,887	61	99.82% Pervious Area
491	98	0.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	50	0.0700	0.25		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.34"
13.0	750	0.0190	0.96		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
16.3	800	Total			

Subcatchment EX-3: EX-3 FIELD TO SWALE



Summary for Subcatchment EX-4: PR-40 TOWARD TENNIS

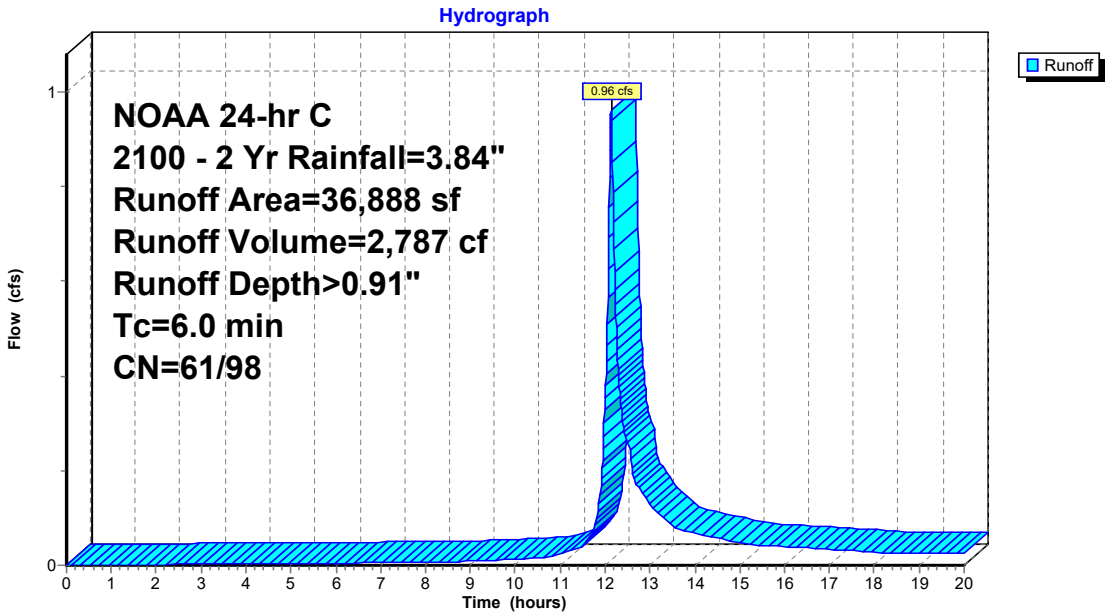
Runoff = 0.96 cfs @ 12.14 hrs, Volume= 2,787 cf, Depth> 0.91"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 2 Yr Rainfall=3.84"

Area (sf)	CN	Description
33,347	61	>75% Grass cover, Good, HSG B
3,541	98	Paved roads w/curbs & sewers, HSG B
36,888	65	Weighted Average
33,347	61	90.40% Pervious Area
3,541	98	9.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum**

Subcatchment EX-4: PR-40 TOWARD TENNIS



Summary for Subcatchment EX-5: 2-EX REG SWALE AREA

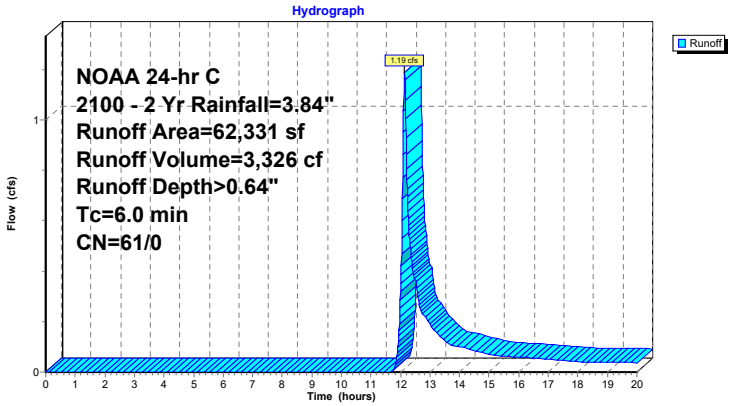
Runoff = 1.19 cfs @ 12.14 hrs, Volume= 3,326 cf, Depth> 0.64"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 2 Yr Rainfall=3.84"

Area (sf)	CN	Description
62,331	61	>75% Grass cover, Good, HSG B
62,331	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment EX-5: 2-EX REG SWALE AREA



Summary for Subcatchment EX-6: EX-6 TOWARD SOFTBALL

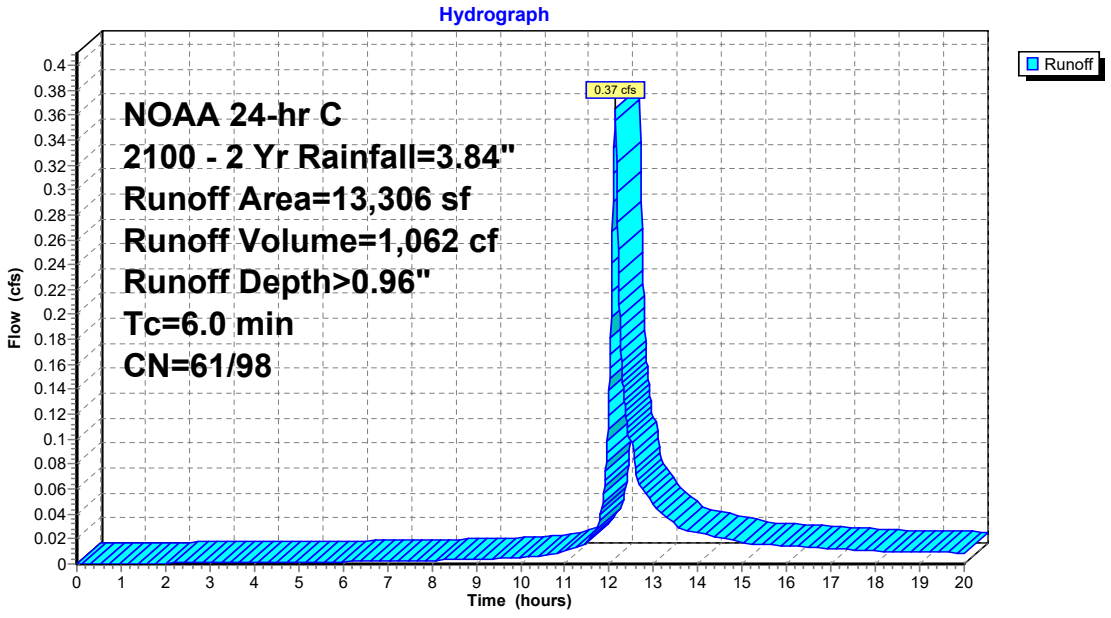
Runoff = 0.37 cfs @ 12.14 hrs, Volume= 1,062 cf, Depth> 0.96"
Routed to Reach 1R : DP1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 2 Yr Rainfall=3.84"

Area (sf)	CN	Description
11,783	61	>75% Grass cover, Good, HSG B
1,523	98	Paved parking, HSG B
13,306	65	Weighted Average
11,783	61	88.55% Pervious Area
1,523	98	11.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment EX-6: EX-6 TOWARD SOFTBALL



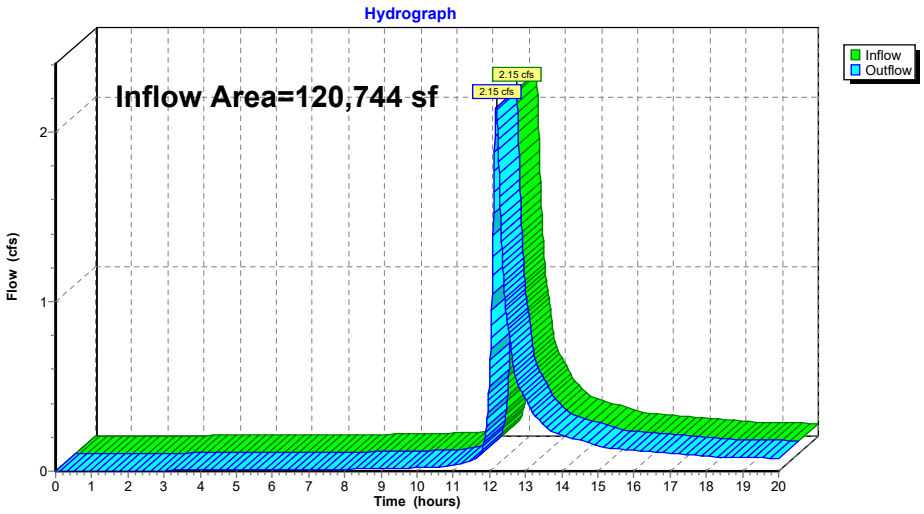
Summary for Reach 1R: DP1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 120,744 sf, 4.73% Impervious, Inflow Depth > 0.77" for 2100 - 2 Yr event
Inflow = 2.15 cfs @ 12.19 hrs, Volume= 7,744 cf
Outflow = 2.15 cfs @ 12.19 hrs, Volume= 7,744 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs

Reach 1R: DP1



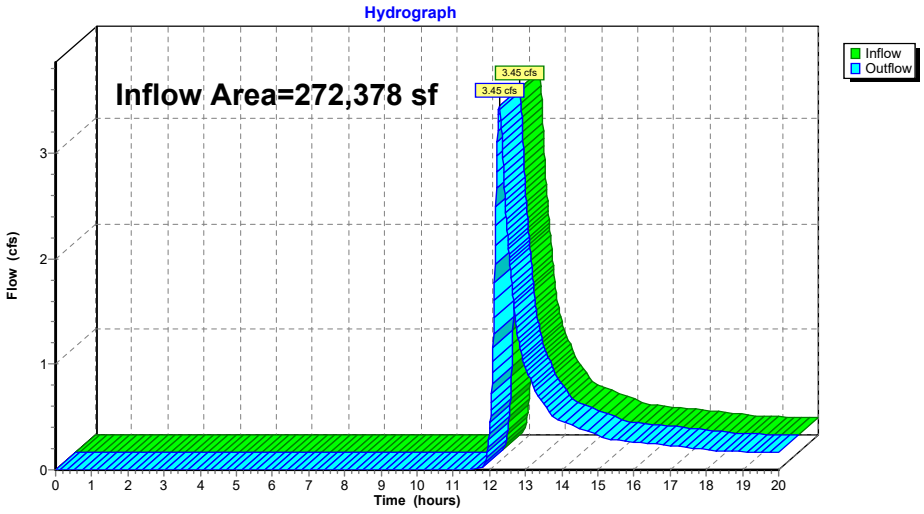
Summary for Reach DP3: REGIONAL SWALE

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 272,378 sf, 0.18% Impervious, Inflow Depth > 0.64" for 2100 - 2 Yr event
Inflow = 3.45 cfs @ 12.28 hrs, Volume= 14,554 cf
Outflow = 3.45 cfs @ 12.28 hrs, Volume= 14,554 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs

Reach DP3: REGIONAL SWALE



Time span=0.00-20.00 hrs, dt=0.01 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentEX-1: EX-1 TO SOFTBALL TD Runoff Area=107,438 sf 3.90% Impervious Runoff Depth>1.86"
Flow Length=388' Tc=10.9 min CN=61/98 Runoff=5.28 cfs 16,628 cf

SubcatchmentEX-2: EX-2 CROSS COUNTRY Runoff Area=391,756 sf 0.00% Impervious Runoff Depth>1.70"
Flow Length=1,178' Tc=25.5 min CN=61/0 Runoff=12.29 cfs 55,646 cf

SubcatchmentEX-3: EX-3 FIELD TO SWALE Runoff Area=272,378 sf 0.18% Impervious Runoff Depth>1.72"
Flow Length=800' Tc=16.3 min CN=61/98 Runoff=10.66 cfs 39,013 cf

SubcatchmentEX-4: PR-40 TOWARD TENNIS Runoff Area=36,888 sf 9.60% Impervious Runoff Depth>2.07"
Tc=6.0 min CN=61/98 Runoff=2.40 cfs 6,354 cf

SubcatchmentEX-5: 2-EX REG SWALE AREA Runoff Area=62,331 sf 0.00% Impervious Runoff Depth>1.72"
Tc=6.0 min CN=61/0 Runoff=3.54 cfs 8,939 cf

SubcatchmentEX-6: EX-6 TOWARD SOFTBALL Runoff Area=13,306 sf 11.45% Impervious Runoff Depth>2.13"
Tc=6.0 min CN=61/98 Runoff=0.89 cfs 2,366 cf

Reach 1R: DP1 Inflow=5.95 cfs 18,994 cf
Outflow=5.95 cfs 18,994 cf

Reach DP3: REGIONAL SWALE Inflow=10.66 cfs 39,013 cf
Outflow=10.66 cfs 39,013 cf

Total Runoff Area = 884,097 sf Runoff Volume = 128,947 cf Average Runoff Depth = 1.75"
98.90% Pervious = 874,356 sf 1.10% Impervious = 9,741 sf

Summary for Subcatchment EX-1: EX-1 TO SOFTBALL TD

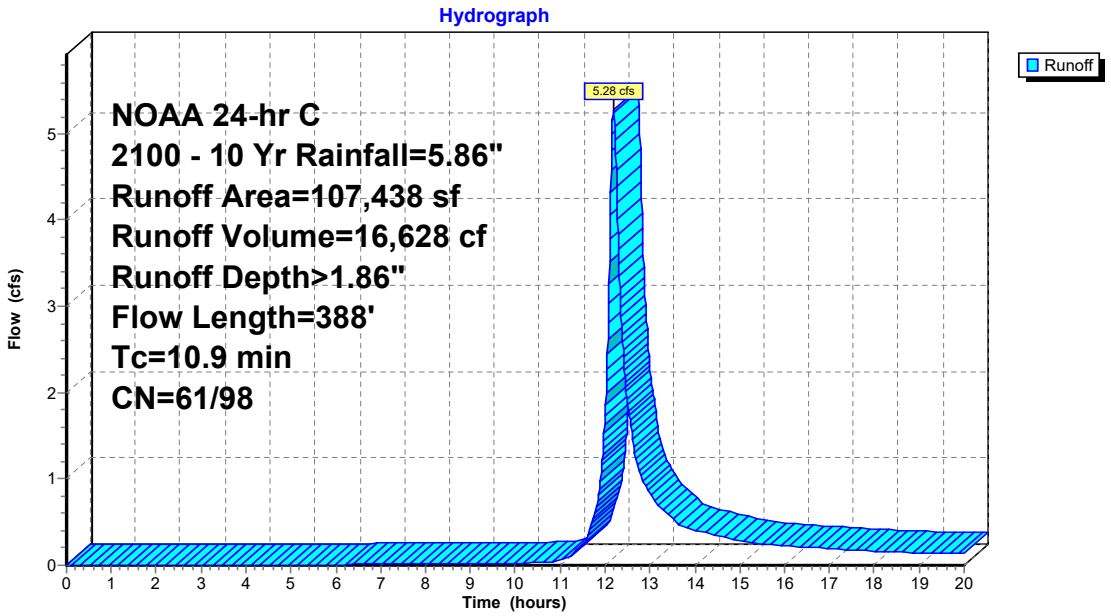
Runoff = 5.28 cfs @ 12.19 hrs, Volume= 16,628 cf, Depth> 1.86"
Routed to Reach 1R : DP1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 10 Yr Rainfall=5.86"

Area (sf)	CN	Description
103,252	61	>75% Grass cover, Good, HSG B
4,186	98	Paved roads w/curbs & sewers, HSG B
107,438	62	Weighted Average
103,252	61	96.10% Pervious Area
4,186	98	3.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0150	0.13		**Sheet Flow, SHEET FLOW** Grass: Short n= 0.150 P2= 3.34"
4.7	338	0.0290	1.19		**Shallow Concentrated Flow, SHALLOW FLOW** Short Grass Pasture Kv= 7.0 fps
10.9	388	Total			

Subcatchment EX-1: EX-1 TO SOFTBALL TD



Summary for Subcatchment EX-2: EX-2 CROSS COUNTRY

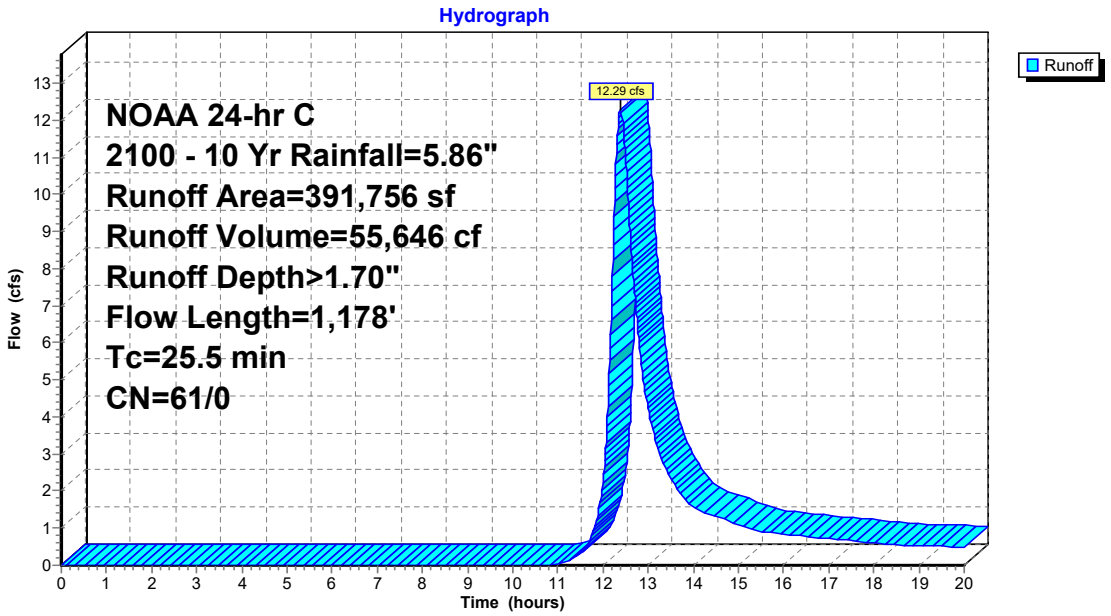
Runoff = 12.29 cfs @ 12.38 hrs, Volume= 55,646 cf, Depth> 1.70"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 10 Yr Rainfall=5.86"

Area (sf)	CN	Description
391,756	61	>75% Grass cover, Good, HSG B
391,756	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	50	0.0200	0.15		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.34"
20.0	1,128	0.0180	0.94		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
25.5	1,178	Total			

Subcatchment EX-2: EX-2 CROSS COUNTRY



Summary for Subcatchment EX-3: EX-3 FIELD TO SWALE

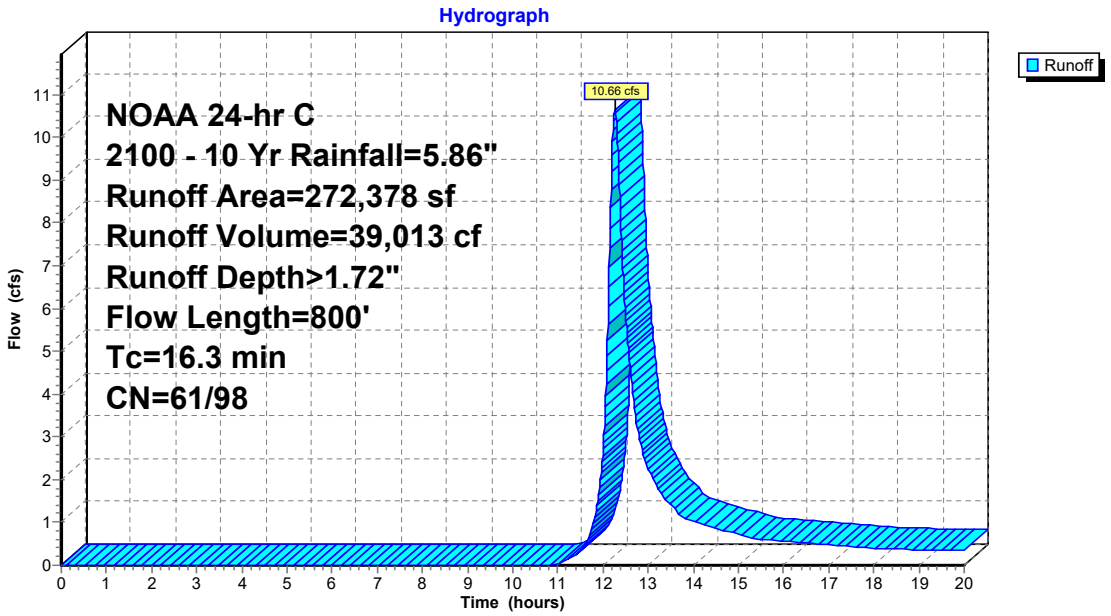
Runoff = 10.66 cfs @ 12.26 hrs, Volume= 39,013 cf, Depth> 1.72"
Routed to Reach DP3 : REGIONAL SWALE

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 10 Yr Rainfall=5.86"

Area (sf)	CN	Description
271,887	61	>75% Grass cover, Good, HSG B
491	98	Paved parking, HSG A
272,378	61	Weighted Average
271,887	61	99.82% Pervious Area
491	98	0.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	50	0.0700	0.25		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.34"
13.0	750	0.0190	0.96		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
16.3	800	Total			

Subcatchment EX-3: EX-3 FIELD TO SWALE



Summary for Subcatchment EX-4: PR-40 TOWARD TENNIS

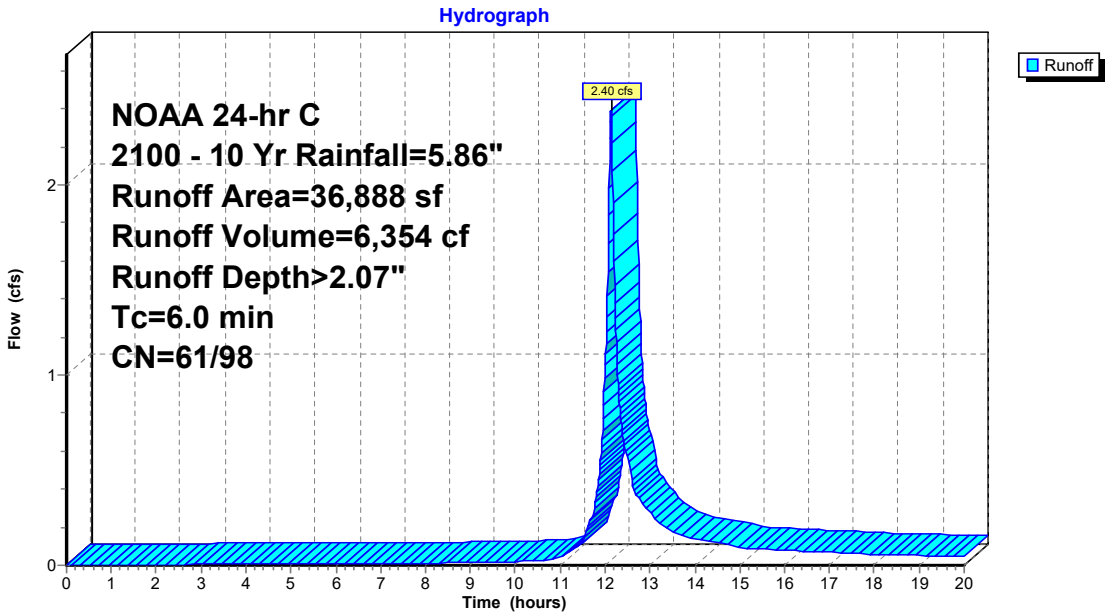
Runoff = 2.40 cfs @ 12.14 hrs, Volume= 6,354 cf, Depth> 2.07"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 10 Yr Rainfall=5.86"

Area (sf)	CN	Description
33,347	61	>75% Grass cover, Good, HSG B
3,541	98	Paved roads w/curbs & sewers, HSG B
36,888	65	Weighted Average
33,347	61	90.40% Pervious Area
3,541	98	9.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum**

Subcatchment EX-4: PR-40 TOWARD TENNIS



Summary for Subcatchment EX-5: 2-EX REG SWALE AREA

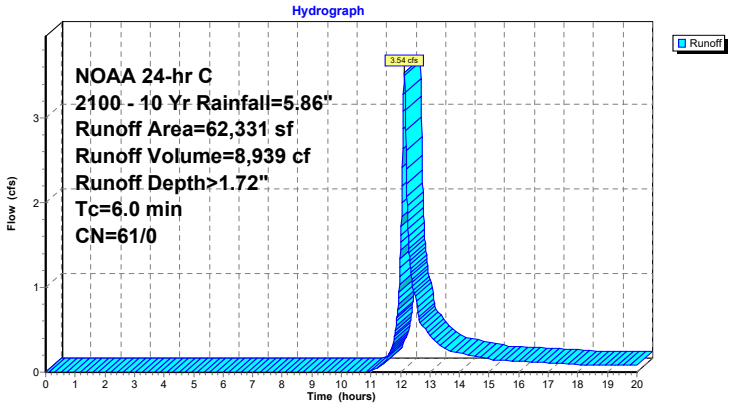
Runoff = 3.54 cfs @ 12.14 hrs, Volume= 8,939 cf, Depth> 1.72"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 10 Yr Rainfall=5.86"

Area (sf)	CN	Description
62,331	61	>75% Grass cover, Good, HSG B
62,331	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment EX-5: 2-EX REG SWALE AREA



Summary for Subcatchment EX-6: EX-6 TOWARD SOFTBALL

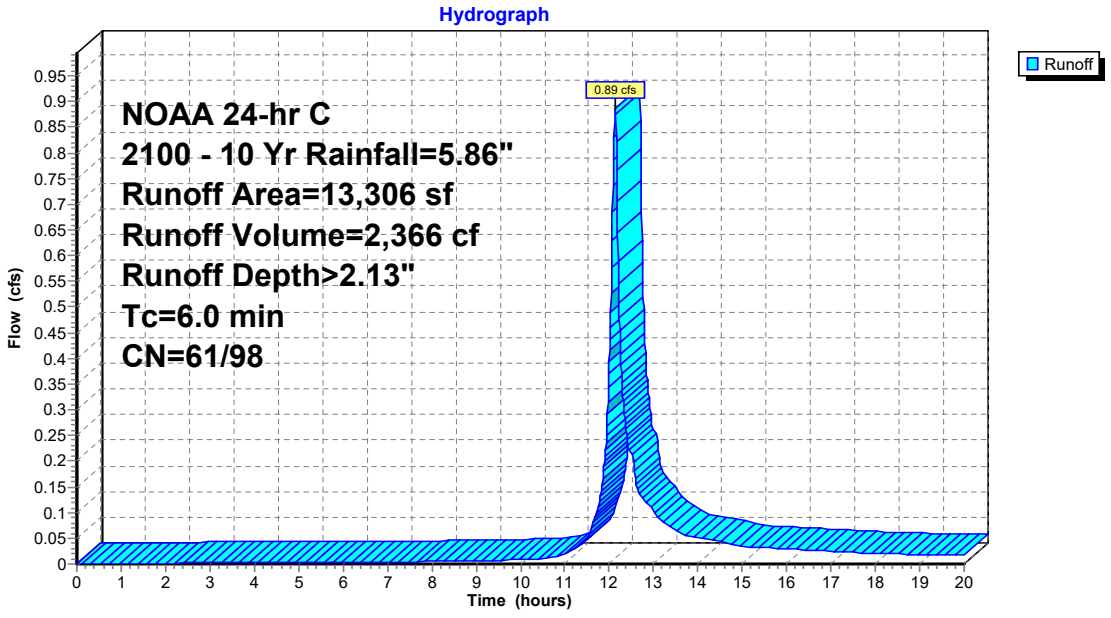
Runoff = 0.89 cfs @ 12.14 hrs, Volume= 2,366 cf, Depth> 2.13"
Routed to Reach 1R : DP1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 10 Yr Rainfall=5.86"

Area (sf)	CN	Description
11,783	61	>75% Grass cover, Good, HSG B
1,523	98	Paved parking, HSG B
13,306	65	Weighted Average
11,783	61	88.55% Pervious Area
1,523	98	11.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment EX-6: EX-6 TOWARD SOFTBALL



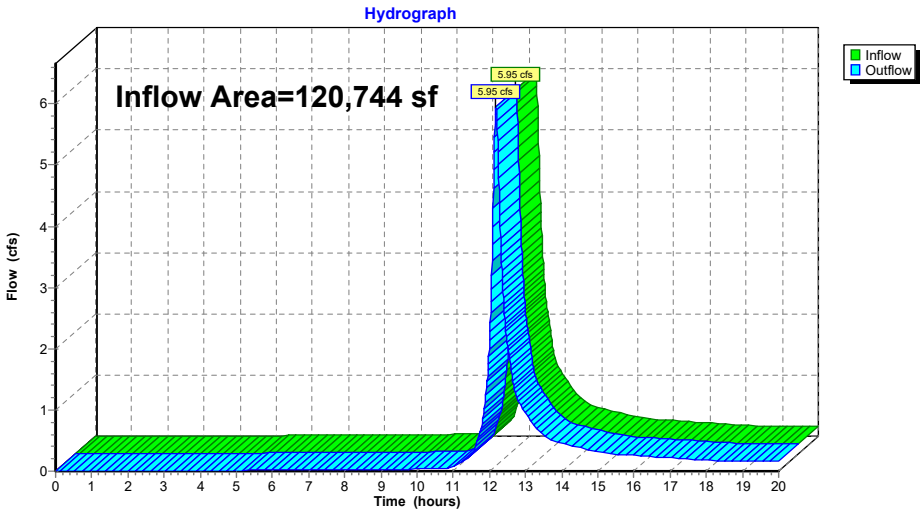
Summary for Reach 1R: DP1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 120,744 sf, 4.73% Impervious, Inflow Depth > 1.89" for 2100 - 10 Yr event
Inflow = 5.95 cfs @ 12.18 hrs, Volume= 18,994 cf
Outflow = 5.95 cfs @ 12.18 hrs, Volume= 18,994 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs

Reach 1R: DP1



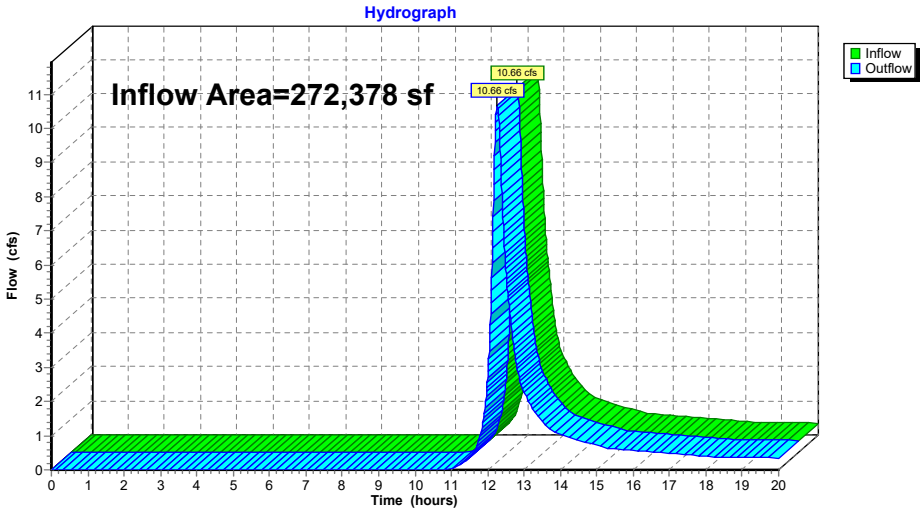
Summary for Reach DP3: REGIONAL SWALE

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 272,378 sf, 0.18% Impervious, Inflow Depth > 1.72" for 2100 - 10 Yr event
Inflow = 10.66 cfs @ 12.26 hrs, Volume= 39,013 cf
Outflow = 10.66 cfs @ 12.26 hrs, Volume= 39,013 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs

Reach DP3: REGIONAL SWALE



Time span=0.00-20.00 hrs, dt=0.01 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentEX-1: EX-1 TO SOFTBALL TD Runoff Area=107,438 sf 3.90% Impervious Runoff Depth>5.84"
Flow Length=388' Tc=10.9 min CN=61/98 Runoff=16.89 cfs 52,311 cf

SubcatchmentEX-2: EX-2 CROSS COUNTRY Runoff Area=391,756 sf 0.00% Impervious Runoff Depth>5.62"
Flow Length=1,178' Tc=25.5 min CN=61/0 Runoff=41.60 cfs 183,556 cf

SubcatchmentEX-3: EX-3 FIELD TO SWALE Runoff Area=272,378 sf 0.18% Impervious Runoff Depth>5.65"
Flow Length=800' Tc=16.3 min CN=61/98 Runoff=35.72 cfs 128,266 cf

SubcatchmentEX-4: PR-40 TOWARD TENNIS Runoff Area=36,888 sf 9.60% Impervious Runoff Depth>6.13"
Tc=6.0 min CN=61/98 Runoff=7.19 cfs 18,844 cf

SubcatchmentEX-5: 2-EX REG SWALE AREA Runoff Area=62,331 sf 0.00% Impervious Runoff Depth>5.66"
Tc=6.0 min CN=61/0 Runoff=11.59 cfs 29,420 cf

SubcatchmentEX-6: EX-6 TOWARD SOFTBALL Runoff Area=13,306 sf 11.45% Impervious Runoff Depth>6.22"
Tc=6.0 min CN=61/98 Runoff=2.62 cfs 6,897 cf

Reach 1R: DP1 Inflow=18.92 cfs 59,208 cf
Outflow=18.92 cfs 59,208 cf

Reach DP3: REGIONAL SWALE Inflow=35.72 cfs 128,266 cf
Outflow=35.72 cfs 128,266 cf

Total Runoff Area = 884,097 sf Runoff Volume = 419,295 cf Average Runoff Depth = 5.69"
98.90% Pervious = 874,356 sf 1.10% Impervious = 9,741 sf

Summary for Subcatchment EX-1: EX-1 TO SOFTBALL TD

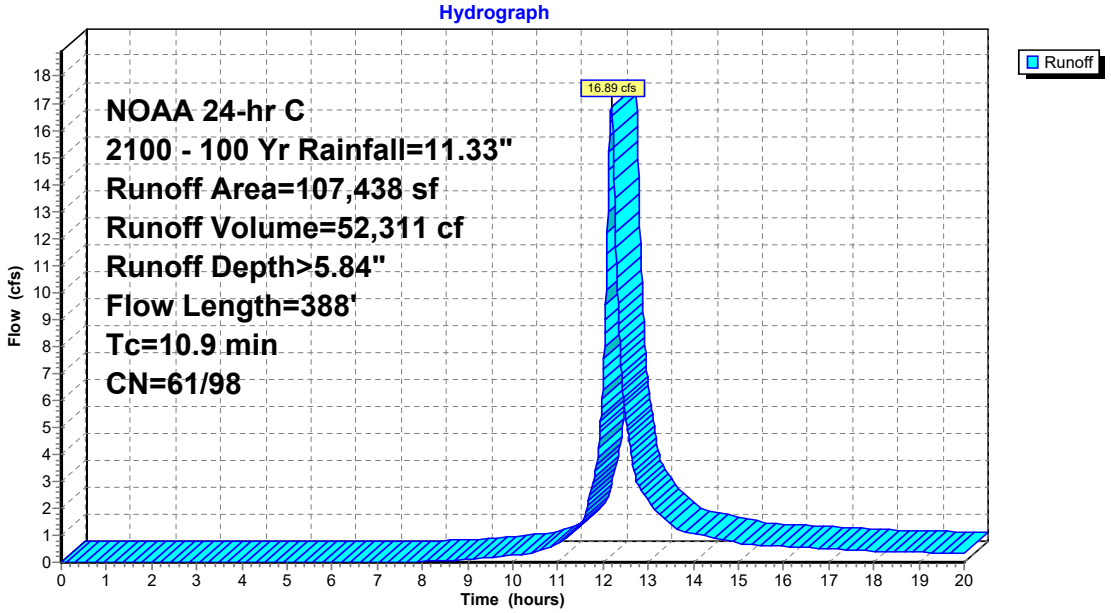
Runoff = 16.89 cfs @ 12.19 hrs, Volume= 52,311 cf, Depth> 5.84"
Routed to Reach 1R : DP1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 100 Yr Rainfall=11.33"

Area (sf)	CN	Description
103,252	61	>75% Grass cover, Good, HSG B
4,186	98	Paved roads w/curbs & sewers, HSG B
107,438	62	Weighted Average
103,252	61	96.10% Pervious Area
4,186	98	3.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0150	0.13		**Sheet Flow, SHEET FLOW** Grass: Short n= 0.150 P2= 3.34"
4.7	338	0.0290	1.19		**Shallow Concentrated Flow, SHALLOW FLOW** Short Grass Pasture Kv= 7.0 fps
10.9	388	Total			

Subcatchment EX-1: EX-1 TO SOFTBALL TD



Summary for Subcatchment EX-2: EX-2 CROSS COUNTRY

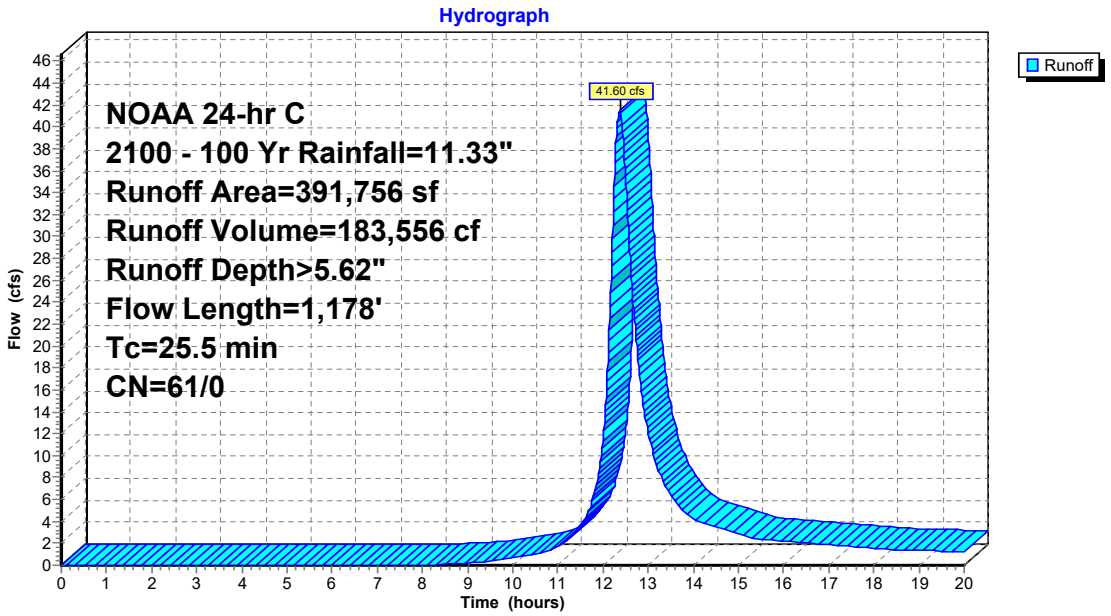
Runoff = 41.60 cfs @ 12.38 hrs, Volume= 183,556 cf, Depth> 5.62"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 100 Yr Rainfall=11.33"

Area (sf)	CN	Description
391,756	61	>75% Grass cover, Good, HSG B
391,756	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	50	0.0200	0.15		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.34"
20.0	1,128	0.0180	0.94		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
25.5	1,178	Total			

Subcatchment EX-2: EX-2 CROSS COUNTRY



Summary for Subcatchment EX-3: EX-3 FIELD TO SWALE

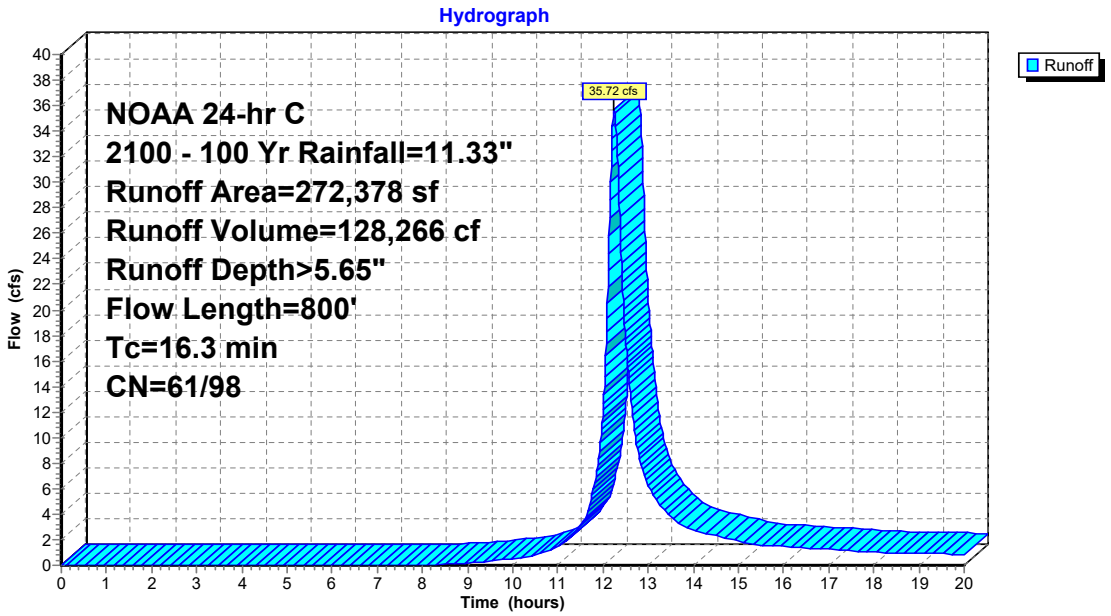
Runoff = 35.72 cfs @ 12.25 hrs, Volume= 128,266 cf, Depth> 5.65"
Routed to Reach DP3 : REGIONAL SWALE

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 100 Yr Rainfall=11.33"

Area (sf)	CN	Description
271,887	61	>75% Grass cover, Good, HSG B
491	98	Paved parking, HSG A
272,378	61	Weighted Average
271,887	61	99.82% Pervious Area
491	98	0.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	50	0.0700	0.25		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.34"
13.0	750	0.0190	0.96		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
16.3	800	Total			

Subcatchment EX-3: EX-3 FIELD TO SWALE



Summary for Subcatchment EX-4: PR-40 TOWARD TENNIS

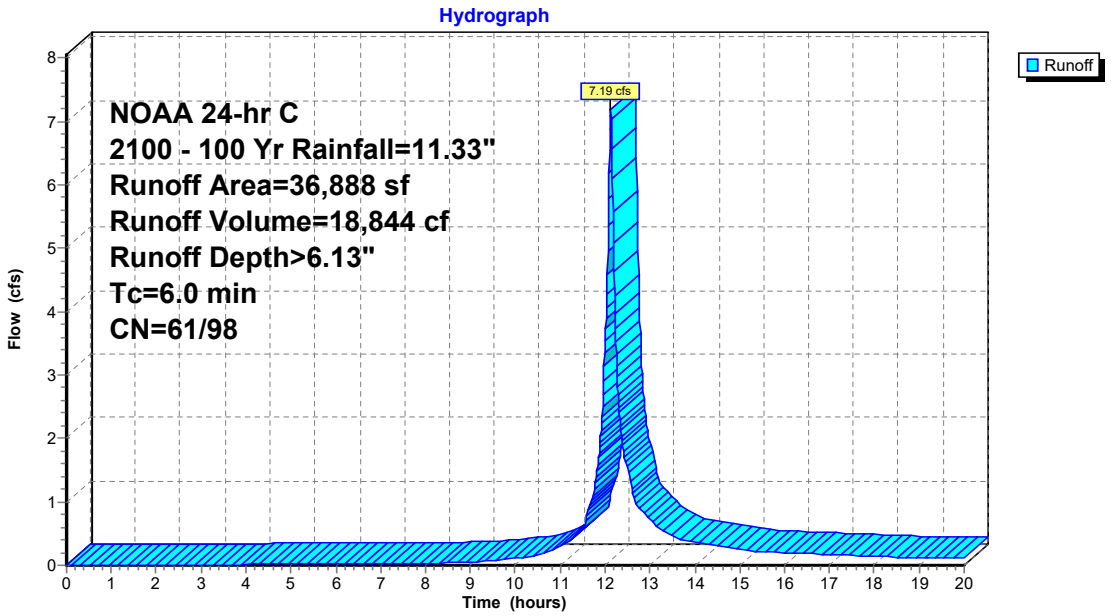
Runoff = 7.19 cfs @ 12.13 hrs, Volume= 18,844 cf, Depth> 6.13"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 100 Yr Rainfall=11.33"

Area (sf)	CN	Description
33,347	61	>75% Grass cover, Good, HSG B
3,541	98	Paved roads w/curbs & sewers, HSG B
36,888	65	Weighted Average
33,347	61	90.40% Pervious Area
3,541	98	9.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum**

Subcatchment EX-4: PR-40 TOWARD TENNIS



Summary for Subcatchment EX-5: 2-EX REG SWALE AREA

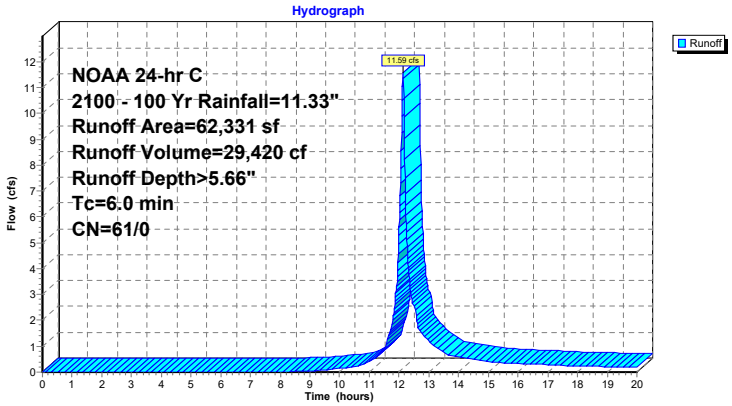
Runoff = 11.59 cfs @ 12.13 hrs, Volume= 29,420 cf, Depth> 5.66"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 100 Yr Rainfall=11.33"

Area (sf)	CN	Description
62,331	61	>75% Grass cover, Good, HSG B
62,331	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, minimum

Subcatchment EX-5: 2-EX REG SWALE AREA



Summary for Subcatchment EX-6: EX-6 TOWARD SOFTBALL

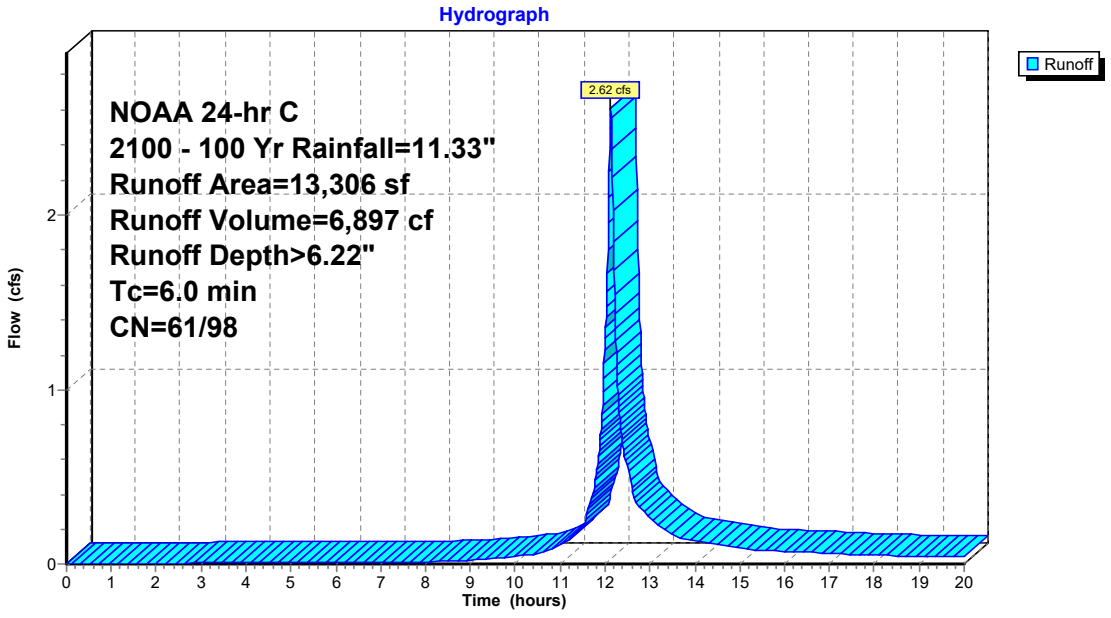
Runoff = 2.62 cfs @ 12.13 hrs, Volume= 6,897 cf, Depth> 6.22"
Routed to Reach 1R : DP1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 100 Yr Rainfall=11.33"

Area (sf)	CN	Description
11,783	61	>75% Grass cover, Good, HSG B
1,523	98	Paved parking, HSG B
13,306	65	Weighted Average
11,783	61	88.55% Pervious Area
1,523	98	11.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment EX-6: EX-6 TOWARD SOFTBALL



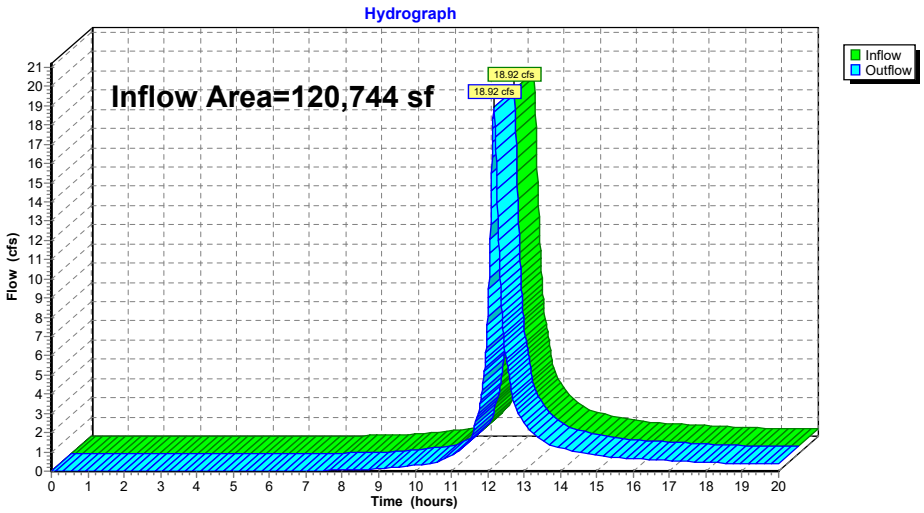
Summary for Reach 1R: DP1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 120,744 sf, 4.73% Impervious, Inflow Depth > 5.88" for 2100 - 100 Yr event
Inflow = 18.92 cfs @ 12.17 hrs, Volume= 59,208 cf
Outflow = 18.92 cfs @ 12.17 hrs, Volume= 59,208 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs

Reach 1R: DP1



Summary for Reach DP3: REGIONAL SWALE

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 272,378 sf, 0.18% Impervious, Inflow Depth > 5.65" for 2100 - 100 Yr event
Inflow = 35.72 cfs @ 12.25 hrs, Volume= 128,266 cf
Outflow = 35.72 cfs @ 12.25 hrs, Volume= 128,266 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs

Reach DP3: REGIONAL SWALE

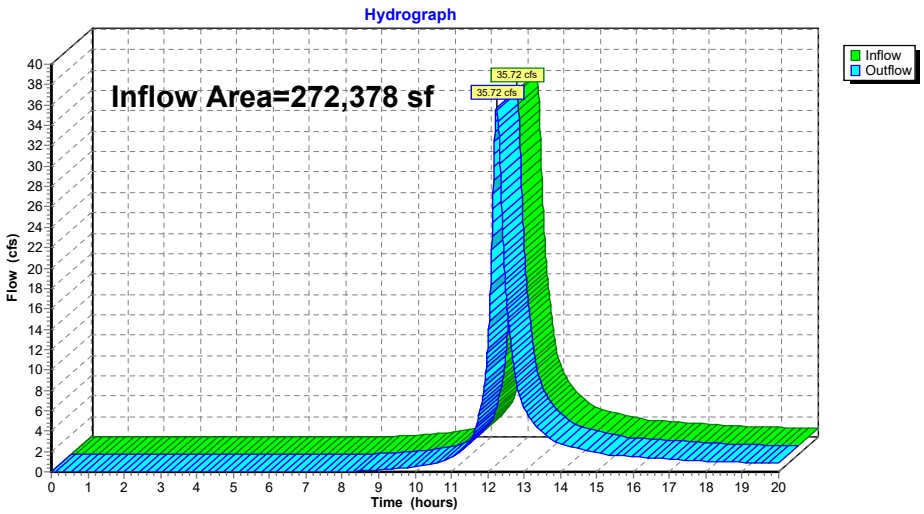


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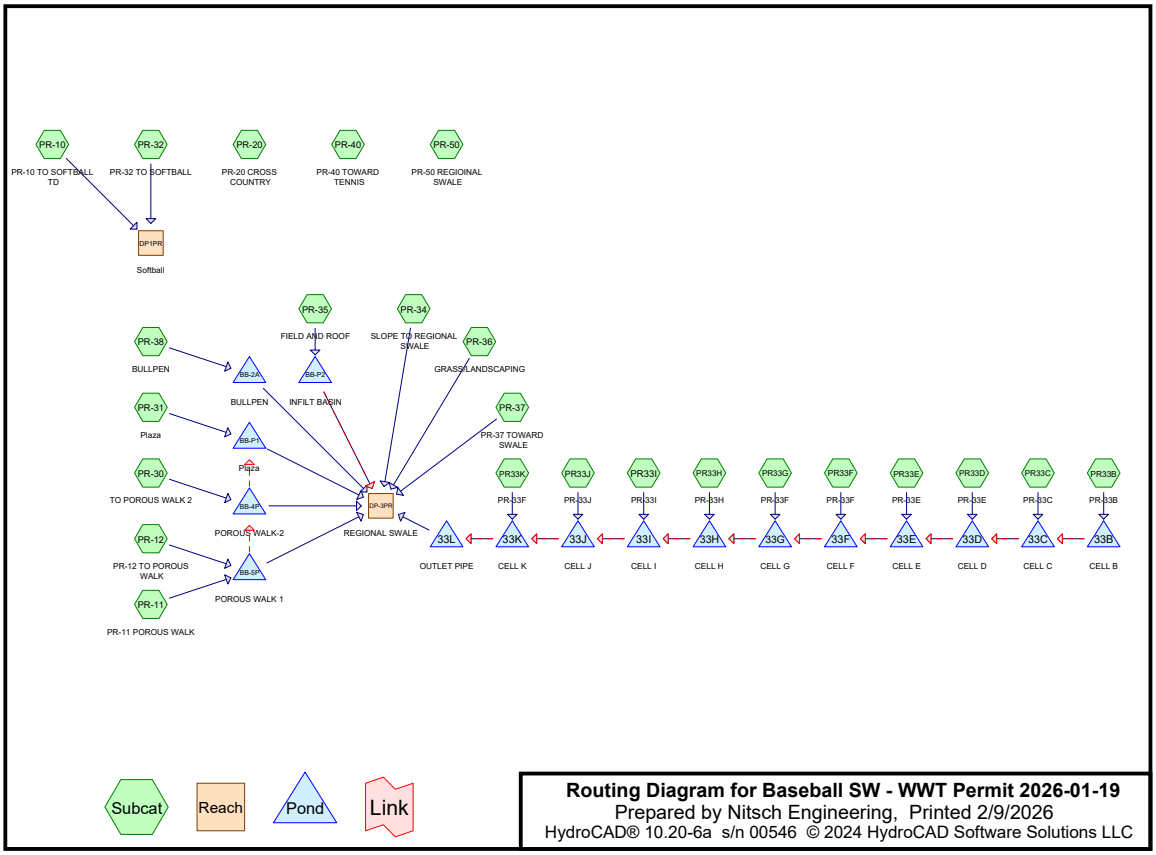
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ATTACHMENT C

Drainage Map Flow Chart – Large Format

Post-Development Conditions – HydroCAD Calculations



Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1.25 inch	NJ DEP 2-hr		Default	2.00	1	1.25	2
2	2 Yr	NOAA 24-hr	C	Default	24.00	1	3.34	2
3	10 Yr	NOAA 24-hr	C	Default	24.00	1	5.11	2
4	100 Yr	NOAA 24-hr	C	Default	24.00	1	8.66	2
5	2100 - 2 Yr	NOAA 24-hr	C	Default	24.00	1	3.84	2
6	2100 - 10 Yr	NOAA 24-hr	C	Default	24.00	1	5.86	2
7	2100 - 100 Yr	NOAA 24-hr	C	Default	24.00	1	11.33	2

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
695,882	61	>75% Grass cover, Good, HSG B (PR-10, PR-12, PR-20, PR-30, PR-31, PR-32, PR-34, PR-36, PR-37, PR-40, PR-50, PR33H, PR33I, PR33J, PR33K)
2,369	98	Paved parking, HSG A (PR-30, PR-32)
15,728	98	Paved parking, HSG B (PR-31, PR-38, PR33B, PR33C, PR33D, PR33E, PR33F, PR33G, PR33I, PR33J, PR33K)
10,783	98	Paved roads w/curbs & sewers, HSG B (PR-10, PR-11, PR-12, PR-37, PR-40)
1,634	98	Porous Pavers (PR33H)
155,772	98	Roofs, HSG B (PR-35)
1,931	98	Sidewalk (PR33H)
884,099	**69**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
2,369	HSG A	PR-30, PR-32
878,165	HSG B	PR-10, PR-11, PR-12, PR-20, PR-30, PR-31, PR-32, PR-34, PR-35, PR-36, PR-37, PR-38, PR-40, PR-50, PR33B, PR33C, PR33D, PR33E, PR33F, PR33G, PR33H, PR33I, PR33J, PR33K
0	HSG C	
0	HSG D	
3,565	Other	PR33H
884,099		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Subcatchment Numbers
0	695,882	0	0	0	695,882	>75% Grass cover, Good	PR-10, PR-12, PR-20, PR-30, PR-31, PR-32, PR-34, PR-36, PR-37, PR-40, PR-50, PR33H, PR33I, PR33J, PR33K
2,369	15,728	0	0	0	18,097	Paved parking	PR-30, PR-31, PR-32, PR-38, PR33B, PR33C, PR33D, PR33E, PR33F, PR33G, PR33I, PR33J, PR33K
0	10,783	0	0	0	10,783	Paved roads w/curbs & sewers	PR-10, PR-11, PR-12, PR-37, PR-40
0	0	0	0	1,634	1,634	Porous Pavers	PR33H
0	155,772	0	0	0	155,772	Roofs	PR-35
0	0	0	0	1,931	1,931	Sidewalk	PR33H
2,369	**878,165**	**0**	**0**	**3,565**	**884,099**	**TOTAL AREA**	

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	PR-36	0.00	0.00	235.0	0.0120	0.012	0.0	12.0	0.0	GRASS/LANDSCAPING
2	PR-36	0.00	0.00	175.0	0.0100	0.012	0.0	24.0	0.0	GRASS/LANDSCAPING
3	PR-37	0.00	0.00	104.0	0.0190	0.012	0.0	8.0	0.0	PR-37 TOWARD SWALE
4	PR-37	0.00	0.00	118.0	0.0100	0.012	0.0	10.0	0.0	PR-37 TOWARD SWALE
5	PR-37	0.00	0.00	143.0	0.0126	0.012	0.0	36.0	0.0	PR-37 TOWARD SWALE
6	PR-37	0.00	0.00	104.0	0.0133	0.012	0.0	36.0	0.0	PR-37 TOWARD SWALE
7	PR-37	0.00	0.00	332.0	0.0032	0.120	0.0	36.0	0.0	PR-37 TOWARD SWALE
8	BB-2A	79.00	78.90	10.0	0.0100	0.010	0.0	3.0	0.0	BULLPEN
9	BB-4P	88.00	83.00	10.0	0.5000	0.010	0.0	12.0	0.0	POROUS WALK-2
10	BB-P1	82.00	80.90	10.0	0.1100	0.010	0.0	12.0	0.0	Plaza
11	BB-P2	77.50	76.50	353.0	0.0028	0.010	0.0	24.0	0.0	INFILT BASIN
12	BB-P2	75.00	74.90	10.0	0.0100	0.010	0.0	3.0	0.0	INFILT BASIN

Time span=0.00-20.00 hrs, dt=0.01 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentPR-10: PR-10 TO SOFTBALL TD Runoff Area=61,785 sf 5.95% Impervious Runoff Depth=0.06"
Flow Length=277' Tc=9.3 min CN=61/98 Runoff=0.22 cfs 317 cf

SubcatchmentPR-11: PR-11 POROUS WALK Runoff Area=2,299 sf 100.00% Impervious Runoff Depth=1.03"
Tc=6.0 min CN=0/98 Runoff=0.15 cfs 198 cf

SubcatchmentPR-12: PR-12 TO POROUS WALK Runoff Area=43,047 sf 4.00% Impervious Runoff Depth=0.04"
Flow Length=205' Tc=8.4 min CN=61/98 Runoff=0.11 cfs 148 cf

SubcatchmentPR-20: PR-20 CROSS COUNTRY Runoff Area=391,772 sf 0.00% Impervious Runoff Depth=0.00"
Tc=25.5 min CN=61/0 Runoff=0.00 cfs 0 cf

SubcatchmentPR-30: TO POROUS WALK 2 Runoff Area=18,645 sf 8.43% Impervious Runoff Depth=0.09"
Tc=6.0 min CN=61/98 Runoff=0.11 cfs 135 cf

SubcatchmentPR-31: Plaza Runoff Area=13,728 sf 46.55% Impervious Runoff Depth=0.48"
Tc=6.0 min CN=61/98 Runoff=0.43 cfs 551 cf

SubcatchmentPR-32: PR-32 TO SOFTBALL Runoff Area=25,435 sf 3.14% Impervious Runoff Depth=0.03"
Tc=6.0 min CN=61/98 Runoff=0.05 cfs 69 cf

SubcatchmentPR-34: SLOPE TO REGIONAL SWALE Runoff Area=21,534 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=142' Tc=7.1 min CN=61/0 Runoff=0.00 cfs 0 cf

SubcatchmentPR-35: FIELD AND ROOF Runoff Area=155,772 sf 100.00% Impervious Runoff Depth=1.03"
Tc=6.0 min CN=0/98 Runoff=10.47 cfs 13,430 cf

SubcatchmentPR-36: GRASS/LANDSCAPING Runoff Area=29,400 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=576' Tc=10.1 min CN=61/0 Runoff=0.00 cfs 0 cf

SubcatchmentPR-37: PR-37 TOWARD SWALE Runoff Area=36,798 sf 1.01% Impervious Runoff Depth=0.01"
Flow Length=1,093' Tc=20.2 min CN=61/98 Runoff=0.02 cfs 32 cf

SubcatchmentPR-38: BULLPEN Runoff Area=1,798 sf 100.00% Impervious Runoff Depth=1.03"
Tc=6.0 min CN=0/98 Runoff=0.12 cfs 155 cf

SubcatchmentPR-40: PR-40 TOWARD TENNIS Runoff Area=7,153 sf 37.96% Impervious Runoff Depth=0.39"
Tc=6.0 min CN=61/98 Runoff=0.18 cfs 234 cf

SubcatchmentPR-50: PR-50 REGIOINAL SWALE Runoff Area=62,111 sf 0.00% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=61/0 Runoff=0.00 cfs 0 cf

SubcatchmentPR33B: PR-33B Runoff Area=550 sf 100.00% Impervious Runoff Depth=1.03"
Tc=6.0 min CN=0/98 Runoff=0.04 cfs 47 cf

SubcatchmentPR33C: PR-33C Runoff Area=550 sf 100.00% Impervious Runoff Depth=1.03"
Tc=6.0 min CN=0/98 Runoff=0.04 cfs 47 cf

SubcatchmentPR33D: PR-33E Runoff Area=550 sf 100.00% Impervious Runoff Depth=1.03"
Tc=6.0 min CN=0/98 Runoff=0.04 cfs 47 cf

SubcatchmentPR33E: PR-33E Runoff Area=550 sf 100.00% Impervious Runoff Depth=1.03"
Tc=6.0 min CN=0/98 Runoff=0.04 cfs 47 cf

SubcatchmentPR33F: PR-33F Runoff Area=550 sf 100.00% Impervious Runoff Depth=1.03"
Tc=6.0 min CN=0/98 Runoff=0.04 cfs 47 cf

SubcatchmentPR33G: PR-33F Runoff Area=1,100 sf 100.00% Impervious Runoff Depth=1.03"
Tc=6.0 min CN=0/98 Runoff=0.07 cfs 95 cf

SubcatchmentPR33H: PR-33H Runoff Area=3,713 sf 96.01% Impervious Runoff Depth=0.99"
Tc=6.0 min CN=61/98 Runoff=0.24 cfs 307 cf

SubcatchmentPR33I: PR-33I Runoff Area=2,005 sf 92.52% Impervious Runoff Depth=0.96"
Tc=6.0 min CN=61/98 Runoff=0.12 cfs 160 cf

SubcatchmentPR33J: PR-33J Runoff Area=1,945 sf 56.56% Impervious Runoff Depth=0.59"
Tc=6.0 min CN=61/98 Runoff=0.07 cfs 95 cf

SubcatchmentPR33K: PR-33F Runoff Area=1,309 sf 56.07% Impervious Runoff Depth=0.58"
Tc=6.0 min CN=61/98 Runoff=0.05 cfs 63 cf

Reach DP-3PR: REGIONAL SWALE Inflow=0.35 cfs 11,449 cf
Outflow=0.35 cfs 11,449 cf

Reach DP1PR: Softball Inflow=0.27 cfs 386 cf
Outflow=0.27 cfs 386 cf

Pond 33B: CELL B Peak Elev=83.75' Storage=47 cf Inflow=0.04 cfs 47 cf
Primary=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf Outflow=0.00 cfs 0 cf

Pond 33C: CELL C Peak Elev=83.33' Storage=47 cf Inflow=0.04 cfs 47 cf
Primary=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf Outflow=0.00 cfs 0 cf

Pond 33D: CELL D Peak Elev=82.92' Storage=47 cf Inflow=0.04 cfs 47 cf
Primary=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf Outflow=0.00 cfs 0 cf

Pond 33E: CELL E Peak Elev=82.50' Storage=47 cf Inflow=0.04 cfs 47 cf
Primary=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf Outflow=0.00 cfs 0 cf

Pond 33F: CELL F Peak Elev=82.09' Storage=47 cf Inflow=0.04 cfs 47 cf
Primary=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf Outflow=0.00 cfs 0 cf

Pond 33G: CELL G Peak Elev=81.26' Storage=95 cf Inflow=0.07 cfs 95 cf
Primary=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf Outflow=0.00 cfs 0 cf

Pond 33H: CELL H Peak Elev=80.58' Storage=307 cf Inflow=0.24 cfs 307 cf
Primary=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf Outflow=0.00 cfs 0 cf

Pond 33I: CELL I Peak Elev=79.38' Storage=160 cf Inflow=0.12 cfs 160 cf
Primary=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf Outflow=0.00 cfs 0 cf

Pond 33J: CELL J Peak Elev=78.58' Storage=95 cf Inflow=0.07 cfs 95 cf
Primary=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf Outflow=0.00 cfs 0 cf

Pond 33K: CELL K Peak Elev=78.20' Storage=63 cf Inflow=0.05 cfs 63 cf
Primary=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf Outflow=0.00 cfs 0 cf

Pond 33L: OUTLET PIPE Peak Elev=76.00' Storage=0 cf Inflow=0.00 cfs 0 cf
Outflow=0.00 cfs 0 cf

Pond BB-2A: BULLPEN Peak Elev=79.13' Storage=97 cf Inflow=0.12 cfs 155 cf
3.0" Round Culvert n=0.010 L=10.0' S=0.0100 '/' Outflow=0.03 cfs 152 cf

Pond BB-4P: POROUS WALK-2 Peak Elev=87.22' Storage=135 cf Inflow=0.11 cfs 135 cf
Primary=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf Outflow=0.00 cfs 0 cf

Pond BB-5P: POROUS WALK 1 Peak Elev=90.43' Storage=347 cf Inflow=0.26 cfs 347 cf
Primary=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf Outflow=0.00 cfs 0 cf

Pond BB-P1: Plaza Peak Elev=81.22' Storage=551 cf Inflow=0.43 cfs 551 cf
12.0" Round Culvert n=0.010 L=10.0' S=0.1100 '/' Outflow=0.00 cfs 0 cf

Pond BB-P2: INFILT BASIN Peak Elev=77.01' Storage=12,273 cf Inflow=10.47 cfs 13,430 cf
Primary=0.32 cfs 11,265 cf Secondary=0.00 cfs 0 cf Outflow=0.32 cfs 11,265 cf

Total Runoff Area = 884,099 sf Runoff Volume = 16,227 cf Average Runoff Depth = 0.22"
78.71% Pervious = 695,882 sf 21.29% Impervious = 188,217 sf

Summary for Subcatchment PR-10: PR-10 TO SOFTBALL TD

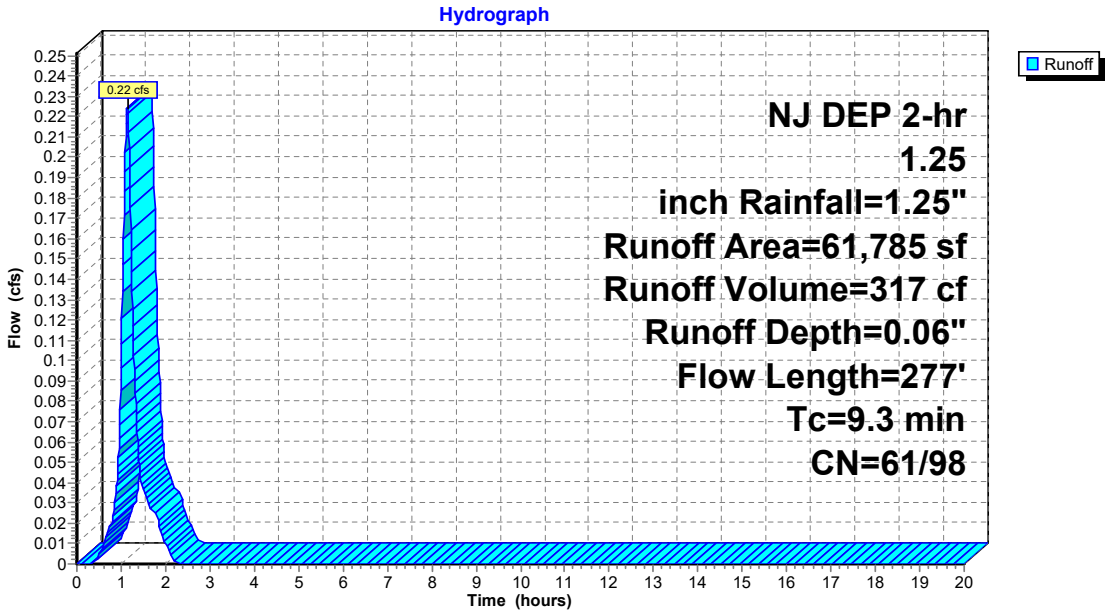
Runoff = 0.22 cfs @ 1.14 hrs, Volume= 317 cf, Depth= 0.06"
Routed to Reach DP1PR : Softball

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr 1.25 inch Rainfall=1.25"

Area (sf)	CN	Description
58,109	61	>75% Grass cover, Good, HSG B
3,676	98	Paved roads w/curbs & sewers, HSG B
61,785	63	Weighted Average
58,109	61	94.05% Pervious Area
3,676	98	5.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0150	0.13		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.34"
3.1	227	0.0300	1.21		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
9.3	277	Total			

Subcatchment PR-10: PR-10 TO SOFTBALL TD



Summary for Subcatchment PR-11: PR-11 POROUS WALK

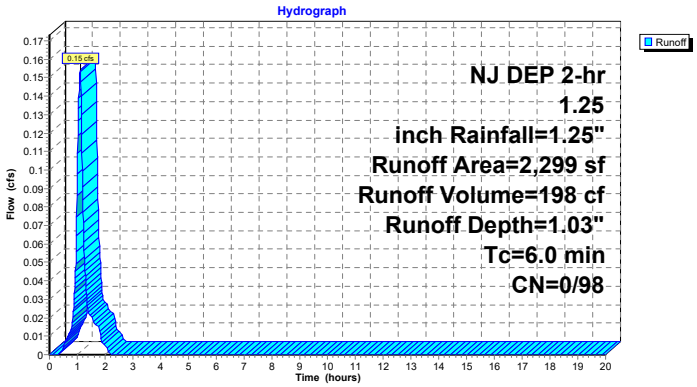
Runoff = 0.15 cfs @ 1.11 hrs, Volume= 198 cf, Depth= 1.03"
Routed to Pond BB-5P : POROUS WALK 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr 1.25 inch Rainfall=1.25"

Area (sf)	CN	Description
2,299	98	Paved roads w/curbs & sewers, HSG B
2,299	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Surface**

Subcatchment PR-11: PR-11 POROUS WALK



Summary for Subcatchment PR-12: PR-12 TO POROUS WALK

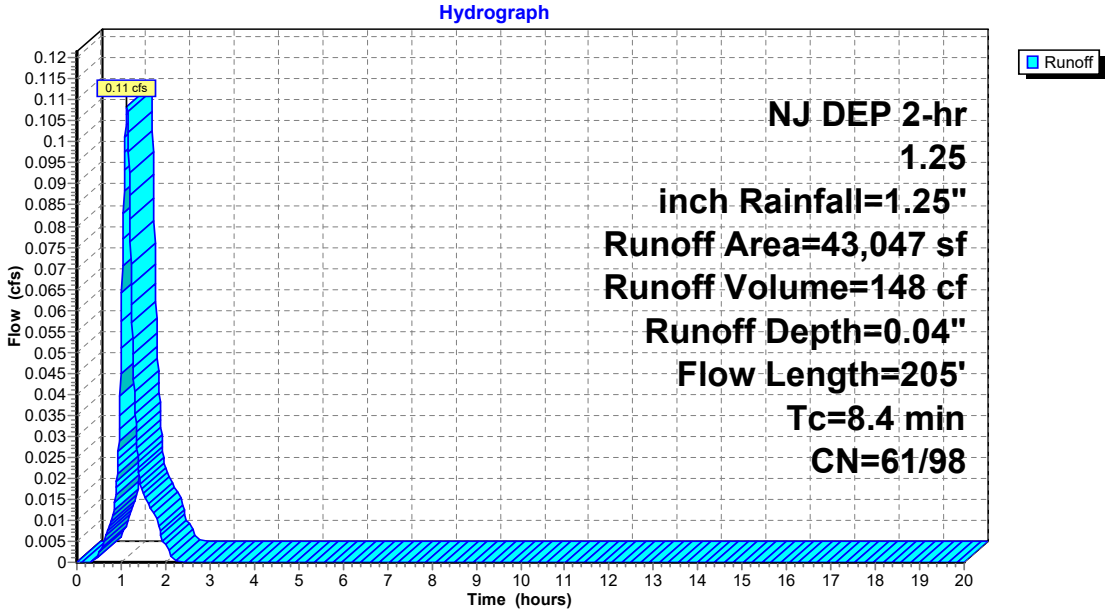
Runoff = 0.11 cfs @ 1.13 hrs, Volume= 148 cf, Depth= 0.04"
Routed to Pond BB-5P : POROUS WALK 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr 1.25 inch Rainfall=1.25"

Area (sf)	CN	Description
41,325	61	>75% Grass cover, Good, HSG B
1,722	98	Paved roads w/curbs & sewers, HSG B
43,047	62	Weighted Average
41,325	61	96.00% Pervious Area
1,722	98	4.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0150	0.13		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.34"
2.2	155	0.0290	1.19		**Shallow Concentrated Flow, Shallow Conc** Short Grass Pasture Kv= 7.0 fps
8.4	205	Total			

Subcatchment PR-12: PR-12 TO POROUS WALK



Summary for Subcatchment PR-20: PR-20 CROSS COUNTRY

[45] Hint: Runoff=Zero

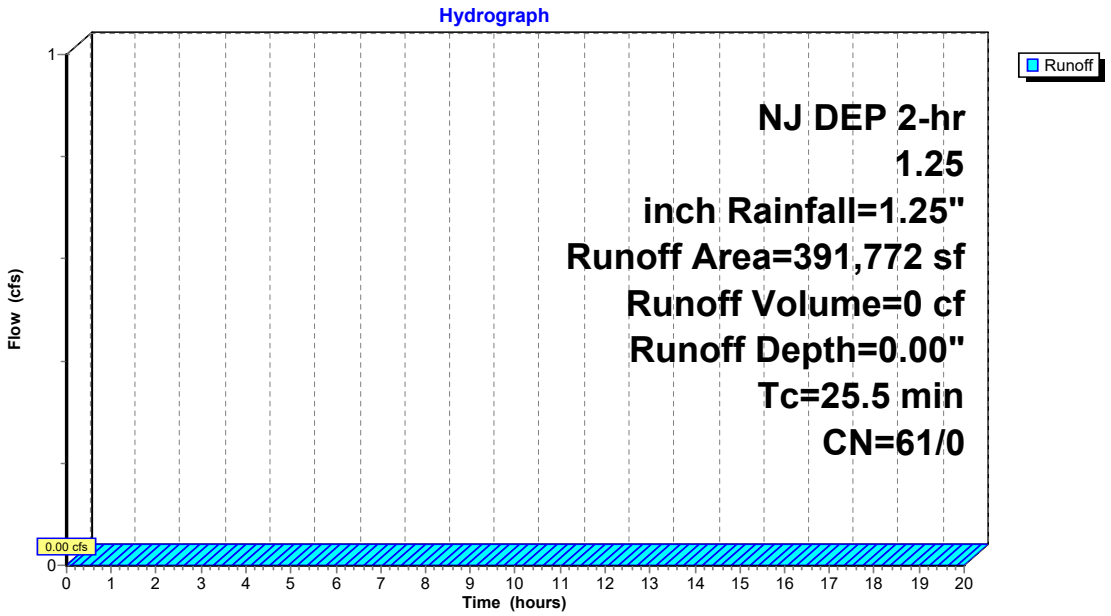
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr 1.25 inch Rainfall=1.25"

Area (sf)	CN	Description
391,772	61	>75% Grass cover, Good, HSG B
391,772	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.5					**Direct Entry, Same as Exist**

Subcatchment PR-20: PR-20 CROSS COUNTRY



Summary for Subcatchment PR-30: TO POROUS WALK 2

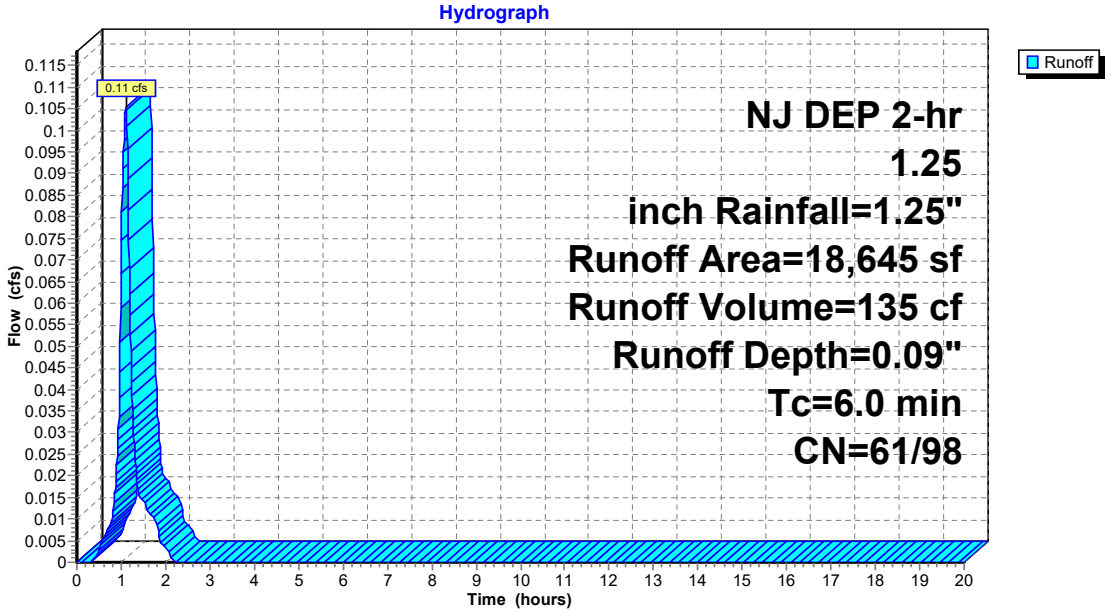
Runoff = 0.11 cfs @ 1.11 hrs, Volume= 135 cf, Depth= 0.09"
Routed to Pond BB-4P : POROUS WALK-2

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr 1.25 inch Rainfall=1.25"

Area (sf)	CN	Description
17,074	61	>75% Grass cover, Good, HSG B
1,571	98	Paved parking, HSG A
18,645	64	Weighted Average
17,074	61	91.57% Pervious Area
1,571	98	8.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment PR-30: TO POROUS WALK 2



Summary for Subcatchment PR-31: Plaza

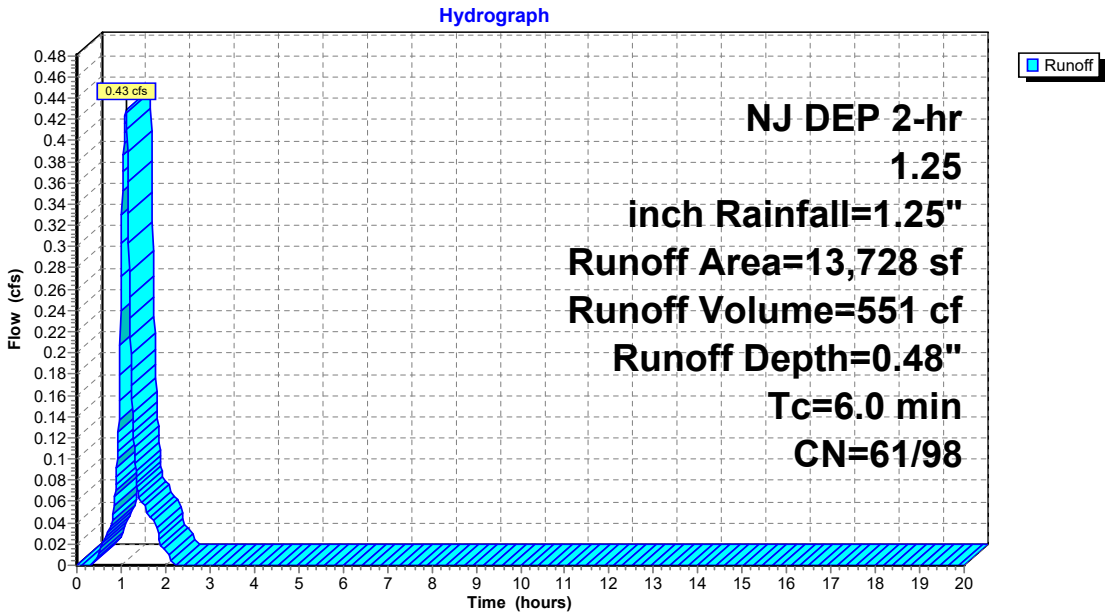
Runoff = 0.43 cfs @ 1.11 hrs, Volume= 551 cf, Depth= 0.48"
Routed to Pond BB-P1 : Plaza

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr 1.25 inch Rainfall=1.25"

Area (sf)	CN	Description
6,391	98	Paved parking, HSG B
7,337	61	>75% Grass cover, Good, HSG B
13,728	78	Weighted Average
7,337	61	53.45% Pervious Area
6,391	98	46.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment PR-31: Plaza



Summary for Subcatchment PR-32: PR-32 TO SOFTBALL

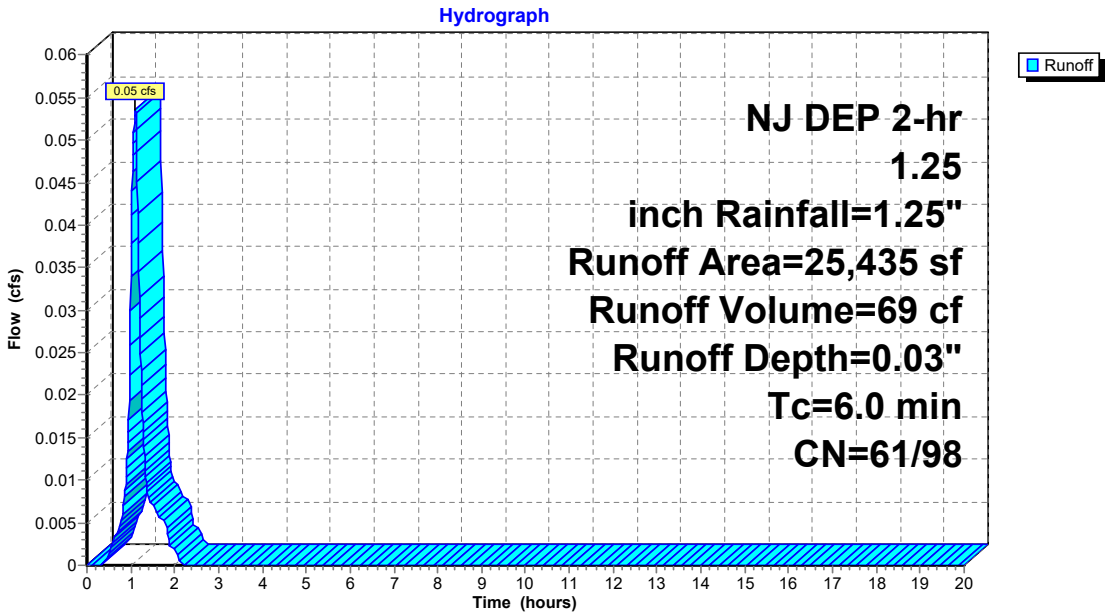
Runoff = 0.05 cfs @ 1.11 hrs, Volume= 69 cf, Depth= 0.03"
Routed to Reach DP1PR : Softball

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr 1.25 inch Rainfall=1.25"

Area (sf)	CN	Description
24,637	61	>75% Grass cover, Good, HSG B
798	98	Paved parking, HSG A
25,435	62	Weighted Average
24,637	61	96.86% Pervious Area
798	98	3.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum**

Subcatchment PR-32: PR-32 TO SOFTBALL



Summary for Subcatchment PR-34: SLOPE TO REGIONAL SWALE

[45] Hint: Runoff=Zero

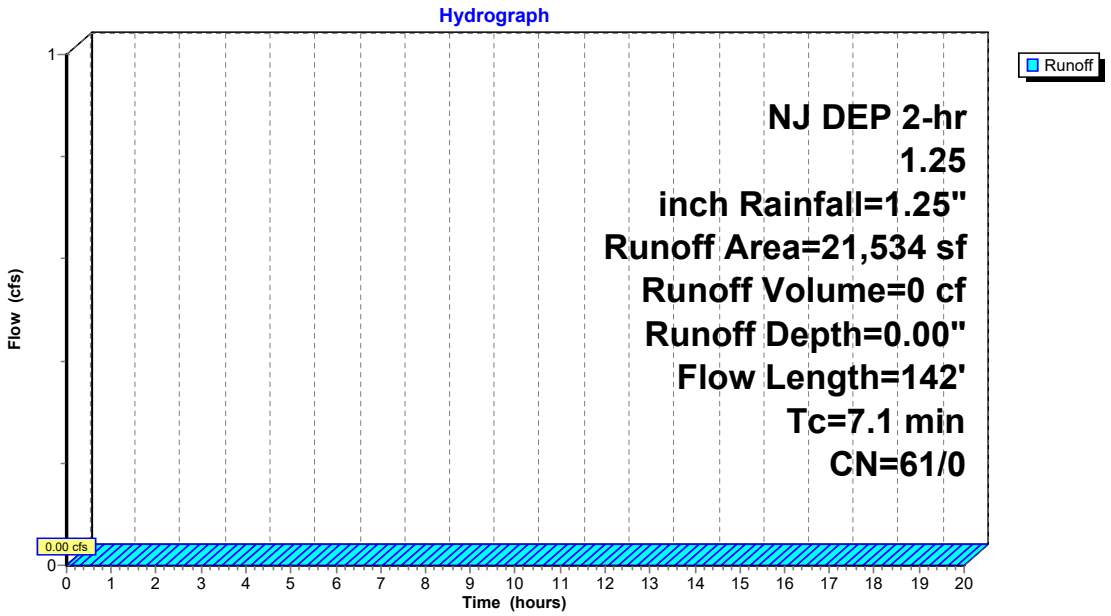
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
Routed to Reach DP-3PR : REGIONAL SWALE

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr 1.25 inch Rainfall=1.25"

Area (sf)	CN	Description
21,534	61	>75% Grass cover, Good, HSG B
21,534	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0150	0.13		**Sheet Flow, SHEET FLOW** Grass: Short n= 0.150 P2= 3.34"
0.9	92	0.0570	1.67		**Shallow Concentrated Flow, SHALLOW CONC** Short Grass Pasture Kv= 7.0 fps
7.1	142	Total			

Subcatchment PR-34: SLOPE TO REGIONAL SWALE



Summary for Subcatchment PR-35: FIELD AND ROOF

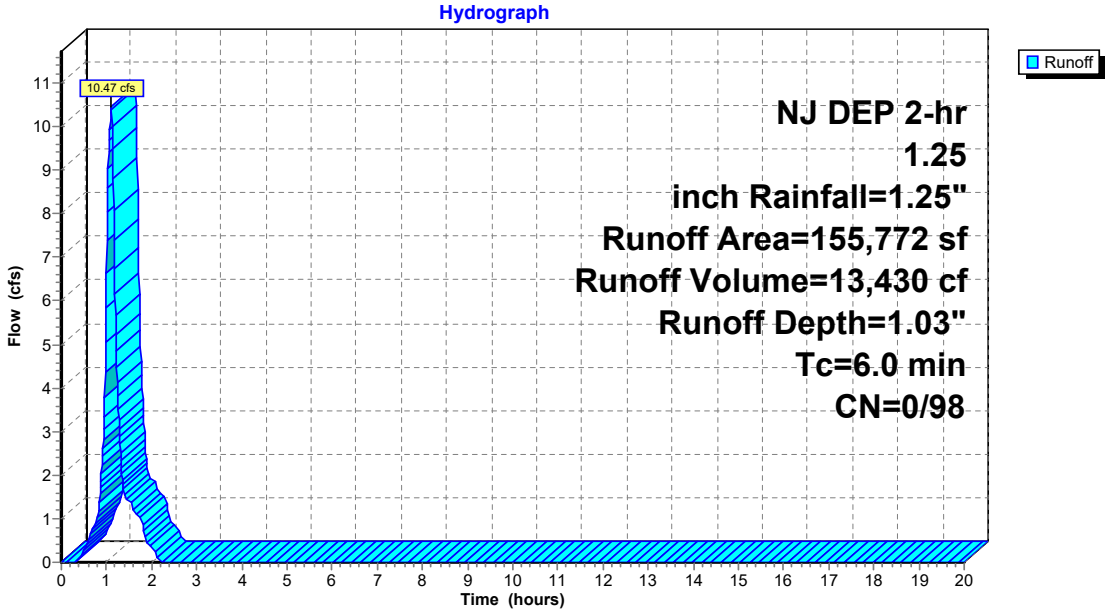
Runoff = 10.47 cfs @ 1.11 hrs, Volume= 13,430 cf, Depth= 1.03"
Routed to Pond BB-P2 : INFILT BASIN

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr 1.25 inch Rainfall=1.25"

Area (sf)	CN	Description
155,772	98	Roofs, HSG B
0	61	>75% Grass cover, Good, HSG B
155,772	98	Weighted Average
155,772	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT**

Subcatchment PR-35: FIELD AND ROOF



Summary for Subcatchment PR-36: GRASS/LANDSCAPING

[45] Hint: Runoff=Zero

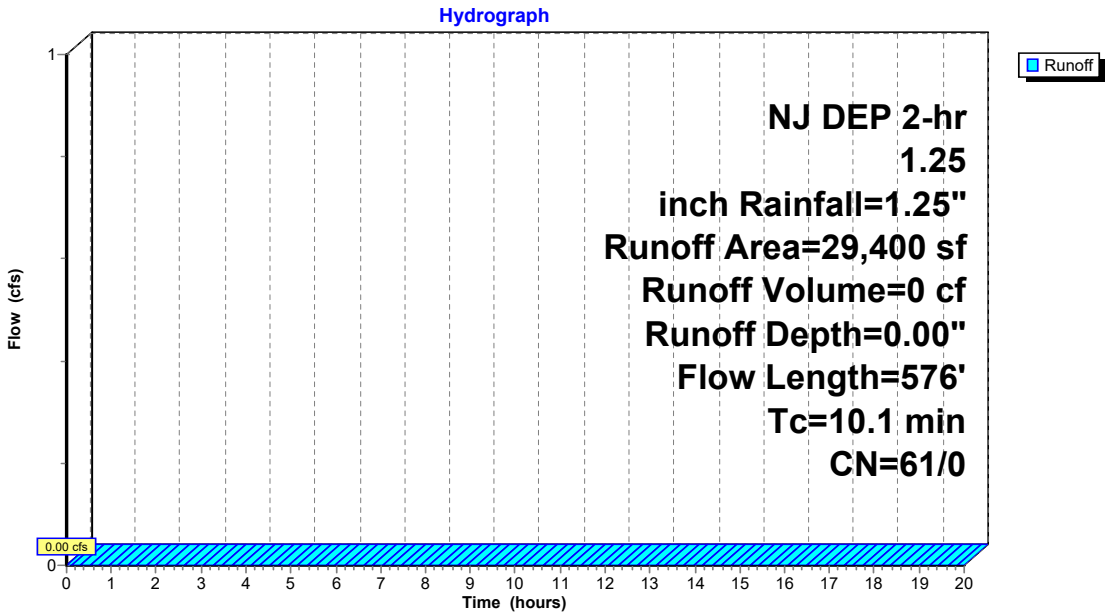
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
Routed to Reach DP-3PR : REGIONAL SWALE

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr 1.25 inch Rainfall=1.25"

Area (sf)	CN	Description
29,400	61	>75% Grass cover, Good, HSG B
29,400	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.34"
1.7	116	0.0050	1.14		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.7	235	0.0120	5.38	4.23	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
0.4	175	0.0100	7.80	24.51	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012
10.1	576	Total			

Subcatchment PR-36: GRASS/LANDSCAPING



Summary for Subcatchment PR-37: PR-37 TOWARD SWALE

Runoff = 0.02 cfs @ 1.28 hrs, Volume= 32 cf, Depth= 0.01"
Routed to Reach DP-3PR : REGIONAL SWALE

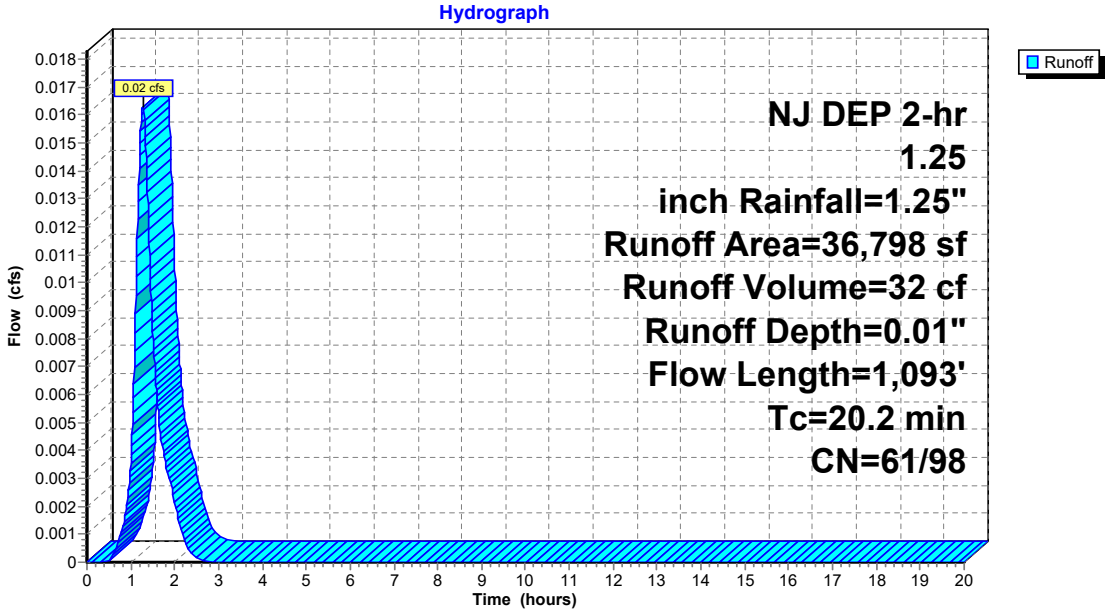
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr 1.25 inch Rainfall=1.25"

Area (sf)	CN	Description
36,427	61	>75% Grass cover, Good, HSG B
371	98	Paved roads w/curbs & sewers, HSG B
36,798	61	Weighted Average
36,427	61	98.99% Pervious Area
371	98	1.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.34"
2.2	242	0.0130	1.84		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	104	0.0190	5.17	1.80	**Pipe Channel, 8"** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012 Corrugated PP, smooth interior
0.5	118	0.0100	4.35	2.37	**Pipe Channel, 10"** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.012 Corrugated PP, smooth interior
0.2	143	0.0126	11.47	81.11	**Pipe Channel, 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012
0.1	104	0.0133	11.79	83.33	**Pipe Channel, 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012
9.6	332	0.0032	0.58	4.09	**Pipe Channel, 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.120

20.2 1,093 Total

Subcatchment PR-37: PR-37 TOWARD SWALE



Summary for Subcatchment PR-38: BULLPEN

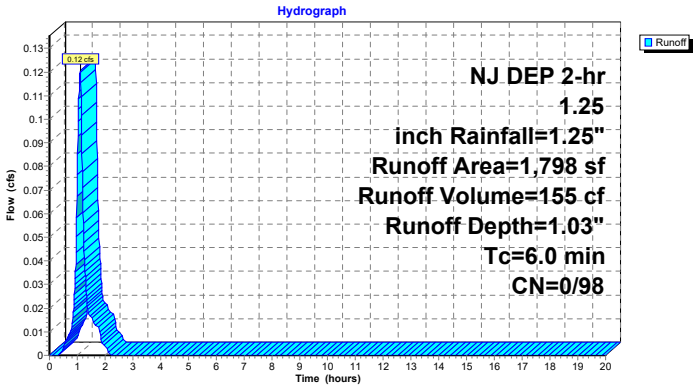
Runoff = 0.12 cfs @ 1.11 hrs, Volume= 155 cf, Depth= 1.03"
Routed to Pond BB-2A : BULLPEN

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr 1.25 inch Rainfall=1.25"

Area (sf)	CN	Description
1,798	98	Paved parking, HSG B
1,798	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment PR-38: BULLPEN



Summary for Subcatchment PR-40: PR-40 TOWARD TENNIS

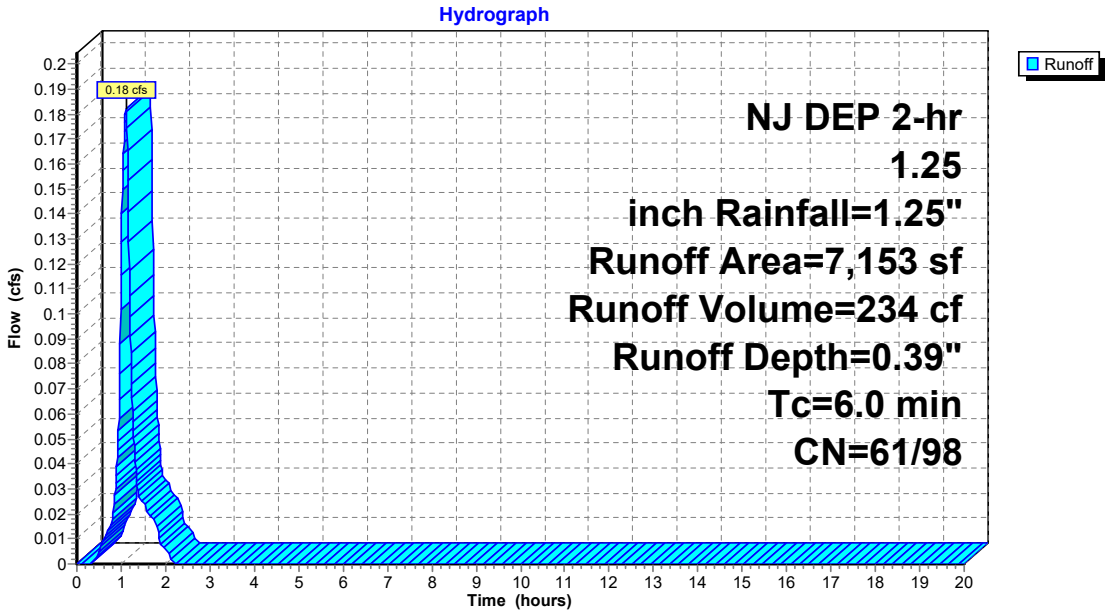
Runoff = 0.18 cfs @ 1.11 hrs, Volume= 234 cf, Depth= 0.39"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr 1.25 inch Rainfall=1.25"

Area (sf)	CN	Description
4,438	61	>75% Grass cover, Good, HSG B
0	61	>75% Grass cover, Good, HSG B
2,715	98	Paved roads w/curbs & sewers, HSG B
7,153	75	Weighted Average
4,438	61	62.04% Pervious Area
2,715	98	37.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR-40: PR-40 TOWARD TENNIS



Summary for Subcatchment PR-50: PR-50 REGIOINAL SWALE

[45] Hint: Runoff=Zero

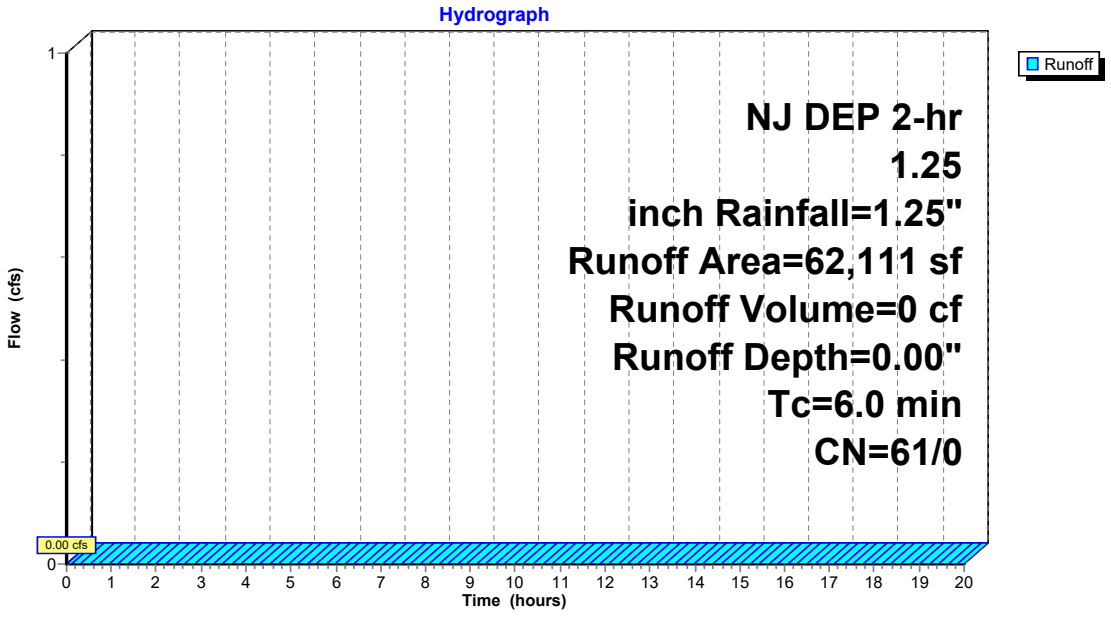
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr 1.25 inch Rainfall=1.25"

Area (sf)	CN	Description
62,111	61	>75% Grass cover, Good, HSG B
62,111	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum**

Subcatchment PR-50: PR-50 REGIOINAL SWALE



Summary for Subcatchment PR33B: PR-33B

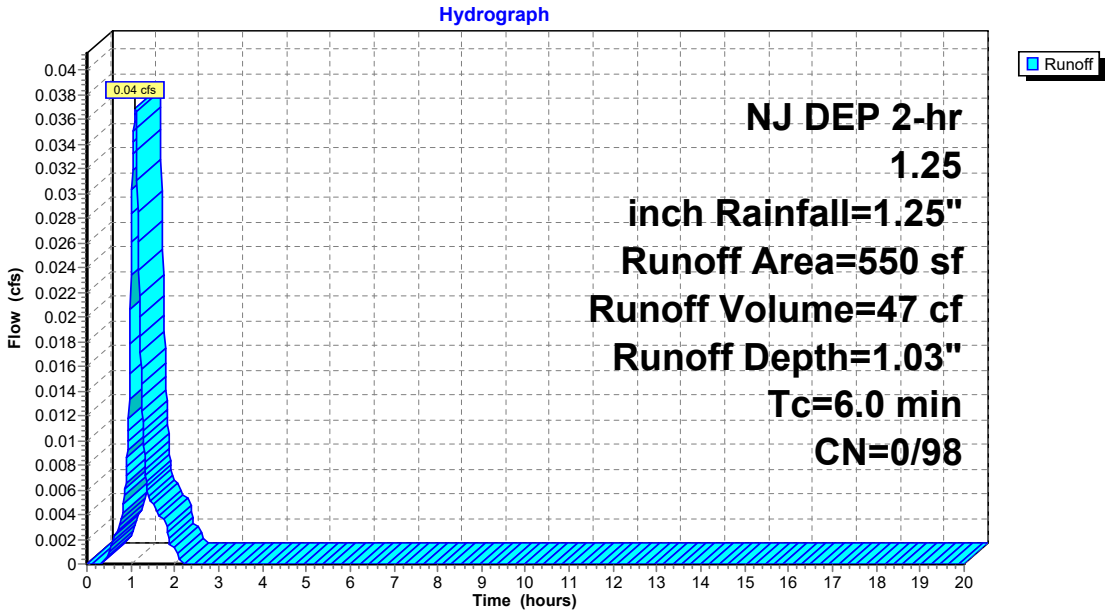
Runoff = 0.04 cfs @ 1.11 hrs, Volume= 47 cf, Depth= 1.03"
Routed to Pond 33B : CELL B

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr 1.25 inch Rainfall=1.25"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
550	98	Paved parking, HSG B
550	98	Weighted Average
550	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33B: PR-33B



Summary for Subcatchment PR33C: PR-33C

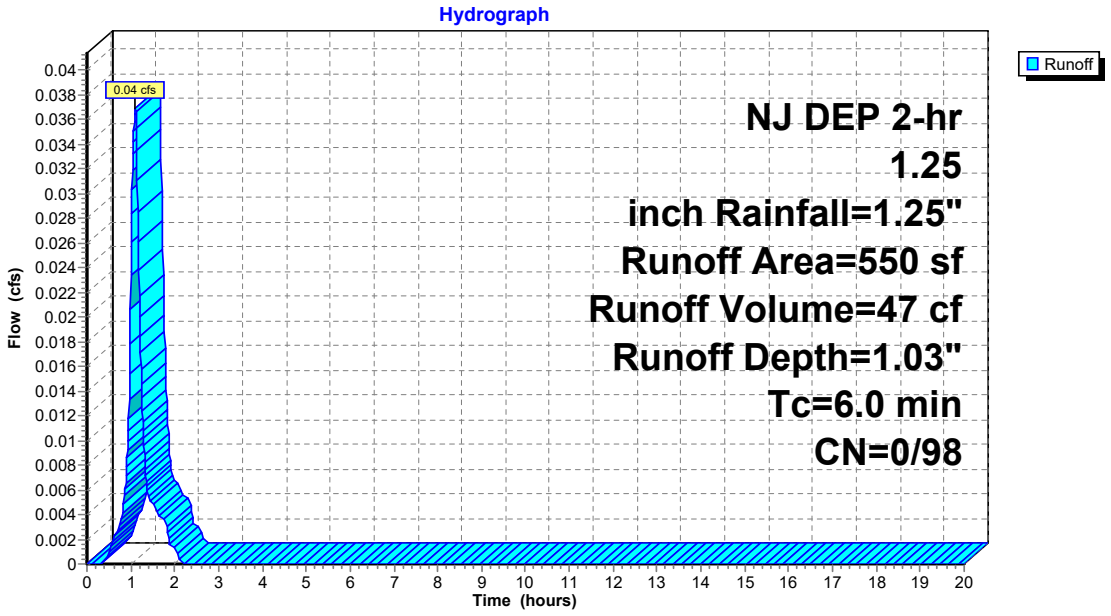
Runoff = 0.04 cfs @ 1.11 hrs, Volume= 47 cf, Depth= 1.03"
Routed to Pond 33C : CELL C

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr 1.25 inch Rainfall=1.25"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
550	98	Paved parking, HSG B
550	98	Weighted Average
550	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33C: PR-33C



Summary for Subcatchment PR33D: PR-33E

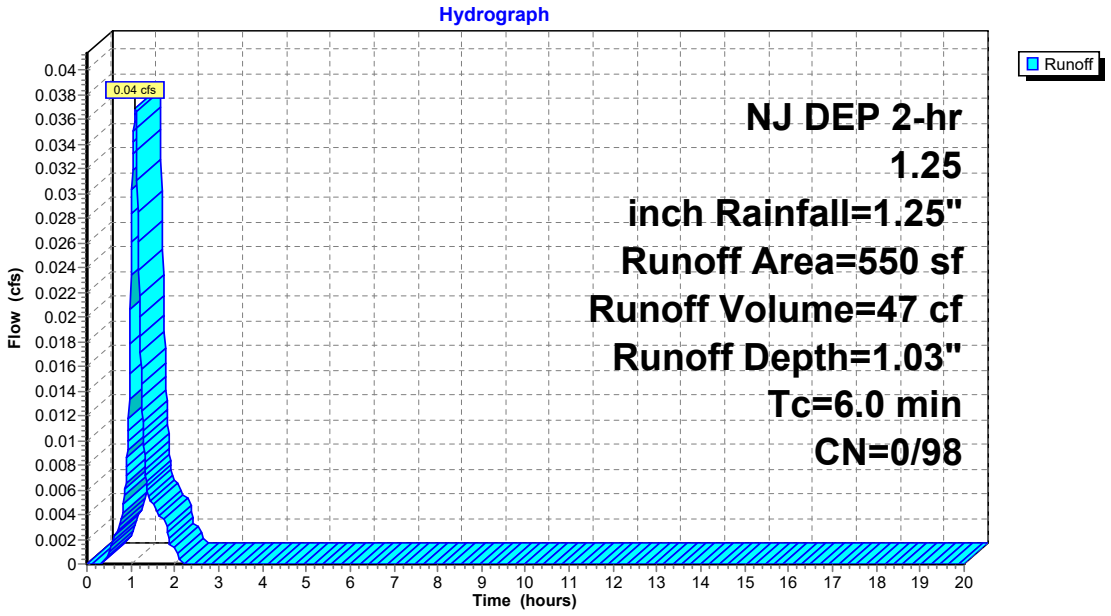
Runoff = 0.04 cfs @ 1.11 hrs, Volume= 47 cf, Depth= 1.03"
Routed to Pond 33D : CELL D

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr 1.25 inch Rainfall=1.25"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
550	98	Paved parking, HSG B
550	98	Weighted Average
550	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33D: PR-33E



Summary for Subcatchment PR33E: PR-33E

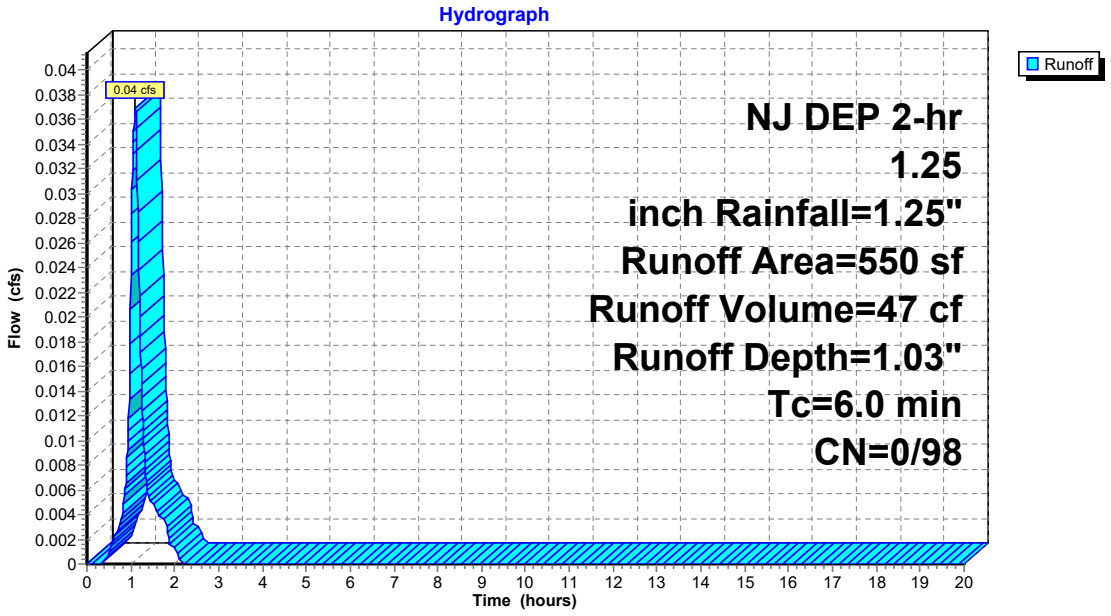
Runoff = 0.04 cfs @ 1.11 hrs, Volume= 47 cf, Depth= 1.03"
Routed to Pond 33E : CELL E

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr 1.25 inch Rainfall=1.25"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
550	98	Paved parking, HSG B
550	98	Weighted Average
550	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33E: PR-33E



Summary for Subcatchment PR33F: PR-33F

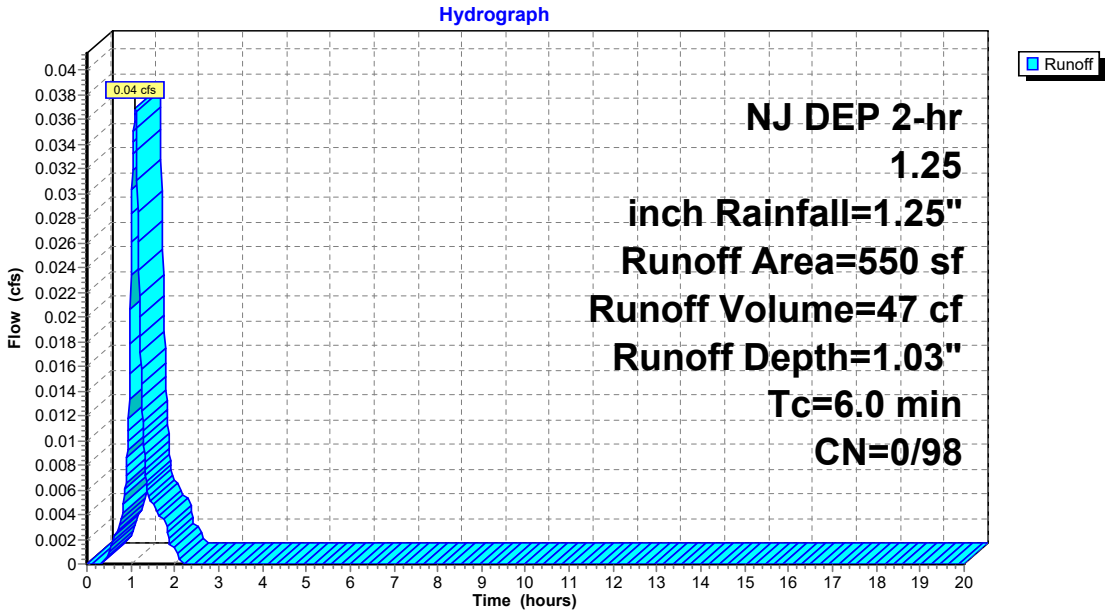
Runoff = 0.04 cfs @ 1.11 hrs, Volume= 47 cf, Depth= 1.03"
Routed to Pond 33F : CELL F

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr 1.25 inch Rainfall=1.25"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
550	98	Paved parking, HSG B
550	98	Weighted Average
550	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33F: PR-33F



Summary for Subcatchment PR33G: PR-33F

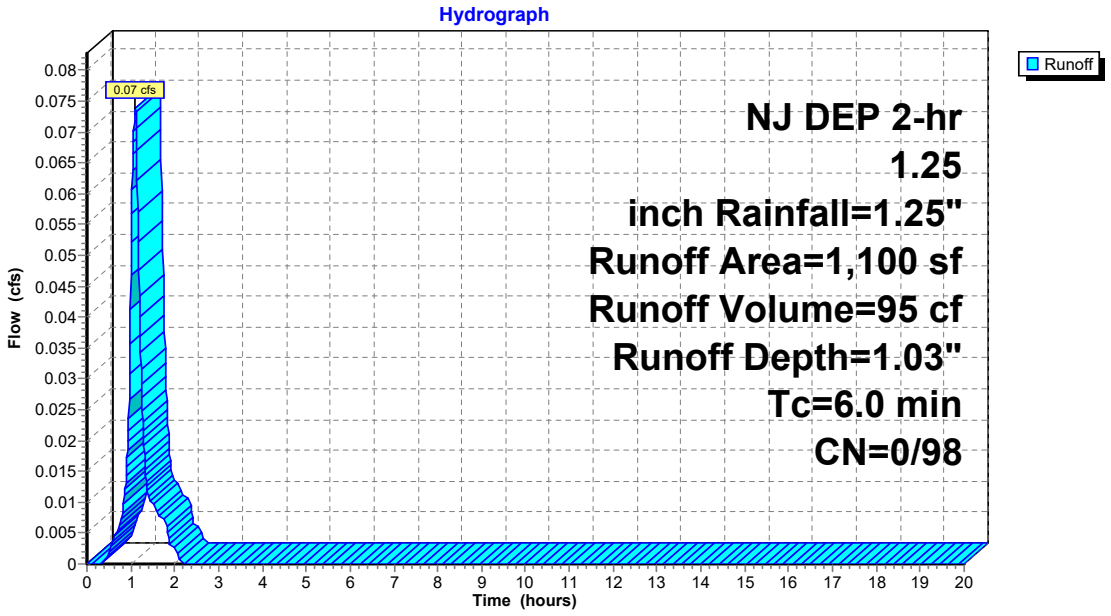
Runoff = 0.07 cfs @ 1.11 hrs, Volume= 95 cf, Depth= 1.03"
Routed to Pond 33G : CELL G

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr 1.25 inch Rainfall=1.25"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
1,100	98	Paved parking, HSG B
1,100	98	Weighted Average
1,100	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33G: PR-33F



Summary for Subcatchment PR33H: PR-33H

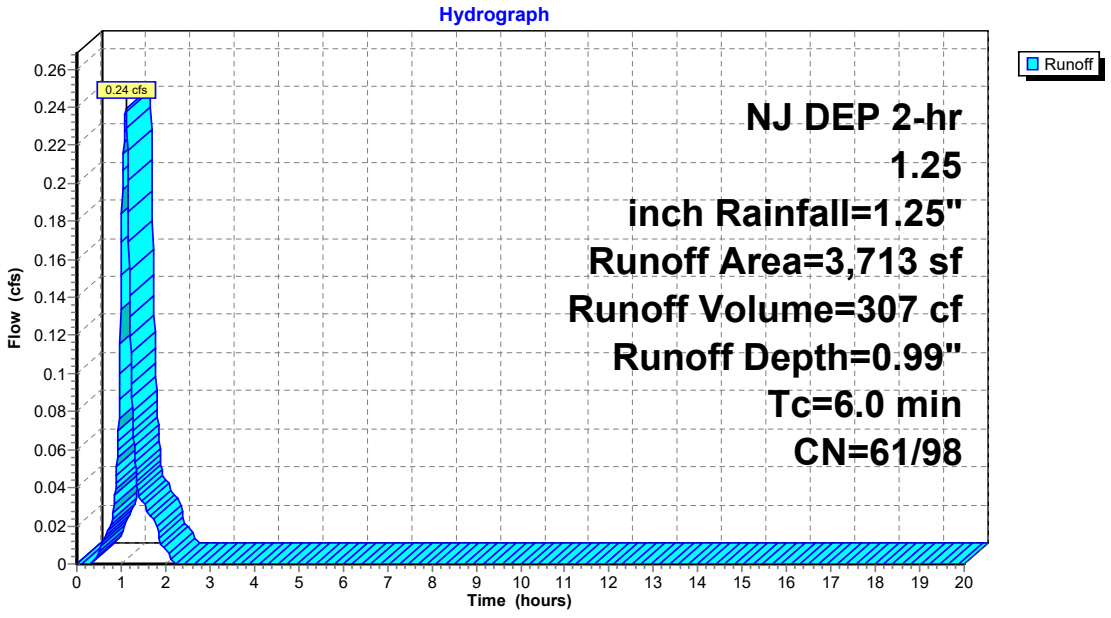
Runoff = 0.24 cfs @ 1.11 hrs, Volume= 307 cf, Depth= 0.99"
Routed to Pond 33H : CELL H

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr 1.25 inch Rainfall=1.25"

	Area (sf)	CN	Description
	148	61	>75% Grass cover, Good, HSG B
*	1,634	98	Porous Pavers
*	1,931	98	Sidewalk
	3,713	97	Weighted Average
	148	61	3.99% Pervious Area
	3,565	98	96.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33H: PR-33H



Summary for Subcatchment PR33I: PR-33I

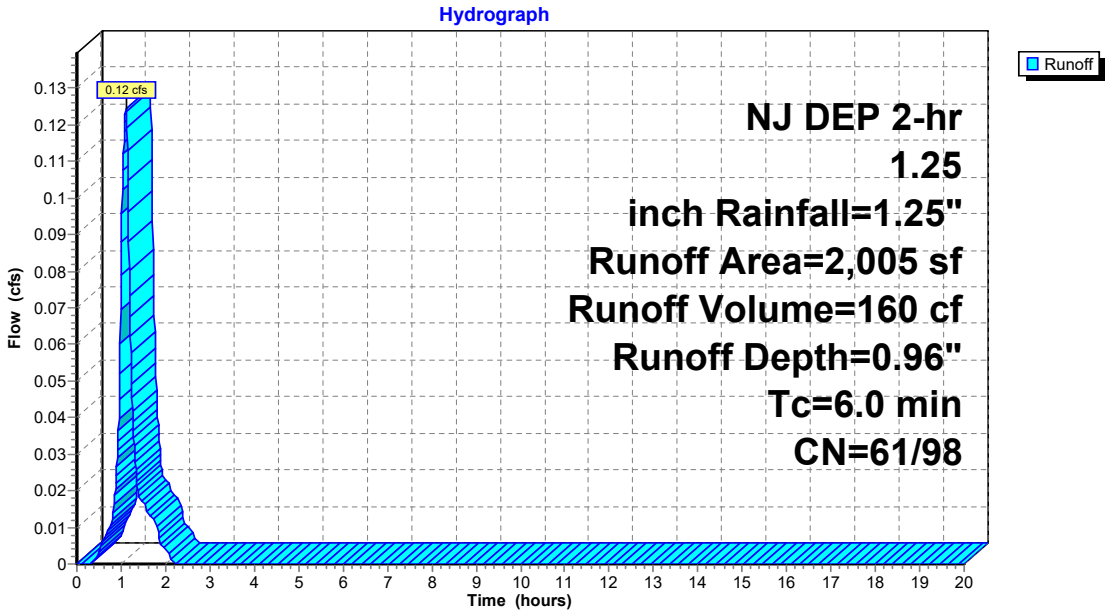
Runoff = 0.12 cfs @ 1.11 hrs, Volume= 160 cf, Depth= 0.96"
Routed to Pond 33I : CELL I

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr 1.25 inch Rainfall=1.25"

Area (sf)	CN	Description
150	61	>75% Grass cover, Good, HSG B
1,855	98	Paved parking, HSG B
2,005	95	Weighted Average
150	61	7.48% Pervious Area
1,855	98	92.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33I: PR-33I



Summary for Subcatchment PR33J: PR-33J

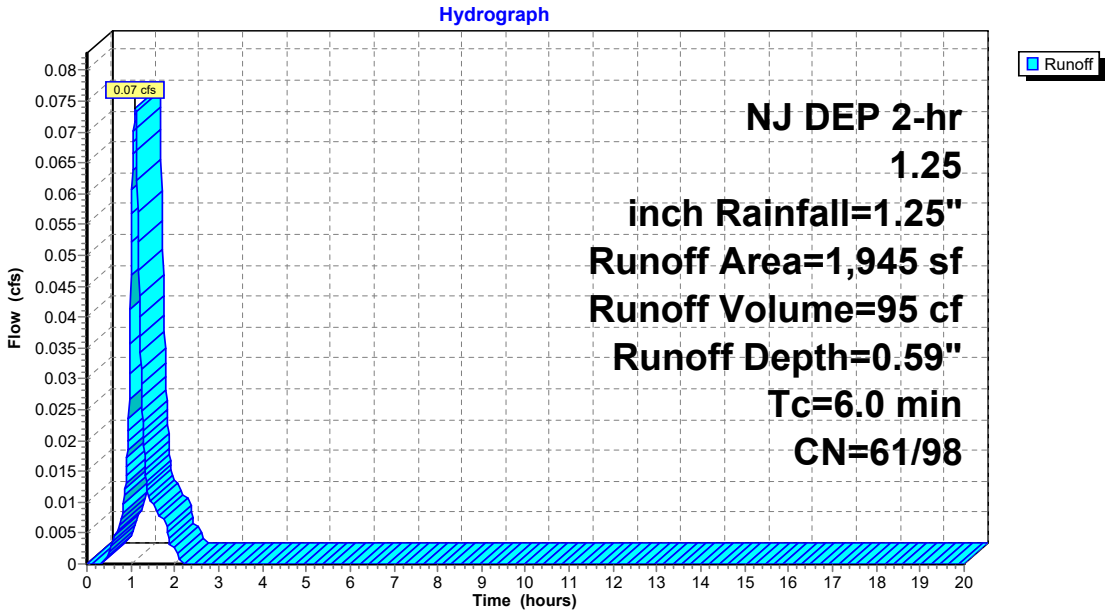
Runoff = 0.07 cfs @ 1.11 hrs, Volume= 95 cf, Depth= 0.59"
Routed to Pond 33J : CELL J

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr 1.25 inch Rainfall=1.25"

Area (sf)	CN	Description
845	61	>75% Grass cover, Good, HSG B
1,100	98	Paved parking, HSG B
1,945	82	Weighted Average
845	61	43.44% Pervious Area
1,100	98	56.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33J: PR-33J



Summary for Subcatchment PR33K: PR-33F

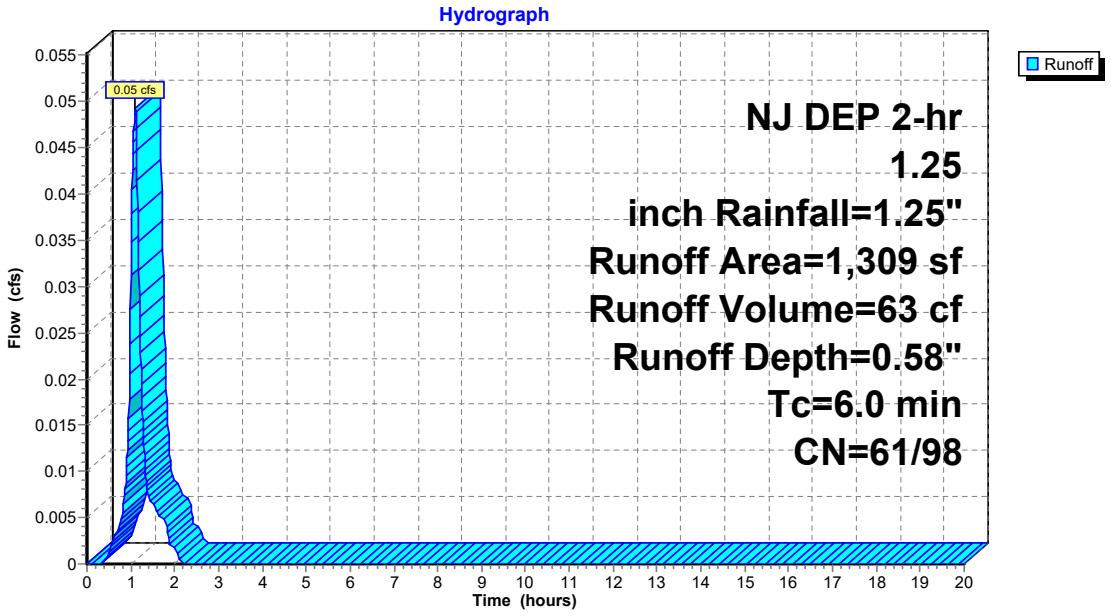
Runoff = 0.05 cfs @ 1.11 hrs, Volume= 63 cf, Depth= 0.58"
Routed to Pond 33K : CELL K

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr 1.25 inch Rainfall=1.25"

Area (sf)	CN	Description
575	61	>75% Grass cover, Good, HSG B
734	98	Paved parking, HSG B
1,309	82	Weighted Average
575	61	43.93% Pervious Area
734	98	56.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33K: PR-33F



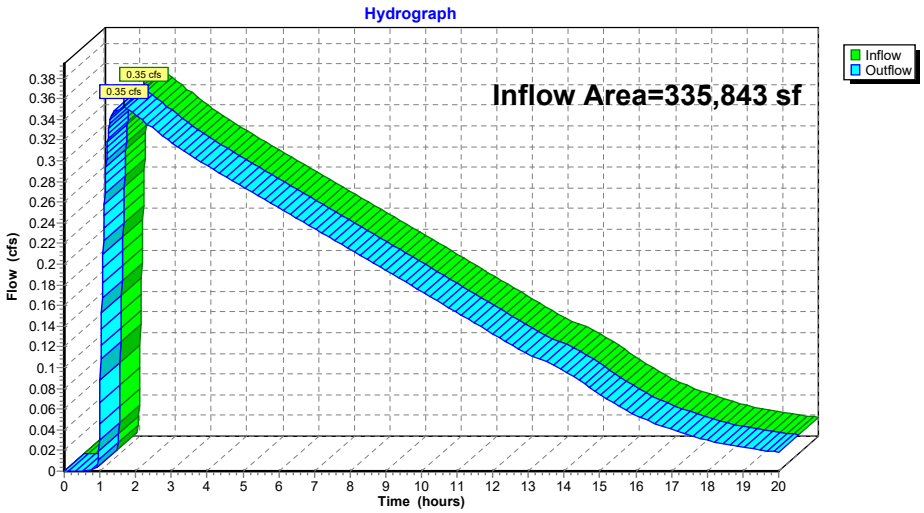
Summary for Reach DP-3PR: REGIONAL SWALE

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 335,843 sf, 53.90% Impervious, Inflow Depth > 0.41" for 1.25 inch event
Inflow = 0.35 cfs @ 1.68 hrs, Volume= 11,449 cf
Outflow = 0.35 cfs @ 1.68 hrs, Volume= 11,449 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs

Reach DP-3PR: REGIONAL SWALE



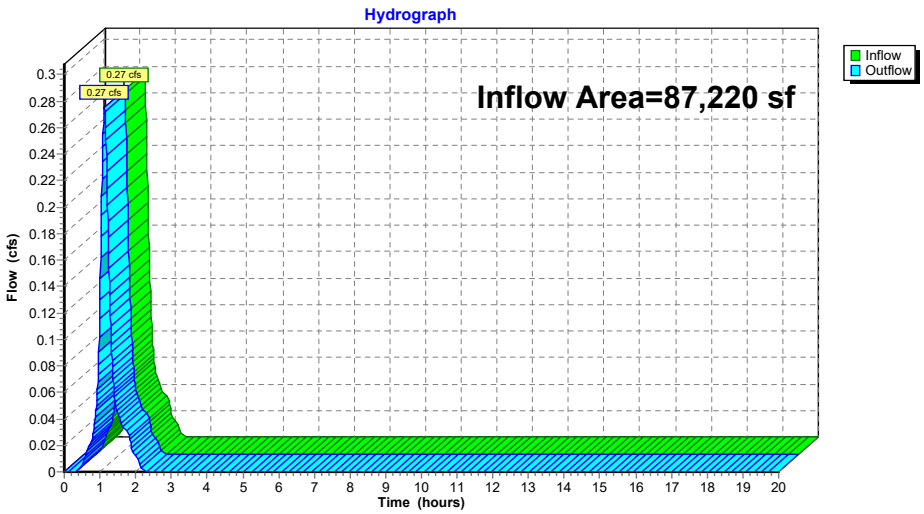
Summary for Reach DP1PR: Softball

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 87,220 sf, 5.13% Impervious, Inflow Depth = 0.05" for 1.25 inch event
Inflow = 0.27 cfs @ 1.13 hrs, Volume= 386 cf
Outflow = 0.27 cfs @ 1.13 hrs, Volume= 386 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs

Reach DP1PR: Softball



Summary for Pond 33B: CELL B

Inflow Area = 550 sf,100.00% Impervious, Inflow Depth = 1.03" for 1.25 inch event
Inflow = 0.04 cfs @ 1.11 hrs, Volume= 47 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33C : CELL C
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33C : CELL C

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 83.75' @ 2.34 hrs Surf.Area= 550 sf Storage= 47 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	83.53'	440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,100 cf Overall x 40.0% Voids

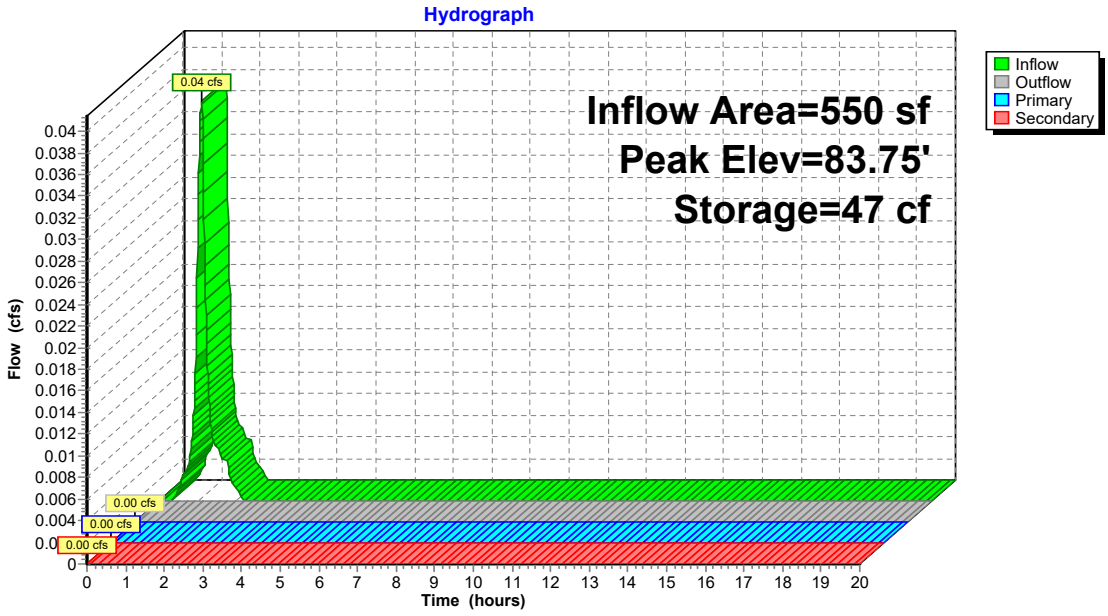
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
83.53	550	0	0
84.53	550	550	550
85.53	550	550	1,100

Device	Routing	Invert	Outlet Devices
#1	Primary	83.80'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	84.53'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=83.53' (Free Discharge)
└**1=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=83.53' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33B: CELL B



Summary for Pond 33C: CELL C

Inflow Area = 1,100 sf,100.00% Impervious, Inflow Depth = 0.52" for 1.25 inch event
Inflow = 0.04 cfs @ 1.11 hrs, Volume= 47 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33D : CELL D
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33D : CELL D

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 83.33' @ 2.34 hrs Surf.Area= 550 sf Storage= 47 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	83.11'	440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,100 cf Overall x 40.0% Voids

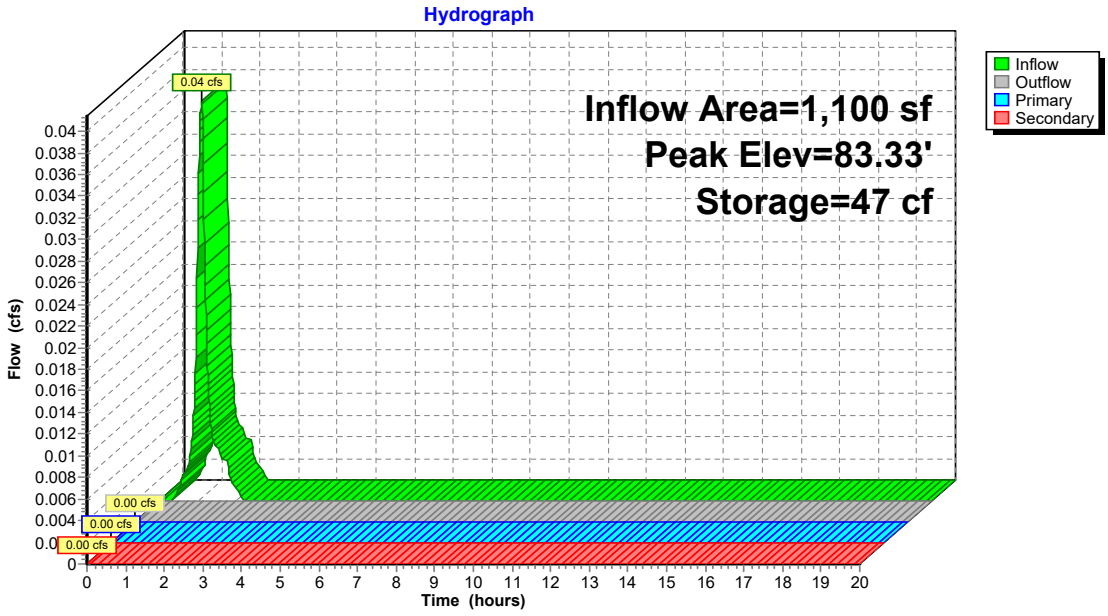
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
83.11	550	0	0
84.11	550	550	550
85.11	550	550	1,100

Device	Routing	Invert	Outlet Devices
#1	Primary	83.38'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	84.11'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=83.11' (Free Discharge)
└**1=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=83.11' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33C: CELL C



Summary for Pond 33D: CELL D

Inflow Area = 1,650 sf,100.00% Impervious, Inflow Depth = 0.34" for 1.25 inch event
Inflow = 0.04 cfs @ 1.11 hrs, Volume= 47 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33E : CELL E
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33E : CELL E

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 82.92' @ 2.34 hrs Surf.Area= 550 sf Storage= 47 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	82.70'	440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,100 cf Overall x 40.0% Voids

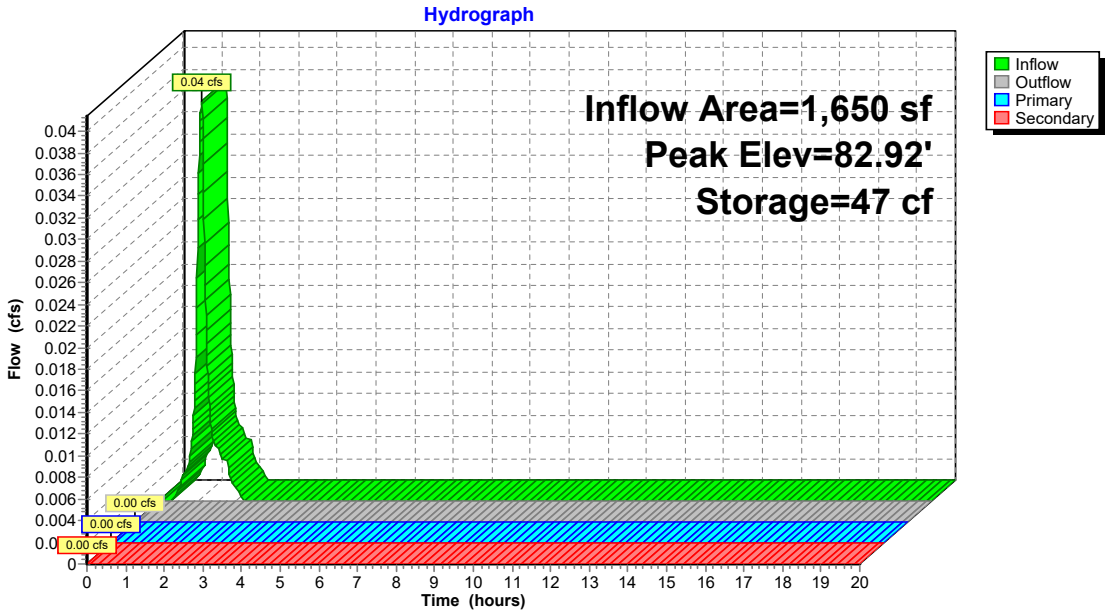
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
82.70	550	0	0
83.70	550	550	550
84.70	550	550	1,100

Device	Routing	Invert	Outlet Devices
#1	Primary	82.97'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	83.70'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=82.70' (Free Discharge)
└**1=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=82.70' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33D: CELL D



Summary for Pond 33E: CELL E

Inflow Area = 2,200 sf,100.00% Impervious, Inflow Depth = 0.26" for 1.25 inch event
Inflow = 0.04 cfs @ 1.11 hrs, Volume= 47 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33F : CELL F
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33F : CELL F

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 82.50' @ 2.34 hrs Surf.Area= 550 sf Storage= 47 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	82.28'	440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,100 cf Overall x 40.0% Voids

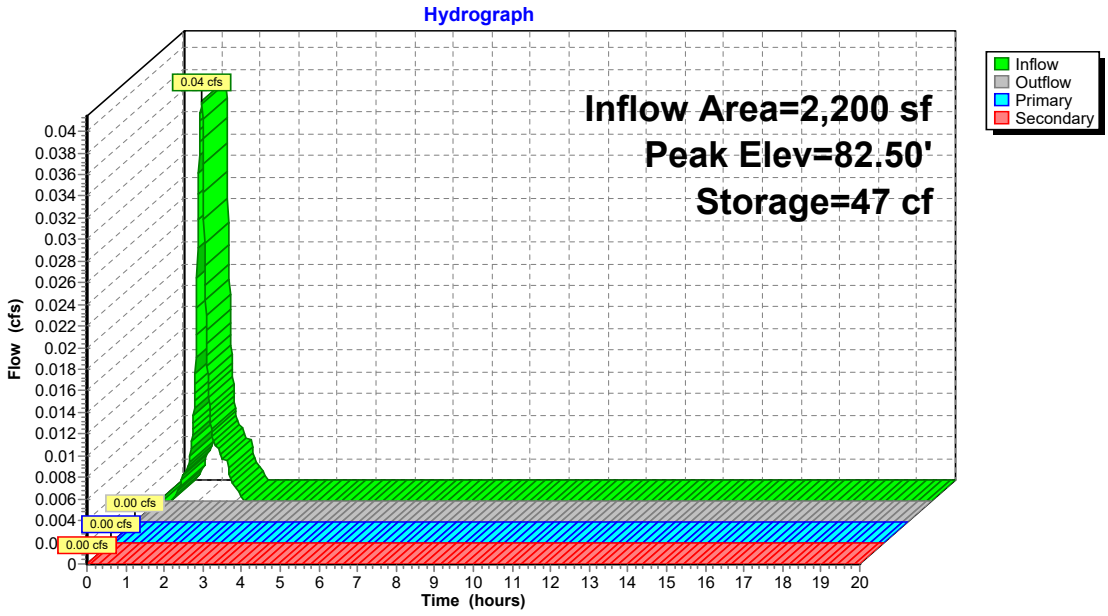
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
82.28	550	0	0
83.28	550	550	550
84.28	550	550	1,100

Device	Routing	Invert	Outlet Devices
#1	Primary	82.55'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	83.28'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=82.28' (Free Discharge)
└**1=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=82.28' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33E: CELL E



Summary for Pond 33F: CELL F

Inflow Area = 2,750 sf,100.00% Impervious, Inflow Depth = 0.21" for 1.25 inch event
Inflow = 0.04 cfs @ 1.11 hrs, Volume= 47 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33G : CELL G
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33G : CELL G

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 82.09' @ 2.34 hrs Surf.Area= 550 sf Storage= 47 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	81.87'	440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,100 cf Overall x 40.0% Voids

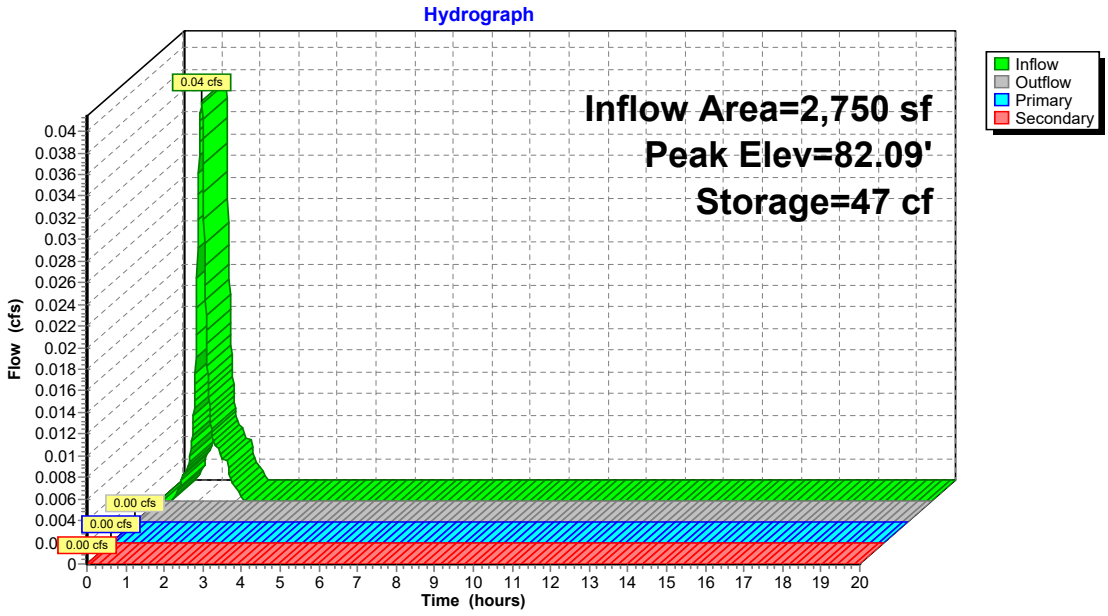
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
81.87	550	0	0
82.87	550	550	550
83.87	550	550	1,100

Device	Routing	Invert	Outlet Devices
#1	Primary	82.14'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	82.87'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=81.87' (Free Discharge)
└**1=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=81.87' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33F: CELL F



Summary for Pond 33G: CELL G

Inflow Area = 3,850 sf,100.00% Impervious, Inflow Depth = 0.30" for 1.25 inch event
Inflow = 0.07 cfs @ 1.11 hrs, Volume= 95 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33H : CELL H
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33H : CELL H

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 81.26' @ 2.34 hrs Surf.Area= 1,100 sf Storage= 95 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	81.04'	880 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 2,200 cf Overall x 40.0% Voids

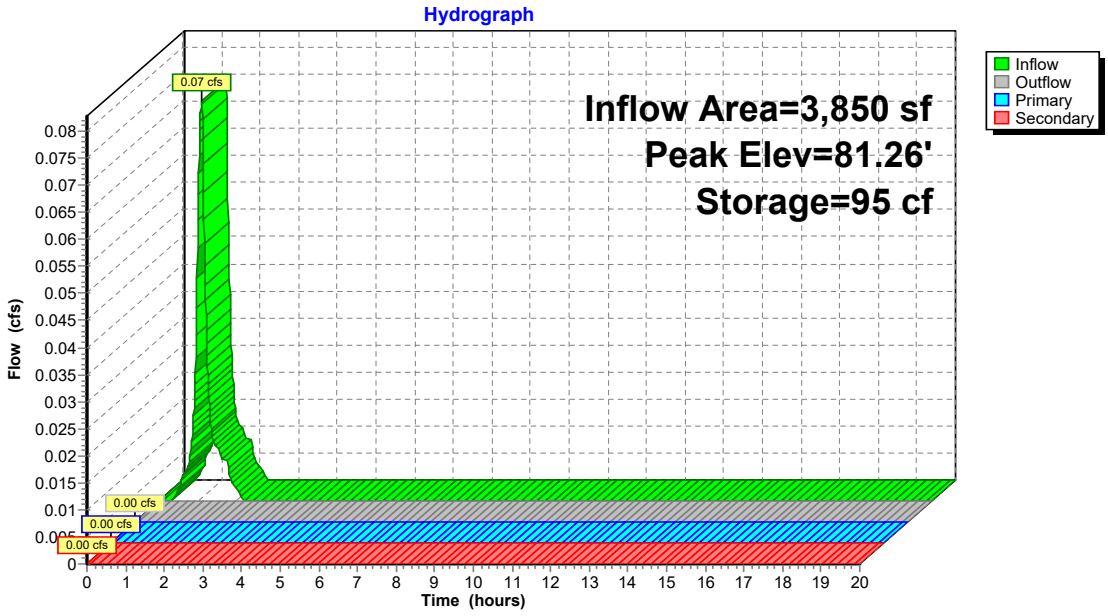
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
81.04	1,100	0	0
82.04	1,100	1,100	1,100
83.04	1,100	1,100	2,200

Device	Routing	Invert	Outlet Devices
#1	Primary	81.31'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	82.04'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=81.04' (Free Discharge)
└**1=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=81.04' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33G: CELL G



Summary for Pond 33H: CELL H

Inflow Area = 7,563 sf, 98.04% Impervious, Inflow Depth = 0.49" for 1.25 inch event
Inflow = 0.24 cfs @ 1.11 hrs, Volume= 307 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33I : CELL I
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33I : CELL I

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 80.58' @ 2.34 hrs Surf.Area= 1,631 sf Storage= 307 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	80.11'	1,305 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 3,262 cf Overall x 40.0% Voids

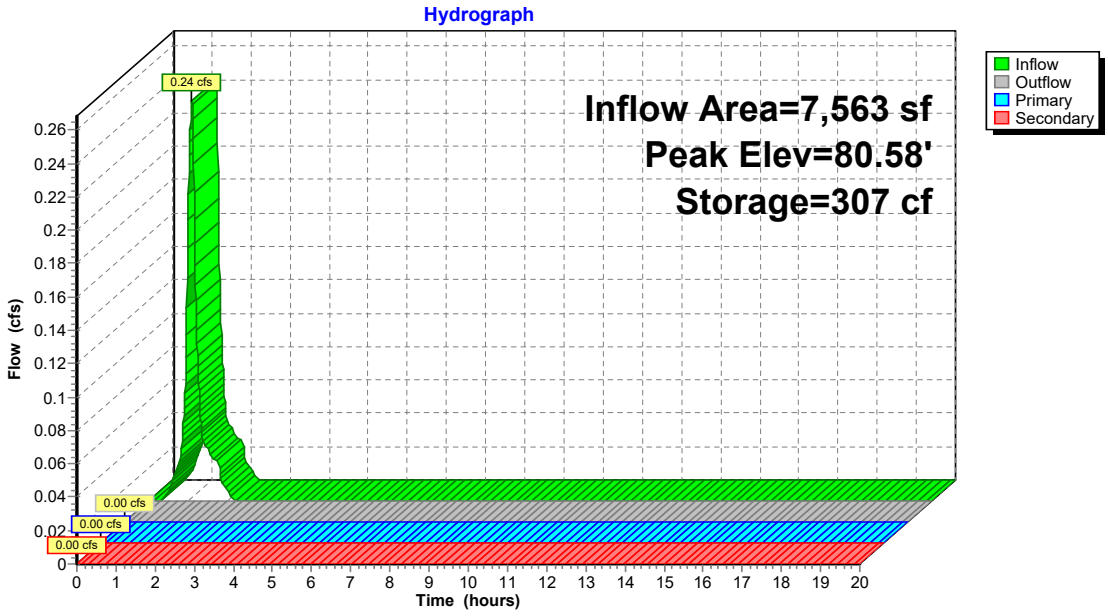
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
80.11	1,631	0	0
81.11	1,631	1,631	1,631
82.11	1,631	1,631	3,262

Device	Routing	Invert	Outlet Devices
#1	Primary	80.63'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	81.11'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=80.11' (Free Discharge)
└**1=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=80.11' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33H: CELL H



Summary for Pond 33I: CELL I

Inflow Area = 9,568 sf, 96.89% Impervious, Inflow Depth = 0.20" for 1.25 inch event
Inflow = 0.12 cfs @ 1.11 hrs, Volume= 160 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33J : CELL J
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33J : CELL J

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 79.38' @ 2.34 hrs Surf.Area= 1,855 sf Storage= 160 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	79.16'	1,484 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 3,710 cf Overall x 40.0% Voids

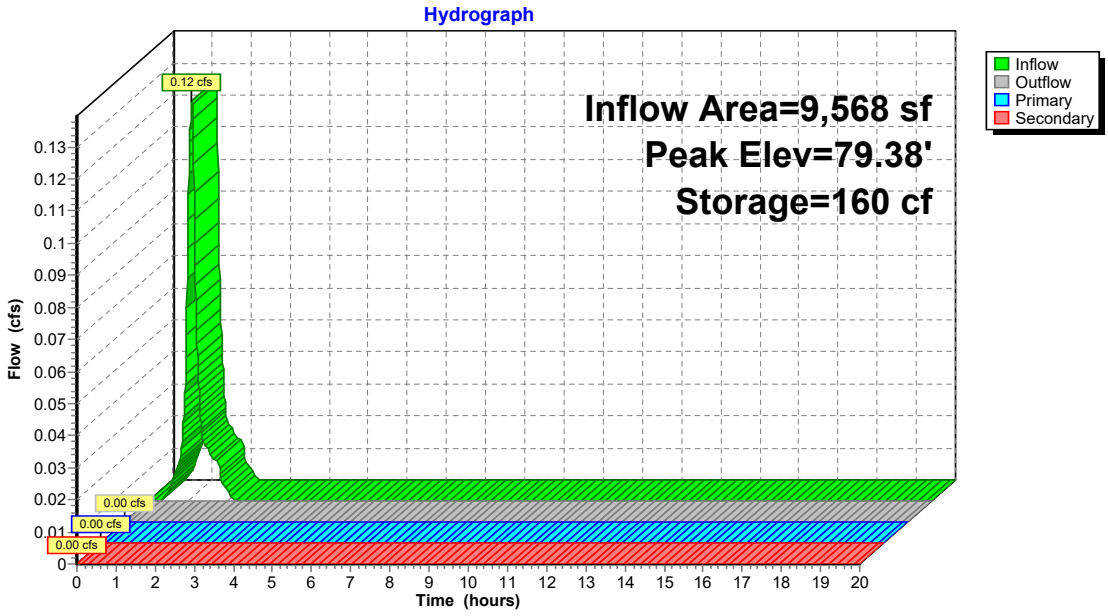
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
79.16	1,855	0	0
80.16	1,855	1,855	1,855
81.16	1,855	1,855	3,710

Device	Routing	Invert	Outlet Devices
#1	Primary	79.43'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	80.16'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=79.16' (Free Discharge)
└**1=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=79.16' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33I: CELL I



Summary for Pond 33J: CELL J

Inflow Area = 11,513 sf, 90.07% Impervious, Inflow Depth = 0.10" for 1.25 inch event
Inflow = 0.07 cfs @ 1.11 hrs, Volume= 95 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33K : CELL K
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33K : CELL K

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 78.58' @ 2.34 hrs Surf.Area= 1,100 sf Storage= 95 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	78.36'	880 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 2,200 cf Overall x 40.0% Voids

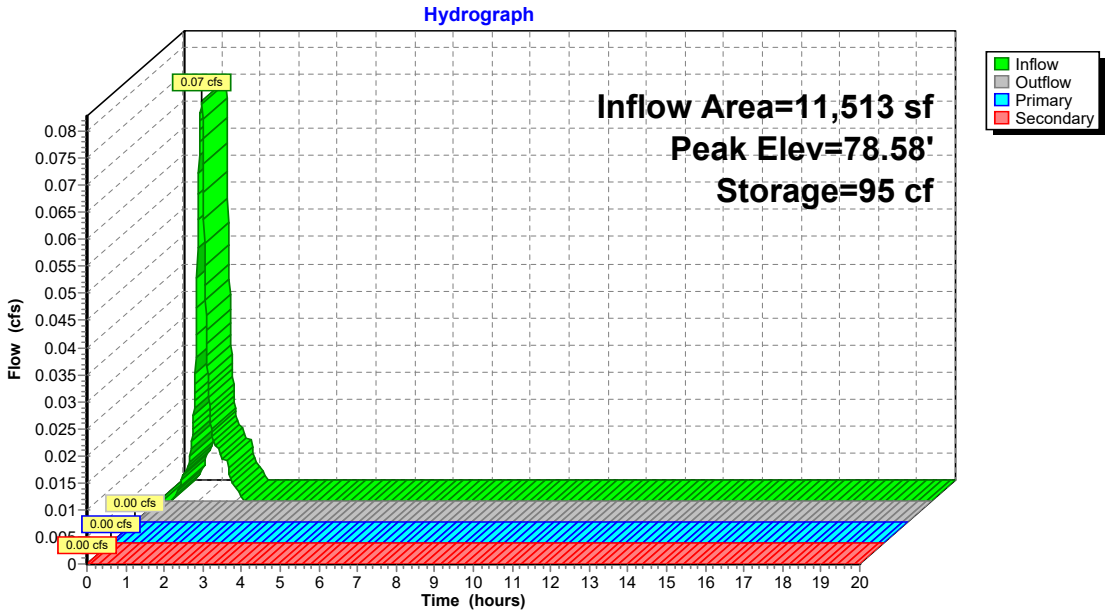
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
78.36	1,100	0	0
79.36	1,100	1,100	1,100
80.36	1,100	1,100	2,200

Device	Routing	Invert	Outlet Devices
#1	Primary	78.63'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	79.36'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=78.36' (Free Discharge)
└**1=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=78.36' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33J: CELL J



Summary for Pond 33K: CELL K

Inflow Area = 12,822 sf, 86.60% Impervious, Inflow Depth = 0.06" for 1.25 inch event
Inflow = 0.05 cfs @ 1.11 hrs, Volume= 63 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33L : OUTLET PIPE
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33L : OUTLET PIPE

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 78.20' @ 2.34 hrs Surf.Area= 734 sf Storage= 63 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	77.98'	587 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,468 cf Overall x 40.0% Voids

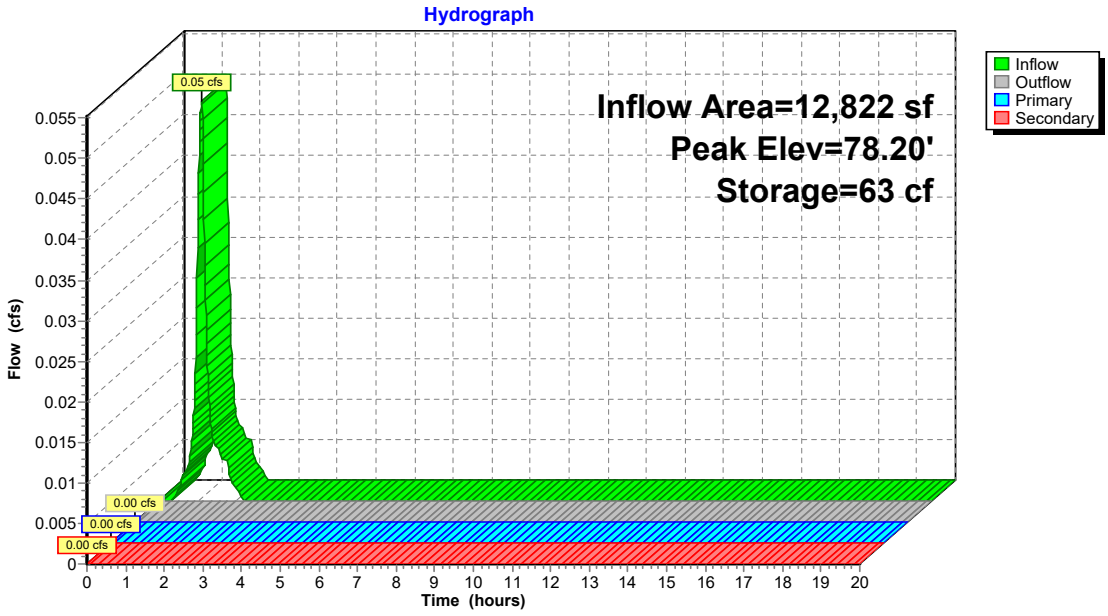
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
77.98	734	0	0
78.98	734	734	734
79.98	734	734	1,468

Device	Routing	Invert	Outlet Devices
#1	Primary	78.30'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	78.98'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=77.98' (Free Discharge)
↑**1=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=77.98' (Free Discharge)
↑**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33K: CELL K



Summary for Pond 33L: OUTLET PIPE

Inflow Area = 12,822 sf, 86.60% Impervious, Inflow Depth = 0.00" for 1.25 inch event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach DP-3PR : REGIONAL SWALE

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 76.00' @ 0.00 hrs Surf.Area= 30 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

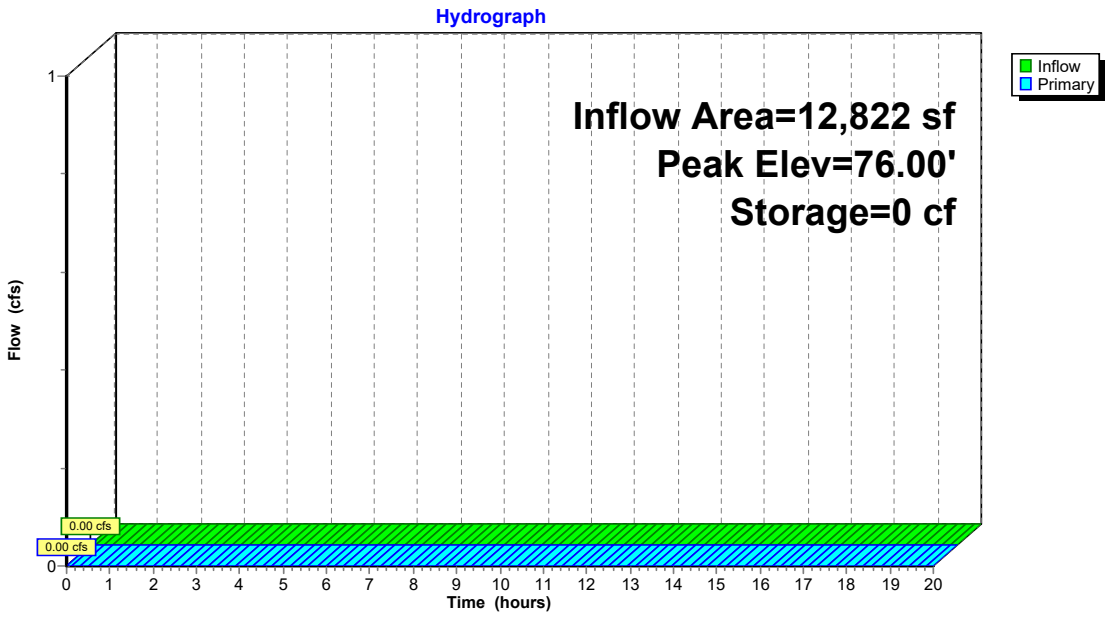
Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	37 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 93 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
76.00	30	0	0
79.10	30	93	93

Device	Routing	Invert	Outlet Devices
#1	Primary	76.00'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=76.00' (Free Discharge)
└**1=Orifice/Grate** (Controls 0.00 cfs)

Pond 33L: OUTLET PIPE



Summary for Pond BB-2A: BULLPEN

Inflow Area = 1,798 sf,100.00% Impervious, Inflow Depth = 1.03" for 1.25 inch event
Inflow = 0.12 cfs @ 1.11 hrs, Volume= 155 cf
Outflow = 0.03 cfs @ 1.30 hrs, Volume= 152 cf, Atten= 74%, Lag= 11.4 min
Primary = 0.03 cfs @ 1.30 hrs, Volume= 152 cf
Routed to Reach DP-3PR : REGIONAL SWALE

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 79.13' @ 1.30 hrs Surf.Area= 1,798 sf Storage= 97 cf

Plug-Flow detention time= 91.8 min calculated for 152 cf (98% of inflow)
Center-of-Mass det. time= 91.3 min (161.5 - 70.3)

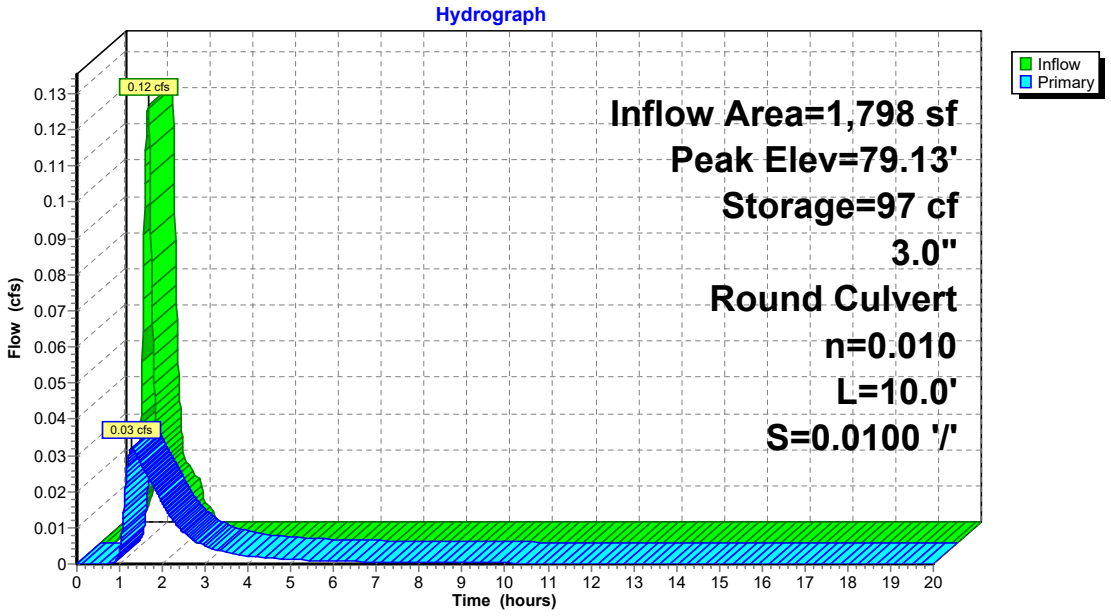
Volume	Invert	Avail.Storage	Storage Description
#1	79.00'	719 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,798 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
79.00	1,798	0	0
80.00	1,798	1,798	1,798

Device	Routing	Invert	Outlet Devices
#1	Primary	79.00'	**3.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 79.00' / 78.90' S= 0.0100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.05 sf

Primary OutFlow Max=0.03 cfs @ 1.30 hrs HW=79.13' (Free Discharge)
1=Culvert (Barrel Controls 0.03 cfs @ 1.71 fps)

Pond BB-2A: BULLPEN



Summary for Pond BB-4P: POROUS WALK-2

Inflow Area = 18,645 sf, 8.43% Impervious, Inflow Depth = 0.09" for 1.25 inch event
Inflow = 0.11 cfs @ 1.11 hrs, Volume= 135 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach DP-3PR : REGIONAL SWALE
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond BB-P1 : Plaza

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 87.22' @ 2.34 hrs Surf.Area= 1,571 sf Storage= 135 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	87.00'	1,257 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 3,142 cf Overall x 40.0% Voids

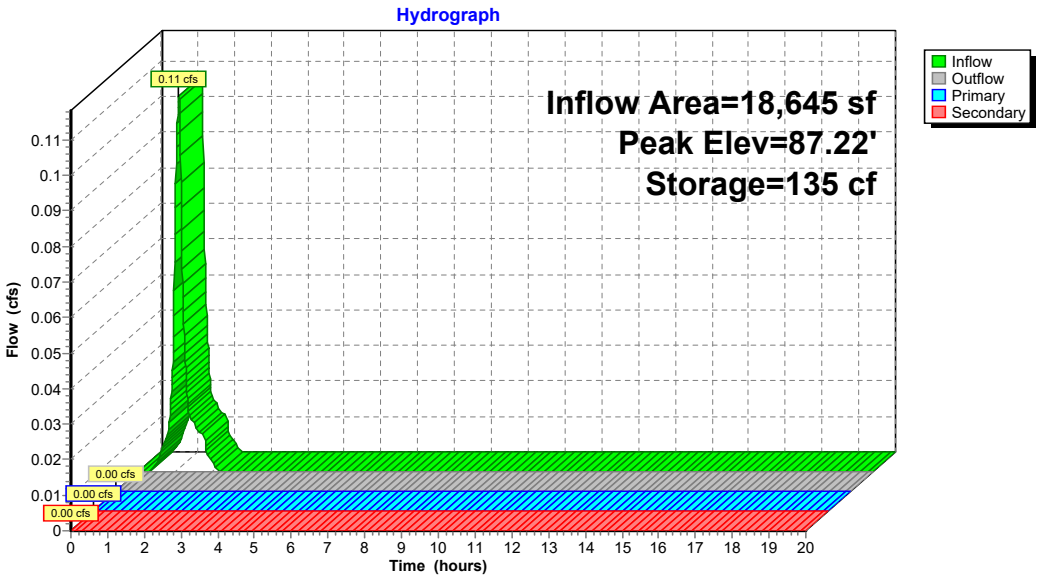
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
87.00	1,571	0	0
88.00	1,571	1,571	1,571
89.00	1,571	1,571	3,142

Device	Routing	Invert	Outlet Devices
#1	Primary	88.00'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 88.00' / 83.00' S= 0.5000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Secondary	88.00'	**30.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=87.00' (Free Discharge)
└**1=Culvert** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=87.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond BB-4P: POROUS WALK-2



Summary for Pond BB-5P: POROUS WALK 1

Inflow Area = 45,346 sf, 8.87% Impervious, Inflow Depth = 0.09" for 1.25 inch event
Inflow = 0.26 cfs @ 1.11 hrs, Volume= 347 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach DP-3PR : REGIONAL SWALE
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond BB-4P : POROUS WALK-2

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 90.43' @ 2.49 hrs Surf.Area= 2,298 sf Storage= 347 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	1,609 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 4,596 cf Overall x 35.0% Voids

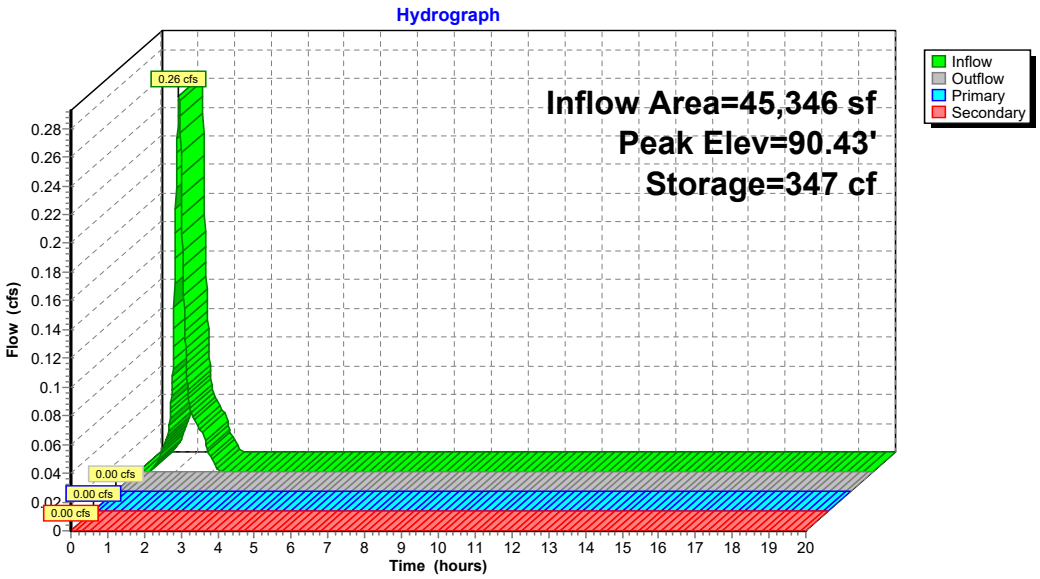
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.00	2,298	0	0
91.00	2,298	2,298	2,298
92.00	2,298	2,298	4,596

Device	Routing	Invert	Outlet Devices
#1	Primary	91.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	91.00'	**30.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=90.00' (Free Discharge)
└**1=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=90.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond BB-5P: POROUS WALK 1



Summary for Pond BB-P1: Plaza

Inflow Area = 13,728 sf, 46.55% Impervious, Inflow Depth = 0.48" for 1.25 inch event
Inflow = 0.43 cfs @ 1.11 hrs, Volume= 551 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach DP-3PR : REGIONAL SWALE

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 81.22' @ 2.34 hrs Surf.Area= 6,390 sf Storage= 551 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

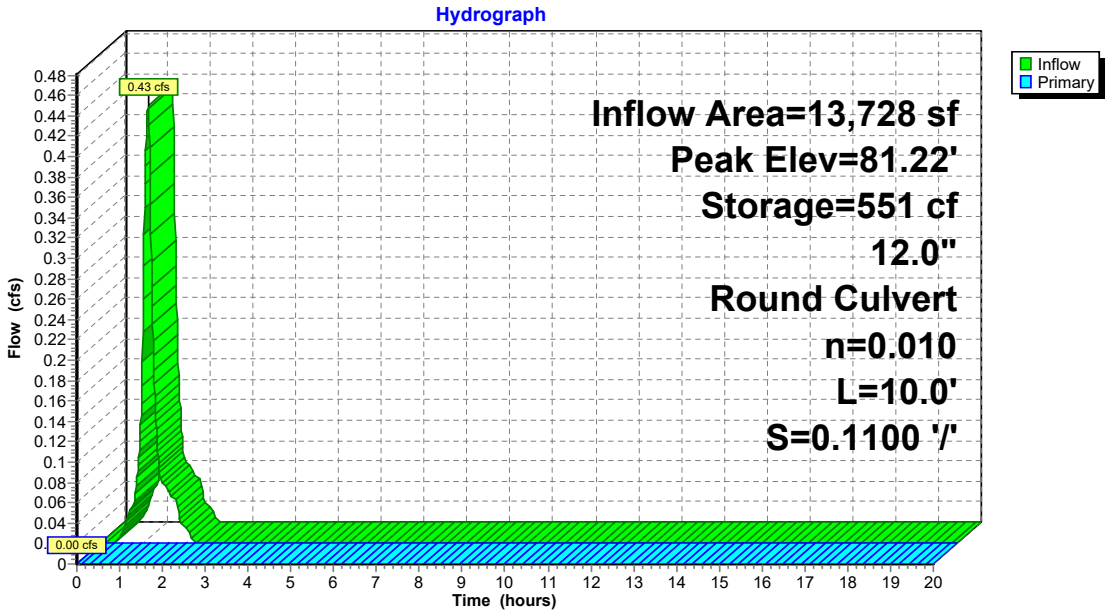
Volume	Invert	Avail.Storage	Storage Description
#1	81.00'	12,780 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 31,950 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
81.00	6,390	0	0
86.00	6,390	31,950	31,950

Device	Routing	Invert	Outlet Devices
#1	Primary	82.00'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 82.00' / 80.90' S= 0.1100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=81.00' (Free Discharge)
1=Culvert (Controls 0.00 cfs)

Pond BB-P1: Plaza



Summary for Pond BB-P2: INFILT BASIN

Inflow Area = 155,772 sf,100.00% Impervious, Inflow Depth = 1.03" for 1.25 inch event
Inflow = 10.47 cfs @ 1.11 hrs, Volume= 13,430 cf
Outflow = 0.32 cfs @ 2.04 hrs, Volume= 11,265 cf, Atten= 97%, Lag= 56.1 min
Primary = 0.32 cfs @ 2.04 hrs, Volume= 11,265 cf
Routed to Reach DP-3PR : REGIONAL SWALE
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach DP-3PR : REGIONAL SWALE

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 77.01' @ 2.04 hrs Surf.Area= 120,809 sf Storage= 12,273 cf

Plug-Flow detention time= 368.2 min calculated for 11,265 cf (84% of inflow)
Center-of-Mass det. time= 362.5 min (432.8 - 70.3)

Volume	Invert	Avail.Storage	Storage Description
#1	74.67'	124,126 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 354,645 cf Overall x 35.0% Voids

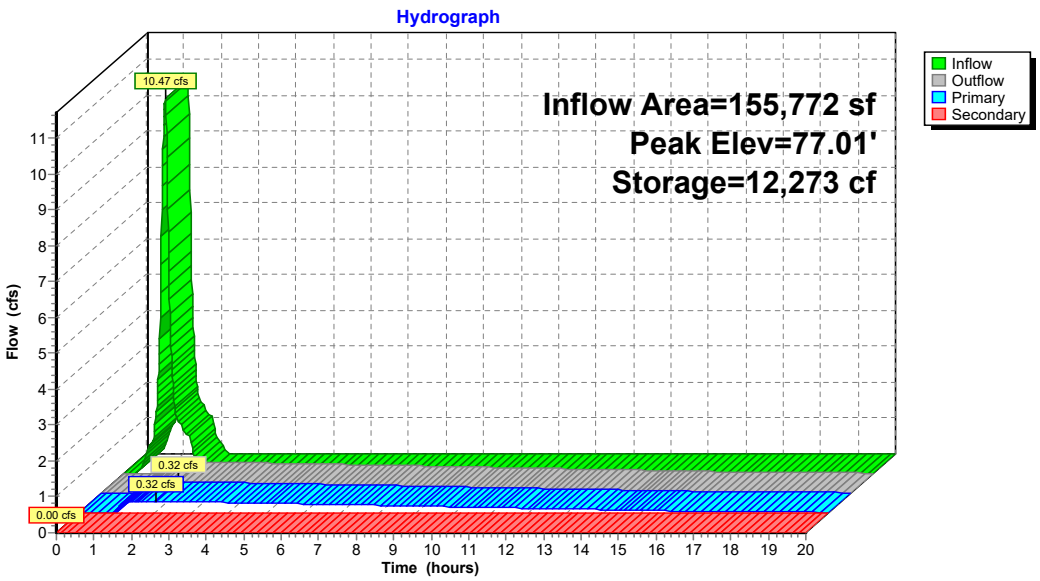
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
74.67	14,517	0	0
77.00	14,517	33,825	33,825
77.01	120,809	677	34,501
79.66	120,809	320,144	354,645

Device	Routing	Invert	Outlet Devices
#1	Secondary	77.50'	**24.0" Round Culvert** L= 353.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 77.50' / 76.50' S= 0.0028 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 3.14 sf
#2	Primary	75.00'	**3.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 75.00' / 74.90' S= 0.0100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.05 sf

Primary OutFlow Max=0.32 cfs @ 2.04 hrs HW=77.01' (Free Discharge)
└**2=Culvert** (Inlet Controls 0.32 cfs @ 6.62 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=74.67' (Free Discharge)
└**1=Culvert** (Controls 0.00 cfs)

Pond BB-P2: INFILT BASIN



Time span=0.00-20.00 hrs, dt=0.01 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentPR-10: PR-10 TO SOFTBALL TD Runoff Area=61,785 sf 5.95% Impervious Runoff Depth>0.58"
Flow Length=277' Tc=9.3 min CN=61/98 Runoff=0.82 cfs 2,991 cf

SubcatchmentPR-11: PR-11 POROUS WALK Runoff Area=2,299 sf 100.00% Impervious Runoff Depth>2.94"
Tc=6.0 min CN=0/98 Runoff=0.19 cfs 563 cf

SubcatchmentPR-12: PR-12 TO POROUS WALK Runoff Area=43,047 sf 4.00% Impervious Runoff Depth>0.53"
Flow Length=205' Tc=8.4 min CN=61/98 Runoff=0.54 cfs 1,909 cf

SubcatchmentPR-20: PR-20 CROSS COUNTRY Runoff Area=391,772 sf 0.00% Impervious Runoff Depth>0.43"
Tc=25.5 min CN=61/0 Runoff=2.38 cfs 13,936 cf

SubcatchmentPR-30: TO POROUS WALK 2 Runoff Area=18,645 sf 8.43% Impervious Runoff Depth>0.64"
Tc=6.0 min CN=61/98 Runoff=0.32 cfs 1,001 cf

SubcatchmentPR-31: Plaza Runoff Area=13,728 sf 46.55% Impervious Runoff Depth>1.60"
Tc=6.0 min CN=61/98 Runoff=0.60 cfs 1,830 cf

SubcatchmentPR-32: PR-32 TO SOFTBALL Runoff Area=25,435 sf 3.14% Impervious Runoff Depth>0.51"
Tc=6.0 min CN=61/98 Runoff=0.35 cfs 1,084 cf

SubcatchmentPR-34: SLOPE TO REGIONAL SWALE Runoff Area=21,534 sf 0.00% Impervious Runoff Depth>0.43"
Flow Length=142' Tc=7.1 min CN=61/0 Runoff=0.23 cfs 776 cf

SubcatchmentPR-35: FIELD AND ROOF Runoff Area=155,772 sf 100.00% Impervious Runoff Depth>2.94"
Tc=6.0 min CN=0/98 Runoff=12.67 cfs 38,164 cf

SubcatchmentPR-36: GRASS/LANDSCAPING Runoff Area=29,400 sf 0.00% Impervious Runoff Depth>0.43"
Flow Length=576' Tc=10.1 min CN=61/0 Runoff=0.27 cfs 1,057 cf

SubcatchmentPR-37: PR-37 TOWARD SWALE Runoff Area=36,798 sf 1.01% Impervious Runoff Depth>0.45"
Flow Length=1,093' Tc=20.2 min CN=61/98 Runoff=0.27 cfs 1,391 cf

SubcatchmentPR-38: BULLPEN Runoff Area=1,798 sf 100.00% Impervious Runoff Depth>2.94"
Tc=6.0 min CN=0/98 Runoff=0.15 cfs 441 cf

SubcatchmentPR-40: PR-40 TOWARD TENNIS Runoff Area=7,153 sf 37.96% Impervious Runoff Depth>1.38"
Tc=6.0 min CN=61/98 Runoff=0.27 cfs 825 cf

SubcatchmentPR-50: PR-50 REGIOINAL SWALE Runoff Area=62,111 sf 0.00% Impervious Runoff Depth>0.43"
Tc=6.0 min CN=61/0 Runoff=0.72 cfs 2,240 cf

SubcatchmentPR33B: PR-33B Runoff Area=550 sf 100.00% Impervious Runoff Depth>2.94"
Tc=6.0 min CN=0/98 Runoff=0.04 cfs 135 cf

SubcatchmentPR33C: PR-33C Runoff Area=550 sf 100.00% Impervious Runoff Depth>2.94"
Tc=6.0 min CN=0/98 Runoff=0.04 cfs 135 cf

SubcatchmentPR33D: PR-33E Runoff Area=550 sf 100.00% Impervious Runoff Depth>2.94"
Tc=6.0 min CN=0/98 Runoff=0.04 cfs 135 cf

SubcatchmentPR33E: PR-33E Runoff Area=550 sf 100.00% Impervious Runoff Depth>2.94"
Tc=6.0 min CN=0/98 Runoff=0.04 cfs 135 cf

SubcatchmentPR33F: PR-33F Runoff Area=550 sf 100.00% Impervious Runoff Depth>2.94"
Tc=6.0 min CN=0/98 Runoff=0.04 cfs 135 cf

SubcatchmentPR33G: PR-33F Runoff Area=1,100 sf 100.00% Impervious Runoff Depth>2.94"
Tc=6.0 min CN=0/98 Runoff=0.09 cfs 269 cf

SubcatchmentPR33H: PR-33H Runoff Area=3,713 sf 96.01% Impervious Runoff Depth>2.84"
Tc=6.0 min CN=61/98 Runoff=0.29 cfs 879 cf

SubcatchmentPR33I: PR-33I Runoff Area=2,005 sf 92.52% Impervious Runoff Depth>2.75"
Tc=6.0 min CN=61/98 Runoff=0.15 cfs 460 cf

SubcatchmentPR33J: PR-33J Runoff Area=1,945 sf 56.56% Impervious Runoff Depth>1.85"
Tc=6.0 min CN=61/98 Runoff=0.10 cfs 300 cf

SubcatchmentPR33K: PR-33F Runoff Area=1,309 sf 56.07% Impervious Runoff Depth>1.84"
Tc=6.0 min CN=61/98 Runoff=0.07 cfs 201 cf

Reach DP-3PR: REGIONAL SWALE Inflow=1.03 cfs 18,626 cf
Outflow=1.03 cfs 18,626 cf

Reach DP1PR: Softball Inflow=1.13 cfs 4,074 cf
Outflow=1.13 cfs 4,074 cf

Pond 33B: CELL B Peak Elev=83.89' Storage=80 cf Inflow=0.04 cfs 135 cf
Primary=0.01 cfs 72 cf Secondary=0.00 cfs 0 cf Outflow=0.01 cfs 72 cf

Pond 33C: CELL C Peak Elev=83.51' Storage=87 cf Inflow=0.05 cfs 206 cf
Primary=0.02 cfs 141 cf Secondary=0.00 cfs 0 cf Outflow=0.02 cfs 141 cf

Pond 33D: CELL D Peak Elev=83.12' Storage=92 cf Inflow=0.05 cfs 276 cf
Primary=0.03 cfs 209 cf Secondary=0.00 cfs 0 cf Outflow=0.03 cfs 209 cf

Pond 33E: CELL E Peak Elev=82.72' Storage=97 cf Inflow=0.05 cfs 344 cf
Primary=0.03 cfs 276 cf Secondary=0.00 cfs 0 cf Outflow=0.03 cfs 276 cf

Pond 33F: CELL F Peak Elev=82.33' Storage=101 cf Inflow=0.05 cfs 410 cf
Primary=0.03 cfs 341 cf Secondary=0.00 cfs 0 cf Outflow=0.03 cfs 341 cf

Pond 33G: CELL G Peak Elev=81.52' Storage=211 cf Inflow=0.09 cfs 611 cf
Primary=0.04 cfs 467 cf Secondary=0.00 cfs 0 cf Outflow=0.04 cfs 467 cf

Pond 33H: CELL H Peak Elev=81.02' Storage=595 cf Inflow=0.30 cfs 1,346 cf
Primary=0.06 cfs 954 cf Secondary=0.00 cfs 0 cf Outflow=0.06 cfs 954 cf

Pond 33I: CELL I Peak Elev=79.80' Storage=475 cf Inflow=0.18 cfs 1,414 cf
Primary=0.06 cfs 1,139 cf Secondary=0.00 cfs 0 cf Outflow=0.06 cfs 1,139 cf

Pond 33J: CELL J Peak Elev=79.01' Storage=286 cf Inflow=0.10 cfs 1,439 cf
Primary=0.06 cfs 1,268 cf Secondary=0.00 cfs 0 cf Outflow=0.06 cfs 1,268 cf

Pond 33K: CELL K Peak Elev=78.69' Storage=208 cf Inflow=0.07 cfs 1,469 cf
Primary=0.06 cfs 1,334 cf Secondary=0.00 cfs 0 cf Outflow=0.06 cfs 1,334 cf

Pond 33L: OUTLET PIPE Peak Elev=76.11' Storage=1 cf Inflow=0.06 cfs 1,334 cf
Outflow=0.06 cfs 1,333 cf

Pond BB-2A: BULLPEN Peak Elev=79.20' Storage=144 cf Inflow=0.15 cfs 441 cf
3.0" Round Culvert n=0.010 L=10.0' S=0.0100 '/' Outflow=0.06 cfs 417 cf

Pond BB-4P: POROUS WALK-2 Peak Elev=88.03' Storage=646 cf Inflow=0.62 cfs 2,656 cf
Primary=0.00 cfs 16 cf Secondary=0.38 cfs 2,010 cf Outflow=0.38 cfs 2,026 cf

Pond BB-5P: POROUS WALK 1 Peak Elev=91.03' Storage=829 cf Inflow=0.70 cfs 2,473 cf
Primary=0.00 cfs 11 cf Secondary=0.45 cfs 1,656 cf Outflow=0.46 cfs 1,667 cf

Pond BB-P1: Plaza Peak Elev=82.12' Storage=2,861 cf Inflow=0.60 cfs 3,840 cf
12.0" Round Culvert n=0.010 L=10.0' S=0.1100 '/' Outflow=0.06 cfs 1,028 cf

Pond BB-P2: INFILT BASIN Peak Elev=77.38' Storage=27,677 cf Inflow=12.67 cfs 38,164 cf
Primary=0.35 cfs 12,596 cf Secondary=0.00 cfs 0 cf Outflow=0.35 cfs 12,596 cf

Total Runoff Area = 884,099 sf Runoff Volume = 70,989 cf Average Runoff Depth = 0.96"
78.71% Pervious = 695,882 sf 21.29% Impervious = 188,217 sf

Summary for Subcatchment PR-10: PR-10 TO SOFTBALL TD

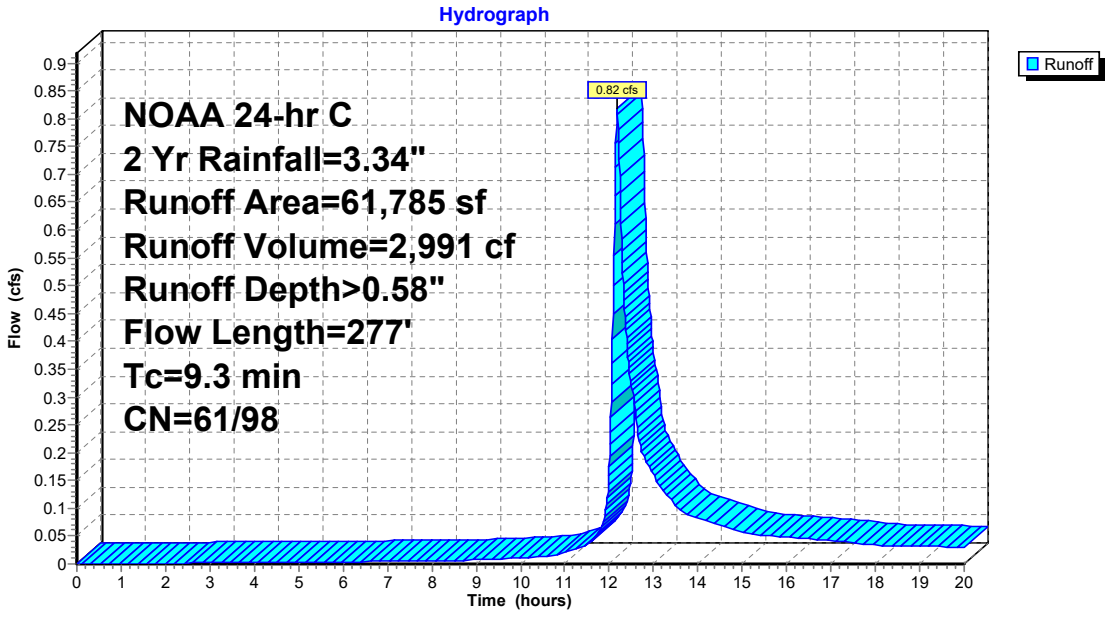
Runoff = 0.82 cfs @ 12.18 hrs, Volume= 2,991 cf, Depth> 0.58"
Routed to Reach DP1PR : Softball

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2 Yr Rainfall=3.34"

Area (sf)	CN	Description
58,109	61	>75% Grass cover, Good, HSG B
3,676	98	Paved roads w/curbs & sewers, HSG B
61,785	63	Weighted Average
58,109	61	94.05% Pervious Area
3,676	98	5.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0150	0.13		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.34"
3.1	227	0.0300	1.21		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
9.3	277	Total			

Subcatchment PR-10: PR-10 TO SOFTBALL TD



Summary for Subcatchment PR-11: PR-11 POROUS WALK

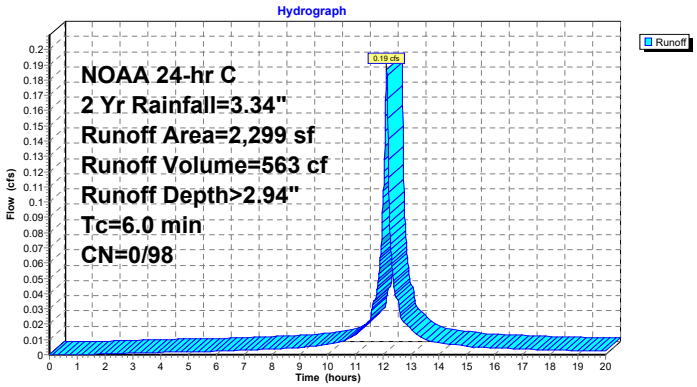
Runoff = 0.19 cfs @ 12.13 hrs, Volume= 563 cf, Depth> 2.94"
Routed to Pond BB-5P : POROUS WALK 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2 Yr Rainfall=3.34"

Area (sf)	CN	Description
2,299	98	Paved roads w/curbs & sewers, HSG B
2,299	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Surface**

Subcatchment PR-11: PR-11 POROUS WALK



Summary for Subcatchment PR-12: PR-12 TO POROUS WALK

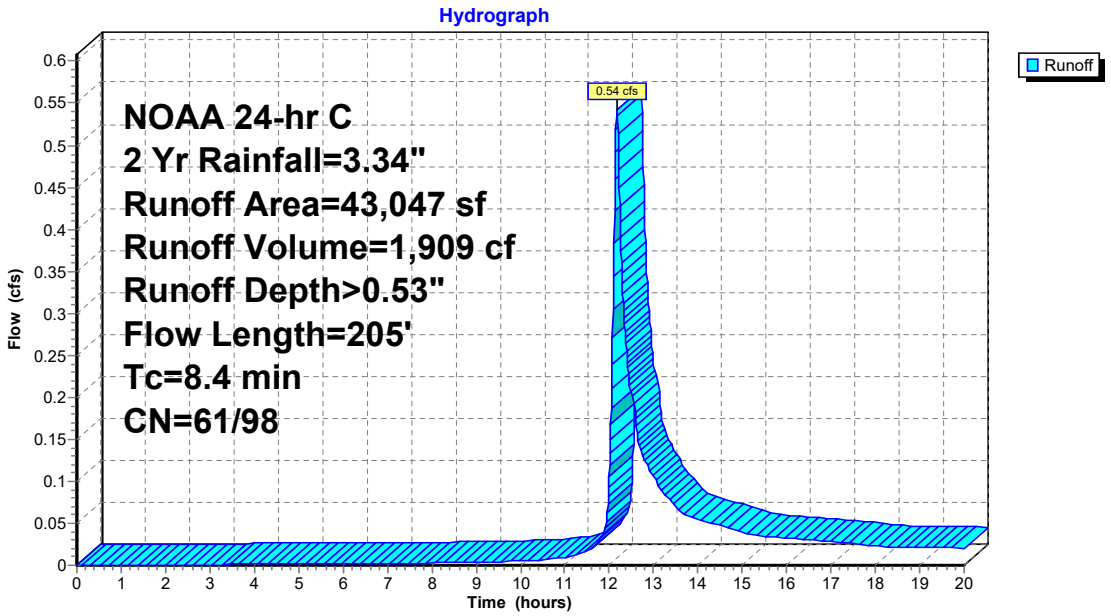
Runoff = 0.54 cfs @ 12.17 hrs, Volume= 1,909 cf, Depth> 0.53"
Routed to Pond BB-5P : POROUS WALK 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2 Yr Rainfall=3.34"

Area (sf)	CN	Description
41,325	61	>75% Grass cover, Good, HSG B
1,722	98	Paved roads w/curbs & sewers, HSG B
43,047	62	Weighted Average
41,325	61	96.00% Pervious Area
1,722	98	4.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0150	0.13		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.34"
2.2	155	0.0290	1.19		**Shallow Concentrated Flow, Shallow Conc** Short Grass Pasture Kv= 7.0 fps
8.4	205	Total			

Subcatchment PR-12: PR-12 TO POROUS WALK



Summary for Subcatchment PR-20: PR-20 CROSS COUNTRY

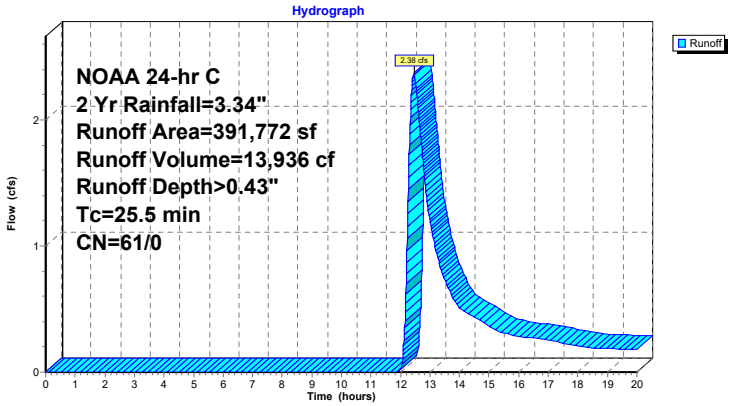
Runoff = 2.38 cfs @ 12.45 hrs, Volume= 13,936 cf, Depth> 0.43"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2 Yr Rainfall=3.34"

Area (sf)	CN	Description
391,772	61	>75% Grass cover, Good, HSG B
391,772	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.5					Direct Entry, Same as Exist

Subcatchment PR-20: PR-20 CROSS COUNTRY



Summary for Subcatchment PR-30: TO POROUS WALK 2

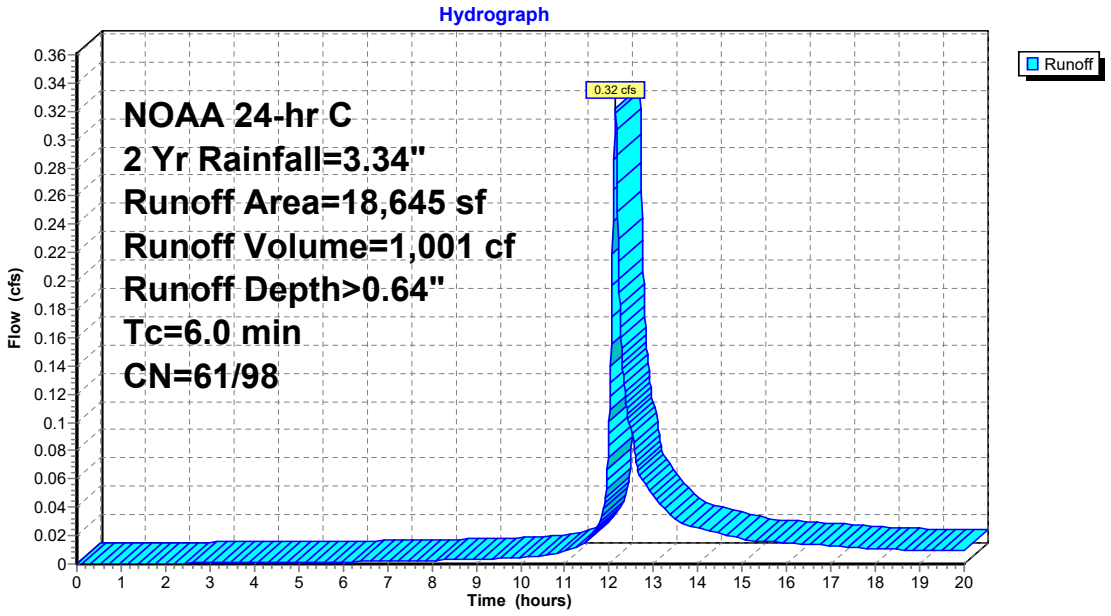
Runoff = 0.32 cfs @ 12.14 hrs, Volume= 1,001 cf, Depth> 0.64"
Routed to Pond BB-4P : POROUS WALK-2

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2 Yr Rainfall=3.34"

Area (sf)	CN	Description
17,074	61	>75% Grass cover, Good, HSG B
1,571	98	Paved parking, HSG A
18,645	64	Weighted Average
17,074	61	91.57% Pervious Area
1,571	98	8.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment PR-30: TO POROUS WALK 2



Summary for Subcatchment PR-31: Plaza

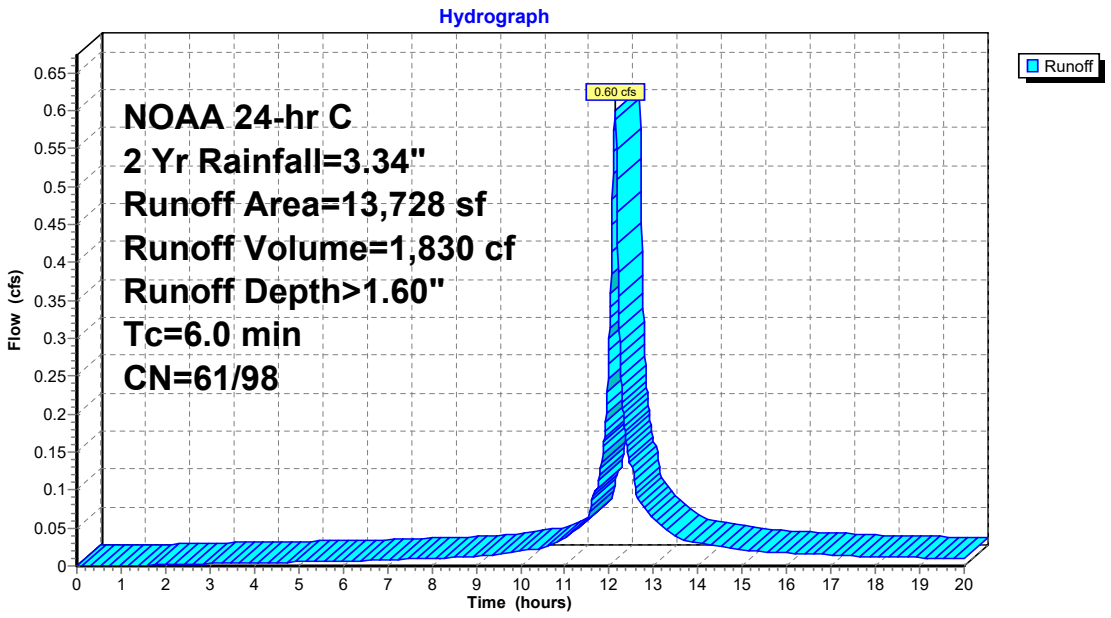
Runoff = 0.60 cfs @ 12.13 hrs, Volume= 1,830 cf, Depth> 1.60"
Routed to Pond BB-P1 : Plaza

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2 Yr Rainfall=3.34"

Area (sf)	CN	Description
6,391	98	Paved parking, HSG B
7,337	61	>75% Grass cover, Good, HSG B
13,728	78	Weighted Average
7,337	61	53.45% Pervious Area
6,391	98	46.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment PR-31: Plaza



Summary for Subcatchment PR-32: PR-32 TO SOFTBALL

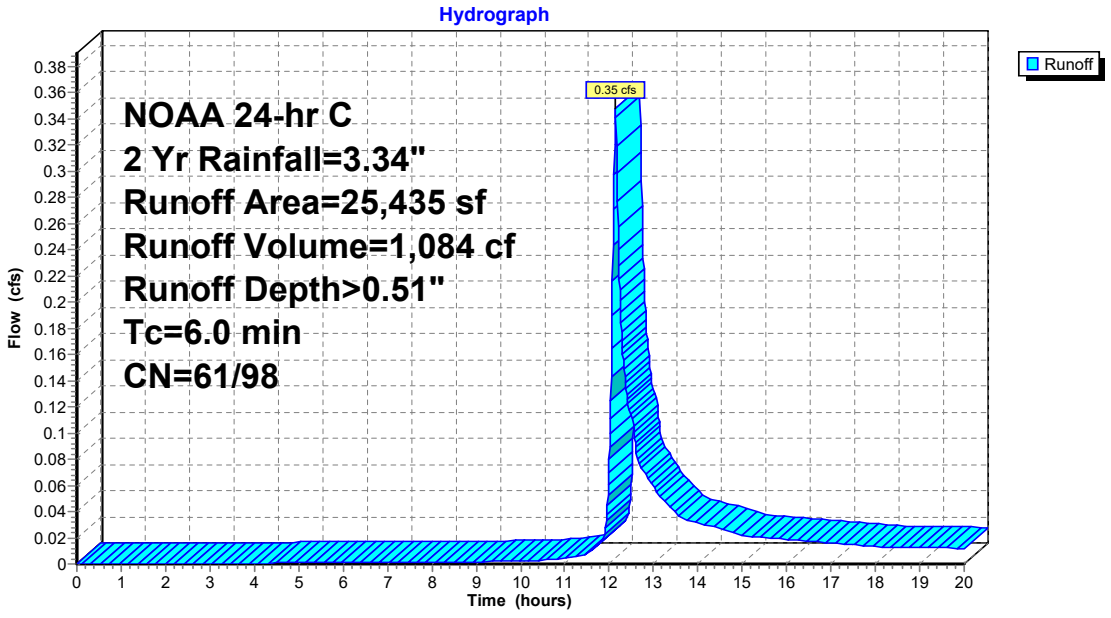
Runoff = 0.35 cfs @ 12.14 hrs, Volume= 1,084 cf, Depth> 0.51"
Routed to Reach DP1PR : Softball

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2 Yr Rainfall=3.34"

Area (sf)	CN	Description
24,637	61	>75% Grass cover, Good, HSG B
798	98	Paved parking, HSG A
25,435	62	Weighted Average
24,637	61	96.86% Pervious Area
798	98	3.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum**

Subcatchment PR-32: PR-32 TO SOFTBALL



Summary for Subcatchment PR-34: SLOPE TO REGIONAL SWALE

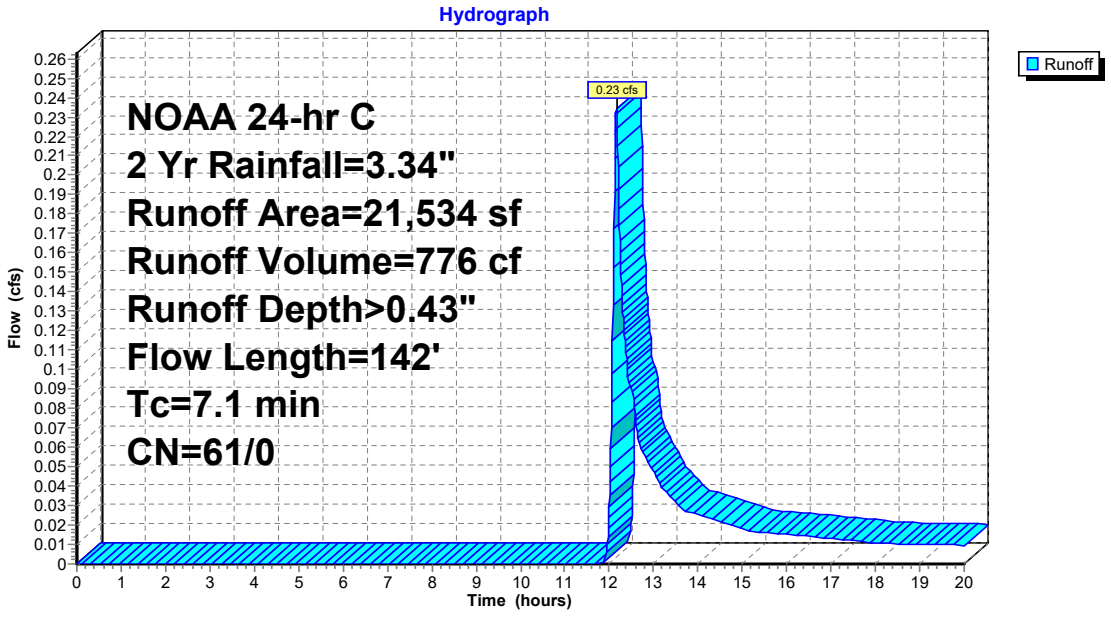
Runoff = 0.23 cfs @ 12.16 hrs, Volume= 776 cf, Depth> 0.43"
Routed to Reach DP-3PR : REGIONAL SWALE

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2 Yr Rainfall=3.34"

Area (sf)	CN	Description
21,534	61	>75% Grass cover, Good, HSG B
21,534	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0150	0.13		**Sheet Flow, SHEET FLOW** Grass: Short n= 0.150 P2= 3.34"
0.9	92	0.0570	1.67		**Shallow Concentrated Flow, SHALLOW CONC** Short Grass Pasture Kv= 7.0 fps
7.1	142	Total			

Subcatchment PR-34: SLOPE TO REGIONAL SWALE



Summary for Subcatchment PR-35: FIELD AND ROOF

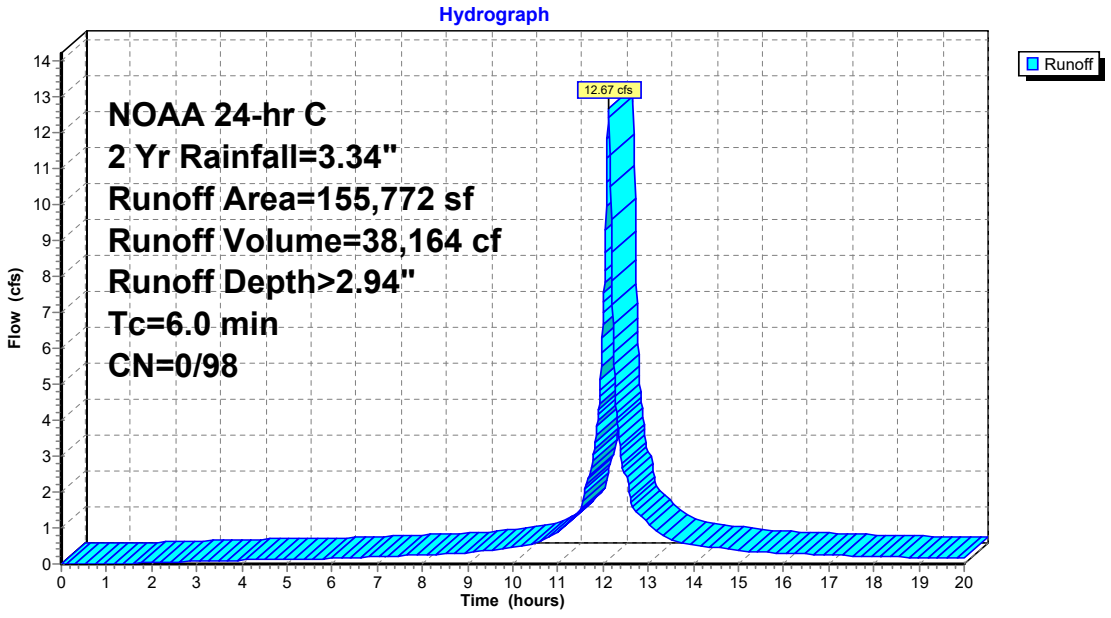
Runoff = 12.67 cfs @ 12.13 hrs, Volume= 38,164 cf, Depth> 2.94"
Routed to Pond BB-P2 : INFILT BASIN

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2 Yr Rainfall=3.34"

Area (sf)	CN	Description
155,772	98	Roofs, HSG B
0	61	>75% Grass cover, Good, HSG B
155,772	98	Weighted Average
155,772	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT**

Subcatchment PR-35: FIELD AND ROOF



Summary for Subcatchment PR-36: GRASS/LANDSCAPING

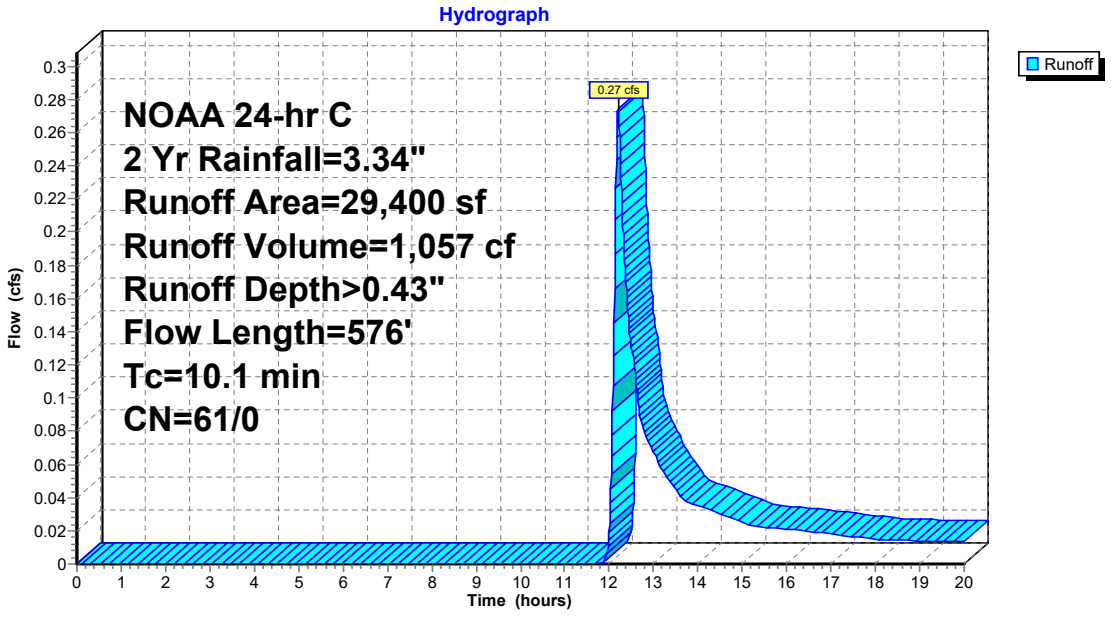
Runoff = 0.27 cfs @ 12.20 hrs, Volume= 1,057 cf, Depth> 0.43"
Routed to Reach DP-3PR : REGIONAL SWALE

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2 Yr Rainfall=3.34"

Area (sf)	CN	Description
29,400	61	>75% Grass cover, Good, HSG B
29,400	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.34"
1.7	116	0.0050	1.14		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.7	235	0.0120	5.38	4.23	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
0.4	175	0.0100	7.80	24.51	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012
10.1	576	Total			

Subcatchment PR-36: GRASS/LANDSCAPING



Summary for Subcatchment PR-37: PR-37 TOWARD SWALE

Runoff = 0.27 cfs @ 12.37 hrs, Volume= 1,391 cf, Depth> 0.45"
Routed to Reach DP-3PR : REGIONAL SWALE

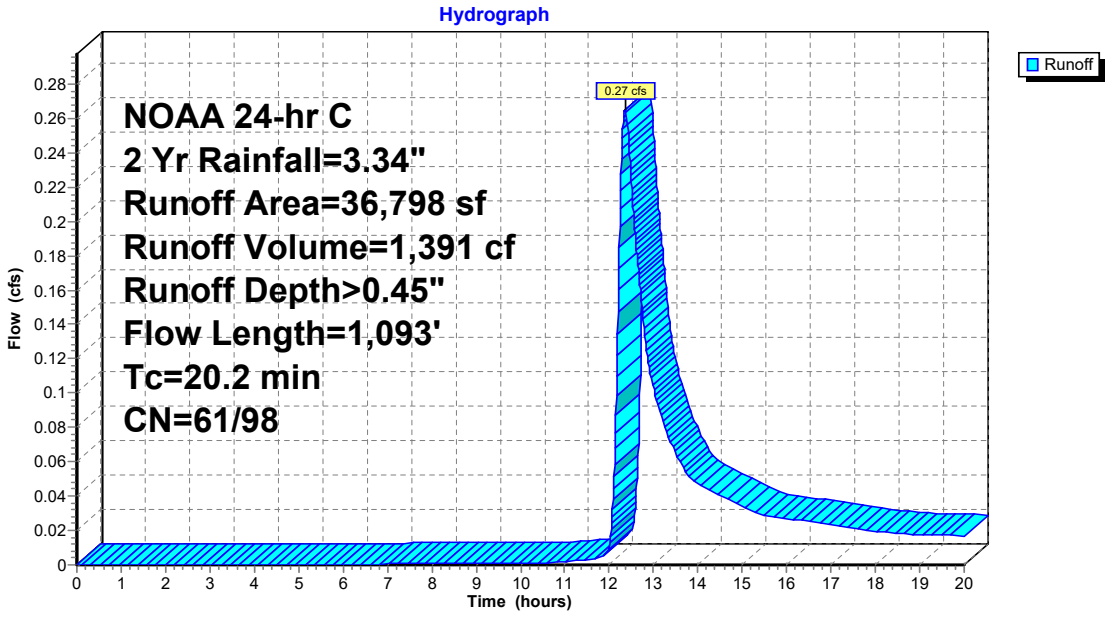
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2 Yr Rainfall=3.34"

Area (sf)	CN	Description
36,427	61	>75% Grass cover, Good, HSG B
371	98	Paved roads w/curbs & sewers, HSG B
36,798	61	Weighted Average
36,427	61	98.99% Pervious Area
371	98	1.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.34"
2.2	242	0.0130	1.84		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	104	0.0190	5.17	1.80	**Pipe Channel, 8"** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012 Corrugated PP, smooth interior
0.5	118	0.0100	4.35	2.37	**Pipe Channel, 10"** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.012 Corrugated PP, smooth interior
0.2	143	0.0126	11.47	81.11	**Pipe Channel, 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012
0.1	104	0.0133	11.79	83.33	**Pipe Channel, 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012
9.6	332	0.0032	0.58	4.09	**Pipe Channel, 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.120

20.2	1,093	Total

Subcatchment PR-37: PR-37 TOWARD SWALE



Summary for Subcatchment PR-38: BULLPEN

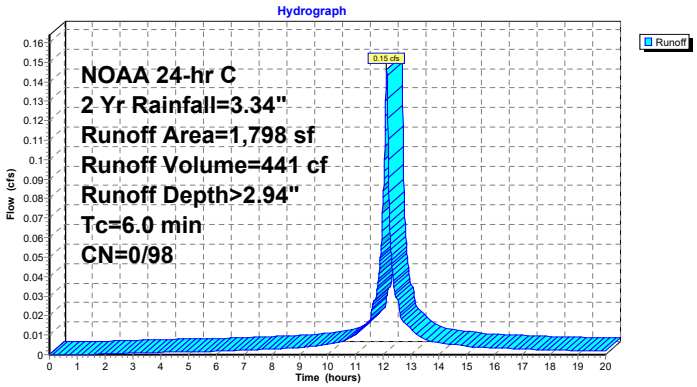
Runoff = 0.15 cfs @ 12.13 hrs, Volume= 441 cf, Depth> 2.94"
Routed to Pond BB-2A : BULLPEN

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2 Yr Rainfall=3.34"

Area (sf)	CN	Description
1,798	98	Paved parking, HSG B
1,798	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment PR-38: BULLPEN



Summary for Subcatchment PR-40: PR-40 TOWARD TENNIS

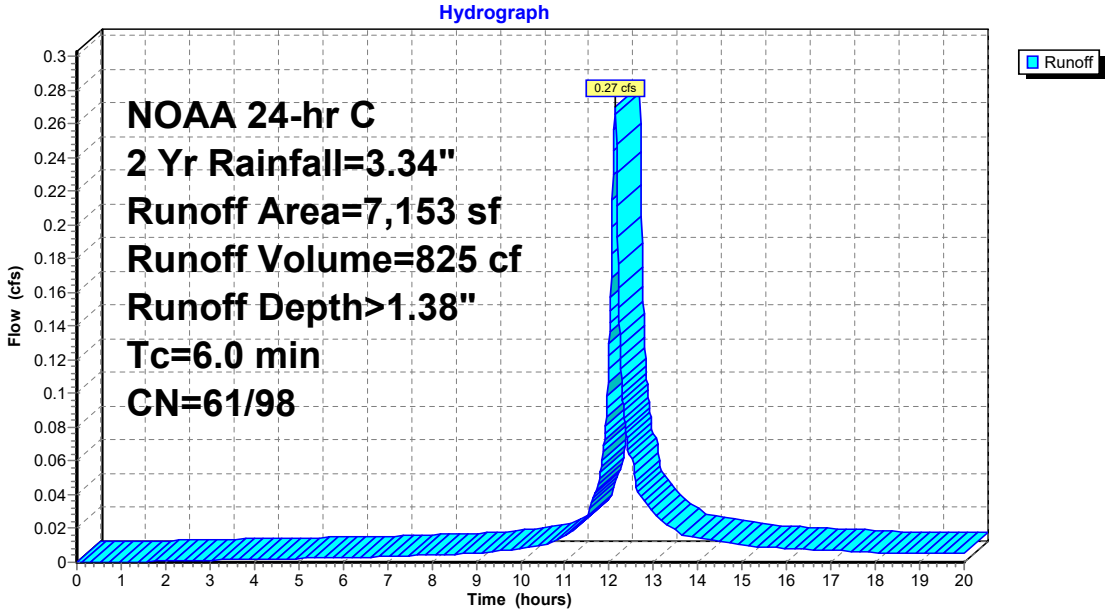
Runoff = 0.27 cfs @ 12.13 hrs, Volume= 825 cf, Depth> 1.38"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2 Yr Rainfall=3.34"

Area (sf)	CN	Description
4,438	61	>75% Grass cover, Good, HSG B
0	61	>75% Grass cover, Good, HSG B
2,715	98	Paved roads w/curbs & sewers, HSG B
7,153	75	Weighted Average
4,438	61	62.04% Pervious Area
2,715	98	37.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR-40: PR-40 TOWARD TENNIS



Summary for Subcatchment PR-50: PR-50 REGIOINAL SWALE

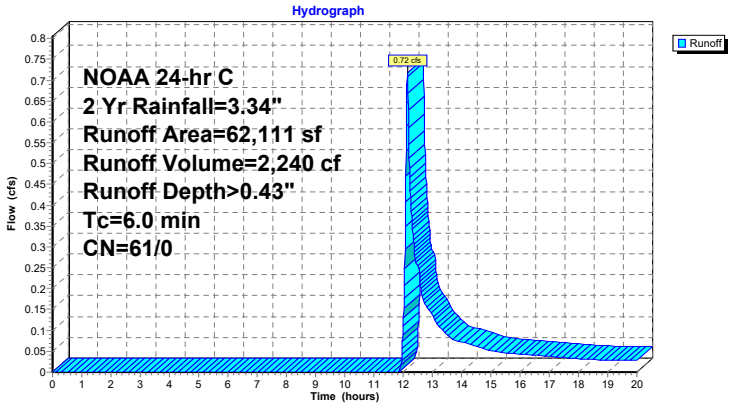
Runoff = 0.72 cfs @ 12.15 hrs, Volume= 2,240 cf, Depth> 0.43"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2 Yr Rainfall=3.34"

Area (sf)	CN	Description
62,111	61	>75% Grass cover, Good, HSG B
62,111	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum**

Subcatchment PR-50: PR-50 REGIOINAL SWALE



Summary for Subcatchment PR33B: PR-33B

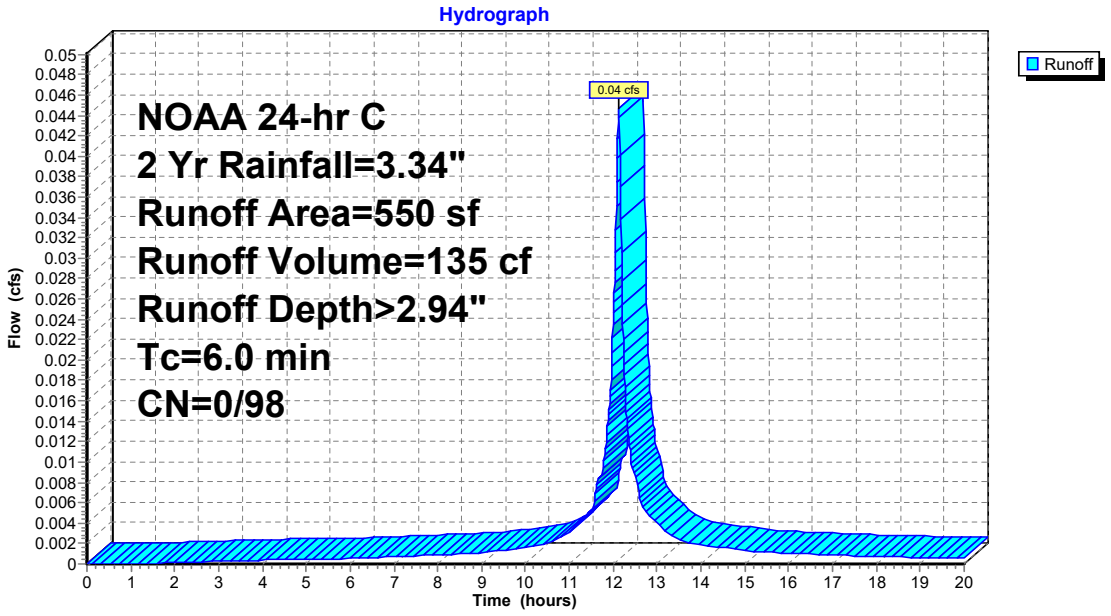
Runoff = 0.04 cfs @ 12.13 hrs, Volume= 135 cf, Depth> 2.94"
Routed to Pond 33B : CELL B

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2 Yr Rainfall=3.34"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
550	98	Paved parking, HSG B
550	98	Weighted Average
550	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33B: PR-33B



Summary for Subcatchment PR33C: PR-33C

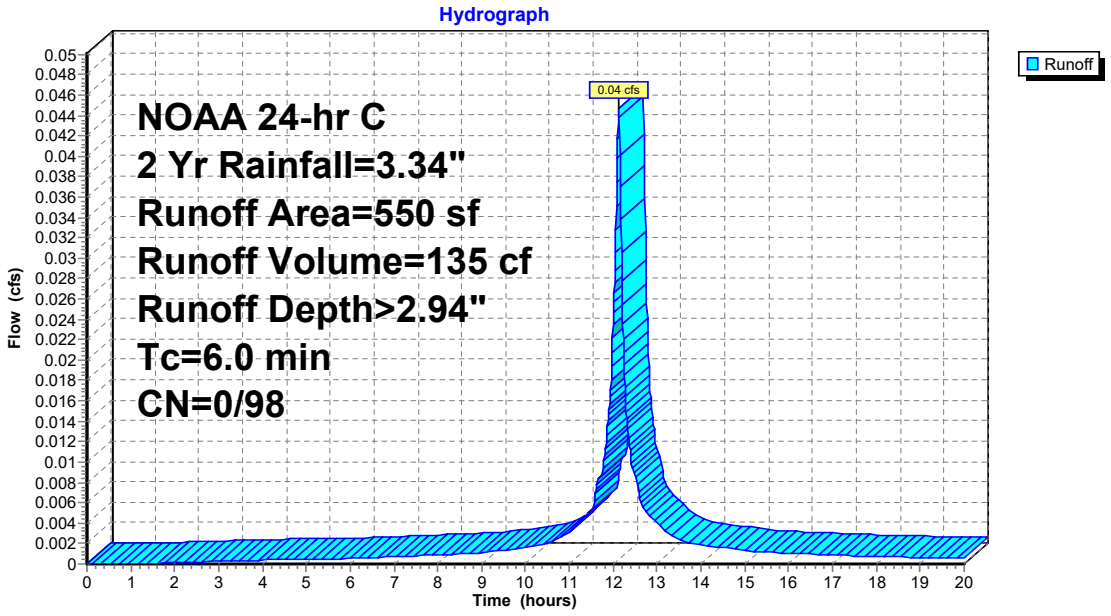
Runoff = 0.04 cfs @ 12.13 hrs, Volume= 135 cf, Depth> 2.94"
Routed to Pond 33C : CELL C

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2 Yr Rainfall=3.34"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
550	98	Paved parking, HSG B
550	98	Weighted Average
550	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33C: PR-33C



Summary for Subcatchment PR33D: PR-33E

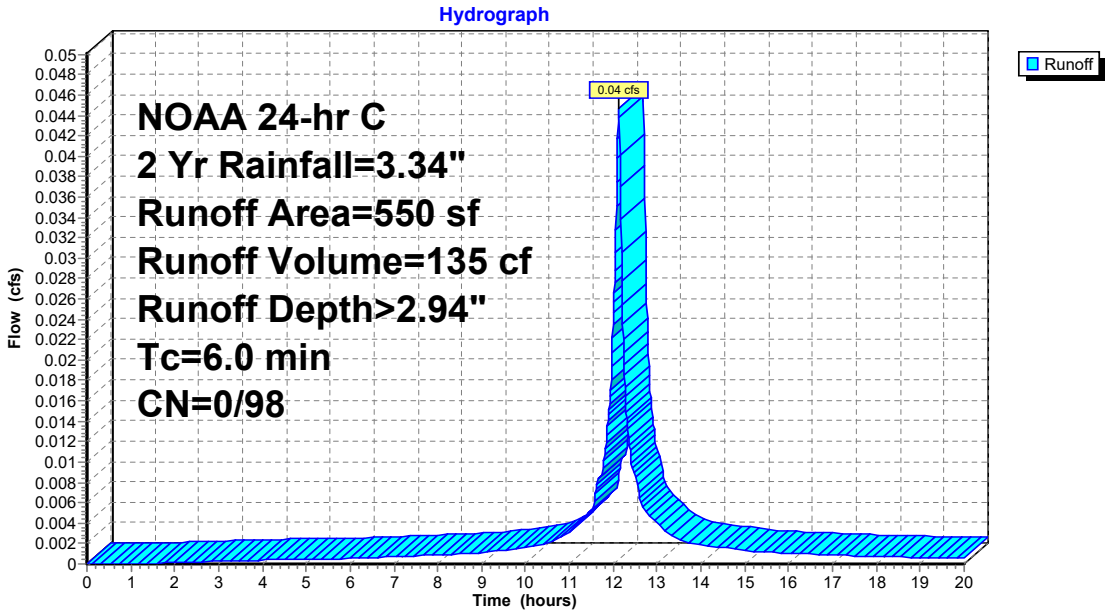
Runoff = 0.04 cfs @ 12.13 hrs, Volume= 135 cf, Depth> 2.94"
Routed to Pond 33D : CELL D

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2 Yr Rainfall=3.34"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
550	98	Paved parking, HSG B
550	98	Weighted Average
550	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33D: PR-33E



Summary for Subcatchment PR33E: PR-33E

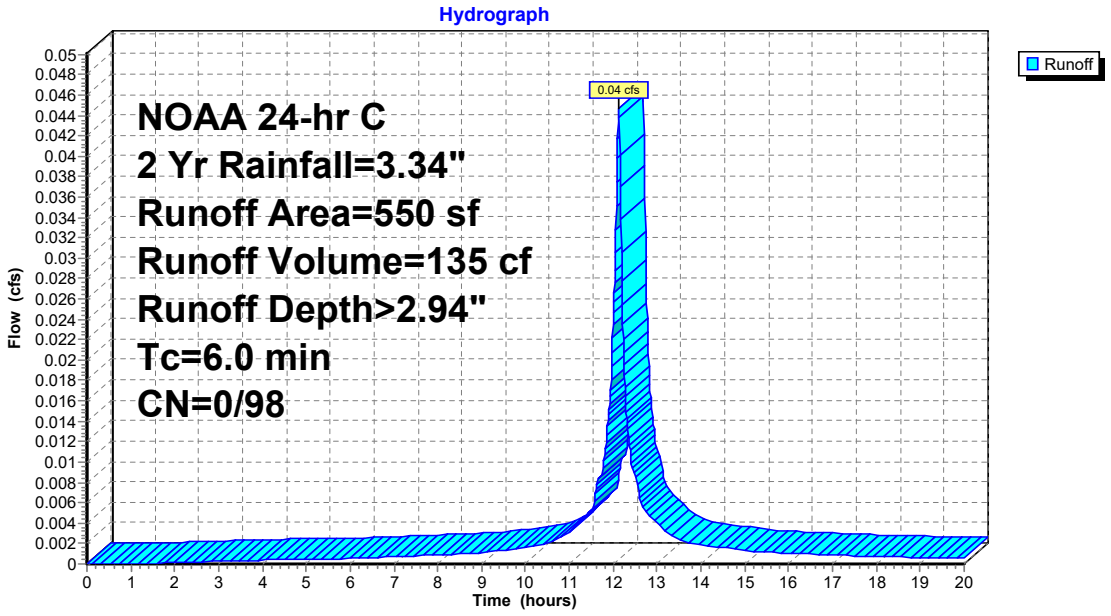
Runoff = 0.04 cfs @ 12.13 hrs, Volume= 135 cf, Depth> 2.94"
Routed to Pond 33E : CELL E

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2 Yr Rainfall=3.34"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
550	98	Paved parking, HSG B
550	98	Weighted Average
550	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33E: PR-33E



Summary for Subcatchment PR33F: PR-33F

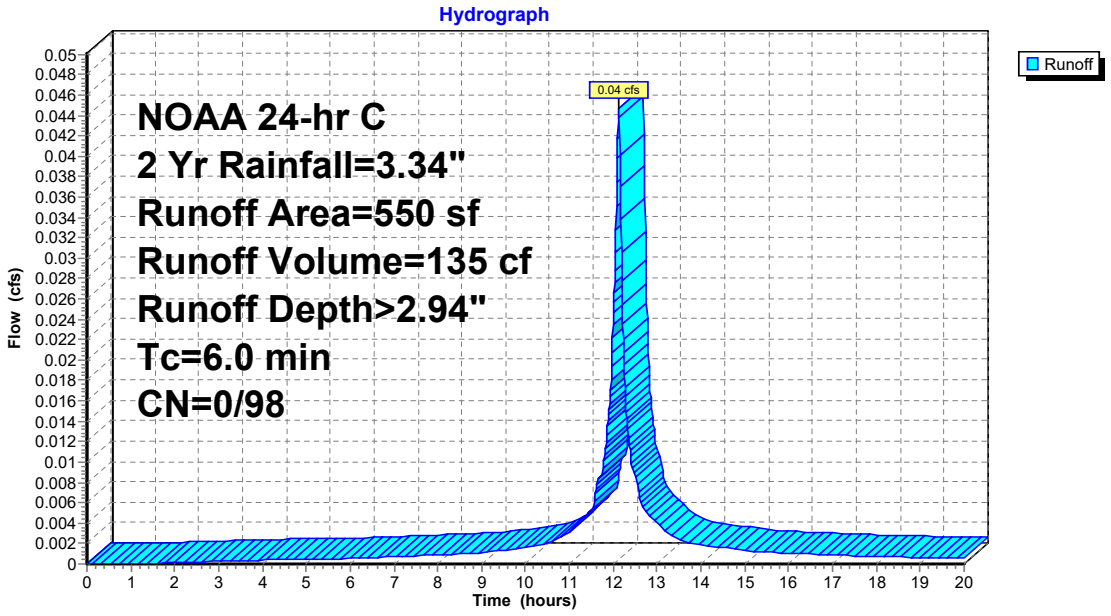
Runoff = 0.04 cfs @ 12.13 hrs, Volume= 135 cf, Depth> 2.94"
Routed to Pond 33F : CELL F

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2 Yr Rainfall=3.34"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
550	98	Paved parking, HSG B
550	98	Weighted Average
550	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33F: PR-33F



Summary for Subcatchment PR33G: PR-33F

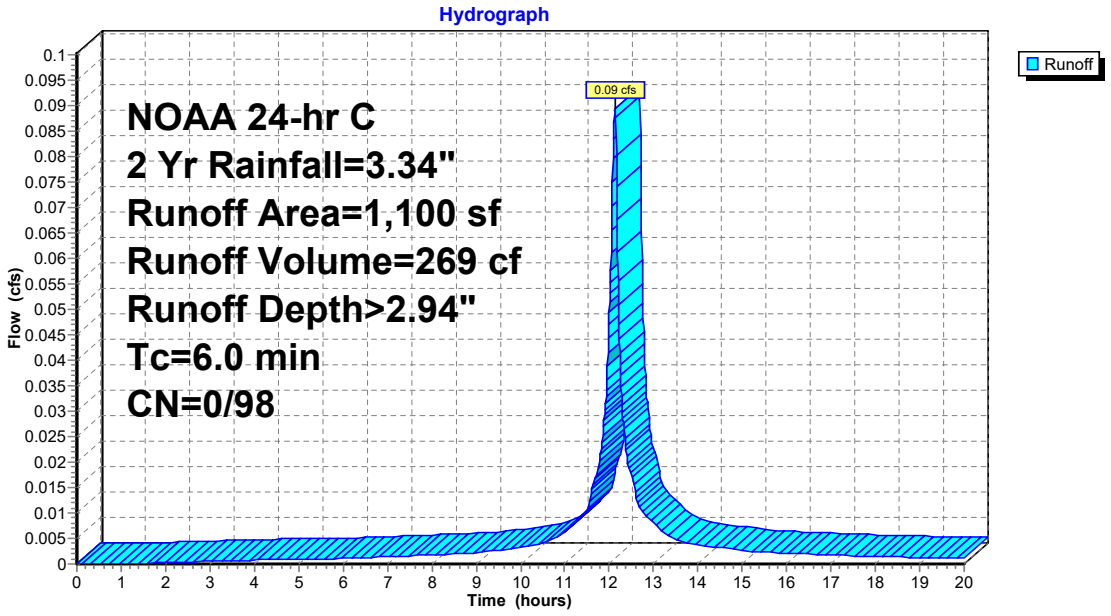
Runoff = 0.09 cfs @ 12.13 hrs, Volume= 269 cf, Depth> 2.94"
Routed to Pond 33G : CELL G

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2 Yr Rainfall=3.34"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
1,100	98	Paved parking, HSG B
1,100	98	Weighted Average
1,100	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33G: PR-33F



Summary for Subcatchment PR33H: PR-33H

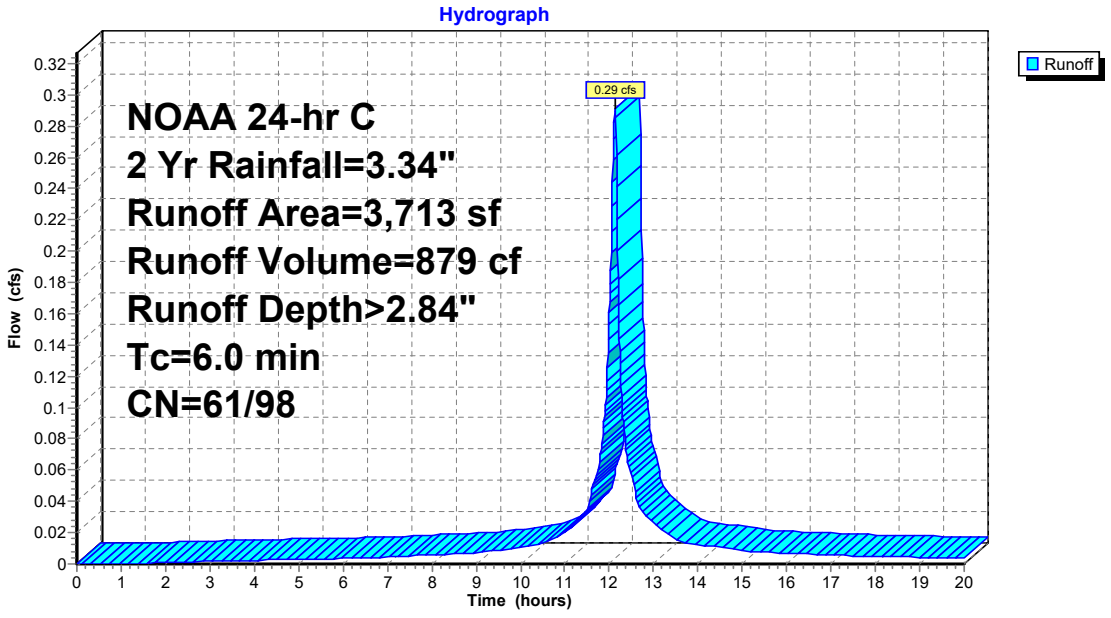
Runoff = 0.29 cfs @ 12.13 hrs, Volume= 879 cf, Depth> 2.84"
Routed to Pond 33H : CELL H

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2 Yr Rainfall=3.34"

	Area (sf)	CN	Description
	148	61	>75% Grass cover, Good, HSG B
*	1,634	98	Porous Pavers
*	1,931	98	Sidewalk
	3,713	97	Weighted Average
	148	61	3.99% Pervious Area
	3,565	98	96.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33H: PR-33H



Summary for Subcatchment PR33I: PR-33I

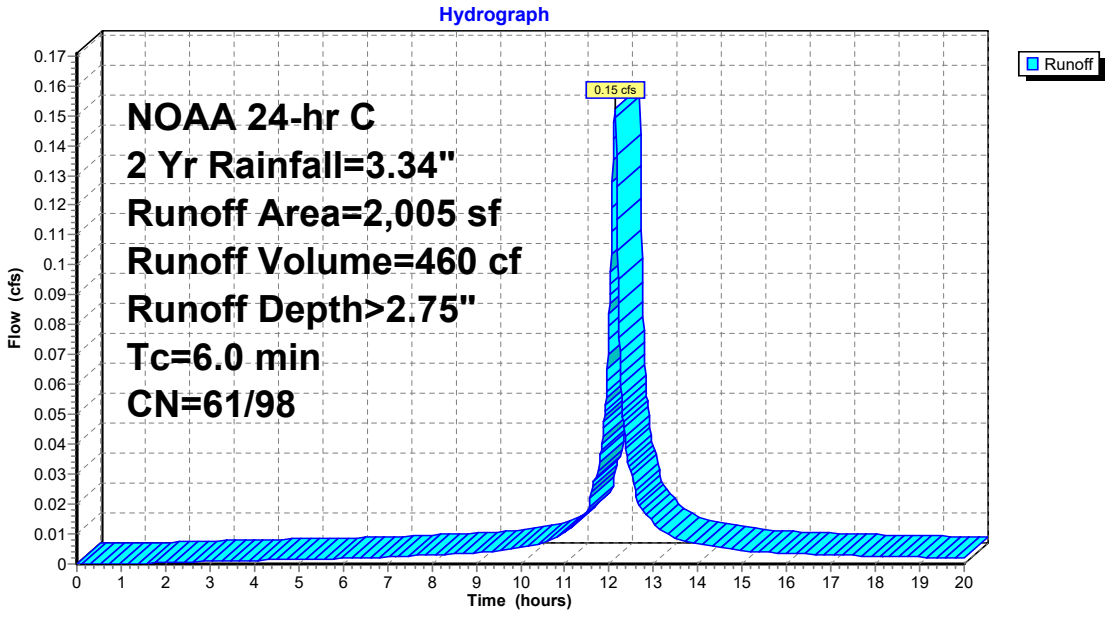
Runoff = 0.15 cfs @ 12.13 hrs, Volume= 460 cf, Depth> 2.75"
Routed to Pond 33I : CELL I

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2 Yr Rainfall=3.34"

Area (sf)	CN	Description
150	61	>75% Grass cover, Good, HSG B
1,855	98	Paved parking, HSG B
2,005	95	Weighted Average
150	61	7.48% Pervious Area
1,855	98	92.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33I: PR-33I



Summary for Subcatchment PR33J: PR-33J

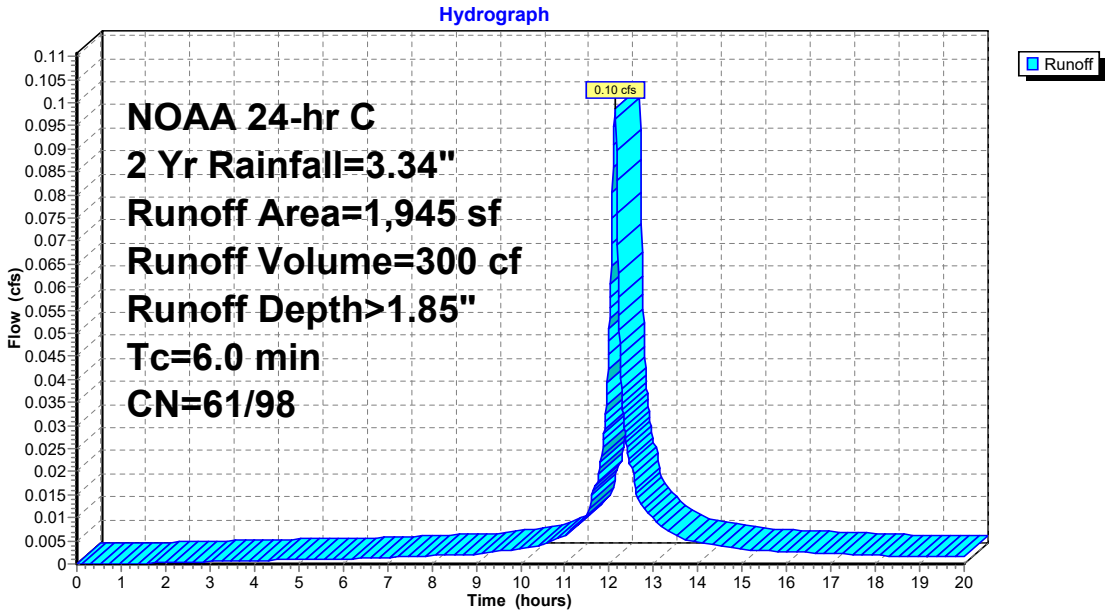
Runoff = 0.10 cfs @ 12.13 hrs, Volume= 300 cf, Depth> 1.85"
Routed to Pond 33J : CELL J

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2 Yr Rainfall=3.34"

Area (sf)	CN	Description
845	61	>75% Grass cover, Good, HSG B
1,100	98	Paved parking, HSG B
1,945	82	Weighted Average
845	61	43.44% Pervious Area
1,100	98	56.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33J: PR-33J



Summary for Subcatchment PR33K: PR-33F

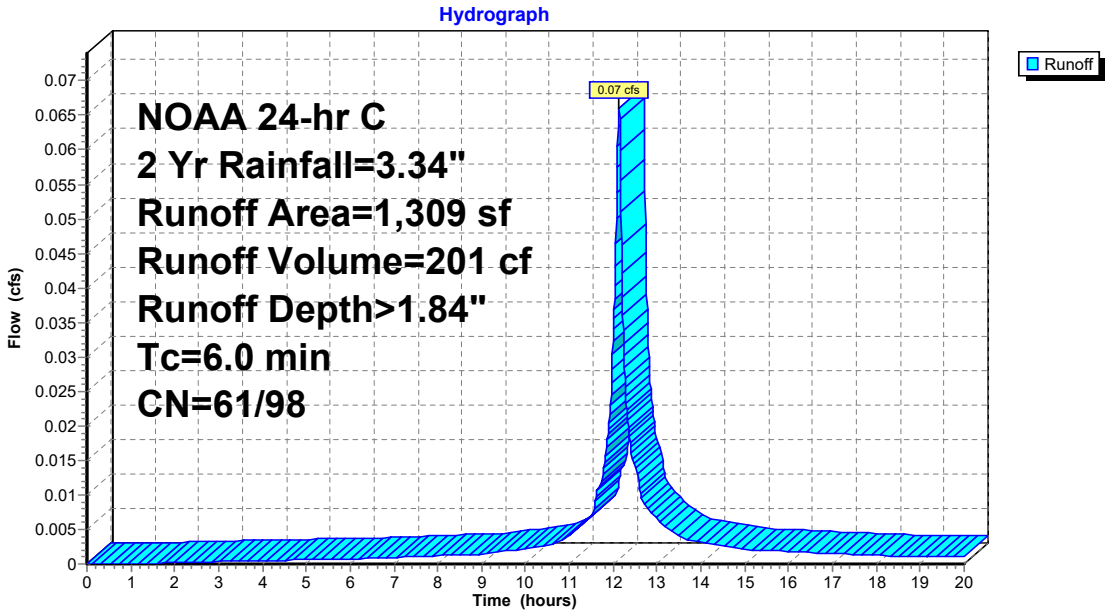
Runoff = 0.07 cfs @ 12.13 hrs, Volume= 201 cf, Depth> 1.84"
Routed to Pond 33K : CELL K

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2 Yr Rainfall=3.34"

Area (sf)	CN	Description
575	61	>75% Grass cover, Good, HSG B
734	98	Paved parking, HSG B
1,309	82	Weighted Average
575	61	43.93% Pervious Area
734	98	56.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33K: PR-33F



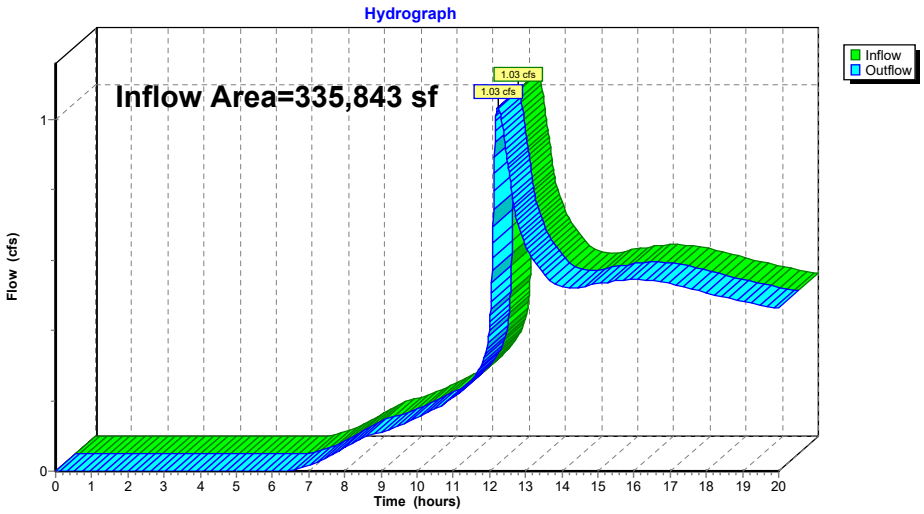
Summary for Reach DP-3PR: REGIONAL SWALE

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 335,843 sf, 53.90% Impervious, Inflow Depth > 0.67" for 2 Yr event
Inflow = 1.03 cfs @ 12.25 hrs, Volume= 18,626 cf
Outflow = 1.03 cfs @ 12.25 hrs, Volume= 18,626 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs

Reach DP-3PR: REGIONAL SWALE



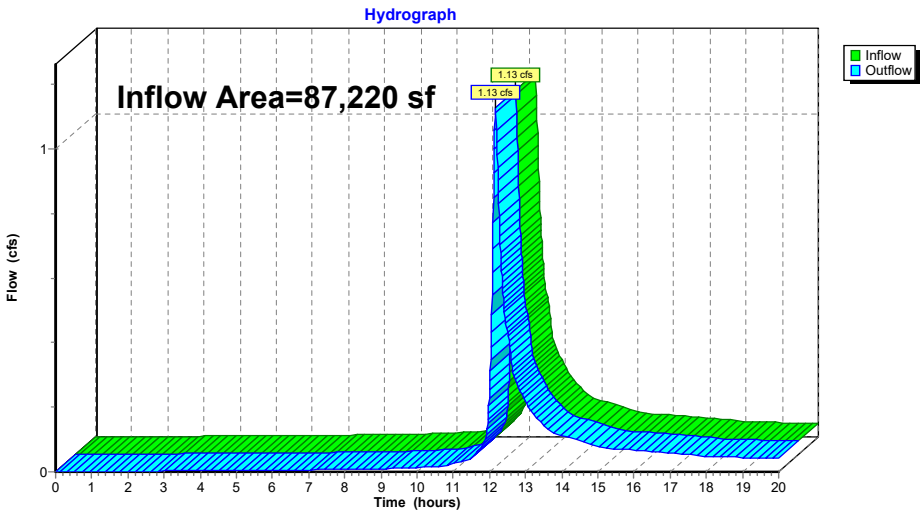
Summary for Reach DP1PR: Softball

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 87,220 sf, 5.13% Impervious, Inflow Depth > 0.56" for 2 Yr event
Inflow = 1.13 cfs @ 12.17 hrs, Volume= 4,074 cf
Outflow = 1.13 cfs @ 12.17 hrs, Volume= 4,074 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs

Reach DP1PR: Softball



Summary for Pond 33B: CELL B

Inflow Area = 550 sf,100.00% Impervious, Inflow Depth > 2.94" for 2 Yr event
Inflow = 0.04 cfs @ 12.13 hrs, Volume= 135 cf
Outflow = 0.01 cfs @ 12.33 hrs, Volume= 72 cf, Atten= 70%, Lag= 12.2 min
Primary = 0.01 cfs @ 12.33 hrs, Volume= 72 cf
Routed to Pond 33C : CELL C
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33C : CELL C

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 83.89' @ 12.33 hrs Surf.Area= 550 sf Storage= 80 cf

Plug-Flow detention time= 214.2 min calculated for 72 cf (53% of inflow)
Center-of-Mass det. time= 119.2 min (844.0 - 724.8)

Volume	Invert	Avail.Storage	Storage Description
#1	83.53'	440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,100 cf Overall x 40.0% Voids

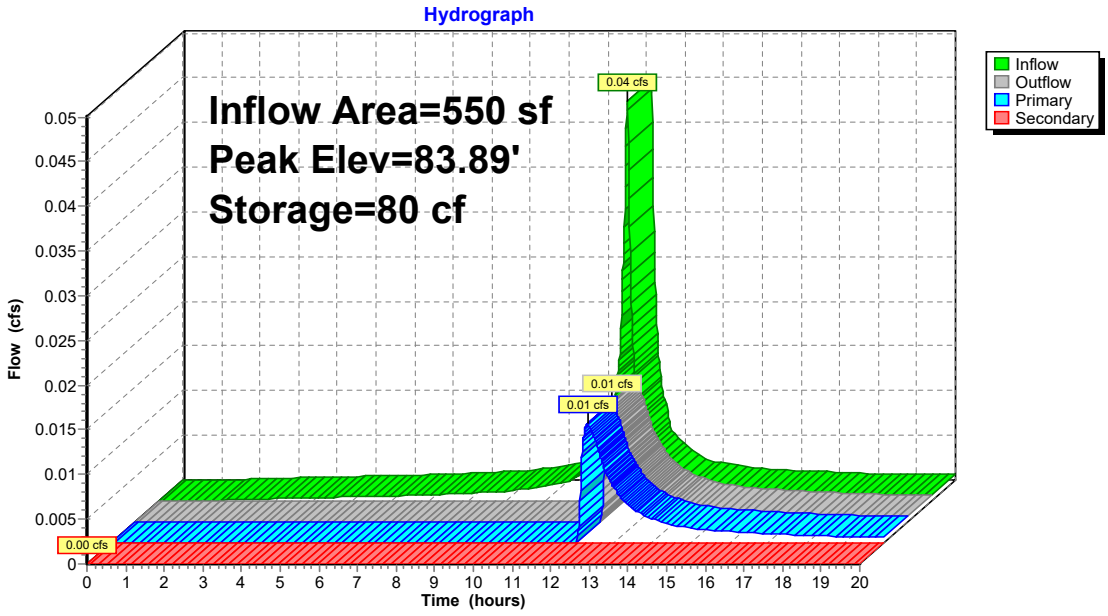
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
83.53	550	0	0
84.53	550	550	550
85.53	550	550	1,100

Device	Routing	Invert	Outlet Devices
#1	Primary	83.80'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	84.53'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.01 cfs @ 12.33 hrs HW=83.89' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.01 cfs @ 1.05 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=83.53' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33B: CELL B



Summary for Pond 33C: CELL C

Inflow Area = 1,100 sf,100.00% Impervious, Inflow Depth > 2.25" for 2 Yr event
Inflow = 0.05 cfs @ 12.14 hrs, Volume= 206 cf
Outflow = 0.02 cfs @ 12.46 hrs, Volume= 141 cf, Atten= 56%, Lag= 19.2 min
Primary = 0.02 cfs @ 12.46 hrs, Volume= 141 cf
Routed to Pond 33D : CELL D
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33D : CELL D

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 83.51' @ 12.46 hrs Surf.Area= 550 sf Storage= 87 cf

Plug-Flow detention time= 161.4 min calculated for 141 cf (68% of inflow)
Center-of-Mass det. time= 84.4 min (850.5 - 766.2)

Volume	Invert	Avail.Storage	Storage Description
#1	83.11'	440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,100 cf Overall x 40.0% Voids

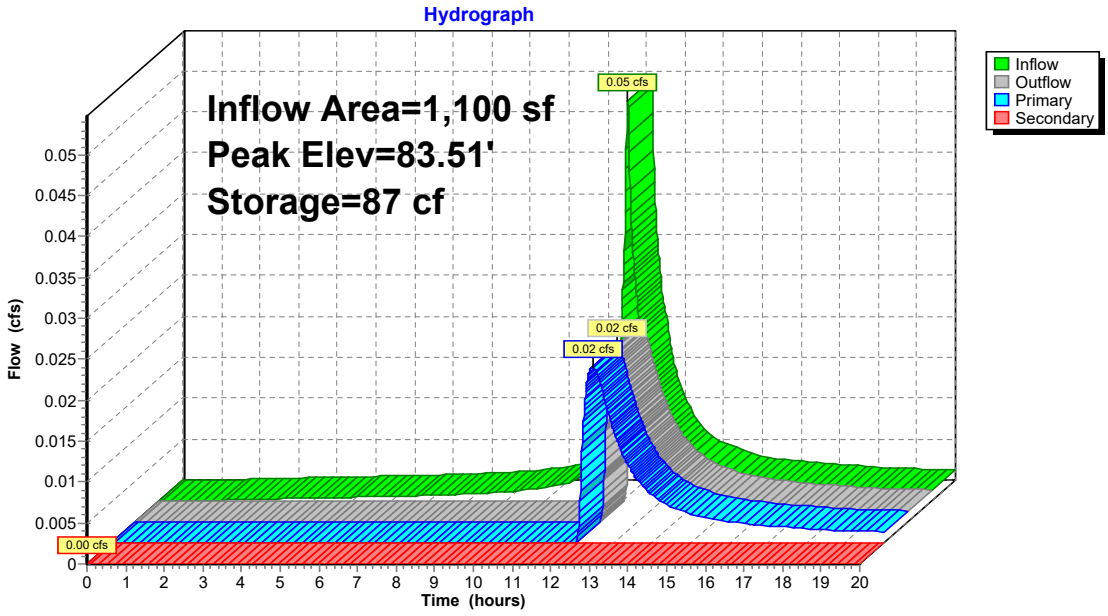
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
83.11	550	0	0
84.11	550	550	550
85.11	550	550	1,100

Device	Routing	Invert	Outlet Devices
#1	Primary	83.38'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	84.11'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.02 cfs @ 12.46 hrs HW=83.51' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.02 cfs @ 1.21 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=83.11' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33C: CELL C



Summary for Pond 33D: CELL D

Inflow Area = 1,650 sf,100.00% Impervious, Inflow Depth > 2.01" for 2 Yr event
Inflow = 0.05 cfs @ 12.14 hrs, Volume= 276 cf
Outflow = 0.03 cfs @ 12.60 hrs, Volume= 209 cf, Atten= 44%, Lag= 27.3 min
Primary = 0.03 cfs @ 12.60 hrs, Volume= 209 cf
Routed to Pond 33E : CELL E
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33E : CELL E

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 83.12' @ 12.60 hrs Surf.Area= 550 sf Storage= 92 cf

Plug-Flow detention time= 133.2 min calculated for 209 cf (76% of inflow)
Center-of-Mass det. time= 67.7 min (856.8 - 789.1)

Volume	Invert	Avail.Storage	Storage Description
#1	82.70'	440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,100 cf Overall x 40.0% Voids

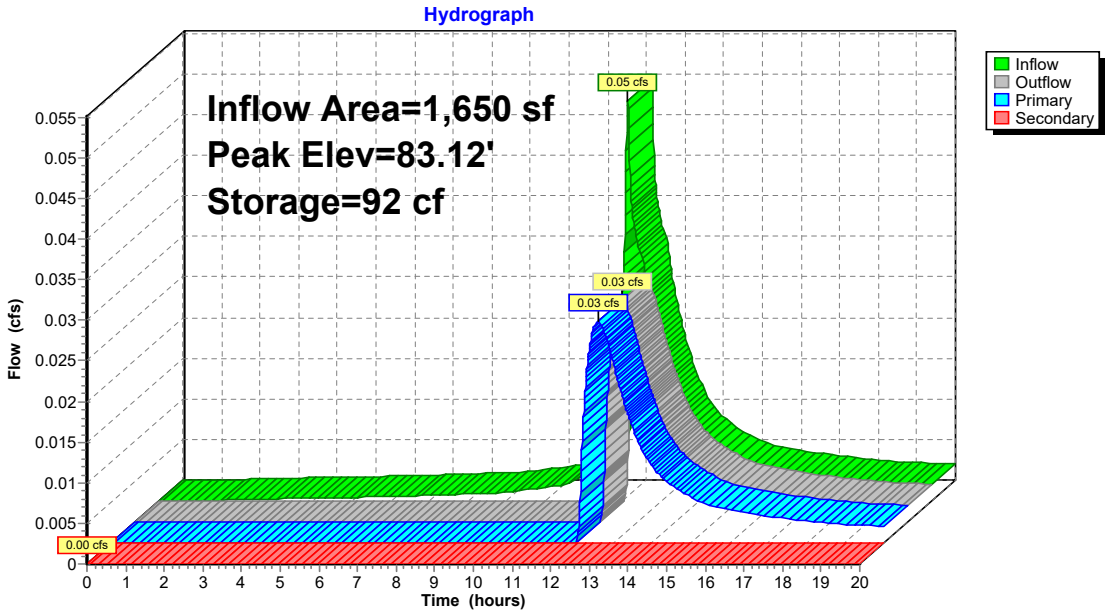
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
82.70	550	0	0
83.70	550	550	550
84.70	550	550	1,100

Device	Routing	Invert	Outlet Devices
#1	Primary	82.97'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	83.70'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.03 cfs @ 12.60 hrs HW=83.12' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.03 cfs @ 1.32 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=82.70' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33D: CELL D



Summary for Pond 33E: CELL E

Inflow Area = 2,200 sf,100.00% Impervious, Inflow Depth > 1.88" for 2 Yr event
Inflow = 0.05 cfs @ 12.14 hrs, Volume= 344 cf
Outflow = 0.03 cfs @ 12.77 hrs, Volume= 276 cf, Atten= 37%, Lag= 37.8 min
Primary = 0.03 cfs @ 12.77 hrs, Volume= 276 cf
Routed to Pond 33F : CELL F
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33F : CELL F

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 82.72' @ 12.77 hrs Surf.Area= 550 sf Storage= 97 cf

Plug-Flow detention time= 114.4 min calculated for 276 cf (80% of inflow)
Center-of-Mass det. time= 58.0 min (863.0 - 805.0)

Volume	Invert	Avail.Storage	Storage Description
#1	82.28'	440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,100 cf Overall x 40.0% Voids

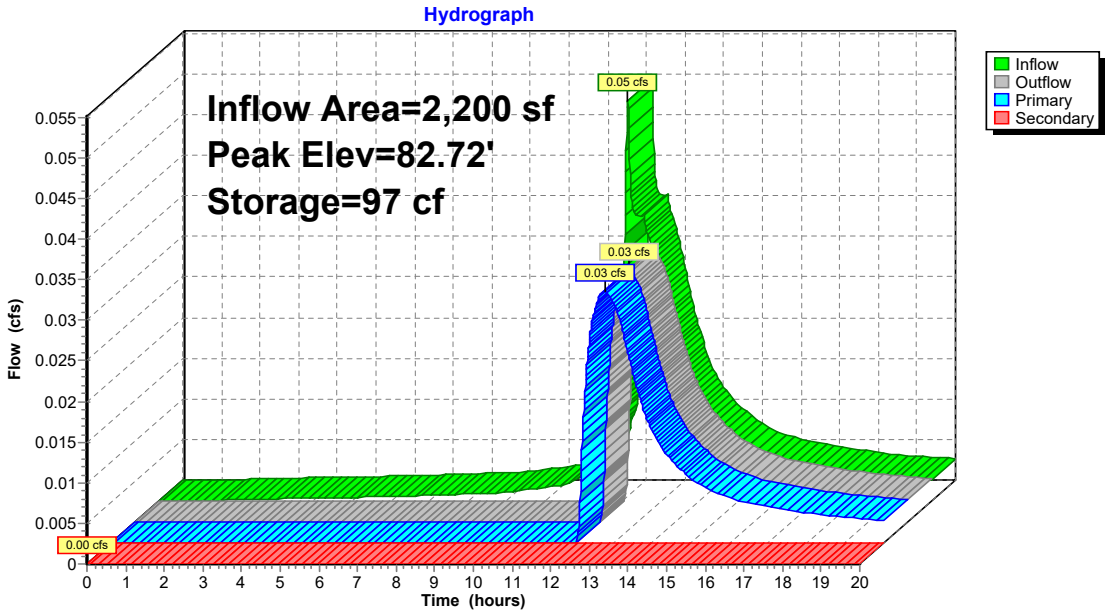
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
82.28	550	0	0
83.28	550	550	550
84.28	550	550	1,100

Device	Routing	Invert	Outlet Devices
#1	Primary	82.55'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	83.28'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.03 cfs @ 12.77 hrs HW=82.72' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.03 cfs @ 1.42 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=82.28' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33E: CELL E



Summary for Pond 33F: CELL F

Inflow Area = 2,750 sf,100.00% Impervious, Inflow Depth > 1.79" for 2 Yr event
Inflow = 0.05 cfs @ 12.14 hrs, Volume= 410 cf
Outflow = 0.03 cfs @ 12.99 hrs, Volume= 341 cf, Atten= 31%, Lag= 50.6 min
Primary = 0.03 cfs @ 12.99 hrs, Volume= 341 cf
Routed to Pond 33G : CELL G
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33G : CELL G

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 82.33' @ 12.99 hrs Surf.Area= 550 sf Storage= 101 cf

Plug-Flow detention time= 100.9 min calculated for 341 cf (83% of inflow)
Center-of-Mass det. time= 51.4 min (869.1 - 817.6)

Volume	Invert	Avail.Storage	Storage Description
#1	81.87'	440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,100 cf Overall x 40.0% Voids

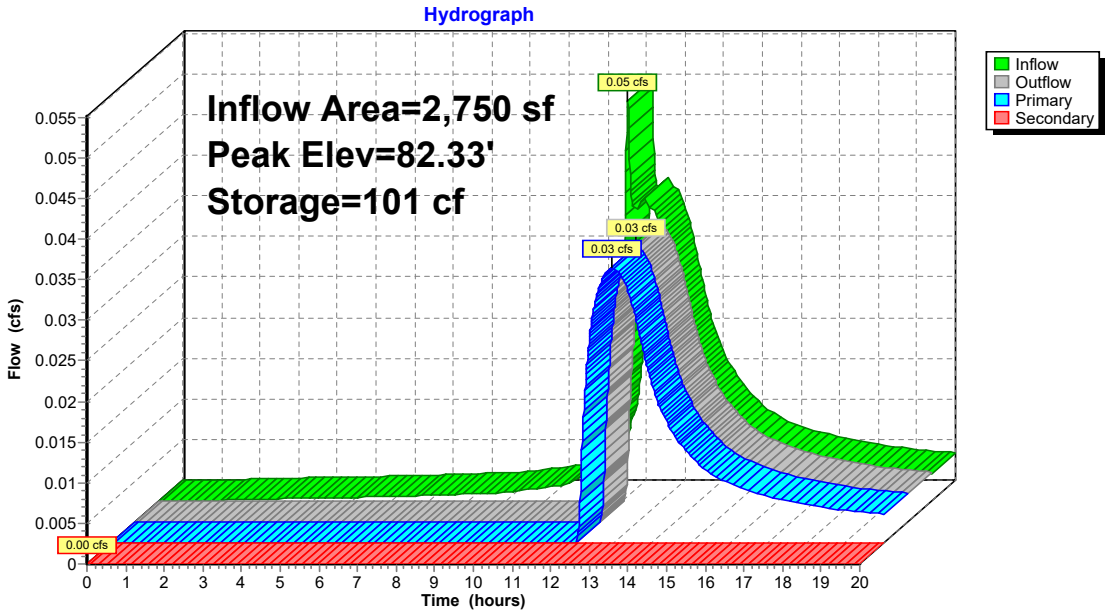
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
81.87	550	0	0
82.87	550	550	550
83.87	550	550	1,100

Device	Routing	Invert	Outlet Devices
#1	Primary	82.14'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	82.87'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.03 cfs @ 12.99 hrs HW=82.33' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.03 cfs @ 1.55 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=81.87' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33F: CELL F



Summary for Pond 33G: CELL G

Inflow Area = 3,850 sf,100.00% Impervious, Inflow Depth > 1.90" for 2 Yr event
Inflow = 0.09 cfs @ 12.14 hrs, Volume= 611 cf
Outflow = 0.04 cfs @ 13.34 hrs, Volume= 467 cf, Atten= 60%, Lag= 72.4 min
Primary = 0.04 cfs @ 13.34 hrs, Volume= 467 cf
Routed to Pond 33H : CELL H
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33H : CELL H

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 81.52' @ 13.34 hrs Surf.Area= 1,100 sf Storage= 211 cf

Plug-Flow detention time= 141.6 min calculated for 467 cf (77% of inflow)
Center-of-Mass det. time= 77.3 min (882.7 - 805.4)

Volume	Invert	Avail.Storage	Storage Description
#1	81.04'	880 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 2,200 cf Overall x 40.0% Voids

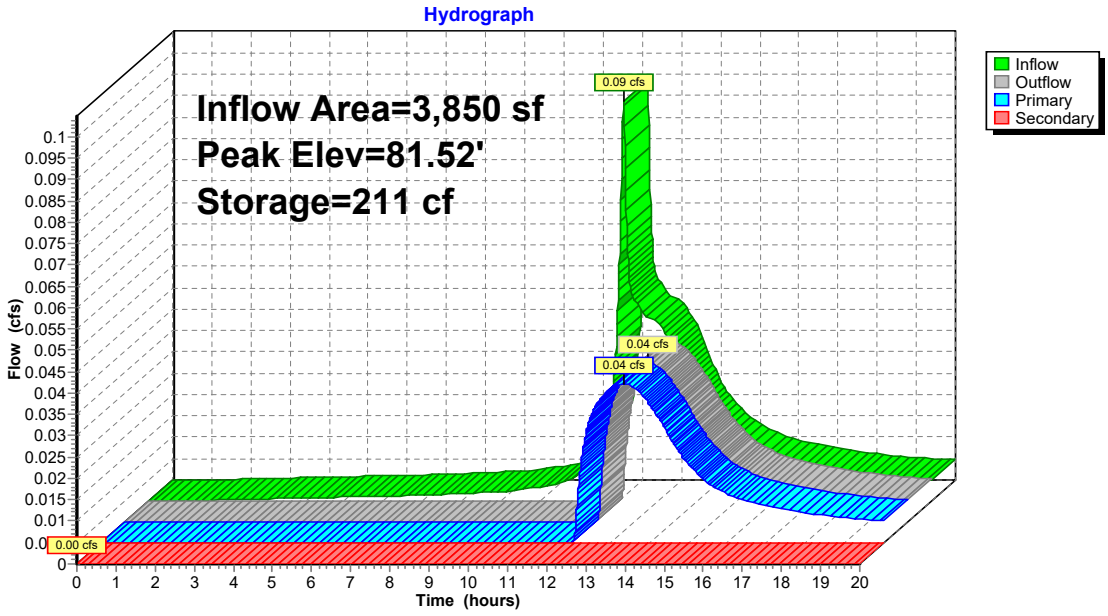
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
81.04	1,100	0	0
82.04	1,100	1,100	1,100
83.04	1,100	1,100	2,200

Device	Routing	Invert	Outlet Devices
#1	Primary	81.31'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	82.04'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.04 cfs @ 13.34 hrs HW=81.52' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.04 cfs @ 1.71 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=81.04' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33G: CELL G



Summary for Pond 33H: CELL H

Inflow Area = 7,563 sf, 98.04% Impervious, Inflow Depth > 2.14" for 2 Yr event
Inflow = 0.30 cfs @ 12.13 hrs, Volume= 1,346 cf
Outflow = 0.06 cfs @ 13.18 hrs, Volume= 954 cf, Atten= 80%, Lag= 63.1 min
Primary = 0.06 cfs @ 13.18 hrs, Volume= 954 cf
Routed to Pond 33I : CELL I
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33I : CELL I

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 81.02' @ 13.18 hrs Surf.Area= 1,631 sf Storage= 595 cf

Plug-Flow detention time= 189.8 min calculated for 954 cf (71% of inflow)
Center-of-Mass det. time= 112.0 min (892.1 - 780.1)

Volume	Invert	Avail.Storage	Storage Description
#1	80.11'	1,305 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 3,262 cf Overall x 40.0% Voids

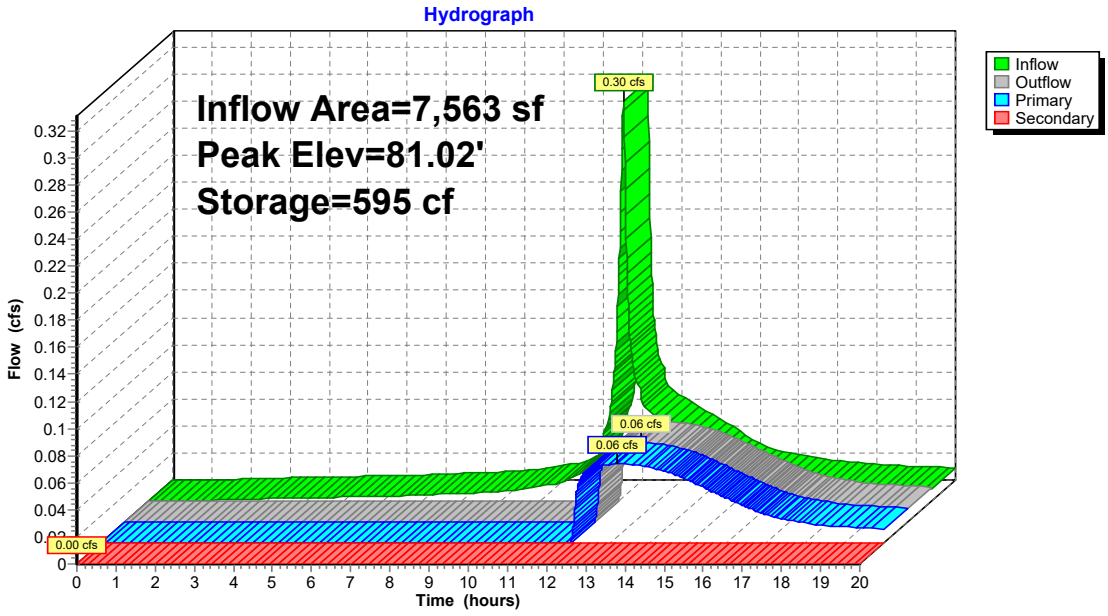
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
80.11	1,631	0	0
81.11	1,631	1,631	1,631
82.11	1,631	1,631	3,262

Device	Routing	Invert	Outlet Devices
#1	Primary	80.63'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	81.11'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.06 cfs @ 13.18 hrs HW=81.02' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.06 cfs @ 2.68 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=80.11' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33H: CELL H



Summary for Pond 33I: CELL I

Inflow Area = 9,568 sf, 96.89% Impervious, Inflow Depth > 1.77" for 2 Yr event
Inflow = 0.18 cfs @ 12.14 hrs, Volume= 1,414 cf
Outflow = 0.06 cfs @ 14.61 hrs, Volume= 1,139 cf, Atten= 69%, Lag= 148.4 min
Primary = 0.06 cfs @ 14.61 hrs, Volume= 1,139 cf
Routed to Pond 33J : CELL J
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33J : CELL J

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 79.80' @ 14.61 hrs Surf.Area= 1,855 sf Storage= 475 cf

Plug-Flow detention time= 146.2 min calculated for 1,139 cf (81% of inflow)
Center-of-Mass det. time= 92.8 min (931.0 - 838.2)

Volume	Invert	Avail.Storage	Storage Description
#1	79.16'	1,484 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 3,710 cf Overall x 40.0% Voids

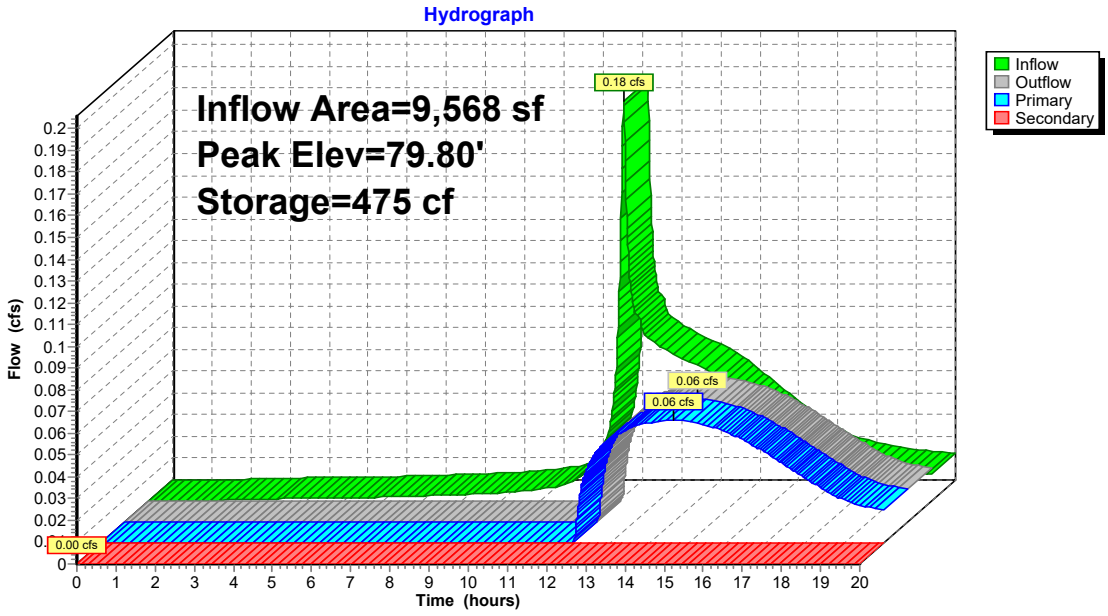
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
79.16	1,855	0	0
80.16	1,855	1,855	1,855
81.16	1,855	1,855	3,710

Device	Routing	Invert	Outlet Devices
#1	Primary	79.43'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	80.16'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.06 cfs @ 14.61 hrs HW=79.80' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.06 cfs @ 2.58 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=79.16' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33I: CELL I



Summary for Pond 33J: CELL J

Inflow Area = 11,513 sf, 90.07% Impervious, Inflow Depth > 1.50" for 2 Yr event
Inflow = 0.10 cfs @ 12.14 hrs, Volume= 1,439 cf
Outflow = 0.06 cfs @ 15.42 hrs, Volume= 1,268 cf, Atten= 45%, Lag= 197.1 min
Primary = 0.06 cfs @ 15.42 hrs, Volume= 1,268 cf
Routed to Pond 33K : CELL K
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33K : CELL K

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 79.01' @ 15.42 hrs Surf.Area= 1,100 sf Storage= 286 cf

Plug-Flow detention time= 91.3 min calculated for 1,268 cf (88% of inflow)
Center-of-Mass det. time= 59.1 min (949.8 - 890.7)

Volume	Invert	Avail.Storage	Storage Description
#1	78.36'	880 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 2,200 cf Overall x 40.0% Voids

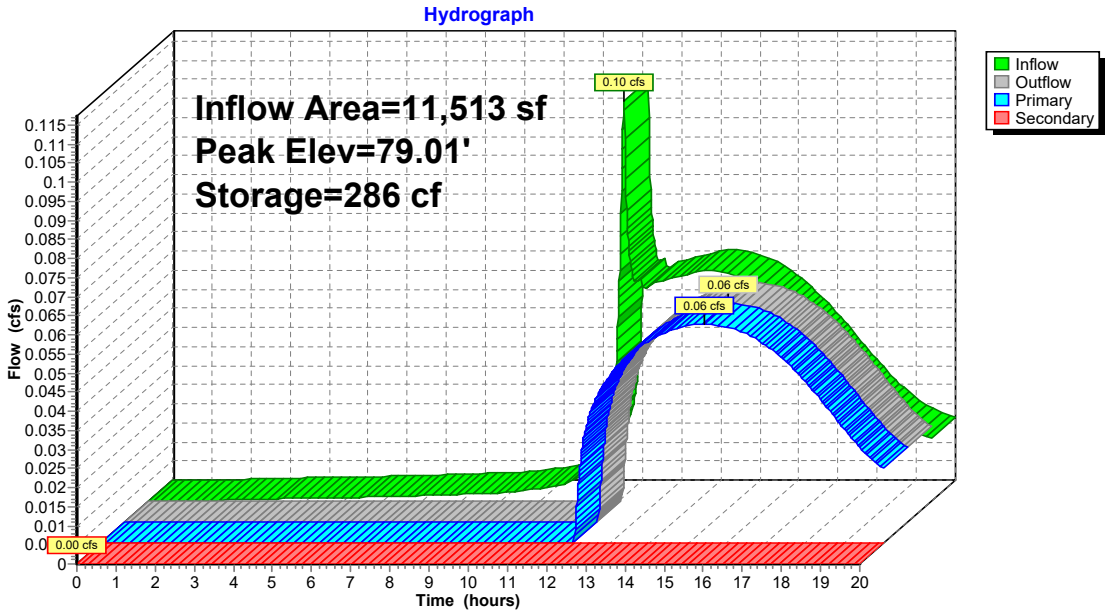
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
78.36	1,100	0	0
79.36	1,100	1,100	1,100
80.36	1,100	1,100	2,200

Device	Routing	Invert	Outlet Devices
#1	Primary	78.63'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	79.36'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.06 cfs @ 15.42 hrs HW=79.01' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.06 cfs @ 2.62 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=78.36' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33J: CELL J



Summary for Pond 33K: CELL K

[79] Warning: Submerged Pond 33J Primary device # 1 by 0.06'

Inflow Area = 12,822 sf, 86.60% Impervious, Inflow Depth > 1.37" for 2 Yr event
Inflow = 0.07 cfs @ 12.14 hrs, Volume= 1,469 cf
Outflow = 0.06 cfs @ 16.08 hrs, Volume= 1,334 cf, Atten= 19%, Lag= 236.4 min
Primary = 0.06 cfs @ 16.08 hrs, Volume= 1,334 cf
Routed to Pond 33L : OUTLET PIPE
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33L : OUTLET PIPE

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 78.69' @ 16.08 hrs Surf.Area= 734 sf Storage= 208 cf

Plug-Flow detention time= 66.3 min calculated for 1,334 cf (91% of inflow)
Center-of-Mass det. time= 42.8 min (963.6 - 920.8)

Volume	Invert	Avail.Storage	Storage Description
#1	77.98'	587 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,468 cf Overall x 40.0% Voids

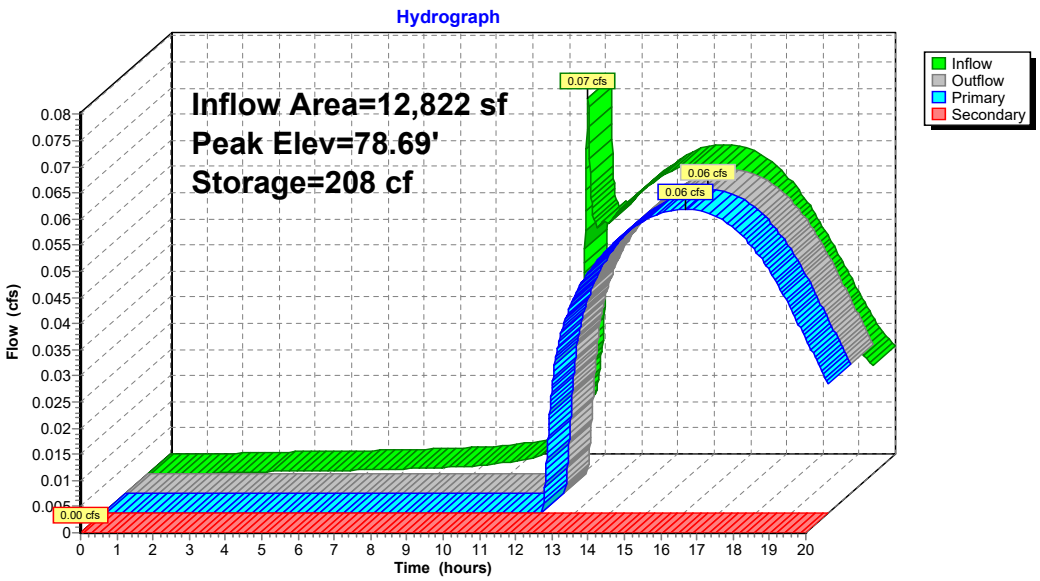
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
77.98	734	0	0
78.98	734	734	734
79.98	734	734	1,468

Device	Routing	Invert	Outlet Devices
#1	Primary	78.30'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	78.98'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.06 cfs @ 16.08 hrs HW=78.69' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.06 cfs @ 2.66 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=77.98' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 33K: CELL K



Summary for Pond 33L: OUTLET PIPE

Inflow Area = 12,822 sf, 86.60% Impervious, Inflow Depth > 1.25" for 2 Yr event
Inflow = 0.06 cfs @ 16.08 hrs, Volume= 1,334 cf
Outflow = 0.06 cfs @ 16.08 hrs, Volume= 1,333 cf, Atten= 0%, Lag= 0.2 min
Primary = 0.06 cfs @ 16.08 hrs, Volume= 1,333 cf
Routed to Reach DP-3PR : REGIONAL SWALE

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 76.11' @ 16.08 hrs Surf.Area= 30 sf Storage= 1 cf

Plug-Flow detention time= 0.4 min calculated for 1,333 cf (100% of inflow)
Center-of-Mass det. time= 0.3 min (963.9 - 963.6)

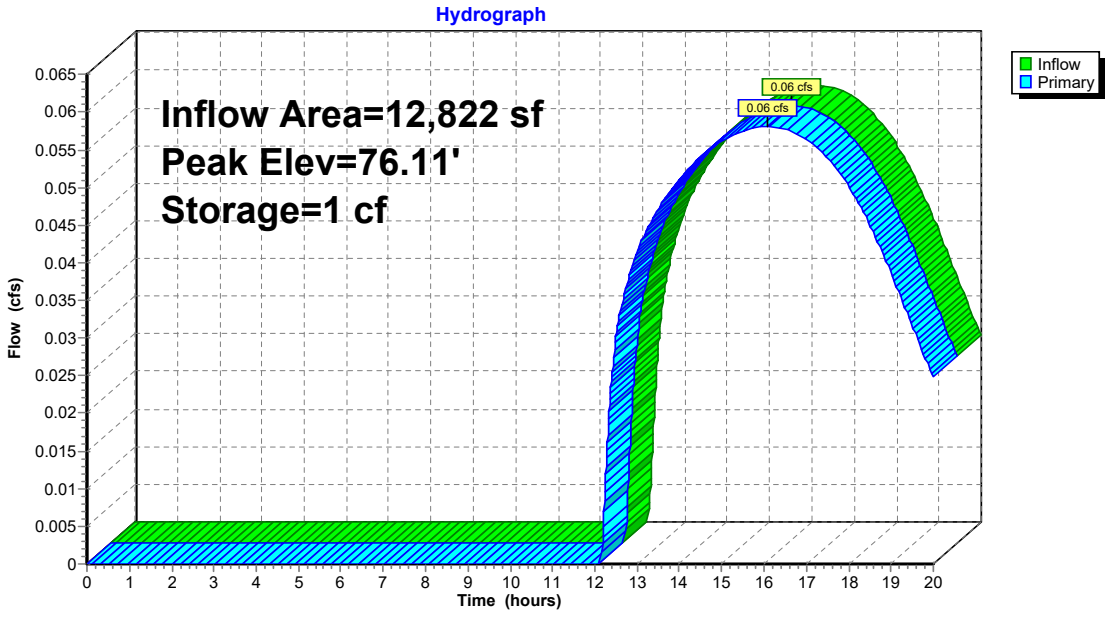
Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	37 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 93 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
76.00	30	0	0
79.10	30	93	93

Device	Routing	Invert	Outlet Devices
#1	Primary	76.00'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.06 cfs @ 16.08 hrs HW=76.11' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.06 cfs @ 1.15 fps)

Pond 33L: OUTLET PIPE



Summary for Pond BB-2A: BULLPEN

Inflow Area = 1,798 sf,100.00% Impervious, Inflow Depth > 2.94" for 2 Yr event
Inflow = 0.15 cfs @ 12.13 hrs, Volume= 441 cf
Outflow = 0.06 cfs @ 12.26 hrs, Volume= 417 cf, Atten= 59%, Lag= 7.9 min
Primary = 0.06 cfs @ 12.26 hrs, Volume= 417 cf
Routed to Reach DP-3PR : REGIONAL SWALE

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 79.20' @ 12.26 hrs Surf.Area= 1,798 sf Storage= 144 cf

Plug-Flow detention time= 79.0 min calculated for 416 cf (95% of inflow)
Center-of-Mass det. time= 57.1 min (781.9 - 724.8)

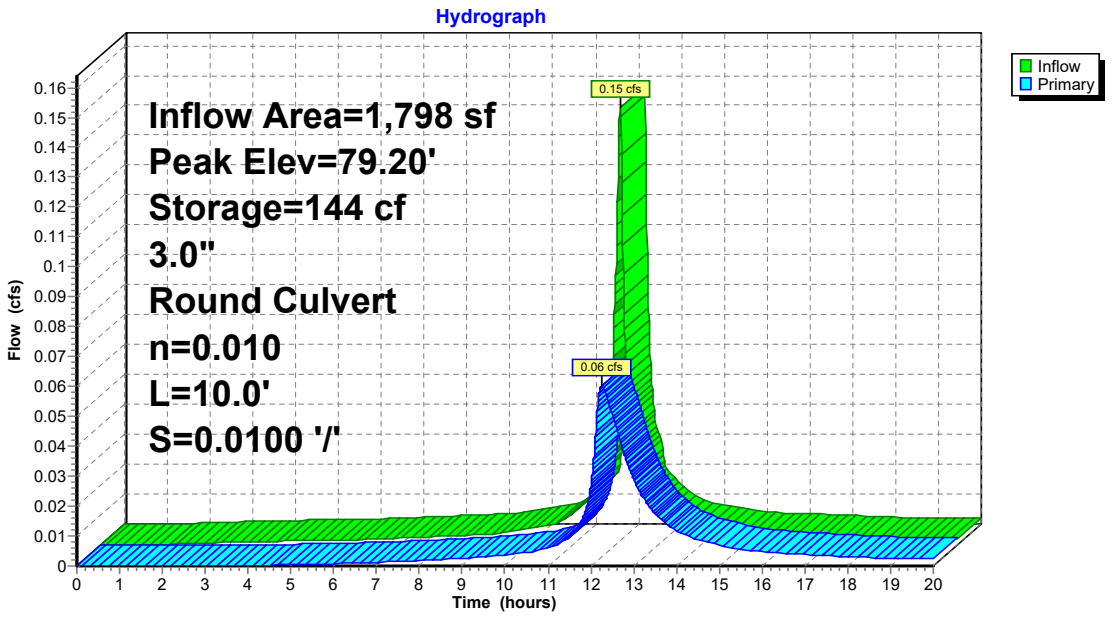
Volume	Invert	Avail.Storage	Storage Description
#1	79.00'	719 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,798 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
79.00	1,798	0	0
80.00	1,798	1,798	1,798

Device	Routing	Invert	Outlet Devices
#1	Primary	79.00'	**3.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 79.00' / 78.90' S= 0.0100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.05 sf

Primary OutFlow Max=0.06 cfs @ 12.26 hrs HW=79.20' (Free Discharge)
1=Culvert (Barrel Controls 0.06 cfs @ 1.96 fps)

Pond BB-2A: BULLPEN



Summary for Pond BB-4P: POROUS WALK-2

Inflow Area = 18,645 sf, 8.43% Impervious, Inflow Depth > 1.71" for 2 Yr event
Inflow = 0.62 cfs @ 12.26 hrs, Volume= 2,656 cf
Outflow = 0.38 cfs @ 12.42 hrs, Volume= 2,026 cf, Atten= 38%, Lag= 9.5 min
Primary = 0.00 cfs @ 12.42 hrs, Volume= 16 cf
Routed to Reach DP-3PR : REGIONAL SWALE
Secondary = 0.38 cfs @ 12.42 hrs, Volume= 2,010 cf
Routed to Pond BB-P1 : Plaza

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 88.03' @ 12.42 hrs Surf.Area= 1,571 sf Storage= 646 cf

Plug-Flow detention time= 111.1 min calculated for 2,026 cf (76% of inflow)
Center-of-Mass det. time= 44.6 min (887.1 - 842.6)

Volume	Invert	Avail.Storage	Storage Description
#1	87.00'	1,257 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 3,142 cf Overall x 40.0% Voids

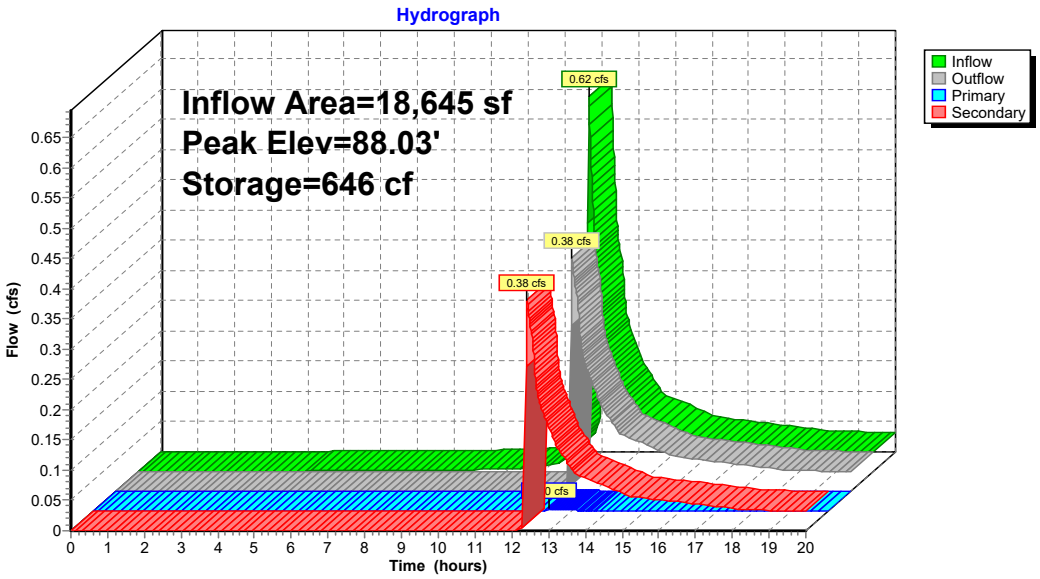
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
87.00	1,571	0	0
88.00	1,571	1,571	1,571
89.00	1,571	1,571	3,142

Device	Routing	Invert	Outlet Devices
#1	Primary	88.00'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 88.00' / 83.00' S= 0.5000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Secondary	88.00'	**30.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.00 cfs @ 12.42 hrs HW=88.03' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.00 cfs @ 0.56 fps)

Secondary OutFlow Max=0.36 cfs @ 12.42 hrs HW=88.03' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 0.36 cfs @ 0.44 fps)

Pond BB-4P: POROUS WALK-2



Summary for Pond BB-5P: POROUS WALK 1

Inflow Area = 45,346 sf, 8.87% Impervious, Inflow Depth > 0.65" for 2 Yr event
Inflow = 0.70 cfs @ 12.16 hrs, Volume= 2,473 cf
Outflow = 0.46 cfs @ 12.27 hrs, Volume= 1,667 cf, Atten= 35%, Lag= 6.4 min
Primary = 0.00 cfs @ 12.27 hrs, Volume= 11 cf
Routed to Reach DP-3PR : REGIONAL SWALE
Secondary = 0.45 cfs @ 12.27 hrs, Volume= 1,656 cf
Routed to Pond BB-4P : POROUS WALK-2

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 91.03' @ 12.27 hrs Surf.Area= 2,298 sf Storage= 829 cf

Plug-Flow detention time= 151.0 min calculated for 1,667 cf (67% of inflow)
Center-of-Mass det. time= 66.4 min (867.4 - 801.0)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	1,609 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 4,596 cf Overall x 35.0% Voids

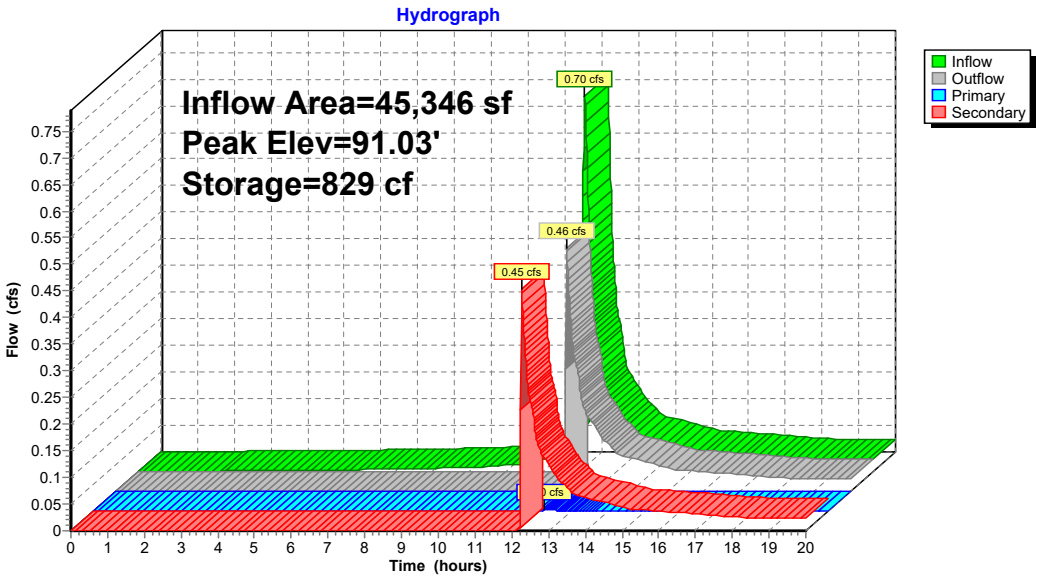
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.00	2,298	0	0
91.00	2,298	2,298	2,298
92.00	2,298	2,298	4,596

Device	Routing	Invert	Outlet Devices
#1	Primary	91.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	91.00'	**30.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.00 cfs @ 12.27 hrs HW=91.03' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.00 cfs @ 0.60 fps)

Secondary OutFlow Max=0.43 cfs @ 12.27 hrs HW=91.03' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 0.43 cfs @ 0.47 fps)

Pond BB-5P: POROUS WALK 1



Summary for Pond BB-P1: Plaza

Inflow Area = 13,728 sf, 46.55% Impervious, Inflow Depth > 3.36" for 2 Yr event
Inflow = 0.60 cfs @ 12.13 hrs, Volume= 3,840 cf
Outflow = 0.06 cfs @ 16.40 hrs, Volume= 1,028 cf, Atten= 89%, Lag= 255.9 min
Primary = 0.06 cfs @ 16.40 hrs, Volume= 1,028 cf
Routed to Reach DP-3PR : REGIONAL SWALE

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 82.12' @ 16.40 hrs Surf.Area= 6,390 sf Storage= 2,861 cf

Plug-Flow detention time= 387.9 min calculated for 1,028 cf (27% of inflow)
Center-of-Mass det. time= 218.5 min (1,036.8 - 818.4)

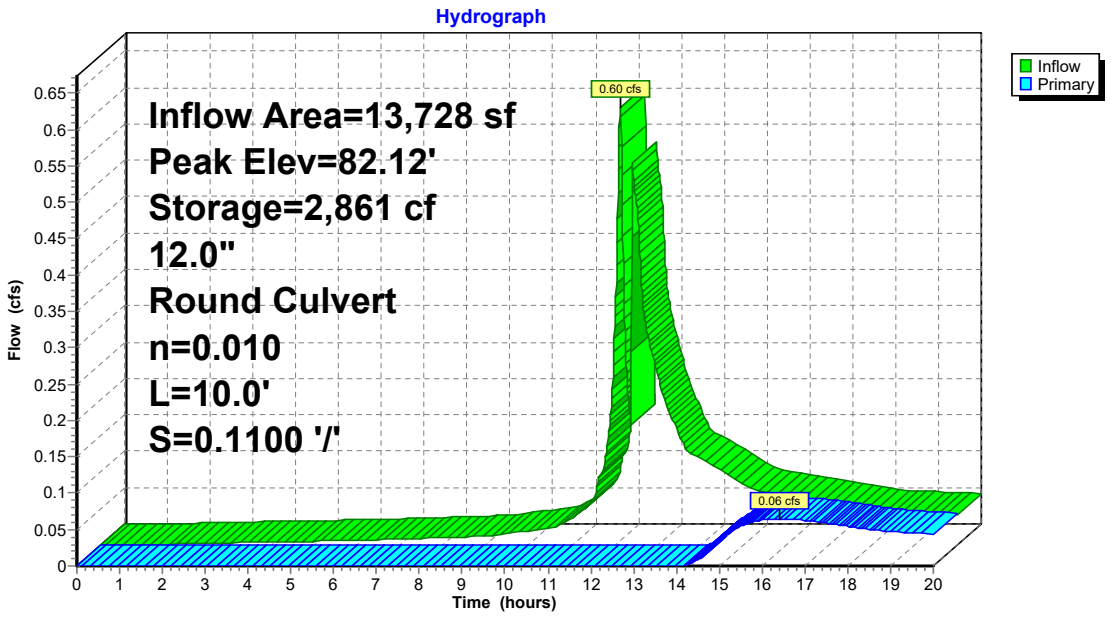
Volume	Invert	Avail.Storage	Storage Description
#1	81.00'	12,780 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 31,950 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
81.00	6,390	0	0
86.00	6,390	31,950	31,950

Device	Routing	Invert	Outlet Devices
#1	Primary	82.00'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 82.00' / 80.90' S= 0.1100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.06 cfs @ 16.40 hrs HW=82.12' (Free Discharge)
1=Culvert (Inlet Controls 0.06 cfs @ 1.18 fps)

Pond BB-P1: Plaza



Summary for Pond BB-P2: INFILT BASIN

Inflow Area = 155,772 sf,100.00% Impervious, Inflow Depth > 2.94" for 2 Yr event
Inflow = 12.67 cfs @ 12.13 hrs, Volume= 38,164 cf
Outflow = 0.35 cfs @ 15.04 hrs, Volume= 12,596 cf, Atten= 97%, Lag= 174.7 min
Primary = 0.35 cfs @ 15.04 hrs, Volume= 12,596 cf
Routed to Reach DP-3PR : REGIONAL SWALE
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach DP-3PR : REGIONAL SWALE

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 77.38' @ 15.04 hrs Surf.Area= 120,809 sf Storage= 27,677 cf

Plug-Flow detention time= 320.9 min calculated for 12,596 cf (33% of inflow)
Center-of-Mass det. time= 169.2 min (894.0 - 724.8)

Volume	Invert	Avail.Storage	Storage Description
#1	74.67'	124,126 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 354,645 cf Overall x 35.0% Voids

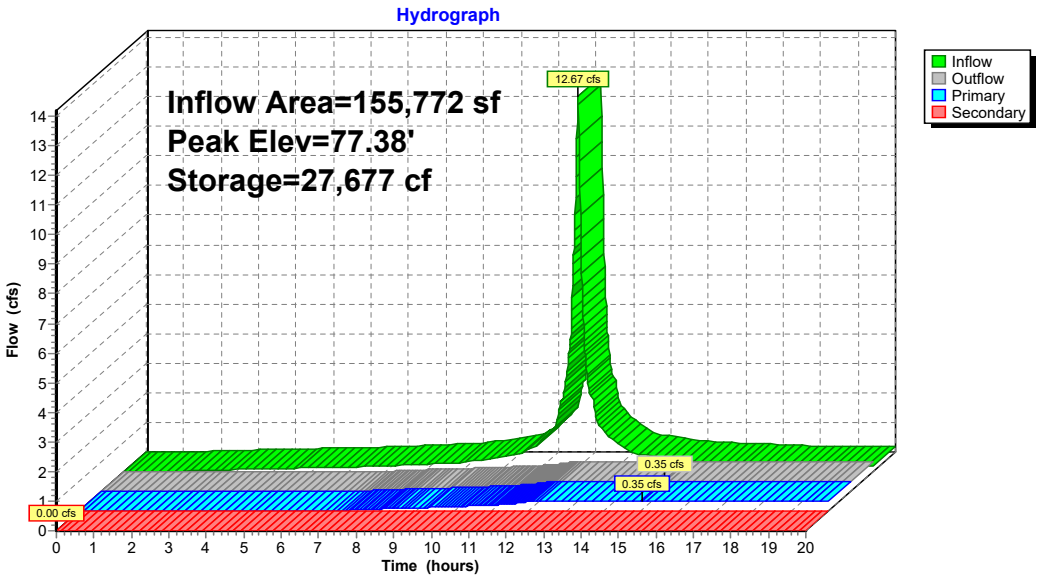
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
74.67	14,517	0	0
77.00	14,517	33,825	33,825
77.01	120,809	677	34,501
79.66	120,809	320,144	354,645

Device	Routing	Invert	Outlet Devices
#1	Secondary	77.50'	**24.0" Round Culvert** L= 353.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 77.50' / 76.50' S= 0.0028 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 3.14 sf
#2	Primary	75.00'	**3.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 75.00' / 74.90' S= 0.0100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.05 sf

Primary OutFlow Max=0.35 cfs @ 15.04 hrs HW=77.38' (Free Discharge)
└**2=Culvert** (Inlet Controls 0.35 cfs @ 7.23 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=74.67' (Free Discharge)
└**1=Culvert** (Controls 0.00 cfs)

Pond BB-P2: INFILT BASIN



Time span=0.00-20.00 hrs, dt=0.01 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentPR-10: PR-10 TO SOFTBALL TD Runoff Area=61,785 sf 5.95% Impervious Runoff Depth>1.48"
Flow Length=277' Tc=9.3 min CN=61/98 Runoff=2.50 cfs 7,611 cf

SubcatchmentPR-11: PR-11 POROUS WALK Runoff Area=2,299 sf 100.00% Impervious Runoff Depth>4.62"
Tc=6.0 min CN=0/98 Runoff=0.29 cfs 885 cf

SubcatchmentPR-12: PR-12 TO POROUS WALK Runoff Area=43,047 sf 4.00% Impervious Runoff Depth>1.41"
Flow Length=205' Tc=8.4 min CN=61/98 Runoff=1.75 cfs 5,072 cf

SubcatchmentPR-20: PR-20 CROSS COUNTRY Runoff Area=391,772 sf 0.00% Impervious Runoff Depth>1.27"
Tc=25.5 min CN=61/0 Runoff=8.91 cfs 41,428 cf

SubcatchmentPR-30: TO POROUS WALK 2 Runoff Area=18,645 sf 8.43% Impervious Runoff Depth>1.56"
Tc=6.0 min CN=61/98 Runoff=0.91 cfs 2,429 cf

SubcatchmentPR-31: Plaza Runoff Area=13,728 sf 46.55% Impervious Runoff Depth>2.83"
Tc=6.0 min CN=61/98 Runoff=1.10 cfs 3,243 cf

SubcatchmentPR-32: PR-32 TO SOFTBALL Runoff Area=25,435 sf 3.14% Impervious Runoff Depth>1.39"
Tc=6.0 min CN=61/98 Runoff=1.13 cfs 2,939 cf

SubcatchmentPR-34: SLOPE TO REGIONAL SWALE Runoff Area=21,534 sf 0.00% Impervious Runoff Depth>1.28"
Flow Length=142' Tc=7.1 min CN=61/0 Runoff=0.86 cfs 2,299 cf

SubcatchmentPR-35: FIELD AND ROOF Runoff Area=155,772 sf 100.00% Impervious Runoff Depth>4.62"
Tc=6.0 min CN=0/98 Runoff=19.51 cfs 59,933 cf

SubcatchmentPR-36: GRASS/LANDSCAPING Runoff Area=29,400 sf 0.00% Impervious Runoff Depth>1.28"
Flow Length=576' Tc=10.1 min CN=61/0 Runoff=1.03 cfs 3,134 cf

SubcatchmentPR-37: PR-37 TOWARD SWALE Runoff Area=36,798 sf 1.01% Impervious Runoff Depth>1.31"
Flow Length=1,093' Tc=20.2 min CN=61/98 Runoff=0.96 cfs 4,005 cf

SubcatchmentPR-38: BULLPEN Runoff Area=1,798 sf 100.00% Impervious Runoff Depth>4.62"
Tc=6.0 min CN=0/98 Runoff=0.23 cfs 692 cf

SubcatchmentPR-40: PR-40 TOWARD TENNIS Runoff Area=7,153 sf 37.96% Impervious Runoff Depth>2.55"
Tc=6.0 min CN=61/98 Runoff=0.52 cfs 1,519 cf

SubcatchmentPR-50: PR-50 REGIOINAL SWALE Runoff Area=62,111 sf 0.00% Impervious Runoff Depth>1.28"
Tc=6.0 min CN=61/0 Runoff=2.59 cfs 6,636 cf

SubcatchmentPR33B: PR-33B Runoff Area=550 sf 100.00% Impervious Runoff Depth>4.62"
Tc=6.0 min CN=0/98 Runoff=0.07 cfs 212 cf

SubcatchmentPR33C: PR-33C Runoff Area=550 sf 100.00% Impervious Runoff Depth>4.62"
Tc=6.0 min CN=0/98 Runoff=0.07 cfs 212 cf

SubcatchmentPR33D: PR-33E Runoff Area=550 sf 100.00% Impervious Runoff Depth>4.62"
Tc=6.0 min CN=0/98 Runoff=0.07 cfs 212 cf

SubcatchmentPR33E: PR-33E Runoff Area=550 sf 100.00% Impervious Runoff Depth>4.62"
Tc=6.0 min CN=0/98 Runoff=0.07 cfs 212 cf

SubcatchmentPR33F: PR-33F Runoff Area=550 sf 100.00% Impervious Runoff Depth>4.62"
Tc=6.0 min CN=0/98 Runoff=0.07 cfs 212 cf

SubcatchmentPR33G: PR-33F Runoff Area=1,100 sf 100.00% Impervious Runoff Depth>4.62"
Tc=6.0 min CN=0/98 Runoff=0.14 cfs 423 cf

SubcatchmentPR33H: PR-33H Runoff Area=3,713 sf 96.01% Impervious Runoff Depth>4.48"
Tc=6.0 min CN=61/98 Runoff=0.45 cfs 1,387 cf

SubcatchmentPR33I: PR-33I Runoff Area=2,005 sf 92.52% Impervious Runoff Depth>4.37"
Tc=6.0 min CN=61/98 Runoff=0.24 cfs 730 cf

SubcatchmentPR33J: PR-33J Runoff Area=1,945 sf 56.56% Impervious Runoff Depth>3.17"
Tc=6.0 min CN=61/98 Runoff=0.17 cfs 513 cf

SubcatchmentPR33K: PR-33F Runoff Area=1,309 sf 56.07% Impervious Runoff Depth>3.15"
Tc=6.0 min CN=61/98 Runoff=0.12 cfs 344 cf

Reach DP-3PR: REGIONAL SWALE Inflow=3.33 cfs 40,624 cf
Outflow=3.33 cfs 40,624 cf

Reach DP1PR: Softball Inflow=3.52 cfs 10,550 cf
Outflow=3.52 cfs 10,550 cf

Pond 33B: CELL B Peak Elev=83.99' Storage=102 cf Inflow=0.07 cfs 212 cf
Primary=0.04 cfs 147 cf Secondary=0.00 cfs 0 cf Outflow=0.04 cfs 147 cf

Pond 33C: CELL C Peak Elev=83.69' Storage=127 cf Inflow=0.10 cfs 359 cf
Primary=0.05 cfs 292 cf Secondary=0.00 cfs 0 cf Outflow=0.05 cfs 292 cf

Pond 33D: CELL D Peak Elev=83.35' Storage=143 cf Inflow=0.11 cfs 504 cf
Primary=0.06 cfs 435 cf Secondary=0.00 cfs 0 cf Outflow=0.06 cfs 435 cf

Pond 33E: CELL E Peak Elev=82.98' Storage=154 cf Inflow=0.11 cfs 647 cf
Primary=0.06 cfs 577 cf Secondary=0.00 cfs 0 cf Outflow=0.06 cfs 577 cf

Pond 33F: CELL F Peak Elev=82.61' Storage=162 cf Inflow=0.11 cfs 788 cf
Primary=0.07 cfs 717 cf Secondary=0.00 cfs 0 cf Outflow=0.07 cfs 717 cf

Pond 33G: CELL G Peak Elev=81.82' Storage=343 cf Inflow=0.18 cfs 1,140 cf
Primary=0.07 cfs 991 cf Secondary=0.00 cfs 0 cf Outflow=0.07 cfs 991 cf

Pond 33H: CELL H Peak Elev=81.14' Storage=673 cf Inflow=0.49 cfs 2,378 cf
Primary=0.07 cfs 1,469 cf Secondary=0.41 cfs 503 cf Outflow=0.48 cfs 1,971 cf

Pond 33I: CELL I Peak Elev=80.17' Storage=751 cf Inflow=0.71 cfs 2,701 cf
Primary=0.09 cfs 2,075 cf Secondary=0.12 cfs 276 cf Outflow=0.21 cfs 2,351 cf

Pond 33J: CELL J Peak Elev=79.37' Storage=445 cf Inflow=0.25 cfs 2,864 cf
Primary=0.09 cfs 2,268 cf Secondary=0.12 cfs 313 cf Outflow=0.20 cfs 2,581 cf

Pond 33K: CELL K Peak Elev=78.99' Storage=297 cf Inflow=0.22 cfs 2,925 cf
Primary=0.08 cfs 2,259 cf Secondary=0.11 cfs 418 cf Outflow=0.19 cfs 2,678 cf

Pond 33L: OUTLET PIPE Peak Elev=76.22' Storage=3 cf Inflow=0.19 cfs 2,678 cf
Outflow=0.20 cfs 2,676 cf

Pond BB-2A: BULLPEN Peak Elev=79.28' Storage=204 cf Inflow=0.23 cfs 692 cf
3.0" Round Culvert n=0.010 L=10.0' S=0.0100 '/' Outflow=0.09 cfs 663 cf

Pond BB-4P: POROUS WALK-2 Peak Elev=88.11' Storage=695 cf Inflow=2.83 cfs 7,533 cf
Primary=0.05 cfs 78 cf Secondary=2.77 cfs 6,823 cf Outflow=2.82 cfs 6,901 cf

Pond BB-5P: POROUS WALK 1 Peak Elev=91.08' Storage=872 cf Inflow=2.00 cfs 5,956 cf
Primary=0.03 cfs 44 cf Secondary=1.97 cfs 5,104 cf Outflow=2.00 cfs 5,148 cf

Pond BB-P1: Plaza Peak Elev=82.53' Storage=3,920 cf Inflow=3.82 cfs 10,065 cf
12.0" Round Culvert n=0.010 L=10.0' S=0.1100 '/' Outflow=1.06 cfs 7,147 cf

Pond BB-P2: INFILT BASIN Peak Elev=77.74' Storage=43,080 cf Inflow=19.51 cfs 59,933 cf
Primary=0.38 cfs 15,233 cf Secondary=0.27 cfs 5,343 cf Outflow=0.65 cfs 20,577 cf

Total Runoff Area = 884,099 sf Runoff Volume = 146,278 cf Average Runoff Depth = 1.99"
78.71% Pervious = 695,882 sf 21.29% Impervious = 188,217 sf

Summary for Subcatchment PR-10: PR-10 TO SOFTBALL TD

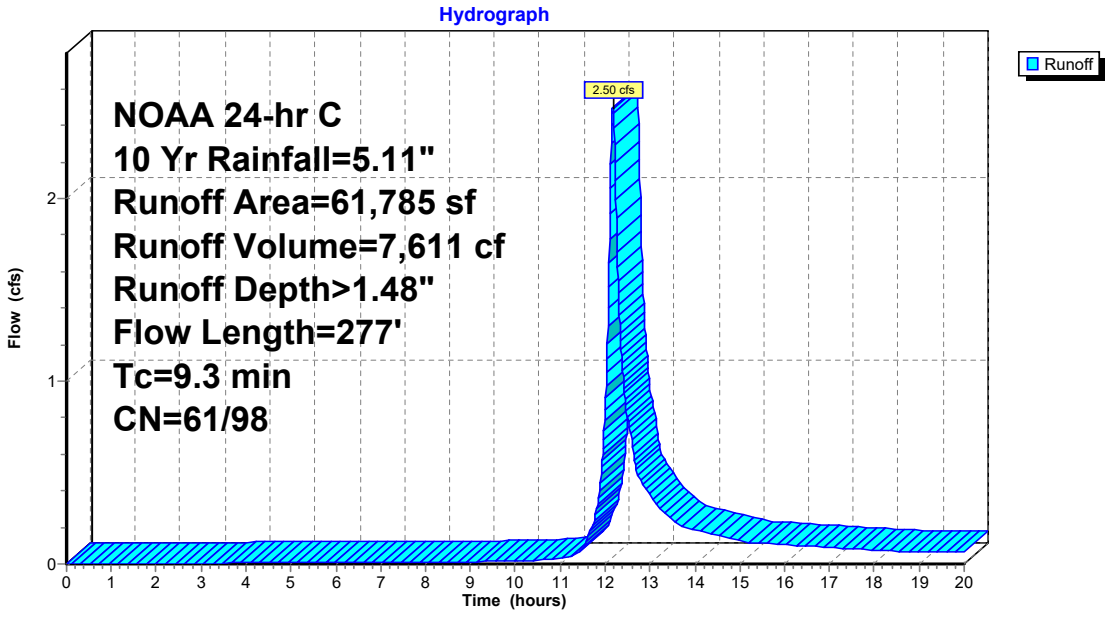
Runoff = 2.50 cfs @ 12.17 hrs, Volume= 7,611 cf, Depth> 1.48"
Routed to Reach DP1PR : Softball

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10 Yr Rainfall=5.11"

Area (sf)	CN	Description
58,109	61	>75% Grass cover, Good, HSG B
3,676	98	Paved roads w/curbs & sewers, HSG B
61,785	63	Weighted Average
58,109	61	94.05% Pervious Area
3,676	98	5.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0150	0.13		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.34"
3.1	227	0.0300	1.21		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
9.3	277	Total			

Subcatchment PR-10: PR-10 TO SOFTBALL TD



Summary for Subcatchment PR-11: PR-11 POROUS WALK

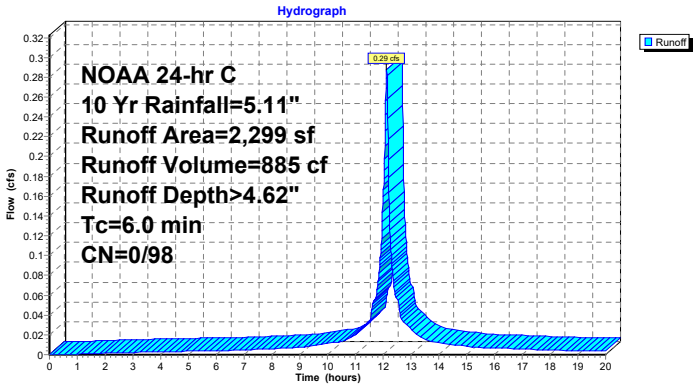
Runoff = 0.29 cfs @ 12.13 hrs, Volume= 885 cf, Depth> 4.62"
Routed to Pond BB-5P : POROUS WALK 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10 Yr Rainfall=5.11"

Area (sf)	CN	Description
2,299	98	Paved roads w/curbs & sewers, HSG B
2,299	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Surface**

Subcatchment PR-11: PR-11 POROUS WALK



Summary for Subcatchment PR-12: PR-12 TO POROUS WALK

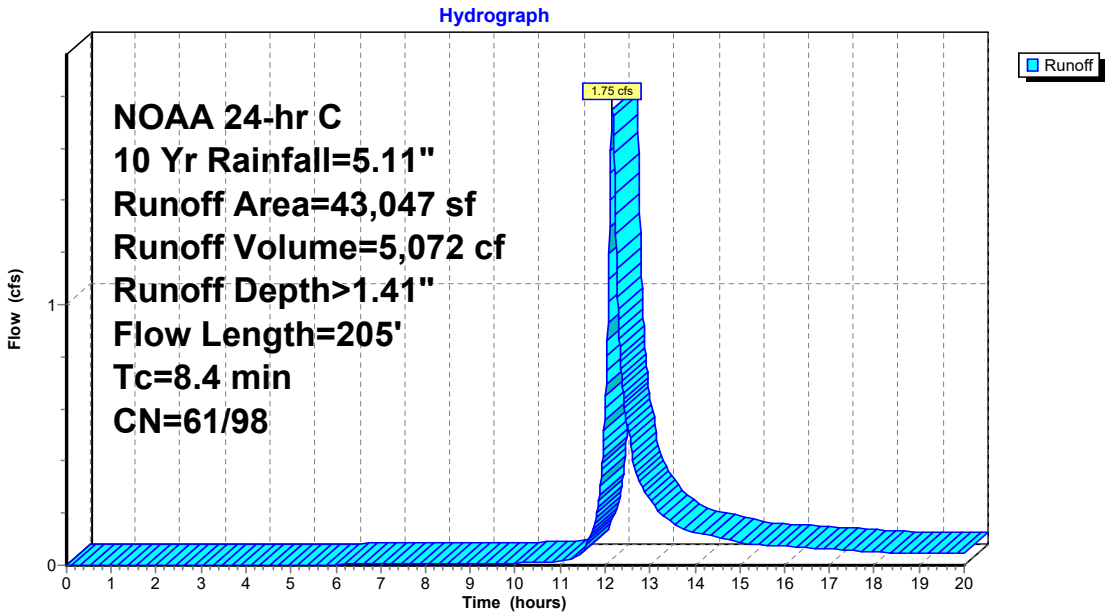
Runoff = 1.75 cfs @ 12.16 hrs, Volume= 5,072 cf, Depth> 1.41"
Routed to Pond BB-5P : POROUS WALK 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10 Yr Rainfall=5.11"

Area (sf)	CN	Description
41,325	61	>75% Grass cover, Good, HSG B
1,722	98	Paved roads w/curbs & sewers, HSG B
43,047	62	Weighted Average
41,325	61	96.00% Pervious Area
1,722	98	4.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0150	0.13		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.34"
2.2	155	0.0290	1.19		**Shallow Concentrated Flow, Shallow Conc** Short Grass Pasture Kv= 7.0 fps
8.4	205	Total			

Subcatchment PR-12: PR-12 TO POROUS WALK



Summary for Subcatchment PR-20: PR-20 CROSS COUNTRY

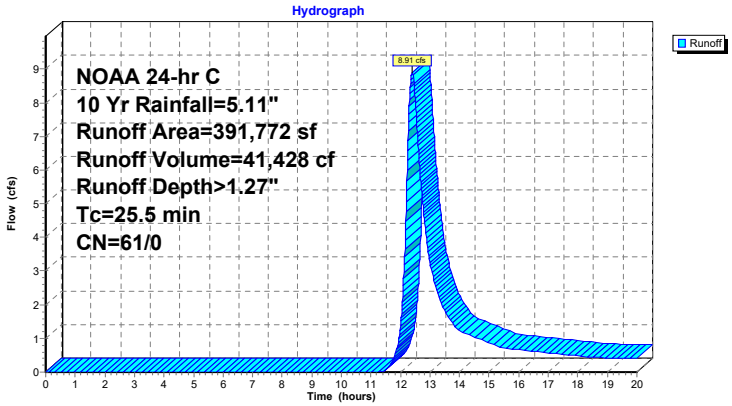
Runoff = 8.91 cfs @ 12.39 hrs, Volume= 41,428 cf, Depth> 1.27"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10 Yr Rainfall=5.11"

Area (sf)	CN	Description
391,772	61	>75% Grass cover, Good, HSG B
391,772	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.5					Direct Entry, Same as Exist

Subcatchment PR-20: PR-20 CROSS COUNTRY



Summary for Subcatchment PR-30: TO POROUS WALK 2

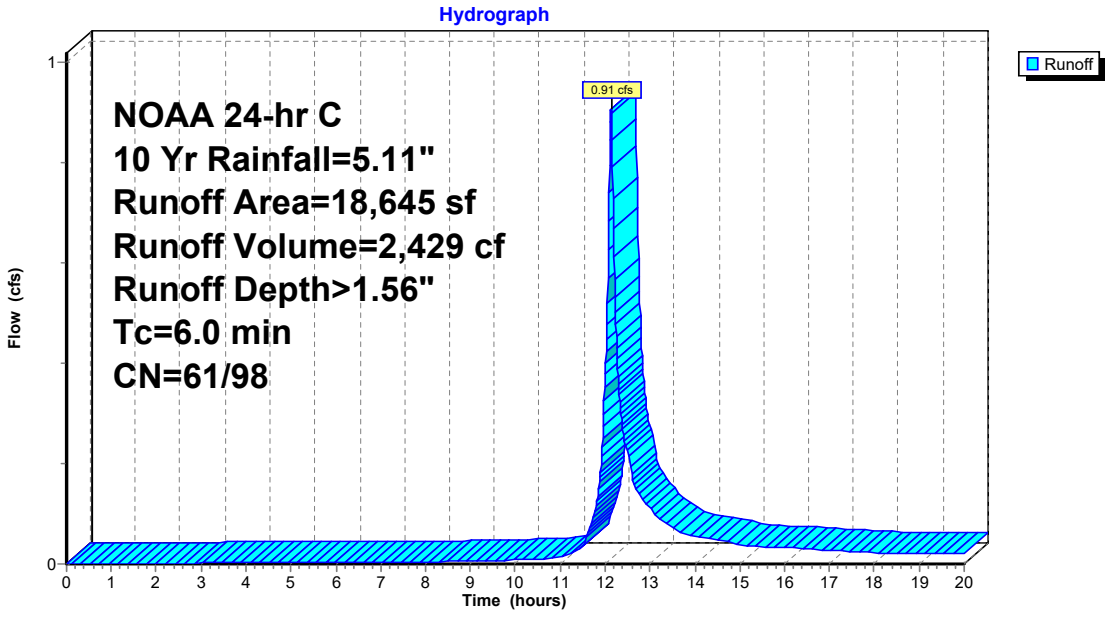
Runoff = 0.91 cfs @ 12.14 hrs, Volume= 2,429 cf, Depth> 1.56"
Routed to Pond BB-4P : POROUS WALK-2

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10 Yr Rainfall=5.11"

Area (sf)	CN	Description
17,074	61	>75% Grass cover, Good, HSG B
1,571	98	Paved parking, HSG A
18,645	64	Weighted Average
17,074	61	91.57% Pervious Area
1,571	98	8.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment PR-30: TO POROUS WALK 2



Summary for Subcatchment PR-31: Plaza

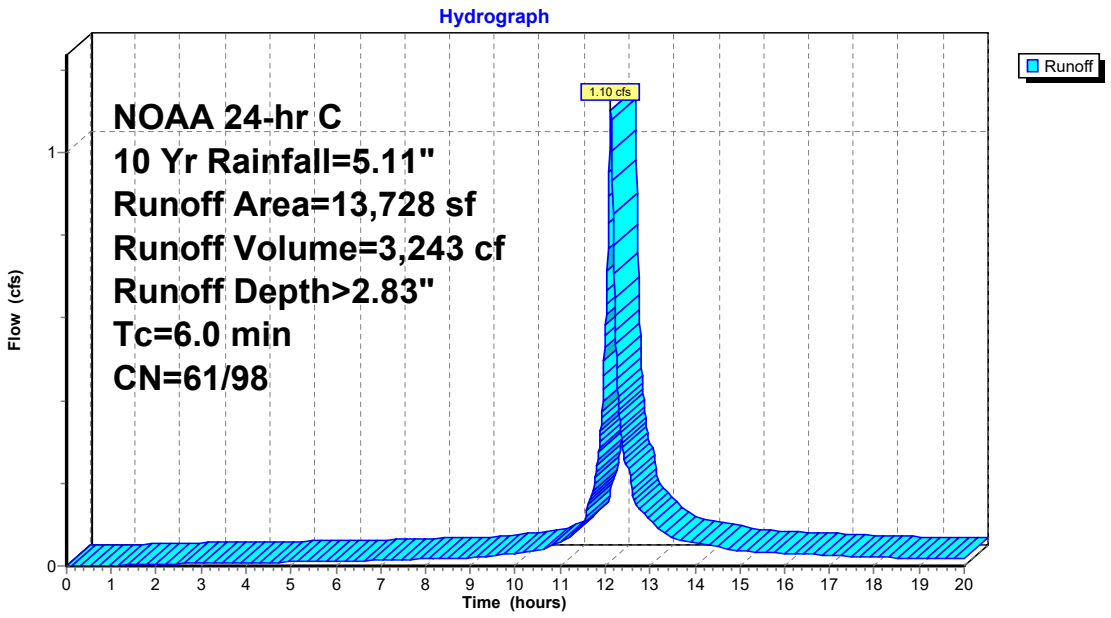
Runoff = 1.10 cfs @ 12.13 hrs, Volume= 3,243 cf, Depth> 2.83"
Routed to Pond BB-P1 : Plaza

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10 Yr Rainfall=5.11"

Area (sf)	CN	Description
6,391	98	Paved parking, HSG B
7,337	61	>75% Grass cover, Good, HSG B
13,728	78	Weighted Average
7,337	61	53.45% Pervious Area
6,391	98	46.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment PR-31: Plaza



Summary for Subcatchment PR-32: PR-32 TO SOFTBALL

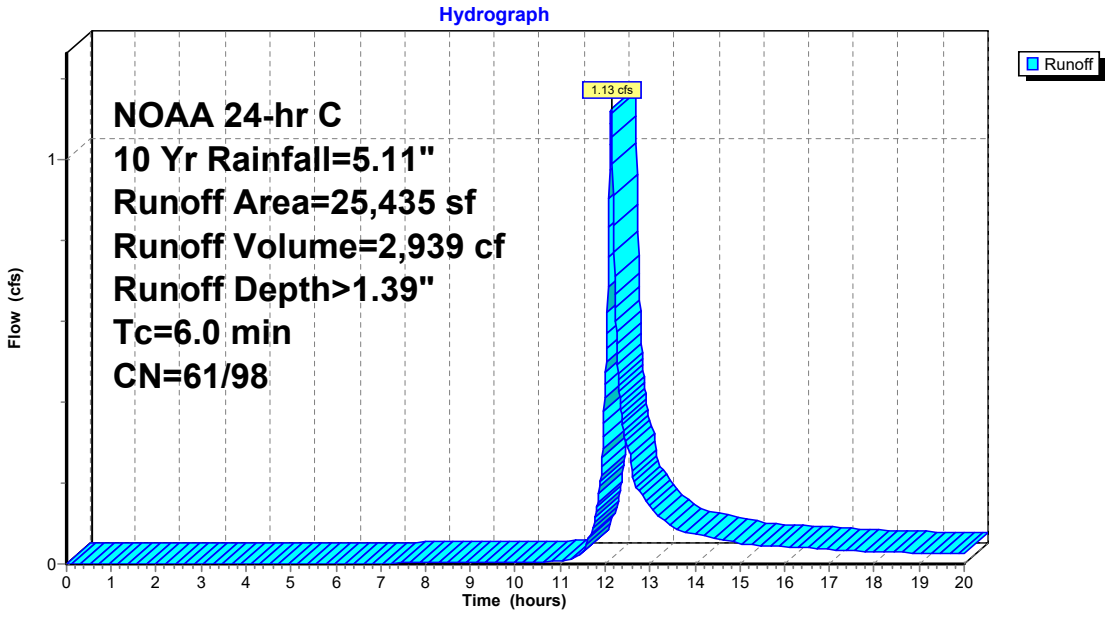
Runoff = 1.13 cfs @ 12.14 hrs, Volume= 2,939 cf, Depth> 1.39"
Routed to Reach DP1PR : Softball

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10 Yr Rainfall=5.11"

Area (sf)	CN	Description
24,637	61	>75% Grass cover, Good, HSG B
798	98	Paved parking, HSG A
25,435	62	Weighted Average
24,637	61	96.86% Pervious Area
798	98	3.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum**

Subcatchment PR-32: PR-32 TO SOFTBALL



Summary for Subcatchment PR-34: SLOPE TO REGIONAL SWALE

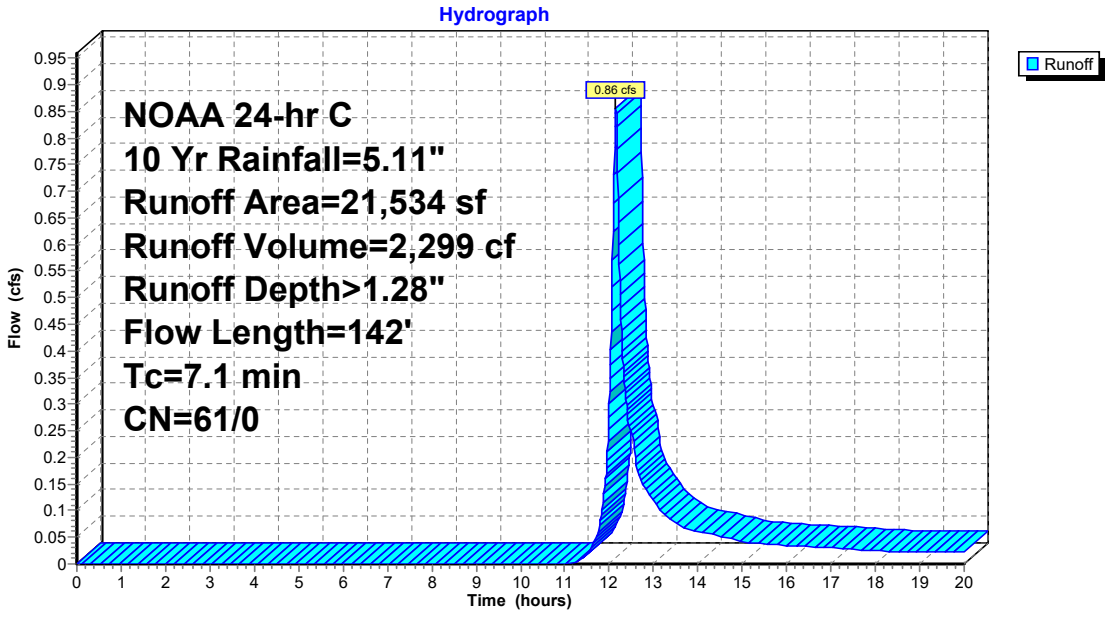
Runoff = 0.86 cfs @ 12.15 hrs, Volume= 2,299 cf, Depth> 1.28"
Routed to Reach DP-3PR : REGIONAL SWALE

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10 Yr Rainfall=5.11"

Area (sf)	CN	Description
21,534	61	>75% Grass cover, Good, HSG B
21,534	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0150	0.13		**Sheet Flow, SHEET FLOW** Grass: Short n= 0.150 P2= 3.34"
0.9	92	0.0570	1.67		**Shallow Concentrated Flow, SHALLOW CONC** Short Grass Pasture Kv= 7.0 fps
7.1	142	Total			

Subcatchment PR-34: SLOPE TO REGIONAL SWALE



Summary for Subcatchment PR-35: FIELD AND ROOF

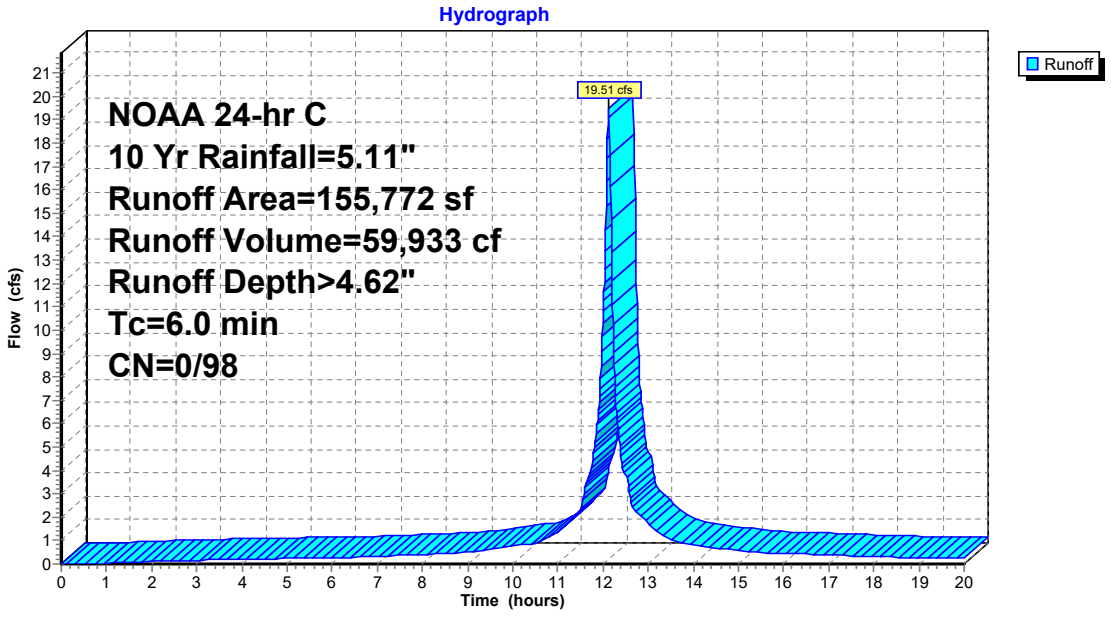
Runoff = 19.51 cfs @ 12.13 hrs, Volume= 59,933 cf, Depth> 4.62"
Routed to Pond BB-P2 : INFILT BASIN

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10 Yr Rainfall=5.11"

Area (sf)	CN	Description
155,772	98	Roofs, HSG B
0	61	>75% Grass cover, Good, HSG B
155,772	98	Weighted Average
155,772	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT**

Subcatchment PR-35: FIELD AND ROOF



Summary for Subcatchment PR-36: GRASS/LANDSCAPING

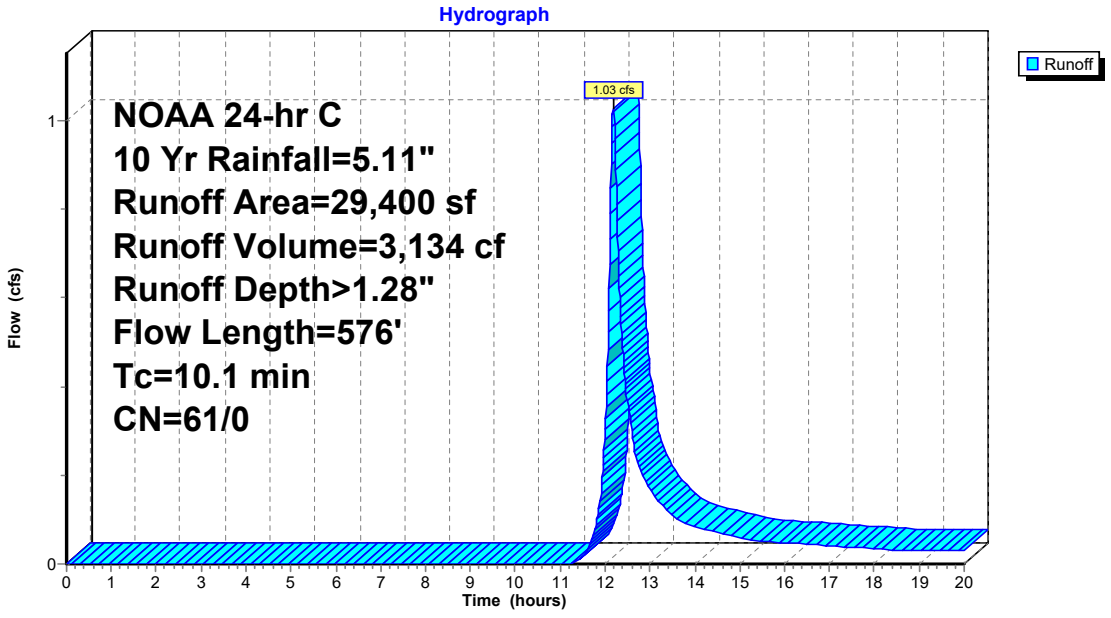
Runoff = 1.03 cfs @ 12.18 hrs, Volume= 3,134 cf, Depth> 1.28"
Routed to Reach DP-3PR : REGIONAL SWALE

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10 Yr Rainfall=5.11"

Area (sf)	CN	Description
29,400	61	>75% Grass cover, Good, HSG B
29,400	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.34"
1.7	116	0.0050	1.14		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.7	235	0.0120	5.38	4.23	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
0.4	175	0.0100	7.80	24.51	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012
10.1	576	Total			

Subcatchment PR-36: GRASS/LANDSCAPING



Summary for Subcatchment PR-37: PR-37 TOWARD SWALE

Runoff = 0.96 cfs @ 12.32 hrs, Volume= 4,005 cf, Depth> 1.31"
Routed to Reach DP-3PR : REGIONAL SWALE

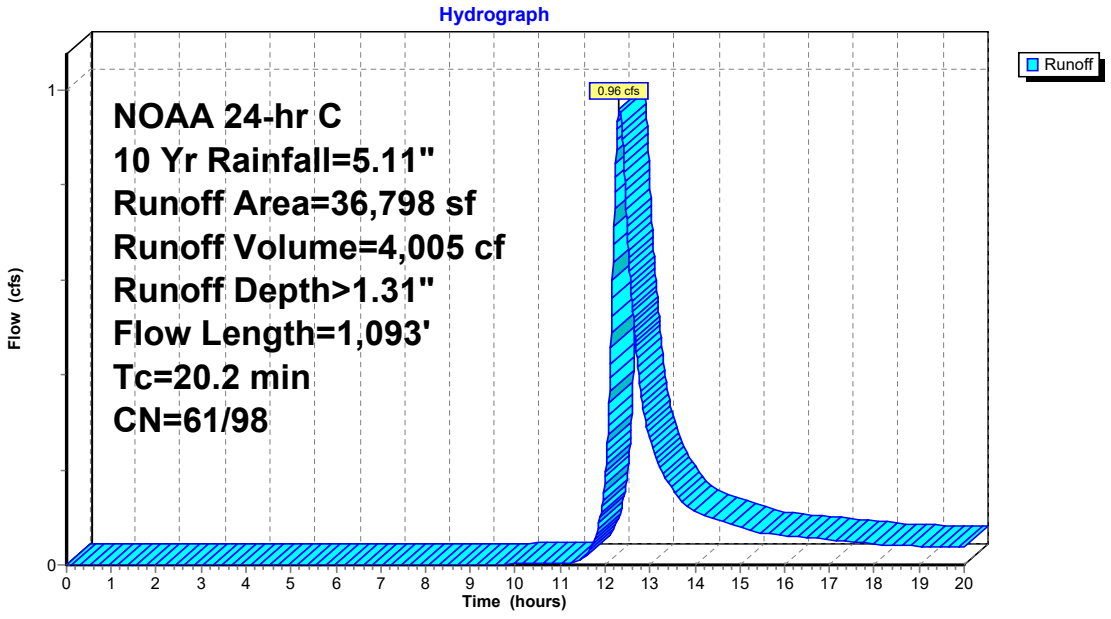
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10 Yr Rainfall=5.11"

Area (sf)	CN	Description
36,427	61	>75% Grass cover, Good, HSG B
371	98	Paved roads w/curbs & sewers, HSG B
36,798	61	Weighted Average
36,427	61	98.99% Pervious Area
371	98	1.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.34"
2.2	242	0.0130	1.84		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	104	0.0190	5.17	1.80	**Pipe Channel, 8"** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012 Corrugated PP, smooth interior
0.5	118	0.0100	4.35	2.37	**Pipe Channel, 10"** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.012 Corrugated PP, smooth interior
0.2	143	0.0126	11.47	81.11	**Pipe Channel, 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012
0.1	104	0.0133	11.79	83.33	**Pipe Channel, 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012
9.6	332	0.0032	0.58	4.09	**Pipe Channel, 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.120

20.2 1,093 Total

Subcatchment PR-37: PR-37 TOWARD SWALE



Summary for Subcatchment PR-38: BULLPEN

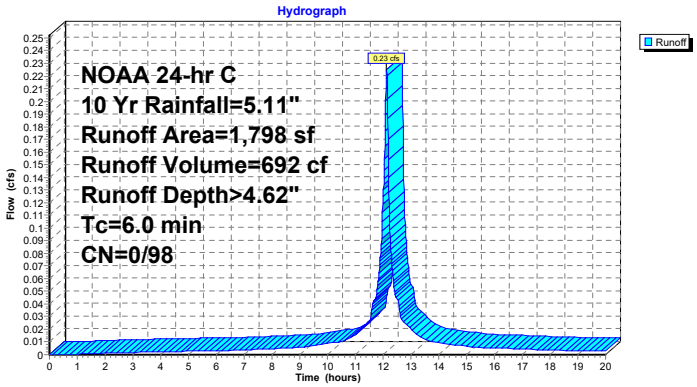
Runoff = 0.23 cfs @ 12.13 hrs, Volume= 692 cf, Depth> 4.62"
Routed to Pond BB-2A : BULLPEN

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10 Yr Rainfall=5.11"

Area (sf)	CN	Description
1,798	98	Paved parking, HSG B
1,798	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment PR-38: BULLPEN



Summary for Subcatchment PR-40: PR-40 TOWARD TENNIS

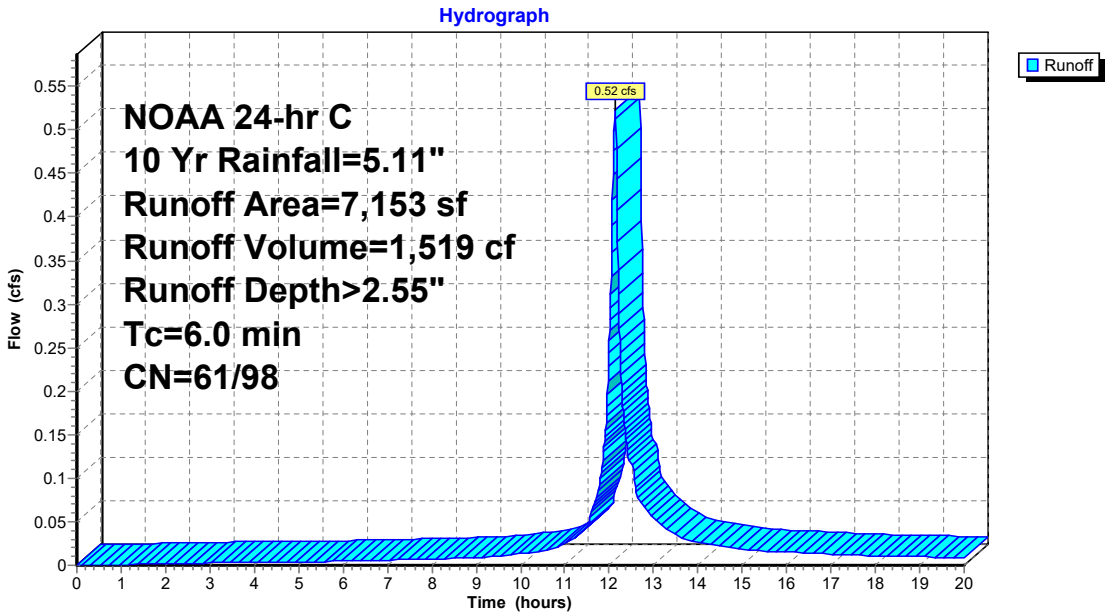
Runoff = 0.52 cfs @ 12.13 hrs, Volume= 1,519 cf, Depth> 2.55"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10 Yr Rainfall=5.11"

Area (sf)	CN	Description
4,438	61	>75% Grass cover, Good, HSG B
0	61	>75% Grass cover, Good, HSG B
2,715	98	Paved roads w/curbs & sewers, HSG B
7,153	75	Weighted Average
4,438	61	62.04% Pervious Area
2,715	98	37.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR-40: PR-40 TOWARD TENNIS



Summary for Subcatchment PR-50: PR-50 REGIOINAL SWALE

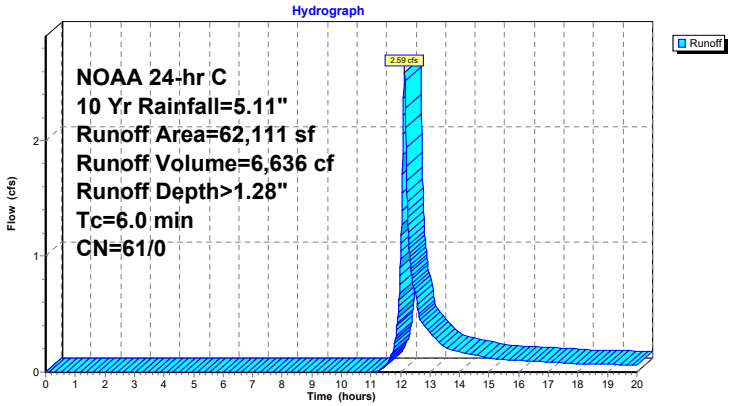
Runoff = 2.59 cfs @ 12.14 hrs, Volume= 6,636 cf, Depth> 1.28"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10 Yr Rainfall=5.11"

Area (sf)	CN	Description
62,111	61	>75% Grass cover, Good, HSG B
62,111	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum**

Subcatchment PR-50: PR-50 REGIOINAL SWALE



Summary for Subcatchment PR33B: PR-33B

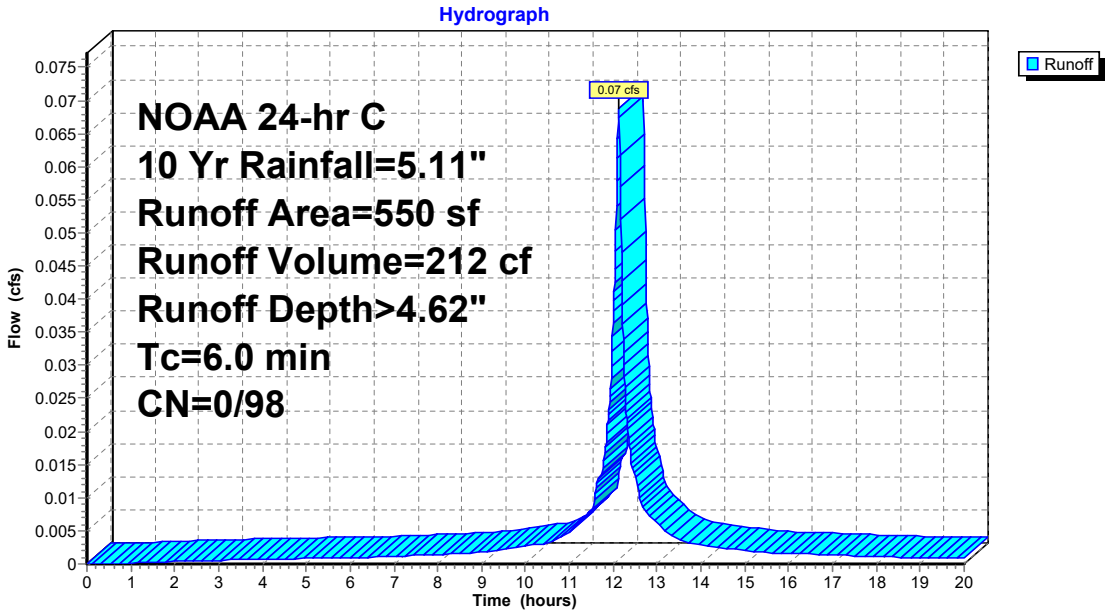
Runoff = 0.07 cfs @ 12.13 hrs, Volume= 212 cf, Depth> 4.62"
Routed to Pond 33B : CELL B

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10 Yr Rainfall=5.11"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
550	98	Paved parking, HSG B
550	98	Weighted Average
550	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33B: PR-33B



Summary for Subcatchment PR33C: PR-33C

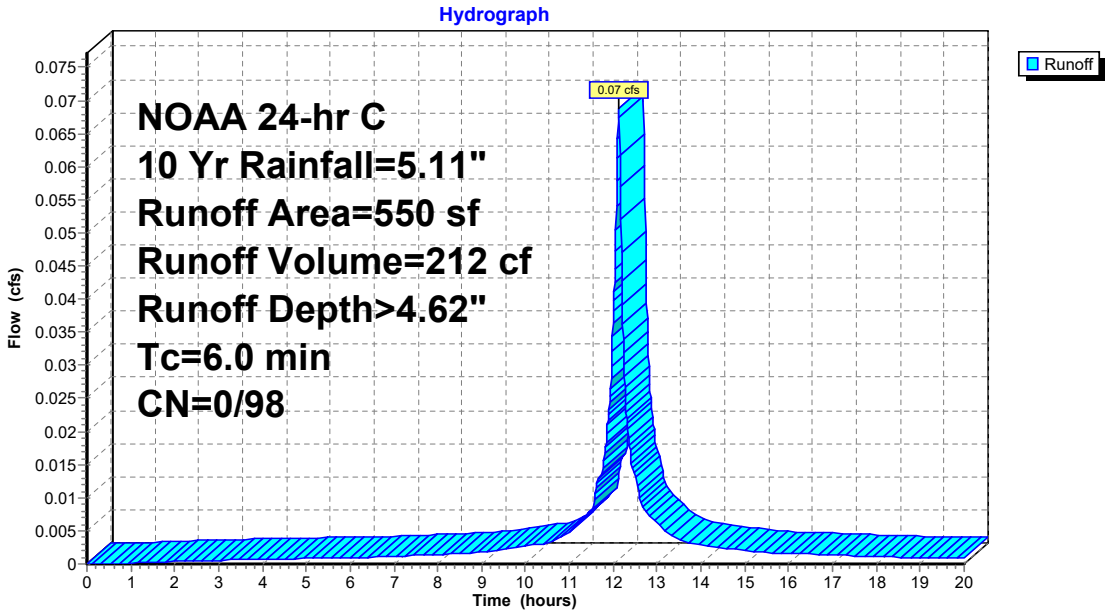
Runoff = 0.07 cfs @ 12.13 hrs, Volume= 212 cf, Depth> 4.62"
Routed to Pond 33C : CELL C

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10 Yr Rainfall=5.11"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
550	98	Paved parking, HSG B
550	98	Weighted Average
550	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33C: PR-33C



Summary for Subcatchment PR33D: PR-33E

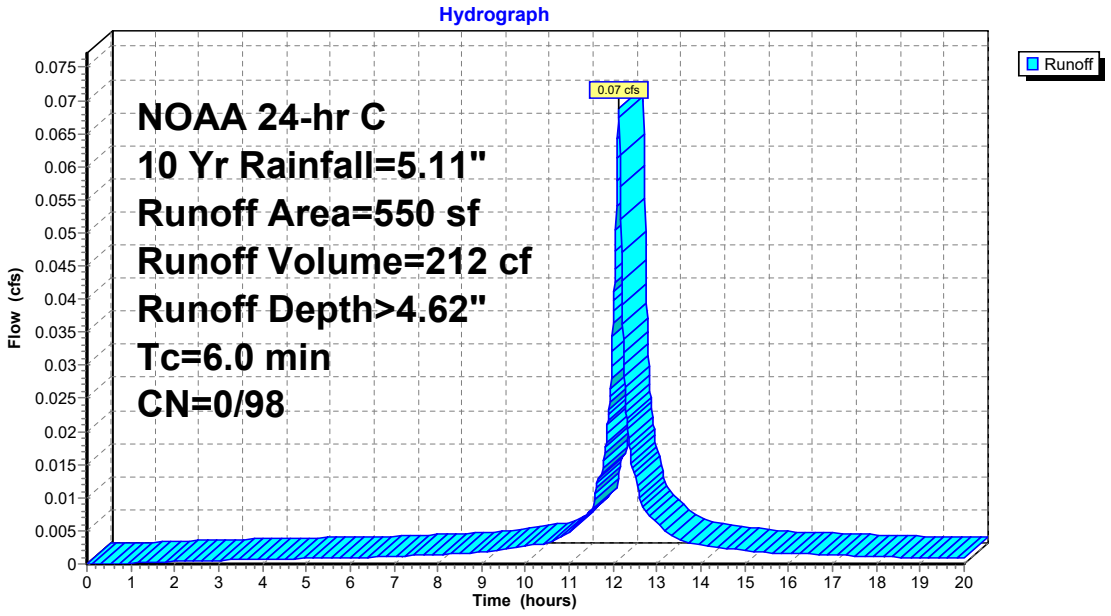
Runoff = 0.07 cfs @ 12.13 hrs, Volume= 212 cf, Depth> 4.62"
Routed to Pond 33D : CELL D

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10 Yr Rainfall=5.11"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
550	98	Paved parking, HSG B
550	98	Weighted Average
550	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33D: PR-33E



Summary for Subcatchment PR33E: PR-33E

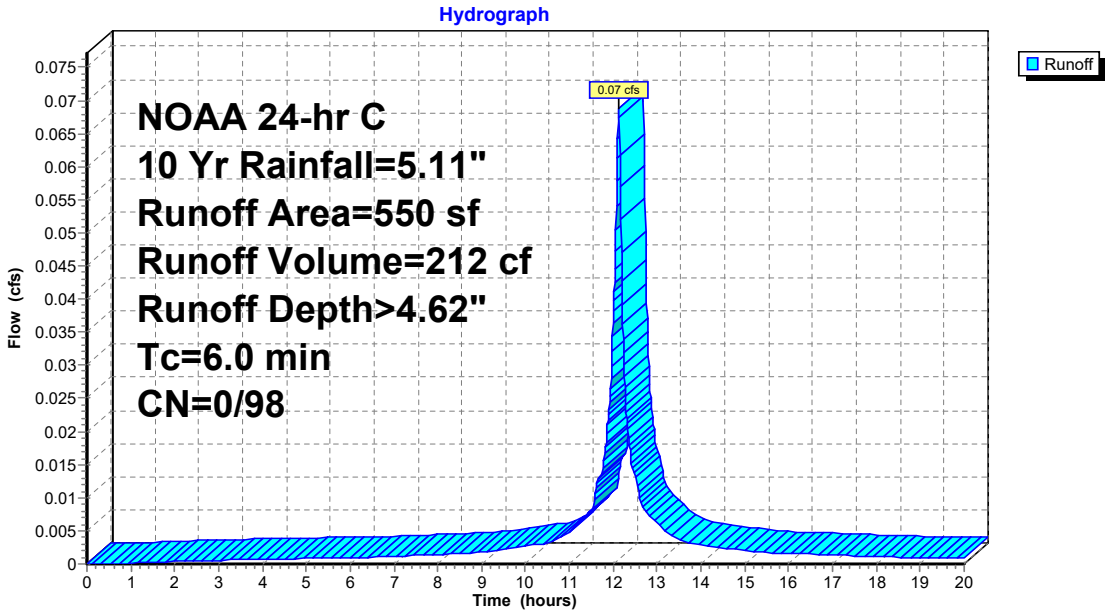
Runoff = 0.07 cfs @ 12.13 hrs, Volume= 212 cf, Depth> 4.62"
Routed to Pond 33E : CELL E

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10 Yr Rainfall=5.11"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
550	98	Paved parking, HSG B
550	98	Weighted Average
550	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33E: PR-33E



Summary for Subcatchment PR33F: PR-33F

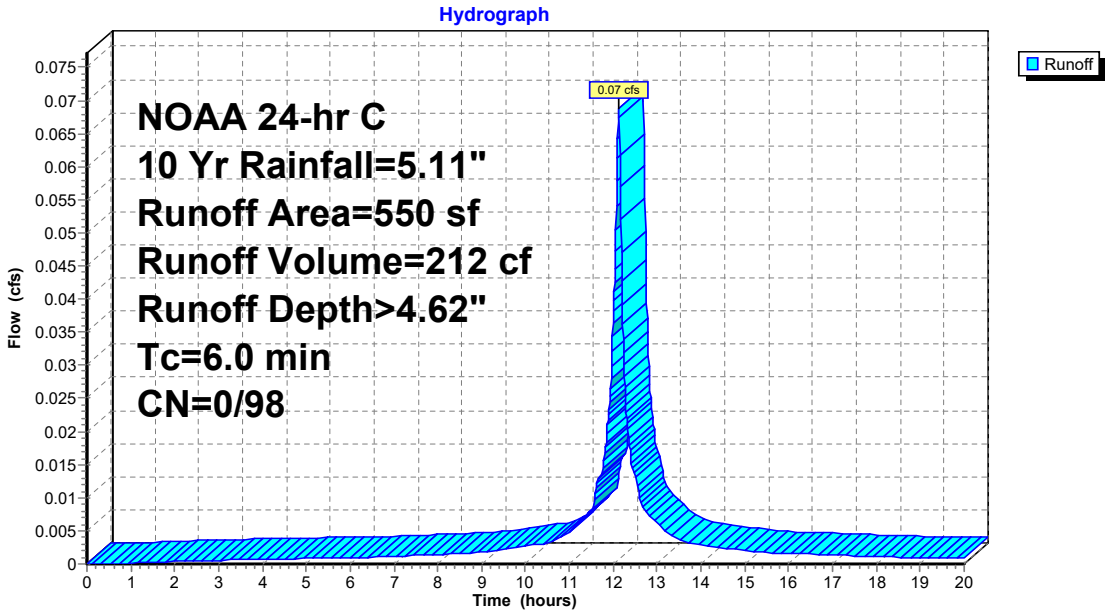
Runoff = 0.07 cfs @ 12.13 hrs, Volume= 212 cf, Depth> 4.62"
Routed to Pond 33F : CELL F

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10 Yr Rainfall=5.11"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
550	98	Paved parking, HSG B
550	98	Weighted Average
550	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33F: PR-33F



Summary for Subcatchment PR33G: PR-33F

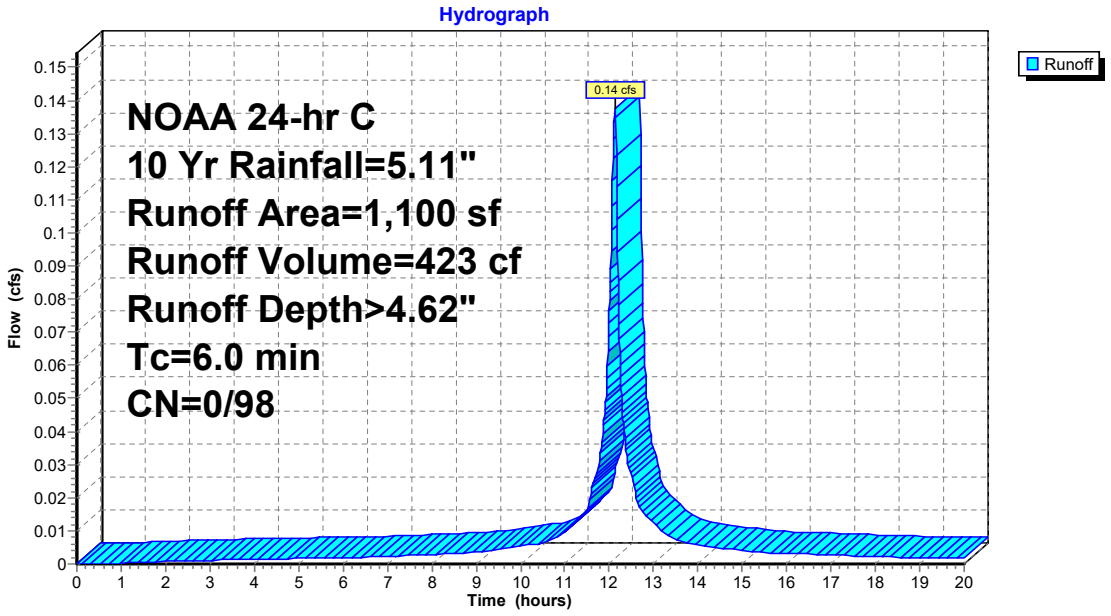
Runoff = 0.14 cfs @ 12.13 hrs, Volume= 423 cf, Depth> 4.62"
Routed to Pond 33G : CELL G

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10 Yr Rainfall=5.11"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
1,100	98	Paved parking, HSG B
1,100	98	Weighted Average
1,100	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33G: PR-33F



Summary for Subcatchment PR33H: PR-33H

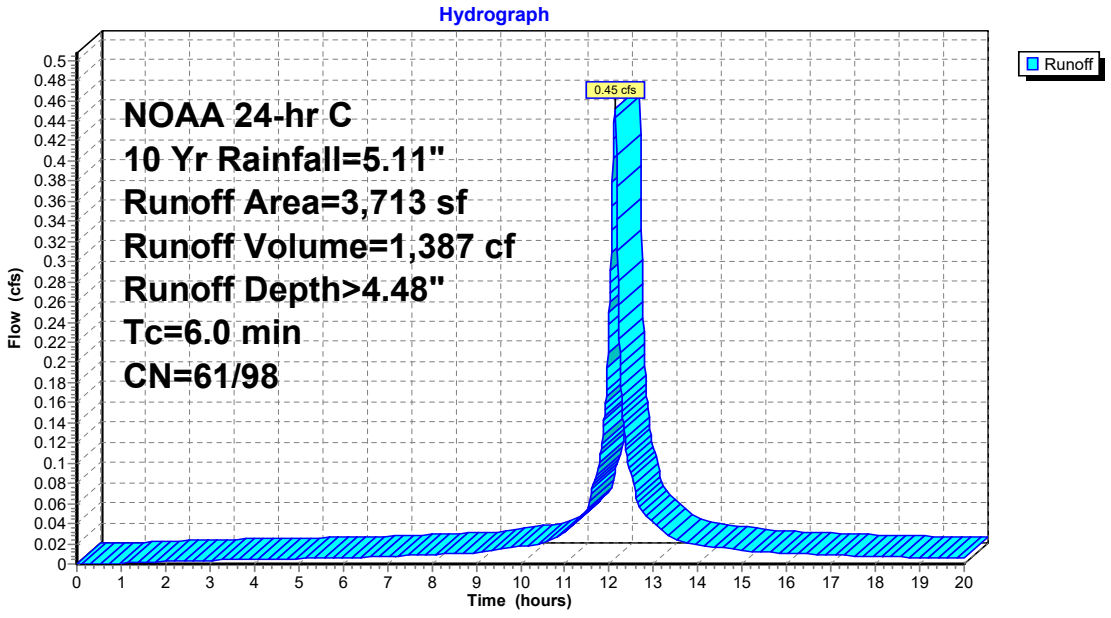
Runoff = 0.45 cfs @ 12.13 hrs, Volume= 1,387 cf, Depth> 4.48"
Routed to Pond 33H : CELL H

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10 Yr Rainfall=5.11"

	Area (sf)	CN	Description
	148	61	>75% Grass cover, Good, HSG B
*	1,634	98	Porous Pavers
*	1,931	98	Sidewalk
	3,713	97	Weighted Average
	148	61	3.99% Pervious Area
	3,565	98	96.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33H: PR-33H



Summary for Subcatchment PR33I: PR-33I

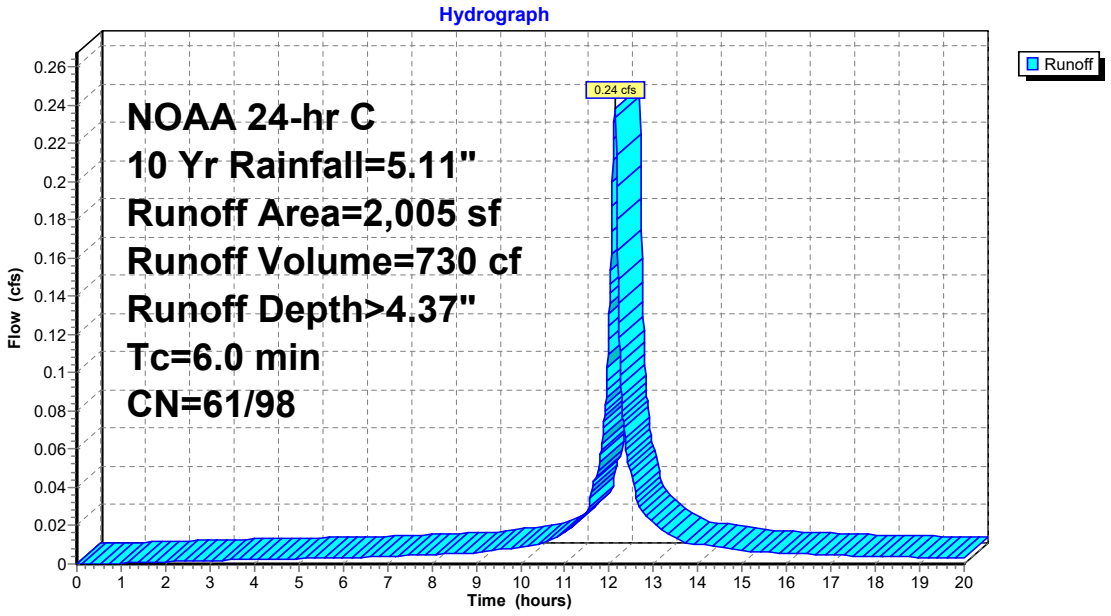
Runoff = 0.24 cfs @ 12.13 hrs, Volume= 730 cf, Depth> 4.37"
Routed to Pond 33I : CELL I

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10 Yr Rainfall=5.11"

Area (sf)	CN	Description
150	61	>75% Grass cover, Good, HSG B
1,855	98	Paved parking, HSG B
2,005	95	Weighted Average
150	61	7.48% Pervious Area
1,855	98	92.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33I: PR-33I



Summary for Subcatchment PR33J: PR-33J

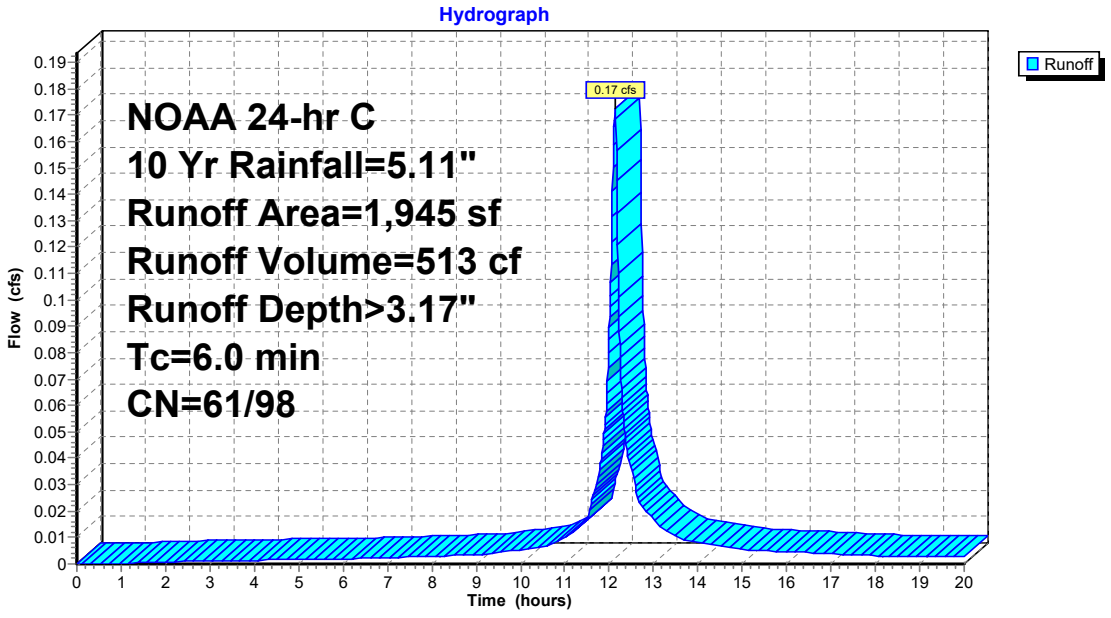
Runoff = 0.17 cfs @ 12.13 hrs, Volume= 513 cf, Depth> 3.17"
Routed to Pond 33J : CELL J

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10 Yr Rainfall=5.11"

Area (sf)	CN	Description
845	61	>75% Grass cover, Good, HSG B
1,100	98	Paved parking, HSG B
1,945	82	Weighted Average
845	61	43.44% Pervious Area
1,100	98	56.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33J: PR-33J



Summary for Subcatchment PR33K: PR-33F

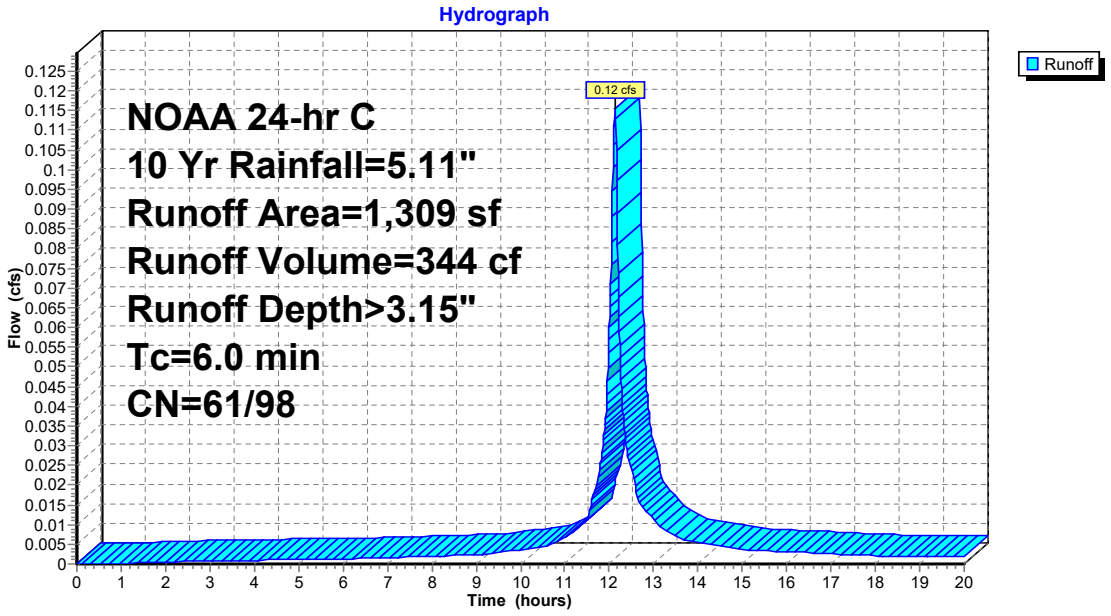
Runoff = 0.12 cfs @ 12.13 hrs, Volume= 344 cf, Depth> 3.15"
Routed to Pond 33K : CELL K

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 10 Yr Rainfall=5.11"

Area (sf)	CN	Description
575	61	>75% Grass cover, Good, HSG B
734	98	Paved parking, HSG B
1,309	82	Weighted Average
575	61	43.93% Pervious Area
734	98	56.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33K: PR-33F



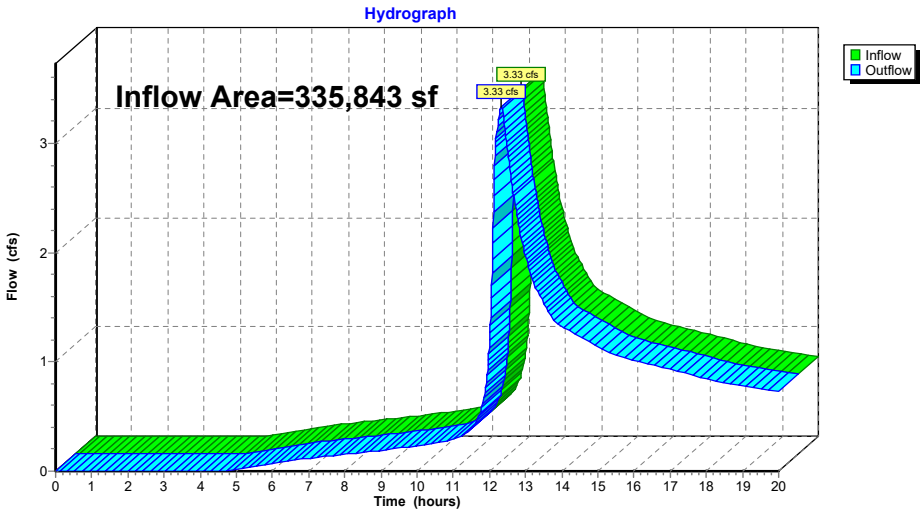
Summary for Reach DP-3PR: REGIONAL SWALE

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 335,843 sf, 53.90% Impervious, Inflow Depth > 1.45" for 10 Yr event
Inflow = 3.33 cfs @ 12.33 hrs, Volume= 40,624 cf
Outflow = 3.33 cfs @ 12.33 hrs, Volume= 40,624 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs

Reach DP-3PR: REGIONAL SWALE



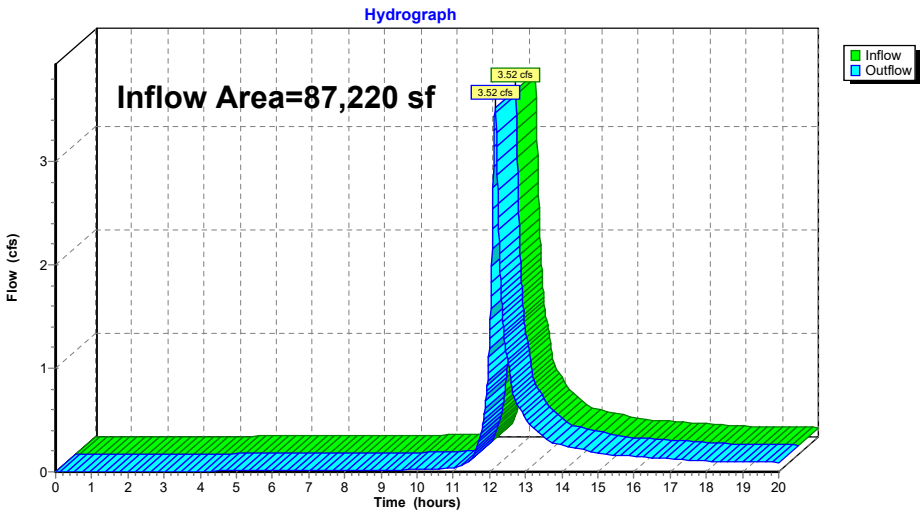
Summary for Reach DP1PR: Softball

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 87,220 sf, 5.13% Impervious, Inflow Depth > 1.45" for 10 Yr event
Inflow = 3.52 cfs @ 12.16 hrs, Volume= 10,550 cf
Outflow = 3.52 cfs @ 12.16 hrs, Volume= 10,550 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs

Reach DP1PR: Softball



Summary for Pond 33B: CELL B

Inflow Area = 550 sf,100.00% Impervious, Inflow Depth > 4.62" for 10 Yr event
Inflow = 0.07 cfs @ 12.13 hrs, Volume= 212 cf
Outflow = 0.04 cfs @ 12.23 hrs, Volume= 147 cf, Atten= 49%, Lag= 5.8 min
Primary = 0.04 cfs @ 12.23 hrs, Volume= 147 cf
Routed to Pond 33C : CELL C
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33C : CELL C

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 83.99' @ 12.23 hrs Surf.Area= 550 sf Storage= 102 cf

Plug-Flow detention time= 167.9 min calculated for 147 cf (70% of inflow)
Center-of-Mass det. time= 95.9 min (812.8 - 717.0)

Volume	Invert	Avail.Storage	Storage Description
#1	83.53'	440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,100 cf Overall x 40.0% Voids

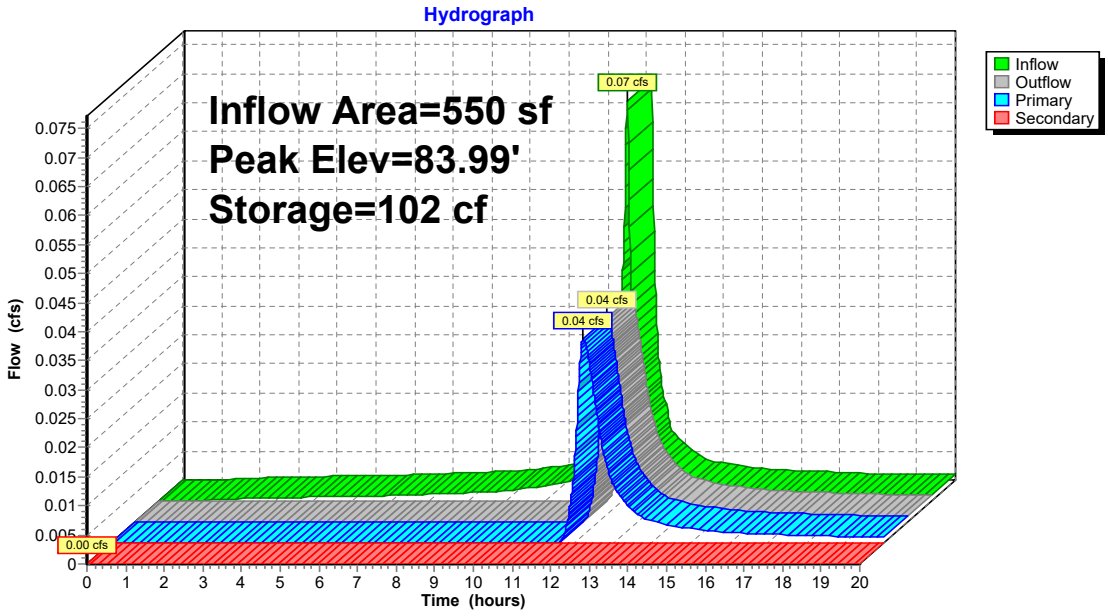
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
83.53	550	0	0
84.53	550	550	550
85.53	550	550	1,100

Device	Routing	Invert	Outlet Devices
#1	Primary	83.80'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	84.53'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.04 cfs @ 12.23 hrs HW=83.99' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.04 cfs @ 1.61 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=83.53' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33B: CELL B



Summary for Pond 33C: CELL C

Inflow Area = 1,100 sf,100.00% Impervious, Inflow Depth > 3.92" for 10 Yr event
Inflow = 0.10 cfs @ 12.14 hrs, Volume= 359 cf
Outflow = 0.05 cfs @ 12.37 hrs, Volume= 292 cf, Atten= 50%, Lag= 13.9 min
Primary = 0.05 cfs @ 12.37 hrs, Volume= 292 cf
Routed to Pond 33D : CELL D
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33D : CELL D

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 83.69' @ 12.37 hrs Surf.Area= 550 sf Storage= 127 cf

Plug-Flow detention time= 116.9 min calculated for 292 cf (81% of inflow)
Center-of-Mass det. time= 64.1 min (820.5 - 756.3)

Volume	Invert	Avail.Storage	Storage Description
#1	83.11'	440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,100 cf Overall x 40.0% Voids

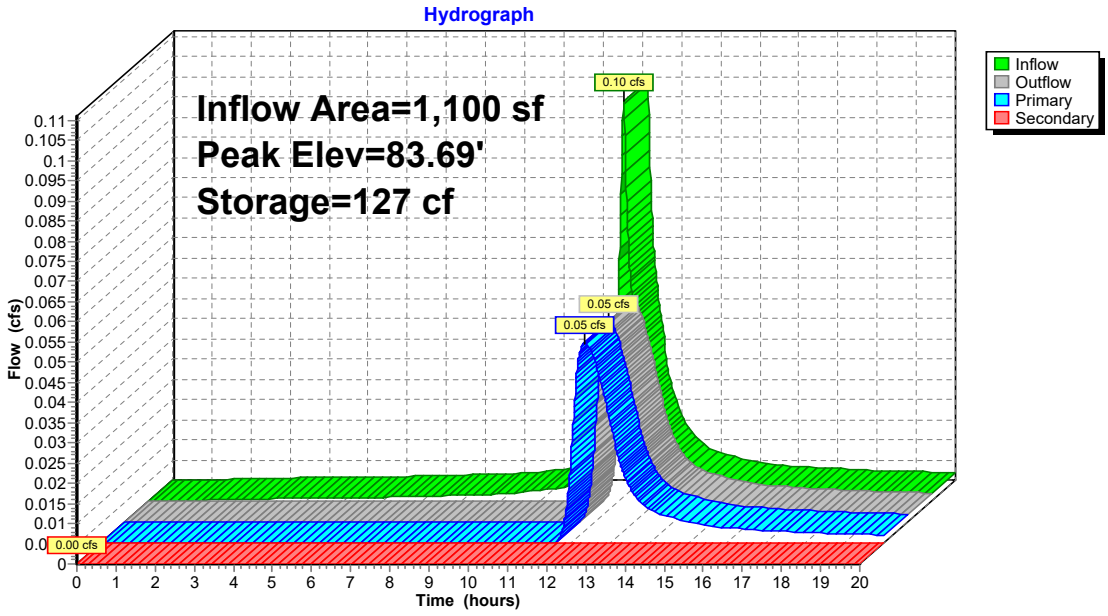
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
83.11	550	0	0
84.11	550	550	550
85.11	550	550	1,100

Device	Routing	Invert	Outlet Devices
#1	Primary	83.38'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	84.11'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.05 cfs @ 12.37 hrs HW=83.69' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.05 cfs @ 2.27 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=83.11' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33C: CELL C



Summary for Pond 33D: CELL D

Inflow Area = 1,650 sf,100.00% Impervious, Inflow Depth > 3.66" for 10 Yr event
Inflow = 0.11 cfs @ 12.14 hrs, Volume= 504 cf
Outflow = 0.06 cfs @ 12.59 hrs, Volume= 435 cf, Atten= 47%, Lag= 26.9 min
Primary = 0.06 cfs @ 12.59 hrs, Volume= 435 cf
Routed to Pond 33E : CELL E
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33E : CELL E

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 83.35' @ 12.59 hrs Surf.Area= 550 sf Storage= 143 cf

Plug-Flow detention time= 93.7 min calculated for 435 cf (86% of inflow)
Center-of-Mass det. time= 52.1 min (829.1 - 777.0)

Volume	Invert	Avail.Storage	Storage Description
#1	82.70'	440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,100 cf Overall x 40.0% Voids

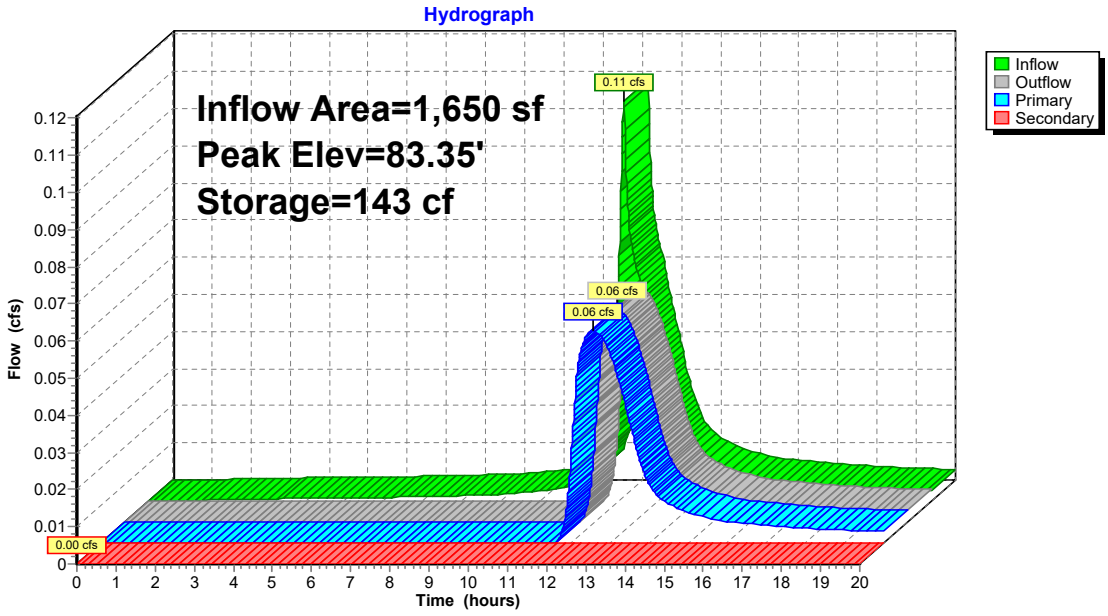
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
82.70	550	0	0
83.70	550	550	550
84.70	550	550	1,100

Device	Routing	Invert	Outlet Devices
#1	Primary	82.97'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	83.70'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.06 cfs @ 12.59 hrs HW=83.35' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.06 cfs @ 2.62 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=82.70' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33D: CELL D



Summary for Pond 33E: CELL E

[79] Warning: Submerged Pond 33D Primary device # 1 by 0.01'

Inflow Area = 2,200 sf,100.00% Impervious, Inflow Depth > 3.53" for 10 Yr event
Inflow = 0.11 cfs @ 12.14 hrs, Volume= 647 cf
Outflow = 0.06 cfs @ 12.85 hrs, Volume= 577 cf, Atten= 44%, Lag= 42.8 min
Primary = 0.06 cfs @ 12.85 hrs, Volume= 577 cf
Routed to Pond 33F : CELL F
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33F : CELL F

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 82.98' @ 12.85 hrs Surf.Area= 550 sf Storage= 154 cf

Plug-Flow detention time= 80.1 min calculated for 577 cf (89% of inflow)
Center-of-Mass det. time= 45.7 min (838.1 - 792.4)

Volume	Invert	Avail.Storage	Storage Description
#1	82.28'	440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,100 cf Overall x 40.0% Voids

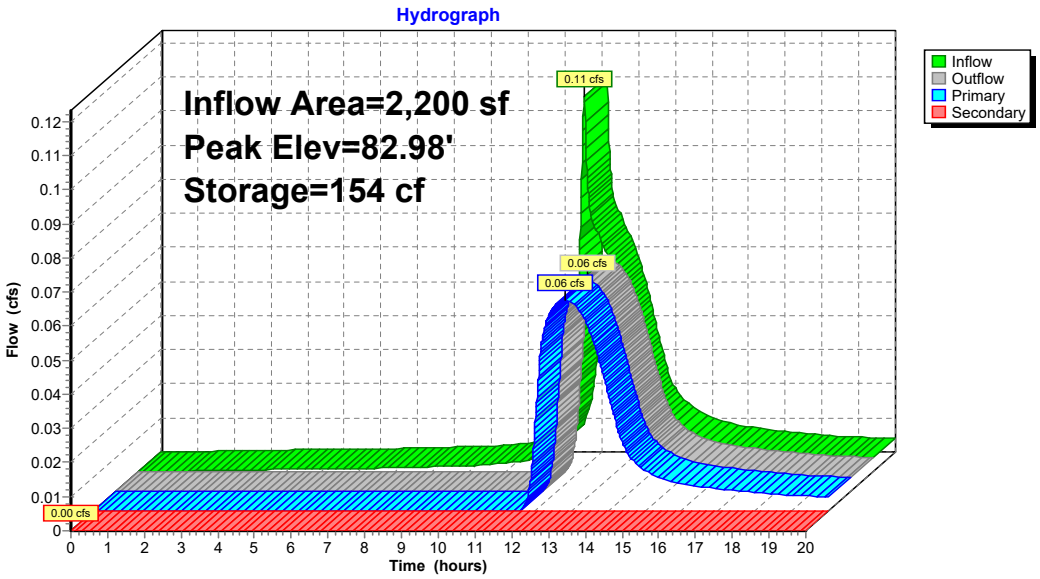
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
82.28	550	0	0
83.28	550	550	550
84.28	550	550	1,100

Device	Routing	Invert	Outlet Devices
#1	Primary	82.55'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	83.28'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.06 cfs @ 12.85 hrs HW=82.98' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.06 cfs @ 2.83 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=82.28' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33E: CELL E



Summary for Pond 33F: CELL F

[79] Warning: Submerged Pond 33E Primary device # 1 by 0.06'

Inflow Area = 2,750 sf,100.00% Impervious, Inflow Depth > 3.44" for 10 Yr event
Inflow = 0.11 cfs @ 12.14 hrs, Volume= 788 cf
Outflow = 0.07 cfs @ 13.15 hrs, Volume= 717 cf, Atten= 41%, Lag= 60.9 min
Primary = 0.07 cfs @ 13.15 hrs, Volume= 717 cf
Routed to Pond 33G : CELL G
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33G : CELL G

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 82.61' @ 13.15 hrs Surf.Area= 550 sf Storage= 162 cf

Plug-Flow detention time= 71.2 min calculated for 717 cf (91% of inflow)
Center-of-Mass det. time= 42.2 min (847.8 - 805.6)

Volume	Invert	Avail.Storage	Storage Description
#1	81.87'	440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,100 cf Overall x 40.0% Voids

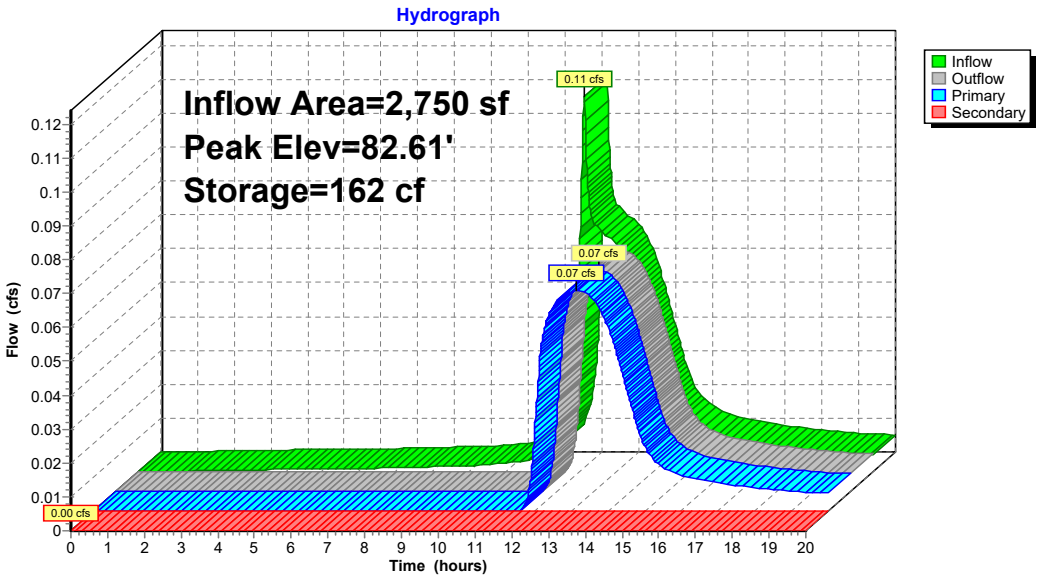
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
81.87	550	0	0
82.87	550	550	550
83.87	550	550	1,100

Device	Routing	Invert	Outlet Devices
#1	Primary	82.14'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	82.87'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.07 cfs @ 13.15 hrs HW=82.61' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.07 cfs @ 2.98 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=81.87' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33F: CELL F



Summary for Pond 33G: CELL G

Inflow Area = 3,850 sf,100.00% Impervious, Inflow Depth > 3.55" for 10 Yr event
Inflow = 0.18 cfs @ 12.13 hrs, Volume= 1,140 cf
Outflow = 0.07 cfs @ 13.64 hrs, Volume= 991 cf, Atten= 62%, Lag= 90.6 min
Primary = 0.07 cfs @ 13.64 hrs, Volume= 991 cf
Routed to Pond 33H : CELL H
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33H : CELL H

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 81.82' @ 13.64 hrs Surf.Area= 1,100 sf Storage= 343 cf

Plug-Flow detention time= 110.0 min calculated for 991 cf (87% of inflow)
Center-of-Mass det. time= 71.3 min (870.5 - 799.2)

Volume	Invert	Avail.Storage	Storage Description
#1	81.04'	880 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 2,200 cf Overall x 40.0% Voids

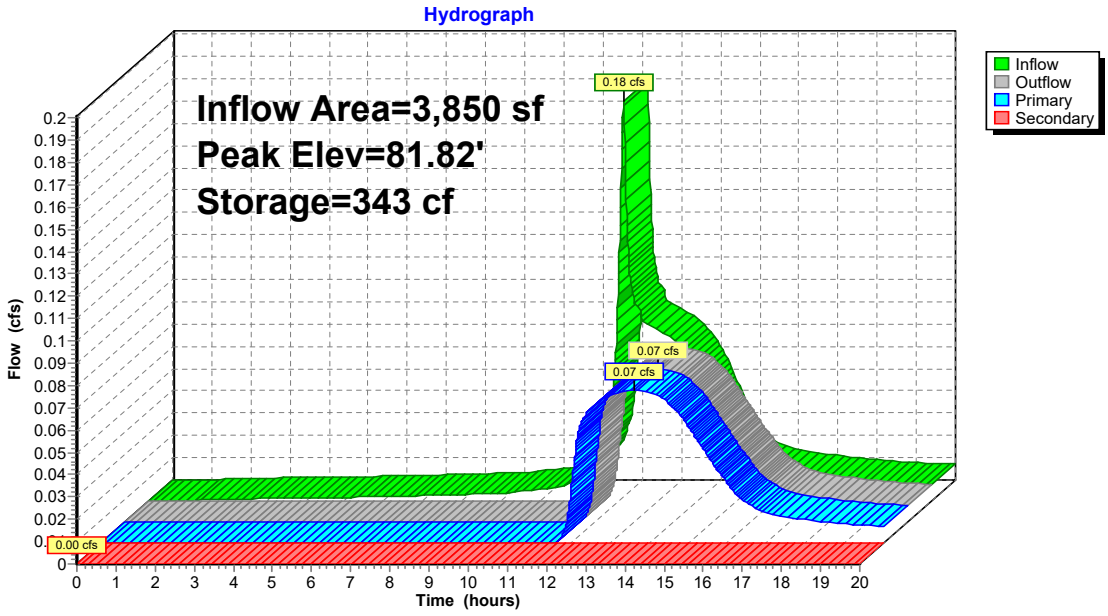
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
81.04	1,100	0	0
82.04	1,100	1,100	1,100
83.04	1,100	1,100	2,200

Device	Routing	Invert	Outlet Devices
#1	Primary	81.31'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	82.04'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.07 cfs @ 13.64 hrs HW=81.82' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.07 cfs @ 3.14 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=81.04' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33G: CELL G



Summary for Pond 33H: CELL H

Inflow Area = 7,563 sf, 98.04% Impervious, Inflow Depth > 3.77" for 10 Yr event
Inflow = 0.49 cfs @ 12.13 hrs, Volume= 2,378 cf
Outflow = 0.48 cfs @ 12.15 hrs, Volume= 1,971 cf, Atten= 3%, Lag= 1.2 min
Primary = 0.07 cfs @ 12.15 hrs, Volume= 1,469 cf
Routed to Pond 33I : CELL I
Secondary = 0.41 cfs @ 12.15 hrs, Volume= 503 cf
Routed to Pond 33I : CELL I

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 81.14' @ 12.15 hrs Surf.Area= 1,631 sf Storage= 673 cf

Plug-Flow detention time= 138.1 min calculated for 1,970 cf (83% of inflow)
Center-of-Mass det. time= 88.3 min (870.0 - 781.6)

Volume	Invert	Avail.Storage	Storage Description
#1	80.11'	1,305 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 3,262 cf Overall x 40.0% Voids

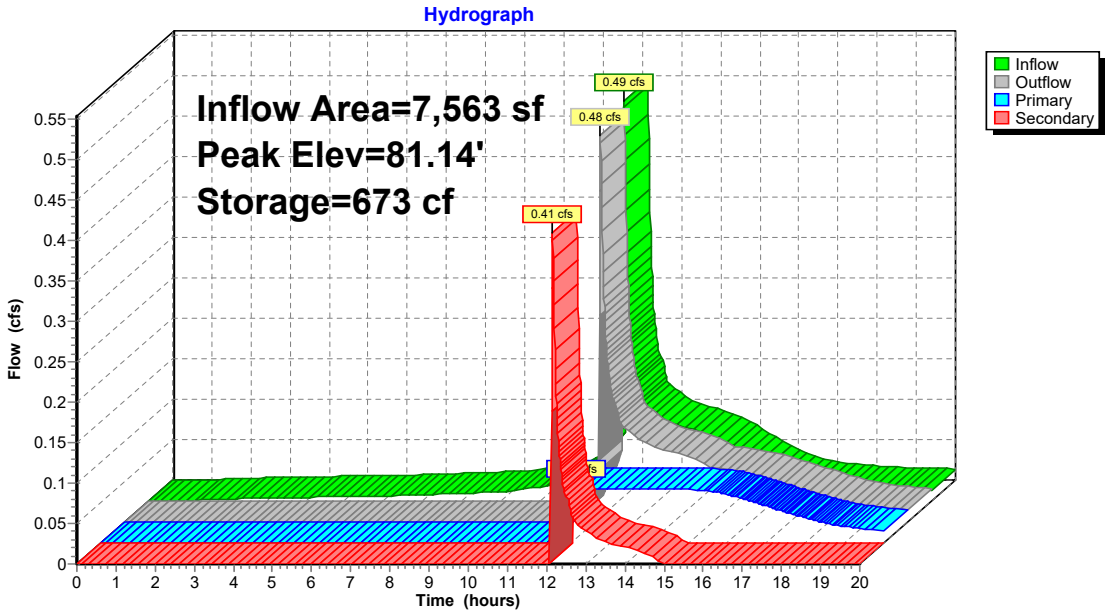
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
80.11	1,631	0	0
81.11	1,631	1,631	1,631
82.11	1,631	1,631	3,262

Device	Routing	Invert	Outlet Devices
#1	Primary	80.63'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	81.11'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.07 cfs @ 12.15 hrs HW=81.14' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.07 cfs @ 3.15 fps)

Secondary OutFlow Max=0.39 cfs @ 12.15 hrs HW=81.14' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.39 cfs @ 0.58 fps)

Pond 33H: CELL H



Summary for Pond 33I: CELL I

Inflow Area = 9,568 sf, 96.89% Impervious, Inflow Depth > 3.39" for 10 Yr event
Inflow = 0.71 cfs @ 12.15 hrs, Volume= 2,701 cf
Outflow = 0.21 cfs @ 12.45 hrs, Volume= 2,351 cf, Atten= 71%, Lag= 18.1 min
Primary = 0.09 cfs @ 12.45 hrs, Volume= 2,075 cf
Routed to Pond 33J : CELL J
Secondary = 0.12 cfs @ 12.45 hrs, Volume= 276 cf
Routed to Pond 33J : CELL J

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 80.17' @ 12.45 hrs Surf.Area= 1,855 sf Storage= 751 cf

Plug-Flow detention time= 127.4 min calculated for 2,351 cf (87% of inflow)
Center-of-Mass det. time= 88.7 min (917.9 - 829.2)

Volume	Invert	Avail.Storage	Storage Description
#1	79.16'	1,484 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 3,710 cf Overall x 40.0% Voids

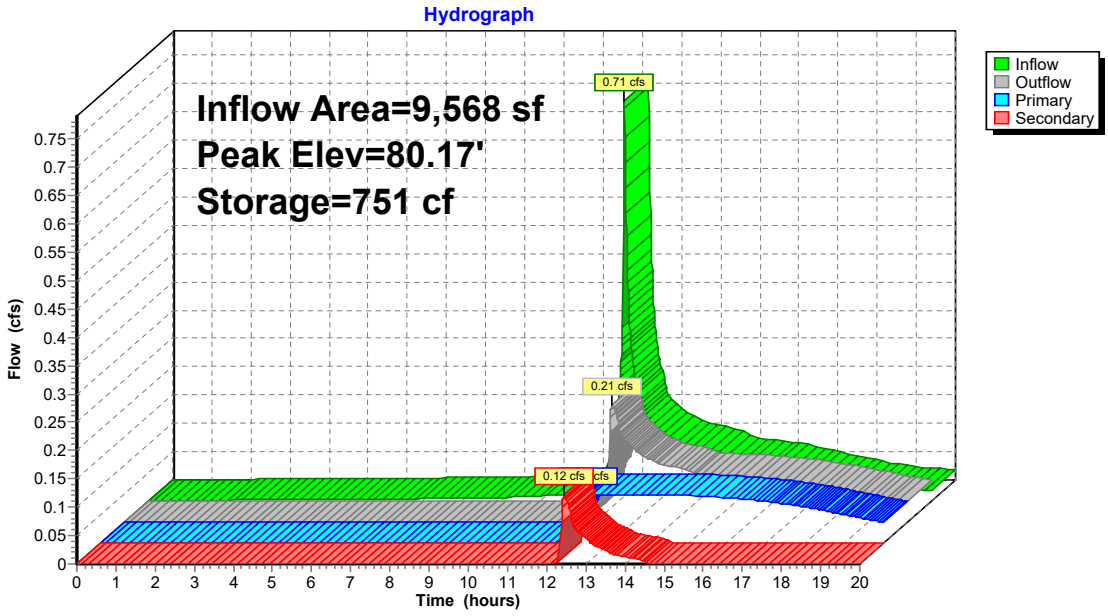
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
79.16	1,855	0	0
80.16	1,855	1,855	1,855
81.16	1,855	1,855	3,710

Device	Routing	Invert	Outlet Devices
#1	Primary	79.43'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	80.16'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.09 cfs @ 12.45 hrs HW=80.17' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.09 cfs @ 3.91 fps)

Secondary OutFlow Max=0.09 cfs @ 12.45 hrs HW=80.17' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.09 cfs @ 0.36 fps)

Pond 33I: CELL I



Summary for Pond 33J: CELL J

Inflow Area = 11,513 sf, 90.07% Impervious, Inflow Depth > 2.99" for 10 Yr event
Inflow = 0.25 cfs @ 12.44 hrs, Volume= 2,864 cf
Outflow = 0.20 cfs @ 12.60 hrs, Volume= 2,581 cf, Atten= 17%, Lag= 9.6 min
Primary = 0.09 cfs @ 12.60 hrs, Volume= 2,268 cf
Routed to Pond 33K : CELL K
Secondary = 0.12 cfs @ 12.60 hrs, Volume= 313 cf
Routed to Pond 33K : CELL K

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 79.37' @ 12.60 hrs Surf.Area= 1,100 sf Storage= 445 cf

Plug-Flow detention time= 78.5 min calculated for 2,580 cf (90% of inflow)
Center-of-Mass det. time= 49.7 min (934.9 - 885.2)

Volume	Invert	Avail.Storage	Storage Description
#1	78.36'	880 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 2,200 cf Overall x 40.0% Voids

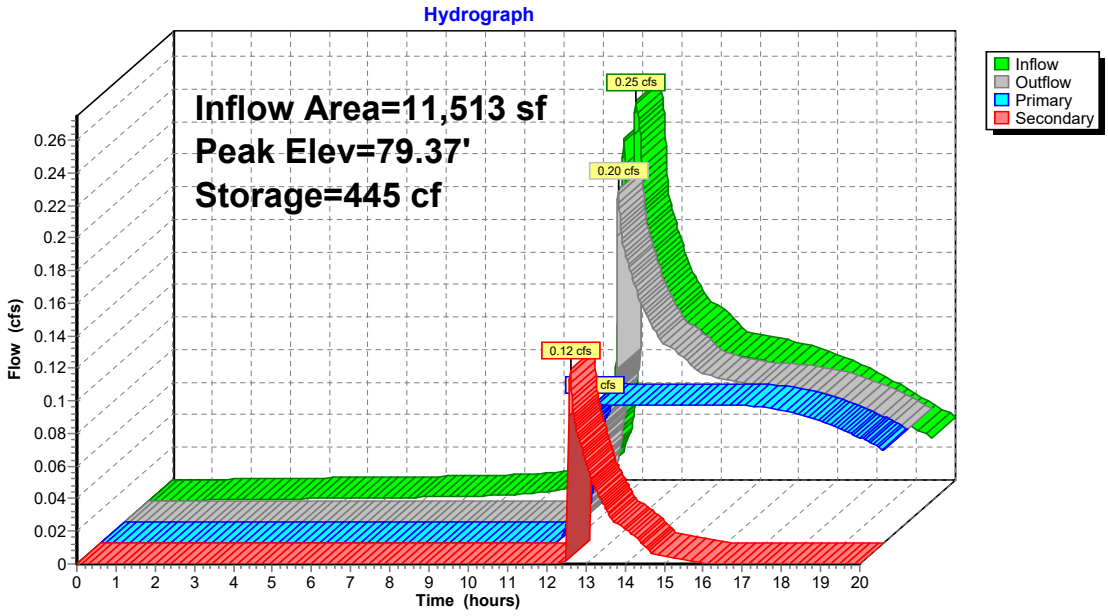
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
78.36	1,100	0	0
79.36	1,100	1,100	1,100
80.36	1,100	1,100	2,200

Device	Routing	Invert	Outlet Devices
#1	Primary	78.63'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	79.36'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.09 cfs @ 12.60 hrs HW=79.37' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.09 cfs @ 3.91 fps)

Secondary OutFlow Max=0.09 cfs @ 12.60 hrs HW=79.37' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.09 cfs @ 0.35 fps)

Pond 33J: CELL J



Summary for Pond 33K: CELL K

[79] Warning: Submerged Pond 33J Primary device # 1 by 0.36'

Inflow Area = 12,822 sf, 86.60% Impervious, Inflow Depth > 2.74" for 10 Yr event
Inflow = 0.22 cfs @ 12.60 hrs, Volume= 2,925 cf
Outflow = 0.19 cfs @ 12.69 hrs, Volume= 2,678 cf, Atten= 13%, Lag= 5.2 min
Primary = 0.08 cfs @ 12.69 hrs, Volume= 2,259 cf
Routed to Pond 33L : OUTLET PIPE
Secondary = 0.11 cfs @ 12.69 hrs, Volume= 418 cf
Routed to Pond 33L : OUTLET PIPE

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 78.99' @ 12.69 hrs Surf.Area= 734 sf Storage= 297 cf

Plug-Flow detention time= 53.5 min calculated for 2,678 cf (92% of inflow)
Center-of-Mass det. time= 30.0 min (941.4 - 911.4)

Volume	Invert	Avail.Storage	Storage Description
#1	77.98'	587 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,468 cf Overall x 40.0% Voids

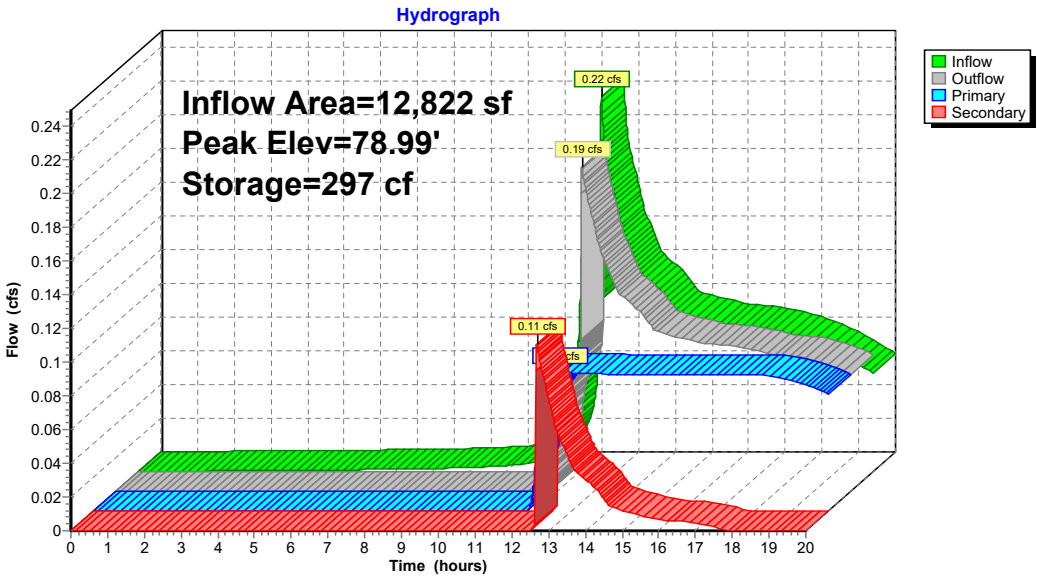
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
77.98	734	0	0
78.98	734	734	734
79.98	734	734	1,468

Device	Routing	Invert	Outlet Devices
#1	Primary	78.30'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	78.98'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.08 cfs @ 12.69 hrs HW=78.99' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.08 cfs @ 3.75 fps)

Secondary OutFlow Max=0.08 cfs @ 12.69 hrs HW=78.99' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.08 cfs @ 0.34 fps)

Pond 33K: CELL K



Summary for Pond 33L: OUTLET PIPE

[88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 12,822 sf, 86.60% Impervious, Inflow Depth > 2.51" for 10 Yr event
Inflow = 0.19 cfs @ 12.69 hrs, Volume= 2,678 cf
Outflow = 0.20 cfs @ 12.68 hrs, Volume= 2,676 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.20 cfs @ 12.68 hrs, Volume= 2,676 cf
Routed to Reach DP-3PR : REGIONAL SWALE

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 76.22' @ 12.68 hrs Surf.Area= 30 sf Storage= 3 cf

Plug-Flow detention time= 0.3 min calculated for 2,676 cf (100% of inflow)
Center-of-Mass det. time= 0.2 min (941.6 - 941.4)

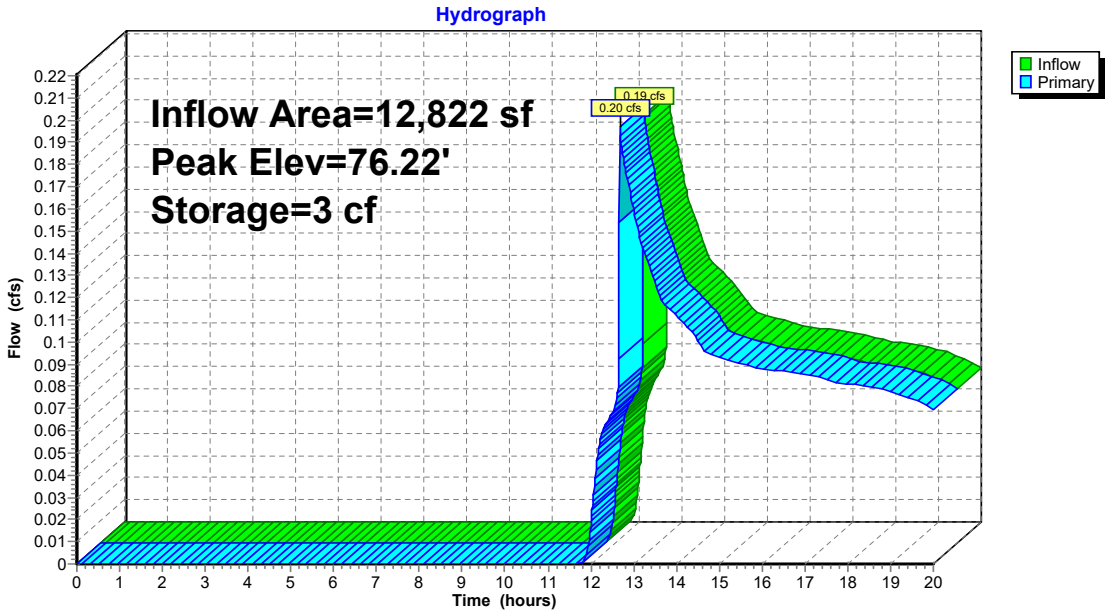
Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	37 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 93 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
76.00	30	0	0
79.10	30	93	93

Device	Routing	Invert	Outlet Devices
#1	Primary	76.00'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.20 cfs @ 12.68 hrs HW=76.22' (Free Discharge)
1=Orifice/Grate (Orifice Controls 0.20 cfs @ 1.58 fps)

Pond 33L: OUTLET PIPE



Summary for Pond BB-2A: BULLPEN

Inflow Area = 1,798 sf,100.00% Impervious, Inflow Depth > 4.62" for 10 Yr event
Inflow = 0.23 cfs @ 12.13 hrs, Volume= 692 cf
Outflow = 0.09 cfs @ 12.26 hrs, Volume= 663 cf, Atten= 58%, Lag= 7.8 min
Primary = 0.09 cfs @ 12.26 hrs, Volume= 663 cf
Routed to Reach DP-3PR : REGIONAL SWALE

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 79.28' @ 12.26 hrs Surf.Area= 1,798 sf Storage= 204 cf

Plug-Flow detention time= 67.3 min calculated for 662 cf (96% of inflow)
Center-of-Mass det. time= 49.4 min (766.4 - 717.0)

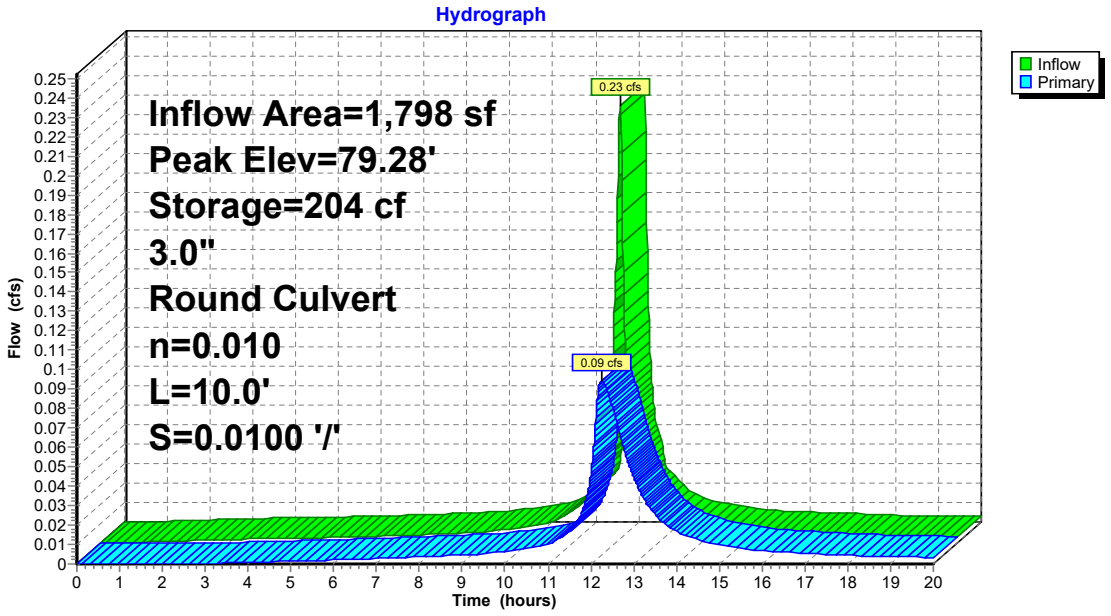
Volume	Invert	Avail.Storage	Storage Description
#1	79.00'	719 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,798 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
79.00	1,798	0	0
80.00	1,798	1,798	1,798

Device	Routing	Invert	Outlet Devices
#1	Primary	79.00'	**3.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 79.00' / 78.90' S= 0.0100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.05 sf

Primary OutFlow Max=0.09 cfs @ 12.26 hrs HW=79.28' (Free Discharge)
1=Culvert (Inlet Controls 0.09 cfs @ 1.91 fps)

Pond BB-2A: BULLPEN



Summary for Pond BB-4P: POROUS WALK-2

Inflow Area = 18,645 sf, 8.43% Impervious, Inflow Depth > 4.85" for 10 Yr event
Inflow = 2.83 cfs @ 12.15 hrs, Volume= 7,533 cf
Outflow = 2.82 cfs @ 12.16 hrs, Volume= 6,901 cf, Atten= 0%, Lag= 0.3 min
Primary = 0.05 cfs @ 12.16 hrs, Volume= 78 cf
Routed to Reach DP-3PR : REGIONAL SWALE
Secondary = 2.77 cfs @ 12.16 hrs, Volume= 6,823 cf
Routed to Pond BB-P1 : Plaza

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 88.11' @ 12.16 hrs Surf.Area= 1,571 sf Storage= 695 cf

Plug-Flow detention time= 42.5 min calculated for 6,901 cf (92% of inflow)
Center-of-Mass det. time= 14.3 min (830.2 - 815.9)

Volume	Invert	Avail.Storage	Storage Description
#1	87.00'	1,257 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 3,142 cf Overall x 40.0% Voids

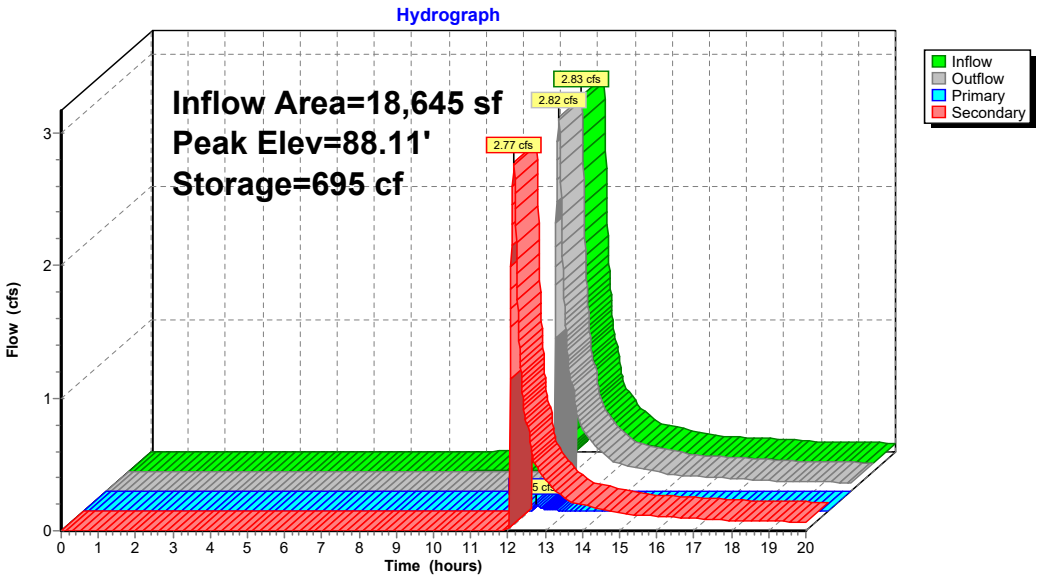
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
87.00	1,571	0	0
88.00	1,571	1,571	1,571
89.00	1,571	1,571	3,142

Device	Routing	Invert	Outlet Devices
#1	Primary	88.00'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 88.00' / 83.00' S= 0.5000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Secondary	88.00'	**30.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.05 cfs @ 12.16 hrs HW=88.11' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.05 cfs @ 1.11 fps)

Secondary OutFlow Max=2.76 cfs @ 12.16 hrs HW=88.11' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 2.76 cfs @ 0.87 fps)

Pond BB-4P: POROUS WALK-2



Summary for Pond BB-5P: POROUS WALK 1

Inflow Area = 45,346 sf, 8.87% Impervious, Inflow Depth > 1.58" for 10 Yr event
Inflow = 2.00 cfs @ 12.16 hrs, Volume= 5,956 cf
Outflow = 2.00 cfs @ 12.16 hrs, Volume= 5,148 cf, Atten= 0%, Lag= 0.3 min
Primary = 0.03 cfs @ 12.16 hrs, Volume= 44 cf
Routed to Reach DP-3PR : REGIONAL SWALE
Secondary = 1.97 cfs @ 12.16 hrs, Volume= 5,104 cf
Routed to Pond BB-4P : POROUS WALK-2

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 91.08' @ 12.16 hrs Surf.Area= 2,298 sf Storage= 872 cf

Plug-Flow detention time= 73.2 min calculated for 5,148 cf (86% of inflow)
Center-of-Mass det. time= 29.6 min (825.4 - 795.9)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	1,609 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 4,596 cf Overall x 35.0% Voids

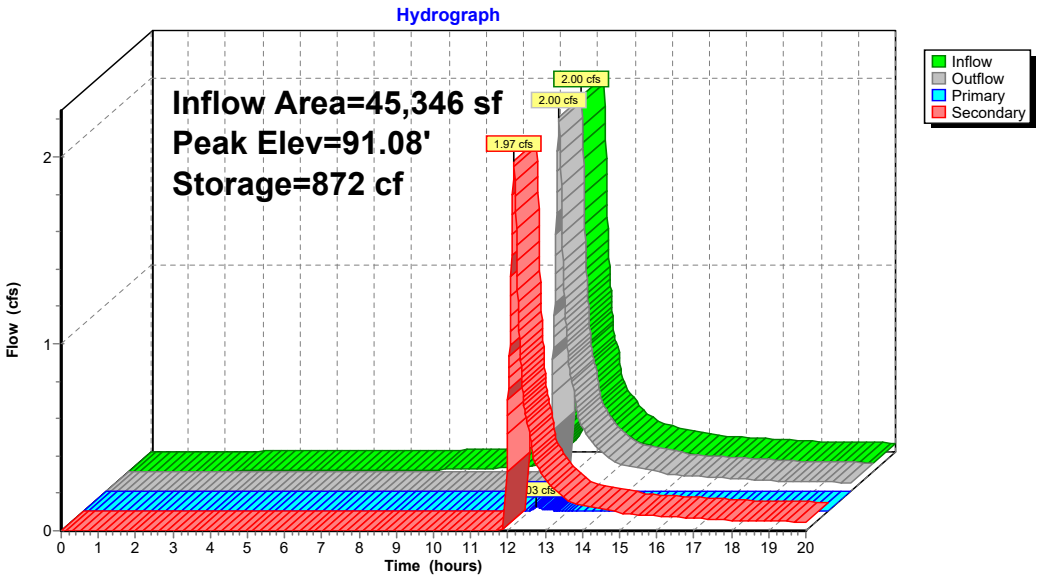
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.00	2,298	0	0
91.00	2,298	2,298	2,298
92.00	2,298	2,298	4,596

Device	Routing	Invert	Outlet Devices
#1	Primary	91.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	91.00'	**30.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.03 cfs @ 12.16 hrs HW=91.08' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.03 cfs @ 0.99 fps)

Secondary OutFlow Max=1.96 cfs @ 12.16 hrs HW=91.08' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 1.96 cfs @ 0.78 fps)

Pond BB-5P: POROUS WALK 1



Summary for Pond BB-P1: Plaza

Inflow Area = 13,728 sf, 46.55% Impervious, Inflow Depth > 8.80" for 10 Yr event
Inflow = 3.82 cfs @ 12.15 hrs, Volume= 10,065 cf
Outflow = 1.06 cfs @ 12.49 hrs, Volume= 7,147 cf, Atten= 72%, Lag= 20.4 min
Primary = 1.06 cfs @ 12.49 hrs, Volume= 7,147 cf
Routed to Reach DP-3PR : REGIONAL SWALE

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 82.53' @ 12.49 hrs Surf.Area= 6,390 sf Storage= 3,920 cf

Plug-Flow detention time= 138.8 min calculated for 7,147 cf (71% of inflow)
Center-of-Mass det. time= 65.3 min (867.3 - 802.1)

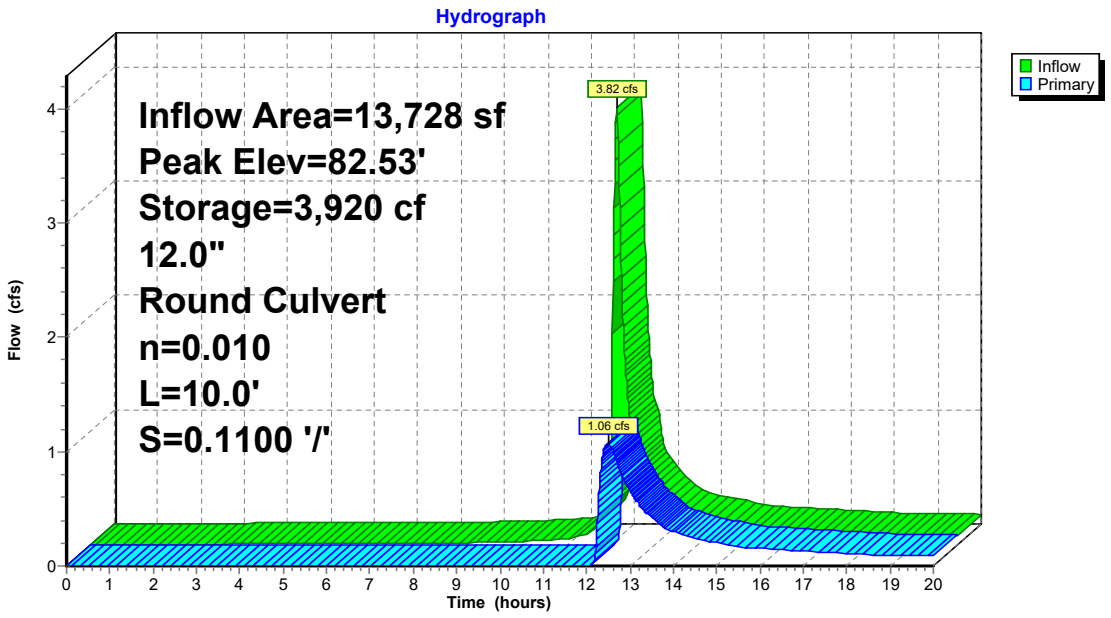
Volume	Invert	Avail.Storage	Storage Description
#1	81.00'	12,780 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 31,950 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
81.00	6,390	0	0
86.00	6,390	31,950	31,950

Device	Routing	Invert	Outlet Devices
#1	Primary	82.00'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 82.00' / 80.90' S= 0.1100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.06 cfs @ 12.49 hrs HW=82.53' (Free Discharge)
1=Culvert (Inlet Controls 1.06 cfs @ 2.49 fps)

Pond BB-P1: Plaza



Summary for Pond BB-P2: INFILT BASIN

Inflow Area = 155,772 sf,100.00% Impervious, Inflow Depth > 4.62" for 10 Yr event
Inflow = 19.51 cfs @ 12.13 hrs, Volume= 59,933 cf
Outflow = 0.65 cfs @ 14.65 hrs, Volume= 20,577 cf, Atten= 97%, Lag= 151.4 min
Primary = 0.38 cfs @ 14.65 hrs, Volume= 15,233 cf
Routed to Reach DP-3PR : REGIONAL SWALE
Secondary = 0.27 cfs @ 14.65 hrs, Volume= 5,343 cf
Routed to Reach DP-3PR : REGIONAL SWALE

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 77.74' @ 14.65 hrs Surf.Area= 120,809 sf Storage= 43,080 cf

Plug-Flow detention time= 318.0 min calculated for 20,566 cf (34% of inflow)
Center-of-Mass det. time= 160.7 min (877.7 - 717.0)

Volume	Invert	Avail.Storage	Storage Description
#1	74.67'	124,126 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 354,645 cf Overall x 35.0% Voids

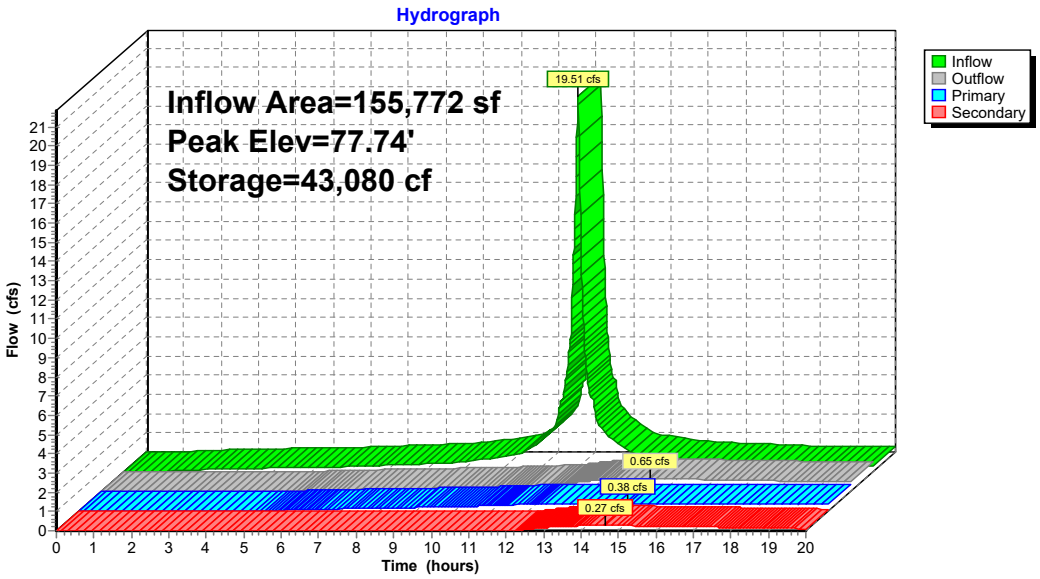
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
74.67	14,517	0	0
77.00	14,517	33,825	33,825
77.01	120,809	677	34,501
79.66	120,809	320,144	354,645

Device	Routing	Invert	Outlet Devices
#1	Secondary	77.50'	**24.0" Round Culvert** L= 353.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 77.50' / 76.50' S= 0.0028 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 3.14 sf
#2	Primary	75.00'	**3.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 75.00' / 74.90' S= 0.0100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.05 sf

Primary OutFlow Max=0.38 cfs @ 14.65 hrs HW=77.74' (Free Discharge)
└**2=Culvert** (Inlet Controls 0.38 cfs @ 7.79 fps)

Secondary OutFlow Max=0.27 cfs @ 14.65 hrs HW=77.74' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.27 cfs @ 1.86 fps)

Pond BB-P2: INFILT BASIN



Time span=0.00-20.00 hrs, dt=0.01 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentPR-10: PR-10 TO SOFTBALL TD Runoff Area=61,785 sf 5.95% Impervious Runoff Depth>3.87"
Flow Length=277' Tc=9.3 min CN=61/98 Runoff=6.80 cfs 19,938 cf

SubcatchmentPR-11: PR-11 POROUS WALK Runoff Area=2,299 sf 100.00% Impervious Runoff Depth>7.99"
Tc=6.0 min CN=0/98 Runoff=0.49 cfs 1,530 cf

SubcatchmentPR-12: PR-12 TO POROUS WALK Runoff Area=43,047 sf 4.00% Impervious Runoff Depth>3.79"
Flow Length=205' Tc=8.4 min CN=61/98 Runoff=4.85 cfs 13,590 cf

SubcatchmentPR-20: PR-20 CROSS COUNTRY Runoff Area=391,772 sf 0.00% Impervious Runoff Depth>3.59"
Tc=25.5 min CN=61/0 Runoff=26.60 cfs 117,151 cf

SubcatchmentPR-30: TO POROUS WALK 2 Runoff Area=18,645 sf 8.43% Impervious Runoff Depth>3.99"
Tc=6.0 min CN=61/98 Runoff=2.39 cfs 6,192 cf

SubcatchmentPR-31: Plaza Runoff Area=13,728 sf 46.55% Impervious Runoff Depth>5.65"
Tc=6.0 min CN=61/98 Runoff=2.24 cfs 6,465 cf

SubcatchmentPR-32: PR-32 TO SOFTBALL Runoff Area=25,435 sf 3.14% Impervious Runoff Depth>3.75"
Tc=6.0 min CN=61/98 Runoff=3.13 cfs 7,958 cf

SubcatchmentPR-34: SLOPE TO REGIONAL SWALE Runoff Area=21,534 sf 0.00% Impervious Runoff Depth>3.62"
Flow Length=142' Tc=7.1 min CN=61/0 Runoff=2.48 cfs 6,489 cf

SubcatchmentPR-35: FIELD AND ROOF Runoff Area=155,772 sf 100.00% Impervious Runoff Depth>7.99"
Tc=6.0 min CN=0/98 Runoff=33.17 cfs 103,659 cf

SubcatchmentPR-36: GRASS/LANDSCAPING Runoff Area=29,400 sf 0.00% Impervious Runoff Depth>3.61"
Flow Length=576' Tc=10.1 min CN=61/0 Runoff=3.01 cfs 8,848 cf

SubcatchmentPR-37: PR-37 TOWARD SWALE Runoff Area=36,798 sf 1.01% Impervious Runoff Depth>3.64"
Flow Length=1,093' Tc=20.2 min CN=61/98 Runoff=2.81 cfs 11,163 cf

SubcatchmentPR-38: BULLPEN Runoff Area=1,798 sf 100.00% Impervious Runoff Depth>7.99"
Tc=6.0 min CN=0/98 Runoff=0.38 cfs 1,196 cf

SubcatchmentPR-40: PR-40 TOWARD TENNIS Runoff Area=7,153 sf 37.96% Impervious Runoff Depth>5.28"
Tc=6.0 min CN=61/98 Runoff=1.11 cfs 3,145 cf

SubcatchmentPR-50: PR-50 REGIOINAL SWALE Runoff Area=62,111 sf 0.00% Impervious Runoff Depth>3.62"
Tc=6.0 min CN=61/0 Runoff=7.46 cfs 18,723 cf

SubcatchmentPR33B: PR-33B Runoff Area=550 sf 100.00% Impervious Runoff Depth>7.99"
Tc=6.0 min CN=0/98 Runoff=0.12 cfs 366 cf

SubcatchmentPR33C: PR-33C Runoff Area=550 sf 100.00% Impervious Runoff Depth>7.99"
Tc=6.0 min CN=0/98 Runoff=0.12 cfs 366 cf

SubcatchmentPR33D: PR-33E Runoff Area=550 sf 100.00% Impervious Runoff Depth>7.99"
Tc=6.0 min CN=0/98 Runoff=0.12 cfs 366 cf

SubcatchmentPR33E: PR-33E Runoff Area=550 sf 100.00% Impervious Runoff Depth>7.99"
Tc=6.0 min CN=0/98 Runoff=0.12 cfs 366 cf

SubcatchmentPR33F: PR-33F Runoff Area=550 sf 100.00% Impervious Runoff Depth>7.99"
Tc=6.0 min CN=0/98 Runoff=0.12 cfs 366 cf

SubcatchmentPR33G: PR-33F Runoff Area=1,100 sf 100.00% Impervious Runoff Depth>7.99"
Tc=6.0 min CN=0/98 Runoff=0.23 cfs 732 cf

SubcatchmentPR33H: PR-33H Runoff Area=3,713 sf 96.01% Impervious Runoff Depth>7.81"
Tc=6.0 min CN=61/98 Runoff=0.78 cfs 2,417 cf

SubcatchmentPR33I: PR-33I Runoff Area=2,005 sf 92.52% Impervious Runoff Depth>7.66"
Tc=6.0 min CN=61/98 Runoff=0.41 cfs 1,280 cf

SubcatchmentPR33J: PR-33J Runoff Area=1,945 sf 56.56% Impervious Runoff Depth>6.09"
Tc=6.0 min CN=61/98 Runoff=0.34 cfs 987 cf

SubcatchmentPR33K: PR-33F Runoff Area=1,309 sf 56.07% Impervious Runoff Depth>6.07"
Tc=6.0 min CN=61/98 Runoff=0.23 cfs 662 cf

Reach DP-3PR: REGIONAL SWALE Inflow=15.06 cfs 114,345 cf
Outflow=15.06 cfs 114,345 cf

Reach DP1PR: Softball Inflow=9.68 cfs 27,895 cf
Outflow=9.68 cfs 27,895 cf

Pond 33B: CELL B Peak Elev=84.14' Storage=135 cf Inflow=0.12 cfs 366 cf
Primary=0.05 cfs 300 cf Secondary=0.00 cfs 0 cf Outflow=0.05 cfs 300 cf

Pond 33C: CELL C Peak Elev=83.97' Storage=190 cf Inflow=0.16 cfs 666 cf
Primary=0.08 cfs 597 cf Secondary=0.00 cfs 0 cf Outflow=0.08 cfs 597 cf

Pond 33D: CELL D Peak Elev=83.70' Storage=220 cf Inflow=0.18 cfs 963 cf
Primary=0.08 cfs 883 cf Secondary=0.02 cfs 9 cf Outflow=0.10 cfs 892 cf

Pond 33E: CELL E Peak Elev=83.28' Storage=221 cf Inflow=0.19 cfs 1,258 cf
Primary=0.08 cfs 1,123 cf Secondary=0.04 cfs 61 cf Outflow=0.12 cfs 1,184 cf

Pond 33F: CELL F Peak Elev=82.88' Storage=222 cf Inflow=0.19 cfs 1,550 cf
Primary=0.08 cfs 1,339 cf Secondary=0.07 cfs 136 cf Outflow=0.16 cfs 1,475 cf

Pond 33G: CELL G Peak Elev=82.05' Storage=446 cf Inflow=0.31 cfs 2,207 cf
Primary=0.09 cfs 1,725 cf Secondary=0.14 cfs 323 cf Outflow=0.23 cfs 2,048 cf

Pond 33H: CELL H Peak Elev=81.16' Storage=684 cf Inflow=0.85 cfs 4,465 cf
Primary=0.07 cfs 2,013 cf Secondary=0.78 cfs 1,997 cf Outflow=0.85 cfs 4,010 cf

Pond 33I: CELL I Peak Elev=80.22' Storage=789 cf Inflow=1.26 cfs 5,290 cf
Primary=0.09 cfs 2,554 cf Secondary=1.17 cfs 2,215 cf Outflow=1.25 cfs 4,769 cf

Pond 33J: CELL J Peak Elev=79.43' Storage=473 cf Inflow=1.59 cfs 5,756 cf
Primary=0.09 cfs 2,628 cf Secondary=1.50 cfs 2,730 cf Outflow=1.58 cfs 5,358 cf

Pond 33K: CELL K Peak Elev=79.06' Storage=318 cf Inflow=1.81 cfs 6,019 cf
Primary=0.09 cfs 2,526 cf Secondary=1.72 cfs 3,200 cf Outflow=1.81 cfs 5,726 cf

Pond 33L: OUTLET PIPE Peak Elev=76.74' Storage=9 cf Inflow=1.81 cfs 5,726 cf
Outflow=1.81 cfs 5,724 cf

Pond BB-2A: BULLPEN Peak Elev=79.47' Storage=335 cf Inflow=0.38 cfs 1,196 cf
3.0" Round Culvert n=0.010 L=10.0' S=0.0100 '/' Outflow=0.14 cfs 1,159 cf

Pond BB-4P: POROUS WALK-2 Peak Elev=88.20' Storage=755 cf Inflow=7.46 cfs 20,347 cf
Primary=0.17 cfs 290 cf Secondary=7.28 cfs 19,421 cf Outflow=7.46 cfs 19,711 cf

Pond BB-5P: POROUS WALK 1 Peak Elev=91.16' Storage=934 cf Inflow=5.30 cfs 15,120 cf
Primary=0.09 cfs 154 cf Secondary=5.20 cfs 14,155 cf Outflow=5.29 cfs 14,309 cf

Pond BB-P1: Plaza Peak Elev=84.04' Storage=7,774 cf Inflow=9.44 cfs 25,886 cf
12.0" Round Culvert n=0.010 L=10.0' S=0.1100 '/' Outflow=4.69 cfs 22,801 cf

Pond BB-P2: INFILT BASIN Peak Elev=78.27' Storage=65,531 cf Inflow=33.17 cfs 103,659 cf
Primary=0.42 cfs 18,707 cf Secondary=2.72 cfs 39,009 cf Outflow=3.14 cfs 57,717 cf

Total Runoff Area = 884,099 sf Runoff Volume = 333,953 cf Average Runoff Depth = 4.53"
78.71% Pervious = 695,882 sf 21.29% Impervious = 188,217 sf

Summary for Subcatchment PR-10: PR-10 TO SOFTBALL TD

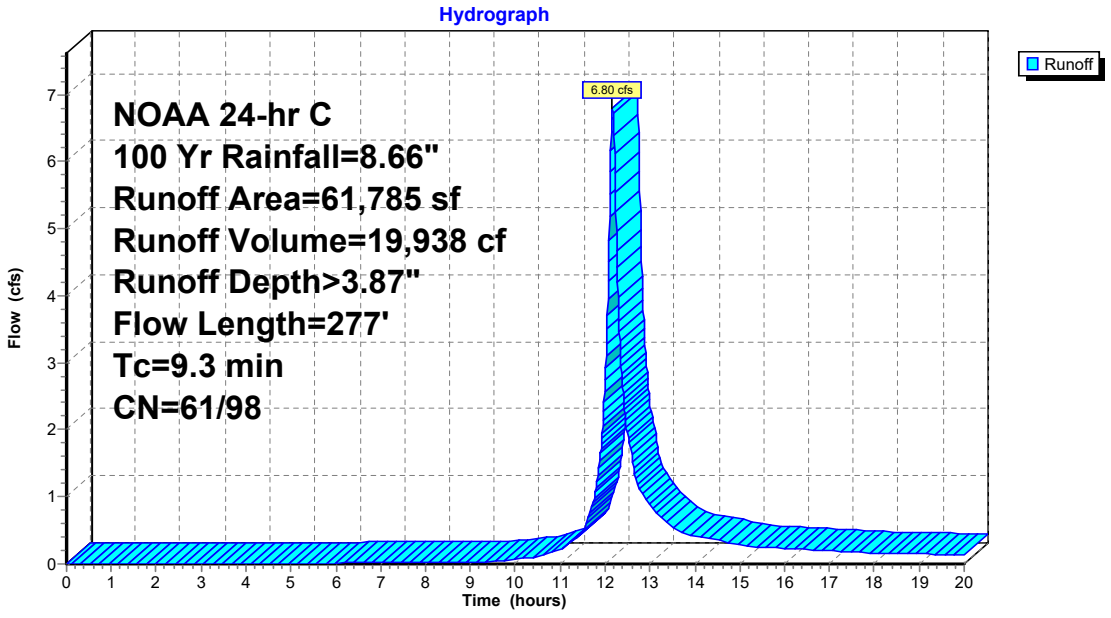
Runoff = 6.80 cfs @ 12.17 hrs, Volume= 19,938 cf, Depth> 3.87"
Routed to Reach DP1PR : Softball

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100 Yr Rainfall=8.66"

Area (sf)	CN	Description
58,109	61	>75% Grass cover, Good, HSG B
3,676	98	Paved roads w/curbs & sewers, HSG B
61,785	63	Weighted Average
58,109	61	94.05% Pervious Area
3,676	98	5.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0150	0.13		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.34"
3.1	227	0.0300	1.21		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
9.3	277	Total			

Subcatchment PR-10: PR-10 TO SOFTBALL TD



Summary for Subcatchment PR-11: PR-11 POROUS WALK

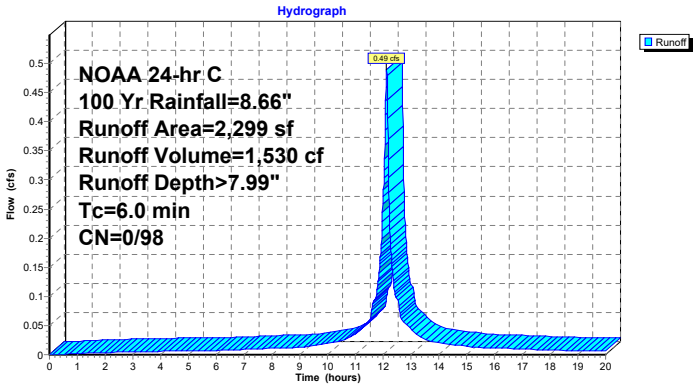
Runoff = 0.49 cfs @ 12.13 hrs, Volume= 1,530 cf, Depth> 7.99"
Routed to Pond BB-5P : POROUS WALK 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100 Yr Rainfall=8.66"

Area (sf)	CN	Description
2,299	98	Paved roads w/curbs & sewers, HSG B
2,299	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Surface**

Subcatchment PR-11: PR-11 POROUS WALK



Summary for Subcatchment PR-12: PR-12 TO POROUS WALK

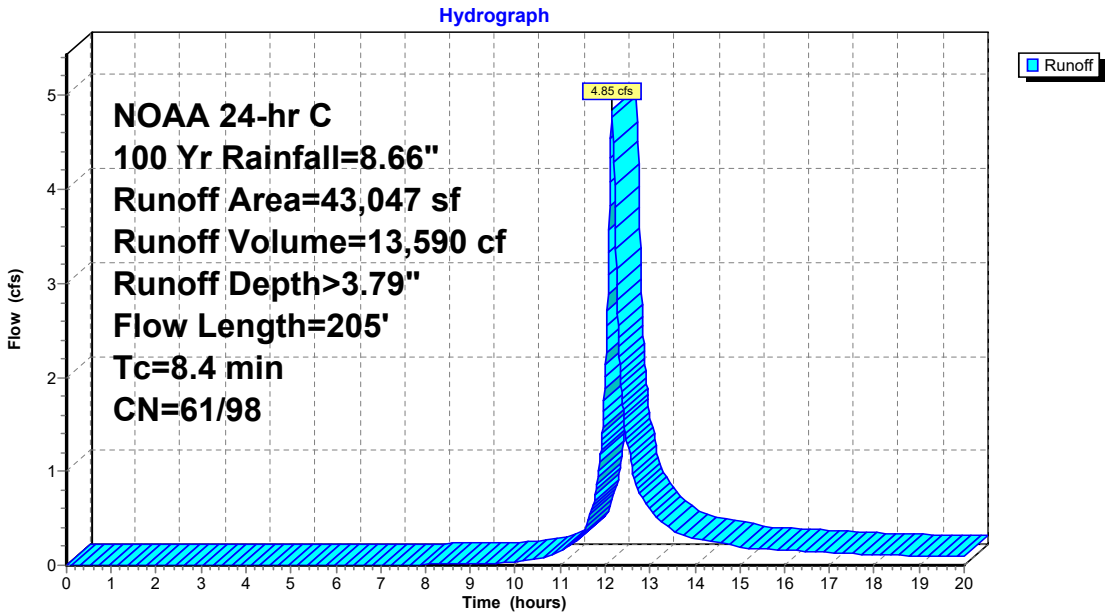
Runoff = 4.85 cfs @ 12.16 hrs, Volume= 13,590 cf, Depth> 3.79"
Routed to Pond BB-5P : POROUS WALK 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100 Yr Rainfall=8.66"

Area (sf)	CN	Description
41,325	61	>75% Grass cover, Good, HSG B
1,722	98	Paved roads w/curbs & sewers, HSG B
43,047	62	Weighted Average
41,325	61	96.00% Pervious Area
1,722	98	4.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0150	0.13		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.34"
2.2	155	0.0290	1.19		**Shallow Concentrated Flow, Shallow Conc** Short Grass Pasture Kv= 7.0 fps
8.4	205	Total			

Subcatchment PR-12: PR-12 TO POROUS WALK



Summary for Subcatchment PR-20: PR-20 CROSS COUNTRY

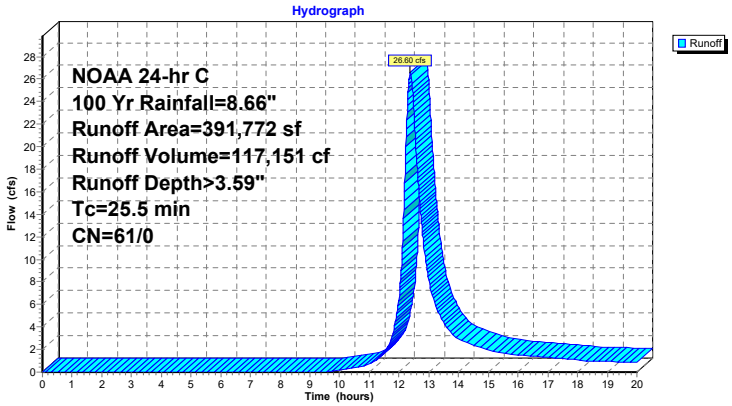
Runoff = 26.60 cfs @ 12.38 hrs, Volume= 117,151 cf, Depth> 3.59"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100 Yr Rainfall=8.66"

Area (sf)	CN	Description
391,772	61	>75% Grass cover, Good, HSG B
391,772	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.5					**Direct Entry, Same as Exist**

Subcatchment PR-20: PR-20 CROSS COUNTRY



Summary for Subcatchment PR-30: TO POROUS WALK 2

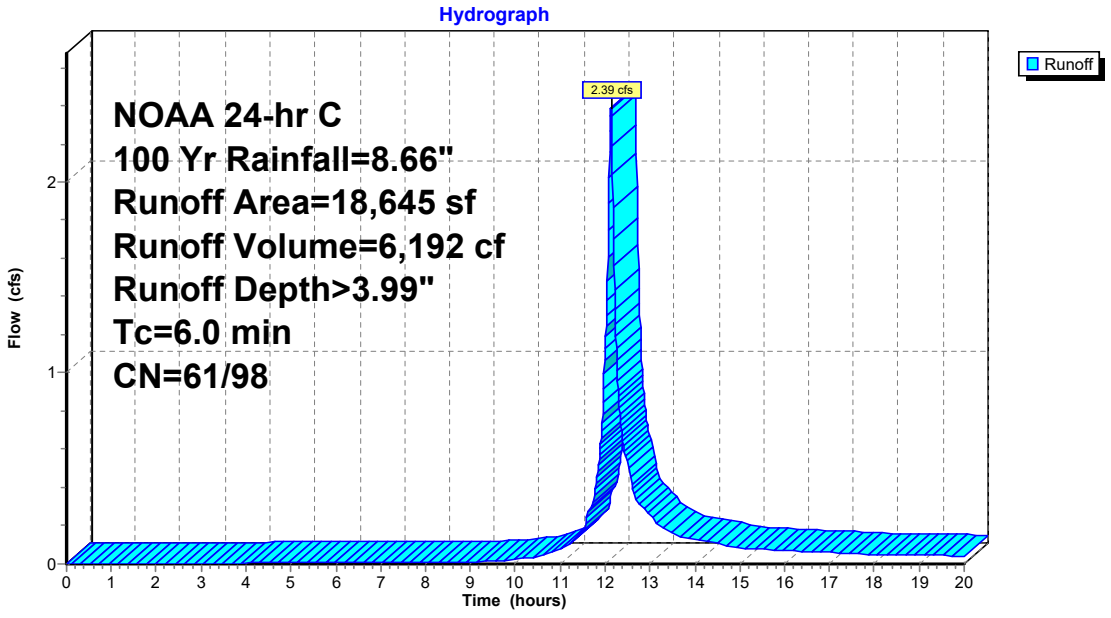
Runoff = 2.39 cfs @ 12.13 hrs, Volume= 6,192 cf, Depth> 3.99"
Routed to Pond BB-4P : POROUS WALK-2

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100 Yr Rainfall=8.66"

Area (sf)	CN	Description
17,074	61	>75% Grass cover, Good, HSG B
1,571	98	Paved parking, HSG A
18,645	64	Weighted Average
17,074	61	91.57% Pervious Area
1,571	98	8.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment PR-30: TO POROUS WALK 2



Summary for Subcatchment PR-31: Plaza

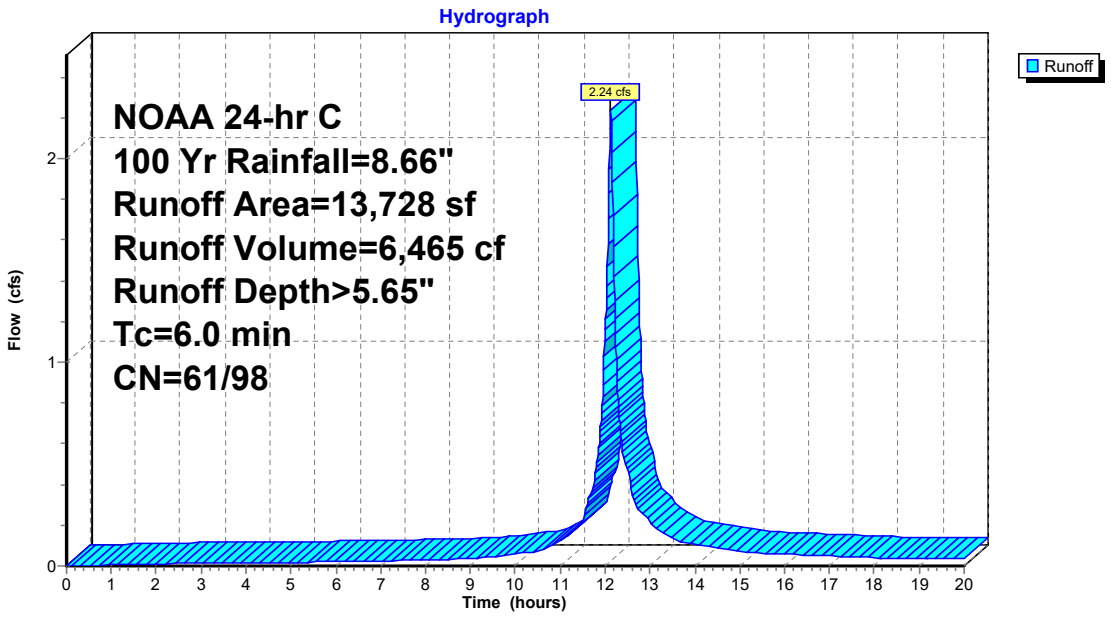
Runoff = 2.24 cfs @ 12.13 hrs, Volume= 6,465 cf, Depth> 5.65"
Routed to Pond BB-P1 : Plaza

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100 Yr Rainfall=8.66"

Area (sf)	CN	Description
6,391	98	Paved parking, HSG B
7,337	61	>75% Grass cover, Good, HSG B
13,728	78	Weighted Average
7,337	61	53.45% Pervious Area
6,391	98	46.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment PR-31: Plaza



Summary for Subcatchment PR-32: PR-32 TO SOFTBALL

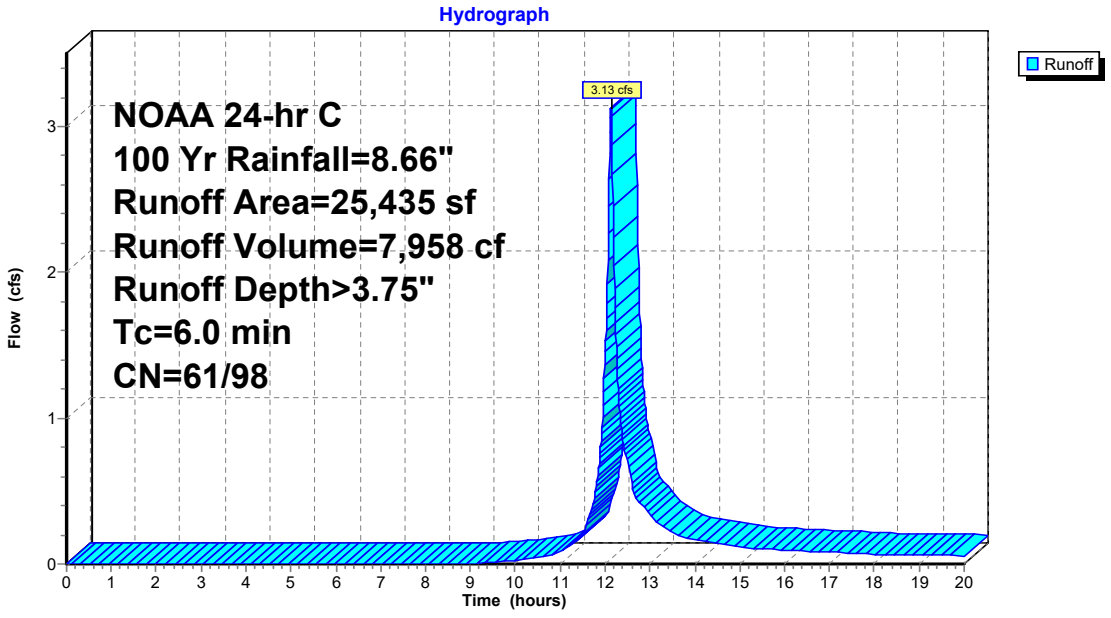
Runoff = 3.13 cfs @ 12.13 hrs, Volume= 7,958 cf, Depth> 3.75"
Routed to Reach DP1PR : Softball

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100 Yr Rainfall=8.66"

Area (sf)	CN	Description
24,637	61	>75% Grass cover, Good, HSG B
798	98	Paved parking, HSG A
25,435	62	Weighted Average
24,637	61	96.86% Pervious Area
798	98	3.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum**

Subcatchment PR-32: PR-32 TO SOFTBALL



Summary for Subcatchment PR-34: SLOPE TO REGIONAL SWALE

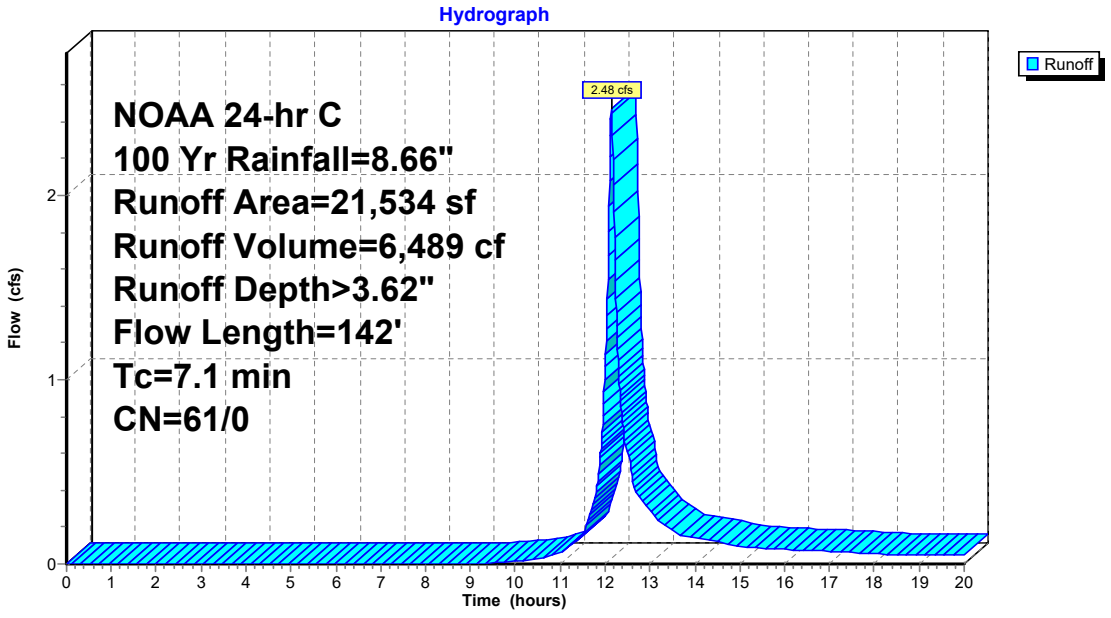
Runoff = 2.48 cfs @ 12.15 hrs, Volume= 6,489 cf, Depth> 3.62"
Routed to Reach DP-3PR : REGIONAL SWALE

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100 Yr Rainfall=8.66"

Area (sf)	CN	Description
21,534	61	>75% Grass cover, Good, HSG B
21,534	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0150	0.13		**Sheet Flow, SHEET FLOW** Grass: Short n= 0.150 P2= 3.34"
0.9	92	0.0570	1.67		**Shallow Concentrated Flow, SHALLOW CONC** Short Grass Pasture Kv= 7.0 fps
7.1	142	Total			

Subcatchment PR-34: SLOPE TO REGIONAL SWALE



Summary for Subcatchment PR-35: FIELD AND ROOF

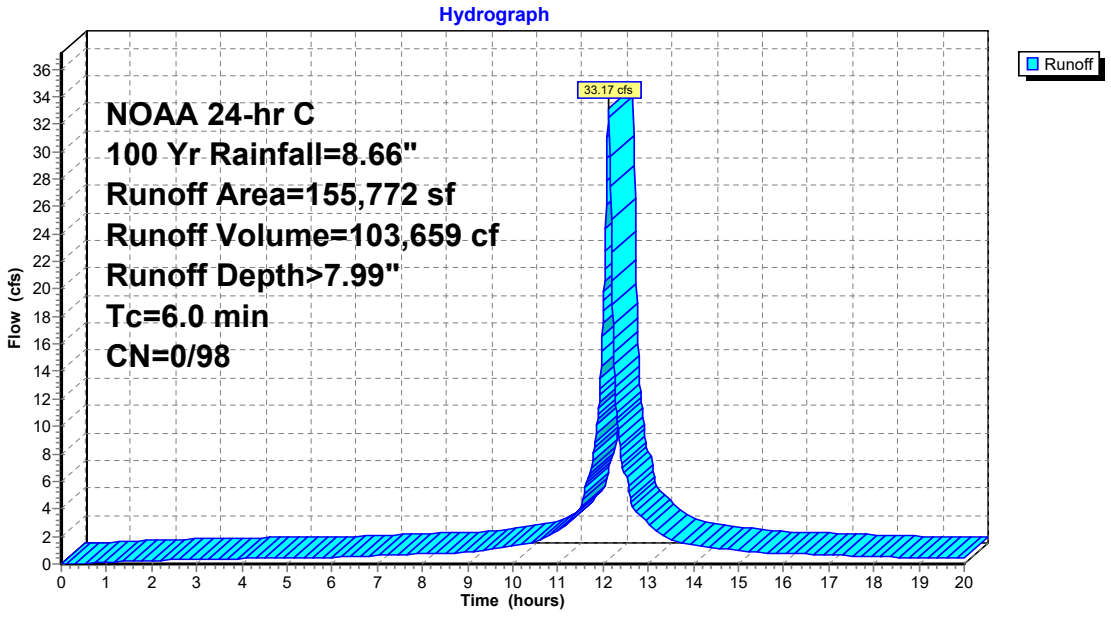
Runoff = 33.17 cfs @ 12.13 hrs, Volume= 103,659 cf, Depth> 7.99"
Routed to Pond BB-P2 : INFILT BASIN

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100 Yr Rainfall=8.66"

Area (sf)	CN	Description
155,772	98	Roofs, HSG B
0	61	>75% Grass cover, Good, HSG B
155,772	98	Weighted Average
155,772	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT**

Subcatchment PR-35: FIELD AND ROOF



Summary for Subcatchment PR-36: GRASS/LANDSCAPING

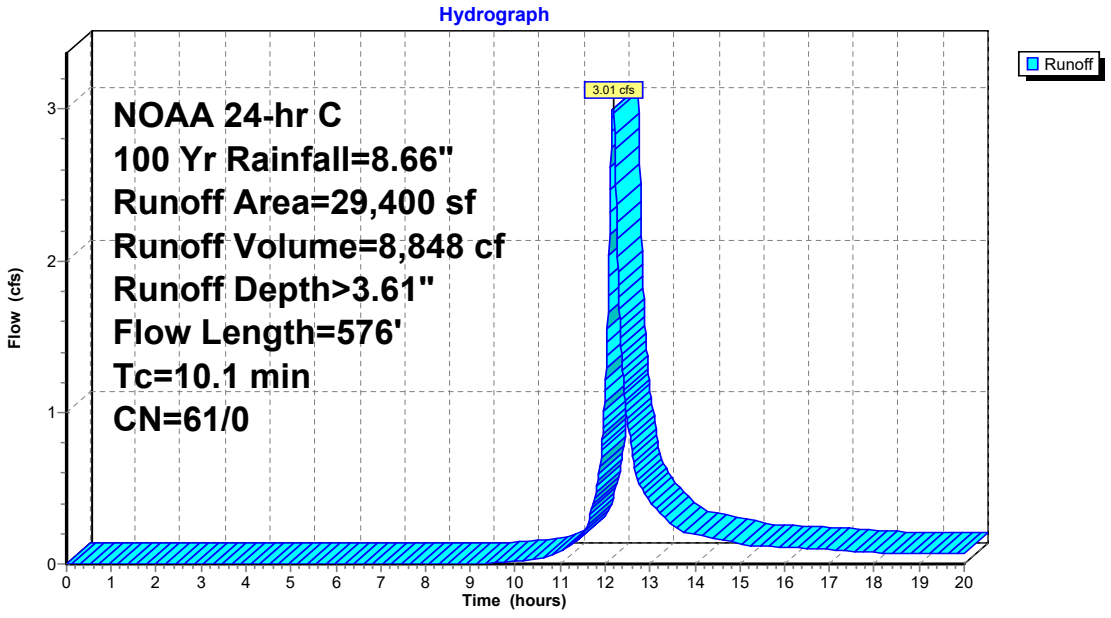
Runoff = 3.01 cfs @ 12.18 hrs, Volume= 8,848 cf, Depth> 3.61"
Routed to Reach DP-3PR : REGIONAL SWALE

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100 Yr Rainfall=8.66"

Area (sf)	CN	Description
29,400	61	>75% Grass cover, Good, HSG B
29,400	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.34"
1.7	116	0.0050	1.14		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.7	235	0.0120	5.38	4.23	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
0.4	175	0.0100	7.80	24.51	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012
10.1	576	Total			

Subcatchment PR-36: GRASS/LANDSCAPING



Summary for Subcatchment PR-37: PR-37 TOWARD SWALE

[47] Hint: Peak is 156% of capacity of segment #3
[47] Hint: Peak is 119% of capacity of segment #4

Runoff = 2.81 cfs @ 12.30 hrs, Volume= 11,163 cf, Depth> 3.64"
Routed to Reach DP-3PR : REGIONAL SWALE

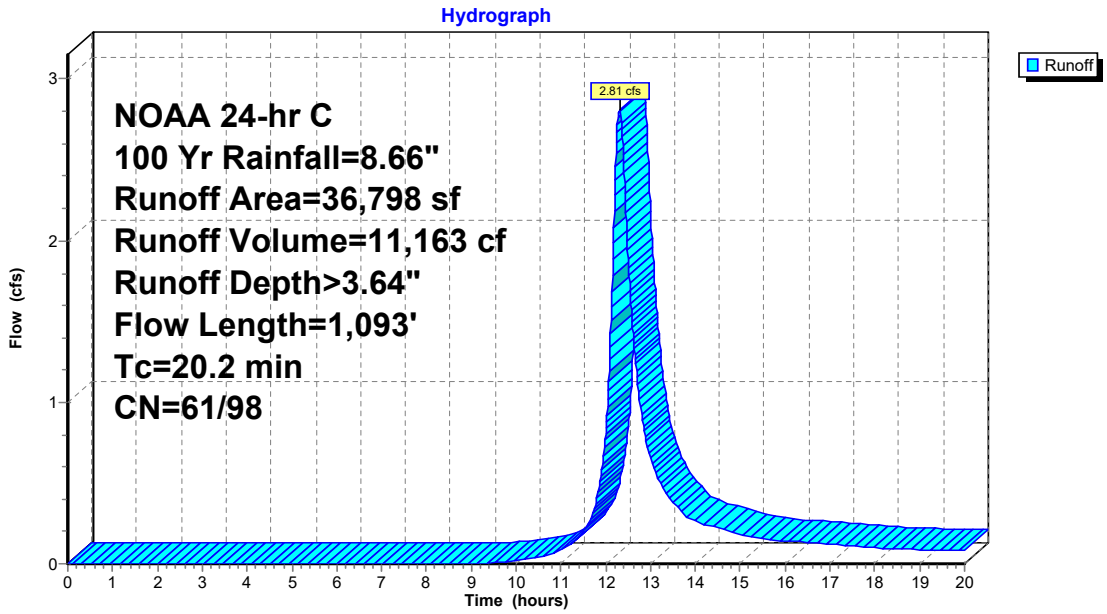
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100 Yr Rainfall=8.66"

Area (sf)	CN	Description
36,427	61	>75% Grass cover, Good, HSG B
371	98	Paved roads w/curbs & sewers, HSG B
36,798	61	Weighted Average
36,427	61	98.99% Pervious Area
371	98	1.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.34"
2.2	242	0.0130	1.84		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	104	0.0190	5.17	1.80	**Pipe Channel, 8"** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012 Corrugated PP, smooth interior
0.5	118	0.0100	4.35	2.37	**Pipe Channel, 10"** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.012 Corrugated PP, smooth interior
0.2	143	0.0126	11.47	81.11	**Pipe Channel, 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012
0.1	104	0.0133	11.79	83.33	**Pipe Channel, 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012

9.6	332	0.0032	0.58	4.09	**Pipe Channel, 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.120
20.2	1,093	Total			

Subcatchment PR-37: PR-37 TOWARD SWALE



Summary for Subcatchment PR-38: BULLPEN

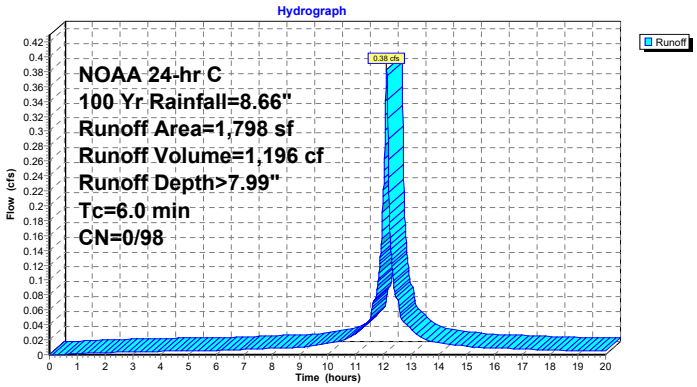
Runoff = 0.38 cfs @ 12.13 hrs, Volume= 1,196 cf, Depth> 7.99"
Routed to Pond BB-2A : BULLPEN

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100 Yr Rainfall=8.66"

Area (sf)	CN	Description
1,798	98	Paved parking, HSG B
1,798	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment PR-38: BULLPEN



Summary for Subcatchment PR-40: PR-40 TOWARD TENNIS

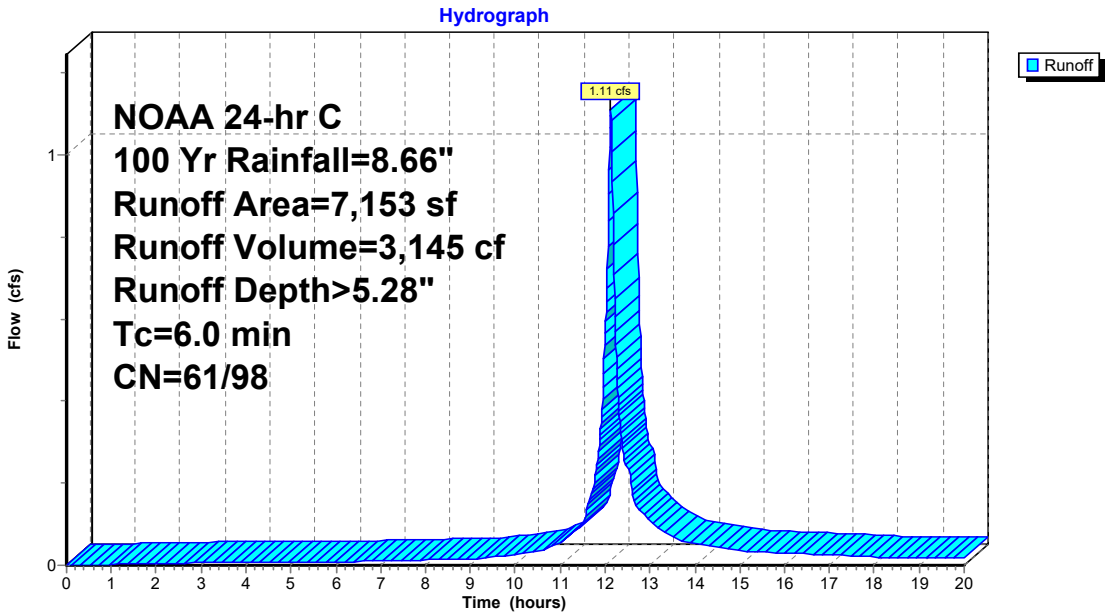
Runoff = 1.11 cfs @ 12.13 hrs, Volume= 3,145 cf, Depth> 5.28"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100 Yr Rainfall=8.66"

Area (sf)	CN	Description
4,438	61	>75% Grass cover, Good, HSG B
0	61	>75% Grass cover, Good, HSG B
2,715	98	Paved roads w/curbs & sewers, HSG B
7,153	75	Weighted Average
4,438	61	62.04% Pervious Area
2,715	98	37.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR-40: PR-40 TOWARD TENNIS



Summary for Subcatchment PR-50: PR-50 REGIOINAL SWALE

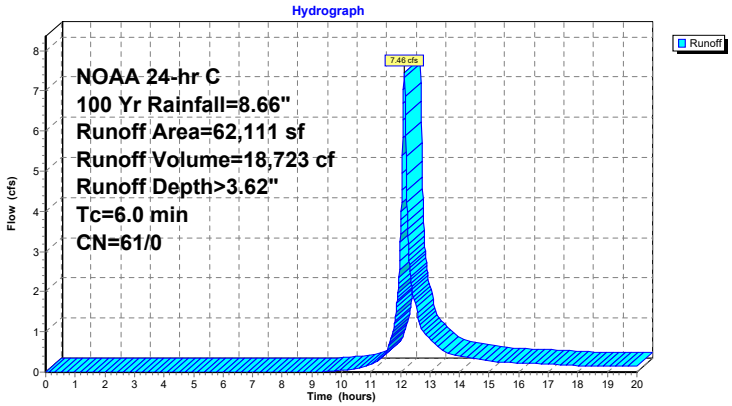
Runoff = 7.46 cfs @ 12.13 hrs, Volume= 18,723 cf, Depth> 3.62"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100 Yr Rainfall=8.66"

Area (sf)	CN	Description
62,111	61	>75% Grass cover, Good, HSG B
62,111	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum**

Subcatchment PR-50: PR-50 REGIOINAL SWALE



Summary for Subcatchment PR33B: PR-33B

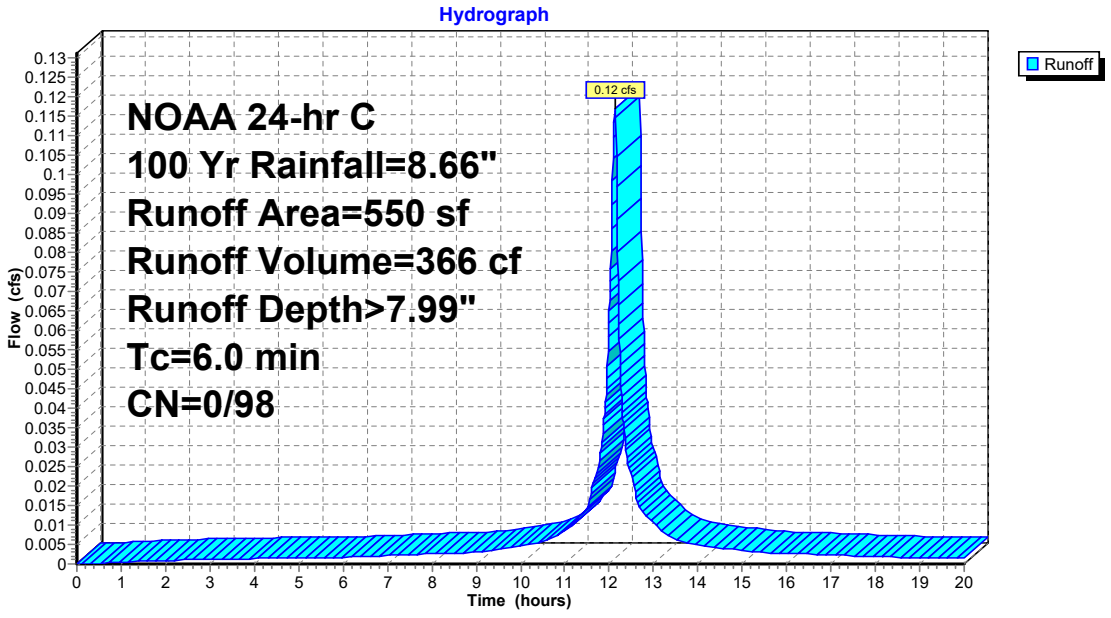
Runoff = 0.12 cfs @ 12.13 hrs, Volume= 366 cf, Depth> 7.99"
Routed to Pond 33B : CELL B

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100 Yr Rainfall=8.66"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
550	98	Paved parking, HSG B
550	98	Weighted Average
550	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33B: PR-33B



Summary for Subcatchment PR33C: PR-33C

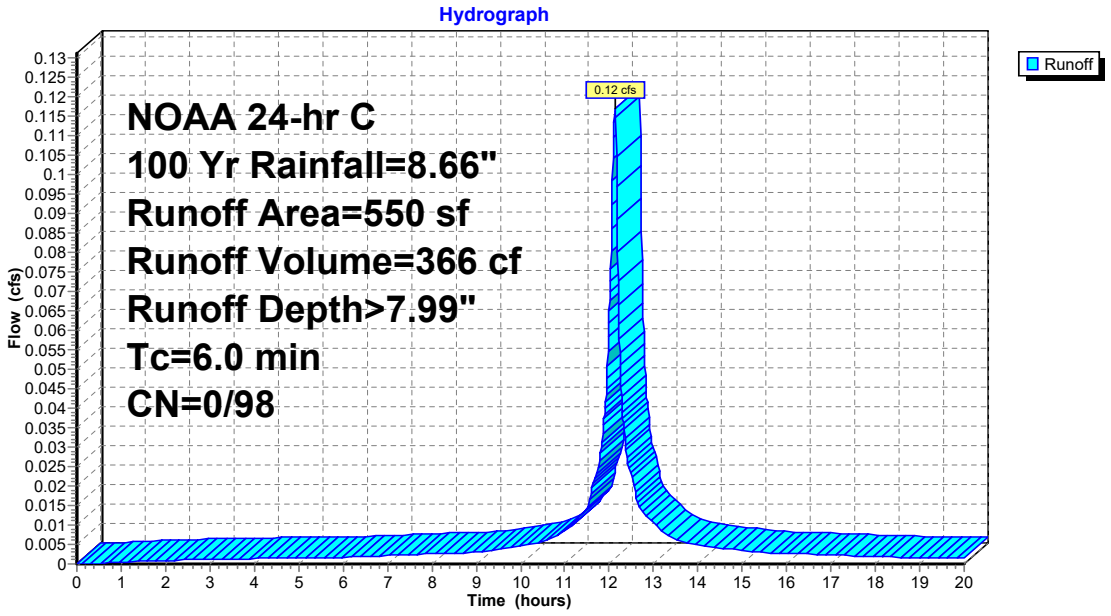
Runoff = 0.12 cfs @ 12.13 hrs, Volume= 366 cf, Depth> 7.99"
Routed to Pond 33C : CELL C

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100 Yr Rainfall=8.66"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
550	98	Paved parking, HSG B
550	98	Weighted Average
550	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33C: PR-33C



Summary for Subcatchment PR33D: PR-33E

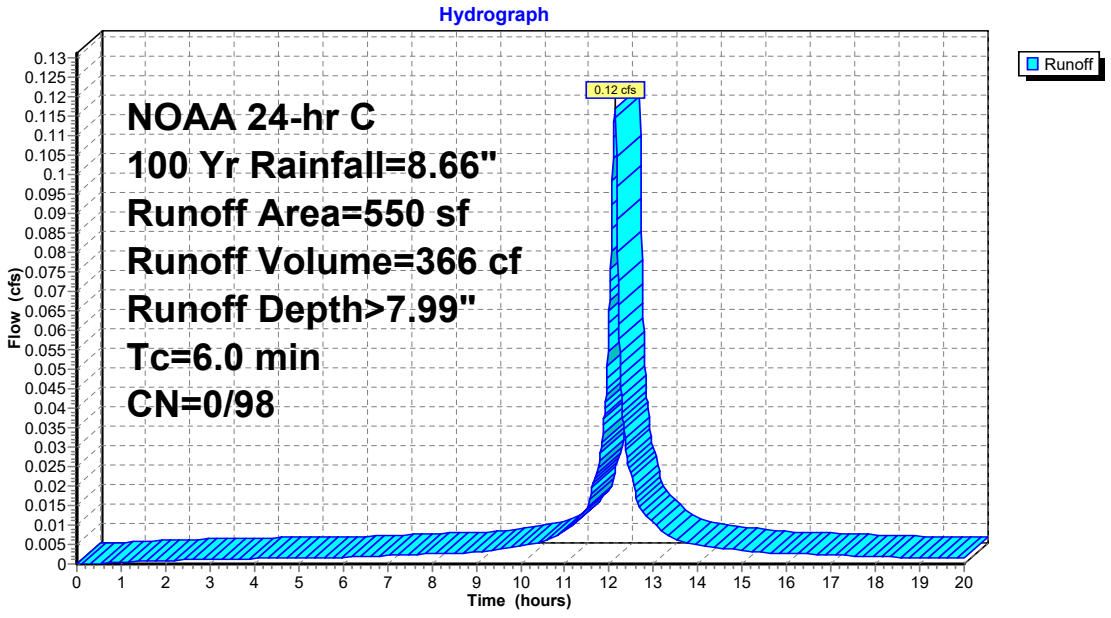
Runoff = 0.12 cfs @ 12.13 hrs, Volume= 366 cf, Depth> 7.99"
Routed to Pond 33D : CELL D

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100 Yr Rainfall=8.66"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
550	98	Paved parking, HSG B
550	98	Weighted Average
550	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33D: PR-33E



Summary for Subcatchment PR33E: PR-33E

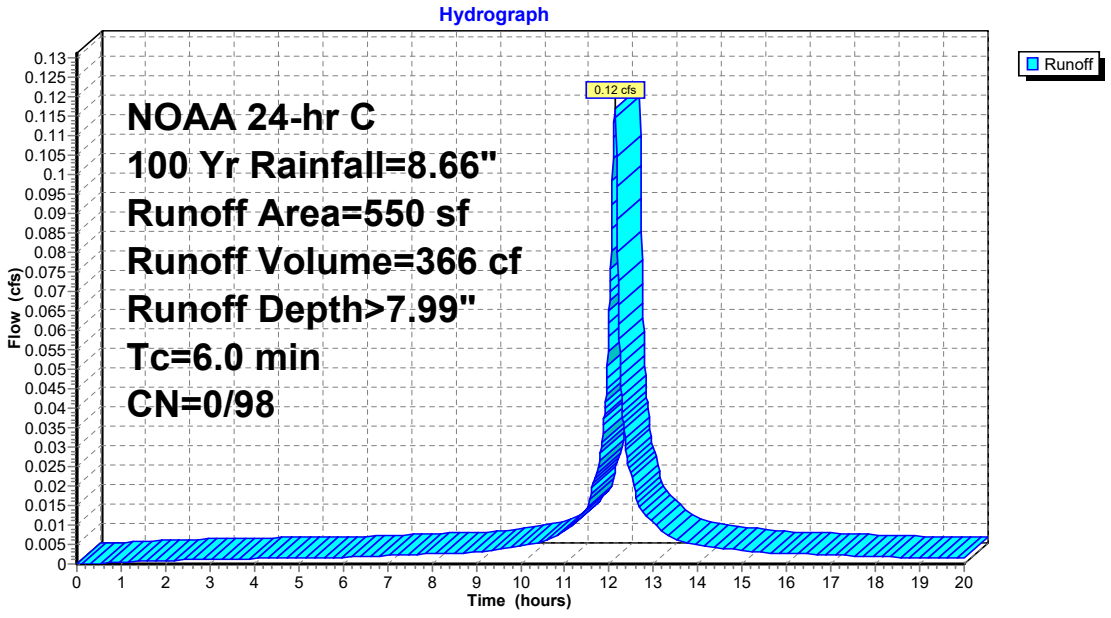
Runoff = 0.12 cfs @ 12.13 hrs, Volume= 366 cf, Depth> 7.99"
Routed to Pond 33E : CELL E

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100 Yr Rainfall=8.66"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
550	98	Paved parking, HSG B
550	98	Weighted Average
550	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33E: PR-33E



Summary for Subcatchment PR33F: PR-33F

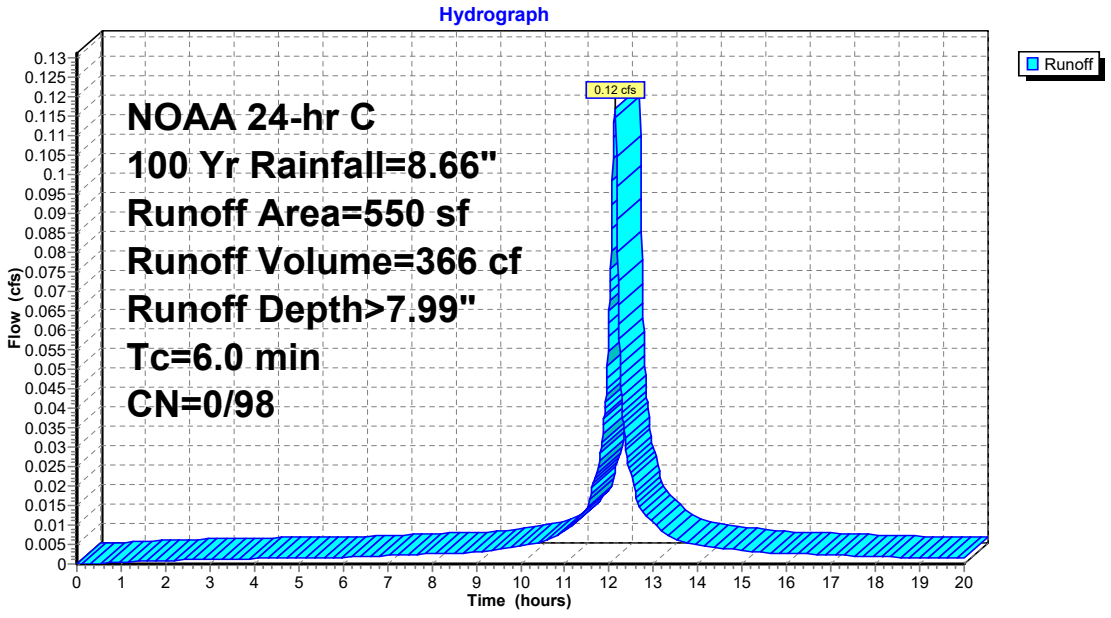
Runoff = 0.12 cfs @ 12.13 hrs, Volume= 366 cf, Depth> 7.99"
Routed to Pond 33F : CELL F

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100 Yr Rainfall=8.66"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
550	98	Paved parking, HSG B
550	98	Weighted Average
550	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33F: PR-33F



Summary for Subcatchment PR33G: PR-33F

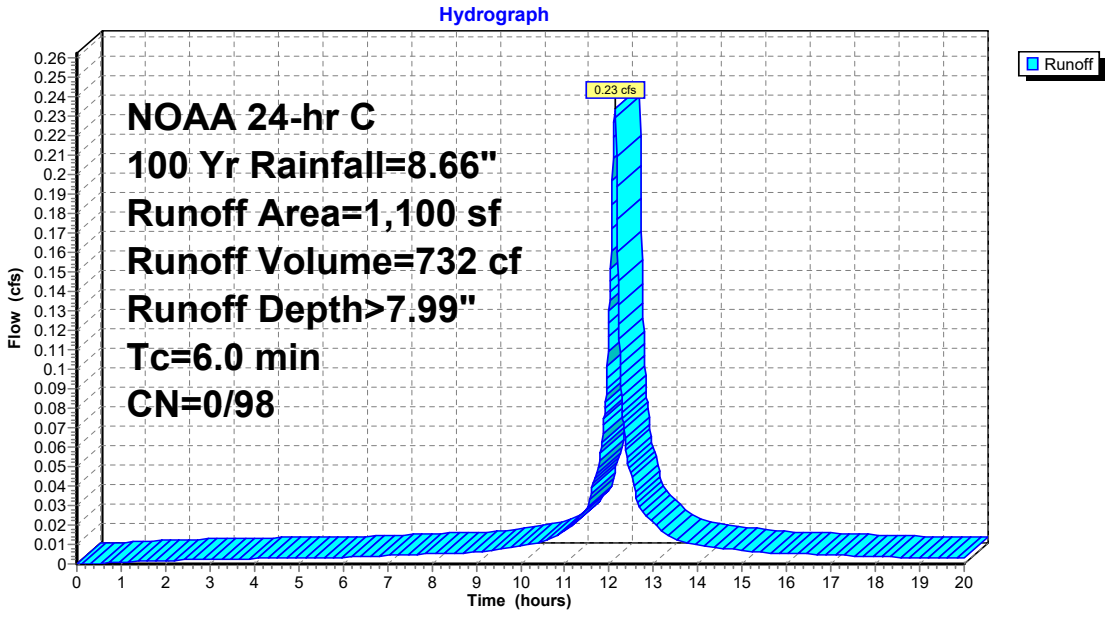
Runoff = 0.23 cfs @ 12.13 hrs, Volume= 732 cf, Depth> 7.99"
Routed to Pond 33G : CELL G

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100 Yr Rainfall=8.66"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
1,100	98	Paved parking, HSG B
1,100	98	Weighted Average
1,100	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33G: PR-33F



Summary for Subcatchment PR33H: PR-33H

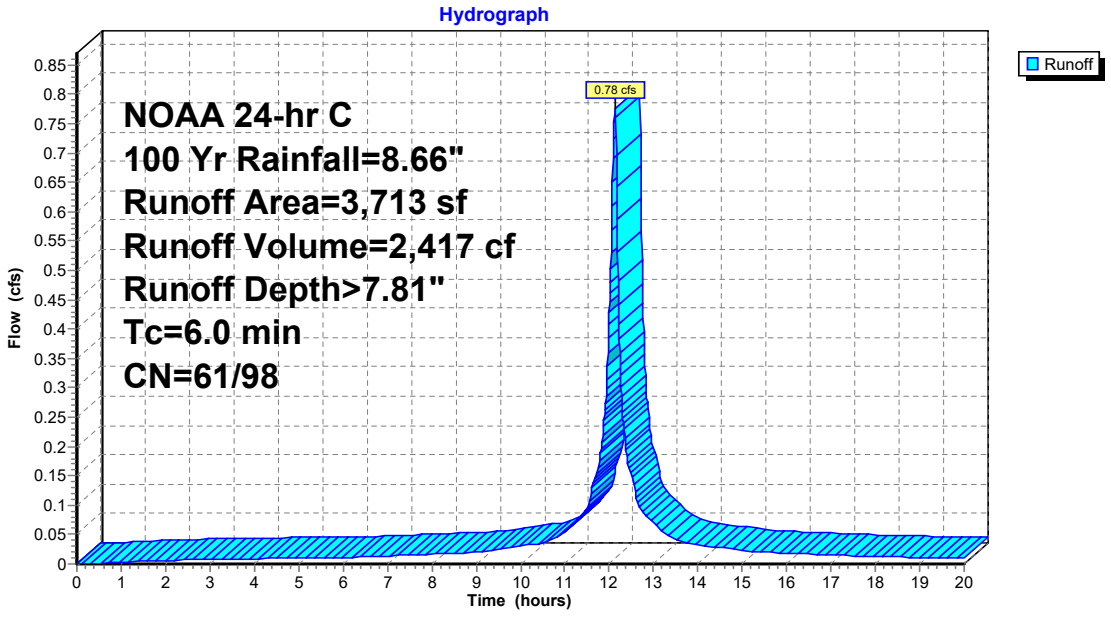
Runoff = 0.78 cfs @ 12.13 hrs, Volume= 2,417 cf, Depth> 7.81"
Routed to Pond 33H : CELL H

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100 Yr Rainfall=8.66"

	Area (sf)	CN	Description
	148	61	>75% Grass cover, Good, HSG B
*	1,634	98	Porous Pavers
*	1,931	98	Sidewalk
	3,713	97	Weighted Average
	148	61	3.99% Pervious Area
	3,565	98	96.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33H: PR-33H



Summary for Subcatchment PR33I: PR-33I

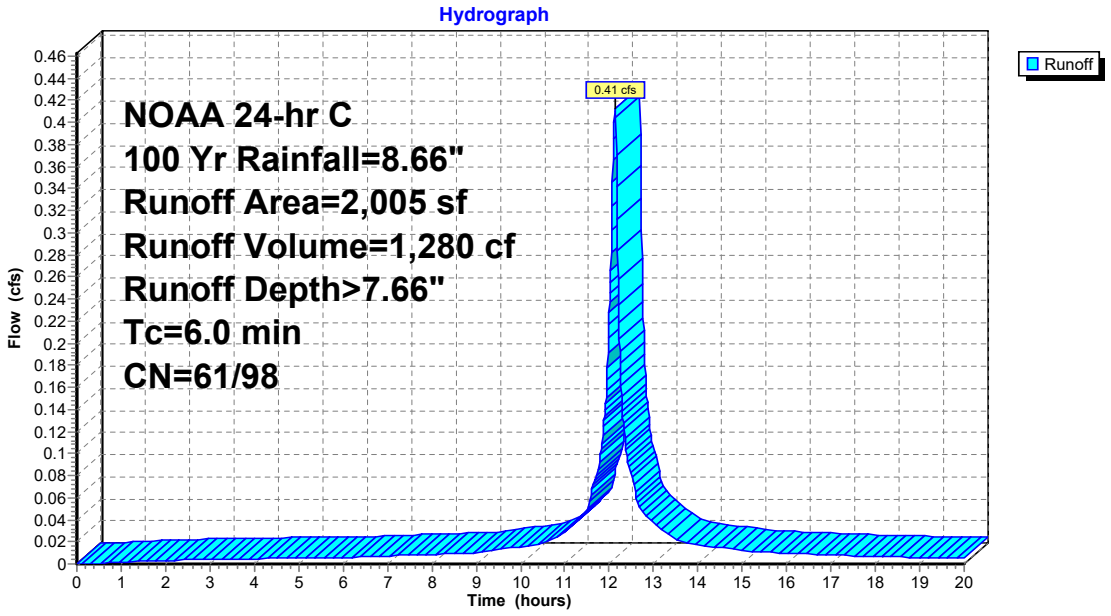
Runoff = 0.41 cfs @ 12.13 hrs, Volume= 1,280 cf, Depth> 7.66"
Routed to Pond 33I : CELL I

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100 Yr Rainfall=8.66"

Area (sf)	CN	Description
150	61	>75% Grass cover, Good, HSG B
1,855	98	Paved parking, HSG B
2,005	95	Weighted Average
150	61	7.48% Pervious Area
1,855	98	92.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33I: PR-33I



Summary for Subcatchment PR33J: PR-33J

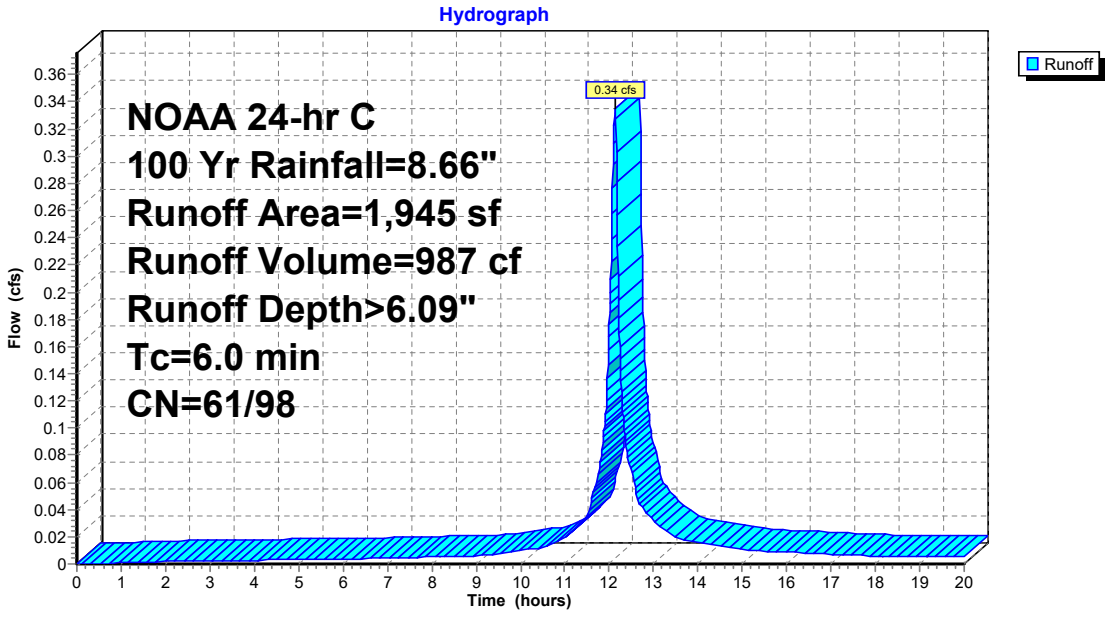
Runoff = 0.34 cfs @ 12.13 hrs, Volume= 987 cf, Depth> 6.09"
Routed to Pond 33J : CELL J

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100 Yr Rainfall=8.66"

Area (sf)	CN	Description
845	61	>75% Grass cover, Good, HSG B
1,100	98	Paved parking, HSG B
1,945	82	Weighted Average
845	61	43.44% Pervious Area
1,100	98	56.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33J: PR-33J



Summary for Subcatchment PR33K: PR-33F

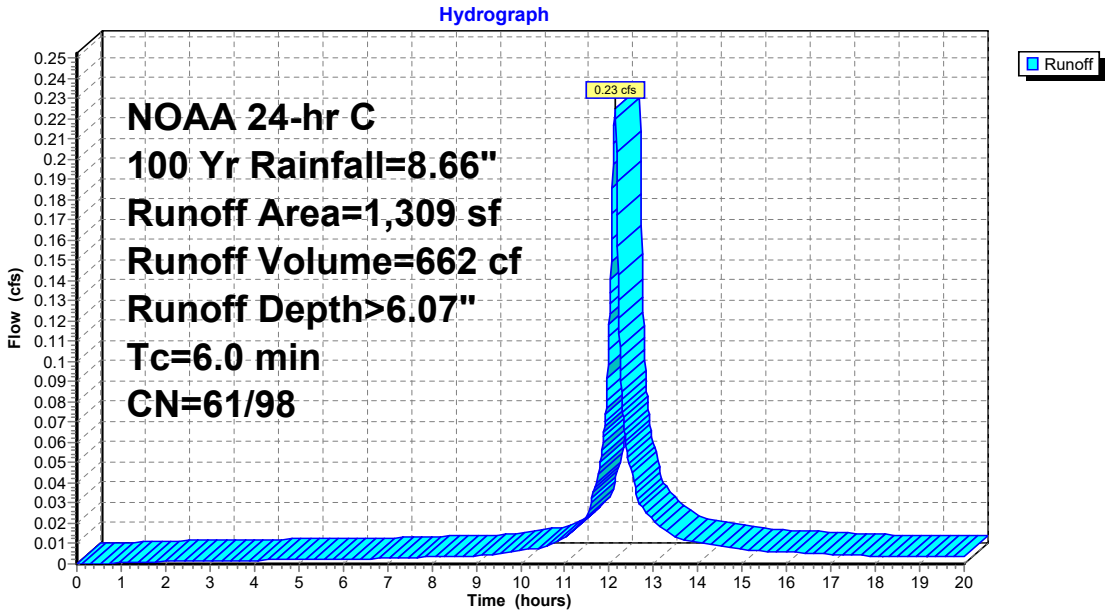
Runoff = 0.23 cfs @ 12.13 hrs, Volume= 662 cf, Depth> 6.07"
Routed to Pond 33K : CELL K

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 100 Yr Rainfall=8.66"

Area (sf)	CN	Description
575	61	>75% Grass cover, Good, HSG B
734	98	Paved parking, HSG B
1,309	82	Weighted Average
575	61	43.93% Pervious Area
734	98	56.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33K: PR-33F



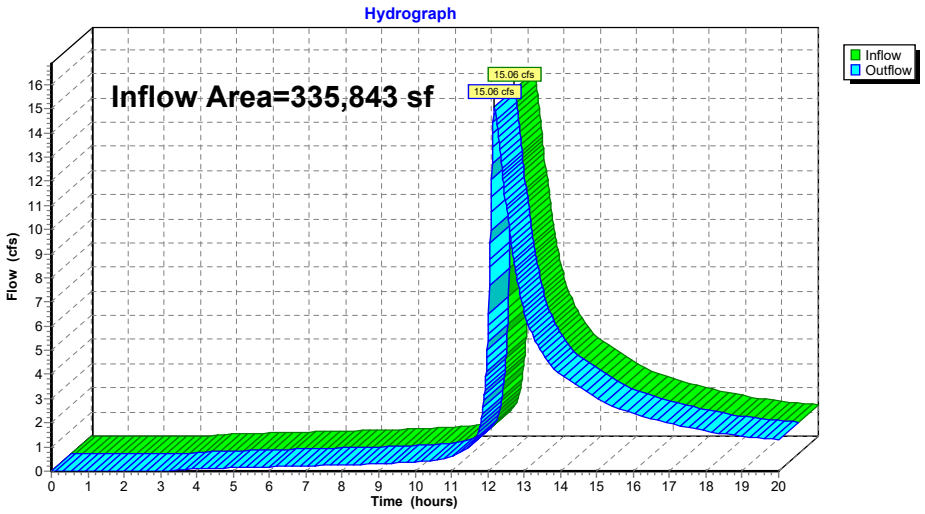
Summary for Reach DP-3PR: REGIONAL SWALE

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 335,843 sf, 53.90% Impervious, Inflow Depth > 4.09" for 100 Yr event
Inflow = 15.06 cfs @ 12.18 hrs, Volume= 114,345 cf
Outflow = 15.06 cfs @ 12.18 hrs, Volume= 114,345 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs

Reach DP-3PR: REGIONAL SWALE



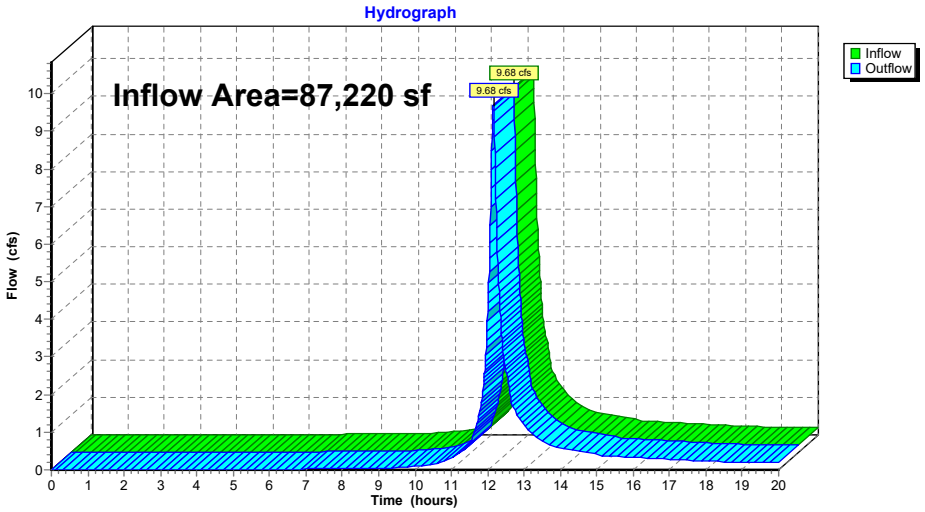
Summary for Reach DP1PR: Softball

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 87,220 sf, 5.13% Impervious, Inflow Depth > 3.84" for 100 Yr event
Inflow = 9.68 cfs @ 12.15 hrs, Volume= 27,895 cf
Outflow = 9.68 cfs @ 12.15 hrs, Volume= 27,895 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs

Reach DP1PR: Softball



Summary for Pond 33B: CELL B

Inflow Area = 550 sf,100.00% Impervious, Inflow Depth > 7.99" for 100 Yr event
Inflow = 0.12 cfs @ 12.13 hrs, Volume= 366 cf
Outflow = 0.05 cfs @ 12.24 hrs, Volume= 300 cf, Atten= 54%, Lag= 6.8 min
Primary = 0.05 cfs @ 12.24 hrs, Volume= 300 cf
Routed to Pond 33C : CELL C
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33C : CELL C

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 84.14' @ 12.24 hrs Surf.Area= 550 sf Storage= 135 cf

Plug-Flow detention time= 135.1 min calculated for 300 cf (82% of inflow)
Center-of-Mass det. time= 80.9 min (790.4 - 709.5)

Volume	Invert	Avail.Storage	Storage Description
#1	83.53'	440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,100 cf Overall x 40.0% Voids

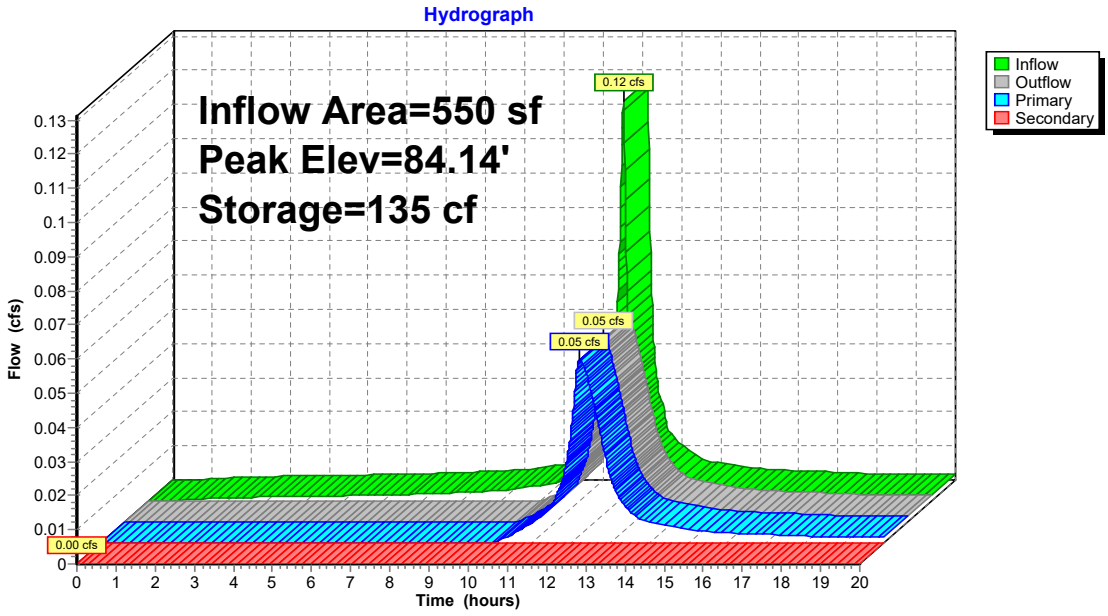
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
83.53	550	0	0
84.53	550	550	550
85.53	550	550	1,100

Device	Routing	Invert	Outlet Devices
#1	Primary	83.80'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	84.53'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.05 cfs @ 12.24 hrs HW=84.14' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.05 cfs @ 2.46 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=83.53' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33B: CELL B



Summary for Pond 33C: CELL C

[79] Warning: Submerged Pond 33B Primary device # 1 by 0.17'

Inflow Area = 1,100 sf,100.00% Impervious, Inflow Depth > 7.26" for 100 Yr event
Inflow = 0.16 cfs @ 12.13 hrs, Volume= 666 cf
Outflow = 0.08 cfs @ 12.41 hrs, Volume= 597 cf, Atten= 54%, Lag= 16.7 min
Primary = 0.08 cfs @ 12.41 hrs, Volume= 597 cf
Routed to Pond 33D : CELL D
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33D : CELL D

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 83.97' @ 12.41 hrs Surf.Area= 550 sf Storage= 190 cf

Plug-Flow detention time= 90.1 min calculated for 597 cf (90% of inflow)
Center-of-Mass det. time= 55.2 min (801.1 - 745.9)

Volume	Invert	Avail.Storage	Storage Description
#1	83.11'	440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,100 cf Overall x 40.0% Voids

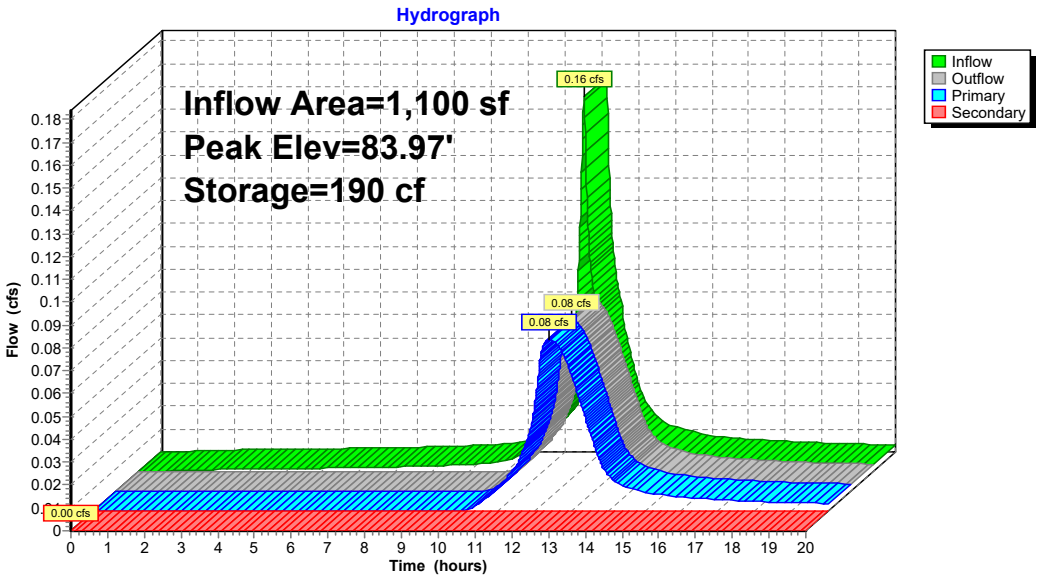
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
83.11	550	0	0
84.11	550	550	550
85.11	550	550	1,100

Device	Routing	Invert	Outlet Devices
#1	Primary	83.38'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	84.11'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.08 cfs @ 12.41 hrs HW=83.97' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.08 cfs @ 3.44 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=83.11' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33C: CELL C



Summary for Pond 33D: CELL D

[79] Warning: Submerged Pond 33C Primary device # 1 by 0.32'

Inflow Area = 1,650 sf,100.00% Impervious, Inflow Depth > 7.00" for 100 Yr event
Inflow = 0.18 cfs @ 12.13 hrs, Volume= 963 cf
Outflow = 0.10 cfs @ 12.44 hrs, Volume= 892 cf, Atten= 44%, Lag= 18.3 min
Primary = 0.08 cfs @ 12.44 hrs, Volume= 883 cf
Routed to Pond 33E : CELL E
Secondary = 0.02 cfs @ 12.44 hrs, Volume= 9 cf
Routed to Pond 33E : CELL E

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 83.70' @ 12.44 hrs Surf.Area= 550 sf Storage= 220 cf

Plug-Flow detention time= 72.6 min calculated for 891 cf (93% of inflow)
Center-of-Mass det. time= 46.7 min (812.9 - 766.3)

Volume	Invert	Avail.Storage	Storage Description
#1	82.70'	440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,100 cf Overall x 40.0% Voids

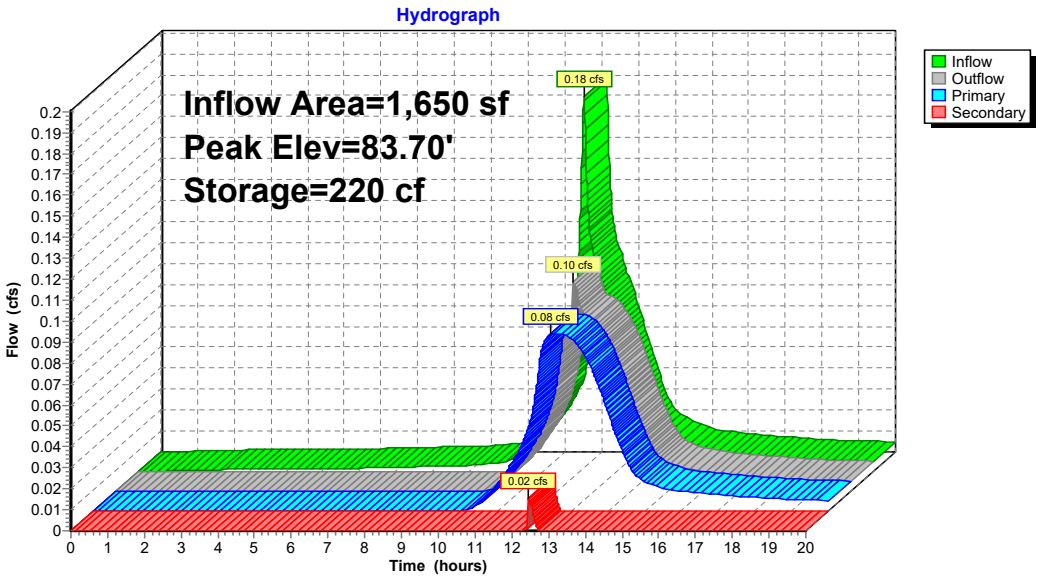
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
82.70	550	0	0
83.70	550	550	550
84.70	550	550	1,100

Device	Routing	Invert	Outlet Devices
#1	Primary	82.97'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	83.70'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.08 cfs @ 12.44 hrs HW=83.70' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.08 cfs @ 3.88 fps)

Secondary OutFlow Max=0.00 cfs @ 12.44 hrs HW=83.70' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.00 cfs @ 0.13 fps)

Pond 33D: CELL D



Summary for Pond 33E: CELL E

[79] Warning: Submerged Pond 33D Primary device # 1 by 0.31'

Inflow Area = 2,200 sf,100.00% Impervious, Inflow Depth > 6.86" for 100 Yr event
Inflow = 0.19 cfs @ 12.13 hrs, Volume= 1,258 cf
Outflow = 0.12 cfs @ 12.45 hrs, Volume= 1,184 cf, Atten= 33%, Lag= 18.9 min
Primary = 0.08 cfs @ 12.45 hrs, Volume= 1,123 cf
Routed to Pond 33F : CELL F
Secondary = 0.04 cfs @ 12.45 hrs, Volume= 61 cf
Routed to Pond 33F : CELL F

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 83.28' @ 12.45 hrs Surf.Area= 550 sf Storage= 221 cf

Plug-Flow detention time= 61.8 min calculated for 1,183 cf (94% of inflow)
Center-of-Mass det. time= 41.3 min (824.1 - 782.8)

Volume	Invert	Avail.Storage	Storage Description
#1	82.28'	440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,100 cf Overall x 40.0% Voids

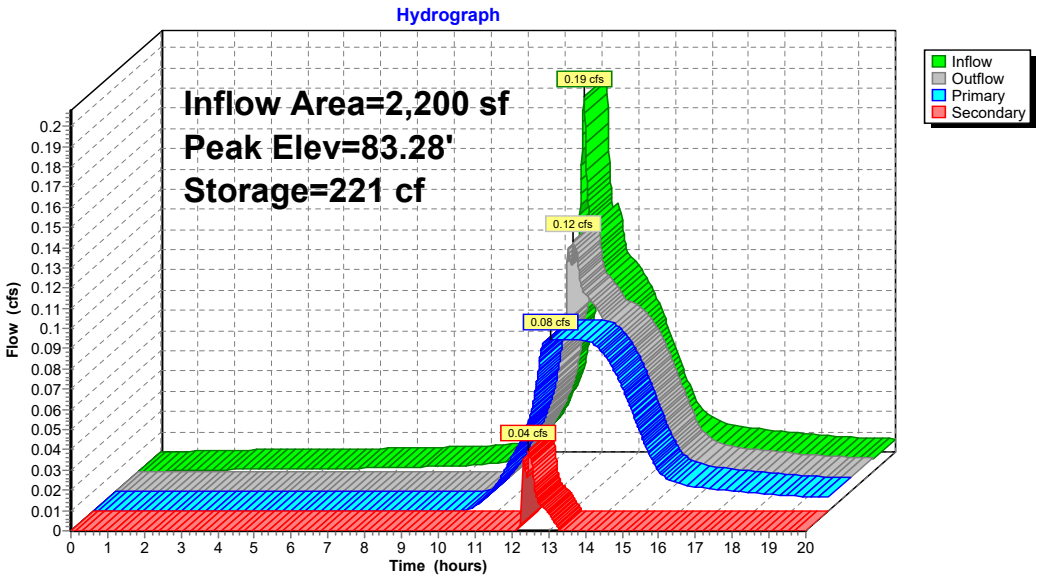
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
82.28	550	0	0
83.28	550	550	550
84.28	550	550	1,100

Device	Routing	Invert	Outlet Devices
#1	Primary	82.55'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	83.28'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.08 cfs @ 12.45 hrs HW=83.28' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.08 cfs @ 3.88 fps)

Secondary OutFlow Max=0.02 cfs @ 12.45 hrs HW=83.28' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.02 cfs @ 0.20 fps)

Pond 33E: CELL E



Summary for Pond 33F: CELL F

[79] Warning: Submerged Pond 33E Primary device # 1 by 0.33'

Inflow Area = 2,750 sf,100.00% Impervious, Inflow Depth > 6.76" for 100 Yr event
Inflow = 0.19 cfs @ 12.13 hrs, Volume= 1,550 cf
Outflow = 0.16 cfs @ 12.31 hrs, Volume= 1,475 cf, Atten= 17%, Lag= 10.6 min
Primary = 0.08 cfs @ 12.31 hrs, Volume= 1,339 cf
Routed to Pond 33G : CELL G
Secondary = 0.07 cfs @ 12.31 hrs, Volume= 136 cf
Routed to Pond 33G : CELL G

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 82.88' @ 12.31 hrs Surf.Area= 550 sf Storage= 222 cf

Plug-Flow detention time= 54.6 min calculated for 1,474 cf (95% of inflow)
Center-of-Mass det. time= 37.7 min (834.7 - 797.1)

Volume	Invert	Avail.Storage	Storage Description
#1	81.87'	440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,100 cf Overall x 40.0% Voids

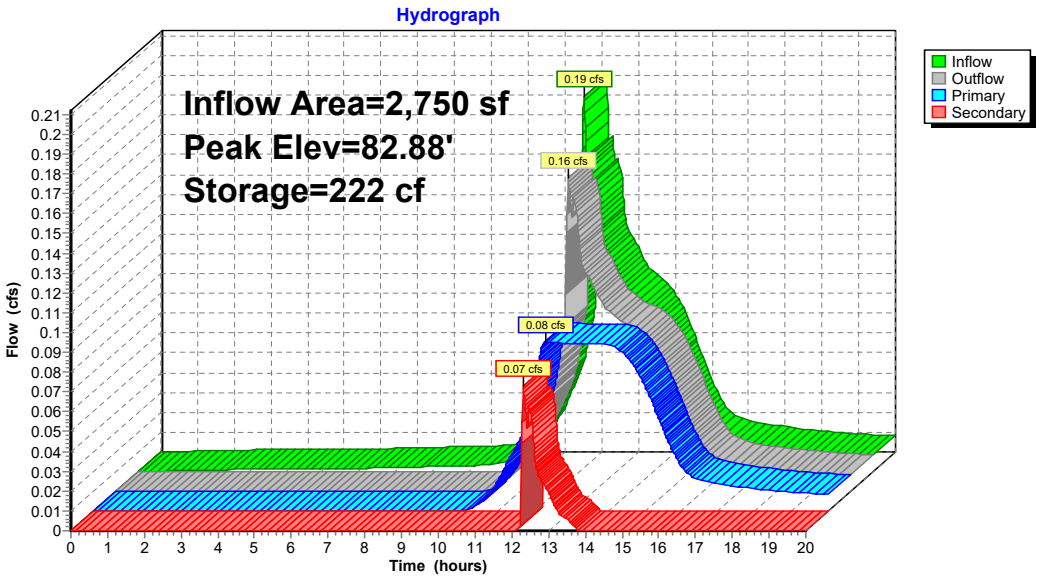
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
81.87	550	0	0
82.87	550	550	550
83.87	550	550	1,100

Device	Routing	Invert	Outlet Devices
#1	Primary	82.14'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	82.87'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.08 cfs @ 12.31 hrs HW=82.88' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.08 cfs @ 3.89 fps)

Secondary OutFlow Max=0.04 cfs @ 12.31 hrs HW=82.88' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.04 cfs @ 0.28 fps)

Pond 33F: CELL F



Summary for Pond 33G: CELL G

Inflow Area = 3,850 sf,100.00% Impervious, Inflow Depth > 6.88" for 100 Yr event
Inflow = 0.31 cfs @ 12.13 hrs, Volume= 2,207 cf
Outflow = 0.23 cfs @ 12.32 hrs, Volume= 2,048 cf, Atten= 25%, Lag= 11.2 min
Primary = 0.09 cfs @ 12.32 hrs, Volume= 1,725 cf
Routed to Pond 33H : CELL H
Secondary = 0.14 cfs @ 12.32 hrs, Volume= 323 cf
Routed to Pond 33H : CELL H

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 82.05' @ 12.32 hrs Surf.Area= 1,100 sf Storage= 446 cf

Plug-Flow detention time= 86.8 min calculated for 2,048 cf (93% of inflow)
Center-of-Mass det. time= 63.2 min (856.4 - 793.2)

Volume	Invert	Avail.Storage	Storage Description
#1	81.04'	880 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 2,200 cf Overall x 40.0% Voids

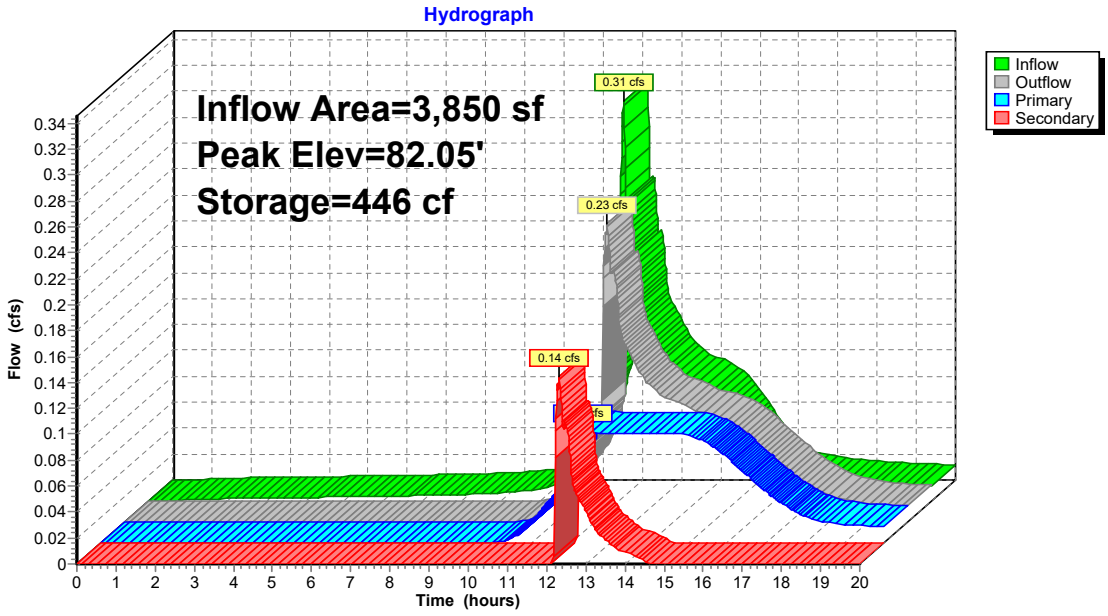
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
81.04	1,100	0	0
82.04	1,100	1,100	1,100
83.04	1,100	1,100	2,200

Device	Routing	Invert	Outlet Devices
#1	Primary	81.31'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	82.04'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.09 cfs @ 12.32 hrs HW=82.05' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.09 cfs @ 3.91 fps)

Secondary OutFlow Max=0.12 cfs @ 12.32 hrs HW=82.05' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.12 cfs @ 0.39 fps)

Pond 33G: CELL G



Summary for Pond 33H: CELL H

Inflow Area = 7,563 sf, 98.04% Impervious, Inflow Depth > 7.08" for 100 Yr event
Inflow = 0.85 cfs @ 12.13 hrs, Volume= 4,465 cf
Outflow = 0.85 cfs @ 12.14 hrs, Volume= 4,010 cf, Atten= 0%, Lag= 0.4 min
Primary = 0.07 cfs @ 12.14 hrs, Volume= 2,013 cf
Routed to Pond 33I : CELL I
Secondary = 0.78 cfs @ 12.14 hrs, Volume= 1,997 cf
Routed to Pond 33I : CELL I

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 81.16' @ 12.14 hrs Surf.Area= 1,631 sf Storage= 684 cf

Plug-Flow detention time= 93.4 min calculated for 4,008 cf (90% of inflow)
Center-of-Mass det. time= 60.0 min (837.8 - 777.8)

Volume	Invert	Avail.Storage	Storage Description
#1	80.11'	1,305 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 3,262 cf Overall x 40.0% Voids

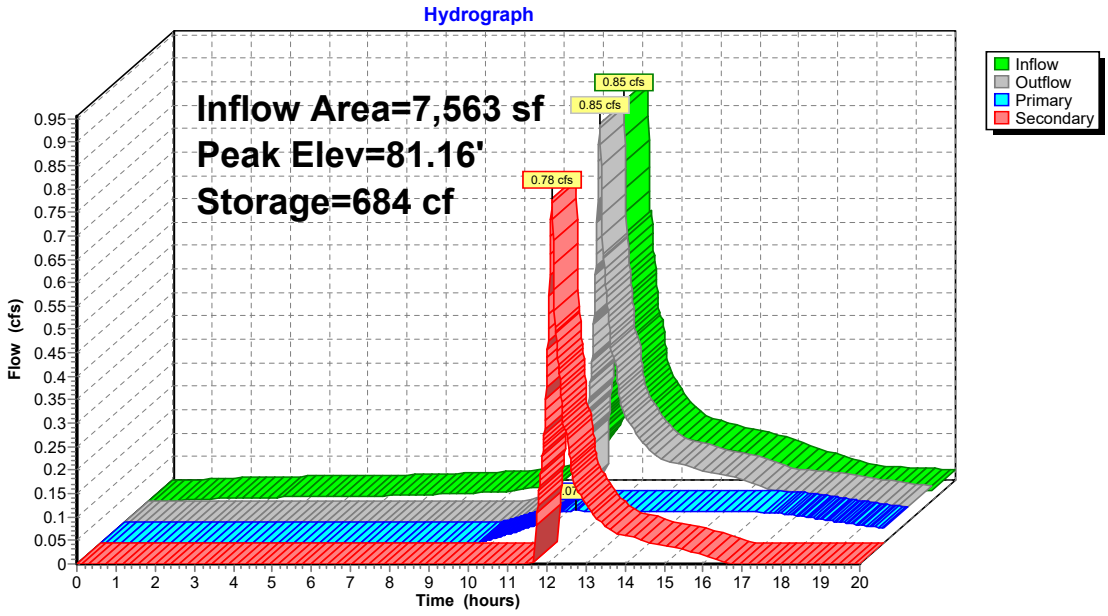
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
80.11	1,631	0	0
81.11	1,631	1,631	1,631
82.11	1,631	1,631	3,262

Device	Routing	Invert	Outlet Devices
#1	Primary	80.63'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	81.11'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.07 cfs @ 12.14 hrs HW=81.16' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.07 cfs @ 3.21 fps)

Secondary OutFlow Max=0.76 cfs @ 12.14 hrs HW=81.16' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.76 cfs @ 0.72 fps)

Pond 33H: CELL H



Summary for Pond 33I: CELL I

Inflow Area = 9,568 sf, 96.89% Impervious, Inflow Depth > 6.63" for 100 Yr event
Inflow = 1.26 cfs @ 12.13 hrs, Volume= 5,290 cf
Outflow = 1.25 cfs @ 12.14 hrs, Volume= 4,769 cf, Atten= 0%, Lag= 0.4 min
Primary = 0.09 cfs @ 12.14 hrs, Volume= 2,554 cf
Routed to Pond 33J : CELL J
Secondary = 1.17 cfs @ 12.14 hrs, Volume= 2,215 cf
Routed to Pond 33J : CELL J

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 80.22' @ 12.14 hrs Surf.Area= 1,855 sf Storage= 789 cf

Plug-Flow detention time= 78.5 min calculated for 4,767 cf (90% of inflow)
Center-of-Mass det. time= 45.6 min (853.1 - 807.5)

Volume	Invert	Avail.Storage	Storage Description
#1	79.16'	1,484 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 3,710 cf Overall x 40.0% Voids

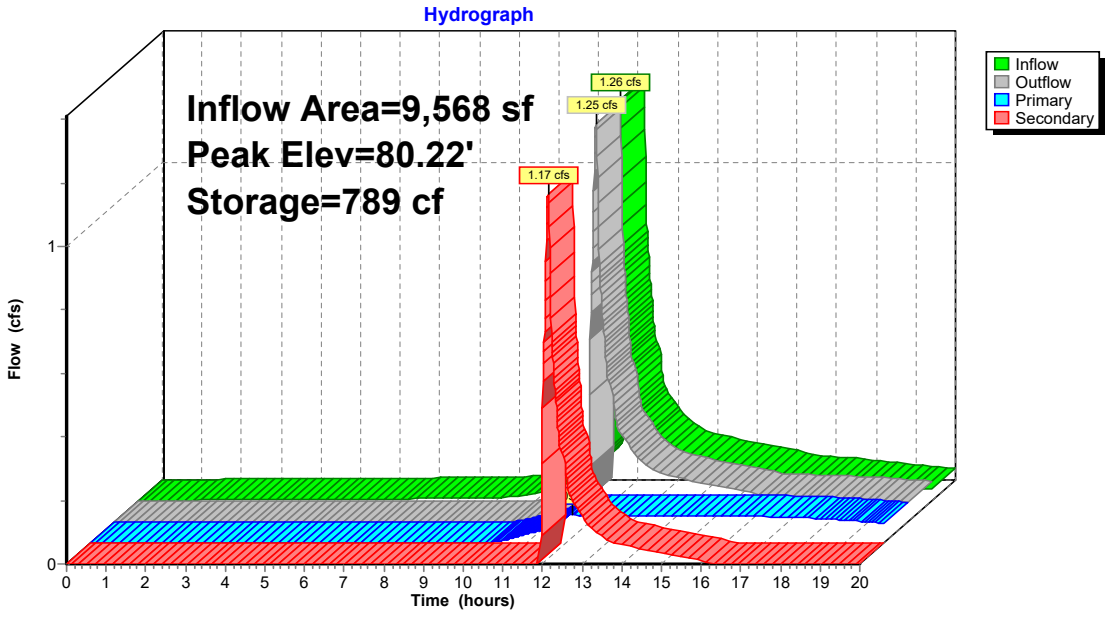
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
79.16	1,855	0	0
80.16	1,855	1,855	1,855
81.16	1,855	1,855	3,710

Device	Routing	Invert	Outlet Devices
#1	Primary	79.43'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	80.16'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.09 cfs @ 12.14 hrs HW=80.22' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.09 cfs @ 4.06 fps)

Secondary OutFlow Max=1.16 cfs @ 12.14 hrs HW=80.22' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Weir Controls 1.16 cfs @ 0.83 fps)

Pond 33I: CELL I



Summary for Pond 33J: CELL J

Inflow Area = 11,513 sf, 90.07% Impervious, Inflow Depth > 6.00" for 100 Yr event
Inflow = 1.59 cfs @ 12.14 hrs, Volume= 5,756 cf
Outflow = 1.58 cfs @ 12.14 hrs, Volume= 5,358 cf, Atten= 0%, Lag= 0.2 min
Primary = 0.09 cfs @ 12.14 hrs, Volume= 2,628 cf
Routed to Pond 33K : CELL K
Secondary = 1.50 cfs @ 12.14 hrs, Volume= 2,730 cf
Routed to Pond 33K : CELL K

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 79.43' @ 12.14 hrs Surf.Area= 1,100 sf Storage= 473 cf

Plug-Flow detention time= 44.7 min calculated for 5,355 cf (93% of inflow)
Center-of-Mass det. time= 21.0 min (853.4 - 832.4)

Volume	Invert	Avail.Storage	Storage Description
#1	78.36'	880 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 2,200 cf Overall x 40.0% Voids

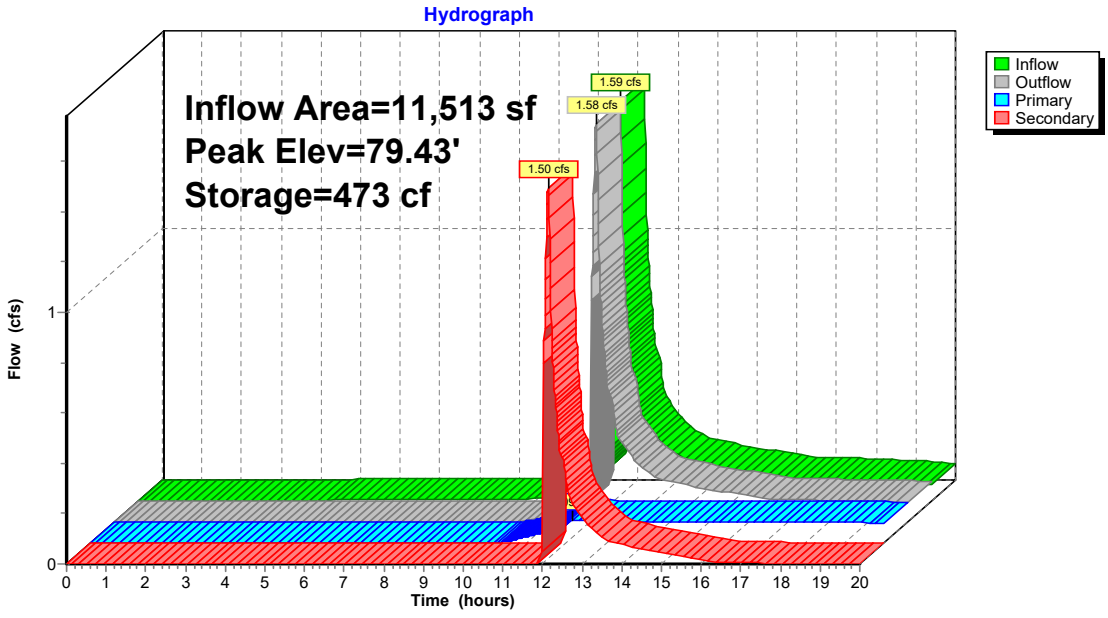
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
78.36	1,100	0	0
79.36	1,100	1,100	1,100
80.36	1,100	1,100	2,200

Device	Routing	Invert	Outlet Devices
#1	Primary	78.63'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	79.36'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.09 cfs @ 12.14 hrs HW=79.43' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.09 cfs @ 4.09 fps)

Secondary OutFlow Max=1.48 cfs @ 12.14 hrs HW=79.43' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Weir Controls 1.48 cfs @ 0.91 fps)

Pond 33J: CELL J



Summary for Pond 33K: CELL K

[79] Warning: Submerged Pond 33J Primary device # 1 by 0.43'

Inflow Area = 12,822 sf, 86.60% Impervious, Inflow Depth > 5.63" for 100 Yr event
Inflow = 1.81 cfs @ 12.14 hrs, Volume= 6,019 cf
Outflow = 1.81 cfs @ 12.14 hrs, Volume= 5,726 cf, Atten= 0%, Lag= 0.1 min
Primary = 0.09 cfs @ 12.14 hrs, Volume= 2,526 cf
Routed to Pond 33L : OUTLET PIPE
Secondary = 1.72 cfs @ 12.14 hrs, Volume= 3,200 cf
Routed to Pond 33L : OUTLET PIPE

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 79.06' @ 12.14 hrs Surf.Area= 734 sf Storage= 318 cf

Plug-Flow detention time= 28.9 min calculated for 5,723 cf (95% of inflow)
Center-of-Mass det. time= 12.0 min (852.2 - 840.2)

Volume	Invert	Avail.Storage	Storage Description
#1	77.98'	587 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,468 cf Overall x 40.0% Voids

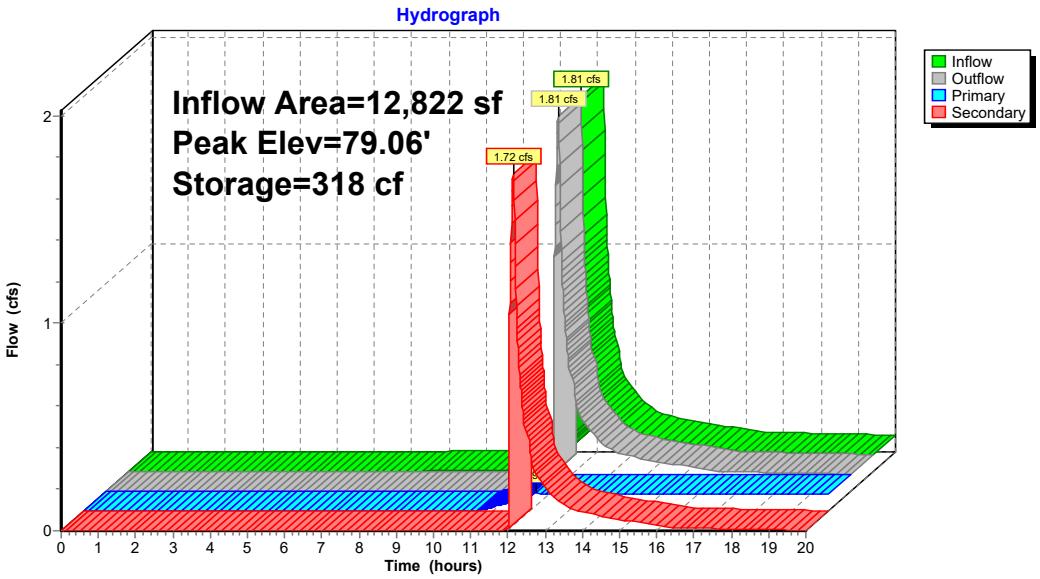
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
77.98	734	0	0
78.98	734	734	734
79.98	734	734	1,468

Device	Routing	Invert	Outlet Devices
#1	Primary	78.30'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	78.98'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.09 cfs @ 12.14 hrs HW=79.06' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.09 cfs @ 3.97 fps)

Secondary OutFlow Max=1.71 cfs @ 12.14 hrs HW=79.06' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Weir Controls 1.71 cfs @ 0.95 fps)

Pond 33K: CELL K



Summary for Pond 33L: OUTLET PIPE

Inflow Area = 12,822 sf, 86.60% Impervious, Inflow Depth > 5.36" for 100 Yr event
Inflow = 1.81 cfs @ 12.14 hrs, Volume= 5,726 cf
Outflow = 1.81 cfs @ 12.15 hrs, Volume= 5,724 cf, Atten= 0%, Lag= 0.2 min
Primary = 1.81 cfs @ 12.15 hrs, Volume= 5,724 cf
Routed to Reach DP-3PR : REGIONAL SWALE

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 76.74' @ 12.15 hrs Surf.Area= 30 sf Storage= 9 cf

Plug-Flow detention time= 0.2 min calculated for 5,721 cf (100% of inflow)
Center-of-Mass det. time= 0.1 min (852.3 - 852.2)

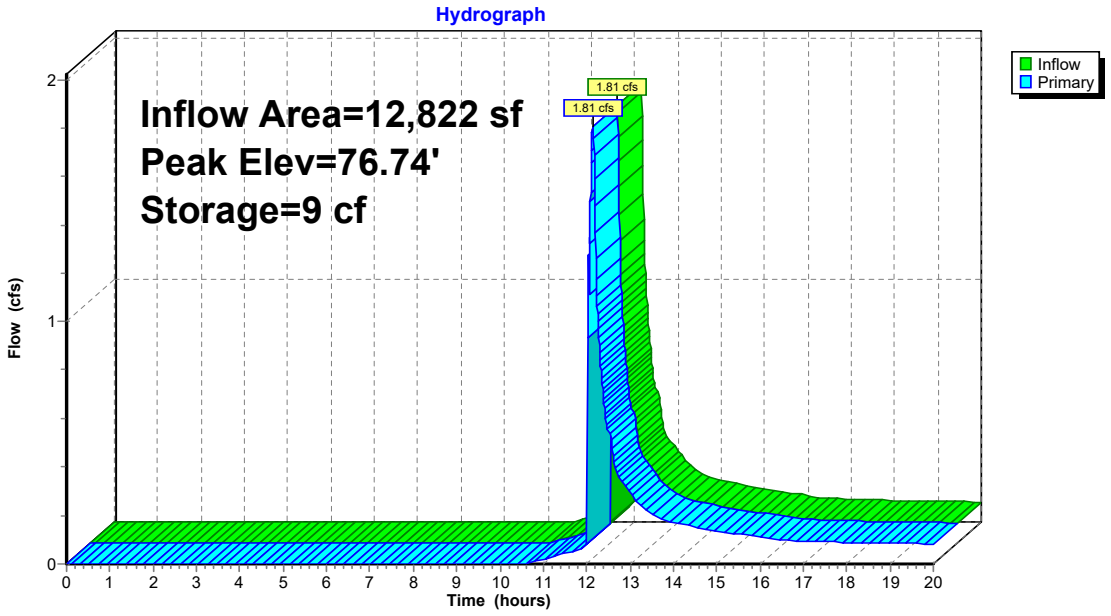
Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	37 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 93 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
76.00	30	0	0
79.10	30	93	93

Device	Routing	Invert	Outlet Devices
#1	Primary	76.00'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.80 cfs @ 12.15 hrs HW=76.73' (Free Discharge)
↑**1=Orifice/Grate** (Orifice Controls 1.80 cfs @ 2.92 fps)

Pond 33L: OUTLET PIPE



Summary for Pond BB-2A: BULLPEN

Inflow Area = 1,798 sf,100.00% Impervious, Inflow Depth > 7.99" for 100 Yr event
Inflow = 0.38 cfs @ 12.13 hrs, Volume= 1,196 cf
Outflow = 0.14 cfs @ 12.29 hrs, Volume= 1,159 cf, Atten= 65%, Lag= 9.5 min
Primary = 0.14 cfs @ 12.29 hrs, Volume= 1,159 cf
Routed to Reach DP-3PR : REGIONAL SWALE

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 79.47' @ 12.29 hrs Surf.Area= 1,798 sf Storage= 335 cf

Plug-Flow detention time= 57.7 min calculated for 1,159 cf (97% of inflow)
Center-of-Mass det. time= 43.7 min (753.2 - 709.5)

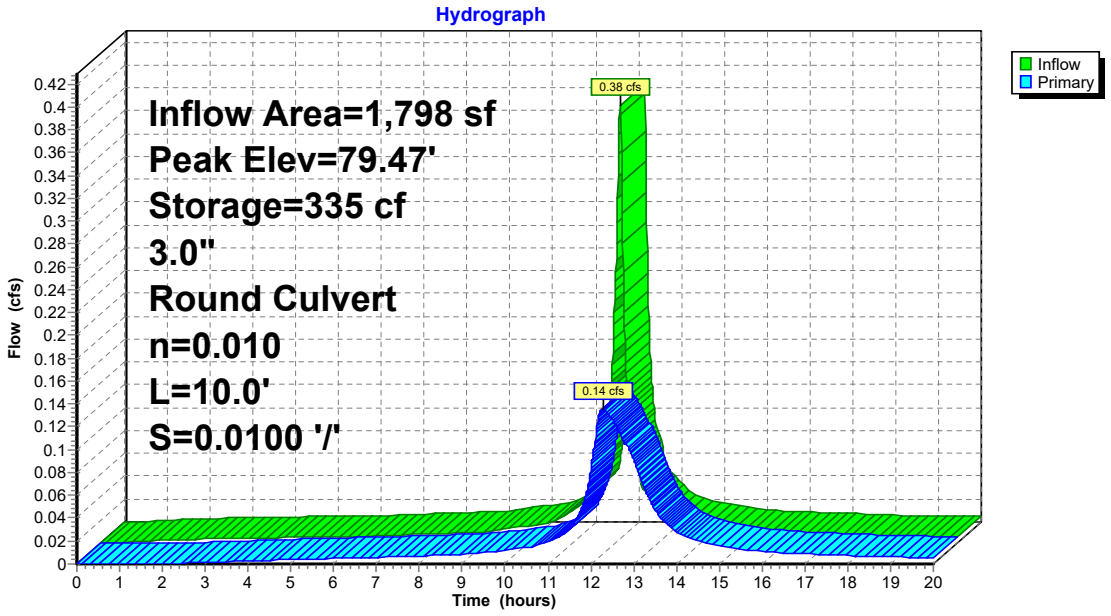
Volume	Invert	Avail.Storage	Storage Description
#1	79.00'	719 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,798 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
79.00	1,798	0	0
80.00	1,798	1,798	1,798

Device	Routing	Invert	Outlet Devices
#1	Primary	79.00'	**3.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 79.00' / 78.90' S= 0.0100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.05 sf

Primary OutFlow Max=0.14 cfs @ 12.29 hrs HW=79.47' (Free Discharge)
1=Culvert (Barrel Controls 0.14 cfs @ 2.76 fps)

Pond BB-2A: BULLPEN



Summary for Pond BB-4P: POROUS WALK-2

Inflow Area = 18,645 sf, 8.43% Impervious, Inflow Depth > 13.10" for 100 Yr event
Inflow = 7.46 cfs @ 12.15 hrs, Volume= 20,347 cf
Outflow = 7.46 cfs @ 12.15 hrs, Volume= 19,711 cf, Atten= 0%, Lag= 0.2 min
Primary = 0.17 cfs @ 12.15 hrs, Volume= 290 cf
Routed to Reach DP-3PR : REGIONAL SWALE
Secondary = 7.28 cfs @ 12.15 hrs, Volume= 19,421 cf
Routed to Pond BB-P1 : Plaza

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 88.20' @ 12.15 hrs Surf.Area= 1,571 sf Storage= 755 cf

Plug-Flow detention time= 18.9 min calculated for 19,701 cf (97% of inflow)
Center-of-Mass det. time= 7.1 min (803.2 - 796.1)

Volume	Invert	Avail.Storage	Storage Description
#1	87.00'	1,257 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 3,142 cf Overall x 40.0% Voids

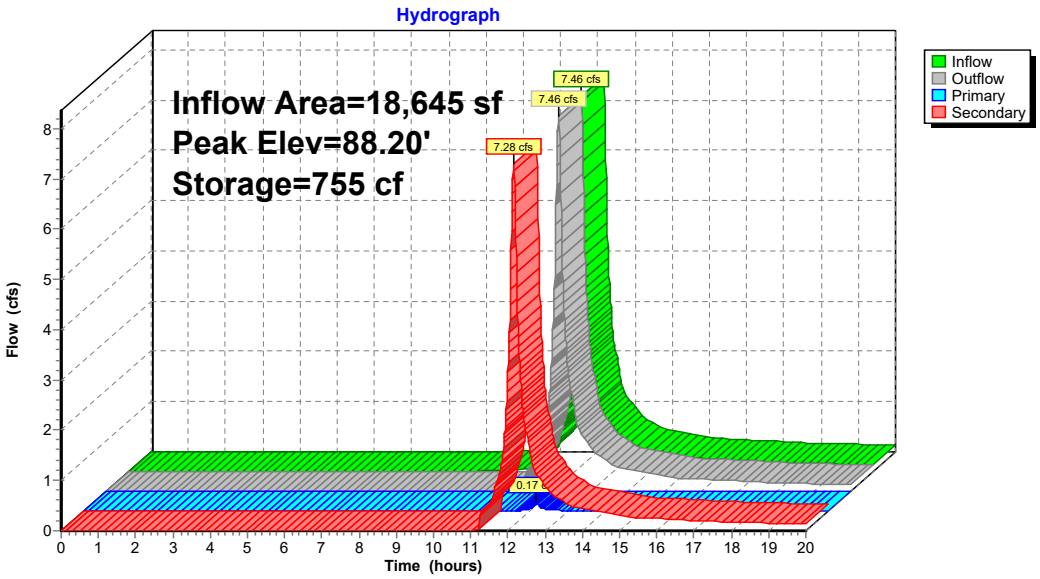
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
87.00	1,571	0	0
88.00	1,571	1,571	1,571
89.00	1,571	1,571	3,142

Device	Routing	Invert	Outlet Devices
#1	Primary	88.00'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 88.00' / 83.00' S= 0.5000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Secondary	88.00'	**30.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.17 cfs @ 12.15 hrs HW=88.20' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.17 cfs @ 1.53 fps)

Secondary OutFlow Max=7.27 cfs @ 12.15 hrs HW=88.20' (Free Discharge)
└**2=Broad-Crested Rectangular Weir**(Weir Controls 7.27 cfs @ 1.21 fps)

Pond BB-4P: POROUS WALK-2



Summary for Pond BB-5P: POROUS WALK 1

Inflow Area = 45,346 sf, 8.87% Impervious, Inflow Depth > 4.00" for 100 Yr event
Inflow = 5.30 cfs @ 12.16 hrs, Volume= 15,120 cf
Outflow = 5.29 cfs @ 12.16 hrs, Volume= 14,309 cf, Atten= 0%, Lag= 0.3 min
Primary = 0.09 cfs @ 12.16 hrs, Volume= 154 cf
Routed to Reach DP-3PR : REGIONAL SWALE
Secondary = 5.20 cfs @ 12.16 hrs, Volume= 14,155 cf
Routed to Pond BB-4P : POROUS WALK-2

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 91.16' @ 12.16 hrs Surf.Area= 2,298 sf Storage= 934 cf

Plug-Flow detention time= 36.2 min calculated for 14,309 cf (95% of inflow)
Center-of-Mass det. time= 16.3 min (801.1 - 784.8)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	1,609 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 4,596 cf Overall x 35.0% Voids

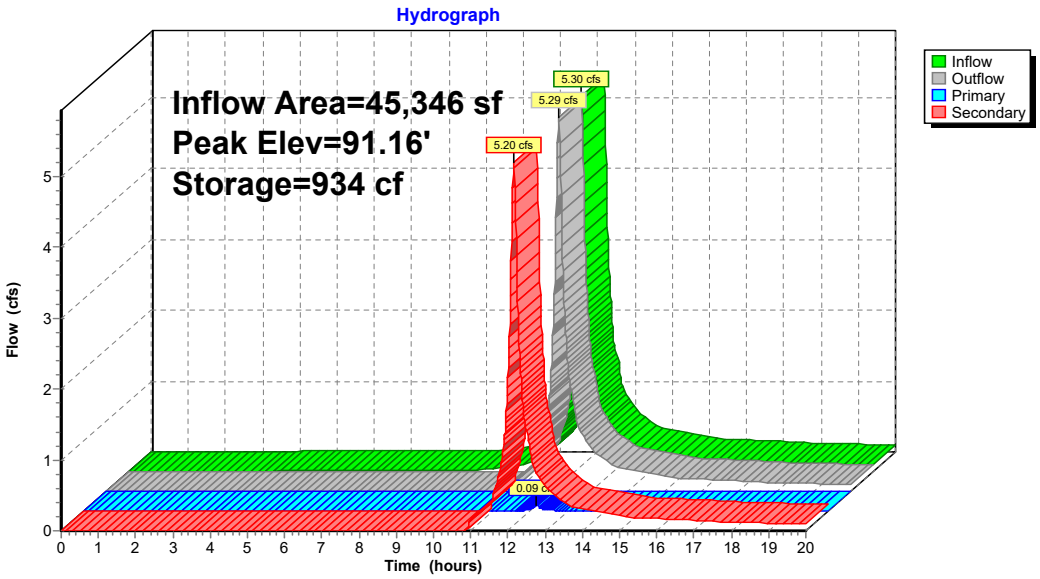
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.00	2,298	0	0
91.00	2,298	2,298	2,298
92.00	2,298	2,298	4,596

Device	Routing	Invert	Outlet Devices
#1	Primary	91.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	91.00'	**30.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.09 cfs @ 12.16 hrs HW=91.16' (Free Discharge)
↑—**1=Orifice/Grate** (Orifice Controls 0.09 cfs @ 1.36 fps)

Secondary OutFlow Max=5.20 cfs @ 12.16 hrs HW=91.16' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 5.20 cfs @ 1.08 fps)

Pond BB-5P: POROUS WALK 1



Summary for Pond BB-P1: Plaza

Inflow Area = 13,728 sf, 46.55% Impervious, Inflow Depth > 22.63" for 100 Yr event
Inflow = 9.44 cfs @ 12.15 hrs, Volume= 25,886 cf
Outflow = 4.69 cfs @ 12.28 hrs, Volume= 22,801 cf, Atten= 50%, Lag= 8.1 min
Primary = 4.69 cfs @ 12.28 hrs, Volume= 22,801 cf
Routed to Reach DP-3PR : REGIONAL SWALE

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 84.04' @ 12.28 hrs Surf.Area= 6,390 sf Storage= 7,774 cf

Plug-Flow detention time= 73.4 min calculated for 22,801 cf (88% of inflow)
Center-of-Mass det. time= 35.0 min (822.8 - 787.8)

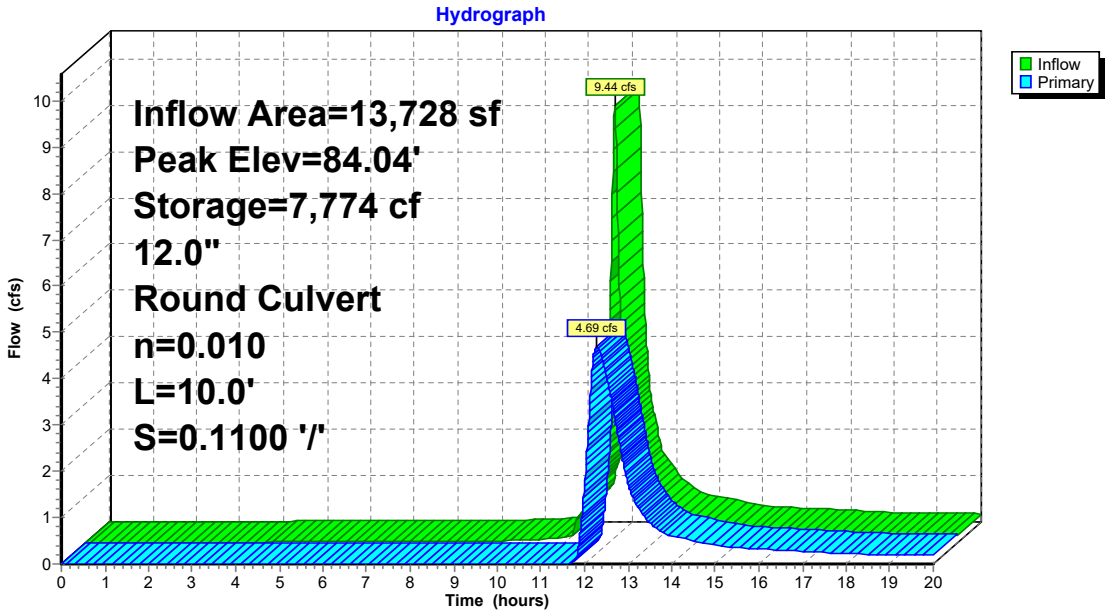
Volume	Invert	Avail.Storage	Storage Description
#1	81.00'	12,780 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 31,950 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
81.00	6,390	0	0
86.00	6,390	31,950	31,950

Device	Routing	Invert	Outlet Devices
#1	Primary	82.00'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 82.00' / 80.90' S= 0.1100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=4.69 cfs @ 12.28 hrs HW=84.04' (Free Discharge)
1=Culvert (Inlet Controls 4.69 cfs @ 5.98 fps)

Pond BB-P1: Plaza



Summary for Pond BB-P2: INFILT BASIN

Inflow Area = 155,772 sf,100.00% Impervious, Inflow Depth > 7.99" for 100 Yr event
Inflow = 33.17 cfs @ 12.13 hrs, Volume= 103,659 cf
Outflow = 3.14 cfs @ 12.95 hrs, Volume= 57,717 cf, Atten= 91%, Lag= 49.2 min
Primary = 0.42 cfs @ 12.95 hrs, Volume= 18,707 cf
Routed to Reach DP-3PR : REGIONAL SWALE
Secondary = 2.72 cfs @ 12.95 hrs, Volume= 39,009 cf
Routed to Reach DP-3PR : REGIONAL SWALE

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 78.27' @ 12.95 hrs Surf.Area= 120,809 sf Storage= 65,531 cf

Plug-Flow detention time= 251.1 min calculated for 57,717 cf (56% of inflow)
Center-of-Mass det. time= 151.7 min (861.2 - 709.5)

Volume	Invert	Avail.Storage	Storage Description
#1	74.67'	124,126 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 354,645 cf Overall x 35.0% Voids

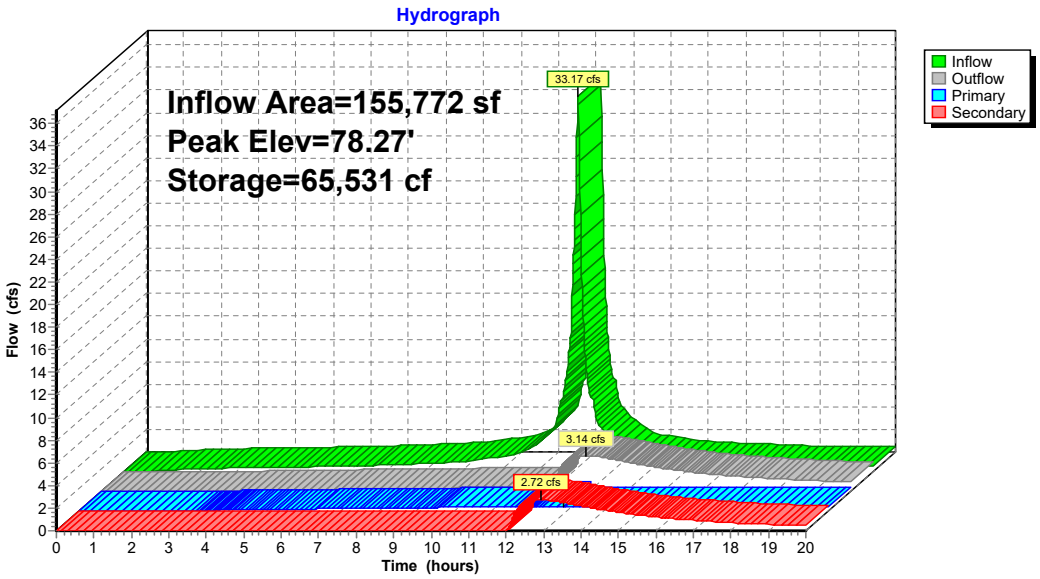
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
74.67	14,517	0	0
77.00	14,517	33,825	33,825
77.01	120,809	677	34,501
79.66	120,809	320,144	354,645

Device	Routing	Invert	Outlet Devices
#1	Secondary	77.50'	**24.0" Round Culvert** L= 353.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 77.50' / 76.50' S= 0.0028 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 3.14 sf
#2	Primary	75.00'	**3.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 75.00' / 74.90' S= 0.0100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.05 sf

Primary OutFlow Max=0.42 cfs @ 12.95 hrs HW=78.27' (Free Discharge)
└**2=Culvert** (Inlet Controls 0.42 cfs @ 8.54 fps)

Secondary OutFlow Max=2.72 cfs @ 12.95 hrs HW=78.27' (Free Discharge)
└**1=Culvert** (Barrel Controls 2.72 cfs @ 3.59 fps)

Pond BB-P2: INFILT BASIN



Time span=0.00-20.00 hrs, dt=0.01 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentPR-10: PR-10 TO SOFTBALL TD Runoff Area=61,785 sf 5.95% Impervious Runoff Depth>0.80"
Flow Length=277' Tc=9.3 min CN=61/98 Runoff=1.24 cfs 4,139 cf

SubcatchmentPR-11: PR-11 POROUS WALK Runoff Area=2,299 sf 100.00% Impervious Runoff Depth>3.41"
Tc=6.0 min CN=0/98 Runoff=0.22 cfs 654 cf

SubcatchmentPR-12: PR-12 TO POROUS WALK Runoff Area=43,047 sf 4.00% Impervious Runoff Depth>0.75"
Flow Length=205' Tc=8.4 min CN=61/98 Runoff=0.84 cfs 2,691 cf

SubcatchmentPR-20: PR-20 CROSS COUNTRY Runoff Area=391,772 sf 0.00% Impervious Runoff Depth>0.63"
Tc=25.5 min CN=61/0 Runoff=3.95 cfs 20,649 cf

SubcatchmentPR-30: TO POROUS WALK 2 Runoff Area=18,645 sf 8.43% Impervious Runoff Depth>0.87"
Tc=6.0 min CN=61/98 Runoff=0.47 cfs 1,358 cf

SubcatchmentPR-31: Plaza Runoff Area=13,728 sf 46.55% Impervious Runoff Depth>1.93"
Tc=6.0 min CN=61/98 Runoff=0.74 cfs 2,209 cf

SubcatchmentPR-32: PR-32 TO SOFTBALL Runoff Area=25,435 sf 3.14% Impervious Runoff Depth>0.73"
Tc=6.0 min CN=61/98 Runoff=0.54 cfs 1,542 cf

SubcatchmentPR-34: SLOPE TO REGIONAL SWALE Runoff Area=21,534 sf 0.00% Impervious Runoff Depth>0.64"
Flow Length=142' Tc=7.1 min CN=61/0 Runoff=0.39 cfs 1,148 cf

SubcatchmentPR-35: FIELD AND ROOF Runoff Area=155,772 sf 100.00% Impervious Runoff Depth>3.41"
Tc=6.0 min CN=0/98 Runoff=14.60 cfs 44,308 cf

SubcatchmentPR-36: GRASS/LANDSCAPING Runoff Area=29,400 sf 0.00% Impervious Runoff Depth>0.64"
Flow Length=576' Tc=10.1 min CN=61/0 Runoff=0.46 cfs 1,565 cf

SubcatchmentPR-37: PR-37 TOWARD SWALE Runoff Area=36,798 sf 1.01% Impervious Runoff Depth>0.66"
Flow Length=1,093' Tc=20.2 min CN=61/98 Runoff=0.43 cfs 2,032 cf

SubcatchmentPR-38: BULLPEN Runoff Area=1,798 sf 100.00% Impervious Runoff Depth>3.41"
Tc=6.0 min CN=0/98 Runoff=0.17 cfs 511 cf

SubcatchmentPR-40: PR-40 TOWARD TENNIS Runoff Area=7,153 sf 37.96% Impervious Runoff Depth>1.69"
Tc=6.0 min CN=61/98 Runoff=0.34 cfs 1,009 cf

SubcatchmentPR-50: PR-50 REGIOINAL SWALE Runoff Area=62,111 sf 0.00% Impervious Runoff Depth>0.64"
Tc=6.0 min CN=61/0 Runoff=1.19 cfs 3,314 cf

SubcatchmentPR33B: PR-33B Runoff Area=550 sf 100.00% Impervious Runoff Depth>3.41"
Tc=6.0 min CN=0/98 Runoff=0.05 cfs 156 cf

SubcatchmentPR33C: PR-33C Runoff Area=550 sf 100.00% Impervious Runoff Depth>3.41"
Tc=6.0 min CN=0/98 Runoff=0.05 cfs 156 cf

SubcatchmentPR33D: PR-33E Runoff Area=550 sf 100.00% Impervious Runoff Depth>3.41"
Tc=6.0 min CN=0/98 Runoff=0.05 cfs 156 cf

SubcatchmentPR33E: PR-33E Runoff Area=550 sf 100.00% Impervious Runoff Depth>3.41"
Tc=6.0 min CN=0/98 Runoff=0.05 cfs 156 cf

SubcatchmentPR33F: PR-33F Runoff Area=550 sf 100.00% Impervious Runoff Depth>3.41"
Tc=6.0 min CN=0/98 Runoff=0.05 cfs 156 cf

SubcatchmentPR33G: PR-33F Runoff Area=1,100 sf 100.00% Impervious Runoff Depth>3.41"
Tc=6.0 min CN=0/98 Runoff=0.10 cfs 313 cf

SubcatchmentPR33H: PR-33H Runoff Area=3,713 sf 96.01% Impervious Runoff Depth>3.30"
Tc=6.0 min CN=61/98 Runoff=0.34 cfs 1,022 cf

SubcatchmentPR33I: PR-33I Runoff Area=2,005 sf 92.52% Impervious Runoff Depth>3.21"
Tc=6.0 min CN=61/98 Runoff=0.18 cfs 536 cf

SubcatchmentPR33J: PR-33J Runoff Area=1,945 sf 56.56% Impervious Runoff Depth>2.21"
Tc=6.0 min CN=61/98 Runoff=0.12 cfs 358 cf

SubcatchmentPR33K: PR-33F Runoff Area=1,309 sf 56.07% Impervious Runoff Depth>2.20"
Tc=6.0 min CN=61/98 Runoff=0.08 cfs 239 cf

Reach DP-3PR: REGIONAL SWALE Inflow=1.52 cfs 23,006 cf
Outflow=1.52 cfs 23,006 cf

Reach DP1PR: Softball Inflow=1.73 cfs 5,681 cf
Outflow=1.73 cfs 5,681 cf

Pond 33B: CELL B Peak Elev=83.93' Storage=87 cf Inflow=0.05 cfs 156 cf
Primary=0.02 cfs 93 cf Secondary=0.00 cfs 0 cf Outflow=0.02 cfs 93 cf

Pond 33C: CELL C Peak Elev=83.55' Storage=98 cf Inflow=0.06 cfs 249 cf
Primary=0.03 cfs 184 cf Secondary=0.00 cfs 0 cf Outflow=0.03 cfs 184 cf

Pond 33D: CELL D Peak Elev=83.18' Storage=106 cf Inflow=0.07 cfs 340 cf
Primary=0.04 cfs 273 cf Secondary=0.00 cfs 0 cf Outflow=0.04 cfs 273 cf

Pond 33E: CELL E Peak Elev=82.79' Storage=113 cf Inflow=0.07 cfs 429 cf
Primary=0.04 cfs 361 cf Secondary=0.00 cfs 0 cf Outflow=0.04 cfs 361 cf

Pond 33F: CELL F Peak Elev=82.41' Storage=118 cf Inflow=0.07 cfs 517 cf
Primary=0.04 cfs 447 cf Secondary=0.00 cfs 0 cf Outflow=0.04 cfs 447 cf

Pond 33G: CELL G Peak Elev=81.60' Storage=248 cf Inflow=0.12 cfs 760 cf
Primary=0.05 cfs 615 cf Secondary=0.00 cfs 0 cf Outflow=0.05 cfs 615 cf

Pond 33H: CELL H Peak Elev=81.11' Storage=655 cf Inflow=0.35 cfs 1,637 cf
Primary=0.07 cfs 1,183 cf Secondary=0.04 cfs 57 cf Outflow=0.11 cfs 1,241 cf

Pond 33I: CELL I Peak Elev=79.94' Storage=576 cf Inflow=0.22 cfs 1,776 cf
Primary=0.07 cfs 1,488 cf Secondary=0.00 cfs 0 cf Outflow=0.07 cfs 1,488 cf

Pond 33J: CELL J Peak Elev=79.15' Storage=348 cf Inflow=0.14 cfs 1,846 cf
Primary=0.07 cfs 1,652 cf Secondary=0.00 cfs 0 cf Outflow=0.07 cfs 1,652 cf

Pond 33K: CELL K Peak Elev=78.83' Storage=250 cf Inflow=0.10 cfs 1,891 cf
Primary=0.07 cfs 1,725 cf Secondary=0.00 cfs 0 cf Outflow=0.07 cfs 1,725 cf

Pond 33L: OUTLET PIPE Peak Elev=76.13' Storage=2 cf Inflow=0.07 cfs 1,725 cf
Outflow=0.07 cfs 1,724 cf

Pond BB-2A: BULLPEN Peak Elev=79.22' Storage=161 cf Inflow=0.17 cfs 511 cf
3.0" Round Culvert n=0.010 L=10.0' S=0.0100 '/' Outflow=0.07 cfs 486 cf

Pond BB-4P: POROUS WALK-2 Peak Elev=88.06' Storage=664 cf Inflow=1.41 cfs 3,878 cf
Primary=0.02 cfs 29 cf Secondary=1.15 cfs 3,218 cf Outflow=1.16 cfs 3,248 cf

Pond BB-5P: POROUS WALK 1 Peak Elev=91.05' Storage=847 cf Inflow=1.03 cfs 3,345 cf
Primary=0.01 cfs 18 cf Secondary=1.00 cfs 2,520 cf Outflow=1.01 cfs 2,539 cf

Pond BB-P1: Plaza Peak Elev=82.21' Storage=3,082 cf Inflow=1.54 cfs 5,428 cf
12.0" Round Culvert n=0.010 L=10.0' S=0.1100 '/' Outflow=0.18 cfs 2,587 cf

Pond BB-P2: INFILT BASIN Peak Elev=77.49' Storage=32,565 cf Inflow=14.60 cfs 44,308 cf
Primary=0.36 cfs 13,417 cf Secondary=0.00 cfs 0 cf Outflow=0.36 cfs 13,417 cf

Total Runoff Area = 884,099 sf Runoff Volume = 90,379 cf Average Runoff Depth = 1.23"
78.71% Pervious = 695,882 sf 21.29% Impervious = 188,217 sf

Summary for Subcatchment PR-10: PR-10 TO SOFTBALL TD

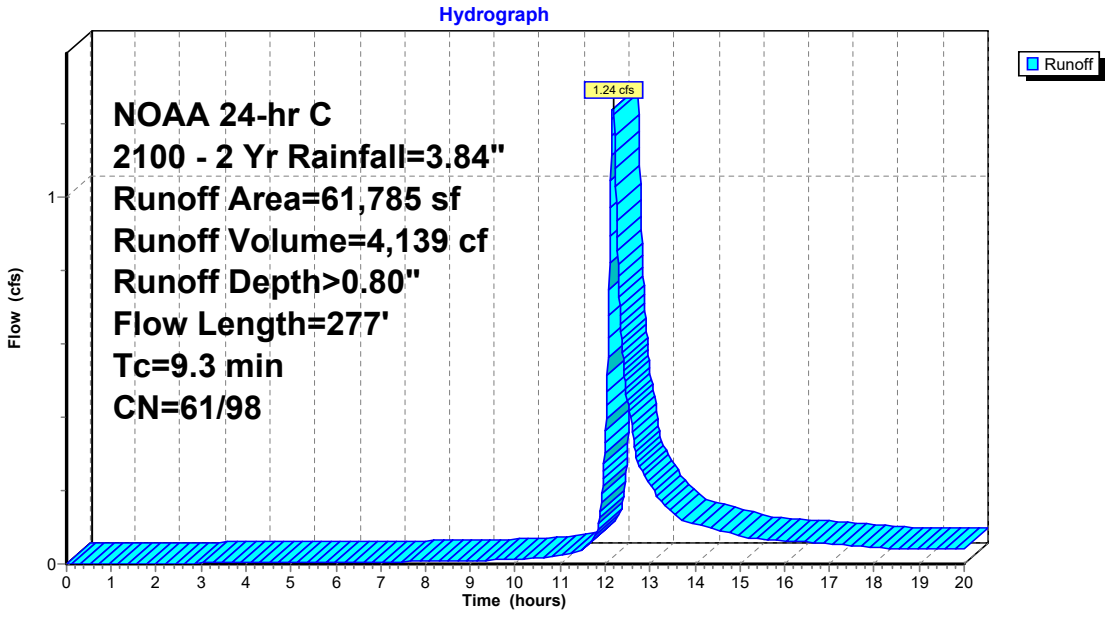
Runoff = 1.24 cfs @ 12.18 hrs, Volume= 4,139 cf, Depth> 0.80"
Routed to Reach DP1PR : Softball

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 2 Yr Rainfall=3.84"

Area (sf)	CN	Description
58,109	61	>75% Grass cover, Good, HSG B
3,676	98	Paved roads w/curbs & sewers, HSG B
61,785	63	Weighted Average
58,109	61	94.05% Pervious Area
3,676	98	5.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0150	0.13		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.34"
3.1	227	0.0300	1.21		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
9.3	277	Total			

Subcatchment PR-10: PR-10 TO SOFTBALL TD



Summary for Subcatchment PR-11: PR-11 POROUS WALK

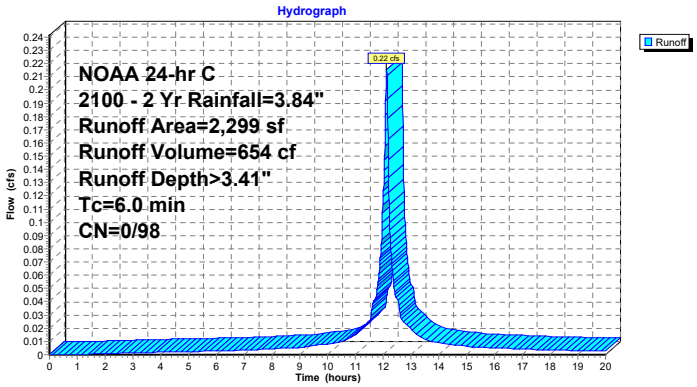
Runoff = 0.22 cfs @ 12.13 hrs, Volume= 654 cf, Depth> 3.41"
Routed to Pond BB-5P : POROUS WALK 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 2 Yr Rainfall=3.84"

Area (sf)	CN	Description
2,299	98	Paved roads w/curbs & sewers, HSG B
2,299	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Surface**

Subcatchment PR-11: PR-11 POROUS WALK



Summary for Subcatchment PR-12: PR-12 TO POROUS WALK

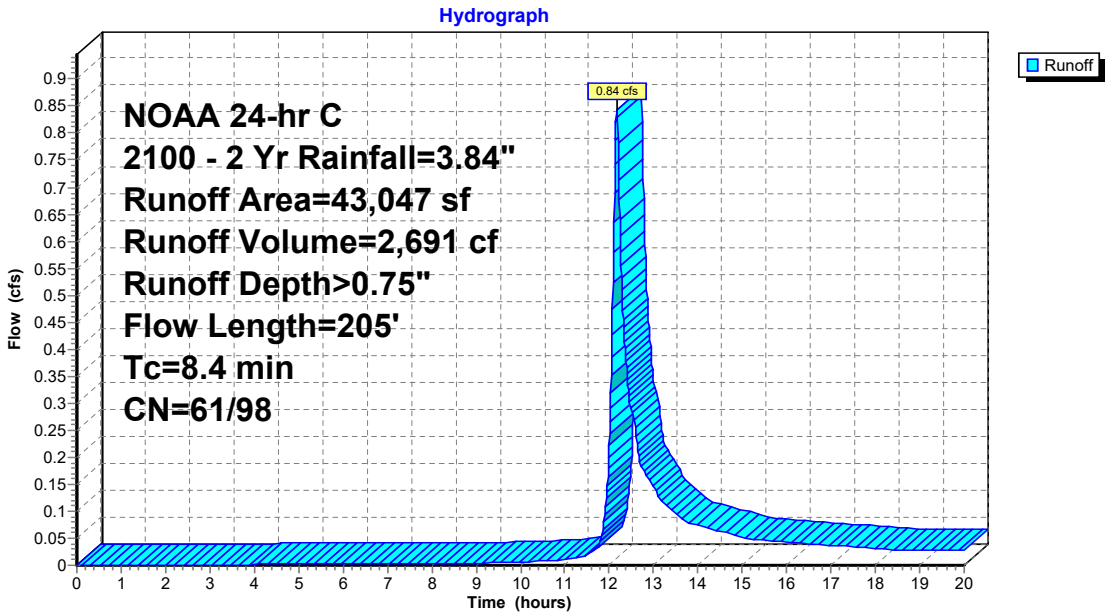
Runoff = 0.84 cfs @ 12.17 hrs, Volume= 2,691 cf, Depth> 0.75"
Routed to Pond BB-5P : POROUS WALK 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 2 Yr Rainfall=3.84"

Area (sf)	CN	Description
41,325	61	>75% Grass cover, Good, HSG B
1,722	98	Paved roads w/curbs & sewers, HSG B
43,047	62	Weighted Average
41,325	61	96.00% Pervious Area
1,722	98	4.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0150	0.13		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.34"
2.2	155	0.0290	1.19		**Shallow Concentrated Flow, Shallow Conc** Short Grass Pasture Kv= 7.0 fps
8.4	205	Total			

Subcatchment PR-12: PR-12 TO POROUS WALK



Summary for Subcatchment PR-20: PR-20 CROSS COUNTRY

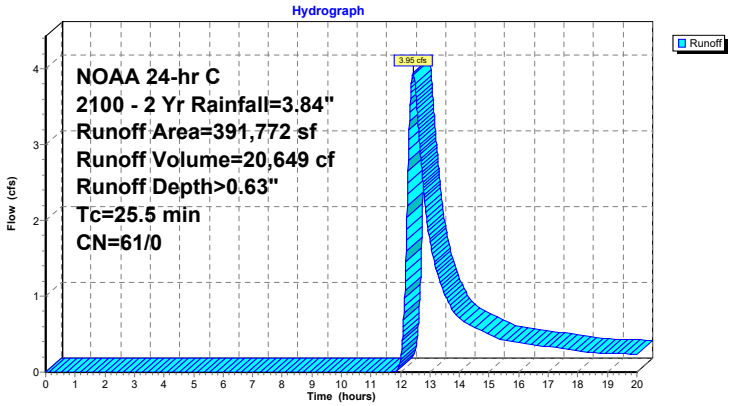
Runoff = 3.95 cfs @ 12.44 hrs, Volume= 20,649 cf, Depth> 0.63"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 2 Yr Rainfall=3.84"

Area (sf)	CN	Description
391,772	61	>75% Grass cover, Good, HSG B
391,772	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.5					Direct Entry, Same as Exist

Subcatchment PR-20: PR-20 CROSS COUNTRY



Summary for Subcatchment PR-30: TO POROUS WALK 2

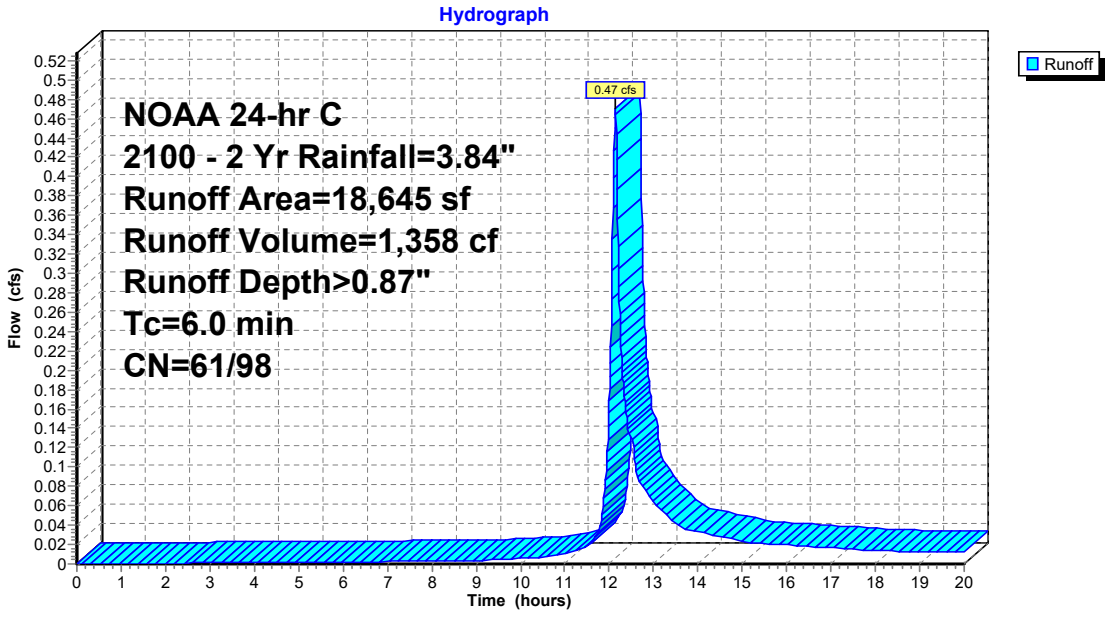
Runoff = 0.47 cfs @ 12.14 hrs, Volume= 1,358 cf, Depth> 0.87"
Routed to Pond BB-4P : POROUS WALK-2

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 2 Yr Rainfall=3.84"

Area (sf)	CN	Description
17,074	61	>75% Grass cover, Good, HSG B
1,571	98	Paved parking, HSG A
18,645	64	Weighted Average
17,074	61	91.57% Pervious Area
1,571	98	8.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment PR-30: TO POROUS WALK 2



Summary for Subcatchment PR-31: Plaza

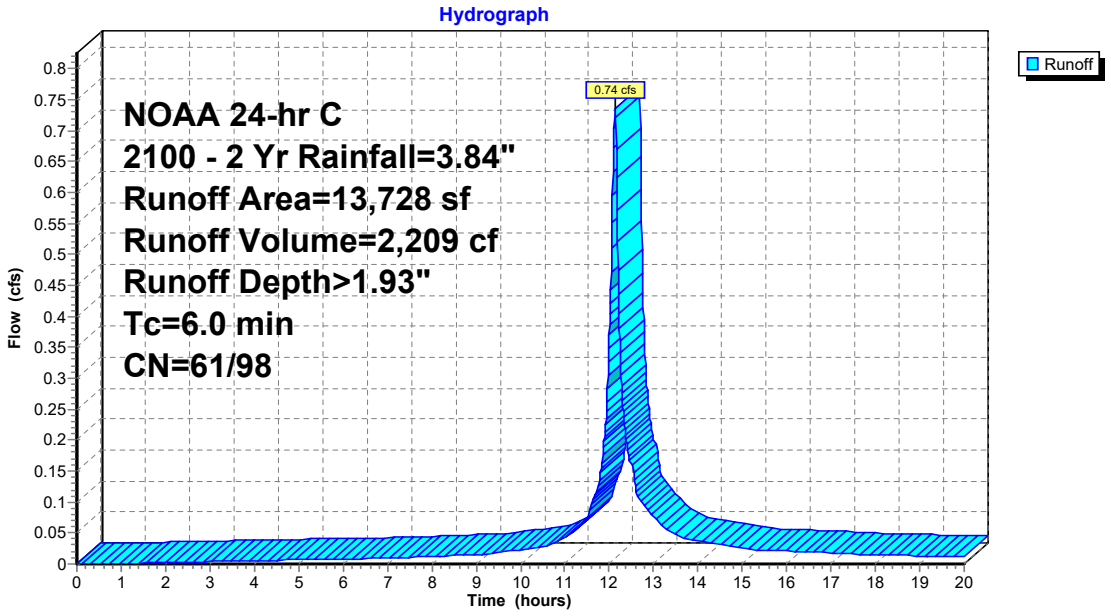
Runoff = 0.74 cfs @ 12.13 hrs, Volume= 2,209 cf, Depth> 1.93"
Routed to Pond BB-P1 : Plaza

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 2 Yr Rainfall=3.84"

Area (sf)	CN	Description
6,391	98	Paved parking, HSG B
7,337	61	>75% Grass cover, Good, HSG B
13,728	78	Weighted Average
7,337	61	53.45% Pervious Area
6,391	98	46.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment PR-31: Plaza



Summary for Subcatchment PR-32: PR-32 TO SOFTBALL

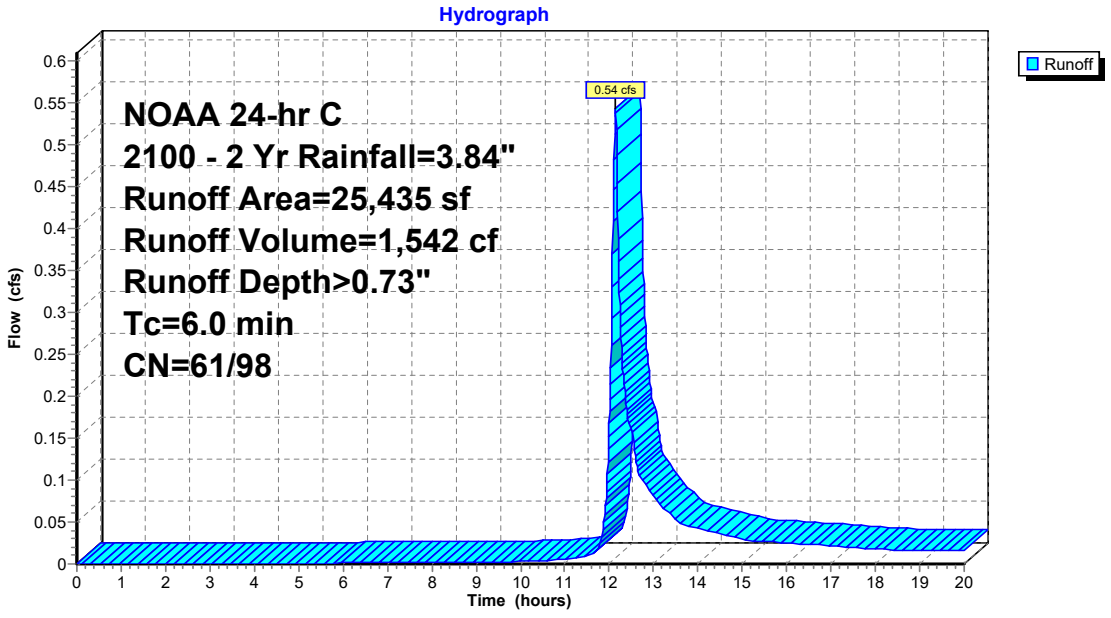
Runoff = 0.54 cfs @ 12.14 hrs, Volume= 1,542 cf, Depth> 0.73"
Routed to Reach DP1PR : Softball

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 2 Yr Rainfall=3.84"

Area (sf)	CN	Description
24,637	61	>75% Grass cover, Good, HSG B
798	98	Paved parking, HSG A
25,435	62	Weighted Average
24,637	61	96.86% Pervious Area
798	98	3.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum**

Subcatchment PR-32: PR-32 TO SOFTBALL



Summary for Subcatchment PR-34: SLOPE TO REGIONAL SWALE

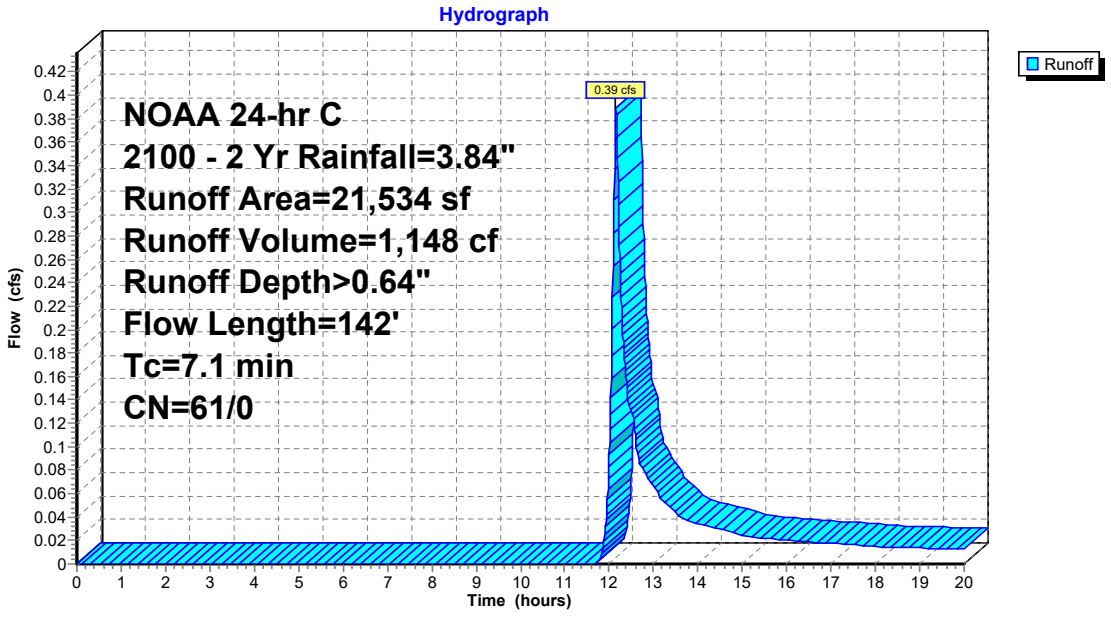
Runoff = 0.39 cfs @ 12.16 hrs, Volume= 1,148 cf, Depth> 0.64"
Routed to Reach DP-3PR : REGIONAL SWALE

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 2 Yr Rainfall=3.84"

Area (sf)	CN	Description
21,534	61	>75% Grass cover, Good, HSG B
21,534	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0150	0.13		**Sheet Flow, SHEET FLOW** Grass: Short n= 0.150 P2= 3.34"
0.9	92	0.0570	1.67		**Shallow Concentrated Flow, SHALLOW CONC** Short Grass Pasture Kv= 7.0 fps
7.1	142	Total			

Subcatchment PR-34: SLOPE TO REGIONAL SWALE



Summary for Subcatchment PR-35: FIELD AND ROOF

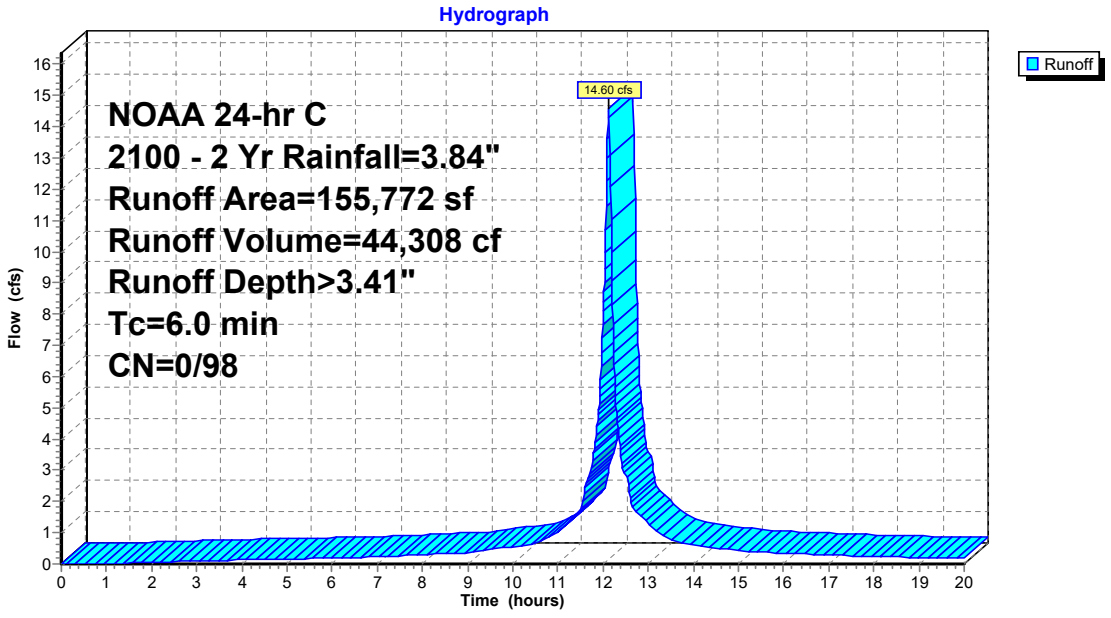
Runoff = 14.60 cfs @ 12.13 hrs, Volume= 44,308 cf, Depth> 3.41"
Routed to Pond BB-P2 : INFILT BASIN

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 2 Yr Rainfall=3.84"

Area (sf)	CN	Description
155,772	98	Roofs, HSG B
0	61	>75% Grass cover, Good, HSG B
155,772	98	Weighted Average
155,772	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT**

Subcatchment PR-35: FIELD AND ROOF



Summary for Subcatchment PR-36: GRASS/LANDSCAPING

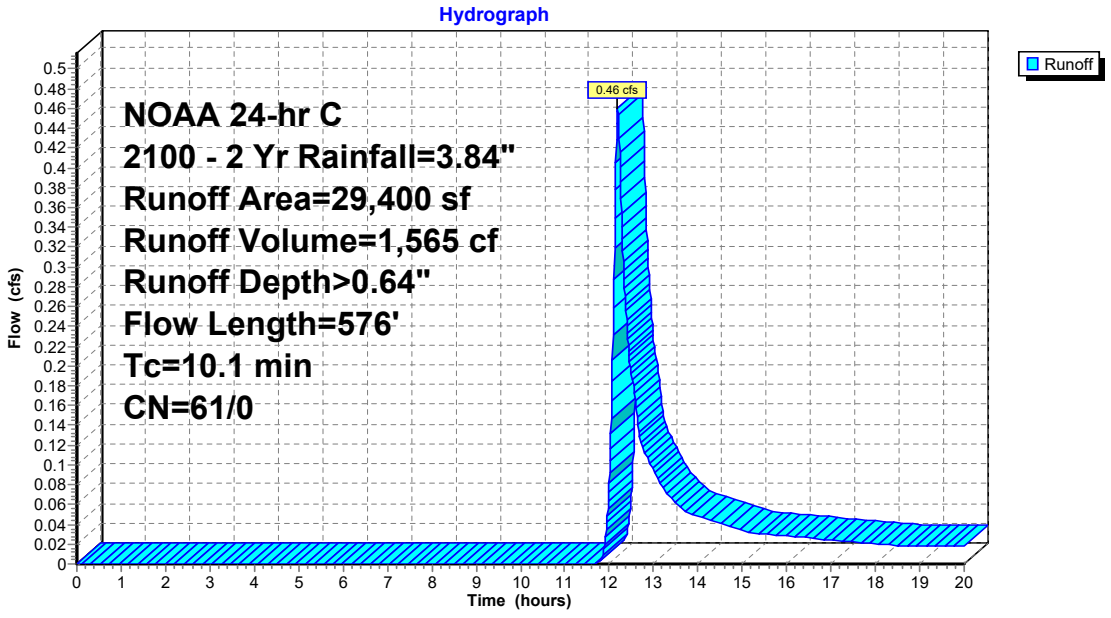
Runoff = 0.46 cfs @ 12.19 hrs, Volume= 1,565 cf, Depth> 0.64"
Routed to Reach DP-3PR : REGIONAL SWALE

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 2 Yr Rainfall=3.84"

Area (sf)	CN	Description
29,400	61	>75% Grass cover, Good, HSG B
29,400	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.34"
1.7	116	0.0050	1.14		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.7	235	0.0120	5.38	4.23	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
0.4	175	0.0100	7.80	24.51	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012
10.1	576	Total			

Subcatchment PR-36: GRASS/LANDSCAPING



Summary for Subcatchment PR-37: PR-37 TOWARD SWALE

Runoff = 0.43 cfs @ 12.34 hrs, Volume= 2,032 cf, Depth> 0.66"
Routed to Reach DP-3PR : REGIONAL SWALE

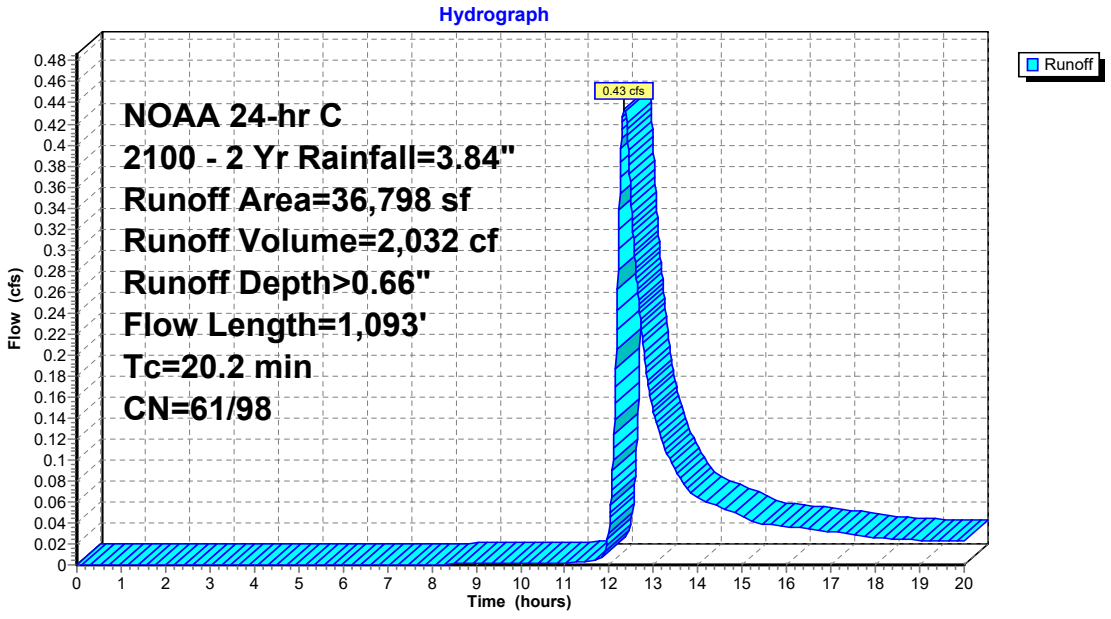
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 2 Yr Rainfall=3.84"

Area (sf)	CN	Description
36,427	61	>75% Grass cover, Good, HSG B
371	98	Paved roads w/curbs & sewers, HSG B
36,798	61	Weighted Average
36,427	61	98.99% Pervious Area
371	98	1.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.34"
2.2	242	0.0130	1.84		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	104	0.0190	5.17	1.80	**Pipe Channel, 8"** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012 Corrugated PP, smooth interior
0.5	118	0.0100	4.35	2.37	**Pipe Channel, 10"** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.012 Corrugated PP, smooth interior
0.2	143	0.0126	11.47	81.11	**Pipe Channel, 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012
0.1	104	0.0133	11.79	83.33	**Pipe Channel, 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012
9.6	332	0.0032	0.58	4.09	**Pipe Channel, 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.120

20.2 1,093 Total

Subcatchment PR-37: PR-37 TOWARD SWALE



Summary for Subcatchment PR-38: BULLPEN

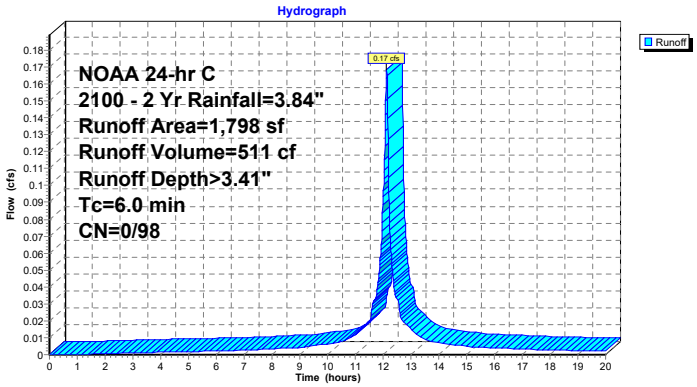
Runoff = 0.17 cfs @ 12.13 hrs, Volume= 511 cf, Depth> 3.41"
Routed to Pond BB-2A : BULLPEN

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 2 Yr Rainfall=3.84"

Area (sf)	CN	Description
1,798	98	Paved parking, HSG B
1,798	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment PR-38: BULLPEN



Summary for Subcatchment PR-40: PR-40 TOWARD TENNIS

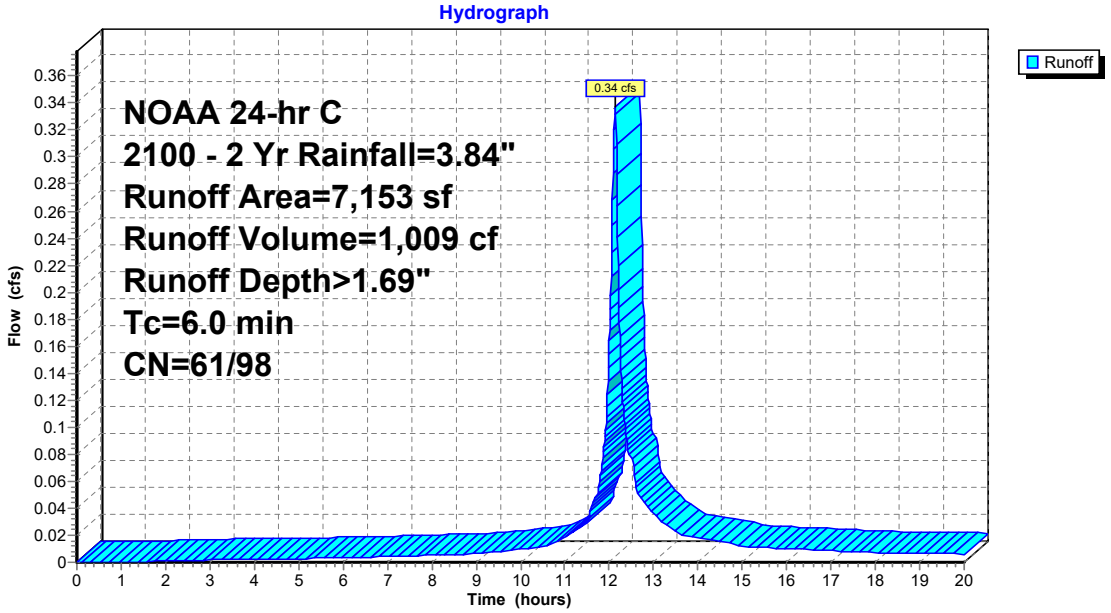
Runoff = 0.34 cfs @ 12.13 hrs, Volume= 1,009 cf, Depth> 1.69"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 2 Yr Rainfall=3.84"

Area (sf)	CN	Description
4,438	61	>75% Grass cover, Good, HSG B
0	61	>75% Grass cover, Good, HSG B
2,715	98	Paved roads w/curbs & sewers, HSG B
7,153	75	Weighted Average
4,438	61	62.04% Pervious Area
2,715	98	37.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR-40: PR-40 TOWARD TENNIS



Summary for Subcatchment PR-50: PR-50 REGIOINAL SWALE

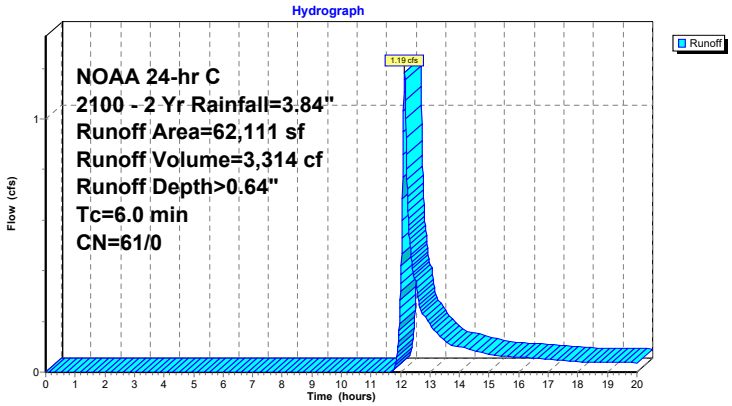
Runoff = 1.19 cfs @ 12.14 hrs, Volume= 3,314 cf, Depth> 0.64"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 2 Yr Rainfall=3.84"

Area (sf)	CN	Description
62,111	61	>75% Grass cover, Good, HSG B
62,111	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum**

Subcatchment PR-50: PR-50 REGIOINAL SWALE



Summary for Subcatchment PR33B: PR-33B

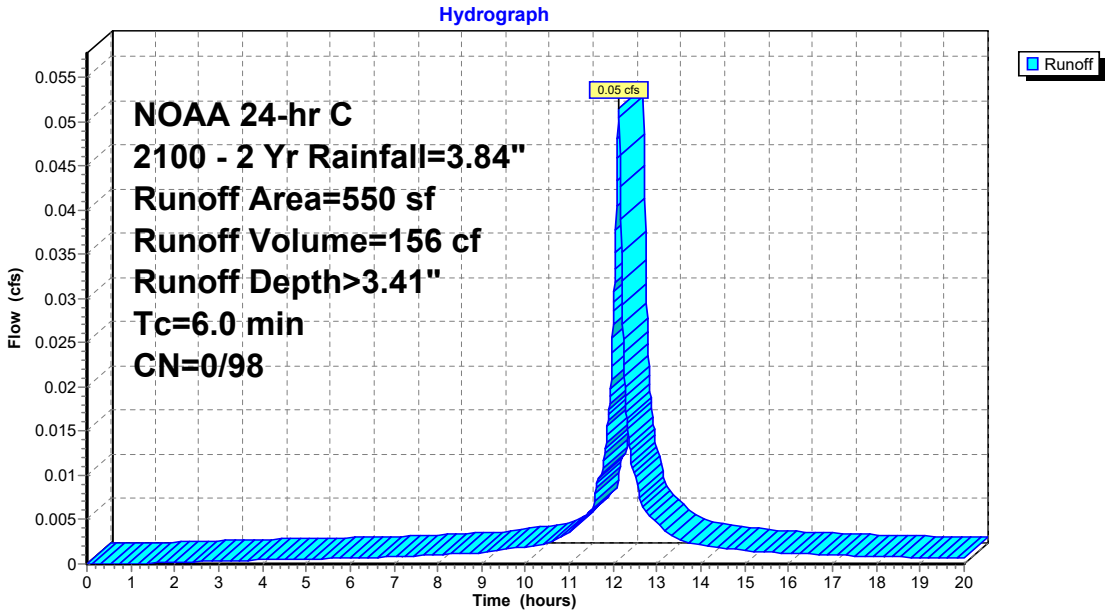
Runoff = 0.05 cfs @ 12.13 hrs, Volume= 156 cf, Depth> 3.41"
Routed to Pond 33B : CELL B

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 2 Yr Rainfall=3.84"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
550	98	Paved parking, HSG B
550	98	Weighted Average
550	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33B: PR-33B



Summary for Subcatchment PR33C: PR-33C

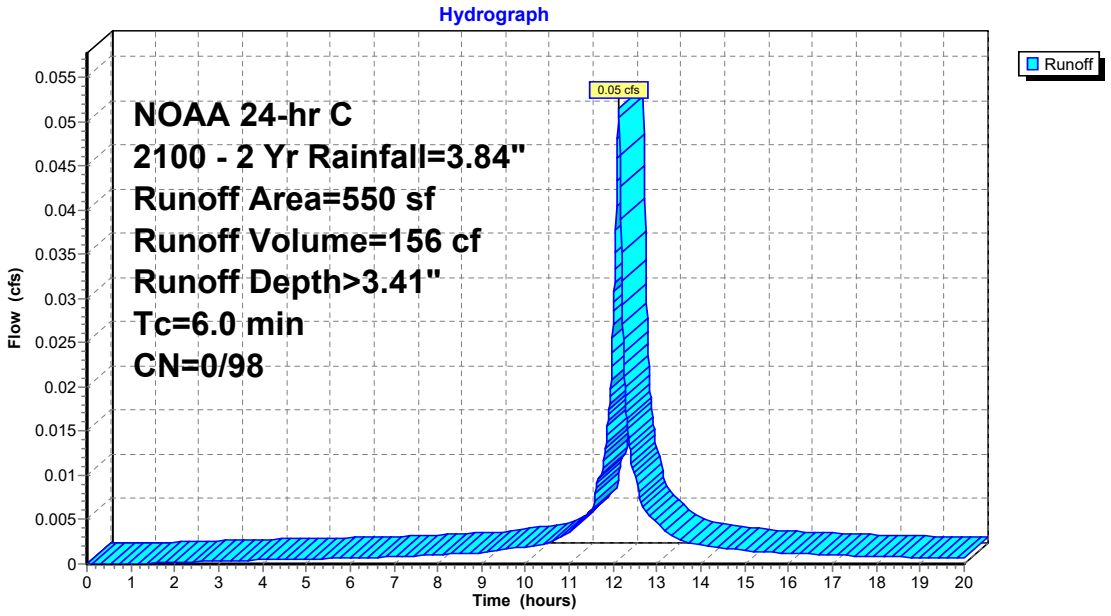
Runoff = 0.05 cfs @ 12.13 hrs, Volume= 156 cf, Depth> 3.41"
Routed to Pond 33C : CELL C

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 2 Yr Rainfall=3.84"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
550	98	Paved parking, HSG B
550	98	Weighted Average
550	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33C: PR-33C



Summary for Subcatchment PR33D: PR-33E

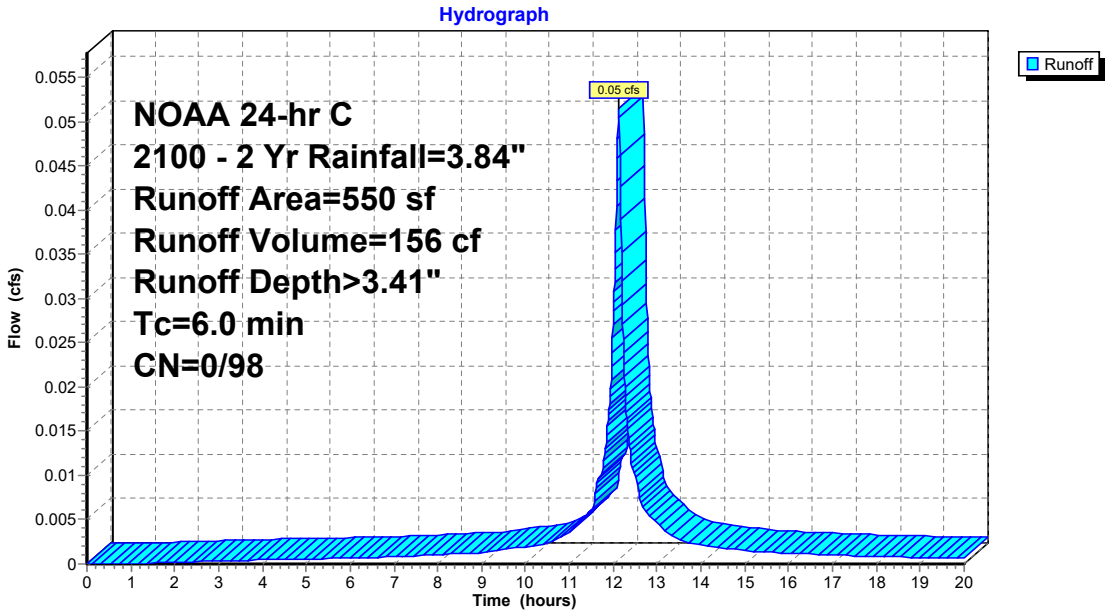
Runoff = 0.05 cfs @ 12.13 hrs, Volume= 156 cf, Depth> 3.41"
Routed to Pond 33D : CELL D

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 2 Yr Rainfall=3.84"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
550	98	Paved parking, HSG B
550	98	Weighted Average
550	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33D: PR-33E



Summary for Subcatchment PR33E: PR-33E

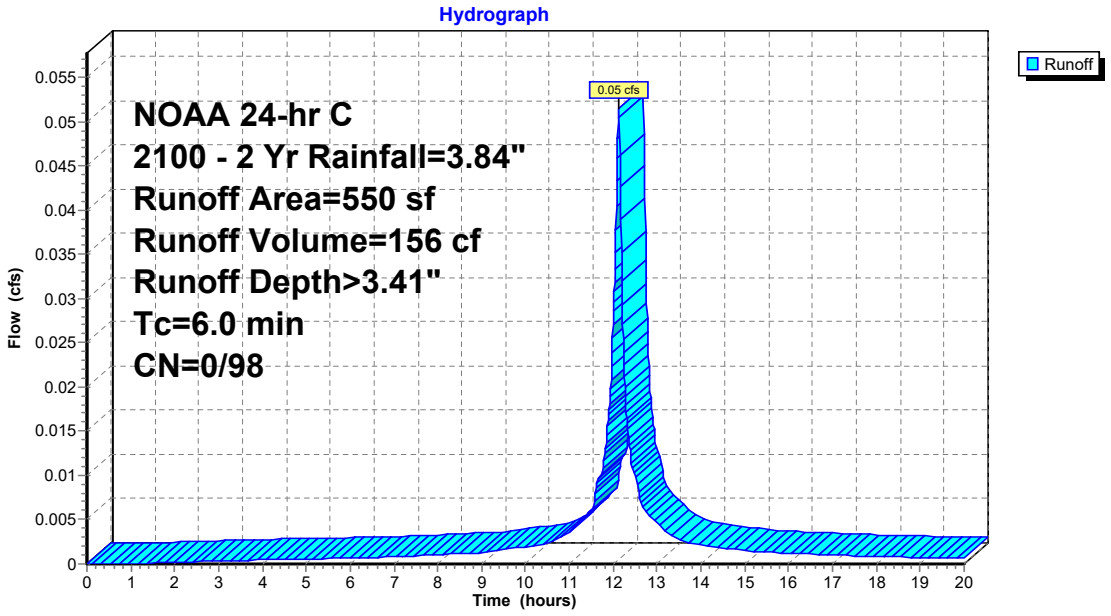
Runoff = 0.05 cfs @ 12.13 hrs, Volume= 156 cf, Depth> 3.41"
Routed to Pond 33E : CELL E

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 2 Yr Rainfall=3.84"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
550	98	Paved parking, HSG B
550	98	Weighted Average
550	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33E: PR-33E



Summary for Subcatchment PR33F: PR-33F

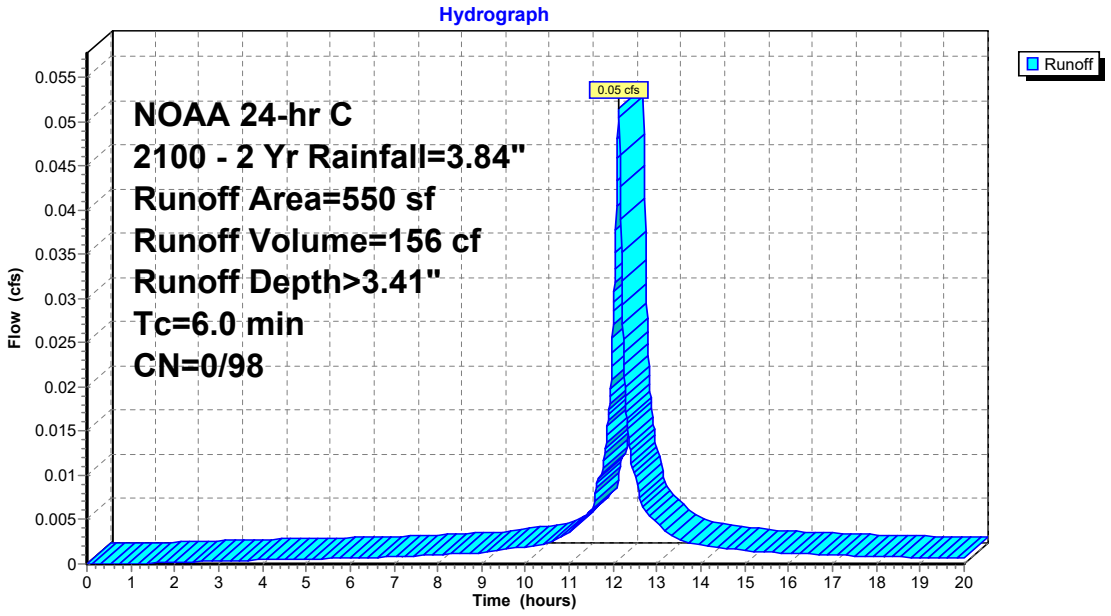
Runoff = 0.05 cfs @ 12.13 hrs, Volume= 156 cf, Depth> 3.41"
Routed to Pond 33F : CELL F

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 2 Yr Rainfall=3.84"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
550	98	Paved parking, HSG B
550	98	Weighted Average
550	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33F: PR-33F



Summary for Subcatchment PR33G: PR-33F

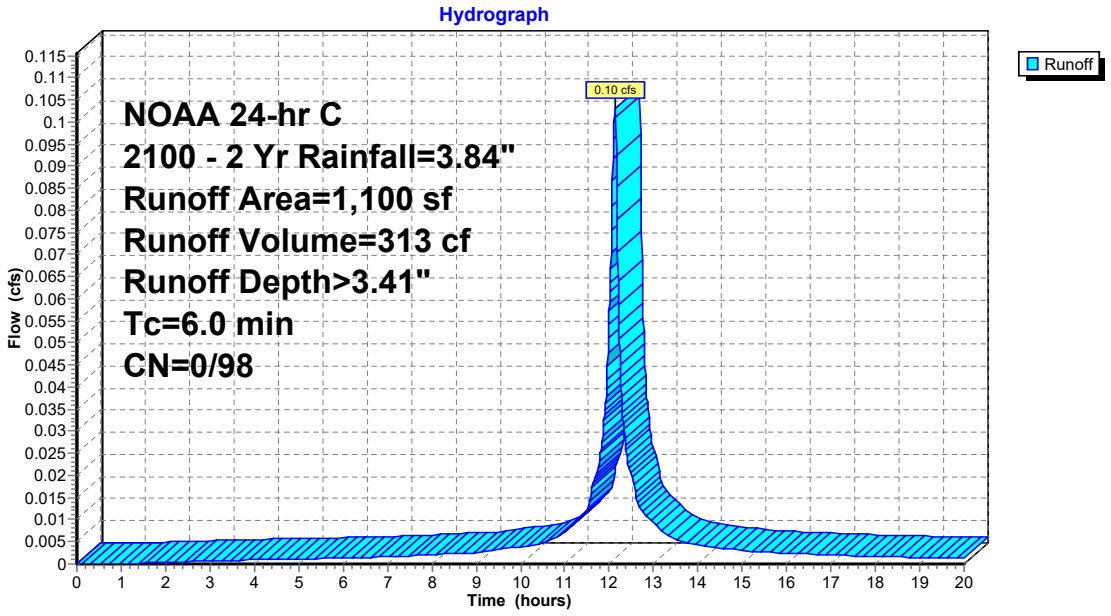
Runoff = 0.10 cfs @ 12.13 hrs, Volume= 313 cf, Depth> 3.41"
Routed to Pond 33G : CELL G

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 2 Yr Rainfall=3.84"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
1,100	98	Paved parking, HSG B
1,100	98	Weighted Average
1,100	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33G: PR-33F



Summary for Subcatchment PR33H: PR-33H

Runoff = 0.34 cfs @ 12.13 hrs, Volume= 1,022 cf, Depth> 3.30"
Routed to Pond 33H : CELL H

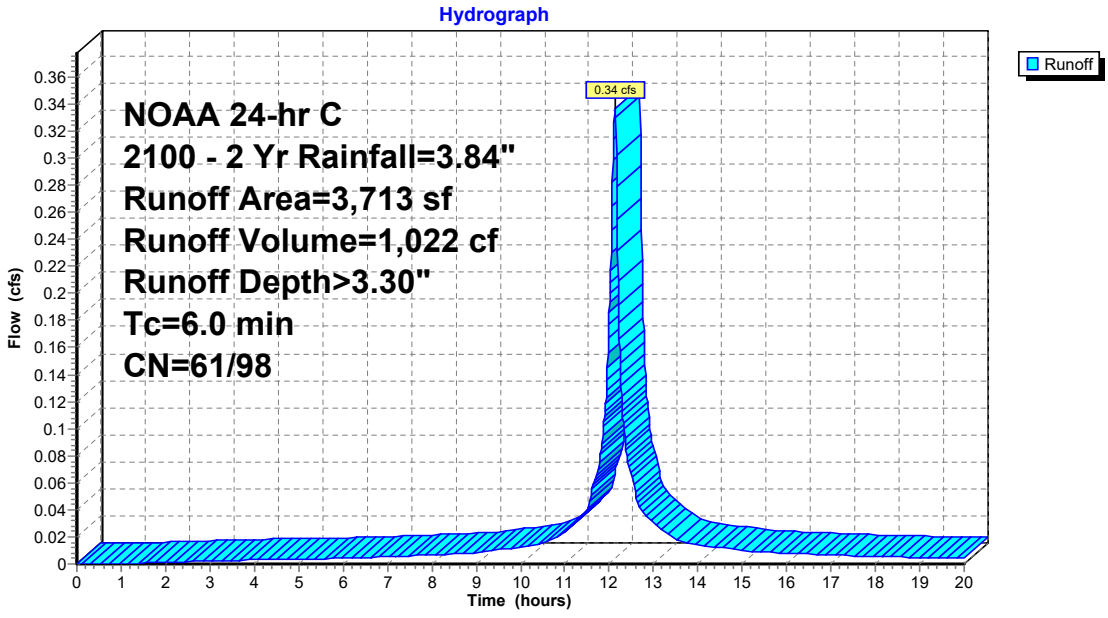
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 2 Yr Rainfall=3.84"

	Area (sf)	CN	Description
	148	61	>75% Grass cover, Good, HSG B
*	1,634	98	Porous Pavers
*	1,931	98	Sidewalk
	3,713	97	Weighted Average
	148	61	3.99% Pervious Area
	3,565	98	96.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Baseball SW - WWT Permit 2026-01-19 *NOAA 24-hr C 2100 - 2 Yr Rainfall=3.84"*
Prepared by Nitsch Engineering Printed 2/9/2026
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Subcatchment PR33H: PR-33H



Summary for Subcatchment PR33I: PR-33I

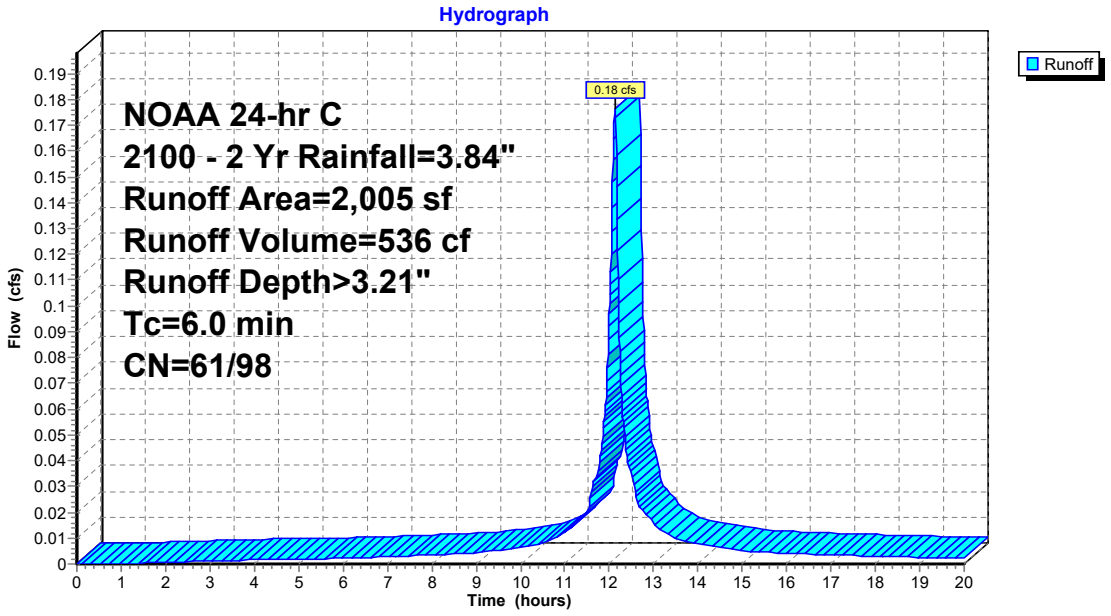
Runoff = 0.18 cfs @ 12.13 hrs, Volume= 536 cf, Depth> 3.21"
Routed to Pond 33I : CELL I

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 2 Yr Rainfall=3.84"

Area (sf)	CN	Description
150	61	>75% Grass cover, Good, HSG B
1,855	98	Paved parking, HSG B
2,005	95	Weighted Average
150	61	7.48% Pervious Area
1,855	98	92.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33I: PR-33I



Summary for Subcatchment PR33J: PR-33J

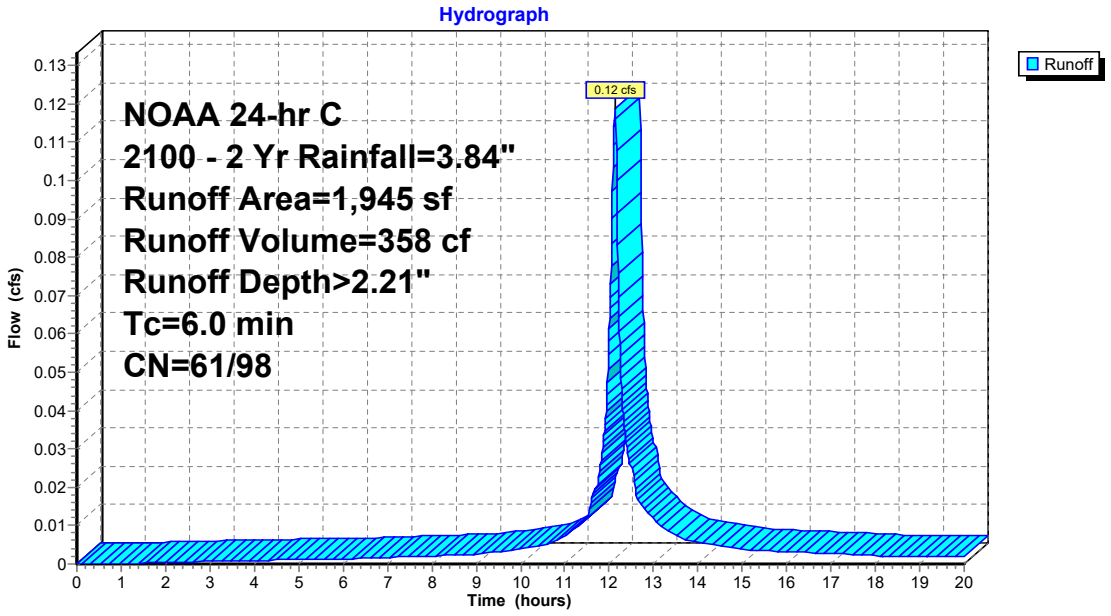
Runoff = 0.12 cfs @ 12.13 hrs, Volume= 358 cf, Depth> 2.21"
Routed to Pond 33J : CELL J

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 2 Yr Rainfall=3.84"

Area (sf)	CN	Description
845	61	>75% Grass cover, Good, HSG B
1,100	98	Paved parking, HSG B
1,945	82	Weighted Average
845	61	43.44% Pervious Area
1,100	98	56.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33J: PR-33J



Summary for Subcatchment PR33K: PR-33F

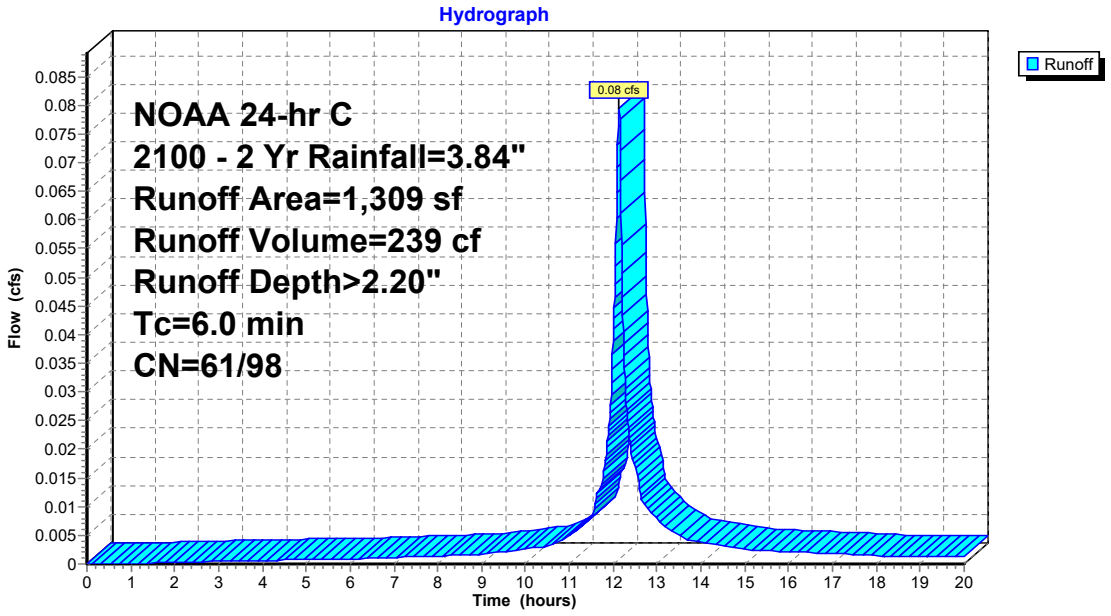
Runoff = 0.08 cfs @ 12.13 hrs, Volume= 239 cf, Depth> 2.20"
Routed to Pond 33K : CELL K

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 2 Yr Rainfall=3.84"

Area (sf)	CN	Description
575	61	>75% Grass cover, Good, HSG B
734	98	Paved parking, HSG B
1,309	82	Weighted Average
575	61	43.93% Pervious Area
734	98	56.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33K: PR-33F



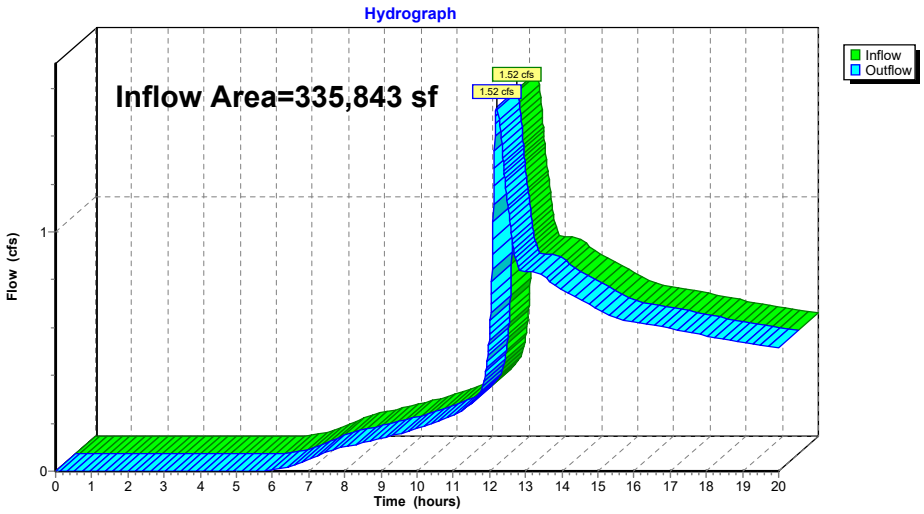
Summary for Reach DP-3PR: REGIONAL SWALE

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 335,843 sf, 53.90% Impervious, Inflow Depth > 0.82" for 2100 - 2 Yr event
Inflow = 1.52 cfs @ 12.21 hrs, Volume= 23,006 cf
Outflow = 1.52 cfs @ 12.21 hrs, Volume= 23,006 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs

Reach DP-3PR: REGIONAL SWALE



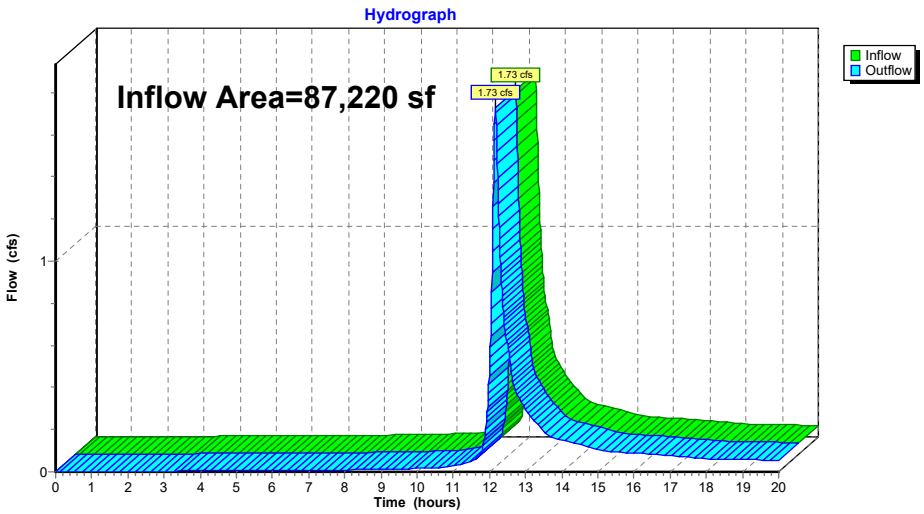
Summary for Reach DP1PR: Softball

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 87,220 sf, 5.13% Impervious, Inflow Depth > 0.78" for 2100 - 2 Yr event
Inflow = 1.73 cfs @ 12.16 hrs, Volume= 5,681 cf
Outflow = 1.73 cfs @ 12.16 hrs, Volume= 5,681 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs

Reach DP1PR: Softball



Summary for Pond 33B: CELL B

Inflow Area = 550 sf, 100.00% Impervious, Inflow Depth > 3.41" for 2100 - 2 Yr event
Inflow = 0.05 cfs @ 12.13 hrs, Volume= 156 cf
Outflow = 0.02 cfs @ 12.26 hrs, Volume= 93 cf, Atten= 59%, Lag= 7.8 min
Primary = 0.02 cfs @ 12.26 hrs, Volume= 93 cf
Routed to Pond 33C : CELL C
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33C : CELL C

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 83.93' @ 12.26 hrs Surf.Area= 550 sf Storage= 87 cf

Plug-Flow detention time= 194.4 min calculated for 93 cf (59% of inflow)
Center-of-Mass det. time= 108.8 min (830.9 - 722.0)

Volume	Invert	Avail.Storage	Storage Description
#1	83.53'	440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,100 cf Overall x 40.0% Voids

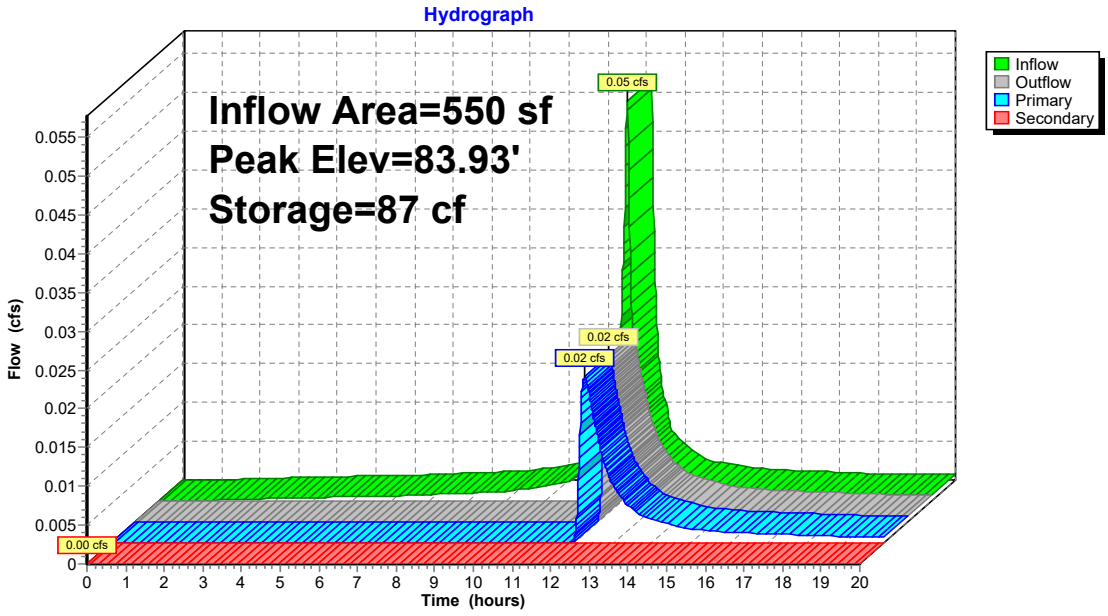
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
83.53	550	0	0
84.53	550	550	550
85.53	550	550	1,100

Device	Routing	Invert	Outlet Devices
#1	Primary	83.80'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	84.53'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.02 cfs @ 12.26 hrs HW=83.93' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.02 cfs @ 1.21 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=83.53' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33B: CELL B



Summary for Pond 33C: CELL C

Inflow Area = 1,100 sf,100.00% Impervious, Inflow Depth > 2.72" for 2100 - 2 Yr event
Inflow = 0.06 cfs @ 12.14 hrs, Volume= 249 cf
Outflow = 0.03 cfs @ 12.38 hrs, Volume= 184 cf, Atten= 51%, Lag= 14.5 min
Primary = 0.03 cfs @ 12.38 hrs, Volume= 184 cf
Routed to Pond 33D : CELL D
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33D : CELL D

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 83.55' @ 12.38 hrs Surf.Area= 550 sf Storage= 98 cf

Plug-Flow detention time= 141.7 min calculated for 184 cf (74% of inflow)
Center-of-Mass det. time= 74.4 min (837.0 - 762.6)

Volume	Invert	Avail.Storage	Storage Description
#1	83.11'	440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,100 cf Overall x 40.0% Voids

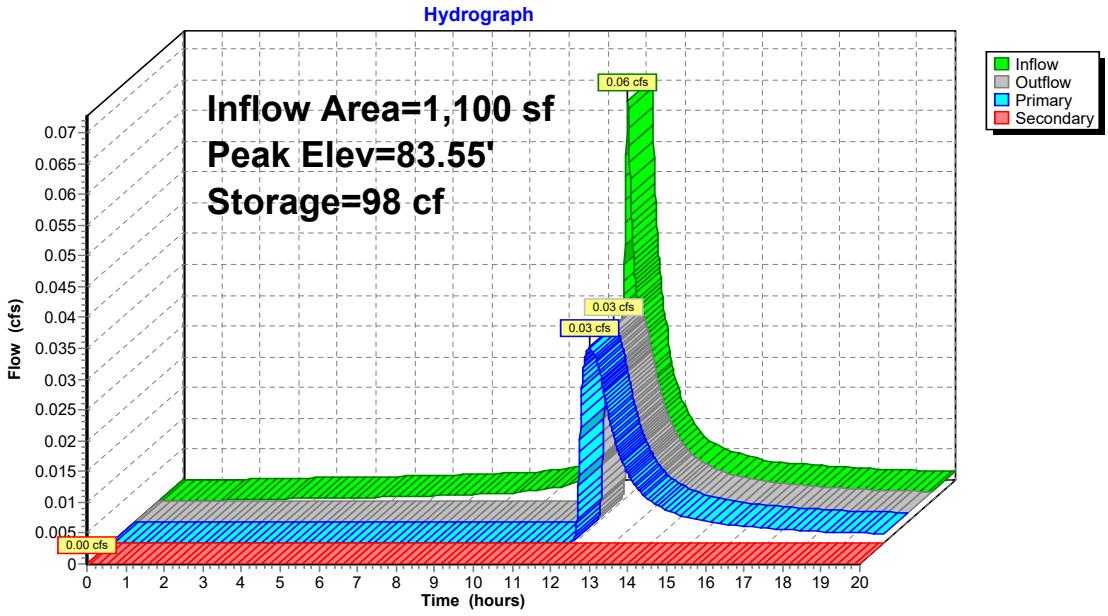
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
83.11	550	0	0
84.11	550	550	550
85.11	550	550	1,100

Device	Routing	Invert	Outlet Devices
#1	Primary	83.38'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	84.11'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.03 cfs @ 12.38 hrs HW=83.55' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.03 cfs @ 1.46 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=83.11' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33C: CELL C



Summary for Pond 33D: CELL D

Inflow Area = 1,650 sf,100.00% Impervious, Inflow Depth > 2.47" for 2100 - 2 Yr event
Inflow = 0.07 cfs @ 12.15 hrs, Volume= 340 cf
Outflow = 0.04 cfs @ 12.58 hrs, Volume= 273 cf, Atten= 44%, Lag= 25.9 min
Primary = 0.04 cfs @ 12.58 hrs, Volume= 273 cf
Routed to Pond 33E : CELL E
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33E : CELL E

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 83.18' @ 12.58 hrs Surf.Area= 550 sf Storage= 106 cf

Plug-Flow detention time= 115.3 min calculated for 273 cf (80% of inflow)
Center-of-Mass det. time= 59.7 min (843.8 - 784.1)

Volume	Invert	Avail.Storage	Storage Description
#1	82.70'	440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,100 cf Overall x 40.0% Voids

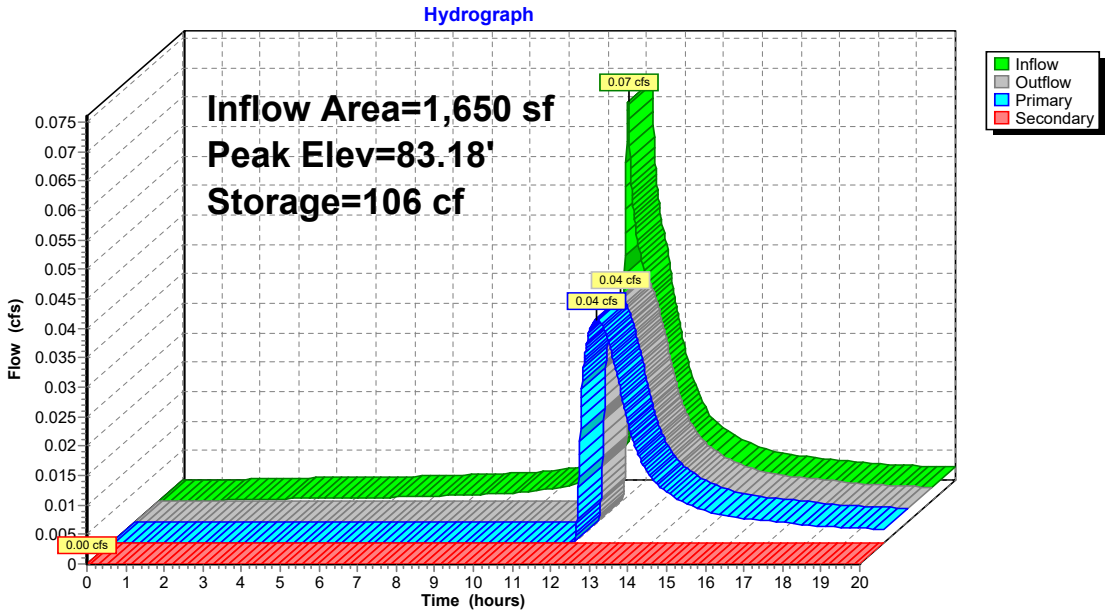
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
82.70	550	0	0
83.70	550	550	550
84.70	550	550	1,100

Device	Routing	Invert	Outlet Devices
#1	Primary	82.97'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	83.70'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.04 cfs @ 12.58 hrs HW=83.18' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.04 cfs @ 1.74 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=82.70' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33D: CELL D



Summary for Pond 33E: CELL E

Inflow Area = 2,200 sf,100.00% Impervious, Inflow Depth > 2.34" for 2100 - 2 Yr event
Inflow = 0.07 cfs @ 12.15 hrs, Volume= 429 cf
Outflow = 0.04 cfs @ 12.77 hrs, Volume= 361 cf, Atten= 39%, Lag= 37.7 min
Primary = 0.04 cfs @ 12.77 hrs, Volume= 361 cf
Routed to Pond 33F : CELL F
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33F : CELL F

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 82.79' @ 12.77 hrs Surf.Area= 550 sf Storage= 113 cf

Plug-Flow detention time= 98.6 min calculated for 361 cf (84% of inflow)
Center-of-Mass det. time= 51.3 min (850.7 - 799.4)

Volume	Invert	Avail.Storage	Storage Description
#1	82.28'	440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,100 cf Overall x 40.0% Voids

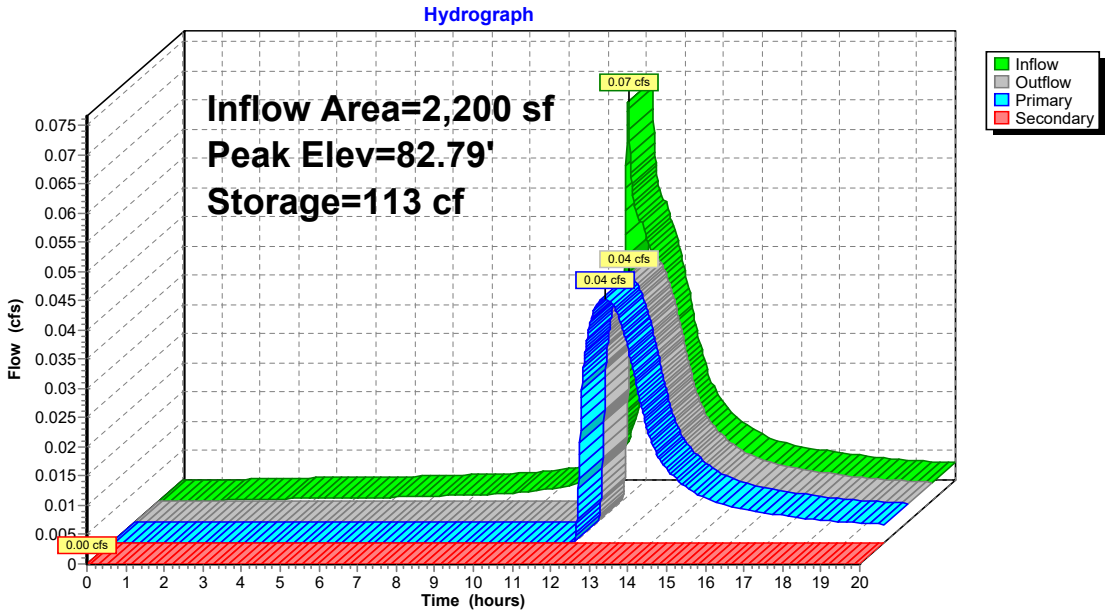
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
82.28	550	0	0
83.28	550	550	550
84.28	550	550	1,100

Device	Routing	Invert	Outlet Devices
#1	Primary	82.55'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	83.28'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.04 cfs @ 12.77 hrs HW=82.79' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.04 cfs @ 1.92 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=82.28' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33E: CELL E



Summary for Pond 33F: CELL F

Inflow Area = 2,750 sf,100.00% Impervious, Inflow Depth > 2.26" for 2100 - 2 Yr event
Inflow = 0.07 cfs @ 12.15 hrs, Volume= 517 cf
Outflow = 0.04 cfs @ 13.03 hrs, Volume= 447 cf, Atten= 34%, Lag= 52.7 min
Primary = 0.04 cfs @ 13.03 hrs, Volume= 447 cf
Routed to Pond 33G : CELL G
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33G : CELL G

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 82.41' @ 13.03 hrs Surf.Area= 550 sf Storage= 118 cf

Plug-Flow detention time= 86.9 min calculated for 447 cf (86% of inflow)
Center-of-Mass det. time= 45.9 min (857.7 - 811.8)

Volume	Invert	Avail.Storage	Storage Description
#1	81.87'	440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,100 cf Overall x 40.0% Voids

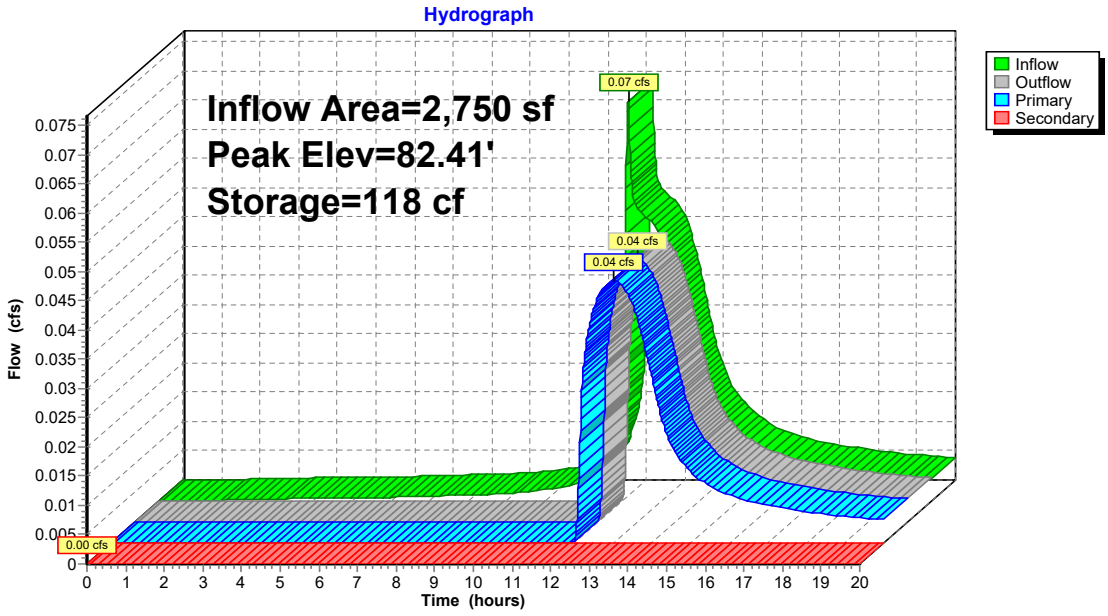
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
81.87	550	0	0
82.87	550	550	550
83.87	550	550	1,100

Device	Routing	Invert	Outlet Devices
#1	Primary	82.14'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	82.87'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.04 cfs @ 13.03 hrs HW=82.41' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.04 cfs @ 2.06 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=81.87' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33F: CELL F



Summary for Pond 33G: CELL G

Inflow Area = 3,850 sf,100.00% Impervious, Inflow Depth > 2.37" for 2100 - 2 Yr event
Inflow = 0.12 cfs @ 12.14 hrs, Volume= 760 cf
Outflow = 0.05 cfs @ 13.42 hrs, Volume= 615 cf, Atten= 60%, Lag= 77.2 min
Primary = 0.05 cfs @ 13.42 hrs, Volume= 615 cf
Routed to Pond 33H : CELL H
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33H : CELL H

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 81.60' @ 13.42 hrs Surf.Area= 1,100 sf Storage= 248 cf

Plug-Flow detention time= 125.6 min calculated for 615 cf (81% of inflow)
Center-of-Mass det. time= 72.1 min (874.0 - 801.8)

Volume	Invert	Avail.Storage	Storage Description
#1	81.04'	880 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 2,200 cf Overall x 40.0% Voids

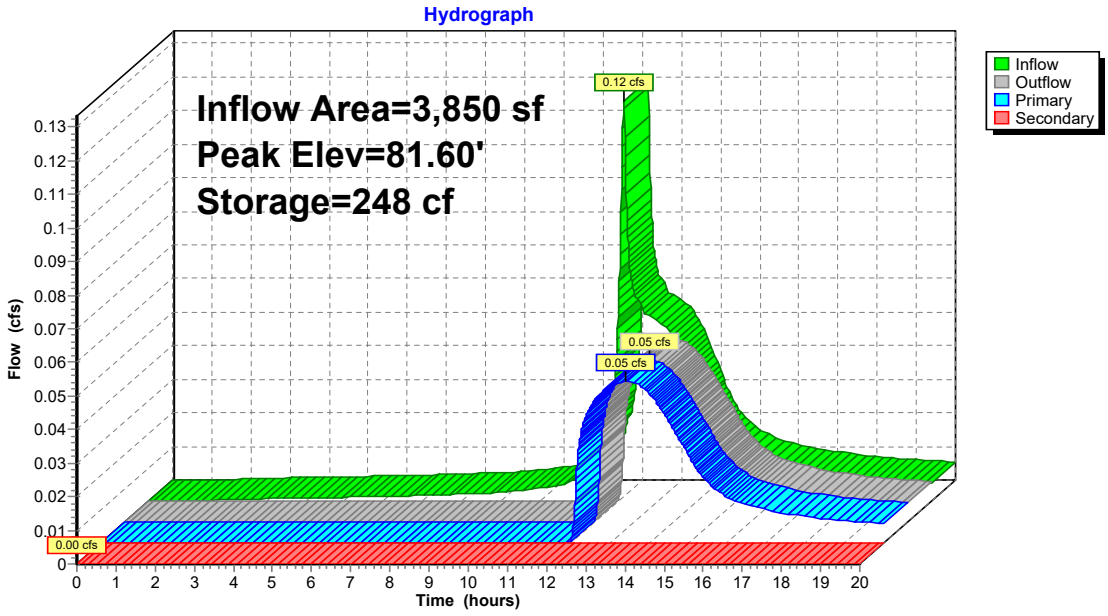
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
81.04	1,100	0	0
82.04	1,100	1,100	1,100
83.04	1,100	1,100	2,200

Device	Routing	Invert	Outlet Devices
#1	Primary	81.31'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	82.04'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.05 cfs @ 13.42 hrs HW=81.60' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.05 cfs @ 2.21 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=81.04' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33G: CELL G



Summary for Pond 33H: CELL H

Inflow Area = 7,563 sf, 98.04% Impervious, Inflow Depth > 2.60" for 2100 - 2 Yr event
Inflow = 0.35 cfs @ 12.13 hrs, Volume= 1,637 cf
Outflow = 0.11 cfs @ 12.49 hrs, Volume= 1,241 cf, Atten= 70%, Lag= 21.5 min
Primary = 0.07 cfs @ 12.49 hrs, Volume= 1,183 cf
Routed to Pond 33I : CELL I
Secondary = 0.04 cfs @ 12.49 hrs, Volume= 57 cf
Routed to Pond 33I : CELL I

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 81.11' @ 12.49 hrs Surf.Area= 1,631 sf Storage= 655 cf

Plug-Flow detention time= 174.5 min calculated for 1,240 cf (76% of inflow)
Center-of-Mass det. time= 108.2 min (887.8 - 779.7)

Volume	Invert	Avail.Storage	Storage Description
#1	80.11'	1,305 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 3,262 cf Overall x 40.0% Voids

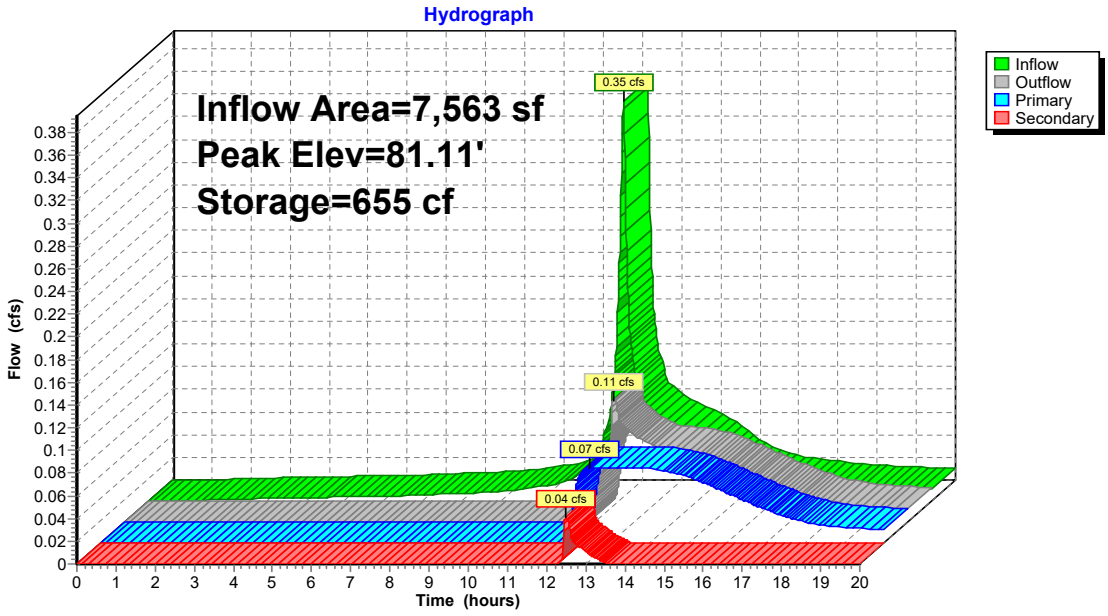
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
80.11	1,631	0	0
81.11	1,631	1,631	1,631
82.11	1,631	1,631	3,262

Device	Routing	Invert	Outlet Devices
#1	Primary	80.63'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	81.11'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.07 cfs @ 12.49 hrs HW=81.11' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.07 cfs @ 3.05 fps)

Secondary OutFlow Max=0.02 cfs @ 12.49 hrs HW=81.11' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.02 cfs @ 0.21 fps)

Pond 33H: CELL H



Summary for Pond 33I: CELL I

Inflow Area = 9,568 sf, 96.89% Impervious, Inflow Depth > 2.23" for 2100 - 2 Yr event
Inflow = 0.22 cfs @ 12.13 hrs, Volume= 1,776 cf
Outflow = 0.07 cfs @ 14.60 hrs, Volume= 1,488 cf, Atten= 69%, Lag= 148.1 min
Primary = 0.07 cfs @ 14.60 hrs, Volume= 1,488 cf
Routed to Pond 33J : CELL J
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33J : CELL J

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 79.94' @ 14.60 hrs Surf.Area= 1,855 sf Storage= 576 cf

Plug-Flow detention time= 141.7 min calculated for 1,488 cf (84% of inflow)
Center-of-Mass det. time= 96.2 min (934.6 - 838.4)

Volume	Invert	Avail.Storage	Storage Description
#1	79.16'	1,484 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 3,710 cf Overall x 40.0% Voids

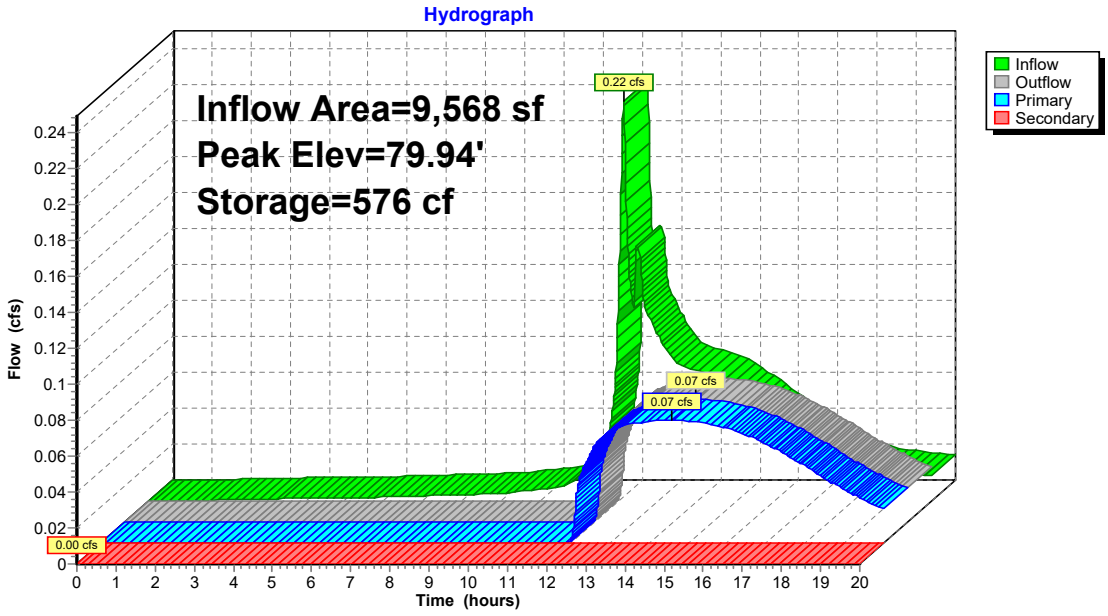
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
79.16	1,855	0	0
80.16	1,855	1,855	1,855
81.16	1,855	1,855	3,710

Device	Routing	Invert	Outlet Devices
#1	Primary	79.43'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	80.16'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.07 cfs @ 14.60 hrs HW=79.94' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.07 cfs @ 3.13 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=79.16' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33I: CELL I



Summary for Pond 33J: CELL J

Inflow Area = 11,513 sf, 90.07% Impervious, Inflow Depth > 1.92" for 2100 - 2 Yr event
Inflow = 0.14 cfs @ 12.14 hrs, Volume= 1,846 cf
Outflow = 0.07 cfs @ 15.60 hrs, Volume= 1,652 cf, Atten= 51%, Lag= 207.7 min
Primary = 0.07 cfs @ 15.60 hrs, Volume= 1,652 cf
Routed to Pond 33K : CELL K
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33K : CELL K

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 79.15' @ 15.60 hrs Surf.Area= 1,100 sf Storage= 348 cf

Plug-Flow detention time= 87.8 min calculated for 1,652 cf (89% of inflow)
Center-of-Mass det. time= 59.1 min (955.4 - 896.2)

Volume	Invert	Avail.Storage	Storage Description
#1	78.36'	880 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 2,200 cf Overall x 40.0% Voids

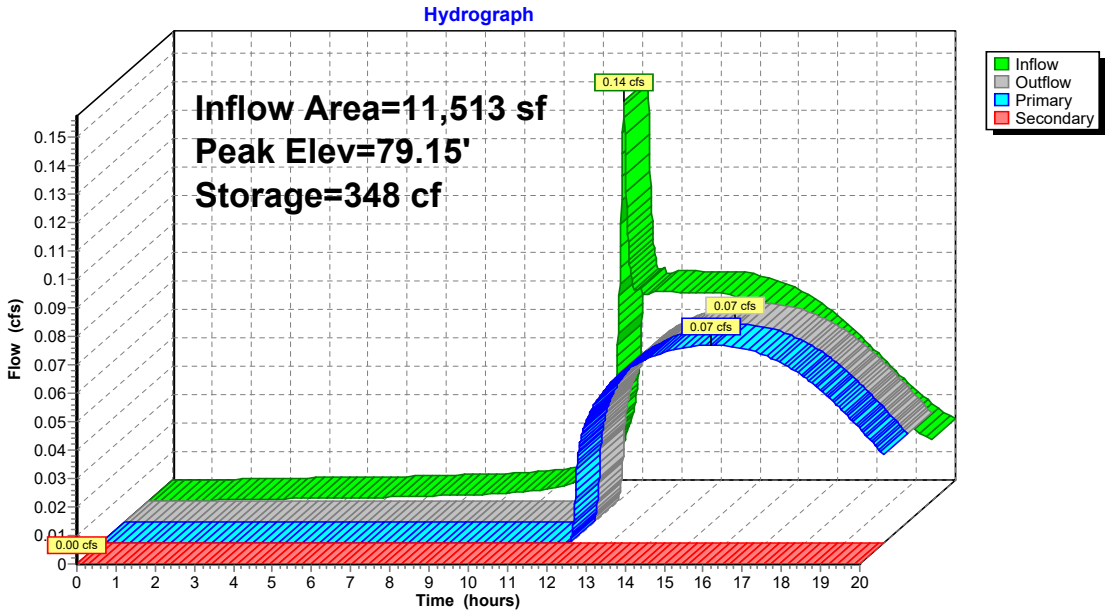
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
78.36	1,100	0	0
79.36	1,100	1,100	1,100
80.36	1,100	1,100	2,200

Device	Routing	Invert	Outlet Devices
#1	Primary	78.63'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	79.36'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.07 cfs @ 15.60 hrs HW=79.15' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.07 cfs @ 3.18 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=78.36' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33J: CELL J



Summary for Pond 33K: CELL K

[79] Warning: Submerged Pond 33J Primary device # 1 by 0.20'

Inflow Area = 12,822 sf, 86.60% Impervious, Inflow Depth > 1.77" for 2100 - 2 Yr event
Inflow = 0.10 cfs @ 12.14 hrs, Volume= 1,891 cf
Outflow = 0.07 cfs @ 16.38 hrs, Volume= 1,725 cf, Atten= 30%, Lag= 254.3 min
Primary = 0.07 cfs @ 16.38 hrs, Volume= 1,725 cf
Routed to Pond 33L : OUTLET PIPE
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33L : OUTLET PIPE

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 78.83' @ 16.38 hrs Surf.Area= 734 sf Storage= 250 cf

Plug-Flow detention time= 63.1 min calculated for 1,724 cf (91% of inflow)
Center-of-Mass det. time= 40.4 min (968.1 - 927.7)

Volume	Invert	Avail.Storage	Storage Description
#1	77.98'	587 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,468 cf Overall x 40.0% Voids

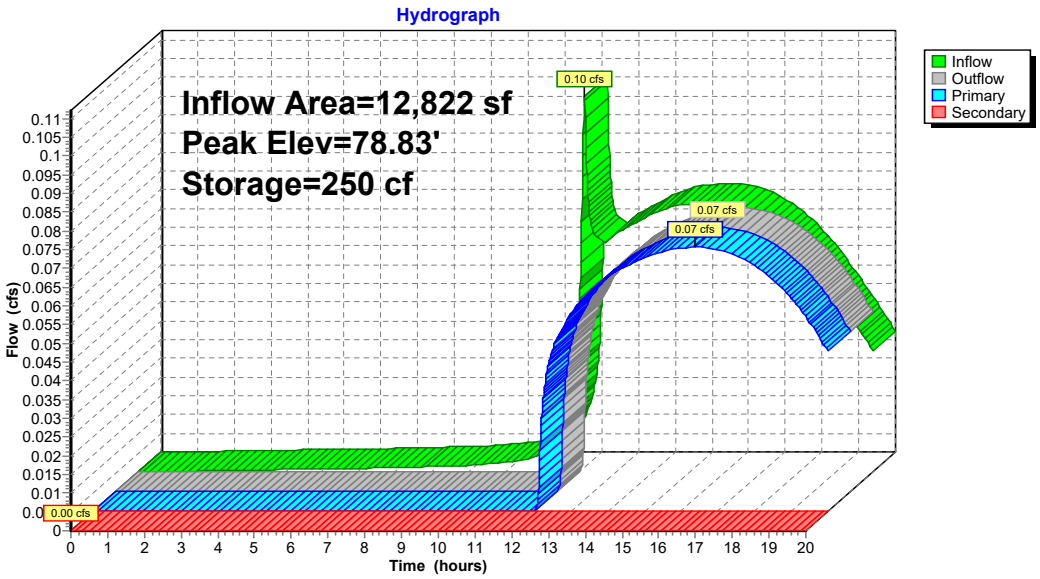
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
77.98	734	0	0
78.98	734	734	734
79.98	734	734	1,468

Device	Routing	Invert	Outlet Devices
#1	Primary	78.30'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	78.98'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.07 cfs @ 16.38 hrs HW=78.83' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.07 cfs @ 3.23 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=77.98' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 33K: CELL K



Summary for Pond 33L: OUTLET PIPE

Inflow Area = 12,822 sf, 86.60% Impervious, Inflow Depth > 1.61" for 2100 - 2 Yr event
Inflow = 0.07 cfs @ 16.38 hrs, Volume= 1,725 cf
Outflow = 0.07 cfs @ 16.39 hrs, Volume= 1,724 cf, Atten= 0%, Lag= 0.2 min
Primary = 0.07 cfs @ 16.39 hrs, Volume= 1,724 cf
Routed to Reach DP-3PR : REGIONAL SWALE

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 76.13' @ 16.39 hrs Surf.Area= 30 sf Storage= 2 cf

Plug-Flow detention time= 0.4 min calculated for 1,723 cf (100% of inflow)
Center-of-Mass det. time= 0.2 min (968.4 - 968.1)

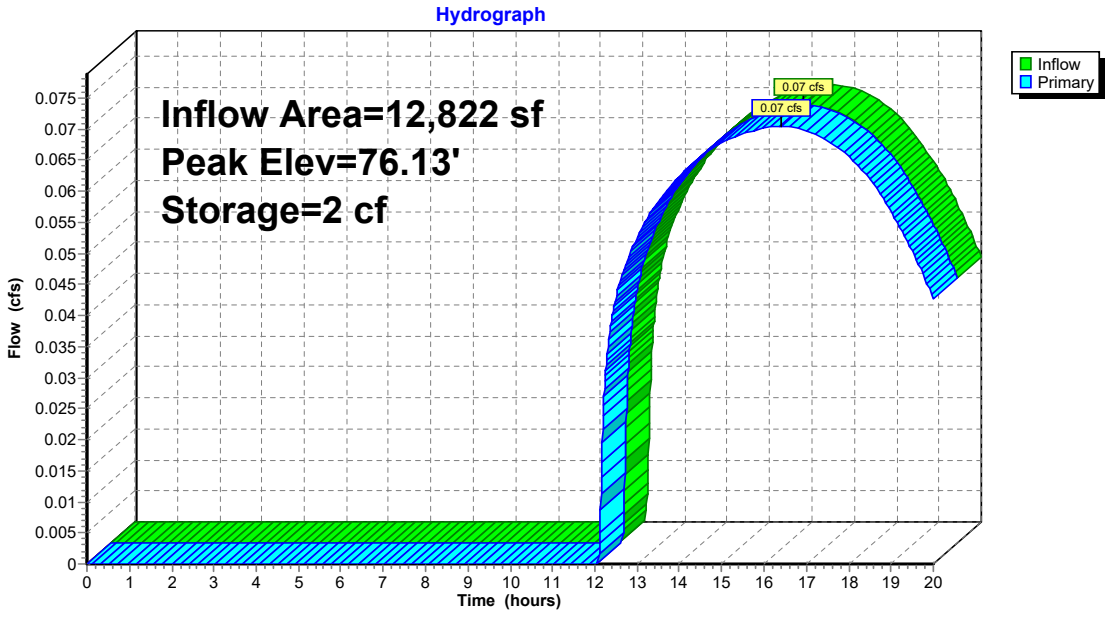
Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	37 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 93 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
76.00	30	0	0
79.10	30	93	93

Device	Routing	Invert	Outlet Devices
#1	Primary	76.00'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.07 cfs @ 16.39 hrs HW=76.13' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.07 cfs @ 1.21 fps)

Pond 33L: OUTLET PIPE



Summary for Pond BB-2A: BULLPEN

Inflow Area = 1,798 sf,100.00% Impervious, Inflow Depth > 3.41" for 2100 - 2 Yr event
Inflow = 0.17 cfs @ 12.13 hrs, Volume= 511 cf
Outflow = 0.07 cfs @ 12.26 hrs, Volume= 486 cf, Atten= 58%, Lag= 7.7 min
Primary = 0.07 cfs @ 12.26 hrs, Volume= 486 cf
Routed to Reach DP-3PR : REGIONAL SWALE

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 79.22' @ 12.26 hrs Surf.Area= 1,798 sf Storage= 161 cf

Plug-Flow detention time= 74.9 min calculated for 486 cf (95% of inflow)
Center-of-Mass det. time= 54.4 min (776.5 - 722.0)

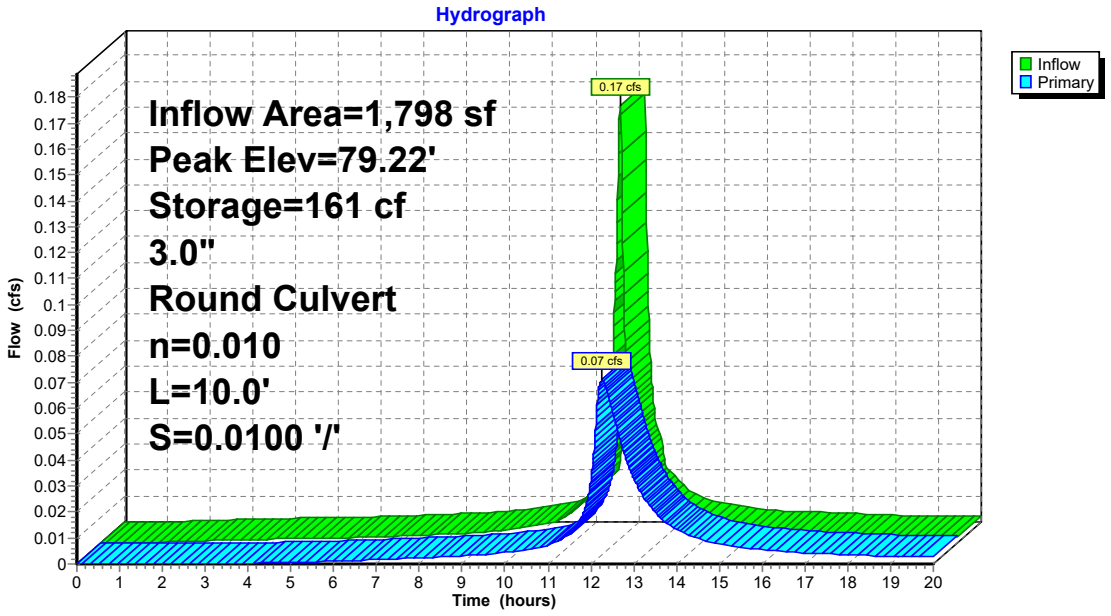
Volume	Invert	Avail.Storage	Storage Description
#1	79.00'	719 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,798 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
79.00	1,798	0	0
80.00	1,798	1,798	1,798

Device	Routing	Invert	Outlet Devices
#1	Primary	79.00'	**3.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 79.00' / 78.90' S= 0.0100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.05 sf

Primary OutFlow Max=0.07 cfs @ 12.26 hrs HW=79.22' (Free Discharge)
1=Culvert (Barrel Controls 0.07 cfs @ 2.02 fps)

Pond BB-2A: BULLPEN



Summary for Pond BB-4P: POROUS WALK-2

Inflow Area = 18,645 sf, 8.43% Impervious, Inflow Depth > 2.50" for 2100 - 2 Yr event
Inflow = 1.41 cfs @ 12.17 hrs, Volume= 3,878 cf
Outflow = 1.16 cfs @ 12.22 hrs, Volume= 3,248 cf, Atten= 17%, Lag= 3.1 min
Primary = 0.02 cfs @ 12.22 hrs, Volume= 29 cf
Routed to Reach DP-3PR : REGIONAL SWALE
Secondary = 1.15 cfs @ 12.22 hrs, Volume= 3,218 cf
Routed to Pond BB-P1 : Plaza

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 88.06' @ 12.22 hrs Surf.Area= 1,571 sf Storage= 664 cf

Plug-Flow detention time= 77.1 min calculated for 3,246 cf (84% of inflow)
Center-of-Mass det. time= 28.1 min (859.6 - 831.5)

Volume	Invert	Avail.Storage	Storage Description
#1	87.00'	1,257 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 3,142 cf Overall x 40.0% Voids

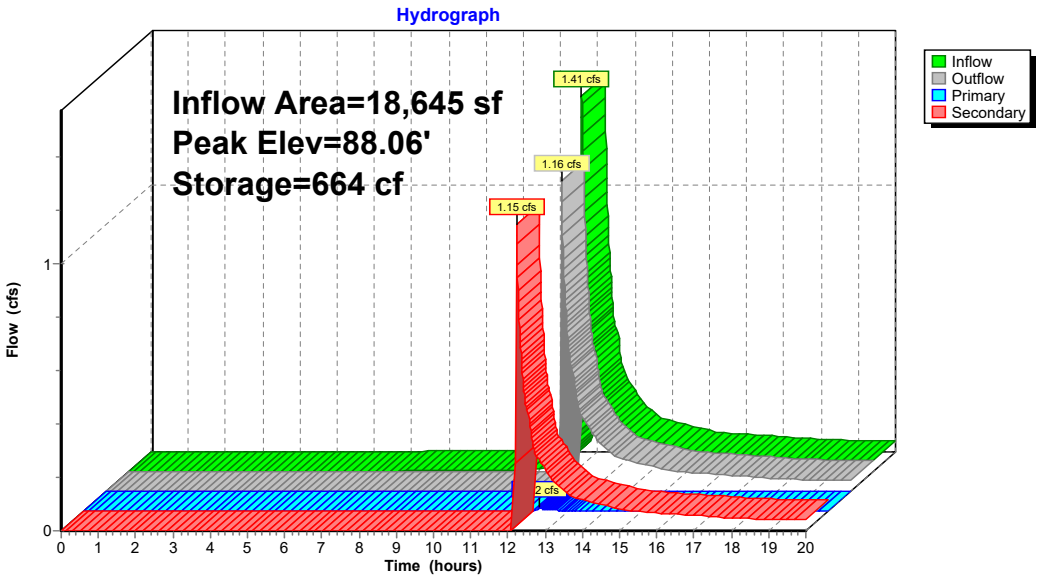
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
87.00	1,571	0	0
88.00	1,571	1,571	1,571
89.00	1,571	1,571	3,142

Device	Routing	Invert	Outlet Devices
#1	Primary	88.00'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 88.00' / 83.00' S= 0.5000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Secondary	88.00'	**30.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.01 cfs @ 12.22 hrs HW=88.06' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.01 cfs @ 0.81 fps)

Secondary OutFlow Max=1.10 cfs @ 12.22 hrs HW=88.06' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 1.10 cfs @ 0.64 fps)

Pond BB-4P: POROUS WALK-2



Summary for Pond BB-5P: POROUS WALK 1

Inflow Area = 45,346 sf, 8.87% Impervious, Inflow Depth > 0.89" for 2100 - 2 Yr event
Inflow = 1.03 cfs @ 12.16 hrs, Volume= 3,345 cf
Outflow = 1.01 cfs @ 12.18 hrs, Volume= 2,539 cf, Atten= 3%, Lag= 1.1 min
Primary = 0.01 cfs @ 12.18 hrs, Volume= 18 cf
Routed to Reach DP-3PR : REGIONAL SWALE
Secondary = 1.00 cfs @ 12.18 hrs, Volume= 2,520 cf
Routed to Pond BB-4P : POROUS WALK-2

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 91.05' @ 12.18 hrs Surf.Area= 2,298 sf Storage= 847 cf

Plug-Flow detention time= 116.4 min calculated for 2,538 cf (76% of inflow)
Center-of-Mass det. time= 48.4 min (848.4 - 800.0)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	1,609 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 4,596 cf Overall x 35.0% Voids

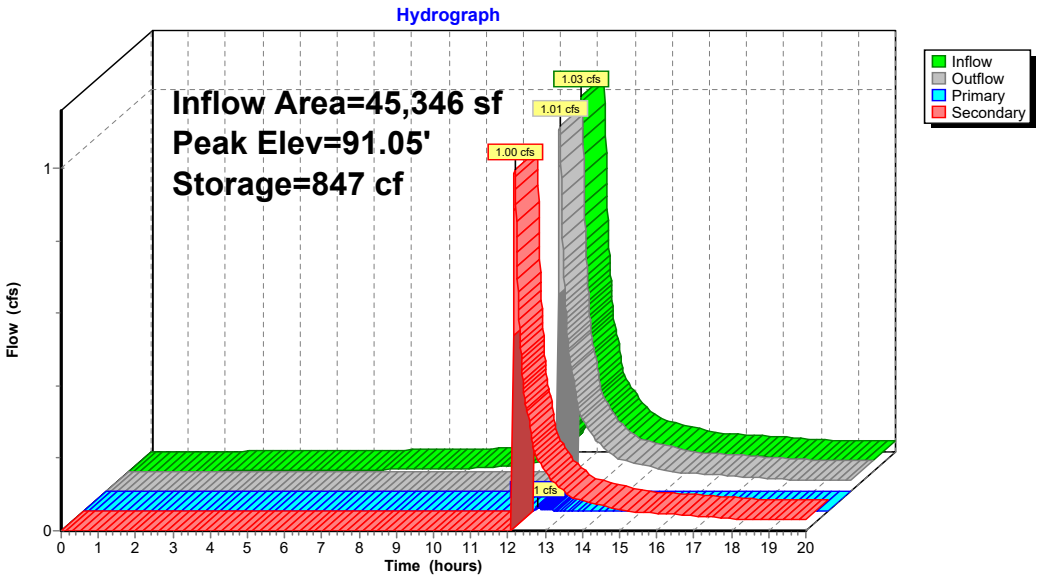
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.00	2,298	0	0
91.00	2,298	2,298	2,298
92.00	2,298	2,298	4,596

Device	Routing	Invert	Outlet Devices
#1	Primary	91.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	91.00'	**30.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.01 cfs @ 12.18 hrs HW=91.05' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.01 cfs @ 0.78 fps)

Secondary OutFlow Max=0.98 cfs @ 12.18 hrs HW=91.05' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 0.98 cfs @ 0.62 fps)

Pond BB-5P: POROUS WALK 1



Summary for Pond BB-P1: Plaza

Inflow Area = 13,728 sf, 46.55% Impervious, Inflow Depth > 4.74" for 2100 - 2 Yr event
Inflow = 1.54 cfs @ 12.22 hrs, Volume= 5,428 cf
Outflow = 0.18 cfs @ 13.60 hrs, Volume= 2,587 cf, Atten= 88%, Lag= 82.7 min
Primary = 0.18 cfs @ 13.60 hrs, Volume= 2,587 cf
Routed to Reach DP-3PR : REGIONAL SWALE

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 82.21' @ 13.60 hrs Surf.Area= 6,390 sf Storage= 3,082 cf

Plug-Flow detention time= 246.4 min calculated for 2,587 cf (48% of inflow)
Center-of-Mass det. time= 133.2 min (945.3 - 812.1)

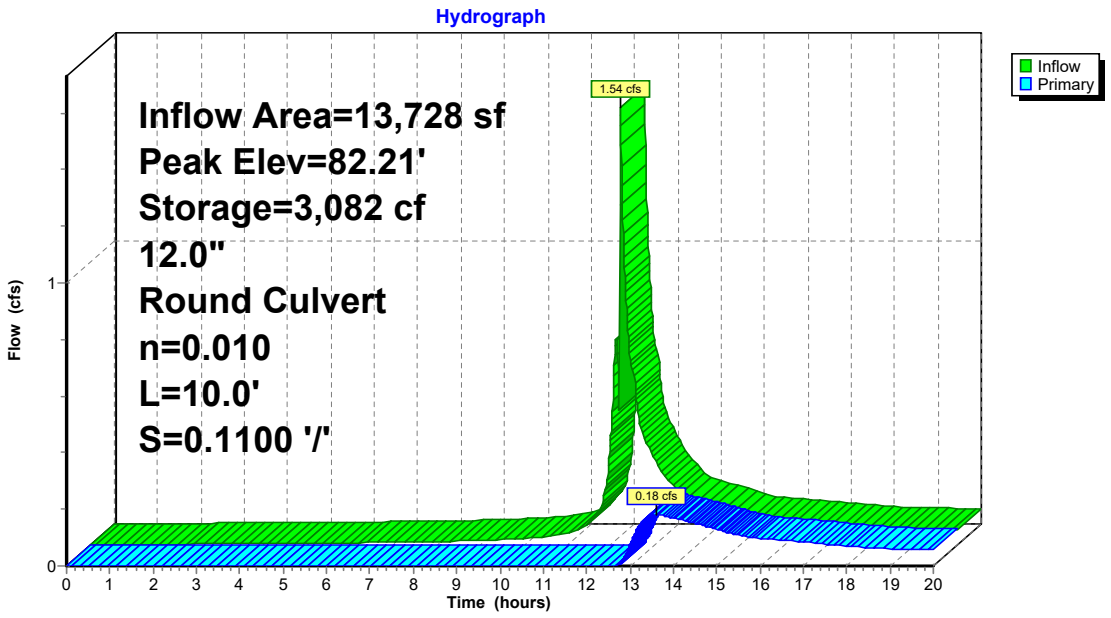
Volume	Invert	Avail.Storage	Storage Description
#1	81.00'	12,780 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 31,950 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
81.00	6,390	0	0
86.00	6,390	31,950	31,950

Device	Routing	Invert	Outlet Devices
#1	Primary	82.00'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 82.00' / 80.90' S= 0.1100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.18 cfs @ 13.60 hrs HW=82.21' (Free Discharge)
1=Culvert (Inlet Controls 0.18 cfs @ 1.54 fps)

Pond BB-P1: Plaza



Summary for Pond BB-P2: INFILT BASIN

Inflow Area = 155,772 sf,100.00% Impervious, Inflow Depth > 3.41" for 2100 - 2 Yr event
Inflow = 14.60 cfs @ 12.13 hrs, Volume= 44,308 cf
Outflow = 0.36 cfs @ 15.56 hrs, Volume= 13,417 cf, Atten= 98%, Lag= 205.9 min
Primary = 0.36 cfs @ 15.56 hrs, Volume= 13,417 cf
Routed to Reach DP-3PR : REGIONAL SWALE
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach DP-3PR : REGIONAL SWALE

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 77.49' @ 15.56 hrs Surf.Area= 120,809 sf Storage= 32,565 cf

Plug-Flow detention time= 326.8 min calculated for 13,411 cf (30% of inflow)
Center-of-Mass det. time= 158.5 min (880.6 - 722.0)

Volume	Invert	Avail.Storage	Storage Description
#1	74.67'	124,126 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 354,645 cf Overall x 35.0% Voids

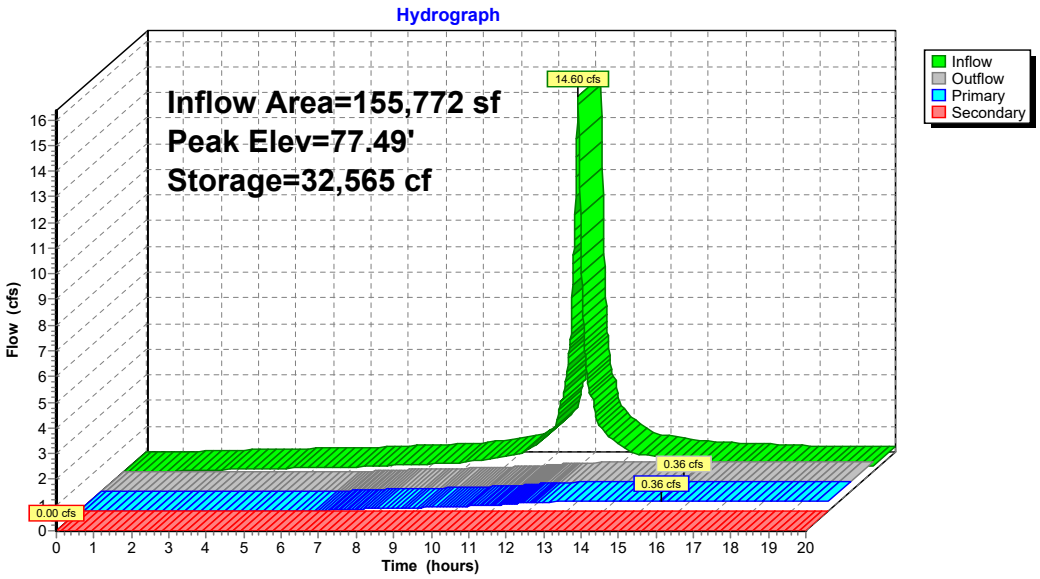
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
74.67	14,517	0	0
77.00	14,517	33,825	33,825
77.01	120,809	677	34,501
79.66	120,809	320,144	354,645

Device	Routing	Invert	Outlet Devices
#1	Secondary	77.50'	**24.0" Round Culvert** L= 353.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 77.50' / 76.50' S= 0.0028 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 3.14 sf
#2	Primary	75.00'	**3.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 75.00' / 74.90' S= 0.0100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.05 sf

Primary OutFlow Max=0.36 cfs @ 15.56 hrs HW=77.49' (Free Discharge)
└**2=Culvert** (Inlet Controls 0.36 cfs @ 7.41 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=74.67' (Free Discharge)
└**1=Culvert** (Controls 0.00 cfs)

Pond BB-P2: INFILT BASIN



Time span=0.00-20.00 hrs, dt=0.01 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentPR-10: PR-10 TO SOFTBALL TD Runoff Area=61,785 sf 5.95% Impervious Runoff Depth>1.93"
Flow Length=277' Tc=9.3 min CN=61/98 Runoff=3.33 cfs 9,951 cf

SubcatchmentPR-11: PR-11 POROUS WALK Runoff Area=2,299 sf 100.00% Impervious Runoff Depth>5.33"
Tc=6.0 min CN=0/98 Runoff=0.33 cfs 1,021 cf

SubcatchmentPR-12: PR-12 TO POROUS WALK Runoff Area=43,047 sf 4.00% Impervious Runoff Depth>1.86"
Flow Length=205' Tc=8.4 min CN=61/98 Runoff=2.35 cfs 6,684 cf

SubcatchmentPR-20: PR-20 CROSS COUNTRY Runoff Area=391,772 sf 0.00% Impervious Runoff Depth>1.70"
Tc=25.5 min CN=61/0 Runoff=12.30 cfs 55,649 cf

SubcatchmentPR-30: TO POROUS WALK 2 Runoff Area=18,645 sf 8.43% Impervious Runoff Depth>2.02"
Tc=6.0 min CN=61/98 Runoff=1.20 cfs 3,146 cf

SubcatchmentPR-31: Plaza Runoff Area=13,728 sf 46.55% Impervious Runoff Depth>3.40"
Tc=6.0 min CN=61/98 Runoff=1.33 cfs 3,890 cf

SubcatchmentPR-32: PR-32 TO SOFTBALL Runoff Area=25,435 sf 3.14% Impervious Runoff Depth>1.83"
Tc=6.0 min CN=61/98 Runoff=1.51 cfs 3,887 cf

SubcatchmentPR-34: SLOPE TO REGIONAL SWALE Runoff Area=21,534 sf 0.00% Impervious Runoff Depth>1.72"
Flow Length=142' Tc=7.1 min CN=61/0 Runoff=1.17 cfs 3,086 cf

SubcatchmentPR-35: FIELD AND ROOF Runoff Area=155,772 sf 100.00% Impervious Runoff Depth>5.33"
Tc=6.0 min CN=0/98 Runoff=22.40 cfs 69,166 cf

SubcatchmentPR-36: GRASS/LANDSCAPING Runoff Area=29,400 sf 0.00% Impervious Runoff Depth>1.72"
Flow Length=576' Tc=10.1 min CN=61/0 Runoff=1.41 cfs 4,208 cf

SubcatchmentPR-37: PR-37 TOWARD SWALE Runoff Area=36,798 sf 1.01% Impervious Runoff Depth>1.75"
Flow Length=1,093' Tc=20.2 min CN=61/98 Runoff=1.32 cfs 5,352 cf

SubcatchmentPR-38: BULLPEN Runoff Area=1,798 sf 100.00% Impervious Runoff Depth>5.33"
Tc=6.0 min CN=0/98 Runoff=0.26 cfs 798 cf

SubcatchmentPR-40: PR-40 TOWARD TENNIS Runoff Area=7,153 sf 37.96% Impervious Runoff Depth>3.09"
Tc=6.0 min CN=61/98 Runoff=0.64 cfs 1,842 cf

SubcatchmentPR-50: PR-50 REGIOINAL SWALE Runoff Area=62,111 sf 0.00% Impervious Runoff Depth>1.72"
Tc=6.0 min CN=61/0 Runoff=3.53 cfs 8,907 cf

SubcatchmentPR33B: PR-33B Runoff Area=550 sf 100.00% Impervious Runoff Depth>5.33"
Tc=6.0 min CN=0/98 Runoff=0.08 cfs 244 cf

SubcatchmentPR33C: PR-33C Runoff Area=550 sf 100.00% Impervious Runoff Depth>5.33"
Tc=6.0 min CN=0/98 Runoff=0.08 cfs 244 cf

SubcatchmentPR33D: PR-33E Runoff Area=550 sf 100.00% Impervious Runoff Depth>5.33"
Tc=6.0 min CN=0/98 Runoff=0.08 cfs 244 cf

SubcatchmentPR33E: PR-33E Runoff Area=550 sf 100.00% Impervious Runoff Depth>5.33"
Tc=6.0 min CN=0/98 Runoff=0.08 cfs 244 cf

SubcatchmentPR33F: PR-33F Runoff Area=550 sf 100.00% Impervious Runoff Depth>5.33"
Tc=6.0 min CN=0/98 Runoff=0.08 cfs 244 cf

SubcatchmentPR33G: PR-33F Runoff Area=1,100 sf 100.00% Impervious Runoff Depth>5.33"
Tc=6.0 min CN=0/98 Runoff=0.16 cfs 488 cf

SubcatchmentPR33H: PR-33H Runoff Area=3,713 sf 96.01% Impervious Runoff Depth>5.18"
Tc=6.0 min CN=61/98 Runoff=0.52 cfs 1,604 cf

SubcatchmentPR33I: PR-33I Runoff Area=2,005 sf 92.52% Impervious Runoff Depth>5.06"
Tc=6.0 min CN=61/98 Runoff=0.28 cfs 845 cf

SubcatchmentPR33J: PR-33J Runoff Area=1,945 sf 56.56% Impervious Runoff Depth>3.76"
Tc=6.0 min CN=61/98 Runoff=0.21 cfs 610 cf

SubcatchmentPR33K: PR-33F Runoff Area=1,309 sf 56.07% Impervious Runoff Depth>3.74"
Tc=6.0 min CN=61/98 Runoff=0.14 cfs 408 cf

Reach DP-3PR: REGIONAL SWALE Inflow=5.88 cfs 54,616 cf
Outflow=5.88 cfs 54,616 cf

Reach DP1PR: Softball Inflow=4.71 cfs 13,838 cf
Outflow=4.71 cfs 13,838 cf

Pond 33B: CELL B Peak Elev=84.03' Storage=110 cf Inflow=0.08 cfs 244 cf
Primary=0.04 cfs 180 cf Secondary=0.00 cfs 0 cf Outflow=0.04 cfs 180 cf

Pond 33C: CELL C Peak Elev=83.75' Storage=141 cf Inflow=0.11 cfs 424 cf
Primary=0.06 cfs 357 cf Secondary=0.00 cfs 0 cf Outflow=0.06 cfs 357 cf

Pond 33D: CELL D Peak Elev=83.44' Storage=163 cf Inflow=0.12 cfs 601 cf
Primary=0.07 cfs 532 cf Secondary=0.00 cfs 0 cf Outflow=0.07 cfs 532 cf

Pond 33E: CELL E Peak Elev=83.08' Storage=177 cf Inflow=0.13 cfs 776 cf
Primary=0.07 cfs 705 cf Secondary=0.00 cfs 0 cf Outflow=0.07 cfs 705 cf

Pond 33F: CELL F Peak Elev=82.72' Storage=188 cf Inflow=0.13 cfs 949 cf
Primary=0.07 cfs 876 cf Secondary=0.00 cfs 0 cf Outflow=0.07 cfs 876 cf

Pond 33G: CELL G Peak Elev=81.94' Storage=398 cf Inflow=0.21 cfs 1,365 cf
Primary=0.08 cfs 1,214 cf Secondary=0.00 cfs 0 cf Outflow=0.08 cfs 1,214 cf

Pond 33H: CELL H Peak Elev=81.15' Storage=676 cf Inflow=0.57 cfs 2,818 cf
Primary=0.07 cfs 1,612 cf Secondary=0.50 cfs 792 cf Outflow=0.57 cfs 2,403 cf

Pond 33I: CELL I Peak Elev=80.19' Storage=765 cf Inflow=0.84 cfs 3,249 cf
Primary=0.09 cfs 2,206 cf Secondary=0.42 cfs 649 cf Outflow=0.51 cfs 2,855 cf

Pond 33J: CELL J Peak Elev=79.39' Storage=453 cf Inflow=0.62 cfs 3,465 cf
Primary=0.09 cfs 2,369 cf Secondary=0.41 cfs 775 cf Outflow=0.50 cfs 3,143 cf

Pond 33K: CELL K Peak Elev=79.01' Storage=303 cf Inflow=0.55 cfs 3,552 cf
Primary=0.08 cfs 2,329 cf Secondary=0.44 cfs 953 cf Outflow=0.52 cfs 3,283 cf

Pond 33L: OUTLET PIPE Peak Elev=76.37' Storage=4 cf Inflow=0.52 cfs 3,283 cf
Outflow=0.54 cfs 3,281 cf

Pond BB-2A: BULLPEN Peak Elev=79.32' Storage=230 cf Inflow=0.26 cfs 798 cf
3.0" Round Culvert n=0.010 L=10.0' S=0.0100 '/' Outflow=0.10 cfs 767 cf

Pond BB-4P: POROUS WALK-2 Peak Elev=88.13' Storage=708 cf Inflow=3.73 cfs 9,979 cf
Primary=0.07 cfs 115 cf Secondary=3.65 cfs 9,231 cf Outflow=3.72 cfs 9,346 cf

Pond BB-5P: POROUS WALK 1 Peak Elev=91.10' Storage=886 cf Inflow=2.64 cfs 7,704 cf
Primary=0.04 cfs 63 cf Secondary=2.60 cfs 6,833 cf Outflow=2.64 cfs 6,896 cf

Pond BB-P1: Plaza Peak Elev=82.79' Storage=4,572 cf Inflow=4.92 cfs 13,121 cf
12.0" Round Culvert n=0.010 L=10.0' S=0.1100 '/' Outflow=2.01 cfs 10,164 cf

Pond BB-P2: INFILT BASIN Peak Elev=77.86' Storage=48,042 cf Inflow=22.40 cfs 69,166 cf
Primary=0.39 cfs 16,121 cf Secondary=0.60 cfs 11,457 cf Outflow=0.99 cfs 27,578 cf

Total Runoff Area = 884,099 sf Runoff Volume = 182,764 cf Average Runoff Depth = 2.48"
78.71% Pervious = 695,882 sf 21.29% Impervious = 188,217 sf

Summary for Subcatchment PR-10: PR-10 TO SOFTBALL TD

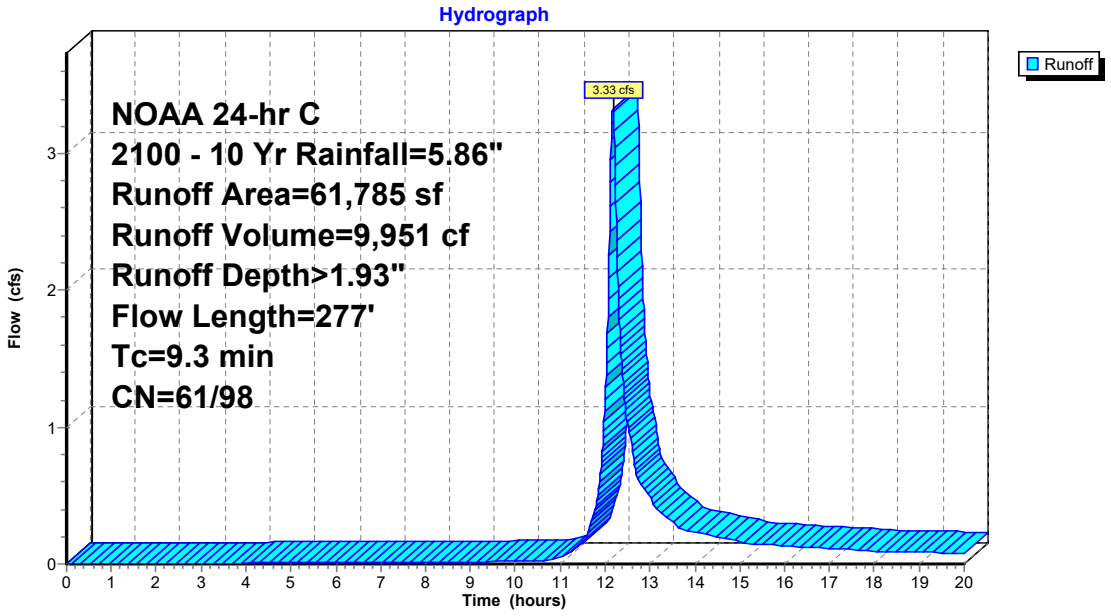
Runoff = 3.33 cfs @ 12.17 hrs, Volume= 9,951 cf, Depth> 1.93"
Routed to Reach DP1PR : Softball

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 10 Yr Rainfall=5.86"

Area (sf)	CN	Description
58,109	61	>75% Grass cover, Good, HSG B
3,676	98	Paved roads w/curbs & sewers, HSG B
61,785	63	Weighted Average
58,109	61	94.05% Pervious Area
3,676	98	5.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0150	0.13		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.34"
3.1	227	0.0300	1.21		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
9.3	277	Total			

Subcatchment PR-10: PR-10 TO SOFTBALL TD



Summary for Subcatchment PR-11: PR-11 POROUS WALK

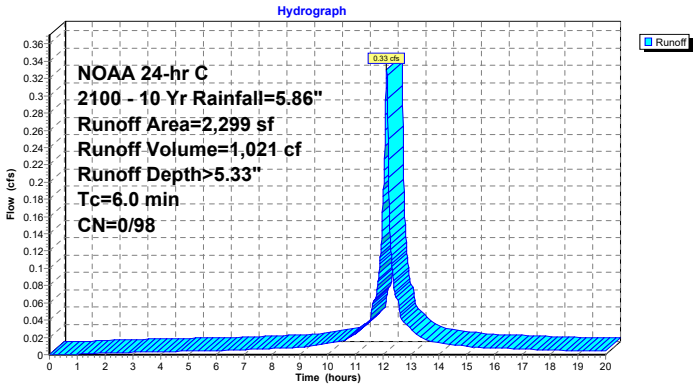
Runoff = 0.33 cfs @ 12.13 hrs, Volume= 1,021 cf, Depth> 5.33"
Routed to Pond BB-5P : POROUS WALK 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 10 Yr Rainfall=5.86"

Area (sf)	CN	Description
2,299	98	Paved roads w/curbs & sewers, HSG B
2,299	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Surface**

Subcatchment PR-11: PR-11 POROUS WALK



Summary for Subcatchment PR-12: PR-12 TO POROUS WALK

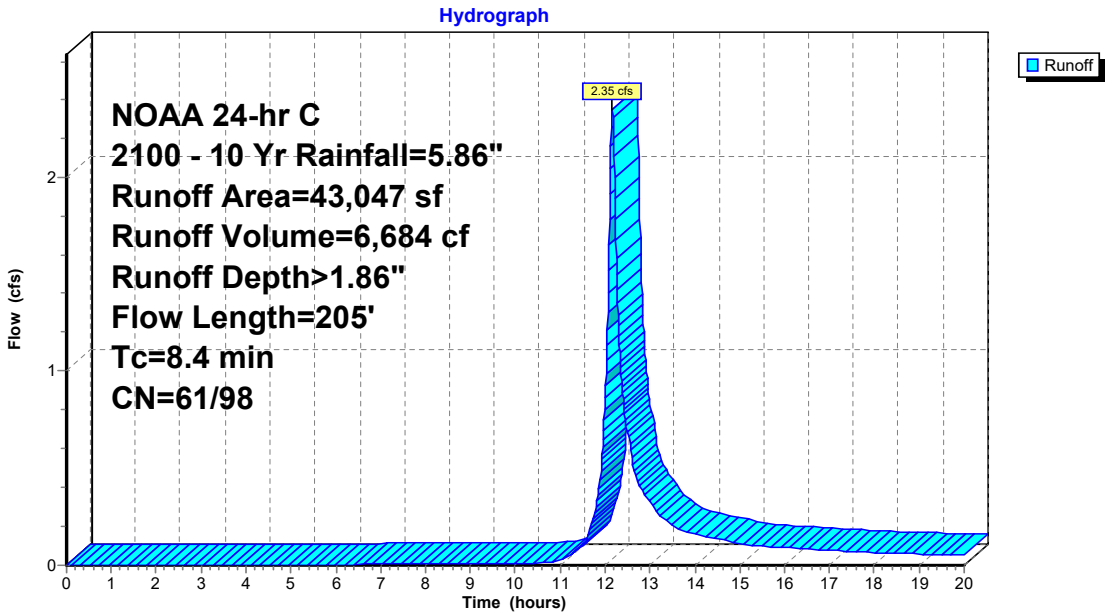
Runoff = 2.35 cfs @ 12.16 hrs, Volume= 6,684 cf, Depth> 1.86"
Routed to Pond BB-5P : POROUS WALK 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 10 Yr Rainfall=5.86"

Area (sf)	CN	Description
41,325	61	>75% Grass cover, Good, HSG B
1,722	98	Paved roads w/curbs & sewers, HSG B
43,047	62	Weighted Average
41,325	61	96.00% Pervious Area
1,722	98	4.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0150	0.13		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.34"
2.2	155	0.0290	1.19		**Shallow Concentrated Flow, Shallow Conc** Short Grass Pasture Kv= 7.0 fps
8.4	205	Total			

Subcatchment PR-12: PR-12 TO POROUS WALK



Summary for Subcatchment PR-20: PR-20 CROSS COUNTRY

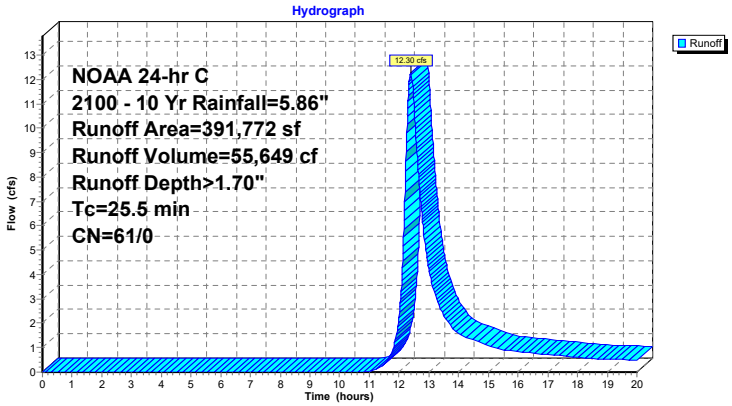
Runoff = 12.30 cfs @ 12.38 hrs, Volume= 55,649 cf, Depth> 1.70"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 10 Yr Rainfall=5.86"

Area (sf)	CN	Description
391,772	61	>75% Grass cover, Good, HSG B
391,772	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.5					**Direct Entry, Same as Exist**

Subcatchment PR-20: PR-20 CROSS COUNTRY



Summary for Subcatchment PR-30: TO POROUS WALK 2

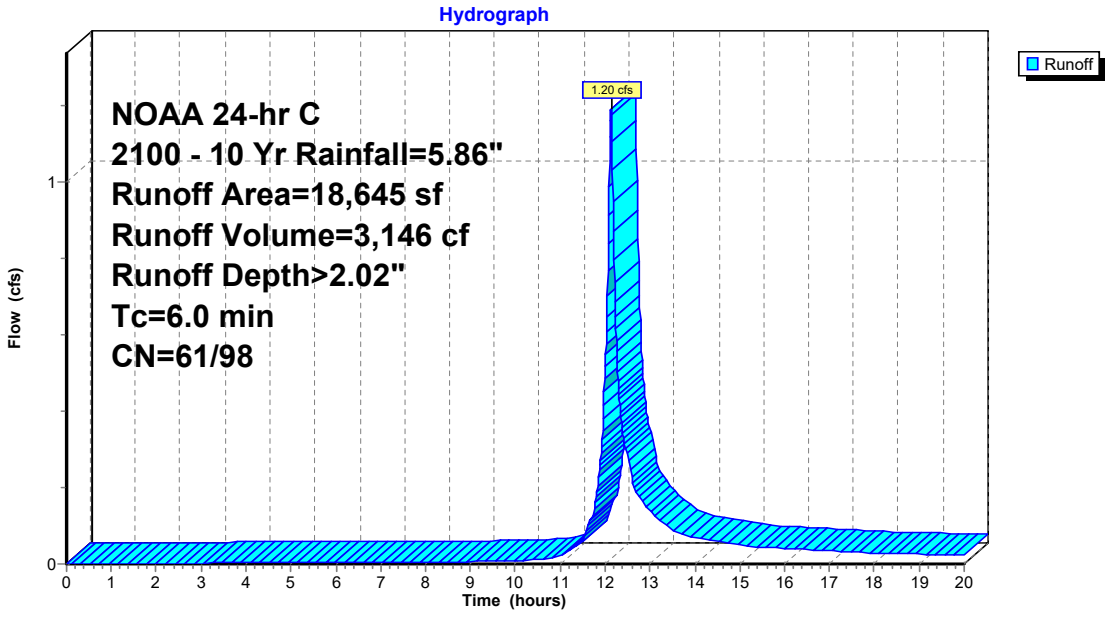
Runoff = 1.20 cfs @ 12.14 hrs, Volume= 3,146 cf, Depth> 2.02"
Routed to Pond BB-4P : POROUS WALK-2

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 10 Yr Rainfall=5.86"

Area (sf)	CN	Description
17,074	61	>75% Grass cover, Good, HSG B
1,571	98	Paved parking, HSG A
18,645	64	Weighted Average
17,074	61	91.57% Pervious Area
1,571	98	8.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment PR-30: TO POROUS WALK 2



Summary for Subcatchment PR-31: Plaza

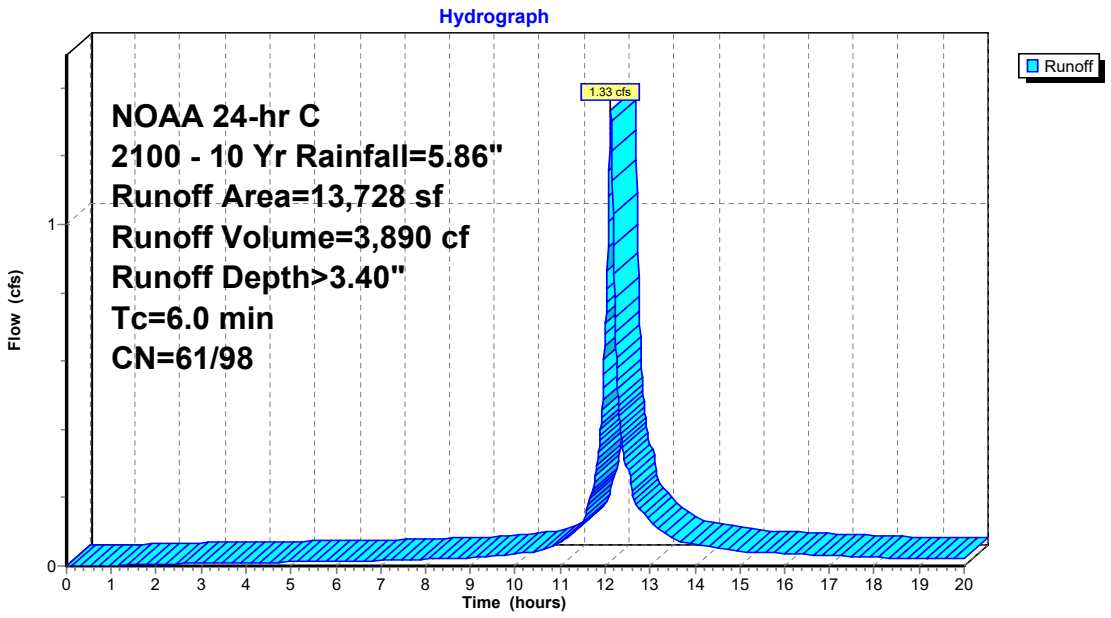
Runoff = 1.33 cfs @ 12.13 hrs, Volume= 3,890 cf, Depth> 3.40"
Routed to Pond BB-P1 : Plaza

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 10 Yr Rainfall=5.86"

Area (sf)	CN	Description
6,391	98	Paved parking, HSG B
7,337	61	>75% Grass cover, Good, HSG B
13,728	78	Weighted Average
7,337	61	53.45% Pervious Area
6,391	98	46.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment PR-31: Plaza



Summary for Subcatchment PR-32: PR-32 TO SOFTBALL

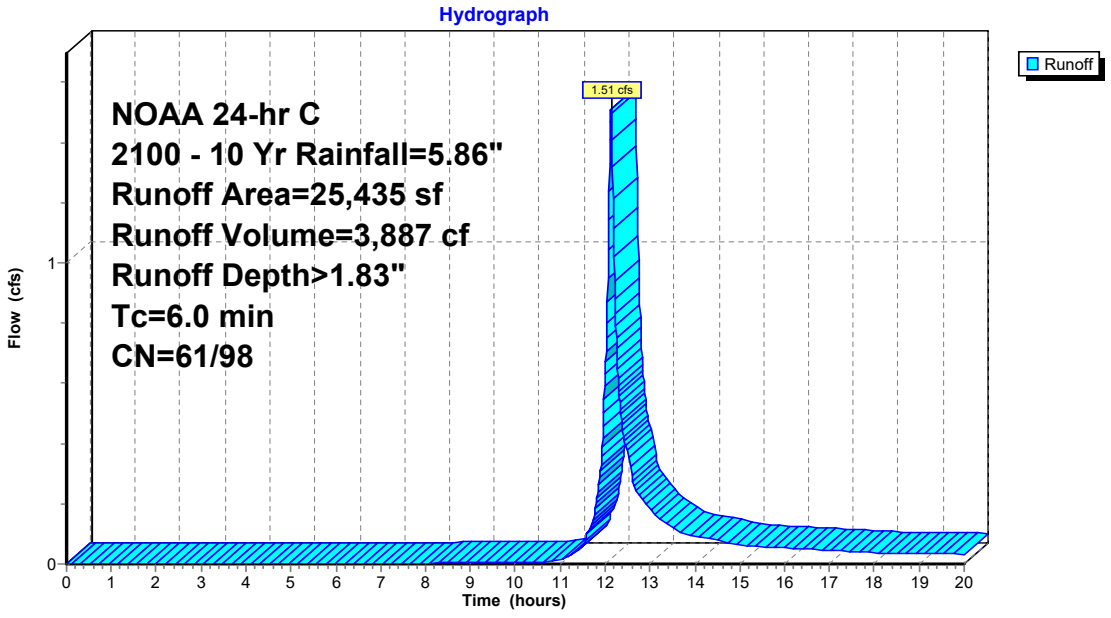
Runoff = 1.51 cfs @ 12.14 hrs, Volume= 3,887 cf, Depth> 1.83"
Routed to Reach DP1PR : Softball

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 10 Yr Rainfall=5.86"

Area (sf)	CN	Description
24,637	61	>75% Grass cover, Good, HSG B
798	98	Paved parking, HSG A
25,435	62	Weighted Average
24,637	61	96.86% Pervious Area
798	98	3.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum**

Subcatchment PR-32: PR-32 TO SOFTBALL



Summary for Subcatchment PR-34: SLOPE TO REGIONAL SWALE

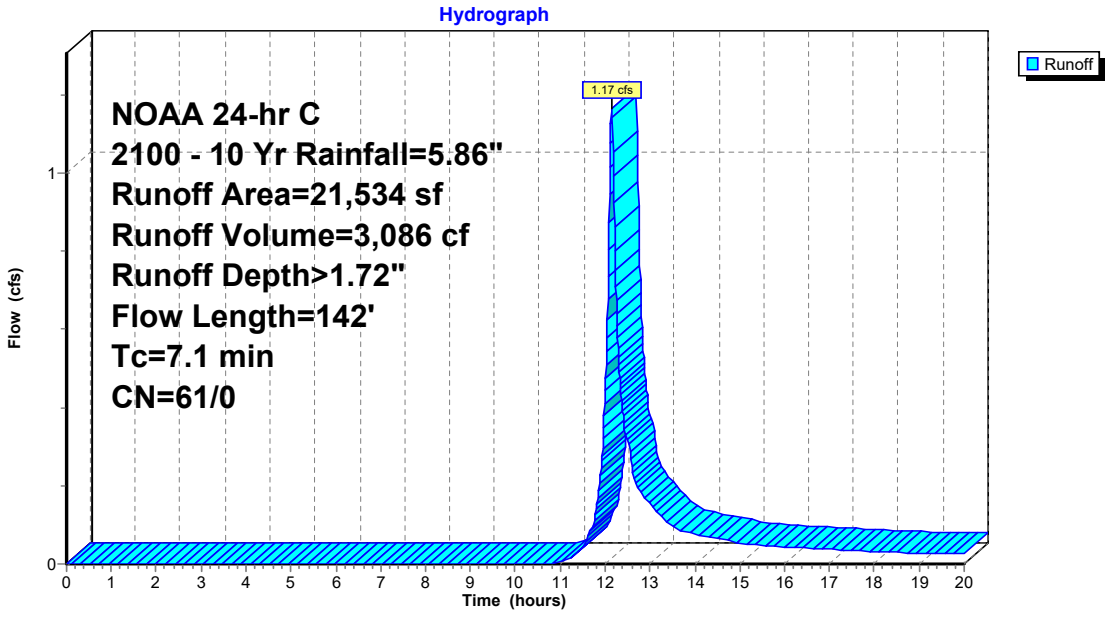
Runoff = 1.17 cfs @ 12.15 hrs, Volume= 3,086 cf, Depth> 1.72"
Routed to Reach DP-3PR : REGIONAL SWALE

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 10 Yr Rainfall=5.86"

Area (sf)	CN	Description
21,534	61	>75% Grass cover, Good, HSG B
21,534	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0150	0.13		**Sheet Flow, SHEET FLOW** Grass: Short n= 0.150 P2= 3.34"
0.9	92	0.0570	1.67		**Shallow Concentrated Flow, SHALLOW CONC** Short Grass Pasture Kv= 7.0 fps
7.1	142	Total			

Subcatchment PR-34: SLOPE TO REGIONAL SWALE



Summary for Subcatchment PR-35: FIELD AND ROOF

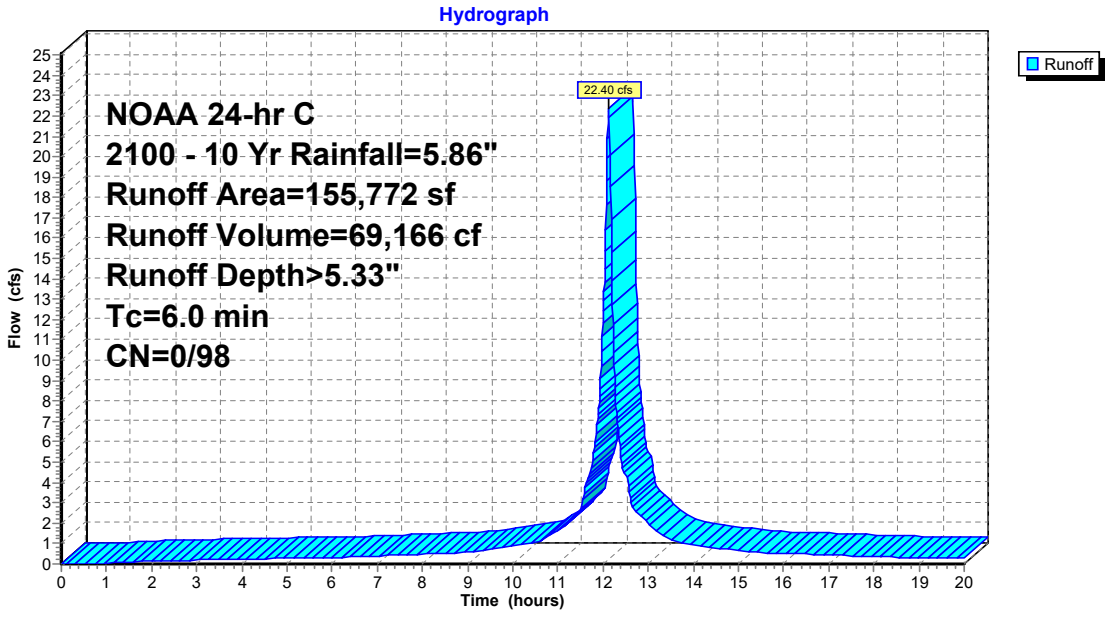
Runoff = 22.40 cfs @ 12.13 hrs, Volume= 69,166 cf, Depth> 5.33"
Routed to Pond BB-P2 : INFILT BASIN

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 10 Yr Rainfall=5.86"

Area (sf)	CN	Description
155,772	98	Roofs, HSG B
0	61	>75% Grass cover, Good, HSG B
155,772	98	Weighted Average
155,772	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT**

Subcatchment PR-35: FIELD AND ROOF



Summary for Subcatchment PR-36: GRASS/LANDSCAPING

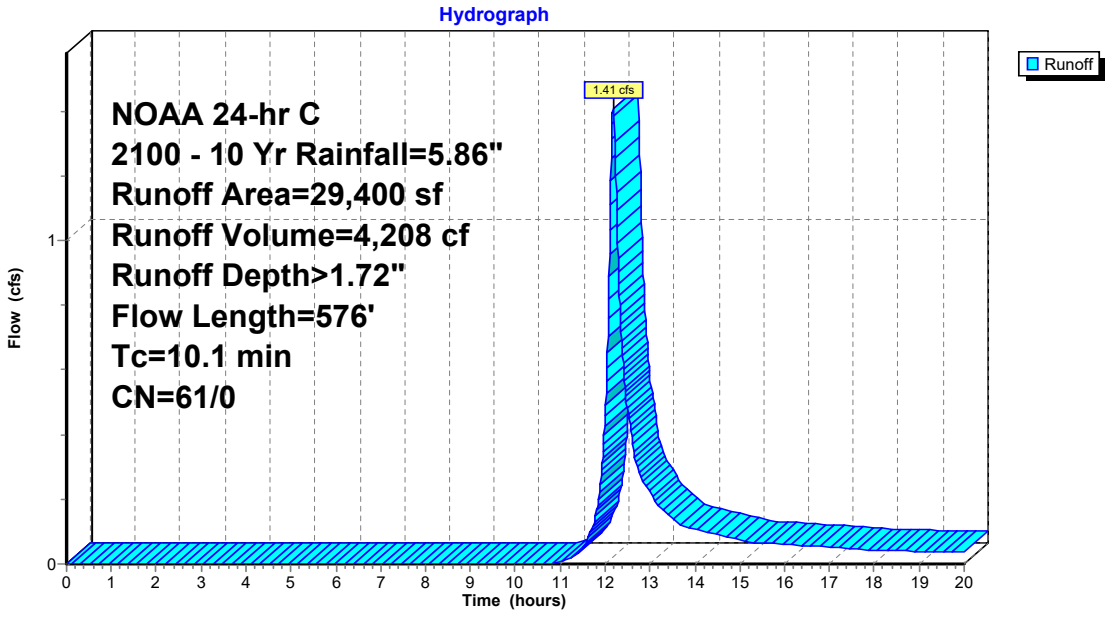
Runoff = 1.41 cfs @ 12.18 hrs, Volume= 4,208 cf, Depth> 1.72"
Routed to Reach DP-3PR : REGIONAL SWALE

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 10 Yr Rainfall=5.86"

Area (sf)	CN	Description
29,400	61	>75% Grass cover, Good, HSG B
29,400	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.34"
1.7	116	0.0050	1.14		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.7	235	0.0120	5.38	4.23	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
0.4	175	0.0100	7.80	24.51	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012
10.1	576	Total			

Subcatchment PR-36: GRASS/LANDSCAPING



Summary for Subcatchment PR-37: PR-37 TOWARD SWALE

Runoff = 1.32 cfs @ 12.32 hrs, Volume= 5,352 cf, Depth> 1.75"
Routed to Reach DP-3PR : REGIONAL SWALE

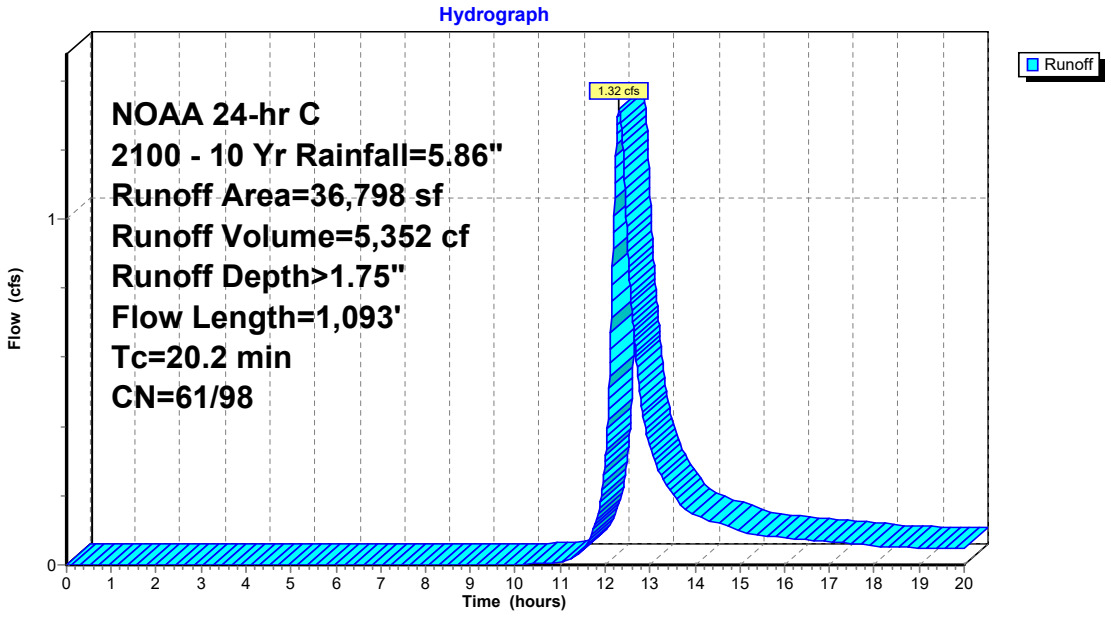
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 10 Yr Rainfall=5.86"

Area (sf)	CN	Description
36,427	61	>75% Grass cover, Good, HSG B
371	98	Paved roads w/curbs & sewers, HSG B
36,798	61	Weighted Average
36,427	61	98.99% Pervious Area
371	98	1.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.34"
2.2	242	0.0130	1.84		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	104	0.0190	5.17	1.80	**Pipe Channel, 8"** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012 Corrugated PP, smooth interior
0.5	118	0.0100	4.35	2.37	**Pipe Channel, 10"** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.012 Corrugated PP, smooth interior
0.2	143	0.0126	11.47	81.11	**Pipe Channel, 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012
0.1	104	0.0133	11.79	83.33	**Pipe Channel, 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012
9.6	332	0.0032	0.58	4.09	**Pipe Channel, 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.120

20.2	1,093	Total

Subcatchment PR-37: PR-37 TOWARD SWALE



Summary for Subcatchment PR-38: BULLPEN

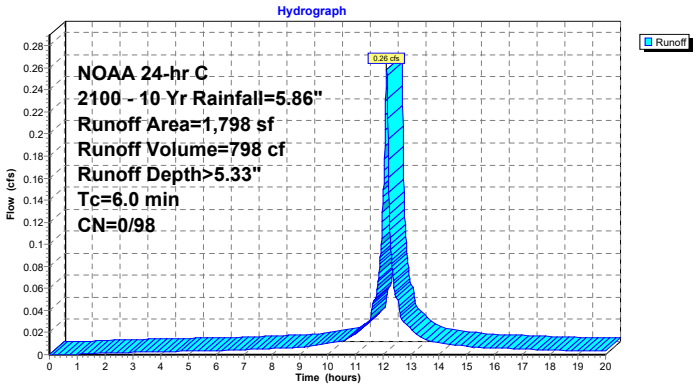
Runoff = 0.26 cfs @ 12.13 hrs, Volume= 798 cf, Depth> 5.33"
Routed to Pond BB-2A : BULLPEN

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 10 Yr Rainfall=5.86"

Area (sf)	CN	Description
1,798	98	Paved parking, HSG B
1,798	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment PR-38: BULLPEN



Summary for Subcatchment PR-40: PR-40 TOWARD TENNIS

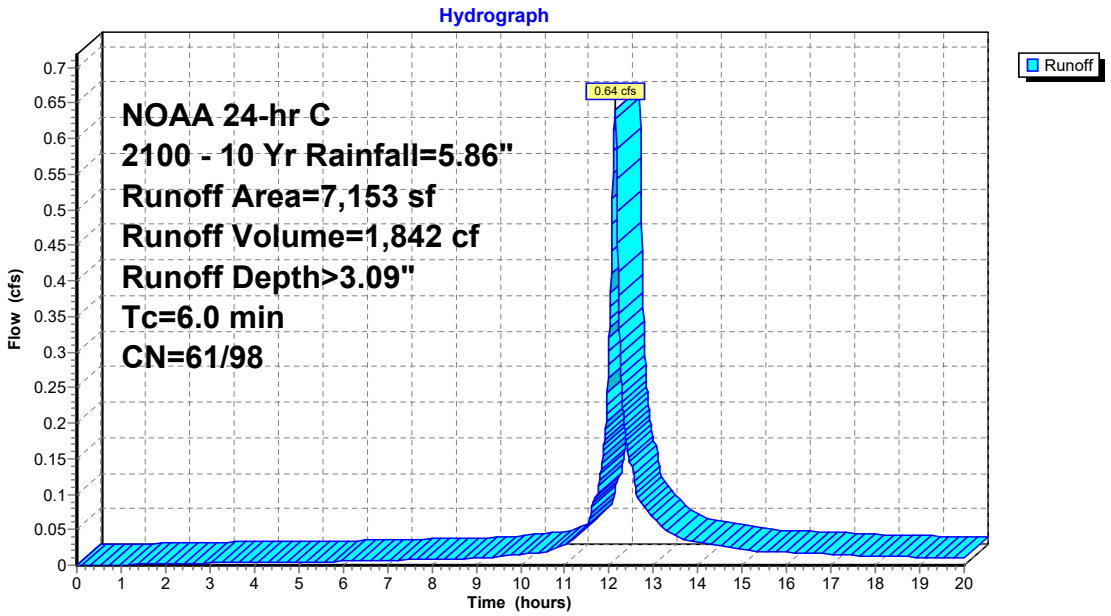
Runoff = 0.64 cfs @ 12.13 hrs, Volume= 1,842 cf, Depth> 3.09"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 10 Yr Rainfall=5.86"

Area (sf)	CN	Description
4,438	61	>75% Grass cover, Good, HSG B
0	61	>75% Grass cover, Good, HSG B
2,715	98	Paved roads w/curbs & sewers, HSG B
7,153	75	Weighted Average
4,438	61	62.04% Pervious Area
2,715	98	37.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR-40: PR-40 TOWARD TENNIS



Summary for Subcatchment PR-50: PR-50 REGIOINAL SWALE

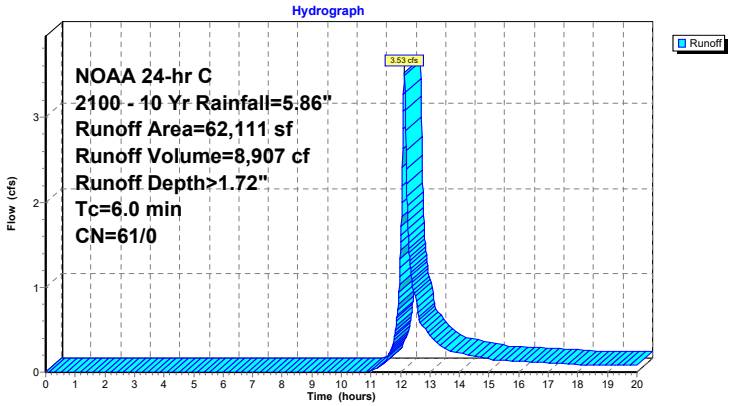
Runoff = 3.53 cfs @ 12.14 hrs, Volume= 8,907 cf, Depth> 1.72"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 10 Yr Rainfall=5.86"

Area (sf)	CN	Description
62,111	61	>75% Grass cover, Good, HSG B
62,111	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum**

Subcatchment PR-50: PR-50 REGIOINAL SWALE



Summary for Subcatchment PR33B: PR-33B

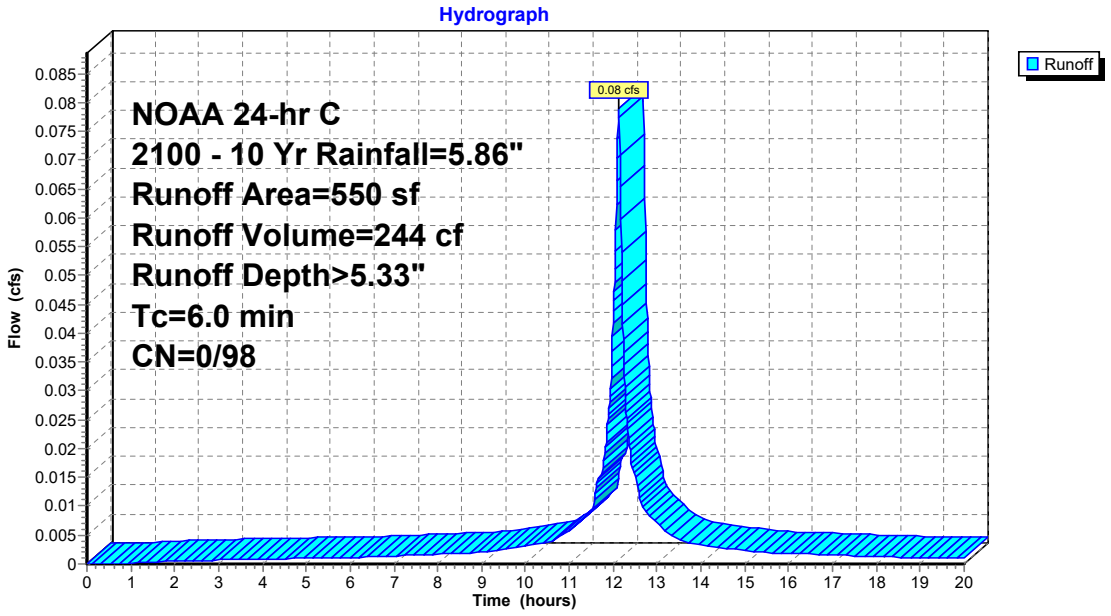
Runoff = 0.08 cfs @ 12.13 hrs, Volume= 244 cf, Depth> 5.33"
Routed to Pond 33B : CELL B

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 10 Yr Rainfall=5.86"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
550	98	Paved parking, HSG B
550	98	Weighted Average
550	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33B: PR-33B



Summary for Subcatchment PR33C: PR-33C

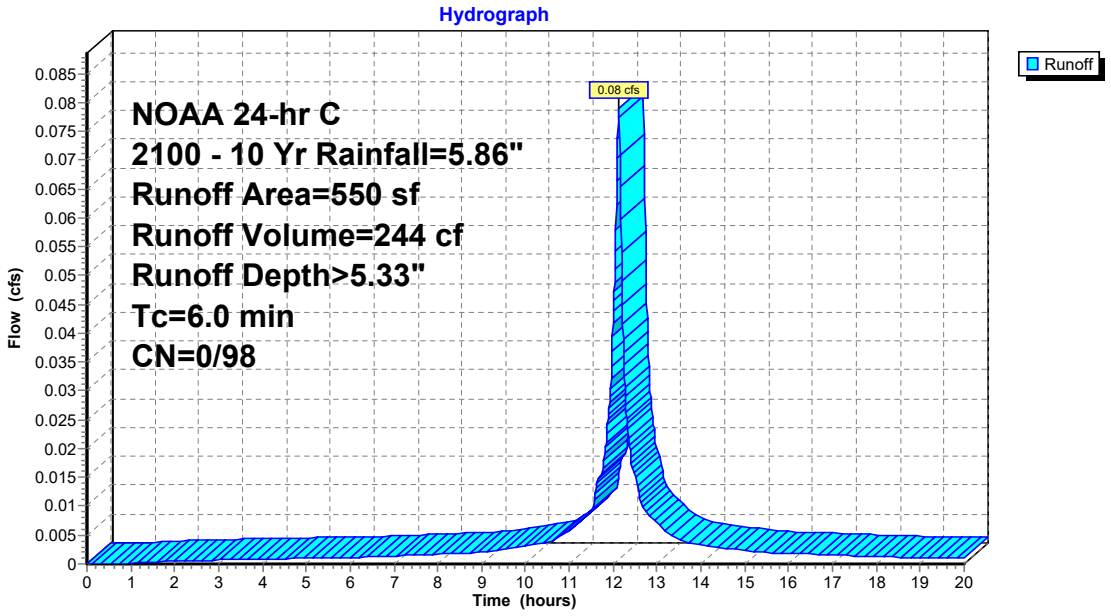
Runoff = 0.08 cfs @ 12.13 hrs, Volume= 244 cf, Depth> 5.33"
Routed to Pond 33C : CELL C

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 10 Yr Rainfall=5.86"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
550	98	Paved parking, HSG B
550	98	Weighted Average
550	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33C: PR-33C



Summary for Subcatchment PR33D: PR-33E

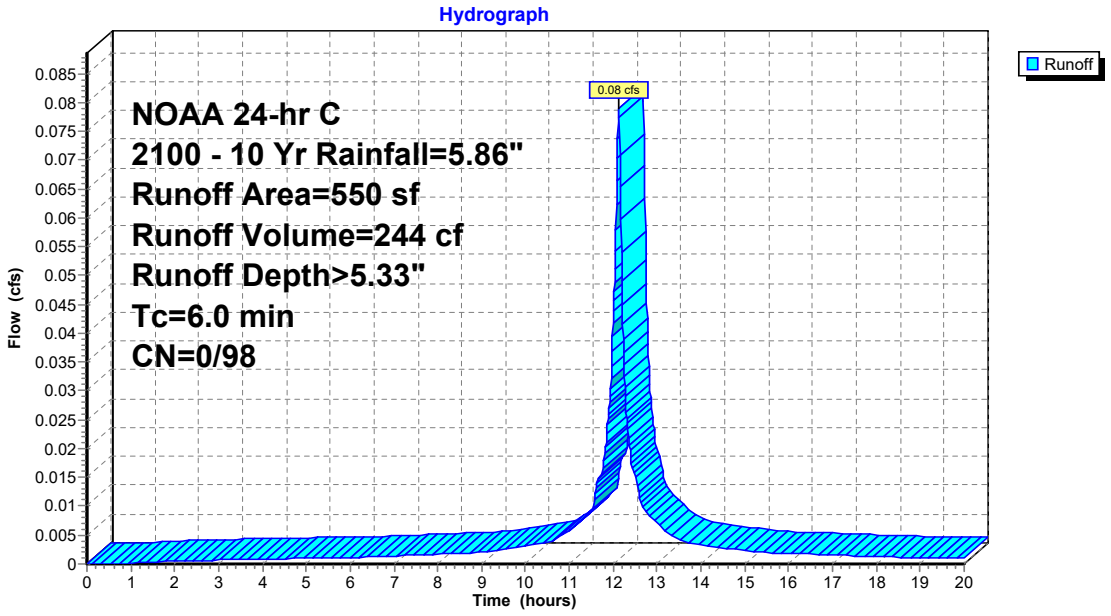
Runoff = 0.08 cfs @ 12.13 hrs, Volume= 244 cf, Depth> 5.33"
Routed to Pond 33D : CELL D

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 10 Yr Rainfall=5.86"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
550	98	Paved parking, HSG B
550	98	Weighted Average
550	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33D: PR-33E



Summary for Subcatchment PR33E: PR-33E

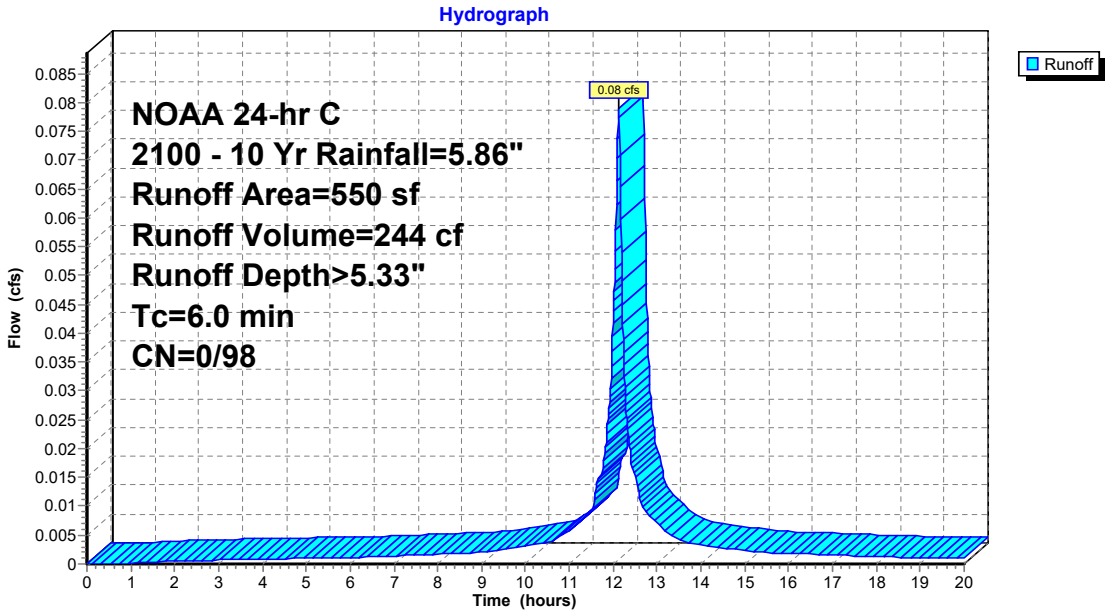
Runoff = 0.08 cfs @ 12.13 hrs, Volume= 244 cf, Depth> 5.33"
Routed to Pond 33E : CELL E

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 10 Yr Rainfall=5.86"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
550	98	Paved parking, HSG B
550	98	Weighted Average
550	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33E: PR-33E



Summary for Subcatchment PR33F: PR-33F

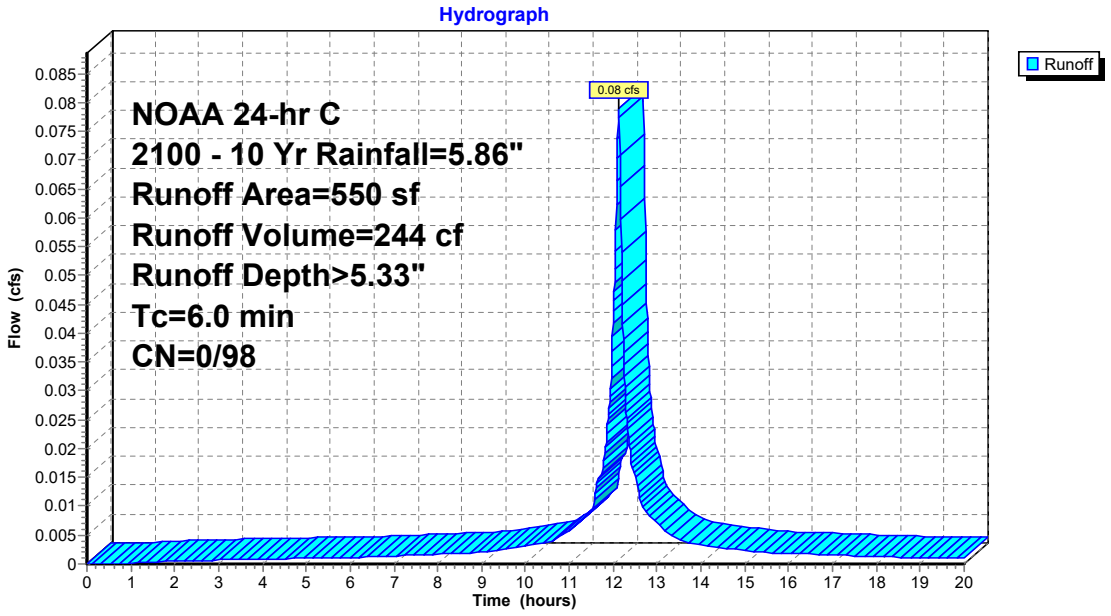
Runoff = 0.08 cfs @ 12.13 hrs, Volume= 244 cf, Depth> 5.33"
Routed to Pond 33F : CELL F

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 10 Yr Rainfall=5.86"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
550	98	Paved parking, HSG B
550	98	Weighted Average
550	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33F: PR-33F



Summary for Subcatchment PR33G: PR-33F

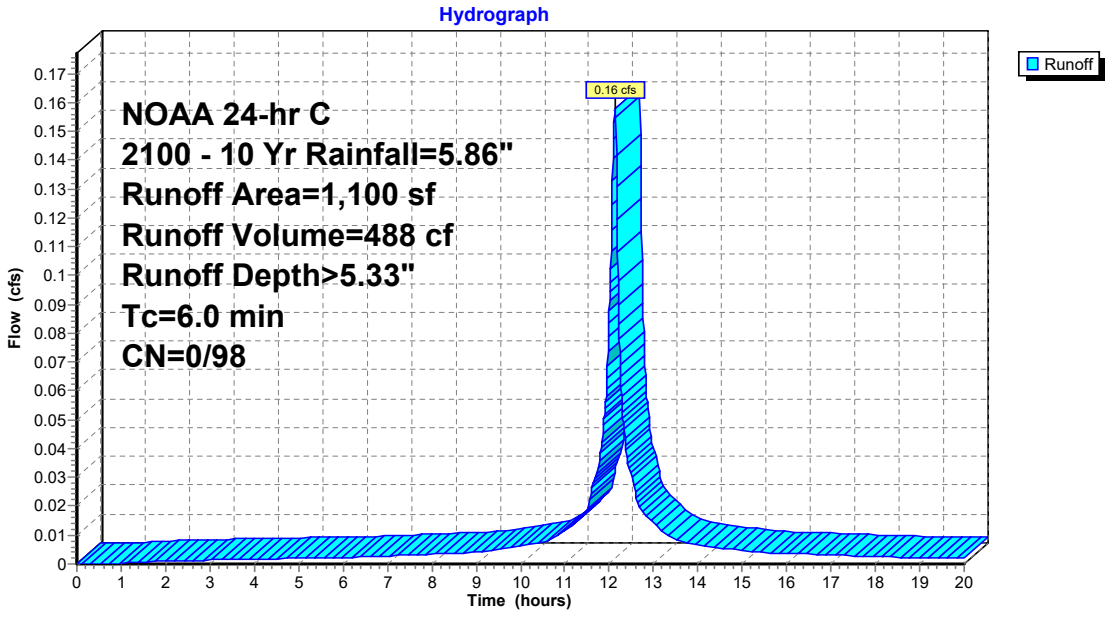
Runoff = 0.16 cfs @ 12.13 hrs, Volume= 488 cf, Depth> 5.33"
Routed to Pond 33G : CELL G

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 10 Yr Rainfall=5.86"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
1,100	98	Paved parking, HSG B
1,100	98	Weighted Average
1,100	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33G: PR-33F



Summary for Subcatchment PR33H: PR-33H

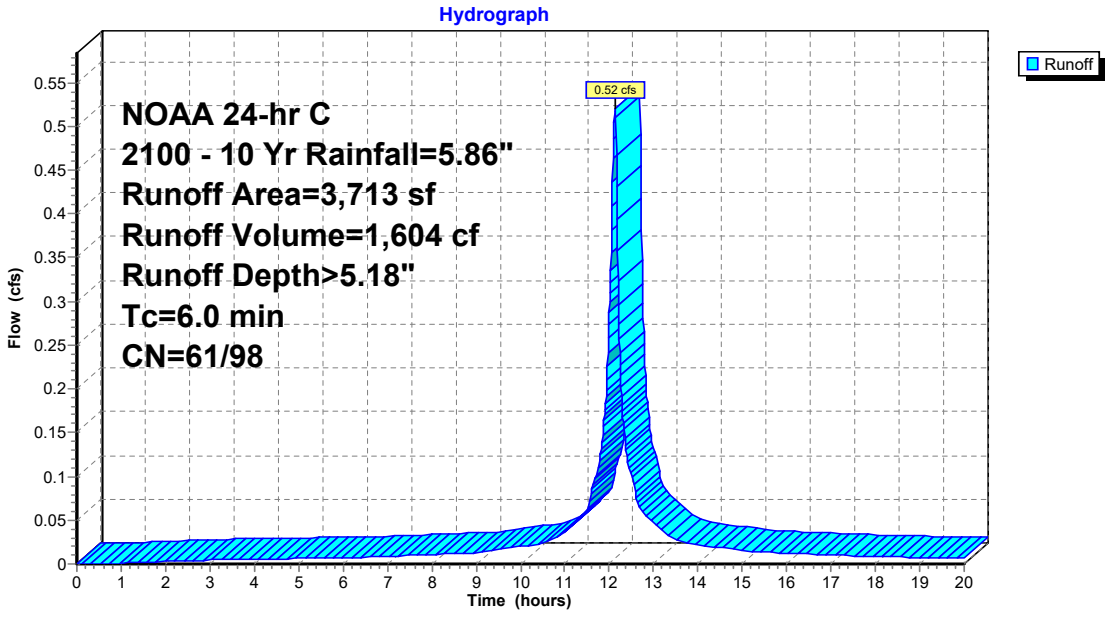
Runoff = 0.52 cfs @ 12.13 hrs, Volume= 1,604 cf, Depth> 5.18"
Routed to Pond 33H : CELL H

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 10 Yr Rainfall=5.86"

	Area (sf)	CN	Description
	148	61	>75% Grass cover, Good, HSG B
*	1,634	98	Porous Pavers
*	1,931	98	Sidewalk
	3,713	97	Weighted Average
	148	61	3.99% Pervious Area
	3,565	98	96.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33H: PR-33H



Summary for Subcatchment PR33I: PR-33I

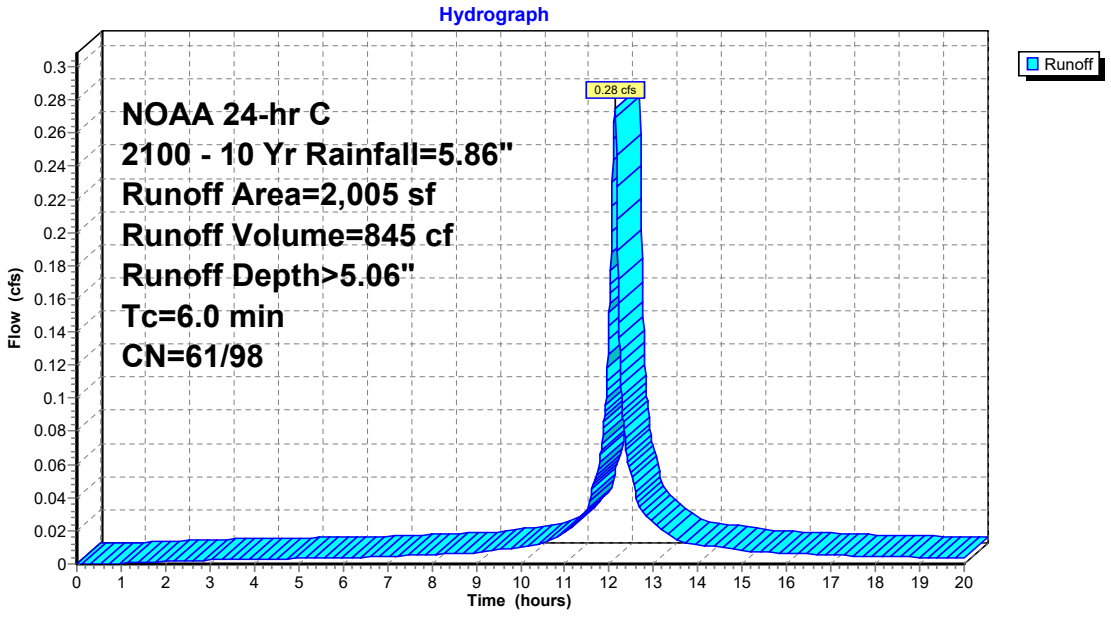
Runoff = 0.28 cfs @ 12.13 hrs, Volume= 845 cf, Depth> 5.06"
Routed to Pond 33I : CELL I

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 10 Yr Rainfall=5.86"

Area (sf)	CN	Description
150	61	>75% Grass cover, Good, HSG B
1,855	98	Paved parking, HSG B
2,005	95	Weighted Average
150	61	7.48% Pervious Area
1,855	98	92.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33I: PR-33I



Summary for Subcatchment PR33J: PR-33J

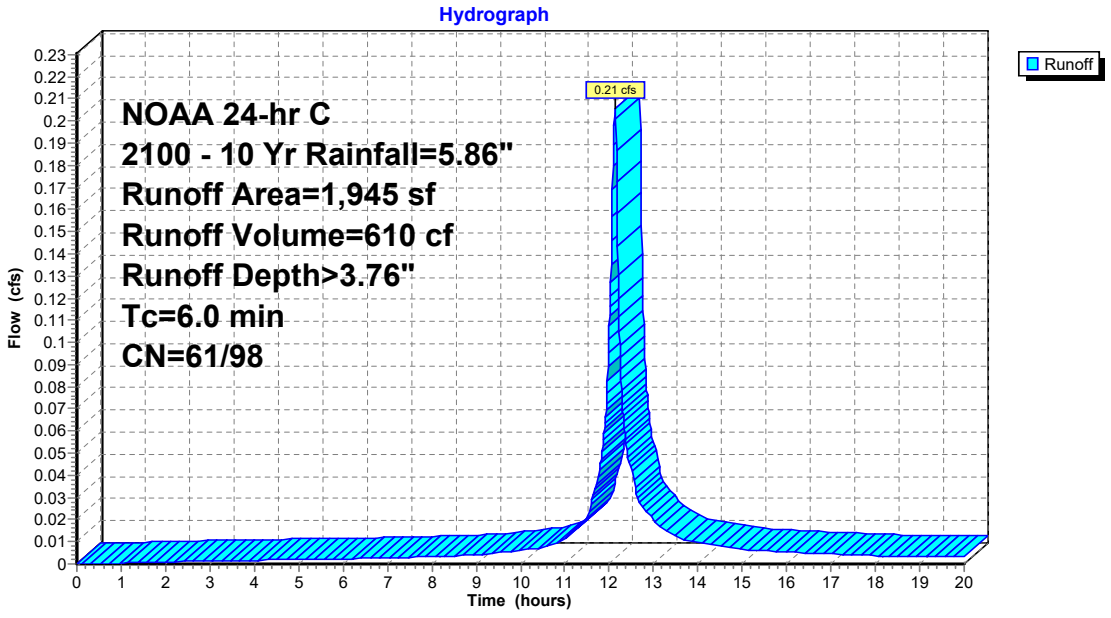
Runoff = 0.21 cfs @ 12.13 hrs, Volume= 610 cf, Depth> 3.76"
Routed to Pond 33J : CELL J

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 10 Yr Rainfall=5.86"

Area (sf)	CN	Description
845	61	>75% Grass cover, Good, HSG B
1,100	98	Paved parking, HSG B
1,945	82	Weighted Average
845	61	43.44% Pervious Area
1,100	98	56.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33J: PR-33J



Summary for Subcatchment PR33K: PR-33F

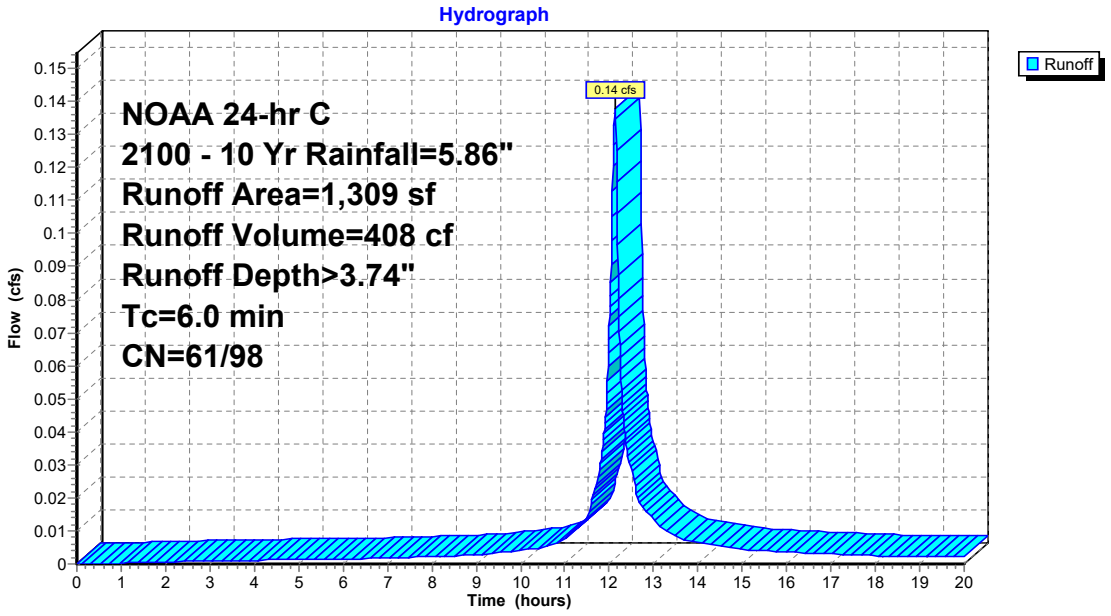
Runoff = 0.14 cfs @ 12.13 hrs, Volume= 408 cf, Depth> 3.74"
Routed to Pond 33K : CELL K

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 10 Yr Rainfall=5.86"

Area (sf)	CN	Description
575	61	>75% Grass cover, Good, HSG B
734	98	Paved parking, HSG B
1,309	82	Weighted Average
575	61	43.93% Pervious Area
734	98	56.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33K: PR-33F



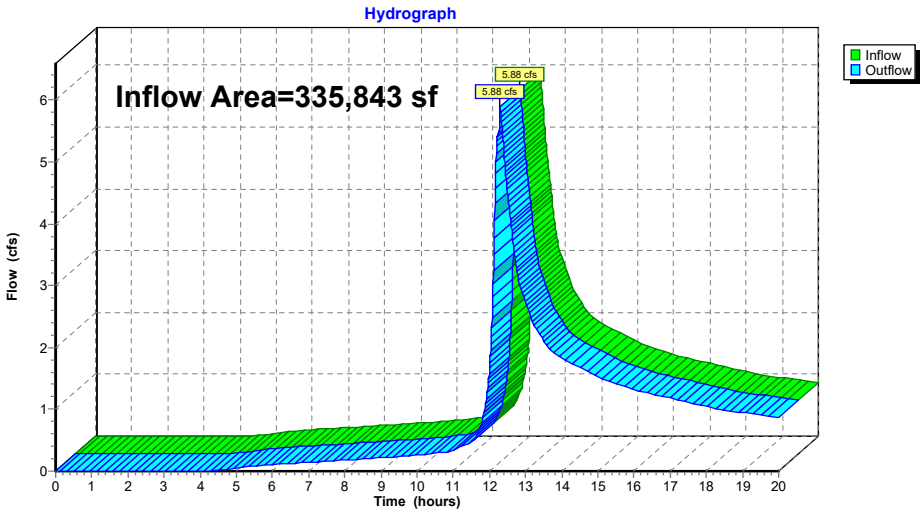
Summary for Reach DP-3PR: REGIONAL SWALE

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 335,843 sf, 53.90% Impervious, Inflow Depth > 1.95" for 2100 - 10 Yr event
Inflow = 5.88 cfs @ 12.30 hrs, Volume= 54,616 cf
Outflow = 5.88 cfs @ 12.30 hrs, Volume= 54,616 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs

Reach DP-3PR: REGIONAL SWALE



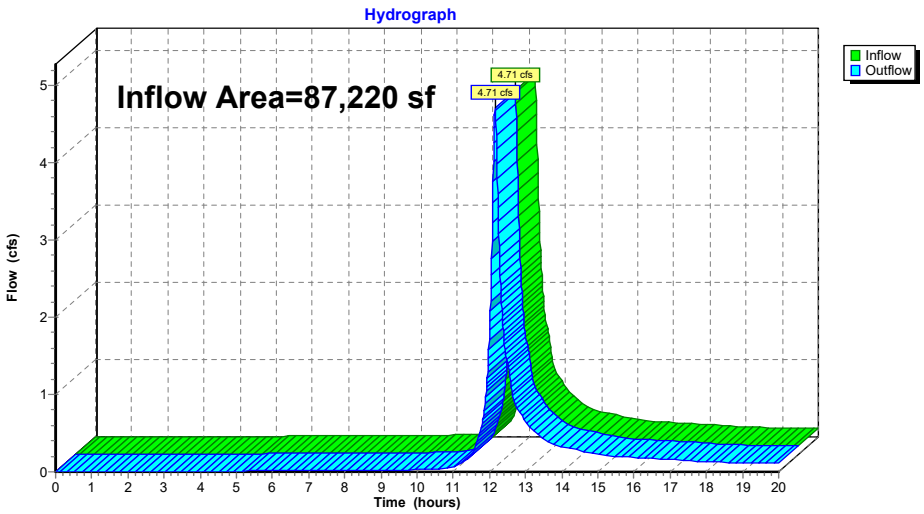
Summary for Reach DP1PR: Softball

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 87,220 sf, 5.13% Impervious, Inflow Depth > 1.90" for 2100 - 10 Yr event
Inflow = 4.71 cfs @ 12.16 hrs, Volume= 13,838 cf
Outflow = 4.71 cfs @ 12.16 hrs, Volume= 13,838 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs

Reach DP1PR: Softball



Summary for Pond 33B: CELL B

Inflow Area = 550 sf,100.00% Impervious, Inflow Depth > 5.33" for 2100 - 10 Yr event
Inflow = 0.08 cfs @ 12.13 hrs, Volume= 244 cf
Outflow = 0.04 cfs @ 12.23 hrs, Volume= 180 cf, Atten= 49%, Lag= 5.8 min
Primary = 0.04 cfs @ 12.23 hrs, Volume= 180 cf
Routed to Pond 33C : CELL C
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33C : CELL C

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 84.03' @ 12.23 hrs Surf.Area= 550 sf Storage= 110 cf

Plug-Flow detention time= 158.2 min calculated for 179 cf (73% of inflow)
Center-of-Mass det. time= 91.5 min (806.3 - 714.8)

Volume	Invert	Avail.Storage	Storage Description
#1	83.53'	440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,100 cf Overall x 40.0% Voids

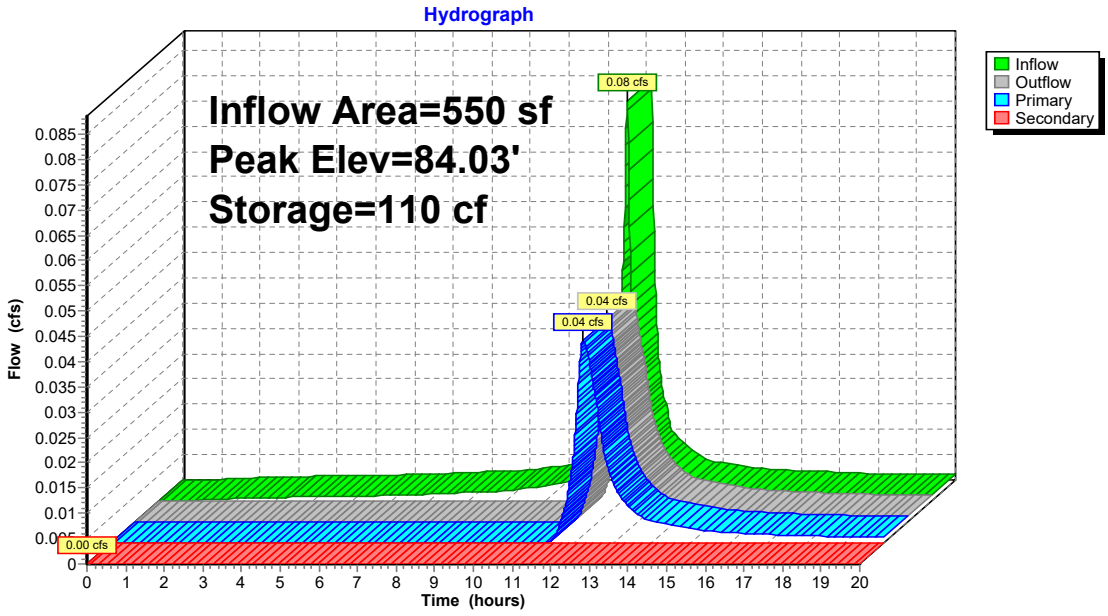
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
83.53	550	0	0
84.53	550	550	550
85.53	550	550	1,100

Device	Routing	Invert	Outlet Devices
#1	Primary	83.80'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	84.53'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.04 cfs @ 12.23 hrs HW=84.03' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.04 cfs @ 1.83 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=83.53' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33B: CELL B



Summary for Pond 33C: CELL C

Inflow Area = 1,100 sf,100.00% Impervious, Inflow Depth > 4.62" for 2100 - 10 Yr event
Inflow = 0.11 cfs @ 12.14 hrs, Volume= 424 cf
Outflow = 0.06 cfs @ 12.37 hrs, Volume= 357 cf, Atten= 51%, Lag= 14.3 min
Primary = 0.06 cfs @ 12.37 hrs, Volume= 357 cf
Routed to Pond 33D : CELL D
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33D : CELL D

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 83.75' @ 12.37 hrs Surf.Area= 550 sf Storage= 141 cf

Plug-Flow detention time= 108.7 min calculated for 357 cf (84% of inflow)
Center-of-Mass det. time= 61.2 min (814.8 - 753.6)

Volume	Invert	Avail.Storage	Storage Description
#1	83.11'	440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,100 cf Overall x 40.0% Voids

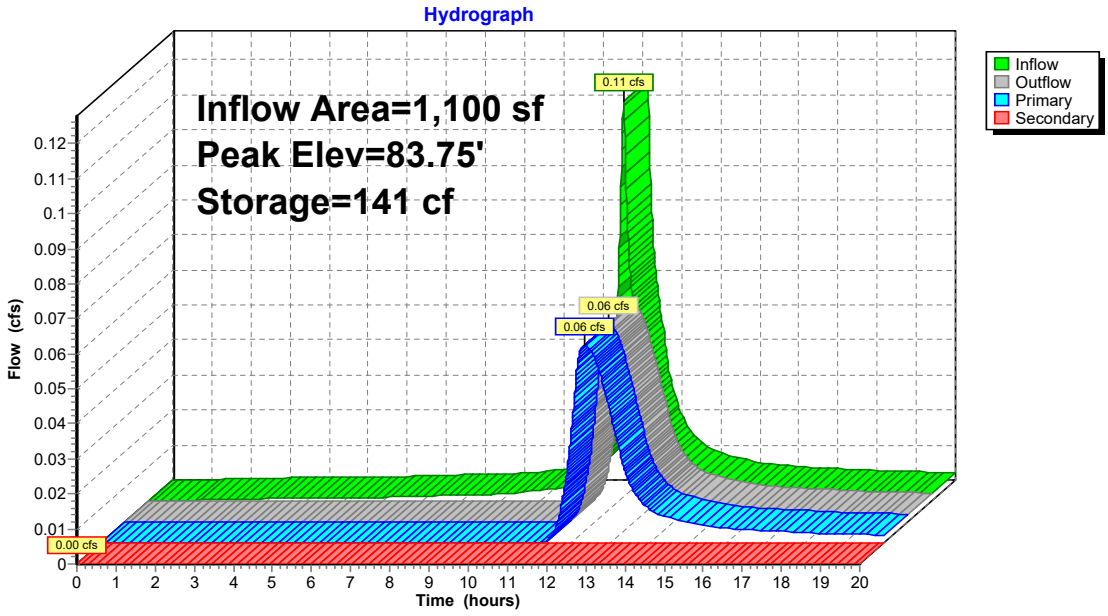
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
83.11	550	0	0
84.11	550	550	550
85.11	550	550	1,100

Device	Routing	Invert	Outlet Devices
#1	Primary	83.38'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	84.11'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.06 cfs @ 12.37 hrs HW=83.75' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.06 cfs @ 2.59 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=83.11' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33C: CELL C



Summary for Pond 33D: CELL D

[79] Warning: Submerged Pond 33C Primary device # 1 by 0.06'

Inflow Area = 1,650 sf,100.00% Impervious, Inflow Depth > 4.37" for 2100 - 10 Yr event
Inflow = 0.12 cfs @ 12.14 hrs, Volume= 601 cf
Outflow = 0.07 cfs @ 12.60 hrs, Volume= 532 cf, Atten= 48%, Lag= 27.6 min
Primary = 0.07 cfs @ 12.60 hrs, Volume= 532 cf
Routed to Pond 33E : CELL E
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33E : CELL E

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 83.44' @ 12.60 hrs Surf.Area= 550 sf Storage= 163 cf

Plug-Flow detention time= 87.0 min calculated for 532 cf (88% of inflow)
Center-of-Mass det. time= 50.2 min (824.4 - 774.2)

Volume	Invert	Avail.Storage	Storage Description
#1	82.70'	440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,100 cf Overall x 40.0% Voids

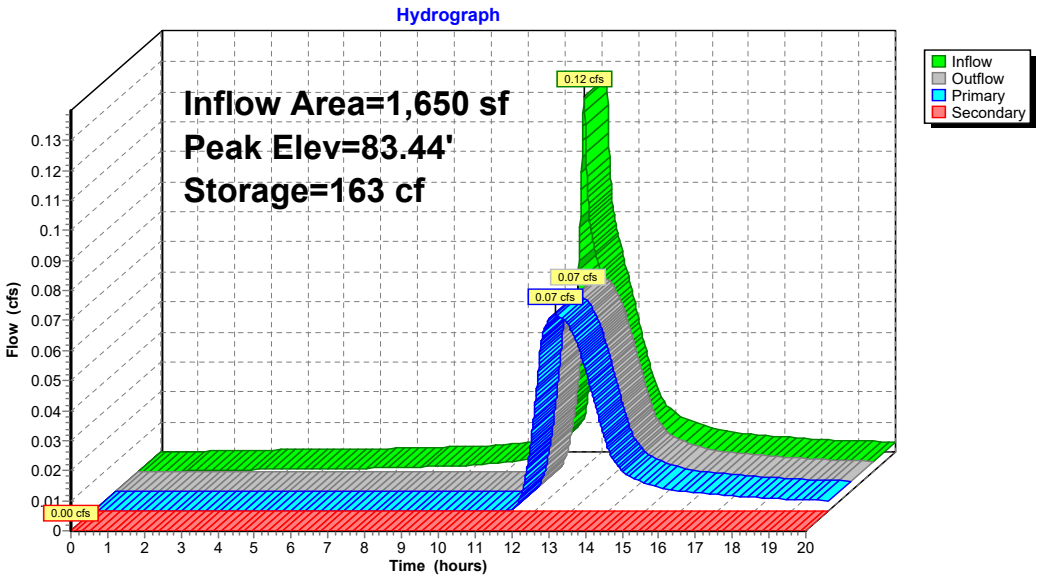
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
82.70	550	0	0
83.70	550	550	550
84.70	550	550	1,100

Device	Routing	Invert	Outlet Devices
#1	Primary	82.97'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	83.70'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.07 cfs @ 12.60 hrs HW=83.44' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.07 cfs @ 2.99 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=82.70' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33D: CELL D



Summary for Pond 33E: CELL E

[79] Warning: Submerged Pond 33D Primary device # 1 by 0.11'

Inflow Area = 2,200 sf,100.00% Impervious, Inflow Depth > 4.23" for 2100 - 10 Yr event
Inflow = 0.13 cfs @ 12.14 hrs, Volume= 776 cf
Outflow = 0.07 cfs @ 12.89 hrs, Volume= 705 cf, Atten= 45%, Lag= 45.0 min
Primary = 0.07 cfs @ 12.89 hrs, Volume= 705 cf
Routed to Pond 33F : CELL F
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33F : CELL F

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 83.08' @ 12.89 hrs Surf.Area= 550 sf Storage= 177 cf

Plug-Flow detention time= 74.6 min calculated for 704 cf (91% of inflow)
Center-of-Mass det. time= 44.8 min (834.7 - 789.9)

Volume	Invert	Avail.Storage	Storage Description
#1	82.28'	440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,100 cf Overall x 40.0% Voids

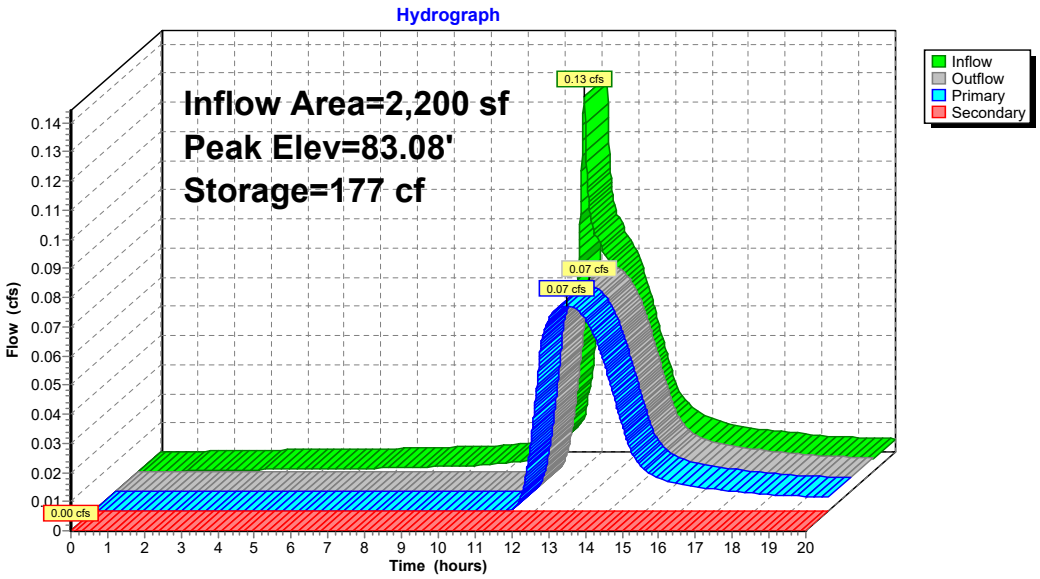
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
82.28	550	0	0
83.28	550	550	550
84.28	550	550	1,100

Device	Routing	Invert	Outlet Devices
#1	Primary	82.55'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	83.28'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.07 cfs @ 12.89 hrs HW=83.08' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.07 cfs @ 3.23 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=82.28' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33E: CELL E



Summary for Pond 33F: CELL F

[79] Warning: Submerged Pond 33E Primary device # 1 by 0.17'

Inflow Area = 2,750 sf,100.00% Impervious, Inflow Depth > 4.14" for 2100 - 10 Yr event
Inflow = 0.13 cfs @ 12.14 hrs, Volume= 949 cf
Outflow = 0.07 cfs @ 13.22 hrs, Volume= 876 cf, Atten= 43%, Lag= 64.7 min
Primary = 0.07 cfs @ 13.22 hrs, Volume= 876 cf
Routed to Pond 33G : CELL G
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33G : CELL G

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 82.72' @ 13.22 hrs Surf.Area= 550 sf Storage= 188 cf

Plug-Flow detention time= 66.8 min calculated for 876 cf (92% of inflow)
Center-of-Mass det. time= 41.9 min (845.8 - 803.8)

Volume	Invert	Avail.Storage	Storage Description
#1	81.87'	440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,100 cf Overall x 40.0% Voids

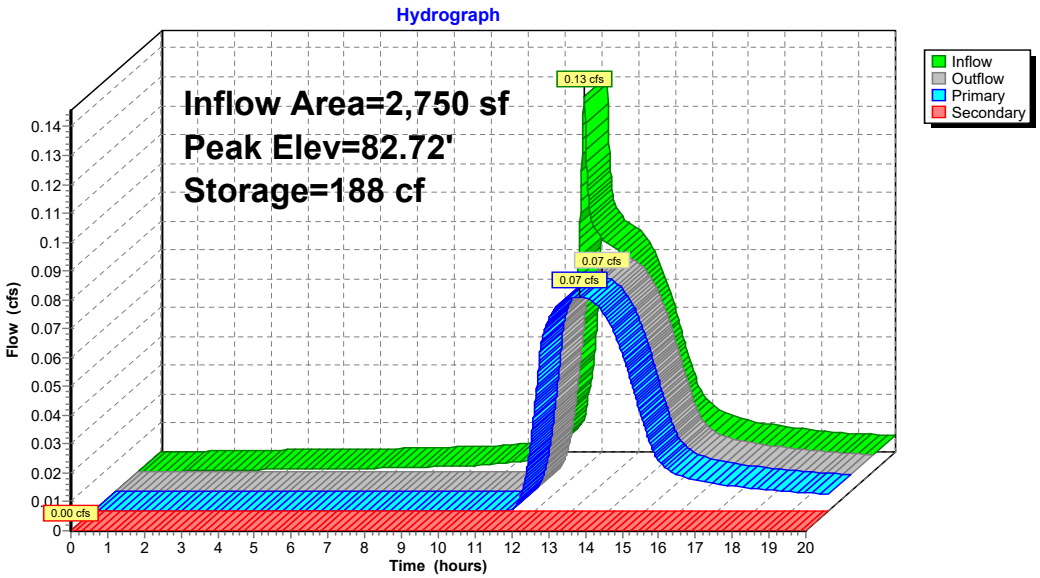
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
81.87	550	0	0
82.87	550	550	550
83.87	550	550	1,100

Device	Routing	Invert	Outlet Devices
#1	Primary	82.14'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	82.87'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.07 cfs @ 13.22 hrs HW=82.72' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.07 cfs @ 3.40 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=81.87' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond 33F: CELL F



Summary for Pond 33G: CELL G

Inflow Area = 3,850 sf,100.00% Impervious, Inflow Depth > 4.25" for 2100 - 10 Yr event
Inflow = 0.21 cfs @ 12.13 hrs, Volume= 1,365 cf
Outflow = 0.08 cfs @ 13.76 hrs, Volume= 1,214 cf, Atten= 63%, Lag= 97.7 min
Primary = 0.08 cfs @ 13.76 hrs, Volume= 1,214 cf
Routed to Pond 33H : CELL H
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33H : CELL H

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 81.94' @ 13.76 hrs Surf.Area= 1,100 sf Storage= 398 cf

Plug-Flow detention time= 106.5 min calculated for 1,213 cf (89% of inflow)
Center-of-Mass det. time= 73.0 min (871.9 - 798.9)

Volume	Invert	Avail.Storage	Storage Description
#1	81.04'	880 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 2,200 cf Overall x 40.0% Voids

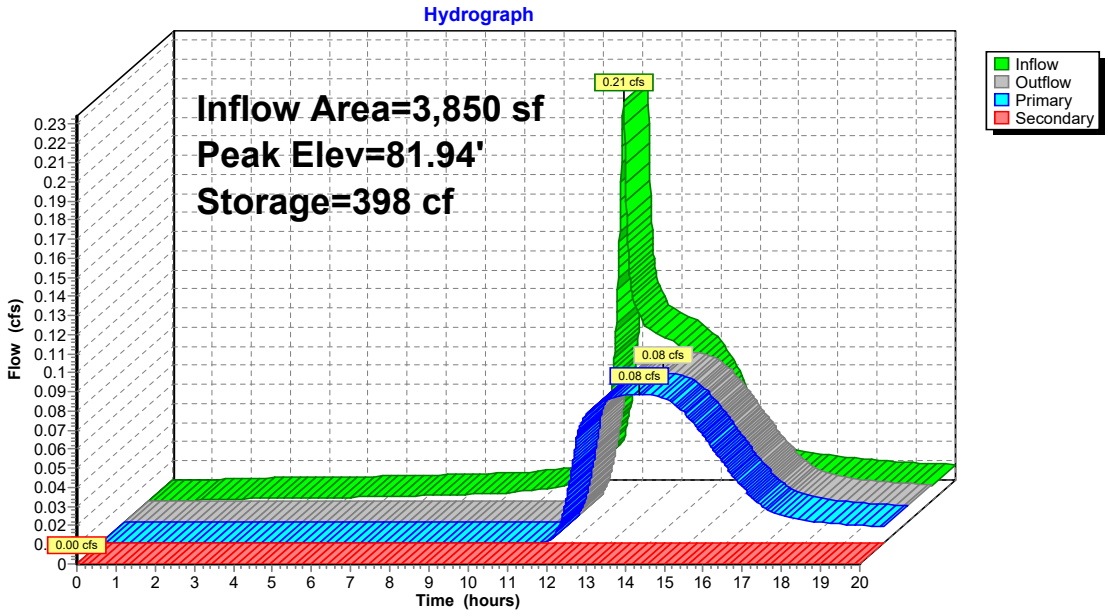
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
81.04	1,100	0	0
82.04	1,100	1,100	1,100
83.04	1,100	1,100	2,200

Device	Routing	Invert	Outlet Devices
#1	Primary	81.31'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	82.04'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.08 cfs @ 13.76 hrs HW=81.94' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.08 cfs @ 3.57 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=81.04' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33G: CELL G



Summary for Pond 33H: CELL H

Inflow Area = 7,563 sf, 98.04% Impervious, Inflow Depth > 4.47" for 2100 - 10 Yr event
Inflow = 0.57 cfs @ 12.13 hrs, Volume= 2,818 cf
Outflow = 0.57 cfs @ 12.14 hrs, Volume= 2,403 cf, Atten= 1%, Lag= 0.5 min
Primary = 0.07 cfs @ 12.14 hrs, Volume= 1,612 cf
Routed to Pond 33I : CELL I
Secondary = 0.50 cfs @ 12.14 hrs, Volume= 792 cf
Routed to Pond 33I : CELL I

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 81.15' @ 12.14 hrs Surf.Area= 1,631 sf Storage= 676 cf

Plug-Flow detention time= 124.8 min calculated for 2,402 cf (85% of inflow)
Center-of-Mass det. time= 80.8 min (864.0 - 783.2)

Volume	Invert	Avail.Storage	Storage Description
#1	80.11'	1,305 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 3,262 cf Overall x 40.0% Voids

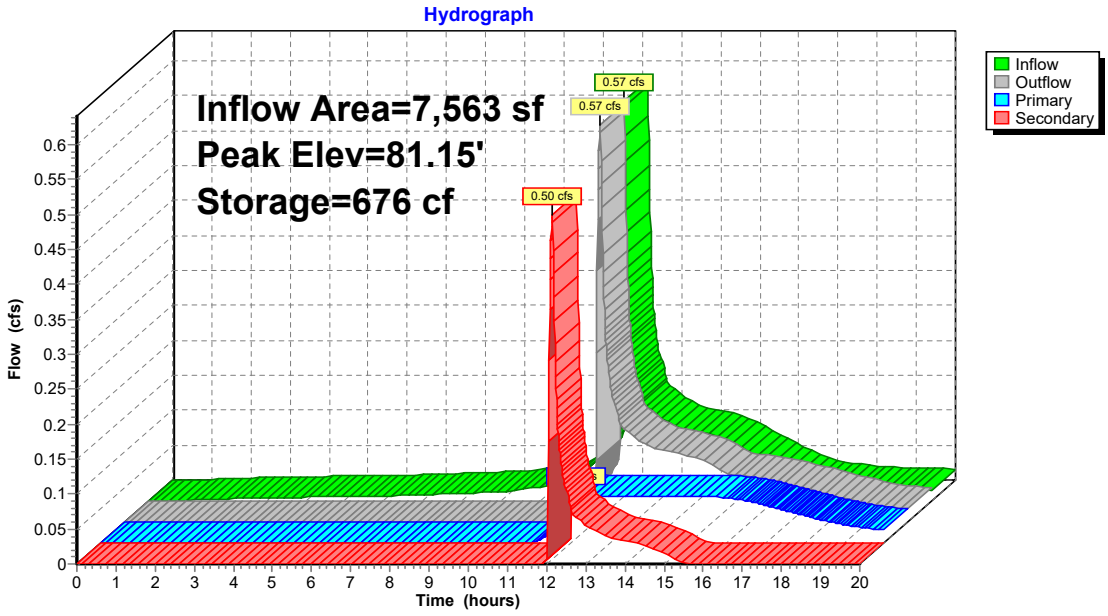
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
80.11	1,631	0	0
81.11	1,631	1,631	1,631
82.11	1,631	1,631	3,262

Device	Routing	Invert	Outlet Devices
#1	Primary	80.63'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	81.11'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.07 cfs @ 12.14 hrs HW=81.15' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.07 cfs @ 3.17 fps)

Secondary OutFlow Max=0.49 cfs @ 12.14 hrs HW=81.15' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.49 cfs @ 0.62 fps)

Pond 33H: CELL H



Summary for Pond 33I: CELL I

Inflow Area = 9,568 sf, 96.89% Impervious, Inflow Depth > 4.07" for 2100 - 10 Yr event
Inflow = 0.84 cfs @ 12.14 hrs, Volume= 3,249 cf
Outflow = 0.51 cfs @ 12.22 hrs, Volume= 2,855 cf, Atten= 40%, Lag= 5.2 min
Primary = 0.09 cfs @ 12.22 hrs, Volume= 2,206 cf
Routed to Pond 33J : CELL J
Secondary = 0.42 cfs @ 12.22 hrs, Volume= 649 cf
Routed to Pond 33J : CELL J

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 80.19' @ 12.22 hrs Surf.Area= 1,855 sf Storage= 765 cf

Plug-Flow detention time= 112.3 min calculated for 2,855 cf (88% of inflow)
Center-of-Mass det. time= 75.0 min (900.8 - 825.8)

Volume	Invert	Avail.Storage	Storage Description
#1	79.16'	1,484 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 3,710 cf Overall x 40.0% Voids

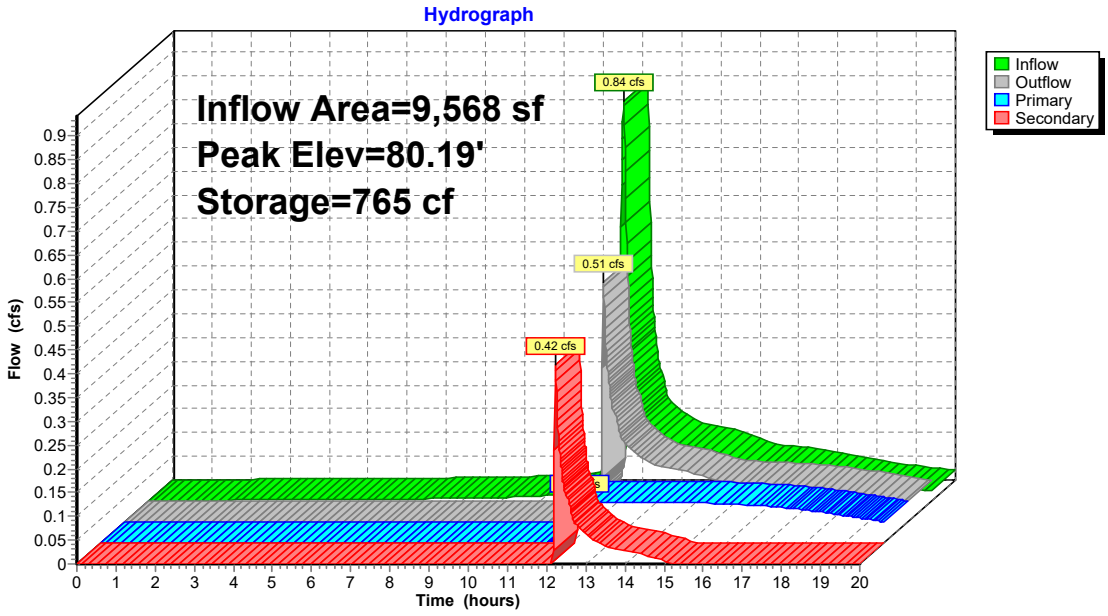
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
79.16	1,855	0	0
80.16	1,855	1,855	1,855
81.16	1,855	1,855	3,710

Device	Routing	Invert	Outlet Devices
#1	Primary	79.43'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	80.16'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.09 cfs @ 12.22 hrs HW=80.19' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.09 cfs @ 3.96 fps)

Secondary OutFlow Max=0.40 cfs @ 12.22 hrs HW=80.19' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.40 cfs @ 0.58 fps)

Pond 33I: CELL I



Summary for Pond 33J: CELL J

Inflow Area = 11,513 sf, 90.07% Impervious, Inflow Depth > 3.61" for 2100 - 10 Yr event
Inflow = 0.62 cfs @ 12.22 hrs, Volume= 3,465 cf
Outflow = 0.50 cfs @ 12.27 hrs, Volume= 3,143 cf, Atten= 19%, Lag= 3.3 min
Primary = 0.09 cfs @ 12.27 hrs, Volume= 2,369 cf
Routed to Pond 33K : CELL K
Secondary = 0.41 cfs @ 12.27 hrs, Volume= 775 cf
Routed to Pond 33K : CELL K

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 79.39' @ 12.27 hrs Surf.Area= 1,100 sf Storage= 453 cf

Plug-Flow detention time= 67.9 min calculated for 3,143 cf (91% of inflow)
Center-of-Mass det. time= 39.5 min (911.1 - 871.6)

Volume	Invert	Avail.Storage	Storage Description
#1	78.36'	880 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 2,200 cf Overall x 40.0% Voids

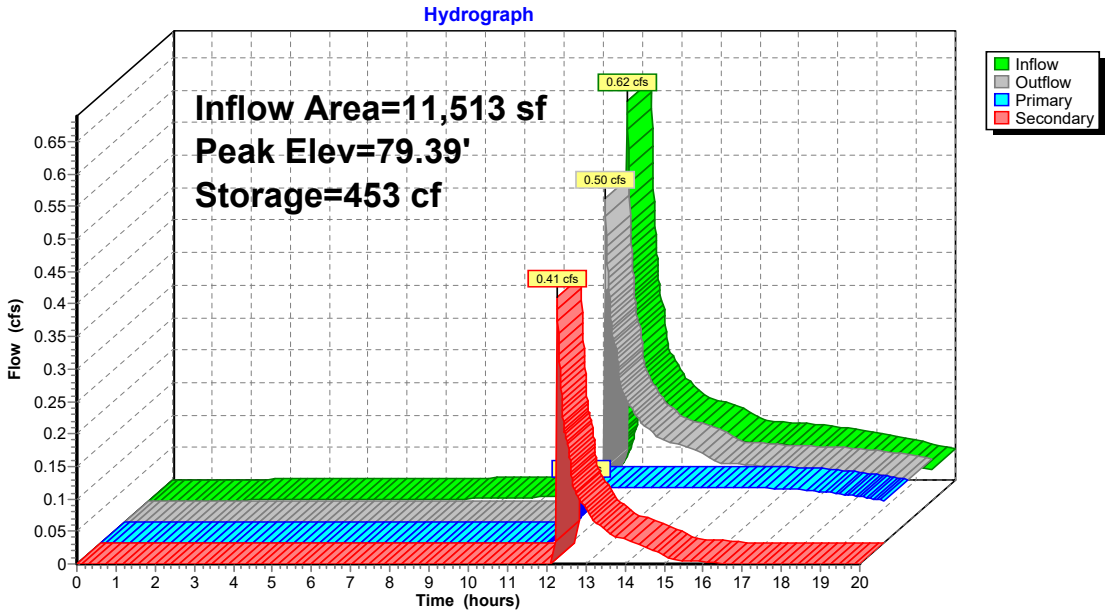
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
78.36	1,100	0	0
79.36	1,100	1,100	1,100
80.36	1,100	1,100	2,200

Device	Routing	Invert	Outlet Devices
#1	Primary	78.63'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	79.36'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.09 cfs @ 12.27 hrs HW=79.39' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.09 cfs @ 3.96 fps)

Secondary OutFlow Max=0.38 cfs @ 12.27 hrs HW=79.39' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.38 cfs @ 0.57 fps)

Pond 33J: CELL J



Summary for Pond 33K: CELL K

[79] Warning: Submerged Pond 33J Primary device # 1 by 0.38'

Inflow Area = 12,822 sf, 86.60% Impervious, Inflow Depth > 3.32" for 2100 - 10 Yr event
Inflow = 0.55 cfs @ 12.27 hrs, Volume= 3,552 cf
Outflow = 0.52 cfs @ 12.30 hrs, Volume= 3,283 cf, Atten= 5%, Lag= 1.7 min
Primary = 0.08 cfs @ 12.30 hrs, Volume= 2,329 cf
Routed to Pond 33L : OUTLET PIPE
Secondary = 0.44 cfs @ 12.30 hrs, Volume= 953 cf
Routed to Pond 33L : OUTLET PIPE

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 79.01' @ 12.30 hrs Surf.Area= 734 sf Storage= 303 cf

Plug-Flow detention time= 45.4 min calculated for 3,283 cf (92% of inflow)
Center-of-Mass det. time= 22.9 min (913.7 - 890.8)

Volume	Invert	Avail.Storage	Storage Description
#1	77.98'	587 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,468 cf Overall x 40.0% Voids

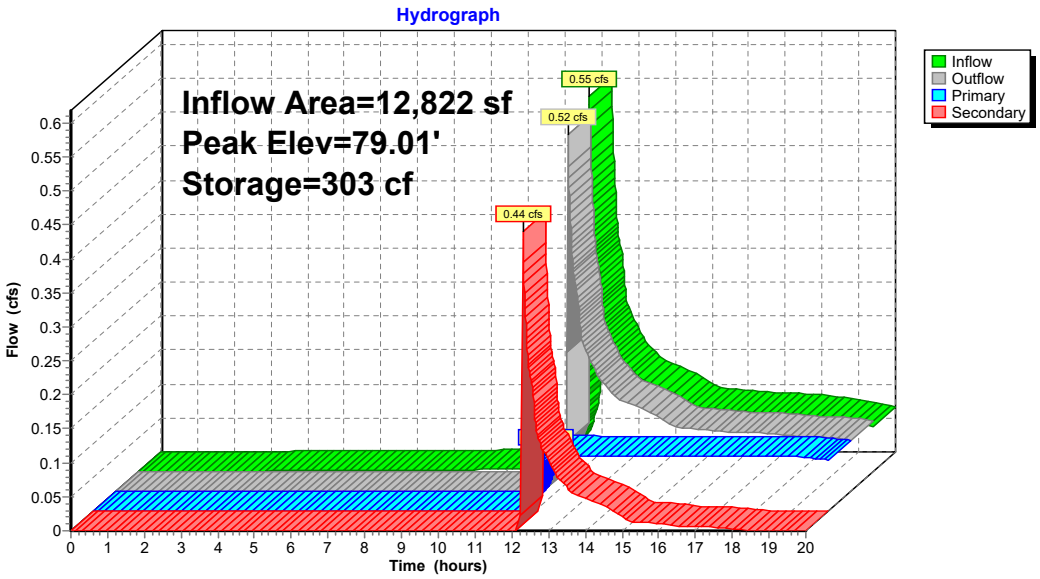
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
77.98	734	0	0
78.98	734	734	734
79.98	734	734	1,468

Device	Routing	Invert	Outlet Devices
#1	Primary	78.30'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	78.98'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.08 cfs @ 12.30 hrs HW=79.01' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.08 cfs @ 3.82 fps)

Secondary OutFlow Max=0.40 cfs @ 12.30 hrs HW=79.01' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.40 cfs @ 0.58 fps)

Pond 33K: CELL K



Summary for Pond 33L: OUTLET PIPE

[88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 12,822 sf, 86.60% Impervious, Inflow Depth > 3.07" for 2100 - 10 Yr event
Inflow = 0.52 cfs @ 12.30 hrs, Volume= 3,283 cf
Outflow = 0.54 cfs @ 12.30 hrs, Volume= 3,281 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.54 cfs @ 12.30 hrs, Volume= 3,281 cf
Routed to Reach DP-3PR : REGIONAL SWALE

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 76.37' @ 12.30 hrs Surf.Area= 30 sf Storage= 4 cf

Plug-Flow detention time= 0.3 min calculated for 3,281 cf (100% of inflow)
Center-of-Mass det. time= 0.1 min (913.8 - 913.7)

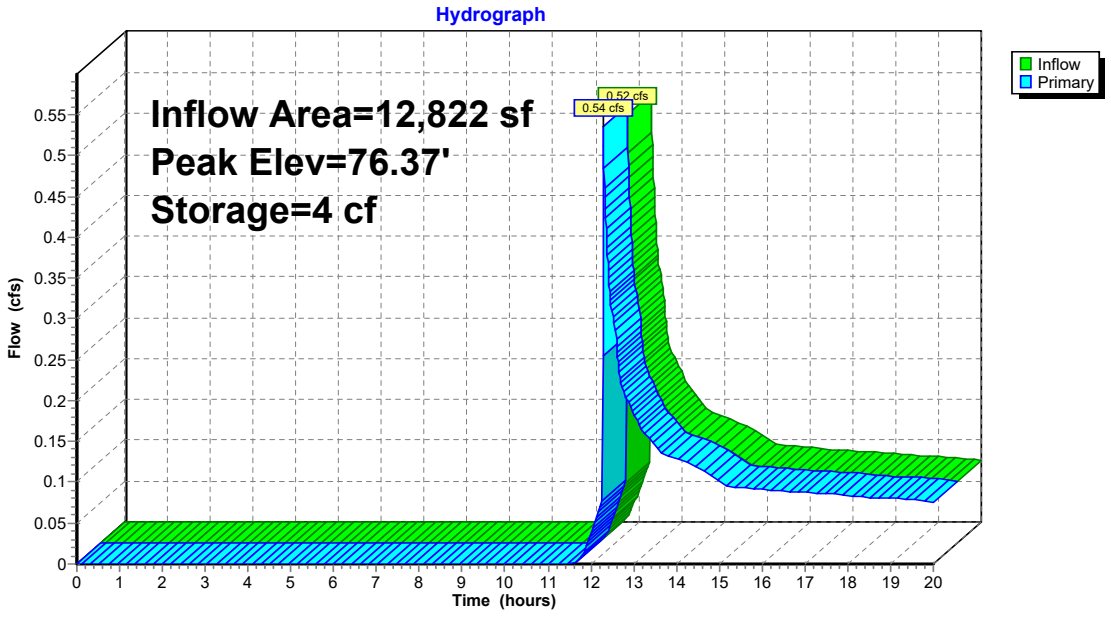
Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	37 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 93 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
76.00	30	0	0
79.10	30	93	93

Device	Routing	Invert	Outlet Devices
#1	Primary	76.00'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.50 cfs @ 12.30 hrs HW=76.35' (Free Discharge)
1=Orifice/Grate (Orifice Controls 0.50 cfs @ 2.02 fps)

Pond 33L: OUTLET PIPE



Summary for Pond BB-2A: BULLPEN

Inflow Area = 1,798 sf,100.00% Impervious, Inflow Depth > 5.33" for 2100 - 10 Yr event
Inflow = 0.26 cfs @ 12.13 hrs, Volume= 798 cf
Outflow = 0.10 cfs @ 12.26 hrs, Volume= 767 cf, Atten= 60%, Lag= 8.1 min
Primary = 0.10 cfs @ 12.26 hrs, Volume= 767 cf
Routed to Reach DP-3PR : REGIONAL SWALE

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 79.32' @ 12.26 hrs Surf.Area= 1,798 sf Storage= 230 cf

Plug-Flow detention time= 64.3 min calculated for 767 cf (96% of inflow)
Center-of-Mass det. time= 47.5 min (762.3 - 714.8)

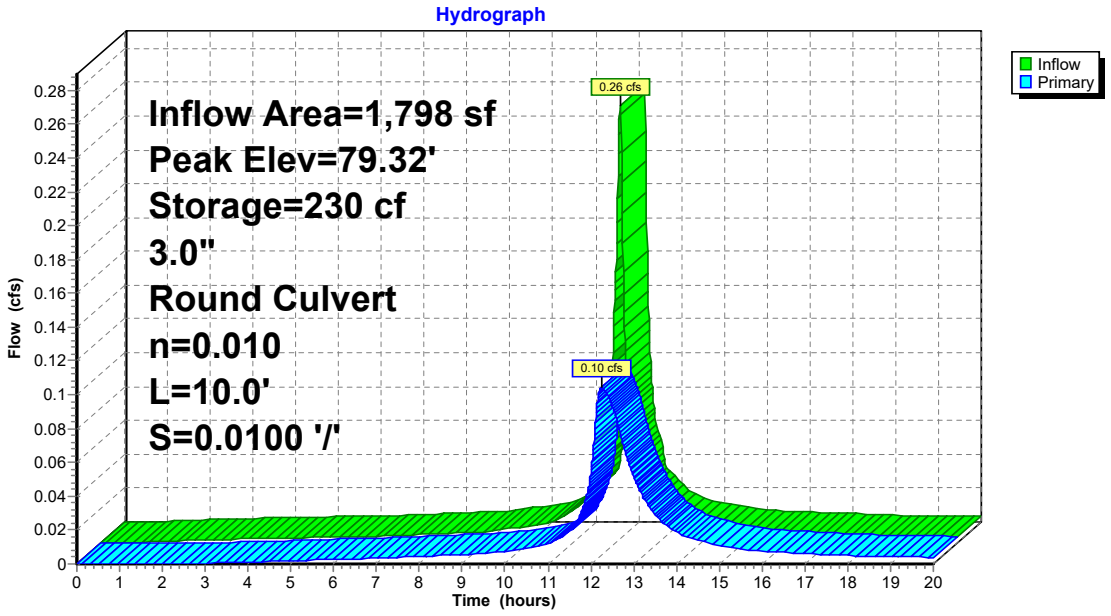
Volume	Invert	Avail.Storage	Storage Description
#1	79.00'	719 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,798 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
79.00	1,798	0	0
80.00	1,798	1,798	1,798

Device	Routing	Invert	Outlet Devices
#1	Primary	79.00'	**3.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 79.00' / 78.90' S= 0.0100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.05 sf

Primary OutFlow Max=0.10 cfs @ 12.26 hrs HW=79.32' (Free Discharge)
1=Culvert (Barrel Controls 0.10 cfs @ 2.15 fps)

Pond BB-2A: BULLPEN



Summary for Pond BB-4P: POROUS WALK-2

Inflow Area = 18,645 sf, 8.43% Impervious, Inflow Depth > 6.42" for 2100 - 10 Yr event
Inflow = 3.73 cfs @ 12.15 hrs, Volume= 9,979 cf
Outflow = 3.72 cfs @ 12.16 hrs, Volume= 9,346 cf, Atten= 0%, Lag= 0.2 min
Primary = 0.07 cfs @ 12.16 hrs, Volume= 115 cf
Routed to Reach DP-3PR : REGIONAL SWALE
Secondary = 3.65 cfs @ 12.16 hrs, Volume= 9,231 cf
Routed to Pond BB-P1 : Plaza

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 88.13' @ 12.16 hrs Surf.Area= 1,571 sf Storage= 708 cf

Plug-Flow detention time= 33.4 min calculated for 9,341 cf (94% of inflow)
Center-of-Mass det. time= 11.3 min (821.4 - 810.2)

Volume	Invert	Avail.Storage	Storage Description
#1	87.00'	1,257 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 3,142 cf Overall x 40.0% Voids

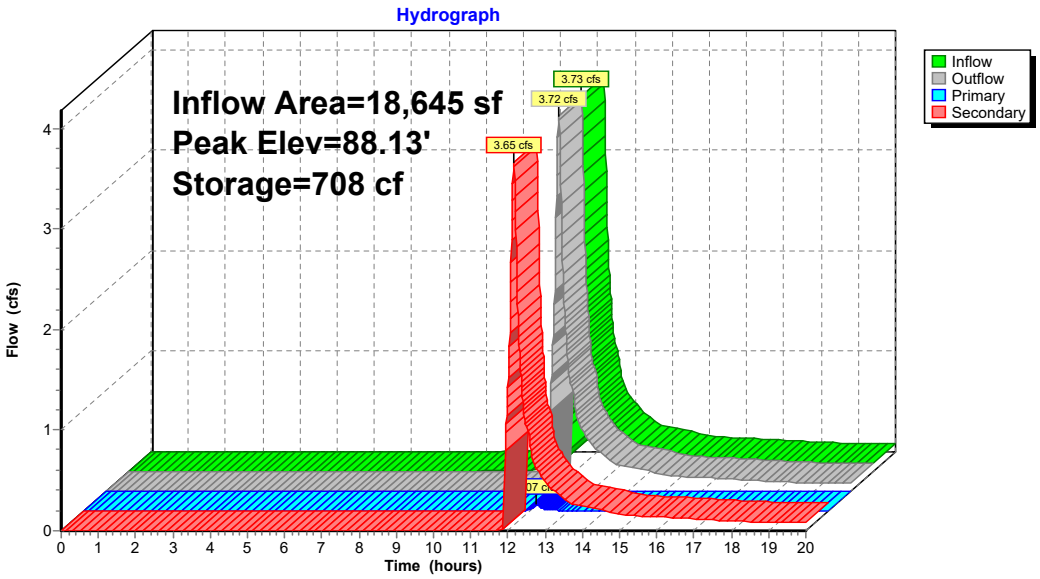
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
87.00	1,571	0	0
88.00	1,571	1,571	1,571
89.00	1,571	1,571	3,142

Device	Routing	Invert	Outlet Devices
#1	Primary	88.00'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 88.00' / 83.00' S= 0.5000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Secondary	88.00'	**30.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.07 cfs @ 12.16 hrs HW=88.13' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.07 cfs @ 1.21 fps)

Secondary OutFlow Max=3.64 cfs @ 12.16 hrs HW=88.13' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 3.64 cfs @ 0.96 fps)

Pond BB-4P: POROUS WALK-2



Summary for Pond BB-5P: POROUS WALK 1

Inflow Area = 45,346 sf, 8.87% Impervious, Inflow Depth > 2.04" for 2100 - 10 Yr event
Inflow = 2.64 cfs @ 12.16 hrs, Volume= 7,704 cf
Outflow = 2.64 cfs @ 12.16 hrs, Volume= 6,896 cf, Atten= 0%, Lag= 0.3 min
Primary = 0.04 cfs @ 12.16 hrs, Volume= 63 cf
Routed to Reach DP-3PR : REGIONAL SWALE
Secondary = 2.60 cfs @ 12.16 hrs, Volume= 6,833 cf
Routed to Pond BB-4P : POROUS WALK-2

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 91.10' @ 12.16 hrs Surf.Area= 2,298 sf Storage= 886 cf

Plug-Flow detention time= 59.9 min calculated for 6,896 cf (90% of inflow)
Center-of-Mass det. time= 24.6 min (817.9 - 793.3)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	1,609 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 4,596 cf Overall x 35.0% Voids

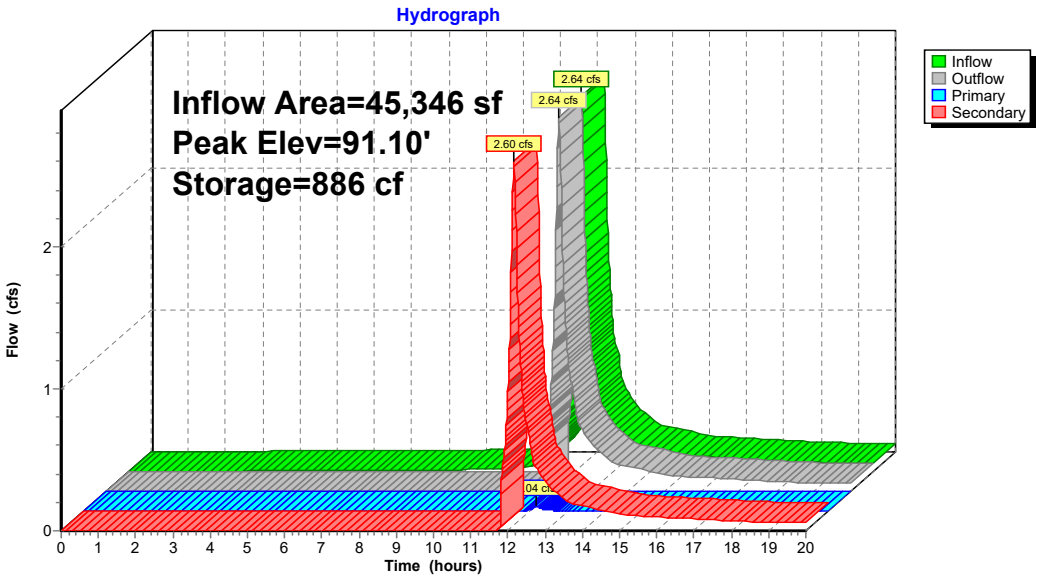
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.00	2,298	0	0
91.00	2,298	2,298	2,298
92.00	2,298	2,298	4,596

Device	Routing	Invert	Outlet Devices
#1	Primary	91.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	91.00'	**30.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.04 cfs @ 12.16 hrs HW=91.10' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.04 cfs @ 1.08 fps)

Secondary OutFlow Max=2.59 cfs @ 12.16 hrs HW=91.10' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 2.59 cfs @ 0.86 fps)

Pond BB-5P: POROUS WALK 1



Summary for Pond BB-P1: Plaza

Inflow Area = 13,728 sf, 46.55% Impervious, Inflow Depth > 11.47" for 2100 - 10 Yr event
Inflow = 4.92 cfs @ 12.15 hrs, Volume= 13,121 cf
Outflow = 2.01 cfs @ 12.34 hrs, Volume= 10,164 cf, Atten= 59%, Lag= 11.4 min
Primary = 2.01 cfs @ 12.34 hrs, Volume= 10,164 cf
Routed to Reach DP-3PR : REGIONAL SWALE

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 82.79' @ 12.34 hrs Surf.Area= 6,390 sf Storage= 4,572 cf

Plug-Flow detention time= 113.2 min calculated for 10,164 cf (77% of inflow)
Center-of-Mass det. time= 51.5 min (849.6 - 798.1)

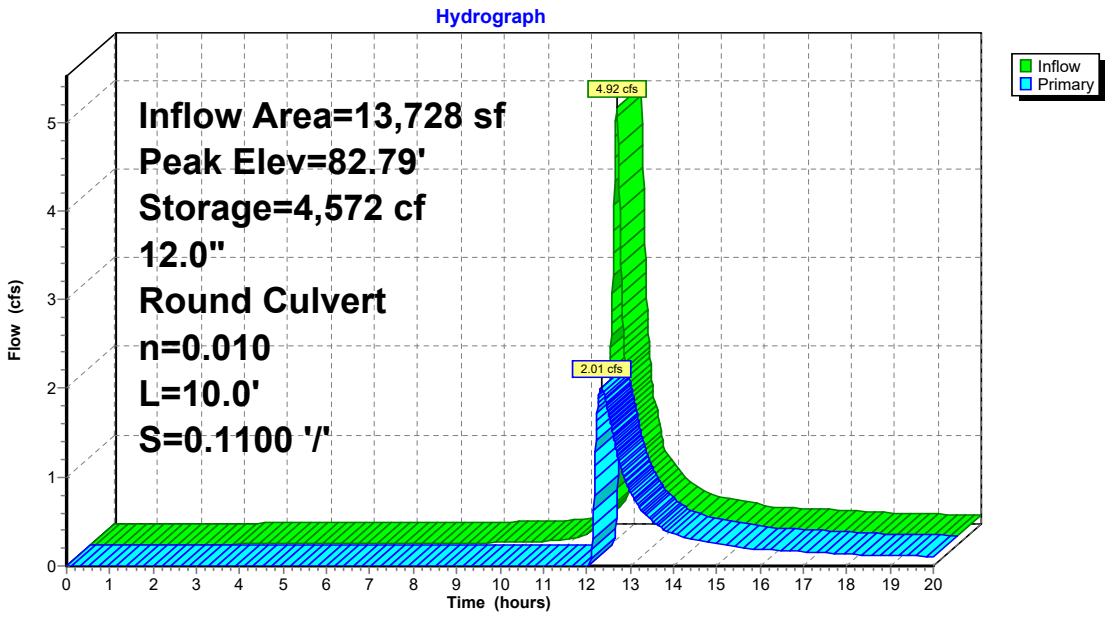
Volume	Invert	Avail.Storage	Storage Description
#1	81.00'	12,780 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 31,950 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
81.00	6,390	0	0
86.00	6,390	31,950	31,950

Device	Routing	Invert	Outlet Devices
#1	Primary	82.00'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 82.00' / 80.90' S= 0.1100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.01 cfs @ 12.34 hrs HW=82.79' (Free Discharge)
1=Culvert (Inlet Controls 2.01 cfs @ 3.02 fps)

Pond BB-P1: Plaza



Summary for Pond BB-P2: INFILT BASIN

Inflow Area = 155,772 sf,100.00% Impervious, Inflow Depth > 5.33" for 2100 - 10 Yr event
Inflow = 22.40 cfs @ 12.13 hrs, Volume= 69,166 cf
Outflow = 0.99 cfs @ 13.87 hrs, Volume= 27,578 cf, Atten= 96%, Lag= 104.8 min
Primary = 0.39 cfs @ 13.87 hrs, Volume= 16,121 cf
Routed to Reach DP-3PR : REGIONAL SWALE
Secondary = 0.60 cfs @ 13.87 hrs, Volume= 11,457 cf
Routed to Reach DP-3PR : REGIONAL SWALE

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 77.86' @ 13.87 hrs Surf.Area= 120,809 sf Storage= 48,042 cf

Plug-Flow detention time= 300.3 min calculated for 27,565 cf (40% of inflow)
Center-of-Mass det. time= 162.1 min (876.9 - 714.8)

Volume	Invert	Avail.Storage	Storage Description
#1	74.67'	124,126 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 354,645 cf Overall x 35.0% Voids

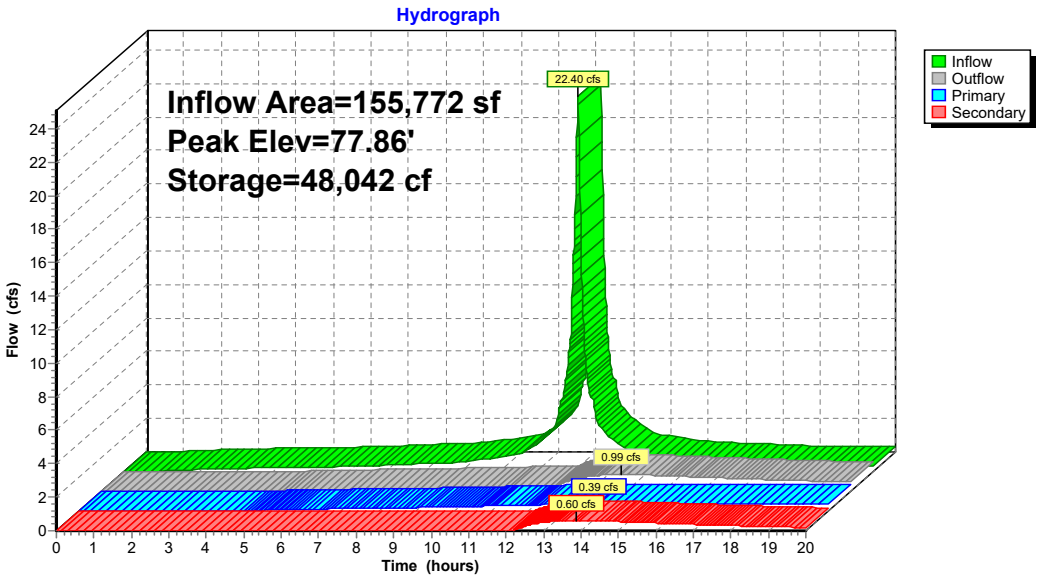
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
74.67	14,517	0	0
77.00	14,517	33,825	33,825
77.01	120,809	677	34,501
79.66	120,809	320,144	354,645

Device	Routing	Invert	Outlet Devices
#1	Secondary	77.50'	**24.0" Round Culvert** L= 353.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 77.50' / 76.50' S= 0.0028 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 3.14 sf
#2	Primary	75.00'	**3.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 75.00' / 74.90' S= 0.0100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.05 sf

Primary OutFlow Max=0.39 cfs @ 13.87 hrs HW=77.86' (Free Discharge)
└**2=Culvert** (Inlet Controls 0.39 cfs @ 7.96 fps)

Secondary OutFlow Max=0.60 cfs @ 13.87 hrs HW=77.86' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.60 cfs @ 2.36 fps)

Pond BB-P2: INFILT BASIN



Time span=0.00-20.00 hrs, dt=0.01 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentPR-10: PR-10 TO SOFTBALL TD Runoff Area=61,785 sf 5.95% Impervious Runoff Depth>5.95"
Flow Length=277' Tc=9.3 min CN=61/98 Runoff=10.40 cfs 30,614 cf

SubcatchmentPR-11: PR-11 POROUS WALK Runoff Area=2,299 sf 100.00% Impervious Runoff Depth>10.52"
Tc=6.0 min CN=0/98 Runoff=0.64 cfs 2,016 cf

SubcatchmentPR-12: PR-12 TO POROUS WALK Runoff Area=43,047 sf 4.00% Impervious Runoff Depth>5.85"
Flow Length=205' Tc=8.4 min CN=61/98 Runoff=7.45 cfs 20,997 cf

SubcatchmentPR-20: PR-20 CROSS COUNTRY Runoff Area=391,772 sf 0.00% Impervious Runoff Depth>5.62"
Tc=25.5 min CN=61/0 Runoff=41.60 cfs 183,564 cf

SubcatchmentPR-30: TO POROUS WALK 2 Runoff Area=18,645 sf 8.43% Impervious Runoff Depth>6.07"
Tc=6.0 min CN=61/98 Runoff=3.61 cfs 9,436 cf

SubcatchmentPR-31: Plaza Runoff Area=13,728 sf 46.55% Impervious Runoff Depth>7.92"
Tc=6.0 min CN=61/98 Runoff=3.15 cfs 9,066 cf

SubcatchmentPR-32: PR-32 TO SOFTBALL Runoff Area=25,435 sf 3.14% Impervious Runoff Depth>5.82"
Tc=6.0 min CN=61/98 Runoff=4.80 cfs 12,328 cf

SubcatchmentPR-34: SLOPE TO REGIONAL SWALE Runoff Area=21,534 sf 0.00% Impervious Runoff Depth>5.66"
Flow Length=142' Tc=7.1 min CN=61/0 Runoff=3.84 cfs 10,160 cf

SubcatchmentPR-35: FIELD AND ROOF Runoff Area=155,772 sf 100.00% Impervious Runoff Depth>10.52"
Tc=6.0 min CN=0/98 Runoff=43.43 cfs 136,564 cf

SubcatchmentPR-36: GRASS/LANDSCAPING Runoff Area=29,400 sf 0.00% Impervious Runoff Depth>5.66"
Flow Length=576' Tc=10.1 min CN=61/0 Runoff=4.68 cfs 13,856 cf

SubcatchmentPR-37: PR-37 TOWARD SWALE Runoff Area=36,798 sf 1.01% Impervious Runoff Depth>5.68"
Flow Length=1,093' Tc=20.2 min CN=61/98 Runoff=4.39 cfs 17,426 cf

SubcatchmentPR-38: BULLPEN Runoff Area=1,798 sf 100.00% Impervious Runoff Depth>10.52"
Tc=6.0 min CN=0/98 Runoff=0.50 cfs 1,576 cf

SubcatchmentPR-40: PR-40 TOWARD TENNIS Runoff Area=7,153 sf 37.96% Impervious Runoff Depth>7.51"
Tc=6.0 min CN=61/98 Runoff=1.58 cfs 4,475 cf

SubcatchmentPR-50: PR-50 REGIOINAL SWALE Runoff Area=62,111 sf 0.00% Impervious Runoff Depth>5.66"
Tc=6.0 min CN=61/0 Runoff=11.55 cfs 29,316 cf

SubcatchmentPR33B: PR-33B Runoff Area=550 sf 100.00% Impervious Runoff Depth>10.52"
Tc=6.0 min CN=0/98 Runoff=0.15 cfs 482 cf

SubcatchmentPR33C: PR-33C Runoff Area=550 sf 100.00% Impervious Runoff Depth>10.52"
Tc=6.0 min CN=0/98 Runoff=0.15 cfs 482 cf

SubcatchmentPR33D: PR-33E Runoff Area=550 sf 100.00% Impervious Runoff Depth>10.52"
Tc=6.0 min CN=0/98 Runoff=0.15 cfs 482 cf

SubcatchmentPR33E: PR-33E Runoff Area=550 sf 100.00% Impervious Runoff Depth>10.52"
Tc=6.0 min CN=0/98 Runoff=0.15 cfs 482 cf

SubcatchmentPR33F: PR-33F Runoff Area=550 sf 100.00% Impervious Runoff Depth>10.52"
Tc=6.0 min CN=0/98 Runoff=0.15 cfs 482 cf

SubcatchmentPR33G: PR-33F Runoff Area=1,100 sf 100.00% Impervious Runoff Depth>10.52"
Tc=6.0 min CN=0/98 Runoff=0.31 cfs 964 cf

SubcatchmentPR33H: PR-33H Runoff Area=3,713 sf 96.01% Impervious Runoff Depth>10.33"
Tc=6.0 min CN=61/98 Runoff=1.02 cfs 3,195 cf

SubcatchmentPR33I: PR-33I Runoff Area=2,005 sf 92.52% Impervious Runoff Depth>10.16"
Tc=6.0 min CN=61/98 Runoff=0.55 cfs 1,697 cf

SubcatchmentPR33J: PR-33J Runoff Area=1,945 sf 56.56% Impervious Runoff Depth>8.41"
Tc=6.0 min CN=61/98 Runoff=0.46 cfs 1,363 cf

SubcatchmentPR33K: PR-33F Runoff Area=1,309 sf 56.07% Impervious Runoff Depth>8.39"
Tc=6.0 min CN=61/98 Runoff=0.31 cfs 915 cf

Reach DP-3PR: REGIONAL SWALE Inflow=24.43 cfs 176,190 cf
Outflow=24.43 cfs 176,190 cf

Reach DP1PR: Softball Inflow=14.83 cfs 42,942 cf
Outflow=14.83 cfs 42,942 cf

Pond 33B: CELL B Peak Elev=84.26' Storage=161 cf Inflow=0.15 cfs 482 cf
Primary=0.06 cfs 415 cf Secondary=0.00 cfs 0 cf Outflow=0.06 cfs 415 cf

Pond 33C: CELL C Peak Elev=84.11' Storage=221 cf Inflow=0.21 cfs 897 cf
Primary=0.08 cfs 807 cf Secondary=0.05 cfs 20 cf Outflow=0.13 cfs 827 cf

Pond 33D: CELL D Peak Elev=83.71' Storage=223 cf Inflow=0.23 cfs 1,309 cf
Primary=0.09 cfs 1,118 cf Secondary=0.13 cfs 118 cf Outflow=0.21 cfs 1,236 cf

Pond 33E: CELL E Peak Elev=83.30' Storage=225 cf Inflow=0.33 cfs 1,718 cf
Primary=0.09 cfs 1,388 cf Secondary=0.24 cfs 254 cf Outflow=0.33 cfs 1,642 cf

Pond 33F: CELL F Peak Elev=82.90' Storage=226 cf Inflow=0.45 cfs 2,125 cf
Primary=0.09 cfs 1,629 cf Secondary=0.36 cfs 418 cf Outflow=0.44 cfs 2,047 cf

Pond 33G: CELL G Peak Elev=82.08' Storage=458 cf Inflow=0.68 cfs 3,011 cf
Primary=0.09 cfs 2,046 cf Secondary=0.58 cfs 800 cf Outflow=0.67 cfs 2,846 cf

Pond 33H: CELL H Peak Elev=81.19' Storage=702 cf Inflow=1.62 cfs 6,041 cf
Primary=0.07 cfs 2,320 cf Secondary=1.54 cfs 3,220 cf Outflow=1.61 cfs 5,539 cf

Pond 33I: CELL I Peak Elev=80.25' Storage=810 cf Inflow=2.13 cfs 7,236 cf
Primary=0.09 cfs 2,846 cf Secondary=2.03 cfs 3,792 cf Outflow=2.12 cfs 6,639 cf

Pond 33J: CELL J Peak Elev=79.46' Storage=486 cf Inflow=2.56 cfs 8,002 cf
Primary=0.09 cfs 2,879 cf Secondary=2.46 cfs 4,693 cf Outflow=2.56 cfs 7,572 cf

Pond 33K: CELL K Peak Elev=79.09' Storage=326 cf Inflow=2.85 cfs 8,487 cf
Primary=0.09 cfs 2,758 cf Secondary=2.76 cfs 5,435 cf Outflow=2.85 cfs 8,193 cf

Pond 33L: OUTLET PIPE Peak Elev=77.07' Storage=13 cf Inflow=2.85 cfs 8,193 cf
Outflow=2.85 cfs 8,191 cf

Pond BB-2A: BULLPEN Peak Elev=79.61' Storage=441 cf Inflow=0.50 cfs 1,576 cf
3.0" Round Culvert n=0.010 L=10.0' S=0.0100 '/' Outflow=0.16 cfs 1,533 cf

Pond BB-4P: POROUS WALK-2 Peak Elev=88.26' Storage=795 cf Inflow=11.32 cfs 31,369 cf
Primary=0.29 cfs 502 cf Secondary=11.02 cfs 30,227 cf Outflow=11.31 cfs 30,730 cf

Pond BB-5P: POROUS WALK 1 Peak Elev=91.21' Storage=975 cf Inflow=8.04 cfs 23,012 cf
Primary=0.15 cfs 265 cf Secondary=7.88 cfs 21,933 cf Outflow=8.03 cfs 22,198 cf

Pond BB-P1: Plaza Peak Elev=85.33' Storage=11,068 cf Inflow=14.06 cfs 39,293 cf
12.0" Round Culvert n=0.010 L=10.0' S=0.1100 '/' Outflow=6.36 cfs 36,107 cf

Pond BB-P2: INFILT BASIN Peak Elev=78.66' Storage=81,840 cf Inflow=43.43 cfs 136,564 cf
Primary=0.44 cfs 20,480 cf Secondary=5.67 cfs 67,670 cf Outflow=6.11 cfs 88,150 cf

Total Runoff Area = 884,099 sf Runoff Volume = 491,939 cf Average Runoff Depth = 6.68"
78.71% Pervious = 695,882 sf 21.29% Impervious = 188,217 sf

Summary for Subcatchment PR-10: PR-10 TO SOFTBALL TD

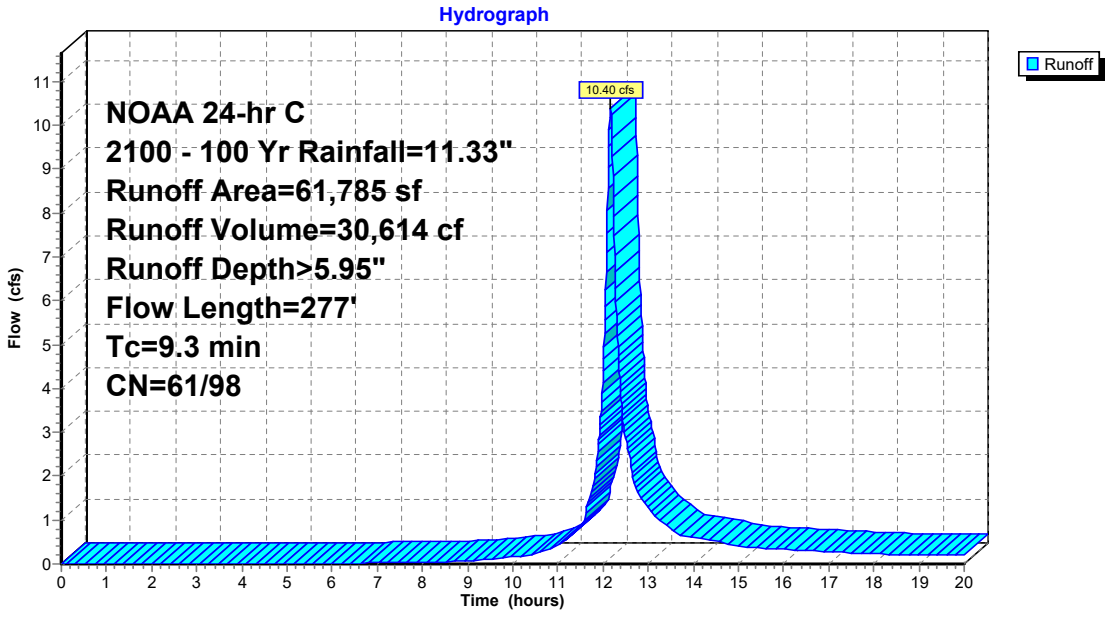
Runoff = 10.40 cfs @ 12.17 hrs, Volume= 30,614 cf, Depth> 5.95"
Routed to Reach DP1PR : Softball

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 100 Yr Rainfall=11.33"

Area (sf)	CN	Description
58,109	61	>75% Grass cover, Good, HSG B
3,676	98	Paved roads w/curbs & sewers, HSG B
61,785	63	Weighted Average
58,109	61	94.05% Pervious Area
3,676	98	5.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0150	0.13		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.34"
3.1	227	0.0300	1.21		**Shallow Concentrated Flow, Shallow Concentrated** Short Grass Pasture Kv= 7.0 fps
9.3	277	Total			

Subcatchment PR-10: PR-10 TO SOFTBALL TD



Summary for Subcatchment PR-11: PR-11 POROUS WALK

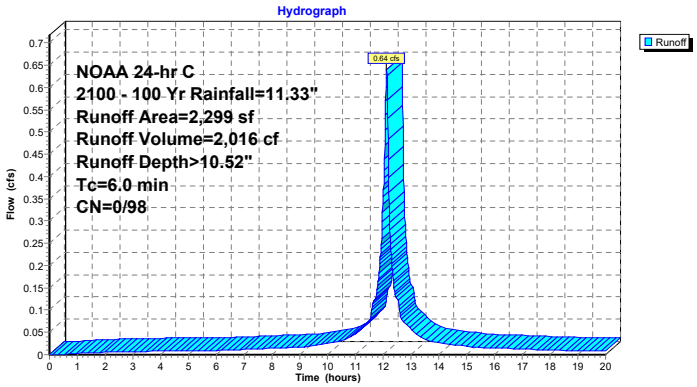
Runoff = 0.64 cfs @ 12.13 hrs, Volume= 2,016 cf, Depth>10.52"
Routed to Pond BB-5P : POROUS WALK 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 100 Yr Rainfall=11.33"

Area (sf)	CN	Description
2,299	98	Paved roads w/curbs & sewers, HSG B
2,299	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Surface**

Subcatchment PR-11: PR-11 POROUS WALK



Summary for Subcatchment PR-12: PR-12 TO POROUS WALK

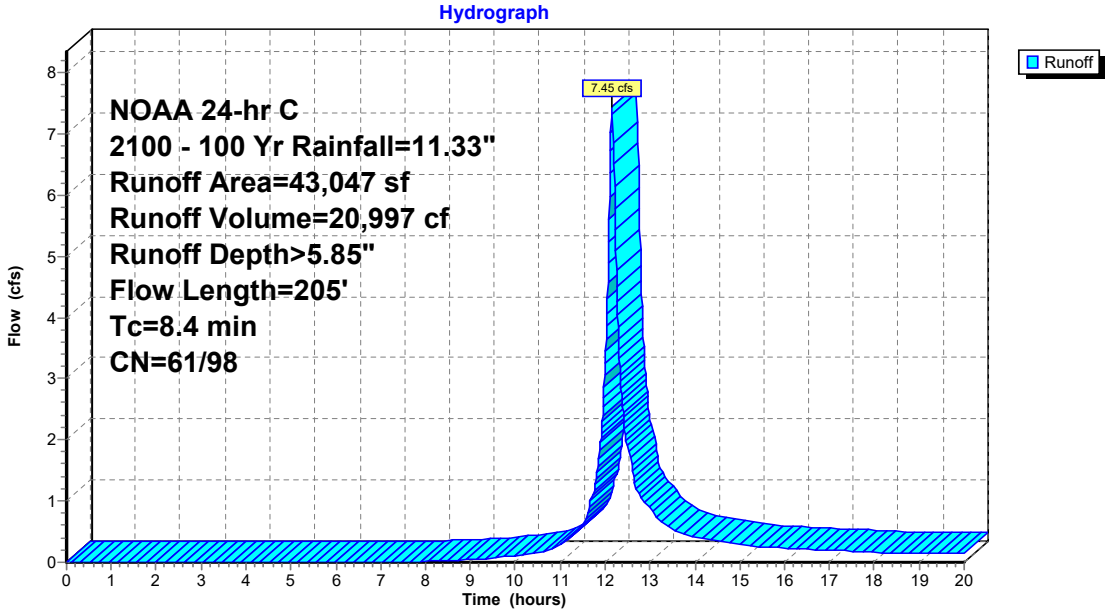
Runoff = 7.45 cfs @ 12.16 hrs, Volume= 20,997 cf, Depth> 5.85"
Routed to Pond BB-5P : POROUS WALK 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 100 Yr Rainfall=11.33"

Area (sf)	CN	Description
41,325	61	>75% Grass cover, Good, HSG B
1,722	98	Paved roads w/curbs & sewers, HSG B
43,047	62	Weighted Average
41,325	61	96.00% Pervious Area
1,722	98	4.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0150	0.13		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.34"
2.2	155	0.0290	1.19		**Shallow Concentrated Flow, Shallow Conc** Short Grass Pasture Kv= 7.0 fps
8.4	205	Total			

Subcatchment PR-12: PR-12 TO POROUS WALK



Summary for Subcatchment PR-20: PR-20 CROSS COUNTRY

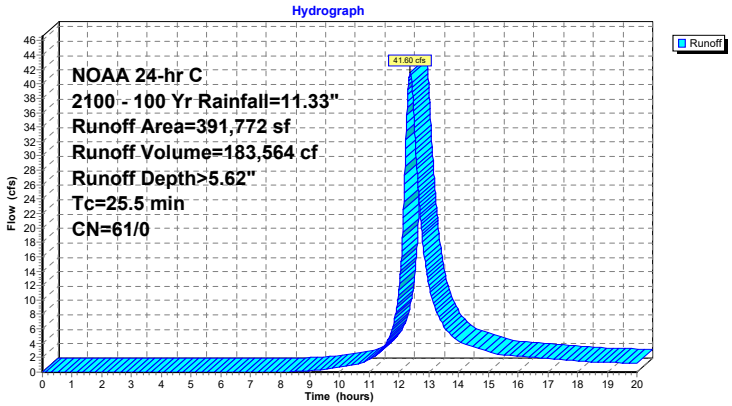
Runoff = 41.60 cfs @ 12.38 hrs, Volume= 183,564 cf, Depth> 5.62"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 100 Yr Rainfall=11.33"

Area (sf)	CN	Description
391,772	61	>75% Grass cover, Good, HSG B
391,772	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.5					**Direct Entry, Same as Exist**

Subcatchment PR-20: PR-20 CROSS COUNTRY



Summary for Subcatchment PR-30: TO POROUS WALK 2

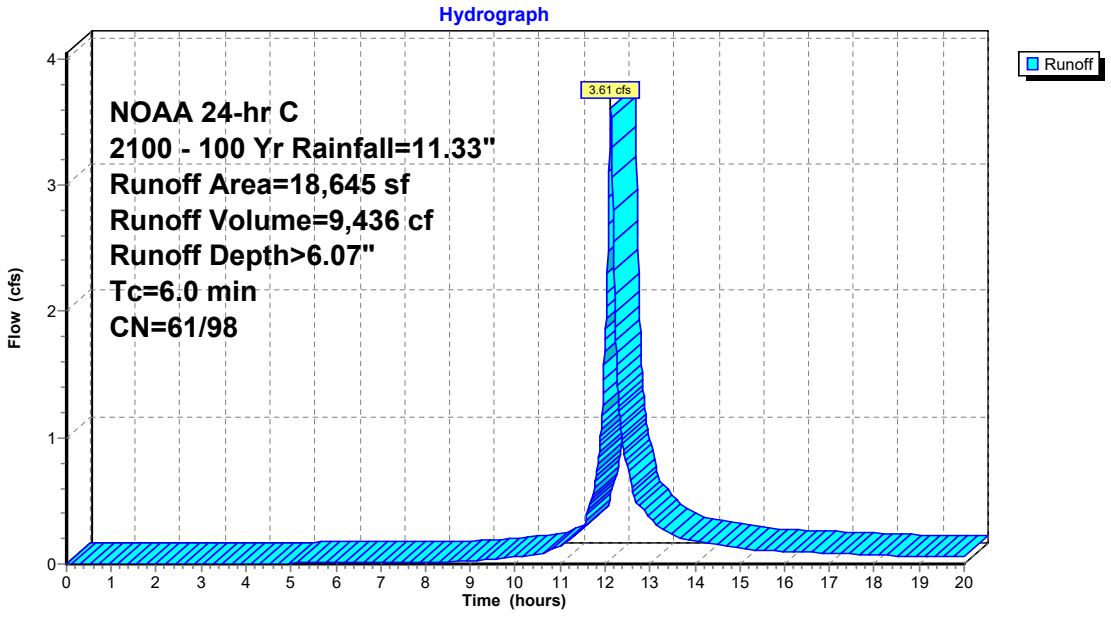
Runoff = 3.61 cfs @ 12.13 hrs, Volume= 9,436 cf, Depth> 6.07"
Routed to Pond BB-4P : POROUS WALK-2

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 100 Yr Rainfall=11.33"

Area (sf)	CN	Description
17,074	61	>75% Grass cover, Good, HSG B
1,571	98	Paved parking, HSG A
18,645	64	Weighted Average
17,074	61	91.57% Pervious Area
1,571	98	8.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment PR-30: TO POROUS WALK 2



Summary for Subcatchment PR-31: Plaza

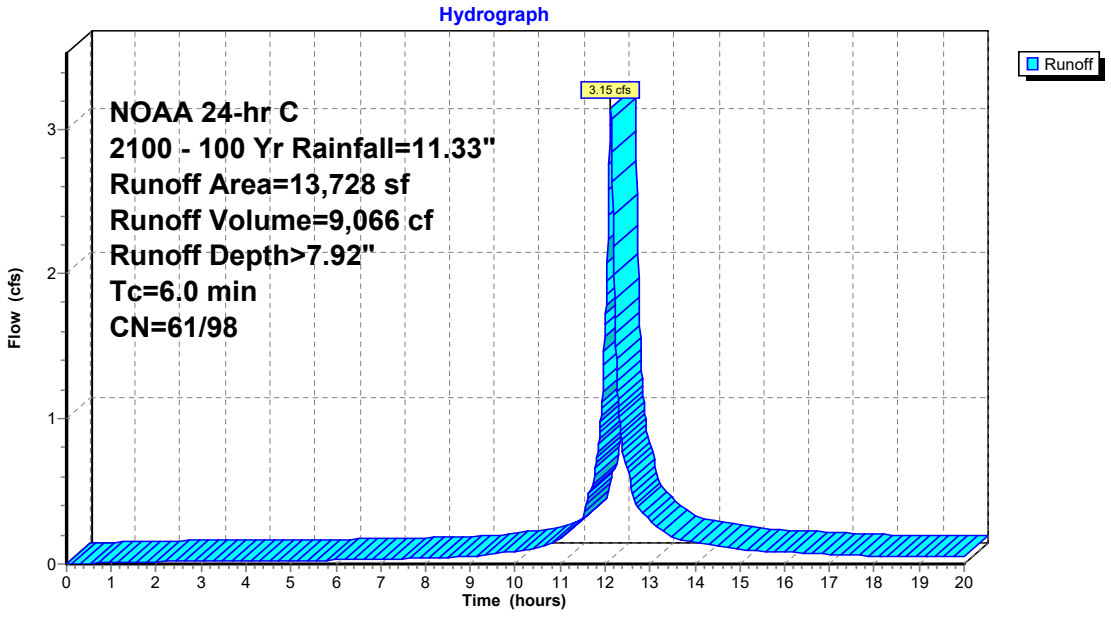
Runoff = 3.15 cfs @ 12.13 hrs, Volume= 9,066 cf, Depth> 7.92"
Routed to Pond BB-P1 : Plaza

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 100 Yr Rainfall=11.33"

Area (sf)	CN	Description
6,391	98	Paved parking, HSG B
7,337	61	>75% Grass cover, Good, HSG B
13,728	78	Weighted Average
7,337	61	53.45% Pervious Area
6,391	98	46.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment PR-31: Plaza



Summary for Subcatchment PR-32: PR-32 TO SOFTBALL

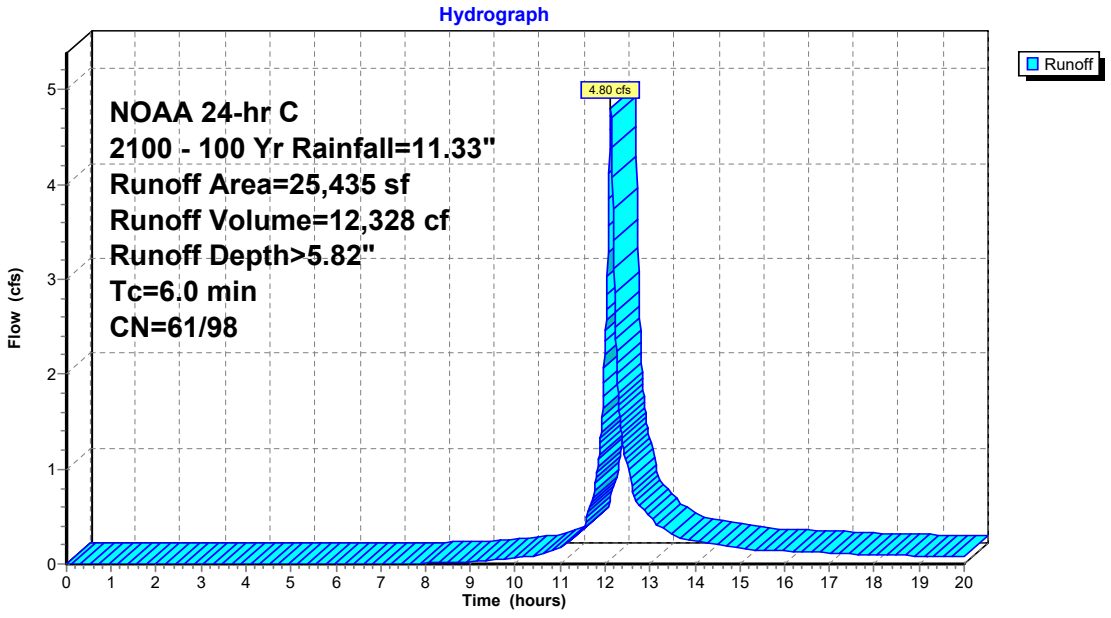
Runoff = 4.80 cfs @ 12.13 hrs, Volume= 12,328 cf, Depth> 5.82"
Routed to Reach DP1PR : Softball

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 100 Yr Rainfall=11.33"

Area (sf)	CN	Description
24,637	61	>75% Grass cover, Good, HSG B
798	98	Paved parking, HSG A
25,435	62	Weighted Average
24,637	61	96.86% Pervious Area
798	98	3.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum**

Subcatchment PR-32: PR-32 TO SOFTBALL



Summary for Subcatchment PR-34: SLOPE TO REGIONAL SWALE

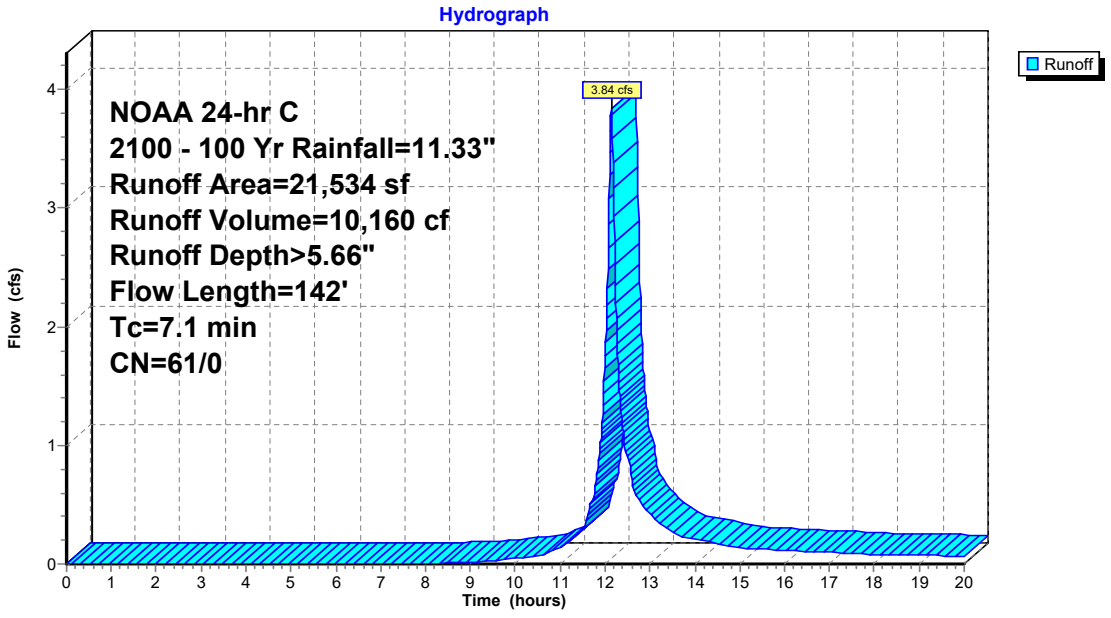
Runoff = 3.84 cfs @ 12.14 hrs, Volume= 10,160 cf, Depth> 5.66"
Routed to Reach DP-3PR : REGIONAL SWALE

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 100 Yr Rainfall=11.33"

Area (sf)	CN	Description
21,534	61	>75% Grass cover, Good, HSG B
21,534	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0150	0.13		**Sheet Flow, SHEET FLOW** Grass: Short n= 0.150 P2= 3.34"
0.9	92	0.0570	1.67		**Shallow Concentrated Flow, SHALLOW CONC** Short Grass Pasture Kv= 7.0 fps
7.1	142	Total			

Subcatchment PR-34: SLOPE TO REGIONAL SWALE



Summary for Subcatchment PR-35: FIELD AND ROOF

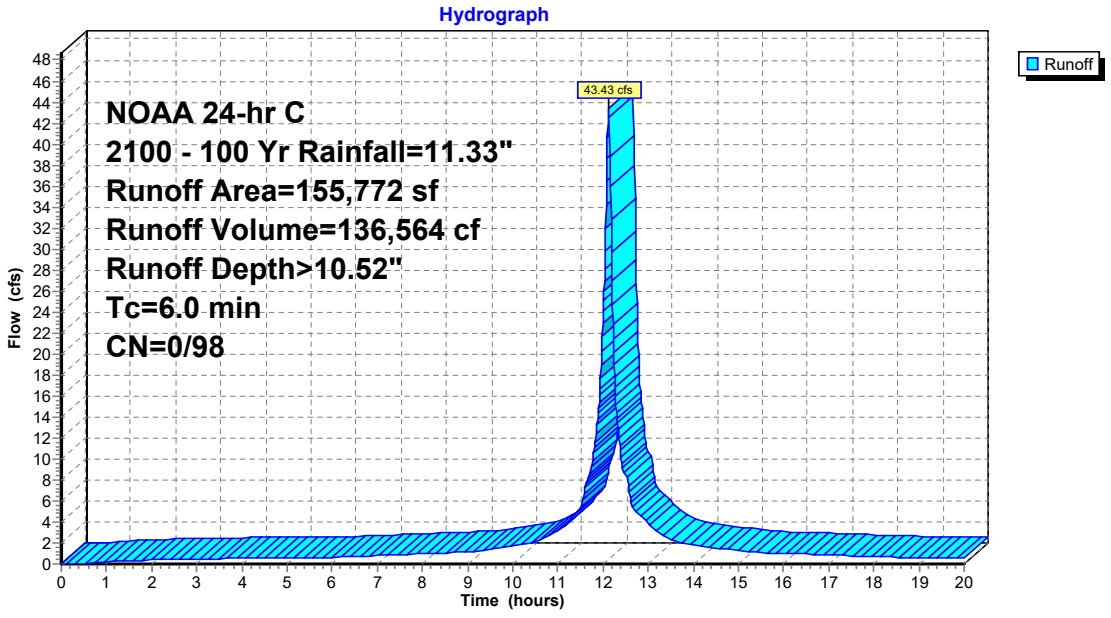
Runoff = 43.43 cfs @ 12.13 hrs, Volume= 136,564 cf, Depth>10.52"
Routed to Pond BB-P2 : INFILT BASIN

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 100 Yr Rainfall=11.33"

Area (sf)	CN	Description
155,772	98	Roofs, HSG B
0	61	>75% Grass cover, Good, HSG B
155,772	98	Weighted Average
155,772	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT**

Subcatchment PR-35: FIELD AND ROOF



Summary for Subcatchment PR-36: GRASS/LANDSCAPING

[47] Hint: Peak is 111% of capacity of segment #3

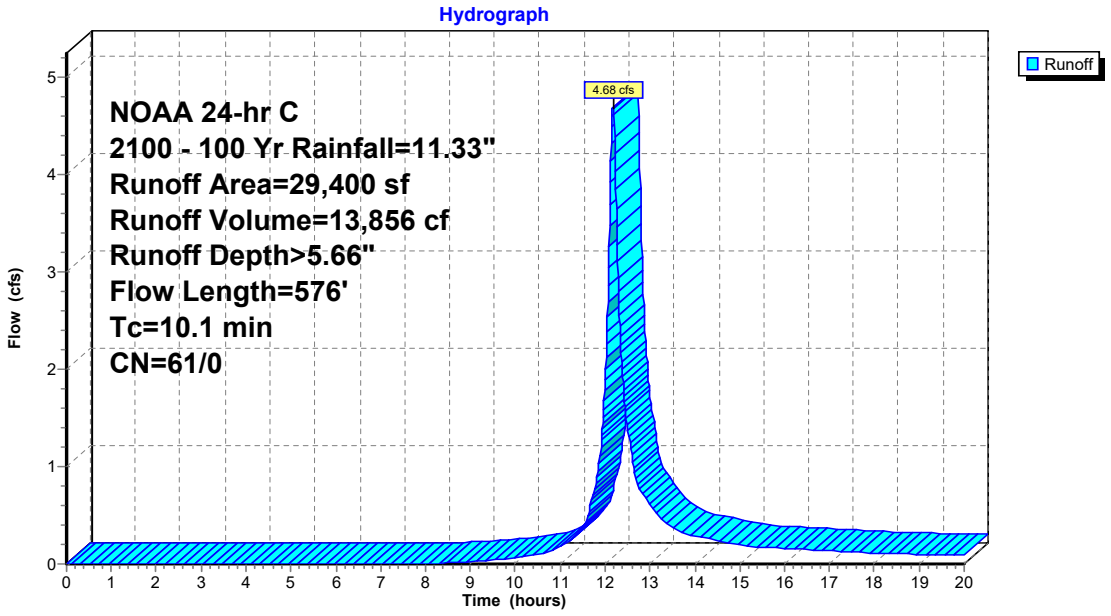
Runoff = 4.68 cfs @ 12.18 hrs, Volume= 13,856 cf, Depth> 5.66"
Routed to Reach DP-3PR : REGIONAL SWALE

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 100 Yr Rainfall=11.33"

Area (sf)	CN	Description
29,400	61	>75% Grass cover, Good, HSG B
29,400	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.34"
1.7	116	0.0050	1.14		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.7	235	0.0120	5.38	4.23	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
0.4	175	0.0100	7.80	24.51	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012
10.1	576	Total			

Subcatchment PR-36: GRASS/LANDSCAPING



Summary for Subcatchment PR-37: PR-37 TOWARD SWALE

[47] Hint: Peak is 243% of capacity of segment #3
[47] Hint: Peak is 185% of capacity of segment #4
[47] Hint: Peak is 107% of capacity of segment #7

Runoff = 4.39 cfs @ 12.30 hrs, Volume= 17,426 cf, Depth> 5.68"
Routed to Reach DP-3PR : REGIONAL SWALE

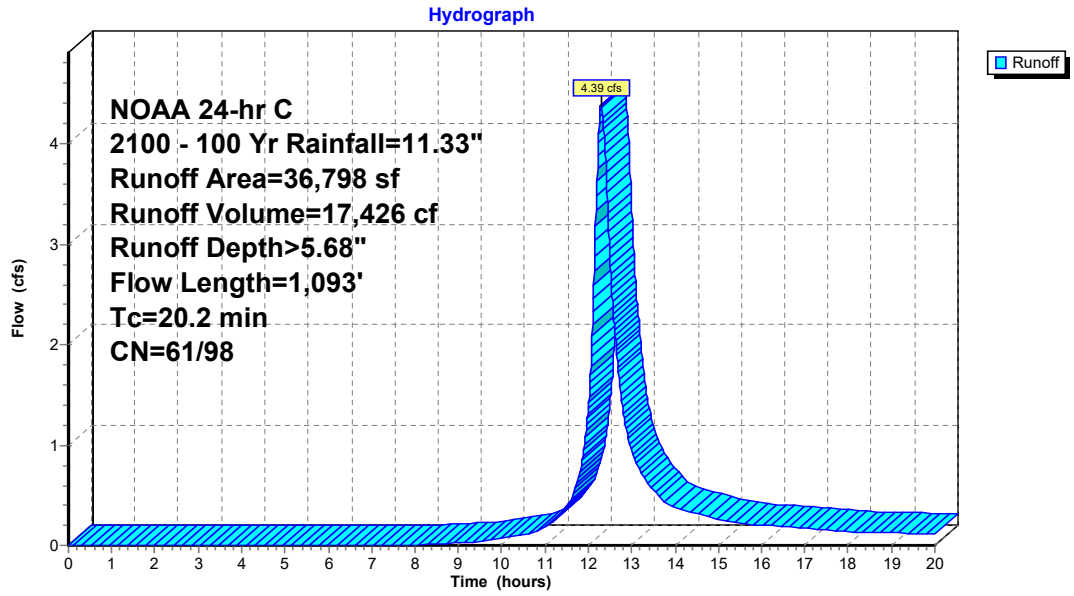
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 100 Yr Rainfall=11.33"

Area (sf)	CN	Description
36,427	61	>75% Grass cover, Good, HSG B
371	98	Paved roads w/curbs & sewers, HSG B
36,798	61	Weighted Average
36,427	61	98.99% Pervious Area
371	98	1.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	50	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.34"
2.2	242	0.0130	1.84		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	104	0.0190	5.17	1.80	**Pipe Channel, 8"** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.012 Corrugated PP, smooth interior
0.5	118	0.0100	4.35	2.37	**Pipe Channel, 10"** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.012 Corrugated PP, smooth interior
0.2	143	0.0126	11.47	81.11	**Pipe Channel, 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012
0.1	104	0.0133	11.79	83.33	**Pipe Channel, 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75'

n= 0.012					
9.6	332	0.0032	0.58	4.09	**Pipe Channel, 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.120
20.2	1,093	Total			

Subcatchment PR-37: PR-37 TOWARD SWALE



Summary for Subcatchment PR-38: BULLPEN

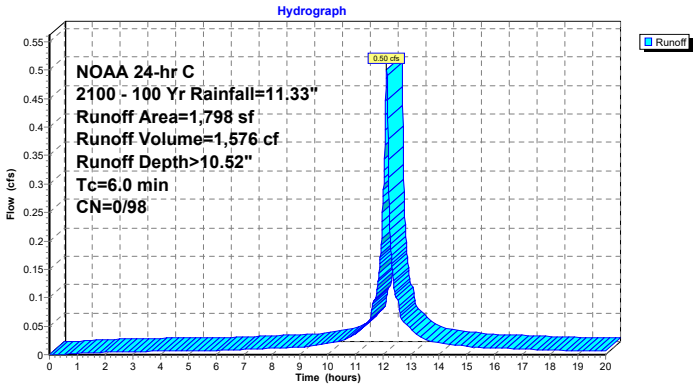
Runoff = 0.50 cfs @ 12.13 hrs, Volume= 1,576 cf, Depth>10.52"
Routed to Pond BB-2A : BULLPEN

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 100 Yr Rainfall=11.33"

Area (sf)	CN	Description
1,798	98	Paved parking, HSG B
1,798	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment PR-38: BULLPEN



Summary for Subcatchment PR-40: PR-40 TOWARD TENNIS

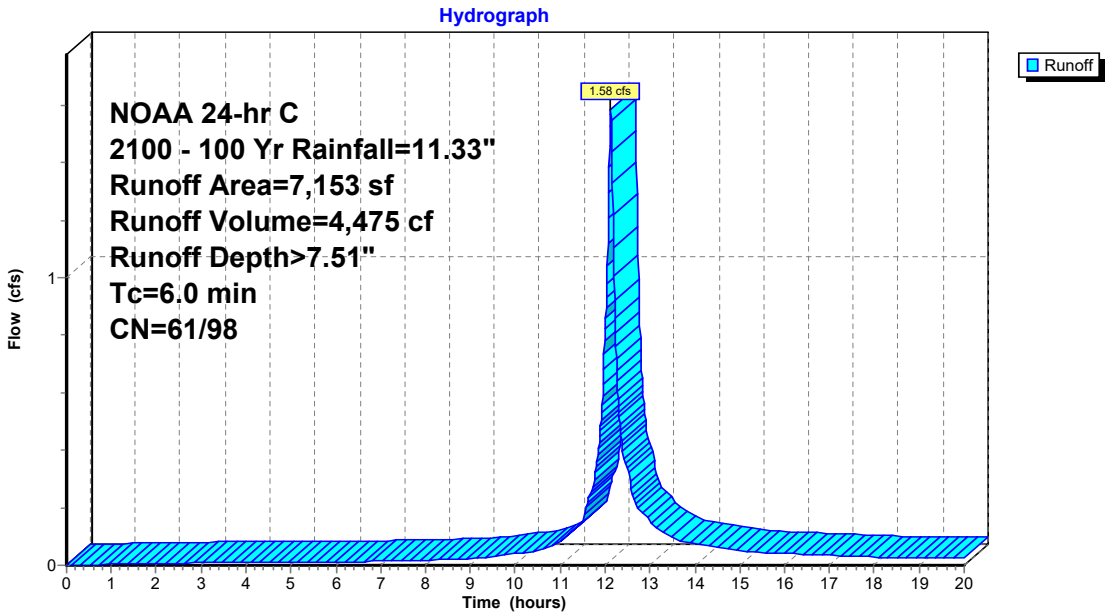
Runoff = 1.58 cfs @ 12.13 hrs, Volume= 4,475 cf, Depth> 7.51"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 100 Yr Rainfall=11.33"

Area (sf)	CN	Description
4,438	61	>75% Grass cover, Good, HSG B
0	61	>75% Grass cover, Good, HSG B
2,715	98	Paved roads w/curbs & sewers, HSG B
7,153	75	Weighted Average
4,438	61	62.04% Pervious Area
2,715	98	37.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR-40: PR-40 TOWARD TENNIS



Summary for Subcatchment PR-50: PR-50 REGIOINAL SWALE

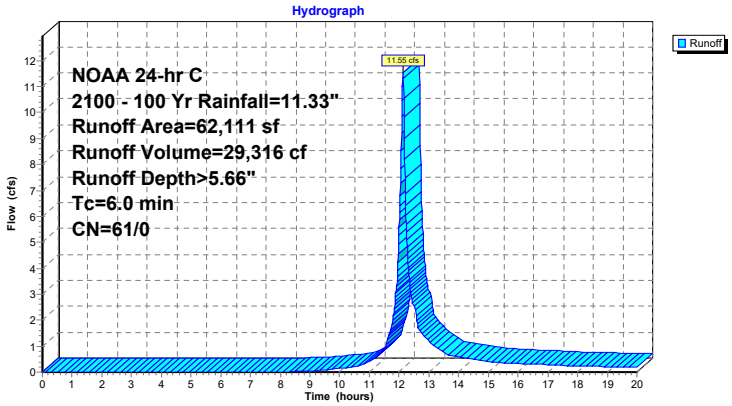
Runoff = 11.55 cfs @ 12.13 hrs, Volume= 29,316 cf, Depth> 5.66"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 100 Yr Rainfall=11.33"

Area (sf)	CN	Description
62,111	61	>75% Grass cover, Good, HSG B
62,111	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum**

Subcatchment PR-50: PR-50 REGIOINAL SWALE



Summary for Subcatchment PR33B: PR-33B

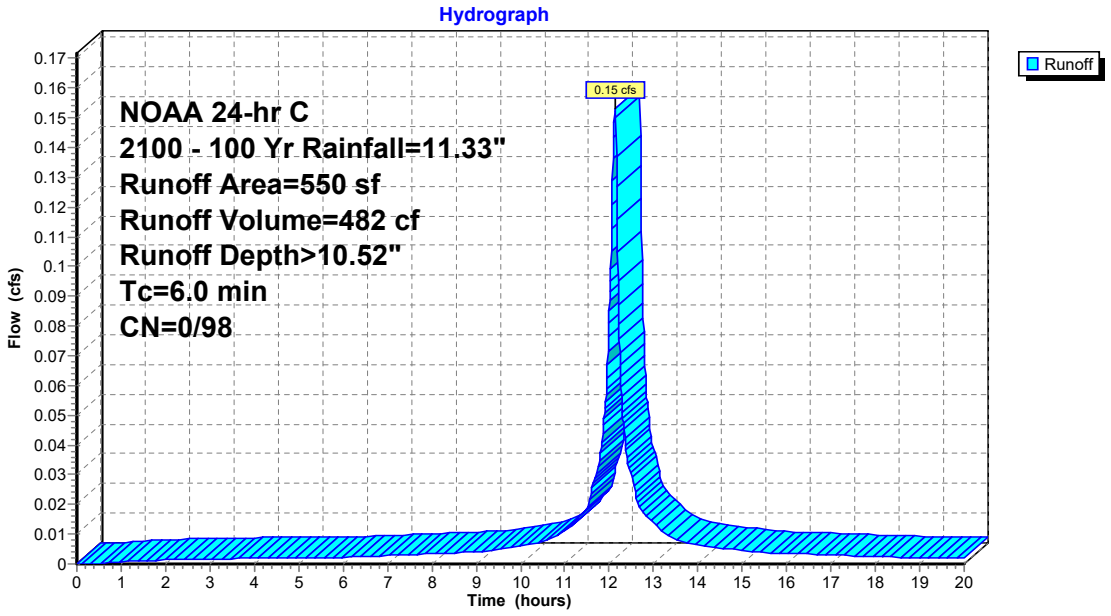
Runoff = 0.15 cfs @ 12.13 hrs, Volume= 482 cf, Depth>10.52"
Routed to Pond 33B : CELL B

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 100 Yr Rainfall=11.33"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
550	98	Paved parking, HSG B
550	98	Weighted Average
550	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33B: PR-33B



Summary for Subcatchment PR33C: PR-33C

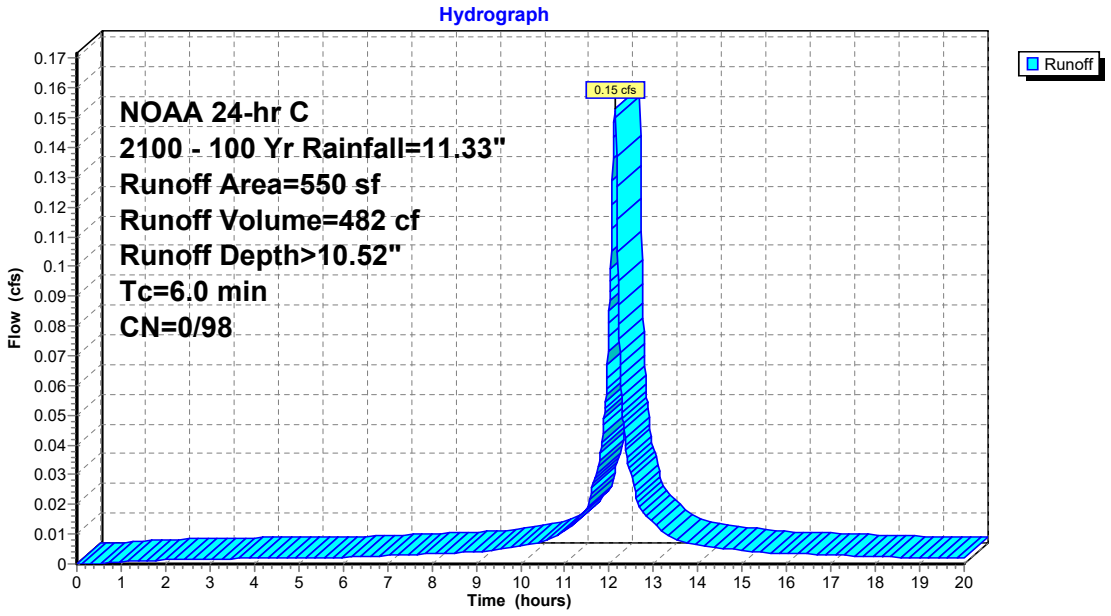
Runoff = 0.15 cfs @ 12.13 hrs, Volume= 482 cf, Depth>10.52"
Routed to Pond 33C : CELL C

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 100 Yr Rainfall=11.33"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
550	98	Paved parking, HSG B
550	98	Weighted Average
550	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33C: PR-33C



Summary for Subcatchment PR33D: PR-33E

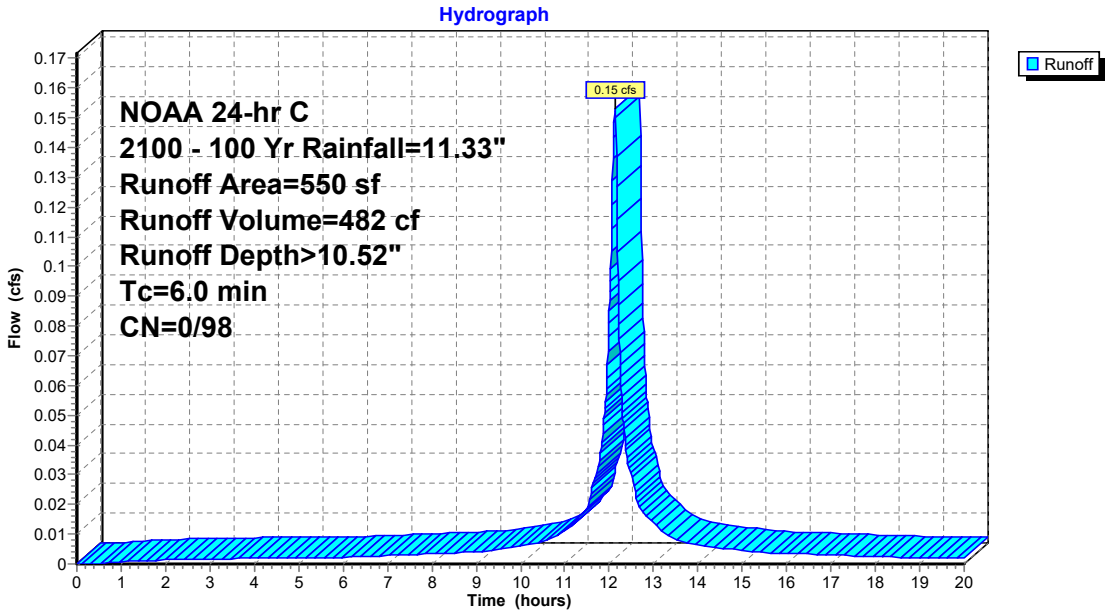
Runoff = 0.15 cfs @ 12.13 hrs, Volume= 482 cf, Depth>10.52"
Routed to Pond 33D : CELL D

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 100 Yr Rainfall=11.33"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
550	98	Paved parking, HSG B
550	98	Weighted Average
550	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33D: PR-33E



Summary for Subcatchment PR33E: PR-33E

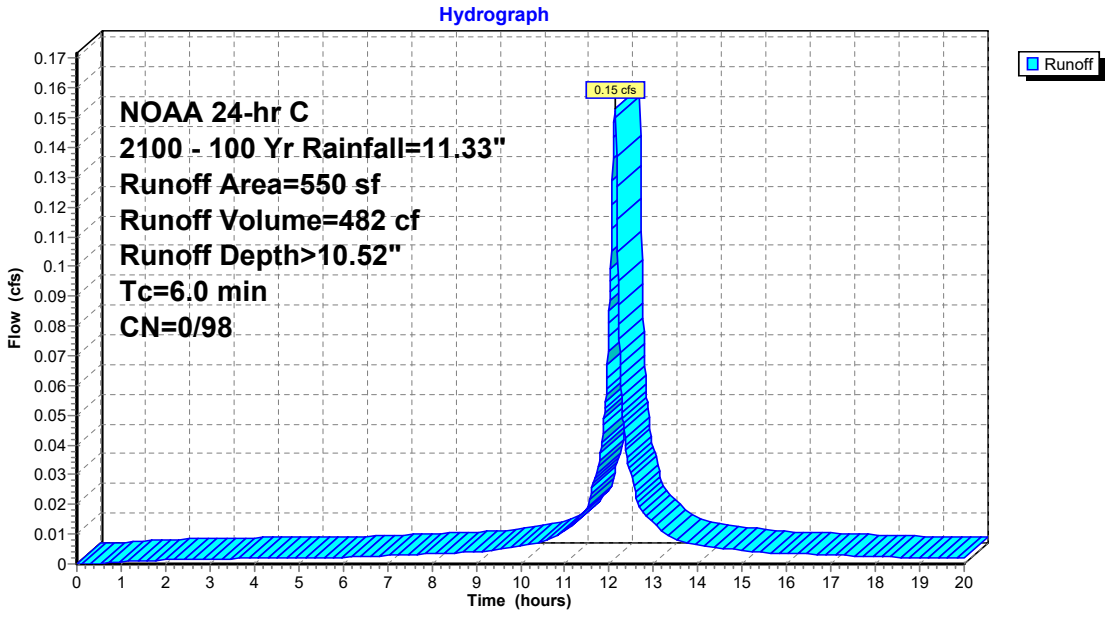
Runoff = 0.15 cfs @ 12.13 hrs, Volume= 482 cf, Depth>10.52"
Routed to Pond 33E : CELL E

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 100 Yr Rainfall=11.33"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
550	98	Paved parking, HSG B
550	98	Weighted Average
550	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33E: PR-33E



Summary for Subcatchment PR33F: PR-33F

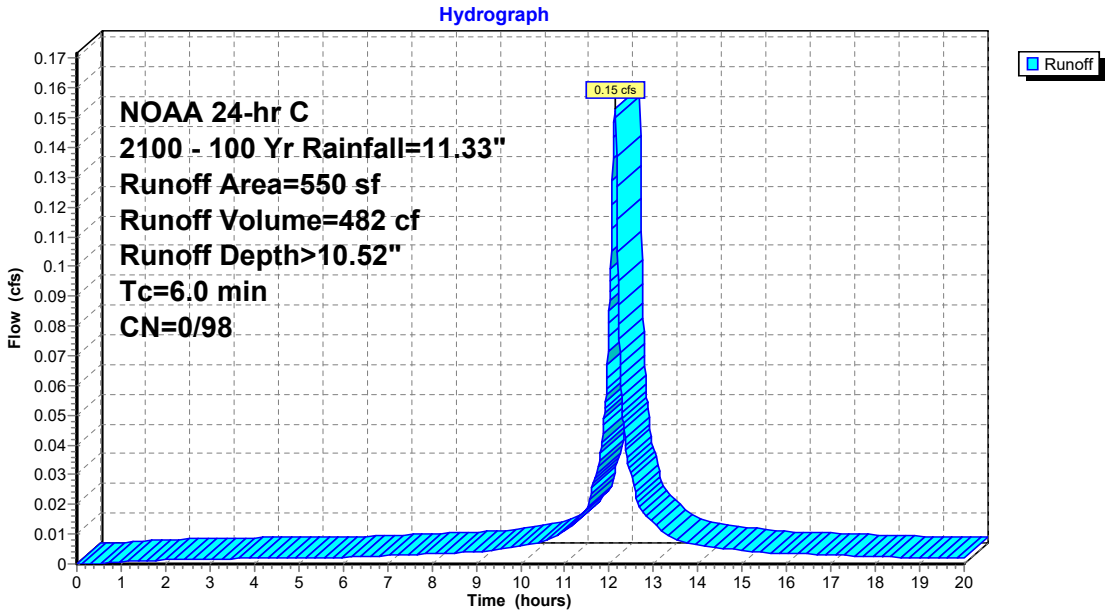
Runoff = 0.15 cfs @ 12.13 hrs, Volume= 482 cf, Depth>10.52"
Routed to Pond 33F : CELL F

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 100 Yr Rainfall=11.33"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
550	98	Paved parking, HSG B
550	98	Weighted Average
550	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33F: PR-33F



Summary for Subcatchment PR33G: PR-33F

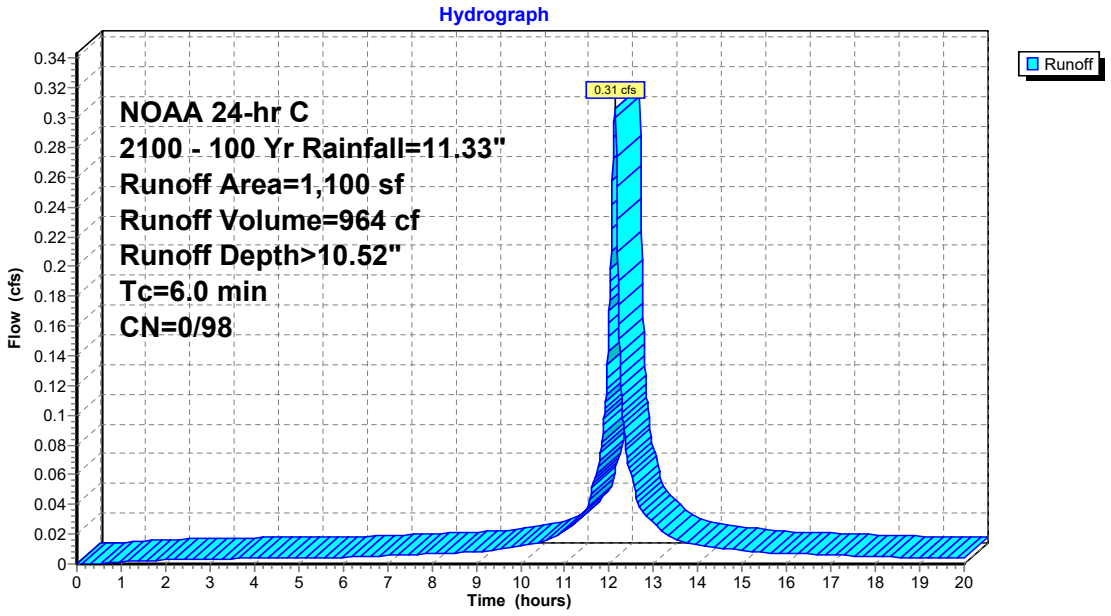
Runoff = 0.31 cfs @ 12.13 hrs, Volume= 964 cf, Depth>10.52"
Routed to Pond 33G : CELL G

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 100 Yr Rainfall=11.33"

Area (sf)	CN	Description
0	61	>75% Grass cover, Good, HSG B
1,100	98	Paved parking, HSG B
1,100	98	Weighted Average
1,100	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33G: PR-33F



Summary for Subcatchment PR33H: PR-33H

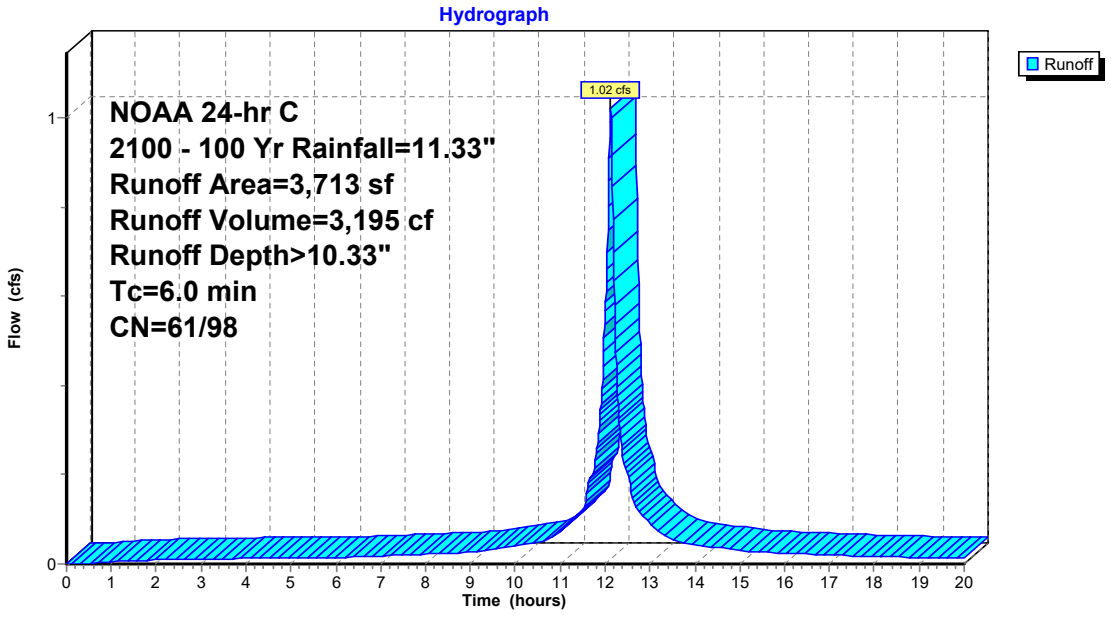
Runoff = 1.02 cfs @ 12.13 hrs, Volume= 3,195 cf, Depth>10.33"
Routed to Pond 33H : CELL H

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 100 Yr Rainfall=11.33"

	Area (sf)	CN	Description
	148	61	>75% Grass cover, Good, HSG B
*	1,634	98	Porous Pavers
*	1,931	98	Sidewalk
	3,713	97	Weighted Average
	148	61	3.99% Pervious Area
	3,565	98	96.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33H: PR-33H



Summary for Subcatchment PR33I: PR-33I

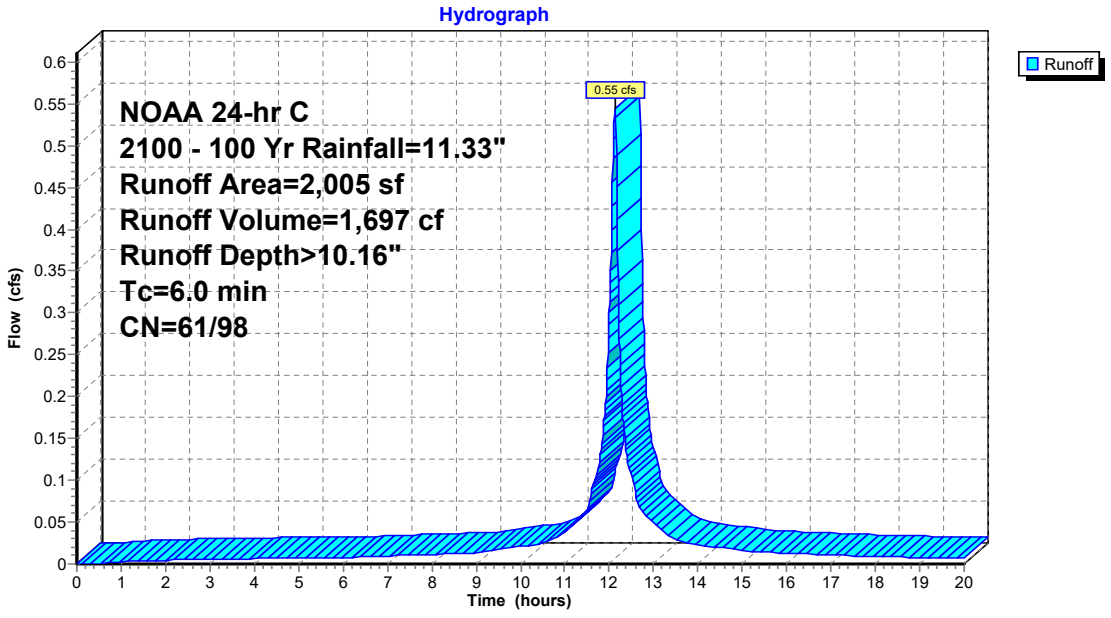
Runoff = 0.55 cfs @ 12.13 hrs, Volume= 1,697 cf, Depth>10.16"
Routed to Pond 33I : CELL I

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 100 Yr Rainfall=11.33"

Area (sf)	CN	Description
150	61	>75% Grass cover, Good, HSG B
1,855	98	Paved parking, HSG B
2,005	95	Weighted Average
150	61	7.48% Pervious Area
1,855	98	92.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33I: PR-33I



Summary for Subcatchment PR33J: PR-33J

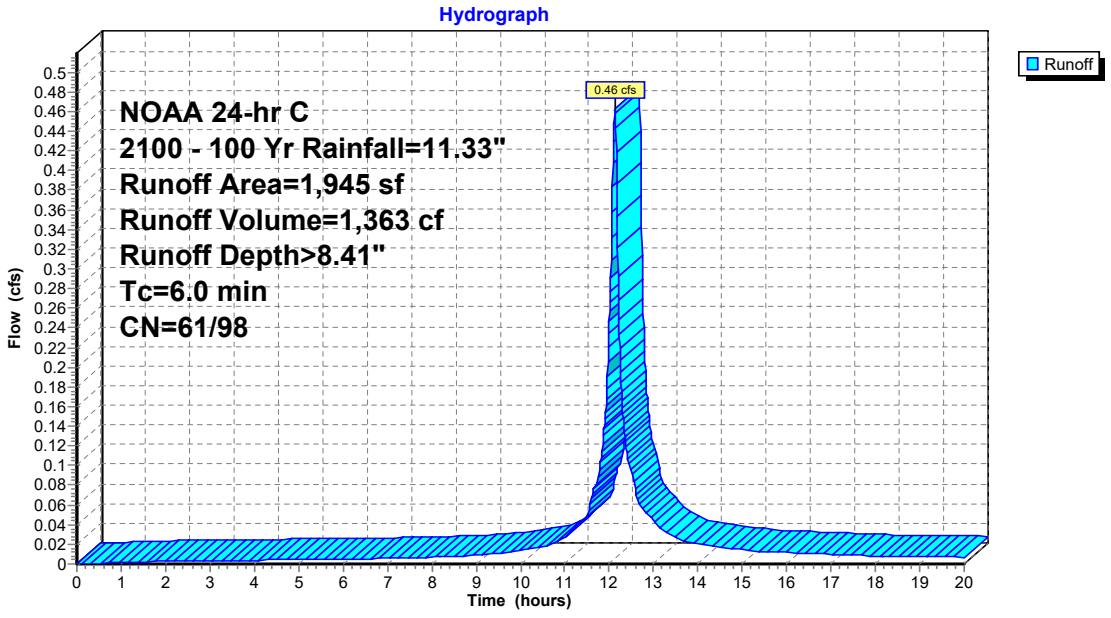
Runoff = 0.46 cfs @ 12.13 hrs, Volume= 1,363 cf, Depth> 8.41"
Routed to Pond 33J : CELL J

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 100 Yr Rainfall=11.33"

Area (sf)	CN	Description
845	61	>75% Grass cover, Good, HSG B
1,100	98	Paved parking, HSG B
1,945	82	Weighted Average
845	61	43.44% Pervious Area
1,100	98	56.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33J: PR-33J



Summary for Subcatchment PR33K: PR-33F

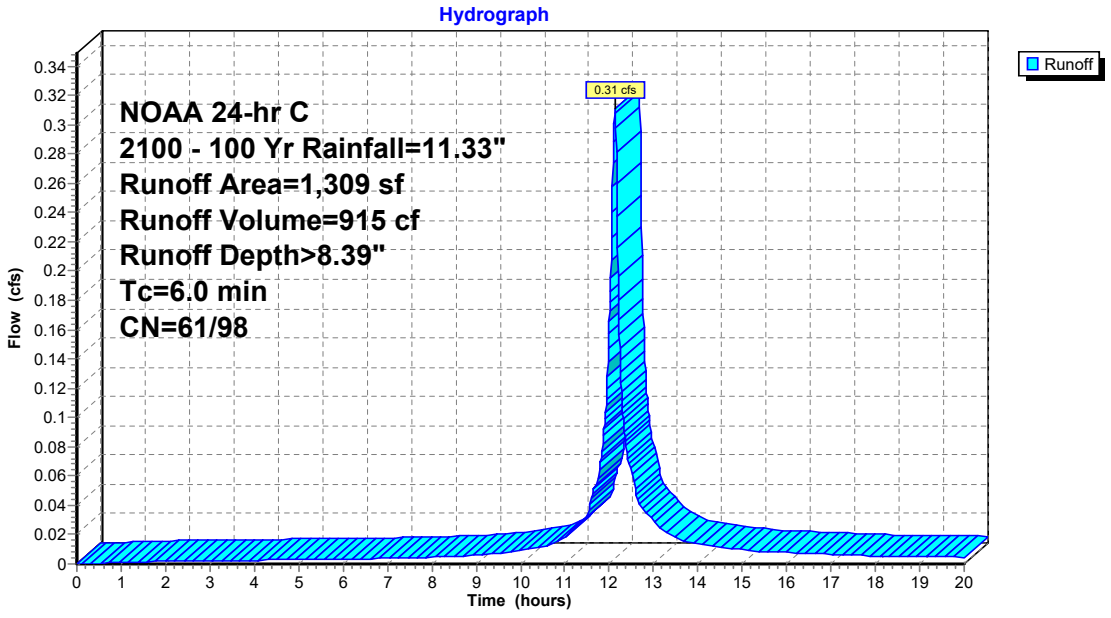
Runoff = 0.31 cfs @ 12.13 hrs, Volume= 915 cf, Depth> 8.39"
Routed to Pond 33K : CELL K

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 100 Yr Rainfall=11.33"

Area (sf)	CN	Description
575	61	>75% Grass cover, Good, HSG B
734	98	Paved parking, HSG B
1,309	82	Weighted Average
575	61	43.93% Pervious Area
734	98	56.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment PR33K: PR-33F



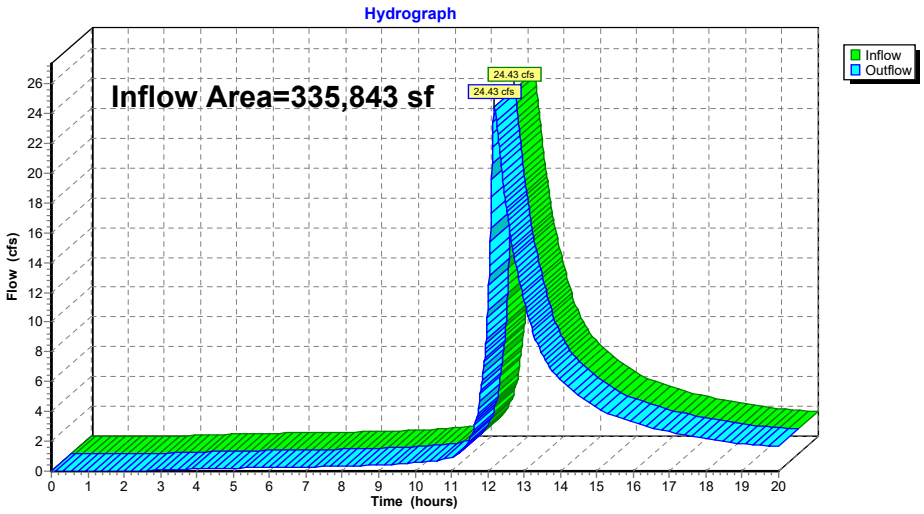
Summary for Reach DP-3PR: REGIONAL SWALE

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 335,843 sf, 53.90% Impervious, Inflow Depth > 6.30" for 2100 - 100 Yr event
Inflow = 24.43 cfs @ 12.18 hrs, Volume= 176,190 cf
Outflow = 24.43 cfs @ 12.18 hrs, Volume= 176,190 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs

Reach DP-3PR: REGIONAL SWALE



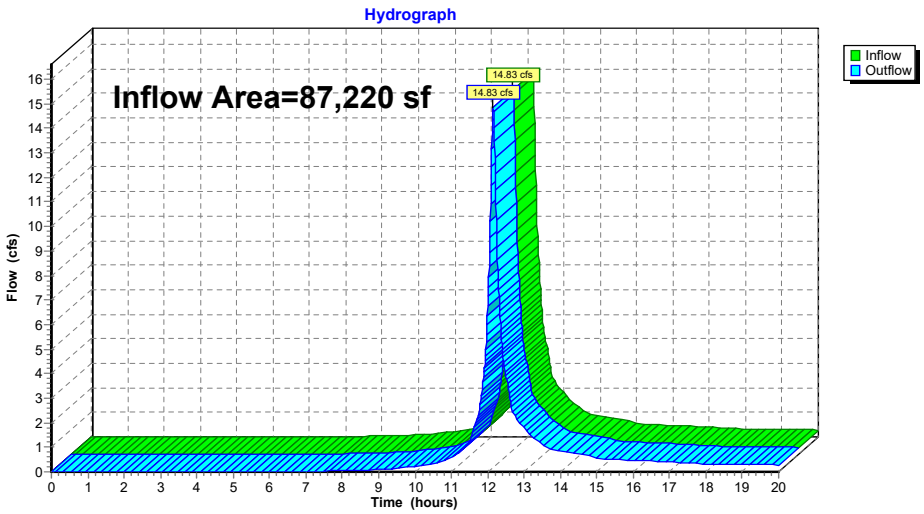
Summary for Reach DP1PR: Softball

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 87,220 sf, 5.13% Impervious, Inflow Depth > 5.91" for 2100 - 100 Yr event
Inflow = 14.83 cfs @ 12.15 hrs, Volume= 42,942 cf
Outflow = 14.83 cfs @ 12.15 hrs, Volume= 42,942 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs

Reach DP1PR: Softball



Summary for Pond 33B: CELL B

Inflow Area = 550 sf,100.00% Impervious, Inflow Depth > 10.52" for 2100 - 100 Yr event
Inflow = 0.15 cfs @ 12.13 hrs, Volume= 482 cf
Outflow = 0.06 cfs @ 12.26 hrs, Volume= 415 cf, Atten= 58%, Lag= 7.7 min
Primary = 0.06 cfs @ 12.26 hrs, Volume= 415 cf
Routed to Pond 33C : CELL C
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond 33C : CELL C

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 84.26' @ 12.26 hrs Surf.Area= 550 sf Storage= 161 cf

Plug-Flow detention time= 120.1 min calculated for 415 cf (86% of inflow)
Center-of-Mass det. time= 74.0 min (780.6 - 706.5)

Volume	Invert	Avail.Storage	Storage Description
#1	83.53'	440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,100 cf Overall x 40.0% Voids

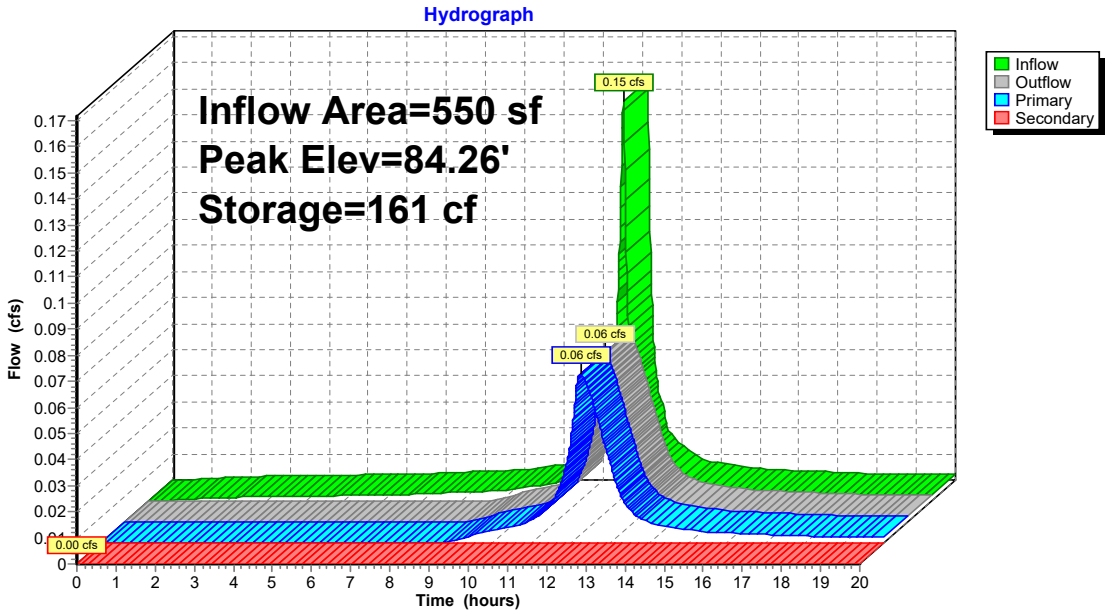
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
83.53	550	0	0
84.53	550	550	550
85.53	550	550	1,100

Device	Routing	Invert	Outlet Devices
#1	Primary	83.80'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	84.53'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.06 cfs @ 12.26 hrs HW=84.26' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.06 cfs @ 2.96 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=83.53' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 33B: CELL B



Summary for Pond 33C: CELL C

[81] Warning: Exceeded Pond 33B by 0.01' @ 12.84 hrs

Inflow Area = 1,100 sf,100.00% Impervious, Inflow Depth > 9.79" for 2100 - 100 Yr event
Inflow = 0.21 cfs @ 12.13 hrs, Volume= 897 cf
Outflow = 0.13 cfs @ 12.25 hrs, Volume= 827 cf, Atten= 36%, Lag= 7.2 min
Primary = 0.08 cfs @ 12.25 hrs, Volume= 807 cf
Routed to Pond 33D : CELL D
Secondary = 0.05 cfs @ 12.25 hrs, Volume= 20 cf
Routed to Pond 33D : CELL D

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 84.11' @ 12.25 hrs Surf.Area= 550 sf Storage= 221 cf

Plug-Flow detention time= 79.3 min calculated for 827 cf (92% of inflow)
Center-of-Mass det. time= 50.8 min (791.6 - 740.8)

Volume	Invert	Avail.Storage	Storage Description
#1	83.11'	440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,100 cf Overall x 40.0% Voids

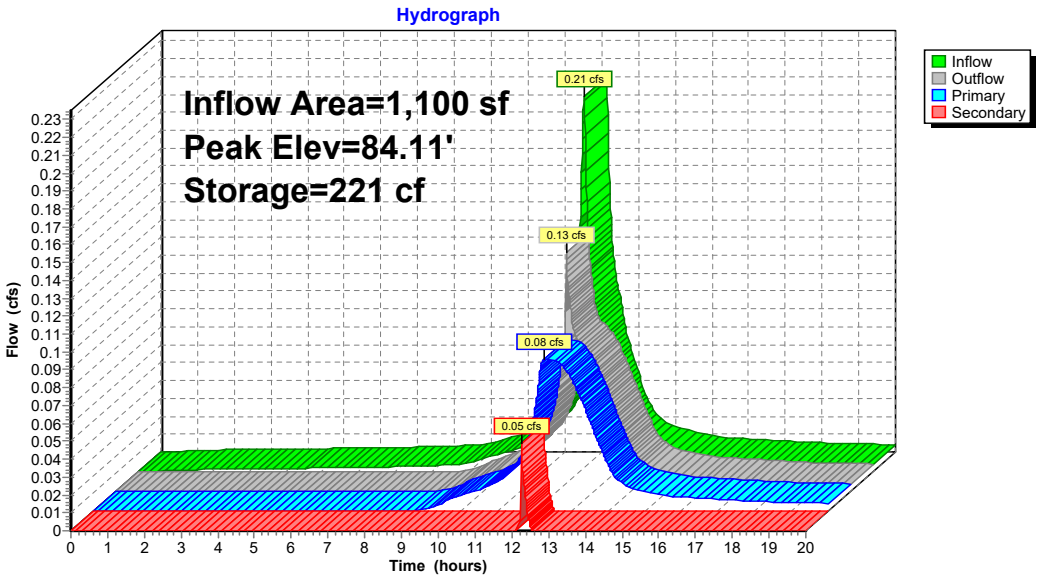
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
83.11	550	0	0
84.11	550	550	550
85.11	550	550	1,100

Device	Routing	Invert	Outlet Devices
#1	Primary	83.38'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	84.11'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.08 cfs @ 12.25 hrs HW=84.11' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.08 cfs @ 3.89 fps)

Secondary OutFlow Max=0.02 cfs @ 12.25 hrs HW=84.11' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.02 cfs @ 0.22 fps)

Pond 33C: CELL C



Summary for Pond 33D: CELL D

[79] Warning: Submerged Pond 33C Primary device # 1 by 0.33'

Inflow Area = 1,650 sf,100.00% Impervious, Inflow Depth > 9.52" for 2100 - 100 Yr event
Inflow = 0.23 cfs @ 12.13 hrs, Volume= 1,309 cf
Outflow = 0.21 cfs @ 12.17 hrs, Volume= 1,236 cf, Atten= 7%, Lag= 2.4 min
Primary = 0.09 cfs @ 12.17 hrs, Volume= 1,118 cf
Routed to Pond 33E : CELL E
Secondary = 0.13 cfs @ 12.17 hrs, Volume= 118 cf
Routed to Pond 33E : CELL E

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 83.71' @ 12.17 hrs Surf.Area= 550 sf Storage= 223 cf

Plug-Flow detention time= 61.7 min calculated for 1,235 cf (94% of inflow)
Center-of-Mass det. time= 41.0 min (801.3 - 760.3)

Volume	Invert	Avail.Storage	Storage Description
#1	82.70'	440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,100 cf Overall x 40.0% Voids

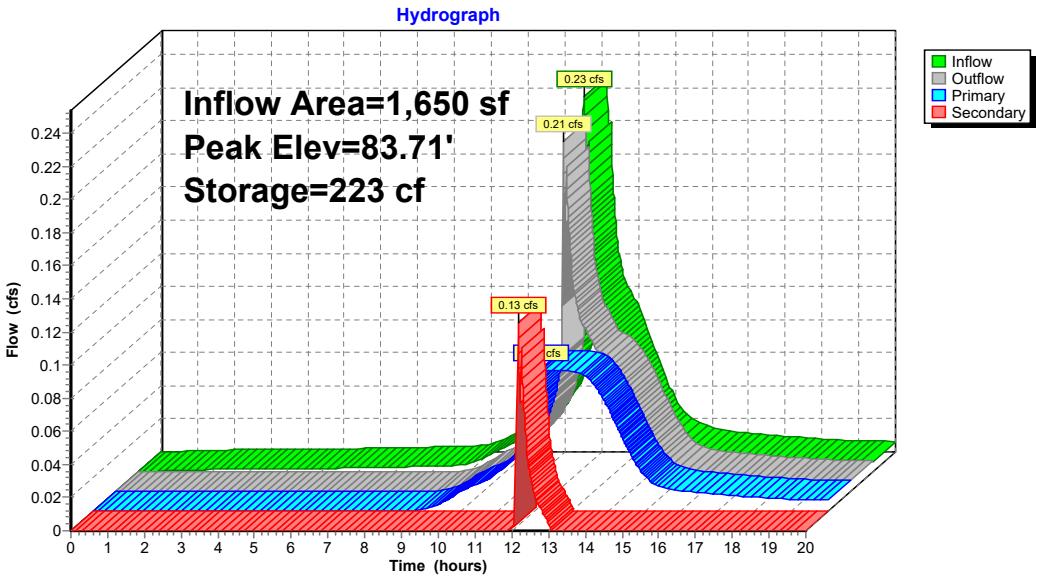
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
82.70	550	0	0
83.70	550	550	550
84.70	550	550	1,100

Device	Routing	Invert	Outlet Devices
#1	Primary	82.97'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	83.70'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.09 cfs @ 12.17 hrs HW=83.71' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.09 cfs @ 3.91 fps)

Secondary OutFlow Max=0.09 cfs @ 12.17 hrs HW=83.71' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.09 cfs @ 0.35 fps)

Pond 33D: CELL D



Summary for Pond 33E: CELL E

[79] Warning: Submerged Pond 33D Primary device # 1 by 0.33'

Inflow Area = 2,200 sf,100.00% Impervious, Inflow Depth > 9.37" for 2100 - 100 Yr event
Inflow = 0.33 cfs @ 12.17 hrs, Volume= 1,718 cf
Outflow = 0.33 cfs @ 12.18 hrs, Volume= 1,642 cf, Atten= 2%, Lag= 0.4 min
Primary = 0.09 cfs @ 12.18 hrs, Volume= 1,388 cf
Routed to Pond 33F : CELL F
Secondary = 0.24 cfs @ 12.18 hrs, Volume= 254 cf
Routed to Pond 33F : CELL F

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 83.30' @ 12.18 hrs Surf.Area= 550 sf Storage= 225 cf

Plug-Flow detention time= 51.8 min calculated for 1,642 cf (96% of inflow)
Center-of-Mass det. time= 35.5 min (810.2 - 774.7)

Volume	Invert	Avail.Storage	Storage Description
#1	82.28'	440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,100 cf Overall x 40.0% Voids

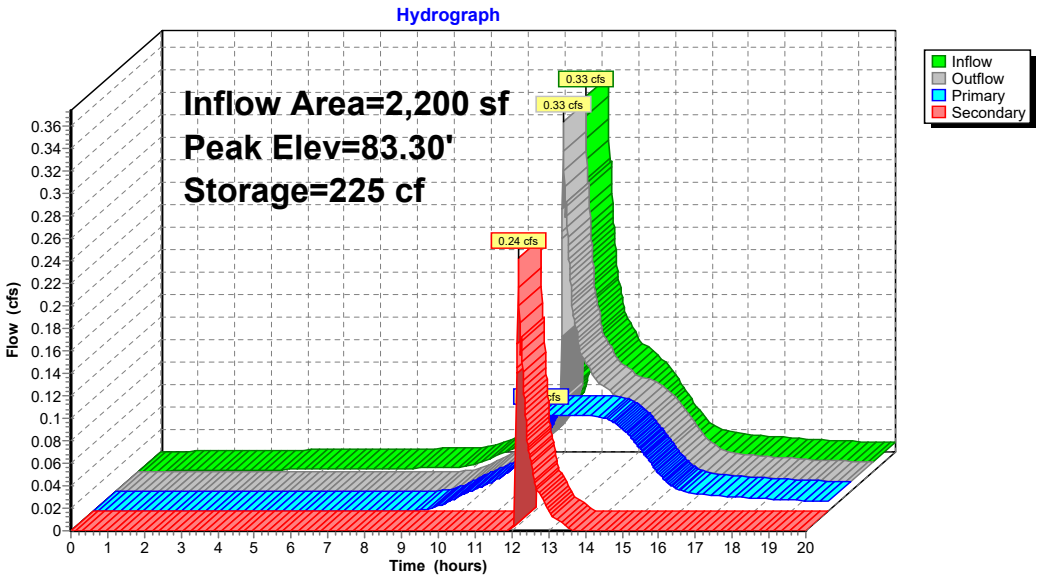
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
82.28	550	0	0
83.28	550	550	550
84.28	550	550	1,100

Device	Routing	Invert	Outlet Devices
#1	Primary	82.55'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	83.28'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.09 cfs @ 12.18 hrs HW=83.30' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.09 cfs @ 3.94 fps)

Secondary OutFlow Max=0.24 cfs @ 12.18 hrs HW=83.30' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.24 cfs @ 0.49 fps)

Pond 33E: CELL E



Summary for Pond 33F: CELL F

[79] Warning: Submerged Pond 33E Primary device # 1 by 0.35'

Inflow Area = 2,750 sf,100.00% Impervious, Inflow Depth > 9.27" for 2100 - 100 Yr event
Inflow = 0.45 cfs @ 12.18 hrs, Volume= 2,125 cf
Outflow = 0.44 cfs @ 12.18 hrs, Volume= 2,047 cf, Atten= 1%, Lag= 0.2 min
Primary = 0.09 cfs @ 12.18 hrs, Volume= 1,629 cf
Routed to Pond 33G : CELL G
Secondary = 0.36 cfs @ 12.18 hrs, Volume= 418 cf
Routed to Pond 33G : CELL G

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 82.90' @ 12.18 hrs Surf.Area= 550 sf Storage= 226 cf

Plug-Flow detention time= 45.4 min calculated for 2,046 cf (96% of inflow)
Center-of-Mass det. time= 31.9 min (818.5 - 786.6)

Volume	Invert	Avail.Storage	Storage Description
#1	81.87'	440 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,100 cf Overall x 40.0% Voids

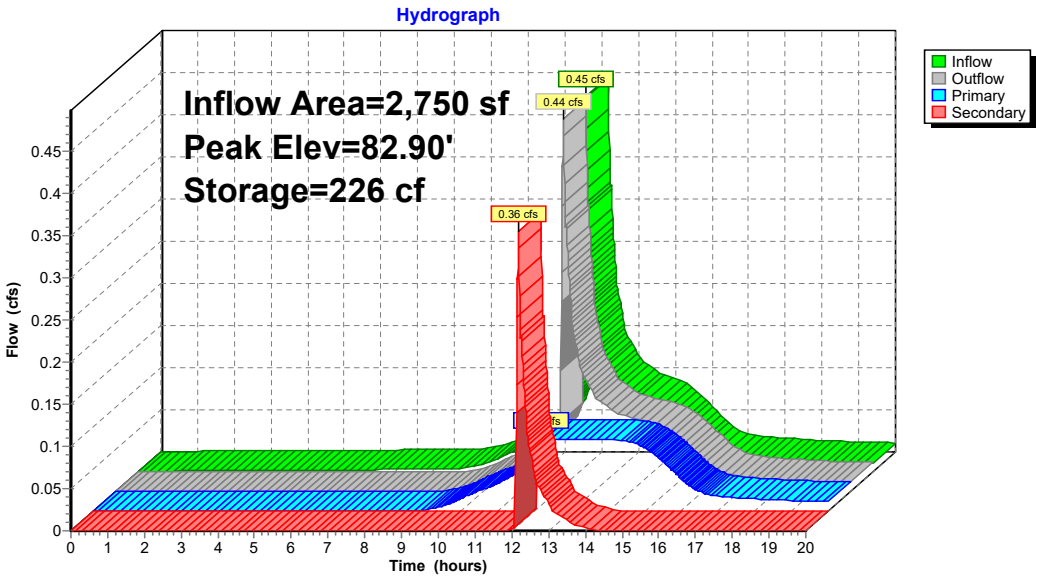
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
81.87	550	0	0
82.87	550	550	550
83.87	550	550	1,100

Device	Routing	Invert	Outlet Devices
#1	Primary	82.14'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	82.87'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.09 cfs @ 12.18 hrs HW=82.90' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.09 cfs @ 3.95 fps)

Secondary OutFlow Max=0.34 cfs @ 12.18 hrs HW=82.90' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.34 cfs @ 0.55 fps)

Pond 33F: CELL F



Summary for Pond 33G: CELL G

Inflow Area = 3,850 sf,100.00% Impervious, Inflow Depth > 9.38" for 2100 - 100 Yr event
Inflow = 0.68 cfs @ 12.15 hrs, Volume= 3,011 cf
Outflow = 0.67 cfs @ 12.18 hrs, Volume= 2,846 cf, Atten= 1%, Lag= 1.6 min
Primary = 0.09 cfs @ 12.18 hrs, Volume= 2,046 cf
Routed to Pond 33H : CELL H
Secondary = 0.58 cfs @ 12.18 hrs, Volume= 800 cf
Routed to Pond 33H : CELL H

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 82.08' @ 12.18 hrs Surf.Area= 1,100 sf Storage= 458 cf

Plug-Flow detention time= 72.1 min calculated for 2,844 cf (94% of inflow)
Center-of-Mass det. time= 52.8 min (835.5 - 782.7)

Volume	Invert	Avail.Storage	Storage Description
#1	81.04'	880 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 2,200 cf Overall x 40.0% Voids

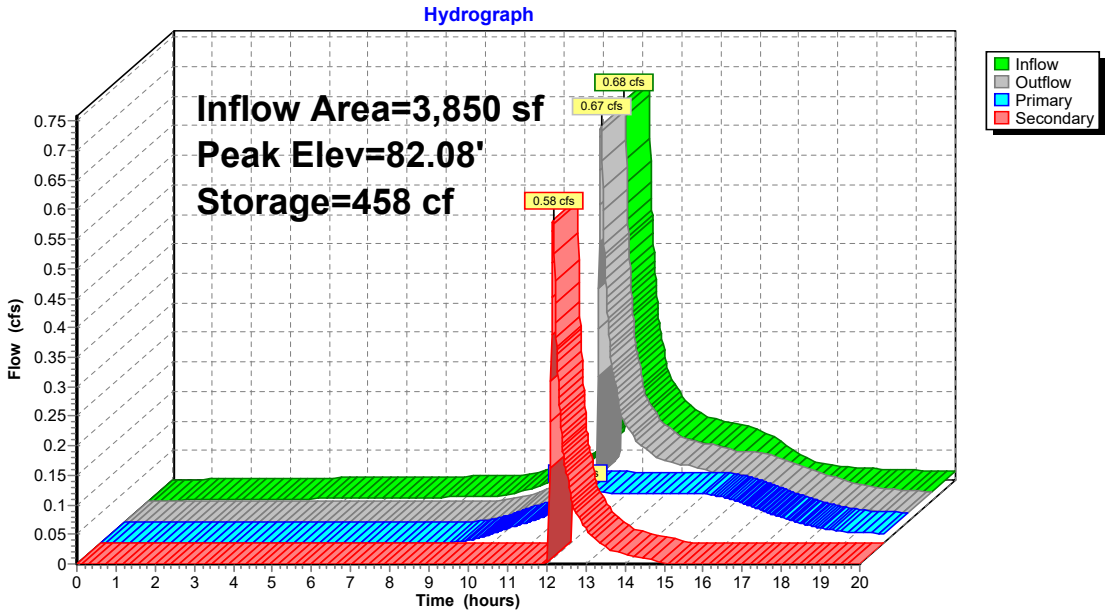
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
81.04	1,100	0	0
82.04	1,100	1,100	1,100
83.04	1,100	1,100	2,200

Device	Routing	Invert	Outlet Devices
#1	Primary	81.31'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	82.04'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.09 cfs @ 12.18 hrs HW=82.08' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.09 cfs @ 3.99 fps)

Secondary OutFlow Max=0.58 cfs @ 12.18 hrs HW=82.08' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.58 cfs @ 0.66 fps)

Pond 33G: CELL G



Summary for Pond 33H: CELL H

Inflow Area = 7,563 sf, 98.04% Impervious, Inflow Depth > 9.59" for 2100 - 100 Yr event
Inflow = 1.62 cfs @ 12.15 hrs, Volume= 6,041 cf
Outflow = 1.61 cfs @ 12.15 hrs, Volume= 5,539 cf, Atten= 1%, Lag= 0.3 min
Primary = 0.07 cfs @ 12.15 hrs, Volume= 2,320 cf
Routed to Pond 33I : CELL I
Secondary = 1.54 cfs @ 12.15 hrs, Volume= 3,220 cf
Routed to Pond 33I : CELL I

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 81.19' @ 12.15 hrs Surf.Area= 1,631 sf Storage= 702 cf

Plug-Flow detention time= 76.6 min calculated for 5,539 cf (92% of inflow)
Center-of-Mass det. time= 47.5 min (815.8 - 768.2)

Volume	Invert	Avail.Storage	Storage Description
#1	80.11'	1,305 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 3,262 cf Overall x 40.0% Voids

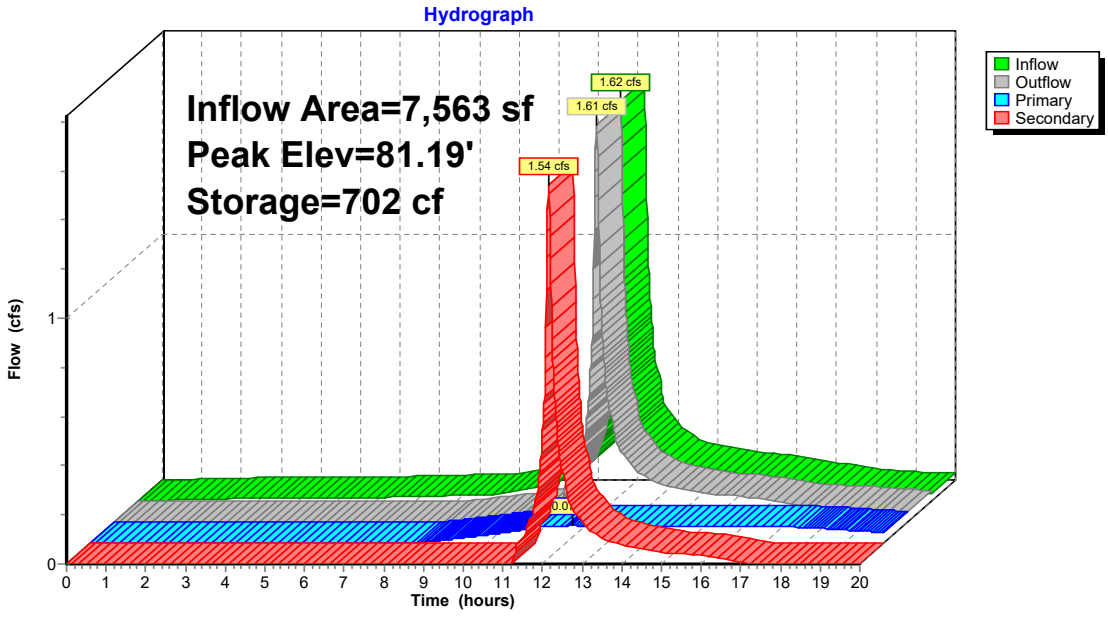
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
80.11	1,631	0	0
81.11	1,631	1,631	1,631
82.11	1,631	1,631	3,262

Device	Routing	Invert	Outlet Devices
#1	Primary	80.63'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	81.11'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.07 cfs @ 12.15 hrs HW=81.19' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.07 cfs @ 3.31 fps)

Secondary OutFlow Max=1.53 cfs @ 12.15 hrs HW=81.19' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Weir Controls 1.53 cfs @ 0.92 fps)

Pond 33H: CELL H



Summary for Pond 33I: CELL I

Inflow Area = 9,568 sf, 96.89% Impervious, Inflow Depth > 9.08" for 2100 - 100 Yr event
Inflow = 2.13 cfs @ 12.15 hrs, Volume= 7,236 cf
Outflow = 2.12 cfs @ 12.15 hrs, Volume= 6,639 cf, Atten= 0%, Lag= 0.3 min
Primary = 0.09 cfs @ 12.15 hrs, Volume= 2,846 cf
Routed to Pond 33J : CELL J
Secondary = 2.03 cfs @ 12.15 hrs, Volume= 3,792 cf
Routed to Pond 33J : CELL J

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 80.25' @ 12.15 hrs Surf.Area= 1,855 sf Storage= 810 cf

Plug-Flow detention time= 62.6 min calculated for 6,635 cf (92% of inflow)
Center-of-Mass det. time= 33.4 min (824.4 - 791.0)

Volume	Invert	Avail.Storage	Storage Description
#1	79.16'	1,484 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 3,710 cf Overall x 40.0% Voids

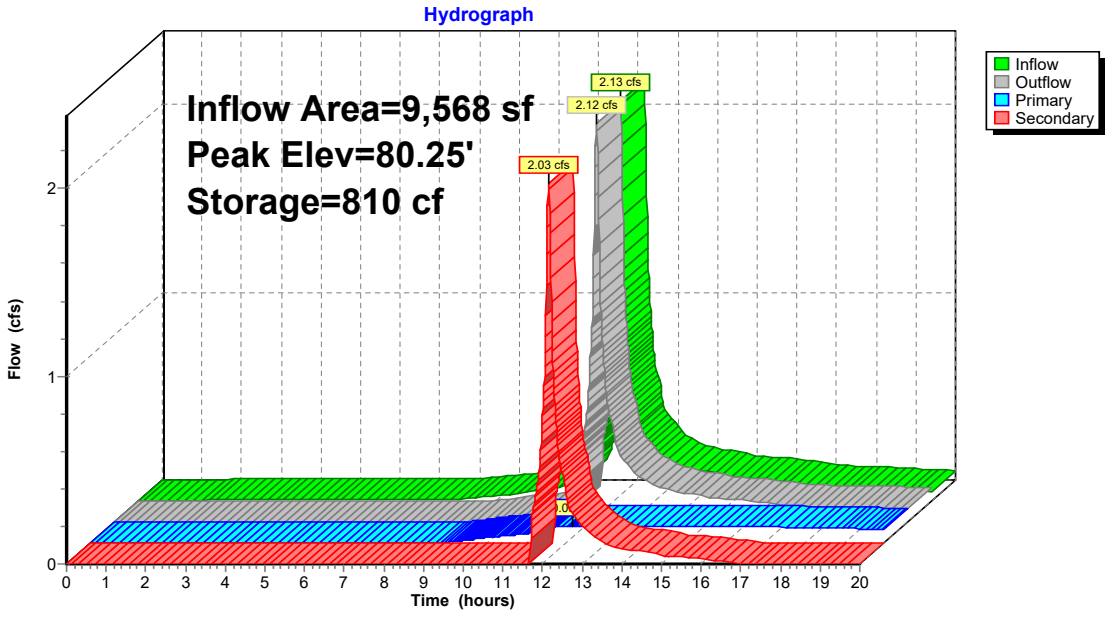
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
79.16	1,855	0	0
80.16	1,855	1,855	1,855
81.16	1,855	1,855	3,710

Device	Routing	Invert	Outlet Devices
#1	Primary	79.43'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	80.16'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.09 cfs @ 12.15 hrs HW=80.25' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.09 cfs @ 4.14 fps)

Secondary OutFlow Max=2.01 cfs @ 12.15 hrs HW=80.25' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Weir Controls 2.01 cfs @ 1.01 fps)

Pond 33I: CELL I



Summary for Pond 33J: CELL J

[79] Warning: Submerged Pond 33I Primary device # 1 by 0.03'

Inflow Area = 11,513 sf, 90.07% Impervious, Inflow Depth > 8.34" for 2100 - 100 Yr event
Inflow = 2.56 cfs @ 12.15 hrs, Volume= 8,002 cf
Outflow = 2.56 cfs @ 12.15 hrs, Volume= 7,572 cf, Atten= 0%, Lag= 0.2 min
Primary = 0.09 cfs @ 12.15 hrs, Volume= 2,879 cf
Routed to Pond 33K : CELL K
Secondary = 2.46 cfs @ 12.15 hrs, Volume= 4,693 cf
Routed to Pond 33K : CELL K

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 79.46' @ 12.15 hrs Surf.Area= 1,100 sf Storage= 486 cf

Plug-Flow detention time= 34.5 min calculated for 7,568 cf (95% of inflow)
Center-of-Mass det. time= 14.9 min (823.3 - 808.4)

Volume	Invert	Avail.Storage	Storage Description
#1	78.36'	880 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 2,200 cf Overall x 40.0% Voids

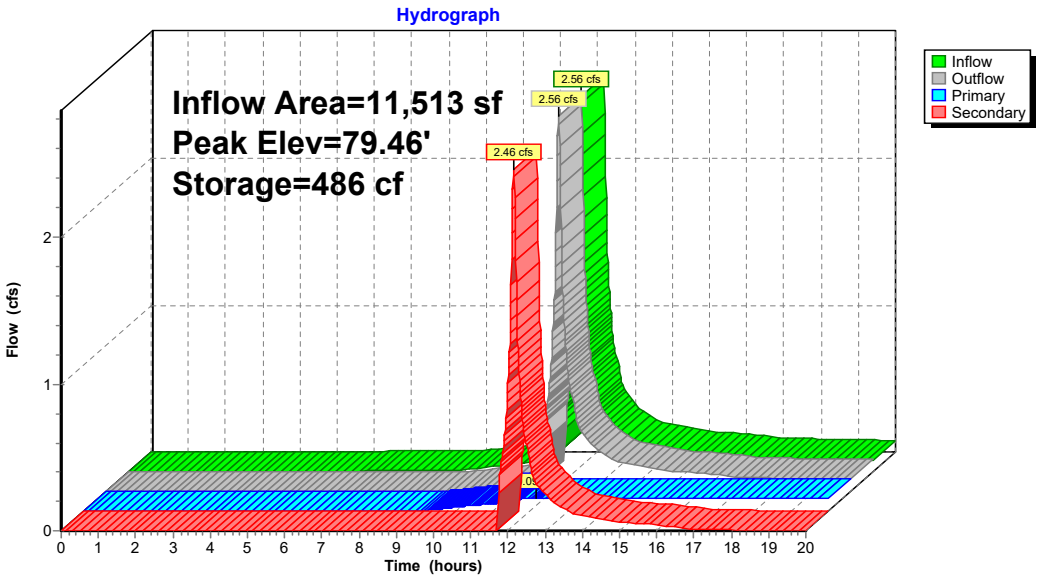
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
78.36	1,100	0	0
79.36	1,100	1,100	1,100
80.36	1,100	1,100	2,200

Device	Routing	Invert	Outlet Devices
#1	Primary	78.63'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	79.36'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.09 cfs @ 12.15 hrs HW=79.46' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.09 cfs @ 4.17 fps)

Secondary OutFlow Max=2.45 cfs @ 12.15 hrs HW=79.46' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Weir Controls 2.45 cfs @ 1.08 fps)

Pond 33J: CELL J



Summary for Pond 33K: CELL K

[79] Warning: Submerged Pond 33J Primary device # 1 by 0.46'

Inflow Area = 12,822 sf, 86.60% Impervious, Inflow Depth > 7.94" for 2100 - 100 Yr event
Inflow = 2.85 cfs @ 12.15 hrs, Volume= 8,487 cf
Outflow = 2.85 cfs @ 12.15 hrs, Volume= 8,193 cf, Atten= 0%, Lag= 0.1 min
Primary = 0.09 cfs @ 12.15 hrs, Volume= 2,758 cf
Routed to Pond 33L : OUTLET PIPE
Secondary = 2.76 cfs @ 12.15 hrs, Volume= 5,435 cf
Routed to Pond 33L : OUTLET PIPE

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 79.09' @ 12.15 hrs Surf.Area= 734 sf Storage= 326 cf

Plug-Flow detention time= 22.0 min calculated for 8,189 cf (96% of inflow)
Center-of-Mass det. time= 9.3 min (822.7 - 813.4)

Volume	Invert	Avail.Storage	Storage Description
#1	77.98'	587 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,468 cf Overall x 40.0% Voids

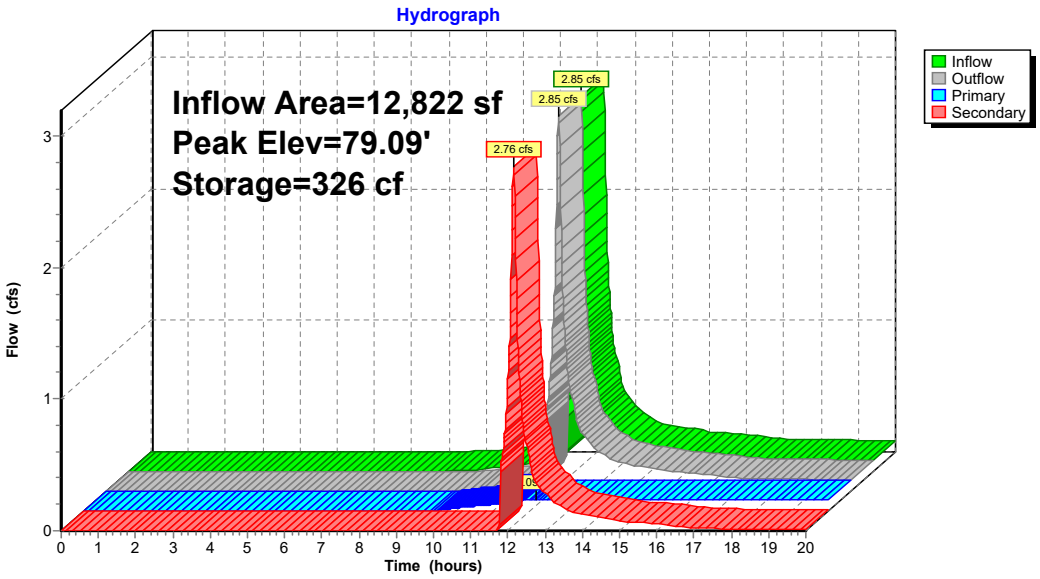
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
77.98	734	0	0
78.98	734	734	734
79.98	734	734	1,468

Device	Routing	Invert	Outlet Devices
#1	Primary	78.30'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	78.98'	**22.0' long x 0.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=0.09 cfs @ 12.15 hrs HW=79.09' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.09 cfs @ 4.05 fps)

Secondary OutFlow Max=2.75 cfs @ 12.15 hrs HW=79.09' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** (Weir Controls 2.75 cfs @ 1.12 fps)

Pond 33K: CELL K



Summary for Pond 33L: OUTLET PIPE

Inflow Area = 12,822 sf, 86.60% Impervious, Inflow Depth > 7.67" for 2100 - 100 Yr event
Inflow = 2.85 cfs @ 12.15 hrs, Volume= 8,193 cf
Outflow = 2.85 cfs @ 12.15 hrs, Volume= 8,191 cf, Atten= 0%, Lag= 0.1 min
Primary = 2.85 cfs @ 12.15 hrs, Volume= 8,191 cf
Routed to Reach DP-3PR : REGIONAL SWALE

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 77.07' @ 12.15 hrs Surf.Area= 30 sf Storage= 13 cf

Plug-Flow detention time= 0.2 min calculated for 8,191 cf (100% of inflow)
Center-of-Mass det. time= 0.1 min (822.8 - 822.7)

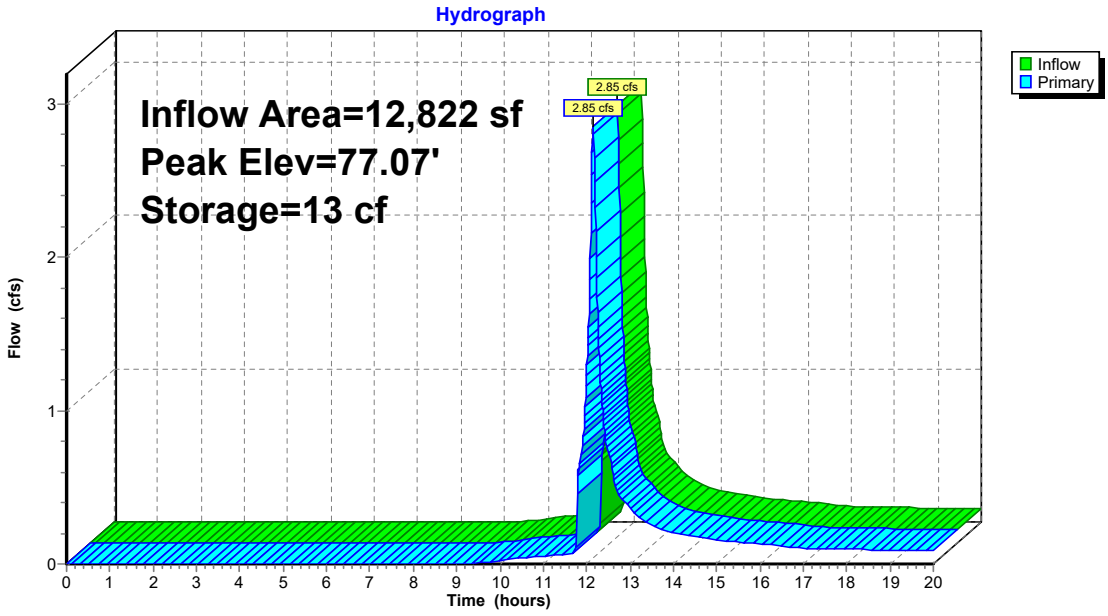
Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	37 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 93 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
76.00	30	0	0
79.10	30	93	93

Device	Routing	Invert	Outlet Devices
#1	Primary	76.00'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.84 cfs @ 12.15 hrs HW=77.07' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 2.84 cfs @ 3.62 fps)

Pond 33L: OUTLET PIPE



Summary for Pond BB-2A: BULLPEN

Inflow Area = 1,798 sf,100.00% Impervious, Inflow Depth > 10.52" for 2100 - 100 Yr event
Inflow = 0.50 cfs @ 12.13 hrs, Volume= 1,576 cf
Outflow = 0.16 cfs @ 12.30 hrs, Volume= 1,533 cf, Atten= 67%, Lag= 10.5 min
Primary = 0.16 cfs @ 12.30 hrs, Volume= 1,533 cf
Routed to Reach DP-3PR : REGIONAL SWALE

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 79.61' @ 12.30 hrs Surf.Area= 1,798 sf Storage= 441 cf

Plug-Flow detention time= 54.4 min calculated for 1,533 cf (97% of inflow)
Center-of-Mass det. time= 42.1 min (748.6 - 706.5)

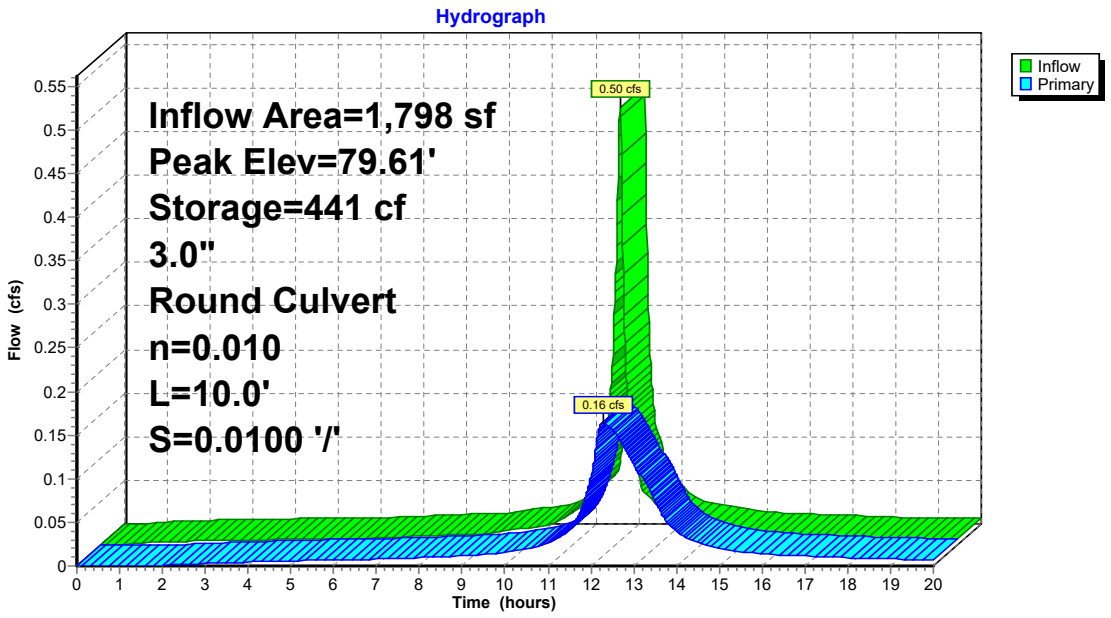
Volume	Invert	Avail.Storage	Storage Description
#1	79.00'	719 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 1,798 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
79.00	1,798	0	0
80.00	1,798	1,798	1,798

Device	Routing	Invert	Outlet Devices
#1	Primary	79.00'	**3.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 79.00' / 78.90' S= 0.0100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.05 sf

Primary OutFlow Max=0.16 cfs @ 12.30 hrs HW=79.61' (Free Discharge)
1=Culvert (Barrel Controls 0.16 cfs @ 3.33 fps)

Pond BB-2A: BULLPEN



Summary for Pond BB-4P: POROUS WALK-2

Inflow Area = 18,645 sf, 8.43% Impervious, Inflow Depth > 20.19" for 2100 - 100 Yr event
Inflow = 11.32 cfs @ 12.15 hrs, Volume= 31,369 cf
Outflow = 11.31 cfs @ 12.15 hrs, Volume= 30,730 cf, Atten= 0%, Lag= 0.2 min
Primary = 0.29 cfs @ 12.15 hrs, Volume= 502 cf
Routed to Reach DP-3PR : REGIONAL SWALE
Secondary = 11.02 cfs @ 12.15 hrs, Volume= 30,227 cf
Routed to Pond BB-P1 : Plaza

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 88.26' @ 12.15 hrs Surf.Area= 1,571 sf Storage= 795 cf

Plug-Flow detention time= 13.7 min calculated for 30,730 cf (98% of inflow)
Center-of-Mass det. time= 5.8 min (792.9 - 787.1)

Volume	Invert	Avail.Storage	Storage Description
#1	87.00'	1,257 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 3,142 cf Overall x 40.0% Voids

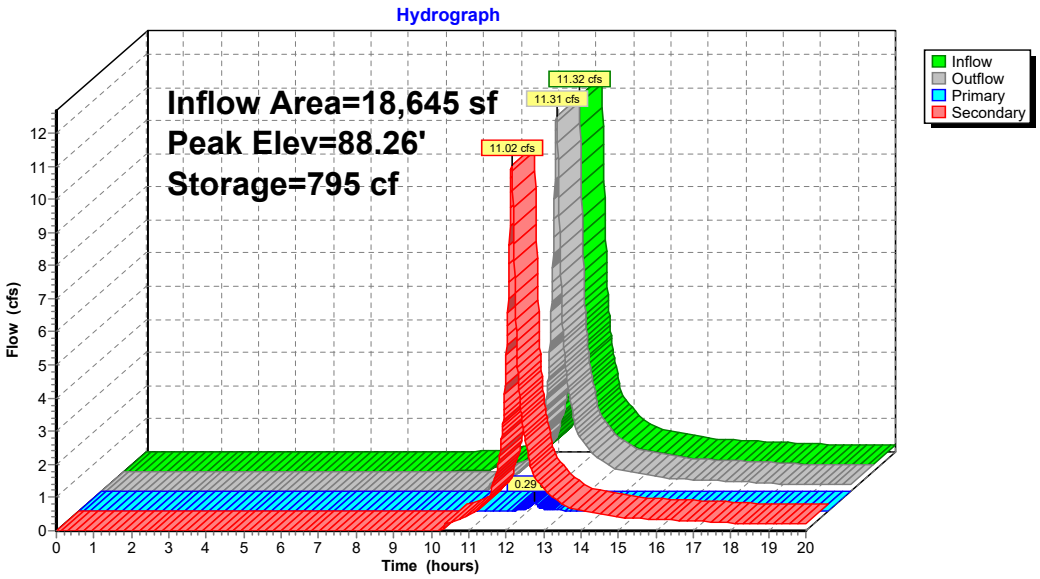
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
87.00	1,571	0	0
88.00	1,571	1,571	1,571
89.00	1,571	1,571	3,142

Device	Routing	Invert	Outlet Devices
#1	Primary	88.00'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 88.00' / 83.00' S= 0.5000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Secondary	88.00'	**30.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.29 cfs @ 12.15 hrs HW=88.26' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.29 cfs @ 1.75 fps)

Secondary OutFlow Max=11.01 cfs @ 12.15 hrs HW=88.26' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 11.01 cfs @ 1.39 fps)

Pond BB-4P: POROUS WALK-2



Summary for Pond BB-5P: POROUS WALK 1

Inflow Area = 45,346 sf, 8.87% Impervious, Inflow Depth > 6.09" for 2100 - 100 Yr event
Inflow = 8.04 cfs @ 12.16 hrs, Volume= 23,012 cf
Outflow = 8.03 cfs @ 12.16 hrs, Volume= 22,198 cf, Atten= 0%, Lag= 0.2 min
Primary = 0.15 cfs @ 12.16 hrs, Volume= 265 cf
Routed to Reach DP-3PR : REGIONAL SWALE
Secondary = 7.88 cfs @ 12.16 hrs, Volume= 21,933 cf
Routed to Pond BB-4P : POROUS WALK-2

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 91.21' @ 12.16 hrs Surf.Area= 2,298 sf Storage= 975 cf

Plug-Flow detention time= 26.6 min calculated for 22,198 cf (96% of inflow)
Center-of-Mass det. time= 12.9 min (791.1 - 778.2)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	1,609 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 4,596 cf Overall x 35.0% Voids

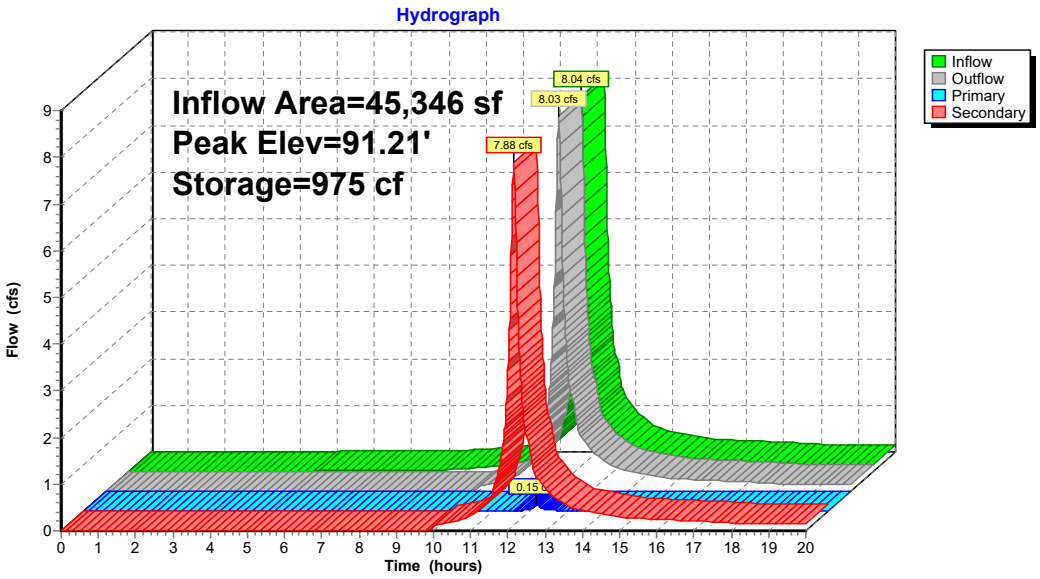
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.00	2,298	0	0
91.00	2,298	2,298	2,298
92.00	2,298	2,298	4,596

Device	Routing	Invert	Outlet Devices
#1	Primary	91.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	91.00'	**30.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.15 cfs @ 12.16 hrs HW=91.21' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.15 cfs @ 1.57 fps)

Secondary OutFlow Max=7.86 cfs @ 12.16 hrs HW=91.21' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 7.86 cfs @ 1.24 fps)

Pond BB-5P: POROUS WALK 1



Summary for Pond BB-P1: Plaza

Inflow Area = 13,728 sf, 46.55% Impervious, Inflow Depth > 34.35" for 2100 - 100 Yr event
Inflow = 14.06 cfs @ 12.14 hrs, Volume= 39,293 cf
Outflow = 6.36 cfs @ 12.30 hrs, Volume= 36,107 cf, Atten= 55%, Lag= 9.1 min
Primary = 6.36 cfs @ 12.30 hrs, Volume= 36,107 cf
Routed to Reach DP-3PR : REGIONAL SWALE

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 85.33' @ 12.30 hrs Surf.Area= 6,390 sf Storage= 11,068 cf

Plug-Flow detention time= 59.8 min calculated for 36,089 cf (92% of inflow)
Center-of-Mass det. time= 31.7 min (812.3 - 780.6)

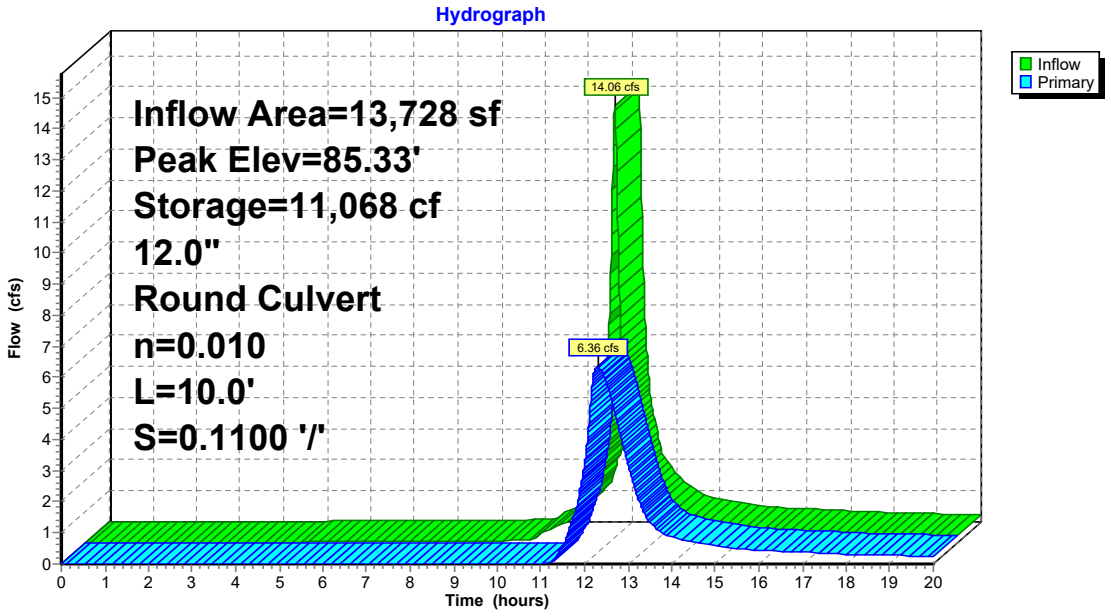
Volume	Invert	Avail.Storage	Storage Description
#1	81.00'	12,780 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 31,950 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
81.00	6,390	0	0
86.00	6,390	31,950	31,950

Device	Routing	Invert	Outlet Devices
#1	Primary	82.00'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 82.00' / 80.90' S= 0.1100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=6.36 cfs @ 12.30 hrs HW=85.33' (Free Discharge)
1=Culvert (Inlet Controls 6.36 cfs @ 8.10 fps)

Pond BB-P1: Plaza



Summary for Pond BB-P2: INFILT BASIN

Inflow Area = 155,772 sf,100.00% Impervious, Inflow Depth > 10.52" for 2100 - 100 Yr event
Inflow = 43.43 cfs @ 12.13 hrs, Volume= 136,564 cf
Outflow = 6.11 cfs @ 12.61 hrs, Volume= 88,150 cf, Atten= 86%, Lag= 29.0 min
Primary = 0.44 cfs @ 12.61 hrs, Volume= 20,480 cf
Routed to Reach DP-3PR : REGIONAL SWALE
Secondary = 5.67 cfs @ 12.61 hrs, Volume= 67,670 cf
Routed to Reach DP-3PR : REGIONAL SWALE

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 78.66' @ 12.61 hrs Surf.Area= 120,809 sf Storage= 81,840 cf

Plug-Flow detention time= 226.4 min calculated for 88,106 cf (65% of inflow)
Center-of-Mass det. time= 142.7 min (849.2 - 706.5)

Volume	Invert	Avail.Storage	Storage Description
#1	74.67'	124,126 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 354,645 cf Overall x 35.0% Voids

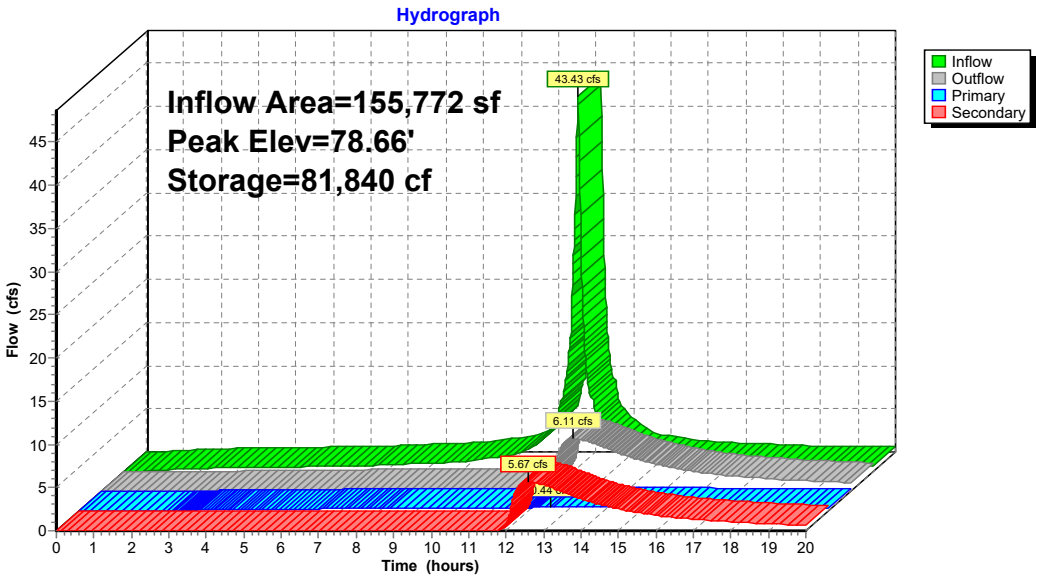
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
74.67	14,517	0	0
77.00	14,517	33,825	33,825
77.01	120,809	677	34,501
79.66	120,809	320,144	354,645

Device	Routing	Invert	Outlet Devices
#1	Secondary	77.50'	**24.0" Round Culvert** L= 353.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 77.50' / 76.50' S= 0.0028 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 3.14 sf
#2	Primary	75.00'	**3.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 75.00' / 74.90' S= 0.0100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.05 sf

Primary OutFlow Max=0.44 cfs @ 12.61 hrs HW=78.66' (Free Discharge)
└**2=Culvert** (Inlet Controls 0.44 cfs @ 9.05 fps)

Secondary OutFlow Max=5.67 cfs @ 12.61 hrs HW=78.66' (Free Discharge)
└**1=Culvert** (Barrel Controls 5.67 cfs @ 4.32 fps)

Pond BB-P2: INFILT BASIN



ATTACHMENT D

Closed Drainage System Calculations

Nitsch Project #12683.4

ATTACHMENT D
CLOSED DRAINAGE CALCuLATIONS
STORMWATER REPORT

Complies with the NJDEP – New Jersey Administrative Code (N.J.A.C.) 7:8 last amended July 17, 2023
and the West Windsor Township Stormwater Control Requirements (Article XXI)

Project Name: Baseball Ballpark at Meadows Neighborhood

Date Prepared:July 8, 2024

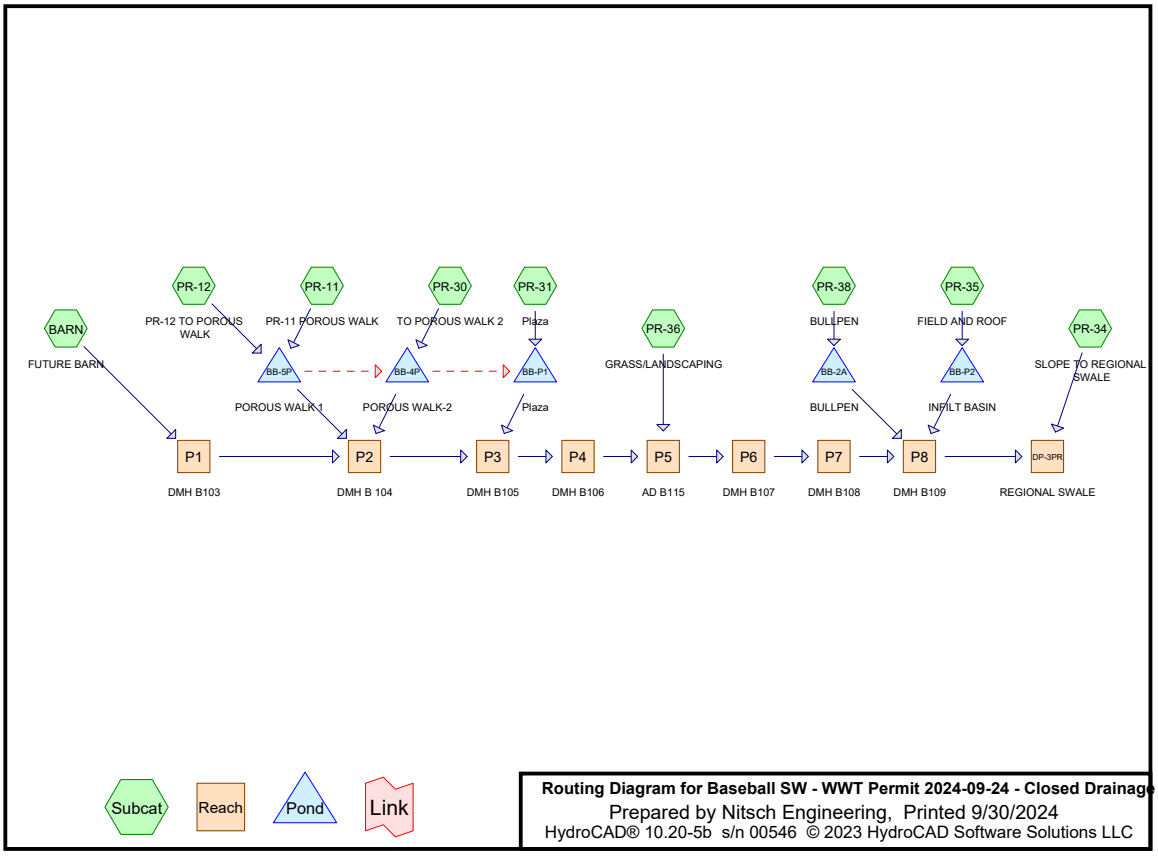
CLOSED DRAINAGE DESCRIPTOIN AND SUMMARY

The proposed Closed Drainage system generally conveys the discharge from the Infiltration Basin and the various Porous Pavement Systems with storage. There are two Area Drains (AD B10 and AD B11) that collect flow from a landscape area prior to it flowing onto the porous paver system near the main entrance of the Baseball Ballpark. There are a series of Area Drains near the main entrance as an overflow in case porous paver system infiltration component is allowing flow through pavers. These are not intended to collect runoff.

The attached calculations demonstrate the the flow out the various porous systems and the infiltration system have little or no flow during the 25-Year Storm for the typical return period. The rational method was used for these calculations. See attached HydroCAD.

The main pipe that flows along the south of the Baseball Ballpark is a 24-inch CPP pipe and is over sized for the runoff and discharges from the basins associated with the Ballpark. The plans indicate that this pipe could be extended to the west to collect additional flow from future projects. Any future projects would be need to assess the flow from that project and confirm the capacity of the pipe.

In summary, the flows from the porous pavement systems and the infiltration basin is less than 1 cubic feet per second.



Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2100 - 25 Yr	NOAA 24-hr	C	Default	24.00	1	8.42	2

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
111,485	61	>75% Grass cover, Good, HSG B (PR-12, PR-30, PR-31, PR-34, PR-36)
1,352	98	Paved parking, HSG A (PR-30)
8,125	98	Paved parking, HSG B (PR-31, PR-38)
4,129	98	Paved roads w/curbs & sewers, HSG B (PR-11, PR-12)
196,706	98	Roofs, HSG B (BARN, PR-35)
321,797	**85**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
1,352	HSG A	PR-30
320,445	HSG B	BARN, PR-11, PR-12, PR-30, PR-31, PR-34, PR-35, PR-36, PR-38
0	HSG C	
0	HSG D	
0	Other	
321,797		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Subcatchment Numbers
0	111,485	0	0	0	111,485	>75% Grass cover, Good	PR-12, PR-30, PR-31, PR-34, PR-36
1,352	8,125	0	0	0	9,477	Paved parking	PR-30, PR-31, PR-38
0	4,129	0	0	0	4,129	Paved roads w/curbs & sewers	PR-11, PR-12
0	196,706	0	0	0	196,706	Roofs	BARN, PR-35
1,352	**320,445**	**0**	**0**	**0**	**321,797**	**TOTAL AREA**	

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	P1	82.60	81.97	84.4	0.0075	0.013	0.0	24.0	0.0	DMH B103
2	P2	81.94	80.74	114.8	0.0105	0.013	0.0	24.0	0.0	DMH B 104
3	P3	80.64	80.20	38.8	0.0113	0.013	0.0	24.0	0.0	DMH B105
4	P4	80.10	78.97	111.1	0.0102	0.013	0.0	24.0	0.0	DMH B106
5	P5	78.97	77.69	127.8	0.0100	0.013	0.0	24.0	0.0	AD B115
6	P6	77.59	76.11	145.7	0.0102	0.013	0.0	24.0	0.0	DMH B107
7	P7	76.01	75.62	36.8	0.0106	0.013	0.0	24.0	0.0	DMH B108
8	P8	75.52	74.00	152.0	0.0100	0.013	0.0	24.0	0.0	DMH B109
9	BB-2A	79.00	78.90	10.0	0.0100	0.010	0.0	3.0	0.0	BULLPEN
10	BB-4P	88.00	83.00	10.0	0.5000	0.010	0.0	12.0	0.0	POROUS WALK-2
11	BB-P1	82.00	80.90	10.0	0.1100	0.010	0.0	12.0	0.0	Plaza
12	BB-P2	78.30	78.20	10.0	0.0100	0.010	0.0	24.0	0.0	INFILT BASIN
13	BB-P2	75.00	74.90	10.0	0.0100	0.010	0.0	3.0	0.0	INFILT BASIN

Time span=0.00-20.00 hrs, dt=0.01 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentBARN: FUTURE BARN Runoff Area=30,000 sf 100.00% Impervious Runoff Depth>7.76"
Tc=6.0 min CN=0/98 Runoff=6.21 cfs 19,394 cf

SubcatchmentPR-11: PR-11 POROUS WALK Runoff Area=2,363 sf 100.00% Impervious Runoff Depth>7.76"
Tc=6.0 min CN=0/98 Runoff=0.49 cfs 1,528 cf

SubcatchmentPR-12: PR-12 TO POROUS WALK Runoff Area=43,346 sf 4.07% Impervious Runoff Depth>3.62"
Flow Length=205' Tc=8.4 min CN=61/98 Runoff=4.66 cfs 13,058 cf

SubcatchmentPR-30: TO POROUS WALK 2 Runoff Area=21,359 sf 6.33% Impervious Runoff Depth>3.72"
Tc=6.0 min CN=61/98 Runoff=2.57 cfs 6,614 cf

SubcatchmentPR-31: Plaza Runoff Area=16,650 sf 36.53% Impervious Runoff Depth>5.02"
Tc=6.0 min CN=61/98 Runoff=2.47 cfs 6,964 cf

SubcatchmentPR-34: SLOPE TO REGIONAL SWALE Runoff Area=20,933 sf 0.00% Impervious Runoff Depth>3.44"
Flow Length=142' Tc=7.1 min CN=61/0 Runoff=2.30 cfs 6,003 cf

SubcatchmentPR-35: FIELD AND ROOF Runoff Area=166,706 sf 100.00% Impervious Runoff Depth>7.76"
Tc=6.0 min CN=0/98 Runoff=34.51 cfs 107,770 cf

SubcatchmentPR-36: GRASS/LANDSCAPING Runoff Area=18,398 sf 0.00% Impervious Runoff Depth>3.44"
Tc=6.0 min CN=61/0 Runoff=2.11 cfs 5,278 cf

SubcatchmentPR-38: BULLPEN Runoff Area=2,042 sf 100.00% Impervious Runoff Depth>7.76"
Tc=6.0 min CN=0/98 Runoff=0.42 cfs 1,320 cf

Reach DP-3PR: REGIONAL SWALE Inflow=12.97 cfs 83,975 cf
Outflow=12.97 cfs 83,975 cf

Reach P1: DMH B103 Avg. Flow Depth=0.77' Max Vel=5.52 fps Inflow=6.21 cfs 19,394 cf
24.0" Round Pipe n=0.013 L=84.4' S=0.0075 '/' Capacity=19.55 cfs Outflow=6.19 cfs 19,388 cf

Reach P2: DMH B 104 Avg. Flow Depth=0.71' Max Vel=6.27 fps Inflow=6.34 cfs 19,726 cf
24.0" Round Pipe n=0.013 L=114.8' S=0.0105 '/' Capacity=23.13 cfs Outflow=6.31 cfs 19,719 cf

Reach P3: DMH B105 Avg. Flow Depth=0.84' Max Vel=7.09 fps Inflow=8.91 cfs 40,053 cf
24.0" Round Pipe n=0.013 L=38.8' S=0.0113 '/' Capacity=24.09 cfs Outflow=8.90 cfs 40,048 cf

Reach P4: DMH B106 Avg. Flow Depth=0.87' Max Vel=6.81 fps Inflow=8.90 cfs 40,048 cf
24.0" Round Pipe n=0.013 L=111.1' S=0.0102 '/' Capacity=22.82 cfs Outflow=8.88 cfs 40,031 cf

Reach P5: AD B115 Avg. Flow Depth=0.97' Max Vel=7.10 fps Inflow=10.69 cfs 45,309 cf
24.0" Round Pipe n=0.013 L=127.8' S=0.0100 '/' Capacity=22.64 cfs Outflow=10.66 cfs 45,288 cf

Reach P6: DMH B107 Avg. Flow Depth=0.96' Max Vel=7.13 fps Inflow=10.66 cfs 45,288 cf
24.0" Round Pipe n=0.013 L=145.7' S=0.0102 '/' Capacity=22.80 cfs Outflow=10.62 cfs 45,264 cf

Reach P7: DMH B108 Avg. Flow Depth=0.95' Max Vel=7.24 fps Inflow=10.62 cfs 45,264 cf
24.0" Round Pipe n=0.013 L=36.8' S=0.0106 '/' Capacity=23.29 cfs Outflow=10.61 cfs 45,258 cf

Reach P8: DMH B109 Avg. Flow Depth=0.99' Max Vel=7.17 fps Inflow=11.14 cfs 78,037 cf
24.0" Round Pipe n=0.013 L=152.0' S=0.0100 '/' Capacity=22.62 cfs Outflow=11.11 cfs 77,972 cf

Pond BB-2A: BULLPEN Peak Elev=79.48' Storage=392 cf Inflow=0.42 cfs 1,320 cf
3.0" Round Culvert n=0.010 L=10.0' S=0.0100 '/' Outflow=0.14 cfs 1,275 cf

Pond BB-4P: POROUS WALK-2 Peak Elev=88.19' Storage=641 cf Inflow=6.63 cfs 17,091 cf
Primary=0.15 cfs 229 cf Secondary=6.48 cfs 16,315 cf Outflow=6.62 cfs 16,544 cf

Pond BB-5P: POROUS WALK 1 Peak Elev=91.15' Storage=4,553 cf Inflow=5.11 cfs 14,586 cf
Primary=0.08 cfs 109 cf Secondary=4.62 cfs 10,477 cf Outflow=4.69 cfs 10,586 cf

Pond BB-P1: Plaza Peak Elev=83.66' Storage=6,482 cf Inflow=8.55 cfs 23,279 cf
12.0" Round Culvert n=0.010 L=10.0' S=0.1100 '/' Outflow=4.08 cfs 20,335 cf

Pond BB-P2: INFILT BASIN Peak Elev=78.63' Storage=80,614 cf Inflow=34.51 cfs 107,770 cf
Outflow=1.01 cfs 31,505 cf

Total Runoff Area = 321,797 sf Runoff Volume = 167,929 cf Average Runoff Depth = 6.26"
34.64% Pervious = 111,485 sf 65.36% Impervious = 210,312 sf

Summary for Subcatchment BARN: FUTURE BARN

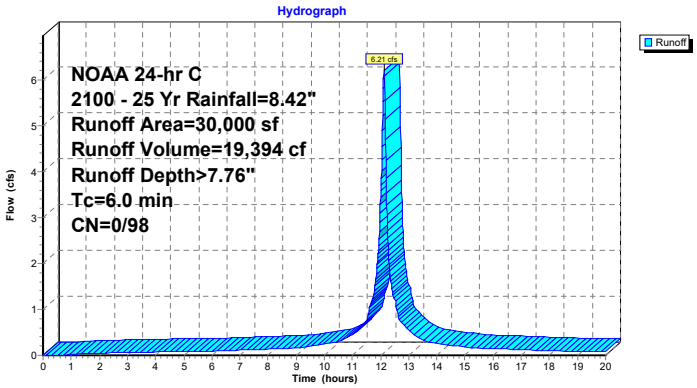
Runoff = 6.21 cfs @ 12.13 hrs, Volume= 19,394 cf, Depth> 7.76"
Routed to Reach P1 : DMH B103

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 25 Yr Rainfall=8.42"

Area (sf)	CN	Description
30,000	98	Roofs, HSG B
30,000	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment BARN: FUTURE BARN



Summary for Subcatchment PR-11: PR-11 POROUS WALK

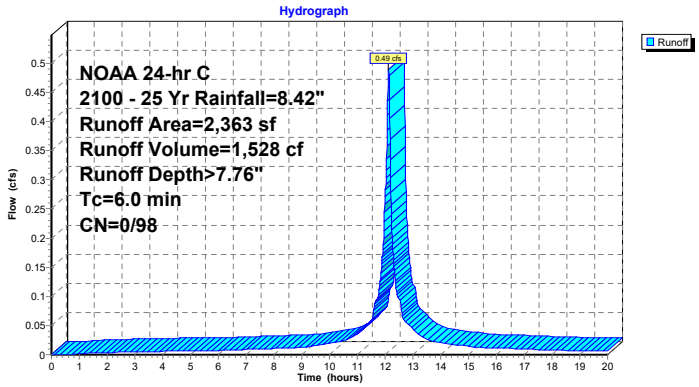
Runoff = 0.49 cfs @ 12.13 hrs, Volume= 1,528 cf, Depth> 7.76"
Routed to Pond BB-5P : POROUS WALK 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 25 Yr Rainfall=8.42"

Area (sf)	CN	Description
2,363	98	Paved roads w/curbs & sewers, HSG B
2,363	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Surface**

Subcatchment PR-11: PR-11 POROUS WALK



Summary for Subcatchment PR-12: PR-12 TO POROUS WALK

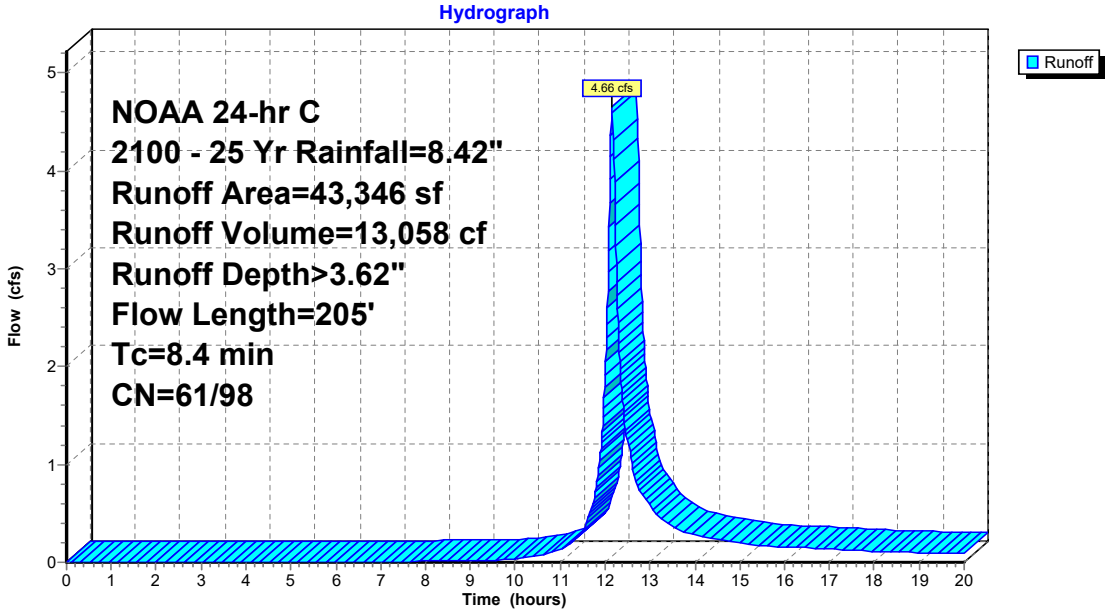
Runoff = 4.66 cfs @ 12.16 hrs, Volume= 13,058 cf, Depth> 3.62"
Routed to Pond BB-5P : POROUS WALK 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 25 Yr Rainfall=8.42"

Area (sf)	CN	Description
41,580	61	>75% Grass cover, Good, HSG B
1,766	98	Paved roads w/curbs & sewers, HSG B
43,346	63	Weighted Average
41,580	61	95.93% Pervious Area
1,766	98	4.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0150	0.13		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.34"
2.2	155	0.0290	1.19		**Shallow Concentrated Flow, Shallow Conc** Short Grass Pasture Kv= 7.0 fps
8.4	205	Total			

Subcatchment PR-12: PR-12 TO POROUS WALK



Summary for Subcatchment PR-30: TO POROUS WALK 2

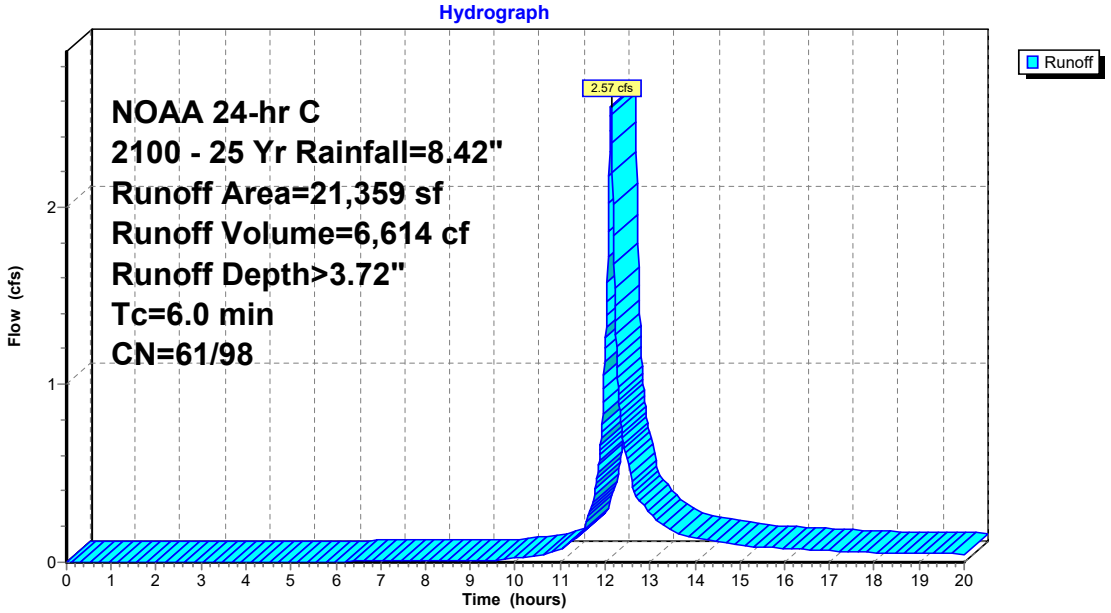
Runoff = 2.57 cfs @ 12.13 hrs, Volume= 6,614 cf, Depth> 3.72"
Routed to Pond BB-4P : POROUS WALK-2

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 25 Yr Rainfall=8.42"

Area (sf)	CN	Description
20,007	61	>75% Grass cover, Good, HSG B
1,352	98	Paved parking, HSG A
21,359	63	Weighted Average
20,007	61	93.67% Pervious Area
1,352	98	6.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment PR-30: TO POROUS WALK 2



Summary for Subcatchment PR-31: Plaza

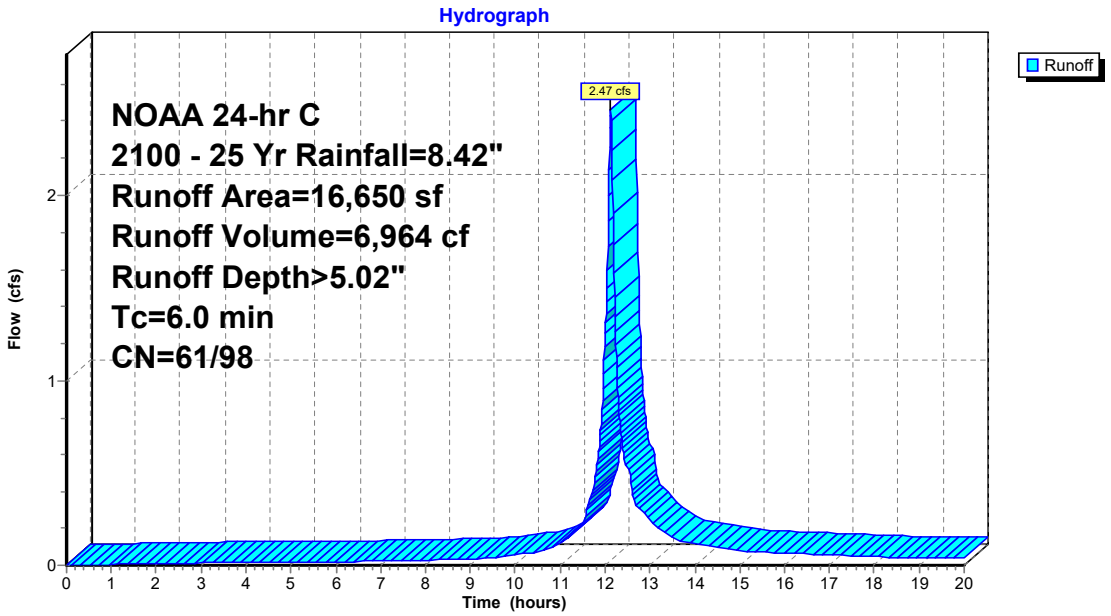
Runoff = 2.47 cfs @ 12.13 hrs, Volume= 6,964 cf, Depth> 5.02"
Routed to Pond BB-P1 : Plaza

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 25 Yr Rainfall=8.42"

Area (sf)	CN	Description
6,083	98	Paved parking, HSG B
10,567	61	>75% Grass cover, Good, HSG B
16,650	75	Weighted Average
10,567	61	63.47% Pervious Area
6,083	98	36.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment PR-31: Plaza



Summary for Subcatchment PR-34: SLOPE TO REGIONAL SWALE

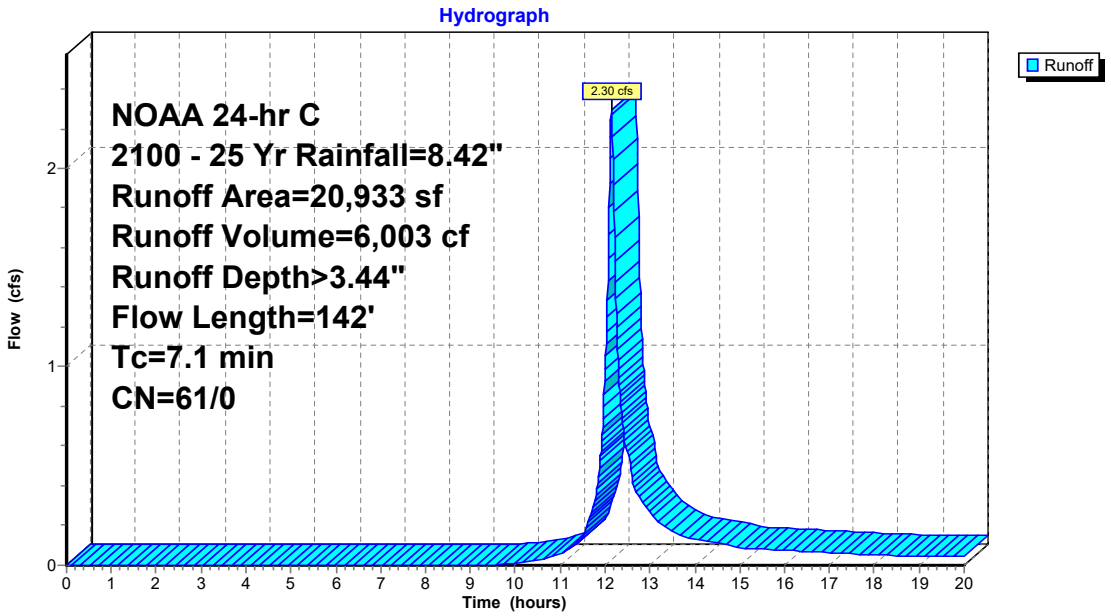
Runoff = 2.30 cfs @ 12.15 hrs, Volume= 6,003 cf, Depth> 3.44"
Routed to Reach DP-3PR : REGIONAL SWALE

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 25 Yr Rainfall=8.42"

Area (sf)	CN	Description
20,933	61	>75% Grass cover, Good, HSG B
20,933	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0150	0.13		**Sheet Flow, SHEET FLOW** Grass: Short n= 0.150 P2= 3.34"
0.9	92	0.0570	1.67		**Shallow Concentrated Flow, SHALLOW CONC** Short Grass Pasture Kv= 7.0 fps
7.1	142	Total			

Subcatchment PR-34: SLOPE TO REGIONAL SWALE



Summary for Subcatchment PR-35: FIELD AND ROOF

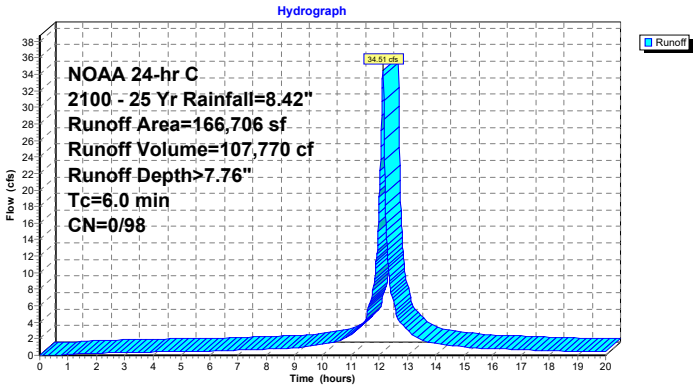
Runoff = 34.51 cfs @ 12.13 hrs, Volume= 107,770 cf, Depth> 7.76"
Routed to Pond BB-P2 : INFILT BASIN

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 25 Yr Rainfall=8.42"

Area (sf)	CN	Description
166,706	98	Roofs, HSG B
166,706	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT**

Subcatchment PR-35: FIELD AND ROOF



Summary for Subcatchment PR-36: GRASS/LANDSCAPING

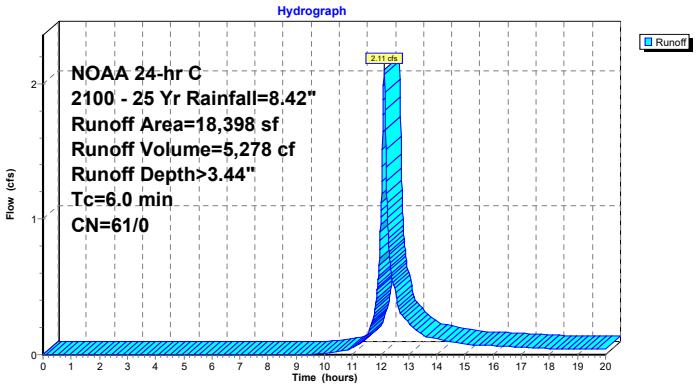
Runoff = 2.11 cfs @ 12.13 hrs, Volume= 5,278 cf, Depth> 3.44"
Routed to Reach P5 : AD B115

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 25 Yr Rainfall=8.42"

Area (sf)	CN	Description
18,398	61	>75% Grass cover, Good, HSG B
18,398	61	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum**

Subcatchment PR-36: GRASS/LANDSCAPING



Summary for Subcatchment PR-38: BULLPEN

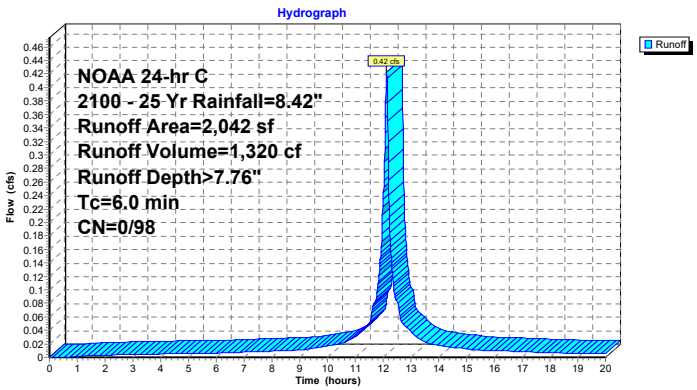
Runoff = 0.42 cfs @ 12.13 hrs, Volume= 1,320 cf, Depth> 7.76"
Routed to Pond BB-2A : BULLPEN

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 2100 - 25 Yr Rainfall=8.42"

Area (sf)	CN	Description
2,042	98	Paved parking, HSG B
2,042	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment PR-38: BULLPEN



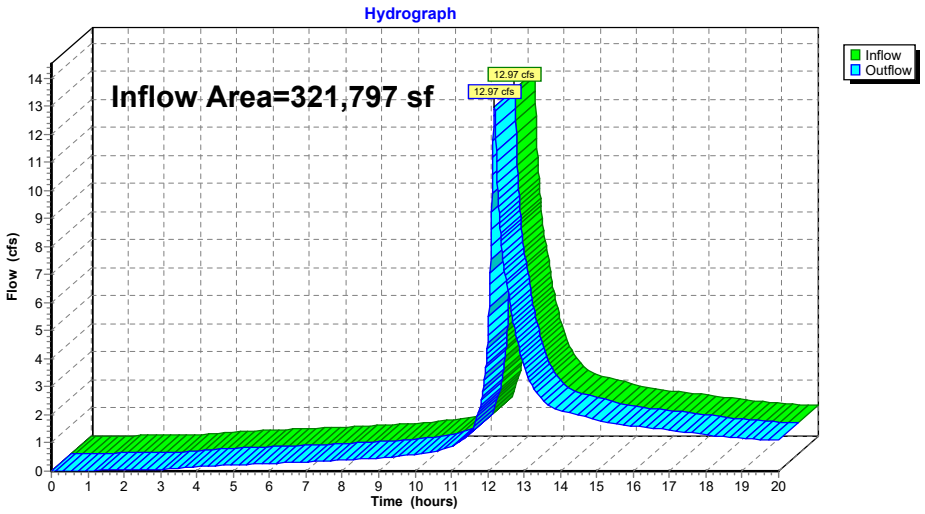
Summary for Reach DP-3PR: REGIONAL SWALE

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 321,797 sf, 65.36% Impervious, Inflow Depth > 3.13" for 2100 - 25 Yr event
Inflow = 12.97 cfs @ 12.19 hrs, Volume= 83,975 cf
Outflow = 12.97 cfs @ 12.19 hrs, Volume= 83,975 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs

Reach DP-3PR: REGIONAL SWALE



Summary for Reach P1: DMH B103

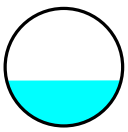
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 30,000 sf,100.00% Impervious, Inflow Depth > 7.76" for 2100 - 25 Yr event
Inflow = 6.21 cfs @ 12.13 hrs, Volume= 19,394 cf
Outflow = 6.19 cfs @ 12.14 hrs, Volume= 19,388 cf, Atten= 0%, Lag= 0.4 min
Routed to Reach P2 : DMH B 104

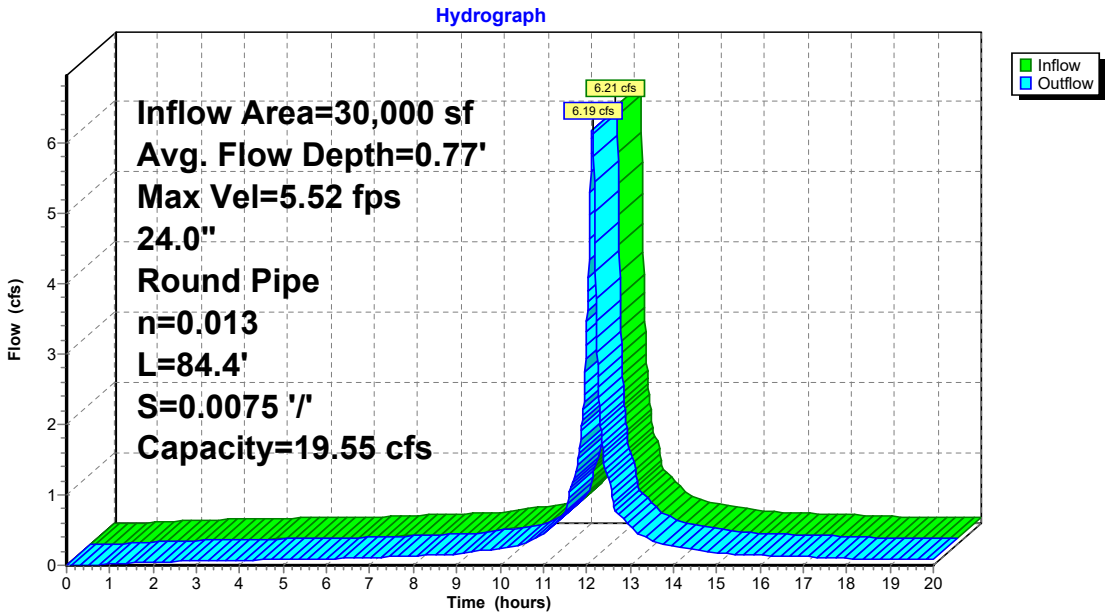
Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.52 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.89 fps, Avg. Travel Time= 0.7 min

Peak Storage= 95 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.77' , Surface Width= 1.95'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 19.55 cfs

24.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 84.4' Slope= 0.0075 '/'
Inlet Invert= 82.60', Outlet Invert= 81.97'



Reach P1: DMH B103



Summary for Reach P2: DMH B 104

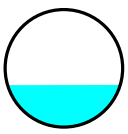
[52] Hint: Inlet/Outlet conditions not evaluated
[61] Hint: Exceeded Reach 3R outlet invert by 0.68' @ 12.14 hrs

Inflow Area = 97,068 sf, 36.55% Impervious, Inflow Depth > 2.44" for 2100 - 25 Yr event
Inflow = 6.34 cfs @ 12.14 hrs, Volume= 19,726 cf
Outflow = 6.31 cfs @ 12.15 hrs, Volume= 19,719 cf, Atten= 0%, Lag= 0.5 min
Routed to Reach P3 : DMH B105

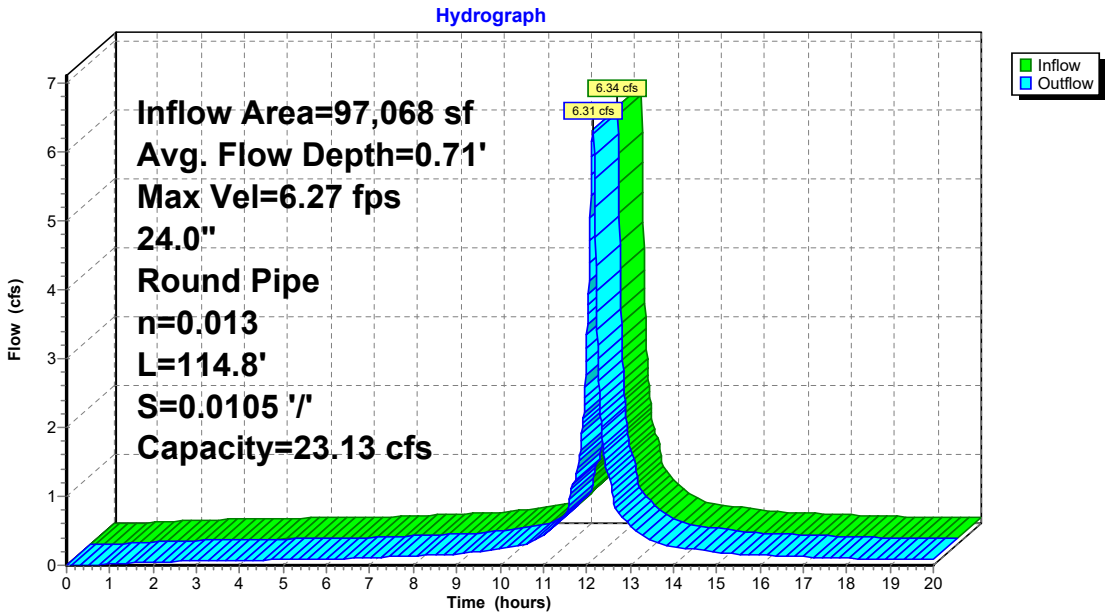
Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.27 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.13 fps, Avg. Travel Time= 0.9 min

Peak Storage= 116 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.71' , Surface Width= 1.92'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 23.13 cfs

24.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 114.8' Slope= 0.0105 '/'
Inlet Invert= 81.94', Outlet Invert= 80.74'



Reach P2: DMH B 104



Summary for Reach P3: DMH B105

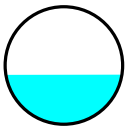
[52] Hint: Inlet/Outlet conditions not evaluated
[62] Hint: Exceeded Reach 4R OUTLET depth by 0.21' @ 12.43 hrs
[79] Warning: Submerged Pond BB-P1 Primary device # 1 OUTLET by 0.58'

Inflow Area = 113,718 sf, 36.55% Impervious, Inflow Depth > 4.23" for 2100 - 25 Yr event
Inflow = 8.91 cfs @ 12.16 hrs, Volume= 40,053 cf
Outflow = 8.90 cfs @ 12.17 hrs, Volume= 40,048 cf, Atten= 0%, Lag= 0.1 min
Routed to Reach P4 : DMH B106

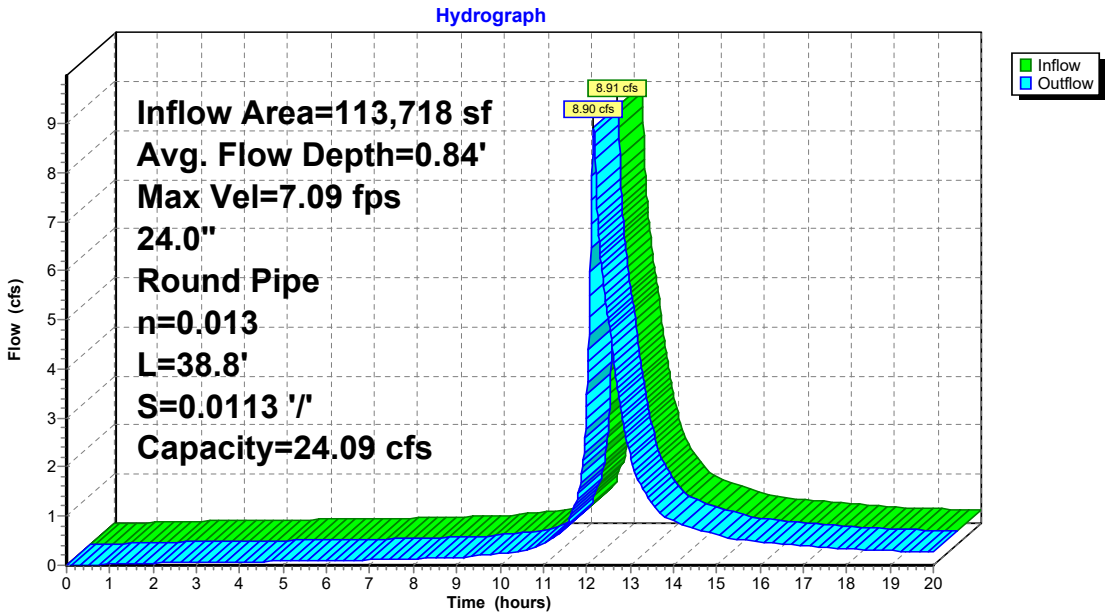
Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Max. Velocity= 7.09 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.61 fps, Avg. Travel Time= 0.2 min

Peak Storage= 49 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.84' , Surface Width= 1.97'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 24.09 cfs

24.0" Round Pipe
n= 0.013
Length= 38.8' Slope= 0.0113 '/'
Inlet Invert= 80.64', Outlet Invert= 80.20'



Reach P3: DMH B105



Summary for Reach P4: DMH B106

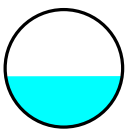
[52] Hint: Inlet/Outlet conditions not evaluated
[61] Hint: Exceeded Reach 5R outlet invert by 0.77' @ 12.17 hrs

Inflow Area = 113,718 sf, 36.55% Impervious, Inflow Depth > 4.23" for 2100 - 25 Yr event
Inflow = 8.90 cfs @ 12.17 hrs, Volume= 40,048 cf
Outflow = 8.88 cfs @ 12.17 hrs, Volume= 40,031 cf, Atten= 0%, Lag= 0.5 min
Routed to Reach P5 : AD B115

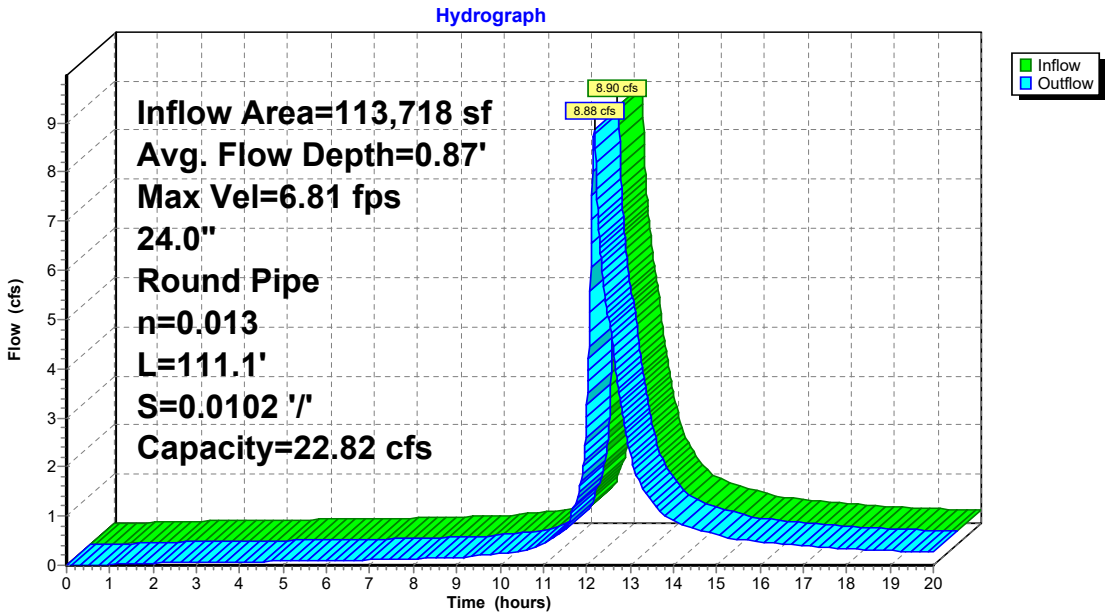
Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.81 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.51 fps, Avg. Travel Time= 0.7 min

Peak Storage= 145 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.87' , Surface Width= 1.98'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 22.82 cfs

24.0" Round Pipe
n= 0.013
Length= 111.1' Slope= 0.0102 '/'
Inlet Invert= 80.10', Outlet Invert= 78.97'



Reach P4: DMH B106



Summary for Reach P5: AD B115

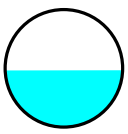
[52] Hint: Inlet/Outlet conditions not evaluated
[62] Hint: Exceeded Reach 6R OUTLET depth by 0.10' @ 12.17 hrs

Inflow Area = 132,116 sf, 31.46% Impervious, Inflow Depth > 4.12" for 2100 - 25 Yr event
Inflow = 10.69 cfs @ 12.17 hrs, Volume= 45,309 cf
Outflow = 10.66 cfs @ 12.17 hrs, Volume= 45,288 cf, Atten= 0%, Lag= 0.5 min
Routed to Reach P6 : DMH B107

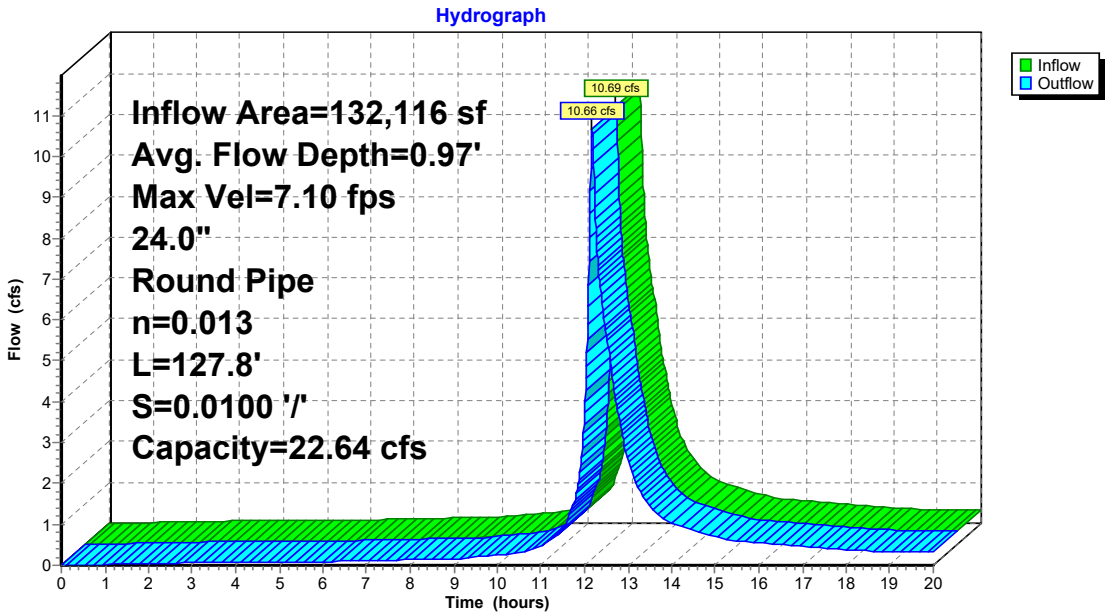
Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Max. Velocity= 7.10 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.57 fps, Avg. Travel Time= 0.8 min

Peak Storage= 192 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.97' , Surface Width= 2.00'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 22.64 cfs

24.0" Round Pipe
n= 0.013
Length= 127.8' Slope= 0.0100 '/'
Inlet Invert= 78.97', Outlet Invert= 77.69'



Reach P5: AD B115



Summary for Reach P6: DMH B107

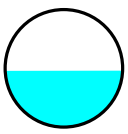
[52] Hint: Inlet/Outlet conditions not evaluated
[61] Hint: Exceeded Reach 7R outlet invert by 0.86' @ 12.18 hrs

Inflow Area = 132,116 sf, 31.46% Impervious, Inflow Depth > 4.11" for 2100 - 25 Yr event
Inflow = 10.66 cfs @ 12.17 hrs, Volume= 45,288 cf
Outflow = 10.62 cfs @ 12.18 hrs, Volume= 45,264 cf, Atten= 0%, Lag= 0.6 min
Routed to Reach P7 : DMH B108

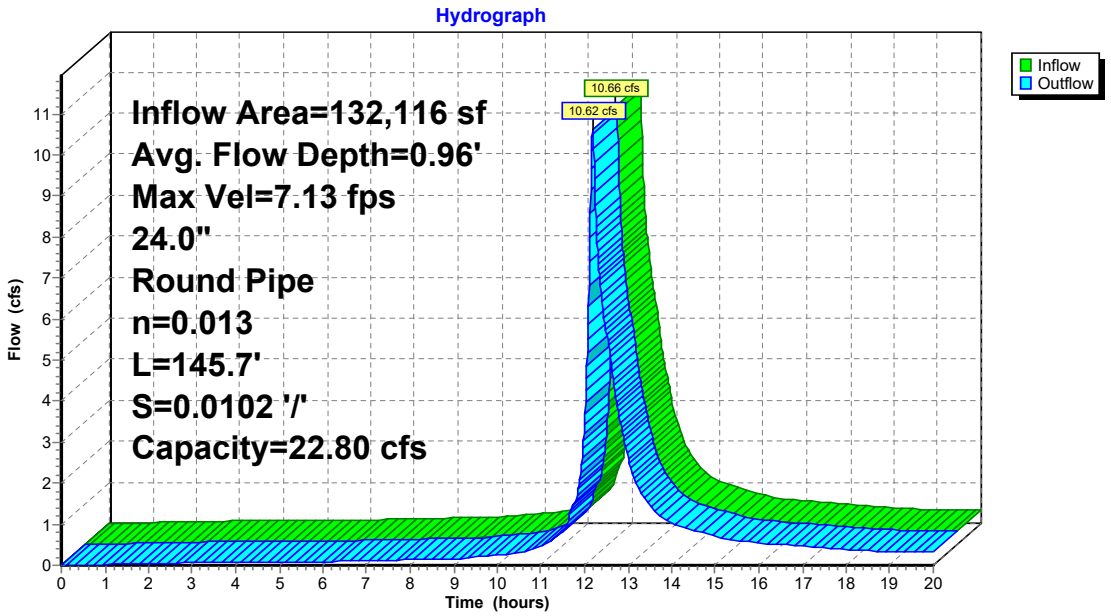
Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Max. Velocity= 7.13 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.58 fps, Avg. Travel Time= 0.9 min

Peak Storage= 217 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.96' , Surface Width= 2.00'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 22.80 cfs

24.0" Round Pipe
n= 0.013
Length= 145.7' Slope= 0.0102 '/'
Inlet Invert= 77.59', Outlet Invert= 76.11'



Reach P6: DMH B107



Summary for Reach P7: DMH B108

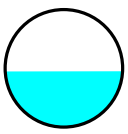
[52] Hint: Inlet/Outlet conditions not evaluated
[61] Hint: Exceeded Reach 8R outlet invert by 0.85' @ 12.19 hrs

Inflow Area = 132,116 sf, 31.46% Impervious, Inflow Depth > 4.11" for 2100 - 25 Yr event
Inflow = 10.62 cfs @ 12.18 hrs, Volume= 45,264 cf
Outflow = 10.61 cfs @ 12.19 hrs, Volume= 45,258 cf, Atten= 0%, Lag= 0.2 min
Routed to Reach P8 : DMH B109

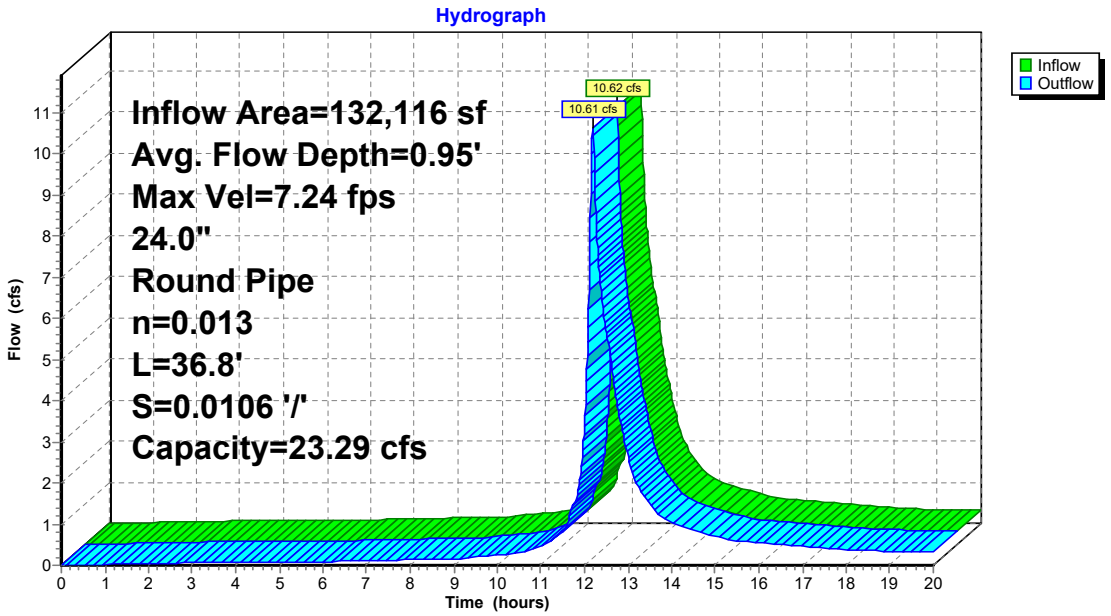
Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Max. Velocity= 7.24 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.62 fps, Avg. Travel Time= 0.2 min

Peak Storage= 54 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.95' , Surface Width= 2.00'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 23.29 cfs

24.0" Round Pipe
n= 0.013
Length= 36.8' Slope= 0.0106 '/'
Inlet Invert= 76.01', Outlet Invert= 75.62'



Reach P7: DMH B108



Summary for Reach P8: DMH B109

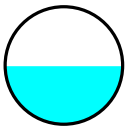
[52] Hint: Inlet/Outlet conditions not evaluated
[62] Hint: Exceeded Reach 9R OUTLET depth by 0.04' @ 16.10 hrs
[81] Warning: Exceeded Pond BB-P2 by 0.86' @ 1.06 hrs

Inflow Area = 300,864 sf, 69.90% Impervious, Inflow Depth > 3.11" for 2100 - 25 Yr event
Inflow = 11.14 cfs @ 12.19 hrs, Volume= 78,037 cf
Outflow = 11.11 cfs @ 12.20 hrs, Volume= 77,972 cf, Atten= 0%, Lag= 0.6 min
Routed to Reach DP-3PR : REGIONAL SWALE

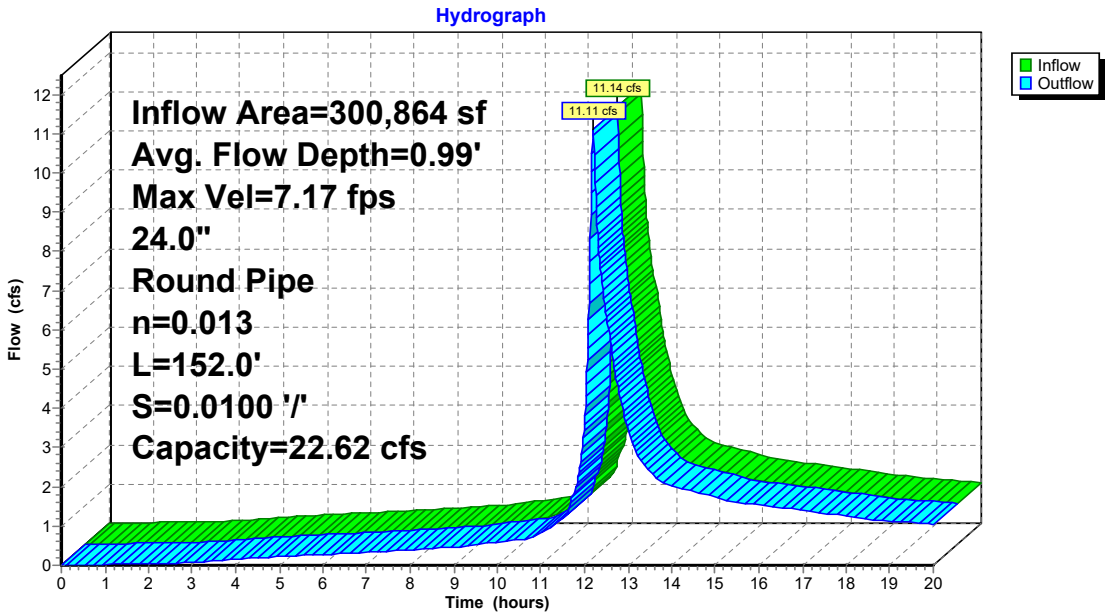
Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Max. Velocity= 7.17 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 3.23 fps, Avg. Travel Time= 0.8 min

Peak Storage= 236 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.99' , Surface Width= 2.00'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 22.62 cfs

24.0" Round Pipe
n= 0.013
Length= 152.0' Slope= 0.0100 '/'
Inlet Invert= 75.52', Outlet Invert= 74.00'



Reach P8: DMH B109



Summary for Pond BB-2A: BULLPEN

Inflow Area = 2,042 sf,100.00% Impervious, Inflow Depth > 7.76" for 2100 - 25 Yr event
Inflow = 0.42 cfs @ 12.13 hrs, Volume= 1,320 cf
Outflow = 0.14 cfs @ 12.30 hrs, Volume= 1,275 cf, Atten= 67%, Lag= 10.5 min
Primary = 0.14 cfs @ 12.30 hrs, Volume= 1,275 cf
Routed to Reach P8 : DMH B109

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 79.48' @ 12.30 hrs Surf.Area= 2,042 sf Storage= 392 cf

Plug-Flow detention time= 63.2 min calculated for 1,275 cf (97% of inflow)
Center-of-Mass det. time= 48.1 min (757.9 - 709.8)

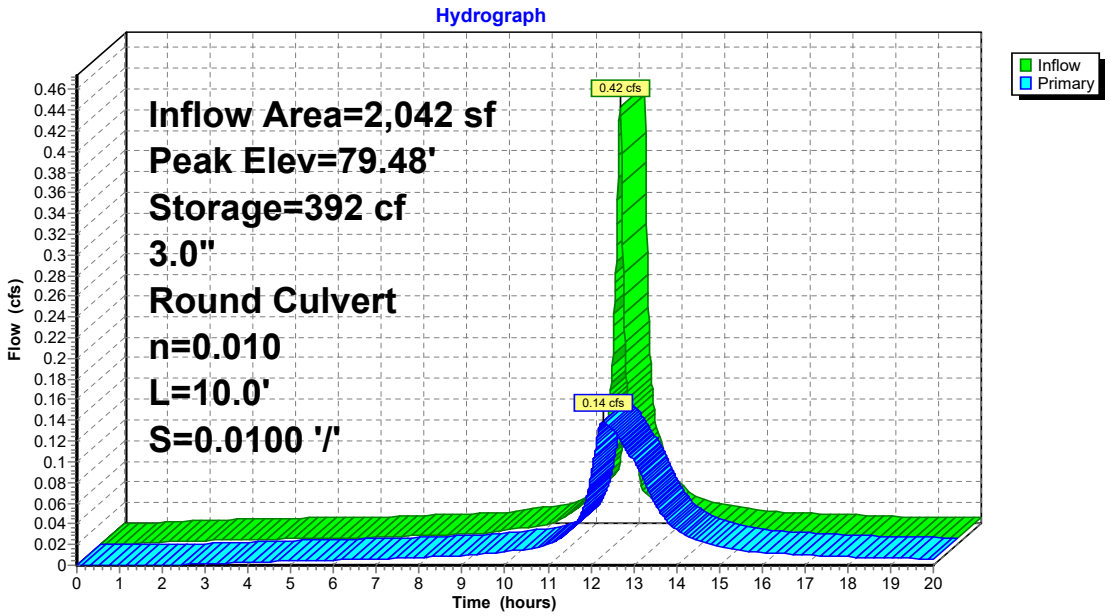
Volume	Invert	Avail.Storage	Storage Description
#1	79.00'	817 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 2,042 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
79.00	2,042	0	0
80.00	2,042	2,042	2,042

Device	Routing	Invert	Outlet Devices
#1	Primary	79.00'	**3.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 79.00' / 78.90' S= 0.0100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.05 sf

Primary OutFlow Max=0.14 cfs @ 12.30 hrs HW=79.48' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 0.14 cfs @ 2.82 fps)

Pond BB-2A: BULLPEN



Summary for Pond BB-4P: POROUS WALK-2

Inflow Area = 21,359 sf, 6.33% Impervious, Inflow Depth > 9.60" for 2100 - 25 Yr event
Inflow = 6.63 cfs @ 12.17 hrs, Volume= 17,091 cf
Outflow = 6.62 cfs @ 12.18 hrs, Volume= 16,544 cf, Atten= 0%, Lag= 0.2 min
Primary = 0.15 cfs @ 12.18 hrs, Volume= 229 cf
Routed to Reach P2 : DMH B 104
Secondary = 6.48 cfs @ 12.18 hrs, Volume= 16,315 cf
Routed to Pond BB-P1 : Plaza

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 88.19' @ 12.18 hrs Surf.Area= 1,352 sf Storage= 641 cf

Plug-Flow detention time= 19.2 min calculated for 16,544 cf (97% of inflow)
Center-of-Mass det. time= 7.7 min (822.6 - 815.0)

Volume	Invert	Avail.Storage	Storage Description
#1	87.00'	1,082 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 2,704 cf Overall x 40.0% Voids

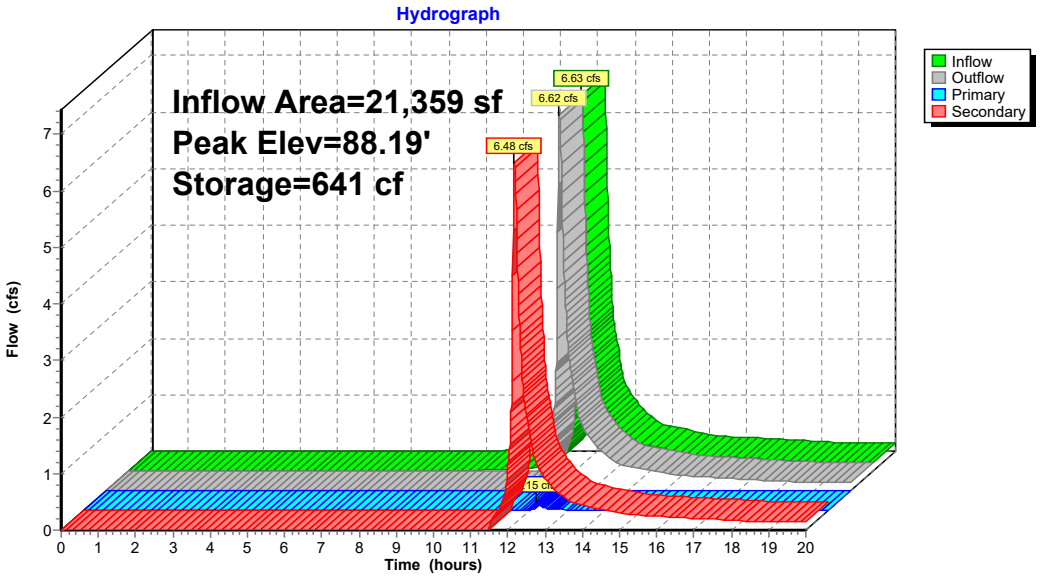
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
87.00	1,352	0	0
88.00	1,352	1,352	1,352
89.00	1,352	1,352	2,704

Device	Routing	Invert	Outlet Devices
#1	Primary	88.00'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 88.00' / 83.00' S= 0.5000 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Secondary	88.00'	**30.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.15 cfs @ 12.18 hrs HW=88.19' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.15 cfs @ 1.47 fps)

Secondary OutFlow Max=6.46 cfs @ 12.18 hrs HW=88.19' (Free Discharge)
└**2=Broad-Crested Rectangular Weir**(Weir Controls 6.46 cfs @ 1.16 fps)

Pond BB-4P: POROUS WALK-2



Summary for Pond BB-5P: POROUS WALK 1

Inflow Area = 45,709 sf, 9.03% Impervious, Inflow Depth > 3.83" for 2100 - 25 Yr event
Inflow = 5.11 cfs @ 12.16 hrs, Volume= 14,586 cf
Outflow = 4.69 cfs @ 12.19 hrs, Volume= 10,586 cf, Atten= 8%, Lag= 2.0 min
Primary = 0.08 cfs @ 12.19 hrs, Volume= 109 cf
Routed to Reach P2 : DMH B 104
Secondary = 4.62 cfs @ 12.19 hrs, Volume= 10,477 cf
Routed to Pond BB-4P : POROUS WALK-2

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 91.15' @ 12.19 hrs Surf.Area= 11,328 sf Storage= 4,553 cf

Plug-Flow detention time= 112.5 min calculated for 10,581 cf (73% of inflow)
Center-of-Mass det. time= 46.4 min (831.6 - 785.2)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	7,930 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 22,656 cf Overall x 35.0% Voids

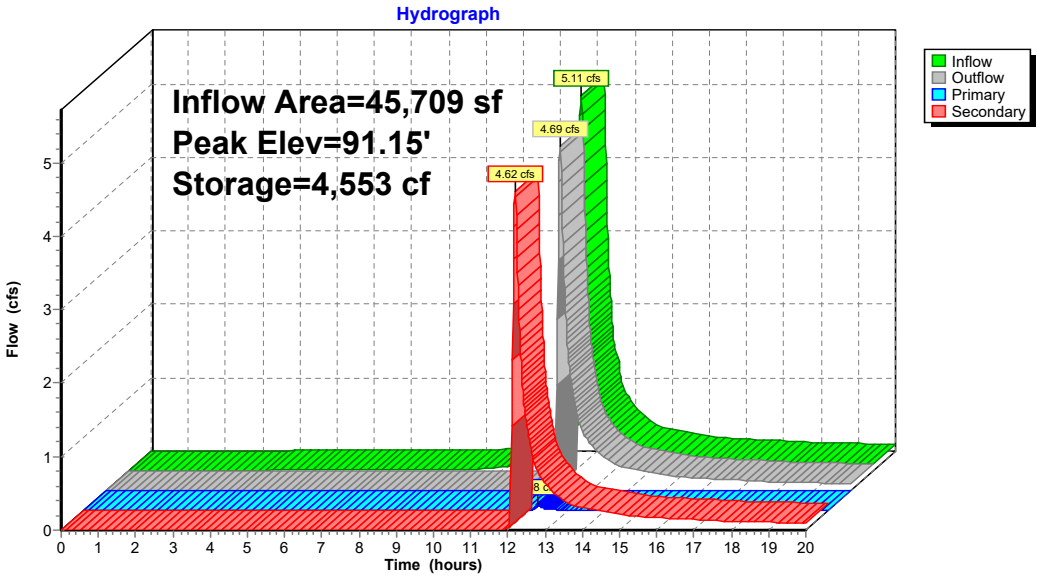
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.00	11,328	0	0
91.00	11,328	11,328	11,328
92.00	11,328	11,328	22,656

Device	Routing	Invert	Outlet Devices
#1	Primary	91.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	91.00'	**30.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.08 cfs @ 12.19 hrs HW=91.15' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.08 cfs @ 1.31 fps)

Secondary OutFlow Max=4.60 cfs @ 12.19 hrs HW=91.15' (Free Discharge)
└**2=Broad-Crested Rectangular Weir**(Weir Controls 4.60 cfs @ 1.04 fps)

Pond BB-5P: POROUS WALK 1



Summary for Pond BB-P1: Plaza

Inflow Area = 16,650 sf, 36.53% Impervious, Inflow Depth > 16.78" for 2100 - 25 Yr event
Inflow = 8.55 cfs @ 12.17 hrs, Volume= 23,279 cf
Outflow = 4.08 cfs @ 12.33 hrs, Volume= 20,335 cf, Atten= 52%, Lag= 10.0 min
Primary = 4.08 cfs @ 12.33 hrs, Volume= 20,335 cf
Routed to Reach P3 : DMH B105

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 83.66' @ 12.33 hrs Surf.Area= 6,083 sf Storage= 6,482 cf

Plug-Flow detention time= 76.1 min calculated for 20,325 cf (87% of inflow)
Center-of-Mass det. time= 35.8 min (836.7 - 801.0)

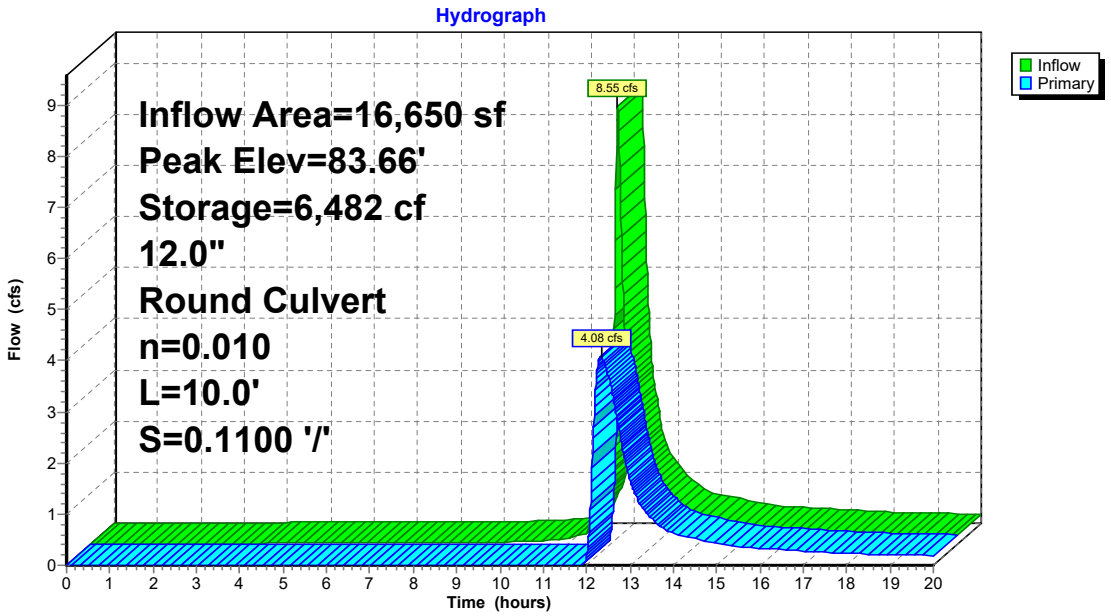
Volume	Invert	Avail.Storage	Storage Description
#1	81.00'	12,166 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 30,415 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
81.00	6,083	0	0
86.00	6,083	30,415	30,415

Device	Routing	Invert	Outlet Devices
#1	Primary	82.00'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 82.00' / 80.90' S= 0.1100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=4.08 cfs @ 12.33 hrs HW=83.66' (Free Discharge)
└**1=Culvert** (Inlet Controls 4.08 cfs @ 5.19 fps)

Pond BB-P1: Plaza



Summary for Pond BB-P2: INFILT BASIN

Inflow Area = 166,706 sf,100.00% Impervious, Inflow Depth > 7.76" for 2100 - 25 Yr event
Inflow = 34.51 cfs @ 12.13 hrs, Volume= 107,770 cf
Outflow = 1.01 cfs @ 14.94 hrs, Volume= 31,505 cf, Atten= 97%, Lag= 168.6 min
Primary = 1.01 cfs @ 14.94 hrs, Volume= 31,505 cf
Routed to Reach P8 : DMH B109

Routing by Stor-Ind method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Peak Elev= 78.63' @ 14.94 hrs Surf.Area= 120,809 sf Storage= 80,614 cf

Plug-Flow detention time= 349.4 min calculated for 31,505 cf (29% of inflow)
Center-of-Mass det. time= 153.3 min (863.2 - 709.8)

Volume	Invert	Avail.Storage	Storage Description
#1	74.67'	124,126 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 354,645 cf Overall x 35.0% Voids

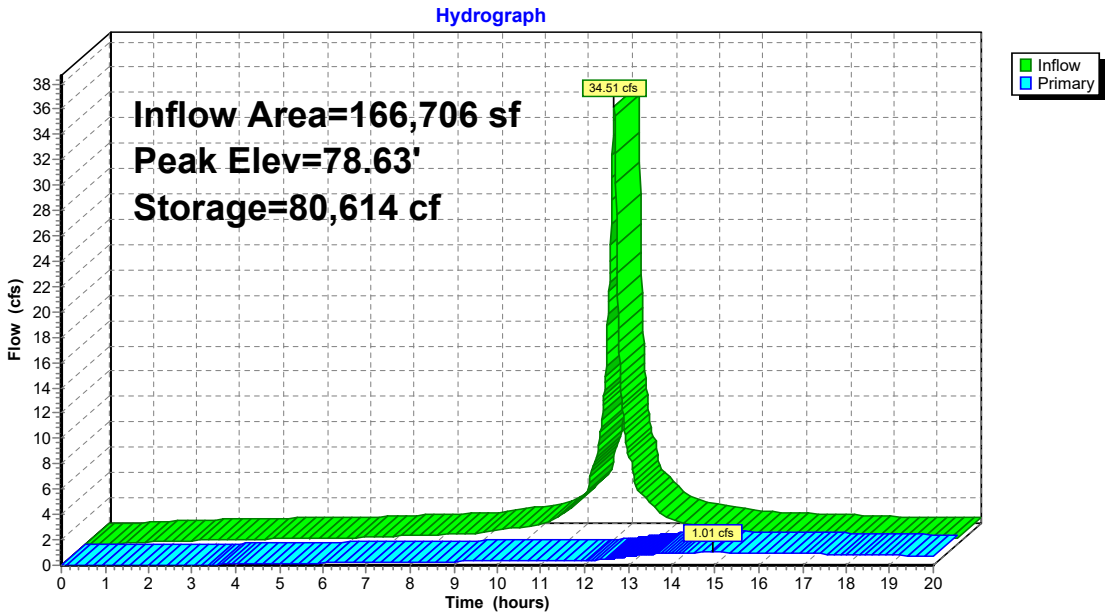
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
74.67	14,517	0	0
77.00	14,517	33,825	33,825
77.01	120,809	677	34,501
79.66	120,809	320,144	354,645

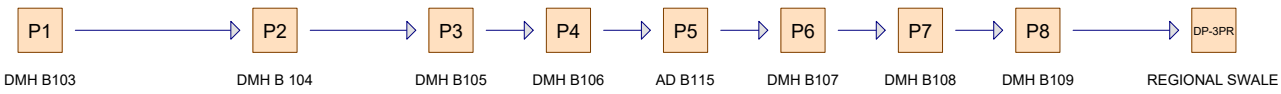
Device	Routing	Invert	Outlet Devices
#1	Primary	78.30'	**24.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 78.30' / 78.20' S= 0.0100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 3.14 sf
#2	Primary	75.00'	**3.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 75.00' / 74.90' S= 0.0100 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.05 sf

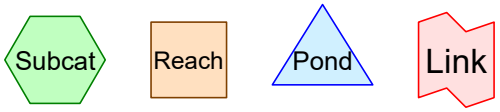
Primary OutFlow Max=1.01 cfs @ 14.94 hrs HW=78.63' (Free Discharge)
1=Culvert (Barrel Controls 0.57 cfs @ 2.52 fps)
2=Culvert (Inlet Controls 0.44 cfs @ 9.02 fps)

Pond BB-P2: INFILT BASIN

Hydrograph







Routing Diagram for Baseball SW - WWT Permit 2024-09-24 - Closed Drainage

Prepared by Nitsch Engineering, Printed 10/1/2024

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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2100 - 100 Yr	NOAA 24-hr	C	Default	24.00	1	11.33	2

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
0	**0**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
0		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Subcatchment Numbers
0	**0**	**0**	**0**	**0**	**0**	**TOTAL AREA**	

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	P1	82.60	81.97	84.4	0.0075	0.013	0.0	24.0	0.0	
2	P2	81.94	80.74	114.8	0.0105	0.013	0.0	24.0	0.0	
3	P3	80.64	80.20	38.8	0.0113	0.013	0.0	24.0	0.0	
4	P4	80.10	78.97	111.1	0.0102	0.013	0.0	24.0	0.0	
5	P5	78.97	77.69	127.8	0.0100	0.013	0.0	24.0	0.0	
6	P6	77.59	76.11	145.7	0.0102	0.013	0.0	24.0	0.0	
7	P7	76.01	75.62	36.8	0.0106	0.013	0.0	24.0	0.0	
8	P8	75.52	74.00	152.0	0.0100	0.013	0.0	24.0	0.0	

Time span=0.00-20.00 hrs, dt=0.01 hrs, 2001 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Reach DP-3PR: REGIONAL SWALE Inflow=21.18 cfs 147,765 cf
Outflow=21.18 cfs 147,765 cf

Reach P1: DMH B103 Avg. Flow Depth=0.91' Max Vel=5.98 fps Inflow=8.36 cfs 26,301 cf
24.0" Round Pipe n=0.013 L=84.4' S=0.0075 '/' Capacity=19.55 cfs Outflow=8.34 cfs 26,294 cf

Reach P2: DMH B 104 Avg. Flow Depth=0.85' Max Vel=6.85 fps Inflow=8.75 cfs 27,016 cf
24.0" Round Pipe n=0.013 L=114.8' S=0.0105 '/' Capacity=23.13 cfs Outflow=8.72 cfs 27,007 cf

Reach P3: DMH B105 Avg. Flow Depth=1.10' Max Vel=7.96 fps Inflow=14.06 cfs 62,839 cf
24.0" Round Pipe n=0.013 L=38.8' S=0.0113 '/' Capacity=24.09 cfs Outflow=14.05 cfs 62,832 cf

Reach P4: DMH B106 Avg. Flow Depth=1.13' Max Vel=7.64 fps Inflow=14.05 cfs 62,832 cf
24.0" Round Pipe n=0.013 L=111.1' S=0.0102 '/' Capacity=22.82 cfs Outflow=14.02 cfs 62,810 cf

Reach P5: AD B115 Avg. Flow Depth=1.30' Max Vel=7.92 fps Inflow=17.17 cfs 71,494 cf
24.0" Round Pipe n=0.013 L=127.8' S=0.0100 '/' Capacity=22.64 cfs Outflow=17.13 cfs 71,467 cf

Reach P6: DMH B107 Avg. Flow Depth=1.29' Max Vel=7.96 fps Inflow=17.13 cfs 71,467 cf
24.0" Round Pipe n=0.013 L=145.7' S=0.0102 '/' Capacity=22.80 cfs Outflow=17.08 cfs 71,436 cf

Reach P7: DMH B108 Avg. Flow Depth=1.27' Max Vel=8.10 fps Inflow=17.08 cfs 71,436 cf
24.0" Round Pipe n=0.013 L=36.8' S=0.0106 '/' Capacity=23.29 cfs Outflow=17.07 cfs 71,428 cf

Reach P8: DMH B109 Avg. Flow Depth=1.35' Max Vel=7.99 fps Inflow=17.98 cfs 137,974 cf
24.0" Round Pipe n=0.013 L=152.0' S=0.0100 '/' Capacity=22.62 cfs Outflow=17.94 cfs 137,889 cf

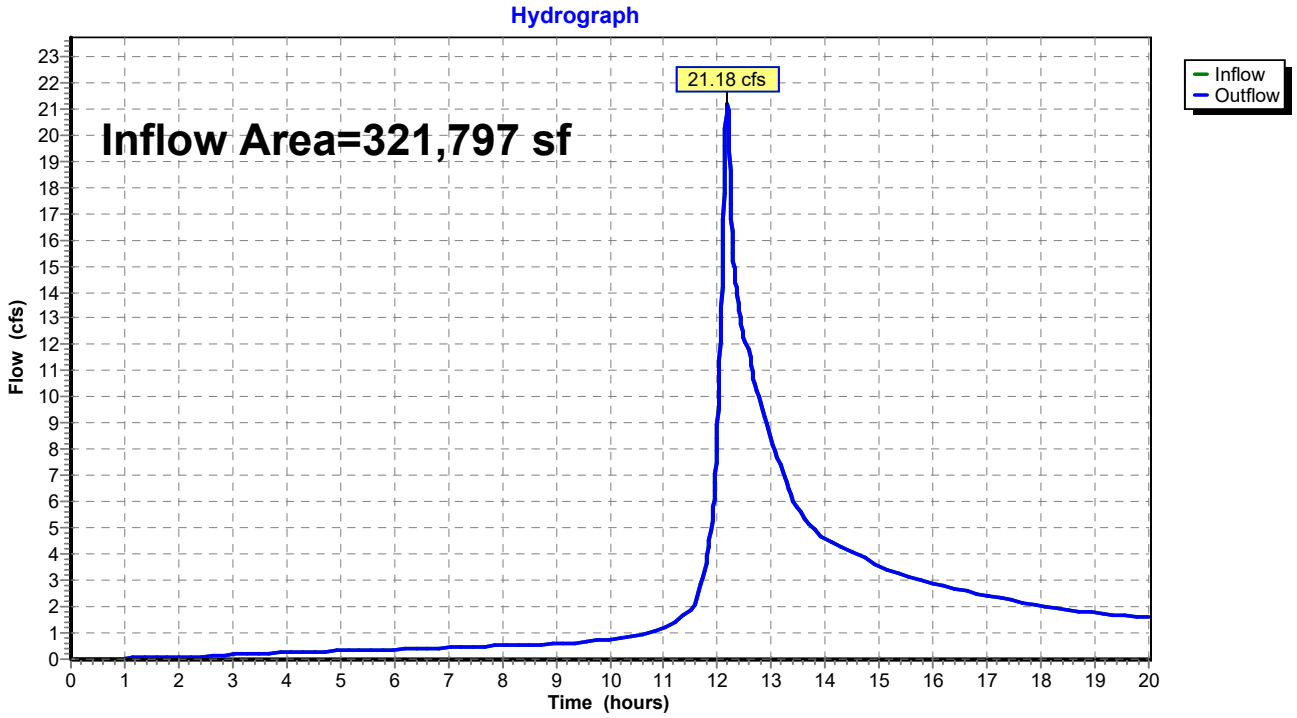
Summary for Reach DP-3PR: REGIONAL SWALE

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 321,797 sf, 65.36% Impervious, Inflow Depth > 5.51" for 2100 - 100 Yr event
Inflow = 21.18 cfs @ 12.18 hrs, Volume= 147,765 cf
Outflow = 21.18 cfs @ 12.18 hrs, Volume= 147,765 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs

Reach DP-3PR: REGIONAL SWALE



Summary for Reach P1: DMH B103

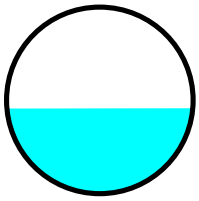
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 30,000 sf,100.00% Impervious, Inflow Depth > 10.52" for 2100 - 100 Yr event
Inflow = 8.36 cfs @ 12.13 hrs, Volume= 26,301 cf
Outflow = 8.34 cfs @ 12.14 hrs, Volume= 26,294 cf, Atten= 0%, Lag= 0.4 min
Routed to Reach P2 : DMH B 104

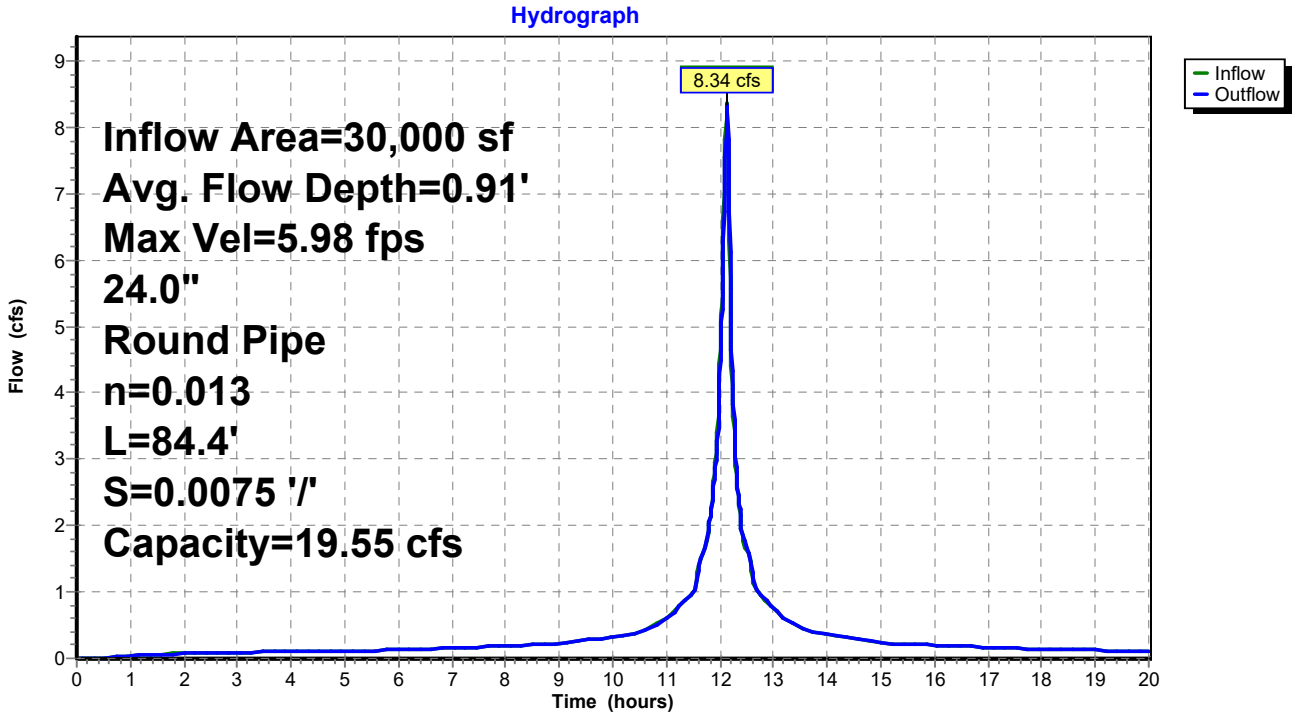
Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.98 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.07 fps, Avg. Travel Time= 0.7 min

Peak Storage= 118 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.91' , Surface Width= 1.99'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 19.55 cfs

24.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 84.4' Slope= 0.0075 '/'
Inlet Invert= 82.60', Outlet Invert= 81.97'



Reach P1: DMH B103



Summary for Reach P2: DMH B 104

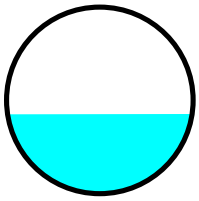
[52] Hint: Inlet/Outlet conditions not evaluated
[61] Hint: Exceeded Reach P1 outlet invert by 0.82' @ 12.14 hrs

Inflow Area = 97,068 sf, 36.55% Impervious, Inflow Depth > 3.34" for 2100 - 100 Yr event
Inflow = 8.75 cfs @ 12.14 hrs, Volume= 27,016 cf
Outflow = 8.72 cfs @ 12.14 hrs, Volume= 27,007 cf, Atten= 0%, Lag= 0.5 min
Routed to Reach P3 : DMH B105

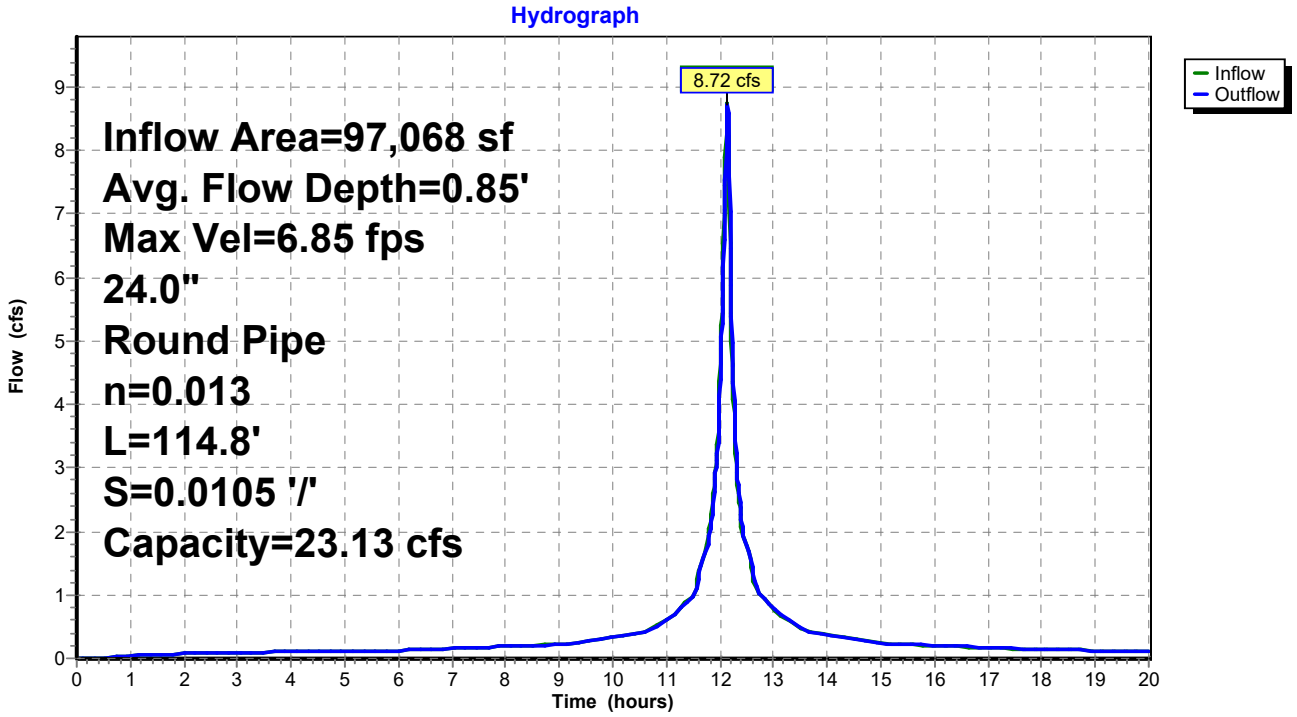
Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.85 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.34 fps, Avg. Travel Time= 0.8 min

Peak Storage= 147 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.85' , Surface Width= 1.98'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 23.13 cfs

24.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 114.8' Slope= 0.0105 '/'
Inlet Invert= 81.94', Outlet Invert= 80.74'



Reach P2: DMH B 104



Summary for Reach P3: DMH B105

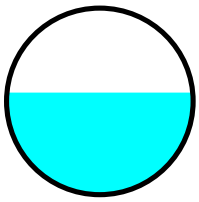
[52] Hint: Inlet/Outlet conditions not evaluated
[62] Hint: Exceeded Reach P2 OUTLET depth by 0.32' @ 12.43 hrs
[79] Warning: Submerged Pond BB-P1 Primary device # 1 OUTLET by 0.84'

Inflow Area = 113,718 sf, 36.55% Impervious, Inflow Depth > 6.63" for 2100 - 100 Yr event
Inflow = 14.06 cfs @ 12.15 hrs, Volume= 62,839 cf
Outflow = 14.05 cfs @ 12.16 hrs, Volume= 62,832 cf, Atten= 0%, Lag= 0.1 min
Routed to Reach P4 : DMH B106

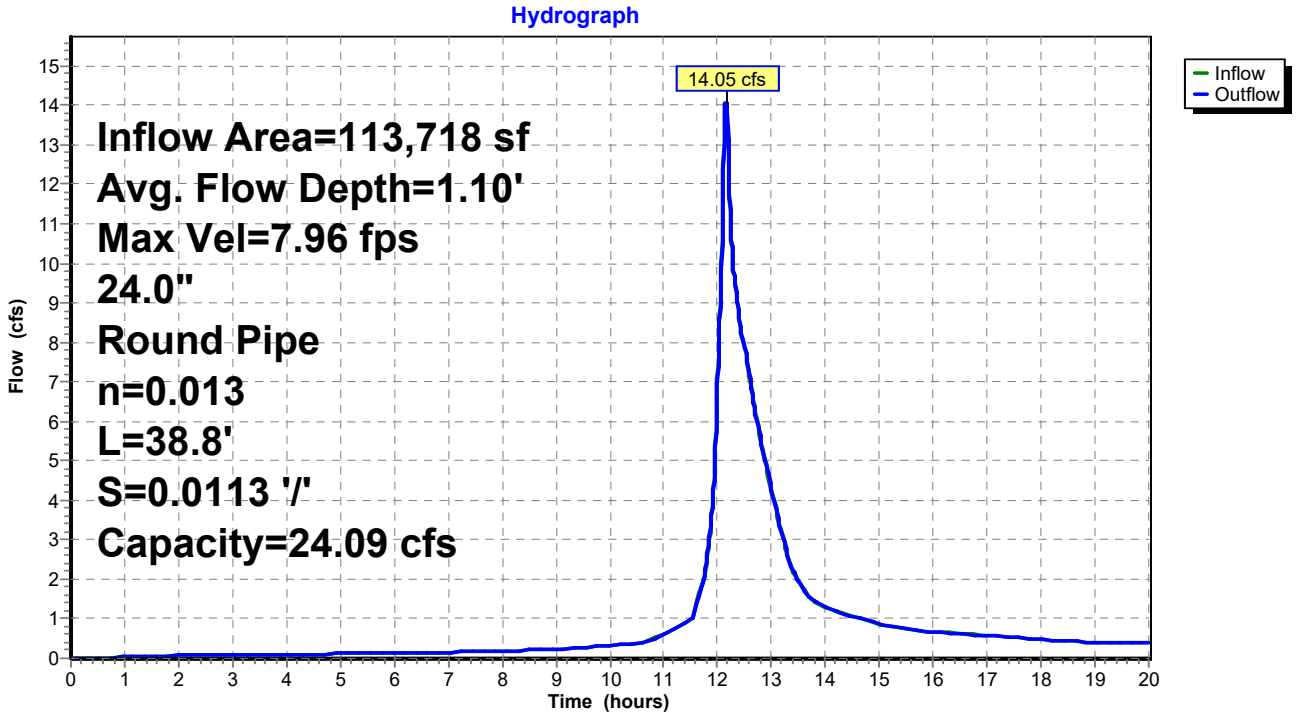
Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Max. Velocity= 7.96 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.92 fps, Avg. Travel Time= 0.2 min

Peak Storage= 69 cf @ 12.16 hrs
Average Depth at Peak Storage= 1.10' , Surface Width= 1.99'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 24.09 cfs

24.0" Round Pipe
n= 0.013
Length= 38.8' Slope= 0.0113 '/'
Inlet Invert= 80.64', Outlet Invert= 80.20'



Reach P3: DMH B105



Summary for Reach P4: DMH B106

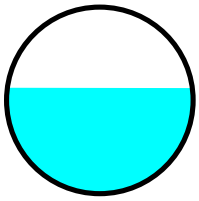
[52] Hint: Inlet/Outlet conditions not evaluated
[61] Hint: Exceeded Reach P3 outlet invert by 1.03' @ 12.16 hrs

Inflow Area = 113,718 sf, 36.55% Impervious, Inflow Depth > 6.63" for 2100 - 100 Yr event
Inflow = 14.05 cfs @ 12.16 hrs, Volume= 62,832 cf
Outflow = 14.02 cfs @ 12.16 hrs, Volume= 62,810 cf, Atten= 0%, Lag= 0.4 min
Routed to Reach P5 : AD B115

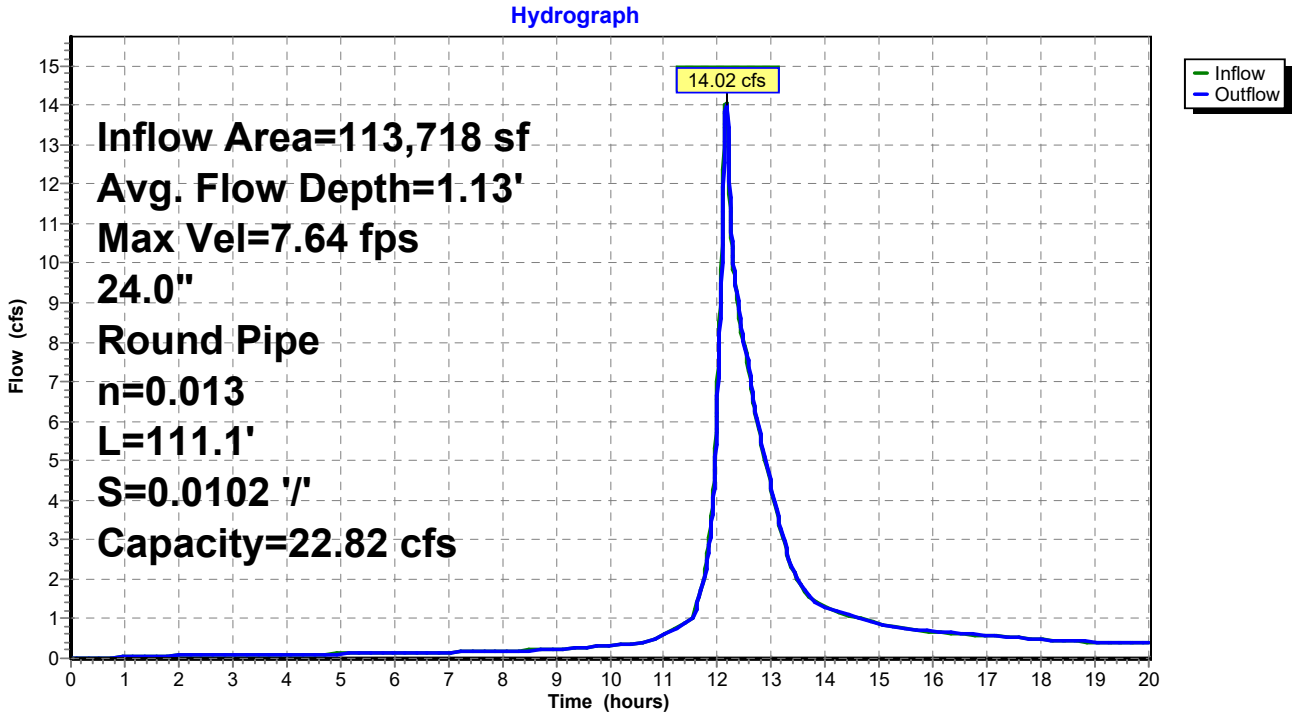
Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Max. Velocity= 7.64 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.81 fps, Avg. Travel Time= 0.7 min

Peak Storage= 204 cf @ 12.16 hrs
Average Depth at Peak Storage= 1.13' , Surface Width= 1.98'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 22.82 cfs

24.0" Round Pipe
n= 0.013
Length= 111.1' Slope= 0.0102 '/'
Inlet Invert= 80.10', Outlet Invert= 78.97'



Reach P4: DMH B106



Summary for Reach P5: AD B115

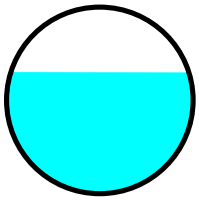
[52] Hint: Inlet/Outlet conditions not evaluated
[62] Hint: Exceeded Reach P4 OUTLET depth by 0.17' @ 12.15 hrs

Inflow Area = 132,116 sf, 31.46% Impervious, Inflow Depth > 6.49" for 2100 - 100 Yr event
Inflow = 17.17 cfs @ 12.15 hrs, Volume= 71,494 cf
Outflow = 17.13 cfs @ 12.16 hrs, Volume= 71,467 cf, Atten= 0%, Lag= 0.5 min
Routed to Reach P6 : DMH B107

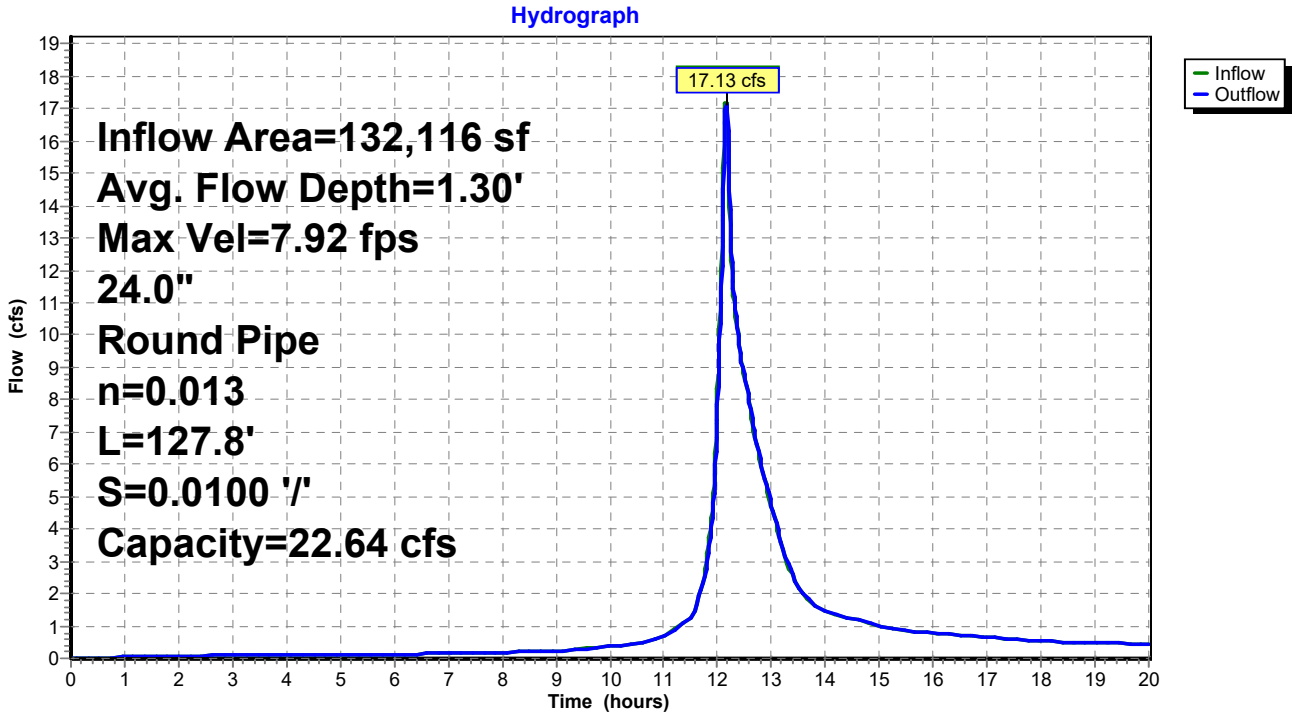
Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Max. Velocity= 7.92 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.87 fps, Avg. Travel Time= 0.7 min

Peak Storage= 277 cf @ 12.16 hrs
Average Depth at Peak Storage= 1.30' , Surface Width= 1.91'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 22.64 cfs

24.0" Round Pipe
n= 0.013
Length= 127.8' Slope= 0.0100 '/'
Inlet Invert= 78.97', Outlet Invert= 77.69'



Reach P5: AD B115



Summary for Reach P6: DMH B107

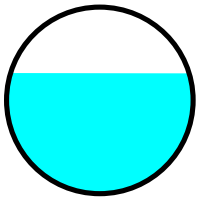
[52] Hint: Inlet/Outlet conditions not evaluated
[61] Hint: Exceeded Reach P5 outlet invert by 1.19' @ 12.17 hrs

Inflow Area = 132,116 sf, 31.46% Impervious, Inflow Depth > 6.49" for 2100 - 100 Yr event
Inflow = 17.13 cfs @ 12.16 hrs, Volume= 71,467 cf
Outflow = 17.08 cfs @ 12.17 hrs, Volume= 71,436 cf, Atten= 0%, Lag= 0.6 min
Routed to Reach P7 : DMH B108

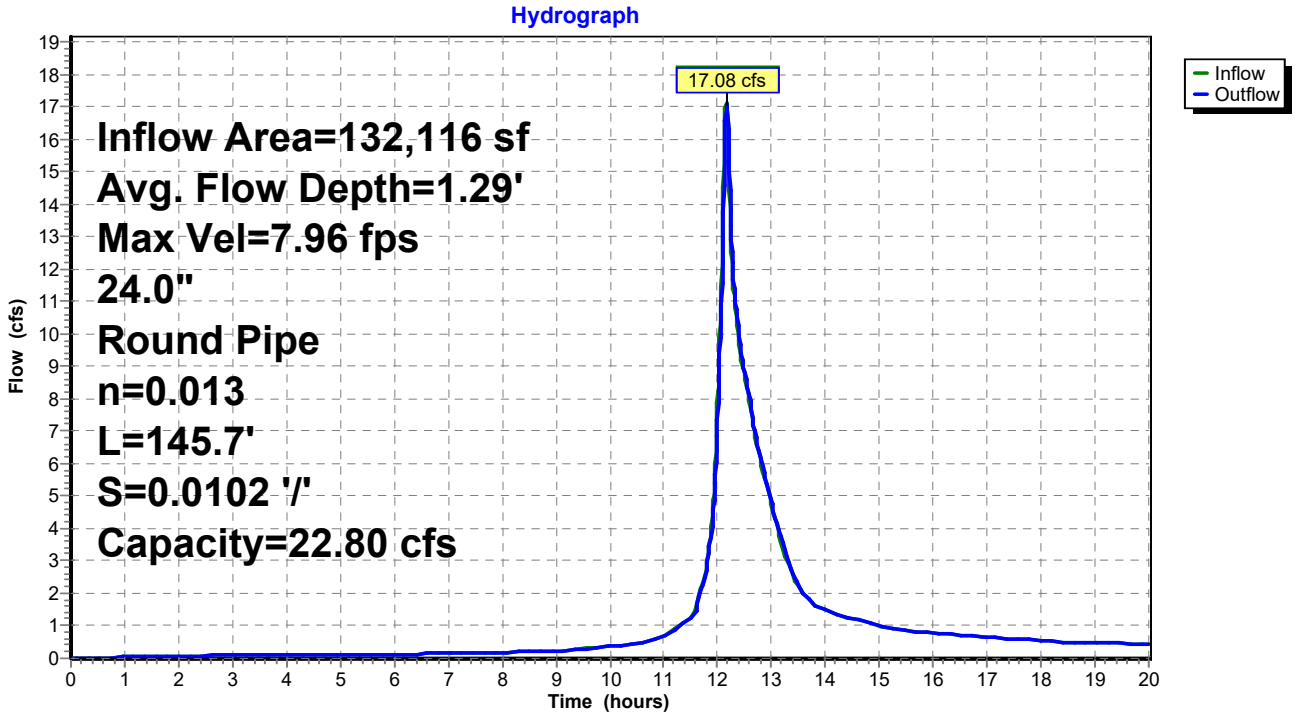
Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Max. Velocity= 7.96 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.89 fps, Avg. Travel Time= 0.8 min

Peak Storage= 313 cf @ 12.17 hrs
Average Depth at Peak Storage= 1.29' , Surface Width= 1.91'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 22.80 cfs

24.0" Round Pipe
n= 0.013
Length= 145.7' Slope= 0.0102 '/'
Inlet Invert= 77.59', Outlet Invert= 76.11'



Reach P6: DMH B107



Summary for Reach P7: DMH B108

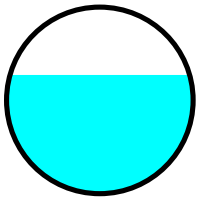
[52] Hint: Inlet/Outlet conditions not evaluated
[61] Hint: Exceeded Reach P6 outlet invert by 1.17' @ 12.17 hrs

Inflow Area = 132,116 sf, 31.46% Impervious, Inflow Depth > 6.49" for 2100 - 100 Yr event
Inflow = 17.08 cfs @ 12.17 hrs, Volume= 71,436 cf
Outflow = 17.07 cfs @ 12.17 hrs, Volume= 71,428 cf, Atten= 0%, Lag= 0.1 min
Routed to Reach P8 : DMH B109

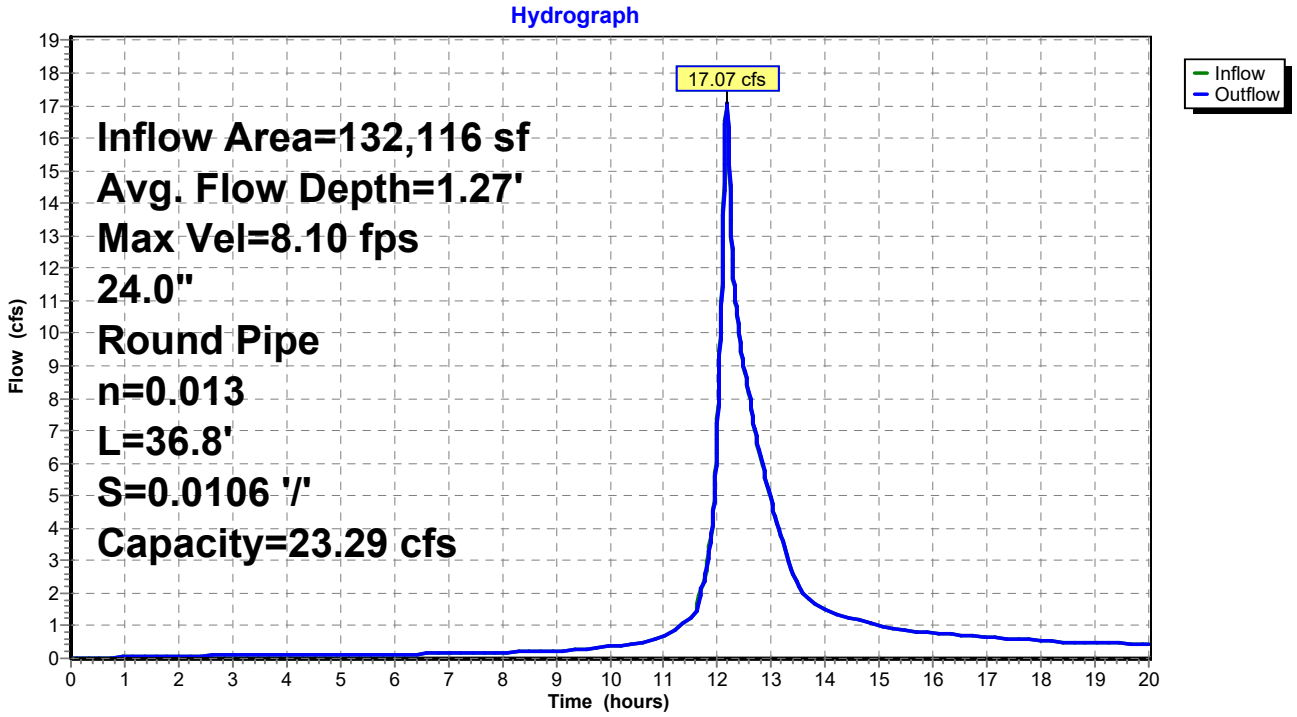
Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Max. Velocity= 8.10 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.93 fps, Avg. Travel Time= 0.2 min

Peak Storage= 78 cf @ 12.17 hrs
Average Depth at Peak Storage= 1.27' , Surface Width= 1.92'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 23.29 cfs

24.0" Round Pipe
n= 0.013
Length= 36.8' Slope= 0.0106 '/'
Inlet Invert= 76.01', Outlet Invert= 75.62'



Reach P7: DMH B108



Summary for Reach P8: DMH B109

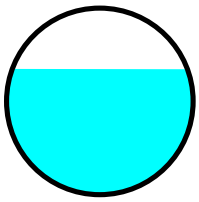
[52] Hint: Inlet/Outlet conditions not evaluated
[62] Hint: Exceeded Reach P7 OUTLET depth by 0.16' @ 13.92 hrs
[81] Warning: Exceeded Pond BB-P2 by 0.87' @ 0.82 hrs

Inflow Area = 300,864 sf, 69.90% Impervious, Inflow Depth > 5.50" for 2100 - 100 Yr event
Inflow = 17.98 cfs @ 12.18 hrs, Volume= 137,974 cf
Outflow = 17.94 cfs @ 12.19 hrs, Volume= 137,889 cf, Atten= 0%, Lag= 0.6 min
Routed to Reach DP-3PR : REGIONAL SWALE

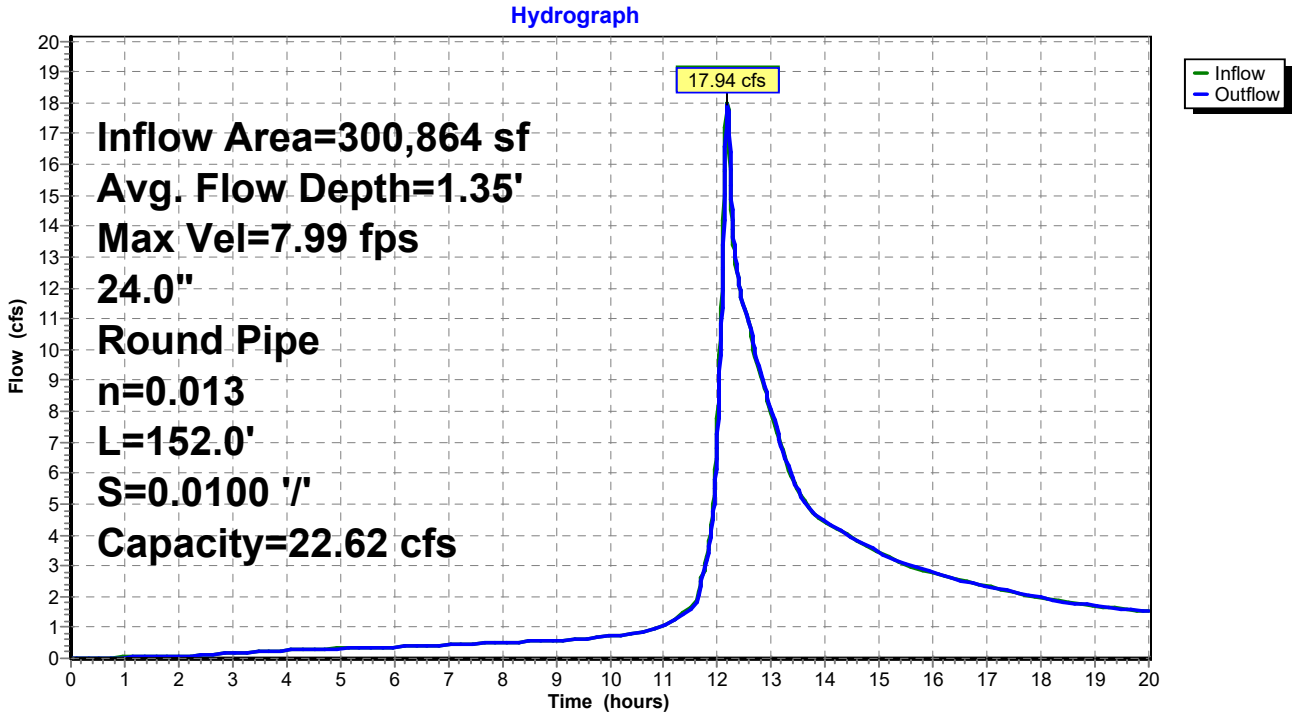
Routing by Stor-Ind+Trans method, Time Span= 0.00-20.00 hrs, dt= 0.01 hrs
Max. Velocity= 7.99 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 3.71 fps, Avg. Travel Time= 0.7 min

Peak Storage= 342 cf @ 12.18 hrs
Average Depth at Peak Storage= 1.35' , Surface Width= 1.88'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 22.62 cfs

24.0" Round Pipe
n= 0.013
Length= 152.0' Slope= 0.0100 '/'
Inlet Invert= 75.52', Outlet Invert= 74.00'



Reach P8: DMH B109



ATTACHTMENT D

Rational Method

From 2021 NJ Stormwater Best Management Practices - Chapter 5

The Rational method is a tool for estimating peak runoff flowrate from small drainage area not greater than 20 acres. The equation for the rational method is expressed below:

$$Q_p = \mathrm{C}\, i\, \mathrm{A}$$

where:

Q_p = peak flow rate (cfs)

C = runoff coefficient (dimensionless), which describes the level of imperviousness of the drainage area and reflect the ability of a soil to infiltrate precipitation before excess precipitation becomes stormwater runoff and sometimes the slope of the drainage area

i = uniform rate of rainfall intensity for a rainfall duration longer or equal to the time of concentration T_c (in/hr)

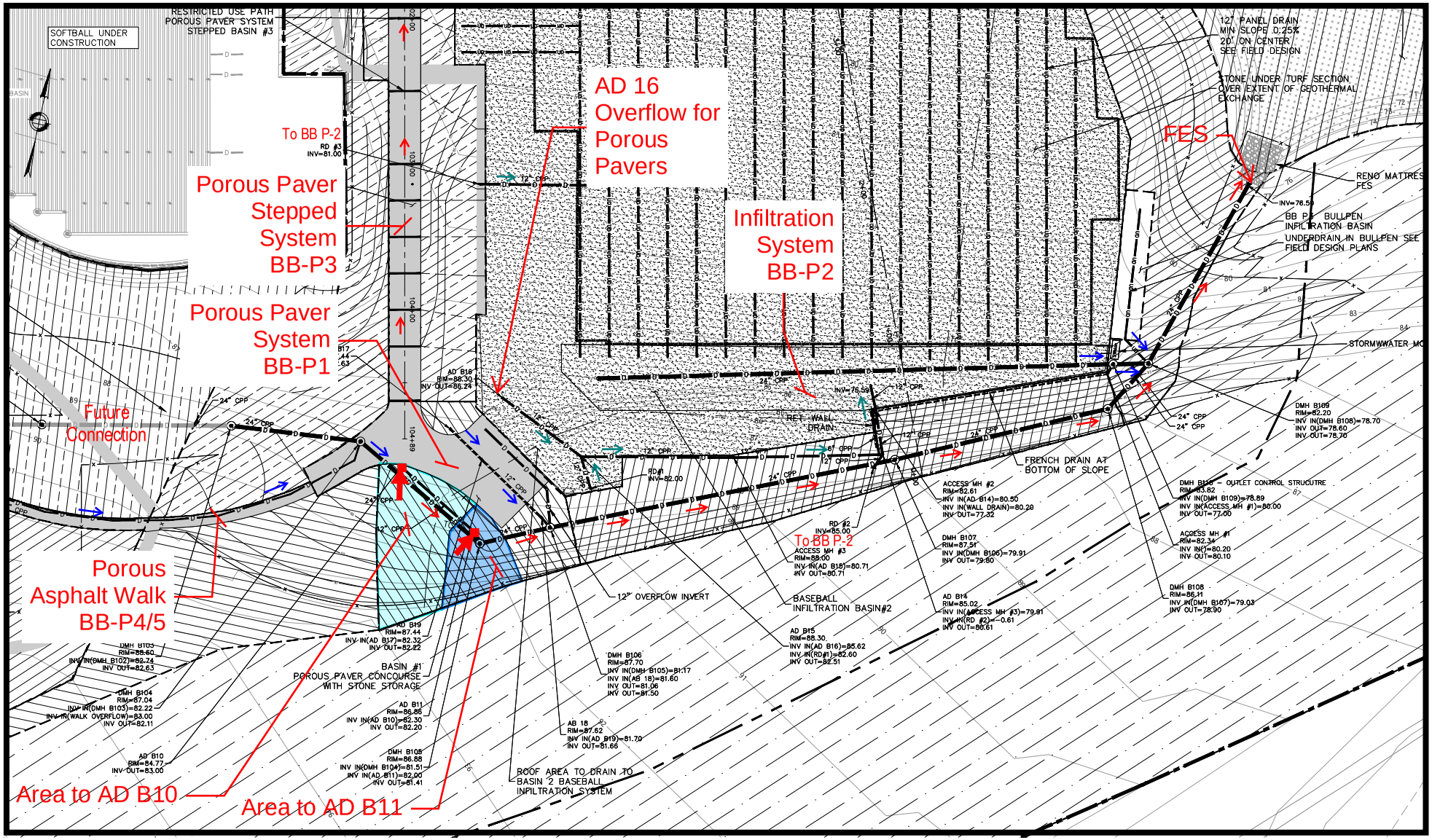
A = drainage area (ac)

Note that the rational equation may not appear to be dimensionally correct in that although i is specified in inches per hour, 1 in/hr equals 1.008 cfs per acre, and in using this equation, the two are taken to be numerically equal, meaning no conversion factor is required.

Table 5-3: Runoff Coefficients for the Rational Method

Land Use	Description	Hydrologic Soils Group			
		A	B	C	D
Cultivated Land	without conservation treatment	0.49	0.67	0.81	0.88
	with conservation treatment	0.27	0.43	0.67	0.67
Pasture or Range Land	poor condition	0.38	0.63	0.78	0.84
Meadow	good condition	---	0.25	0.51	0.65
	good condition	---	---	0.41	0.61
Wood or Forest Land	thin stand, poor cover, no mulch	---	0.34	0.59	0.70
	good cover	---	---	0.45	0.59
Open Spaces, Lawns, Parks, Golf Courses, Cemeteries					
Good Condition	grass cover on 75% or more	---	0.25	0.51	0.65
Fair Condition	grass cover on 50% to 75%	---	0.45	0.63	0.74

ATTACHTMENT D



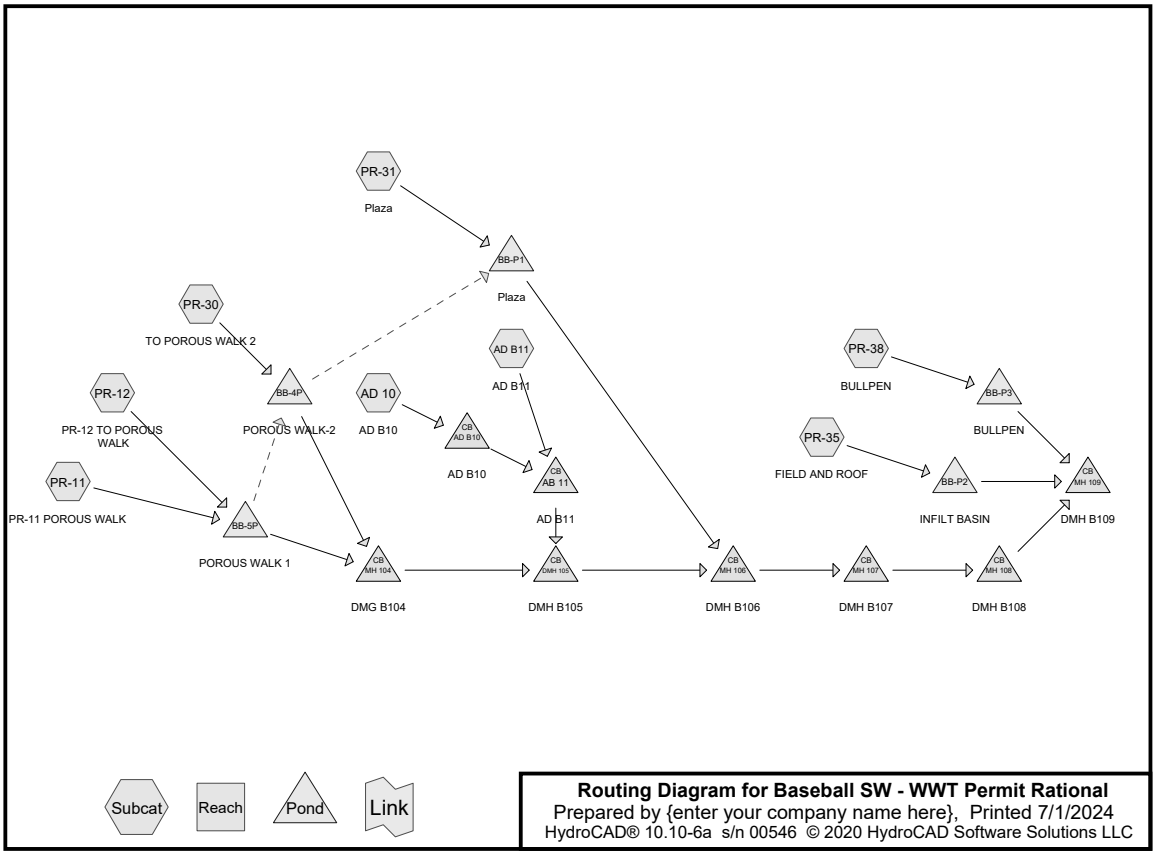
→ Flow Direction in Drainage Pipes

↘ Flow from Porous System and the Infiltration Basin

→ Flow into the Infiltration Basin

Princeton University
Baseball Ballpark
Closed Drainage Plan

Not to Scale



Area Listing (selected nodes)

Area (sq-ft)	C	Description (subcatchment-numbers)
72,154	0.25	>75% Grass cover, Good, HSG B (PR-12, PR-30, PR-31)
7,318	0.25	Landscape - Good Condition (AD 10, AD B11)
1,352	0.95	Paved parking, HSG A (PR-30)
8,125	0.95	Paved parking, HSG B (PR-31, PR-38)
2,363	0.25	Paved roads w/curbs & sewers, HSG B (PR-11)
1,766	0.95	Paved roads w/curbs & sewers, HSG B (PR-12)
166,706	0.95	Roofs, HSG B (PR-35)
259,784	**0.73**	**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Subcatchment Numbers
0	72,154	0	0	0	72,154	>75% Grass cover, Good	PR-12, PR-30, PR-31
0	0	0	0	7,318	7,318	Landscape - Good Condition	AD 10, AD B11
1,352	8,125	0	0	0	9,477	Paved parking	PR-30, PR-31, PR-38
0	4,129	0	0	0	4,129	Paved roads w/curbs & sewers	PR-11, PR-12
0	166,706	0	0	0	166,706	Roofs	PR-35
1,352	**251,114**	**0**	**0**	**7,318**	**259,784**	**TOTAL AREA**	

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)
1	AB 11	82.20	82.00	9.0	0.0222	0.013	0.0	12.0	0.0
2	AD B10	83.00	82.30	66.3	0.0106	0.013	0.0	12.0	0.0
3	DMH 105	81.42	81.17	49.0	0.0051	0.013	0.0	24.0	0.0
4	MH 104	82.11	81.51	107.0	0.0056	0.013	0.0	24.0	0.0
5	MH 106	81.06	79.90	241.0	0.0048	0.013	0.0	24.0	0.0
6	MH 107	79.80	79.03	147.0	0.0052	0.013	0.0	24.0	0.0
7	MH 108	78.90	78.70	39.0	0.0051	0.013	0.0	24.0	0.0
8	MH 109	78.60	76.50	137.0	0.0153	0.013	0.0	24.0	0.0

Summary for Subcatchment AD 10: AD B10

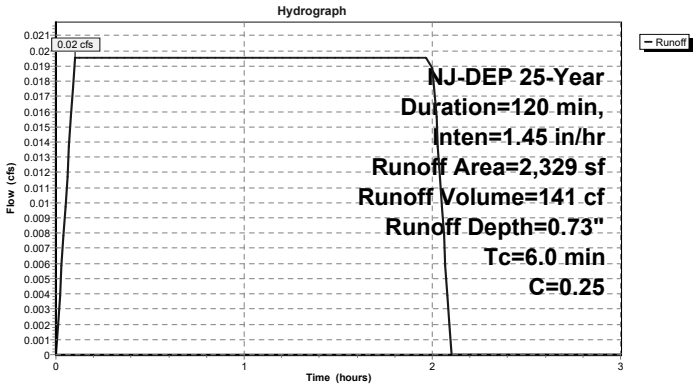
Runoff = 0.02 cfs @ 0.10 hrs, Volume= 141 cf, Depth= 0.73"
Routed to Pond AD B10 : AD B10

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
NJ-DEP 25-Year Duration=120 min, Inten=1.45 in/hr

Area (sf)	C	Description
2,329	0.25	Landscape - Good Condition
2,329	0.25	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum**

Subcatchment AD 10: AD B10



Summary for Subcatchment AD B11: AD B11

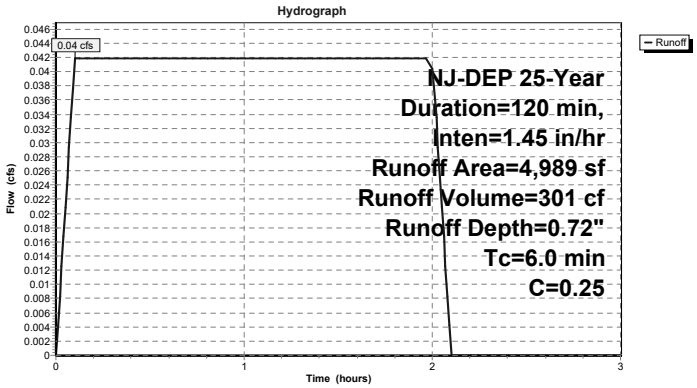
Runoff = 0.04 cfs @ 0.10 hrs, Volume= 301 cf, Depth= 0.72"
Routed to Pond AB 11 : AD B11

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
NJ-DEP 25-Year Duration=120 min, Inten=1.45 in/hr

Area (sf)	C	Description
4,989	0.25	Landscape - Good Condition
4,989	0.25	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum**

Subcatchment AD B11: AD B11



Summary for Subcatchment PR-11: PR-11 POROUS WALK

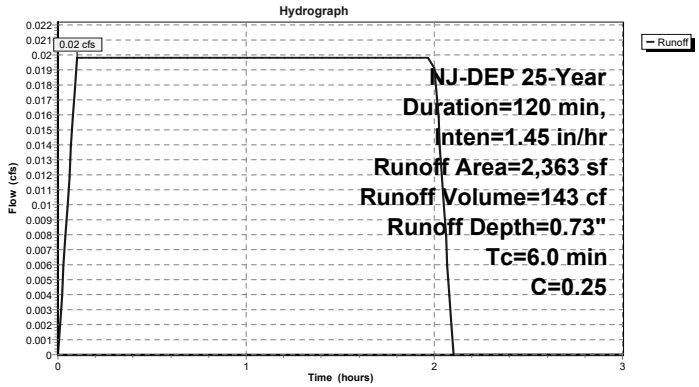
Runoff = 0.02 cfs @ 0.10 hrs, Volume= 143 cf, Depth= 0.73"
Routed to Pond BB-5P : POROUS WALK 1

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
NJ-DEP 25-Year Duration=120 min, Inten=1.45 in/hr

Area (sf)	C	Description
2,363	0.25	Paved roads w/curbs & sewers, HSG B
2,363	0.25	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Surface**

Subcatchment PR-11: PR-11 POROUS WALK



Summary for Subcatchment PR-12: PR-12 TO POROUS WALK

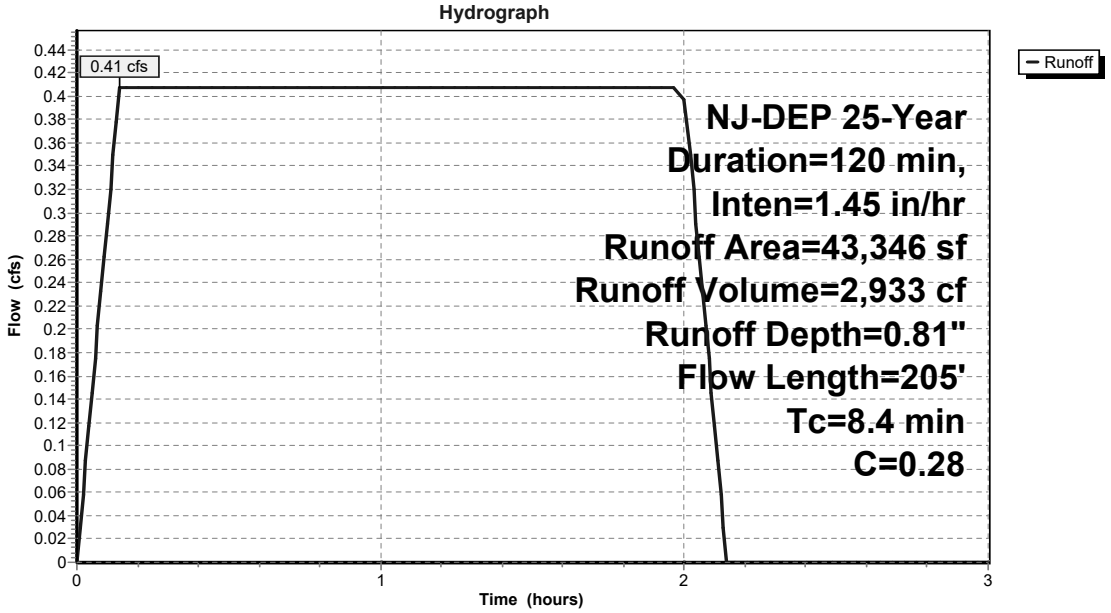
Runoff = 0.41 cfs @ 0.14 hrs, Volume= 2,933 cf, Depth= 0.81"
Routed to Pond BB-5P : POROUS WALK 1

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
NJ-DEP 25-Year Duration=120 min, Inten=1.45 in/hr

Area (sf)	C	Description
41,580	0.25	>75% Grass cover, Good, HSG B
1,766	0.95	Paved roads w/curbs & sewers, HSG B
43,346	0.28	Weighted Average
41,580	0.25	95.93% Pervious Area
1,766	0.95	4.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.0150	0.13		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.34"
2.2	155	0.0290	1.19		**Shallow Concentrated Flow, Shallow Conc** Short Grass Pasture Kv= 7.0 fps
8.4	205	Total			

Subcatchment PR-12: PR-12 TO POROUS WALK



Summary for Subcatchment PR-30: TO POROUS WALK 2

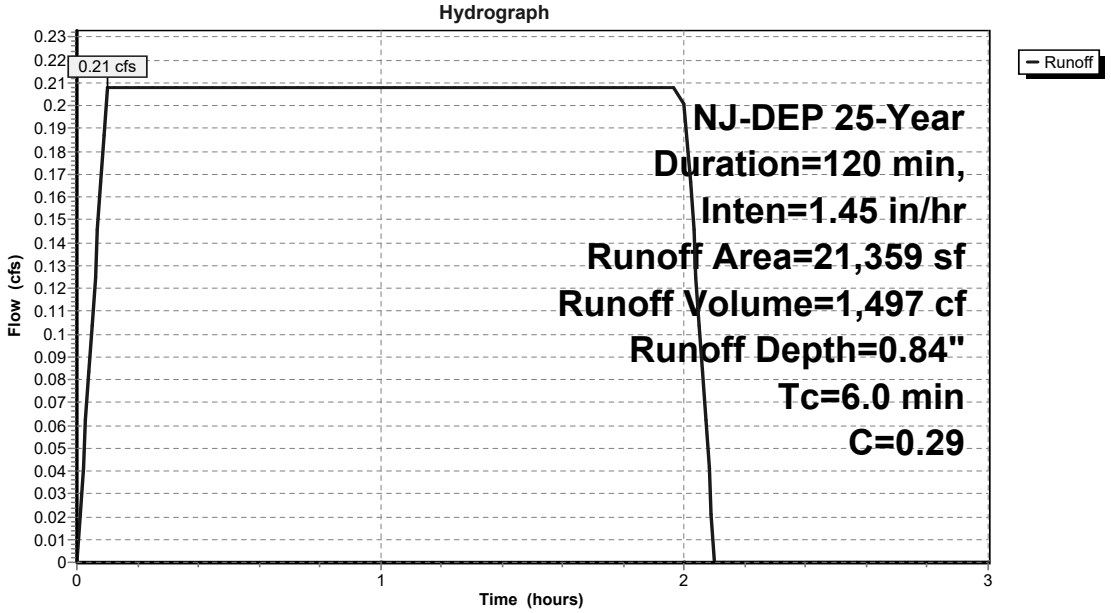
Runoff = 0.21 cfs @ 0.10 hrs, Volume= 1,497 cf, Depth= 0.84"
Routed to Pond BB-4P : POROUS WALK-2

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
NJ-DEP 25-Year Duration=120 min, Inten=1.45 in/hr

Area (sf)	C	Description
20,007	0.25	>75% Grass cover, Good, HSG B
1,352	0.95	Paved parking, HSG A
21,359	0.29	Weighted Average
20,007	0.25	93.67% Pervious Area
1,352	0.95	6.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment PR-30: TO POROUS WALK 2



Summary for Subcatchment PR-31: Plaza

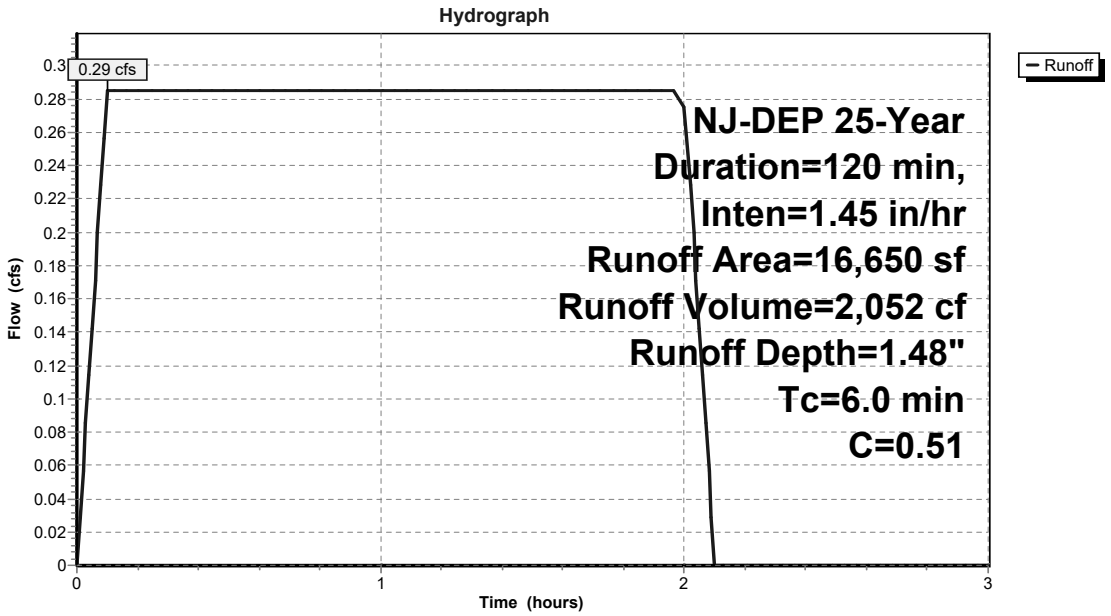
Runoff = 0.29 cfs @ 0.10 hrs, Volume= 2,052 cf, Depth= 1.48"
Routed to Pond BB-P1 : Plaza

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
NJ-DEP 25-Year Duration=120 min, Inten=1.45 in/hr

Area (sf)	C	Description
6,083	0.95	Paved parking, HSG B
10,567	0.25	>75% Grass cover, Good, HSG B
16,650	0.51	Weighted Average
10,567	0.25	63.47% Pervious Area
6,083	0.95	36.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment PR-31: Plaza



Summary for Subcatchment PR-35: FIELD AND ROOF

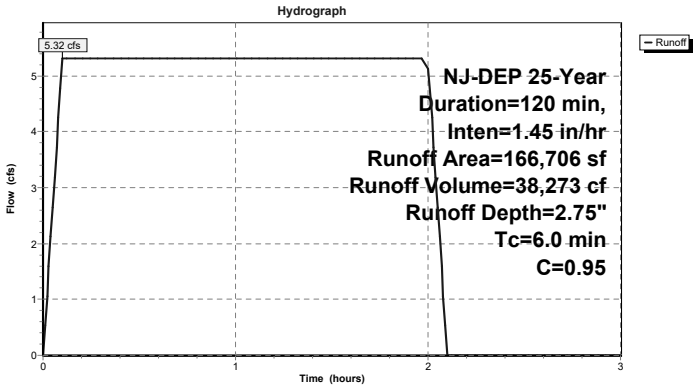
Runoff = 5.32 cfs @ 0.10 hrs, Volume= 38,273 cf, Depth= 2.75"
Routed to Pond BB-P2 : INFILT BASIN

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
NJ-DEP 25-Year Duration=120 min, Inten=1.45 in/hr

Area (sf)	C	Description
166,706	0.95	Roofs, HSG B
166,706	0.95	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, DIRECT

Subcatchment PR-35: FIELD AND ROOF



Summary for Subcatchment PR-38: BULLPEN

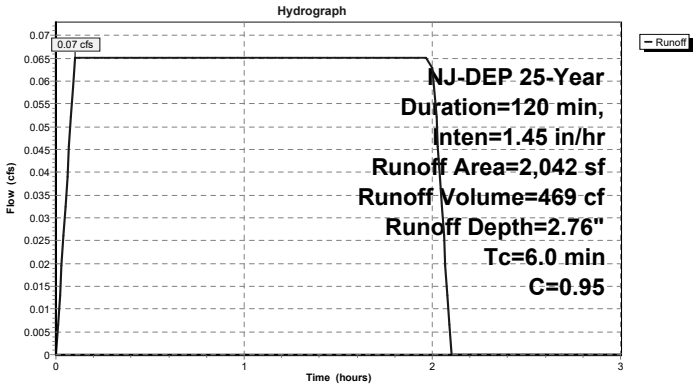
Runoff = 0.07 cfs @ 0.10 hrs, Volume= 469 cf, Depth= 2.76"
Routed to Pond BB-P3 : BULLPEN

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
NJ-DEP 25-Year Duration=120 min, Inten=1.45 in/hr

Area (sf)	C	Description
2,042	0.95	Paved parking, HSG B
2,042	0.95	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, minimum**

Subcatchment PR-38: BULLPEN



Summary for Pond AB 11: AD B11

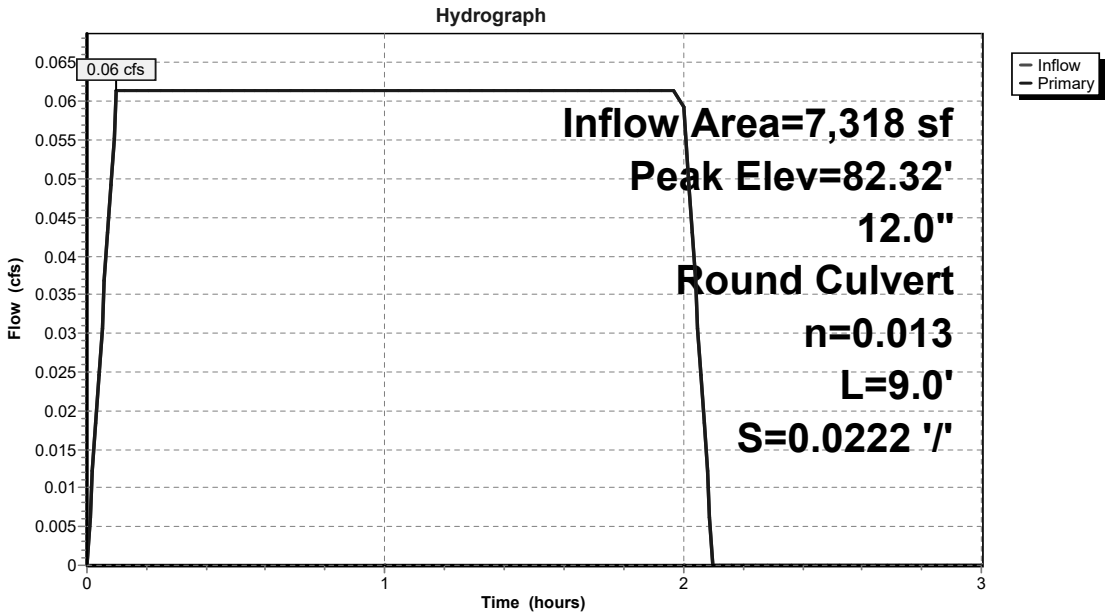
Inflow Area = 7,318 sf, 0.00% Impervious, Inflow Depth = 0.72" for 25-Year event
Inflow = 0.06 cfs @ 0.10 hrs, Volume= 442 cf
Outflow = 0.06 cfs @ 0.10 hrs, Volume= 442 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.06 cfs @ 0.10 hrs, Volume= 442 cf
Routed to Pond DMH 105 : DMH B105

Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 82.32' @ 0.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	82.20'	**12.0" Round Culvert** L= 9.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 82.20' / 82.00' S= 0.0222 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.06 cfs @ 0.10 hrs HW=82.32' (Free Discharge)
1=Culvert (Inlet Controls 0.06 cfs @ 1.17 fps)

Pond AB 11: AD B11



Summary for Pond AD B10: AD B10

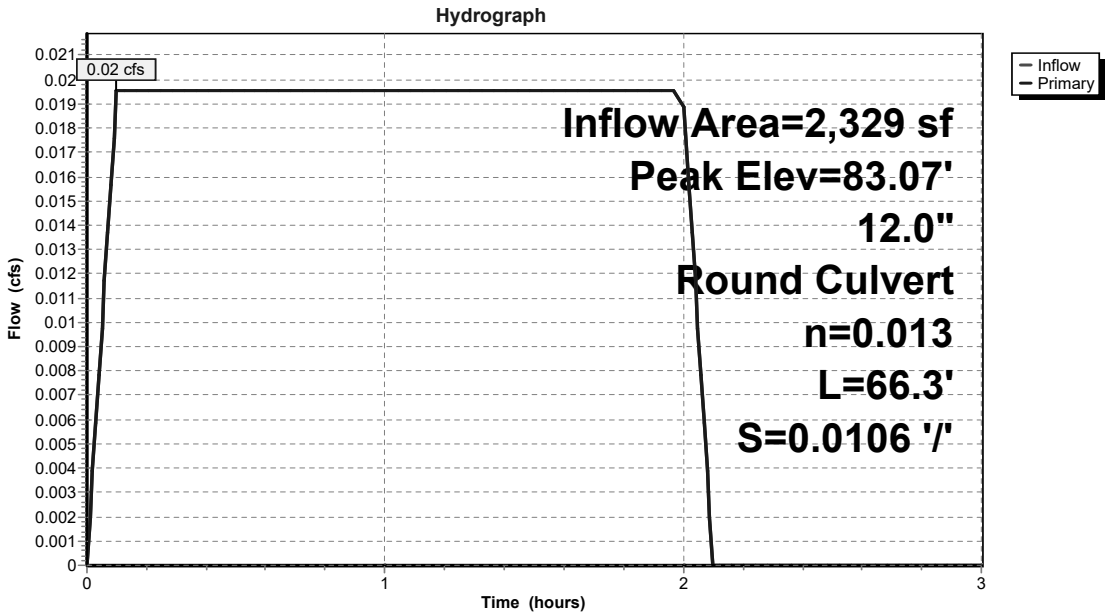
Inflow Area = 2,329 sf, 0.00% Impervious, Inflow Depth = 0.73" for 25-Year event
Inflow = 0.02 cfs @ 0.10 hrs, Volume= 141 cf
Outflow = 0.02 cfs @ 0.10 hrs, Volume= 141 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.02 cfs @ 0.10 hrs, Volume= 141 cf
Routed to Pond AB 11 : AD B11

Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 83.07' @ 0.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	83.00'	**12.0" Round Culvert** L= 66.3' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 83.00' / 82.30' S= 0.0106 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.02 cfs @ 0.10 hrs HW=83.07' (Free Discharge)
1=Culvert (Barrel Controls 0.02 cfs @ 1.22 fps)

Pond AD B10: AD B10



Summary for Pond BB-4P: POROUS WALK-2

Inflow Area = 21,359 sf, 6.33% Impervious, Inflow Depth = 0.84" for 25-Year event
Inflow = 0.21 cfs @ 0.10 hrs, Volume= 1,497 cf
Outflow = 0.21 cfs @ 2.00 hrs, Volume= 936 cf, Atten= 0%, Lag= 114.0 min
Primary = 0.21 cfs @ 2.00 hrs, Volume= 936 cf
Routed to Pond MH 104 : DMG B104
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond BB-P1 : Plaza

Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 88.25' @ 2.00 hrs Surf.Area= 1,352 sf Storage= 677 cf

Plug-Flow detention time= 54.9 min calculated for 936 cf (63% of inflow)
Center-of-Mass det. time= 32.5 min (95.5 - 63.0)

Volume	Invert	Avail.Storage	Storage Description
#1	87.00'	1,082 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 2,704 cf Overall x 40.0% Voids

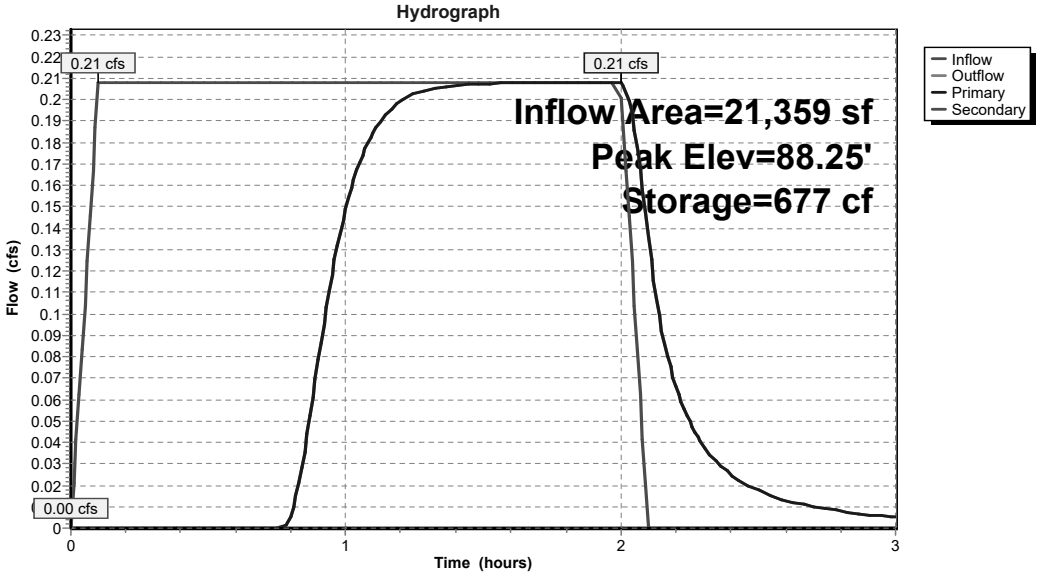
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
87.00	1,352	0	0
88.00	1,352	1,352	1,352
89.00	1,352	1,352	2,704

Device	Routing	Invert	Outlet Devices
#1	Secondary	88.99'	**30.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32
#2	Primary	88.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.21 cfs @ 2.00 hrs HW=88.25' (Free Discharge)
└**2=Orifice/Grate** (Orifice Controls 0.21 cfs @ 1.71 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=87.00' (Free Discharge)
└**1=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond BB-4P: POROUS WALK-2



Summary for Pond BB-5P: POROUS WALK 1

Inflow Area = 45,709 sf, 3.86% Impervious, Inflow Depth = 0.81" for 25-Year event
Inflow = 0.43 cfs @ 0.14 hrs, Volume= 3,076 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond MH 104 : DMG B104
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond BB-4P : POROUS WALK-2

Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 90.78' @ 2.14 hrs Surf.Area= 11,328 sf Storage= 3,076 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	90.00'	7,930 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 22,656 cf Overall x 35.0% Voids

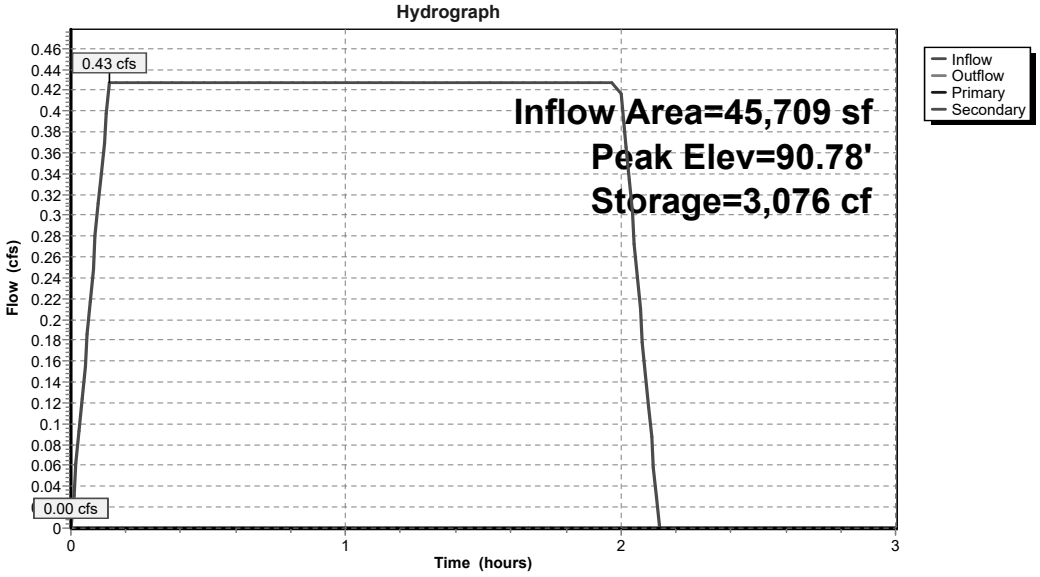
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.00	11,328	0	0
91.00	11,328	11,328	11,328
92.00	11,328	11,328	22,656

Device	Routing	Invert	Outlet Devices
#1	Primary	91.00'	**8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Secondary	91.99'	**30.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=90.00' (Free Discharge)
└**1=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=90.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond BB-5P: POROUS WALK 1



Summary for Pond BB-P1: Plaza

Inflow Area = 16,650 sf, 36.53% Impervious, Inflow Depth = 1.48" for 25-Year event
Inflow = 0.29 cfs @ 0.10 hrs, Volume= 2,052 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond MH 106 : DMH B106

Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 81.84' @ 2.10 hrs Surf.Area= 6,083 sf Storage= 2,052 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	81.00'	12,166 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 30,415 cf Overall x 40.0% Voids

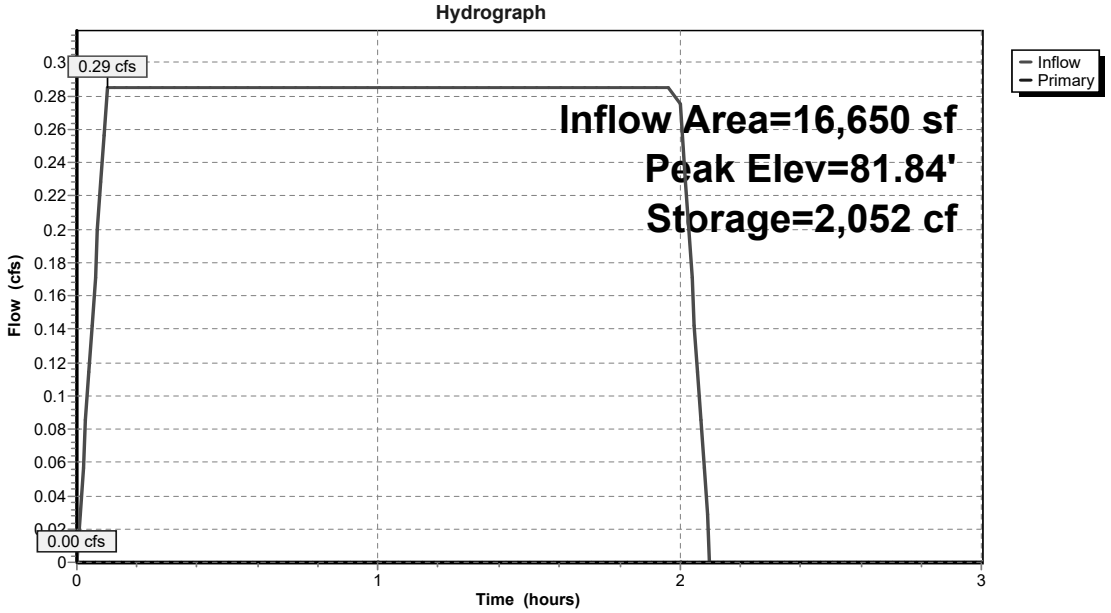
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
81.00	6,083	0	0
86.00	6,083	30,415	30,415

Device	Routing	Invert	Outlet Devices
#1	Primary	82.00'	**12.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=81.00' (Free Discharge)
└**1=Orifice/Grate** (Controls 0.00 cfs)

Pond BB-P1: Plaza

Hydrograph



Summary for Pond BB-P2: INFILT BASIN

Inflow Area = 166,706 sf,100.00% Impervious, Inflow Depth = 2.75" for 25-Year event
Inflow = 5.32 cfs @ 0.10 hrs, Volume= 38,273 cf
Outflow = 0.38 cfs @ 2.09 hrs, Volume= 3,473 cf, Atten= 93%, Lag= 119.6 min
Primary = 0.38 cfs @ 2.09 hrs, Volume= 3,473 cf
Routed to Pond MH 109 : DMH B109

Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 77.58' @ 2.09 hrs Surf.Area= 120,809 sf Storage= 36,031 cf

Plug-Flow detention time= 93.1 min calculated for 3,462 cf (9% of inflow)
Center-of-Mass det. time= 38.7 min (101.7 - 63.0)

Volume	Invert	Avail.Storage	Storage Description
#1	74.67'	124,126 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 354,645 cf Overall x 35.0% Voids

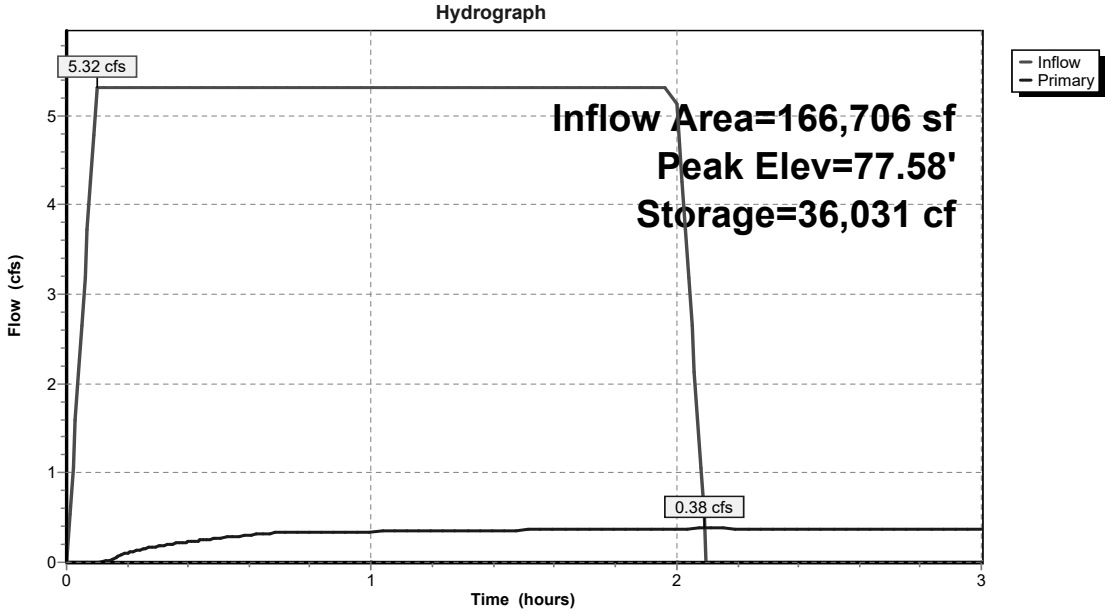
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
74.67	14,517	0	0
77.00	14,517	33,825	33,825
77.01	120,809	677	34,501
79.66	120,809	320,144	354,645

Device	Routing	Invert	Outlet Devices
#1	Primary	74.90'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	78.30'	**24.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.38 cfs @ 2.09 hrs HW=77.58' (Free Discharge)
1=Orifice/Grate (Orifice Controls 0.38 cfs @ 7.69 fps)
2=Orifice/Grate (Controls 0.00 cfs)

Pond BB-P2: INFILT BASIN

Hydrograph



Summary for Pond BB-P3: BULLPEN

Inflow Area = 2,042 sf,100.00% Impervious, Inflow Depth = 2.76" for 25-Year event
Inflow = 0.07 cfs @ 0.10 hrs, Volume= 469 cf
Outflow = 0.06 cfs @ 2.00 hrs, Volume= 406 cf, Atten= 3%, Lag= 114.1 min
Primary = 0.06 cfs @ 2.00 hrs, Volume= 406 cf
Routed to Pond MH 109 : DMH B109

Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 79.20' @ 2.00 hrs Surf.Area= 2,042 sf Storage= 162 cf

Plug-Flow detention time= 39.7 min calculated for 405 cf (86% of inflow)
Center-of-Mass det. time= 31.8 min (94.8 - 63.0)

Volume	Invert	Avail.Storage	Storage Description
#1	79.00'	817 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 2,042 cf Overall x 40.0% Voids

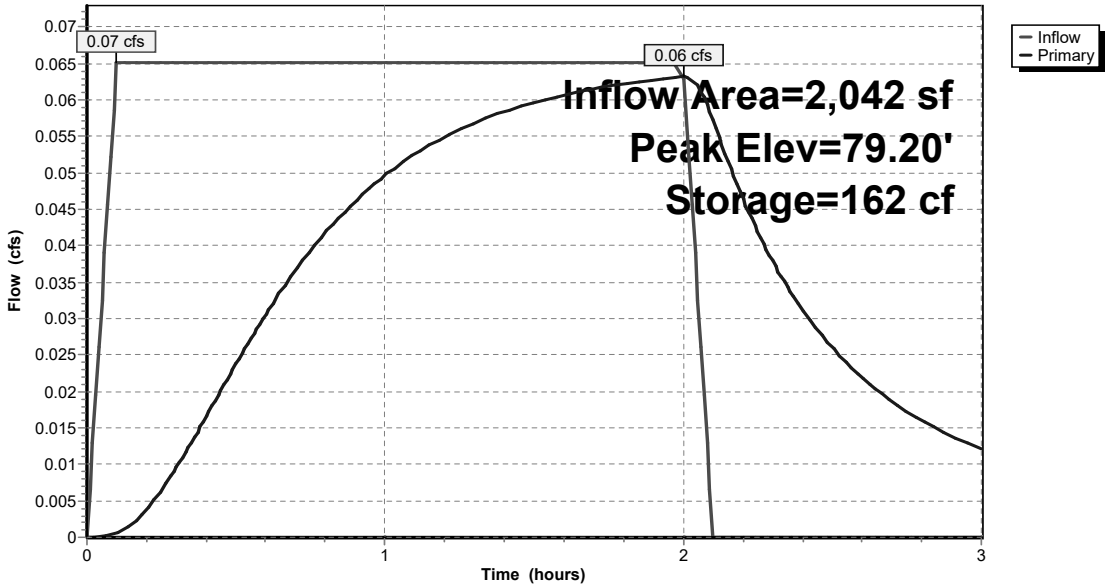
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
79.00	2,042	0	0
80.00	2,042	2,042	2,042

Device	Routing	Invert	Outlet Devices
#1	Primary	79.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.06 cfs @ 2.00 hrs HW=79.20' (Free Discharge)
1=Orifice/Grate (Orifice Controls 0.06 cfs @ 1.52 fps)

Pond BB-P3: BULLPEN

Hydrograph



Summary for Pond DMH 105: DMH B105

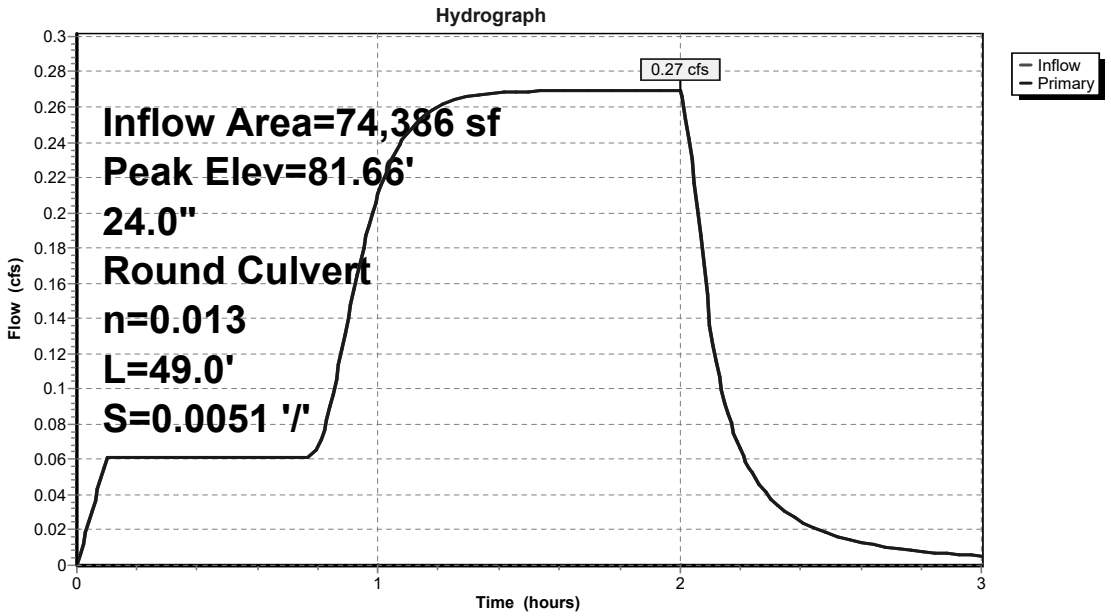
Inflow Area = 74,386 sf, 4.19% Impervious, Inflow Depth > 0.22" for 25-Year event
Inflow = 0.27 cfs @ 2.00 hrs, Volume= 1,378 cf
Outflow = 0.27 cfs @ 2.00 hrs, Volume= 1,378 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.27 cfs @ 2.00 hrs, Volume= 1,378 cf
Routed to Pond MH 106 : DMH B106

Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 81.66' @ 2.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	81.42'	**24.0" Round Culvert** L= 49.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 81.42' / 81.17' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.27 cfs @ 2.00 hrs HW=81.66' (Free Discharge)
1=Culvert (Barrel Controls 0.27 cfs @ 1.87 fps)

Pond DMH 105: DMH B105



Summary for Pond MH 104: DMG B104

Inflow Area = 67,068 sf, 4.65% Impervious, Inflow Depth > 0.17" for 25-Year event
Inflow = 0.21 cfs @ 2.00 hrs, Volume= 936 cf
Outflow = 0.21 cfs @ 2.00 hrs, Volume= 936 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.21 cfs @ 2.00 hrs, Volume= 936 cf
Routed to Pond DMH 105 : DMH B105

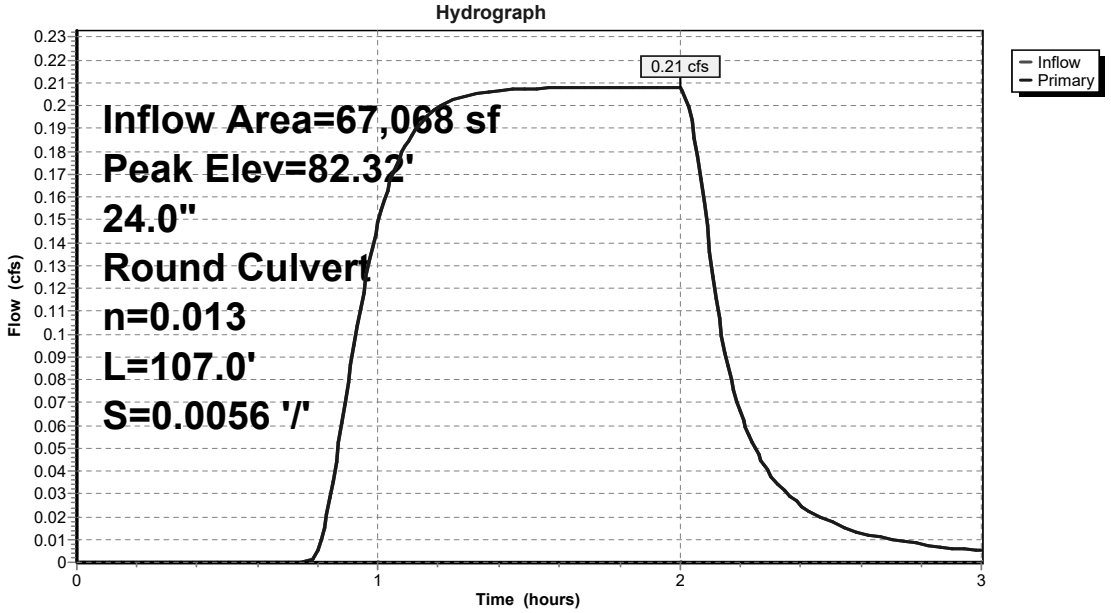
Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 82.32' @ 2.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	82.11'	**24.0" Round Culvert** L= 107.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 82.11' / 81.51' S= 0.0056 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.21 cfs @ 2.00 hrs HW=82.32' (Free Discharge)
1=Culvert (Barrel Controls 0.21 cfs @ 1.81 fps)

Pond MH 104: DMG B104

Hydrograph



Summary for Pond MH 106: DMH B106

Inflow Area = 91,036 sf, 10.11% Impervious, Inflow Depth > 0.18" for 25-Year event
Inflow = 0.27 cfs @ 2.00 hrs, Volume= 1,378 cf
Outflow = 0.27 cfs @ 2.00 hrs, Volume= 1,378 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.27 cfs @ 2.00 hrs, Volume= 1,378 cf
Routed to Pond MH 107 : DMH B107

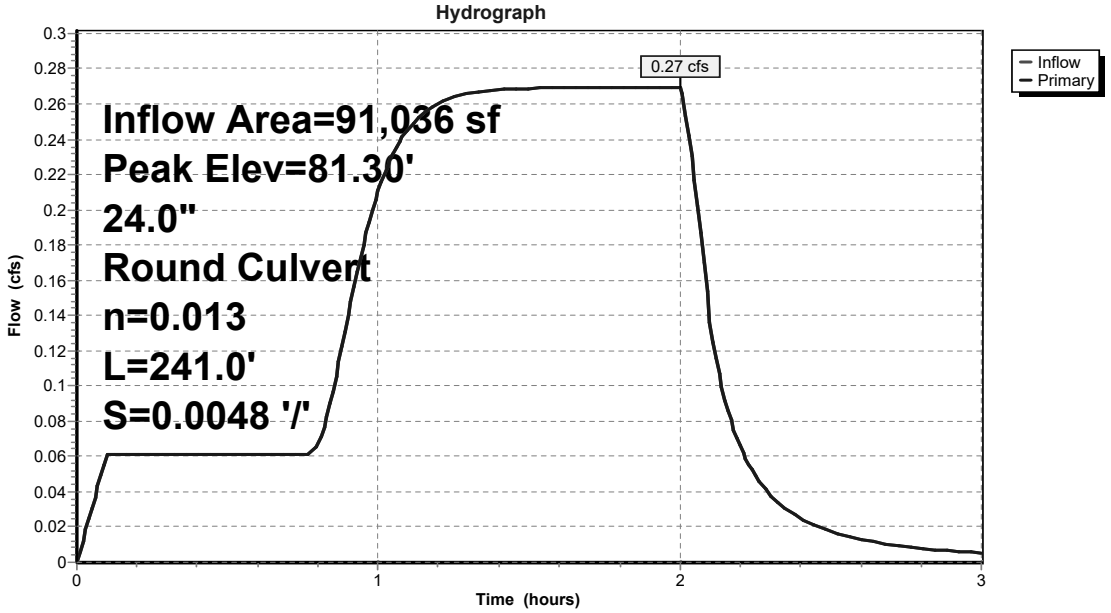
Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 81.30' @ 2.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	81.06'	**24.0" Round Culvert** L= 241.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 81.06' / 79.90' S= 0.0048 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.27 cfs @ 2.00 hrs HW=81.30' (Free Discharge)
1=Culvert (Barrel Controls 0.27 cfs @ 1.87 fps)

Pond MH 106: DMH B106

Hydrograph



Summary for Pond MH 107: DMH B107

Inflow Area = 91,036 sf, 10.11% Impervious, Inflow Depth > 0.18" for 25-Year event
Inflow = 0.27 cfs @ 2.00 hrs, Volume= 1,378 cf
Outflow = 0.27 cfs @ 2.00 hrs, Volume= 1,378 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.27 cfs @ 2.00 hrs, Volume= 1,378 cf
Routed to Pond MH 108 : DMH B108

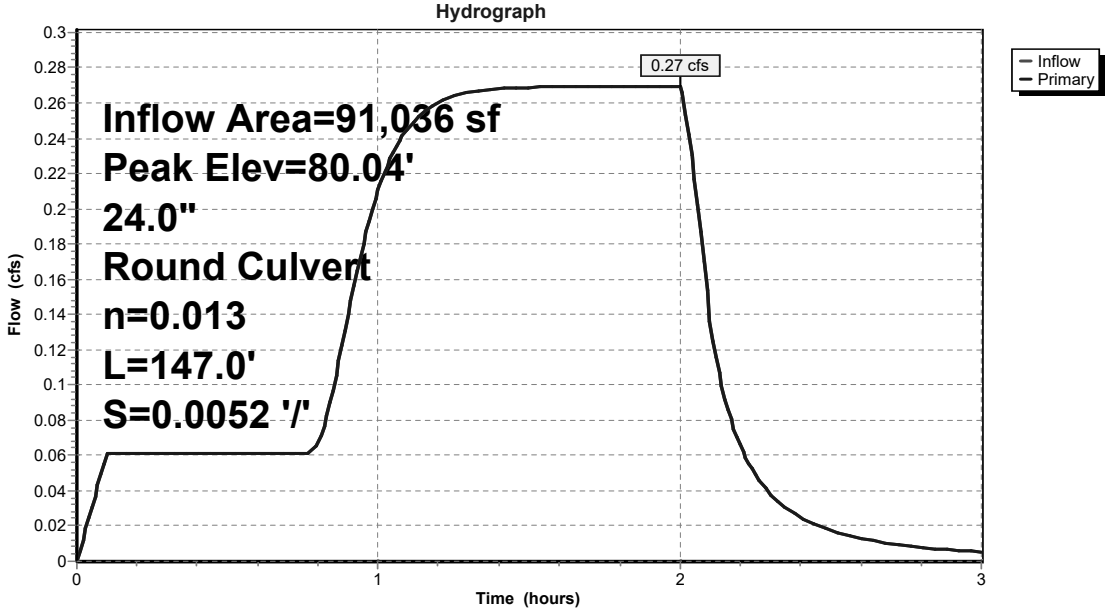
Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 80.04' @ 2.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	79.80'	**24.0" Round Culvert** L= 147.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 79.80' / 79.03' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.27 cfs @ 2.00 hrs HW=80.04' (Free Discharge)
1=Culvert (Barrel Controls 0.27 cfs @ 1.92 fps)

Pond MH 107: DMH B107

Hydrograph



Summary for Pond MH 108: DMH B108

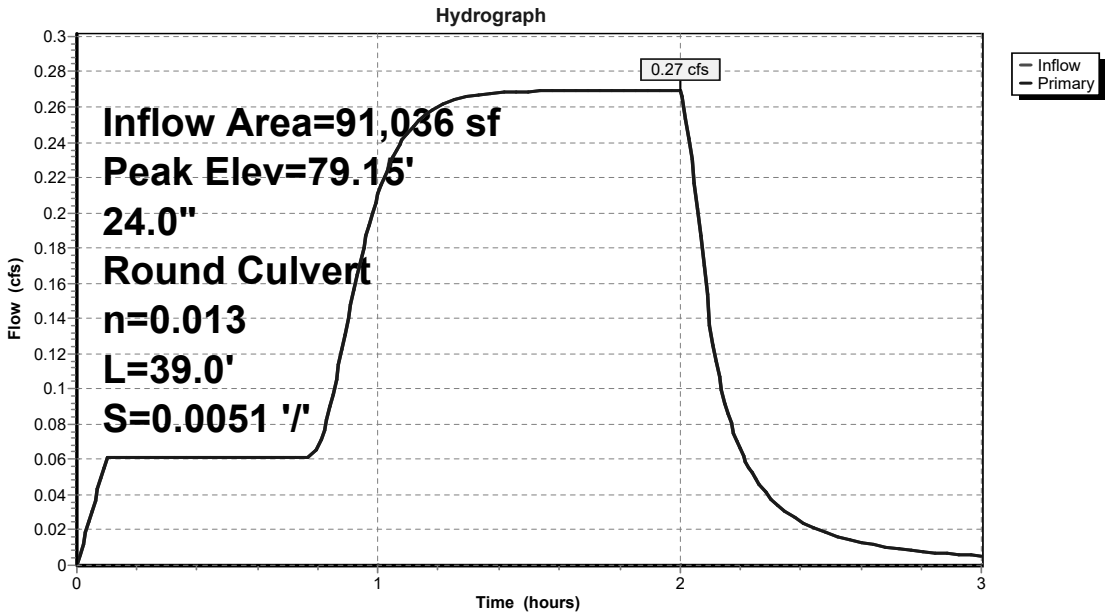
Inflow Area = 91,036 sf, 10.11% Impervious, Inflow Depth > 0.18" for 25-Year event
Inflow = 0.27 cfs @ 2.00 hrs, Volume= 1,378 cf
Outflow = 0.27 cfs @ 2.00 hrs, Volume= 1,378 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.27 cfs @ 2.00 hrs, Volume= 1,378 cf
Routed to Pond MH 109 : DMH B109

Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 79.15' @ 2.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	78.90'	**24.0" Round Culvert** L= 39.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 78.90' / 78.70' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.27 cfs @ 2.00 hrs HW=79.15' (Free Discharge)
1=Culvert (Barrel Controls 0.27 cfs @ 1.86 fps)

Pond MH 108: DMH B108



Summary for Pond MH 109: DMH B109

Inflow Area = 259,784 sf, 68.50% Impervious, Inflow Depth > 0.24" for 25-Year event
Inflow = 0.71 cfs @ 2.00 hrs, Volume= 5,258 cf
Outflow = 0.71 cfs @ 2.00 hrs, Volume= 5,258 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.71 cfs @ 2.00 hrs, Volume= 5,258 cf

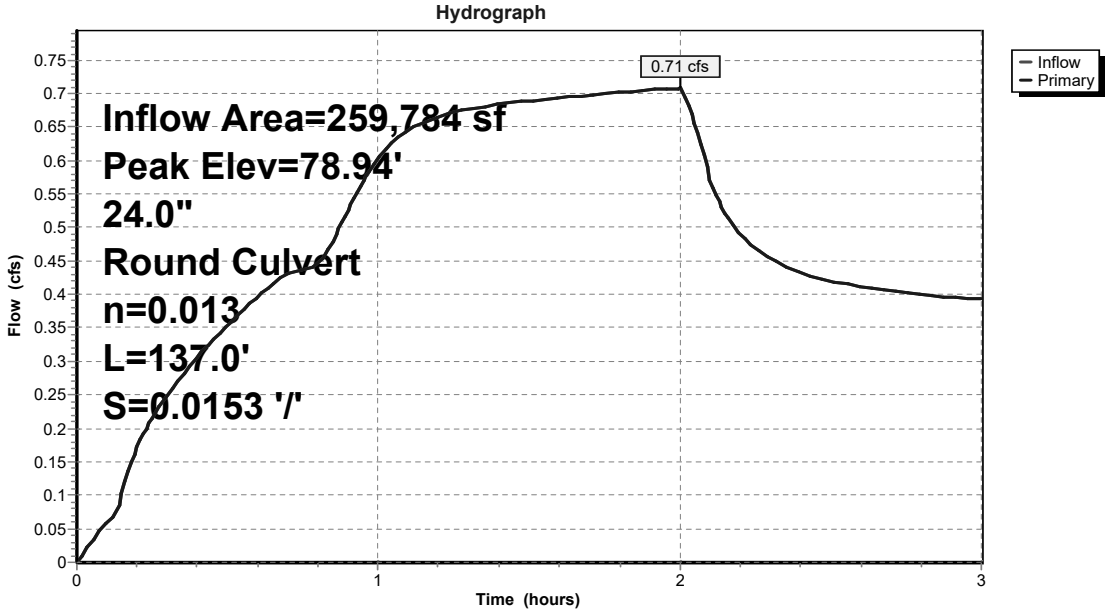
Routing by Stor-Ind method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 78.94' @ 2.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	78.60'	**24.0" Round Culvert** L= 137.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 78.60' / 76.50' S= 0.0153 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.71 cfs @ 2.00 hrs HW=78.94' (Free Discharge)
1=Culvert (Inlet Controls 0.71 cfs @ 1.99 fps)

Pond MH 109: DMH B109

Hydrograph



ATTACHMENT E

Geotechnical Engineering Report
NRSC Soils Map
Aquifer Recharge Map

CARLIN • SIMPSON & ASSOCIATES, LLC

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Kurt W. Anke
Eric J. Shaw

18 June 2024

Pendulum
1512 Holmes Street
Kansas City, MO 64108

Attn: Mr. Jonathan O'Neil Cole, AIA, NCARB, NOMA
Principal/CEO

Re: Supplemental Subsurface Soil and Groundwater Investigation
Proposed Ballpark – Stormwater Management Update
Princeton University
Princeton, NJ (CSA Job. No. 23-114)

Dear Mr. O'Neil:

We understand that a new stormwater management system is planned at the Lake Campus at Princeton University. The stormwater system will consist of porous pavement, porous pavers, and infiltration basins. At this time, the invert elevations have not been finalized. The following is a summary of the preliminary findings of the infiltration testing.

Test locations were provided by Nitsch Engineering in a drawing entitled "Stormwater Management Soil Testing Plan for Baseball Stadium" with a revised date of 5/31/2024. This drawing indicates the location of 7 proposed tests that consist of 4 percolation tests (BB-TP-24-1 through BB-TP-24-4) and 3 basin flood tests (BB-BFT-24-1 through BB-BFT-24-3). See the attached drawing for the testing location plan. Note that the northern most test location was renumbered to BB-TP-24-4. The following table is a summary of the field test results. In addition, the percolation test results can be found in the attached N.J.A.C 7:9A Form 3d – Percolation Test Data.

Table 1 – Percolation and Basin Flood Test Results

Test No.	Approximate Ground Surface Elevation	Test Type	Test Depth (Elevation)	Percolation Rate (min/in)	Hydraulic Conductivity Rate, K_s (in/hr)
BB-TP-24-1	+90.8	Perc	0'9" – 1'3" (+89.5)	6.5	3.1
BB-TP-24-2	+91.8	Perc	1'9" – 2'3" (+89.5)	4.3	4.6
BB-TP-24-3	+86.0	Perc	2'0" – 2'6" (+83.5)	9.2	2.2
BB-TP-24-4	+80.5	Perc	1'6" – 2'0" (+78.5)	20.8	0.96
BB-BFT-24-1	+90.0	BFT	*10'0" (+80.0)	BB-BFT-24-1 Passed – Design Rate 0.5 in/hr	
BB-BFT-24-2	+77.0	BFT	*2'0" (+75.0)	BB-BFT-24-2 Passed – Design Rate 0.5 in/hr	

Test No.	Approximate Ground Surface Elevation	Test Type	Test Depth (Elevation)	Percolation Rate (min/in)	Hydraulic Conductivity Rate, K_s (in/hr)
BB-BFT-24-3	+76.2	BFT	*1'2" (+75.0)	BB-BFT-24-3 Passed – Design Rate 0.5 in/hr	

Perc – Percolation Test
BFT – Basin Flood Test
(*) – Depth to Bottom of Basin Flood Test Excavation

The percolation tests and calculations were performed in accordance with New Jersey Stormwater Best Management Practices Manual (March 2024), Chapter 12: Soil Testing Criteria. The saturated hydraulic conductivity rate, K_s, was determined using the simplified Equation 2 and Table 12-9 for a test hole diameter of 6 inches of this manual.

The new stormwater management system shall be designed and constructed in accordance with the applicable New Jersey Stormwater Best Management Practices (BMP) Manual. Once the site grading plan is finalized, a copy of the plan should be forwarded to this office so that we can review it along with the recommendations in this letter. At that time, additional field exploration and soil testing may be required to determine the design permeability rate for the system in accordance with the New Jersey stormwater regulations. Should stormwater management areas be planned in other portions of the site, they should be evaluated on a case-by-case basis.

Thank you for allowing us to assist you with this project. Should you have any questions or comments, please contact this office.

Very truly yours,

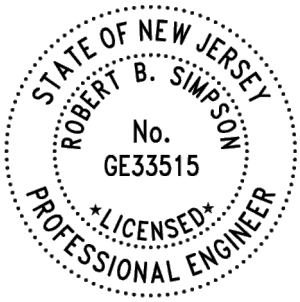
CARLIN-SIMPSON & ASSOCIATES, LLC.



MICHAL WROBLEWSKI, P.E.
Project Engineer



ROBERT B. SIMPSON, P.E.
Principal



File No. 23-114

N.J.A.C. 7:9A – Appendix B Forms

Form 3d
Percolation Test Data

Lot: 1.0113 Block: 3

1. Test Number: BB-TP-24-1 Replicate (letter): _____ Date Tested: 6-7-2024

2. Depth: 0'9" -1'3"

3. Pre-soak: X

X Sandy textured soil only, shortened pre-soak – Indicate time required for 12 inches of water to drain after second filling, minutes: 45 minutes

_____ Four hour pre-soak completed – Indicate results:
_____ Test hole drained within 16 to 24 hours after pre-soak
_____ Test hole did not drain within 24 hours after pre-soak

4. Rate of fall data:
   a. Time interval selected, minutes: 5 minutes
   b. Record the drop in water level during each time interval to the nearest 1/10th – Inch on the lines below:

Depth of water, start of interval (inches)	Depth of water, end of interval (inches)	Drop in water level (inches)
7.0	5.75	1.25
7.0	5.875	1.125
7.0	5.875	1.125
7.0	6.0	1.0
7.0	6.0	1.0

5. Percolation Rate:
   a. Time, minutes, required for a six-inch drop in water level 39 minutes
   b. Percolation rate = a/6 = 6.5 min/in

6. I hereby certify that the information furnished on Form 3d of this application (and the attachments thereto) is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Soil Evaluator: _____ Date: 6-17-2024
Signature of Professional Engineer: _____ License #: 24GE03351500

County: Mercer Municipality: West Windsor

N.J.A.C. 7:9A – Appendix B Forms

Form 3d
Percolation Test Data

Lot: 1.0113 Block: 3

1. Test Number: BB-TP-24-2 Replicate (letter): _____ Date Tested: 6-7-2024

2. Depth: 1'9" - 2'3"

3. Pre-soak: X

X Sandy textured soil only, shortened pre-soak – Indicate time required for 12 inches of water to drain after second filling, minutes: 30 minutes

_____ Four hour pre-soak completed – Indicate results:
_____ Test hole drained within 16 to 24 hours after pre-soak
_____ Test hole did not drain within 24 hours after pre-soak

4. Rate of fall data:
   a. Time interval selected, minutes: 5 minutes
   b. Record the drop in water level during each time interval to the nearest 1/10th – Inch on the lines below:

Depth of water, start of interval (inches)	Depth of water, end of interval (inches)	Drop in water level (inches)
7.0	5.25	1.75
7.0	5.375	1.625
7.0	5.375	1.625
7.0	5.5	1.5
7.0	5.5	1.5

5. Percolation Rate:
   a. Time, minutes, required for a six-inch drop in water level 26 minutes
   b. Percolation rate = a/6 = 4.3 min/in

6. I hereby certify that the information furnished on Form 3d of this application (and the attachments thereto) is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Soil Evaluator: _____ Date: 6-17-2024
Signature of Professional Engineer: _____ License #: 24GE03351500

County: Mercer Municipality: West Windsor

N.J.A.C. 7:9A – Appendix B Forms

Form 3d
Percolation Test Data

Lot: 1.0113 Block: 3

1. Test Number: BB-TP-24-3 Replicate (letter): _____ Date Tested: 6-7-2024 - Presoak / 6-8-2024 - Final Test

2. Depth: 2'0" - 2'6"

3. Pre-soak: X

X Sandy textured soil only, shortened pre-soak – Indicate time required for 12 inches of water to drain after second filling, minutes: 55 minutes

X Four hour pre-soak completed – Indicate results:
X Test hole drained within 16 to 24 hours after pre-soak
_____ Test hole did not drain within 24 hours after pre-soak

4. Rate of fall data:
   a. Time interval selected, minutes: 10 minutes
   b. Record the drop in water level during each time interval to the nearest 1/10th – Inch on the lines below:

Depth of water, start of interval (inches)	Depth of water, end of interval (inches)	Drop in water level (inches)
7.0	5.0	2.0
7.0	5.25	1.75
7.0	5.25	1.75
7.0	5.25	1.75

5. Percolation Rate:
   a. Time, minutes, required for a six-inch drop in water level 55 minutes
   b. Percolation rate = a/6 = 9.2 min/in

6. I hereby certify that the information furnished on Form 3d of this application (and the attachments thereto) is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Soil Evaluator: _____ Date: 6-17-2024
Signature of Professional Engineer: _____ License #: 24GE03351500

County: Mercer Municipality: West Windsor

N.J.A.C. 7:9A – Appendix B Forms

Form 3d
Percolation Test Data

Lot: 1.0113 Block: 3

1. Test Number: BB-TP-24-4 Replicate (letter): _____ Date Tested: 6-7-2024 - Presoak / 6-8-2024 - Final Test

2. Depth: 1'6" - 2'0"

3. Pre-soak: _____
_____ Sandy textured soil only, shortened pre-soak – Indicate time required for 12 inches of water to drain after second filling, minutes: _____

X Four hour pre-soak completed – Indicate results:
X Test hole drained within 16 to 24 hours after pre-soak
_____ Test hole did not drain within 24 hours after pre-soak

4. Rate of fall data:
   a. Time interval selected, minutes: 10 minutes
   b. Record the drop in water level during each time interval to the nearest 1/10th – Inch on the lines below:

Depth of water, start of interval (inches)	Depth of water, end of interval (inches)	Drop in water level (inches)
7.0	6.0	1.0
7.0	6.5	0.5
7.0	6.5	0.5
7.0	6.75	0.25

5. Percolation Rate:
   a. Time, minutes, required for a six-inch drop in water level 125 minutes
   b. Percolation rate = a/6 = 20.8 min/in

6. I hereby certify that the information furnished on Form 3d of this application (and the attachments thereto) is true and accurate. I am aware that falsification of data is a violation of the Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) and is subject to penalties as prescribed in N.J.A.C. 7:14-8.

Signature of Soil Evaluator: _____ Date: 6-17-2024
Signature of Professional Engineer: _____ License #: 24GE03351500

County: Mercer Municipality: West Windsor

ARCH E1 30" x 42"

BFT-2
EXISTING GRADE = +76.0 FT
ELEVATION = +70.0 FT
INFILTRATION RATE = 0.50 IN/HR

TP-228
ELEVATION = +76.0 FT
NO GROUNDWATER ENCOUNTERED

BB-B-1
ELEVATION = +63.50 FT
GROUNDWATER ELEVATION = +65.80 FT

TP-229
ELEVATION = +75.0 FT
NO GROUNDWATER ENCOUNTERED

BFT-3
EXISTING GRADE = +75.0 FT
ELEVATION = +70.5 FT
INFILTRATION RATE = 0.50 IN/HR

BB-TP-104
PERCOLATION TEST
ELEVATION = +78.0 FT
INFILTRATION RATE = 0.57 IN/HR

BB-B-6
ELEVATION = +74.50 FT
NO GROUNDWATER ENCOUNTERED

TP-256
ELEVATION = +81.00 FT
NO GROUNDWATER ENCOUNTERED

SHIFT TEST
JUST OFF
HAUL ROAD

BB-TP-105
PERCOLATION TEST
ELEVATION = +79.0 FT
INFILTRATION RATE = 8.50 IN/HR

PROPOSED BB-TP-24-4
TEST PIT AND PERCOLATION TEST
AT POROUS PAVERS
ELEV OF PT 79±

BB-BFT-2
BASIN FLOOD TEST
ELEVATION = +80.0 FT
INFILTRATION RATE = 0.5 IN/HR

TP-230
ELEVATION = +75.0 FT
NO GROUNDWATER ENCOUNTERED

BB-TP-103
PERCOLATION TEST
ELEVATION = +77.0 FT
INFILTRATION RATE = 18.00 IN/HR

BB-2
ELEVATION = +80.0 FT
GROUNDWATER ELEVATION = +63.50 FT

PROPOSED POROUS PAVERS
WITH STORAGE AND INFILTRATION

TEST CAN
SHIFT WITHIN
BLUE AREA

PROPOSED INFILTRATION
BASIN

B-245
ELEVATION = +85.00 FT
NO GROUNDWATER ENCOUNTERED

BFT-6
EXISTING GRADE = +65.00 FT
ELEVATION = +60.50 FT
INFILTRATION RATE = 0.065 IN/HR

B-244
ELEVATION = +85.00 FT
NO GROUNDWATER ENCOUNTERED

BB-TP-106
PERCOLATION TEST
ELEVATION = +82.50 FT
INFILTRATION RATE = 0.87 IN/HR

PROPOSED BB BFT-24-2
AT INFILTRATION BASIN
ELEV OF TEST - 76

PROPOSED BB BFT-24-3
AT INFILTRATION BASIN
ELEV OF TEST - 76

BB-TP-102
PERCOLATION TEST
ELEVATION = +81.20 FT
INFILTRATION RATE = 11.10 IN/HR

BB-B-3
ELEVATION = +86.50 FT
GROUNDWATER ELEVATION = +71.00 FT

BB-B-5
ELEVATION = +81.00FT
GROUNDWATER ELEVATION = +64.80 FT

SHIFT OFF ROAD

PROPOSED POROUS PAVEMENT

FUTURE LOOP ROAD

BB-BFT-1
BFT TEST
ELEVATION = +87.37 FT
INFILTRATION RATE = 0.5 IN/HR

BB-BFT-2
BFT TEST
ELEVATION = +83.70 FT
INFILTRATION RATE = 0.5 IN/HR

BB-B-4
ELEVATION = +83.70 FT
GROUNDWATER ELEVATION = +65.80 FT

PROPOSED BB TP-24-1
TEST PIT AND PERCOLATION TEST
AT POROUS ASPHALT
ELEV OF PT - 90±

PROPOSED BB TP-24-3
TEST PIT AND PERCOLATION TEST
AT POROUS PAVERS
ELEV OF PT 84±

PROPOSED BB TP-24-2
TEST PIT AND PERCOLATION TEST
AT POROUS ASPHALT
ELEV OF PT - 90±

BB-TP-101
PERCOLATION TEST
ELEVATION = +88.20 FT
INFILTRATION RATE = 0.81 IN/HR

PROPOSED BB BFT-24-1
AT INFILTRATION BASIN
ELEV OF TEST 81±

PROPOSED POROUS PAVERS
WITH STORAGE AND INFILTRATION

BB-TP-100
PERCOLATION TEST

HAUL ROAD AT
FUTURE LOOP
ROAD

SOIL TESTS OUTSITE OF HAUL ROAD (AT FUTURE LOOP ROAD) AND GEOTHERMAL

SOILD TESTS THAT MAY HAVE TO SHIFT

PROPOSED SOIL TESTING

SCALE: 1" = 40'

REV 2: 2024-05-31

NOTES:

1. THIS PLAN INDICATES TEST PITS FROM LAKE CAMPUS, BASEBALL PRELIMINARY TESTING, AND PROPOSED TESTING FOR STORMWATER MANAGEMENT SYSTEMS FOR MEADOWS NEIGHBORHOOD BASEBALL STADIUM.
2. THE LOCATIONS OF THE SOIL TESTING IS BASED ON THE SCHEMATIC DESIGN.
3. THE GEOTECH MAY ADD OR SHIFT TESTING LOCATIONS OR TYPE OF TEST (PT VS BFT) BASED ON SITE CONDITIONS.

TB-X — Lake Campus Boring (Carlin Simpson – Sept 2020)
BFT-X — Lake Campus Flood Test (Carlin Simpson – Sept 2020)
TP-X — Lake Campus Test PIT (Carlin Simpson – Sept 2020)
TP-X — Preliminary Baseball Test Pit (2023-12-05)
BFT-X — Preliminary Baseball Basin Flood Test (2023-12-05)
B-X — Preliminary Baseball Boring(2023-12-05)
TP-X — Proposed Soil Investigation Locations (Test Pit)
BFT-X — Proposed Soil Investigation Locations (Basin Flood Test)
B-X — Preliminary Soil Investigation Locations (Boring Well)

PENDULUM

PROJECT
PRINCETON

ARCHITECT
ARCHITECT OF RECORD
PENDULUM STUDIO LLC
1512 Holmes
Kansas City, MO 64108
tel - 816.335.3030

CLIENT
PRINCETON UNIVERSITY

CONSULTANTS

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Mills + Schnoering Architects, LLC
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Princeton, NJ 08540
(609) 681-2480

Agencie Architecture & Engineering PC
463 West St, Suite 1801
New York, NY 10014
(212) 203-0265

Cost Estimating
Ellana, Inc.
32 Broadway, 8th Floor
New York, NY 10004
(212) 971-0936

Structural Engineer
Thornton Tomasetti
1130 Connecticut Ave NW, Suite 300
Washington, DC 20036
(202) 580-6300

MEP, Fire/Life Safety
Henderson Engineers
1801 Main St, Suite 300
Kansas City, MO 64108
(816) 663-8700

Landscape Architect
Field Operations
4 Bryant Park, Floor 11
New York, NY 10018
(212) 433-1450

Stormwater Engineering
Nitsch Engineering
2175 K St NW, Suite 320
Washington, DC 20037
(202) 640-5967

Playing Field Design
Kimley-Horn and Associates, Inc.
805 Pennsylvania Ave, Suite 150
Kansas City, MO 64105
(816) 652-0350

Civil Engineer
VHB
One Penn Plaza, Suite 715
New York, NY 10119
(212) 857-7350

Geotechnical Engineer
Carlin-Simpson & Associates, LLC
61 Main St
Sayreville, NJ 08872
(732) 432-5757

Environmental/Sustainability
Atelier Ten
104 West 29th St, 8th Floor
New York, NY 10001
(212) 254-4500

Proposed Soil Testing
Project No. 231101

Project No.
Issued: **May 6, 2024**

ISSUE/REVISION

KEY PLAN

SHEET TITLE
STORMWATER MANAGEMENT SOIL TESTING PLAN FOR BASEBALL STADIUM

SHEET NUMBER

SW TP1

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Project Management Initials:
Last Plotted:
Filename:
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CARLIN • SIMPSON & ASSOCIATES, LLC

Consulting Geotechnical and Environmental Engineers

61 Main Street, Sayreville, New Jersey 08872
Tel. (732) 432-5757
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Kurt W. Anke
Eric J. Shaw

5 December 2023

Pendulum
1512 Holmes Street
Kansas City, MO 64108

Attn: Mr. Jonathan O'Neil Cole, AIA, NCARB, NOMA
Principal/CEO

Re: Report on Subsurface Soil and Foundation Investigation
Proposed Baseball Stadium
Princeton University
Princeton, NJ (CSA Job. No. 23-114)

Dear Mr. Cole:

In accordance with our proposal dated 23 August 2023 and your subsequent authorization, we have completed a Subsurface Soil and Foundation Investigation for the referenced site. The purpose of this study was to determine the nature and engineering properties of the subsurface soil and the groundwater conditions for the new construction, to recommend a practical foundation scheme, to determine the allowable bearing capacity of the site soils, and to preliminarily determine the site soils permeability. We understand that the proposed construction will consist of a new baseball stadium.

Our scope of work for this project included the following:

1. Reviewed the proposed layout, the existing site conditions, the expected soil conditions, and planned this study.

2. Retained Environmental Technical Drilling, Inc. to advance six (6) borings throughout the area.

3. Observed six (6) test pits performed by Vollers Construction.

4. Performed three (3) basin flooding tests and seven (7) percolation tests to determine the site soils/rock permeability rate.

5. Laid out the boring and test pit locations in the field, visually identified the soil layers encountered, obtained soil samples, and prepared detailed boring logs and a Boring and Test pit Location Plan.

6. Performed laboratory soil identifications tests on selected representative soil samples.

7. Analyzed the field and laboratory test data and prepared this report containing the results of this study.

1.0 SITE DESCRIPTION

The site is at Princeton Lake Campus along Washington Road in Princeton, New Jersey. The site is currently an active construction site and contractor parking. Existing site grades range from approximately elevation +90.0 to +80.0. Site grades generally slope down from south to north.

2.0 PROPOSED CONSTRUCTION

We understand that the proposed construction will consist of a new baseball stadium. The proposed field will have a finished grade ranging from elevation +92.0 to +78.0. The baseball stadium will also include a new press box, grandstand, dugouts, and locker rooms. The proposed structure loads were not known at the time of writing. The planned stadium will also include foul poles, scoreboard, and light towers. In addition, a new stormwater management system will be included for this project.

The following evaluation is based on information that has been provided to our office as of the date of this report. Once the planned construction drawings have been further completed, a copy of the final plans should be forwarded to our office so that we can review them along with the recommendations in this report. At that time, any changes or additional recommendations can be provided, if required.

3.0 SUBSURFACE CONDITIONS

To determine the subsurface soil and groundwater conditions at the site, six (6) borings and six (6) test pits were advanced in the area of the proposed baseball stadium area. Borings were performed by Environmental Technical Drilling Inc. in October 2023. The borings were performed using hollow stem augers, mud-rotary drilling, rock coring, and split spoon sampling. The test pits were performed by Vollers Construction in November 2023. Both the borings and test pits were performed under the full-time inspection of Carlin-Simpson & Associates.

Detailed boring and test pit logs have been prepared and are included in this report. The locations of all of the subsurface testing can be found on the attached Boring and Test Pit Location Plan (FIG-1).

Our field engineer visually identified all of the soil samples obtained during the boring and test pit operations and selected samples were tested in our laboratory.

3.1 Soils

The soil descriptions shown on the boring and test pit logs are based on the Burmister Classification System. In this system, the soil is divided into three components: Sand (S), Silt ($) and Gravel (G). The major component is indicated in all capital letters, the lesser in lower case letters. The following modifiers indicate the quantity of each lesser component:

Modifier	Quantity
trace (t)	0 -10%
little (l)	10% - 20%
some (s)	20% - 35%
and (a)	35% - 50%

In addition the Unified Soil Classification System (USCS) has been identified for each major soil stratum. The subsurface soil conditions encountered in the borings and test pits at the site can be summarized as follows:

Stratum 1A Gravel — The surface layer in boring BB-B-4 and test pits BB-TP-100 through BB-TP-102, BB-BFT-1 and BB-BFT-2 is gravel that ranges from approximately 2 to 8 inches in thickness.

Stratum 1B Topsoil — The surface layer in borings BB-B-5 and BB-B-6 is topsoil that ranges from 12 to 24 inches in thickness.

Stratum 2 Existing Fill — At the surface in borings BB-B-1 through BB-B-3, test pits BB-TP-103 to BB-TP-106 and BB-BFT-3, and below the surface layers in the remaining borings and test pit BB-TP-101 and BB-BFT-3 is existing fill. The existing fill generally consists of loose to medium dense red brown, brown, dark brown, yellow brown, coarse to fine SAND, little (to some) Silt, little (to some) coarse to fine Gravel. Some debris including sticks and organics were encountered within this stratum. The existing fill extends to depths ranging from 2’0” to 5’0” below the existing ground surface.

Stratum 3 Silty Sand with Gravel [USCS: SM] — Below the existing fill in each of the borings is loose to dense brown, red brown, gray coarse to fine SAND, trace (to some) Silt, trace (to some) coarse to fine Gravel. This stratum extends to depths ranging from approximately 10’0” to 17’0” feet below the existing ground surface.

Stratum 4 Completely Weathered Bedrock

Beneath the Silty Sand with Gravel in borings BB-B-2 through BB-B-6 and test pits BB-BFT-1 through BB-BFT-3 is completely to highly weathered sedimentary bedrock. This layer is soil like in state, however there are denser pockets that likely cannot be conventionally excavated. The weathered sedimentary rock was encountered at depths ranging from 9'6" to 17'0" below the existing ground surface. Test pits BB-BFT-1 through BB-BFT-3 were terminated in this stratum at depths ranging from 11'6" to 14'6" below the existing ground surface.

Stratum 5 Sedimentary Bedrock

Borings BB-B-1 through BB-B-5 were terminated upon auger refusal on harder more intact sedimentary bedrock at depths of 11'6" to 18'9" below the existing ground surface.

The upper 5-feet of the bedrock surface was cored at boring location BB-B-6 starting at a depth of 15'0" below the existing ground surface. The core recovery was 77% and the rock quality designations (RQD) of the recovered core was 47%. Based on the RQD and visual inspection of the recovered core, the upper portion of the bedrock generally is poor quality in a shattered very blocky and seamy condition.

3.2 Bedrock

Completely weathered to highly weathered sedimentary bedrock was encountered in each of the borings and in 3 of the 10 test pits performed at the project site to depths ranging from 9'6" to 17'0" (elevations +76.9 to +64.5) below the existing ground surface. Auger refusal on possible harder more intact bedrock was encountered in each of the borings at depths ranging from 11'6" to 18'9" (elevations +71.0 to +59.5) below the existing ground surface.

Penetration into the bedrock and completely weathered rock with excavation equipment will depend on the degree of weathering and fracturing in the rock. The upper few feet of rock may be "rippable" by using large construction equipment, but we anticipate that the "rippability" of the bedrock will be variable and limited. It should not be assumed that the completely weathered rock (very dense material in a soil-like state) can be excavated with conventional equipment. Harder rock may be encountered within the completely weathered rock zone, and the use of hydraulic hammers may be required to excavate the harder and more intact bedrock.

3.3 Groundwater

Observations for groundwater were made during sampling and upon completion of the drilling and test pit operations. During this subsurface investigation, groundwater was not encountered above the bedrock surface. Groundwater on the subject site will be controlled by the topography and the underlying bedrock surface. As surface water infiltrates the ground, the water will travel along the soil/rock interface and through fractures of the underlying bedrock. During construction, we expect that perched or trapped water could be encountered within the existing fill and/or along the soil/rock interface, especially during wet periods. Proper groundwater control measures (i.e. sumps and pumps) will be required if water is encountered in the site excavations.

Variations in the location of the long-term water table may occur as a result of changes in precipitation, evaporation, surface water runoff, and other factors not immediately apparent at the time of this exploration.

3.4 Summary of Boring and Test Pit Observations

A summary of the observations for the borings and test pits performed throughout the site are provided in Table 1 below.

Table 1 – Boring and Test Pit Observation Summary

Test Pit/ Boring No.	Approximate Ground Surface Elevation	Depth to Groundwater (Elevation)	Depth to Bottom of Existing Fill (Elevation)	Depth to Bedrock (Elevation)
BB-B-1	+75.0	NE to 11’6”	2’0” (+73.0)	AR @ 11’6” (+63.5)
BB-B-2	+80.0	NE to 15’6”	2’0” (+78.0)	CWR @ 15’0” (+65.0) AR @ 15’6” (+64.5)
BB-B-3	+86.5	NE to 15’6”	3’0” (+83.5)	CWR @ 11’6” (+75.0) AR @ 15’6” (+71.0)
BB-B-4	+84.5	NE to 18’9”	5’0” (+79.5)	CWR @ 17’0” (+67.5) AR @ 18’9” (+65.8)
BB-B-5	+81.0	NE to 16’3”	5’0” (+76.0)	CWR @ 14’0” (+67.0) AR @ 16’3” (+64.8)
BB-B-6	+74.5	NWR	2’0” (+72.5)	CWR @ 10’0” (+64.5) C @ 15’0” (+59.5)
BB-TP-100	+89.3	NE to 10’0”	NE	NE to 10’0”
BB-TP-101	+88.2	NE to 10’0”	2’0” (+86.2)	NE to 10’0”
BB-TP-102	+81.2	NE to 10’5”	NE	NE to 10’5”
BB-TP-103	+77.0	NE to 10’2”	3’0” (+74.0)	NE to 10’2”
BB-TP-104	+78.0	NE to 10’0”	2’0” (+76.0)	NE to 10’0”
BB-TP-105	+79.0	NE to 10’4”	3’0” (+76.0)	NE to 10’4”
BB-TP-106	+82.5	NE to 10’0”	2’6” (+80.0)	NE to 10’0”
BB-BFT-1	+87.4	NE to 11’6”	NE	CWR @ 10’6” (+76.9)
BB-BFT-2	+83.7	NE to 14’3”	NE	CWR @ 13’6” (+70.2)
BB-BFT-3	+80.0	NE to 11’0”	3’6” (+76.5)	CWR @ 9’6” (+70.5)

CWR – Completely Weathered Rock
AR – Auger Refusal on Probable Bedrock
C – Cored Bedrock
NE – Not Encountered
NWR – No Groundwater Reading

4.0 SUMMARY OF DESIGN RECOMMENDATIONS

Below is a summary of the major design and construction considerations for this project. Additional recommendations are provided in the following sections of this report.

- *Subsurface Conditions (Section 3.0)*
  - Existing fill is present throughout the site extending to depths ranging from 2'0" to 5'0" below the existing ground surface.
  - Completely weathered to highly weathered bedrock was encountered throughout the site at depths ranging from 9'6" to 17'0" below the existing ground surface.
  - A summary of the subsurface observations is provided in Table 1 above.

- *Site Area Preparation (Section 5.1)*
  - The surface materials must be stripped from the proposed construction area.
  - Existing fill is not suitable for support of the new structure foundations or floor slab. Where it is encountered within the structure areas, it must be completely removed and replaced with new compacted fill.
  - New backfill shall be compacted to at least 95% of its Maximum Modified Dry Density (ASTM D-1557).

- *New Structure Foundations Recommendations (Section 5.2)*
  - The new foundations may be designed as spread footing type foundations bearing on virgin soil or engineer-approved compacted fill using a design bearing pressure of 4,000 psf.
  - Minimum depth for frost protection is 36 inches.
  - Seismic Site Class is C – Very Dense Soil or Soft Rock Profile.

- *New Floor Slabs Recommendations (Section 5.3)*
  - New compacted fill or virgin soil are suitable bearing material for support of the proposed floor slabs.
  - The floor slabs may be designed as slabs on grade.
  - Modulus of subgrade reaction is 200 pci.

- *New Light Tower/ Foul Pole/ Scoreboard Foundations Recommendations (Section 5.6)*
  - We anticipate that development will include new light towers, foul poles, and scoreboard foundations. We expect that the foundations will be designed as drilled shafts extending into the underlying bedrock.

- *Stormwater Management System (Section 6.1)*
  - Basin flood testing was performed at 3 test pit locations.
  - Percolation testing was performed at 7 test pits locations.
  - The field infiltration rates can be found in Table 8 below.

- *New Synthetic Turf Field Subgrade Preparation (Section 6.2)*
  - The new synthetic turf field can bear on densified existing fill, virgin soil, or new compacted fill.

5.0 PROPOSED STRUCTURE FOUNDATIONS

It is our understanding that the proposed construction will consist of a new baseball stadium. The new stadium will include a new press box, grandstand, dugouts, and locker rooms. Finished floor elevations of the new stadium structures were unknown at the time of writing this report. A summary of the subsurface observations is provided in Table 1 above.

Existing fill was encountered in the structure areas extending to depths ranging from 2'0" to 5'0" below the existing ground surface (elevations +86.2 to +72.5). The depth of the existing fill is expected to be variable and may be deeper in unexplored areas of the site. The existing fill is not an acceptable bearing material for the new structure foundations. The consistency and density of the soil fill are not predictable. Certain areas may contain clean dense soils while other areas may contain loose material, void spaces, and/or debris. The existing soil fill creates the possibility of intolerable differential settlements under loading.

Where existing fill is present below the proposed finished floor subgrade elevation, the existing fill shall be completely removed from the structure area and replaced with new engineered approved compacted fill. Recommendations for preparation of the site area are provided in Section 5.1.

Once the structure areas are prepared as outlined in Section 5.1, the new foundations can be designed as shallow spread foundations bearing on virgin soil or new compacted fill. Foundation recommendations for the structures are provided in Section 5.2 below. In addition, the proposed floor slabs may be designed as slab on grade bearing on new compacted fill or virgin soils. Floor slab recommendations can be found in Section 5.3 below.

5.1 Structure Area Preparation

In order to prepare the site for construction, all surface materials such as topsoil, and gravel shall be removed from the planned structure areas, extending at least ten (10) feet beyond the new construction limits, where practical.

In the event that existing utilities are encountered within the planned structure area, should be either abandoned or rerouted around the new structure. Once the utility has been rerouted or abandoned, the section of pipe and any associated structure within the structure area should be completely removed. The removal of the pipe and structure must also include any loose fill around the pipe or structure. After the pipe, associated structure, and associated loose backfill have been removed, the resulting excavation shall be backfilled with new controlled fill as described below in "Installation of New Structural Fill".

Removal of Existing Fill

Existing fill was encountered throughout the site at depths of 2'0" to 5'0" below the existing ground surface (approximate elevations +86.2 to +72.5). As discussed above, the existing fill is not a suitable bearing material for the new structure foundations and floor slab.

Where existing fill remains below the planned subgrade elevation, the excavation shall extend through the existing fill down to the virgin soil. At the bottom of the excavation, the removal of the unsuitable material shall extend horizontally beyond the structure limits a minimum distance of 1'0" plus a distance equal to the depth of the excavation below the planned foundation bearing elevation. For example, if the removal of the existing fill extends vertically 3'0" below the planned foundation bearing elevation, the excavation must extend horizontally a minimum of 4'0" (1'0" plus 3'0") beyond the new structure limits at that location.

The removal of the existing fill from the proposed structure area shall be performed under the full time inspection of Carlin-Simpson & Associates. The on-site representative from Carlin-Simpson & Associates shall direct the contractor during this operation to ensure that all of the unsuitable material has been removed from the proposed structure areas.

During the removal of the unsuitable material, the contractor should segregate the potentially re-usable existing soil/fill material from the non-reusable fill (i.e. debris and topsoil). The on-site representative from Carlin-Simpson & Associates shall evaluate the suitability of the excavated materials for use as compacted fill during the excavation and prior to its re-use. Potentially usable fill should be stockpiled and covered with tarps or plastic sheeting for protection from excess moisture. Any fill material that is or becomes wet must be dried prior to its re-use.

Densification of Subgrade Soils (Proofrolling)

After surface materials are removed as outlined above; the exposed subgrade shall be proofrolled with at least five (5) passes of a large vibratory drum roller (i.e. Dynapac CA 250 or equivalent). The proofrolling is necessary to densify the underlying soils. The proofrolling must be performed prior to the excavation for new foundations and the placement of new fill in the structure areas. In areas where the existing subgrade is to be cut, the proofrolling of the subgrade in those areas should be performed once the proposed subgrade is achieved.

A representative from Carlin-Simpson & Associates shall observe the proofrolling operation. If any excessive movement is noted during the proofrolling, the soft soil shall be removed and replaced with new compacted fill. The Carlin-Simpson & Associates representative shall be responsible for determining what material, if any, is to be removed and will direct the Contractor during this operation.

Installation of New Structural Fill

New fill required to achieve final grades shall consist of either engineer-approved on-site soil or imported sand and gravel. The new fill shall be placed in layers not exceeding one (1) foot in thickness and each layer shall be compacted to at least 95% of its Maximum Modified Dry Density (ASTM D1557). Each layer must be compacted, tested, and approved by Carlin-Simpson & Associates field representative prior to placing subsequent layers. The suitability of the excavated soil for reuse as compacted structural fill is discussed in Section 6.5 below.

If imported structural fill will be required during construction, the imported structural fill shall meet the following specified gradation:

US Standard Sieve Size	Percent Finer By Weight
3 inch	100
No. 4	30-80
No. 40	10-50
No. 200	0-20

5.2 New Structure Foundations

Once the planned structure area and subgrade has been prepared as described Section 5.1 above, the new foundations may be constructed on new compacted fill, virgin site soils, or bedrock. The new structure foundations may be designed as shallow spread footings using the net design bearing pressures as listed in Table 2 below.

All foundations shall bear on the virgin soil or on new engineer-approved compacted fill. All of the exterior footings shall bear at the minimum depth listed below for protection from frost. Interior column footings may bear on the virgin soil or new structural fill just below the floor slab provided the structure is heated during winter. The footings shall have minimum dimensions as listed in Table 2 below.

Table 2 – Foundation Design Parameters

Description	Value
Foundation Bearing Material	New Structural Fill or Virgin Soil
Net Design Bearing Pressure	4,000 psf
Minimum Frost Depth	36 inches
Minimum Column Footing Dimension	30 inches
Minimum Wall Footing Dimension	18 inches

The excavations for the new foundations shall be performed under the full-time inspection of Carlin-Simpson & Associates or a qualified geotechnical engineering firm. The on-site representative shall confirm that the foundation bearing material is capable of supporting the design bearing pressure.

Prior to the installation of the reinforcement steel and concrete, the bottoms of the foundation excavations should be cleaned of all loose material. The foundation subgrade shall be compacted with a small vibratory drum trench compactor (i.e. Wacker Model RT560), a heavy vibratory plate tamper (i.e. Wacker BPU 3545A or equivalent), or a “jumping jack” style tamper (i.e. Wacker Model BS 600). The preparation of the footing bearing subgrade should be performed under the observation of a representative from Carlin-Simpson & Associates. If instability is observed during the compaction of the bearing subgrade, the soft soil shall be removed and replaced with new compacted fill.

5.3 Structure Floor Slab on Grade

New fill for the floor slabs shall consist of either suitable on-site soil or imported sand and gravel. Imported sand and gravel shall conform to the gradation outlined in Section 5.1 above "Installation of New Structural Fill". The new fill shall be placed in layers not exceeding one (1) foot in loose thickness and each layer shall be compacted to at least 92% of its Maximum Modified Dry Density (ASTM D1557). Fill layers shall be compacted, tested, and approved before placing subsequent layers.

The floor may be designed as a slab on grade bearing on densified virgin soil or new engineer-approved structural fill. Floor slab design parameters are provided in Table 4 below. A layer of 3/4-inch crushed stone is recommended beneath the concrete slab for additional support and drainage.

Table 4 – Structure Floor Slab Design Parameters

Description	Value
Slab Subgrade Material	New Structural Fill/ Virgin Soil
Modulus of Subgrade Reaction (k)	200 pci
Crushed Stone Cushion Thickness	6 inches

5.4 Structure Settlement

Settlement of individual footings, designed in accordance with recommendations presented in this report, is expected to be within tolerable limits for the proposed structure. For footings placed on natural soils or new engineer-approved compacted fill and constructed in accordance with the requirements outlined in this report, maximum total settlement is expected to be on the order of 1-inch or less. Maximum differential settlement between adjacent columns or load bearing walls is expected to be ½-inch or less.

The above settlement values are based on our engineering experience with similar soil conditions and the anticipated structural loading. These estimated settlements are intended to guide the structural engineer with their design. It is critical that Carlin-Simpson & Associates or a qualified geotechnical engineer be retained to observe the foundation bearing surfaces and to confirm the recommended bearing pressures during construction.

5.5 Seismic Design Considerations

From the site-specific test boring data, the Seismic Site Class was determined using the International Building Code – New Jersey Edition and ASCE 7. The site-specific data used to determine the Site Class typically includes soil test borings to determine Standard Penetration resistances (N-values). Based on estimated average N-values in the upper 100 feet of soil profile, the site can be classified as Site Class C – Very Dense Soil or Soft Rock Profile.

The structures should be designed to resist stress produced by lateral forces computed in accordance with Section 1613 of International Building Code – New Jersey Edition. The values in Table 5 can be used for this project.

Table 5 – Seismic Design Values

Description	Value
Mapped Spectral Response Acceleration for Short Periods, [Fig 1613.2.1 (2)]	S_S=0.230g
Mapped Spectral Response Acceleration at 1-Second Period, [Fig 1613.2.1 (4)]	S_1=0.053g
Site Coefficient [Table 1613.2.3 (1)]	F_a= 1.30
Site Coefficient [Table 1613.2.3 (2)]	F_v= 1.50
Max Considered Earthquake Spectral Response for Short Periods [Eq 16-20]	S_{MS}=0.299g
Max Considered Earthquake Spectral Response at 1-Second Period [Eq 16-21]	S_{M1}=0.079g
Design Spectral Response Acceleration for Short Periods [Eq 16-22]	S_{DS}=0.199g
Design Spectral Response Acceleration for 1-Second Period [Eq 16-23]	S_{D1}=0.053g

We expect that the proposed baseball stadium will be a Risk Category of III. Based on this assumption and the above Seismic Design Values, the Seismic Design Category (SDC) is B. The Risk Category and SDC should be verified by the project structural engineer. In the event that the structure has a different Risk Category, the SDC should be updated in accordance with Section 1613 of the International Building Code – New Jersey Edition.

5.6 New Light Tower, Foul Poles, and Score Board Foundations

It is our understanding that the proposed baseball stadium may also include new light towers, foul poles, and scoreboard. We anticipate that these foundations will be designed as drilled shafts. Drilled shaft foundation recommendations are provided below.

Drilled Shaft Uplift Capacity

The foundation design for the drilled shaft must consider the potential for uplift and overturning caused by wind loads. The new light poles, foul poles, and scoreboard foundations must be designed to withstand these loads.

Resistance to uplift forces is achieved by the weight of the concrete shaft and frictional forces developed between the concrete shaft and adjoining soil. For design, the minimum uplift resistance can be assumed to be equal to the weight of the concrete shaft. For additional resistance, frictional resistance between the soil and concrete can be utilized, provided that any temporary casing is removed during the placement of the drilled shaft concrete.

The allowable frictional resistance will depend on the diameter and length of the concrete shaft and the vertical effective stress in the soil along the shaft. In design, the frictional resistance is typically neglected in the upper three (3) feet of the shaft to account for freeze/thaw action and surface disturbance. The values in Table 6 below can be used in the calculation of the ultimate uplift capacity. A factor of safety of three (3) should be applied to the ultimate uplift capacity.

Drilled Shaft - Lateral Resistance

For drilled shaft-type foundations where the contractor drills a large diameter cylindrical hole into the soil then fills that hole with concrete, the resistance to overturning depends on the lateral bearing pressure of the soil against the shaft.

Lateral resistance can be provided by passive earth pressure against the shaft foundation. The coefficient of passive earth pressure is a function of soil type and density. The effective unit weight (g'), friction angle (phi), and coefficient of passive earth pressure (k_p) for each soil stratum are summarized in Table 6 below. For design, a minimum factor of safety of two (2) should be applied to the ultimate lateral capacity.

Table 6 – Sign Drilled Shaft Design Parameters

Description	**Soil Type**		
Drilled Shaft Bearing Material	Existing Fill	Virgin Soil and New Compacted Fill	Bedrock
Allowable End Bearing Pressure	Unsuitable	4,000 psf	10,000 psf
Effective Unit Weight (γ') Above Water Table	120	130	140
Effective Unit Weight (γ') Below Water Table	57.6	67.6	77.6
Friction Angle (phi)	28	32	40
Cohesion (c)	0	0	0
Friction Coefficient between Concrete and Soil (tan δ)	0.45	0.45	0.55
Earth Pressure Coefficient At Rest (k_o)	0.53	0.47	0.36
Active Earth Pressure Coefficient (k_a)	0.36	0.31	0.22
Passive Earth Pressure Coefficient (k_p)	2.77	3.25	4.55
p-y Modulus (k) Above Water Table	75 pci	90 pci	225 pci
p-y Modulus (k) Below Water Table	50 pci	60 pci	125 pci

Foundation settlement will depend on the structural loads, the shaft diameter, and the bearing material. Assuming that the drilled shafts bear in the medium dense Sand, the foundation settlement is expected to be less than 1-inch, which is expected to be within tolerable limits for this structure.

Placement of New Compacted Fill around Drilled Shaft Foundations

In the event that new compacted fill is required to backfill the new drilled shaft foundations and piers, the new fill shall consist of either approved on-site soil or imported sand and gravel. Imported sand and gravel shall contain less than 20% material by weight passing a No. 200 sieve or crushed stone. The new fill shall be placed in layers no more than 12 inches in

thickness and each layer shall be compacted to at least 92% of its Maximum Modified Dry Density (ASTM D-1557). Layers shall be compacted, tested, and approved before placing subsequent layers. Proper backfilling and compaction around the sign foundation and piers is important to the lateral stability of the sign.

6.0 SITE EVALUATION

Our recommendations for the proposed project including the new stormwater management system, new synthetic turf field, new utilities, and the suitability of the existing site soils for reuse as structural fill are provided below.

6.1 Stormwater Management System

As part of the study, 10 test pits were excavated to determine the subsurface soil and groundwater conditions in the proposed stormwater management areas. Groundwater was not encountered in the test pits to depths ranging from 10’0” to 14’3” below the existing ground surface. Completely weathered to highly weathered bedrock was encountered in test pits BB-BFT-1 to BB-BFT-3 at depths ranging from 9’6” to 13’6” below the existing ground surface elevation. Table 7 below summarizes the subsurface conditions at each of the test pit locations.

Table 7 – Summary of Test Pit Observations for the Stormwater Management System

Test Pit No.	Approximate Ground Surface Elevation	Depth to Groundwater (Elevation)	Depth to Bottom of Existing Fill (Elevation)	Depth to Bedrock (Elevation)
BB-TP-100	+89.3	NE to 10’0”	NE	NE to 10’0”
BB-TP-101	+88.2	NE to 10’0”	2’0” (+86.2)	NE to 10’0”
BB-TP-102	+81.2	NE to 10’5”	NE	NE to 10’5”
BB-TP-103	+77.0	NE to 10’2”	3’0” (+74.0)	NE to 10’2”
BB-TP-104	+78.0	NE to 10’0”	2’0” (+76.0)	NE to 10’0”
BB-TP-105	+79.0	NE to 10’4”	3’0” (+76.0)	NE to 10’4”
BB-TP-106	+82.5	NE to 10’0”	2’6” (+80.0)	NE to 10’0”
BB-BFT-1	+87.4	NE to 11’6”	NE	CWR @ 10’6” (+76.9)
BB-BFT-2	+83.7	NE to 14’3”	NE	CWR @ 13’6” (+70.2)
BB-BFT-3	+80.0	NE to 11’0”	3’6” (+76.5)	CWR @ 9’6” (+70.5)

NE – Not Encountered
CWR – Completely Weathered Rock

In addition, percolation testing or basin flood testing were performed at the test pit locations. Percolation testing was performed at 7 test pits locations (BB-TP-100 through BB-TP-106). Basin flood testing was performed at 3 test pit locations (BB-BFT-1 through BB-BFT-3). The percolation test and basin flood test depths were determined in the field by Carlin Simpson and Associates. The following table is a summary of the field test results.

Table 8 – Percolation and Basin Flood Test Results

Test Pit No.	Approximate Ground Surface Elevation	Test Type	Test Depth (Elevation)	Field Percolation Rate (min/in)	Calculated Vertical Permeability Rate, K_s (in/hr)
BB-TP-100	+89.3	Perc	4'0" – 4'6" (+85.3)	28.3	0.85
BB-TP-101	+88.2	Perc	4'0" – 4'6" (+84.2)	29.6	0.81
BB-TP-102	+81.2	Perc	4'6" – 5'0" (+76.7)	2.16	11.1
BB-TP-103	+77.0	Perc	4'0" – 4'6" (+73.0)	1.33	18.0
BB-TP-104	+78.0	Perc	4'6" – 5'0" (+73.5)	42.0	0.57
BB-TP-105	+79.0	Perc	4'6" – 5'0" (+74.5)	2.83	8.50
BB-TP-106	+82.5	Perc	4'6" – 5'0" (+78.0)	27.5	0.87
BB-BFT-1	+87.37	BFT	*10'9" (+76.6)	BB-BFT-1 Passed – Design Rate 0.5 in/hr	
BB-BFT-2	+83.70	BFT	*14'2" (+69.5)	BB-BFT-2 Passed – Design Rate 0.5 in/hr	
BB-BFT-3	+80.0	BFT	*10'9" (+69.25)	BB-BFT-3 Passed – Design Rate 0.5 in/hr	

Perc – Percolation Test
BFT – Basin Flood Test
(*) – Depth to Bottom of Excavation

The new stormwater management system shall be designed and constructed in accordance with the applicable New Jersey Stormwater Best Management Practices (BMP) Manual. Once the site grading plan is finalized, a copy of the plan should be forwarded to this office so that we can review it along with the recommendations in this letter. At that time, additional field exploration and soil testing may be required to determine the design permeability rate for the system in accordance with the New Jersey stormwater regulations. Should stormwater management areas be planned in other portions of the site, they should be evaluated on a case-by-case basis.

6.2 New Synthetic Field Subgrade Preparation

We understand that the proposed construction will also include new synthetic turf field. Densified existing fill, virgin site soils, new compacted fill, and completely weathered rock may be used to support the field.

To prepare the new synthetic turf field subgrade, the existing surface materials (i.e. topsoil, vegetation, etc.) must be removed from the planned pavement areas. Areas where existing fill is encountered shall be compacted in place. Carlin-Simpson & Associates must evaluate these areas for the presence of soft or unsuitable material within the existing fill matrix. Portions of this fill may have to be removed and replaced with new compacted fill. Carlin-Simpson & Associates will determine this during construction.

After all surface materials have been removed, the area can be excavated to the planned subgrade elevation. Where soil is encountered at the subgrade elevation, the subgrade shall be

proofrolled with a large vibratory drum roller (i.e. Dynapac 250 or equivalent) to densify the underlying soils. The on-site representative from Carlin-Simpson & Associates shall witness the proofrolling operation. If any excessive movement is noted during the proofrolling, the soft or unsuitable soil shall be removed and replaced with new compacted fill.

Where new fill is required to achieve final grades, it shall consist of either suitable on-site soil or imported sand and gravel. Imported sand and gravel shall conform to the gradation outlined in Section 5.1 "Installation of New Structural Fill". New fill shall be placed in layers not exceeding 12 inches in loose thickness and each layer shall be compacted to at least 95% of its Maximum Modified Dry Density (ASTM D-1557). All compacted fill shall be tested with a nuclear soil moisture and density gauge in accordance with the ASTM D-6938. After the planned subgrade has been proofrolled and new compacted fill has been placed as required, the new pavement subbase may be placed on the existing site soils and new compacted fill.

6.3 Utilities

New utilities may bear in the existing site soils, weathered bedrock, or new compacted fill. The bottom of all trenches should be excavated clean and shaped so a hard bottom is provided for the pipe support. If any soft or unsuitable soil conditions are encountered during construction, the unsuitable materials must be removed and replaced with new compacted fill.

Trench hammering may be required to install the new utilities in portions of the site where rock is encountered above the planned utility invert elevation. Where rock is encountered in the utility excavations, it must be removed to at least six (6) inches below planned pipe invert. The over-excavated six (6) inches shall then be filled with new sandy fill and compacted to at least 92% of its Maximum Modified Dry Density (ASTM D-1557) to act as a cushion on the rock.

In the event that the trench bottom becomes soft due to the inflow of surface or trapped water, the soft soil shall be removed and the excavation filled with a minimum of six (6) inches of 3/4-inch clean crushed stone to provide a firm base for support of the pipe. Sump pits and pumps should be adequate to keep the excavations dry.

After the utility is installed, the trench must be backfilled with compacted fill. The fill shall consist of suitable on-site soil or imported sand and gravel. Imported fill shall contain less than 20% by weight passing a No. 200 sieve. Large rock fragments and boulders must not be placed directly against the pipe. Controlled compacted fill shall be placed in one (1) foot loose layers and each layer shall be compacted to at least 92% of its Maximum Modified Dry Density (ASTM D-1557). The backfill must be free of topsoil, debris, and large boulders or rock fragments.

6.4 Temporary Construction Excavations and Excavation Protection

Temporary construction excavations should be conducted in accordance with the most recent OSHA guidelines or applicable federal, state or local codes. A qualified person should evaluate the excavations at the time of construction to determine the appropriate soil type and

allowable slope configuration. Based on the boring data, we believe the site soils and rock would have the following classifications as defined by the OSHA guidelines.

Soil/Rock Type	Possible Classification	Maximum Slope or Bench
Existing Fill	Type "C"	1½H:1V
Virgin Soil	Type "B" or "C"	1H:1V to 1½H:1V
Intact Bedrock	Type "A"	3/4H :1V

Temporary support (i.e. trench boxes, sheeting, and shoring, etc.) should be used for any excavation that cannot be sloped or benched in accordance with the applicable regulations, where necessary to protect adjacent utilities and structures, or where saturated soils or water seepage is encountered within the excavation.

A New Jersey licensed professional engineer must design all temporary and permanent support systems. The contractor will select the shoring type and submit design calculations for the proposed shoring method to Carlin-Simpson & Associates for review. The soil adjacent to the temporary support system will exert a horizontal pressure against the system. This pressure is based on the soil unit weight, coefficient of active earth pressure, and depth of the excavation. Support of Excavation design parameters are listed in Table 9 below.

Table 9 – Temporary Sheeting and Shoring Design Parameters

Description	Value
Moist Unit Weight (pcf)	130
Friction Angle (ϕ, deg)	30
Cohesion (c, psf)	0
Active Earth Pressure Coefficient (k_a)[1]	0.33
Equivalent Fluid Pressure (pcf)	42.9
Passive Earth Pressure Coefficient (k_p)[1]	3.0

6.5 Suitability of the In-Situ Soils for Use as Compacted Fill

The suitability of each soil stratum for use as compacted fill is discussed below.

Stratum 1B
Topsoil

Topsoil is not suitable for use as compacted fill. During construction, it shall be stripped from the construction areas. The topsoil may be reused in landscape areas or hauled offsite.

Stratum 2
Existing Fill

The existing fill generally consists of red brown, brown, dark brown, yellow brown, coarse to fine SAND, little (to some) Silt, little (to some) coarse to fine Gravel. Some debris including sticks and organics were encountered within this stratum. The existing fill may be suitable for use as compacted fill at the site provided that it remains relatively dry for optimum compaction and that any debris (i.e. wood, etc.) and organic material (i.e. topsoil, roots, etc.) have been removed prior to its reuse.

Stratum 3 Silty Sand with Gravel [USCS: SM]	The virgin soil consists of brown, red brown, gray coarse to fine SAND, trace (to some) Silt, trace (to some) coarse to fine Gravel. This stratum has a low to moderate percentage of silt. This stratum is generally suitable for reuse as compacted fill, as long as it remains dry for optimum compaction prior to reuse.

The boring and test pit observations indicate that the on-site soils contain a moderate to high percentage of silt (12% to 45%). The moderate to high silt content soils will be moisture sensitive. If the soil becomes too wet, it will be difficult to achieve adequate compaction.

Proper moisture conditioning of the soil will be required. New compacted fill should be within 2% (+/-) of its optimum moisture content at the time of placement. In the event that the on-site material is too wet at the time of placement and cannot be adequately compacted, the soil should be aerated and allowed to dry or the material removed and a drier cleaner fill material used. In the event that the on-site material is too dry at the time of placement and cannot be adequately compacted, water may be needed to increase the soil moisture content for proper compaction.

The in-situ soils which exist throughout the site may become soft and weave if exposed to excessive moisture and construction traffic. The instability will occur quickly when exposed to these elements and it will be difficult to stabilize the subgrade. We recommend that adequate site drainage be implemented early in the construction schedule and if the subgrade becomes wet, the contractor should limit construction activity until the soil has dried. The minimum compaction requirements for the various areas of the site are summarized in Table 10 below.

Table 10 – Minimum Compaction Requirements

Area	Maximum Modified Dry Density (ASTM D-1557)
Below foundations	95%
Below Slabs	92%
Adjacent to Drilled Shafts	92%
Synthetic Field Turf Areas	95%
Exterior Slabs and Sidewalks	92%
Utility Trenches	92%
Landscape Areas – Non-Sloped	90%

7.0 GENERAL

The findings, conclusions and recommendations presented in this report represent our professional opinions concerning subsurface conditions at the site. The opinions presented are relative to the dates of our sitework and should not be relied on to represent conditions on later dates or at locations not explored. The opinions included herein are based on information provided to us, the data obtained at specific locations during the study and our past experience. If additional information becomes available that might impact our geotechnical opinions, it will be

necessary for Carlin-Simpson & Associates to review the information, reassess the potential concerns, and re-evaluate our conclusions and recommendations.

Regardless of the thoroughness of a geotechnical exploration, there is the possibility that conditions between borings and test pits will differ from those encountered at specific boring or test pit locations, that conditions are not as anticipated by the designers and/or the contractors, or that either natural events or the construction process have altered the subsurface conditions. These variations are an inherent risk associated with subsurface conditions in this region and the approximate methods used to obtain the data. These variations may not be apparent until construction.

The professional opinions presented in this geotechnical report are not final. Field observations and foundation installation monitoring by the geotechnical engineer, as well as soil density testing and other quality assurance functions associated with site earthwork and foundation construction, are an extension of this report. Therefore, Carlin-Simpson & Associates should be retained by the Owner to observe all earthwork and foundation construction, to document that the conditions anticipated in this study actually exist, and to finalize or amend our conclusions and recommendations Carlin-Simpson & Associates is not responsible or liable for the conclusions and recommendations presented in this report if Carlin-Simpson & Associates does not perform the observation and testing services.

Therefore, in order to preserve continuity in this project, the Owner must retain the services of Carlin-Simpson & Associates to provide full time geotechnical related monitoring and testing during construction. At a minimum, this shall include the observation and testing of the following: 1) the removal of existing fill and unsuitable soil, where required; 2) the proofrolling of the subgrade soil prior to the placement of new compacted fill; 3) the placement and compaction of controlled fill; 4) the excavation for the foundations; and 5) the preparation of the subgrade for the floor slabs.

This report has been prepared in accordance with generally accepted geotechnical engineering practice. No other warranty is expressed or implied. The evaluations and recommendations presented in this report are based on the available project information, as well as on the results of the exploration. Carlin-Simpson & Associates should be given the opportunity to review the final drawings and site plans for this project to determine if changes to the recommendations outlined in this report are needed. Should the nature of the project change, these recommendations should be re-evaluated.

This report is provided for the exclusive use of Princeton University and the project specific design team and may not be used or relied upon in connection with other projects or by other third parties. Carlin-Simpson & Associates disclaims liability for any such third party use or reliance without express written permission. Use of this report or the findings, conclusions or recommendations by others will be at the sole risk of the user. Carlin-Simpson & Associates is not responsible or liable for the interpretation by others of the data in this report, nor their conclusions, recommendations or opinions.

If the conditions encountered during construction vary significantly from those stated in this report, this office should be notified immediately so that additional recommendations can be made.

Thank you for allowing us to assist you with this project. Should you have any questions or comments, please contact this office.

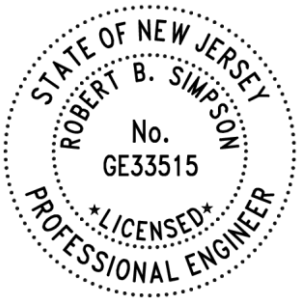
Very truly yours,

CARLIN-SIMPSON & ASSOCIATES, LLC.

Catherine K Andersen

CATHERINE K. ANDERSEN, P.E.
Project Engineer

ROBERT B. SIMPSON, P.E.
Principal



File No. 23-114



GENERAL NOTES:

1. BORING AND TEST PITS WERE LAID OUT IN THE FIELD BY CARLIN-SIMPSON & ASSOCIATES (CSA).
2. TEST PITS WERE PERFORMED IN NOVEMBER 2023 AND THE BORINGS WERE PERFORMED IN OCTOBER 2023, BOTH UNDER THE FULL TIME INSPECTION OF CSA.
3. LOCATIONS ARE APPROXIMATE.

LEGEND:

- BASEBALL BORING LOCATION
- BASEBALL TEST PIT LOCATION
- BASIN FLOODING TEST LOCATION FOR THE BASEBALL STADIUM
- BORING LOCATION OF PERVIOUS CSA SUBSURFACE INVESTIGATION
- -TEST PIT LOCATION OF PERVIOUS CSA SUBSURFACE INVESTIGATION
- BASIN FLOODING TEST LOCATION OF PERVIOUS CSA SUBSURFACE INVESTIGATION

ROBERT B. SIMPSON, P.E.
PROFESSIONAL ENGINEER

BORING & TEST PIT LOCATION PLAN

PROPOSED BASEBALL STADIUM
LAKE CAMPUS - PRINCETON UNIVERSITY
PRINCETON, NEW JERSEY

DRAWN: CKA	SCALE: 1" = 80'
CHECKED: RBS	DATE: 12.04.2023
PROJECT NO.: 23-114	DWG NO.: FIG - 1
APPROVED	

CARLIN-SIMPSON AND ASSOCIATES
61 Main Street
Sayreville, NJ 08872
Consulting Geotechnical and Environmental Engineers

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER BB-B-1
Project: Prop Ballpark, Princeton University, Princeton NJ		**SHEET NO.:** 1 of 1
Client: Pendulum		**JOB NUMBER:** 23-114
Drilling Contractor: Environmental Technical Drilling		**ELEVATION:** +75.0

GROUNDWATER					CASING	SAMPLE	CORE	TUBE	DATUM: Topo
DATE	TIME	DEPTH	CASING	TYPE	HSA	SS			START DATE: 13/Oct/23
No groundwater encountered				DIA.	3 1/4"	1 3/8"			FINISH DATE: 13/Oct/23
				WGHT		140#			DRILLER: MR
				FALL		30"			INSPECTOR: JP

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
			6		FILL (Rd br, br cf S, s (-) $, s cf G)	
1		S-1	6		**FILL (Red brown, brown coarse to fine**	Rec = 15"
			8		**SAND, some (-) Silt, some coarse to fine**	moist
2			10		**Gravel)** 2'0"	
			12		**Red brown, brown coarse to fine SAND,**	
3		S-2	11		**little Silt, some coarse to fine Gravel**	Rec = 12"
			12		Rd br, br cf S, l $, s cf G 3'6"	moist
4			10		Br cf S, l $	
5						
			5			
6		S-3	5		same **Brown coarse to fine SAND, little Silt**	Rec = 20"
			5			moist
7			6			
			8			
8		S-4	9		same 8'0"	Rec = 24"
			14		Rd br, br cf S, s (-) $, s cf G	moist
9			17			
10					**Red brown. Brown coarse to fine SAND,**	
			11		**some (-) Silt, some coarse to fine Gravel**	
11		S-5	50/3"		same	Rec = 12"
					11'6"	moist
12					**End of Boring @ 11'6"**	Auger refusal 11'6"
						likely bedrock
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER BB-B-2
Project: Prop Ballpark, Princeton University, Princeton NJ		**SHEET NO.:** 1 of 1
Client: Pendulum		**JOB NUMBER:** 23-114
Drilling Contractor: Environmental Technical Drilling		**ELEVATION:** +80.0

GROUNDWATER					CASING	SAMPLE	CORE	TUBE	DATUM: Topo
DATE	TIME	DEPTH	CASING	TYPE	HSA	SS			START DATE: 13/Oct/23
No Groundwater Encountered				DIA.	3 1/4"	1 3/8"			FINISH DATE: 13/Oct/23
				WGHT		140#			DRILLER: MR
				FALL		30"			INSPECTOR: JP

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
			6		FILL (Dk br cf S, s $, l cf G, w/wood, org)	
1		S-1	6		**FILL (Dark brown coarse to fine SAND, some Silt, little coarse to fine Gravel, with wood, org)** 2'0"	Rec = 20" moist
			12			
2			10			
			9			
3		S-2	9		Slightly mttled gr, or, br cf S, s (-) $	Rec = 23" moist
			8			
4			8			
5						
			3			
6		S-3	3		same	Rec = 20" moist
			6		**Slightly mottled gray, orange, brown coarse to fine SAND, some (-) Silt**	
7			8			
			6			
8		S-4	7		same, lt br	Rec = 18" moist
			7			
9			7			
10						
			3			
11		S-5	6		same, lt gr, br, or	Rec = 24" moist
			12			
12			14			
13						
14						
15					15'0"	
		S-6	50/6"		**Sandstone, Completely Weathered** 15'6"	Rec = 4" moist
16					**End of Boring @ 15'6"**	Auger refusal 15'0" likely bedrock
17						
18						
19						
20						
21						
22						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER BB-B-3
Project: Prop Ballpark, Princeton University, Princeton NJ		**SHEET NO.:** 1 of 1
Client: Pendulum		**JOB NUMBER:** 23-114
Drilling Contractor: Environmental Technical Drilling		**ELEVATION:** +86.5

GROUNDWATER					CASING	SAMPLE	CORE	TUBE	DATUM: Topo
DATE	TIME	DEPTH	CASING	TYPE	HSA	SS			START DATE: 12/Oct/23
No Groundwater Encountered				DIA.	3 1/4"	1 3/8"			FINISH DATE: 12/Oct/23
				WGHT		140#			DRILLER: Vinny
				FALL		30"			INSPECTOR: JP

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
			9		**Gravel driveway** 0'2"	
1		S-1	6		FILL (Br cf S, l (+) $)	Rec = 13"
			6		**FILL (Brown coarse to fine SAND,**	moist
2			6		**little (+) Silt)**	
			5			
3		S-2	3		3'0"	Rec = 18"
			9		Dk rd br cf S, l (+) $, s cf G	moist
4			15			
5						
			5			
6		S-3	8		same	Rec = 16"
			9			moist
7			8		**Dark red brown coarse to fine SAND,**	
			8		**little (+) Silt, some coarse to fine Gravel**	
8		S-4	10		Br cf S, l $	Rec = 10"
			10			moist
9			16			
10						
			13			
11		S-5	26		same, s cf G	Rec = 10"
			50/3"		11'6"	moist
12						
13						
					Sandstone, Completely Weathered	Dense Drilling
14						
15						
		S-6	50/2"		Br cf G (Sandstone) 15'6"	Rec = 0"
16					**End of Boring @ 15'6"**	
						Auger refusal 15'6"
17						likely bedrock
18						
19						
20						
21						
22						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER BB-B-4
Project: Prop Ballpark, Princeton University, Princeton NJ		**SHEET NO.:** 1 of 1
Client: Pendulum		**JOB NUMBER:** 23-114
Drilling Contractor: Environmental Technical Drilling		**ELEVATION:** +84.5

GROUNDWATER					CASING	SAMPLE	CORE	TUBE	DATUM: Topo
DATE	TIME	DEPTH	CASING	TYPE	HSA	SS			START DATE: 12/Oct/23
No Groundwater Encountered				DIA.	3 1/4"	1 3/8"			FINISH DATE: 12/Oct/23
				WGHT		140#			DRILLER: Vinny
				FALL		30"			INSPECTOR: JP

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
1		S-1	2 2			Rec = 10"
2			3 5		**Topsoil** 2'0"	moist
3		S-2	4 4		FILL (Dk br cf S, s $, l (-) cf G, w/sticks)	Rec = 12"
4			6 7		**FILL (Dark brown coarse to fine SAND, some Silt, little (-) coarse to fine Gravel, with sticks)** 5'0"	moist
5						
6		S-3	2 2		Br mf S, s (-) $	Rec = 15"
7			2 2			moist
8		S-4	2 4		**Brown medium to fine SAND, some (-) Silt** same	Rec = 13"
9			2 2			moist
10					10'0"	
11		S-5	4 9		Br cf S, t (+) $, l cf G	Rec = 14"
12			12 15			moist
13					**Brown coarse to fine SAND, trace (+) Silt, little coarse to fine Gravel**	
14						
15						
16		S-6	8 21		same 15'6" **Dark red brown, brown coarse to fine SAND, little Silt, and coarse to fine**	Rec = 14"
17			28 20		**Gravel** 17'0"	moist
18					**Sandstone, Completely Weathered**	
19		S-7	50/4"		Lt br cf G l, cf S, t $ 18'9"	Rec = 0" moist
20					**End of Boring @ 18'9"**	Auger Refusal on probable harder bedrock
21						
22						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER BB-B-5
Project: Prop Ballpark, Princeton University, Princeton NJ		**SHEET NO.:** 1 of 1
Client: Pendulum		**JOB NUMBER:** 23-114
Drilling Contractor: Environmental Technical Drilling		**ELEVATION:** +81.0

GROUNDWATER					CASING	SAMPLE	CORE	TUBE	DATUM: Topo
DATE	TIME	DEPTH	CASING	TYPE	HSA	SS			START DATE: 12/Oct/23
No Groundwater Encountered				DIA.	3 1/4"	1 3/8"			FINISH DATE: 12/Oct/23
				WGHT		140#			DRILLER: Vinny
				FALL		30"			INSPECTOR: JP

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
1			2 2		**Topsoil** 1'0"	
2		S-1	4 5		FILL (Dk br cf S, s (-) $, l cf G)	Rec = 22" moist
3		S-2	4 4		FILL (same)	Rec = 20"
4			9 15		**FILL (Dark brown coarse to fine SAND, some (-) Silt, little coarse to fine Gravel)**	moist
5					5'0"	
6		S-3	8 20		Dk rd br, br cf S, l $, a cf G **Dark red brown, brown coarse to fine**	Rec = 10"
7			50/6"		**SAND, little Silt, and coarse to fine Gravel** 7'0"	moist
8		S-4	7 10		Lt br cf S, t $, s (-) cf G	Rec = 16"
9			11 13			moist
10						
11		S-5	10 17		same	Rec = 17"
12			34 50/3"		**Light brown coarse to fine SAND, trace Silt, some (-) coarse to fine Gravel**	moist
13						
14		S-6	19 42		same 14'0"	Rec = 10"
15			50/3"			moist
16					**Sandstone, Completely Weathered**	
17		S-7	50/3"		Sandstone, CWR 16'3" **End of Boring @ 16'3"**	Rec = 3" moist
18						Auger refusal 16'0" likely bedrock
19						
20						
21						
22						

CARLIN - SIMPSON & ASSOCIATES Sayreville, N.J.	TEST BORING LOG	BORING NUMBER BB-B-6

Project:	**Prop Ballpark, Princeton University, Princeton NJ**									**SHEET NO.:**	1 of 1
Client:	**Pendulum**									**JOB NUMBER:**	23-117
Drilling Contractor:	**Environmental Technical Drilling**									**ELEVATION:**	+74.5
GROUNDWATER						**CASING**	**SAMPLE**	**CORE**	**TUBE**	**DATUM:**	Topo
DATE	**TIME**	**DEPTH**	**CASING**	**TYPE**		**HSA**	**SS**			**START DATE:**	13 Oct 23
No Groundwater Reading				**DIA.**		**3 1/4"**	**1 3/8"**			**FINISH DATE:**	13 Oct 23
				WGHT			**140#**			**DRILLER:**	M Ryan
				FALL			**30"**			**INSPECTOR:**	JP

Depth (ft.)	Casing Blows pre Foot	Sample Number	Blows on Sample Spoon per 6"	Sy r	IDENTIFICATION	REMARKS
			23			
1		**S-1**	24		FILL (Br, gr cf S, s (-) $, s cf G)	Rec = 20"
			13		**FILL (Brown, gray coarse to fine SAND,**	moist
2			12		**some (-) Silt, some coarse to fine Gravel)** 2'0"	
			8			
3		**S-2**	6		Br cf S, l (+) $, l cf G	Rec = 15"
			6			moist
4			9			
			9			
5		**S-3**	12		same, t (+) cf G	Rec = 14"
			12			moist
6			11		**Brown coarse to fine SAND, little (+) Silt,**	
			9		**little coarse to fine Gravel**	
7		**S-4**	9		same, s $	Rec = 16"
			9			moist
8			9			mud
9						
10					10'0"	
			31		Br cf S, l $, a cf G (Sandstone)	
11		**S-5**	49			Rec = 6"
			50/3"			moist
12						
					Sandstone, Completely Weathered Rock	rollerbit grinding
13						
14						
15					15'0"	
16						
					Brown sandstone shattered, very blocky	
17					**seamy weathered rock**	
		Run				Run #1
18		**#1**			18'0"	15'0"-20'0"
						Run = 60"
19					**Red brown Shale shattered, very blocky**	Rec = 77%
					seamy weathered rock	RQD = 47%
20					20'0"	
					End of Boring @ 20'0"	
21						
22						

CARLIN-SIMPSON & ASSOCIATES, LLC

Consulting Engineers
Geotechnical & Environmental

Proposed Ballpark
Princeton University
Lake Campus
West Windsor, NJ
23-114

2 November 2023

BB-TP-100 (Elev. +89.3)

0'0"-0’8"	Gravel	
0’8"-2'0"	Red brown coarse to fine Sand, some Silt, little (+) coarse to fine Gravel	medium dense, moist
2'0"-10’0”	Brown coarse to fine Sand, some (-) Silt, little (+) coarse to fine Gravel	medium dense, moist
	No groundwater encountered	

BB-TP-101 (Elev. +88.2)

0’0”-0’8”	Gravel	
0’8”-2’0”	FILL (Brown coarse to fine SAND, little (+) Silt, little coarse to fine Gravel)	loose, moist
2’0”-10’0”	Brown coarse to fine Sand, some Silt, little coarse to fine Gravel	medium dense, moist
	No groundwater encountered	

BB-TP-102 (Elev. +81.2)

0’0”-0’8”	Gravel	
0’8”-10’5”	Brown coarse to fine Sand, little (+) Silt, some (-) coarse to fine Gravel	medium dense, moist
	No groundwater encountered	

Proposed Ballpark
Princeton University
Lake Campus
West Windsor, NJ
23-114

2 November 2023

BB-TP-103 (Elev. +77.0)

0’0”-1’10”	FILL (Brown coarse to fine Sand, some (+) Silt, little (+) coarse to fine Gravel, with topsoil)	loose, moist
1’10”-3’0”	FILL (Brown coarse to fine SAND, little (+) Silt, little coarse to fine Gravel)	loose, moist
3’0”-10’2”	Brown coarse to fine SAND, little Silt, little (+) coarse to fine Gravel	medium dense, moist
	No groundwater encountered	

BB-TP-104 (Elev. +78.0)

0’0”-2’0”	FILL (Red brown coarse to fine Sand, some Silt, little (+) coarse to fine Gravel	loose, moist
2’0”-10’0”	Red brown coarse to fine Sand, some (-) Silt, some coarse to fine Gravel	medium dense, moist
	No groundwater encountered	

BB-TP-105 (Elev. +79.0)

0’0”-3’0”	FILL (Brown coarse to fine Sand, some (-) Silt, little (+) coarse to fine Gravel)	loose, moist
3’0”-10’4”	Gray, brown coarse to fine Sand, some Silt, little coarse to fine Gravel	medium dense, moist
	No groundwater encountered	

Proposed Ballpark
Princeton University
Lake Campus
West Windsor, NJ
23-114

2 November 2023

BB-TP-106 (Elev. +82.5)

0’0”-2’6”	FILL (Red brown coarse to fine Sand, some Silt, some coarse to fine Gravel)	loose, moist
2’6”-10’0”	Brown coarse to fine Sand, little (+) Silt, some (+) coarse to fine Gravel	medium dense, moist

No groundwater encountered

CARLIN-SIMPSON & ASSOCIATES, LLC

Consulting Engineers
Geotechnical & Environmental

Proposed Ballpark
Princeton University
Lake Campus
West Windsor, NJ
23-114

3 November 2023

BB-BFT-1 (Elev. +87.37)

0'0"-0’6"	Gravel	
0’6"-4’6"	Yellow brown coarse to fine SAND, little Silt, little (-) coarse to fine Gravel	medium dense, moist
4’6"-7’0”	Red brown highly fractured Shale	rippable, moist
7’0”-10’6”	Yellow brown coarse to fine SAND, little Silt, with Sandstone fragments	medium dense, moist
10’6”-11’6”	Yellow brown Sandstone, Completely weathered	rippable, moist
	No groundwater encountered	

BB-BFT-2 (Elev. +83.7)

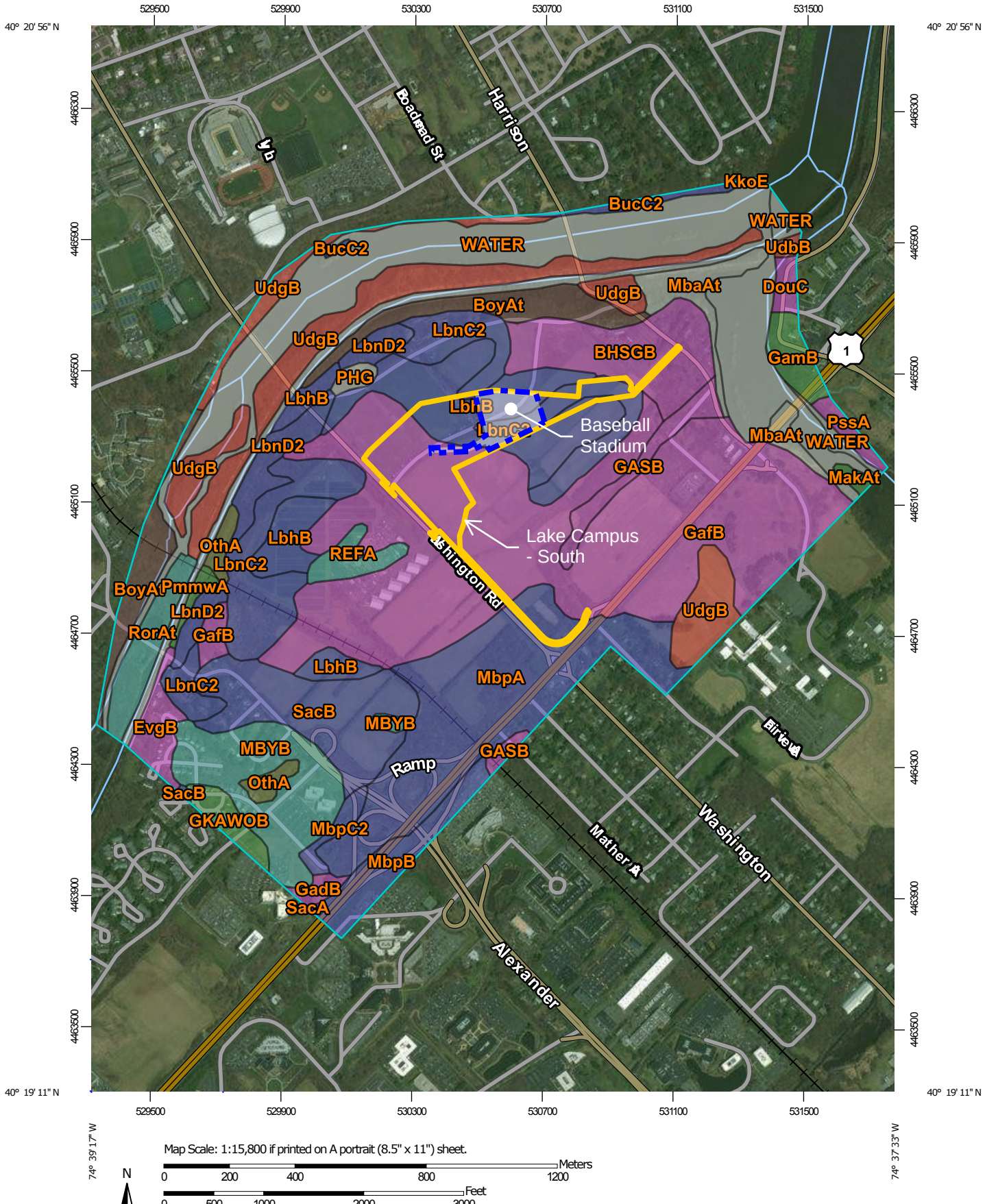
0’0”-0’6”	Gravel	
0’6”-5’8”	Brown coarse to fine SAND, some (+) Silt, trace coarse to fine Gravel	medium dense, moist
5’8”-13’6”	Light brown coarse to fine SAND, little (+) Silt, trace coarse to fine Gravel	medium dense, moist
13’6”-14’3”	Light brown Sandstone completely weathered	rippable, moist
	No groundwater encountered	

Proposed Ballpark
Princeton University
Lake Campus
Princeton, NJ
23-114

3 November 2023

BB-BFT-3 (Elev. +80.0)

0’0”-2’0”	FILL (Yellow brown, red brown, brown coarse to fine Sand, some Silt, some coarse to fine Gravel)	medium dense, moist
2’0”-3’6”	FILL (Gray, brown coarse to fine Sand, some Silt, little coarse to fine Gravel)	loose, moist
3’6”-9’6”	Brown coarse to fine SAND, little (+) Silt, little coarse to fine Gravel	medium dense, moist
9’6”-11’0”	Red brown fractured weathered Shale	rippable, moist
	No groundwater encountered	



Map Scale: 1:15,800 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 200 400 800 1200

Feet: 0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

Soil Survey Area: Mercer County, New Jersey
Survey Area Data: Version 12, Sep 28, 2016

Soil Survey Area: Middlesex County, New Jersey
Survey Area Data: Version 12, Sep 28, 2016

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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

Date(s) aerial images were photographed: Aug 14, 2015—Apr 2, 2017

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BHSGB	Birdsboro gravelly solum variant soils, 0 to 6 percent slopes	A	31.1	3.8%
BoyAt	Bowmansville silt loam, 0 to 2 percent slopes, frequently flooded	B/D	27.0	3.3%
BucC2	Bucks silt loam, 6 to 12 percent slopes, eroded	B	3.6	0.4%
EvgB	Evesboro loamy sand, 0 to 5 percent slopes	A	7.7	0.9%
GadB	Galestown loamy sand, 0 to 5 percent slopes	A	2.4	0.3%
GafB	Galestown sandy loam, 0 to 5 percent slopes	A	201.8	24.6%
GASB	Galloway variant soils, 0 to 5 percent slopes	A	10.4	1.3%
GKAWOB	Glassboro and Woodstown sandy loams, 0 to 5 percent slopes	A/D	5.8	0.7%
KkoE	Klinesville channery loam, 18 to 35 percent slopes	D	0.0	0.0%
LbhB	Lansdale sandy loam, 2 to 6 percent slopes	B	55.1	6.7%
LbnC2	Lansdale channery loam, 6 to 12 percent slopes, eroded	B	54.7	6.7%
LbnD2	Lansdale channery loam, 12 to 18 percent slopes, eroded	B	16.6	2.0%
MakAt	Manahawkin muck, 0 to 2 percent slopes, frequently flooded	A/D	1.5	0.2%
MbaAt	Marsh, fresh water, 0 to 2 percent slopes, frequently flooded		13.2	1.6%
MbpA	Matapeake loam, 0 to 2 percent slopes	B	76.7	9.3%
MbpB	Matapeake loam, 2 to 5 percent slopes	B	14.5	1.8%
MbpC2	Matapeake loam, 5 to 10 percent slopes, eroded	B	3.6	0.4%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
MBYB	Mattapex and Bertie loams, 0 to 5 percent slopes	C	35.4	4.3%
OthA	Othello silt loams, 0 to 2 percent slopes, Northern Coastal Plain	C/D	5.4	0.7%
PHG	Pits, sand and gravel		2.2	0.3%
PmmwA	Plummer sandy loam, very wet, 0 to 2 percent slopes	A/D	2.1	0.3%
REFA	Readington and Abbottstown silt loams, 0 to 2 percent slopes	C	6.3	0.8%
RorAt	Rowland silt loam, 0 to 2 percent slopes, frequently flooded	C	11.7	1.4%
SacA	Sassafras sandy loam, 0 to 2 percent slopes, Northern Coastal Plain	B	0.0	0.0%
SacB	Sassafras sandy loam, 2 to 5 percent slopes, Northern Coastal Plain	B	35.6	4.3%
UdgB	Udorthents, gravelly substratum, 0 to 8 percent slopes	D	60.6	7.4%
WATER	Water		117.2	14.3%
Subtotals for Soil Survey Area			**802.1**	**97.7%**
Totals for Area of Interest			**820.7**	**100.0%**

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
DouC	Downer-Urban land complex, 5 to 10 percent slopes	A	2.9	0.4%
GamB	Galloway loamy sand, 0 to 5 percent slopes	A/D	7.3	0.9%
PssA	Psamments, 0 to 3 percent slopes	A	3.4	0.4%
RorAt	Rowland silt loam, 0 to 2 percent slopes, frequently flooded	C	0.1	0.0%
UdbB	Udorthents, bedrock substratum, 0 to 8 percent slopes	D	1.1	0.1%
WATER	Water		3.8	0.5%
Subtotals for Soil Survey Area			**18.6**	**2.3%**

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Totals for Area of Interest			**820.7**	**100.0%**

Description

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

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

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

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

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

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

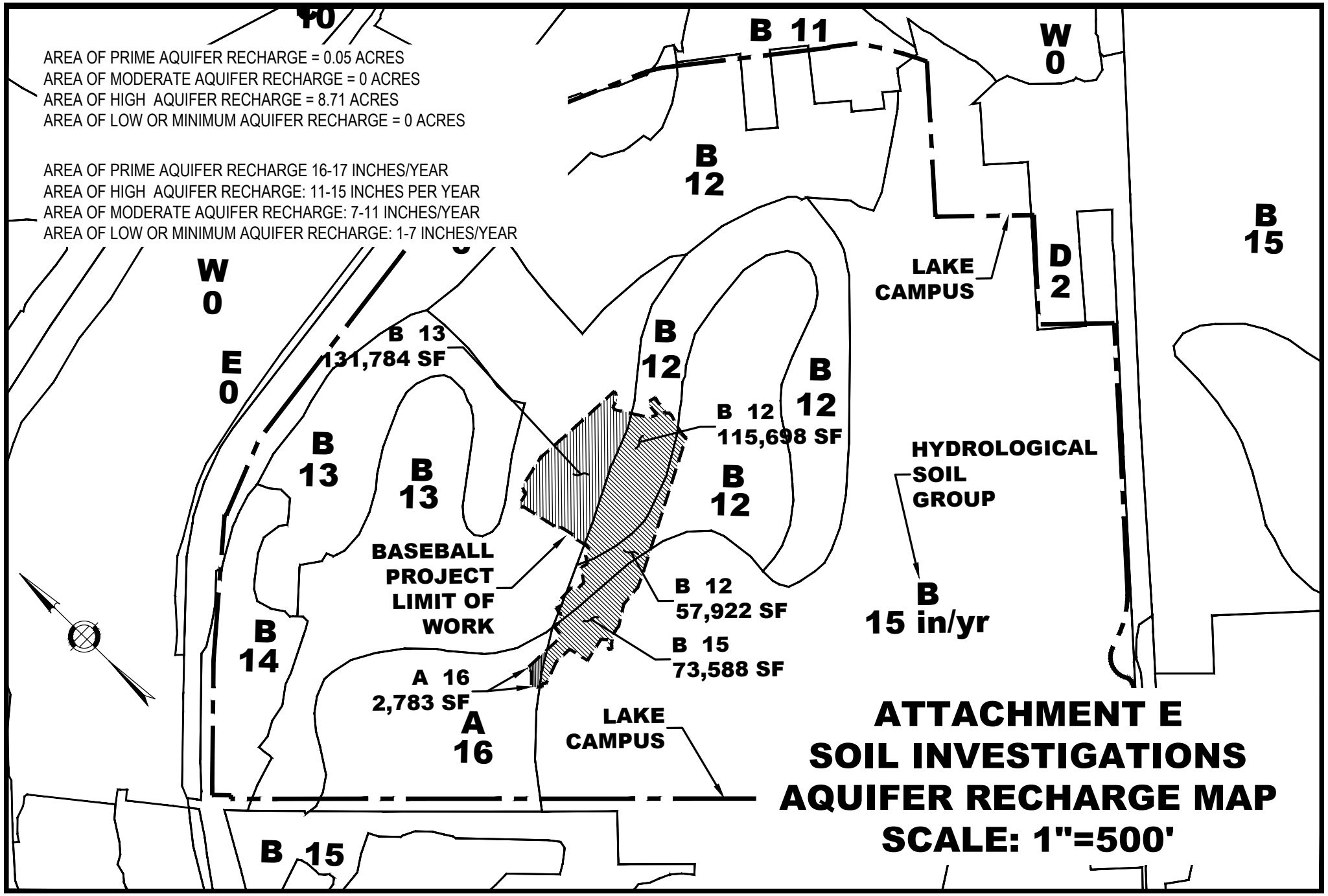
If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher


AREA OF PRIME AQUIFER RECHARGE = 0.05 ACRES
AREA OF MODERATE AQUIFER RECHARGE = 0 ACRES
AREA OF HIGH AQUIFER RECHARGE = 8.71 ACRES
AREA OF LOW OR MINIMUM AQUIFER RECHARGE = 0 ACRES
AREA OF PRIME AQUIFER RECHARGE 16-17 INCHES/YEAR
AREA OF HIGH AQUIFER RECHARGE: 11-15 INCHES PER YEAR
AREA OF MODERATE AQUIFER RECHARGE: 7-11 INCHES/YEAR
AREA OF LOW OR MINIMUM AQUIFER RECHARGE: 1-7 INCHES/YEAR
B 11
W 0
B 12
B 15
D 2
LAKE CAMPUS
W 0
E 0
B 13
131,784 SF
B 12
B 12
B 12
115,698 SF
B 13
B 13
B 12
HYDROLOGICAL SOIL GROUP
B 15 in/yr
BASEBALL PROJECT LIMIT OF WORK
B 12
57,922 SF
B 15
73,588 SF
B 14
A 16
2,783 SF
A 16
LAKE CAMPUS
B 15
ATTACHMENT E
SOIL INVESTIGATIONS
AQUIFER RECHARGE MAP
SCALE: 1"=500'

ATTACHMENT F

Methodology and HydroCAD Technical Information

Nitsch Engineering

METHODOLOGY AND HYDROCAD TECHNICAL INFORMATION

Project Name:	Baseball Ballpark Princeton University
Nitsch Project #:	12683.2

HYDROLOGY CALCULATIONS

Nitsch Engineering completed a hydrologic analysis of the existing project site utilizing Soil Conservation Service (SCS) Runoff Curve Number (CN) methodology. The SCS method calculates the rate at which the runoff reaches the design point considering several factors: the slope and flow lengths of the subcatchment area, the soil type of the subcatchment area, and the type of surface cover in the subcatchment area. HydroCAD Version 10.00 computer modeling software was used in conjunction with the SCS method to determine the peak runoff rates and runoff volumes for each of the 24-hour storm events. The proposed project site is being analyzed with the same methodology.

The Site was divided into multiple drainage areas, or subcatchments, which drain to the design points along the property boundary and within the site. For each subcatchment area, SCS Runoff Curve Numbers (CNs) were selected by using the cover type and hydrologic soil group of each area. The peak runoff rates and runoff volumes for each of the 24-hour storm events were then determined by inputting the drainage areas, CNs, and time of concentration (T_c) paths into the HydroCAD model.

HydroCAD Version 10.00

The HydroCAD computer program uses SCS and TR-20 methods to model drainage systems. TR-20 (Technical Release 20) was developed by the Soil Conservation Service to estimate runoff and peak discharges in small watersheds. TR-20 is generally accepted by engineers and reviewing authorities as the standard method for estimating runoff and peak discharges.

HydroCAD Version 10.00 uses up to four types of components to analyze the hydrology of a given site: subcatchments, reaches, basins, and links. Subcatchments are areas of land that produce surface runoff. The area, weighted CN, and T_c characterize each individual subcatchment area. Reaches are generally uniform streams, channels, or pipes that convey water from one point to another. A basin is any impoundment that fills with water from one or more sources and empties via an outlet structure. Links are used to introduce hydrographs into a project from another source or to provide a junction for more than one hydrograph within a project. The time span for the model was set for 0-48 hours in order to prevent truncation of the hydrograph.

HYDRAULIC CALCULATIONS (Closed Drainage System)

The closed drainage system, catch basin to drain manhole system, was designed to convey the 25-year storm event using the Rational method as described previously.

ATTACHMENT G

Nonstructural Strategies Points System

NJDEP Nonstructural Strategies Points System (NSPS)

Version: January 31, 2006

Note: Input Values in Yellow Cells Only

Project:	Princeton Universeity - Baseball Ballpark
Date:	6/27/2024, Rev 1/17/2025, Rev 2 2/24/2025, Rev 3 12/10/2025, Rev 3 2/19/2026
User:	Sandra Brock, PE
Notes:	

Step 1 - Provide Basic Major Development Site Information

A. Specify Total Area in Acres of Development Site Described in Steps 2 and 3 = 8.6 **Acres**

B. Specify by Percent the Various Planning Areas Located within the Development Site:

State Plan Planning Area:	PA-1	PA-2	PA-3	PA-4	PA-4B	PA-5	Total % Area
Percent of Each Planning Area within Site:		100.0%					100.0%

Note: See User's Guide for Equivalent Zones within Designated Centers and the NJ Meadowlands, Pinelands, and Highlands Districts

Step 2 - Describe Existing or Pre-Developed Site Conditions

A. Specify Existing Land Use/Land Cover Descriptions and Areas:

Site Segment	Land Use/Land Cover Description	Specify Land Use/Land Cover in Acres for Each HSG				Use/Cover Subtotals	Points
		HSG A	HSG B	HSG C	HSG D		
1	Wetlands and Undisturbed Stream Buffers					0.0	0
2	Lawn and Open Space	0.1	8.4			8.5	329
3	Brush and Shrub					0.0	0
4	Meadow, Pasture, Grassland, or Range					0.0	0
5	Row Crop					0.0	0
6	Small Grain and Legumes					0.0	0
7	Woods - Indigenous					0.0	0
8	Woods - Planted					0.0	0
9	Woods and Grass Combination					0.0	0
10	Ponds, Lakes, and Other Open Water					0.0	0
11	Gravel and Dirt					0.0	0
12	Porous and Permeable Paving					0.0	0
13	Directly Connected Impervious		0.1			0.1	0
14	Unconnected Impervious with Small D/S Pervious		0.0			0.0	0
15	Unconnected Impervious with Large D/S Pervious					0.0	0
	HSG Subtotals (Acres):	0.1	8.5	0.0	0.0	**Total Area:**	8.6
	HSG Subtotals (%):	1.2%	98.8%	0.0%	0.0%	**Total % Area:**	100.0%

Points Subtotal: **329**

Total Existing Site Points: **329**

Step 3 - Describe Proposed or Post-Developed Site Conditions

A. Specify Proposed Land Use/Land Cover Descriptions and Areas:

Site Segment	Land Use/Land Cover Description	Specify Land Use/Land Cover in Acres for Each HSG				Use/Cover Subtotals		Points
		HSG A	HSG B	HSG C	HSG D			
1	Wetlands and Undisturbed Stream Buffers					0.0		0
2	Lawn and Open Space	0.1	4.0			4.1		160
3	Brush and Shrub					0.0		0
4	Meadow, Pasture, Grassland, or Range					0.0		0
5	Row Crop					0.0		0
6	Small Grain and Legumes					0.0		0
7	Woods - Indigenous					0.0		0
8	Woods - Planted					0.0		0
9	Woods and Grass Combination					0.0		0
10	Ponds, Lakes, and Other Open Water					0.0		0
11	Gravel and Dirt					0.0		0
12	Porous and Permeable Paving		0.6			0.6		23
13	Directly Connected Impervious		3.9			3.9		0
14	Unconnected Impervious with Small D/S Pervious		0.0			0.0		0
15	Unconnected Impervious with Large D/S Pervious					0.0		0
	HSG Subtotals (Acres):	0.1	8.5	0.0	0.0		**Total Area:**	8.6
	HSG Subtotals (%):	1.2%	98.8%	0.0%	0.0%		**Total % Area:**	100.0%
							Points Subtotal:	**183**

B. Compare Proposed Impervious Coverage with Maximum Allowable Impervious Coverage:

Total Directly Connected Impervious Coverage =	45%	% of Site
Total Unconnected Impervious Coverage with Small D/S Pervious =	0%	% of Site
Total Unconnected Impervious Coverage with Large D/S Pervious =	0%	% of Site
Total Site Impervious Coverage =	45%	% of Site
Effective Site Impervious Coverage =	45%	% of Site
Specify Source of Maximum Allowable Impervious Coverage:	Table	(None or Table)
Allowable Site Impervious Cover from Maximum Impervious Cover Table:	72%	

Note: See Maximum Impervious Cover Table Worksheet for Details

Points Subtotal: 25

C. Compare Proposed Site Disturbance with Maximum Allowable Site Disturbance:

Total Proposed Site Disturbance =	0%	% of Site
Maximum Allowable Site Disturbance by Municipal Ordinance =	0%	% of Site

Points Subtotal: 0

D. Describe Proposed Runoff Conveyance System:

Total Length of Runoff Conveyance System =	1370	Feet
Length of Vegetated Runoff Conveyance System =	1140	Feet
% of Total Runoff Conveyance System That is Vegetated =	83%	

Points Subtotal: 111

E. Residential Lot Clustering:

Percent of Total Site Area that will be Clustered =		% of Site
Minimum Standard Lot Size as Per Zoning (Note: 1/2 Acre or Greater) =		Acres
Maximum Proposed Cluster Lot Size (Note:1/4 Acre or Less) =		Acres
Percent of Clustered Portion of Site to be Preserved as Vegetated Open Space =		% of Clustered Site Portion

Points Subtotal: 0

F. Will the Following be Utilized to Minimize Soil Compaction?

Proposed Lawn Areas will be Graded with Lightweight Construction Equipment:	Yes	(Yes or No)
Percent of Proposed Lawn Areas to be Graded with Such Equipment:	100%	% of Lawn Areas

Points Subtotal: 33

G. Are Any of the Following Stormwater Management Standards Met Using Only Nonstructural Strategies and Measures?

Groundwater Recharge Standards (NJAC 7:8-5.4-a-2):	No	(Yes or No)
Stormwater Runoff Quality Standards (NJAC 7:8-5.5):	No	(Yes or No)
Stormwater Runoff Quantity Standards (NJAC 7:8-5.4-a-3):	No	(Yes or No)

Points Subtotal: 0

Note: If the Answers to All Three Questions at G Above are "Yes", Adequate Nonstructural Measures have been Utilized.

Total Proposed Site Points: 352

Ratio of Proposed to Existing Site Points: 107%

Required Site Points Ratio: 93%

Nonstructural Point System Results: Proposed Nonstructural Measures are Adequate

ATTACHMENT H

New Jersey Department of Agriculture Data Entry Forms

New Jersey Department of Agriculture

Hydrologic Modeling Database – Data Entry Form

Project Site Details

Chpt. 251 Application Number: _____

Start Date (if known): TBD

County: Mercer

Street Address: Princeton University Lake Campus, 300 Washington Rd

Municipality: West Windsor

Block: 3

Lot: 1.0113

NJDEP Anderson Landuse Code (4 digits): 1800

Landuse description: Recreational Land

Site Centroid Location (NJ State Plane Feet): [1]

Northing: 548188.225 Easting: 452628.018

Project Contact Details

Applicant: Patrick O'Brien

Address: Princeton University, MacMillan Bldg, Princeton, NJ

Phone: 609-258-9382

Email: patrick.obrien@princeton.edu

Post Construction Operation & Maintenance:[2]

Party Name: Sean Gallagher (Director, Civil and Environmental Engineer of Princeton University, Facilities Operations)

Address: Princeton University, MacMillan Bldg, Princeton, NJ

Phone: 609-258-6682

Email: sean.gallagher@princeton.edu

Party type: Owner, Facilities Operations

New Jersey Department of Agriculture

Hydrologic Modeling Database – Data Entry Form

Basin Details:[3]

Basin Centroid (NJ State Plane Feet):[4]

Northing: 548037.36 Easting: _____

Basin Type: Infiltration Basin (BB-P2)

Construction: ☐excavated ☐embankment ☑ sub-surface (check one)

Status phase:[5] Design ☑ As-built ☐

Dam Height: (ft) 5' top width: (ft) N/A

Dam Classification: N/A - Underground

Drainage Area(s) to Basin [note- include any bypass areas][6]

Drainage Area Name	Drainage Area	Post-Development CN#	Percent Impervious	Time of Concentration (min)
PR - 35	170,465 sf	95	92%	6

Basin Outlet Structure(s)[7]

ID:

End of Pipe Location:[8] Northing: 548081.66 Easting: 453344.14

Discharge Type[9] (weir, orifice, etc)	Dimensions (diameter, length)	Elevation (USGS)	Discharge[10] Coefficient	Equation Used[11]
24" Round Culvert	L =353' D =2'	77.5'	0.5	Orifice Eq. Manning's Eq.
3.0" Round Culvert	L =10' D =0.25'	75'	0.5	Orifice Eq. Manning's Eq.

New Jersey Department of Agriculture

Hydrologic Modeling Database – Data Entry Form

Basin Outlet Structure(s)

ID:

End of Pipe Location: Northing: Easting:

Discharge Type (weir, orifice, etc)	Dimensions (diameter, length)	Elevation (USGS)	Discharge Coefficient	Equation Used

Basin Stage-Discharge Rating Table[12]

Elevation (USGS Feet)	Storage (Sq Ft)	Total Outlet Structure Discharge (cfs)
74.67	14,517	0
77.00	14,517	0.32
77.01	120,809	0.32
79.66	120,809	14.30

NJDEP BMP Water Quality Structures[13] The project does not include vehicular driveways or parking on the proposed project; therefore, no water quality treatment not required.

Type (rain garden, green roof, seepage pit etc)	Size	Size Units (cu ft, sq ft etc)	Northing (SPF)	Easting (SPF)

New Jersey Department of Agriculture

Hydrologic Modeling Database – Data Entry Form

Explanatory Notes-

[1] Approximate location of center of site, coordinates in state plane feet
[2] Indicate who will be responsible for permanent operation and maintenance
[3] Additional Basin Detail Pages can be used for more than one basin in a project.
[4] Approximate location of center of basin, coordinates in state plane feet
[5] Indicate "design" for basins not yet constructed
[6] Drainage areas which are modified by construction, but not directed to the basin should still be listed and described
[7] "Outlet structure" means the control box, outlet headwall, FES etc. This does not refer to an individual control on the structure such as a weir or orifice. There are two tables for more than one outlet structure
[8] Approximate location of terminal discharge end of basin outfall, coordinates instate plane feet
[9] Indicate the type of outlet – weir, orifice, hydro brake, etc.
[10] Discharge Coefficient specific to the type of outlet control i.e., 0.6 for circular orifice
[11] List the discharge equation for each outlet (weir, orifice etc) used
[12] For basins with dead storage below the primary outlet, indicate 0 cfs discharge until the lowest outlet is reached. Routing table should begin at the lowest basin elevation.
[13] Describe NJDEP BMP Manual water quality devices such as seepage pits, rain gardens etc. Size is appropriate for device – cubic feet, square feet or linear feet. Location of device using state plane feet coordinates.

ATTACHMENT I

Updated Lake Campus South Stormwater Operations and Maintenance Plan

West Windsor Township Major Site Plan Application
Lake Campus South
Stormwater Operations and Maintenance Plan

Prepared For:

Princeton University

Prepared By:

Nitsch Engineering, Inc.
2 Center Plaza, Suite 430
Boston, MA 02108

February 3, 2020
Revised March 15, 2021
Revised August 25, 2021

Revised June 28, 2024 to include Baseball Ballpark



Nitsch Project 12683.2

Nitsch Engineering

STORMWATER OPERATIONS AND MAINTENANCE PLAN

Princeton University Lake Campus South, West Windsor, NJ

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ATTACHMENTS

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Attachment B – Exhibit B - Stormwater Management System Location 1,
2, & 3 Attachment C – Stormwater Management Plan Checklists
Attachment D – MTD Maintenance
Requirements Attachment E – Required
Documents

- E.1 - Transfer Agreement
- E.2 - Deed
- E.3 - As-Built Drawings with Drainage Plans
- E.4 - Landscaping Plan for the Stormwater Management Measures
- E.5 - Soil Boring Logs
- E.6 - Local, State, Federal Permits
- E.7 - Safety Regulations and Requirements
- E.8 - Devices/Tools/Equipment Operation and Maintenance Manual and Warranties

1.0 INTRODUCTION

The purpose of this document is to specify the stormwater management system operation and maintenance for the Princeton University Lake Campus South (B) project site. The Responsible Party indicated below shall implement the management practices outlined in this document and proactively conduct operations at the project site in an environmentally responsible manner. Compliance with this Manual does not in any way dismiss the responsible party, owner, property manager, or occupants from compliance with other applicable federal, state or local laws.

Responsible Party: Sean M Gallagher, PE (Director, Civil and Environmental Engineering)
Princeton University, Facilities Operations
166E MacMillan Building
Princeton, New Jersey 08544
T: 609-258-6682

Project Location: Tax Map Block 3 Lot 1.0113 Zone E
West Windsor, NJ 08540, Mercer County

This Document has been prepared in compliance with N.J.A.C. 7:8 Stormwater Management Standards Section 7:8-5.8 Maintenance Requirements and the Township of West Windsor Stormwater Control (Article XXI § 200-105. Maintenance and repair) Requirements.

2.0 STORMWATER MANAGEMENT OPERATION AND MAINTENANCE PLAN

2.1 Introduction

This Operation and Maintenance Plan (O&M Plan) for the project site is required under N.J.A.C. 7:8-5.8 for maintenance activities to the stormwater management system.

The Owner shall implement this O&M Plan and proactively conduct operations at the site in an environmentally responsible manner. Compliance with this O&M Plan does not in any way dismiss the Owner from compliance with other applicable Federal, State or local laws.

All stormwater best management practices (BMPs) shall be operated and maintained in accordance with the design plans approved by the issuing authority. The party responsible for maintenance shall:

a. Maintain an operation and maintenance log, including inspections, repairs, replacement and disposal (for disposal the log shall indicate the type of material and the approved disposal location and include disposal permit information if applicable – refer to Section 2.8 below). This is a rolling log in which the responsible party records all operation and maintenance activities for the past three years.

b. Make this log available to NJDEP and the municipality upon request. Currently the Owner reports all SWM O&M reporting annually as one report/submission to the municipality; and

c. Allow members and agents of the NJDEP and the municipality to enter and inspect the premises to evaluate and ensure that the Owner complies with the Operation and Maintenance requirements for each BMP; and

d. Maintain a detailed log of all preventative and corrective maintenance undertaken on the stormwater management measures, including a record of all inspections and copies of all maintenance-related work orders or invoices

e. Submit a copy of the detailed log along with an annual inspection report prepared by a professional engineer licensed in New Jersey or a New Jersey certified stormwater inspector to the Township of West Windsor Department of Community Development, Division of Engineering, by June 30th of each year

f. Retain and make available, upon request by any public entity with administrative, health, environmental or safety authority over the site, the Maintenance Plan and the documentation required by Township of West Windsor Stormwater Control Article XXI § 200-105.B(7) and 105.B(8).

2.2 Stormwater Operation and Maintenance Requirements

Inspect and maintain the stormwater management system as directed below. Refer to the Stormwater Management System Location Map (Attachment B) for the location of each component of the system as listed in Table 1 below. Repairs to any component of the system shall be made as soon as possible to prevent any potential pollutants (including silt) from entering the resource areas. Refer to Attachment C for a detailed inspection check list for use following construction.

The stormwater management measures incorporated into this project are listed below for each BMP.

Table 1 – Stormwater Management Measures List

Type of Stormwater Management Measure	BMP No.	Location Description
Bioretention Systems	CUB-P, R-1A-P, R-1B-P, R-2A-B, R-2B-P, R-3A-P, R-3B-C, R-4A-P, R-4B-P, R-5A-C, R-5B-P, R-6A-P, R-6B-P, R-7A-B, R-7B-P, R-8A-P, R-8B-P, R-9A-P, R-9B-P, R-10A-P, R-10B-P, R-11A-P, R-11B-P, R-12A-P, R-12B-P, R-13A-P, R-13B-P, R-14A-P, R-15A-P	Plan SW-104-105
Subsurface Infiltration Basins	SOFT-P, ST-1-P	Plan SW-104-105
Extended Detention Basins	SWALE-P	Plan SW-104
Surface Infiltration Basins	GAR-P	Plan SW-104-105
Pervious Paving Systems	INNO-1B-P	Plan SW 104-105
Manufactured Treatment Devices	WQS#601	Plan SW-104
Pervious Paving Systems	BB– P1, BB-P3, BB-P4, BB-P5	Plan CSW-100
Subsurface Infiltration Basin	BB-P2	Plan CSW-100

Preventative Maintenance Actions

The frequency of the preventative maintenance actions listed here is adopted from Chapter 9, BMP Manual of Structural Stormwater Management Measures. Design engineer and the Owner should adjust the frequency of preventative maintenance actions according to the situations of the stormwater management measures in the development. Additional information on maintenance is found below the table and within Attachment A*.

* Attachment A includes the NJ BMP manual sheets for the specific facilities associated with this project.

Frequency	Preventative Maintenance Actions	Stormwater Measuresl No.
Monthly	Vegetation mowing and removal in growing season	CUB-P, R-1A-P, R-1B-P, R-2A-B, R-2B-P, R-3A-P, R-3B-C, R-4A-P, R-4B-P, R-5A-C, R-5B-P, R-6A-P, R-6B-P, R-7A-B, R-7B-P, R-8A-P, R-8B-P, R-9A-P, R-9B-P, R-10A-P, R-10B-P, R-11A-P, R-11B-P, R-12A-P, R-12B-P, R-13A-P, R-13B-P, R-14A-P, R-15A-P, GAR-P, SWALE-P,
Quarterly	Quarterly inspection (Sediment removal, depending on the type of measure)	INNO-1B-P, SOFT1A-P, SOFT1B-P, ST-1-P, BB– P1, BB-P3, BB-P4, BB-P5
Semiannual	Sediment removal, depending on the type of measure	CUB-P, R-1A-P, R-1B-P, R-2A-B, R-2B-P, R-3A-P, R-3B-C, R-4A-P, R-4B-P, R-5A-C, R-5B-P, R-6A-P, R-6B-P, R-7A-B, R-7B-P, R-8A-P, R-8B-P, R-9A-P, R-9B-P, R-10A-P, R-10B-P, R-11A-P, R-11B-P, R-12A-P, R-12B-P, R-13A-P, R-13B-P, R-14A-P, R-15A-P, GAR-P, SWALE-P
Annual	Basin / Unit Structural Inspection	CUB-P, R-1A-P, R-1B-P, R-2A-B, R-2B-P, R-3A-P, R-3B-C, R-4A-P, R-4B-P, R-5A-C, R-5B-P, R-6A-P, R-6B-P, R-7A-B, R-7B-P, R-8A-P, R-8B-P, R-9A-P, R-9B-P, R-10A-P, R-10B-P, R-11A-P, R-11B-P, R-12A-P, R-12B-P, R-13A-P, R-13B-P, R-14A-P, R-15A-P, GAR-P, SWALE-P SOFT1A-P, SOFT1B-P, ST-1-P
Semi- Annual (every two years)	Aeration of the SW Meadow Basins planting soil.	GAR-P, MEAD-1-P, MEAD-2-P, MEAD-3-P, BB-P2
Unscheduled	Quick inspection after every 1” rain	All stormwater management measures.
Additional	Manufacturer Requirements	Water quality units shall also be inspected in accordance with the manufacturer.

Inlets / Catch Basins

Inspect inlets / catch basins four times per year, including after the foliage season. Other inspection and maintenance requirements include:

- Remove organic material, sediment and hydrocarbons four times per year or whenever the depth of deposits is greater than or equal to one half the depth from the bottom of the invert of the lowest pipe in the basin.
- Always clean out inlets / catch basins after street sweeping. If any evidence of hydrocarbons is found during inspection, remove the material immediately using absorbent pads or other suitable measures and dispose of legally. Remove other accumulated debris as necessary.
- Transport and disposal of accumulated sediment off-site shall be in accordance with applicable local, state and federal guidelines and regulations.

Area Drains

Inspect area drains at least once per month and remove debris from the grate. Clean out accumulated sediments at least once per year and more frequently as necessary.

Grass Swales

Refer to Attachment A.

Bioretention Systems

Refer to Attachment A.

Extended Detention Basins

Refer to Attachment A.

Infiltration Basins

Refer to Attachment A and the following.

- Monitor the basins after storms larger than 1-inch of rainfall to determine if the drain time is taking longer than 24 hours. If drain time appears to be changing additional observations and testing shall be performed to determine that the infiltration rate of the planting soils is greater than the underlining native soils. If infiltration of the planting soil is approaching the infiltration rates of the underlining native soils action shall be taken to restore the infiltration rates including aeration of the planting soil, adding sand plugs, etc.

Pervious Paving Systems

Refer to Attachment A.

Water Quality Units (Proprietary Separators)

Refer to Attachment D.

2.3 Corrective Maintenance Actions

Depending on many factors, such as the performance of preventative maintenance actions, weather, or unexpected incidents, corrective maintenance requirements may not be precisely anticipated; however, a list of potential corrective maintenance actions may assist the responsible party in planning and estimating costs in advance.

Potential Corrective	Stormwater Management

Maintenance Actions	Measures No.
Example of corrective maintenance tasks - Repair/replacement of eroded or damaged riprap - Repair/replacement of outlet pipes or orifices - Revegetation of eroded side slope or grass swales - Clogged inlets or area drains	CUB-P, R-1A-P, R-1B-P, R-2A-B, R-2B-P, R-3A-P, R-3B-C, R-4A-P, R-4B-P, R-5A-C, R-5B-P, R-6A-P, R-6B-P, R-7A-B, R-7B-P, R-8A-P, R-8B-P, R-9A-P, R-9B-P, R-10A-P, R-10B-P, R-11A-P, R-11B-P, R-12A-P, R-12B-P, R-13A-P, R-13B-P, R-14A-P, R-15A-P, GAR-P, SWALE-P SOFT1A-P, SOFT1B-P, ST-1-P Inlets/Catch Basins, Area Drains, BB-P2

2.4 Maintenance Tools

Maintenance tools anticipated for use generally include the following: shovels, rakes, debris removal tools, lightweight backhoe and, at times, a vacuum truck to remove debris from inlets / catch basins, proprietary separators and manholes. A list of Personnel/Equipment/Tools Name and quantities shall be completed by the Owner, updated over time as needed and kept with this manual for future reference. Warranty and parts information should be attached to this document.

Maintenance Personnel Equipment Tools Supplies

Personnel Equipment Tools Name	Quantity
(e.g., general maintenance crew)	
(e.g., debris removal tools)	
(e.g., lightweight backhoe)	

2.5 Safety Measures

All maintenance work is to be completed in accordance with the Owner's safety requirements, as well as all local, state, OSHA and other federal safety requirements.

2.6 Repair of the Stormwater Management System

The stormwater management system shall be maintained. The repair of any component of the system shall be made as soon as possible to prevent any potential pollutants including silt from entering the resource areas or the existing closed drainage system.

The Township shall be given the right, but not the obligation, to enter the property and perform any required maintenance under the plan should the owner fail to do so. The cost of any necessary repairs undertaken by the Township shall be placed as a lien against the property.

2.7 Inspection and Logs for Recording Maintenance

The Owner shall maintain a record of drainage system inspections and maintenance (per this Plan). Refer to Exhibit C for Maintenance Logs and Inspection Records.

2.8 Disposal Plan

As per NJDEP BMP Manual Ch. 8 (Feb. 2004), the maintenance plan should include approved

disposal and recycling sites and procedures for sediment, trash, debris and other material removed from stormwater management measures during maintenance operations. The Owner shall complete and update over time as needed the following information and keep the information with this manual for future reference.

Disposal Recycling Procedures – As applicable.

- Dewatering procedures and requirements
- Unloading procedures and requirements
- Covering procedures and requirements

Disposal Field – Onsite (if applicable)

Location of the Onsite Disposal Field:
Provide a description of the site and any nearby wetland, floodplain, or water body

_____

_____

_____

Permits for the Proposed Onsite Disposal Field

Local/State permits ☐ not required

☐ required

Permit Number	Government Entity	Issuance Date	Expiration Date
(If available)	(If available)	(If available)	(If available)

A copy of all permits should be included in the Documents section of the Maintenance Plan.

Disposal Field – Offsite (if applicable**)**

Description of the Offsite Disposal:
By the township, by a private operator and conveyance entity, etc.

_____

_____

_____

A copy of the contract should be included in the Documents section of the Maintenance Plan if available.

2.9 Cost Estimate

As per N.J.A.C.7:8-5.8(b), cost estimates of maintenance tasks, including, but not limited to, sediment, trash and debris removal must be included in the maintenance plan. The actual costs may vary with factors such as local requirements, equipment, personnel, weather, and maintenance methods. The Owner shall include an estimate for the maintenance of the facilities and include that information within this document. The estimate can be updated over time as needed and that updated estimate is to be included in this manual for future reference.

2.10 Training

As per NJDEP BMP Manual Ch. 8 (February 2004), maintenance training begins with a basic description of the purpose and function of the overall stormwater management measure and its major components. Such understanding will enable maintenance personnel to provide more effective component maintenance and more readily detect maintenance-related problems. Depending on the size, character, location, and components of each stormwater management measure, maintenance personnel may also require training in specialized inspection and maintenance tasks and/or the

operation and care of specialized maintenance equipment. Training should also be provided in the need for and use of all required safety equipment and procedures.

I. Training Plan

Types of Training

- Mandatory Stormwater Management Basic Training and Field Manual Usage Training for new maintenance crews
- Occupational Safety Training
- Subcontractor training, if applicable

Content of Training

- **Stormwater Management Basic Training**
  - Purposes and Functions of BMPs
    Example Training Material
    - NJDEP Stormwater BMP Manual, Chapter Nine: Structural Stormwater Management Measures
      - Chapter 9.1 Bioretention Systems
      - Chapter 9.4 Extended Detention Basins
      - Chapter 9.5 Surface Infiltration Basins
      - Chapter 9.12 Grass Swales

More training information is available at NJ Stormwater.org (http://www.nj.gov/dep/stormwater/training.htm)

  - Vegetation Care
    Example Training Material
    - NJDEP Stormwater BMP Manual, Chapter Seven: Landscaping *(provides information on vegetation and landscaping for stormwater management measures)*

  - Field Manual Usage Training
    Example Training Material
    - Field Manuals attached to this Maintenance Plan, see Attachment A.

  - Equipment and Tools Operation Training
    Example Training Material
    - Equipment or tool manufacturer's Operation & Maintenance Manual

  - Occupational Safety Training
    Example Training Material
    - OSHA Training
    - Equipment or tool manufacturer's Operation & Maintenance Manual

II. Training Records

Training attendance sheets should be attached by the responsible party after each training.

2.11 Annual Plan Evaluation

As per N.J.A.C. 7:8-5.8(g), the person responsible for maintenance shall evaluate the effectiveness of the maintenance plan at least once per year and adjust the plan and the deed as needed. The responsible party should evaluate the effectiveness of the maintenance plan by comparing the maintenance plan with the actual performance of the maintenance. The items to evaluate may include, but not limited to:

- Whether the inspections have been performed as scheduled;
- Whether the preventive maintenance has been performed as scheduled;
- Whether the frequency of preventative maintenance needs to increase or decrease;
- Whether the planned resources were enough to perform the maintenance;
- Whether the repairs were completed on time;
- Whether the actual cost was consistent with the estimated cost;
- Whether the inspection, maintenance, and repair records have been kept.

If actual performance of those items has been deviated from the maintenance plan, the responsible party should find the causes and implement solutions in a revised maintenance plan.

Annual Evaluation Records

Evaluator(s)	Date of Evaluation	Decision
		__Maintain current version OR __Revise current version Revision date_____(also update the last revision date on the cover page) __Requires a new deed recording (also update the last recording information on the cover page)
		__Maintain current version OR __Revise current version Revision date_____(also update the last revision date on the cover page) __Requires a new deed recording (also update the last recording information on the cover page)

Documents

Prior to the implementation of this Stormwater Maintenance Plan the Owner shall provide the following documents, as applicable, and attach to this plan:

Transfer Agreement
As per N.J.A.C. 7:8-5.8(b), if the maintenance plan identifies a person other than the developer as having the responsibility for maintenance, the plan shall include documentation of such person's agreement to assume this responsibility, or the developer's obligation to dedicate a stormwater management facility to such person under an applicable ordinance or regulation.

Deed
As per N.J.A.C. 7:8-5.8(d), if the person responsible for maintenance is not a public agency, the maintenance plan and any future revisions shall be recorded upon the deed of record for each property on which the maintenance described in the maintenance plan must be undertaken.

As-Built Drawings with Drainage Plans
As per NJDEP BMP Manual Ch. 8 (Feb., 2004), as-built construction plans of the stormwater management measure and copies of pertinent construction documents, such as laboratory test results, permits, and completion certificates should be included in this Maintenance Plan.

Landscaping Plan for the Stormwater Management Measures
As per NJDEP BMP Manual Ch. 8 (Feb., 2004), if there is a Landscaping Plan for the stormwater

management measures should be included in this Maintenance Plan.

Soil Boring Logs
As per NJDEP BMP Manual Ch.8 (Feb., 2004), if any soil borings were taken prior to construction, a copy of the soil boring logs should be included in this Maintenance Plan.

Local, State, Federal Permits
As per NJDEP BMP Manual Ch. 8 (Feb., 2004), local, state, or federal permits related to the stormwater management measures for this development should be included in this Maintenance Plan. See Cost Estimate Section of this Maintenance Plan for more information.

The requirement to obtain State permits depends on specific circumstances, such as, but not limited to, the specific design of the stormwater management measures, the maintenance actions, the access and disturbance, the disposal methods, the location of disposal, the method to empty a basin, the method to dredge the basin, the pollutants in the basin, the damages to the basin, and the method to repair the basin.

Check Maintenance Guidance in NJDEP Stormwater Management Website for details and links to the relevant permits and program areas (http://www.njstormwater.org).

Safety Regulations and Requirements
As per NJDEP BMP Manual Ch. 8 (Feb., 2004), all local ordinances, state, OSHA and other federal regulations regarding occupational safety should be included in this Maintenance Plan unless the Owner has a safety plan that covers this information in which case that plan shall be included.

Devices Tools Equipment Operation and Maintenance Manual and Warranties
As per NJDEP BMP Manual Ch. 8 (Feb., 2004), maintenance, repair, and replacement instructions for specialized, proprietary, and nonstandard equipment, tools, supplies, manufacturers' product instructions, and user manuals should be included in this Maintenance Plan.

ATTACHMENT A

Field Manuals

Infiltration Basin (Surface & Subsurface) Basin#GAR-P,MEAD-1-P,MEAD-2-P,MEAD-3-P,SOFT1A-P, & ST-1-P

Development Name: Princeton University Lake Campus South

Township, County: West Windsor, Mercer County, NJ Location

of Basin: See Exhibit B – SWM Location

Surface Infiltration Basin Overview

Functionality

An infiltration basin is a stormwater management facility constructed of highly permeable soils, which provides temporary storage of stormwater runoff. Infiltration basins are used to remove pollutants and to infiltrate stormwater. In addition to pollutant removal and groundwater recharge, infiltration may help to reduce increases in both the peak rate and total runoff volume caused by land development. Pollutant removal is achieved through filtration of the runoff through the soil, as well as biological and chemical activity within the soil. The total suspended solids (TSS) removal rate attributed to infiltration basins is 80%.

Proper care and attention in the long-term maintenance of the stormwater management measure is critically important to the safety and health of the public.

Type of BMP – Dry Basin / Infiltration Only

An infiltration basin is a type of ***dry*** basin. Dry basins must fully drain within 72 hours of the most recent rainfall. Standing water in excess of 72 hours is a sign of basin failure. It may also contribute to mosquito breeding and other health and safety issues. The design drain time shall be closely monitored to ensure that potential failure is recognized early.

This surface infiltration basin is designed for **infiltration only** and is **not** designed for extended detention.

For the field manual for a surface infiltration basin with extended detention, please see: Surface Infiltration – Extended Detention Basin Field Manual.

Basic Design Information

Hydrology Design Targets

1. This basins' subsoil permeability rates are:
    a. MEAD-1-P 0.5 IN/HR MIN.
    b. MEAD-2-P 0.5 IN/HR MIN.
    c. MEAD-3-P 0.5 IN/HR MIN.
    d. SOFT-P 0.5 IN/HR MIN.
    e. ST1-P 0.5 IN/HR MIN.
    f. GAR-P 1.3 IN/HR MIN.
2. The design drain time:
    a. MEAD-1-P 4.7 HOURS (72 HR MAX.)
    b. MEAD-2-P 5.2 HOURS (72 HR MAX.)
    c. MEAD-3-P 12.3 HOURS (72 HR MAX.)
    d. SOFT-P 14.6 HOURS (72 HR MAX.)
    e. ST1-P 60.6 HOURS (72 HR MAX.)
    f. GAR-P 22.3 HOURS (72 HR MAX.)

3. The elevation of the seasonal high water table of this basin:
    a. MEAD-1-P 70.5
    b. MEAD-2-P 62.5
    c. MEAD-3-P 57.5
    d. SOFT-P 70
    e. ST1-P 66
    f. GAR-P 87.25

Hydraulic Design Targets

1. Runoff rates from the Water Quality Design Storm, invert elevations for outlets for the design storm, and emergency spillway elevations are below:

BMP	RUNOFF RATES (WQ STORM) (CFS)	OUTLET INVERT	EMERGENCY SPILLWAY ELEVATION
MEAD-1	0.16	72.5	73.5
MEAD-2	0	71.5	72.5
MEAD-3	0	70.5	71.5
SOFT-P	4.64	78.5	80.5
ST1-P	2.05	73	74.7
GAR-P	3.24	94.5	94.8

Basin Configuration Targets

1. This basin bottom is not covered by sediment.
2. Vegetation (Surface Basins only)

- Surface Basins: The top of basin bed is designed to have no vegetation (if the basin is vegetated, a Landscaping Plan is included in the Record Plan submission.

Critical Maintenance Features

1. No heavy equipment on the basin surface or sand layer.
2. Trash racks and discharge outlet shall be cleaned frequently.
3. Grass clippings shall be collected from the basin and properly disposed.

References

1. See Visual Aid for BMP type at: https://www.njstormwater.org/maintenance_guidance.htm
2. See Operations and Maintenance Plan Attachment C for Inspection Checklists
3. See Stormwater Report Attachment E for Soil Boring Logs and Permeability Tests

Princeton University Lake Campus South
West Windsor, NJ 08540

STORMWATER MANAGEMENT MAINTENANCE RECORD

(Attach additional forms, photos, receipts and reports as may be required)

Record for Period: _____

Check if Completed	Description of Maintenance Item	Date Complete	Completed by Initial/Signature
	Visual inspection of Drainage Structures and where possible subsurface piping		
	Visual inspection of Outfalls		
	Removal of Silt, Litter, and Debris from areas outlined above.		
	Repair or Replacement of Failing Components (if required)		
	Tilling of Infiltration Basin sand bottom		
	Aeration of the SW Meadow Basins planting soil / adding sand plugs.		

Notes for additional / follow-up work required:

_____

_____

_____

Bioretention System

Basin # CUB-P, R-1A-P, R-1B-P, R-2A-B, R-2B-P, R-3A-P, R-3B-C, R-4A-P, R-4B-P, R-5A-C, R-5B-P, R-6A-P, R-6B-P, R-7A-B, R-7B-P, R-8A-P, R-8B-P, R-9A-P, R-9B-P, R-10A-P, R-10B-P, R-11A-P, R-11B-P, R-12A-P, R-12B-P, R-13A-P, R-13B-P, R-14A-P, &R-15A-P

Development Name: Princeton University Lake Campus South

Township, County: West Windsor, Mercer County, NJ

Location of Basin: See Exhibit B – SWM Location

Bioretention System Overview

Functionality

Bioretention systems are used to remove a wide range of pollutants, such as suspended solids, nutrients, metals, hydrocarbons, and bacteria from stormwater runoff. They can also be used to reduce peak runoff rates and increase stormwater infiltration when designed as a multi-stage, multi-function facility.

A bioretention system can be configured as either a bioretention basin or a longer, narrower bioretention swale. In general, a bioretention basin has a flat bottom while a bioretention swale may have sloping bottom. Runoff storage depths above the soil bed surface are typically shallow. The TSS removal rate for bioretention systems is 80 or 90 percent, depending upon the thickness of the soil planting bed and the type of vegetation grown in the bed.

Proper care and attention in the long-term maintenance of the stormwater management measure is critically important to the safety and health of the public.

Type of BMP – Dry Basin / Infiltration

A bioretention system is a type of **dry** basin. Dry basins must fully drain within 72 hours of the most recent rainfall. Standing water in excess of 72 hours is a sign of basin failure. It may also contribute to mosquito breeding and other health and safety issues. The design drain time shall be closely monitored to ensure that potential failure is recognized early.

A bioretention system with infiltration can also be designed for extended detention, in which case it will attenuate peak flows from storms larger than the Water Quality Design Storm.

Basic Design Information

Hydrology Design Targets

1. The bioretention system is designed as an online system.
2. Table 1

Name	Drain Down Time	Seasonal High Groundwater Elevation	Subsoil permeability rates (inlhr)	Runoff Rates (WQ Storm) (CFS)	Outlet Invert	Emergency Spillway Elevation
R-15A-P	70.25	66.75	BFT#2 – 0.5	0.0	79.35	80
R-14A-P	70.27	66.75	>60	0.0	80.32	81
R-13B-P	1.46	72	>60	0.06	80.21	81
R-13A-P	1.46	71.25	5.2	0.02	83.09	84
R-12A-P	6.27	78	6.0	0.0	85.58	86
R-12B-P	70.33	78	6.0	0.04	82.79	83
R-11B-P	5.44	78	6.0	0.03	83.47	84
R-10B-P	5.44	81	6.0	0.03	85.31	86
R-10A-P	6.28	81	6.0	0.02	86.07	86.5
R-9B-P	6.28	81	6.6	0.01	87.03	87.5
R-8B-P	6.27	81	8.3	0.08	90.32	91
R-8A-P	6.27	81	8.3	0.08	90.4	91
R-7A-P	26.57	83	6.6	0.01	93.05	93.5
R-6B-P	13.23	87	8.3	0.16	92.33	93
R-6A-P	29.82	83	8.3	0.06	93	93.5
R-5B-P	29.02	83	6.6	0.02	95.57	96
R-5A-P	27.61	85	6.6	0.06	95.51	96
R-4B-P	6.91	85.25	4.2	0.09	92.24	94
R-4A-P	18.77	85.25	4.2	0.03	93.07	94
R-3B-P	6.79	87	18	0.07	95.2	95.8
R-3A-P	6.79	87	18	0.07	95.44	95.8
R-2B-P	2.66	88.5	6.5	0.06	96	96.5
R-2A-P	4.09	88.5	3.7	0.03	97.70	98
R-1A-P	3.89	90	>60	0.03	99.57	100
R-1B-P	2.86	88.5	>60	0.0	97.74	98
CUB-P	3.94	88.25	4.2	0.0	97.79	98

Basin Configuration Targets

1. Planting Soil Bed
   - The depth of the soil planting bed is 24".
   - Filter fabric along the sides of the system is required, while fabric beneath is prohibited.
2. Outlet Information
   - See Table 1

3. Vegetation

- A Landscaping Plan should be included in the Reference Documents section of this field manual.

Critical Maintenance Features

1. No heavy equipment on the basin surface.
2. Remove vegetation strictly in accordance with the landscaping plan.
3. Grass clippings shall be collected from the basin and properly disposed.
4. Keep the appearance of the basin aesthetic.

References

1. See Visual Aid for BMP type at: https://www.njstormwater.org/maintenance_guidance.htm
2. See Operations and Maintenance Plan Attachment C for Inspection Checklists
3. See Stormwater Report Attachment E for Soil Boring Logs and Permeability Tests

Princeton University Lake Campus South
West Windsor, NJ 08540

STORMWATER MANAGEMENT MAINTENANCE RECORD

(Attach additional forms, photos, receipts and reports as may be required)

Record for Period: _____

Check if Completed	Description of Maintenance Item	Date Complete	Completed by Initial/Signature
	Visual inspection of Drainage Structures and where possible subsurface piping		
	Visual inspection of Outfalls		
	Removal of Silt, Litter, and Debris from areas outlined above		
	Repair or Replacement of Failing Components (if required)		
	Tilling of Basin bottom		

Notes for additional / follow-up work required:

_____

_____

_____

Surface Infiltration – Extended Detention Basin
Basin # SWALE-P

Development Name: Princeton University Lake Campus South

Township, County: West Windsor, Mercer County, NJ

Location of Basin: See Exhibit B – SWM Location

Infiltration Basin – Extended Detention Overview

Functionality

An infiltration – extended detention basin is a stormwater management facility constructed of highly permeable soils that provides temporary storage of stormwater runoff from Water Quality Storm. It also functions to temporarily store and attenuate the stormwater runoff from large storms, such as 2, 10, and 100 year storms. The surface infiltration – detention basin has the infiltration function to remove pollutants and to infiltrate stormwater; in addition to groundwater recharge. Pollutants in runoff are treated through the processes of filtration through and biological and chemical activity within the soils. It also has the storage space to store the runoff volume from large storms. The total suspended solids (TSS) removal rate attributed to infiltration basins is 80%.

Proper care and attention in the long-term maintenance of the stormwater management measure is critically important to the safety and health of the public.

Type of BMP – Dry Basin / Infiltration and Extended Detention

An infiltration – extended detention basin is a type of **dry** basin. Dry basins must fully drain within 72 hours of the most recent rainfall. Standing water in excess of 72 hours is a sign of basin failure. It may also contribute to mosquito breeding and other health and safety issues. The design drain time shall be closely monitored to ensure that potential failure is recognized early.

Dry detention basins: RUNOFF FROM THE WATER QUALITY DESIGN STORM IS RETAINED SUCH THAT NOT MORE THAN 90 PERCENT WILL BE EVACUATED PRIOR TO 36 HOURS.

For the field manual for a surface infiltration basin without extended detention, please see: Surface Infiltration Basin Field Manual. For the field manual for an extended detention basin without infiltration, please see: Extended Detention Basin Field Manual.

Basic Design Information

Hydrology Design Targets

1. The basin is designed to achieve a TSS removal rate of 80%.
2. This basin will be discharged to site close drainage system.
3. This basins' subsoil permeability rates are:
    a. SWALE-P 4.2 IN/HR MIN.
4. The design drain time:
    a. SWALE-P 47.6 HOURS (72 HR MAX.)
5. The elevation of the seasonal high water table of this basin:
    a. SWALE-P 66.75 (TP-230)

Basin Configuration Targets

1. Pretreatment is provided by a series of bioretention and infiltration basins. A perforated riser not used.
2. Outlet Information:

Outlet Description	Outlet Type	Orifice Size / Weir Length	Invert Elevation
Outlet #1	Orifice	4″	71.3
Outlet #2	Grate	24″ x 24″	74.0
Outlet #3	Grate	24″ x 24″	74.5
Outlet #4	Broad-crested rectangular weir	38′	75.5

3. Vegetation
    - The top of basin bed is designed to have vegetation. See Landscape Plan for vegetation information.

Critical Maintenance Features

1. No heavy equipment on the basin surface or sand layer.
2. Trash racks and discharge outlet shall be cleaned frequently.
3. Grass clippings shall be collected from the basin and properly disposed.

References

1. See Visual Aid for BMP type at: https://www.njstormwater.org/maintenance_guidance.htm
2. See Operations and Maintenance Plan Attachment C for Inspection Checklists
3. See Stormwater Report Attachment E for Soil Boring Logs and Permeability Tests

Princeton University Lake Campus South
West Windsor, NJ 08540

STORMWATER MANAGEMENT MAINTENANCE RECORD

(Attach additional forms, photos, receipts and reports as may berequired)

Record for Period: _____

Check if Completed	Description of Maintenance Item	Date Complete	Completed by Initial/Signature
	Visual inspection of Drainage Structures and where possible subsurface piping		
	Visual inspection of Outfalls		
	Removal of Silt, Litter, and Debris from areas outlined above		
	Repair or Replacement of Failing Components (if required)		
	Tilling of Basin bottom		

Notes for additional / follow-up work required:

_____

_____

_____

Pervious Paving System
Measure # INNO-1B-P, BB-P1, BB-P3, BB-P4, BB-P5 on the Location Map

Development Name: Princeton University Lake Campus South

Township, County: West Windsor, Mercer County, NJ

Location of Basin: See Exhibit B – SWM Location

Pervious Pavement System Overview

Functionality

Pervious paving systems are paved areas that produce less stormwater runoff than areas paved with conventional paving. This reduction is achieved primarily through the infiltration of a greater portion of the rain falling on the area than would occur with conventional paving. This increased infiltration occurs either through the paving material itself or through void spaces between individual paving blocks known as pavers.

Pervious paving systems are divided into two general types. Each type depends primarily upon the nature of the pervious paving surface course and the presence or absence of a runoff storage bed beneath the surface course. Porous paving and permeable paver with storage bed systems treat the stormwater quality design storm runoff through storage and infiltration. Therefore, these systems have adopted TSS removal rates similar to infiltration structures. The adopted TSS removal rate for each type of pervious paving system is from 80%.

Pervious paving systems are used to reduce runoff rates and volumes from paved, on-grade surfaces such as patios, walkways, driveways, fire lanes, and parking spaces. Pervious paving systems with runoff storage beds achieve these reductions through storage of runoff and eventual infiltration into the subgrade soils. Through this infiltration process, these types of pervious paving systems also achieve stormwater quality requirements.

Proper care and attention in the long-term maintenance of the stormwater management measure is critically important to the safety and health of the public.

Type of BMP – Dry Stormwater Management Measure

The pervious pavement system shall fully drain within 72 hours of the most recent rainfall. Standing water in excess of 72 hours is a sign of the porous pavement failure. It may also contribute to mosquito breeding and other health and safety issues. At no time shall there be ponding on the surface of the pavement.

Basic Design Information

Hydrology Design Targets

1. The system is porous pavement with storage bed.
2. The design drain time is 4.73 hours.
3. The elevation of the seasonal high water table of this pavement area iselevation 78.8
4. The TSS removal rate is 80%.

Hydraulic Design Targets

1. Runoff rates from the Water Quality Design Storm and invert elevations for overflow outlets are:
    a. Runoff Rate (WQ Storm) (CFS): 0.33 CFS
    b. Overflow outlet invert: 86.0

System Configuration Targets

1. The system has no pretreatment.
2. The depth of uniformly graded coarse aggregate in the storage bed is 24 inches.

Critical Maintenance Features

1. Avoid sand or silt onto the porous pavement area.
2. Sweep and vacuum the porous pavement area often to prevent clog.
3. Do not apply sealant to cracks or entire surface.

References

1. See Visual Aid for BMP type at: https://www.njstormwater.org/maintenance_guidance.htm
2. See Operations and Maintenance Plan Attachment C for Inspection Checklists
3. See Stormwater Report Attachment E for Soil Boring Logs and Permeability Tests

Princeton University Lake Campus South
West Windsor, NJ 08540

STORMWATER MANAGEMENT MAINTENANCE RECORD

(Attach additional forms, photos, receipts and reports as may be required)

Record for Period: _____

Check if Completed	Description of Maintenance Item	Date Complete	Completed by Initial/Signature
	Visual inspection of Drainage Structures and where possible subsurface piping		
	Visual inspection of Outfalls		
	Removal of Silt, Litter, and Debris from areas outlined above		
	Repair or Replacement of Failing Components (if required)		
	Adding pavement at localized low spots or grading depressions within the porous pavement		
	Pressure wash and Vacuuming		

Notes for additional / follow-up work required:

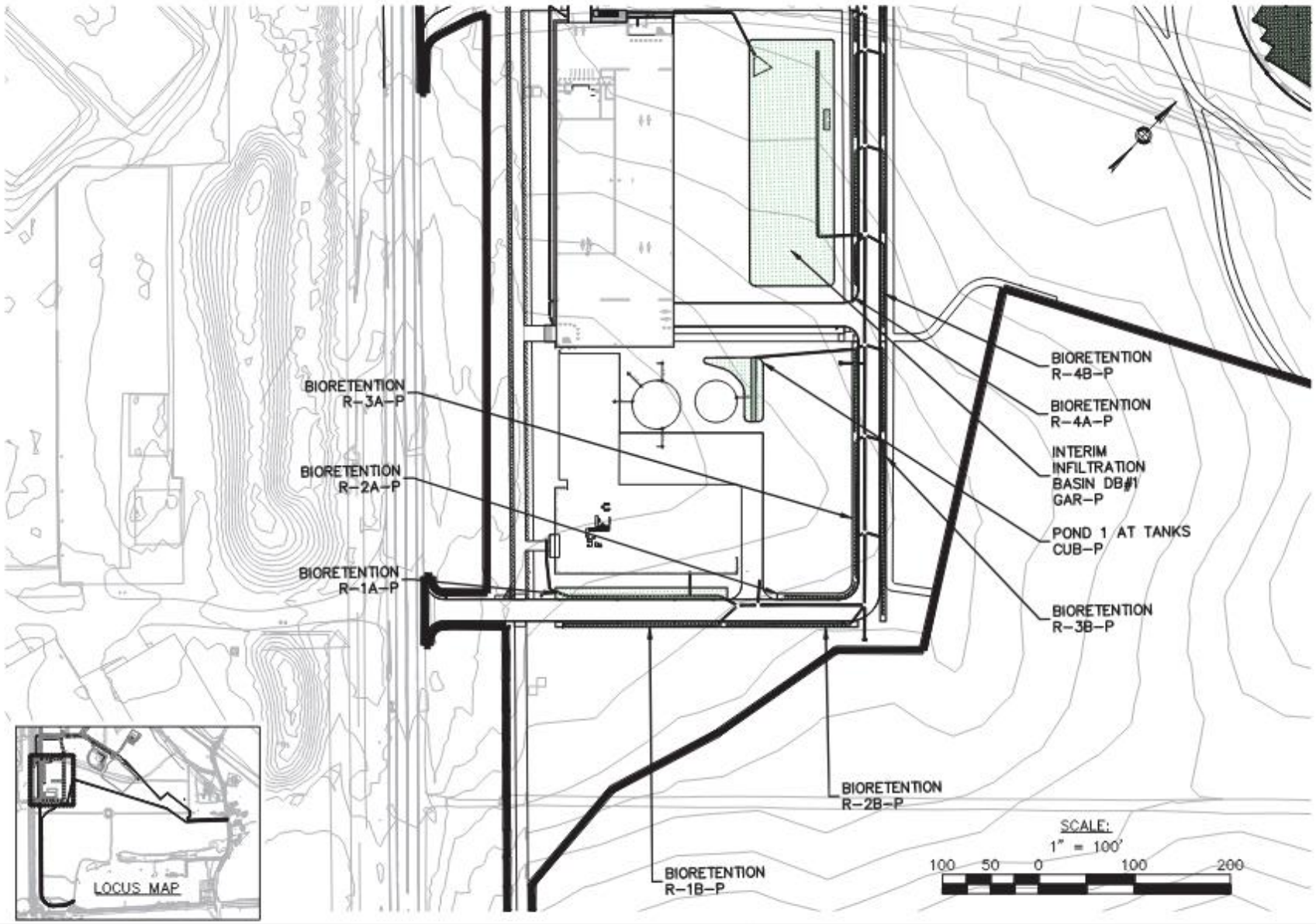
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ATTACHMENT B

Stormwater Management Locations



Nitsch Engineering
2 Center Plaza, Suite 430
Boston, MA 02108
T: (617) 338-0063
F: (617) 338-6472
Civil Engineering
Land Surveying
Transportation Engineering
Structural Engineering
Green Infrastructure
Planning
GIS

STORMWATER MANAGEMENT SYSTEMS LOCATION MAP

LAKE CAMPUS SOUTH
WEST WINDSOR, NJ

prepared for

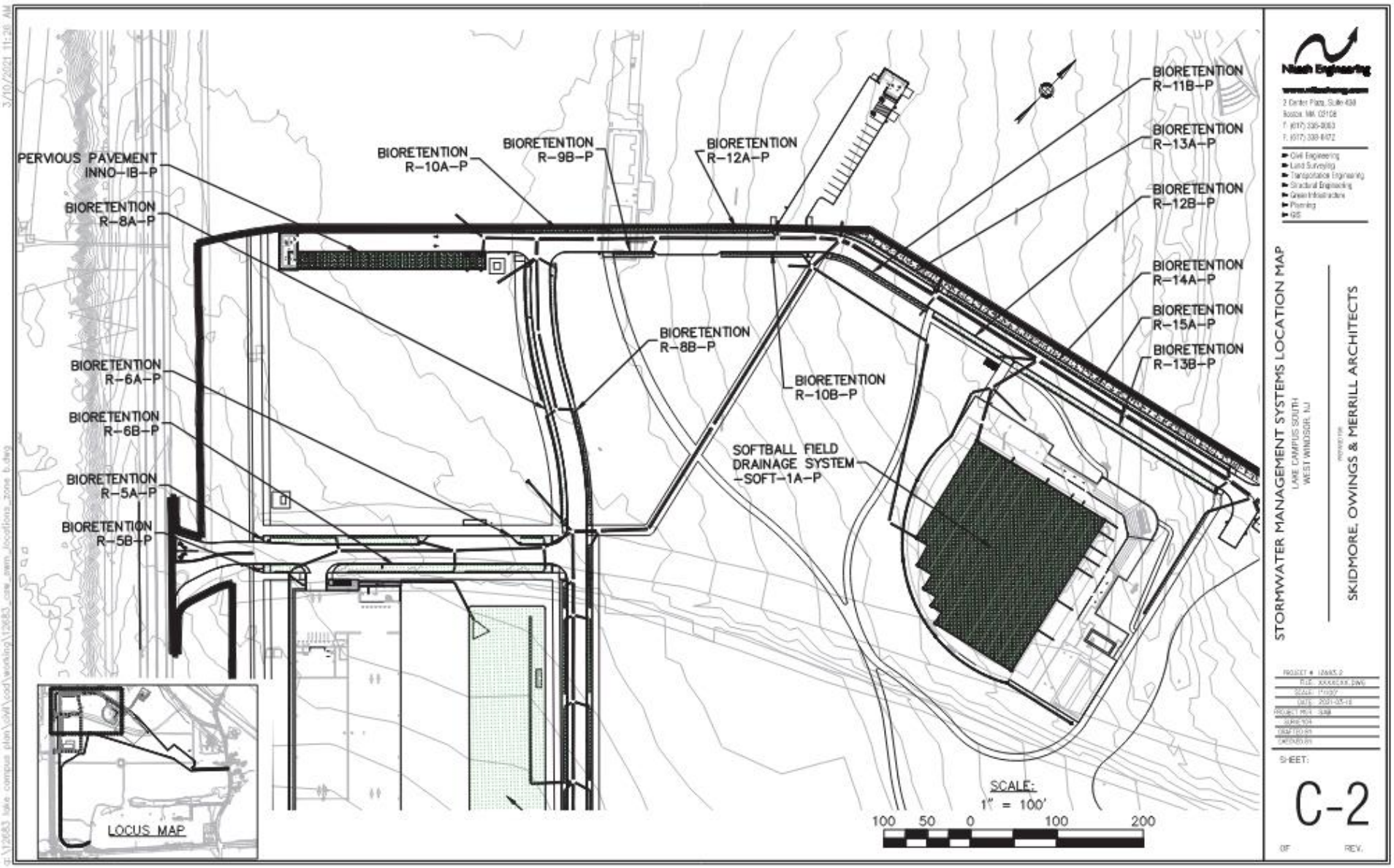
SKIDMORE, OWINGS & MERRILL ARCHITECTS

PROJECT #: 12683.2
FILE: XXXXC03.DWG
SCALE: 1"=100'
DATE: 2021-03-15
PROJECT MGR: SAR
SURVEYED
DRAFTED BY
CHECKED BY

SHEET:

C-1

OF REV.



Nitsch Engineering
2 Center Plaza, Suite 430
Boston, MA 02108
T: (617) 338-0063
F: (617) 338-6472
Civil Engineering
Land Surveying
Transportation Engineering
Structural Engineering
Green Infrastructure
Planning
GIS

STORMWATER MANAGEMENT SYSTEMS LOCATION MAP

LAKE CAMPUS SOUTH
WEST WINDSOR, NJ

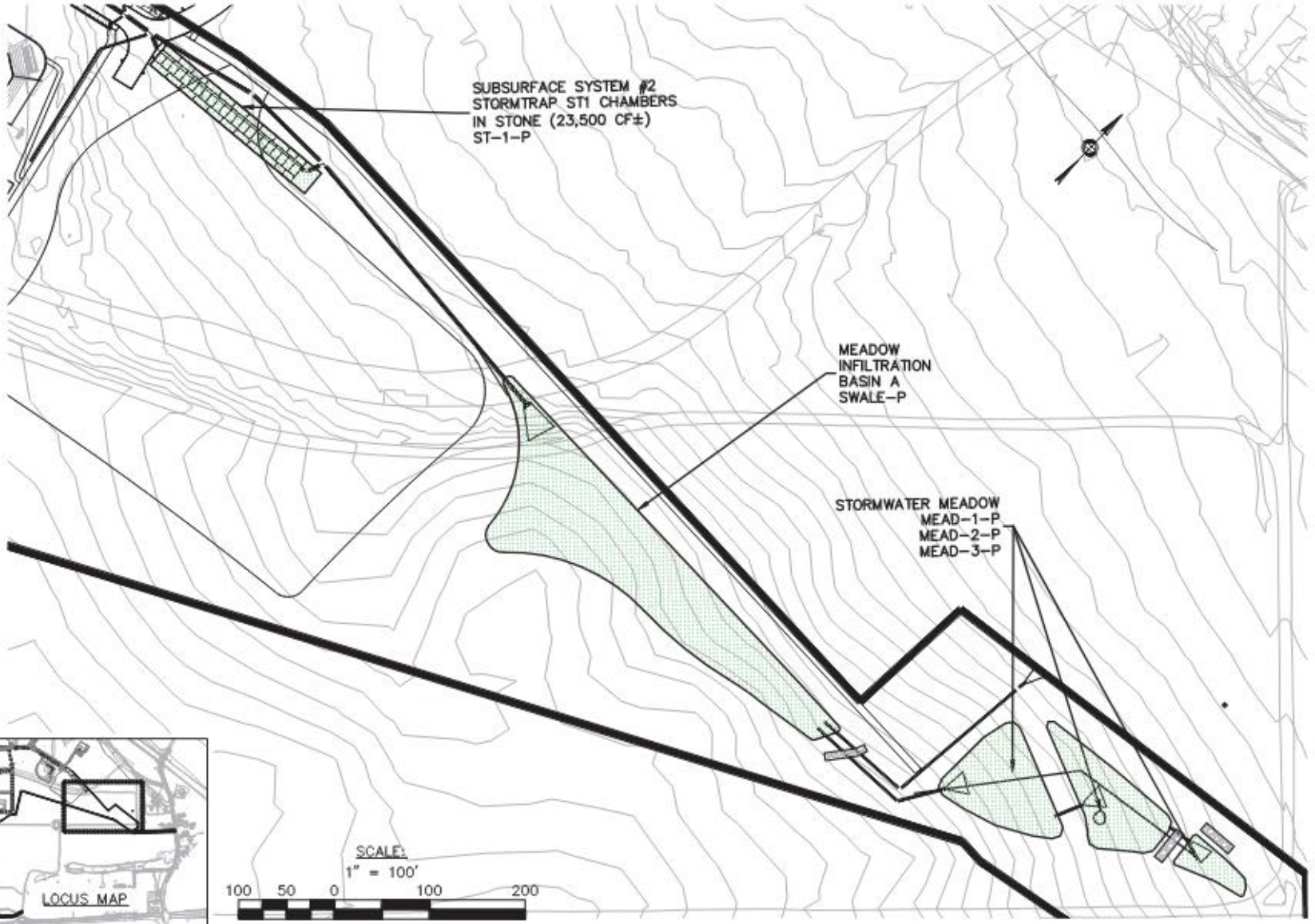
prepared for
SKIDMORE, OWINGS & MERRILL ARCHITECTS

PROJECT #: 12683.2
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SCALE: 1"=100'
DATE: 2021-03-12
PROJECT MGR: SJM
SURVEY:
DESIGN BY:
DRAWN BY:

SHEET:

C-2

OF REV.



Nitsch Engineering
www.nitsch.com
2 Center Plaza, Suite 430
Boston, MA 02108
T: (617) 338-0063
F: (617) 338-6472
Civil Engineering
Land Surveying
Transportation Engineering
Structural Engineering
Green Infrastructure
Planning
GIS

STORMWATER MANAGEMENT SYSTEMS LOCATION MAP

LAKE CAMPUS SOUTH
WEST WINDSOR, NJ

prepared for

SKIDMORE, OWINGS & MERRILL ARCHITECTS

PROJECT #: 12683.2
FILE: XXXXXXX.DWG
SCALE: 1"=100'
DATE: 2021-03-10
PROJECT MGR: SMH
SURVEYOR:
DRAFTED BY:
DESIGNED BY:

SHEET

C-3

OF REV.

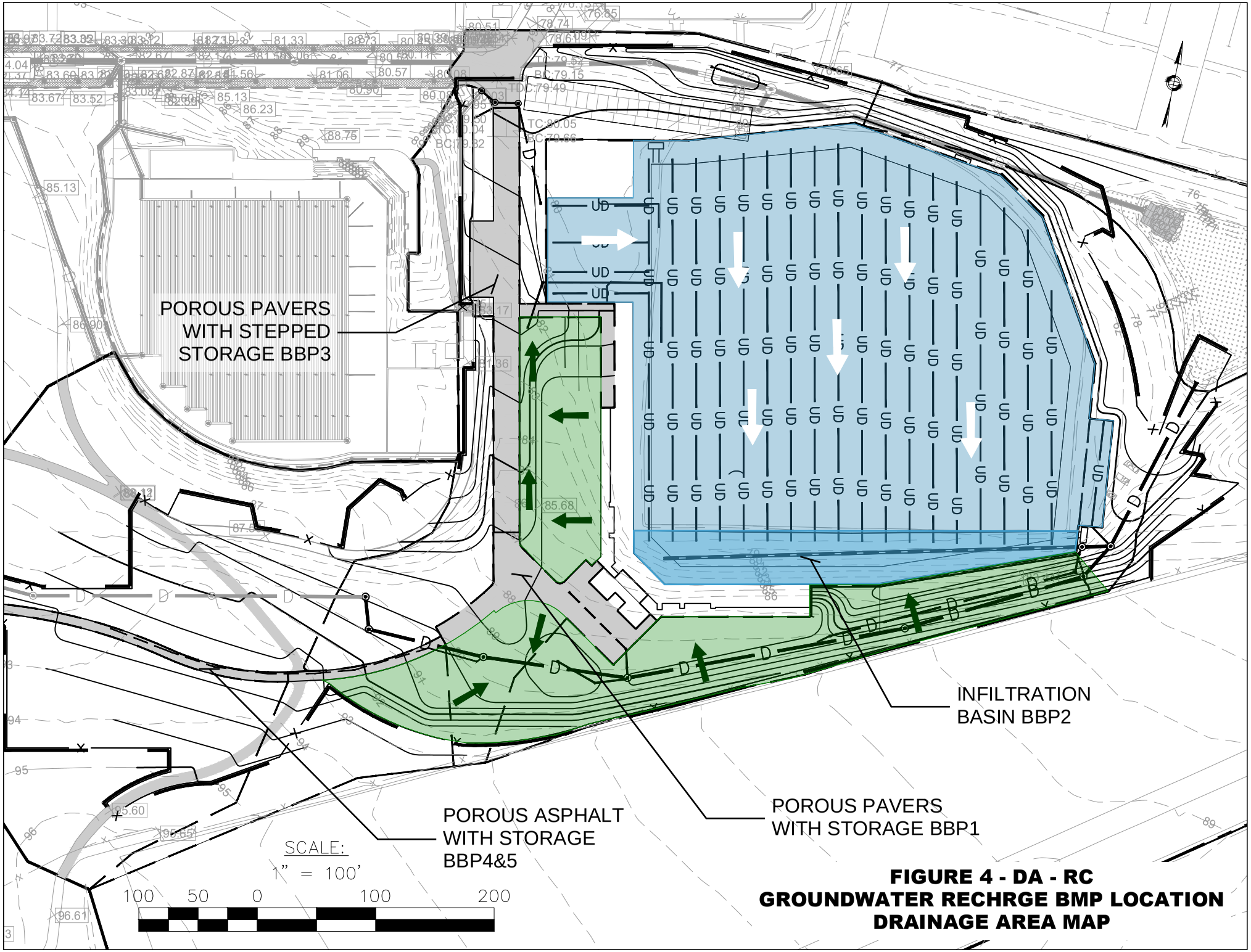


FIGURE 4 - DA - RC
GROUNDWATER RECHRGE BMP LOCATION
DRAINAGE AREA MAP

ATTACHMENT C

Stormwater Maintenance Plan Checklist

INSPECTION CHECKLIST (BIORETENTION AREAS)			
Location: **Date:** **Time:** **Date Since Last Rain Event:**			**Inspector:** **Site Conditions:**
Inspection Items	**Satisfactory (S) or Unsatisfactory (U)**		**CommentslCorrective Action**
Initial Inspection After Planting			
Plants are stable, roots not exposed	S	U	
Surface is at design level	S	U	
Overflow bypass/inlet is functional	S	U	
Debris Cleanup (Monthly)			
Litter, leaves, and dead vegetation removed from the system	S	U	
Prune perennial vegetation	S	U	
Standing Water (1 time a year, After large storm events)			
No evidence of standing water after 72 hours	S	U	
Short Circuiting & Erosion (1 time a year, After large storm events)			
No evidence of animal burrows or other holes	S	U	
No evidence of erosion	S	U	
Drought Conditions (As needed)			
Water plants as needed	S	U	
Dead or dying plants	S	U	
Overflow BypasslInlet Inspection (1 time a year, After large storm events)			
No evidence of blockage or accumulated leaves	S	U	
Good condition, no need for repair	S	U	
Vegetation Coverage (once a year)			
50% coverage established throughout system by first year	S	U	
Substantial coverage by year 2 or later	S	U	
Conduct Annual Structural Inspection			
Structural Inspection	S	U	
Corrective Action Needed			**Due Date**
1.			
2.			
3.			
4.			

INSPECTION CHECKLIST (WATER QUALITY UNITS)			
Location: **Date:** **Time:** **Date Since Last Rain Event:**			**Inspector:** **Site Conditions:**
Inspection Items	**Satisfactory (S) or Unsatisfactory (U)**		**CommentslCorrective Action**
Inspections (2 times a year minimum, Spring & Fall)			
Visual evidence of trash, debris or dumping	S	U	
Evidence of oil, gasoline, contaminants, or other pollutants	S	U	
Condition of structure. Is there a safety, function, or design problem (need for repair)	S	U	
Condition of frame and cover	S	U	
Sediment in the basin exceeds manufacturer recommended levels	S	U	
Trash or debris blocking inlet/outlet pipe	S	U	
Debris Cleanup (2 times a year minimum, Spring & Fall)			
Remove and legally dispose sediment, trash, and debris	S	U	
Remove and legally dispose contaminants or pollutants	S	U	
Repair structure (as necessary)	S	U	
Replace structure castings (as necessary)			
Conduct Annual Structural Inspection			
Structural Inspection	S	U	
Corrective Action Needed			**Due Date**
1.			
2.			
3.			
4.			

INSPECTION CHECKLIST (INLETSlCATCH BASINS AND AREA DRAINS)		
Location: **Date:** **Time:** **Date Since Last Rain Event:**		**Inspector:** **Site Conditions:**
Inspection Items	**Satisfactory (S) or Unsatisfactory (U)**	**CommentslCorrective Action**
Inspections (2 times a year minimum, Spring & Fall)		
Visual evidence of trash, debris or dumping	S U	
Dead animals or vegetation that could generate odors or gases and could cause complaints	S U	
Evidence of oil, gasoline, contaminants, or other pollutants	S U	
Condition of basin. Is there a safety, function, or design problem (need for repair)	S U	
Vegetation blocking more than 10% of the basin opening (lawn areas)	S U	
Trash and debris blocking more than 20% of grate surface inlet capacity	S U	
Missing grate, missing or broken grate members	S U	
Trash or debris in the basin exceeds 50% of the sump depth from the bottom of basin to invert of the outlet pipe; less than 6 inches clearance from the debris surface to the invert of the outlet pipe	S U	
Sediment in the basin exceeds 50% of the sump depth from the bottom of basin to invert of the outlet pipe; less than 6 inches clearance from the debris surface to the invert of the outlet pipe	S U	
Trash or debris blocking outlet pipe	S U	
Debris Cleanup (2 times a year minimum, Spring & Fall)		
Remove and legally dispose sediment, trash, and debris	S U	
Remove and legally dispose contaminants or pollutants	S U	
Repair area drain (as necessary)	S U	
Replace area drain castings (as necessary)		
Controlling Run-On (2-4 times a year)		
Adjacent vegetated areas show no signs of erosion and run-on to area drain	S U	
Conduct Annual Structural Inspection		
Structural Inspection	S U	
Corrective Action Needed		**Due Date**
1.		
2.		
3.		
4.		

INSPECTION CHECKLIST (SUBSURFACE STORMWATER MANAGEMENT SYSTEMS AND CRUSHED STONE)			
Location: **Date:** **Time:** **Date Since Last Rain Event:**			**Inspector:** **Site Conditions:**
Inspection Items	**Satisfactory (S) or Unsatisfactory (U)**		**CommentslCorrective Action**
Inspections (After major storm events during first 3 months of operation and 2 times a year thereafter, Spring & Fall)			
Visual evidence of trash, debris or dumping	S	U	
Examine the outlet structure for evidence of clogging or outflow release velocities that are greater than the design velocity	S	U	
Condition of system. Is there a safety, function, or design problem (need for repair)	S	U	
Identify areas of sediment accumulation within the basin	S	U	
Debris Cleanup (After major storm events during first 3 months of operation and 2 times a year thereafter, Spring & Fall)			
Remove and legally dispose sediment, trash, and debris	S	U	
Remove and legally dispose contaminants or pollutants	S	U	
Conduct Annual Structural Inspection			
Structural Inspection	S	U	
Corrective Action Needed			**Due Date**
1.			
2.			
3.			
4.			

INSPECTION CHECKLIST (POROUS PAVEMENT)			
Location: **Date:** **Time:** **Date Since Last Rain Event:**			**Inspector:** **Site Conditions:**
Inspection Items	**Satisfactory (S) or Unsatisfactory (U)**		**CommentslCorrective Action**
SaltlDeicing			
Use salt only for ice management	S	U	
Piles of accumulated salt removed in spring	S	U	
Debris Cleanup (2 times a year minimum, Spring & Fall)			
Clean porous pavement to remove sediment and organic debris on the pavement surface via vacuum street sweeper	S	U	
Adjacent non porous pavement vacuumed	S	U	
Clean catch basins (if applicable)	S	U	
Controlling Run-On (2-4 times a year)			
Adjacent vegetated areas show no signs of erosion and run-on to porous pavement	S	U	
Catch Basin Inspection (if applicable)(1 time a year, After large storm events)			
No evidence of blockage	S	U	
Good condition, no need for cleaning/repair	S	U	
Poorly Drained Pavement (2-4 times a year)			
Pavement has been pressure washed and vacuumed	S	U	
Pavement Condition (2-4 times a year, Spring & Fall)			
No evidence of deterioration	S	U	
No cuts from utilities visible	S	U	
No evidence of improper design load applied	S	U	
SignagelStockpiling (As Needed)			
Proper signage posted indicating usage for traffic load	S	U	
No stockpiling of materials and no seal coating	S	U	
Corrective Action Needed			**Due Date**
1.			
2.			
3.			
4.			

ATTACHMENT D

Manufactured Treatment Device Maintenance Guide

CONTECH®
ENGINEERED SOLUTIONS

Cascade Separator™ Inspection and Maintenance Guide



CASCADE
separator™

Maintenance

The Cascade Separator™ system should be inspected at regular intervals and maintained when necessary to ensure optimum performance. The rate at which the system collects sediment and debris will depend upon on-site activities and site pollutant characteristics. For example, unstable soils or heavy winter sanding wi¦ ¦ cause the sediment storage sump to fi¦ ¦ more quickly but regular sweeping of paved surfaces will slow accumulation.

Inspection

Inspection is the key to effective maintenance and is easi¦ y performed. Pollutant transport and deposition may vary from year to year and regular inspections will help ensure that the system is cleaned out at the appropriate time. At a minimum, inspections should be performed twice per year (i.e. spring and fall). However, more frequent inspections may be necessary in c¦imates where winter sanding operations may lead to rapid accumulations, or in equipment wash–down areas. Insta¦ ¦ations shou¦ d a¦so be inspected more frequent¦ y where excessive amounts of trash are expected.

A visual inspection should ascertain that the system components are in working order and that there are no b¦ockages or obstructions in the in¦et chamber, flumes or out¦et channe¦. The inspection shou¦ d a¦so quantify the accumu¦ation of hydrocarbons, trash and sediment in the system. Measuring pollutant accumu-¦ation can be done with a ca¦ibrated dipstick, tape measure or other measuring instrument. If absorbent material is used for enhanced removal of hydrocarbons, the level of discoloration of the sorbent materia¦ shou¦ d a¦so be identified during inspection. It is usefu¦ and often required as part of an operating permit to keep a record of each inspection. A simp¦e form for doing so is provided in this Inspection and Maintenance Guide.

Access to the Cascade Separator unit is typically achieved through one manhole access cover. The opening allows for inspection and cleanout of the center chamber (cylinder) and sediment storage sump, as well as inspection of the inlet chamber and slanted skirt. ror ¦arge units, mu¦tip¦e manho¦e covers a¦ ¦ow access to the chambers and sump.

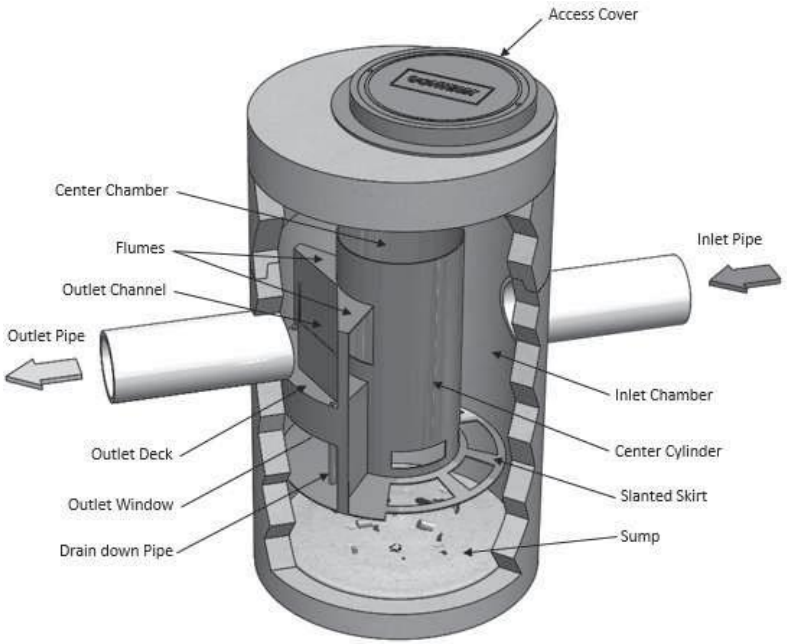
The Cascade Separator system should be cleaned before the level of sediment in the sump reaches the maximum sediment depth and/or when an appreciable level of hydrocarbons and trash has accumulated. If sorbent material is used, it must be replaced when significant discoloration has occurred. Performance may be impacted when maximum sediment storage capacity is exceeded. Contech recommends maintaining the system when sediment level reaches the 50% storage volume. The level of sediment is easily determined by measuring from finished grade down to the top of the sediment pile. To avoid underestimating the level of sediment in the chamber, the measuring device must be lowered to the top of the sediment pile carefully. Finer, silty particles at the top of the pile typically offer less resistance to the end of the rod than larger particles toward the bottom of the pile. Once this measurement is recorded, it should be compared to the as-built drawing for the unit to determine if the height of the sediment pi¦e off the bottom of the sump floor exceeds 50% of the tota¦ height of sediment storage sump.

Cleaning

Cleaning of a Cascade Separator system should be done during dry weather conditions when no flow is entering the system. The use of a vacuum truck is genera¦ ¦y the most effective and convenient method of removing pollutants from the system. Simply remove the manhole cover and insert the vacuum hose down through the center chamber and into the sump. The system should be completely drained down and the sump fully evacuated of sediment. The areas outside the center chamber and the slanted skirt should also be washed off if po¦ ¦utant bui¦d–up exists in these areas.

In insta¦ ¦ations where the risk of petro¦eum spi¦ ¦s is sma¦ ¦, ¦iquid contaminants may not accumu¦ate as quick¦y as sediment. However, the system should be cleaned out immediately in the event of an oil or gasoline spill. Motor oil and other hydrocarbons that accumulate on a more routine basis should be removed when an appreciable layer has been captured. To remove these pollutants, it may be preferable to use absorbent pads since they are usually less expensive to dispose than the oil/water emulsion that may be created by vacuuming the oily layer. Trash and debris can be netted out to separate it from the other pollutants. Then the system should be power washed to ensure it is free of trash and debris.

Manhole covers should be securely seated following cleaning activities to prevent ¦eakage of runoff into the system from above and to ensure proper safety precautions. Confined space entry procedures need to be fo¦ ¦owed if physica¦ access is required. Disposal of all material removed from the Cascade Separator system must be done is accordance with local regulations. In many locations, disposal of evacuated sediments may be handled in the same manner as disposal of sediments removed from catch basins or deep sump manho¦es. Check your ¦oca¦ regu¦ations for specific requirements on disposa¦. If any components are damaged, replacement parts can be ordered from the manufacturer.



Cascade Separator Inspection & Maintenance Log

Cascade Model:			Location:		
Date	Water Depth to Sediment[1]	Floatable Layer Thickness[2]	Describe Maintenance Performed	Maintenance Personnel	Comments

1. The depth to sediment is determined by taking a measurement from the manhole opening to the top of the sediment pile. Once this measurement is recorded, it should be compared to the as-built drawing for the unit to determine if the height of the sediment pile off the bottom of the sump floor exceeds 50% of the total height of sediment storage sump. Note: to avoid underestimating the volume of sediment in the chamber, the measuring device must be carefully lowered to the top of the sediment pile.
2. For optimum performance, the system should be cleaned out when the floating hydrocarbon layer accumulates to an appreciable thickness. In the event of an oil spill, the system should be cleaned immediately.



A Cascade Separator unit can be easily cleaned in less than 30 minutes.



A vacuum truck excavates po¦¦utants from the systems.

SUPPORT

- Drawings and specifications are available at www.ContechES.com.
- Site-specific design support is available from our engineers.

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www.ContechES.com

Attachment E – Required Documents

E.1 - Transfer Agreement

E.2 - Deed

E.3 - As-Built Drawings with Drainage Plans

E.4 - Landscaping Plan for the Stormwater Management Measures

E.5 - Soil Boring Logs

E.6 - Local, State, Federal Permits

E.7 - Safety Regulations and Requirements

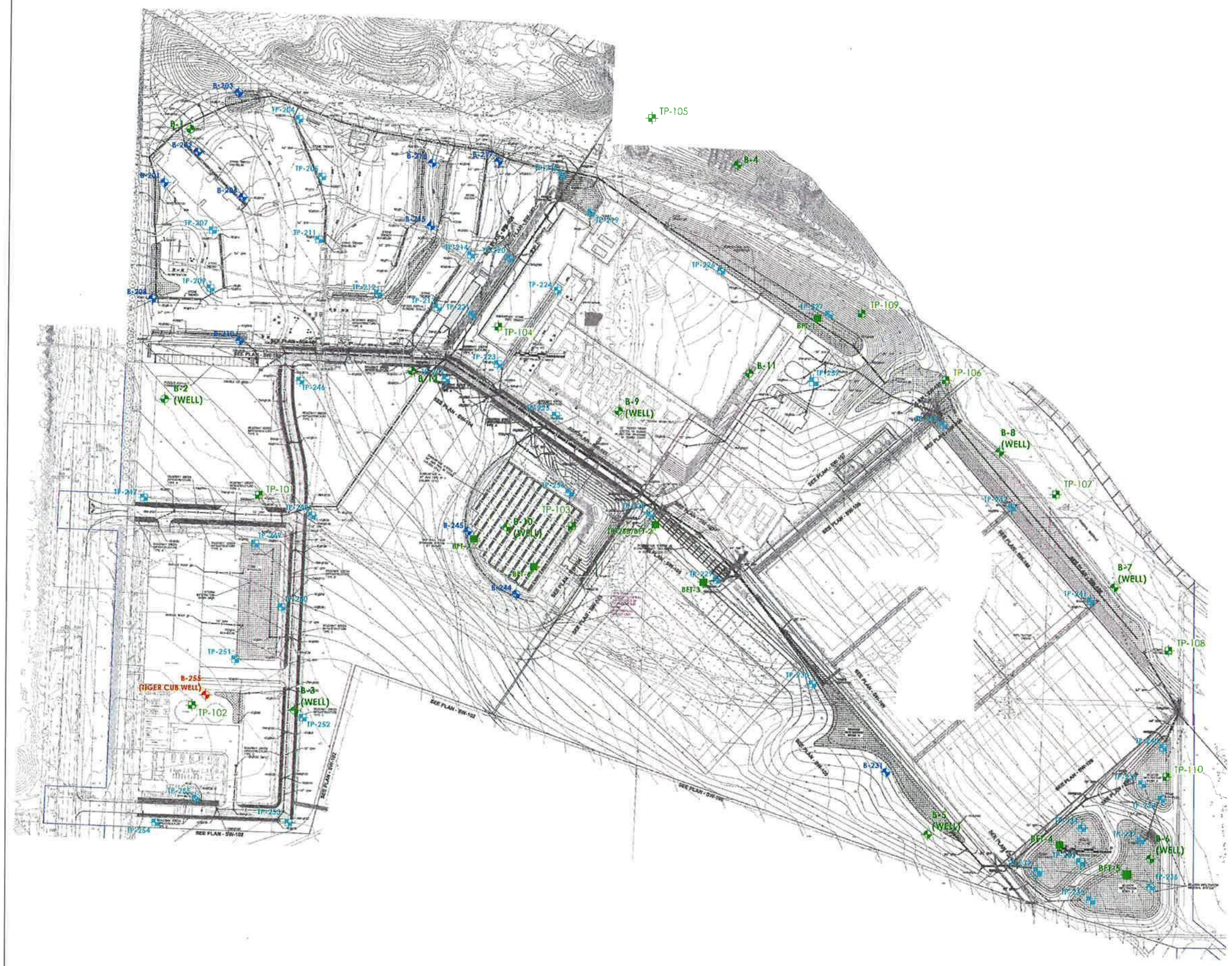
E.8 - Devices/Tools/Equipment Operation and Maintenance Manual and Warranties

GENERAL NOTES:

1. LOCATIONS ARE APPROXIMATE.

LEGEND:

- CSA STORMWATER PHASE II BORING LOCATION
- CSA STORMWATER PHASE II WELL LOCATION
- CSA STORMWATER PHASE II TEST PIT LOCATION
- CSA STORMWATER PHASE II BASIN FLOOD TEST
- CSA STORMWATER PHASE I TEST PIT LOCATION
- CSA STORMWATER PHASE I BORING LOCATION



ROBERT B. SIMPSON, P.E.
PROFESSIONAL ENGINEER

LICENSE NO. | SIGNATURE | DATE

STORMWATER INVESTEGATION BORING AND TEST PIT LOCATION PLAN

LAKE CAMPUS
PRINCETON UNIVERSITY
PRINCETON, NEW JERSEY

DRAWN: SR	SCALE: 1" = 100'	CARLIN-SIMPSON AND ASSOCIATES 61 Main Street Sayreville, NJ 08872 Consulting Geotechnical and Environmental Engineers
CHECKED: RBS	DATE: 14-OCT-20	
PROJECT NO: 19-211	DWG NO: FIG - 1	
APPROVED:		

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-1
Project: Proposed Lake Campus, Princeton University, Princeton NJ		**SHEET NO.:** 1 of 1
Client: Princeton University		**JOB NUMBER:** 19-211
Drilling Contractor: Environmental Technical Drilling		**ELEVATION:** +91.0

GROUNDWATER					CASING	SAMPLE	CORE	TUBE	DATUM:	
DATE	TIME	DEPTH	CASING	TYPE	HSA	SS			START DATE:	20/Feb/20
No Groundwater Encountered				DIA.	3 1/4"	1 3/8"			FINISH DATE:	20/Feb/20
				WGHT		140#			DRILLER:	Scott
				FALL		30"			INSPECTOR:	KWA

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
			1		**Brown topsoil** 0'6"	
1		S-1	1		FILL (Br Cy $ s, cf S)	Rec = 13"
			1			moist
2			2		**FILL (Brown Clayey SILT some,**	
			2		**coarse to fine Sand)**	
3		S-2	3		FILL (same, yw br)	Rec = 20"
			2			moist
4			4		4'0"	
			3			
5		S-3	4		Yw br, br, or br cf S, l (+) $	Rec = 14"
			6		**Yellow brown, brown, orange brown**	moist
6			9		**coarse to fine SAND, little (+) Silt**	
			17		6'3"	
7		S-4	24		Rd br Shale, completely weathered	Rec = 11"
			19			moist
8			19			
					Red brown Shale, completely weathered	
9						
			6			
10		S-5	28		Yw br Sandstone, weathered	Rec = 13"
			42			moist
11			20/1"		11'0"	Refusal on auger @ 11'0"
					End of Boring @ 11'0"	
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-201
Project: Proposed Stomrwater Phase II, Lake Campus, Princeton University		**SHEET NO.:** 1 of 1
Client: Princeton University		**JOB NUMBER:** 19-211
Drilling Contractor: Environmental Technical Drilling		**ELEVATION:** +91.0

GROUNDWATER					CASING	SAMPLE	CORE	TUBE	**DATUM:** Topo
DATE	TIME	DEPTH	CASING	TYPE	HSA	SS			**START DATE:** 23/Sep/20
No Groundwater Encountered				DIA.	2 1/4"	1 3/8"			**FINISH DATE:** 23/Sep/20
				WGHT		140#			**DRILLER:** V Cipoletti
				FALL		30"			**INSPECTOR:** KWA

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
			1		**Brown topsoil** 0'6"	
1		S-1	5		Br cf S, l $	Rec = 20"
			5			moist
2			4			
			2			
3		S-2	5		same	Rec = 18"
			5			moist
4			9			
5					**Brown coarse to fine SAND, little Silt**	
			11			
6		S-3	7		same	Rec = 23"
			9			moist
7			18		7'0"	
			19			
8		S-4	31		Br Sandstone highly to completely weathered	Rec = 10"
			30			moist
9			61		**Brown Sandstone highly to completely weathered**	
10						
		S-5	50/4"		same	
11					11'0"	Refusal on auger @ 11'0"
					End of Boring @ 11'0"	Pushed tube 4'-5'6"
12						Rec = 17"
						Did not attempt @ 9'
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-202
Project: Proposed Stomrwater Phase II, Lake Campus, Princeton University		**SHEET NO.:** 1 of 1
Client: Princeton University		**JOB NUMBER:** 19-211
Drilling Contractor: Environmental Technical Drilling		**ELEVATION:** +92.0

GROUNDWATER					CASING	SAMPLE	CORE	TUBE	**DATUM:** Topo
DATE	TIME	DEPTH	CASING	TYPE	HSA	SS			**START DATE:** 23/Sep/20
No Groundwater Encountered				DIA.	2 1/4"	1 3/8"			**FINISH DATE:** 23/Sep/20
				WGHT		140#			**DRILLER:** V Cipoletti
				FALL		30"			**INSPECTOR:** KWA

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
			1		**Brown topsoil** 0'4"	
1		**S-1**	3		Br cf S, l (+) $, w/topsoil	Rec = 17"
			4		**Brown coarse to fine SAND, little (+) Silt,**	moist
2			7		**with topsoil** 2'0"	
			5			
3		**S-2**	20		Br cf S, l $, l (+) cf G	Rec = 17"
			34			moist
4			30		**Brown coarse to fine SAND, little Silt,**	
					little (+) coarse to fine Gravel	
5						
			10			
6		**S-3**	20		same, sandstone; weathered fractured	Rec = 12"
			36			moist
7			20/1"		7'1"	Refusal on auger/spoon 7'1"
			50/1"		**End of Boring @ 7'1"**	No tube attempted
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-203
Project: Proposed Stomrwater Phase II, Lake Campus, Princeton University		**SHEET NO.:** 1 of 1
Client: Princeton University		**JOB NUMBER:** 19-211
Drilling Contractor: Environmental Technical Drilling		**ELEVATION:** +91.0

GROUNDWATER									
DATE	TIME	DEPTH	CASING	TYPE	CASING HSA	SAMPLE SS	CORE	TUBE	**DATUM:**
No Groundwater Encountered				DIA.	2 1/4"	1 3/8"			**START DATE:** 23/Sep/20
				WGHT		140#			**FINISH DATE:** 23/Sep/20
				FALL		30"			**DRILLER:** V Cipoletti
									INSPECTOR: KWA

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
1			2 4		**Brown topsoil** 0'10"	
2		S-1	10 12		**FILL (Brown coarse to fine SAND, little Silt, little medium to fine Gravel)** 2'0"	Rec = 18" moist
3		S-2	10 8		Br cf S, l (-) $, t (-) f G	Rec = 17" moist
4			8 9			
5					**Brown coarse to fine SAND, little (-) Silt, trace (-) fine Gravel**	
6		S-3	25 20/0"		same, w/rk fgs spoon bouncing	Rec = 2" moist Refusal on spoon augered to 8'
7						
8					8'0"	
9		S-4	35 35		Br Sandstone highly to completely weathered	
10			29 50		**Brown Sandstone highly to completely weathered**	Auger/spoon refusal 10'6" Pushed tube 3'-5'
11			50/0"		10'0" **End of Boring @ 10'0"**	Rec = 15" No tube attempt @ 11'0"
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-206
Project: Proposed Stomrwater Phase II, Lake Campus, Princeton University		**SHEET NO.:** 1 of 1
Client: Princeton University		**JOB NUMBER:** 19-211
Drilling Contractor: Environmental Technical Drilling		**ELEVATION:** +92.5

GROUNDWATER					CASING	SAMPLE	CORE	TUBE	**DATUM:** Topo
DATE	TIME	DEPTH	CASING	TYPE	HSA	SS			**START DATE:** 23/Sep/20
No Groundwater Encountered				DIA.	2 1/4"	1 3/8"			**FINISH DATE:** 23/Sep/20
				WGHT		140#			**DRILLER:** V Cipoletti
				FALL		30"			**INSPECTOR:** KWA

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
			1		**Brown topsoil** 0'6"	
1		S-1	2		Br cf S, l (+) $	Rec = 18"
			2		**Brown coarse to fine SAND, little (+) Silt**	moist
2			4			
			5		same 2'3"	
3		S-2	6		Yw br cf S, t (+) $	Rec = 18"
			9			moist
4			9			
5						
			7			
6		S-3	6		same	Rec = 17"
			5			moist
7			9		**Yellow brown coarse to fine SAND, trace (+) Silt**	
			6			
8		S-4	5		same, l $	Rec = 16"
			5			moist
9			4			
10						
			15			
11		S-5	18		same	Rec = 22"
			18			moist
12			30			
13						
14						
15						
		S-6	50/4"		same 15'6"	Rec = 3"
16					**End of Boring @ 15'6"**	moist
17						Refusal on auger @ 15'6"
18						Pushed tube 6'-8'
19						Rec = 20"
20						
21						
22						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-208
Project: Proposed Stomrwater Phase II, Lake Campus, Princeton University		**SHEET NO.:** 1 of 1
Client: Princeton University		**JOB NUMBER:** 19-211
Drilling Contractor: Environmental Technical Drilling		**ELEVATION:** +92.0

GROUNDWATER									
DATE	TIME	DEPTH	CASING	TYPE	CASING HSA	SAMPLE SS	CORE	TUBE	**DATUM:** Topo
No Groundwater Encountered				DIA.	2 1/4"	1 3/8"			**START DATE:** 23/Sep/20
				WGHT		140#			**FINISH DATE:** 23/Sep/20
				FALL		30"			**DRILLER:** V Cipoletti
									INSPECTOR: KWA

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
			1		**Brown topsoil** 0'7"	
1		**S-1**	3		Br cf S, l (+) $	Rec = 19"
			6			moist
2			6			
			4			
3		**S-2**	4		same	Rec = 18"
			5		**Brown coarse to fine SAND, little (+) Silt**	moist
4			8			
5						
			15			
6		**S-3**	7		same 6'0"	Rec = 17"
			6		**Gray, orange brown SILT and, coarse to**	moist
7			8		**fine Sand**	
			5		7'6"	
8		**S-4**	11		**Red brown SILT some, coarse to fine Sand,**	Rec = 16"
			12		**trace medium to fine Gravel** 8'6"	moist
9			16		Gr, or br $ a, cf S	
					Gray, orange brown SILT and, coarse to	
10					**fine Sand** 10'0"	
			9			
11		**S-5**	14		Yw br cf S, l $	Rec = 14"
			34		**Yellow brown coarse to fine SAND,**	moist
12			20/1"		**little Silt**	
					12'6"	Refusal on auger/spoon 12'6"
13			50/0"		**End of Boring @ 12'6"**	Pushed tube 8'-10'
						Rec = 24"
14						
15						
16						
17						
18						
19						
20						
21						
22						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-210
Project: Proposed Stomrwater Phase II, Lake Campus, Princeton University		**SHEET NO.:** 1 of 1
Client: Princeton University		**JOB NUMBER:** 19-211
Drilling Contractor: Environmental Technical Drilling		**ELEVATION:** +91.3

GROUNDWATER									
DATE	TIME	DEPTH	CASING	TYPE	CASING HSA	SAMPLE SS	CORE	TUBE	DATUM: Topo
No Groundwater Encountered				DIA.	2 1/4"	1 3/8"			START DATE: 23/Sep/20
				WGHT		140#			FINISH DATE: 23/Sep/20
				FALL		30"			DRILLER: V Cipoletti
									INSPECTOR: KWA

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
			1		**Brown topsoil** 0'7"	
1		S-1	4		Br cf S, l $	Rec = 15"
			6			moist
2			7			
			4			
3		S-2	4		same, s $	Rec = 16"
			4		**Brown coarse to fine SAND, little (+) Silt**	moist
4			4			
5						
			5			
6		S-3	6		same 6'0"	Rec = 20"
			7		Rd br cf S, s (-) $	moist
7			6			
			7			
8		S-4	10		same	Rec = 18"
			11		**Red brown coarse to fine SAND,**	moist
9			14		**some (-) Silt**	
10						
			10		same 10'6"	
11		S-5	27		Lt gr cf S, l $	Rec = 12"
			50/3"			moist
12					**Light gray coarse to fine SAND, little Silt**	
					12'6"	Refusal on auger/spoon 12'6"
13			50/0"		**End of Boring @ 12'6"**	Pushed tube 6'-8'
						Rec = 24"
14						
15						
16						
17						
18						
19						
20						
21						
22						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-215

Project:	**Proposed Stomrwater Phase II, Lake Campus, Princeton University**	**SHEET NO.:**	1 of 1
Client:	**Princeton University**	**JOB NUMBER:**	19-211
Drilling Contractor:	**Environmental Technical Drilling**	**ELEVATION:**	+87.0
GROUNDWATER		**DATUM:**	Topo
DATE / **TIME** / **DEPTH** / **CASING**	**No Groundwater Encountered**	**START DATE:**	24/Sep/20
		FINISH DATE:	24/Sep/20
		DRILLER:	V Cipoletti
		INSPECTOR:	KWA

	CASING	SAMPLE	CORE	TUBE
TYPE	HSA	SS		
DIA.	2 1/4"	1 3/8"		
WGHT		140#		
FALL		30"		

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
1			3		**Brown topsoil** 0'10"	
			3			
2		**S-1**	3		Br cf S, l $	Rec = 20"
			2			moist
3			2			
		S-2	4		same	Rec = 15"
4			4			moist
			7			
5					**Brown coarse to fine SAND, little Silt**	
6			3			
		S-3	4		same	Rec = 20"
7			8			moist
			36		7'0"	
8			30		Lt br Sandstone, highly to completely weathered	
		S-4	31			Rec = 12"
9			50/3"			moist
					Light brown Sandstone highly to completely weathered	
10						
11			50/4"		10'9"	Refusal on auger @ 10'9"
12					**End of Boring @ 10'9"**	Pushed tube 4'-6'
13						Rec = 24"
14						No tube attempted @ 7.5'
15						
16						
17						
18						
19						
20						
21						
22						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-216
Project: Proposed Stomrwater Phase II, Lake Campus, Princeton University		**SHEET NO.:** 1 of 1
Client: Princeton University		**JOB NUMBER:** 19-211
Drilling Contractor: Environmental Technical Drilling		**ELEVATION:** +87.5

GROUNDWATER									
DATE	TIME	DEPTH	CASING		CASING	SAMPLE	CORE	TUBE	**DATUM:** Topo
No Groundwater Encountered				TYPE	HSA	SS			**START DATE:** 24/Sep/20
				DIA.	2 1/4"	1 3/8"			**FINISH DATE:** 24/Sep/20
				WGHT		140#			**DRILLER:** V Cipoletti
				FALL		30"			**INSPECTOR:** KWA

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
			1		**Brown topsoil** 0'5"	
1		S-1	2		Br cf S, s $	Rec = 18"
			4		**Brown coarse to fine SAND, some Silt**	moist
2			5		Rd br $ s, cf S 1'6"	
			3			
3		S-2	5		same, t mf G	Rec = 22"
			6		**Red brown SILT some, coarse to fine Sand**	moist
4			9			
5						
			4			
6		S-3	5		same 6'0"	Rec = 20"
			9		Lt br cf S, l (-) $	moist
7			8		**Light brown coarse to fine SAND, little (-) Silt**	
			6			
8		S-4	13		same, l (-) $ 8'0"	
			50/4"		Lt br, Sandstone, completely weathered	
9					**Light brown Sandstone highly to completely weathered**	
10						
		S-5	33		same	
11			20/0"		11'0"	Refusal on auger/spoon 11'0"
					End of Boring @ 11'0"	Pushed tube 5'-7'
12						Rec = 24"
						No tube attempt @ 8'
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-217
Project: Proposed Stomrwater Phase II, Lake Campus, Princeton University		**SHEET NO.:** 1 of 1
Client: Princeton University		**JOB NUMBER:** 19-211
Drilling Contractor: Environmental Technical Drilling		**ELEVATION:** +84.0

GROUNDWATER					CASING	SAMPLE	CORE	TUBE	**DATUM:** Topo
DATE	TIME	DEPTH	CASING	TYPE	HSA	SS			**START DATE:** 24/Sep/20
No Groundwater Encountered				DIA.	2 1/4"	1 3/8"			**FINISH DATE:** 24/Sep/20
				WGHT		140#			**DRILLER:** V Cipoletti
				FALL		30"			**INSPECTOR:** KWA

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
			2		**Brown topsoil** 0'6"	
1		S-1	4		Br cf S, s (-) $	Rec = 16"
			4			moist
2			3			
			2			
3		S-2	2		same, l $	Rec = 17"
			4			moist
4			4			
5					**Brown coarse to fine SAND, some (-) Silt**	
			2			
6		S-3	5		Rd br cf S, l (+) $	Rec = 20"
			6			moist
7			6			
			4			
8		S-4	5		same	Rec = 20"
			6			moist
9			9			
10						
			50/2"		Rd br same, weathered rock	
11						
12					11'9"	Refusal on auger/spoon 11'9"
					End of Boring @ 11'9"	Pushed tube 6'-8'
13						Rec = 24"
						No tube attempt @ 10'
14						
15						
16						
17						
18						
19						
20						
21						
22						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-231

Project:	**Proposed Stomrwater Phase II, Lake Campus, Princeton University**	**SHEET NO.:**	1 of 1
Client:	**Princeton University**	**JOB NUMBER:**	19-211
Drilling Contractor:	**Environmental Technical Drilling**	**ELEVATION:**	+80.0
GROUNDWATER		**DATUM:**	Topo
START DATE:	25/Sep/20		
FINISH DATE:	25/Sep/20		
DRILLER:	Vinnie		
INSPECTOR:	MW		

DATE	TIME	DEPTH	CASING
No Groundwater encountered			

	CASING	SAMPLE	CORE	TUBE
TYPE	HSA	SS		
DIA.	2 1/4"	1 3/8"		
WGHT		140#		
FALL		30"		

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
1			2 3			
			3		**Topsoil** 1'3"	
2		**S-1**	4		**Brown, gray coarse to fine SAND, some Silt, trace (-) medium to fine Gravel** 2'6"	Rec = 20" moist
			5			
3		**S-2**	14		Br, gr cf S, l $, t (+) mf G	Rec = 18" moist
			24			
4			19			
					Brown, gray coarse to fine SAND, little Silt, trace (+) medium to fine Gravel	
5						
		UD-1	7			
6		**S-3**	5		same, lt gr, br, t (+) $	Rec = 18" moist
			6			
7			9		7'0"	
			37		**Light gray, brown Sandstone highly to completely weathered**	
8		**S-4**	50/3"		8'6"	Rec = 6" moist
9		**S-5**	50/1"		**End of Boring @ 8'6"**	Auger refusal @ 8'6" UD-1 5'-6' Rec = 12" No tube attempted @ 9'0"
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-244
Project: Proposed Stomrwater Phase II, Lake Campus, Princeton University		**SHEET NO.:** 1 of 1
Client: Princeton University		**JOB NUMBER:** 19-211
Drilling Contractor: Environmental Technical Drilling		**ELEVATION:** +85.0

GROUNDWATER									
DATE	TIME	DEPTH	CASING	TYPE	CASING HSA	SAMPLE SS	CORE	TUBE	**DATUM:** Topo
No Groundwater Encountered				DIA.	2 1/4"	1 3/8"			**START DATE:** 24/Sep/20
				WGHT		140#			**FINISH DATE:** 24/Sep/20
				FALL		30"			**DRILLER:** V Cipoletti
									INSPECTOR: KWA

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
			17		**Item 4** 0'6"	
1		**S-1**	13		Br cf S, l $	Rec = 17"
			10			moist
2			8		**Brown coarse to fine SAND, little Silt**	
			5			
3		**S-2**	5		same 3'0"	Rec = 15"
			4		Rd br cf S, s $	moist
4			9		**Red brown coarse to fine SAND, some Silt**	
5					5'0"	
			30			
6		**S-3**	22		shale; completely weathered	Rec = 15"
			20			moist
7			14		**Red brown Shale, highly to completely weathered**	
			12			
8		**S-4**	50/4"		same	
9						
10						
			7		same	
11		**S-5**	12		11'0"	Refusal on auger/spoon 11'0"
			50/0"		**End of Boring @ 11'0"**	Unable to advance tube @10'
12						
						No tube attempted
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-245
Project: Proposed Stomrwater Phase II, Lake Campus, Princeton University		**SHEET NO.:** 1 of 1
Client: Princeton University		**JOB NUMBER:** 19-211
Drilling Contractor: Environmental Technical Drilling		**ELEVATION:** +85.0

GROUNDWATER					CASING	SAMPLE	CORE	TUBE	**DATUM:** Topo
DATE	TIME	DEPTH	CASING	TYPE	HSA	SS			**START DATE:** 24/Sep/20
No Groundwater Encountered				DIA.	2 1/4"	1 3/8"			**FINISH DATE:** 24/Sep/20
				WGHT		140#			**DRILLER:** V Cipoletti
				FALL		30"			**INSPECTOR:** KWA

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
1			1			
			1			
			3		**Brown topsoil** 1'2"	
2		S-1	6		Br cf S, l (-) $	Rec = 20"
			3			moist
3		S-2	4		same	Rec = 18"
			4		**Brown coarse to fine SAND, little (-) Silt**	moist
4			5			
5						
			7			
6		S-3	7		same, gr 6'0"	Rec = 12"
			6		Rd br $ s, cf S, t mf G	moist
7			7			
			14			
8		S-4	18		same, weathered shale	Rec = 16"
			17			moist
9			18			
10						
			10		**Red brown SILT some, coarse to fine Sand,**	
11		S-5	16		same **trace medium to fine Gravel**	
			22			
12			34			
13						
14						
15					15'0"	Refusal on auger/spoon 15'0"
			50/0"		**End of Boring @ 15'0"**	Pushed tube 5'-6'
16						Rec = 12"
						Unable to advance tube @ 9"
17						
18						
19						
20						
21						
22						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-255

Project:	**Proposed Stomrwater Phase II, Lake Campus, Princeton University**	**SHEET NO.:**	1 of 1
Client:	**Princeton University**	**JOB NUMBER:**	19-211
Drilling Contractor:	**Environmental Technical Drilling**	**ELEVATION:**	+99.5
GROUNDWATER		**DATUM:**	Topo
DATE / **TIME** / **DEPTH** / **CASING**	**No Groundwater Encountered**	**START DATE:**	24/Sep/20
		FINISH DATE:	24/Sep/20
		DRILLER:	V Cipoletti
		INSPECTOR:	KWA

	CASING	SAMPLE	CORE	TUBE
TYPE	HSA	SS		
DIA.	2 1/4"	1 3/8"		
WGHT		140#		
FALL		30"		

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
1			3 3		**Brown topsoil** 1'0"	
2		**S-1**	3 4		Br cf S, l (+) $	Rec = 18" moist
3		**S-2**	2 3		same	Rec = 15" moist
4			5 6			
5						
6		**S-3**	5 5		same, yw br	Rec = 20" moist
7			6 7			
8		**S-4**	6 5		same	Rec = 19" moist
9			5 10		**Brown coarse to fine SAND, little (+) Silt**	
10						
11		**S-5**	9 5		same	Rec = 19" moist
12			12 17			
13						
14						
15					15'0"	
16		**S-6**	29 38		Br, Sandstone, highly to completely weathered	Rec = 4"
17			30/0"		**Brown Sandstone highly to completely weathered**	moist
18						
19						
20					20'0"	Set well @ 20'0"
21					**End of Boring @ 20'0"**	
22						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-2

Project:	**Proposed Lake Campus, Princeton University, Princeton NJ**	**SHEET NO.:**	1 of 1
Client:	**Princeton University**	**JOB NUMBER:**	19-211
Drilling Contractor:	**Environmental Technical Drilling**	**ELEVATION:**	+92.0
GROUNDWATER		**DATUM:**	
No Groundwater Encountered		**START DATE:**	20/Feb/20
		FINISH DATE:	20/Feb/20
		DRILLER:	Scott
		INSPECTOR:	KWA

DATE	TIME	DEPTH	CASING		TYPE	CASING	SAMPLE	CORE	TUBE
					DIA.	Pipe	SS		
					WGHT	3"	1 3/8"		
					FALL		140#		
							30"		

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
1		S-1	1		**Brown topsoil** 0'8"	Rec = 13"
			2		Br Cy $ l, cf S	moist
2			4			
			6			
3		S-2	4		Br cf S, s (-) $	Rec = 19"
			5			moist
4			7		**Brown coarse to fine SAND, little (+) Silt,**	
			3			
5		S-3	3		Gr, or br cf S, l $	Rec = 16"
			3			moist
6			5			
			2			
7		S-4	3		same, yw br	Rec = 18"
			5			moist
8			5			
9						
			3			
10		S-5	7		same 10'0"	
			24		**Brown coarse to fine SAND, little Silt,**	
11			31		**Sandstone completely weathered** 11'0"	Refusal on Tooling @ 11'0"
					End of Boring @ 11'0"	
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-3
Project: Proposed Lake Campus, Princeton University, Princeton NJ		**SHEET NO.:** 1 of 1
Client: Princeton University		**JOB NUMBER:** 19-211
Drilling Contractor: Environmental Technical Drilling		**ELEVATION:** +97.5

GROUNDWATER					CASING	SAMPLE	CORE	TUBE	DATUM:	
DATE	TIME	DEPTH	CASING	TYPE	Pipe	SS			START DATE:	20/Feb/20
No Groundwater Encountered				DIA.	3"	1 3/8"			FINISH DATE:	20/Feb/20
				WGHT		140#			DRILLER:	Scott
				FALL		30"			INSPECTOR:	KWA

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
1			1 1		**Brown topsoil** 1'0"	
2		S-1	1 1		Br Cy $ s, cf S	Rec = 16" moist
3		S-2	2 2		same	Rec = 15" moist
4			3			
5		S-3	3 4		same	Rec = 16"
6			6 6		**Brown Clayey SILT some, coarse to fine Sand**	moist
7		S-4	6 5		Yw br $ l (+), mf S	Rec = 20"
8			7 8			moist
9					8'6"	
10		S-5	8 6		Yw br cf S, s (+) $	Rec = 17"
11			9 15			moist
12					**Yellow brown coarse to fine SAND, some (+) Silt**	
13						
14		S-6	16 15		same	Rec = 14"
15			26 25		15'0"	Refusal on Tooling @ 15'0"
16					**End of Boring @ 15'0"**	
17						
18						
19						
20						
21						
22						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-4
Project: Proposed Lake Campus, Princeton University, Princeton NJ		**SHEET NO.:** 1 of 1
Client: Princeton University		**JOB NUMBER:** 19-211
Drilling Contractor: Environmental Technical Drilling		**ELEVATION:** +65.5

GROUNDWATER					CASING	SAMPLE	CORE	TUBE	DATUM:	
DATE	TIME	DEPTH	CASING	TYPE	Pipe	SS			START DATE:	19/Feb/20
No Groundwater Encountered				DIA.	3"	1 3/8"			FINISH DATE:	19/Feb/20
				WGHT		140#			DRILLER:	Joe
				FALL		30"			INSPECTOR:	KWA

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
1		S-1	5 4		Rd br cf S, a (-) $, l cf G	Rec = 20" moist
2			4 5			
3		S-2	4 10		same	Rec = 11" moist
4			10 10		**Red brown coarse to fine SAND, and (-) Silt, little coarse to fine Gravel**	
5		S-3	5 7		same	Rec = 20" moist
6			8 8			
7		S-4	8 10		same	
8			50/3"		8'0"	Moved hole, twice could not advance beyond 8'
9					**End of Boring @ 8'0"**	
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-5
Project: Proposed Lake Campus, Princeton University, Princeton NJ		**SHEET NO.:** 1 of 1
Client: Princeton University		**JOB NUMBER:** 19-211
Drilling Contractor: Environmental Technical Drilling		**ELEVATION:** +81.5

GROUNDWATER					CASING	SAMPLE	CORE	TUBE	DATUM:	
DATE	TIME	DEPTH	CASING	TYPE	Pipe	SS			START DATE:	19/Feb/20
No Groundwater Encountered				DIA.	3"	1 3/8"			FINISH DATE:	19/Feb/20
				WGHT		140#			DRILLER:	Joe
				FALL		30"			INSPECTOR:	KWA

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
1			1		**Brown topsoil** 1'2"	
		S-1	1		Rd br Cy $ s, cf S, t mf G	Rec = 10"
2			2			moist
			3			
3		S-2	5			Rec = 17"
			6		**Red brown Clayey SILT some, coarse**	moist
4			9		**to fine Sand, trace medium to fine**	
			10		**Gravel**	
5		S-3	22		same; completely weathered	Rec = 17"
			29			moist
6			33			
7					7'0"	Refusal @ 7'0"
					End of Boring @ 7'0"	
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-6

Project:	**Proposed Lake Campus, Princeton University, Princeton NJ**									**SHEET NO.:**	1 of 1
Client:	**Princeton University**									**JOB NUMBER:**	19-211
Drilling Contractor:	**Environmental Technical Drilling**									**ELEVATION:**	+65.0
GROUNDWATER					**CASING**	**SAMPLE**	**CORE**	**TUBE**		**DATUM:**	
DATE	**TIME**	**DEPTH**	**CASING**	**TYPE**	**Pipe**	**SS**				**START DATE:**	19/Feb/20
19/Feb/20	**1100**	**7'0"**	**Pipe**	**DIA.**	**4"**	**1 3/8"**				**FINISH DATE:**	19/Feb/20
21/Feb/20	**0900**	**6'3"**	**PVC**	**WGHT**		**140#**				**DRILLER:**	Joe
				FALL		**30"**				**INSPECTOR:**	KWA

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
1			1 2		**Brown topsoil** 1'3"	
2		**S-1**	1 2		Rd br cf S, a (-) $, t (-) f G	Rec = moist
3		**S-2**	2 6		same	Rec = 20"
4			6 11			moist
5		**S-3**	15 11		same **Red brown coarse to fine SAND, and (-) Silt, trace (-) fine Gravel**	Rec = 17"
6			11 14			moist
7		**S-4**	12 14		Yw br cf S, s (-) $	Rec = 19"
8			18 33			moist
9						
10		**S-5**	19 19		Lt br cf S, l (+) $, w/	Rec = 11"
11			20 50/3"		10'9"	wet Spoon Refusal @ 10'9"
12					**End of Boring @ 10'9"**	
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-7

Project:	**Prop Lake Campus, Princeton University, Princeton NJ**								**SHEET NO.:**	1 of 1
Client:	**Princeton University**								**JOB NUMBER:**	19-211
Drilling Contractor:	**Environmental Technical Drilling**								**ELEVATION:**	+61.0
GROUNDWATER					**CASING**	**SAMPLE**	**CORE**	**TUBE**	**DATUM:**	
DATE	**TIME**	**DEPTH**	**CASING**	**TYPE**	**Pipe**	**SS**			**START DATE:**	19/Feb/20
21/Feb/20	**1115**	**5'0"**	**PVC**	**DIA.**	**4"**	**1 3/8"**			**FINISH DATE:**	19/Feb/20
				WGHT		**140#**			**DRILLER:**	Joe
				FALL		**30"**			**INSPECTOR:**	KWA

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
1		S-1	1 2		Br Cy $ a, cf S, t f G	Rec = 19"
2			2 2		**Brown Clayey SILT and, coarse to fine Sand, trace fine Gravel**	moist
3		S-2	1 2			Rec = 6"
4			3 3		same 3'6"	moist
5		S-3	13 9		Br cf S, s $, l (+) cf G	Rec = 17"
6			10 9			moist to wet
7		S-4	5 7		same, s (+) $	Rec = 14"
8			7 10			wet
9						
10		S-5	1 1		Br cf S, s $	Rec = 18"
11			3 3			wet
12					**Brown coarse to fine SAND, some Silt, little (+) coarse to fine Gravel**	
13						
14						
15		S-6	8 8		same, l mf G	Rec = 10"
16			9 9			wet
17						
18						
19						
20		S-7	18 26		same, s cf G	Rec = 13"
21			34 44		21'0"	wet
22					**End of Boring @ 21'0"**	

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-8

Project:	**Proposed Lake Campus, Princeton University, Princeton NJ**								**SHEET NO.:**	1 of 1
Client:	**Princeton University**								**JOB NUMBER:**	19-211
Drilling Contractor:	**Environmental Technical Drilling**								**ELEVATION:**	+61.0
GROUNDWATER					**CASING**	**SAMPLE**	**CORE**	**TUBE**	**DATUM:**	
DATE	**TIME**	**DEPTH**	**CASING**	**TYPE**	**HSA**	**SS**			**START DATE:**	18/Feb/20
21/Feb/20	**0915**	**4'3"**	**PVC**	**DIA.**	**3 1/4"**	**1 3/8"**			**FINISH DATE:**	19/Feb/20
				WGHT		**140#**			**DRILLER:**	Scott
				FALL		**30"**			**INSPECTOR:**	KWA

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
1			1 2		**Brown topsoil** 0'10"	
2		**S-1**	2 3		Rd br cf S, a $ **Red brown coarse to fine SAND, and Silt**	Rec = 11" moist
3		**S-2**	5 11		same 3'0"	Rec = 12"
4			11 10		Br cf S, l $, t mf G	moist
5		**S-3**	10 8		same, l cf G	Rec = 13"
6			9 10			moist
7						
8						
9						
10		**S-4**	2 3		Rd br cf S, s (+) $	Rec = 16"
11			5 5			wet
12						
13						
14						
15		**S-5**	4 3		same	Rec = 13"
16			3 4			wet
17						
18						
19		**S-6**	50/2"		same 18'2" **End of Boring @ 18'2"**	Rec = 0" wet
20						
21						
22						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-9

Project:	**Proposed Lake Campus, Princeton University, Princeton NJ**	**SHEET NO.:**	1 of 1
Client:	**Princeton University**	**JOB NUMBER:**	19-211
Drilling Contractor:	**Environmental Technical Drilling**	**ELEVATION:**	+80.0

GROUNDWATER					CASING	SAMPLE	CORE	TUBE	DATUM:	
DATE	TIME	DEPTH	CASING	TYPE	Pipe	SS			START DATE:	18/Feb/20
No Groundwater Encountered				DIA.	3"	1 3/8"			FINISH DATE:	18/Feb/20
				WGHT		140#			DRILLER:	Scott
				FALL		30"			INSPECTOR:	KWA

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
1		S-1	1 2		FILL (Br cf S, a (-) $, t f G)	Rec = 18"
2			3 3		**FILL (Brown coarse to fine SAND, and (-) Silt, trace fine Gravel, with tops** 1'9"	moist
3		S-2	2 3		**Brown topsoil** 2'0" Rd br cf S, s $	Rec = 14"
4			3 3		**Red brown coarse to fine SAND, some Silt**	moist
5		S-3	4 17		4'9"	Rec = 18"
6			15 21		Rd br, br cf S, l (-) $	moist
7		S-4	16 11		same	Rec = 16"
8			10 10		**Red brown, brown coarse to fine SAND, little (-) Silt**	moist
9						
10		S-5	13 14		Br Shale, weathered	Rec = 16"
11			36 61		11'0"	moist Refusal on tooling @ 11'0"
12					**End of Boring @ 11'0"**	
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-10
Project: Proposed Lake Campus, Princeton University, Princeton NJ		**SHEET NO.:** 1 of 1
Client: Princeton University		**JOB NUMBER:** 19-211
Drilling Contractor: Environmental Technical Drilling		**ELEVATION:** +85.0

GROUNDWATER					CASING	SAMPLE	CORE	TUBE	DATUM:	
DATE	TIME	DEPTH	CASING	TYPE	Pipe	SS			START DATE:	18/Feb/20
No Groundwater Encountered				DIA.	3"	1 3/8"			FINISH DATE:	18/Feb/20
				WGHT		140#			DRILLER:	Scott
				FALL		30"			INSPECTOR:	KWA

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
			1		**Brown topsoil** 0'4"	
1		S-1	2		FILL (Br cf S, l (-) $)	Rec = 15"
			3			moist
2			4		**FILL (Brown coarse to fine SAND, little (-) Silt)**	
			2			
3		S-2	2		3'0"	Rec = 17"
			4		FILL (Gr cf S, l (-) $)	moist
4			4		**FILL (Gray coarse to fine SAND, little (-) Silt)** 4'6"	
			4			
5		S-3	3		Or br, br cf S, s (-) $	Rec = 16"
			5		**Orange brown, brown coarse to fine SAND, some (-) Silt**	moist
6			6			
			4		6'6"	
7		S-4	7		Rd br cf S, s $	Rec = 14"
			7			moist
8			7		**Red brown coarse to fine SAND, some Silt**	
9					9'0"	
			35			
10		S-5	34		Shale, highly to completely weathered	Rec = 10"
			19			moist
11			20			
					Shale, highly to completely weathered	
12						
13						
		S-6	50/3"		same 13'3"	Rec = 3"
14					**End of Boring @ 13'3"**	moist
						Refusal on tooling @ 13'0"
15						
16						
17						
18						
19						
20						
21						
22						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-11

Project:	**Proposed Lake Campus, Princeton University, Princeton NJ**	**SHEET NO.:**	1 of 1
Client:	**Princeton University**	**JOB NUMBER:**	19-211
Drilling Contractor:	**Environmental Technical Drilling**	**ELEVATION:**	+71.5
GROUNDWATER		**DATUM:**	
No Groundwater Encountered		**START DATE:**	18/Feb/20
		FINISH DATE:	18/Feb/20
		DRILLER:	Scott
		INSPECTOR:	KWA

DATE	TIME	DEPTH	CASING

	CASING	SAMPLE	CORE	TUBE
TYPE	**Pipe**	**SS**		
DIA.	**3"**	**1 3/8"**		
WGHT		**140#**		
FALL		**30"**		

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
			3		**Brown topsoil** 0'6"	
1		**S-1**	9		Shale, highly to completely weathered	Rec = 15"
			13			moist
2			29		**Shale, highly to completetly weathered**	
			14			
3		**S-2**	47		same	Rec = 10"
			54			moist
4			50/3"		3'9"	Refusal on tooling @ 4'0"
					End of Boring @ 3'9"	
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

CARLIN-SIMPSON & ASSOCIATES Sayreville, NJ	TEST BORING LOG	BORING NUMBER B-12

Project:	**Proposed Lake Campus, Princeton University, Princeton NJ**									**SHEET NO.:**	1 of 1
Client:	**Princeton University**									**JOB NUMBER:**	19-211
Drilling Contractor:	**Environmental Technical Drilling**									**ELEVATION:**	+85.0
GROUNDWATER					**CASING**	**SAMPLE**	**CORE**	**TUBE**		**DATUM:**	
DATE	**TIME**	**DEPTH**	**CASING**	**TYPE**	**Pipe**	**SS**				**START DATE:**	18/Feb/20
No Groundwater Encountered				**DIA.**	**3"**	**1 3/8"**				**FINISH DATE:**	18/Feb/20
				WGHT		**140#**				**DRILLER:**	Scott
				FALL		**30"**				**INSPECTOR:**	KWA

Depth (ft.)	Casing Blows per Foot	Sample Number	Blows on Sample Spoon per 6"	Sym	IDENTIFICATION	REMARKS
			1		**Brown topsoil** 0'2"	
1		**S-1**	2		Br cf S, s $	Rec = 15"
			6			moist
2			11		**Brown coarse to fine SAND, some Silt**	
			9			
3		**S-2**	8		same	Rec = 11"
			12			moist
4			9			
			7			
5		**S-3**	9		same 5'0"	Rec = 13"
			11		Shale, highly to completely weathered	moist
6			14			
					Shale, highly to completely weathered	
7						
8						
9						
			18			
10		**S-4**	50/3"		same 9'9"	Rec = 4"
					End of Boring @ 9'9"	moist
11						Refusal on tooling @ 9'0"
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						