February 16, 2024

Mike Conklin
Inlands Wetlands Commission
Town Hall Annex
238 Danbury Road
Wilton, CT 06897

RE: Inland Wetlands Commission Application
Project Site: 131 Danbury Road
Contract Purchaser: 131 Danbury Wilton Dev AMS LLC
(an affiliate of AMS Acquisitions, LLC)

Dear Mr. Conklin,

On behalf of our client, 131 Danbury Wilton Dev AMS LLC (an affiliate of AMS Acquisitions, LLC) (the "Applicant"), the contract purchaser and potential developer of 131 Danbury Road, we are submitting revised materials in response to comments received from Roy Seelye of Cardinal Engineer Associates in a letter dated January 19, 2024 and Stephen Santacroce from the Department of Public Works in a letter dated February 7, 2024. Included herewith for your consideration are 11 copies of the following documents:

1. Cardinal Engineering Response Letter, prepared by SLR International, dated February 13, 2024

2. DPW Response Letter, prepared by SLR International, dated February 14, 2024

3. Site Engineering Plans prepared by SLR, dated October 23, 2023 and revised through February 13, 2024, including sheets:
    a. Title Sheet
    b. NL – Notes and Legend
    c. EX – Existing Conditions
    d. SP – Site Vicinity Plan
    e. LA – Site Plan – Layout
    f. LS – Site Plan – Landscaping
    g. GR – Site Plan – Grading
    h. UT – Site Plan – Utilities
    i. SE-1 – Sediment and Erosion Control Plans
    j. SE-2 – Sediment and Erosion Control Specifications and Details
    k. SD-1 – Site Details

l. SD-2 – Site Details
m. SD-3 – Site Details
n. SD-4 – Site Details
o. SD-5 – Site Details
p. SE-6 – Site Details
q. SD-7 – Site Details
r. ABG – Combined Average Building Grade
s. IFP – Interpolated Floodplain Earthwork
t. EW – Proposed Site Earthwork
u. UR – Upland Review Area Earthwork
v. VH – Vehicle Turning Movement – Fire Truck
w. SL-1B – Site Lighting Photometric Calculation (By Apex Lighting Solutions)

4. Drainage Report, prepared by SLR, dated October 23, 2023 and revised through February 13, 2024

5. Engineering Report – Floodplain Analysis, prepared by SLR, dated November 27, 2023 and revised through February 13, 2024

The Applicant looks forward to presenting the proposal to the Commission at its meeting on February 22, 2024.

Sincerely,

Craig J. Flaherty, P.E.

SLR International Corporation
99 Realty Drive, Cheshire, Connecticut, 06410

February 13, 2024

Michael Conklin
Director of Environmental Affairs
Town of Wilton
238 Danbury Road
Wilton, CT 06897

SLR Project No.: 21543.00001

RE: Wilton Inland Wetlands and Watercourses Agency Review
Application for a Significant Regulated Activity
Application #2904(S) ASML Acquisitions, LLC
131 Danbury Road, Wilton, Connecticut

Dear Mr. Conklin,

SLR International Corporation (SLR) is in receipt of a letters addressed to you from Cardinal Engineering Associates in regard to the above-referenced project.

This response letter focuses on the storm drainage, FEMA flood plain, and erosion control related comments.

It is our professional opinion the remaining comments can be addressed as conditions of the Planning and Zoning or building permit application. We are confident that those comments can easily be addressed and will not result in any significant changes to the plans.

We offer the following responses to the wetlands related comments

Review comments related to the Site Plans and Engineering Reports January 19, 2024

Critical Comments

R.1: The plans have been modified to include an exit drive on the south-eastern corner of the garage above the flood elevation. Additionally, the grading of the garage has been revised so 119 spaces are now located above the flood elevation. Additionally, 28 spaces are located in an area with less than 6 inches of water for the 100-year flood. The FEMA limits shown on the plans are the regulatory line shown on FEMA FIRM panel 0391. A “non-regulatory” elevation based line has been added to the plans as well. A revised floodplain earthwork analysis has been prepared based on this elevation-based line. The proposed project grading results in no net increase in fill in the flood plain.

R.2: Two additional cross sections have been analyzed. Results of the hydraulic modeling show the project will not increase the base flood elevation in the Norwalk River. A revised Floodplain Analysis has been submitted.

R.3: The final hydrodynamic separator (MH2/Cascade CS-5) has been resized based on the entire volume of runoff discharging to the structure.

Engineering Reports

R.CC-RPT-1: All earthwork sheets have been revised based on updated grading. An upland review area earthwork has been added to the set. Cut/fill tick marks are provided on these sheets to show a grid of cut/fill values across the area for support to the values calculated for total cut, total fill, and net total.

R.CC-RPT-2: The conversion factor that was used in the hydraulic analysis and provided in the Engineering Report was taken directly from the most recent Flood Insurance Study (FIS) for Fairfield County revised to October 16, 2003, see Section 3.5 – Vertical Datum on Page 110-111 in Volume 1 of 6. The conversion factor provided in the FIS is to a tenth of a foot and therefore was used to convert elevation data as needed in the hydraulic analysis.

The hydraulic analysis was revised to include two additional cross sections up- and downstream of the proposed building location. All cross sectional data used to develop the geometry through the project site was checked and updated as needed to reflect the proposed changes, including grade changes and obstructions that will change due to the removal of the existing building and construction of the new building.

R.CC-RPT-3: A hydrologic analysis was conducted to estimate the peak discharge rate in the Norwalk River during a 2-year flood. The peak discharge rate was estimated using the Bulletin 17B/C capabilities built into the US Army Corps of Engineers HEC-SSP application. The methodology utilizes statistical analysis of annual peak flow data collected at USGS stream gauges. For this analysis, the Norwalk River at South Wilton gauge (USGS Gauge 01209700) was used to estimate hydrology. This gauge has a 67 year record and is located at Kent Road, which coincides with a flow change location with a flow change location that was used in the FEMA effective model and is the basis of the floodplain analysis. The hydrology analysis estimates a peak discharge rate of 1,030 cfs in the Norwalk River within the study reach, and was used to estimate the flood elevation at the project site. The hydraulic modeling indicates that the 2-year flood elevation ranges from 140.14 to 140.09 along the river at the project site. The hydraulic modeling results for the 2-year flood in the Norwalk River were used as the tailwater conditions in the storm drainage design calculations. See the revised Engineering Report – Floodplain Analysis and revised Drainage Report for more information.

Engineering Plans

R.CC-T-2: Note 10 has been revised.

R.CC-NL-4: Hydrodynamic separators have been sized based on the total volume of water discharging to the structure and per the manufacturer specifications.

R.CC-EX-1: FEMA provides the effective floodplain boundary based on their FIRM panel mapping. The LOMR process is required in order to change the FEMA floodplain delineation. The FEMA line is considered the regulatory line, and a callout has been added to sheet EX. An additional line based on Base Flood Elevation has been added to sheet EX and called out as the non-regulatory boundary.

R.CC-GR-4: The proposed 10 year flood elevation of 144.9 has been delineated on the proposed grading plan.

R.CC-GR-17: Grading has been revised at the storm drainage outlet.

R.CC-GR-19: Grading has been revised in the northwest corner of the site.

R.CC-GR-20: An underdrain has been added to the rain garden. Only a small portion of overland flow reaches the rain garden, so it is not expected affect the function of the rain garden for water quality storage during the first flush of storm events. Rain garden detail has been revised. The overall water quality volume provided is 35% greater than what is required by the new CT DEEP stormwater manual. Rain garden detail has been revised.

R.CC-UT-3: It is the design team's opinion that a drainage system is not needed for the garage.

R.CC-UT-19: Outlet Control Structure details have been revised to conform with the plan and drainage report.

R.CC-UT-33: Boring data has been revised.

R.CC-UT-35: Manifold pipes have been revised to show connections to each row of chambers.

R.CC-UT-38: All manholes prior to the isolator rows are now hydrodynamic separators to assist with the collection of sediment.

R.CC-UT-39: Due to the site layout, keeping treated stormwater separate would be difficult, but the hydrodynamic separators are sized accordingly for the full flow.

R.CC-UT-40: Backflow preventers have been added to the pipes.

R.CC-UT-45: The hydrodynamic separator has been removed from MH-13. A hydrodynamic separator has been added to MH-2, MH-5, and MH-21.

R.CC-UT-46: Inverts have been revised and provided for the foundation drain.

R.CC-UT-47: The invert to the isolator row has been lowered to allow for treatment of the first flush.

R.CC-UT-48: The invert has been lowered to maintain 2 feet of cover.

R.CC-UT-49: Inverts have been added to the end of the 6” curtain drain along Wall #1, and to the tie-in to CCB 6.

R.CC-UT-50: Inverts in MH 10 have been revised. Due to the site elevation constraints, we are unable to match crowns.

R.CC-UT-51: The invert at OVFL-3 is 137.8. The invert at the 24” HDPE is 137.65.

R.CC-UT-52: See Rip Rap Splash Pad detail on sheet SD-4 for all requested information. Detail has been revised for RCP or HDPE flared end section. Filter fabric is not included in the installation.

R.CC-UT-53: Inverts in MH 13 have been revised.

R.CC-UT-54: Inverts in CCB 18 have been revised.

R.CC-UT-55: 12” HDPE has been revised to avoid the generator and light pole.

R.CC-UT-56: Due to the flat nature of the western portion of the site and limited elevation change before discharging to the Norwalk River, it is not possible to match pipe crowns. Hydraulic models and pipe computations have been performed to show that the pipes will be able to accommodate the flows and there are no hydraulic grade line issues for the design storm within the system. All pipes have been sized according to the design flow required in the pipe.

R.CC-UT-60: The Stormtech SC-740 Typical Cross Section detail has been revised. S-1 and S-3 will have 6 inches of stone base and S-2 will have 12 inches of stone base.

R.CC-SE-1-4: Silt fence and straw wattles have been added at the outlet to protect the river.

R.CC-SE-1-7: A note has been added to sheet SE-1.

R.CC-SE-1-8: Silt fence has been provided at the boundary of the area of disturbance.

R.CC-SE-1-9: A layer of straw wattles have been added to the river side of the proposed sediment traps.

R.CC-SE-2-3: Pipe stopper by Silt Saver has been added to the plans for use in the 18” diameter pipes. Detail has been added to sheet SE-2.

R.CC-SE-2-5: Dewatering details have been added to the plans. The contractor will prepare the dewatering plan during the building permit phase. The Town Engineer’s

comments have acknowledged that the dewatering plan will be submitted during the building permit phase.

R.CC-SD-4-2: AF-41 Flatback, 24" flap gate to be used. A note has been added to the detail.

R.CC-SD-4-5: All requested information is provided in the Outlet Protection table.

R.CC-SD-4-7: Note has been added to the Storm Drainage Trench detail.

Review comments related to the Flood Preparedness Plan from February 8, 2024

Development in Floodplains in the Town of Wilton falls under the jurisdiction of the Planning & Zoning Commission vis-à-vis Section 29-9.F. of the Wilton Zoning Regulations "Development in Floodplains". The reviewer's comments are appreciated and will be incorporated into the currently DRAFT Flood Preparedness Plan if appropriate and feasible. The applicant proposes a project that complies with Zoning Regulation, and National Flood Insurance Program Standards, which requires the first floor and supporting mechanical systems to be elevated above the Base Flood Elevation and permits the parking of vehicles below the Base Flood Elevation.

Review comments related the Construction Management Plan from February 8, 2024

It is our professional opinion the Sediment and Erosion Control Plan is adequate to protect the Norwalk River from the temporary impacts and disturbances associated with construction activities. The reviewer's comments are appreciated and will be incorporated into the currently DRAFT Construction Management Plan if appropriate and feasible once a contractor is selected and prior to the commencement of construction.

Please feel free to contact us if you have any questions on the above responses.

Regards,

SLR International Corporation

Thomas J. Daly, PE
US Manager of Civil & Structural Engineering
tdaly@slrconsulting.com

Attachments

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SLR International Corporation
99 Realty Drive, Cheshire, Connecticut, 06410

February 14, 2024

Mr. Mike Conklin
Environmental Affairs
Town of Wilton
238 Danbury Road
Wilton, CT 06897

SLR Project No.: 21543.00001

RE: Comment Response Letter
131 Danbury Wilton Dev AMS, LLC WET #2904
131 Danbury Road, Wilton, Connecticut

Dear Mike,

SLR International Corporation (SLR) is in receipt of correspondence addressed to you from Stephen Santacroce, PE, Senior Civil Engineer, dated February 7, 2024 regarding the latest review of the above-referenced project. We offer the following responses in bold to the comments contained in the letter.

Wetlands Application Review

C3. Any proposed structures and / or landscape features, including plantings, within the floodway shall be certified by an engineer to withstand calculated base flood velocities. Base flood velocities have been provided. Engineer to certify that proposed features within the floodway can withstand these velocities.

R3. General note 14 has been added to the title sheet. The certification will be provided with the Building permit application.

C4. There shall be no net fill proposed for the site within the regulated floodplain. Provide an earthwork cut and fill computation for review.

Earthwork plan sheet titled "Floodplain Earthwork[0] has been provided in revised plan set. It is not clear from the plan if the cut / fill calculations were performed for only the area within the regulated floodplain or if the proposed compensatory volume is shown outside of the 100-yr floodplain. Additionally, the FEMA limits of the 100-year floodplain appear to be incorrect, and should be modified to reflect the elevations provided in the HEC-RAS analysis and FEMA study elevations.

Since the parking area under the building is proposed to flood, provide elevations of parking area relative to door entrances.

R4. The calculated floodplain earthwork has been revised to incorporate all areas up to the interpolated 100-year floodplain elevation 146.5. The regulatory 100-year floodplain based on FEMA FIRM panel 0391 and non-regulatory interpolated 100-year floodplain have been added to the sheets and are called out on sheet EX. The parking garage design has been revised to provide an additional exit and raised the grade on the eastern side to be above the flood elevation.

C6. Provide water quality units upstream of proposed stormwater infiltration systems to minimize sediment and debris entering infiltration units.
Provide explanation as to why the proposed water quality separator is proposed as shown on the utility plan. As shown, only a portion of the runoff from the parking areas will be treated prior to the infiltration systems. Footing drains should not tie directly into the water quality separator units.

R6. Additional water quality units have been provided prior to the stormwater infiltration systems along with one downstream of the chambers. Footing drain has been revised to tie into a standard manhole.

C9. Shift the proposed rain garden adjacent to Route 7 five feet to the west so that there's at least four feet of walkable grass area behind the sidewalk.

The sidewalk has been moved from the Route 7 R.O.W. to the back of the rain garden on private property. This is not acceptable - shift rain garden so that the proposed sidewalk is entirely within the State R.O.W.

R9. The location of the sidewalk was originally proposed as noted above but as the result of recommendations made by the Planning and Zoning Commission, the sidewalk was revised as shown on the plans. The applicant will construct the sidewalk in the location chosen by the town.

C10. Depict proposed catch basins for the parking area under the building, considering that most of the parking area is within a floodzone. Any drains proposed shall be routed to an oil-water separator prior to discharging to the proposed stormwater management system. Please confirm if any state regulations require that these drains have to tie into the sanitary system.

Applicant responded that no drains for the covered parking are proposed; a cobble stone infiltration trench is proposed to catch stormwater from the covered parking area. A detail of this infiltration trench should be provided.

R10. Cobble Filter Strip detail is shown on sheet SD-7.

C11. At this time test pits are required to determine soil characteristics and groundwater depths. Soil percolation tests should be conducted to determine infiltration rates. Addressed; a report on soil borings and infiltration tests were provided in a separate geotechnical report. According to the geotechnical report provided, groundwater elevation ranges from 137.7 to 139.5. The stormwater storage capacity of the proposed infiltration basins may be affected since the bottom elevation is shown at 139.0. Will the basins perform as designed with these groundwater conditions? Test pits shall be performed to determine mottling elevations. Bottom of units shall be 12" above mottling elevation.

R11. An underdrain has been added to the rain garden in the northwest corner to ensure the basin performs as designed. Test pits will be conducted prior to construction to determine mottling elevations and results will be reported to the town. The overall water quality volume provided is 35% greater than what is required by the new CT DEEP stormwater manual.

C12. Depict footing drain discharge. No footing drains shall be connected to sanitary sewers. Footing drain discharge pipe should not be shown connecting into the proposed water quality unit. Discharge can connect to infiltrator units directly. Please review.

R12. Footing drain is shown tying into MH 16.

<u>Planning & Zoning Review</u>:

C15. The proposed driveway entrance may be problematic, Engineer to submit a traffic report or summary, subject to approval by the Town's Independent Consultant as well as the State's Review and approval. A DOT OSTA review approval is most likely. Coordinate with the State DOT.

Applicant has submitted a traffic study for review to the Town of Wilton and to CTDOT. Developer shall evaluate having one driveway entrance / exit from the property.

R15. The layout as shown was informally presented to the CDOT District office and they expressed no initial concerns with the design. Furthermore we understand the town is proceeding with a independent traffic review. Moreover, we believe that separating the entrance and exit movements into different driveways is a positive in that it reduces conflicts between entering and exiting turning movements.

C18. Sidewalks and grass strip shall be pitched towards roadway per town standards. Refer to item #9 above. The proposed sidewalk should be located in the State R.O.W.

R18. See response C9.

C20. Prior to the issuance of a Certificate of Occupancy, a certified as-built drawing and certified letter signed by a Professional Engineer indicating that all work was completed in accordance with the design plans shall be submitted to the Town of Wilton.

R20. Comment noted.

Please feel free to contact us with any questions regarding the above responses.

Regards,

SLR International Corporation

Thomas J. Daly, PE
US Manager of Civil & Structural Engineering
tdaly@slrconsulting.com

Andrew Goralski, PE
Associate Civil Engineer
agoralski@slrconsulting.com

Attachments

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Proposed Multifamily Development

131 Danbury Road, Wilton, Connecticut
Drainage Report

Prepared for:

Ryan Sutherland, AMS Acquisitions Management Corporation

One Bridge Plaza North, Suite 840
Fort Lee, New Jersey 07024

Prepared by:

SLR International Corporation

99 Realty Drive, Cheshire, Connecticut, 06410

SLR Project No.: 141.21543.00001

October 23, 2023

Revised February 13, 2024

Making Sustainability Happen

Drainage Report

Proposed Multifamily Development
131 Danbury Road
Wilton, Connecticut
October 23, 2023 (Revised February 13, 2024)
SLR #141.21543.00001

This Drainage Report has been prepared in support of the proposed multifamily development on Danbury Road in the town of Wilton, Connecticut. This redevelopment project will add a new building and demolish the existing building and reconfigure the parking lot and all associated site infrastructure.

Figure 1 – 131 Danbury Road, MBL: 70-1

Table 1 – Stormwater Data

Parcel Size Total	4.75 acres
Existing Impervious Area (Watershed Area)	3.23 acres
Proposed Impervious Area (Watershed Area)	2.97 acres
Soil Type (Hydrologic Soil Group)	"B/D," "C," and “D”
Existing Land Use	Open space, building, and impervious
Proposed Land Use	Open space, building, and paved/impervious
Design Storm for Stormwater Management	No increases in peak rates of runoff for the 2-, 10-, 25-, 50-, and 100-year storms; Connecticut Department of Energy & Environmental Protection (CTDEEP) water quality flow (WQF) treatment, water quality volume (WQV)
Water Quality Measures	Catch basins with 4-foot sumps, detention/infiltration storage for WQV, an isolator row within the underground infiltration systems, permeable pavers, and water quality basins
Design Storm for Storm Drainage	25-year storm
Federal Emergency Management Agency (FEMA) Special Flood Hazard Areas	Area of Minimal Flood Hazard (Zone X), Area of Undetermined Flood Hazard (Zone D), Special Flood Hazard Areas with Base Flood Elevation (Zone AE) and Regulatory Floodway
Connecticut Department of Energy & Environmental Protection Aquifer Protection Areas	None

Stormwater Management Approach

The proposed stormwater management system for the project focuses on providing water quality management while attenuating proposed peak flows. Water quality treatment in accordance with the CTDEEP requirements for WQV and WQF for a redevelopment project is provided. The proposed stormwater treatment train consists of catch basins with 4-foot sumps, water quality basins, and subsurface infiltration systems with isolator rows to provide additional water quality treatment.

The computer program entitled *Hydraflow Storm Sewers Extension for AutoCAD® Civil 3D® 2023* by Autodesk, Inc. was used for designing the proposed storm drainage collection system. Storm drainage computations performed include pipe capacity and hydraulic grade line calculations. The contributing watershed to each individual catch basin inlet was delineated to determine the drainage area and land coverage. These values were used to determine the stormwater runoff to each inlet using the Rational Method. The rainfall intensities for the site

were obtained from the National Oceanic and Atmospheric Administration (NOAA) Atlas 14, Volume 10, Precipitation Frequency Data Server (PFDS). The proposed storm drainage system is designed to provide adequate capacity to convey the 25-year storm event.

Water Quality Management

Water quality measures or Best Management Practices (BMPs) have been incorporated into the design to maintain water quality to provide protection of the areas downgradient of the proposed development. The proposed stormwater management system will include catch basins with 4-foot sumps, subsurface infiltration systems with isolator rows for water quality treatment, water quality basins, and permeable pavers.

The subsurface chamber systems incorporate isolator rows that consist of a row of chambers where stormwater is further treated prior to entering the rest of the storage chamber system, thus enhancing sediment removal and protecting the storage chambers from sediment accumulation. These systems have been designed to meet criteria recommended by the CTDEEP *2004 Stormwater Quality Manual*. The device was designed based on the determined WQF, which is the peak-flow rate associated with the WQV and sized based on the manufacturer's specifications. There are also three water quality basins proposed that will provide retention volume along their bottom, thus creating a water quality feature within it. This serves several purposes, including stormwater renovation and first-flush retention. The vegetation will provide pollutant removal by filtering stormwater runoff and utilizing excess nutrients that may be present in the stormwater. The CTDEEP *2004 Stormwater Quality Manual* (Chapter 7) recommends methods for sizing stormwater treatment measures with WQV computations. The WQV addresses the initial stormwater runoff, also commonly referred to as the "first-flush" runoff. The WQV provides adequate volume to store the runoff associated with the first 1 inch of rainfall, which tends to contain the highest concentration of potential pollutants. Supporting calculations have been included in the Appendix of this report. This project is a redevelopment project with greater than 40% existing directly connected impervious area, so 50% of the calculated WQV is required. The provided WQV of approximately 12,720 CF exceeds the minimum required calculated WQV of 5,290 CF. Additionally, the WQV exceeds the required WQV that would be required under the revised Connecticut Stormwater Management Manual that will be effective March 30, 2024, which requires that the first 1.3 inches of rainfall runoff will be required to be stored. The provided WQV also exceeds the required WQV under the revised manual, which would be approximately 6,880 CF.

Subsurface infiltration allows for temperature mitigation through infiltration to the ground, convective cooling from the surrounding subsurface substrate, and removal of runoff from direct sunlight, thus preventing additional heating from solar energy. The use of permeable pavers in parking and plaza areas will also be beneficial for temperature reduction of impervious runoff.

Hydrologic Analysis

A hydrologic analysis was conducted to analyze the predevelopment and postdevelopment peak-flow rates from the site. Four analysis points that receive runoff from the site were selected. Analysis Point 1 represents a majority of the site, including the parking and building areas and drains to the Norwalk River. Analysis Point 2 represents the front lawn area. Under proposed conditions, this area will be connected to the site stormwater system that eventually drains to the Norwalk River (AP-1). Analysis Point 3 represents the area of the site that drains towards Danbury Road. Analysis Point 4 represents the area of the site the drains to the existing landscaped area south of the entrance drive. Analysis Point 5 represents the area of the site draining to the catch basin located along the paved access road on the south side of the

building. No part of the site will be draining to this location under proposed conditions. The total watershed area delineated is approximately 4.6 acres under both existing and proposed conditions.

The method of predicting the surface water runoff rates utilized in this analysis was a computer program titled *HydroCAD 10.20-3c* by HydroCAD Software Solutions LLC. The *HydroCAD* program is a computer model that utilizes the methodologies set forth in the *Technical Release No. 55* (TR-55) manual and *Technical Release No. 20* (TR-20) computer model, originally developed by the United States Department of Agriculture – Natural Resources Conservation Service (USDA-NRCS). The *HydroCAD* computer modeling program is primarily used for conducting hydrology studies such as this one.

The *HydroCAD* computer program forecasts the rate of surface water runoff based upon several factors. The input data includes information on land use, hydrologic soil type, vegetation, contributing watershed area, time of concentration, rainfall data, storage volumes, and the hydraulic capacity of structures. The computer model predicts the amount of runoff as a function of time, with the ability to include the attenuation effect due to dams, lakes, large wetlands, floodplains, and stormwater management basins. The input data for rainfalls with statistical recurrence frequencies of 2, 10, 25, 50, and 100 years was obtained from the NOAA Atlas 14, Volume 10 database. The corresponding rainfall totals are listed below.

Storm Frequency	Rainfall (inches)
2-year	3.53
10-year	5.39
25-year	6.56
50-year	7.42
100-year	8.35

Land use for the site under existing and proposed conditions was determined from field survey and aerial photogrammetry. Land use types used in the analysis included grassed or open space, building, and impervious (paved) cover. Soil types in the watershed were determined from the CTDEEP Geographic Information System (GIS) database of the USDA-NRCS soil survey for Fairfield County, Connecticut. For the analysis, the site was determined to contain hydrologic soil types “B/D,” “C,” and “D” as classified by USDA-NRCS (see Appendix I). Composite runoff Curve Numbers (CN) for each subwatershed were calculated based on the different land use and soil types. The time of concentration (Tc) was estimated for each subwatershed using the TR-55 methodology and was computed by summing all travel times through the watershed as sheet flow, shallow concentrated flow, and channel flow.

Borings were taken on site, and laboratory permeability tests were performed in the approximate areas of the proposed infiltration BMPs. 50% of the permeability result was used for the exfiltration rates in the *HydroCAD* model. In areas where the infiltration BMPs were within the vicinity of multiple results, the more conservative value was used. Soil test results and a map of the boring locations is included in Appendix J.

The existing conditions were modeled with the *HydroCAD* program to determine the peak-flow rates for the various storm events at each analysis point. A revised model was developed incorporating the proposed site conditions, the underground chamber system, and the stormwater management basins. The flows obtained with the revised model were then compared to the results of the existing conditions model. Peak-flow rates from the project site

were controlled by the storage volume provided within the underground infiltration system and the detention basins connected in series.

The following peak rates of runoff were obtained from the *HydroCAD* hydrology results:

Analysis Point 1 – Norwalk River					
	Peak Runoff Rate (cubic feet per second)				
Storm Frequency (years)	**2**	**10**	**25**	**50**	**100**
Existing Conditions	8.92	14.05	17.24	19.58	22.11
Proposed Conditions	2.59	8.28	11.82	13.75	16.14

Analysis Point 2* – Front Lawn					
	Peak Runoff Rate (cubic feet per second)				
Storm Frequency (years)	**2**	**10**	**25**	**50**	**100**
Existing Conditions	0.88	1.68	2.2	2.58	2.99
Proposed Conditions	0.00	0.00	0.00	0.37	0.93

***Note: The area draining to AP-2 subsequently drains to AP-1 under proposed conditions.**

Analysis Point 3 – Danbury Road					
	Peak Runoff Rate (cubic feet per second)				
Storm Frequency (years)	**2**	**10**	**25**	**50**	**100**
Existing Conditions	0.00	0.00	0.00	0.00	0.00
Proposed Conditions	0.09	0.14	0.17	0.20	0.22

Analysis Point 4 – Landscape Island					
	Peak Runoff Rate (cubic feet per second)				
Storm Frequency (years)	**2**	**10**	**25**	**50**	**100**
Existing Conditions	0.08	0.15	0.20	0.23	0.27
Proposed Conditions	0.26	0.51	0.68	0.8	0.93

Analysis Point 5** – Access Drive Catch Basin (Existing Only)					
	Peak Runoff Rate (cubic feet per second)				
Storm Frequency (years)	**2**	**10**	**25**	**50**	**100**
Existing Conditions	1.52	2.54	3.18	3.64	4.14
Proposed Conditions	0.00	0.00	0.00	0.00	0.00

****Note: The existing structure at AP-5 was removed under proposed conditions.**

Water Quality Basin 1 – North*					
	Water Surface Elevation (feet)				
Storm Frequency (years)	**2**	**10**	**25**	**50**	**100**
Proposed Conditions	139.4	139.8	140.0	140.2	140.4

***Top of Basin Elevation = 141.5**

Water Quality Basin 2 – South**					
	Water Surface Elevation (feet)				
Storm Frequency (years)	**2**	**10**	**25**	**50**	**100**
Proposed Conditions	139.7	139.9	139.9	140.0	140.0

****Top of Basin Elevation = 141.0**

Water Quality Basin 3 – Front Lawn Meadow***					
	Water Surface Elevation (feet)				
Storm Frequency (years)	**2**	**10**	**25**	**50**	**100**
Proposed Conditions	148.3	148.7	149.0	149.1	149.2

*****Top of Basin Elevation = 150.0**

Subsurface Infiltration System 1*					
	Water Surface Elevation (feet)				
Storm Frequency (years)	**2**	**10**	**25**	**50**	**100**
Proposed Conditions	143.2	143.6	143.8	144.0	144.3

*** Inside Top of Chamber Elevation = 144.4**

Subsurface Infiltration System 2**					
	Water Surface Elevation (feet)				
Storm Frequency (years)	**2**	**10**	**25**	**50**	**100**
Proposed Conditions	144.0	144.8	144.9	144.9	144.9

**** Inside Top of Chamber Elevation = 145.0**

Subsurface Infiltration System 3***					
	Water Surface Elevation (feet)				
Storm Frequency (years)	**2**	**10**	**25**	**50**	**100**
Proposed Conditions	141.5	141.9	142.3	142.6	142.7

**** Inside Top of Chamber Elevation = 142.7**

Conclusion

The results of the hydrologic analysis demonstrate that there will be no increases in peak-flow rates from the proposed development. This was achieved for storm events modeled through a planned stormwater management system with subsurface infiltration systems and stormwater management basins. Manholes with internal weir wall structures at the outlets of the subsurface infiltration systems were designed to provide peak-flow attenuation and maximize water quality volume within the systems. The proposed development will also introduce a new stormwater treatment train consisting of catch basins with 4-foot sumps, isolator rows in the underground infiltration systems, water quality basins, and permeable pavers.

All supporting documentation and stormwater-related computations are attached to this report along with the *Hydrographs* model results for stormwater management and *Hydraflow Storm Sewers* model results for the proposed storm drainage system. Illustrative watershed maps for both existing and proposed conditions are also attached to this report.

Appendices

Appendix A **United States Geological Survey Location Map**

Appendix B **FEMA Flood Insurance Rate Map**

Appendix C **Natural Resources Conservation Service Hydrologic Soil Group Map**

Appendix D **Storm Drainage Computations**

Appendix E **Water Quality Computations**

Appendix F **Hydrologic Analysis - Existing Conditions**

Appendix G **Hydrologic Analysis - Proposed Conditions**

Appendix H **Watershed Maps**

Appendix I NRCS Web Soil Survey

Appendix J Permeability Test Results

Appendix A
United States Geological Survey Location Map

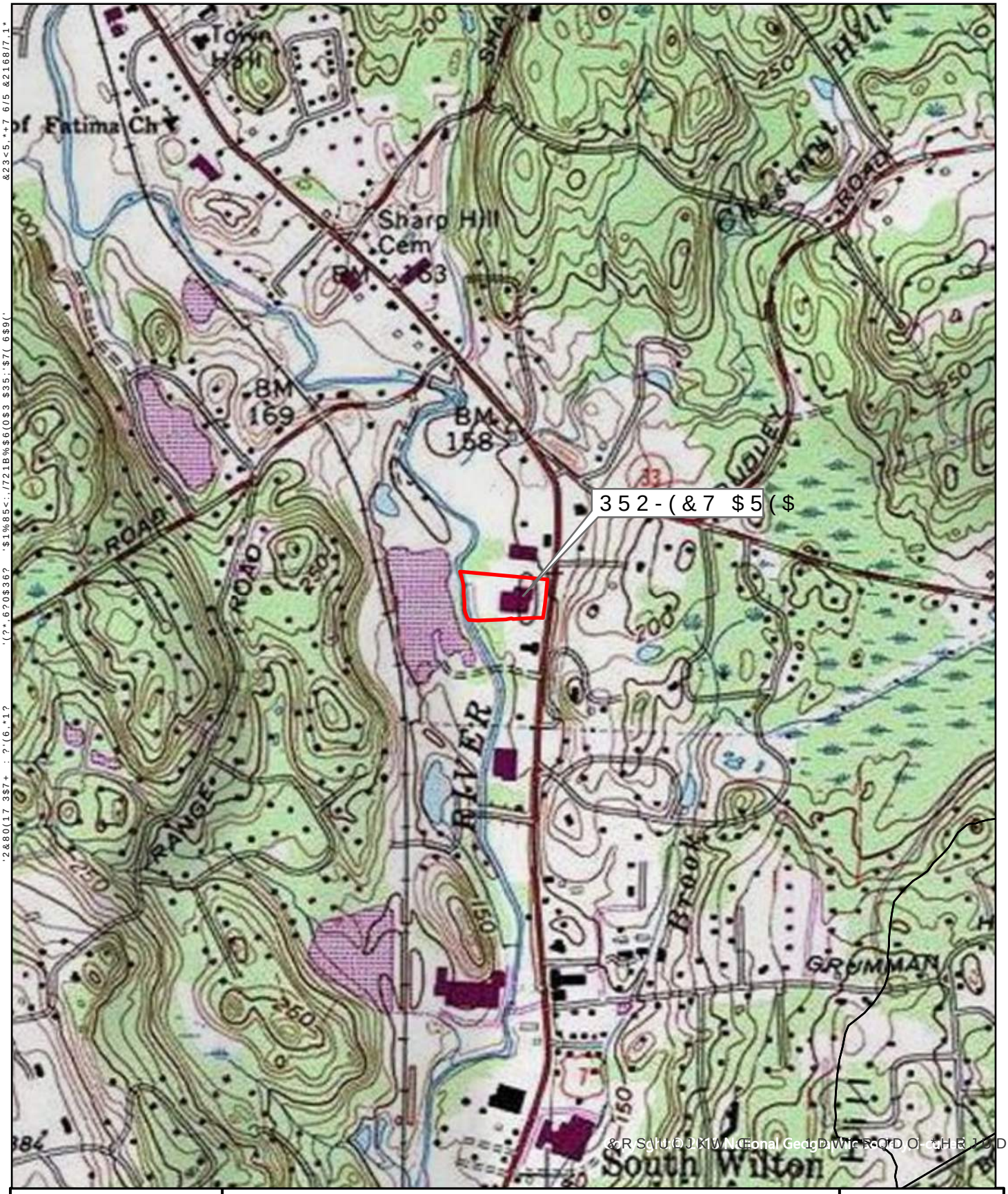
Proposed Multifamily Development

131 Danbury Road, Wilton, Connecticut
Drainage Report

Ryan Sutherland, AMS Acquisitions Management Corporation

SLR Project No.: 141.21543.0000171

October 23, 2023



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Appendix B
FEMA Flood Insurance Rate Map

Proposed Multifamily Development

131 Danbury Road, Wilton, Connecticut
Drainage Report

Ryan Sutherland, AMS Acquisitions Management Corporation

SLR Project No.: 141.21543.0000171

October 23, 2023

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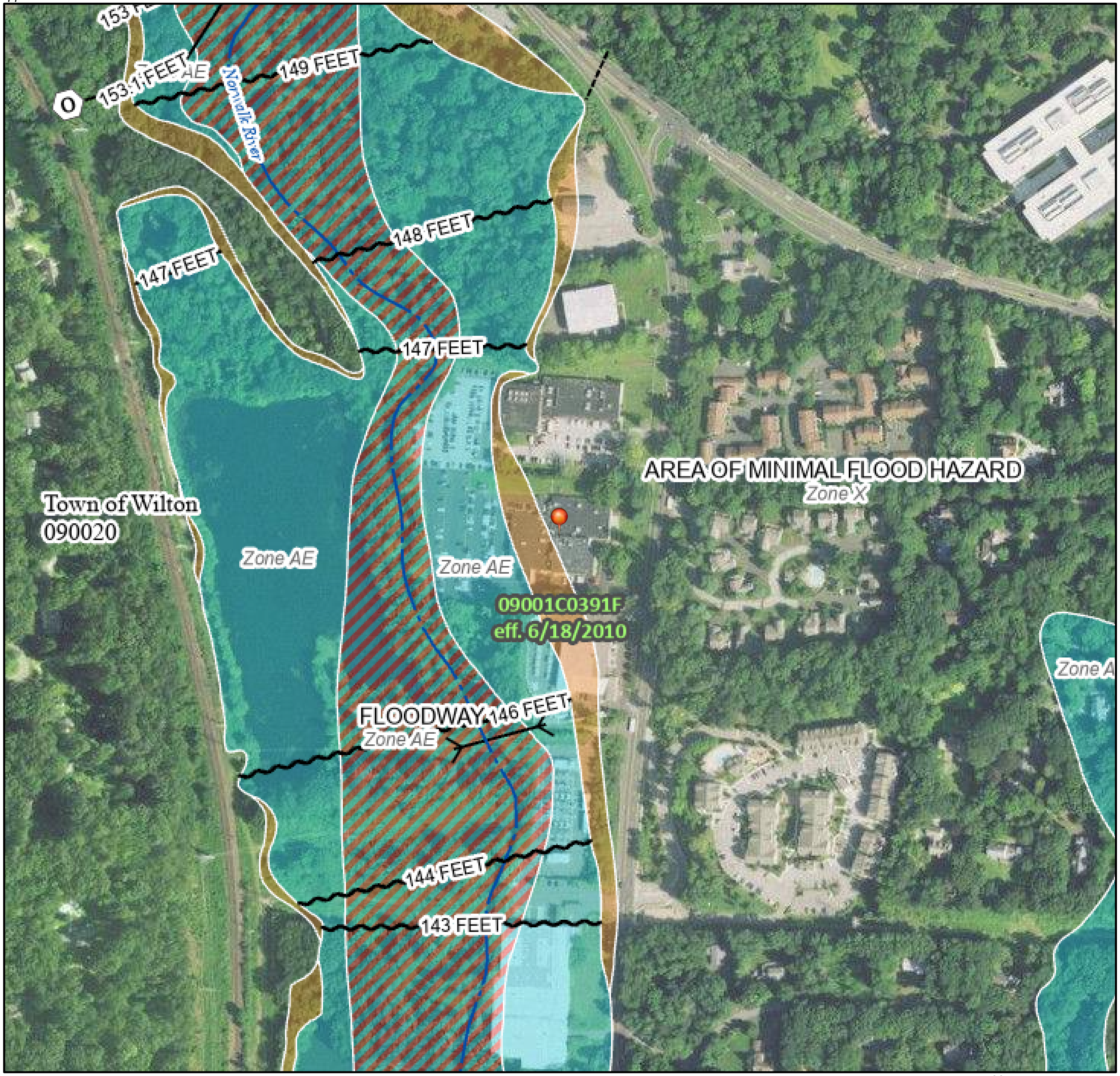
FEMA



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Appendix C
Natural Resources Conservation Service Hydrologic Soil Group Map

Proposed Multifamily Development

131 Danbury Road, Wilton, Connecticut
Drainage Report

Ryan Sutherland, AMS Acquisitions Management Corporation

SLR Project No.: 141.21543.0000171

October 23, 2023

Figure 3: Soil Map—State of Connecticut

Map Scale: 1:1,180 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 15 30 60 90

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

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

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

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

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

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

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

Soil Survey Area: State of Connecticut
Survey Area Data: Version 22, Sep 12, 2022

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

Date(s) aerial images were photographed: Oct 21, 2022—Oct 27, 2022

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
103	Rippowam fine sandy loam	0.5	6.6%
305	Udorthents-Pits complex, gravelly	0.9	13.2%
307	Urban land	5.3	77.0%
W	Water	0.2	3.3%
Totals for Area of Interest		**6.9**	**100.0%**

Appendix D
Storm Drainage Computations

Proposed Multifamily Development

131 Danbury Road, Wilton, Connecticut
Drainage Report

Ryan Sutherland, AMS Acquisitions Management Corporation

SLR Project No.: 141.21543.0000171

February 13, 2024

NOAA Atlas 14, Volume 10, Version 3
Location name: Wilton, Connecticut, USA*
Latitude: 41.1787°, Longitude: -73.4171°
Elevation: 147 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	4.38 (3.42-5.54)	5.10 (3.97-6.46)	6.28 (4.87-7.97)	7.25 (5.60-9.25)	8.59 (6.42-11.4)	9.61 (7.02-13.0)	10.7 (7.54-14.8)	11.8 (7.94-16.8)	13.3 (8.63-19.6)	14.5 (9.19-21.8)
10-min	3.10 (2.42-3.92)	3.61 (2.81-4.58)	4.45 (3.46-5.65)	5.14 (3.97-6.56)	6.08 (4.54-8.05)	6.81 (4.97-9.17)	7.55 (5.34-10.5)	8.34 (5.62-11.9)	9.43 (6.11-13.9)	10.3 (6.51-15.4)
15-min	2.43 (1.90-3.08)	2.83 (2.21-3.59)	3.48 (2.71-4.43)	4.03 (3.11-5.14)	4.77 (3.56-6.32)	5.34 (3.90-7.19)	5.92 (4.19-8.22)	6.54 (4.41-9.32)	7.39 (4.80-10.9)	8.07 (5.11-12.1)
30-min	1.70 (1.32-2.15)	1.97 (1.54-2.50)	2.42 (1.88-3.08)	2.80 (2.16-3.57)	3.31 (2.47-4.38)	3.71 (2.70-4.98)	4.11 (2.90-5.68)	4.52 (3.05-6.44)	5.07 (3.29-7.45)	5.49 (3.47-8.22)
60-min	1.09 (0.850-1.38)	1.26 (0.986-1.60)	1.55 (1.21-1.97)	1.79 (1.38-2.29)	2.12 (1.58-2.80)	2.38 (1.73-3.19)	2.63 (1.85-3.63)	2.88 (1.95-4.11)	3.22 (2.09-4.73)	3.47 (2.20-5.20)
2-hr	0.696 (0.547-0.876)	0.821 (0.644-1.03)	1.03 (0.802-1.30)	1.20 (0.929-1.52)	1.43 (1.07-1.88)	1.61 (1.18-2.15)	1.79 (1.27-2.48)	1.99 (1.35-2.82)	2.27 (1.48-3.31)	2.49 (1.58-3.71)
3-hr	0.532 (0.419-0.667)	0.633 (0.498-0.793)	0.796 (0.625-1.00)	0.932 (0.727-1.18)	1.12 (0.845-1.47)	1.26 (0.931-1.69)	1.41 (1.01-1.95)	1.57 (1.07-2.22)	1.81 (1.18-2.64)	2.00 (1.28-2.97)
6-hr	0.336 (0.266-0.418)	0.402 (0.318-0.501)	0.510 (0.403-0.637)	0.600 (0.471-0.753)	0.724 (0.549-0.946)	0.816 (0.607-1.09)	0.914 (0.660-1.26)	1.03 (0.699-1.44)	1.19 (0.779-1.72)	1.33 (0.848-1.96)
12-hr	0.206 (0.164-0.255)	0.248 (0.197-0.306)	0.315 (0.250-0.392)	0.372 (0.294-0.464)	0.450 (0.343-0.584)	0.508 (0.379-0.673)	0.569 (0.413-0.782)	0.641 (0.438-0.893)	0.746 (0.489-1.07)	0.834 (0.533-1.22)
24-hr	0.121 (0.097-0.148)	0.147 (0.118-0.180)	0.189 (0.151-0.233)	0.224 (0.178-0.278)	0.273 (0.210-0.353)	0.309 (0.232-0.408)	0.347 (0.254-0.476)	0.393 (0.269-0.545)	0.462 (0.303-0.659)	0.519 (0.333-0.755)
2-day	0.067 (0.054-0.081)	0.082 (0.066-0.101)	0.108 (0.087-0.133)	0.130 (0.104-0.160)	0.160 (0.124-0.206)	0.182 (0.138-0.239)	0.206 (0.152-0.281)	0.235 (0.161-0.323)	0.279 (0.184-0.396)	0.317 (0.204-0.458)
3-day	0.048 (0.039-0.058)	0.059 (0.048-0.072)	0.078 (0.063-0.096)	0.094 (0.075-0.115)	0.116 (0.090-0.149)	0.132 (0.100-0.173)	0.149 (0.111-0.204)	0.171 (0.118-0.234)	0.204 (0.134-0.288)	0.232 (0.149-0.334)
4-day	0.038 (0.031-0.046)	0.047 (0.038-0.057)	0.062 (0.050-0.076)	0.075 (0.060-0.092)	0.092 (0.072-0.118)	0.105 (0.080-0.137)	0.119 (0.088-0.162)	0.136 (0.093-0.185)	0.161 (0.107-0.228)	0.183 (0.118-0.263)
7-day	0.026 (0.021-0.031)	0.031 (0.026-0.038)	0.041 (0.033-0.050)	0.049 (0.039-0.059)	0.059 (0.046-0.076)	0.067 (0.051-0.087)	0.076 (0.056-0.102)	0.086 (0.060-0.117)	0.101 (0.067-0.142)	0.114 (0.074-0.163)
10-day	0.021 (0.017-0.025)	0.025 (0.020-0.030)	0.032 (0.026-0.039)	0.038 (0.030-0.046)	0.046 (0.036-0.058)	0.051 (0.039-0.066)	0.058 (0.043-0.077)	0.065 (0.045-0.088)	0.076 (0.050-0.106)	0.084 (0.055-0.120)
20-day	0.015 (0.012-0.017)	0.017 (0.014-0.020)	0.021 (0.017-0.025)	0.024 (0.019-0.029)	0.028 (0.022-0.036)	0.032 (0.024-0.040)	0.035 (0.026-0.046)	0.039 (0.027-0.052)	0.044 (0.029-0.061)	0.048 (0.031-0.068)
30-day	0.012 (0.010-0.014)	0.014 (0.011-0.016)	0.016 (0.013-0.020)	0.019 (0.015-0.023)	0.022 (0.017-0.027)	0.024 (0.019-0.031)	0.027 (0.020-0.035)	0.029 (0.020-0.039)	0.033 (0.022-0.045)	0.035 (0.023-0.050)
45-day	0.010 (0.008-0.012)	0.011 (0.009-0.013)	0.013 (0.011-0.016)	0.015 (0.012-0.018)	0.017 (0.013-0.021)	0.019 (0.014-0.024)	0.021 (0.015-0.027)	0.022 (0.016-0.030)	0.024 (0.016-0.034)	0.026 (0.017-0.037)
60-day	0.008 (0.007-0.010)	0.009 (0.008-0.011)	0.011 (0.009-0.013)	0.012 (0.010-0.015)	0.014 (0.011-0.018)	0.016 (0.012-0.020)	0.017 (0.012-0.022)	0.018 (0.013-0.024)	0.020 (0.013-0.028)	0.021 (0.014-0.030)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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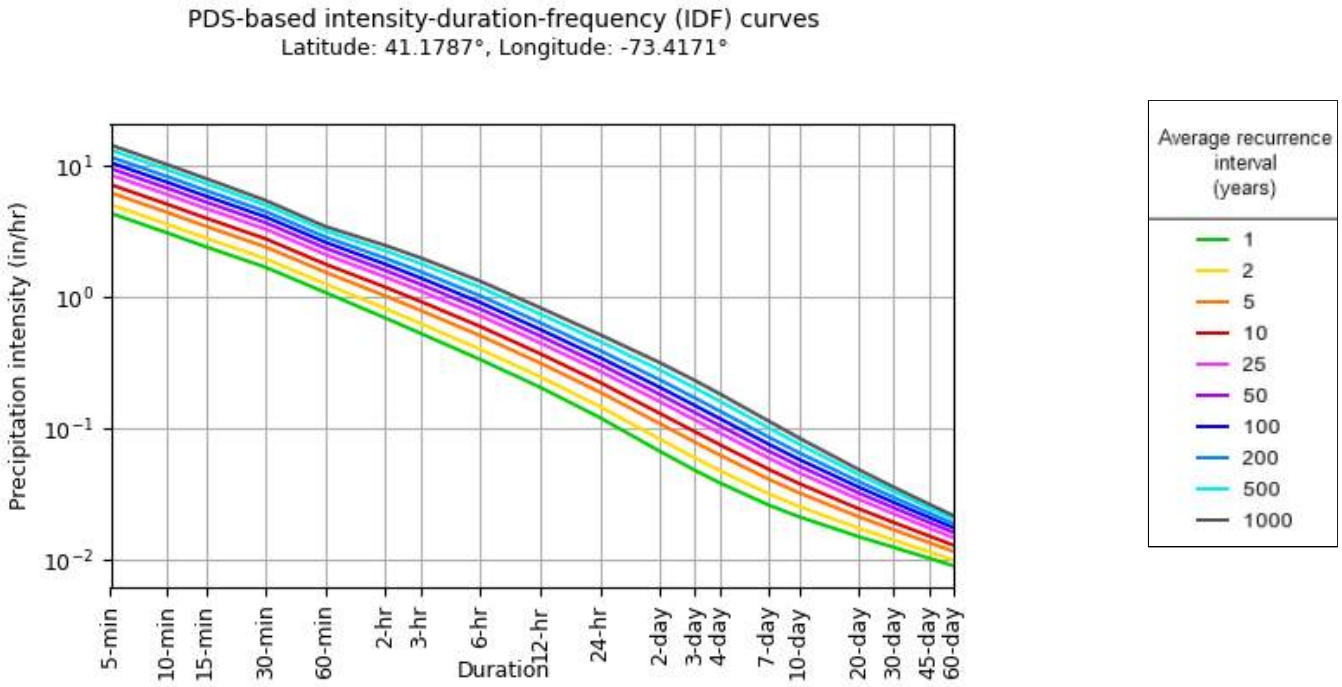
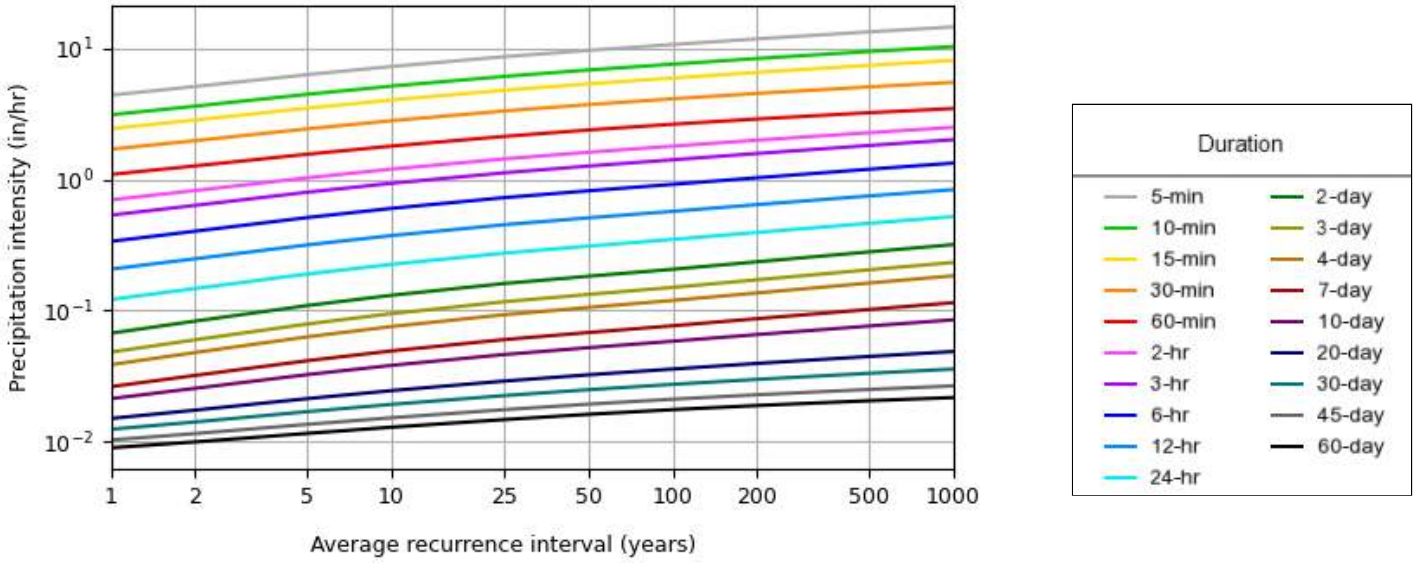
PF graphical





NOAA Atlas 14, Volume 10, Version 3

Created (GMT): Mon Oct 16 16:00:53 2023

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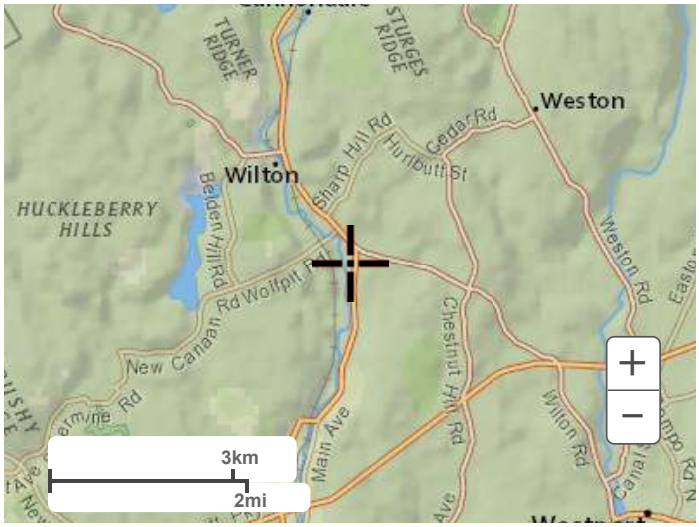
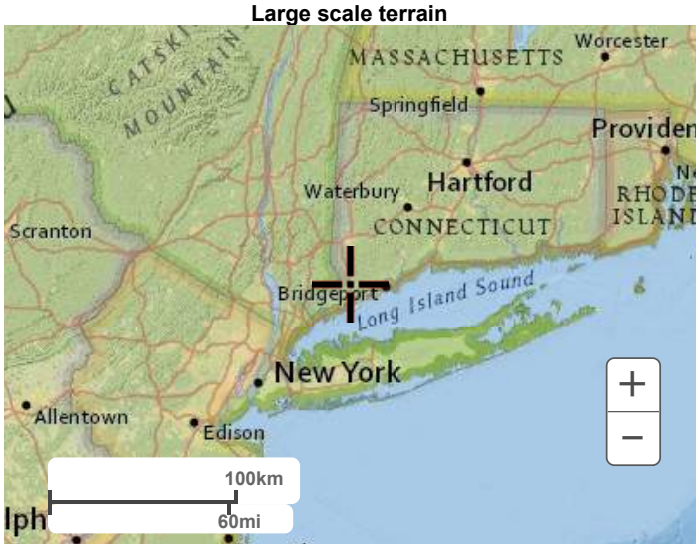
Maps & aerials

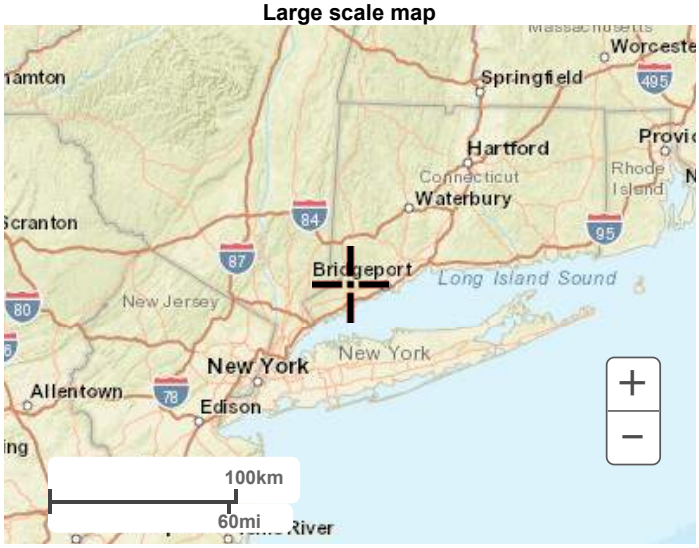
Small scale terrain



Large scale terrain



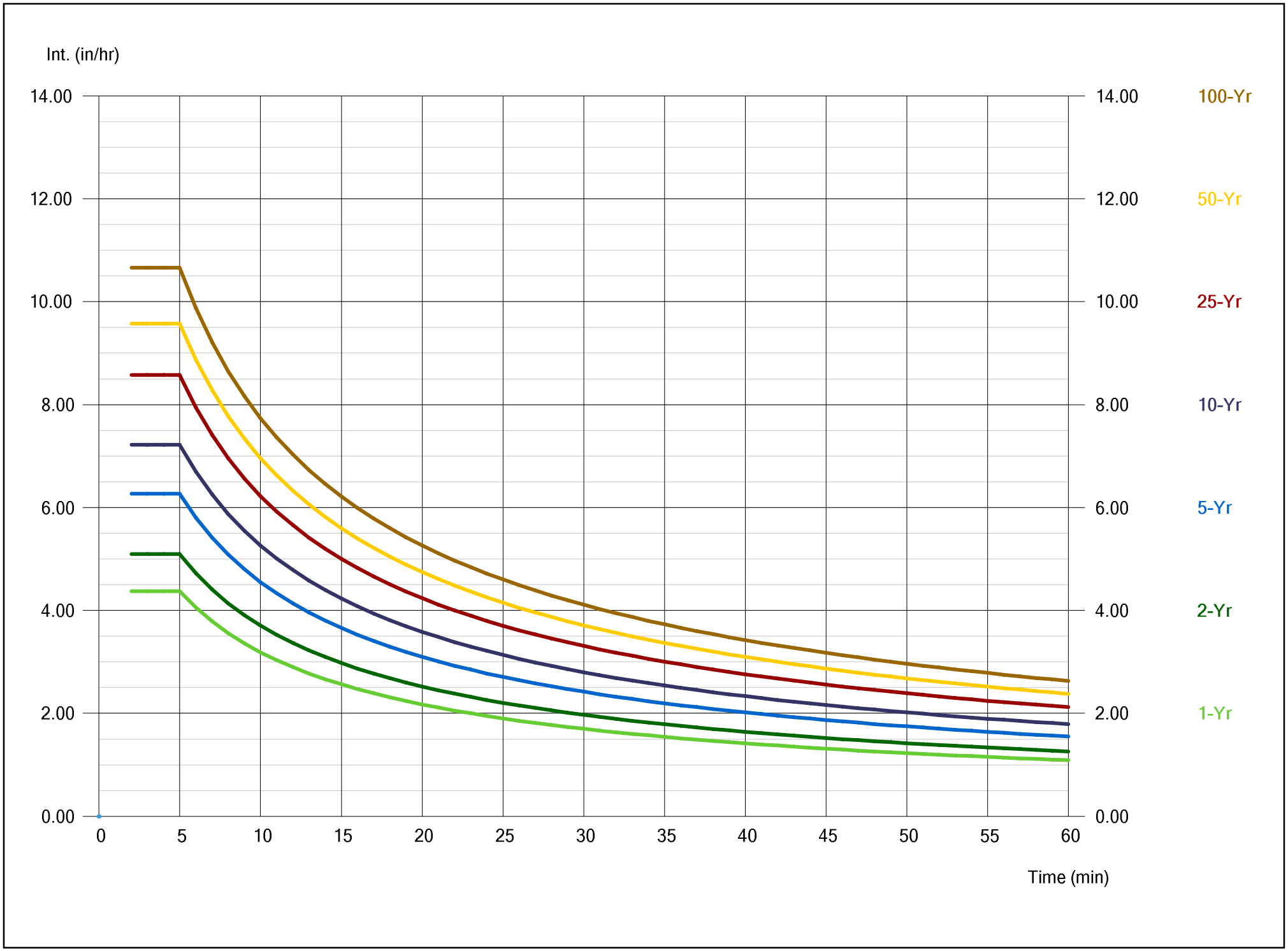
Large scale map



Large scale aerial

Storm Sewer IDF Curves

IDF file: wilton.IDF



Rational Method Individual Basin Calculations

Project: Proposed Multi-Family Development By: RH Date: Rev:2/13/24
Location: Wilton, Connecticut Checked: Date:

Basin Name	Impervious Area C=0.9 (sf)	Grassed Area C=0.3 (sf)	Wooded Area C=0.2 (sf)	Total Area (sf)	Total Area (ac)	Weighted C	Tc (min)
System 1 UG							
CCB 27	5008	7986	0	12994	0.30	0.53	5.0
CCB 28	8279	281	0	8560	0.20	0.88	5.0
CCB 29	678	0	0	678	0.02	0.90	5.0
CCB 30	675	0	0	675	0.02	0.90	5.0
System 3 UG							
CCB 7	4855	323	0	5178	0.12	0.86	5.0
CCB 10	4743	4000	0	8743	0.20	0.63	5.0
CCB 14	1386	74	0	1460	0.03	0.87	5.0
CCB 17	2448	0	0	2448	0.06	0.90	5.0
CCB 18	1860	1144	0	3004	0.07	0.67	5.0
OVFL 19	1883	6304	0	8187	0.19	0.44	5.0
CLCB 20	1759	0	0	1759	0.04	0.90	5.0
CLCB 21	1740	0	0	1740	0.04	0.90	5.0
Outlet							
CCB 6	3375	63	0	3438	0.08	0.89	5.0
CCB 26	3046	820	0	3866	0.09	0.77	5.0
CCB 26A	5350	1203	0	6553	0.15	0.79	5.0
OVFL 3	1533	5291	0	6824	0.16	0.43	5.0
OVFL 25	1069	5874	0	6943	0.16	0.39	5.0

Rational Method Roof Drain System Calculations

Project: Proposed Multi-Family Development By: RH Date: Rev:2/13/24
Location: Wilton, Connecticut Checked: Date:

Total Roof Runoff to Proposed Storm Drainage System (In Hydraflow Model)

	ROOF TO FRONT LAWN RAIN GARDEN						
C	0.90						
I	10.70						
A	0.07						
Q	0.71						

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan

Project File: System 1-03.stm	Number of lines: 4	Date: 2/13/2024

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	17.000	-90.000	Comb	0.00	0.20	0.88	5.0	142.70	1.76	143.00	12	Cir	0.012	1.50	151.50	MH 21 (S-1) - CCB 28
2	1	113.000	-90.149	Comb	0.00	0.30	0.53	5.0	143.00	0.88	144.00	12	Cir	0.012	1.00	147.10	CCB 28 - CCB 27
3	End	208.000	0.256	Comb	0.00	0.02	0.90	5.0	142.70	2.16	147.20	12	Cir	0.012	1.50	150.90	MH 21 (S-1) - CCB 29
4	3	21.000	86.938	Comb	0.00	0.02	0.90	5.0	147.20	0.95	147.40	12	Cir	0.012	1.00	150.90	CCB 29 - CCB 30

Project File: System 1-03.stm | Number of lines: 4 | Date: 2/13/2024

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	17.000	0.20	0.50	0.88	0.18	0.34	5.0	5.7	8.1	2.72	5.13	4.01	12	1.76	142.70	143.00	143.70	143.71	151.80	151.50	MH 21 - CCB 28
2	1	113.000	0.30	0.30	0.53	0.16	0.16	5.0	5.0	8.6	1.36	3.63	2.63	12	0.88	143.00	144.00	144.19	144.49	151.50	147.10	CCB 28 - CCB 27
3	End	208.000	0.02	0.04	0.90	0.02	0.04	5.0	5.2	8.4	0.30	5.67	1.33	12	2.16	142.70	147.20	143.70	147.43	151.35	150.90	MH 21 - CCB 29
4	3	21.000	0.02	0.02	0.90	0.02	0.02	5.0	5.0	8.6	0.15	3.77	1.52	12	0.95	147.20	147.40	147.43	147.56	150.90	150.90	CCB 29 - CCB 30

Project File: System 1-03.stm

Number of lines: 4

Run Date: 2/13/2024

NOTES:Intensity = 38.51 / (Inlet time + 3.60) ^ 0.70; Return period =Yrs. 25 ; c = cir e = ellip b = box

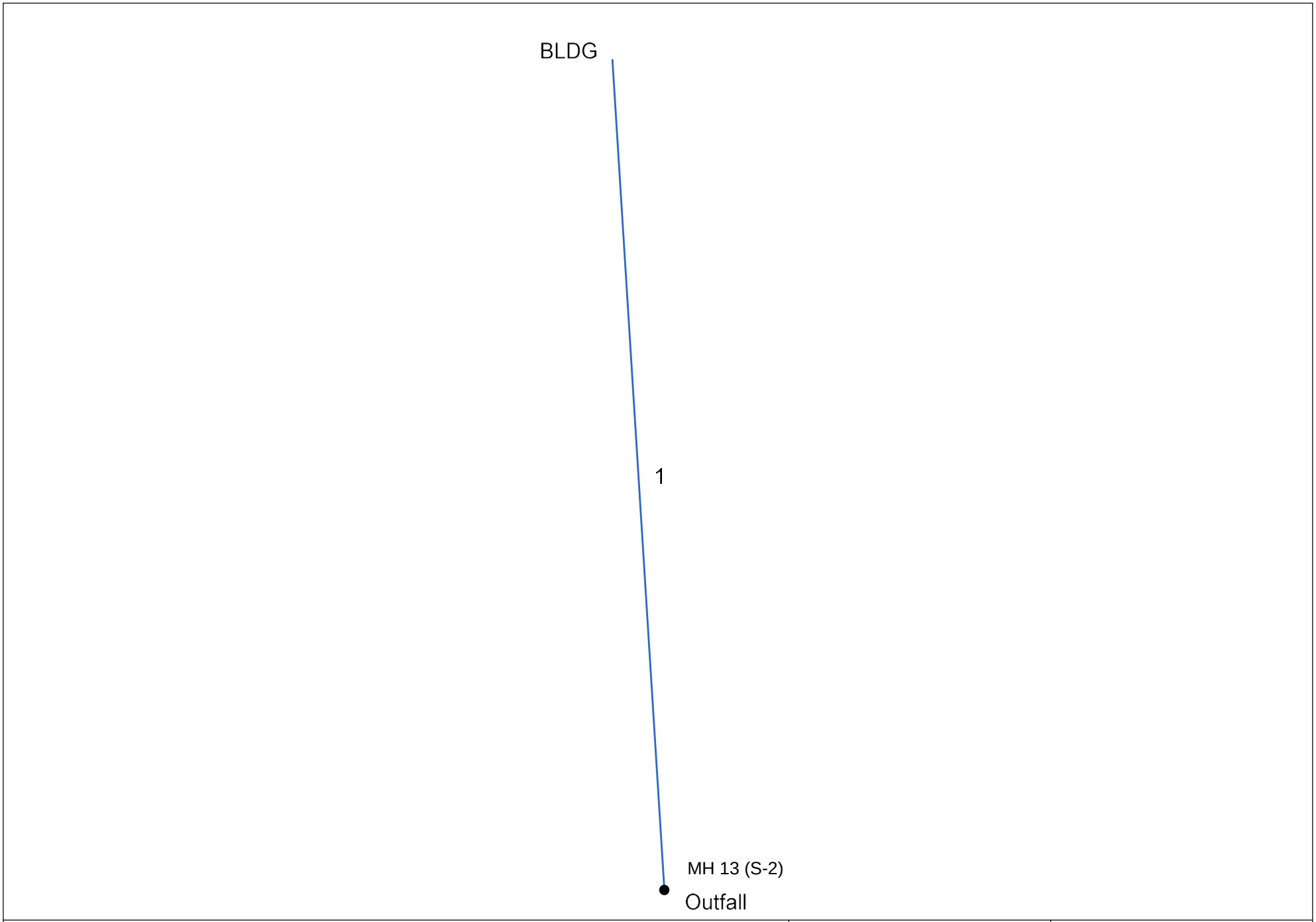
Hydraulic Grade Line Computations

Line	Size (in)	Q (cfs)	Downstream Invert elev (ft)	Downstream HGL elev (ft)	Downstream Depth (ft)	Downstream Area (sqft)	Downstream Vel (ft/s)	Downstream Vel head (ft)	Downstream EGL elev (ft)	Downstream Sf (%)	Len (ft)	Upstream Invert elev (ft)	Upstream HGL elev (ft)	Upstream Depth (ft)	Upstream Area (sqft)	Upstream Vel (ft/s)	Upstream Vel head (ft)	Upstream EGL elev (ft)	Upstream Sf (%)	Check Ave Sf (%)	Check Enrgy loss (ft)	JL coeff (K)	Minor loss (ft)
1	12	2.72	142.70	143.70	1.00	0.59	3.46	0.19	143.89	0.496	17.000	143.00	143.71 j	0.71**	0.59	4.57	0.32	144.03	0.686	0.591	0.100	1.50	0.49
2	12	1.36	143.00	144.19	1.00	0.39	1.74	0.05	144.24	0.125	113.000	144.00	144.49 j	0.49**	0.39	3.53	0.19	144.69	0.523	0.324	n/a	1.00	0.19
3	12	0.30	142.70	143.70	1.00*	0.13	0.39	0.00	143.70	0.006	208.000	147.20	147.43 j	0.23**	0.13	2.27	0.08	147.51	0.487	0.247	n/a	1.50	0.12
4	12	0.15	147.20	147.43	0.23	0.08	1.16	0.06	147.48	0.000	21.000	147.40	147.56 j	0.16**	0.08	1.89	0.06	147.62	0.000	0.000	n/a	1.00	n/a

Project File: System 1-03.stm | Number of lines: 4 | Run Date 2/13/2024

Notes: * depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: System 2-03.stm	Number of lines: 1	Date: 2/13/2024

Storm Sewers v2023.00

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	5.000	-93.988	None	4.54	0.00	0.00	0.0	143.90	8.00	144.30	12	Cir	0.012	1.00	151.20	MH 13 (S-2) - BLDG

Project File: System 2-03.stm | Number of lines: 1 | Date: 2/13/2024

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	5.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	4.54	10.91	5.97	12	8.00	143.90	144.30	144.90	145.19	150.70	151.20	MH 13 - BLDG

Project File: System 2-03.stm

Number of lines: 1

Run Date: 2/13/2024

NOTES:Intensity = 38.51 / (Inlet time + 3.60) ^ 0.70; Return period =Yrs. 25 ; c = cir e = ellip b = box

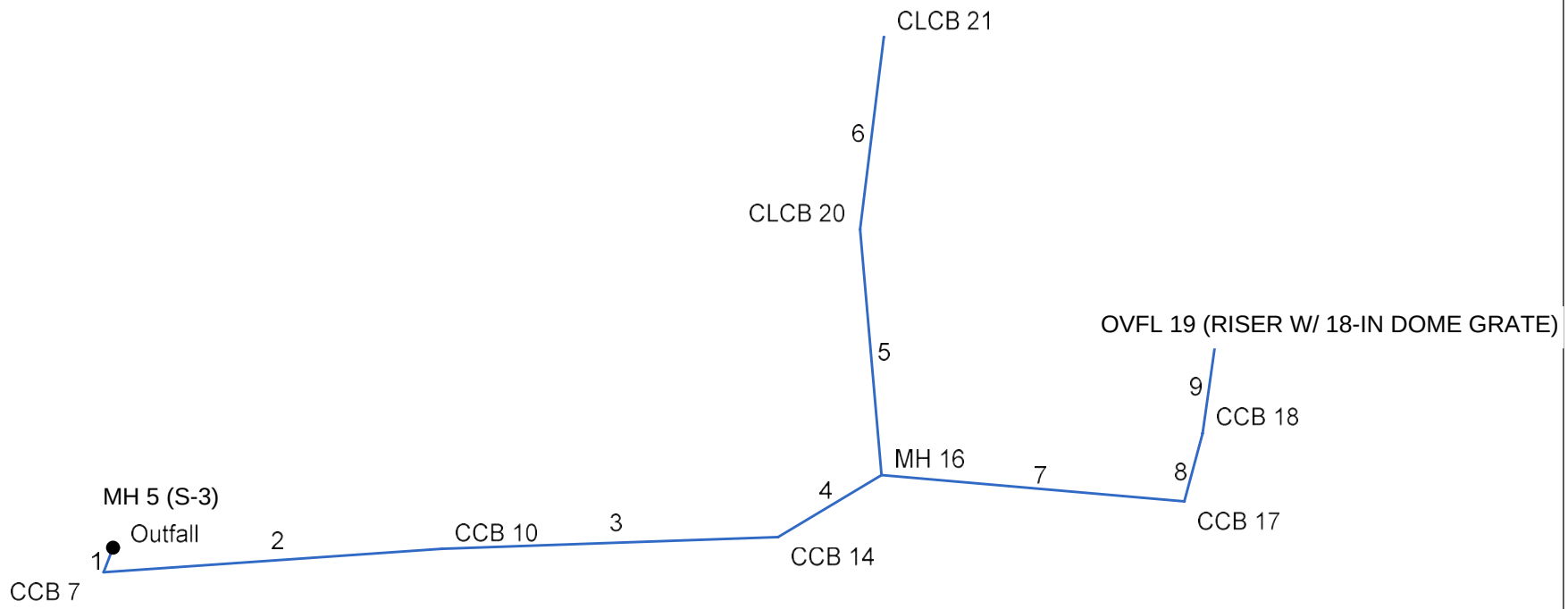
Hydraulic Grade Line Computations

Line	Size (in)	Q (cfs)	Downstream Invert elev (ft)	Downstream HGL elev (ft)	Downstream Depth (ft)	Downstream Area (sqft)	Downstream Vel (ft/s)	Downstream Vel head (ft)	Downstream EGL elev (ft)	Downstream Sf (%)	Len (ft)	Upstream Invert elev (ft)	Upstream HGL elev (ft)	Upstream Depth (ft)	Upstream Area (sqft)	Upstream Vel (ft/s)	Upstream Vel head (ft)	Upstream EGL elev (ft)	Upstream Sf (%)	Check Ave Sf (%)	Check Enrgy loss (ft)	JL coeff (K)	Minor loss (ft)
1	12	4.54	143.90	144.90	1.00	0.74	5.78	0.52	145.42	1.385	5.000	144.30	145.19 j	0.89**	0.74	6.16	0.59	145.78	1.233	1.309	n/a	1.00	0.59

Project File: System 2-03.stm | Number of lines: 1 | Run Date 2/13/2024

Notes: ; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: System 3-03.stm	Number of lines: 9	Date: 2/13/2024

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	9.000	111.000	Comb	0.00	0.12	0.86	5.0	140.30	1.11	140.40	18	Cir	0.012	1.50	144.20	MH 5 - CCB 7
2	1	115.000	-115.000	Comb	0.00	0.20	0.63	5.0	140.40	1.83	142.50	12	Cir	0.012	0.50	147.10	CCB 7 - CCB 10
3	2	114.000	2.000	Comb	0.00	0.03	0.87	5.0	142.50	1.05	143.70	12	Cir	0.012	0.81	150.90	CCB 10 - CCB 14
4	3	41.000	-29.000	MH	0.00	0.00	0.00	0.0	143.70	1.46	144.30	12	Cir	0.012	0.92	152.50	CCB 14 - MH 16
5	4	84.000	-64.000	Grate	0.00	0.04	0.90	5.0	147.00	3.57	150.00	12	Cir	0.012	0.50	154.40	MH 16 - CLCB 20
6	5	66.000	12.000	Grate	0.00	0.04	0.90	5.0	150.00	0.91	150.60	12	Cir	0.012	1.00	154.40	CLCB 20 - CLCB 21
7	4	103.000	36.000	Comb	0.00	0.06	0.90	5.0	144.30	0.97	145.30	12	Cir	0.012	1.48	149.50	MH 16 - CCB 17
8	7	24.000	-80.000	Comb	0.00	0.07	0.67	5.0	145.30	0.83	145.50	12	Cir	0.012	0.50	149.60	CCB 17 - CCB 18
9	8	32.000	-7.000	DrGrt	0.36	0.00	0.00	0.0	145.50	1.25	145.90	12	Cir	0.012	1.00	149.00	CCB 18 - OVFL 19

Project File: System 3-03.stm | Number of lines: 9 | Date: 2/13/2024

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	9.000	0.12	0.56	0.86	0.10	0.43	5.0	7.2	7.3	3.50	11.99	1.98	18	1.11	140.30	140.40	142.50	142.51	144.50	144.20	MH 5 - CCB 7
2	1	115.000	0.20	0.44	0.63	0.13	0.33	5.0	6.7	7.6	2.82	5.21	4.12	12	1.83	140.40	142.50	142.60	143.22	144.20	147.10	CCB 7 - CCB 10
3	2	114.000	0.03	0.24	0.87	0.03	0.20	5.0	6.1	7.9	1.93	3.96	3.30	12	1.05	142.50	143.70	143.39	144.29	147.10	150.90	CCB 10 - CCB 14
4	3	41.000	0.00	0.21	0.00	0.00	0.17	0.0	5.9	8.0	1.74	4.67	3.72	12	1.46	143.70	144.30	144.29	144.86	150.90	152.50	CCB 14 - MH 16
5	4	84.000	0.04	0.08	0.90	0.04	0.07	5.0	5.6	8.2	0.59	7.29	4.15	12	3.57	147.00	150.00	147.19	150.32	152.50	154.40	MH 16 - CLCB 20
6	5	66.000	0.04	0.04	0.90	0.04	0.04	5.0	5.0	8.6	0.31	3.68	1.86	12	0.91	150.00	150.60	150.32	150.83	154.40	154.40	CLCB 20 - CLCB 21
7	4	103.000	0.06	0.13	0.90	0.05	0.10	5.0	5.2	8.5	1.21	3.80	3.04	12	0.97	144.30	145.30	144.86	145.76	152.50	149.50	MH 16 - CCB 17
8	7	24.000	0.07	0.07	0.67	0.05	0.05	5.0	5.0	8.6	0.76	3.52	2.54	12	0.83	145.30	145.50	145.76	145.86	149.50	149.60	CCB 17 - CCB 18
9	8	32.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.36	4.31	1.88	12	1.25	145.50	145.90	145.86	146.15	149.60	149.00	CCB 18 - OVFL 19

Project File: System 3-03.stm

Number of lines: 9

Run Date: 2/13/2024

NOTES:Intensity = 38.51 / (Inlet time + 3.60) ^ 0.70; Return period =Yrs. 25 ; c = cir e = ellip b = box

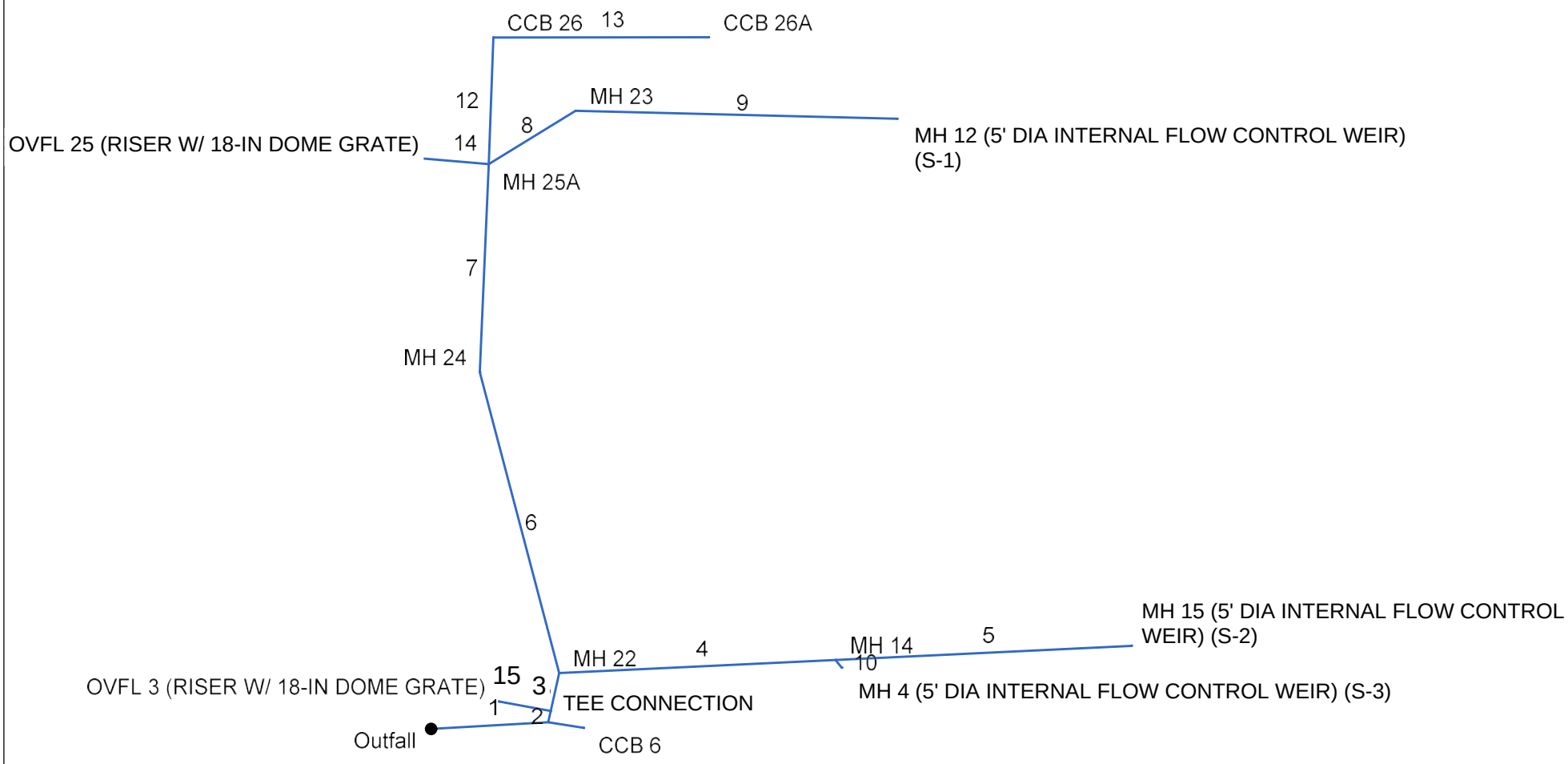
Hydraulic Grade Line Computations

Line	Size (in)	Q (cfs)	Downstream Invert elev (ft)	Downstream HGL elev (ft)	Downstream Depth (ft)	Downstream Area (sqft)	Downstream Vel (ft/s)	Downstream Vel head (ft)	Downstream EGL elev (ft)	Downstream Sf (%)	Len (ft)	Upstream Invert elev (ft)	Upstream HGL elev (ft)	Upstream Depth (ft)	Upstream Area (sqft)	Upstream Vel (ft/s)	Upstream Vel head (ft)	Upstream EGL elev (ft)	Upstream Sf (%)	Check Ave Sf (%)	Check Enrgy loss (ft)	JL coeff (K)	Minor loss (ft)
1	18	3.50	140.30	142.50	1.50	1.77	1.98	0.06	142.56	0.095	9.000	140.40	142.51	1.50	1.77	1.98	0.06	142.57	0.095	0.095	0.009	1.50	0.09
2	12	2.82	140.40	142.60	1.00	0.60	3.59	0.20	142.80	0.534	115.000	142.50	143.22 j	0.72**	0.61	4.65	0.34	143.56	0.705	0.619	0.712	0.50	0.17
3	12	1.93	142.50	143.39	0.89	0.48	2.61	0.25	143.64	0.000	114.000	143.70	144.29 j	0.59**	0.48	3.98	0.25	144.54	0.000	0.000	n/a	0.81	0.20
4	12	1.74	143.70	144.29	0.59	0.45	3.60	0.23	144.52	0.000	41.000	144.30	144.86 j	0.56**	0.45	3.84	0.23	145.09	0.000	0.000	n/a	0.92	0.21
5	12	0.59	147.00	147.19	0.19*	0.11	5.57	0.12	147.31	0.000	84.000	150.00	150.32	0.32**	0.22	2.73	0.12	150.43	0.000	0.000	n/a	0.50	n/a
6	12	0.31	150.00	150.32	0.32	0.14	1.43	0.08	150.40	0.000	66.000	150.60	150.83 j	0.23**	0.14	2.28	0.08	150.91	0.000	0.000	n/a	1.00	n/a
7	12	1.21	144.30	144.86	0.56	0.36	2.68	0.18	145.04	0.000	103.000	145.30	145.76 j	0.46**	0.36	3.40	0.18	145.94	0.000	0.000	n/a	1.48	n/a
8	12	0.76	145.30	145.76	0.46	0.26	2.13	0.13	145.90	0.000	24.000	145.50	145.86 j	0.36**	0.26	2.95	0.13	146.00	0.000	0.000	n/a	0.50	n/a
9	12	0.36	145.50	145.86	0.36	0.15	1.39	0.09	145.95	0.000	32.000	145.90	146.15 j	0.25**	0.15	2.38	0.09	146.24	0.000	0.000	n/a	1.00	n/a

Project File: System 3-03.stm | Number of lines: 9 | Run Date 2/13/2024

Notes: * depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: Outlet System 1 2 and 3 - 03.stm	Number of lines: 15	Date: 2/13/2024

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	42.000	-4.075	MH	0.00	0.00	0.00	0.0	137.30	0.71	137.60	36	Cir	0.013	0.98	142.10	HEADWALL 1 - MH 2
2	1	5.000	-75.824	None	0.00	0.00	0.00	0.0	137.60	1.00	137.65	24	Cir	0.012	1.00	143.00	MH 2 - TEE
3	2	17.000	0.000	MH	0.00	0.00	0.00	0.0	137.65	0.88	137.80	24	Cir	0.012	0.98	143.30	TEE - MH 22
4	3	99.000	76.527	MH	0.00	0.00	0.00	0.0	137.80	3.13	140.90	15	Cir	0.012	0.90	145.10	MH 22 - MH 14
5	4	106.000	0.000	MH	4.48	0.00	0.00	0.0	140.90	2.12	143.15	15	Cir	0.012	1.00	147.30	MH 14 - MH 15 (S-2
6	3	136.000	-22.113	MH	0.00	0.00	0.00	0.0	137.80	0.44	138.40	18	Cir	0.013	0.29	143.10	MH 22 - MH 24
7	6	92.000	13.934	MH	0.00	0.00	0.00	0.0	138.40	0.43	138.80	18	Cir	0.013	1.00	143.10	MH 24 - MH 25A
8	7	39.000	50.948	MH	0.00	0.00	0.00	0.0	138.80	1.03	139.20	12	Cir	0.012	0.68	143.30	MH 25A - MH 23
9	8	115.000	38.878	MH	3.12	0.00	0.00	0.0	139.50	2.78	142.70	12	Cir	0.012	1.00	146.70	MH 23 - MH 12 (S-1
10	4	4.000	60.852	MH	3.89	0.00	0.00	0.0	141.00	3.50	141.14	12	Cir	0.012	1.00	145.10	MH 14 - MH 4 (S-3)
11	1	13.000	15.546	Comb	0.00	0.08	0.89	5.0	137.90	7.69	138.90	12	Cir	0.012	1.00	143.20	MH 2 - CCB 6
12	7	56.000	-0.186	Comb	0.00	0.09	0.77	5.0	138.80	0.54	139.10	12	Cir	0.012	1.50	142.70	MH 25A - CCB 26
13	12	77.000	88.216	Comb	0.00	0.15	0.79	5.0	139.10	0.65	139.60	12	Cir	0.012	1.00	143.80	CCB 26 - CCB 26A
14	7	26.000	-85.916	DrGrt	1.11	0.00	0.00	0.0	138.80	0.77	139.00	8	Cir	0.012	1.00	140.50	MH 25A - OVFL 25
15	2	19.000	-87.138	DrGrt	1.21	0.00	0.00	0.0	137.65	0.79	137.80	12	Cir	0.012	1.00	141.00	TEE - OVFL 3

Project File: Outlet System 1 2 and 3 - 03.stm | Number of lines: 15 | Date: 2/13/2024

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	42.000	0.00	0.32	0.00	0.00	0.26	0.0	7.2	9.1	16.17	56.37	3.98	36	0.71	137.30	137.60	140.10	138.88	140.20	142.10	HDWL 1- MH 2
2	1	5.000	0.00	0.24	0.00	0.00	0.19	0.0	7.2	9.1	15.52	24.50	6.90	24	1.00	137.60	137.65	138.88	139.07	142.10	143.00	MH 2 - TEE
3	2	17.000	0.00	0.24	0.00	0.00	0.19	0.0	7.1	9.1	14.31	23.02	6.14	24	0.88	137.65	137.80	139.07	139.16	143.00	143.30	TEE - MH 22
4	3	99.000	0.00	0.00	0.00	0.00	0.00	0.0	0.4	0.0	8.37	12.38	6.99	15	3.13	137.80	140.90	139.16	142.03	143.30	145.10	MH 22 - MH 14
5	4	106.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	4.48	10.19	4.42	15	2.12	140.90	143.15	142.03	144.01	145.10	147.30	MH 14 - MH 15
6	3	136.000	0.00	0.24	0.00	0.00	0.19	0.0	6.6	9.5	6.01	6.97	3.86	18	0.44	137.80	138.40	139.16	139.55	143.30	143.10	MH 22 - MH 24
7	6	92.000	0.00	0.24	0.00	0.00	0.19	0.0	6.2	9.7	6.06	6.92	4.11	18	0.43	138.40	138.80	139.62	139.92	143.10	143.10	MH 24 - MH 25A
8	7	39.000	0.00	0.00	0.00	0.00	0.00	0.0	0.4	0.0	3.12	3.91	3.97	12	1.03	138.80	139.20	140.20	140.46	143.10	143.30	MH 25A - MH 23
9	8	115.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	3.12	6.44	4.43	12	2.78	139.50	142.70	140.63	143.46	143.30	146.70	MH 23 - MH 12
10	4	4.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	3.89	7.22	5.24	12	3.50	141.00	141.14	142.03	141.98	145.10	145.10	MH 14 - MH 4
11	1	13.000	0.08	0.08	0.89	0.07	0.07	5.0	5.0	10.7	0.76	10.70	1.96	12	7.69	137.90	138.90	138.88	139.26	142.10	143.20	MH 2 - CCB 6
12	7	56.000	0.09	0.24	0.77	0.07	0.19	5.0	5.8	10.0	1.88	2.82	2.40	12	0.54	138.80	139.10	140.20	140.34	143.10	142.70	MH 25A - CCB 26
13	12	77.000	0.15	0.15	0.79	0.12	0.12	5.0	5.0	10.7	1.26	3.11	1.63	12	0.65	139.10	139.60	140.47	140.55	142.70	143.80	CCB 26 - CCB 26
14	7	26.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	1.11	1.15	3.18	8	0.77	138.80	139.00	140.20	140.39	143.10	140.50	MH 25A - OVFL 2
15	2	19.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	1.21	3.43	1.54	12	0.79	137.65	137.80	139.07	139.09	143.00	141.00	TEE - OVFL 3

Project File: Outlet System 1 2 and 3 - 03.stm

Number of lines: 15

Run Date: 2/13/2024

NOTES:Intensity = 48.06 / (Inlet time + 3.60) ^ 0.70; Return period =Yrs. 100 ; c = cir e = ellip b = box

Hydraulic Grade Line Computations

Line	Size (in)	Q (cfs)	Downstream Invert elev (ft)	Downstream HGL elev (ft)	Downstream Depth (ft)	Downstream Area (sqft)	Downstream Vel (ft/s)	Downstream Vel head (ft)	Downstream EGL elev (ft)	Downstream Sf (%)	Len (ft)	Upstream Invert elev (ft)	Upstream HGL elev (ft)	Upstream Depth (ft)	Upstream Area (sqft)	Upstream Vel (ft/s)	Upstream Vel head (ft)	Upstream EGL elev (ft)	Upstream Sf (%)	Check Ave Sf (%)	Check Enrgy loss (ft)	JL coeff (K)	Minor loss (ft)
1	36	16.17	137.30	140.10	2.80	2.88	2.35	0.49	140.59	0.000	42.000	137.60	138.88	1.28**	2.88	5.60	0.49	139.37	0.000	0.000	n/a	0.98	0.48
2	24	15.52	137.60	138.88	1.28	2.13	7.29	0.66	139.54	0.000	5.000	137.65	139.07	1.42**	2.38	6.51	0.66	139.73	0.000	0.000	n/a	1.00	n/a
3	24	14.31	137.65	139.07	1.42	2.28	6.01	0.61	139.68	0.000	17.000	137.80	139.16 j	1.36**	2.28	6.28	0.61	139.78	0.000	0.000	n/a	0.98	n/a
4	15	8.37	137.80	139.16	1.25	1.17	6.82	0.72	139.89	1.432	99.000	140.90	142.03 j	1.13**	1.17	7.17	0.80	142.83	1.255	1.344	n/a	0.90	0.72
5	15	4.48	140.90	142.03	1.13	0.90	3.84	0.39	142.42	0.000	106.000	143.15	144.01 j	0.86**	0.90	5.00	0.39	144.40	0.000	0.000	n/a	1.00	0.39
6	18	6.01	137.80	139.16	1.36	1.69	3.57	0.20	139.36	0.287	136.000	138.40	139.55	1.14	1.45	4.15	0.27	139.81	0.379	0.333	0.453	0.29	0.08
7	18	6.06	138.40	139.62	1.22	1.54	3.93	0.24	139.86	0.336	92.000	138.80	139.92	1.12	1.41	4.28	0.29	140.20	0.405	0.371	0.341	1.00	0.29
8	12	3.12	138.80	140.20	1.00	0.79	3.97	0.25	140.45	0.654	39.000	139.20	140.46	1.00	0.79	3.97	0.25	140.71	0.654	0.654	0.255	0.68	0.17
9	12	3.12	139.50	140.63	1.00	0.64	3.97	0.25	140.87	0.654	115.000	142.70	143.46 j	0.76**	0.64	4.90	0.37	143.83	0.772	0.713	n/a	1.00	0.37
10	12	3.89	141.00	142.03	1.00	0.70	4.95	0.38	142.41	1.017	4.000	141.14	141.98	0.84**	0.70	5.53	0.48	142.45	0.977	0.997	0.040	1.00	0.48
11	12	0.76	137.90	138.88	0.98	0.26	0.97	0.13	139.02	0.000	13.000	138.90	139.26 j	0.36**	0.26	2.94	0.13	139.40	0.000	0.000	n/a	1.00	0.13
12	12	1.88	138.80	140.20	1.00	0.79	2.40	0.09	140.29	0.238	56.000	139.10	140.34	1.00	0.79	2.40	0.09	140.43	0.238	0.238	0.133	1.50	0.13
13	12	1.26	139.10	140.47	1.00	0.79	1.61	0.04	140.51	0.107	77.000	139.60	140.55	0.95	0.77	1.64	0.04	140.59	0.093	0.100	0.077	1.00	0.04
14	8	1.11	138.80	140.20	0.67	0.35	3.18	0.16	140.36	0.720	26.000	139.00	140.39	0.67	0.35	3.18	0.16	140.55	0.720	0.720	0.187	1.00	0.16
15	12	1.21	137.65	139.07	1.00	0.79	1.54	0.04	139.11	0.098	19.000	137.80	139.09	1.00	0.79	1.54	0.04	139.12	0.098	0.098	0.019	1.00	0.04

Project File: Outlet System 1 2 and 3 - 03.stm | Number of lines: 15 | Run Date 2/13/2024

Notes: ; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Outlet Protection Calculations

Project:	Proposed Multi-Family Development	By:	RH	Date:	11/02/23
Location:	Wilton, Connecticut	Checked:		Date:	Rev:2/13/24
Outlet I.D.	**HEADWALL 1 TO RIVER**				

*Based on Connecticut DOT Drainage Manual, Section 11.13

Description:

CONCRETE HEADWALL 1 TO RIVER

Design Criteria (100-yr Storm Event):

Q (cfs) =	14.81	R_p (ft)=	3
D (in) =	36	S_p (ft) =	3
V (fps) =	3.8	Tw (ft)=	2.8

Q= Flow rate at discharge point in cubic feet per second (cfs)
D= Outlet pipe diameter (in)
V= Flow velocity at discharge point (ft/s)
R_p= Maximum inside pipe rise (ft)
S_p= inside diametere for circular sections of maximum inside pipe span for non-circular sections (ft)
T_w= Tailwater depth (ft)

Based on **Table 11-13.1** use Type 'B' ---> TW≥ 0.5 Rp

Rip Rap Stone Size:

Velocity	Rip Rap Specification	D_{50} Stone Size
0-8 fps	Modified	5 inches

Preformed Scour Hole Dimensions:

F(ft)=0.5(R_p)	=	n/a
C(ft)=3.0(S_p)+6.0(F)	=	n/a
B(ft)=2.0(S_p)+6.0(F)	=	n/a

Rip Rap Splash Pad Dimensions:

L_a	=	15	ft
W1 = 3.0(S_p) min.	=	9	ft
W2 = 3.0(Sp)+0.4(La) min.	=	15	ft
d (Depth of Stone)	=	12	inches

SLR

Outlet Protection Calculations

Project:	Proposed Multi-Family Development	By:	RH	Date:	Rev:2/13/24
Location:	Wilton, Connecticut	Checked:		Date:	
Outlet I.D.	**JEWEL BOX ROOFDRAIN**				

*Based on Connecticut DOT Drainage Manual, Section 11.13

Description:

Jewel Box roof drain to front lawn

Design Criteria (100-yr Storm Event):

Q (cfs) =	0.71	R_p (ft)=	1
D (in) =	12	S_p (ft) =	1
V (fps) =	0.904	Tw (ft)=	1

Q= Flow rate at discharge point in cubic feet per second (cfs)
D= Outlet pipe diameter (in)
V= Flow velocity at discharge point (ft/s)
R_p= Maximum inside pipe rise (ft)
S_p= inside diametere for circular sections of maximum inside pipe span for non-circular sections (ft)
T_w= Tailwater depth (ft)

Based on **Table 11-13.1** use Type 'B' ---> TW≥ 0.5 Rp

Rip Rap Stone Size:

Velocity	Rip Rap Specification	D_{50} Stone Size
0-8 fps	Modified	5 inches

Preformed Scour Hole Dimensions:

F(ft)=0.5(R_p)	=	n/a
C(ft)=3.0(S_p)+6.0(F)	=	n/a
B(ft)=2.0(S_p)+6.0(F)	=	n/a

Rip Rap Splash Pad Dimensions:

L_a	=	10	ft
W1 = 3.0(S_p) min.	=	3	ft
W2 = 3.0(Sp)+0.4(La) min.	=	7	ft
d (Depth of Stone)	=	12	inches

SLR

	SLR Consulting	Project	21543.00001
	COMPUTATION SHEET - WATER QUALITY FLOW (WQF)	Made By:	MCB
Subject:	131 Danbury Rd, Wilton, Connecticut	Date:	1/31/2024
		Chkd by:	
		Date:	

CDS Unit - MH 2								
Contributing Basins			Imperv. Area (acres)	Total Area (acres)				
Total			3.05	3.79				
Table 4.1: WQV = (P)(R_v)(A)/12 =				0.245	acre-feet			
Where:								
I = % of Impervious Cover =				80%				
R_v = volumetric runoff coeff. 0.05 + 0.009(I) =				0.774				
P = design precipitation (1.0" for water quality storm) =					1	inch		
A = site area (acres) =				3.79	acres =	0.0059	miles^2	
Q = runoff depth (in watershed inches) = [WQV(acrefeet)]*[12(inches/foot)]/drainage area (acres)								
			Q =	0.774				
CN = 1000 / [10+ 5P + 10Q -10(Q^2 + 1.25QP)$^{0.5}$] =					98			
Where:								
Q = runoff depth (in watershed inches)								
			t_c =	0.1	hours			
Type III Rainfall Distribution:								
From Table 4-1, Ia =		0.041		Ia/P =	0.041			
(TR-55)								
From Exhibit 4-III, q_u =		700	csm/in.					
(TR-55)								
WQF = (qu)(A)(Q) =		3.21	cfs		**Cascade CS-5 Flow = 3.5 cfs -> OK**			

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MH 2

2. Compute the time of concentration (t_c) based on the methods described in Chapter 3 of TR-55. A minimum value of 0.167 hours (10 minutes) should be used. For sheet flow, the flow path should not be longer than 300 feet.

3. Using the computed CN, t_c, and drainage area (A) in acres, compute the peak discharge for the water quality storm (i.e., the water quality flow [WQF]), based on the procedures described in Chapter 4 of TR-55.

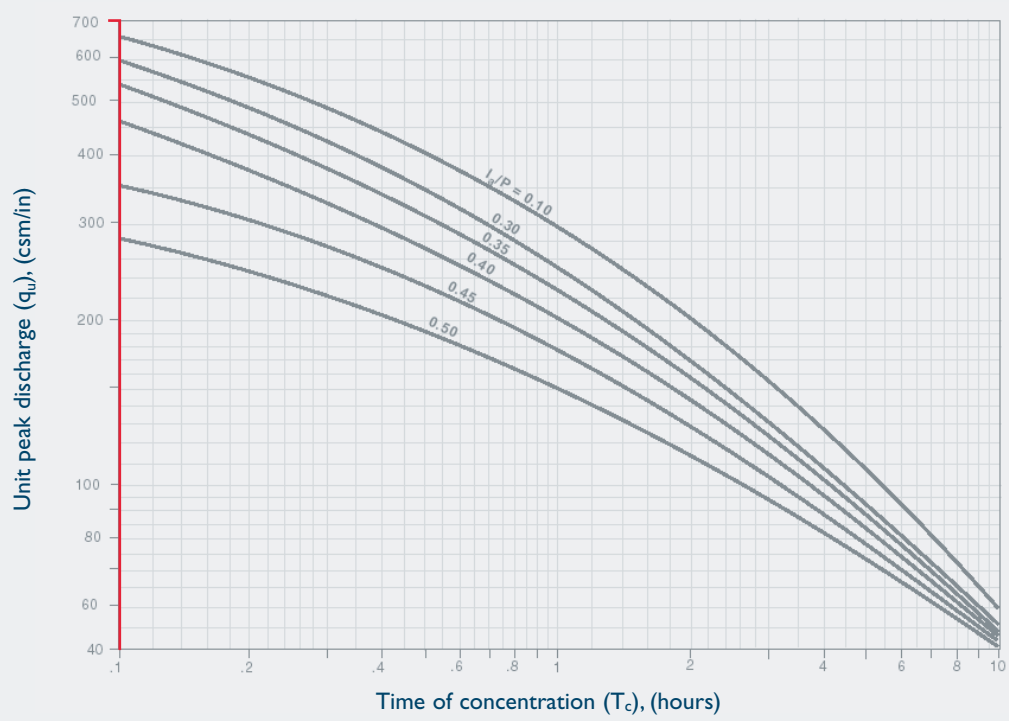
   - *Read initial abstraction (I_a) from Table 4-1 in Chapter 4 of TR-55 (reproduced below); compute I_a/P*

Table 4-1 I_a values for runoff curve numbers

Curve number	I_a (in)	Curve number	I_a (in)	Curve number	I_a (in)	Curve number	I_a (in)
40	3.000	55	1.636	70	0.857	85	0.353
41	2.878	56	1.571	71	0.817	86	0.326
42	2.762	57	1.509	72	0.778	87	0.299
43	2.651	58	1.448	73	0.740	88	0.273
44	2.545	59	1.390	74	0.703	89	0.247
45	2.444	60	1.333	75	0.667	90	0.222
46	2.348	61	1.279	76	0.632	91	0.198
47	2.255	62	1.226	77	0.597	92	0.174
48	2.167	63	1.175	78	0.564	93	0.151
49	2.082	64	1.125	79	0.532	94	0.128
50	2.000	65	1.077	80	0.500	95	0.105
51	1.922	66	1.030	81	0.469	96	0.083
52	1.846	67	0.985	82	0.439	97	0.062
53	1.774	68	0.941	83	0.410	98	0.041
54	1.704	69	0.899	84	0.381		

   - *Read the unit peak discharge (q_u) from Exhibit 4-III in Chapter 4 of TR-55 (reproduced below) for appropriate t_c*

Exhibit 4-111 Unit peak discharge (q_u) for NRCS (SCS) type III rainfall distribution



MH 2

Product Flow Rates

CASCADE

Model	Treatment Rate (cfs)	Sediment Capacity[1] (CF)
CS-4	2.00	19
CS-5	3.50	29
CS-6	5.60	42
CS-8	12.00	75
CS-10	18.00	118

CDS

Model	Treatment Rate[2] (cfs)	Sediment Capacity[1] (CF)
1515-3	1.00	14
2015-4	1.40	25
2015-5	1.40	39
2015-6	1.40	57
2020-5	2.20	39
2020-6	2.20	57
2025-5	3.20	39
2025-6	3.20	57
3020-6	3.90	57
3025-6	5.00	57
3030-6	5.70	57
3035-6	6.50	57
4030-8	7.50	151
4040-8	9.50	151

VORTECHS

Model	Treatment Rate (cfs)	Sediment Capacity[3] (CF)
1000	1.60	16
2000	2.80	32
3000	4.50	49
4000	6.00	65
5000	8.50	86
7000	11.00	108
9000	14.00	130
11000	17.5	151
16000	25	192

STORMCEPTOR STC

Model	Treatment Rate (cfs)	Sediment Capacity[1] (CF)
STC 450i	0.40	46
STC 900	0.89	89
STC 2400	1.58	205
STC 4800	2.47	543
STC 7200	3.56	839
STC 11000	4.94	1086
STC 16000	7.12	1677

1 Additional sediment storage capacity available – Check with your local representative for information.

2 Treatment Capacity is based on laboratory testing using OK-110 (average D50 particle size of approximately 100 microns) and a 2400 micron screen.

3 Maintenance recommended when sediment depth has accumulated to within 12-18 inches of the dry weather water surface elevation.

STORMWATER SOLUTIONS

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	SLR Consulting	Project	21543.00001
	COMPUTATION SHEET - WATER QUALITY FLOW (WQF)	Made By:	MCB
Subject:	131 Danbury Rd, Wilton, Connecticut	Date:	1/31/2024
		Chkd by:	
		Date:	

CDS Unit - MH 5								
Contributing Basins			Imperv. Area (acres)	Total Area (acres)				
Total			0.53	0.80				
Table 4.1: WQV = (P)(R_v)(A)/12 =				0.043	acre-feet			
Where:								
I = % of Impervious Cover =				66%				
R_v = volumetric runoff coeff. 0.05 + 0.009(I) =				0.646				
P = design precipitation (1.0" for water quality storm) =					1	inch		
A = site area (acres) =				0.8	acres =	0.0013	miles^2	
Q = runoff depth (in watershed inches) = [WQV(acrefeet)]*[12(inches/foot)]/drainage area (acres)								
			Q =	0.646				
CN = 1000 / [10+ 5P + 10Q -10(Q^2 + 1.25QP)$^{0.5}$] =					96			
Where:								
Q = runoff depth (in watershed inches)								
			t_c =	0.1	hours			
Type III Rainfall Distribution:								
From Table 4-1, Ia =		0.083		Ia/P =	0.083			
(TR-55)								
From Exhibit 4-III, q_u =		700	csm/in.					
(TR-55)								
WQF = (qu)(A)(Q) =		0.57	cfs		**CDS 2015-4-C Flow = 1.4 cfs -> OK**			

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MH 5

2. Compute the time of concentration (t_c) based on the methods described in Chapter 3 of TR-55. A minimum value of 0.167 hours (10 minutes) should be used. For sheet flow, the flow path should not be longer than 300 feet.

3. Using the computed CN, t_c, and drainage area (A) in acres, compute the peak discharge for the water quality storm (i.e., the water quality flow [WQF]), based on the procedures described in Chapter 4 of TR-55.

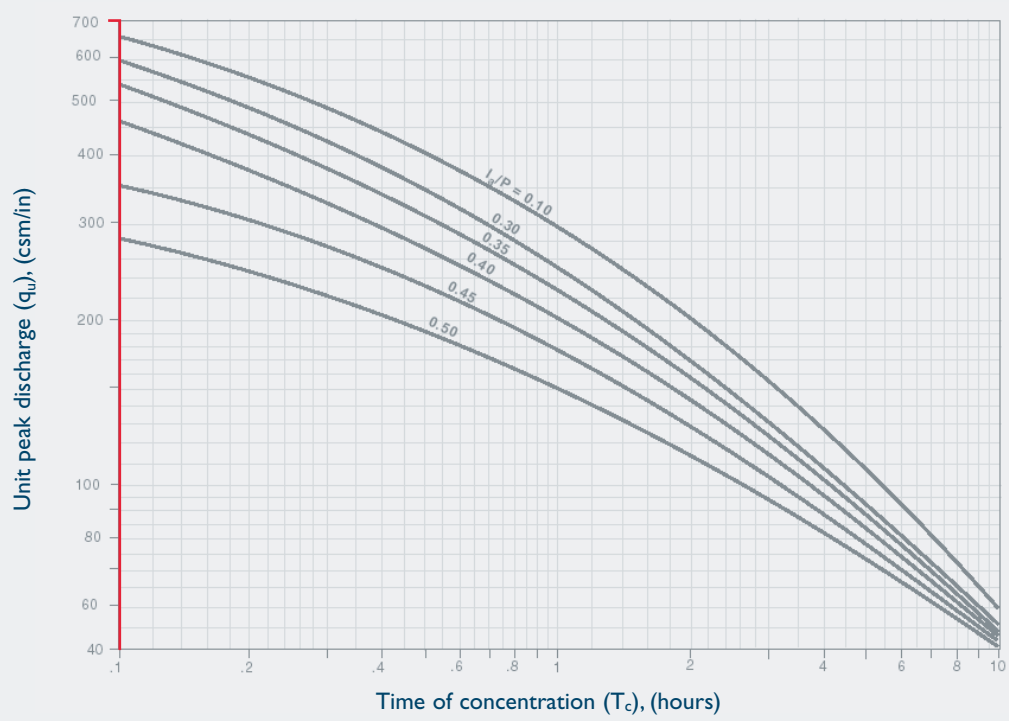
   - *Read initial abstraction (I_a) from Table 4-1 in Chapter 4 of TR-55 (reproduced below); compute I_a/P*

Table 4-1 I_a values for runoff curve numbers

Curve number	I_a (in)	Curve number	I_a (in)	Curve number	I_a (in)	Curve number	I_a (in)
40	3.000	55	1.636	70	0.857	85	0.353
41	2.878	56	1.571	71	0.817	86	0.326
42	2.762	57	1.509	72	0.778	87	0.299
43	2.651	58	1.448	73	0.740	88	0.273
44	2.545	59	1.390	74	0.703	89	0.247
45	2.444	60	1.333	75	0.667	90	0.222
46	2.348	61	1.279	76	0.632	91	0.198
47	2.255	62	1.226	77	0.597	92	0.174
48	2.167	63	1.175	78	0.564	93	0.151
49	2.082	64	1.125	79	0.532	94	0.128
50	2.000	65	1.077	80	0.500	95	0.105
51	1.922	66	1.030	81	0.469	96	0.083
52	1.846	67	0.985	82	0.439	97	0.062
53	1.774	68	0.941	83	0.410	98	0.041
54	1.704	69	0.899	84	0.381		

   - *Read the unit peak discharge (q_u) from Exhibit 4-III in Chapter 4 of TR-55 (reproduced below) for appropriate t_c*

Exhibit 4-111 Unit peak discharge (q_u) for NRCS (SCS) type III rainfall distribution



MH 5

Product Flow Rates

CASCADE

Model	Treatment Rate (cfs)	Sediment Capacity[1] (CF)
CS-4	2.00	19
CS-5	3.50	29
CS-6	5.60	42
CS-8	12.00	75
CS-10	18.00	118

CDS

Model	Treatment Rate[2] (cfs)	Sediment Capacity[1] (CF)
1515-3	1.00	14
2015-4	1.40	25
2015-5	1.40	39
2015-6	1.40	57
2020-5	2.20	39
2020-6	2.20	57
2025-5	3.20	39
2025-6	3.20	57
3020-6	3.90	57
3025-6	5.00	57
3030-6	5.70	57
3035-6	6.50	57
4030-8	7.50	151
4040-8	9.50	151

VORTECHS

Model	Treatment Rate (cfs)	Sediment Capacity[3] (CF)
1000	1.60	16
2000	2.80	32
3000	4.50	49
4000	6.00	65
5000	8.50	86
7000	11.00	108
9000	14.00	130
11000	17.5	151
16000	25	192

STORMCEPTOR STC

Model	Treatment Rate (cfs)	Sediment Capacity[1] (CF)
STC 450i	0.40	46
STC 900	0.89	89
STC 2400	1.58	205
STC 4800	2.47	543
STC 7200	3.56	839
STC 11000	4.94	1086
STC 16000	7.12	1677

1 Additional sediment storage capacity available – Check with your local representative for information.

2 Treatment Capacity is based on laboratory testing using OK-110 (average D50 particle size of approximately 100 microns) and a 2400 micron screen.

3 Maintenance recommended when sediment depth has accumulated to within 12-18 inches of the dry weather water surface elevation.

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	SLR Consulting	Project	21543.00001
	COMPUTATION SHEET - WATER QUALITY FLOW (WQF)	Made By:	MCB
Subject:	131 Danbury Rd, Wilton, Connecticut	Date:	1/31/2024
		Chkd by:	
		Date:	

CDS Unit - MH 21								
Contributing Basins			Imperv. Area (acres)	Total Area (acres)				
Total			0.34	0.54				
Table 4.1: WQV = (P)(R_v)(A)/12 =				0.028	acre-feet			
Where:								
I = % of Impervious Cover =				63%				
R_v = volumetric runoff coeff. 0.05 + 0.009(I) =				0.617				
P = design precipitation (1.0" for water quality storm) =					1	inch		
A = site area (acres) =				0.54	acres =	0.0008	miles^2	
Q = runoff depth (in watershed inches) = [WQV(acrefeet)]*[12(inches/foot)]/drainage area (acres)								
			Q =	0.617				
CN = 1000 / [10+ 5P + 10Q -10(Q^2 + 1.25QP)$^{0.5}$] =					96			
Where:								
Q = runoff depth (in watershed inches)								
			t_c =	0.1	hours			
Type III Rainfall Distribution:								
From Table 4-1, Ia =		0.083		Ia/P =	0.083			
(TR-55)								
From Exhibit 4-III, q_u =		700	csm/in.					
(TR-55)								
WQF = (qu)(A)(Q) =		0.36	cfs		**CDS 2015-4-C Flow = 1.4 cfs -> OK**			

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MH 21

2. Compute the time of concentration (t_c) based on the methods described in Chapter 3 of TR-55. A minimum value of 0.167 hours (10 minutes) should be used. For sheet flow, the flow path should not be longer than 300 feet.

3. Using the computed CN, t_c, and drainage area (A) in acres, compute the peak discharge for the water quality storm (i.e., the water quality flow [WQF]), based on the procedures described in Chapter 4 of TR-55.

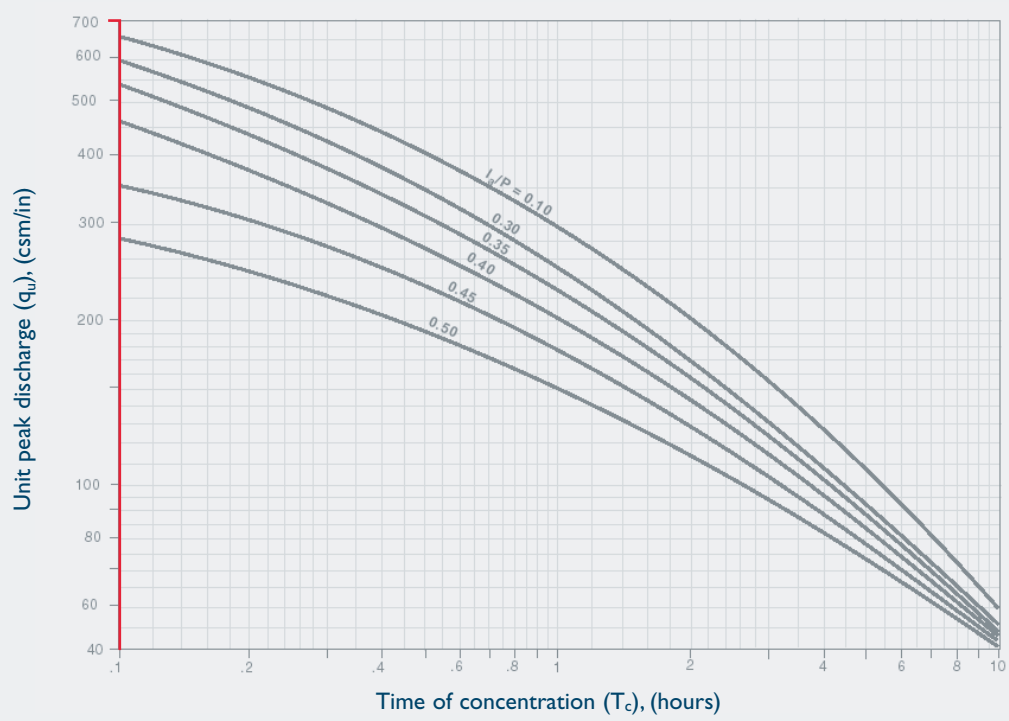
   - *Read initial abstraction (I_a) from Table 4-1 in Chapter 4 of TR-55 (reproduced below); compute I_a/P*

Table 4-1 I_a values for runoff curve numbers

Curve number	I_a (in)	Curve number	I_a (in)	Curve number	I_a (in)	Curve number	I_a (in)
40	3.000	55	1.636	70	0.857	85	0.353
41	2.878	56	1.571	71	0.817	86	0.326
42	2.762	57	1.509	72	0.778	87	0.299
43	2.651	58	1.448	73	0.740	88	0.273
44	2.545	59	1.390	74	0.703	89	0.247
45	2.444	60	1.333	75	0.667	90	0.222
46	2.348	61	1.279	76	0.632	91	0.198
47	2.255	62	1.226	77	0.597	92	0.174
48	2.167	63	1.175	78	0.564	93	0.151
49	2.082	64	1.125	79	0.532	94	0.128
50	2.000	65	1.077	80	0.500	95	0.105
51	1.922	66	1.030	81	0.469	96	0.083
52	1.846	67	0.985	82	0.439	97	0.062
53	1.774	68	0.941	83	0.410	98	0.041
54	1.704	69	0.899	84	0.381		

   - *Read the unit peak discharge (q_u) from Exhibit 4-III in Chapter 4 of TR-55 (reproduced below) for appropriate t_c*

Exhibit 4-111 Unit peak discharge (q_u) for NRCS (SCS) type III rainfall distribution



MH 21

Product Flow Rates

CASCADE

Model	Treatment Rate (cfs)	Sediment Capacity[1] (CF)
CS-4	2.00	19
CS-5	3.50	29
CS-6	5.60	42
CS-8	12.00	75
CS-10	18.00	118

CDS

Model	Treatment Rate[2] (cfs)	Sediment Capacity[1] (CF)
1515-3	1.00	14
2015-4	1.40	25
2015-5	1.40	39
2015-6	1.40	57
2020-5	2.20	39
2020-6	2.20	57
2025-5	3.20	39
2025-6	3.20	57
3020-6	3.90	57
3025-6	5.00	57
3030-6	5.70	57
3035-6	6.50	57
4030-8	7.50	151
4040-8	9.50	151

VORTECHS

Model	Treatment Rate (cfs)	Sediment Capacity[3] (CF)
1000	1.60	16
2000	2.80	32
3000	4.50	49
4000	6.00	65
5000	8.50	86
7000	11.00	108
9000	14.00	130
11000	17.5	151
16000	25	192

STORMCEPTOR STC

Model	Treatment Rate (cfs)	Sediment Capacity[1] (CF)
STC 450i	0.40	46
STC 900	0.89	89
STC 2400	1.58	205
STC 4800	2.47	543
STC 7200	3.56	839
STC 11000	4.94	1086
STC 16000	7.12	1677

1 Additional sediment storage capacity available – Check with your local representative for information.

2 Treatment Capacity is based on laboratory testing using OK-110 (average D50 particle size of approximately 100 microns) and a 2400 micron screen.

3 Maintenance recommended when sediment depth has accumulated to within 12-18 inches of the dry weather water surface elevation.

STORMWATER SOLUTIONS

PIPE SOLUTIONS

STRUCTURES SOLUTIONS

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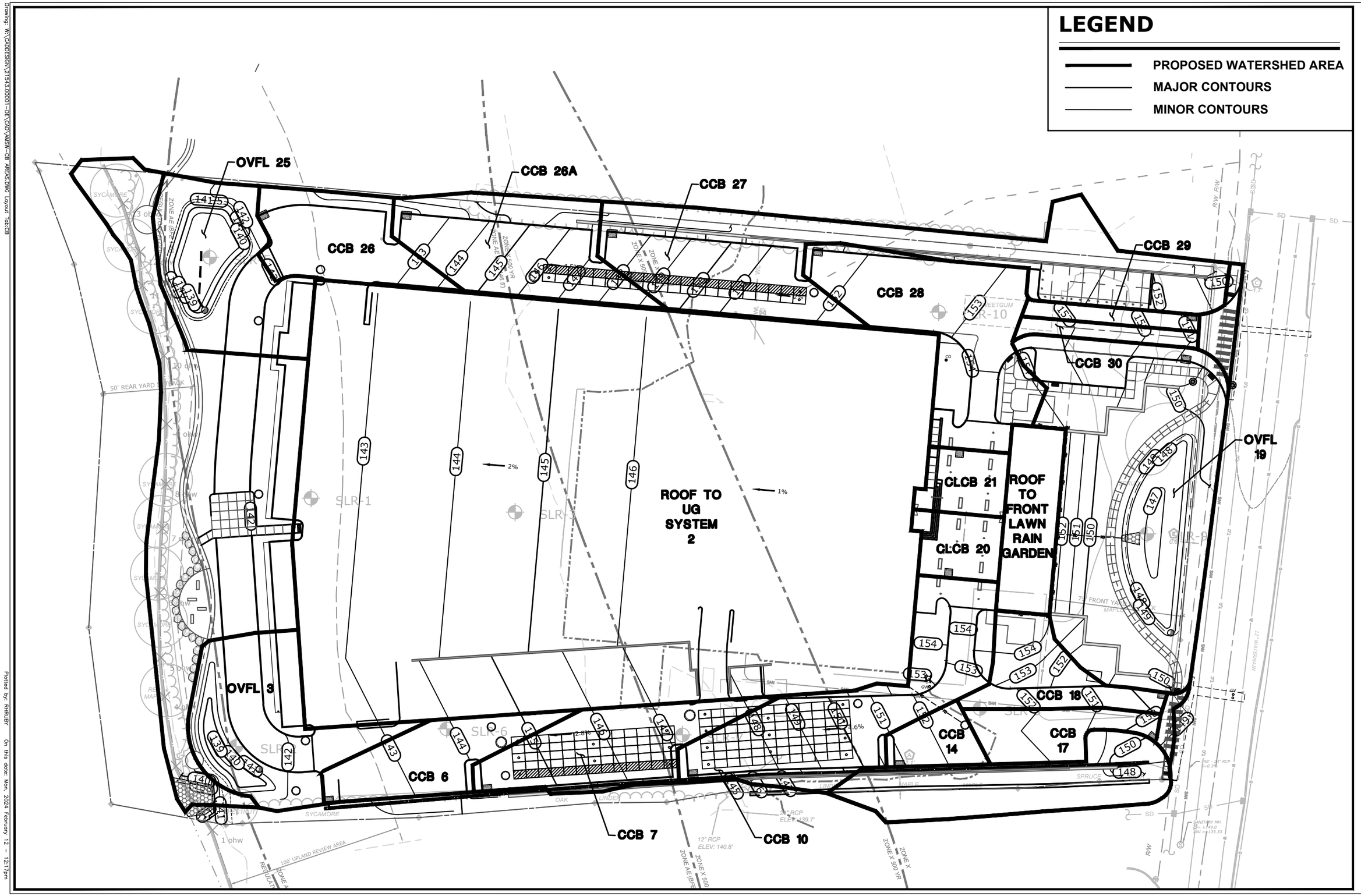


SLR

99 REALTY DRIVE
CHESHIRE, CT 06410
203.271.1773
SLRCONSULTING.COM

REVISIONS

1/05/2024	
2/13/2024	

DRAINAGE AREA MAP - PROPOSED CONDITIONS

PROPOSED MULTI-FAMILY DEVELOPMENT

131 DANBURY ROAD
WILTON, CONNECTICUT

HM	HM	MG
DESIGNED	DRAWN	CHECKED

SCALE 1"=50'

DATE NOVEMBER 2, 2023

PROJECT NO. 21543.00001

SHEET NO. CB

Drawing: W:\CADDESIGN\21543.00001-DE\CAD\AMSW-CB AREAS.DWG Layout: tab:CB

Plotted by: RHRUBY On this date: Mon, 2024 February 12 - 12:17pm

Appendix E
Water Quality Computations

Proposed Multifamily Development

131 Danbury Road, Wilton, Connecticut
Drainage Report

Ryan Sutherland, AMS Acquisitions Management Corporation

SLR Project No.: 141.21543.0000171

February 13, 2024

Proposed Multi-Family Development
131 Danbury Road, Wilton, Connecticut

Water Quality Volume (WQV)

Site Area	=	4.752	ac
Impervious Area	=	2.96	ac
Percent Impervious Cover, I	=	62	%
Volumetric Runoff Coefficient, R			
$R=0.05+0.009(I)$	=	0.610	
Water Quality Volume			
	=	**0.243**	**ac-ft**
$WQV=\frac{(1")(R)(A)}{12}$	**=**	**10580**	**cf**
Current site DCIA > 40%	=	**5290**	**cf**
Provided Water Quality Volume			
North Infiltration Basin	=	2090	cf
South Infiltration Basin	=	205	cf
Front Lawn Rain Garden	=	2410	CF
Infiltration System S-1	=	1700	cf
Infiltration System S-2	=	4005	cf
Infiltration System S-3	=	2310	cf
Total	**=**	**12720**	**cf**

Proposed Multi-Family Development
131 Danbury Road, Wilton, Connecticut

Required Water Quality Flow (WQF)

Water Quality Volume	=	0.243	ac-ft
Drainage Area, A	=	4.752	ac
Runoff Depth in Watershed inches, Q			
$Q = \frac{WQVx12}{A}$	=	0.613	in
Design Precipitation, P	=	1	in
Runoff Curve Number, CN	=	96	

$$CN = \frac{1000}{[10 + 5P + 10Q - 10(Q^2 + 1.25QP)^{\frac{1}{2}}}$$

From Table 4-1 in Chapter 4 of TR-55			
Initial Abstraction, Ia	=	0.128	in
Ia/P	=	0.128	
From Exhibit 4-III in Chapter 4 of TR-55			
qu = Unit Peak Discharge	=	650	csm/in
Water Quality Flow (WQF)			
$WQF = (q_u)(A)(Q)$	=	2.96	cfs

Appendix F
Hydrologic Analysis - Existing Conditions

Proposed Multifamily Development

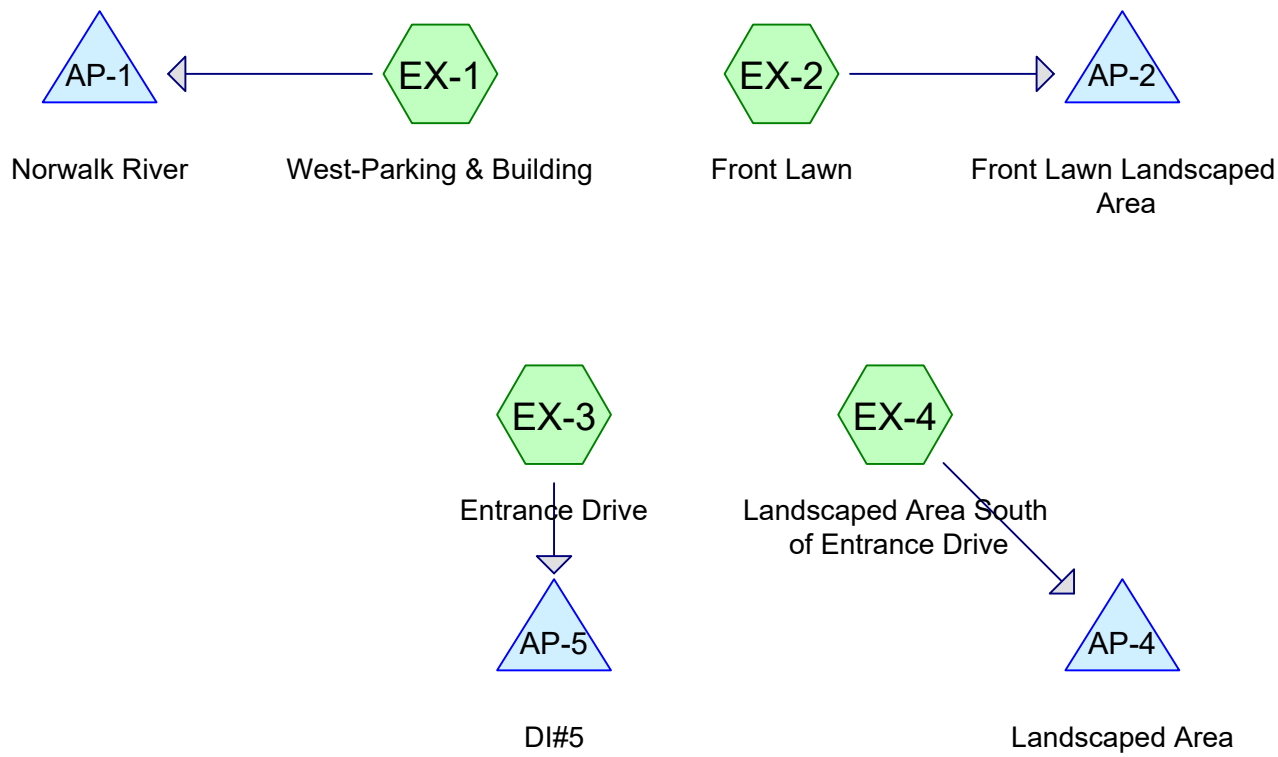
131 Danbury Road, Wilton, Connecticut
Drainage Report

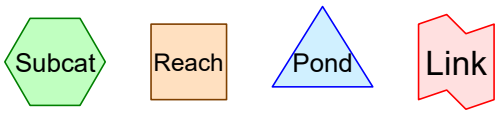
Ryan Sutherland, AMS Acquisitions Management Corporation

SLR Project No.: 141.21543.0000171

October 23, 2023

SLR





Routing Diagram for AMSW_Existing
Prepared by SLR International Corporation, Printed 10/18/2023
HydroCAD® 10.20-3c s/n 07599 © 2023 HydroCAD Software Solutions LLC

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-yr	NRCC 24-hr	C	Default	24.00	1	3.53	2
2	10-yr	NRCC 24-hr	C	Default	24.00	1	5.39	2
3	25-yr	NRCC 24-hr	C	Default	24.00	1	6.56	2
4	50-yr	NRCC 24-hr	C	Default	24.00	1	7.42	2
5	100-yr	NRCC 24-hr	C	Default	24.00	1	8.35	2

Summary for Subcatchment EX-1: West-Parking & Building

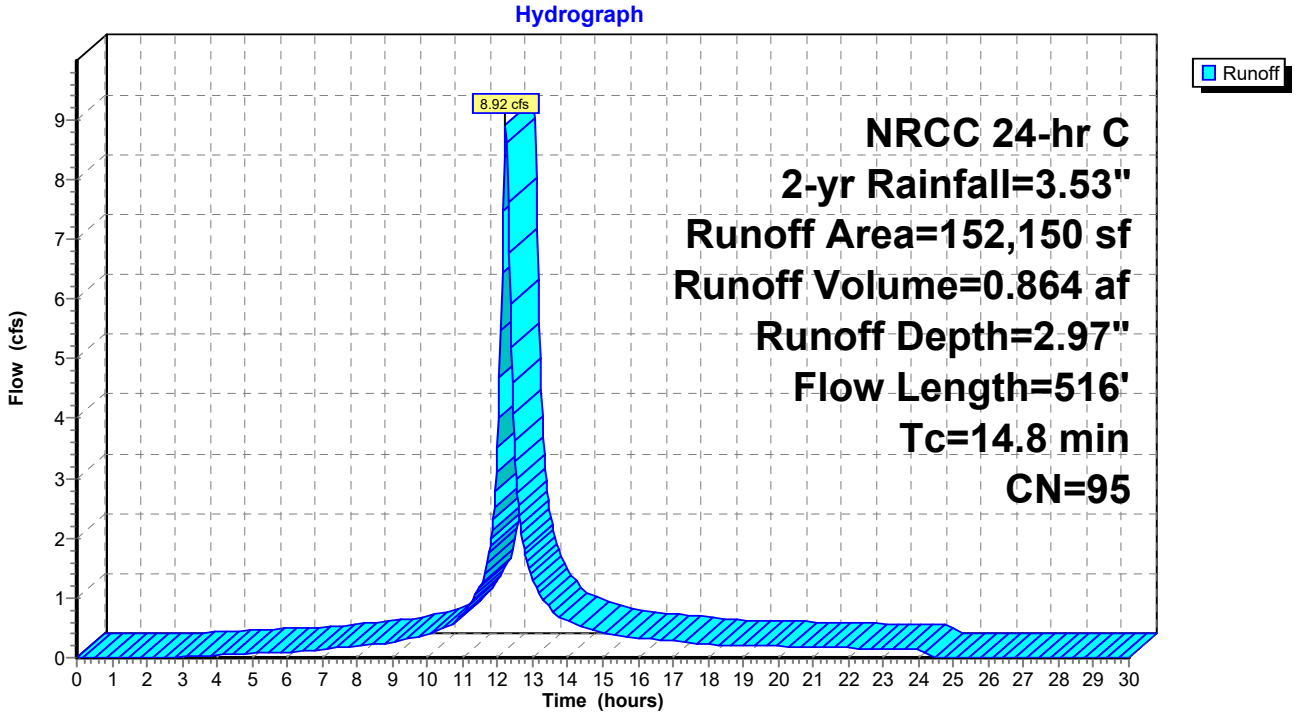
Runoff = 8.92 cfs @ 12.22 hrs, Volume= 0.864 af, Depth= 2.97"
Routed to Pond AP-1 : Norwalk River

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 2-yr Rainfall=3.53"

	Area (sf)	CN	Description
	67,673	98	Paved parking, HSG D
	18,349	98	Paved parking, HSG C
*	1,675	98	Concrete, HSG D
	38,351	98	Roofs, HSG D
	17,092	80	>75% Grass cover, Good, HSG D
*	144	79	Landscaping., Good, HSG D
	8,301	77	Woods, Good, HSG D
	565	70	Woods, Good, HSG C
	152,150	95	Weighted Average
	26,102		17.16% Pervious Area
	126,048		82.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0270	0.20		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.53"
5.5	275	0.0140	0.83		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.8	119	0.0150	2.49		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
0.2	22	0.2270	2.38		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
14.8	516	Total			

Subcatchment EX-1: West-Parking & Building



Summary for Subcatchment EX-2: Front Lawn

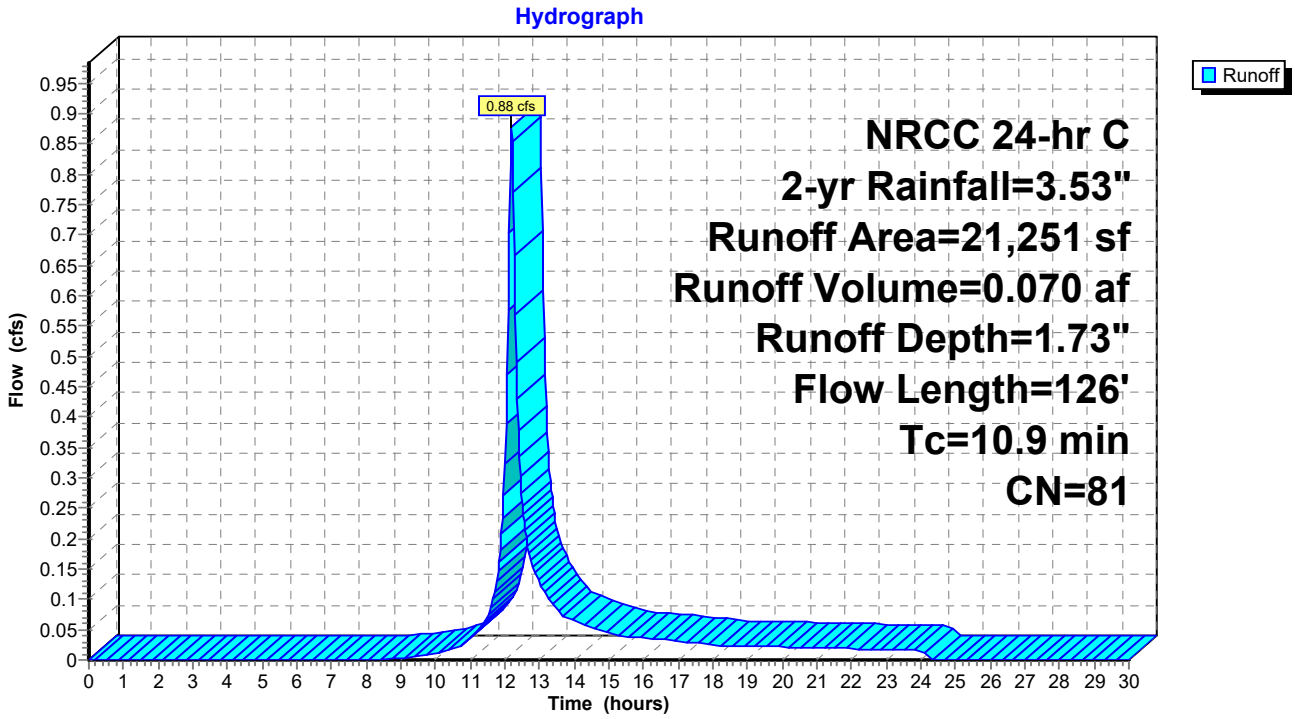
Runoff = 0.88 cfs @ 12.19 hrs, Volume= 0.070 af, Depth= 1.73"
Routed to Pond AP-2 : Front Lawn Landscaped Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 2-yr Rainfall=3.53"

	Area (sf)	CN	Description
*	721	98	Concrete, HSG D
	19,154	80	>75% Grass cover, Good, HSG D
*	1,376	79	Landscaping, Good, HSG D
	21,251	81	Weighted Average
	20,530		96.61% Pervious Area
	721		3.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0150	0.16		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.53"
0.4	26	0.0190	0.96		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
10.9	126	Total			

Subcatchment EX-2: Front Lawn



Summary for Subcatchment EX-3: Entrance Drive

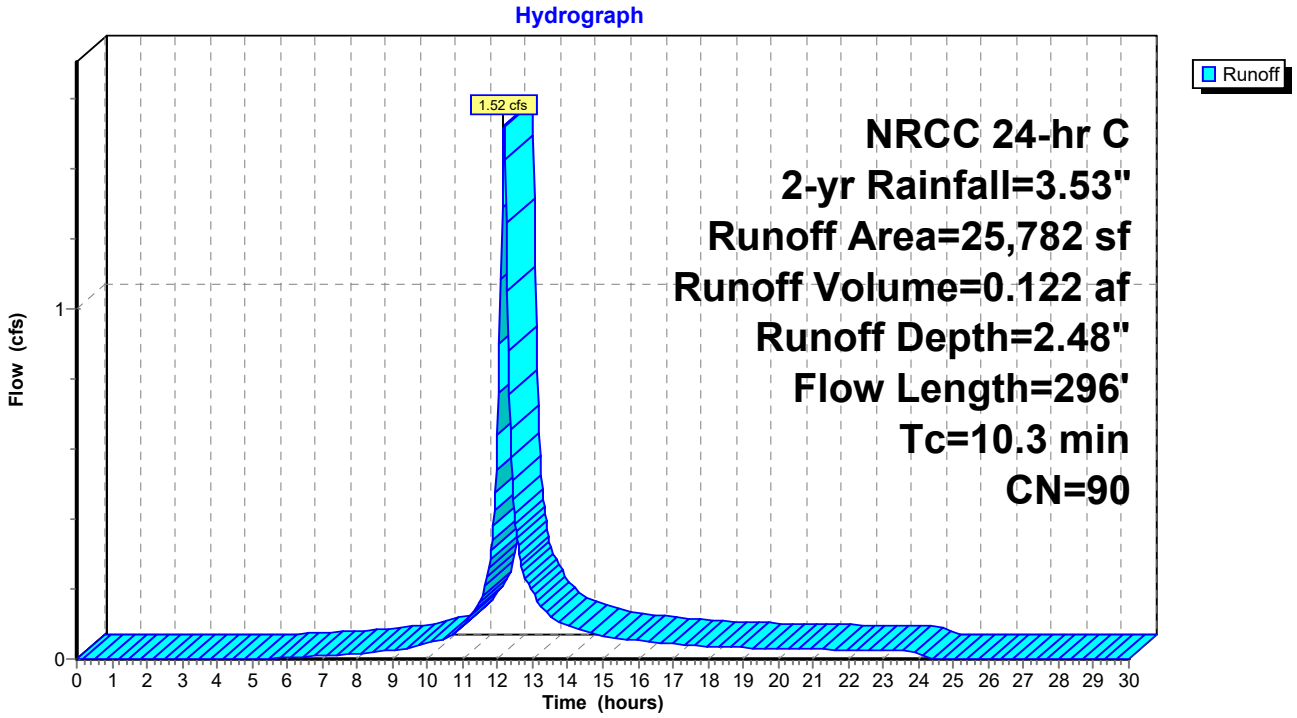
Runoff = 1.52 cfs @ 12.18 hrs, Volume= 0.122 af, Depth= 2.48"
Routed to Pond AP-5 : DI#5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 2-yr Rainfall=3.53"

	Area (sf)	CN	Description
	9,910	98	Paved parking, HSG D
*	814	98	Concrete, HSG D
	3,130	98	Roofs, HSG D
	9,334	80	>75% Grass cover, Good, HSG D
*	2,594	79	Landscaping, Good, HSG D
	25,782	90	Weighted Average
	11,928		46.26% Pervious Area
	13,854		53.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	92	0.0200	0.18		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.53"
1.6	204	0.0110	2.13		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
10.3	296	Total			

Subcatchment EX-3: Entrance Drive



Summary for Subcatchment EX-4: Landscaped Area South of Entrance Drive

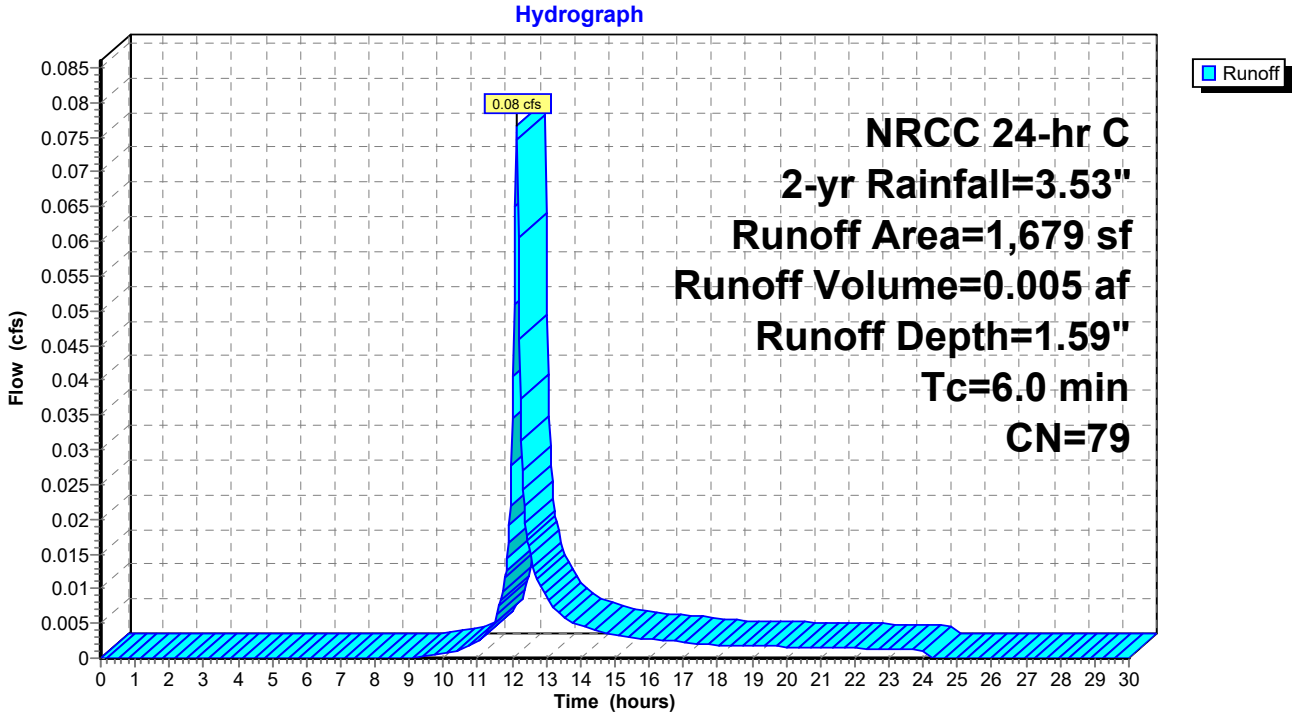
Runoff = 0.08 cfs @ 12.13 hrs, Volume= 0.005 af, Depth= 1.59"
Routed to Pond AP-4 : Landscaped Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 2-yr Rainfall=3.53"

	Area (sf)	CN	Description
	510	80	>75% Grass cover, Good, HSG D
*	1,169	79	Landscaping, Good, HSG D
	1,679	79	Weighted Average
	1,679		100.00% Pervious Area

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

Subcatchment EX-4: Landscaped Area South of Entrance Drive

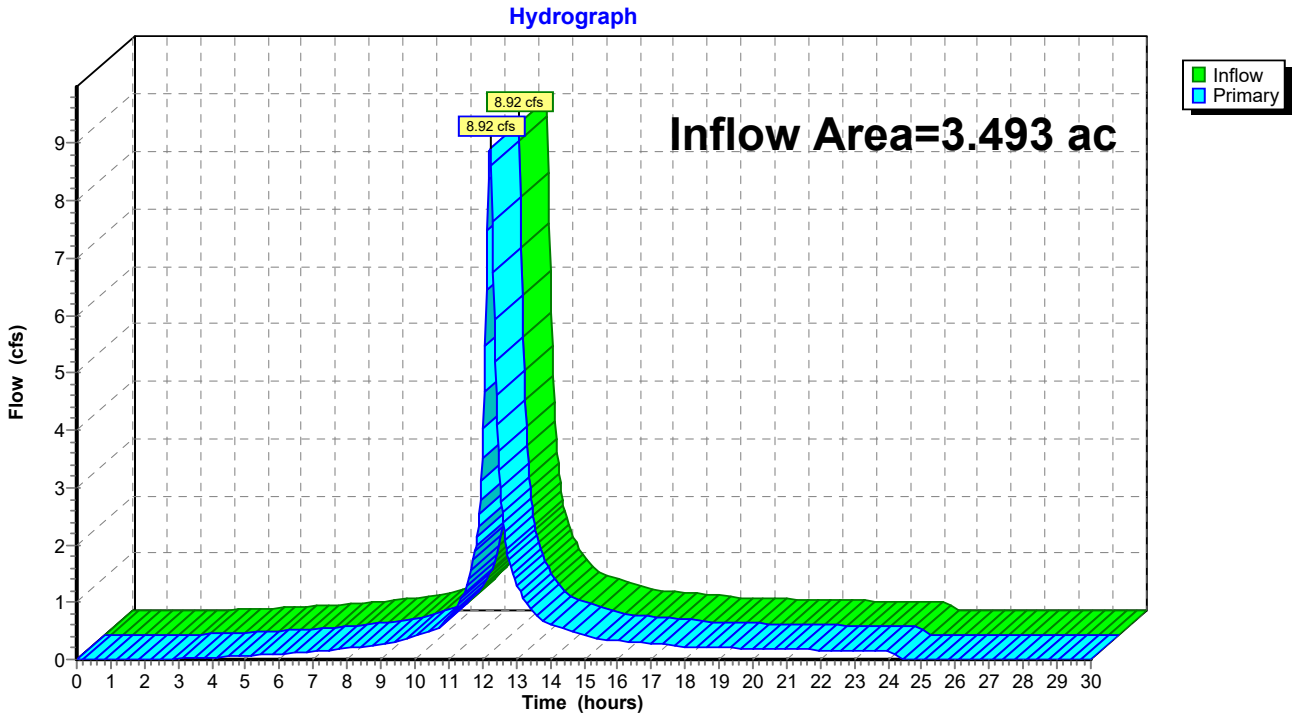


Summary for Pond AP-1: Norwalk River

Inflow Area = 3.493 ac, 82.84% Impervious, Inflow Depth = 2.97" for 2-yr event
Inflow = 8.92 cfs @ 12.22 hrs, Volume= 0.864 af
Primary = 8.92 cfs @ 12.22 hrs, Volume= 0.864 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Pond AP-1: Norwalk River

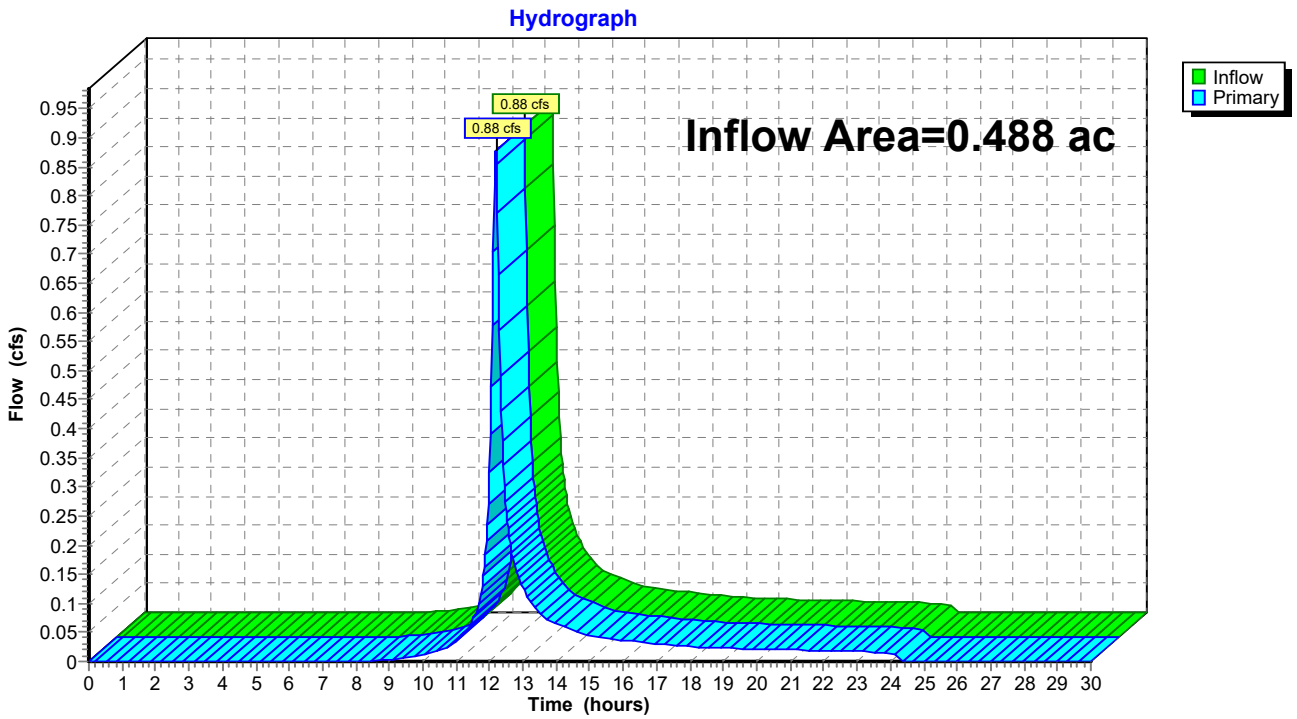


Summary for Pond AP-2: Front Lawn Landscaped Area

Inflow Area = 0.488 ac, 3.39% Impervious, Inflow Depth = 1.73" for 2-yr event
Inflow = 0.88 cfs @ 12.19 hrs, Volume= 0.070 af
Primary = 0.88 cfs @ 12.19 hrs, Volume= 0.070 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Pond AP-2: Front Lawn Landscaped Area

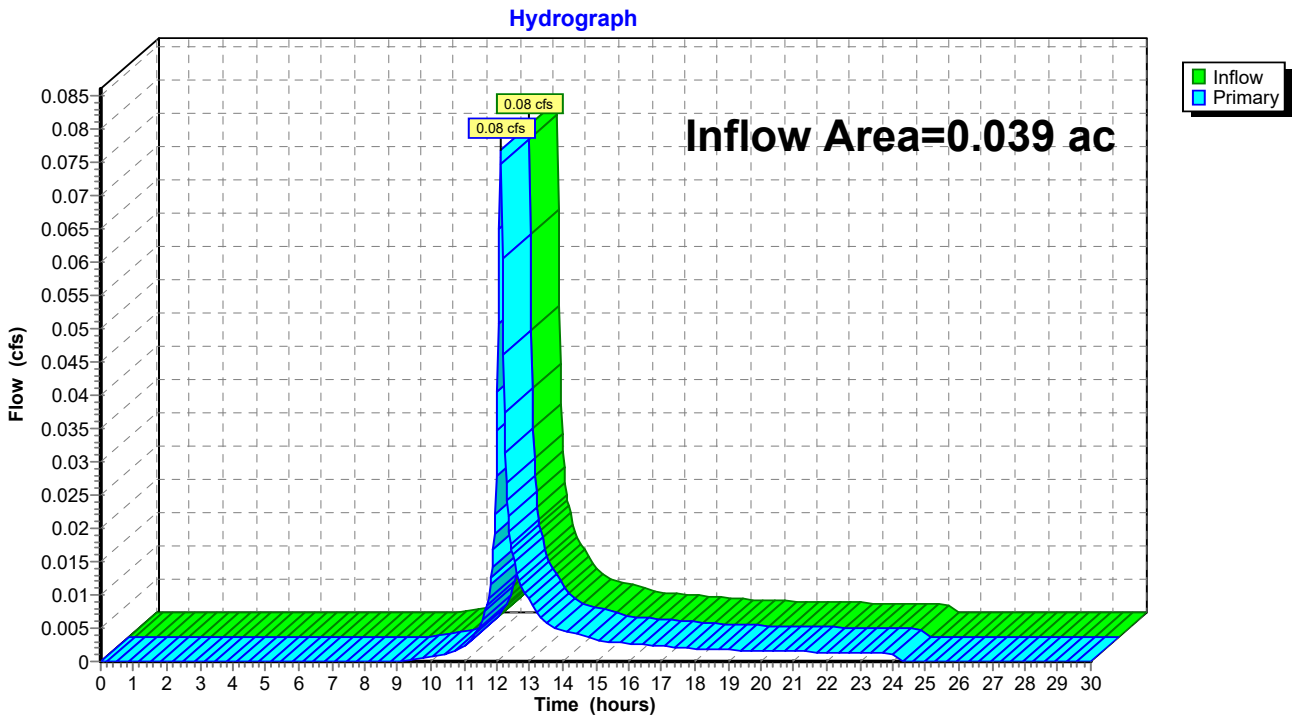


Summary for Pond AP-4: Landscaped Area

Inflow Area = 0.039 ac, 0.00% Impervious, Inflow Depth = 1.59" for 2-yr event
Inflow = 0.08 cfs @ 12.13 hrs, Volume= 0.005 af
Primary = 0.08 cfs @ 12.13 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Pond AP-4: Landscaped Area

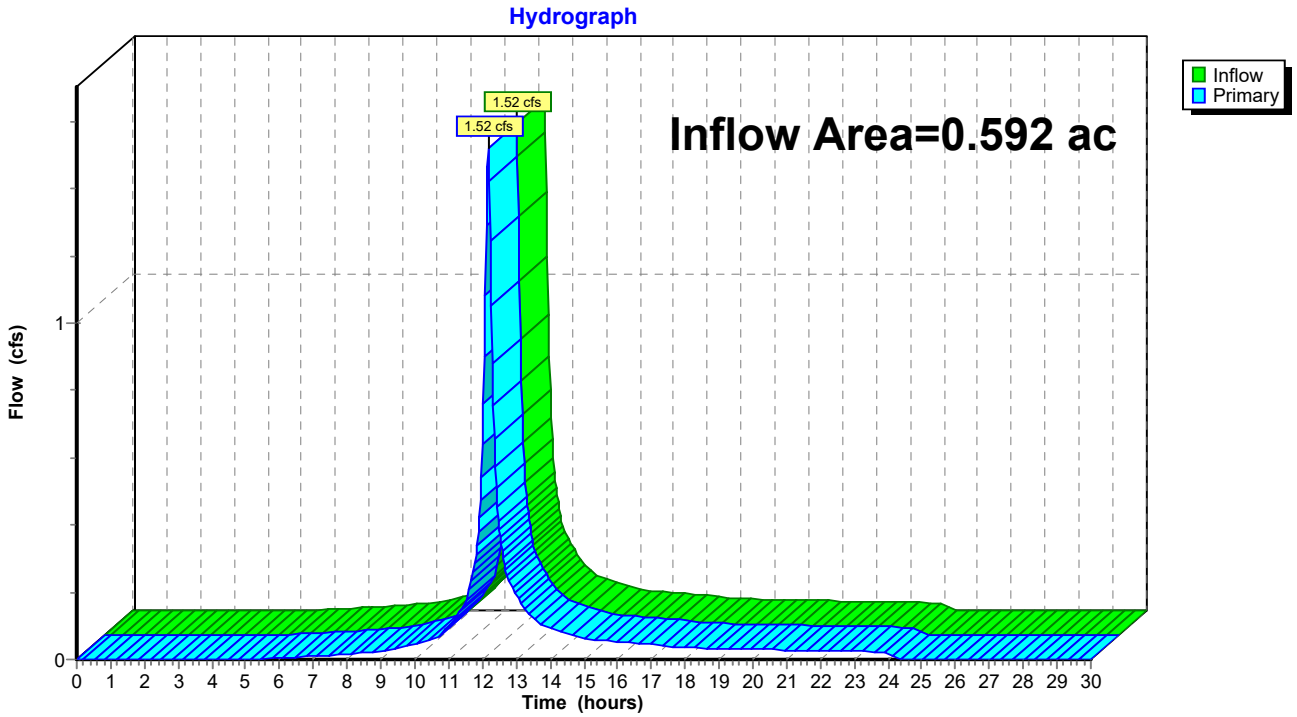


Summary for Pond AP-5: DI#5

Inflow Area = 0.592 ac, 53.74% Impervious, Inflow Depth = 2.48" for 2-yr event
Inflow = 1.52 cfs @ 12.18 hrs, Volume= 0.122 af
Primary = 1.52 cfs @ 12.18 hrs, Volume= 0.122 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Pond AP-5: DI#5



Summary for Subcatchment EX-1: West-Parking & Building

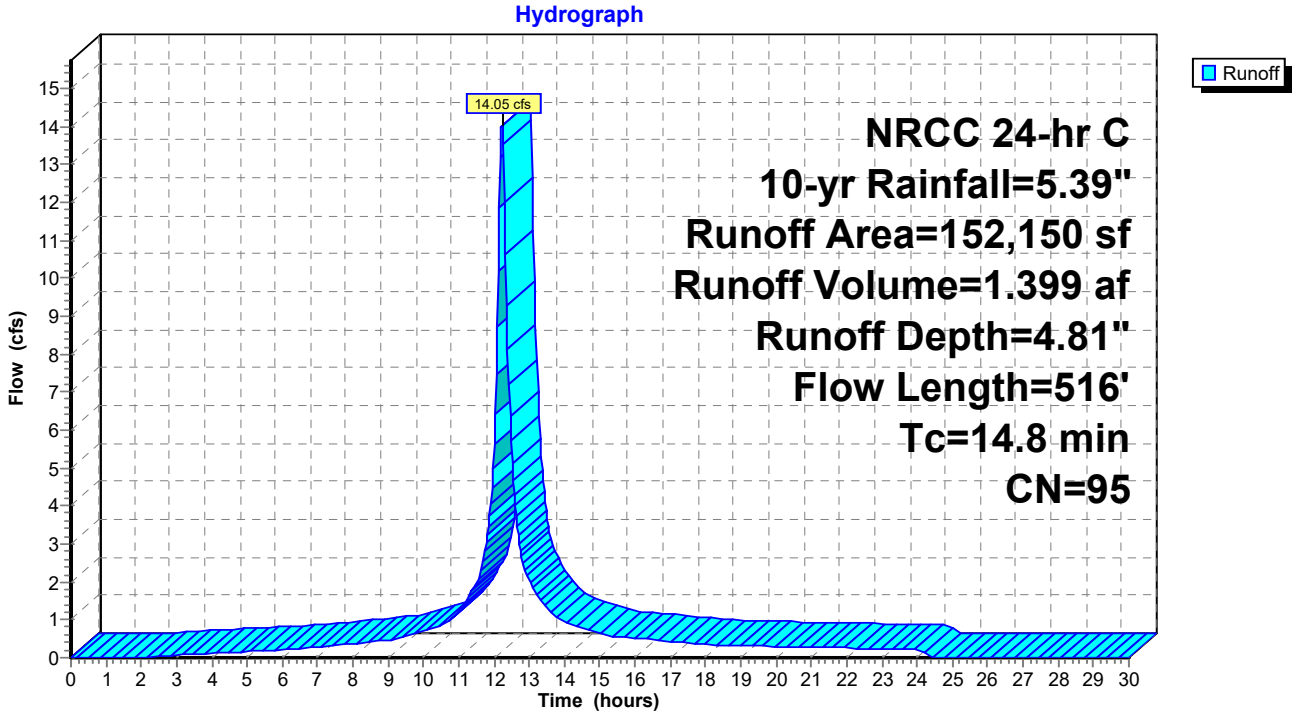
Runoff = 14.05 cfs @ 12.22 hrs, Volume= 1.399 af, Depth= 4.81"
Routed to Pond AP-1 : Norwalk River

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 10-yr Rainfall=5.39"

	Area (sf)	CN	Description
	67,673	98	Paved parking, HSG D
	18,349	98	Paved parking, HSG C
*	1,675	98	Concrete, HSG D
	38,351	98	Roofs, HSG D
	17,092	80	>75% Grass cover, Good, HSG D
*	144	79	Landscaping., Good, HSG D
	8,301	77	Woods, Good, HSG D
	565	70	Woods, Good, HSG C
	152,150	95	Weighted Average
	26,102		17.16% Pervious Area
	126,048		82.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0270	0.20		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.53"
5.5	275	0.0140	0.83		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.8	119	0.0150	2.49		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
0.2	22	0.2270	2.38		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
14.8	516	Total			

Subcatchment EX-1: West-Parking & Building



Summary for Subcatchment EX-2: Front Lawn

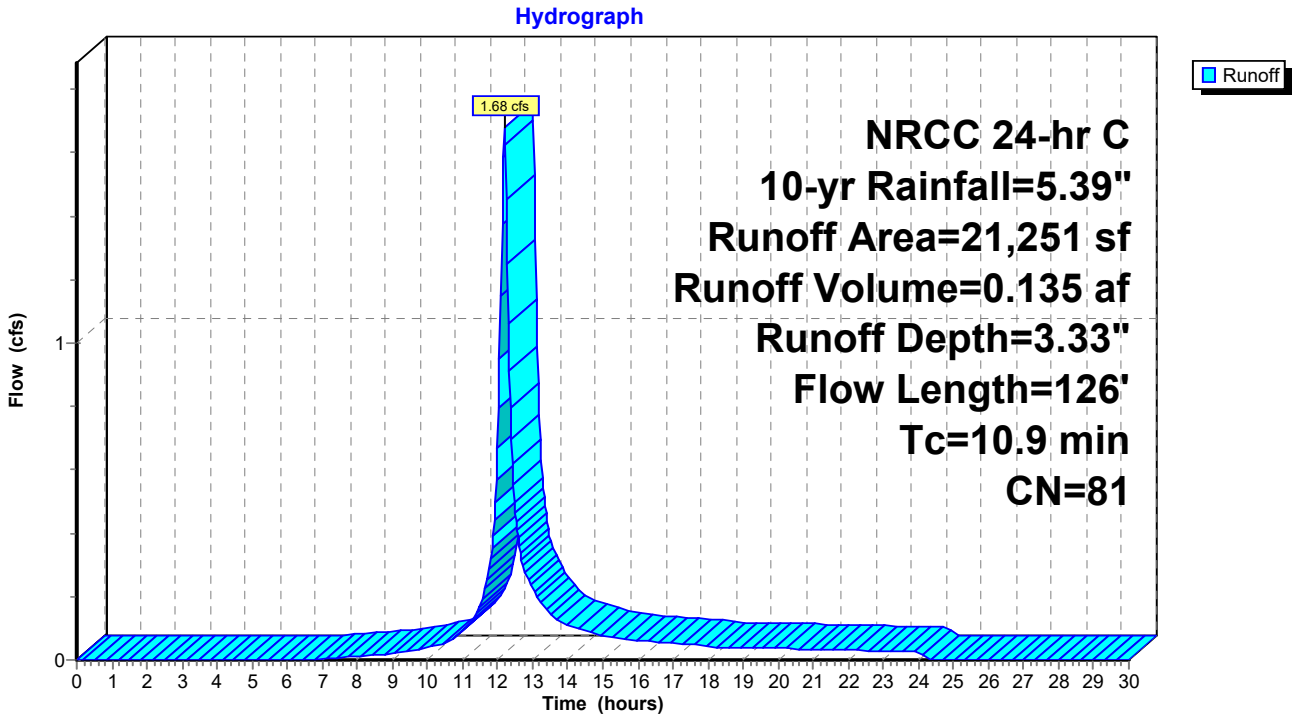
Runoff = 1.68 cfs @ 12.18 hrs, Volume= 0.135 af, Depth= 3.33"
Routed to Pond AP-2 : Front Lawn Landscaped Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 10-yr Rainfall=5.39"

	Area (sf)	CN	Description
*	721	98	Concrete, HSG D
	19,154	80	>75% Grass cover, Good, HSG D
*	1,376	79	Landscaping, Good, HSG D
	21,251	81	Weighted Average
	20,530		96.61% Pervious Area
	721		3.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0150	0.16		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.53"
0.4	26	0.0190	0.96		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
10.9	126	Total			

Subcatchment EX-2: Front Lawn



Summary for Subcatchment EX-3: Entrance Drive

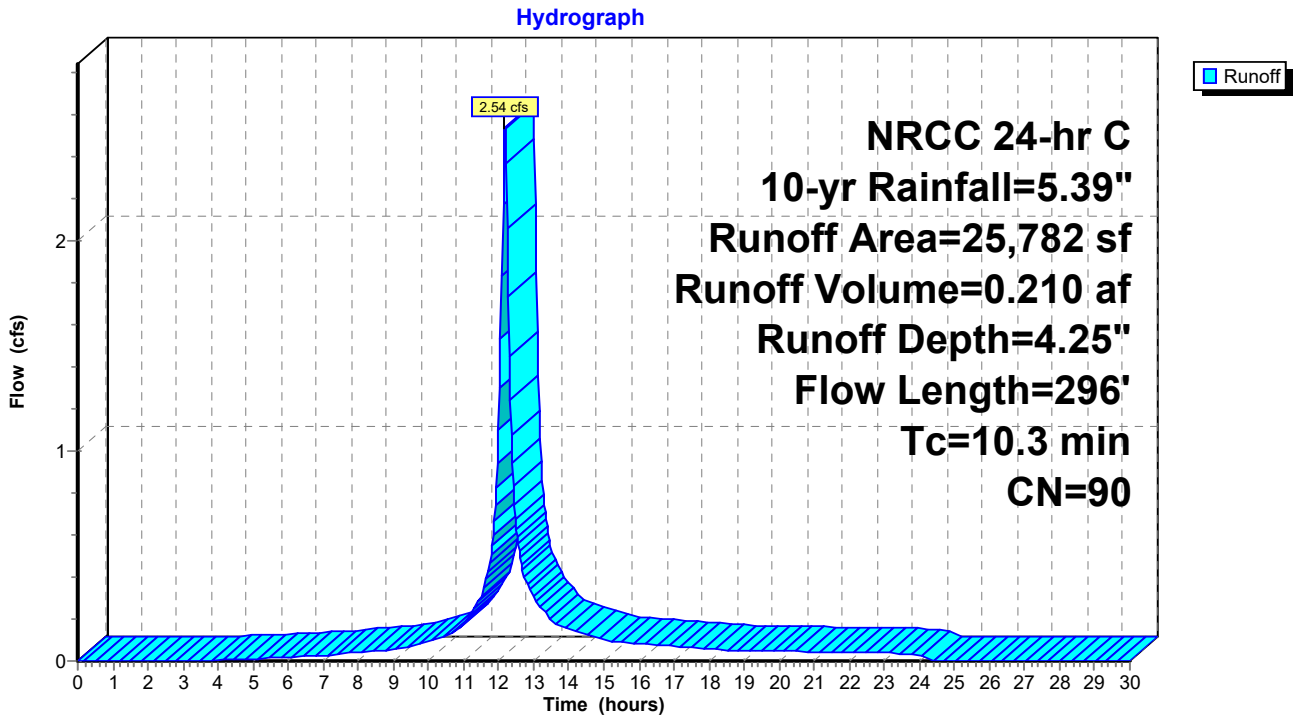
Runoff = 2.54 cfs @ 12.17 hrs, Volume= 0.210 af, Depth= 4.25"
Routed to Pond AP-5 : DI#5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 10-yr Rainfall=5.39"

	Area (sf)	CN	Description
	9,910	98	Paved parking, HSG D
*	814	98	Concrete, HSG D
	3,130	98	Roofs, HSG D
	9,334	80	>75% Grass cover, Good, HSG D
*	2,594	79	Landscaping, Good, HSG D
	25,782	90	Weighted Average
	11,928		46.26% Pervious Area
	13,854		53.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	92	0.0200	0.18		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.53"
1.6	204	0.0110	2.13		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
10.3	296	Total			

Subcatchment EX-3: Entrance Drive



Summary for Subcatchment EX-4: Landscaped Area South of Entrance Drive

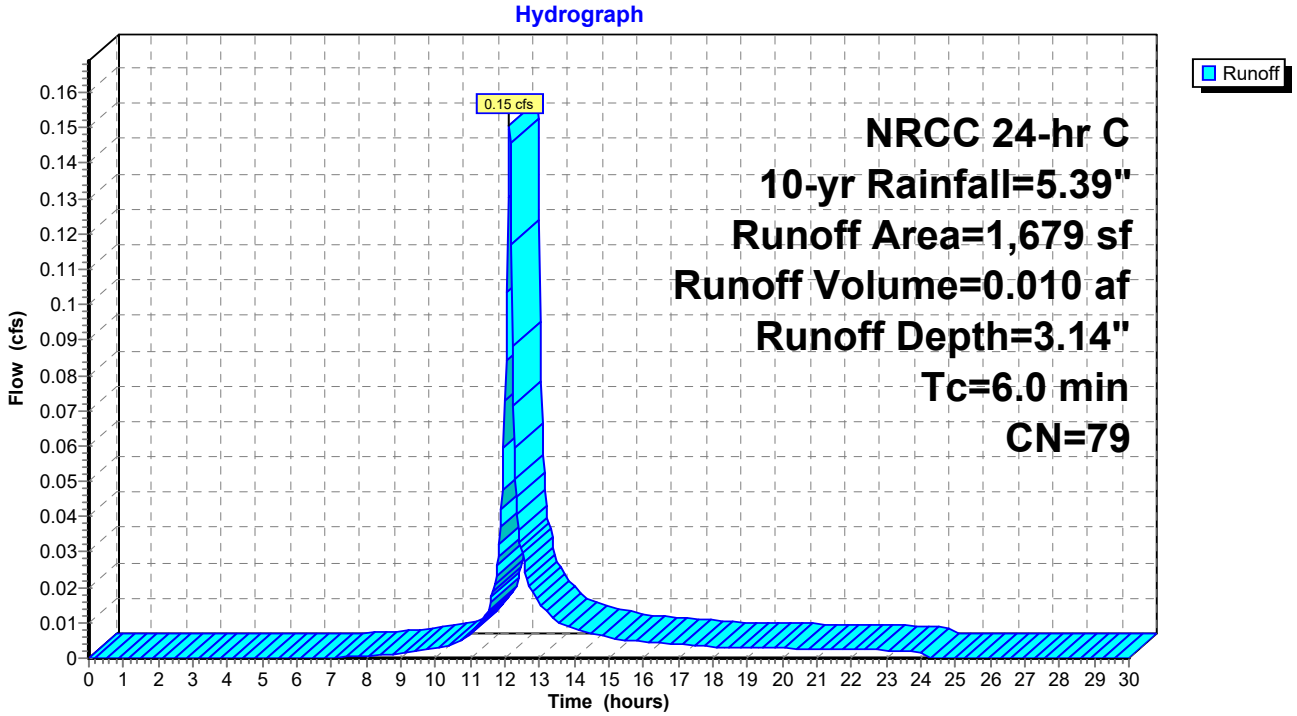
Runoff = 0.15 cfs @ 12.13 hrs, Volume= 0.010 af, Depth= 3.14"
Routed to Pond AP-4 : Landscaped Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 10-yr Rainfall=5.39"

	Area (sf)	CN	Description
	510	80	>75% Grass cover, Good, HSG D
*	1,169	79	Landscaping, Good, HSG D
	1,679	79	Weighted Average
	1,679		100.00% Pervious Area

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

Subcatchment EX-4: Landscaped Area South of Entrance Drive

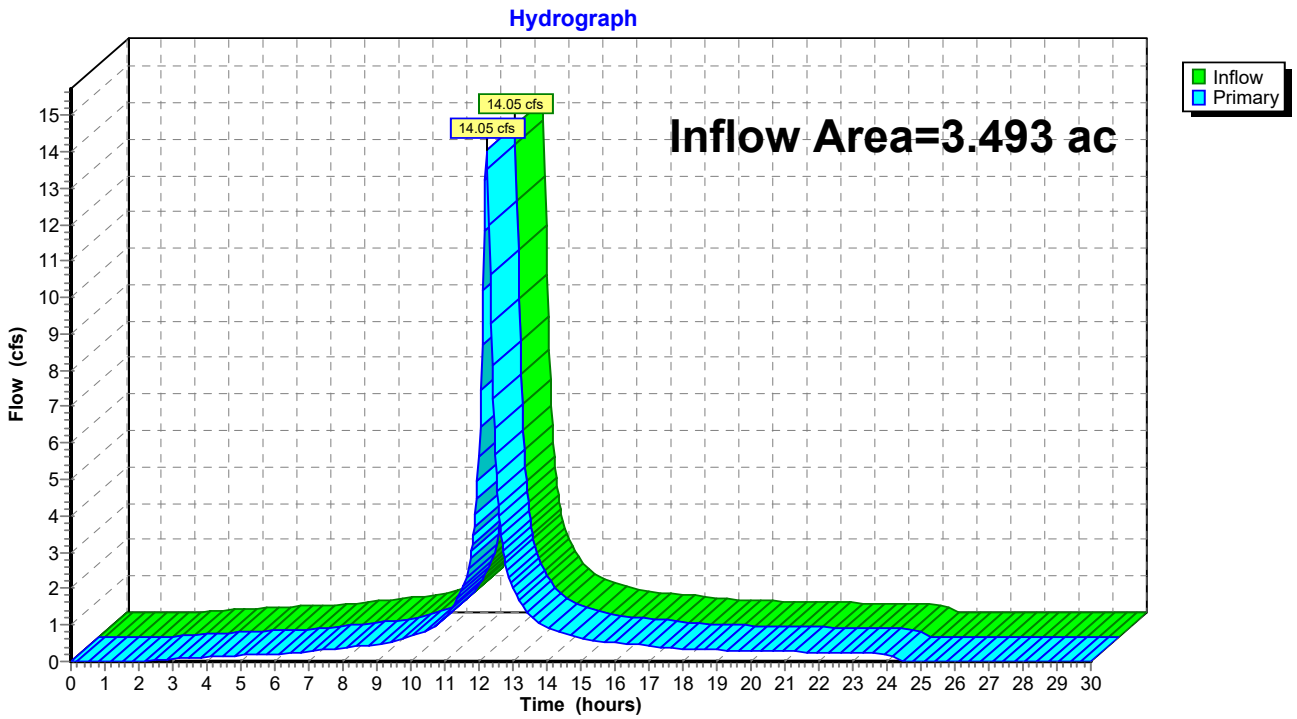


Summary for Pond AP-1: Norwalk River

Inflow Area = 3.493 ac, 82.84% Impervious, Inflow Depth = 4.81" for 10-yr event
Inflow = 14.05 cfs @ 12.22 hrs, Volume= 1.399 af
Primary = 14.05 cfs @ 12.22 hrs, Volume= 1.399 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Pond AP-1: Norwalk River

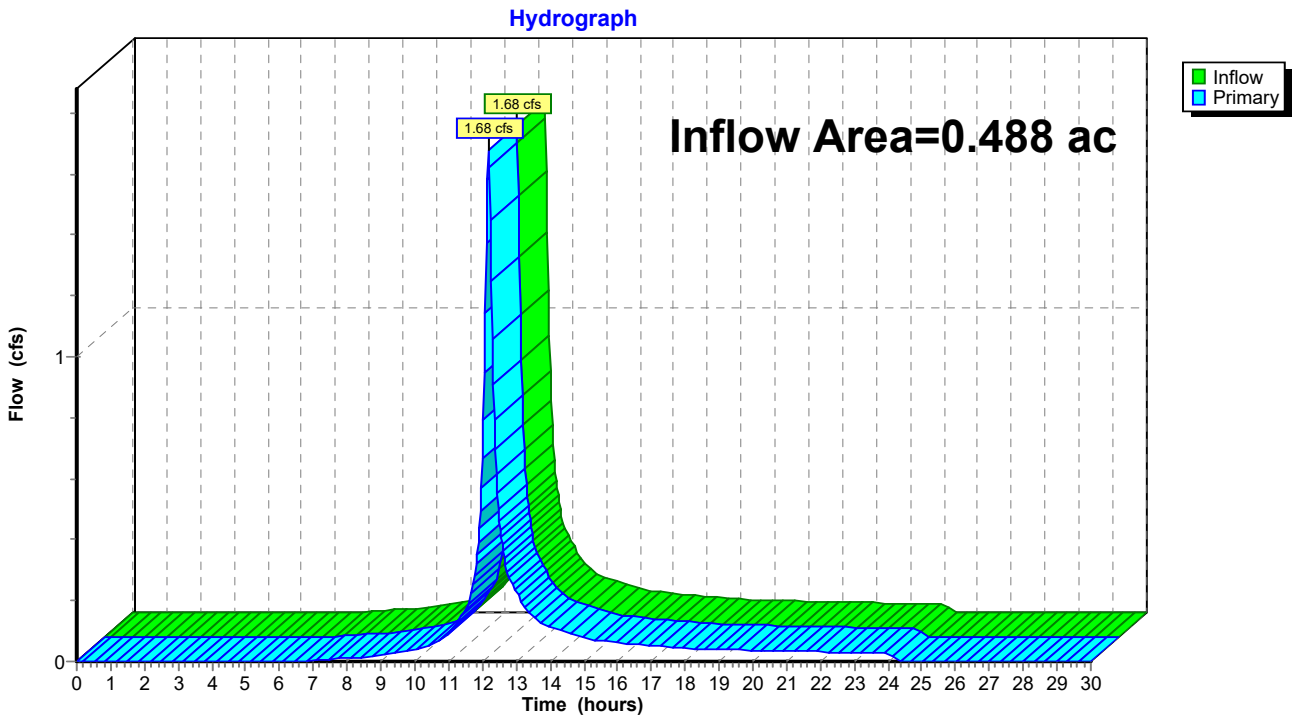


Summary for Pond AP-2: Front Lawn Landscaped Area

Inflow Area =	0.488 ac,	3.39% Impervious,	Inflow Depth =	3.33"	for 10-yr event
Inflow =	1.68 cfs @	12.18 hrs,	Volume=	0.135 af	
Primary =	1.68 cfs @	12.18 hrs,	Volume=	0.135 af,	Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Pond AP-2: Front Lawn Landscaped Area

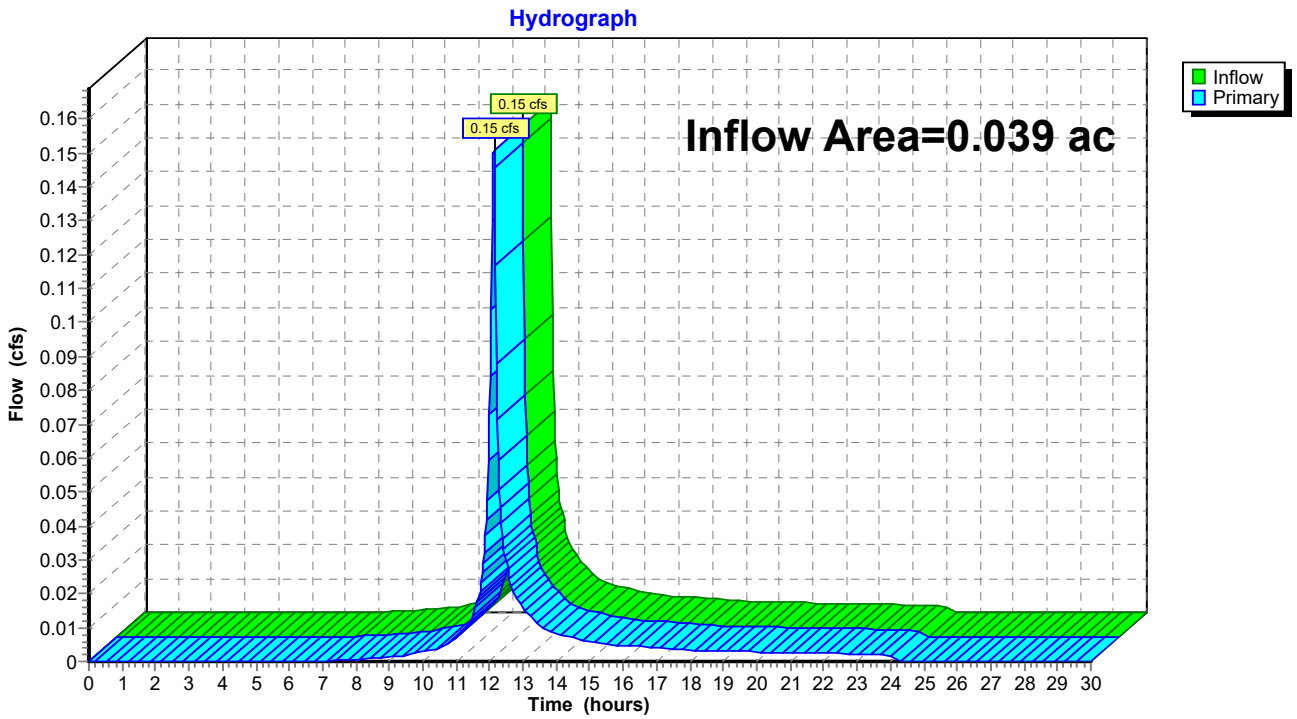


Summary for Pond AP-4: Landscaped Area

Inflow Area = 0.039 ac, 0.00% Impervious, Inflow Depth = 3.14" for 10-yr event
Inflow = 0.15 cfs @ 12.13 hrs, Volume= 0.010 af
Primary = 0.15 cfs @ 12.13 hrs, Volume= 0.010 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Pond AP-4: Landscaped Area

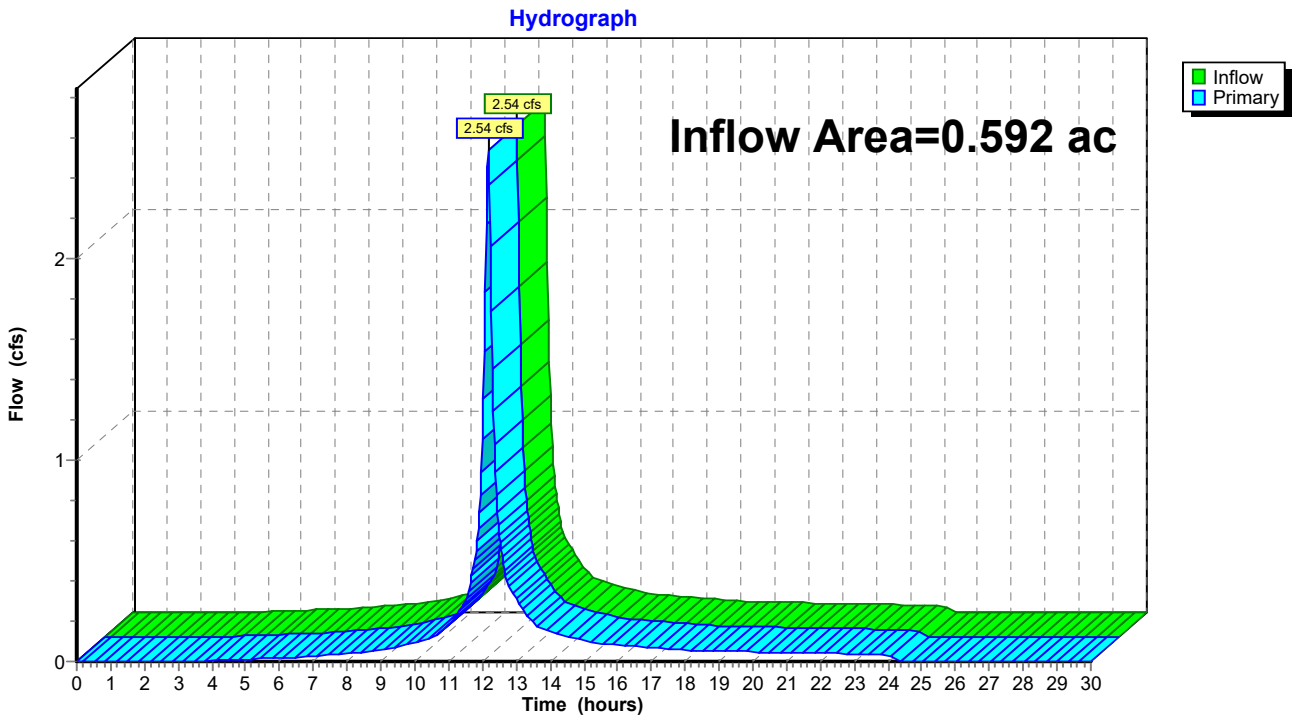


Summary for Pond AP-5: DI#5

Inflow Area = 0.592 ac, 53.74% Impervious, Inflow Depth = 4.25" for 10-yr event
Inflow = 2.54 cfs @ 12.17 hrs, Volume= 0.210 af
Primary = 2.54 cfs @ 12.17 hrs, Volume= 0.210 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Pond AP-5: DI#5



Summary for Subcatchment EX-1: West-Parking & Building

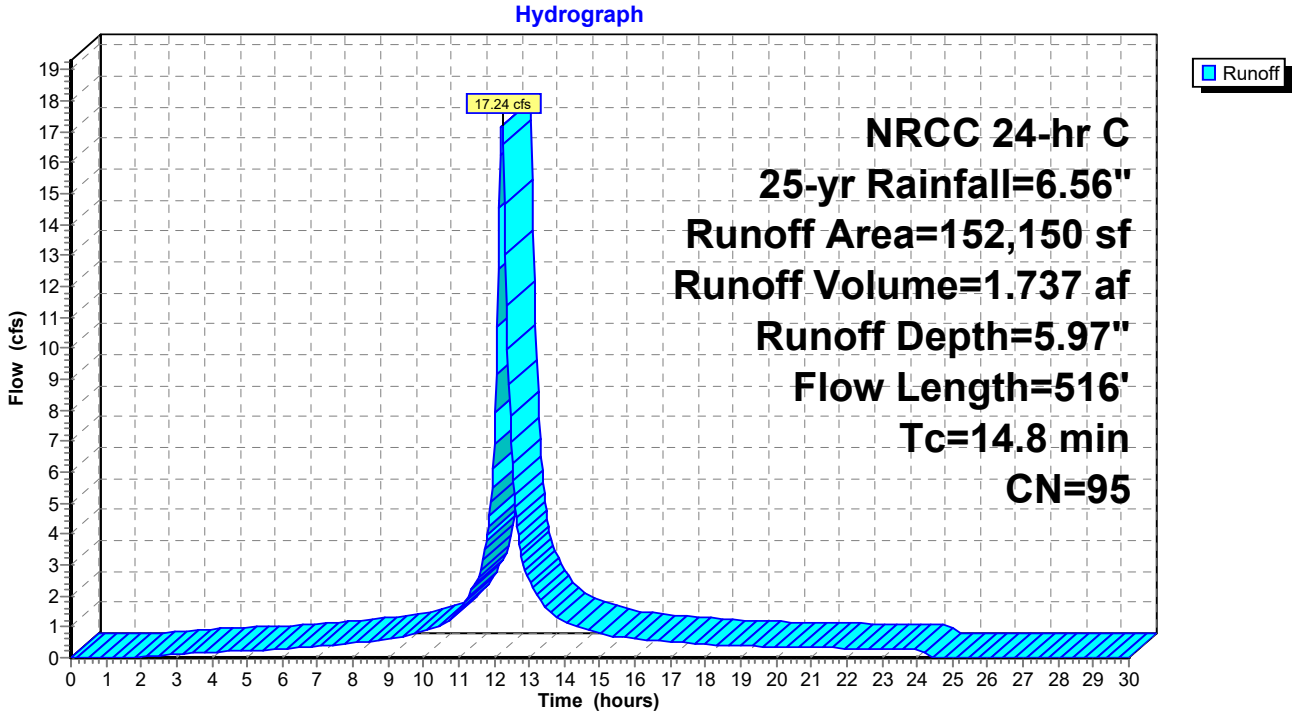
Runoff = 17.24 cfs @ 12.22 hrs, Volume= 1.737 af, Depth= 5.97"
Routed to Pond AP-1 : Norwalk River

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 25-yr Rainfall=6.56"

	Area (sf)	CN	Description
	67,673	98	Paved parking, HSG D
	18,349	98	Paved parking, HSG C
*	1,675	98	Concrete, HSG D
	38,351	98	Roofs, HSG D
	17,092	80	>75% Grass cover, Good, HSG D
*	144	79	Landscaping., Good, HSG D
	8,301	77	Woods, Good, HSG D
	565	70	Woods, Good, HSG C
	152,150	95	Weighted Average
	26,102		17.16% Pervious Area
	126,048		82.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0270	0.20		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.53"
5.5	275	0.0140	0.83		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.8	119	0.0150	2.49		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
0.2	22	0.2270	2.38		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
14.8	516	Total			

Subcatchment EX-1: West-Parking & Building



Summary for Subcatchment EX-2: Front Lawn

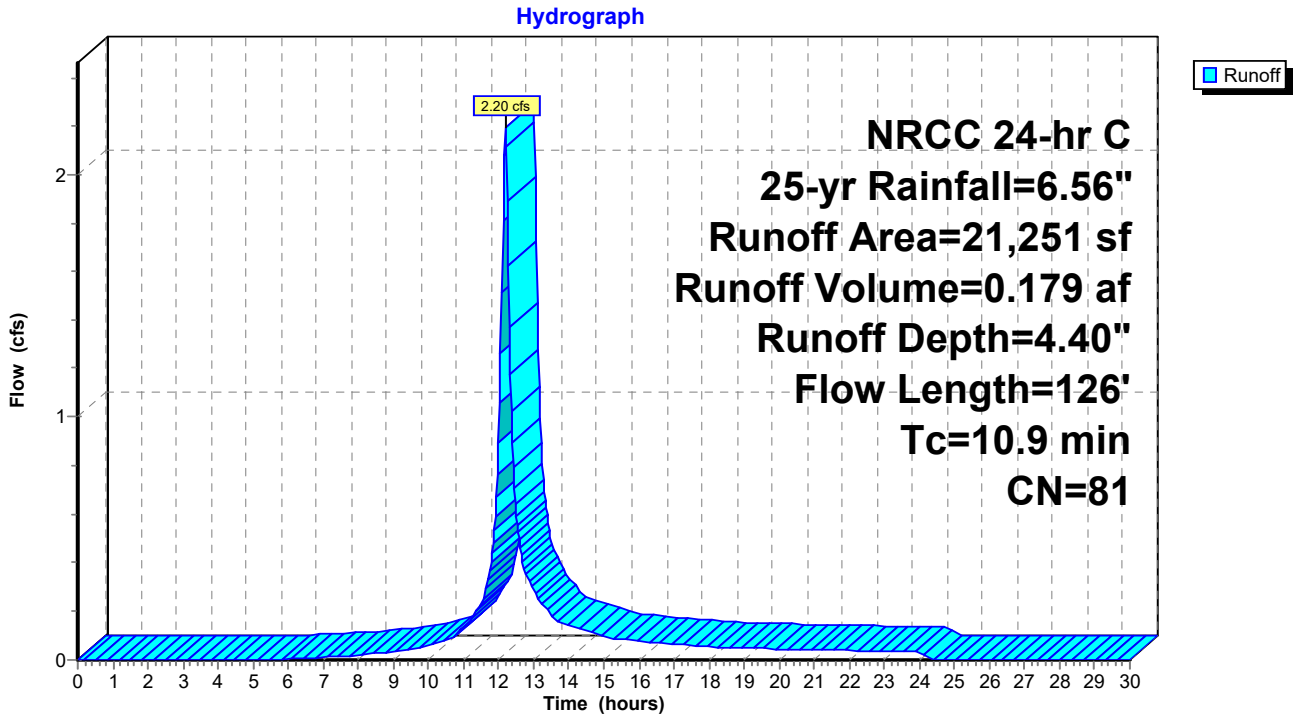
Runoff = 2.20 cfs @ 12.18 hrs, Volume= 0.179 af, Depth= 4.40"
Routed to Pond AP-2 : Front Lawn Landscaped Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 25-yr Rainfall=6.56"

	Area (sf)	CN	Description
*	721	98	Concrete, HSG D
	19,154	80	>75% Grass cover, Good, HSG D
*	1,376	79	Landscaping, Good, HSG D
	21,251	81	Weighted Average
	20,530		96.61% Pervious Area
	721		3.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0150	0.16		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.53"
0.4	26	0.0190	0.96		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
10.9	126	Total			

Subcatchment EX-2: Front Lawn



Summary for Subcatchment EX-3: Entrance Drive

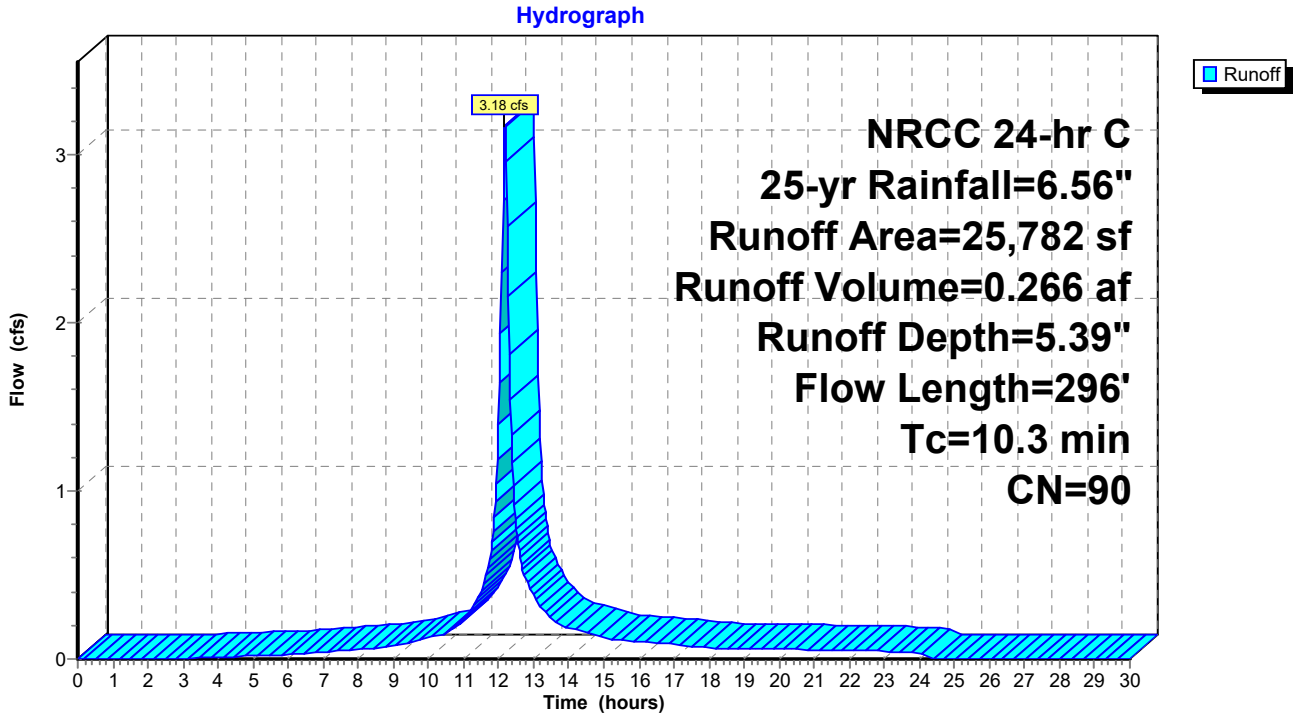
Runoff = 3.18 cfs @ 12.17 hrs, Volume= 0.266 af, Depth= 5.39"
Routed to Pond AP-5 : DI#5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 25-yr Rainfall=6.56"

	Area (sf)	CN	Description
	9,910	98	Paved parking, HSG D
*	814	98	Concrete, HSG D
	3,130	98	Roofs, HSG D
	9,334	80	>75% Grass cover, Good, HSG D
*	2,594	79	Landscaping, Good, HSG D
	25,782	90	Weighted Average
	11,928		46.26% Pervious Area
	13,854		53.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	92	0.0200	0.18		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.53"
1.6	204	0.0110	2.13		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
10.3	296	Total			

Subcatchment EX-3: Entrance Drive



Summary for Subcatchment EX-4: Landscaped Area South of Entrance Drive

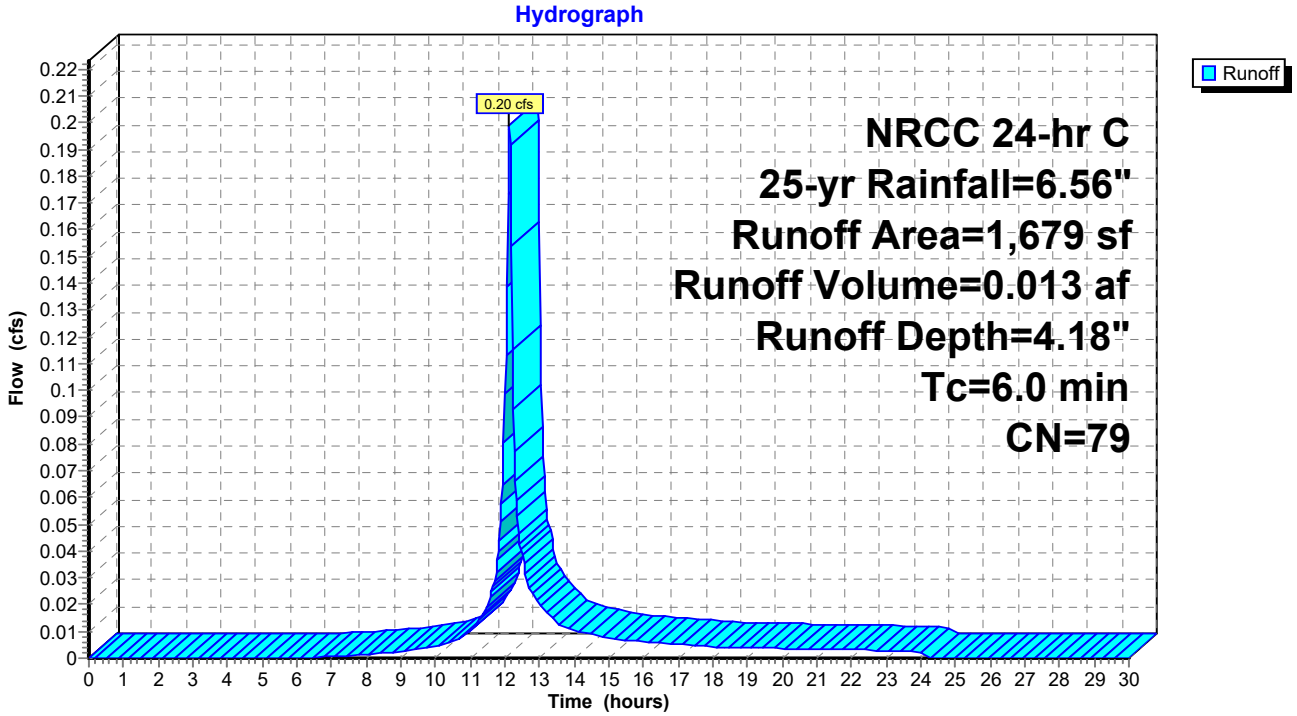
Runoff = 0.20 cfs @ 12.13 hrs, Volume= 0.013 af, Depth= 4.18"
Routed to Pond AP-4 : Landscaped Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 25-yr Rainfall=6.56"

	Area (sf)	CN	Description
	510	80	>75% Grass cover, Good, HSG D
*	1,169	79	Landscaping, Good, HSG D
	1,679	79	Weighted Average
	1,679		100.00% Pervious Area

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

Subcatchment EX-4: Landscaped Area South of Entrance Drive

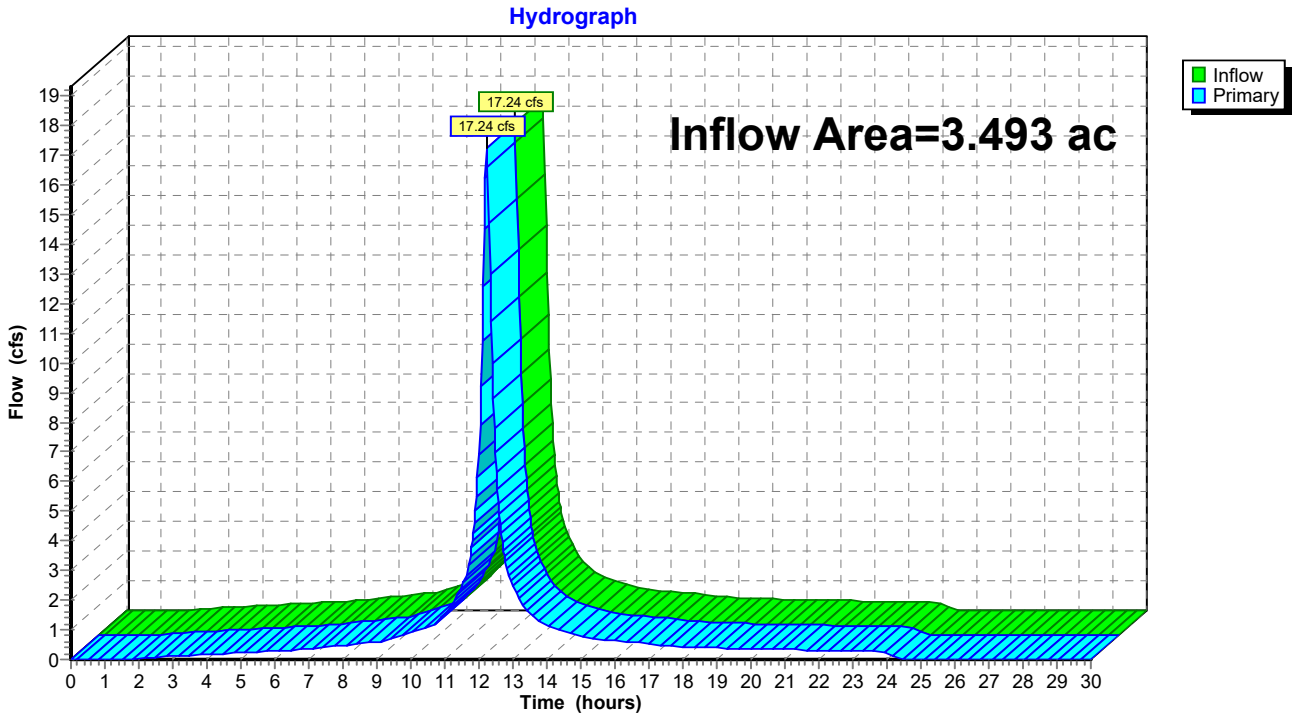


Summary for Pond AP-1: Norwalk River

Inflow Area = 3.493 ac, 82.84% Impervious, Inflow Depth = 5.97" for 25-yr event
Inflow = 17.24 cfs @ 12.22 hrs, Volume= 1.737 af
Primary = 17.24 cfs @ 12.22 hrs, Volume= 1.737 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Pond AP-1: Norwalk River

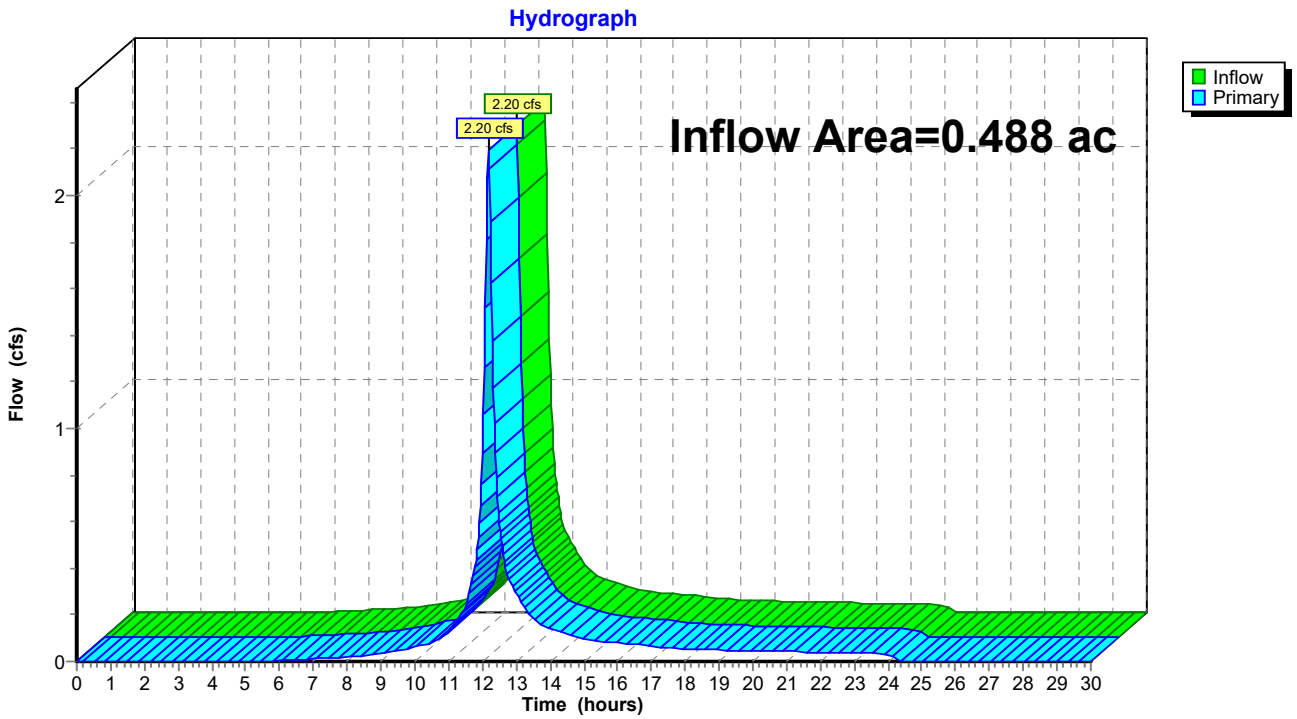


Summary for Pond AP-2: Front Lawn Landscaped Area

Inflow Area = 0.488 ac, 3.39% Impervious, Inflow Depth = 4.40" for 25-yr event
Inflow = 2.20 cfs @ 12.18 hrs, Volume= 0.179 af
Primary = 2.20 cfs @ 12.18 hrs, Volume= 0.179 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Pond AP-2: Front Lawn Landscaped Area

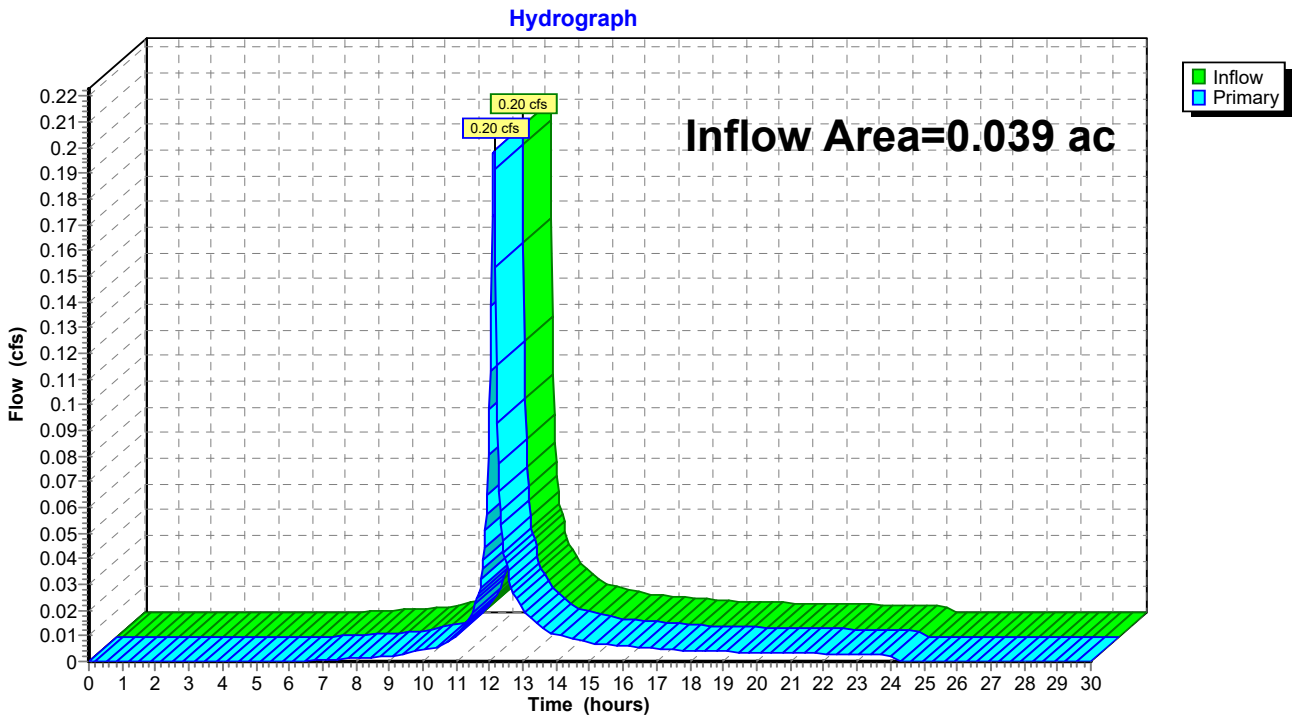


Summary for Pond AP-4: Landscaped Area

Inflow Area = 0.039 ac, 0.00% Impervious, Inflow Depth = 4.18" for 25-yr event
Inflow = 0.20 cfs @ 12.13 hrs, Volume= 0.013 af
Primary = 0.20 cfs @ 12.13 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Pond AP-4: Landscaped Area

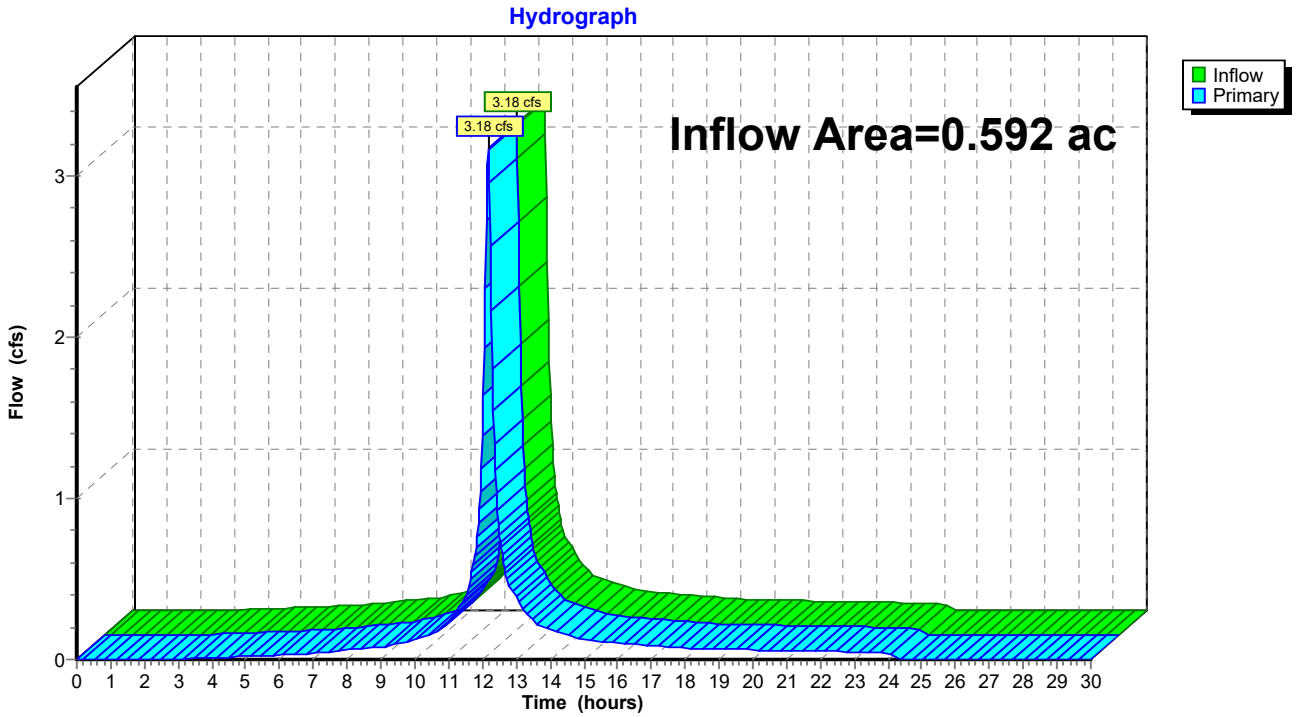


Summary for Pond AP-5: DI#5

Inflow Area = 0.592 ac, 53.74% Impervious, Inflow Depth = 5.39" for 25-yr event
Inflow = 3.18 cfs @ 12.17 hrs, Volume= 0.266 af
Primary = 3.18 cfs @ 12.17 hrs, Volume= 0.266 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Pond AP-5: DI#5



Summary for Subcatchment EX-1: West-Parking & Building

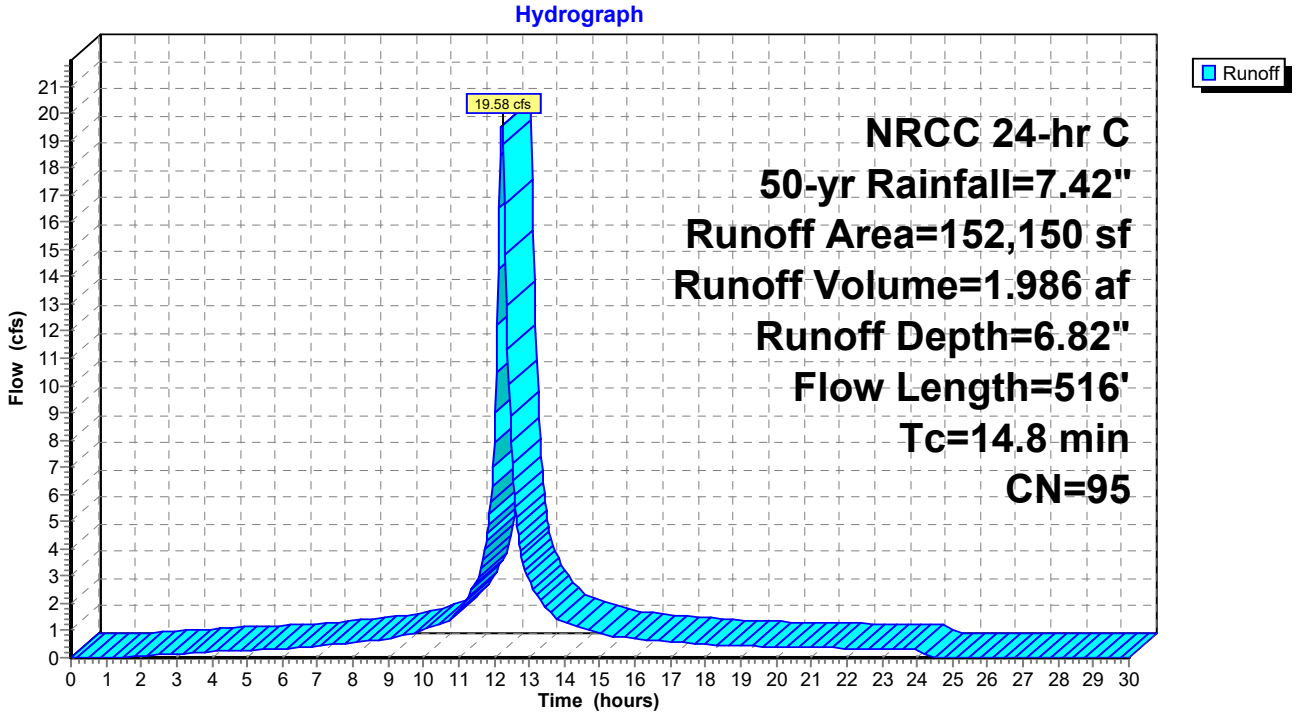
Runoff = 19.58 cfs @ 12.22 hrs, Volume= 1.986 af, Depth= 6.82"
Routed to Pond AP-1 : Norwalk River

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 50-yr Rainfall=7.42"

	Area (sf)	CN	Description
	67,673	98	Paved parking, HSG D
	18,349	98	Paved parking, HSG C
*	1,675	98	Concrete, HSG D
	38,351	98	Roofs, HSG D
	17,092	80	>75% Grass cover, Good, HSG D
*	144	79	Landscaping., Good, HSG D
	8,301	77	Woods, Good, HSG D
	565	70	Woods, Good, HSG C
	152,150	95	Weighted Average
	26,102		17.16% Pervious Area
	126,048		82.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0270	0.20		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.53"
5.5	275	0.0140	0.83		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.8	119	0.0150	2.49		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
0.2	22	0.2270	2.38		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
14.8	516	Total			

Subcatchment EX-1: West-Parking & Building



Summary for Subcatchment EX-2: Front Lawn

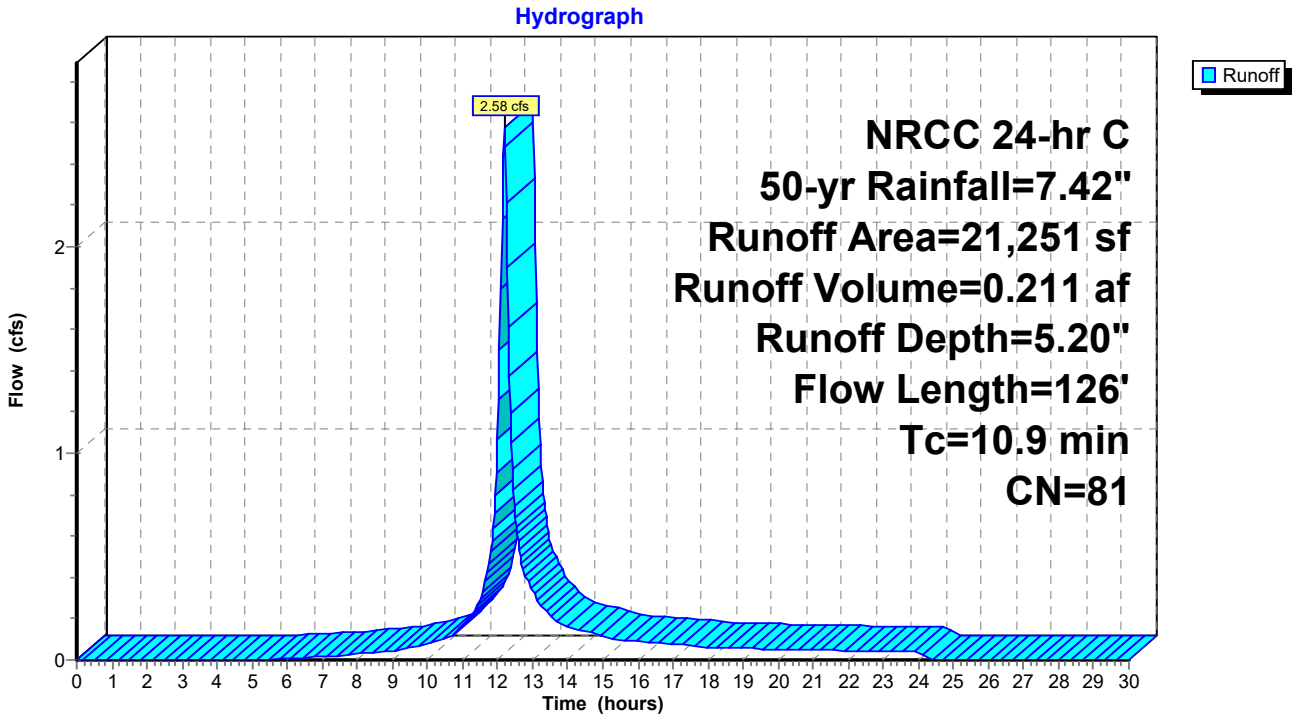
Runoff = 2.58 cfs @ 12.18 hrs, Volume= 0.211 af, Depth= 5.20"
Routed to Pond AP-2 : Front Lawn Landscaped Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 50-yr Rainfall=7.42"

	Area (sf)	CN	Description
*	721	98	Concrete, HSG D
	19,154	80	>75% Grass cover, Good, HSG D
*	1,376	79	Landscaping, Good, HSG D
	21,251	81	Weighted Average
	20,530		96.61% Pervious Area
	721		3.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0150	0.16		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.53"
0.4	26	0.0190	0.96		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
10.9	126	Total			

Subcatchment EX-2: Front Lawn



Summary for Subcatchment EX-3: Entrance Drive

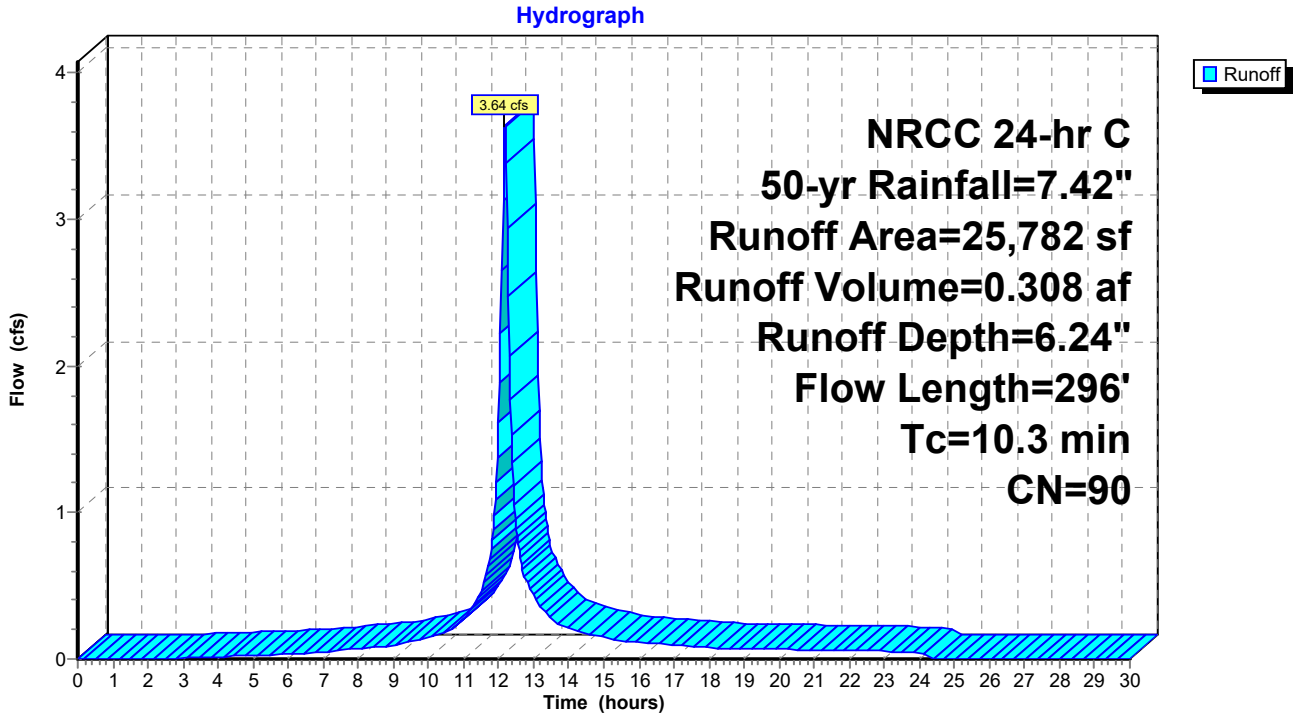
Runoff = 3.64 cfs @ 12.17 hrs, Volume= 0.308 af, Depth= 6.24"
Routed to Pond AP-5 : DI#5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 50-yr Rainfall=7.42"

	Area (sf)	CN	Description
	9,910	98	Paved parking, HSG D
*	814	98	Concrete, HSG D
	3,130	98	Roofs, HSG D
	9,334	80	>75% Grass cover, Good, HSG D
*	2,594	79	Landscaping, Good, HSG D
	25,782	90	Weighted Average
	11,928		46.26% Pervious Area
	13,854		53.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	92	0.0200	0.18		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.53"
1.6	204	0.0110	2.13		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
10.3	296	Total			

Subcatchment EX-3: Entrance Drive



Summary for Subcatchment EX-4: Landscaped Area South of Entrance Drive

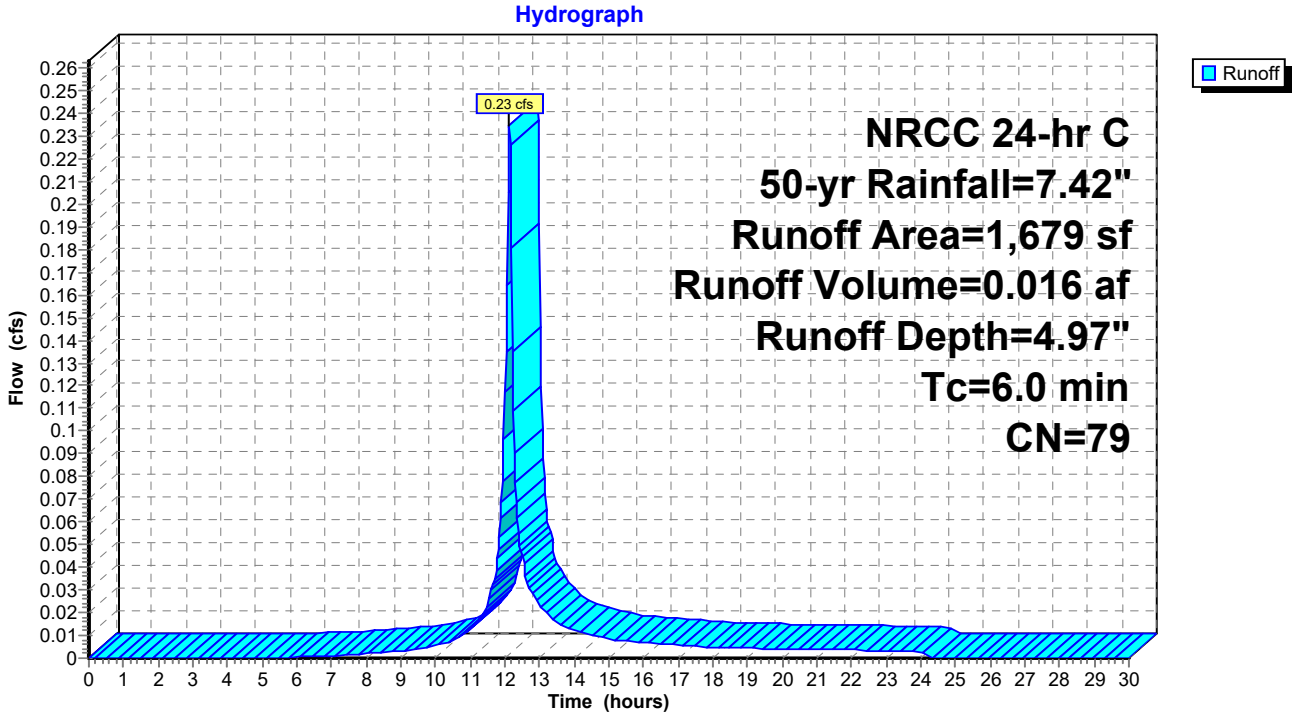
Runoff = 0.23 cfs @ 12.13 hrs, Volume= 0.016 af, Depth= 4.97"
Routed to Pond AP-4 : Landscaped Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 50-yr Rainfall=7.42"

	Area (sf)	CN	Description
	510	80	>75% Grass cover, Good, HSG D
*	1,169	79	Landscaping, Good, HSG D
	1,679	79	Weighted Average
	1,679		100.00% Pervious Area

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

Subcatchment EX-4: Landscaped Area South of Entrance Drive

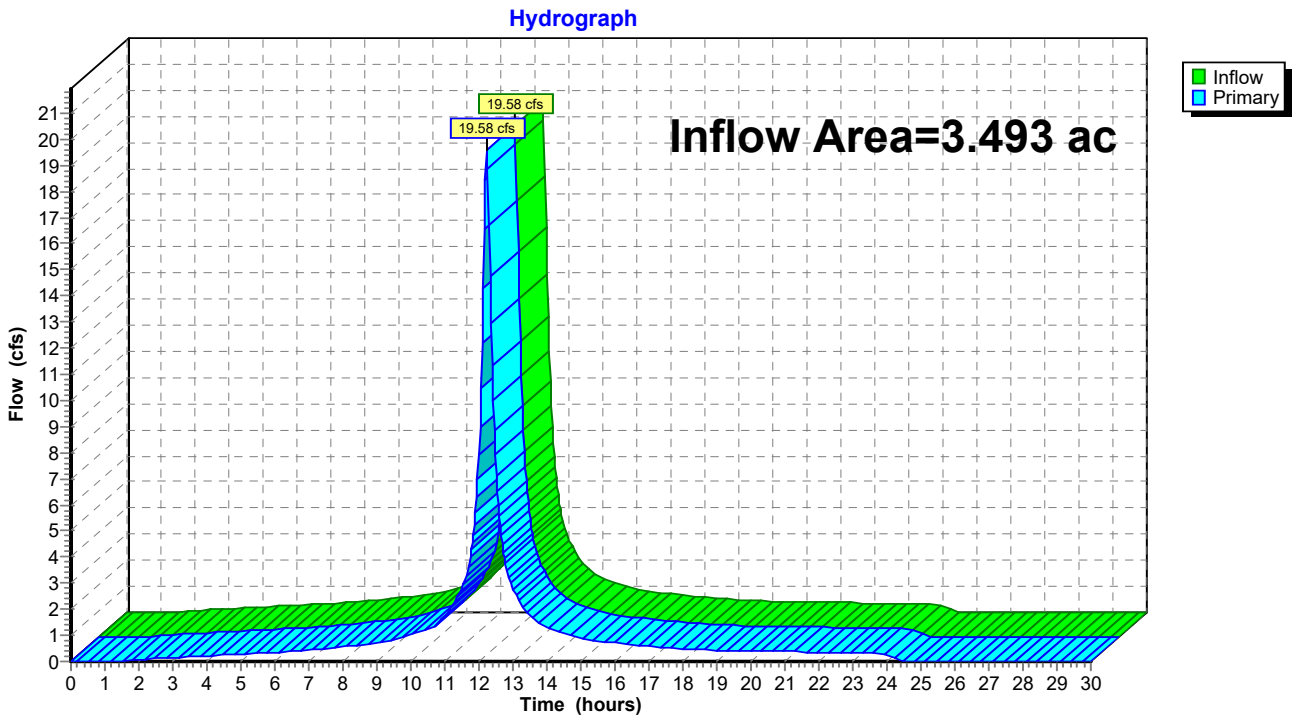


Summary for Pond AP-1: Norwalk River

Inflow Area = 3.493 ac, 82.84% Impervious, Inflow Depth = 6.82" for 50-yr event
Inflow = 19.58 cfs @ 12.22 hrs, Volume= 1.986 af
Primary = 19.58 cfs @ 12.22 hrs, Volume= 1.986 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Pond AP-1: Norwalk River

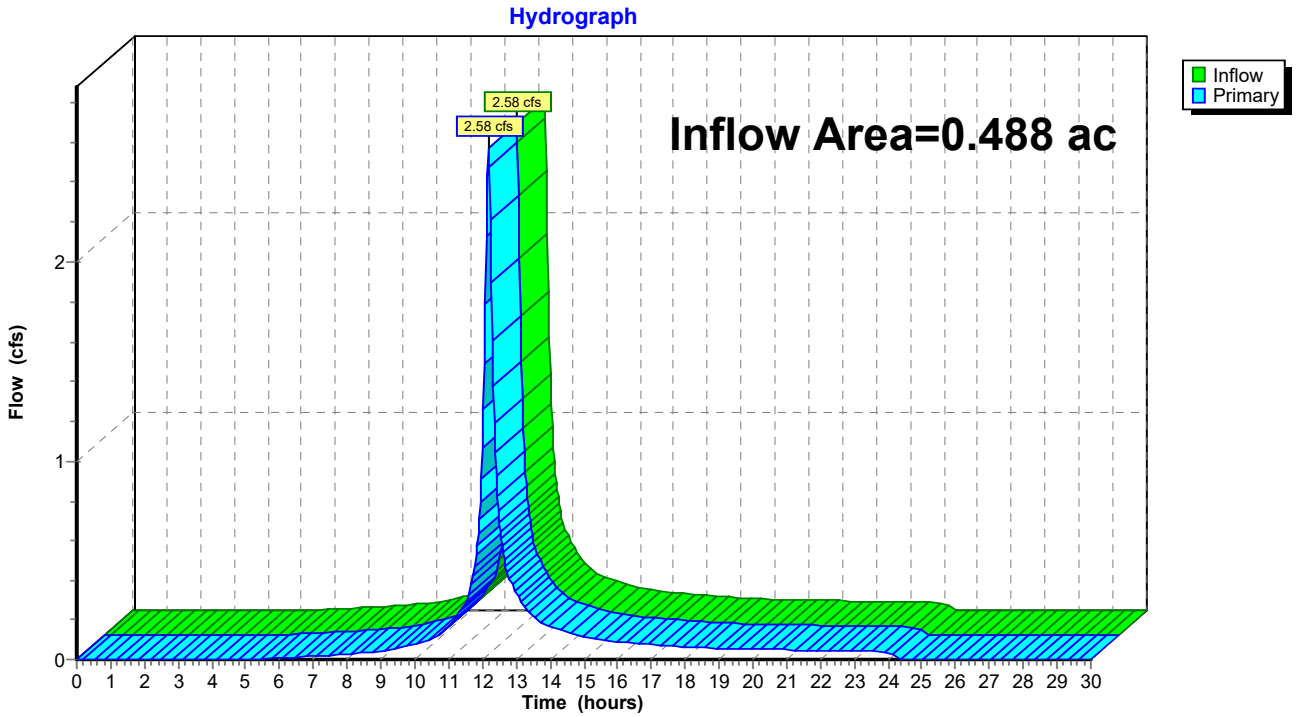


Summary for Pond AP-2: Front Lawn Landscaped Area

Inflow Area = 0.488 ac, 3.39% Impervious, Inflow Depth = 5.20" for 50-yr event
Inflow = 2.58 cfs @ 12.18 hrs, Volume= 0.211 af
Primary = 2.58 cfs @ 12.18 hrs, Volume= 0.211 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Pond AP-2: Front Lawn Landscaped Area

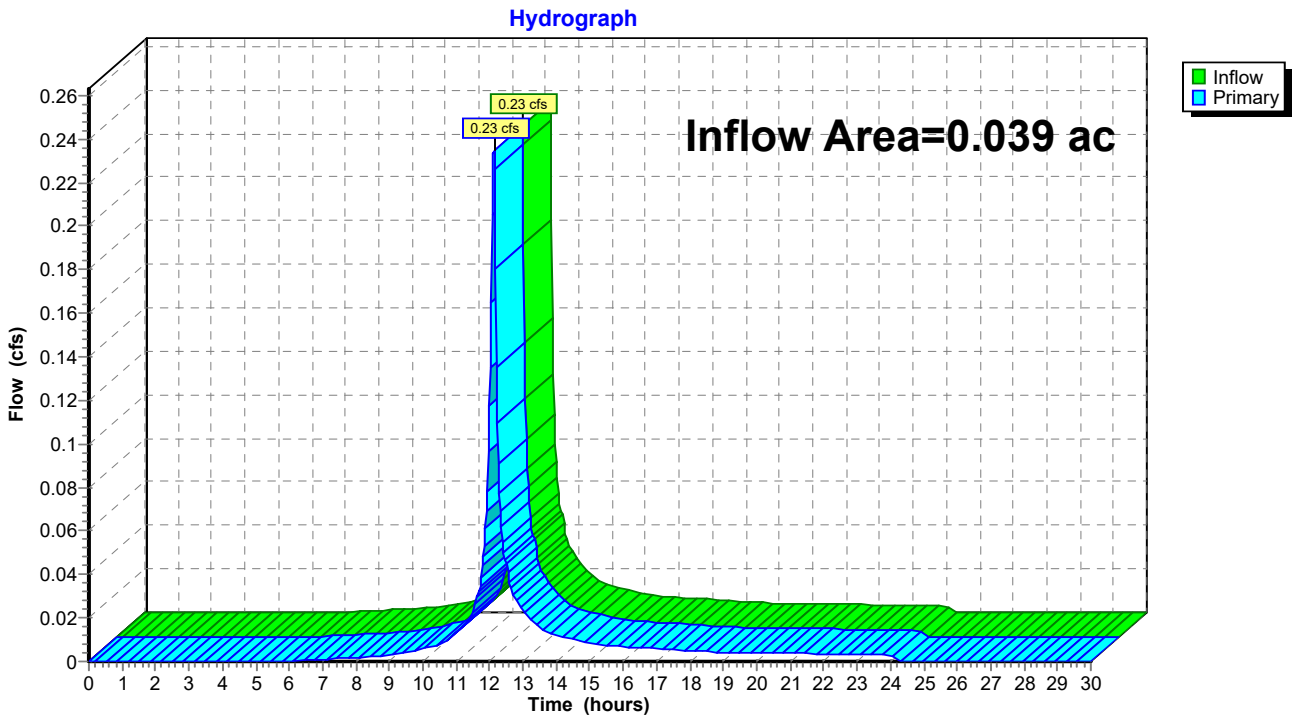


Summary for Pond AP-4: Landscaped Area

Inflow Area = 0.039 ac, 0.00% Impervious, Inflow Depth = 4.97" for 50-yr event
Inflow = 0.23 cfs @ 12.13 hrs, Volume= 0.016 af
Primary = 0.23 cfs @ 12.13 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Pond AP-4: Landscaped Area

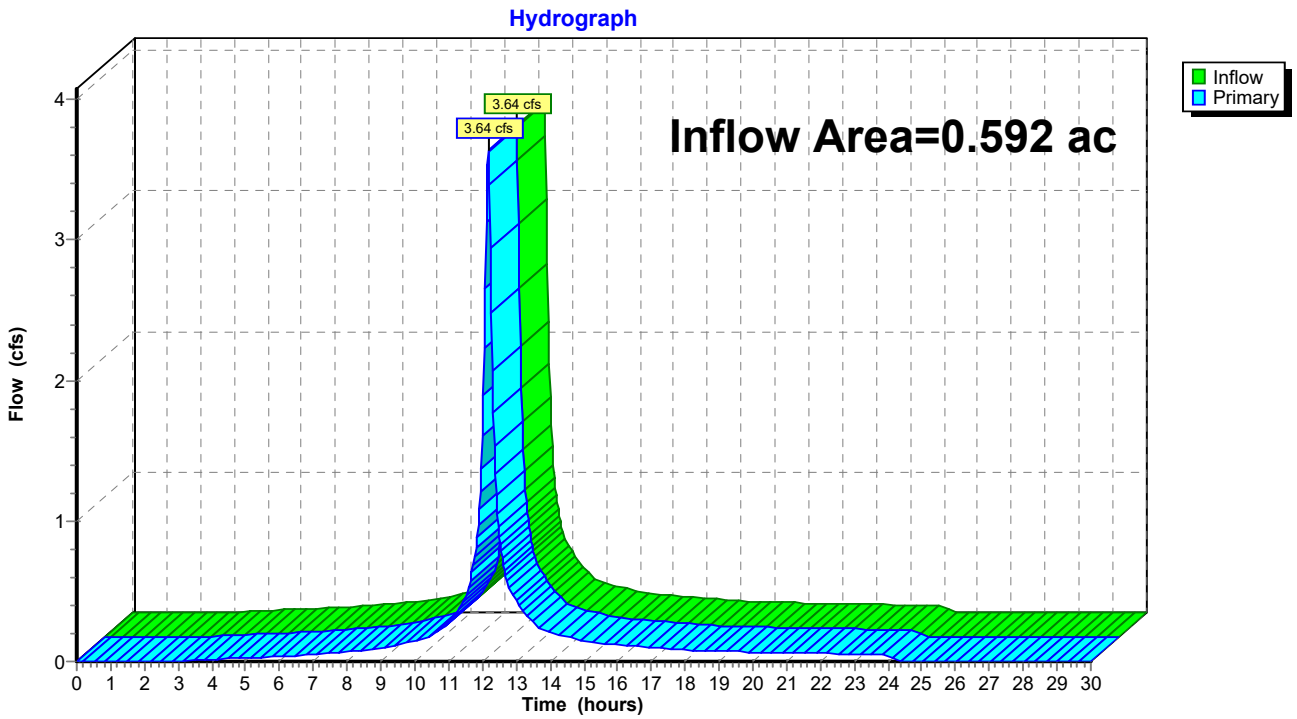


Summary for Pond AP-5: DI#5

Inflow Area = 0.592 ac, 53.74% Impervious, Inflow Depth = 6.24" for 50-yr event
Inflow = 3.64 cfs @ 12.17 hrs, Volume= 0.308 af
Primary = 3.64 cfs @ 12.17 hrs, Volume= 0.308 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Pond AP-5: DI#5



Summary for Subcatchment EX-1: West-Parking & Building

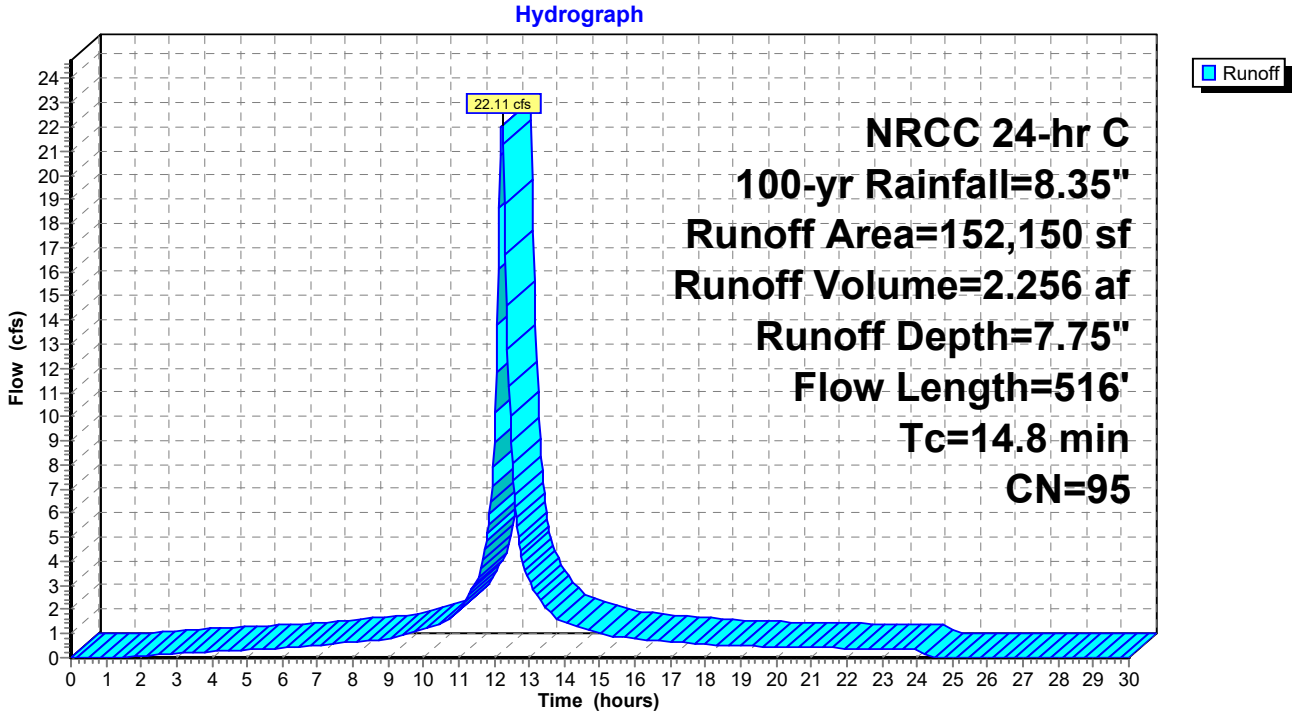
Runoff = 22.11 cfs @ 12.22 hrs, Volume= 2.256 af, Depth= 7.75"
Routed to Pond AP-1 : Norwalk River

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 100-yr Rainfall=8.35"

	Area (sf)	CN	Description
	67,673	98	Paved parking, HSG D
	18,349	98	Paved parking, HSG C
*	1,675	98	Concrete, HSG D
	38,351	98	Roofs, HSG D
	17,092	80	>75% Grass cover, Good, HSG D
*	144	79	Landscaping., Good, HSG D
	8,301	77	Woods, Good, HSG D
	565	70	Woods, Good, HSG C
	152,150	95	Weighted Average
	26,102		17.16% Pervious Area
	126,048		82.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0270	0.20		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.53"
5.5	275	0.0140	0.83		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.8	119	0.0150	2.49		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
0.2	22	0.2270	2.38		**Shallow Concentrated Flow, D-E** Woodland Kv= 5.0 fps
14.8	516	Total			

Subcatchment EX-1: West-Parking & Building



Summary for Subcatchment EX-2: Front Lawn

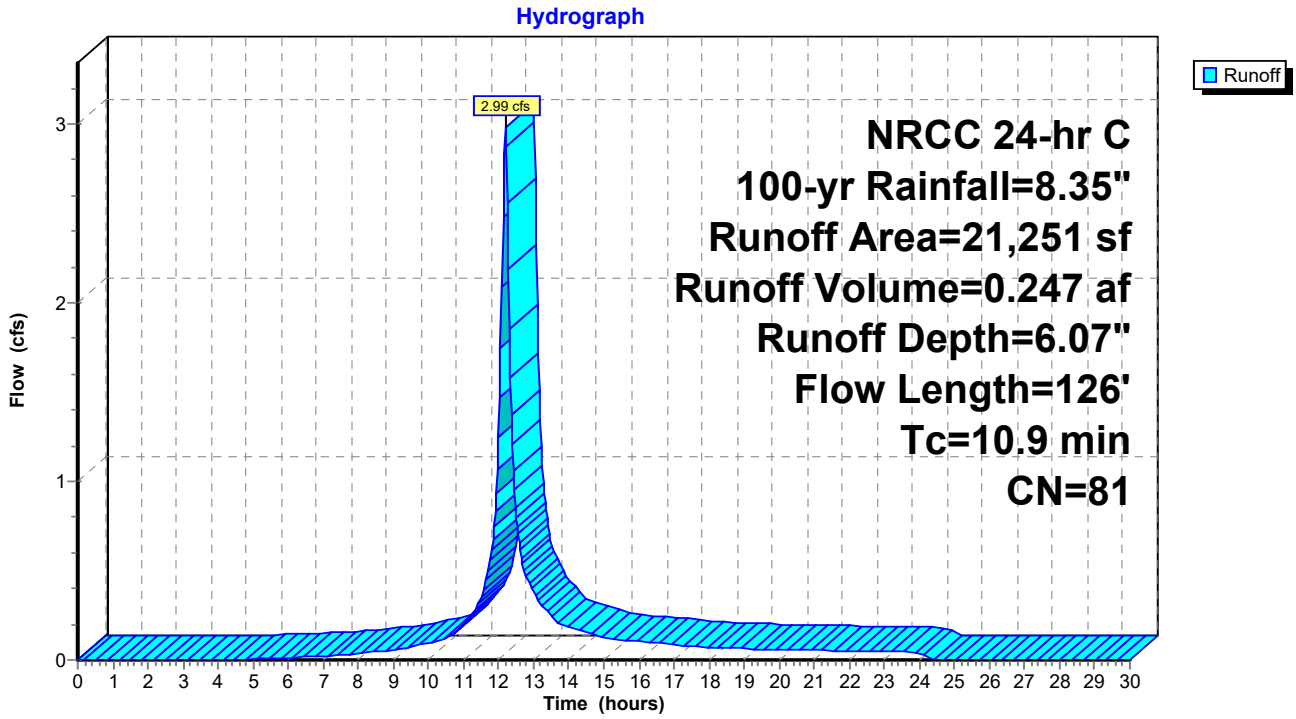
Runoff = 2.99 cfs @ 12.18 hrs, Volume= 0.247 af, Depth= 6.07"
Routed to Pond AP-2 : Front Lawn Landscaped Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 100-yr Rainfall=8.35"

	Area (sf)	CN	Description
*	721	98	Concrete, HSG D
	19,154	80	>75% Grass cover, Good, HSG D
*	1,376	79	Landscaping, Good, HSG D
	21,251	81	Weighted Average
	20,530		96.61% Pervious Area
	721		3.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0150	0.16		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.53"
0.4	26	0.0190	0.96		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
10.9	126	Total			

Subcatchment EX-2: Front Lawn



Summary for Subcatchment EX-3: Entrance Drive

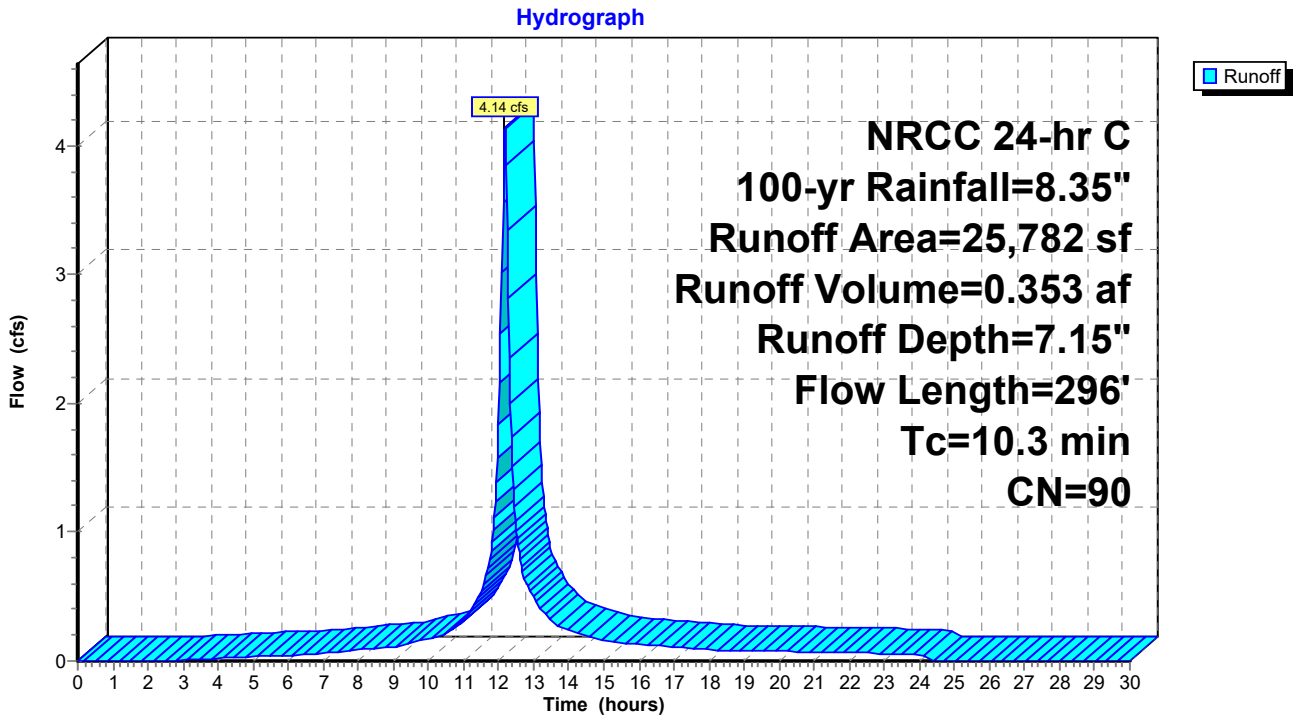
Runoff = 4.14 cfs @ 12.17 hrs, Volume= 0.353 af, Depth= 7.15"
Routed to Pond AP-5 : DI#5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 100-yr Rainfall=8.35"

	Area (sf)	CN	Description
	9,910	98	Paved parking, HSG D
*	814	98	Concrete, HSG D
	3,130	98	Roofs, HSG D
	9,334	80	>75% Grass cover, Good, HSG D
*	2,594	79	Landscaping, Good, HSG D
	25,782	90	Weighted Average
	11,928		46.26% Pervious Area
	13,854		53.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	92	0.0200	0.18		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.53"
1.6	204	0.0110	2.13		**Shallow Concentrated Flow, B-C** Paved Kv= 20.3 fps
10.3	296	Total			

Subcatchment EX-3: Entrance Drive



Summary for Subcatchment EX-4: Landscaped Area South of Entrance Drive

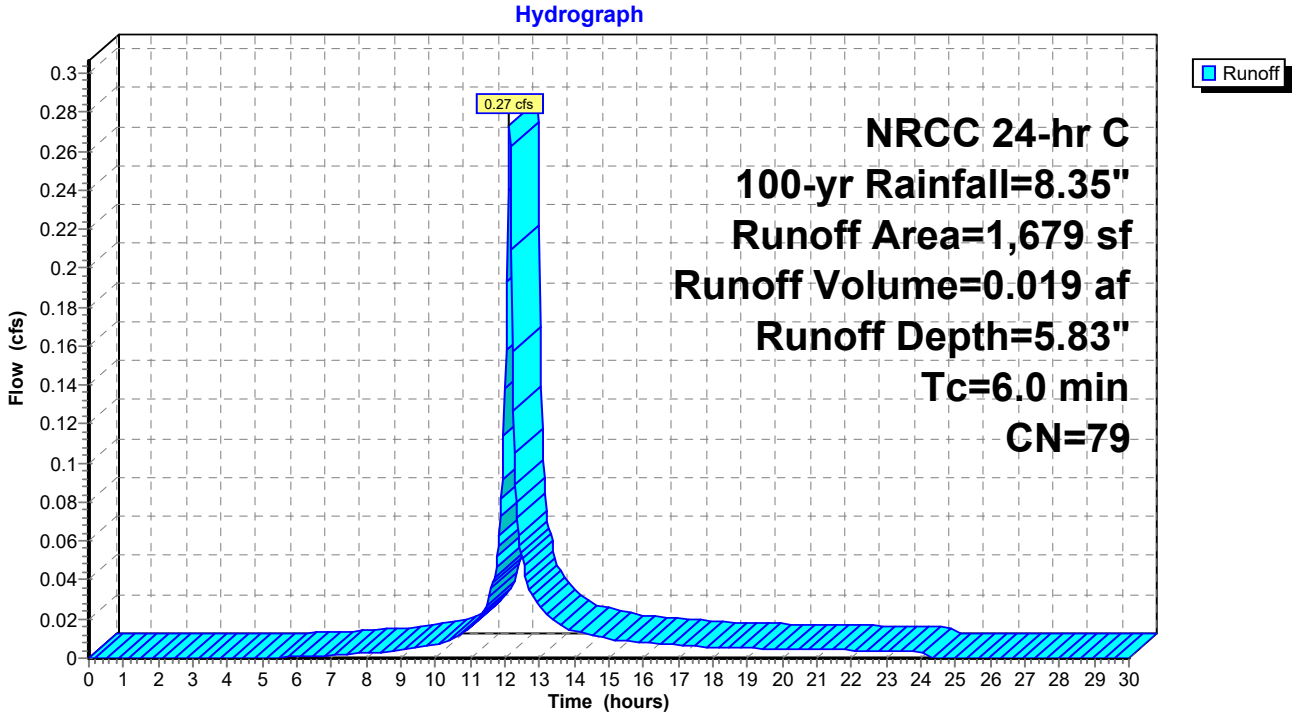
Runoff = 0.27 cfs @ 12.13 hrs, Volume= 0.019 af, Depth= 5.83"
Routed to Pond AP-4 : Landscaped Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 100-yr Rainfall=8.35"

	Area (sf)	CN	Description
	510	80	>75% Grass cover, Good, HSG D
*	1,169	79	Landscaping, Good, HSG D
	1,679	79	Weighted Average
	1,679		100.00% Pervious Area

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

Subcatchment EX-4: Landscaped Area South of Entrance Drive

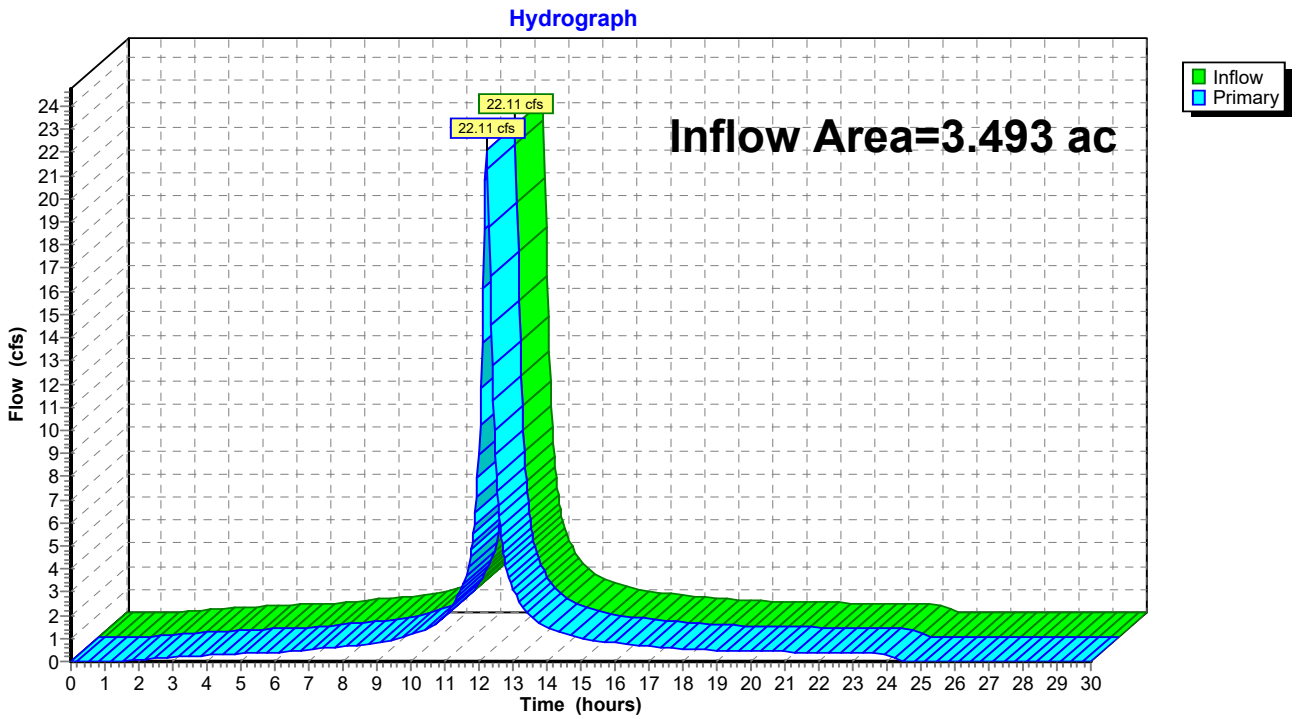


Summary for Pond AP-1: Norwalk River

Inflow Area = 3.493 ac, 82.84% Impervious, Inflow Depth = 7.75" for 100-yr event
Inflow = 22.11 cfs @ 12.22 hrs, Volume= 2.256 af
Primary = 22.11 cfs @ 12.22 hrs, Volume= 2.256 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Pond AP-1: Norwalk River

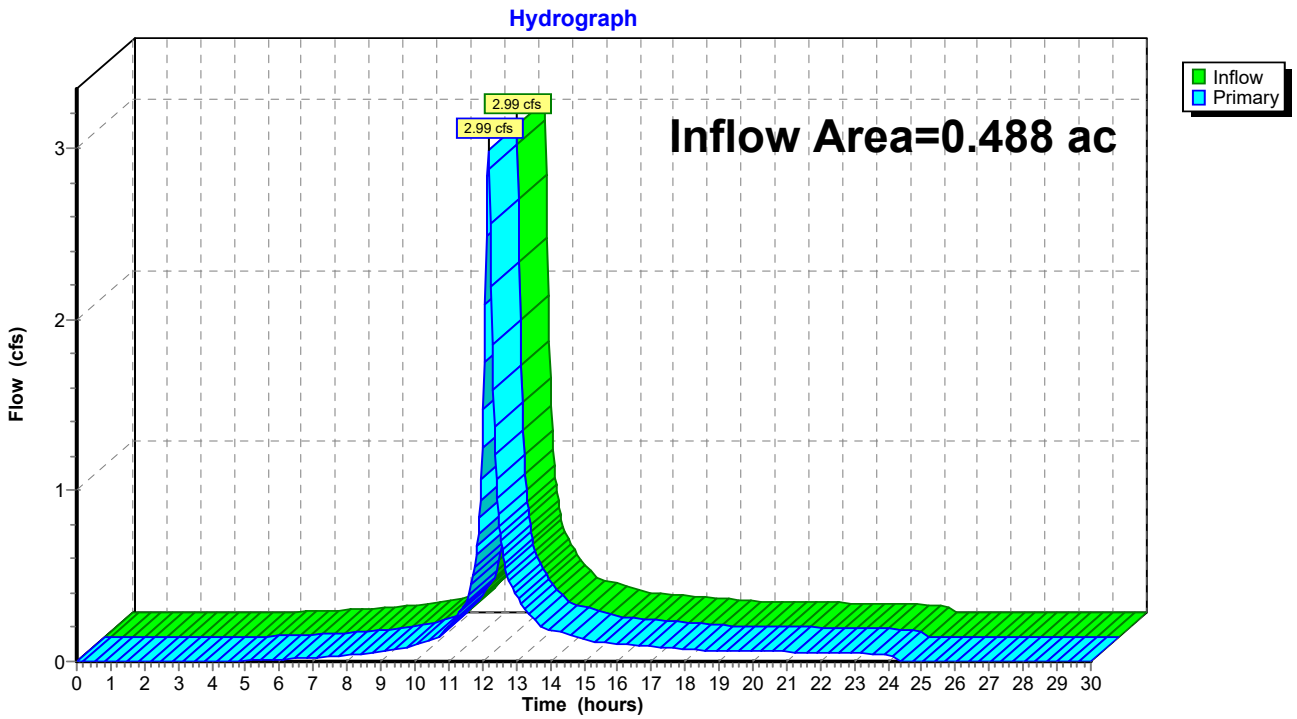


Summary for Pond AP-2: Front Lawn Landscaped Area

Inflow Area = 0.488 ac, 3.39% Impervious, Inflow Depth = 6.07" for 100-yr event
Inflow = 2.99 cfs @ 12.18 hrs, Volume= 0.247 af
Primary = 2.99 cfs @ 12.18 hrs, Volume= 0.247 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Pond AP-2: Front Lawn Landscaped Area

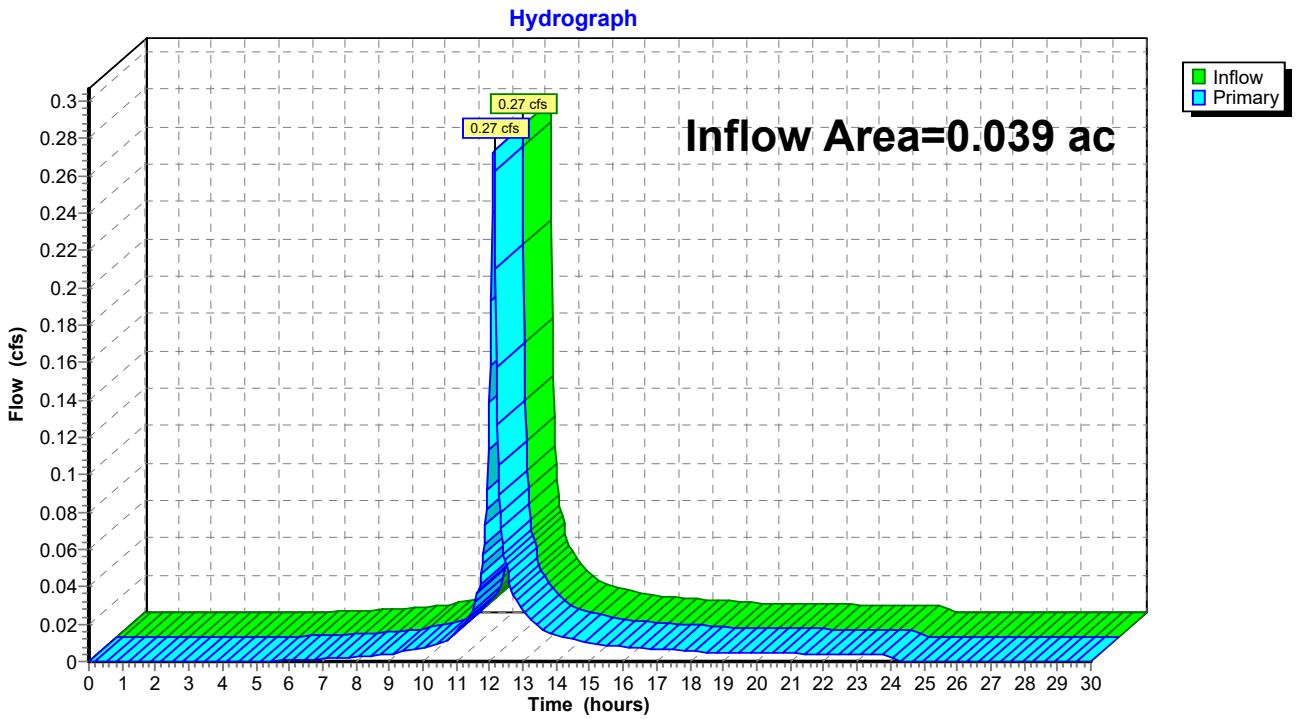


Summary for Pond AP-4: Landscaped Area

Inflow Area = 0.039 ac, 0.00% Impervious, Inflow Depth = 5.83" for 100-yr event
Inflow = 0.27 cfs @ 12.13 hrs, Volume= 0.019 af
Primary = 0.27 cfs @ 12.13 hrs, Volume= 0.019 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Pond AP-4: Landscaped Area

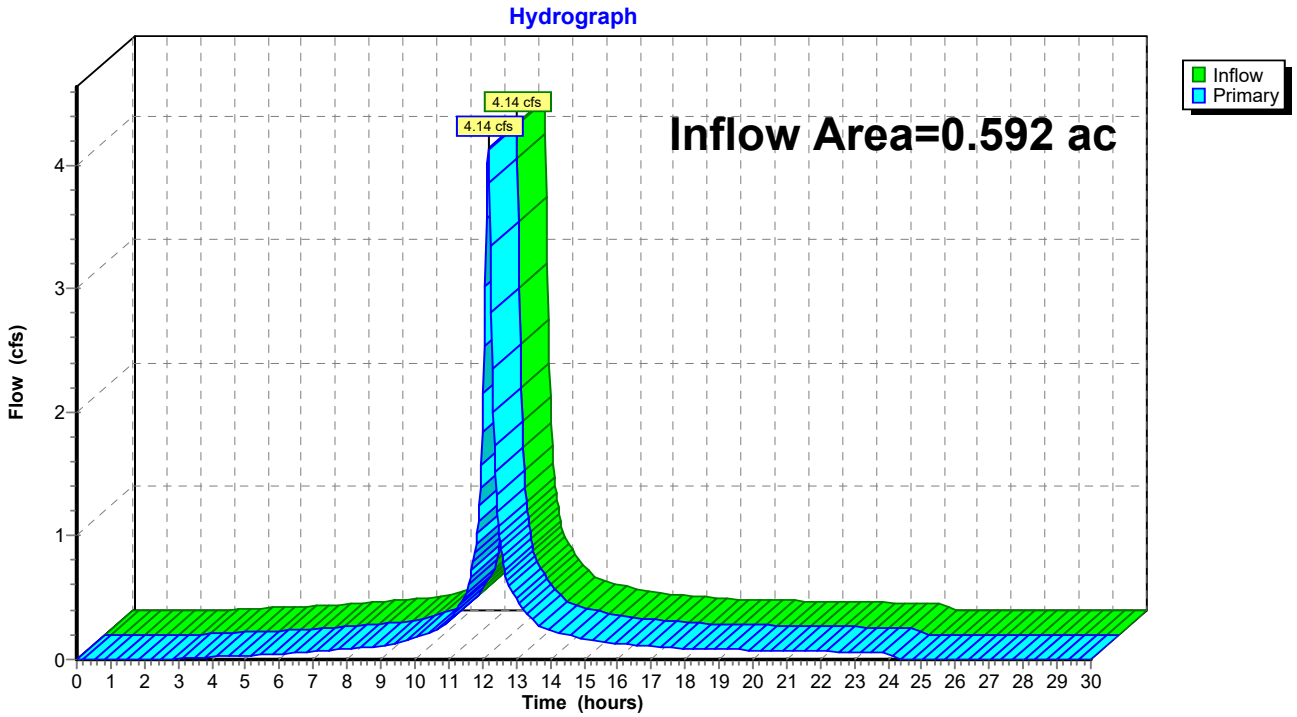


Summary for Pond AP-5: DI#5

Inflow Area = 0.592 ac, 53.74% Impervious, Inflow Depth = 7.15" for 100-yr event
Inflow = 4.14 cfs @ 12.17 hrs, Volume= 0.353 af
Primary = 4.14 cfs @ 12.17 hrs, Volume= 0.353 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Pond AP-5: DI#5



Appendix G
Hydrologic Analysis - Proposed Conditions

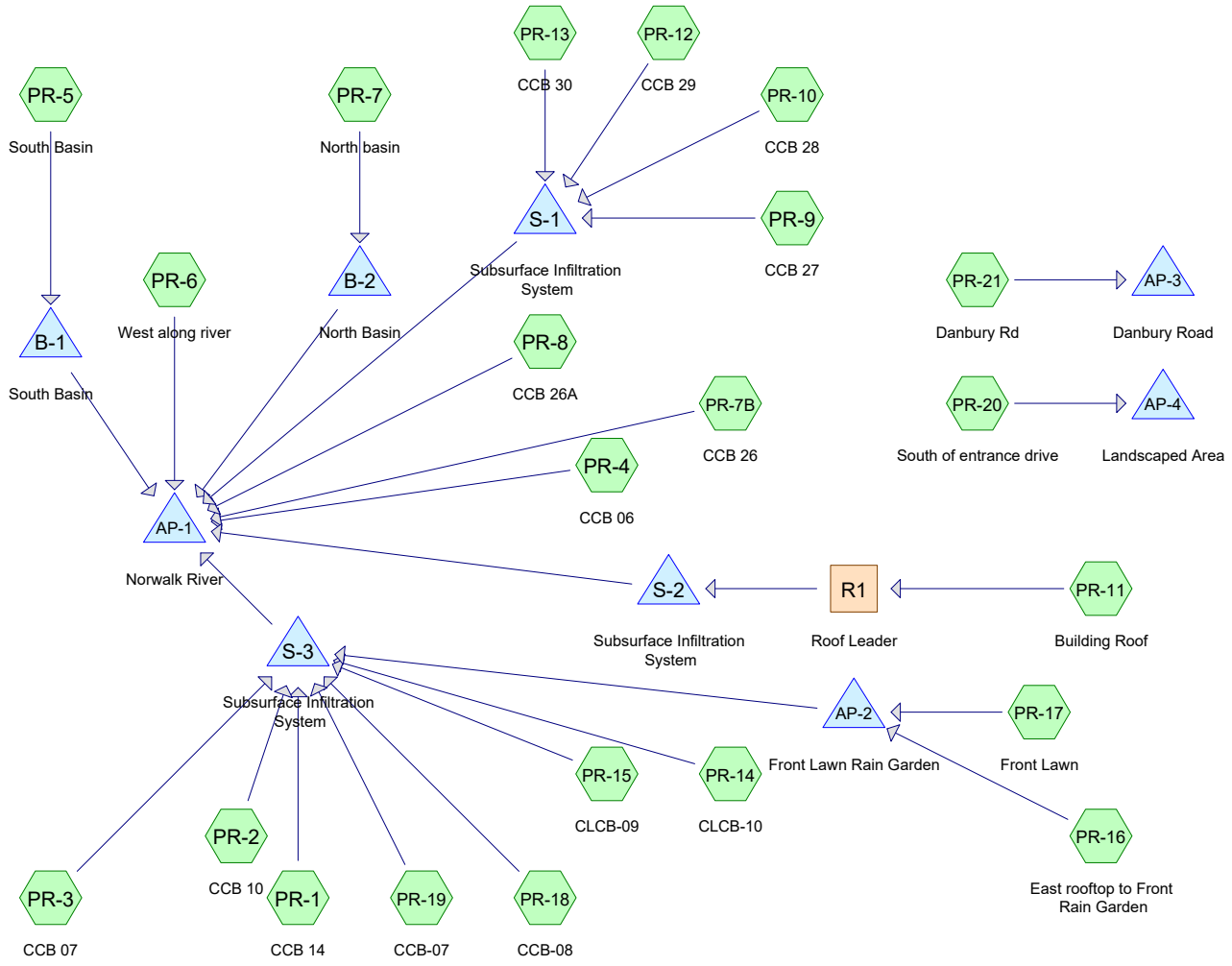
Proposed Multifamily Development

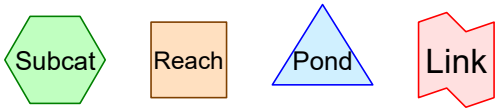
131 Danbury Road, Wilton, Connecticut
Drainage Report

Ryan Sutherland, AMS Acquisitions Management Corporation

SLR Project No.: 141.21543.0000171

February 13, 2024





Routing Diagram for AMSW_Proposed-R10_2024-02-06, Revised 2024-02-06
Prepared by SLR International Corporation, Printed 2/12/2024
HydroCAD® 10.20-4a s/n 07599 © 2023 HydroCAD Software Solutions LLC

Summary for Subcatchment PR-1: CCB 14

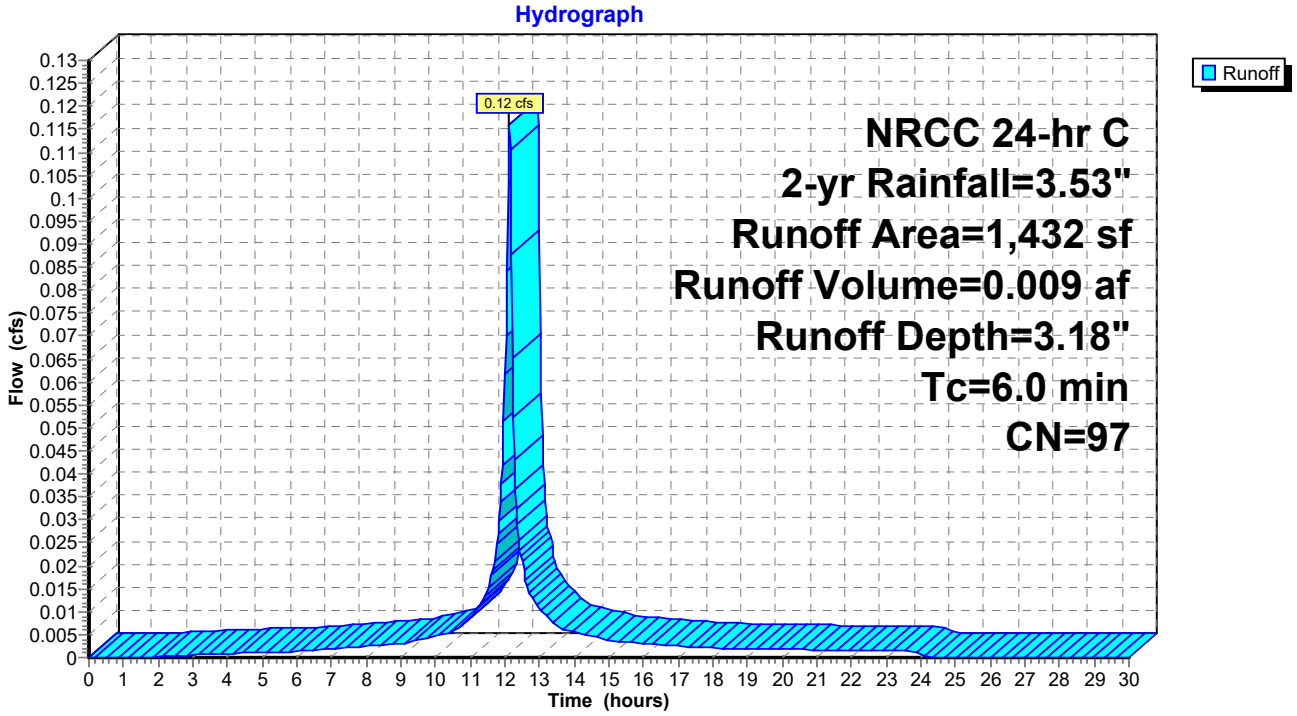
Runoff = 0.12 cfs @ 12.13 hrs, Volume= 0.009 af, Depth= 3.18"
Routed to Pond S-3 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 2-yr Rainfall=3.53"

	Area (sf)	CN	Description
	1,361	98	Paved parking, HSG D
*	71	79	Landscaping, Good, HSG D
	1,432	97	Weighted Average
	71		4.96% Pervious Area
	1,361		95.04% Impervious Area

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

Subcatchment PR-1: CCB 14



Summary for Subcatchment PR-10: CCB 28

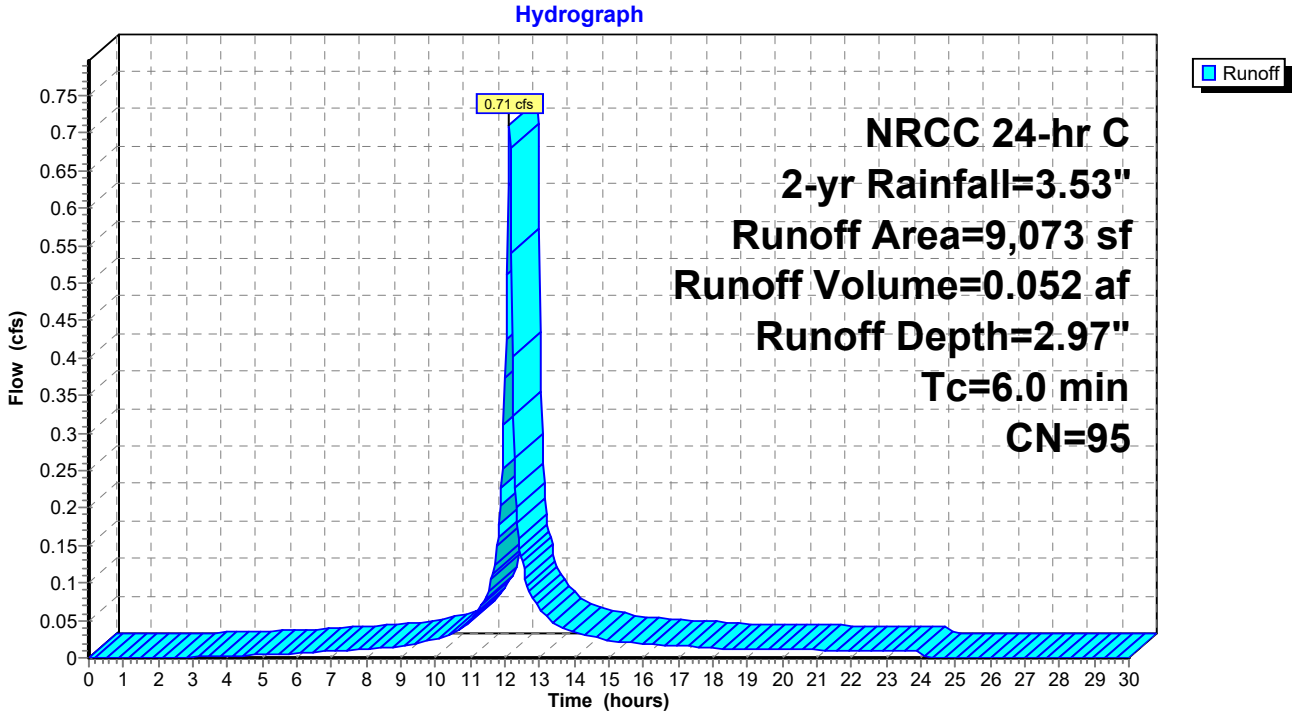
Runoff = 0.71 cfs @ 12.13 hrs, Volume= 0.052 af, Depth= 2.97"
Routed to Pond S-1 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 2-yr Rainfall=3.53"

	Area (sf)	CN	Description
	7,450	98	Paved parking, HSG D
	440	80	>75% Grass cover, Good, HSG D
*	1,183	79	Landscaping, Good, HSG D
	9,073	95	Weighted Average
	1,623		17.89% Pervious Area
	7,450		82.11% Impervious Area

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

Subcatchment PR-10: CCB 28



Summary for Subcatchment PR-11: Building Roof

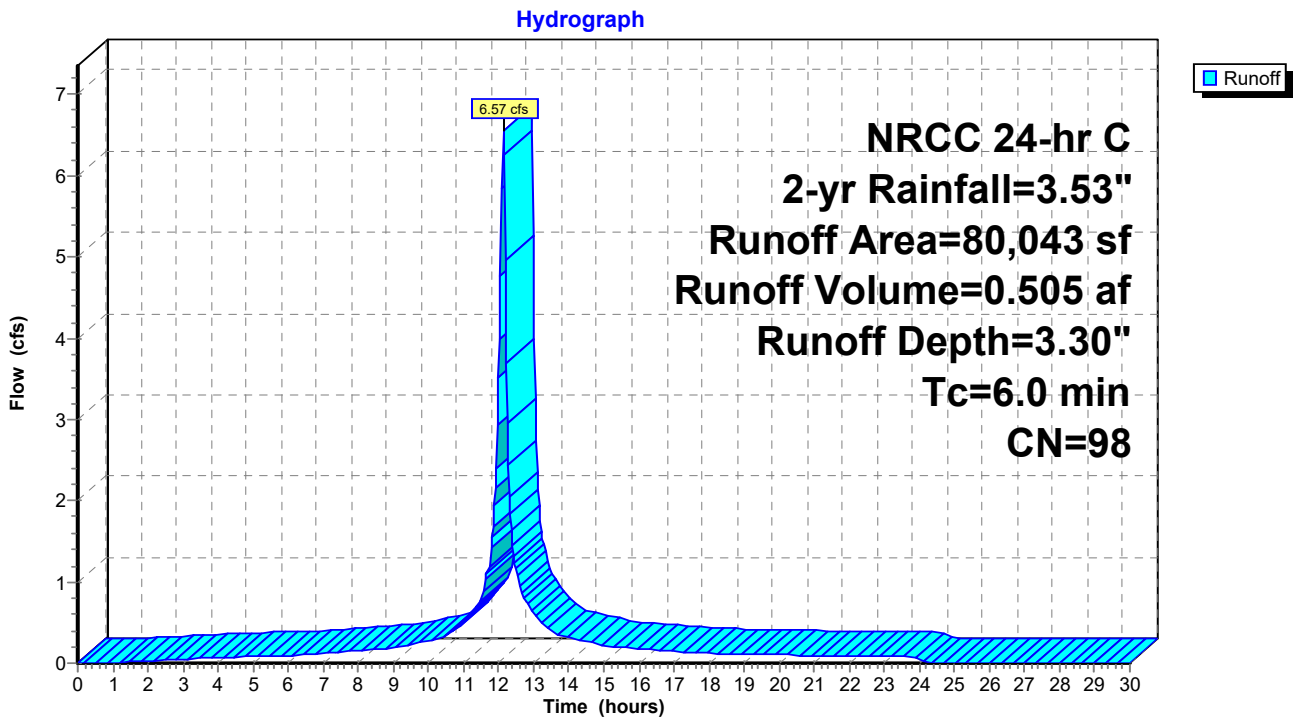
Runoff = 6.57 cfs @ 12.13 hrs, Volume= 0.505 af, Depth= 3.30"
Routed to Reach R1 : Roof Leader

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 2-yr Rainfall=3.53"

Area (sf)	CN	Description
80,043	98	Roofs, HSG D
80,043		100.00% Impervious Area

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

Subcatchment PR-11: Building Roof



Summary for Subcatchment PR-12: CCB 29

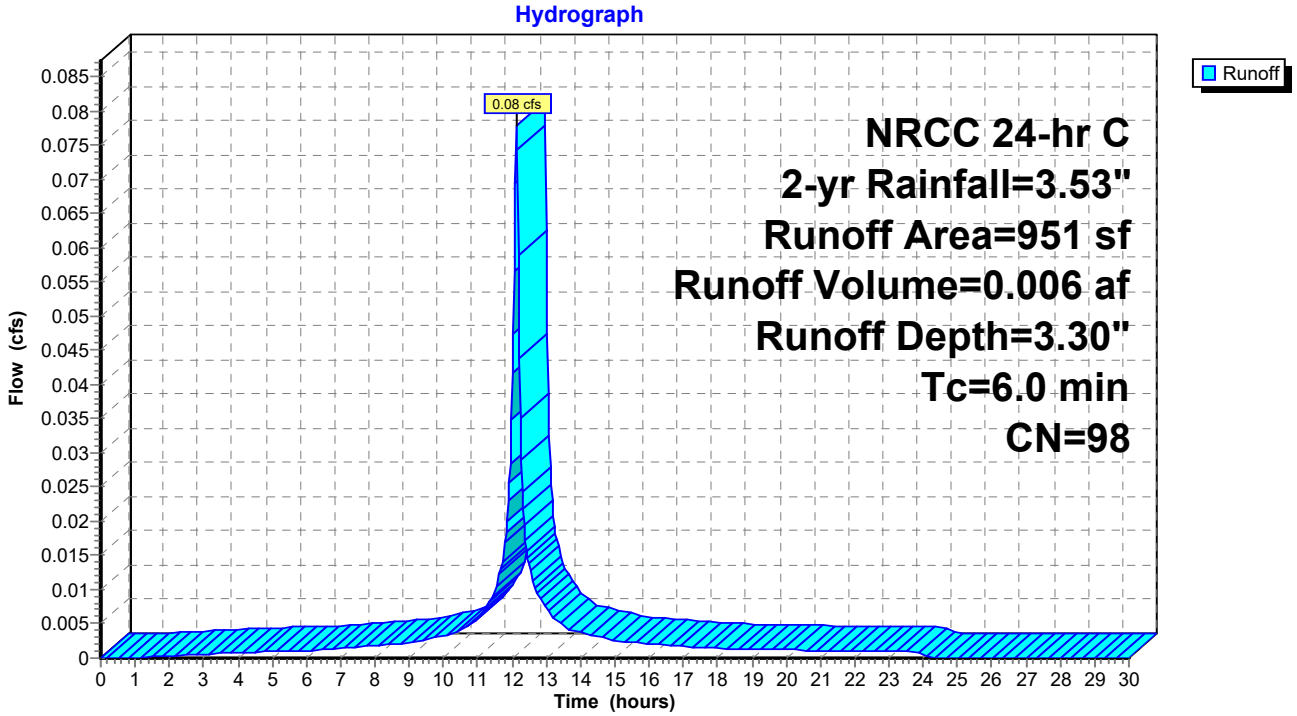
Runoff = 0.08 cfs @ 12.13 hrs, Volume= 0.006 af, Depth= 3.30"
Routed to Pond S-1 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 2-yr Rainfall=3.53"

Area (sf)	CN	Description
951	98	Paved parking, HSG D
951		100.00% Impervious Area

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

Subcatchment PR-12: CCB 29



Summary for Subcatchment PR-13: CCB 30

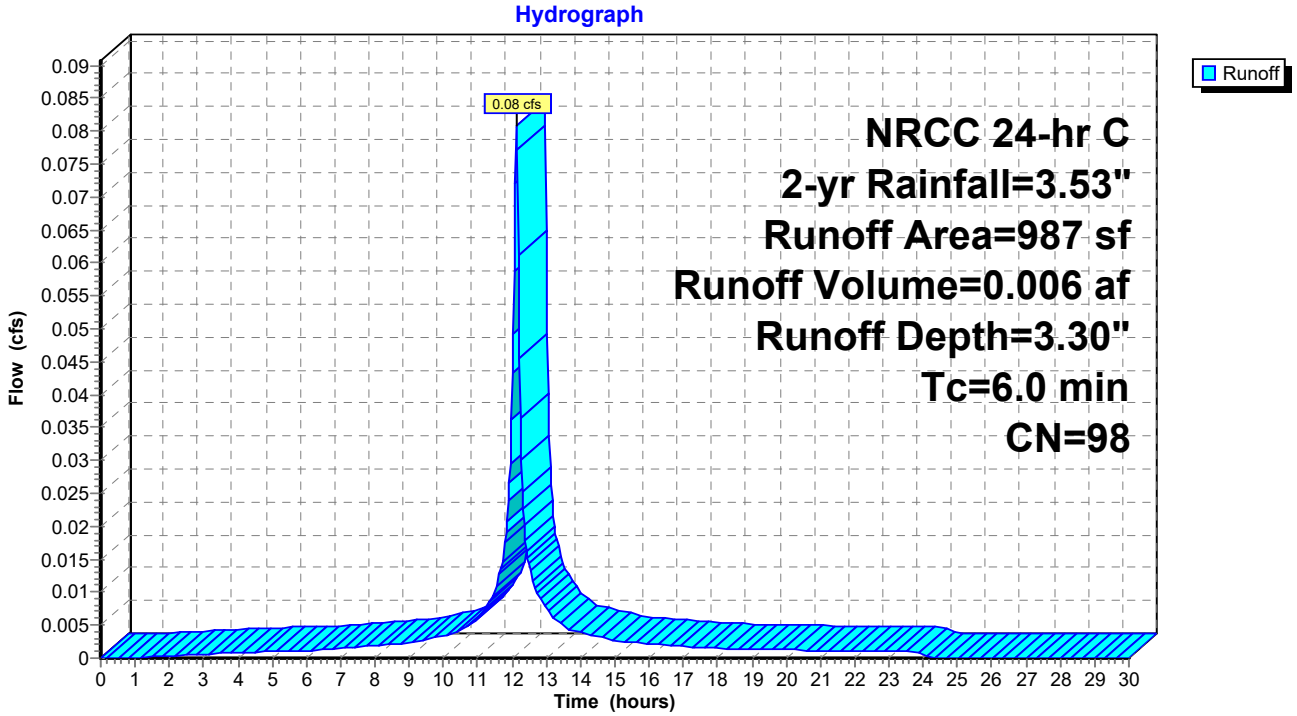
Runoff = 0.08 cfs @ 12.13 hrs, Volume= 0.006 af, Depth= 3.30"
Routed to Pond S-1 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 2-yr Rainfall=3.53"

Area (sf)	CN	Description
987	98	Paved parking, HSG D
987		100.00% Impervious Area

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

Subcatchment PR-13: CCB 30



Summary for Subcatchment PR-14: CLCB-10

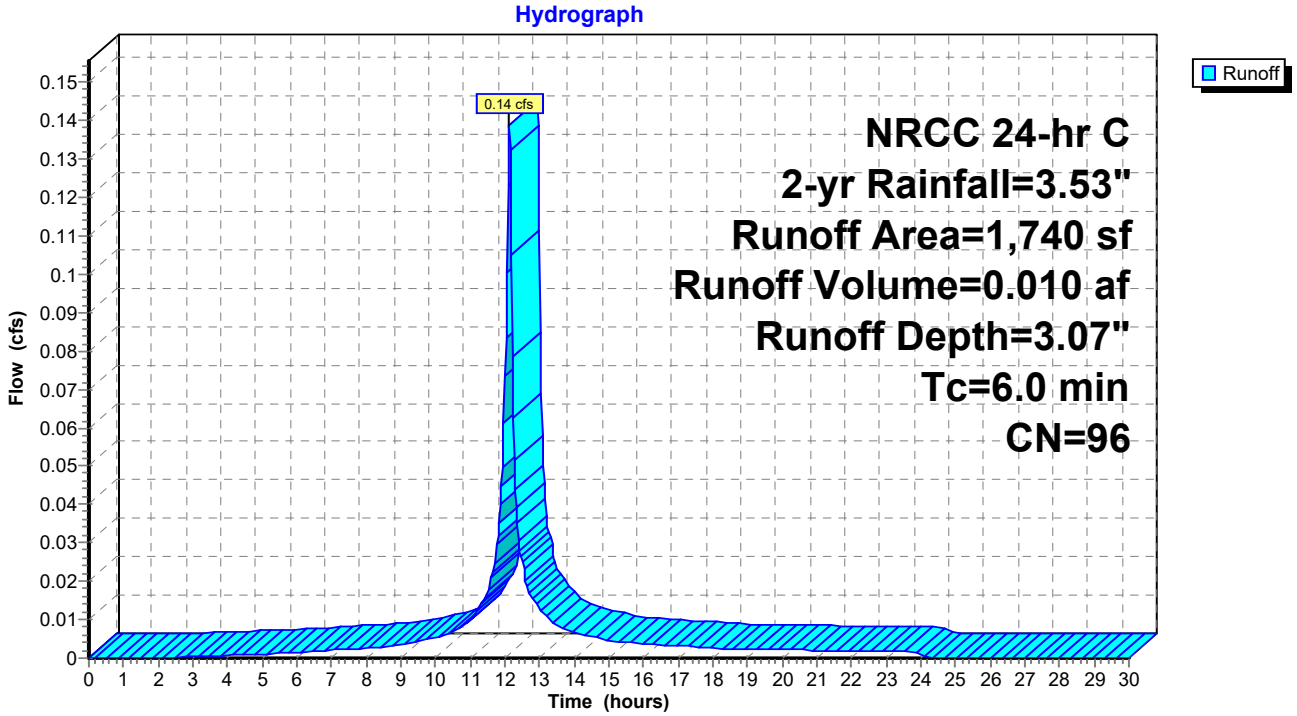
Runoff = 0.14 cfs @ 12.13 hrs, Volume= 0.010 af, Depth= 3.07"
Routed to Pond S-3 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 2-yr Rainfall=3.53"

	Area (sf)	CN	Description
*	1,740	96	Concrete paver, HSG D
	1,740		100.00% Pervious Area

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

Subcatchment PR-14: CLCB-10



Summary for Subcatchment PR-15: CLCB-09

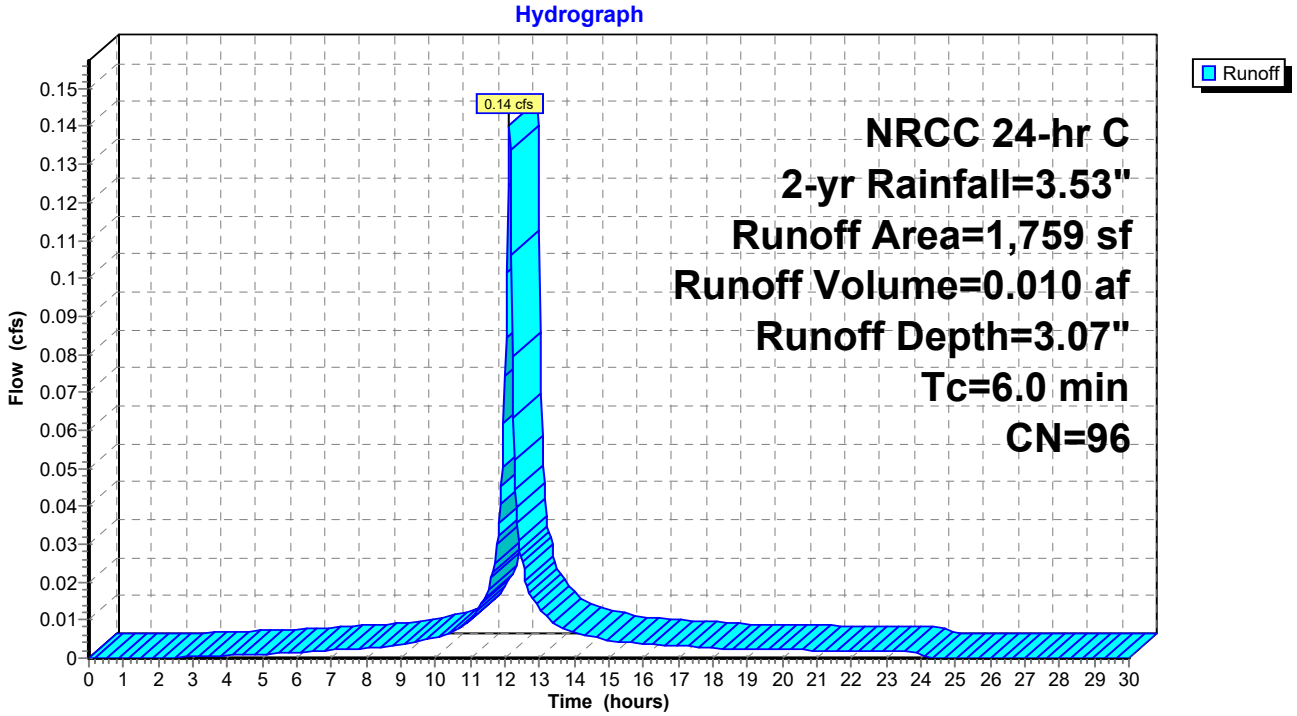
Runoff = 0.14 cfs @ 12.13 hrs, Volume= 0.010 af, Depth= 3.07"
Routed to Pond S-3 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 2-yr Rainfall=3.53"

	Area (sf)	CN	Description
*	1,759	96	Pevious paver, HSG D
	1,759		100.00% Pervious Area

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

Subcatchment PR-15: CLCB-09



Summary for Subcatchment PR-16: East rooftop to Front Rain Garden

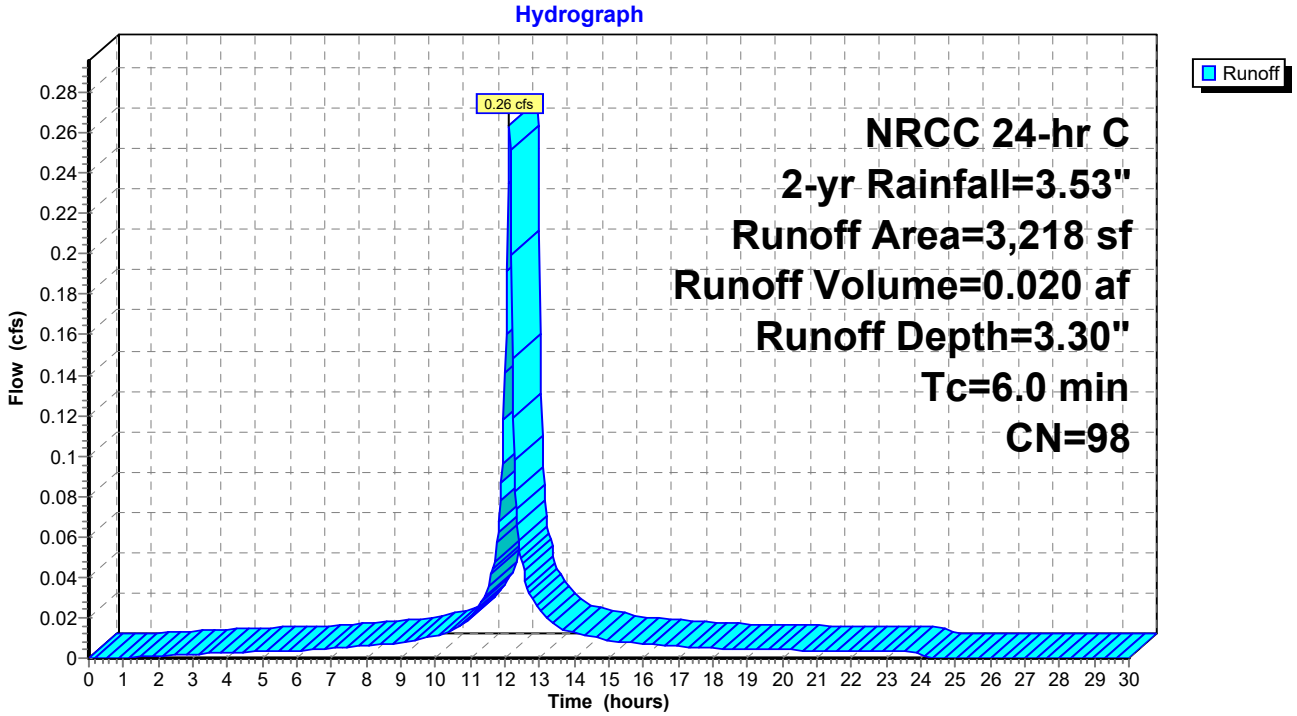
Runoff = 0.26 cfs @ 12.13 hrs, Volume= 0.020 af, Depth= 3.30"
Routed to Pond AP-2 : Front Lawn Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 2-yr Rainfall=3.53"

Area (sf)	CN	Description
3,218	98	Roofs, HSG D
3,218		100.00% Impervious Area

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

Subcatchment PR-16: East rooftop to Front Rain Garden



Summary for Subcatchment PR-17: Front Lawn

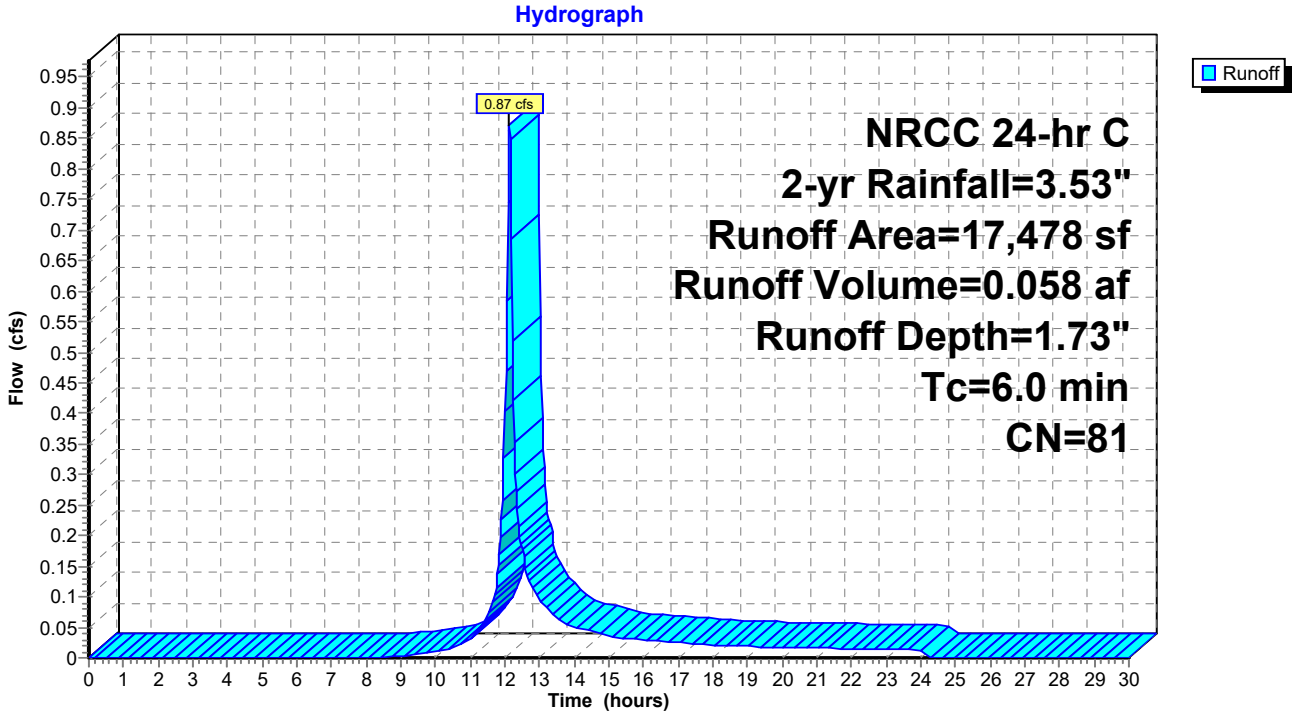
Runoff = 0.87 cfs @ 12.13 hrs, Volume= 0.058 af, Depth= 1.73"
Routed to Pond AP-2 : Front Lawn Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 2-yr Rainfall=3.53"

	Area (sf)	CN	Description
	1,883	98	Paved parking, HSG D
	6,950	80	>75% Grass cover, Good, HSG D
*	8,645	79	Landscaping, Good, HSG D
	17,478	81	Weighted Average
	15,595		89.23% Pervious Area
	1,883		10.77% Impervious Area

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

Subcatchment PR-17: Front Lawn



Summary for Subcatchment PR-18: CCB-08

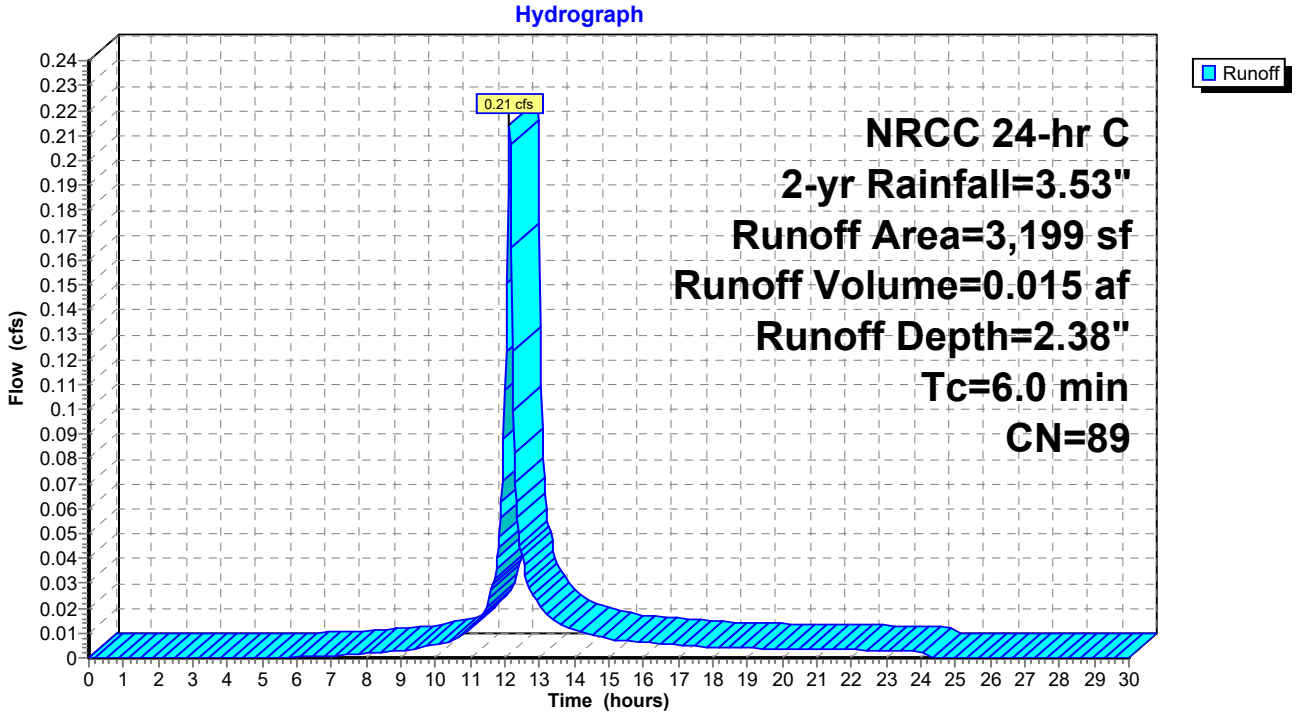
Runoff = 0.21 cfs @ 12.13 hrs, Volume= 0.015 af, Depth= 2.38"
Routed to Pond S-3 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 2-yr Rainfall=3.53"

	Area (sf)	CN	Description
	1,677	98	Paved parking, HSG D
	192	80	>75% Grass cover, Good, HSG D
*	1,330	79	Landscaping, Good, HSG D
	3,199	89	Weighted Average
	1,522		47.58% Pervious Area
	1,677		52.42% Impervious Area

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

Subcatchment PR-18: CCB-08



Summary for Subcatchment PR-19: CCB-07

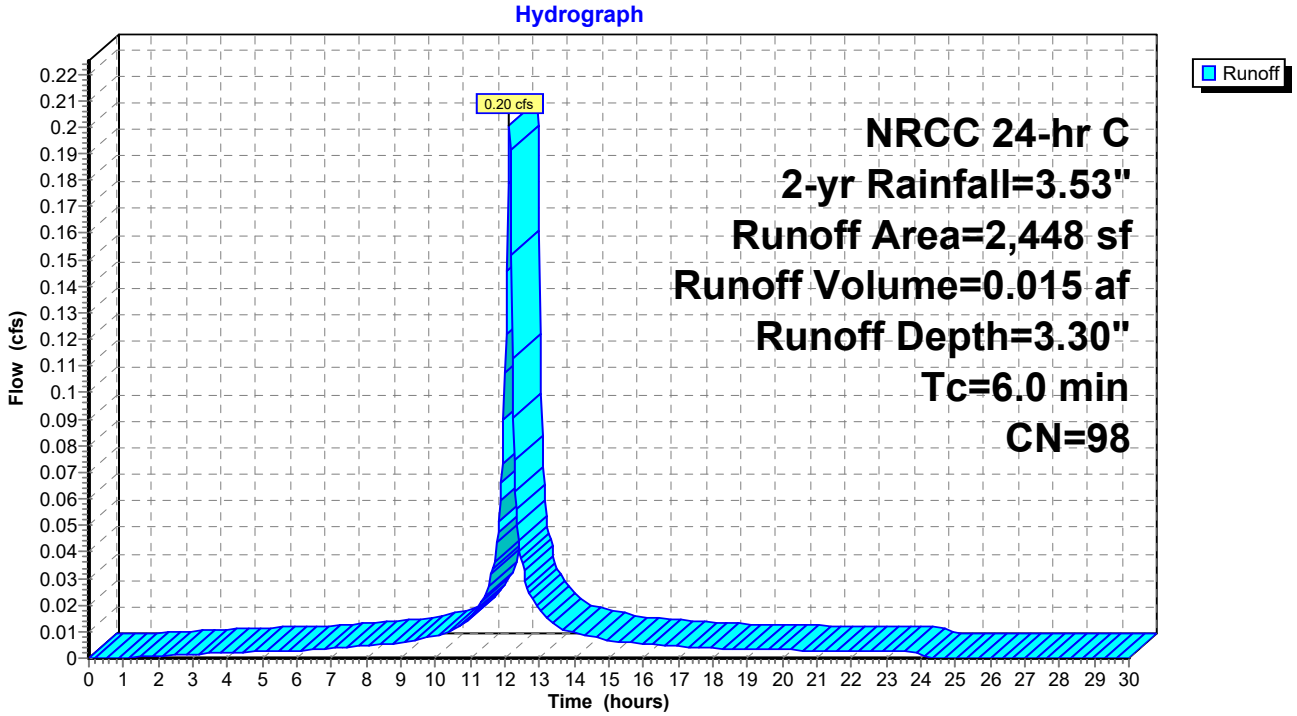
Runoff = 0.20 cfs @ 12.13 hrs, Volume= 0.015 af, Depth= 3.30"
Routed to Pond S-3 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 2-yr Rainfall=3.53"

Area (sf)	CN	Description
2,448	98	Paved parking, HSG D
2,448		100.00% Impervious Area

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

Subcatchment PR-19: CCB-07



Summary for Subcatchment PR-2: CCB 10

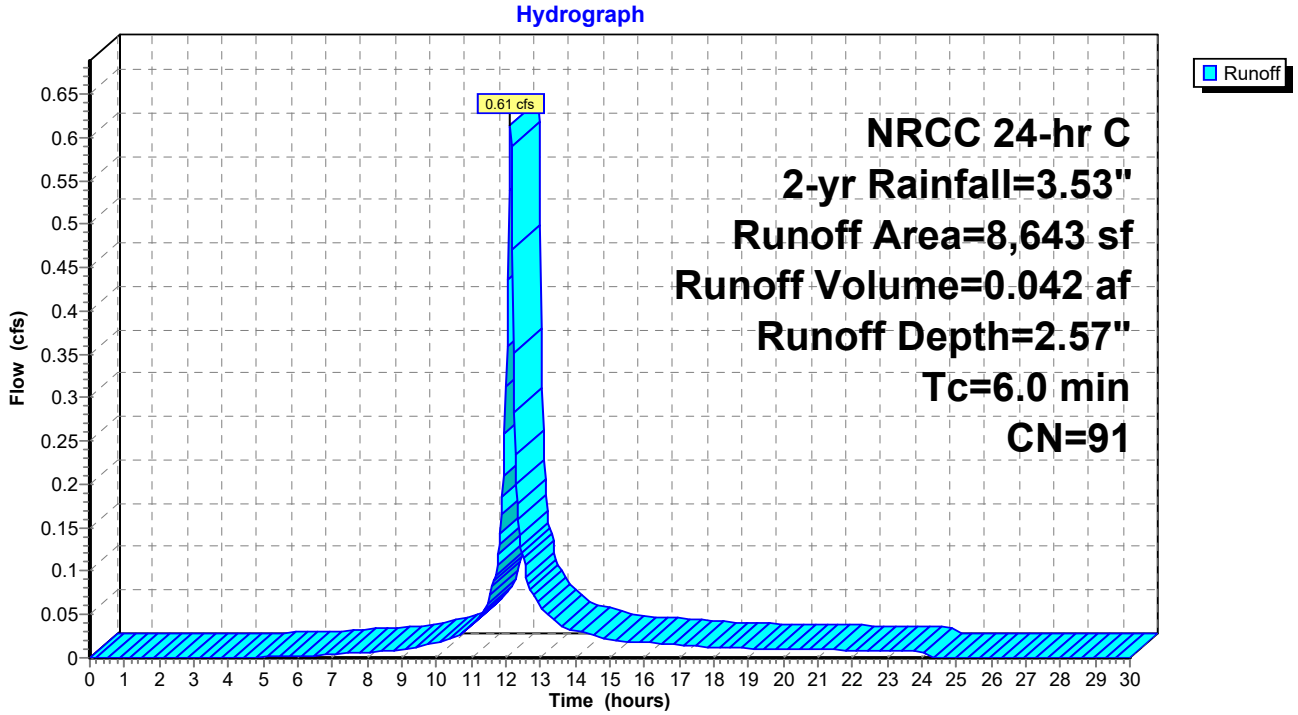
Runoff = 0.61 cfs @ 12.13 hrs, Volume= 0.042 af, Depth= 2.57"
Routed to Pond S-3 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 2-yr Rainfall=3.53"

	Area (sf)	CN	Description
*	6,303	98	Paved parking, HSG C
*	1,994	72	Landscaping, Good, HSG C
	346	74	>75% Grass cover, Good, HSG C
	8,643	91	Weighted Average
	2,340		27.07% Pervious Area
	6,303		72.93% Impervious Area

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

Subcatchment PR-2: CCB 10



Summary for Subcatchment PR-20: South of entrance drive

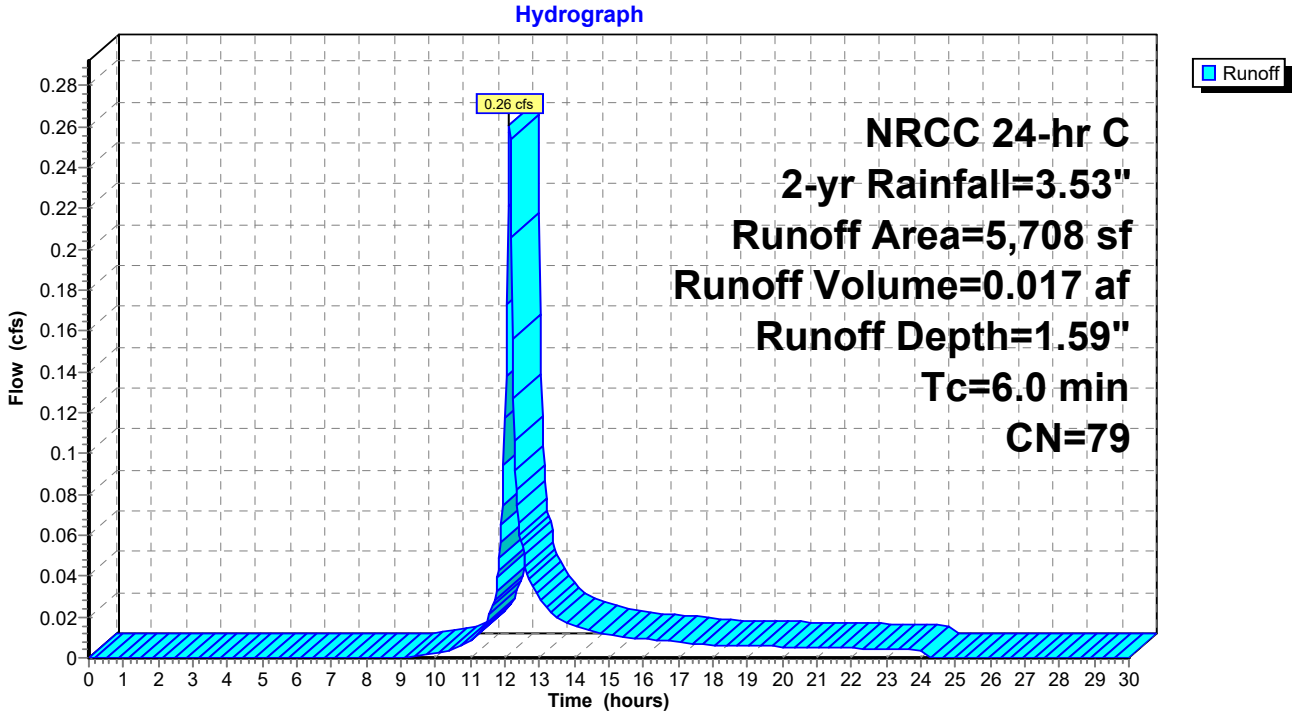
Runoff = 0.26 cfs @ 12.13 hrs, Volume= 0.017 af, Depth= 1.59"
Routed to Pond AP-4 : Landscaped Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 2-yr Rainfall=3.53"

	Area (sf)	CN	Description
	93	98	Paved parking, HSG D
	755	80	>75% Grass cover, Good, HSG D
*	4,860	79	Landscaping, Good, HSG D
	5,708	79	Weighted Average
	5,615		98.37% Pervious Area
	93		1.63% Impervious Area

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

Subcatchment PR-20: South of entrance drive



Summary for Subcatchment PR-21: Danbury Rd

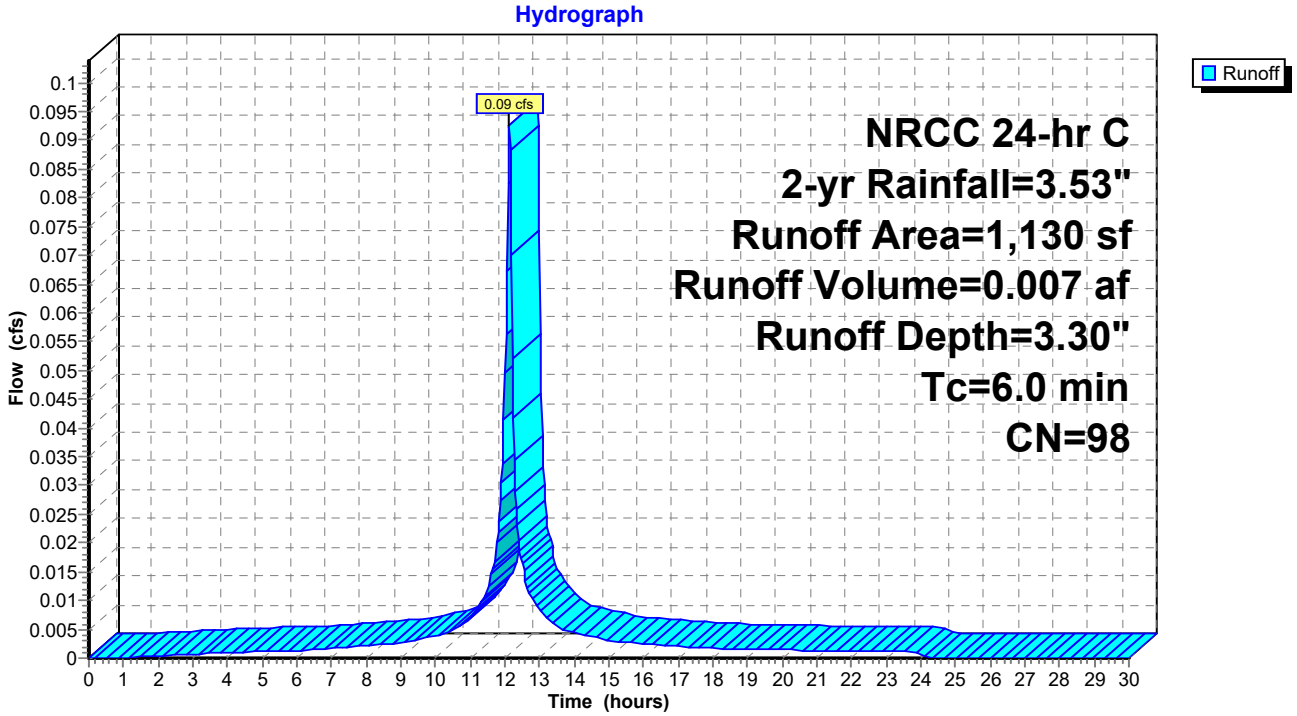
Runoff = 0.09 cfs @ 12.13 hrs, Volume= 0.007 af, Depth= 3.30"
Routed to Pond AP-3 : Danbury Road

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 2-yr Rainfall=3.53"

Area (sf)	CN	Description
1,130	98	Paved parking, HSG D
1,130		100.00% Impervious Area

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

Subcatchment PR-21: Danbury Rd



Summary for Subcatchment PR-3: CCB 07

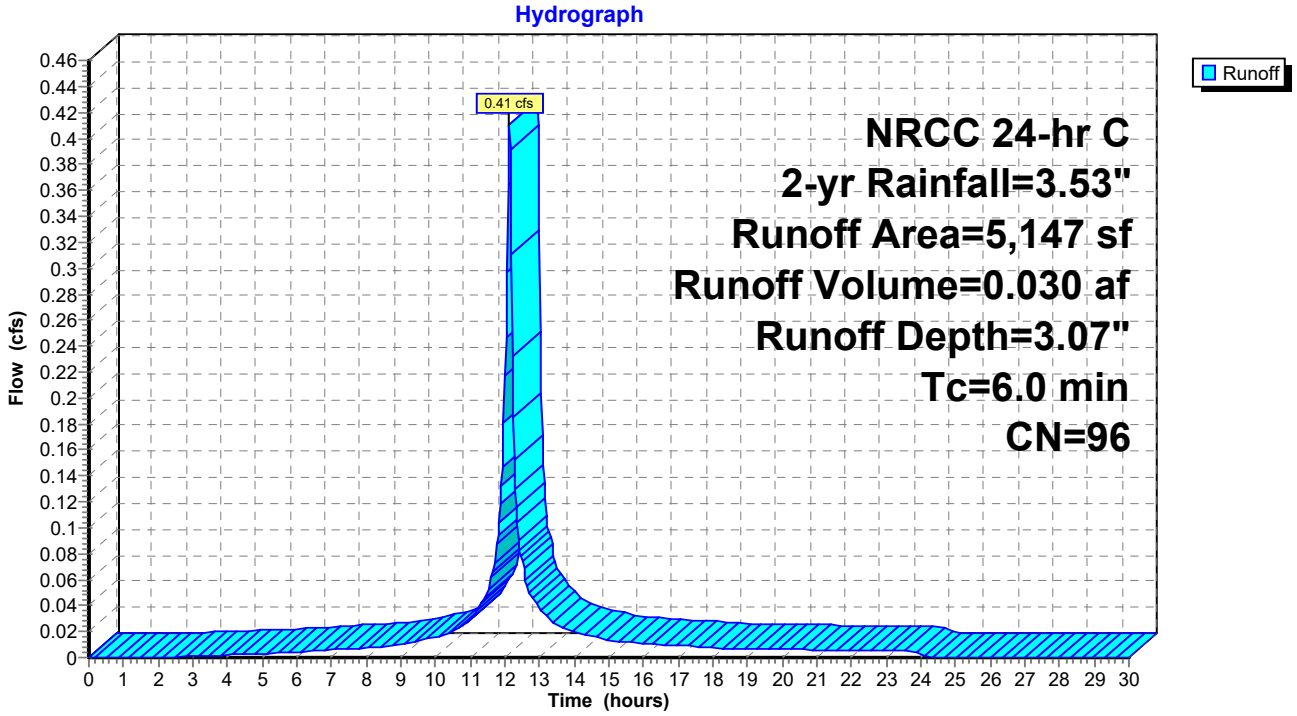
Runoff = 0.41 cfs @ 12.13 hrs, Volume= 0.030 af, Depth= 3.07"
Routed to Pond S-3 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 2-yr Rainfall=3.53"

	Area (sf)	CN	Description
*	4,715	98	Paved parking, HSG C
*	432	72	Landscaping, Good, HSG C
	5,147	96	Weighted Average
	432		8.39% Pervious Area
	4,715		91.61% Impervious Area

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

Subcatchment PR-3: CCB 07



Summary for Subcatchment PR-4: CCB 06

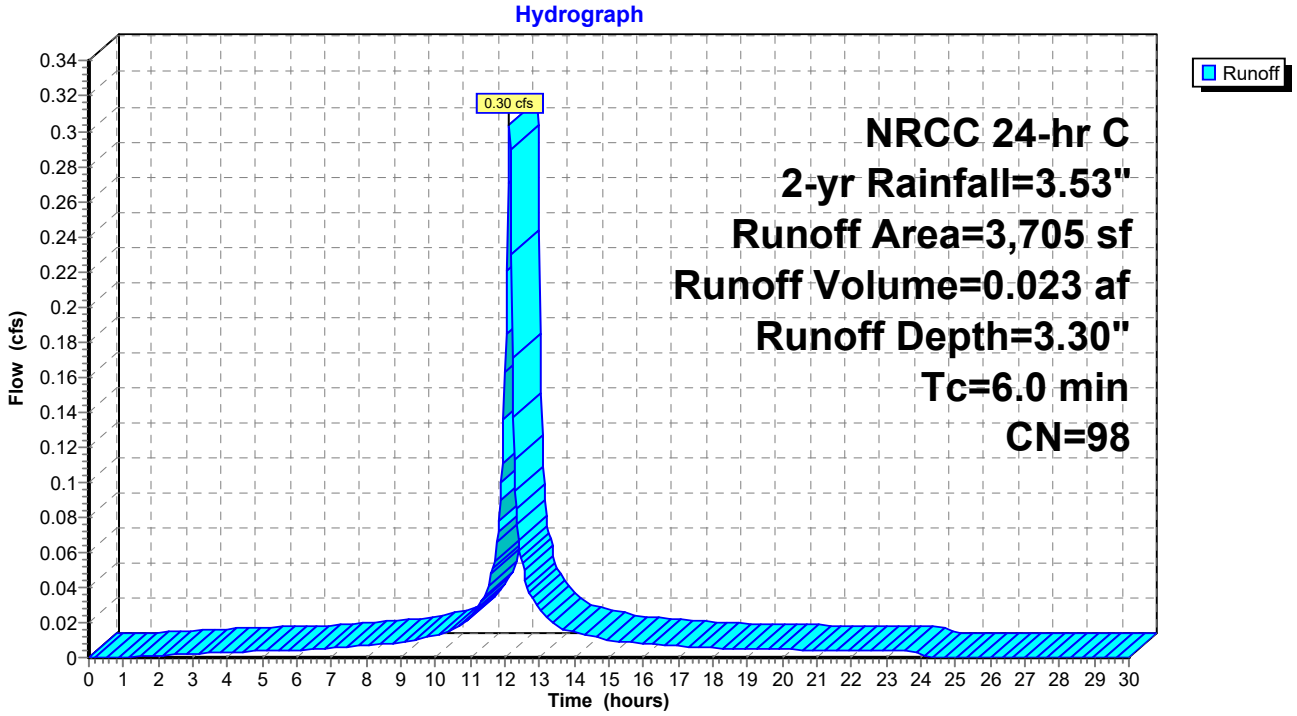
Runoff = 0.30 cfs @ 12.13 hrs, Volume= 0.023 af, Depth= 3.30"
Routed to Pond AP-1 : Norwalk River

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 2-yr Rainfall=3.53"

	Area (sf)	CN	Description
	3,630	98	Paved parking, HSG D
*	75	79	Landscaping, Good, HSG D
	3,705	98	Weighted Average
	75		2.02% Pervious Area
	3,630		97.98% Impervious Area

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

Subcatchment PR-4: CCB 06



Summary for Subcatchment PR-5: South Basin

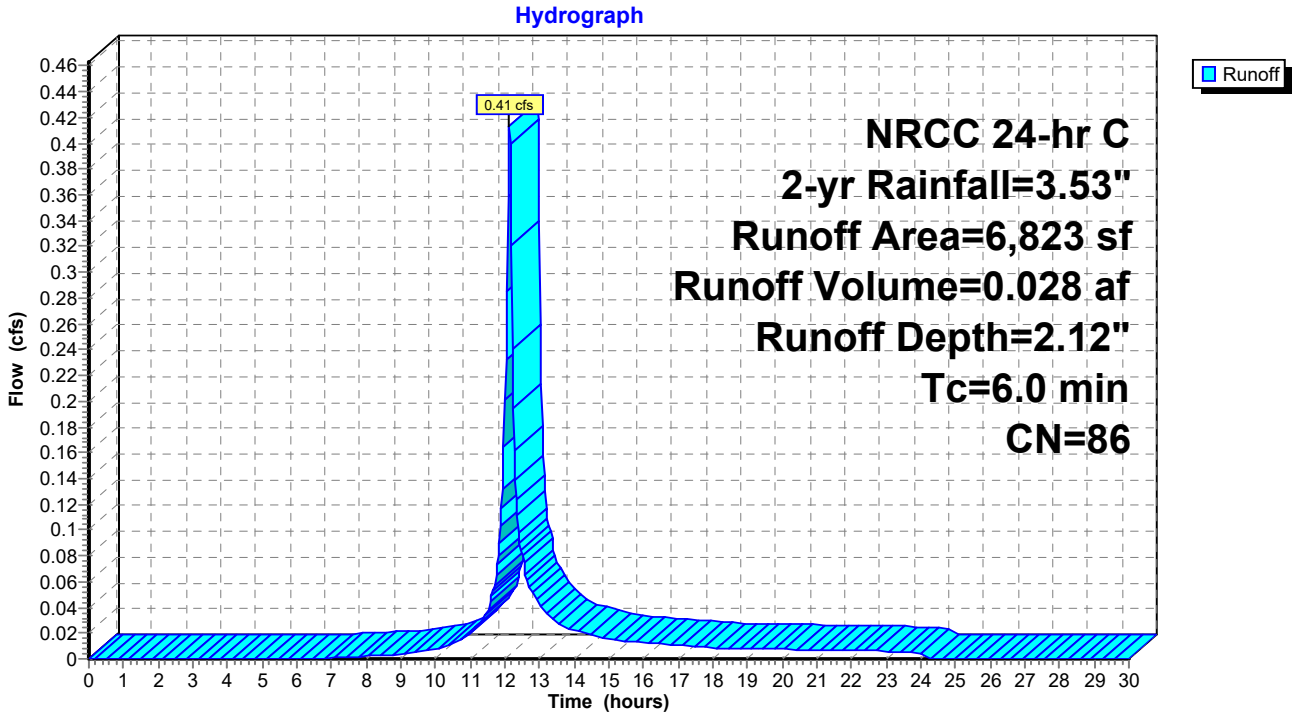
Runoff = 0.41 cfs @ 12.13 hrs, Volume= 0.028 af, Depth= 2.12"
Routed to Pond B-1 : South Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 2-yr Rainfall=3.53"

	Area (sf)	CN	Description
*	2,205	96	Permable Paver, HSG C
*	366	96	Gravel surface, HSG C
*	2,923	72	Landscaping, Good, HSG C
*	1,139	98	Paved parking, HSG C
	190	80	>75% Grass cover, Good, HSG D
	6,823	86	Weighted Average
	5,684		83.31% Pervious Area
	1,139		16.69% Impervious Area

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

Subcatchment PR-5: South Basin



Summary for Subcatchment PR-6: West along river

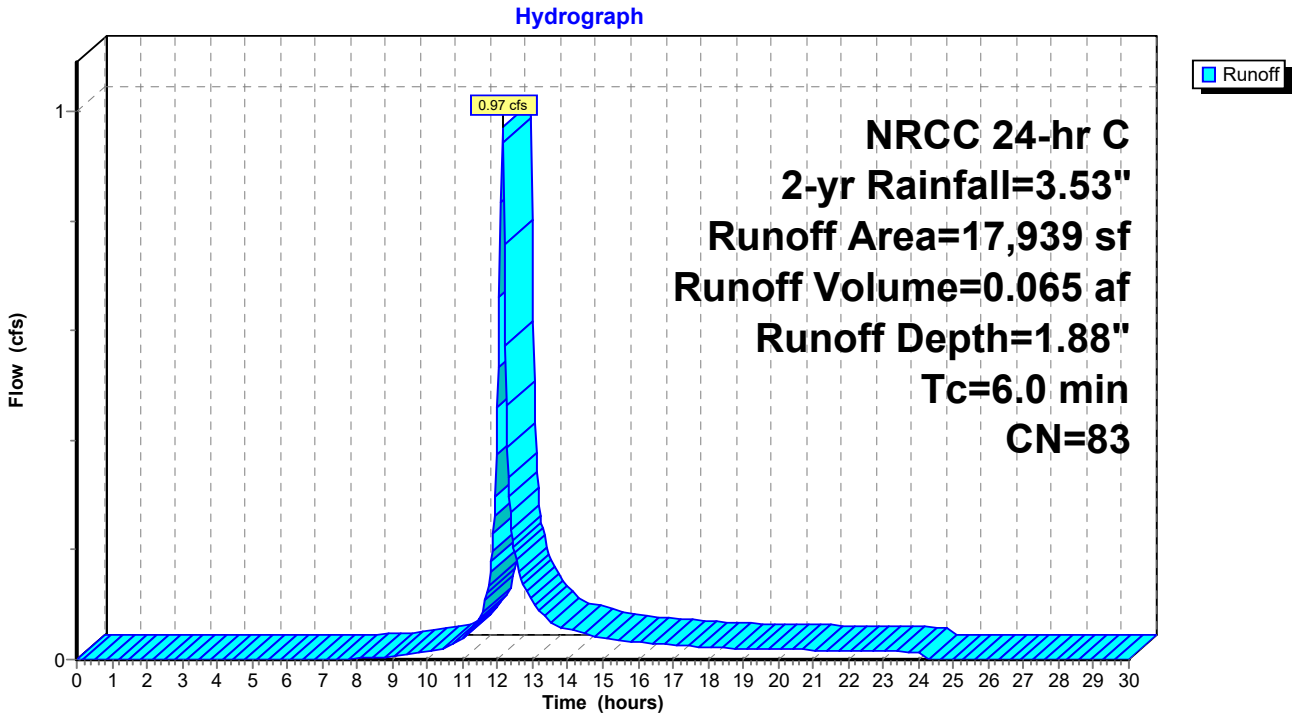
Runoff = 0.97 cfs @ 12.13 hrs, Volume= 0.065 af, Depth= 1.88"
Routed to Pond AP-1 : Norwalk River

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 2-yr Rainfall=3.53"

	Area (sf)	CN	Description
*	2,585	96	Permeable paver, HSG D
	461	96	Gravel surface, HSG D
	911	98	Paved parking, HSG D
	3,570	80	>75% Grass cover, Good, HSG D
*	6,264	79	Landscaping, Good, HSG D
	4,148	77	Woods, Good, HSG D
	17,939	83	Weighted Average
	17,028		94.92% Pervious Area
	911		5.08% Impervious Area

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

Subcatchment PR-6: West along river



Summary for Subcatchment PR-7: North basin

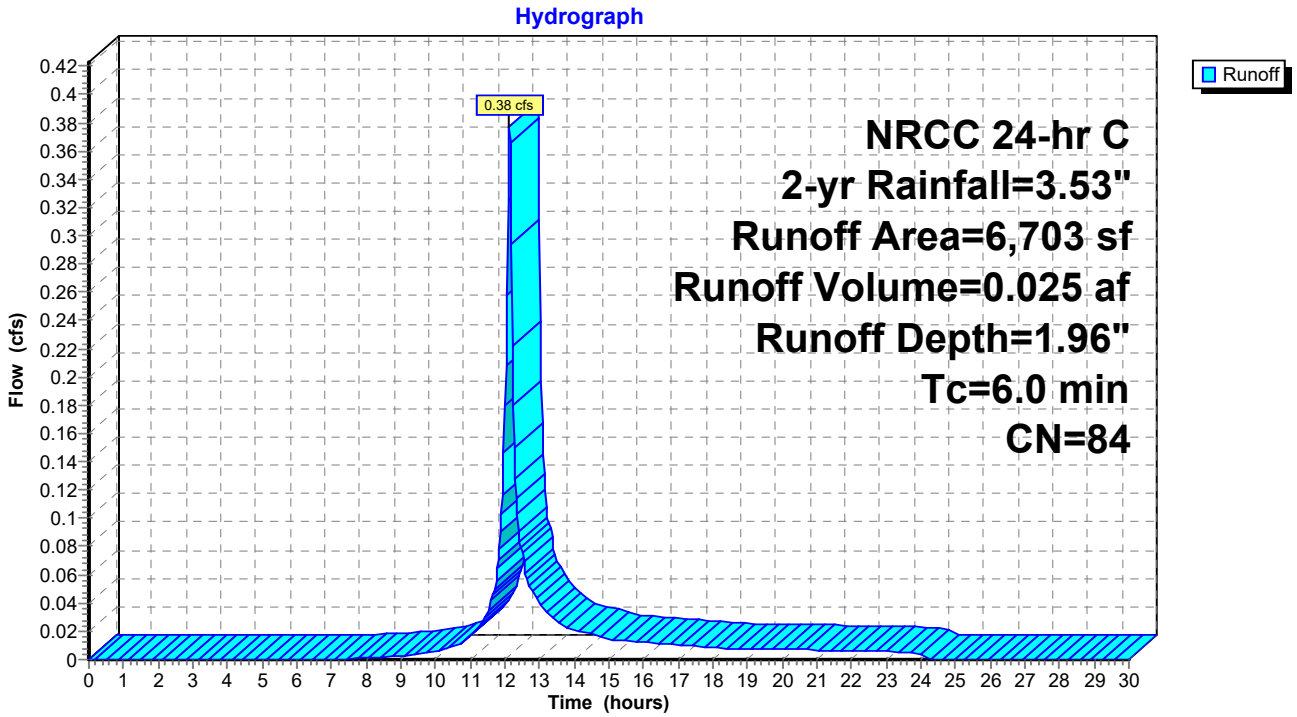
Runoff = 0.38 cfs @ 12.13 hrs, Volume= 0.025 af, Depth= 1.96"
Routed to Pond B-2 : North Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 2-yr Rainfall=3.53"

	Area (sf)	CN	Description
	453	96	Gravel surface, HSG D
*	1,031	96	Permeable paver, HSG D
	445	80	>75% Grass cover, Good, HSG D
*	3,601	79	Landscaping, Good, HSG D
	692	77	Woods, Good, HSG D
	481	98	Paved parking, HSG D
	6,703	84	Weighted Average
	6,222		92.82% Pervious Area
	481		7.18% Impervious Area

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

Subcatchment PR-7: North basin



Summary for Subcatchment PR-7B: CCB 26

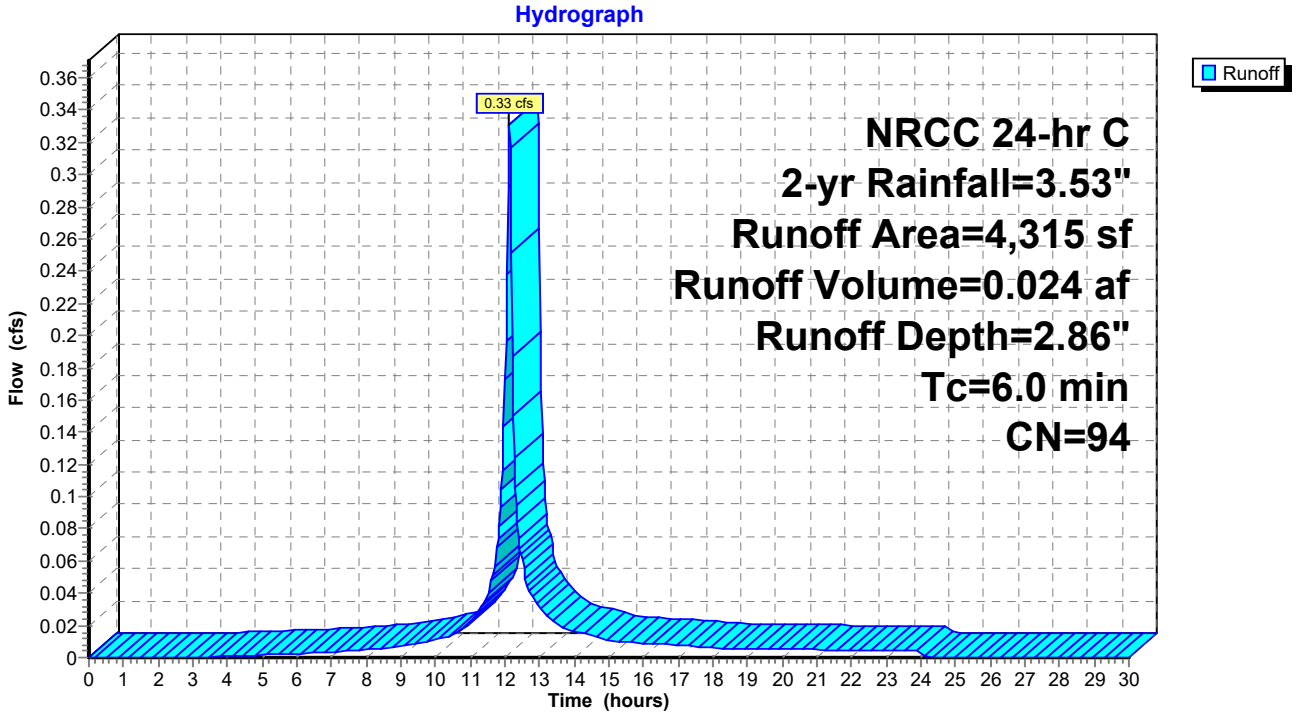
Runoff = 0.33 cfs @ 12.13 hrs, Volume= 0.024 af, Depth= 2.86"
Routed to Pond AP-1 : Norwalk River

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 2-yr Rainfall=3.53"

	Area (sf)	CN	Description
	3,518	98	Paved parking, HSG D
*	797	79	Landscaping, Good, HSG D
	4,315	94	Weighted Average
	797		18.47% Pervious Area
	3,518		81.53% Impervious Area

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

Subcatchment PR-7B: CCB 26



Summary for Subcatchment PR-8: CCB 26A

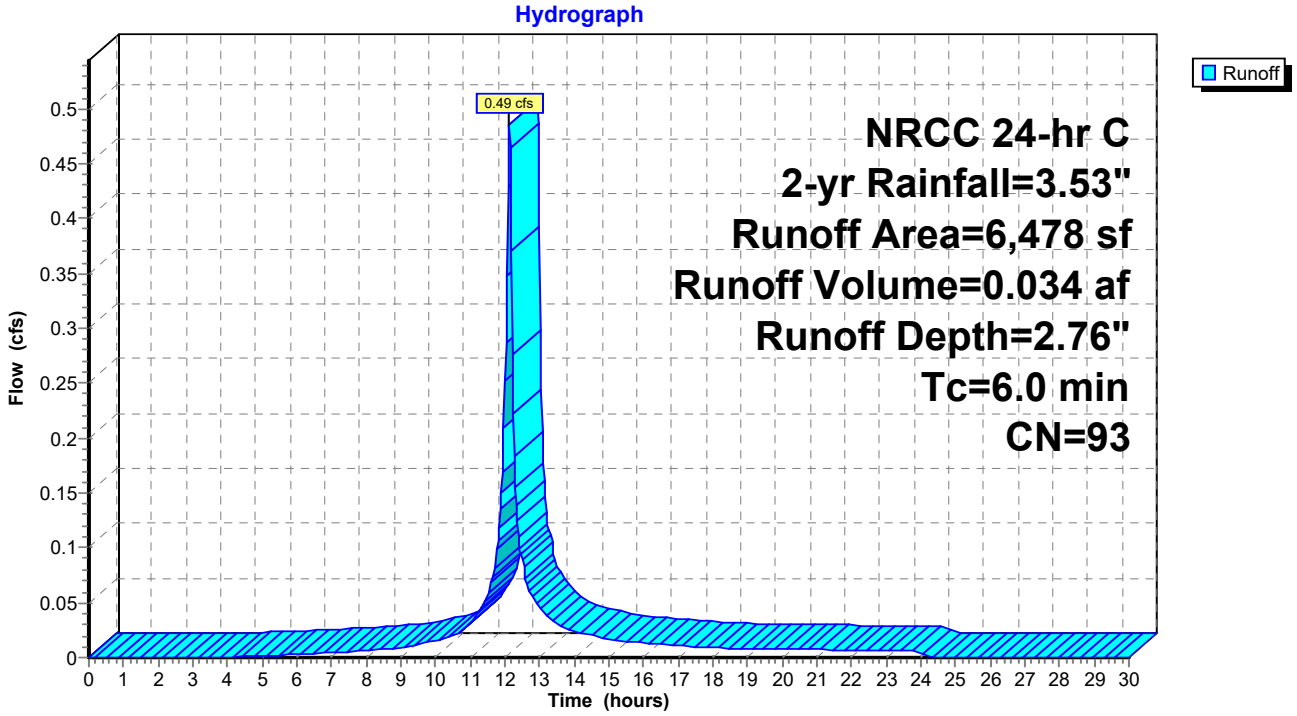
Runoff = 0.49 cfs @ 12.13 hrs, Volume= 0.034 af, Depth= 2.76"
Routed to Pond AP-1 : Norwalk River

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 2-yr Rainfall=3.53"

	Area (sf)	CN	Description
	4,737	98	Paved parking, HSG D
*	1,741	79	Landscaping, Good, HSG D
	6,478	93	Weighted Average
	1,741		26.88% Pervious Area
	4,737		73.12% Impervious Area

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

Subcatchment PR-8: CCB 26A



Summary for Subcatchment PR-9: CCB 27

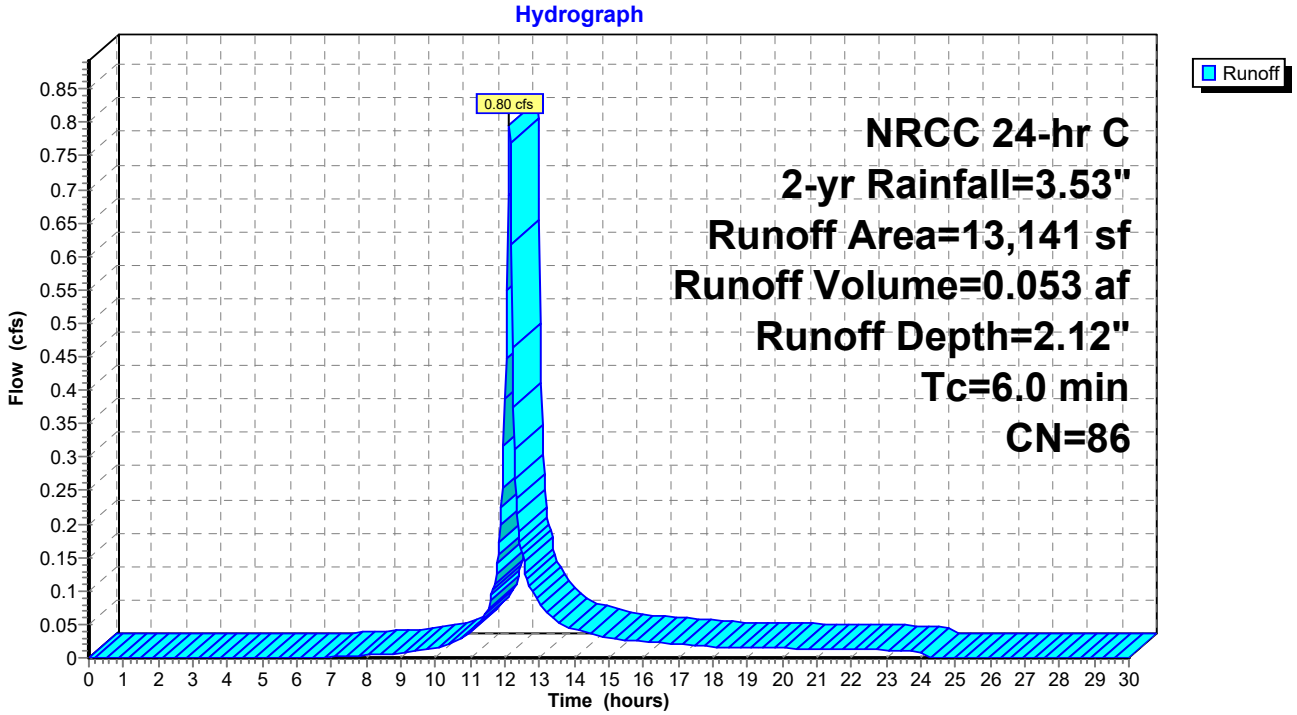
Runoff = 0.80 cfs @ 12.13 hrs, Volume= 0.053 af, Depth= 2.12"
Routed to Pond S-1 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 2-yr Rainfall=3.53"

	Area (sf)	CN	Description
	4,730	98	Paved parking, HSG D
	817	80	>75% Grass cover, Good, HSG D
*	7,594	79	Landscaping, Good, HSG D
	13,141	86	Weighted Average
	8,411		64.01% Pervious Area
	4,730		35.99% Impervious Area

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

Subcatchment PR-9: CCB 27



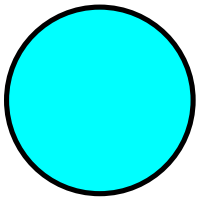
Summary for Reach R1: Roof Leader

Inflow Area = 1.838 ac,100.00% Impervious, Inflow Depth = 3.30" for 2-yr event
Inflow = 6.57 cfs @ 12.13 hrs, Volume= 0.505 af
Outflow = 4.79 cfs @ 12.07 hrs, Volume= 0.505 af, Atten= 27%, Lag= 0.0 min
Routed to Pond S-2 : Subsurface Infiltration System

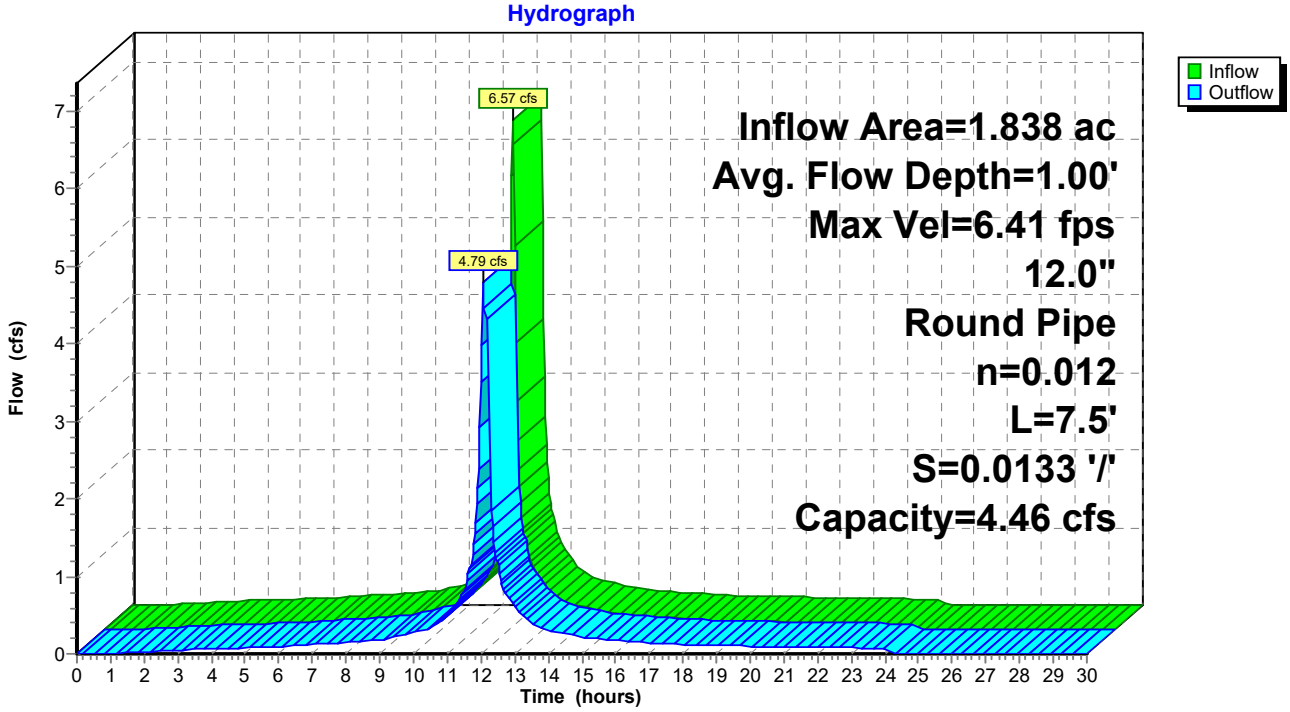
Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Max. Velocity= 6.41 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.64 fps, Avg. Travel Time= 0.0 min

Peak Storage= 6 cf @ 12.09 hrs
Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.46 cfs

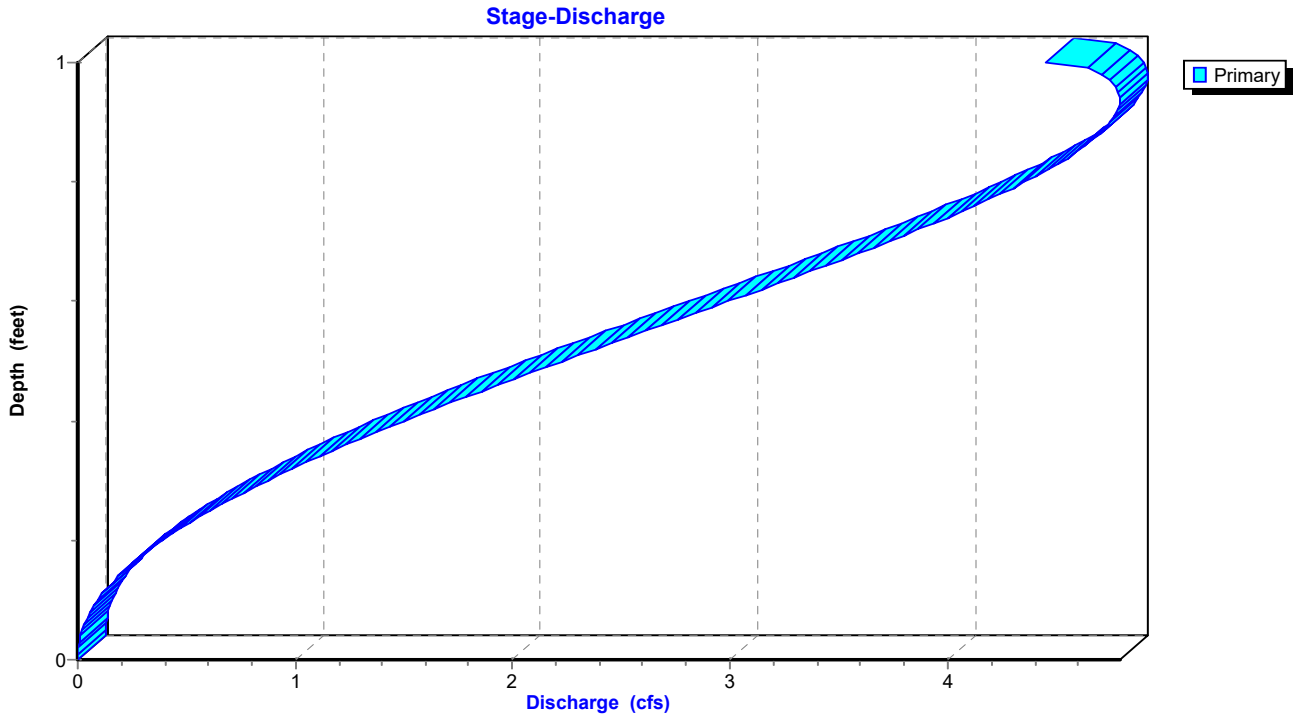
12.0" Round Pipe
n= 0.012
Length= 7.5' Slope= 0.0133 '/'
Inlet Invert= 142.20', Outlet Invert= 142.10'



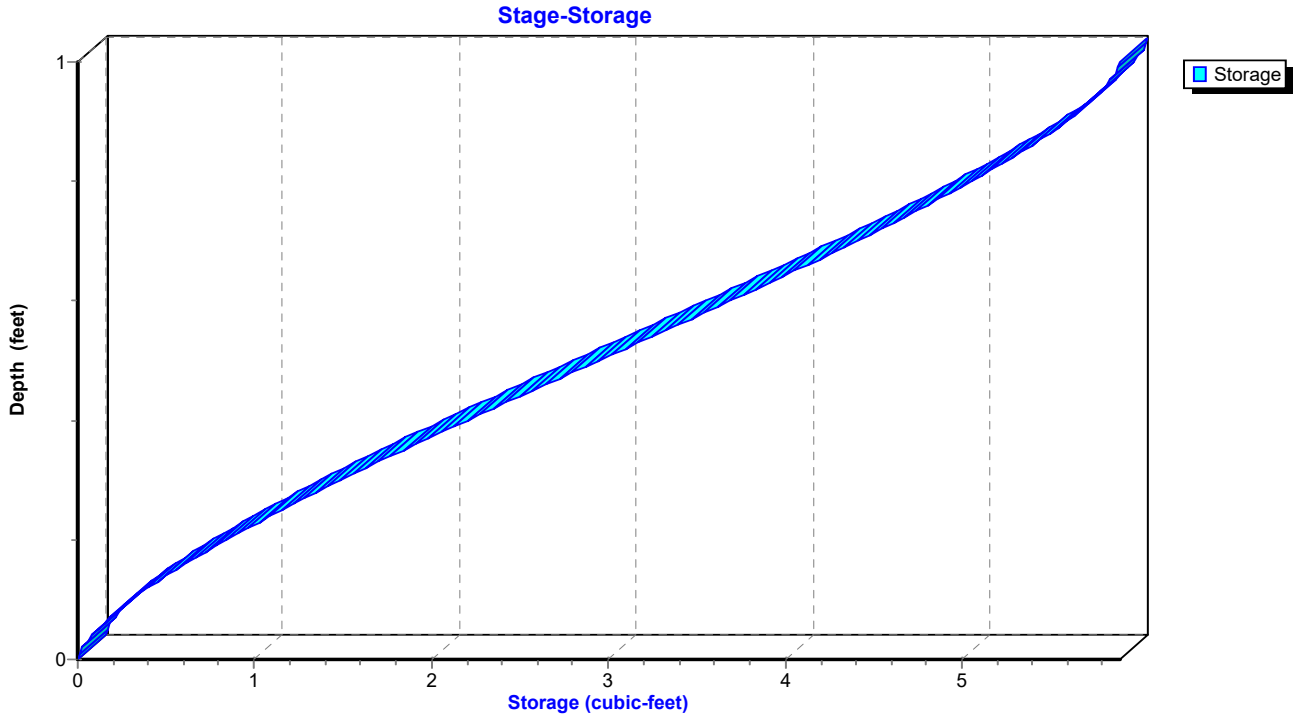
Reach R1: Roof Leader



Reach R1: Roof Leader



Reach R1: Roof Leader

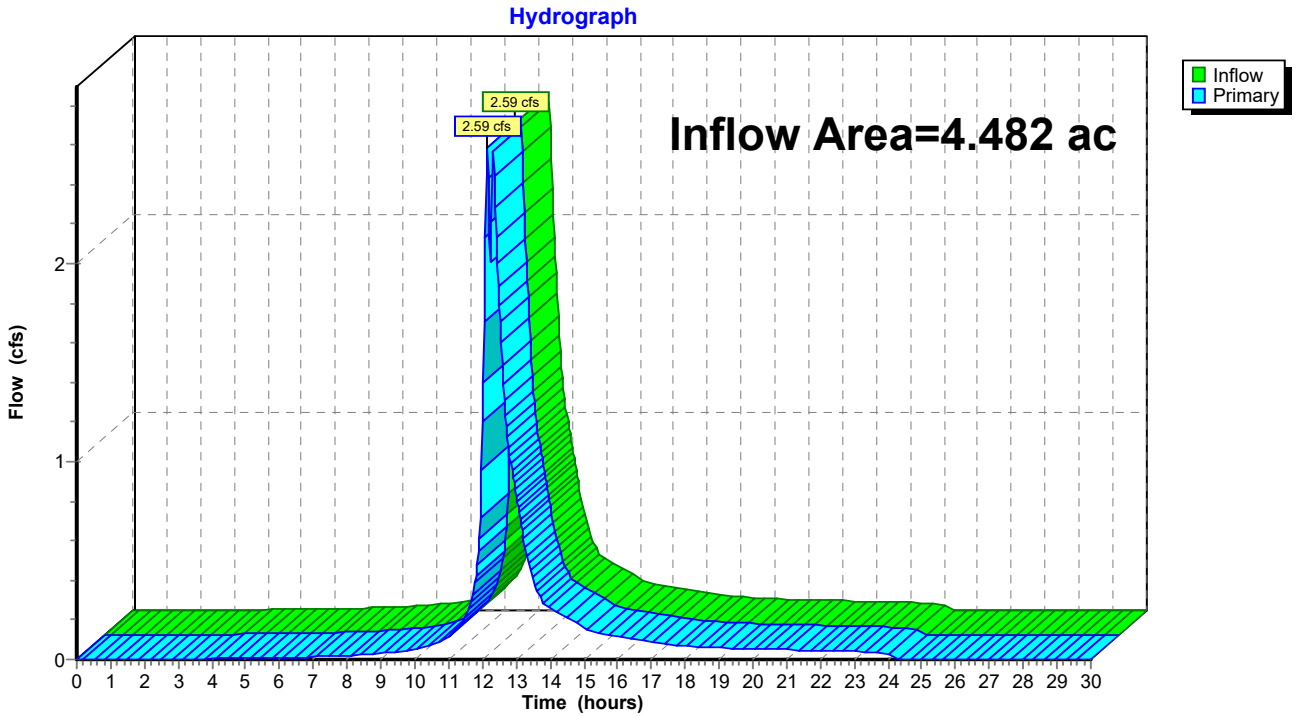


Summary for Pond AP-1: Norwalk River

Inflow Area = 4.482 ac, 66.68% Impervious, Inflow Depth = 0.76" for 2-yr event
Inflow = 2.59 cfs @ 12.15 hrs, Volume= 0.285 af
Primary = 2.59 cfs @ 12.15 hrs, Volume= 0.285 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Pond AP-1: Norwalk River



Summary for Pond AP-2: Front Lawn Rain Garden

Inflow Area = 0.475 ac, 24.65% Impervious, Inflow Depth = 1.98" for 2-yr event
Inflow = 1.14 cfs @ 12.13 hrs, Volume= 0.078 af
Outflow = 0.28 cfs @ 12.38 hrs, Volume= 0.078 af, Atten= 75%, Lag= 15.2 min
Discarded = 0.28 cfs @ 12.38 hrs, Volume= 0.078 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond S-3 : Subsurface Infiltration System

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 148.30' @ 12.38 hrs Surf.Area= 2,241 sf Storage= 638 cf

Plug-Flow detention time= 12.9 min calculated for 0.078 af (100% of inflow)
Center-of-Mass det. time= 12.9 min (835.0 - 822.1)

Volume	Invert	Avail.Storage	Storage Description
#1	148.00'	6,536 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

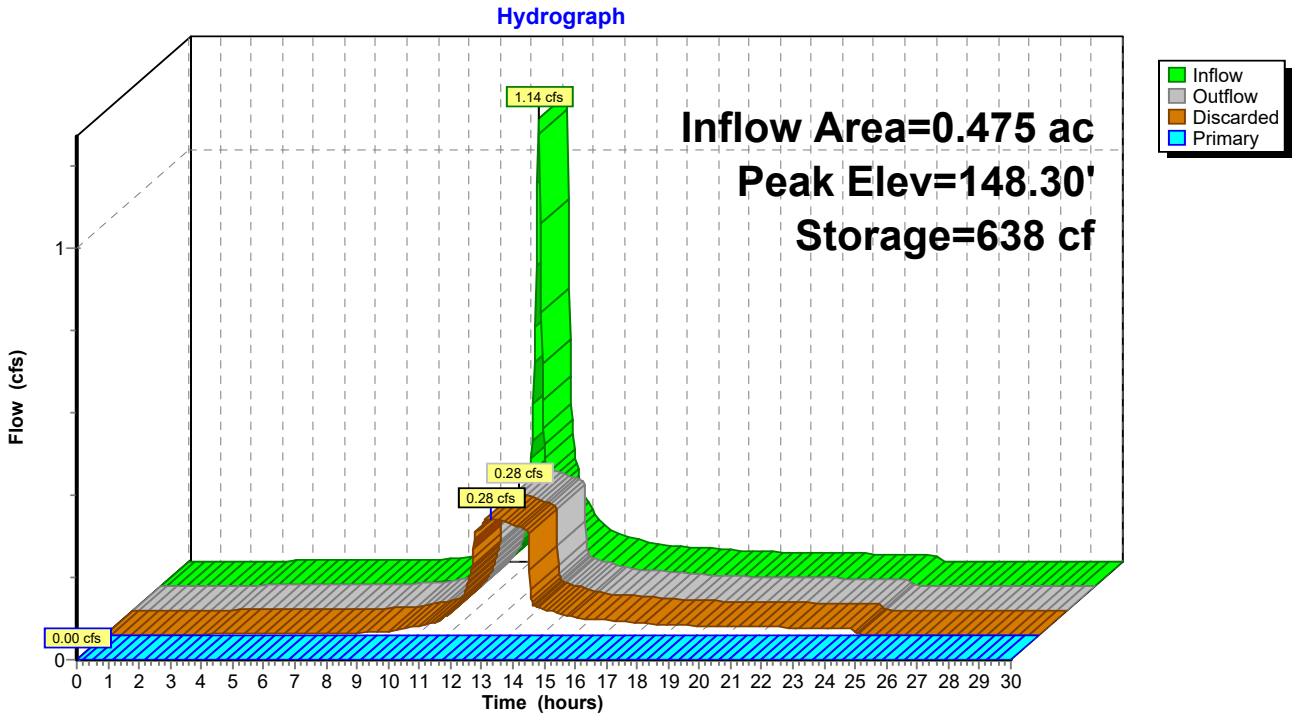
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
148.00	1,985	0	0
149.00	2,833	2,409	2,409
150.00	5,420	4,127	6,536

Device	Routing	Invert	Outlet Devices
#1	Primary	145.90'	**15.0" Round Culvert** L= 34.6' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 145.90' / 145.55' S= 0.0101 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	149.00'	**3.6" x 0.9" Horiz. Yard Drain X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads
#3	Discarded	148.00'	**5.450 in/hr Exfiltration over Surface area**

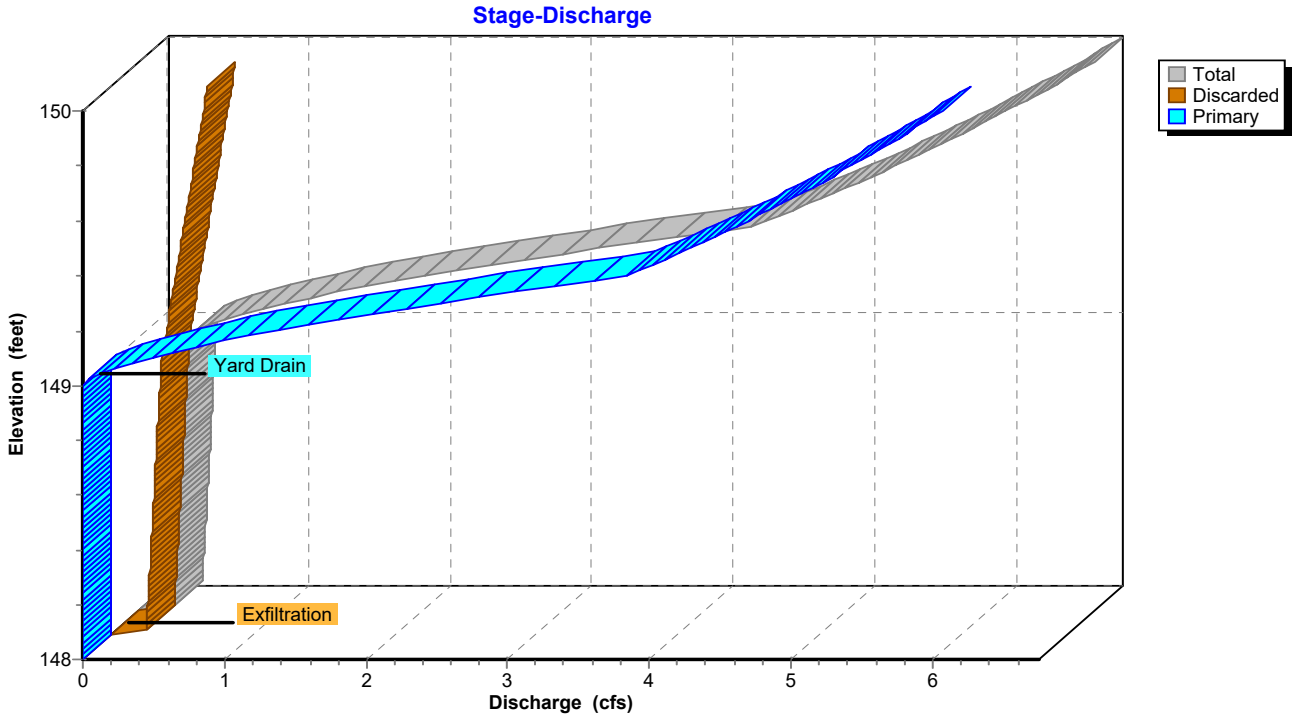
Discarded OutFlow Max=0.28 cfs @ 12.38 hrs HW=148.30' (Free Discharge)
└─**3=Exfiltration** (Exfiltration Controls 0.28 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.00' (Free Discharge)
└─**1=Culvert** (Passes 0.00 cfs of 7.18 cfs potential flow)
└─**2=Yard Drain** (Controls 0.00 cfs)

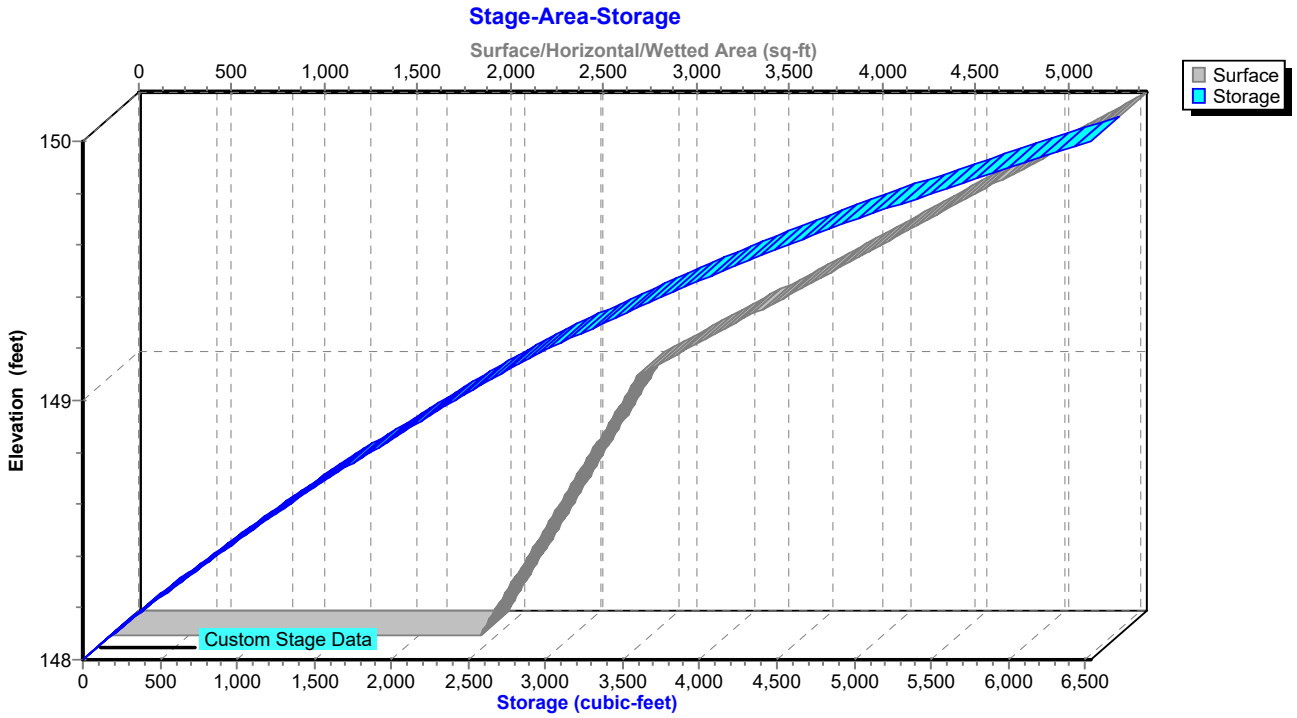
Pond AP-2: Front Lawn Rain Garden



Pond AP-2: Front Lawn Rain Garden



Pond AP-2: Front Lawn Rain Garden

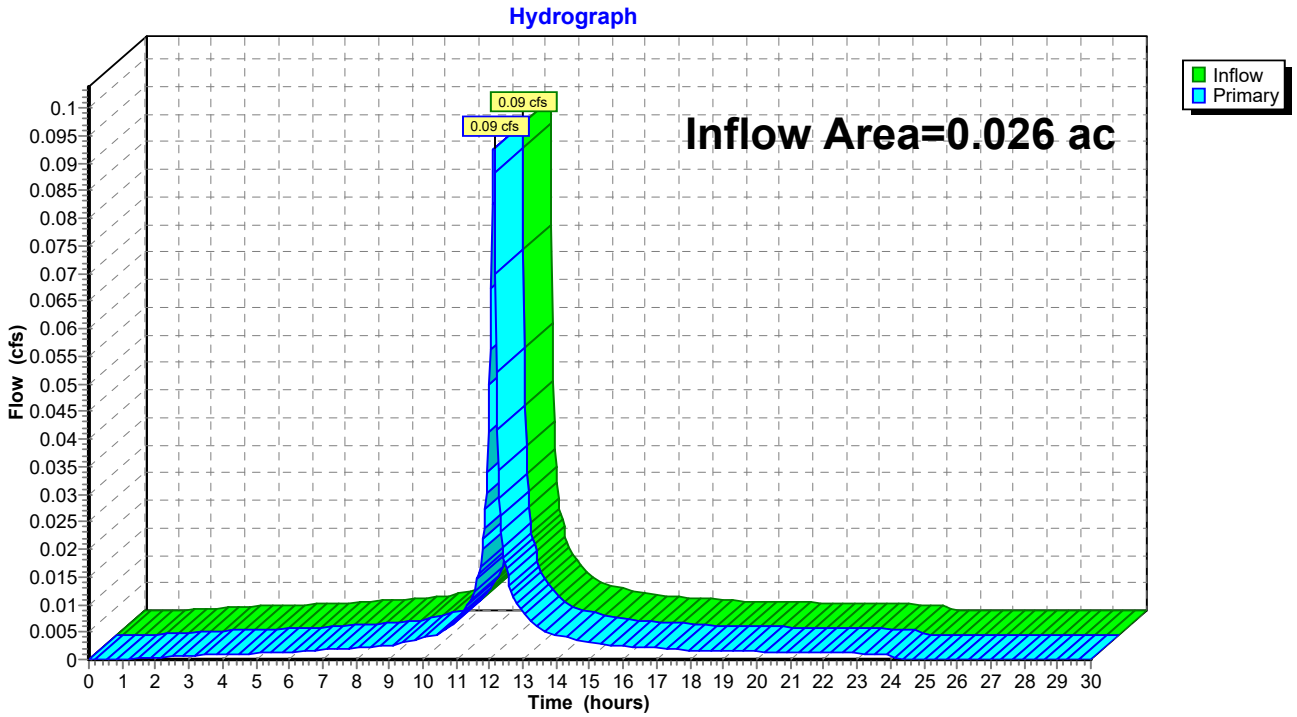


Summary for Pond AP-3: Danbury Road

Inflow Area = 0.026 ac,100.00% Impervious, Inflow Depth = 3.30" for 2-yr event
Inflow = 0.09 cfs @ 12.13 hrs, Volume= 0.007 af
Primary = 0.09 cfs @ 12.13 hrs, Volume= 0.007 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Pond AP-3: Danbury Road

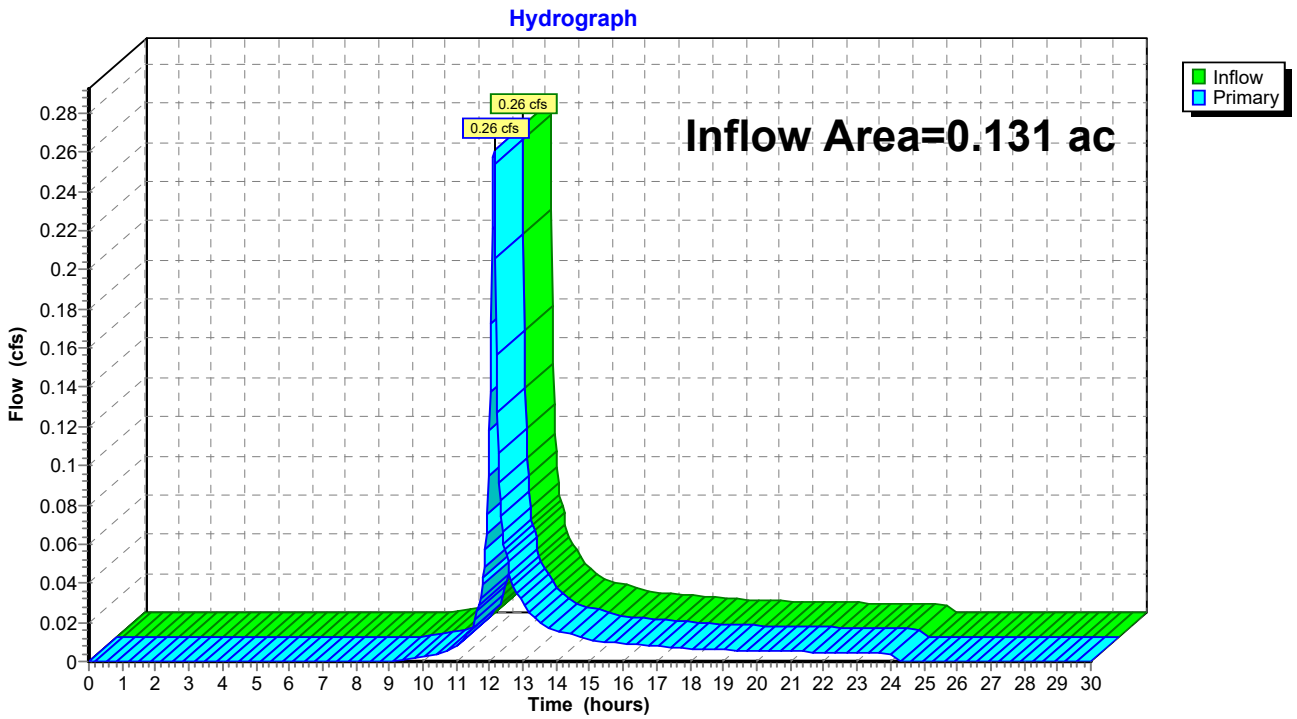


Summary for Pond AP-4: Landscaped Area

Inflow Area = 0.131 ac, 1.63% Impervious, Inflow Depth = 1.59" for 2-yr event
Inflow = 0.26 cfs @ 12.13 hrs, Volume= 0.017 af
Primary = 0.26 cfs @ 12.13 hrs, Volume= 0.017 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Pond AP-4: Landscaped Area



Summary for Pond B-1: South Basin

Inflow Area = 0.157 ac, 16.69% Impervious, Inflow Depth = 2.12" for 2-yr event
Inflow = 0.41 cfs @ 12.13 hrs, Volume= 0.028 af
Outflow = 0.40 cfs @ 12.15 hrs, Volume= 0.025 af, Atten= 3%, Lag= 1.0 min
Discarded = 0.00 cfs @ 12.15 hrs, Volume= 0.006 af
Primary = 0.40 cfs @ 12.15 hrs, Volume= 0.019 af
Routed to Pond AP-1 : Norwalk River

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 139.99' @ 12.15 hrs Surf.Area= 441 sf Storage= 243 cf

Plug-Flow detention time= 141.8 min calculated for 0.025 af (89% of inflow)
Center-of-Mass det. time= 86.3 min (913.4 - 827.1)

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	962 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

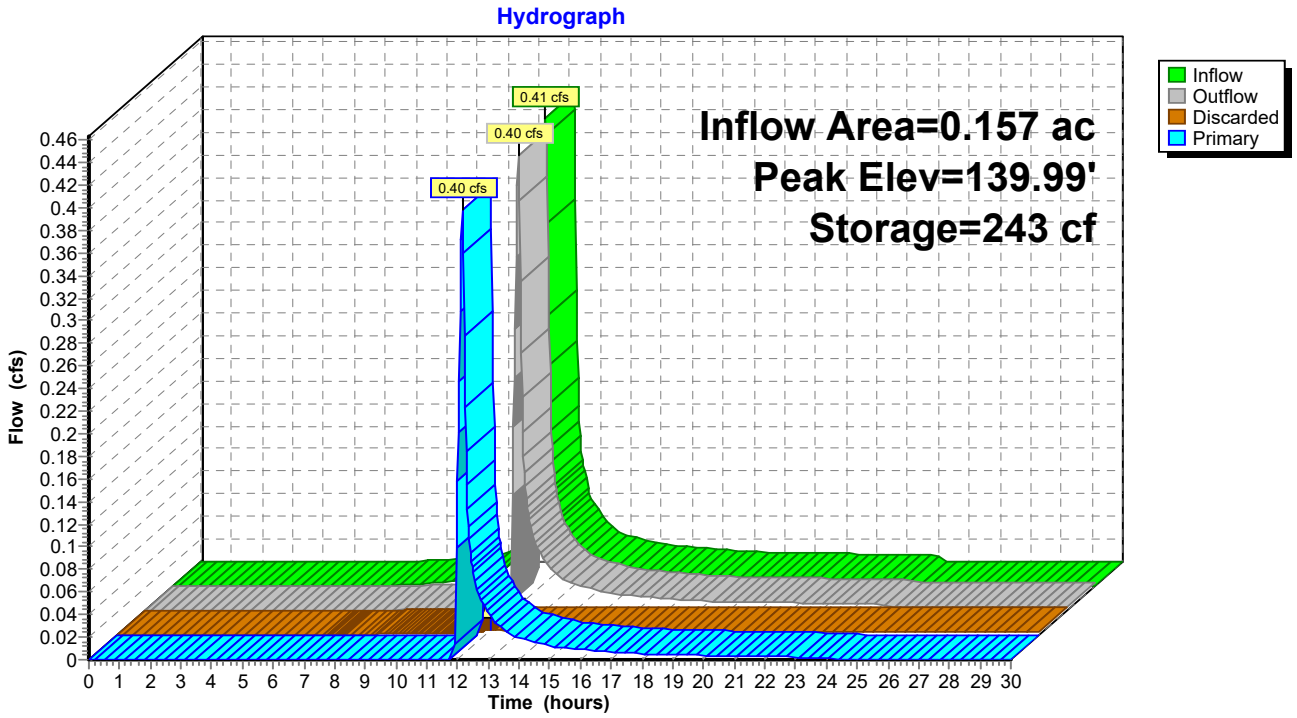
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	52	0	0
140.00	446	249	249
141.00	979	713	962

Device	Routing	Invert	Outlet Devices
#1	Primary	138.00'	**8.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 138.00' / 137.60' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf
#2	Device 1	139.90'	**3.6" x 0.9" Horiz. Yard Drain X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads
#3	Discarded	139.00'	**0.400 in/hr Exfiltration over Surface area**

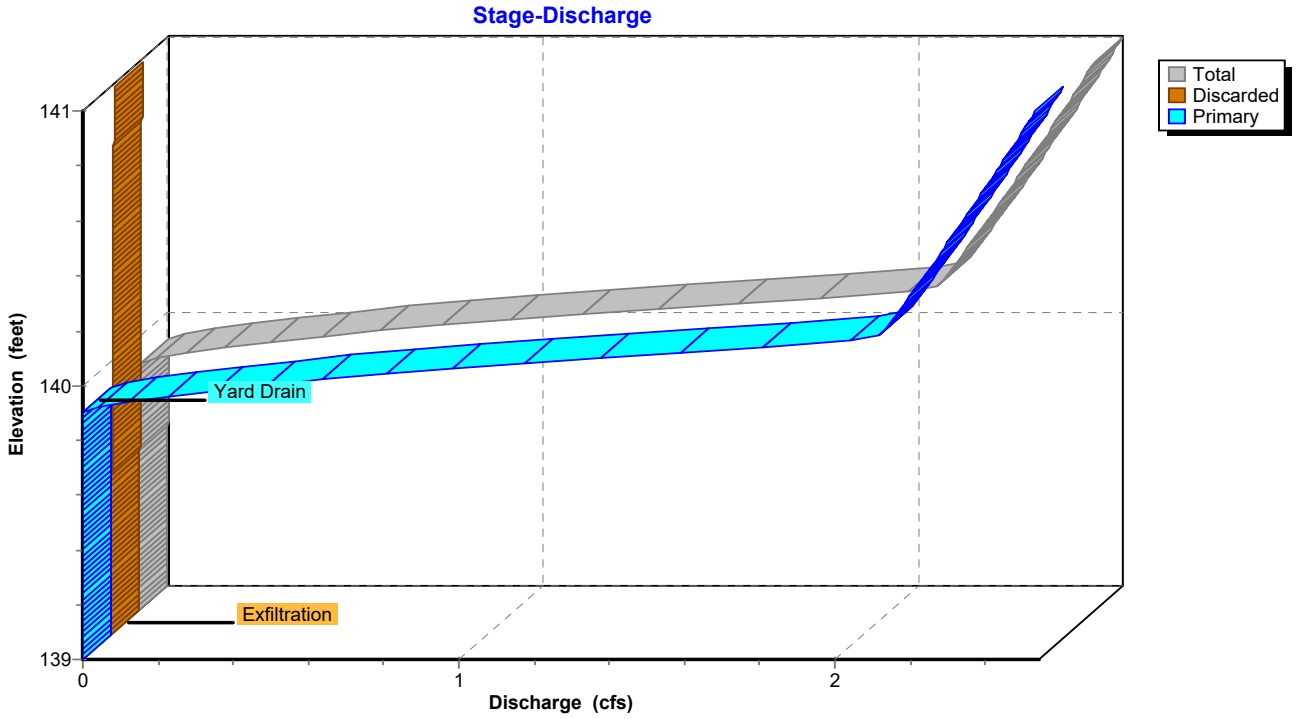
Discarded OutFlow Max=0.00 cfs @ 12.15 hrs HW=139.99' (Free Discharge)
└─**3=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.39 cfs @ 12.15 hrs HW=139.99' (Free Discharge)
└─**1=Culvert** (Passes 0.39 cfs of 2.01 cfs potential flow)
└─**2=Yard Drain** (Weir Controls 0.39 cfs @ 0.96 fps)

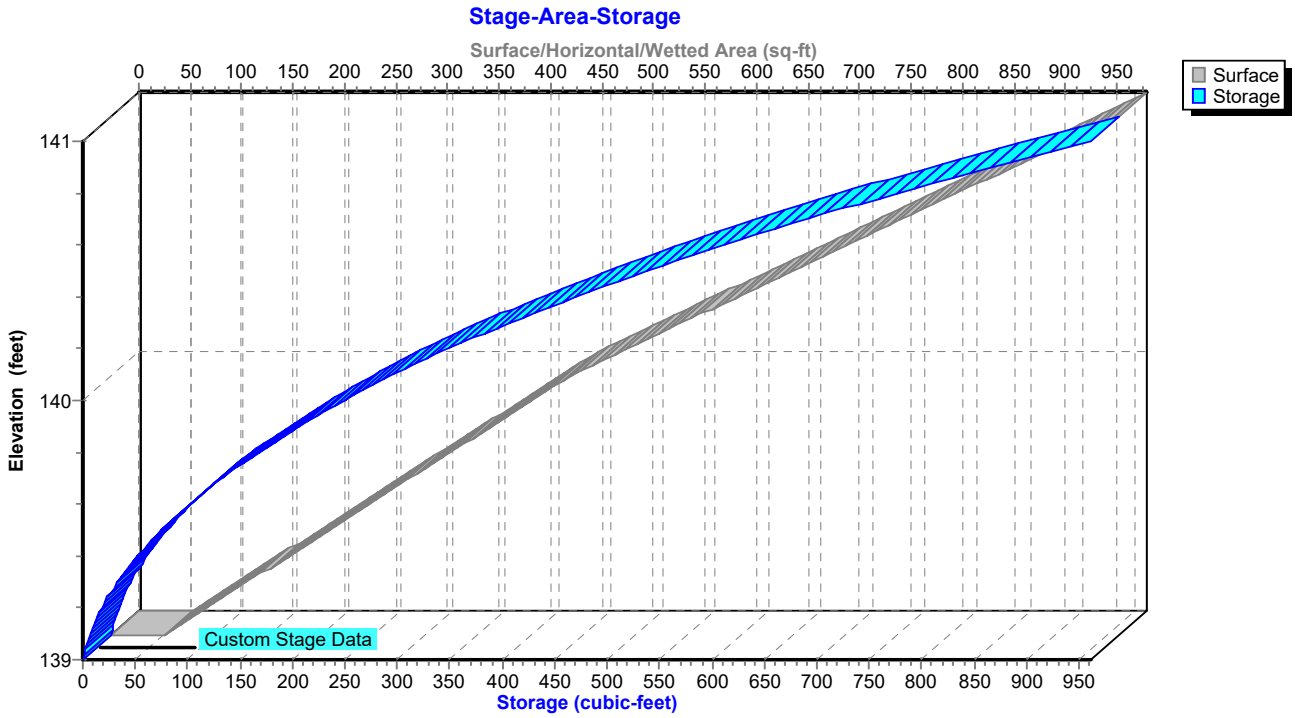
Pond B-1: South Basin



Pond B-1: South Basin



Pond B-1: South Basin



Summary for Pond B-2: North Basin

Inflow Area = 0.154 ac, 7.18% Impervious, Inflow Depth = 1.96" for 2-yr event
Inflow = 0.38 cfs @ 12.13 hrs, Volume= 0.025 af
Outflow = 0.04 cfs @ 13.15 hrs, Volume= 0.025 af, Atten= 91%, Lag= 61.4 min
Discarded = 0.04 cfs @ 13.15 hrs, Volume= 0.025 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond AP-1 : Norwalk River

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 139.36' @ 13.15 hrs Surf.Area= 1,216 sf Storage= 406 cf

Plug-Flow detention time= 99.5 min calculated for 0.025 af (100% of inflow)
Center-of-Mass det. time= 99.3 min (933.9 - 834.6)

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	4,090 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

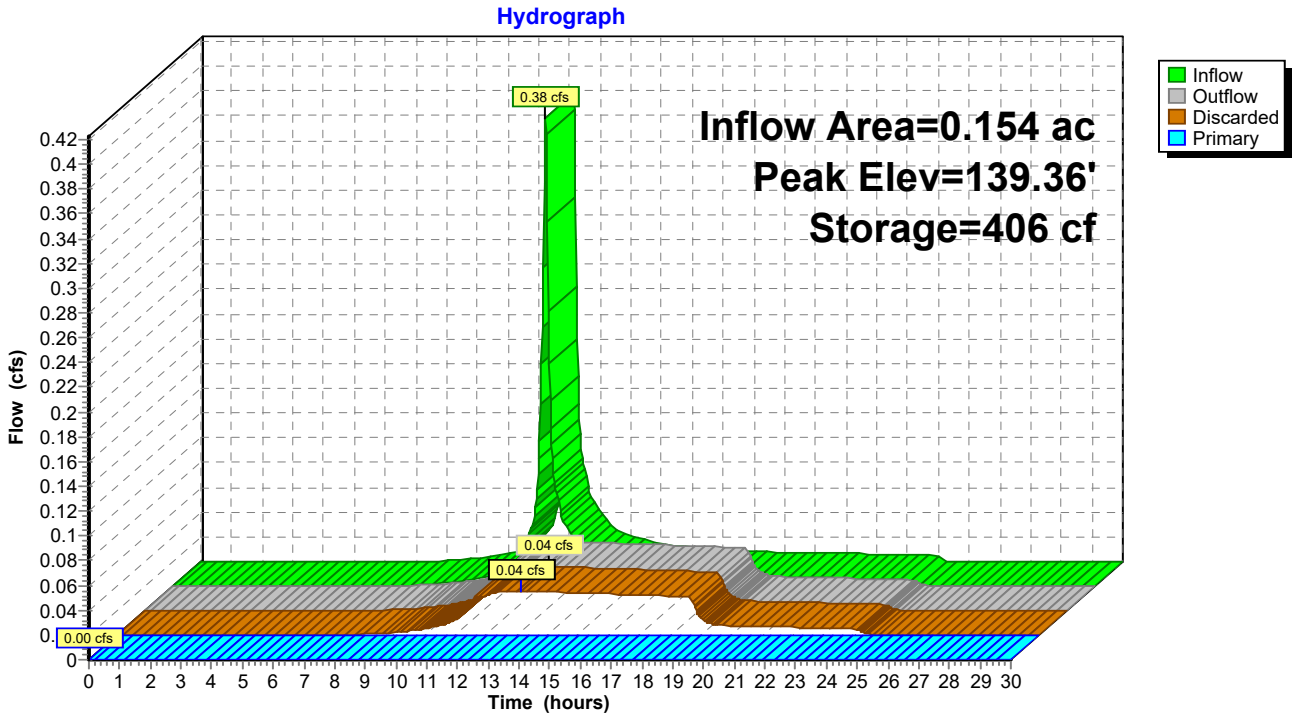
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	1,058	0	0
140.00	1,499	1,279	1,279
141.00	1,995	1,747	3,026
141.50	2,263	1,065	4,090

Device	Routing	Invert	Outlet Devices
#1	Primary	139.00'	**10.0" Round Culvert** L= 22.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 139.00' / 138.80' S= 0.0091 '/' Cc= 0.900 n= 0.012, Flow Area= 0.55 sf
#2	Device 1	140.50'	**3.6" x 0.9" Horiz. Yard Drain X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads
#3	Discarded	139.00'	**1.250 in/hr Exfiltration over Surface area**

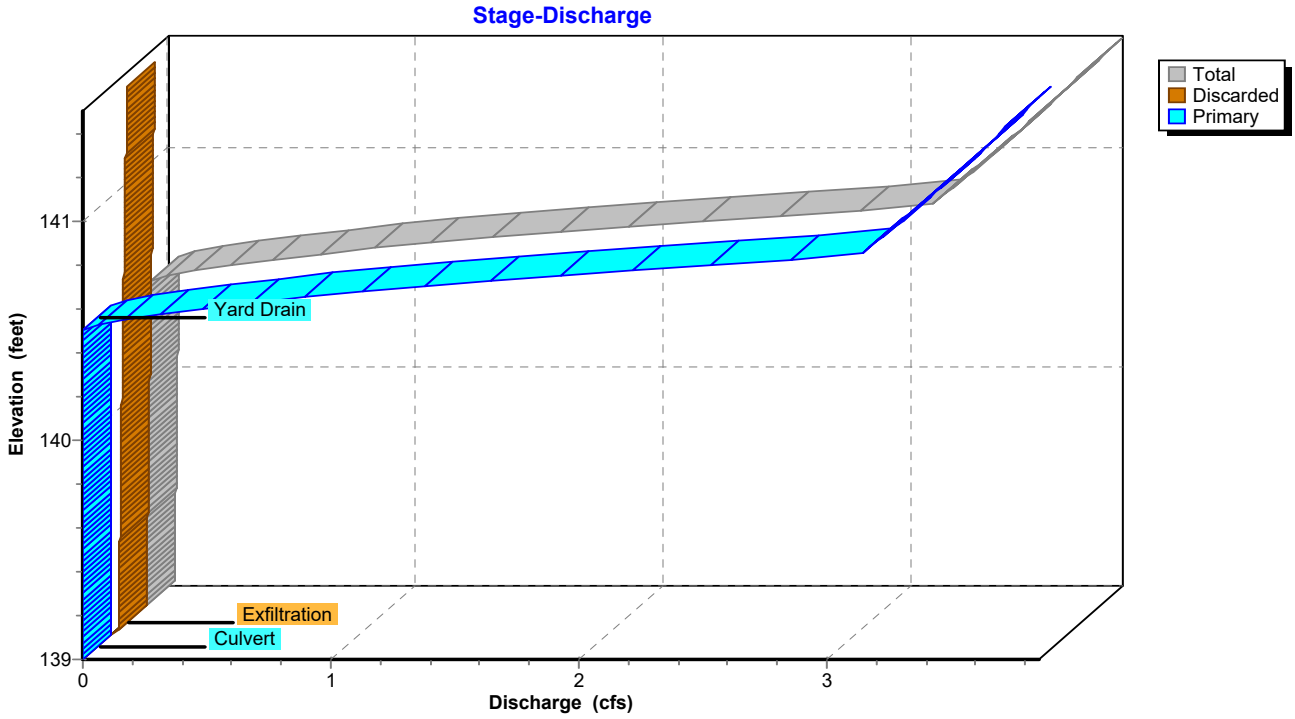
Discarded OutFlow Max=0.04 cfs @ 13.15 hrs HW=139.36' (Free Discharge)
└─**3=Exfiltration** (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=139.00' (Free Discharge)
└─**1=Culvert** (Controls 0.00 cfs)
└─**2=Yard Drain** (Controls 0.00 cfs)

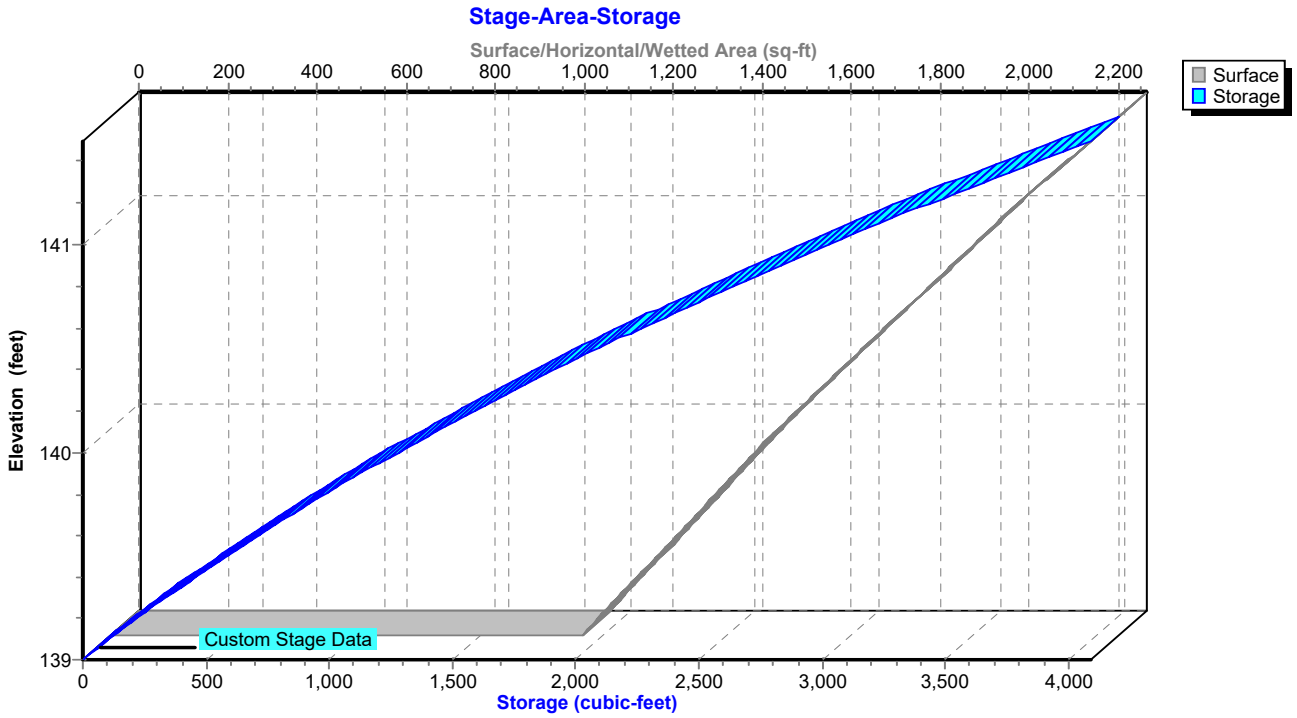
Pond B-2: North Basin



Pond B-2: North Basin



Pond B-2: North Basin



Summary for Pond S-1: Subsurface Infiltration System

Inflow Area = 0.554 ac, 58.45% Impervious, Inflow Depth = 2.54" for 2-yr event
Inflow = 1.67 cfs @ 12.13 hrs, Volume= 0.117 af
Outflow = 0.73 cfs @ 12.25 hrs, Volume= 0.087 af, Atten= 56%, Lag= 7.4 min
Discarded = 0.02 cfs @ 7.83 hrs, Volume= 0.031 af
Primary = 0.71 cfs @ 12.25 hrs, Volume= 0.055 af
Routed to Pond AP-1 : Norwalk River

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 143.16' @ 12.25 hrs Surf.Area= 0.039 ac Storage= 0.046 af

Plug-Flow detention time= 229.5 min calculated for 0.087 af (74% of inflow)
Center-of-Mass det. time= 133.0 min (932.9 - 799.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	141.35'	0.036 af	**11.00'W x 153.14'L x 3.50'H Field A** 0.135 af Overall - 0.044 af Embedded = 0.091 af x 40.0% Voids
#2A	141.85'	0.044 af	**ADS_StormTech SC-740 +Cap** x 42 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 42 Chambers in 2 Rows
		0.081 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	142.70'	**12.0" Round Culvert** L= 114.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 142.70' / 141.56' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	142.85'	**6.0" Vert. Orifice X 3.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	144.25'	**5.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)
#4	Discarded	141.35'	**0.400 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.02 cfs @ 7.83 hrs HW=141.39' (Free Discharge)
└─**4=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.70 cfs @ 12.25 hrs HW=143.15' (Free Discharge)
└─**1=Culvert** (Passes 0.70 cfs of 0.80 cfs potential flow)
  ├─**2=Orifice** (Orifice Controls 0.70 cfs @ 1.88 fps)
  └─**3=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Pond S-1: Subsurface Infiltration System - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

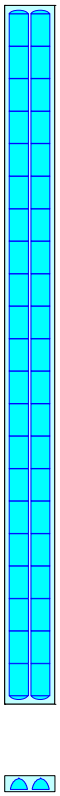
21 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 151.14' Row Length +12.0" End Stone x 2 = 153.14' Base Length
2 Rows x 51.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 11.00' Base Width
6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

42 Chambers x 45.9 cf = 1,929.5 cf Chamber Storage

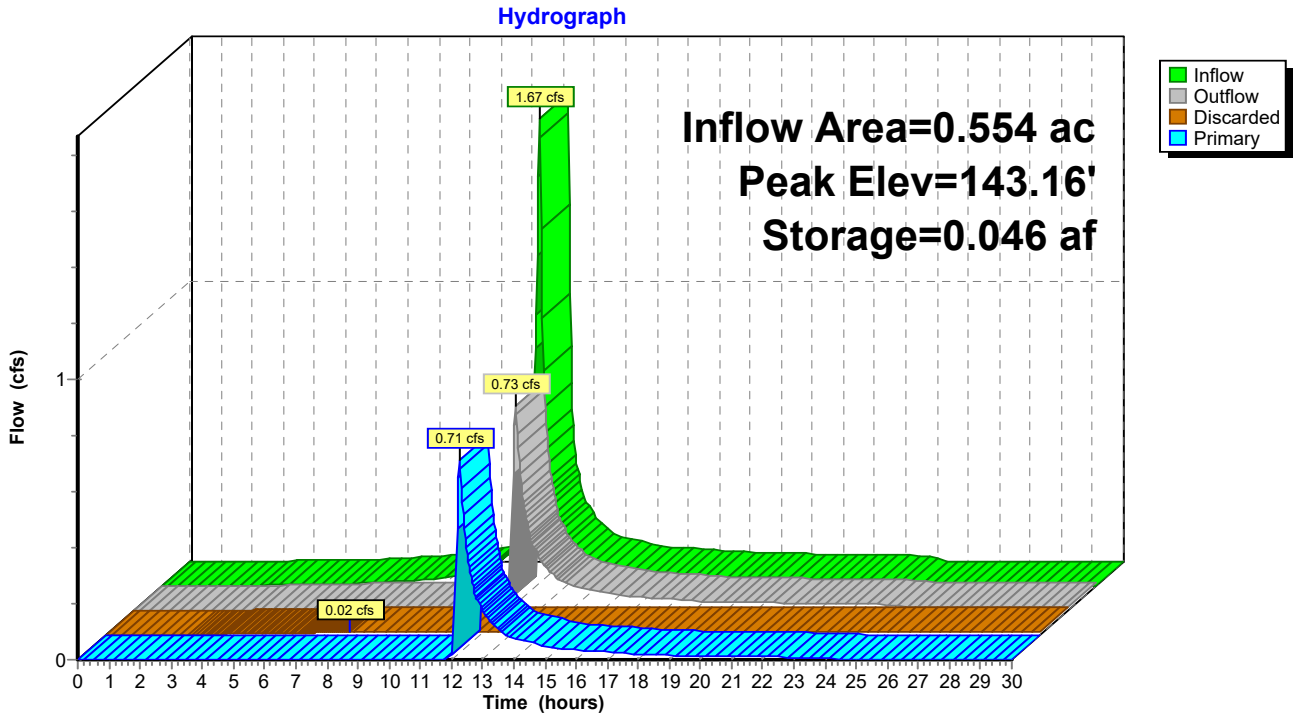
5,895.8 cf Field - 1,929.5 cf Chambers = 3,966.3 cf Stone x 40.0% Voids = 1,586.5 cf Stone Storage

Chamber Storage + Stone Storage = 3,516.0 cf = 0.081 af
Overall Storage Efficiency = 59.6%
Overall System Size = 153.14' x 11.00' x 3.50'

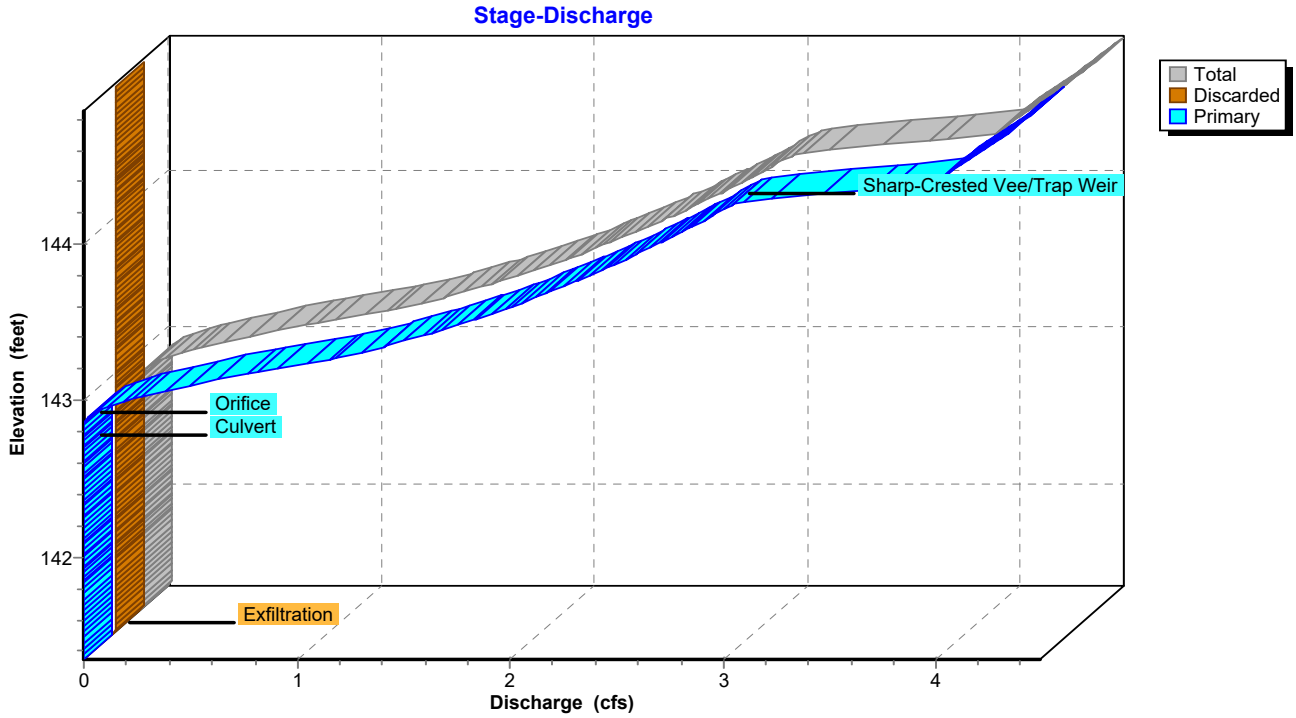
42 Chambers
218.4 cy Field
146.9 cy Stone



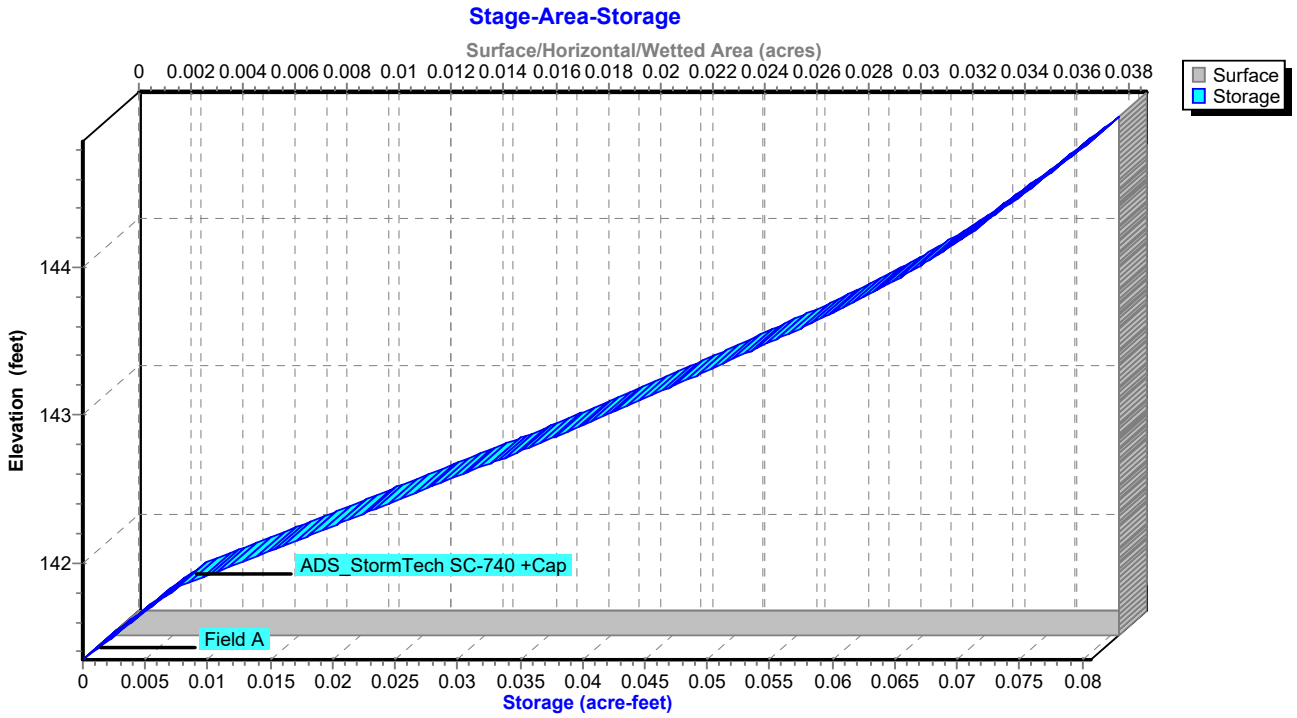
Pond S-1: Subsurface Infiltration System



Pond S-1: Subsurface Infiltration System



Pond S-1: Subsurface Infiltration System



Summary for Pond S-2: Subsurface Infiltration System

Inflow Area = 1.838 ac,100.00% Impervious, Inflow Depth = 3.30" for 2-yr event
Inflow = 4.79 cfs @ 12.07 hrs, Volume= 0.505 af
Outflow = 1.71 cfs @ 12.35 hrs, Volume= 0.505 af, Atten= 64%, Lag= 17.0 min
Discarded = 0.50 cfs @ 11.04 hrs, Volume= 0.452 af
Primary = 1.21 cfs @ 12.35 hrs, Volume= 0.052 af
Routed to Pond AP-1 : Norwalk River

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 144.03' @ 12.35 hrs Surf.Area= 0.091 ac Storage= 0.145 af

Plug-Flow detention time= 65.8 min calculated for 0.504 af (100% of inflow)
Center-of-Mass det. time= 65.7 min (822.2 - 756.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	141.50'	0.100 af	**30.00'W x 131.78'L x 4.00'H Field A** 0.363 af Overall - 0.114 af Embedded = 0.249 af x 40.0% Voids
#2A	142.50'	0.114 af	**ADS_StormTech SC-740 +Cap** x 108 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 108 Chambers in 6 Rows
		0.214 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	143.15'	**15.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 143.15' / 142.69' S= 0.0061 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	143.64'	**7.0" Vert. Orifice X 3.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	144.90'	**5.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)
#4	Discarded	141.50'	**5.450 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.50 cfs @ 11.04 hrs HW=141.54' (Free Discharge)
└─**4=Exfiltration** (Exfiltration Controls 0.50 cfs)

Primary OutFlow Max=1.21 cfs @ 12.35 hrs HW=144.03' (Free Discharge)
└─**1=Culvert** (Passes 1.21 cfs of 2.54 cfs potential flow)
  ├─**2=Orifice** (Orifice Controls 1.21 cfs @ 2.13 fps)
  └─**3=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Pond S-2: Subsurface Infiltration System - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

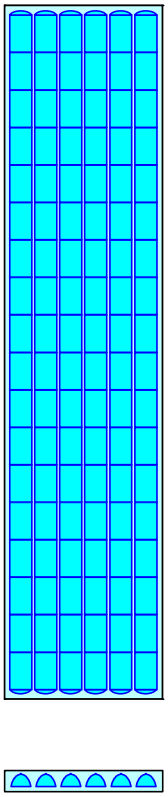
18 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 129.78' Row Length +12.0" End Stone x 2 = 131.78' Base Length
6 Rows x 51.0" Wide + 6.0" Spacing x 5 + 12.0" Side Stone x 2 = 30.00' Base Width
12.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

108 Chambers x 45.9 cf = 4,961.5 cf Chamber Storage

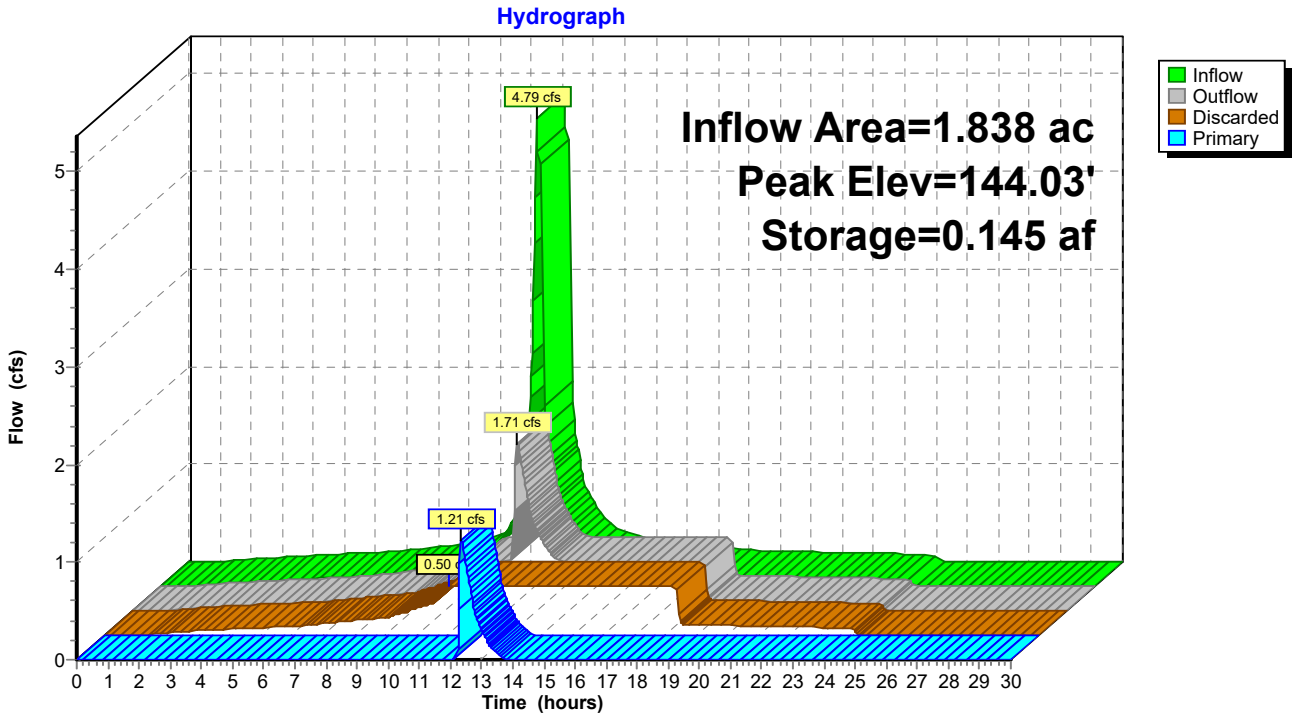
15,813.2 cf Field - 4,961.5 cf Chambers = 10,851.7 cf Stone x 40.0% Voids = 4,340.7 cf Stone Storage

Chamber Storage + Stone Storage = 9,302.2 cf = 0.214 af
Overall Storage Efficiency = 58.8%
Overall System Size = 131.78' x 30.00' x 4.00'

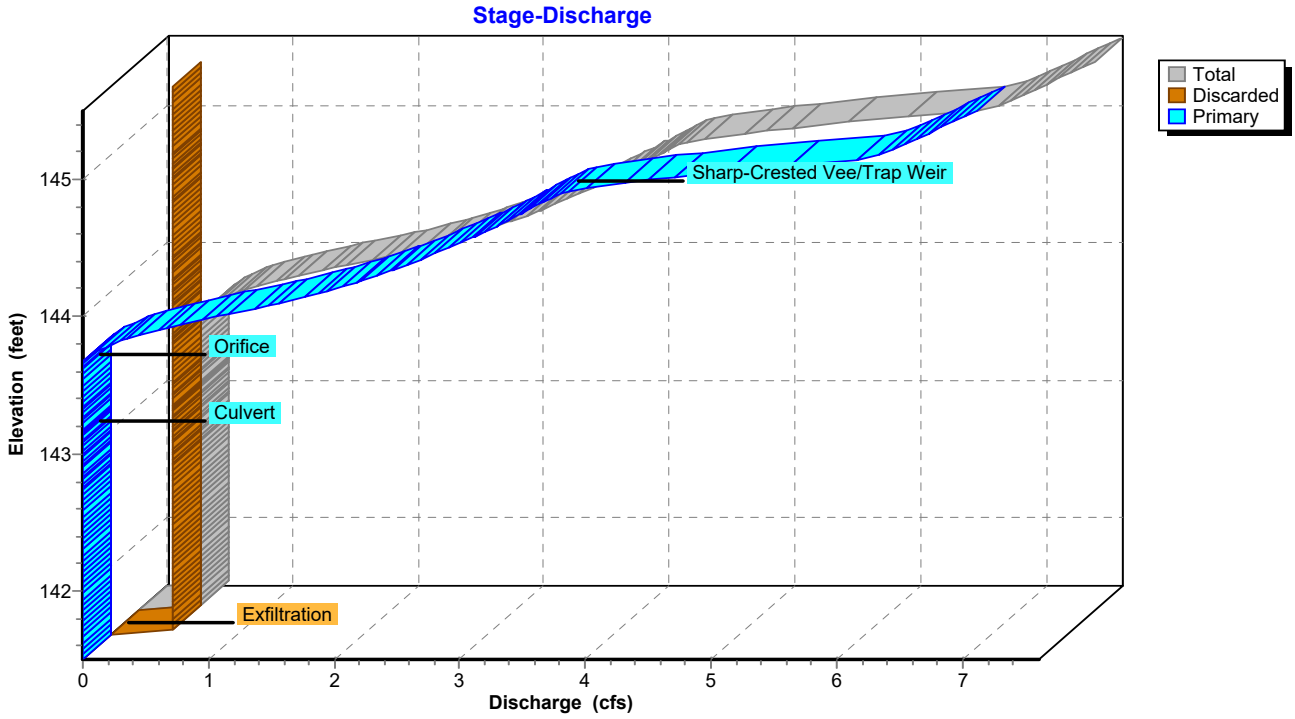
108 Chambers
585.7 cy Field
401.9 cy Stone



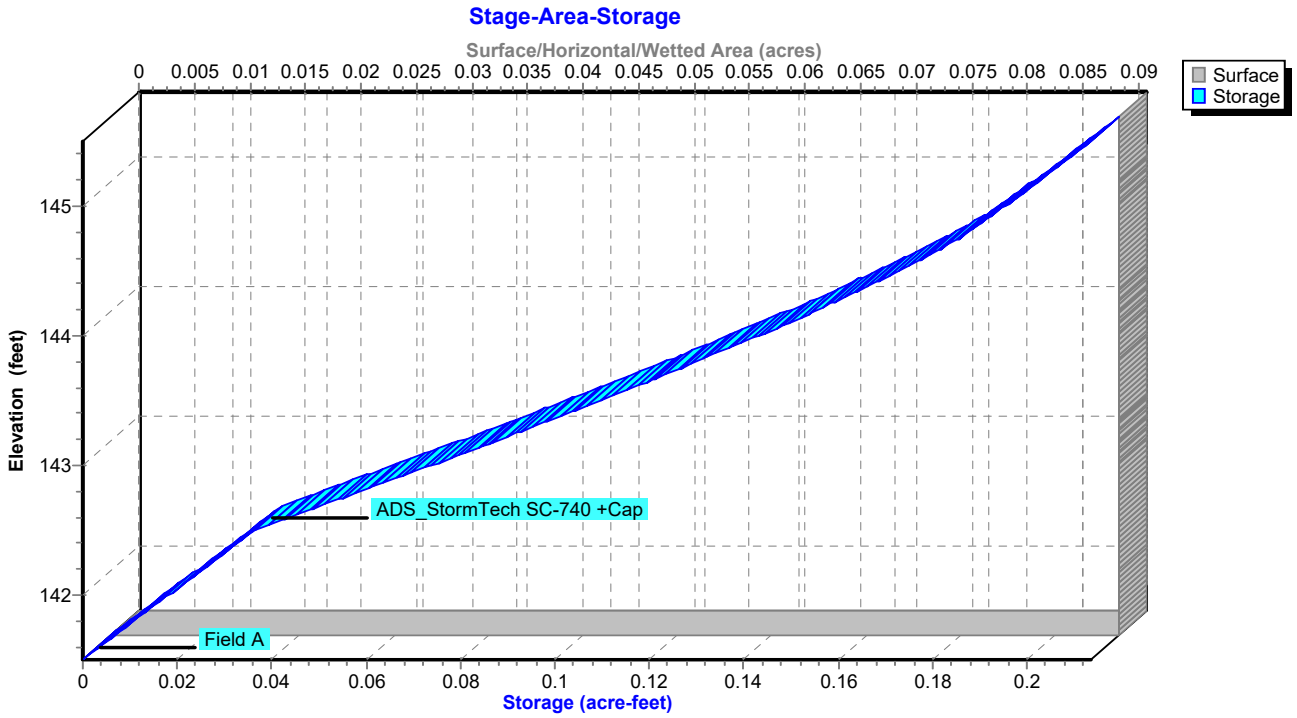
Pond S-2: Subsurface Infiltration System



Pond S-2: Subsurface Infiltration System



Pond S-2: Subsurface Infiltration System



Summary for Pond S-3: Subsurface Infiltration System

Inflow Area = 1.035 ac, 47.94% Impervious, Inflow Depth = 1.53" for 2-yr event
Inflow = 1.84 cfs @ 12.13 hrs, Volume= 0.132 af
Outflow = 0.15 cfs @ 13.20 hrs, Volume= 0.114 af, Atten= 92%, Lag= 64.4 min
Discarded = 0.05 cfs @ 9.87 hrs, Volume= 0.102 af
Primary = 0.09 cfs @ 13.20 hrs, Volume= 0.012 af
Routed to Pond AP-1 : Norwalk River

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 141.52' @ 13.20 hrs Surf.Area= 0.052 ac Storage= 0.064 af

Plug-Flow detention time= 363.9 min calculated for 0.114 af (87% of inflow)
Center-of-Mass det. time= 298.9 min (1,085.2 - 786.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	139.70'	0.047 af	**30.00'W x 74.82'L x 3.50'H Field A** 0.180 af Overall - 0.063 af Embedded = 0.117 af x 40.0% Voids
#2A	140.20'	0.063 af	**ADS_StormTech SC-740 +Cap** x 60 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 60 Chambers in 6 Rows
		0.110 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	141.14'	**12.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 141.14' / 140.49' S= 0.0087 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	141.40'	**7.0" Vert. Orifice X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	142.60'	**5.0' long Weir Wall** Cv= 2.62 (C= 3.28)
#4	Discarded	139.70'	**1.050 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.05 cfs @ 9.87 hrs HW=139.74' (Free Discharge)
└─**4=Exfiltration** (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=0.09 cfs @ 13.20 hrs HW=141.52' (Free Discharge)
└─**1=Culvert** (Passes 0.09 cfs of 0.57 cfs potential flow)
  ├─**2=Orifice** (Orifice Controls 0.09 cfs @ 1.18 fps)
  └─**3=Weir Wall** (Controls 0.00 cfs)

Pond S-3: Subsurface Infiltration System - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

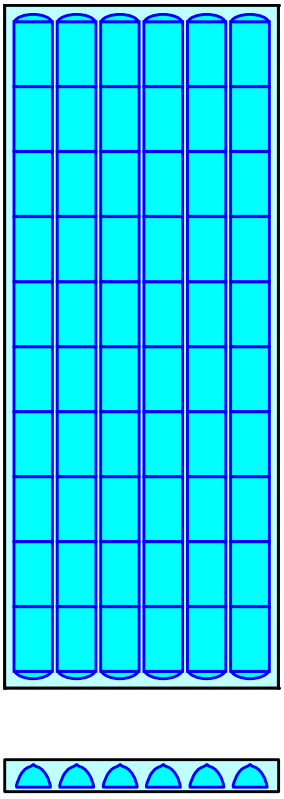
10 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 72.82' Row Length +12.0" End Stone x 2 = 74.82' Base Length
6 Rows x 51.0" Wide + 6.0" Spacing x 5 + 12.0" Side Stone x 2 = 30.00' Base Width
6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

60 Chambers x 45.9 cf = 2,756.4 cf Chamber Storage

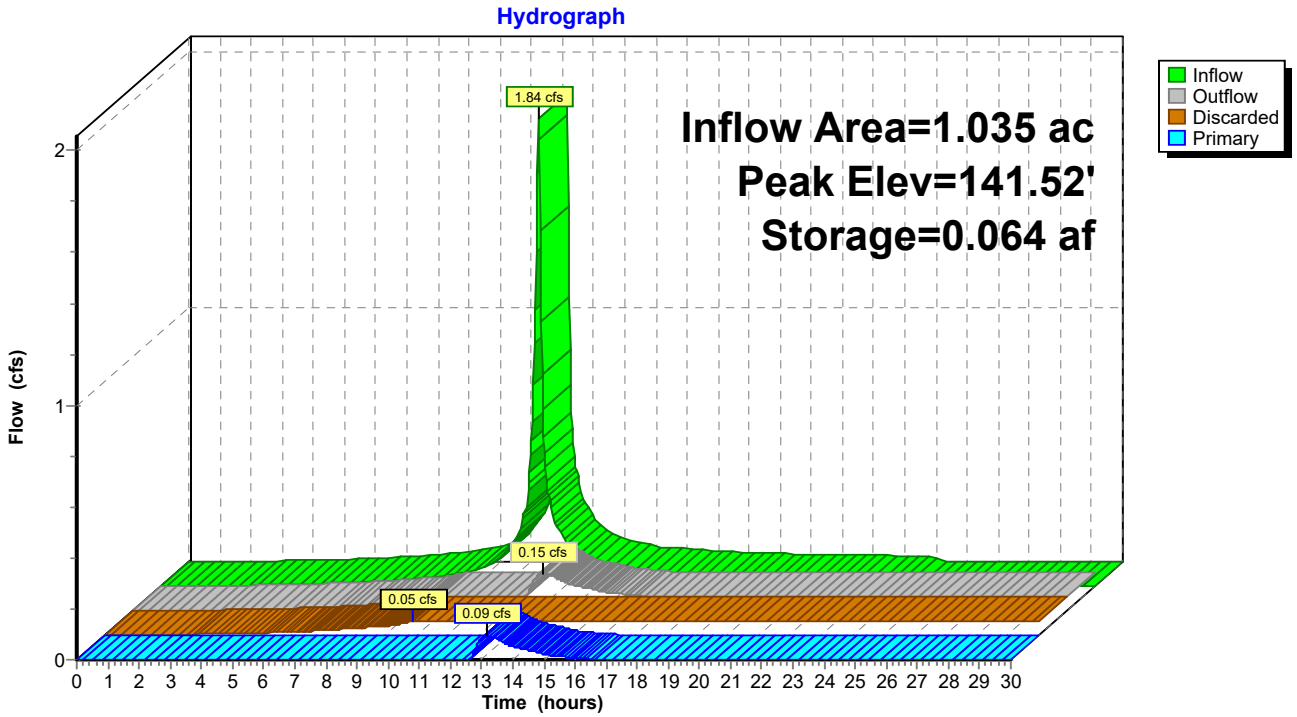
7,855.8 cf Field - 2,756.4 cf Chambers = 5,099.3 cf Stone x 40.0% Voids = 2,039.7 cf Stone Storage

Chamber Storage + Stone Storage = 4,796.1 cf = 0.110 af
Overall Storage Efficiency = 61.1%
Overall System Size = 74.82' x 30.00' x 3.50'

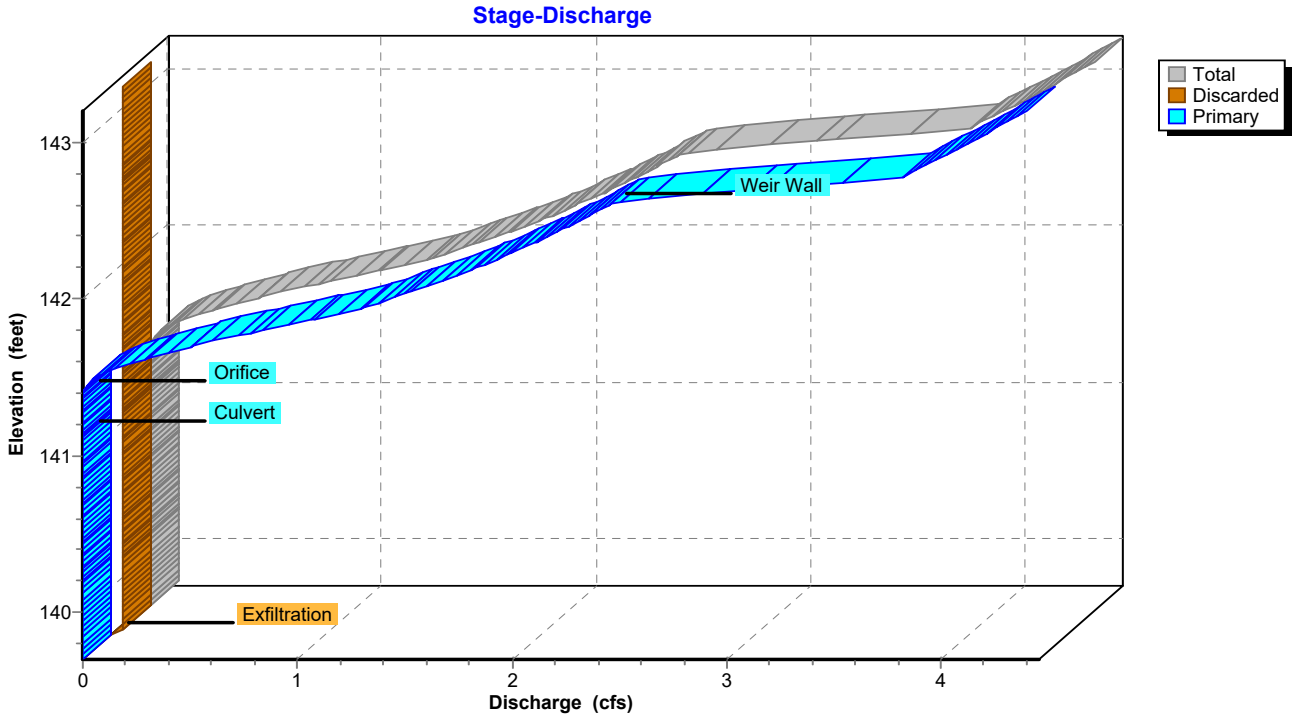
60 Chambers
291.0 cy Field
188.9 cy Stone



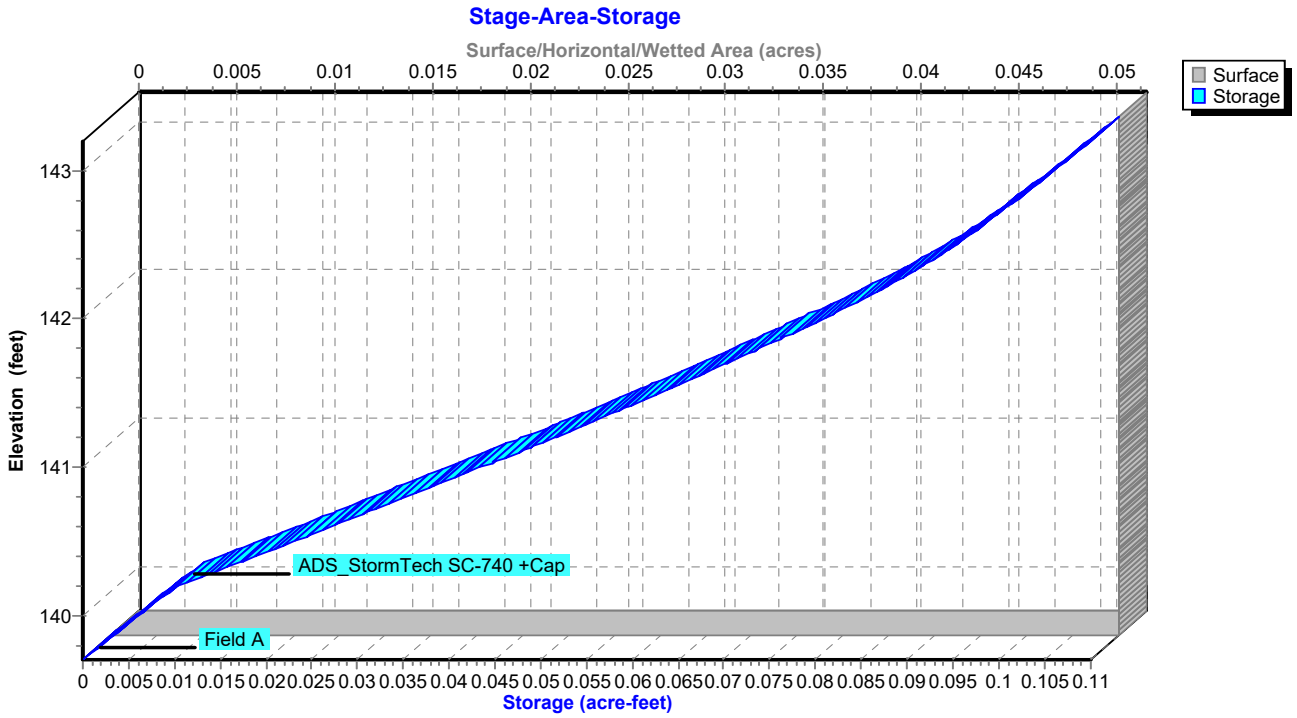
Pond S-3: Subsurface Infiltration System



Pond S-3: Subsurface Infiltration System



Pond S-3: Subsurface Infiltration System



Summary for Subcatchment PR-1: CCB 14

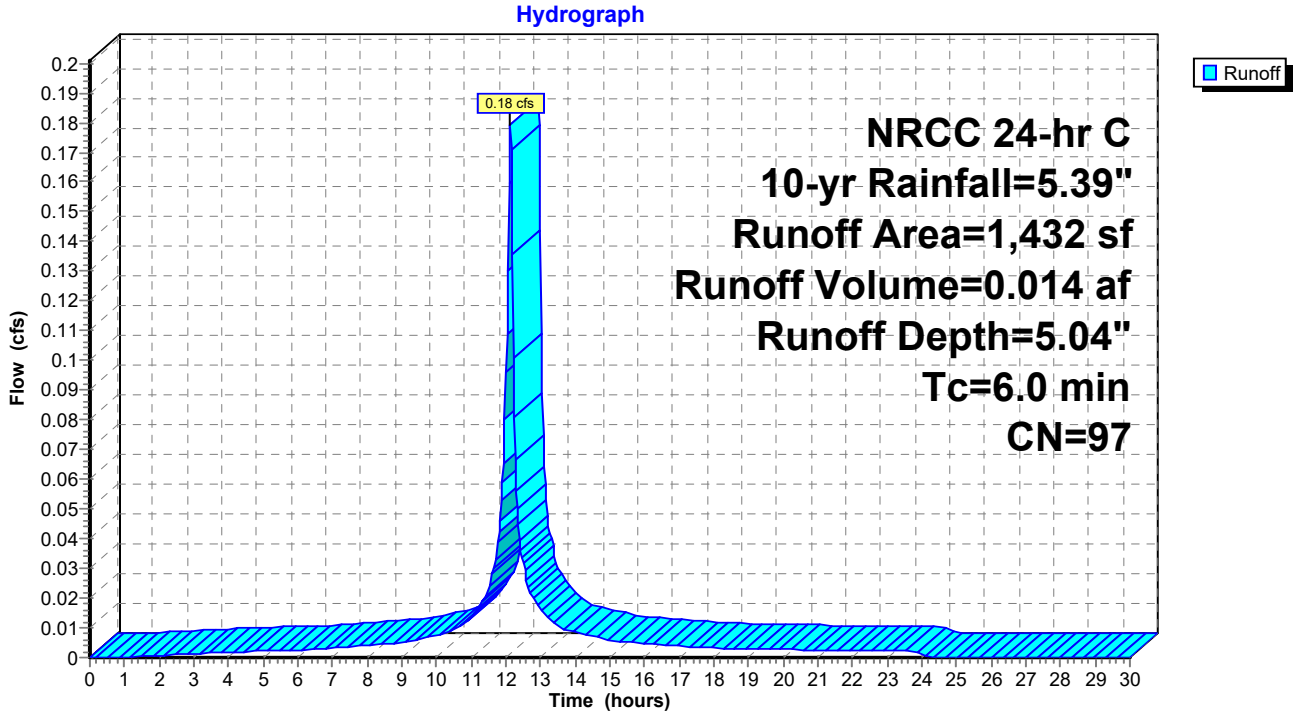
Runoff = 0.18 cfs @ 12.13 hrs, Volume= 0.014 af, Depth= 5.04"
Routed to Pond S-3 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 10-yr Rainfall=5.39"

	Area (sf)	CN	Description
	1,361	98	Paved parking, HSG D
*	71	79	Landscaping, Good, HSG D
	1,432	97	Weighted Average
	71		4.96% Pervious Area
	1,361		95.04% Impervious Area

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

Subcatchment PR-1: CCB 14



Summary for Subcatchment PR-10: CCB 28

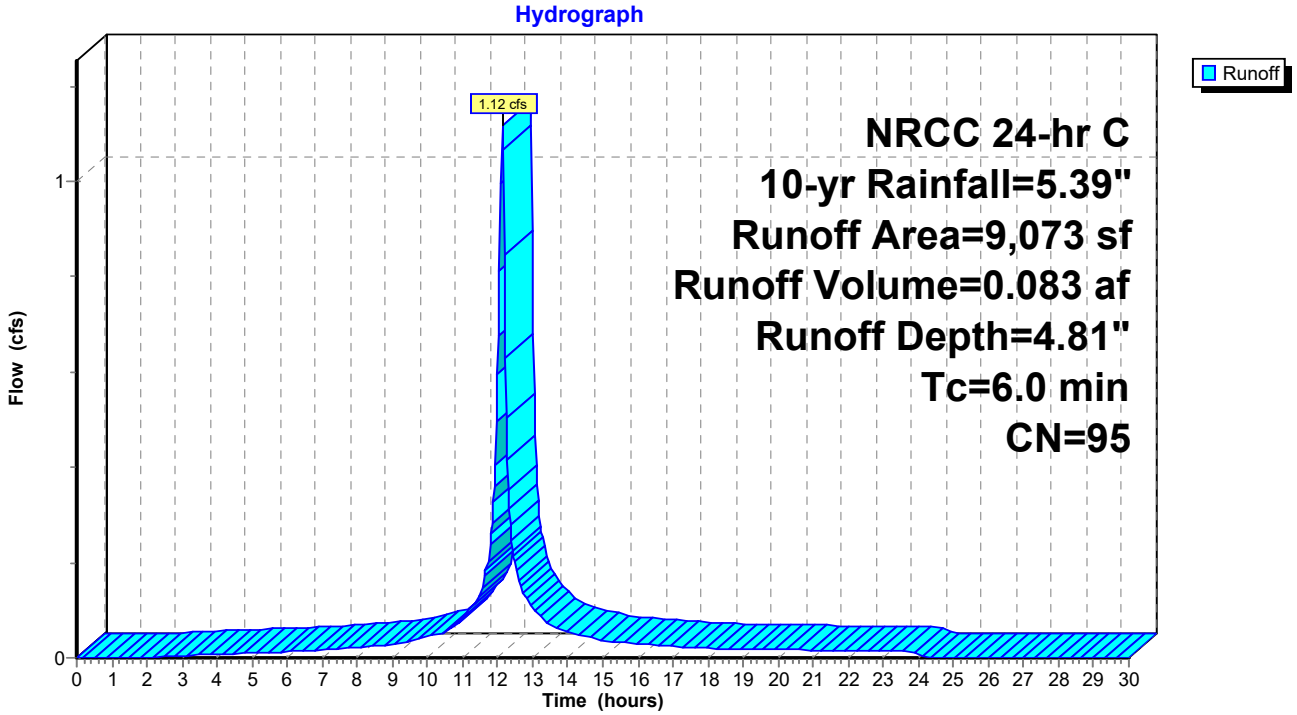
Runoff = 1.12 cfs @ 12.13 hrs, Volume= 0.083 af, Depth= 4.81"
Routed to Pond S-1 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 10-yr Rainfall=5.39"

	Area (sf)	CN	Description
	7,450	98	Paved parking, HSG D
	440	80	>75% Grass cover, Good, HSG D
*	1,183	79	Landscaping, Good, HSG D
	9,073	95	Weighted Average
	1,623		17.89% Pervious Area
	7,450		82.11% Impervious Area

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

Subcatchment PR-10: CCB 28



Summary for Subcatchment PR-11: Building Roof

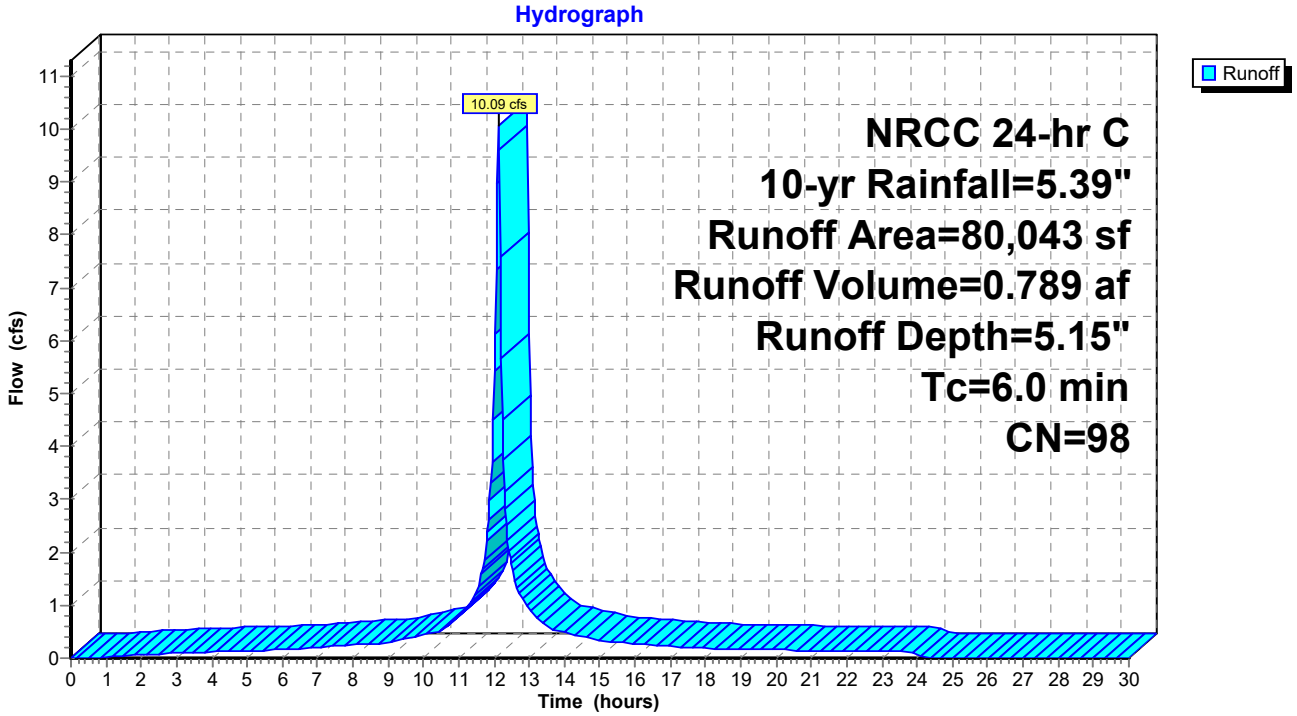
Runoff = 10.09 cfs @ 12.13 hrs, Volume= 0.789 af, Depth= 5.15"
Routed to Reach R1 : Roof Leader

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 10-yr Rainfall=5.39"

Area (sf)	CN	Description
80,043	98	Roofs, HSG D
80,043		100.00% Impervious Area

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

Subcatchment PR-11: Building Roof



Summary for Subcatchment PR-12: CCB 29

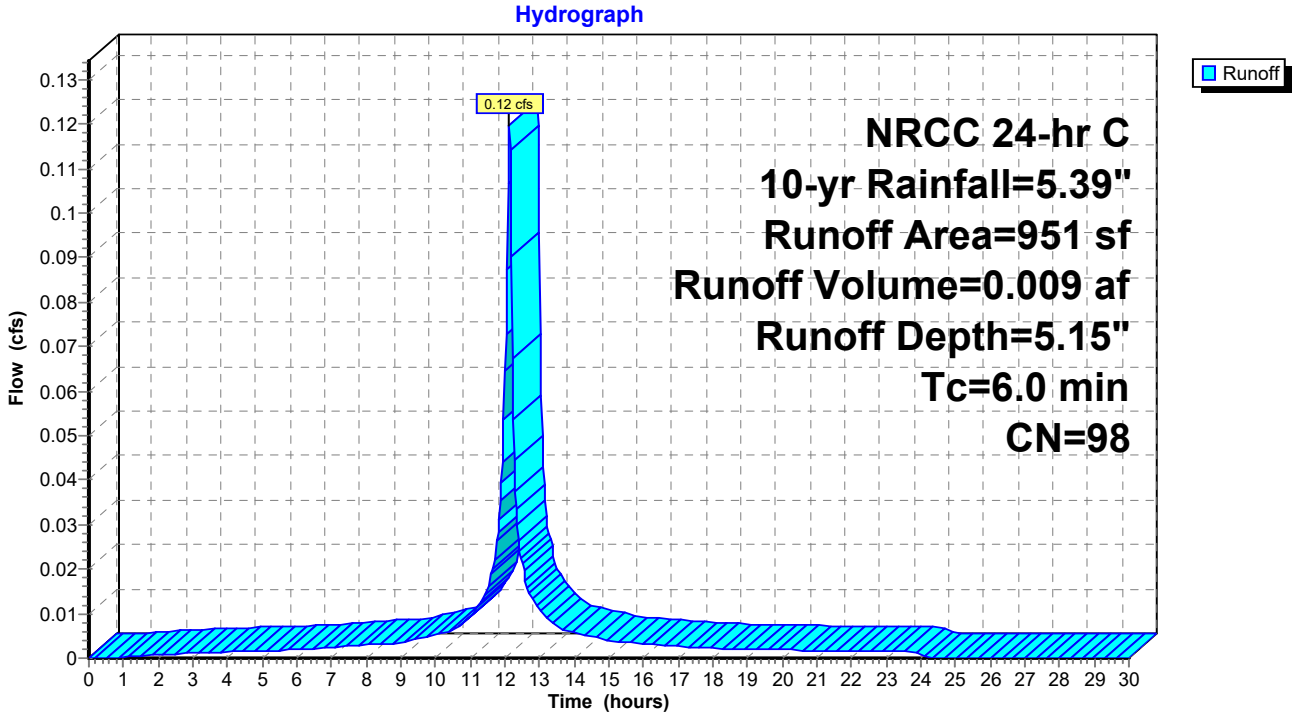
Runoff = 0.12 cfs @ 12.13 hrs, Volume= 0.009 af, Depth= 5.15"
Routed to Pond S-1 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 10-yr Rainfall=5.39"

Area (sf)	CN	Description
951	98	Paved parking, HSG D
951		100.00% Impervious Area

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

Subcatchment PR-12: CCB 29



Summary for Subcatchment PR-13: CCB 30

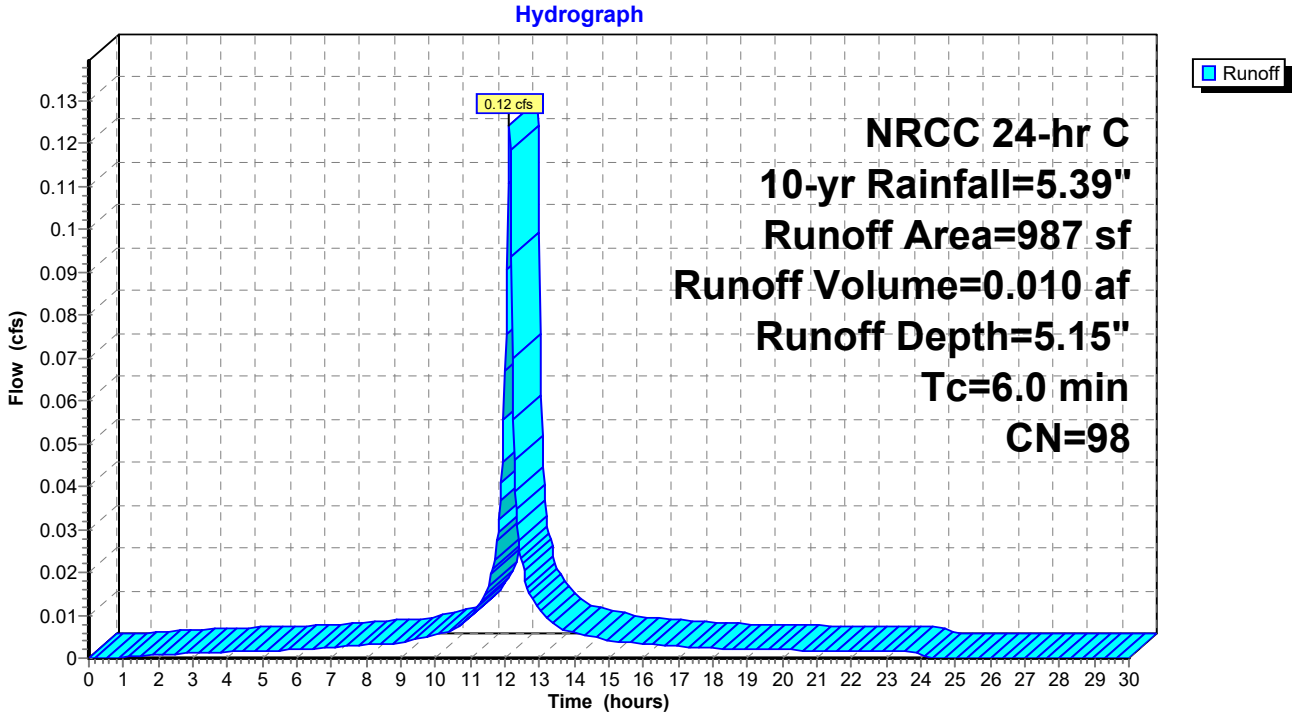
Runoff = 0.12 cfs @ 12.13 hrs, Volume= 0.010 af, Depth= 5.15"
Routed to Pond S-1 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 10-yr Rainfall=5.39"

Area (sf)	CN	Description
987	98	Paved parking, HSG D
987		100.00% Impervious Area

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

Subcatchment PR-13: CCB 30



Summary for Subcatchment PR-14: CLCB-10

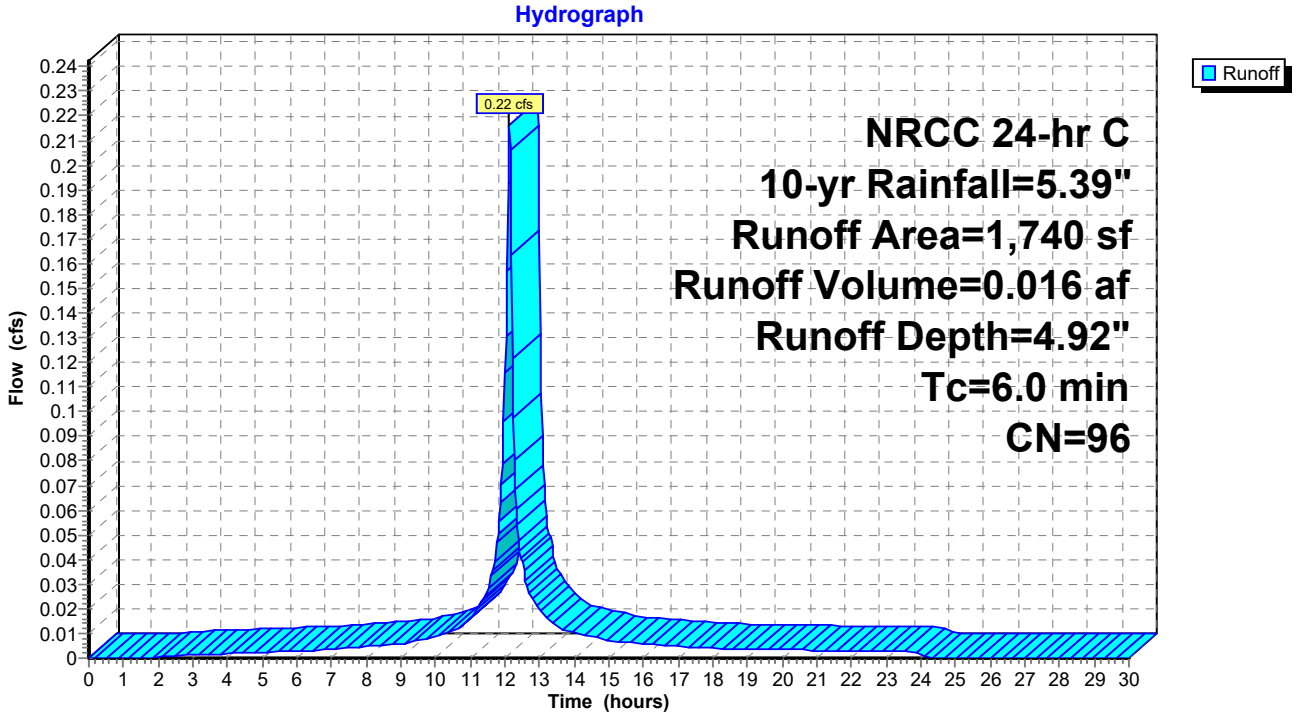
Runoff = 0.22 cfs @ 12.13 hrs, Volume= 0.016 af, Depth= 4.92"
Routed to Pond S-3 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 10-yr Rainfall=5.39"

	Area (sf)	CN	Description
*	1,740	96	Concrete paver, HSG D
	1,740		100.00% Pervious Area

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

Subcatchment PR-14: CLCB-10



Summary for Subcatchment PR-15: CLCB-09

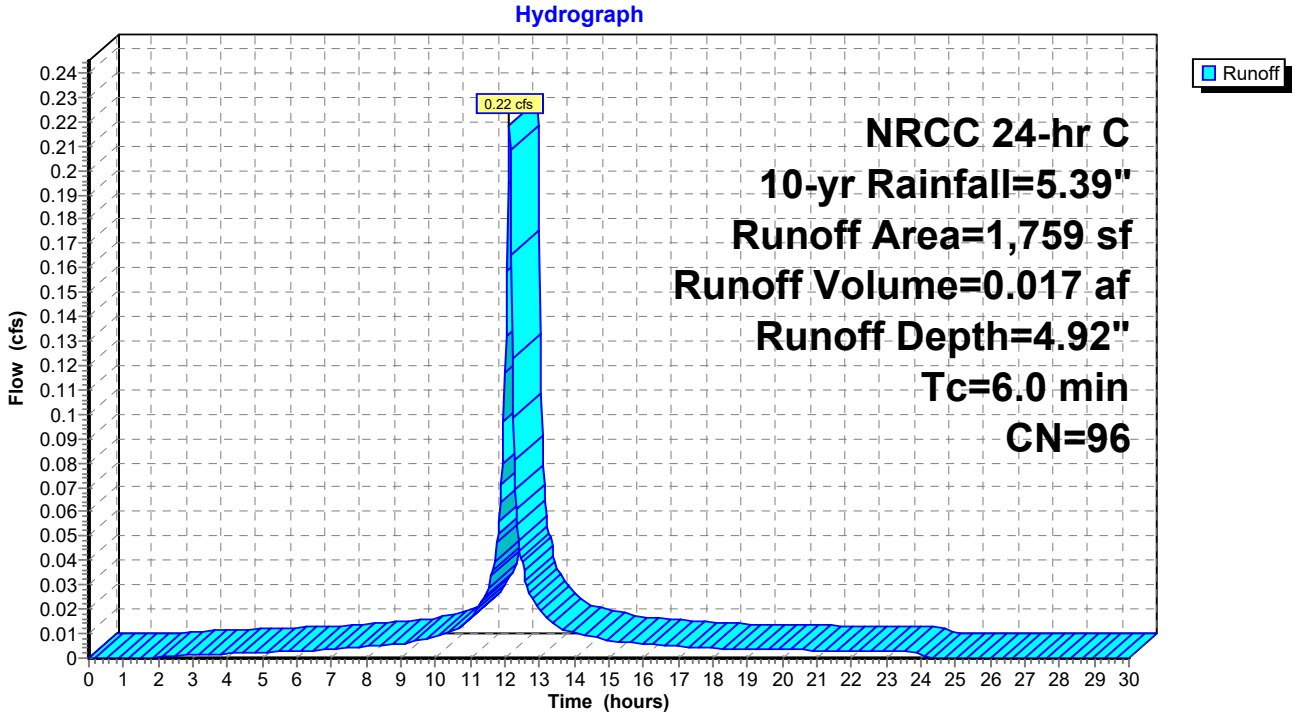
Runoff = 0.22 cfs @ 12.13 hrs, Volume= 0.017 af, Depth= 4.92"
Routed to Pond S-3 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 10-yr Rainfall=5.39"

	Area (sf)	CN	Description
*	1,759	96	Pevious paver, HSG D
	1,759		100.00% Pervious Area

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

Subcatchment PR-15: CLCB-09



Summary for Subcatchment PR-16: East rooftop to Front Rain Garden

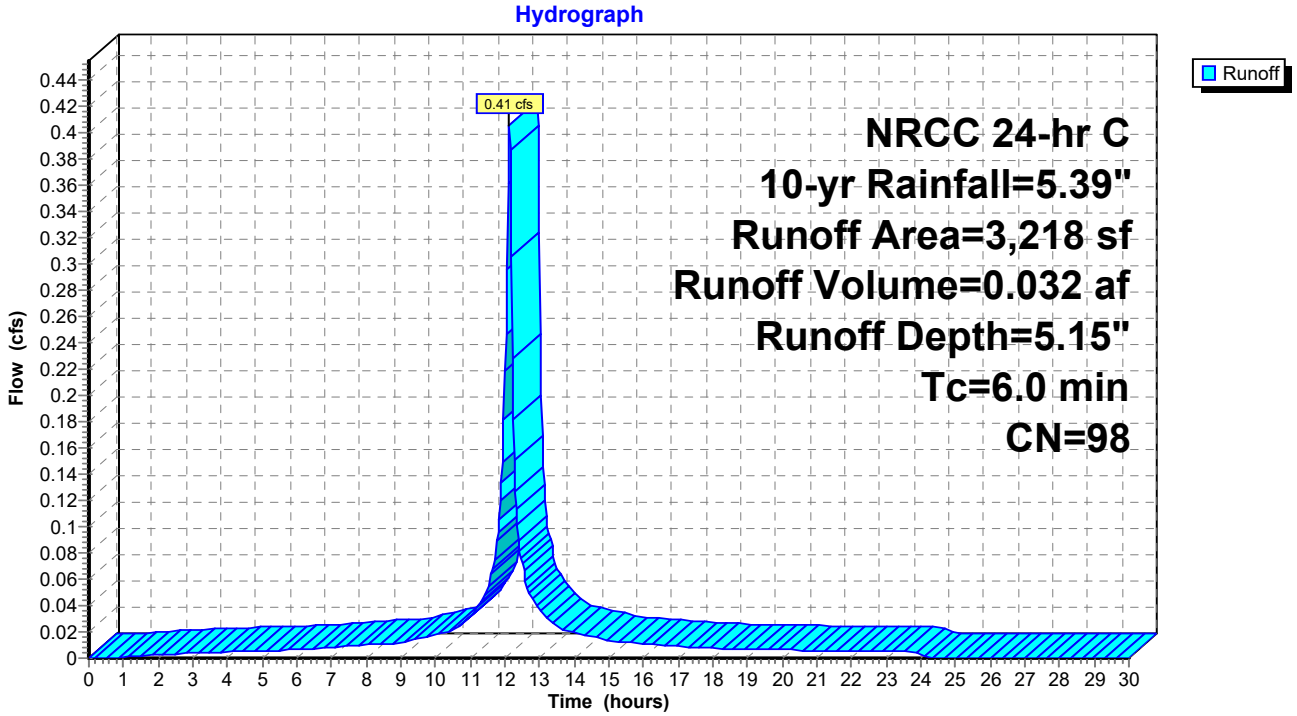
Runoff = 0.41 cfs @ 12.13 hrs, Volume= 0.032 af, Depth= 5.15"
Routed to Pond AP-2 : Front Lawn Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 10-yr Rainfall=5.39"

Area (sf)	CN	Description
3,218	98	Roofs, HSG D
3,218		100.00% Impervious Area

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

Subcatchment PR-16: East rooftop to Front Rain Garden



Summary for Subcatchment PR-17: Front Lawn

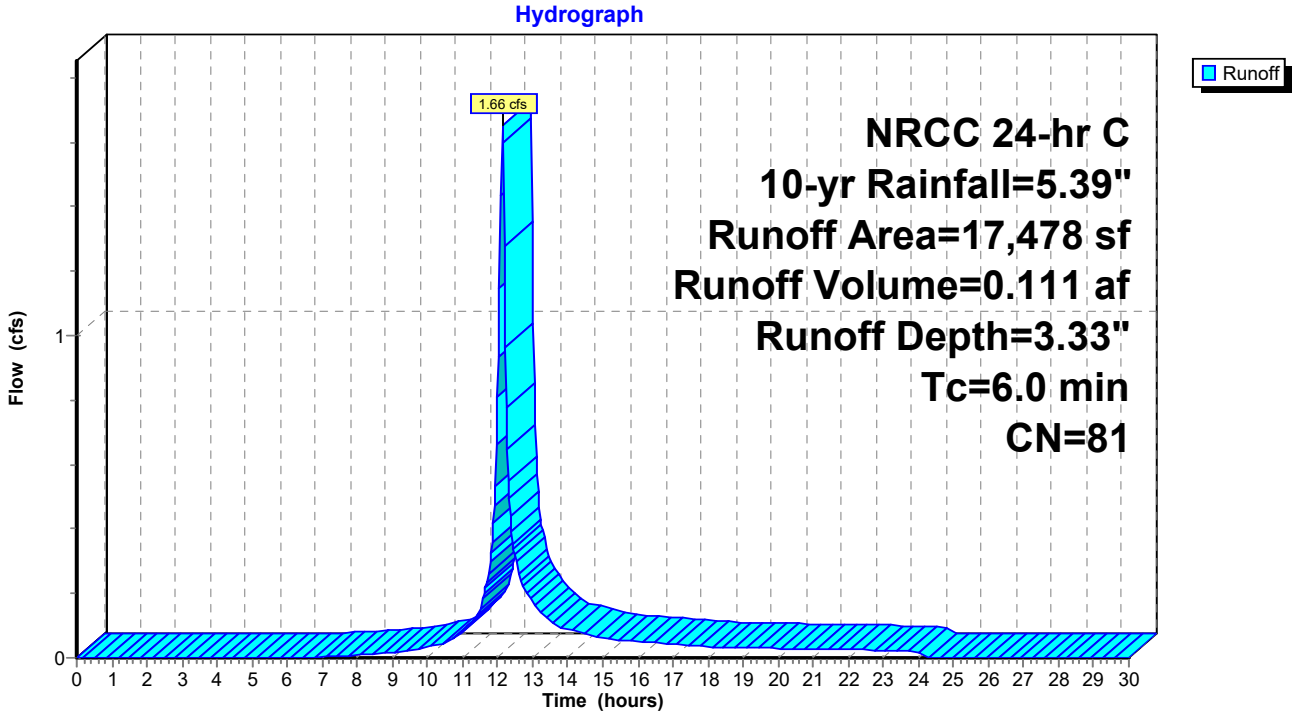
Runoff = 1.66 cfs @ 12.13 hrs, Volume= 0.111 af, Depth= 3.33"
Routed to Pond AP-2 : Front Lawn Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 10-yr Rainfall=5.39"

	Area (sf)	CN	Description
	1,883	98	Paved parking, HSG D
	6,950	80	>75% Grass cover, Good, HSG D
*	8,645	79	Landscaping, Good, HSG D
	17,478	81	Weighted Average
	15,595		89.23% Pervious Area
	1,883		10.77% Impervious Area

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

Subcatchment PR-17: Front Lawn



Summary for Subcatchment PR-18: CCB-08

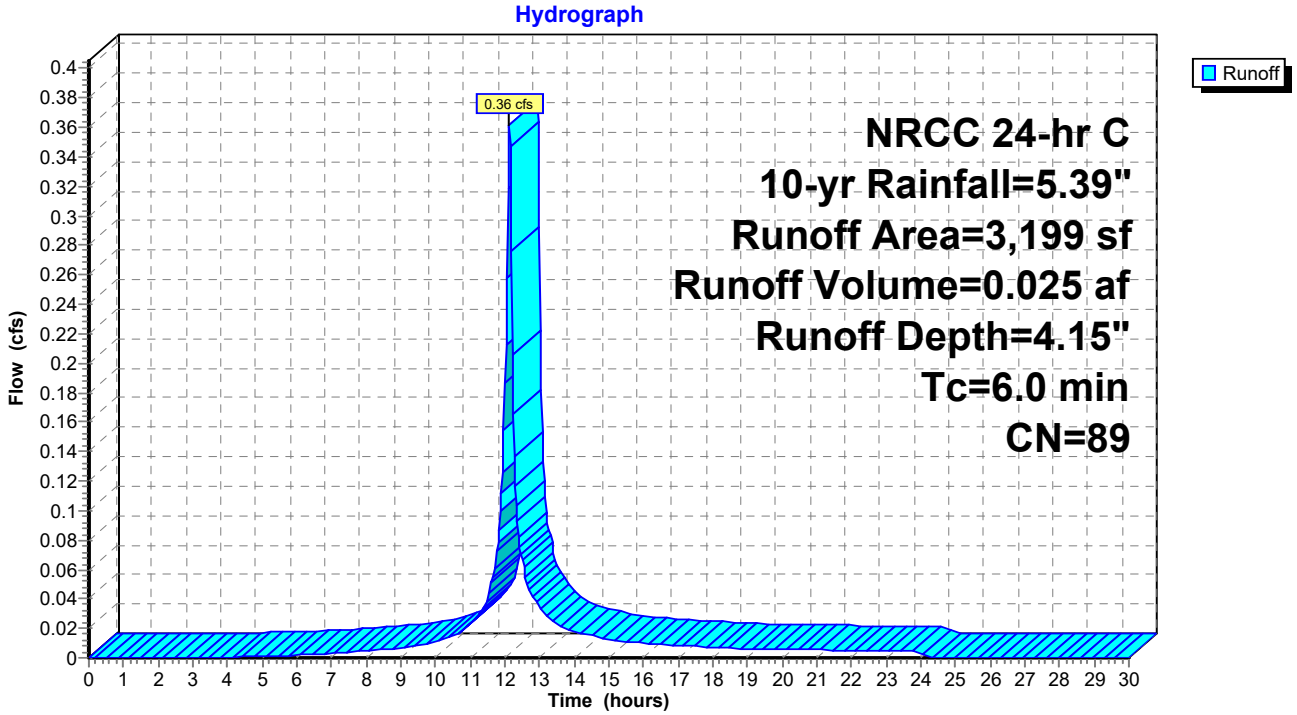
Runoff = 0.36 cfs @ 12.13 hrs, Volume= 0.025 af, Depth= 4.15"
Routed to Pond S-3 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 10-yr Rainfall=5.39"

	Area (sf)	CN	Description
	1,677	98	Paved parking, HSG D
	192	80	>75% Grass cover, Good, HSG D
*	1,330	79	Landscaping, Good, HSG D
	3,199	89	Weighted Average
	1,522		47.58% Pervious Area
	1,677		52.42% Impervious Area

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

Subcatchment PR-18: CCB-08



Summary for Subcatchment PR-19: CCB-07

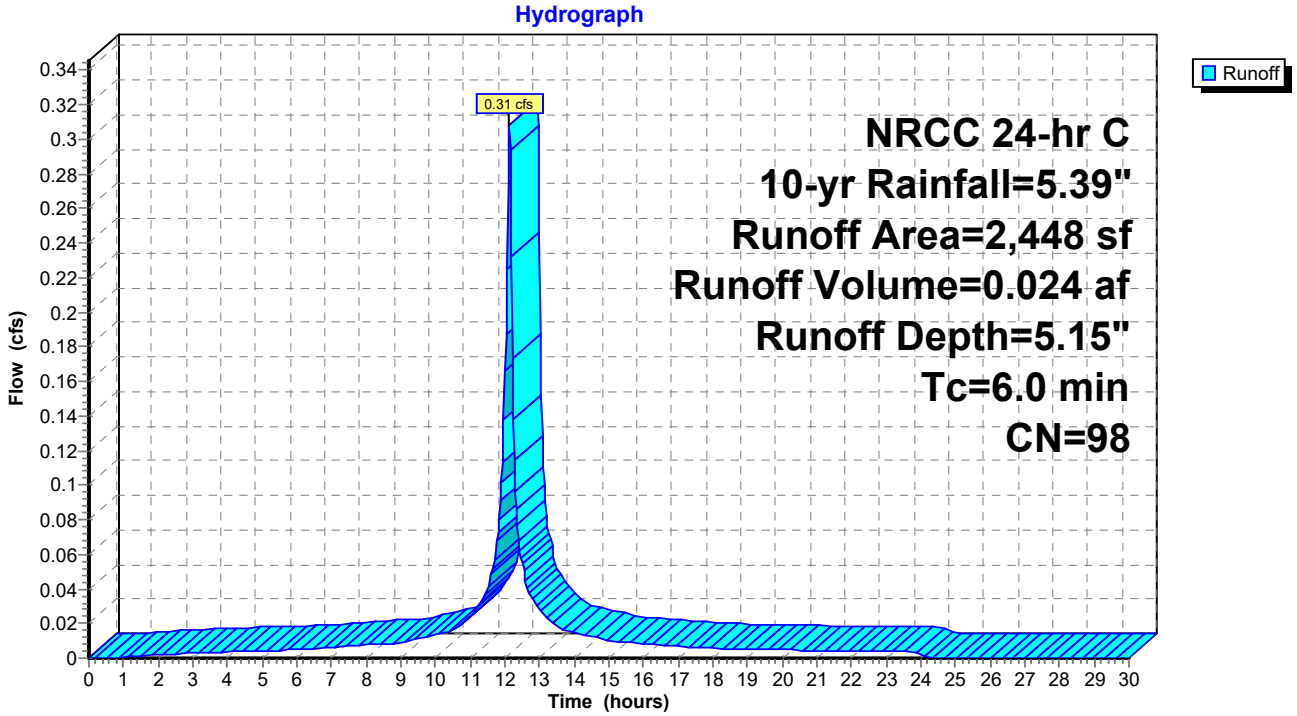
Runoff = 0.31 cfs @ 12.13 hrs, Volume= 0.024 af, Depth= 5.15"
Routed to Pond S-3 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 10-yr Rainfall=5.39"

Area (sf)	CN	Description
2,448	98	Paved parking, HSG D
2,448		100.00% Impervious Area

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

Subcatchment PR-19: CCB-07



Summary for Subcatchment PR-2: CCB 10

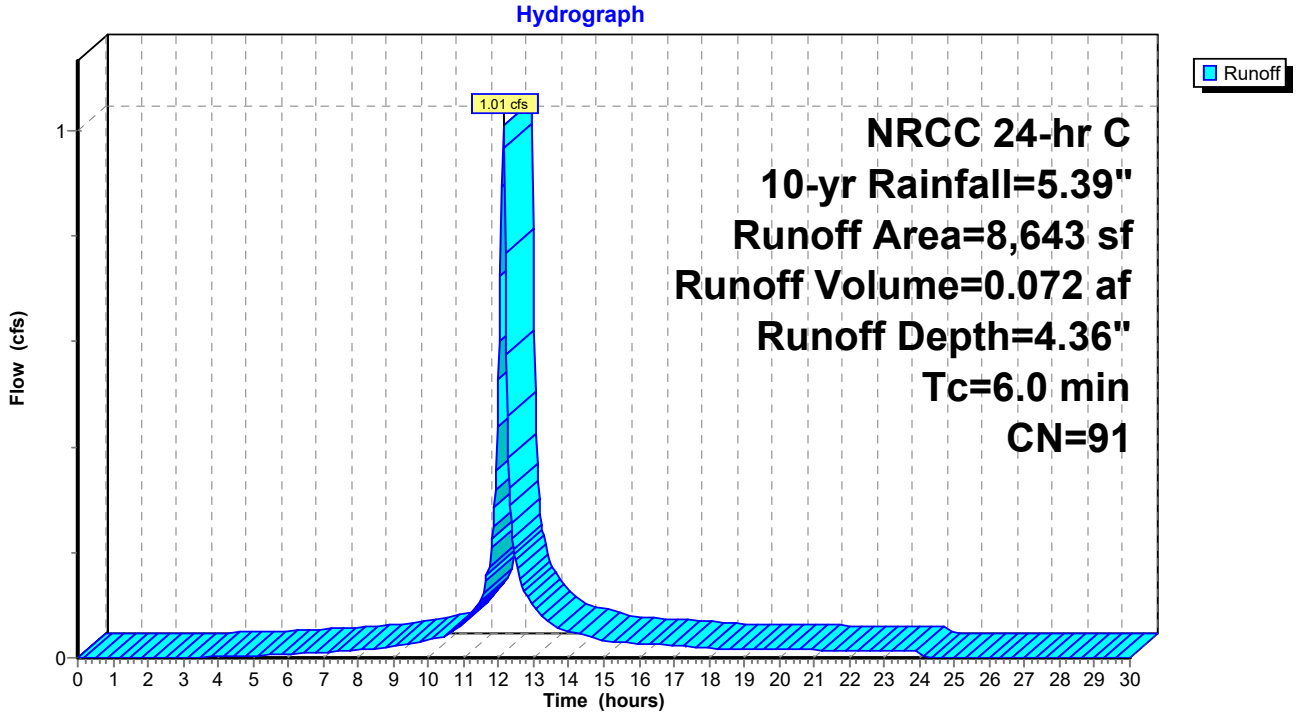
Runoff = 1.01 cfs @ 12.13 hrs, Volume= 0.072 af, Depth= 4.36"
Routed to Pond S-3 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 10-yr Rainfall=5.39"

	Area (sf)	CN	Description
*	6,303	98	Paved parking, HSG C
*	1,994	72	Landscaping, Good, HSG C
	346	74	>75% Grass cover, Good, HSG C
	8,643	91	Weighted Average
	2,340		27.07% Pervious Area
	6,303		72.93% Impervious Area

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

Subcatchment PR-2: CCB 10



Summary for Subcatchment PR-20: South of entrance drive

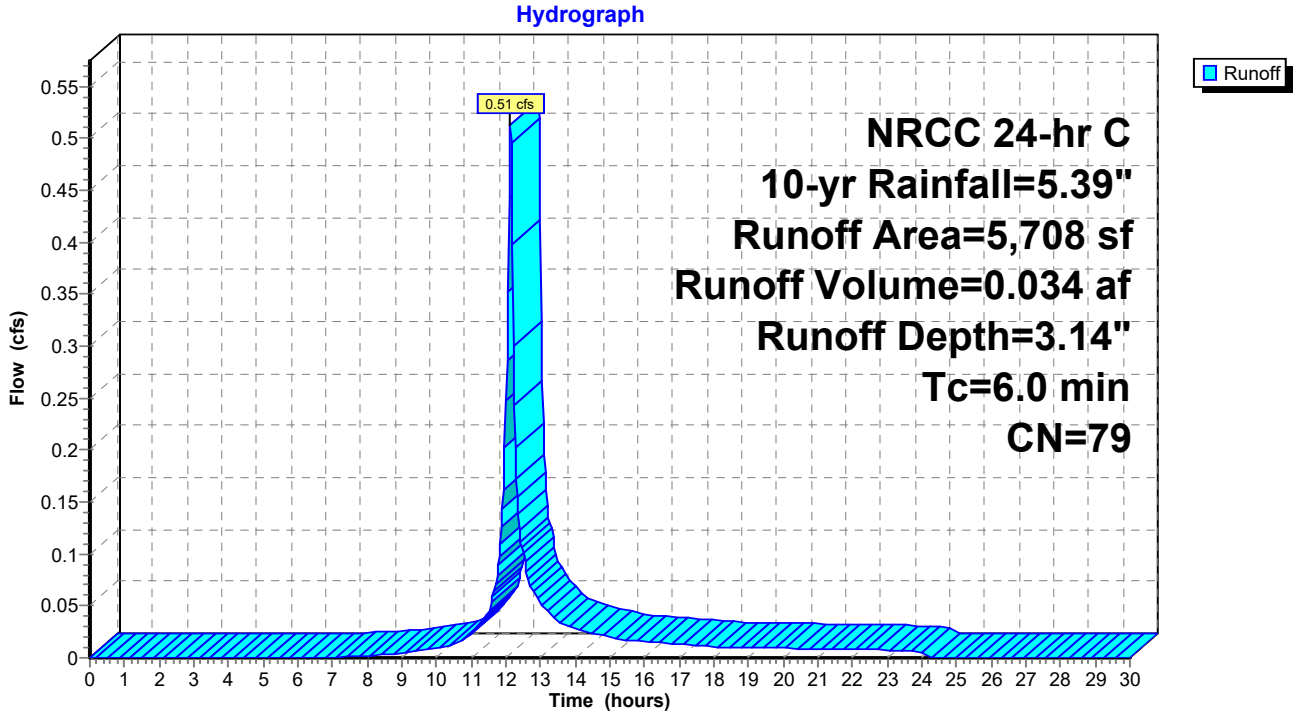
Runoff = 0.51 cfs @ 12.13 hrs, Volume= 0.034 af, Depth= 3.14"
Routed to Pond AP-4 : Landscaped Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 10-yr Rainfall=5.39"

	Area (sf)	CN	Description
	93	98	Paved parking, HSG D
	755	80	>75% Grass cover, Good, HSG D
*	4,860	79	Landscaping, Good, HSG D
	5,708	79	Weighted Average
	5,615		98.37% Pervious Area
	93		1.63% Impervious Area

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

Subcatchment PR-20: South of entrance drive



Summary for Subcatchment PR-21: Danbury Rd

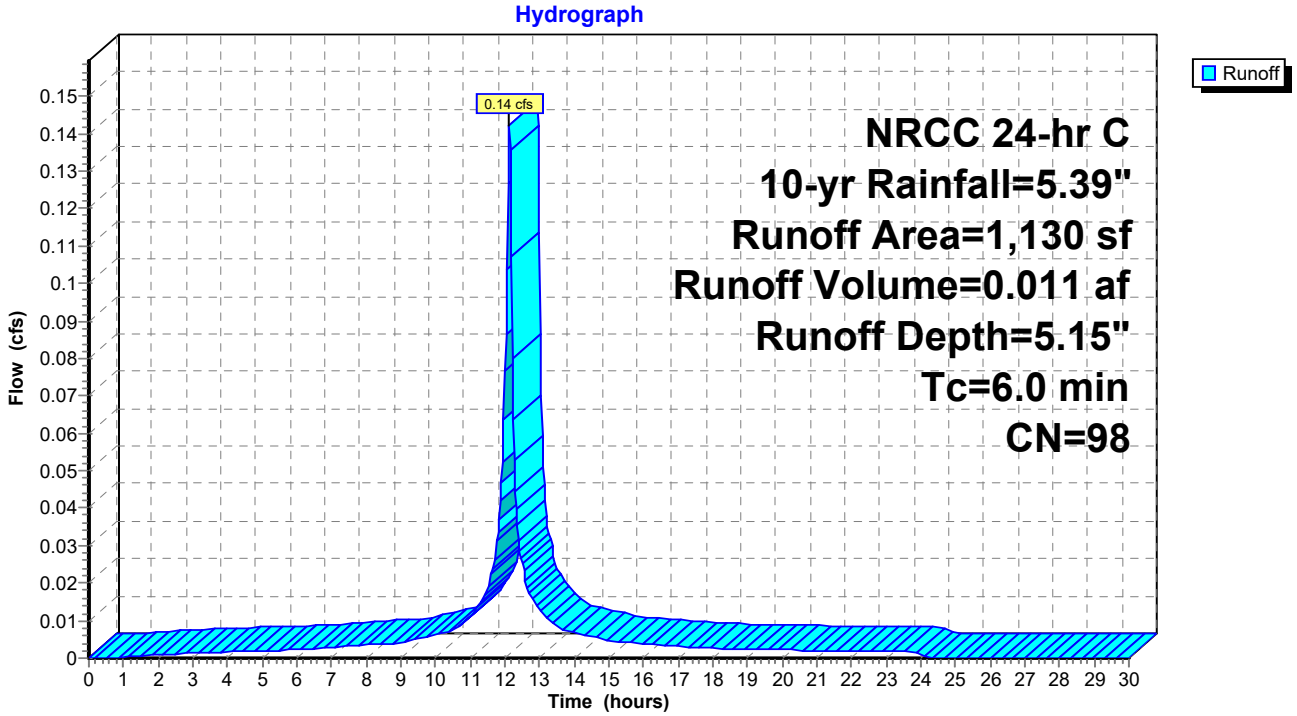
Runoff = 0.14 cfs @ 12.13 hrs, Volume= 0.011 af, Depth= 5.15"
Routed to Pond AP-3 : Danbury Road

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 10-yr Rainfall=5.39"

Area (sf)	CN	Description
1,130	98	Paved parking, HSG D
1,130		100.00% Impervious Area

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

Subcatchment PR-21: Danbury Rd



Summary for Subcatchment PR-3: CCB 07

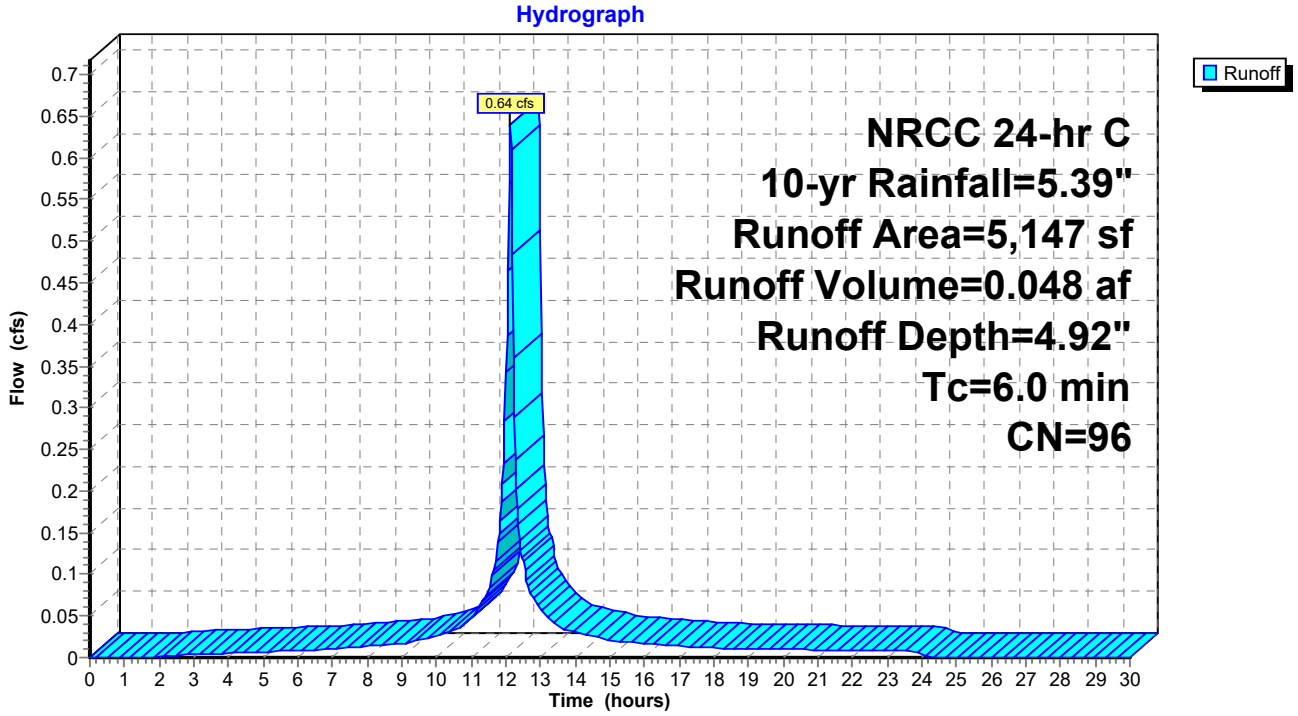
Runoff = 0.64 cfs @ 12.13 hrs, Volume= 0.048 af, Depth= 4.92"
Routed to Pond S-3 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 10-yr Rainfall=5.39"

	Area (sf)	CN	Description
*	4,715	98	Paved parking, HSG C
*	432	72	Landscaping, Good, HSG C
	5,147	96	Weighted Average
	432		8.39% Pervious Area
	4,715		91.61% Impervious Area

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

Subcatchment PR-3: CCB 07



Summary for Subcatchment PR-4: CCB 06

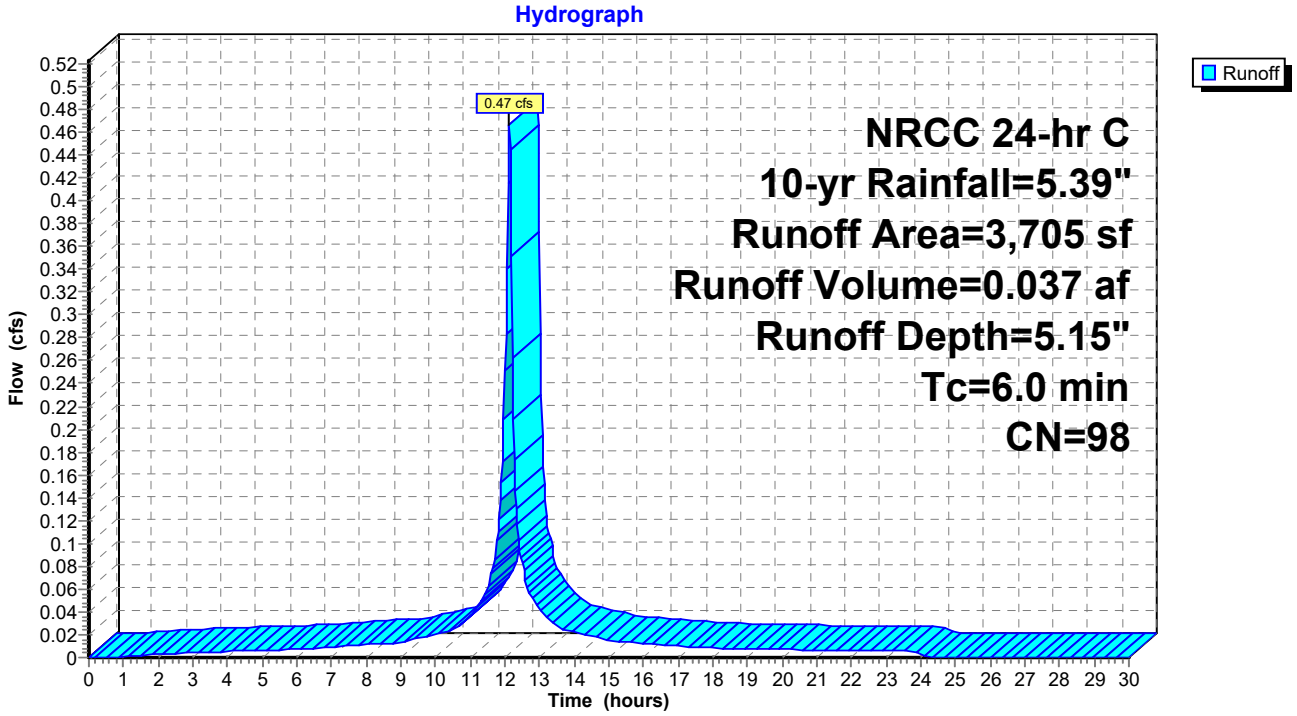
Runoff = 0.47 cfs @ 12.13 hrs, Volume= 0.037 af, Depth= 5.15"
Routed to Pond AP-1 : Norwalk River

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 10-yr Rainfall=5.39"

	Area (sf)	CN	Description
	3,630	98	Paved parking, HSG D
*	75	79	Landscaping, Good, HSG D
	3,705	98	Weighted Average
	75		2.02% Pervious Area
	3,630		97.98% Impervious Area

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

Subcatchment PR-4: CCB 06



Summary for Subcatchment PR-5: South Basin

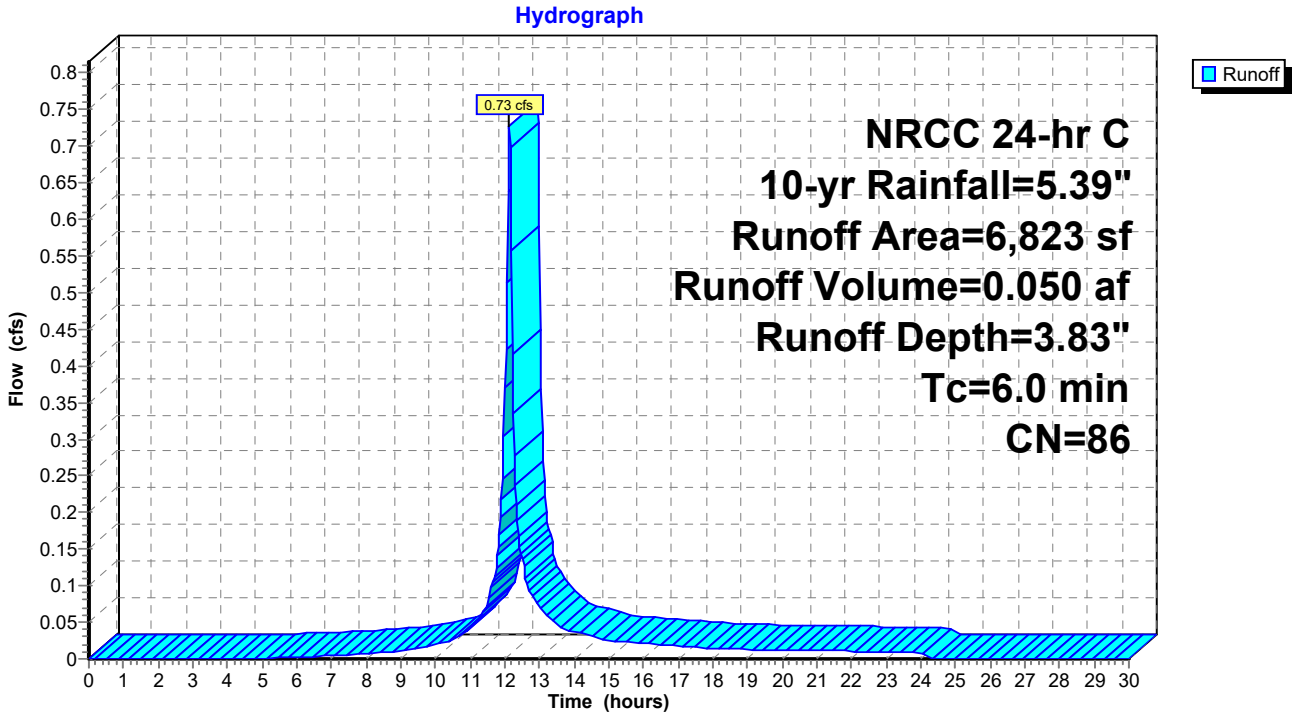
Runoff = 0.73 cfs @ 12.13 hrs, Volume= 0.050 af, Depth= 3.83"
Routed to Pond B-1 : South Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 10-yr Rainfall=5.39"

	Area (sf)	CN	Description
*	2,205	96	Permable Paver, HSG C
*	366	96	Gravel surface, HSG C
*	2,923	72	Landscaping, Good, HSG C
*	1,139	98	Paved parking, HSG C
	190	80	>75% Grass cover, Good, HSG D
	6,823	86	Weighted Average
	5,684		83.31% Pervious Area
	1,139		16.69% Impervious Area

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

Subcatchment PR-5: South Basin



Summary for Subcatchment PR-6: West along river

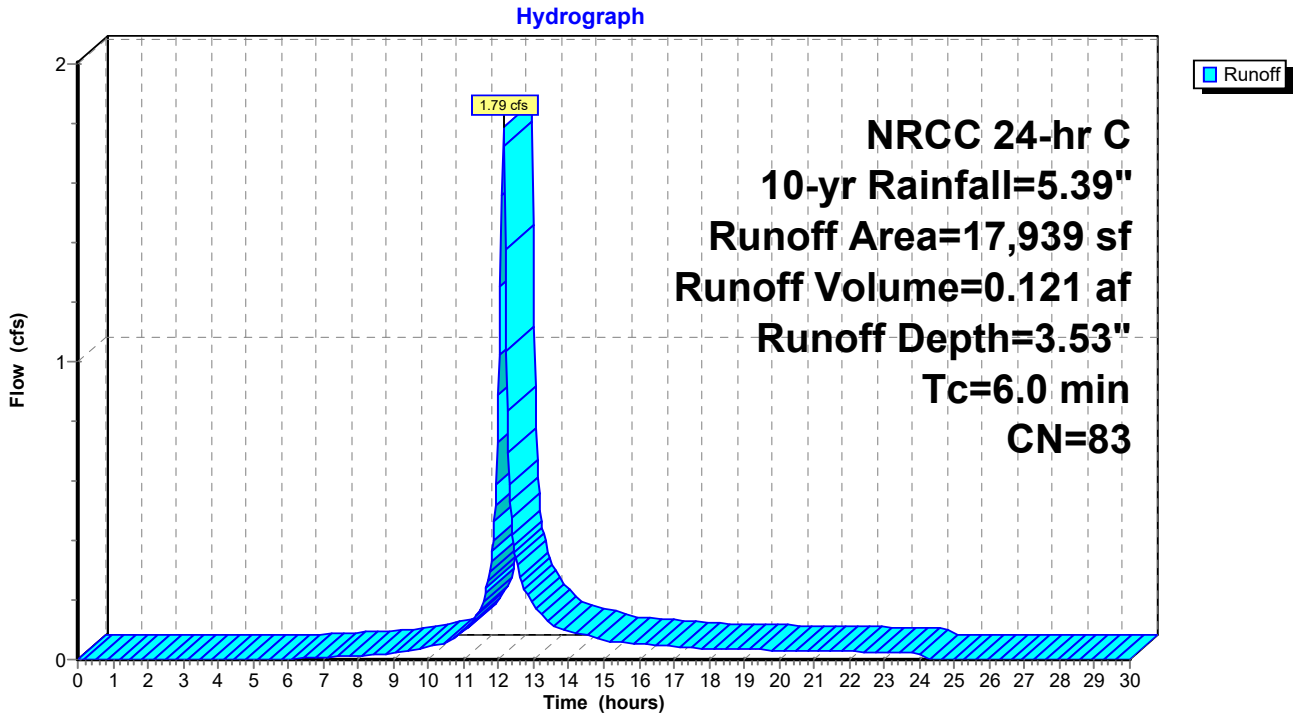
Runoff = 1.79 cfs @ 12.13 hrs, Volume= 0.121 af, Depth= 3.53"
Routed to Pond AP-1 : Norwalk River

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 10-yr Rainfall=5.39"

	Area (sf)	CN	Description
*	2,585	96	Permeable paver, HSG D
	461	96	Gravel surface, HSG D
	911	98	Paved parking, HSG D
	3,570	80	>75% Grass cover, Good, HSG D
*	6,264	79	Landscaping, Good, HSG D
	4,148	77	Woods, Good, HSG D
	17,939	83	Weighted Average
	17,028		94.92% Pervious Area
	911		5.08% Impervious Area

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

Subcatchment PR-6: West along river



Summary for Subcatchment PR-7: North basin

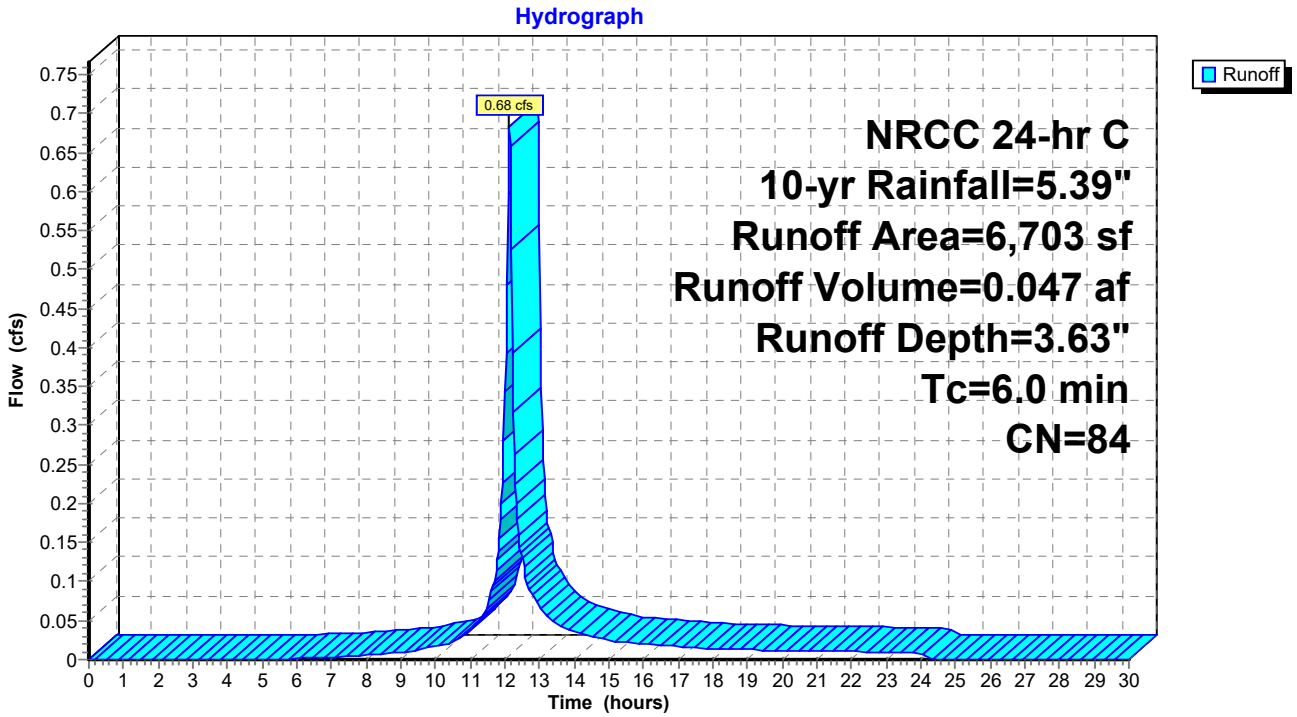
Runoff = 0.68 cfs @ 12.13 hrs, Volume= 0.047 af, Depth= 3.63"
Routed to Pond B-2 : North Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 10-yr Rainfall=5.39"

	Area (sf)	CN	Description
	453	96	Gravel surface, HSG D
*	1,031	96	Permeable paver, HSG D
	445	80	>75% Grass cover, Good, HSG D
*	3,601	79	Landscaping, Good, HSG D
	692	77	Woods, Good, HSG D
	481	98	Paved parking, HSG D
	6,703	84	Weighted Average
	6,222		92.82% Pervious Area
	481		7.18% Impervious Area

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

Subcatchment PR-7: North basin



Summary for Subcatchment PR-7B: CCB 26

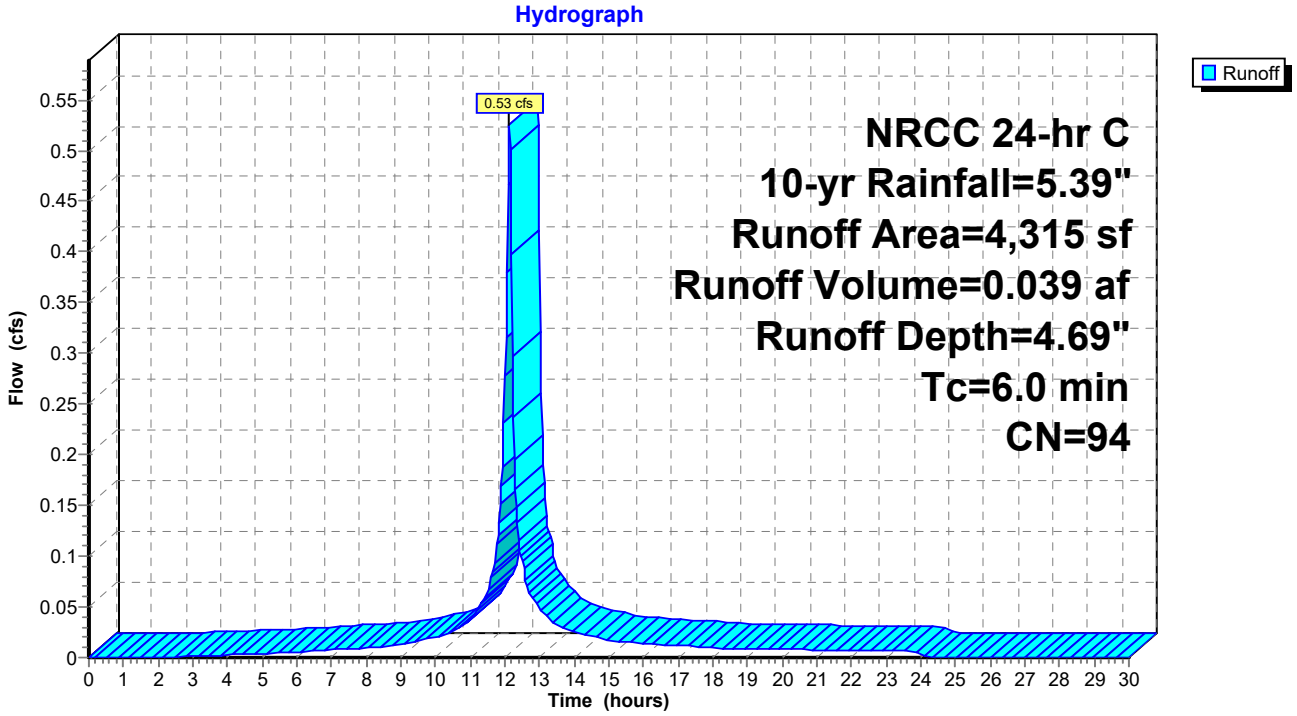
Runoff = 0.53 cfs @ 12.13 hrs, Volume= 0.039 af, Depth= 4.69"
Routed to Pond AP-1 : Norwalk River

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 10-yr Rainfall=5.39"

	Area (sf)	CN	Description
	3,518	98	Paved parking, HSG D
*	797	79	Landscaping, Good, HSG D
	4,315	94	Weighted Average
	797		18.47% Pervious Area
	3,518		81.53% Impervious Area

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

Subcatchment PR-7B: CCB 26



Summary for Subcatchment PR-8: CCB 26A

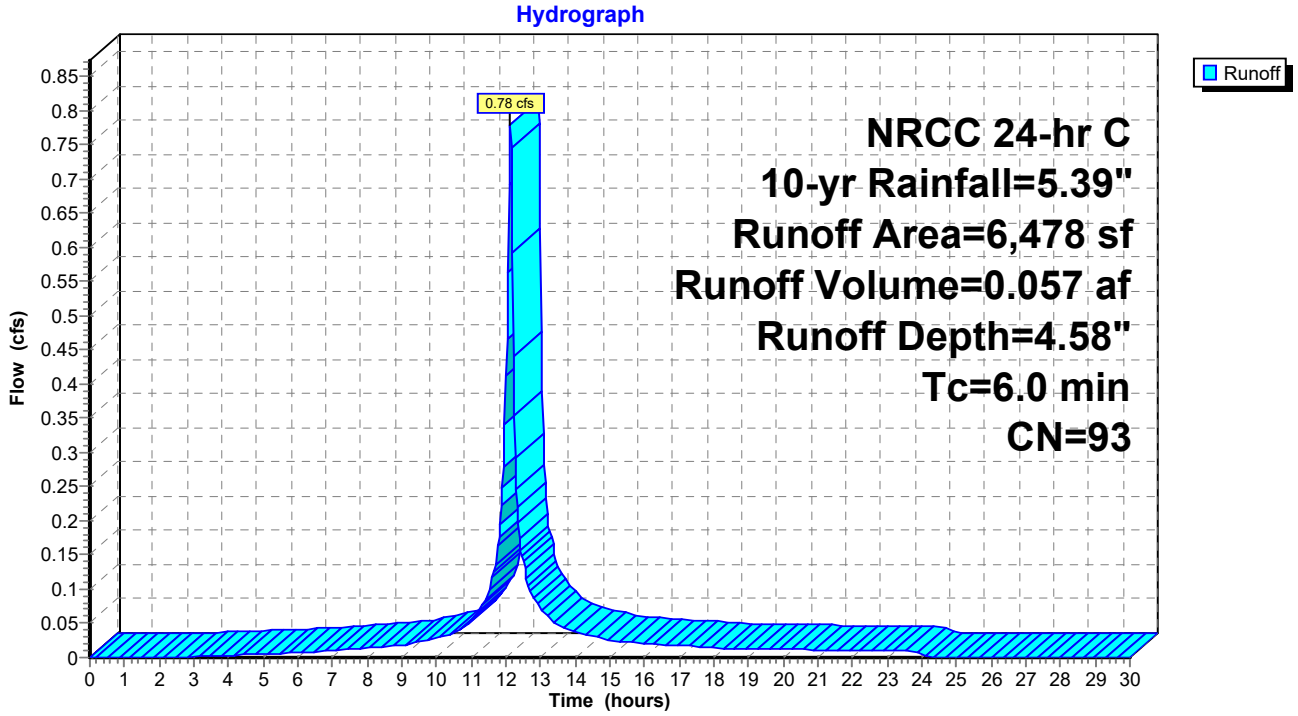
Runoff = 0.78 cfs @ 12.13 hrs, Volume= 0.057 af, Depth= 4.58"
Routed to Pond AP-1 : Norwalk River

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 10-yr Rainfall=5.39"

	Area (sf)	CN	Description
	4,737	98	Paved parking, HSG D
*	1,741	79	Landscaping, Good, HSG D
	6,478	93	Weighted Average
	1,741		26.88% Pervious Area
	4,737		73.12% Impervious Area

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

Subcatchment PR-8: CCB 26A



Summary for Subcatchment PR-9: CCB 27

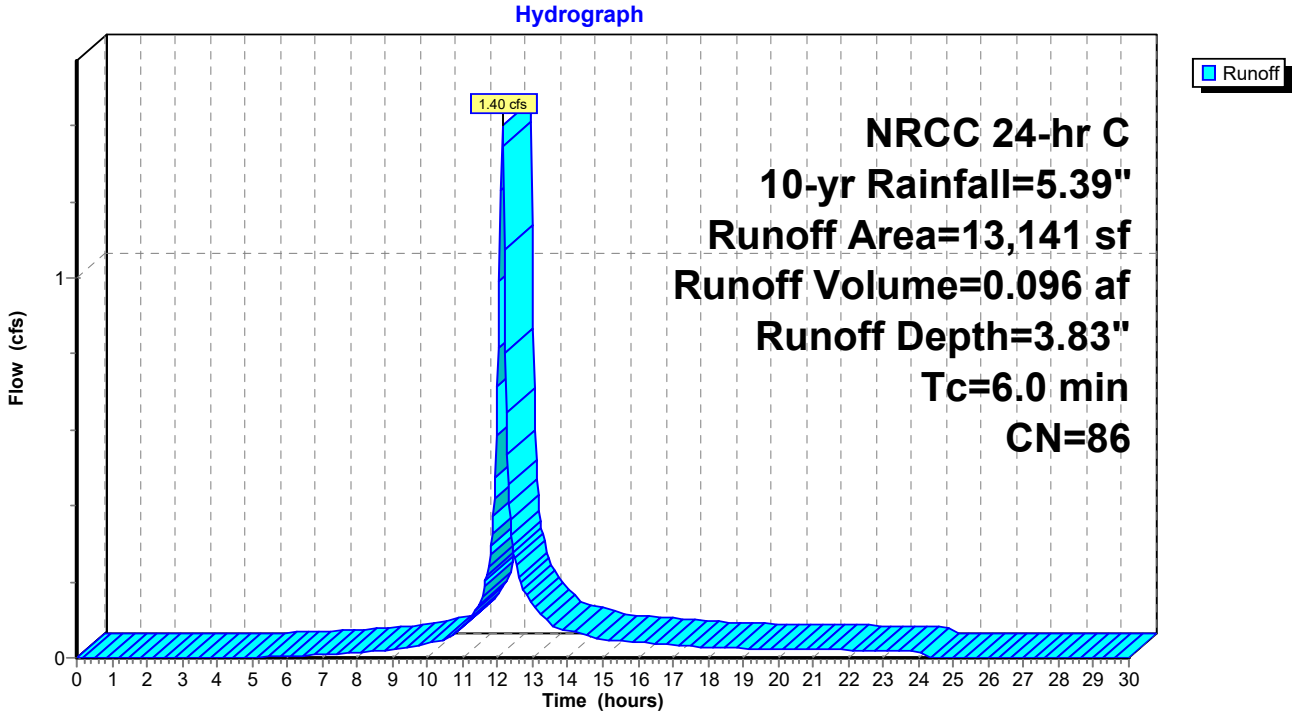
Runoff = 1.40 cfs @ 12.13 hrs, Volume= 0.096 af, Depth= 3.83"
Routed to Pond S-1 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 10-yr Rainfall=5.39"

	Area (sf)	CN	Description
	4,730	98	Paved parking, HSG D
	817	80	>75% Grass cover, Good, HSG D
*	7,594	79	Landscaping, Good, HSG D
	13,141	86	Weighted Average
	8,411		64.01% Pervious Area
	4,730		35.99% Impervious Area

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

Subcatchment PR-9: CCB 27



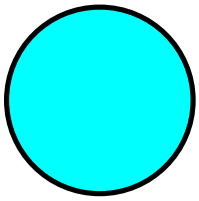
Summary for Reach R1: Roof Leader

Inflow Area = 1.838 ac,100.00% Impervious, Inflow Depth = 5.15" for 10-yr event
Inflow = 10.09 cfs @ 12.13 hrs, Volume= 0.789 af
Outflow = 4.50 cfs @ 11.97 hrs, Volume= 0.789 af, Atten= 55%, Lag= 0.0 min
Routed to Pond S-2 : Subsurface Infiltration System

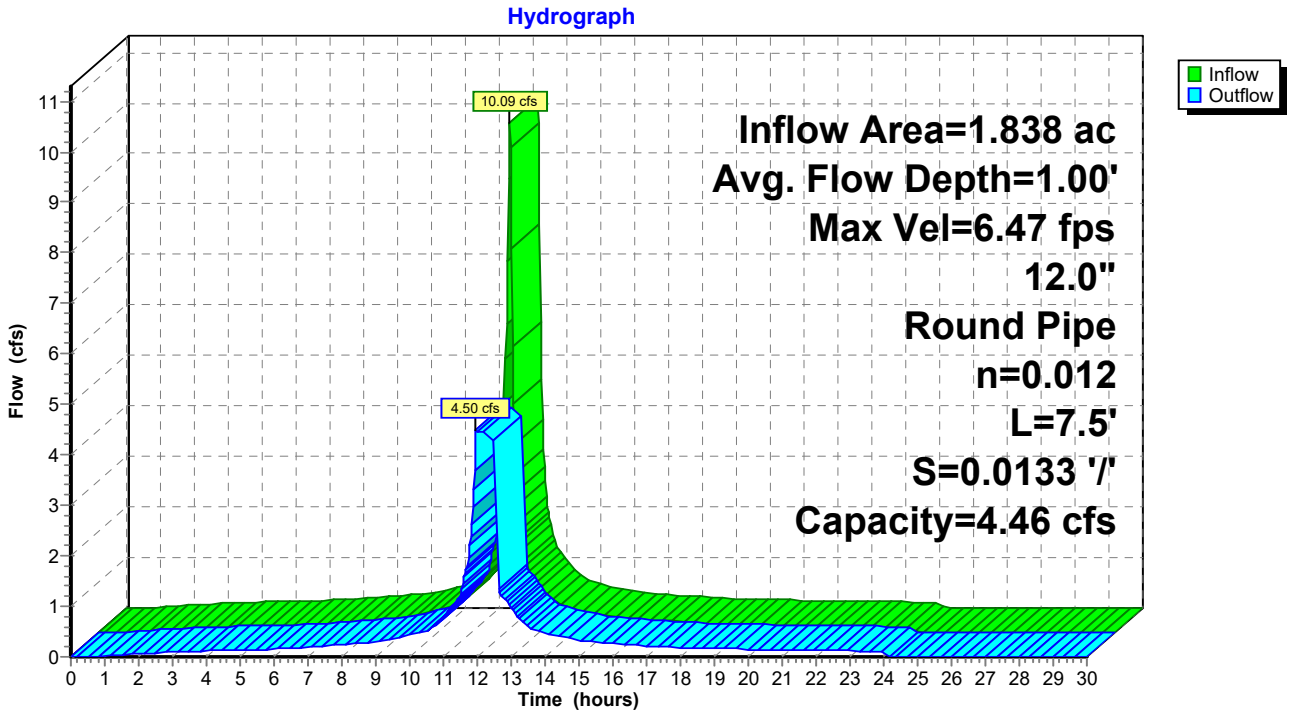
Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Max. Velocity= 6.47 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 3.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 6 cf @ 12.00 hrs
Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.46 cfs

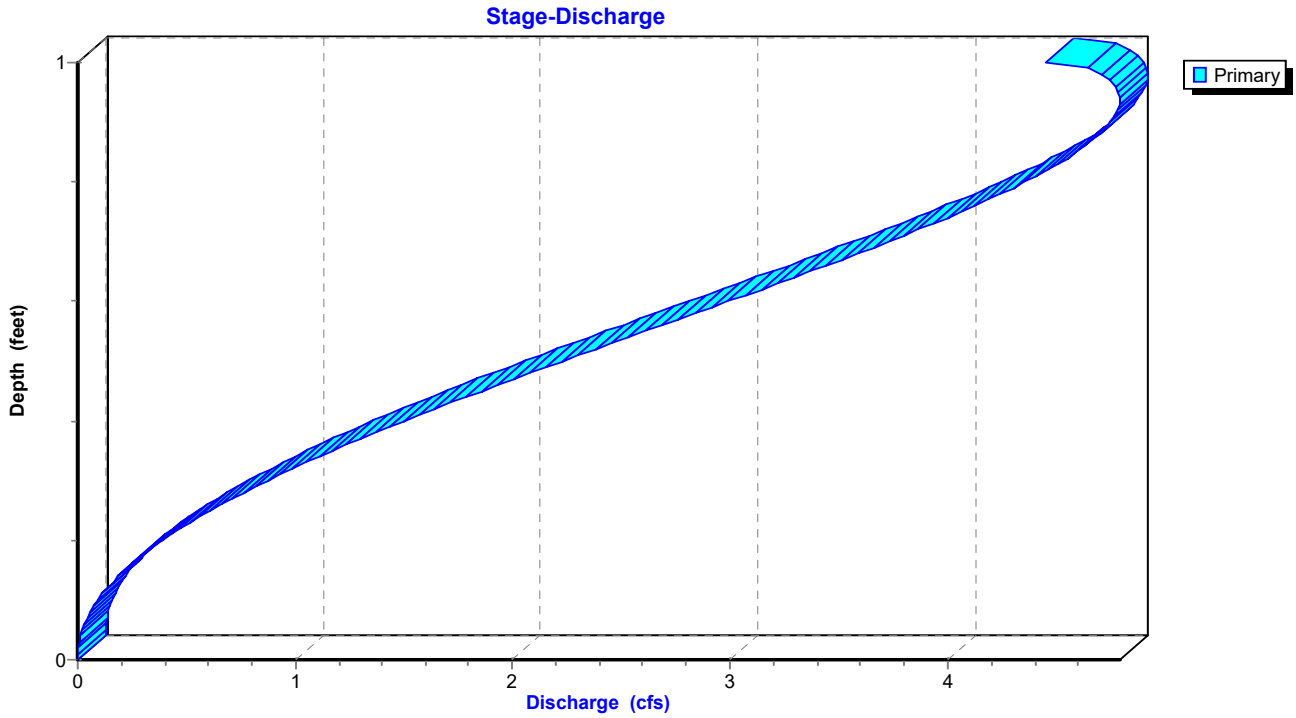
12.0" Round Pipe
n= 0.012
Length= 7.5' Slope= 0.0133 '/'
Inlet Invert= 142.20', Outlet Invert= 142.10'



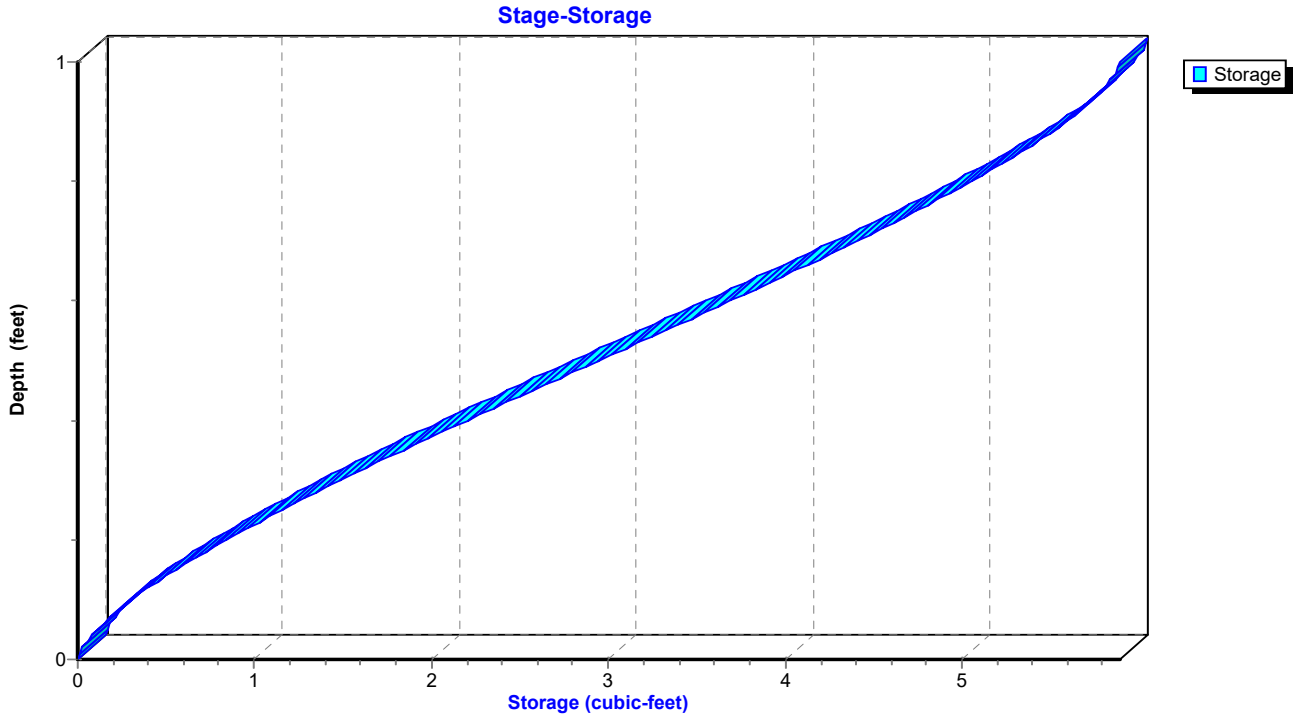
Reach R1: Roof Leader



Reach R1: Roof Leader



Reach R1: Roof Leader

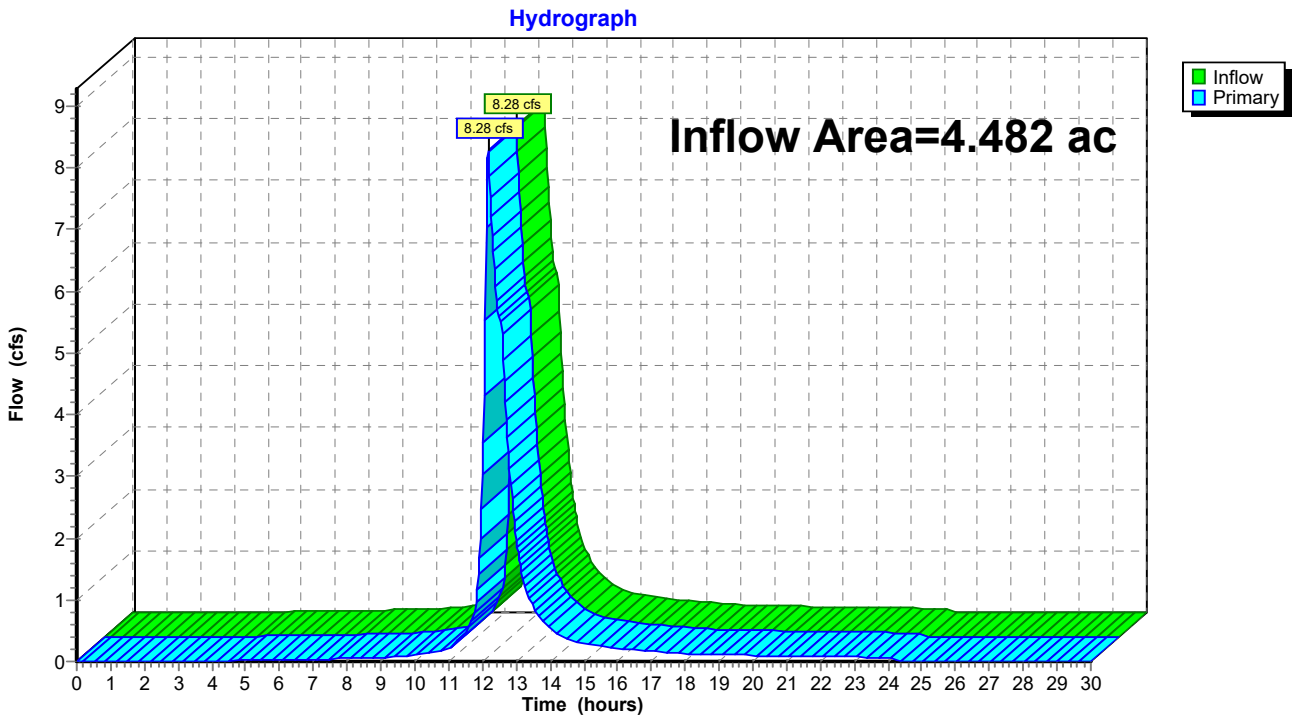


Summary for Pond AP-1: Norwalk River

Inflow Area = 4.482 ac, 66.68% Impervious, Inflow Depth = 1.91" for 10-yr event
Inflow = 8.28 cfs @ 12.17 hrs, Volume= 0.715 af
Primary = 8.28 cfs @ 12.17 hrs, Volume= 0.715 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Pond AP-1: Norwalk River



Summary for Pond AP-2: Front Lawn Rain Garden

Inflow Area = 0.475 ac, 24.65% Impervious, Inflow Depth = 3.62" for 10-yr event
Inflow = 2.06 cfs @ 12.13 hrs, Volume= 0.143 af
Outflow = 0.33 cfs @ 12.59 hrs, Volume= 0.143 af, Atten= 84%, Lag= 28.0 min
Discarded = 0.33 cfs @ 12.59 hrs, Volume= 0.143 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond S-3 : Subsurface Infiltration System

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 148.72' @ 12.59 hrs Surf.Area= 2,595 sf Storage= 1,646 cf

Plug-Flow detention time= 33.7 min calculated for 0.143 af (100% of inflow)
Center-of-Mass det. time= 33.6 min (841.1 - 807.5)

Volume	Invert	Avail.Storage	Storage Description
#1	148.00'	6,536 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

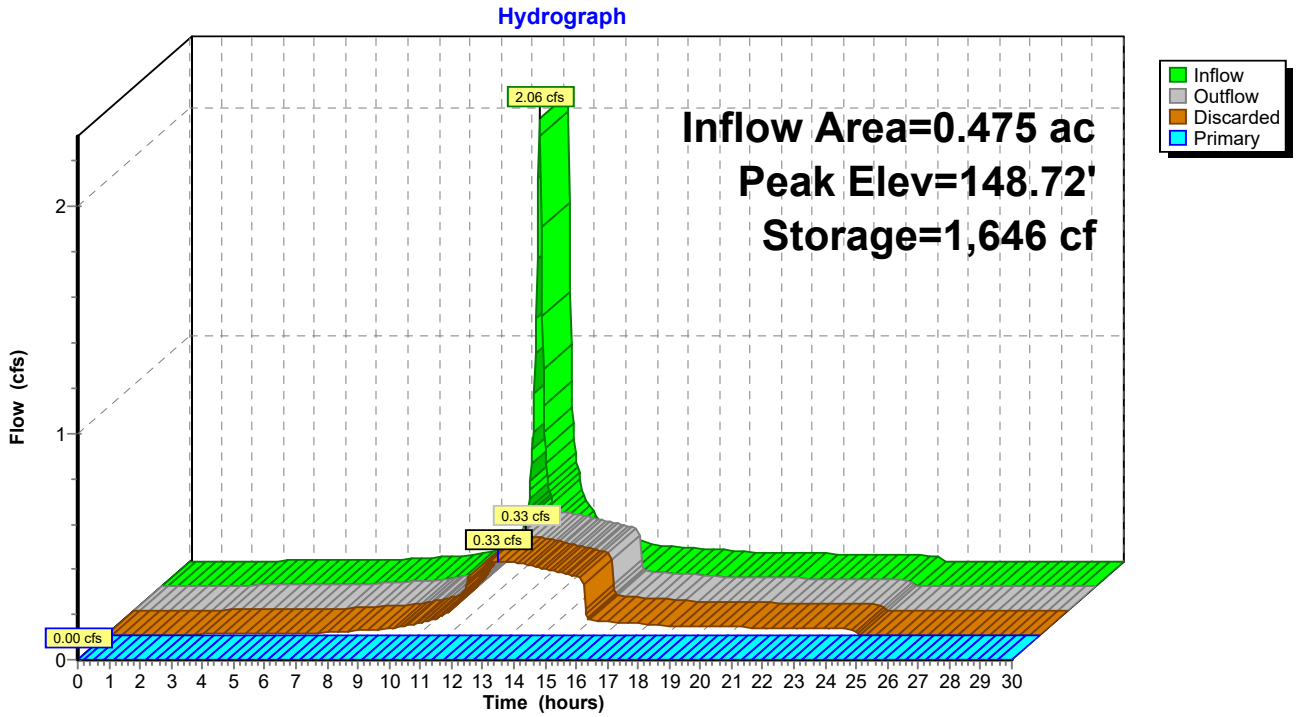
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
148.00	1,985	0	0
149.00	2,833	2,409	2,409
150.00	5,420	4,127	6,536

Device	Routing	Invert	Outlet Devices
#1	Primary	145.90'	**15.0" Round Culvert** L= 34.6' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 145.90' / 145.55' S= 0.0101 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	149.00'	**3.6" x 0.9" Horiz. Yard Drain X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads
#3	Discarded	148.00'	**5.450 in/hr Exfiltration over Surface area**

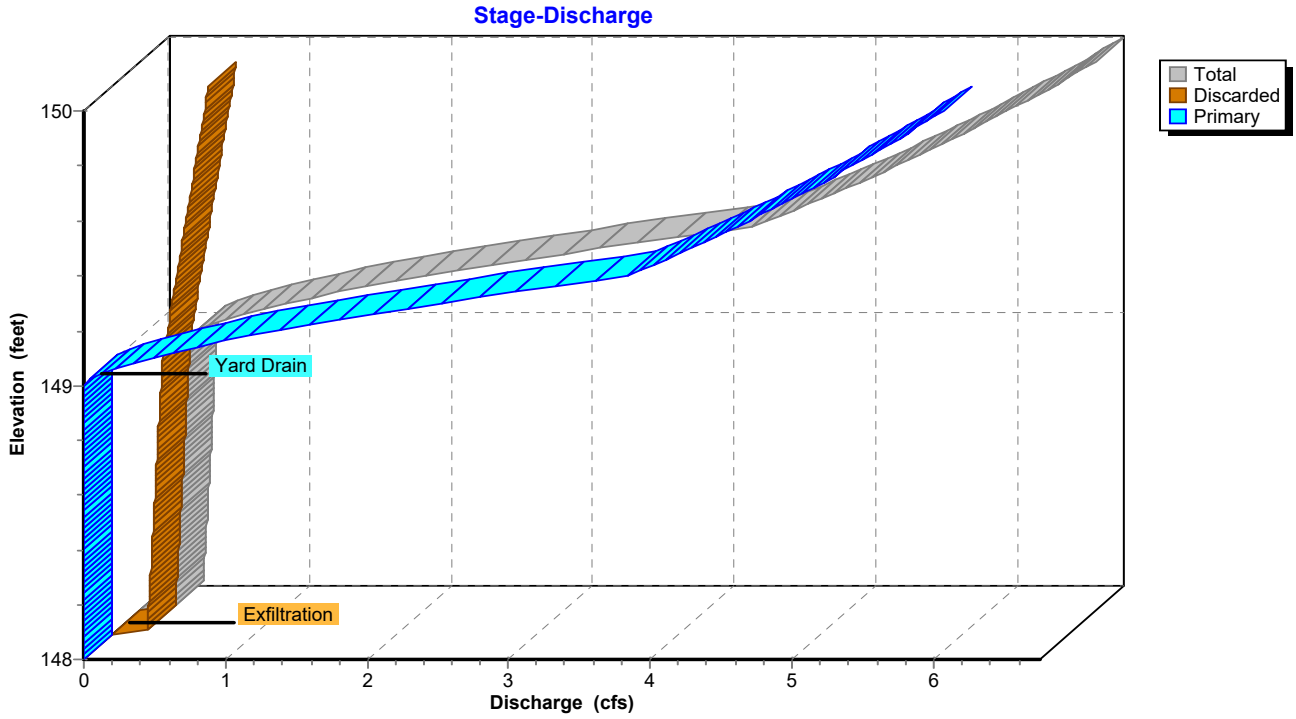
Discarded OutFlow Max=0.33 cfs @ 12.59 hrs HW=148.72' (Free Discharge)
└─**3=Exfiltration** (Exfiltration Controls 0.33 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.00' (Free Discharge)
└─**1=Culvert** (Passes 0.00 cfs of 7.18 cfs potential flow)
└─**2=Yard Drain** (Controls 0.00 cfs)

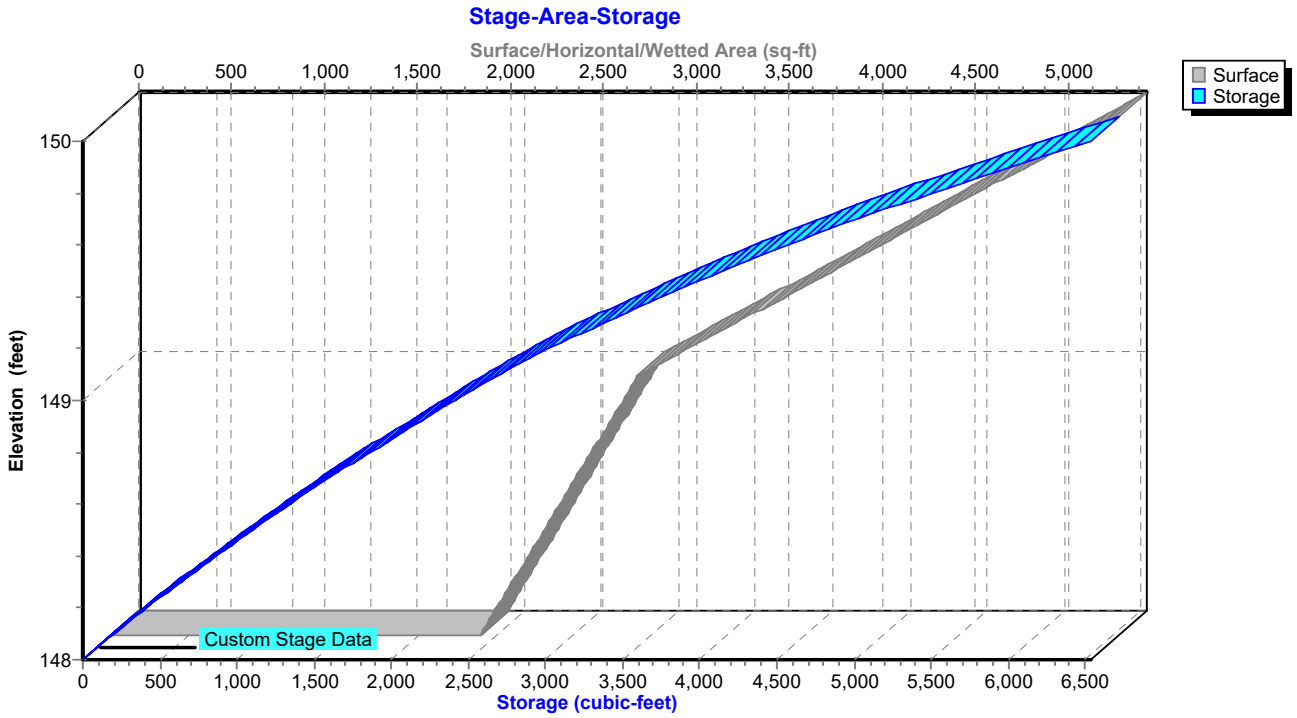
Pond AP-2: Front Lawn Rain Garden



Pond AP-2: Front Lawn Rain Garden



Pond AP-2: Front Lawn Rain Garden

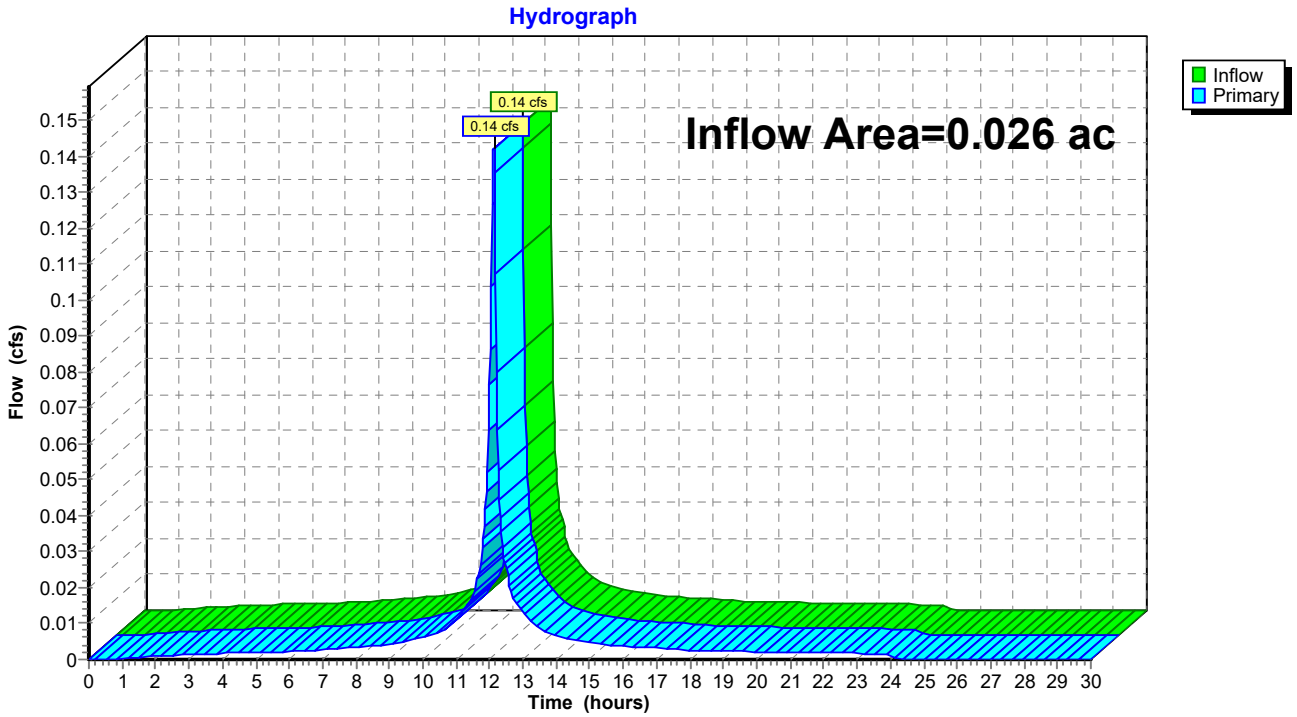


Summary for Pond AP-3: Danbury Road

Inflow Area = 0.026 ac,100.00% Impervious, Inflow Depth = 5.15" for 10-yr event
Inflow = 0.14 cfs @ 12.13 hrs, Volume= 0.011 af
Primary = 0.14 cfs @ 12.13 hrs, Volume= 0.011 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Pond AP-3: Danbury Road

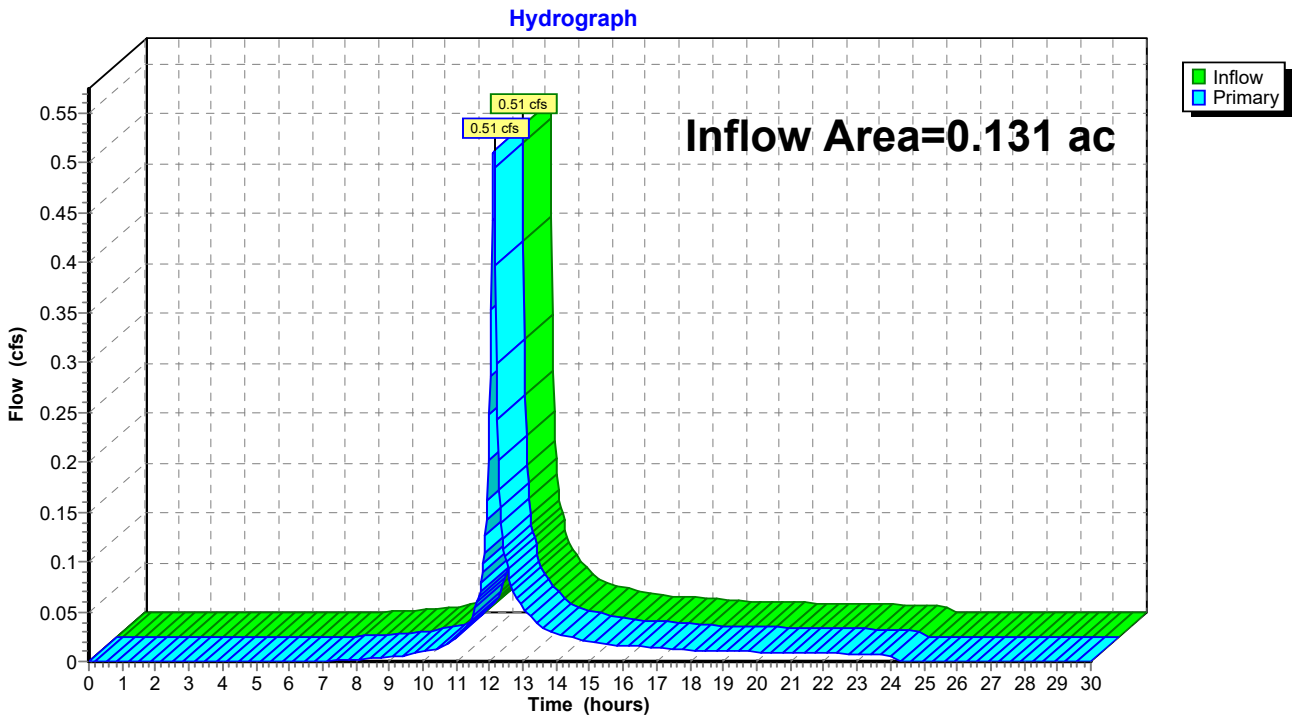


Summary for Pond AP-4: Landscaped Area

Inflow Area = 0.131 ac, 1.63% Impervious, Inflow Depth = 3.14" for 10-yr event
Inflow = 0.51 cfs @ 12.13 hrs, Volume= 0.034 af
Primary = 0.51 cfs @ 12.13 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Pond AP-4: Landscaped Area



Summary for Pond B-1: South Basin

Inflow Area = 0.157 ac, 16.69% Impervious, Inflow Depth = 3.83" for 10-yr event
Inflow = 0.73 cfs @ 12.13 hrs, Volume= 0.050 af
Outflow = 0.71 cfs @ 12.14 hrs, Volume= 0.047 af, Atten= 2%, Lag= 0.9 min
Discarded = 0.00 cfs @ 12.14 hrs, Volume= 0.007 af
Primary = 0.71 cfs @ 12.14 hrs, Volume= 0.040 af
Routed to Pond AP-1 : Norwalk River

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 140.03' @ 12.14 hrs Surf.Area= 461 sf Storage= 262 cf

Plug-Flow detention time= 88.2 min calculated for 0.047 af (94% of inflow)
Center-of-Mass det. time= 53.7 min (862.2 - 808.5)

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	962 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

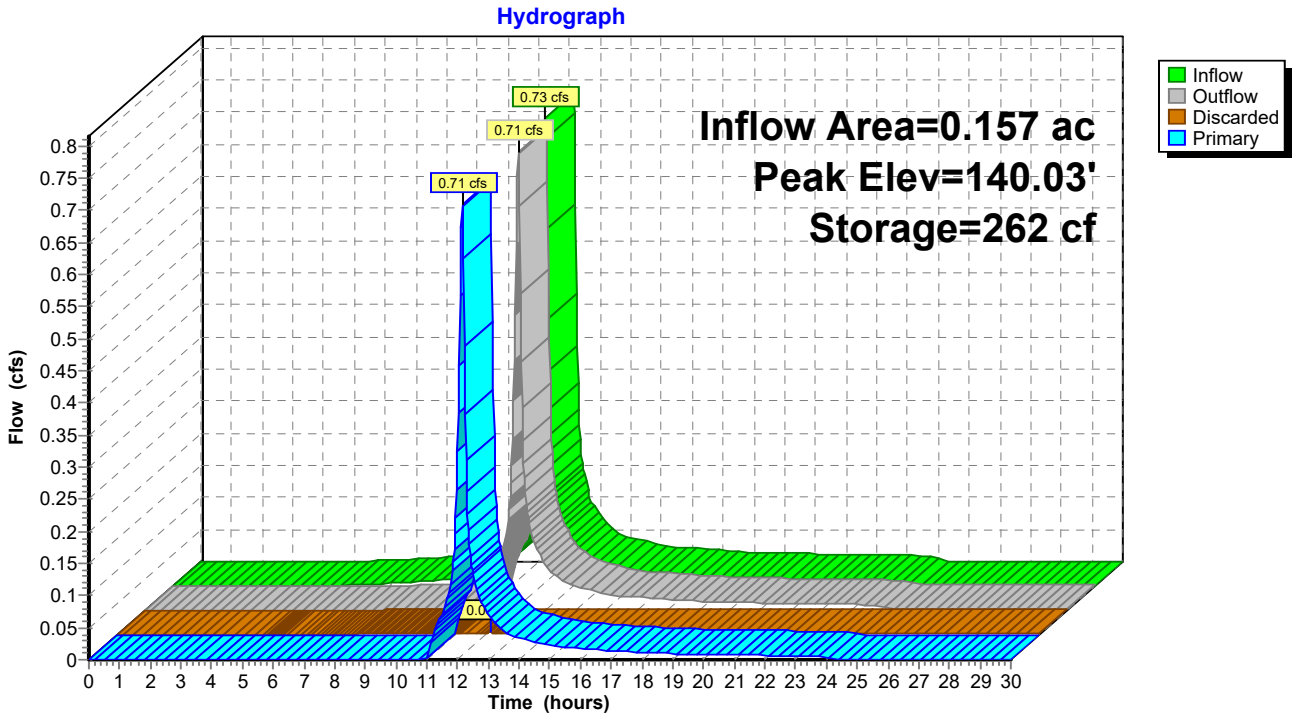
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	52	0	0
140.00	446	249	249
141.00	979	713	962

Device	Routing	Invert	Outlet Devices
#1	Primary	138.00'	**8.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 138.00' / 137.60' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf
#2	Device 1	139.90'	**3.6" x 0.9" Horiz. Yard Drain X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads
#3	Discarded	139.00'	**0.400 in/hr Exfiltration over Surface area**

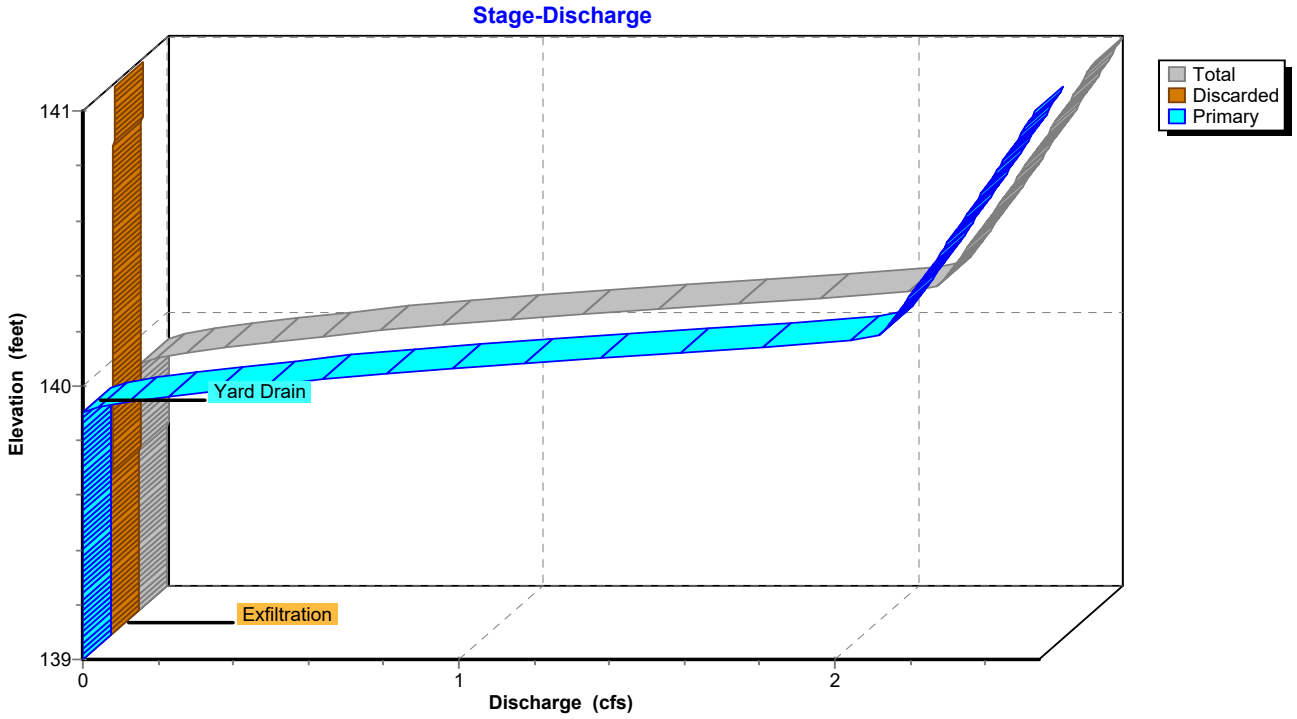
Discarded OutFlow Max=0.00 cfs @ 12.14 hrs HW=140.03' (Free Discharge)
└─**3=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.70 cfs @ 12.14 hrs HW=140.03' (Free Discharge)
└─**1=Culvert** (Passes 0.70 cfs of 2.03 cfs potential flow)
└─**2=Yard Drain** (Weir Controls 0.70 cfs @ 1.17 fps)

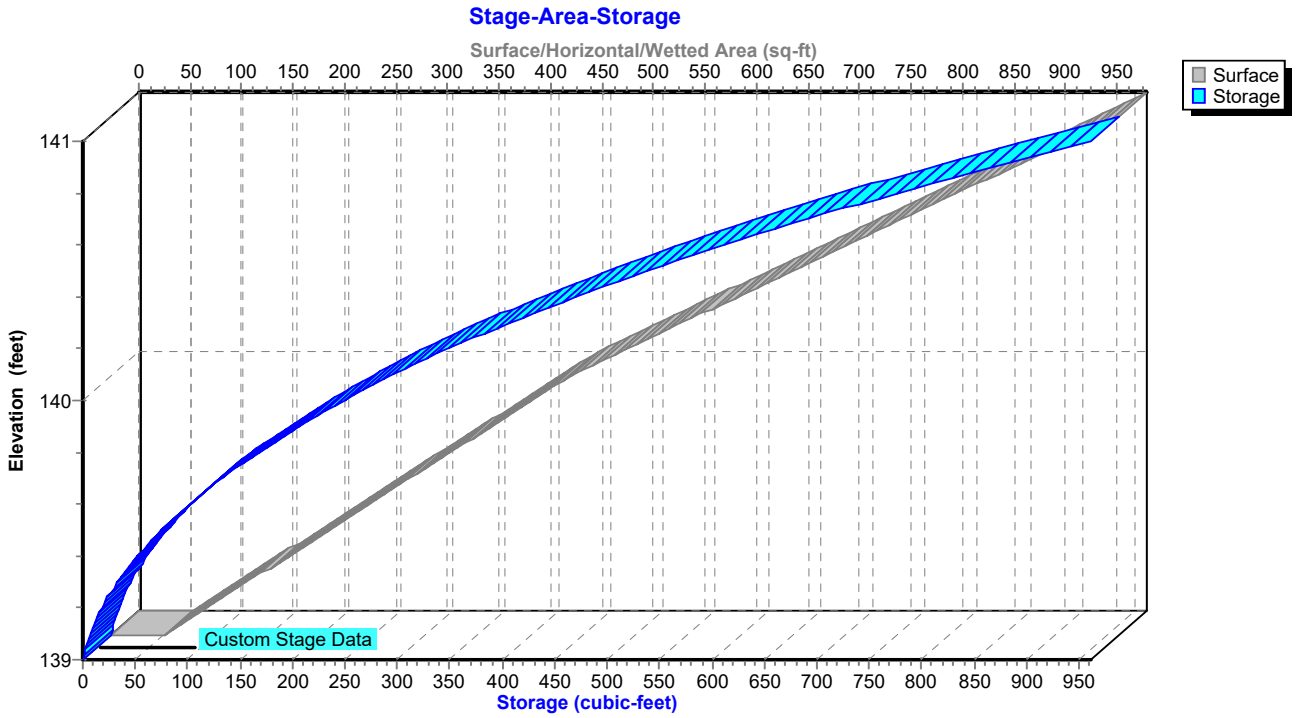
Pond B-1: South Basin



Pond B-1: South Basin



Pond B-1: South Basin



Summary for Pond B-2: North Basin

Inflow Area = 0.154 ac, 7.18% Impervious, Inflow Depth = 3.63" for 10-yr event
Inflow = 0.68 cfs @ 12.13 hrs, Volume= 0.047 af
Outflow = 0.04 cfs @ 13.64 hrs, Volume= 0.047 af, Atten= 94%, Lag= 90.9 min
Discarded = 0.04 cfs @ 13.64 hrs, Volume= 0.047 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond AP-1 : Norwalk River

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 139.75' @ 13.64 hrs Surf.Area= 1,391 sf Storage= 924 cf

Plug-Flow detention time= 224.0 min calculated for 0.046 af (100% of inflow)
Center-of-Mass det. time= 223.9 min (1,039.0 - 815.1)

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	4,090 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

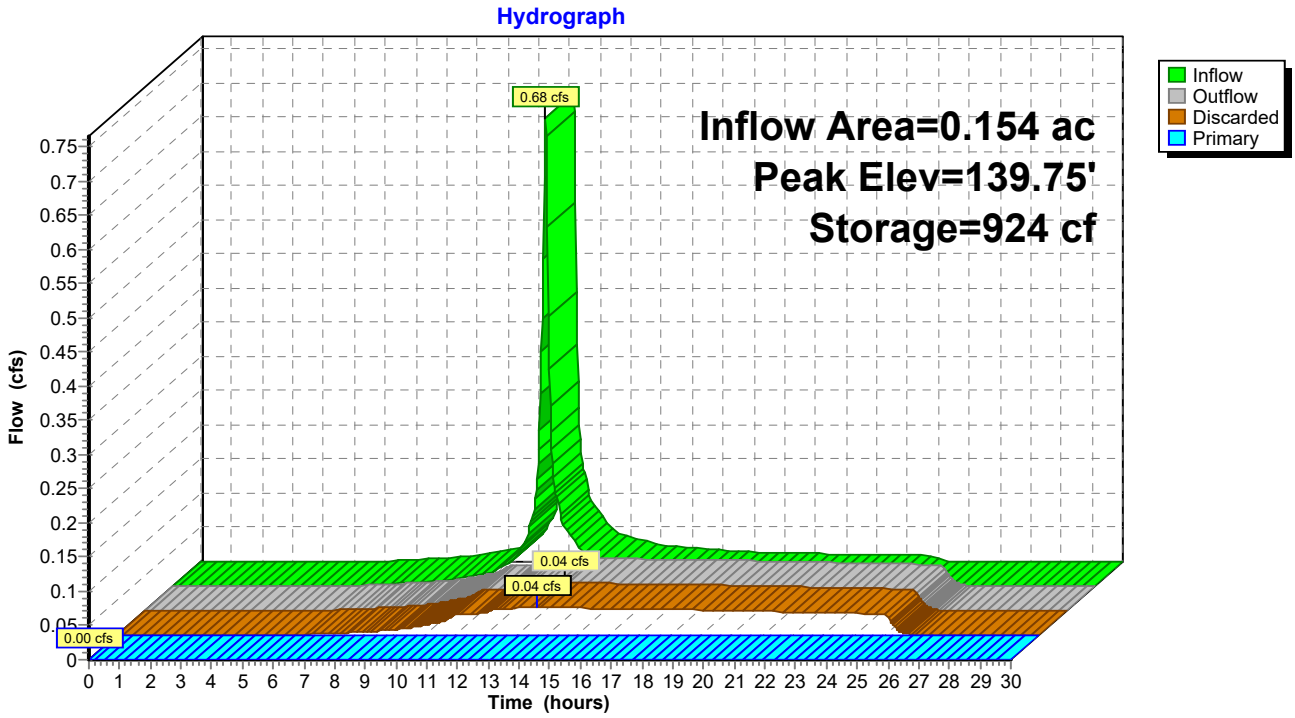
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	1,058	0	0
140.00	1,499	1,279	1,279
141.00	1,995	1,747	3,026
141.50	2,263	1,065	4,090

Device	Routing	Invert	Outlet Devices
#1	Primary	139.00'	**10.0" Round Culvert** L= 22.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 139.00' / 138.80' S= 0.0091 '/' Cc= 0.900 n= 0.012, Flow Area= 0.55 sf
#2	Device 1	140.50'	**3.6" x 0.9" Horiz. Yard Drain X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads
#3	Discarded	139.00'	**1.250 in/hr Exfiltration over Surface area**

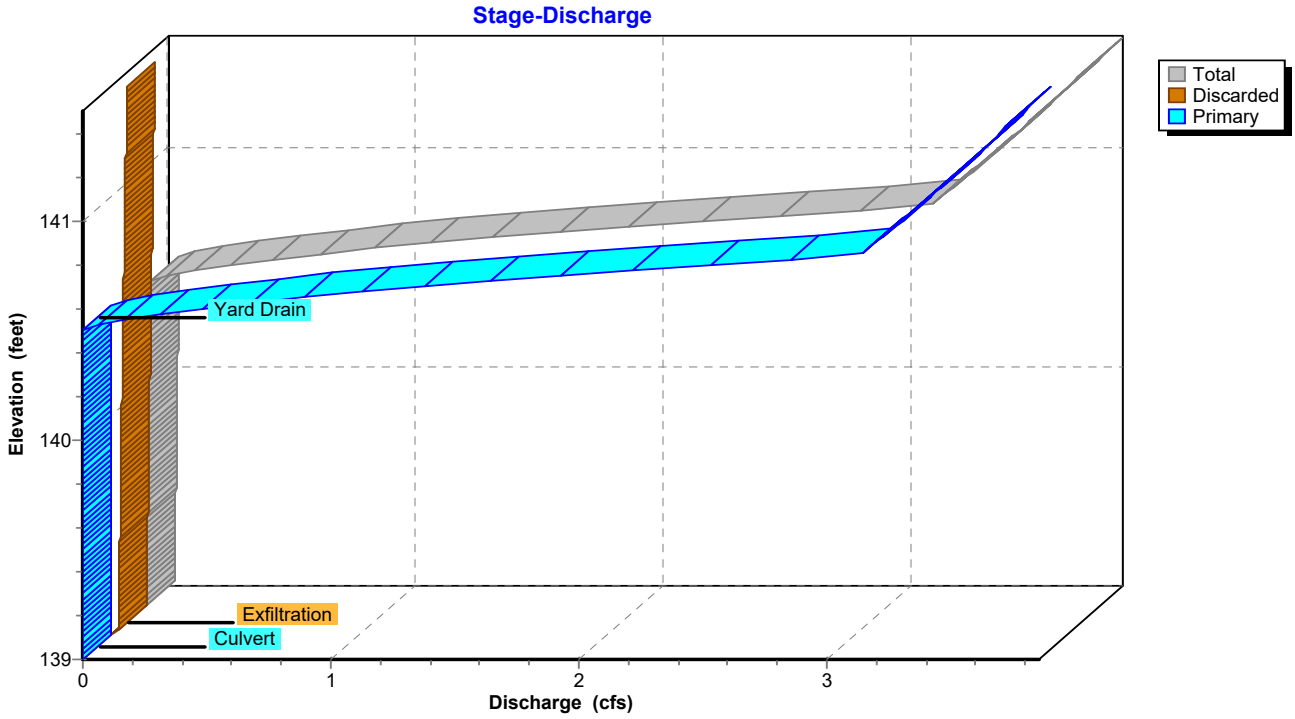
Discarded OutFlow Max=0.04 cfs @ 13.64 hrs HW=139.75' (Free Discharge)
└─**3=Exfiltration** (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=139.00' (Free Discharge)
└─**1=Culvert** (Controls 0.00 cfs)
└─**2=Yard Drain** (Controls 0.00 cfs)

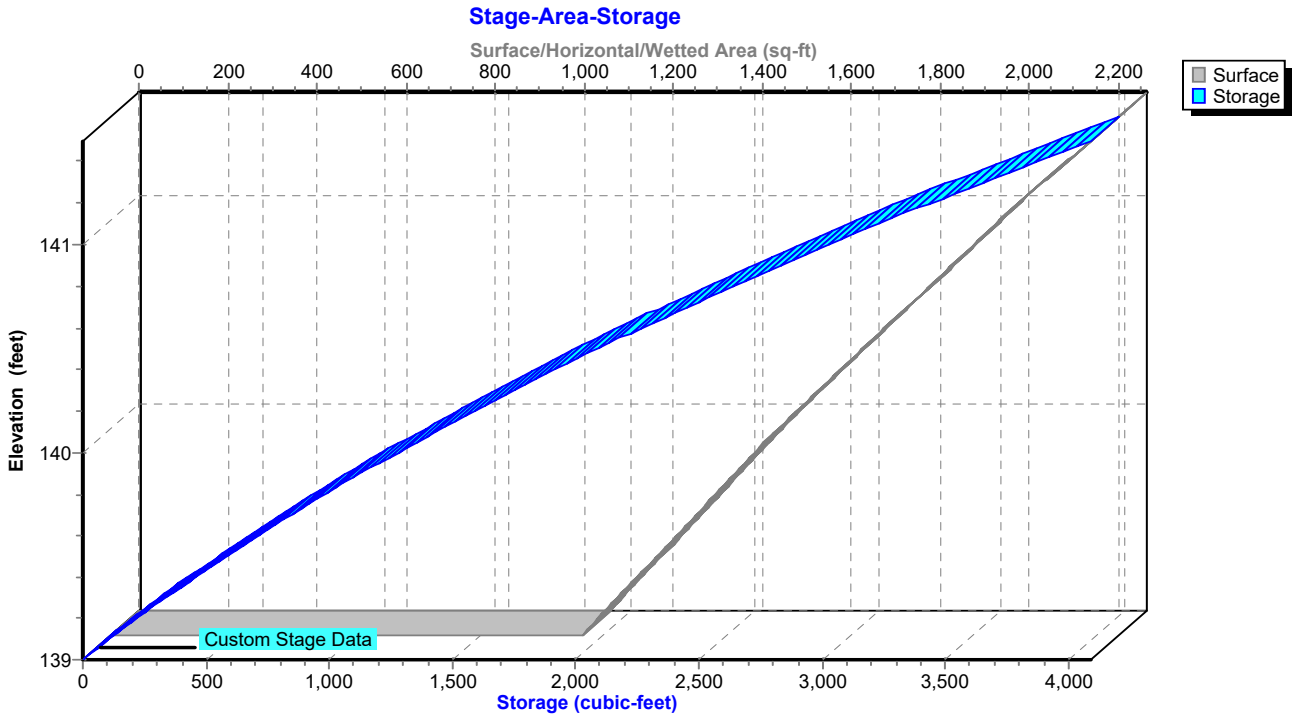
Pond B-2: North Basin



Pond B-2: North Basin



Pond B-2: North Basin



Summary for Pond S-1: Subsurface Infiltration System

Inflow Area = 0.554 ac, 58.45% Impervious, Inflow Depth = 4.30" for 10-yr event
Inflow = 2.76 cfs @ 12.13 hrs, Volume= 0.199 af
Outflow = 2.02 cfs @ 12.19 hrs, Volume= 0.168 af, Atten= 27%, Lag= 3.5 min
Discarded = 0.02 cfs @ 5.58 hrs, Volume= 0.034 af
Primary = 2.00 cfs @ 12.19 hrs, Volume= 0.134 af
Routed to Pond AP-1 : Norwalk River

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 143.60' @ 12.19 hrs Surf.Area= 0.039 ac Storage= 0.058 af

Plug-Flow detention time= 155.1 min calculated for 0.168 af (84% of inflow)
Center-of-Mass det. time= 83.7 min (869.9 - 786.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	141.35'	0.036 af	**11.00'W x 153.14'L x 3.50'H Field A** 0.135 af Overall - 0.044 af Embedded = 0.091 af x 40.0% Voids
#2A	141.85'	0.044 af	**ADS_StormTech SC-740 +Cap** x 42 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 42 Chambers in 2 Rows
		0.081 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	142.70'	**12.0" Round Culvert** L= 114.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 142.70' / 141.56' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	142.85'	**6.0" Vert. Orifice X 3.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	144.25'	**5.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)
#4	Discarded	141.35'	**0.400 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.02 cfs @ 5.58 hrs HW=141.39' (Free Discharge)
└─**4=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=1.99 cfs @ 12.19 hrs HW=143.59' (Free Discharge)
└─**1=Culvert** (Passes 1.99 cfs of 2.38 cfs potential flow)
  ├─**2=Orifice** (Orifice Controls 1.99 cfs @ 3.38 fps)
  └─**3=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Pond S-1: Subsurface Infiltration System - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

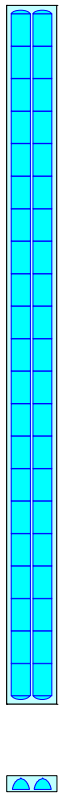
21 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 151.14' Row Length +12.0" End Stone x 2 = 153.14' Base Length
2 Rows x 51.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 11.00' Base Width
6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

42 Chambers x 45.9 cf = 1,929.5 cf Chamber Storage

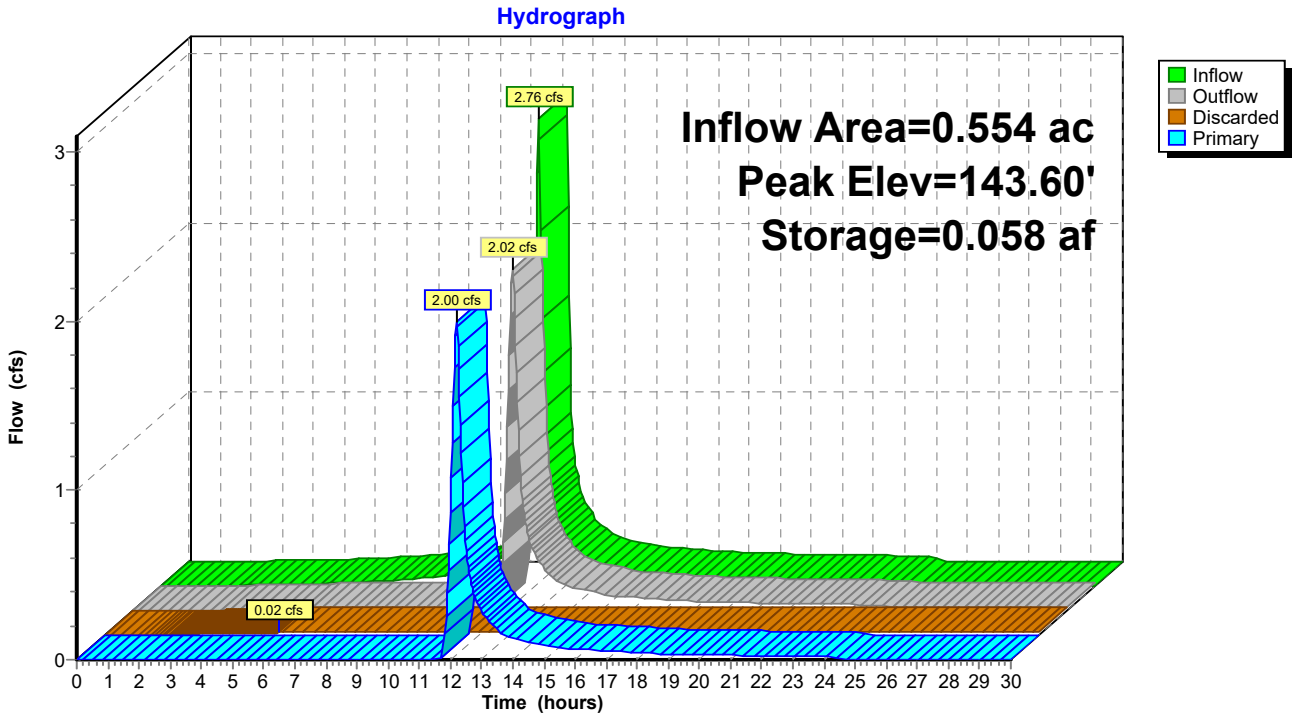
5,895.8 cf Field - 1,929.5 cf Chambers = 3,966.3 cf Stone x 40.0% Voids = 1,586.5 cf Stone Storage

Chamber Storage + Stone Storage = 3,516.0 cf = 0.081 af
Overall Storage Efficiency = 59.6%
Overall System Size = 153.14' x 11.00' x 3.50'

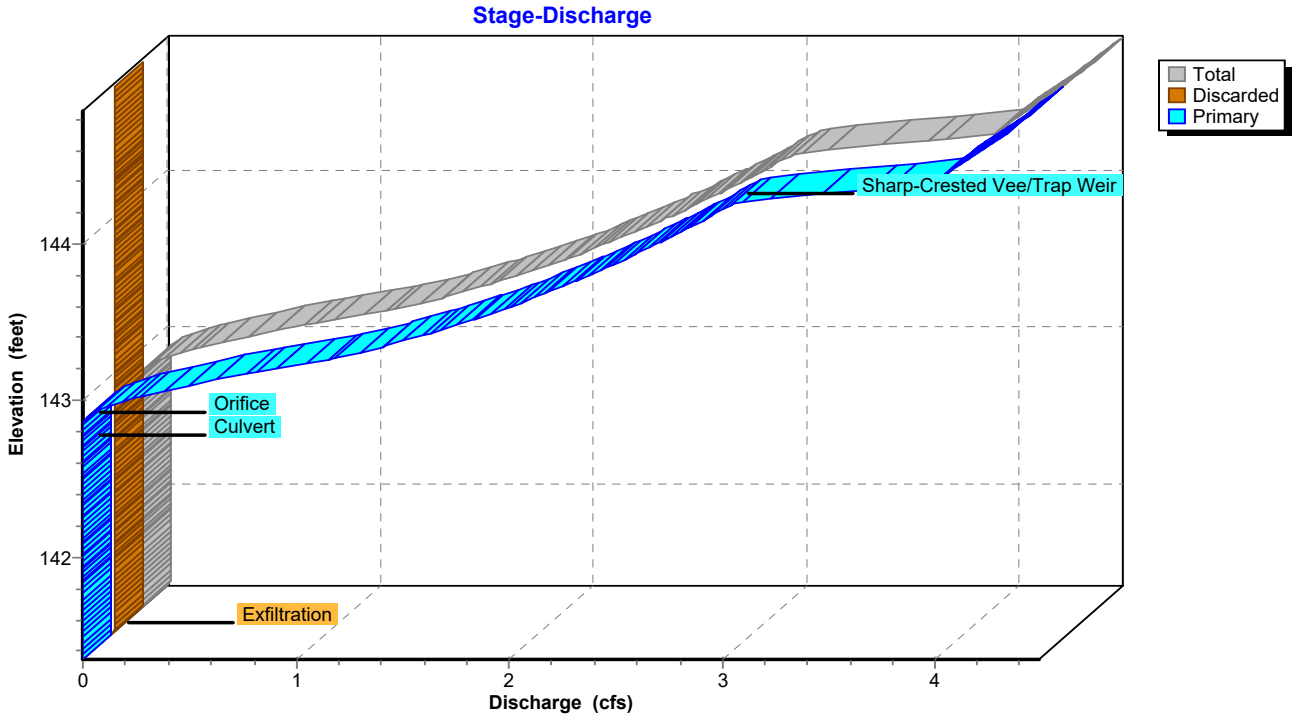
42 Chambers
218.4 cy Field
146.9 cy Stone



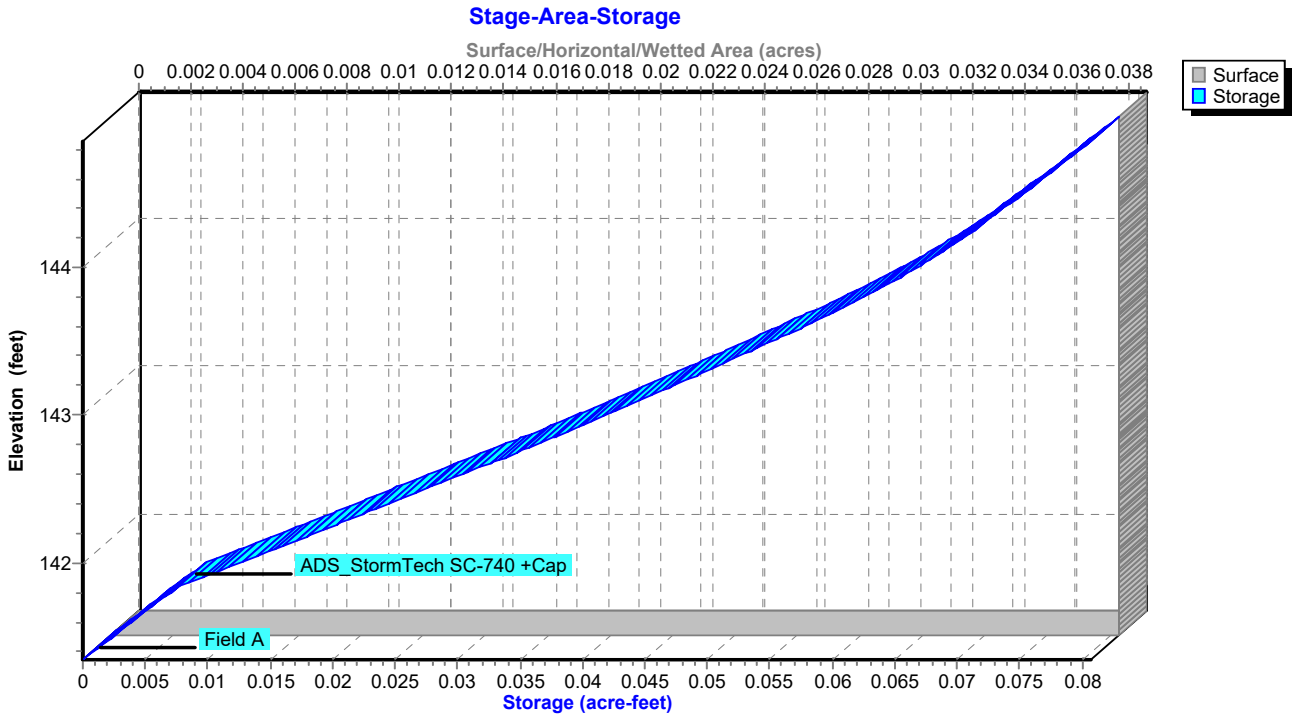
Pond S-1: Subsurface Infiltration System



Pond S-1: Subsurface Infiltration System



Pond S-1: Subsurface Infiltration System



Summary for Pond S-2: Subsurface Infiltration System

Inflow Area = 1.838 ac,100.00% Impervious, Inflow Depth = 5.15" for 10-yr event
Inflow = 4.50 cfs @ 11.97 hrs, Volume= 0.789 af
Outflow = 4.03 cfs @ 12.57 hrs, Volume= 0.789 af, Atten= 11%, Lag= 36.1 min
Discarded = 0.50 cfs @ 10.44 hrs, Volume= 0.580 af
Primary = 3.53 cfs @ 12.57 hrs, Volume= 0.209 af
Routed to Pond AP-1 : Norwalk River

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 144.77' @ 12.57 hrs Surf.Area= 0.091 ac Storage= 0.186 af

Plug-Flow detention time= 58.6 min calculated for 0.788 af (100% of inflow)
Center-of-Mass det. time= 58.5 min (808.2 - 749.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	141.50'	0.100 af	**30.00'W x 131.78'L x 4.00'H Field A** 0.363 af Overall - 0.114 af Embedded = 0.249 af x 40.0% Voids
#2A	142.50'	0.114 af	**ADS_StormTech SC-740 +Cap** x 108 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 108 Chambers in 6 Rows
		0.214 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	143.15'	**15.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 143.15' / 142.69' S= 0.0061 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	143.64'	**7.0" Vert. Orifice X 3.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	144.90'	**5.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)
#4	Discarded	141.50'	**5.450 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.50 cfs @ 10.44 hrs HW=141.54' (Free Discharge)
└─**4=Exfiltration** (Exfiltration Controls 0.50 cfs)

Primary OutFlow Max=3.52 cfs @ 12.57 hrs HW=144.77' (Free Discharge)
└─**1=Culvert** (Passes 3.52 cfs of 5.43 cfs potential flow)
  ├─**2=Orifice** (Orifice Controls 3.52 cfs @ 4.40 fps)
  └─**3=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Pond S-2: Subsurface Infiltration System - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

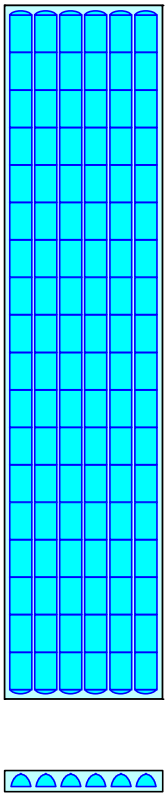
18 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 129.78' Row Length +12.0" End Stone x 2 = 131.78' Base Length
6 Rows x 51.0" Wide + 6.0" Spacing x 5 + 12.0" Side Stone x 2 = 30.00' Base Width
12.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

108 Chambers x 45.9 cf = 4,961.5 cf Chamber Storage

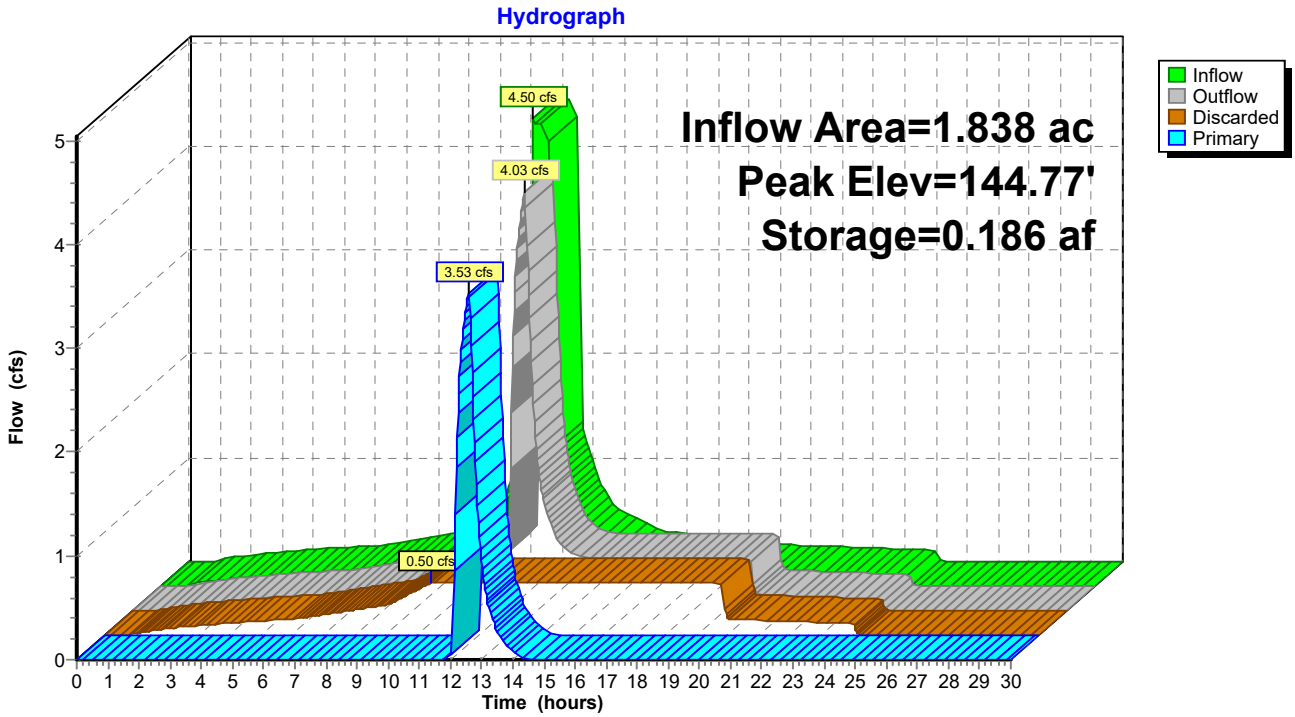
15,813.2 cf Field - 4,961.5 cf Chambers = 10,851.7 cf Stone x 40.0% Voids = 4,340.7 cf Stone Storage

Chamber Storage + Stone Storage = 9,302.2 cf = 0.214 af
Overall Storage Efficiency = 58.8%
Overall System Size = 131.78' x 30.00' x 4.00'

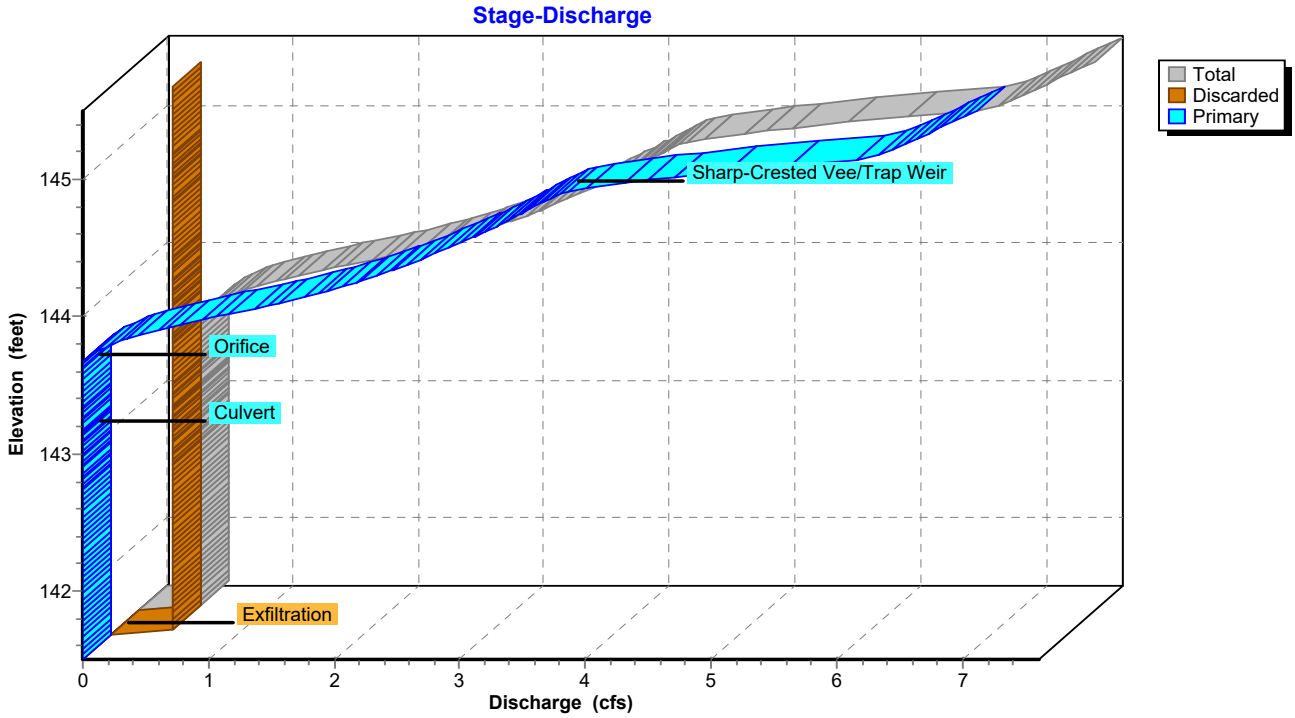
108 Chambers
585.7 cy Field
401.9 cy Stone



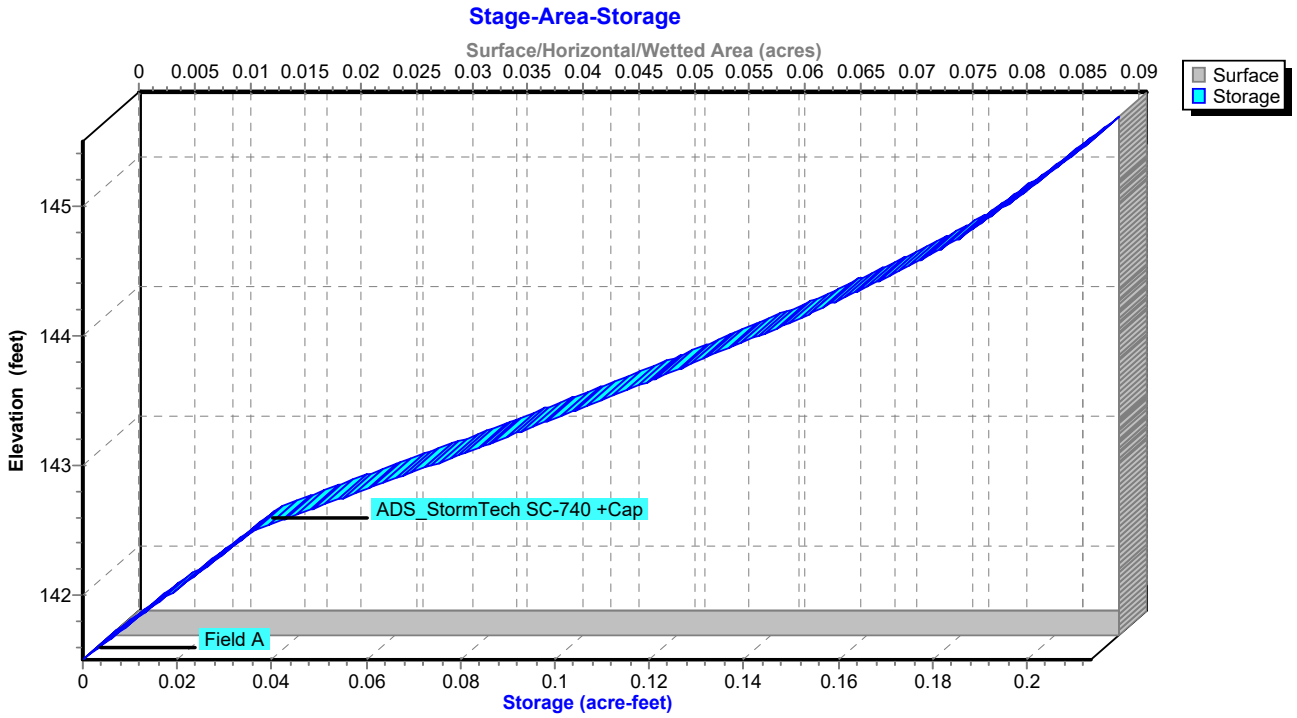
Pond S-2: Subsurface Infiltration System



Pond S-2: Subsurface Infiltration System



Pond S-2: Subsurface Infiltration System



Summary for Pond S-3: Subsurface Infiltration System

Inflow Area = 1.035 ac, 47.94% Impervious, Inflow Depth = 2.51" for 10-yr event
Inflow = 2.94 cfs @ 12.13 hrs, Volume= 0.217 af
Outflow = 1.33 cfs @ 12.24 hrs, Volume= 0.189 af, Atten= 55%, Lag= 7.0 min
Discarded = 0.05 cfs @ 8.13 hrs, Volume= 0.111 af
Primary = 1.28 cfs @ 12.24 hrs, Volume= 0.078 af
Routed to Pond AP-1 : Norwalk River

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 141.93' @ 12.24 hrs Surf.Area= 0.052 ac Storage= 0.079 af

Plug-Flow detention time= 234.8 min calculated for 0.189 af (87% of inflow)
Center-of-Mass det. time= 172.3 min (946.0 - 773.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	139.70'	0.047 af	**30.00'W x 74.82'L x 3.50'H Field A** 0.180 af Overall - 0.063 af Embedded = 0.117 af x 40.0% Voids
#2A	140.20'	0.063 af	**ADS_StormTech SC-740 +Cap** x 60 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 60 Chambers in 6 Rows
		0.110 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	141.14'	**12.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 141.14' / 140.49' S= 0.0087 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	141.40'	**7.0" Vert. Orifice X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	142.60'	**5.0' long Weir Wall** Cv= 2.62 (C= 3.28)
#4	Discarded	139.70'	**1.050 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.05 cfs @ 8.13 hrs HW=139.74' (Free Discharge)
└─**4=Exfiltration** (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=1.27 cfs @ 12.24 hrs HW=141.93' (Free Discharge)
└─**1=Culvert** (Passes 1.27 cfs of 2.00 cfs potential flow)
  ├─**2=Orifice** (Orifice Controls 1.27 cfs @ 2.49 fps)
  └─**3=Weir Wall** (Controls 0.00 cfs)

Pond S-3: Subsurface Infiltration System - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

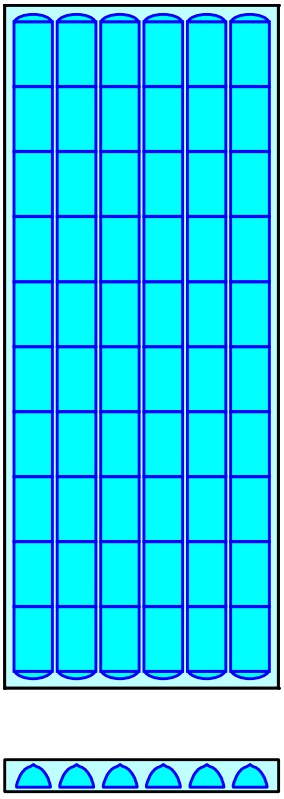
10 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 72.82' Row Length +12.0" End Stone x 2 = 74.82' Base Length
6 Rows x 51.0" Wide + 6.0" Spacing x 5 + 12.0" Side Stone x 2 = 30.00' Base Width
6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

60 Chambers x 45.9 cf = 2,756.4 cf Chamber Storage

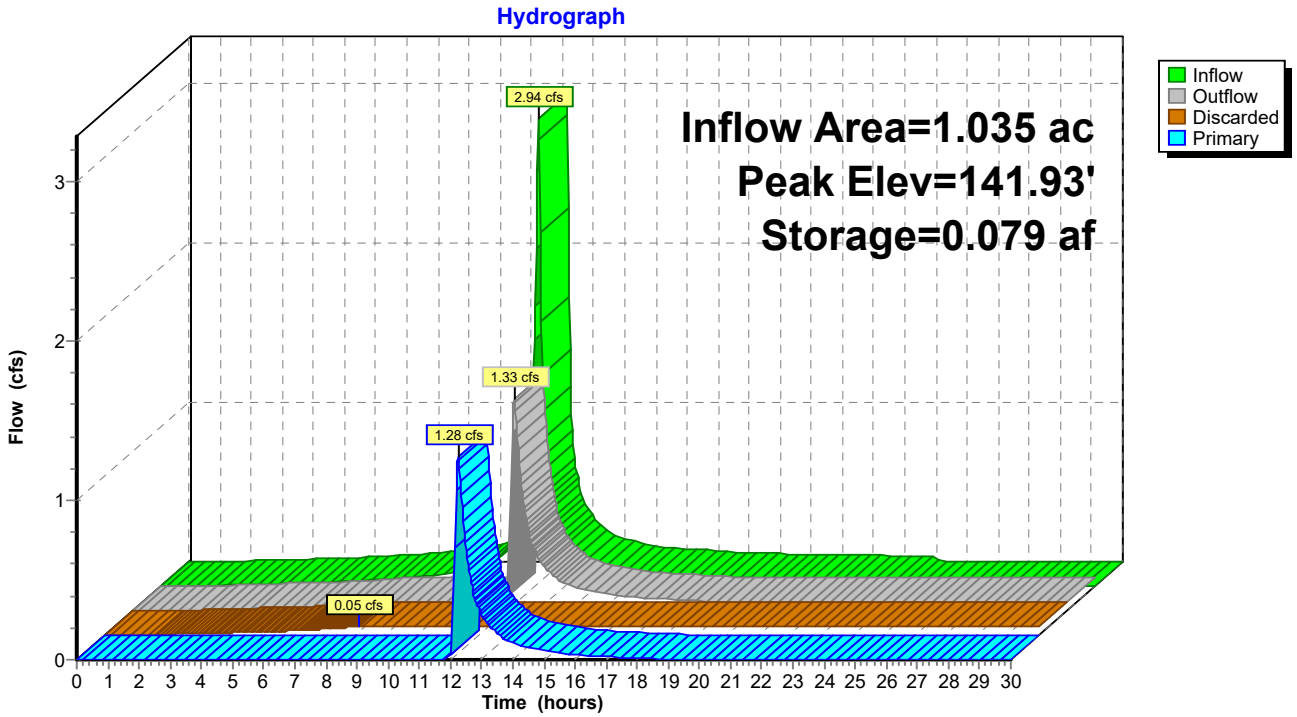
7,855.8 cf Field - 2,756.4 cf Chambers = 5,099.3 cf Stone x 40.0% Voids = 2,039.7 cf Stone Storage

Chamber Storage + Stone Storage = 4,796.1 cf = 0.110 af
Overall Storage Efficiency = 61.1%
Overall System Size = 74.82' x 30.00' x 3.50'

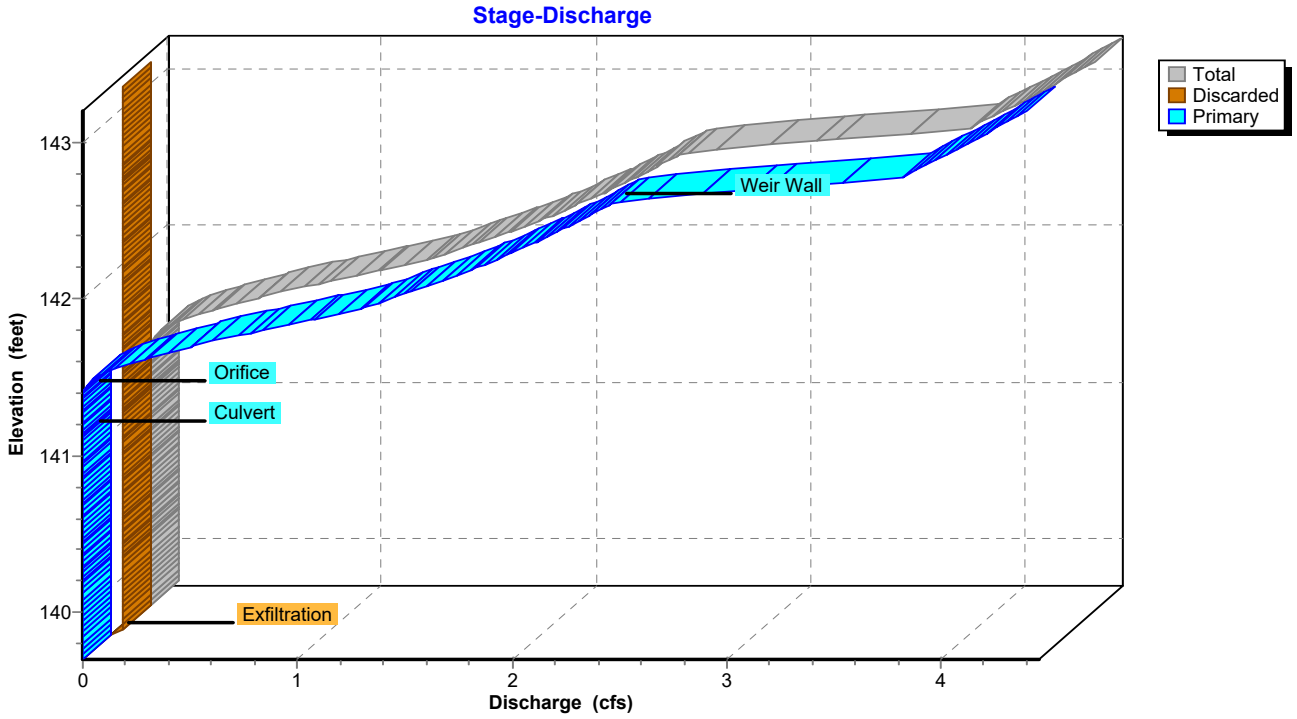
60 Chambers
291.0 cy Field
188.9 cy Stone



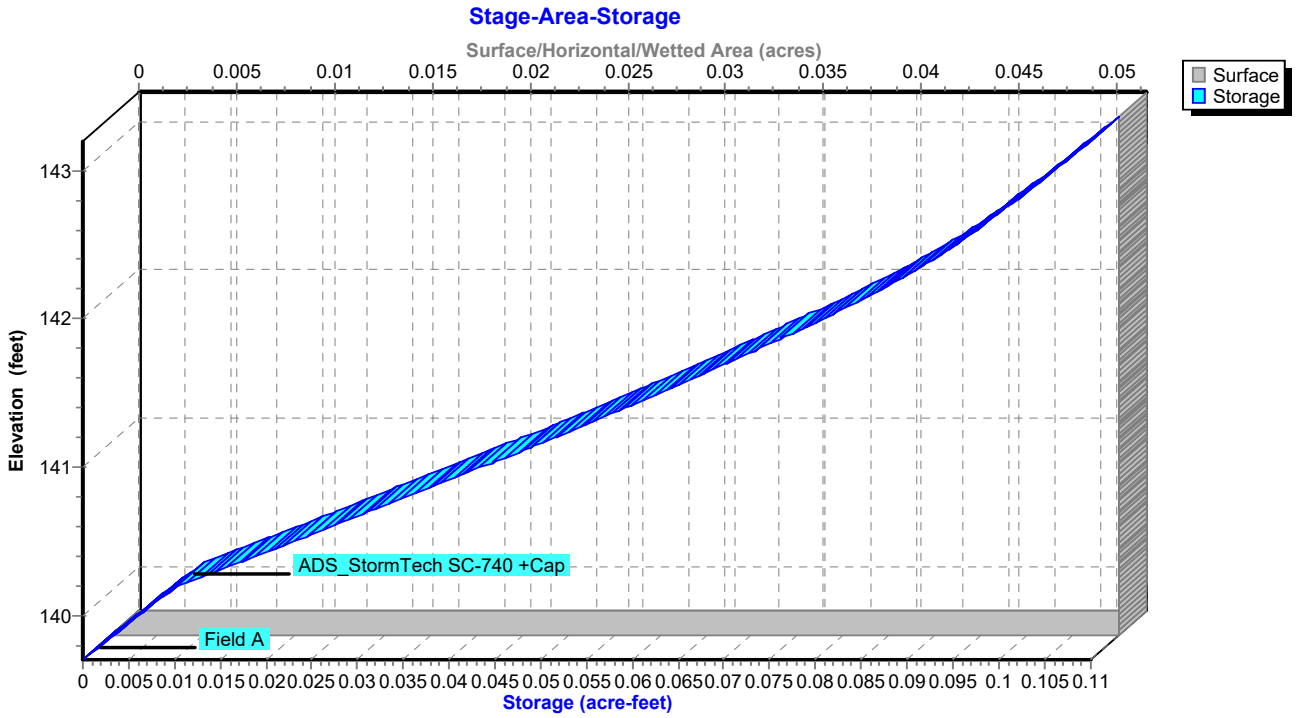
Pond S-3: Subsurface Infiltration System



Pond S-3: Subsurface Infiltration System



Pond S-3: Subsurface Infiltration System



Summary for Subcatchment PR-1: CCB 14

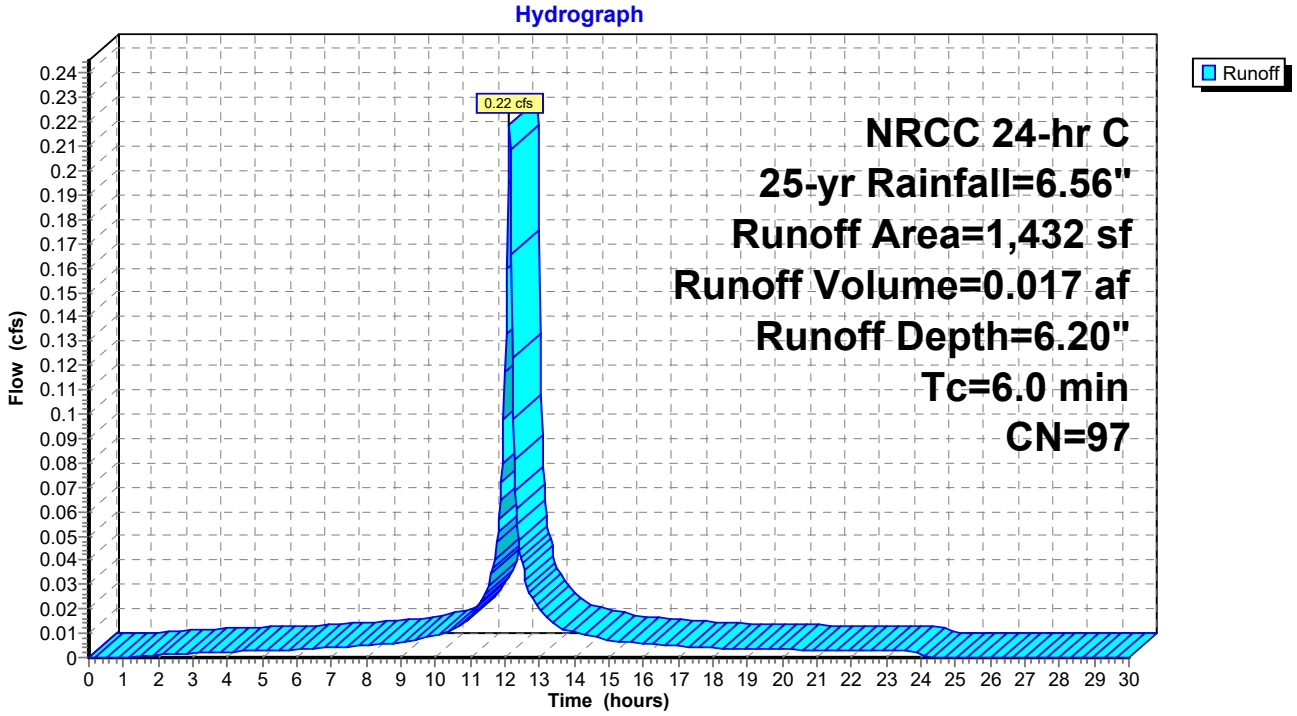
Runoff = 0.22 cfs @ 12.13 hrs, Volume= 0.017 af, Depth= 6.20"
Routed to Pond S-3 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 25-yr Rainfall=6.56"

	Area (sf)	CN	Description
	1,361	98	Paved parking, HSG D
*	71	79	Landscaping, Good, HSG D
	1,432	97	Weighted Average
	71		4.96% Pervious Area
	1,361		95.04% Impervious Area

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

Subcatchment PR-1: CCB 14



Summary for Subcatchment PR-10: CCB 28

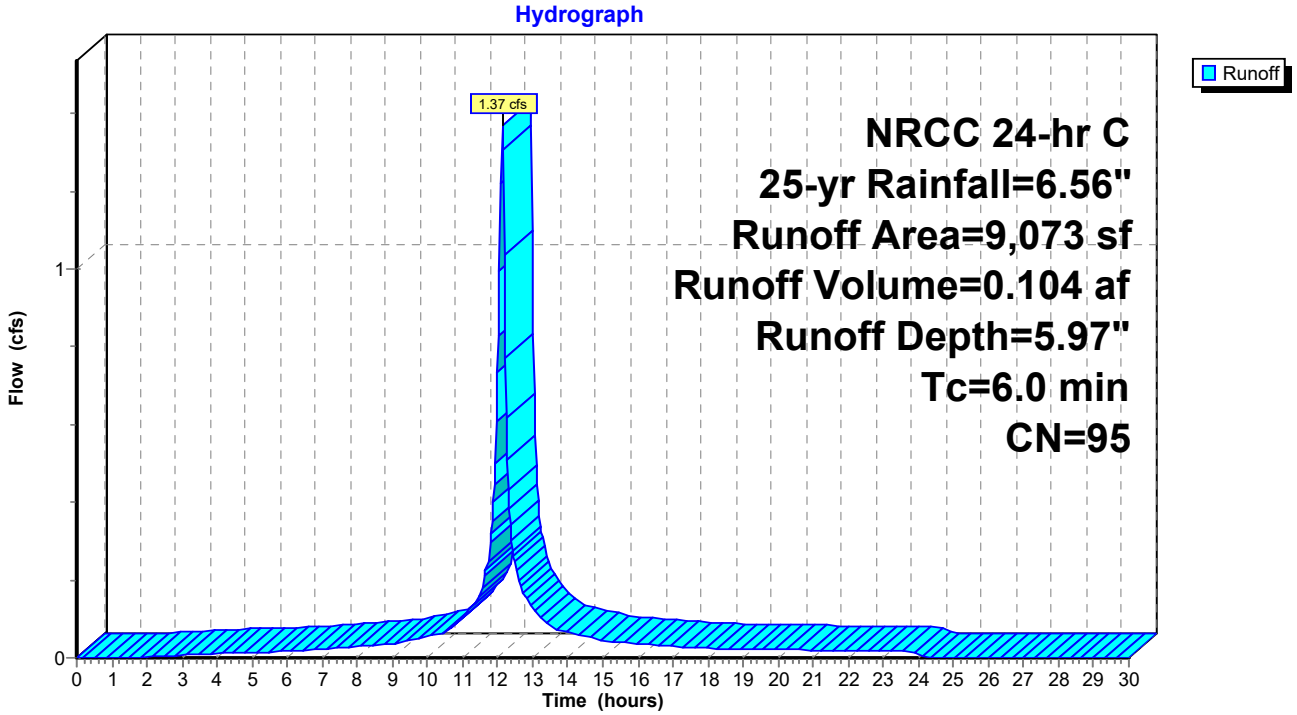
Runoff = 1.37 cfs @ 12.13 hrs, Volume= 0.104 af, Depth= 5.97"
Routed to Pond S-1 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 25-yr Rainfall=6.56"

	Area (sf)	CN	Description
	7,450	98	Paved parking, HSG D
	440	80	>75% Grass cover, Good, HSG D
*	1,183	79	Landscaping, Good, HSG D
	9,073	95	Weighted Average
	1,623		17.89% Pervious Area
	7,450		82.11% Impervious Area

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

Subcatchment PR-10: CCB 28



Summary for Subcatchment PR-11: Building Roof

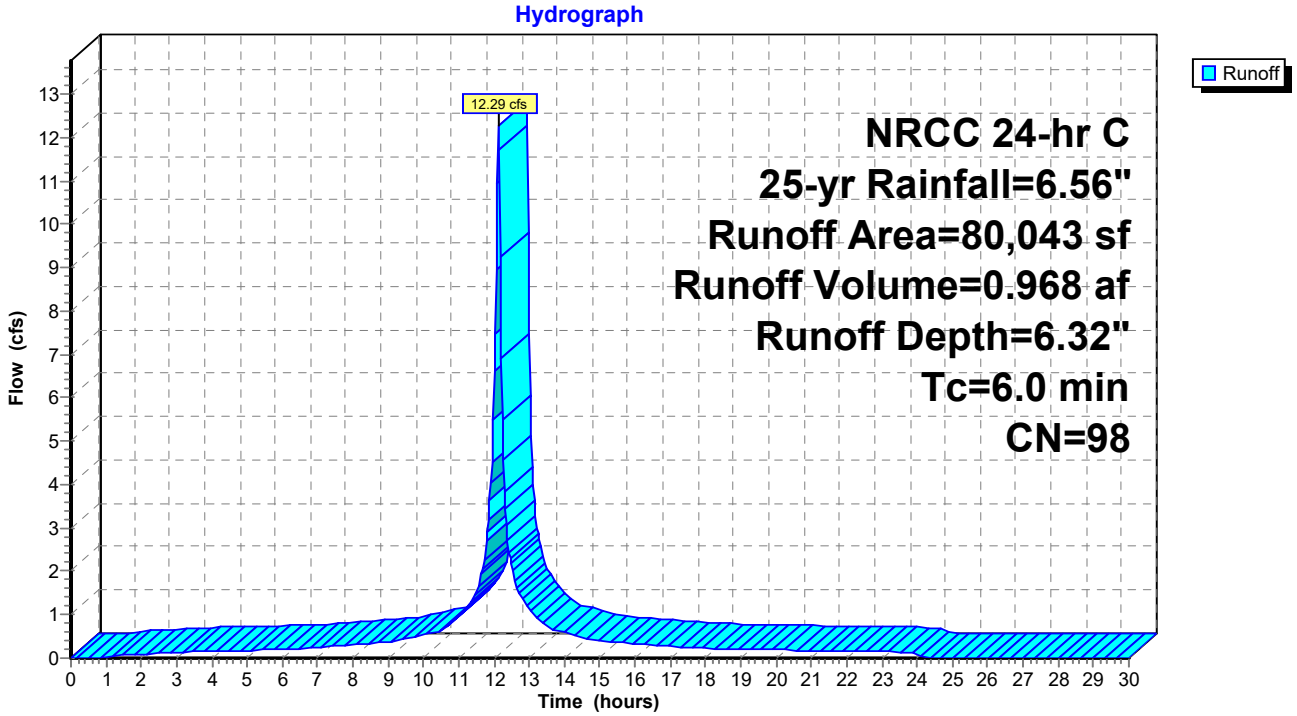
Runoff = 12.29 cfs @ 12.13 hrs, Volume= 0.968 af, Depth= 6.32"
Routed to Reach R1 : Roof Leader

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 25-yr Rainfall=6.56"

Area (sf)	CN	Description
80,043	98	Roofs, HSG D
80,043		100.00% Impervious Area

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

Subcatchment PR-11: Building Roof



Summary for Subcatchment PR-12: CCB 29

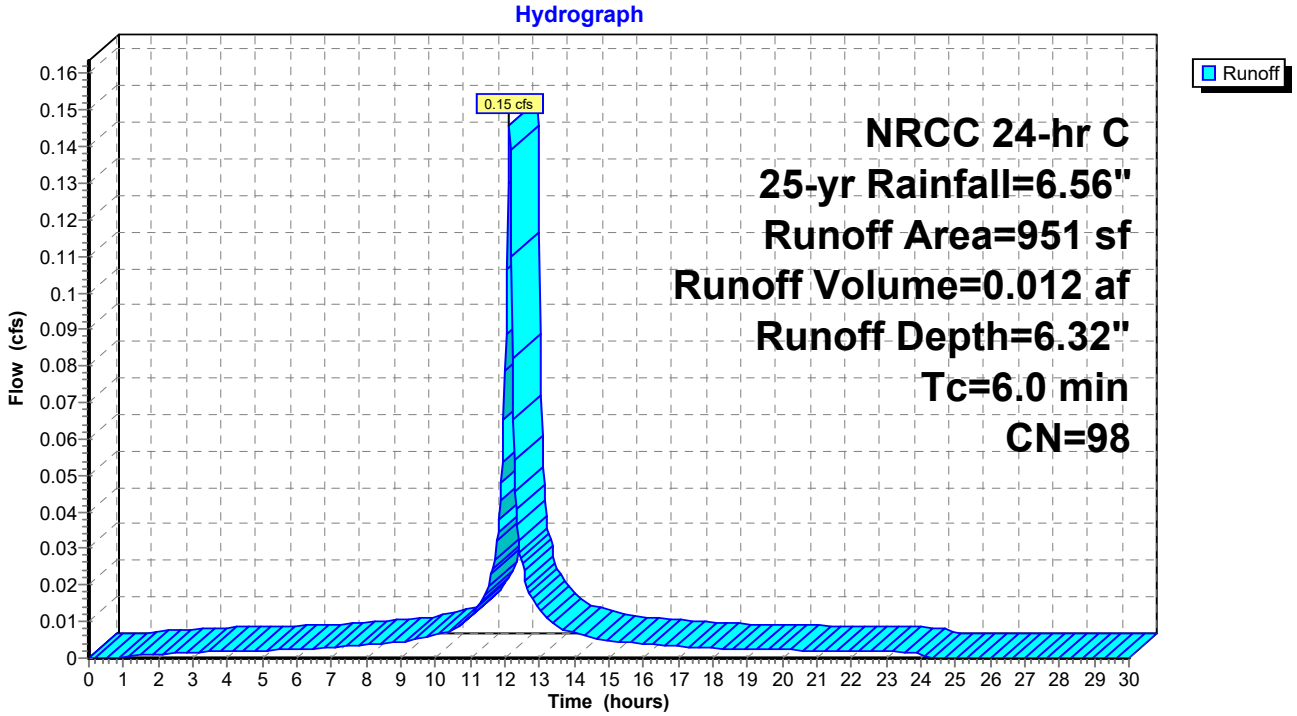
Runoff = 0.15 cfs @ 12.13 hrs, Volume= 0.012 af, Depth= 6.32"
Routed to Pond S-1 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 25-yr Rainfall=6.56"

Area (sf)	CN	Description
951	98	Paved parking, HSG D
951		100.00% Impervious Area

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

Subcatchment PR-12: CCB 29



Summary for Subcatchment PR-13: CCB 30

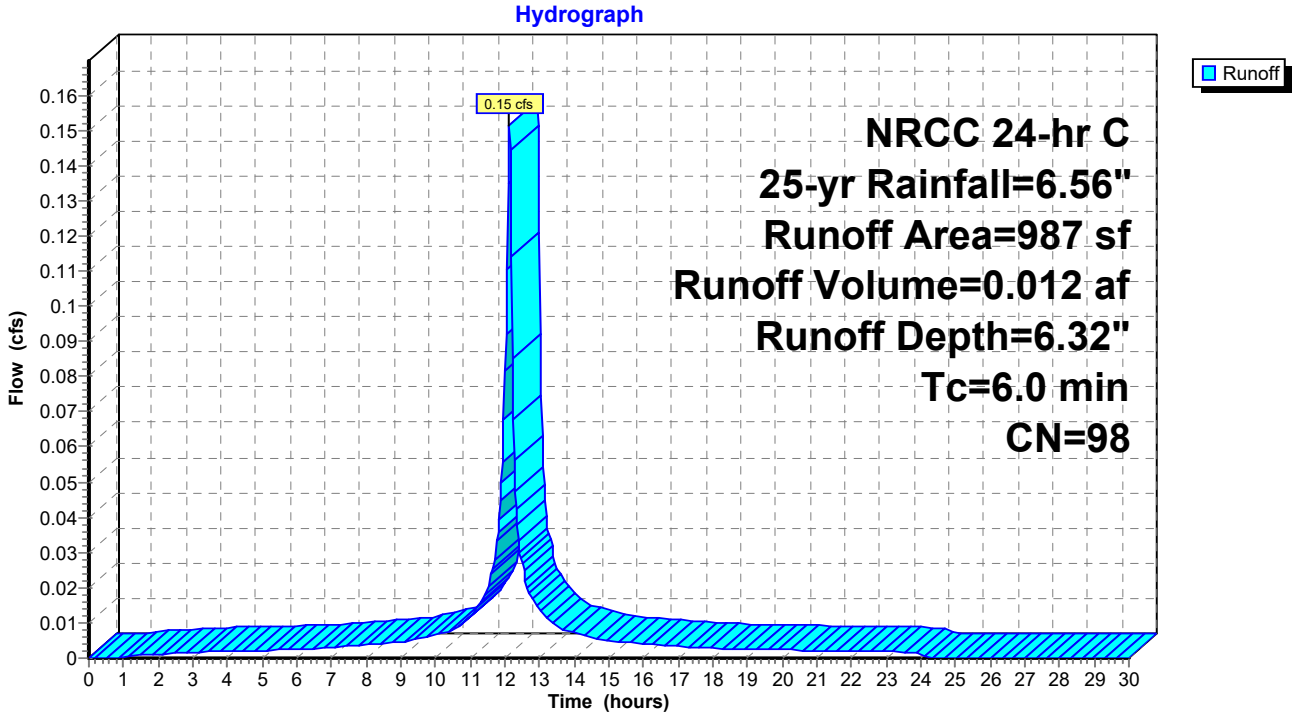
Runoff = 0.15 cfs @ 12.13 hrs, Volume= 0.012 af, Depth= 6.32"
Routed to Pond S-1 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 25-yr Rainfall=6.56"

Area (sf)	CN	Description
987	98	Paved parking, HSG D
987		100.00% Impervious Area

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

Subcatchment PR-13: CCB 30



Summary for Subcatchment PR-14: CLCB-10

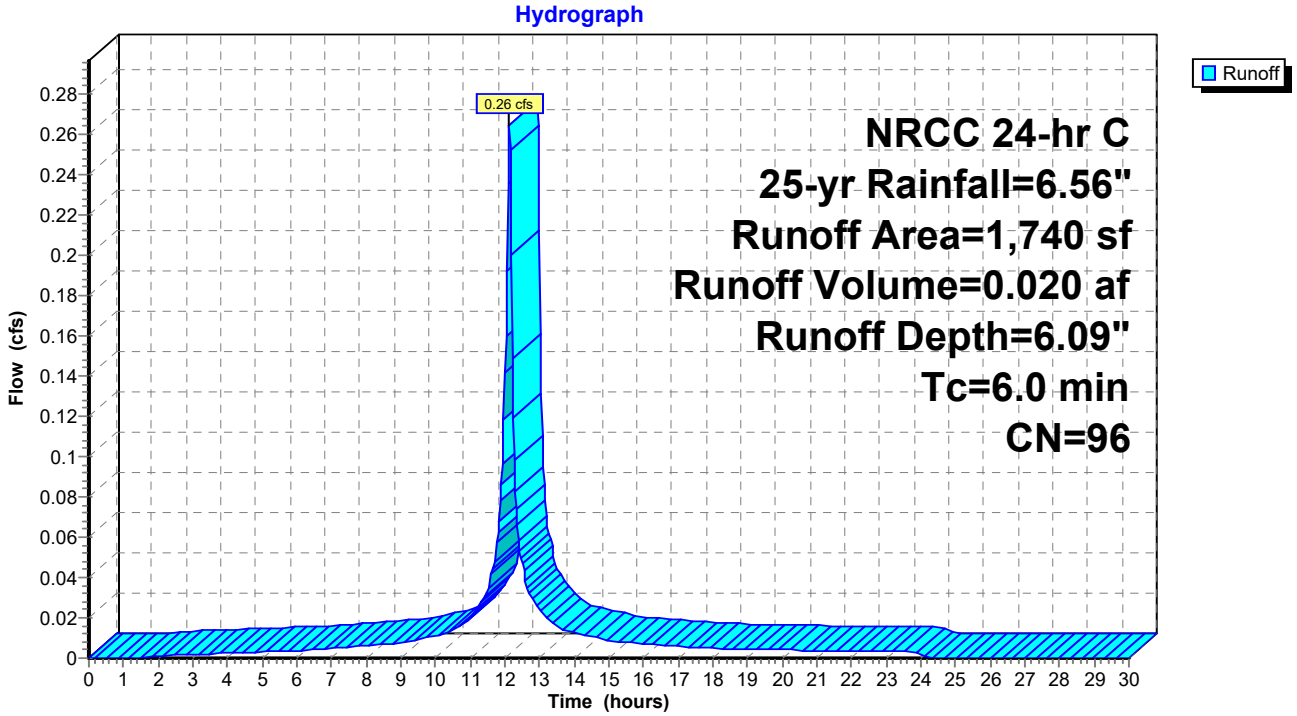
Runoff = 0.26 cfs @ 12.13 hrs, Volume= 0.020 af, Depth= 6.09"
Routed to Pond S-3 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 25-yr Rainfall=6.56"

	Area (sf)	CN	Description
*	1,740	96	Concrete paver, HSG D
	1,740		100.00% Pervious Area

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

Subcatchment PR-14: CLCB-10



Summary for Subcatchment PR-15: CLCB-09

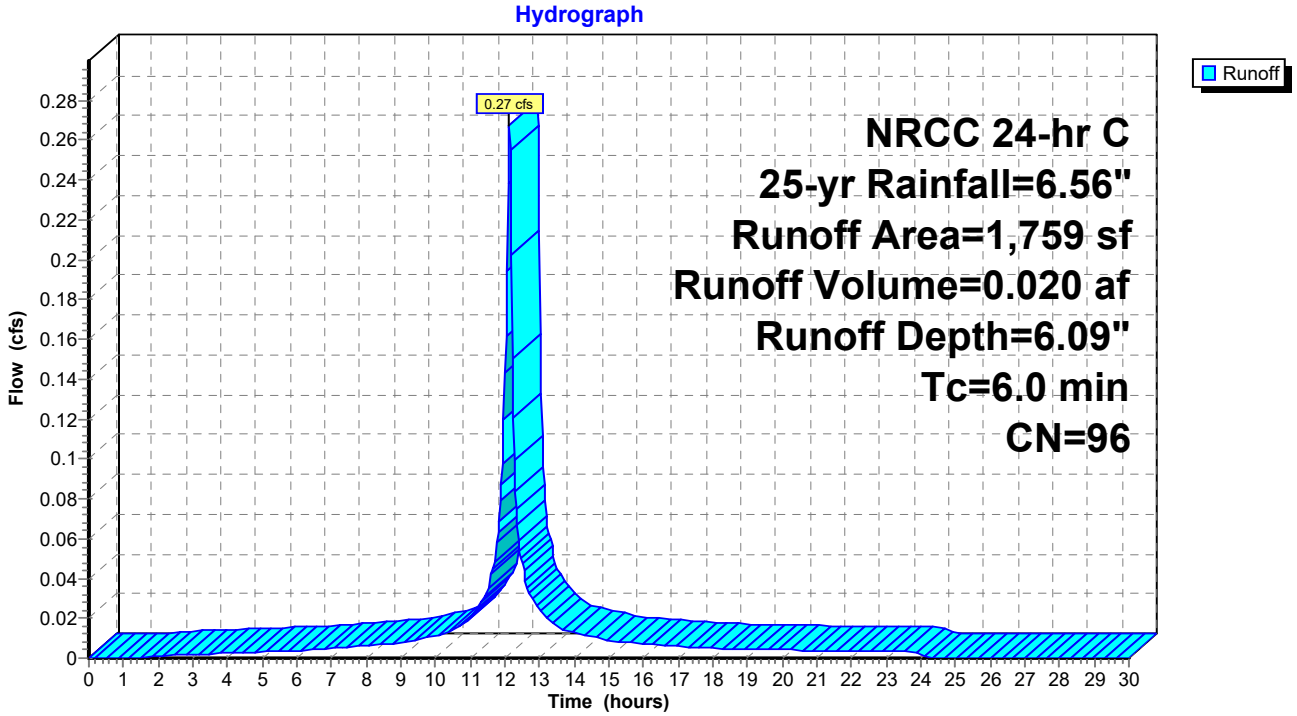
Runoff = 0.27 cfs @ 12.13 hrs, Volume= 0.020 af, Depth= 6.09"
Routed to Pond S-3 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 25-yr Rainfall=6.56"

	Area (sf)	CN	Description
*	1,759	96	Pevious paver, HSG D
	1,759		100.00% Pervious Area

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

Subcatchment PR-15: CLCB-09



Summary for Subcatchment PR-16: East rooftop to Front Rain Garden

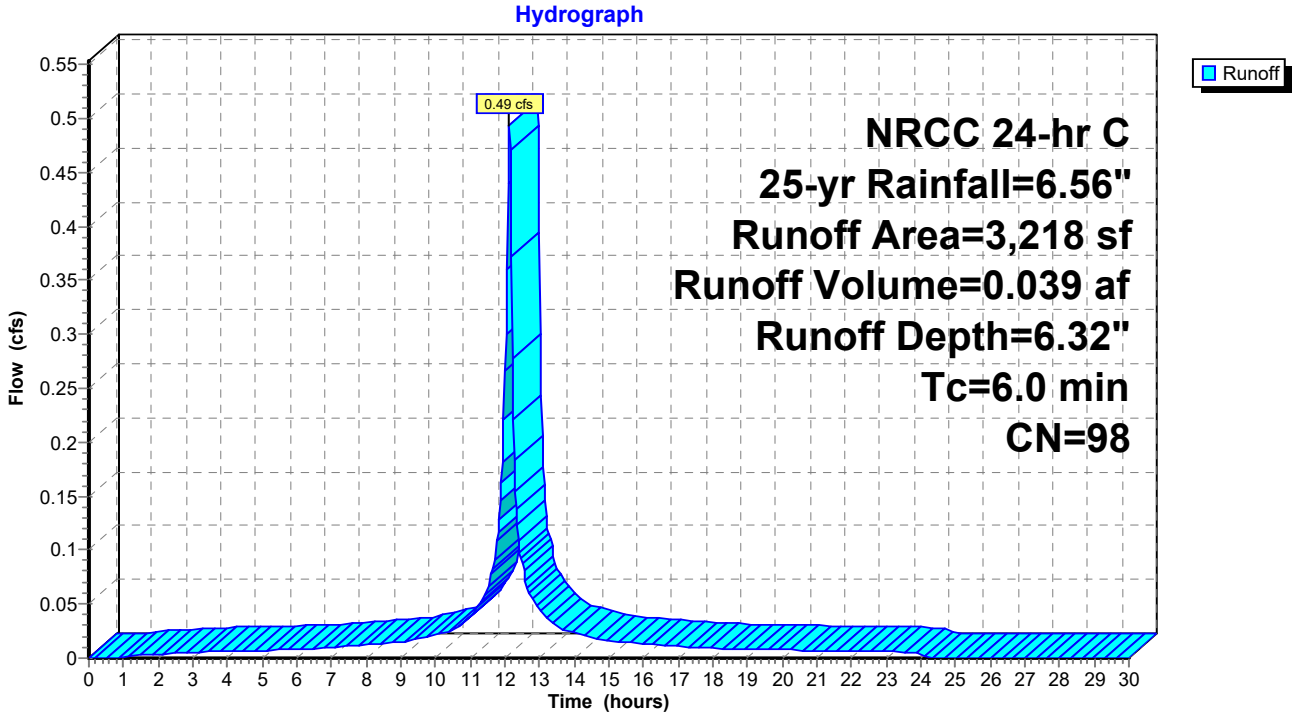
Runoff = 0.49 cfs @ 12.13 hrs, Volume= 0.039 af, Depth= 6.32"
Routed to Pond AP-2 : Front Lawn Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 25-yr Rainfall=6.56"

Area (sf)	CN	Description
3,218	98	Roofs, HSG D
3,218		100.00% Impervious Area

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

Subcatchment PR-16: East rooftop to Front Rain Garden



Summary for Subcatchment PR-17: Front Lawn

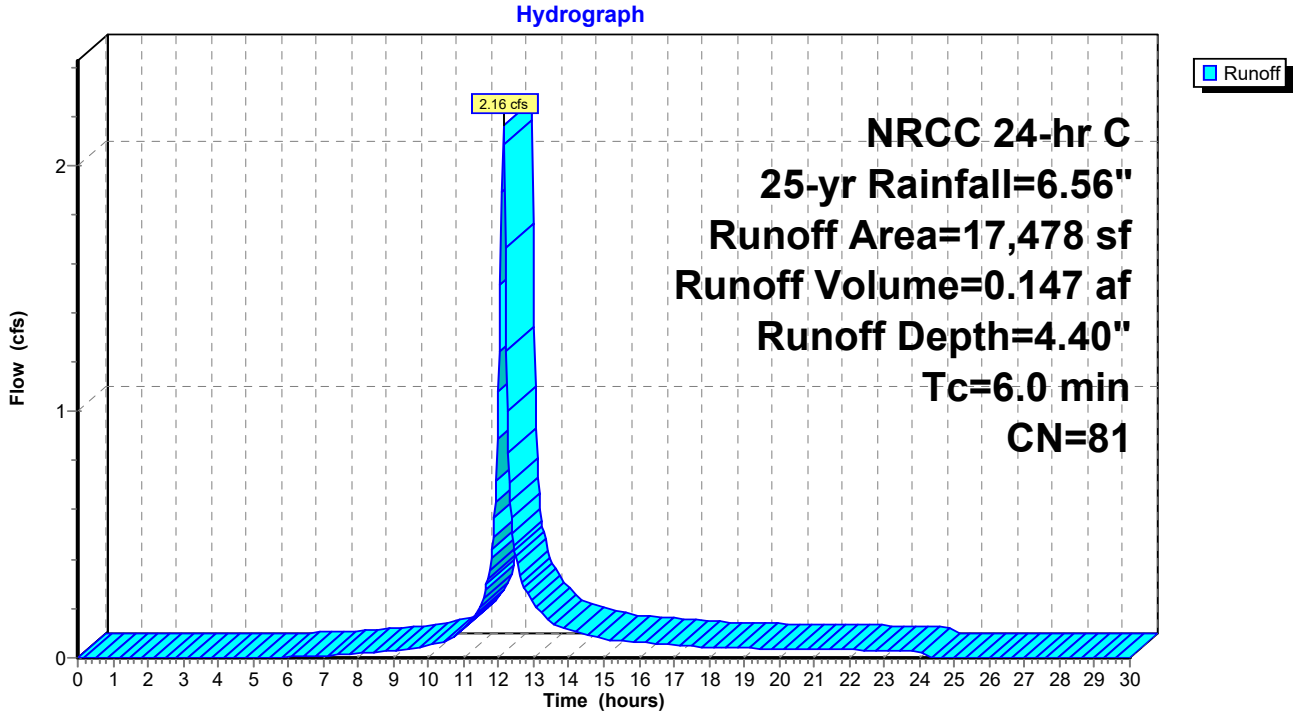
Runoff = 2.16 cfs @ 12.13 hrs, Volume= 0.147 af, Depth= 4.40"
Routed to Pond AP-2 : Front Lawn Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 25-yr Rainfall=6.56"

	Area (sf)	CN	Description
	1,883	98	Paved parking, HSG D
	6,950	80	>75% Grass cover, Good, HSG D
*	8,645	79	Landscaping, Good, HSG D
	17,478	81	Weighted Average
	15,595		89.23% Pervious Area
	1,883		10.77% Impervious Area

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

Subcatchment PR-17: Front Lawn



Summary for Subcatchment PR-18: CCB-08

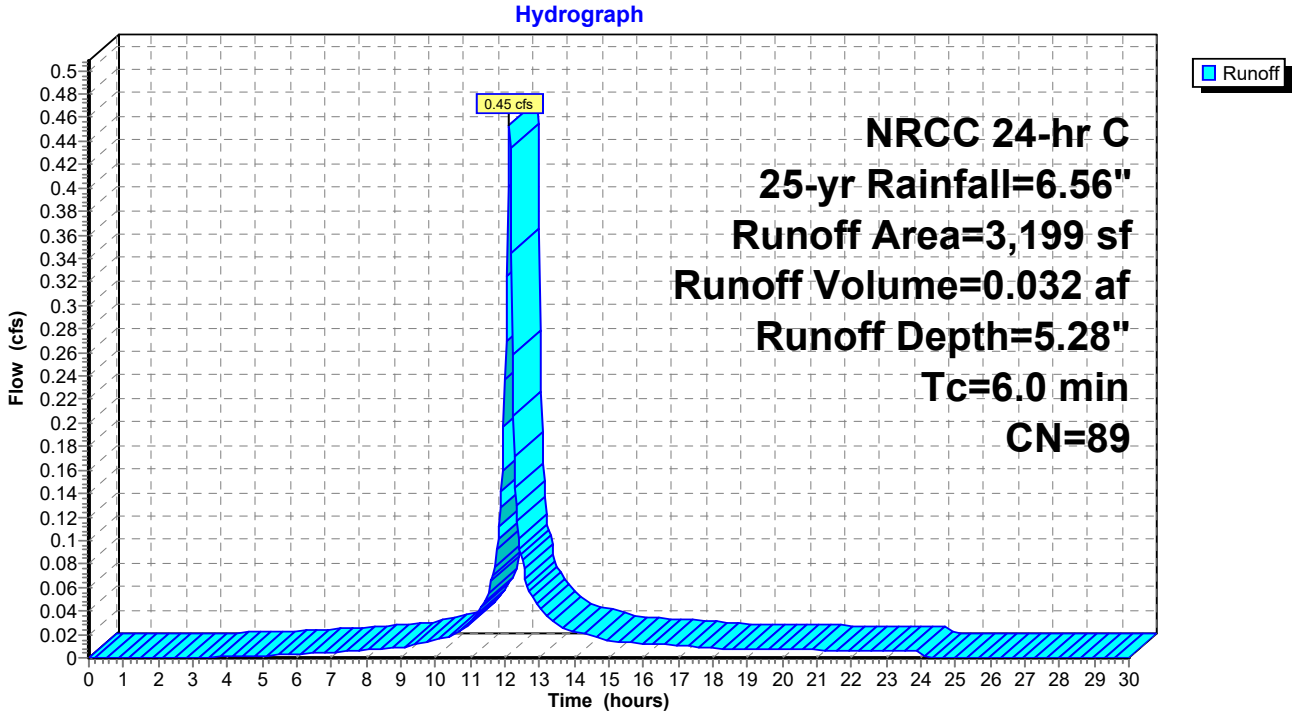
Runoff = 0.45 cfs @ 12.13 hrs, Volume= 0.032 af, Depth= 5.28"
Routed to Pond S-3 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 25-yr Rainfall=6.56"

	Area (sf)	CN	Description
	1,677	98	Paved parking, HSG D
	192	80	>75% Grass cover, Good, HSG D
*	1,330	79	Landscaping, Good, HSG D
	3,199	89	Weighted Average
	1,522		47.58% Pervious Area
	1,677		52.42% Impervious Area

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

Subcatchment PR-18: CCB-08



Summary for Subcatchment PR-19: CCB-07

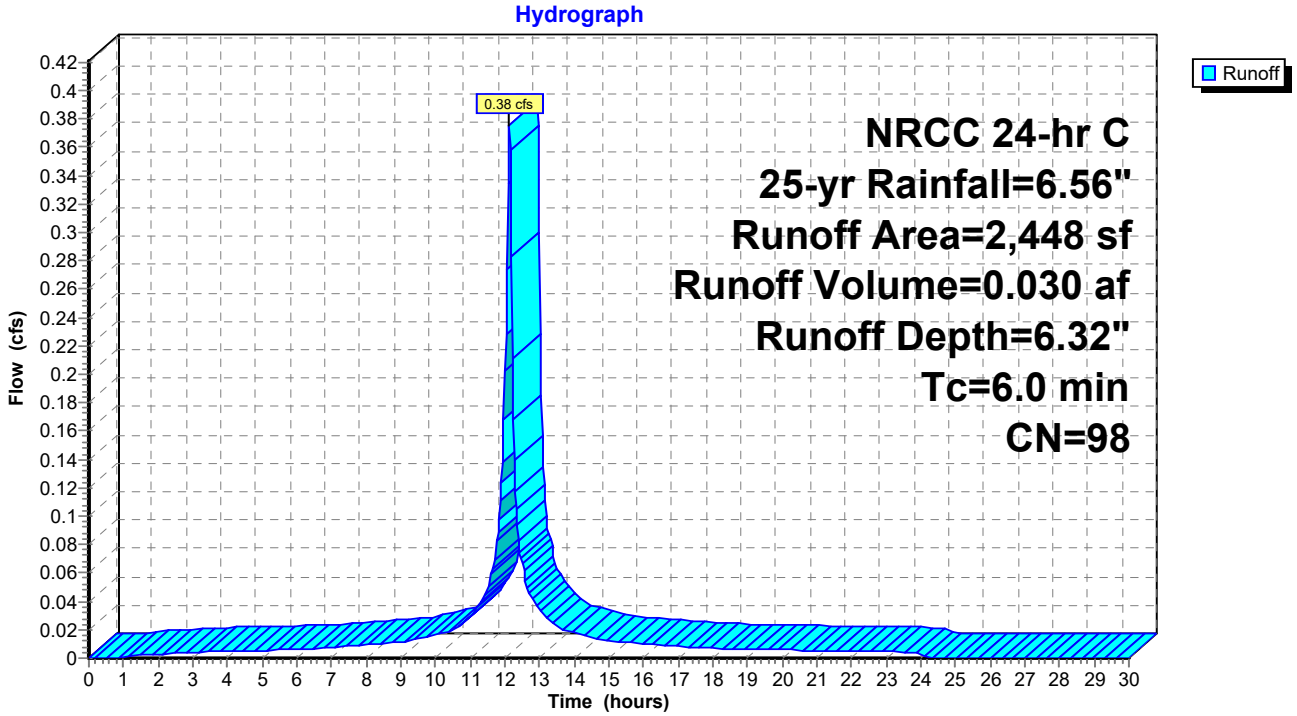
Runoff = 0.38 cfs @ 12.13 hrs, Volume= 0.030 af, Depth= 6.32"
Routed to Pond S-3 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 25-yr Rainfall=6.56"

Area (sf)	CN	Description
2,448	98	Paved parking, HSG D
2,448		100.00% Impervious Area

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

Subcatchment PR-19: CCB-07



Summary for Subcatchment PR-2: CCB 10

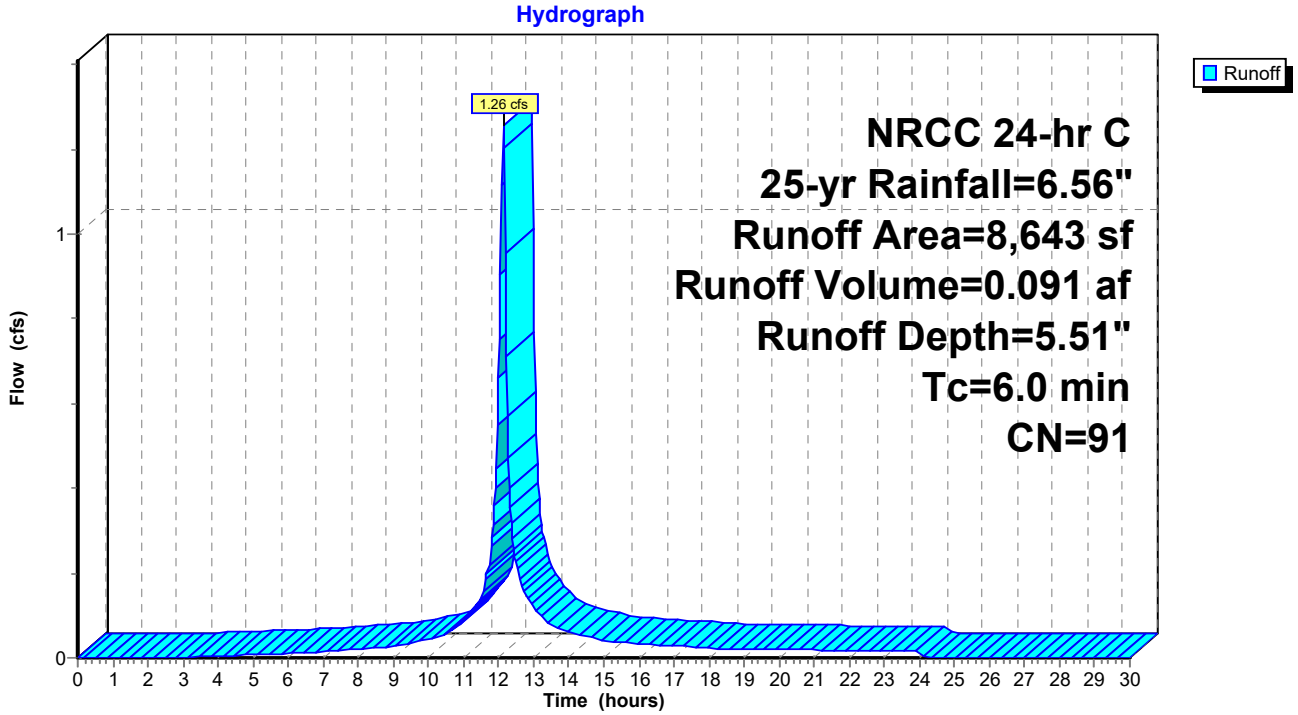
Runoff = 1.26 cfs @ 12.13 hrs, Volume= 0.091 af, Depth= 5.51"
Routed to Pond S-3 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 25-yr Rainfall=6.56"

	Area (sf)	CN	Description
*	6,303	98	Paved parking, HSG C
*	1,994	72	Landscaping, Good, HSG C
	346	74	>75% Grass cover, Good, HSG C
	8,643	91	Weighted Average
	2,340		27.07% Pervious Area
	6,303		72.93% Impervious Area

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

Subcatchment PR-2: CCB 10



Summary for Subcatchment PR-20: South of entrance drive

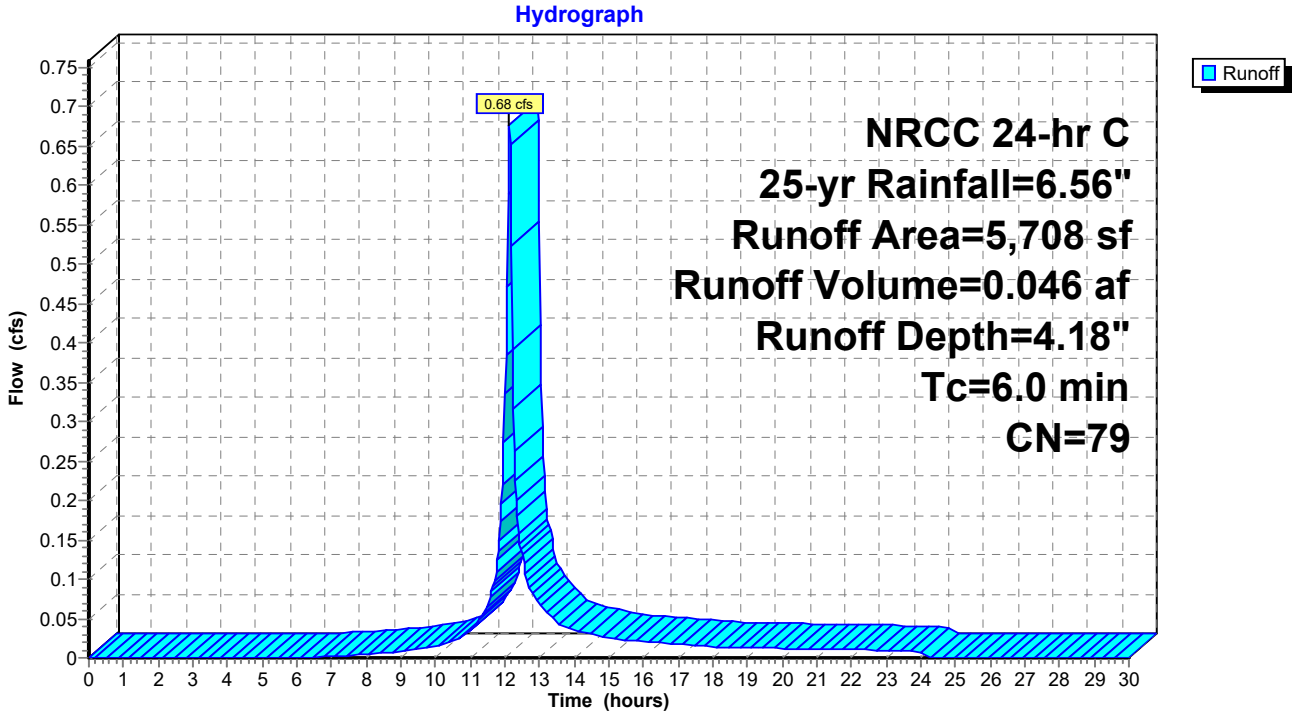
Runoff = 0.68 cfs @ 12.13 hrs, Volume= 0.046 af, Depth= 4.18"
Routed to Pond AP-4 : Landscaped Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 25-yr Rainfall=6.56"

	Area (sf)	CN	Description
	93	98	Paved parking, HSG D
	755	80	>75% Grass cover, Good, HSG D
*	4,860	79	Landscaping, Good, HSG D
	5,708	79	Weighted Average
	5,615		98.37% Pervious Area
	93		1.63% Impervious Area

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

Subcatchment PR-20: South of entrance drive



Summary for Subcatchment PR-21: Danbury Rd

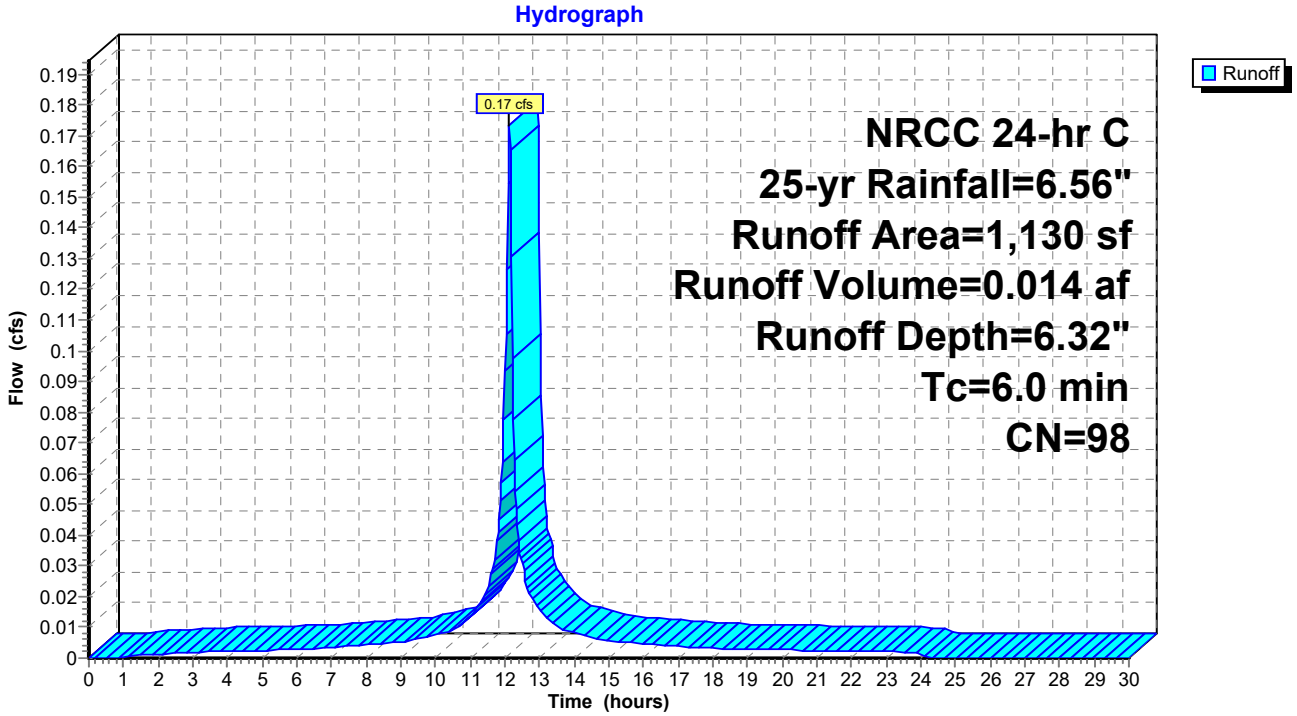
Runoff = 0.17 cfs @ 12.13 hrs, Volume= 0.014 af, Depth= 6.32"
Routed to Pond AP-3 : Danbury Road

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 25-yr Rainfall=6.56"

Area (sf)	CN	Description
1,130	98	Paved parking, HSG D
1,130		100.00% Impervious Area

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

Subcatchment PR-21: Danbury Rd



Summary for Subcatchment PR-3: CCB 07

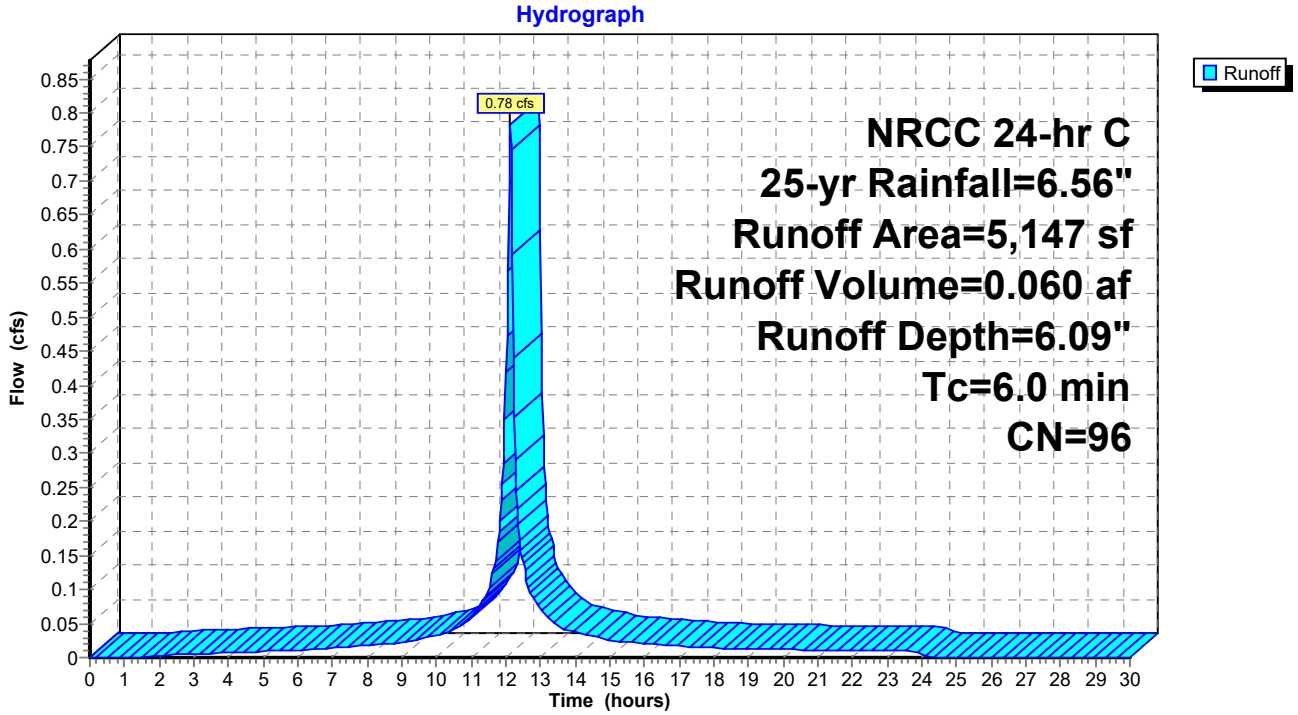
Runoff = 0.78 cfs @ 12.13 hrs, Volume= 0.060 af, Depth= 6.09"
Routed to Pond S-3 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 25-yr Rainfall=6.56"

	Area (sf)	CN	Description
*	4,715	98	Paved parking, HSG C
*	432	72	Landscaping, Good, HSG C
	5,147	96	Weighted Average
	432		8.39% Pervious Area
	4,715		91.61% Impervious Area

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

Subcatchment PR-3: CCB 07



Summary for Subcatchment PR-4: CCB 06

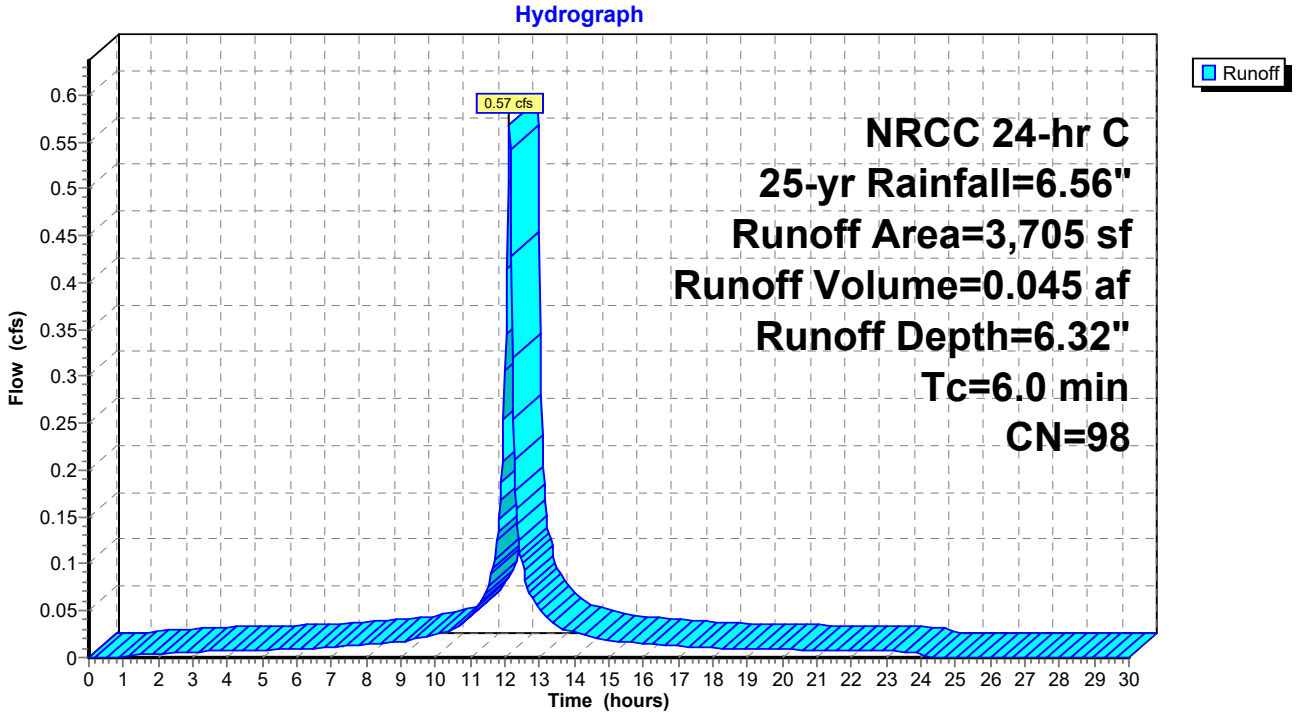
Runoff = 0.57 cfs @ 12.13 hrs, Volume= 0.045 af, Depth= 6.32"
Routed to Pond AP-1 : Norwalk River

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 25-yr Rainfall=6.56"

	Area (sf)	CN	Description
	3,630	98	Paved parking, HSG D
*	75	79	Landscaping, Good, HSG D
	3,705	98	Weighted Average
	75		2.02% Pervious Area
	3,630		97.98% Impervious Area

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

Subcatchment PR-4: CCB 06



Summary for Subcatchment PR-5: South Basin

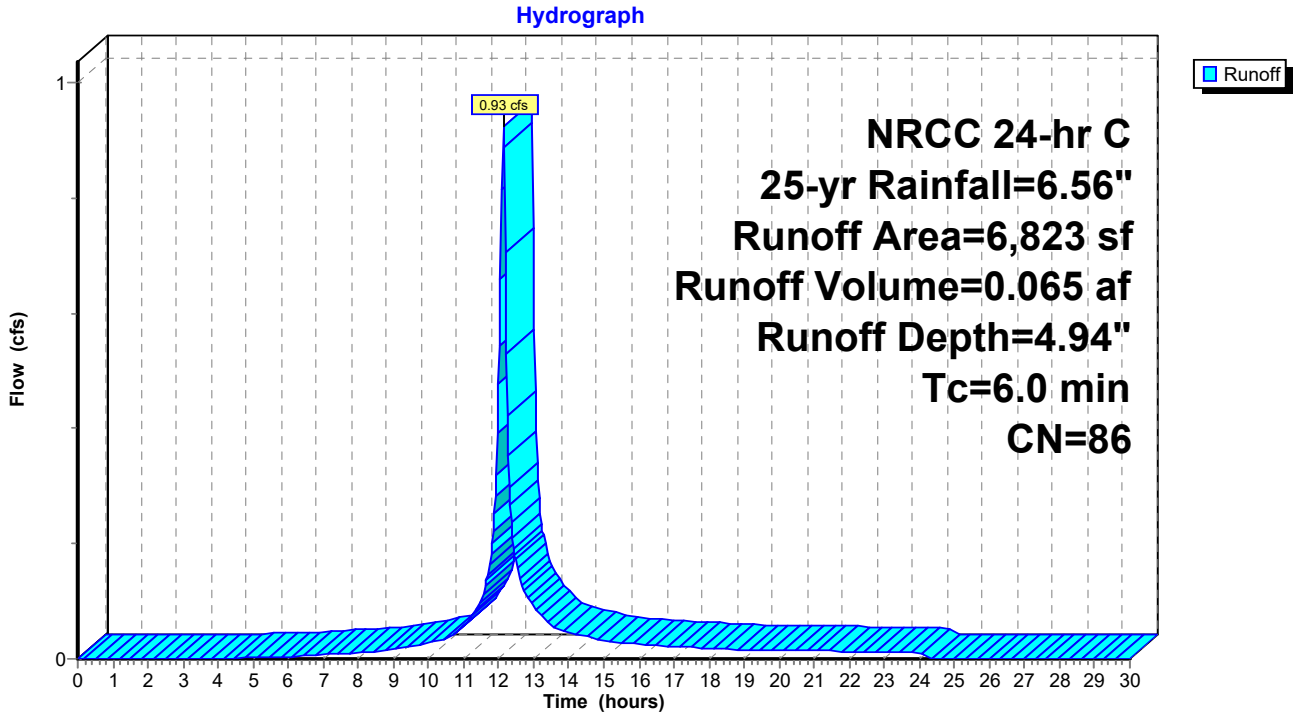
Runoff = 0.93 cfs @ 12.13 hrs, Volume= 0.065 af, Depth= 4.94"
Routed to Pond B-1 : South Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 25-yr Rainfall=6.56"

	Area (sf)	CN	Description
*	2,205	96	Permable Paver, HSG C
*	366	96	Gravel surface, HSG C
*	2,923	72	Landscaping, Good, HSG C
*	1,139	98	Paved parking, HSG C
	190	80	>75% Grass cover, Good, HSG D
	6,823	86	Weighted Average
	5,684		83.31% Pervious Area
	1,139		16.69% Impervious Area

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

Subcatchment PR-5: South Basin



Summary for Subcatchment PR-6: West along river

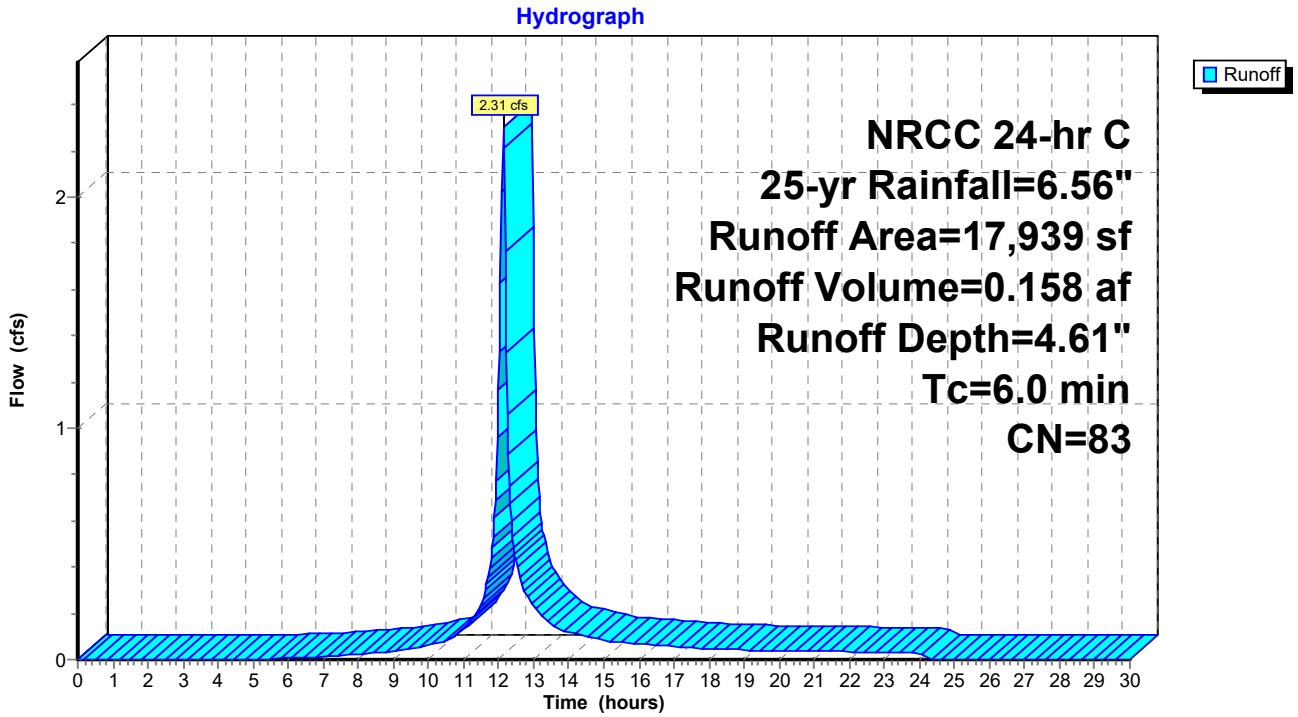
Runoff = 2.31 cfs @ 12.13 hrs, Volume= 0.158 af, Depth= 4.61"
Routed to Pond AP-1 : Norwalk River

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 25-yr Rainfall=6.56"

	Area (sf)	CN	Description
*	2,585	96	Permeable paver, HSG D
	461	96	Gravel surface, HSG D
	911	98	Paved parking, HSG D
	3,570	80	>75% Grass cover, Good, HSG D
*	6,264	79	Landscaping, Good, HSG D
	4,148	77	Woods, Good, HSG D
	17,939	83	Weighted Average
	17,028		94.92% Pervious Area
	911		5.08% Impervious Area

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

Subcatchment PR-6: West along river



Summary for Subcatchment PR-7: North basin

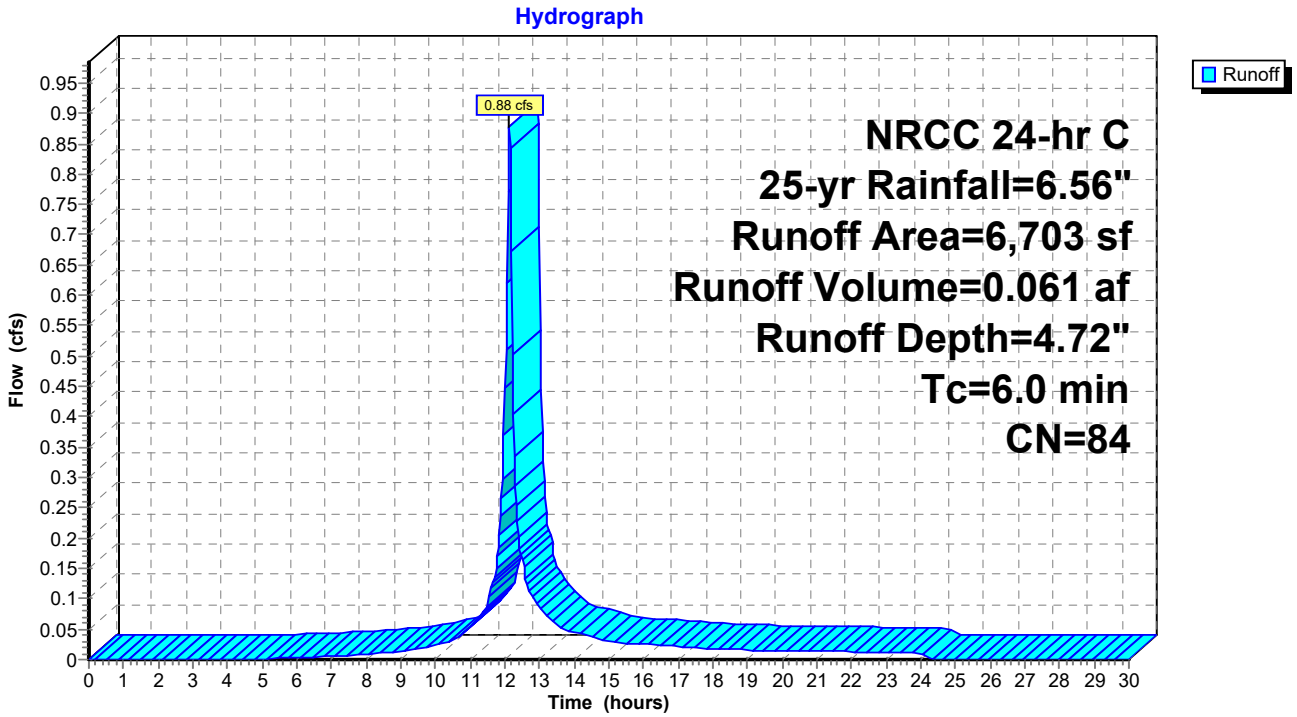
Runoff = 0.88 cfs @ 12.13 hrs, Volume= 0.061 af, Depth= 4.72"
Routed to Pond B-2 : North Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 25-yr Rainfall=6.56"

	Area (sf)	CN	Description
	453	96	Gravel surface, HSG D
*	1,031	96	Permeable paver, HSG D
	445	80	>75% Grass cover, Good, HSG D
*	3,601	79	Landscaping, Good, HSG D
	692	77	Woods, Good, HSG D
	481	98	Paved parking, HSG D
	6,703	84	Weighted Average
	6,222		92.82% Pervious Area
	481		7.18% Impervious Area

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

Subcatchment PR-7: North basin



Summary for Subcatchment PR-7B: CCB 26

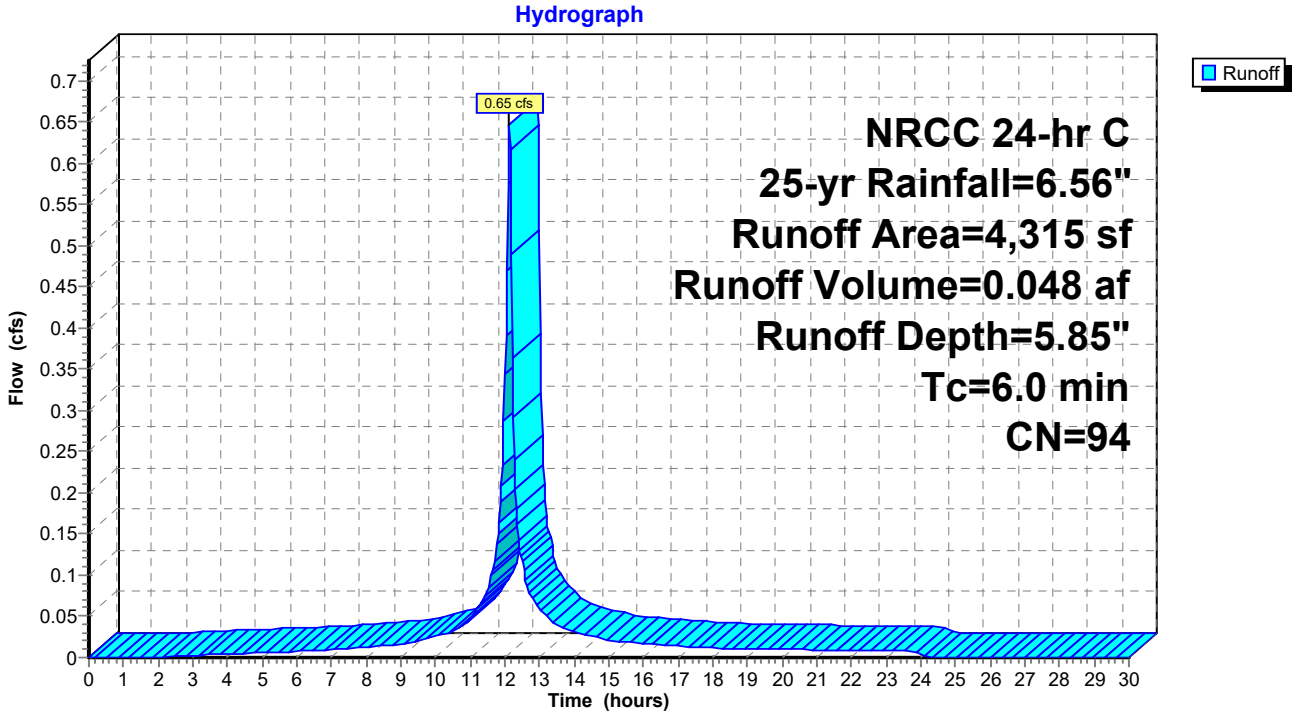
Runoff = 0.65 cfs @ 12.13 hrs, Volume= 0.048 af, Depth= 5.85"
Routed to Pond AP-1 : Norwalk River

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 25-yr Rainfall=6.56"

	Area (sf)	CN	Description
	3,518	98	Paved parking, HSG D
*	797	79	Landscaping, Good, HSG D
	4,315	94	Weighted Average
	797		18.47% Pervious Area
	3,518		81.53% Impervious Area

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

Subcatchment PR-7B: CCB 26



Summary for Subcatchment PR-8: CCB 26A

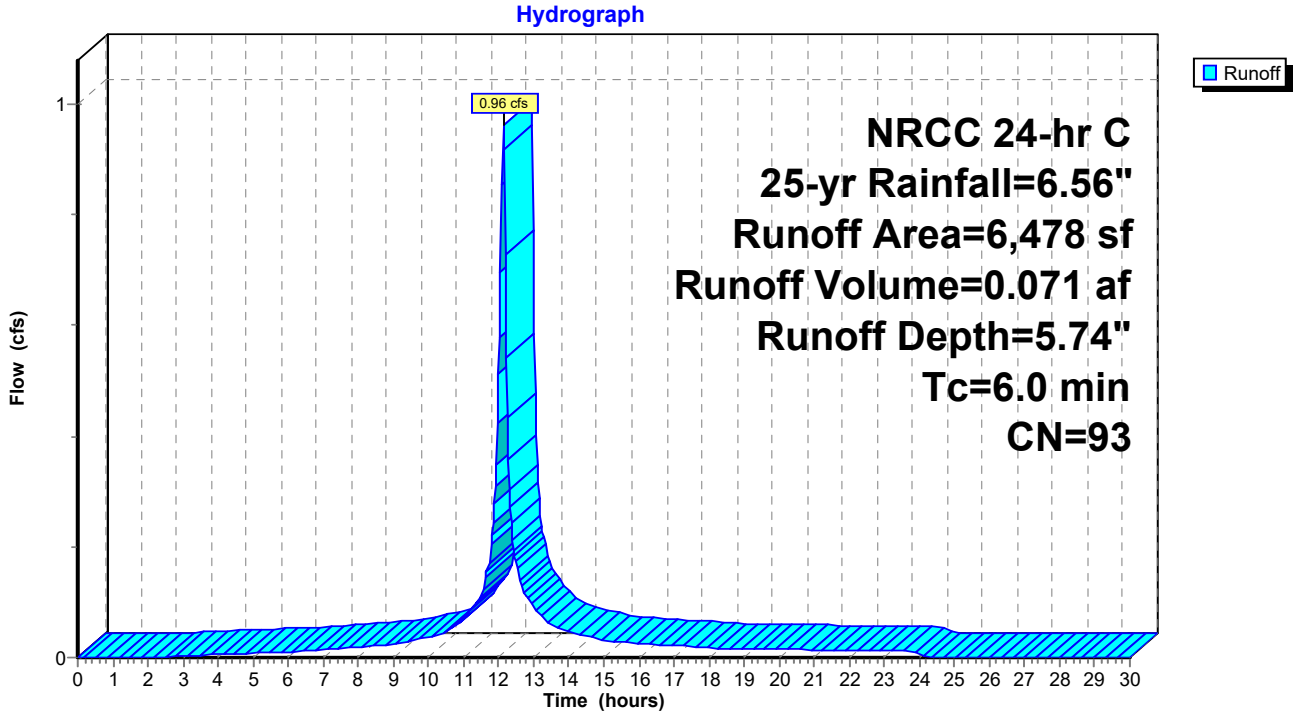
Runoff = 0.96 cfs @ 12.13 hrs, Volume= 0.071 af, Depth= 5.74"
Routed to Pond AP-1 : Norwalk River

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 25-yr Rainfall=6.56"

	Area (sf)	CN	Description
	4,737	98	Paved parking, HSG D
*	1,741	79	Landscaping, Good, HSG D
	6,478	93	Weighted Average
	1,741		26.88% Pervious Area
	4,737		73.12% Impervious Area

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

Subcatchment PR-8: CCB 26A



Summary for Subcatchment PR-9: CCB 27

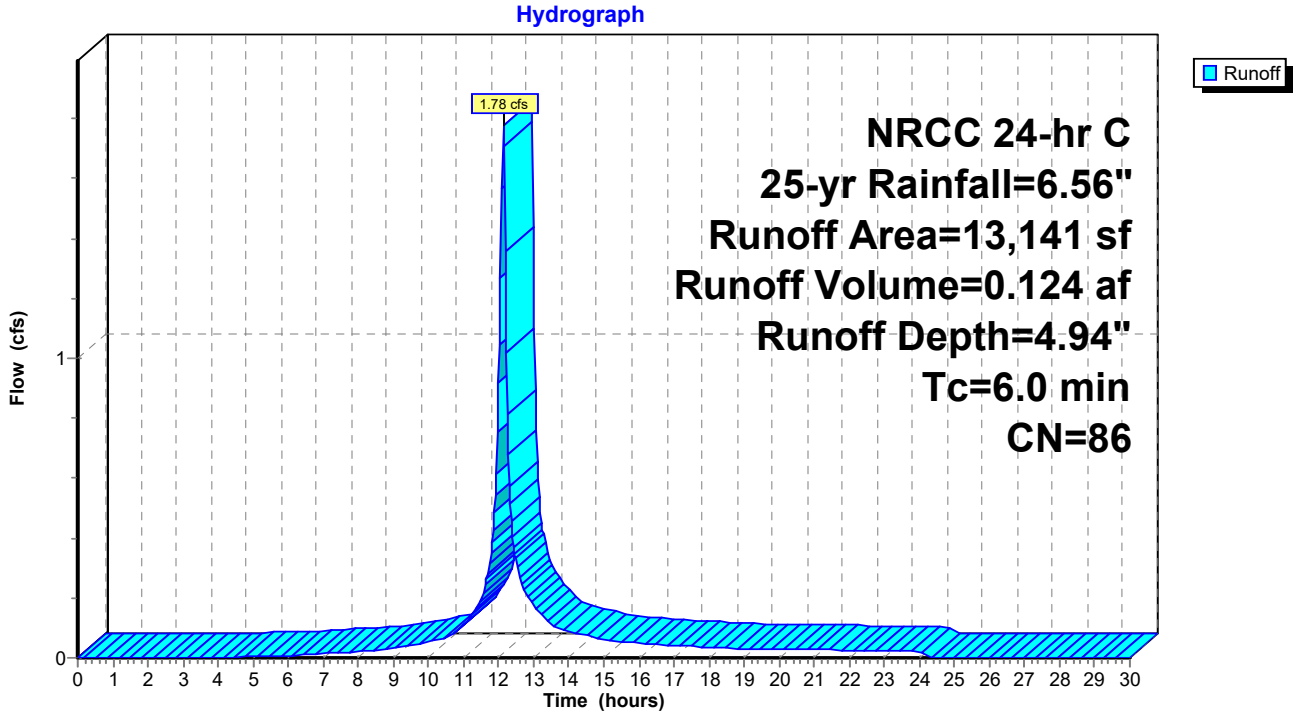
Runoff = 1.78 cfs @ 12.13 hrs, Volume= 0.124 af, Depth= 4.94"
Routed to Pond S-1 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 25-yr Rainfall=6.56"

	Area (sf)	CN	Description
	4,730	98	Paved parking, HSG D
	817	80	>75% Grass cover, Good, HSG D
*	7,594	79	Landscaping, Good, HSG D
	13,141	86	Weighted Average
	8,411		64.01% Pervious Area
	4,730		35.99% Impervious Area

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

Subcatchment PR-9: CCB 27



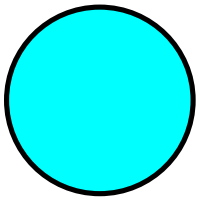
Summary for Reach R1: Roof Leader

Inflow Area = 1.838 ac,100.00% Impervious, Inflow Depth = 6.32" for 25-yr event
Inflow = 12.29 cfs @ 12.13 hrs, Volume= 0.968 af
Outflow = 4.54 cfs @ 11.95 hrs, Volume= 0.968 af, Atten= 63%, Lag= 0.0 min
Routed to Pond S-2 : Subsurface Infiltration System

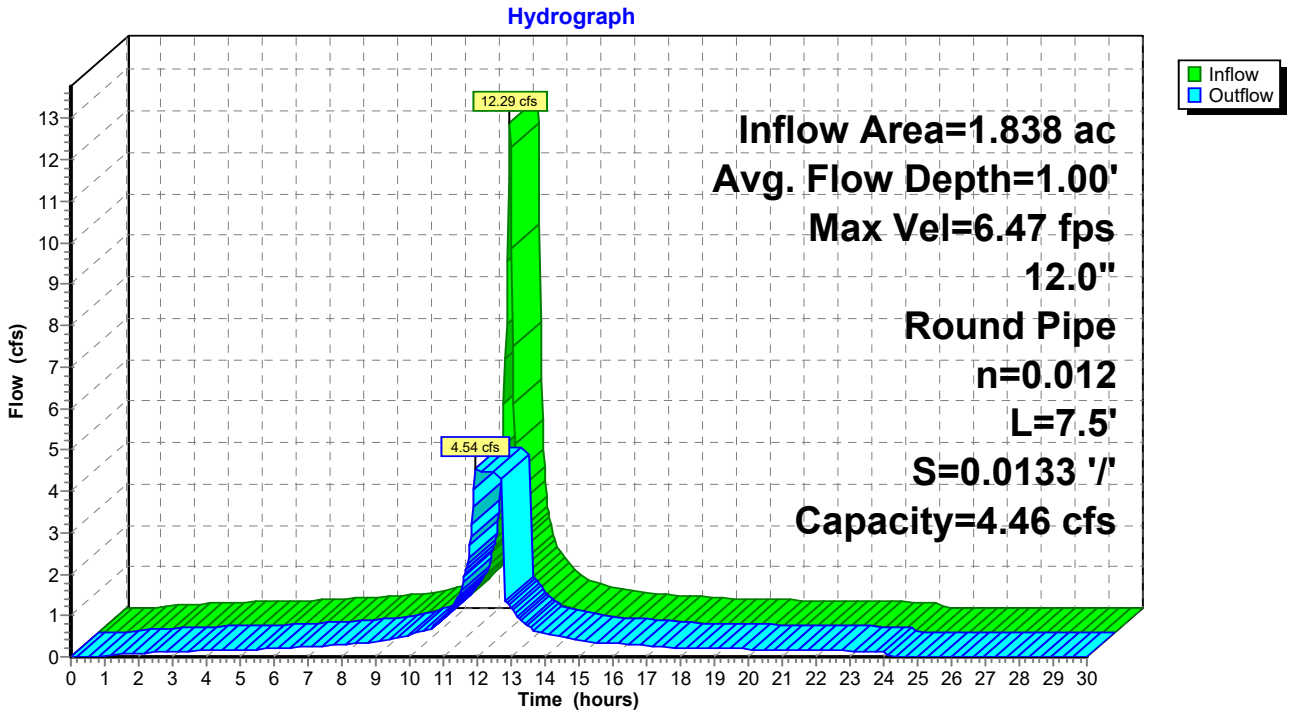
Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Max. Velocity= 6.47 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 3.19 fps, Avg. Travel Time= 0.0 min

Peak Storage= 6 cf @ 11.97 hrs
Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.46 cfs

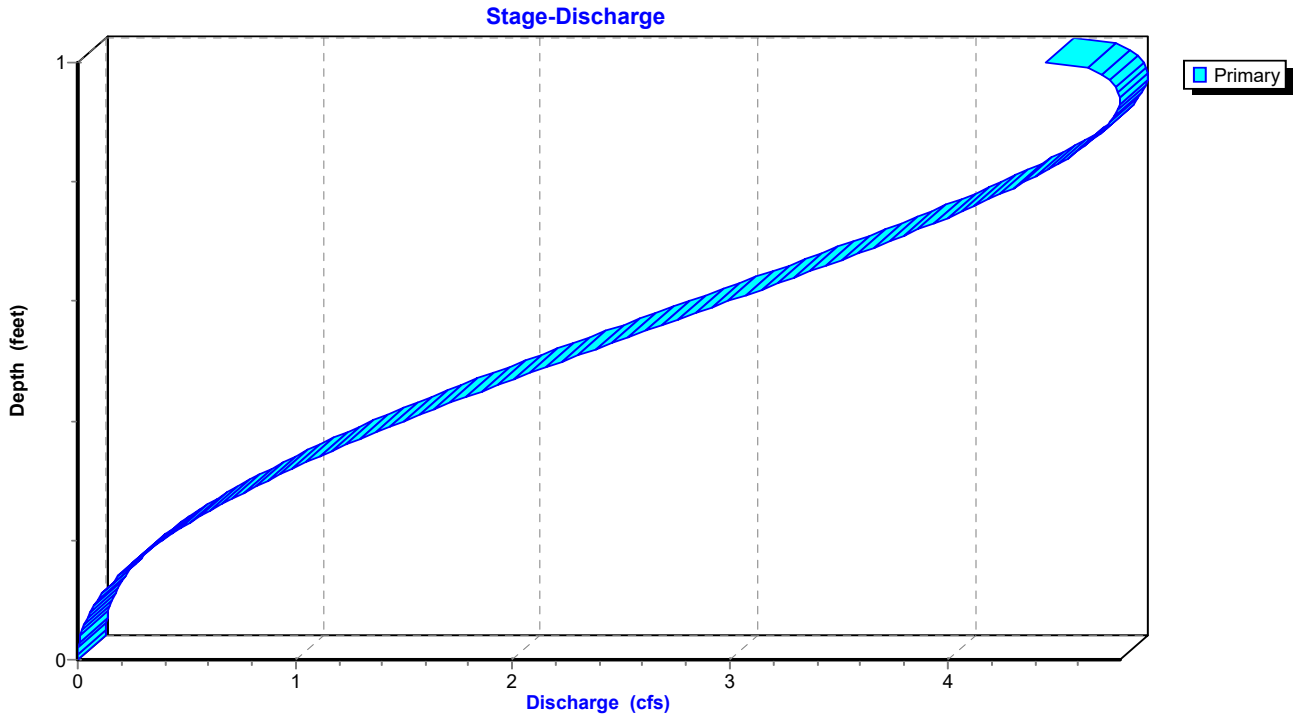
12.0" Round Pipe
n= 0.012
Length= 7.5' Slope= 0.0133 '/'
Inlet Invert= 142.20', Outlet Invert= 142.10'



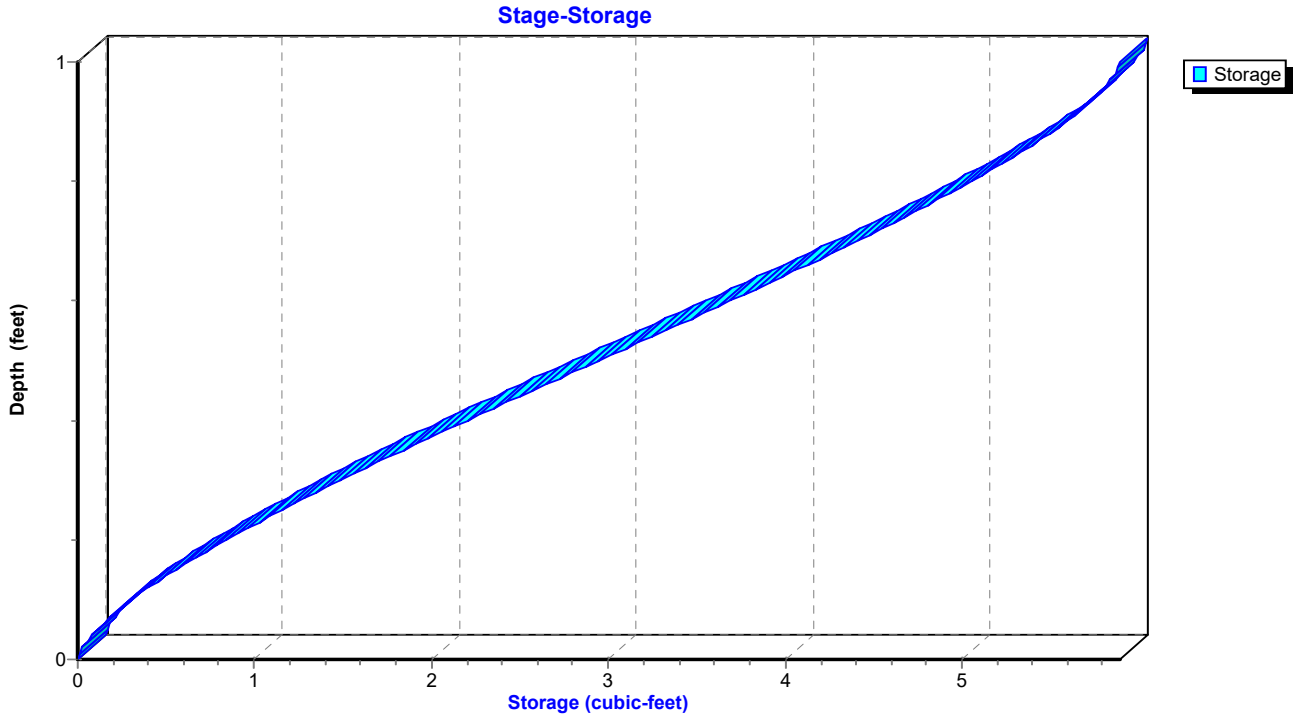
Reach R1: Roof Leader



Reach R1: Roof Leader



Reach R1: Roof Leader

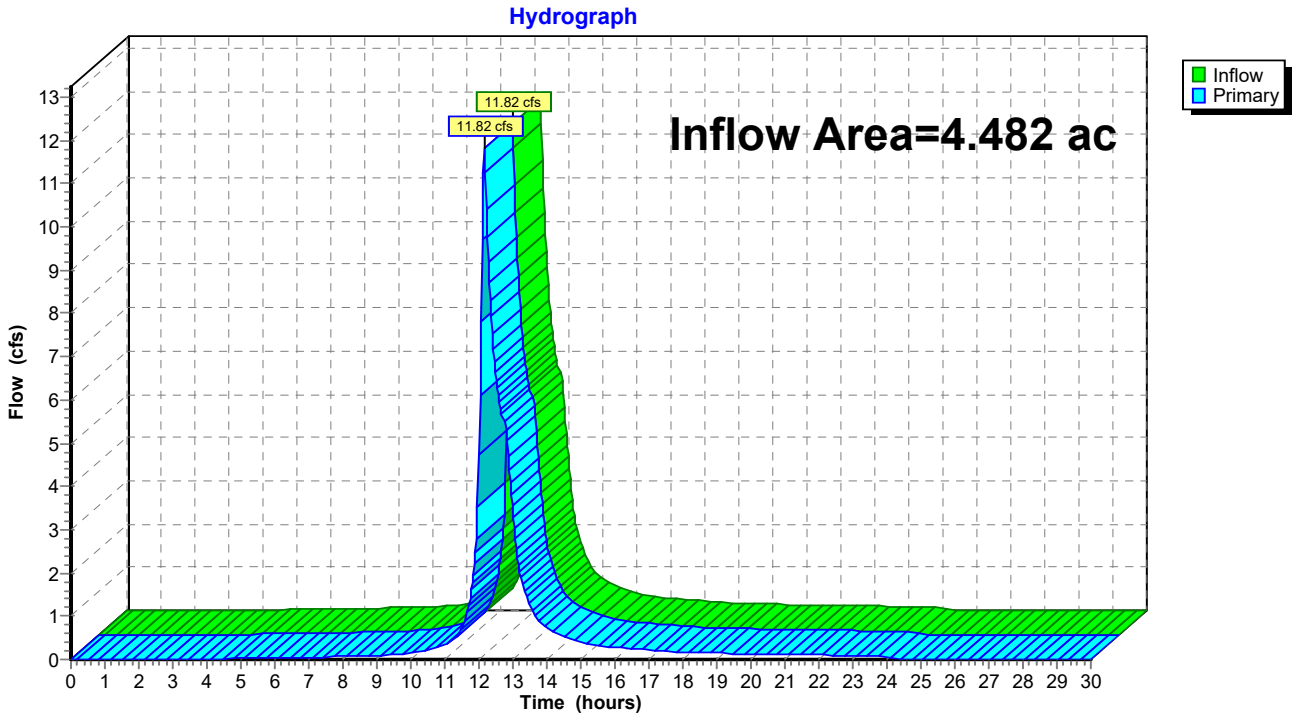


Summary for Pond AP-1: Norwalk River

Inflow Area = 4.482 ac, 66.68% Impervious, Inflow Depth = 2.69" for 25-yr event
Inflow = 11.82 cfs @ 12.15 hrs, Volume= 1.006 af
Primary = 11.82 cfs @ 12.15 hrs, Volume= 1.006 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Pond AP-1: Norwalk River



Summary for Pond AP-2: Front Lawn Rain Garden

Inflow Area = 0.475 ac, 24.65% Impervious, Inflow Depth = 4.70" for 25-yr event
Inflow = 2.66 cfs @ 12.13 hrs, Volume= 0.186 af
Outflow = 0.36 cfs @ 12.68 hrs, Volume= 0.186 af, Atten= 87%, Lag= 33.1 min
Discarded = 0.36 cfs @ 12.68 hrs, Volume= 0.186 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond S-3 : Subsurface Infiltration System

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 148.99' @ 12.68 hrs Surf.Area= 2,829 sf Storage= 2,394 cf

Plug-Flow detention time= 48.2 min calculated for 0.186 af (100% of inflow)
Center-of-Mass det. time= 48.2 min (849.0 - 800.8)

Volume	Invert	Avail.Storage	Storage Description
#1	148.00'	6,536 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

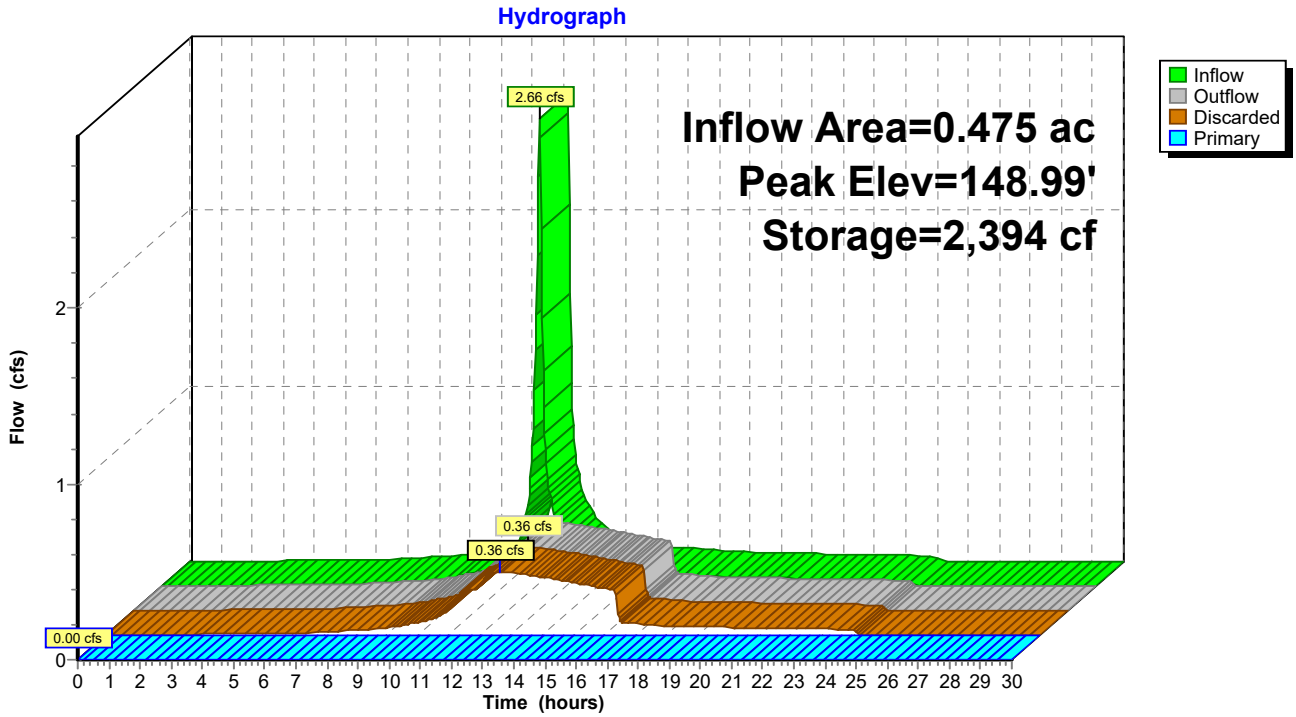
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
148.00	1,985	0	0
149.00	2,833	2,409	2,409
150.00	5,420	4,127	6,536

Device	Routing	Invert	Outlet Devices
#1	Primary	145.90'	**15.0" Round Culvert** L= 34.6' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 145.90' / 145.55' S= 0.0101 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	149.00'	**3.6" x 0.9" Horiz. Yard Drain X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads
#3	Discarded	148.00'	**5.450 in/hr Exfiltration over Surface area**

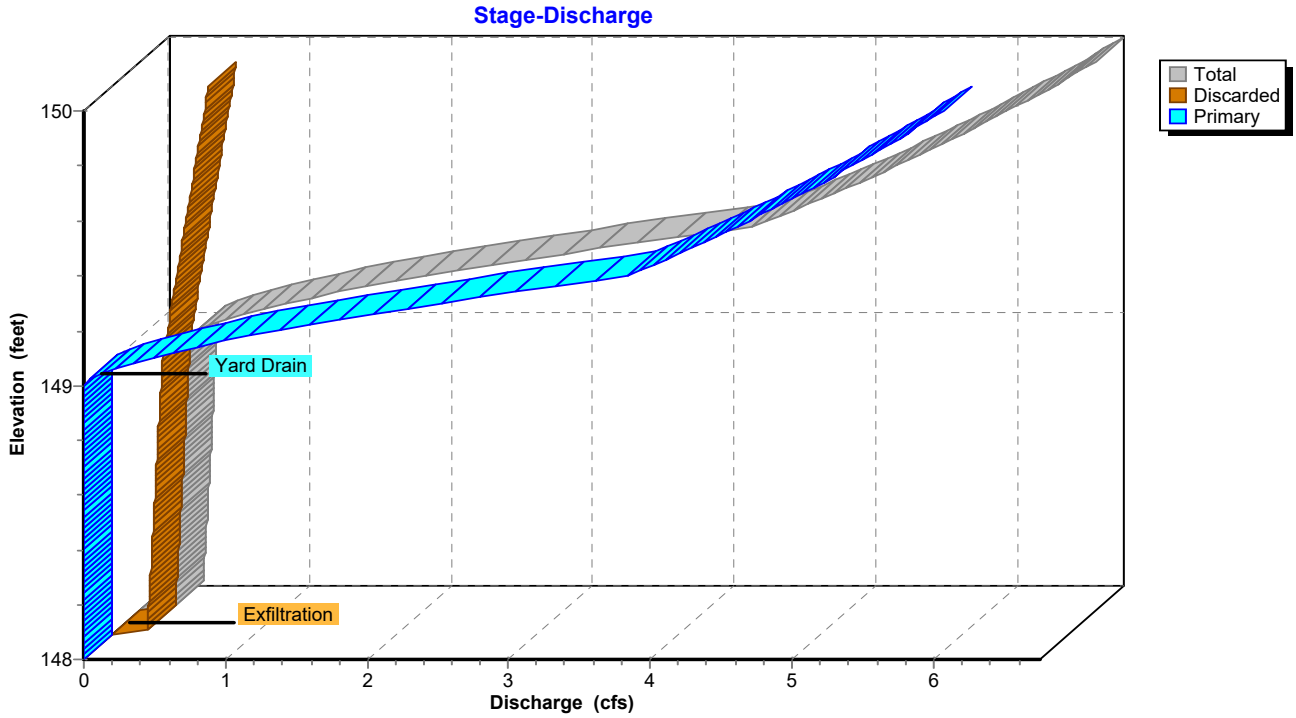
Discarded OutFlow Max=0.36 cfs @ 12.68 hrs HW=148.99' (Free Discharge)
└─**3=Exfiltration** (Exfiltration Controls 0.36 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=148.00' (Free Discharge)
└─**1=Culvert** (Passes 0.00 cfs of 7.18 cfs potential flow)
└─**2=Yard Drain** (Controls 0.00 cfs)

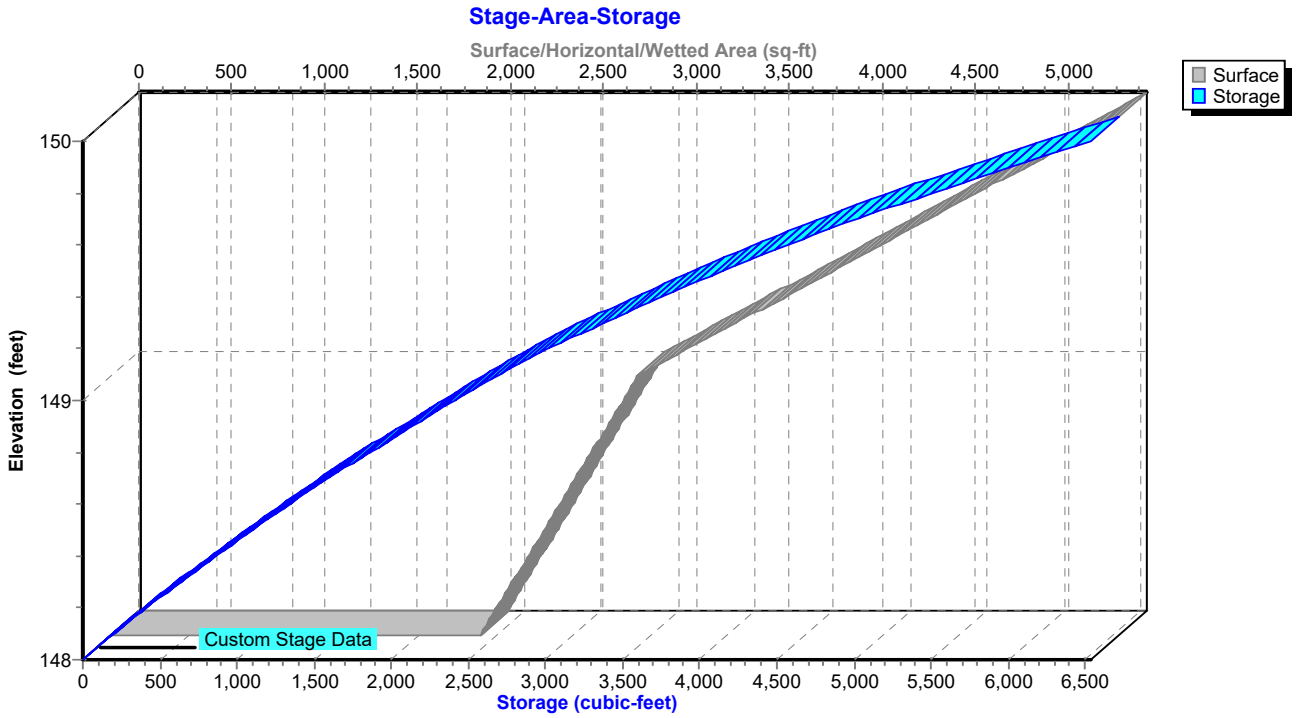
Pond AP-2: Front Lawn Rain Garden



Pond AP-2: Front Lawn Rain Garden



Pond AP-2: Front Lawn Rain Garden

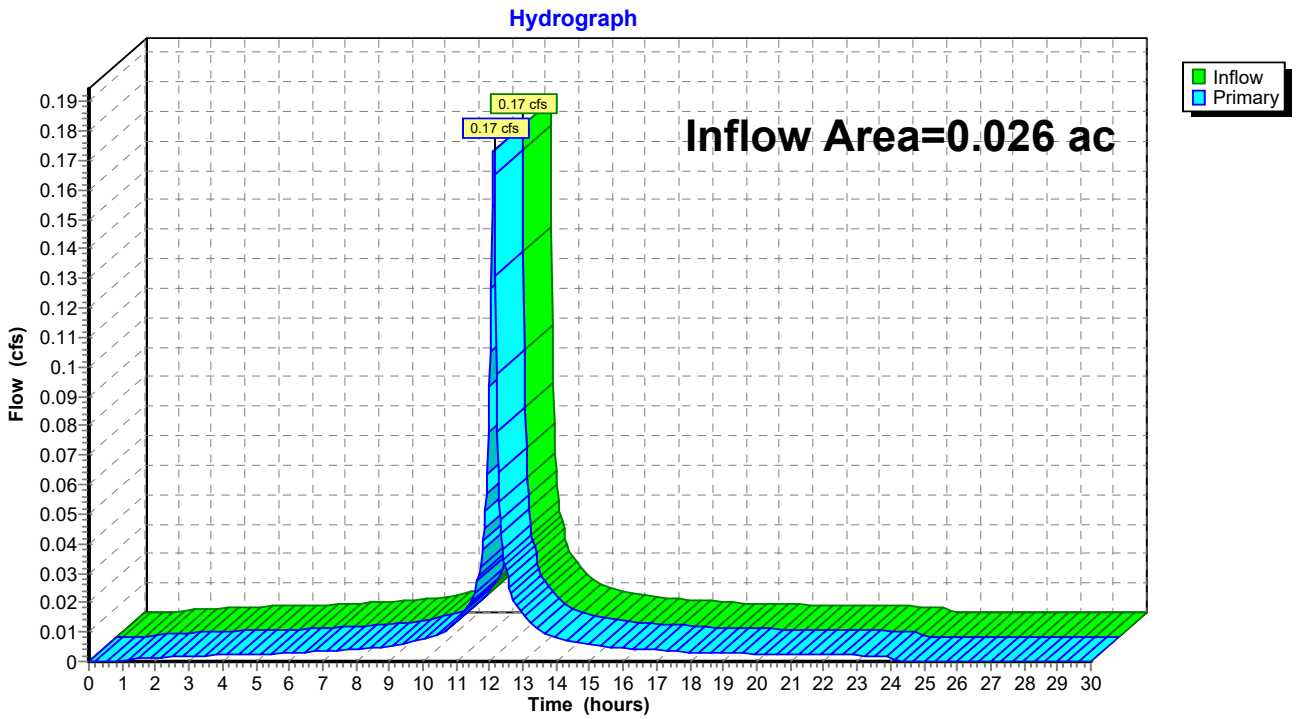


Summary for Pond AP-3: Danbury Road

Inflow Area = 0.026 ac,100.00% Impervious, Inflow Depth = 6.32" for 25-yr event
Inflow = 0.17 cfs @ 12.13 hrs, Volume= 0.014 af
Primary = 0.17 cfs @ 12.13 hrs, Volume= 0.014 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Pond AP-3: Danbury Road

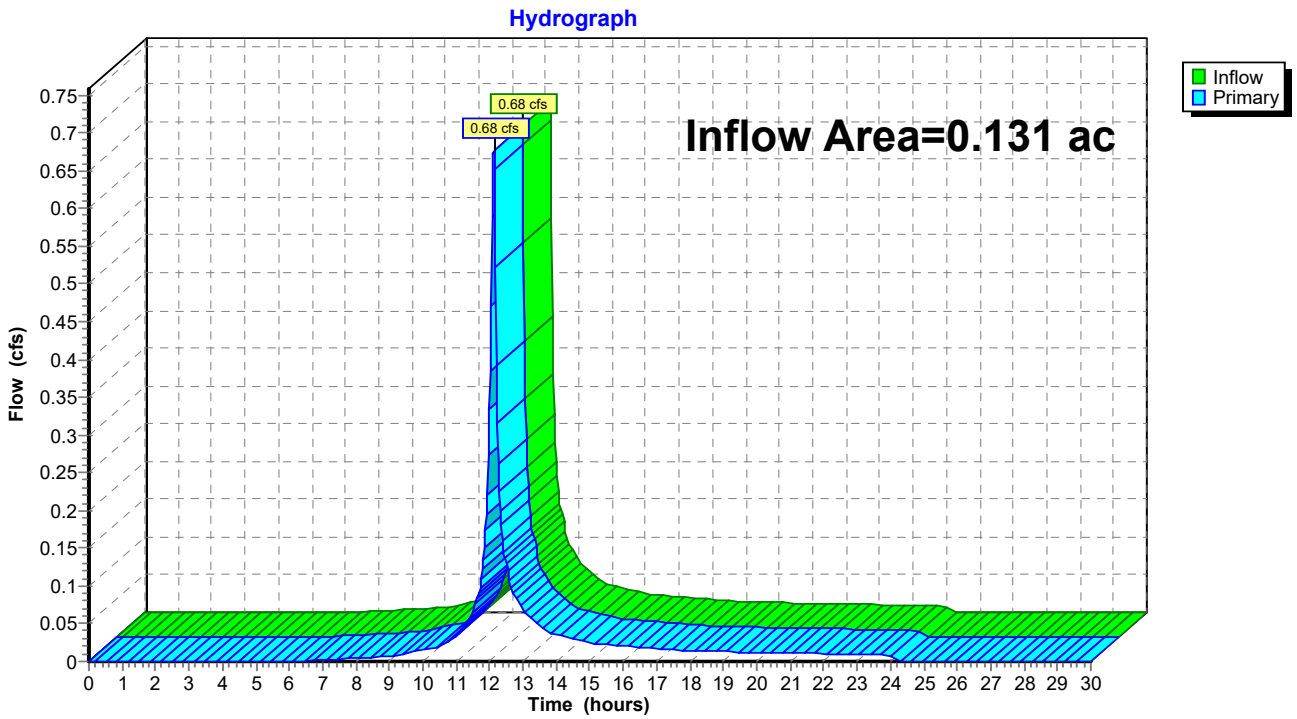


Summary for Pond AP-4: Landscaped Area

Inflow Area = 0.131 ac, 1.63% Impervious, Inflow Depth = 4.18" for 25-yr event
Inflow = 0.68 cfs @ 12.13 hrs, Volume= 0.046 af
Primary = 0.68 cfs @ 12.13 hrs, Volume= 0.046 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Pond AP-4: Landscaped Area



Summary for Pond B-1: South Basin

Inflow Area = 0.157 ac, 16.69% Impervious, Inflow Depth = 4.94" for 25-yr event
Inflow = 0.93 cfs @ 12.13 hrs, Volume= 0.065 af
Outflow = 0.91 cfs @ 12.14 hrs, Volume= 0.061 af, Atten= 2%, Lag= 0.9 min
Discarded = 0.00 cfs @ 12.14 hrs, Volume= 0.007 af
Primary = 0.90 cfs @ 12.14 hrs, Volume= 0.055 af
Routed to Pond AP-1 : Norwalk River

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 140.05' @ 12.14 hrs Surf.Area= 473 sf Storage= 272 cf

Plug-Flow detention time= 72.4 min calculated for 0.061 af (95% of inflow)
Center-of-Mass det. time= 45.1 min (845.7 - 800.6)

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	962 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

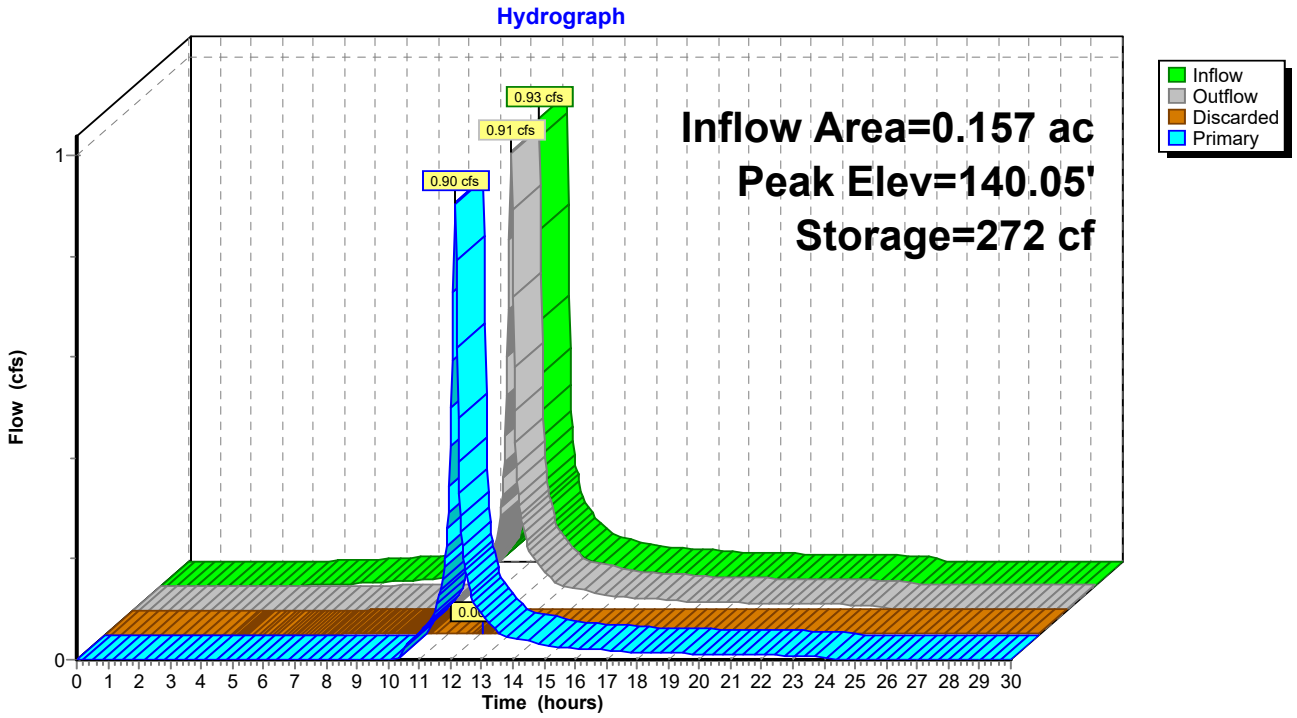
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	52	0	0
140.00	446	249	249
141.00	979	713	962

Device	Routing	Invert	Outlet Devices
#1	Primary	138.00'	**8.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 138.00' / 137.60' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf
#2	Device 1	139.90'	**3.6" x 0.9" Horiz. Yard Drain X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads
#3	Discarded	139.00'	**0.400 in/hr Exfiltration over Surface area**

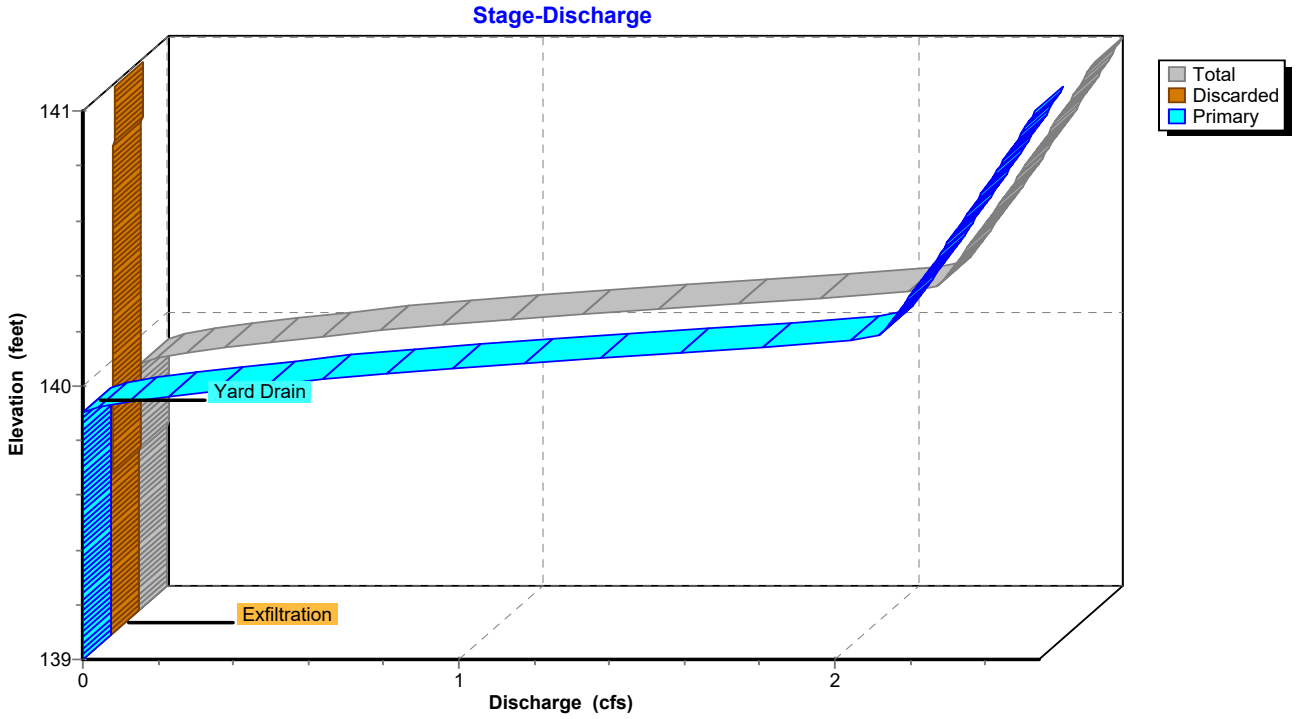
Discarded OutFlow Max=0.00 cfs @ 12.14 hrs HW=140.05' (Free Discharge)
└─**3=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=0.89 cfs @ 12.14 hrs HW=140.05' (Free Discharge)
└─**1=Culvert** (Passes 0.89 cfs of 2.05 cfs potential flow)
└─**2=Yard Drain** (Weir Controls 0.89 cfs @ 1.26 fps)

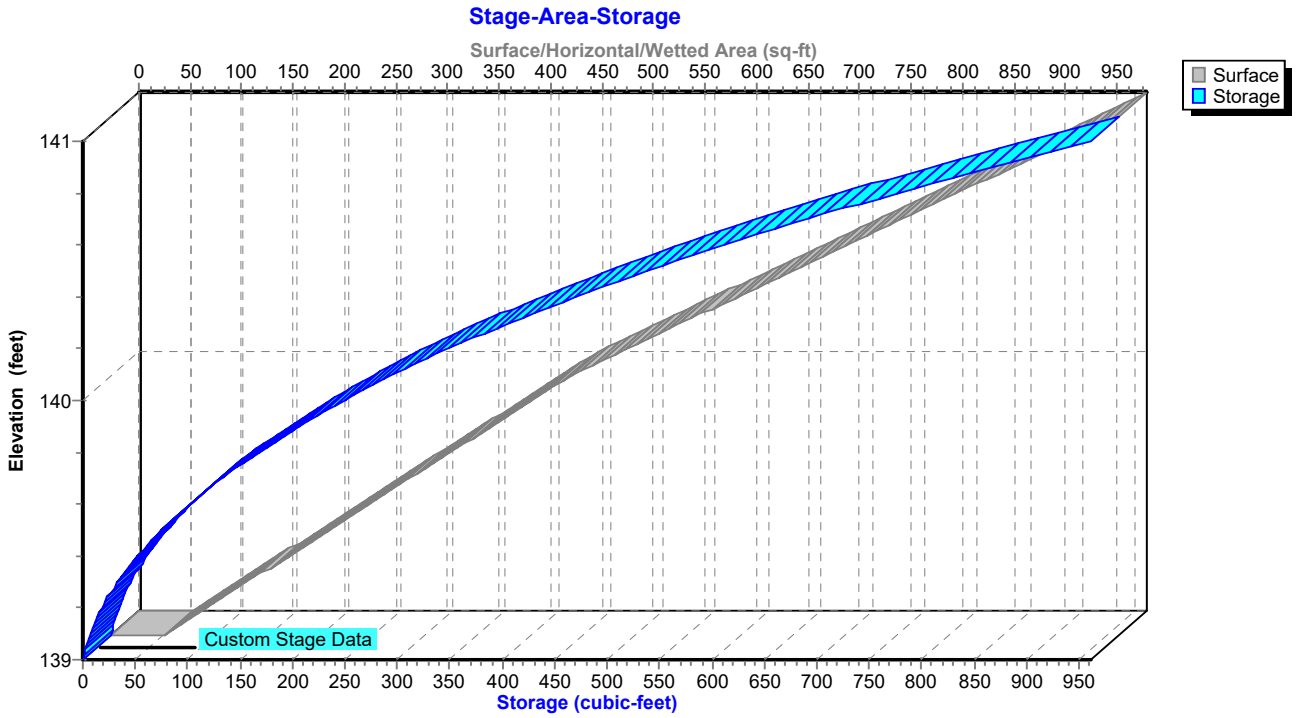
Pond B-1: South Basin



Pond B-1: South Basin



Pond B-1: South Basin



Summary for Pond B-2: North Basin

Inflow Area = 0.154 ac, 7.18% Impervious, Inflow Depth = 4.72" for 25-yr event
Inflow = 0.88 cfs @ 12.13 hrs, Volume= 0.061 af
Outflow = 0.04 cfs @ 14.11 hrs, Volume= 0.061 af, Atten= 95%, Lag= 118.7 min
Discarded = 0.04 cfs @ 14.11 hrs, Volume= 0.061 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond AP-1 : Norwalk River

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 140.01' @ 14.11 hrs Surf.Area= 1,503 sf Storage= 1,290 cf

Plug-Flow detention time= 299.2 min calculated for 0.061 af (100% of inflow)
Center-of-Mass det. time= 299.2 min (1,106.0 - 806.9)

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	4,090 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

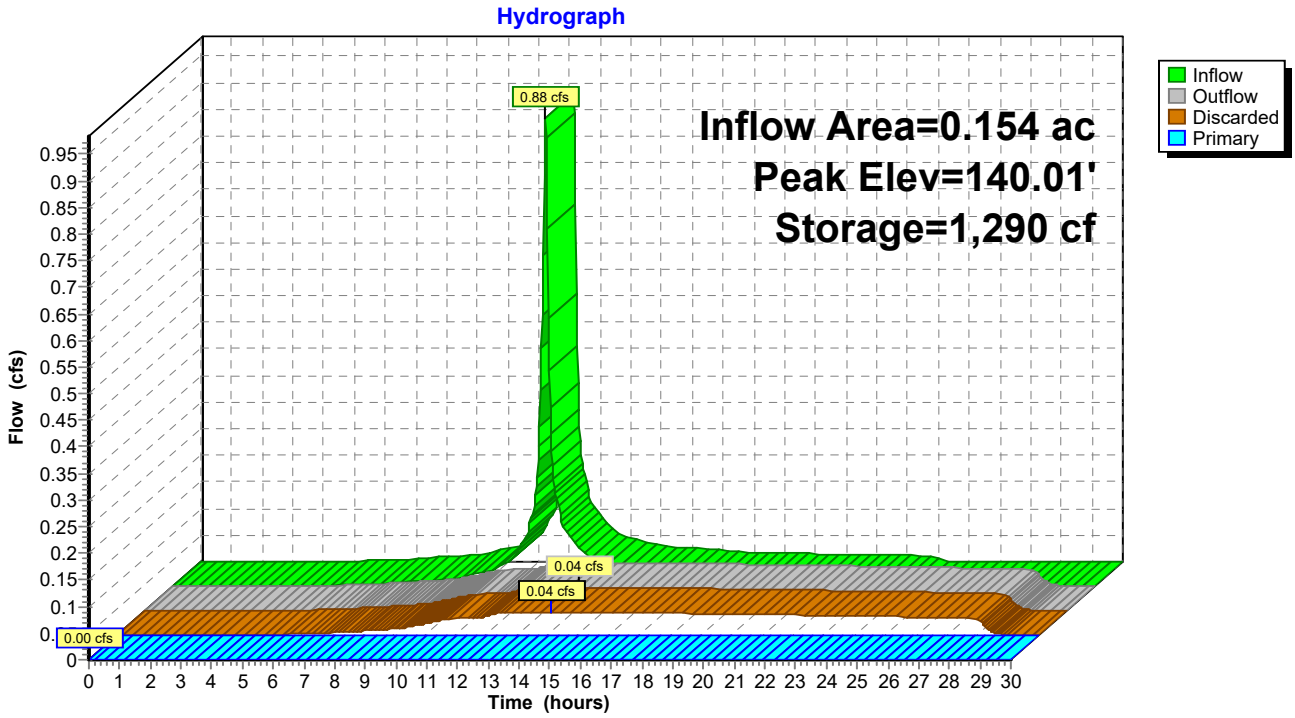
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	1,058	0	0
140.00	1,499	1,279	1,279
141.00	1,995	1,747	3,026
141.50	2,263	1,065	4,090

Device	Routing	Invert	Outlet Devices
#1	Primary	139.00'	**10.0" Round Culvert** L= 22.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 139.00' / 138.80' S= 0.0091 '/' Cc= 0.900 n= 0.012, Flow Area= 0.55 sf
#2	Device 1	140.50'	**3.6" x 0.9" Horiz. Yard Drain X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads
#3	Discarded	139.00'	**1.250 in/hr Exfiltration over Surface area**

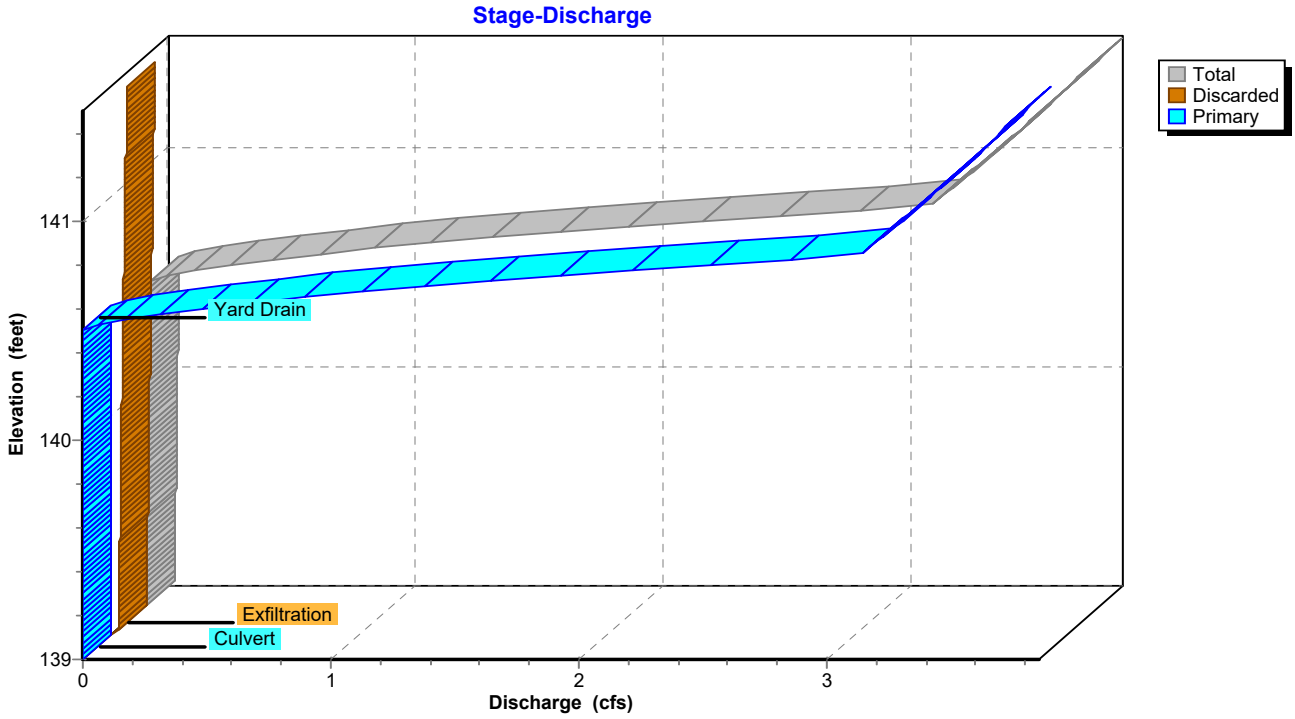
Discarded OutFlow Max=0.04 cfs @ 14.11 hrs HW=140.01' (Free Discharge)
└─**3=Exfiltration** (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=139.00' (Free Discharge)
└─**1=Culvert** (Controls 0.00 cfs)
└─**2=Yard Drain** (Controls 0.00 cfs)

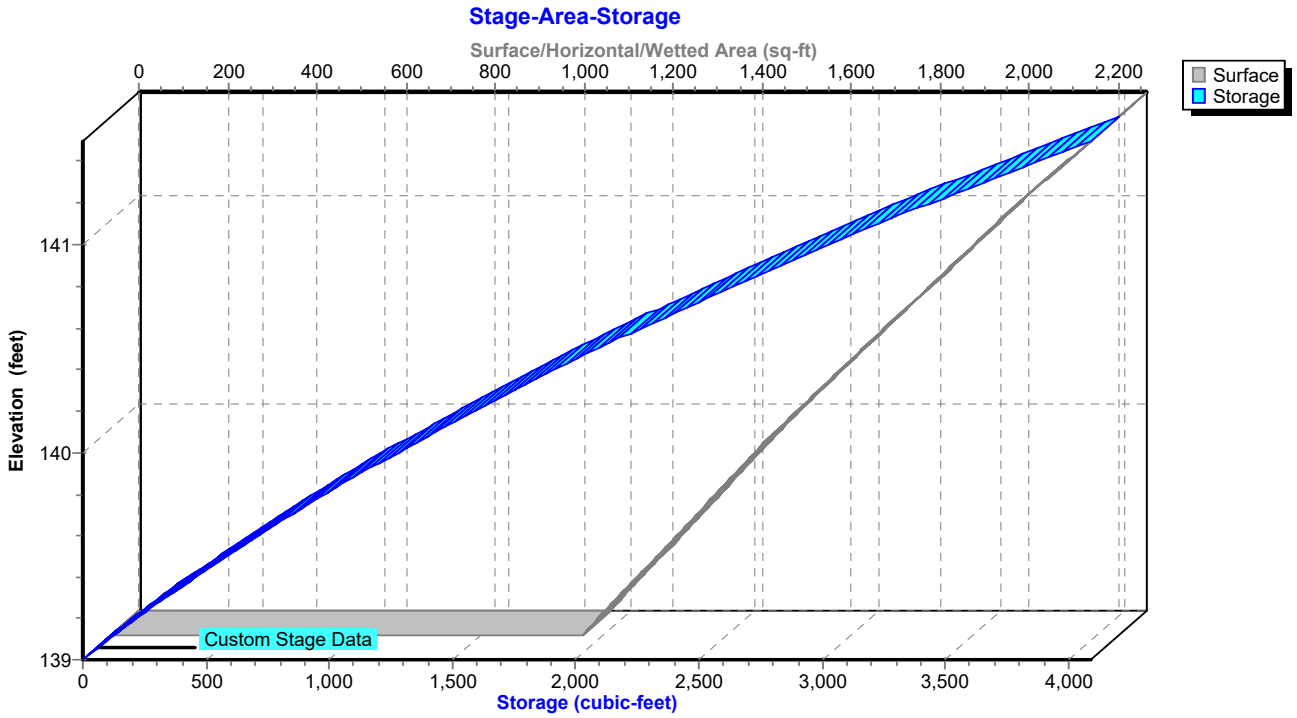
Pond B-2: North Basin



Pond B-2: North Basin



Pond B-2: North Basin



Summary for Pond S-1: Subsurface Infiltration System

Inflow Area = 0.554 ac, 58.45% Impervious, Inflow Depth = 5.44" for 25-yr event
Inflow = 3.45 cfs @ 12.13 hrs, Volume= 0.251 af
Outflow = 2.44 cfs @ 12.19 hrs, Volume= 0.220 af, Atten= 29%, Lag= 3.7 min
Discarded = 0.02 cfs @ 4.44 hrs, Volume= 0.035 af
Primary = 2.42 cfs @ 12.19 hrs, Volume= 0.185 af
Routed to Pond AP-1 : Norwalk River

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 143.83' @ 12.19 hrs Surf.Area= 0.039 ac Storage= 0.063 af

Plug-Flow detention time= 133.3 min calculated for 0.220 af (88% of inflow)
Center-of-Mass det. time= 72.7 min (853.0 - 780.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	141.35'	0.036 af	**11.00'W x 153.14'L x 3.50'H Field A** 0.135 af Overall - 0.044 af Embedded = 0.091 af x 40.0% Voids
#2A	141.85'	0.044 af	**ADS_StormTech SC-740 +Cap** x 42 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 42 Chambers in 2 Rows
		0.081 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	142.70'	**12.0" Round Culvert** L= 114.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 142.70' / 141.56' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	142.85'	**6.0" Vert. Orifice X 3.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	144.25'	**5.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)
#4	Discarded	141.35'	**0.400 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.02 cfs @ 4.44 hrs HW=141.39' (Free Discharge)
└─**4=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=2.41 cfs @ 12.19 hrs HW=143.82' (Free Discharge)
└─**1=Culvert** (Passes 2.41 cfs of 2.98 cfs potential flow)
  ├─**2=Orifice** (Orifice Controls 2.41 cfs @ 4.09 fps)
  └─**3=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Pond S-1: Subsurface Infiltration System - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

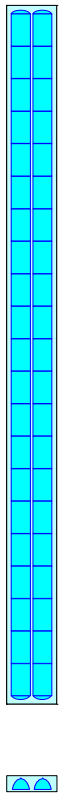
21 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 151.14' Row Length +12.0" End Stone x 2 = 153.14' Base Length
2 Rows x 51.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 11.00' Base Width
6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

42 Chambers x 45.9 cf = 1,929.5 cf Chamber Storage

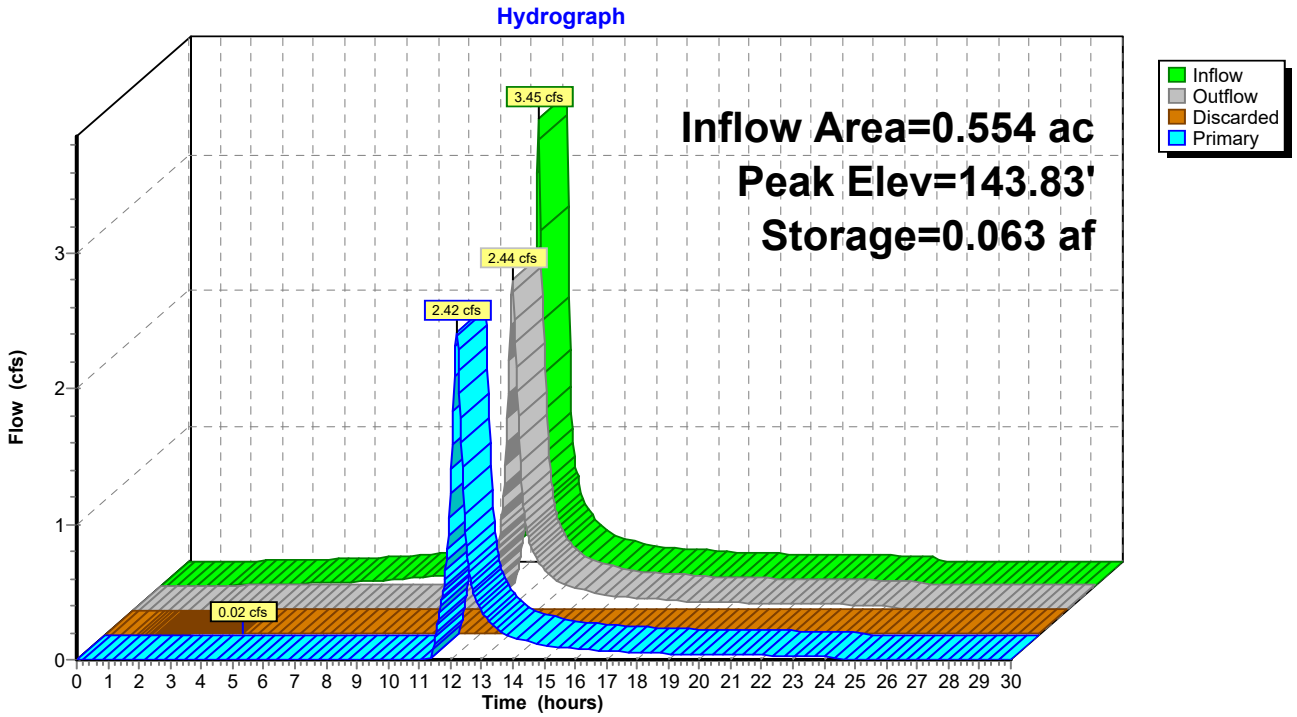
5,895.8 cf Field - 1,929.5 cf Chambers = 3,966.3 cf Stone x 40.0% Voids = 1,586.5 cf Stone Storage

Chamber Storage + Stone Storage = 3,516.0 cf = 0.081 af
Overall Storage Efficiency = 59.6%
Overall System Size = 153.14' x 11.00' x 3.50'

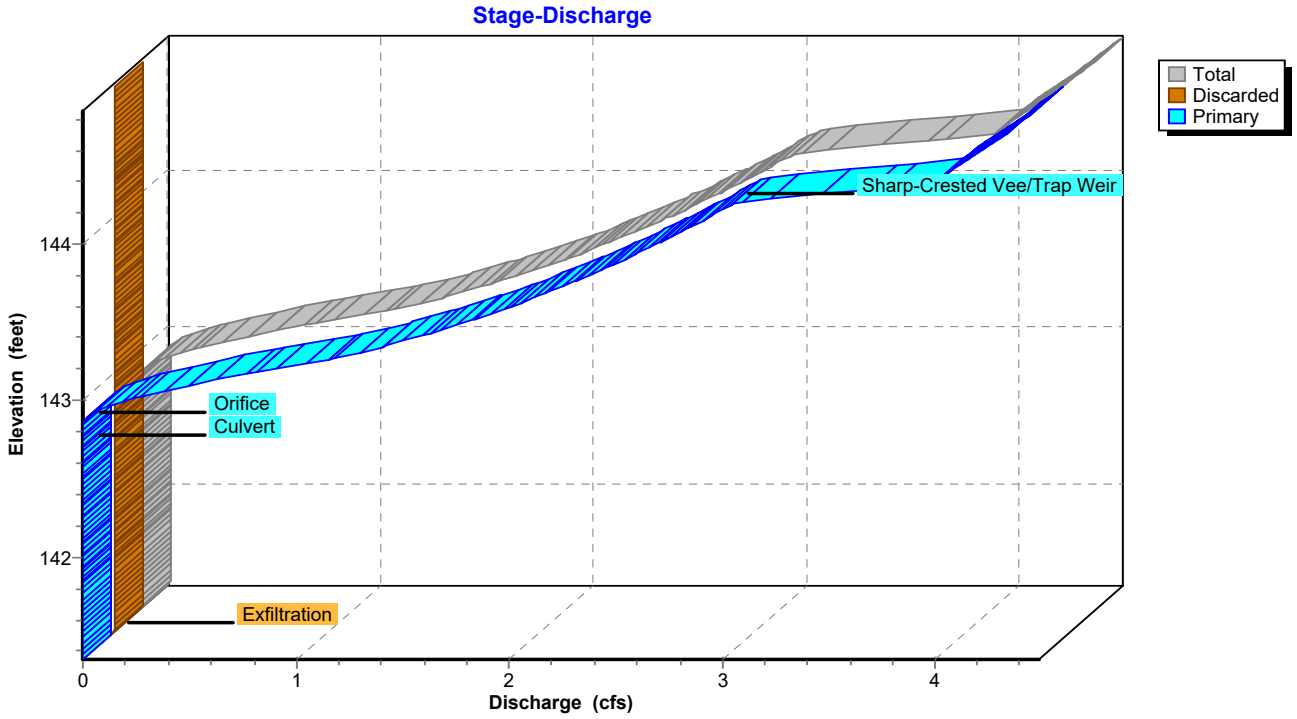
42 Chambers
218.4 cy Field
146.9 cy Stone



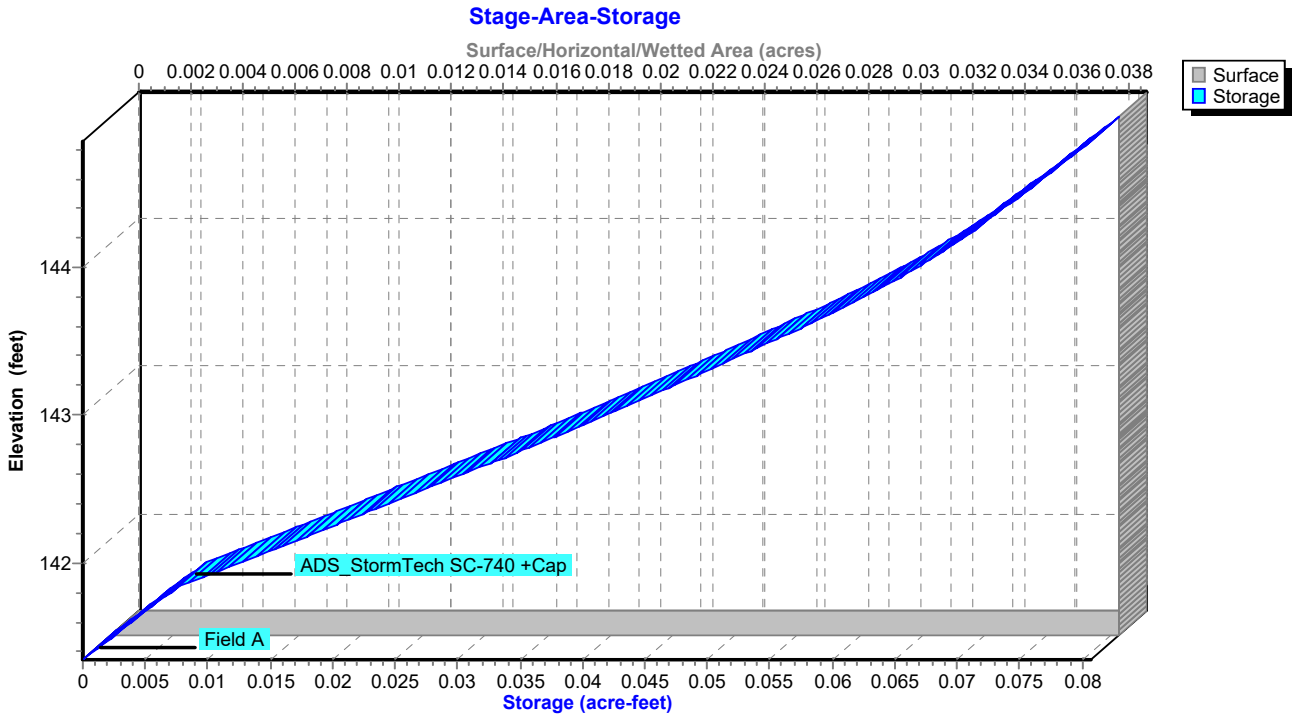
Pond S-1: Subsurface Infiltration System



Pond S-1: Subsurface Infiltration System



Pond S-1: Subsurface Infiltration System



Summary for Pond S-2: Subsurface Infiltration System

Inflow Area = 1.838 ac,100.00% Impervious, Inflow Depth = 6.32" for 25-yr event
Inflow = 4.54 cfs @ 11.95 hrs, Volume= 0.968 af
Outflow = 4.39 cfs @ 12.77 hrs, Volume= 0.968 af, Atten= 3%, Lag= 49.2 min
Discarded = 0.50 cfs @ 9.84 hrs, Volume= 0.649 af
Primary = 3.89 cfs @ 12.77 hrs, Volume= 0.319 af
Routed to Pond AP-1 : Norwalk River

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 144.92' @ 12.77 hrs Surf.Area= 0.091 ac Storage= 0.192 af

Plug-Flow detention time= 56.7 min calculated for 0.967 af (100% of inflow)
Center-of-Mass det. time= 56.6 min (804.5 - 747.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	141.50'	0.100 af	**30.00'W x 131.78'L x 4.00'H Field A** 0.363 af Overall - 0.114 af Embedded = 0.249 af x 40.0% Voids
#2A	142.50'	0.114 af	**ADS_StormTech SC-740 +Cap** x 108 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 108 Chambers in 6 Rows
		0.214 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	143.15'	**15.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 143.15' / 142.69' S= 0.0061 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	143.64'	**7.0" Vert. Orifice X 3.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	144.90'	**5.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)
#4	Discarded	141.50'	**5.450 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.50 cfs @ 9.84 hrs HW=141.54' (Free Discharge)
└─**4=Exfiltration** (Exfiltration Controls 0.50 cfs)

Primary OutFlow Max=3.87 cfs @ 12.77 hrs HW=144.92' (Free Discharge)
└─**1=Culvert** (Passes 3.87 cfs of 5.63 cfs potential flow)
  ├─**2=Orifice** (Orifice Controls 3.83 cfs @ 4.78 fps)
  └─**3=Sharp-Crested Vee/Trap Weir** (Weir Controls 0.04 cfs @ 0.44 fps)

Pond S-2: Subsurface Infiltration System - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

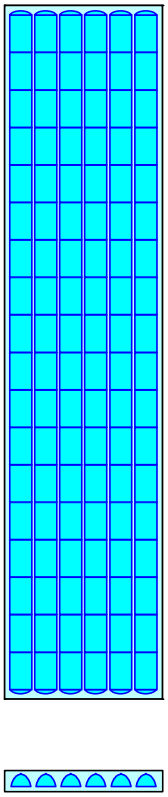
18 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 129.78' Row Length +12.0" End Stone x 2 = 131.78' Base Length
6 Rows x 51.0" Wide + 6.0" Spacing x 5 + 12.0" Side Stone x 2 = 30.00' Base Width
12.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

108 Chambers x 45.9 cf = 4,961.5 cf Chamber Storage

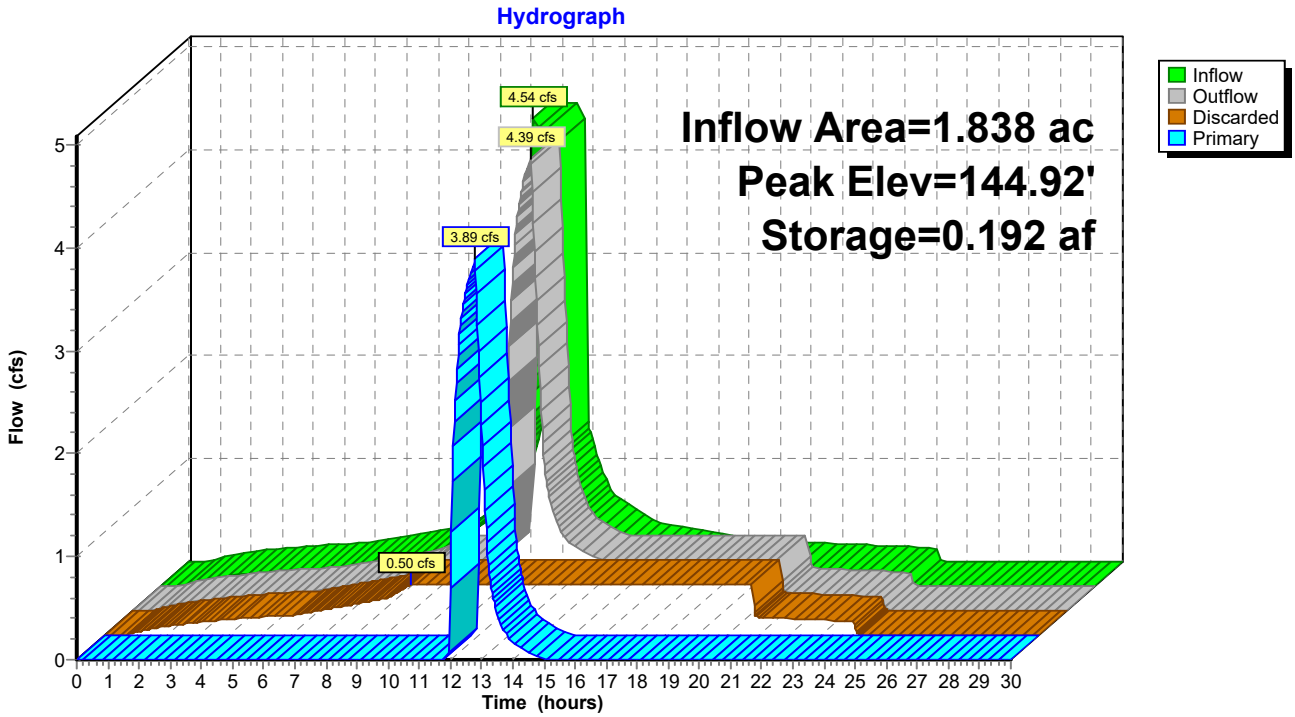
15,813.2 cf Field - 4,961.5 cf Chambers = 10,851.7 cf Stone x 40.0% Voids = 4,340.7 cf Stone Storage

Chamber Storage + Stone Storage = 9,302.2 cf = 0.214 af
Overall Storage Efficiency = 58.8%
Overall System Size = 131.78' x 30.00' x 4.00'

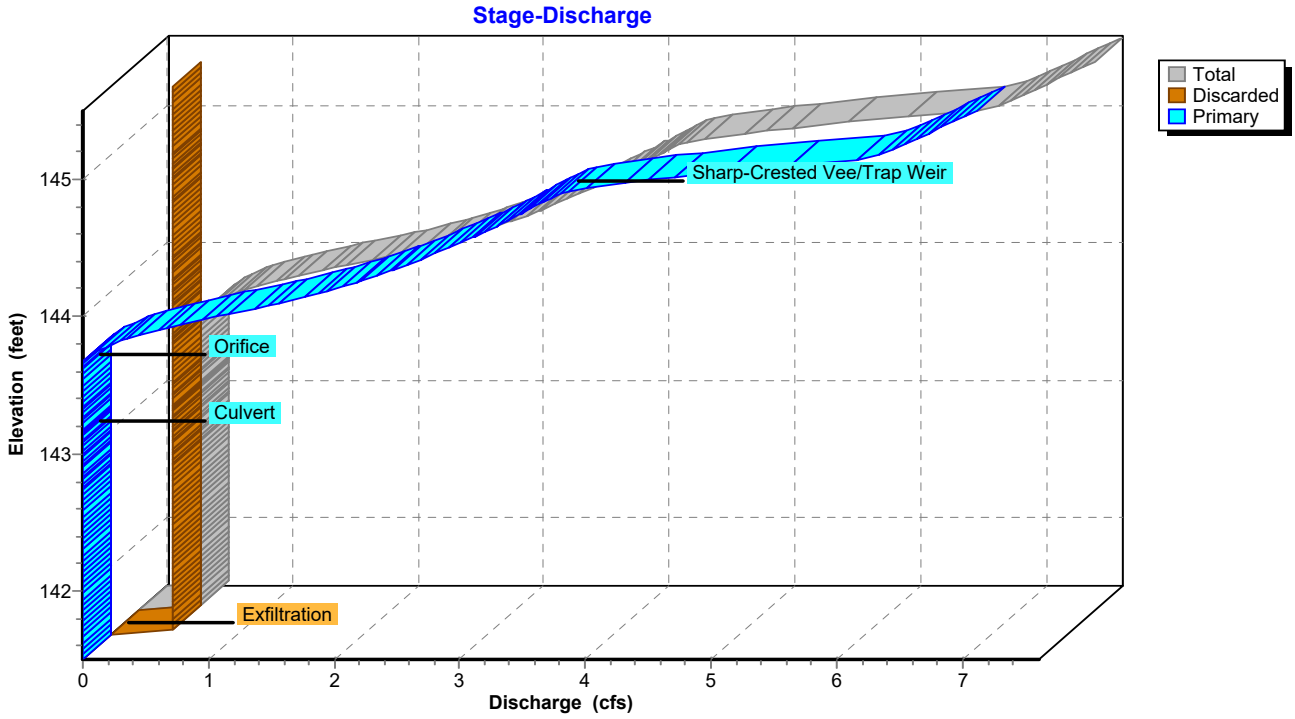
108 Chambers
585.7 cy Field
401.9 cy Stone



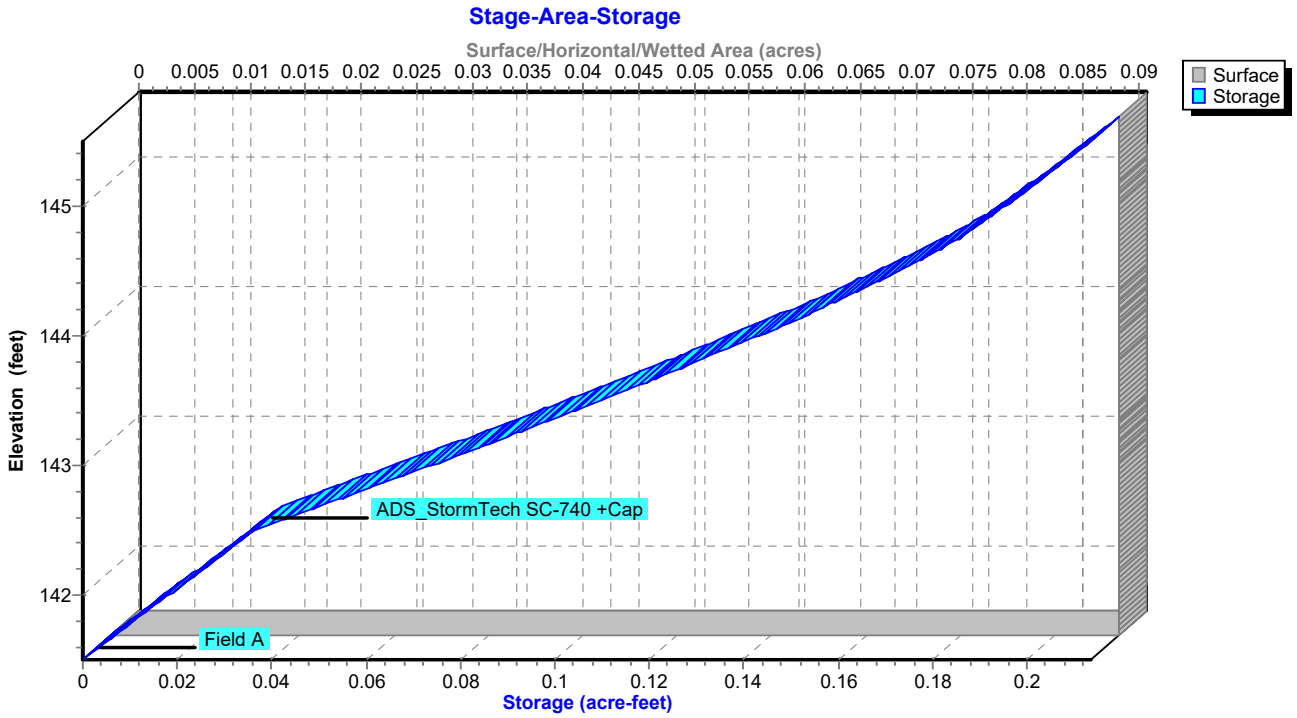
Pond S-2: Subsurface Infiltration System



Pond S-2: Subsurface Infiltration System



Pond S-2: Subsurface Infiltration System



Summary for Pond S-3: Subsurface Infiltration System

Inflow Area = 1.035 ac, 47.94% Impervious, Inflow Depth = 3.14" for 25-yr event
Inflow = 3.62 cfs @ 12.13 hrs, Volume= 0.271 af
Outflow = 2.07 cfs @ 12.21 hrs, Volume= 0.240 af, Atten= 43%, Lag= 5.2 min
Discarded = 0.05 cfs @ 7.11 hrs, Volume= 0.116 af
Primary = 2.02 cfs @ 12.21 hrs, Volume= 0.124 af
Routed to Pond AP-1 : Norwalk River

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 142.31' @ 12.21 hrs Surf.Area= 0.052 ac Storage= 0.090 af

Plug-Flow detention time= 194.3 min calculated for 0.239 af (88% of inflow)
Center-of-Mass det. time= 136.5 min (904.9 - 768.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	139.70'	0.047 af	**30.00'W x 74.82'L x 3.50'H Field A** 0.180 af Overall - 0.063 af Embedded = 0.117 af x 40.0% Voids
#2A	140.20'	0.063 af	**ADS_StormTech SC-740 +Cap** x 60 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 60 Chambers in 6 Rows
		0.110 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	141.14'	**12.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 141.14' / 140.49' S= 0.0087 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	141.40'	**7.0" Vert. Orifice X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	142.60'	**5.0' long Weir Wall** Cv= 2.62 (C= 3.28)
#4	Discarded	139.70'	**1.050 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.05 cfs @ 7.11 hrs HW=139.74' (Free Discharge)
└─**4=Exfiltration** (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=2.01 cfs @ 12.21 hrs HW=142.30' (Free Discharge)
└─**1=Culvert** (Passes 2.01 cfs of 3.08 cfs potential flow)
  ├─**2=Orifice** (Orifice Controls 2.01 cfs @ 3.77 fps)
  └─**3=Weir Wall** (Controls 0.00 cfs)

Pond S-3: Subsurface Infiltration System - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

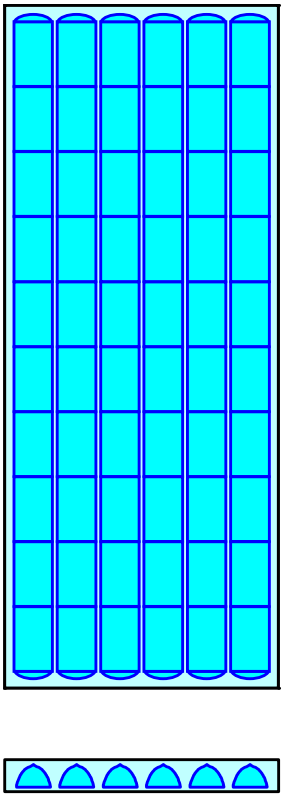
10 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 72.82' Row Length +12.0" End Stone x 2 = 74.82' Base Length
6 Rows x 51.0" Wide + 6.0" Spacing x 5 + 12.0" Side Stone x 2 = 30.00' Base Width
6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

60 Chambers x 45.9 cf = 2,756.4 cf Chamber Storage

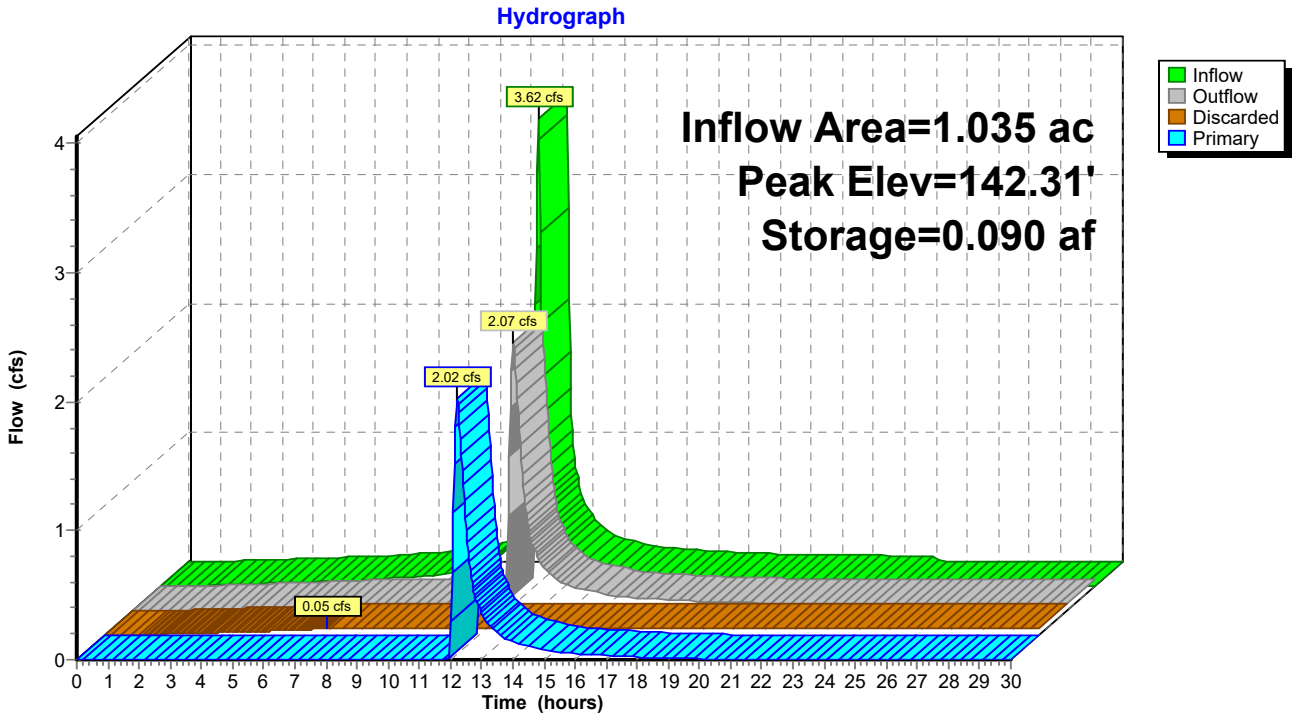
7,855.8 cf Field - 2,756.4 cf Chambers = 5,099.3 cf Stone x 40.0% Voids = 2,039.7 cf Stone Storage

Chamber Storage + Stone Storage = 4,796.1 cf = 0.110 af
Overall Storage Efficiency = 61.1%
Overall System Size = 74.82' x 30.00' x 3.50'

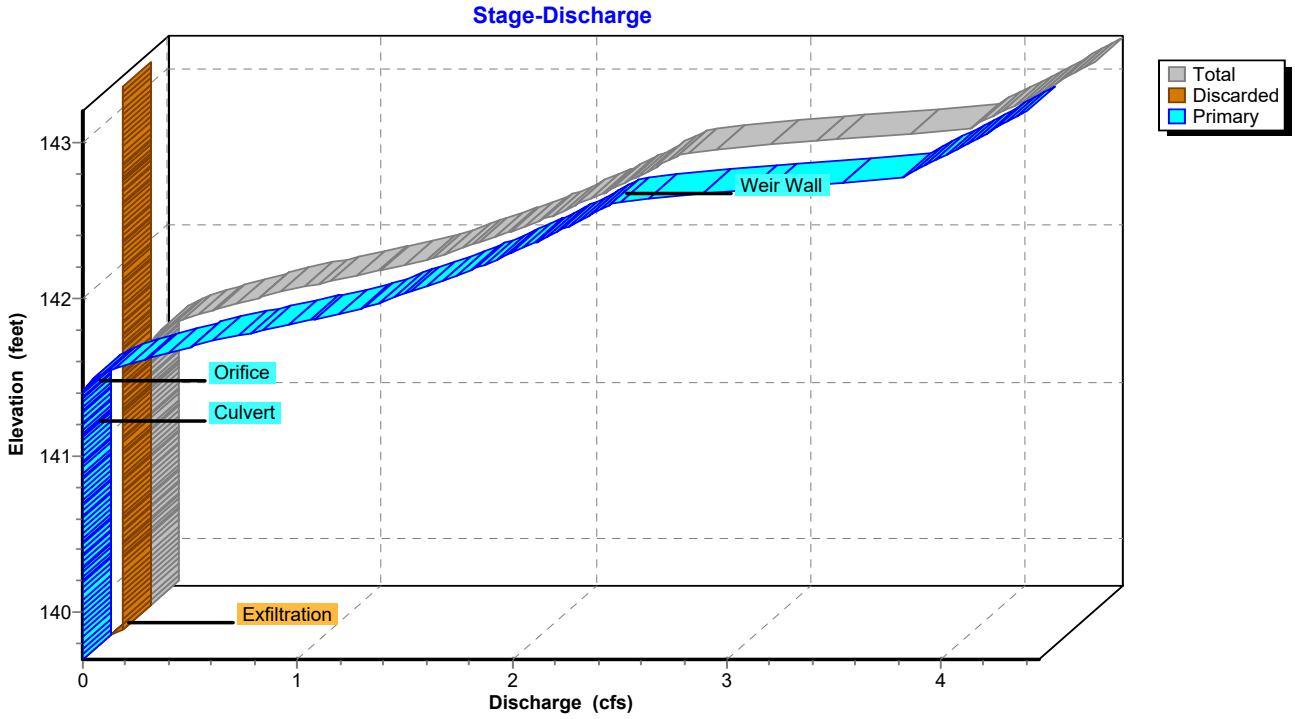
60 Chambers
291.0 cy Field
188.9 cy Stone



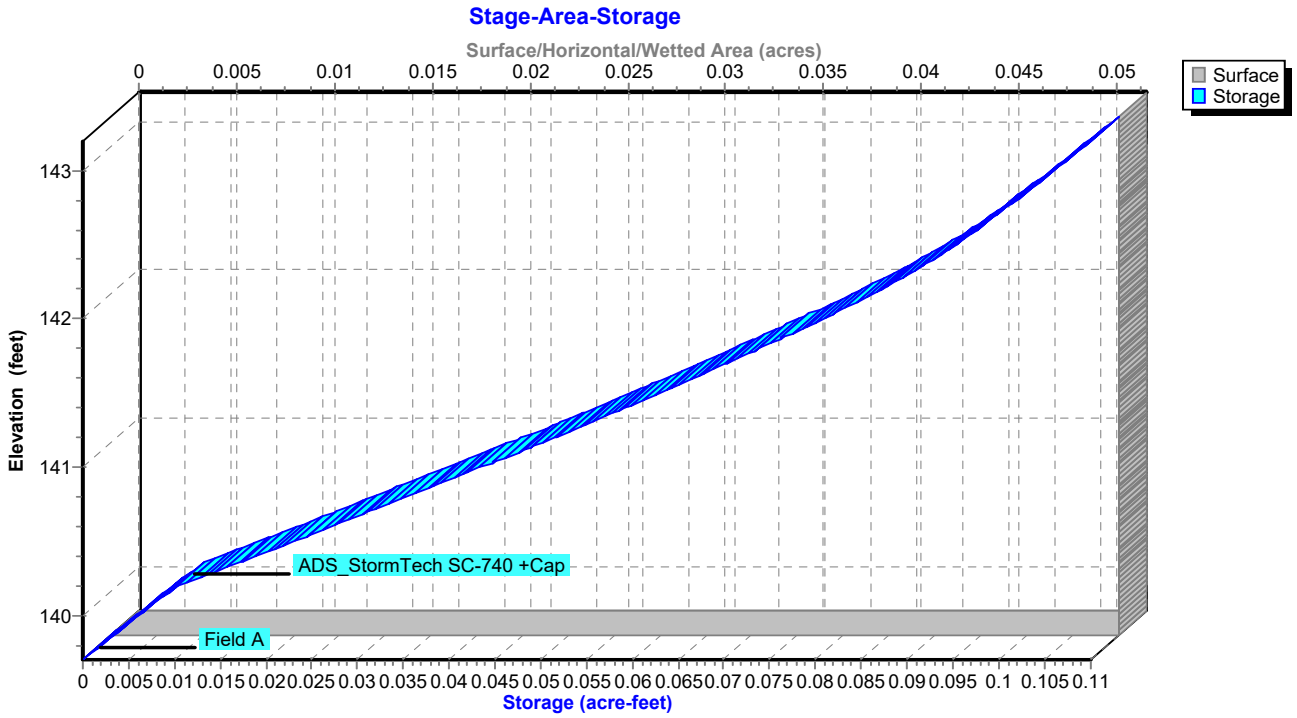
Pond S-3: Subsurface Infiltration System



Pond S-3: Subsurface Infiltration System



Pond S-3: Subsurface Infiltration System



Summary for Subcatchment PR-1: CCB 14

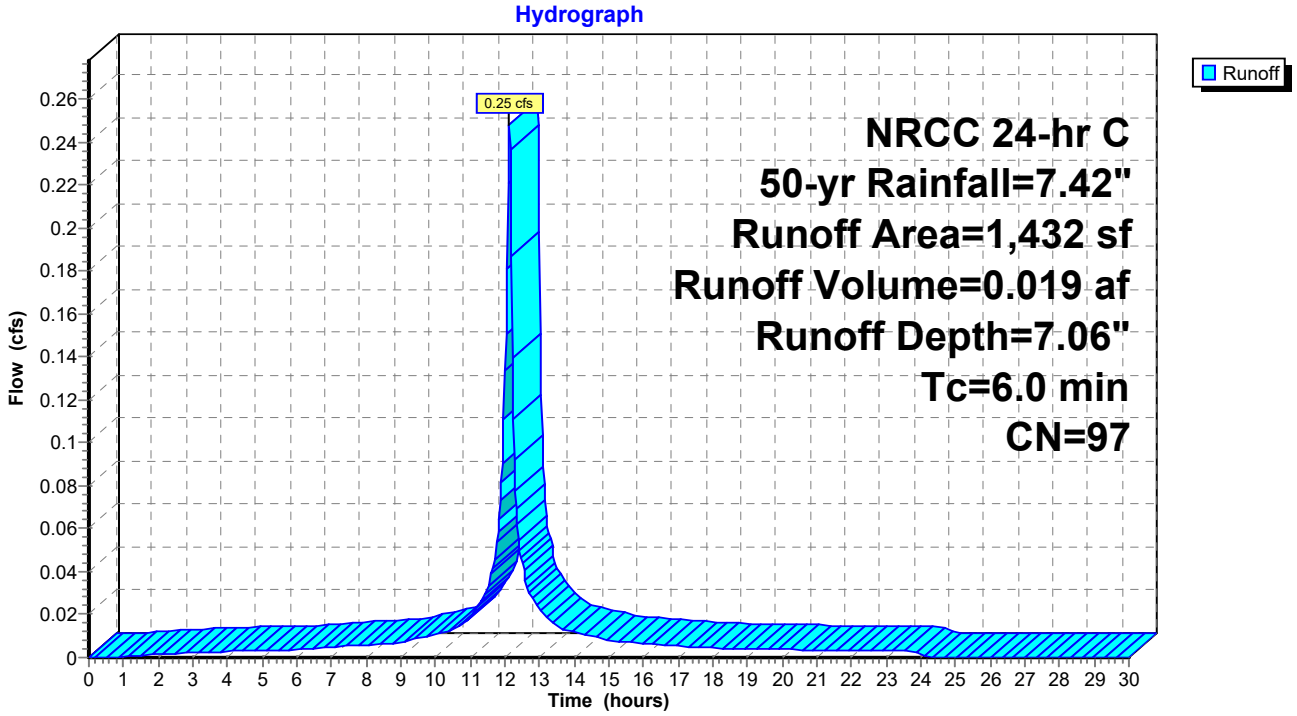
Runoff = 0.25 cfs @ 12.13 hrs, Volume= 0.019 af, Depth= 7.06"
Routed to Pond S-3 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 50-yr Rainfall=7.42"

	Area (sf)	CN	Description
	1,361	98	Paved parking, HSG D
*	71	79	Landscaping, Good, HSG D
	1,432	97	Weighted Average
	71		4.96% Pervious Area
	1,361		95.04% Impervious Area

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

Subcatchment PR-1: CCB 14



Summary for Subcatchment PR-10: CCB 28

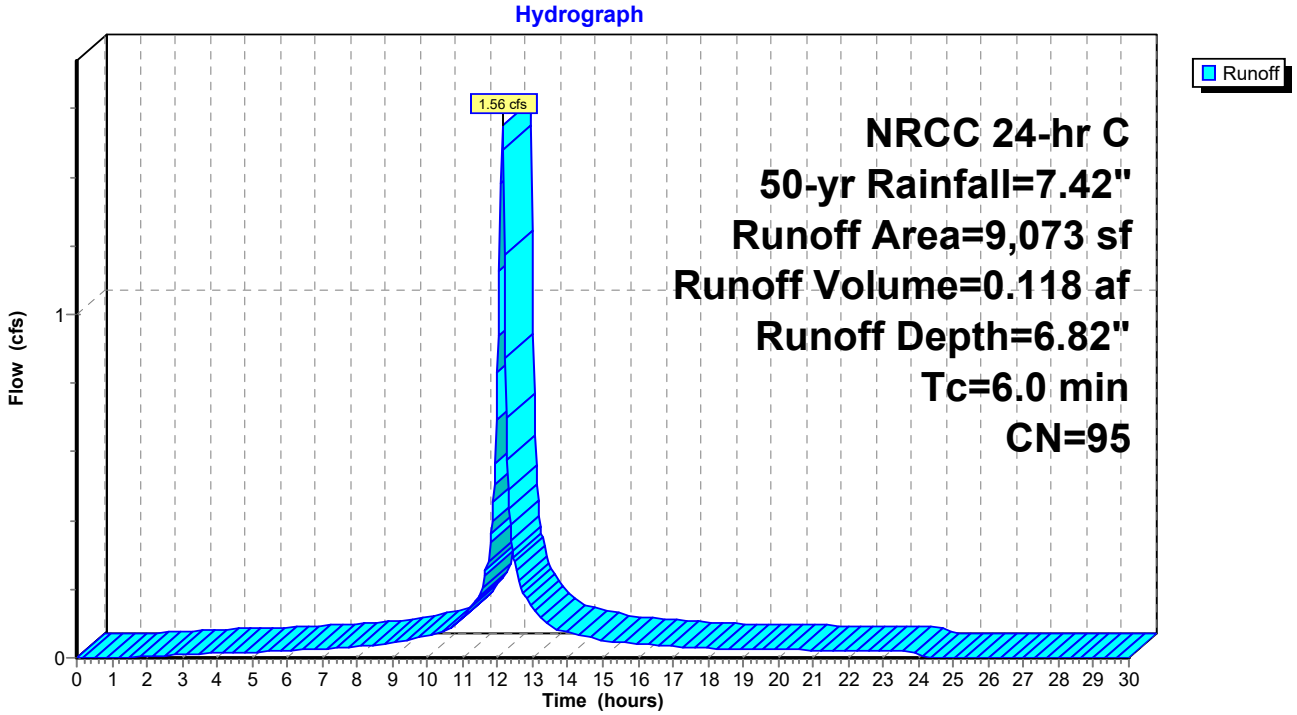
Runoff = 1.56 cfs @ 12.13 hrs, Volume= 0.118 af, Depth= 6.82"
Routed to Pond S-1 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 50-yr Rainfall=7.42"

	Area (sf)	CN	Description
	7,450	98	Paved parking, HSG D
	440	80	>75% Grass cover, Good, HSG D
*	1,183	79	Landscaping, Good, HSG D
	9,073	95	Weighted Average
	1,623		17.89% Pervious Area
	7,450		82.11% Impervious Area

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

Subcatchment PR-10: CCB 28



Summary for Subcatchment PR-11: Building Roof

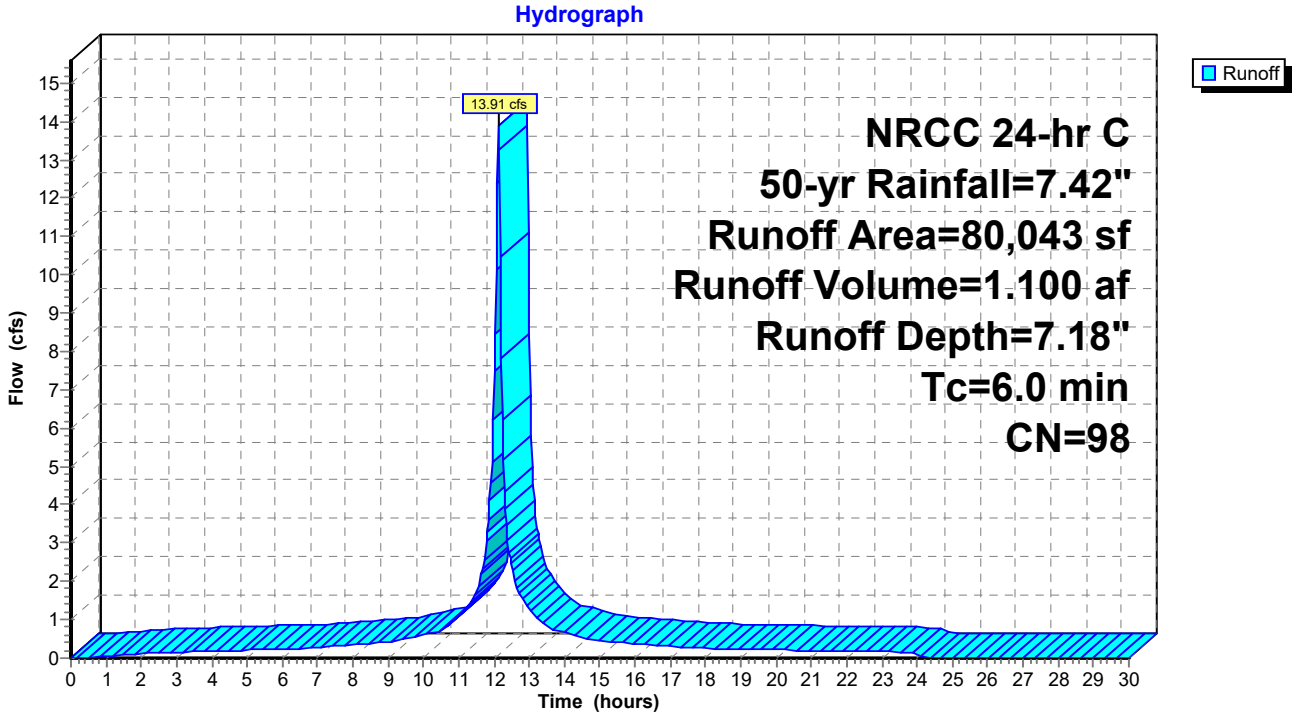
Runoff = 13.91 cfs @ 12.13 hrs, Volume= 1.100 af, Depth= 7.18"
Routed to Reach R1 : Roof Leader

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 50-yr Rainfall=7.42"

Area (sf)	CN	Description
80,043	98	Roofs, HSG D
80,043		100.00% Impervious Area

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

Subcatchment PR-11: Building Roof



Summary for Subcatchment PR-12: CCB 29

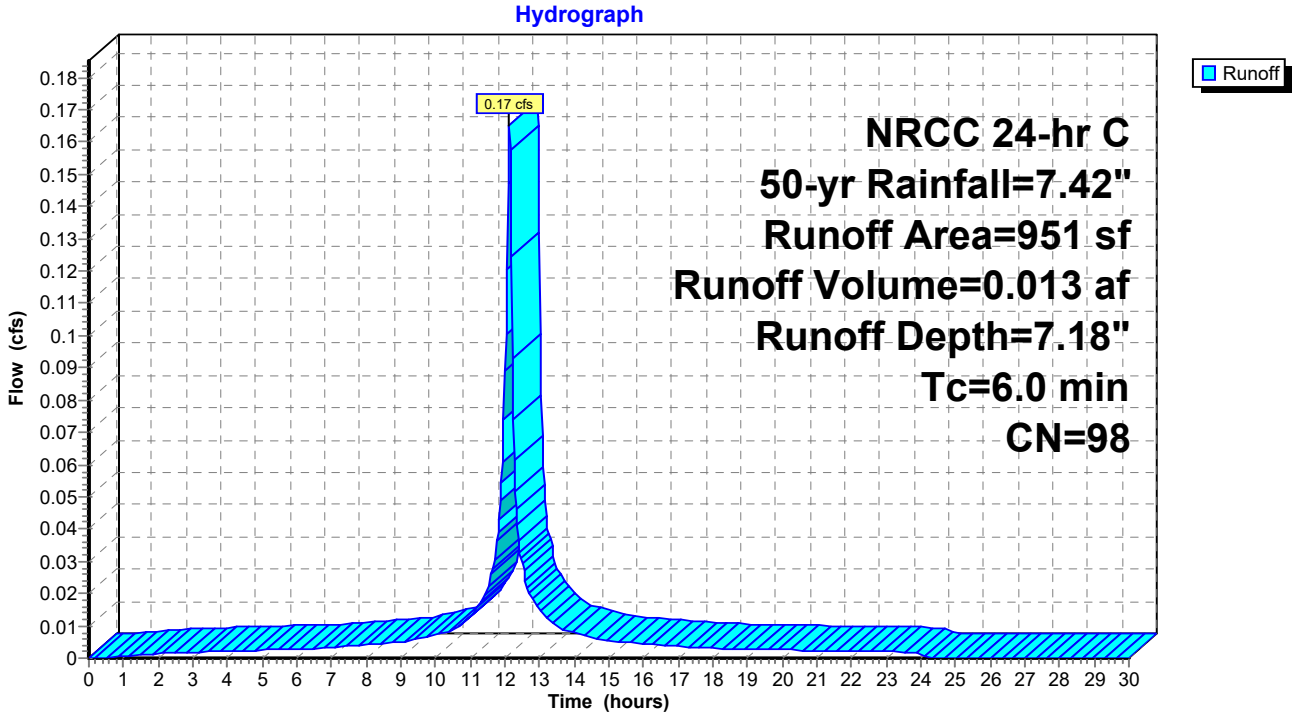
Runoff = 0.17 cfs @ 12.13 hrs, Volume= 0.013 af, Depth= 7.18"
Routed to Pond S-1 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 50-yr Rainfall=7.42"

Area (sf)	CN	Description
951	98	Paved parking, HSG D
951		100.00% Impervious Area

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

Subcatchment PR-12: CCB 29



Summary for Subcatchment PR-13: CCB 30

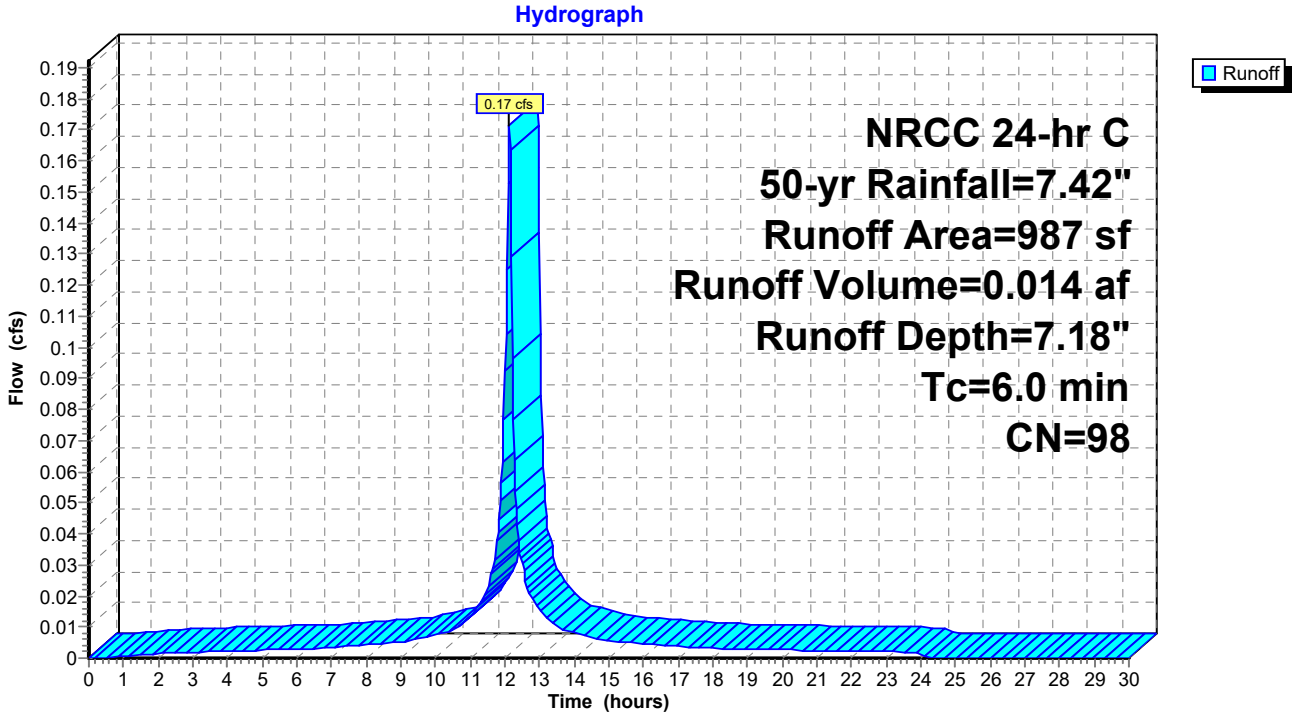
Runoff = 0.17 cfs @ 12.13 hrs, Volume= 0.014 af, Depth= 7.18"
Routed to Pond S-1 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 50-yr Rainfall=7.42"

Area (sf)	CN	Description
987	98	Paved parking, HSG D
987		100.00% Impervious Area

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

Subcatchment PR-13: CCB 30



Summary for Subcatchment PR-14: CLCB-10

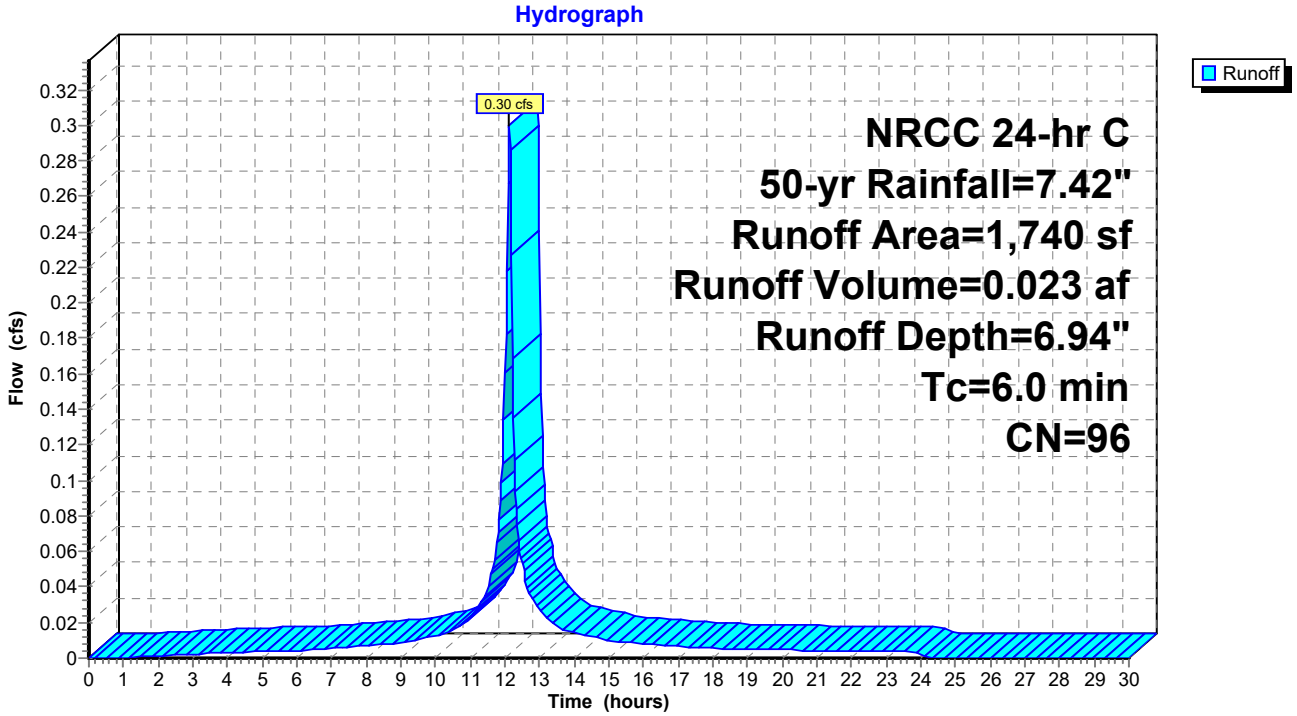
Runoff = 0.30 cfs @ 12.13 hrs, Volume= 0.023 af, Depth= 6.94"
Routed to Pond S-3 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 50-yr Rainfall=7.42"

	Area (sf)	CN	Description
*	1,740	96	Concrete paver, HSG D
	1,740		100.00% Pervious Area

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

Subcatchment PR-14: CLCB-10



Summary for Subcatchment PR-15: CLCB-09

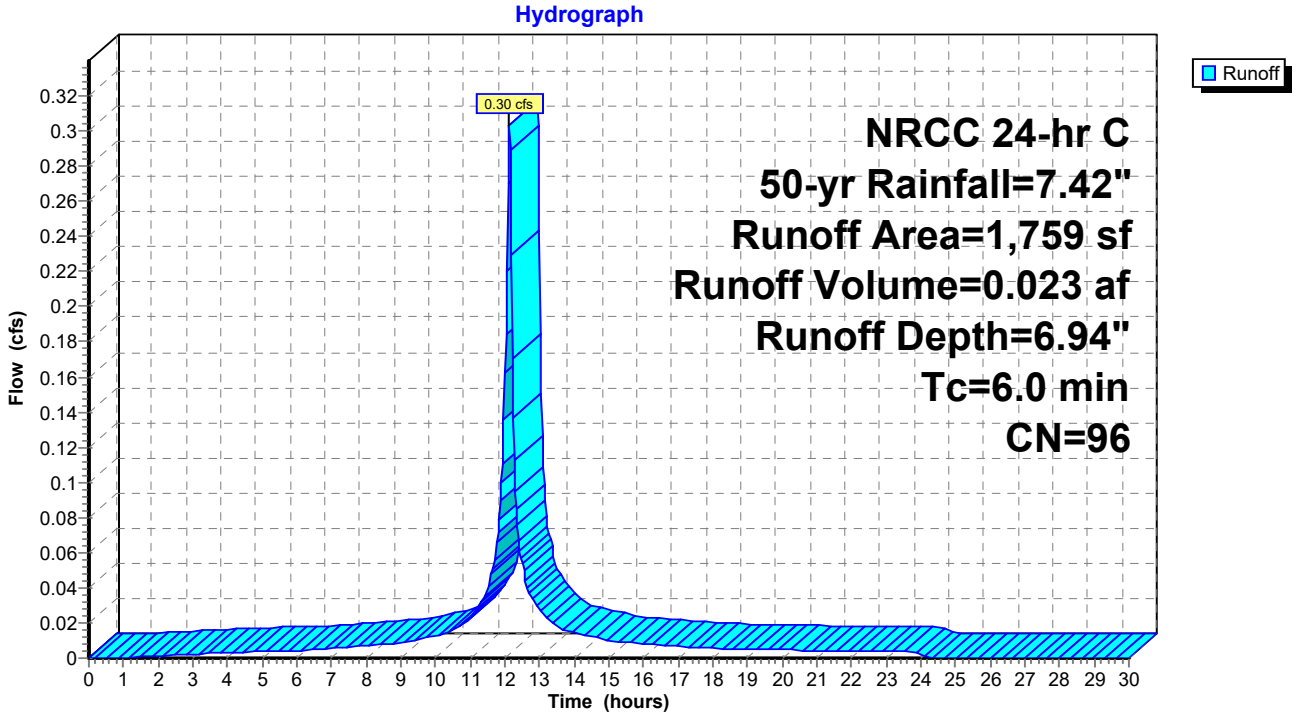
Runoff = 0.30 cfs @ 12.13 hrs, Volume= 0.023 af, Depth= 6.94"
Routed to Pond S-3 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 50-yr Rainfall=7.42"

	Area (sf)	CN	Description
*	1,759	96	Pevious paver, HSG D
	1,759		100.00% Pervious Area

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

Subcatchment PR-15: CLCB-09



Summary for Subcatchment PR-16: East rooftop to Front Rain Garden

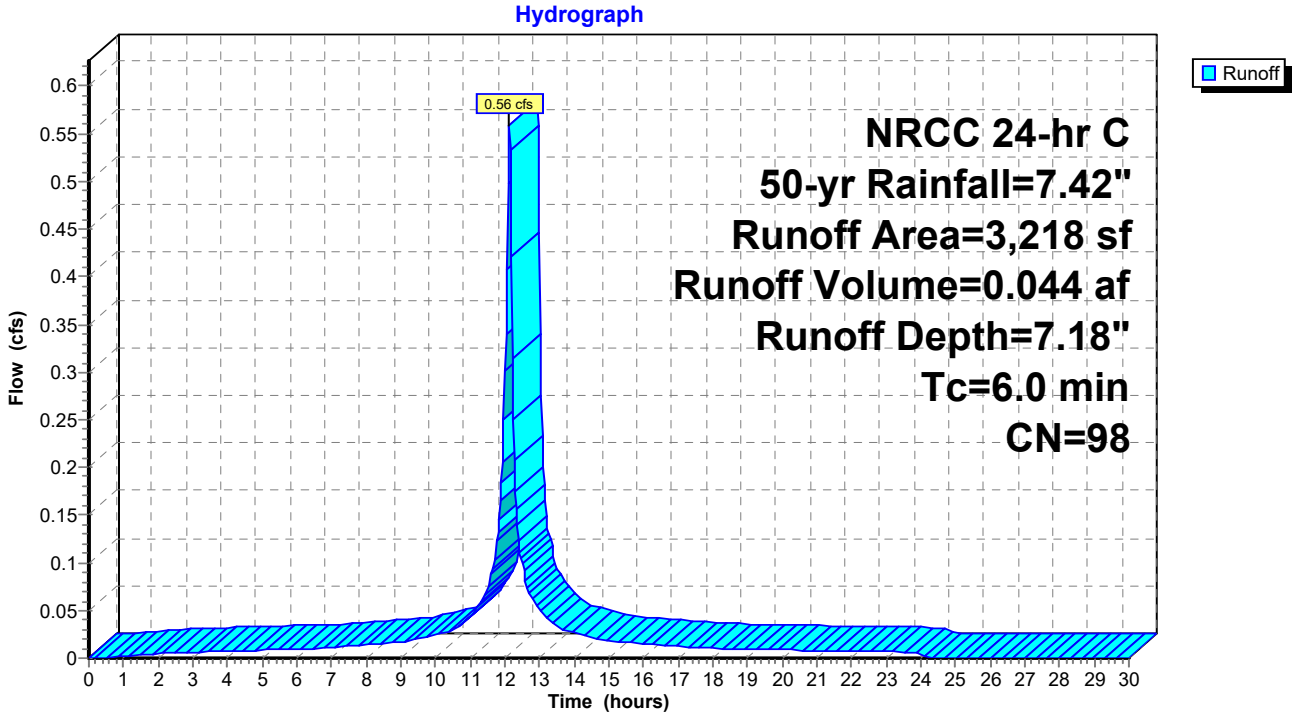
Runoff = 0.56 cfs @ 12.13 hrs, Volume= 0.044 af, Depth= 7.18"
Routed to Pond AP-2 : Front Lawn Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 50-yr Rainfall=7.42"

Area (sf)	CN	Description
3,218	98	Roofs, HSG D
3,218		100.00% Impervious Area

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

Subcatchment PR-16: East rooftop to Front Rain Garden



Summary for Subcatchment PR-17: Front Lawn

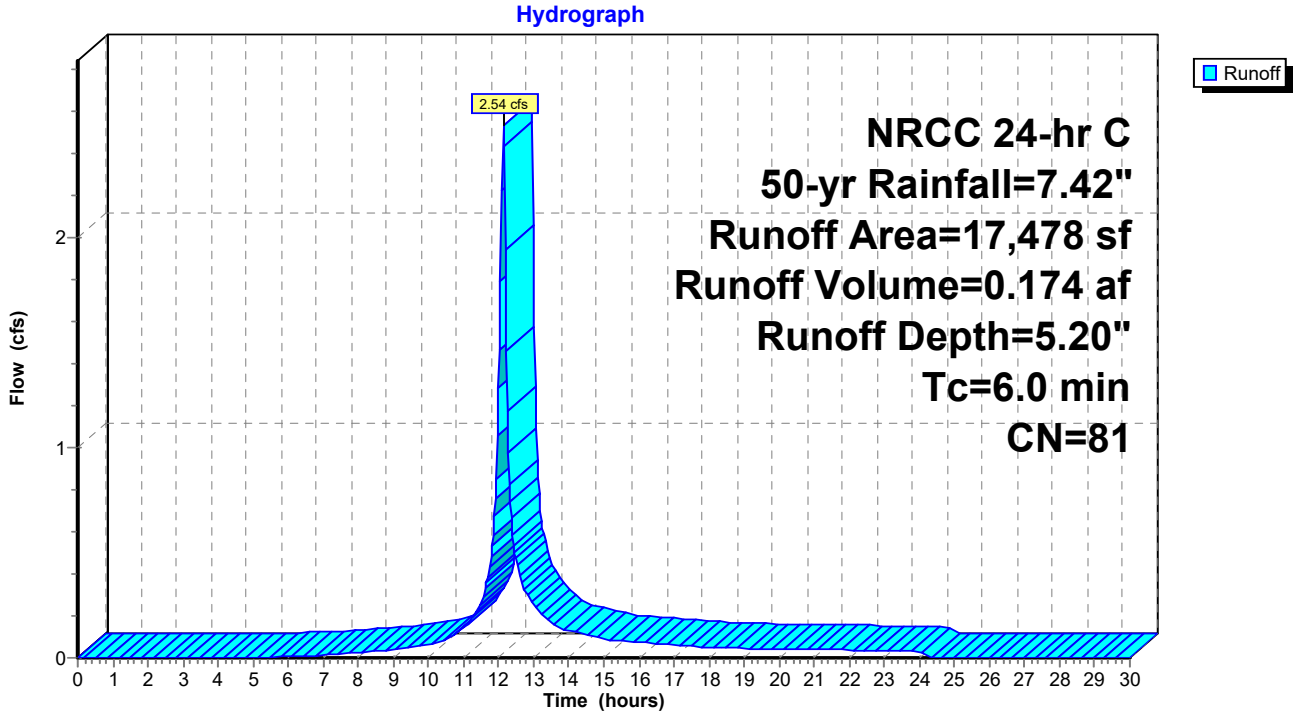
Runoff = 2.54 cfs @ 12.13 hrs, Volume= 0.174 af, Depth= 5.20"
Routed to Pond AP-2 : Front Lawn Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 50-yr Rainfall=7.42"

	Area (sf)	CN	Description
	1,883	98	Paved parking, HSG D
	6,950	80	>75% Grass cover, Good, HSG D
*	8,645	79	Landscaping, Good, HSG D
	17,478	81	Weighted Average
	15,595		89.23% Pervious Area
	1,883		10.77% Impervious Area

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

Subcatchment PR-17: Front Lawn



Summary for Subcatchment PR-18: CCB-08

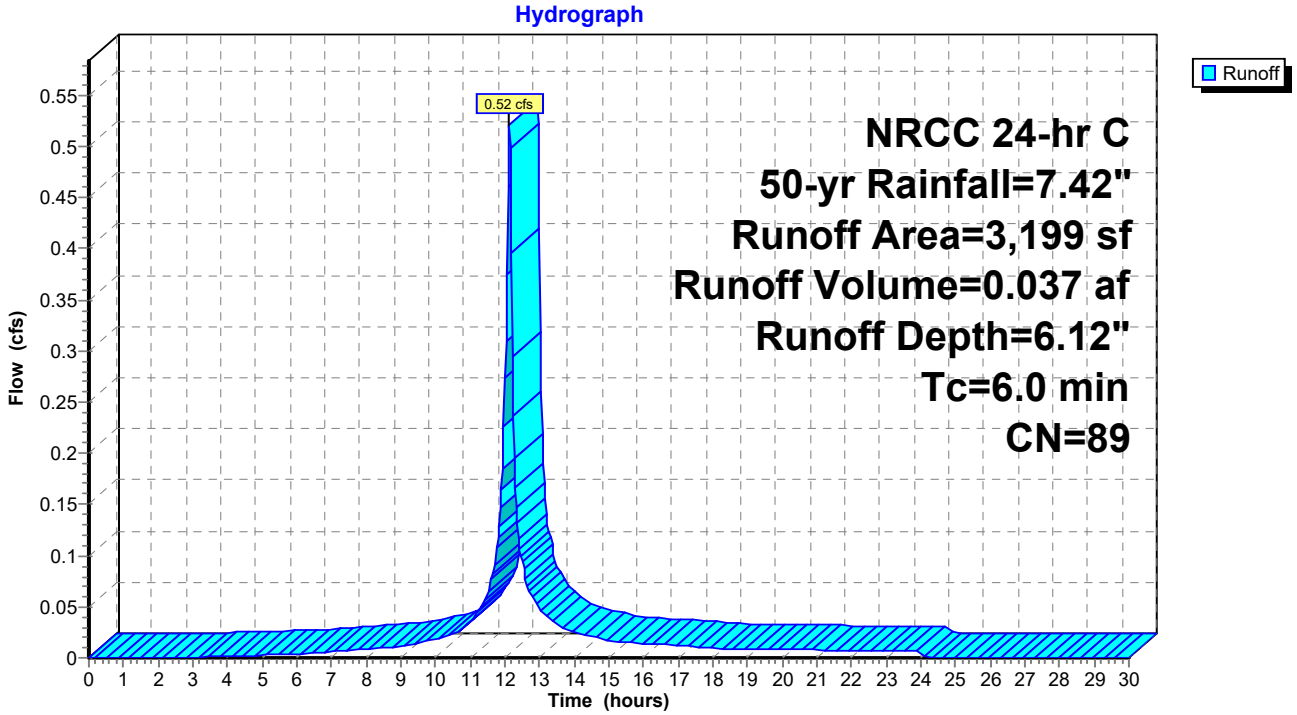
Runoff = 0.52 cfs @ 12.13 hrs, Volume= 0.037 af, Depth= 6.12"
Routed to Pond S-3 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 50-yr Rainfall=7.42"

	Area (sf)	CN	Description
	1,677	98	Paved parking, HSG D
	192	80	>75% Grass cover, Good, HSG D
*	1,330	79	Landscaping, Good, HSG D
	3,199	89	Weighted Average
	1,522		47.58% Pervious Area
	1,677		52.42% Impervious Area

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

Subcatchment PR-18: CCB-08



Summary for Subcatchment PR-19: CCB-07

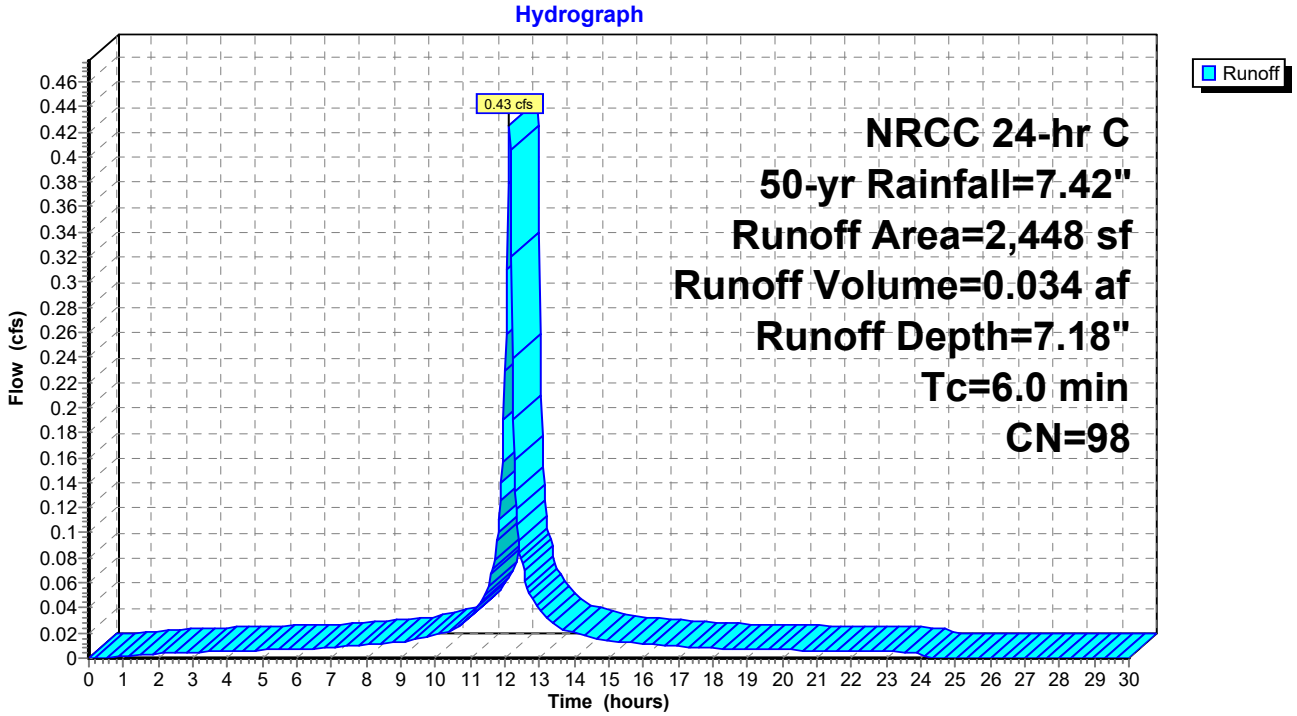
Runoff = 0.43 cfs @ 12.13 hrs, Volume= 0.034 af, Depth= 7.18"
Routed to Pond S-3 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 50-yr Rainfall=7.42"

Area (sf)	CN	Description
2,448	98	Paved parking, HSG D
2,448		100.00% Impervious Area

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

Subcatchment PR-19: CCB-07



Summary for Subcatchment PR-2: CCB 10

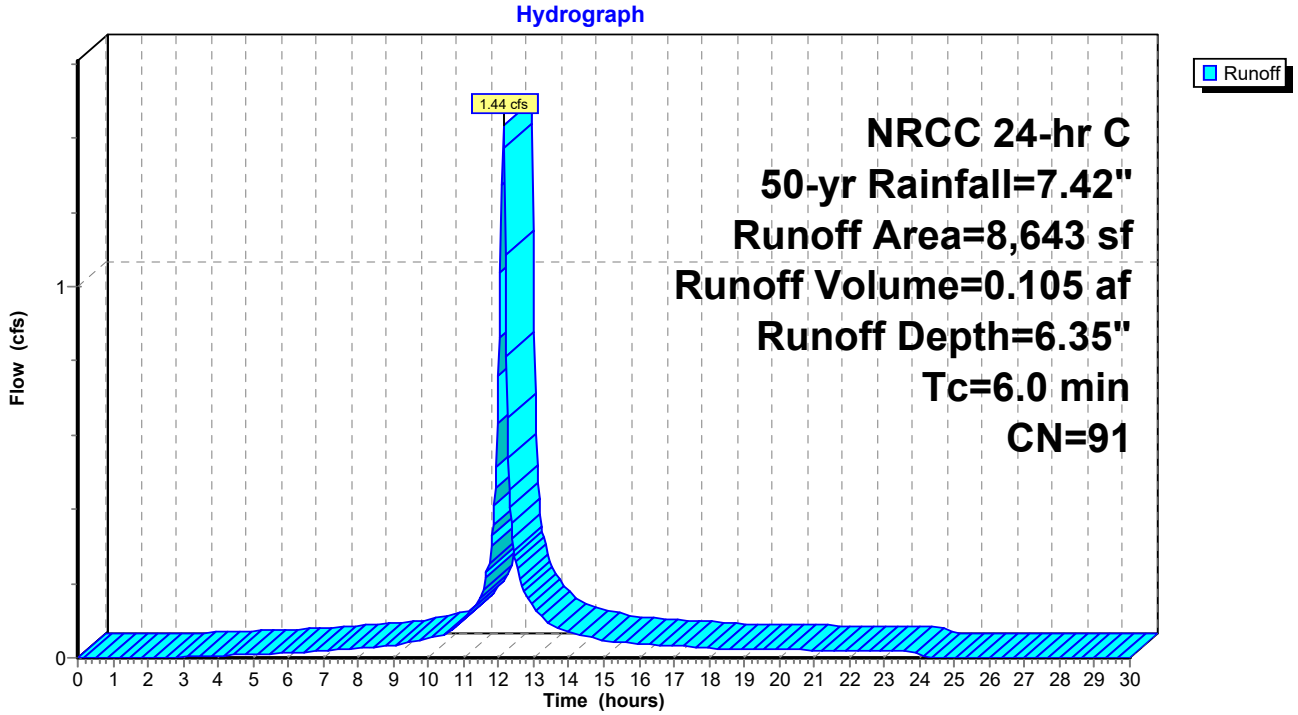
Runoff = 1.44 cfs @ 12.13 hrs, Volume= 0.105 af, Depth= 6.35"
Routed to Pond S-3 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 50-yr Rainfall=7.42"

	Area (sf)	CN	Description
*	6,303	98	Paved parking, HSG C
*	1,994	72	Landscaping, Good, HSG C
	346	74	>75% Grass cover, Good, HSG C
	8,643	91	Weighted Average
	2,340		27.07% Pervious Area
	6,303		72.93% Impervious Area

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

Subcatchment PR-2: CCB 10



Summary for Subcatchment PR-20: South of entrance drive

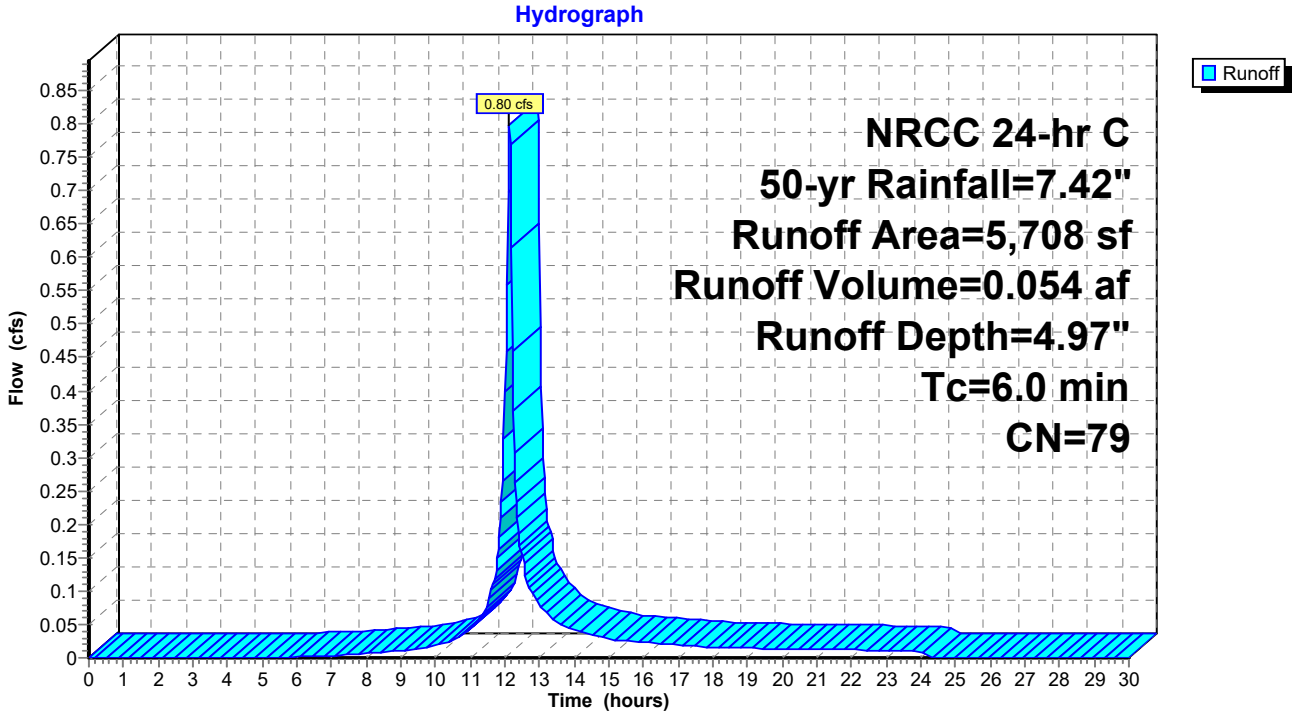
Runoff = 0.80 cfs @ 12.13 hrs, Volume= 0.054 af, Depth= 4.97"
Routed to Pond AP-4 : Landscaped Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 50-yr Rainfall=7.42"

	Area (sf)	CN	Description
	93	98	Paved parking, HSG D
	755	80	>75% Grass cover, Good, HSG D
*	4,860	79	Landscaping, Good, HSG D
	5,708	79	Weighted Average
	5,615		98.37% Pervious Area
	93		1.63% Impervious Area

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

Subcatchment PR-20: South of entrance drive



Summary for Subcatchment PR-21: Danbury Rd

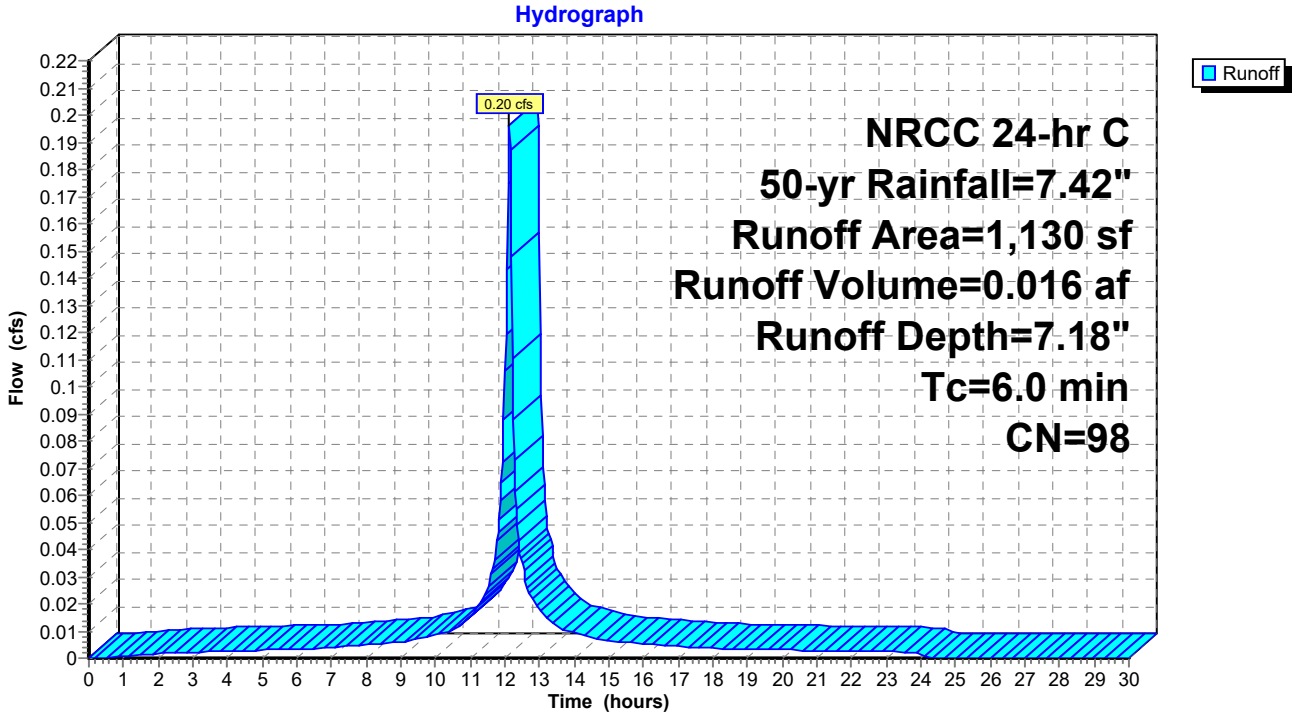
Runoff = 0.20 cfs @ 12.13 hrs, Volume= 0.016 af, Depth= 7.18"
Routed to Pond AP-3 : Danbury Road

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 50-yr Rainfall=7.42"

Area (sf)	CN	Description
1,130	98	Paved parking, HSG D
1,130		100.00% Impervious Area

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

Subcatchment PR-21: Danbury Rd



Summary for Subcatchment PR-3: CCB 07

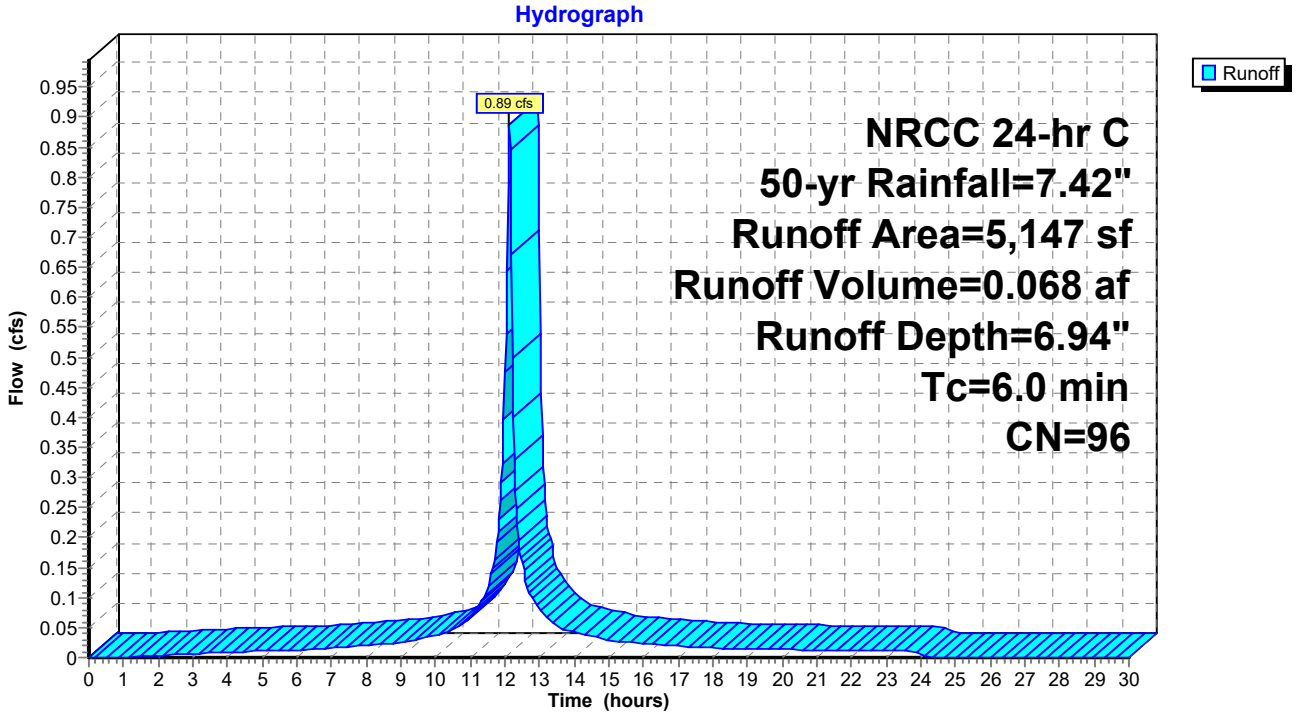
Runoff = 0.89 cfs @ 12.13 hrs, Volume= 0.068 af, Depth= 6.94"
Routed to Pond S-3 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 50-yr Rainfall=7.42"

	Area (sf)	CN	Description
*	4,715	98	Paved parking, HSG C
*	432	72	Landscaping, Good, HSG C
	5,147	96	Weighted Average
	432		8.39% Pervious Area
	4,715		91.61% Impervious Area

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

Subcatchment PR-3: CCB 07



Summary for Subcatchment PR-4: CCB 06

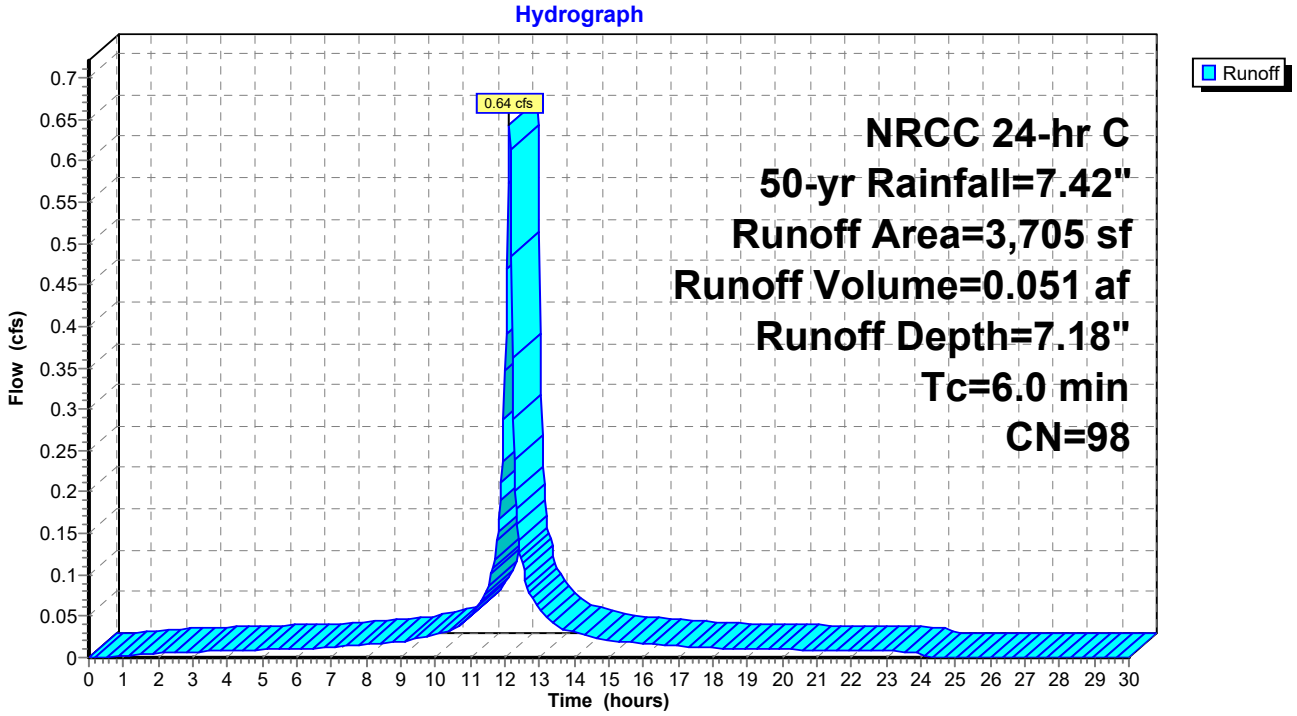
Runoff = 0.64 cfs @ 12.13 hrs, Volume= 0.051 af, Depth= 7.18"
Routed to Pond AP-1 : Norwalk River

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 50-yr Rainfall=7.42"

	Area (sf)	CN	Description
	3,630	98	Paved parking, HSG D
*	75	79	Landscaping, Good, HSG D
	3,705	98	Weighted Average
	75		2.02% Pervious Area
	3,630		97.98% Impervious Area

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

Subcatchment PR-4: CCB 06



Summary for Subcatchment PR-5: South Basin

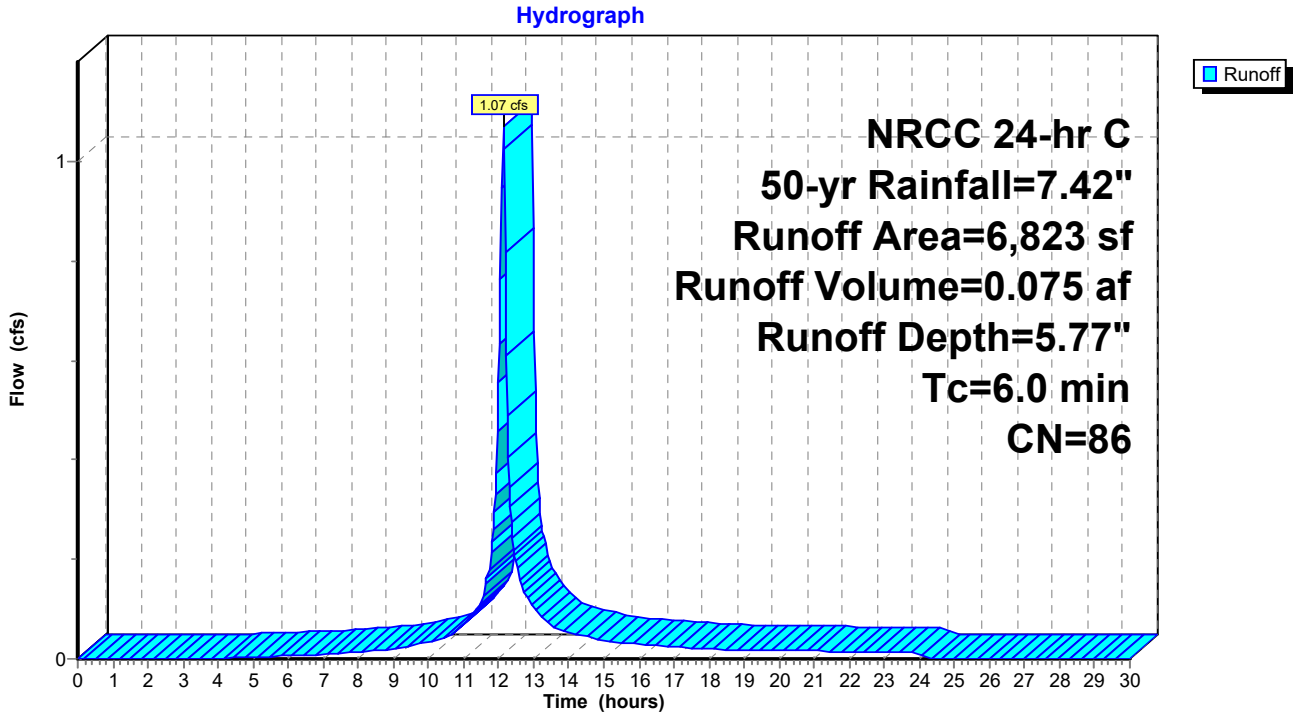
Runoff = 1.07 cfs @ 12.13 hrs, Volume= 0.075 af, Depth= 5.77"
Routed to Pond B-1 : South Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 50-yr Rainfall=7.42"

	Area (sf)	CN	Description
*	2,205	96	Permable Paver, HSG C
*	366	96	Gravel surface, HSG C
*	2,923	72	Landscaping, Good, HSG C
*	1,139	98	Paved parking, HSG C
	190	80	>75% Grass cover, Good, HSG D
	6,823	86	Weighted Average
	5,684		83.31% Pervious Area
	1,139		16.69% Impervious Area

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

Subcatchment PR-5: South Basin



Summary for Subcatchment PR-6: West along river

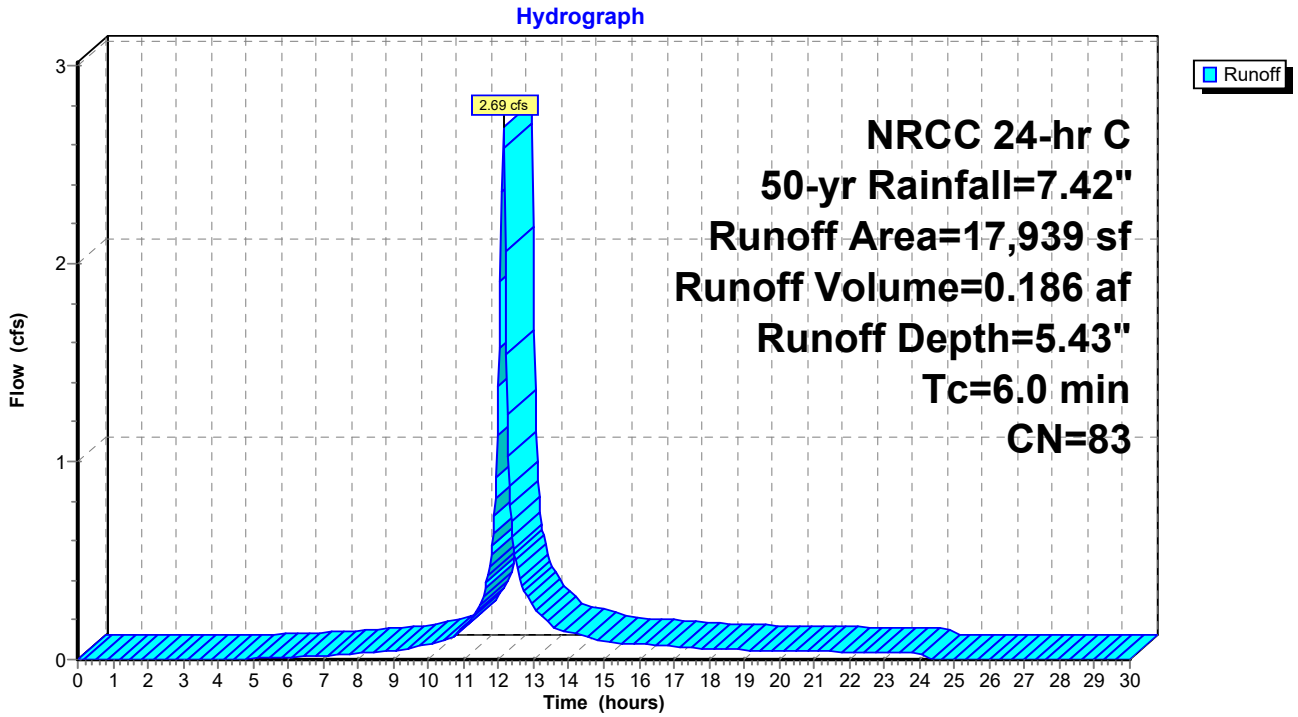
Runoff = 2.69 cfs @ 12.13 hrs, Volume= 0.186 af, Depth= 5.43"
Routed to Pond AP-1 : Norwalk River

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 50-yr Rainfall=7.42"

	Area (sf)	CN	Description
*	2,585	96	Permeable paver, HSG D
	461	96	Gravel surface, HSG D
	911	98	Paved parking, HSG D
	3,570	80	>75% Grass cover, Good, HSG D
*	6,264	79	Landscaping, Good, HSG D
	4,148	77	Woods, Good, HSG D
	17,939	83	Weighted Average
	17,028		94.92% Pervious Area
	911		5.08% Impervious Area

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

Subcatchment PR-6: West along river



Summary for Subcatchment PR-7: North basin

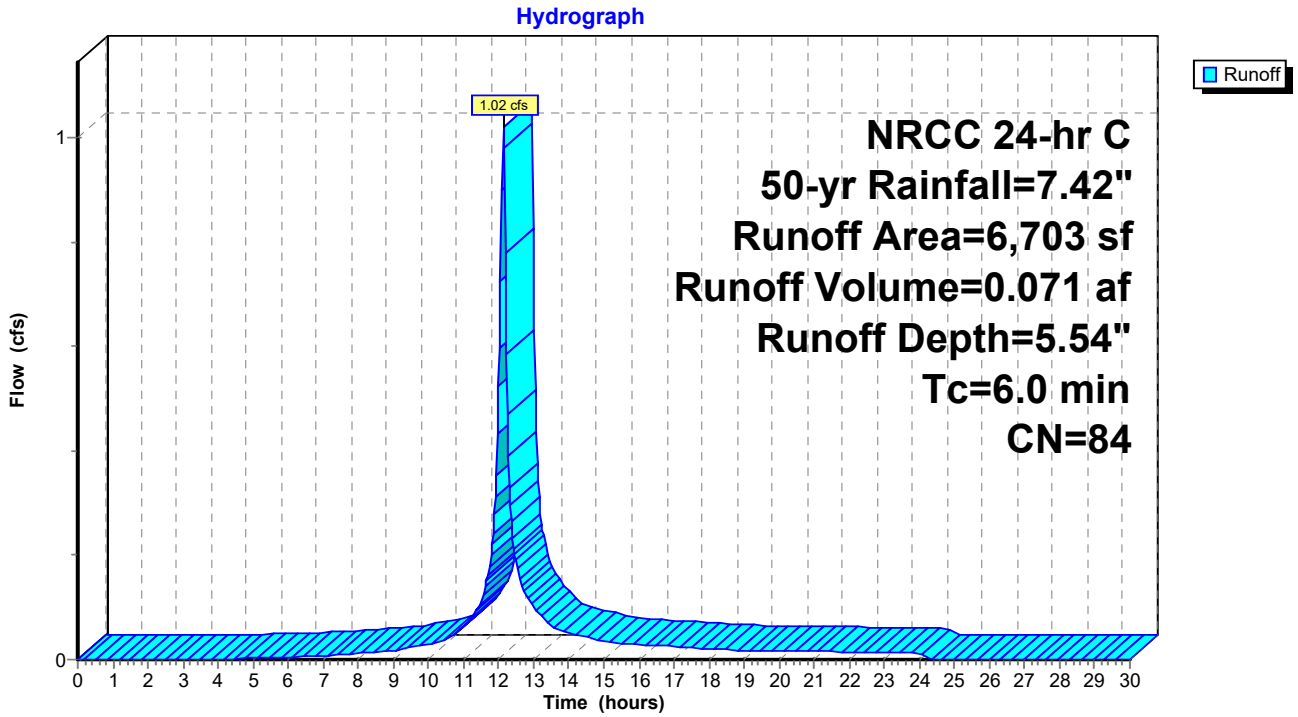
Runoff = 1.02 cfs @ 12.13 hrs, Volume= 0.071 af, Depth= 5.54"
Routed to Pond B-2 : North Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 50-yr Rainfall=7.42"

	Area (sf)	CN	Description
	453	96	Gravel surface, HSG D
*	1,031	96	Permeable paver, HSG D
	445	80	>75% Grass cover, Good, HSG D
*	3,601	79	Landscaping, Good, HSG D
	692	77	Woods, Good, HSG D
	481	98	Paved parking, HSG D
	6,703	84	Weighted Average
	6,222		92.82% Pervious Area
	481		7.18% Impervious Area

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

Subcatchment PR-7: North basin



Summary for Subcatchment PR-7B: CCB 26

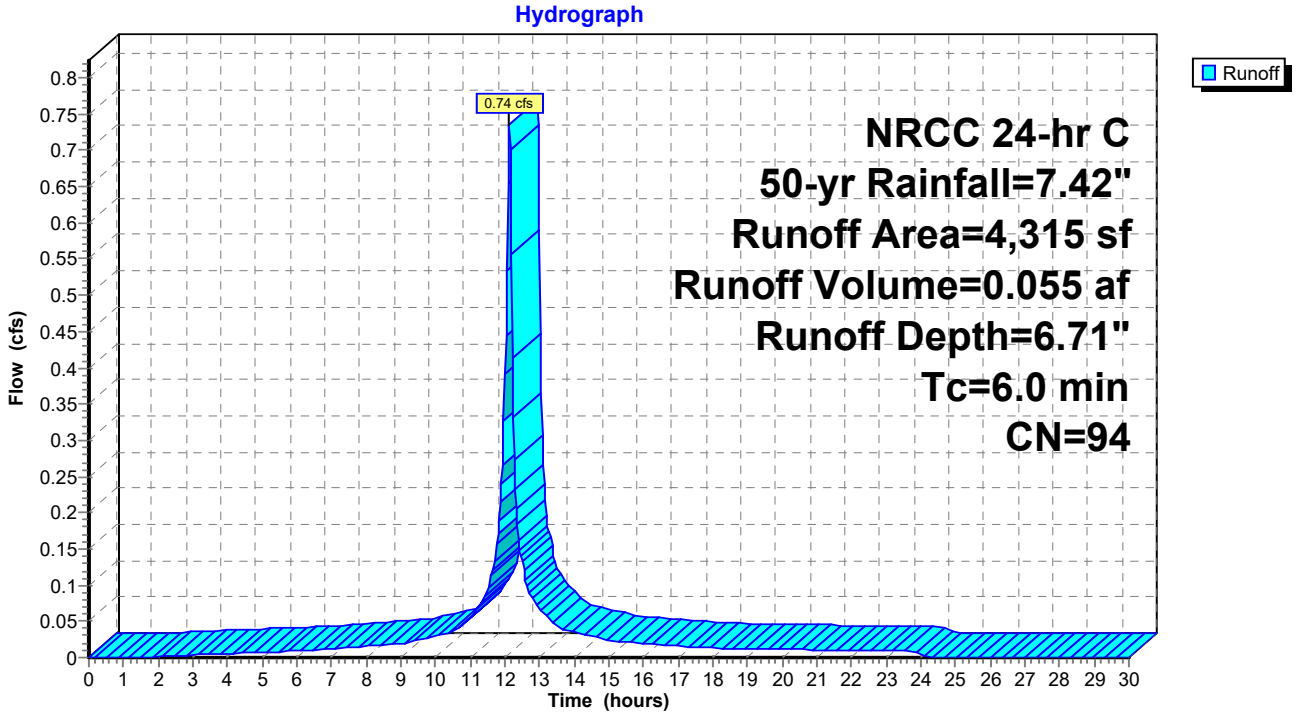
Runoff = 0.74 cfs @ 12.13 hrs, Volume= 0.055 af, Depth= 6.71"
Routed to Pond AP-1 : Norwalk River

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 50-yr Rainfall=7.42"

	Area (sf)	CN	Description
	3,518	98	Paved parking, HSG D
*	797	79	Landscaping, Good, HSG D
	4,315	94	Weighted Average
	797		18.47% Pervious Area
	3,518		81.53% Impervious Area

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

Subcatchment PR-7B: CCB 26



Summary for Subcatchment PR-8: CCB 26A

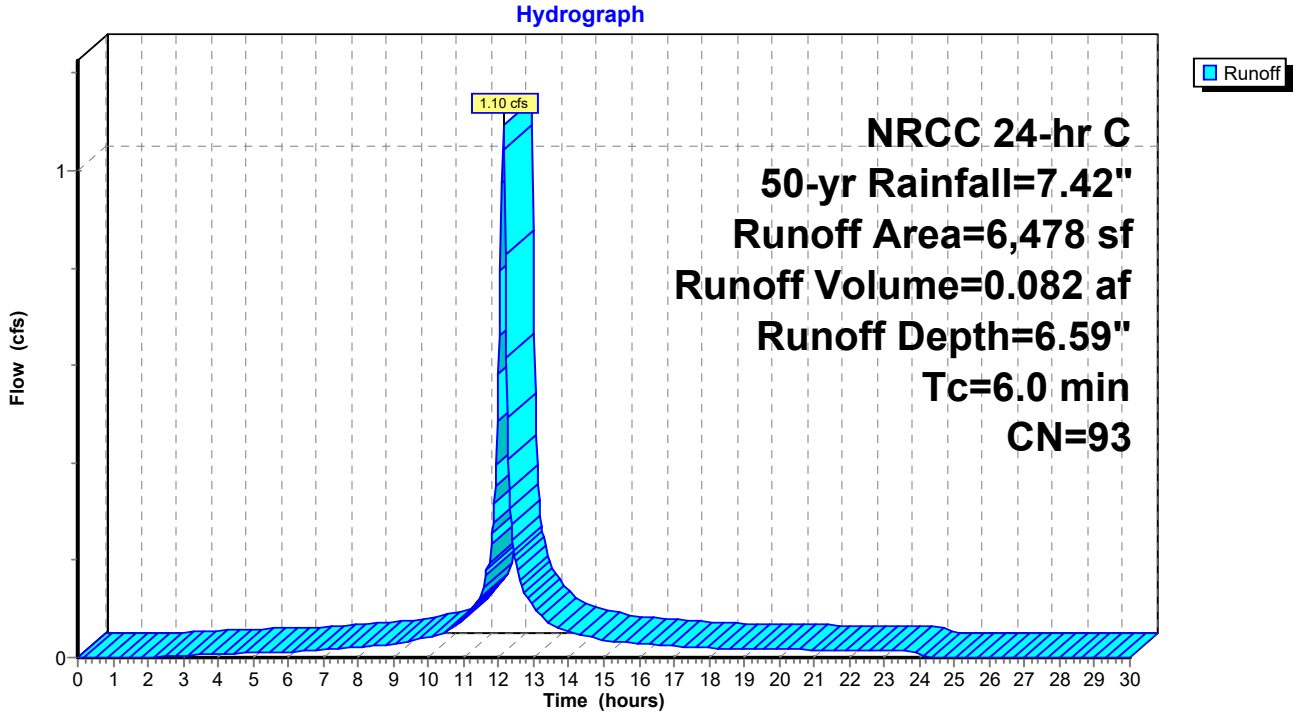
Runoff = 1.10 cfs @ 12.13 hrs, Volume= 0.082 af, Depth= 6.59"
Routed to Pond AP-1 : Norwalk River

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 50-yr Rainfall=7.42"

	Area (sf)	CN	Description
	4,737	98	Paved parking, HSG D
*	1,741	79	Landscaping, Good, HSG D
	6,478	93	Weighted Average
	1,741		26.88% Pervious Area
	4,737		73.12% Impervious Area

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

Subcatchment PR-8: CCB 26A



Summary for Subcatchment PR-9: CCB 27

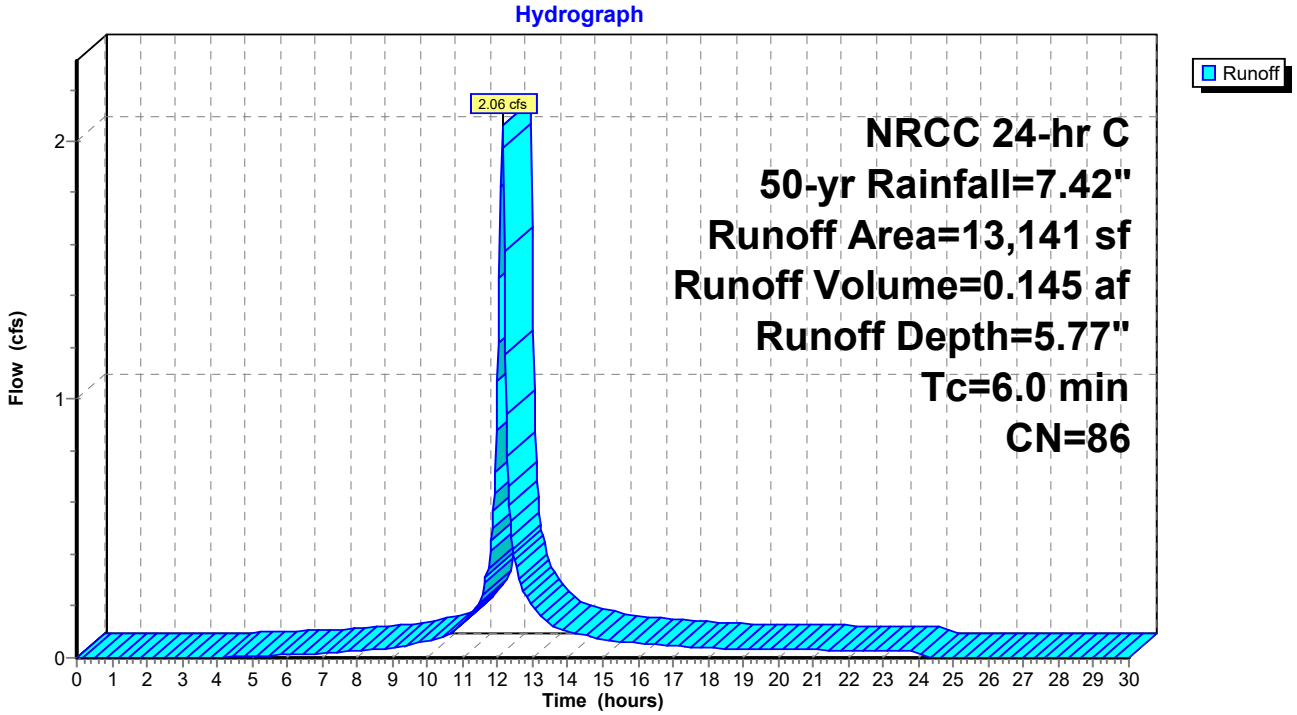
Runoff = 2.06 cfs @ 12.13 hrs, Volume= 0.145 af, Depth= 5.77"
Routed to Pond S-1 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 50-yr Rainfall=7.42"

	Area (sf)	CN	Description
	4,730	98	Paved parking, HSG D
	817	80	>75% Grass cover, Good, HSG D
*	7,594	79	Landscaping, Good, HSG D
	13,141	86	Weighted Average
	8,411		64.01% Pervious Area
	4,730		35.99% Impervious Area

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

Subcatchment PR-9: CCB 27



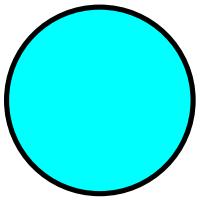
Summary for Reach R1: Roof Leader

Inflow Area = 1.838 ac,100.00% Impervious, Inflow Depth = 7.18" for 50-yr event
Inflow = 13.91 cfs @ 12.13 hrs, Volume= 1.100 af
Outflow = 4.60 cfs @ 11.92 hrs, Volume= 1.100 af, Atten= 67%, Lag= 0.0 min
Routed to Pond S-2 : Subsurface Infiltration System

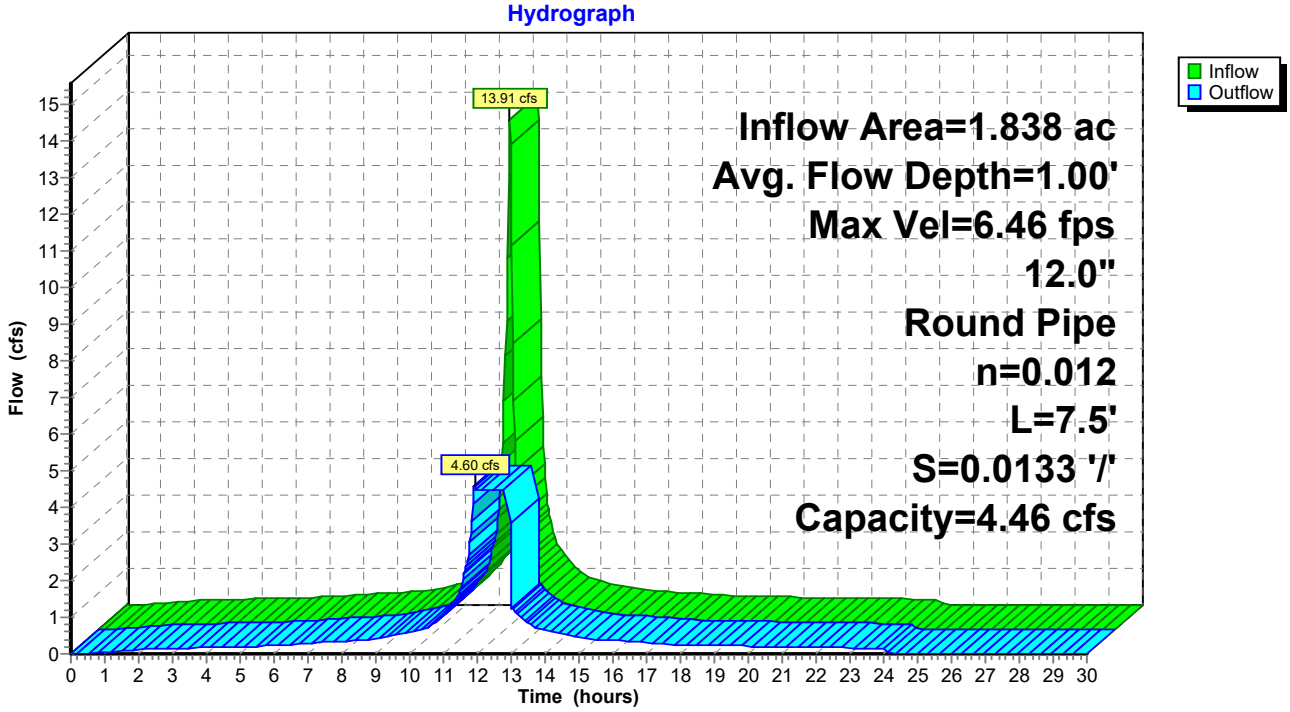
Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Max. Velocity= 6.46 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 3.30 fps, Avg. Travel Time= 0.0 min

Peak Storage= 6 cf @ 11.94 hrs
Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.46 cfs

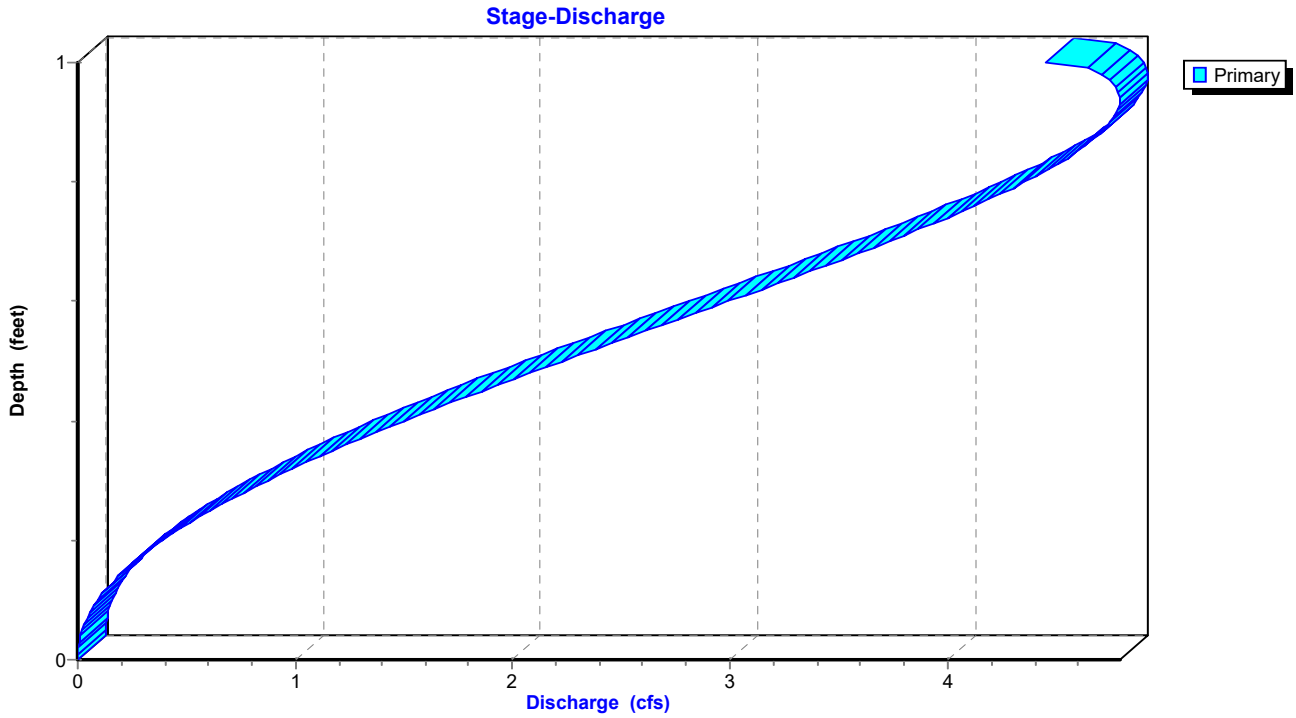
12.0" Round Pipe
n= 0.012
Length= 7.5' Slope= 0.0133 '/'
Inlet Invert= 142.20', Outlet Invert= 142.10'



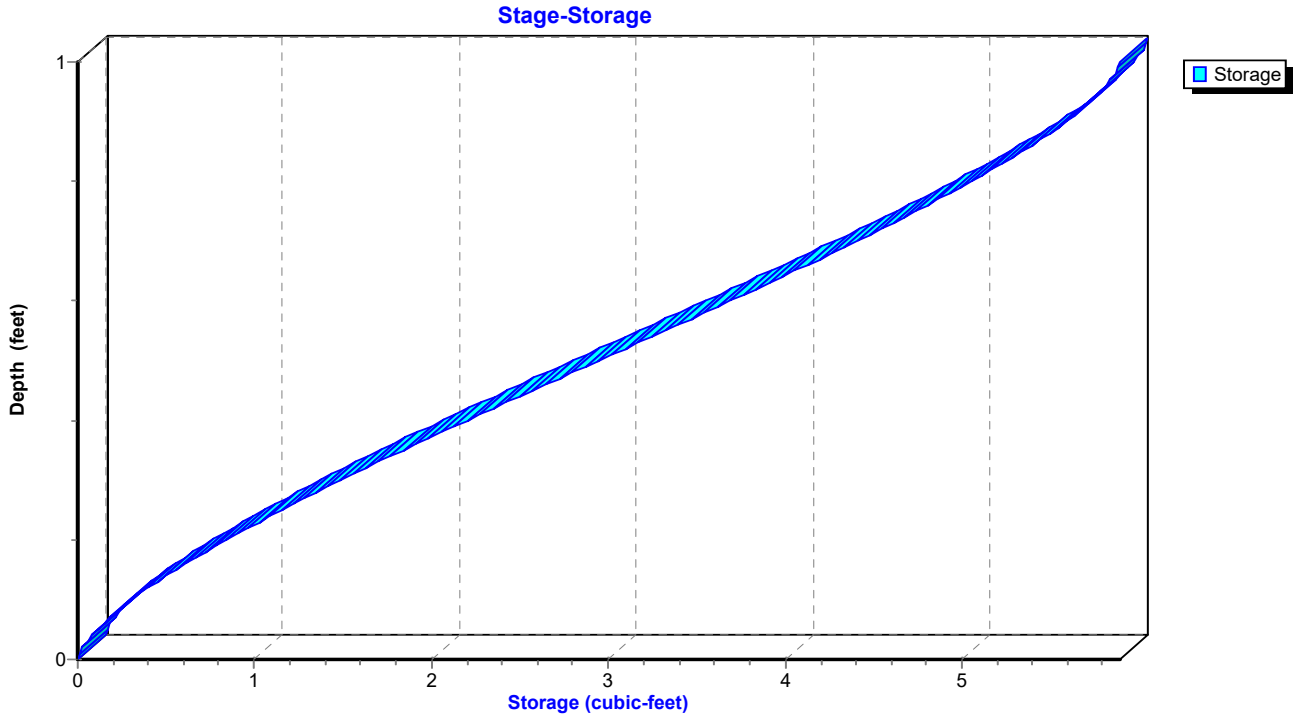
Reach R1: Roof Leader



Reach R1: Roof Leader



Reach R1: Roof Leader

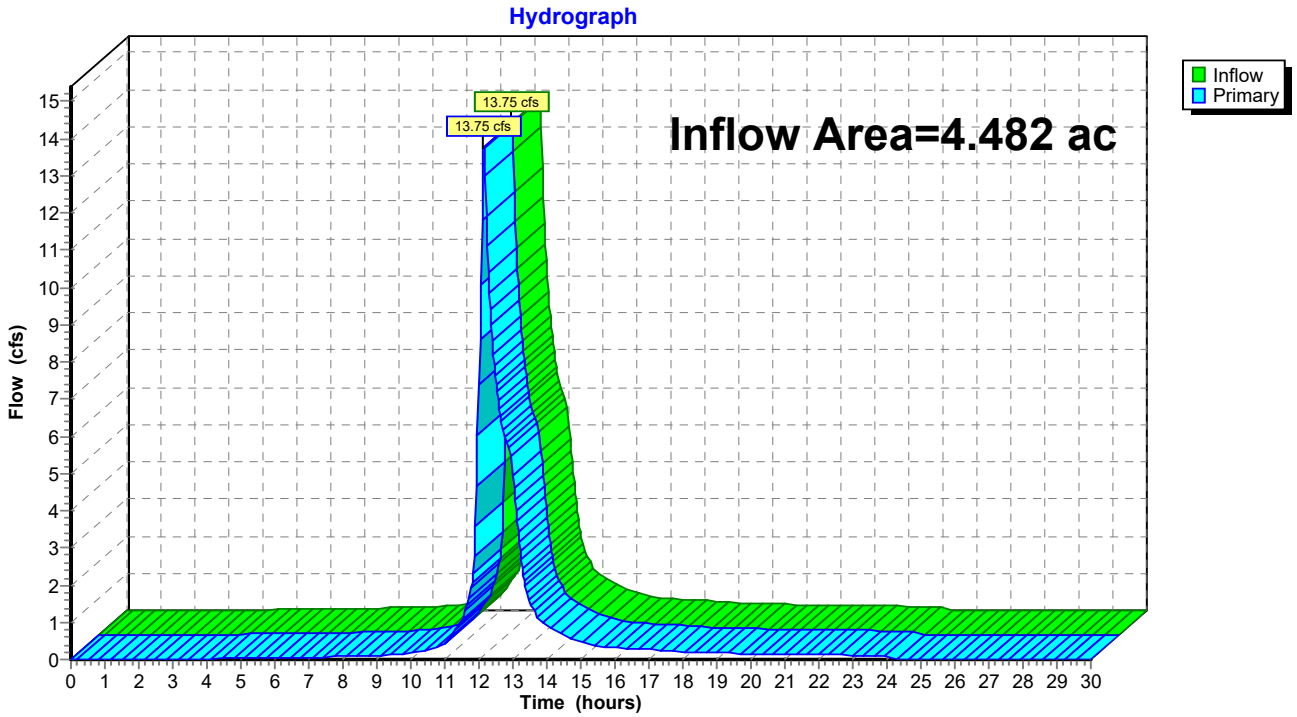


Summary for Pond AP-1: Norwalk River

Inflow Area = 4.482 ac, 66.68% Impervious, Inflow Depth = 3.32" for 50-yr event
Inflow = 13.75 cfs @ 12.15 hrs, Volume= 1.240 af
Primary = 13.75 cfs @ 12.15 hrs, Volume= 1.240 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Pond AP-1: Norwalk River



Summary for Pond AP-2: Front Lawn Rain Garden

Inflow Area = 0.475 ac, 24.65% Impervious, Inflow Depth = 5.51" for 50-yr event
Inflow = 3.10 cfs @ 12.13 hrs, Volume= 0.218 af
Outflow = 0.75 cfs @ 12.38 hrs, Volume= 0.218 af, Atten= 76%, Lag= 14.9 min
Discarded = 0.38 cfs @ 12.38 hrs, Volume= 0.206 af
Primary = 0.37 cfs @ 12.38 hrs, Volume= 0.012 af
Routed to Pond S-3 : Subsurface Infiltration System

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 149.08' @ 12.38 hrs Surf.Area= 3,048 sf Storage= 2,653 cf

Plug-Flow detention time= 47.5 min calculated for 0.218 af (100% of inflow)
Center-of-Mass det. time= 47.5 min (844.2 - 796.7)

Volume	Invert	Avail.Storage	Storage Description
#1	148.00'	6,536 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

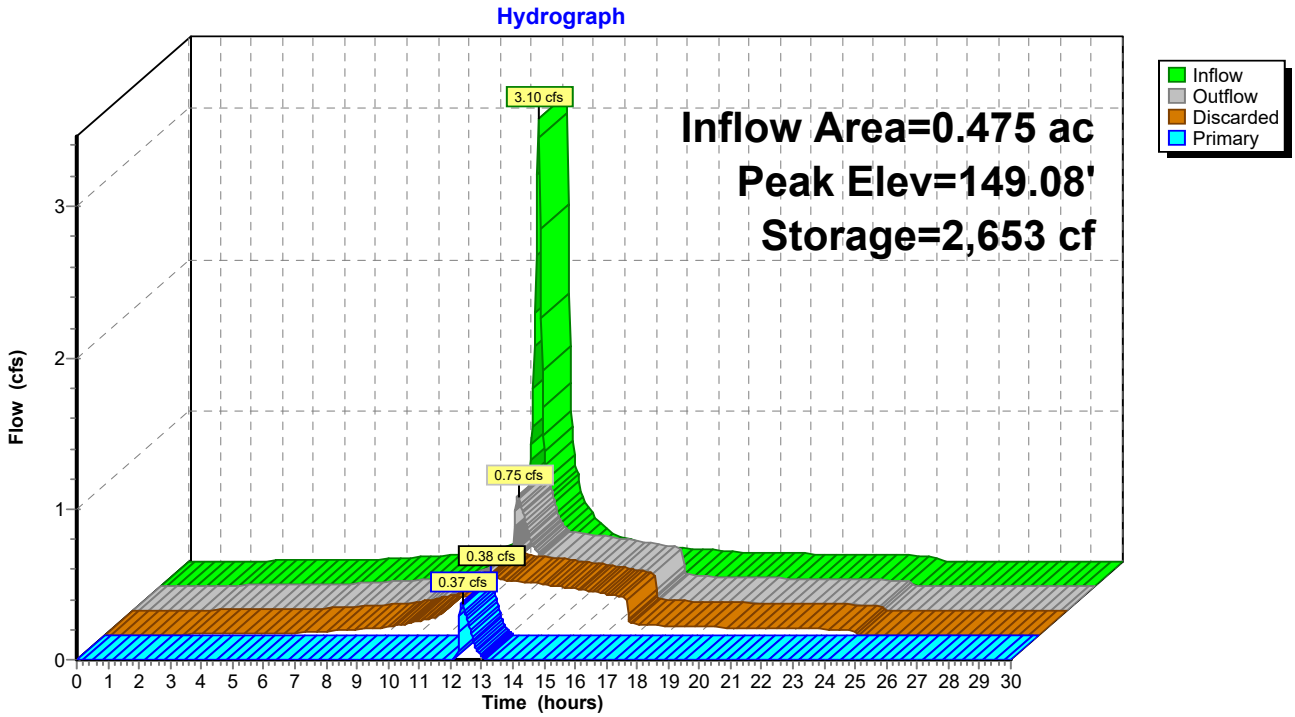
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
148.00	1,985	0	0
149.00	2,833	2,409	2,409
150.00	5,420	4,127	6,536

Device	Routing	Invert	Outlet Devices
#1	Primary	145.90'	**15.0" Round Culvert** L= 34.6' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 145.90' / 145.55' S= 0.0101 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	149.00'	**3.6" x 0.9" Horiz. Yard Drain X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads
#3	Discarded	148.00'	**5.450 in/hr Exfiltration over Surface area**

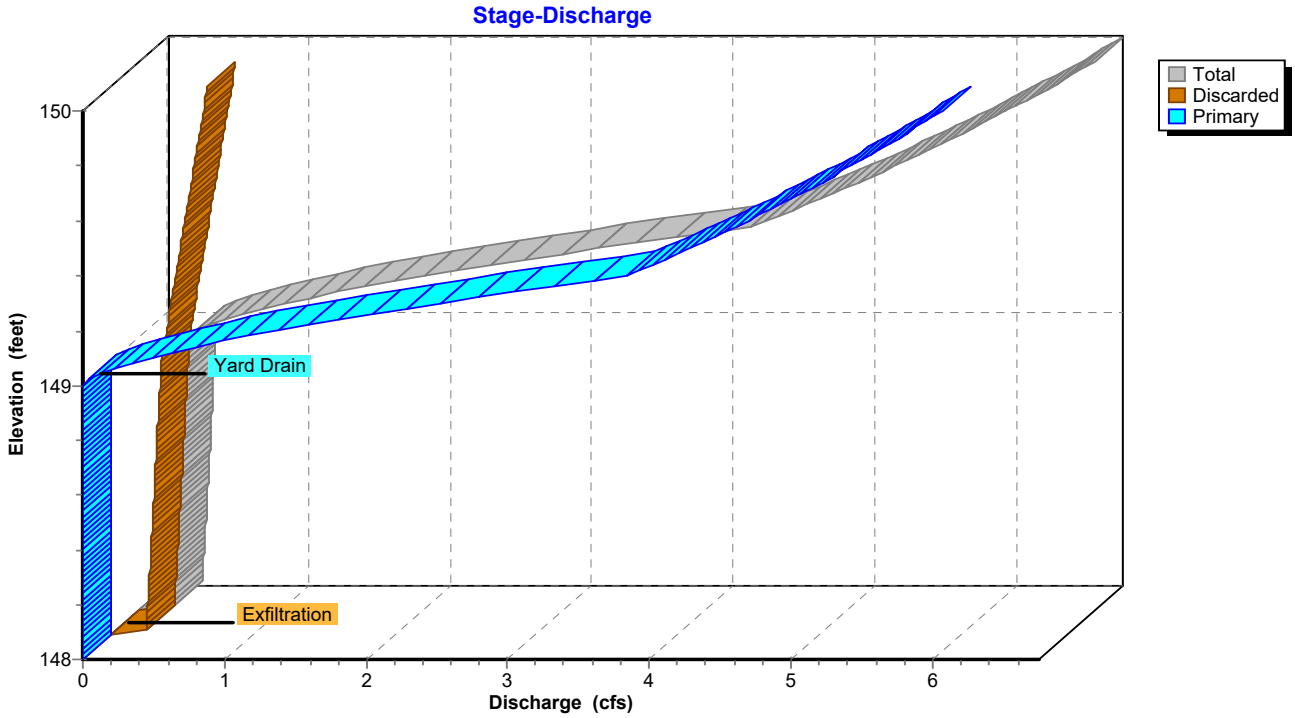
Discarded OutFlow Max=0.38 cfs @ 12.38 hrs HW=149.08' (Free Discharge)
└─**3=Exfiltration** (Exfiltration Controls 0.38 cfs)

Primary OutFlow Max=0.37 cfs @ 12.38 hrs HW=149.08' (Free Discharge)
└─**1=Culvert** (Passes 0.37 cfs of 9.45 cfs potential flow)
└─**2=Yard Drain** (Weir Controls 0.37 cfs @ 0.94 fps)

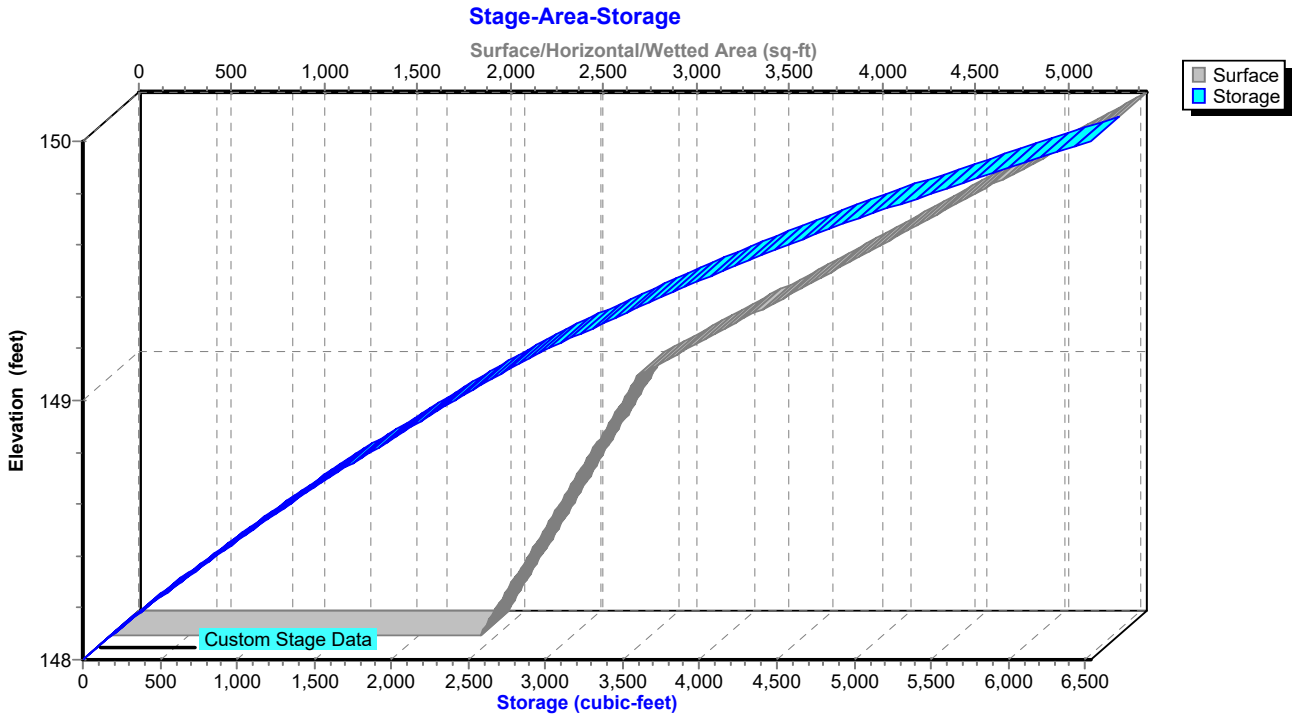
Pond AP-2: Front Lawn Rain Garden



Pond AP-2: Front Lawn Rain Garden



Pond AP-2: Front Lawn Rain Garden

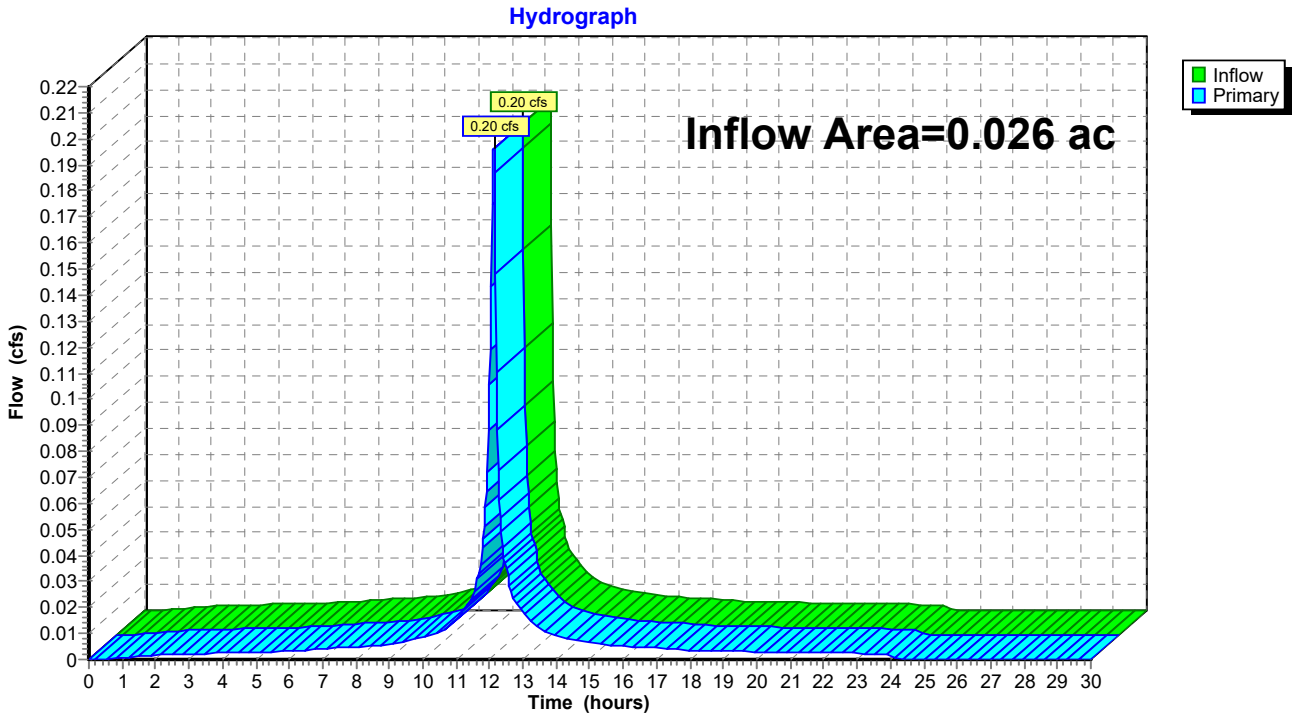


Summary for Pond AP-3: Danbury Road

Inflow Area = 0.026 ac,100.00% Impervious, Inflow Depth = 7.18" for 50-yr event
Inflow = 0.20 cfs @ 12.13 hrs, Volume= 0.016 af
Primary = 0.20 cfs @ 12.13 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Pond AP-3: Danbury Road

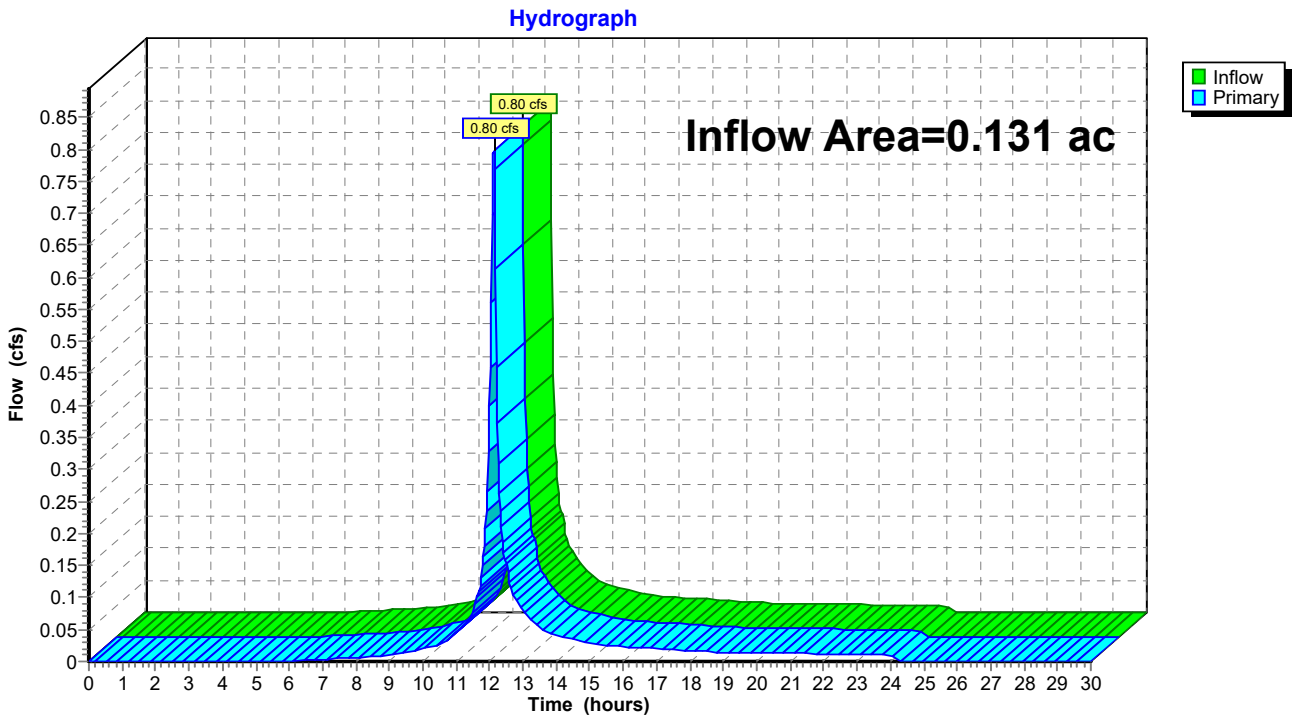


Summary for Pond AP-4: Landscaped Area

Inflow Area = 0.131 ac, 1.63% Impervious, Inflow Depth = 4.97" for 50-yr event
Inflow = 0.80 cfs @ 12.13 hrs, Volume= 0.054 af
Primary = 0.80 cfs @ 12.13 hrs, Volume= 0.054 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Pond AP-4: Landscaped Area



Summary for Pond B-1: South Basin

Inflow Area = 0.157 ac, 16.69% Impervious, Inflow Depth = 5.77" for 50-yr event
Inflow = 1.07 cfs @ 12.13 hrs, Volume= 0.075 af
Outflow = 1.05 cfs @ 12.14 hrs, Volume= 0.072 af, Atten= 2%, Lag= 0.9 min
Discarded = 0.00 cfs @ 12.14 hrs, Volume= 0.007 af
Primary = 1.05 cfs @ 12.14 hrs, Volume= 0.065 af
Routed to Pond AP-1 : Norwalk River

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 140.07' @ 12.14 hrs Surf.Area= 481 sf Storage= 280 cf

Plug-Flow detention time= 64.6 min calculated for 0.072 af (96% of inflow)
Center-of-Mass det. time= 40.8 min (836.6 - 795.9)

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	962 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

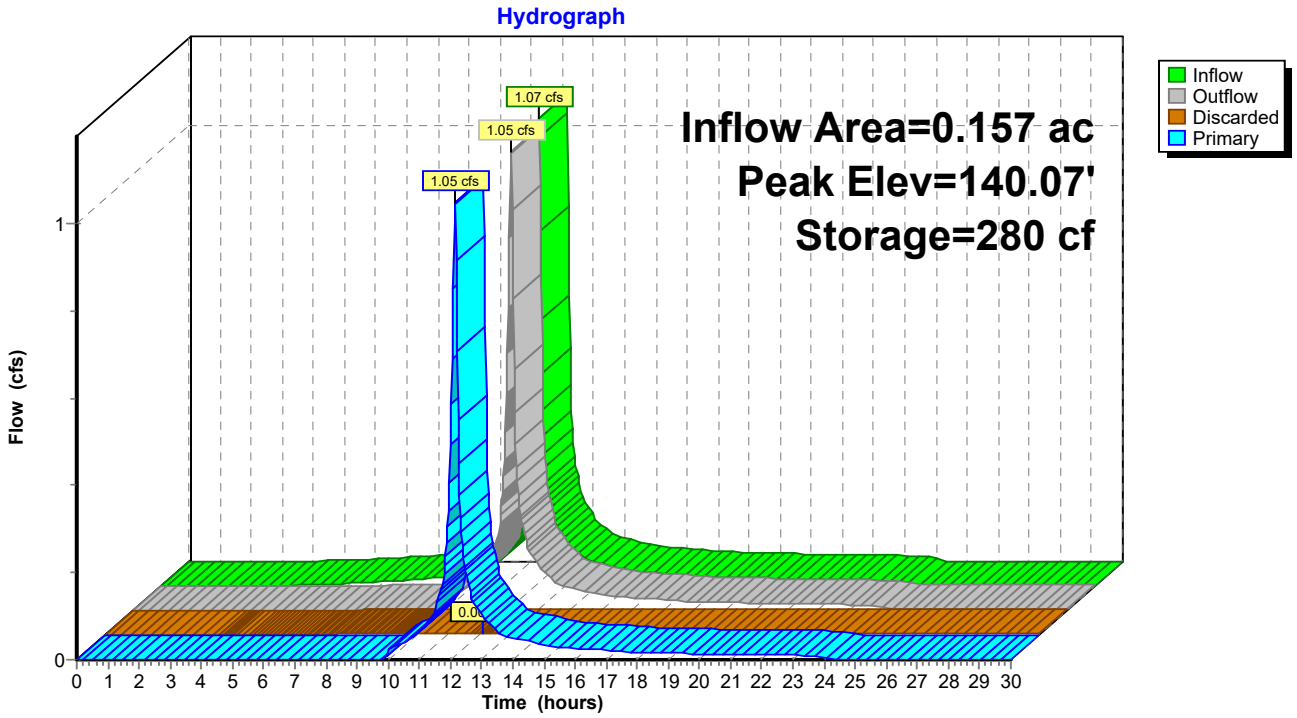
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	52	0	0
140.00	446	249	249
141.00	979	713	962

Device	Routing	Invert	Outlet Devices
#1	Primary	138.00'	**8.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 138.00' / 137.60' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf
#2	Device 1	139.90'	**3.6" x 0.9" Horiz. Yard Drain X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads
#3	Discarded	139.00'	**0.400 in/hr Exfiltration over Surface area**

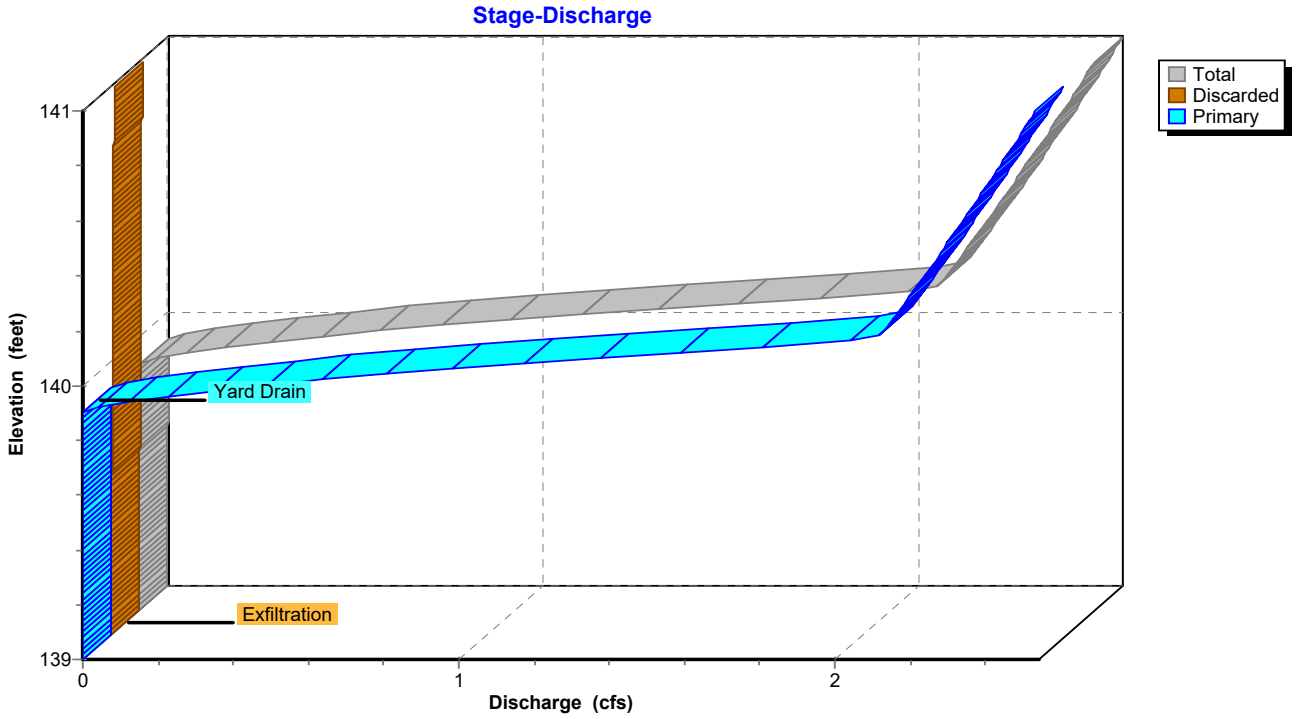
Discarded OutFlow Max=0.00 cfs @ 12.14 hrs HW=140.06' (Free Discharge)
└─**3=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=1.03 cfs @ 12.14 hrs HW=140.06' (Free Discharge)
└─**1=Culvert** (Passes 1.03 cfs of 2.06 cfs potential flow)
└─**2=Yard Drain** (Weir Controls 1.03 cfs @ 1.33 fps)

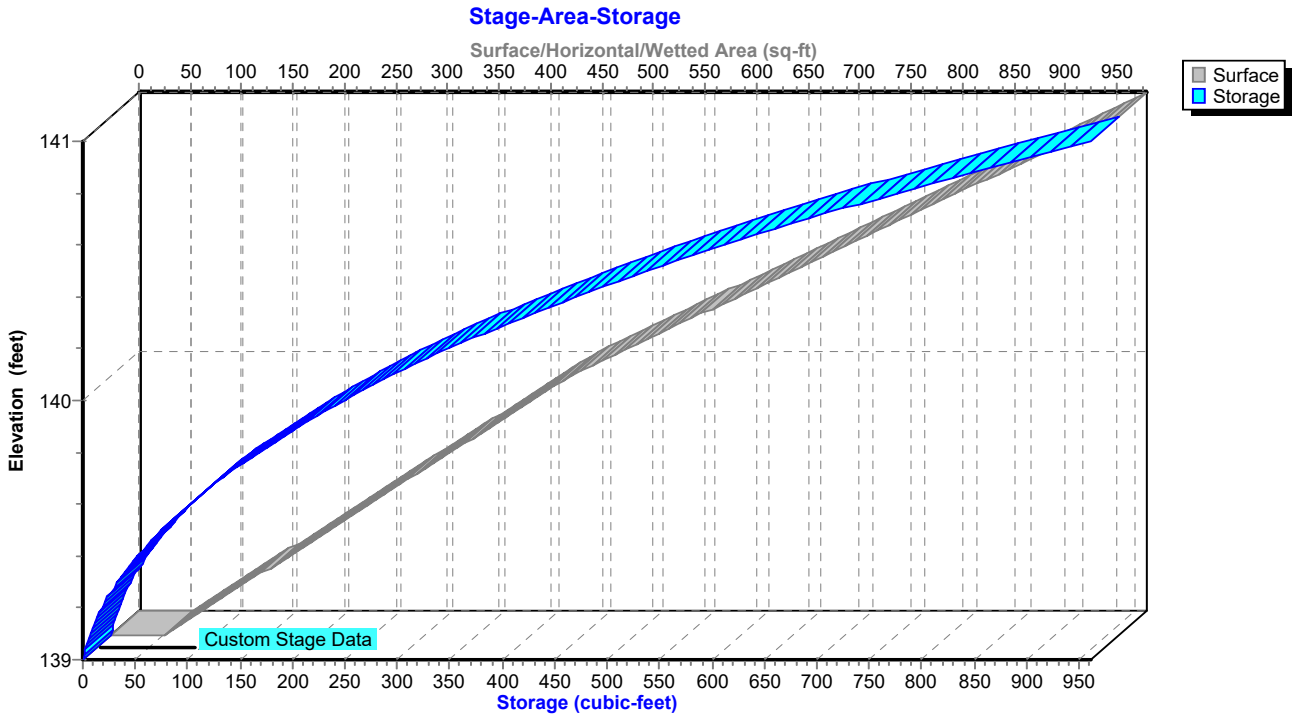
Pond B-1: South Basin



Pond B-1: South Basin



Pond B-1: South Basin



Summary for Pond B-2: North Basin

Inflow Area = 0.154 ac, 7.18% Impervious, Inflow Depth = 5.54" for 50-yr event
Inflow = 1.02 cfs @ 12.13 hrs, Volume= 0.071 af
Outflow = 0.05 cfs @ 14.35 hrs, Volume= 0.070 af, Atten= 95%, Lag= 133.1 min
Discarded = 0.05 cfs @ 14.35 hrs, Volume= 0.070 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond AP-1 : Norwalk River

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 140.19' @ 14.35 hrs Surf.Area= 1,593 sf Storage= 1,573 cf

Plug-Flow detention time= 348.7 min calculated for 0.070 af (98% of inflow)
Center-of-Mass det. time= 339.6 min (1,141.5 - 801.9)

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	4,090 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

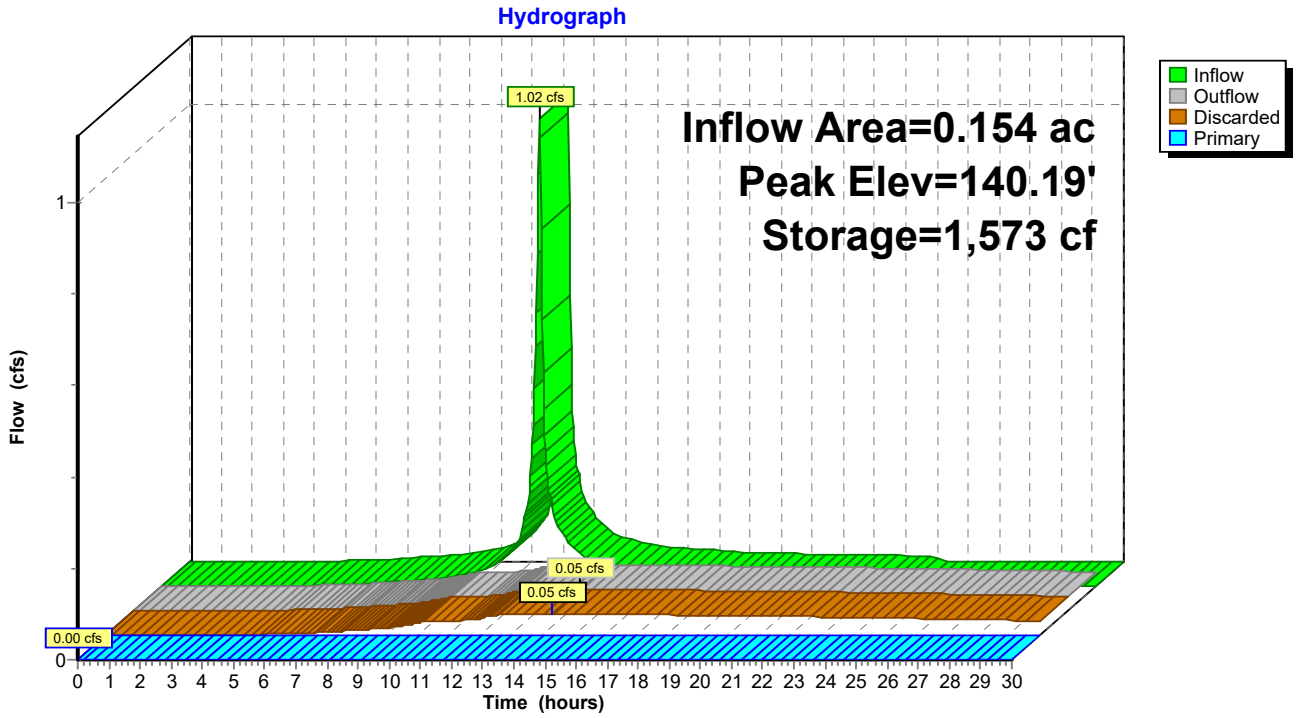
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	1,058	0	0
140.00	1,499	1,279	1,279
141.00	1,995	1,747	3,026
141.50	2,263	1,065	4,090

Device	Routing	Invert	Outlet Devices
#1	Primary	139.00'	**10.0" Round Culvert** L= 22.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 139.00' / 138.80' S= 0.0091 '/' Cc= 0.900 n= 0.012, Flow Area= 0.55 sf
#2	Device 1	140.50'	**3.6" x 0.9" Horiz. Yard Drain X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads
#3	Discarded	139.00'	**1.250 in/hr Exfiltration over Surface area**

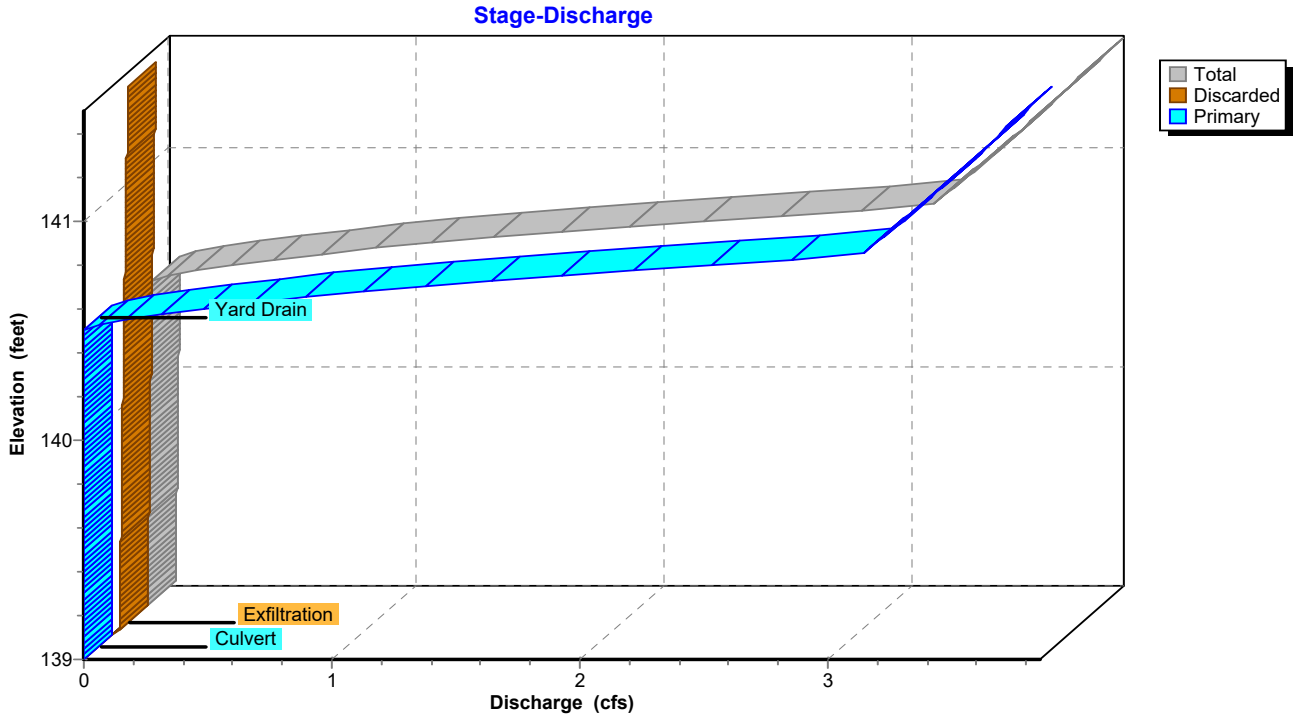
Discarded OutFlow Max=0.05 cfs @ 14.35 hrs HW=140.19' (Free Discharge)
└─**3=Exfiltration** (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=139.00' (Free Discharge)
└─**1=Culvert** (Controls 0.00 cfs)
└─**2=Yard Drain** (Controls 0.00 cfs)

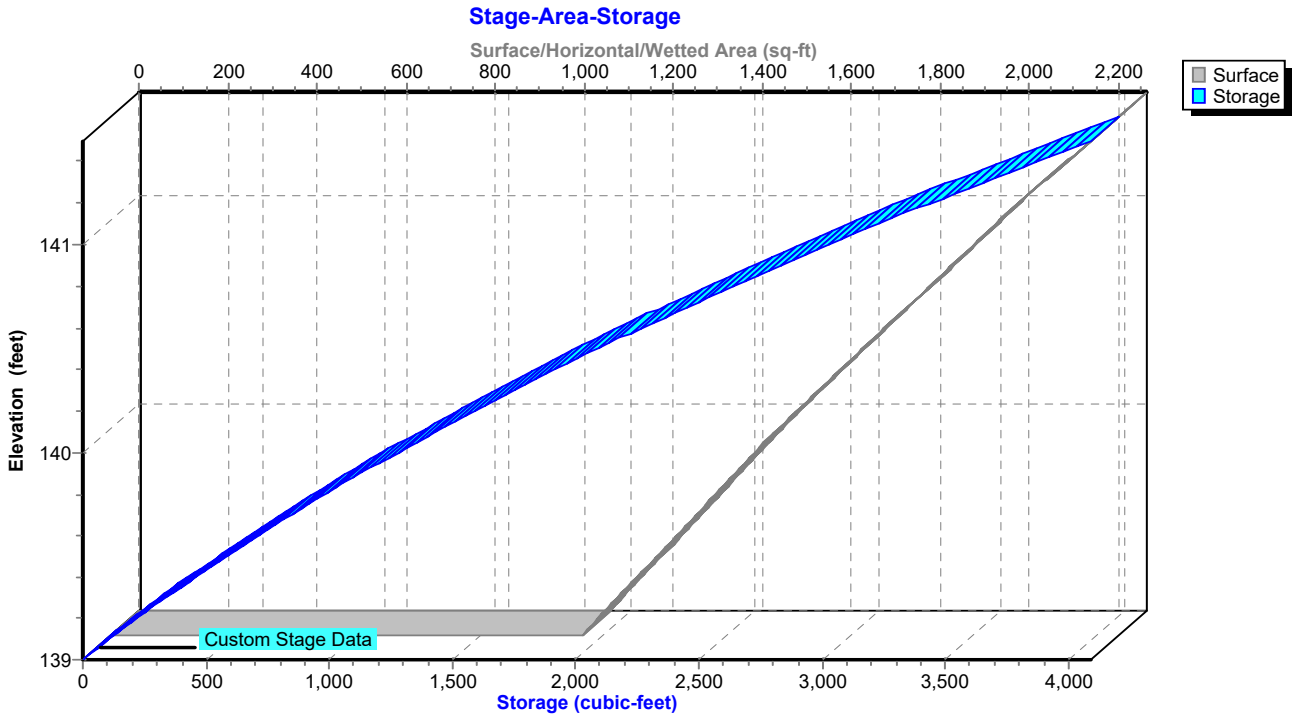
Pond B-2: North Basin



Pond B-2: North Basin



Pond B-2: North Basin



Summary for Pond S-1: Subsurface Infiltration System

Inflow Area = 0.554 ac, 58.45% Impervious, Inflow Depth = 6.28" for 50-yr event
Inflow = 3.96 cfs @ 12.13 hrs, Volume= 0.290 af
Outflow = 2.74 cfs @ 12.19 hrs, Volume= 0.259 af, Atten= 31%, Lag= 3.9 min
Discarded = 0.02 cfs @ 3.84 hrs, Volume= 0.035 af
Primary = 2.72 cfs @ 12.19 hrs, Volume= 0.224 af
Routed to Pond AP-1 : Norwalk River

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 144.02' @ 12.19 hrs Surf.Area= 0.039 ac Storage= 0.067 af

Plug-Flow detention time= 122.2 min calculated for 0.259 af (89% of inflow)
Center-of-Mass det. time= 67.6 min (844.3 - 776.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	141.35'	0.036 af	**11.00'W x 153.14'L x 3.50'H Field A** 0.135 af Overall - 0.044 af Embedded = 0.091 af x 40.0% Voids
#2A	141.85'	0.044 af	**ADS_StormTech SC-740 +Cap** x 42 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 42 Chambers in 2 Rows
		0.081 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	142.70'	**12.0" Round Culvert** L= 114.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 142.70' / 141.56' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	142.85'	**6.0" Vert. Orifice X 3.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	144.25'	**5.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)
#4	Discarded	141.35'	**0.400 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.02 cfs @ 3.84 hrs HW=141.39' (Free Discharge)
└─**4=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=2.71 cfs @ 12.19 hrs HW=144.01' (Free Discharge)
└─**1=Culvert** (Passes 2.71 cfs of 3.41 cfs potential flow)
  ├─**2=Orifice** (Orifice Controls 2.71 cfs @ 4.60 fps)
  └─**3=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Pond S-1: Subsurface Infiltration System - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

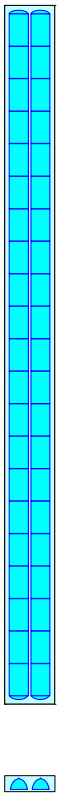
21 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 151.14' Row Length +12.0" End Stone x 2 = 153.14' Base Length
2 Rows x 51.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 11.00' Base Width
6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

42 Chambers x 45.9 cf = 1,929.5 cf Chamber Storage

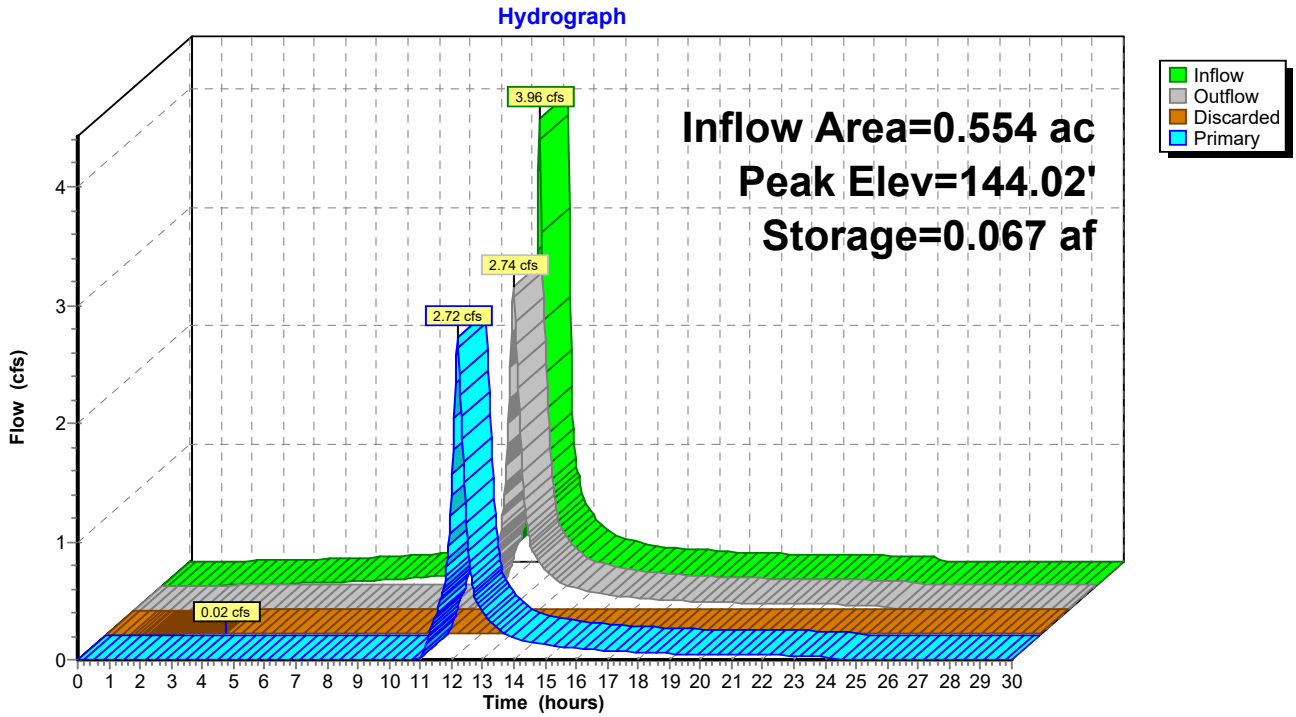
5,895.8 cf Field - 1,929.5 cf Chambers = 3,966.3 cf Stone x 40.0% Voids = 1,586.5 cf Stone Storage

Chamber Storage + Stone Storage = 3,516.0 cf = 0.081 af
Overall Storage Efficiency = 59.6%
Overall System Size = 153.14' x 11.00' x 3.50'

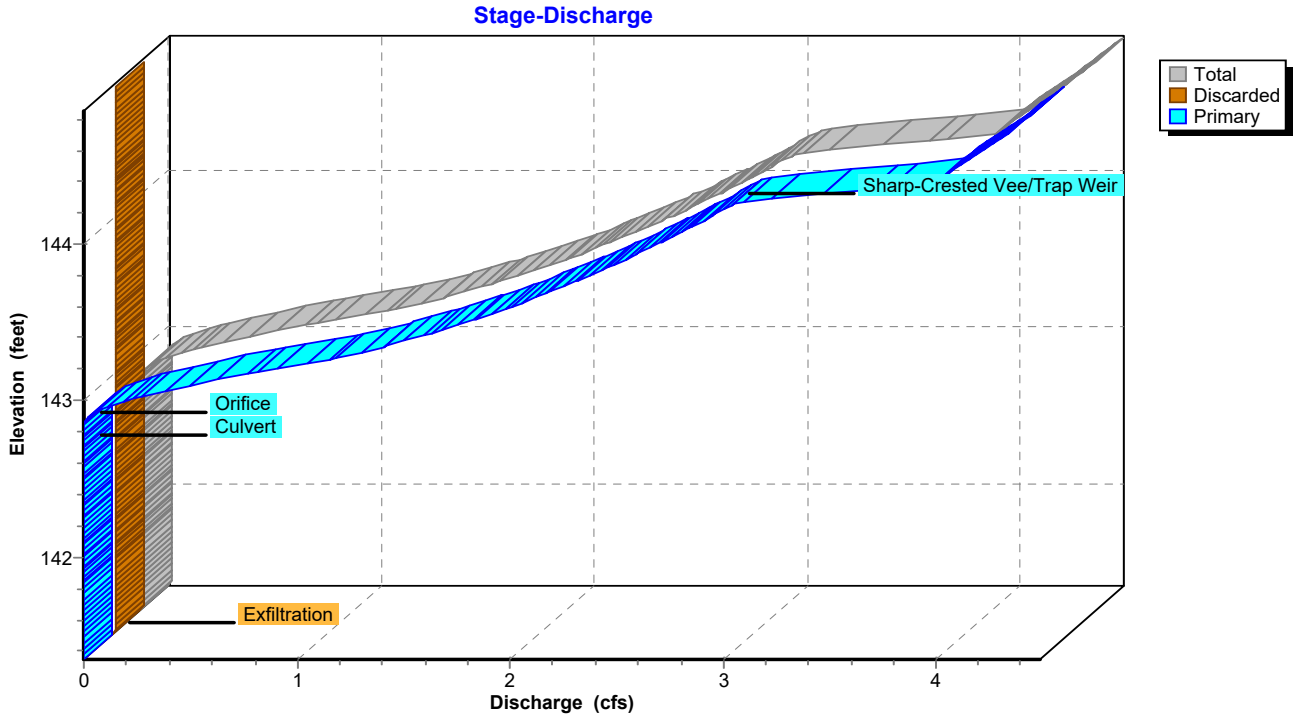
42 Chambers
218.4 cy Field
146.9 cy Stone



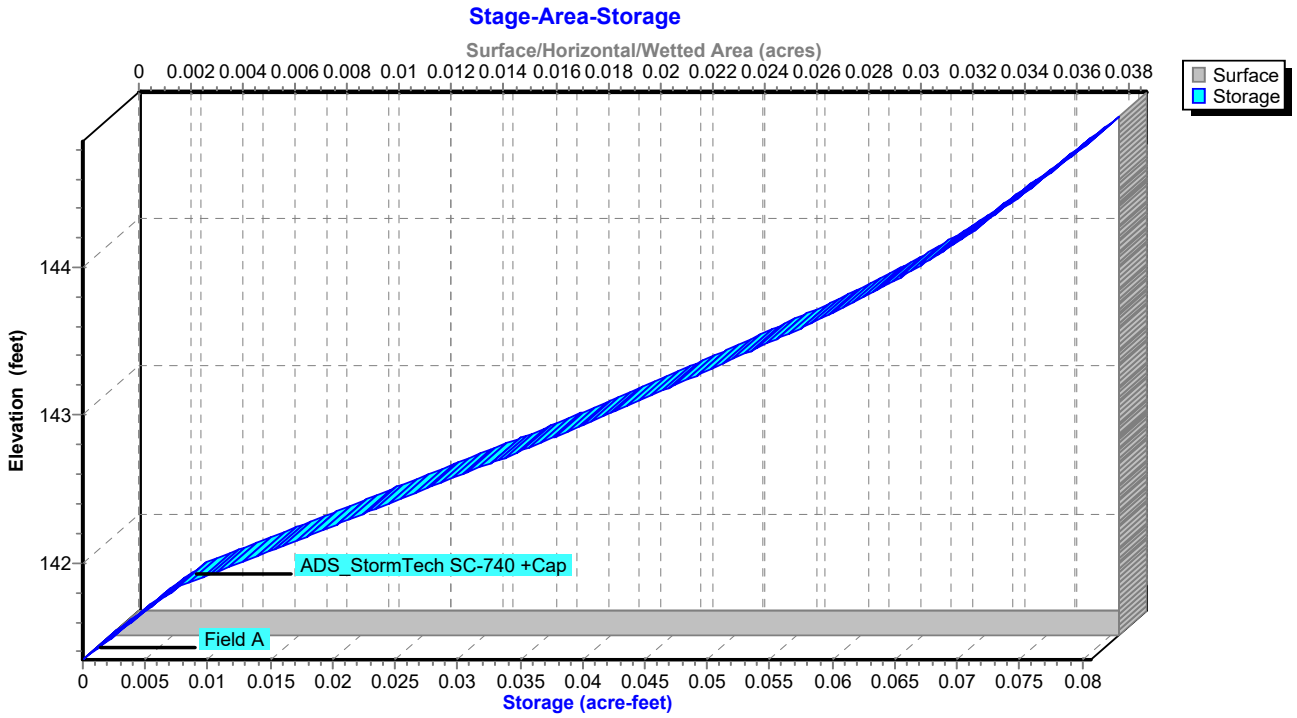
Pond S-1: Subsurface Infiltration System



Pond S-1: Subsurface Infiltration System



Pond S-1: Subsurface Infiltration System



Summary for Pond S-2: Subsurface Infiltration System

Inflow Area = 1.838 ac,100.00% Impervious, Inflow Depth = 7.18" for 50-yr event
Inflow = 4.60 cfs @ 11.92 hrs, Volume= 1.100 af
Outflow = 4.45 cfs @ 12.96 hrs, Volume= 1.100 af, Atten= 3%, Lag= 62.5 min
Discarded = 0.50 cfs @ 9.51 hrs, Volume= 0.695 af
Primary = 3.96 cfs @ 12.96 hrs, Volume= 0.405 af
Routed to Pond AP-1 : Norwalk River

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 144.93' @ 12.96 hrs Surf.Area= 0.091 ac Storage= 0.193 af

Plug-Flow detention time= 55.9 min calculated for 1.100 af (100% of inflow)
Center-of-Mass det. time= 55.9 min (803.3 - 747.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	141.50'	0.100 af	**30.00'W x 131.78'L x 4.00'H Field A** 0.363 af Overall - 0.114 af Embedded = 0.249 af x 40.0% Voids
#2A	142.50'	0.114 af	**ADS_StormTech SC-740 +Cap** x 108 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 108 Chambers in 6 Rows
		0.214 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	143.15'	**15.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 143.15' / 142.69' S= 0.0061 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	143.64'	**7.0" Vert. Orifice X 3.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	144.90'	**5.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)
#4	Discarded	141.50'	**5.450 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.50 cfs @ 9.51 hrs HW=141.54' (Free Discharge)
└─**4=Exfiltration** (Exfiltration Controls 0.50 cfs)

Primary OutFlow Max=3.95 cfs @ 12.96 hrs HW=144.93' (Free Discharge)
└─**1=Culvert** (Passes 3.95 cfs of 5.67 cfs potential flow)
  ├─**2=Orifice** (Orifice Controls 3.86 cfs @ 4.81 fps)
  └─**3=Sharp-Crested Vee/Trap Weir** (Weir Controls 0.09 cfs @ 0.58 fps)

Pond S-2: Subsurface Infiltration System - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

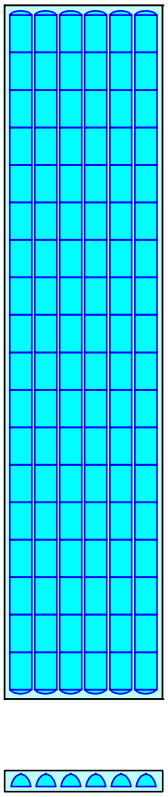
18 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 129.78' Row Length +12.0" End Stone x 2 = 131.78' Base Length
6 Rows x 51.0" Wide + 6.0" Spacing x 5 + 12.0" Side Stone x 2 = 30.00' Base Width
12.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

108 Chambers x 45.9 cf = 4,961.5 cf Chamber Storage

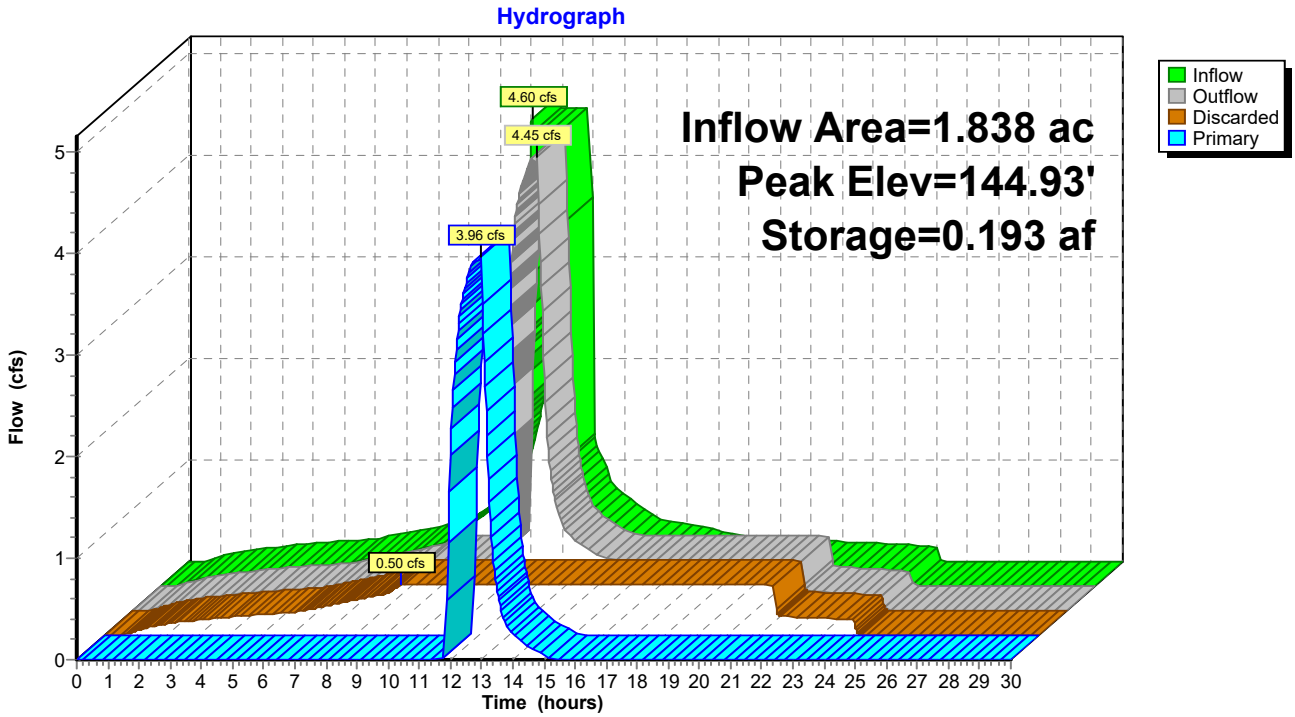
15,813.2 cf Field - 4,961.5 cf Chambers = 10,851.7 cf Stone x 40.0% Voids = 4,340.7 cf Stone Storage

Chamber Storage + Stone Storage = 9,302.2 cf = 0.214 af
Overall Storage Efficiency = 58.8%
Overall System Size = 131.78' x 30.00' x 4.00'

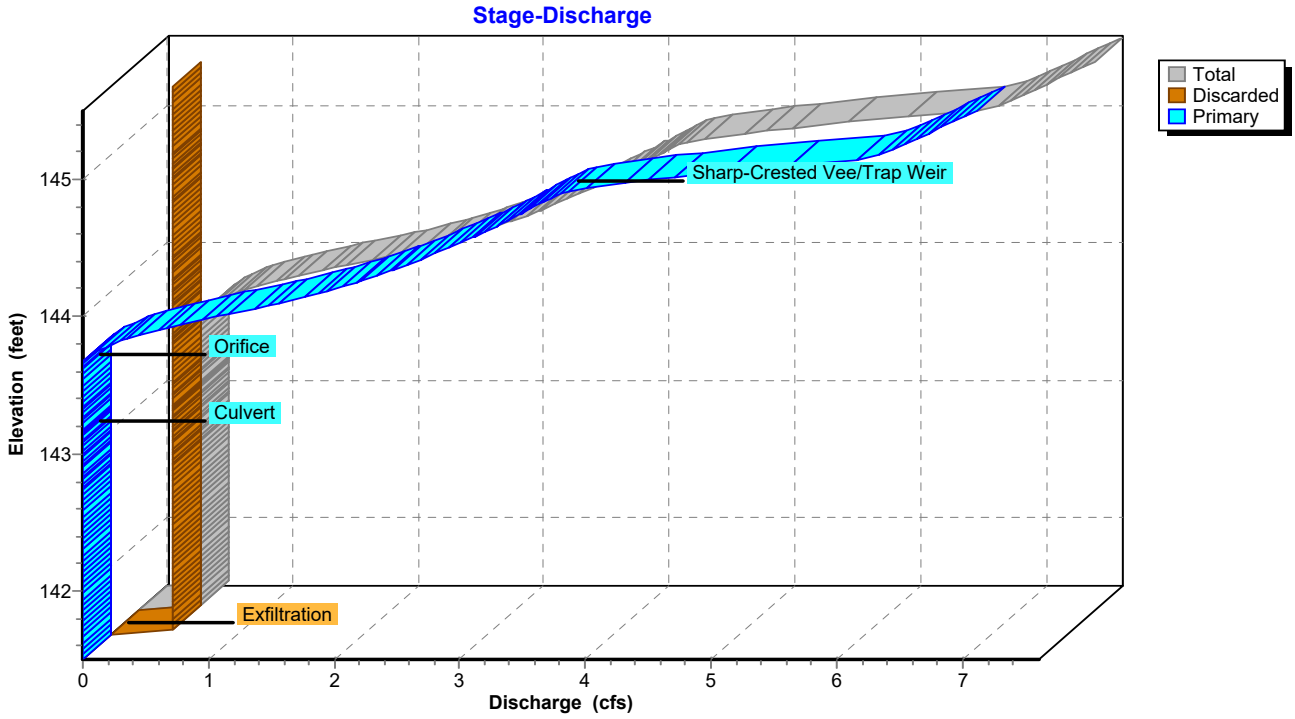
108 Chambers
585.7 cy Field
401.9 cy Stone



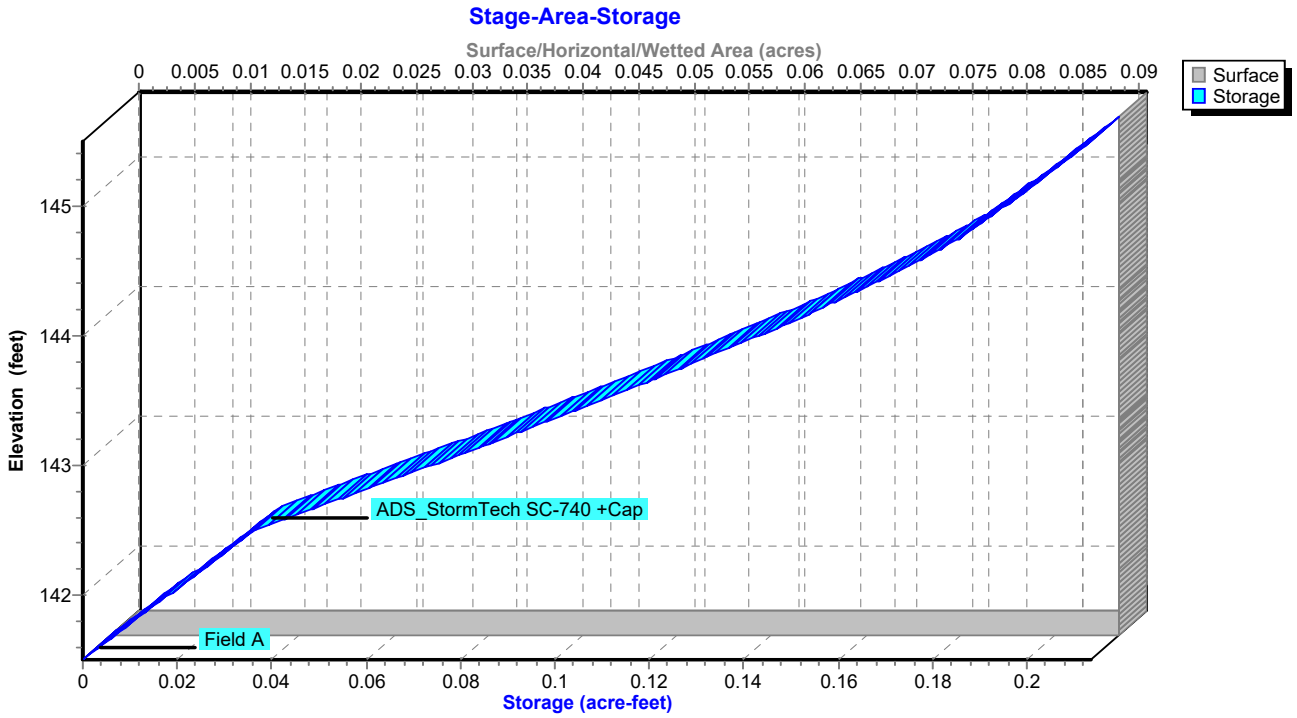
Pond S-2: Subsurface Infiltration System



Pond S-2: Subsurface Infiltration System



Pond S-2: Subsurface Infiltration System



Summary for Pond S-3: Subsurface Infiltration System

Inflow Area = 1.035 ac, 47.94% Impervious, Inflow Depth = 3.74" for 50-yr event
Inflow = 4.12 cfs @ 12.13 hrs, Volume= 0.322 af
Outflow = 2.50 cfs @ 12.21 hrs, Volume= 0.290 af, Atten= 39%, Lag= 4.8 min
Discarded = 0.05 cfs @ 6.51 hrs, Volume= 0.118 af
Primary = 2.45 cfs @ 12.21 hrs, Volume= 0.172 af
Routed to Pond AP-1 : Norwalk River

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 142.59' @ 12.21 hrs Surf.Area= 0.052 ac Storage= 0.098 af

Plug-Flow detention time= 167.7 min calculated for 0.290 af (90% of inflow)
Center-of-Mass det. time= 115.8 min (880.5 - 764.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	139.70'	0.047 af	**30.00'W x 74.82'L x 3.50'H Field A** 0.180 af Overall - 0.063 af Embedded = 0.117 af x 40.0% Voids
#2A	140.20'	0.063 af	**ADS_StormTech SC-740 +Cap** x 60 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 60 Chambers in 6 Rows
		0.110 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	141.14'	**12.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 141.14' / 140.49' S= 0.0087 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	141.40'	**7.0" Vert. Orifice X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	142.60'	**5.0' long Weir Wall** Cv= 2.62 (C= 3.28)
#4	Discarded	139.70'	**1.050 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.05 cfs @ 6.51 hrs HW=139.74' (Free Discharge)
└─**4=Exfiltration** (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=2.44 cfs @ 12.21 hrs HW=142.59' (Free Discharge)
└─**1=Culvert** (Passes 2.44 cfs of 3.53 cfs potential flow)
  ├─**2=Orifice** (Orifice Controls 2.44 cfs @ 4.57 fps)
  └─**3=Weir Wall** (Controls 0.00 cfs)

Pond S-3: Subsurface Infiltration System - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

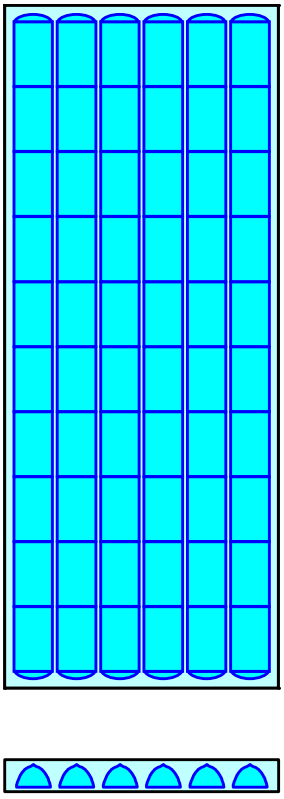
10 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 72.82' Row Length +12.0" End Stone x 2 = 74.82' Base Length
6 Rows x 51.0" Wide + 6.0" Spacing x 5 + 12.0" Side Stone x 2 = 30.00' Base Width
6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

60 Chambers x 45.9 cf = 2,756.4 cf Chamber Storage

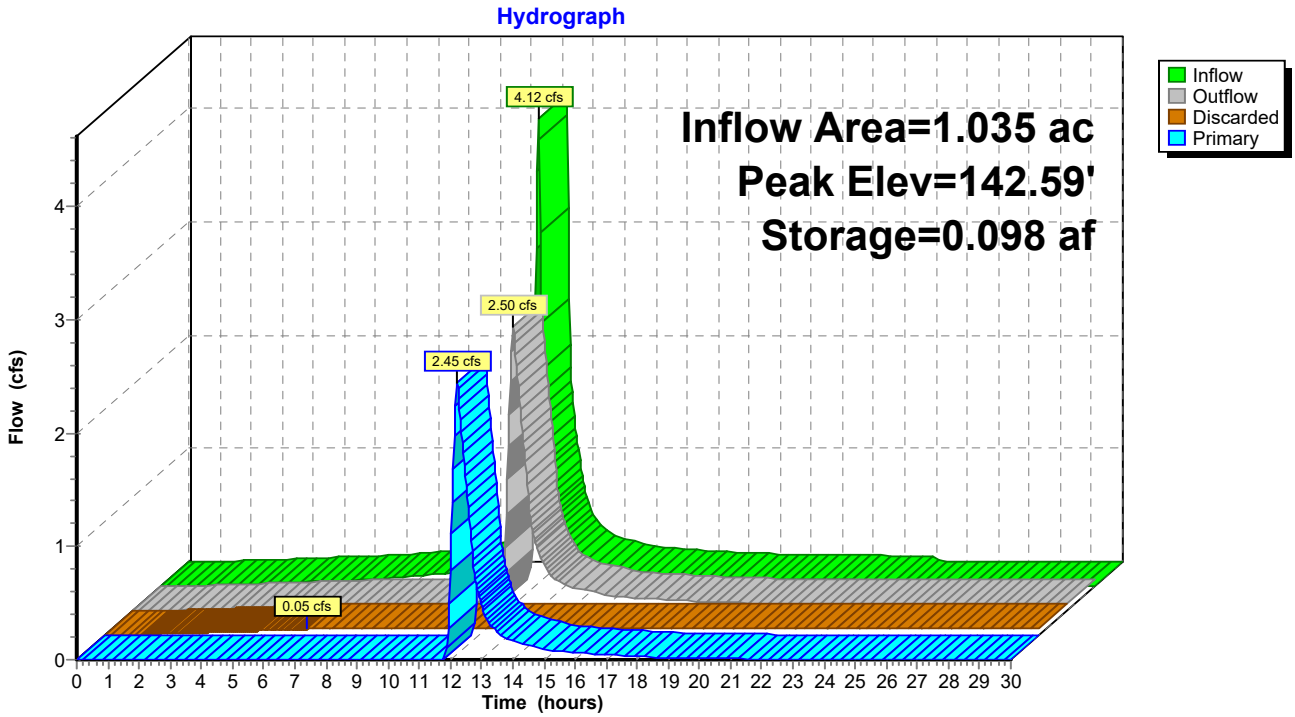
7,855.8 cf Field - 2,756.4 cf Chambers = 5,099.3 cf Stone x 40.0% Voids = 2,039.7 cf Stone Storage

Chamber Storage + Stone Storage = 4,796.1 cf = 0.110 af
Overall Storage Efficiency = 61.1%
Overall System Size = 74.82' x 30.00' x 3.50'

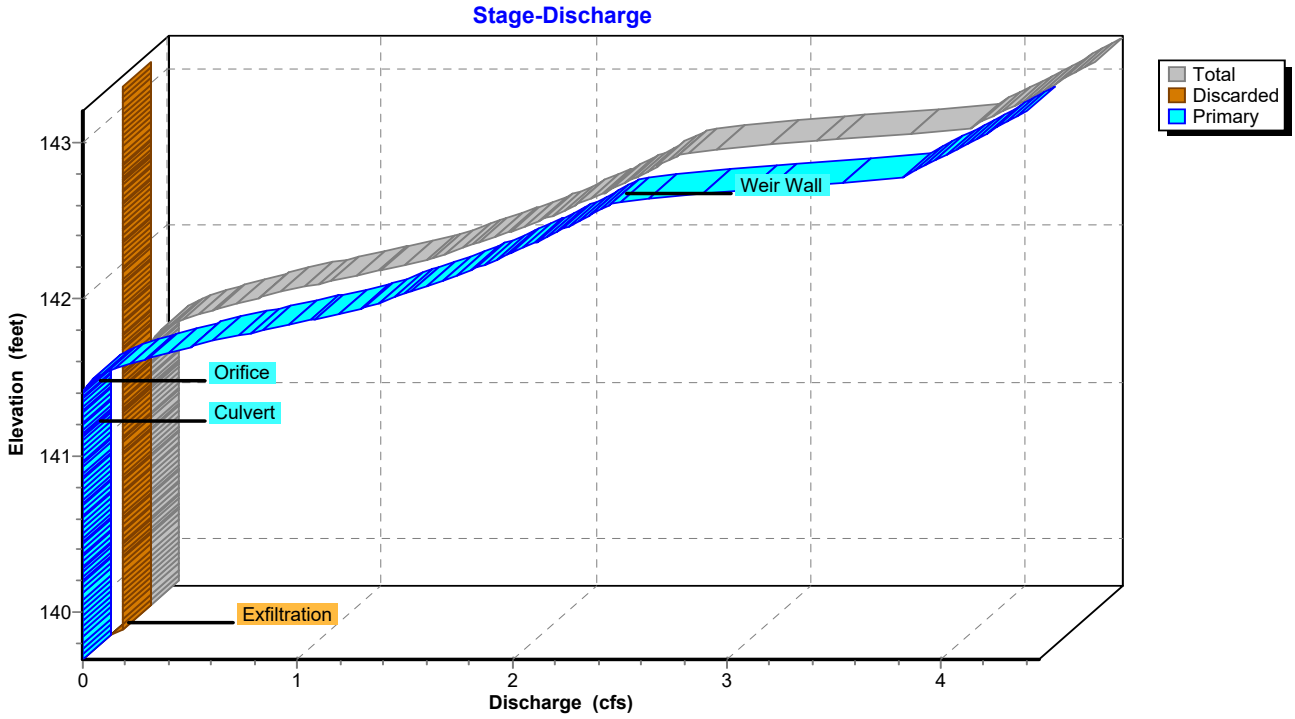
60 Chambers
291.0 cy Field
188.9 cy Stone



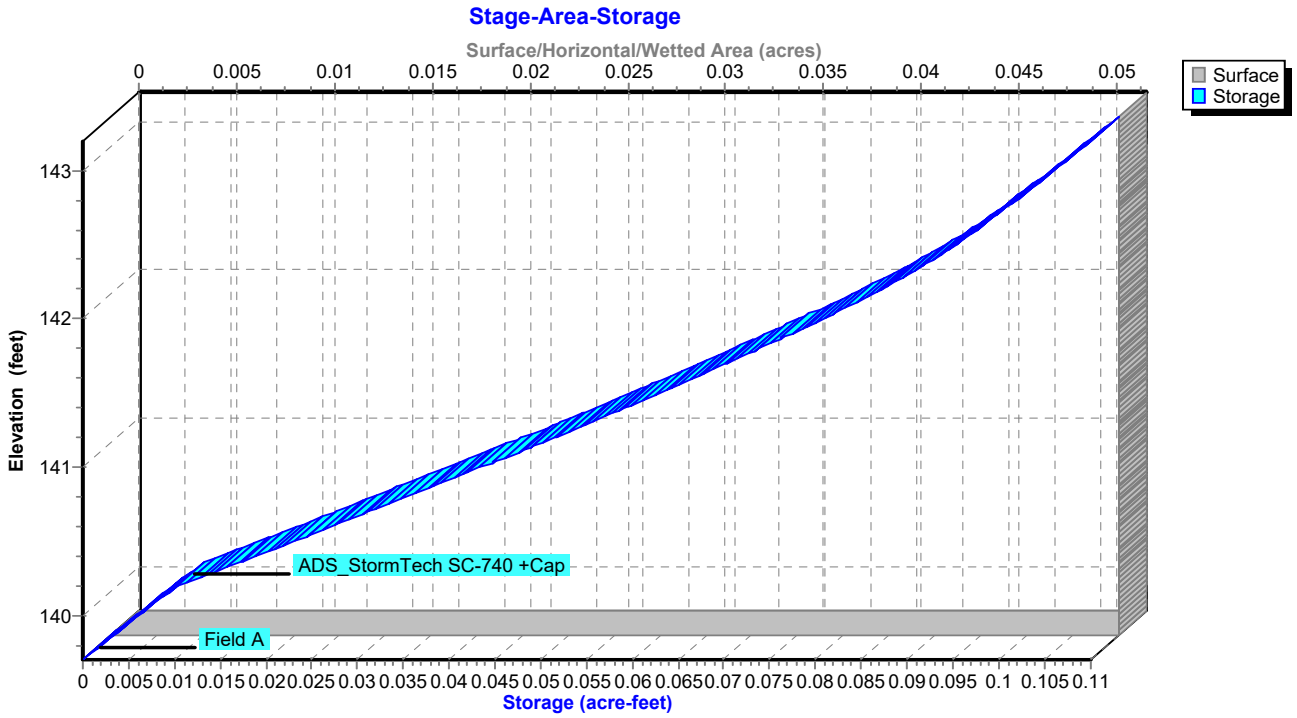
Pond S-3: Subsurface Infiltration System



Pond S-3: Subsurface Infiltration System



Pond S-3: Subsurface Infiltration System



Summary for Subcatchment PR-1: CCB 14

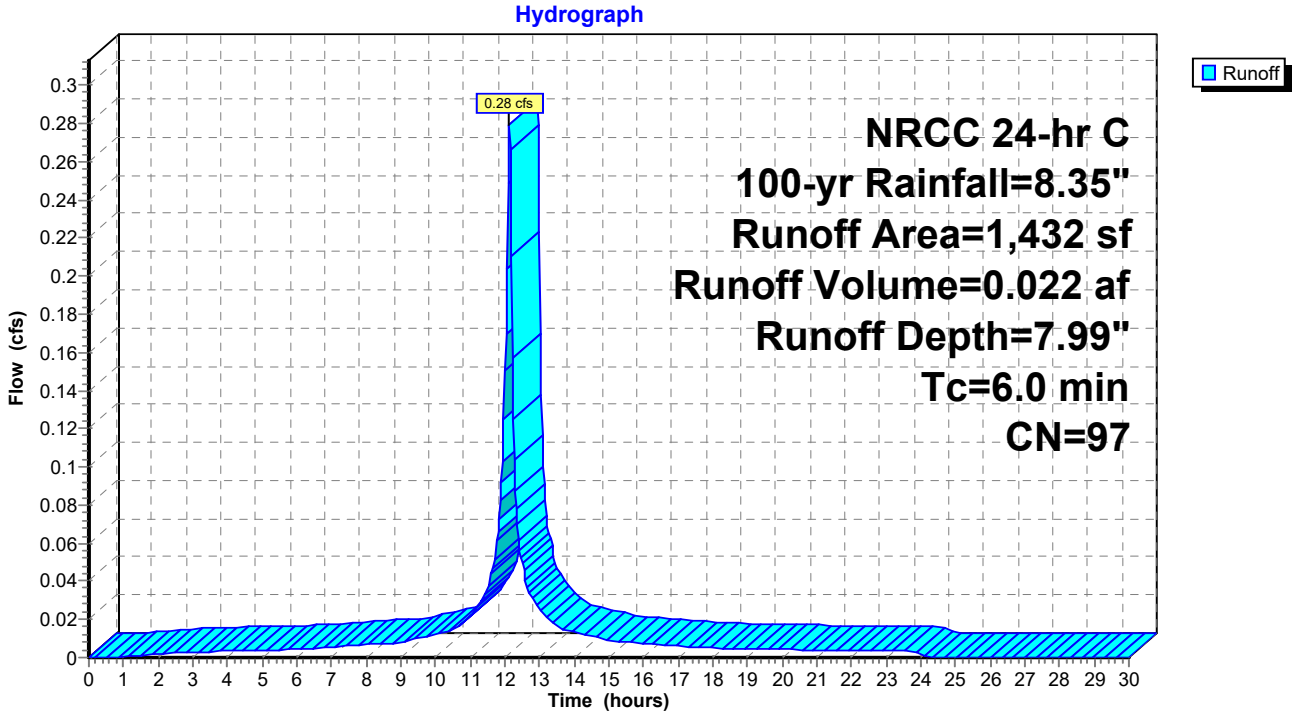
Runoff = 0.28 cfs @ 12.13 hrs, Volume= 0.022 af, Depth= 7.99"
Routed to Pond S-3 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 100-yr Rainfall=8.35"

	Area (sf)	CN	Description
	1,361	98	Paved parking, HSG D
*	71	79	Landscaping, Good, HSG D
	1,432	97	Weighted Average
	71		4.96% Pervious Area
	1,361		95.04% Impervious Area

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

Subcatchment PR-1: CCB 14



Summary for Subcatchment PR-10: CCB 28

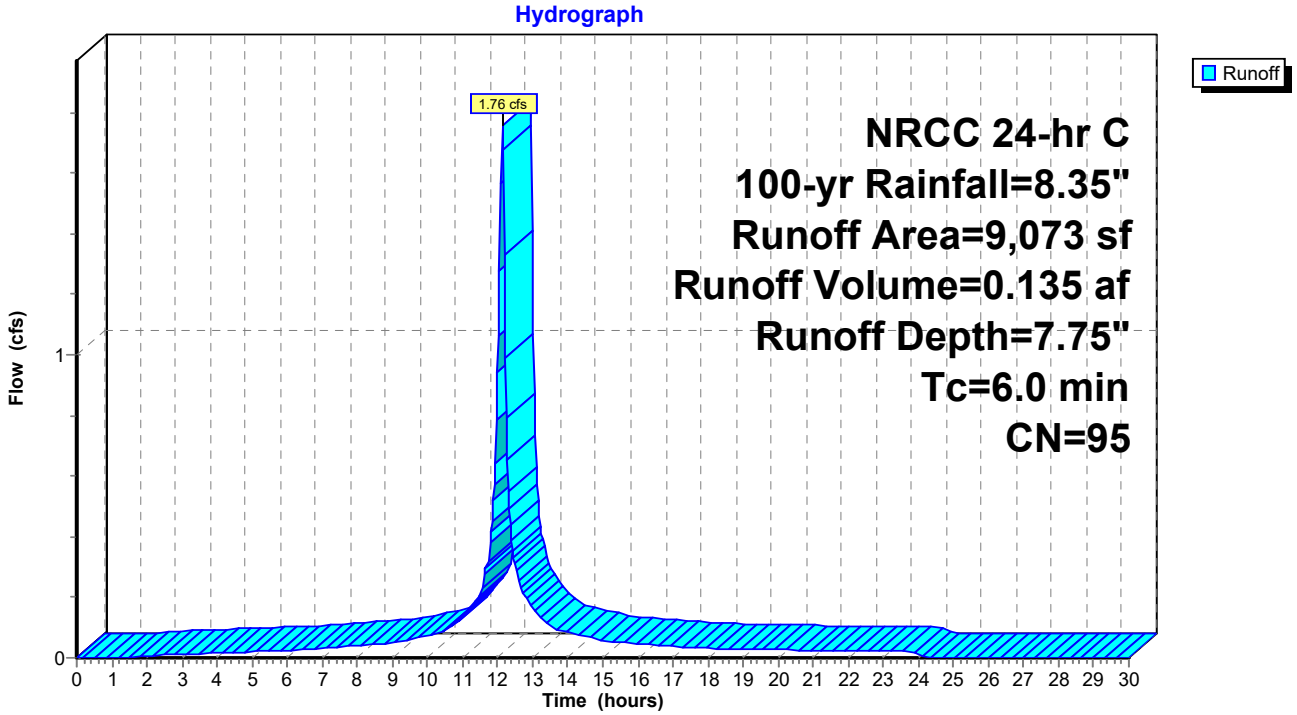
Runoff = 1.76 cfs @ 12.13 hrs, Volume= 0.135 af, Depth= 7.75"
Routed to Pond S-1 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 100-yr Rainfall=8.35"

	Area (sf)	CN	Description
	7,450	98	Paved parking, HSG D
	440	80	>75% Grass cover, Good, HSG D
*	1,183	79	Landscaping, Good, HSG D
	9,073	95	Weighted Average
	1,623		17.89% Pervious Area
	7,450		82.11% Impervious Area

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

Subcatchment PR-10: CCB 28



Summary for Subcatchment PR-11: Building Roof

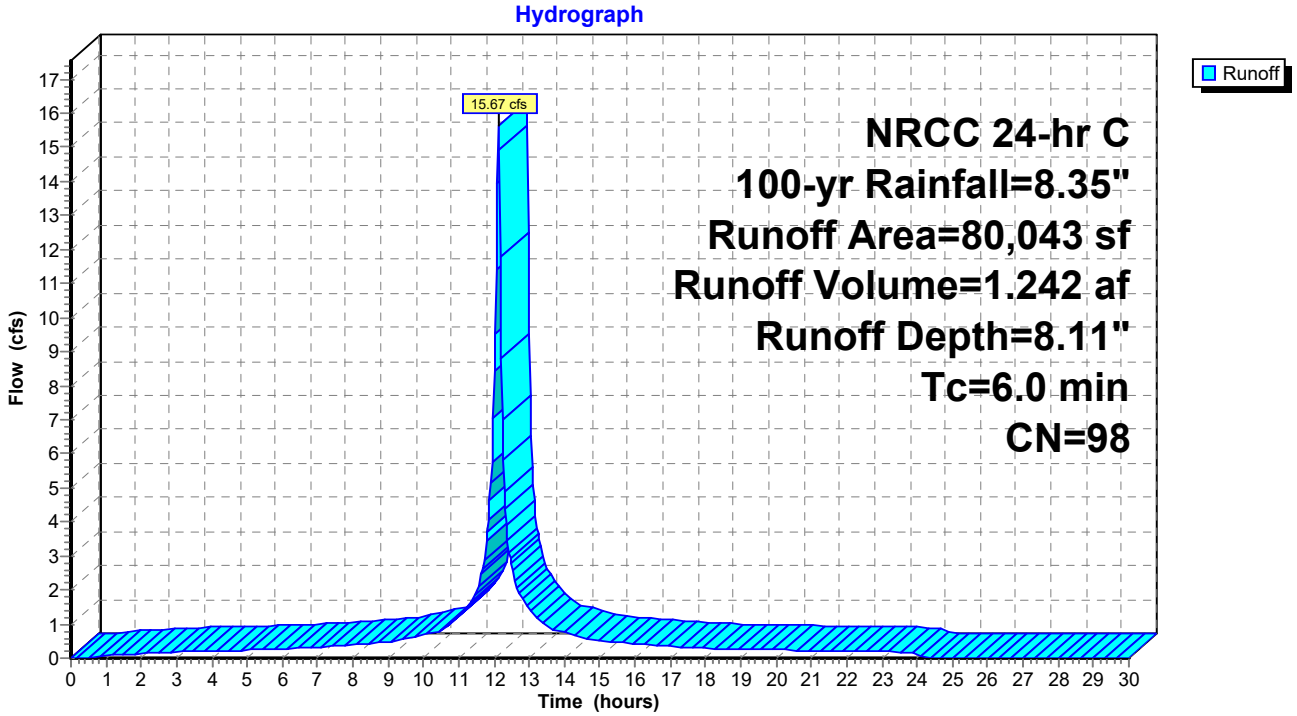
Runoff = 15.67 cfs @ 12.13 hrs, Volume= 1.242 af, Depth= 8.11"
Routed to Reach R1 : Roof Leader

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 100-yr Rainfall=8.35"

Area (sf)	CN	Description
80,043	98	Roofs, HSG D
80,043		100.00% Impervious Area

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

Subcatchment PR-11: Building Roof



Summary for Subcatchment PR-12: CCB 29

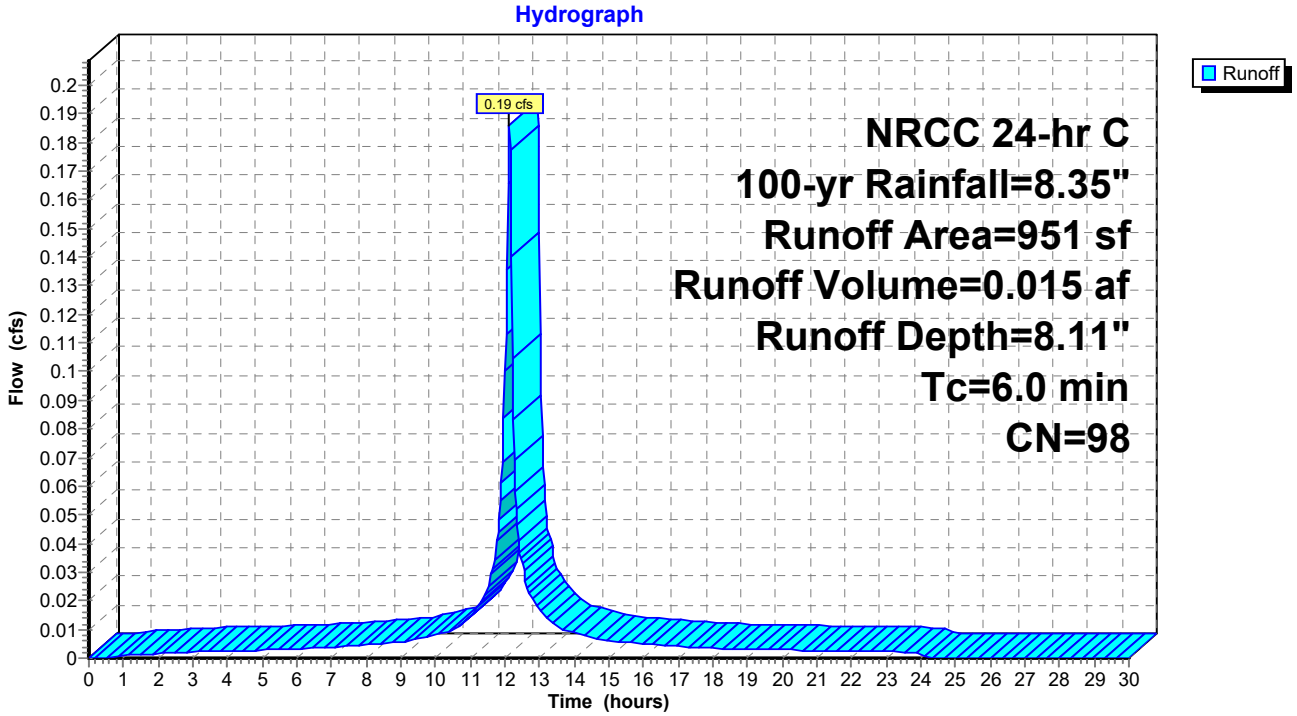
Runoff = 0.19 cfs @ 12.13 hrs, Volume= 0.015 af, Depth= 8.11"
Routed to Pond S-1 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 100-yr Rainfall=8.35"

Area (sf)	CN	Description
951	98	Paved parking, HSG D
951		100.00% Impervious Area

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

Subcatchment PR-12: CCB 29



Summary for Subcatchment PR-13: CCB 30

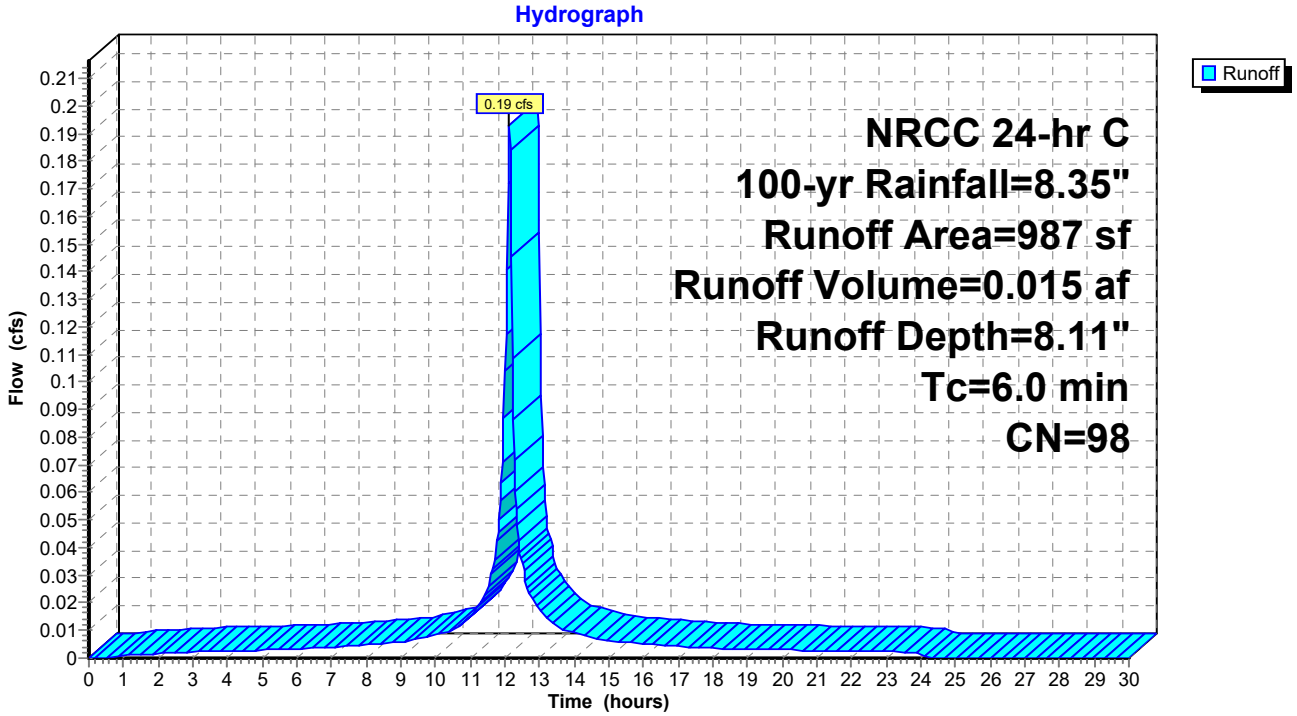
Runoff = 0.19 cfs @ 12.13 hrs, Volume= 0.015 af, Depth= 8.11"
Routed to Pond S-1 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 100-yr Rainfall=8.35"

Area (sf)	CN	Description
987	98	Paved parking, HSG D
987		100.00% Impervious Area

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

Subcatchment PR-13: CCB 30



Summary for Subcatchment PR-14: CLCB-10

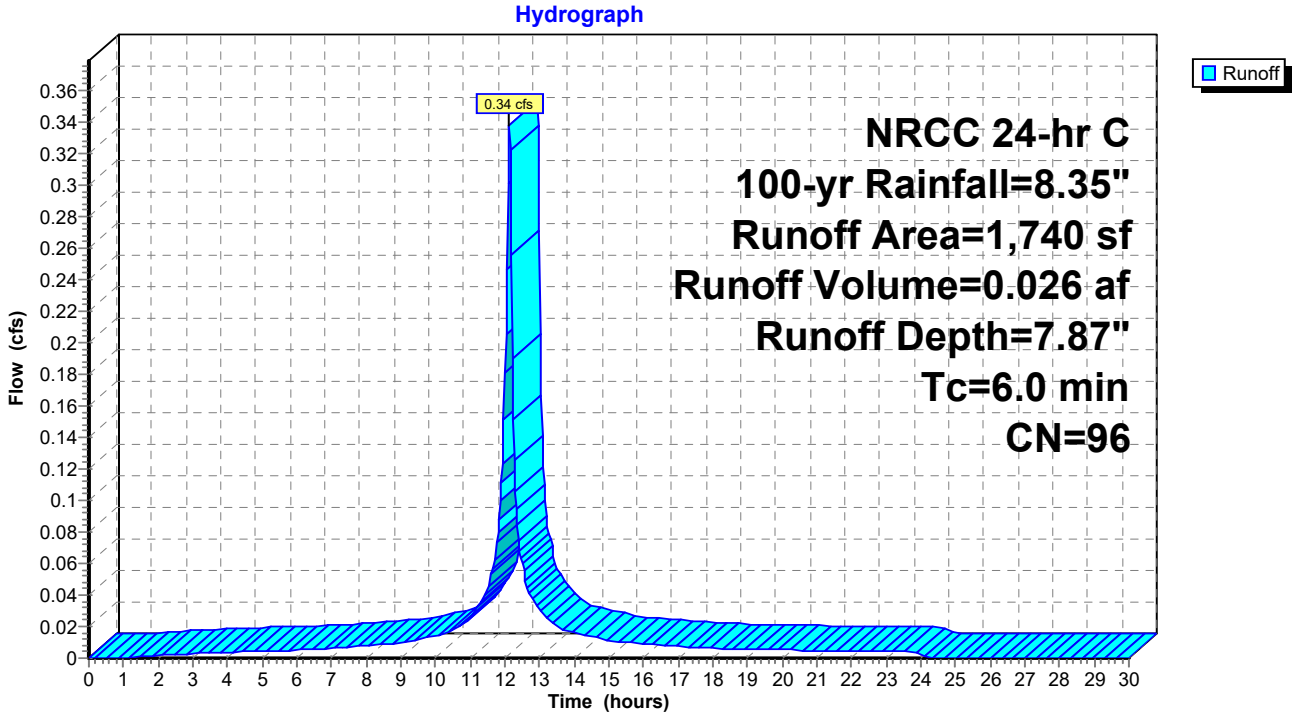
Runoff = 0.34 cfs @ 12.13 hrs, Volume= 0.026 af, Depth= 7.87"
Routed to Pond S-3 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 100-yr Rainfall=8.35"

	Area (sf)	CN	Description
*	1,740	96	Concrete paver, HSG D
	1,740		100.00% Pervious Area

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

Subcatchment PR-14: CLCB-10



Summary for Subcatchment PR-15: CLCB-09

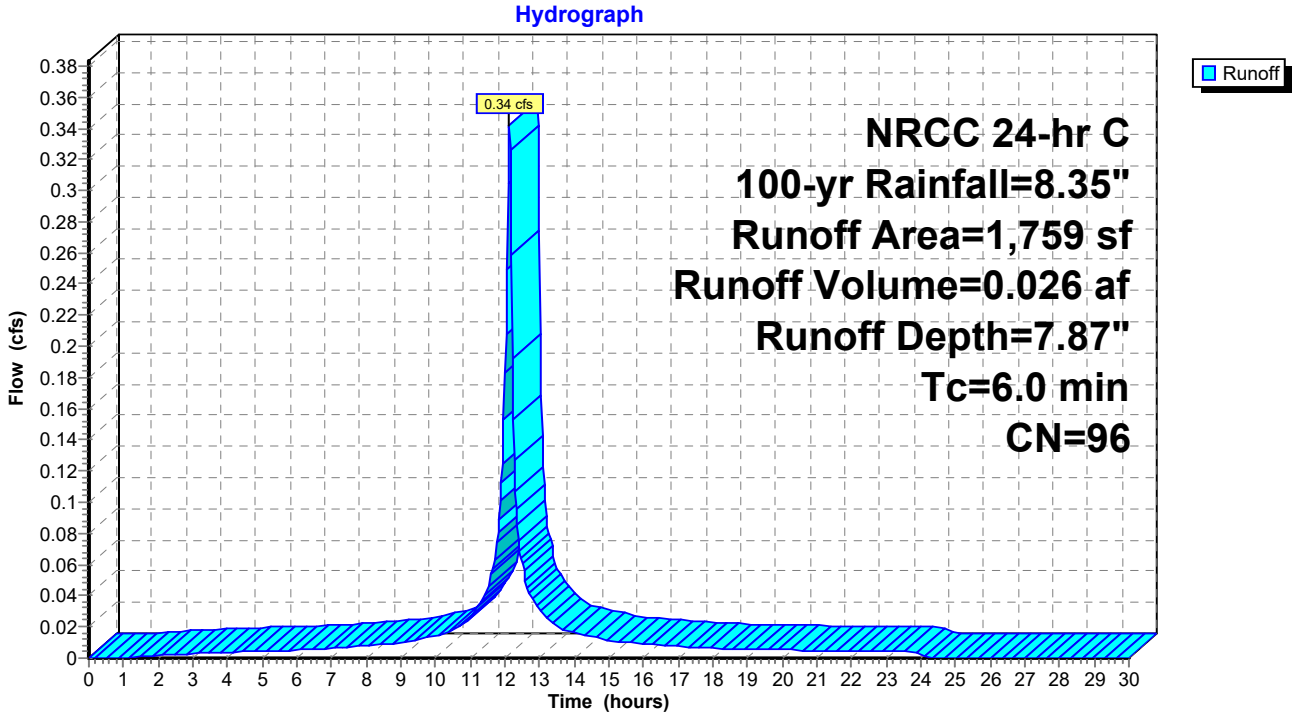
Runoff = 0.34 cfs @ 12.13 hrs, Volume= 0.026 af, Depth= 7.87"
Routed to Pond S-3 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 100-yr Rainfall=8.35"

	Area (sf)	CN	Description
*	1,759	96	Pevious paver, HSG D
	1,759		100.00% Pervious Area

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

Subcatchment PR-15: CLCB-09



Summary for Subcatchment PR-16: East rooftop to Front Rain Garden

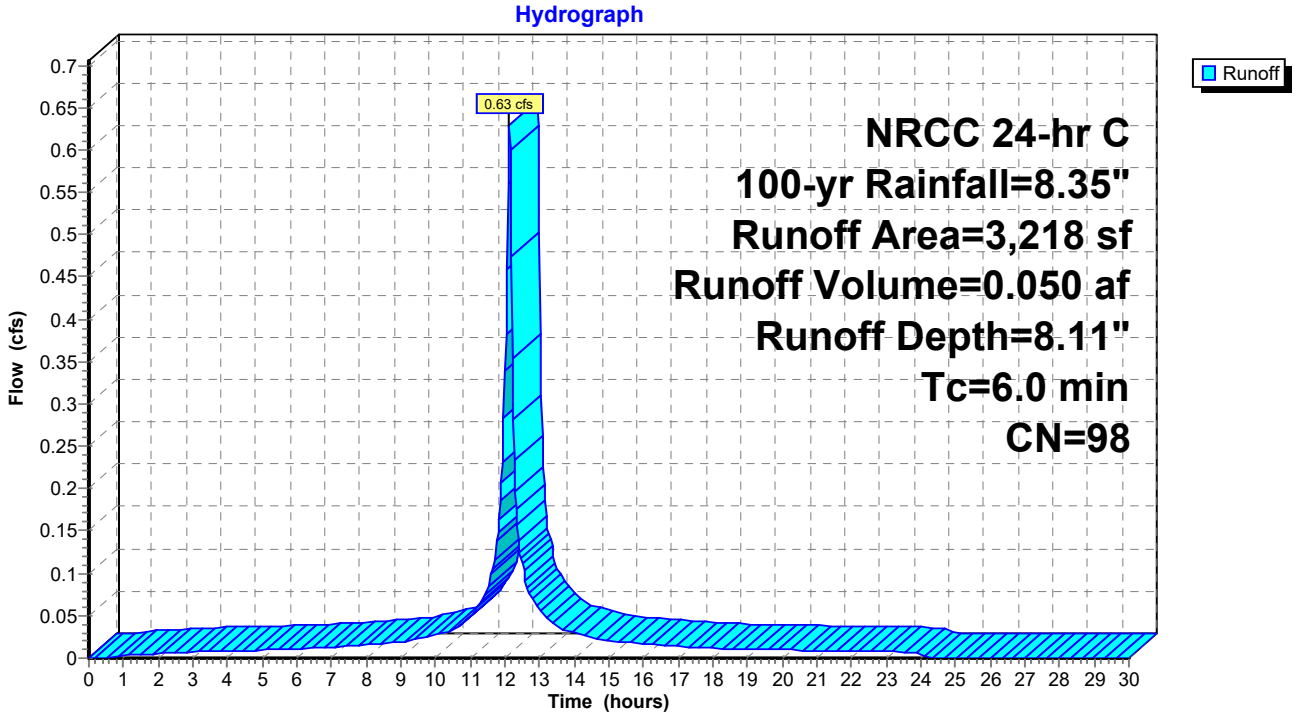
Runoff = 0.63 cfs @ 12.13 hrs, Volume= 0.050 af, Depth= 8.11"
Routed to Pond AP-2 : Front Lawn Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 100-yr Rainfall=8.35"

Area (sf)	CN	Description
3,218	98	Roofs, HSG D
3,218		100.00% Impervious Area

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

Subcatchment PR-16: East rooftop to Front Rain Garden



Summary for Subcatchment PR-17: Front Lawn

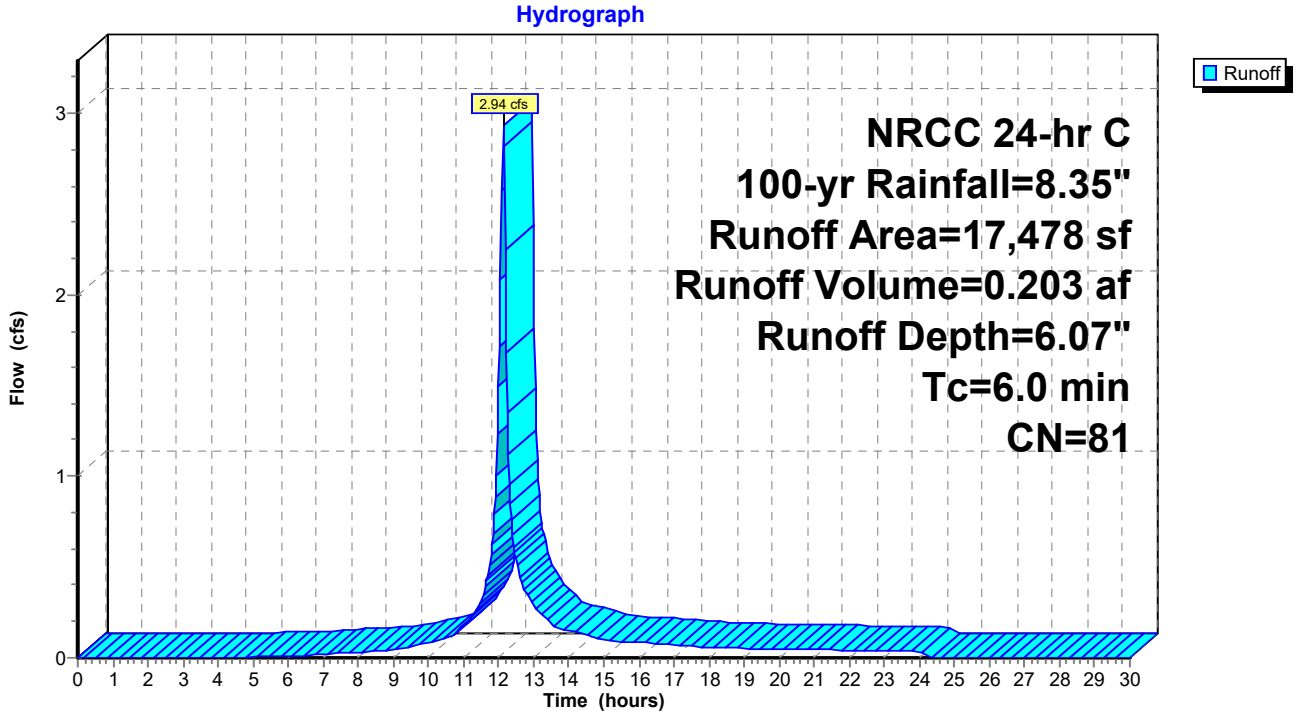
Runoff = 2.94 cfs @ 12.13 hrs, Volume= 0.203 af, Depth= 6.07"
Routed to Pond AP-2 : Front Lawn Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 100-yr Rainfall=8.35"

	Area (sf)	CN	Description
	1,883	98	Paved parking, HSG D
	6,950	80	>75% Grass cover, Good, HSG D
*	8,645	79	Landscaping, Good, HSG D
	17,478	81	Weighted Average
	15,595		89.23% Pervious Area
	1,883		10.77% Impervious Area

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

Subcatchment PR-17: Front Lawn



Summary for Subcatchment PR-18: CCB-08

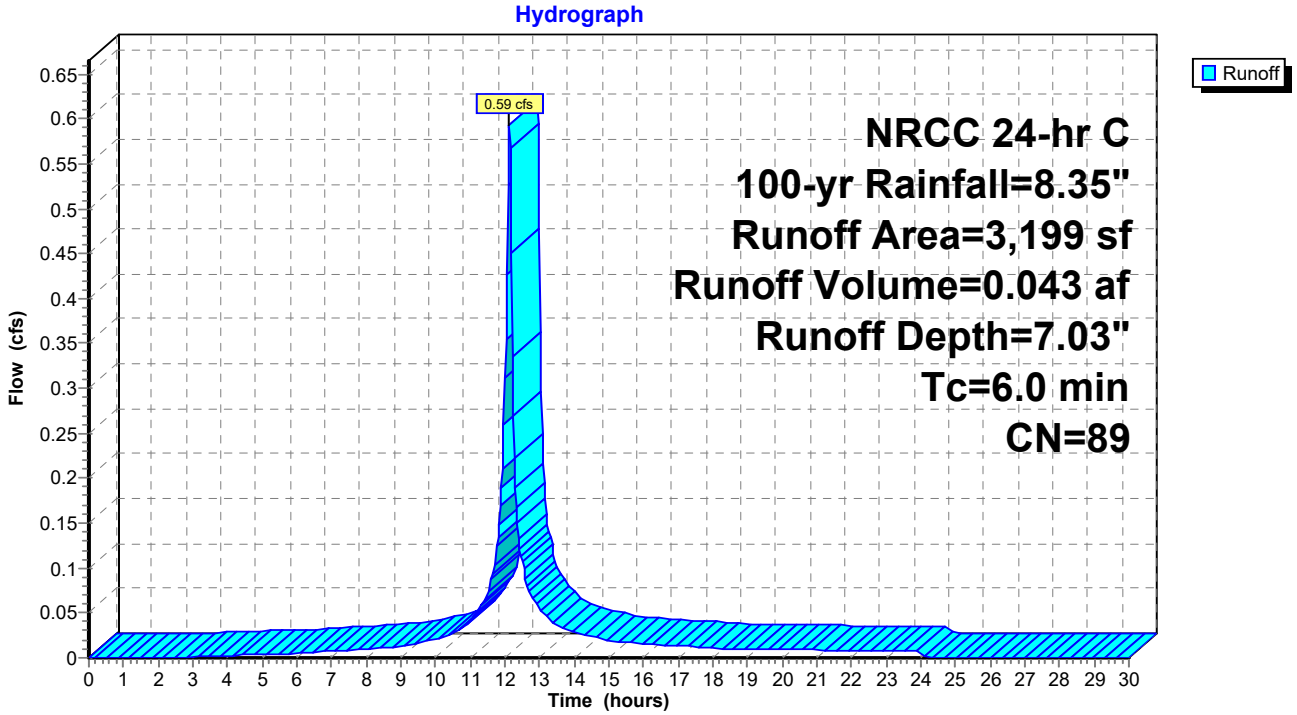
Runoff = 0.59 cfs @ 12.13 hrs, Volume= 0.043 af, Depth= 7.03"
Routed to Pond S-3 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 100-yr Rainfall=8.35"

	Area (sf)	CN	Description
	1,677	98	Paved parking, HSG D
	192	80	>75% Grass cover, Good, HSG D
*	1,330	79	Landscaping, Good, HSG D
	3,199	89	Weighted Average
	1,522		47.58% Pervious Area
	1,677		52.42% Impervious Area

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

Subcatchment PR-18: CCB-08



Summary for Subcatchment PR-19: CCB-07

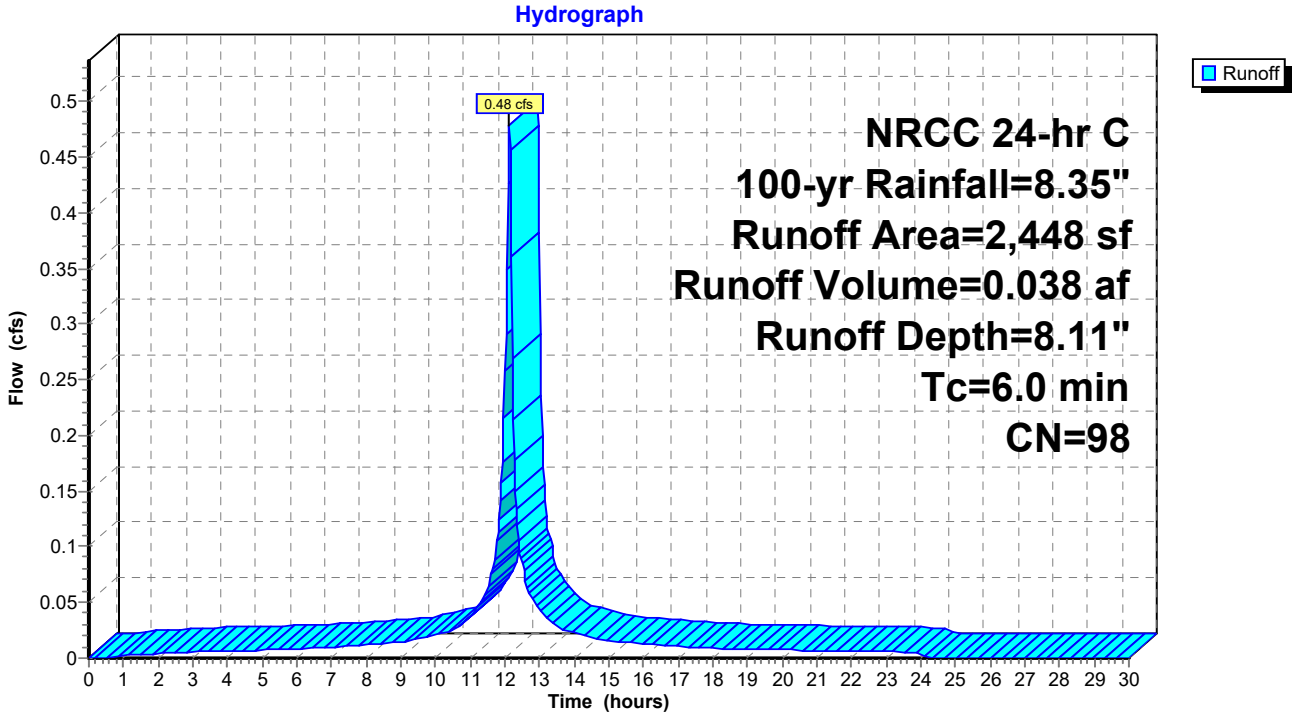
Runoff = 0.48 cfs @ 12.13 hrs, Volume= 0.038 af, Depth= 8.11"
Routed to Pond S-3 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 100-yr Rainfall=8.35"

Area (sf)	CN	Description
2,448	98	Paved parking, HSG D
2,448		100.00% Impervious Area

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

Subcatchment PR-19: CCB-07



Summary for Subcatchment PR-2: CCB 10

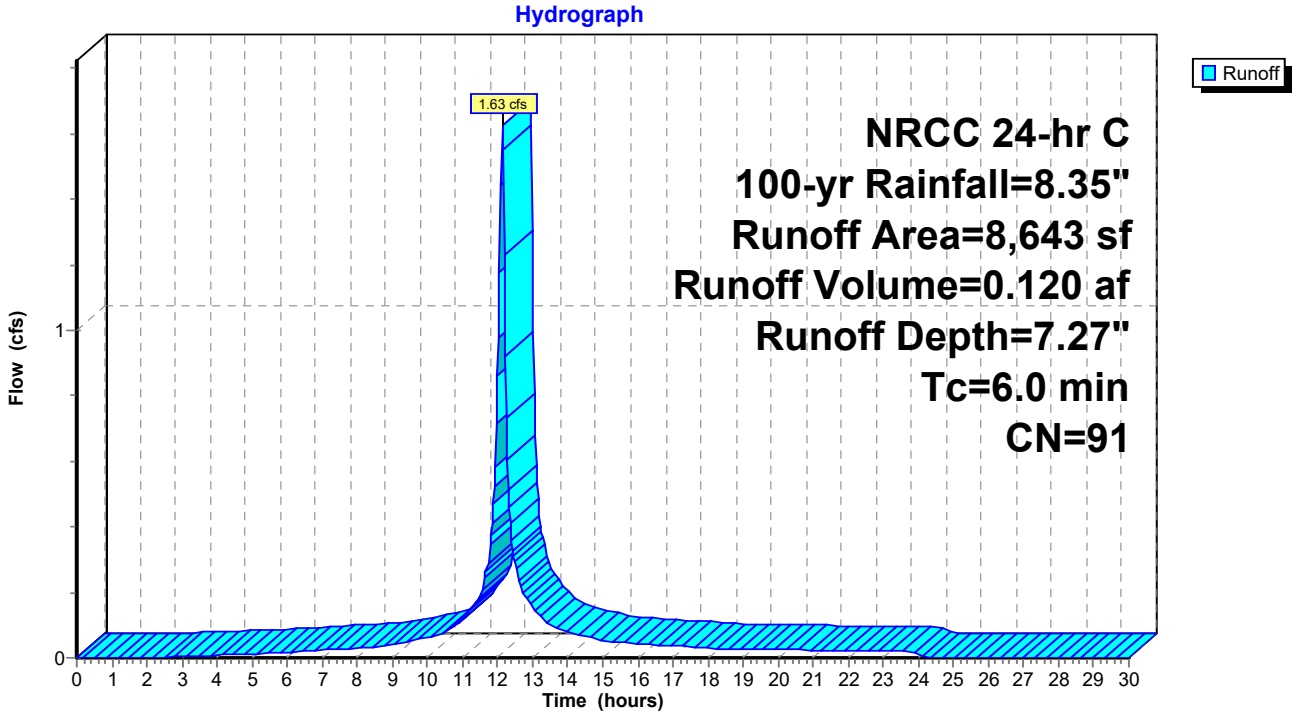
Runoff = 1.63 cfs @ 12.13 hrs, Volume= 0.120 af, Depth= 7.27"
Routed to Pond S-3 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 100-yr Rainfall=8.35"

	Area (sf)	CN	Description
*	6,303	98	Paved parking, HSG C
*	1,994	72	Landscaping, Good, HSG C
	346	74	>75% Grass cover, Good, HSG C
	8,643	91	Weighted Average
	2,340		27.07% Pervious Area
	6,303		72.93% Impervious Area

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

Subcatchment PR-2: CCB 10



Summary for Subcatchment PR-20: South of entrance drive

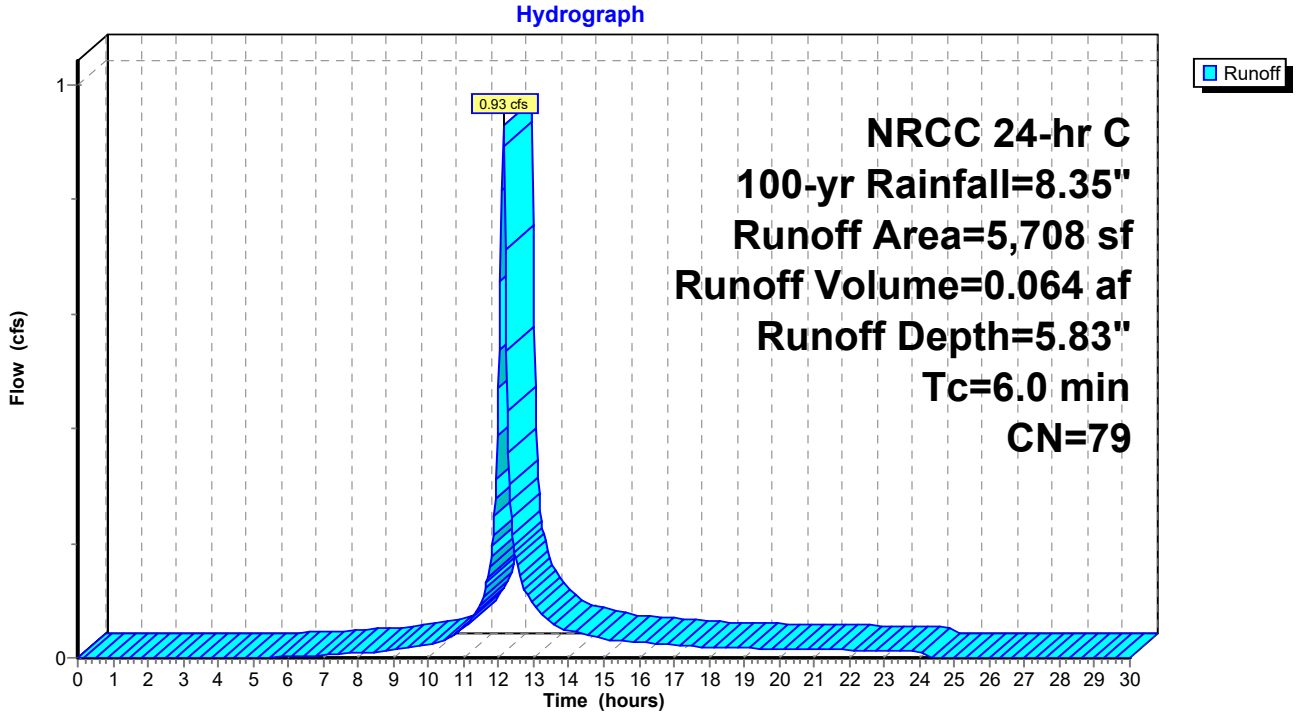
Runoff = 0.93 cfs @ 12.13 hrs, Volume= 0.064 af, Depth= 5.83"
Routed to Pond AP-4 : Landscaped Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 100-yr Rainfall=8.35"

	Area (sf)	CN	Description
	93	98	Paved parking, HSG D
	755	80	>75% Grass cover, Good, HSG D
*	4,860	79	Landscaping, Good, HSG D
	5,708	79	Weighted Average
	5,615		98.37% Pervious Area
	93		1.63% Impervious Area

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

Subcatchment PR-20: South of entrance drive



Summary for Subcatchment PR-21: Danbury Rd

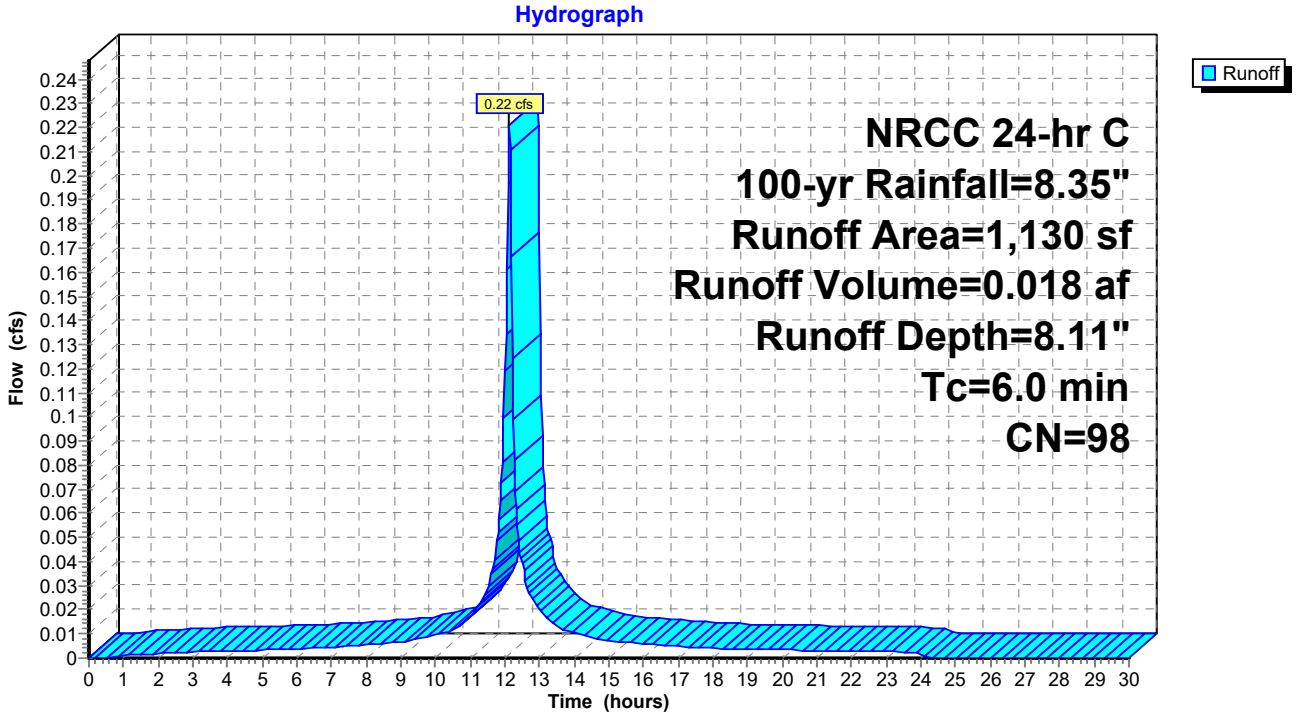
Runoff = 0.22 cfs @ 12.13 hrs, Volume= 0.018 af, Depth= 8.11"
Routed to Pond AP-3 : Danbury Road

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 100-yr Rainfall=8.35"

Area (sf)	CN	Description
1,130	98	Paved parking, HSG D
1,130		100.00% Impervious Area

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

Subcatchment PR-21: Danbury Rd



Summary for Subcatchment PR-3: CCB 07

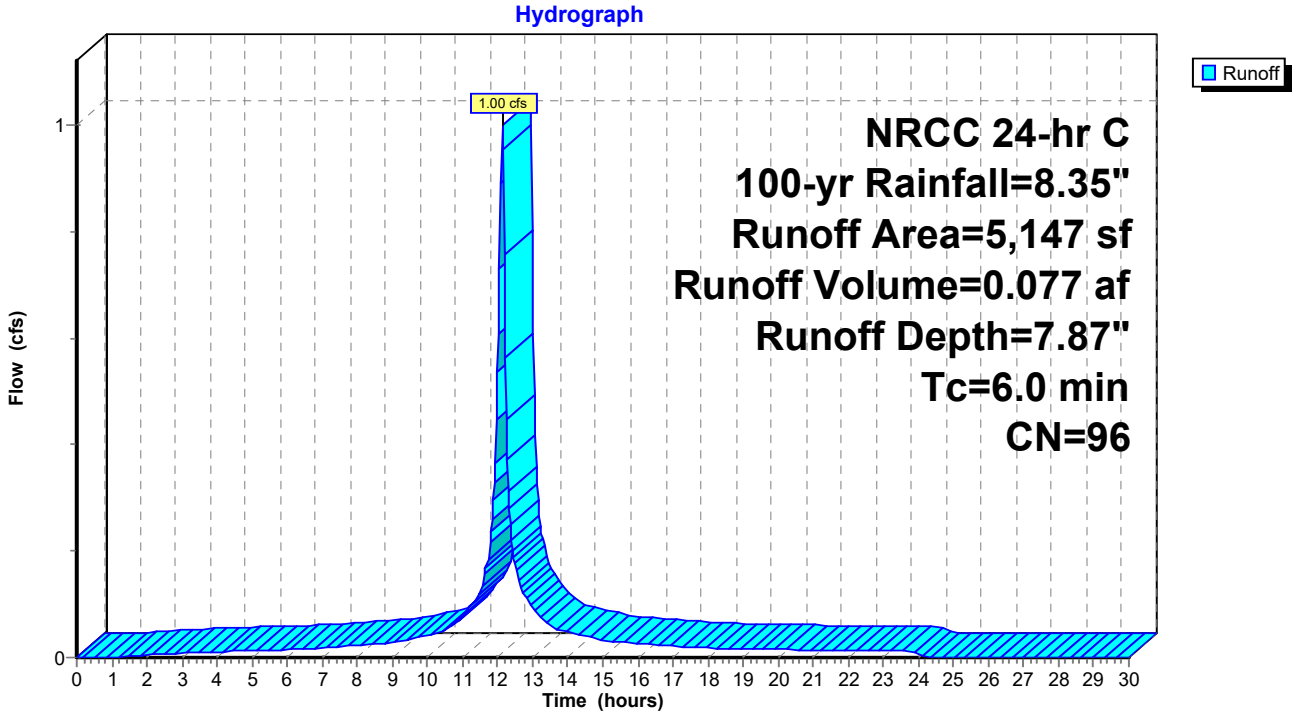
Runoff = 1.00 cfs @ 12.13 hrs, Volume= 0.077 af, Depth= 7.87"
Routed to Pond S-3 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 100-yr Rainfall=8.35"

	Area (sf)	CN	Description
*	4,715	98	Paved parking, HSG C
*	432	72	Landscaping, Good, HSG C
	5,147	96	Weighted Average
	432		8.39% Pervious Area
	4,715		91.61% Impervious Area

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

Subcatchment PR-3: CCB 07



Summary for Subcatchment PR-4: CCB 06

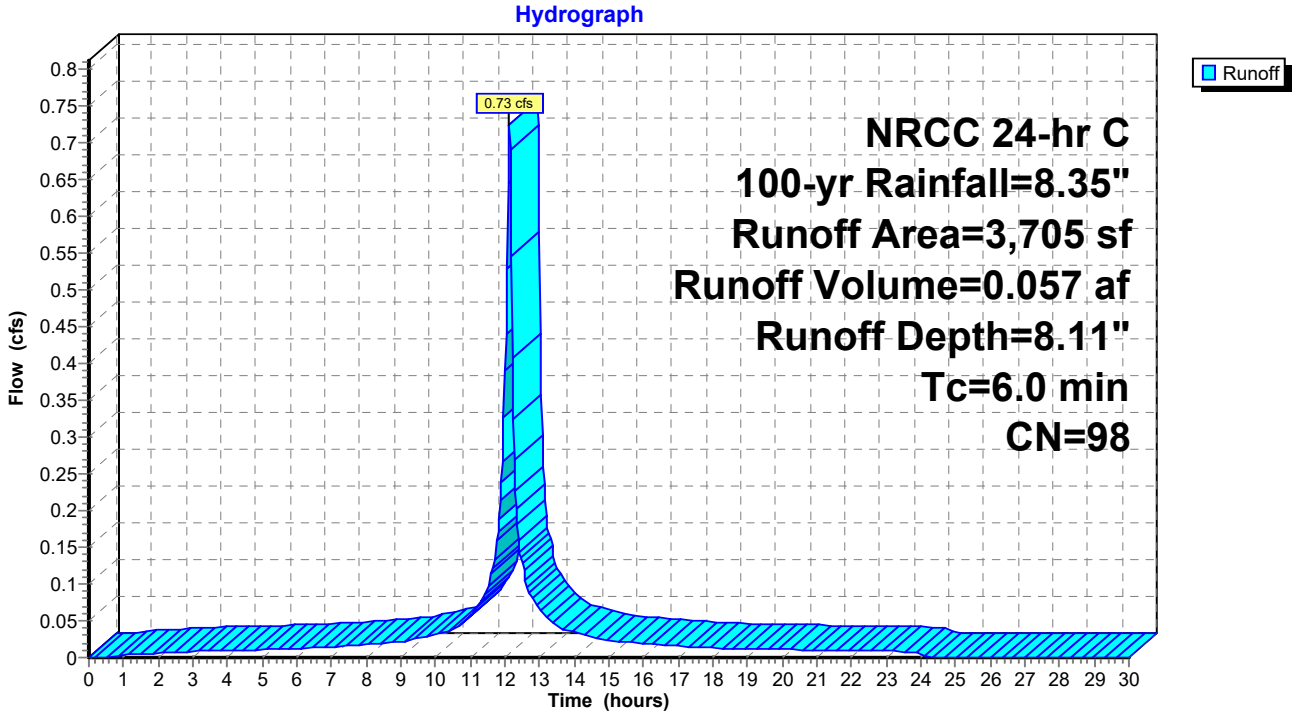
Runoff = 0.73 cfs @ 12.13 hrs, Volume= 0.057 af, Depth= 8.11"
Routed to Pond AP-1 : Norwalk River

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 100-yr Rainfall=8.35"

	Area (sf)	CN	Description
	3,630	98	Paved parking, HSG D
*	75	79	Landscaping, Good, HSG D
	3,705	98	Weighted Average
	75		2.02% Pervious Area
	3,630		97.98% Impervious Area

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

Subcatchment PR-4: CCB 06



Summary for Subcatchment PR-5: South Basin

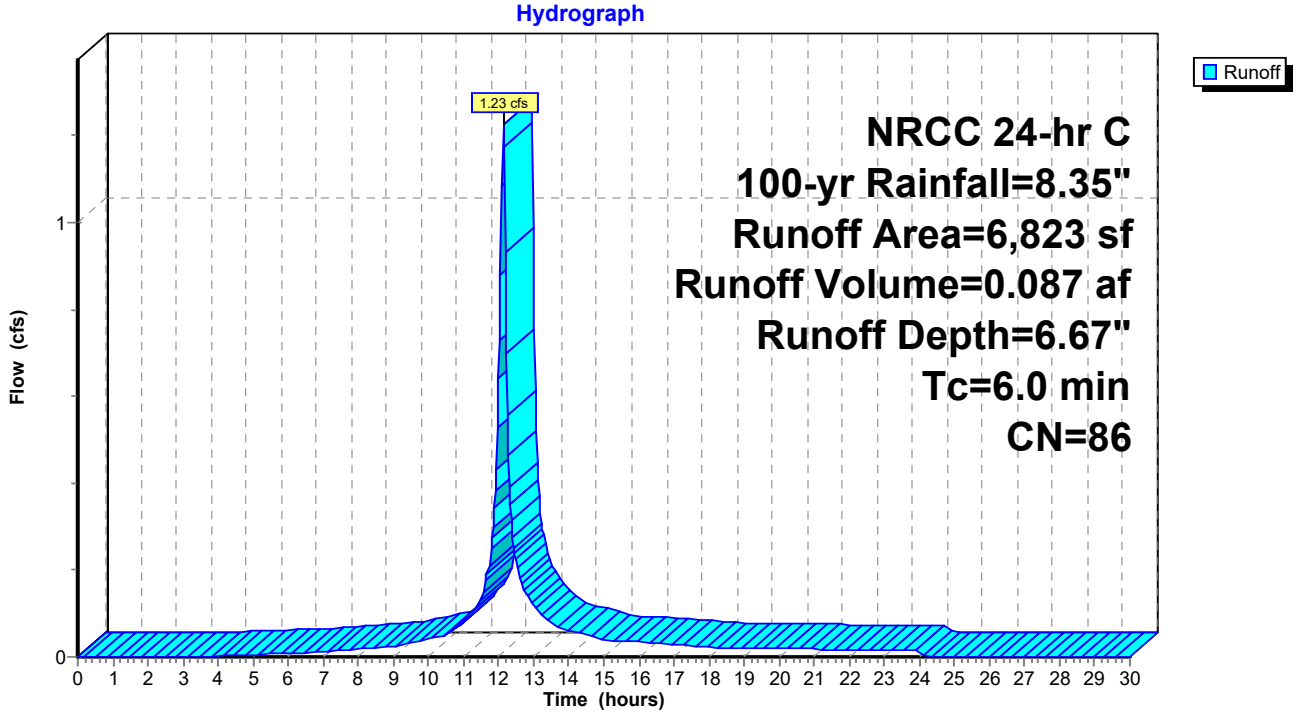
Runoff = 1.23 cfs @ 12.13 hrs, Volume= 0.087 af, Depth= 6.67"
Routed to Pond B-1 : South Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 100-yr Rainfall=8.35"

	Area (sf)	CN	Description
*	2,205	96	Permable Paver, HSG C
*	366	96	Gravel surface, HSG C
*	2,923	72	Landscaping, Good, HSG C
*	1,139	98	Paved parking, HSG C
	190	80	>75% Grass cover, Good, HSG D
	6,823	86	Weighted Average
	5,684		83.31% Pervious Area
	1,139		16.69% Impervious Area

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

Subcatchment PR-5: South Basin



Summary for Subcatchment PR-6: West along river

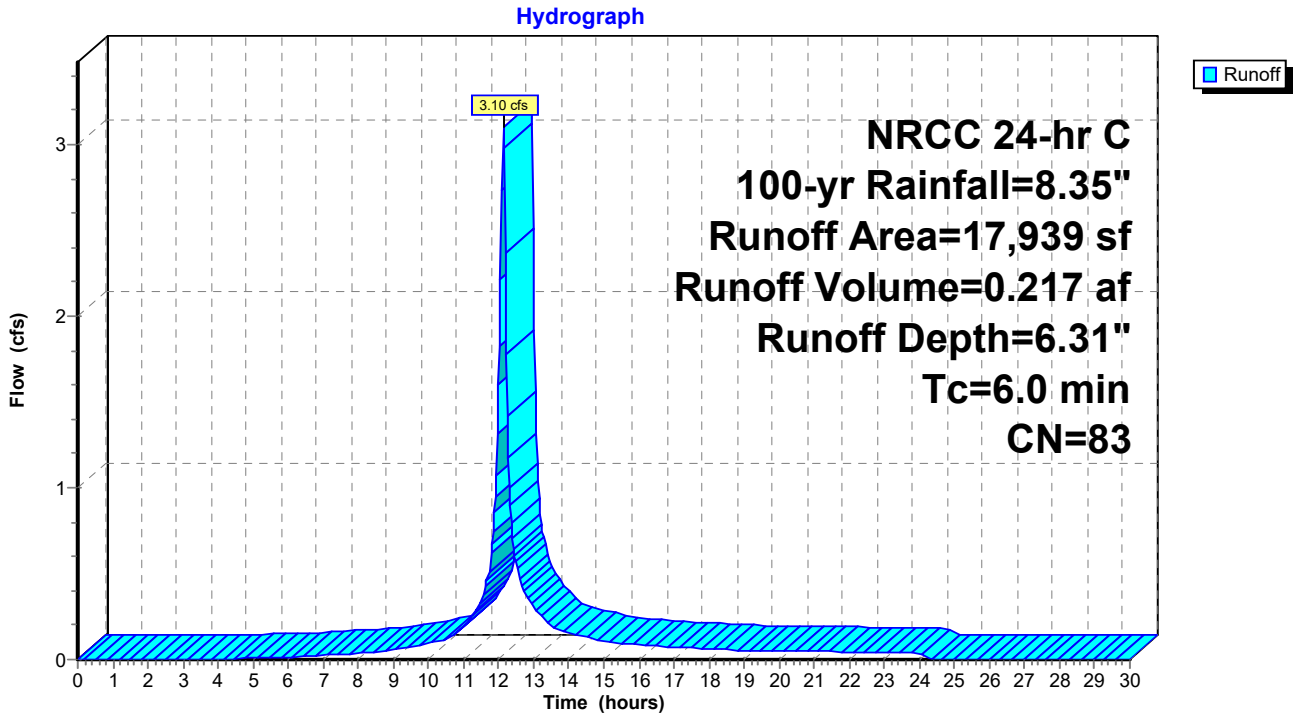
Runoff = 3.10 cfs @ 12.13 hrs, Volume= 0.217 af, Depth= 6.31"
Routed to Pond AP-1 : Norwalk River

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 100-yr Rainfall=8.35"

	Area (sf)	CN	Description
*	2,585	96	Permeable paver, HSG D
	461	96	Gravel surface, HSG D
	911	98	Paved parking, HSG D
	3,570	80	>75% Grass cover, Good, HSG D
*	6,264	79	Landscaping, Good, HSG D
	4,148	77	Woods, Good, HSG D
	17,939	83	Weighted Average
	17,028		94.92% Pervious Area
	911		5.08% Impervious Area

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

Subcatchment PR-6: West along river



Summary for Subcatchment PR-7: North basin

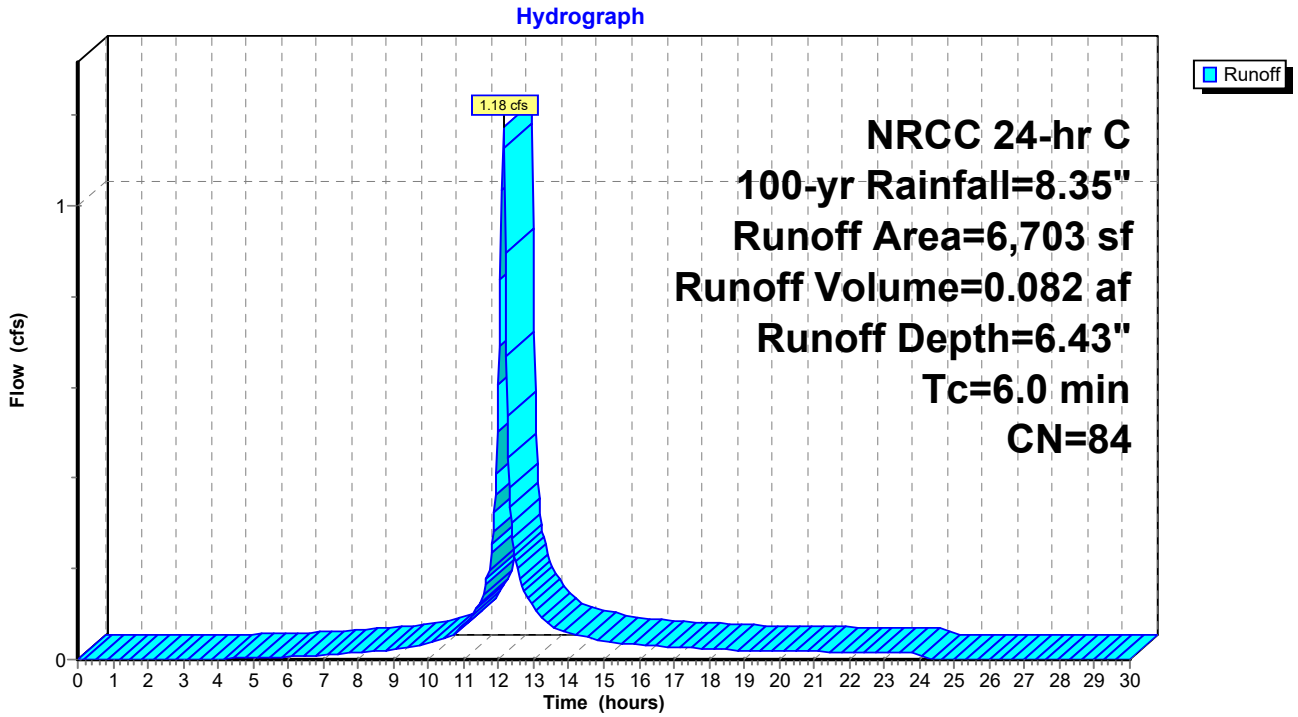
Runoff = 1.18 cfs @ 12.13 hrs, Volume= 0.082 af, Depth= 6.43"
Routed to Pond B-2 : North Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 100-yr Rainfall=8.35"

	Area (sf)	CN	Description
	453	96	Gravel surface, HSG D
*	1,031	96	Permeable paver, HSG D
	445	80	>75% Grass cover, Good, HSG D
*	3,601	79	Landscaping, Good, HSG D
	692	77	Woods, Good, HSG D
	481	98	Paved parking, HSG D
	6,703	84	Weighted Average
	6,222		92.82% Pervious Area
	481		7.18% Impervious Area

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

Subcatchment PR-7: North basin



Summary for Subcatchment PR-7B: CCB 26

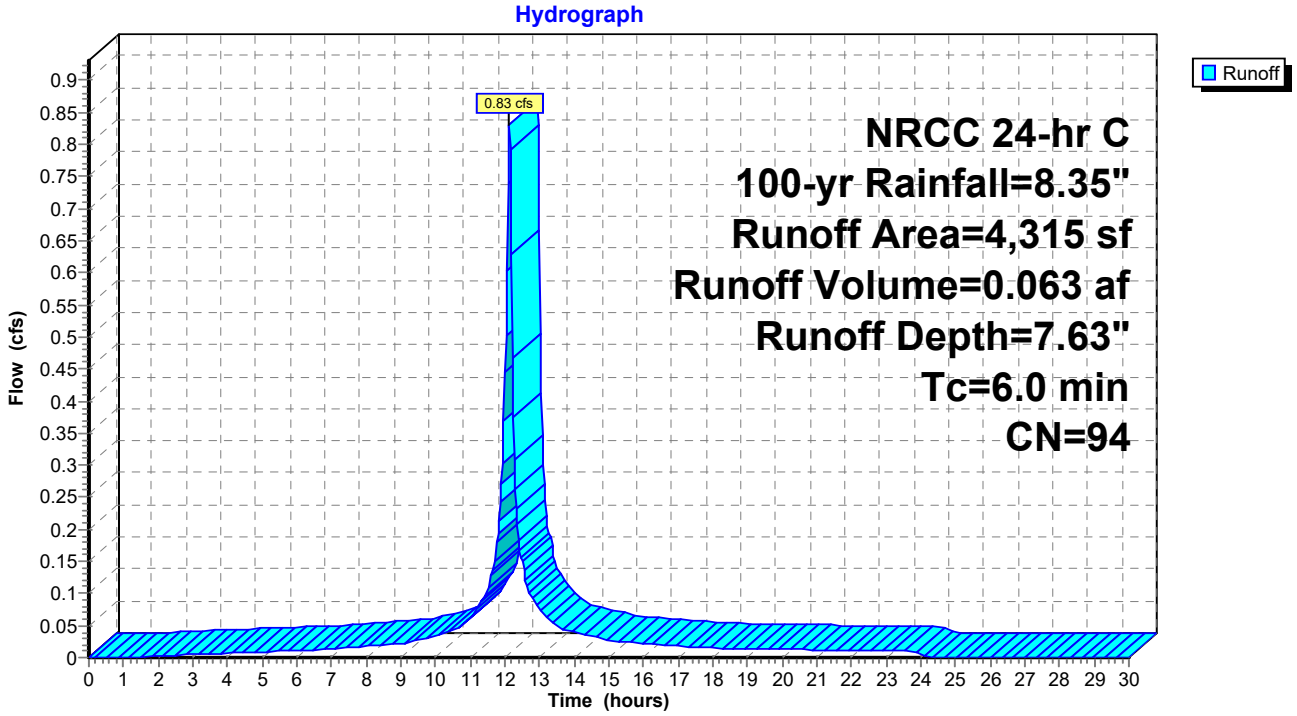
Runoff = 0.83 cfs @ 12.13 hrs, Volume= 0.063 af, Depth= 7.63"
Routed to Pond AP-1 : Norwalk River

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 100-yr Rainfall=8.35"

	Area (sf)	CN	Description
	3,518	98	Paved parking, HSG D
*	797	79	Landscaping, Good, HSG D
	4,315	94	Weighted Average
	797		18.47% Pervious Area
	3,518		81.53% Impervious Area

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

Subcatchment PR-7B: CCB 26



Summary for Subcatchment PR-8: CCB 26A

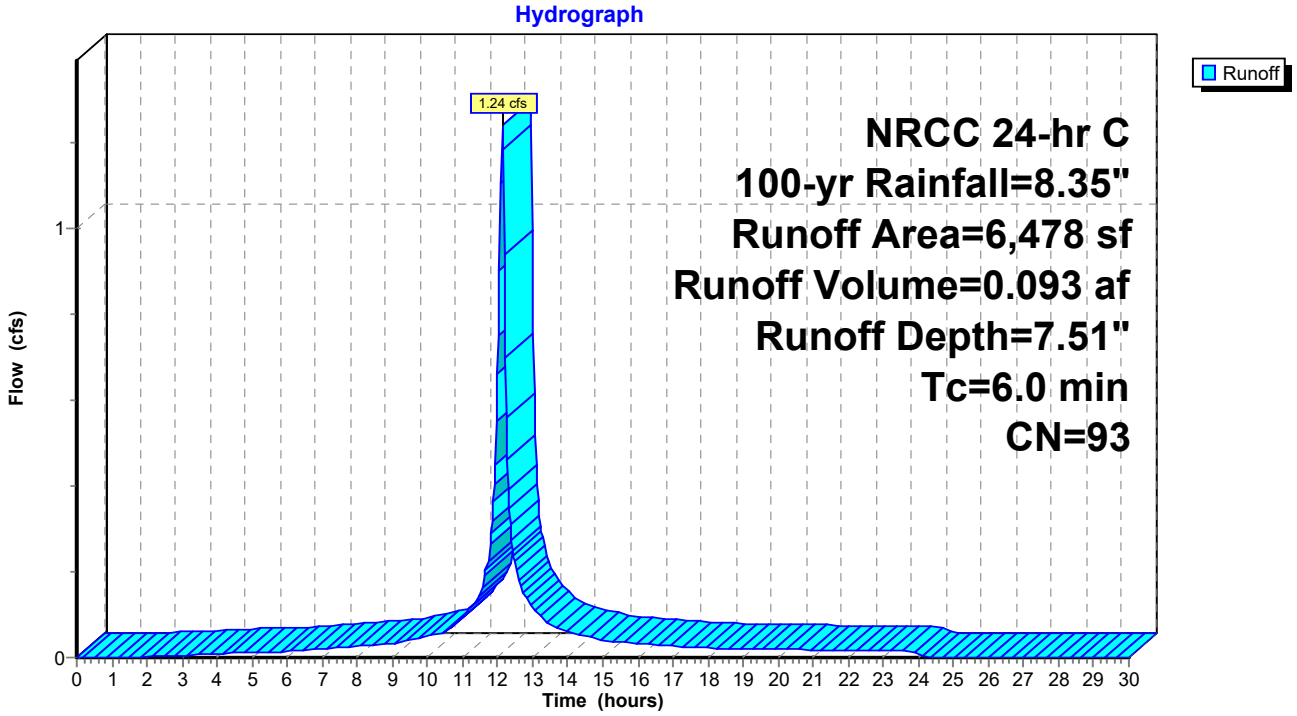
Runoff = 1.24 cfs @ 12.13 hrs, Volume= 0.093 af, Depth= 7.51"
Routed to Pond AP-1 : Norwalk River

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 100-yr Rainfall=8.35"

	Area (sf)	CN	Description
	4,737	98	Paved parking, HSG D
*	1,741	79	Landscaping, Good, HSG D
	6,478	93	Weighted Average
	1,741		26.88% Pervious Area
	4,737		73.12% Impervious Area

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

Subcatchment PR-8: CCB 26A



Summary for Subcatchment PR-9: CCB 27

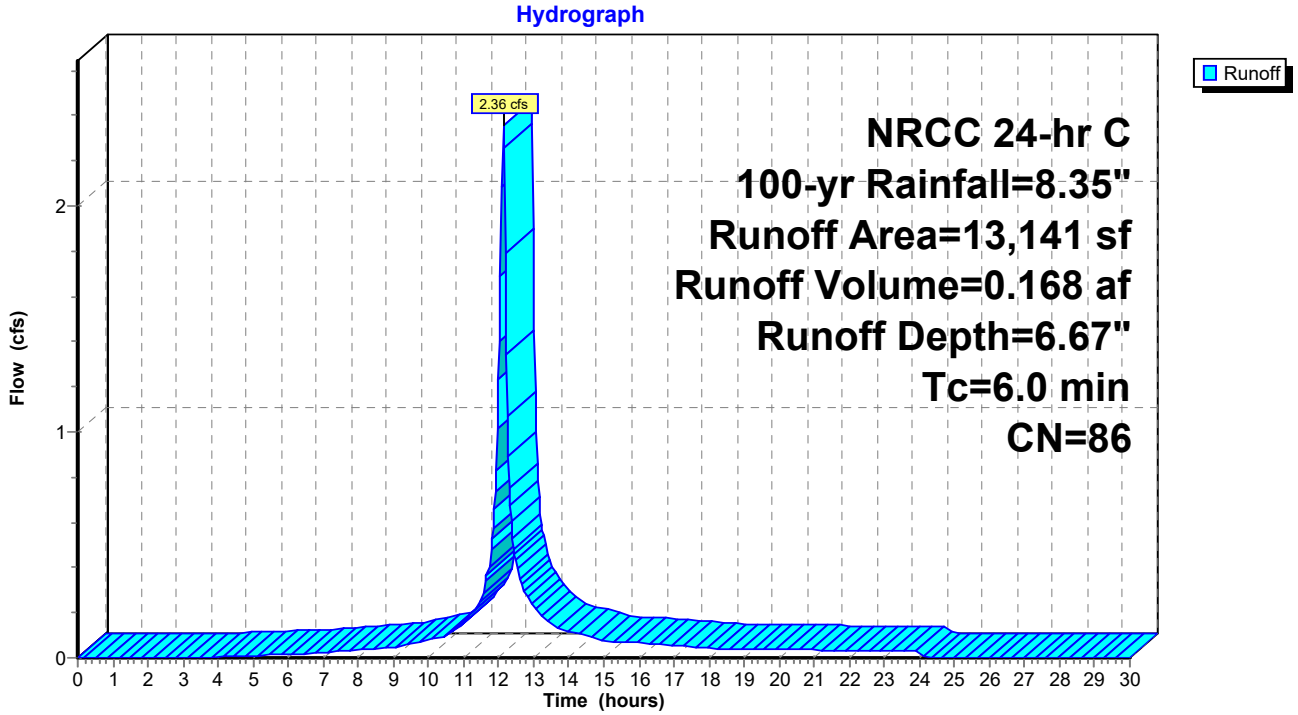
Runoff = 2.36 cfs @ 12.13 hrs, Volume= 0.168 af, Depth= 6.67"
Routed to Pond S-1 : Subsurface Infiltration System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
NRCC 24-hr C 100-yr Rainfall=8.35"

	Area (sf)	CN	Description
	4,730	98	Paved parking, HSG D
	817	80	>75% Grass cover, Good, HSG D
*	7,594	79	Landscaping, Good, HSG D
	13,141	86	Weighted Average
	8,411		64.01% Pervious Area
	4,730		35.99% Impervious Area

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

Subcatchment PR-9: CCB 27



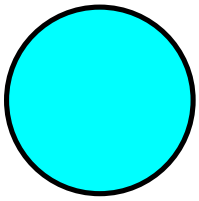
Summary for Reach R1: Roof Leader

Inflow Area = 1.838 ac,100.00% Impervious, Inflow Depth = 8.11" for 100-yr event
Inflow = 15.67 cfs @ 12.13 hrs, Volume= 1.242 af
Outflow = 4.66 cfs @ 11.89 hrs, Volume= 1.242 af, Atten= 70%, Lag= 0.0 min
Routed to Pond S-2 : Subsurface Infiltration System

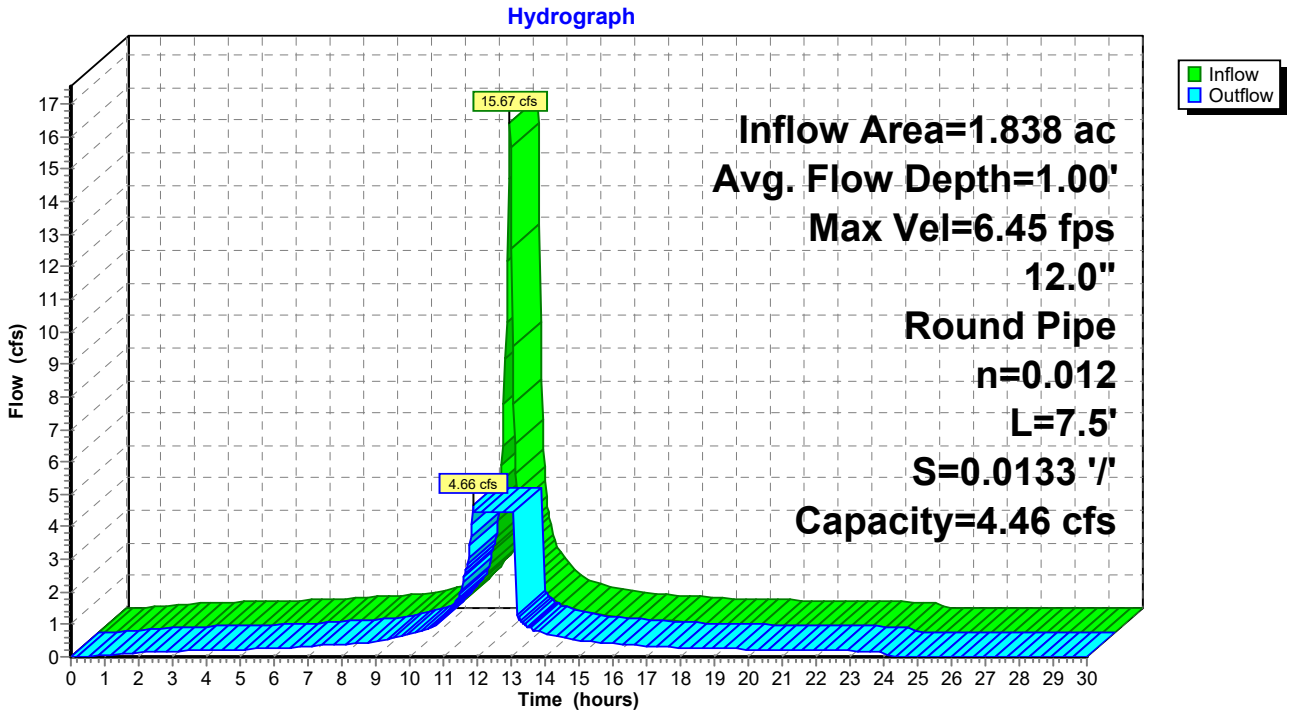
Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Max. Velocity= 6.45 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 3.42 fps, Avg. Travel Time= 0.0 min

Peak Storage= 6 cf @ 11.91 hrs
Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.46 cfs

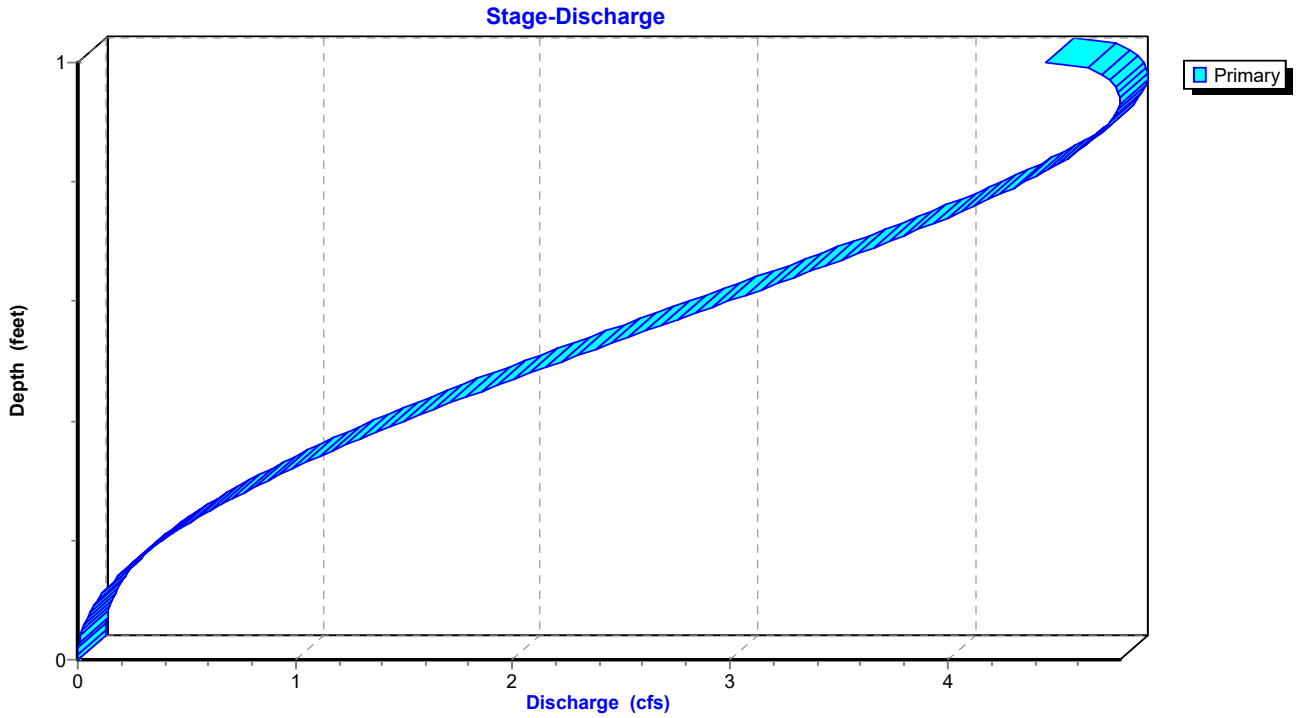
12.0" Round Pipe
n= 0.012
Length= 7.5' Slope= 0.0133 '/'
Inlet Invert= 142.20', Outlet Invert= 142.10'



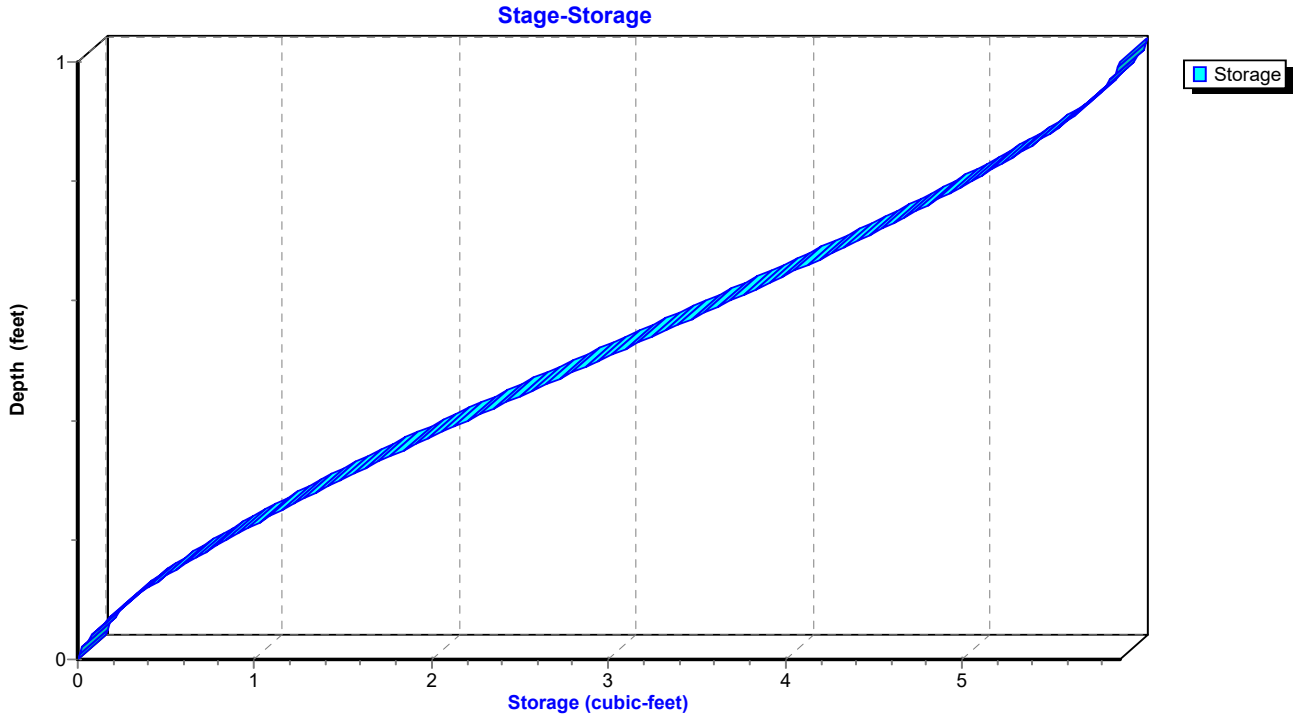
Reach R1: Roof Leader



Reach R1: Roof Leader



Reach R1: Roof Leader

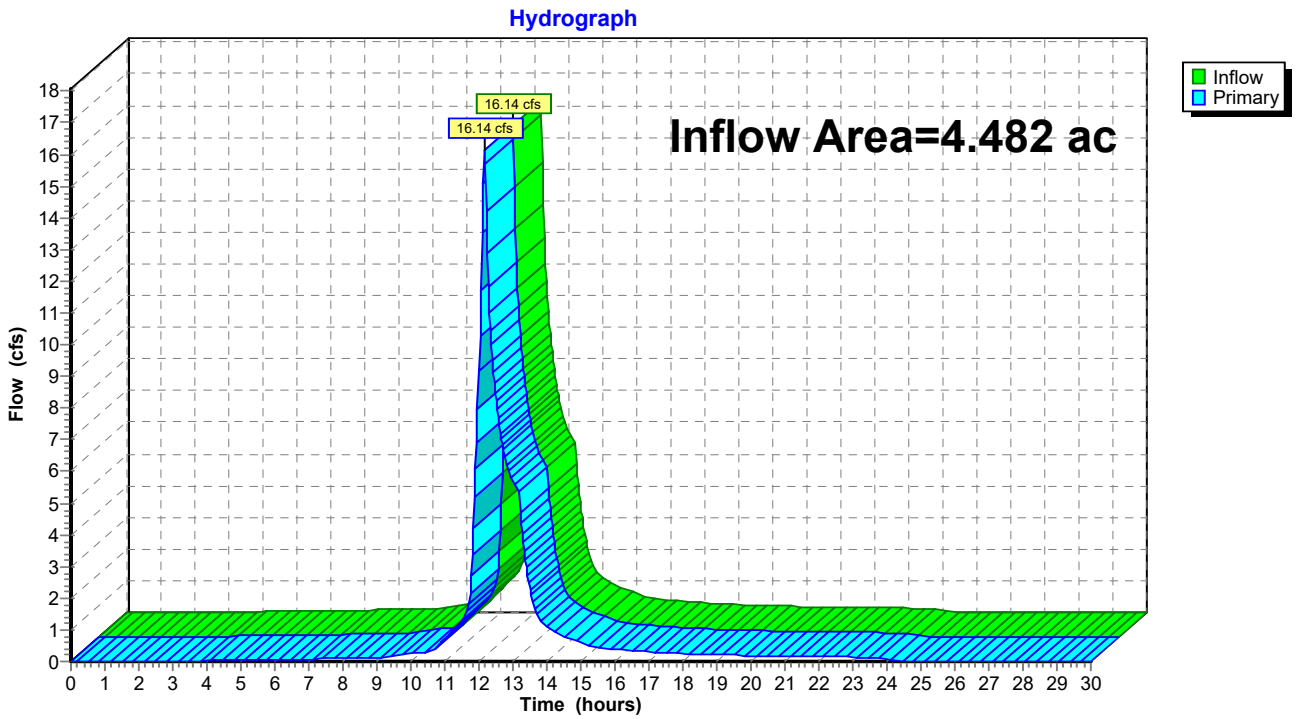


Summary for Pond AP-1: Norwalk River

Inflow Area = 4.482 ac, 66.68% Impervious, Inflow Depth = 4.02" for 100-yr event
Inflow = 16.14 cfs @ 12.16 hrs, Volume= 1.501 af
Primary = 16.14 cfs @ 12.16 hrs, Volume= 1.501 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Pond AP-1: Norwalk River



Summary for Pond AP-2: Front Lawn Rain Garden

Inflow Area = 0.475 ac, 24.65% Impervious, Inflow Depth = 6.39" for 100-yr event
Inflow = 3.57 cfs @ 12.13 hrs, Volume= 0.253 af
Outflow = 1.34 cfs @ 12.28 hrs, Volume= 0.253 af, Atten= 63%, Lag= 8.9 min
Discarded = 0.41 cfs @ 12.28 hrs, Volume= 0.225 af
Primary = 0.93 cfs @ 12.28 hrs, Volume= 0.028 af
Routed to Pond S-3 : Subsurface Infiltration System

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 149.15' @ 12.28 hrs Surf.Area= 3,230 sf Storage= 2,875 cf

Plug-Flow detention time= 45.3 min calculated for 0.253 af (100% of inflow)
Center-of-Mass det. time= 45.3 min (838.2 - 792.9)

Volume	Invert	Avail.Storage	Storage Description
#1	148.00'	6,536 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

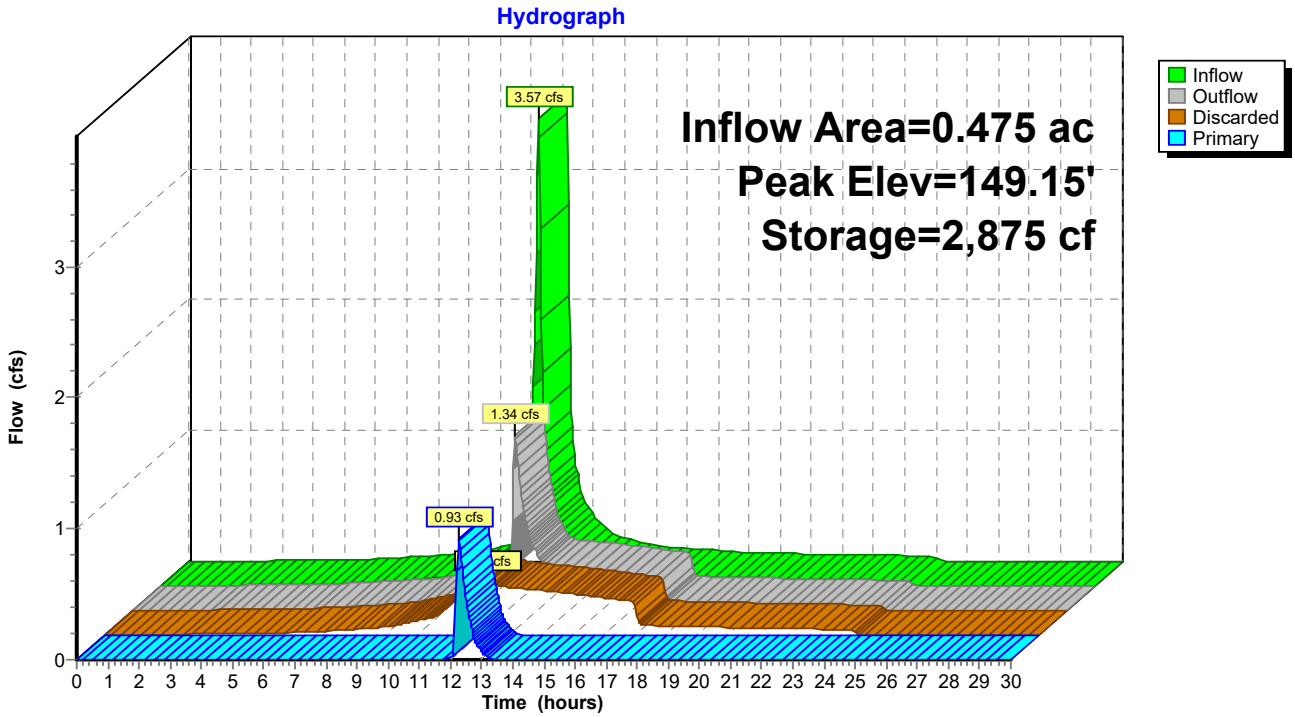
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
148.00	1,985	0	0
149.00	2,833	2,409	2,409
150.00	5,420	4,127	6,536

Device	Routing	Invert	Outlet Devices
#1	Primary	145.90'	**15.0" Round Culvert** L= 34.6' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 145.90' / 145.55' S= 0.0101 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	149.00'	**3.6" x 0.9" Horiz. Yard Drain X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads
#3	Discarded	148.00'	**5.450 in/hr Exfiltration over Surface area**

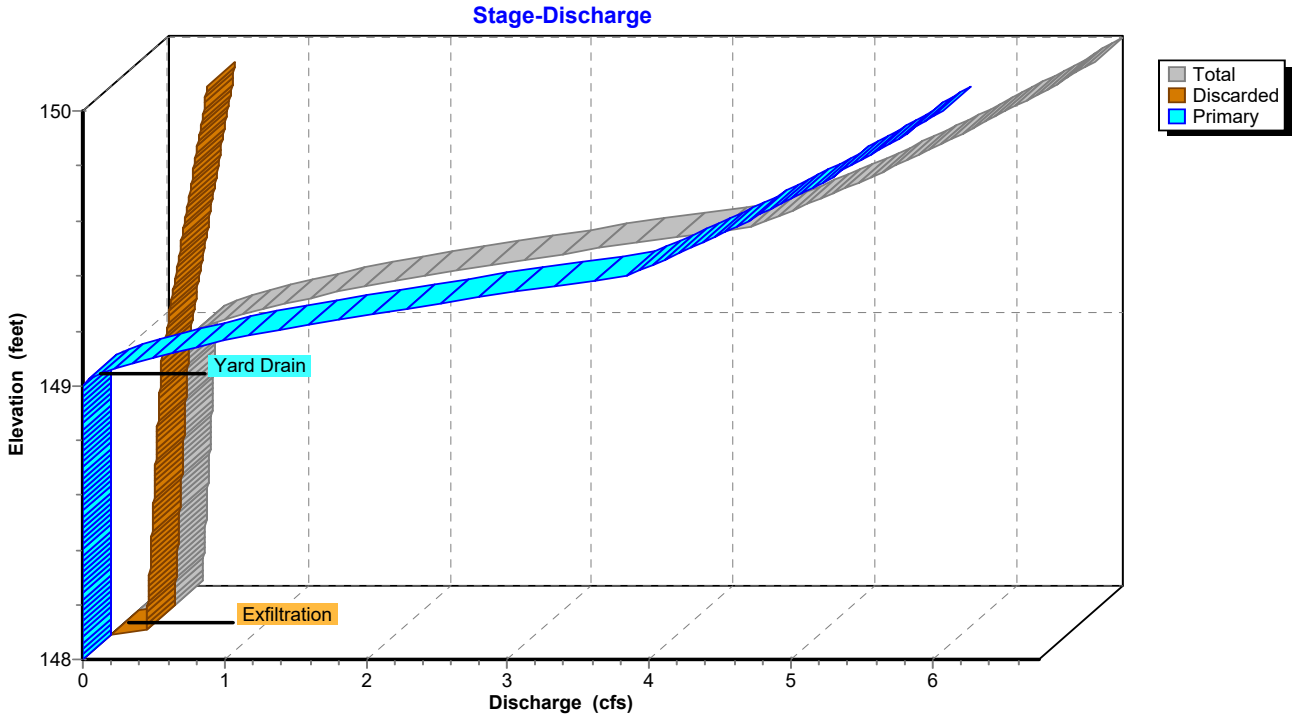
Discarded OutFlow Max=0.41 cfs @ 12.28 hrs HW=149.15' (Free Discharge)
└─**3=Exfiltration** (Exfiltration Controls 0.41 cfs)

Primary OutFlow Max=0.92 cfs @ 12.28 hrs HW=149.15' (Free Discharge)
└─**1=Culvert** (Passes 0.92 cfs of 9.58 cfs potential flow)
└─**2=Yard Drain** (Weir Controls 0.92 cfs @ 1.28 fps)

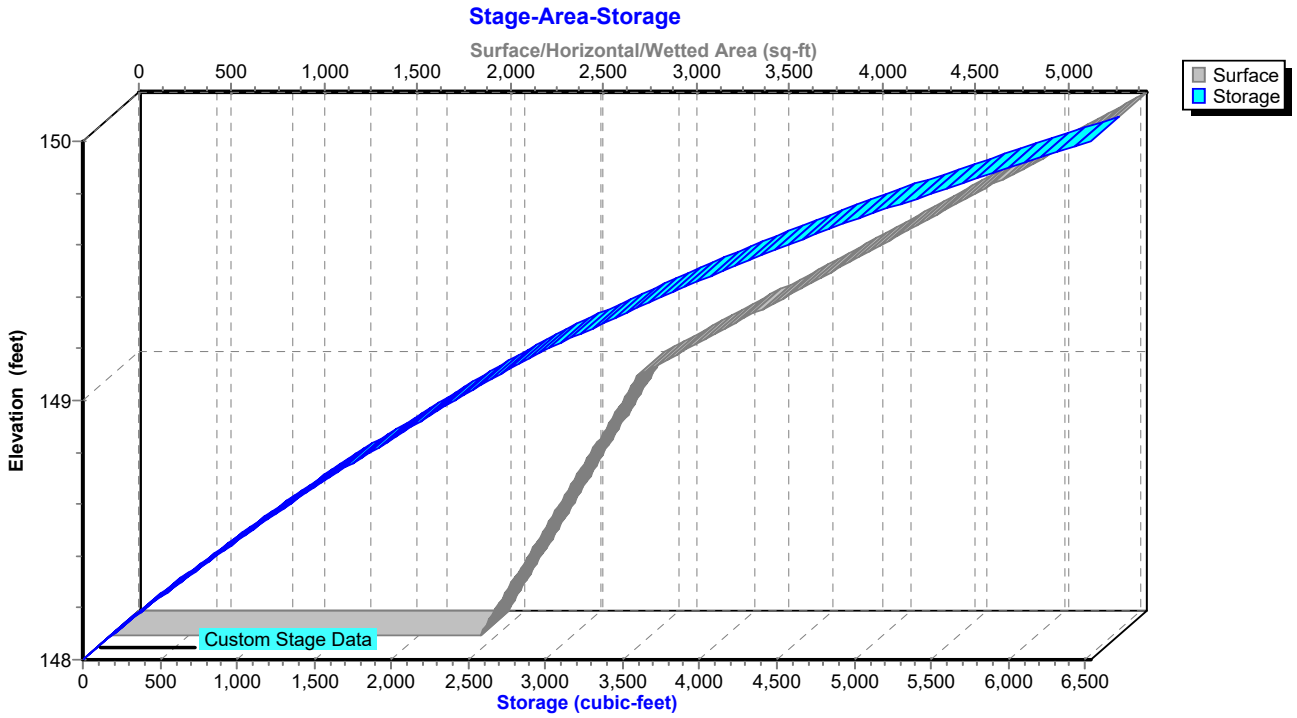
Pond AP-2: Front Lawn Rain Garden



Pond AP-2: Front Lawn Rain Garden



Pond AP-2: Front Lawn Rain Garden

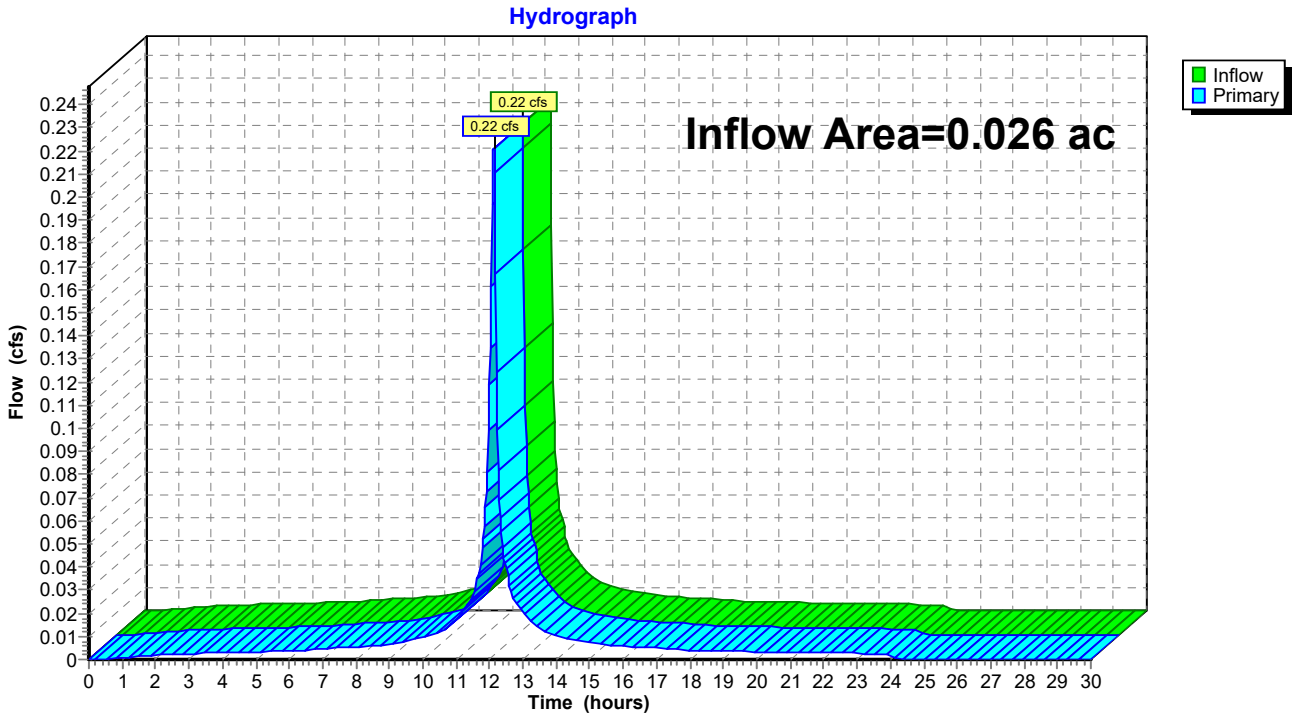


Summary for Pond AP-3: Danbury Road

Inflow Area = 0.026 ac,100.00% Impervious, Inflow Depth = 8.11" for 100-yr event
Inflow = 0.22 cfs @ 12.13 hrs, Volume= 0.018 af
Primary = 0.22 cfs @ 12.13 hrs, Volume= 0.018 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Pond AP-3: Danbury Road

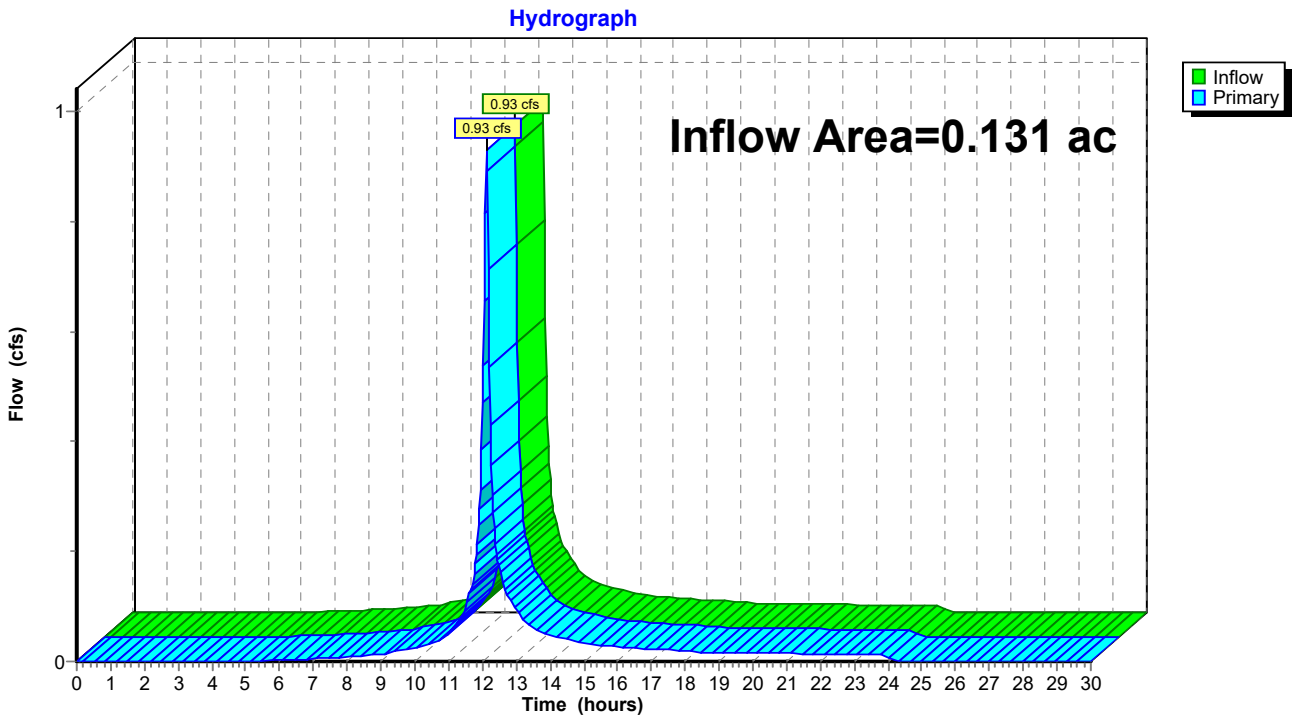


Summary for Pond AP-4: Landscaped Area

Inflow Area = 0.131 ac, 1.63% Impervious, Inflow Depth = 5.83" for 100-yr event
Inflow = 0.93 cfs @ 12.13 hrs, Volume= 0.064 af
Primary = 0.93 cfs @ 12.13 hrs, Volume= 0.064 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs

Pond AP-4: Landscaped Area



Summary for Pond B-1: South Basin

Inflow Area = 0.157 ac, 16.69% Impervious, Inflow Depth = 6.67" for 100-yr event
Inflow = 1.23 cfs @ 12.13 hrs, Volume= 0.087 af
Outflow = 1.21 cfs @ 12.14 hrs, Volume= 0.084 af, Atten= 2%, Lag= 0.9 min
Discarded = 0.00 cfs @ 12.14 hrs, Volume= 0.007 af
Primary = 1.20 cfs @ 12.14 hrs, Volume= 0.077 af
Routed to Pond AP-1 : Norwalk River

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 140.08' @ 12.14 hrs Surf.Area= 490 sf Storage= 288 cf

Plug-Flow detention time= 58.5 min calculated for 0.084 af (96% of inflow)
Center-of-Mass det. time= 37.1 min (828.6 - 791.5)

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	962 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

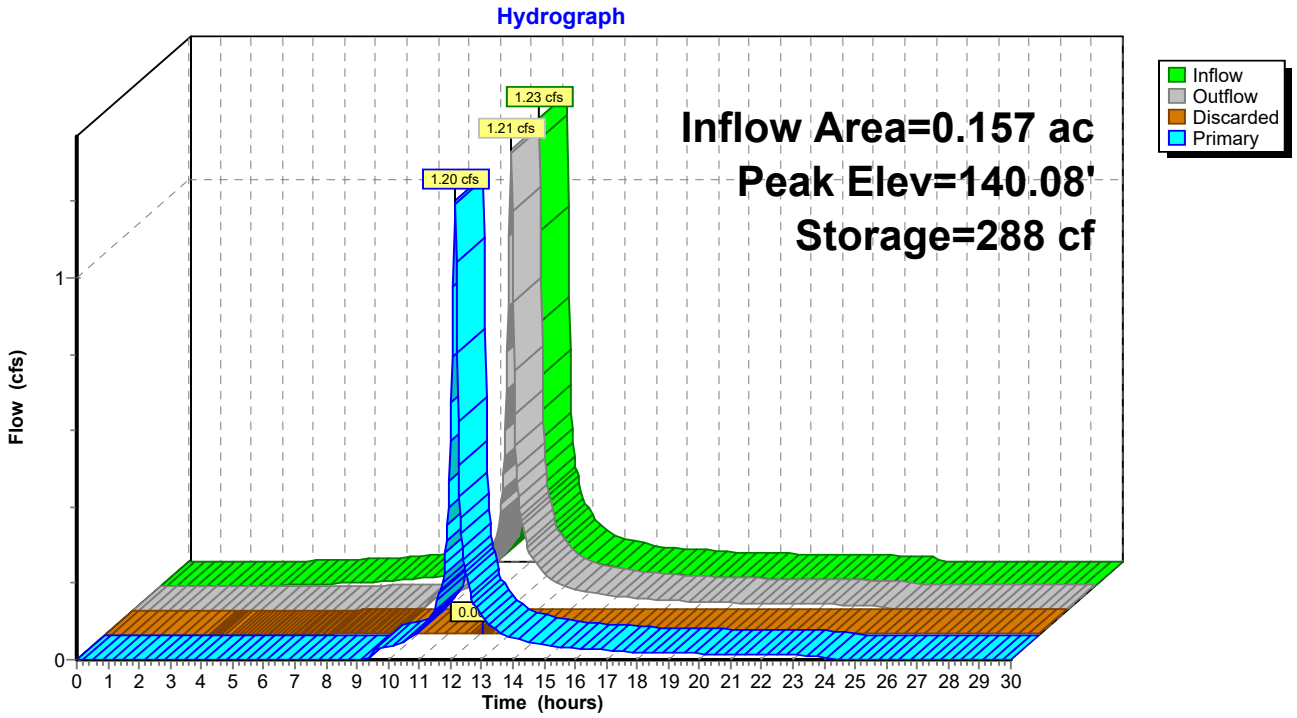
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	52	0	0
140.00	446	249	249
141.00	979	713	962

Device	Routing	Invert	Outlet Devices
#1	Primary	138.00'	**8.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 138.00' / 137.60' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf
#2	Device 1	139.90'	**3.6" x 0.9" Horiz. Yard Drain X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads
#3	Discarded	139.00'	**0.400 in/hr Exfiltration over Surface area**

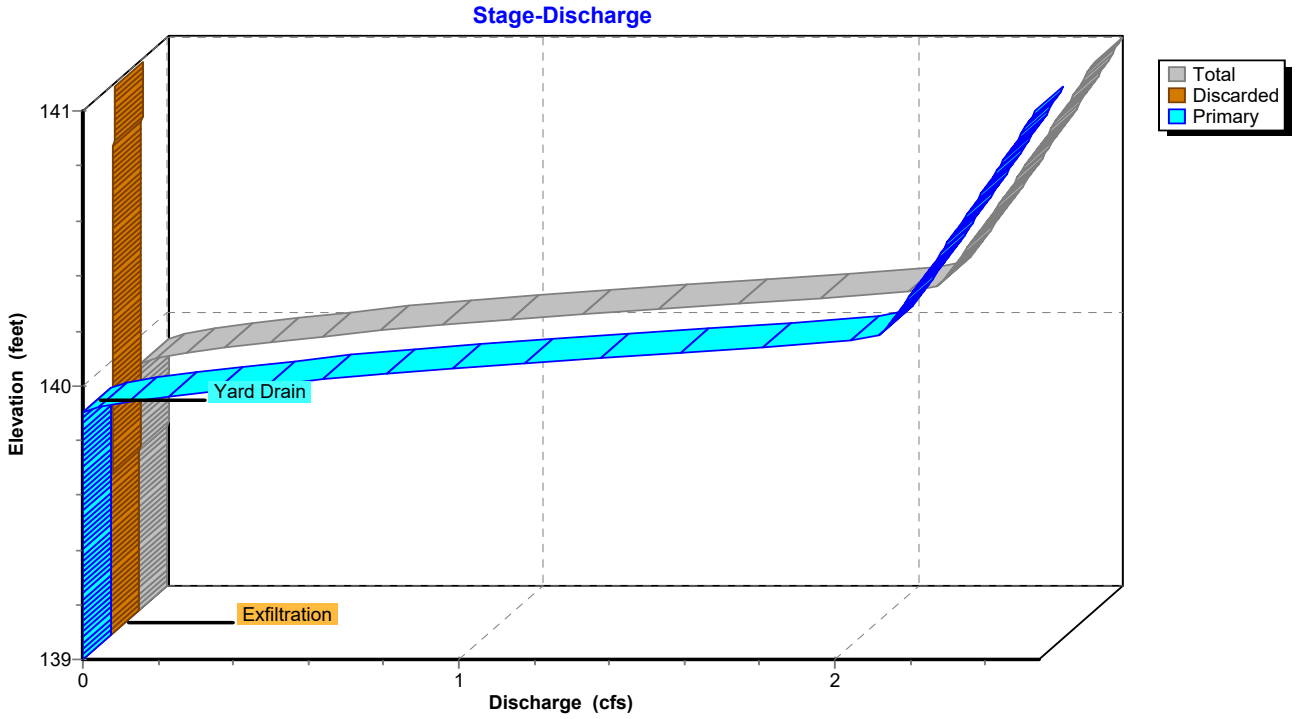
Discarded OutFlow Max=0.00 cfs @ 12.14 hrs HW=140.08' (Free Discharge)
└─**3=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=1.18 cfs @ 12.14 hrs HW=140.08' (Free Discharge)
└─**1=Culvert** (Passes 1.18 cfs of 2.07 cfs potential flow)
└─**2=Yard Drain** (Weir Controls 1.18 cfs @ 1.39 fps)

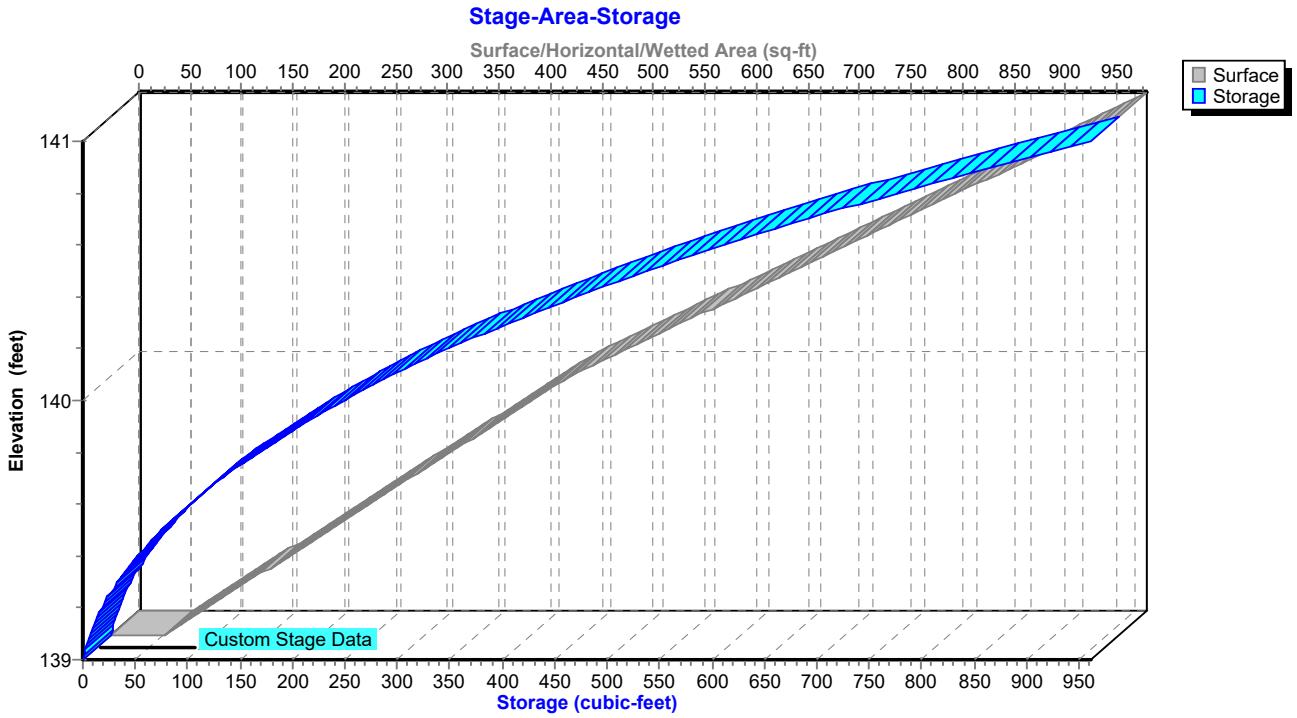
Pond B-1: South Basin



Pond B-1: South Basin



Pond B-1: South Basin



Summary for Pond B-2: North Basin

Inflow Area = 0.154 ac, 7.18% Impervious, Inflow Depth = 6.43" for 100-yr event
Inflow = 1.18 cfs @ 12.13 hrs, Volume= 0.082 af
Outflow = 0.05 cfs @ 14.54 hrs, Volume= 0.076 af, Atten= 96%, Lag= 144.7 min
Discarded = 0.05 cfs @ 14.54 hrs, Volume= 0.076 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond AP-1 : Norwalk River

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 140.38' @ 14.54 hrs Surf.Area= 1,690 sf Storage= 1,891 cf

Plug-Flow detention time= 383.8 min calculated for 0.076 af (92% of inflow)
Center-of-Mass det. time= 339.2 min (1,136.5 - 797.3)

Volume	Invert	Avail.Storage	Storage Description
#1	139.00'	4,090 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

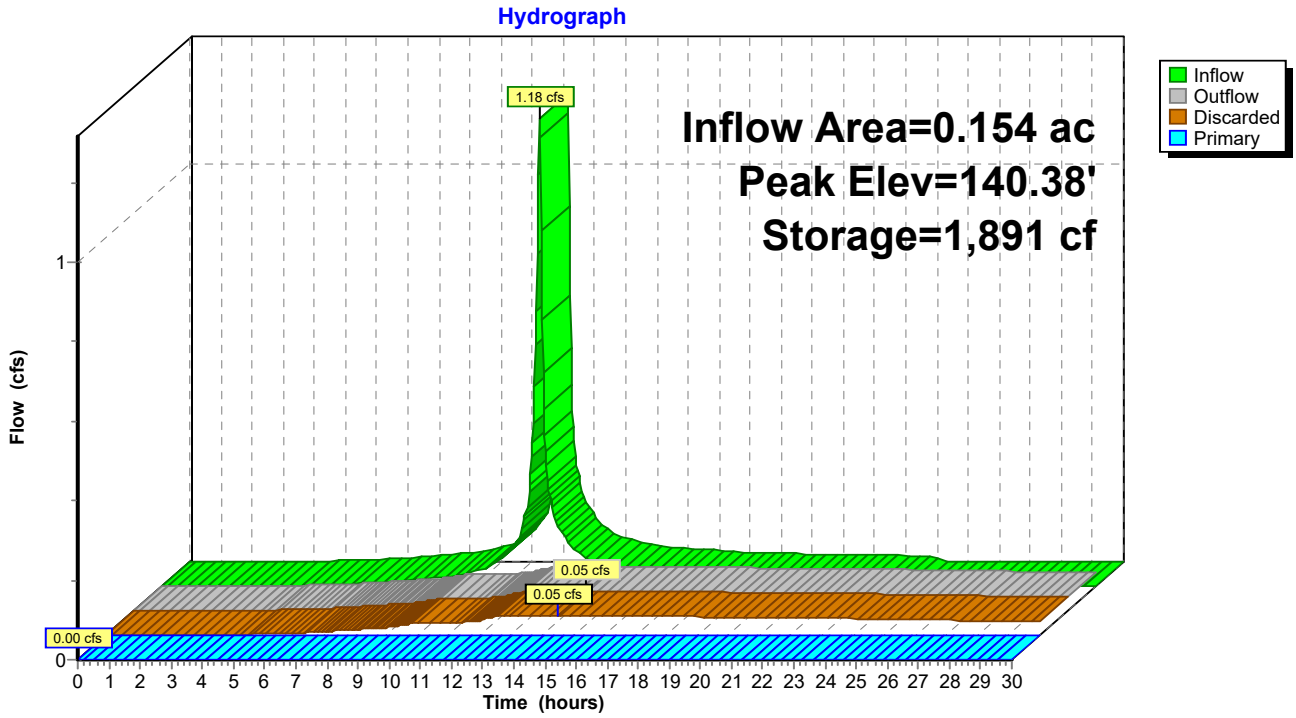
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.00	1,058	0	0
140.00	1,499	1,279	1,279
141.00	1,995	1,747	3,026
141.50	2,263	1,065	4,090

Device	Routing	Invert	Outlet Devices
#1	Primary	139.00'	**10.0" Round Culvert** L= 22.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 139.00' / 138.80' S= 0.0091 '/' Cc= 0.900 n= 0.012, Flow Area= 0.55 sf
#2	Device 1	140.50'	**3.6" x 0.9" Horiz. Yard Drain X 4.00 columns** X 14 rows C= 0.600 in 18.0" Grate (71% open area) Limited to weir flow at low heads
#3	Discarded	139.00'	**1.250 in/hr Exfiltration over Surface area**

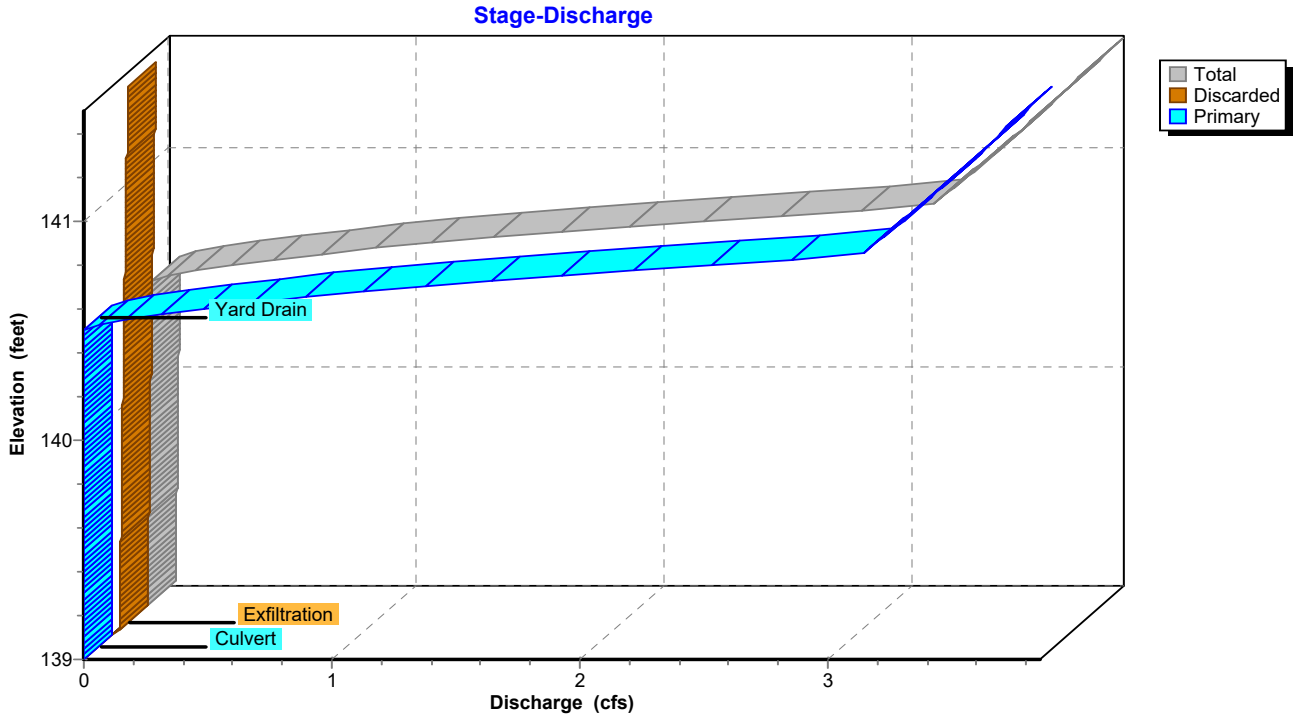
Discarded OutFlow Max=0.05 cfs @ 14.54 hrs HW=140.38' (Free Discharge)
└─**3=Exfiltration** (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=139.00' (Free Discharge)
└─**1=Culvert** (Controls 0.00 cfs)
└─**2=Yard Drain** (Controls 0.00 cfs)

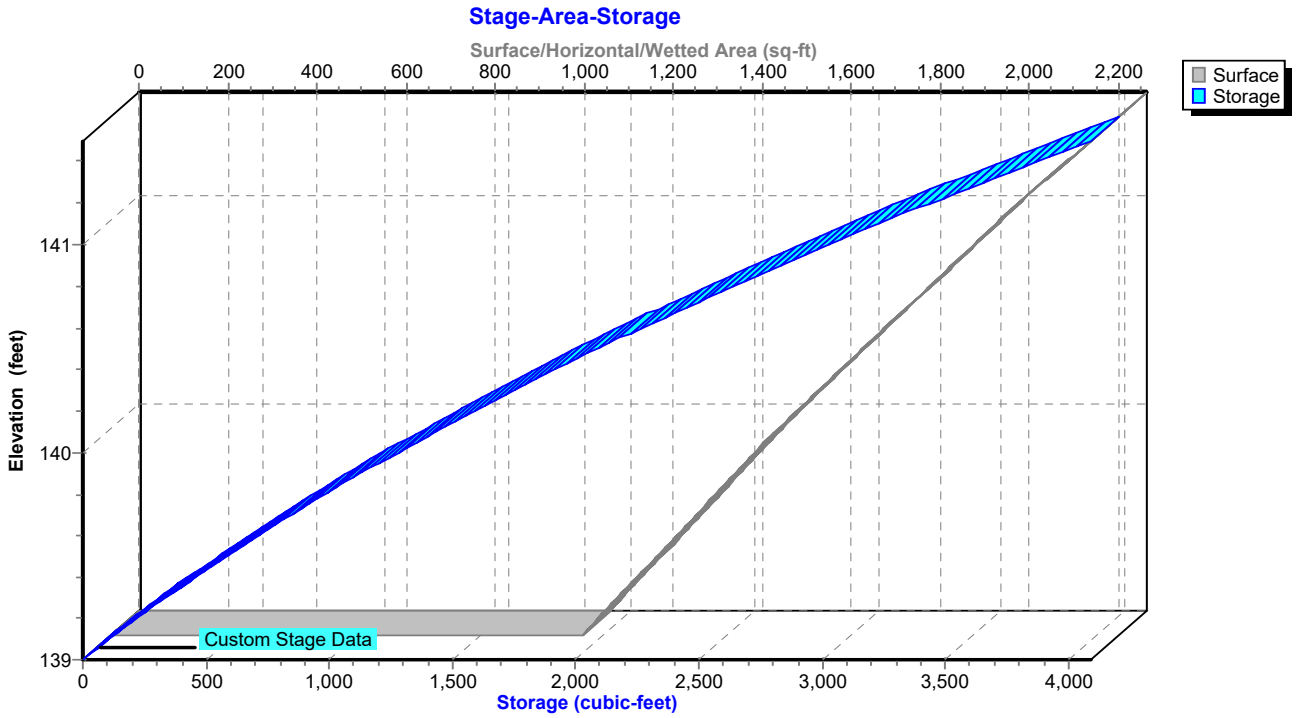
Pond B-2: North Basin



Pond B-2: North Basin



Pond B-2: North Basin



Summary for Pond S-1: Subsurface Infiltration System

Inflow Area = 0.554 ac, 58.45% Impervious, Inflow Depth = 7.19" for 100-yr event
Inflow = 4.50 cfs @ 12.13 hrs, Volume= 0.332 af
Outflow = 3.12 cfs @ 12.19 hrs, Volume= 0.301 af, Atten= 31%, Lag= 3.7 min
Discarded = 0.02 cfs @ 3.33 hrs, Volume= 0.036 af
Primary = 3.10 cfs @ 12.19 hrs, Volume= 0.265 af
Routed to Pond AP-1 : Norwalk River

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 144.28' @ 12.19 hrs Surf.Area= 0.039 ac Storage= 0.072 af

Plug-Flow detention time= 113.4 min calculated for 0.301 af (91% of inflow)
Center-of-Mass det. time= 63.3 min (836.8 - 773.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	141.35'	0.036 af	**11.00'W x 153.14'L x 3.50'H Field A** 0.135 af Overall - 0.044 af Embedded = 0.091 af x 40.0% Voids
#2A	141.85'	0.044 af	**ADS_StormTech SC-740 +Cap** x 42 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 42 Chambers in 2 Rows
		0.081 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	142.70'	**12.0" Round Culvert** L= 114.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 142.70' / 141.56' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	142.85'	**6.0" Vert. Orifice X 3.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	144.25'	**5.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)
#4	Discarded	141.35'	**0.400 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.02 cfs @ 3.33 hrs HW=141.39' (Free Discharge)
└─**4=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=3.07 cfs @ 12.19 hrs HW=144.26' (Free Discharge)
└─**1=Culvert** (Passes 3.07 cfs of 3.85 cfs potential flow)
  ├─**2=Orifice** (Orifice Controls 3.05 cfs @ 5.19 fps)
  └─**3=Sharp-Crested Vee/Trap Weir** (Weir Controls 0.02 cfs @ 0.33 fps)

Pond S-1: Subsurface Infiltration System - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

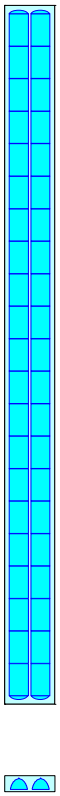
21 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 151.14' Row Length +12.0" End Stone x 2 = 153.14' Base Length
2 Rows x 51.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 11.00' Base Width
6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

42 Chambers x 45.9 cf = 1,929.5 cf Chamber Storage

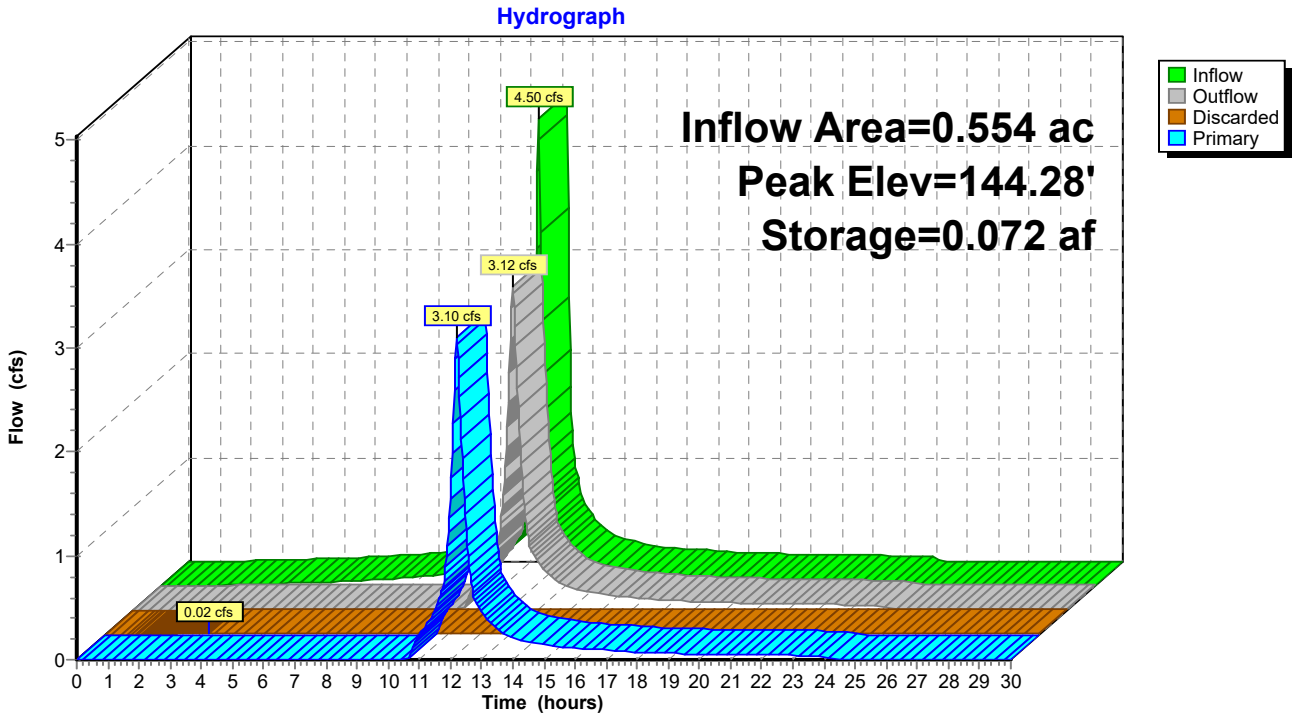
5,895.8 cf Field - 1,929.5 cf Chambers = 3,966.3 cf Stone x 40.0% Voids = 1,586.5 cf Stone Storage

Chamber Storage + Stone Storage = 3,516.0 cf = 0.081 af
Overall Storage Efficiency = 59.6%
Overall System Size = 153.14' x 11.00' x 3.50'

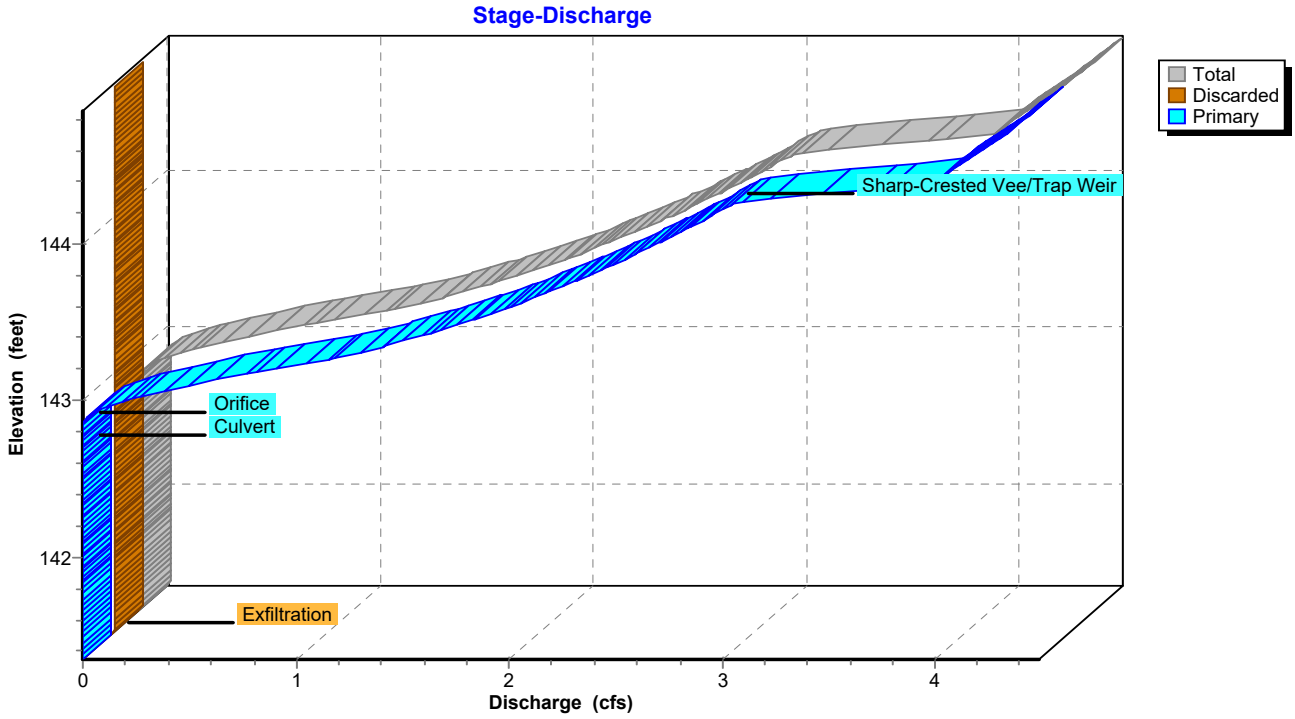
42 Chambers
218.4 cy Field
146.9 cy Stone



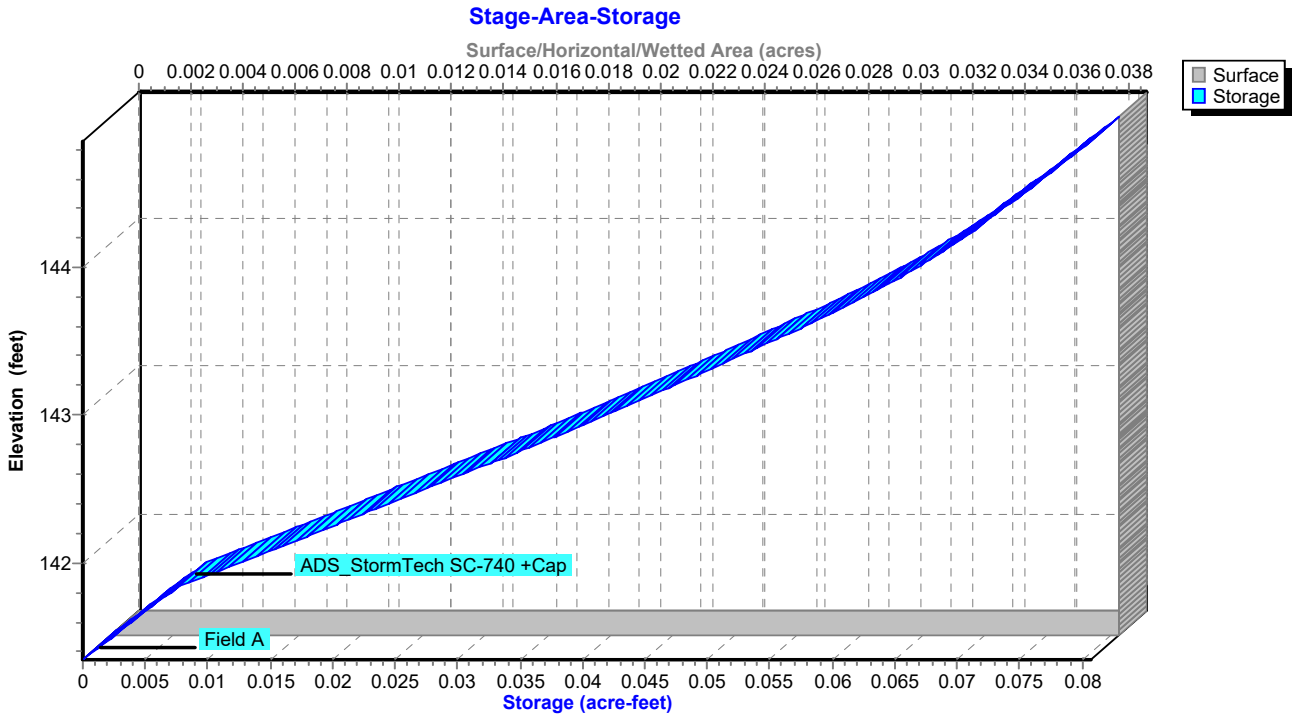
Pond S-1: Subsurface Infiltration System



Pond S-1: Subsurface Infiltration System



Pond S-1: Subsurface Infiltration System



Summary for Pond S-2: Subsurface Infiltration System

Inflow Area = 1.838 ac,100.00% Impervious, Inflow Depth = 8.11" for 100-yr event
Inflow = 4.66 cfs @ 11.89 hrs, Volume= 1.242 af
Outflow = 4.48 cfs @ 13.17 hrs, Volume= 1.242 af, Atten= 4%, Lag= 76.9 min
Discarded = 0.50 cfs @ 9.24 hrs, Volume= 0.741 af
Primary = 3.98 cfs @ 13.17 hrs, Volume= 0.501 af
Routed to Pond AP-1 : Norwalk River

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 144.94' @ 13.17 hrs Surf.Area= 0.091 ac Storage= 0.193 af

Plug-Flow detention time= 55.5 min calculated for 1.242 af (100% of inflow)
Center-of-Mass det. time= 55.5 min (802.9 - 747.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	141.50'	0.100 af	**30.00'W x 131.78'L x 4.00'H Field A** 0.363 af Overall - 0.114 af Embedded = 0.249 af x 40.0% Voids
#2A	142.50'	0.114 af	**ADS_StormTech SC-740 +Cap** x 108 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 108 Chambers in 6 Rows
		0.214 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	143.15'	**15.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 143.15' / 142.69' S= 0.0061 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	143.64'	**7.0" Vert. Orifice X 3.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	144.90'	**5.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)
#4	Discarded	141.50'	**5.450 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.50 cfs @ 9.24 hrs HW=141.54' (Free Discharge)
└─**4=Exfiltration** (Exfiltration Controls 0.50 cfs)

Primary OutFlow Max=3.98 cfs @ 13.17 hrs HW=144.94' (Free Discharge)
└─**1=Culvert** (Passes 3.98 cfs of 5.68 cfs potential flow)
  ├─**2=Orifice** (Orifice Controls 3.87 cfs @ 4.83 fps)
  └─**3=Sharp-Crested Vee/Trap Weir** (Weir Controls 0.11 cfs @ 0.62 fps)

Pond S-2: Subsurface Infiltration System - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

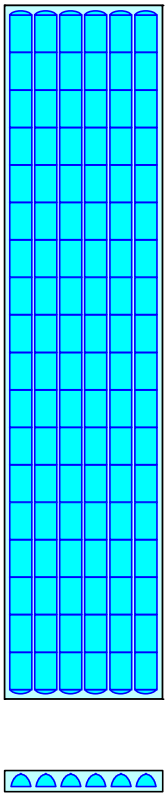
18 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 129.78' Row Length +12.0" End Stone x 2 = 131.78' Base Length
6 Rows x 51.0" Wide + 6.0" Spacing x 5 + 12.0" Side Stone x 2 = 30.00' Base Width
12.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 4.00' Field Height

108 Chambers x 45.9 cf = 4,961.5 cf Chamber Storage

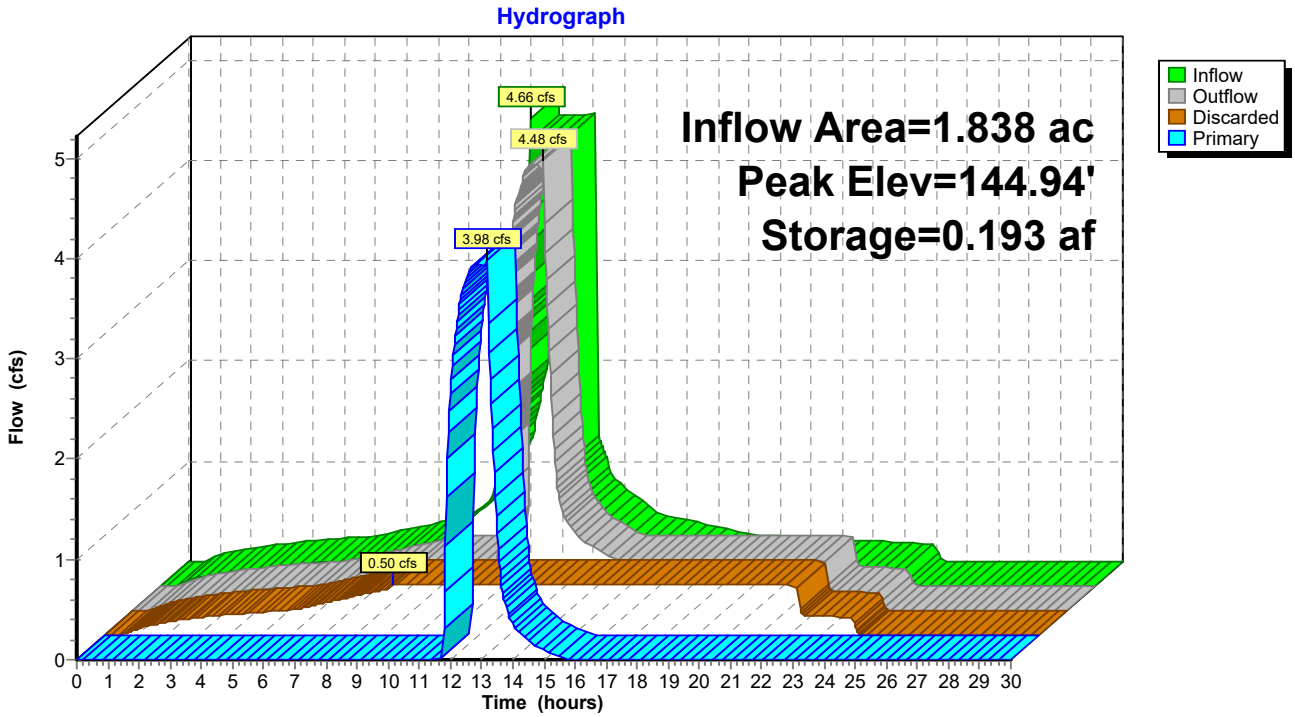
15,813.2 cf Field - 4,961.5 cf Chambers = 10,851.7 cf Stone x 40.0% Voids = 4,340.7 cf Stone Storage

Chamber Storage + Stone Storage = 9,302.2 cf = 0.214 af
Overall Storage Efficiency = 58.8%
Overall System Size = 131.78' x 30.00' x 4.00'

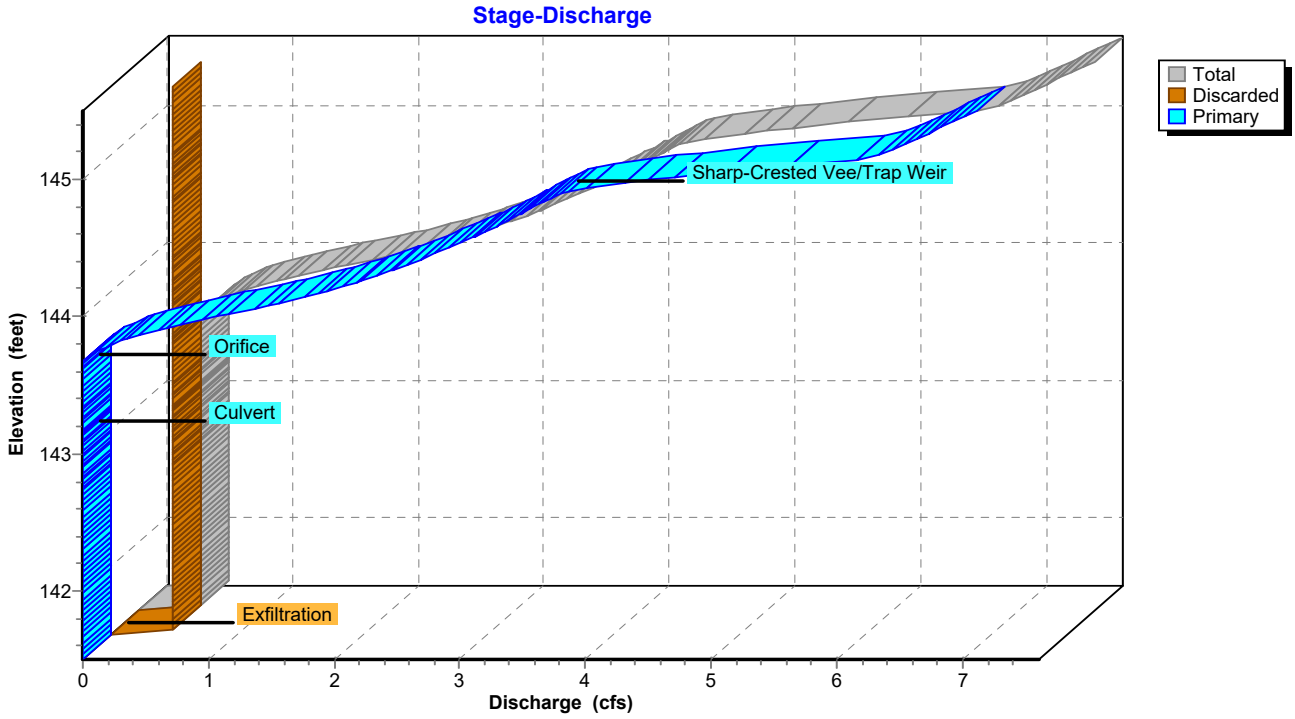
108 Chambers
585.7 cy Field
401.9 cy Stone



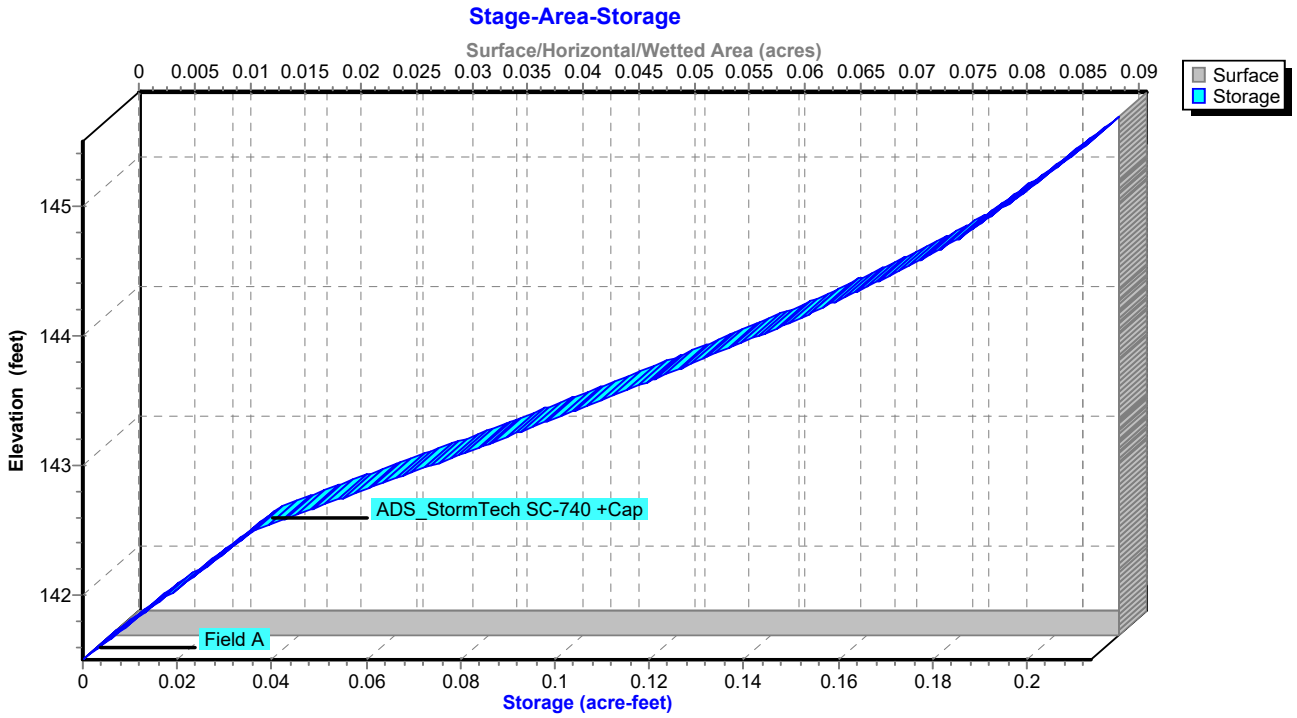
Pond S-2: Subsurface Infiltration System



Pond S-2: Subsurface Infiltration System



Pond S-2: Subsurface Infiltration System



Summary for Pond S-3: Subsurface Infiltration System

Inflow Area = 1.035 ac, 47.94% Impervious, Inflow Depth = 4.43" for 100-yr event
Inflow = 4.67 cfs @ 12.13 hrs, Volume= 0.382 af
Outflow = 3.89 cfs @ 12.19 hrs, Volume= 0.348 af, Atten= 17%, Lag= 3.7 min
Discarded = 0.05 cfs @ 5.79 hrs, Volume= 0.121 af
Primary = 3.84 cfs @ 12.19 hrs, Volume= 0.228 af
Routed to Pond AP-1 : Norwalk River

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs
Peak Elev= 142.78' @ 12.19 hrs Surf.Area= 0.052 ac Storage= 0.101 af

Plug-Flow detention time= 147.0 min calculated for 0.348 af (91% of inflow)
Center-of-Mass det. time= 100.4 min (861.7 - 761.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	139.70'	0.047 af	**30.00'W x 74.82'L x 3.50'H Field A** 0.180 af Overall - 0.063 af Embedded = 0.117 af x 40.0% Voids
#2A	140.20'	0.063 af	**ADS_StormTech SC-740 +Cap** x 60 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 60 Chambers in 6 Rows
		0.110 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	141.14'	**12.0" Round Culvert** L= 75.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 141.14' / 140.49' S= 0.0087 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	141.40'	**7.0" Vert. Orifice X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	142.60'	**5.0' long Weir Wall** Cv= 2.62 (C= 3.28)
#4	Discarded	139.70'	**1.050 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.05 cfs @ 5.79 hrs HW=139.74' (Free Discharge)
└─**4=Exfiltration** (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=3.81 cfs @ 12.19 hrs HW=142.77' (Free Discharge)
└─**1=Culvert** (Barrel Controls 3.81 cfs @ 4.85 fps)
  ├─**2=Orifice** (Passes < 2.67 cfs potential flow)
  └─**3=Weir Wall** (Passes < 1.16 cfs potential flow)

Pond S-3: Subsurface Infiltration System - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

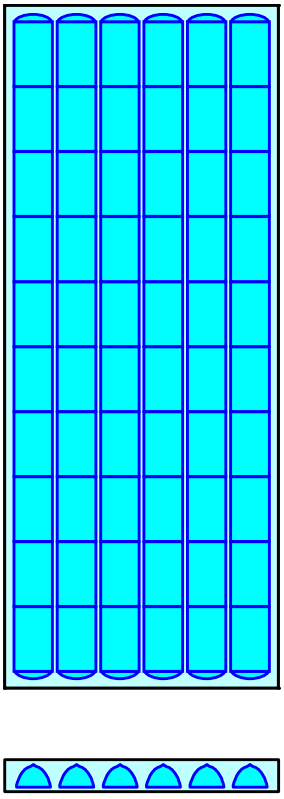
10 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 72.82' Row Length +12.0" End Stone x 2 = 74.82' Base Length
6 Rows x 51.0" Wide + 6.0" Spacing x 5 + 12.0" Side Stone x 2 = 30.00' Base Width
6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

60 Chambers x 45.9 cf = 2,756.4 cf Chamber Storage

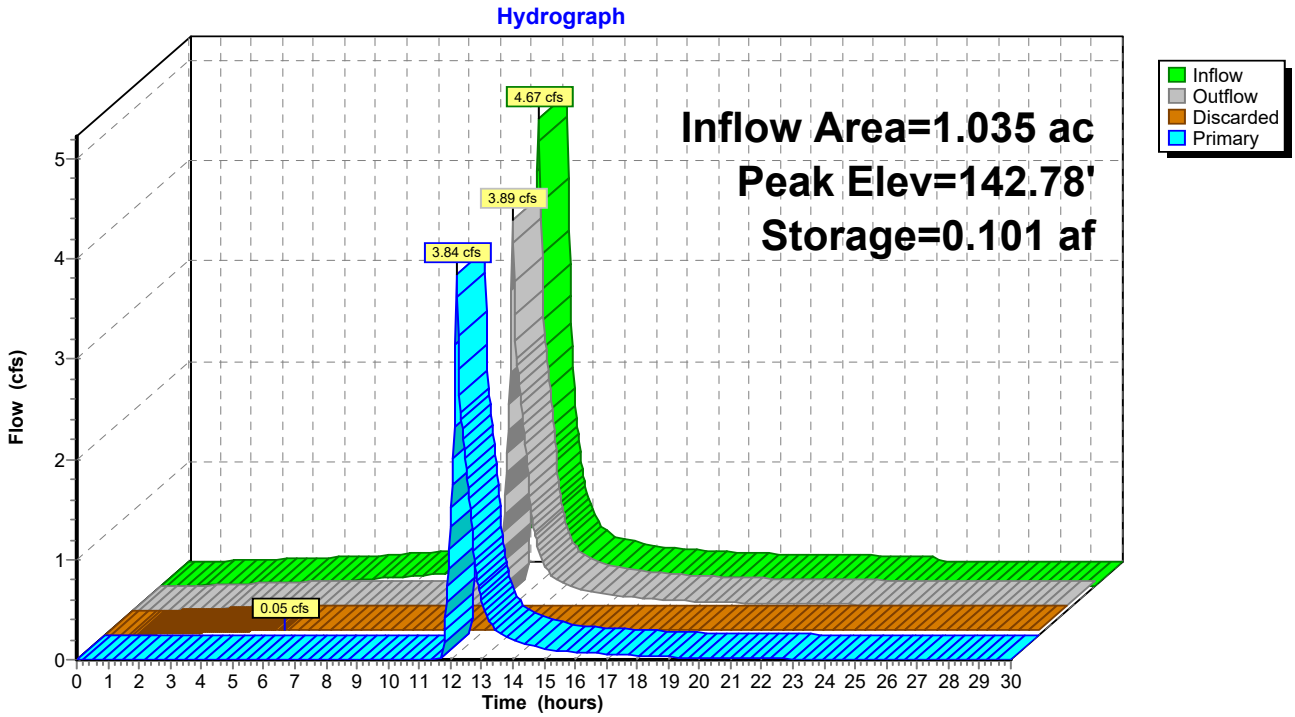
7,855.8 cf Field - 2,756.4 cf Chambers = 5,099.3 cf Stone x 40.0% Voids = 2,039.7 cf Stone Storage

Chamber Storage + Stone Storage = 4,796.1 cf = 0.110 af
Overall Storage Efficiency = 61.1%
Overall System Size = 74.82' x 30.00' x 3.50'

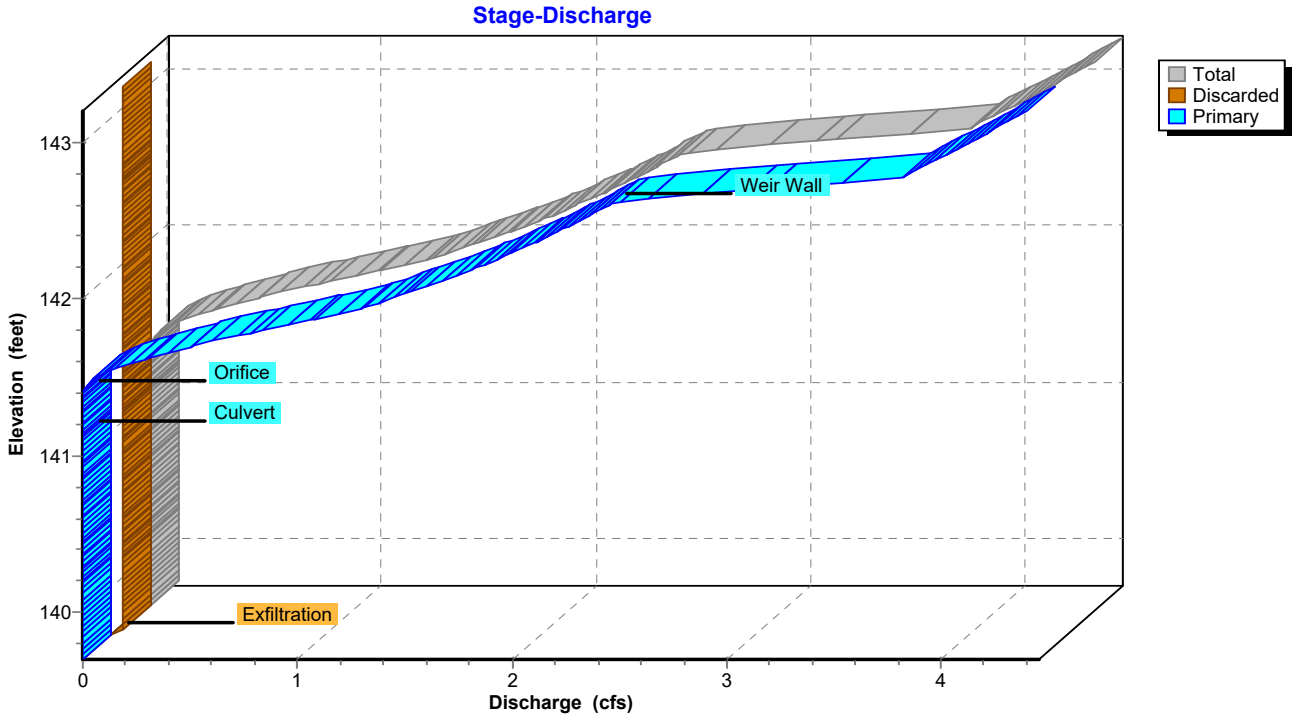
60 Chambers
291.0 cy Field
188.9 cy Stone



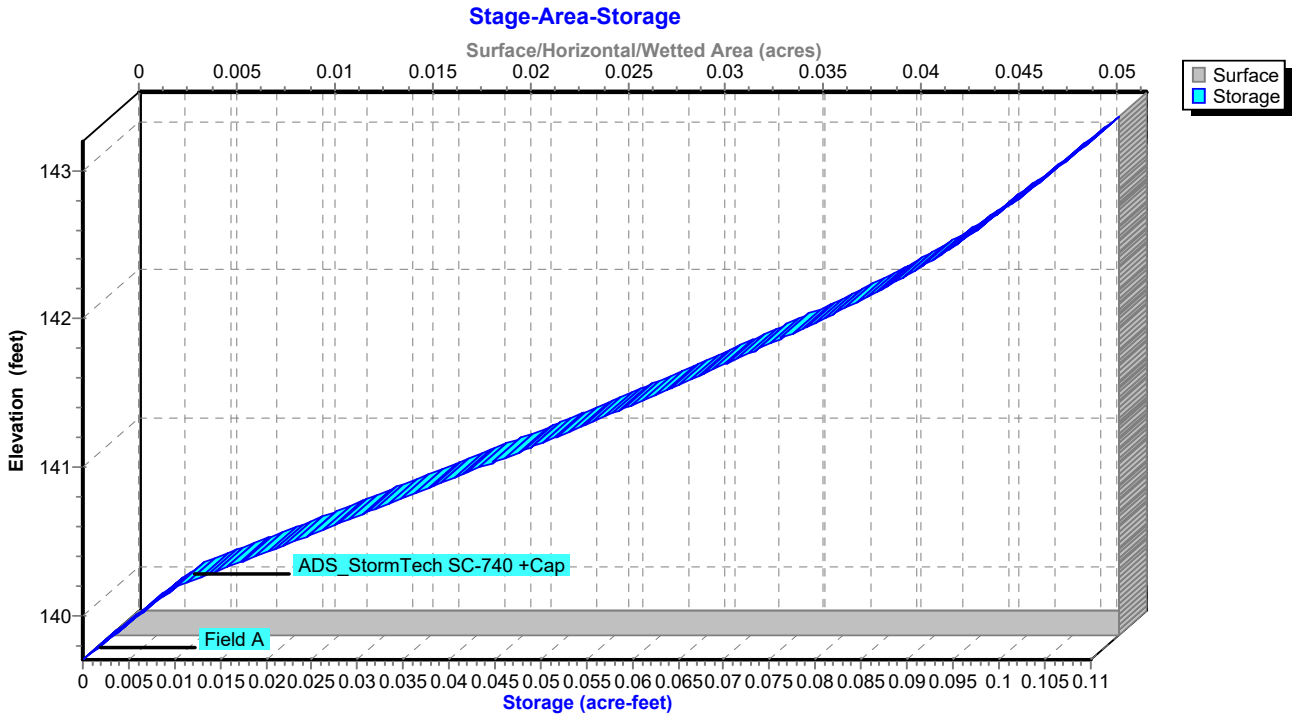
Pond S-3: Subsurface Infiltration System



Pond S-3: Subsurface Infiltration System



Pond S-3: Subsurface Infiltration System



Appendix H
Watershed Maps

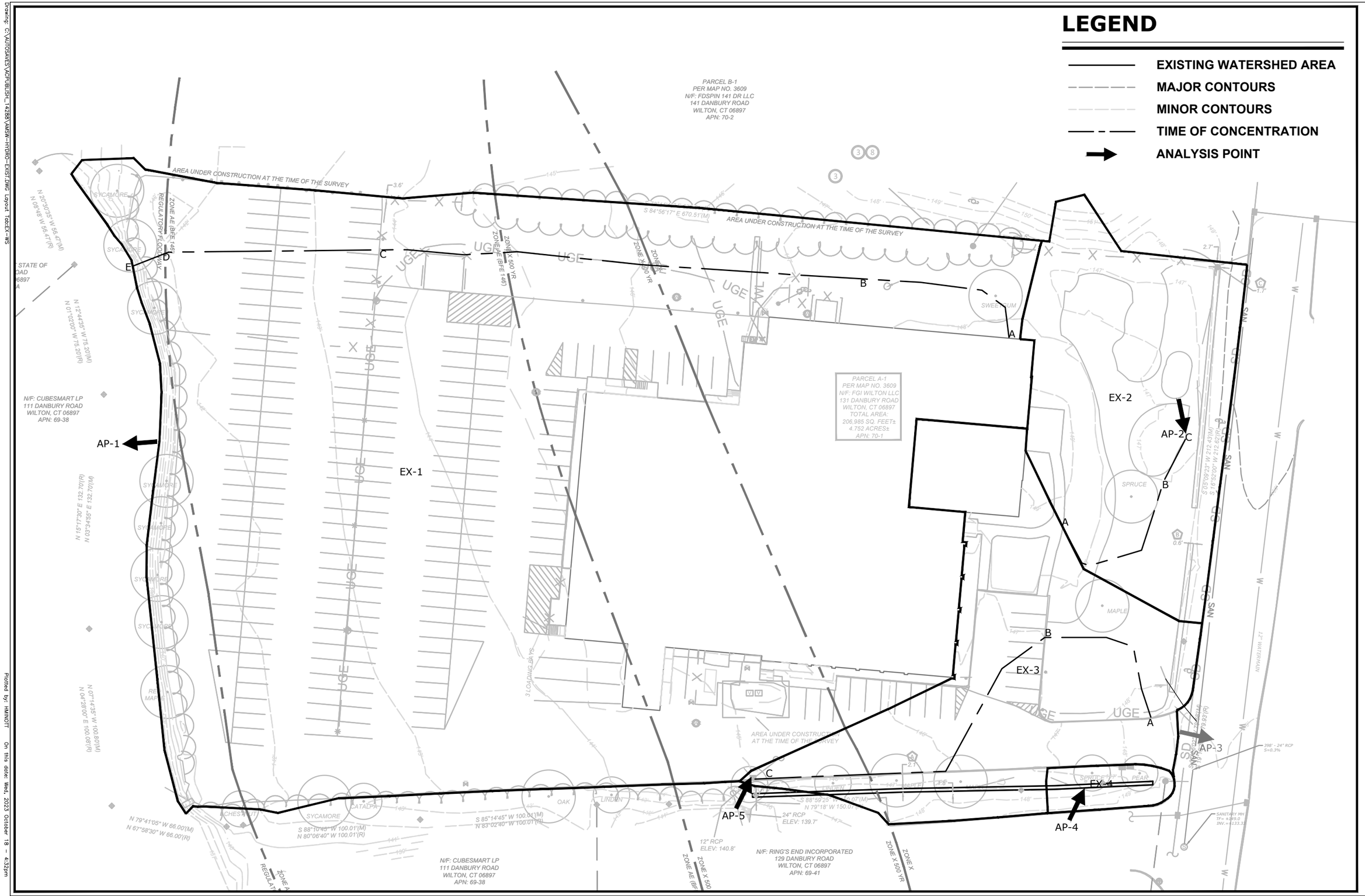
Proposed Multifamily Development

131 Danbury Road, Wilton, Connecticut
Drainage Report

Ryan Sutherland, AMS Acquisitions Management Corporation

SLR Project No.: 141.21543.0000171

February 13, 2024



Drawing: C:\AUTOSAVES\ACPUBLISH_14288\MSW-HYDRO-EXIST.DWG Layout: tab:EX-WS

Plotted By: HMINOTT On this date: Wed, 2023 October 18 - 4:32pm

SLR
99 REALTY DRIVE
CHESHIRE, CT 06410
203.271.1773
SLRCONSULTING.COM

REVISIONS

WATERSHED MAP - EXISTING CONDITIONS

PROPOSED MULTI-FAMILY DEVELOPMENT

131 DANBURY ROAD
WILTON, CONNECTICUT

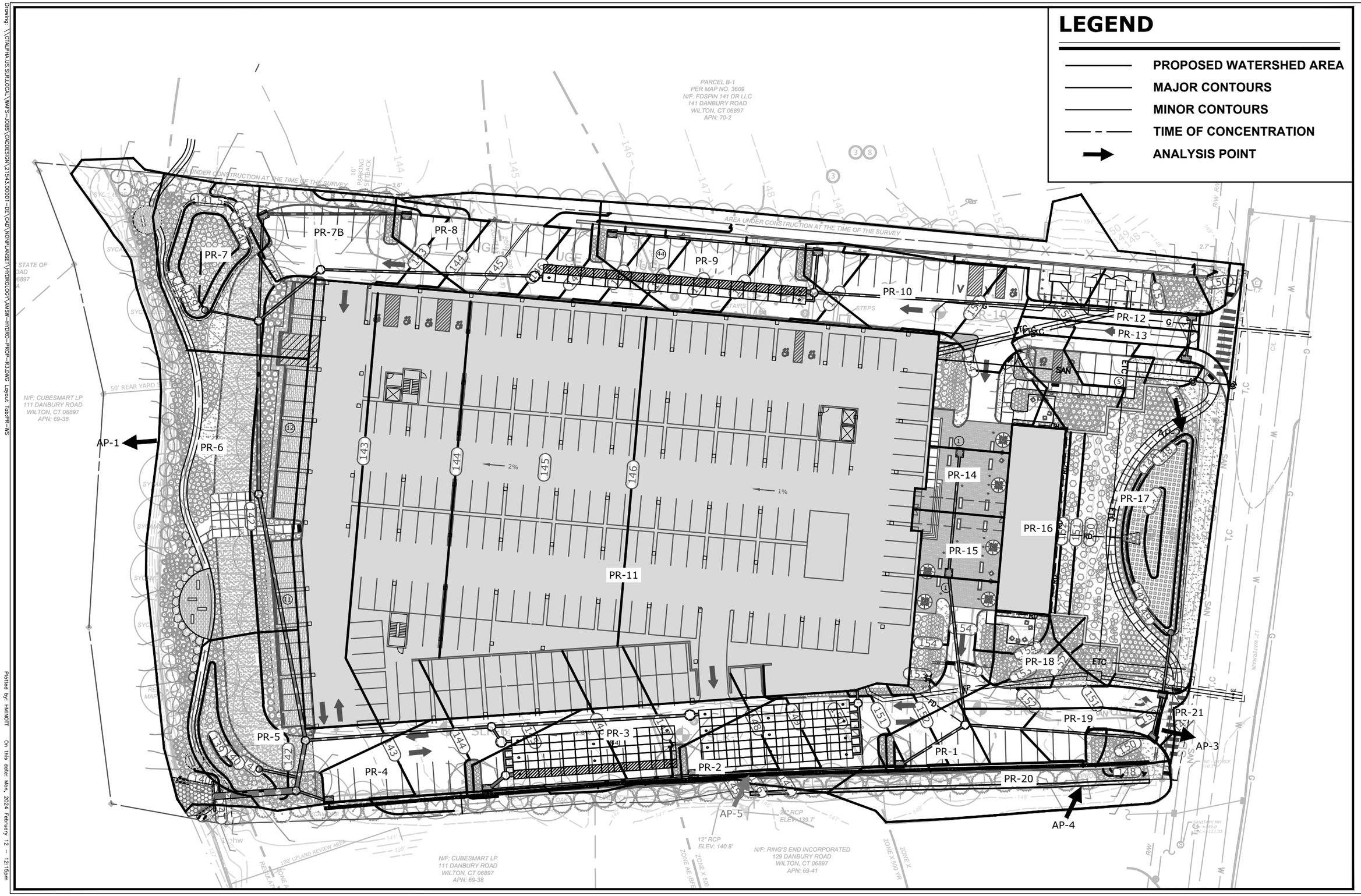
HM	HM	MG
DESIGNED	DRAWN	CHECKED

SCALE: 1"=50'

DATE: OCTOBER 12, 2023

PROJECT NO.: 21543.00001

SHEET NO.: EX-WS



SLR
99 REALTY DRIVE
CHESHIRE, CT 06410
203.271.1773
SLRCONSULTING.COM

REVISIONS

WATERSHED MAP - PROPOSED CONDITIONS

PROPOSED MULTI-FAMILY DEVELOPMENT

131 DANBURY ROAD
WILTON, CONNECTICUT

HM	HM	MG
DESIGNED	DRAWN	CHECKED

SCALE: 1"=50'

DATE: FEBRUARY 13, 2024

PROJECT NO.: 21543.00001

SHEET NO.: **PR-WS**

Drawing: \\CTALPHA1US.SLRLOCAL\WAFS-JOBS\CADDESIGN\21543.00001-DEV\CAD\NONPLANSET\HYDROLOGY\AMSW-HYDRO-PROP-R3.DWG Layout Tab:PR-WS

Plotted By: HMINOTT On this date: Mon, 2024 February 12 - 12:15pm

Appendix I
NRCS Web Soil Survey

Proposed Multifamily Development

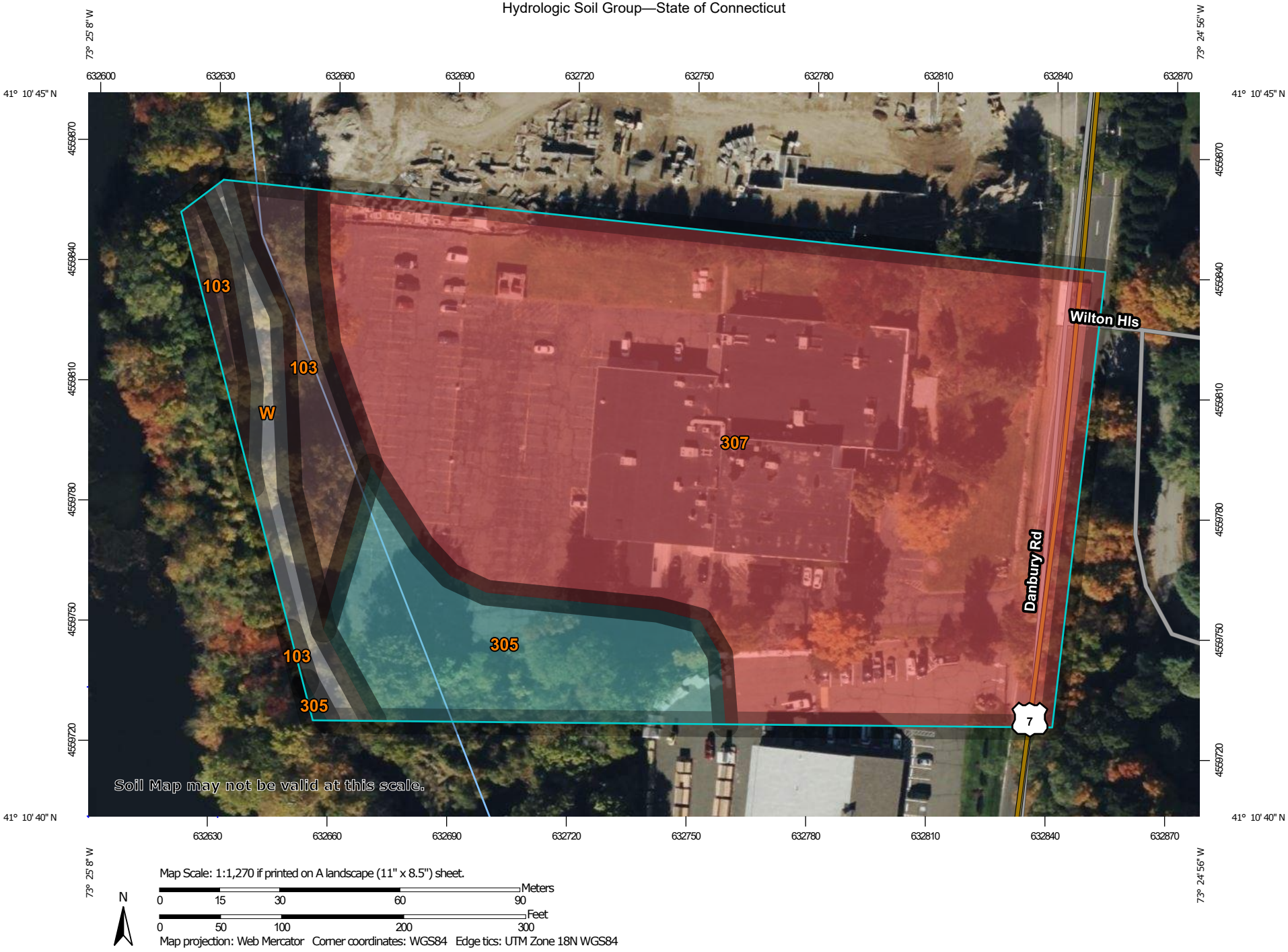
131 Danbury Road, Wilton, Connecticut
Drainage Report

Ryan Sutherland, AMS Acquisitions Management Corporation

SLR Project No.: 141.21543.0000171

October 23, 2023

Hydrologic Soil Group—State of Connecticut



Map Scale: 1:1,270 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 15 30 60 90

Feet: 0 50 100 200 300

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 1:12,000.

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

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

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

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

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

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

Soil Survey Area: State of Connecticut
Survey Area Data: Version 22, Sep 12, 2022

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

Date(s) aerial images were photographed: Oct 21, 2022—Oct 27, 2022

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
103	Rippowam fine sandy loam	B/D	0.5	7.5%
305	Udorthents-Pits complex, gravelly	C	0.8	13.0%
307	Urban land	D	4.8	74.7%
W	Water		0.3	4.7%
Totals for Area of Interest			**6.5**	**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

Appendix J
Permeability Test Results

Proposed Multifamily Development

131 Danbury Road, Wilton, Connecticut
Drainage Report

Ryan Sutherland, AMS Acquisitions Management Corporation

SLR Project No.: 141.21543.0000171

January 5, 2024

NOTES:
1. BASE MAP DEVELOPED FROM AN ELECTRONIC FILE BY SLR TITLED "AMSW - EXISTING CONDITIONS.DWG" AND DATED NOVEMBER, 2023.
2. BORINGS BY SLR WERE PERFORMED BY SITE, LLC ON DECEMBER 12 & 13, 20232.
3. THE BORINGS WERE LOCATED USING A HANDHELD GPS. THESE LOCATIONS SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.

LEGEND:
SLR-1 — BORING BY SLR INTERNATIONAL CORPORATION (SLR)

SLR
99 REALTY DRIVE
CHESHIRE, CT 06410
203.271.1773
SLRCONSULTING.COM

REVISIONS

SUBSURFACE EXPLORATION LOCATION PLAN

PROPOSED MULTI-FAMILY DEVELOPMENT

131 DANBURY ROAD
WILTON, CONNECTICUT

DESIGNED	DRAWN	CHECKED
RDG	RDG	MGB

SCALE: 1"=50'

DATE: DECEMBER 14, 2023

PROJECT NO. 141.21543.00001

SHEET NO. FIG. 2

Drawing: W:\GEOTECH\21543.00001-GT\EXPLORATIONS\SUBSURFACEEXPLORATIONPLAN.DWG Layout Tab:11X17

Plotted by: RGOWSNOCK On this date: Thu, 2023 December 14 – 3:46pm

GRAIN SIZE DISTRIBUTION TEST DATA

12/29/2023

Client: : SLR Internation Corporation

Date: 12/29/2023

Project: : Proposed Multi-Family Development Wilton, CT

Location: Onsite

Depth: 3'-5' Top

Sample Number: 1120-23

Material Description: Lt. brown silty sand

Liquid Limit: N/A

Plastic Limit: N/A

USCS Classification: N/A

AASHTO Classification: N/A

Test Date: 12/29/2023

Testing Remarks: ASTM C 117, ASTM C 136 (Sample ID= SLR-2, Depth 3'-5' Top)

Tested by: SC

Checked by: IC

Test Date: 12/29/2023 **Technician:** SC

Test remarks: ASTM C 117, ASTM C 136 (Sample ID= SLR-2, Depth 3'-5' Top)

Sieve Test Data (ASTM C117 & C136)

Post #200 Wash Test Weights (grams): Dry Specimen+Tare = 177.40
Tare Wt. = 0.00

Minus #200 from wash = 32.3%

Specimen Weights
Dry specimen+tare (gms.) = 262.00
Tare (gms.) = 0.00

Cumulative pan tare (gms.) = 0.00

Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Passing	Percent Retained
3/4"	0.00	100.0	0.0
1/4"	2.70	99.0	1.0
#4	4.20	98.4	1.6
#10	7.50	97.1	2.9
#40	86.60	66.9	33.1
#100	158.70	39.4	60.6
#200	176.80	32.5	67.5

Pan + tare = 0 Tare = 0 Loss during sieving = 0.2%

Total loss (wash+pan/specimen) = 32.3%

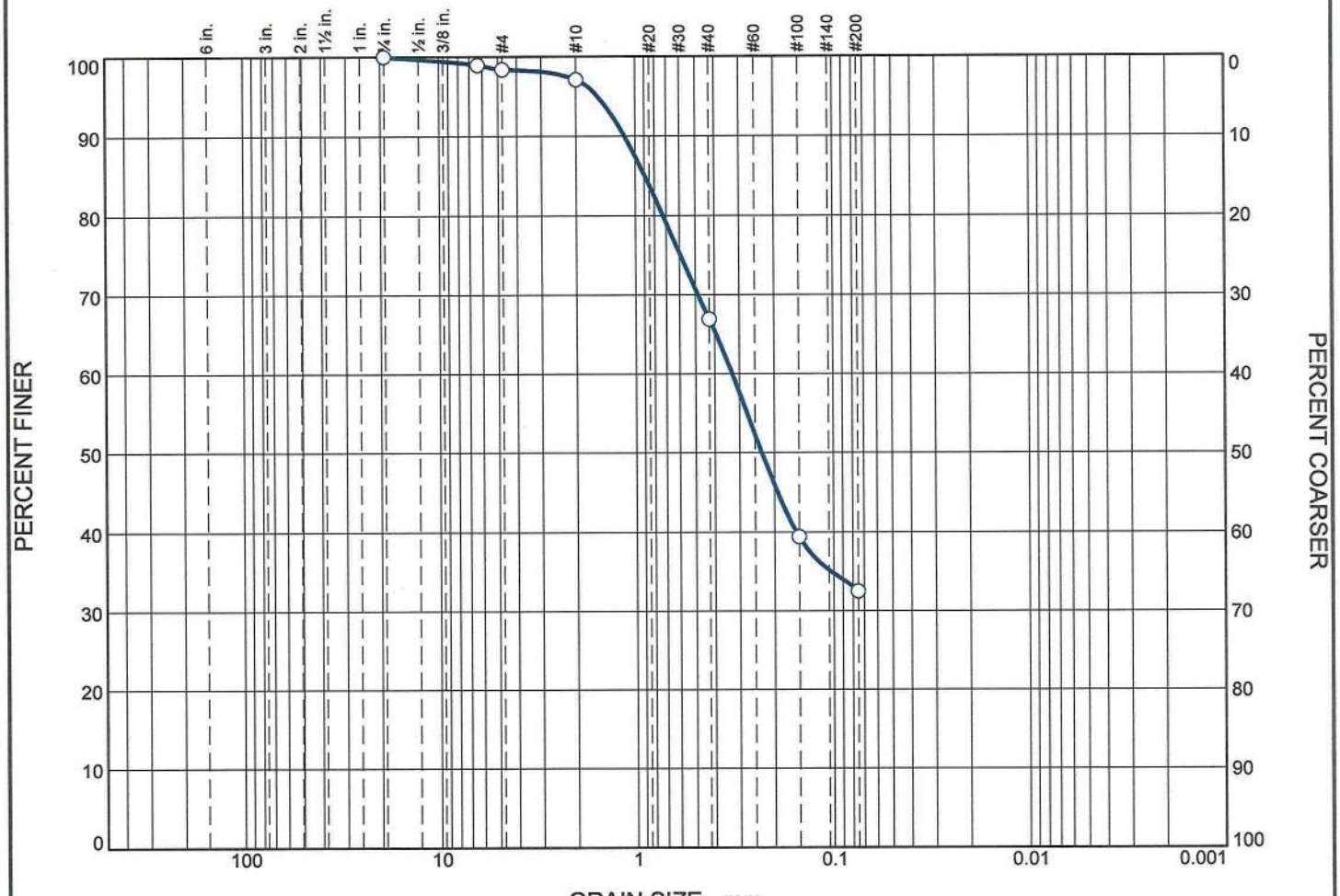
Results

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.0	1.6	1.6	1.3	30.2	34.4	65.9			32.5

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
					0.1546	0.2311	0.3256	0.7255	0.8957	1.1344	1.5511

Fineness Modulus
1.41

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	1.6	1.3	30.2	34.4	32.5	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	N/A	N/A	0.8957	0.3256	0.2311					

MATERIAL DESCRIPTION	TEST DATE	USCS	NM
○ Lt. brown silty sand	12/29/2023	N/A	

Project No. **Client:** : SLR Internation Corporation Date: 12/29/2023

Project: : Proposed Multi-Family Development Wilton, CT

○ **Source of Sample:** Onsite **Depth:** 3'-5' Top **Sample Number:** 1120-23

Remarks:

○ ASTM C 117, ASTM C 136 (Sample ID= SLR-2, Depth 3'-5' Top)

Tri State Materials Testing Lab

Berlin, Connecticut

Figure

Tested By: SC **Checked By:** IC

TRI STATE MATERIALS TESTING LAB LLC.
New England Regional Office
60 Woodlawn Road, Berlin CT 06037 • Tel: 203-949-7733 • Fax: 203-949-7735

Client:	SLR International Corporation 99 Realty Drive Cheshire, CT 06410	**Report:**	001
Project:	Proposed Multi-Family Development Wilton, CT	**Date:**	12-29-2023
Contractor:	N/A	**LAB #:**	1120-23
Technician:	IC		

LABORATORY PERMEABILITY TEST

Sample Description: Lt. brown silty sand

Source: Onsite

Sample ID: SLR-2

Method: ASTM D2434 (Constant Head)

k = QL/Ath

Where k = Coefficient of permeability

Q = quantity of water discharged,	Q = 1000 cm^3
L = length of the sample in centimeters	L = 5.08 cm
A = cross-sectional area of the specimen,	A = 31.93 cm^2
t = total time for discharge, in seconds	t = 10800 sec
h = difference in head manometers,	h = 60 cm

K = 0.000245522 cm/sec = 2.5×10^{-4} cm/sec or 0.8 inch/hour

The permeability (k) of the sample was tested at approx. 92% of the maximum dry density.

Reported To: SLR International Corporation

Submitted By: Tri State Materials Testing Lab, LLC

Paul J. Hessel, P.E.

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New England Regional Office
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Client:	SLR International Corporation 99 Realty Drive Cheshire, CT 06410	**Report:**	001-23
		Unit Weight	001-23
Project:	Proposed Multi-Family Development Wilton, CT	**Date:**	12/29/2023
Contractor:	SLR International Corporation	**Sample #**	1120-23
Technician:	I.C	**Sample ID**	SLR-2

SOIL UNIT WEIGHT

Formula: M=(G-t)/V
M=bulk density of the aggregate, kg/m3 [lb./ft3]
G=mass of the aggregate plus the measure, kg [lb.]
T=mass of the measure, kg [lb.]
V=volume of the measure, m3 [ft3]
$V= \pi r^2 h$

Sample #	Material	Volume	Mass of Soil	Density
1120-23	Lt. brown silty sand	0.005451389 [ft3]	0.57611 lbs.	106.0 lb./ft3

Reported To: SLR International Corporation

Submitted By: Tri State Materials Testing Lab, LLC.

Paul J. Hessel, P.E.

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GRAIN SIZE DISTRIBUTION TEST DATA

12/29/2023

Client: : SLR Internation Corporation

Date: 12/29/2023

Project: : Proposed Multi-Family Development Wilton, CT

Location: Onsite

Depth: 5'-7'

Sample Number: 1121-23

Material Description: Lt. brown silty sand with gravel

Liquid Limit: N/A

Plastic Limit: N/A

USCS Classification: N/A

AASHTO Classification: N/A

Test Date: 12/29/2023

Testing Remarks: ASTM C 117, ASTM C 136 (Sample ID= SLR-5, Depth 5'-7')

Tested by: SC

Checked by: IC

Test Date: 12/29/2023 **Technician:** SC

Test remarks: ASTM C 117, ASTM C 136 (Sample ID= SLR-5, Depth 5'-7')

Sieve Test Data (ASTM C117 & C136)

Post #200 Wash Test Weights (grams): Dry Specimen+Tare = 320.60
Tare Wt. = 0.00

Minus #200 from wash = 23.2%

Specimen Weights
Dry specimen+tare (gms.) = 417.40
Tare (gms.) = 0.00

Cumulative pan tare (gms.) = 0.00

Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Passing	Percent Retained
1 1/4"	0.00	100.0	0.0
3/4"	25.60	93.9	6.1
1/4"	127.20	69.5	30.5
#4	145.60	65.1	34.9
#10	198.50	52.4	47.6
#40	275.60	34.0	66.0
#100	310.10	25.7	74.3
#200	319.70	23.4	76.6

Pan + tare = 0 Tare = 0 Loss during sieving = 0.2%

Total loss (wash+pan/specimen) = 23.2%

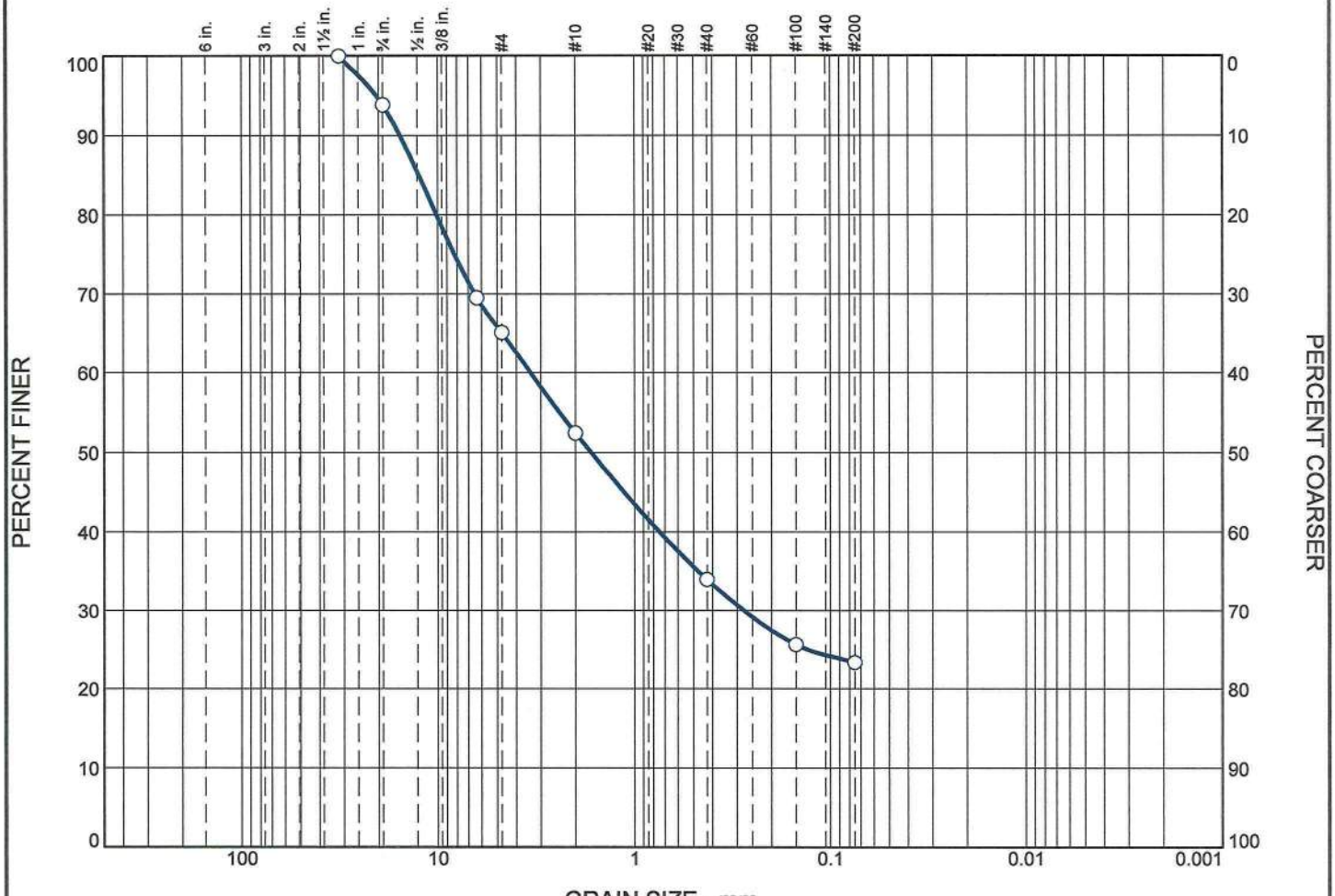
Results

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	6.1	28.8	34.9	12.7	18.4	10.6	41.7			23.4

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.2757	0.7428	1.6618	3.3827	10.1656	12.5016	15.5889	20.4709

Fineness Modulus
3.68

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	6.1	28.8	12.7	18.4	10.6	23.4	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	N/A	N/A	12.5016	3.3827	1.6618	0.2757				

MATERIAL DESCRIPTION	TEST DATE	USCS	NM
○ Lt. brown silty sand with gravel	12/29/2023	N/A	

Project No. **Client:** : SLR Internation Corporation Date: 12/29/2023

Project: : Proposed Multi-Family Development Wilton, CT

○ **Source of Sample:** Onsite **Depth:** 5'-7' **Sample Number:** 1121-23

Remarks:

○ ASTM C 117, ASTM C 136 (Sample ID= SLR-5, Depth 5'-7')

Tri State Materials Testing Lab

Berlin, Connecticut

Figure

Tested By: SC **Checked By:** IC

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Client:	SLR International Corporation 99 Realty Drive Cheshire, CT 06410	**Report:**	002
Project:	Proposed Multi-Family Development Wilton, CT	**Date:**	12-29-2023
Contractor:	N/A	**LAB #:**	1121-23
Technician:	IC		

LABORATORY PERMEABILITY TEST

Sample Description: Lt. brown silty sand with gravel

Source: Onsite

Sample ID: SLR-5

Method: ASTM D2434 (Constant Head)

k = QL/Ath

Where k = Coefficient of permeability

Q = quantity of water discharged,	Q = 1000 cm^3
L = length of the sample in centimeters	L = 6.985 cm
A = cross-sectional area of the specimen,	A = 31.93 cm^2
t = total time for discharge, in seconds	t = 5100 sec
h = difference in head manometers,	h = 60 cm

K = 0.000714901 cm/sec = 7.1×10^{-4} or 2.5 inch/hour

The permeability (k) of the sample was tested at approx. 92% of the maximum dry density.

Reported To: SLR International Corporation

Submitted By: Tri State Materials Testing Lab, LLC

Paul J. Hessel, P.E.

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Client:	SLR International Corporation 99 Realty Drive Cheshire, CT 06410	**Report:**	02-23
		Unit Weight	002-23
Project:	Proposed Multi-Family Development Wilton, CT	**Date:**	12/29/2023
Contractor:	SLR International Corporation	**Sample#:**	1121-23
Technician:	I.C	**Sample ID**	SLR-5

SOIL UNIT WEIGHT

Formula: M=(G-t)/V
M=bulk density of the aggregate, kg/m3 [lb./ft3]
G=mass of the aggregate plus the measure, kg [lb.]
T=mass of the measure, kg [lb.]
V=volume of the measure, m3 [ft3]
$V= \pi r^2 h$

Sample #	Material	Volume	Mass of Soil	Density
1121-23	Lt. brown silty sand with gravel	0.007494213 [ft3]	0.92020948 lbs.	122.7 lb./ft3

Reported To: SLR International Corporation

Submitted By: Tri State Materials Testing Lab, LLC.

Paul J. Hessel, P.E.

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GRAIN SIZE DISTRIBUTION TEST DATA

12/29/2023

Client: : SLR Internation Corporation

Date: 12/29/2023

Project: : Proposed Multi-Family Development Wilton, CT

Location: Onsite

Depth: 5'-7'

Sample Number: 1122-23

Material Description: 1 1/4" Minus gravel with sand, little fines

Liquid Limit: N/A

Plastic Limit: N/A

USCS Classification: N/A

AASHTO Classification: N/A

Test Date: 12/29/2023

Testing Remarks: ASTM C 117, ASTM C 136 (Sample ID= SLR-6, Depth 5'-7')

Tested by: SC

Checked by: IC

Test Date: 12/29/2023 **Technician:** SC

Test remarks: ASTM C 117, ASTM C 136 (Sample ID= SLR-6, Depth 5'-7')

Sieve Test Data (ASTM C117 & C136)

Post #200 Wash Test Weights (grams): Dry Specimen+Tare = 262.30
Tare Wt. = 0.00

Minus #200 from wash = 11.9%

Specimen Weights
Dry specimen+tare (gms.) = 297.60
Tare (gms.) = 0.00

Cumulative pan tare (gms.) = 0.00

Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Passing	Percent Retained
1 1/4"	0.00	100.0	0.0
3/4"	33.30	88.8	11.2
1/4"	125.20	57.9	42.1
#4	138.60	53.4	46.6
#10	177.50	40.4	59.6
#40	237.80	20.1	79.9
#100	259.00	13.0	87.0
#200	261.80	12.0	88.0

Pan + tare = 0 Tare = 0 Loss during sieving = 0.2%

Total loss (wash+pan/specimen) = 11.9%

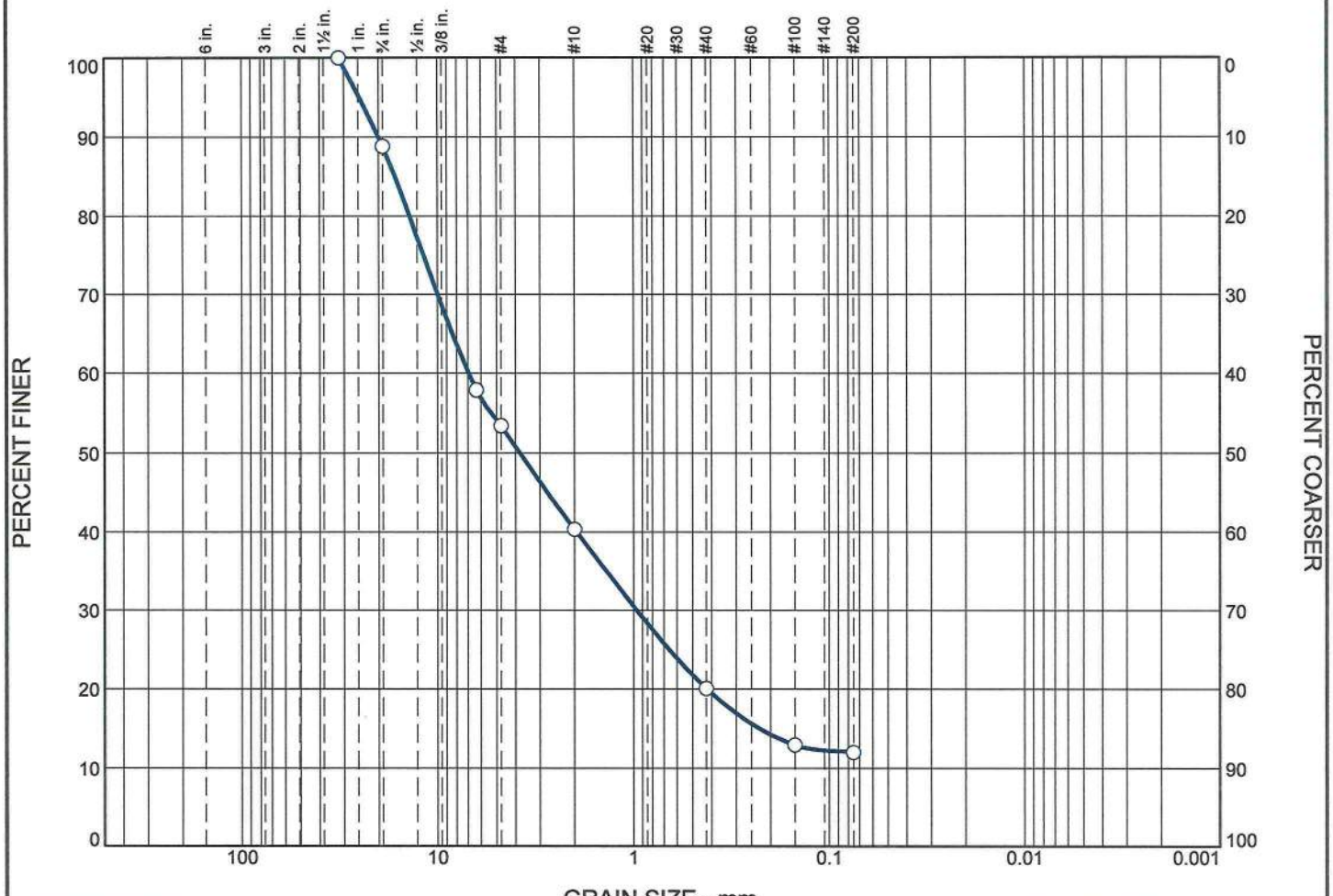
Results

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	11.2	35.4	46.6	13.0	20.3	8.1	41.4			12.0

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
		0.2252	0.4210	0.9616	1.9502	3.8030	6.9471	13.8803	16.4971	20.0000	25.0607

Fineness Modulus
4.60

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	11.2	35.4	13.0	20.3	8.1	12.0	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	N/A	N/A	16.4971	6.9471	3.8030	0.9616	0.2252			

MATERIAL DESCRIPTION	TEST DATE	USCS	NM
○ 1 1/4" Minus gravel with sand, little fines	12/29/2023	N/A	

Project No. **Client:** : SLR Internation Corporation Date: 12/29/2023

Project: : Proposed Multi-Family Development Wilton, CT

○ **Source of Sample:** Onsite **Depth:** 5'-7' **Sample Number:** 1122-23

Remarks:
○ ASTM C 117, ASTM C 136 (
Sample ID= SLR-6, Depth 5'-7')

Tri State Materials Testing Lab

Berlin, Connecticut

Figure

Tested By: SC **Checked By:** IC

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New England Regional Office
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Client:	SLR International Corporation 99 Realty Drive Cheshire, CT 06410	**Report:**	003
Project:	Proposed Multi-Family Development Wilton, CT	**Date:**	12-29-2023
Contractor:	N/A	**LAB #:**	1122-23
Technician:	IC		

LABORATORY PERMEABILITY TEST

Sample Description: 1 ¼" Minus gravel with sand, little fines

Source: Onsite

Sample ID: SLR-6

Method: ASTM D2434 (Constant Head)

k = QL/Ath

Where k = Coefficient of permeability

Q = quantity of water discharged,	Q = 1000 cm^3
L = length of the sample in centimeters	L = 5.08 cm
A = cross-sectional area of the specimen,	A = 31.93 cm^2
t = total time for discharge, in seconds	t = 900 sec
h = difference in head manometers,	h = 60 cm

K = 0.00294626 cm/sec = 2.9×10^{-3} or 10.6 inch/hour

The permeability (k) of the sample was tested at approx. 92% of the maximum dry density.

Reported To: SLR International Corporation

Submitted By: Tri State Materials Testing Lab, LLC

Paul J. Hessel, P.E.

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New England Regional Office
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Client:	SLR International Corporation 99 Realty Drive Cheshire, CT 06410	**Report:**	03-23
		Unit Weight	003-23
Project:	Proposed Multi-Family Development Wilton, CT	**Date:**	12/29/2023
Contractor:	SLR International Corporation	**Sample #:**	1122-23
Technician:	I.C	**Sample ID**	SLR-6

SOIL UNIT WEIGHT

Formula: M=(G-t)/V
M=bulk density of the aggregate, kg/m3 [lb./ft3]
G=mass of the aggregate plus the measure, kg [lb.]
T=mass of the measure, kg [lb.]
V=volume of the measure, m3 [ft3]
$V= \pi r^2 h$

Sample #	Material	Volume	Mass of Soil	Density
1122-23	1 ¼" Minus gravel with sand, little fines	0.005451389 [ft3]	0.65609569 lbs.	120.3 lb./ft3

Reported To: SLR International Corporation

Submitted By: Tri State Materials Testing Lab, LLC.

Paul J. Hessel, P.E.

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GRAIN SIZE DISTRIBUTION TEST DATA

12/29/2023

Client: : SLR Internation Corporation

Date: 12/29/2023

Project: : Proposed Multi-Family Development Wilton, CT

Location: Onsite

Depth: 3'-5'

Sample Number: 1123-23

Material Description: 1 1/4" Minus gravel with silty sand

Liquid Limit: N/A

Plastic Limit: N/A

USCS Classification: N/A

AASHTO Classification: N/A

Test Date: 12/29/2023

Testing Remarks: ASTM C 117, ASTM C 136 (Sample ID= SLR-7, Depth 3'-5')

Tested by: SC

Checked by: IC

Test Date: 12/29/2023 **Technician:** SC

Test remarks: ASTM C 117, ASTM C 136 (Sample ID= SLR-7, Depth 3'-5')

Sieve Test Data (ASTM C117 & C136)

Post #200 Wash Test Weights (grams): Dry Specimen+Tare = 239.20
Tare Wt. = 0.00

Minus #200 from wash = 21.2%

Specimen Weights
Dry specimen+tare (gms.) = 303.50
Tare (gms.) = 0.00

Cumulative pan tare (gms.) = 0.00

Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Passing	Percent Retained
1 1/4"	0.00	100.0	0.0
3/4"	37.40	87.7	12.3
1/4"	115.80	61.8	38.2
#4	129.90	57.2	42.8
#10	165.50	45.5	54.5
#40	216.60	28.6	71.4
#100	236.00	22.2	77.8
#200	238.30	21.5	78.5

Pan + tare = 0 Tare = 0 Loss during sieving = 0.3%

Total loss (wash+pan/specimen) = 21.2%

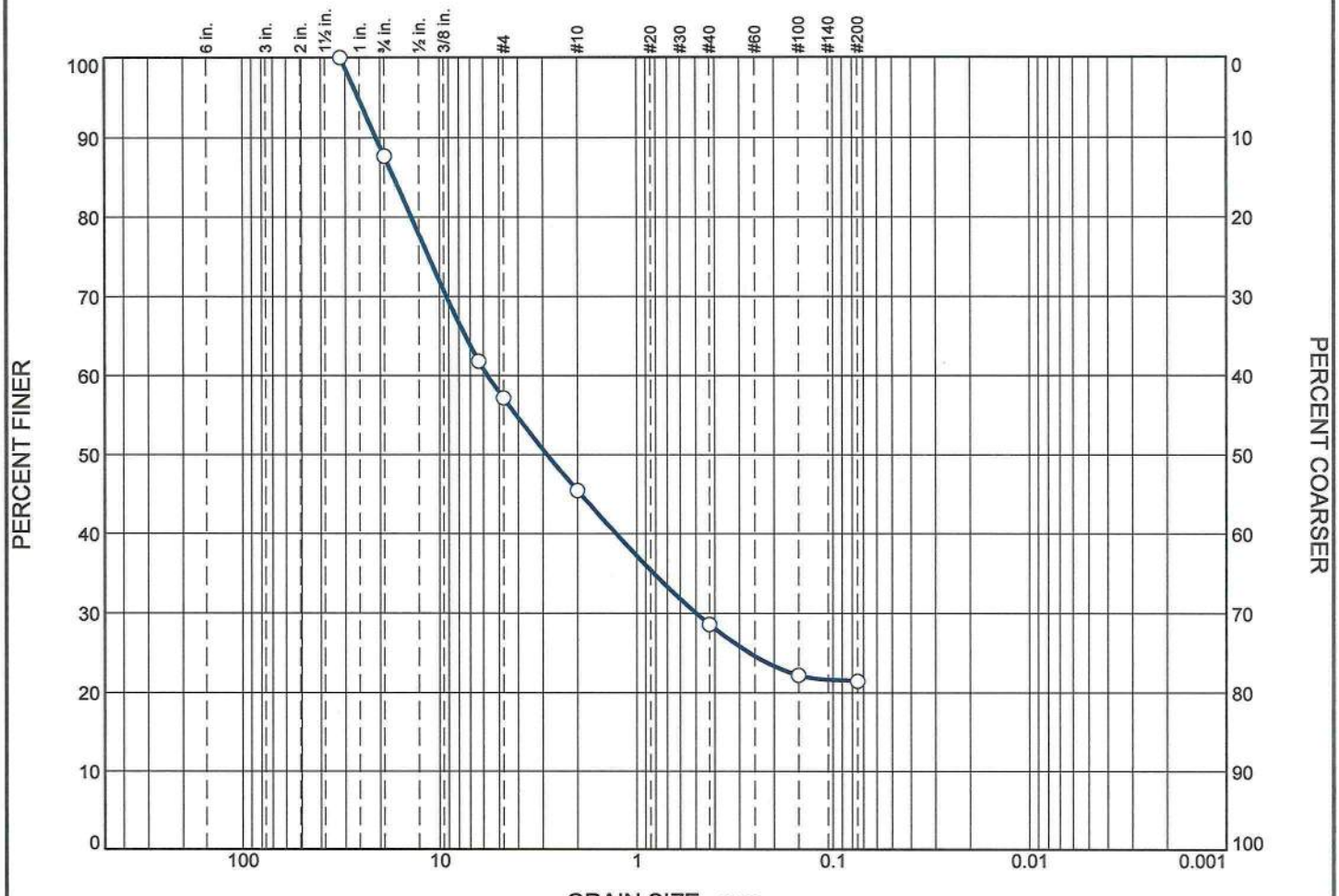
Results

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	12.3	30.5	42.8	11.7	16.9	7.1	35.7			21.5

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.4962	1.2695	2.8497	5.7260	13.9139	17.0473	20.9925	25.8227

Fineness Modulus
4.18

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	12.3	30.5	11.7	16.9	7.1	21.5	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	N/A	N/A	17.0473	5.7260	2.8497	0.4962				

MATERIAL DESCRIPTION	TEST DATE	USCS	NM
○ 1 1/4" Minus gravel with silty sand	12/29/2023	N/A	

Project No. **Client:** : SLR Internation Corporation Date: 12/29/2023

Project: : Proposed Multi-Family Development Wilton, CT

○ **Source of Sample:** Onsite **Depth:** 3'-5' **Sample Number:** 1123-23

Remarks:

○ ASTM C 117, ASTM C 136 (
Sample ID= SLR-7, Depth 3'-5')

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Berlin, Connecticut

Figure

Tested By: SC **Checked By:** IC

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60 Woodlawn Road, Berlin CT 06037 • Tel: 203-949-7733 • Fax: 203-949-7735

Client:	SLR International Corporation 99 Realty Drive Cheshire, CT 06410	**Report:**	004
Project:	Proposed Multi-Family Development Wilton, CT	**Date:**	12-29-2023
Contractor:	N/A	**LAB #:**	1123-23
Technician:	IC		

LABORATORY PERMEABILITY TEST

Sample Description: 1 ¼" Minus gravel with silty sand

Source: Onsite

Sample ID: SLR-7

Method: ASTM D2434 (Constant Head)

k = QL/Ath

Where k = Coefficient of permeability

Q = quantity of water discharged,	Q = 1000 cm^3
L = length of the sample in centimeters	L = 5.08 cm
A = cross-sectional area of the specimen,	A = 31.93 cm^2
t = total time for discharge, in seconds	t = 4500 sec
h = difference in head manometers,	h = 60 cm

K = 0.000589252 cm/sec = 5.8 $x10^{-4}$ or 2.1 inch/hour

The permeability (k) of the sample was tested at approx. 92% of the maximum dry density.

Reported To: SLR International Corporation

Submitted By: Tri State Materials Testing Lab, LLC

Paul J. Hessel, P.E.

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Client:	SLR International Corporation 99 Realty Drive Cheshire, CT 06410	**Report:**	04-23
		Unit Weight	004-23
Project:	Proposed Multi-Family Development Wilton, CT	**Date:**	12/29/2023
Contractor:	SLR International Corporation	**Sample #:**	1123-23
Technician:	I.C	**Sample ID**	SLR-7

SOIL UNIT WEIGHT

Formula: M=(G-t)/V
M=bulk density of the aggregate, kg/m3 [lb./ft3]
G=mass of the aggregate plus the measure, kg [lb.]
T=mass of the measure, kg [lb.]
V=volume of the measure, m3 [ft3]
$V= \pi r^2 h$

Sample #	Material	Volume of measure	Mass of Soil	Density
1123-23	1 ¼" Minus gravel with silty sand	0.005451389 [ft3]	0.66844158 lbs.	122.6 lb./ft3

Reported To: SLR International Corporation

Submitted By: Tri State Materials Testing Lab, LLC.

Paul J. Hessel, P.E.

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GRAIN SIZE DISTRIBUTION TEST DATA

12/29/2023

Client: : SLR Internation Corporation

Date: 12/29/2023

Project: : Proposed Multi-Family Development Wilton, CT

Location: Onsite

Depth: 5'-7'

Sample Number: 1124-23

Material Description: 1 1/4" Minus gravel with sand, little fines

Liquid Limit: N/A

Plastic Limit: N/A

USCS Classification: N/A

AASHTO Classification: N/A

Test Date: 12/29/2023

Testing Remarks: ASTM C 117, ASTM C 136 (Sample ID= SLR-8, Depth 5'-7')

Tested by: SC

Checked by: IC

Test Date: 12/29/2023 **Technician:** SC

Test remarks: ASTM C 117, ASTM C 136 (Sample ID= SLR-8, Depth 5'-7')

Sieve Test Data (ASTM C117 & C136)

Post #200 Wash Test Weights (grams): Dry Specimen+Tare = 355.80
Tare Wt. = 0.00

Minus #200 from wash = 13.1%

Specimen Weights
Dry specimen+tare (gms.) = 409.40
Tare (gms.) = 0.00

Cumulative pan tare (gms.) = 0.00

Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Passing	Percent Retained
1 1/4"	0.00	100.0	0.0
3/4"	52.60	87.2	12.8
1/4"	172.40	57.9	42.1
#4	189.50	53.7	46.3
#10	238.90	41.6	58.4
#40	319.30	22.0	78.0
#100	348.90	14.8	85.2
#200	355.20	13.2	86.8

Pan + tare = 0 Tare = 0 Loss during sieving = 0.1%

Total loss (wash+pan/specimen) = 13.1%

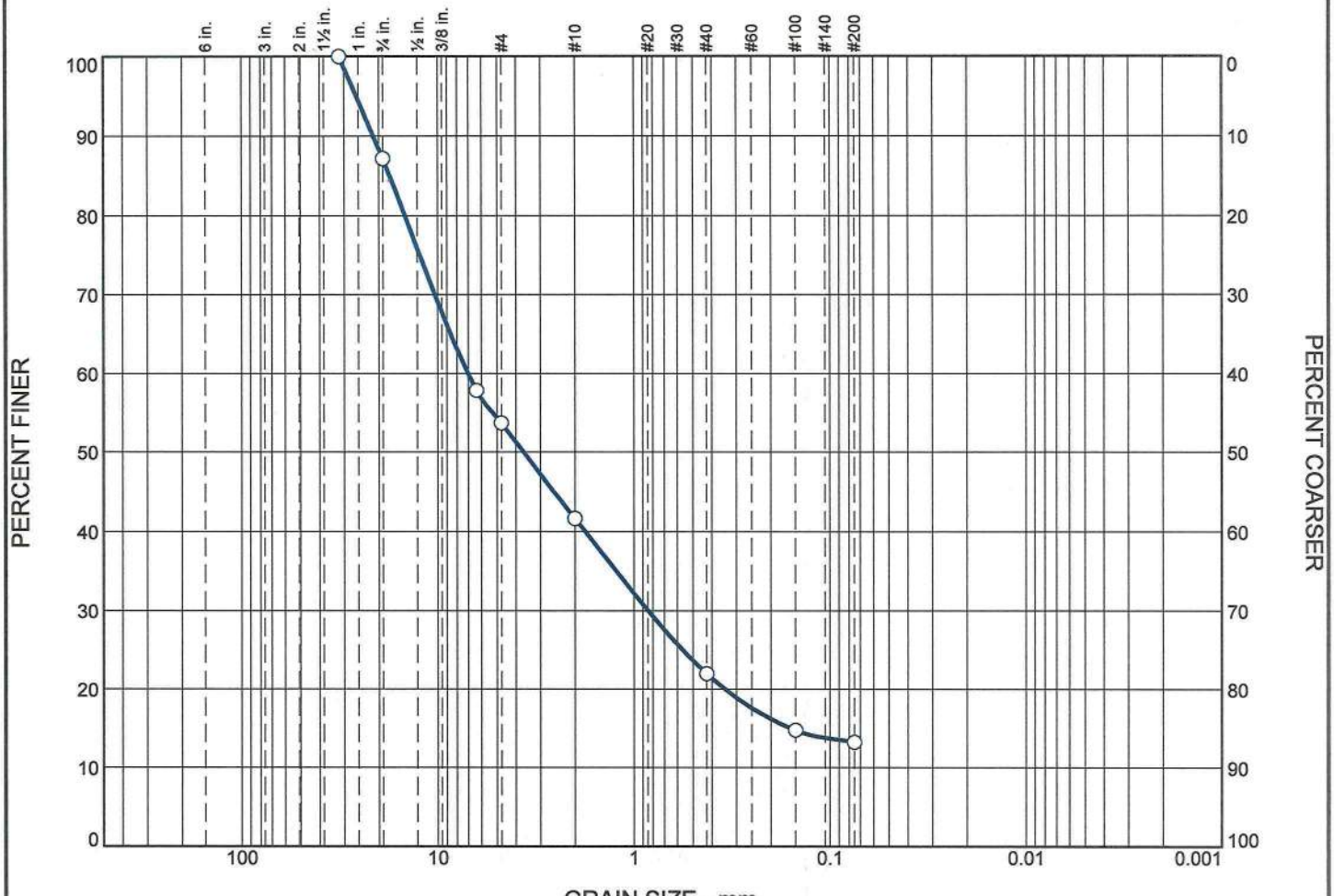
Results

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	12.8	33.5	46.3	12.1	19.6	8.8	40.5			13.2

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
		0.1573	0.3410	0.8447	1.7692	3.6565	7.0014	14.6619	17.5599	21.2912	25.9894

Fineness Modulus
4.54

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	12.8	33.5	12.1	19.6	8.8	13.2	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	N/A	N/A	17.5599	7.0014	3.6565	0.8447	0.1573			

MATERIAL DESCRIPTION	TEST DATE	USCS	NM
○ 1 1/4" Minus gravel with sand, little fines	12/29/2023	N/A	

Project No. **Client:** : SLR Internation Corporation Date: 12/29/2023

Project: : Proposed Multi-Family Development Wilton, CT

○ **Source of Sample:** Onsite **Depth:** 5'-7' **Sample Number:** 1124-23

Remarks:

○ ASTM C 117, ASTM C 136 (Sample ID= SLR-8, Depth 5'-7')

Tri State Materials Testing Lab

Berlin, Connecticut

Figure

Tested By: SC **Checked By:** IC

TRI STATE MATERIALS TESTING LAB LLC.
New England Regional Office
60 Woodlawn Road, Berlin CT 06037 • Tel: 203-949-7733 • Fax: 203-949-7735

Client:	SLR International Corporation 99 Realty Drive Cheshire, CT 06410	**Report:**	005
Project:	Proposed Multi-Family Development Wilton, CT	**Date:**	12-29-2023
Contractor:	N/A	**LAB #:**	1124-23
Technician:	IC		

LABORATORY PERMEABILITY TEST

Sample Description: 1 ¼" Minus gravel with sand, little fines

Source: Onsite

Sample ID: SLR-8

Method: ASTM D2434 (Constant Head)

k = QL/Ath

Where k = Coefficient of permeability

Q = quantity of water discharged,	Q = 1000 cm^3
L = length of the sample in centimeters	L = 6.985 cm
A = cross-sectional area of the specimen,	A = 31.93 cm^2
t = total time for discharge, in seconds	t = 1200 sec
h = difference in head manometers,	h = 60 cm

K = 0.00303833 cm/sec = 3.0 $x10^{-3}$ or 10.9 inch/hour

The permeability (k) of the sample was tested at approx. 92% of the maximum dry density.

Reported To: SLR International Corporation

Submitted By: Tri State Materials Testing Lab, LLC

Paul J. Hessel, P.E.

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TSMT accepts no liability for work executed by others

TRI STATE MATERIALS TESTING LAB, LLC.

New England Regional Office

60 Woodlawn Road • Berlin, CT 06037 • Tel: 203-949-7733 • Fax: 203-949-7735

Client:	SLR International Corporation 99 Realty Drive Cheshire, CT 06410	**Report:**	05-23
		Unit Weight	005-23
Project:	Proposed Multi-Family Development Wilton, CT	**Date:**	12/29/2023
Contractor:	SLR International Corporation	**Sample #:**	1124-23
Technician:	I.C	**Sample ID**	SLR-8

SOIL UNIT WEIGHT

Formula: M=(G-t)/V
M=bulk density of the aggregate, kg/m3 [lb./ft3]
G=mass of the aggregate plus the measure, kg [lb.]
T=mass of the measure, kg [lb.]
V=volume of the measure, m3 [ft3]
$V= \pi r^2 h$

Sample #	Material	Volume	Mass of Soil	Density
1124-23	1 ¼" Minus gravel with sand, little fines	0.007495659 [ft3]	0.9025725 lbs.	120.4 lb./ft3

Reported To: SLR International Corporation

Submitted By: Tri State Materials Testing Lab, LLC.

Paul J. Hessel, P.E.

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Making Sustainability Happen

Engineering Report - Floodplain Analysis

131 Danbury Road, Wilton, Connecticut

Proposed Multi-Family Development

Prepared by:

SLR International Corporation

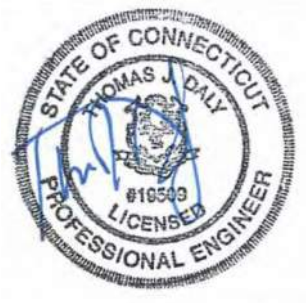
1 South Main Street, Waterbury, Vermont, 05676

SLR Project No.: 141.21543.00001

Client Reference No: 0001

Revised: February 13, 2024

November 27, 2023



Making Sustainability Happen

1.0 Floodplain Management Background

The project site (131 Danbury Rd, Wilton, CT) is located along the Norwalk River. A Flood Insurance Study (FIS) was originally completed for the Norwalk River (Town of Wilton) in 1982. The FIS was updated to a county-wide study for Fairfield County and is currently dated October 16, 2013, although the floodplain mapping continues to be based on the original hydraulic analysis that has not been restudied or updated.

2.0 Modeling

Copies of the input and output for the effective hydraulic model for the Norwalk River were obtained from the FEMA Engineering Library. The effective model was originally developed using HEC-2, the predecessor of the current modeling software known as HEC-RAS. The effective model obtained from FEMA was transferred into HEC-RAS to create a duplicate of the effective model for the floodplain analysis of the project. It should be noted that the vertical datum used in the effective model is the National Geodetic Vertical Datum of 1929 (NGVD29), therefore the data was converted to the North American Vertical Datum of 1988 (NAVD88) in the duplicate model. The conversion factor of 1.0 foot, as published in the FIS, was used to convert between the NGVD29 to NAVD88 datum. The effective HEC-2 modeling used NGVD29 to calculate flood profiles, however the water surface elevations from the effective model have been converted to NAVD88 in the most-recent FIS.

2.1 Duplicate Effective Model

The duplicate effective model was created to replicate the results published in the FIS. A portion of the original model that was obtained from the FEMA Engineering Library was used to create the duplicate effective model in HEC-RAS that included cross sections 15 through 30 (FEMA Lettered Sections N through O). The project site at 131 Danbury Rd falls between FEMA sections N and O, and more specifically between cross sections 27 and 28 from the effective HEC-2 model. The elevation data used to create the duplicate effective model were converted to the NAVD88 datum. The 100-year water surface elevation computed by the duplicate effective model was compared to the effective HEC-2 output and the data provided in the FIS Floodway Table (Table 2-1).

Table 2-1 Duplicate Effective Model Output (100-Year)

FIS CROSS SECTION IDENTIFIER	CALIBRATED MODEL CROSS SECTION NUMBER	WATER SURFACE ELEVATION (NAVD88)		
		HEC-2 Model Results	FIS Profile Data ^	Duplicate Effective
N	17	141.76	141.2	141.20
	18	141.18		141.22
	19	141.73		141.65
	20	142.06		141.98
	21	142.08		142.01
	22	142.22		141.89
	23	142.61		142.51
	24	142.76		142.56
	25	144.13		144.63
	26	144.93		145.21
	27	146.77	146.1	146.61
	28	146.56	146.7	146.84
	29	151.83		151.38
O	30	153.11	153.1	153.17
^ Flood elevation not at FEMA lettered cross sections where obtained from the profile panels in the FIS				

The peak discharge rates used for this analysis were obtained from Volume 1 of the FIS and match those used in the effective model. The flow rates are as follows:

Table 2-2 FIS Flow Rates at Site - Norwalk River at Kent Road

RETURN FREQUENCY (YEARS)	ANNUAL CHANCE PROBABILITY	FLOW RATE (CFS)
10	10%	2,980
50	2%	5,840
100	1%	7,455
500	0.2%	12,505

2.2 Corrected Model

After developing the duplicate effective model, a corrected effective model was developed to correct any erroneous errors in the duplicate effective model and calibrate the results to match

the FEMA data published in the FIS. For the corrected effective model, the following corrections were made:

1. Bridge bottom chord elevations were edited to achieve accurate no flow areas.
2. Effective flow zones were edited to better replicate site limitations due to buildings and bridges.

Table 2-2 Summary of HEC-RAS Model Output
Duplicate Effective vs. Corrected Effective (100-Year)

FIS CROSS SECTION IDENTIFIER	CALIBRATED MODEL CROSS SECTION NUMBER	WATER SURFACE ELEVATION (NAVD88)		
		Duplicate Effective	FIS Profile Data ^	Corrected Effective
N	17	141.20	141.2	141.20
	18	141.22		141.22
	19	141.65		141.65
	20	141.98		141.98
	21	142.01		141.92
	22	141.89		141.99
	23	142.51		142.68
	24	142.56		142.64
	25	144.63		144.58
	26	145.21		145.21
	27	146.61	146.1	146.08
	28	146.84	146.7	146.67
	29	151.38		151.12
O	30	153.17	153.1	153.13
^ Flood elevation not at FEMA lettered cross sections where obtained from the profile panels in the FIS				

2.3 Existing Conditions Model

To evaluate the impact of the proposed redevelopment, three cross sections were added to the corrected effective model through the 131 Danbury Rd property, identified as river stations 27.75, 27.5 and 27.25 in the model. These cross sections were added because no effective model cross sections existed at the project site. Topography for the new cross section inserted into the existing conditions model was developed using the best-available LiDAR contour date

as well as existing site survey data. Wet channel geometry (i.e. – below the water surface) was interpolated from the data at the bounding upstream and downstream cross sections.

2.4 Proposed Conditions Model

The cross sections that pass through the project site were updated to reflect the proposed changes at 131 Danbury Rd. Modifications made to create the proposed conditions model included proposed grading changes, removal of existing building, and addition of obstructions reflecting the ground floor parking area pillars, elevator shaft, and trash receptacle area. The proposed model reflects a conservative condition, projecting all obstructions in close proximity to the cross section. The first floor of the proposed building was not included in the model because flood levels do not approach this elevation. The model was rerun and compared to published FEMA data and existing conditions modelling results (Table 2-3).

Table 2-3 Summary of HEC-RAS Model Output
Corrected Effective vs. Proposed Conditions (100-Year)

FIS CROSS SECTION IDENTIFIER	CALIBRATED MODEL CROSS SECTION NUMBER	WATER SURFACE ELEVATION (NAVD88)		
		Duplicate Effective	FIS Profile Data ^	Corrected Effective
N	17	141.20	141.2	141.20
	18	141.22		141.22
	19	141.65		141.65
	20	141.98		141.98
	21	142.01		141.92
	22	141.89		141.99
	23	142.51		142.68
	24	142.56		142.64
	25	144.63		144.58
	26	145.21		145.21
	27	146.61	146.1	146.08
	27.25 *	---	146.4	146.13
	27.5 *	---	146.5	146.16
	27.75 *	---	146.6	146.20
	28	146.84	146.7	146.67
	29	151.38		151.12
O	30	153.17	153.1	153.13
* Denotes cross section that passes through the project site at 131 Danbury Rd				
^ Flood elevation not at FEMA lettered cross sections where obtained from the profile panels in the FIS				

2.5 2-Year Flood Analysis

An analysis of the 2-Year flood in the Norwalk River has been conducted to facilitate the design of stormwater management practices on the project site. The FEMA FIS does not include data or information related to a 2-Year storm, therefore, a hydrologic analysis was completed. The 2-Year flow rate was estimated by analyzing annual peak flow data collected at the Norwalk River at South Wilton gauge (USGS Gauge 01209700). This gauge has a 67 year record and is located just downstream of Kent Road, which coincides with a flow change location that was used in the FEMA effective model and is the basis of this floodplain analysis. The HEC-SSP

application published by the US Army Corps of Engineers was used to conduct the gage analysis (Appendix C). The analysis was conducted using the Bulletin 17B/C capabilities built into the HEC-SSP application.

A 2-Year peak discharge rate of 1,030 cfs was entered into the hydraulic model and used to estimate flood elevations in the Norwalk River (Table 2-3). The resulting water surface elevations for the 2-Year flood at the project site were used in the design of the proposed stormwater management system.

Table 2-4 Summary of HEC-RAS Model Output
2-Year Flood in the Norwalk River at the Project Site

MODEL CROSS SECTION NUMBER	PROPOSED CONDITIONS WATER SURFACE ELEVATION (NAVD88)
27.25 *	140.07
27.5 *	140.10
27.75 *	140.13
* Denotes cross section that passes through the project site at 131 Danbury Rd	

3.0 Results

Results of water surface elevation for the 100-Year and 10-Year storms were compared between existing and proposed conditions. These results are summarized in Tables 3-1 and 3-2:

Table 3-1 Comparison of Existing vs. Proposed Conditions (100-Year Storm)

FIS CROSS SECTION IDENTIFIER	MODEL CROSS SECTION NUMBER	WATER SURFACE ELEVATION (NAVD88)		
		Existing Conditions	Proposed Conditions	Difference
N	17	141.20	141.20	0.00
	18	141.22	141.22	0.00
	19	141.65	141.65	0.00
	20	141.98	141.98	0.00
	21	141.92	141.92	0.00
	22	141.99	141.99	0.00
	23	142.68	142.68	0.00
	24	142.64	142.64	0.00
	25	144.58	144.58	0.00
	26	145.21	145.21	0.00
	27	146.08	146.08	0.00
	27.25 *	146.13	146.13	0.00
	27.5 *	146.16	146.16	0.00
	27.75 *	146.20	146.20	0.00
	28	146.67	146.67	0.00
	29	151.12	151.12	0.00
O	30	153.13	153.13	0.00
* Denotes cross section that passes through the project site at 131 Danbury Rd				

Table 3-2 Comparison of Existing vs. Proposed Conditions (10-Year Storm)

FIS CROSS SECTION IDENTIFIER	MODEL CROSS SECTION NUMBER	WATER SURFACE ELEVATION (NAVD88)		
		Existing Conditions	Proposed Conditions	Difference
N	17	135.20	135.20	0.00
	18	135.24	135.24	0.00
	19	136.15	136.15	0.00
	20	137.17	137.17	0.00
	21	137.20	137.20	0.00
	22	139.89	139.89	0.00
	23	140.39	140.39	0.00
	24	140.32	140.32	0.00
	25	140.65	140.65	0.00
	26	142.70	142.70	0.00
	27	144.02	144.02	0.00
	27.25 *	144.05	144.05	0.00
	27.5 *	144.07	144.07	0.00
	27.75 *	144.08	144.08	0.00
	28	143.06	143.06	0.00
	29	147.77	147.77	0.00
O	30	151.53	151.53	0.00
* Denotes cross section that passes through the project site at 131 Danbury Rd				

As shown in Tables 3-1 and 3-2, there are no increases in flood elevation for the 100-year storm or the 10-year storm when comparing between the existing and proposed conditions.

4.0 Compliance with Local Floodplain Regulations

Section 29-9.F.7 of the Wilton Zoning Regulations requires the following:

k. Equal Conveyance: Within the floodplain, except those areas which are tidally influenced, as designated on the Flood Insurance Rate Map (FIRM) for the community, encroachments resulting from filling, new construction or substantial improvements involving an increase in footprint of the structure, are prohibited unless the applicant provides certification by a registered professional engineer demonstrating, with supporting hydrologic and hydraulic analyses performed in accordance with standard engineering practice, that such encroachments shall not result in any (0.00 feet) increase in flood levels (base flood elevation). Work within the

floodplain and the land adjacent to the floodplain, including work to provide compensatory storage shall not be constructed in such a way so as to cause an increase in flood stage or flood velocity.

l. Compensatory Storage: The water holding capacity of the floodplain, except those areas which are tidally influenced, shall not be reduced. Any reduction caused by filling, new construction or substantial improvements involving an increase in footprint to the structure, shall be compensated for by deepening and/or widening of the floodplain, storage shall be provided on-site, unless easements have been gained from adjacent property owners; it shall be provided within the same hydraulic reach and a volume not previously used for flood storage; it shall be hydraulically comparable and incrementally equal to the theoretical volume of flood water at each elevation, up to and including the 100-year flood elevation, which would be displaced by the proposed project. Such compensatory volume shall have an unrestricted hydraulic connection to the same waterway or water body. Compensatory storage can be provided off-site if approved by the municipality.

4.1 Equal Conveyance

There are no increases in the base flood elevation between the Existing and Proposed conditions (Tables 3-1 and 3-2), therefore the Equal Conveyance requirement has been met. In addition, the modeling results indicate that the proposed conditions Base Flood Elevation (BFE) will not exceed the effective BFE as published in the current FIS.

4.2 Compensatory Storage

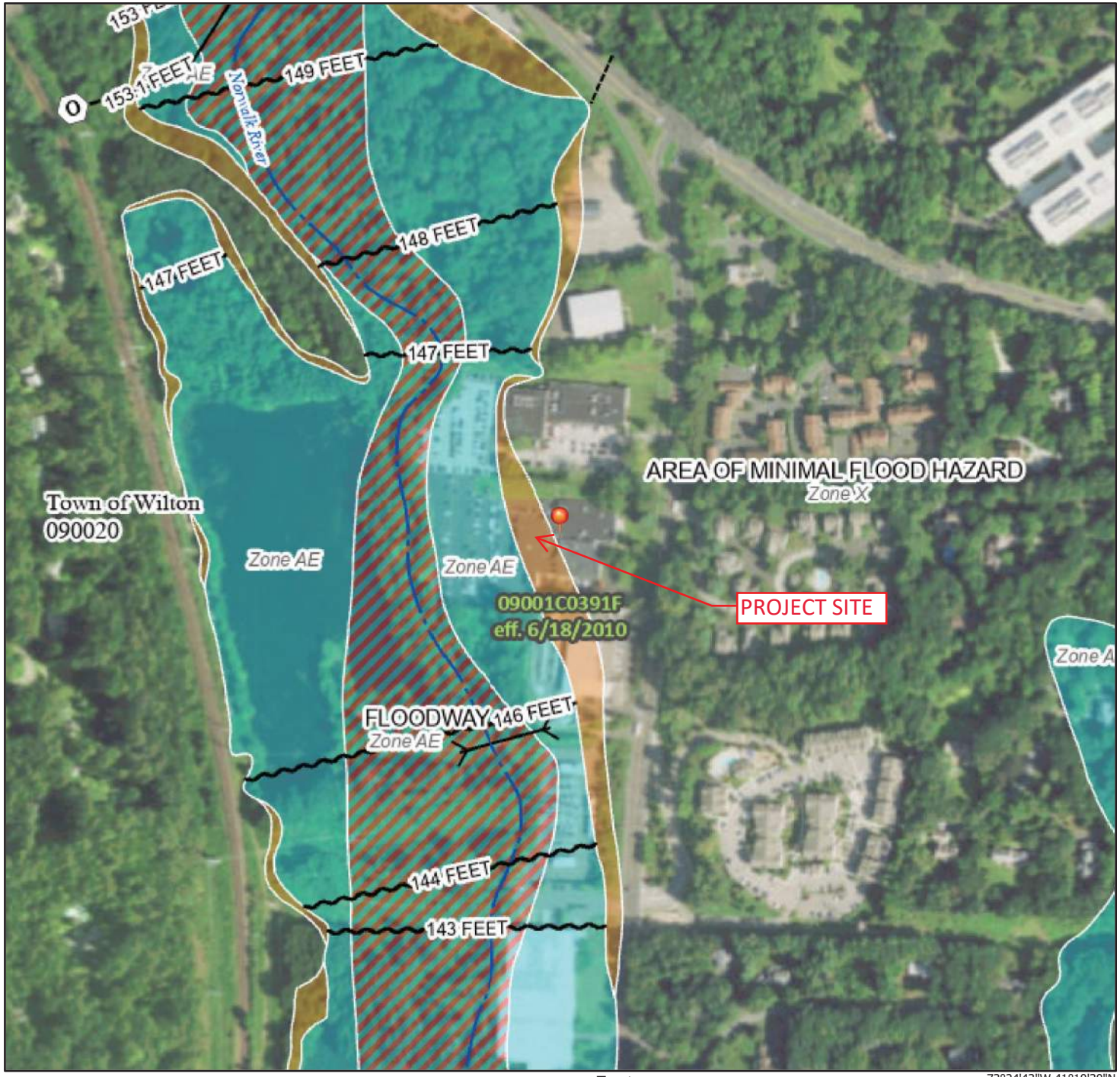
Revised grading has been proposed as part of the redevelopment of 131 Danbury Rd. This proposed earthwork results in a net cut of approximately 41 CY. Removal of the existing building and replacement with a ground level parking garage and raised building also results in a net increase of floodplain storage. Therefore, the proposed condition would not decrease floodplain storage.

Appendix A Figures

National Flood Hazard Layer FIRMette - FIG. 1

FEMA

73°25'21"W 41°10'57"N



73°24'43"W 41°10'30"N

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

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

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

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

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

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

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

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

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

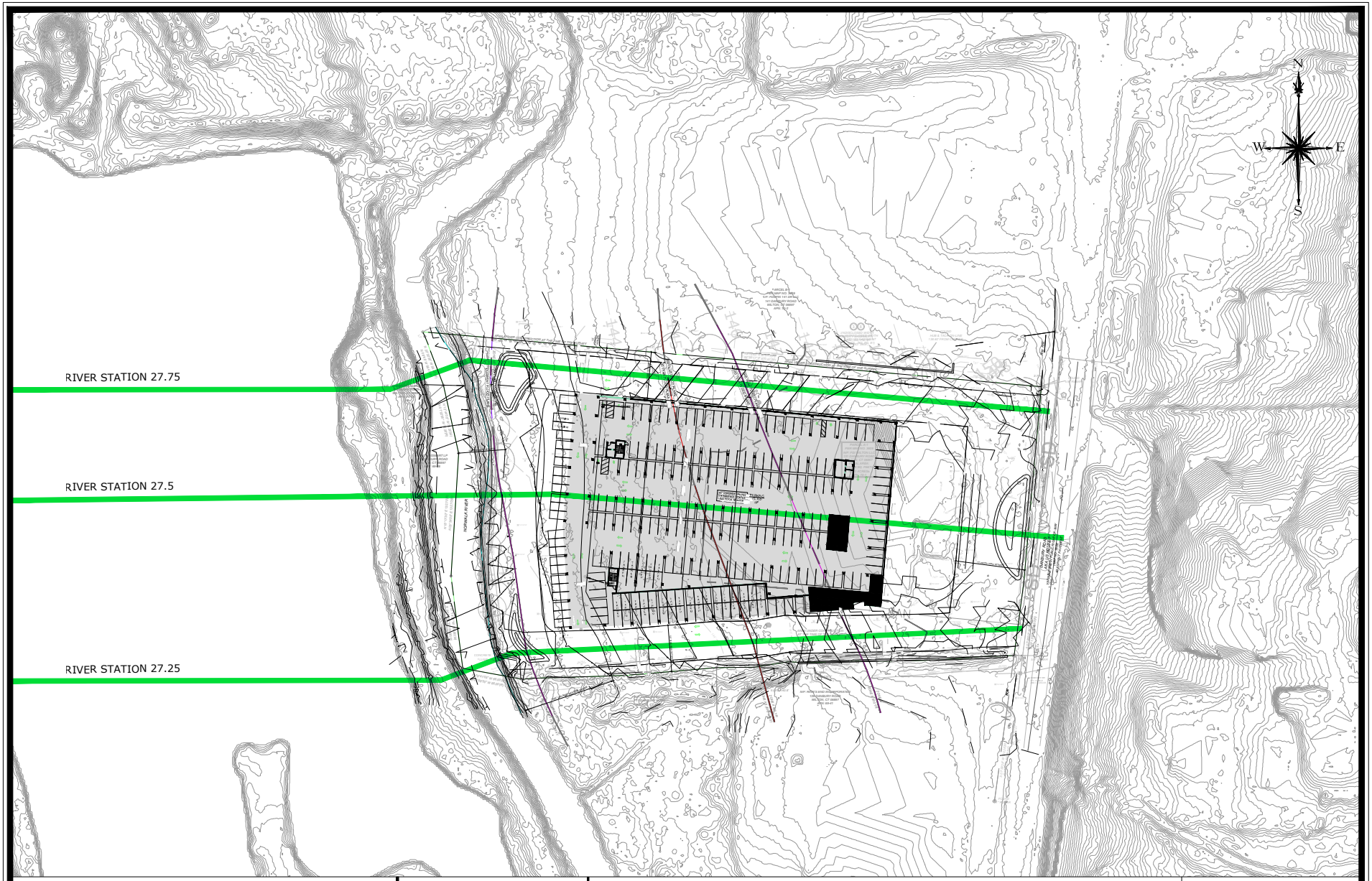
N

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

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

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/14/2023 at 11:10 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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



SLR

1 SOUTH MAIN STREET
WATERBURY, VT 05676
802.882.8335
SLRCONSULTING.COM

DATE	FEB. 13, 2024
SCALE	1"=20'
PROJ. NO.	21543.00001
DESIGNED	---
DRAWN	EMR
CHECKED	---

FLOODPLAIN CROSS SECTION MAP

PROPOSED MULTI-FAMILY DEVELOPMENT

131 DANBURY RD
WILTON, CT

REVISED: ---

0' 30' 60'
0 1/2" 1"
SCALE 1" = 60'H
1" = 6'V

FIG. 2

Drawing: W:\CADDESIGN\21543.00001-DE\CAD\EMR\FEMA_EXISTING.DWG Layout Tab:8.5X11H
Plotted by: ETHOMPSON On this date: Fri, 2024 February 9 – 5:03pm

Appendix B HEC-RAS Results

Existing Conditions HEC-RAS Output Table
February 13, 2024

HEC-RAS Plan: Ex_3XS_NAVD88_bmc River: RIVER-1 Reach: Reach-1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach-1	30	500-Year	12505.00	146.00	154.04	154.04	155.42	0.005597	14.04	2433.81	740.83	0.91
Reach-1	30	100-Year	7455.00	146.00	153.13	153.13	154.18	0.004389	11.40	1780.34	701.03	0.79
Reach-1	30	50-Year	5840.00	146.00	152.71	152.71	153.69	0.004131	10.57	1486.72	680.56	0.76
Reach-1	30	10-Year	2980.00	146.00	151.53	151.53	152.40	0.003798	8.77	754.72	495.37	0.70
Reach-1	29	500-Year	12505.00	141.20	153.06		154.42	0.001769	9.98	1759.83	251.68	0.54
Reach-1	29	100-Year	7455.00	141.20	151.12		151.93	0.001323	7.55	1303.44	221.28	0.45
Reach-1	29	50-Year	5840.00	141.20	150.26		150.91	0.001197	6.69	1116.92	211.30	0.42
Reach-1	29	10-Year	2980.00	141.20	147.77		148.20	0.001274	5.34	626.30	182.44	0.41
Reach-1	28	500-Year	12505.00	137.00	148.47	148.47	150.50	0.003341	13.95	1808.06	520.00	0.75
Reach-1	28	100-Year	7455.00	137.00	146.67	146.67	148.58	0.003318	12.31	1034.65	358.22	0.72
Reach-1	28	50-Year	5840.00	137.00	145.64	145.64	147.61	0.003697	11.97	722.41	259.18	0.75
Reach-1	28	10-Year	2980.00	137.00	143.06		144.59	0.004371	10.03	318.50	69.28	0.76
Reach-1	27.75	500-Year	12505.00	136.60	147.36		147.45	0.000375	4.04	6726.12	1105.85	0.24
Reach-1	27.75	100-Year	7455.00	136.60	146.20		146.24	0.000199	2.68	5590.23	881.34	0.17
Reach-1	27.75	50-Year	5840.00	136.60	145.75		145.78	0.000147	2.21	5201.60	837.01	0.14
Reach-1	27.75	10-Year	2980.00	136.60	144.08		144.09	0.000085	1.41	3914.49	709.58	0.11
Reach-1	27.5	500-Year	12505.00	136.20	147.30		147.40	0.000368	4.25	6398.68	819.29	0.24
Reach-1	27.5	100-Year	7455.00	136.20	146.16		146.21	0.000208	2.94	5472.13	814.88	0.18
Reach-1	27.5	50-Year	5840.00	136.20	145.72		145.76	0.000148	2.40	5116.34	794.60	0.15
Reach-1	27.5	10-Year	2980.00	136.20	144.07		144.08	0.000084	1.55	3856.73	710.17	0.11
Reach-1	27.25	500-Year	12505.00	135.65	147.24		147.33	0.000351	4.17	7084.03	1081.66	0.23
Reach-1	27.25	100-Year	7455.00	135.65	146.13		146.17	0.000200	2.91	5917.52	1011.52	0.17
Reach-1	27.25	50-Year	5840.00	135.65	145.70		145.73	0.000150	2.43	5485.88	968.92	0.15
Reach-1	27.25	10-Year	2980.00	135.65	144.05		144.07	0.000084	1.57	4040.00	797.72	0.11
Reach-1	27	500-Year	12505.00	134.90	147.17		147.24	0.000241	3.98	6956.87	1007.75	0.20
Reach-1	27	100-Year	7455.00	134.90	146.08		146.12	0.000146	2.90	5868.39	995.88	0.16
Reach-1	27	50-Year	5840.00	134.90	145.66		145.69	0.000111	2.47	5448.27	983.12	0.14
Reach-1	27	10-Year	2980.00	134.90	144.02		144.04	0.000079	1.85	3881.15	934.00	0.11
Reach-1	26	500-Year	12505.00	134.50	146.13	145.78	146.96	0.002173	11.46	3121.38	928.26	0.61
Reach-1	26	100-Year	7455.00	134.50	145.21	144.85	145.90	0.001675	9.49	2275.68	898.63	0.53
Reach-1	26	50-Year	5840.00	134.50	144.60	144.49	145.42	0.001843	9.55	1736.54	879.22	0.55
Reach-1	26	10-Year	2980.00	134.50	142.70	140.77	143.72	0.002149	8.89	539.60	294.36	0.57
Reach-1	25.5		Bridge									
Reach-1	25	500-Year	12505.00	134.50	145.35	145.35	146.42	0.002665	12.08	2407.63	903.32	0.66
Reach-1	25	100-Year	7455.00	134.50	144.58	144.58	145.43	0.002049	10.06	1718.75	878.58	0.57
Reach-1	25	50-Year	5840.00	134.50	144.15	144.15	144.98	0.001946	9.50	1341.34	862.90	0.56
Reach-1	25	10-Year	2980.00	134.50	140.65	140.65	142.94	0.006634	12.70	266.21	61.93	0.95
Reach-1	24	500-Year	12505.00	133.00	145.20		145.42	0.000555	5.93	4506.77	762.97	0.31
Reach-1	24	100-Year	7455.00	133.00	142.64		142.94	0.001162	7.25	2576.82	734.64	0.43
Reach-1	24	50-Year	5840.00	133.00	141.64		142.01	0.001393	7.33	1912.98	579.69	0.46
Reach-1	24	10-Year	2980.00	133.00	140.32		140.59	0.001129	5.85	1189.32	488.47	0.40
Reach-1	23	500-Year	12505.00	132.40	145.21		145.25	0.000134	3.00	8225.54	969.64	0.15
Reach-1	23	100-Year	7455.00	132.40	142.68		142.72	0.000144	2.68	5791.68	954.28	0.15
Reach-1	23	50-Year	5840.00	132.40	141.71		141.75	0.000151	2.57	4872.42	946.90	0.15
Reach-1	23	10-Year	2980.00	132.40	140.39		140.41	0.000095	1.84	3631.39	928.40	0.12
Reach-1	22	500-Year	12505.00	129.20	144.77	141.95	145.14	0.000700	7.89	4957.11	760.00	0.36
Reach-1	22	100-Year	7455.00	129.20	141.99	140.67	142.54	0.001037	8.36	2852.56	734.29	0.42
Reach-1	22	50-Year	5840.00	129.20	140.53	140.09	141.45	0.001639	9.65	1816.31	674.18	0.52
Reach-1	22	10-Year	2980.00	129.20	139.89	135.81	140.28	0.000675	5.94	1396.36	635.60	0.33
Reach-1	21.5		Bridge									
Reach-1	21	500-Year	12505.00	130.30	144.73		144.96	0.000651	6.34	5252.01	778.00	0.32
Reach-1	21	100-Year	7455.00	130.30	141.92		142.24	0.001022	6.69	3089.37	749.74	0.38
Reach-1	21	50-Year	5840.00	130.30	140.06		140.85	0.002528	9.11	1731.52	700.48	0.58
Reach-1	21	10-Year	2980.00	130.30	137.20	137.20	139.45	0.006849	12.06	268.27	493.77	0.91
Reach-1	20	500-Year	12505.00	130.30	144.75		144.88	0.000345	4.94	6446.51	778.00	0.24
Reach-1	20	100-Year	7455.00	130.30	141.98		142.11	0.000387	4.50	4314.00	751.04	0.24
Reach-1	20	50-Year	5840.00	130.30	140.31		140.47	0.000577	4.92	3083.59	712.56	0.29
Reach-1	20	10-Year	2980.00	130.30	137.17		137.55	0.001564	6.14	1125.33	489.58	0.44
Reach-1	19	500-Year	12505.00	130.00	144.42		144.60	0.000468	6.27	5560.84	639.00	0.29
Reach-1	19	100-Year	7455.00	130.00	141.65		141.80	0.000486	5.53	3812.12	603.84	0.29

HEC-RAS Plan: Ex_3XS_NAVD88_bmc River: RIVER-1 Reach: Reach-1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach-1	19	50-Year	5840.00	130.00	139.93		140.08	0.000544	5.25	2925.53	471.55	0.30
Reach-1	19	10-Year	2980.00	130.00	136.15		136.43	0.001551	6.37	1229.06	427.91	0.46
Reach-1	18	500-Year	12505.00	126.90	143.92		144.23	0.000469	5.92	3844.58	583.26	0.26
Reach-1	18	100-Year	7455.00	126.90	141.22		141.46	0.000403	4.87	2292.52	566.47	0.23
Reach-1	18	50-Year	5840.00	126.90	139.42		139.69	0.000467	4.77	1501.27	292.20	0.24
Reach-1	18	10-Year	2980.00	126.90	135.24		135.56	0.000887	4.92	704.29	146.31	0.31
Reach-1	17	500-Year	12505.00	126.90	143.90	137.11	144.22	0.000471	5.93	3834.43	583.14	0.26
Reach-1	17	100-Year	7455.00	126.90	141.20	134.91	141.45	0.000405	4.88	2283.83	566.26	0.23
Reach-1	17	50-Year	5840.00	126.90	139.40	134.08	139.67	0.000470	4.78	1496.05	291.59	0.24
Reach-1	17	10-Year	2980.00	126.90	135.20	131.70	135.52	0.000907	4.96	698.80	145.83	0.32

Proposed Conditions HEC-RAS Output Table
February 13, 2024

HEC-RAS Plan: Proposed_NAVD88_bmc River: RIVER-1 Reach: Reach-1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach-1	30	500-Year	12505.00	146.00	154.04	154.04	155.42	0.005597	14.04	2433.81	740.83	0.91
Reach-1	30	100-Year	7455.00	146.00	153.13	153.13	154.18	0.004389	11.40	1780.34	701.03	0.79
Reach-1	30	50-Year	5840.00	146.00	152.71	152.71	153.69	0.004131	10.57	1486.72	680.56	0.76
Reach-1	30	10-Year	2980.00	146.00	151.53	151.53	152.40	0.003798	8.77	754.72	495.37	0.70
Reach-1	29	500-Year	12505.00	141.20	153.06		154.42	0.001769	9.98	1759.83	251.68	0.54
Reach-1	29	100-Year	7455.00	141.20	151.12		151.93	0.001323	7.55	1303.44	221.28	0.45
Reach-1	29	50-Year	5840.00	141.20	150.26		150.91	0.001197	6.69	1116.92	211.30	0.42
Reach-1	29	10-Year	2980.00	141.20	147.77		148.21	0.001273	5.34	626.47	182.45	0.41
Reach-1	28	500-Year	12505.00	137.00	148.47	148.47	150.50	0.003341	13.95	1808.06	520.00	0.75
Reach-1	28	100-Year	7455.00	137.00	146.67	146.67	148.58	0.003318	12.31	1034.65	358.22	0.72
Reach-1	28	50-Year	5840.00	137.00	145.64	145.64	147.61	0.003697	11.97	722.41	259.18	0.75
Reach-1	28	10-Year	2980.00	137.00	143.06		144.59	0.004385	10.04	318.16	69.25	0.76
Reach-1	27.75	500-Year	12505.00	136.60	147.36	140.08	147.45	0.000364	4.27	6774.20	885.39	0.24
Reach-1	27.75	100-Year	7455.00	136.60	146.20	139.21	146.24	0.000190	2.84	5781.69	818.48	0.17
Reach-1	27.75	50-Year	5840.00	136.60	145.75	138.89	145.78	0.000140	2.35	5414.84	799.04	0.14
Reach-1	27.75	10-Year	2980.00	136.60	144.08	138.24	144.09	0.000080	1.53	4125.99	747.98	0.10
Reach-1	27.5	500-Year	12505.00	136.20	147.30		147.40	0.000373	4.27	6531.94	953.69	0.24
Reach-1	27.5	100-Year	7455.00	136.20	146.16		146.21	0.000213	2.97	5451.24	949.27	0.18
Reach-1	27.5	50-Year	5840.00	136.20	145.72		145.75	0.000152	2.42	5042.19	891.38	0.15
Reach-1	27.5	10-Year	2980.00	136.20	144.07		144.08	0.000085	1.56	3760.96	661.77	0.11
Reach-1	27.25	500-Year	12505.00	135.65	147.24	140.22	147.33	0.000354	4.14	6603.55	869.84	0.24
Reach-1	27.25	100-Year	7455.00	135.65	146.13	139.30	146.17	0.000196	2.84	5665.20	827.73	0.17
Reach-1	27.25	50-Year	5840.00	135.65	145.69	138.98	145.73	0.000145	2.36	5309.09	810.69	0.15
Reach-1	27.25	10-Year	2980.00	135.65	144.05	138.34	144.07	0.000080	1.50	4047.21	718.77	0.10
Reach-1	27	500-Year	12505.00	134.90	147.17		147.24	0.000241	3.98	6956.87	1007.75	0.20
Reach-1	27	100-Year	7455.00	134.90	146.08		146.12	0.000146	2.90	5868.39	995.88	0.16
Reach-1	27	50-Year	5840.00	134.90	145.66		145.69	0.000111	2.47	5448.27	983.12	0.14
Reach-1	27	10-Year	2980.00	134.90	144.02		144.04	0.000079	1.85	3881.15	934.00	0.11
Reach-1	26	500-Year	12505.00	134.50	146.13	145.78	146.96	0.002173	11.46	3121.38	928.26	0.61
Reach-1	26	100-Year	7455.00	134.50	145.21	144.85	145.90	0.001675	9.49	2275.68	898.63	0.53
Reach-1	26	50-Year	5840.00	134.50	144.60	144.49	145.42	0.001843	9.55	1736.54	879.22	0.55
Reach-1	26	10-Year	2980.00	134.50	142.70	140.77	143.72	0.002149	8.89	539.60	294.36	0.57
Reach-1	25.5		Bridge									
Reach-1	25	500-Year	12505.00	134.50	145.35	145.35	146.42	0.002665	12.08	2407.63	903.32	0.66
Reach-1	25	100-Year	7455.00	134.50	144.58	144.58	145.43	0.002049	10.06	1718.75	878.58	0.57
Reach-1	25	50-Year	5840.00	134.50	144.15	144.15	144.98	0.001946	9.50	1341.34	862.90	0.56
Reach-1	25	10-Year	2980.00	134.50	140.65	140.65	142.94	0.006634	12.70	266.21	61.93	0.95
Reach-1	24	500-Year	12505.00	133.00	145.20		145.42	0.000555	5.93	4506.77	762.97	0.31
Reach-1	24	100-Year	7455.00	133.00	142.64		142.94	0.001162	7.25	2576.82	734.64	0.43
Reach-1	24	50-Year	5840.00	133.00	141.64		142.01	0.001393	7.33	1912.98	579.69	0.46
Reach-1	24	10-Year	2980.00	133.00	140.32		140.59	0.001129	5.85	1189.32	488.47	0.40
Reach-1	23	500-Year	12505.00	132.40	145.21		145.25	0.000134	3.00	8225.54	969.64	0.15
Reach-1	23	100-Year	7455.00	132.40	142.68		142.72	0.000144	2.68	5791.68	954.28	0.15
Reach-1	23	50-Year	5840.00	132.40	141.71		141.75	0.000151	2.57	4872.42	946.90	0.15
Reach-1	23	10-Year	2980.00	132.40	140.39		140.41	0.000095	1.84	3631.39	928.40	0.12
Reach-1	22	500-Year	12505.00	129.20	144.77	141.95	145.14	0.000700	7.89	4957.11	760.00	0.36
Reach-1	22	100-Year	7455.00	129.20	141.99	140.67	142.54	0.001037	8.36	2852.56	734.29	0.42
Reach-1	22	50-Year	5840.00	129.20	140.53	140.09	141.45	0.001639	9.65	1816.31	674.18	0.52
Reach-1	22	10-Year	2980.00	129.20	139.89	135.81	140.28	0.000675	5.94	1396.36	635.60	0.33
Reach-1	21.5		Bridge									
Reach-1	21	500-Year	12505.00	130.30	144.73		144.96	0.000651	6.34	5252.01	778.00	0.32
Reach-1	21	100-Year	7455.00	130.30	141.92		142.24	0.001022	6.69	3089.37	749.74	0.38
Reach-1	21	50-Year	5840.00	130.30	140.06		140.85	0.002528	9.11	1731.52	700.48	0.58
Reach-1	21	10-Year	2980.00	130.30	137.20	137.20	139.45	0.006849	12.06	268.27	493.77	0.91
Reach-1	20	500-Year	12505.00	130.30	144.75		144.88	0.000345	4.94	6446.51	778.00	0.24
Reach-1	20	100-Year	7455.00	130.30	141.98		142.11	0.000387	4.50	4314.00	751.04	0.24
Reach-1	20	50-Year	5840.00	130.30	140.31		140.47	0.000577	4.92	3083.59	712.56	0.29
Reach-1	20	10-Year	2980.00	130.30	137.17		137.55	0.001564	6.14	1125.33	489.58	0.44
Reach-1	19	500-Year	12505.00	130.00	144.42		144.60	0.000468	6.27	5560.84	639.00	0.29
Reach-1	19	100-Year	7455.00	130.00	141.65		141.80	0.000486	5.53	3812.12	603.84	0.29

HEC-RAS Plan: Proposed_NAVD88_bmc River: RIVER-1 Reach: Reach-1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach-1	19	50-Year	5840.00	130.00	139.93		140.08	0.000544	5.25	2925.53	471.55	0.30
Reach-1	19	10-Year	2980.00	130.00	136.15		136.43	0.001551	6.37	1229.06	427.91	0.46
Reach-1	18	500-Year	12505.00	126.90	143.92		144.23	0.000469	5.92	3844.58	583.26	0.26
Reach-1	18	100-Year	7455.00	126.90	141.22		141.46	0.000403	4.87	2292.52	566.47	0.23
Reach-1	18	50-Year	5840.00	126.90	139.42		139.69	0.000467	4.77	1501.27	292.20	0.24
Reach-1	18	10-Year	2980.00	126.90	135.24		135.56	0.000887	4.92	704.29	146.31	0.31
Reach-1	17	500-Year	12505.00	126.90	143.90	137.11	144.22	0.000471	5.93	3834.43	583.14	0.26
Reach-1	17	100-Year	7455.00	126.90	141.20	134.91	141.45	0.000405	4.88	2283.83	566.26	0.23
Reach-1	17	50-Year	5840.00	126.90	139.40	134.08	139.67	0.000470	4.78	1496.05	291.59	0.24
Reach-1	17	10-Year	2980.00	126.90	135.20	131.70	135.52	0.000907	4.96	698.80	145.83	0.32

Proposed Conditions HEC-RAS Output Table - 2 Year Storm Only
February 13, 2024

HEC-RAS Plan: Proposed_2yr_NAVD88_bmc River: RIVER-1 Reach: Reach-1 Profile: 2-Year

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach-1	30	2-Year	1030.00	146.00	149.02	149.02	150.16	0.009554	8.60	125.33	72.25	0.98
Reach-1	29	2-Year	1030.00	141.20	145.34		145.53	0.001223	3.48	297.22	107.11	0.36
Reach-1	28	2-Year	1030.00	137.00	139.93	139.93	141.05	0.010071	8.49	123.54	57.78	1.00
Reach-1	27.75	2-Year	1030.00	136.60	140.13	137.64	140.14	0.000167	1.28	1579.01	543.46	0.13
Reach-1	27.5	2-Year	1030.00	136.20	140.10		140.11	0.000162	1.34	1549.58	509.78	0.13
Reach-1	27.25	2-Year	1030.00	135.65	140.07	137.73	140.08	0.000169	1.33	1573.87	538.16	0.13
Reach-1	27	2-Year	1030.00	134.90	139.98		140.02	0.000271	2.25	843.29	359.33	0.19
Reach-1	26	2-Year	1030.00	134.50	139.17	137.97	139.79	0.002619	6.50	180.02	54.17	0.56
Reach-1	25.5		Bridge									
Reach-1	25	2-Year	1030.00	134.50	138.78	137.94	139.50	0.003473	7.00	159.39	52.14	0.64
Reach-1	24	2-Year	1030.00	133.00	136.95	136.88	137.90	0.006259	8.58	194.31	121.38	0.84
Reach-1	23	2-Year	1030.00	132.40	135.72		136.03	0.002342	5.04	342.02	275.11	0.49
Reach-1	22	2-Year	1030.00	129.20	135.51	132.83	135.90	0.001048	5.03	210.25	66.66	0.38
Reach-1	21.5		Bridge									
Reach-1	21	2-Year	1030.00	130.30	135.10		135.73	0.002375	6.35	162.28	243.83	0.54
Reach-1	20	2-Year	1030.00	130.30	135.15		135.46	0.001549	4.67	329.90	250.45	0.41
Reach-1	19	2-Year	1030.00	130.00	133.41		133.84	0.003732	6.52	330.34	198.73	0.65
Reach-1	18	2-Year	1030.00	126.90	130.60		131.05	0.003661	5.40	195.44	70.17	0.55
Reach-1	17	2-Year	1030.00	126.90	130.34	129.64	130.88	0.005001	5.95	177.12	69.05	0.63

Appendix C Gage Analysis Results

Bulletin 17 Editor - Norwalk at South Wilton

Frequency Curve for: Norwalk River at South Wilton-

Percent Chance Exceedance	Computed Curve Flow in cfs	Confidence Limits Flow in cfs	
		0.05	0.95
0.2	10207.6	15533.2	7436.4
0.5	7619.5	11049.0	5747.1
1.0	6042.6	8439.8	4681.6
2.0	4735.6	6364.7	3770.2
4.0	3654.0	4721.5	2989.9
10.0	2505.0	3070.6	2123.3
20.0	1803.9	2128.7	1564.5
50.0	1029.4	1174.9	899.5
80.0	638.9	738.0	539.5
90.0	513.8	602.5	423.3
95.0	436.0	518.3	351.6
99.0	332.1	405.2	257.7

Distribution Parameters

Parameter	Value
Mean	3.038
Standard Dev	0.272
Station Skew	0.570
Regional Skew	
Weighted Skew	
Adopted Skew	0.570
EMA Estimate of MSE (G at-site)	
Grubbs-Beck Critical Value	

Events

Event	Number
Historic Events	0
High Outliers	1
Low Outliers	0
Zero Or Missing	0
Systematic Events	61
Historic Period	67
Equivalent Record Length (years)	

Bulletin 17B Frequency Analysis
08 Feb 2024 11:22 AM

--- Input Data ---
Analysis Name: Norwalk at South Wilton
Description:
Data Set Name: Norwalk River at South Wilton-
DSS File Name: W:\Design\20071.00003-DE\Comps\Hydrology\hec-ssp\Norwalk_River\Norwalk_River.dss
DSS Pathname: /NORWALK RIVER/SOUTH WILTON, CT/FLOW-ANNUAL PEAK/01jan1900/IR-CENTURY/USGS/
Report File Name: W:\Design\20071.00003-DE\Comps\Hydrology\hec-ssp\Norwalk_River\Bulletin17Results\Norwalk_at_South_Wilton\N
XML File Name: W:\Design\20071.00003-DE\Comps\Hydrology\hec-ssp\Norwalk_River\Bulletin17Results\Norwalk_at_South_Wilton\No
Start Date:
End Date:
Skew Option: Use Station Skew
Regional Skew: -Infinity
Regional Skew MSE: -Infinity
Plotting Position Type: Median
Upper Confidence Level: 0.05
Lower Confidence Level: 0.95
Use non-standard frequencies
Frequency: 0.2
Frequency: 0.5
Frequency: 1.0
Frequency: 2.0
Frequency: 4.0
Frequency: 10.0
Frequency: 20.0
Frequency: 50.0
Frequency: 80.0
Frequency: 90.0
Frequency: 95.0
Frequency: 99.0
Display ordinate values using 1 digits in fraction part of value
--- End of Input Data ---
--- Preliminary Results ---
<< Plotting Positions >>
Norwalk River at South Wilton-

Events Analyzed		Ordered Events			
	FLOW	Water	FLOW		Median
Day Mon Year	CFS	Rank	Year	CFS	Plot Pos
16 Oct 1955	12,000.0	1	1956	12,000.0*	1.14
06 Mar 1963	715.0	2	2007	3,490.0	2.77
25 Jan 1964	715.0	3	2011	2,440.0	4.40
08 Feb 1965	470.0	4	2006	2,340.0	6.03
01 Mar 1966	350.0	5	1980	2,300.0	7.65
07 Mar 1967	365.0	6	1979	1,940.0	9.28
29 May 1968	1,020.0	7	2021	1,870.0	10.91
25 Mar 1969	1,100.0	8	2010	1,830.0	12.54
02 Apr 1970	1,660.0	9	1989	1,800.0	14.17
14 Sep 1971	1,360.0	10	1999	1,720.0	15.80
19 Jun 1972	1,690.0	11	1987	1,710.0	17.43
03 Feb 1973	1,610.0	12	1984	1,690.0	19.06
21 Dec 1973	1,540.0	13	1972	1,690.0	20.68
27 Sep 1975	1,220.0	14	1970	1,660.0	22.31
28 Jan 1976	1,290.0	15	1973	1,610.0	23.94
22 Mar 1977	1,440.0	16	2022	1,540.0	25.57
26 Jan 1978	1,480.0	17	1974	1,540.0	27.20
21 Jan 1979	1,940.0	18	1996	1,510.0	28.83

10 Apr 1980	2,300.0	19	1983	1,480.0	30.46
20 Feb 1981	560.0	20	1978	1,480.0	32.08
05 Jun 1982	1,400.0	21	1977	1,440.0	33.71
10 Apr 1983	1,480.0	22	1997	1,400.0	35.34
05 Apr 1984	1,690.0	23	1982	1,400.0	36.97
27 Sep 1985	969.0	24	1991	1,360.0	38.60
26 Jan 1986	962.0	25	1971	1,360.0	40.23
04 Apr 1987	1,710.0	26	2004	1,340.0	41.86
20 Feb 1988	400.0	27	2008	1,320.0	43.49
16 May 1989	1,800.0	28	1976	1,290.0	45.11
20 Oct 1989	1,010.0	29	2014	1,280.0	46.74
24 Oct 1990	1,360.0	30	2019	1,270.0	48.37
18 Aug 1992	612.0	31	2009	1,230.0	50.00
23 Nov 1992	672.0	32	1975	1,220.0	51.63
28 Jan 1994	1,090.0	33	2020	1,200.0	53.26
20 Jan 1995	313.0	34	2018	1,190.0	54.89
27 Jan 1996	1,510.0	35	1969	1,100.0	56.51
02 Dec 1996	1,400.0	36	1994	1,090.0	58.14
24 Jan 1998	523.0	37	1968	1,020.0	59.77
17 Sep 1999	1,720.0	38	1990	1,010.0	61.40
07 Jun 2000	495.0	39	1985	969.0	63.03
30 Mar 2001	655.0	40	1986	962.0	64.66
14 May 2002	556.0	41	2005	892.0	66.29
02 Jan 2003	586.0	42	2015	831.0	67.92
18 Sep 2004	1,340.0	43	1964	715.0	69.54
03 Apr 2005	892.0	44	1963	715.0	71.17
23 Apr 2006	2,340.0	45	2012	707.0	72.80
16 Apr 2007	3,490.0	46	1993	672.0	74.43
07 Sep 2008	1,320.0	47	2001	655.0	76.06
12 Dec 2008	1,230.0	48	2013	618.0	77.69
14 Mar 2010	1,830.0	49	1992	612.0	79.32
07 Mar 2011	2,440.0	50	2003	586.0	80.94
08 Dec 2011	707.0	51	1981	560.0	82.57
12 Mar 2013	618.0	52	2002	556.0	84.20
01 May 2014	1,280.0	53	1998	523.0	85.83
09 Dec 2014	831.0	54	2017	517.0	87.46
16 Feb 2016	477.0	55	2000	495.0	89.09
04 Apr 2017	517.0	56	2016	477.0	90.72
16 Apr 2018	1,190.0	57	1965	470.0	92.35
24 Jan 2019	1,270.0	58	1988	400.0	93.97
13 Apr 2020	1,200.0	59	1967	365.0	95.60
01 Sep 2021	1,870.0	60	1966	350.0	97.23
26 Oct 2021	1,540.0	61	1995	313.0	98.86

* Outlier

<< Skew Weighting >>

Based on 61 events, mean-square error of station skew = 0.124
Mean-square error of regional skew = -?

<< Frequency Curve >>
Norwalk River at South Wilton-

Computed Curve FLOW, CFS	Percent Chance Exceedance	Confidence Limits 0.05 FLOW, CFS	0.95
10,207.6	0.2	15,533.2	7,436.4
7,619.5	0.5	11,049.0	5,747.1
6,042.6	1.0	8,439.8	4,681.6
4,735.6	2.0	6,364.7	3,770.2

```
|        3,654.0   |     4.0    |      4,721.5       2,989.9 |
|        2,505.0   |    10.0    |      3,070.6       2,123.3 |
|        1,803.9   |    20.0    |      2,128.7       1,564.5 |
|        1,029.4   |    50.0    |      1,174.9         899.5 |
|          638.9   |    80.0    |        738.0         539.5 |
|          513.8   |    90.0    |        602.5         423.3 |
|          436.0   |    95.0    |        518.3         351.6 |
|          332.1   |    99.0    |        405.2         257.7 |
|-----------------|-------------|----------------------------|
<< Systematic Statistics >>
Norwalk River at South Wilton-
-------------------------------------------------------------------
|       Log Transform:        |                              |
|         FLOW, CFS           |       Number of Events       |
|-----------------------------|------------------------------|
|  Mean                3.038  |  Historic Events          0  |
|  Standard Dev        0.272  |  High Outliers            0  |
|  Station Skew        0.570  |  Low Outliers             0  |
|  Regional Skew         ---  |  Zero Events              0  |
|  Weighted Skew         ---  |  Missing Events           0  |
|  Adopted Skew        0.570  |  Systematic Events       61  |
|-----------------------------|------------------------------|
--- End of Preliminary Results ---
-----------------------
<< High Outlier Test >>
-----------------------
 Based on 61 events, 10 percent outlier test deviate K(N) = 2.842
                    Computed high outlier test value = 6,463.8
        1 high outlier(s) identified above test value of 6,463.8
   * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
   * Note - Collection of historical information and         *
   *       comparison with similar data should be explored, *
   *       if not incorporated in this analysis.            *
   * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
    Statistics and frequency curve adjusted for 1 high outlier(s)
----------------------
<< Low Outlier Test >>
----------------------
 Based on 61 events, 10 percent outlier test deviate K(N) = 2.842
                     Computed low outlier test value = 184.52
          0 low outlier(s) identified below test value of 184.52
--- Final Results ---
<< Plotting Positions >>
Norwalk River at South Wilton-
----------------------------------------------------------------------
|     Events Analyzed        |          Ordered Events            |
|                    FLOW  |        Water        FLOW   Median  |
| Day Mon Year         CFS  |  Rank     Year         CFS  Plot Pos |
|---------------------------|------------------------------------|
|  16 Oct 1955    12,000.0  |    1      1956    12,000.0*   1.04   |
|  06 Mar 1963       715.0  |    2      2007     3,490.0    2.60   |
|  25 Jan 1964       715.0  |    3      2011     2,440.0    4.23   |
|  08 Feb 1965       470.0  |    4      2006     2,340.0    5.86   |
|  01 Mar 1966       350.0  |    5      1980     2,300.0    7.49   |
|  07 Mar 1967       365.0  |    6      1979     1,940.0    9.12   |
|  29 May 1968     1,020.0  |    7      2021     1,870.0   10.76   |
|  25 Mar 1969     1,100.0  |    8      2010     1,830.0   12.39   |
|  02 Apr 1970     1,660.0  |    9      1989     1,800.0   14.02   |
|  14 Sep 1971     1,360.0  |   10      1999     1,720.0   15.65   |
|  19 Jun 1972     1,690.0  |   11      1987     1,710.0   17.28   |
|  03 Feb 1973     1,610.0  |   12      1984     1,690.0   18.92   |
```

21 Dec 1973	1,540.0	13	1972	1,690.0	20.55
27 Sep 1975	1,220.0	14	1970	1,660.0	22.18
28 Jan 1976	1,290.0	15	1973	1,610.0	23.81
22 Mar 1977	1,440.0	16	2022	1,540.0	25.45
26 Jan 1978	1,480.0	17	1974	1,540.0	27.08
21 Jan 1979	1,940.0	18	1996	1,510.0	28.71
10 Apr 1980	2,300.0	19	1983	1,480.0	30.34
20 Feb 1981	560.0	20	1978	1,480.0	31.97
05 Jun 1982	1,400.0	21	1977	1,440.0	33.61
10 Apr 1983	1,480.0	22	1997	1,400.0	35.24
05 Apr 1984	1,690.0	23	1982	1,400.0	36.87
27 Sep 1985	969.0	24	1991	1,360.0	38.50
26 Jan 1986	962.0	25	1971	1,360.0	40.13
04 Apr 1987	1,710.0	26	2004	1,340.0	41.77
20 Feb 1988	400.0	27	2008	1,320.0	43.40
16 May 1989	1,800.0	28	1976	1,290.0	45.03
20 Oct 1989	1,010.0	29	2014	1,280.0	46.66
24 Oct 1990	1,360.0	30	2019	1,270.0	48.29
18 Aug 1992	612.0	31	2009	1,230.0	49.93
23 Nov 1992	672.0	32	1975	1,220.0	51.56
28 Jan 1994	1,090.0	33	2020	1,200.0	53.19
20 Jan 1995	313.0	34	2018	1,190.0	54.82
27 Jan 1996	1,510.0	35	1969	1,100.0	56.45
02 Dec 1996	1,400.0	36	1994	1,090.0	58.09
24 Jan 1998	523.0	37	1968	1,020.0	59.72
17 Sep 1999	1,720.0	38	1990	1,010.0	61.35
07 Jun 2000	495.0	39	1985	969.0	62.98
30 Mar 2001	655.0	40	1986	962.0	64.61
14 May 2002	556.0	41	2005	892.0	66.25
02 Jan 2003	586.0	42	2015	831.0	67.88
18 Sep 2004	1,340.0	43	1964	715.0	69.51
03 Apr 2005	892.0	44	1963	715.0	71.14
23 Apr 2006	2,340.0	45	2012	707.0	72.77
16 Apr 2007	3,490.0	46	1993	672.0	74.41
07 Sep 2008	1,320.0	47	2001	655.0	76.04
12 Dec 2008	1,230.0	48	2013	618.0	77.67
14 Mar 2010	1,830.0	49	1992	612.0	79.30
07 Mar 2011	2,440.0	50	2003	586.0	80.93
08 Dec 2011	707.0	51	1981	560.0	82.57
12 Mar 2013	618.0	52	2002	556.0	84.20
01 May 2014	1,280.0	53	1998	523.0	85.83
09 Dec 2014	831.0	54	2017	517.0	87.46
16 Feb 2016	477.0	55	2000	495.0	89.09
04 Apr 2017	517.0	56	2016	477.0	90.73
16 Apr 2018	1,190.0	57	1965	470.0	92.36
24 Jan 2019	1,270.0	58	1988	400.0	93.99
13 Apr 2020	1,200.0	59	1967	365.0	95.62
01 Sep 2021	1,870.0	60	1966	350.0	97.26
26 Oct 2021	1,540.0	61	1995	313.0	98.89

Note: Plotting positions based on historic period (H) = 67
Number of historic events plus high outliers (Z) = 1
Weighting factor for systematic events (W) = 1.1

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* Outlier

<< Skew Weighting >>

Based on 61 events, mean-square error of station skew = 0.124
Mean-square error of regional skew = -?

<< Frequency Curve >>

Making Sustainability Happen