STORMWATER MANAGEMENT REPORT

PROPOSED

BUNCE 1

SOLAR PROJECT

EAST MAIN STREET
NORTH CANAAN, CONNECTICUT
LITCHFIELD COUNTY

Prepared for:

LSE Indus LLC
40 Tower Lane - Suite 201
Avon, CT 06001

Prepared by:

All-Points Technology Corporation, P.C.
567 Vauxhall Street Extension – Suite 311
Waterford, CT 06385

October 2021

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Introduction

At the request of LSE Indus LLC, All-Points Technology Corporation, P.C. ("APT") has undertaken analysis of and design to address stormwater impacts resulting from development of a solar electric generating facility with a combined output of approximately 1.99 megawatts (MW) alternating current (AC) herein referred to as Bunce 1 Solar (the "Project") located at 81 East Main Street (US Highway 44) in North Canaan (the "Site").

The purpose of this report is to provide an analysis of the potential stormwater drainage impacts associated with the Project, as well as a description of the design to mitigate such potential stormwater drainage impacts. The design is intended to be in full compliance with the State and Town regulations while taking prevailing site conditions and practical factors into account. In addition, this report will also describe how the proposed Project adheres to the updated Connecticut Department of Energy & Environmental Projection ("CT DEEP") Appendix I, Stormwater Management at Solar Array Construction Projects, regulations.

Existing Site Conditions

The Site is located on three (3) irregular shaped privately-owned parcels in common ownership that encompasses approximately 67 acres. The Project will be entirely located within the middle parcel and portions will be split between existing wooded areas as well as existing grassed field areas.

The immediate Project area's existing topography gradually slopes generally in a north to south direction, with ground elevations ranging from approximately 920 feet above mean sea level ("AMSL") to approximately 720 feet AMSL.

Developed Site Conditions

The Project will be constructed in the middle portion of the Property. Due to the existing private air strip that runs east/west through the middle of the Property and existing access roads/driveways, the proposed facility is split into four (4) individually fenced solar arrays and appurtenances, including access roads as required, utilities, and stormwater management features. The four arrays are specifically located in the southern wooded area, the mostly cleared area east of the storage building, in the mixed field and wooded area west of the storage building, and in the wooded area just west of the main driveway. Overall, the Project proposed 5,902 425W photovoltaic modules between the four (4) individually fenced array areas and will occupy approximately ±7.6 acres with an additional ±4.0 acres of additional improvements and clearing for a total of ±11.6 acres of disturbance. The majority of the required grading is associated with the required stormwater management best management practices ("BMPs"). Access to the Site will be provided via an existing driveway off of East Main Street.

The proposed solar panels will be installed on a post driven ground mounted racking system, with minimal changes to the existing grades. As a result, the post-development site conditions will mimic the pre-developed site conditions with the addition of the necessary stormwater

management BMPs. Any existing ground cover that is disturbed during construction will be reseeded with a low growth seed mix.

Stormwater Management

Analysis Methodology

The hydrologic analysis was performed using the HydroCAD stormwater modeling system computer program developed by HydroCAD Software Solutions, LLC.

Hydrographs for each watershed were developed using the SCS Synthetic Unit Hydrograph Method with a Type III rainfall distribution. Hydrographs were developed for the NOAA Atlas 14, Volume 10, Version 3 Precipitation 2-, 25-, 50-, and 100-year storm event with rainfall depths of 3.11, 6.44, 7.37, and 8.41 inches respectively.

The existing and proposed drainage areas used in the calculations are illustrated on the Existing and Proposed Drainage Area Maps (EDA-1 & PDA-1). These maps and the corresponding HydroCAD output are attached.

Utilizing Appendix I Draft 10.1, this hydrologic analysis will reflect a reduction of the Hydrologic Soil Group ("HSG") present on-site by a half (1/2) step (e.g., half the difference between the runoff curve number for HSG B versus HSG C). This reduction, as indicated by CT DEEP, is intended to account for the compaction of soils that results from extensive machinery traffic during construction of the array. The Water Quality Volume ("WQV") for the site will be calculated assuming that the gravel surfaces, transformer pads, and solar panels that are located on slopes that are above 15% slope are effectively impervious cover. Additional Appendix I Draft 10.1 regulations and proposed compliance are presented in a later section with a checklist attached as Appendix D in this report.

Existing Drainage Patterns

The proposed Project area drains generally from the north to the south. The Site was modeled at three (3) Analysis Points ("AP-1", "AP-2", and "AP-3"), associated with the individually fenced solar array areas. Peak discharges have been computed at the points of study for the 2-, 25-, 50-, and 100-year storm events.

The Project area soils identified by the United States Department of Agriculture (USDA) Natural Resources Conservation Service consists of map unit symbols 61B, 73C, 90B, 90D, and 49B. Map unit symbols 61B, 73C, 90B, and 90D are have a HSG rating of "B". Map unit symbol 49B has a HSG rating of "C". Specific details for each soil Map Unit Symbol are provided in Appendix A.

The pre-developed discharges at the Analysis Point are tabulated in Table 1.

Table 1

Analysis Point	**Pre-developed Peak Storm Runoff (Q), cubic feet per second (cfs)**			
	2-year	**25-year**	**50-year**	**100-year**
AP-1	0.51	7.84	10.71	14.22
AP-2	0.95	9.60	12.69	16.47
AP-3	0.14	2.08	2.81	3.68

Proposed Drainage Patterns

The Project will require clearing and grubbing for the installation of the solar facility. Areas that will be disturbed will be seeded with a low growth seed mix. Hydrologically, the post-developed condition is designed to mimic the pre-developed condition. The change in cover type from a wooded condition to a fully stabilized low growth meadow condition with the half-drop (1/2) in HSG results in a slightly higher curve number. Therefore, five (5) individual stormwater management basins are proposed to manage the post-development runoff to be less than that of the pre-development runoff. Existing upstream drainage that would hit the proposed array areas will be managed with proposed mulched diversion berms to be installed immediately upstream of the fenced facility areas as needed.

Water quality volume treatment is proposed in basins B-1A and B-1B to treat the required water quality volume needed for the proposed impervious surfaces associated with the gravel access, transformer pads.

Since the proposed development mimics the existing conditions, the post-development condition was modeled using the same Analysis Points. Peak discharges have been computed at the point of study for the 2-year, 25-year, 50-year, and 100-year storm events. The post-development discharges at each point of study are tabulated in Table 1.

Table 2

Analysis Point	**Post-developed Peak Storm Runoff (Q), cubic feet per second (cfs)**			
	2-year	**25-year**	**50-year**	**100-year**
AP-1	0.38	3.94	5.61	8.33
AP-2	0.48	7.43	11.25	15.46
AP-3	0.10	1.46	2.24	3.21

The reduction in runoff achieved by the post-development discharges in comparison with the pre-development discharges are tabulated in Table 3.

Table 3

Analysis Point	**Peak Storm Runoff (Q) Comparison Pre- and Post-, cubic feet per second (cfs)**			
	2-year	**25-year**	**50-year**	**100-year**
AP-1	-0.13	-3.9	-5.1	-5.89
AP-2	-0.47	-2.17	-1.44	-1.01
AP-3	-0.04	-0.62	-0.57	-0.47

Appendix I Design Regulations/Compliance

The following identifies and details the regulations and proposed compliance measures within Appendix I that pertain specifically to civil, stormwater, and erosion control designs. Additionally, a checklist of the same is available in Appendix D.

(I) Design and construction requirements:

1. Roadways, gravel surfaces, transformer pads are considered effective impervious cover for the purposes of calculating the WQV. The proposed solar panels that are proposed within existing and post-construction slopes that are less than 15% are not considered impervious cover for the purposes of calculating the WQV because the following have been met:
    a. Vegetative areas between the rows of solar panels have a width of 12.5 feet which is greater than the solar panel width of 12.4 feet.
    b. The majority of the proposed solar panels arrays are designed to follow the existing slopes to minimize the potential for channelizing runoff.
    c. The Project meets (iv) of this requirement as the plan includes specific engineered phased construction plans and detailed erosion control measures.
    d. The panels are spaced and provide a minimum height of 3 feet from the ground to provide growth of native vegetation.
2. Setback and buffer requirements have been met following the below:
    a. See subsection requirements below:
        i. No wetlands or waters are located within 100 feet of the proposed solar facility area. No solar panels are located within the 50-foot setback of any property boundary that is located downgradient of the construction activity.
        ii. No wetlands or waters are located within 100 feet of the proposed solar facility area.
        iii. A 10-foot buffer is maintained between the proposed access road and electrical interconnection path.
    b. No wetland or waters are located within 100 feet of the proposed solar facility area.

   c. The existing wetlands and waters were delineated by and APT Registered Soil Scientist in April and June of 2021. The locations delineated resources as well as buffers are present on the development plans.
3. The lowest vertical clearance of the solar panels above the ground is proposed to be 3 feet.

II. Design requirements for post-construction stormwater management measures.

1. Post-construction stormwater control measures are designed and will be constructed to provide permanent stabilization and non-erosive conveyance of runoff on the site.
2. The orientation of the panels follows the existing slopes on the site to the extent practicable.
3. The hydrologic analysis has been completed as describe above, with the following details:
   a. The Project evaluates and controls the 2, 25, 50, and 100-year 24-hour rainfall events in accordance with the Stormwater Quality Manual. Maximum sheet flow was kept to 100 feet and shallow concentrated flows are calculated using values for grassed waterways within HydroCAD.
   b. NRCS soil mapping was used for the stormwater/erosion control design.
   c. The required half-drop (1/2) in HSG for the facility area has been included in the stormwater calculations and design for the proposed stormwater management BMPs to provide a decrease in post-development runoff in comparison to pre-development runoff.
   d. Pre-and post-development drainage area maps are provided in Appendices B and C.
   e. The analysis above demonstrates that the Project will have no net increase in peak flows, erosive velocities or volumes, or adverse impacts to downstream properties.

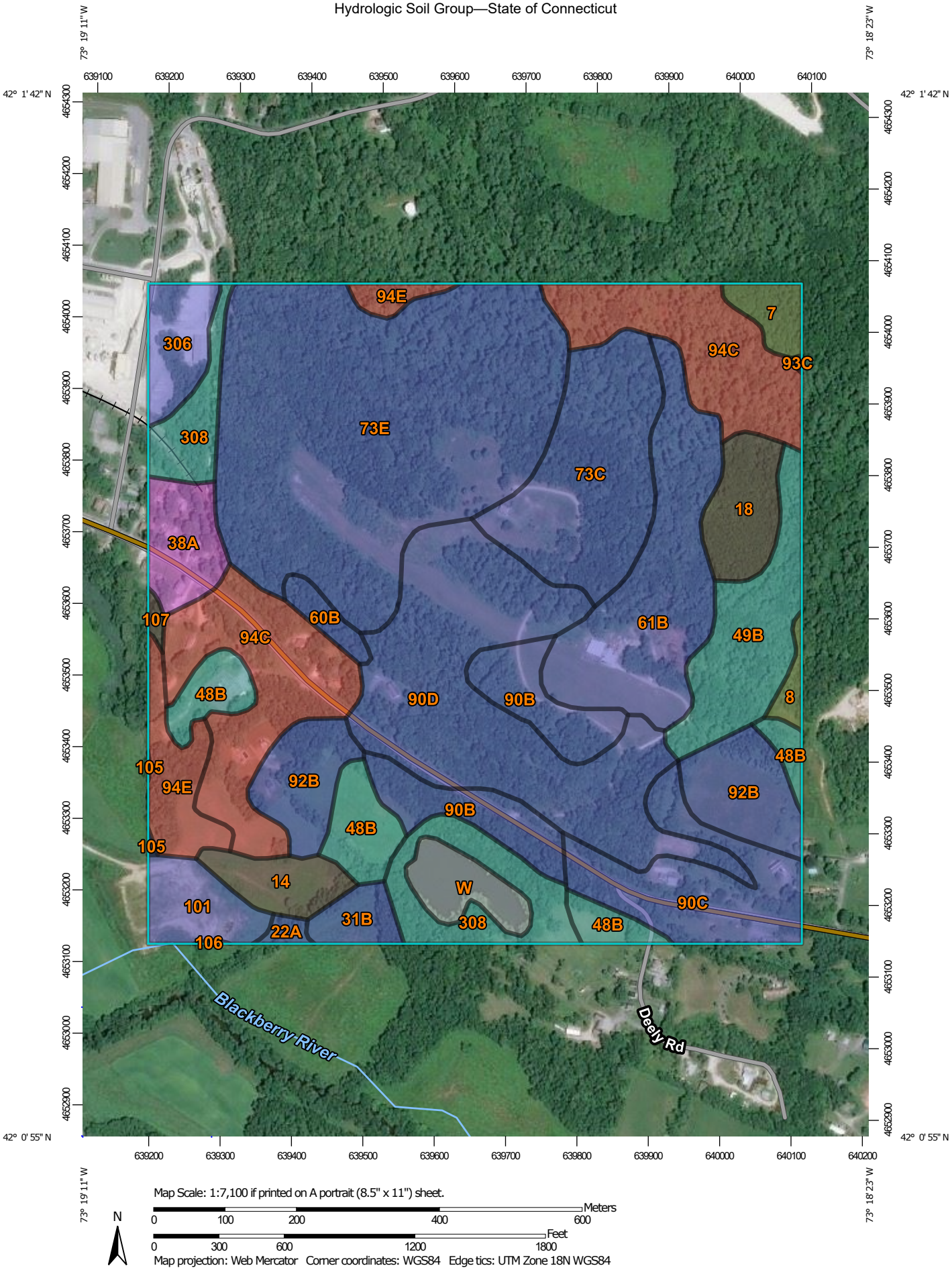
Sediment and Erosion Control During Construction

The Project intends to use a phased approach for construction and proposed to provide sediment and erosion control via tight management of drainage areas. For drainage areas that are under 1.0-acre, sediment and erosion control will be provided by perimeter compost filter sock with wings as needed. For drainage areas that are between 1.0 and 5.0 acres, sediment and erosion control will be provided by temporary sediment traps, specifically TST-1A and TST-1B which will be cleaned and converted to the permanent basins B-1A and B-1B respectively.

Conclusion

The stormwater management for the proposed site has been designed such that the post-development peak discharges to the waters of the State of Connecticut for the 2-, 25-, 50-, and 100- year storm events are less than the pre-development peak discharges. In addition, the Project adheres to the regulations and guidelines presented by CT DEEP's Appendix I Draft 10.1 as described above. As a result, the proposed solar array will not result in any adverse conditions to the surrounding areas and properties.

APPENDIX A: NRCS SOIL SURVEY



Map Scale: 1:7,100 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 300 600 1200 1800

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.

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 20, Jun 9, 2020

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

Date(s) aerial images were photographed: Aug 23, 2018—Sep 17, 2019

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
7	Mudgepond silt loam	C/D	1.9	0.9%
8	Mudgepond and Alden soils, extremely stony	C/D	0.9	0.4%
14	Fredon silt loam	B/D	3.3	1.6%
18	Catden and Freetown soils, 0 to 2 percent slopes	B/D	4.5	2.1%
22A	Hero gravelly loam, 0 to 3 percent slopes	B	0.5	0.3%
31B	Copake fine sandy loam, 3 to 8 percent slopes	B	2.1	1.0%
38A	Hinckley loamy sand, 0 to 3 percent slopes	A	4.2	2.0%
48B	Georgia and Amenia silt loams, 2 to 8 percent slopes	C	7.8	3.7%
49B	Georgia and Amenia silt loams, 3 to 8 percent slopes, very stony	C	8.7	4.1%
60B	Canton and Charlton fine sandy loams, 3 to 8 percent slopes	B	1.4	0.6%
61B	Canton and Charlton fine sandy loams, 0 to 8 percent slopes, very stony	B	15.0	7.2%
73C	Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky	B	14.0	6.7%
73E	Charlton-Chatfield complex, 15 to 45 percent slopes, very rocky	B	43.5	20.8%
90B	Stockbridge loam, 3 to 8 percent slopes	B	8.6	4.1%
90C	Stockbridge loam, 8 to 15 percent slopes	B	9.8	4.7%
90D	Stockbridge loam, 15 to 25 percent slopes	B	25.6	12.2%
92B	Nellis fine sandy loam, 3 to 8 percent slopes	B	9.7	4.7%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
93C	Nellis fine sandy loam, 3 to 15 percent slopes, very stony	B	0.1	0.0%
94C	Farmington-Nellis complex, 3 to 15 percent slopes, very rocky	D	22.5	10.7%
94E	Farmington-Nellis complex, 15 to 35 percent slopes, very rocky	D	5.4	2.6%
101	Occum fine sandy loam	B	3.9	1.9%
105	Hadley silt loam	B	0.1	0.0%
106	Winooski silt loam	C	0.0	0.0%
107	Limerick and Lim soils	B/D	0.3	0.2%
306	Udorthents-Urban land complex	B	3.7	1.8%
308	Udorthents, smoothed	C	8.7	4.2%
W	Water		3.2	1.5%
Totals for Area of Interest			**209.4**	**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

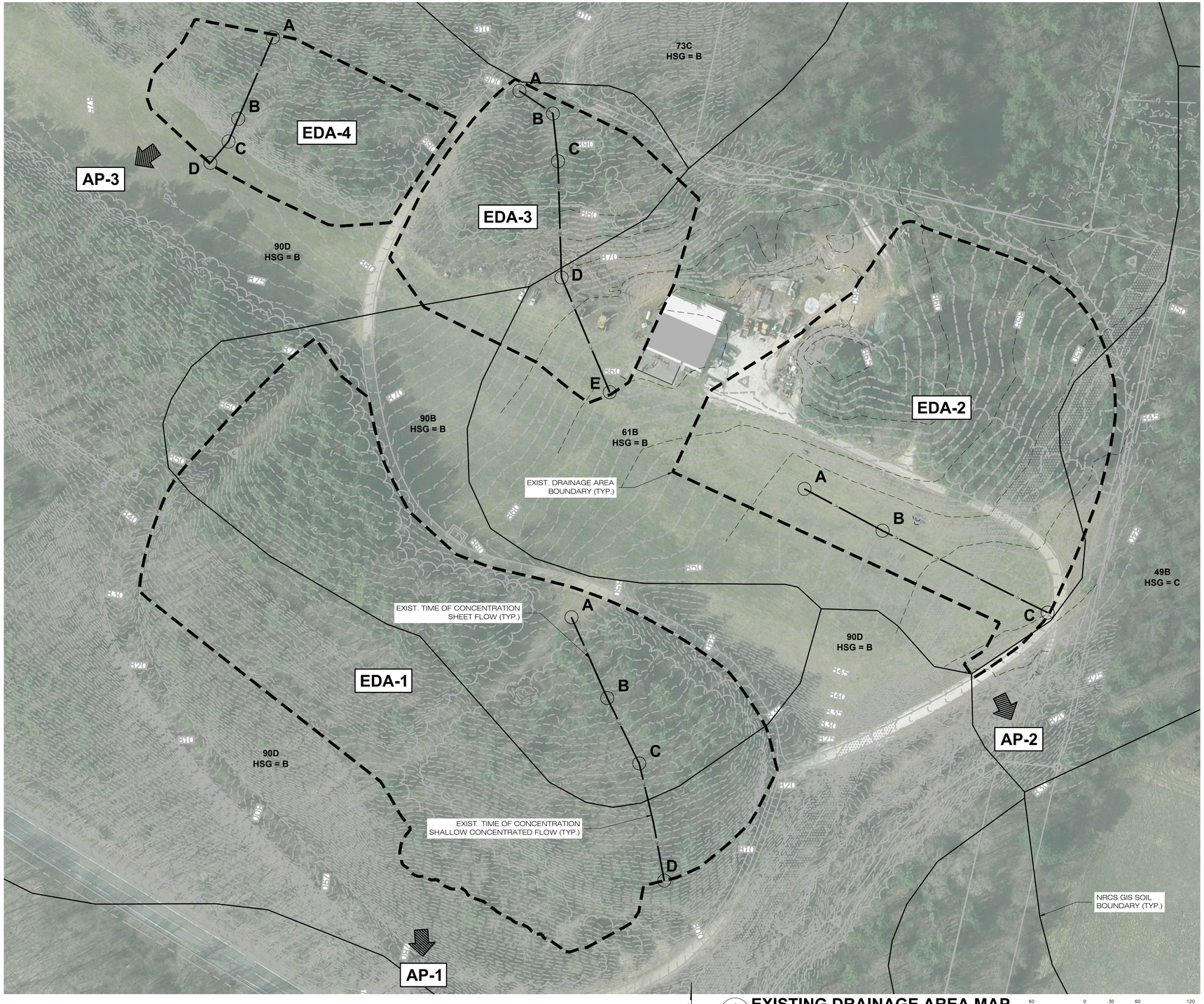
APPENDIX B: EXISTING DRAINAGE AREA MAP (EDA-1) & HYDROLOGIC COMPUTATION (HYDROCAD)

EXISTING DRAINAGE AREAS

	TOTAL AREA (ACRES)	COMPOSITE CN	TC (MINS.)
EDA-1	5.280	56	15.4
EDA-2	3.287	61	11.2
EDA-3	1.627	58	15.1
EDA-4	1.133	57	10.1

EXISTING CONDITION PEAK FLOWS

ANALYSIS POINT	2-YEAR (CFS)	25-YEAR (CFS)	50-YEAR (CFS)	100-YEAR (CFS)
AP-1	0.51	7.84	10.71	14.22
AP-2	0.95	9.60	12.69	16.47
AP-3	0.14	2.08	2.81	3.68



1 / EDA-1 **EXISTING DRAINAGE AREA MAP**
SCALE : 1" = 60'-0"

60 0 30 60 120
(IN FEET) 1 inch = 60 ft.

LSE INDUS LLC

40 TOWER LANE, SUITE 201
AVON, CT, 06001

ALL-POINTS TECHNOLOGY CORPORATION

567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PHONE: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

CSC PERMIT SET

NO	DATE	REVISION
0	10/15/21	FOR REVIEW: KAM
1		
2		
3		
4		
5		
6		

DESIGN PROFESSIONAL OF RECORD

PROF: KEVIN A. MCCAFFERY, P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.
ADD: 567 VAUXHALL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385

OWNER: JOHN BUNCE

ADDRESS: 81 EAST MAIN ST NORTH CANAAN, CT

BUNCE 1 SOLAR

SITE ADDRESS: 81 EAST MAIN ST NORTH CANAAN, CT

APT FILING NUMBER: CT606140

DRAWN BY: JT

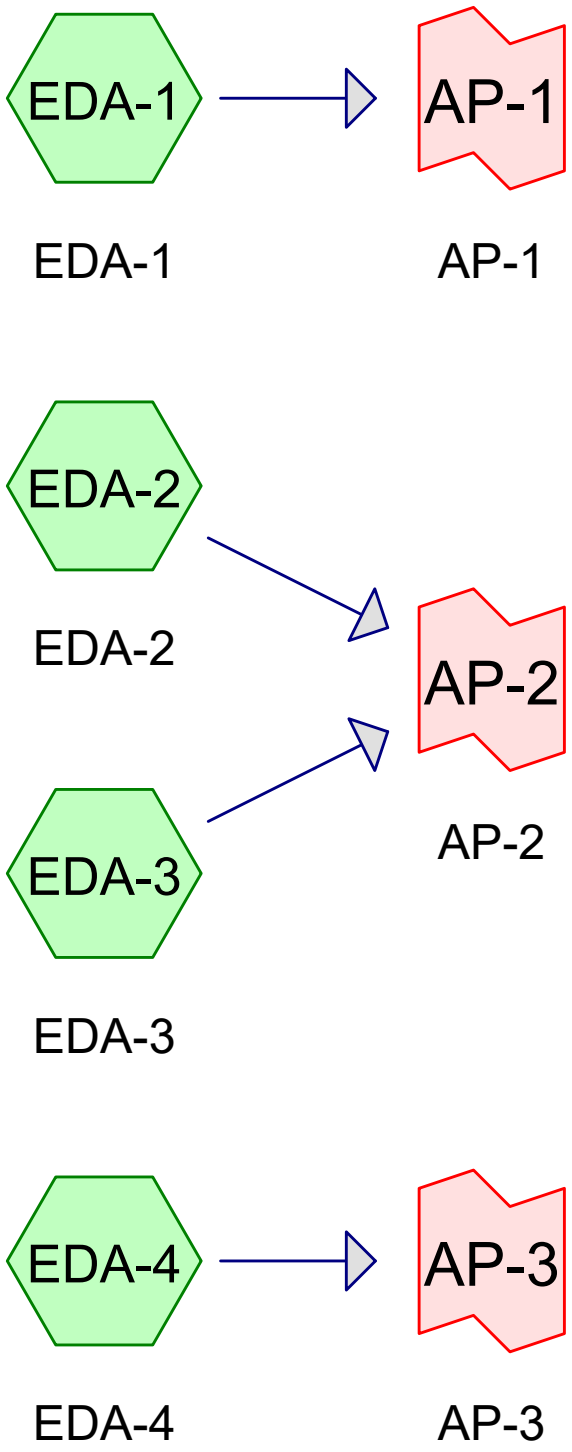
DATE: 10/15/21 CHECKED BY: KAM

SHEET TITLE:

EXISTING DRAINAGE AREA MAP

SHEET NUMBER:

EDA-1



Subcat Reach Pond Link

Routing Diagram for CT606140_Bunce - EX - Rev0
Prepared by Microsoft, Printed 10/14/2021

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.649	61	>75% Grass cover, Good, HSG B (EDA-1, EDA-2, EDA-3, EDA-4)
0.173	74	>75% Grass cover, Good, HSG C (EDA-2)
2.088	58	Meadow, non-grazed, HSG B (EDA-2, EDA-3)
0.169	98	Paved parking, HSG B (EDA-2)
6.226	55	Woods, Good, HSG B (EDA-1, EDA-2, EDA-3, EDA-4)
0.022	70	Woods, Good, HSG C (EDA-2)
11.327	**58**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
11.132	HSG B	EDA-1, EDA-2, EDA-3, EDA-4
0.195	HSG C	EDA-2
0.000	HSG D	
0.000	Other	
11.327		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	2.649	0.173	0.000	0.000	2.822	>75% Grass cover, Good	EDA-1, EDA-2, EDA-3, EDA-4
0.000	2.088	0.000	0.000	0.000	2.088	Meadow, non-grazed	EDA-2, EDA-3
0.000	0.169	0.000	0.000	0.000	0.169	Paved parking	EDA-2
0.000	6.226	0.022	0.000	0.000	6.248	Woods, Good	EDA-1, EDA-2, EDA-3, EDA-4
0.000	**11.132**	**0.195**	**0.000**	**0.000**	**11.327**	**TOTAL AREA**	

Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment EDA-1: EDA-1 Runoff Area=5.280 ac 0.00% Impervious Runoff Depth=0.25"
Flow Length=318' Tc=15.4 min CN=56 Runoff=0.51 cfs 0.111 af

Subcatchment EDA-2: EDA-2 Runoff Area=3.287 ac 5.14% Impervious Runoff Depth=0.41"
Flow Length=308' Tc=11.2 min CN=61 Runoff=0.77 cfs 0.112 af

Subcatchment EDA-3: EDA-3 Runoff Area=1.627 ac 0.00% Impervious Runoff Depth=0.31"
Flow Length=373' Tc=15.1 min CN=58 Runoff=0.22 cfs 0.042 af

Subcatchment EDA-4: EDA-4 Runoff Area=1.133 ac 0.00% Impervious Runoff Depth=0.28"
Flow Length=160' Tc=10.1 min CN=57 Runoff=0.14 cfs 0.026 af

Link AP-1: AP-1 Inflow=0.51 cfs 0.111 af
Primary=0.51 cfs 0.111 af

Link AP-2: AP-2 Inflow=0.95 cfs 0.154 af
Primary=0.95 cfs 0.154 af

Link AP-3: AP-3 Inflow=0.14 cfs 0.026 af
Primary=0.14 cfs 0.026 af

Total Runoff Area = 11.327 ac Runoff Volume = 0.291 af Average Runoff Depth = 0.31"
98.51% Pervious = 11.158 ac 1.49% Impervious = 0.169 ac

Summary for Subcatchment EDA-1: EDA-1

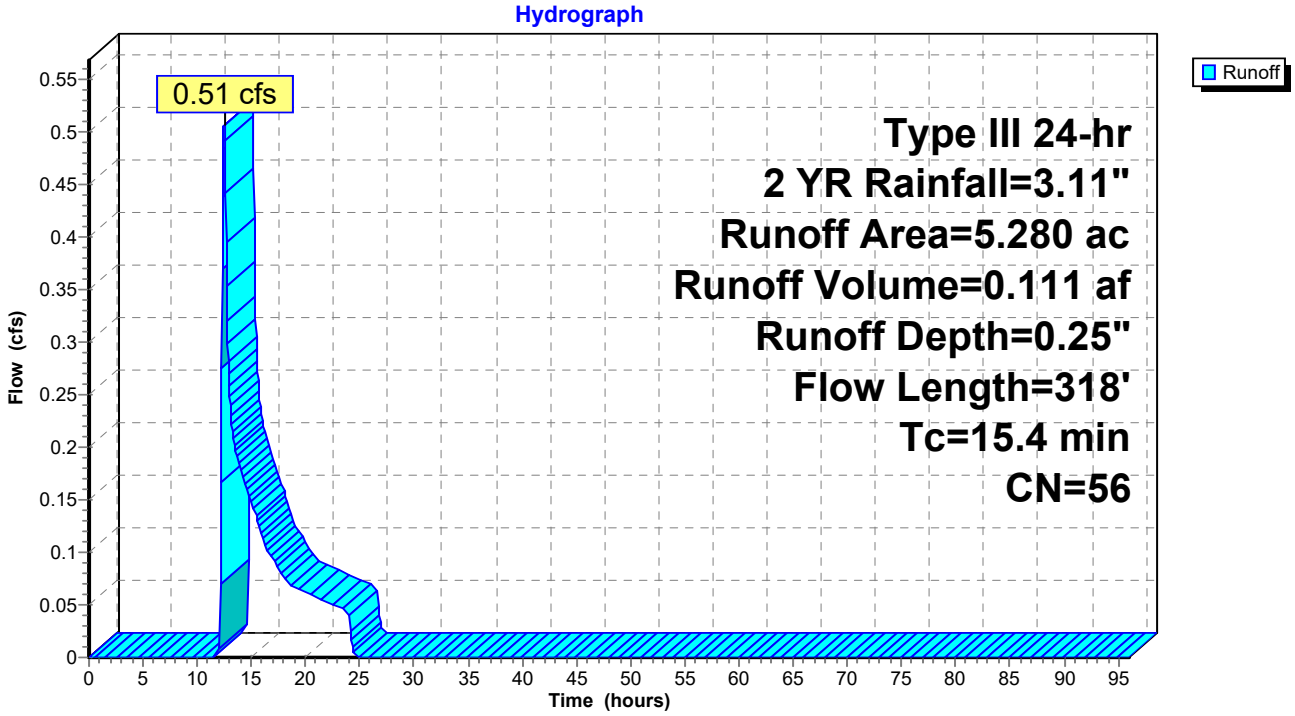
Runoff = 0.51 cfs @ 12.47 hrs, Volume= 0.111 af, Depth= 0.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.11"

Area (ac)	CN	Description
4.430	55	Woods, Good, HSG B
0.850	61	>75% Grass cover, Good, HSG B
5.280	56	Weighted Average
5.280		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	100	0.0694	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.09"
0.9	82	0.0837	1.45		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
1.2	136	0.1448	1.90		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
15.4	318	Total			

Subcatchment EDA-1: EDA-1



Summary for Subcatchment EDA-2: EDA-2

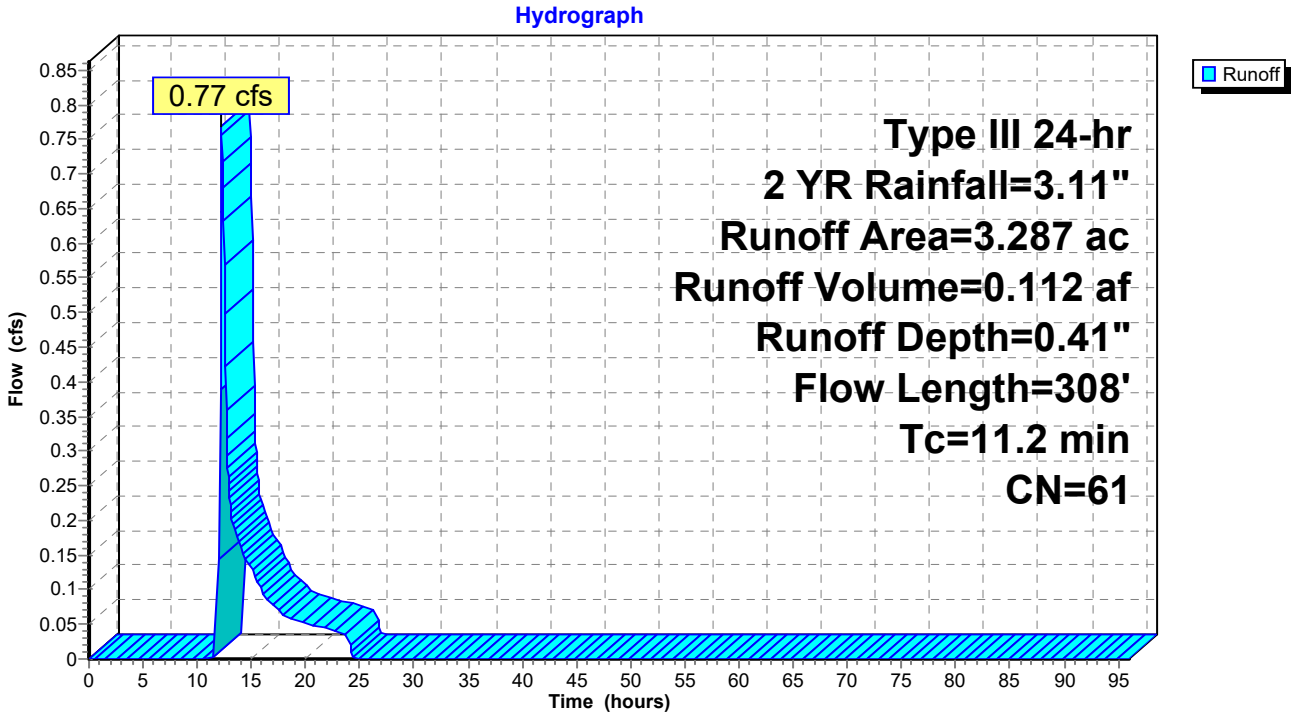
Runoff = 0.77 cfs @ 12.23 hrs, Volume= 0.112 af, Depth= 0.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.11"

Area (ac)	CN	Description
0.566	55	Woods, Good, HSG B
1.271	58	Meadow, non-grazed, HSG B
1.086	61	>75% Grass cover, Good, HSG B
0.169	98	Paved parking, HSG B
0.022	70	Woods, Good, HSG C
0.173	74	>75% Grass cover, Good, HSG C
3.287	61	Weighted Average
3.118		94.86% Pervious Area
0.169		5.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.0203	0.17		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.09"
1.3	208	0.0326	2.71		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
11.2	308	Total			

Subcatchment EDA-2: EDA-2



Summary for Subcatchment EDA-3: EDA-3

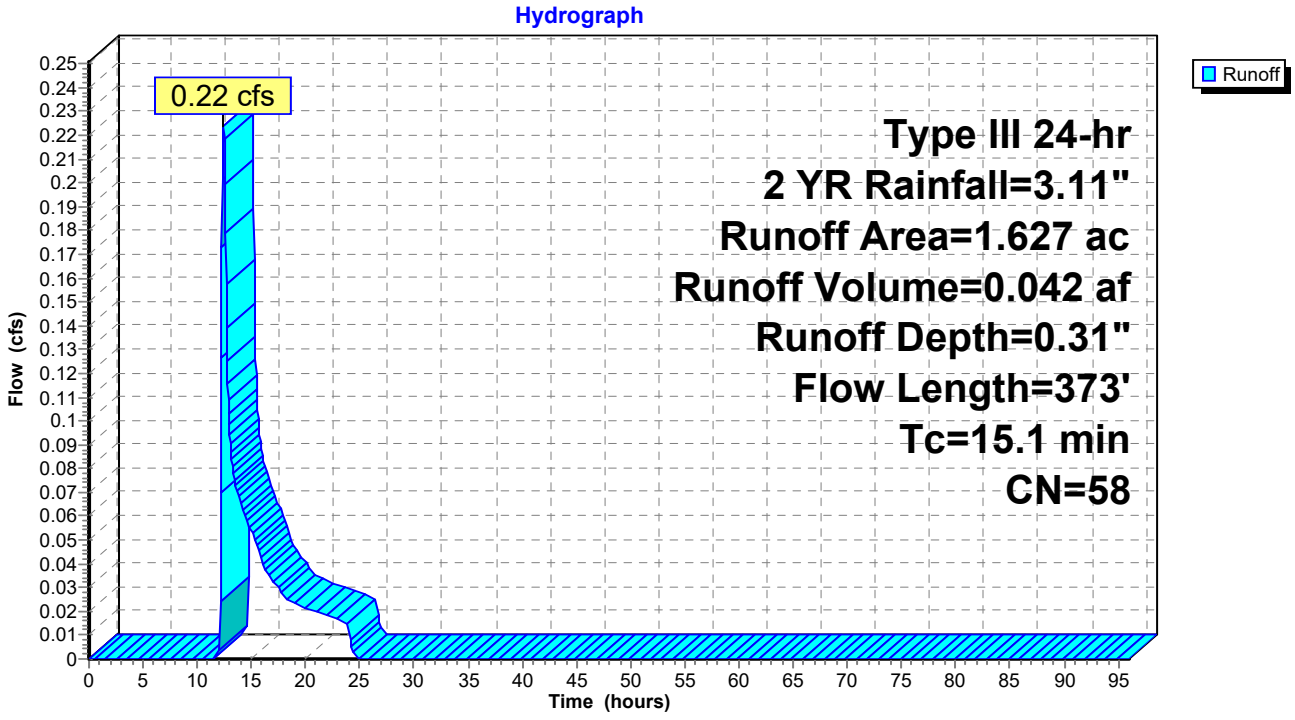
Runoff = 0.22 cfs @ 12.42 hrs, Volume= 0.042 af, Depth= 0.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.11"

Area (ac)	CN	Description
0.436	55	Woods, Good, HSG B
0.817	58	Meadow, non-grazed, HSG B
0.374	61	>75% Grass cover, Good, HSG B
1.627	58	Weighted Average
1.627		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	46	0.0696	0.11		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.09"
6.0	54	0.1452	0.15		**Sheet Flow, B-C** Woods: Light underbrush n= 0.400 P2= 3.09"
0.9	132	0.1287	2.51		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
1.1	141	0.1009	2.22		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
15.1	373	Total			

Subcatchment EDA-3: EDA-3



Summary for Subcatchment EDA-4: EDA-4

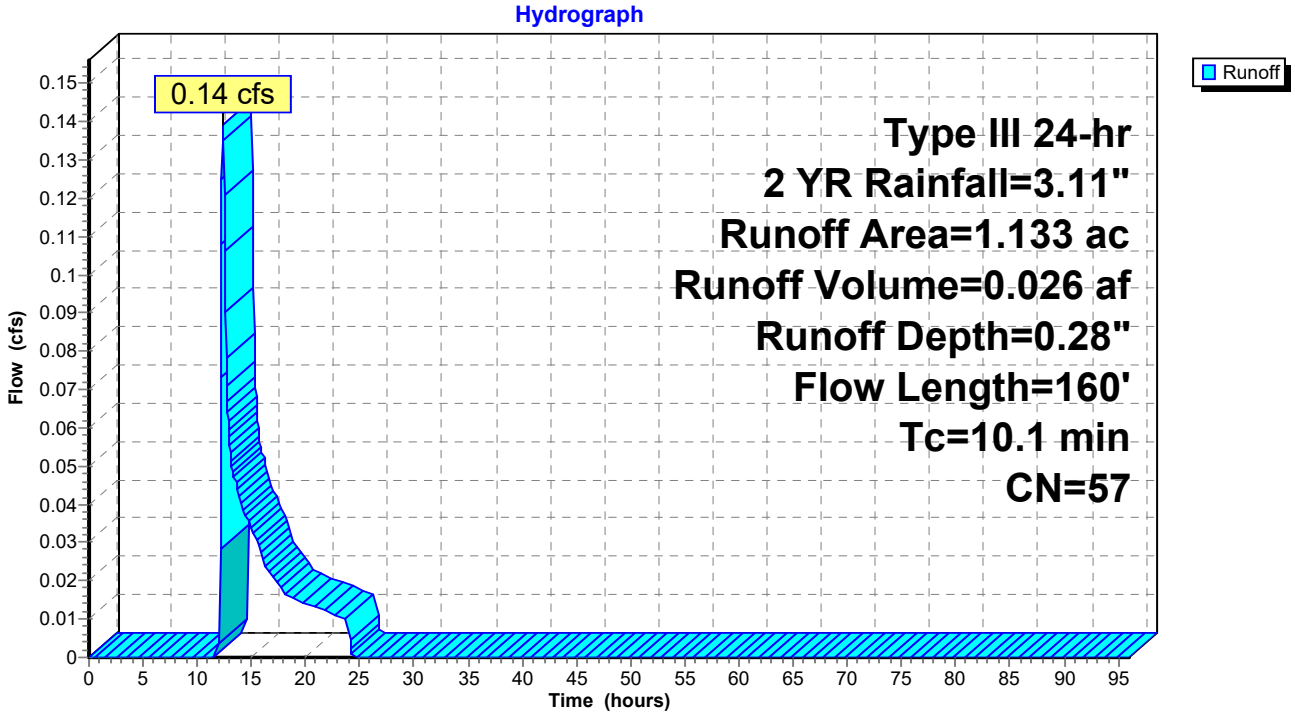
Runoff = 0.14 cfs @ 12.37 hrs, Volume= 0.026 af, Depth= 0.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.11"

Area (ac)	CN	Description
0.794	55	Woods, Good, HSG B
0.339	61	>75% Grass cover, Good, HSG B
1.133	57	Weighted Average
1.133		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.1449	0.17		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.09"
0.1	28	0.3184	8.46		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
0.1	32	0.0566	3.57		**Shallow Concentrated Flow, C-D** Grassed Waterway Kv= 15.0 fps
10.1	160	Total			

Subcatchment EDA-4: EDA-4

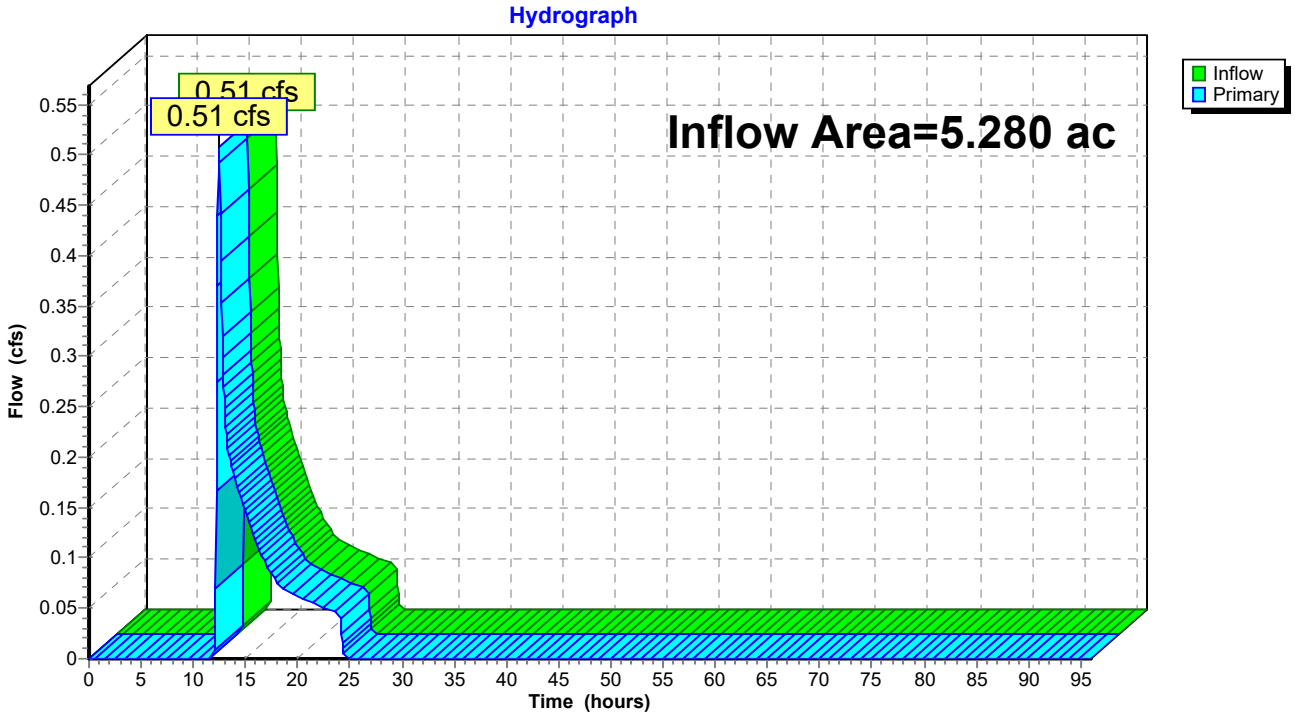


Summary for Link AP-1: AP-1

Inflow Area = 5.280 ac, 0.00% Impervious, Inflow Depth = 0.25" for 2 YR event
Inflow = 0.51 cfs @ 12.47 hrs, Volume= 0.111 af
Primary = 0.51 cfs @ 12.47 hrs, Volume= 0.111 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link AP-1: AP-1

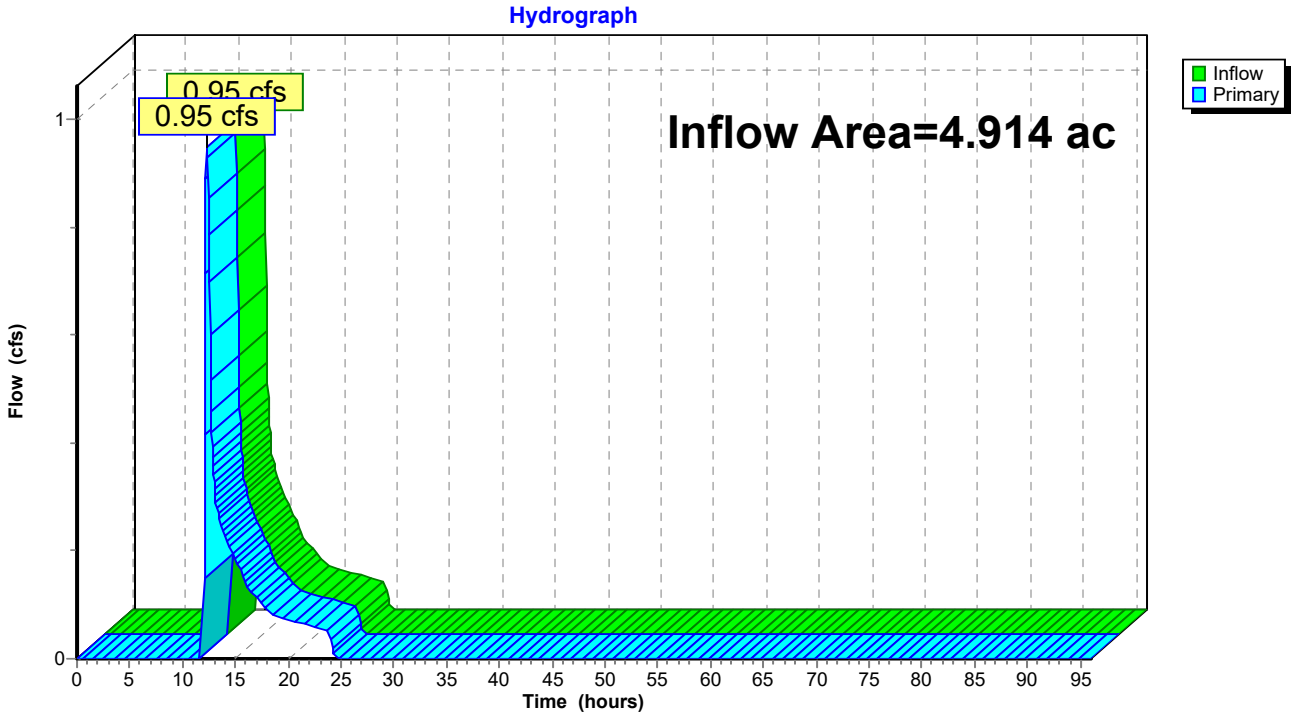


Summary for Link AP-2: AP-2

Inflow Area = 4.914 ac, 3.44% Impervious, Inflow Depth = 0.38" for 2 YR event
Inflow = 0.95 cfs @ 12.29 hrs, Volume= 0.154 af
Primary = 0.95 cfs @ 12.29 hrs, Volume= 0.154 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link AP-2: AP-2

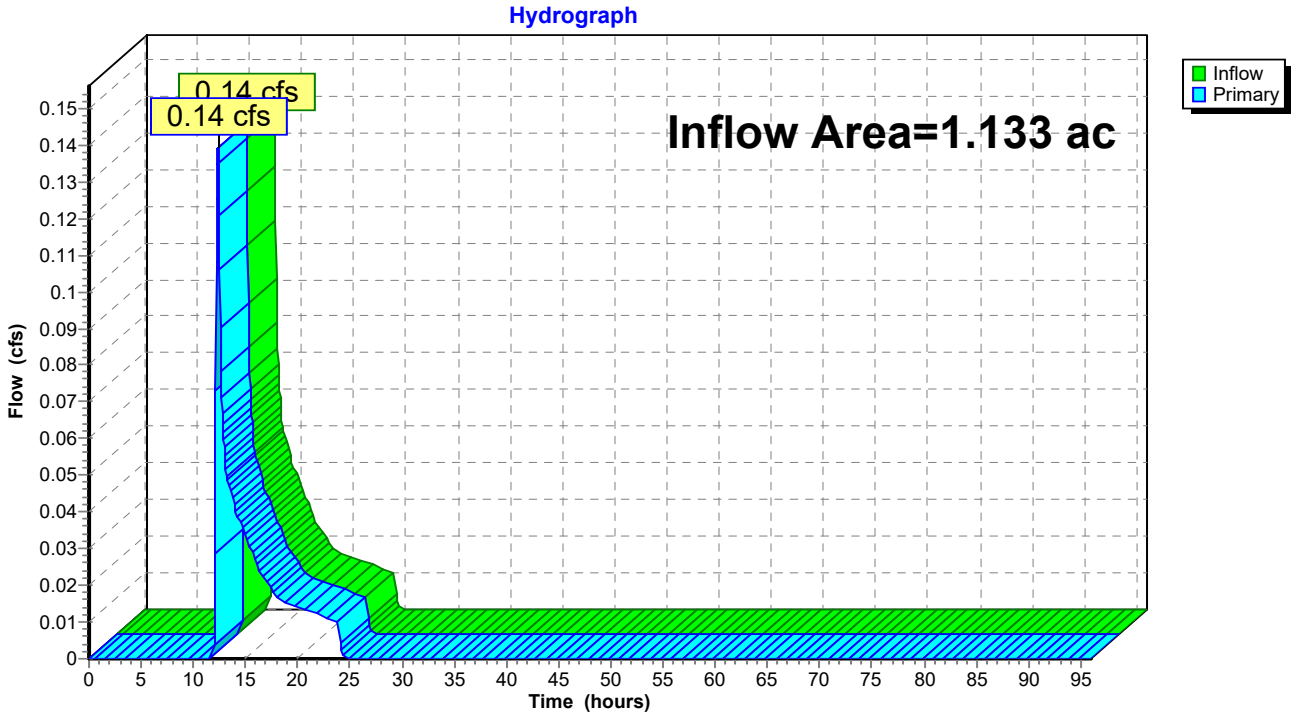


Summary for Link AP-3: AP-3

Inflow Area = 1.133 ac, 0.00% Impervious, Inflow Depth = 0.28" for 2 YR event
Inflow = 0.14 cfs @ 12.37 hrs, Volume= 0.026 af
Primary = 0.14 cfs @ 12.37 hrs, Volume= 0.026 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link AP-3: AP-3



Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment EDA-1: EDA-1 Runoff Area=5.280 ac 0.00% Impervious Runoff Depth=1.86"
Flow Length=318' Tc=15.4 min CN=56 Runoff=7.84 cfs 0.820 af

Subcatchment EDA-2: EDA-2 Runoff Area=3.287 ac 5.14% Impervious Runoff Depth=2.31"
Flow Length=308' Tc=11.2 min CN=61 Runoff=7.13 cfs 0.632 af

Subcatchment EDA-3: EDA-3 Runoff Area=1.627 ac 0.00% Impervious Runoff Depth=2.04"
Flow Length=373' Tc=15.1 min CN=58 Runoff=2.72 cfs 0.276 af

Subcatchment EDA-4: EDA-4 Runoff Area=1.133 ac 0.00% Impervious Runoff Depth=1.95"
Flow Length=160' Tc=10.1 min CN=57 Runoff=2.08 cfs 0.184 af

Link AP-1: AP-1 Inflow=7.84 cfs 0.820 af
Primary=7.84 cfs 0.820 af

Link AP-2: AP-2 Inflow=9.60 cfs 0.908 af
Primary=9.60 cfs 0.908 af

Link AP-3: AP-3 Inflow=2.08 cfs 0.184 af
Primary=2.08 cfs 0.184 af

Total Runoff Area = 11.327 ac Runoff Volume = 1.911 af Average Runoff Depth = 2.02"
98.51% Pervious = 11.158 ac 1.49% Impervious = 0.169 ac

Summary for Subcatchment EDA-1: EDA-1

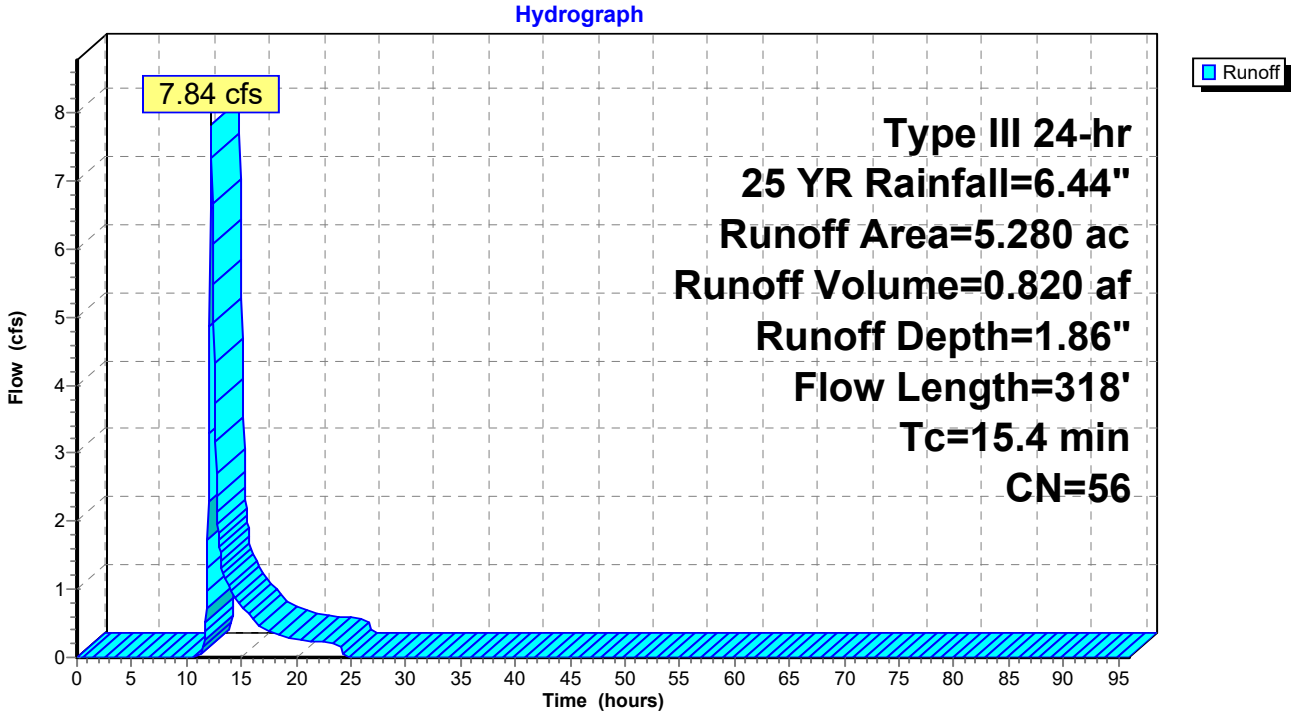
Runoff = 7.84 cfs @ 12.24 hrs, Volume= 0.820 af, Depth= 1.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=6.44"

Area (ac)	CN	Description
4.430	55	Woods, Good, HSG B
0.850	61	>75% Grass cover, Good, HSG B
5.280	56	Weighted Average
5.280		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	100	0.0694	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.09"
0.9	82	0.0837	1.45		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
1.2	136	0.1448	1.90		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
15.4	318	Total			

Subcatchment EDA-1: EDA-1



Summary for Subcatchment EDA-2: EDA-2

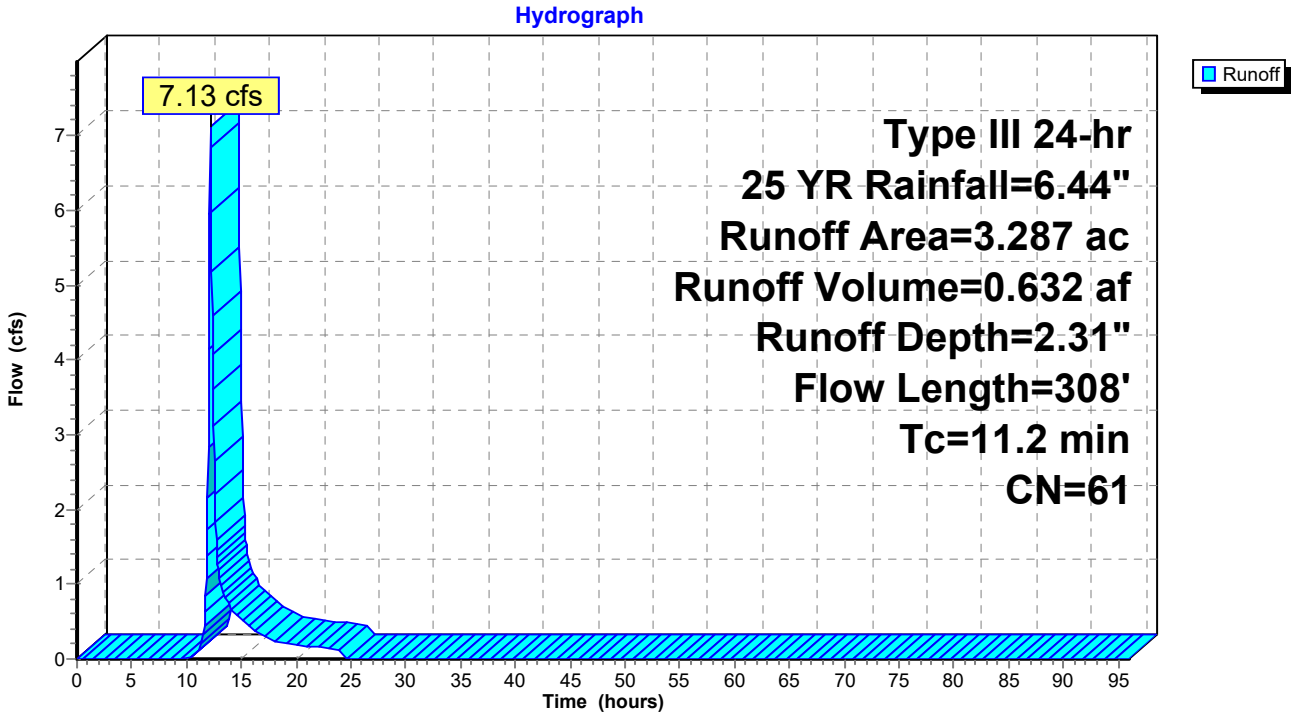
Runoff = 7.13 cfs @ 12.17 hrs, Volume= 0.632 af, Depth= 2.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=6.44"

Area (ac)	CN	Description
0.566	55	Woods, Good, HSG B
1.271	58	Meadow, non-grazed, HSG B
1.086	61	>75% Grass cover, Good, HSG B
0.169	98	Paved parking, HSG B
0.022	70	Woods, Good, HSG C
0.173	74	>75% Grass cover, Good, HSG C
3.287	61	Weighted Average
3.118		94.86% Pervious Area
0.169		5.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.0203	0.17		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.09"
1.3	208	0.0326	2.71		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
11.2	308	Total			

Subcatchment EDA-2: EDA-2



Summary for Subcatchment EDA-3: EDA-3

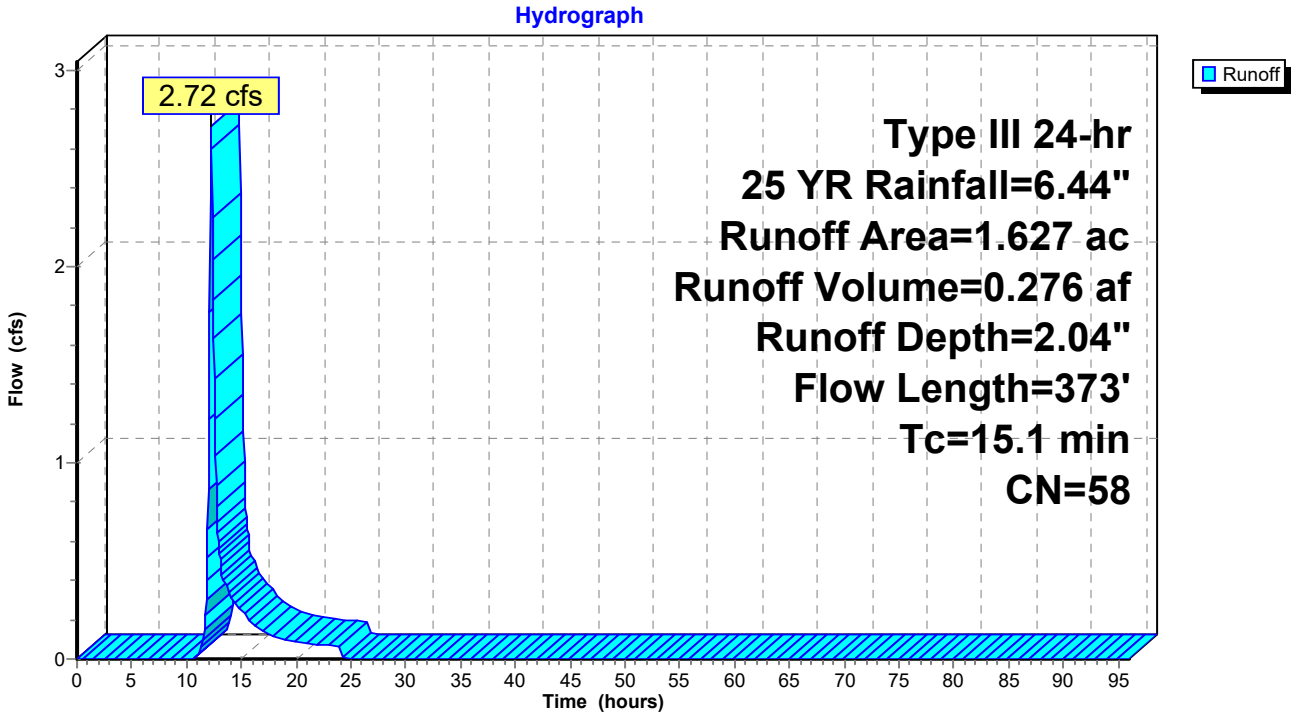
Runoff = 2.72 cfs @ 12.23 hrs, Volume= 0.276 af, Depth= 2.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=6.44"

Area (ac)	CN	Description
0.436	55	Woods, Good, HSG B
0.817	58	Meadow, non-grazed, HSG B
0.374	61	>75% Grass cover, Good, HSG B
1.627	58	Weighted Average
1.627		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	46	0.0696	0.11		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.09"
6.0	54	0.1452	0.15		**Sheet Flow, B-C** Woods: Light underbrush n= 0.400 P2= 3.09"
0.9	132	0.1287	2.51		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
1.1	141	0.1009	2.22		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
15.1	373	Total			

Subcatchment EDA-3: EDA-3



Summary for Subcatchment EDA-4: EDA-4

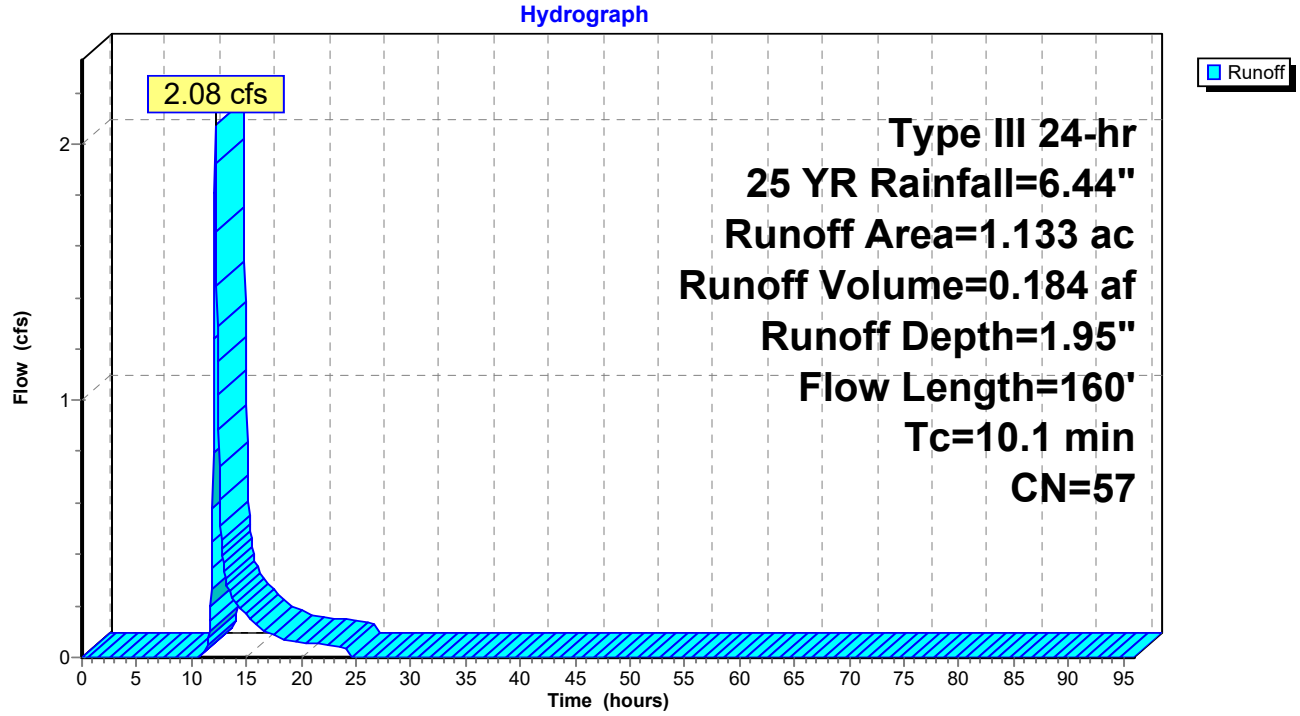
Runoff = 2.08 cfs @ 12.16 hrs, Volume= 0.184 af, Depth= 1.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=6.44"

Area (ac)	CN	Description
0.794	55	Woods, Good, HSG B
0.339	61	>75% Grass cover, Good, HSG B
1.133	57	Weighted Average
1.133		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.1449	0.17		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.09"
0.1	28	0.3184	8.46		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
0.1	32	0.0566	3.57		**Shallow Concentrated Flow, C-D** Grassed Waterway Kv= 15.0 fps
10.1	160	Total			

Subcatchment EDA-4: EDA-4

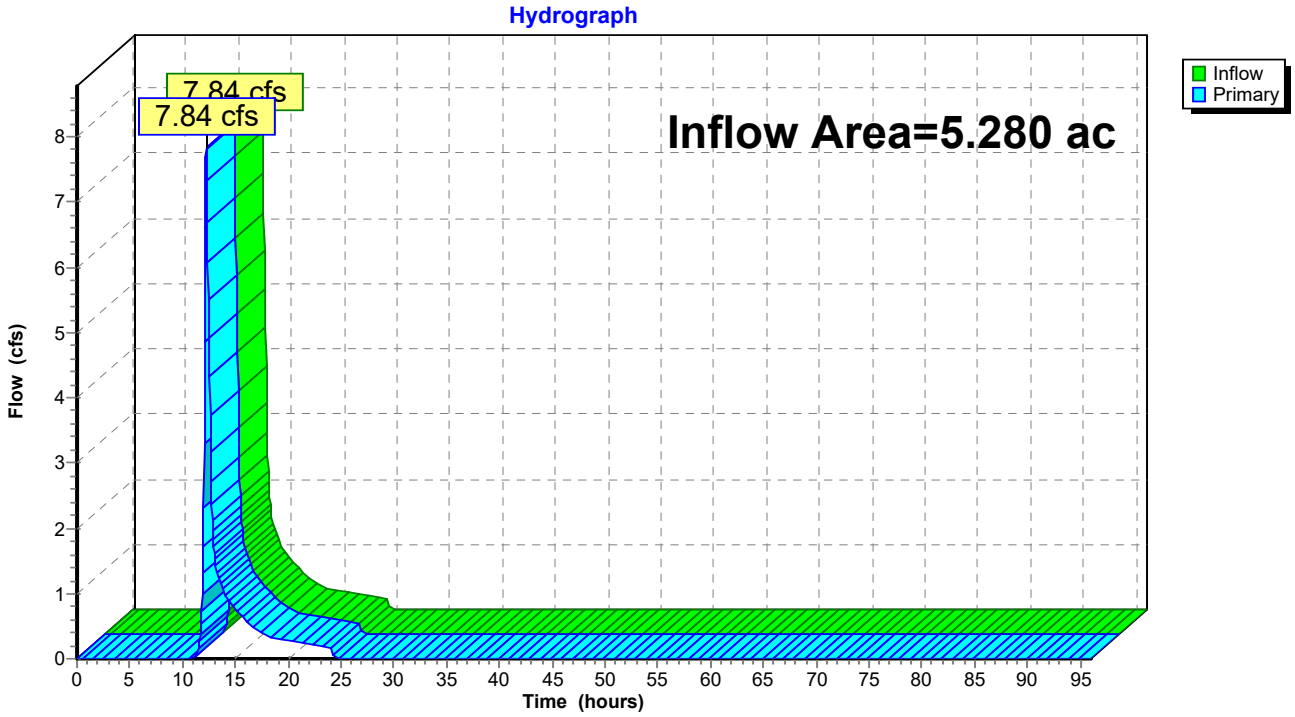


Summary for Link AP-1: AP-1

Inflow Area = 5.280 ac, 0.00% Impervious, Inflow Depth = 1.86" for 25 YR event
Inflow = 7.84 cfs @ 12.24 hrs, Volume= 0.820 af
Primary = 7.84 cfs @ 12.24 hrs, Volume= 0.820 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link AP-1: AP-1

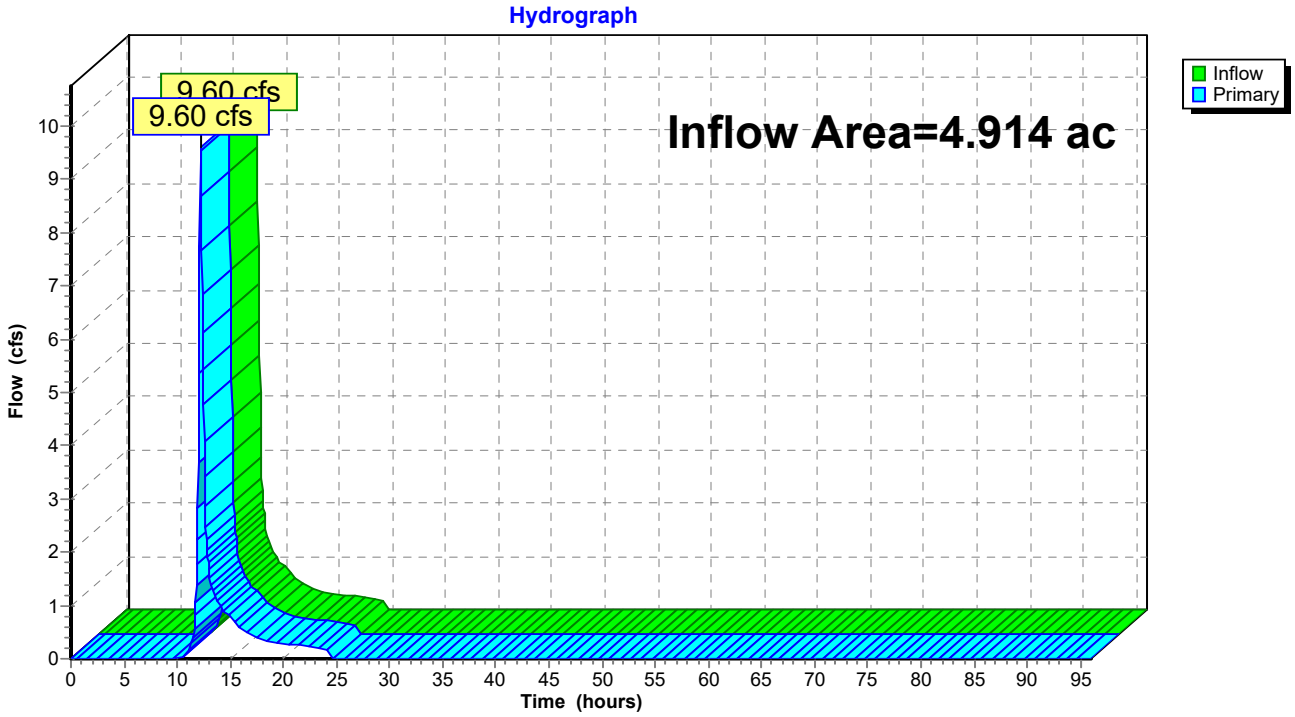


Summary for Link AP-2: AP-2

Inflow Area = 4.914 ac, 3.44% Impervious, Inflow Depth = 2.22" for 25 YR event
Inflow = 9.60 cfs @ 12.18 hrs, Volume= 0.908 af
Primary = 9.60 cfs @ 12.18 hrs, Volume= 0.908 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link AP-2: AP-2

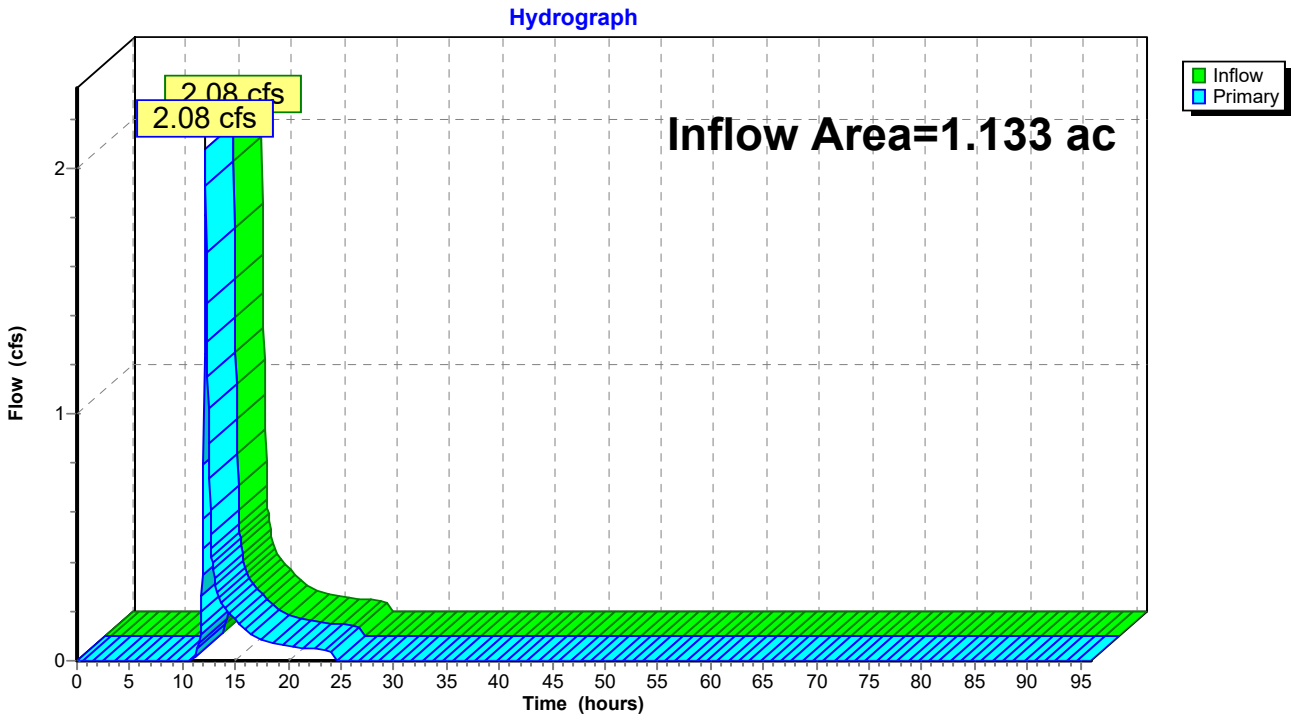


Summary for Link AP-3: AP-3

Inflow Area = 1.133 ac, 0.00% Impervious, Inflow Depth = 1.95" for 25 YR event
Inflow = 2.08 cfs @ 12.16 hrs, Volume= 0.184 af
Primary = 2.08 cfs @ 12.16 hrs, Volume= 0.184 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link AP-3: AP-3



Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment EDA-1: EDA-1 Runoff Area=5.280 ac 0.00% Impervious Runoff Depth=2.46"
Flow Length=318' Tc=15.4 min CN=56 Runoff=10.71 cfs 1.083 af

Subcatchment EDA-2: EDA-2 Runoff Area=3.287 ac 5.14% Impervious Runoff Depth=2.97"
Flow Length=308' Tc=11.2 min CN=61 Runoff=9.36 cfs 0.814 af

Subcatchment EDA-3: EDA-3 Runoff Area=1.627 ac 0.00% Impervious Runoff Depth=2.66"
Flow Length=373' Tc=15.1 min CN=58 Runoff=3.67 cfs 0.361 af

Subcatchment EDA-4: EDA-4 Runoff Area=1.133 ac 0.00% Impervious Runoff Depth=2.56"
Flow Length=160' Tc=10.1 min CN=57 Runoff=2.81 cfs 0.242 af

Link AP-1: AP-1 Inflow=10.71 cfs 1.083 af
Primary=10.71 cfs 1.083 af

Link AP-2: AP-2 Inflow=12.69 cfs 1.175 af
Primary=12.69 cfs 1.175 af

Link AP-3: AP-3 Inflow=2.81 cfs 0.242 af
Primary=2.81 cfs 0.242 af

Total Runoff Area = 11.327 ac Runoff Volume = 2.501 af Average Runoff Depth = 2.65"
98.51% Pervious = 11.158 ac 1.49% Impervious = 0.169 ac

Summary for Subcatchment EDA-1: EDA-1

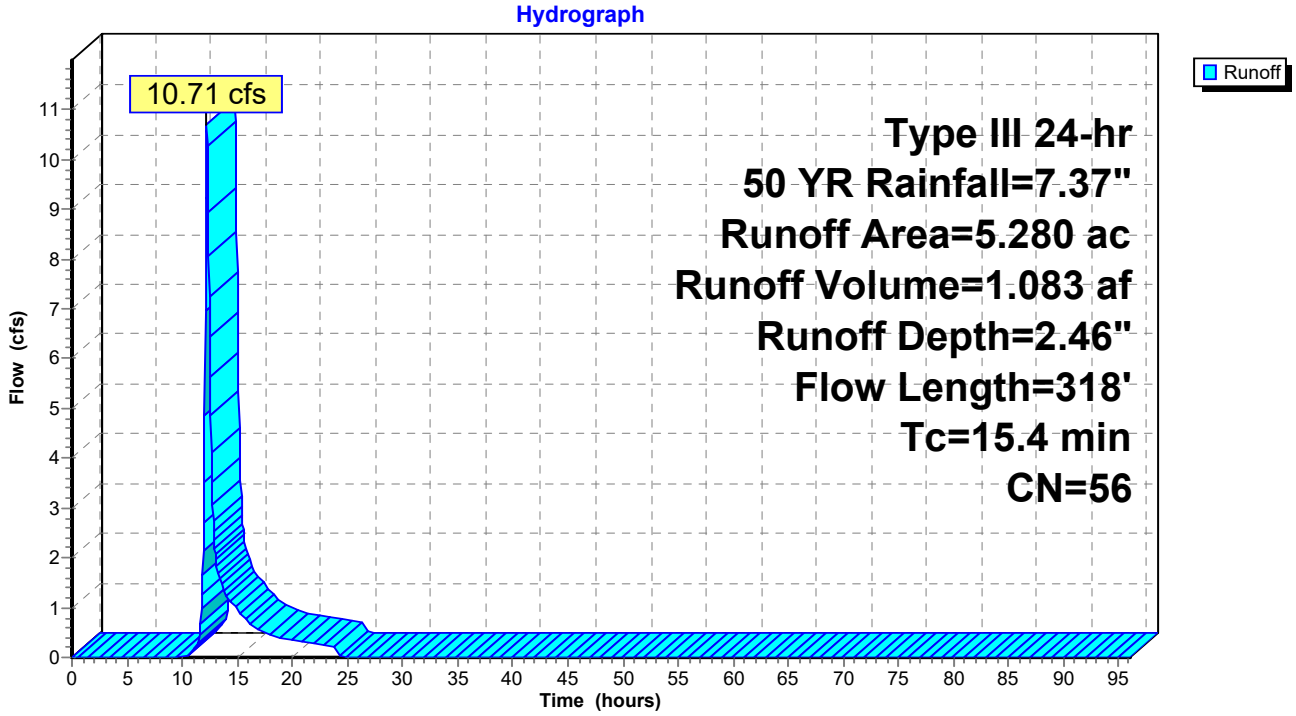
Runoff = 10.71 cfs @ 12.23 hrs, Volume= 1.083 af, Depth= 2.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 YR Rainfall=7.37"

Area (ac)	CN	Description
4.430	55	Woods, Good, HSG B
0.850	61	>75% Grass cover, Good, HSG B
5.280	56	Weighted Average
5.280		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	100	0.0694	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.09"
0.9	82	0.0837	1.45		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
1.2	136	0.1448	1.90		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
15.4	318	Total			

Subcatchment EDA-1: EDA-1



Summary for Subcatchment EDA-2: EDA-2

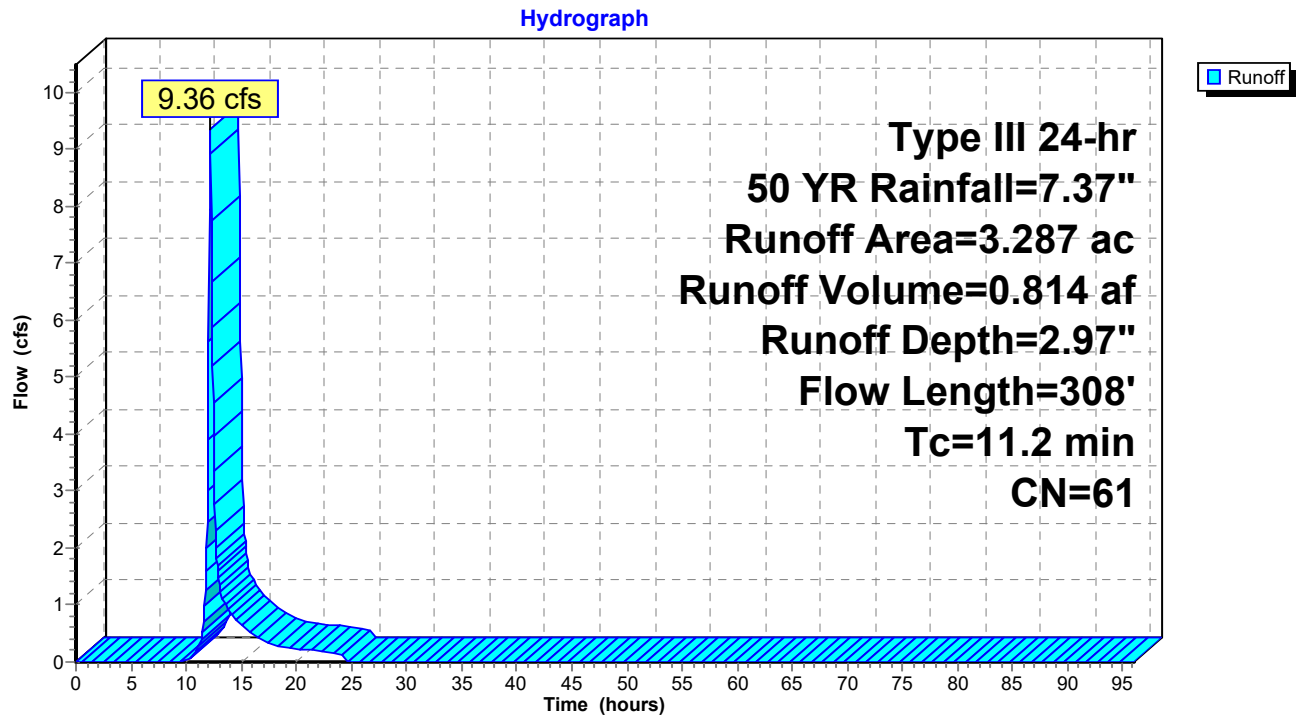
Runoff = 9.36 cfs @ 12.16 hrs, Volume= 0.814 af, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 YR Rainfall=7.37"

Area (ac)	CN	Description
0.566	55	Woods, Good, HSG B
1.271	58	Meadow, non-grazed, HSG B
1.086	61	>75% Grass cover, Good, HSG B
0.169	98	Paved parking, HSG B
0.022	70	Woods, Good, HSG C
0.173	74	>75% Grass cover, Good, HSG C
3.287	61	Weighted Average
3.118		94.86% Pervious Area
0.169		5.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.0203	0.17		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.09"
1.3	208	0.0326	2.71		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
11.2	308	Total			

Subcatchment EDA-2: EDA-2



Summary for Subcatchment EDA-3: EDA-3

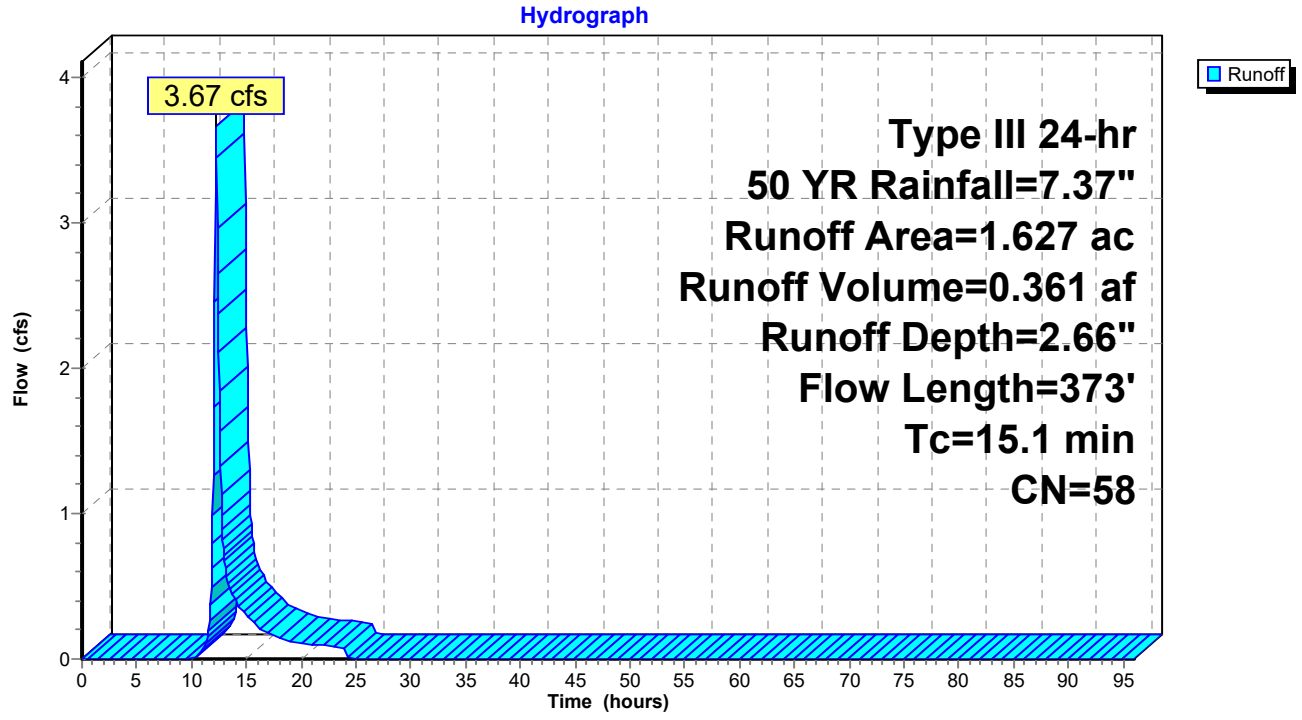
Runoff = 3.67 cfs @ 12.22 hrs, Volume= 0.361 af, Depth= 2.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 YR Rainfall=7.37"

Area (ac)	CN	Description
0.436	55	Woods, Good, HSG B
0.817	58	Meadow, non-grazed, HSG B
0.374	61	>75% Grass cover, Good, HSG B
1.627	58	Weighted Average
1.627		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	46	0.0696	0.11		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.09"
6.0	54	0.1452	0.15		**Sheet Flow, B-C** Woods: Light underbrush n= 0.400 P2= 3.09"
0.9	132	0.1287	2.51		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
1.1	141	0.1009	2.22		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
15.1	373	Total			

Subcatchment EDA-3: EDA-3



Summary for Subcatchment EDA-4: EDA-4

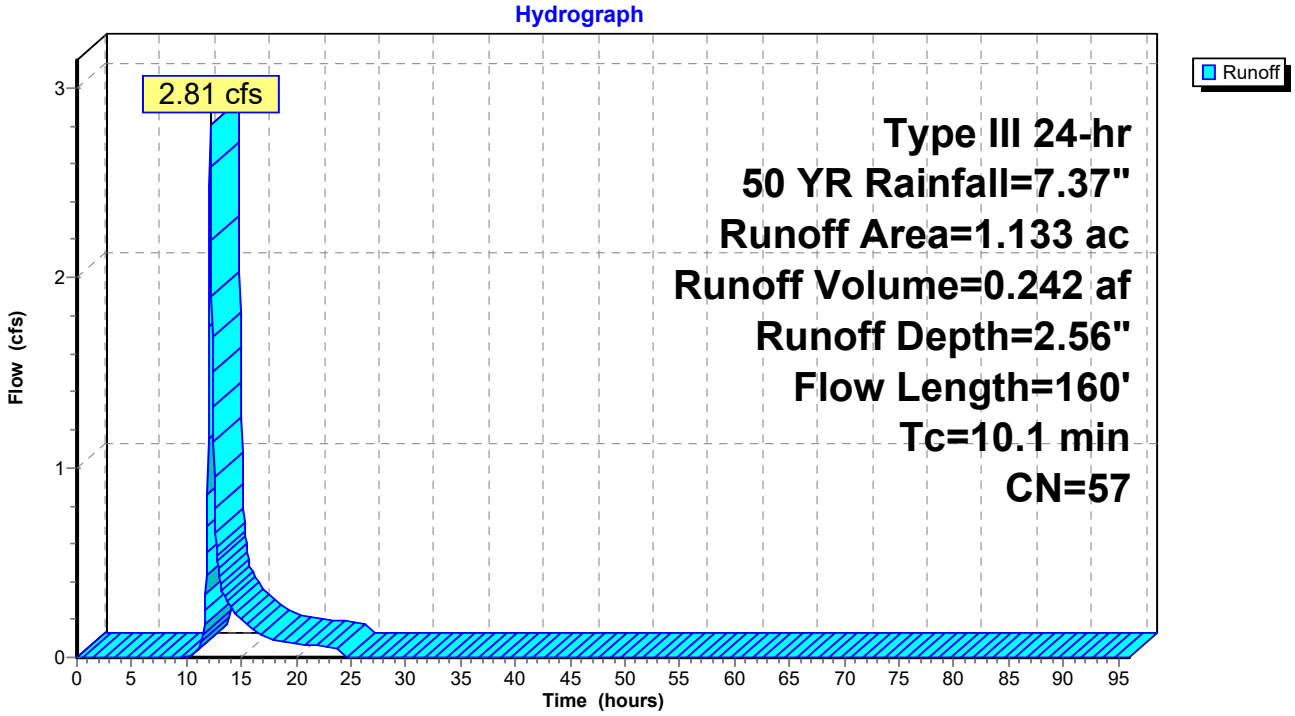
Runoff = 2.81 cfs @ 12.15 hrs, Volume= 0.242 af, Depth= 2.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 YR Rainfall=7.37"

Area (ac)	CN	Description
0.794	55	Woods, Good, HSG B
0.339	61	>75% Grass cover, Good, HSG B
1.133	57	Weighted Average
1.133		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.1449	0.17		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.09"
0.1	28	0.3184	8.46		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
0.1	32	0.0566	3.57		**Shallow Concentrated Flow, C-D** Grassed Waterway Kv= 15.0 fps
10.1	160	Total			

Subcatchment EDA-4: EDA-4

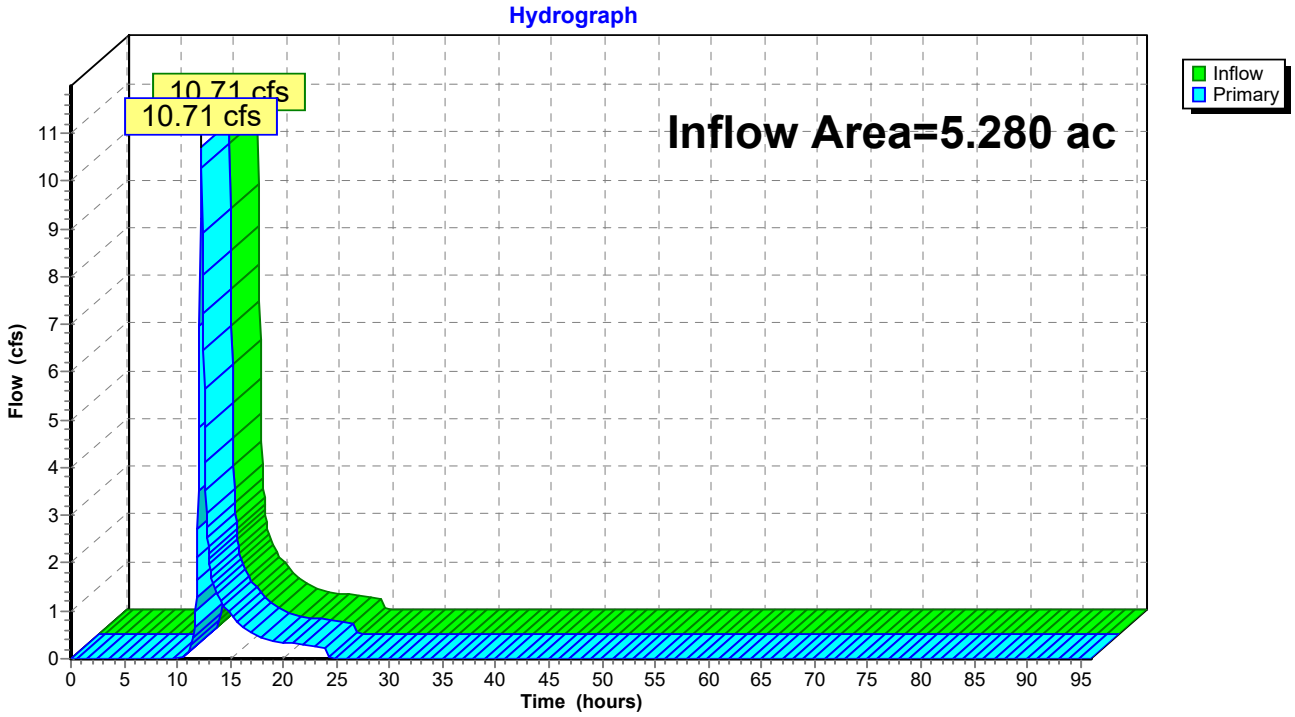


Summary for Link AP-1: AP-1

Inflow Area = 5.280 ac, 0.00% Impervious, Inflow Depth = 2.46" for 50 YR event
Inflow = 10.71 cfs @ 12.23 hrs, Volume= 1.083 af
Primary = 10.71 cfs @ 12.23 hrs, Volume= 1.083 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link AP-1: AP-1

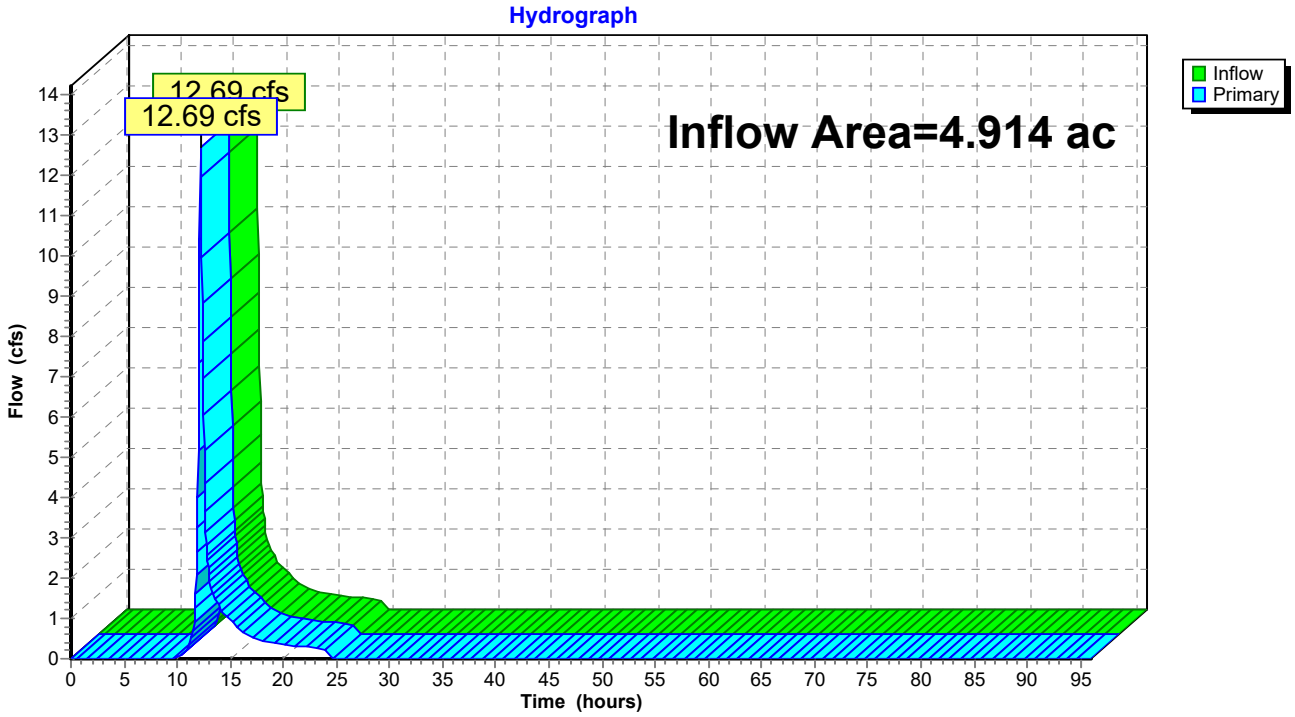


Summary for Link AP-2: AP-2

Inflow Area = 4.914 ac, 3.44% Impervious, Inflow Depth = 2.87" for 50 YR event
Inflow = 12.69 cfs @ 12.18 hrs, Volume= 1.175 af
Primary = 12.69 cfs @ 12.18 hrs, Volume= 1.175 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link AP-2: AP-2

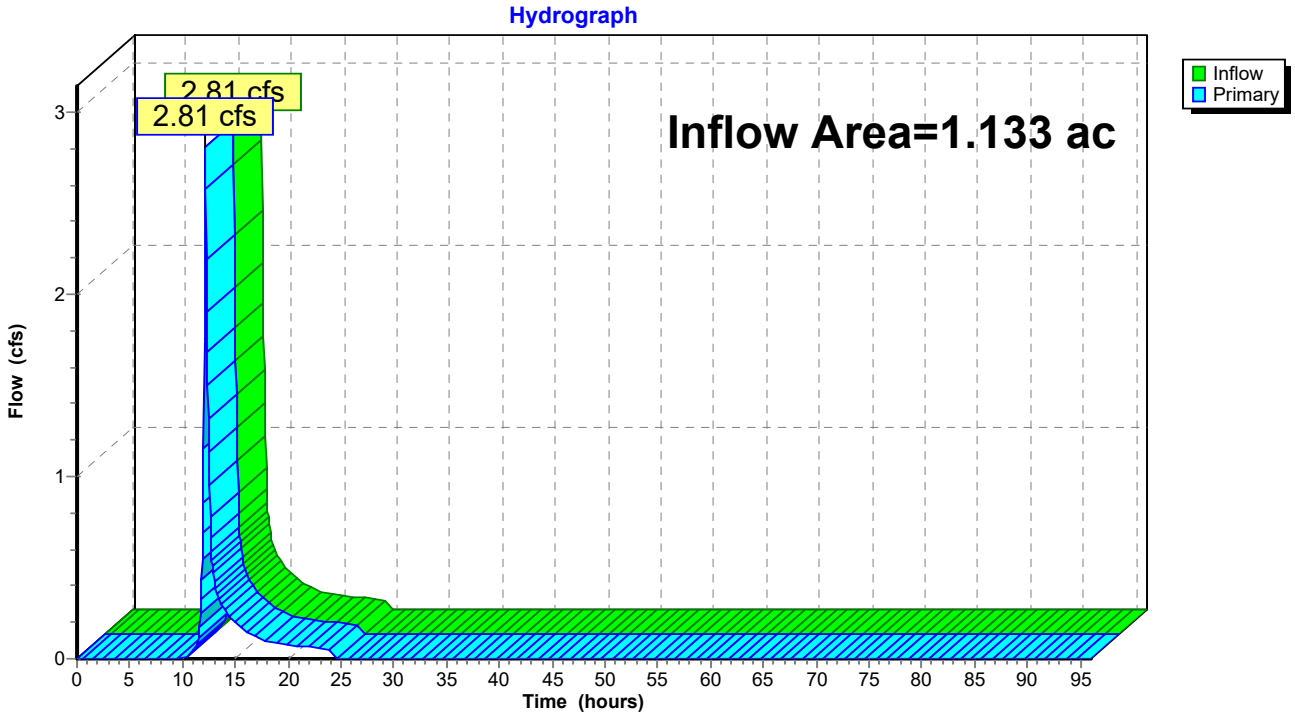


Summary for Link AP-3: AP-3

Inflow Area = 1.133 ac, 0.00% Impervious, Inflow Depth = 2.56" for 50 YR event
Inflow = 2.81 cfs @ 12.15 hrs, Volume= 0.242 af
Primary = 2.81 cfs @ 12.15 hrs, Volume= 0.242 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link AP-3: AP-3



Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment EDA-1: EDA-1 Runoff Area=5.280 ac 0.00% Impervious Runoff Depth=3.18"
Flow Length=318' Tc=15.4 min CN=56 Runoff=14.22 cfs 1.400 af

Subcatchment EDA-2: EDA-2 Runoff Area=3.287 ac 5.14% Impervious Runoff Depth=3.76"
Flow Length=308' Tc=11.2 min CN=61 Runoff=11.98 cfs 1.030 af

Subcatchment EDA-3: EDA-3 Runoff Area=1.627 ac 0.00% Impervious Runoff Depth=3.41"
Flow Length=373' Tc=15.1 min CN=58 Runoff=4.78 cfs 0.463 af

Subcatchment EDA-4: EDA-4 Runoff Area=1.133 ac 0.00% Impervious Runoff Depth=3.30"
Flow Length=160' Tc=10.1 min CN=57 Runoff=3.68 cfs 0.311 af

Link AP-1: AP-1 Inflow=14.22 cfs 1.400 af
Primary=14.22 cfs 1.400 af

Link AP-2: AP-2 Inflow=16.47 cfs 1.493 af
Primary=16.47 cfs 1.493 af

Link AP-3: AP-3 Inflow=3.68 cfs 0.311 af
Primary=3.68 cfs 0.311 af

Total Runoff Area = 11.327 ac Runoff Volume = 3.204 af Average Runoff Depth = 3.39"
98.51% Pervious = 11.158 ac 1.49% Impervious = 0.169 ac

Summary for Subcatchment EDA-1: EDA-1

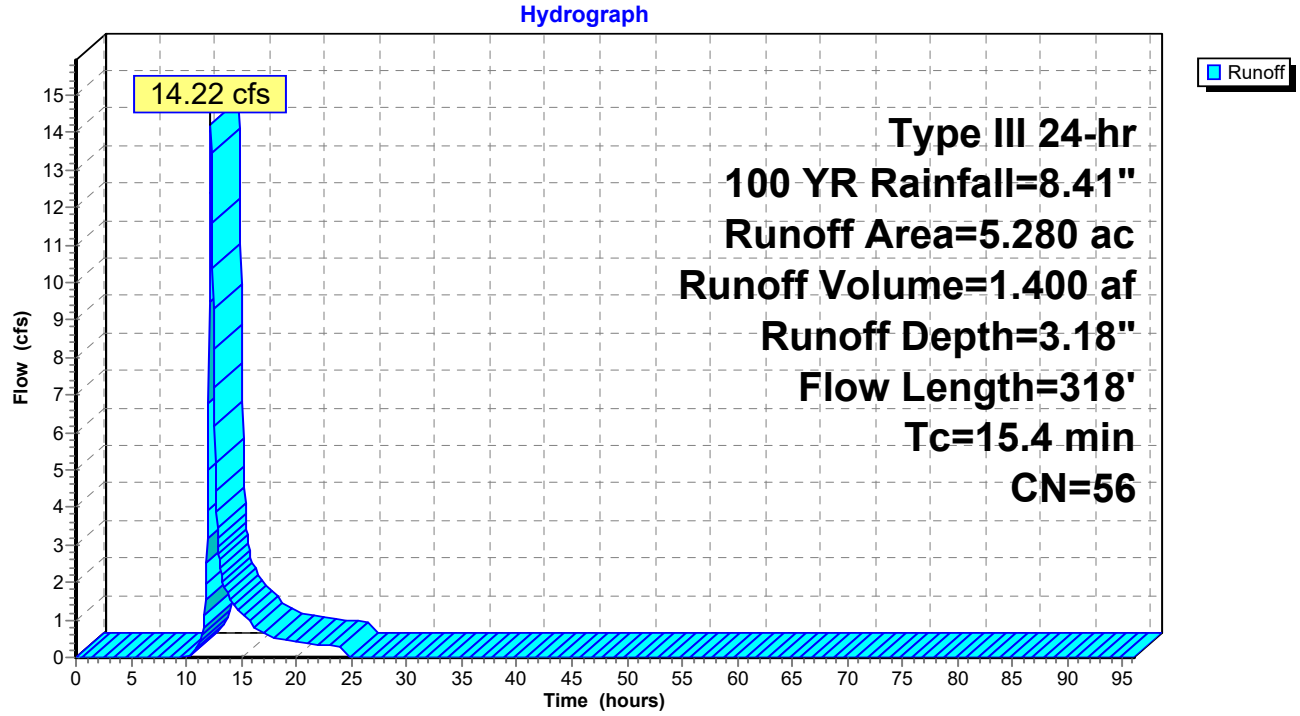
Runoff = 14.22 cfs @ 12.22 hrs, Volume= 1.400 af, Depth= 3.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=8.41"

Area (ac)	CN	Description
4.430	55	Woods, Good, HSG B
0.850	61	>75% Grass cover, Good, HSG B
5.280	56	Weighted Average
5.280		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	100	0.0694	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.09"
0.9	82	0.0837	1.45		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
1.2	136	0.1448	1.90		**Shallow Concentrated Flow, C-D** Woodland Kv= 5.0 fps
15.4	318	Total			

Subcatchment EDA-1: EDA-1



Summary for Subcatchment EDA-2: EDA-2

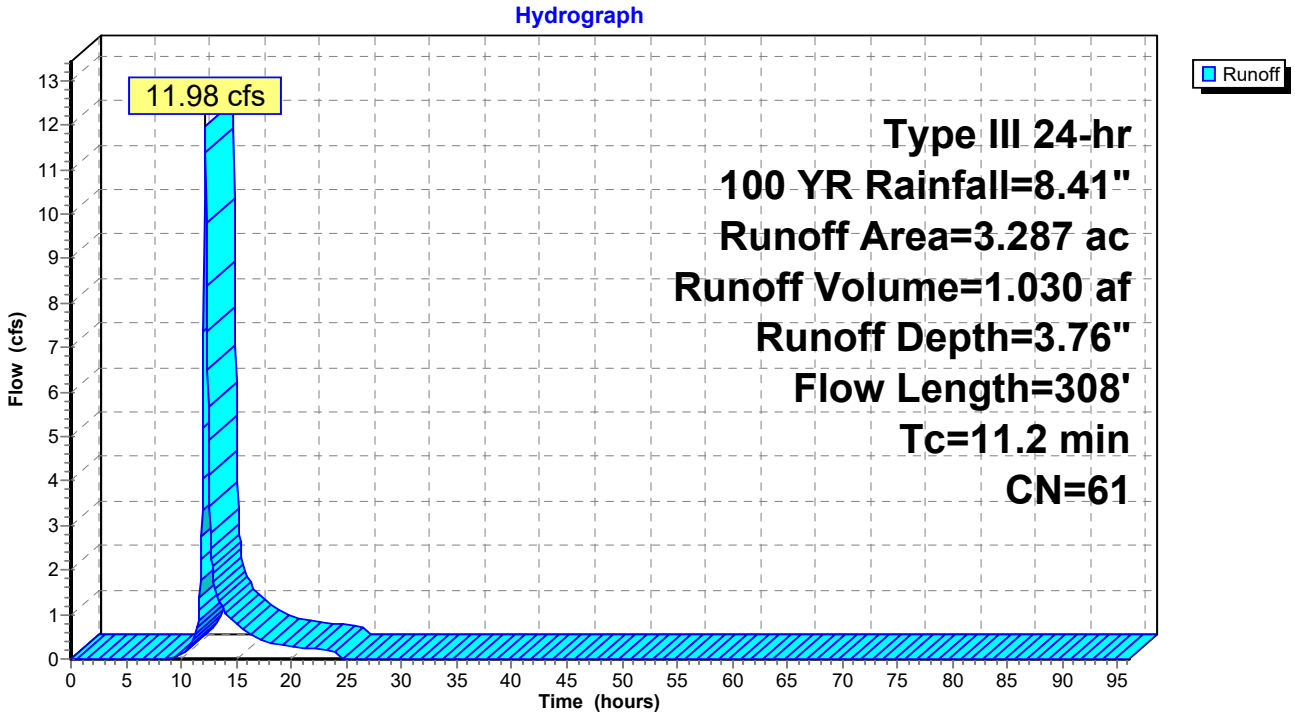
Runoff = 11.98 cfs @ 12.16 hrs, Volume= 1.030 af, Depth= 3.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=8.41"

Area (ac)	CN	Description
0.566	55	Woods, Good, HSG B
1.271	58	Meadow, non-grazed, HSG B
1.086	61	>75% Grass cover, Good, HSG B
0.169	98	Paved parking, HSG B
0.022	70	Woods, Good, HSG C
0.173	74	>75% Grass cover, Good, HSG C
3.287	61	Weighted Average
3.118		94.86% Pervious Area
0.169		5.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.0203	0.17		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.09"
1.3	208	0.0326	2.71		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
11.2	308	Total			

Subcatchment EDA-2: EDA-2



Summary for Subcatchment EDA-3: EDA-3

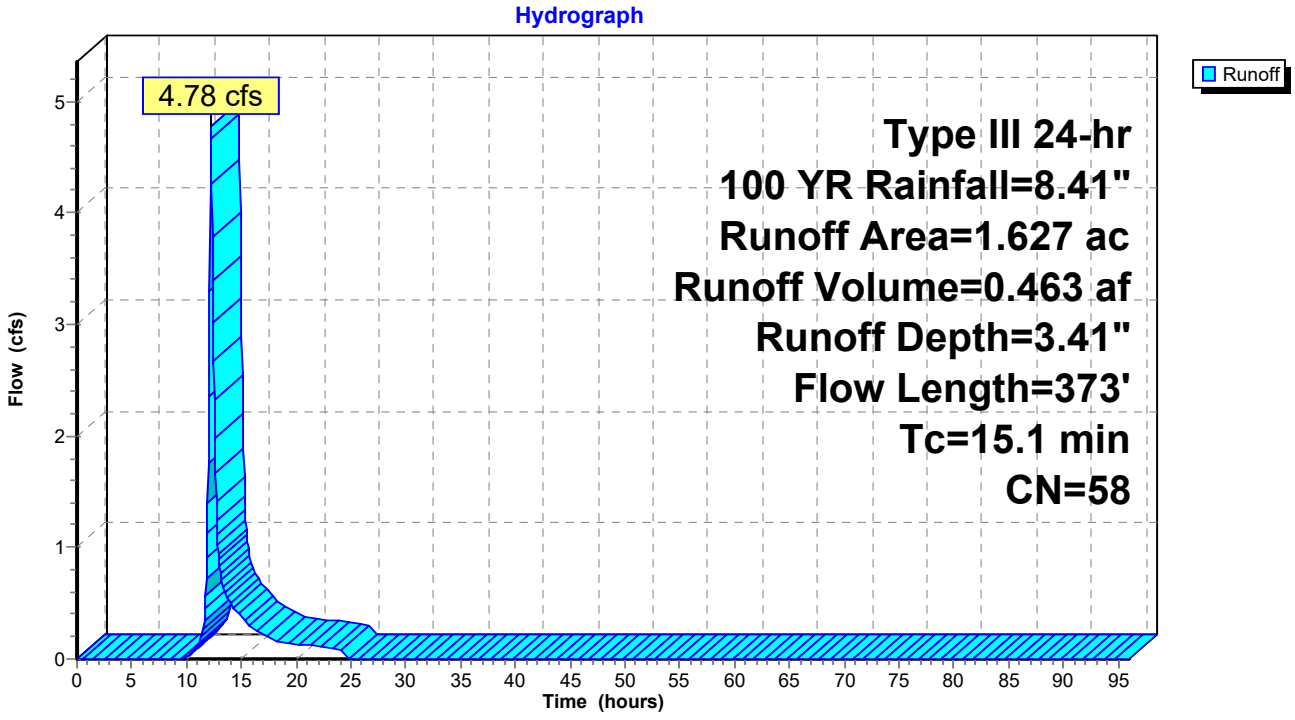
Runoff = 4.78 cfs @ 12.22 hrs, Volume= 0.463 af, Depth= 3.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=8.41"

Area (ac)	CN	Description
0.436	55	Woods, Good, HSG B
0.817	58	Meadow, non-grazed, HSG B
0.374	61	>75% Grass cover, Good, HSG B
1.627	58	Weighted Average
1.627		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	46	0.0696	0.11		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.09"
6.0	54	0.1452	0.15		**Sheet Flow, B-C** Woods: Light underbrush n= 0.400 P2= 3.09"
0.9	132	0.1287	2.51		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
1.1	141	0.1009	2.22		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
15.1	373	Total			

Subcatchment EDA-3: EDA-3



Summary for Subcatchment EDA-4: EDA-4

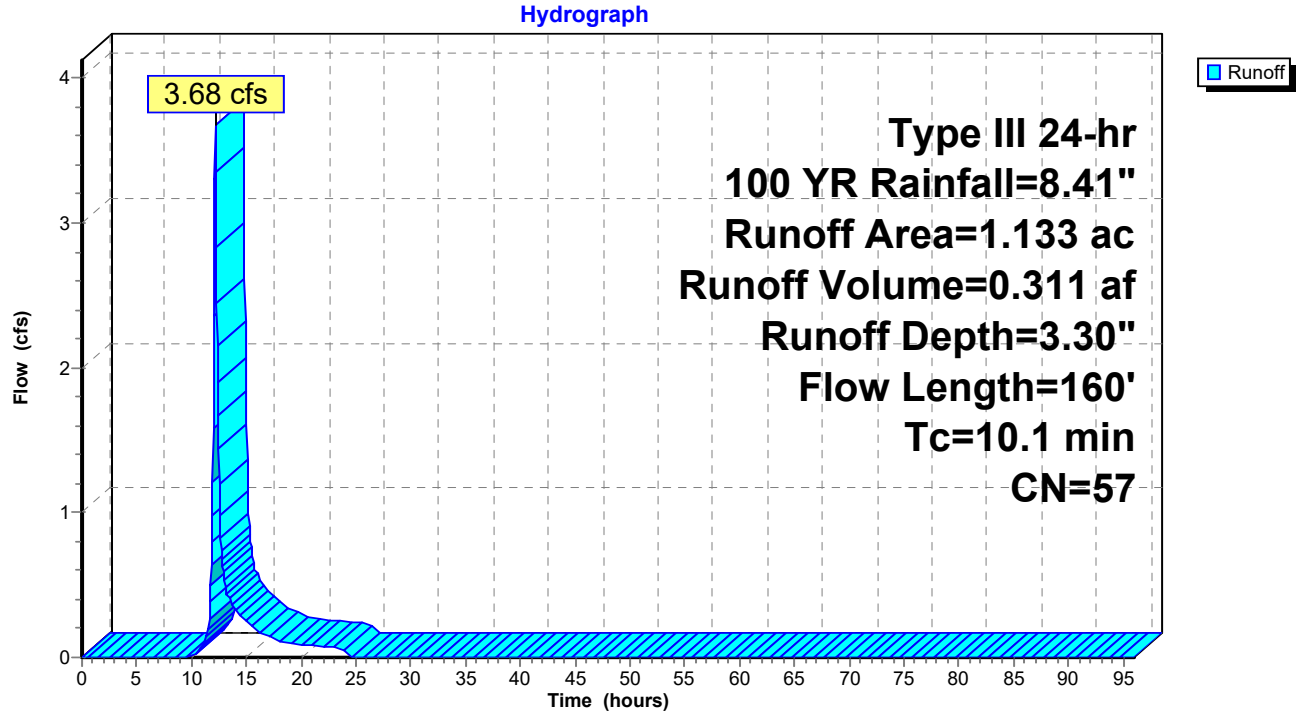
Runoff = 3.68 cfs @ 12.15 hrs, Volume= 0.311 af, Depth= 3.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=8.41"

Area (ac)	CN	Description
0.794	55	Woods, Good, HSG B
0.339	61	>75% Grass cover, Good, HSG B
1.133	57	Weighted Average
1.133		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.1449	0.17		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.09"
0.1	28	0.3184	8.46		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
0.1	32	0.0566	3.57		**Shallow Concentrated Flow, C-D** Grassed Waterway Kv= 15.0 fps
10.1	160	Total			

Subcatchment EDA-4: EDA-4

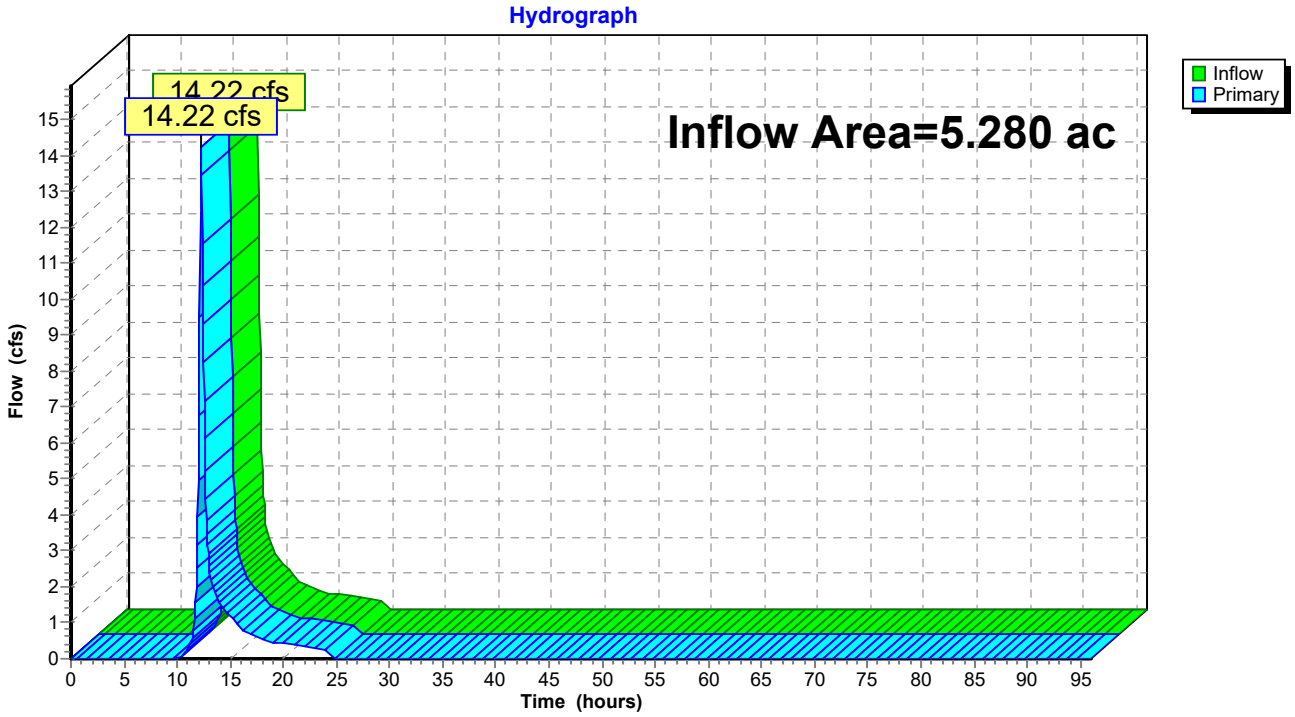


Summary for Link AP-1: AP-1

Inflow Area = 5.280 ac, 0.00% Impervious, Inflow Depth = 3.18" for 100 YR event
Inflow = 14.22 cfs @ 12.22 hrs, Volume= 1.400 af
Primary = 14.22 cfs @ 12.22 hrs, Volume= 1.400 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link AP-1: AP-1

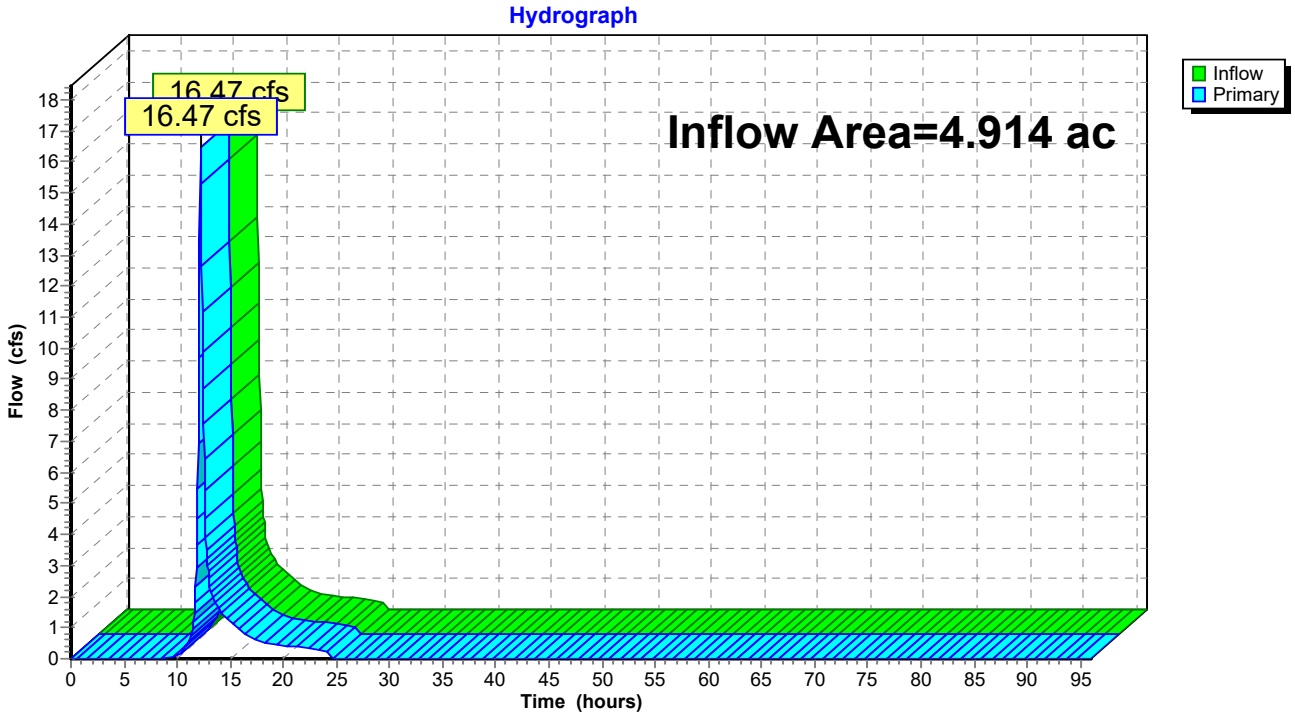


Summary for Link AP-2: AP-2

Inflow Area = 4.914 ac, 3.44% Impervious, Inflow Depth = 3.65" for 100 YR event
Inflow = 16.47 cfs @ 12.17 hrs, Volume= 1.493 af
Primary = 16.47 cfs @ 12.17 hrs, Volume= 1.493 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link AP-2: AP-2

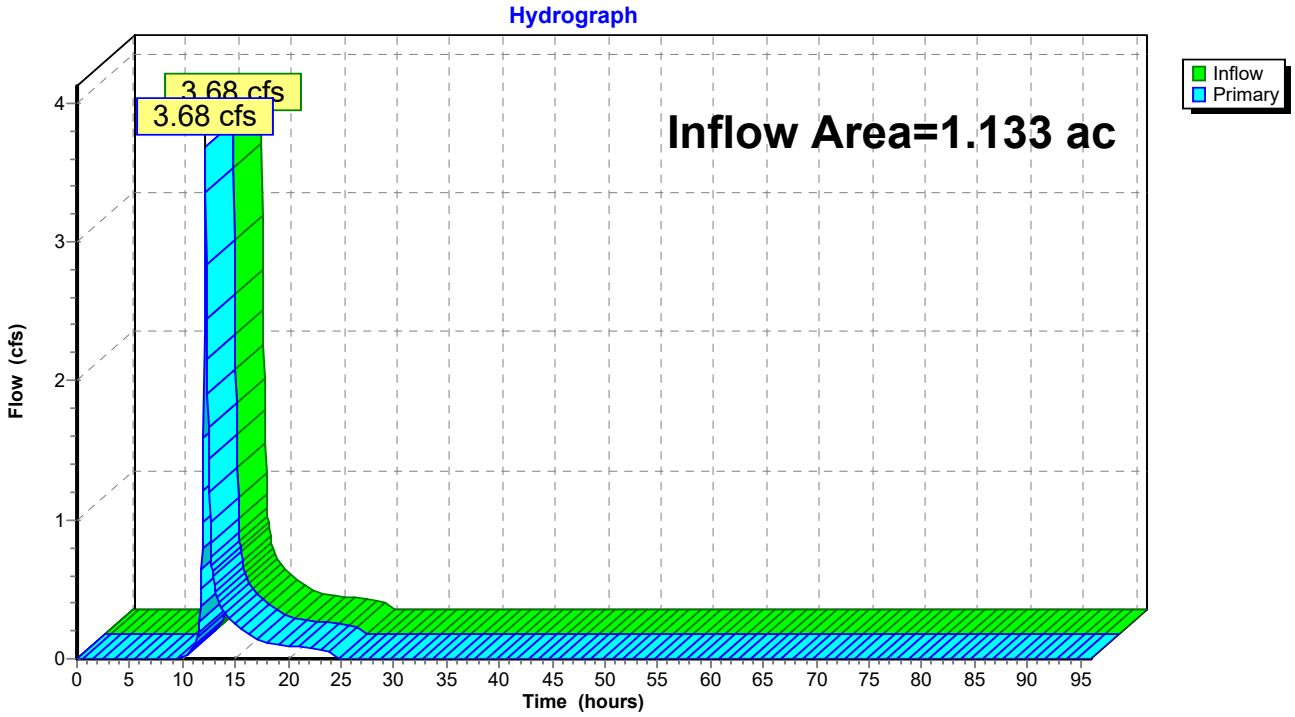


Summary for Link AP-3: AP-3

Inflow Area = 1.133 ac, 0.00% Impervious, Inflow Depth = 3.30" for 100 YR event
Inflow = 3.68 cfs @ 12.15 hrs, Volume= 0.311 af
Primary = 3.68 cfs @ 12.15 hrs, Volume= 0.311 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link AP-3: AP-3



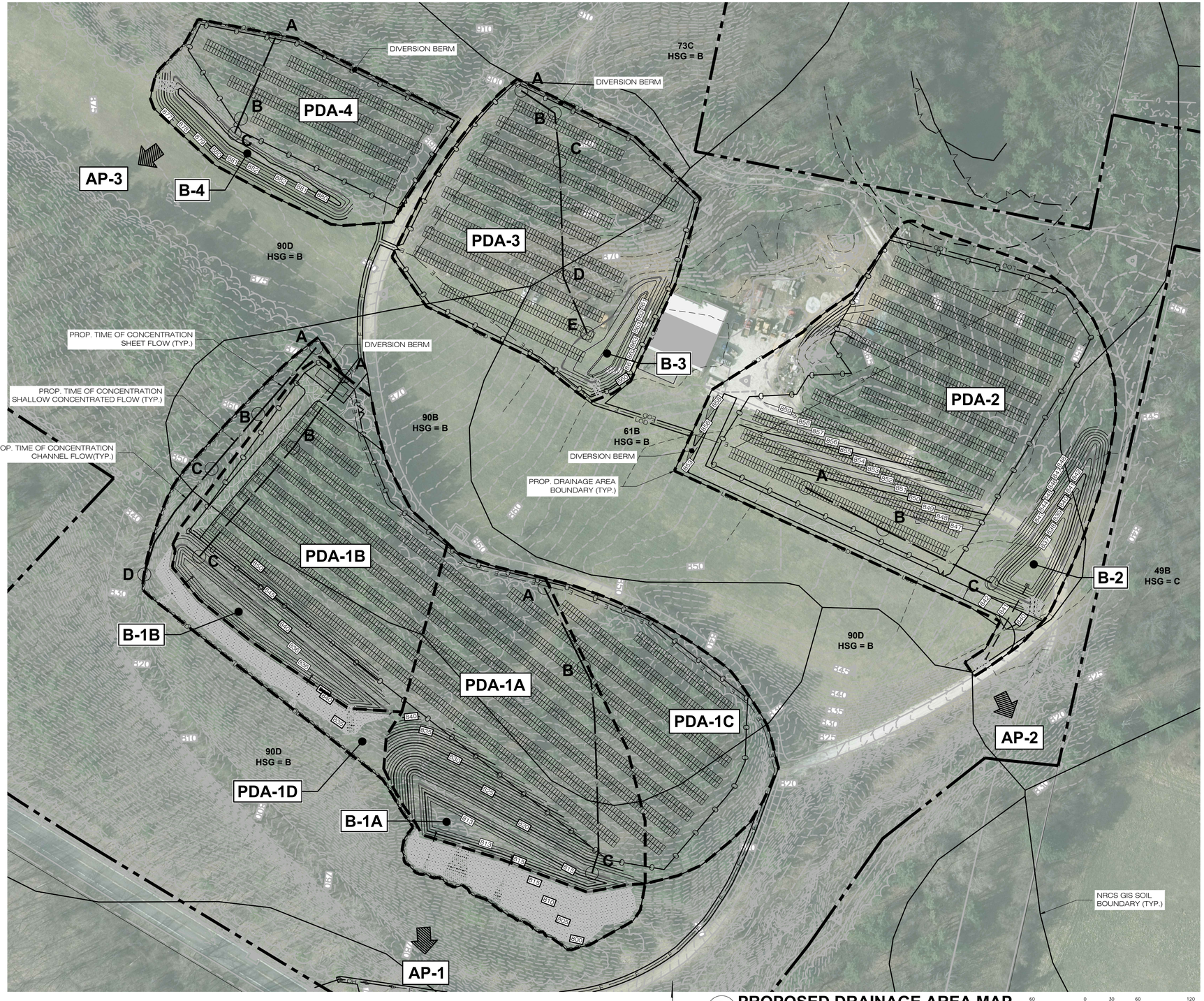
APPENDIX C: PROPOSED DRAINAGE AREA MAP (PDA-1) & HYDROLOGIC COMPUTATION (HYDROCAD)

PROPOSED DRAINAGE AREAS

	TOTAL AREA (ACRES)	COMPOSITE CN	TC (MINS.)
PDA-1A	1.741	67	9.9
PDA-1B	1.703	70	10.5
PDA-1C	0.986	63	6.0
PDA-1D	0.851	57	11.5
PDA-2	3.287	68	16.2
PDA-3	1.628	65	10.1
PDA-4	1.120	66	6.7

PROPOSED CONDITION PEAK FLOWS

ANALYSIS POINT	2-YEAR (CFS)	25-YEAR (CFS)	50-YEAR (CFS)	100-YEAR (CFS)
AP-1	0.38	3.94	5.61	8.33
AP-2	0.48	7.43	11.25	15.46
AP-3	0.10	1.46	2.24	3.21



1 PDA-1 **PROPOSED DRAINAGE AREA MAP**
SCALE : 1" = 60'-0"

60 0 30 60 120
(IN FEET) 1 inch = 60 ft.

LSE INDUS LLC

40 TOWER LANE, SUITE 201
AVON, CT, 06001

ALL-POINTS TECHNOLOGY CORPORATION

567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PHONE: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

CSC PERMIT SET

NO	DATE	REVISION
0	10/15/21	FOR REVIEW: KAM
1		
2		
3		
4		
5		
6		

DESIGN PROFESSIONAL OF RECORD

PROF: KEVIN A. MCCAFFERY, P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION, P.C.
ADD: 567 VAUXHALL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385

OWNER: JOHN BUNCE

ADDRESS: 81 EAST MAIN ST NORTH CANAAN, CT

BUNCE 1 SOLAR

SITE ADDRESS: 81 EAST MAIN ST NORTH CANAAN, CT

APT FILING NUMBER: CT606140

DRAWN BY: JT

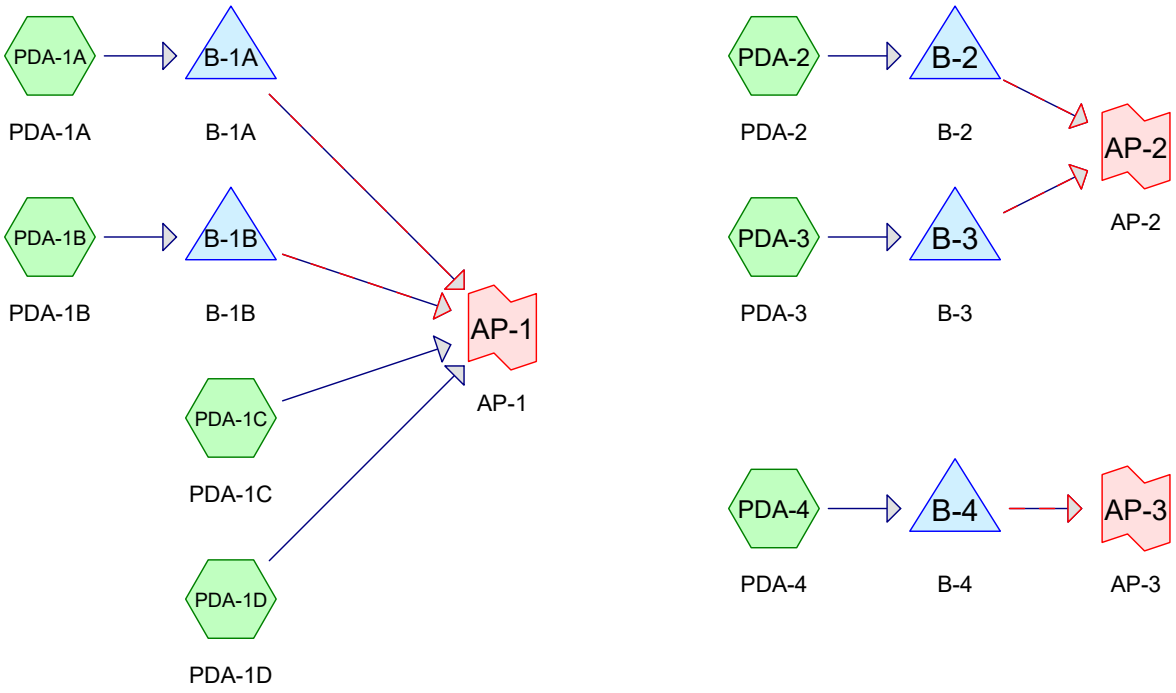
DATE: 10/15/21 CHECKED BY: KAM

SHEET TITLE:

PROPOSED DRAINAGE AREA MAP

SHEET NUMBER:

PDA-1



Subcat Reach Pond Link

Routing Diagram for CT606140_Bunce - PR - Rev0
Prepared by Microsoft, Printed 10/14/2021

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.111	96	Gravel surface, HSG B (PDA-1B)
2.473	58	Meadow, non-grazed, HSG B (PDA-1A, PDA-1B, PDA-1C, PDA-1D, PDA-2, PDA-4)
7.452	65	Meadow, non-grazed, HSG B/C (PDA-1A, PDA-1B, PDA-1C, PDA-2, PDA-3, PDA-4)
0.171	71	Meadow, non-grazed, HSG C (PDA-2)
0.239	98	Paved parking, HSG B (PDA-2)
0.002	98	Paved parking, HSG C (PDA-2)
0.014	98	Unconnected pavement, HSG B (PDA-1B)
0.627	98	Water Surface, HSG B (PDA-1A, PDA-1B, PDA-2, PDA-4)
0.022	98	Water Surface, HSG C (PDA-2)
0.205	55	Woods, Good, HSG B (PDA-1D)
11.316	**66**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
11.121	HSG B	PDA-1A, PDA-1B, PDA-1C, PDA-1D, PDA-2, PDA-3, PDA-4
0.195	HSG C	PDA-2
0.000	HSG D	
0.000	Other	
11.316		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.111	0.000	0.000	0.000	0.111	Gravel surface	PDA-1B
0.000	9.925	0.171	0.000	0.000	10.096	Meadow, non-grazed	PDA-1A, PDA-1B, PDA-1C, PDA-1D, PDA-2, PDA-3, PDA-4
0.000	0.239	0.002	0.000	0.000	0.241	Paved parking	PDA-2
0.000	0.014	0.000	0.000	0.000	0.014	Unconnected pavement	PDA-1B
0.000	0.627	0.022	0.000	0.000	0.649	Water Surface	PDA-1A, PDA-1B, PDA-2, PDA-4
0.000	0.205	0.000	0.000	0.000	0.205	Woods, Good	PDA-1D
0.000	**11.121**	**0.195**	**0.000**	**0.000**	**11.316**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	B-1A	813.00	812.00	25.0	0.0400	0.013	6.0	0.0	0.0
2	B-1A	813.00	812.00	25.0	0.0400	0.013	6.0	0.0	0.0
3	B-1B	836.00	835.00	25.0	0.0400	0.013	6.0	0.0	0.0
4	B-1B	836.00	835.00	25.0	0.0400	0.013	6.0	0.0	0.0
5	B-2	837.00	836.00	94.2	0.0106	0.013	12.0	0.0	0.0
6	B-3	860.50	860.00	21.0	0.0238	0.013	4.0	0.0	0.0
7	B-4	880.00	879.00	20.0	0.0500	0.013	3.0	0.0	0.0

Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment PDA-1A: PDA-1A Runoff Area=1.741 ac 10.28% Impervious Runoff Depth=0.63"
Flow Length=263' Tc=9.9 min CN=67 Runoff=0.90 cfs 0.091 af

Subcatchment PDA-1B: PDA-1B Runoff Area=1.703 ac 13.33% Impervious Runoff Depth=0.76"
Flow Length=337' Tc=10.5 min CN=70 Runoff=1.14 cfs 0.109 af

Subcatchment PDA-1C: PDA-1C Runoff Area=0.986 ac 0.00% Impervious Runoff Depth=0.47"
Tc=6.0 min CN=63 Runoff=0.37 cfs 0.039 af

Subcatchment PDA-1D: PDA-1D Runoff Area=0.851 ac 0.00% Impervious Runoff Depth=0.27"
Flow Length=326' Tc=11.5 min CN=57 Runoff=0.10 cfs 0.019 af

Subcatchment PDA-2: PDA-2 Runoff Area=3.287 ac 11.99% Impervious Runoff Depth=0.67"
Flow Length=237' Tc=16.2 min CN=68 Runoff=1.58 cfs 0.185 af

Subcatchment PDA-3: PDA-3 Runoff Area=1.628 ac 0.00% Impervious Runoff Depth=0.55"
Flow Length=301' Tc=10.1 min CN=65 Runoff=0.67 cfs 0.074 af

Subcatchment PDA-4: PDA-4 Runoff Area=1.120 ac 9.29% Impervious Runoff Depth=0.59"
Flow Length=118' Tc=6.7 min CN=66 Runoff=0.58 cfs 0.055 af

Pond B-1A: B-1A Peak Elev=814.44' Storage=3,983 cf Inflow=0.90 cfs 0.091 af
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond B-1B: B-1B Peak Elev=837.41' Storage=4,728 cf Inflow=1.14 cfs 0.109 af
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond B-2: B-2 Peak Elev=838.41' Storage=2,694 cf Inflow=1.58 cfs 0.185 af
Primary=0.28 cfs 0.184 af Secondary=0.00 cfs 0.000 af Outflow=0.28 cfs 0.184 af

Pond B-3: B-3 Peak Elev=861.06' Storage=750 cf Inflow=0.67 cfs 0.074 af
Primary=0.21 cfs 0.074 af Secondary=0.00 cfs 0.000 af Outflow=0.21 cfs 0.074 af

Pond B-4: B-4 Peak Elev=880.40' Storage=736 cf Inflow=0.58 cfs 0.055 af
Primary=0.10 cfs 0.055 af Secondary=0.00 cfs 0.000 af Outflow=0.10 cfs 0.055 af

Link AP-1: AP-1 Inflow=0.38 cfs 0.058 af
Primary=0.38 cfs 0.058 af

Link AP-2: AP-2 Inflow=0.48 cfs 0.259 af
Primary=0.48 cfs 0.259 af

Link AP-3: AP-3 Inflow=0.10 cfs 0.055 af
Primary=0.10 cfs 0.055 af

Total Runoff Area = 11.316 ac Runoff Volume = 0.572 af Average Runoff Depth = 0.61"
92.01% Pervious = 10.412 ac 7.99% Impervious = 0.904 ac

Summary for Subcatchment PDA-1A: PDA-1A

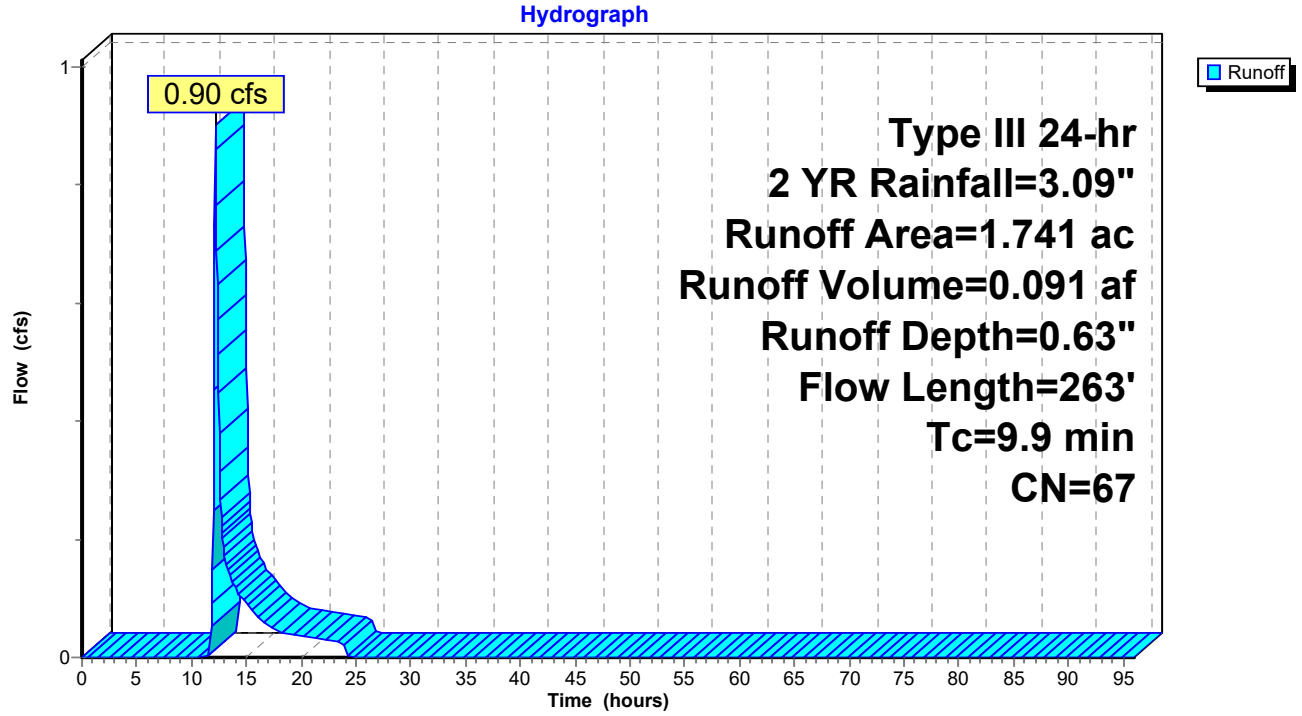
Runoff = 0.90 cfs @ 12.17 hrs, Volume= 0.091 af, Depth= 0.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.09"

	Area (ac)	CN	Description
	0.381	58	Meadow, non-grazed, HSG B
	0.179	98	Water Surface, HSG B
*	1.181	65	Meadow, non-grazed, HSG B/C
	1.741	67	Weighted Average
	1.562		89.72% Pervious Area
	0.179		10.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0697	0.19		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.09"
1.1	163	0.1316	2.54		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
9.9	263	Total			

Subcatchment PDA-1A: PDA-1A



Summary for Subcatchment PDA-1B: PDA-1B

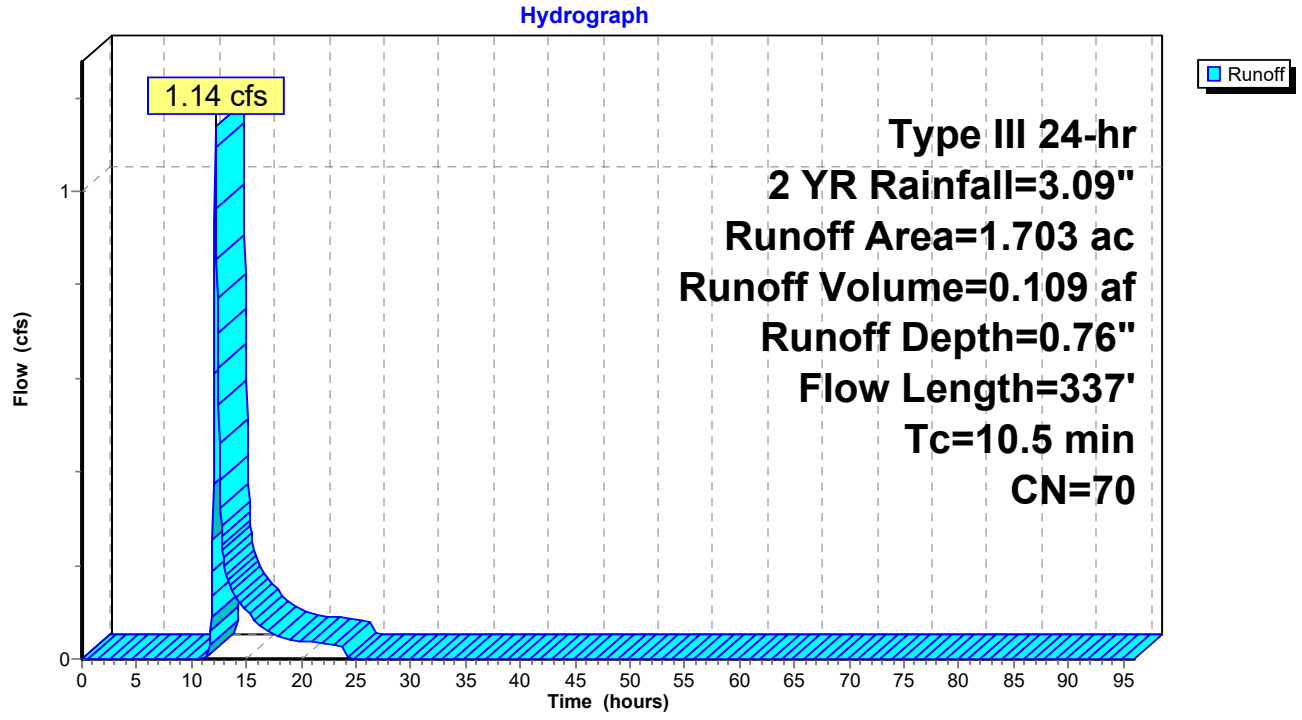
Runoff = 1.14 cfs @ 12.17 hrs, Volume= 0.109 af, Depth= 0.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.09"

	Area (ac)	CN	Description
	0.226	58	Meadow, non-grazed, HSG B
	0.111	96	Gravel surface, HSG B
	0.213	98	Water Surface, HSG B
	0.014	98	Unconnected pavement, HSG B
*	1.139	65	Meadow, non-grazed, HSG B/C
	1.703	70	Weighted Average
	1.476		86.67% Pervious Area
	0.227		13.33% Impervious Area
	0.014		6.17% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	100	0.0688	0.19		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.09"
1.6	237	0.1285	2.51		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
10.5	337	Total			

Subcatchment PDA-1B: PDA-1B



Summary for Subcatchment PDA-1C: PDA-1C

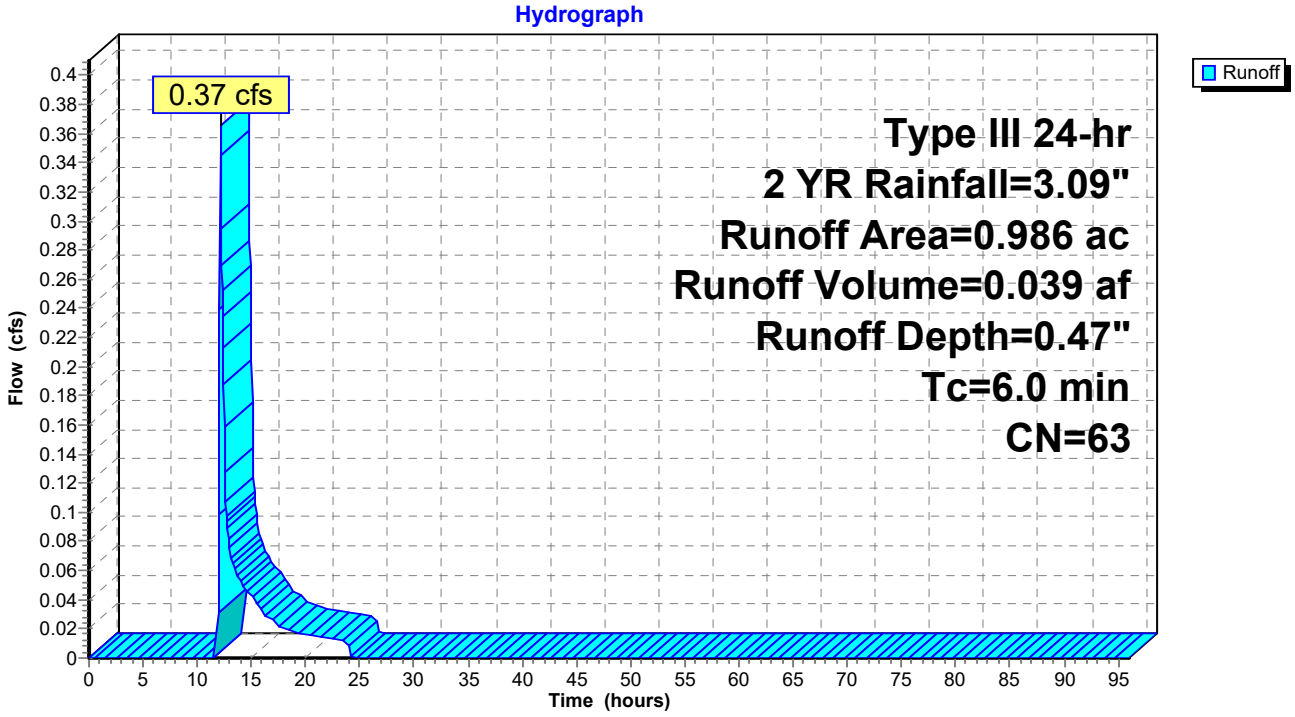
Runoff = 0.37 cfs @ 12.12 hrs, Volume= 0.039 af, Depth= 0.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.09"

	Area (ac)	CN	Description
	0.217	58	Meadow, non-grazed, HSG B
*	0.769	65	Meadow, non-grazed, HSG B/C
	0.986	63	Weighted Average
	0.986		100.00% Pervious Area

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

Subcatchment PDA-1C: PDA-1C



Summary for Subcatchment PDA-1D: PDA-1D

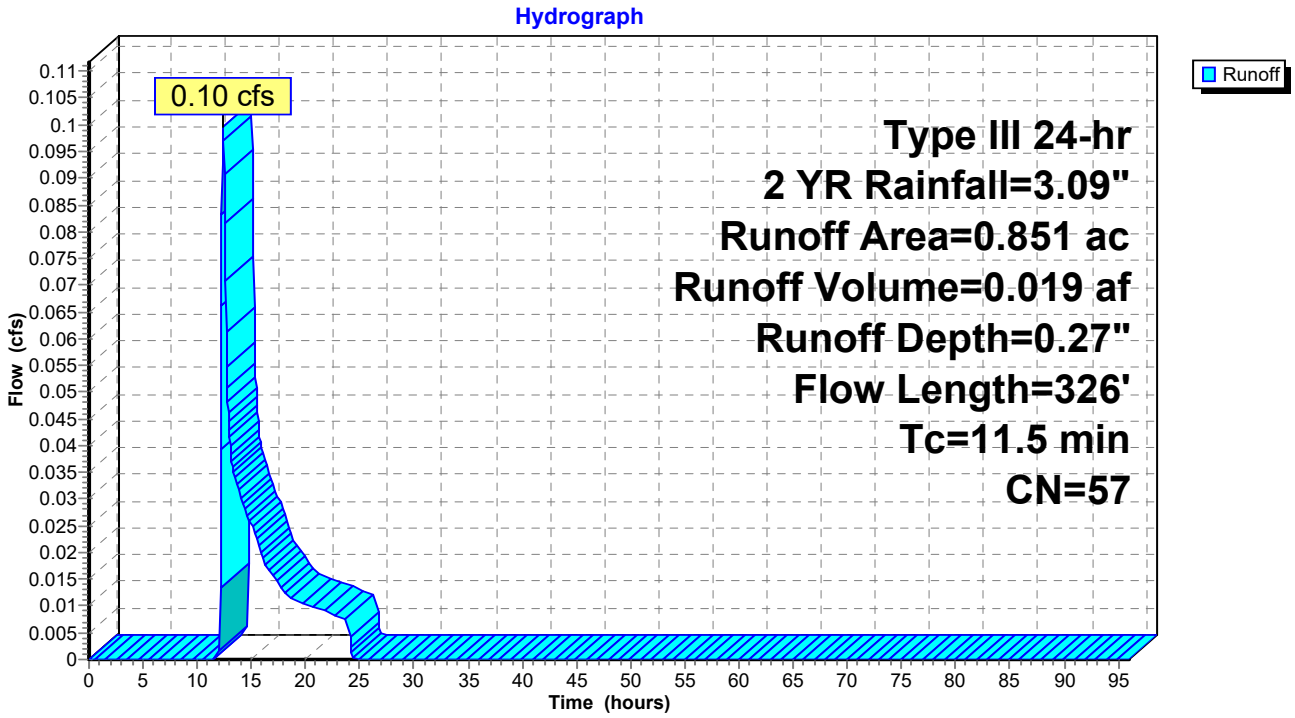
Runoff = 0.10 cfs @ 12.39 hrs, Volume= 0.019 af, Depth= 0.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.09"

Area (ac)	CN	Description
0.205	55	Woods, Good, HSG B
0.233	58	Meadow, non-grazed, HSG B
0.413	58	Meadow, non-grazed, HSG B
0.851	57	Weighted Average
0.851		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.1240	0.16		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.09"
0.8	82	0.1103	1.66		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.2	144	0.1250	11.03	55.16	**Channel Flow, C-D** Area= 5.0 sf Perim= 10.0' r= 0.50' n= 0.030 Earth, grassed & winding
11.5	326	Total			

Subcatchment PDA-1D: PDA-1D



Summary for Subcatchment PDA-2: PDA-2

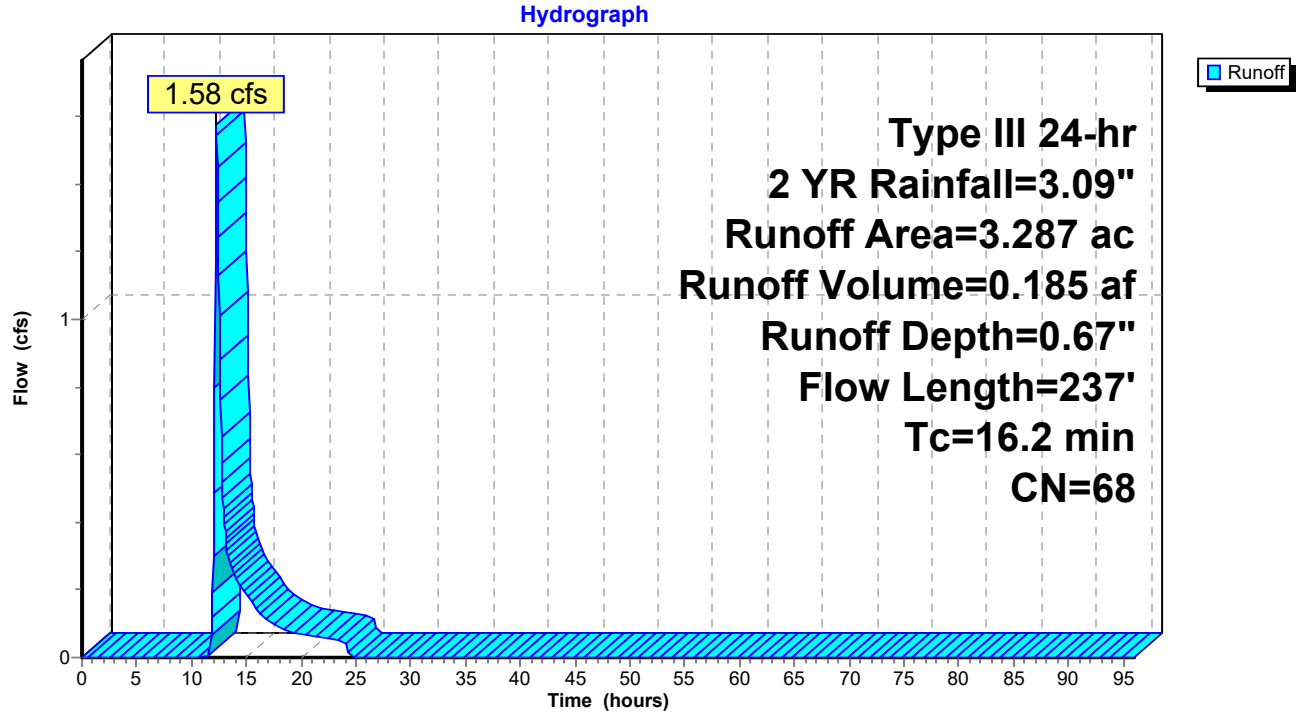
Runoff = 1.58 cfs @ 12.27 hrs, Volume= 0.185 af, Depth= 0.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.09"

	Area (ac)	CN	Description
	0.697	58	Meadow, non-grazed, HSG B
	0.131	98	Water Surface, HSG B
	0.239	98	Paved parking, HSG B
*	2.025	65	Meadow, non-grazed, HSG B/C
	0.171	71	Meadow, non-grazed, HSG C
	0.022	98	Water Surface, HSG C
	0.002	98	Paved parking, HSG C
	3.287	68	Weighted Average
	2.893		88.01% Pervious Area
	0.394		11.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	100	0.0203	0.12		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.09"
1.8	137	0.0326	1.26		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
16.2	237	Total			

Subcatchment PDA-2: PDA-2



Summary for Subcatchment PDA-3: PDA-3

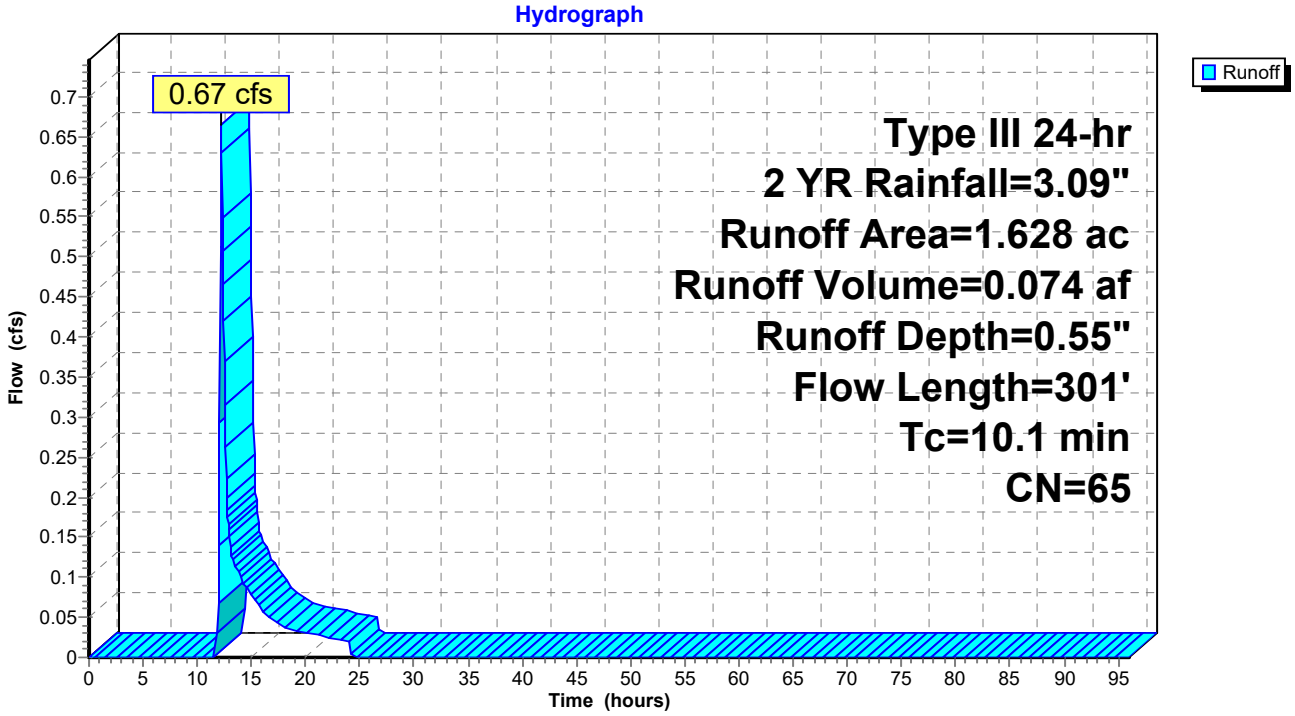
Runoff = 0.67 cfs @ 12.18 hrs, Volume= 0.074 af, Depth= 0.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.09"

	Area (ac)	CN	Description
*	1.628	65	Meadow, non-grazed, HSG B/C
	1.628		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	46	0.0696	0.16		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.09"
4.0	54	0.1452	0.22		**Sheet Flow, B-C** Grass: Dense n= 0.240 P2= 3.09"
0.9	132	0.1287	2.51		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
0.5	69	0.1009	2.22		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
10.1	301	Total			

Subcatchment PDA-3: PDA-3



Summary for Subcatchment PDA-4: PDA-4

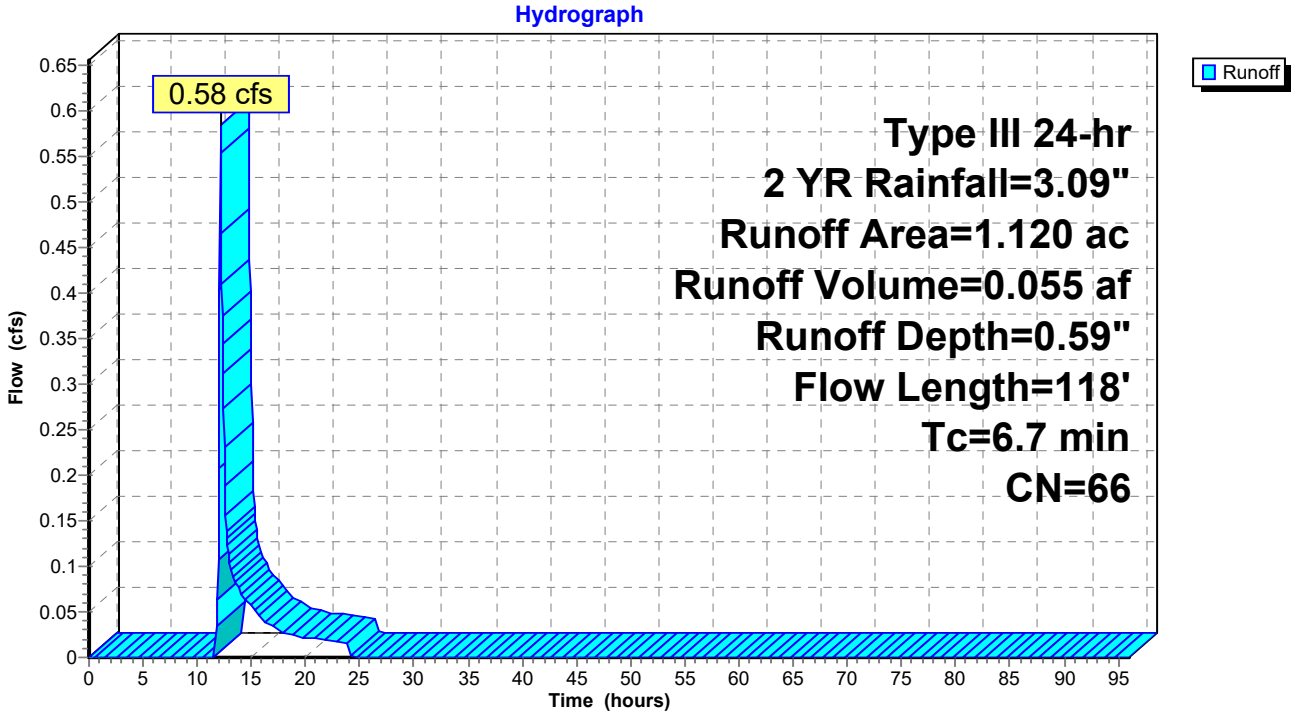
Runoff = 0.58 cfs @ 12.12 hrs, Volume= 0.055 af, Depth= 0.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.09"

	Area (ac)	CN	Description
	0.306	58	Meadow, non-grazed, HSG B
	0.104	98	Water Surface, HSG B
*	0.710	65	Meadow, non-grazed, HSG B/C
	1.120	66	Weighted Average
	1.016		90.71% Pervious Area
	0.104		9.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	100	0.1449	0.25		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.09"
0.1	18	0.3184	3.95		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
6.7	118	Total			

Subcatchment PDA-4: PDA-4



Summary for Pond B-1A: B-1A

Inflow Area = 1.741 ac, 10.28% Impervious, Inflow Depth = 0.63" for 2 YR event
Inflow = 0.90 cfs @ 12.17 hrs, Volume= 0.091 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 814.44' @ 24.60 hrs Surf.Area= 3,628 sf Storage= 3,983 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	813.00'	18,239 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

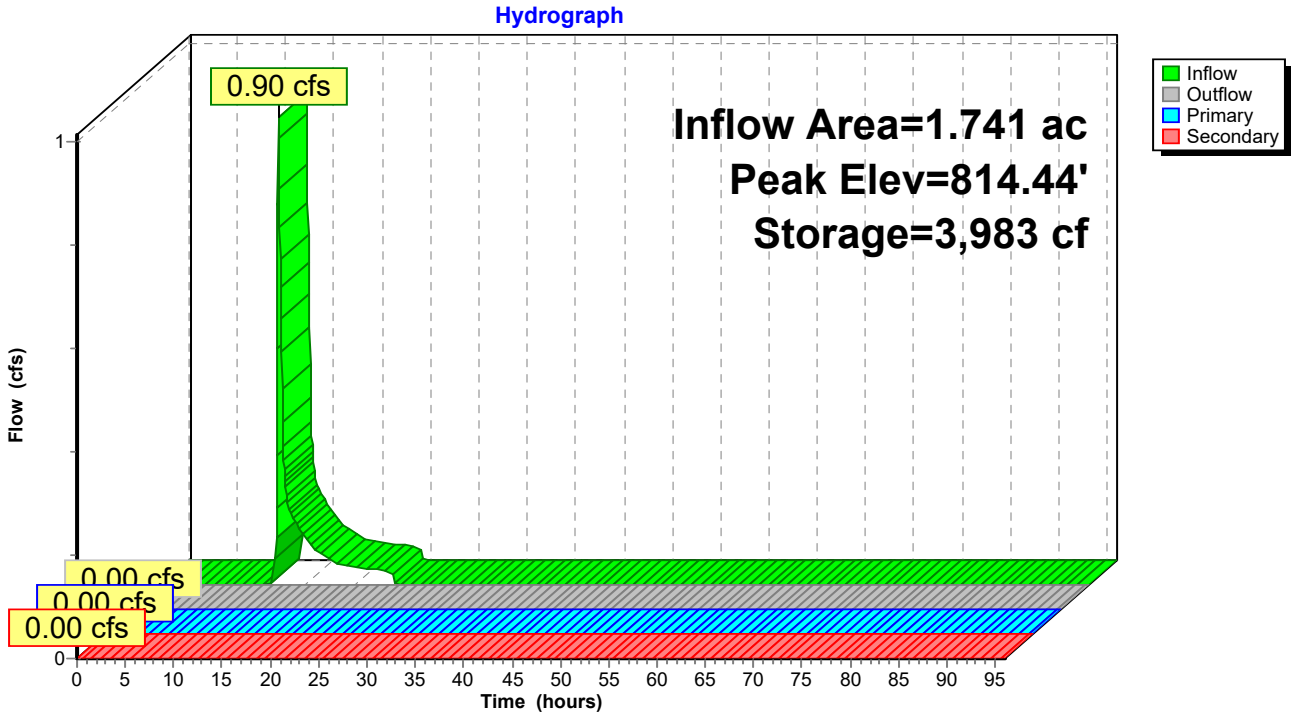
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
813.00	1,972	351.3	0	0	1,972
817.00	7,788	568.9	18,239	18,239	18,012

Device	Routing	Invert	Outlet Devices
#1	Primary	813.00'	**6.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 813.00' / 812.00' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Primary	813.00'	**6.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 813.00' / 812.00' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	815.00'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 2	815.00'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	816.00'	**5.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=813.00' TW=0.00' (Dynamic Tailwater)
- **1=Culvert** (Controls 0.00 cfs)
  - **3=Orifice/Grate** (Controls 0.00 cfs)
- **2=Culvert** (Controls 0.00 cfs)
  - **4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=813.00' TW=0.00' (Dynamic Tailwater)
- **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B-1A: B-1A


Hydrograph
0.90 cfs
Inflow Area=1.741 ac
Peak Elev=814.44'
Storage=3,983 cf
Inflow
Outflow
Primary
Secondary
0.00 cfs
0.00 cfs
0.00 cfs
Flow (cfs)
Time (hours)
0
1
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95

Summary for Pond B-1B: B-1B

Inflow Area = 1.703 ac, 13.33% Impervious, Inflow Depth = 0.76" for 2 YR event
Inflow = 1.14 cfs @ 12.17 hrs, Volume= 0.109 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 837.41' @ 24.65 hrs Surf.Area= 4,349 sf Storage= 4,728 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	836.00'	21,963 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

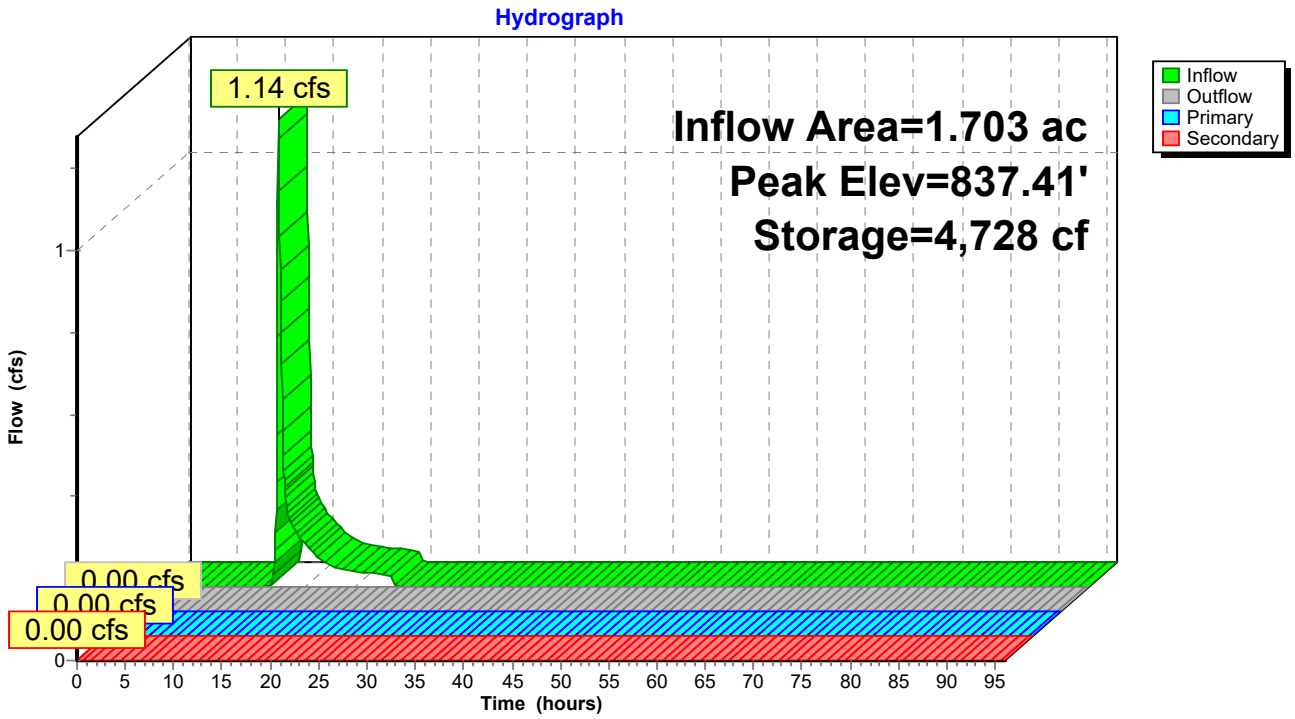
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
836.00	2,430	506.8	0	0	2,430
840.00	9,291	633.4	21,963	21,963	14,141

Device	Routing	Invert	Outlet Devices
#1	Primary	836.00'	**6.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 836.00' / 835.00' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Primary	836.00'	**6.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 836.00' / 835.00' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	838.00'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 2	838.00'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	839.00'	**5.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=836.00' TW=0.00' (Dynamic Tailwater)
- **1=Culvert** (Controls 0.00 cfs)
  - **3=Orifice/Grate** (Controls 0.00 cfs)
- **2=Culvert** (Controls 0.00 cfs)
  - **4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=836.00' TW=0.00' (Dynamic Tailwater)
- **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B-1B: B-1B


Hydrograph
1.14 cfs
0.00 cfs
0.00 cfs
0.00 cfs
Inflow Area=1.703 ac
Peak Elev=837.41'
Storage=4,728 cf
Inflow
Outflow
Primary
Secondary
Flow (cfs)
0
1
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95
Time (hours)

Summary for Pond B-2: B-2

Inflow Area = 3.287 ac, 11.99% Impervious, Inflow Depth = 0.67" for 2 YR event
Inflow = 1.58 cfs @ 12.27 hrs, Volume= 0.185 af
Outflow = 0.28 cfs @ 13.53 hrs, Volume= 0.184 af, Atten= 82%, Lag= 75.9 min
Primary = 0.28 cfs @ 13.53 hrs, Volume= 0.184 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 838.41' @ 13.53 hrs Surf.Area= 2,481 sf Storage= 2,694 cf

Plug-Flow detention time= 117.5 min calculated for 0.184 af (100% of inflow)
Center-of-Mass det. time= 117.0 min (1,012.6 - 895.6)

Volume	Invert	Avail.Storage	Storage Description
#1	837.00'	18,539 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

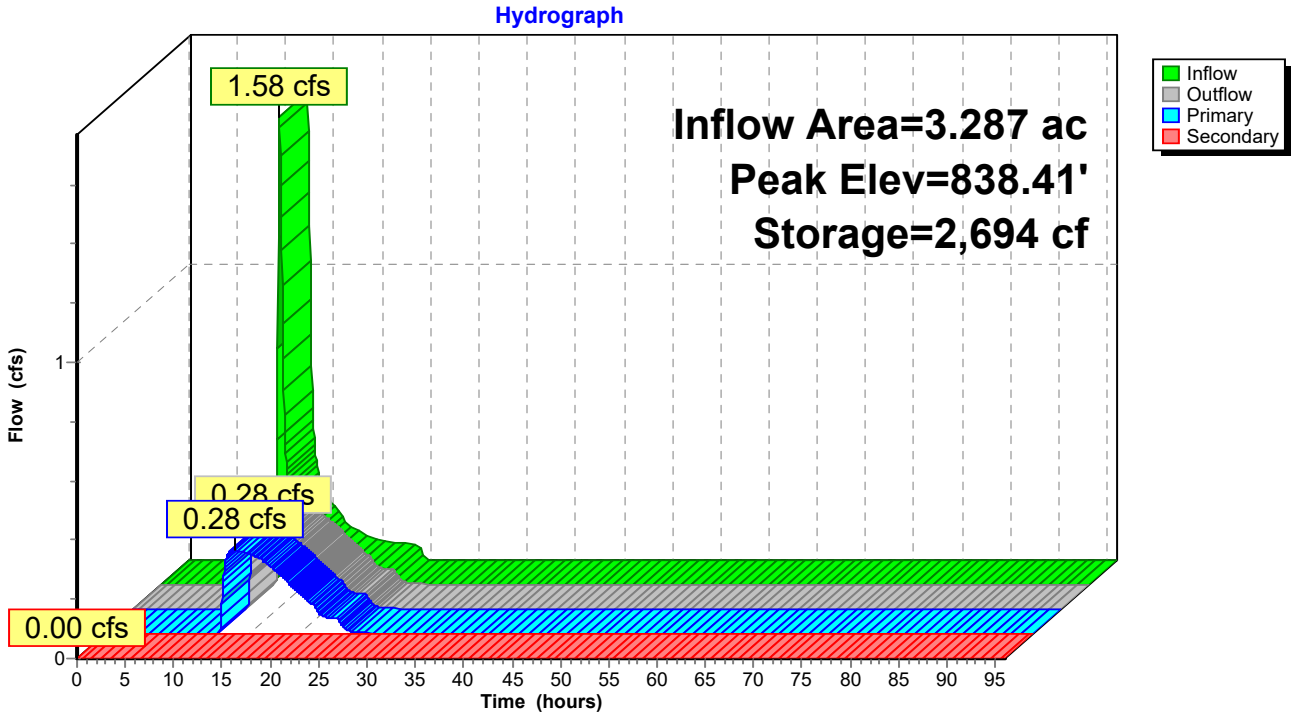
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
837.00	1,383	209.9	0	0	1,383
842.00	6,697	456.9	18,539	18,539	14,595

Device	Routing	Invert	Outlet Devices
#1	Primary	837.00'	**12.0" Round Culvert** L= 94.2' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 837.00' / 836.00' S= 0.0106 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	837.00'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	839.00'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	840.00'	**5.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=0.28 cfs @ 13.53 hrs HW=838.41' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.28 cfs of 3.55 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.28 cfs @ 5.72 fps)
└**3=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=837.00' TW=0.00' (Dynamic Tailwater)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B-2: B-2


Hydrograph
1.58 cfs
0.28 cfs
0.28 cfs
0.00 cfs
Inflow Area=3.287 ac
Peak Elev=838.41'
Storage=2,694 cf
Inflow
Outflow
Primary
Secondary
Flow (cfs)
0
1
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95
Time (hours)

Summary for Pond B-3: B-3

Inflow Area = 1.628 ac, 0.00% Impervious, Inflow Depth = 0.55" for 2 YR event
Inflow = 0.67 cfs @ 12.18 hrs, Volume= 0.074 af
Outflow = 0.21 cfs @ 12.68 hrs, Volume= 0.074 af, Atten= 69%, Lag= 30.3 min
Primary = 0.21 cfs @ 12.68 hrs, Volume= 0.074 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 861.06' @ 12.68 hrs Surf.Area= 1,676 sf Storage= 750 cf

Plug-Flow detention time= 64.9 min calculated for 0.074 af (100% of inflow)
Center-of-Mass det. time= 66.1 min (968.8 - 902.7)

Volume	Invert	Avail.Storage	Storage Description
#1	860.50'	7,066 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

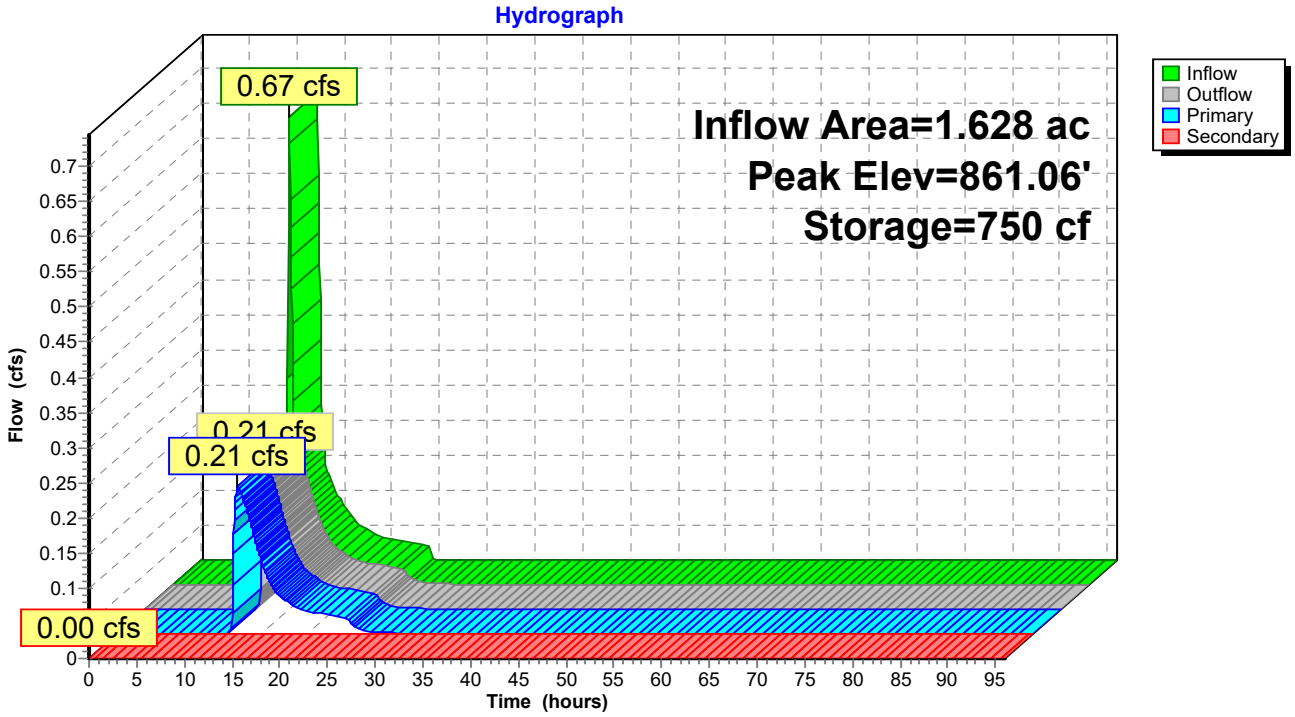
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
860.50	1,023	234.2	0	0	1,023
863.00	5,159	345.6	7,066	7,066	6,214

Device	Routing	Invert	Outlet Devices
#1	Primary	860.50'	**4.0" Round Culvert** L= 21.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 860.50' / 860.00' S= 0.0238 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.09 sf
#2	Secondary	862.00'	**2.5' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=0.21 cfs @ 12.68 hrs HW=861.06' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.21 cfs @ 2.39 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=860.50' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B-3: B-3


Hydrograph
Inflow Area=1.628 ac
Peak Elev=861.06'
Storage=750 cf
0.67 cfs
0.21 cfs
0.21 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
0.55
0.6
0.65
0.7
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95

Summary for Pond B-4: B-4

Inflow Area = 1.120 ac, 9.29% Impervious, Inflow Depth = 0.59" for 2 YR event
Inflow = 0.58 cfs @ 12.12 hrs, Volume= 0.055 af
Outflow = 0.10 cfs @ 13.05 hrs, Volume= 0.055 af, Atten= 83%, Lag= 55.7 min
Primary = 0.10 cfs @ 13.05 hrs, Volume= 0.055 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 880.40' @ 13.05 hrs Surf.Area= 2,083 sf Storage= 736 cf

Plug-Flow detention time= 141.6 min calculated for 0.055 af (100% of inflow)
Center-of-Mass det. time= 142.2 min (1,037.3 - 895.1)

Volume	Invert	Avail.Storage	Storage Description
#1	880.00'	5,913 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

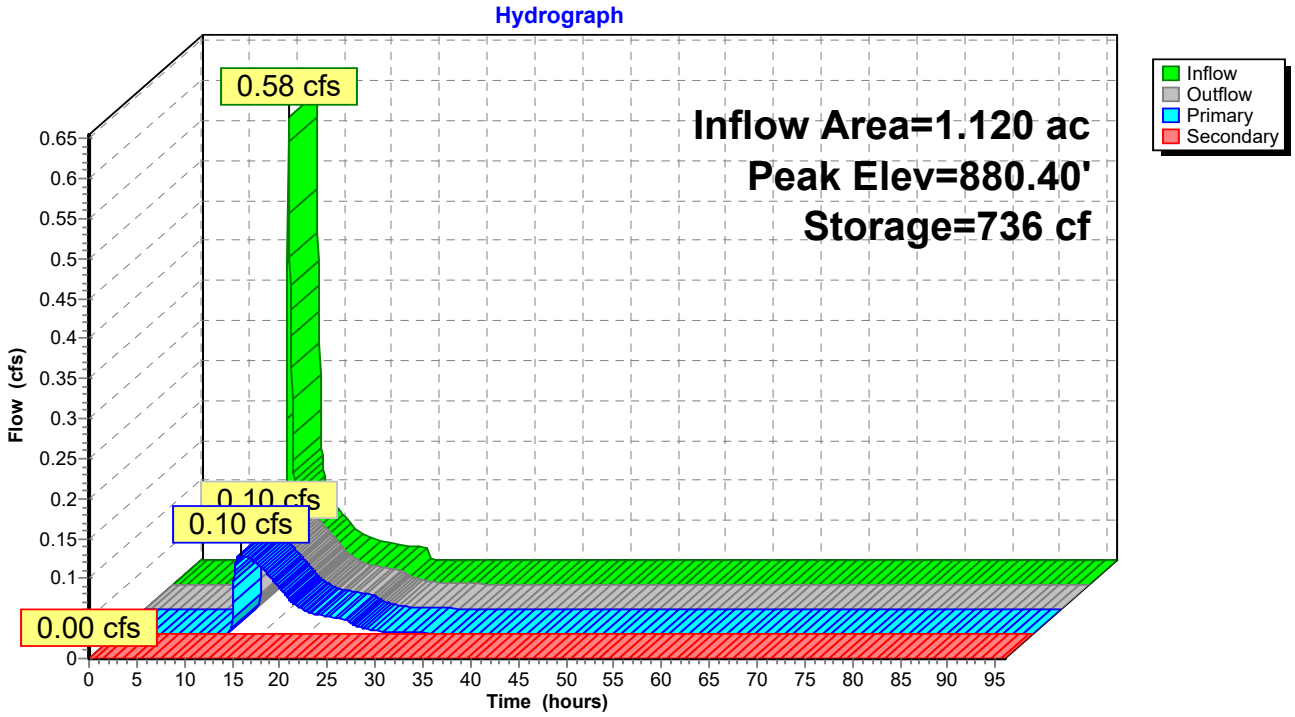
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
880.00	1,618	461.8	0	0	1,618
882.00	4,541	517.0	5,913	5,913	6,028

Device	Routing	Invert	Outlet Devices
#1	Primary	880.00'	**3.0" Round Culvert** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 880.00' / 879.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.05 sf
#2	Secondary	881.00'	**2.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=0.10 cfs @ 13.05 hrs HW=880.40' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.10 cfs @ 1.99 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=880.00' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B-4: B-4

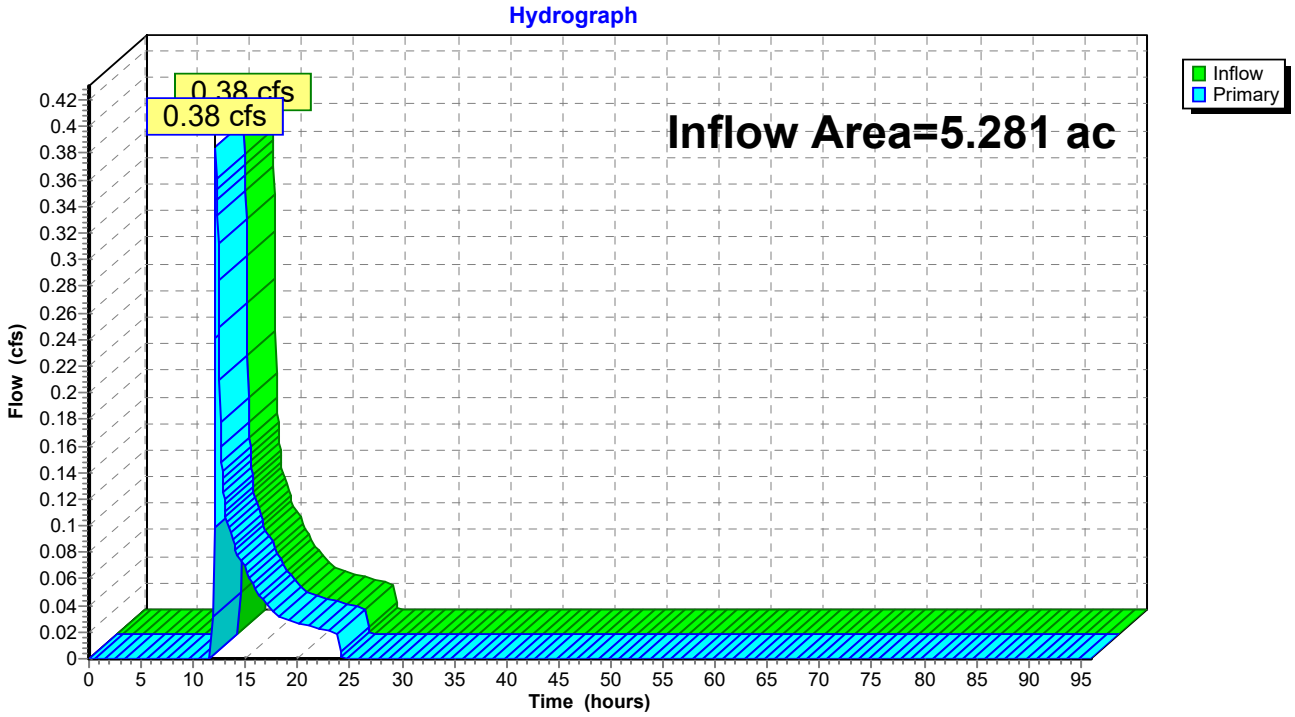

Hydrograph
Inflow Area=1.120 ac
Peak Elev=880.40'
Storage=736 cf
0.58 cfs
0.10 cfs
0.10 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
0.55
0.6
0.65
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95

Summary for Link AP-1: AP-1

Inflow Area = 5.281 ac, 7.69% Impervious, Inflow Depth = 0.13" for 2 YR event
Inflow = 0.38 cfs @ 12.15 hrs, Volume= 0.058 af
Primary = 0.38 cfs @ 12.15 hrs, Volume= 0.058 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link AP-1: AP-1

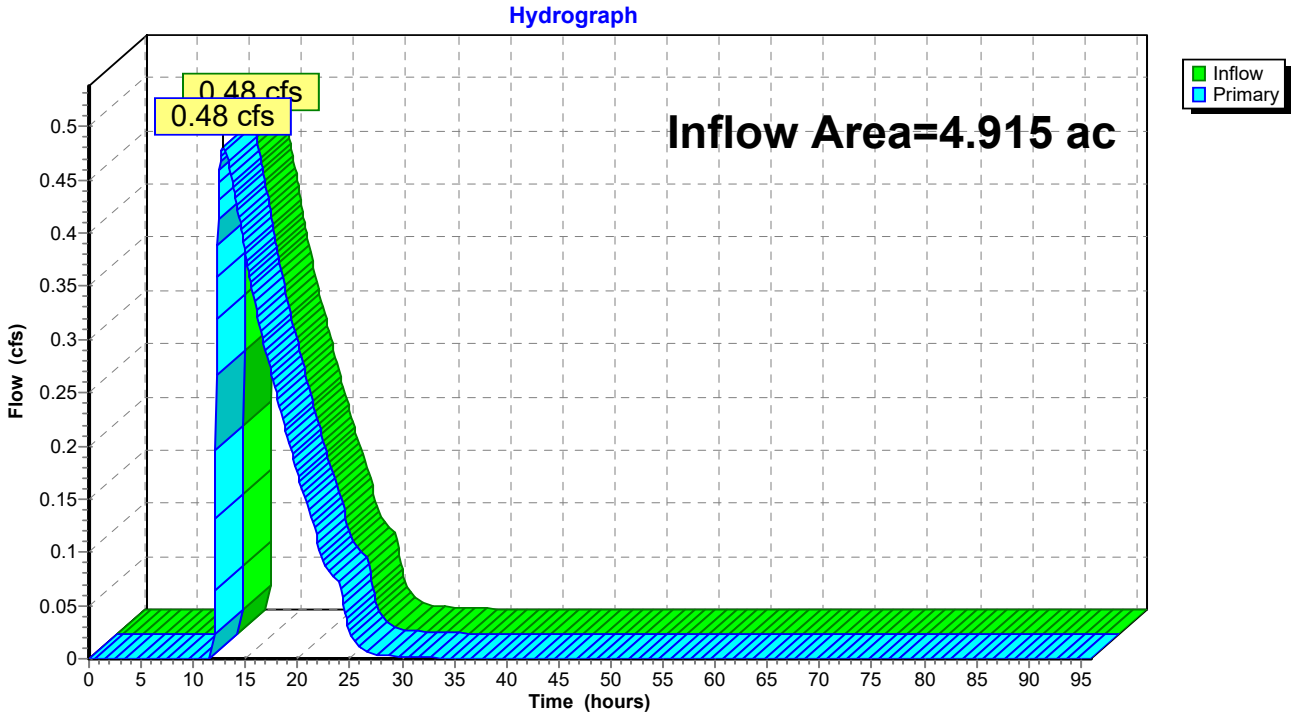


Summary for Link AP-2: AP-2

Inflow Area = 4.915 ac, 8.02% Impervious, Inflow Depth = 0.63" for 2 YR event
Inflow = 0.48 cfs @ 12.89 hrs, Volume= 0.259 af
Primary = 0.48 cfs @ 12.89 hrs, Volume= 0.259 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link AP-2: AP-2

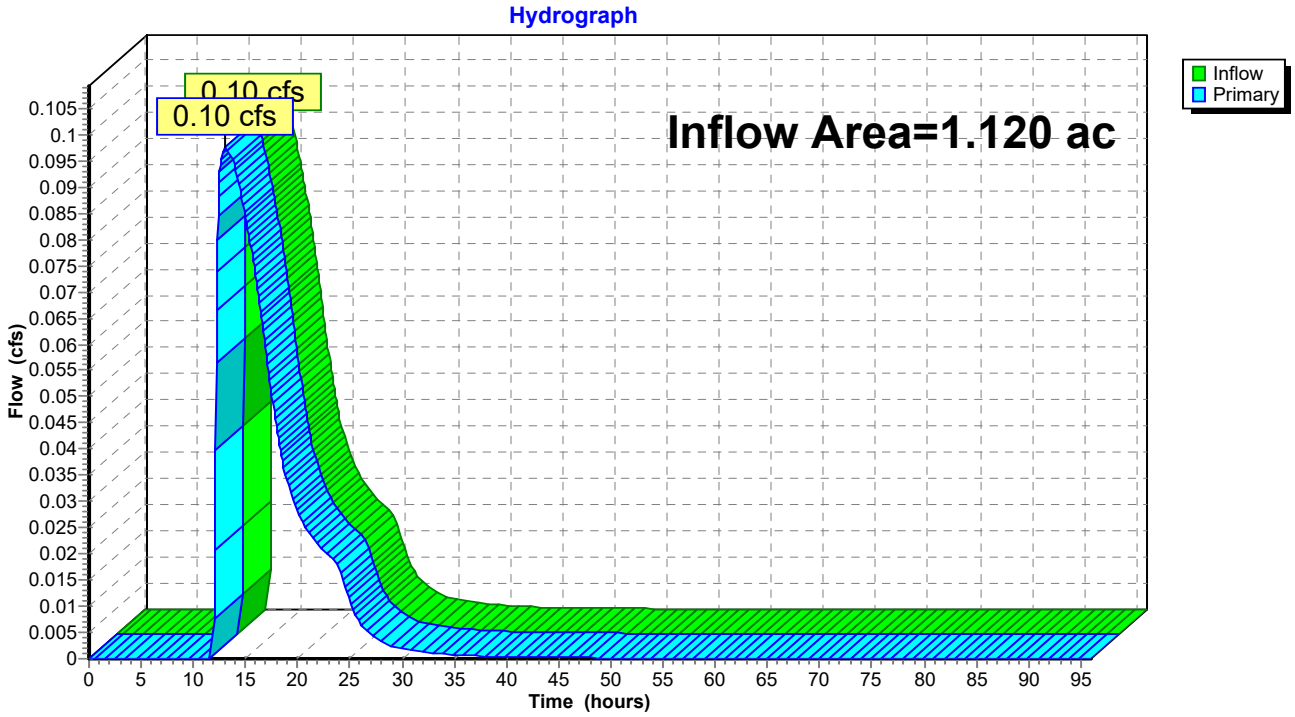


Summary for Link AP-3: AP-3

Inflow Area = 1.120 ac, 9.29% Impervious, Inflow Depth > 0.59" for 2 YR event
Inflow = 0.10 cfs @ 13.05 hrs, Volume= 0.055 af
Primary = 0.10 cfs @ 13.05 hrs, Volume= 0.055 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link AP-3: AP-3



Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment PDA-1A: PDA-1A Runoff Area=1.741 ac 10.28% Impervious Runoff Depth=2.84"
Flow Length=263' Tc=9.9 min CN=67 Runoff=4.96 cfs 0.411 af

Subcatchment PDA-1B: PDA-1B Runoff Area=1.703 ac 13.33% Impervious Runoff Depth=3.13"
Flow Length=337' Tc=10.5 min CN=70 Runoff=5.30 cfs 0.444 af

Subcatchment PDA-1C: PDA-1C Runoff Area=0.986 ac 0.00% Impervious Runoff Depth=2.46"
Tc=6.0 min CN=63 Runoff=2.73 cfs 0.202 af

Subcatchment PDA-1D: PDA-1D Runoff Area=0.851 ac 0.00% Impervious Runoff Depth=1.92"
Flow Length=326' Tc=11.5 min CN=57 Runoff=1.47 cfs 0.136 af

Subcatchment PDA-2: PDA-2 Runoff Area=3.287 ac 11.99% Impervious Runoff Depth=2.93"
Flow Length=237' Tc=16.2 min CN=68 Runoff=8.16 cfs 0.803 af

Subcatchment PDA-3: PDA-3 Runoff Area=1.628 ac 0.00% Impervious Runoff Depth=2.65"
Flow Length=301' Tc=10.1 min CN=65 Runoff=4.27 cfs 0.359 af

Subcatchment PDA-4: PDA-4 Runoff Area=1.120 ac 9.29% Impervious Runoff Depth=2.74"
Flow Length=118' Tc=6.7 min CN=66 Runoff=3.42 cfs 0.256 af

Pond B-1A: B-1A Peak Elev=815.36' Storage=7,912 cf Inflow=4.96 cfs 0.411 af
Primary=1.14 cfs 0.269 af Secondary=0.00 cfs 0.000 af Outflow=1.14 cfs 0.269 af

Pond B-1B: B-1B Peak Elev=838.31' Storage=9,259 cf Inflow=5.30 cfs 0.444 af
Primary=1.05 cfs 0.270 af Secondary=0.00 cfs 0.000 af Outflow=1.05 cfs 0.270 af

Pond B-2: B-2 Peak Elev=840.37' Storage=9,447 cf Inflow=8.16 cfs 0.803 af
Primary=2.40 cfs 0.716 af Secondary=2.93 cfs 0.087 af Outflow=5.34 cfs 0.803 af

Pond B-3: B-3 Peak Elev=862.41' Storage=4,385 cf Inflow=4.27 cfs 0.359 af
Primary=0.44 cfs 0.270 af Secondary=1.69 cfs 0.089 af Outflow=2.13 cfs 0.359 af

Pond B-4: B-4 Peak Elev=881.38' Storage=3,451 cf Inflow=3.42 cfs 0.256 af
Primary=0.21 cfs 0.170 af Secondary=1.25 cfs 0.086 af Outflow=1.46 cfs 0.256 af

Link AP-1: AP-1 Inflow=3.94 cfs 0.878 af
Primary=3.94 cfs 0.878 af

Link AP-2: AP-2 Inflow=7.43 cfs 1.162 af
Primary=7.43 cfs 1.162 af

Link AP-3: AP-3 Inflow=1.46 cfs 0.256 af
Primary=1.46 cfs 0.256 af

Total Runoff Area = 11.316 ac Runoff Volume = 2.611 af Average Runoff Depth = 2.77"
92.01% Pervious = 10.412 ac 7.99% Impervious = 0.904 ac

Summary for Subcatchment PDA-1A: PDA-1A

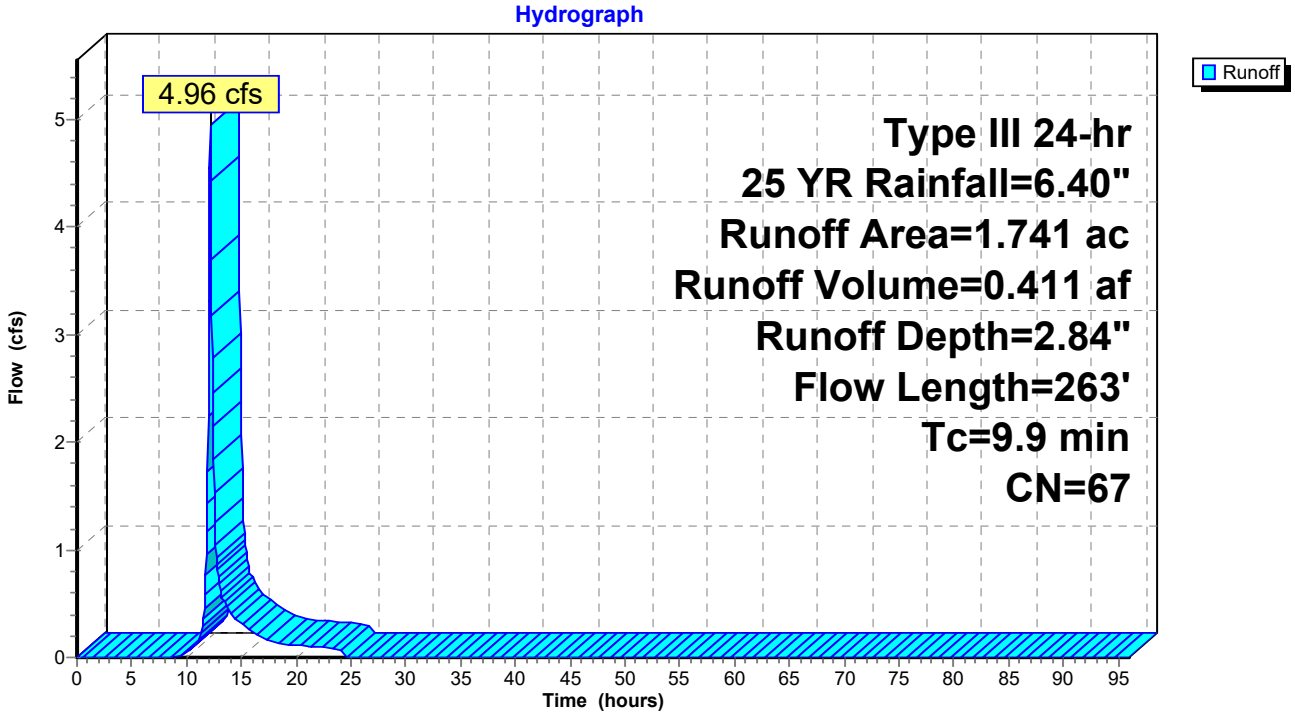
Runoff = 4.96 cfs @ 12.15 hrs, Volume= 0.411 af, Depth= 2.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=6.40"

	Area (ac)	CN	Description
	0.381	58	Meadow, non-grazed, HSG B
	0.179	98	Water Surface, HSG B
*	1.181	65	Meadow, non-grazed, HSG B/C
	1.741	67	Weighted Average
	1.562		89.72% Pervious Area
	0.179		10.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0697	0.19		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.09"
1.1	163	0.1316	2.54		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
9.9	263	Total			

Subcatchment PDA-1A: PDA-1A



Summary for Subcatchment PDA-1B: PDA-1B

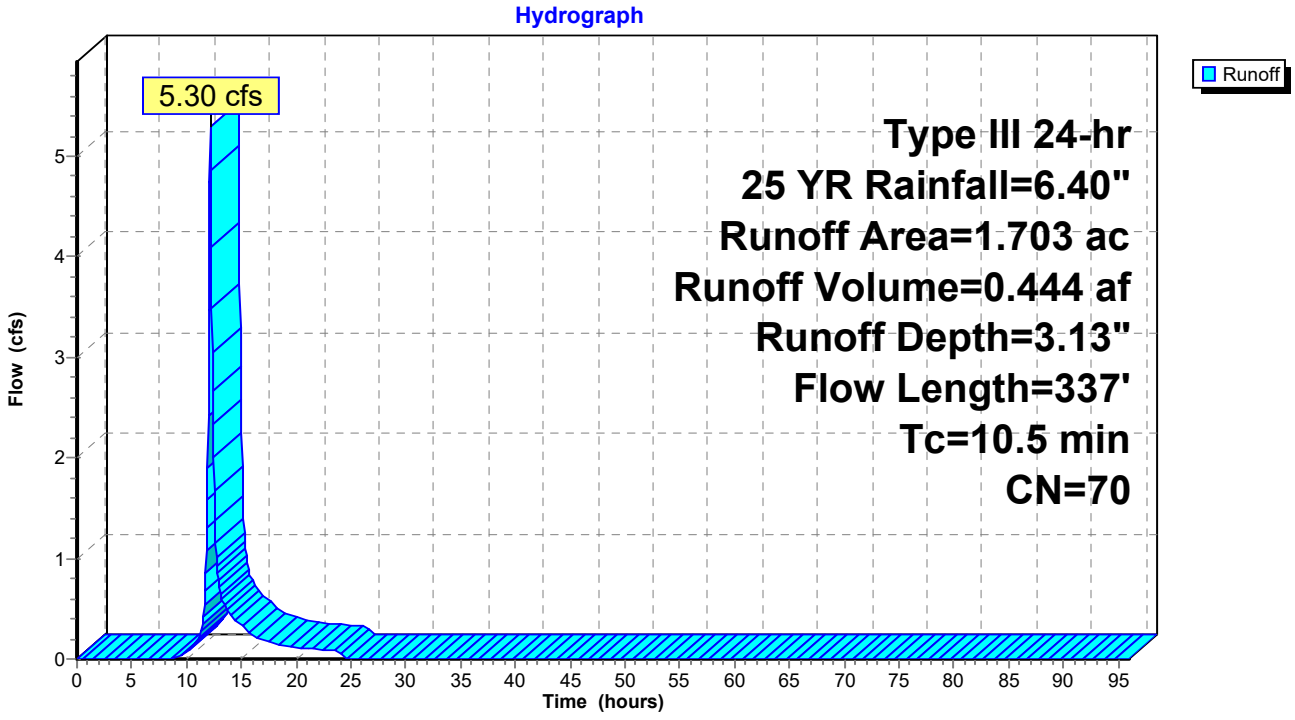
Runoff = 5.30 cfs @ 12.15 hrs, Volume= 0.444 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=6.40"

	Area (ac)	CN	Description
	0.226	58	Meadow, non-grazed, HSG B
	0.111	96	Gravel surface, HSG B
	0.213	98	Water Surface, HSG B
	0.014	98	Unconnected pavement, HSG B
*	1.139	65	Meadow, non-grazed, HSG B/C
	1.703	70	Weighted Average
	1.476		86.67% Pervious Area
	0.227		13.33% Impervious Area
	0.014		6.17% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	100	0.0688	0.19		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.09"
1.6	237	0.1285	2.51		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
10.5	337	Total			

Subcatchment PDA-1B: PDA-1B



Summary for Subcatchment PDA-1C: PDA-1C

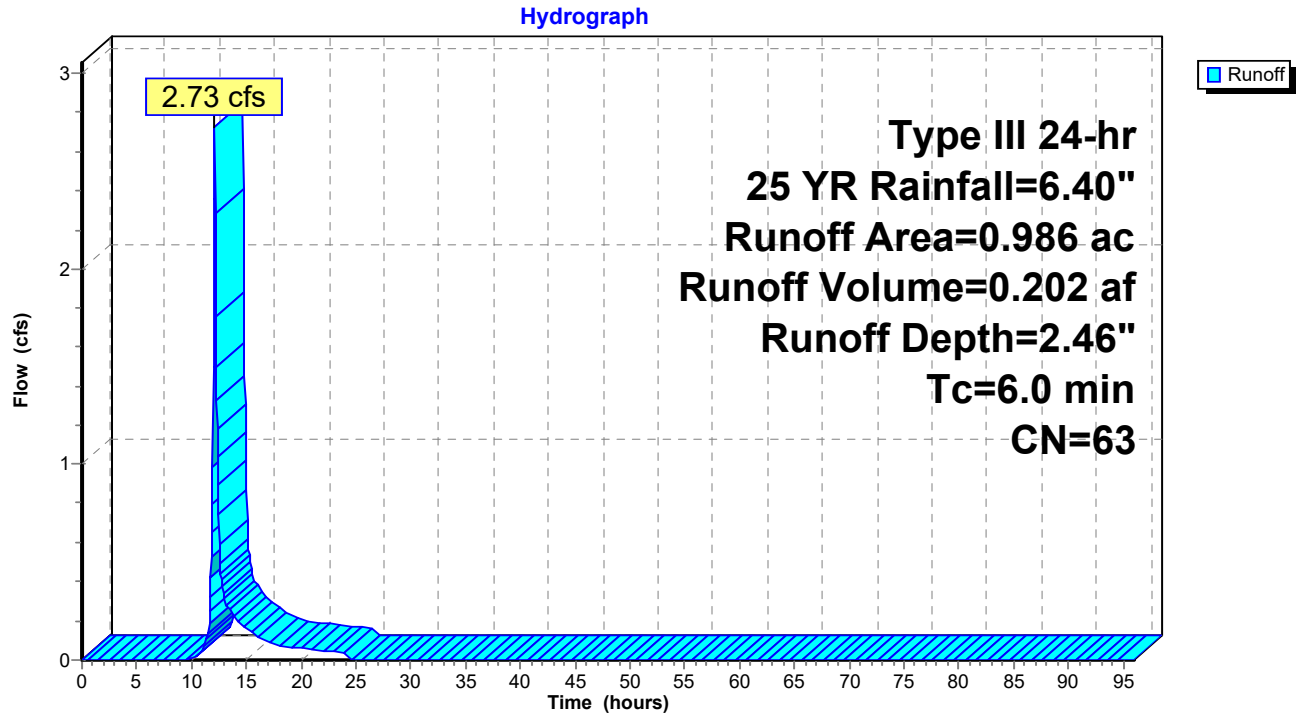
Runoff = 2.73 cfs @ 12.10 hrs, Volume= 0.202 af, Depth= 2.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=6.40"

	Area (ac)	CN	Description
	0.217	58	Meadow, non-grazed, HSG B
*	0.769	65	Meadow, non-grazed, HSG B/C
	0.986	63	Weighted Average
	0.986		100.00% Pervious Area

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

Subcatchment PDA-1C: PDA-1C



Summary for Subcatchment PDA-1D: PDA-1D

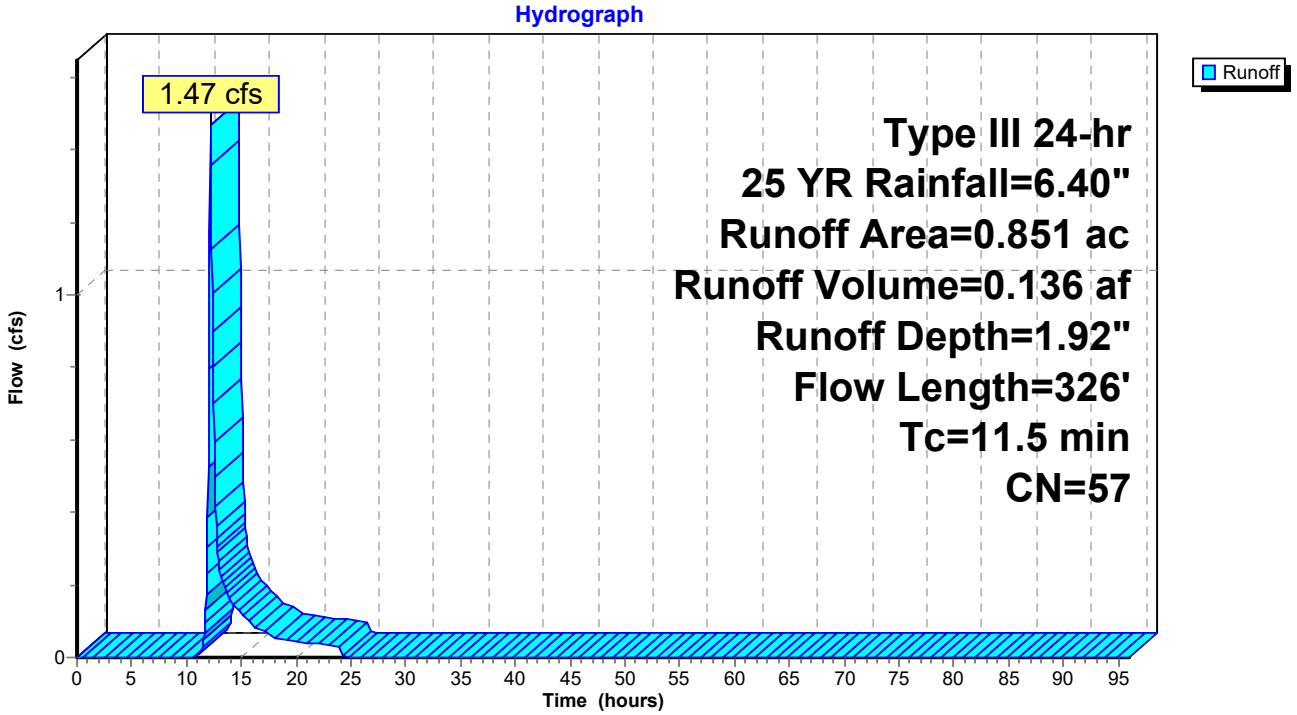
Runoff = 1.47 cfs @ 12.17 hrs, Volume= 0.136 af, Depth= 1.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=6.40"

Area (ac)	CN	Description
0.205	55	Woods, Good, HSG B
0.233	58	Meadow, non-grazed, HSG B
0.413	58	Meadow, non-grazed, HSG B
0.851	57	Weighted Average
0.851		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.1240	0.16		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.09"
0.8	82	0.1103	1.66		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.2	144	0.1250	11.03	55.16	**Channel Flow, C-D** Area= 5.0 sf Perim= 10.0' r= 0.50' n= 0.030 Earth, grassed & winding
11.5	326	Total			

Subcatchment PDA-1D: PDA-1D



Summary for Subcatchment PDA-2: PDA-2

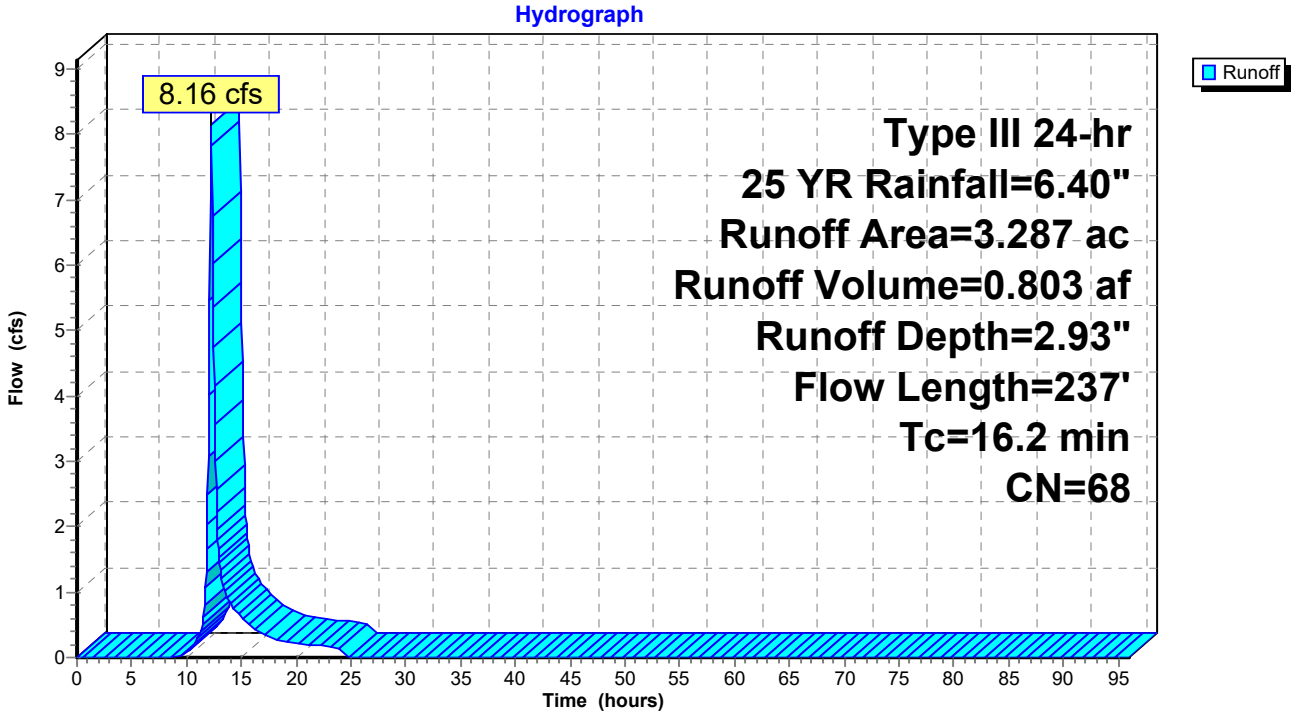
Runoff = 8.16 cfs @ 12.23 hrs, Volume= 0.803 af, Depth= 2.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=6.40"

	Area (ac)	CN	Description
	0.697	58	Meadow, non-grazed, HSG B
	0.131	98	Water Surface, HSG B
	0.239	98	Paved parking, HSG B
*	2.025	65	Meadow, non-grazed, HSG B/C
	0.171	71	Meadow, non-grazed, HSG C
	0.022	98	Water Surface, HSG C
	0.002	98	Paved parking, HSG C
	3.287	68	Weighted Average
	2.893		88.01% Pervious Area
	0.394		11.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	100	0.0203	0.12		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.09"
1.8	137	0.0326	1.26		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
16.2	237	Total			

Subcatchment PDA-2: PDA-2



Summary for Subcatchment PDA-3: PDA-3

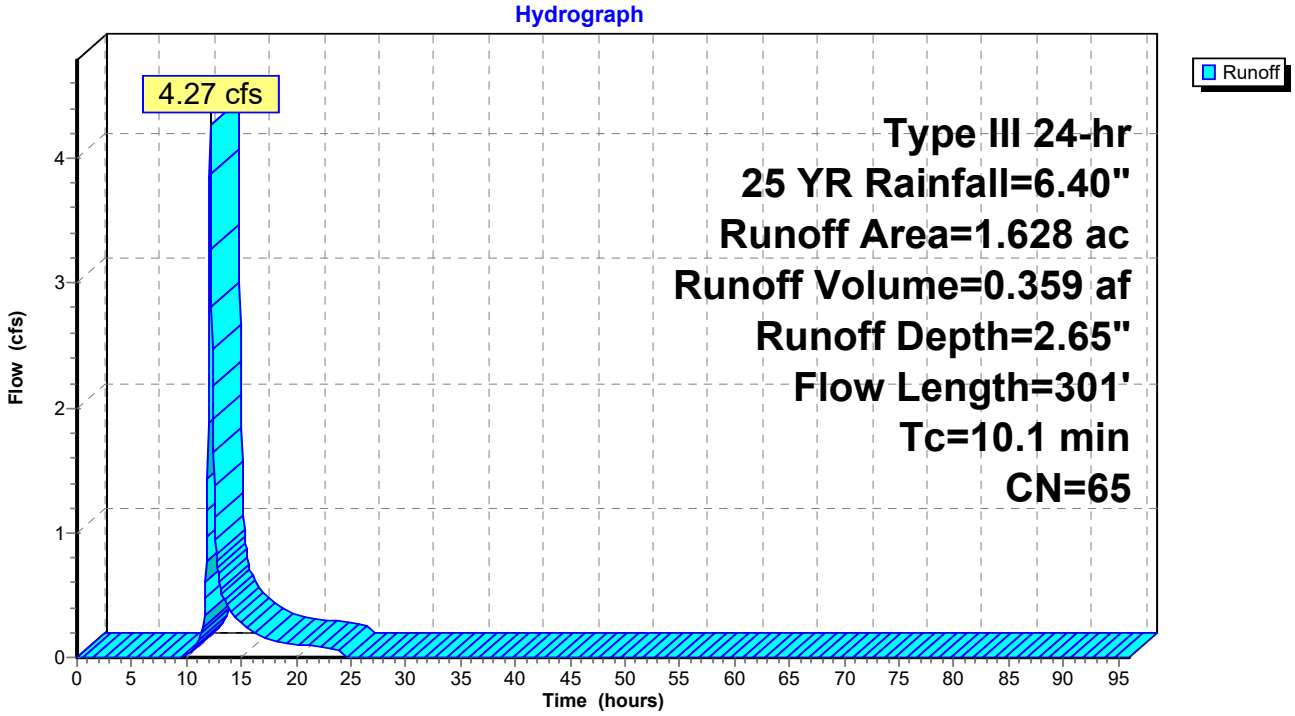
Runoff = 4.27 cfs @ 12.15 hrs, Volume= 0.359 af, Depth= 2.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=6.40"

	Area (ac)	CN	Description
*	1.628	65	Meadow, non-grazed, HSG B/C
	1.628		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	46	0.0696	0.16		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.09"
4.0	54	0.1452	0.22		**Sheet Flow, B-C** Grass: Dense n= 0.240 P2= 3.09"
0.9	132	0.1287	2.51		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
0.5	69	0.1009	2.22		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
10.1	301	Total			

Subcatchment PDA-3: PDA-3



Summary for Subcatchment PDA-4: PDA-4

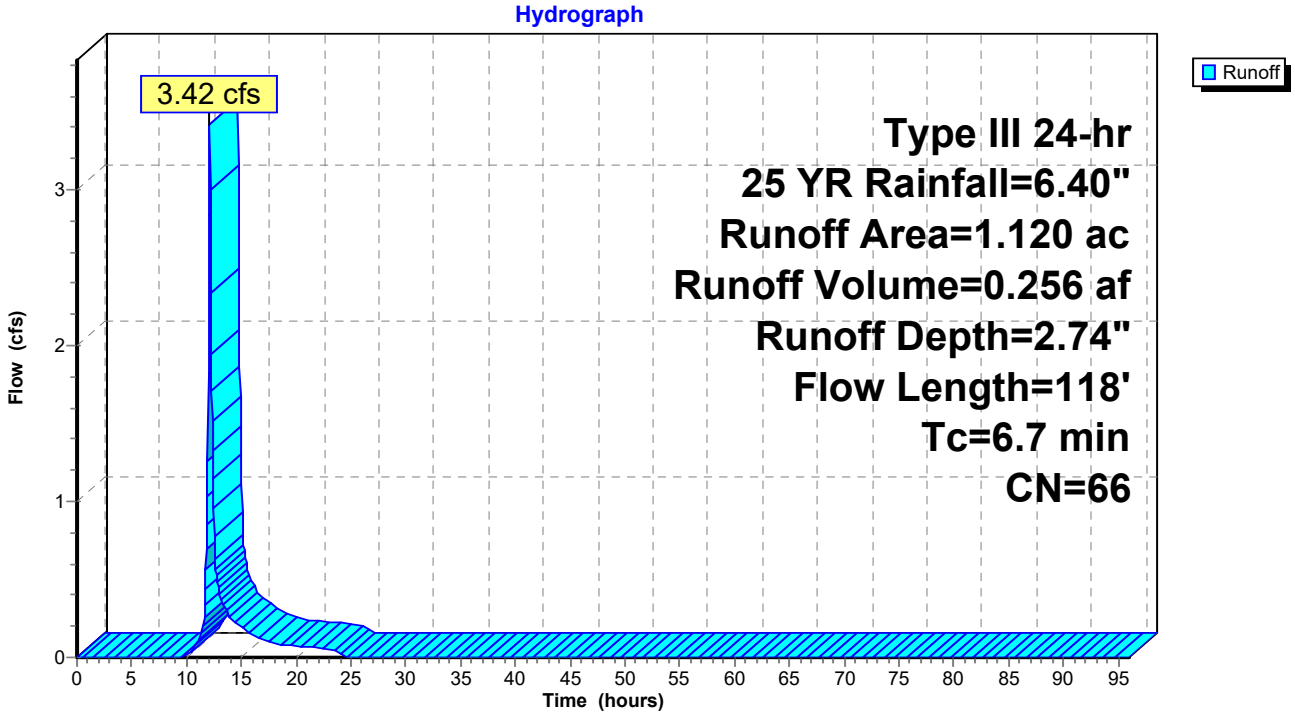
Runoff = 3.42 cfs @ 12.10 hrs, Volume= 0.256 af, Depth= 2.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=6.40"

	Area (ac)	CN	Description
	0.306	58	Meadow, non-grazed, HSG B
	0.104	98	Water Surface, HSG B
*	0.710	65	Meadow, non-grazed, HSG B/C
	1.120	66	Weighted Average
	1.016		90.71% Pervious Area
	0.104		9.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	100	0.1449	0.25		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.09"
0.1	18	0.3184	3.95		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
6.7	118	Total			

Subcatchment PDA-4: PDA-4



Summary for Pond B-1A: B-1A

Inflow Area = 1.741 ac, 10.28% Impervious, Inflow Depth = 2.84" for 25 YR event
Inflow = 4.96 cfs @ 12.15 hrs, Volume= 0.411 af
Outflow = 1.14 cfs @ 12.63 hrs, Volume= 0.269 af, Atten= 77%, Lag= 28.9 min
Primary = 1.14 cfs @ 12.63 hrs, Volume= 0.269 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 815.36' @ 12.63 hrs Surf.Area= 4,945 sf Storage= 7,912 cf

Plug-Flow detention time= 200.9 min calculated for 0.269 af (65% of inflow)
Center-of-Mass det. time= 94.5 min (940.2 - 845.6)

Volume	Invert	Avail.Storage	Storage Description
#1	813.00'	18,239 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

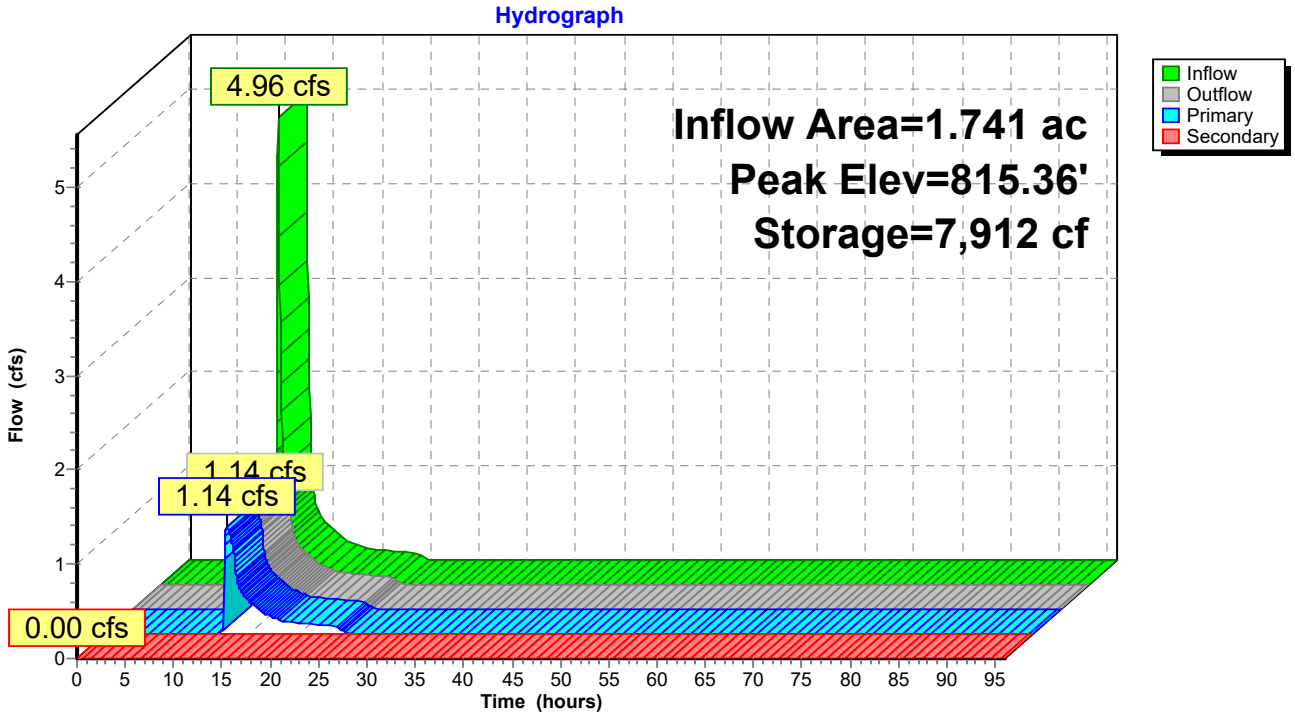
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
813.00	1,972	351.3	0	0	1,972
817.00	7,788	568.9	18,239	18,239	18,012

Device	Routing	Invert	Outlet Devices
#1	Primary	813.00'	**6.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 813.00' / 812.00' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Primary	813.00'	**6.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 813.00' / 812.00' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	815.00'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 2	815.00'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	816.00'	**5.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=1.14 cfs @ 12.63 hrs HW=815.36' TW=0.00' (Dynamic Tailwater)
- **1=Culvert** (Passes 0.57 cfs of 1.37 cfs potential flow)
  - **3=Orifice/Grate** (Orifice Controls 0.57 cfs @ 2.90 fps)
- **2=Culvert** (Passes 0.57 cfs of 1.37 cfs potential flow)
  - **4=Orifice/Grate** (Orifice Controls 0.57 cfs @ 2.90 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=813.00' TW=0.00' (Dynamic Tailwater)
- **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B-1A: B-1A


Hydrograph
Inflow Area=1.741 ac
Peak Elev=815.36'
Storage=7,912 cf
4.96 cfs
1.14 cfs
1.14 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
1
2
3
4
5
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95

Summary for Pond B-1B: B-1B

Inflow Area = 1.703 ac, 13.33% Impervious, Inflow Depth = 3.13" for 25 YR event
Inflow = 5.30 cfs @ 12.15 hrs, Volume= 0.444 af
Outflow = 1.05 cfs @ 12.69 hrs, Volume= 0.270 af, Atten= 80%, Lag= 32.1 min
Primary = 1.05 cfs @ 12.69 hrs, Volume= 0.270 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 838.31' @ 12.69 hrs Surf.Area= 5,845 sf Storage= 9,259 cf

Plug-Flow detention time= 221.5 min calculated for 0.270 af (61% of inflow)
Center-of-Mass det. time= 110.6 min (949.9 - 839.3)

Volume	Invert	Avail.Storage	Storage Description
#1	836.00'	21,963 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

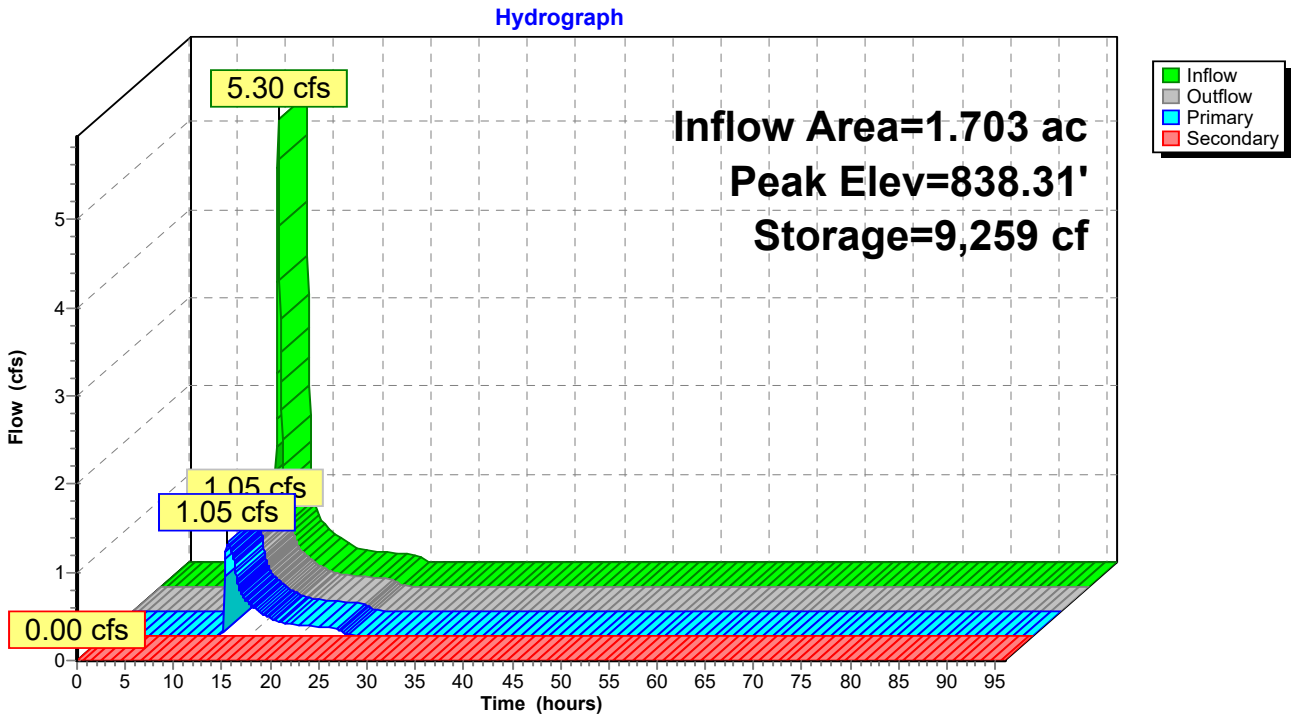
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
836.00	2,430	506.8	0	0	2,430
840.00	9,291	633.4	21,963	21,963	14,141

Device	Routing	Invert	Outlet Devices
#1	Primary	836.00'	**6.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 836.00' / 835.00' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Primary	836.00'	**6.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 836.00' / 835.00' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	838.00'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 2	838.00'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	839.00'	**5.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=1.05 cfs @ 12.69 hrs HW=838.31' TW=0.00' (Dynamic Tailwater)
- **1=Culvert** (Passes 0.52 cfs of 1.36 cfs potential flow)
  - **3=Orifice/Grate** (Orifice Controls 0.52 cfs @ 2.66 fps)
- **2=Culvert** (Passes 0.52 cfs of 1.36 cfs potential flow)
  - **4=Orifice/Grate** (Orifice Controls 0.52 cfs @ 2.66 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=836.00' TW=0.00' (Dynamic Tailwater)
- **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B-1B: B-1B


Hydrograph
5.30 cfs
1.05 cfs
1.05 cfs
0.00 cfs
Inflow Area=1.703 ac
Peak Elev=838.31'
Storage=9,259 cf
Inflow
Outflow
Primary
Secondary
Flow (cfs)
0
1
2
3
4
5
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95
Time (hours)

Summary for Pond B-2: B-2

Inflow Area = 3.287 ac, 11.99% Impervious, Inflow Depth = 2.93" for 25 YR event
Inflow = 8.16 cfs @ 12.23 hrs, Volume= 0.803 af
Outflow = 5.34 cfs @ 12.46 hrs, Volume= 0.803 af, Atten= 35%, Lag= 13.7 min
Primary = 2.40 cfs @ 12.46 hrs, Volume= 0.716 af
Secondary = 2.93 cfs @ 12.46 hrs, Volume= 0.087 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 840.37' @ 12.46 hrs Surf.Area= 4,526 sf Storage= 9,447 cf

Plug-Flow detention time= 99.6 min calculated for 0.803 af (100% of inflow)
Center-of-Mass det. time= 98.9 min (948.1 - 849.1)

Volume	Invert	Avail.Storage	Storage Description
#1	837.00'	18,539 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

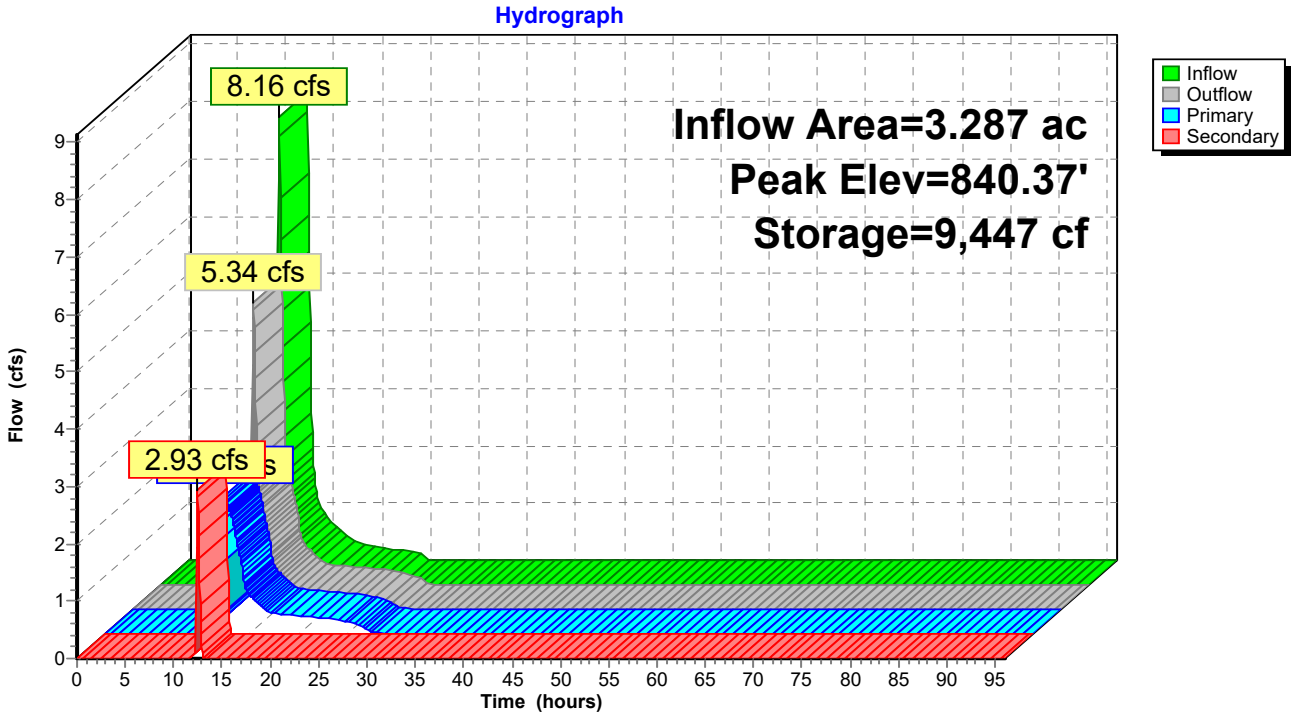
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
837.00	1,383	209.9	0	0	1,383
842.00	6,697	456.9	18,539	18,539	14,595

Device	Routing	Invert	Outlet Devices
#1	Primary	837.00'	**12.0" Round Culvert** L= 94.2' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 837.00' / 836.00' S= 0.0106 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	837.00'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	839.00'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	840.00'	**5.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=2.40 cfs @ 12.46 hrs HW=840.37' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 2.40 cfs of 5.48 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.43 cfs @ 8.84 fps)
└**3=Orifice/Grate** (Orifice Controls 1.97 cfs @ 5.63 fps)

Secondary OutFlow Max=2.91 cfs @ 12.46 hrs HW=840.37' TW=0.00' (Dynamic Tailwater)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 2.91 cfs @ 1.58 fps)

Pond B-2: B-2


Hydrograph
8.16 cfs
5.34 cfs
2.93 cfs
Inflow Area=3.287 ac
Peak Elev=840.37'
Storage=9,447 cf
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95

Summary for Pond B-3: B-3

Inflow Area = 1.628 ac, 0.00% Impervious, Inflow Depth = 2.65" for 25 YR event
Inflow = 4.27 cfs @ 12.15 hrs, Volume= 0.359 af
Outflow = 2.13 cfs @ 12.41 hrs, Volume= 0.359 af, Atten= 50%, Lag= 15.8 min
Primary = 0.44 cfs @ 12.41 hrs, Volume= 0.270 af
Secondary = 1.69 cfs @ 12.41 hrs, Volume= 0.089 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 862.41' @ 12.41 hrs Surf.Area= 3,887 sf Storage= 4,385 cf

Plug-Flow detention time= 78.7 min calculated for 0.359 af (100% of inflow)
Center-of-Mass det. time= 78.1 min (928.6 - 850.5)

Volume	Invert	Avail.Storage	Storage Description
#1	860.50'	7,066 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

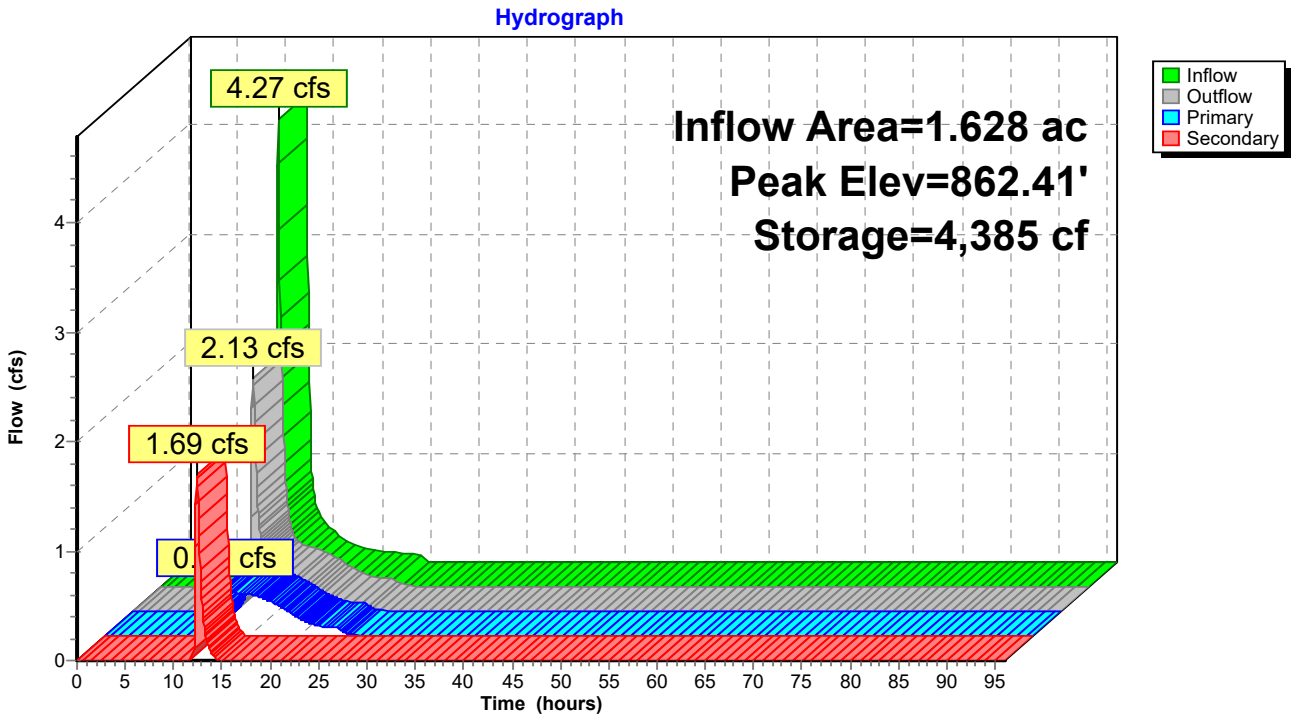
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
860.50	1,023	234.2	0	0	1,023
863.00	5,159	345.6	7,066	7,066	6,214

Device	Routing	Invert	Outlet Devices
#1	Primary	860.50'	**4.0" Round Culvert** L= 21.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 860.50' / 860.00' S= 0.0238 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.09 sf
#2	Secondary	862.00'	**2.5' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=0.44 cfs @ 12.41 hrs HW=862.40' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.44 cfs @ 5.01 fps)

Secondary OutFlow Max=1.68 cfs @ 12.41 hrs HW=862.40' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 1.68 cfs @ 1.67 fps)

Pond B-3: B-3


Hydrograph
Inflow Area=1.628 ac
Peak Elev=862.41'
Storage=4,385 cf
4.27 cfs
2.13 cfs
1.69 cfs
0 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3 4
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95

Summary for Pond B-4: B-4

Inflow Area = 1.120 ac, 9.29% Impervious, Inflow Depth = 2.74" for 25 YR event
Inflow = 3.42 cfs @ 12.10 hrs, Volume= 0.256 af
Outflow = 1.46 cfs @ 12.37 hrs, Volume= 0.256 af, Atten= 57%, Lag= 15.8 min
Primary = 0.21 cfs @ 12.37 hrs, Volume= 0.170 af
Secondary = 1.25 cfs @ 12.37 hrs, Volume= 0.086 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 881.38' @ 12.37 hrs Surf.Area= 3,485 sf Storage= 3,451 cf

Plug-Flow detention time= 126.7 min calculated for 0.256 af (100% of inflow)
Center-of-Mass det. time= 127.8 min (972.8 - 845.0)

Volume	Invert	Avail.Storage	Storage Description
#1	880.00'	5,913 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

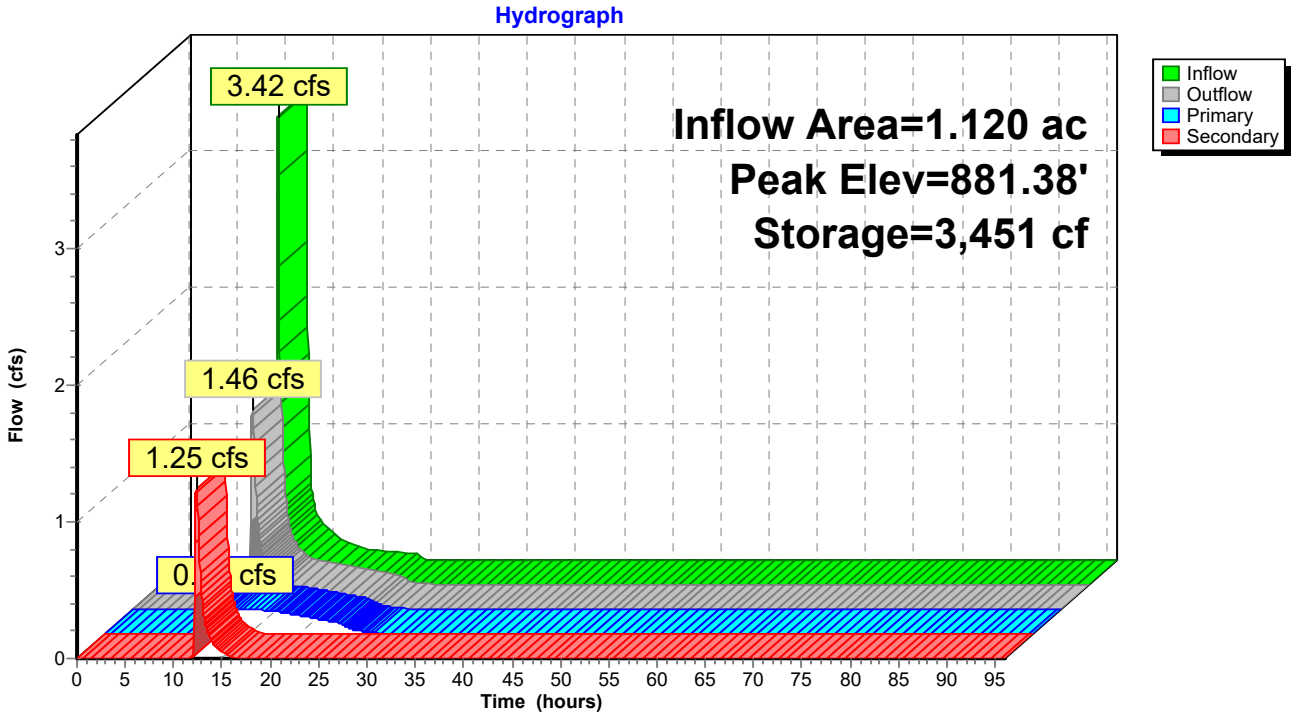
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
880.00	1,618	461.8	0	0	1,618
882.00	4,541	517.0	5,913	5,913	6,028

Device	Routing	Invert	Outlet Devices
#1	Primary	880.00'	**3.0" Round Culvert** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 880.00' / 879.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.05 sf
#2	Secondary	881.00'	**2.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=0.21 cfs @ 12.37 hrs HW=881.38' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.21 cfs @ 4.26 fps)

Secondary OutFlow Max=1.24 cfs @ 12.37 hrs HW=881.38' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 1.24 cfs @ 1.62 fps)

Pond B-4: B-4

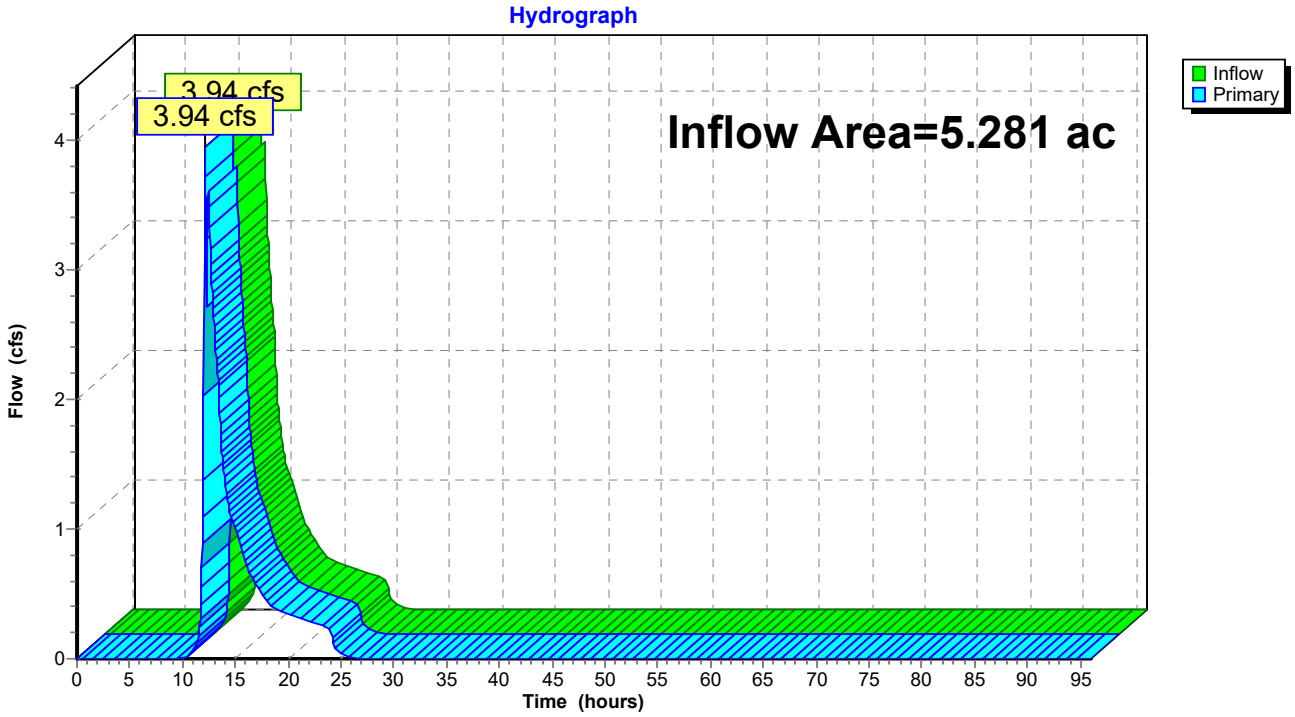

Hydrograph
3.42 cfs
1.46 cfs
1.25 cfs
cfs
Inflow Area=1.120 ac
Peak Elev=881.38'
Storage=3,451 cf
Inflow
Outflow
Primary
Secondary
Flow (cfs)
0
1
2
3
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95
Time (hours)

Summary for Link AP-1: AP-1

Inflow Area = 5.281 ac, 7.69% Impervious, Inflow Depth = 1.99" for 25 YR event
Inflow = 3.94 cfs @ 12.12 hrs, Volume= 0.878 af
Primary = 3.94 cfs @ 12.12 hrs, Volume= 0.878 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link AP-1: AP-1

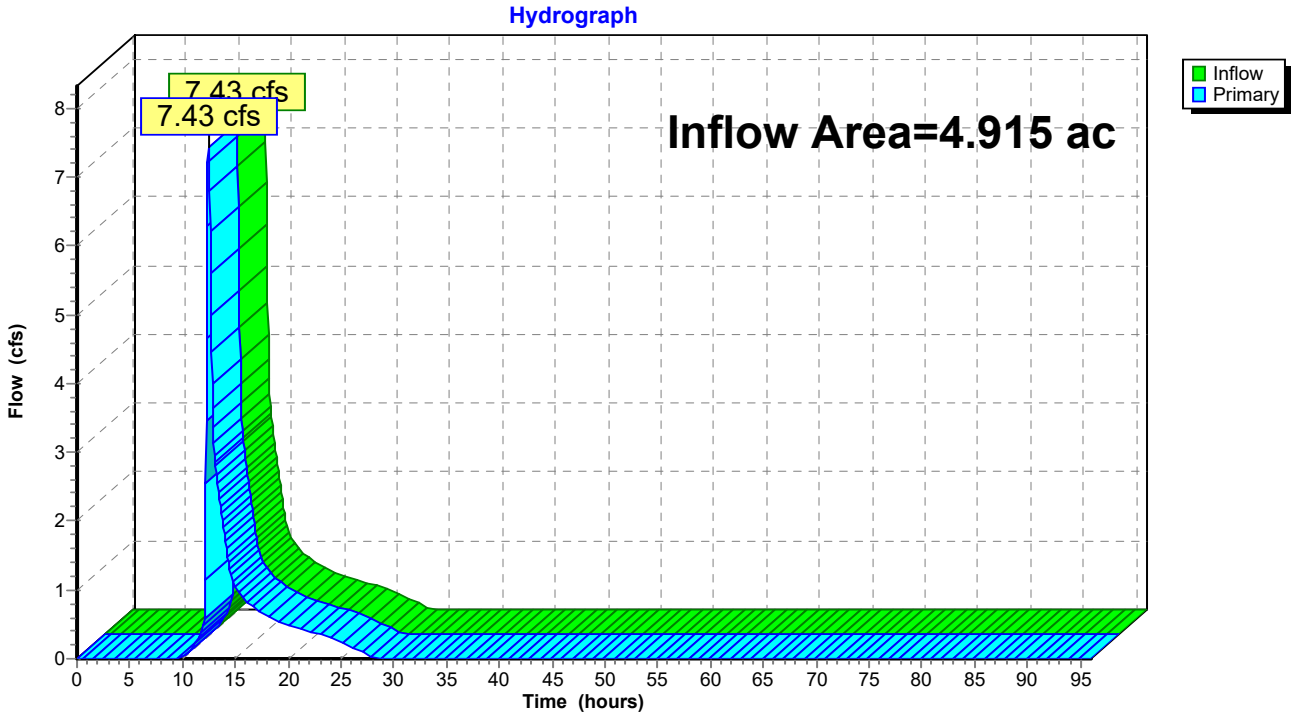


Summary for Link AP-2: AP-2

Inflow Area = 4.915 ac, 8.02% Impervious, Inflow Depth = 2.84" for 25 YR event
Inflow = 7.43 cfs @ 12.45 hrs, Volume= 1.162 af
Primary = 7.43 cfs @ 12.45 hrs, Volume= 1.162 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link AP-2: AP-2

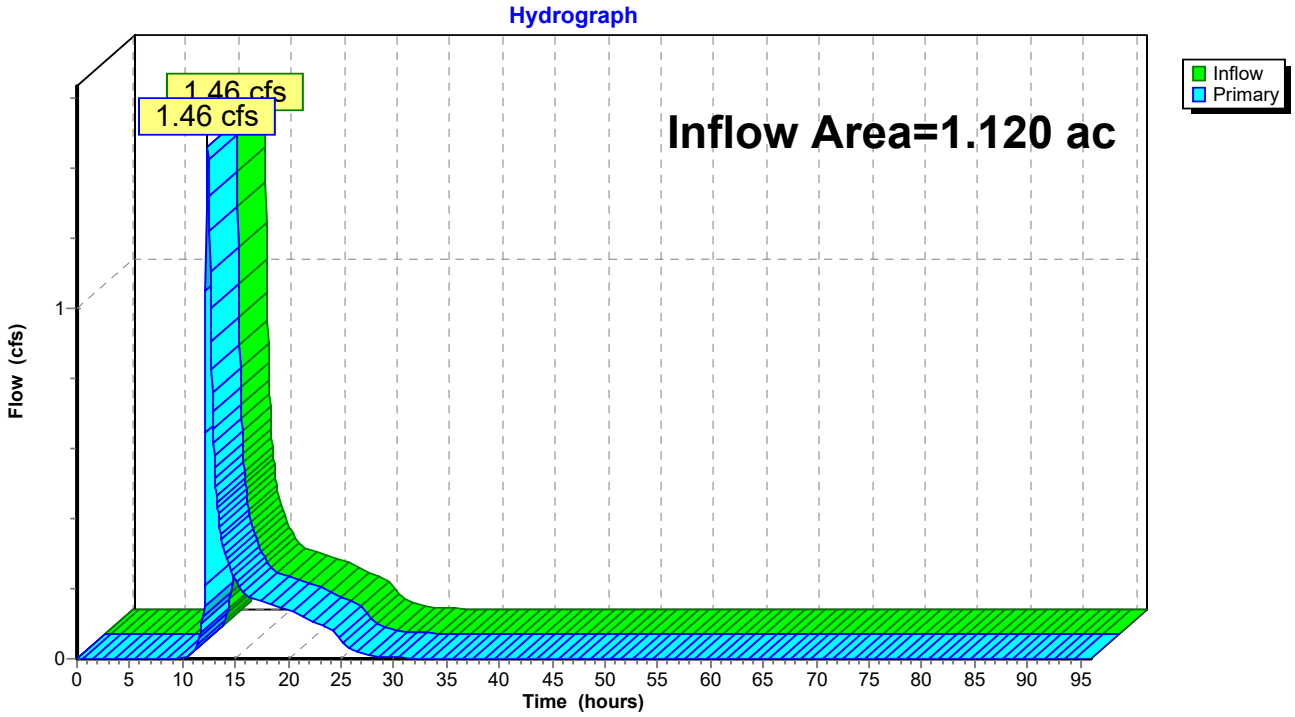


Summary for Link AP-3: AP-3

Inflow Area = 1.120 ac, 9.29% Impervious, Inflow Depth = 2.74" for 25 YR event
Inflow = 1.46 cfs @ 12.37 hrs, Volume= 0.256 af
Primary = 1.46 cfs @ 12.37 hrs, Volume= 0.256 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link AP-3: AP-3



Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment PDA-1A: PDA-1A Runoff Area=1.741 ac 10.28% Impervious Runoff Depth=3.56"
Flow Length=263' Tc=9.9 min CN=67 Runoff=6.26 cfs 0.516 af

Subcatchment PDA-1B: PDA-1B Runoff Area=1.703 ac 13.33% Impervious Runoff Depth=3.88"
Flow Length=337' Tc=10.5 min CN=70 Runoff=6.60 cfs 0.550 af

Subcatchment PDA-1C: PDA-1C Runoff Area=0.986 ac 0.00% Impervious Runoff Depth=3.13"
Tc=6.0 min CN=63 Runoff=3.51 cfs 0.258 af

Subcatchment PDA-1D: PDA-1D Runoff Area=0.851 ac 0.00% Impervious Runoff Depth=2.52"
Flow Length=326' Tc=11.5 min CN=57 Runoff=1.99 cfs 0.179 af

Subcatchment PDA-2: PDA-2 Runoff Area=3.287 ac 11.99% Impervious Runoff Depth=3.66"
Flow Length=237' Tc=16.2 min CN=68 Runoff=10.25 cfs 1.003 af

Subcatchment PDA-3: PDA-3 Runoff Area=1.628 ac 0.00% Impervious Runoff Depth=3.34"
Flow Length=301' Tc=10.1 min CN=65 Runoff=5.45 cfs 0.454 af

Subcatchment PDA-4: PDA-4 Runoff Area=1.120 ac 9.29% Impervious Runoff Depth=3.45"
Flow Length=118' Tc=6.7 min CN=66 Runoff=4.34 cfs 0.322 af

Pond B-1A: B-1A Peak Elev=815.69' Storage=9,606 cf Inflow=6.26 cfs 0.516 af
Primary=1.57 cfs 0.373 af Secondary=0.00 cfs 0.000 af Outflow=1.57 cfs 0.373 af

Pond B-1B: B-1B Peak Elev=838.60' Storage=11,073 cf Inflow=6.60 cfs 0.550 af
Primary=1.47 cfs 0.377 af Secondary=0.00 cfs 0.000 af Outflow=1.47 cfs 0.377 af

Pond B-2: B-2 Peak Elev=840.55' Storage=10,298 cf Inflow=10.25 cfs 1.003 af
Primary=2.54 cfs 0.820 af Secondary=5.51 cfs 0.183 af Outflow=8.05 cfs 1.003 af

Pond B-3: B-3 Peak Elev=862.55' Storage=4,988 cf Inflow=5.45 cfs 0.454 af
Primary=0.46 cfs 0.302 af Secondary=2.77 cfs 0.151 af Outflow=3.22 cfs 0.454 af

Pond B-4: B-4 Peak Elev=881.52' Storage=3,946 cf Inflow=4.34 cfs 0.322 af
Primary=0.22 cfs 0.186 af Secondary=2.02 cfs 0.136 af Outflow=2.24 cfs 0.322 af

Link AP-1: AP-1 Inflow=5.61 cfs 1.187 af
Primary=5.61 cfs 1.187 af

Link AP-2: AP-2 Inflow=11.25 cfs 1.457 af
Primary=11.25 cfs 1.457 af

Link AP-3: AP-3 Inflow=2.24 cfs 0.322 af
Primary=2.24 cfs 0.322 af

Total Runoff Area = 11.316 ac Runoff Volume = 3.282 af Average Runoff Depth = 3.48"
92.01% Pervious = 10.412 ac 7.99% Impervious = 0.904 ac

Summary for Subcatchment PDA-1A: PDA-1A

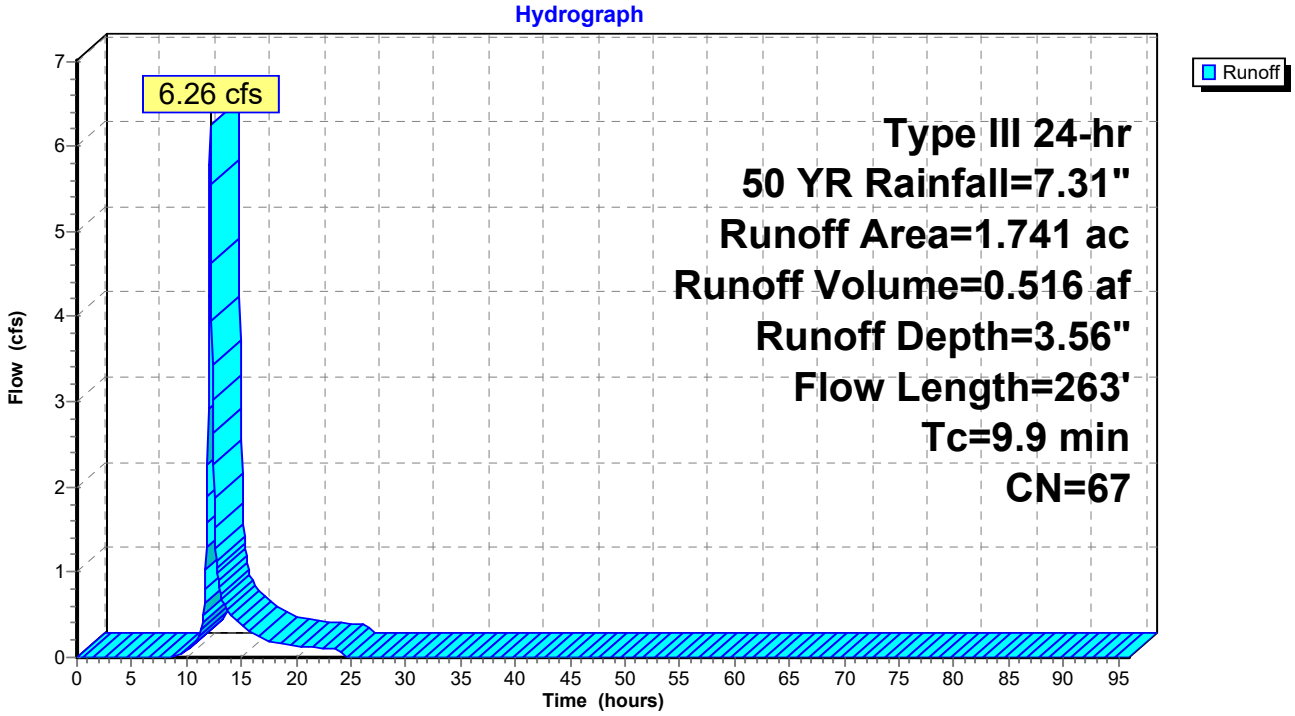
Runoff = 6.26 cfs @ 12.15 hrs, Volume= 0.516 af, Depth= 3.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 YR Rainfall=7.31"

	Area (ac)	CN	Description
	0.381	58	Meadow, non-grazed, HSG B
	0.179	98	Water Surface, HSG B
*	1.181	65	Meadow, non-grazed, HSG B/C
	1.741	67	Weighted Average
	1.562		89.72% Pervious Area
	0.179		10.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0697	0.19		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.09"
1.1	163	0.1316	2.54		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
9.9	263	Total			

Subcatchment PDA-1A: PDA-1A



Summary for Subcatchment PDA-1B: PDA-1B

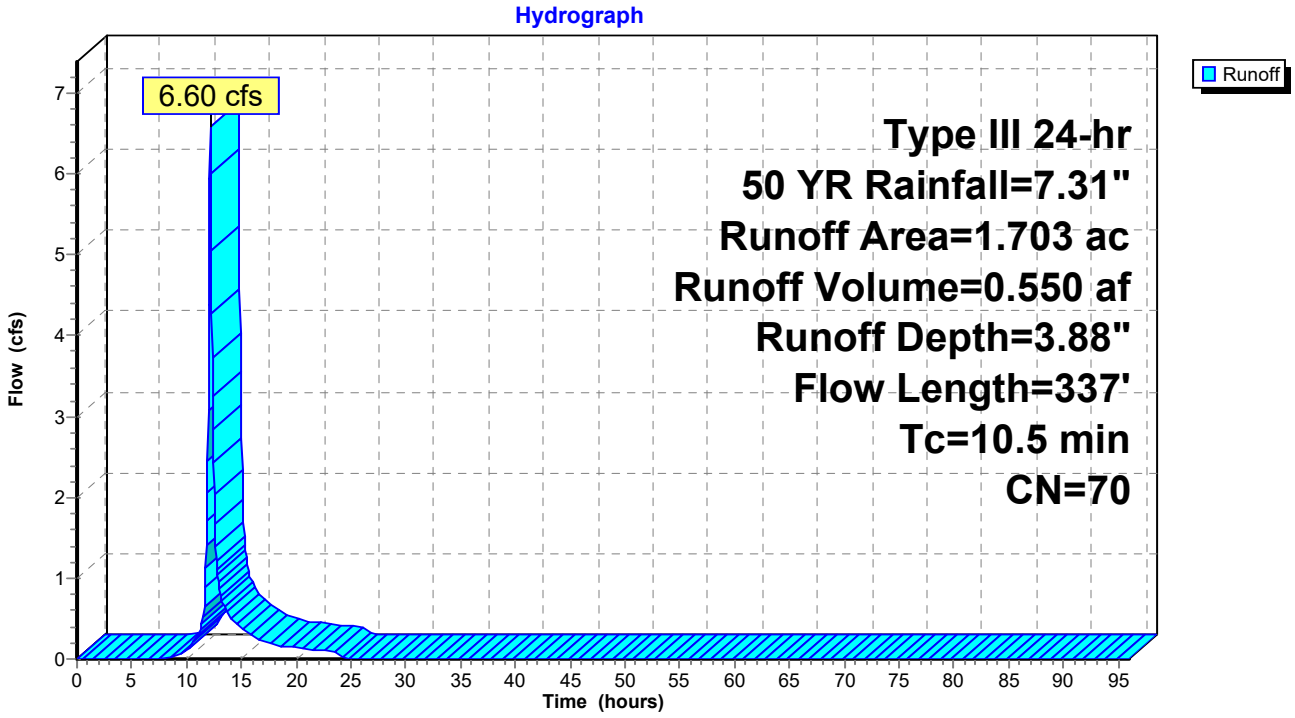
Runoff = 6.60 cfs @ 12.15 hrs, Volume= 0.550 af, Depth= 3.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 YR Rainfall=7.31"

	Area (ac)	CN	Description
	0.226	58	Meadow, non-grazed, HSG B
	0.111	96	Gravel surface, HSG B
	0.213	98	Water Surface, HSG B
	0.014	98	Unconnected pavement, HSG B
*	1.139	65	Meadow, non-grazed, HSG B/C
	1.703	70	Weighted Average
	1.476		86.67% Pervious Area
	0.227		13.33% Impervious Area
	0.014		6.17% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	100	0.0688	0.19		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.09"
1.6	237	0.1285	2.51		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
10.5	337	Total			

Subcatchment PDA-1B: PDA-1B



Summary for Subcatchment PDA-1C: PDA-1C

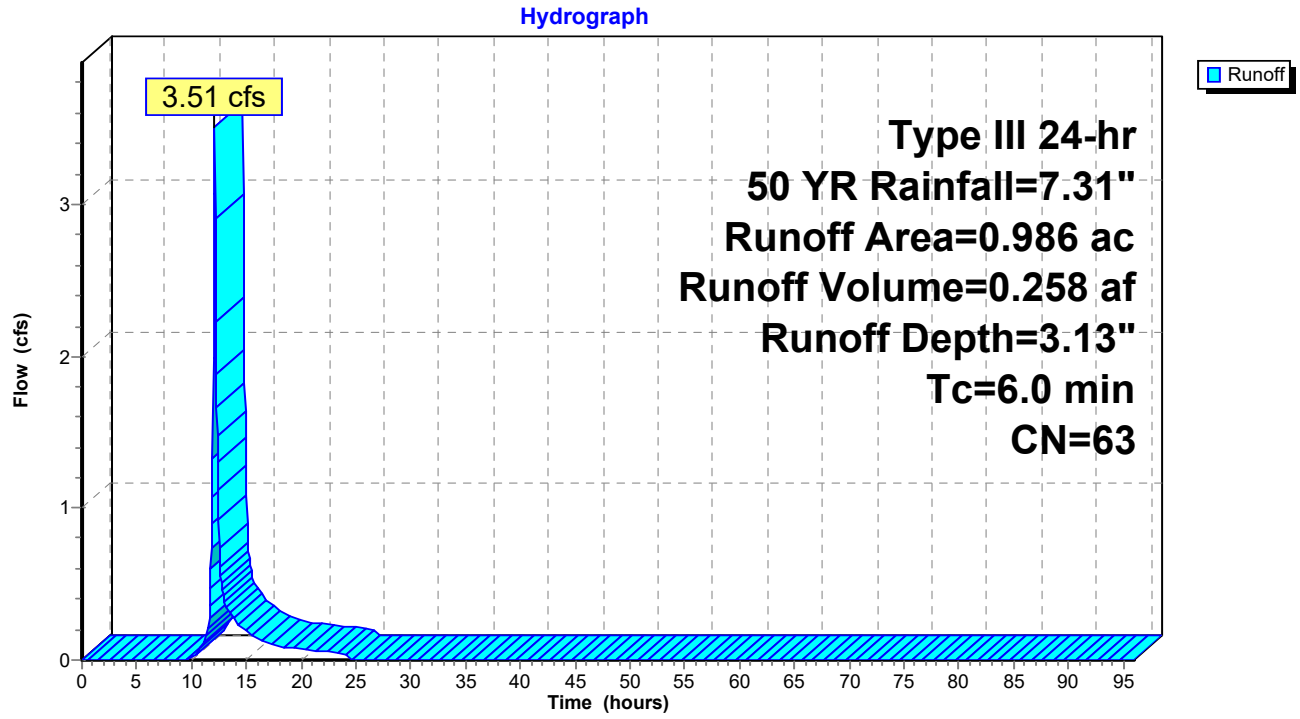
Runoff = 3.51 cfs @ 12.10 hrs, Volume= 0.258 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 YR Rainfall=7.31"

	Area (ac)	CN	Description
	0.217	58	Meadow, non-grazed, HSG B
*	0.769	65	Meadow, non-grazed, HSG B/C
	0.986	63	Weighted Average
	0.986		100.00% Pervious Area

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

Subcatchment PDA-1C: PDA-1C



Summary for Subcatchment PDA-1D: PDA-1D

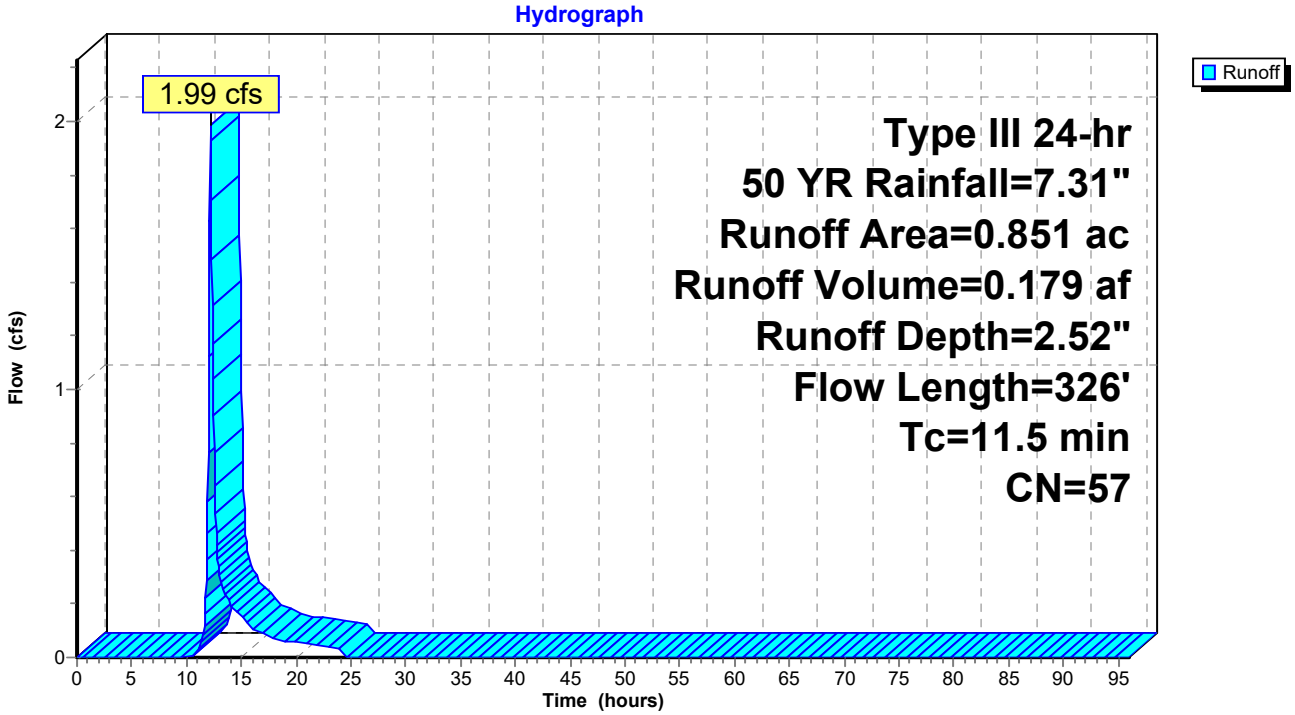
Runoff = 1.99 cfs @ 12.17 hrs, Volume= 0.179 af, Depth= 2.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 YR Rainfall=7.31"

Area (ac)	CN	Description
0.205	55	Woods, Good, HSG B
0.233	58	Meadow, non-grazed, HSG B
0.413	58	Meadow, non-grazed, HSG B
0.851	57	Weighted Average
0.851		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.1240	0.16		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.09"
0.8	82	0.1103	1.66		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.2	144	0.1250	11.03	55.16	**Channel Flow, C-D** Area= 5.0 sf Perim= 10.0' r= 0.50' n= 0.030 Earth, grassed & winding
11.5	326	Total			

Subcatchment PDA-1D: PDA-1D



Summary for Subcatchment PDA-2: PDA-2

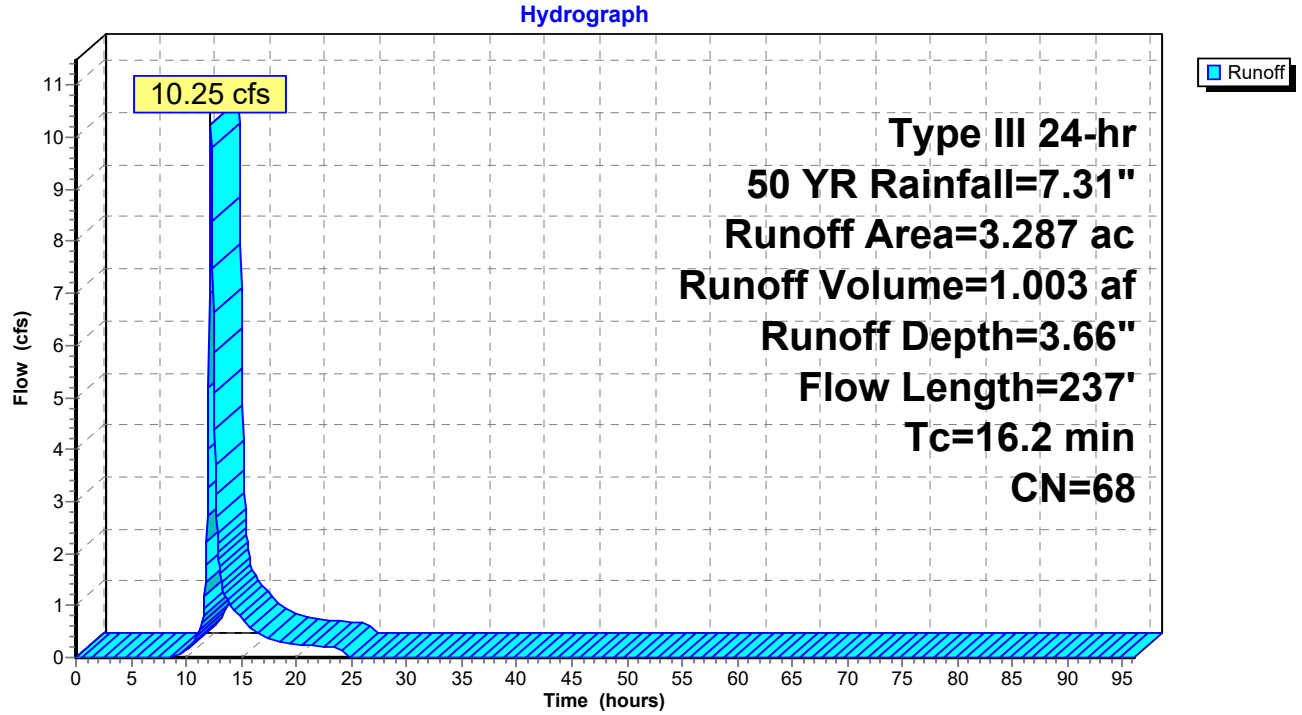
Runoff = 10.25 cfs @ 12.23 hrs, Volume= 1.003 af, Depth= 3.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 YR Rainfall=7.31"

	Area (ac)	CN	Description
	0.697	58	Meadow, non-grazed, HSG B
	0.131	98	Water Surface, HSG B
	0.239	98	Paved parking, HSG B
*	2.025	65	Meadow, non-grazed, HSG B/C
	0.171	71	Meadow, non-grazed, HSG C
	0.022	98	Water Surface, HSG C
	0.002	98	Paved parking, HSG C
	3.287	68	Weighted Average
	2.893		88.01% Pervious Area
	0.394		11.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	100	0.0203	0.12		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.09"
1.8	137	0.0326	1.26		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
16.2	237	Total			

Subcatchment PDA-2: PDA-2



Summary for Subcatchment PDA-3: PDA-3

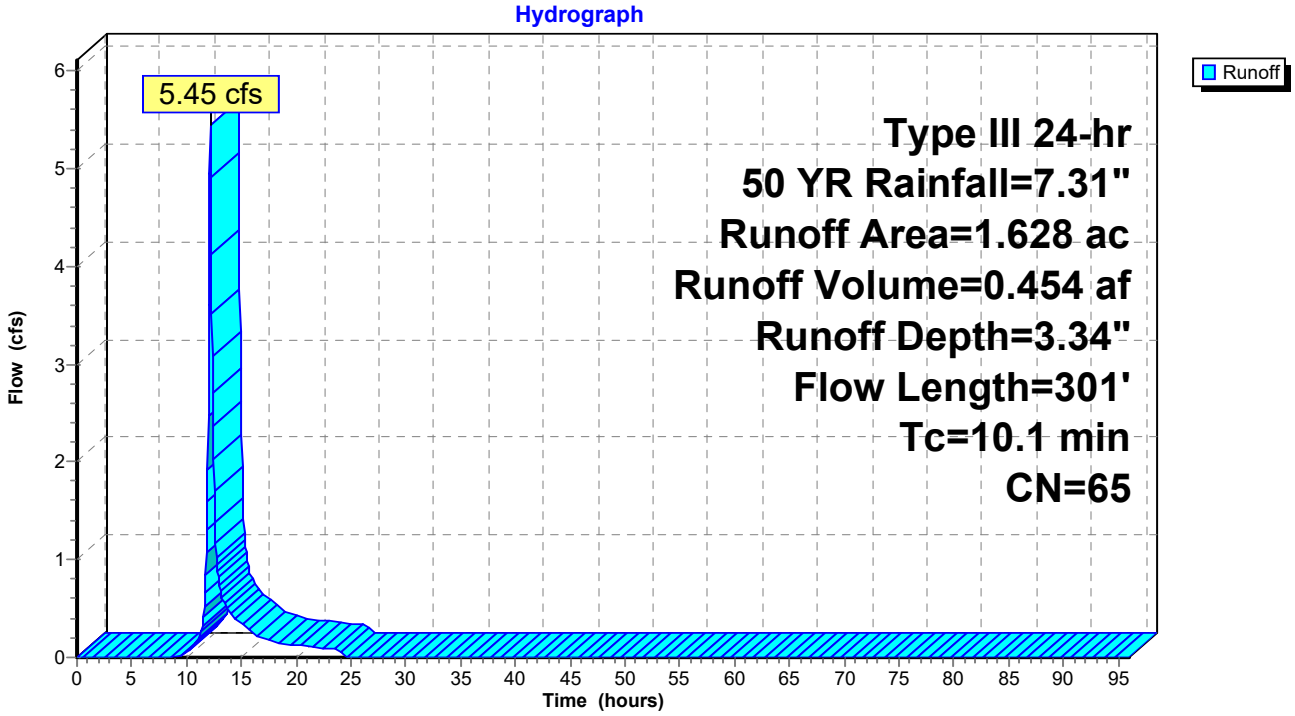
Runoff = 5.45 cfs @ 12.15 hrs, Volume= 0.454 af, Depth= 3.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 YR Rainfall=7.31"

	Area (ac)	CN	Description
*	1.628	65	Meadow, non-grazed, HSG B/C
	1.628		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	46	0.0696	0.16		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.09"
4.0	54	0.1452	0.22		**Sheet Flow, B-C** Grass: Dense n= 0.240 P2= 3.09"
0.9	132	0.1287	2.51		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
0.5	69	0.1009	2.22		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
10.1	301	Total			

Subcatchment PDA-3: PDA-3



Summary for Subcatchment PDA-4: PDA-4

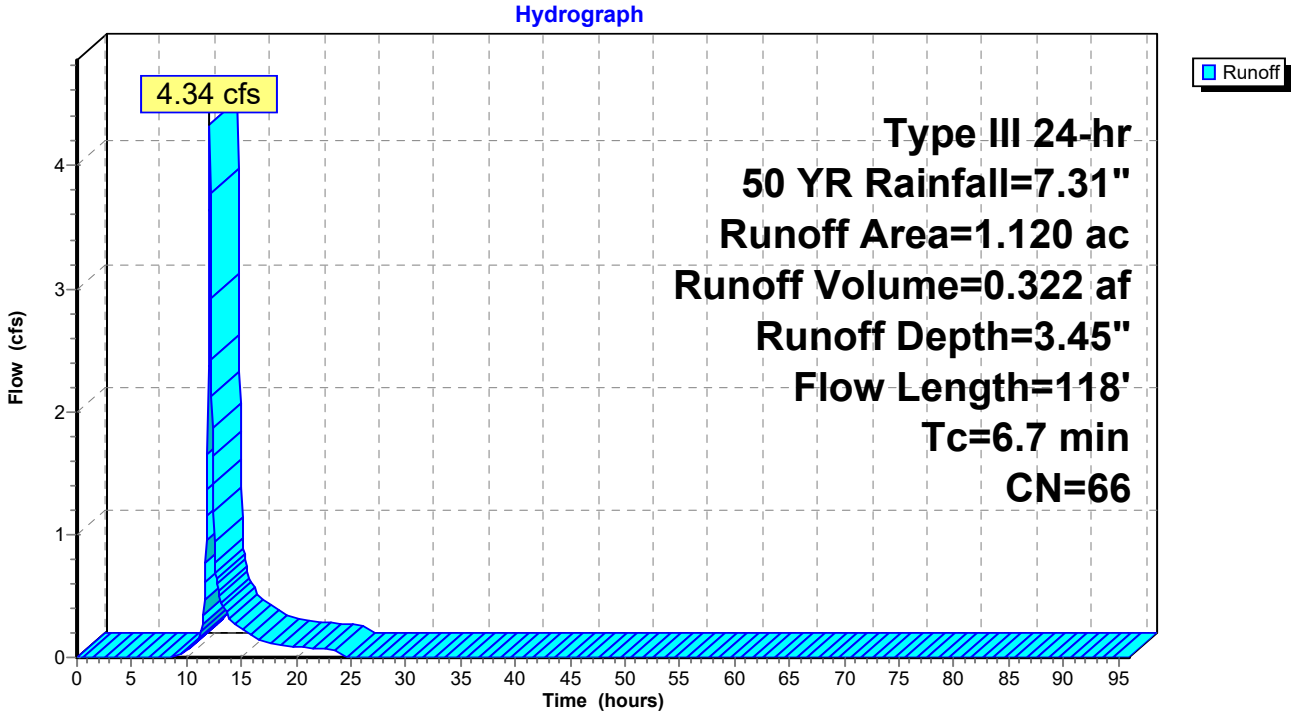
Runoff = 4.34 cfs @ 12.10 hrs, Volume= 0.322 af, Depth= 3.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 YR Rainfall=7.31"

	Area (ac)	CN	Description
	0.306	58	Meadow, non-grazed, HSG B
	0.104	98	Water Surface, HSG B
*	0.710	65	Meadow, non-grazed, HSG B/C
	1.120	66	Weighted Average
	1.016		90.71% Pervious Area
	0.104		9.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	100	0.1449	0.25		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.09"
0.1	18	0.3184	3.95		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
6.7	118	Total			

Subcatchment PDA-4: PDA-4



Summary for Pond B-1A: B-1A

Inflow Area = 1.741 ac, 10.28% Impervious, Inflow Depth = 3.56" for 50 YR event
Inflow = 6.26 cfs @ 12.15 hrs, Volume= 0.516 af
Outflow = 1.57 cfs @ 12.60 hrs, Volume= 0.373 af, Atten= 75%, Lag= 27.1 min
Primary = 1.57 cfs @ 12.60 hrs, Volume= 0.373 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 815.69' @ 12.60 hrs Surf.Area= 5,460 sf Storage= 9,606 cf

Plug-Flow detention time= 173.0 min calculated for 0.373 af (72% of inflow)
Center-of-Mass det. time= 79.0 min (918.1 - 839.0)

Volume	Invert	Avail.Storage	Storage Description
#1	813.00'	18,239 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

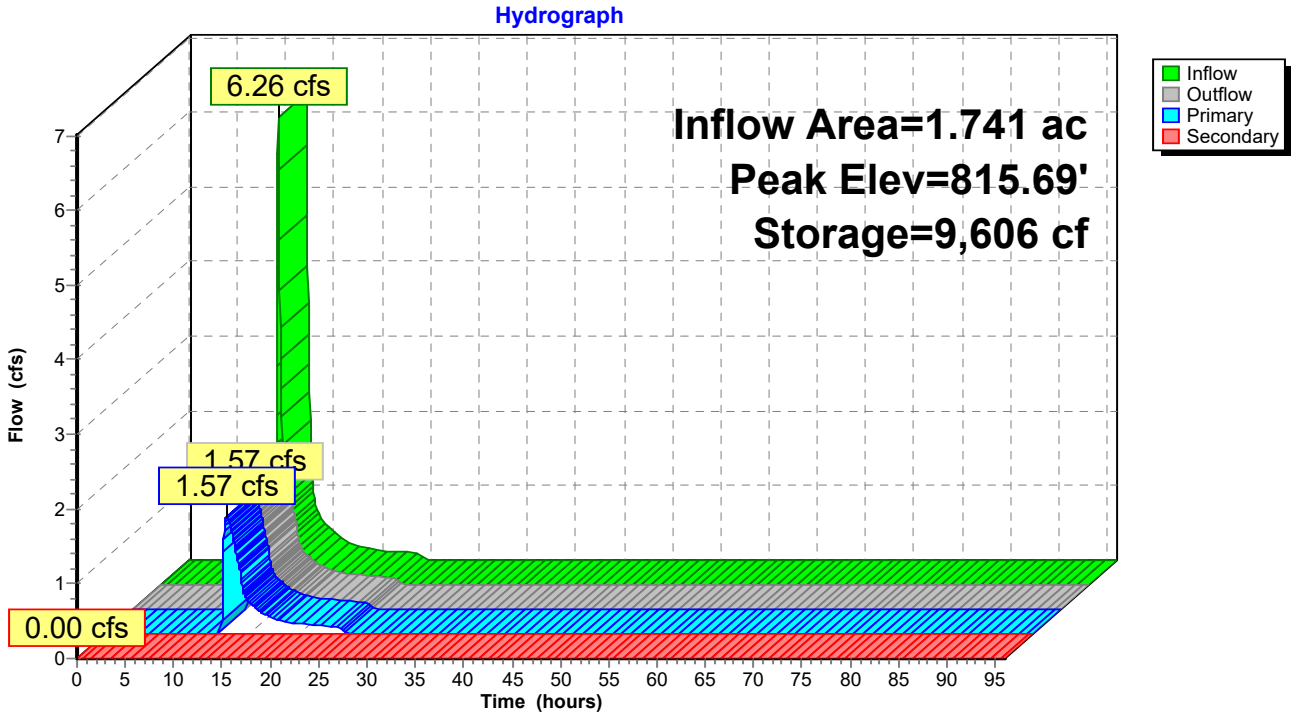
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
813.00	1,972	351.3	0	0	1,972
817.00	7,788	568.9	18,239	18,239	18,012

Device	Routing	Invert	Outlet Devices
#1	Primary	813.00'	**6.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 813.00' / 812.00' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Primary	813.00'	**6.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 813.00' / 812.00' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	815.00'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 2	815.00'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	816.00'	**5.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=1.57 cfs @ 12.60 hrs HW=815.69' TW=0.00' (Dynamic Tailwater)
- **1=Culvert** (Passes 0.79 cfs of 1.48 cfs potential flow)
  - **3=Orifice/Grate** (Orifice Controls 0.79 cfs @ 4.00 fps)
- **2=Culvert** (Passes 0.79 cfs of 1.48 cfs potential flow)
  - **4=Orifice/Grate** (Orifice Controls 0.79 cfs @ 4.00 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=813.00' TW=0.00' (Dynamic Tailwater)
- **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B-1A: B-1A


Hydrograph
6.26 cfs
1.57 cfs
1.57 cfs
0.00 cfs
Inflow Area=1.741 ac
Peak Elev=815.69'
Storage=9,606 cf
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95

Summary for Pond B-1B: B-1B

Inflow Area = 1.703 ac, 13.33% Impervious, Inflow Depth = 3.88" for 50 YR event
Inflow = 6.60 cfs @ 12.15 hrs, Volume= 0.550 af
Outflow = 1.47 cfs @ 12.64 hrs, Volume= 0.377 af, Atten= 78%, Lag= 29.2 min
Primary = 1.47 cfs @ 12.64 hrs, Volume= 0.377 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 838.60' @ 12.64 hrs Surf.Area= 6,391 sf Storage= 11,073 cf

Plug-Flow detention time= 192.4 min calculated for 0.377 af (68% of inflow)
Center-of-Mass det. time= 92.3 min (925.4 - 833.0)

Volume	Invert	Avail.Storage	Storage Description
#1	836.00'	21,963 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

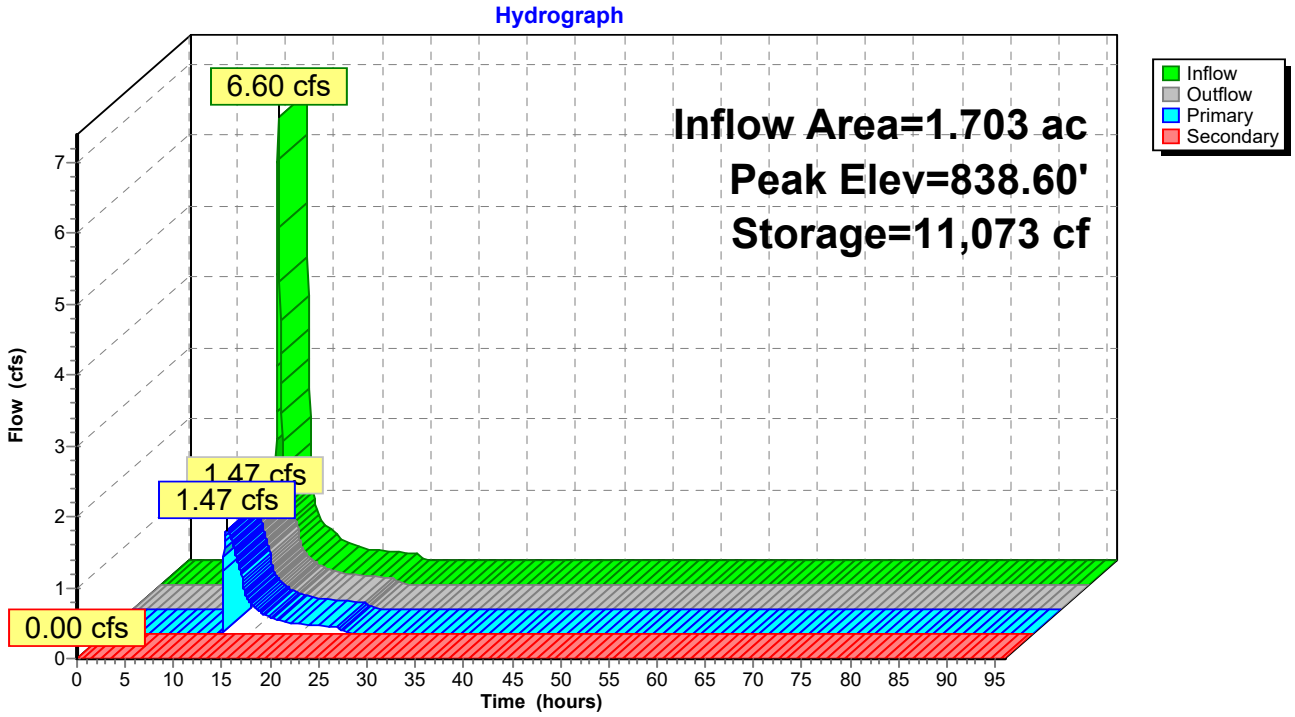
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
836.00	2,430	506.8	0	0	2,430
840.00	9,291	633.4	21,963	21,963	14,141

Device	Routing	Invert	Outlet Devices
#1	Primary	836.00'	**6.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 836.00' / 835.00' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Primary	836.00'	**6.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 836.00' / 835.00' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	838.00'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 2	838.00'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	839.00'	**5.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=1.47 cfs @ 12.64 hrs HW=838.60' TW=0.00' (Dynamic Tailwater)
- **1=Culvert** (Passes 0.73 cfs of 1.45 cfs potential flow)
  - **3=Orifice/Grate** (Orifice Controls 0.73 cfs @ 3.74 fps)
- **2=Culvert** (Passes 0.73 cfs of 1.45 cfs potential flow)
  - **4=Orifice/Grate** (Orifice Controls 0.73 cfs @ 3.74 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=836.00' TW=0.00' (Dynamic Tailwater)
- **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B-1B: B-1B


Hydrograph
6.60 cfs
1.47 cfs
1.47 cfs
0.00 cfs
Inflow Area=1.703 ac
Peak Elev=838.60'
Storage=11,073 cf
Inflow
Outflow
Primary
Secondary
Flow (cfs)
0
1
2
3
4
5
6
7
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95
Time (hours)

Summary for Pond B-2: B-2

Inflow Area = 3.287 ac, 11.99% Impervious, Inflow Depth = 3.66" for 50 YR event
Inflow = 10.25 cfs @ 12.23 hrs, Volume= 1.003 af
Outflow = 8.05 cfs @ 12.37 hrs, Volume= 1.003 af, Atten= 21%, Lag= 8.8 min
Primary = 2.54 cfs @ 12.37 hrs, Volume= 0.820 af
Secondary = 5.51 cfs @ 12.37 hrs, Volume= 0.183 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 840.55' @ 12.37 hrs Surf.Area= 4,749 sf Storage= 10,298 cf

Plug-Flow detention time= 88.2 min calculated for 1.003 af (100% of inflow)
Center-of-Mass det. time= 88.7 min (931.4 - 842.7)

Volume	Invert	Avail.Storage	Storage Description
#1	837.00'	18,539 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

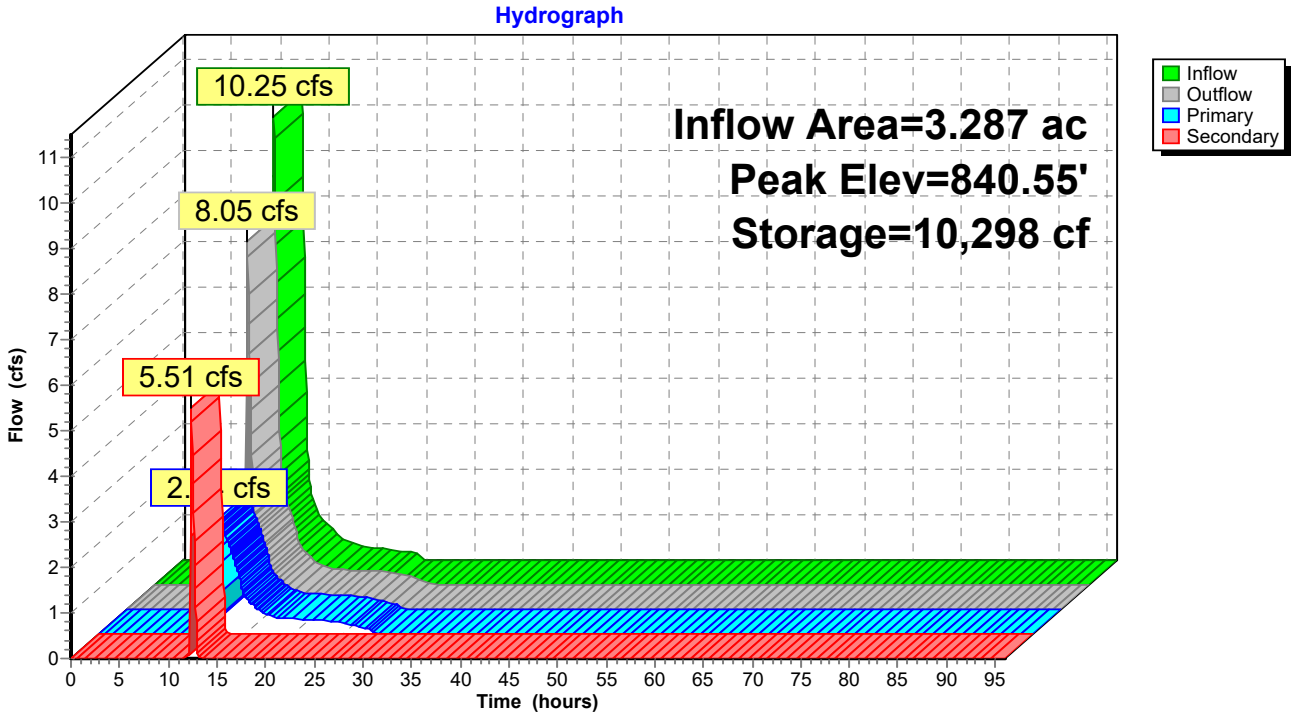
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
837.00	1,383	209.9	0	0	1,383
842.00	6,697	456.9	18,539	18,539	14,595

Device	Routing	Invert	Outlet Devices
#1	Primary	837.00'	**12.0" Round Culvert** L= 94.2' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 837.00' / 836.00' S= 0.0106 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	837.00'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	839.00'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	840.00'	**5.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=2.54 cfs @ 12.37 hrs HW=840.55' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 2.54 cfs of 5.62 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.45 cfs @ 9.07 fps)
└**3=Orifice/Grate** (Orifice Controls 2.09 cfs @ 5.99 fps)

Secondary OutFlow Max=5.41 cfs @ 12.37 hrs HW=840.55' TW=0.00' (Dynamic Tailwater)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 5.41 cfs @ 1.98 fps)

Pond B-2: B-2


Hydrograph
10.25 cfs
8.05 cfs
5.51 cfs
2. cfs
Inflow Area=3.287 ac
Peak Elev=840.55'
Storage=10,298 cf
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95

Summary for Pond B-3: B-3

Inflow Area = 1.628 ac, 0.00% Impervious, Inflow Depth = 3.34" for 50 YR event
Inflow = 5.45 cfs @ 12.15 hrs, Volume= 0.454 af
Outflow = 3.22 cfs @ 12.34 hrs, Volume= 0.454 af, Atten= 41%, Lag= 11.3 min
Primary = 0.46 cfs @ 12.34 hrs, Volume= 0.302 af
Secondary = 2.77 cfs @ 12.34 hrs, Volume= 0.151 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 862.55' @ 12.34 hrs Surf.Area= 4,190 sf Storage= 4,988 cf

Plug-Flow detention time= 72.0 min calculated for 0.454 af (100% of inflow)
Center-of-Mass det. time= 71.4 min (915.0 - 843.6)

Volume	Invert	Avail.Storage	Storage Description
#1	860.50'	7,066 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

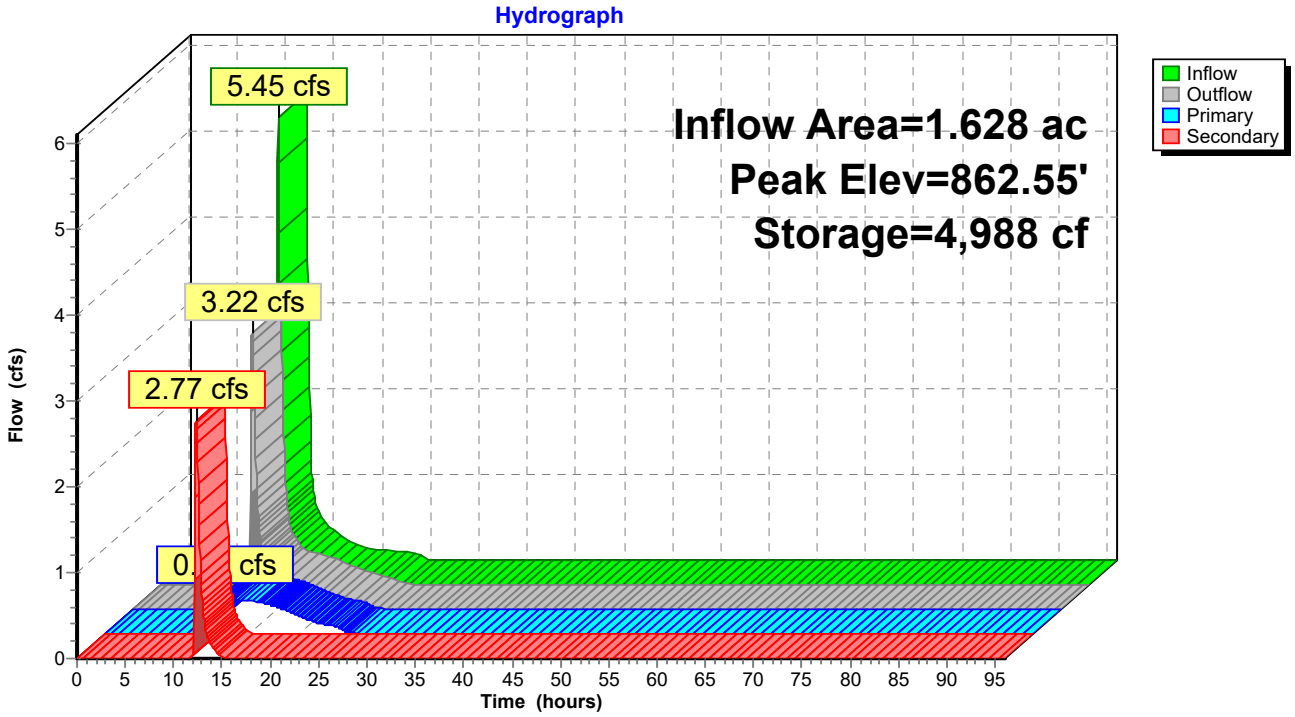
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
860.50	1,023	234.2	0	0	1,023
863.00	5,159	345.6	7,066	7,066	6,214

Device	Routing	Invert	Outlet Devices
#1	Primary	860.50'	**4.0" Round Culvert** L= 21.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 860.50' / 860.00' S= 0.0238 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.09 sf
#2	Secondary	862.00'	**2.5' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=0.46 cfs @ 12.34 hrs HW=862.55' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.46 cfs @ 5.22 fps)

Secondary OutFlow Max=2.76 cfs @ 12.34 hrs HW=862.55' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 2.76 cfs @ 1.99 fps)

Pond B-3: B-3


Hydrograph
5.45 cfs
3.22 cfs
2.77 cfs
0. cfs
Inflow Area=1.628 ac
Peak Elev=862.55'
Storage=4,988 cf
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
1
2
3
4
5
6
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95

Summary for Pond B-4: B-4

Inflow Area = 1.120 ac, 9.29% Impervious, Inflow Depth = 3.45" for 50 YR event
Inflow = 4.34 cfs @ 12.10 hrs, Volume= 0.322 af
Outflow = 2.24 cfs @ 12.28 hrs, Volume= 0.322 af, Atten= 48%, Lag= 10.8 min
Primary = 0.22 cfs @ 12.28 hrs, Volume= 0.186 af
Secondary = 2.02 cfs @ 12.28 hrs, Volume= 0.136 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 881.52' @ 12.28 hrs Surf.Area= 3,709 sf Storage= 3,946 cf

Plug-Flow detention time= 112.6 min calculated for 0.322 af (100% of inflow)
Center-of-Mass det. time= 113.8 min (952.0 - 838.2)

Volume	Invert	Avail.Storage	Storage Description
#1	880.00'	5,913 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

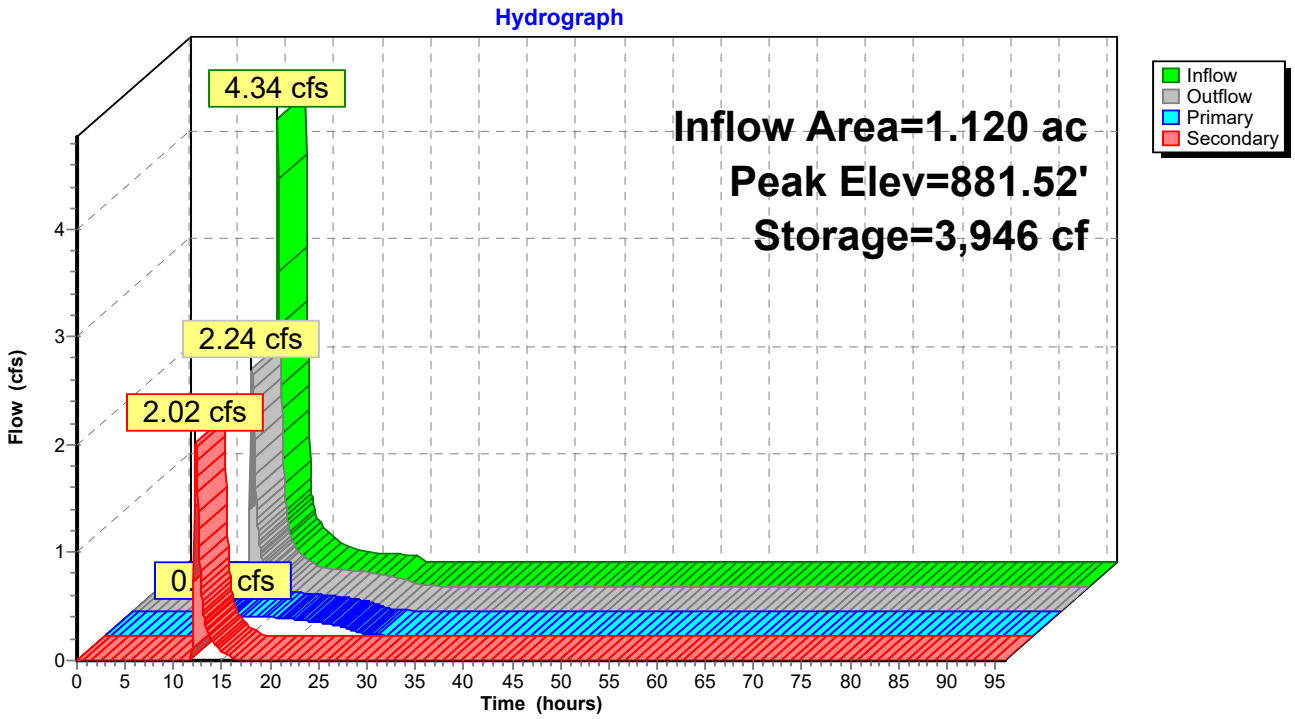
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
880.00	1,618	461.8	0	0	1,618
882.00	4,541	517.0	5,913	5,913	6,028

Device	Routing	Invert	Outlet Devices
#1	Primary	880.00'	**3.0" Round Culvert** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 880.00' / 879.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.05 sf
#2	Secondary	881.00'	**2.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=0.22 cfs @ 12.28 hrs HW=881.52' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.22 cfs @ 4.49 fps)

Secondary OutFlow Max=2.01 cfs @ 12.28 hrs HW=881.52' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 2.01 cfs @ 1.93 fps)

Pond B-4: B-4

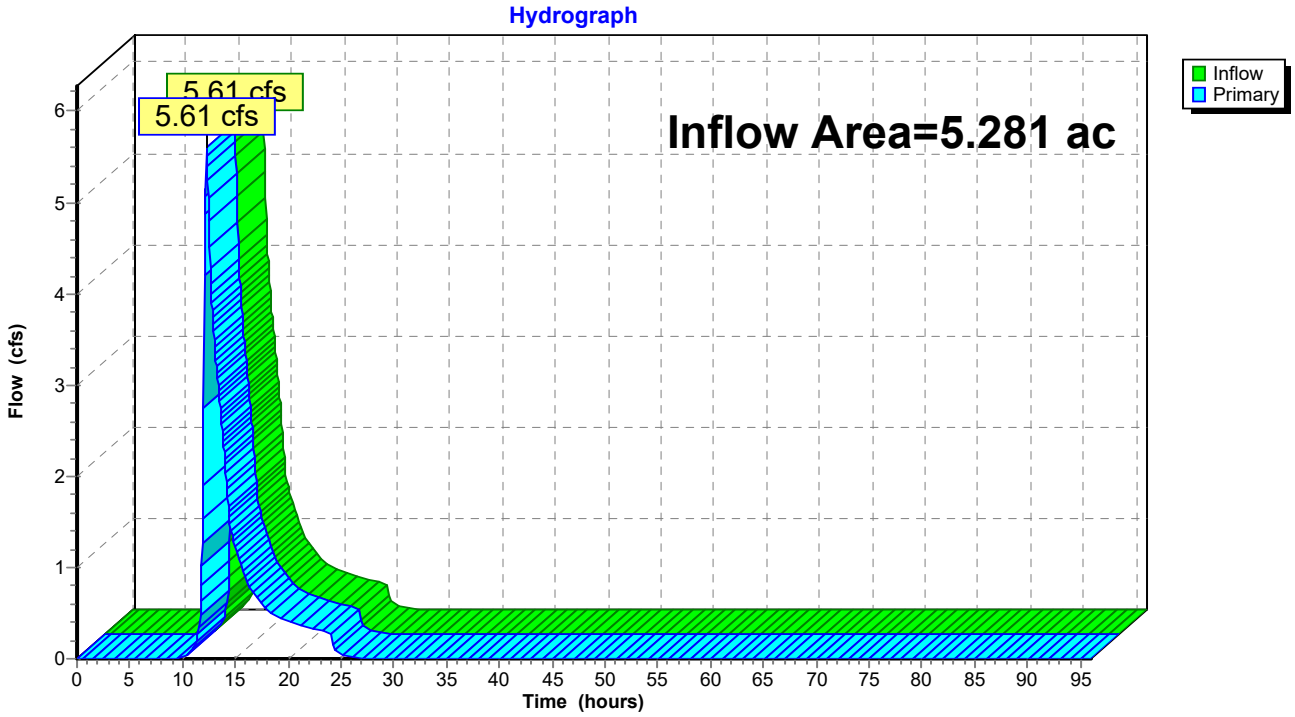

Hydrograph
Inflow Area=1.120 ac
Peak Elev=881.52'
Storage=3,946 cf
4.34 cfs
2.24 cfs
2.02 cfs
0.
cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
1
2
3
4
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95

Summary for Link AP-1: AP-1

Inflow Area = 5.281 ac, 7.69% Impervious, Inflow Depth = 2.70" for 50 YR event
Inflow = 5.61 cfs @ 12.27 hrs, Volume= 1.187 af
Primary = 5.61 cfs @ 12.27 hrs, Volume= 1.187 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link AP-1: AP-1

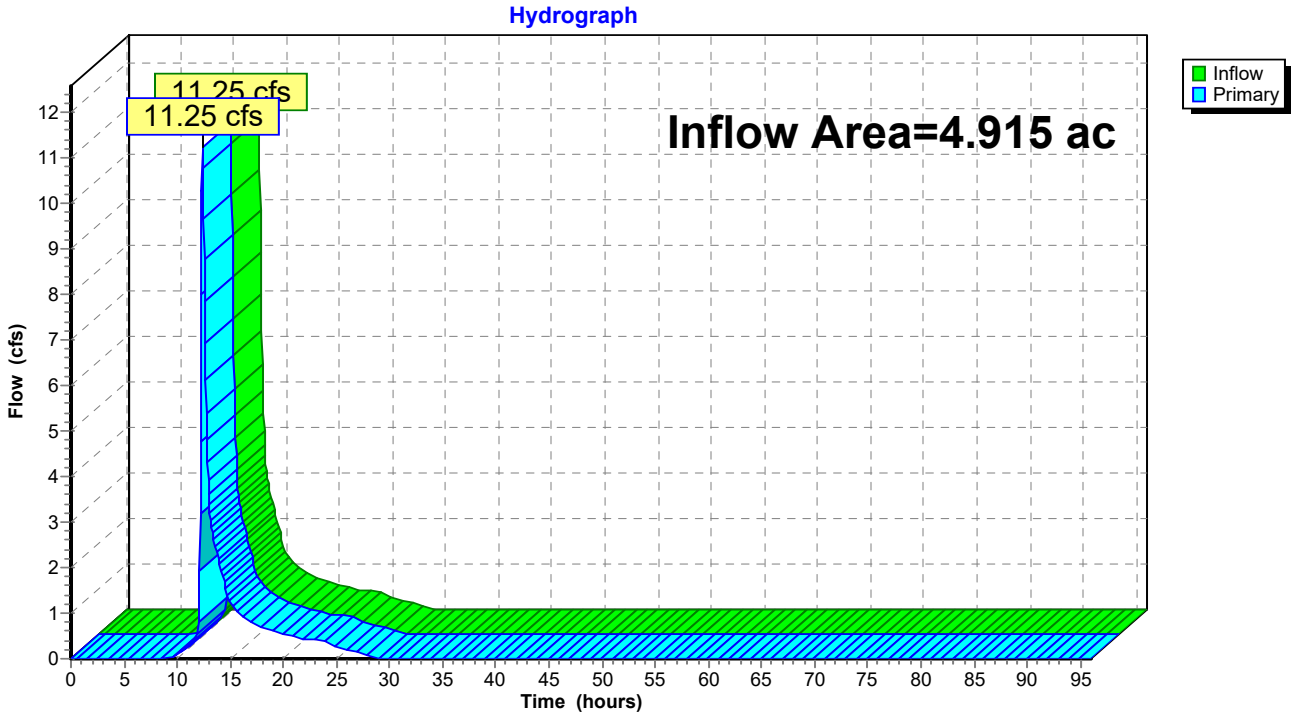


Summary for Link AP-2: AP-2

Inflow Area = 4.915 ac, 8.02% Impervious, Inflow Depth = 3.56" for 50 YR event
Inflow = 11.25 cfs @ 12.37 hrs, Volume= 1.457 af
Primary = 11.25 cfs @ 12.37 hrs, Volume= 1.457 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link AP-2: AP-2

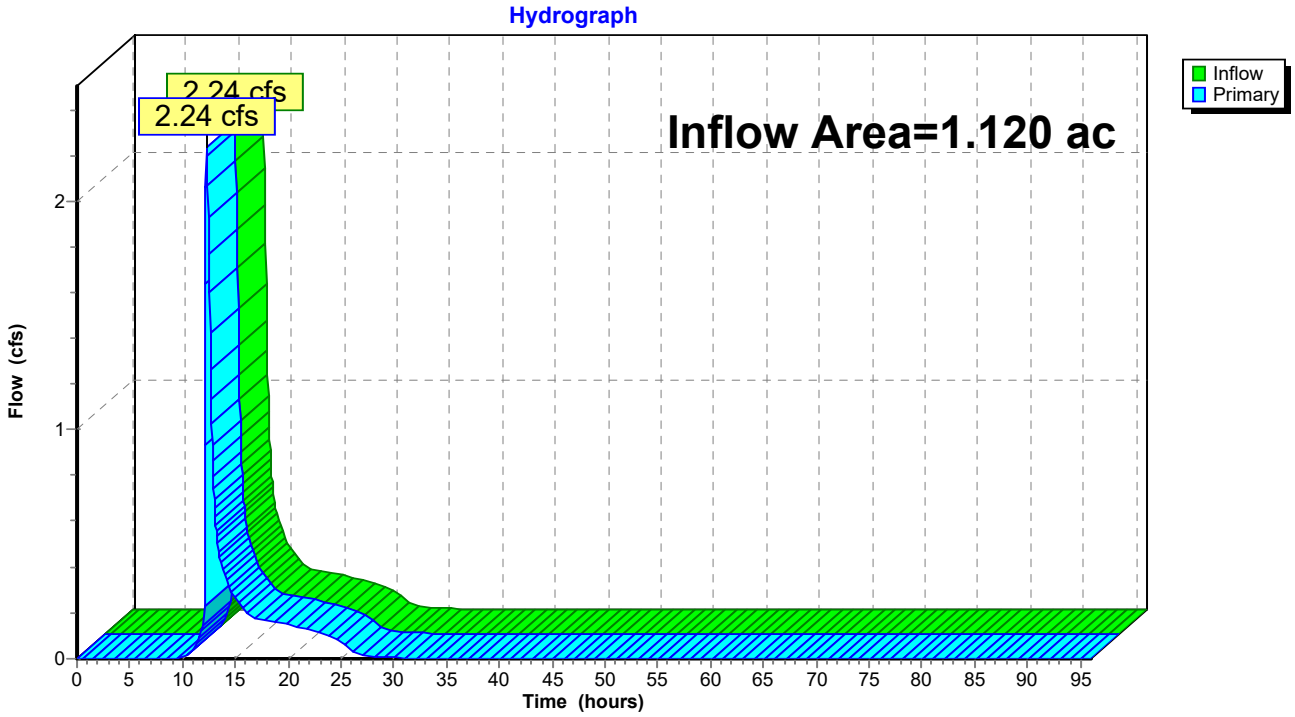


Summary for Link AP-3: AP-3

Inflow Area = 1.120 ac, 9.29% Impervious, Inflow Depth = 3.45" for 50 YR event
Inflow = 2.24 cfs @ 12.28 hrs, Volume= 0.322 af
Primary = 2.24 cfs @ 12.28 hrs, Volume= 0.322 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link AP-3: AP-3



Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment PDA-1A: PDA-1A Runoff Area=1.741 ac 10.28% Impervious Runoff Depth=4.41"
Flow Length=263' Tc=9.9 min CN=67 Runoff=7.79 cfs 0.640 af

Subcatchment PDA-1B: PDA-1B Runoff Area=1.703 ac 13.33% Impervious Runoff Depth=4.77"
Flow Length=337' Tc=10.5 min CN=70 Runoff=8.11 cfs 0.676 af

Subcatchment PDA-1C: PDA-1C Runoff Area=0.986 ac 0.00% Impervious Runoff Depth=3.95"
Tc=6.0 min CN=63 Runoff=4.46 cfs 0.324 af

Subcatchment PDA-1D: PDA-1D Runoff Area=0.851 ac 0.00% Impervious Runoff Depth=3.25"
Flow Length=326' Tc=11.5 min CN=57 Runoff=2.62 cfs 0.231 af

Subcatchment PDA-2: PDA-2 Runoff Area=3.287 ac 11.99% Impervious Runoff Depth=4.53"
Flow Length=237' Tc=16.2 min CN=68 Runoff=12.78 cfs 1.241 af

Subcatchment PDA-3: PDA-3 Runoff Area=1.628 ac 0.00% Impervious Runoff Depth=4.18"
Flow Length=301' Tc=10.1 min CN=65 Runoff=6.85 cfs 0.567 af

Subcatchment PDA-4: PDA-4 Runoff Area=1.120 ac 9.29% Impervious Runoff Depth=4.30"
Flow Length=118' Tc=6.7 min CN=66 Runoff=5.43 cfs 0.401 af

Pond B-1A: B-1A Peak Elev=816.07' Storage=11,828 cf Inflow=7.79 cfs 0.640 af
Primary=1.96 cfs 0.493 af Secondary=0.26 cfs 0.005 af Outflow=2.22 cfs 0.498 af

Pond B-1B: B-1B Peak Elev=838.96' Storage=13,508 cf Inflow=8.11 cfs 0.676 af
Primary=1.86 cfs 0.503 af Secondary=0.00 cfs 0.000 af Outflow=1.86 cfs 0.503 af

Pond B-2: B-2 Peak Elev=840.72' Storage=11,125 cf Inflow=12.78 cfs 1.241 af
Primary=2.66 cfs 0.936 af Secondary=8.25 cfs 0.305 af Outflow=10.91 cfs 1.241 af

Pond B-3: B-3 Peak Elev=862.72' Storage=5,691 cf Inflow=6.85 cfs 0.567 af
Primary=0.47 cfs 0.336 af Secondary=4.06 cfs 0.231 af Outflow=4.54 cfs 0.567 af

Pond B-4: B-4 Peak Elev=881.67' Storage=4,527 cf Inflow=5.43 cfs 0.401 af
Primary=0.23 cfs 0.203 af Secondary=2.97 cfs 0.198 af Outflow=3.21 cfs 0.401 af

Link AP-1: AP-1 Inflow=8.33 cfs 1.556 af
Primary=8.33 cfs 1.556 af

Link AP-2: AP-2 Inflow=15.46 cfs 1.808 af
Primary=15.46 cfs 1.808 af

Link AP-3: AP-3 Inflow=3.21 cfs 0.401 af
Primary=3.21 cfs 0.401 af

Total Runoff Area = 11.316 ac Runoff Volume = 4.081 af Average Runoff Depth = 4.33"
92.01% Pervious = 10.412 ac 7.99% Impervious = 0.904 ac

Summary for Subcatchment PDA-1A: PDA-1A

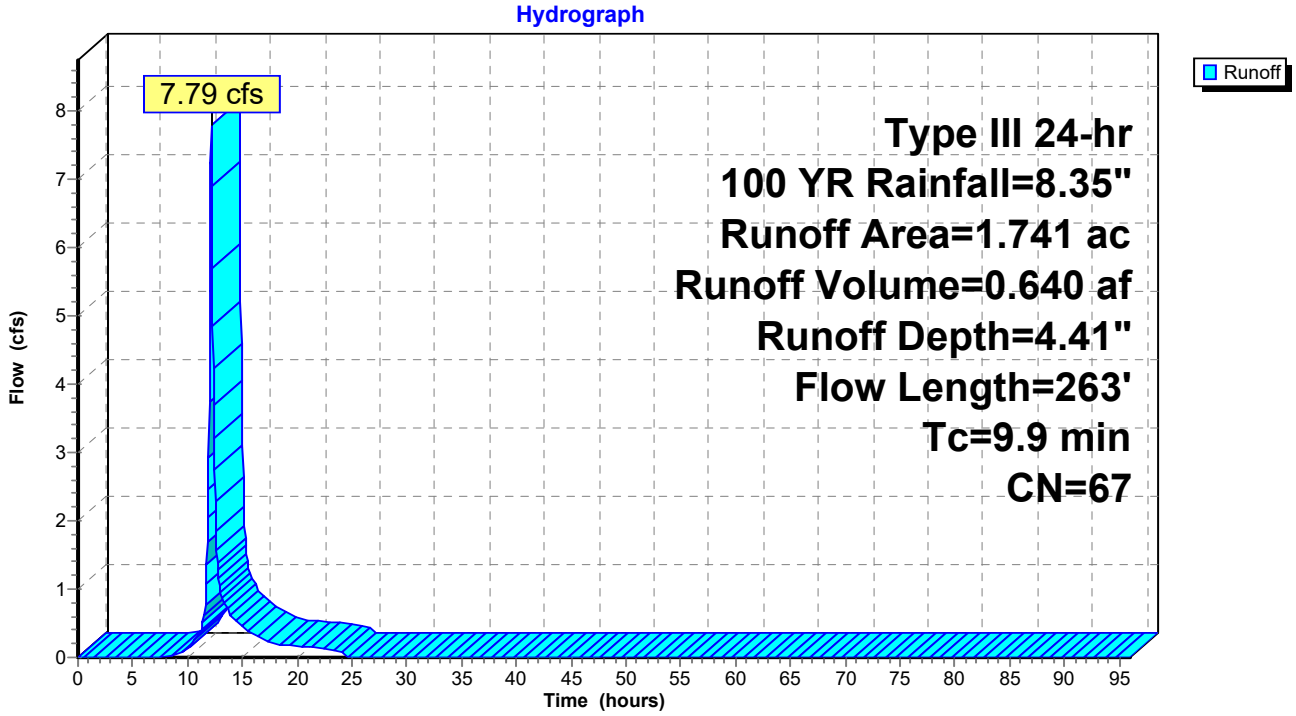
Runoff = 7.79 cfs @ 12.14 hrs, Volume= 0.640 af, Depth= 4.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=8.35"

	Area (ac)	CN	Description
	0.381	58	Meadow, non-grazed, HSG B
	0.179	98	Water Surface, HSG B
*	1.181	65	Meadow, non-grazed, HSG B/C
	1.741	67	Weighted Average
	1.562		89.72% Pervious Area
	0.179		10.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0697	0.19		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.09"
1.1	163	0.1316	2.54		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
9.9	263	Total			

Subcatchment PDA-1A: PDA-1A



Summary for Subcatchment PDA-1B: PDA-1B

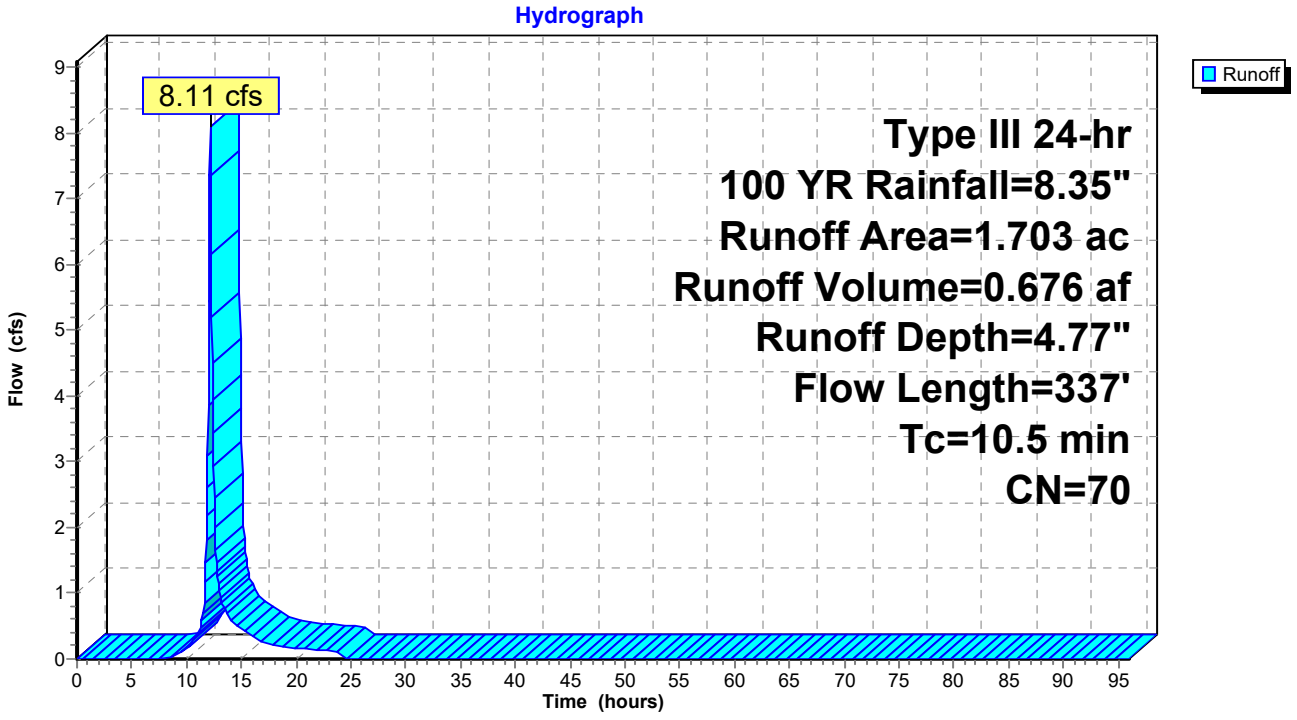
Runoff = 8.11 cfs @ 12.15 hrs, Volume= 0.676 af, Depth= 4.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=8.35"

	Area (ac)	CN	Description
	0.226	58	Meadow, non-grazed, HSG B
	0.111	96	Gravel surface, HSG B
	0.213	98	Water Surface, HSG B
	0.014	98	Unconnected pavement, HSG B
*	1.139	65	Meadow, non-grazed, HSG B/C
	1.703	70	Weighted Average
	1.476		86.67% Pervious Area
	0.227		13.33% Impervious Area
	0.014		6.17% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	100	0.0688	0.19		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.09"
1.6	237	0.1285	2.51		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
10.5	337	Total			

Subcatchment PDA-1B: PDA-1B



Summary for Subcatchment PDA-1C: PDA-1C

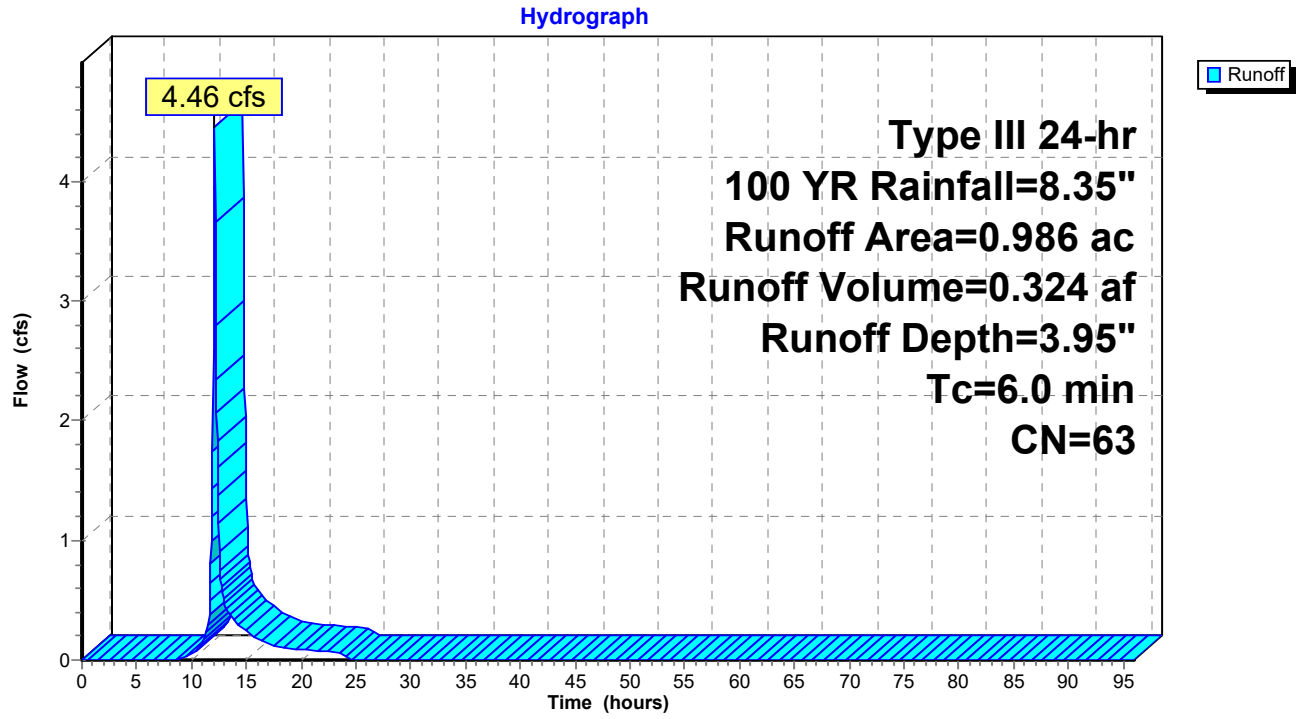
Runoff = 4.46 cfs @ 12.09 hrs, Volume= 0.324 af, Depth= 3.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=8.35"

	Area (ac)	CN	Description
	0.217	58	Meadow, non-grazed, HSG B
*	0.769	65	Meadow, non-grazed, HSG B/C
	0.986	63	Weighted Average
	0.986		100.00% Pervious Area

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

Subcatchment PDA-1C: PDA-1C



Summary for Subcatchment PDA-1D: PDA-1D

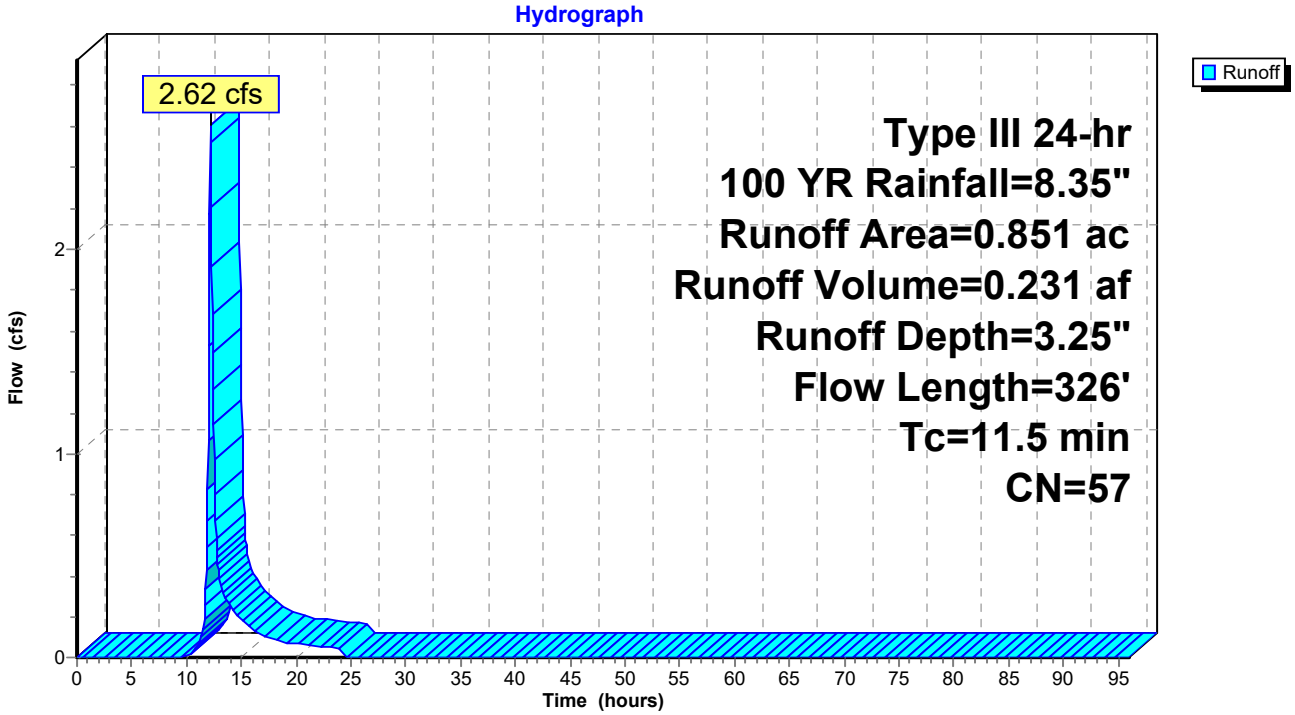
Runoff = 2.62 cfs @ 12.17 hrs, Volume= 0.231 af, Depth= 3.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=8.35"

Area (ac)	CN	Description
0.205	55	Woods, Good, HSG B
0.233	58	Meadow, non-grazed, HSG B
0.413	58	Meadow, non-grazed, HSG B
0.851	57	Weighted Average
0.851		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.1240	0.16		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.09"
0.8	82	0.1103	1.66		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
0.2	144	0.1250	11.03	55.16	**Channel Flow, C-D** Area= 5.0 sf Perim= 10.0' r= 0.50' n= 0.030 Earth, grassed & winding
11.5	326	Total			

Subcatchment PDA-1D: PDA-1D



Summary for Subcatchment PDA-2: PDA-2

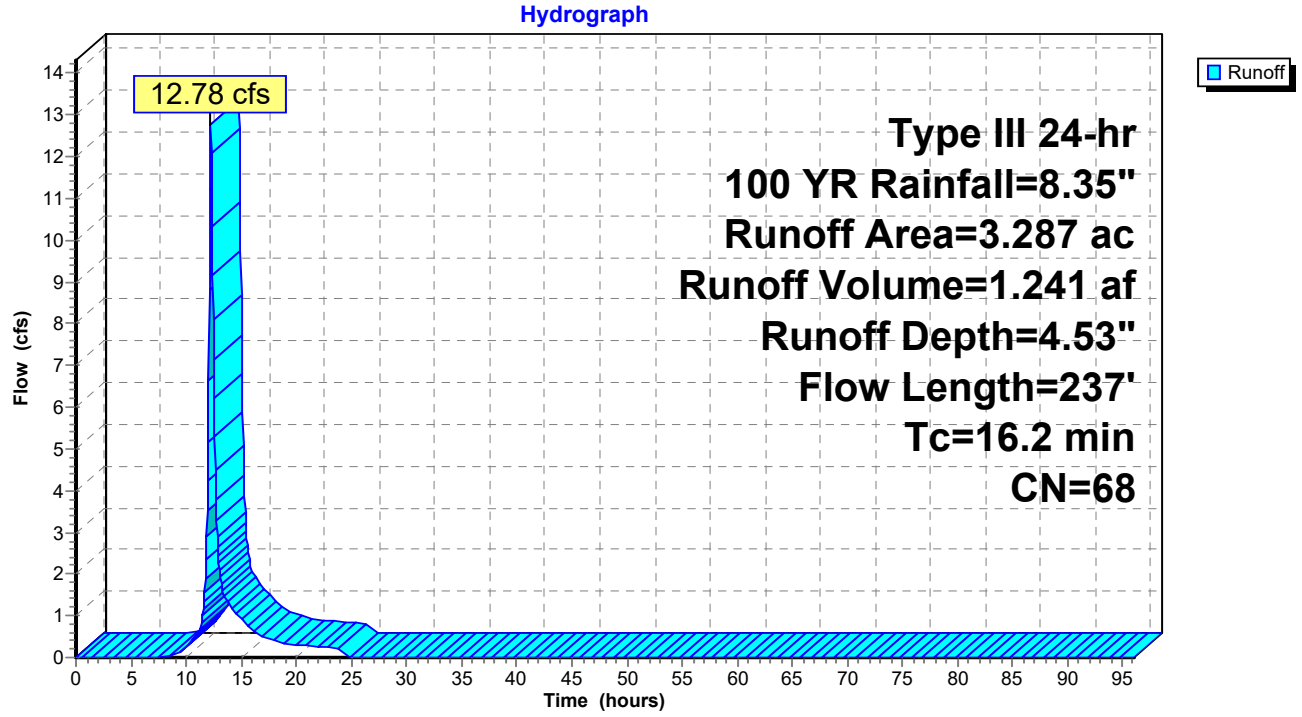
Runoff = 12.78 cfs @ 12.22 hrs, Volume= 1.241 af, Depth= 4.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=8.35"

	Area (ac)	CN	Description
	0.697	58	Meadow, non-grazed, HSG B
	0.131	98	Water Surface, HSG B
	0.239	98	Paved parking, HSG B
*	2.025	65	Meadow, non-grazed, HSG B/C
	0.171	71	Meadow, non-grazed, HSG C
	0.022	98	Water Surface, HSG C
	0.002	98	Paved parking, HSG C
	3.287	68	Weighted Average
	2.893		88.01% Pervious Area
	0.394		11.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	100	0.0203	0.12		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.09"
1.8	137	0.0326	1.26		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
16.2	237	Total			

Subcatchment PDA-2: PDA-2



Summary for Subcatchment PDA-3: PDA-3

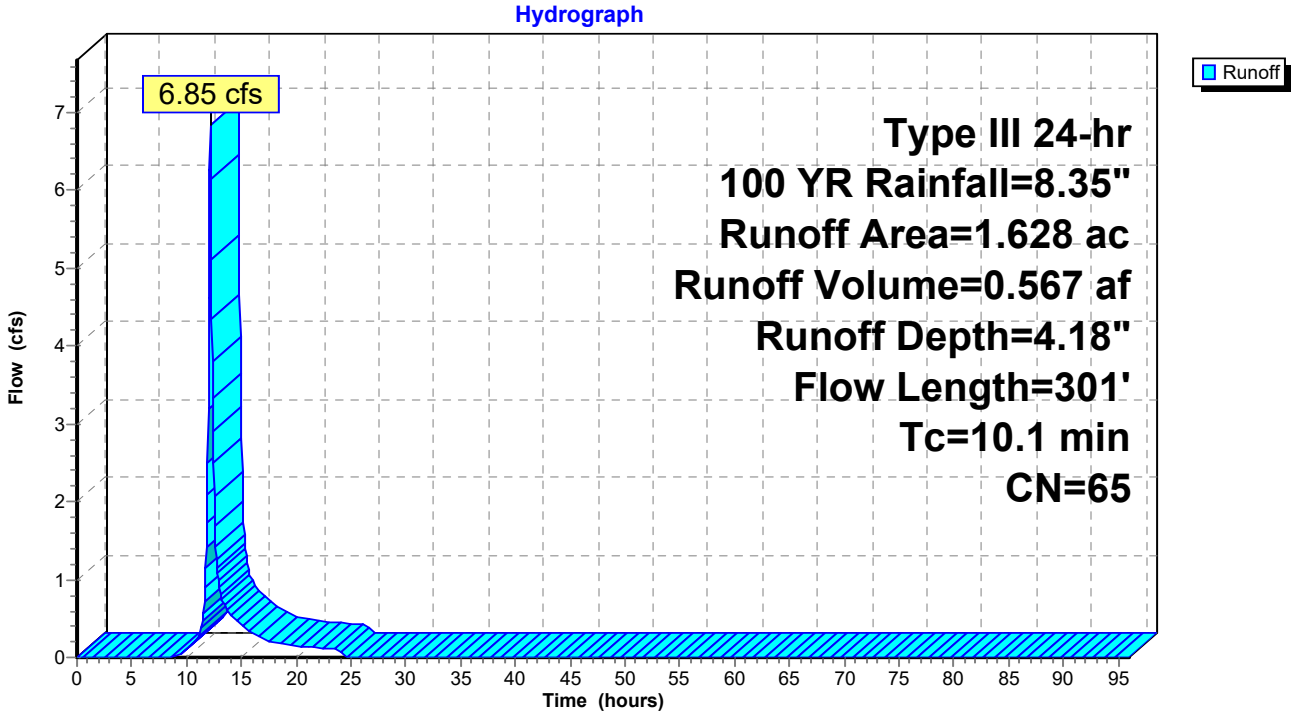
Runoff = 6.85 cfs @ 12.15 hrs, Volume= 0.567 af, Depth= 4.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=8.35"

	Area (ac)	CN	Description
*	1.628	65	Meadow, non-grazed, HSG B/C
	1.628		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	46	0.0696	0.16		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.09"
4.0	54	0.1452	0.22		**Sheet Flow, B-C** Grass: Dense n= 0.240 P2= 3.09"
0.9	132	0.1287	2.51		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
0.5	69	0.1009	2.22		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
10.1	301	Total			

Subcatchment PDA-3: PDA-3



Summary for Subcatchment PDA-4: PDA-4

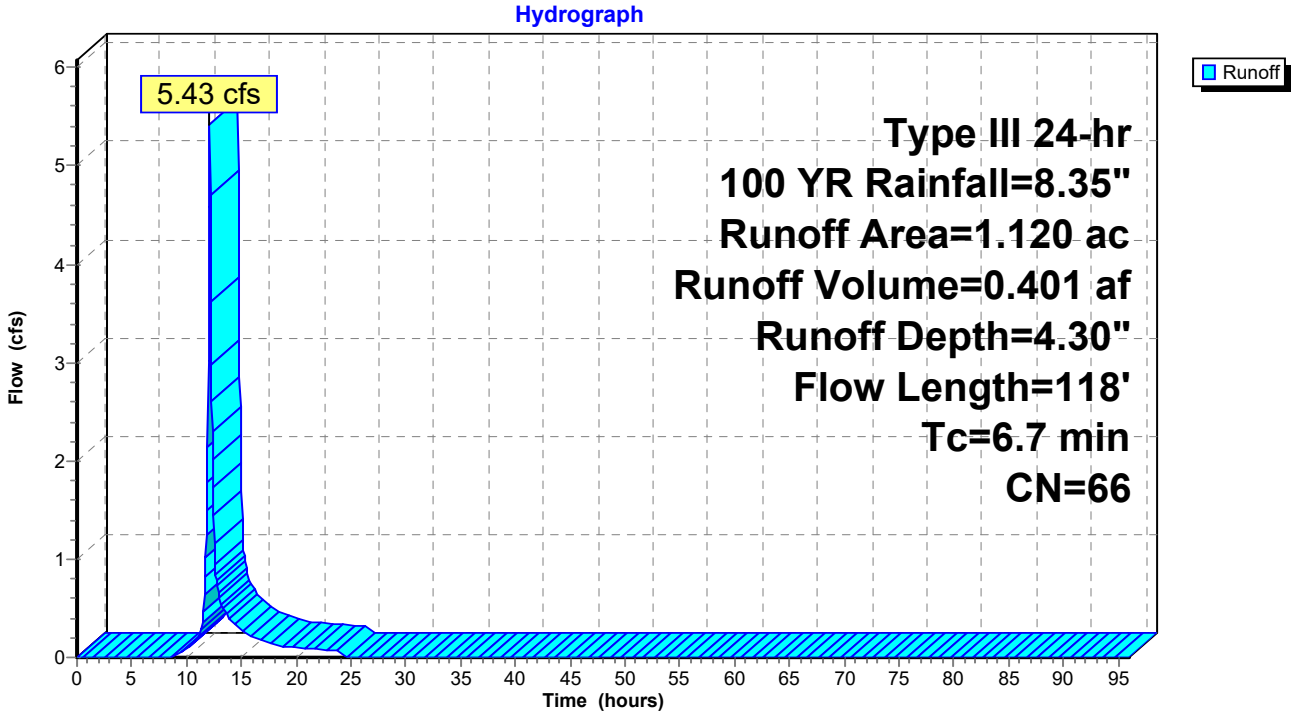
Runoff = 5.43 cfs @ 12.10 hrs, Volume= 0.401 af, Depth= 4.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=8.35"

	Area (ac)	CN	Description
	0.306	58	Meadow, non-grazed, HSG B
	0.104	98	Water Surface, HSG B
*	0.710	65	Meadow, non-grazed, HSG B/C
	1.120	66	Weighted Average
	1.016		90.71% Pervious Area
	0.104		9.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	100	0.1449	0.25		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.09"
0.1	18	0.3184	3.95		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
6.7	118	Total			

Subcatchment PDA-4: PDA-4



Summary for Pond B-1A: B-1A

Inflow Area = 1.741 ac, 10.28% Impervious, Inflow Depth = 4.41" for 100 YR event
Inflow = 7.79 cfs @ 12.14 hrs, Volume= 0.640 af
Outflow = 2.22 cfs @ 12.56 hrs, Volume= 0.498 af, Atten= 72%, Lag= 24.9 min
Primary = 1.96 cfs @ 12.56 hrs, Volume= 0.493 af
Secondary = 0.26 cfs @ 12.56 hrs, Volume= 0.005 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 816.07' @ 12.56 hrs Surf.Area= 6,101 sf Storage= 11,828 cf

Plug-Flow detention time= 156.3 min calculated for 0.498 af (78% of inflow)
Center-of-Mass det. time= 72.5 min (905.2 - 832.8)

Volume	Invert	Avail.Storage	Storage Description
#1	813.00'	18,239 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

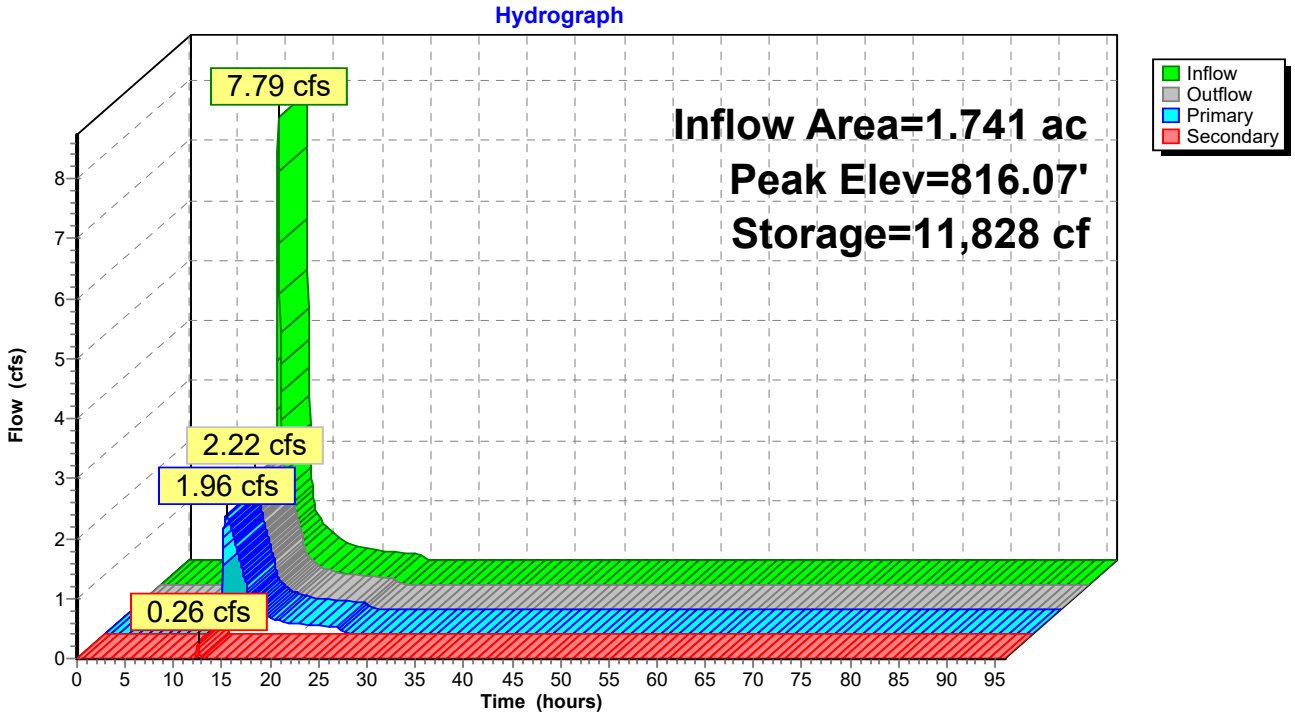
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
813.00	1,972	351.3	0	0	1,972
817.00	7,788	568.9	18,239	18,239	18,012

Device	Routing	Invert	Outlet Devices
#1	Primary	813.00'	**6.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 813.00' / 812.00' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Primary	813.00'	**6.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 813.00' / 812.00' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	815.00'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 2	815.00'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	816.00'	**5.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=1.96 cfs @ 12.56 hrs HW=816.07' TW=0.00' (Dynamic Tailwater)
- **1=Culvert** (Passes 0.98 cfs of 1.59 cfs potential flow)
  - **3=Orifice/Grate** (Orifice Controls 0.98 cfs @ 4.99 fps)
- **2=Culvert** (Passes 0.98 cfs of 1.59 cfs potential flow)
  - **4=Orifice/Grate** (Orifice Controls 0.98 cfs @ 4.99 fps)

Secondary OutFlow Max=0.26 cfs @ 12.56 hrs HW=816.07' TW=0.00' (Dynamic Tailwater)
- **5=Broad-Crested Rectangular Weir** (Weir Controls 0.26 cfs @ 0.70 fps)

Pond B-1A: B-1A


Hydrograph
7.79 cfs
2.22 cfs
1.96 cfs
0.26 cfs
Inflow Area=1.741 ac
Peak Elev=816.07'
Storage=11,828 cf
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
1
2
3
4
5
6
7
8
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95

Summary for Pond B-1B: B-1B

Inflow Area = 1.703 ac, 13.33% Impervious, Inflow Depth = 4.77" for 100 YR event
Inflow = 8.11 cfs @ 12.15 hrs, Volume= 0.676 af
Outflow = 1.86 cfs @ 12.62 hrs, Volume= 0.503 af, Atten= 77%, Lag= 28.3 min
Primary = 1.86 cfs @ 12.62 hrs, Volume= 0.503 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 838.96' @ 12.62 hrs Surf.Area= 7,089 sf Storage= 13,508 cf

Plug-Flow detention time= 173.4 min calculated for 0.503 af (74% of inflow)
Center-of-Mass det. time= 85.2 min (912.2 - 827.1)

Volume	Invert	Avail.Storage	Storage Description
#1	836.00'	21,963 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

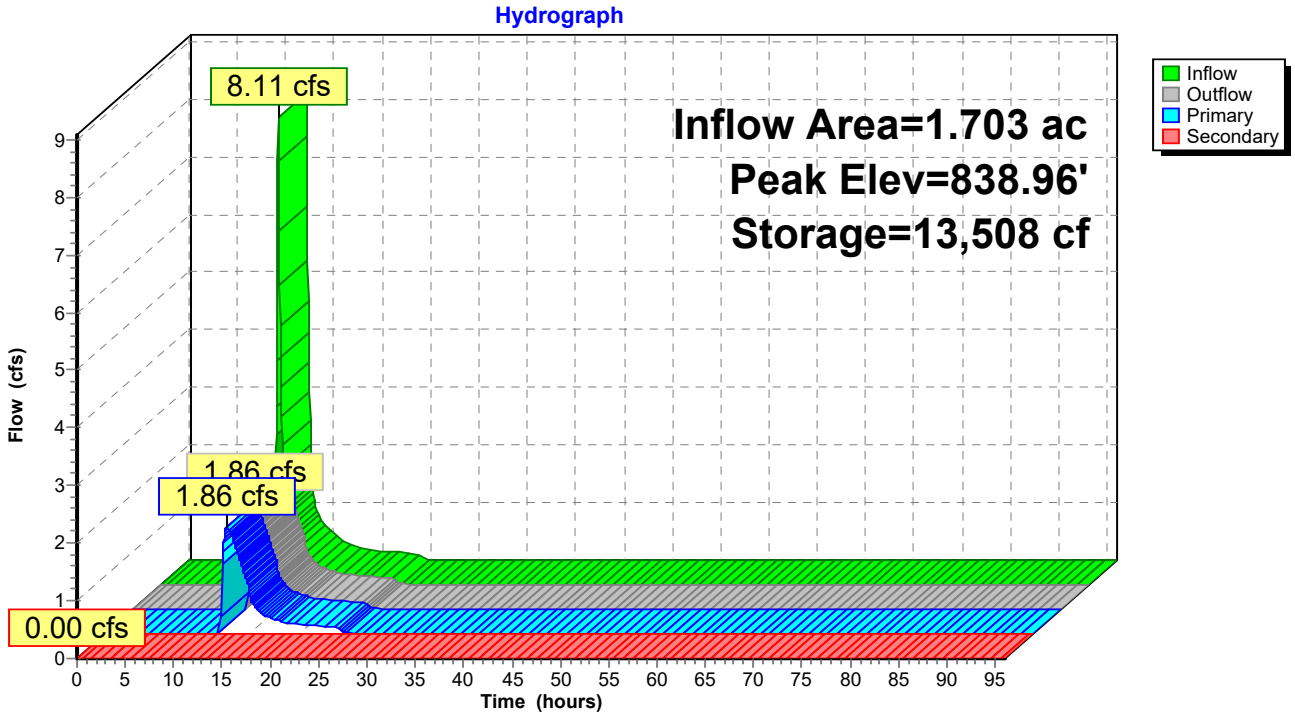
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
836.00	2,430	506.8	0	0	2,430
840.00	9,291	633.4	21,963	21,963	14,141

Device	Routing	Invert	Outlet Devices
#1	Primary	836.00'	**6.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 836.00' / 835.00' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Primary	836.00'	**6.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 836.00' / 835.00' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#3	Device 1	838.00'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 2	838.00'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	839.00'	**5.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=1.86 cfs @ 12.62 hrs HW=838.96' TW=0.00' (Dynamic Tailwater)
- **1=Culvert** (Passes 0.93 cfs of 1.56 cfs potential flow)
  - **3=Orifice/Grate** (Orifice Controls 0.93 cfs @ 4.73 fps)
- **2=Culvert** (Passes 0.93 cfs of 1.56 cfs potential flow)
  - **4=Orifice/Grate** (Orifice Controls 0.93 cfs @ 4.73 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=836.00' TW=0.00' (Dynamic Tailwater)
- **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond B-1B: B-1B


Hydrograph
8.11 cfs
1.86 cfs
1.86 cfs
0.00 cfs
Inflow Area=1.703 ac
Peak Elev=838.96'
Storage=13,508 cf
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95
0 1 2 3 4 5 6 7 8 9

Summary for Pond B-2: B-2

Inflow Area = 3.287 ac, 11.99% Impervious, Inflow Depth = 4.53" for 100 YR event
Inflow = 12.78 cfs @ 12.22 hrs, Volume= 1.241 af
Outflow = 10.91 cfs @ 12.33 hrs, Volume= 1.241 af, Atten= 15%, Lag= 6.4 min
Primary = 2.66 cfs @ 12.33 hrs, Volume= 0.936 af
Secondary = 8.25 cfs @ 12.33 hrs, Volume= 0.305 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 840.72' @ 12.33 hrs Surf.Area= 4,961 sf Storage= 11,125 cf

Plug-Flow detention time= 79.4 min calculated for 1.240 af (100% of inflow)
Center-of-Mass det. time= 79.9 min (916.4 - 836.5)

Volume	Invert	Avail.Storage	Storage Description
#1	837.00'	18,539 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

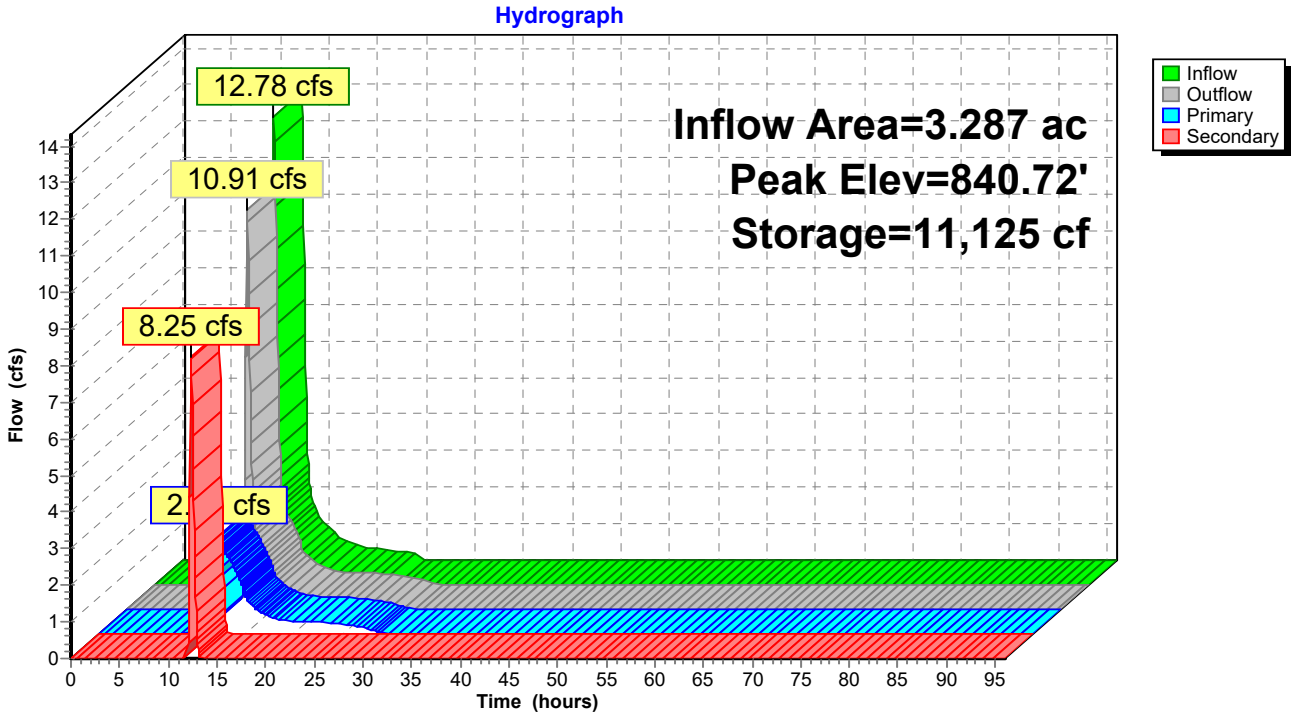
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
837.00	1,383	209.9	0	0	1,383
842.00	6,697	456.9	18,539	18,539	14,595

Device	Routing	Invert	Outlet Devices
#1	Primary	837.00'	**12.0" Round Culvert** L= 94.2' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 837.00' / 836.00' S= 0.0106 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	837.00'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	839.00'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	840.00'	**5.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=2.66 cfs @ 12.33 hrs HW=840.72' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 2.66 cfs of 5.76 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.46 cfs @ 9.29 fps)
└**3=Orifice/Grate** (Orifice Controls 2.20 cfs @ 6.31 fps)

Secondary OutFlow Max=8.18 cfs @ 12.33 hrs HW=840.72' TW=0.00' (Dynamic Tailwater)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 8.18 cfs @ 2.27 fps)

Pond B-2: B-2


Hydrograph
12.78 cfs
10.91 cfs
8.25 cfs
2. cfs
Inflow Area=3.287 ac
Peak Elev=840.72'
Storage=11,125 cf
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95

Summary for Pond B-3: B-3

Inflow Area = 1.628 ac, 0.00% Impervious, Inflow Depth = 4.18" for 100 YR event
Inflow = 6.85 cfs @ 12.15 hrs, Volume= 0.567 af
Outflow = 4.54 cfs @ 12.29 hrs, Volume= 0.567 af, Atten= 34%, Lag= 8.8 min
Primary = 0.47 cfs @ 12.29 hrs, Volume= 0.336 af
Secondary = 4.06 cfs @ 12.29 hrs, Volume= 0.231 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 862.72' @ 12.29 hrs Surf.Area= 4,529 sf Storage= 5,691 cf

Plug-Flow detention time= 64.8 min calculated for 0.567 af (100% of inflow)
Center-of-Mass det. time= 65.4 min (902.5 - 837.1)

Volume	Invert	Avail.Storage	Storage Description
#1	860.50'	7,066 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

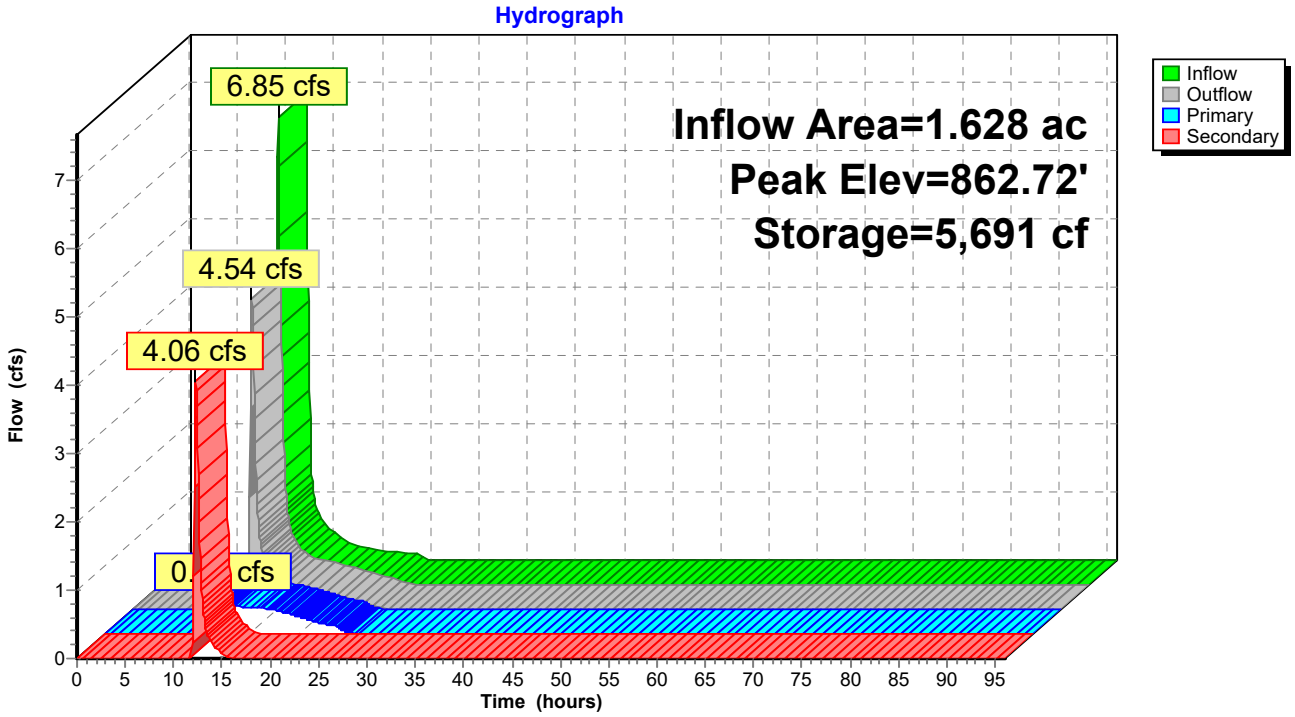
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
860.50	1,023	234.2	0	0	1,023
863.00	5,159	345.6	7,066	7,066	6,214

Device	Routing	Invert	Outlet Devices
#1	Primary	860.50'	**4.0" Round Culvert** L= 21.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 860.50' / 860.00' S= 0.0238 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.09 sf
#2	Secondary	862.00'	**2.5' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=0.47 cfs @ 12.29 hrs HW=862.71' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.47 cfs @ 5.44 fps)

Secondary OutFlow Max=4.05 cfs @ 12.29 hrs HW=862.71' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 4.05 cfs @ 2.27 fps)

Pond B-3: B-3


Hydrograph
6.85 cfs
4.54 cfs
4.06 cfs
Inflow Area=1.628 ac
Peak Elev=862.72'
Storage=5,691 cf
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)

Summary for Pond B-4: B-4

Inflow Area = 1.120 ac, 9.29% Impervious, Inflow Depth = 4.30" for 100 YR event
Inflow = 5.43 cfs @ 12.10 hrs, Volume= 0.401 af
Outflow = 3.21 cfs @ 12.24 hrs, Volume= 0.401 af, Atten= 41%, Lag= 8.1 min
Primary = 0.23 cfs @ 12.24 hrs, Volume= 0.203 af
Secondary = 2.97 cfs @ 12.24 hrs, Volume= 0.198 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs
Peak Elev= 881.67' @ 12.24 hrs Surf.Area= 3,963 sf Storage= 4,527 cf

Plug-Flow detention time= 100.8 min calculated for 0.401 af (100% of inflow)
Center-of-Mass det. time= 101.9 min (933.8 - 831.9)

Volume	Invert	Avail.Storage	Storage Description
#1	880.00'	5,913 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

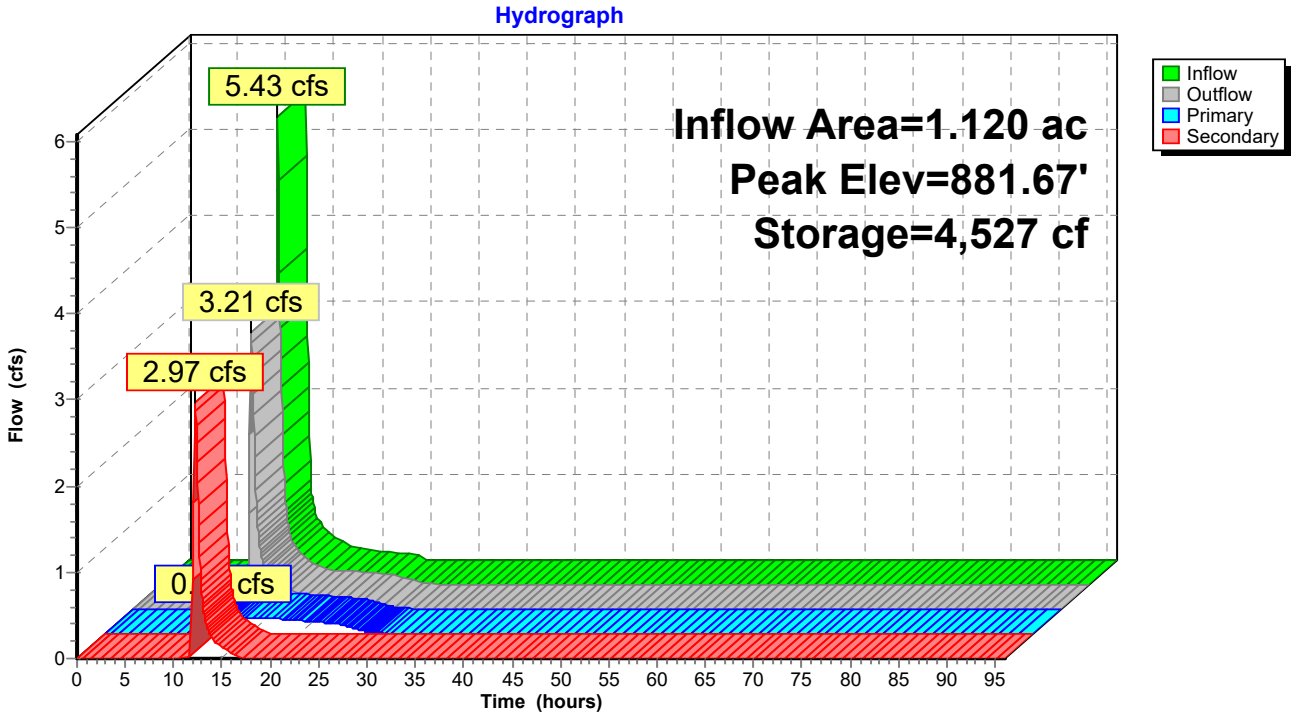
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
880.00	1,618	461.8	0	0	1,618
882.00	4,541	517.0	5,913	5,913	6,028

Device	Routing	Invert	Outlet Devices
#1	Primary	880.00'	**3.0" Round Culvert** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 880.00' / 879.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.05 sf
#2	Secondary	881.00'	**2.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=0.23 cfs @ 12.24 hrs HW=881.67' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.23 cfs @ 4.73 fps)

Secondary OutFlow Max=2.96 cfs @ 12.24 hrs HW=881.67' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 2.96 cfs @ 2.20 fps)

Pond B-4: B-4

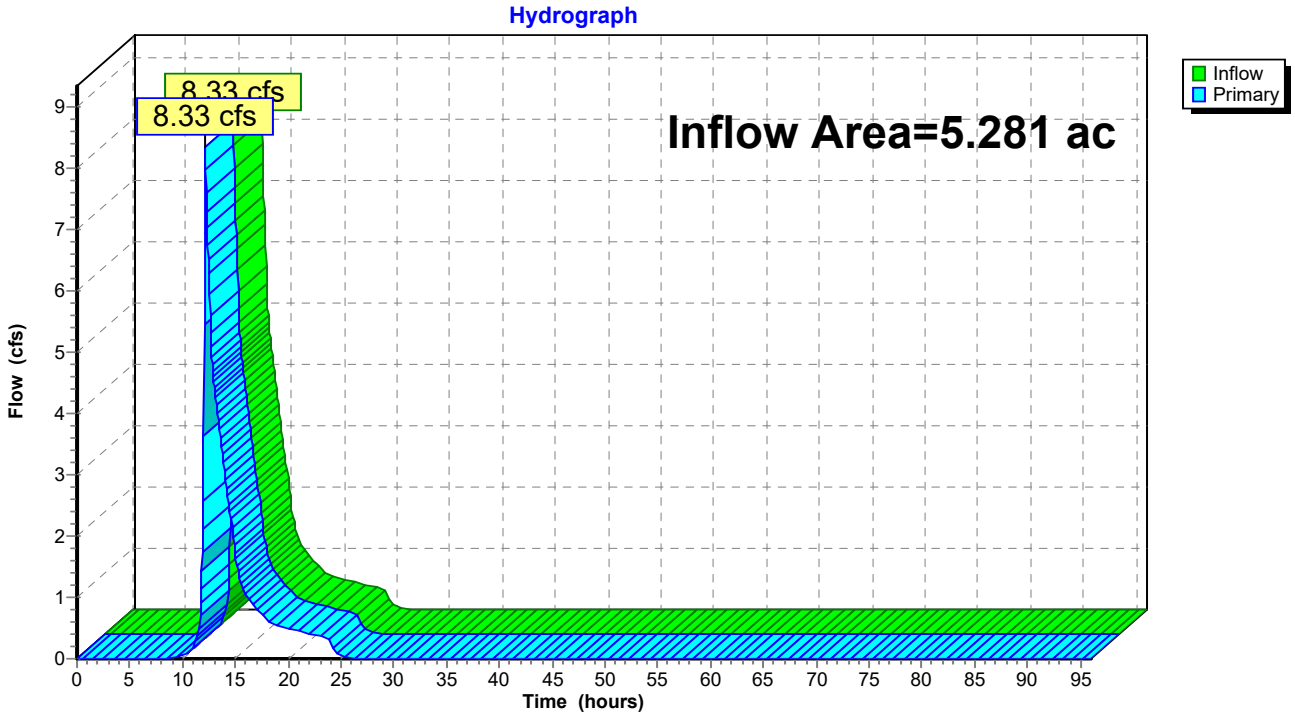

Hydrograph
5.43 cfs
3.21 cfs
2.97 cfs
0 cfs
Inflow Area=1.120 ac
Peak Elev=881.67'
Storage=4,527 cf
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95
0 1 2 3 4 5 6

Summary for Link AP-1: AP-1

Inflow Area = 5.281 ac, 7.69% Impervious, Inflow Depth = 3.54" for 100 YR event
Inflow = 8.33 cfs @ 12.17 hrs, Volume= 1.556 af
Primary = 8.33 cfs @ 12.17 hrs, Volume= 1.556 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link AP-1: AP-1

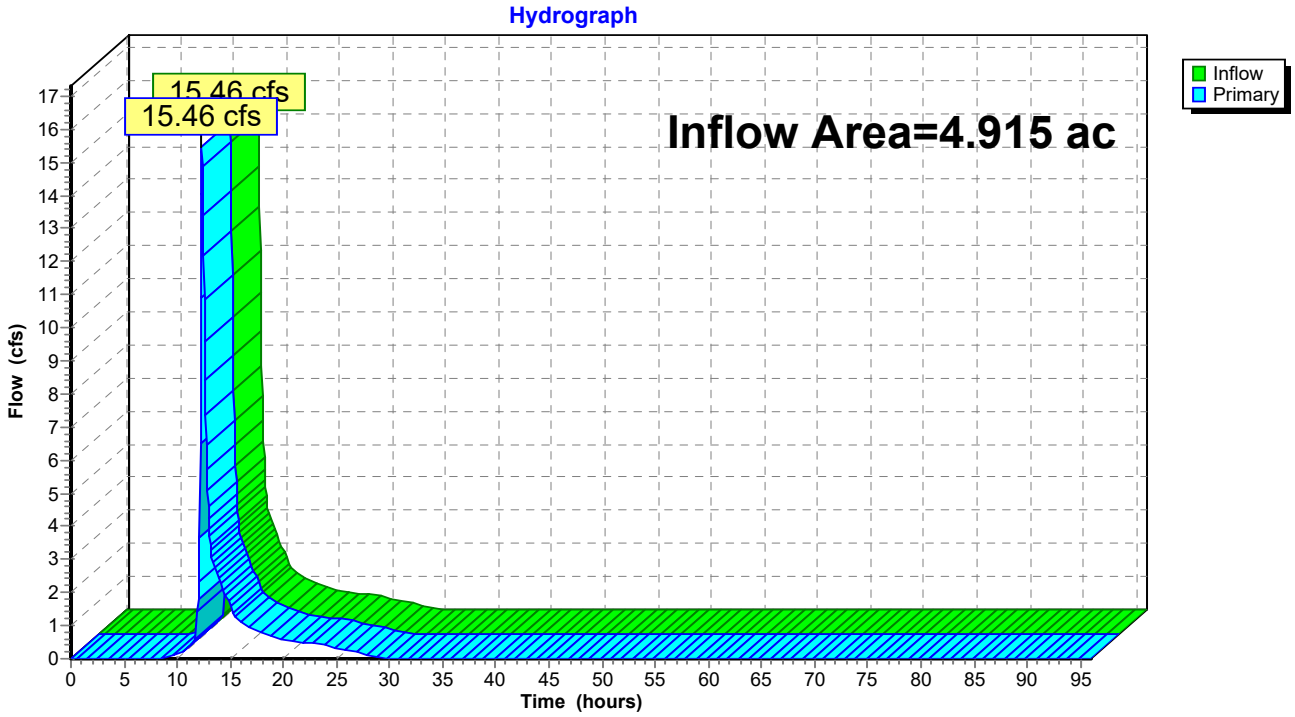


Summary for Link AP-2: AP-2

Inflow Area = 4.915 ac, 8.02% Impervious, Inflow Depth = 4.41" for 100 YR event
Inflow = 15.46 cfs @ 12.32 hrs, Volume= 1.808 af
Primary = 15.46 cfs @ 12.32 hrs, Volume= 1.808 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link AP-2: AP-2

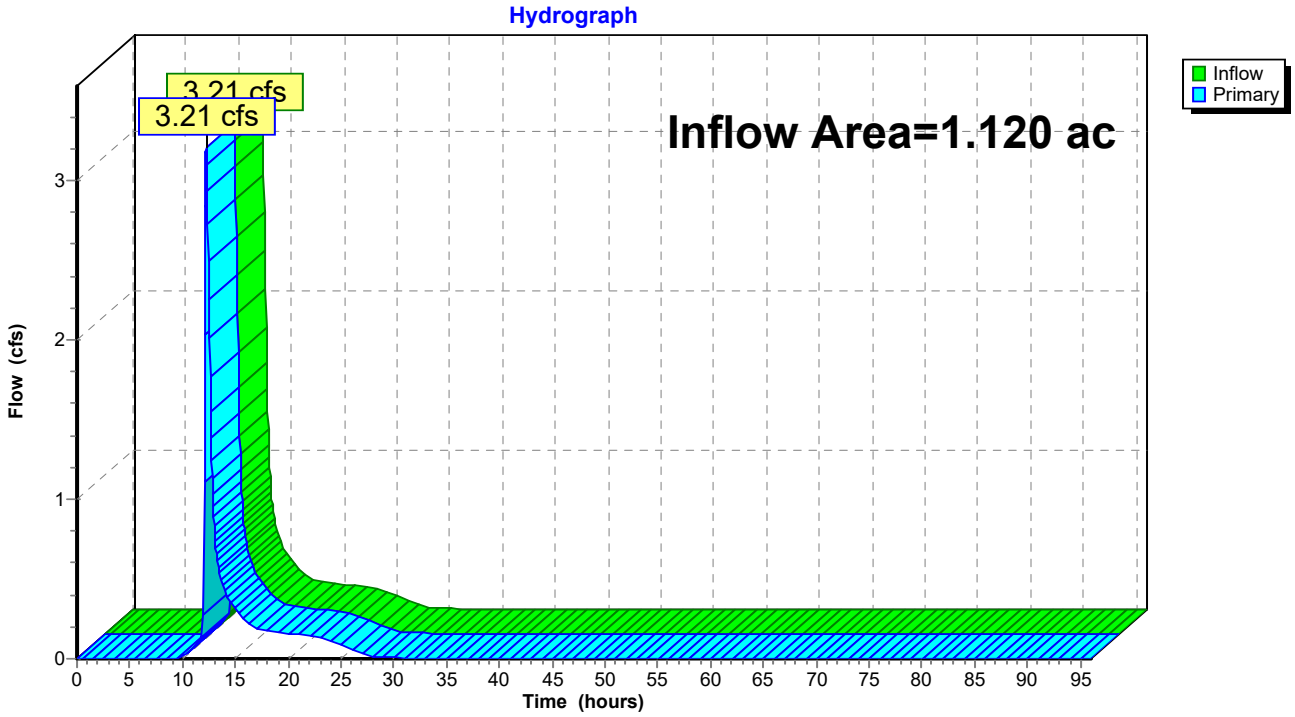


Summary for Link AP-3: AP-3

Inflow Area = 1.120 ac, 9.29% Impervious, Inflow Depth = 4.29" for 100 YR event
Inflow = 3.21 cfs @ 12.24 hrs, Volume= 0.401 af
Primary = 3.21 cfs @ 12.24 hrs, Volume= 0.401 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Link AP-3: AP-3



APPENDIX D: CT DEEP APPENDIX I CHECKLIST

CT DEEP General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities
APPENDIX I - Stormwater Management at Solar Array Construction Projects

Project Name: Bunce 1 Solar
Site Address: 81 East Main Street, North Canaan, CT

Section #	**Requirements** *(Italicized Text is Paraphrased)*	Site and Stormwater Design Review Notes
I	Design and construction requirements	
1	Roadways, gravel surfaces and transformer pads within the solar array are considered effective impervious cover for the purposes of calculating Water Quality Volume (WQV). In addition to these impervious surfaces, all solar panels in the array shall also be considered effective impervious cover for the purposes of calculating Water Quality Volume if the proposed post-construction slopes at a site are equal to or greater than 15% or if the post-construction slopes at a site are less than 15% and the conditions in (a) – (d), inclusive, below have not been met:	Met
a	The vegetated area receiving runoff between rows of solar panels (see Figures 1 and 2, below) is equal to or greater than the average width of the row of solar panels draining to the vegetated area;	Met
b	Overall site conditions and solar panel configuration within the array are designed and constructed such that stormwater runoff remains as sheet flow across the entire site and flows towards the intended stormwater management controls.	Met
c	The following conditions are satisfied regarding the design of the post-construction slope of the site:	
i	For slopes less than or equal to 5%, appropriate vegetation shall be established, that will ensure sheet flow conditions and that will provide sufficient ground cover throughout the site.	Met
ii	For slopes greater than 5%, but less than 10%, practices including, but not limited to, level spreaders, terraces or berms as described in Figure 2, below, shall be used to ensure long term sheet flow conditions; and	Met
iii	For sites with slopes greater than or equal to 8%, erosion control blankets or stump grindings or erosion control mix mulch or hydroseed with tackifier shall be applied within 72 hours of final grading, or when a rainfall of 0.5 inches or greater is predicted within 24 hours, whichever time period is less; and	Met
iv	For slopes equal to or greater than 10% and less than 15%, the Plan includes specific engineered stormwater control measures with detailed specifications that are designed to provide permanent stabilization and non-erosive conveyance of runoff to the property line of the site or downgradient from the site.	Met
d	The solar panels shall be designed and constructed in such a manner as to allow the growth of native vegetation beneath and between the panels. (Pollinator-friendly vegetation is strongly encouraged). With respect to such vegetation, the Permittee shall not use chemical fertilization, herbicides, or pesticides except as necessary to establish such vegetation.	Met
2		
a	Prior to commencing construction activities, the Permittee shall ensure that the following setback and buffer shall be delineated and maintained on the site:	
i	No solar panel associated with a solar array shall be located within one- hundred (100) feet of any wetland or waters ("the 100-foot setback") that, prior to or after construction, is located downgradient of such construction activity or within fifty (50) feet of any property boundary ("the 50-foot setback") that, prior to or after construction, is located downgradient of such construction activity; and	Met
ii	Except as provided in section 2(a)(iii), there shall be an undisturbed buffer of at least fifty (50) feet between any construction activity at a site and any wetland or waters that, prior to or after construction, is located downgradient of such construction activity ("the 50-foot buffer"). Such buffer shall be comprised of existing dense herbaceous vegetative ground cover (e.g. not forested area). If the entirety of such buffer is not comprised of existing dense herbaceous vegetative ground cover, such buffer shall be at least one-hundred (100) feet ("the 100-foot buffer").	Met
iii	There shall be an undisturbed buffer of at least ten (10) feet between any construction activity at a site associated with an access road or the electrical interconnection necessary for the solar array and any wetland or waters that, prior to or after construction, is located downgradient of such construction activity ("10-foot buffer"), except if the access road or electrical interconnection passes between two wetland or waters and the undisturbed buffer cannot be achieved. Any crossing through a wetland or waters for an access road or electrical interconnection is exempt from such buffer requirement.	Met
b	Notwithstanding section 2(a)(ii), the 50-foot buffer or 100-foot buffer, as applicable, may be reduced, only where necessary, but by no more than fifty percent (50%), only if all of the following have been demonstrated to the satisfaction of the commissioner by approval of a Registration	Met, no intrusion of the 50-foot or 100-foot buffer is proposed.
i	Stormwater control measures for managing stormwater discharges that will enter or be received by a wetland or waters shall be designed and installed in accordance with the following conditions	N/A
I	a minimum sediment load reduction of ninety percent (90%) shall be achieved before such discharges enter or are received by a wetland or waters. The required sediment load reduction shall be calculated based solely on the stormwater controls used; no sediment load reduction from conditions on the site (i.e., from any remaining buffer) shall be considered when calculating the sediment load reduction from such stormwater controls. The sediment load reduction may be calculated using a range of available models that are available to facilitate this calculation, including USDA's RUSLE-series programs and the WEPP erosion model, SEDCAD, SEDIMOT, or other equivalent independent third party model or method acceptable to the commissioner	N/A
II	those portions of a solar array from which stormwater discharges enter or will be received by a wetland or waters shall be deemed effective impervious cover for the purposes of calculating Stream Channel Protection in accordance with Section 7.6.1 of the Stormwater Quality Manual, even if those portions of such array are less than one (1) acre; and	N/A
III	the buffer into which stormwater discharges shall have a slope of less than or equal to fifteen percent (15%)	N/A
c	A soil scientist, as that term is defined in Conn. Gen. Stat. § 22a-38, shall delineate all wetland or waters by field survey. The location of all wetland or waters and all required setbacks and buffers shall be shown on all mapping and prior to the start of construction be clearly marked on the site with flags, stakes, tape, or a similar marking device by a surveyor licensed in Connecticut.	Met
d	Delineation of the 100-foot setback and any buffer required under this section shall be measured perpendicularly and laterally from the nearest part of the solar array or construction activity, as applicable, to:	Met
i	in the case of waters, the ordinary high water mark of the water body, defined as the line on the shore established by fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, and/or the presence of litter and debris;	Met
ii	the nearest edge of the stream or river bank, bluff, or cliff, as applicable; and	Met
iii	the nearest edge of any wetland, as determined by a soil scientist.	Met
e	The Plan shall indicate how compliance with this section will be achieved.	Met
f	Prior to the approval of a registration, the commissioner may determine that the 100 foot-setback or any buffer required under this section is not adequate to protect water quality or natural resources (i.e., a vernal pool, cold-water perennial streams, perennial headwater seeps or similar sensitive wetland or waters, or other sensitive habitat). In such a case, the commissioner may reject or disapprove the registration, or may impose additional terms and conditions in the approval of such registration, including, but not limited to, an additional setback, buffer or other control measure.	Waiting for commissioner determination
g	Nothing in this section is intended to or shall prevent improvements, as may be directed by the commissioner in the approval of a registration, to enhance the water quality benefits or the natural resource value of any buffer required under this section.	Met

h	*Section defines wetland and access road.*	*Not a Design Related Concern*
3	*The lowest vertical clearance of the solar panels above the ground should not be greater than ten (10) feet.*	*Met*
4	*Preconstruction Meeting Requirements*	*Not a Design Related Concern*
5	*Plan Implementation and Routine Inspection Requirements*	*Not a Design Related Concern*
6	*Copy of Check List from 5 submitted to DEEP*	*Not a Design Related Concern*
7	*Two Growing Seasons for Notice of Termination*	*Not a Design Related Concern*
8	*Letter of Credit Requirements*	*Not a Design Related Concern*
II	Design requirements for post-construction stormwater management measures.	
1	Post-construction stormwater control measures shall be designed and constructed to provide permanent stabilization and non-erosive conveyance of runoff on the site, to the property line of the site or downgradient from the site to ensure protection of on and off- site wetland, wetlands, waters or other natural resources.	Met
2	Orientation of panels shall be considered with respect to drainage pattern, flow concentration, drainage area and velocity.	Met
3	The permittee shall conduct a hydrologic analysis that:	Met
a	Evaluates and controls the 2, 25, 50 and 100-year 24-hour rainfall event post- development peak discharge to the corresponding pre-development peak discharge rates in accordance with the Stormwater Quality Manual, with the following exceptions: that sheet flow is maintained for a maximum length of 100 feet; shallow concentrated flow is calculated using velocity factors per NRCS Part 630 National Engineering Handbook Chapter 15 (the use of TR-55 paved or unpaved velocity factors are not acceptable); if swales are used to convey or control stormwater, such swales shall convey and control stormwater from a 100-year, 24-hour rainfall event;	Met
b	Is based on site specific soil mapping to confirm soil types; and	Met
c	Is able to determine and confirm the infiltrative capacity of any stormwater management measures. In addition, in areas where grading exceeds a two (2) foot difference between existing and proposed grades, the runoff curve number shall increase by one full HSG (e.g. runoff curve number for soils of HSG B shall be considered HSB C). For the remainder of the entire site, the runoff curve number associated with the Hydrologic Soil Group present on-site shall increase by one half (1/2) the difference between the Hydrologic Soil Group present on-site and the next higher Hydrologic Soil Group (e.g. half the difference between the runoff curve number for HSG B versus HSG C) to account for the compaction of soils that results from extensive machinery traffic over the course of the construction of the array; and	Met
d	Is based on slope gradient, surveyed soil type (adjusted per subparagraph (c), above), infiltration rate, length of slope, occurrence of bedrock, and change in drainage patterns. Pre- and post-development drainage area maps shall be provided showing this information; and	Met
e	For an engineered stormwater management system, demonstrates no net increase in peak flows, erosive velocities or volumes, or adverse impacts to downstream properties in accordance with the general permit and the Stormwater Quality Manual.	Met

APPENDIX E: NOAA ATLAS 14 PRECIPITATION FREQUENCY TABLE

NOAA Atlas 14, Volume 10, Version 3
Location name: Canaan, Connecticut, USA*
Latitude: 42.0217°, Longitude: -73.3129°
Elevation: 871.7 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)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.337** (0.260-0.438)	**0.399** (0.307-0.518)	**0.500** (0.383-0.652)	**0.583** (0.445-0.763)	**0.697** (0.516-0.954)	**0.785** (0.568-1.10)	**0.874** (0.615-1.26)	**0.969** (0.651-1.45)	**1.10** (0.713-1.70)	**1.20** (0.761-1.90)
10-min	**0.478** (0.368-0.620)	**0.565** (0.435-0.734)	**0.707** (0.543-0.922)	**0.825** (0.630-1.08)	**0.988** (0.731-1.35)	**1.11** (0.806-1.55)	**1.24** (0.871-1.79)	**1.37** (0.923-2.05)	**1.56** (1.01-2.41)	**1.70** (1.08-2.69)
15-min	**0.562** (0.433-0.730)	**0.665** (0.512-0.864)	**0.833** (0.639-1.09)	**0.971** (0.742-1.27)	**1.16** (0.860-1.59)	**1.31** (0.947-1.83)	**1.46** (1.02-2.11)	**1.62** (1.09-2.41)	**1.83** (1.19-2.83)	**2.00** (1.27-3.17)
30-min	**0.774** (0.597-1.00)	**0.915** (0.705-1.19)	**1.15** (0.880-1.50)	**1.34** (1.02-1.76)	**1.60** (1.18-2.19)	**1.80** (1.31-2.52)	**2.01** (1.41-2.90)	**2.23** (1.50-3.32)	**2.53** (1.64-3.91)	**2.76** (1.75-4.36)
60-min	**0.986** (0.760-1.28)	**1.17** (0.898-1.52)	**1.46** (1.12-1.90)	**1.70** (1.30-2.24)	**2.04** (1.51-2.79)	**2.30** (1.66-3.21)	**2.56** (1.80-3.70)	**2.84** (1.91-4.23)	**3.22** (2.09-4.98)	**3.52** (2.23-5.56)
2-hr	**1.29** (0.998-1.66)	**1.50** (1.16-1.93)	**1.83** (1.42-2.38)	**2.11** (1.62-2.76)	**2.50** (1.86-3.41)	**2.79** (2.04-3.89)	**3.10** (2.20-4.48)	**3.44** (2.32-5.11)	**3.92** (2.55-6.04)	**4.31** (2.74-6.79)
3-hr	**1.48** (1.15-1.90)	**1.72** (1.33-2.21)	**2.10** (1.63-2.72)	**2.43** (1.87-3.16)	**2.87** (2.15-3.91)	**3.20** (2.35-4.47)	**3.56** (2.54-5.16)	**3.97** (2.68-5.89)	**4.57** (2.98-7.04)	**5.08** (3.23-7.98)
6-hr	**1.80** (1.41-2.31)	**2.14** (1.67-2.74)	**2.70** (2.10-3.46)	**3.16** (2.44-4.08)	**3.79** (2.86-5.16)	**4.25** (3.15-5.95)	**4.76** (3.45-6.98)	**5.40** (3.66-7.99)	**6.40** (4.17-9.82)	**7.27** (4.64-11.4)
12-hr	**2.12** (1.66-2.69)	**2.62** (2.06-3.34)	**3.46** (2.71-4.42)	**4.15** (3.23-5.34)	**5.10** (3.87-6.96)	**5.79** (4.33-8.13)	**6.56** (4.82-9.69)	**7.58** (5.14-11.2)	**9.22** (6.03-14.1)	**10.7** (6.84-16.7)
24-hr	**2.43** (1.92-3.07)	**3.11** (2.46-3.94)	**4.23** (3.33-5.38)	**5.16** (4.04-6.60)	**6.44** (4.93-8.78)	**7.37** (5.55-10.3)	**8.41** (6.24-12.5)	**9.82** (6.68-14.5)	**12.1** (7.96-18.5)	**14.2** (9.13-22.2)
2-day	**2.78** (2.21-3.50)	**3.59** (2.85-4.52)	**4.91** (3.89-6.21)	**6.01** (4.73-7.64)	**7.52** (5.78-10.2)	**8.61** (6.53-12.1)	**9.84** (7.35-14.6)	**11.5** (7.87-16.9)	**14.3** (9.43-21.9)	**16.9** (10.9-26.2)
3-day	**3.04** (2.43-3.82)	**3.92** (3.12-4.92)	**5.35** (4.25-6.73)	**6.53** (5.16-8.28)	**8.16** (6.30-11.1)	**9.34** (7.10-13.0)	**10.7** (8.00-15.8)	**12.5** (8.56-18.3)	**15.6** (10.3-23.7)	**18.4** (11.8-28.4)
4-day	**3.27** (2.62-4.09)	**4.20** (3.35-5.25)	**5.71** (4.54-7.17)	**6.96** (5.51-8.80)	**8.68** (6.72-11.7)	**9.93** (7.56-13.8)	**11.3** (8.50-16.7)	**13.3** (9.10-19.4)	**16.5** (10.9-25.1)	**19.4** (12.5-30.1)
7-day	**3.90** (3.14-4.86)	**4.93** (3.96-6.15)	**6.61** (5.29-8.27)	**8.01** (6.37-10.1)	**9.93** (7.70-13.3)	**11.3** (8.64-15.7)	**12.9** (9.66-18.8)	**15.0** (10.3-21.8)	**18.5** (12.2-27.9)	**21.6** (14.0-33.3)
10-day	**4.56** (3.67-5.65)	**5.64** (4.54-7.00)	**7.40** (5.94-9.23)	**8.87** (7.07-11.1)	**10.9** (8.46-14.5)	**12.4** (9.44-17.0)	**14.0** (10.5-20.3)	**16.2** (11.1-23.5)	**19.7** (13.1-29.7)	**22.8** (14.8-35.2)
20-day	**6.67** (5.40-8.22)	**7.80** (6.31-9.63)	**9.64** (7.78-12.0)	**11.2** (8.96-13.9)	**13.3** (10.3-17.5)	**14.8** (11.3-20.1)	**16.5** (12.3-23.5)	**18.6** (12.9-26.9)	**21.9** (14.6-32.9)	**24.8** (16.1-38.1)

30-day	**8.44** (6.86-10.4)	**9.60** (7.79-11.8)	**11.5** (9.30-14.2)	**13.1** (10.5-16.2)	**15.2** (11.8-19.9)	**16.8** (12.8-22.6)	**18.5** (13.7-26.0)	**20.5** (14.3-29.5)	**23.5** (15.7-35.2)	**26.0** (16.9-39.8)
45-day	**10.6** (8.66-13.0)	**11.8** (9.64-14.5)	**13.8** (11.2-17.0)	**15.4** (12.5-19.1)	**17.7** (13.8-22.9)	**19.4** (14.8-25.8)	**21.2** (15.6-29.2)	**23.0** (16.1-33.0)	**25.6** (17.2-38.2)	**27.6** (18.0-42.2)
60-day	**12.4** (10.2-15.2)	**13.7** (11.2-16.7)	**15.8** (12.8-19.4)	**17.5** (14.2-21.7)	**19.9** (15.5-25.6)	**21.7** (16.5-28.6)	**23.6** (17.2-32.1)	**25.3** (17.7-36.1)	**27.5** (18.5-40.9)	**29.1** (19.0-44.4)

[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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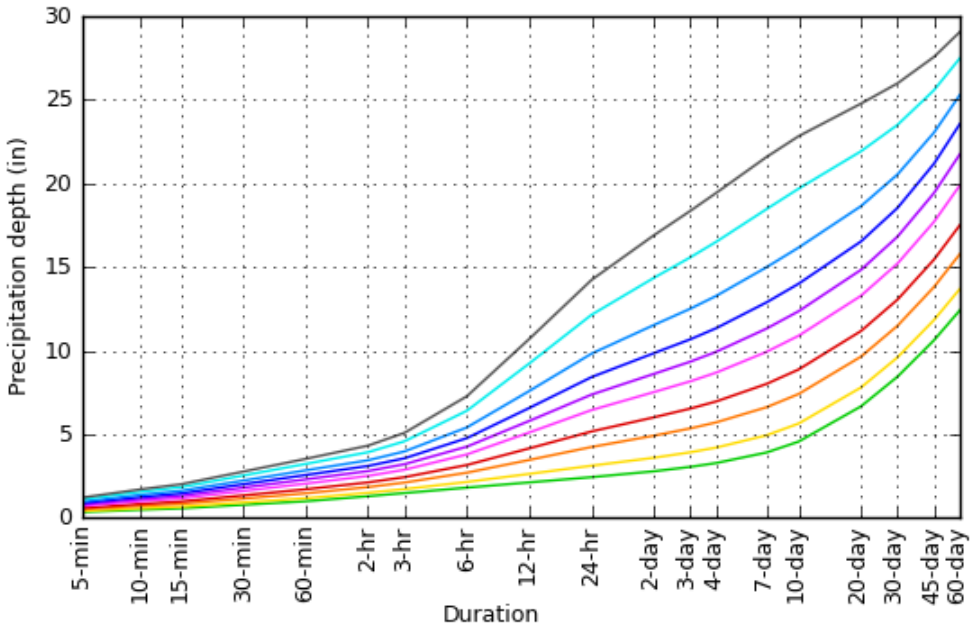
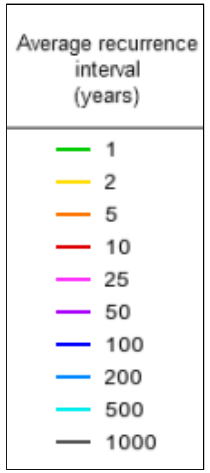
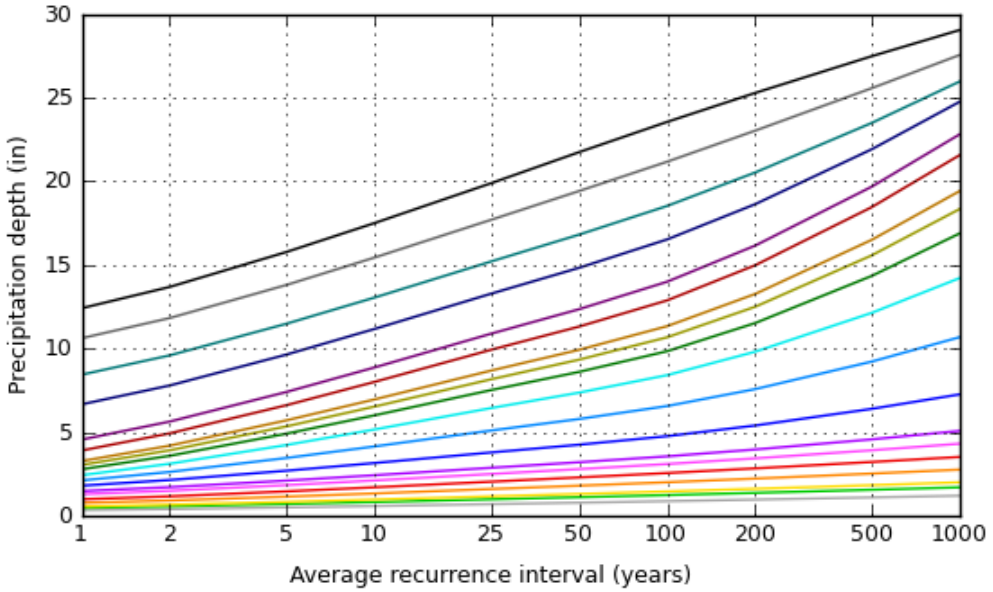
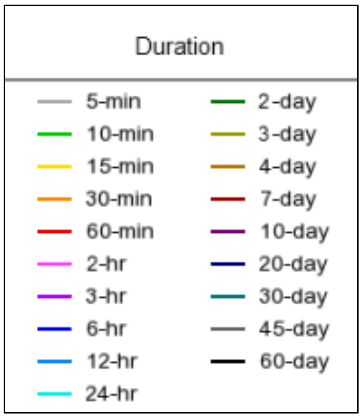
PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 42.0217°, Longitude: -73.3129°









NOAA Atlas 14, Volume 10, Version 3

Created (GMT): Tue Jun 15 21:09:18 2021

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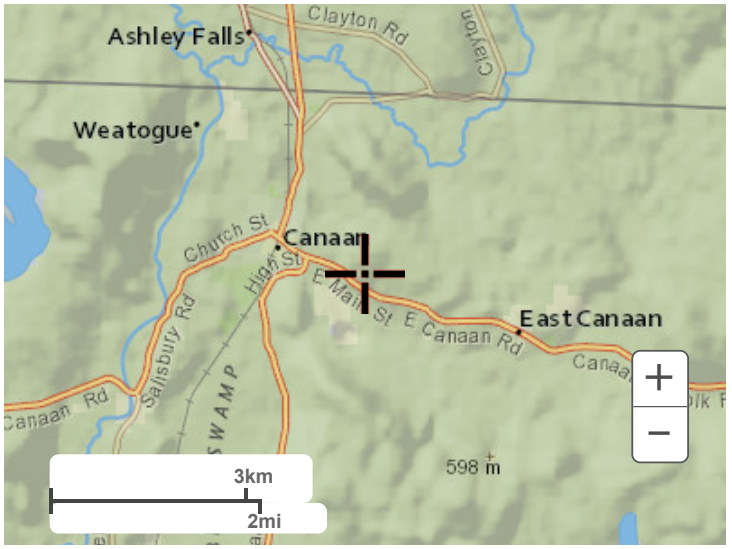
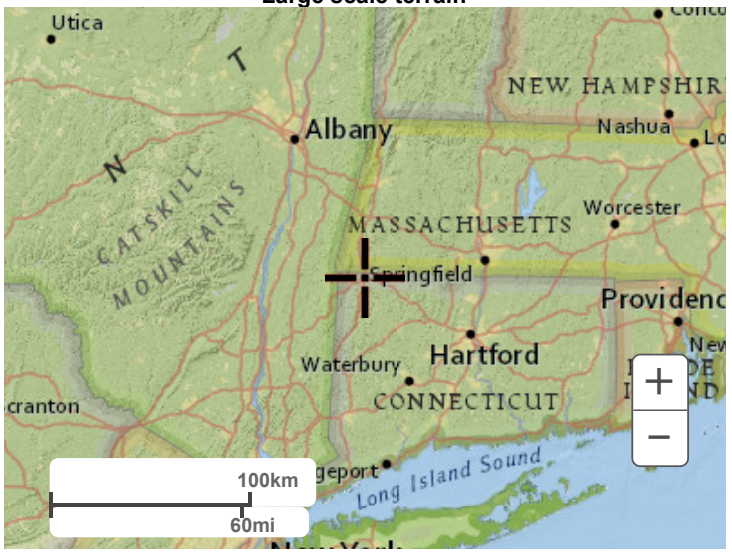
Maps & aerials

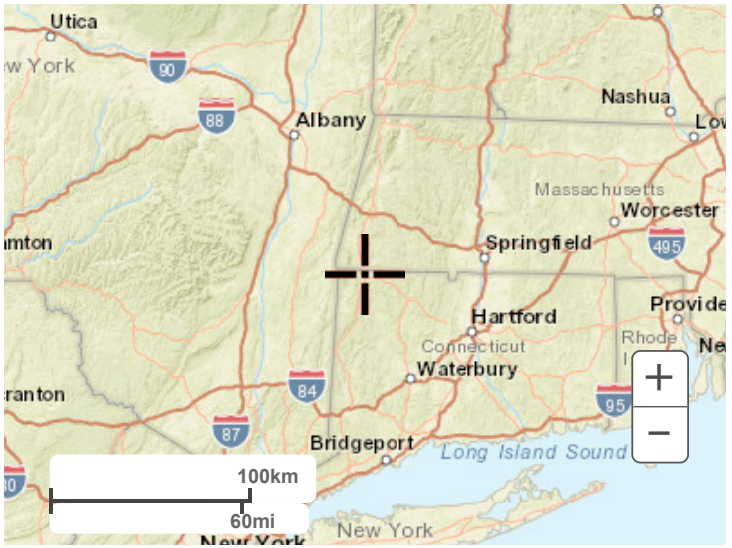
Small scale terrain



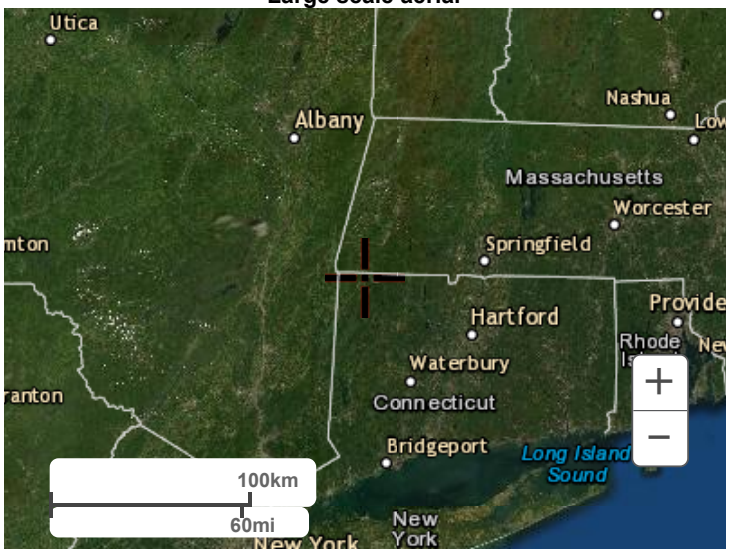
Large scale terrain



Large scale map



Large scale aerial



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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910

Questions?: HDSC.Questions@noaa.gov

Disclaimer

APPENDIX F: ADDITIONAL CALCULATIONS

WATER QUALITY VOLUME CALCULATIONS
FOR
BUNCE 1 SOLAR
81 EAST MAIN ST, NORTH CANAAN, CT

$$WQV = \frac{(1")(R)(A)}{12}$$

where:
- WQV = water quality volume (ac-ft)
- R = volumetric runoff coefficien = 0.05+0.009(I)
- I = percent impervious cover
- A = site area in acres

$V = WQV + ((P)(A_b)/12)$

V=required basin storage volume (ac-ft)
WQV=Water Quality Volume (ac-ft)
P= design water quality precipitation (in)
A_b=basin surface area (ac)

	Area (ac)	Pervious (ac)	Imperv. (ac)	I	R	WQV (ac-ft)	P (in)	Ab (ac)	V (ac-ft)	Total V Req. (cf)	V Provided (cf)
Overall Site	11.50	10.72	0.78	7%	0.11	0.11	n/a	n/a	n/a	4,631.18	-
Basin B-1A	1.74	1.74	-	0%	0.05	0.01	1	0.266531	0.03	1,283.53	6,211.00
Basin B-1B	1.70	1.58	0.13	7%	0.12	0.02	1	0.266531	0.04	1,685.37	7,551.00

Overal Total V Required = 4,631.18 cf
Overal Total V Provided = 13,762.00 cf

Stage-Area-Storage for Pond B-1A: B-1A

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
813.00	1,972	0
813.05	2,021	100
813.10	2,071	202
813.15	2,121	307
813.20	2,171	414
813.25	2,223	524
813.30	2,275	636
813.35	2,327	752
813.40	2,381	869
813.45	2,434	990
813.50	2,489	1,113
813.55	2,544	1,238
813.60	2,599	1,367
813.65	2,656	1,498
813.70	2,712	1,633
813.75	2,770	1,770
813.80	2,828	1,910
813.85	2,886	2,052
813.90	2,945	2,198
813.95	3,005	2,347
814.00	3,066	2,499
814.05	3,127	2,654
814.10	3,188	2,811
814.15	3,250	2,972
814.20	3,313	3,136
814.25	3,377	3,304
814.30	3,441	3,474
814.35	3,505	3,648
814.40	3,570	3,825
814.45	3,636	4,005
814.50	3,702	4,188
814.55	3,769	4,375
814.60	3,837	4,565
814.65	3,905	4,759
814.70	3,974	4,956
814.75	4,043	5,156
814.80	4,113	5,360
814.85	4,184	5,568
814.90	4,255	5,779
814.95	4,327	5,993
815.00	4,399	6,211
815.05	4,472	6,433
815.10	4,546	6,659
815.15	4,620	6,888
815.20	4,695	7,121
815.25	4,770	7,357
815.30	4,846	7,598
815.35	4,923	7,842
815.40	5,000	8,090
815.45	5,078	8,342
815.50	5,156	8,598
815.55	5,236	8,858
815.60	5,315	9,121
815.65	5,395	9,389
815.70	5,476	9,661
815.75	5,558	9,937
815.80	5,640	10,217
815.85	5,722	10,501
815.90	5,805	10,789
815.95	5,889	11,081
816.00	5,974	11,378
816.05	6,059	11,679
816.10	6,144	11,984
816.15	6,230	12,293
816.20	6,317	12,607
816.25	6,405	12,925
816.30	6,493	13,247
816.35	6,581	13,574
816.40	6,671	13,905
816.45	6,760	14,241
816.50	6,851	14,581
816.55	6,942	14,926
816.60	7,033	15,276
816.65	7,126	15,630
816.70	7,218	15,988
816.75	7,312	16,351
816.80	7,406	16,719
816.85	7,501	17,092
816.90	7,596	17,469
816.95	7,692	17,852
817.00	**7,788**	**18,239**

Stage-Area-Storage for Pond B-1B: B-1B

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
836.00	2,430	0
836.05	2,488	123
836.10	2,547	249
836.15	2,607	378
836.20	2,668	510
836.25	2,729	644
836.30	2,791	782
836.35	2,853	924
836.40	2,916	1,068
836.45	2,980	1,215
836.50	3,045	1,366
836.55	3,110	1,520
836.60	3,176	1,677
836.65	3,243	1,837
836.70	3,310	2,001
836.75	3,379	2,168
836.80	3,447	2,339
836.85	3,517	2,513
836.90	3,587	2,691
836.95	3,658	2,872
837.00	3,729	3,057
837.05	3,802	3,245
837.10	3,875	3,437
837.15	3,948	3,632
837.20	4,023	3,832
837.25	4,098	4,035
837.30	4,173	4,241
837.35	4,250	4,452
837.40	4,327	4,666
837.45	4,405	4,885
837.50	4,483	5,107
837.55	4,562	5,333
837.60	4,642	5,563
837.65	4,723	5,797
837.70	4,804	6,035
837.75	4,886	6,278
837.80	4,969	6,524
837.85	5,052	6,774
837.90	5,136	7,029
837.95	5,221	7,288
838.00	5,306	7,551
838.05	5,392	7,819
838.10	5,479	8,090
838.15	5,566	8,367
838.20	5,655	8,647
838.25	5,743	8,932
838.30	5,833	9,221
838.35	5,923	9,515
838.40	6,014	9,814
838.45	6,106	10,117
838.50	6,198	10,424
838.55	6,291	10,737
838.60	6,385	11,054
838.65	6,479	11,375
838.70	6,575	11,701
838.75	6,670	12,033
838.80	6,767	12,369
838.85	6,864	12,709
838.90	6,962	13,055
838.95	7,061	13,406
839.00	7,160	13,761
839.05	7,260	14,122
839.10	7,361	14,487
839.15	7,462	14,858
839.20	7,564	15,233
839.25	7,667	15,614
839.30	7,770	16,000
839.35	7,874	16,391
839.40	7,979	16,787
839.45	8,085	17,189
839.50	8,191	17,596
839.55	8,298	18,008
839.60	8,405	18,426
839.65	8,514	18,849
839.70	8,623	19,277
839.75	8,732	19,711
839.80	8,843	20,150
839.85	8,954	20,595
839.90	9,065	21,046
839.95	9,178	21,502
840.00	**9,291**	**21,963**