November 20, 2023

Mike Gotto
Stoneybrook Land Use Inc.
4846 Sun City Center Blvd. #300
Sun City Center, Florida 33573-6281

SJR ENGINEERING

Re: Stormwater Quantity Report for Barn Addition to Phase 2 Stable Ridge Apts., 555 Court St., Auburn

SJR ENGINEERING, INC.
STEVE@SJRENG.COM. 16 THURSTON DRIVE, MONMOUTH, ME. TEL: (207) 242-6248

Dear Mike,

American Development Group, LLC owns a parcel of land at 555 Court St in Auburn, Maine. They have previously obtained Planning Board approvals for Phases 1 and 2 of the project, which is currently under construction. This proposal is for a Barn addition to the project.

The site is identified as Tax Map 229 Lot 007 of the City's Tax Map. The parcel is approximately 13.25 acres in size and lies within the Traditional Neighborhood District (T-4.2B) Zoning District.

Existing Site Conditions

The existing site consists of wooded/Brush area with no improvement located in Phase 2. Existing conditions have been taken from previous plans. The topography of the proposed developed site is shown at a one-foot contour interval in the areas of proposed development. The slope of the property varies from 10% along the flatter areas to 20% along the banks of the steeper slopes of the property.

Adjacent Areas

Adjacent areas and land uses are similar in nature to that being proposed (residential housing). Runoff from the property is diverted into proposed soil filter ponds and is converted to sheet flows at the side property line.

Soils

Soils delineation was taken from the medium intensity soils maps of the Cumberland County Soil Survey. I have overlaid the proposed developed site onto this map. Onsite soils are identified as being Lyman-Tunbridge/Abram soils (hydro group "D", K=.24-.32).

We have prepared stormwater quality narratives and calculations under separate cover. This narrative is to address stormwater quantity during (and after) the construction of the project.

Summary Overview

We have prepared a stormwater quality analysis, under separate cover, in order to properly evaluate existing and proposed stormwater quantity impacts from the development. The Maine DEP Chapter 500 rules of the Maine DEP stormwater rules require proposed flow rates for 2/10/25 year storm events to be the same or less than existing flows at the property line of the parcel. We have designed this project to meet and exceed these standards by use of the existing combined soil filter pond/detention pond (Pond 3A).

Runoff from the developed portions of the parcel is directed to proposed soil filter pond 3A adjacent to the developed area. Site drainage is eventually discharged to level spreaders converting concentrated flows back to sheet flow at the property sideline.

In order to properly utilize soil filter pond 3A, we have chosen to divert clean upslope stormwater flows in Subcatchment 4B through a new detention pond and bypass pipe located at the intersection of Stable Ridge Road and the proposed driveway. By diverting this water to a different watershed, additional stormwater capacity is obtained within soil filter pond 3A. This clean water diverted flow is directed to an existing 15" diameter bypass pipe along the downslope side of building 4. The detention pond (labelled BP) is necessary to limit flows at the Phase 1 discharge point.

Stormwater flows will be attenuated by diverting and capturing stormwater flows from the new construction into the new soil filter/detention ponds with the stormwater control outlet structure being utilized to control runoff water discharges to pre-exiting conditions as well as providing stormwater quality treatment for the developed runoff water. In summary, the proposed stormwater flows will be less than the existing condition. No downstream impacts from stormwater flows are expected with this proposal.

A portion of the proposed impervious surface for the Barn improvement will be treated through soil filter pond 3A located across the street. The building's roof water will be infiltrated into 4' wide stone drip edges for water

quantity/quality treatment.

Stormwater Quantity

We have prepared the plans and details in order to properly evaluate existing and proposed stormwater impacts from the development. Topography of the existing site is shown at one-foot contour intervals. The slope of the property varies from 10% along the flatter areas to 30% along the existing slopes.

Soils mapping was taken from Natural Resources Conservation Service "Web Soil Survey" medium intensity mapping. These soils have been overlaid onto the proposed site development plan.

Soils have been identified as:

- Lyman-Tunbridge/Abram complex (hydro group "D", K= 0.24-0.32)

I have reviewed the drainage characteristics of the watershed area which includes impervious areas, lawn/meadow areas, and woods, as well upslope watershed areas. The analysis requires post construction stormwater flow rates to be approximately equal to or less than the existing stormwater rates.

I have used the SCS TR-20 (HydroCad 10.1 computer model) method of computing stormwater runoff peak flow rates. This method accounts for soil types, existing land uses, topography, vegetative cover, and proposed land use for the parcel to be developed. The proposed conditions were analyzed using data for Kennebec County type III, 24-hour storm distribution (Northeast Regional Climate Center June 2014) with a design frequency of occurrence of 2/10/25/100 years. One day precipitation values of 3.00"/4.43"/5.55"/7.70" have been used for each respective event. All supporting calculations and data are submitted with this report.

The existing and proposed site conditions were analyzed using information taken from existing/proposed topographic plan of the parcel to be developed. Impervious areas, lawns, meadows, and woods areas for each hydrological soil condition were measured within AutoCad in order to calculate a weighted curve number that typifies the drainage condition of the site.

Watershed calculations (pre and post construction)

Please see the attached stormwater plans for both the existing and proposed

conditions to help determine location of each watershed and drainage flow path.

The project has two design points in two different design point analyses (Phase 1 bypass and pond 3A). We have designated the design points of interest on the stormwater plan.

Soil Filter Ponds:

In the proposed development condition, the watershed has significant increases in impervious and developed areas. The increased flows are captured in the combined soil filter/detention pond Pond 3A within the parcel. Runoff water within the soil filter pond will be detained and treated in the pond. Discharges from the ponds will then be directed to the 25' long level spreaders along the property sideline to convert the concentrated flows to sheet flow.

The soil filter pond 3A has already been constructed. It was previously sized to accommodate and store flows for stormwater quantity and quality functions and to control flows to pre-development runoff conditions. We have calculated a decrease in flow rate in the developed portion of the project for the 2/10/25/100-year storm events. Soil filter pond 3A stormwater flows are captured and regulated.

Design Point 2

The stormwater existing/proposed Design Point 2 is located near Building 5 again. We have calculated the existing flows with the proper land surface cover and soils hydrological group in order to compare these flows with the proposed flows. Existing flows at this location have been calculated to be 3.03/6.29/9.05/14.75 cfs for the 2/10/25/100-year storm events.

<u>Ponds 3A/3B:</u> Pond 3 was broken into two ponds to accommodate sizing restrictions for water quality purposes. Pond 3A was sized and checked to treat watersheds 3 and 4A shown on the stormwater plan. An intermediate berm is proposed between Ponds 3A and 3B to allow quality treatment for these watershed areas. The 3A pond bottom is set at 393.0. The intermediate berm was constructed to elevation 394.40 for water quality purposes. Treatment discharge will flow though the Pond 3A control structure and

discharge into the clean side of control structure 3B. Flows greater than elevation 394.4 will spill into Pond 3B for detention purposes. The top of pond berm has been constructed at elevation 396.62.

Stormwater Summary at Design Point 2

	2 year storm (cfs)	10 year storm (cfs)	25 year storm (cfs)
Existing flows	3.03	6.29	9.05
Proposed flows	1.17	4.26	7.72

Clean water bypass: A clean water detention pond (BP) was created to limit stormwater flows being diverted and discharged around the project into a different watershed design point. We have re-run that stormwater model with the updated impacted watersheds of 4B and 2B. Those results are summarized below.

Stormwater Summary at Phase 1 Design Point 2

	2 year storm (cfs)	10 year storm (cfs)	25 year storm (cfs)
Existing flows	2.02	5.86	9.32
Proposed flows	1.71	5.62	9.24

Detention Pond (BP) construction Control structures

The detention pond will need to be configured with a control manhole structure that has a 12" diameter outlet pipe at invert 401.0. The manhole needs a 24" diameter orifice cut into the structure on the pond side at elevation 401.0. The control structure needs a steel panel installed along the center of the structure with a 3" orifice cut at elevation 401.0. Additional holes in the steel panel include a 12" wide by 8" tall cut at elevation 402.80. The top of the steel panel is at 403.80. A 20' wide emergency spillway is to be constructed at elevation 403.80. The top of the 6' wide berm is elevation 405.0. We have checked the spillway design with the control structure plugged (ie all flows through the spillway) and have calculated flows within the pond reach elevation 404.0. The top of berm is at least 12" higher than this water surface. We have also checked a 100-year storm event that calculates water within the BP pond to rise to elev 403.98.

Summary

The proposed "Barn" development of the parcel can be constructed utilizing the existing soil filter pond 3A as constructed. A new detention pond will need to be constructed to bypass and limit clean water stormwater flows. Both storm watershed models have calculated less than existing peak flow rates will be maintained.

Please feel free to contact me if you have any questions concerning the calculations of stormwater from this project. It is important to note that proper erosion control and revegetation of disturbed areas are essential for the proper operation of the stormwater facilities. Maintenance of the yard impervious areas, careful attention to the pavement/seeded interface, and continued maintenance to the pond system must be a top priority in order for the system to function properly. Thank you for involving this firm on your project.

Sincerely yours,

Stephen Roberge

Stephen Roberge, PE
for SJR Engineering Inc.

STATE OF MAINE
STEPHEN J. ROBERGE
No. 4835
11-20-2023
LICENSED
PROFESSIONAL ENGINEER

Sable Ridge-Barn Addition
555 Court St., Auburn
Stormwater Project Summary

11-20-2023

Stormwater Flows at Design Point 2

	2 year	10 year	25 year	100 year
Existing Conditions at Design Point	3.03 cfs	6.29 cfs	9.05 cfs	14.75 cfs
Proposed Conditions at Design Point	1.17 cfs	4.26 cfs	7.72 cfs	12.97 cfs

Stormwater Flows at Soil Filter Pond 3A

	2 year	10 year	25 year
Soil filter Pond inflow/outflow	1.46/0.21 cfs	2.76/2.71 cfs	3.82/3.81 cfs
Elevation height of detained water in soil filter pond	394.41	394.47	394.49
Pond Storage	4,730 cf	4,973 cf	5,071 cf

The soil filter pond 3A has already been constructed…no changes are proposed with the addition of the adjacent Barn project. The top of the pond berm is set at 396.62.

Stormwater Flows at Phase 1 Design Point 2

(Rerun stormwater flows with proposed Bypass pipe to Phase 1)

	2 year	10 year	25 year
Existing Conditions at Design Point	2.02 cfs	5.86 cfs	9.32 cfs
Proposed Conditions at Design Point	1.71 cfs	5.62 cfs	9.24 cfs

Stormwater Flows at Bypass Detention Pond

	2 year	10 year	25 year
Soil filter Pond inflow/outflow	1.44/0.31 cfs	2.98/1.81 cfs	4.28/2.90 cfs
Elevation height of detained water in soil filter pond	402.80	403.39	403.76
Pond Storage	1,617 cf	2,578 cf	3,288 cf

The purpose of the pond is to detain flows entering the bypass pipe that is directed to Phase 1 design point 2. The control manhole structure consists of the manhole with center steel plate divider elevation. The steel plate has specific holes cut into it at specific elevations to regulate the flow of stormwater from the pond. Control structure "BP" has a steel plate with a 3" hole at invert 401.0, and a 12" wide by 8" tall hole at elevation 402.80. The top of steel plate is at elevation 403.80. The control structure has a 24" diameter inlet opening at invert 401.0. The top of berm elevation is 405.0. A 20' wide emergency spillway has been designed at elevation 403.80 to pass storm events larger than the 25-year event. The BP stormwater control structure has a 12" diameter outlet that discharges to an existing 15" diameter bypass pipe installed during Phase 1 construction.

Proposed Watershed Areas by Soil Group

Hydrologic Group D

Watershed	Impervious	Landscaped	Meadow	Wooded	Total	
0	604	19	0	0	623	ROAD (SAME)
1	250	0	4119	0	4369	WETLANDS (SAME)
2A	5044	1110	0	0	6154	BLDG
✓ 2B	6567	546	22495	9333	38941	TO BYPASS (EXISTING)
✓ 3	0	9304	0	0	9304	POND 3A AREA SAME
✓ 4A	18380	610	14587	40627	74204	GOES TO POND 3A
✓ 4B	0	0	11285	57393	68678	GOES TO BYPASS
5	0	6852	0	0	6852	POND 3B AREA (SAME)
6	11446	4790	0	0	16236	
7	1779	7766	0	0	9545	
8	10327	1931	0	0	12258	
9	228	888	0	0	1116	
10	1876	0	0	0	1876	
11	1085	0	2533	8278	11896	
12	0	3314	0	0	3314	
13	2322	0	0	0	2322	
14	3893	15	0	0	3908	
15	8454	744	0	0	9198	
16	8428	1588	0	0	10016	
17	4791	576	0	0	5367	
18	0	3988	0	0	3988	
19	393	2405	0	0	2798	
20	227	0	22552	14357	37136	
21	0	0	8617	3543	12160	
22	353	15203	0	0	15556	
23	0	0	25852	20812	46664	
24	0	0	18155	22352	40507	
BLDG 6	4984	1169	0	0	6153	
BLDG 7	4984	1169	0	0	6153	
BLDG 8	4984	1169	0	0	6153	
BLDG 9	4984	1169	0	0	6153	
BLDG 10	4984	1169	0	0	6153	
GARAGE 1	0	720	0	0	720	
GARAGE 2	0	720	0	0	720	
GARAGE 3	0	816	0	0	816	
GARAGE 4	0	816	0	0	816	

November 20, 2023

Mike Gotto
Stoneybrook Land Use Inc.
4846 Sun City Center Blvd. #300
Sun City Center, Florida 33573-6281

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Re: Stormwater Quality Report for Barn addition to Phase 2 Stable Ridge Apts., 555 Court St., Auburn

SJR ENGINEERING, INC.
STEVE@SJRENG.COM. 16 THURSTON DRIVE, MONMOUTH, ME. TEL: (207) 242-6248

Dear Mike,

American Development Group LLC wants to add a barn structure with associated parking access to the building. We have prepared a stormwater quantity analysis, under separate cover, in order to properly evaluate existing and proposed stormwater quantity impacts from the development. Runoff from the developed portion of the parcel is directed to soil filter pond 3A adjacent to the developed area.

Water quality - Soil Filter Ponds

Soil Filter Pond 3: We have previously designed the project to redirect impervious and meadow/lawn area runoff from this area into soil filter pond 3A. Pond 3A is designed to treat 18065 sf of impervious area and 65142 sf of meadow/lawn area. The total area draining to this pond is 83207 sf. The soil filter/detention ponds are designed to act such that initial and ending runoff flows are captured and infiltrated through the soil filter media within the pond. The higher flows will be bypassed through pond 3A into pond 3B.

Both soil filter ponds 3A and 3B have been constructed. We have rerun the stormwater numbers as a check to insure they still meet soil filter standards. Soil filter pond 3A has a ground elevation at 393.0 (top of ground surface for filtering system). The pond has been sized such that the surface area meets (or exceeds) 5% of the impervious area plus 2% of the landscape area that drains to the pond. We have calculated 18,065 sf of impervious area runoff and 65,142 sf of landscape area runoff will enter the pond. Therefore, we are required to have a minimum of 2,206 sf of surface filter area. The pond is constructed with 2,730 sf of available area within contour 393.0.

In addition, a minimum treatment volume must be contained such that the required volume contained is less than 18" deep over the surface filter area. The channel protection volume is based on 1" of impervious surface area and .4" of vegetative area entering the pond. Using the same impervious and landscape areas noted above, we are required to have 3,676 cf of pond storage above the soil filter surface area. The pond is constructed with 4,691 cf of storage area at elevation 394.40 (17" deep). Water flows from larger storm events will spill into soil filter pond 3B adjacent to this pond.

Pond 3A is controlled by a stormwater control manhole that has a steel plate (or concrete wall) with specific holes cut into the control panel to limit flows leaving the ponds and provide adequate holding time to be treated by the filter media. The holes have been sized using the DEP orifice sizing equation for both filter area and quality area sizing requirements. Water quality enhancement flows are detained within the soil filter pond by restricting the discharge flow through a 1.25" orifice control that is located within the stormwater control structure (elevation 390.0).

The proposed 4,000 sf building will have a roof drip edge that will infiltrate stormwater through the filter media and enter an underdrain that bypasses the ponds. The typical building for stormwater runoff treatment is by the use of 3' wide filter drip strips along the drip line of the building's roof line. The roof is treated similar to the soil filter ponds using a stone storage area over the filter media strip and underdrain.

When calculating the required impervious treatment, the project meets both the linear standard 75% impervious area for road/driveways and 95% impervious area for site projects. We have chosen to design meeting the 95% impervious area for the entire project. Phase 1 of the project has a 99% impervious treatment while Phase 2 (including this Barn portion) only has a 94% impervious treatment. When combining both treated areas, the project as a whole has a 96% impervious treatment area, which meets the standard.

Please feel free to contact me if you have any questions concerning the calculations of stormwater from this project.

Sincerely yours,

Stephen Roberge

Stephen Roberge, PE
for SJR Engineering Inc.

STATE OF MAINE
STEPHEN J. ROBERGE
No. 4835
11-20-2023
LICENSED
PROFESSIONAL ENGINEER

Project: STABLE RIDGE w/ "BARN" Date: 11-19-23 Sheet: ____ of ____

ENGINEERING BACKUP SHEET

SJR ENGINEERING
16 Thurston Drive
Monmouth, Maine 04259
Tel: (207) 242-6248

Subject: POND DESIGN 3A CHECK

Job #: ____

POND 3A SOIL FILTER DESIGN

SUBCATCHMENTS 3+4A

TOTAL TREATED = 83207 SF

IMPERVIOUS = 18065 SF
LANDSCAPE = 65142 SF

*THIS POND HAS ALREADY BEEN CONSTRUCTED

① REQUIRED SIZING SURFACE CHECK

18065 (.05) + 65142 (.02) = 2206 SF REQUIRED
2730 SF PROVIDED EL 393.0

OK

② REQUIRED TREATMENT VOLUME

18065 (1"/12) + 65142 (.4"/12) = STORAGE REQUIRED
= 3676 CF REQUIRED
4691 CF PROVIDED @ EL 394.40

OK

③ ORIFICE SIZING (DEP EQUATION)

FILTER AREA = $0.035(2730)^{0.4599}$ = 1.33"

QUALITY VOLUME = $0.0137(4691)^{0.5372}$ = 1.28"

USE 1 1/4"

OK

AVAILABLE SURFACE AREA

Stage-Area-Storage for Pond 3A: Pond 3A

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
393.00	2,730	0	395.60	4,961	10,074
393.05	2,774	138	395.65	4,999	10,323
393.10	2,819	277	395.70	5,037	10,574
393.15	2,863	419	395.75	5,075	10,827
393.20	2,907	564	395.80	5,113	11,082
393.25	2,952	710	395.85	5,151	11,338
393.30	2,996	859	395.90	5,189	11,597
393.35	3,040	1,010	395.95	5,227	11,857
393.40	3,084	1,163	396.00	**5,265**	**12,120**
393.45	3,129	1,318			
393.50	3,173	1,476			
393.55	3,217	1,636			
393.60	3,262	1,797			
393.65	3,306	1,962			
393.70	3,350	2,128			
393.75	3,395	2,297			
393.80	3,439	2,468			
393.85	3,483	2,641			
393.90	3,527	2,816			
393.95	3,572	2,993			
394.00	3,616	3,173			
394.05	3,661	3,355			
394.10	3,705	3,539			
394.15	3,749	3,725			
394.20	3,794	3,914			
394.25	3,839	4,105			
394.30	3,883	4,298			
394.35	3,928	4,493			
394.40	3,972	4,691			
394.45	4,016	4,890			
394.50	4,061	5,092			
394.55	4,106	5,296			
394.60	4,150	5,503			
394.65	4,194	5,711			
394.70	4,239	5,922			
394.75	4,284	6,135			
394.80	4,328	6,351			
394.85	4,373	6,568			
394.90	4,417	6,788			
394.95	4,461	7,010			
395.00	4,506	7,234			
395.05	4,544	7,460			
395.10	4,582	7,688			
395.15	4,620	7,918			
395.20	4,658	8,150			
395.25	4,696	8,384			
395.30	4,734	8,620			
395.35	4,772	8,858			
395.40	4,810	9,097			
395.45	4,848	9,339			
395.50	4,886	9,582			
395.55	4,923	9,827			

PROVIDED TREATMENT VOLUME

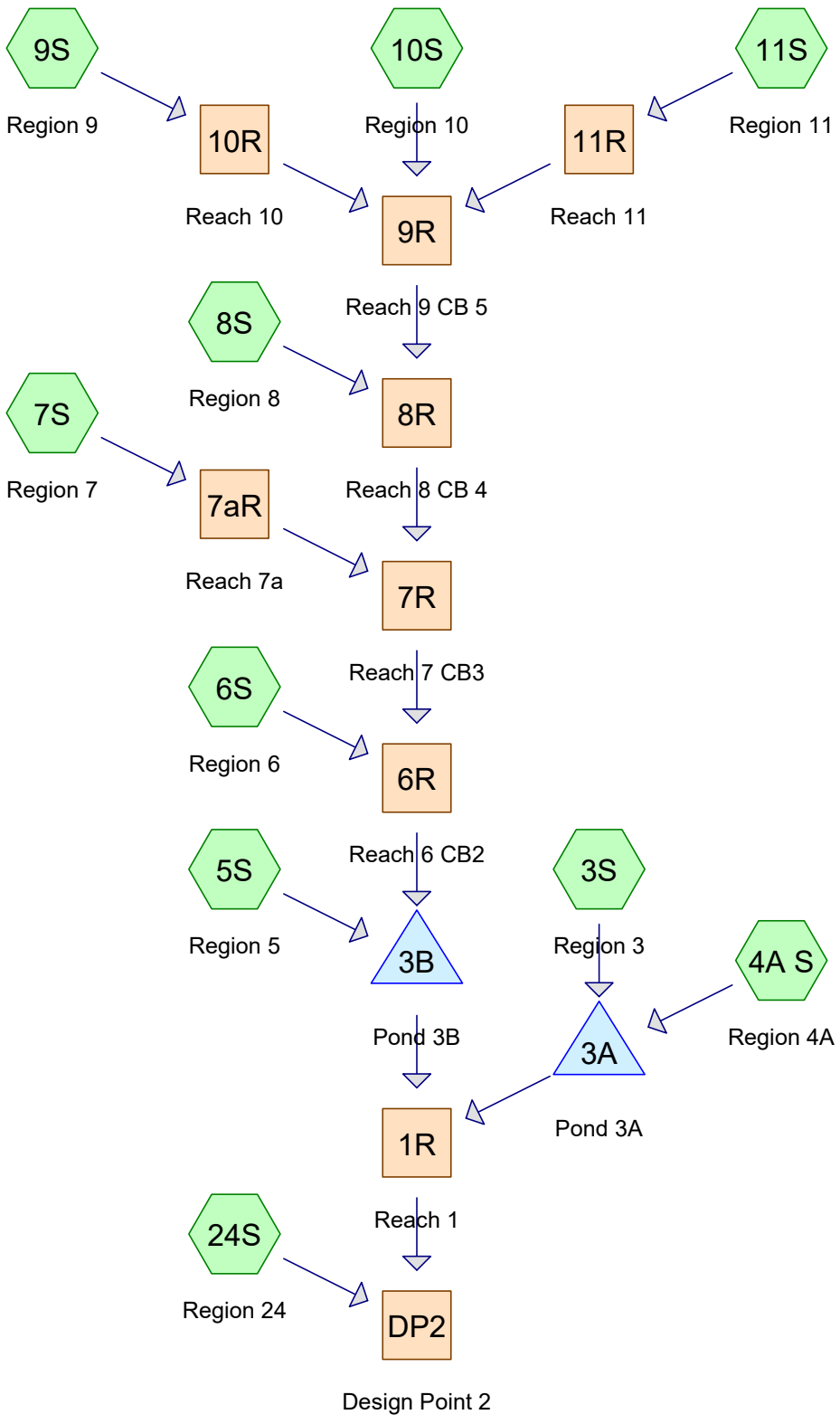
AS CONSTRUCTED

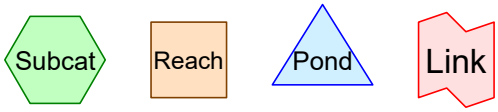
Post Development Watershed Areas and General Standard Calculations									
Watershed Subarea	Total Area	Total Area	Existing Impervious Area	New Impervious Area	New Impervious Area Treated	New Landscape	New Disturbed Area	New Disturbed Area Treated	Treatment BMP
	sf	acres	sf	sf	sf	sf	sf	sf	
0	623	0.01	0	604	604	19		623	Filter Pond 2
1	4396	0.10	0	250	0	4146		0	None
2A	6154	0.14	0	5044	5044	1110		6154	Roof Drain Filter
2B	71535	1.64	0	6882	0	64653		0	None
3	9304	0.21	0	0	0	9304		9304	Filter Pond 3A
4A	73903	1.70	0	18065	18065	55838		30545	Filter Pond 3A
4B	36384	0.84	0	0	0	36384		0	None
5	6852	0.16	0	0	0	6852		6852	Filter Pond 3B
6	16236	0.37	0	11446	11446	4790		16236	Filter Pond 3B
7	9545	0.22	0	1779	1779	7766		9545	Filter Pond 3B
8	12258	0.28	0	10327	10327	1931		12258	Filter Pond 3B
9	1116	0.03	0	228	228	888		1116	Filter Pond 3B
10	1876	0.04	0	1876	1876	0		1876	Filter Pond 3B
11	11896	0.27	0	1085	1085	10811		3716	Filter Pond 3B
12	3314	0.08	0	0	0	3314		3314	Filter Pond 4A
13	2322	0.05	0	2322	2322	0		2322	Filter Pond 4A
14	3908	0.09	0	3893	3893	15		3908	Filter Pond 4A
15	9198	0.21	0	8454	8454	744		9198	Filter Pond 4B
16	10016	0.23	0	8428	8428	1588		10016	Filter Pond 4B
17	5367	0.12	0	4791	4791	576		5367	Filter Pond 4B
18	3988	0.09	0	0	0	3988		3988	Filter Pond 4B
19	2798	0.06	0	393	393	2405		2798	Filter Pond 4B
20	37136	0.85	0	227	227	36909		21135	Filter Pond 4B
21	12160	0.28	0	0	0	12160		7830	Filter Pond 4B
22	15556	0.36	0	353	353	15203		15556	Filter Pond 4B
23	46664	1.07	0	0	0	46664		0	None
24	40507	0.93	0	0	0	40507		0	None
BLDG 6	6153	0.14	0	4984	4984	1169		6153	Roof Drain Filter
BLDG 7	6153	0.14	0	4984	4984	1169		6153	Roof Drain Filter
BLDG 8	6153	0.14	0	4984	4984	1169		6153	Roof Drain Filter
BLDG 9	6153	0.14	0	4984	4984	1169		6153	Roof Drain Filter
BLDG 10	6153	0.14	0	4984	4984	1169		6153	Roof Drain Filter
GARAGE 1	720	0.02	0	0	0	720		720	
GARAGE 2	720	0.02	0	0	0	720		720	
GARAGE 3	816	0.02	0	0	0	816		816	
GARAGE 4	816	0.02	0	0	0	816		816	
Total	485777	11.15	0	111367	104235	374410	290848	217494	
				>95%	94%		>80%	75%	

	Impervious	Impervious Treated	
Phase 1	81849	81176	99%
Phase 2	111367	104235	94%
Total	193216	185411	96%

OK

Filter Bed #3A Grassed Underdrained Soil Filter Pond Design Criteria						
	acres	s.f.				
Impervious Area Draining to Pond	0.41	18065				
Lawn Area draining to Pond	1.50	65142				
Total Area	**1.91**	Acres	< 2.5 ac.	✓		
Minimum Treatment Volume	1" X Impervious Area + 0.4" X Lawn			**3674**	c.f.	
Pond Storage Volume Provided						✓
Minimum Pond Surface Area	5% Impervious Area + 2% Lawn			**2206**	s.f.	
Pond Surface Area Provided	< 3000 s.f.			**2730**		✓





Routing Diagram for Proposed Condition to Barn Design Point 2 11182023
Prepared by SJR Engineering, Printed 11/19/2023
HydroCAD® 10.20-3g s/n 00591 © 2023 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.228	80	>75% Grass cover, Good, HSG D (3S, 4A S)
0.824	78	Meadow, non-grazed, HSG D (4A S, 5S, 6S, 7S, 8S, 9S)
1.057	98	Paved parking, HSG D (4A S, 6S, 7S, 8S, 9S, 10S, 11S)
2.111	77	Woods, Good, HSG D (4A S, 11S, 24S)
4.219	**83**	**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.228	0.000	0.228	>75% Grass cover, Good	3S, 4A S
0.000	0.000	0.000	0.824	0.000	0.824	Meadow, non-grazed	4A S, 5S, 6S, 7S, 8S, 9S
0.000	0.000	0.000	1.057	0.000	1.057	Paved parking	4A S, 6S, 7S, 8S, 9S, 10S, 11S
0.000	0.000	0.000	2.111	0.000	2.111	Woods, Good	4A S, 11S, 24S
0.000	**0.000**	**0.000**	**4.219**	**0.000**	**4.219**	**TOTAL AREA**	

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	4A S	0.00	0.00	70.0	0.0250	0.012	0.0	15.0	0.0	
2	4A S	0.00	0.00	55.0	0.0160	0.012	0.0	15.0	0.0	
3	6R	0.00	-0.99	110.0	0.0090	0.012	0.0	15.0	0.0	
4	7aR	0.00	-1.32	40.0	0.0330	0.012	0.0	12.0	0.0	
5	7R	0.00	-9.88	152.0	0.0650	0.012	0.0	12.0	0.0	
6	8R	0.00	-5.78	105.0	0.0550	0.012	0.0	12.0	0.0	
7	9R	0.00	-4.09	62.0	0.0660	0.012	0.0	12.0	0.0	
8	10R	0.00	-3.30	30.0	0.1100	0.012	0.0	12.0	0.0	
9	11R	0.00	-0.32	32.0	0.0100	0.012	0.0	12.0	0.0	
10	3A	389.75	389.35	40.0	0.0100	0.012	0.0	12.0	0.0	
11	3B	389.35	388.90	45.0	0.0100	0.012	0.0	18.0	0.0	

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 3S: Region 3 Runoff Area=9,304 sf 0.00% Impervious Runoff Depth>1.10"
Flow Length=105' Tc=14.3 min CN=80 Runoff=0.21 cfs 0.020 af

Subcatchment 4A S: Region 4A Runoff Area=74,204 sf 24.77% Impervious Runoff Depth>1.21"
Flow Length=875' Tc=29.8 min CN=82 Runoff=1.34 cfs 0.172 af

Subcatchment 5S: Region 5 Runoff Area=6,852 sf 0.00% Impervious Runoff Depth>0.98"
Flow Length=150' Tc=17.8 min CN=78 Runoff=0.13 cfs 0.013 af

Subcatchment 6S: Region 6 Runoff Area=16,236 sf 74.05% Impervious Runoff Depth>2.06"
Flow Length=260' Tc=5.0 min CN=93 Runoff=0.89 cfs 0.064 af

Subcatchment 7S: Region 7 Runoff Area=9,545 sf 22.37% Impervious Runoff Depth>1.23"
Flow Length=165' Tc=5.7 min CN=82 Runoff=0.33 cfs 0.022 af

Subcatchment 8S: Region 8 Runoff Area=12,258 sf 84.25% Impervious Runoff Depth>2.23"
Flow Length=150' Tc=7.9 min CN=95 Runoff=0.65 cfs 0.052 af

Subcatchment 9S: Region 9 Runoff Area=1,116 sf 20.43% Impervious Runoff Depth>1.23"
Flow Length=35' Slope=0.0100 '/' Tc=5.1 min CN=82 Runoff=0.04 cfs 0.003 af

Subcatchment 10S: Region 10 Runoff Area=1,875 sf 100.00% Impervious Runoff Depth>2.47"
Flow Length=105' Tc=0.6 min CN=98 Runoff=0.13 cfs 0.009 af

Subcatchment 11S: Region 11 Runoff Area=11,896 sf 9.12% Impervious Runoff Depth>1.04"
Flow Length=200' Tc=11.5 min CN=79 Runoff=0.28 cfs 0.024 af

Subcatchment 24S: Region 24 Runoff Area=40,507 sf 0.00% Impervious Runoff Depth>0.94"
Flow Length=475' Tc=6.8 min CN=77 Runoff=1.03 cfs 0.073 af

Reach 1R: Reach 1 Avg. Flow Depth=0.06' Max Vel=0.33 fps Inflow=0.37 cfs 0.183 af
n=0.130 L=30.0' S=0.0400 '/' Capacity=15.92 cfs Outflow=0.37 cfs 0.182 af

Reach 6R: Reach 6 CB2 Avg. Flow Depth=0.49' Max Vel=4.80 fps Inflow=2.11 cfs 0.174 af
15.0" Round Pipe n=0.012 L=110.0' S=0.0090 '/' Capacity=6.64 cfs Outflow=2.09 cfs 0.173 af

Reach 7aR: Reach 7a Avg. Flow Depth=0.15' Max Vel=4.53 fps Inflow=0.33 cfs 0.022 af
12.0" Round Pipe n=0.012 L=40.0' S=0.0330 '/' Capacity=7.01 cfs Outflow=0.33 cfs 0.022 af

Reach 7R: Reach 7 CB3 Avg. Flow Depth=0.24' Max Vel=8.67 fps Inflow=1.29 cfs 0.110 af
12.0" Round Pipe n=0.012 L=152.0' S=0.0650 '/' Capacity=9.84 cfs Outflow=1.28 cfs 0.110 af

Reach 8R: Reach 8 CB 4 Avg. Flow Depth=0.22' Max Vel=7.55 fps Inflow=0.98 cfs 0.087 af
12.0" Round Pipe n=0.012 L=105.0' S=0.0550 '/' Capacity=9.06 cfs Outflow=0.97 cfs 0.087 af

Reach 9R: Reach 9 CB 5 Avg. Flow Depth=0.13' Max Vel=5.90 fps Inflow=0.35 cfs 0.035 af
12.0" Round Pipe n=0.012 L=62.0' S=0.0660 '/' Capacity=9.91 cfs Outflow=0.34 cfs 0.035 af

Reach 10R: Reach 10 Avg. Flow Depth=0.04' Max Vel=3.60 fps Inflow=0.04 cfs 0.003 af
12.0" Round Pipe n=0.012 L=30.0' S=0.1100 '/' Capacity=12.80 cfs Outflow=0.04 cfs 0.003 af

Reach 11R: Reach 11 Avg. Flow Depth=0.18' Max Vel=2.87 fps Inflow=0.28 cfs 0.024 af
12.0" Round Pipe n=0.012 L=32.0' S=0.0100 '/' Capacity=3.86 cfs Outflow=0.28 cfs 0.024 af

Reach DP2: Design Point 2 Inflow=1.17 cfs 0.254 af
Outflow=1.17 cfs 0.254 af

Pond 3A: Pond 3A Peak Elev=394.41' Storage=4,730 cf Inflow=1.46 cfs 0.191 af
Outflow=0.21 cfs 0.084 af

Pond 3B: Pond 3B Peak Elev=394.46' Storage=4,074 cf Inflow=2.17 cfs 0.186 af
Outflow=0.23 cfs 0.099 af

Total Runoff Area = 4.219 ac Runoff Volume = 0.451 af Average Runoff Depth = 1.28"
74.94% Pervious = 3.162 ac 25.06% Impervious = 1.057 ac

Summary for Subcatchment 3S: Region 3

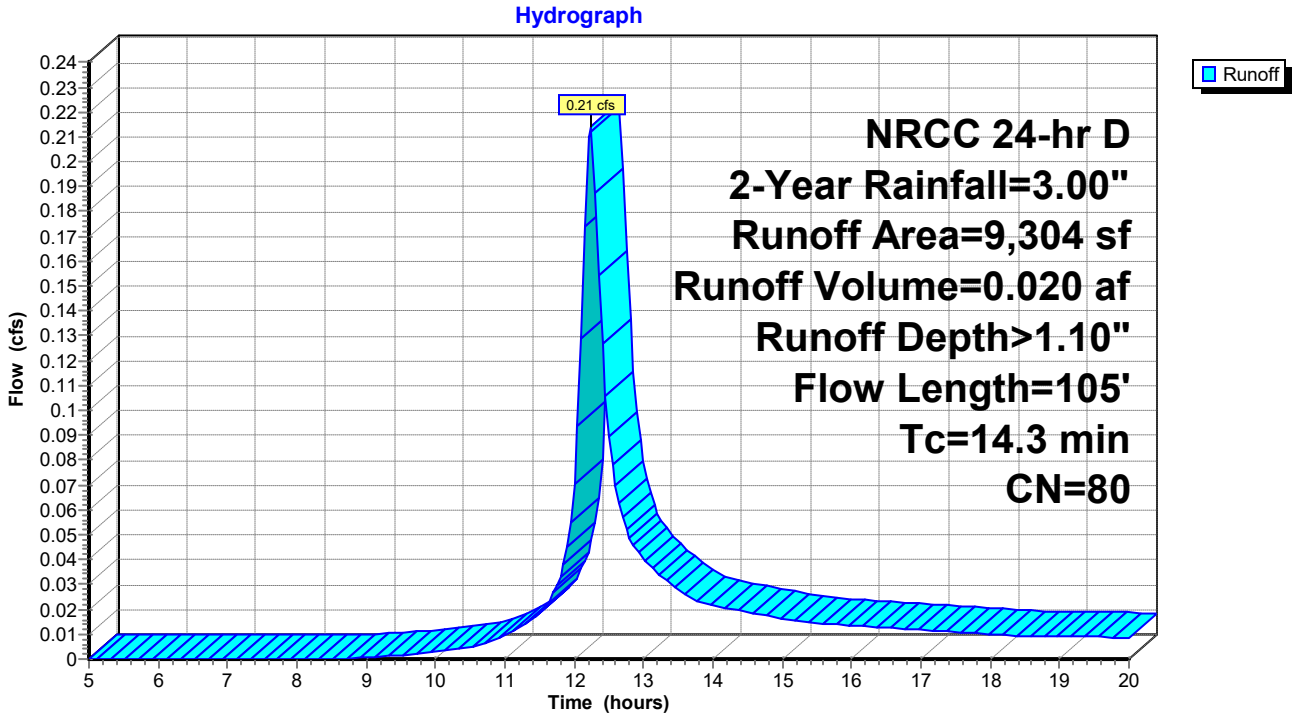
Runoff = 0.21 cfs @ 12.23 hrs, Volume= 0.020 af, Depth> 1.10"
Routed to Pond 3A : Pond 3A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.00"

Area (sf)	CN	Description
9,304	80	>75% Grass cover, Good, HSG D
9,304		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	35	0.0600	0.23		**Sheet Flow,** Range n= 0.130 P2= 3.00"
11.8	70	0.0050	0.10		**Sheet Flow,** Range n= 0.130 P2= 3.00"
14.3	105	Total			

Subcatchment 3S: Region 3



Summary for Subcatchment 4A S: Region 4A

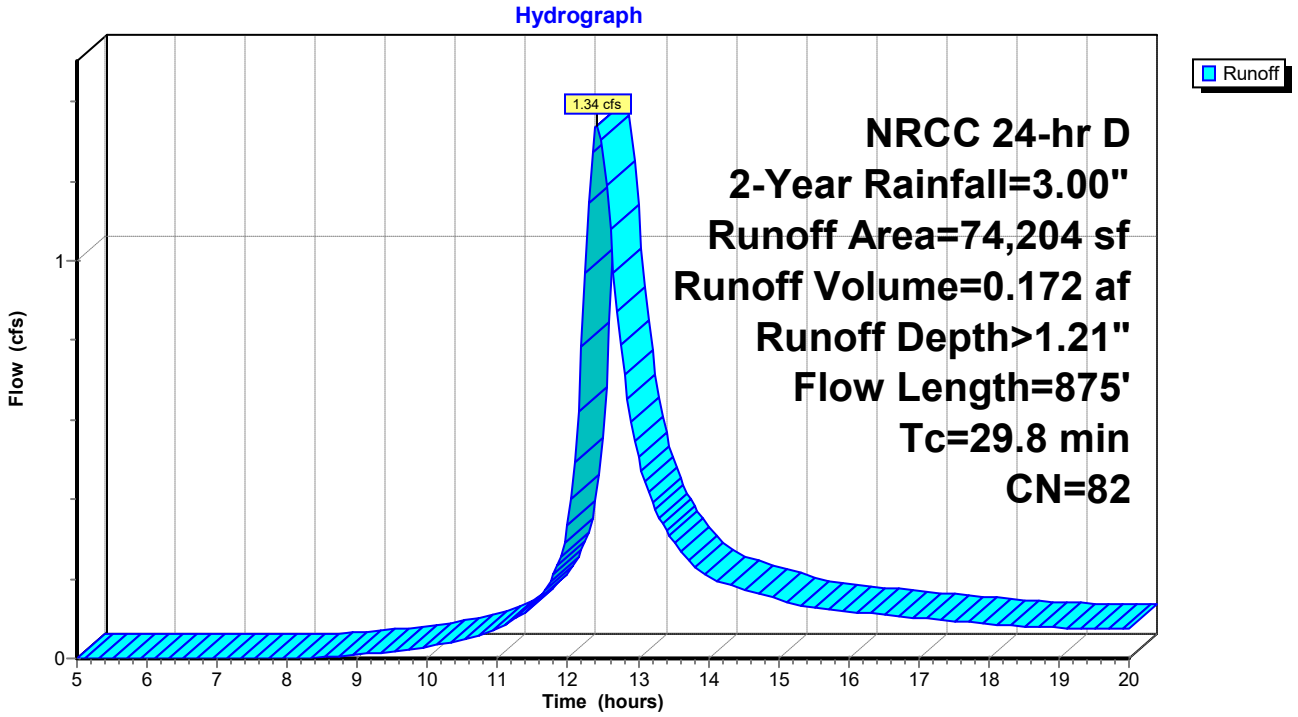
Runoff = 1.34 cfs @ 12.42 hrs, Volume= 0.172 af, Depth> 1.21"
Routed to Pond 3A : Pond 3A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.00"

Area (sf)	CN	Description
18,380	98	Paved parking, HSG D
40,627	77	Woods, Good, HSG D
14,587	78	Meadow, non-grazed, HSG D
610	80	>75% Grass cover, Good, HSG D
74,204	82	Weighted Average
55,824		75.23% Pervious Area
18,380		24.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	100	0.0800	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.00"
4.1	380	0.0970	1.56		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	20	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	180	0.0710	3.23	51.68	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.130 Sheet flow over Range
0.1	70	0.0250	9.02	11.06	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
0.1	55	0.0160	7.21	8.85	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
11.8	70	0.0050	0.10		**Sheet Flow,** Range n= 0.130 P2= 3.00"
29.8	875	Total			

Subcatchment 4A S: Region 4A



Summary for Subcatchment 5S: Region 5

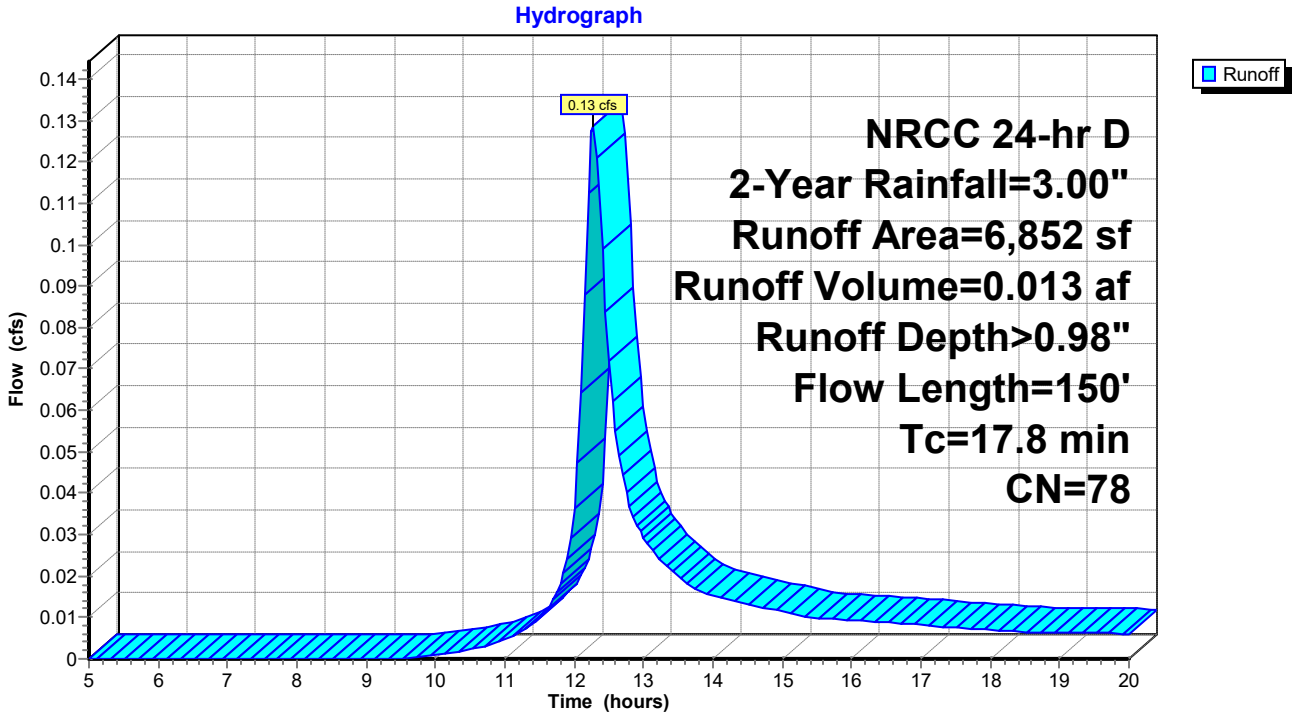
Runoff = 0.13 cfs @ 12.27 hrs, Volume= 0.013 af, Depth> 0.98"
Routed to Pond 3B : Pond 3B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.00"

Area (sf)	CN	Description
6,852	78	Meadow, non-grazed, HSG D
6,852		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	10	0.0100	0.09		**Sheet Flow,** Range n= 0.130 P2= 3.00"
0.2	40	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.7	100	0.0050	0.11		**Sheet Flow,** Range n= 0.130 P2= 3.00"
17.8	150	Total			

Subcatchment 5S: Region 5



Summary for Subcatchment 6S: Region 6

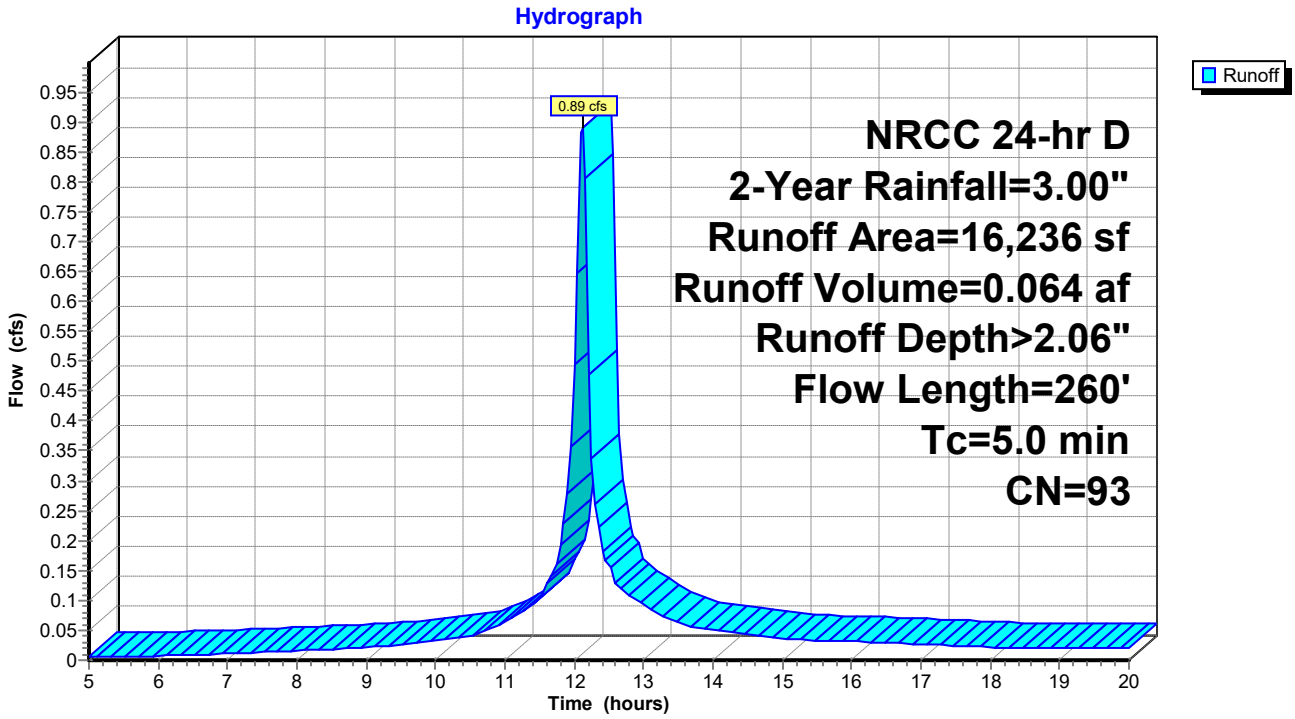
Runoff = 0.89 cfs @ 12.11 hrs, Volume= 0.064 af, Depth> 2.06"
Routed to Reach 6R : Reach 6 CB2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.00"

Area (sf)	CN	Description
12,022	98	Paved parking, HSG D
4,214	78	Meadow, non-grazed, HSG D
16,236	93	Weighted Average
4,214		25.95% Pervious Area
12,022		74.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	25	0.0100	0.11		**Sheet Flow,** Range n= 0.130 P2= 3.00"
0.7	125	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	110	0.0500	4.54		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.0	260	Total			

Subcatchment 6S: Region 6



Summary for Subcatchment 7S: Region 7

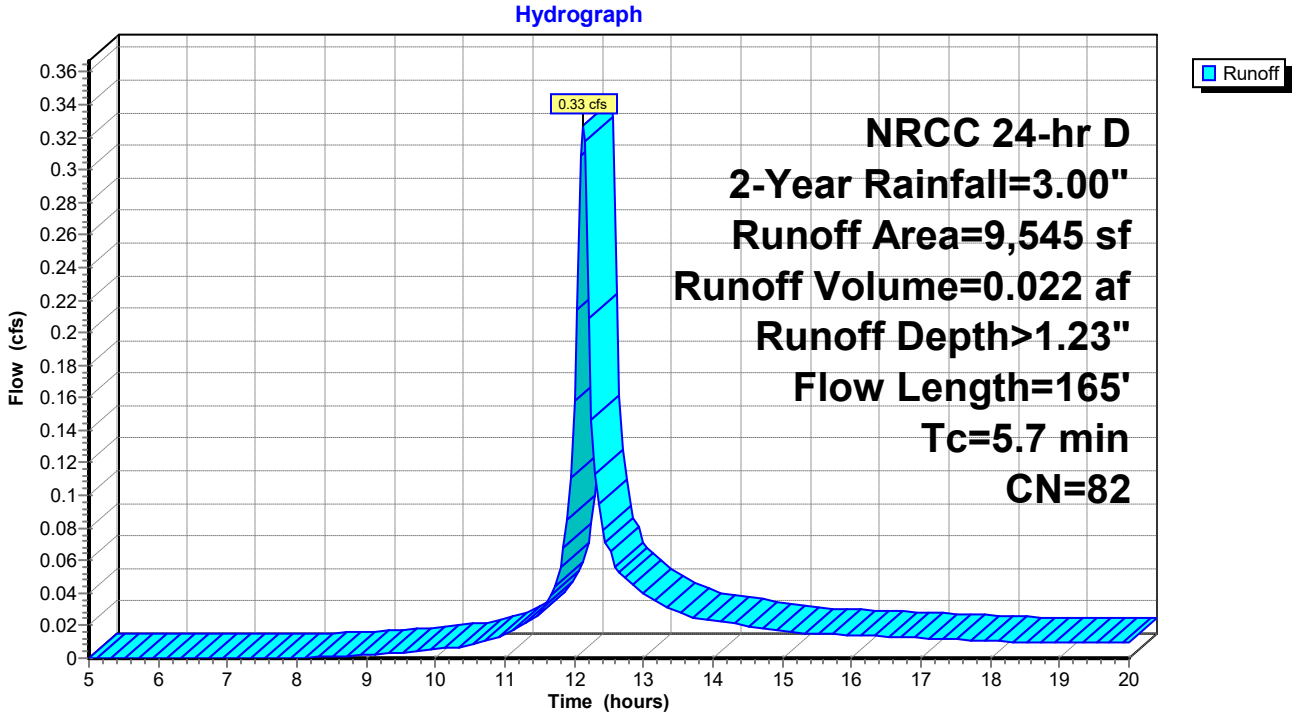
Runoff = 0.33 cfs @ 12.13 hrs, Volume= 0.022 af, Depth> 1.23"
Routed to Reach 7aR : Reach 7a

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.00"

Area (sf)	CN	Description
2,135	98	Paved parking, HSG D
7,410	78	Meadow, non-grazed, HSG D
9,545	82	Weighted Average
7,410		77.63% Pervious Area
2,135		22.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	20	0.0100	0.10		**Sheet Flow,** Range n= 0.130 P2= 3.00"
0.1	25	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.3	120	0.0160	0.89		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.7	165	Total			

Subcatchment 7S: Region 7



Summary for Subcatchment 8S: Region 8

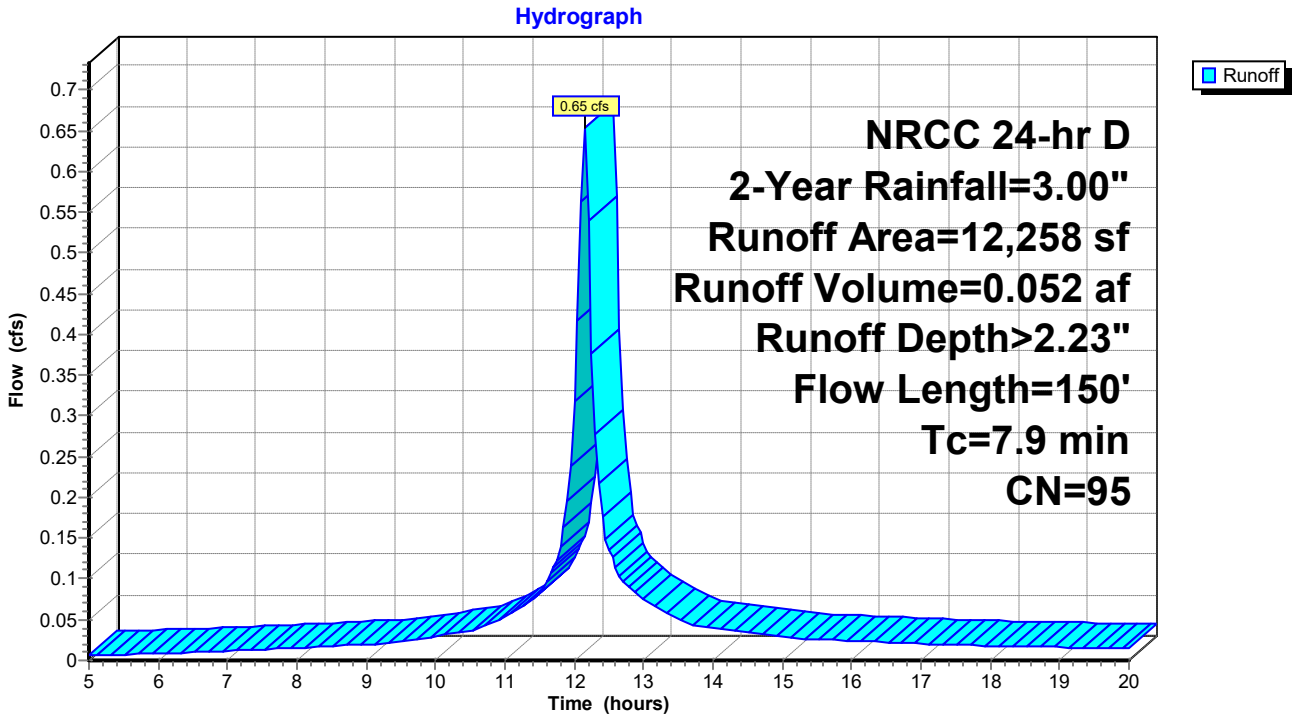
Runoff = 0.65 cfs @ 12.15 hrs, Volume= 0.052 af, Depth> 2.23"
Routed to Reach 8R : Reach 8 CB 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.00"

Area (sf)	CN	Description
10,327	98	Paved parking, HSG D
1,931	78	Meadow, non-grazed, HSG D
12,258	95	Weighted Average
1,931		15.75% Pervious Area
10,327		84.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	50	0.0100	0.12		**Sheet Flow,** Range n= 0.130 P2= 3.00"
1.1	100	0.0280	1.52		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
7.9	150	Total			

Subcatchment 8S: Region 8



Summary for Subcatchment 9S: Region 9

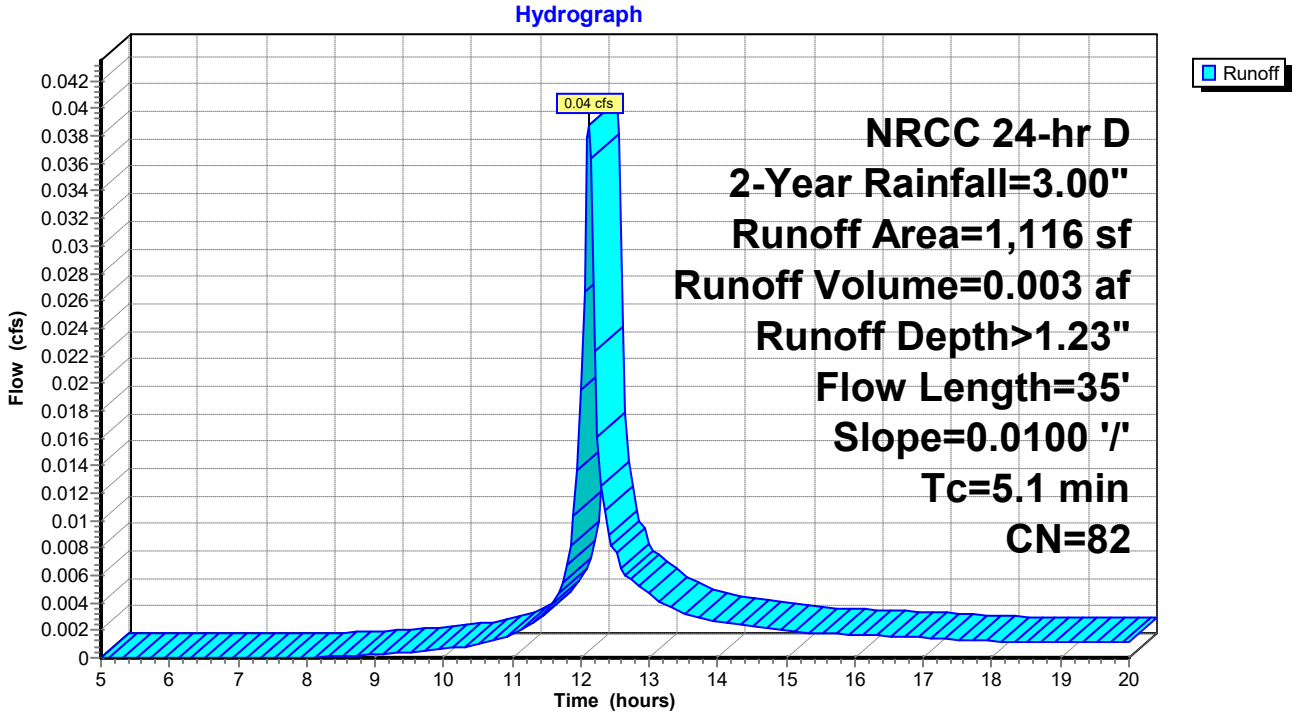
Runoff = 0.04 cfs @ 12.12 hrs, Volume= 0.003 af, Depth> 1.23"
Routed to Reach 10R : Reach 10

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.00"

Area (sf)	CN	Description
228	98	Paved parking, HSG D
888	78	Meadow, non-grazed, HSG D
1,116	82	Weighted Average
888		79.57% Pervious Area
228		20.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	35	0.0100	0.11		**Sheet Flow,** Range n= 0.130 P2= 3.00"

Subcatchment 9S: Region 9



Summary for Subcatchment 10S: Region 10

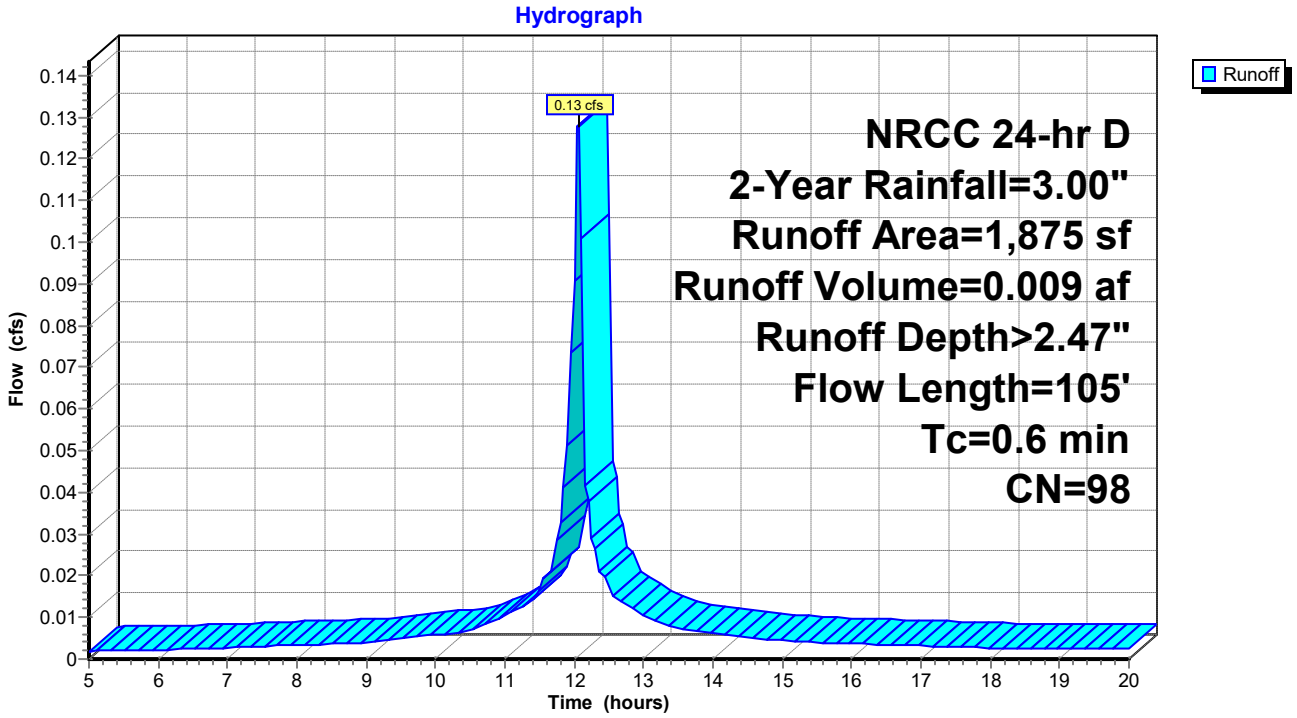
Runoff = 0.13 cfs @ 12.05 hrs, Volume= 0.009 af, Depth> 2.47"
Routed to Reach 9R : Reach 9 CB 5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.00"

Area (sf)	CN	Description
1,875	98	Paved parking, HSG D
1,875		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.97		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
0.3	85	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	105	Total			

Subcatchment 10S: Region 10



Summary for Subcatchment 11S: Region 11

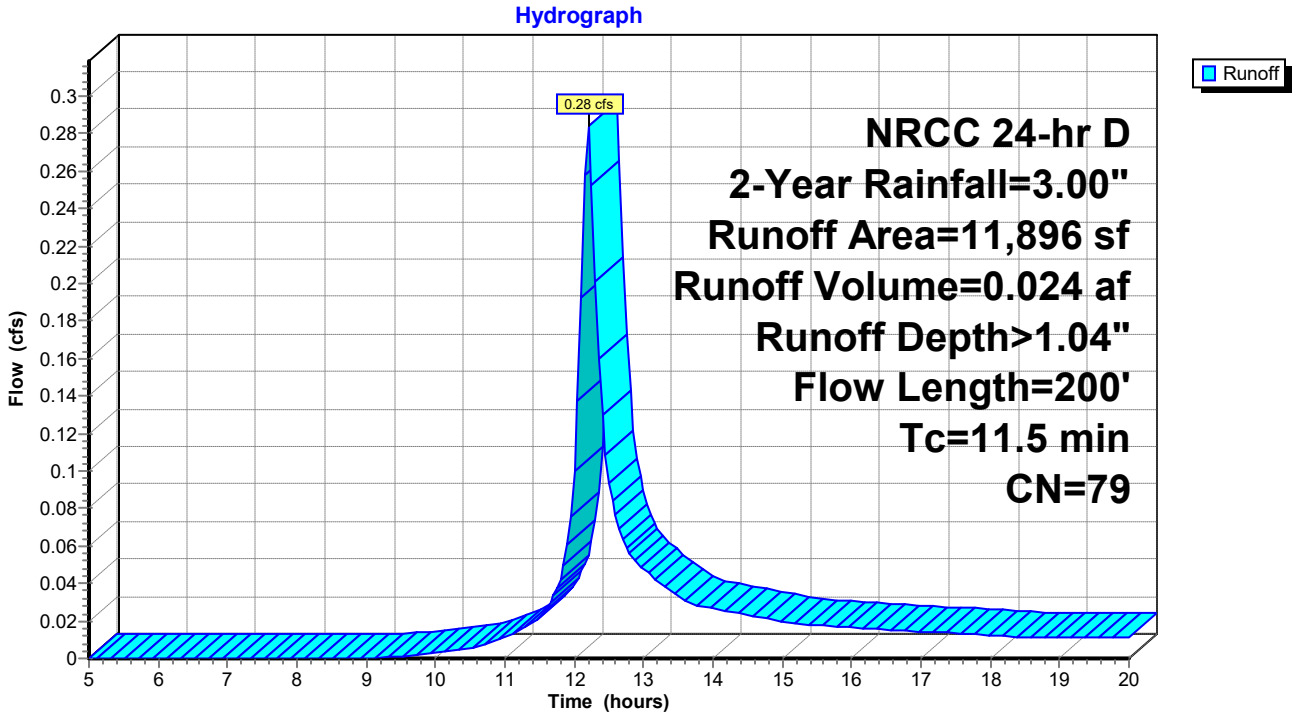
Runoff = 0.28 cfs @ 12.20 hrs, Volume= 0.024 af, Depth> 1.04"
Routed to Reach 11R : Reach 11

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.00"

Area (sf)	CN	Description
1,085	98	Paved parking, HSG D
10,811	77	Woods, Good, HSG D
11,896	79	Weighted Average
10,811		90.88% Pervious Area
1,085		9.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.1200	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.00"
0.5	60	0.1330	1.82		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	15	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	25	0.0670	3.25	58.47	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=2.00' Z= 3.0 '/' Top.W=15.00' n= 0.130 Sheet flow over Range
11.5	200	Total			

Subcatchment 11S: Region 11



Summary for Subcatchment 24S: Region 24

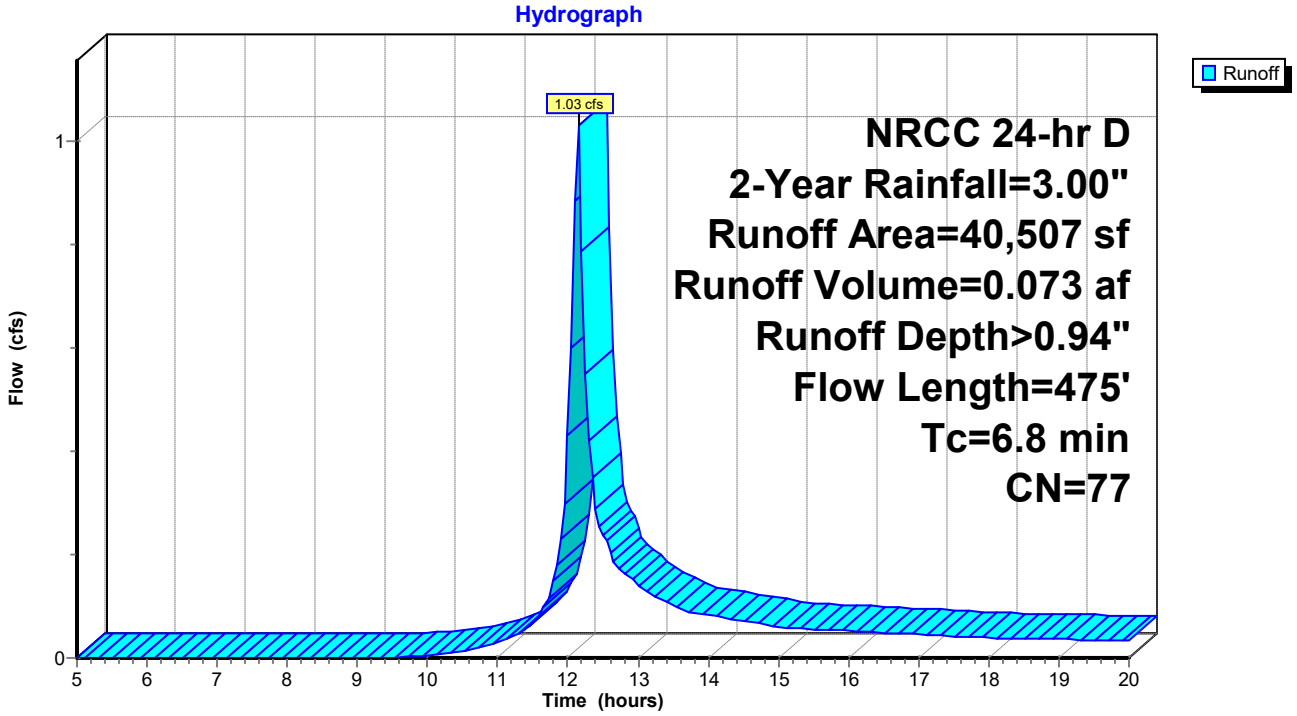
Runoff = 1.03 cfs @ 12.14 hrs, Volume= 0.073 af, Depth> 0.94"
Routed to Reach DP2 : Design Point 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.00"

Area (sf)	CN	Description
40,507	77	Woods, Good, HSG D
40,507		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	25	0.0400	0.18		**Sheet Flow,** Range n= 0.130 P2= 3.00"
0.2	40	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	35	0.1700	2.06		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.0	375	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.8	475	Total			

Subcatchment 24S: Region 24



Summary for Reach 1R: Reach 1

Inflow Area = 3.289 ac, 32.14% Impervious, Inflow Depth > 0.67" for 2-Year event
Inflow = 0.37 cfs @ 14.24 hrs, Volume= 0.183 af
Outflow = 0.37 cfs @ 14.29 hrs, Volume= 0.182 af, Atten= 0%, Lag= 2.7 min
Routed to Reach DP2 : Design Point 2

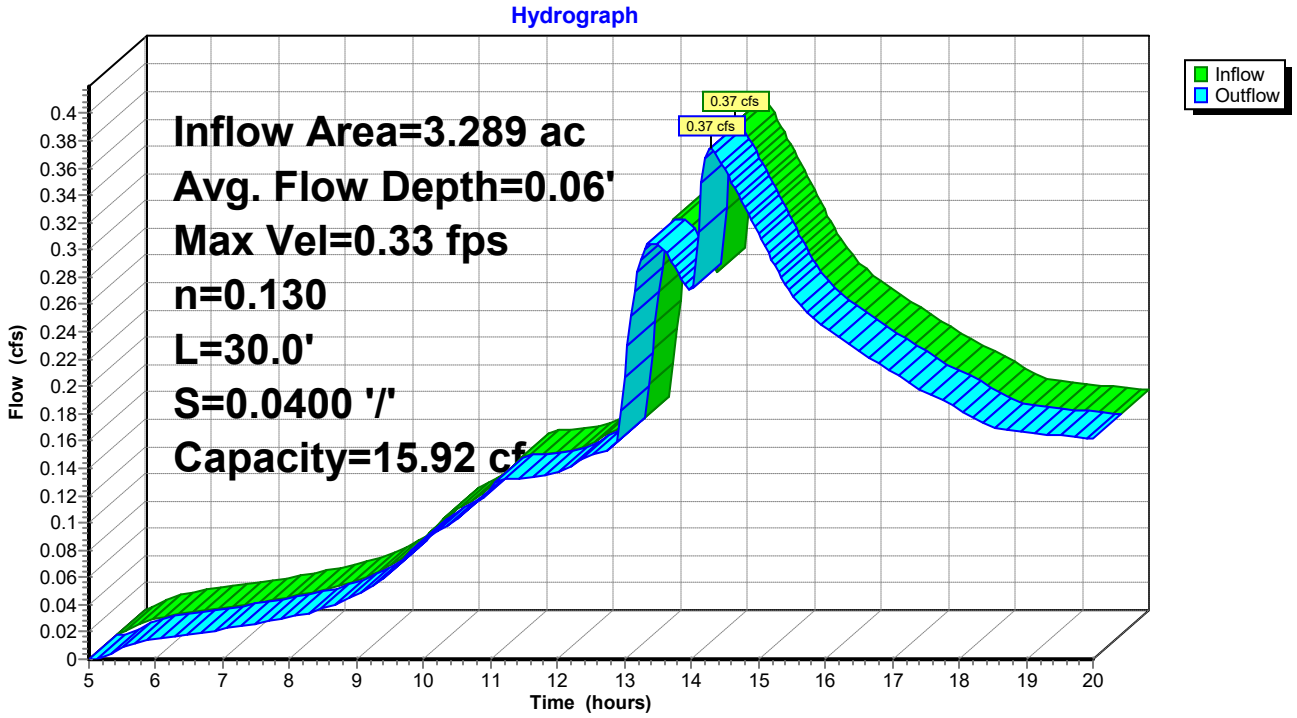
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.33 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 0.21 fps, Avg. Travel Time= 2.4 min

Peak Storage= 34 cf @ 14.26 hrs
Average Depth at Peak Storage= 0.06' , Surface Width= 21.11'
Bank-Full Depth= 0.50' Flow Area= 12.5 sf, Capacity= 15.92 cfs

20.00' x 0.50' deep channel, n= 0.130 Sheet flow over Range
Side Slope Z-value= 10.0 '/' Top Width= 30.00'
Length= 30.0' Slope= 0.0400 '/'
Inlet Invert= 0.00', Outlet Invert= -1.20'

‡

Reach 1R: Reach 1



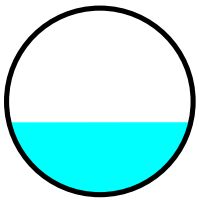
Summary for Reach 6R: Reach 6 CB2

Inflow Area = 1.215 ac, 52.28% Impervious, Inflow Depth > 1.71" for 2-Year event
Inflow = 2.11 cfs @ 12.13 hrs, Volume= 0.174 af
Outflow = 2.09 cfs @ 12.14 hrs, Volume= 0.173 af, Atten= 1%, Lag= 0.6 min
Routed to Pond 3B : Pond 3B

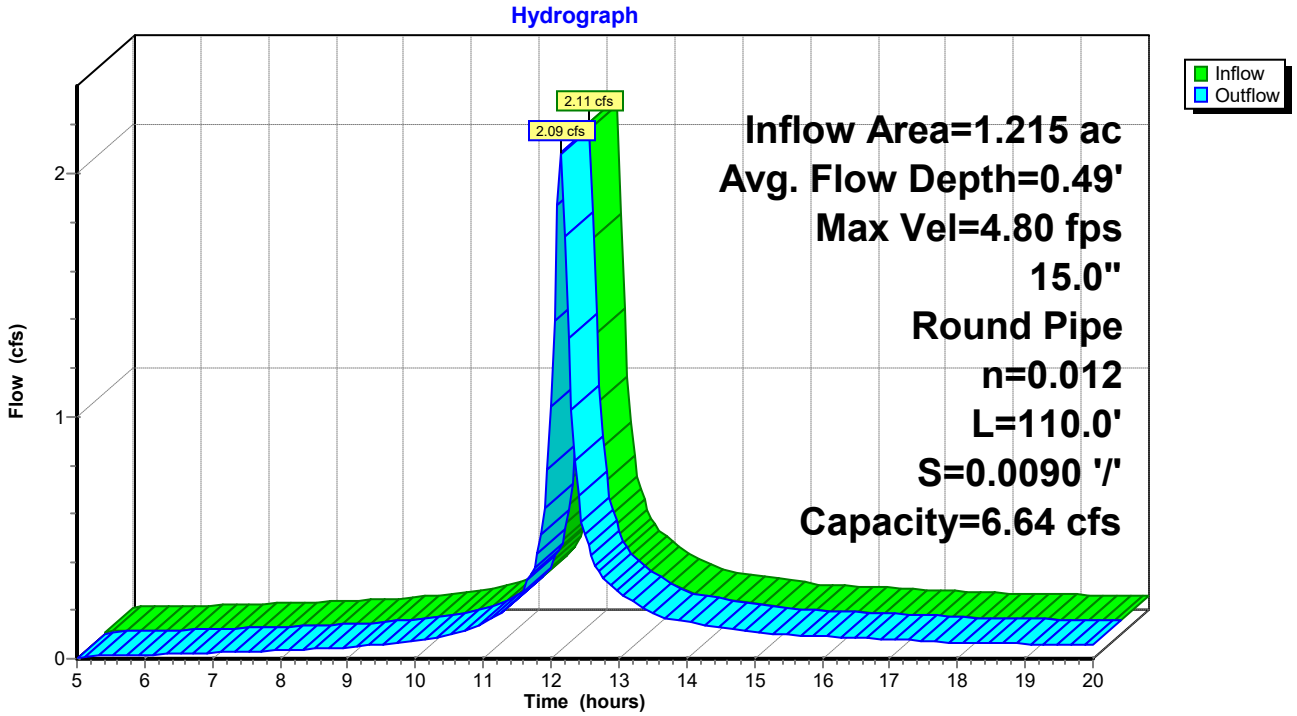
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.80 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.91 fps, Avg. Travel Time= 1.0 min

Peak Storage= 48 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.49' , Surface Width= 1.22'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 6.64 cfs

15.0" Round Pipe
n= 0.012
Length= 110.0' Slope= 0.0090 '/'
Inlet Invert= 0.00', Outlet Invert= -0.99'



Reach 6R: Reach 6 CB2



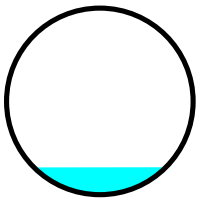
Summary for Reach 7aR: Reach 7a

Inflow Area = 0.219 ac, 22.37% Impervious, Inflow Depth > 1.23" for 2-Year event
Inflow = 0.33 cfs @ 12.13 hrs, Volume= 0.022 af
Outflow = 0.33 cfs @ 12.13 hrs, Volume= 0.022 af, Atten= 0%, Lag= 0.3 min
Routed to Reach 7R : Reach 7 CB3

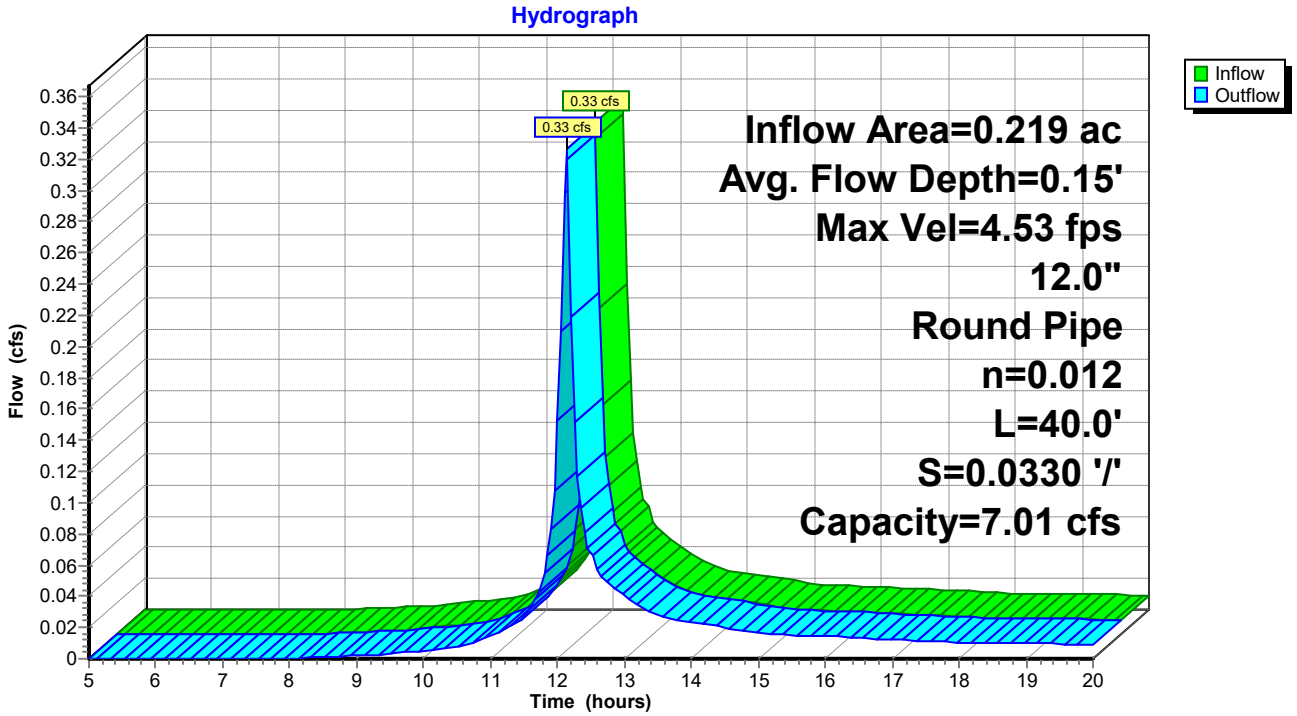
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.53 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.79 fps, Avg. Travel Time= 0.4 min

Peak Storage= 3 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.15' , Surface Width= 0.71'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 7.01 cfs

12.0" Round Pipe
n= 0.012
Length= 40.0' Slope= 0.0330 '/'
Inlet Invert= 0.00', Outlet Invert= -1.32'



Reach 7aR: Reach 7a



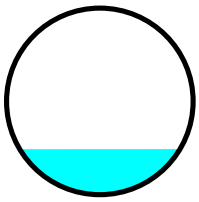
Summary for Reach 7R: Reach 7 CB3

Inflow Area = 0.842 ac, 42.65% Impervious, Inflow Depth > 1.56" for 2-Year event
Inflow = 1.29 cfs @ 12.15 hrs, Volume= 0.110 af
Outflow = 1.28 cfs @ 12.15 hrs, Volume= 0.110 af, Atten= 1%, Lag= 0.4 min
Routed to Reach 6R : Reach 6 CB2

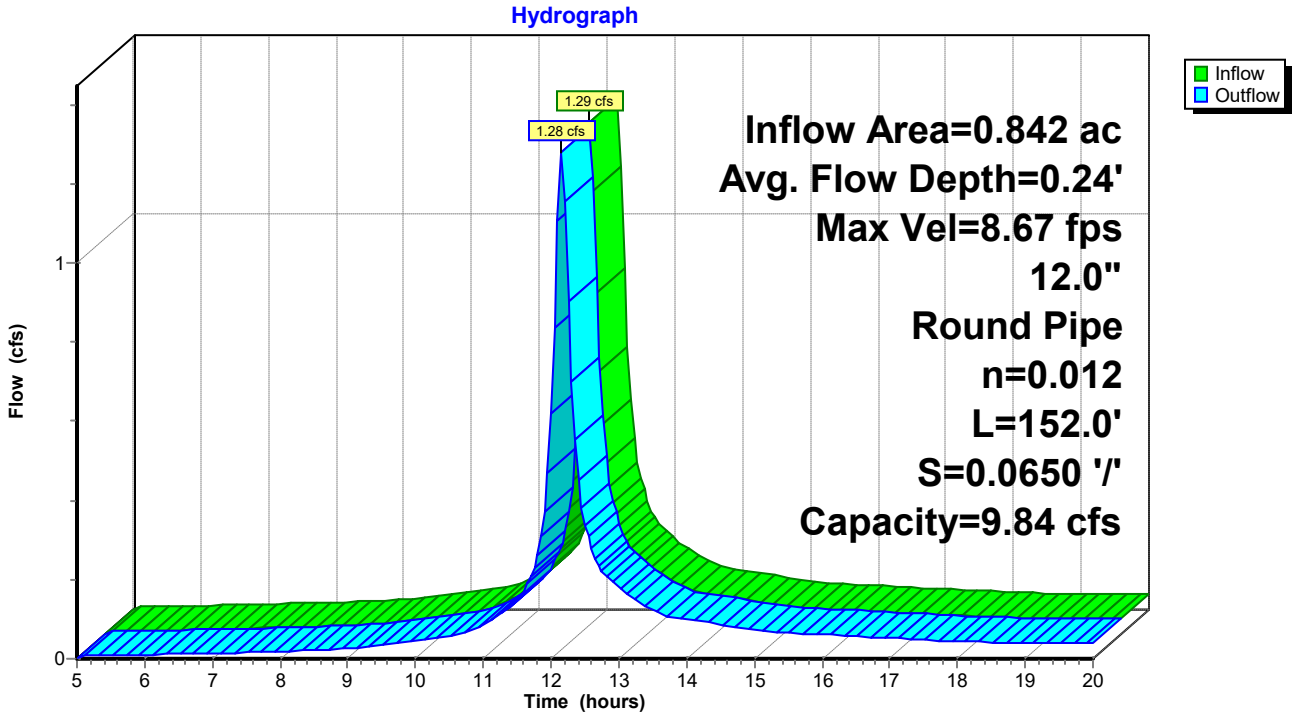
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.67 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 3.41 fps, Avg. Travel Time= 0.7 min

Peak Storage= 23 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.24' , Surface Width= 0.86'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 9.84 cfs

12.0" Round Pipe
n= 0.012
Length= 152.0' Slope= 0.0650 '/'
Inlet Invert= 0.00', Outlet Invert= -9.88'



Reach 7R: Reach 7 CB3



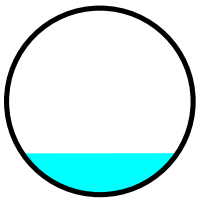
Summary for Reach 8R: Reach 8 CB 4

Inflow Area = 0.623 ac, 49.79% Impervious, Inflow Depth > 1.68" for 2-Year event
Inflow = 0.98 cfs @ 12.15 hrs, Volume= 0.087 af
Outflow = 0.97 cfs @ 12.16 hrs, Volume= 0.087 af, Atten= 1%, Lag= 0.3 min
Routed to Reach 7R : Reach 7 CB3

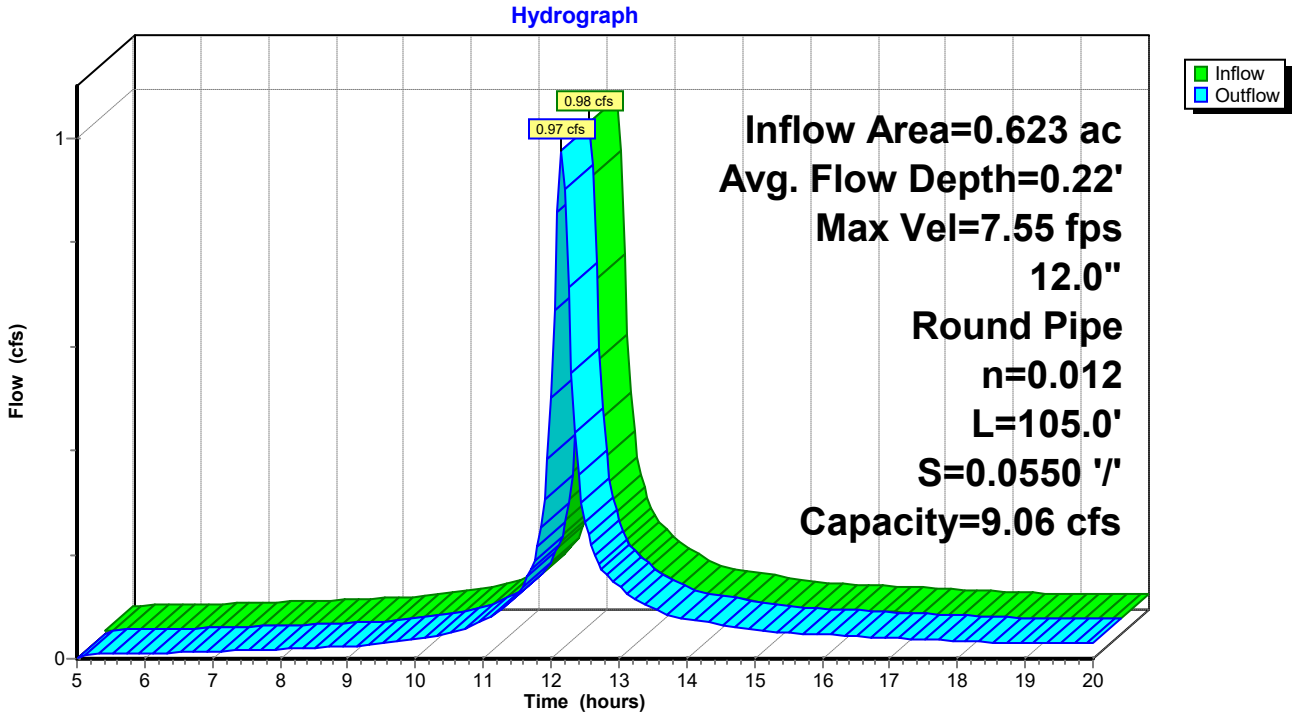
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.55 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 3.04 fps, Avg. Travel Time= 0.6 min

Peak Storage= 14 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.22' , Surface Width= 0.83'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 9.06 cfs

12.0" Round Pipe
n= 0.012
Length= 105.0' Slope= 0.0550 '/'
Inlet Invert= 0.00', Outlet Invert= -5.78'



Reach 8R: Reach 8 CB 4



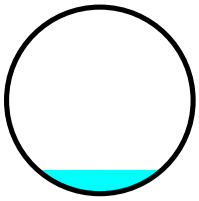
Summary for Reach 9R: Reach 9 CB 5

Inflow Area = 0.342 ac, 21.41% Impervious, Inflow Depth > 1.24" for 2-Year event
Inflow = 0.35 cfs @ 12.19 hrs, Volume= 0.035 af
Outflow = 0.34 cfs @ 12.19 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.1 min
Routed to Reach 8R : Reach 8 CB 4

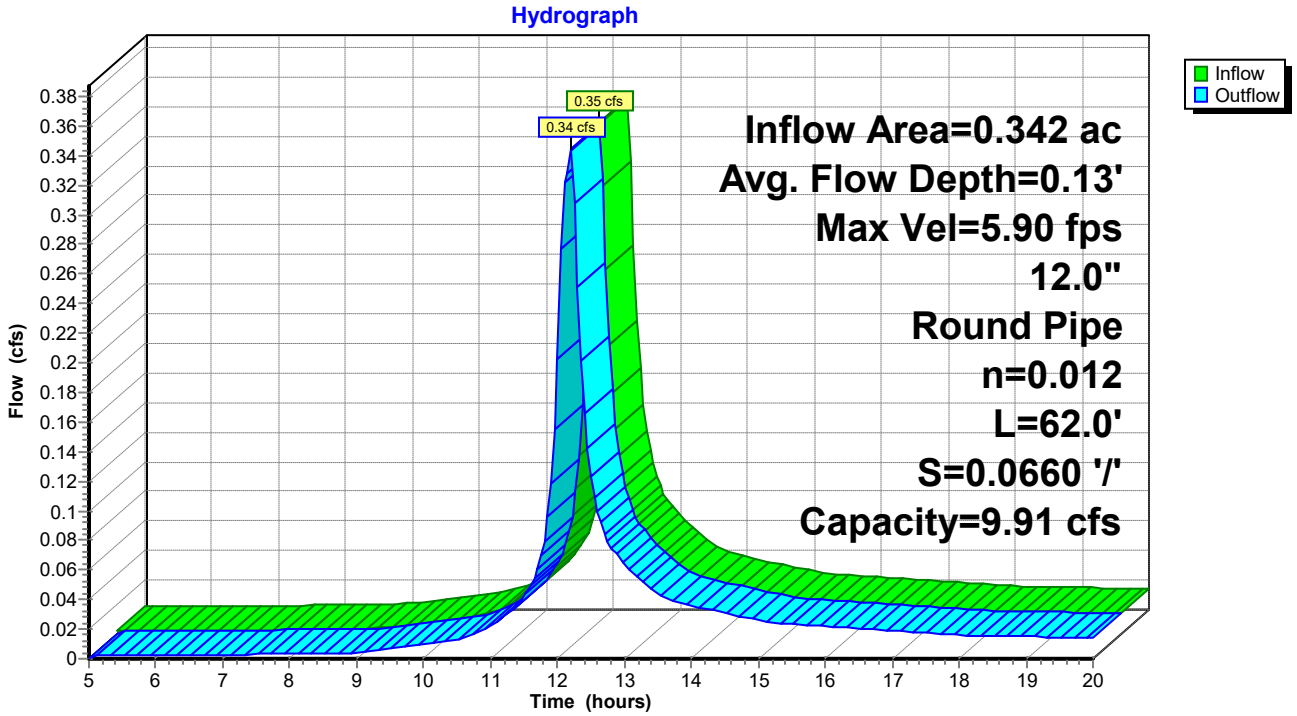
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.90 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.39 fps, Avg. Travel Time= 0.4 min

Peak Storage= 4 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.13' , Surface Width= 0.67'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 9.91 cfs

12.0" Round Pipe
n= 0.012
Length= 62.0' Slope= 0.0660 '/'
Inlet Invert= 0.00', Outlet Invert= -4.09'



Reach 9R: Reach 9 CB 5



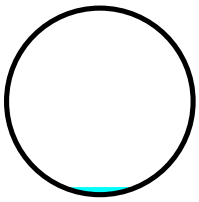
Summary for Reach 10R: Reach 10

Inflow Area = 0.026 ac, 20.43% Impervious, Inflow Depth > 1.23" for 2-Year event
Inflow = 0.04 cfs @ 12.12 hrs, Volume= 0.003 af
Outflow = 0.04 cfs @ 12.13 hrs, Volume= 0.003 af, Atten= 1%, Lag= 0.4 min
Routed to Reach 9R : Reach 9 CB 5

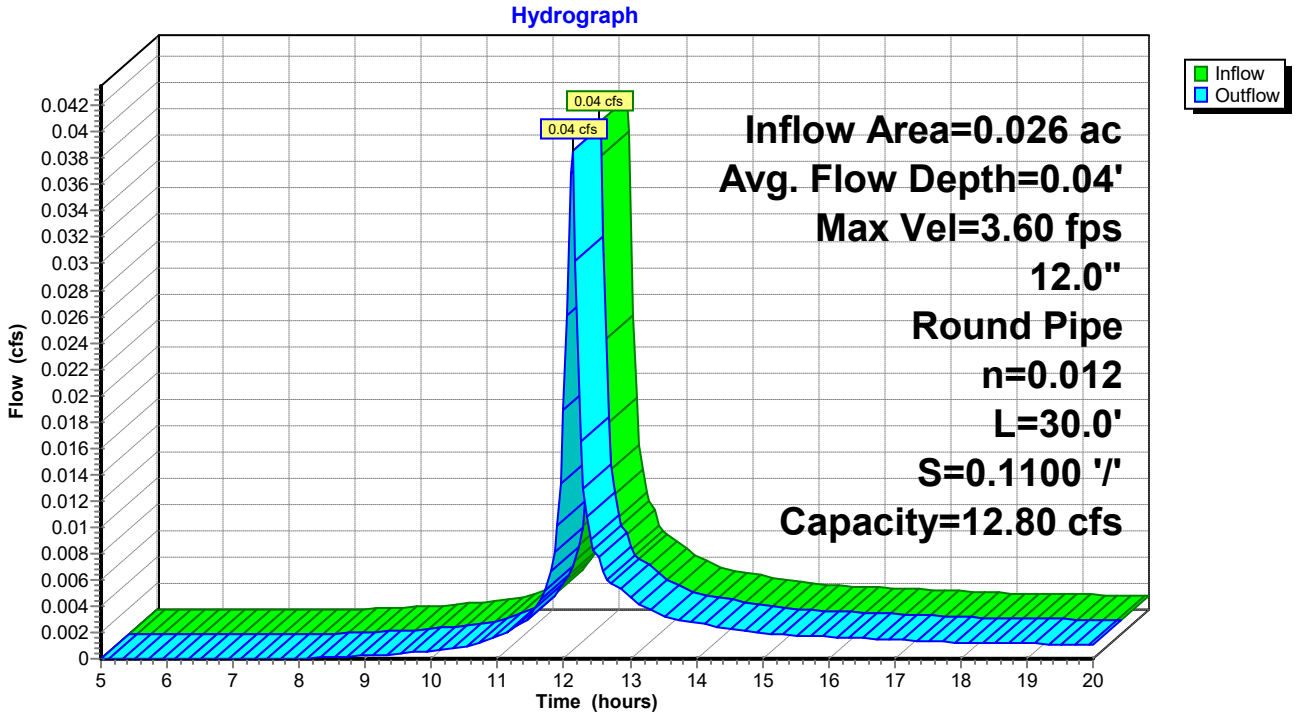
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.60 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.62 fps, Avg. Travel Time= 0.3 min

Peak Storage= 0 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.04' , Surface Width= 0.39'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 12.80 cfs

12.0" Round Pipe
n= 0.012
Length= 30.0' Slope= 0.1100 '/'
Inlet Invert= 0.00', Outlet Invert= -3.30'



Reach 10R: Reach 10



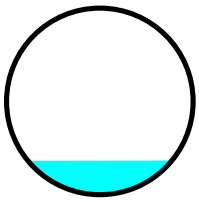
Summary for Reach 11R: Reach 11

Inflow Area = 0.273 ac, 9.12% Impervious, Inflow Depth > 1.04" for 2-Year event
Inflow = 0.28 cfs @ 12.20 hrs, Volume= 0.024 af
Outflow = 0.28 cfs @ 12.20 hrs, Volume= 0.024 af, Atten= 1%, Lag= 0.3 min
Routed to Reach 9R : Reach 9 CB 5

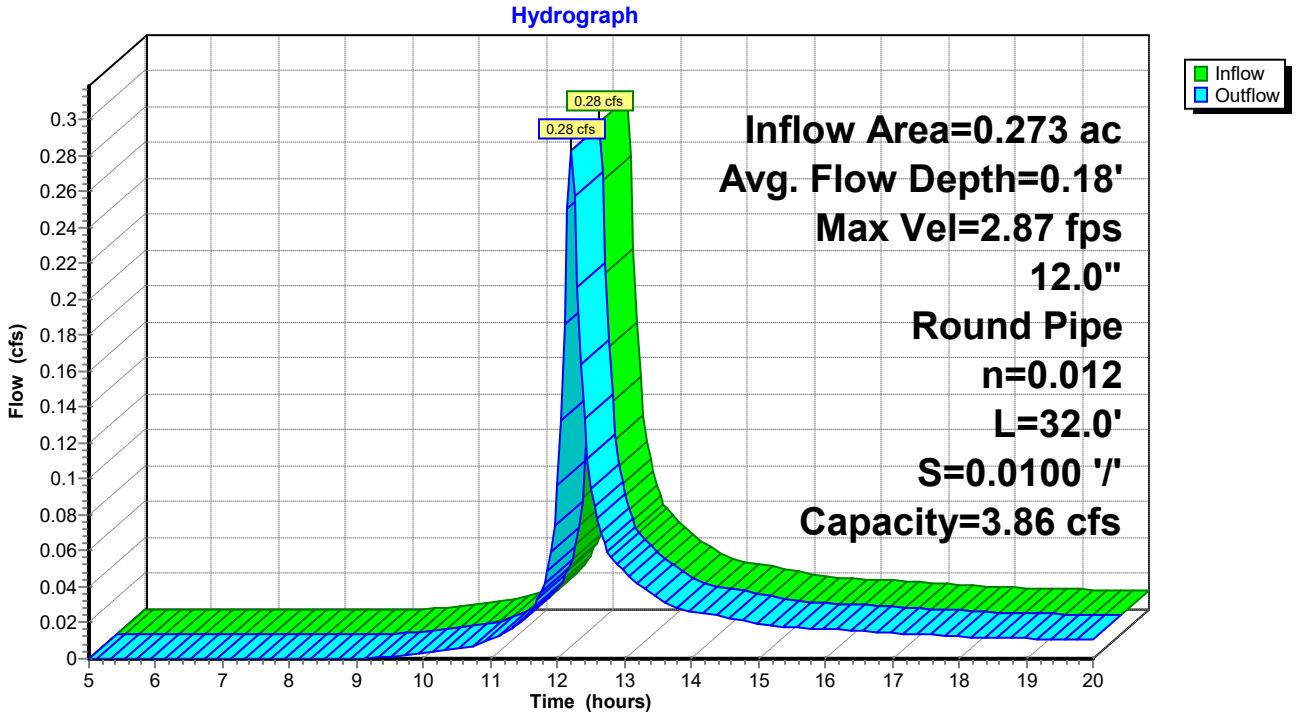
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.87 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.24 fps, Avg. Travel Time= 0.4 min

Peak Storage= 3 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.18' , Surface Width= 0.77'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe
n= 0.012
Length= 32.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.32'



Reach 11R: Reach 11

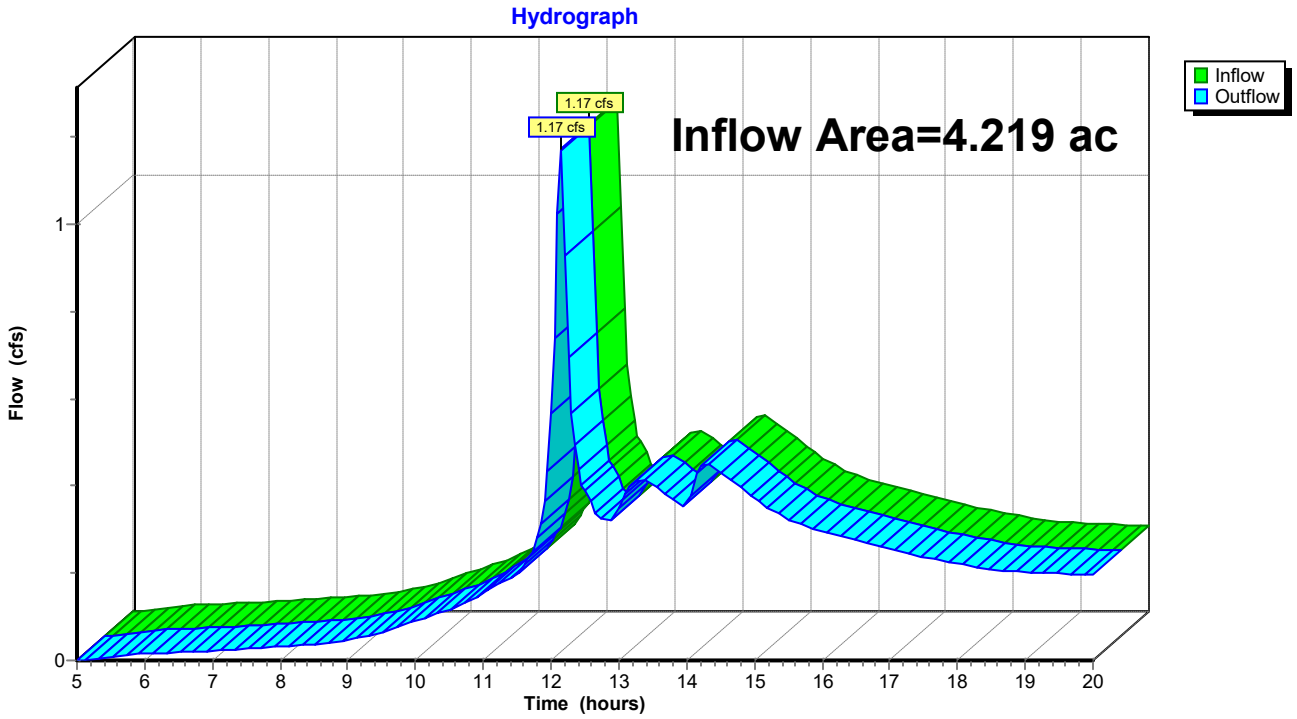


Summary for Reach DP2: Design Point 2

Inflow Area = 4.219 ac, 25.06% Impervious, Inflow Depth > 0.72" for 2-Year event
Inflow = 1.17 cfs @ 12.14 hrs, Volume= 0.254 af
Outflow = 1.17 cfs @ 12.14 hrs, Volume= 0.254 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP2: Design Point 2



Summary for Pond 3A: Pond 3A

Inflow Area = 1.917 ac, 22.01% Impervious, Inflow Depth > 1.20" for 2-Year event
Inflow = 1.46 cfs @ 12.40 hrs, Volume= 0.191 af
Outflow = 0.21 cfs @ 14.29 hrs, Volume= 0.084 af, Atten= 86%, Lag= 113.4 min
Primary = 0.21 cfs @ 14.29 hrs, Volume= 0.084 af
Routed to Reach 1R : Reach 1

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 394.41' @ 14.29 hrs Surf.Area= 3,981 sf Storage= 4,730 cf

Plug-Flow detention time= 195.6 min calculated for 0.084 af (44% of inflow)
Center-of-Mass det. time= 94.5 min (920.8 - 826.3)

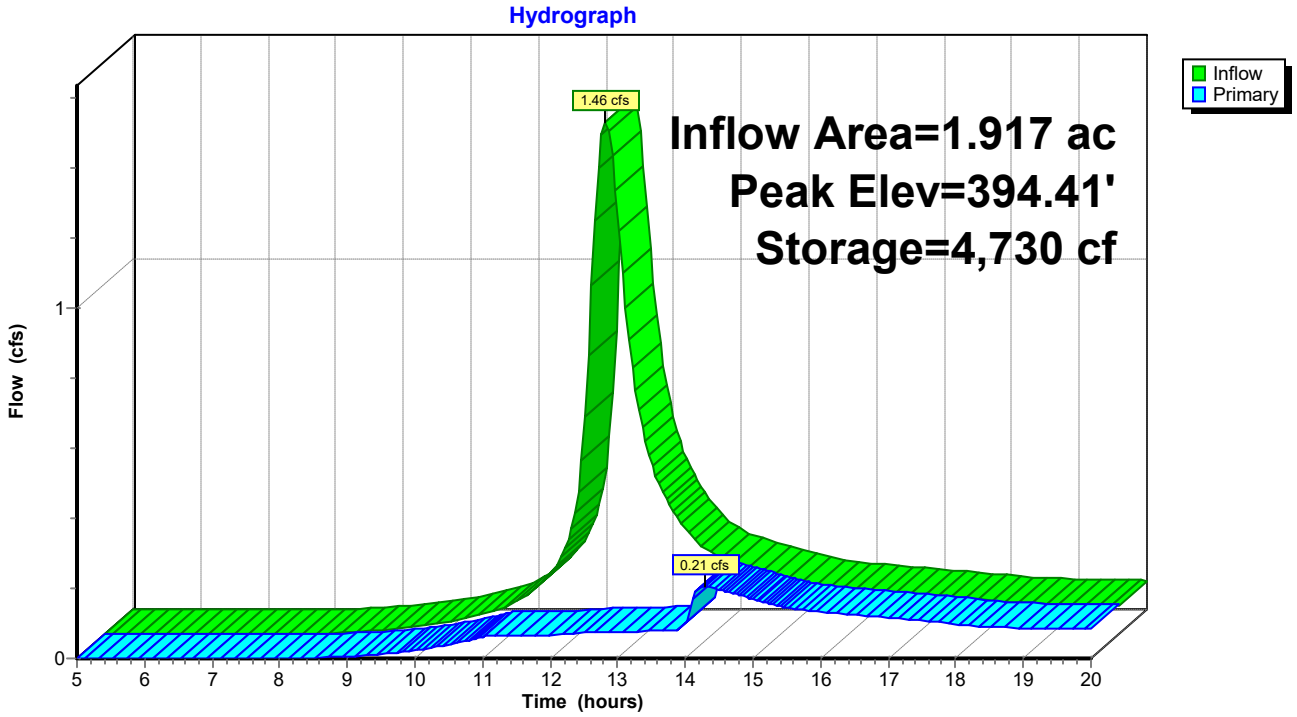
Volume	Invert	Avail.Storage	Storage Description
#1	393.00'	12,120 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
393.00	2,730	0	0
394.00	3,616	3,173	3,173
395.00	4,506	4,061	7,234
396.00	5,265	4,886	12,120

Device	Routing	Invert	Outlet Devices
#1	Primary	389.75'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 389.75' / 389.35' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	390.00'	**1.2" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	394.40'	**50.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.20 cfs @ 14.29 hrs HW=394.41' (Free Discharge)
└─**1=Culvert** (Passes 0.08 cfs of 7.71 cfs potential flow)
  └─**2=Orifice/Grate** (Orifice Controls 0.08 cfs @ 10.05 fps)
└─**3=Broad-Crested Rectangular Weir** (Weir Controls 0.13 cfs @ 0.25 fps)

Pond 3A: Pond 3A



Summary for Pond 3B: Pond 3B

Inflow Area = 1.372 ac, 46.29% Impervious, Inflow Depth > 1.63" for 2-Year event
Inflow = 2.17 cfs @ 12.15 hrs, Volume= 0.186 af
Outflow = 0.23 cfs @ 13.39 hrs, Volume= 0.099 af, Atten= 89%, Lag= 74.5 min
Primary = 0.23 cfs @ 13.39 hrs, Volume= 0.099 af
Routed to Reach 1R : Reach 1

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 394.46' @ 13.39 hrs Surf.Area= 3,379 sf Storage= 4,074 cf

Plug-Flow detention time= 166.4 min calculated for 0.099 af (53% of inflow)
Center-of-Mass det. time= 67.5 min (848.0 - 780.5)

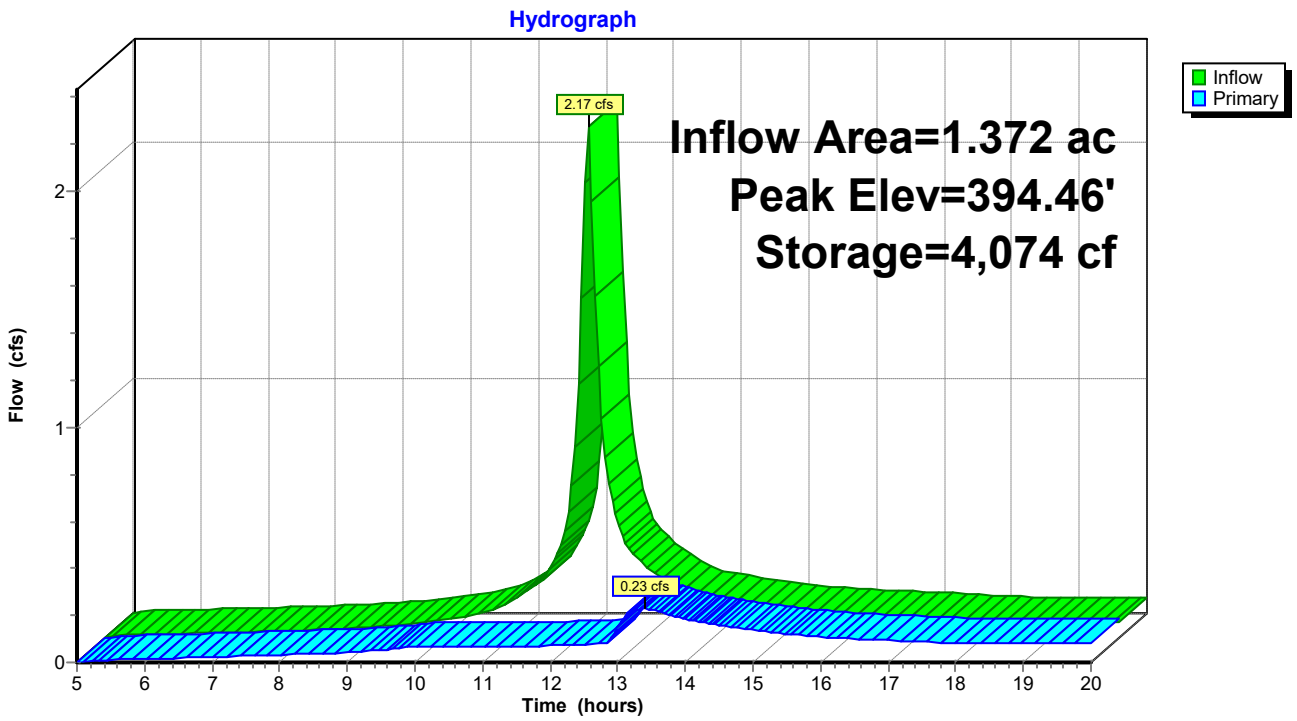
Volume	Invert	Avail.Storage	Storage Description
#1	393.00'	10,071 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
393.00	2,175	0	0
394.00	3,021	2,598	2,598
395.00	3,796	3,409	6,007
396.00	4,333	4,065	10,071

Device	Routing	Invert	Outlet Devices
#1	Primary	389.35'	**18.0" Round Culvert** L= 45.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 389.35' / 388.90' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	390.00'	**1.2" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	394.40'	**36.0" W x 7.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	395.35'	**25.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=0.23 cfs @ 13.39 hrs HW=394.46' (Free Discharge)
- **1=Culvert** (Passes 0.23 cfs of 17.77 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.08 cfs @ 10.11 fps)
  - **3=Orifice/Grate** (Orifice Controls 0.15 cfs @ 0.79 fps)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3B: Pond 3B



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 3S: Region 3 Runoff Area=9,304 sf 0.00% Impervious Runoff Depth>2.15"
Flow Length=105' Tc=14.3 min CN=80 Runoff=0.42 cfs 0.038 af

Subcatchment 4A S: Region 4A Runoff Area=74,204 sf 24.77% Impervious Runoff Depth>2.30"
Flow Length=875' Tc=29.8 min CN=82 Runoff=2.53 cfs 0.326 af

Subcatchment 5S: Region 5 Runoff Area=6,852 sf 0.00% Impervious Runoff Depth>1.99"
Flow Length=150' Tc=17.8 min CN=78 Runoff=0.26 cfs 0.026 af

Subcatchment 6S: Region 6 Runoff Area=16,236 sf 74.05% Impervious Runoff Depth>3.31"
Flow Length=260' Tc=5.0 min CN=93 Runoff=1.40 cfs 0.103 af

Subcatchment 7S: Region 7 Runoff Area=9,545 sf 22.37% Impervious Runoff Depth>2.32"
Flow Length=165' Tc=5.7 min CN=82 Runoff=0.61 cfs 0.042 af

Subcatchment 8S: Region 8 Runoff Area=12,258 sf 84.25% Impervious Runoff Depth>3.48"
Flow Length=150' Tc=7.9 min CN=95 Runoff=1.00 cfs 0.082 af

Subcatchment 9S: Region 9 Runoff Area=1,116 sf 20.43% Impervious Runoff Depth>2.32"
Flow Length=35' Slope=0.0100 '/' Tc=5.1 min CN=82 Runoff=0.07 cfs 0.005 af

Subcatchment 10S: Region 10 Runoff Area=1,875 sf 100.00% Impervious Runoff Depth>3.71"
Flow Length=105' Tc=0.6 min CN=98 Runoff=0.19 cfs 0.013 af

Subcatchment 11S: Region 11 Runoff Area=11,896 sf 9.12% Impervious Runoff Depth>2.07"
Flow Length=200' Tc=11.5 min CN=79 Runoff=0.56 cfs 0.047 af

Subcatchment 24S: Region 24 Runoff Area=40,507 sf 0.00% Impervious Runoff Depth>1.92"
Flow Length=475' Tc=6.8 min CN=77 Runoff=2.12 cfs 0.149 af

Reach 1R: Reach 1 Avg. Flow Depth=0.22' Max Vel=0.79 fps Inflow=4.00 cfs 0.484 af
n=0.130 L=30.0' S=0.0400 '/' Capacity=15.92 cfs Outflow=3.84 cfs 0.483 af

Reach 6R: Reach 6 CB2 Avg. Flow Depth=0.65' Max Vel=5.48 fps Inflow=3.50 cfs 0.292 af
15.0" Round Pipe n=0.012 L=110.0' S=0.0090 '/' Capacity=6.64 cfs Outflow=3.47 cfs 0.292 af

Reach 7aR: Reach 7a Avg. Flow Depth=0.20' Max Vel=5.43 fps Inflow=0.61 cfs 0.042 af
12.0" Round Pipe n=0.012 L=40.0' S=0.0330 '/' Capacity=7.01 cfs Outflow=0.61 cfs 0.042 af

Reach 7R: Reach 7 CB3 Avg. Flow Depth=0.32' Max Vel=10.11 fps Inflow=2.21 cfs 0.189 af
12.0" Round Pipe n=0.012 L=152.0' S=0.0650 '/' Capacity=9.84 cfs Outflow=2.19 cfs 0.189 af

Reach 8R: Reach 8 CB 4 Avg. Flow Depth=0.29' Max Vel=8.74 fps Inflow=1.63 cfs 0.147 af
12.0" Round Pipe n=0.012 L=105.0' S=0.0550 '/' Capacity=9.06 cfs Outflow=1.62 cfs 0.147 af

Reach 9R: Reach 9 CB 5 Avg. Flow Depth=0.18' Max Vel=7.16 fps Inflow=0.66 cfs 0.065 af
12.0" Round Pipe n=0.012 L=62.0' S=0.0660 '/' Capacity=9.91 cfs Outflow=0.66 cfs 0.065 af

Reach 10R: Reach 10 Avg. Flow Depth=0.05' Max Vel=4.37 fps Inflow=0.07 cfs 0.005 af
12.0" Round Pipe n=0.012 L=30.0' S=0.1100 '/' Capacity=12.80 cfs Outflow=0.07 cfs 0.005 af

Reach 11R: Reach 11 Avg. Flow Depth=0.26' Max Vel=3.51 fps Inflow=0.56 cfs 0.047 af
12.0" Round Pipe n=0.012 L=32.0' S=0.0100 '/' Capacity=3.86 cfs Outflow=0.56 cfs 0.047 af

Reach DP2: Design Point 2 Inflow=4.26 cfs 0.632 af
Outflow=4.26 cfs 0.632 af

Pond 3A: Pond 3A Peak Elev=394.47' Storage=4,973 cf Inflow=2.76 cfs 0.364 af
Outflow=2.71 cfs 0.256 af

Pond 3B: Pond 3B Peak Elev=394.72' Storage=4,991 cf Inflow=3.65 cfs 0.318 af
Outflow=1.87 cfs 0.228 af

Total Runoff Area = 4.219 ac Runoff Volume = 0.831 af Average Runoff Depth = 2.36"
74.94% Pervious = 3.162 ac 25.06% Impervious = 1.057 ac

Summary for Subcatchment 3S: Region 3

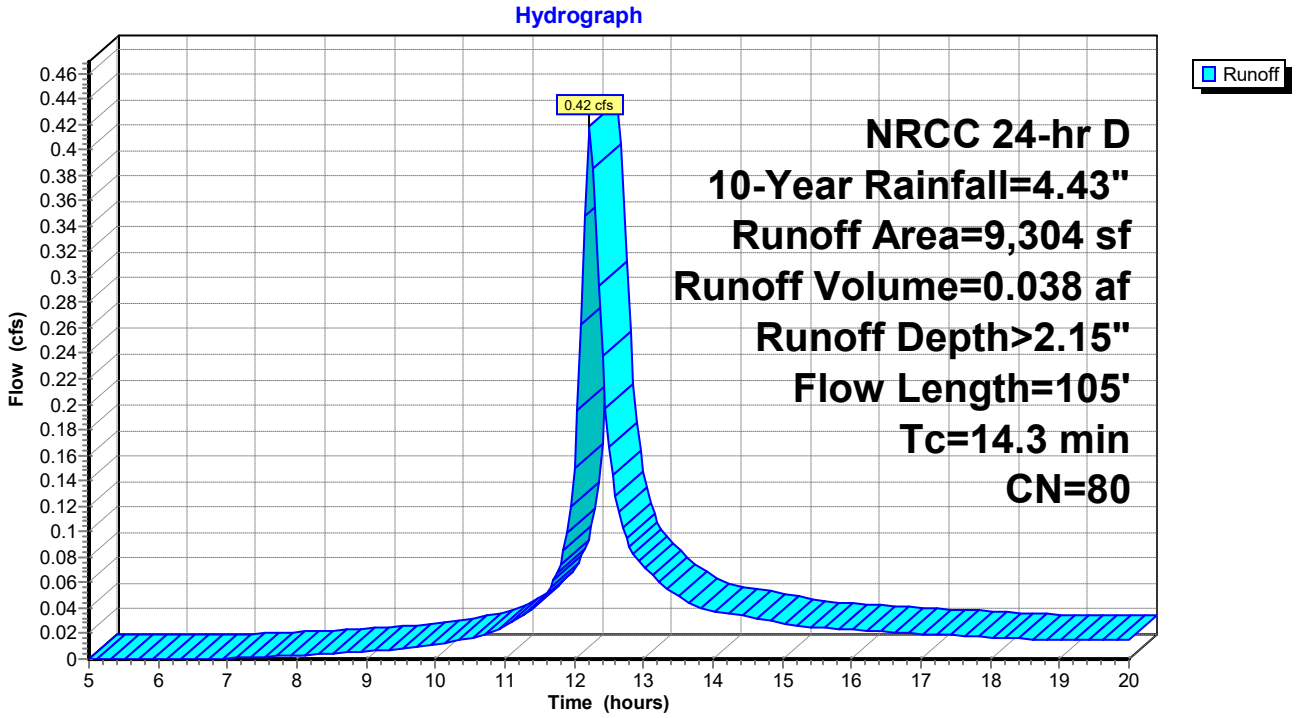
Runoff = 0.42 cfs @ 12.22 hrs, Volume= 0.038 af, Depth> 2.15"
Routed to Pond 3A : Pond 3A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.43"

Area (sf)	CN	Description
9,304	80	>75% Grass cover, Good, HSG D
9,304		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	35	0.0600	0.23		**Sheet Flow,** Range n= 0.130 P2= 3.00"
11.8	70	0.0050	0.10		**Sheet Flow,** Range n= 0.130 P2= 3.00"
14.3	105	Total			

Subcatchment 3S: Region 3



Summary for Subcatchment 4A S: Region 4A

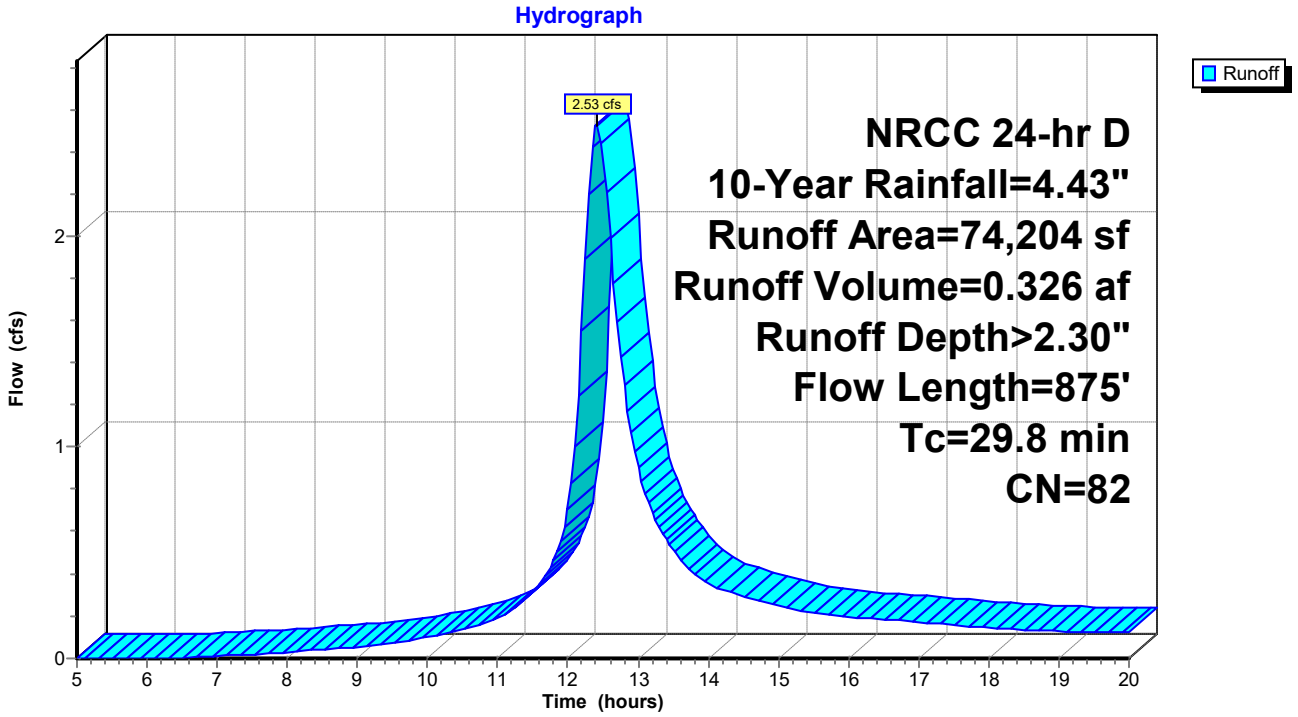
Runoff = 2.53 cfs @ 12.41 hrs, Volume= 0.326 af, Depth> 2.30"
Routed to Pond 3A : Pond 3A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.43"

Area (sf)	CN	Description
18,380	98	Paved parking, HSG D
40,627	77	Woods, Good, HSG D
14,587	78	Meadow, non-grazed, HSG D
610	80	>75% Grass cover, Good, HSG D
74,204	82	Weighted Average
55,824		75.23% Pervious Area
18,380		24.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	100	0.0800	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.00"
4.1	380	0.0970	1.56		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	20	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	180	0.0710	3.23	51.68	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.130 Sheet flow over Range
0.1	70	0.0250	9.02	11.06	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
0.1	55	0.0160	7.21	8.85	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
11.8	70	0.0050	0.10		**Sheet Flow,** Range n= 0.130 P2= 3.00"
29.8	875	Total			

Subcatchment 4A S: Region 4A



Summary for Subcatchment 5S: Region 5

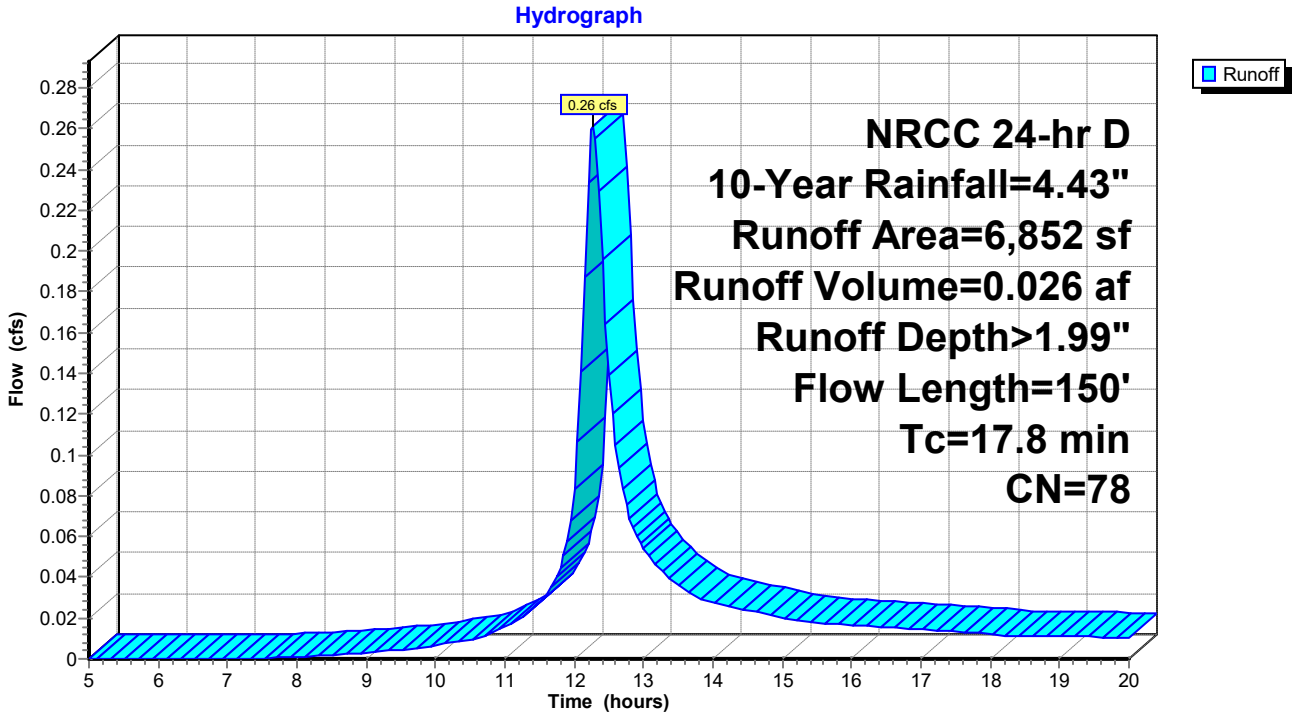
Runoff = 0.26 cfs @ 12.27 hrs, Volume= 0.026 af, Depth> 1.99"
Routed to Pond 3B : Pond 3B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.43"

Area (sf)	CN	Description
6,852	78	Meadow, non-grazed, HSG D
6,852		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	10	0.0100	0.09		**Sheet Flow,** Range n= 0.130 P2= 3.00"
0.2	40	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.7	100	0.0050	0.11		**Sheet Flow,** Range n= 0.130 P2= 3.00"
17.8	150	Total			

Subcatchment 5S: Region 5



Summary for Subcatchment 6S: Region 6

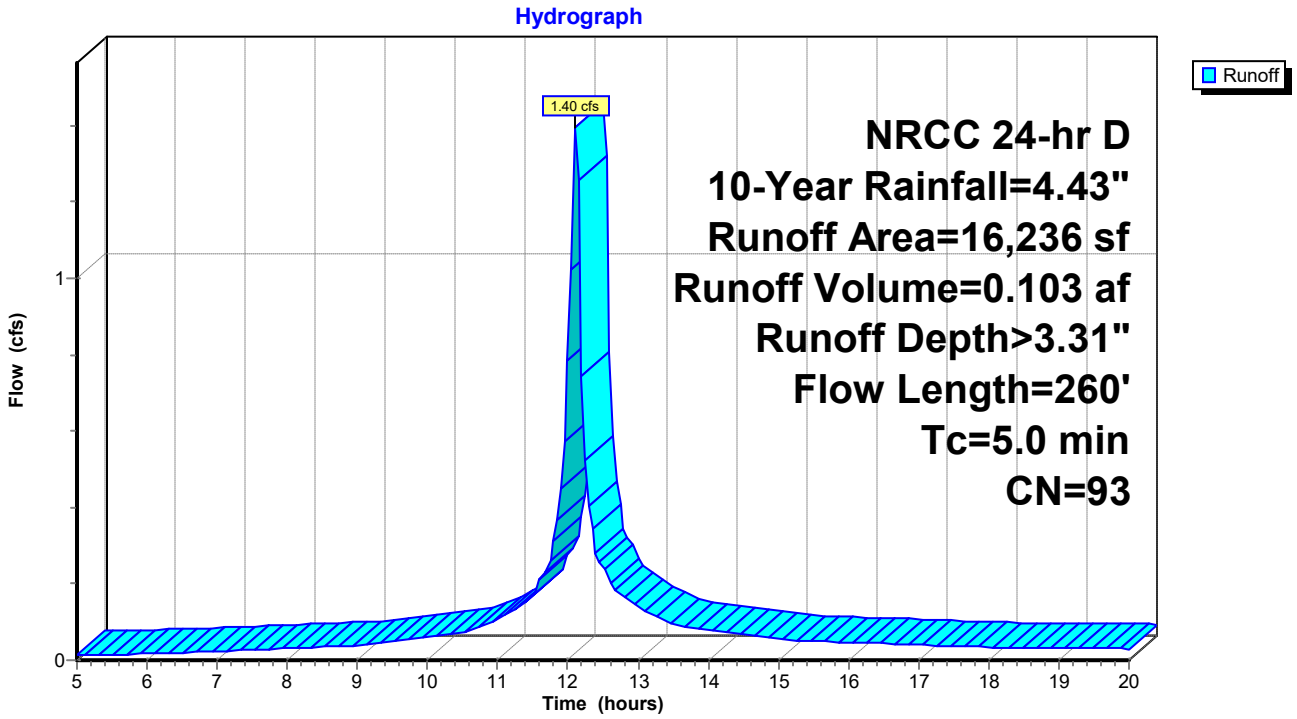
Runoff = 1.40 cfs @ 12.11 hrs, Volume= 0.103 af, Depth> 3.31"
Routed to Reach 6R : Reach 6 CB2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.43"

Area (sf)	CN	Description
12,022	98	Paved parking, HSG D
4,214	78	Meadow, non-grazed, HSG D
16,236	93	Weighted Average
4,214		25.95% Pervious Area
12,022		74.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	25	0.0100	0.11		**Sheet Flow,** Range n= 0.130 P2= 3.00"
0.7	125	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	110	0.0500	4.54		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.0	260	Total			

Subcatchment 6S: Region 6



Summary for Subcatchment 7S: Region 7

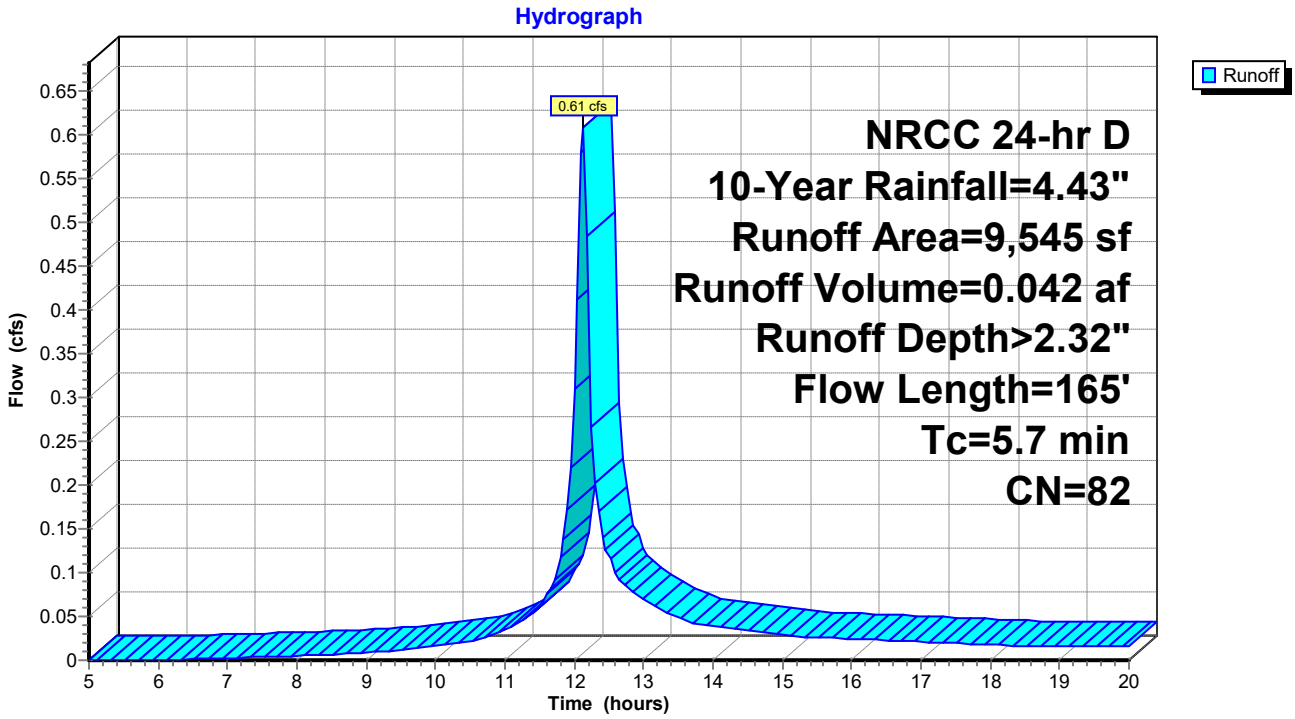
Runoff = 0.61 cfs @ 12.13 hrs, Volume= 0.042 af, Depth> 2.32"
Routed to Reach 7aR : Reach 7a

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.43"

Area (sf)	CN	Description
2,135	98	Paved parking, HSG D
7,410	78	Meadow, non-grazed, HSG D
9,545	82	Weighted Average
7,410		77.63% Pervious Area
2,135		22.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	20	0.0100	0.10		**Sheet Flow,** Range n= 0.130 P2= 3.00"
0.1	25	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.3	120	0.0160	0.89		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.7	165	Total			

Subcatchment 7S: Region 7



Summary for Subcatchment 8S: Region 8

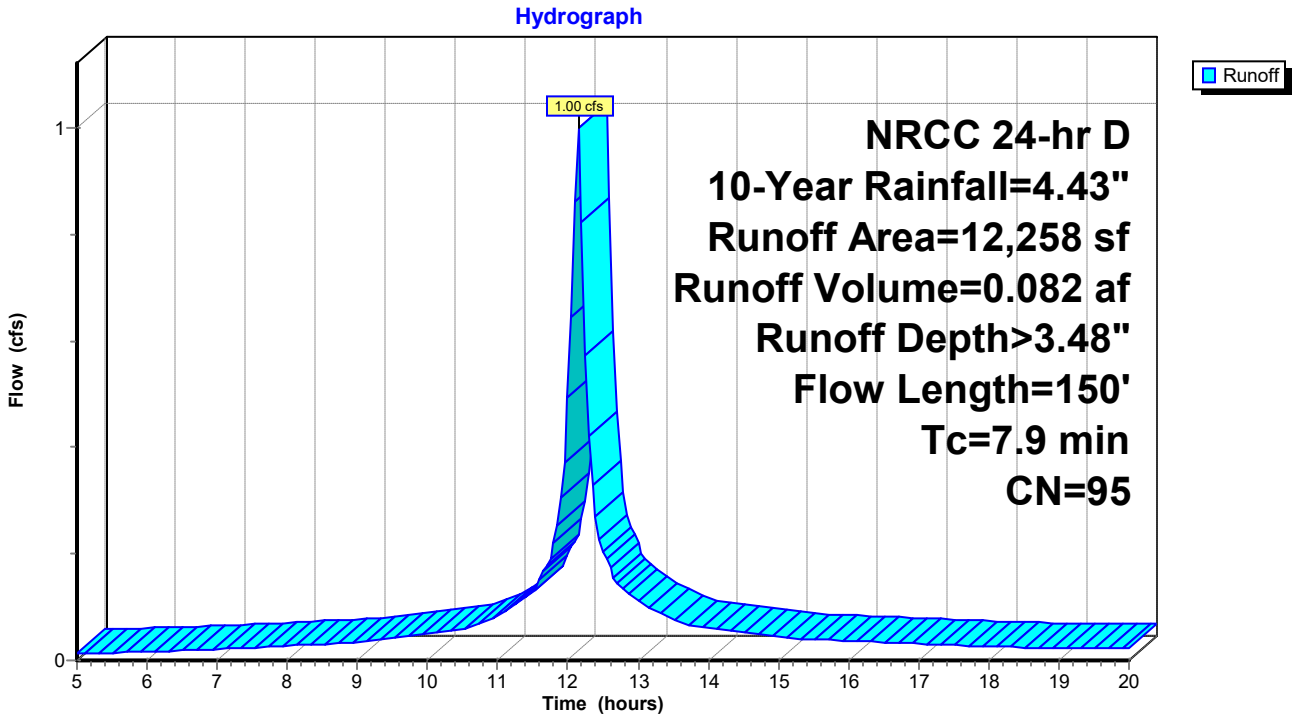
Runoff = 1.00 cfs @ 12.15 hrs, Volume= 0.082 af, Depth> 3.48"
Routed to Reach 8R : Reach 8 CB 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.43"

Area (sf)	CN	Description
10,327	98	Paved parking, HSG D
1,931	78	Meadow, non-grazed, HSG D
12,258	95	Weighted Average
1,931		15.75% Pervious Area
10,327		84.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	50	0.0100	0.12		**Sheet Flow,** Range n= 0.130 P2= 3.00"
1.1	100	0.0280	1.52		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
7.9	150	Total			

Subcatchment 8S: Region 8



Summary for Subcatchment 9S: Region 9

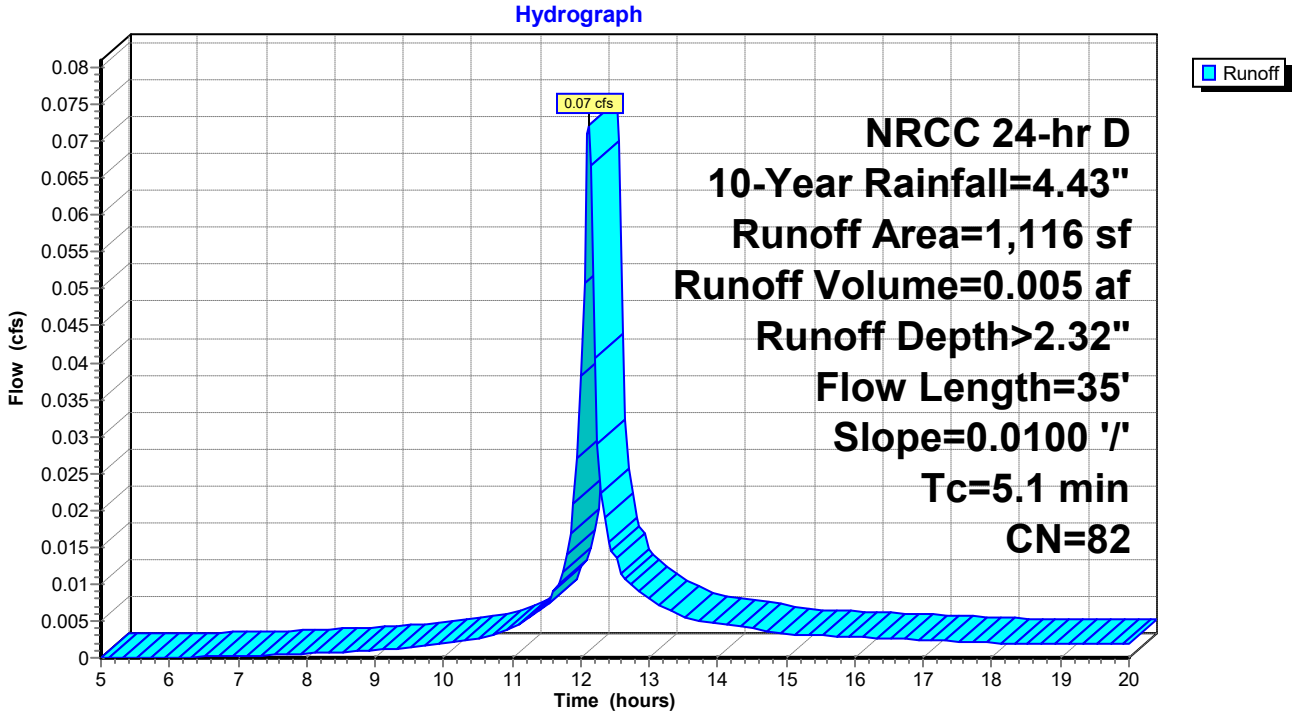
Runoff = 0.07 cfs @ 12.12 hrs, Volume= 0.005 af, Depth> 2.32"
Routed to Reach 10R : Reach 10

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.43"

Area (sf)	CN	Description
228	98	Paved parking, HSG D
888	78	Meadow, non-grazed, HSG D
1,116	82	Weighted Average
888		79.57% Pervious Area
228		20.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	35	0.0100	0.11		**Sheet Flow,** Range n= 0.130 P2= 3.00"

Subcatchment 9S: Region 9



Summary for Subcatchment 10S: Region 10

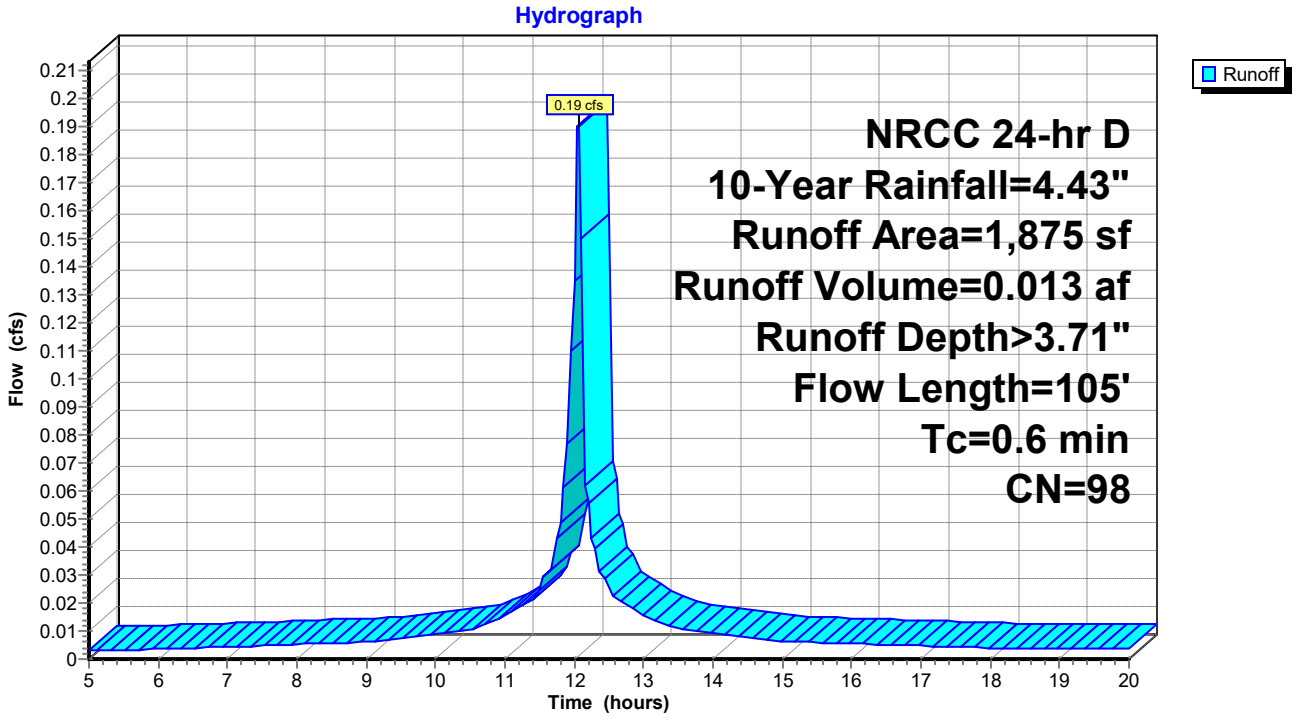
Runoff = 0.19 cfs @ 12.05 hrs, Volume= 0.013 af, Depth> 3.71"
Routed to Reach 9R : Reach 9 CB 5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.43"

Area (sf)	CN	Description
1,875	98	Paved parking, HSG D
1,875		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.97		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
0.3	85	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	105	Total			

Subcatchment 10S: Region 10



Summary for Subcatchment 11S: Region 11

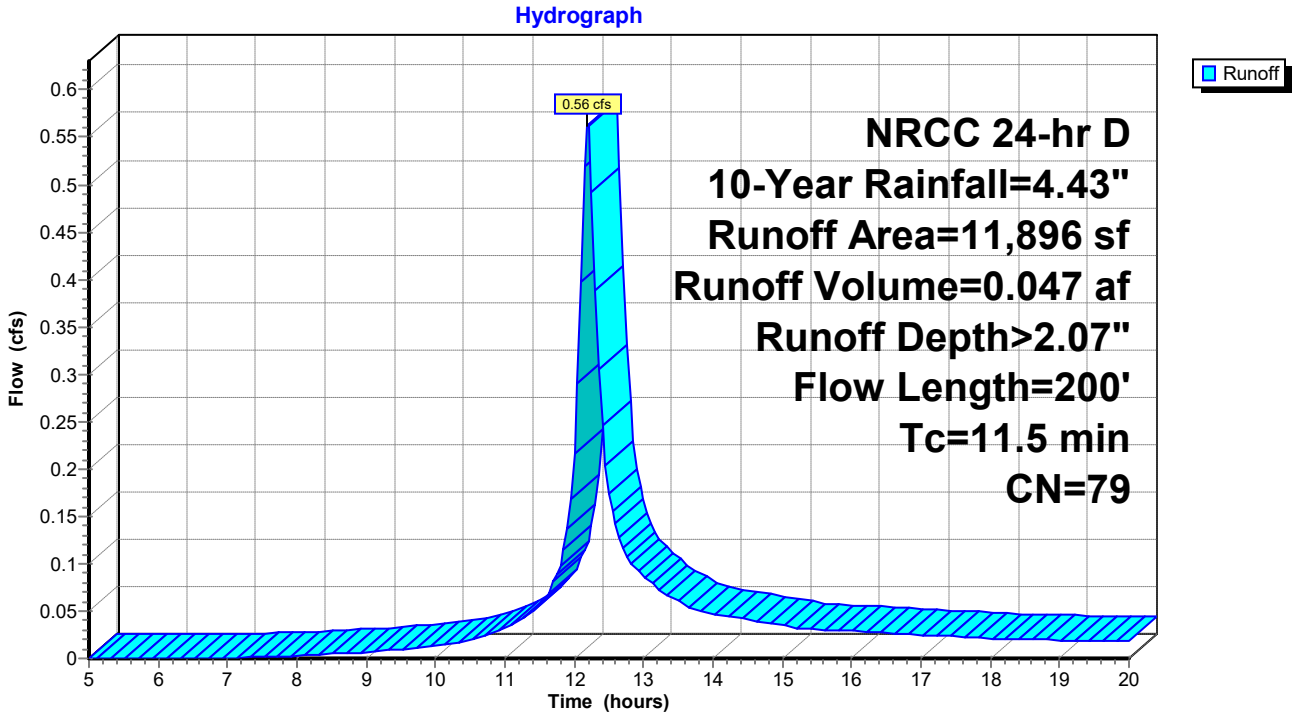
Runoff = 0.56 cfs @ 12.19 hrs, Volume= 0.047 af, Depth> 2.07"
Routed to Reach 11R : Reach 11

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.43"

Area (sf)	CN	Description
1,085	98	Paved parking, HSG D
10,811	77	Woods, Good, HSG D
11,896	79	Weighted Average
10,811		90.88% Pervious Area
1,085		9.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.1200	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.00"
0.5	60	0.1330	1.82		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	15	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	25	0.0670	3.25	58.47	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=2.00' Z= 3.0 '/' Top.W=15.00' n= 0.130 Sheet flow over Range
11.5	200	Total			

Subcatchment 11S: Region 11



Summary for Subcatchment 24S: Region 24

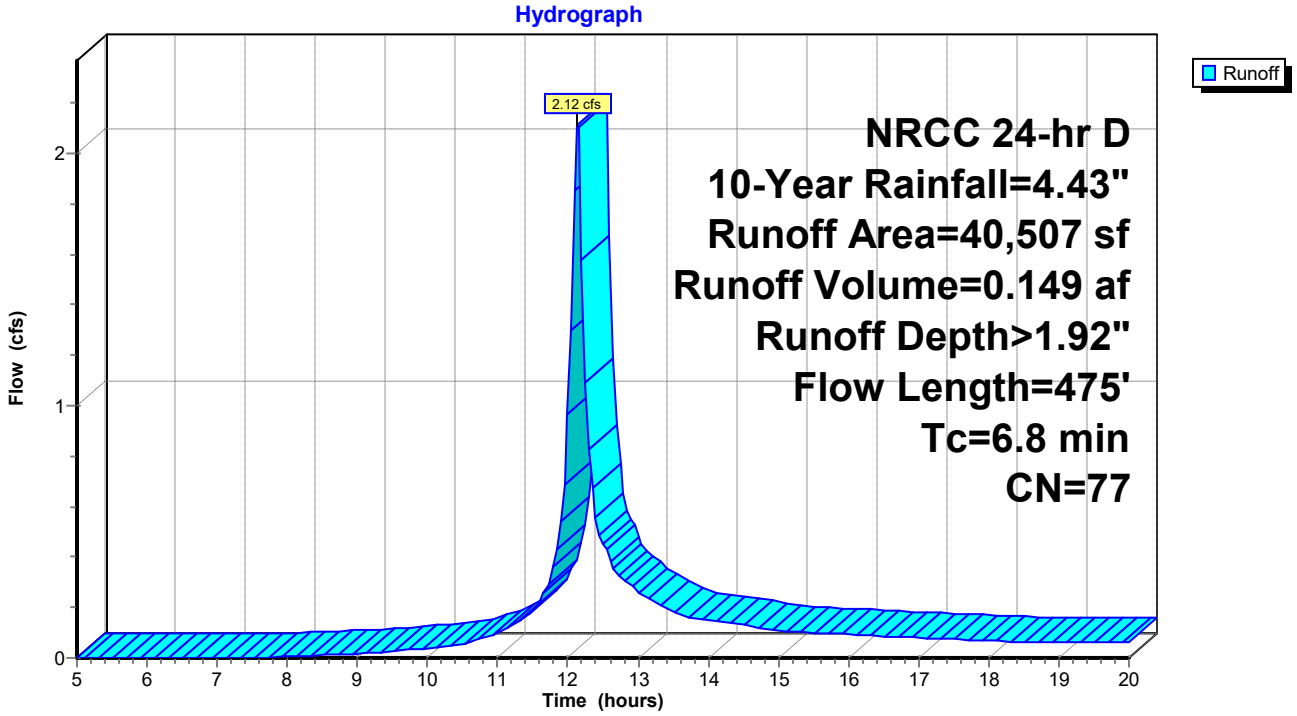
Runoff = 2.12 cfs @ 12.14 hrs, Volume= 0.149 af, Depth> 1.92"
Routed to Reach DP2 : Design Point 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.43"

Area (sf)	CN	Description
40,507	77	Woods, Good, HSG D
40,507		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	25	0.0400	0.18		**Sheet Flow,** Range n= 0.130 P2= 3.00"
0.2	40	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	35	0.1700	2.06		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.0	375	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.8	475	Total			

Subcatchment 24S: Region 24



Summary for Reach 1R: Reach 1

Inflow Area = 3.289 ac, 32.14% Impervious, Inflow Depth > 1.77" for 10-Year event
Inflow = 4.00 cfs @ 12.52 hrs, Volume= 0.484 af
Outflow = 3.84 cfs @ 12.56 hrs, Volume= 0.483 af, Atten= 4%, Lag= 2.1 min
Routed to Reach DP2 : Design Point 2

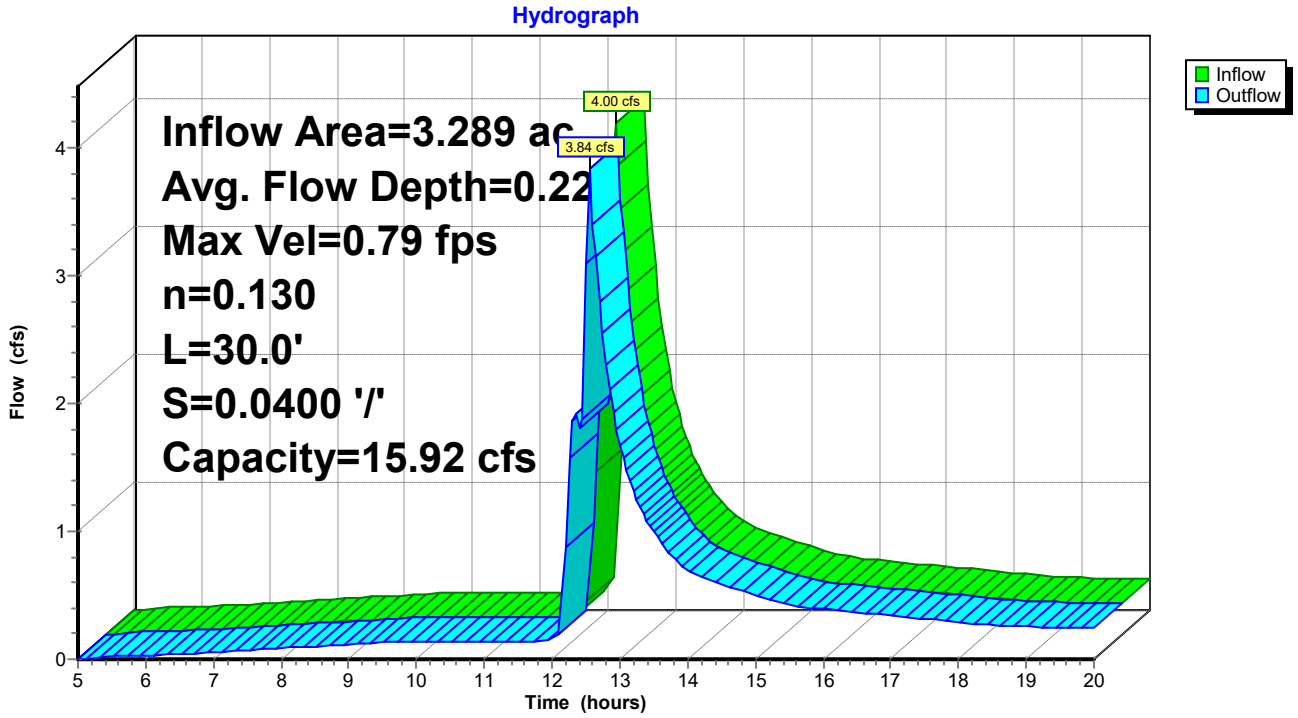
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.79 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 0.28 fps, Avg. Travel Time= 1.8 min

Peak Storage= 149 cf @ 12.55 hrs
Average Depth at Peak Storage= 0.22' , Surface Width= 24.48'
Bank-Full Depth= 0.50' Flow Area= 12.5 sf, Capacity= 15.92 cfs

20.00' x 0.50' deep channel, n= 0.130 Sheet flow over Range
Side Slope Z-value= 10.0 '/' Top Width= 30.00'
Length= 30.0' Slope= 0.0400 '/'
Inlet Invert= 0.00', Outlet Invert= -1.20'

‡

Reach 1R: Reach 1



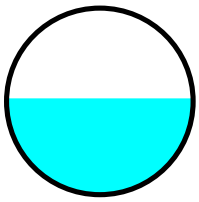
Summary for Reach 6R: Reach 6 CB2

Inflow Area = 1.215 ac, 52.28% Impervious, Inflow Depth > 2.89" for 10-Year event
Inflow = 3.50 cfs @ 12.13 hrs, Volume= 0.292 af
Outflow = 3.47 cfs @ 12.14 hrs, Volume= 0.292 af, Atten= 1%, Lag= 0.6 min
Routed to Pond 3B : Pond 3B

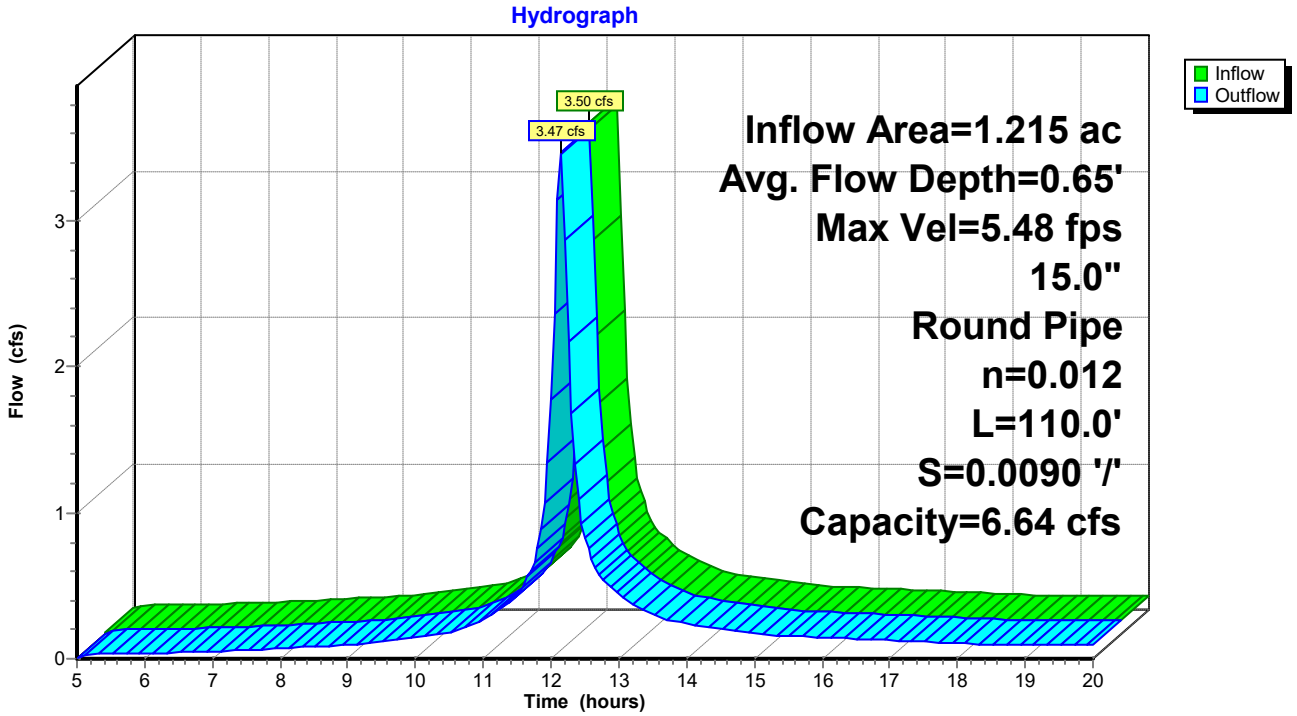
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.48 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.25 fps, Avg. Travel Time= 0.8 min

Peak Storage= 70 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.65' , Surface Width= 1.25'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 6.64 cfs

15.0" Round Pipe
n= 0.012
Length= 110.0' Slope= 0.0090 '/'
Inlet Invert= 0.00', Outlet Invert= -0.99'



Reach 6R: Reach 6 CB2



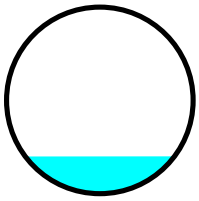
Summary for Reach 7aR: Reach 7a

Inflow Area = 0.219 ac, 22.37% Impervious, Inflow Depth > 2.32" for 10-Year event
Inflow = 0.61 cfs @ 12.13 hrs, Volume= 0.042 af
Outflow = 0.61 cfs @ 12.13 hrs, Volume= 0.042 af, Atten= 0%, Lag= 0.3 min
Routed to Reach 7R : Reach 7 CB3

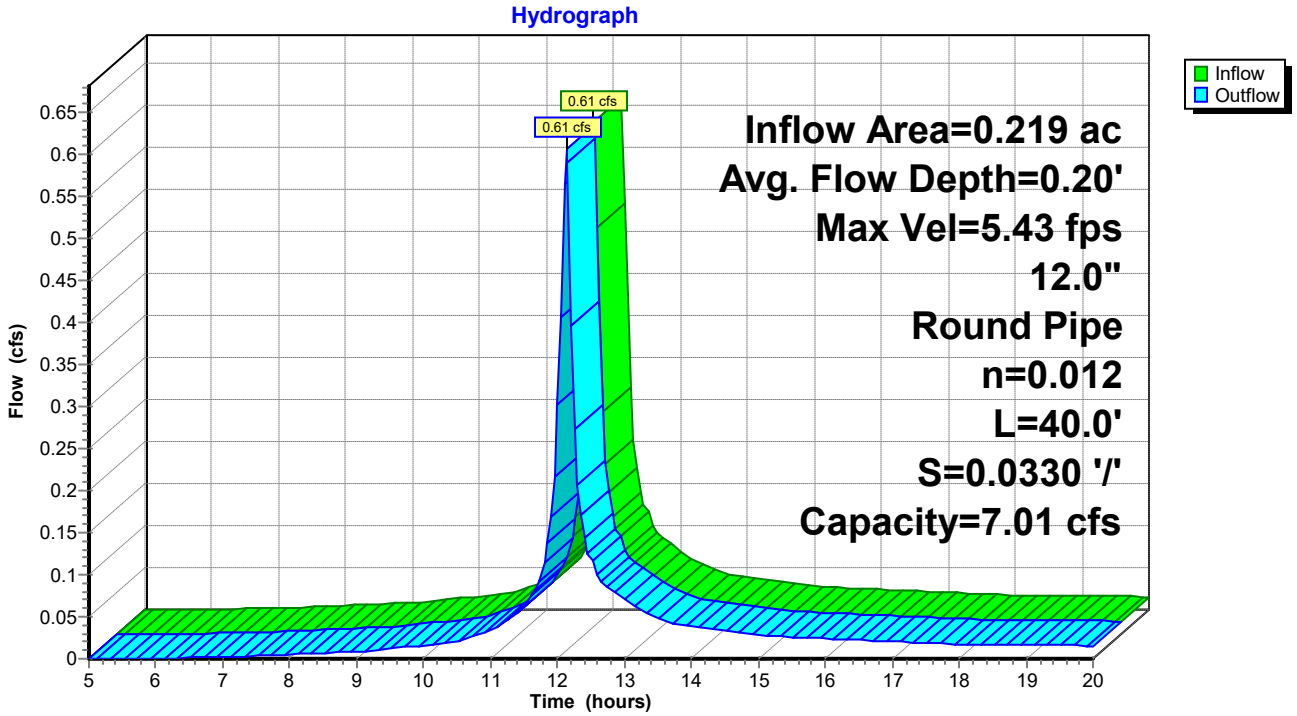
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.43 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.03 fps, Avg. Travel Time= 0.3 min

Peak Storage= 4 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.20' , Surface Width= 0.80'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 7.01 cfs

12.0" Round Pipe
n= 0.012
Length= 40.0' Slope= 0.0330 '/'
Inlet Invert= 0.00', Outlet Invert= -1.32'



Reach 7aR: Reach 7a



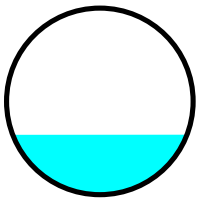
Summary for Reach 7R: Reach 7 CB3

Inflow Area = 0.842 ac, 42.65% Impervious, Inflow Depth > 2.70" for 10-Year event
Inflow = 2.21 cfs @ 12.15 hrs, Volume= 0.189 af
Outflow = 2.19 cfs @ 12.15 hrs, Volume= 0.189 af, Atten= 1%, Lag= 0.4 min
Routed to Reach 6R : Reach 6 CB2

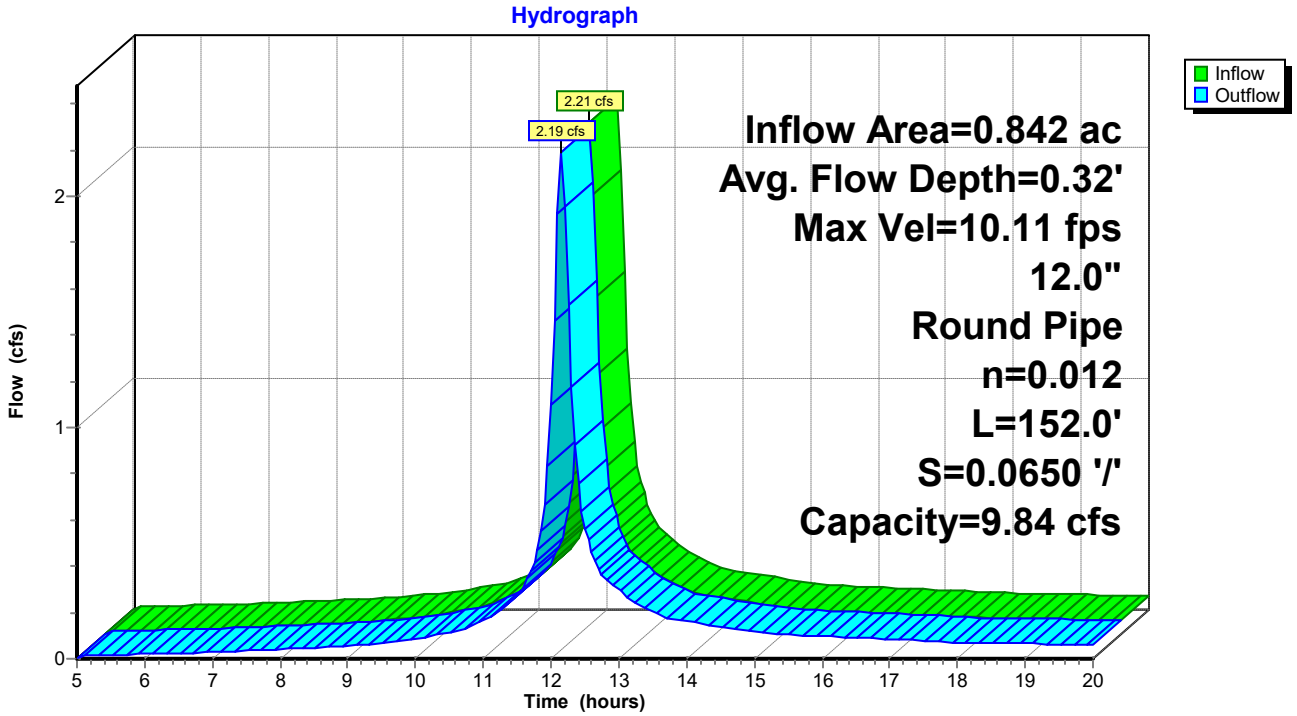
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.11 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 4.04 fps, Avg. Travel Time= 0.6 min

Peak Storage= 33 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.32' , Surface Width= 0.93'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 9.84 cfs

12.0" Round Pipe
n= 0.012
Length= 152.0' Slope= 0.0650 '/'
Inlet Invert= 0.00', Outlet Invert= -9.88'



Reach 7R: Reach 7 CB3



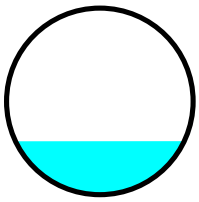
Summary for Reach 8R: Reach 8 CB 4

Inflow Area = 0.623 ac, 49.79% Impervious, Inflow Depth > 2.83" for 10-Year event
Inflow = 1.63 cfs @ 12.15 hrs, Volume= 0.147 af
Outflow = 1.62 cfs @ 12.16 hrs, Volume= 0.147 af, Atten= 1%, Lag= 0.3 min
Routed to Reach 7R : Reach 7 CB3

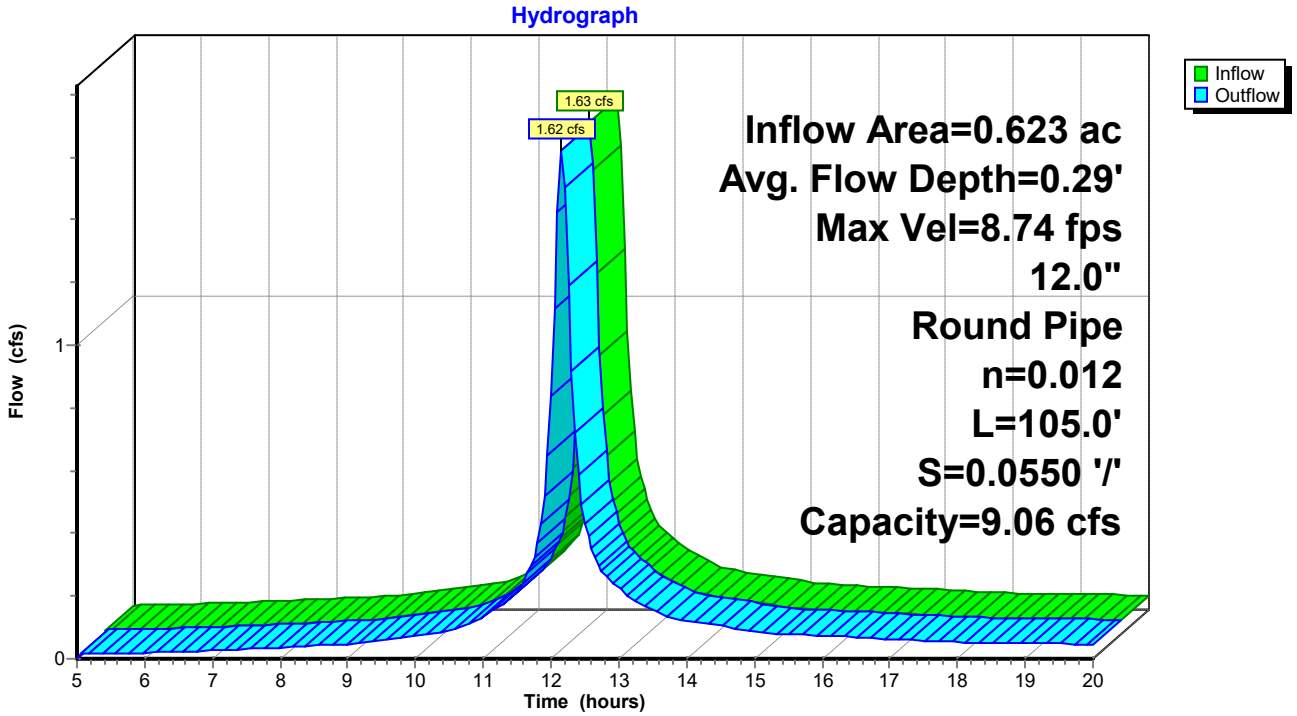
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.74 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 3.57 fps, Avg. Travel Time= 0.5 min

Peak Storage= 20 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.29' , Surface Width= 0.91'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 9.06 cfs

12.0" Round Pipe
n= 0.012
Length= 105.0' Slope= 0.0550 '/'
Inlet Invert= 0.00', Outlet Invert= -5.78'



Reach 8R: Reach 8 CB 4



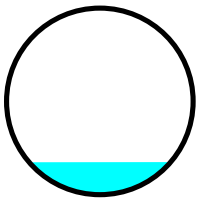
Summary for Reach 9R: Reach 9 CB 5

Inflow Area = 0.342 ac, 21.41% Impervious, Inflow Depth > 2.30" for 10-Year event
Inflow = 0.66 cfs @ 12.18 hrs, Volume= 0.065 af
Outflow = 0.66 cfs @ 12.19 hrs, Volume= 0.065 af, Atten= 0%, Lag= 0.2 min
Routed to Reach 8R : Reach 8 CB 4

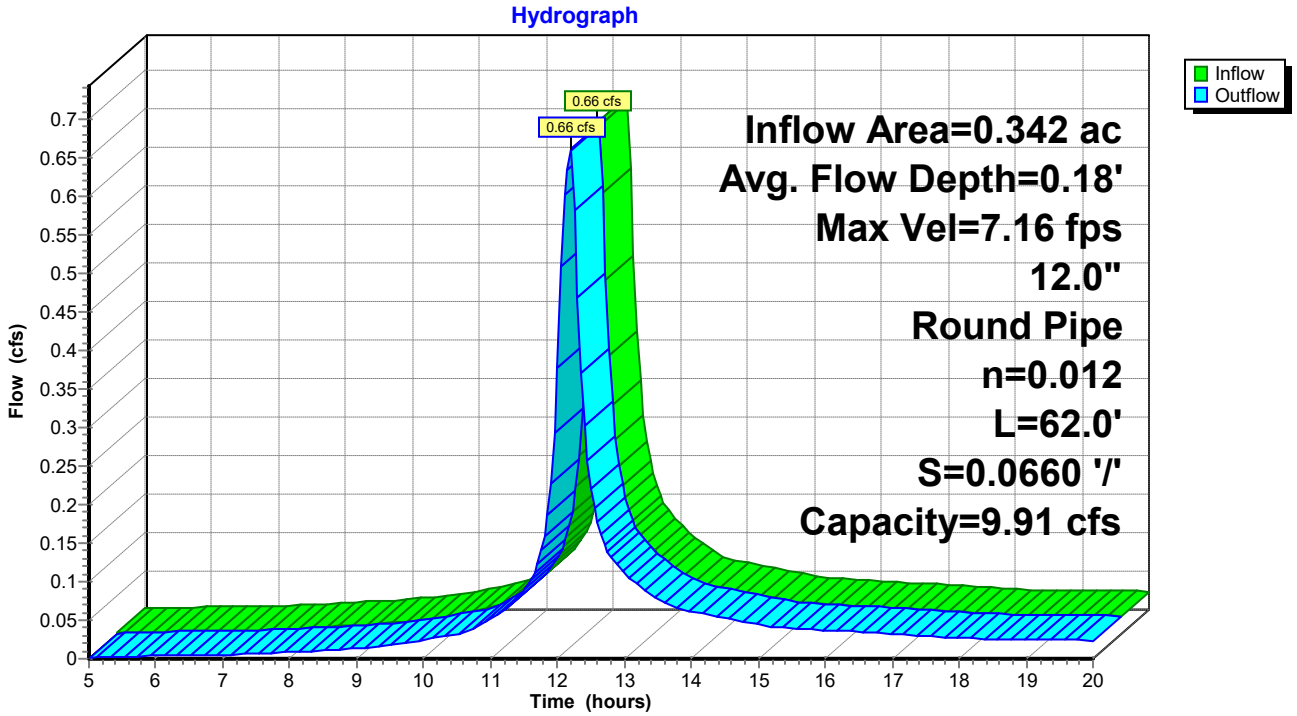
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.16 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.89 fps, Avg. Travel Time= 0.4 min

Peak Storage= 6 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.18' , Surface Width= 0.76'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 9.91 cfs

12.0" Round Pipe
n= 0.012
Length= 62.0' Slope= 0.0660 '/'
Inlet Invert= 0.00', Outlet Invert= -4.09'



Reach 9R: Reach 9 CB 5



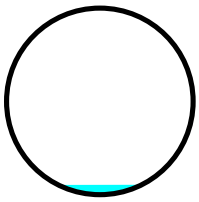
Summary for Reach 10R: Reach 10

Inflow Area = 0.026 ac, 20.43% Impervious, Inflow Depth > 2.32" for 10-Year event
Inflow = 0.07 cfs @ 12.12 hrs, Volume= 0.005 af
Outflow = 0.07 cfs @ 12.12 hrs, Volume= 0.005 af, Atten= 1%, Lag= 0.3 min
Routed to Reach 9R : Reach 9 CB 5

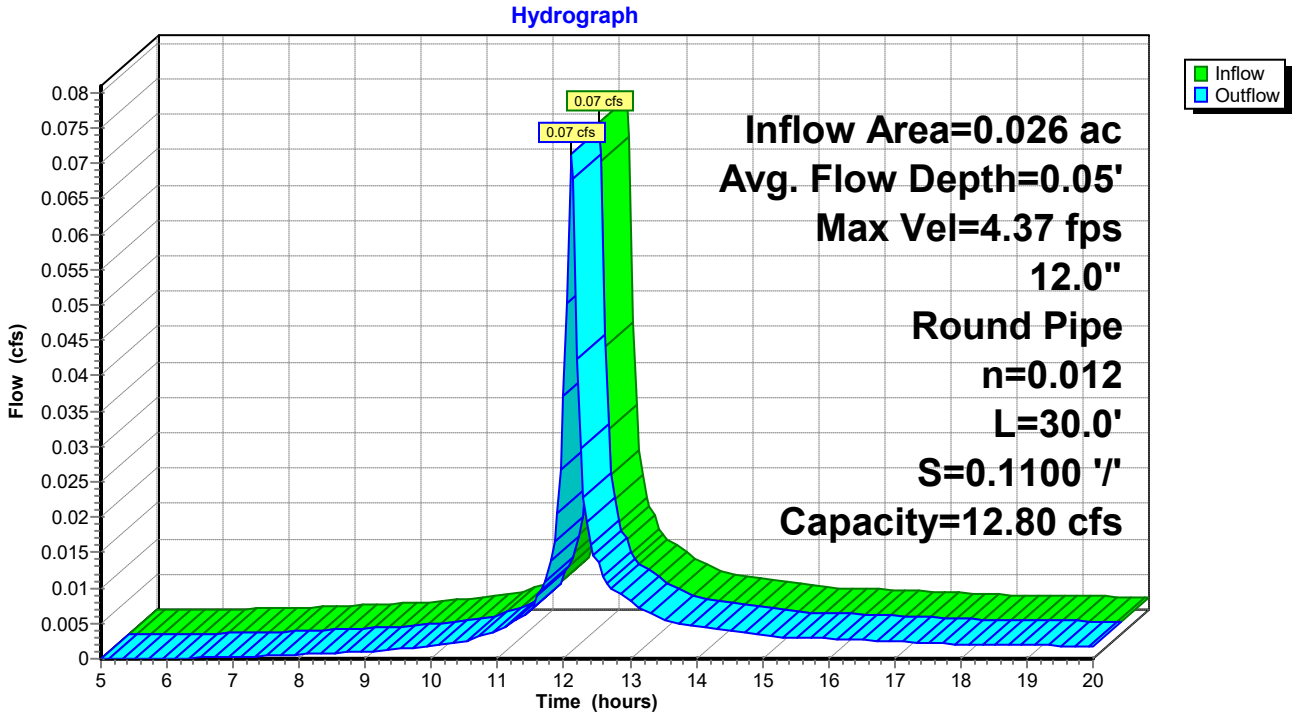
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.37 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.78 fps, Avg. Travel Time= 0.3 min

Peak Storage= 0 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.05' , Surface Width= 0.45'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 12.80 cfs

12.0" Round Pipe
n= 0.012
Length= 30.0' Slope= 0.1100 '/'
Inlet Invert= 0.00', Outlet Invert= -3.30'



Reach 10R: Reach 10



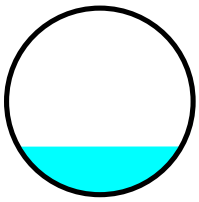
Summary for Reach 11R: Reach 11

Inflow Area = 0.273 ac, 9.12% Impervious, Inflow Depth > 2.07" for 10-Year event
Inflow = 0.56 cfs @ 12.19 hrs, Volume= 0.047 af
Outflow = 0.56 cfs @ 12.20 hrs, Volume= 0.047 af, Atten= 0%, Lag= 0.2 min
Routed to Reach 9R : Reach 9 CB 5

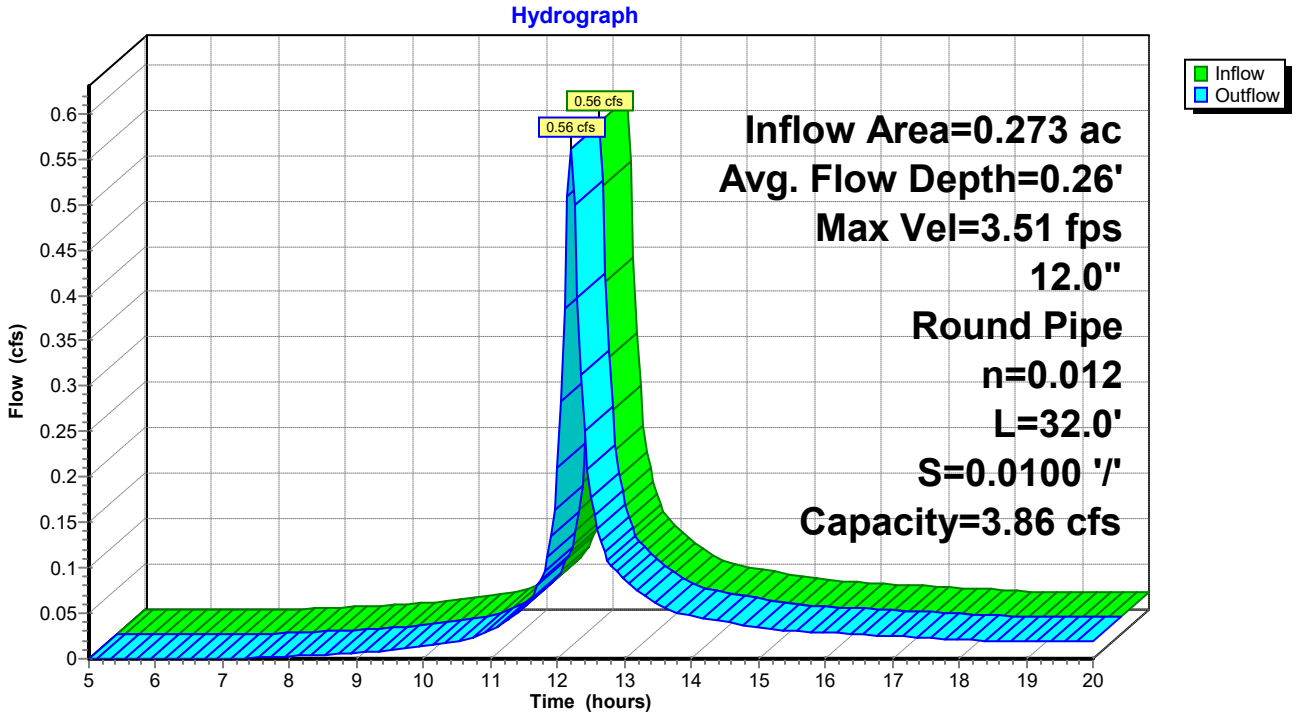
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.51 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.41 fps, Avg. Travel Time= 0.4 min

Peak Storage= 5 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.26' , Surface Width= 0.88'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe
n= 0.012
Length= 32.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.32'



Reach 11R: Reach 11

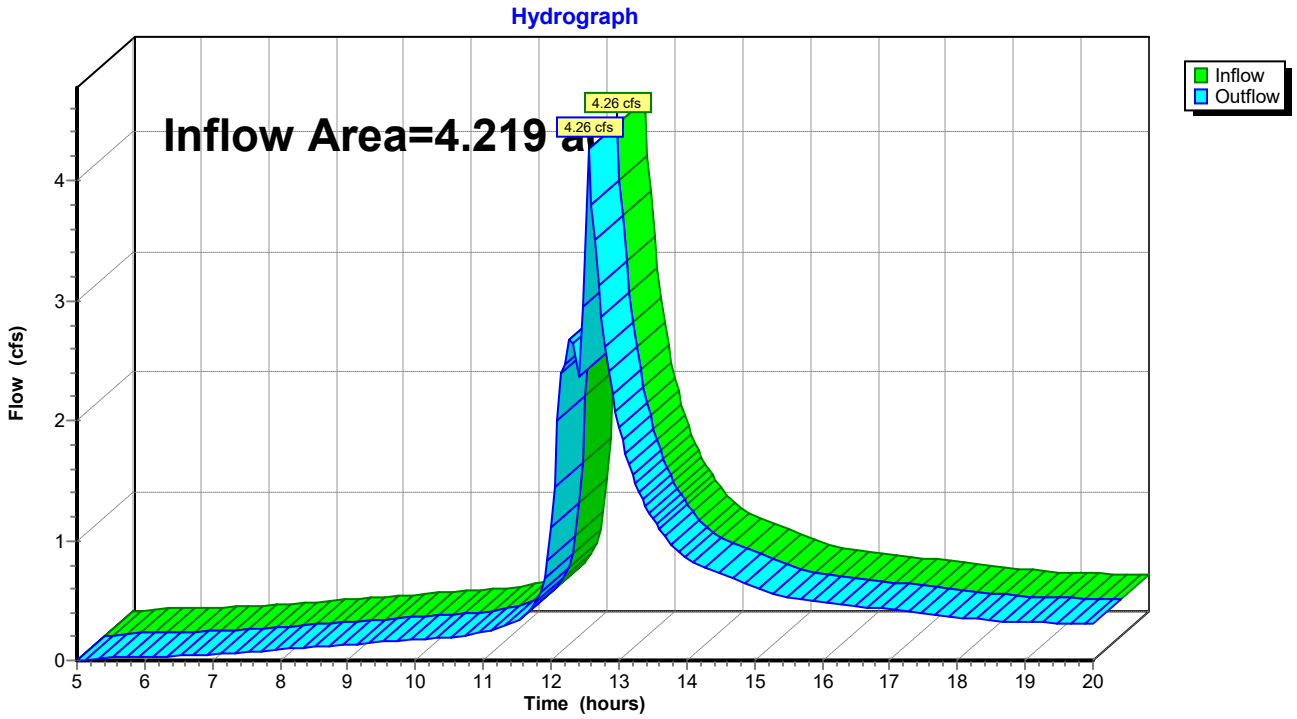


Summary for Reach DP2: Design Point 2

Inflow Area = 4.219 ac, 25.06% Impervious, Inflow Depth > 1.80" for 10-Year event
Inflow = 4.26 cfs @ 12.56 hrs, Volume= 0.632 af
Outflow = 4.26 cfs @ 12.56 hrs, Volume= 0.632 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP2: Design Point 2



Summary for Pond 3A: Pond 3A

Inflow Area = 1.917 ac, 22.01% Impervious, Inflow Depth > 2.28" for 10-Year event
Inflow = 2.76 cfs @ 12.39 hrs, Volume= 0.364 af
Outflow = 2.71 cfs @ 12.52 hrs, Volume= 0.256 af, Atten= 2%, Lag= 7.8 min
Primary = 2.71 cfs @ 12.52 hrs, Volume= 0.256 af
Routed to Reach 1R : Reach 1

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 394.47' @ 12.50 hrs Surf.Area= 4,035 sf Storage= 4,973 cf

Plug-Flow detention time= 114.6 min calculated for 0.255 af (70% of inflow)
Center-of-Mass det. time= 41.8 min (850.1 - 808.3)

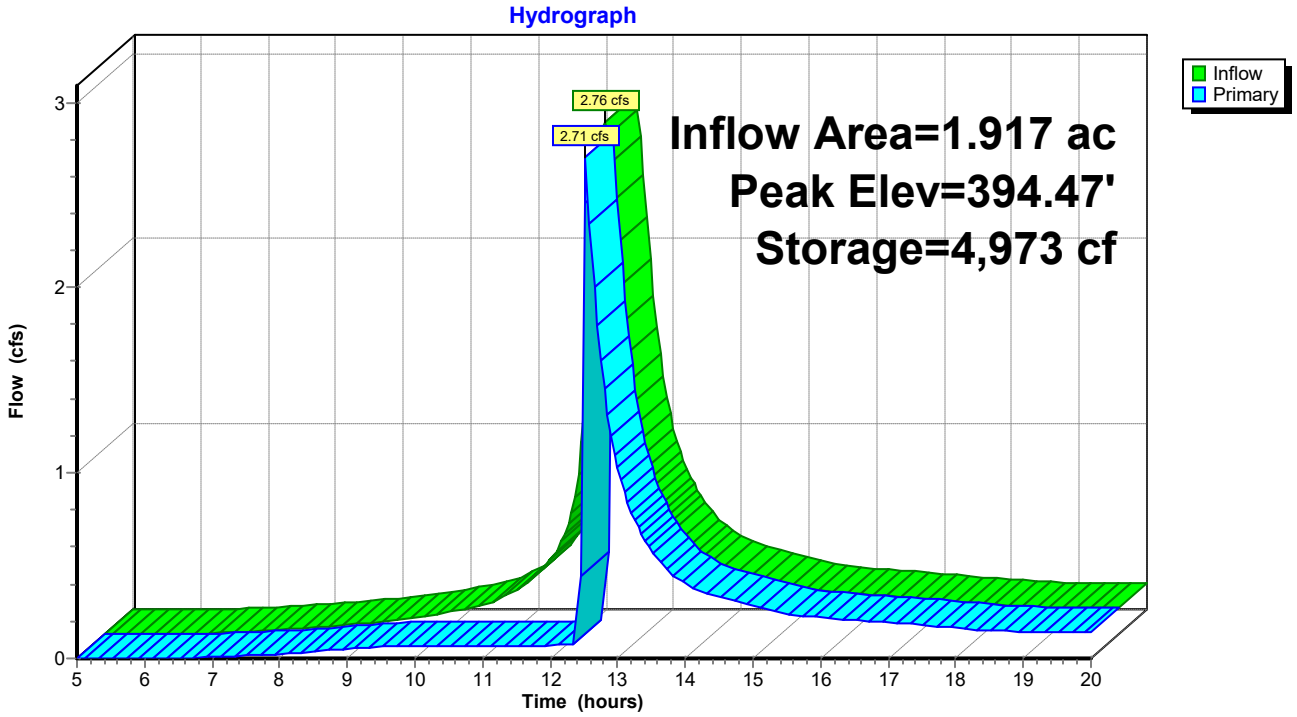
Volume	Invert	Avail.Storage	Storage Description
#1	393.00'	12,120 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
393.00	2,730	0	0
394.00	3,616	3,173	3,173
395.00	4,506	4,061	7,234
396.00	5,265	4,886	12,120

Device	Routing	Invert	Outlet Devices
#1	Primary	389.75'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 389.75' / 389.35' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	390.00'	**1.2" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	394.40'	**50.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=2.45 cfs @ 12.52 hrs HW=394.47' (Free Discharge)
└─**1=Culvert** (Passes 0.08 cfs of 7.77 cfs potential flow)
  └─**2=Orifice/Grate** (Orifice Controls 0.08 cfs @ 10.12 fps)
└─**3=Broad-Crested Rectangular Weir** (Weir Controls 2.37 cfs @ 0.67 fps)

Pond 3A: Pond 3A



Summary for Pond 3B: Pond 3B

Inflow Area = 1.372 ac, 46.29% Impervious, Inflow Depth > 2.78" for 10-Year event
Inflow = 3.65 cfs @ 12.15 hrs, Volume= 0.318 af
Outflow = 1.87 cfs @ 12.32 hrs, Volume= 0.228 af, Atten= 49%, Lag= 10.2 min
Primary = 1.87 cfs @ 12.32 hrs, Volume= 0.228 af
Routed to Reach 1R : Reach 1

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 394.72' @ 12.32 hrs Surf.Area= 3,583 sf Storage= 4,991 cf

Plug-Flow detention time= 118.3 min calculated for 0.228 af (72% of inflow)
Center-of-Mass det. time= 42.6 min (813.4 - 770.8)

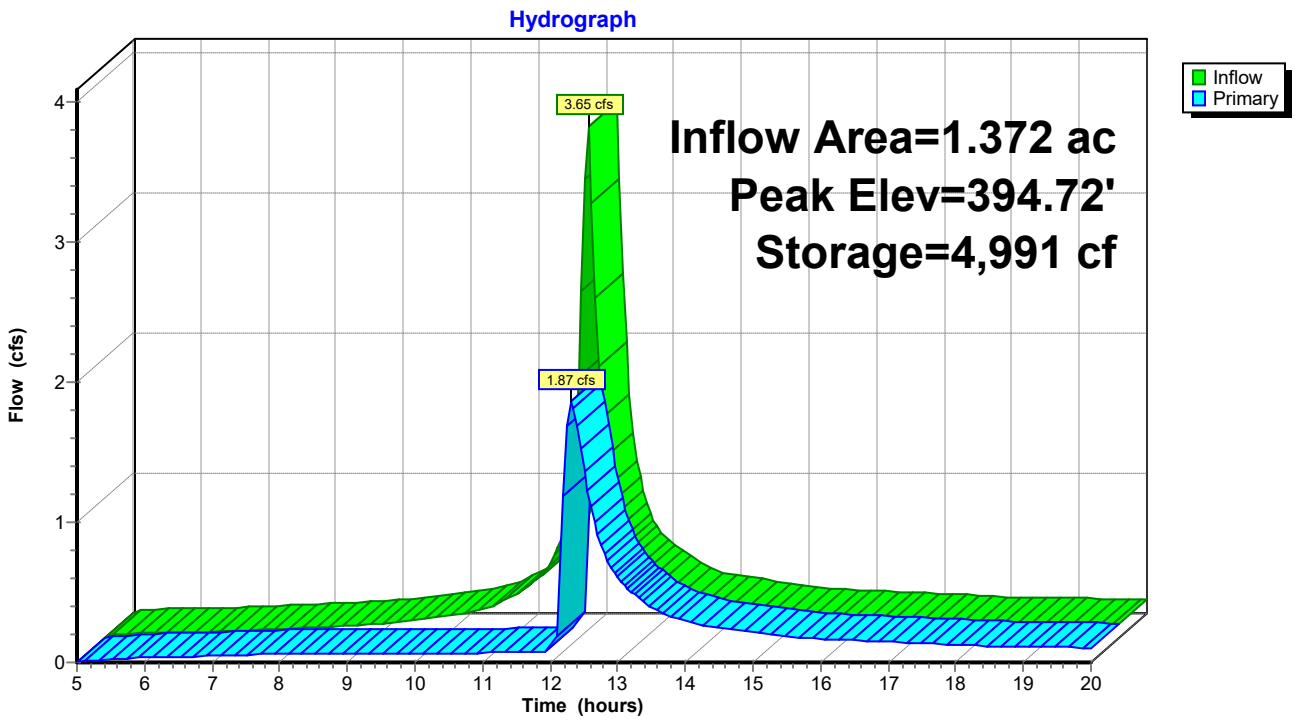
Volume	Invert	Avail.Storage	Storage Description
#1	393.00'	10,071 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
393.00	2,175	0	0
394.00	3,021	2,598	2,598
395.00	3,796	3,409	6,007
396.00	4,333	4,065	10,071

Device	Routing	Invert	Outlet Devices
#1	Primary	389.35'	**18.0" Round Culvert** L= 45.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 389.35' / 388.90' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	390.00'	**1.2" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	394.40'	**36.0" W x 7.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	395.35'	**25.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=1.84 cfs @ 12.32 hrs HW=394.72' (Free Discharge)
- **1=Culvert** (Passes 1.84 cfs of 18.29 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.08 cfs @ 10.41 fps)
  - **3=Orifice/Grate** (Orifice Controls 1.76 cfs @ 1.82 fps)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3B: Pond 3B



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 3S: Region 3 Runoff Area=9,304 sf 0.00% Impervious Runoff Depth>3.04"
Flow Length=105' Tc=14.3 min CN=80 Runoff=0.59 cfs 0.054 af

Subcatchment 4A S: Region 4A Runoff Area=74,204 sf 24.77% Impervious Runoff Depth>3.21"
Flow Length=875' Tc=29.8 min CN=82 Runoff=3.49 cfs 0.456 af

Subcatchment 5S: Region 5 Runoff Area=6,852 sf 0.00% Impervious Runoff Depth>2.85"
Flow Length=150' Tc=17.8 min CN=78 Runoff=0.37 cfs 0.037 af

Subcatchment 6S: Region 6 Runoff Area=16,236 sf 74.05% Impervious Runoff Depth>4.30"
Flow Length=260' Tc=5.0 min CN=93 Runoff=1.79 cfs 0.133 af

Subcatchment 7S: Region 7 Runoff Area=9,545 sf 22.37% Impervious Runoff Depth>3.25"
Flow Length=165' Tc=5.7 min CN=82 Runoff=0.84 cfs 0.059 af

Subcatchment 8S: Region 8 Runoff Area=12,258 sf 84.25% Impervious Runoff Depth>4.47"
Flow Length=150' Tc=7.9 min CN=95 Runoff=1.27 cfs 0.105 af

Subcatchment 9S: Region 9 Runoff Area=1,116 sf 20.43% Impervious Runoff Depth>3.25"
Flow Length=35' Slope=0.0100 '/' Tc=5.1 min CN=82 Runoff=0.10 cfs 0.007 af

Subcatchment 10S: Region 10 Runoff Area=1,875 sf 100.00% Impervious Runoff Depth>4.68"
Flow Length=105' Tc=0.6 min CN=98 Runoff=0.24 cfs 0.017 af

Subcatchment 11S: Region 11 Runoff Area=11,896 sf 9.12% Impervious Runoff Depth>2.95"
Flow Length=200' Tc=11.5 min CN=79 Runoff=0.79 cfs 0.067 af

Subcatchment 24S: Region 24 Runoff Area=40,507 sf 0.00% Impervious Runoff Depth>2.78"
Flow Length=475' Tc=6.8 min CN=77 Runoff=3.03 cfs 0.215 af

Reach 1R: Reach 1 Avg. Flow Depth=0.31' Max Vel=0.96 fps Inflow=6.96 cfs 0.736 af
n=0.130 L=30.0' S=0.0400 '/' Capacity=15.92 cfs Outflow=6.79 cfs 0.735 af

Reach 6R: Reach 6 CB2 Avg. Flow Depth=0.77' Max Vel=5.84 fps Inflow=4.60 cfs 0.388 af
15.0" Round Pipe n=0.012 L=110.0' S=0.0090 '/' Capacity=6.64 cfs Outflow=4.57 cfs 0.388 af

Reach 7aR: Reach 7a Avg. Flow Depth=0.23' Max Vel=5.95 fps Inflow=0.84 cfs 0.059 af
12.0" Round Pipe n=0.012 L=40.0' S=0.0330 '/' Capacity=7.01 cfs Outflow=0.83 cfs 0.059 af

Reach 7R: Reach 7 CB3 Avg. Flow Depth=0.38' Max Vel=10.95 fps Inflow=2.95 cfs 0.255 af
12.0" Round Pipe n=0.012 L=152.0' S=0.0650 '/' Capacity=9.84 cfs Outflow=2.93 cfs 0.255 af

Reach 8R: Reach 8 CB 4 Avg. Flow Depth=0.33' Max Vel=9.45 fps Inflow=2.16 cfs 0.196 af
12.0" Round Pipe n=0.012 L=105.0' S=0.0550 '/' Capacity=9.06 cfs Outflow=2.14 cfs 0.196 af

Reach 9R: Reach 9 CB 5 Avg. Flow Depth=0.21' Max Vel=7.90 fps Inflow=0.93 cfs 0.091 af
12.0" Round Pipe n=0.012 L=62.0' S=0.0660 '/' Capacity=9.91 cfs Outflow=0.92 cfs 0.091 af

Reach 10R: Reach 10 Avg. Flow Depth=0.06' Max Vel=4.82 fps Inflow=0.10 cfs 0.007 af
12.0" Round Pipe n=0.012 L=30.0' S=0.1100 '/' Capacity=12.80 cfs Outflow=0.10 cfs 0.007 af

Reach 11R: Reach 11 Avg. Flow Depth=0.31' Max Vel=3.87 fps Inflow=0.79 cfs 0.067 af
12.0" Round Pipe n=0.012 L=32.0' S=0.0100 '/' Capacity=3.86 cfs Outflow=0.79 cfs 0.067 af

Reach DP2: Design Point 2 Inflow=7.72 cfs 0.950 af
Outflow=7.72 cfs 0.950 af

Pond 3A: Pond 3A Peak Elev=394.49' Storage=5,071 cf Inflow=3.82 cfs 0.510 af
Outflow=3.81 cfs 0.402 af

Pond 3B: Pond 3B Peak Elev=394.91' Storage=5,665 cf Inflow=4.83 cfs 0.425 af
Outflow=3.58 cfs 0.334 af

Total Runoff Area = 4.219 ac Runoff Volume = 1.151 af Average Runoff Depth = 3.27"
74.94% Pervious = 3.162 ac 25.06% Impervious = 1.057 ac

Summary for Subcatchment 3S: Region 3

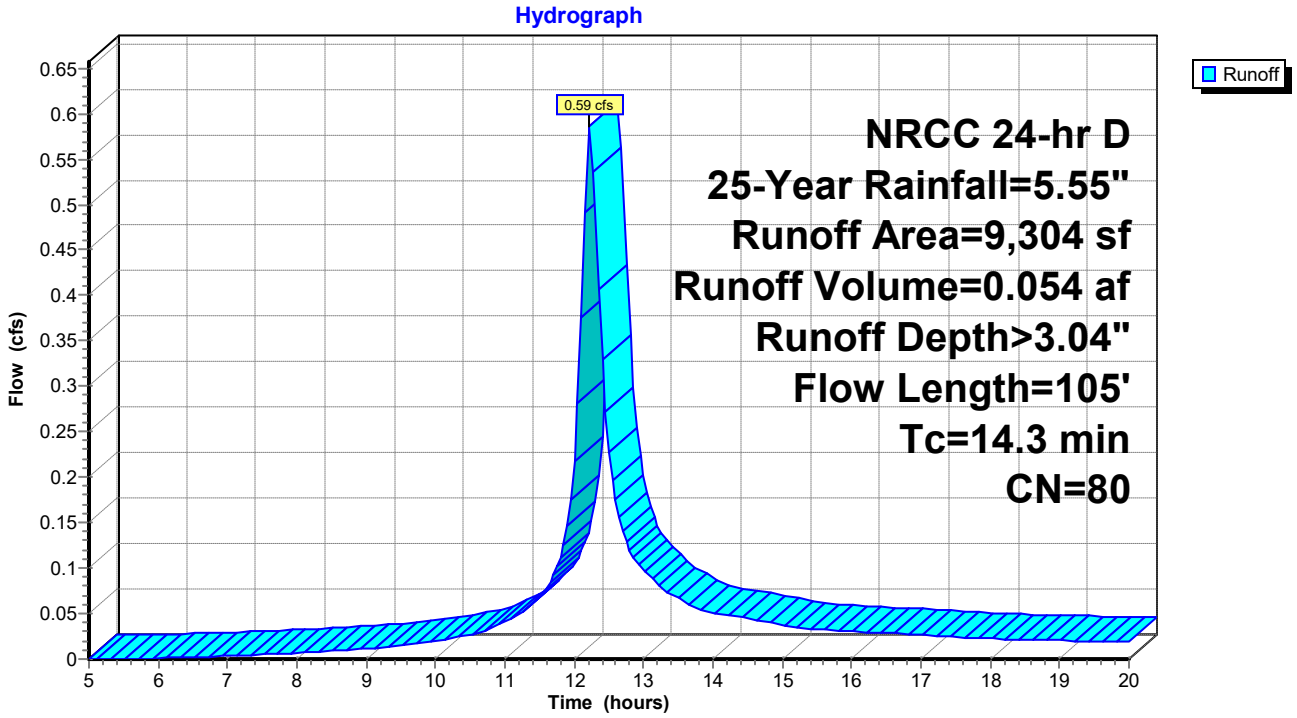
Runoff = 0.59 cfs @ 12.22 hrs, Volume= 0.054 af, Depth> 3.04"
Routed to Pond 3A : Pond 3A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=5.55"

Area (sf)	CN	Description
9,304	80	>75% Grass cover, Good, HSG D
9,304		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	35	0.0600	0.23		**Sheet Flow,** Range n= 0.130 P2= 3.00"
11.8	70	0.0050	0.10		**Sheet Flow,** Range n= 0.130 P2= 3.00"
14.3	105	Total			

Subcatchment 3S: Region 3



Summary for Subcatchment 4A S: Region 4A

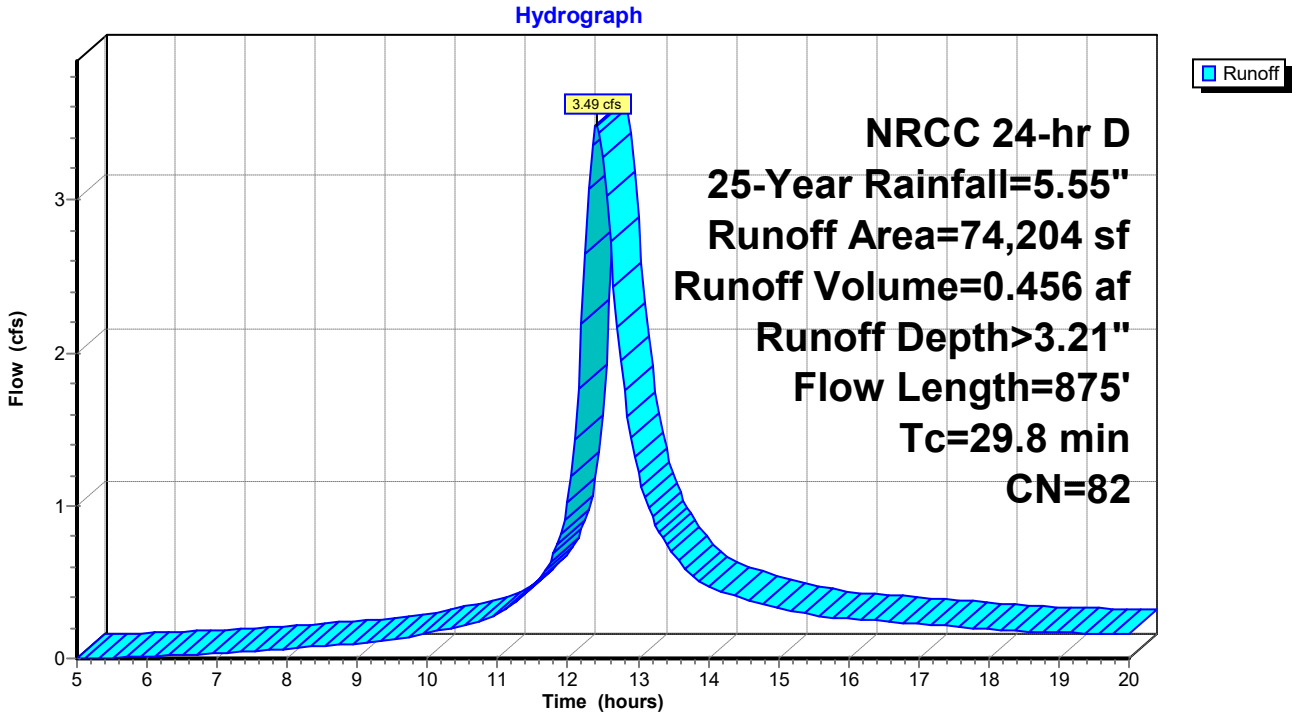
Runoff = 3.49 cfs @ 12.41 hrs, Volume= 0.456 af, Depth> 3.21"
Routed to Pond 3A : Pond 3A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=5.55"

Area (sf)	CN	Description
18,380	98	Paved parking, HSG D
40,627	77	Woods, Good, HSG D
14,587	78	Meadow, non-grazed, HSG D
610	80	>75% Grass cover, Good, HSG D
74,204	82	Weighted Average
55,824		75.23% Pervious Area
18,380		24.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	100	0.0800	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.00"
4.1	380	0.0970	1.56		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	20	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	180	0.0710	3.23	51.68	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.130 Sheet flow over Range
0.1	70	0.0250	9.02	11.06	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
0.1	55	0.0160	7.21	8.85	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
11.8	70	0.0050	0.10		**Sheet Flow,** Range n= 0.130 P2= 3.00"
29.8	875	Total			

Subcatchment 4A S: Region 4A



Summary for Subcatchment 5S: Region 5

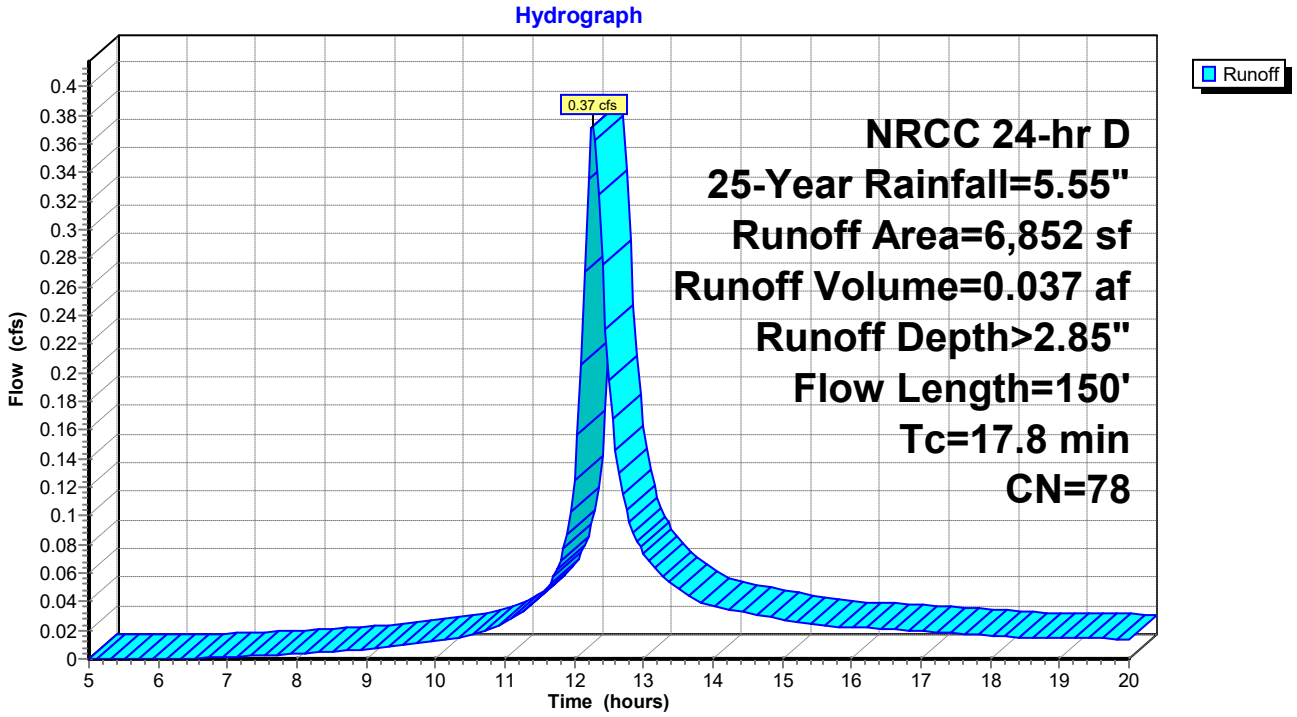
Runoff = 0.37 cfs @ 12.27 hrs, Volume= 0.037 af, Depth> 2.85"
Routed to Pond 3B : Pond 3B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=5.55"

Area (sf)	CN	Description
6,852	78	Meadow, non-grazed, HSG D
6,852		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	10	0.0100	0.09		**Sheet Flow,** Range n= 0.130 P2= 3.00"
0.2	40	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.7	100	0.0050	0.11		**Sheet Flow,** Range n= 0.130 P2= 3.00"
17.8	150	Total			

Subcatchment 5S: Region 5



Summary for Subcatchment 6S: Region 6

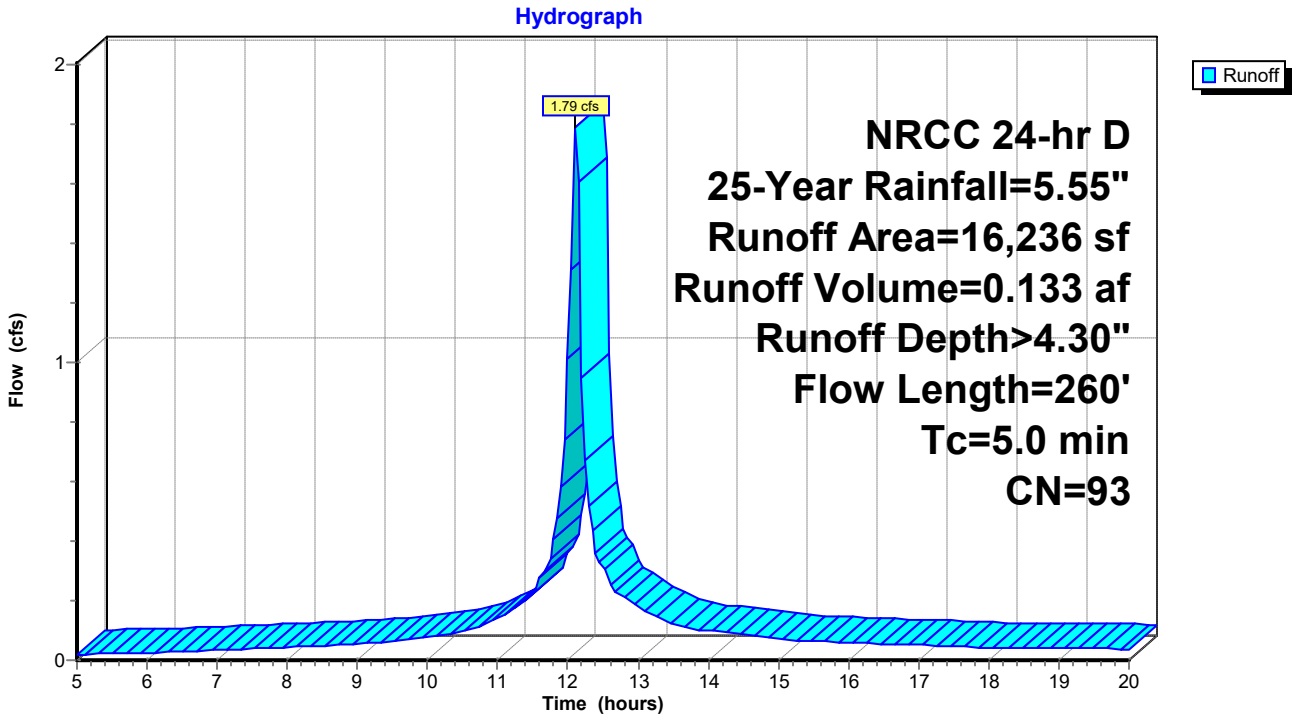
Runoff = 1.79 cfs @ 12.11 hrs, Volume= 0.133 af, Depth> 4.30"
Routed to Reach 6R : Reach 6 CB2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=5.55"

Area (sf)	CN	Description
12,022	98	Paved parking, HSG D
4,214	78	Meadow, non-grazed, HSG D
16,236	93	Weighted Average
4,214		25.95% Pervious Area
12,022		74.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	25	0.0100	0.11		**Sheet Flow,** Range n= 0.130 P2= 3.00"
0.7	125	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	110	0.0500	4.54		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.0	260	Total			

Subcatchment 6S: Region 6



Summary for Subcatchment 7S: Region 7

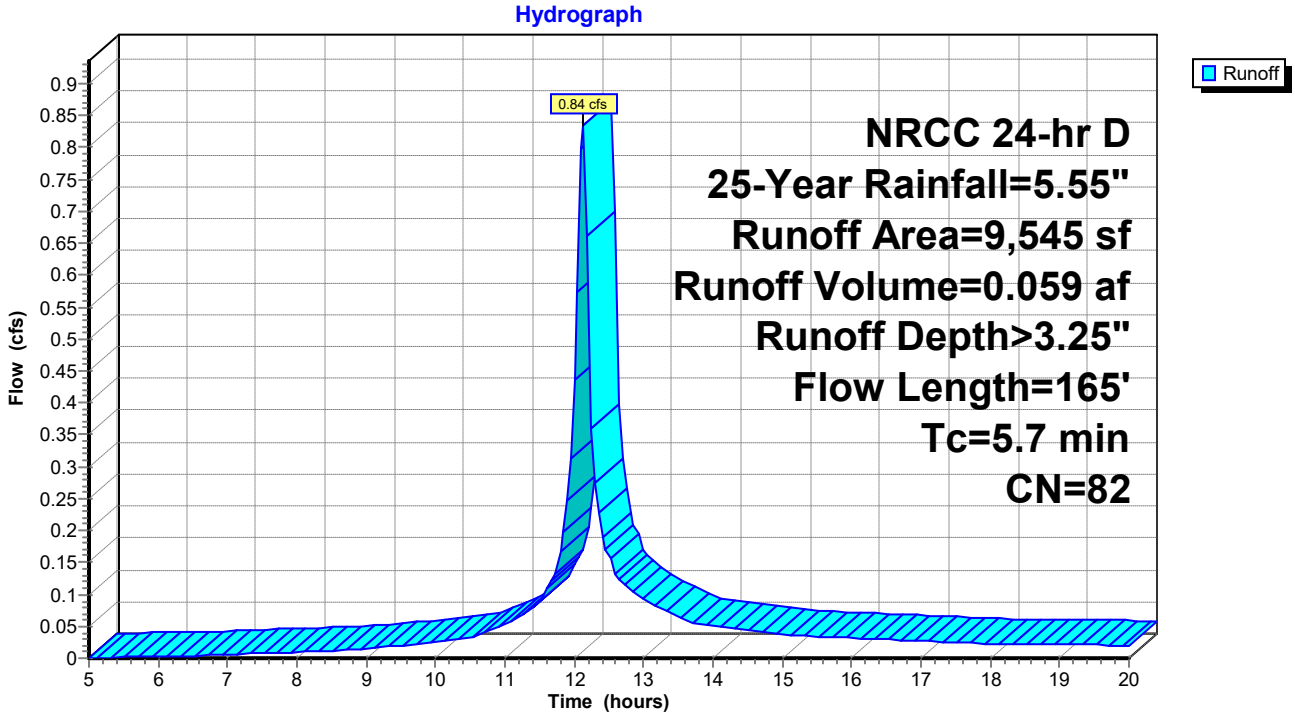
Runoff = 0.84 cfs @ 12.13 hrs, Volume= 0.059 af, Depth> 3.25"
Routed to Reach 7aR : Reach 7a

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=5.55"

Area (sf)	CN	Description
2,135	98	Paved parking, HSG D
7,410	78	Meadow, non-grazed, HSG D
9,545	82	Weighted Average
7,410		77.63% Pervious Area
2,135		22.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	20	0.0100	0.10		**Sheet Flow,** Range n= 0.130 P2= 3.00"
0.1	25	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.3	120	0.0160	0.89		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.7	165	Total			

Subcatchment 7S: Region 7



Summary for Subcatchment 8S: Region 8

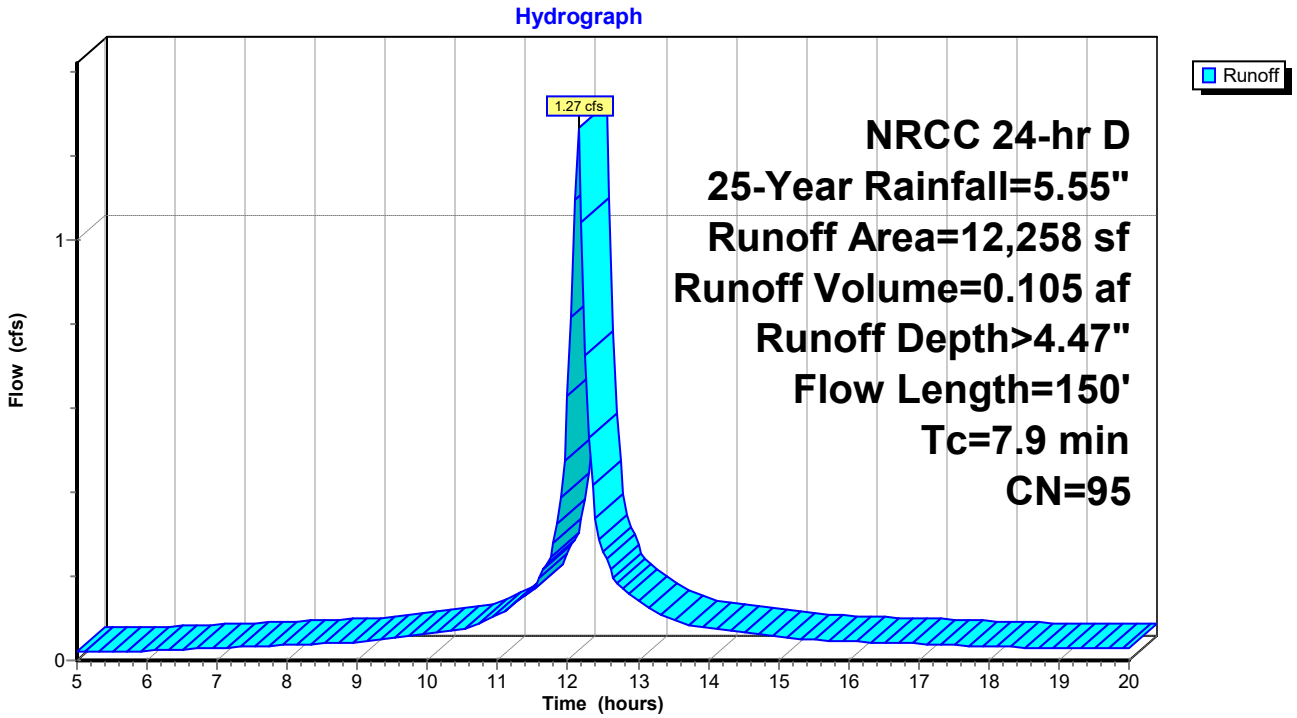
Runoff = 1.27 cfs @ 12.15 hrs, Volume= 0.105 af, Depth> 4.47"
Routed to Reach 8R : Reach 8 CB 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=5.55"

Area (sf)	CN	Description
10,327	98	Paved parking, HSG D
1,931	78	Meadow, non-grazed, HSG D
12,258	95	Weighted Average
1,931		15.75% Pervious Area
10,327		84.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	50	0.0100	0.12		**Sheet Flow,** Range n= 0.130 P2= 3.00"
1.1	100	0.0280	1.52		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
7.9	150	Total			

Subcatchment 8S: Region 8



Summary for Subcatchment 9S: Region 9

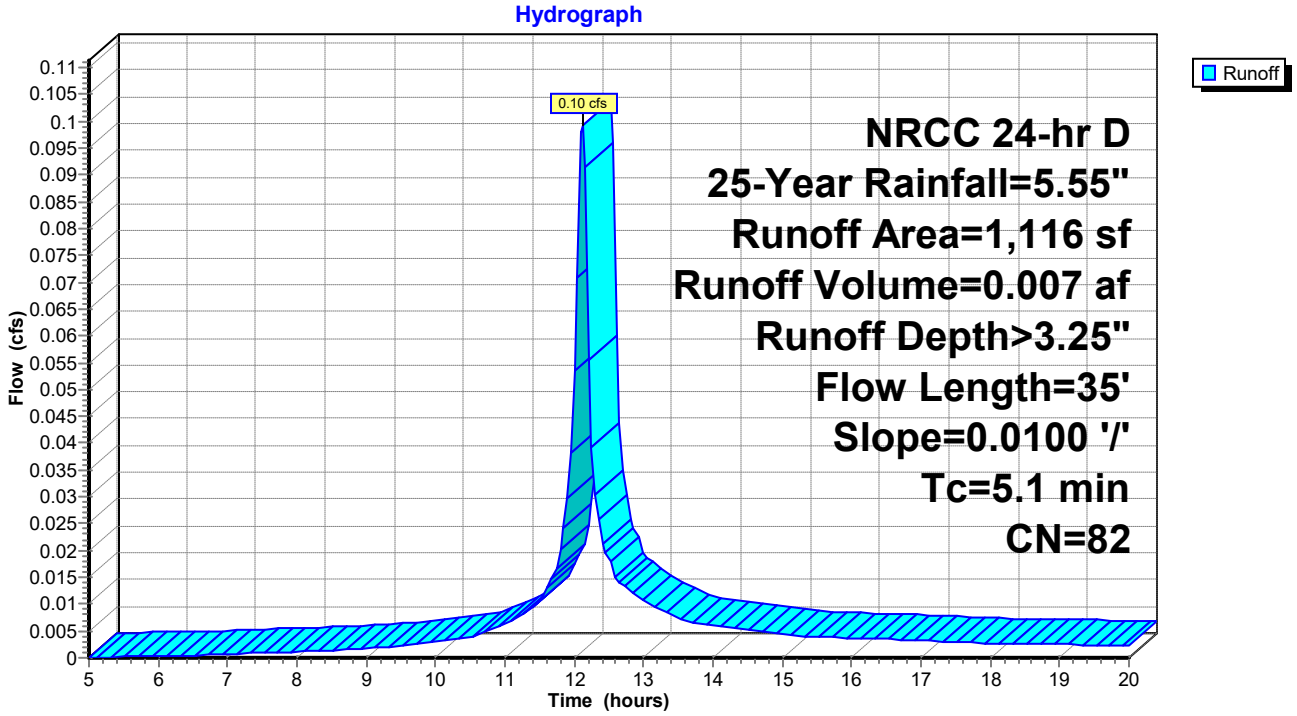
Runoff = 0.10 cfs @ 12.12 hrs, Volume= 0.007 af, Depth> 3.25"
Routed to Reach 10R : Reach 10

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=5.55"

Area (sf)	CN	Description
228	98	Paved parking, HSG D
888	78	Meadow, non-grazed, HSG D
1,116	82	Weighted Average
888		79.57% Pervious Area
228		20.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	35	0.0100	0.11		**Sheet Flow,** Range n= 0.130 P2= 3.00"

Subcatchment 9S: Region 9



Summary for Subcatchment 10S: Region 10

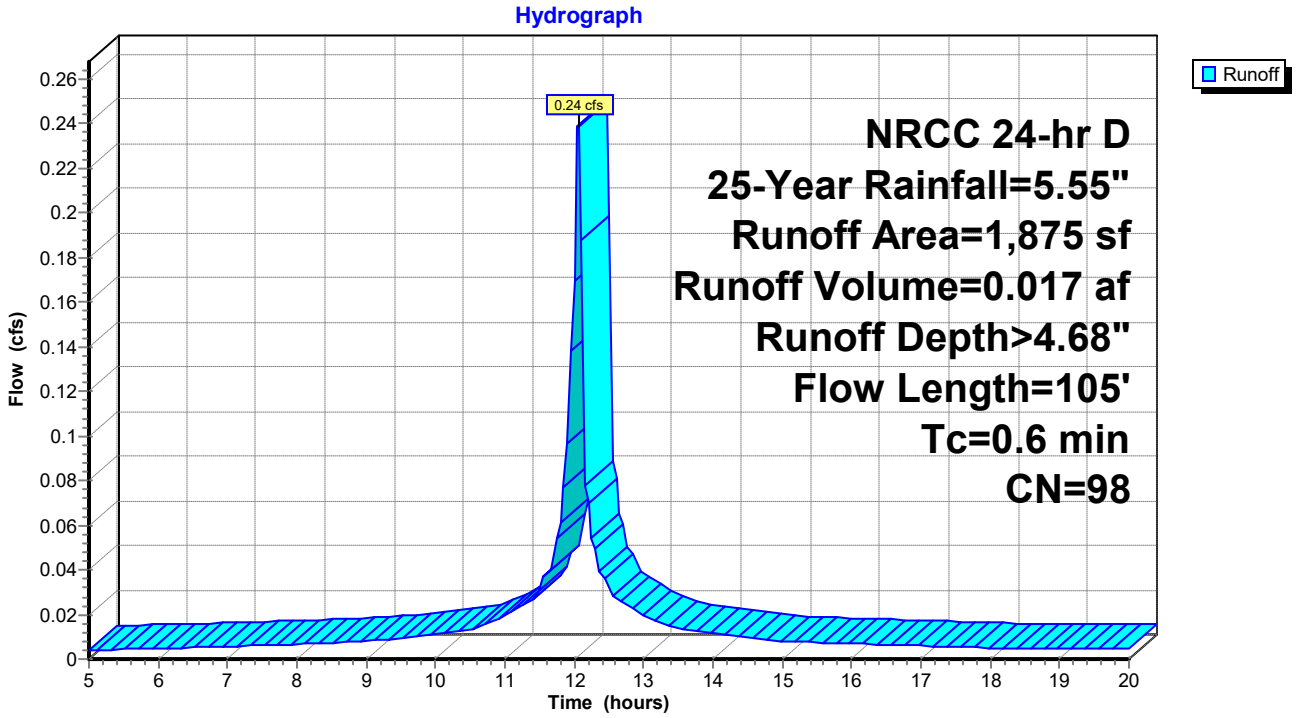
Runoff = 0.24 cfs @ 12.05 hrs, Volume= 0.017 af, Depth> 4.68"
Routed to Reach 9R : Reach 9 CB 5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=5.55"

Area (sf)	CN	Description
1,875	98	Paved parking, HSG D
1,875		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.97		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
0.3	85	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	105	Total			

Subcatchment 10S: Region 10



Summary for Subcatchment 11S: Region 11

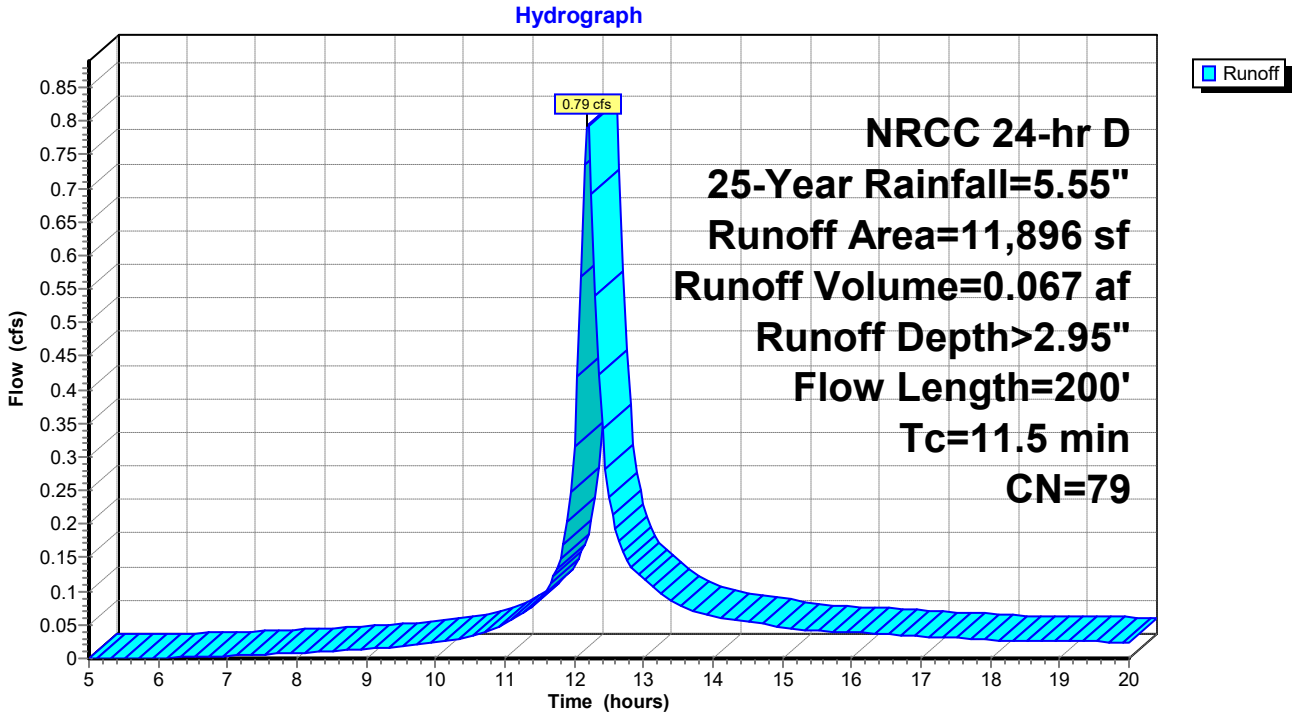
Runoff = 0.79 cfs @ 12.19 hrs, Volume= 0.067 af, Depth> 2.95"
Routed to Reach 11R : Reach 11

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=5.55"

Area (sf)	CN	Description
1,085	98	Paved parking, HSG D
10,811	77	Woods, Good, HSG D
11,896	79	Weighted Average
10,811		90.88% Pervious Area
1,085		9.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.1200	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.00"
0.5	60	0.1330	1.82		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	15	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	25	0.0670	3.25	58.47	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=2.00' Z= 3.0 '/' Top.W=15.00' n= 0.130 Sheet flow over Range
11.5	200	Total			

Subcatchment 11S: Region 11



Summary for Subcatchment 24S: Region 24

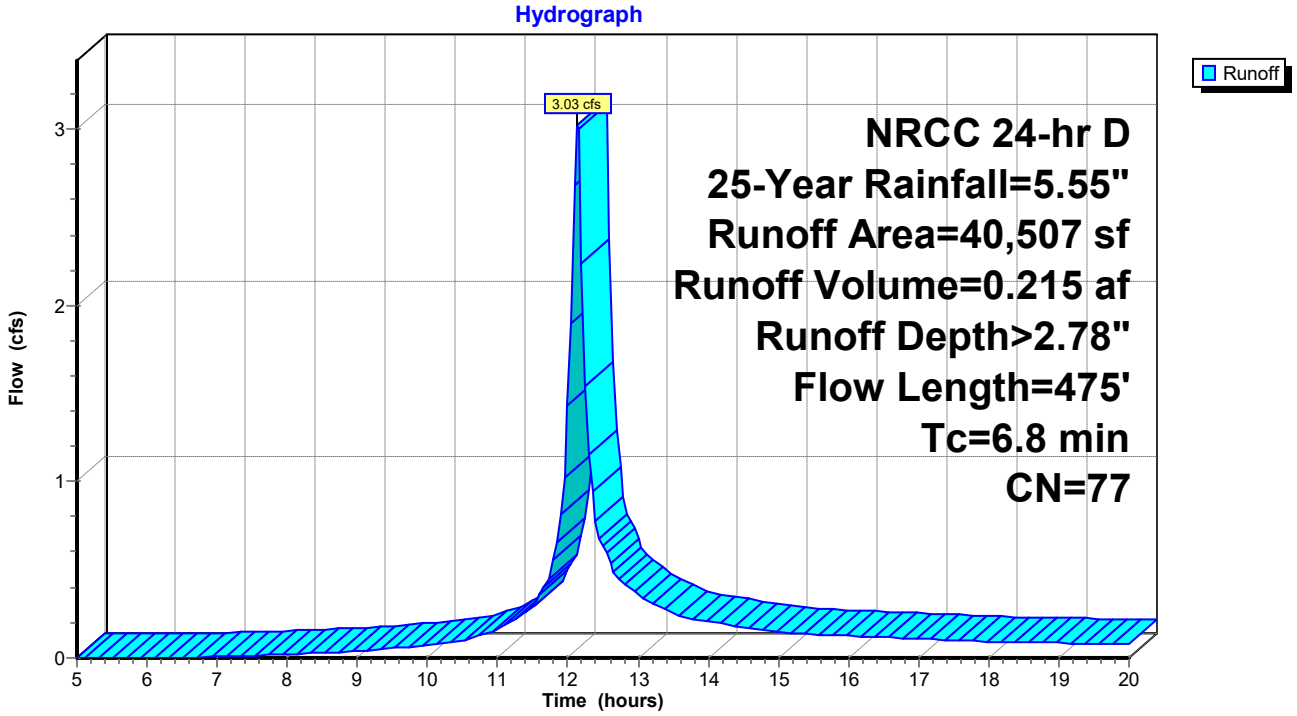
Runoff = 3.03 cfs @ 12.14 hrs, Volume= 0.215 af, Depth> 2.78"
Routed to Reach DP2 : Design Point 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=5.55"

Area (sf)	CN	Description
40,507	77	Woods, Good, HSG D
40,507		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	25	0.0400	0.18		**Sheet Flow,** Range n= 0.130 P2= 3.00"
0.2	40	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	35	0.1700	2.06		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.0	375	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.8	475	Total			

Subcatchment 24S: Region 24



Summary for Reach 1R: Reach 1

Inflow Area = 3.289 ac, 32.14% Impervious, Inflow Depth > 2.68" for 25-Year event
Inflow = 6.96 cfs @ 12.32 hrs, Volume= 0.736 af
Outflow = 6.79 cfs @ 12.36 hrs, Volume= 0.735 af, Atten= 2%, Lag= 2.1 min
Routed to Reach DP2 : Design Point 2

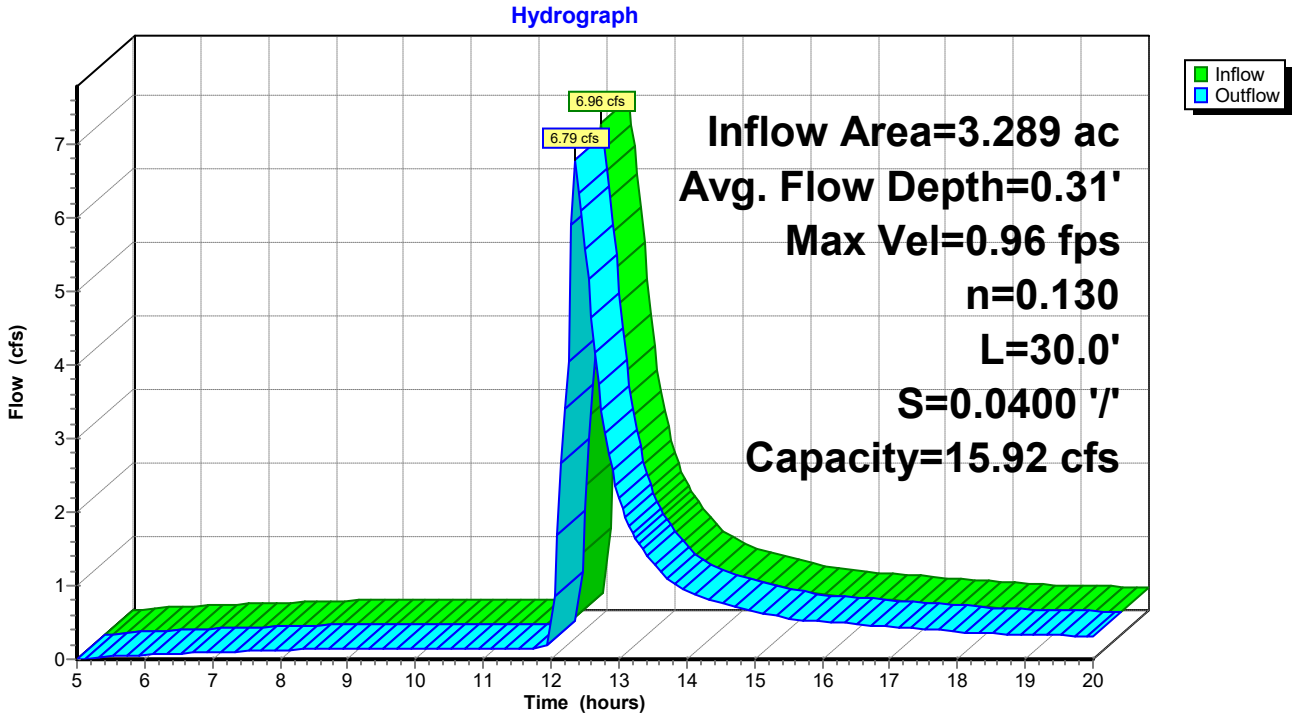
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.96 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 0.32 fps, Avg. Travel Time= 1.6 min

Peak Storage= 215 cf @ 12.35 hrs
Average Depth at Peak Storage= 0.31' , Surface Width= 26.19'
Bank-Full Depth= 0.50' Flow Area= 12.5 sf, Capacity= 15.92 cfs

20.00' x 0.50' deep channel, n= 0.130 Sheet flow over Range
Side Slope Z-value= 10.0 '/' Top Width= 30.00'
Length= 30.0' Slope= 0.0400 '/'
Inlet Invert= 0.00', Outlet Invert= -1.20'

‡

Reach 1R: Reach 1



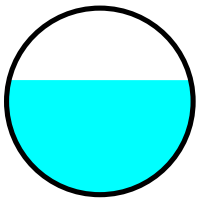
Summary for Reach 6R: Reach 6 CB2

Inflow Area = 1.215 ac, 52.28% Impervious, Inflow Depth > 3.83" for 25-Year event
Inflow = 4.60 cfs @ 12.13 hrs, Volume= 0.388 af
Outflow = 4.57 cfs @ 12.14 hrs, Volume= 0.388 af, Atten= 1%, Lag= 0.5 min
Routed to Pond 3B : Pond 3B

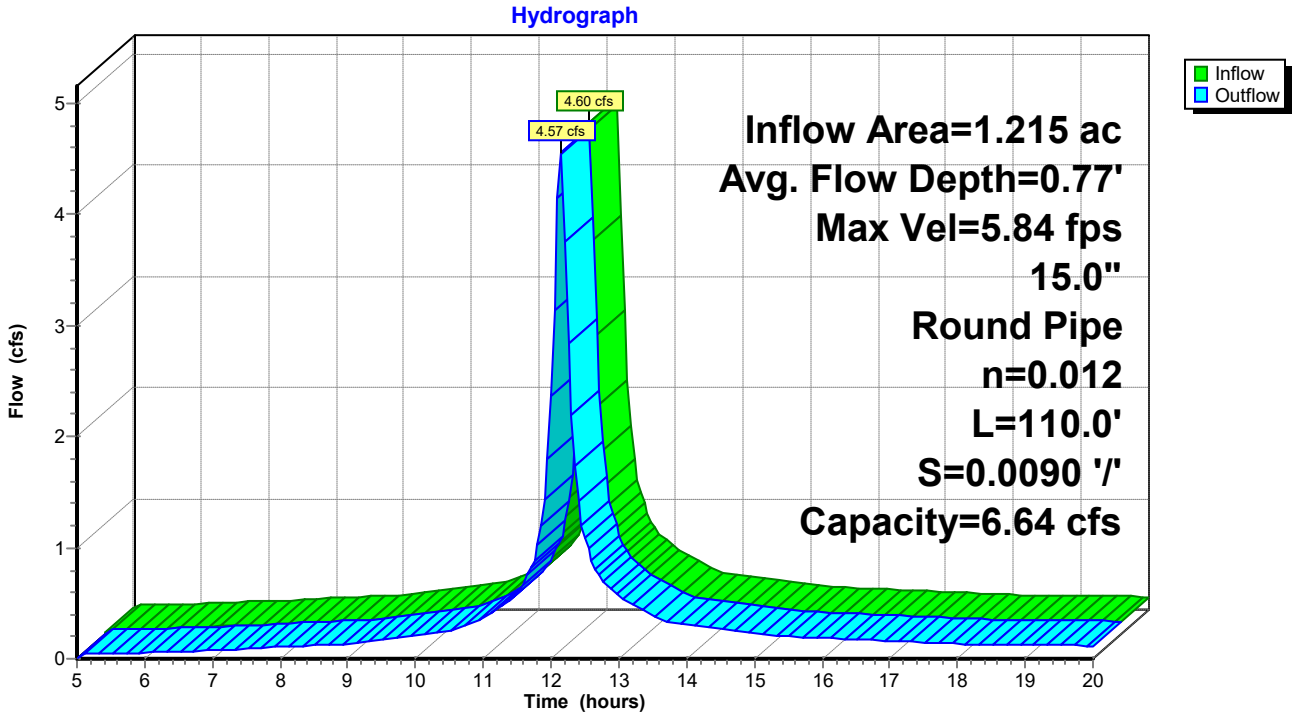
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.84 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.46 fps, Avg. Travel Time= 0.7 min

Peak Storage= 87 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.77' , Surface Width= 1.22'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 6.64 cfs

15.0" Round Pipe
n= 0.012
Length= 110.0' Slope= 0.0090 '/'
Inlet Invert= 0.00', Outlet Invert= -0.99'



Reach 6R: Reach 6 CB2



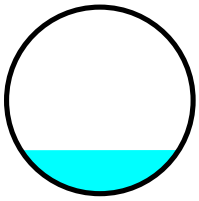
Summary for Reach 7aR: Reach 7a

Inflow Area = 0.219 ac, 22.37% Impervious, Inflow Depth > 3.25" for 25-Year event
Inflow = 0.84 cfs @ 12.13 hrs, Volume= 0.059 af
Outflow = 0.83 cfs @ 12.13 hrs, Volume= 0.059 af, Atten= 0%, Lag= 0.3 min
Routed to Reach 7R : Reach 7 CB3

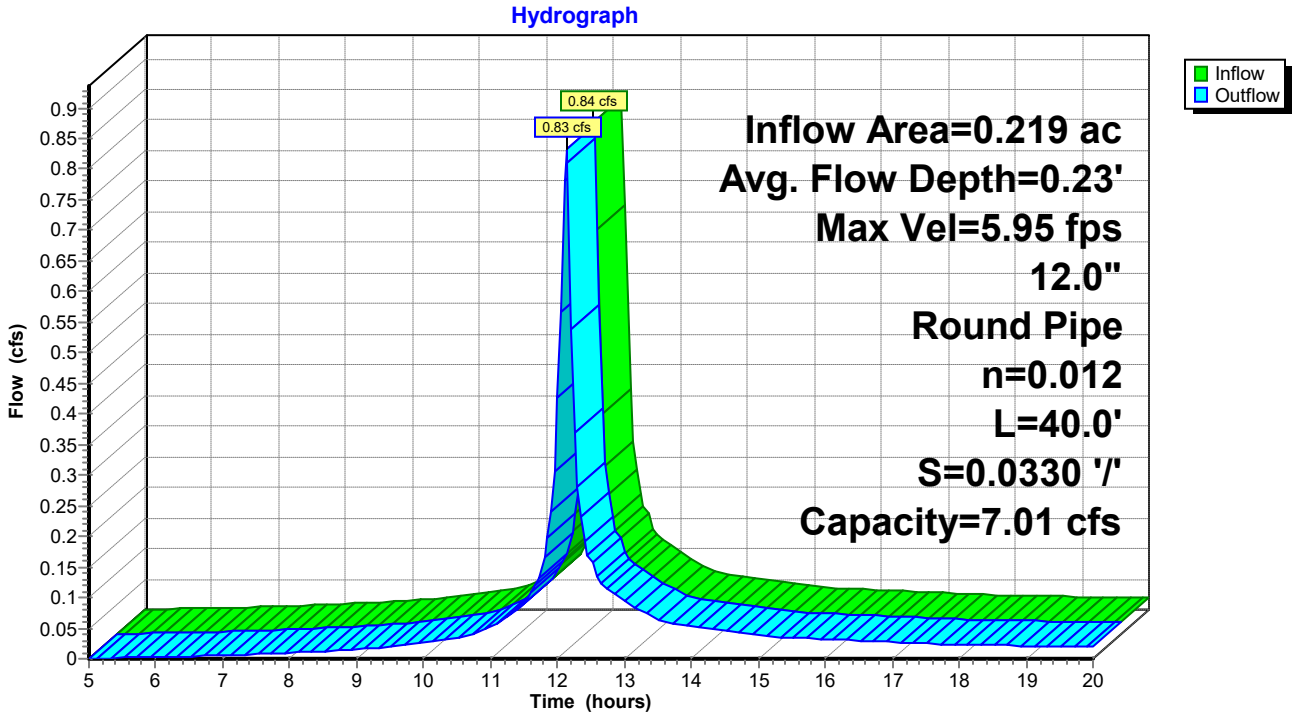
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.95 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.19 fps, Avg. Travel Time= 0.3 min

Peak Storage= 6 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.23' , Surface Width= 0.85'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 7.01 cfs

12.0" Round Pipe
n= 0.012
Length= 40.0' Slope= 0.0330 '/'
Inlet Invert= 0.00', Outlet Invert= -1.32'



Reach 7aR: Reach 7a



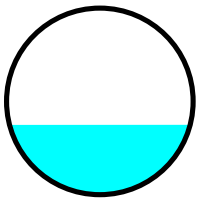
Summary for Reach 7R: Reach 7 CB3

Inflow Area = 0.842 ac, 42.65% Impervious, Inflow Depth > 3.63" for 25-Year event
Inflow = 2.95 cfs @ 12.14 hrs, Volume= 0.255 af
Outflow = 2.93 cfs @ 12.15 hrs, Volume= 0.255 af, Atten= 1%, Lag= 0.3 min
Routed to Reach 6R : Reach 6 CB2

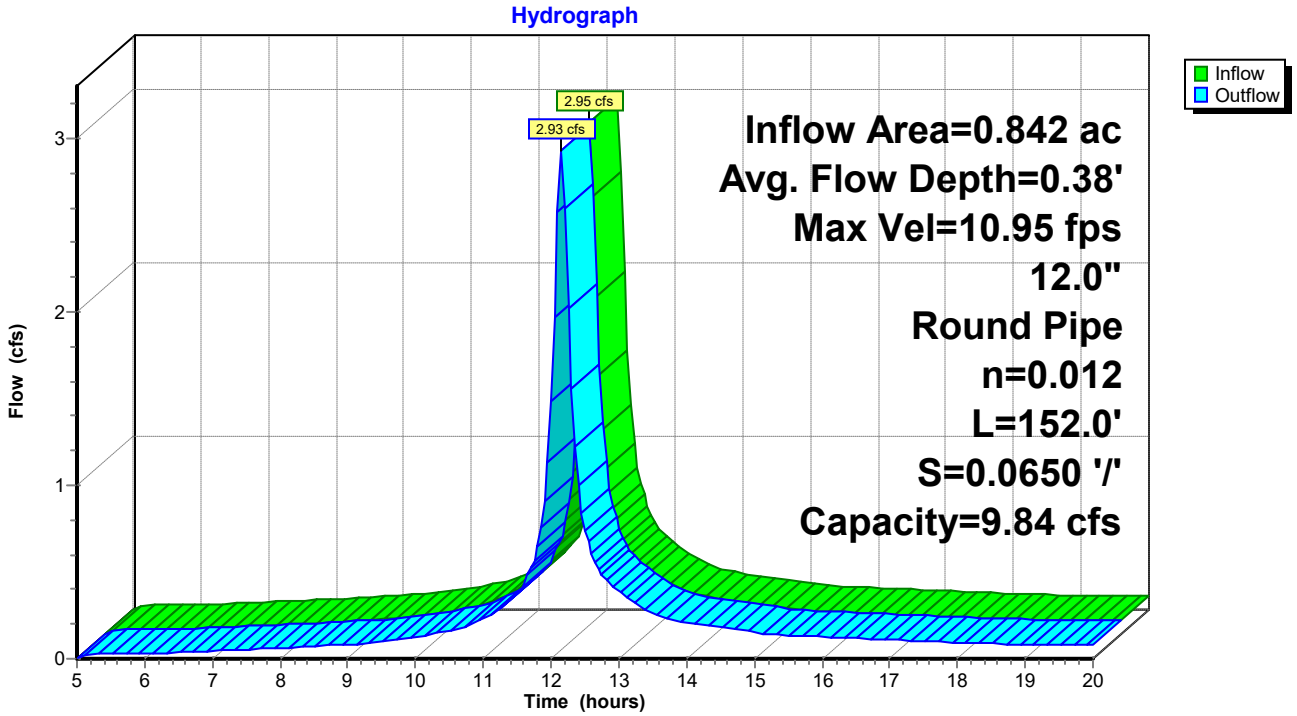
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.95 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 4.44 fps, Avg. Travel Time= 0.6 min

Peak Storage= 41 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.38' , Surface Width= 0.97'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 9.84 cfs

12.0" Round Pipe
n= 0.012
Length= 152.0' Slope= 0.0650 '/'
Inlet Invert= 0.00', Outlet Invert= -9.88'



Reach 7R: Reach 7 CB3



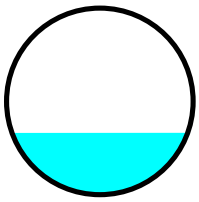
Summary for Reach 8R: Reach 8 CB 4

Inflow Area = 0.623 ac, 49.79% Impervious, Inflow Depth > 3.77" for 25-Year event
Inflow = 2.16 cfs @ 12.15 hrs, Volume= 0.196 af
Outflow = 2.14 cfs @ 12.16 hrs, Volume= 0.196 af, Atten= 1%, Lag= 0.3 min
Routed to Reach 7R : Reach 7 CB3

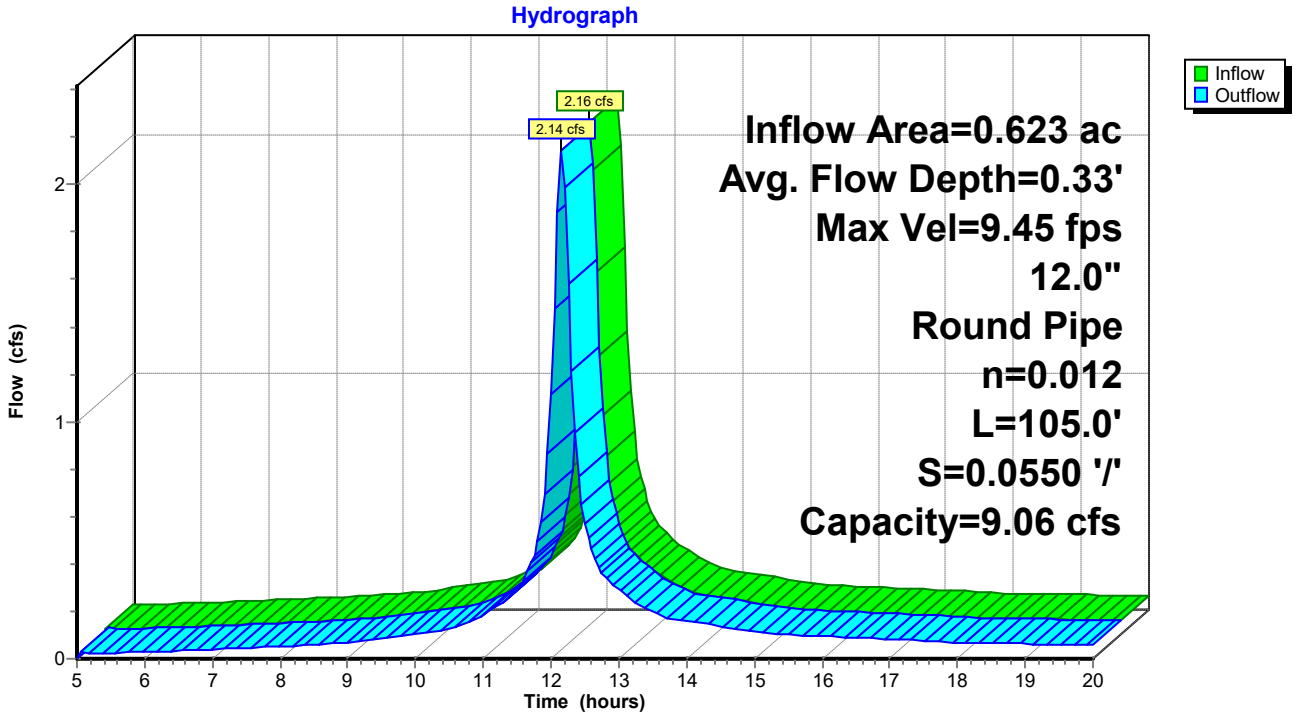
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.45 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 3.90 fps, Avg. Travel Time= 0.4 min

Peak Storage= 24 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.33' , Surface Width= 0.94'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 9.06 cfs

12.0" Round Pipe
n= 0.012
Length= 105.0' Slope= 0.0550 '/'
Inlet Invert= 0.00', Outlet Invert= -5.78'



Reach 8R: Reach 8 CB 4



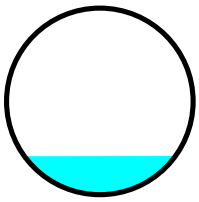
Summary for Reach 9R: Reach 9 CB 5

Inflow Area = 0.342 ac, 21.41% Impervious, Inflow Depth > 3.19" for 25-Year event
Inflow = 0.93 cfs @ 12.18 hrs, Volume= 0.091 af
Outflow = 0.92 cfs @ 12.19 hrs, Volume= 0.091 af, Atten= 0%, Lag= 0.1 min
Routed to Reach 8R : Reach 8 CB 4

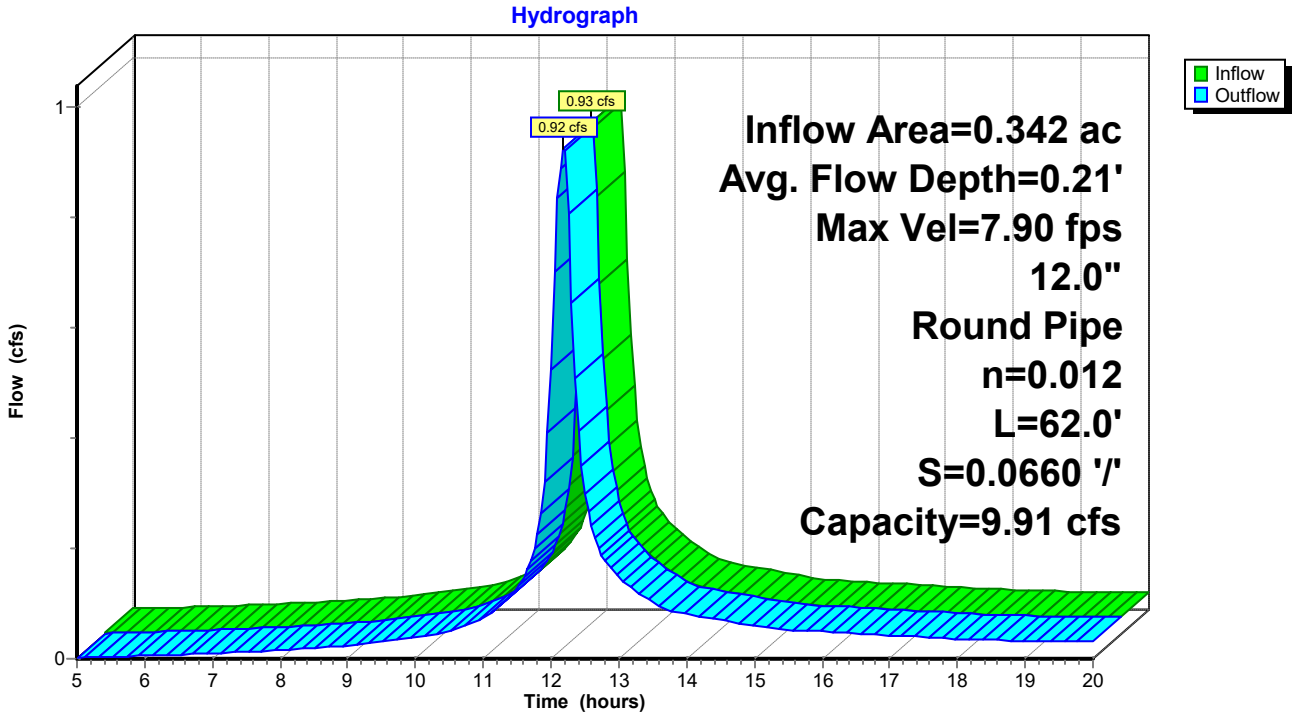
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.90 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.22 fps, Avg. Travel Time= 0.3 min

Peak Storage= 7 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.21' , Surface Width= 0.81'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 9.91 cfs

12.0" Round Pipe
n= 0.012
Length= 62.0' Slope= 0.0660 '/'
Inlet Invert= 0.00', Outlet Invert= -4.09'



Reach 9R: Reach 9 CB 5



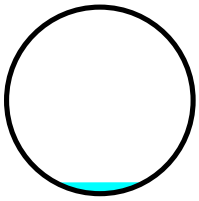
Summary for Reach 10R: Reach 10

Inflow Area = 0.026 ac, 20.43% Impervious, Inflow Depth > 3.25" for 25-Year event
Inflow = 0.10 cfs @ 12.12 hrs, Volume= 0.007 af
Outflow = 0.10 cfs @ 12.12 hrs, Volume= 0.007 af, Atten= 1%, Lag= 0.2 min
Routed to Reach 9R : Reach 9 CB 5

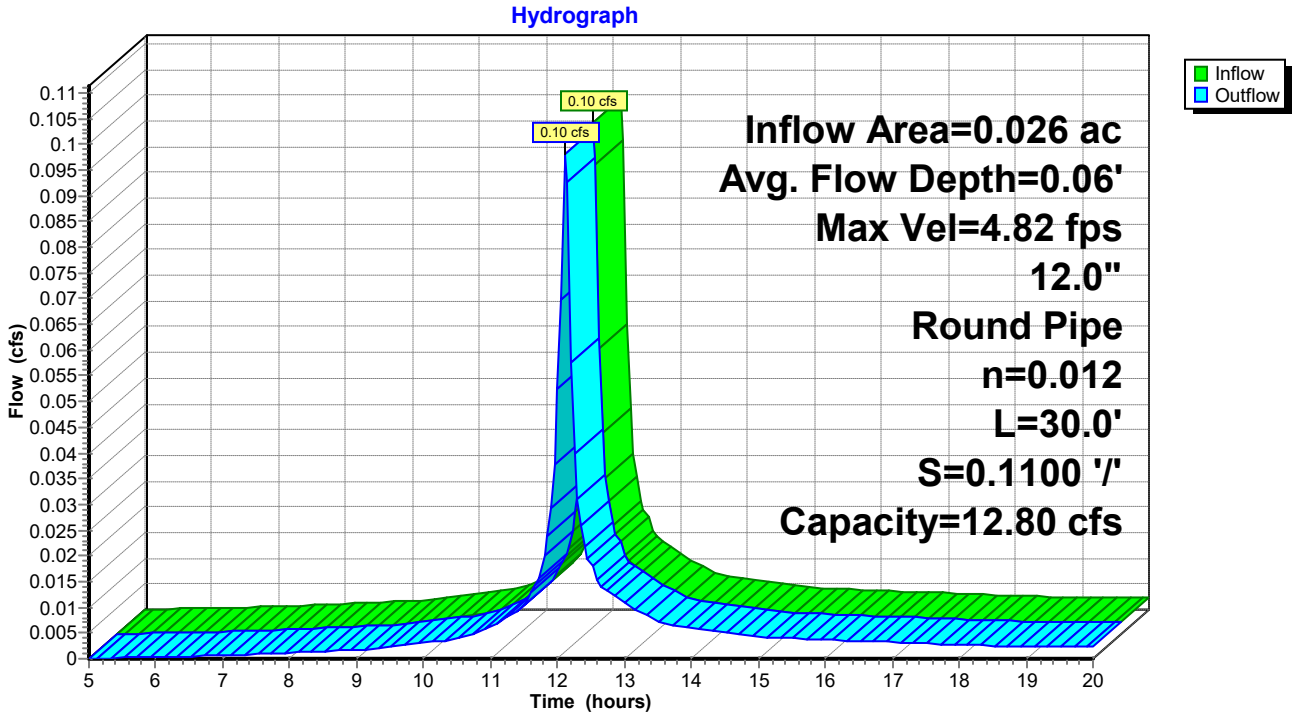
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.82 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.90 fps, Avg. Travel Time= 0.3 min

Peak Storage= 1 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.06' , Surface Width= 0.48'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 12.80 cfs

12.0" Round Pipe
n= 0.012
Length= 30.0' Slope= 0.1100 '/'
Inlet Invert= 0.00', Outlet Invert= -3.30'



Reach 10R: Reach 10



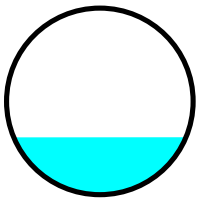
Summary for Reach 11R: Reach 11

Inflow Area = 0.273 ac, 9.12% Impervious, Inflow Depth > 2.95" for 25-Year event
Inflow = 0.79 cfs @ 12.19 hrs, Volume= 0.067 af
Outflow = 0.79 cfs @ 12.20 hrs, Volume= 0.067 af, Atten= 0%, Lag= 0.2 min
Routed to Reach 9R : Reach 9 CB 5

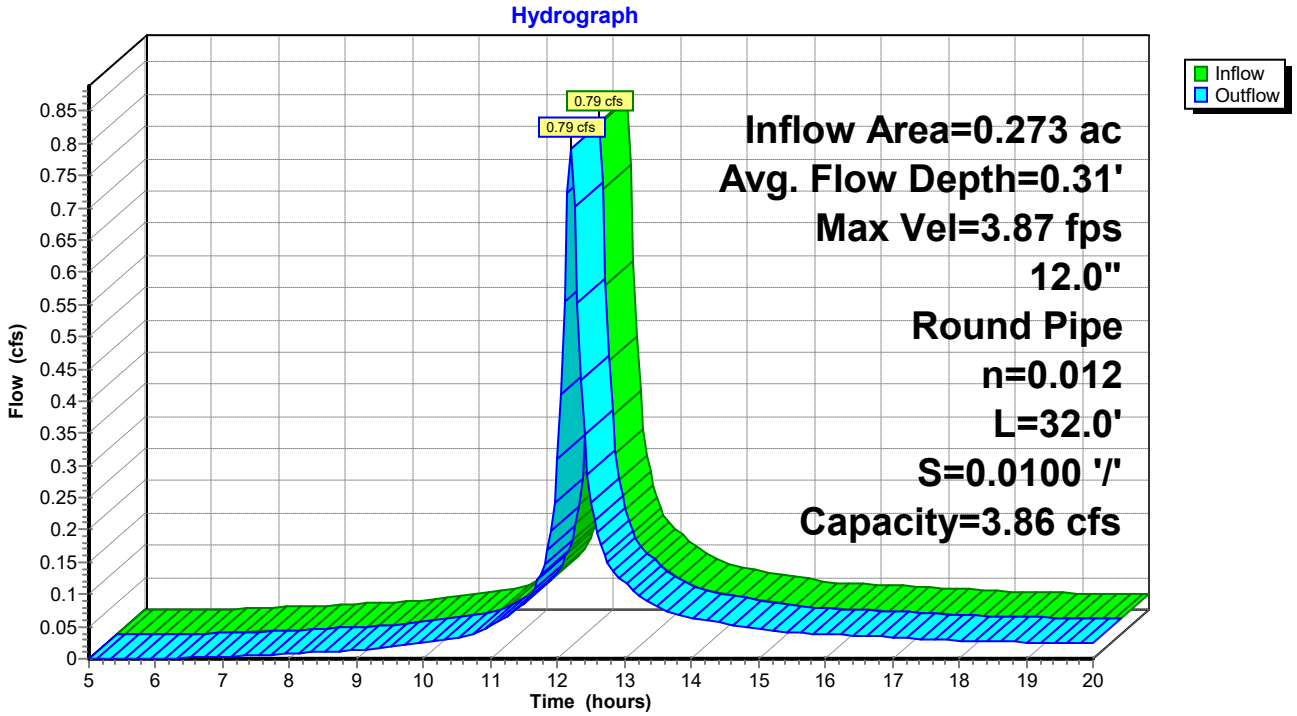
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.87 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.52 fps, Avg. Travel Time= 0.3 min

Peak Storage= 7 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.31' , Surface Width= 0.92'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe
n= 0.012
Length= 32.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.32'



Reach 11R: Reach 11

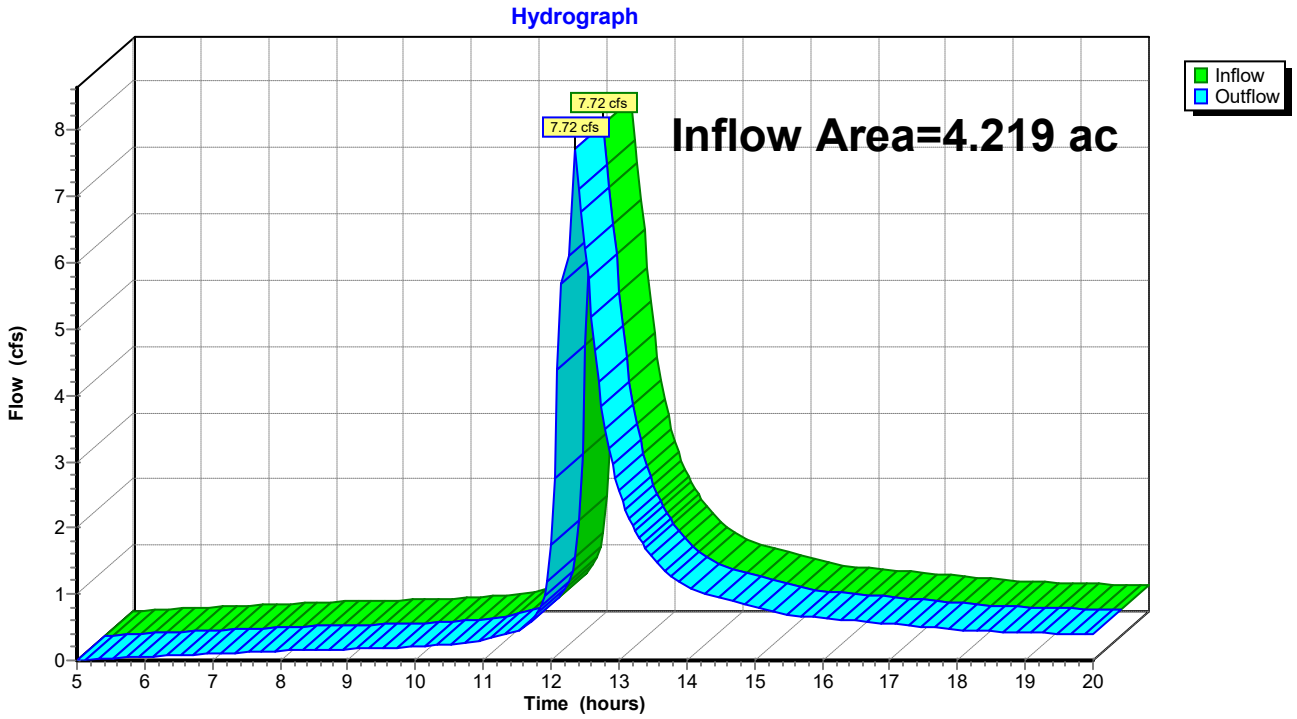


Summary for Reach DP2: Design Point 2

Inflow Area = 4.219 ac, 25.06% Impervious, Inflow Depth > 2.70" for 25-Year event
Inflow = 7.72 cfs @ 12.35 hrs, Volume= 0.950 af
Outflow = 7.72 cfs @ 12.35 hrs, Volume= 0.950 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP2: Design Point 2



Summary for Pond 3A: Pond 3A

Inflow Area = 1.917 ac, 22.01% Impervious, Inflow Depth > 3.19" for 25-Year event
Inflow = 3.82 cfs @ 12.39 hrs, Volume= 0.510 af
Outflow = 3.81 cfs @ 12.41 hrs, Volume= 0.402 af, Atten= 0%, Lag= 1.2 min
Primary = 3.81 cfs @ 12.41 hrs, Volume= 0.402 af
Routed to Reach 1R : Reach 1

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 394.49' @ 12.41 hrs Surf.Area= 4,056 sf Storage= 5,071 cf

Plug-Flow detention time= 91.7 min calculated for 0.400 af (78% of inflow)
Center-of-Mass det. time= 32.2 min (830.6 - 798.4)

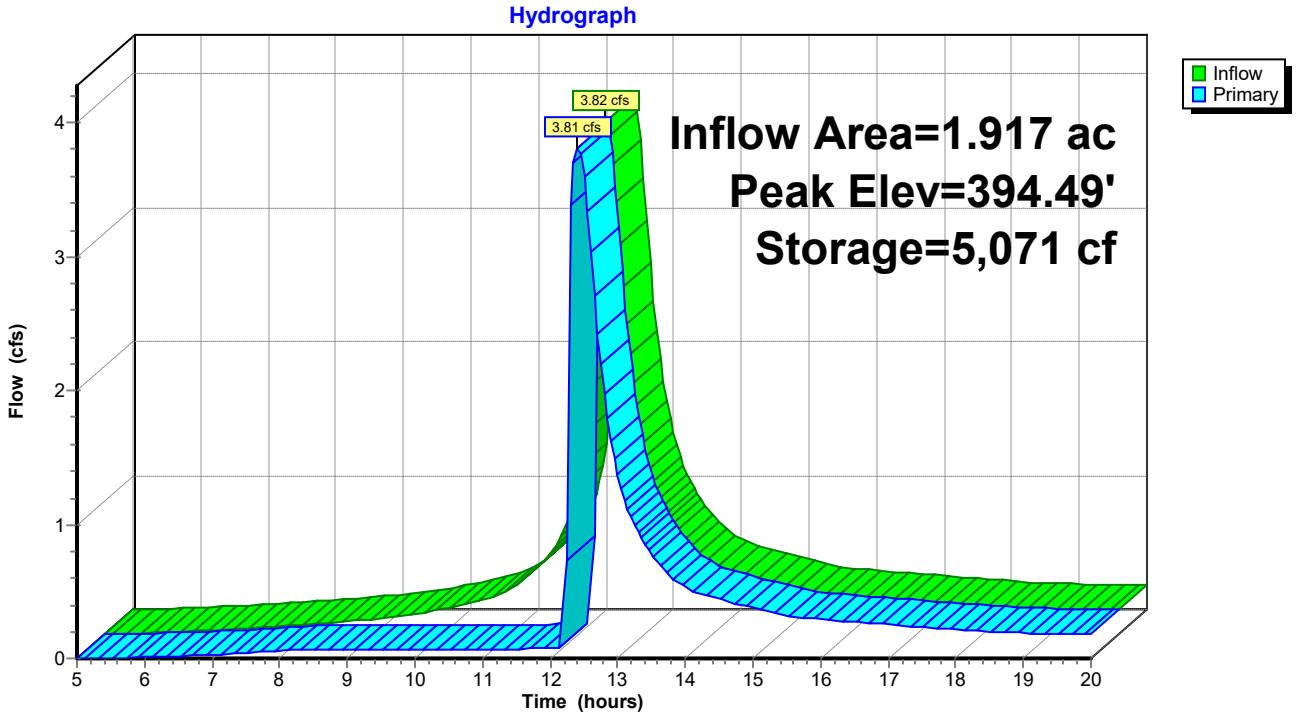
Volume	Invert	Avail.Storage	Storage Description
#1	393.00'	12,120 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
393.00	2,730	0	0
394.00	3,616	3,173	3,173
395.00	4,506	4,061	7,234
396.00	5,265	4,886	12,120

Device	Routing	Invert	Outlet Devices
#1	Primary	389.75'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 389.75' / 389.35' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	390.00'	**1.2" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	394.40'	**50.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=3.77 cfs @ 12.41 hrs HW=394.49' (Free Discharge)
└─**1=Culvert** (Passes 0.08 cfs of 7.79 cfs potential flow)
└─**2=Orifice/Grate** (Orifice Controls 0.08 cfs @ 10.15 fps)
└─**3=Broad-Crested Rectangular Weir** (Weir Controls 3.69 cfs @ 0.78 fps)

Pond 3A: Pond 3A



Summary for Pond 3B: Pond 3B

Inflow Area = 1.372 ac, 46.29% Impervious, Inflow Depth > 3.72" for 25-Year event
Inflow = 4.83 cfs @ 12.14 hrs, Volume= 0.425 af
Outflow = 3.58 cfs @ 12.23 hrs, Volume= 0.334 af, Atten= 26%, Lag= 5.3 min
Primary = 3.58 cfs @ 12.23 hrs, Volume= 0.334 af
Routed to Reach 1R : Reach 1

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 394.91' @ 12.23 hrs Surf.Area= 3,726 sf Storage= 5,665 cf

Plug-Flow detention time= 102.8 min calculated for 0.334 af (79% of inflow)
Center-of-Mass det. time= 38.9 min (804.4 - 765.5)

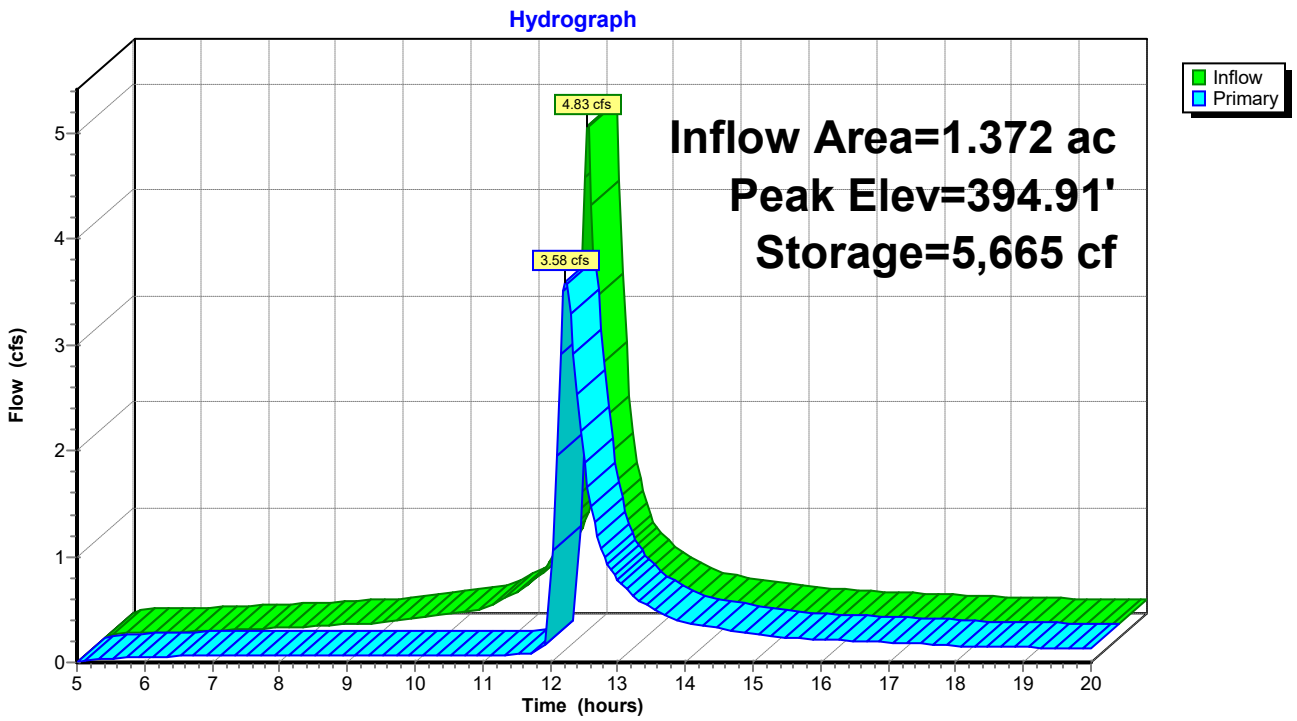
Volume	Invert	Avail.Storage	Storage Description
#1	393.00'	10,071 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
393.00	2,175	0	0
394.00	3,021	2,598	2,598
395.00	3,796	3,409	6,007
396.00	4,333	4,065	10,071

Device	Routing	Invert	Outlet Devices
#1	Primary	389.35'	**18.0" Round Culvert** L= 45.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 389.35' / 388.90' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	390.00'	**1.2" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	394.40'	**36.0" W x 7.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	395.35'	**25.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=3.55 cfs @ 12.23 hrs HW=394.91' (Free Discharge)
- **1=Culvert** (Passes 3.55 cfs of 18.65 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.08 cfs @ 10.61 fps)
  - **3=Orifice/Grate** (Orifice Controls 3.46 cfs @ 2.28 fps)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3B: Pond 3B



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 3S: Region 3 Runoff Area=9,304 sf 0.00% Impervious Runoff Depth>4.92"
Flow Length=105' Tc=14.3 min CN=80 Runoff=0.93 cfs 0.088 af

Subcatchment 4A S: Region 4A Runoff Area=74,204 sf 24.77% Impervious Runoff Depth>5.11"
Flow Length=875' Tc=29.8 min CN=82 Runoff=5.44 cfs 0.725 af

Subcatchment 5S: Region 5 Runoff Area=6,852 sf 0.00% Impervious Runoff Depth>4.70"
Flow Length=150' Tc=17.8 min CN=78 Runoff=0.60 cfs 0.062 af

Subcatchment 6S: Region 6 Runoff Area=16,236 sf 74.05% Impervious Runoff Depth>6.25"
Flow Length=260' Tc=5.0 min CN=93 Runoff=2.57 cfs 0.194 af

Subcatchment 7S: Region 7 Runoff Area=9,545 sf 22.37% Impervious Runoff Depth>5.15"
Flow Length=165' Tc=5.7 min CN=82 Runoff=1.28 cfs 0.094 af

Subcatchment 8S: Region 8 Runoff Area=12,258 sf 84.25% Impervious Runoff Depth>6.41"
Flow Length=150' Tc=7.9 min CN=95 Runoff=1.80 cfs 0.150 af

Subcatchment 9S: Region 9 Runoff Area=1,116 sf 20.43% Impervious Runoff Depth>5.16"
Flow Length=35' Slope=0.0100 '/' Tc=5.1 min CN=82 Runoff=0.15 cfs 0.011 af

Subcatchment 10S: Region 10 Runoff Area=1,875 sf 100.00% Impervious Runoff Depth>6.59"
Flow Length=105' Tc=0.6 min CN=98 Runoff=0.34 cfs 0.024 af

Subcatchment 11S: Region 11 Runoff Area=11,896 sf 9.12% Impervious Runoff Depth>4.82"
Flow Length=200' Tc=11.5 min CN=79 Runoff=1.27 cfs 0.110 af

Subcatchment 24S: Region 24 Runoff Area=40,507 sf 0.00% Impervious Runoff Depth>4.61"
Flow Length=475' Tc=6.8 min CN=77 Runoff=4.90 cfs 0.357 af

Reach 1R: Reach 1 Avg. Flow Depth=0.40' Max Vel=1.11 fps Inflow=10.60 cfs 1.255 af
n=0.130 L=30.0' S=0.0400 '/' Capacity=15.92 cfs Outflow=10.58 cfs 1.254 af

Reach 6R: Reach 6 CB2 Avg. Flow Depth=1.05' Max Vel=6.16 fps Inflow=6.81 cfs 0.583 af
15.0" Round Pipe n=0.012 L=110.0' S=0.0090 '/' Capacity=6.64 cfs Outflow=6.75 cfs 0.582 af

Reach 7aR: Reach 7a Avg. Flow Depth=0.29' Max Vel=6.74 fps Inflow=1.28 cfs 0.094 af
12.0" Round Pipe n=0.012 L=40.0' S=0.0330 '/' Capacity=7.01 cfs Outflow=1.29 cfs 0.094 af

Reach 7R: Reach 7 CB3 Avg. Flow Depth=0.47' Max Vel=12.21 fps Inflow=4.44 cfs 0.388 af
12.0" Round Pipe n=0.012 L=152.0' S=0.0650 '/' Capacity=9.84 cfs Outflow=4.41 cfs 0.388 af

Reach 8R: Reach 8 CB 4 Avg. Flow Depth=0.41' Max Vel=10.54 fps Inflow=3.21 cfs 0.295 af
12.0" Round Pipe n=0.012 L=105.0' S=0.0550 '/' Capacity=9.06 cfs Outflow=3.19 cfs 0.294 af

Reach 9R: Reach 9 CB 5 Avg. Flow Depth=0.26' Max Vel=9.01 fps Inflow=1.46 cfs 0.144 af
12.0" Round Pipe n=0.012 L=62.0' S=0.0660 '/' Capacity=9.91 cfs Outflow=1.46 cfs 0.144 af

Reach 10R: Reach 10 Avg. Flow Depth=0.08' Max Vel=5.51 fps Inflow=0.15 cfs 0.011 af
12.0" Round Pipe n=0.012 L=30.0' S=0.1100 '/' Capacity=12.80 cfs Outflow=0.15 cfs 0.011 af

Reach 11R: Reach 11 Avg. Flow Depth=0.39' Max Vel=4.40 fps Inflow=1.27 cfs 0.110 af
12.0" Round Pipe n=0.012 L=32.0' S=0.0100 '/' Capacity=3.86 cfs Outflow=1.26 cfs 0.110 af

Reach DP2: Design Point 2 Inflow=12.97 cfs 1.611 af
Outflow=12.97 cfs 1.611 af

Pond 3A: Pond 3A Peak Elev=394.53' Storage=5,209 cf Inflow=5.96 cfs 0.813 af
Outflow=5.95 cfs 0.704 af

Pond 3B: Pond 3B Peak Elev=395.14' Storage=6,528 cf Inflow=7.18 cfs 0.644 af
Outflow=5.59 cfs 0.551 af

Total Runoff Area = 4.219 ac Runoff Volume = 1.814 af Average Runoff Depth = 5.16"
74.94% Pervious = 3.162 ac 25.06% Impervious = 1.057 ac

Summary for Subcatchment 3S: Region 3

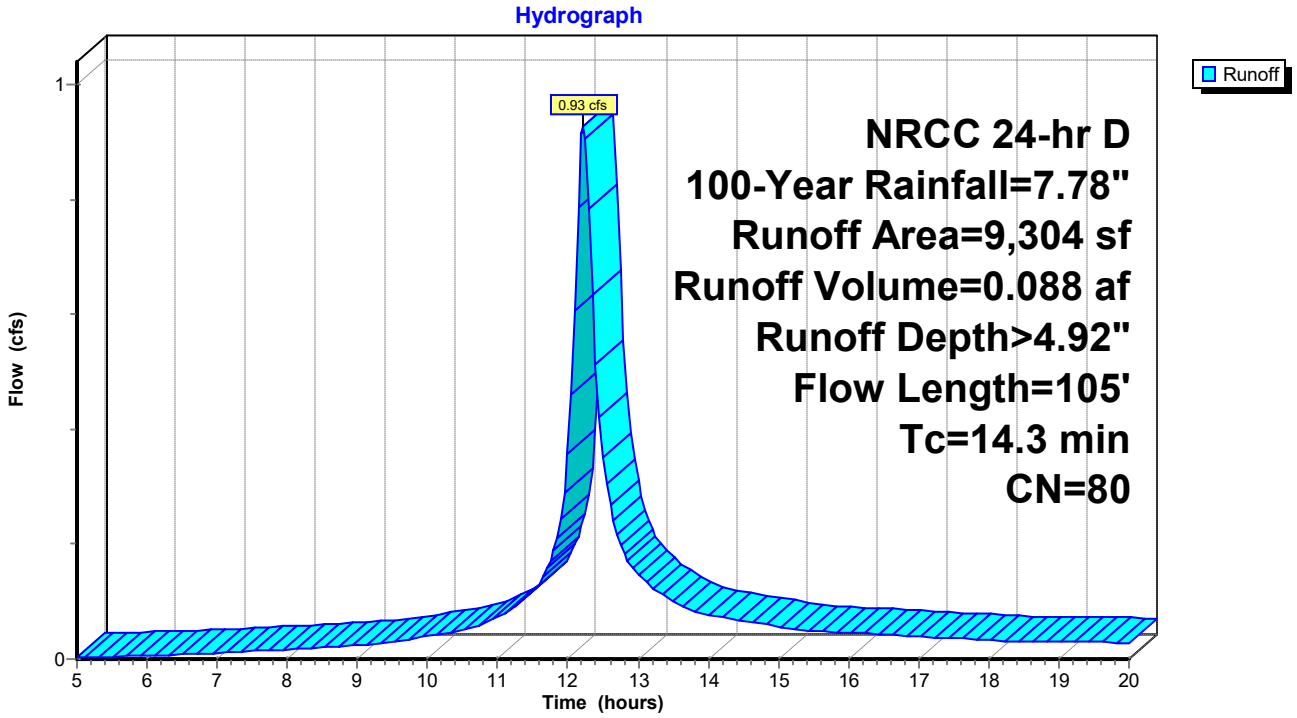
Runoff = 0.93 cfs @ 12.22 hrs, Volume= 0.088 af, Depth> 4.92"
Routed to Pond 3A : Pond 3A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=7.78"

Area (sf)	CN	Description
9,304	80	>75% Grass cover, Good, HSG D
9,304		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	35	0.0600	0.23		**Sheet Flow,** Range n= 0.130 P2= 3.00"
11.8	70	0.0050	0.10		**Sheet Flow,** Range n= 0.130 P2= 3.00"
14.3	105	Total			

Subcatchment 3S: Region 3



Summary for Subcatchment 4A S: Region 4A

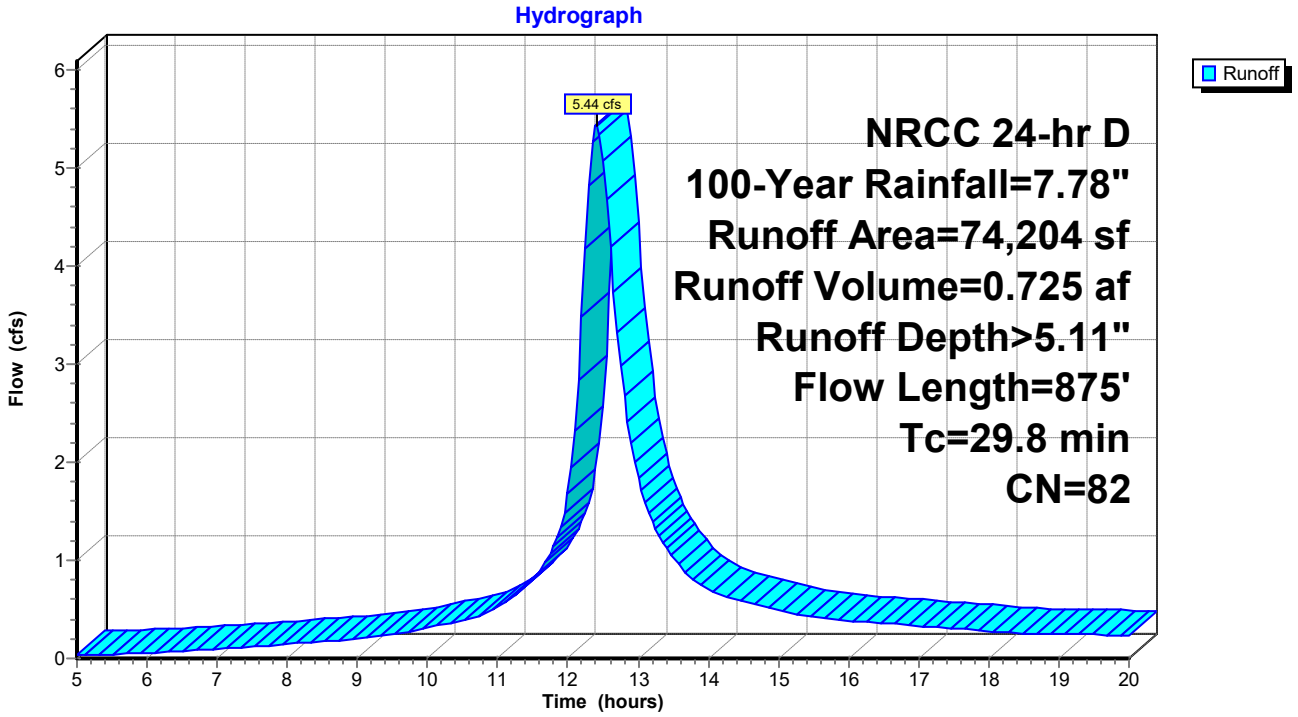
Runoff = 5.44 cfs @ 12.41 hrs, Volume= 0.725 af, Depth> 5.11"
Routed to Pond 3A : Pond 3A

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=7.78"

Area (sf)	CN	Description
18,380	98	Paved parking, HSG D
40,627	77	Woods, Good, HSG D
14,587	78	Meadow, non-grazed, HSG D
610	80	>75% Grass cover, Good, HSG D
74,204	82	Weighted Average
55,824		75.23% Pervious Area
18,380		24.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	100	0.0800	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.00"
4.1	380	0.0970	1.56		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	20	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	180	0.0710	3.23	51.68	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.130 Sheet flow over Range
0.1	70	0.0250	9.02	11.06	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
0.1	55	0.0160	7.21	8.85	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
11.8	70	0.0050	0.10		**Sheet Flow,** Range n= 0.130 P2= 3.00"
29.8	875	Total			

Subcatchment 4A S: Region 4A



Summary for Subcatchment 5S: Region 5

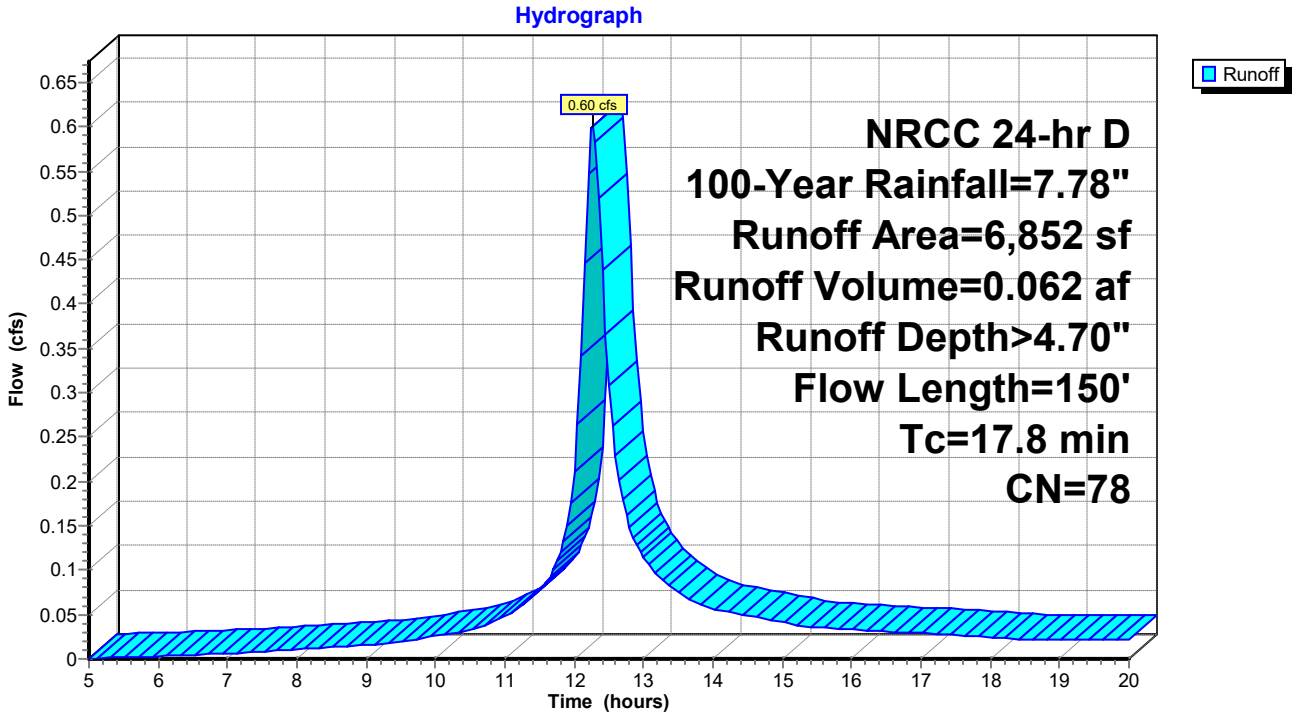
Runoff = 0.60 cfs @ 12.26 hrs, Volume= 0.062 af, Depth> 4.70"
Routed to Pond 3B : Pond 3B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=7.78"

Area (sf)	CN	Description
6,852	78	Meadow, non-grazed, HSG D
6,852		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	10	0.0100	0.09		**Sheet Flow,** Range n= 0.130 P2= 3.00"
0.2	40	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.7	100	0.0050	0.11		**Sheet Flow,** Range n= 0.130 P2= 3.00"
17.8	150	Total			

Subcatchment 5S: Region 5



Summary for Subcatchment 6S: Region 6

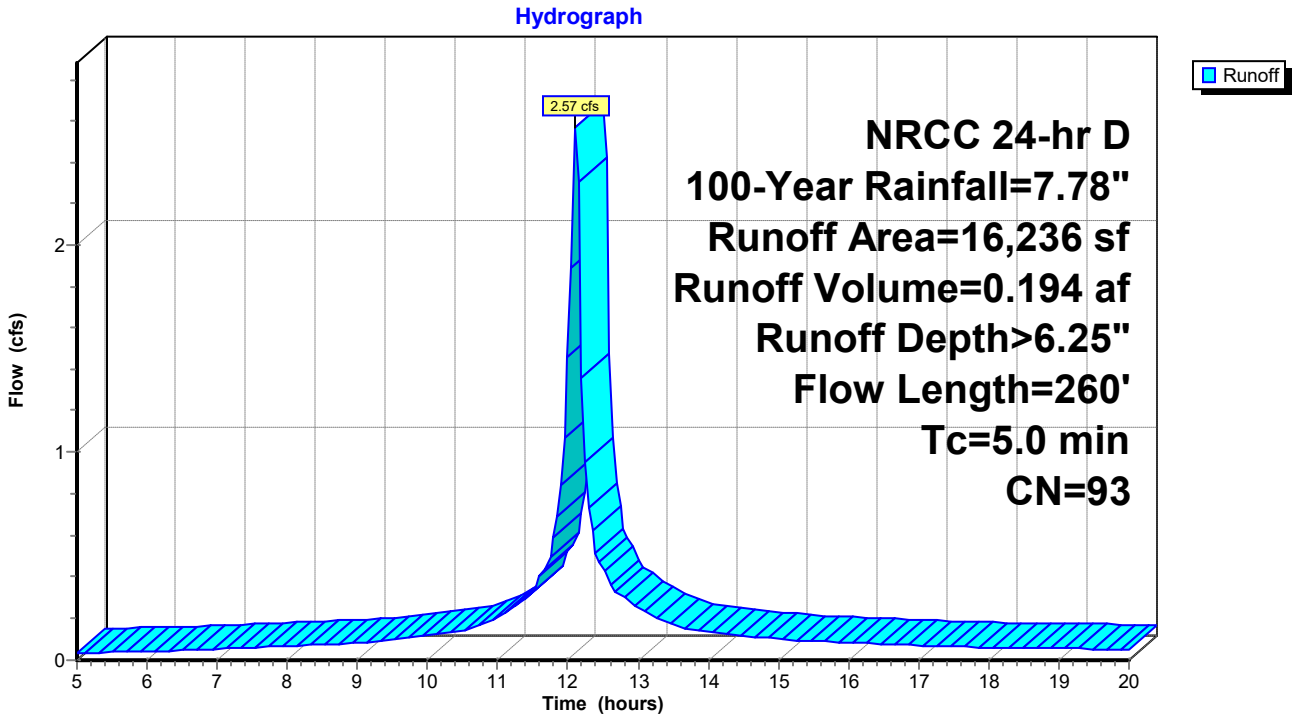
Runoff = 2.57 cfs @ 12.11 hrs, Volume= 0.194 af, Depth> 6.25"
Routed to Reach 6R : Reach 6 CB2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=7.78"

Area (sf)	CN	Description
12,022	98	Paved parking, HSG D
4,214	78	Meadow, non-grazed, HSG D
16,236	93	Weighted Average
4,214		25.95% Pervious Area
12,022		74.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	25	0.0100	0.11		**Sheet Flow,** Range n= 0.130 P2= 3.00"
0.7	125	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	110	0.0500	4.54		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.0	260	Total			

Subcatchment 6S: Region 6



Summary for Subcatchment 7S: Region 7

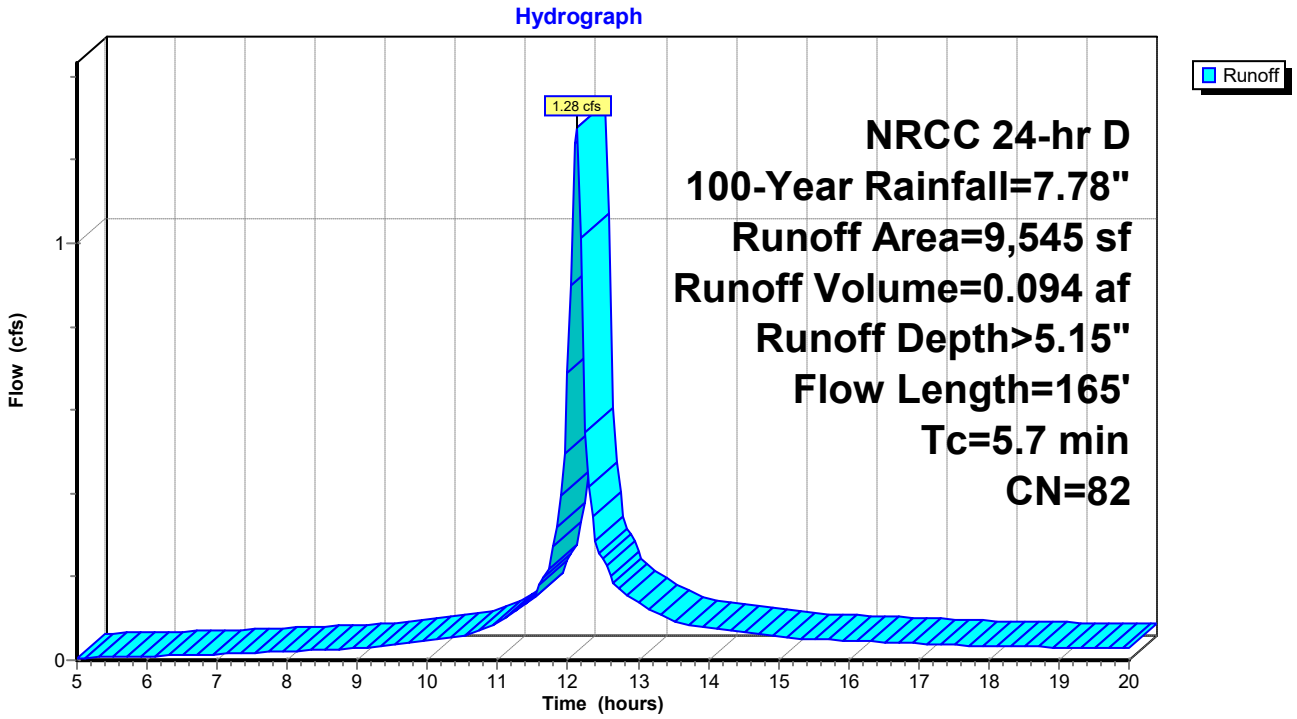
Runoff = 1.28 cfs @ 12.12 hrs, Volume= 0.094 af, Depth> 5.15"
Routed to Reach 7aR : Reach 7a

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=7.78"

Area (sf)	CN	Description
2,135	98	Paved parking, HSG D
7,410	78	Meadow, non-grazed, HSG D
9,545	82	Weighted Average
7,410		77.63% Pervious Area
2,135		22.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	20	0.0100	0.10		**Sheet Flow,** Range n= 0.130 P2= 3.00"
0.1	25	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.3	120	0.0160	0.89		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.7	165	Total			

Subcatchment 7S: Region 7



Summary for Subcatchment 8S: Region 8

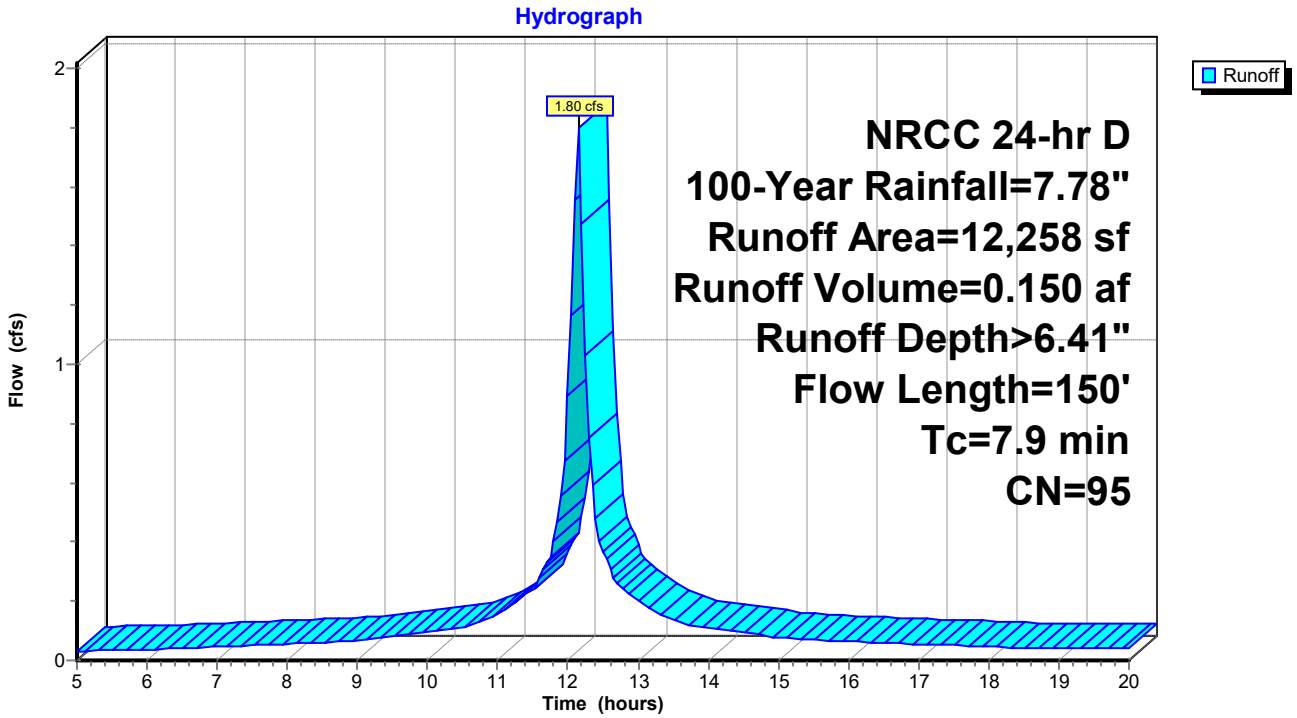
Runoff = 1.80 cfs @ 12.15 hrs, Volume= 0.150 af, Depth> 6.41"
Routed to Reach 8R : Reach 8 CB 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=7.78"

Area (sf)	CN	Description
10,327	98	Paved parking, HSG D
1,931	78	Meadow, non-grazed, HSG D
12,258	95	Weighted Average
1,931		15.75% Pervious Area
10,327		84.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	50	0.0100	0.12		**Sheet Flow,** Range n= 0.130 P2= 3.00"
1.1	100	0.0280	1.52		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
7.9	150	Total			

Subcatchment 8S: Region 8



Summary for Subcatchment 9S: Region 9

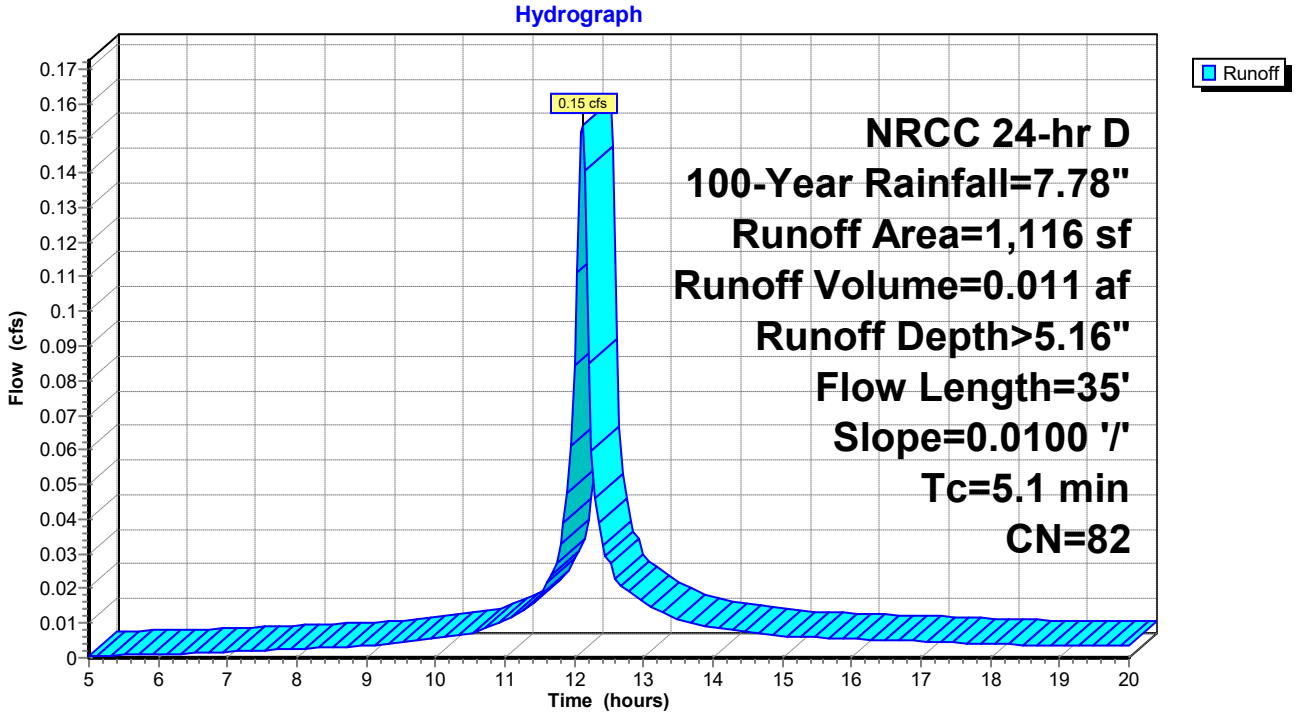
Runoff = 0.15 cfs @ 12.11 hrs, Volume= 0.011 af, Depth> 5.16"
Routed to Reach 10R : Reach 10

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=7.78"

Area (sf)	CN	Description
228	98	Paved parking, HSG D
888	78	Meadow, non-grazed, HSG D
1,116	82	Weighted Average
888		79.57% Pervious Area
228		20.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	35	0.0100	0.11		**Sheet Flow,** Range n= 0.130 P2= 3.00"

Subcatchment 9S: Region 9



Summary for Subcatchment 10S: Region 10

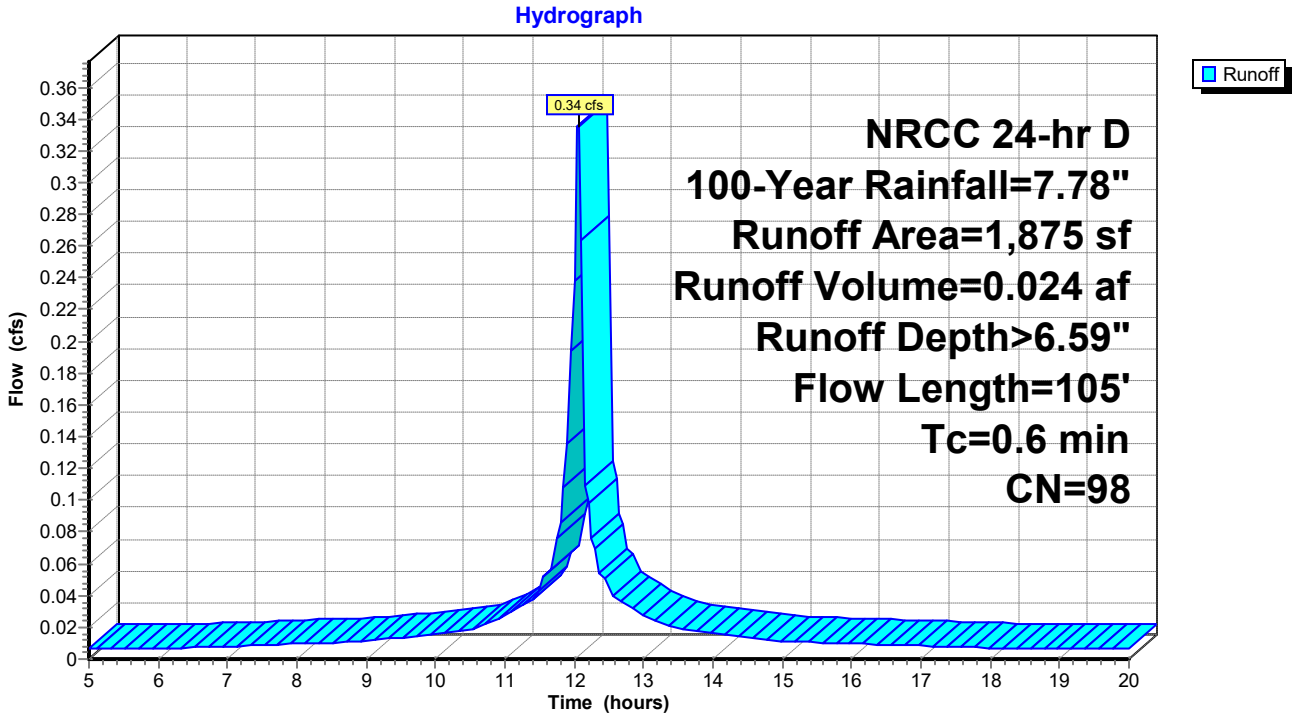
Runoff = 0.34 cfs @ 12.05 hrs, Volume= 0.024 af, Depth> 6.59"
Routed to Reach 9R : Reach 9 CB 5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=7.78"

Area (sf)	CN	Description
1,875	98	Paved parking, HSG D
1,875		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.97		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
0.3	85	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	105	Total			

Subcatchment 10S: Region 10



Summary for Subcatchment 11S: Region 11

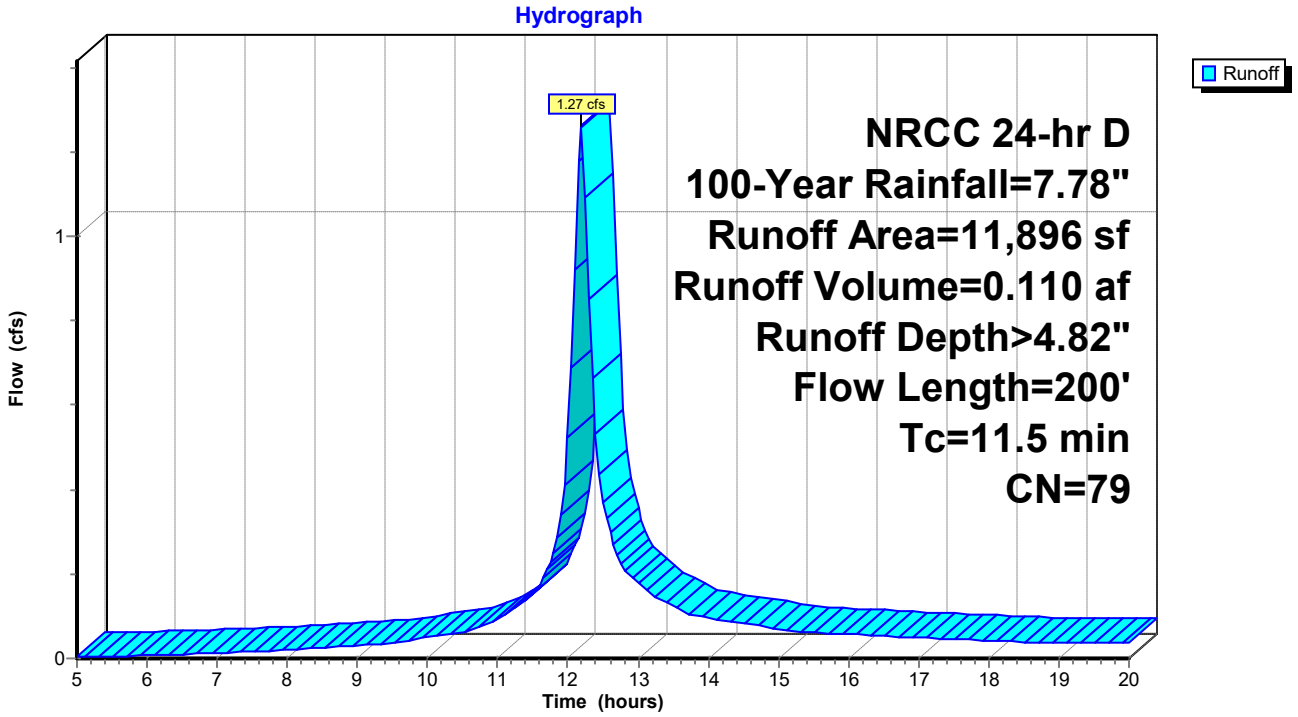
Runoff = 1.27 cfs @ 12.19 hrs, Volume= 0.110 af, Depth> 4.82"
Routed to Reach 11R : Reach 11

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=7.78"

Area (sf)	CN	Description
1,085	98	Paved parking, HSG D
10,811	77	Woods, Good, HSG D
11,896	79	Weighted Average
10,811		90.88% Pervious Area
1,085		9.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.1200	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.00"
0.5	60	0.1330	1.82		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	15	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	25	0.0670	3.25	58.47	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=2.00' Z= 3.0 '/' Top.W=15.00' n= 0.130 Sheet flow over Range
11.5	200	Total			

Subcatchment 11S: Region 11



Summary for Subcatchment 24S: Region 24

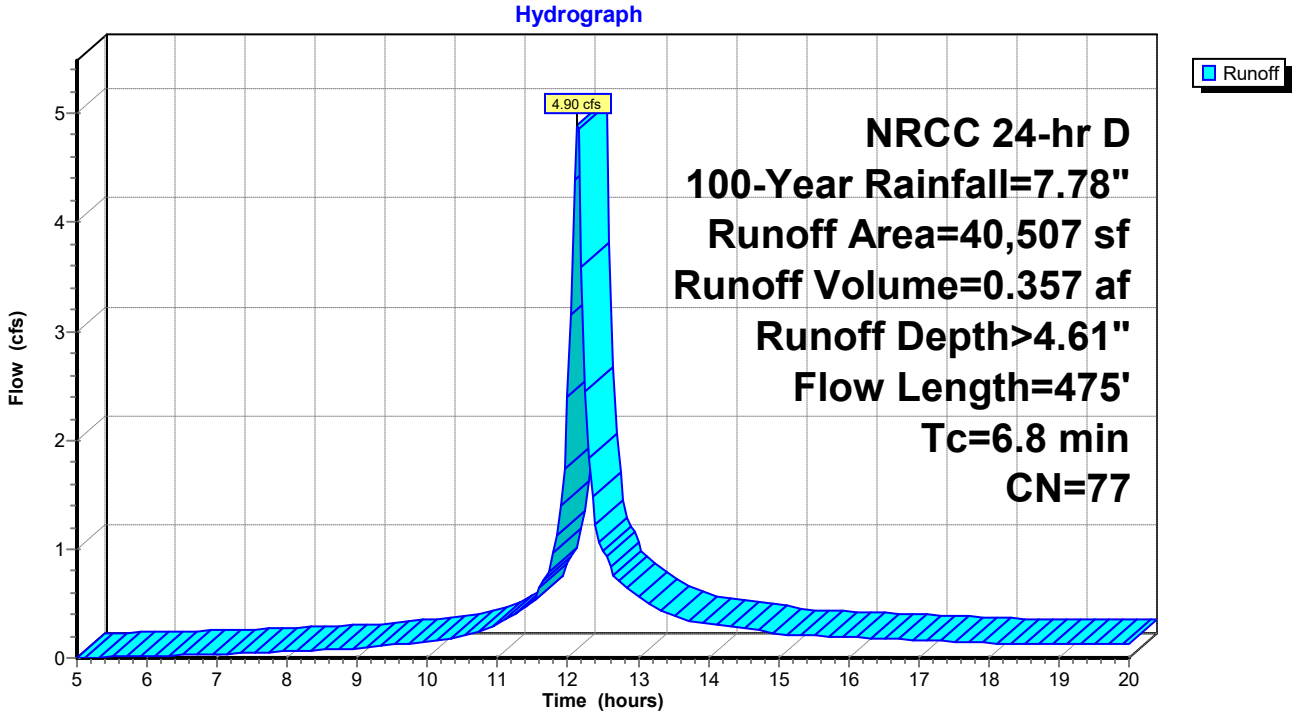
Runoff = 4.90 cfs @ 12.14 hrs, Volume= 0.357 af, Depth> 4.61"
Routed to Reach DP2 : Design Point 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=7.78"

Area (sf)	CN	Description
40,507	77	Woods, Good, HSG D
40,507		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	25	0.0400	0.18		**Sheet Flow,** Range n= 0.130 P2= 3.00"
0.2	40	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	35	0.1700	2.06		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.0	375	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.8	475	Total			

Subcatchment 24S: Region 24



Summary for Reach 1R: Reach 1

Inflow Area = 3.289 ac, 32.14% Impervious, Inflow Depth > 4.58" for 100-Year event
Inflow = 10.60 cfs @ 12.30 hrs, Volume= 1.255 af
Outflow = 10.58 cfs @ 12.31 hrs, Volume= 1.254 af, Atten= 0%, Lag= 0.8 min
Routed to Reach DP2 : Design Point 2

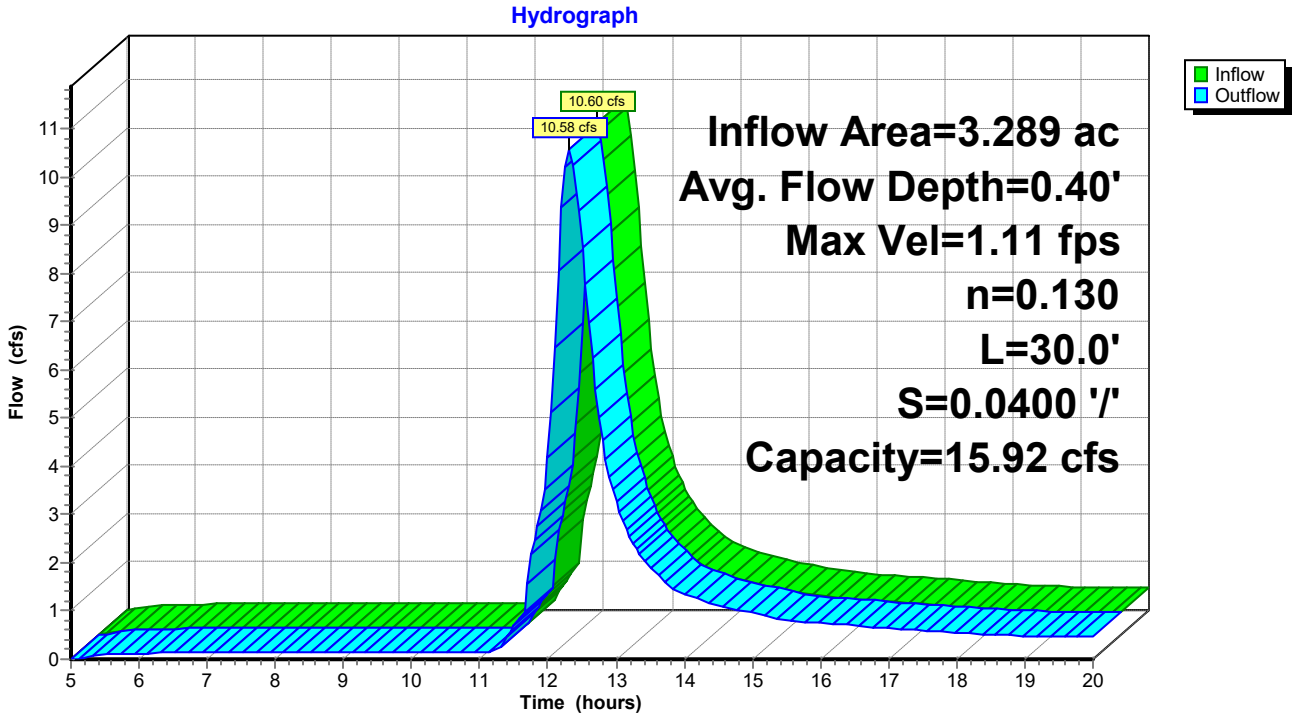
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.11 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 0.38 fps, Avg. Travel Time= 1.3 min

Peak Storage= 286 cf @ 12.31 hrs
Average Depth at Peak Storage= 0.40' , Surface Width= 27.94'
Bank-Full Depth= 0.50' Flow Area= 12.5 sf, Capacity= 15.92 cfs

20.00' x 0.50' deep channel, n= 0.130 Sheet flow over Range
Side Slope Z-value= 10.0 '/' Top Width= 30.00'
Length= 30.0' Slope= 0.0400 '/'
Inlet Invert= 0.00', Outlet Invert= -1.20'

‡

Reach 1R: Reach 1



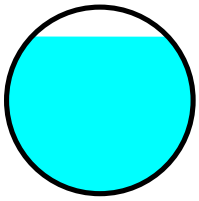
Summary for Reach 6R: Reach 6 CB2

Inflow Area = 1.215 ac, 52.28% Impervious, Inflow Depth > 5.75" for 100-Year event
Inflow = 6.81 cfs @ 12.13 hrs, Volume= 0.583 af
Outflow = 6.75 cfs @ 12.14 hrs, Volume= 0.582 af, Atten= 1%, Lag= 0.5 min
Routed to Pond 3B : Pond 3B

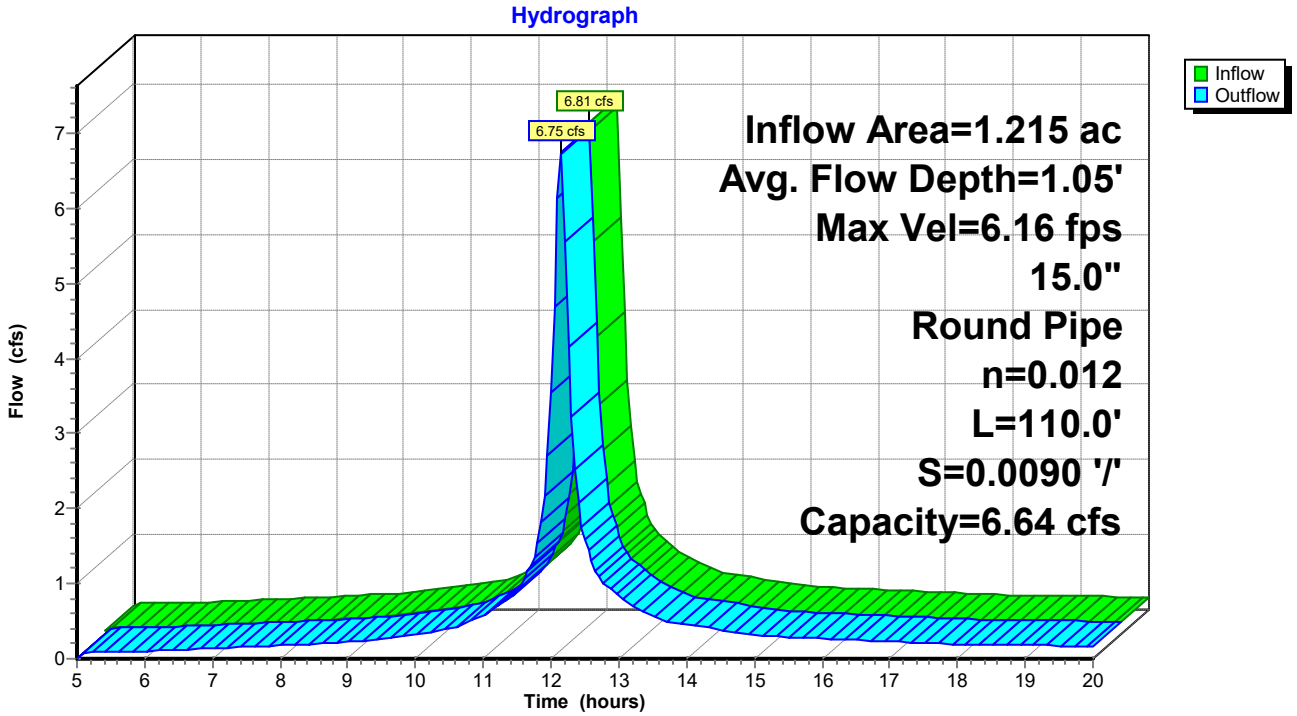
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.16 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.78 fps, Avg. Travel Time= 0.7 min

Peak Storage= 122 cf @ 12.14 hrs
Average Depth at Peak Storage= 1.05' , Surface Width= 0.91'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 6.64 cfs

15.0" Round Pipe
n= 0.012
Length= 110.0' Slope= 0.0090 '/'
Inlet Invert= 0.00', Outlet Invert= -0.99'



Reach 6R: Reach 6 CB2



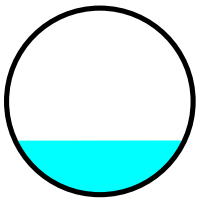
Summary for Reach 7aR: Reach 7a

Inflow Area = 0.219 ac, 22.37% Impervious, Inflow Depth > 5.15" for 100-Year event
Inflow = 1.28 cfs @ 12.12 hrs, Volume= 0.094 af
Outflow = 1.29 cfs @ 12.13 hrs, Volume= 0.094 af, Atten= 0%, Lag= 0.2 min
Routed to Reach 7R : Reach 7 CB3

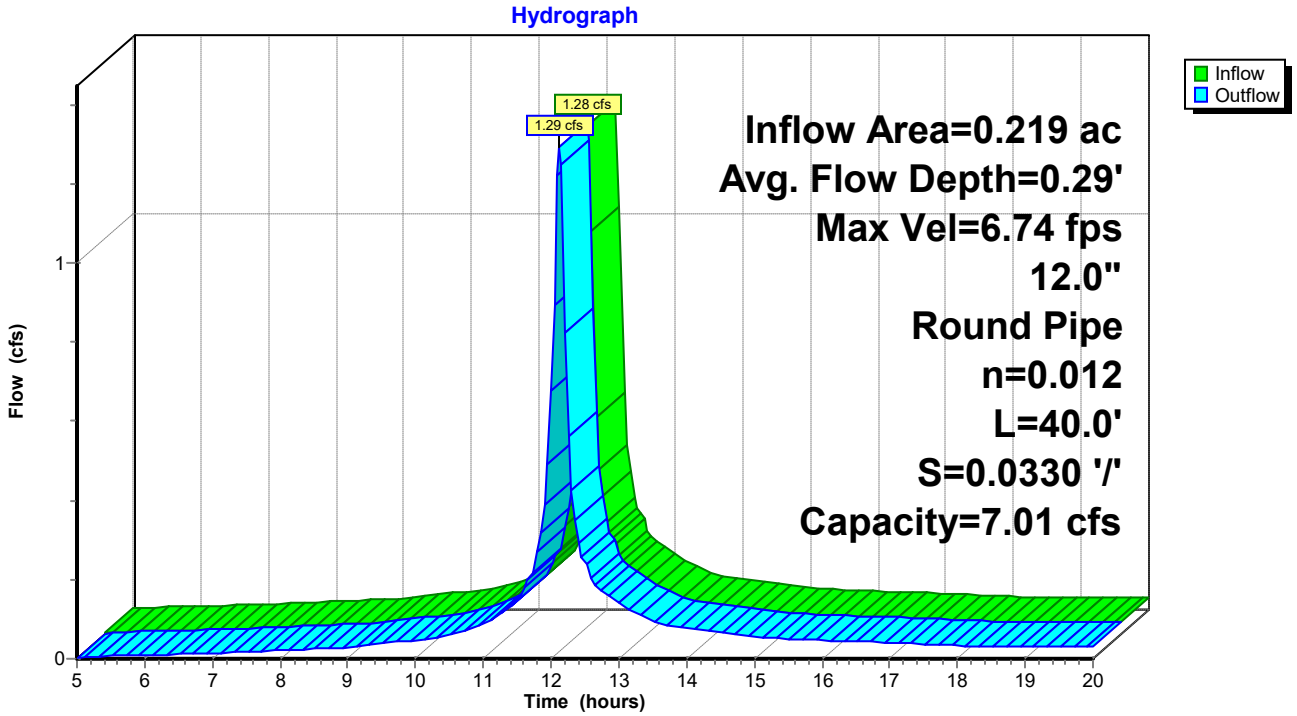
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.74 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.58 fps, Avg. Travel Time= 0.3 min

Peak Storage= 8 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.29' , Surface Width= 0.91'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 7.01 cfs

12.0" Round Pipe
n= 0.012
Length= 40.0' Slope= 0.0330 '/'
Inlet Invert= 0.00', Outlet Invert= -1.32'



Reach 7aR: Reach 7a



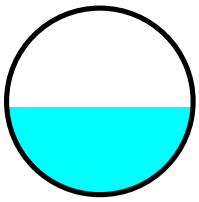
Summary for Reach 7R: Reach 7 CB3

Inflow Area = 0.842 ac, 42.65% Impervious, Inflow Depth > 5.53" for 100-Year event
Inflow = 4.44 cfs @ 12.14 hrs, Volume= 0.388 af
Outflow = 4.41 cfs @ 12.15 hrs, Volume= 0.388 af, Atten= 1%, Lag= 0.3 min
Routed to Reach 6R : Reach 6 CB2

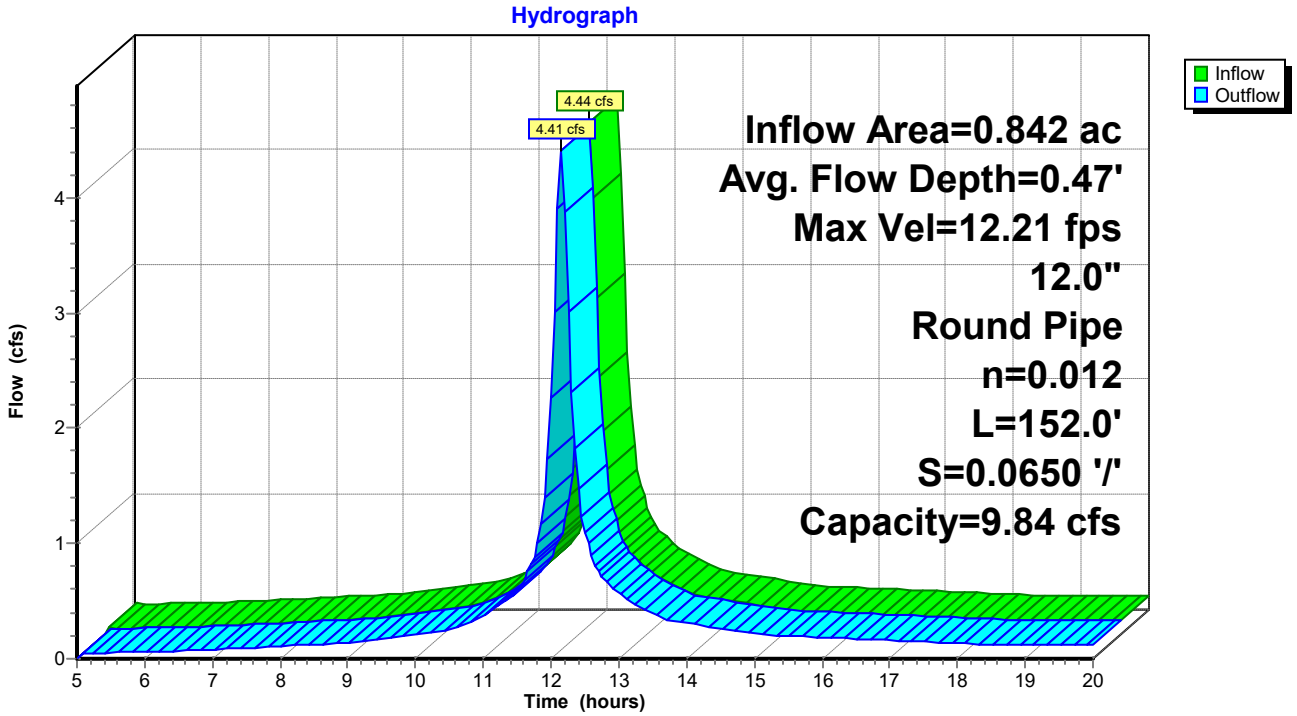
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.21 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 5.08 fps, Avg. Travel Time= 0.5 min

Peak Storage= 55 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.47' , Surface Width= 1.00'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 9.84 cfs

12.0" Round Pipe
n= 0.012
Length= 152.0' Slope= 0.0650 '/'
Inlet Invert= 0.00', Outlet Invert= -9.88'



Reach 7R: Reach 7 CB3



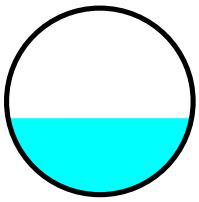
Summary for Reach 8R: Reach 8 CB 4

Inflow Area = 0.623 ac, 49.79% Impervious, Inflow Depth > 5.67" for 100-Year event
Inflow = 3.21 cfs @ 12.15 hrs, Volume= 0.295 af
Outflow = 3.19 cfs @ 12.16 hrs, Volume= 0.294 af, Atten= 1%, Lag= 0.3 min
Routed to Reach 7R : Reach 7 CB3

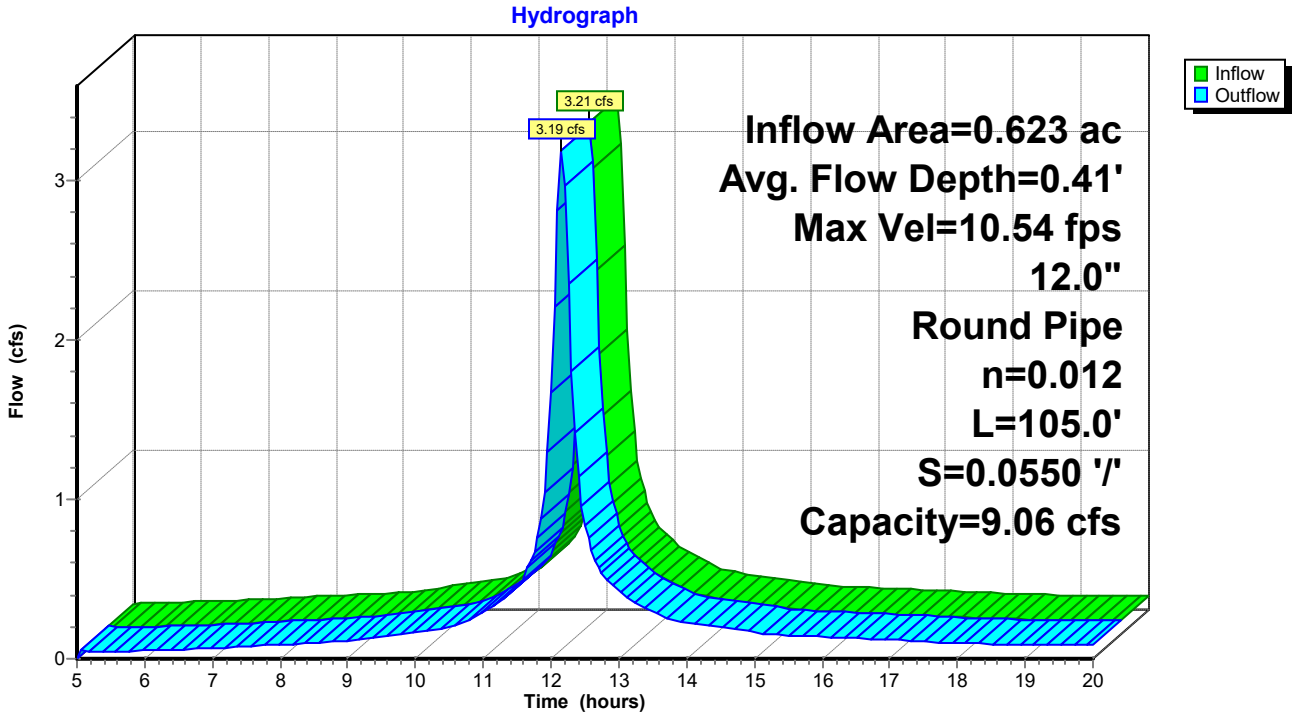
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.54 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 4.43 fps, Avg. Travel Time= 0.4 min

Peak Storage= 32 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.41' , Surface Width= 0.98'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 9.06 cfs

12.0" Round Pipe
n= 0.012
Length= 105.0' Slope= 0.0550 '/'
Inlet Invert= 0.00', Outlet Invert= -5.78'



Reach 8R: Reach 8 CB 4



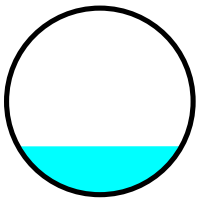
Summary for Reach 9R: Reach 9 CB 5

Inflow Area = 0.342 ac, 21.41% Impervious, Inflow Depth > 5.07" for 100-Year event
Inflow = 1.46 cfs @ 12.18 hrs, Volume= 0.144 af
Outflow = 1.46 cfs @ 12.18 hrs, Volume= 0.144 af, Atten= 0%, Lag= 0.1 min
Routed to Reach 8R : Reach 8 CB 4

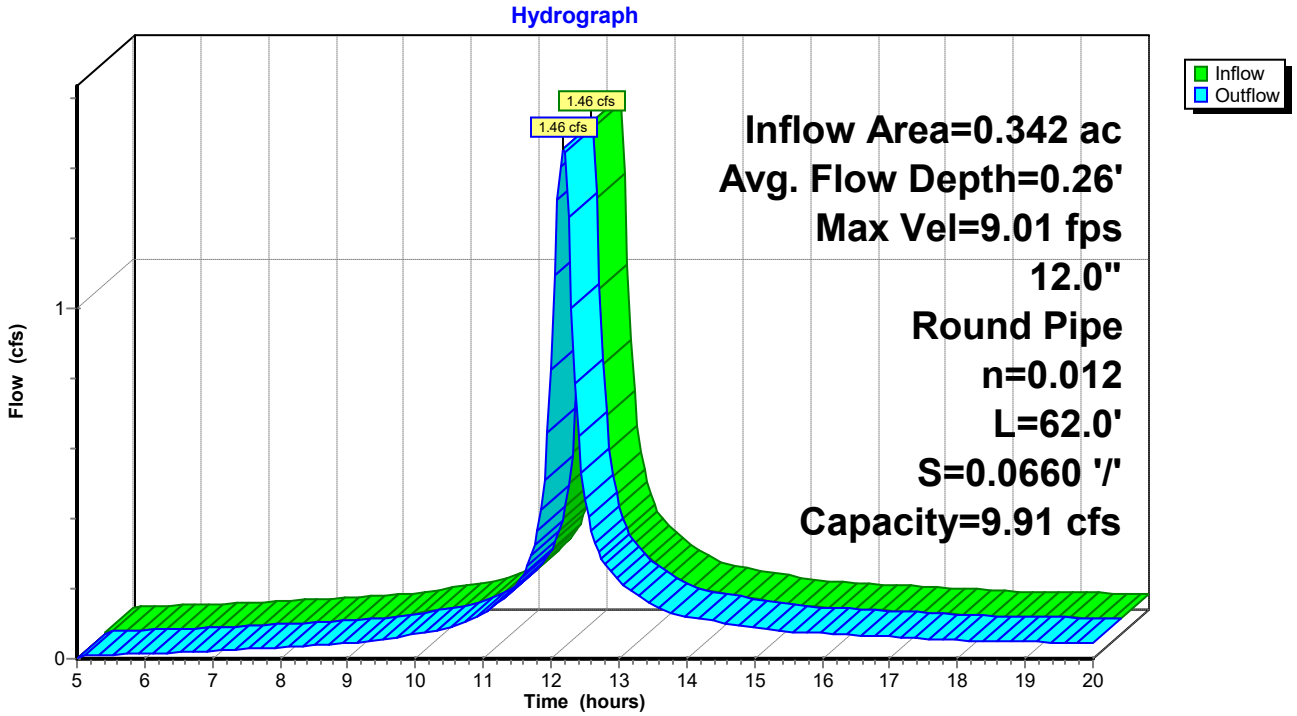
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.01 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.75 fps, Avg. Travel Time= 0.3 min

Peak Storage= 10 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.26' , Surface Width= 0.88'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 9.91 cfs

12.0" Round Pipe
n= 0.012
Length= 62.0' Slope= 0.0660 '/'
Inlet Invert= 0.00', Outlet Invert= -4.09'



Reach 9R: Reach 9 CB 5



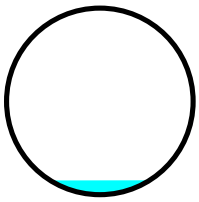
Summary for Reach 10R: Reach 10

Inflow Area = 0.026 ac, 20.43% Impervious, Inflow Depth > 5.16" for 100-Year event
Inflow = 0.15 cfs @ 12.11 hrs, Volume= 0.011 af
Outflow = 0.15 cfs @ 12.12 hrs, Volume= 0.011 af, Atten= 1%, Lag= 0.2 min
Routed to Reach 9R : Reach 9 CB 5

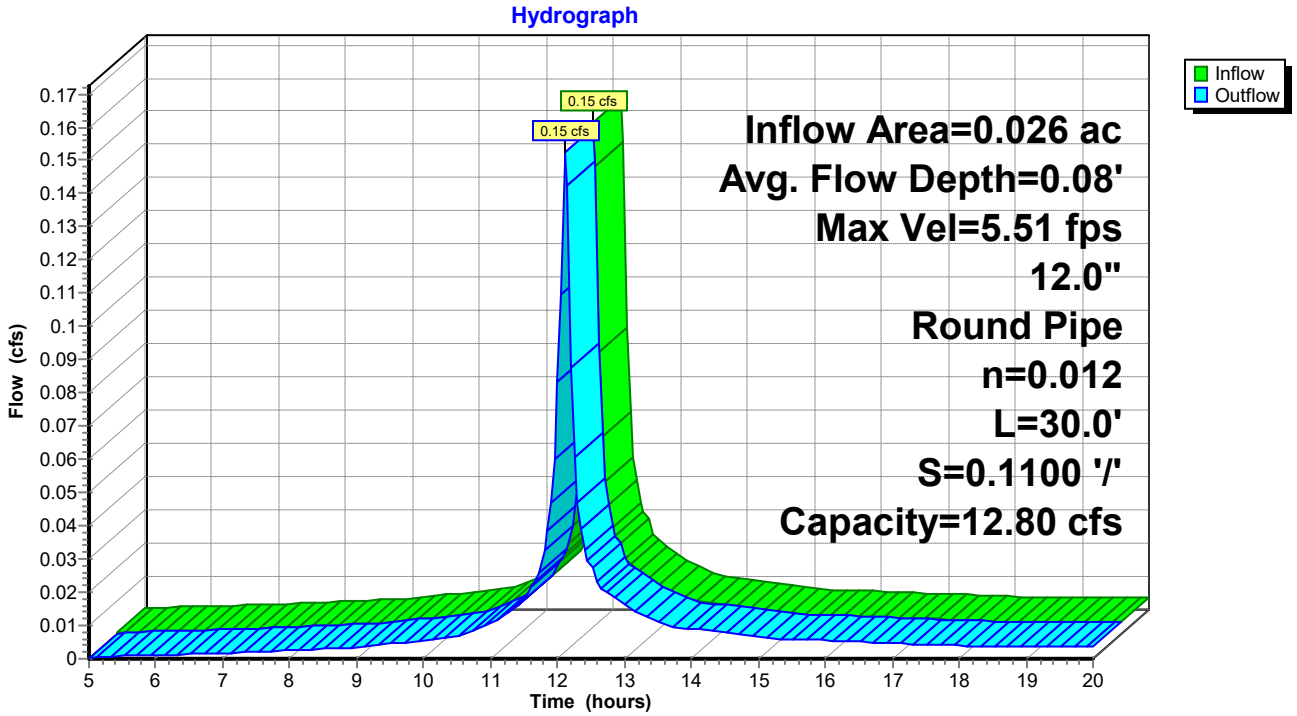
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.51 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.12 fps, Avg. Travel Time= 0.2 min

Peak Storage= 1 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.08' , Surface Width= 0.53'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 12.80 cfs

12.0" Round Pipe
n= 0.012
Length= 30.0' Slope= 0.1100 '/'
Inlet Invert= 0.00', Outlet Invert= -3.30'



Reach 10R: Reach 10



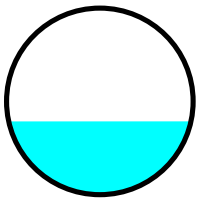
Summary for Reach 11R: Reach 11

Inflow Area = 0.273 ac, 9.12% Impervious, Inflow Depth > 4.82" for 100-Year event
Inflow = 1.27 cfs @ 12.19 hrs, Volume= 0.110 af
Outflow = 1.26 cfs @ 12.19 hrs, Volume= 0.110 af, Atten= 0%, Lag= 0.2 min
Routed to Reach 9R : Reach 9 CB 5

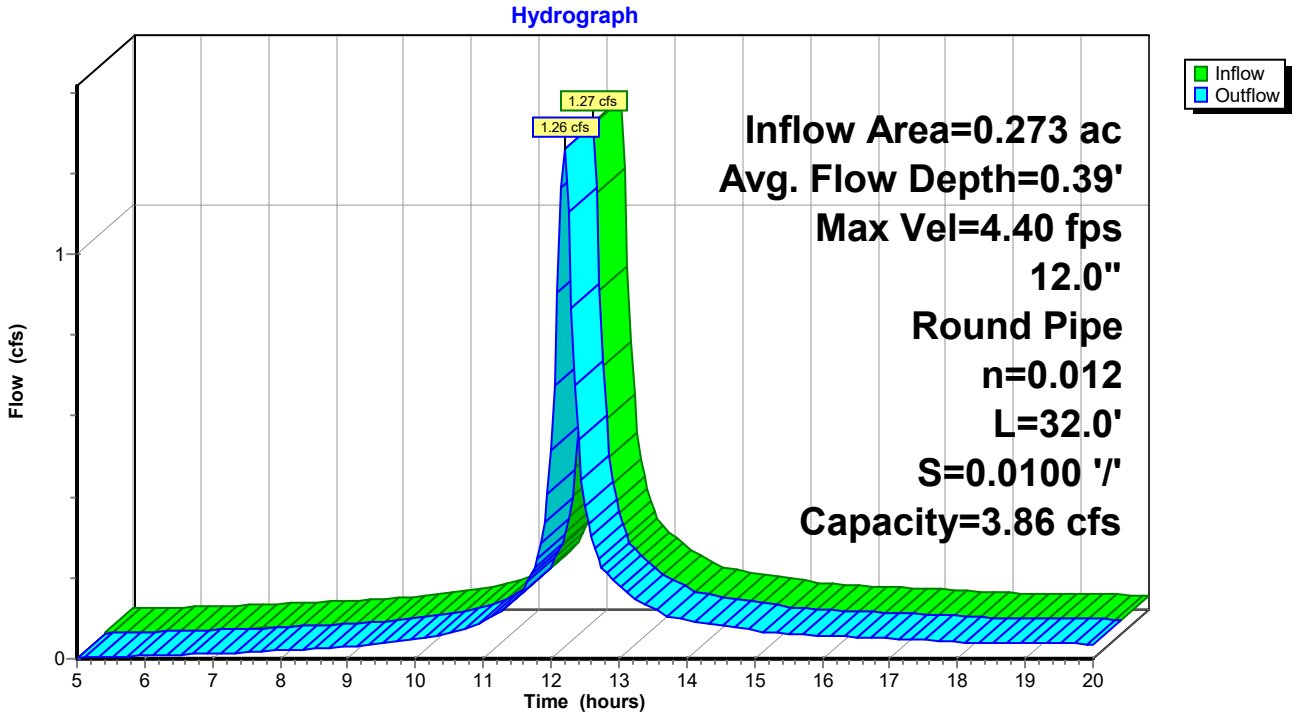
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.40 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.76 fps, Avg. Travel Time= 0.3 min

Peak Storage= 9 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.39' , Surface Width= 0.98'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe
n= 0.012
Length= 32.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.32'



Reach 11R: Reach 11

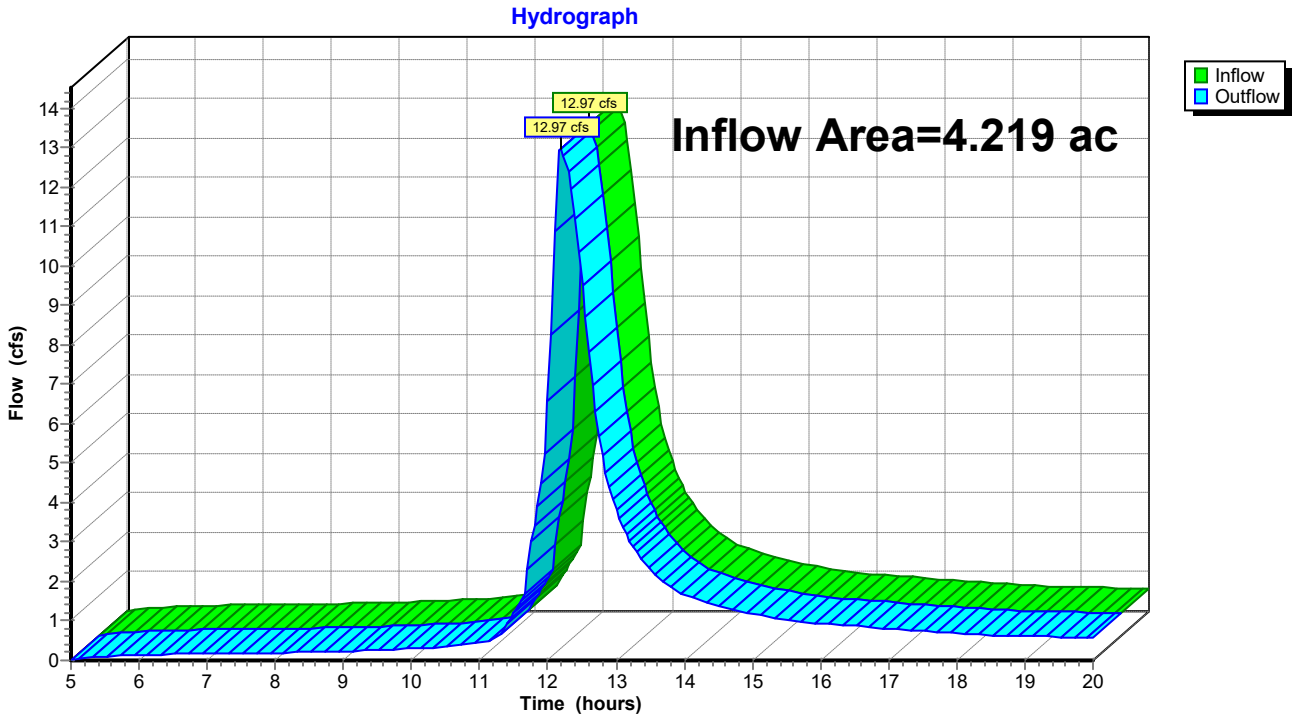


Summary for Reach DP2: Design Point 2

Inflow Area = 4.219 ac, 25.06% Impervious, Inflow Depth > 4.58" for 100-Year event
Inflow = 12.97 cfs @ 12.18 hrs, Volume= 1.611 af
Outflow = 12.97 cfs @ 12.18 hrs, Volume= 1.611 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP2: Design Point 2



Summary for Pond 3A: Pond 3A

Inflow Area = 1.917 ac, 22.01% Impervious, Inflow Depth > 5.09" for 100-Year event
Inflow = 5.96 cfs @ 12.39 hrs, Volume= 0.813 af
Outflow = 5.95 cfs @ 12.40 hrs, Volume= 0.704 af, Atten= 0%, Lag= 1.1 min
Primary = 5.95 cfs @ 12.40 hrs, Volume= 0.704 af
Routed to Reach 1R : Reach 1

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 394.53' @ 12.40 hrs Surf.Area= 4,087 sf Storage= 5,209 cf

Plug-Flow detention time= 71.3 min calculated for 0.702 af (86% of inflow)
Center-of-Mass det. time= 27.9 min (813.0 - 785.1)

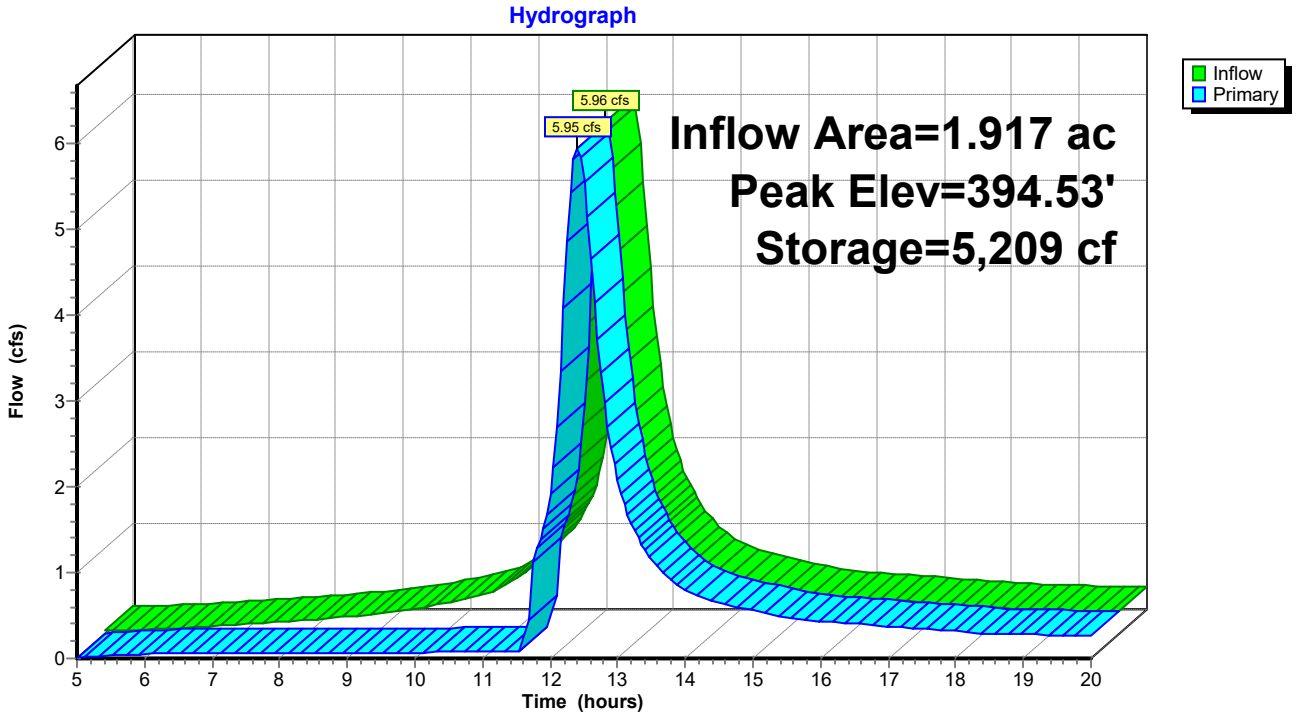
Volume	Invert	Avail.Storage	Storage Description
#1	393.00'	12,120 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
393.00	2,730	0	0
394.00	3,616	3,173	3,173
395.00	4,506	4,061	7,234
396.00	5,265	4,886	12,120

Device	Routing	Invert	Outlet Devices
#1	Primary	389.75'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 389.75' / 389.35' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	390.00'	**1.2" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	394.40'	**50.0' long x 2.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=5.93 cfs @ 12.40 hrs HW=394.53' (Free Discharge)
└─**1=Culvert** (Passes 0.08 cfs of 7.82 cfs potential flow)
  └─**2=Orifice/Grate** (Orifice Controls 0.08 cfs @ 10.19 fps)
└─**3=Broad-Crested Rectangular Weir** (Weir Controls 5.85 cfs @ 0.91 fps)

Pond 3A: Pond 3A



Summary for Pond 3B: Pond 3B

Inflow Area = 1.372 ac, 46.29% Impervious, Inflow Depth > 5.63" for 100-Year event
Inflow = 7.18 cfs @ 12.14 hrs, Volume= 0.644 af
Outflow = 5.59 cfs @ 12.22 hrs, Volume= 0.551 af, Atten= 22%, Lag= 4.6 min
Primary = 5.59 cfs @ 12.22 hrs, Volume= 0.551 af
Routed to Reach 1R : Reach 1

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 395.14' @ 12.22 hrs Surf.Area= 3,869 sf Storage= 6,528 cf

Plug-Flow detention time= 85.9 min calculated for 0.549 af (85% of inflow)
Center-of-Mass det. time= 37.7 min (795.9 - 758.2)

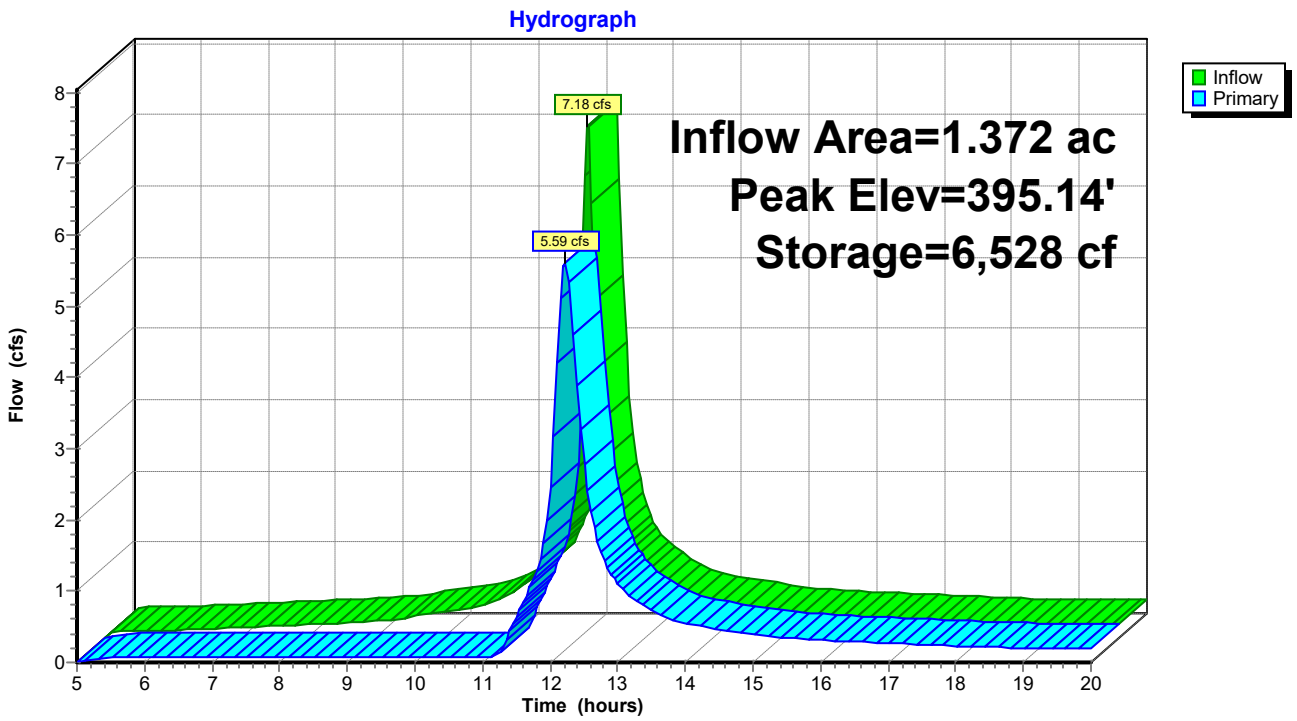
Volume	Invert	Avail.Storage	Storage Description
#1	393.00'	10,071 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

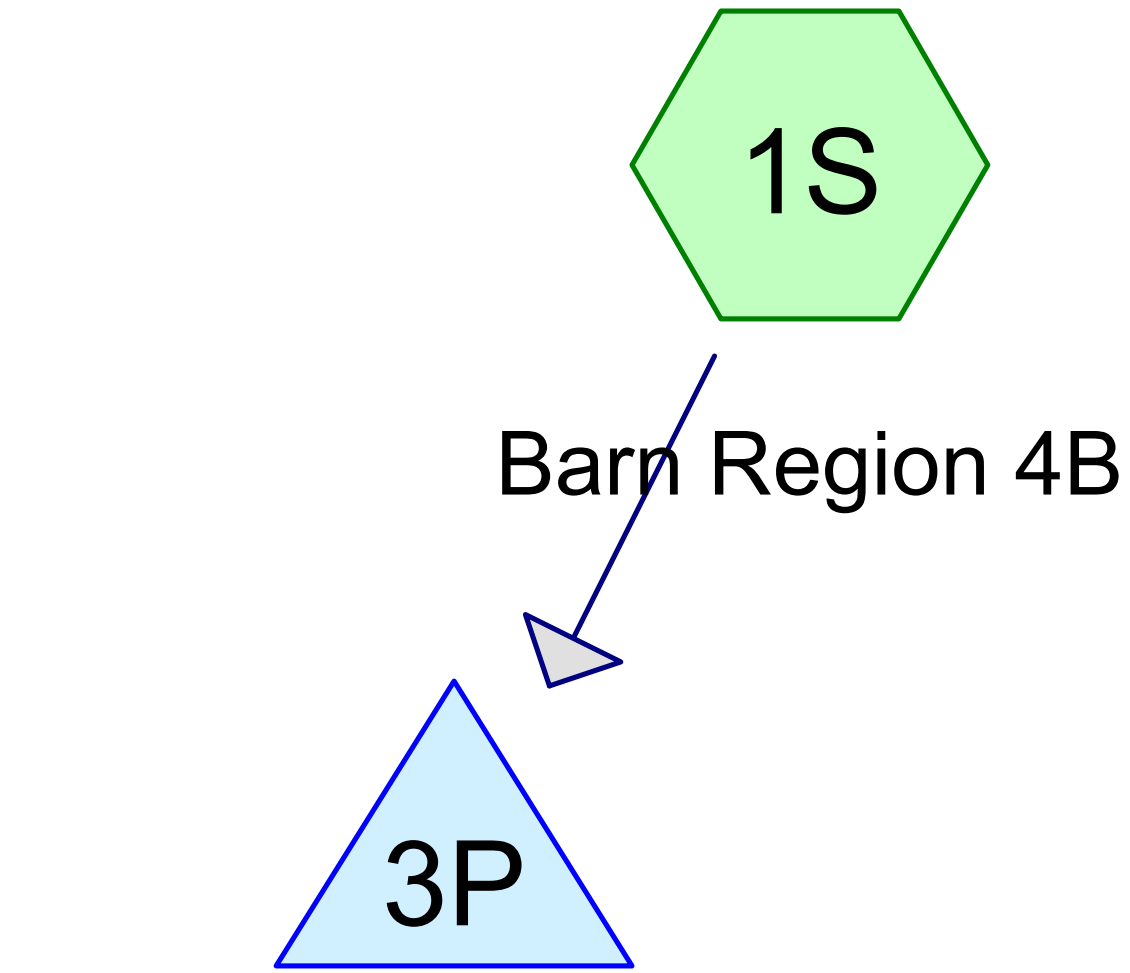
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
393.00	2,175	0	0
394.00	3,021	2,598	2,598
395.00	3,796	3,409	6,007
396.00	4,333	4,065	10,071

Device	Routing	Invert	Outlet Devices
#1	Primary	389.35'	**18.0" Round Culvert** L= 45.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 389.35' / 388.90' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	390.00'	**1.2" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	394.40'	**36.0" W x 7.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	395.35'	**25.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

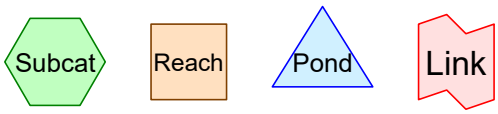
Primary OutFlow Max=5.54 cfs @ 12.22 hrs HW=395.13' (Free Discharge)
- **1=Culvert** (Passes 5.54 cfs of 19.08 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.09 cfs @ 10.85 fps)
  - **3=Orifice/Grate** (Orifice Controls 5.45 cfs @ 3.12 fps)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3B: Pond 3B





Barn Bypass detention Pond Emergency Spillway



Routing Diagram for Proposed to Phase 1 Design Point 2 with Barn bypass 11202023

Prepared by SJR Engineering, Printed 11/19/2023

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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	25-Year	NRCC 24-hr	D	Default	24.00	1	5.55	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.259	78	Meadow, non-grazed, HSG D (1S)
1.318	77	Woods, Good, HSG D (1S)
1.577	**77**	**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.259	0.000	0.259	Meadow, non-grazed	1S
0.000	0.000	0.000	1.318	0.000	1.318	Woods, Good	1S
0.000	**0.000**	**0.000**	**1.577**	**0.000**	**1.577**	**TOTAL AREA**	

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Barn Region 4B Runoff Area=68,678 sf 0.00% Impervious Runoff Depth>2.77"
Flow Length=510' Tc=12.0 min CN=77 Runoff=4.28 cfs 0.364 af

Pond 3P: Barn Bypass detention Pond Peak Elev=404.00' Storage=3,787 cf Inflow=4.28 cfs 0.364 af
Outflow=4.20 cfs 0.286 af

Total Runoff Area = 1.577 ac Runoff Volume = 0.364 af Average Runoff Depth = 2.77"
100.00% Pervious = 1.577 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: Barn Region 4B

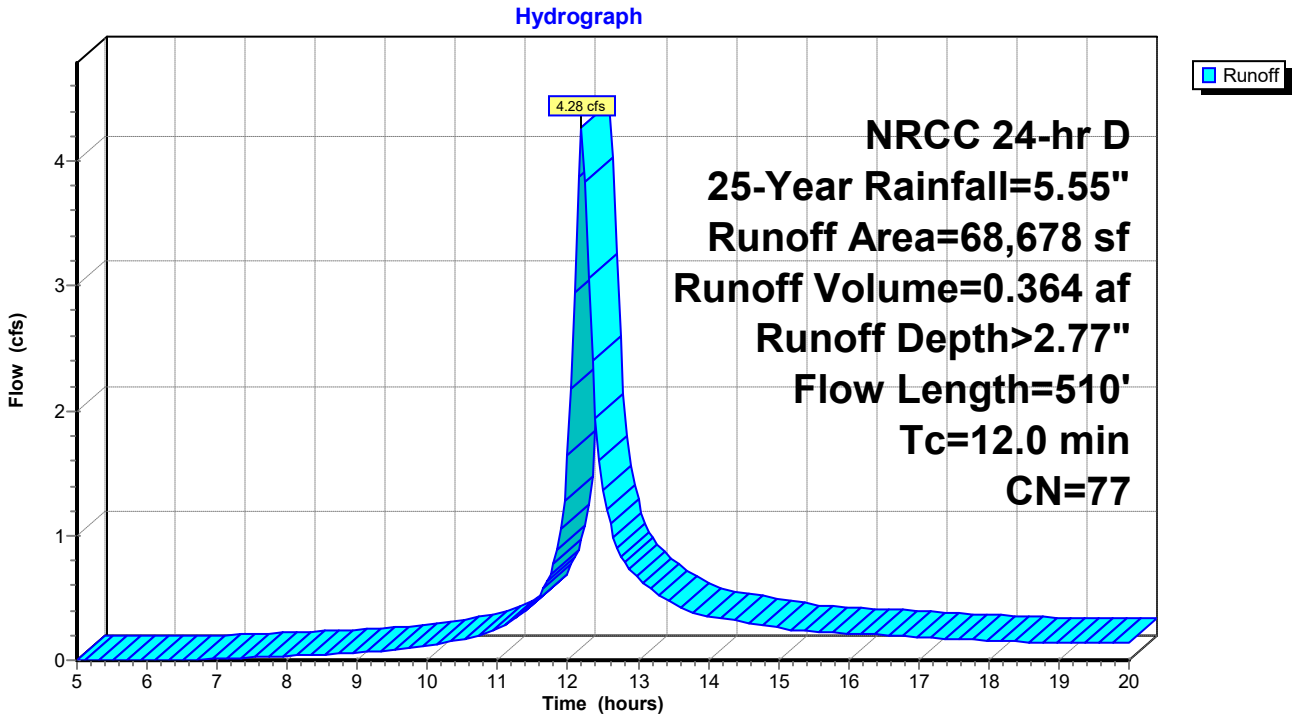
Runoff = 4.28 cfs @ 12.20 hrs, Volume= 0.364 af, Depth> 2.77"
Routed to Pond 3P : Barn Bypass detention Pond Emergency Spillway

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=5.55"

Area (sf)	CN	Description
11,285	78	Meadow, non-grazed, HSG D
57,393	77	Woods, Good, HSG D
68,678	77	Weighted Average
68,678		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.1500	0.17		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.00"
1.6	170	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	240	0.1100	7.58	121.21	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.069 Riprap, 6-inch
12.0	510	Total			

Subcatchment 1S: Barn Region 4B



Summary for Pond 3P: Barn Bypass detention Pond Emergency Spillway

Inflow Area = 1.577 ac, 0.00% Impervious, Inflow Depth > 2.77" for 25-Year event
Inflow = 4.28 cfs @ 12.20 hrs, Volume= 0.364 af
Outflow = 4.20 cfs @ 12.22 hrs, Volume= 0.286 af, Atten= 2%, Lag= 1.2 min
Primary = 4.20 cfs @ 12.22 hrs, Volume= 0.286 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 404.00' @ 12.22 hrs Surf.Area= 2,174 sf Storage= 3,787 cf

Plug-Flow detention time= 100.5 min calculated for 0.285 af (78% of inflow)
Center-of-Mass det. time= 39.6 min (839.2 - 799.5)

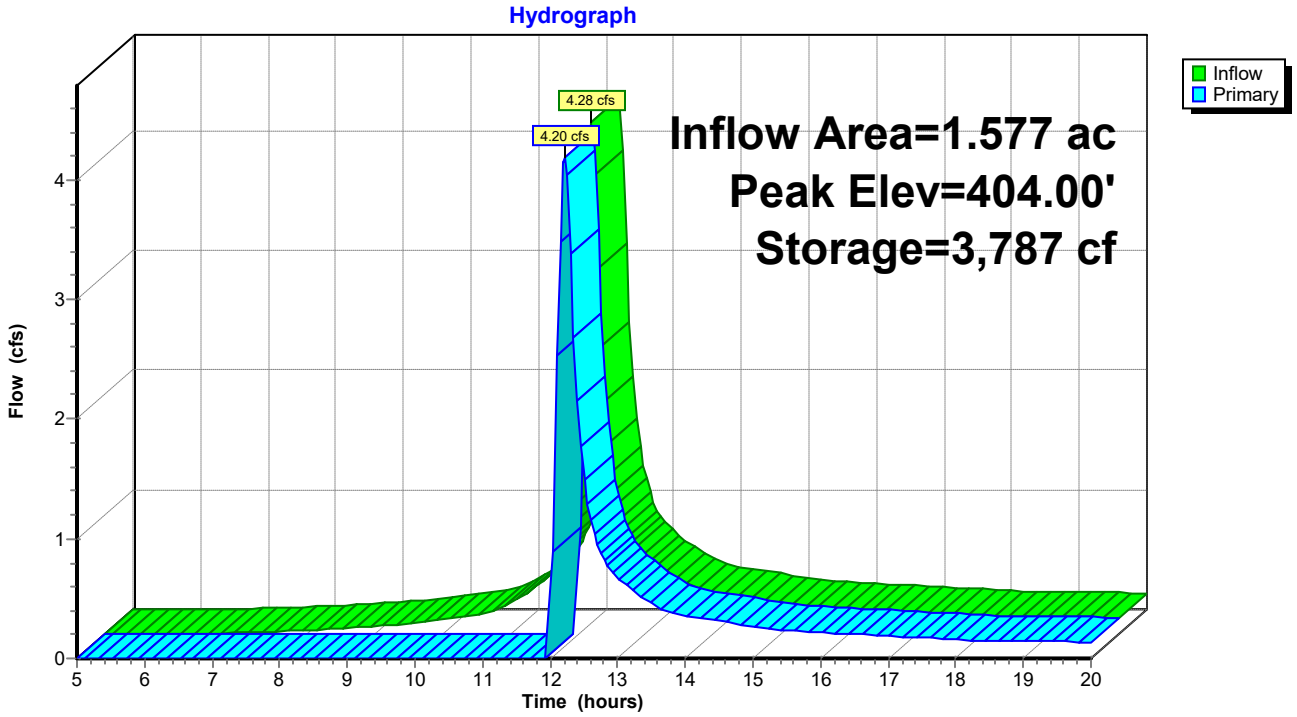
Volume	Invert	Avail.Storage	Storage Description
#1	401.00'	6,368 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

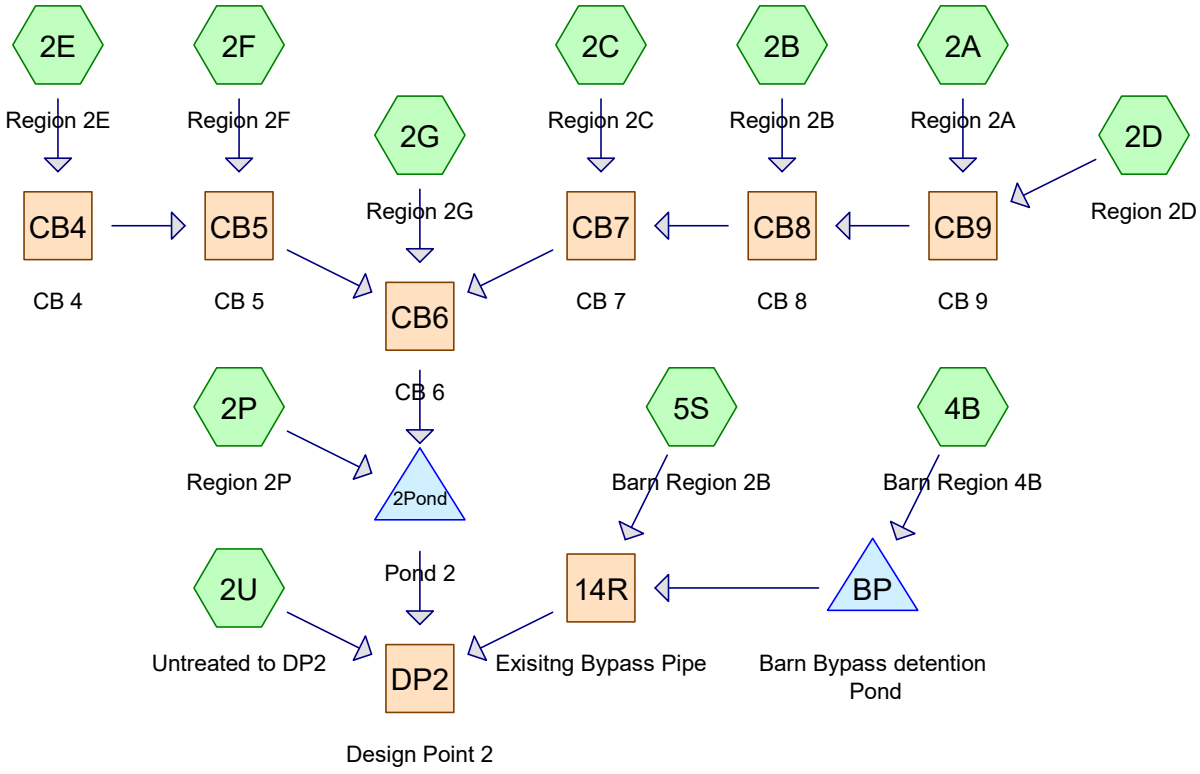
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
401.00	462	0	0
402.00	900	681	681
403.00	1,572	1,236	1,917
404.00	2,175	1,874	3,791
405.00	2,980	2,578	6,368

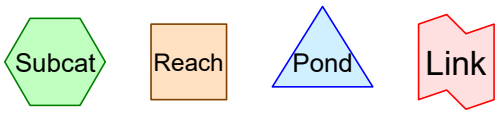
Device	Routing	Invert	Outlet Devices
#1	Primary	403.80'	**20.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=4.10 cfs @ 12.22 hrs HW=404.00' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 4.10 cfs @ 1.05 fps)

Pond 3P: Barn Bypass detention Pond Emergency Spillway







Routing Diagram for Proposed to Phase 1 Design Point 2 with Barn bypass 11202023

Prepared by SJR Engineering, Printed 11/19/2023

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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.839	80	>75% Grass cover, Good, HSG D (2B, 2C, 2P, 2U, 5S)
1.256	78	Meadow, non-grazed, HSG D (2E, 2U, 4B, 5S)
0.151	98	Paved parking, HSG D (5S)
0.774	98	Unconnected pavement, HSG D (2A, 2B, 2C, 2D, 2E, 2F, 2G, 2P, 2U)
1.681	77	Woods, Good, HSG D (2U, 4B, 5S)
4.701	**82**	**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.839	0.000	0.839	>75% Grass cover, Good	2B, 2C, 2P, 2U, 5S
0.000	0.000	0.000	1.256	0.000	1.256	Meadow, non-grazed	2E, 2U, 4B, 5S
0.000	0.000	0.000	0.151	0.000	0.151	Paved parking	5S
0.000	0.000	0.000	0.774	0.000	0.774	Unconnected pavement	2A, 2B, 2C, 2D, 2E, 2F, 2G, 2P, 2U
0.000	0.000	0.000	1.681	0.000	1.681	Woods, Good	2U, 4B, 5S
0.000	**0.000**	**0.000**	**4.701**	**0.000**	**4.701**	**TOTAL AREA**	

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	14R	0.00	-4.50	200.0	0.0225	0.012	0.0	15.0	0.0	
2	CB4	384.20	384.11	18.0	0.0050	0.012	0.0	12.0	0.0	
3	CB5	384.11	383.21	180.0	0.0050	0.012	0.0	15.0	0.0	
4	CB6	383.21	382.91	60.0	0.0050	0.012	0.0	18.0	0.0	
5	CB7	386.55	383.18	135.0	0.0250	0.012	0.0	15.0	0.0	
6	CB8	386.71	386.55	33.0	0.0048	0.012	0.0	15.0	0.0	
7	CB9	386.86	386.71	30.0	0.0050	0.012	0.0	12.0	0.0	
8	2Pond	374.25	371.85	24.0	0.1000	0.012	0.0	18.0	0.0	
9	BP	401.00	395.00	400.0	0.0150	0.012	0.0	12.0	0.0	

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2A: Region 2A Runoff Area=1,620 sf 100.00% Impervious Runoff Depth>2.47"
Flow Length=130' Slope=0.0200 '/' Tc=0.9 min CN=98 Runoff=0.11 cfs 0.008 af

Subcatchment 2B: Region 2B Runoff Area=10,097 sf 87.10% Impervious Runoff Depth>2.32"
Flow Length=150' Slope=0.0200 '/' Tc=1.2 min CN=96 Runoff=0.67 cfs 0.045 af

Subcatchment 2C: Region 2C Runoff Area=8,813 sf 84.74% Impervious Runoff Depth>2.23"
Flow Length=150' Slope=0.0200 '/' Tc=1.2 min CN=95 Runoff=0.57 cfs 0.038 af

Subcatchment 2D: Region 2D Runoff Area=1,149 sf 100.00% Impervious Runoff Depth>2.47"
Flow Length=95' Slope=0.0200 '/' Tc=0.7 min CN=98 Runoff=0.08 cfs 0.005 af

Subcatchment 2E: Region 2E Runoff Area=5,502 sf 50.20% Impervious Runoff Depth>1.65"
Flow Length=230' Tc=1.5 min CN=88 Runoff=0.28 cfs 0.017 af

Subcatchment 2F: Region 2F Runoff Area=2,903 sf 100.00% Impervious Runoff Depth>2.47"
Flow Length=210' Tc=1.4 min CN=98 Runoff=0.20 cfs 0.014 af

Subcatchment 2G: Region 2G Runoff Area=685 sf 100.00% Impervious Runoff Depth>2.47"
Flow Length=55' Tc=0.6 min CN=98 Runoff=0.05 cfs 0.003 af

Subcatchment 2P: Region 2P Runoff Area=39,085 sf 20.19% Impervious Runoff Depth>1.22"
Flow Length=335' Tc=20.6 min UI Adjusted CN=82 Runoff=0.85 cfs 0.091 af

Subcatchment 2U: Untreated to DP2 Runoff Area=27,294 sf 1.63% Impervious Runoff Depth>0.99"
Flow Length=315' Tc=4.6 min CN=78 Runoff=0.79 cfs 0.052 af

Subcatchment 4B: Barn Region 4B Runoff Area=68,678 sf 0.00% Impervious Runoff Depth>0.93"
Flow Length=510' Tc=12.0 min CN=77 Runoff=1.44 cfs 0.123 af

Subcatchment 5S: Barn Region 2B Runoff Area=38,941 sf 16.86% Impervious Runoff Depth>1.16"
Flow Length=385' Tc=13.9 min CN=81 Runoff=0.96 cfs 0.086 af

Reach 14R: Exisitng Bypass Pipe Avg. Flow Depth=0.29' Max Vel=5.70 fps Inflow=1.21 cfs 0.207 af
15.0" Round Pipe n=0.012 L=200.0' S=0.0225 '/' Capacity=10.50 cfs Outflow=1.20 cfs 0.207 af

Reach CB4: CB 4 Avg. Flow Depth=0.22' Max Vel=2.23 fps Inflow=0.28 cfs 0.017 af
12.0" Round Pipe n=0.012 L=18.0' S=0.0050 '/' Capacity=2.73 cfs Outflow=0.29 cfs 0.017 af

Reach CB5: CB 5 Avg. Flow Depth=0.26' Max Vel=2.54 fps Inflow=0.49 cfs 0.031 af
15.0" Round Pipe n=0.012 L=180.0' S=0.0050 '/' Capacity=4.95 cfs Outflow=0.44 cfs 0.031 af

Reach CB6: CB 6 Avg. Flow Depth=0.49' Max Vel=3.69 fps Inflow=1.86 cfs 0.130 af
18.0" Round Pipe n=0.012 L=60.0' S=0.0050 '/' Capacity=8.05 cfs Outflow=1.83 cfs 0.130 af

Reach CB7: CB 7 Avg. Flow Depth=0.30' Max Vel=6.12 fps Inflow=1.38 cfs 0.095 af
15.0" Round Pipe n=0.012 L=135.0' S=0.0250 '/' Capacity=11.06 cfs Outflow=1.39 cfs 0.095 af

Reach CB8: CB 8 Avg. Flow Depth=0.35' Max Vel=2.93 fps Inflow=0.85 cfs 0.058 af
15.0" Round Pipe n=0.012 L=33.0' S=0.0048 '/' Capacity=4.87 cfs Outflow=0.85 cfs 0.058 af

Reach CB9: CB 9 Avg. Flow Depth=0.18' Max Vel=1.97 fps Inflow=0.19 cfs 0.013 af
12.0" Round Pipe n=0.012 L=30.0' S=0.0050 '/' Capacity=2.73 cfs Outflow=0.18 cfs 0.013 af

Reach DP2: Design Point 2 Inflow=1.71 cfs 0.380 af
Outflow=1.71 cfs 0.380 af

Pond 2Pond: Pond 2 Peak Elev=378.45' Storage=4,662 cf Inflow=2.22 cfs 0.220 af
Outflow=0.36 cfs 0.122 af

Pond BP: Barn Bypass detention Pond Peak Elev=402.80' Storage=1,617 cf Inflow=1.44 cfs 0.123 af
Outflow=0.31 cfs 0.120 af

Total Runoff Area = 4.701 ac Runoff Volume = 0.481 af Average Runoff Depth = 1.23"
80.33% Pervious = 3.776 ac 19.67% Impervious = 0.925 ac

Summary for Subcatchment 2A: Region 2A

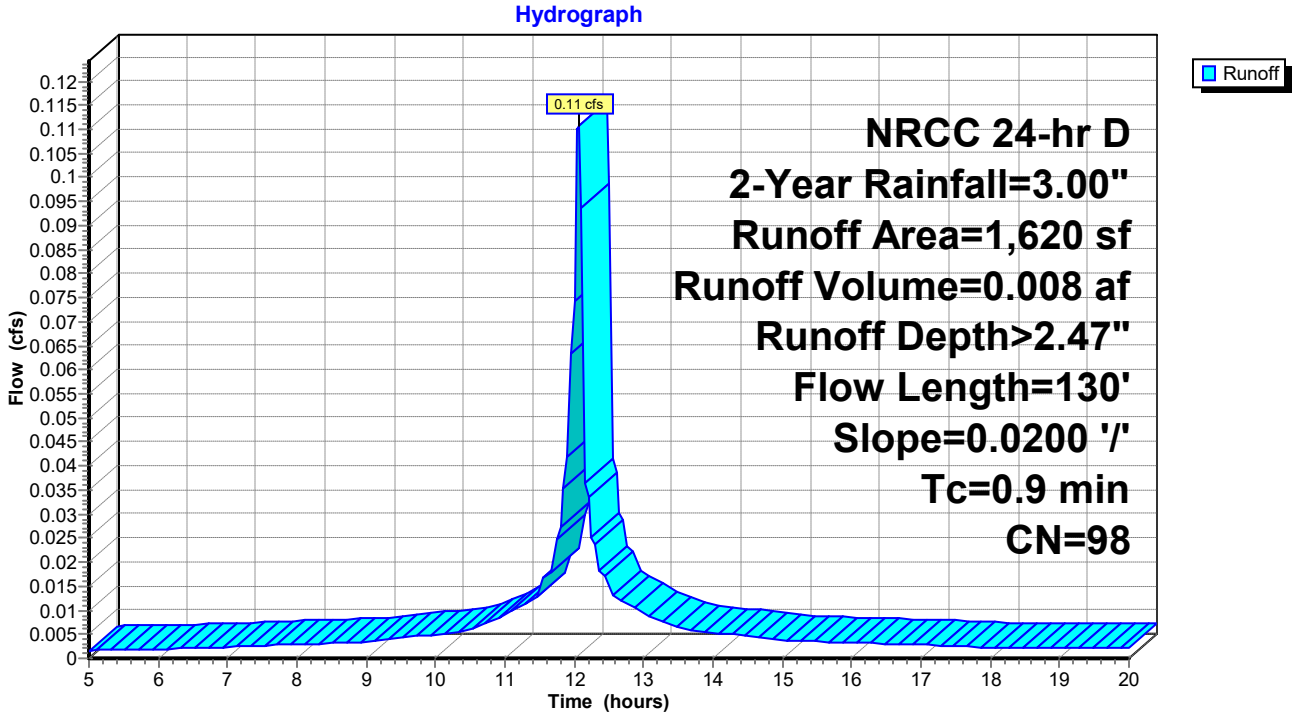
Runoff = 0.11 cfs @ 12.06 hrs, Volume= 0.008 af, Depth> 2.47"
Routed to Reach CB9 : CB 9

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.00"

Area (sf)	CN	Description
1,620	98	Unconnected pavement, HSG D
1,620		100.00% Impervious Area
1,620		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.97		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
0.6	110	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	130	Total			

Subcatchment 2A: Region 2A



Summary for Subcatchment 2B: Region 2B

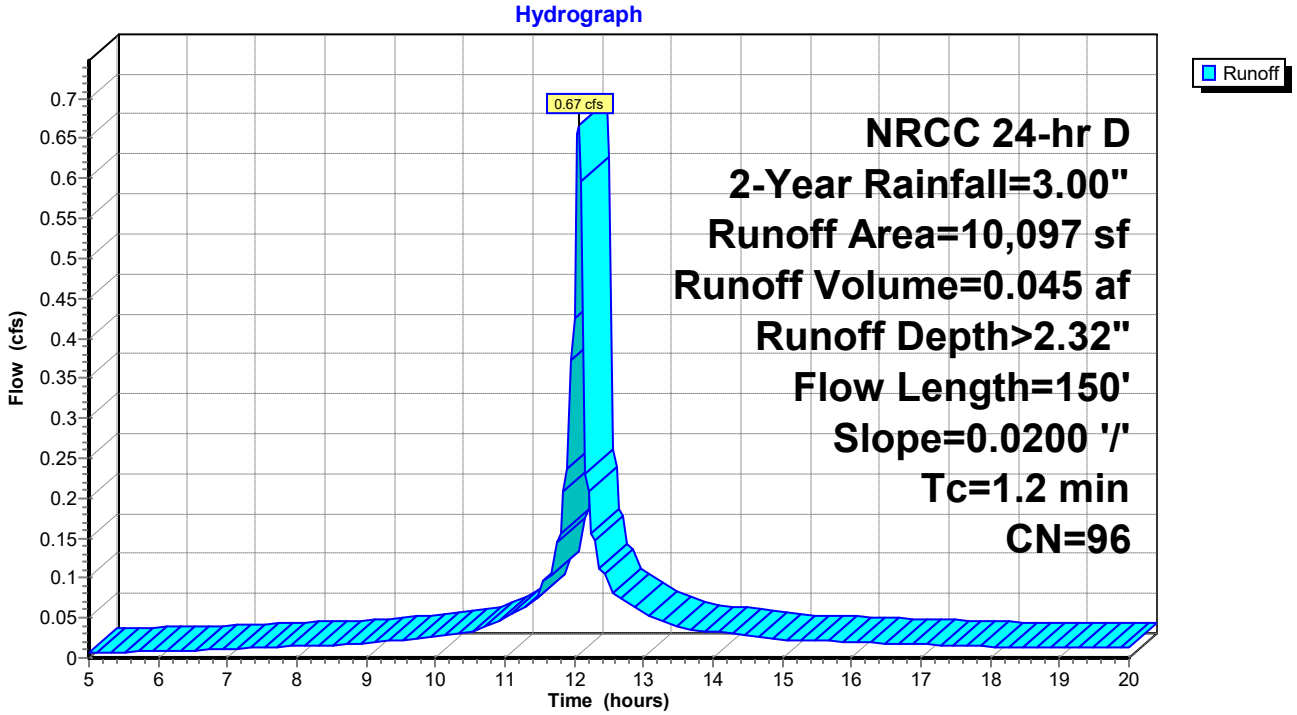
Runoff = 0.67 cfs @ 12.06 hrs, Volume= 0.045 af, Depth> 2.32"
Routed to Reach CB8 : CB 8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.00"

Area (sf)	CN	Description
8,794	98	Unconnected pavement, HSG D
1,303	80	>75% Grass cover, Good, HSG D
10,097	96	Weighted Average
1,303		12.90% Pervious Area
8,794		87.10% Impervious Area
8,794		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0200	1.05		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
0.7	120	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.2	150	Total			

Subcatchment 2B: Region 2B



Summary for Subcatchment 2C: Region 2C

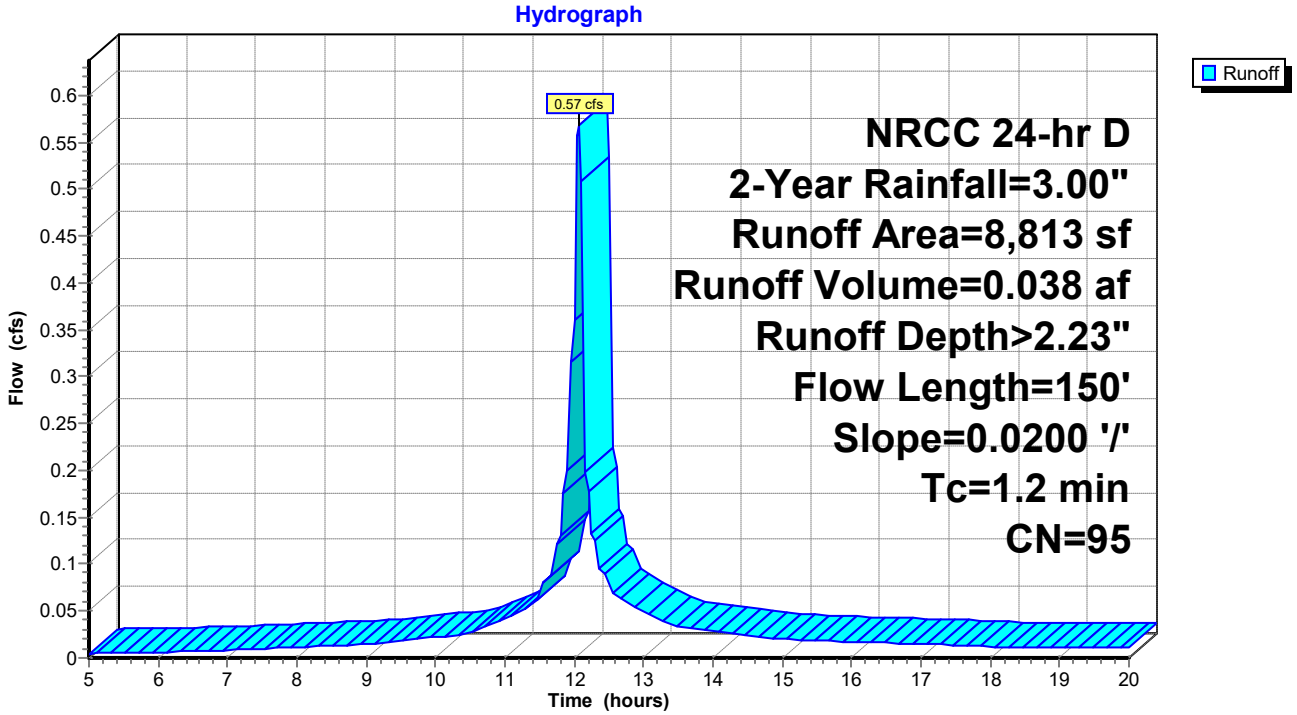
Runoff = 0.57 cfs @ 12.07 hrs, Volume= 0.038 af, Depth> 2.23"
Routed to Reach CB7 : CB 7

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.00"

Area (sf)	CN	Description
7,468	98	Unconnected pavement, HSG D
1,345	80	>75% Grass cover, Good, HSG D
8,813	95	Weighted Average
1,345		15.26% Pervious Area
7,468		84.74% Impervious Area
7,468		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0200	1.05		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
0.7	120	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.2	150	Total			

Subcatchment 2C: Region 2C



Summary for Subcatchment 2D: Region 2D

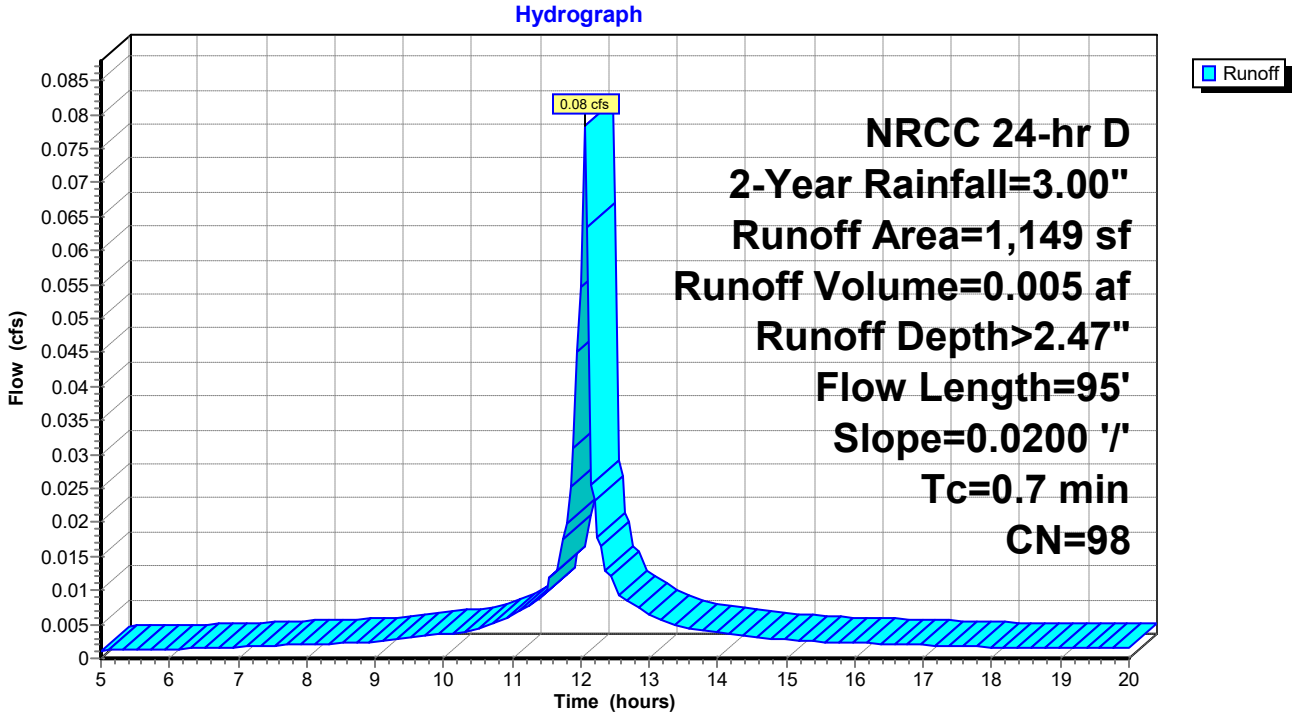
Runoff = 0.08 cfs @ 12.06 hrs, Volume= 0.005 af, Depth> 2.47"
Routed to Reach CB9 : CB 9

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.00"

Area (sf)	CN	Description
1,149	98	Unconnected pavement, HSG D
1,149		100.00% Impervious Area
1,149		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.97		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
0.4	75	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	95	Total			

Subcatchment 2D: Region 2D



Summary for Subcatchment 2E: Region 2E

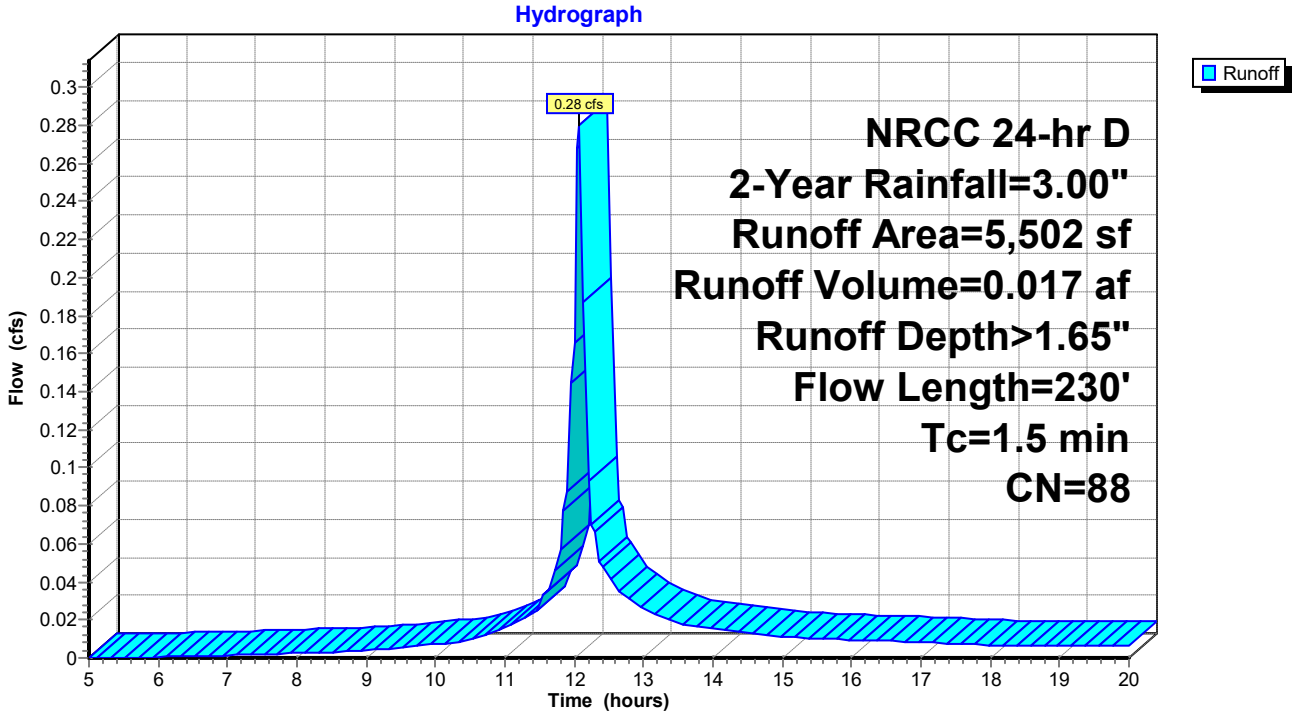
Runoff = 0.28 cfs @ 12.07 hrs, Volume= 0.017 af, Depth> 1.65"
Routed to Reach CB4 : CB 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.00"

Area (sf)	CN	Description
2,762	98	Unconnected pavement, HSG D
2,740	78	Meadow, non-grazed, HSG D
5,502	88	Weighted Average
2,740		49.80% Pervious Area
2,762		50.20% Impervious Area
2,762		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0200	1.05		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
1.0	200	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	230	Total			

Subcatchment 2E: Region 2E



Summary for Subcatchment 2F: Region 2F

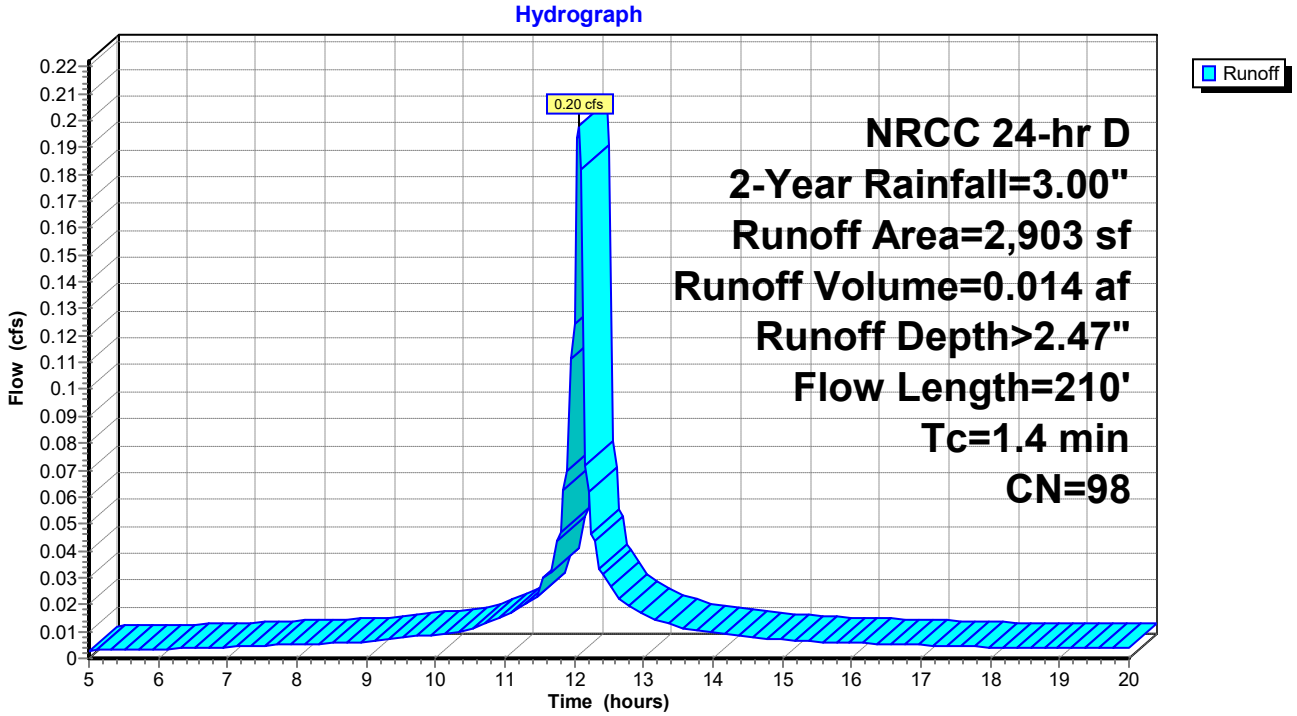
Runoff = 0.20 cfs @ 12.07 hrs, Volume= 0.014 af, Depth> 2.47"
Routed to Reach CB5 : CB 5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.00"

Area (sf)	CN	Description
2,903	98	Unconnected pavement, HSG D
2,903		100.00% Impervious Area
2,903		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0200	1.05		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
0.9	180	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	210	Total			

Subcatchment 2F: Region 2F



Summary for Subcatchment 2G: Region 2G

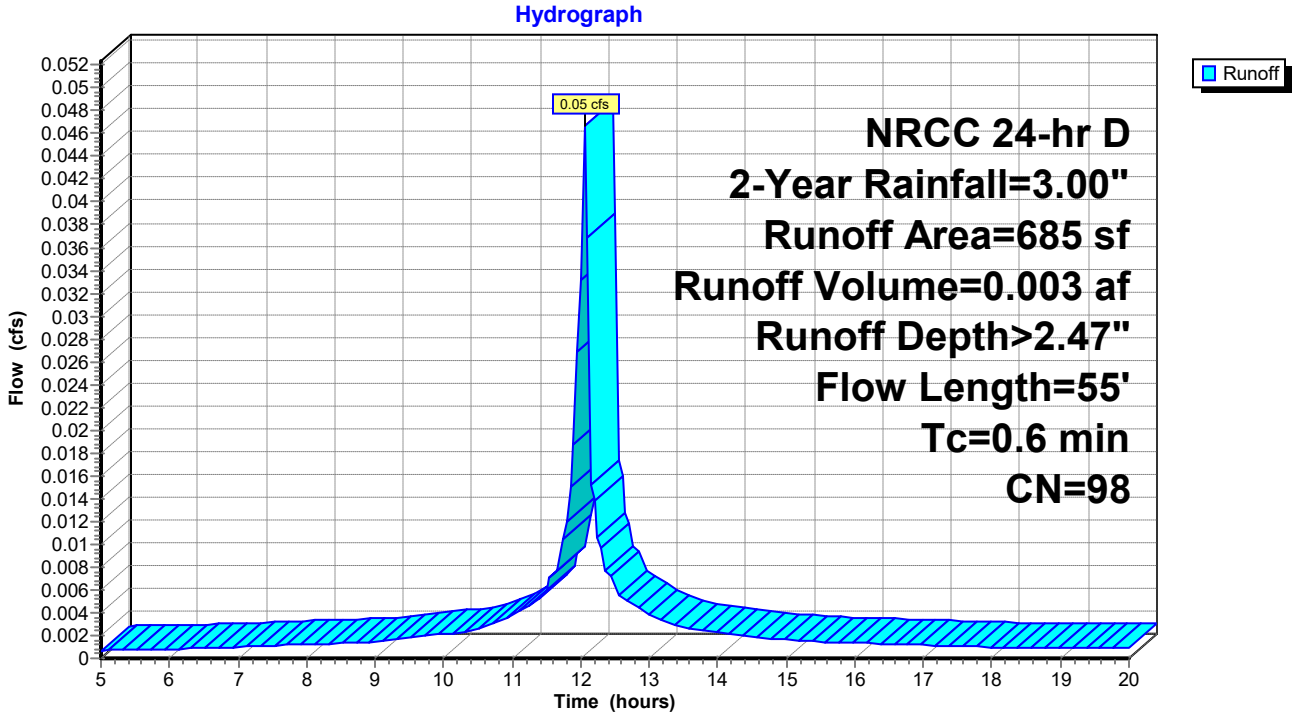
Runoff = 0.05 cfs @ 12.05 hrs, Volume= 0.003 af, Depth> 2.47"
Routed to Reach CB6 : CB 6

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.00"

Area (sf)	CN	Description
685	98	Unconnected pavement, HSG D
685		100.00% Impervious Area
685		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0200	1.05		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
0.1	25	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	55	Total			

Subcatchment 2G: Region 2G



Summary for Subcatchment 2P: Region 2P

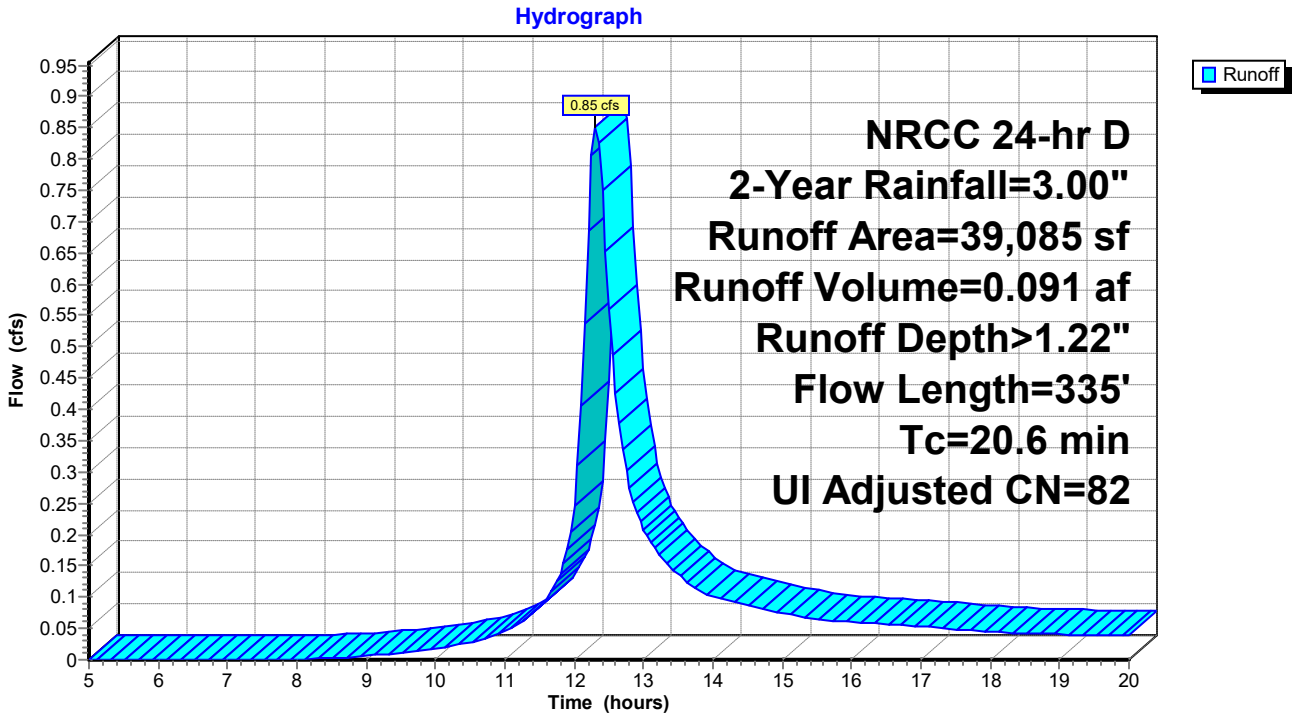
Runoff = 0.85 cfs @ 12.31 hrs, Volume= 0.091 af, Depth> 1.22"
Routed to Pond 2Pond : Pond 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.00"

Area (sf)	CN	Adj	Description
7,890	98		Unconnected pavement, HSG D
31,195	80		>75% Grass cover, Good, HSG D
39,085	84	82	Weighted Average, UI Adjusted
31,195			79.81% Pervious Area
7,890			20.19% Impervious Area
7,890			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0500	1.92		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
2.5	185	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.2	50	0.0010	0.05		**Sheet Flow,** Range n= 0.130 P2= 3.00"
20.6	335	Total			

Subcatchment 2P: Region 2P



Summary for Subcatchment 2U: Untreated to DP2

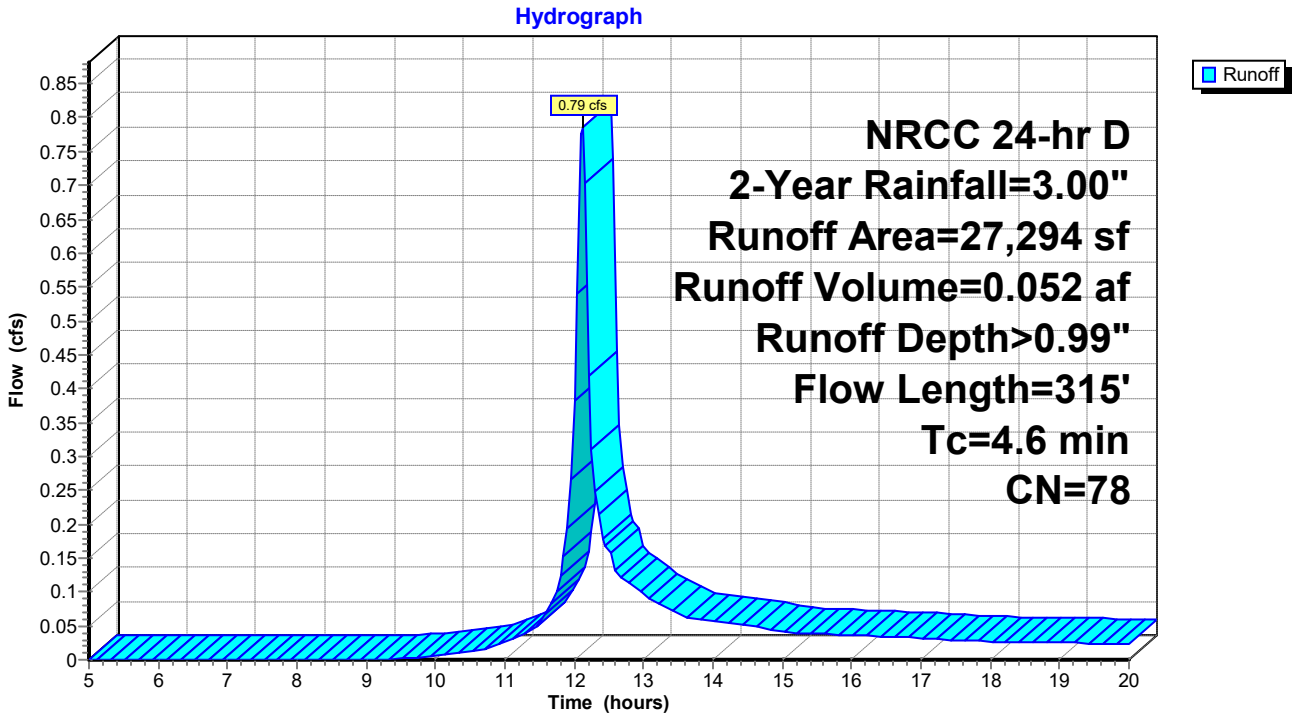
Runoff = 0.79 cfs @ 12.11 hrs, Volume= 0.052 af, Depth> 0.99"
Routed to Reach DP2 : Design Point 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.00"

Area (sf)	CN	Description
444	98	Unconnected pavement, HSG D
2,167	80	>75% Grass cover, Good, HSG D
18,188	78	Meadow, non-grazed, HSG D
6,495	77	Woods, Good, HSG D
27,294	78	Weighted Average
26,850		98.37% Pervious Area
444		1.63% Impervious Area
444		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	80	0.2200	0.46		**Sheet Flow,** Range n= 0.130 P2= 3.00"
1.7	235	0.1050	2.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.6	315	Total			

Subcatchment 2U: Untreated to DP2



Summary for Subcatchment 4B: Barn Region 4B

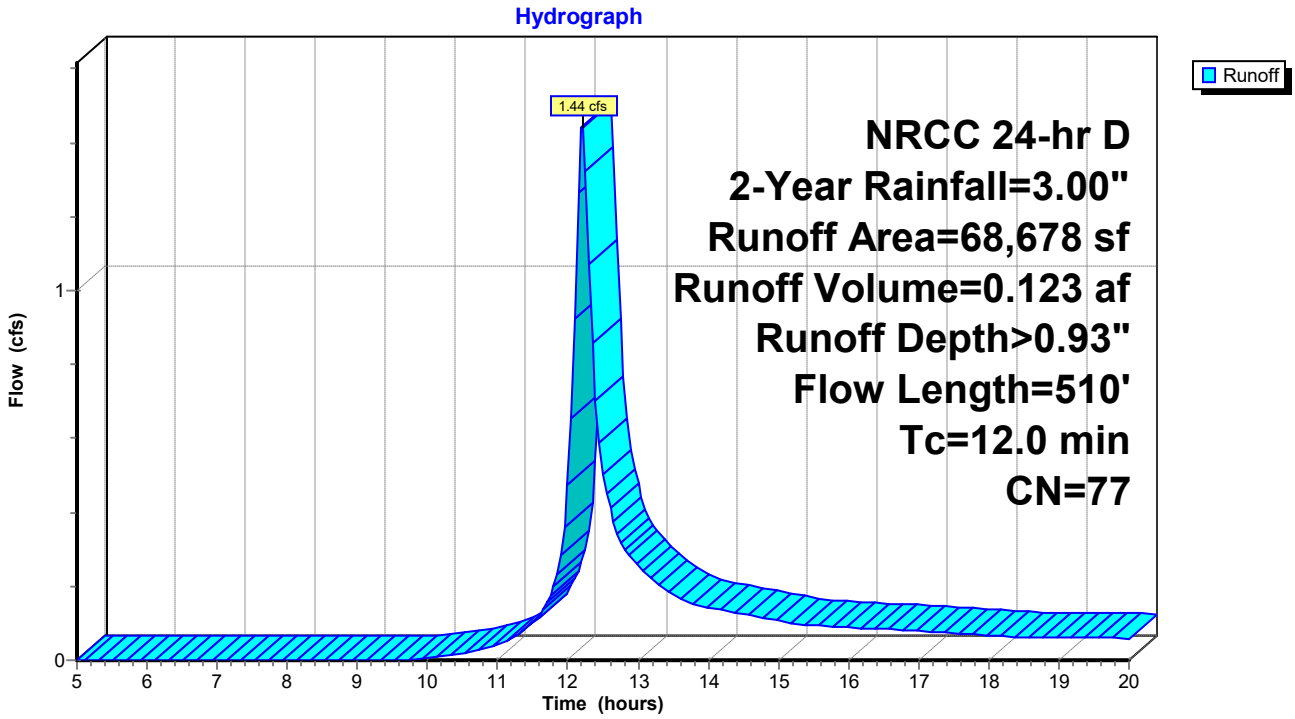
Runoff = 1.44 cfs @ 12.20 hrs, Volume= 0.123 af, Depth> 0.93"
Routed to Pond BP : Barn Bypass detention Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.00"

Area (sf)	CN	Description
11,285	78	Meadow, non-grazed, HSG D
57,393	77	Woods, Good, HSG D
68,678	77	Weighted Average
68,678		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.1500	0.17		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.00"
1.6	170	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	240	0.1100	7.58	121.21	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.069 Riprap, 6-inch
12.0	510	Total			

Subcatchment 4B: Barn Region 4B



Summary for Subcatchment 5S: Barn Region 2B

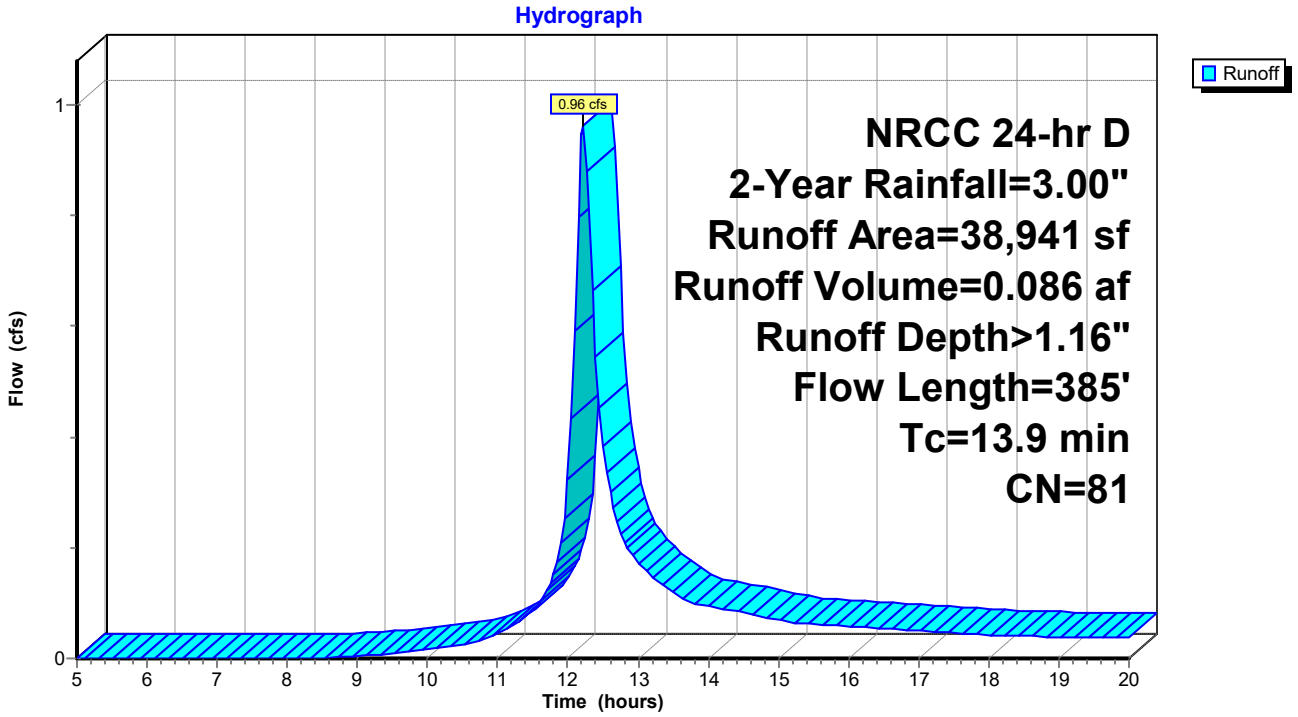
Runoff = 0.96 cfs @ 12.22 hrs, Volume= 0.086 af, Depth> 1.16"
Routed to Reach 14R : Exisitng Bypass Pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 2-Year Rainfall=3.00"

Area (sf)	CN	Description
6,567	98	Paved parking, HSG D
22,495	78	Meadow, non-grazed, HSG D
546	80	>75% Grass cover, Good, HSG D
9,333	77	Woods, Good, HSG D
38,941	81	Weighted Average
32,374		83.14% Pervious Area
6,567		16.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.1400	0.16		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.00"
0.6	60	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	160	0.0150	6.43	102.94	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.030 Short grass
2.7	65	0.1700	0.40		**Sheet Flow,** Range n= 0.130 P2= 3.00"
13.9	385	Total			

Subcatchment 5S: Barn Region 2B



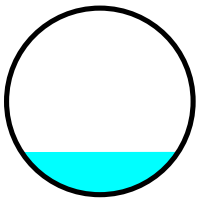
Summary for Reach 14R: Exisitng Bypass Pipe

Inflow Area = 2.471 ac, 6.10% Impervious, Inflow Depth > 1.00" for 2-Year event
Inflow = 1.21 cfs @ 12.23 hrs, Volume= 0.207 af
Outflow = 1.20 cfs @ 12.25 hrs, Volume= 0.207 af, Atten= 1%, Lag= 1.1 min
Routed to Reach DP2 : Design Point 2

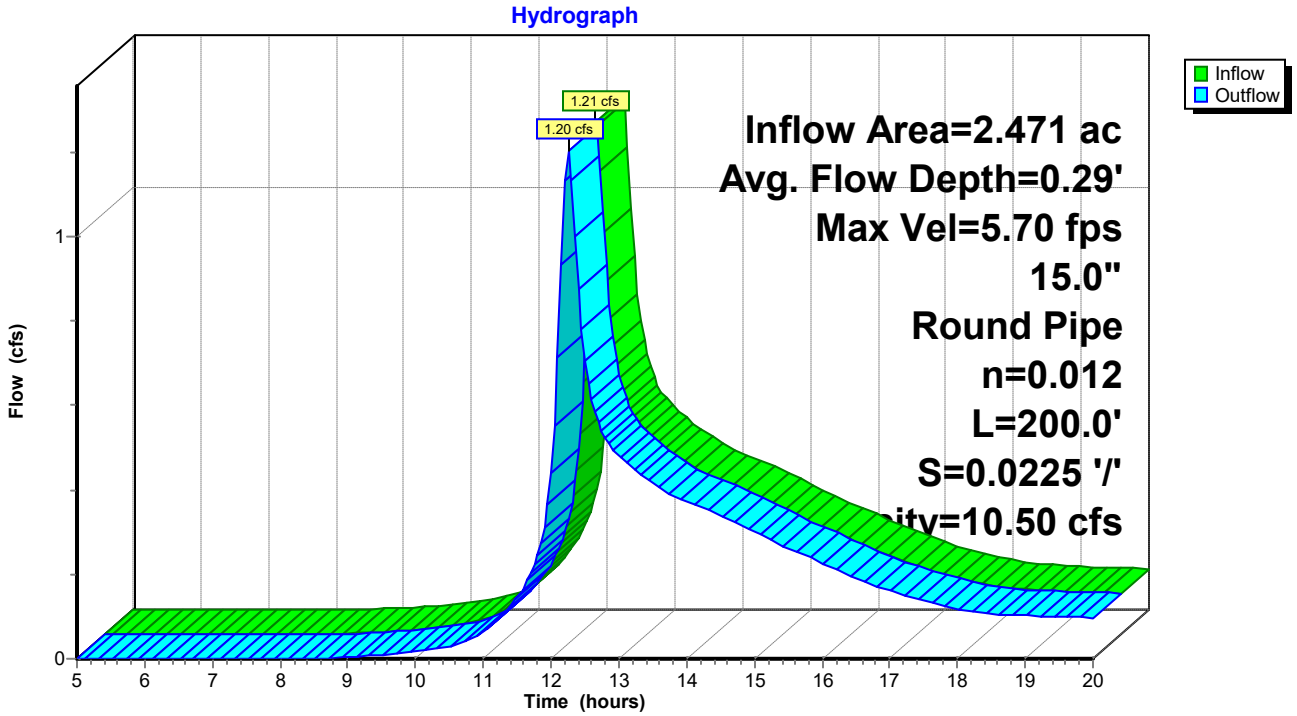
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.70 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 3.02 fps, Avg. Travel Time= 1.1 min

Peak Storage= 43 cf @ 12.24 hrs
Average Depth at Peak Storage= 0.29' , Surface Width= 1.05'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 10.50 cfs

15.0" Round Pipe
n= 0.012
Length= 200.0' Slope= 0.0225 '/'
Inlet Invert= 0.00', Outlet Invert= -4.50'



Reach 14R: Exisitng Bypass Pipe



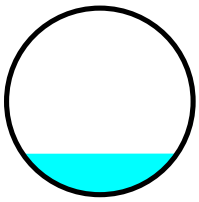
Summary for Reach CB4: CB 4

Inflow Area = 0.126 ac, 50.20% Impervious, Inflow Depth > 1.65" for 2-Year event
Inflow = 0.28 cfs @ 12.07 hrs, Volume= 0.017 af
Outflow = 0.29 cfs @ 12.08 hrs, Volume= 0.017 af, Atten= 0%, Lag= 0.4 min
Routed to Reach CB5 : CB 5

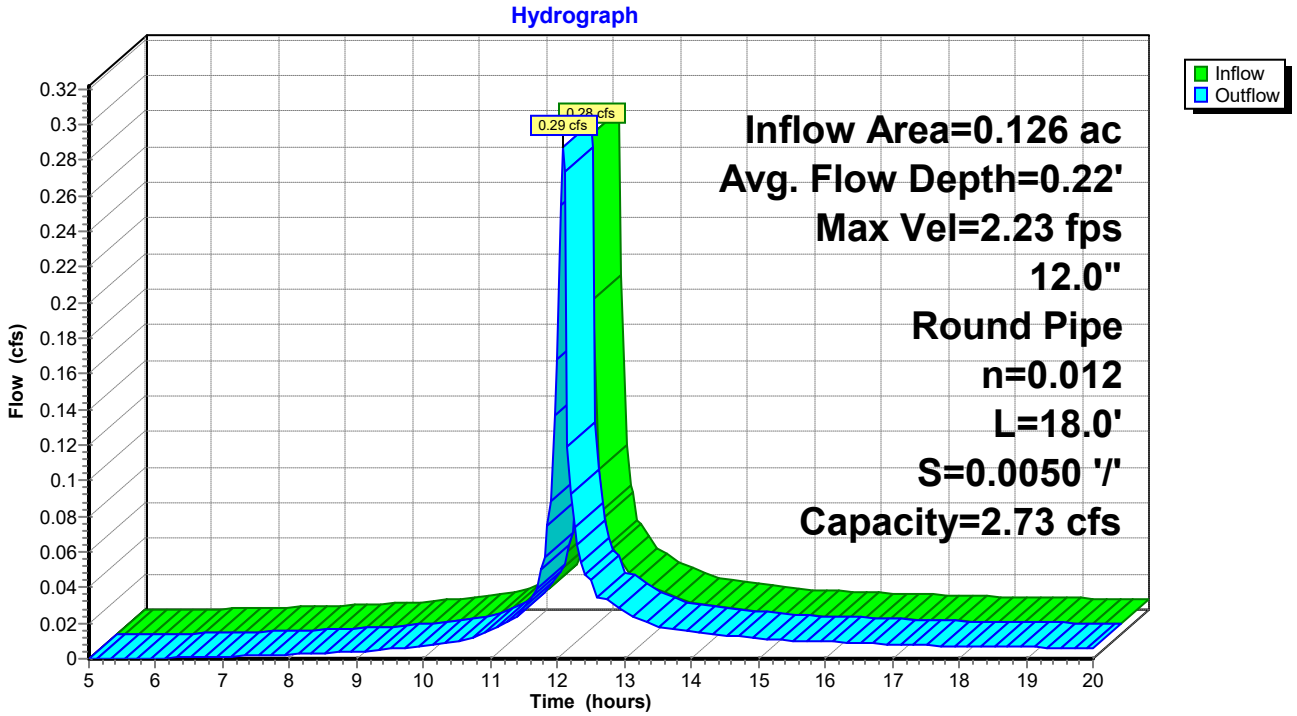
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.23 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 0.79 fps, Avg. Travel Time= 0.4 min

Peak Storage= 2 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.22' , Surface Width= 0.83'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.73 cfs

12.0" Round Pipe
n= 0.012
Length= 18.0' Slope= 0.0050 '/'
Inlet Invert= 384.20', Outlet Invert= 384.11'



Reach CB4: CB 4



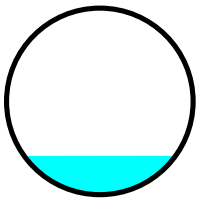
Summary for Reach CB5: CB 5

Inflow Area = 0.193 ac, 67.40% Impervious, Inflow Depth > 1.93" for 2-Year event
Inflow = 0.49 cfs @ 12.08 hrs, Volume= 0.031 af
Outflow = 0.44 cfs @ 12.10 hrs, Volume= 0.031 af, Atten= 10%, Lag= 1.5 min
Routed to Reach CB6 : CB 6

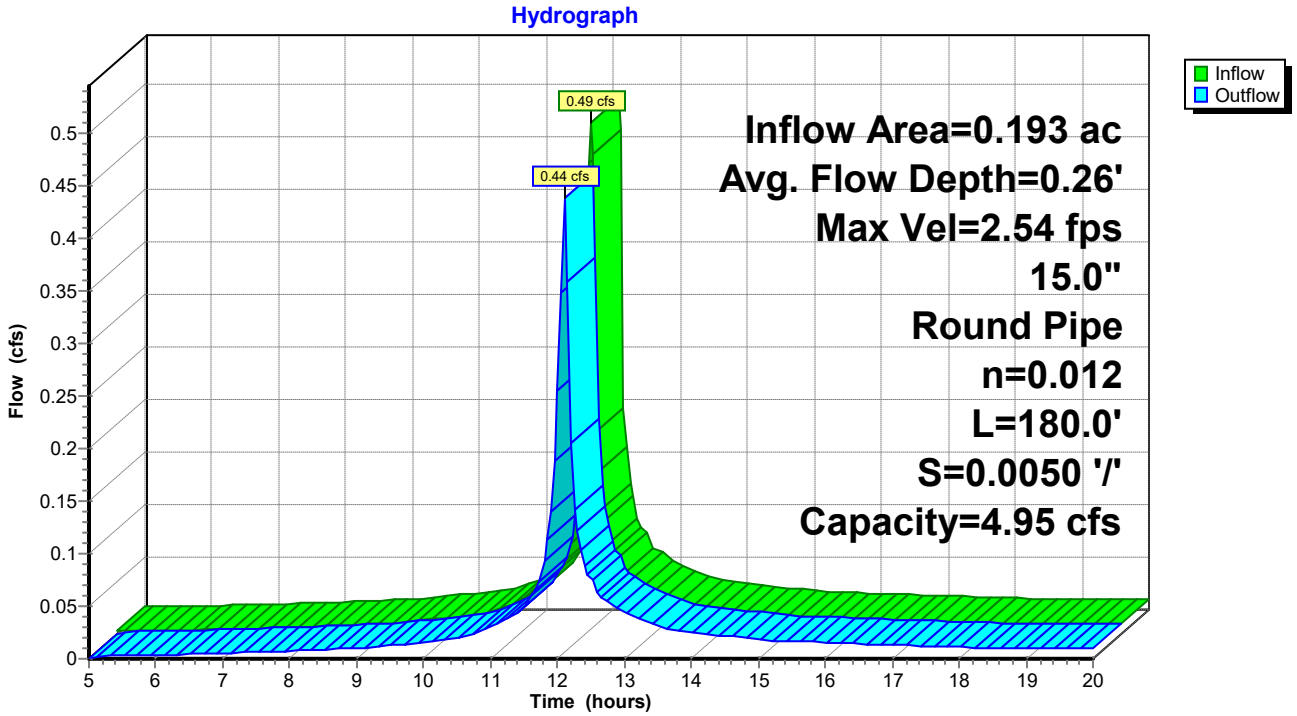
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.54 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 0.93 fps, Avg. Travel Time= 3.2 min

Peak Storage= 34 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.26' , Surface Width= 1.02'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 4.95 cfs

15.0" Round Pipe
n= 0.012
Length= 180.0' Slope= 0.0050 '/'
Inlet Invert= 384.11', Outlet Invert= 383.21'



Reach CB5: CB 5



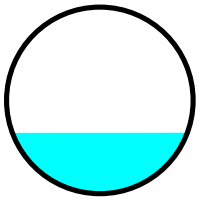
Summary for Reach CB6: CB 6

Inflow Area = 0.706 ac, 82.49% Impervious, Inflow Depth > 2.20" for 2-Year event
Inflow = 1.86 cfs @ 12.09 hrs, Volume= 0.130 af
Outflow = 1.83 cfs @ 12.09 hrs, Volume= 0.130 af, Atten= 2%, Lag= 0.3 min
Routed to Pond 2Pond : Pond 2

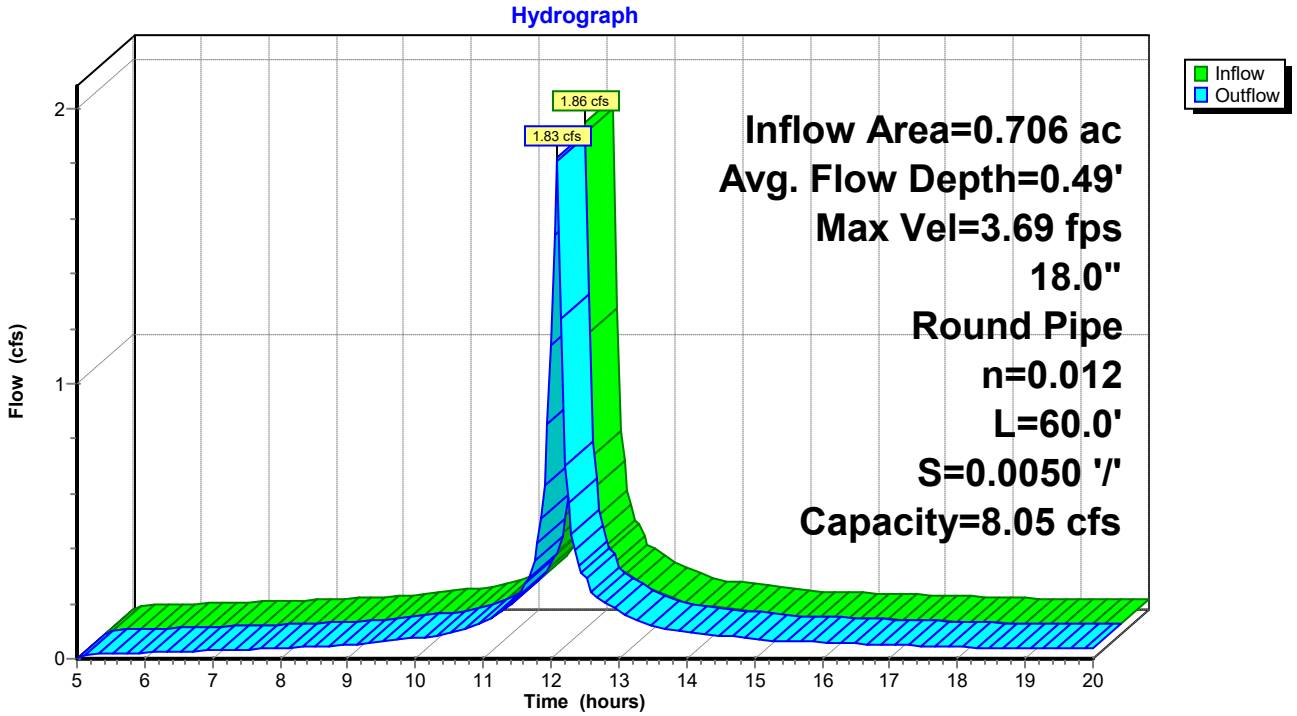
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.69 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.41 fps, Avg. Travel Time= 0.7 min

Peak Storage= 30 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.49' , Surface Width= 1.41'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 8.05 cfs

18.0" Round Pipe
n= 0.012
Length= 60.0' Slope= 0.0050 '/'
Inlet Invert= 383.21', Outlet Invert= 382.91'



Reach CB6: CB 6



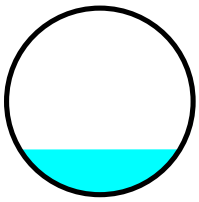
Summary for Reach CB7: CB 7

Inflow Area = 0.498 ac, 87.79% Impervious, Inflow Depth > 2.30" for 2-Year event
Inflow = 1.38 cfs @ 12.07 hrs, Volume= 0.095 af
Outflow = 1.39 cfs @ 12.08 hrs, Volume= 0.095 af, Atten= 0%, Lag= 0.7 min
Routed to Reach CB6 : CB 6

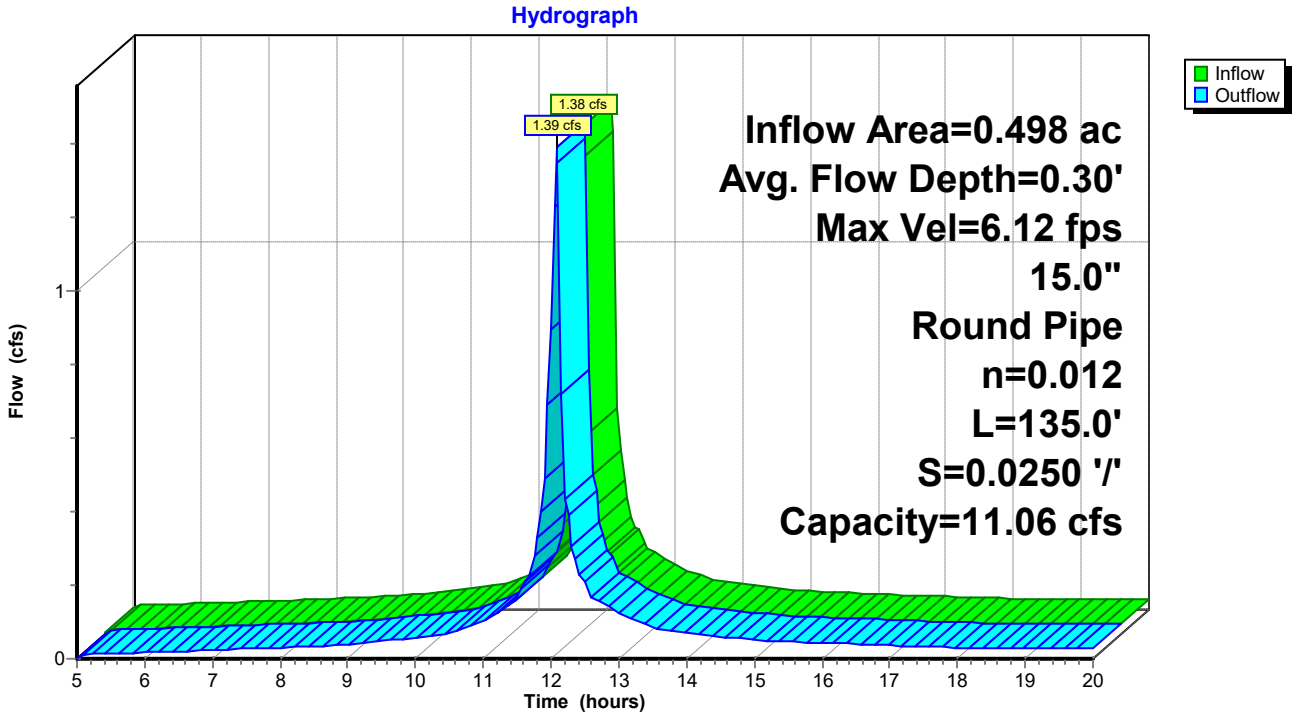
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.12 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 2.32 fps, Avg. Travel Time= 1.0 min

Peak Storage= 31 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.30' , Surface Width= 1.07'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 11.06 cfs

15.0" Round Pipe
n= 0.012
Length= 135.0' Slope= 0.0250 '/'
Inlet Invert= 386.55', Outlet Invert= 383.18'



Reach CB7: CB 7



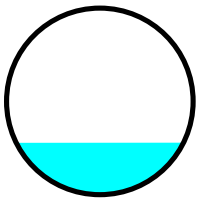
Summary for Reach CB8: CB 8

Inflow Area = 0.295 ac, 89.87% Impervious, Inflow Depth > 2.35" for 2-Year event
Inflow = 0.85 cfs @ 12.07 hrs, Volume= 0.058 af
Outflow = 0.85 cfs @ 12.08 hrs, Volume= 0.058 af, Atten= 0%, Lag= 0.6 min
Routed to Reach CB7 : CB 7

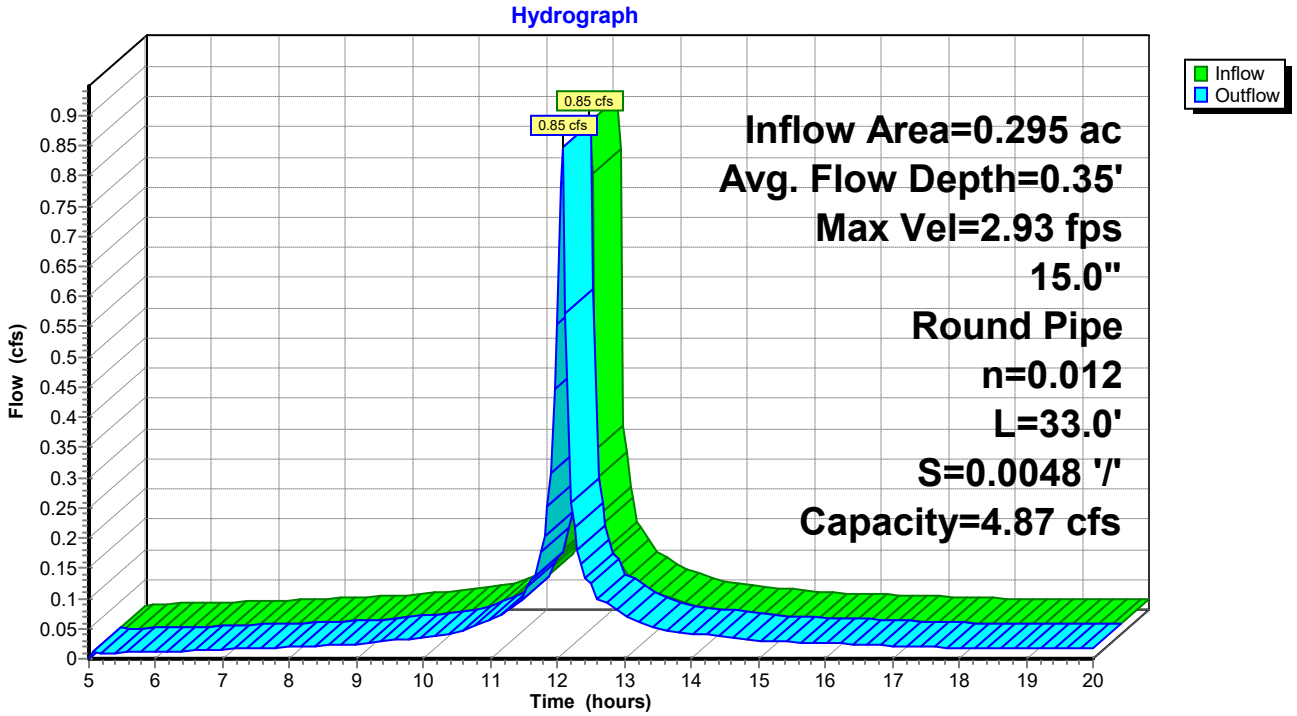
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.93 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.13 fps, Avg. Travel Time= 0.5 min

Peak Storage= 9 cf @ 12.07 hrs
Average Depth at Peak Storage= 0.35' , Surface Width= 1.12'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 4.87 cfs

15.0" Round Pipe
n= 0.012
Length= 33.0' Slope= 0.0048 '/'
Inlet Invert= 386.71', Outlet Invert= 386.55'



Reach CB8: CB 8



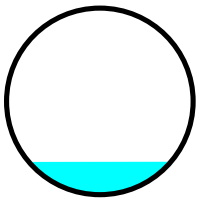
Summary for Reach CB9: CB 9

Inflow Area = 0.064 ac,100.00% Impervious, Inflow Depth > 2.47" for 2-Year event
Inflow = 0.19 cfs @ 12.06 hrs, Volume= 0.013 af
Outflow = 0.18 cfs @ 12.07 hrs, Volume= 0.013 af, Atten= 5%, Lag= 0.6 min
Routed to Reach CB8 : CB 8

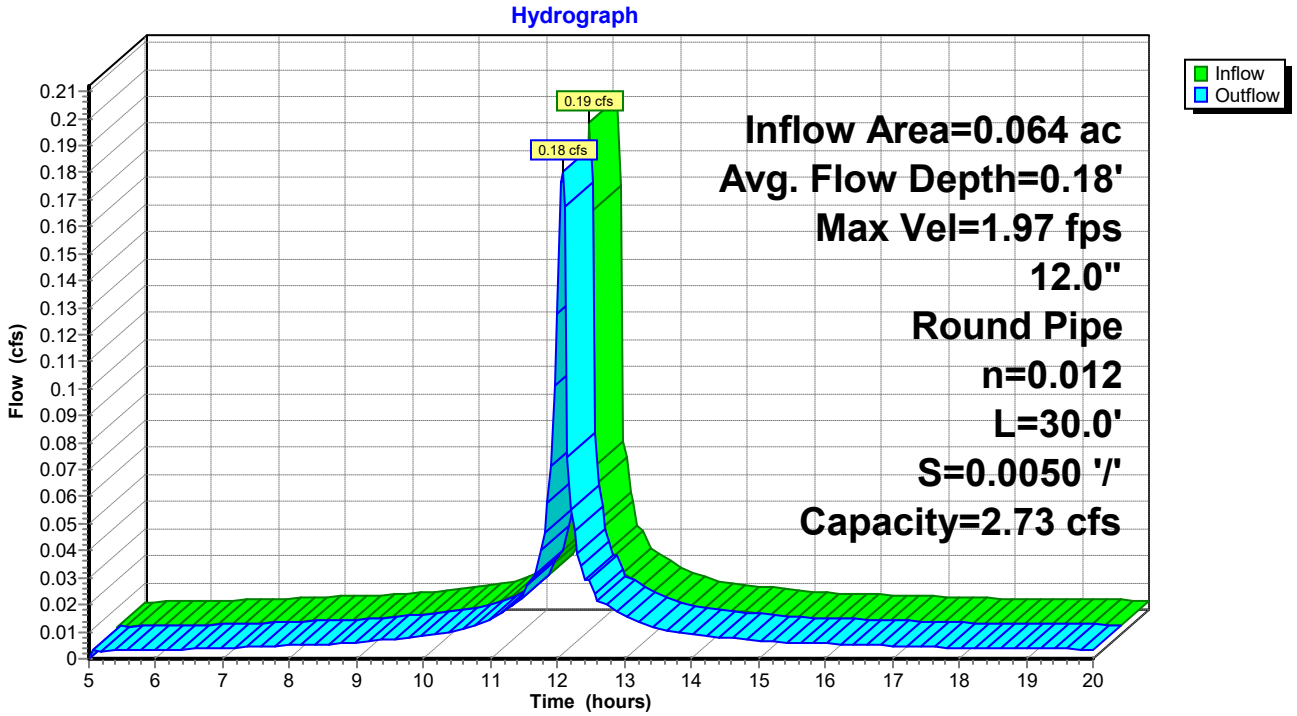
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.97 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.76 fps, Avg. Travel Time= 0.7 min

Peak Storage= 3 cf @ 12.06 hrs
Average Depth at Peak Storage= 0.18' , Surface Width= 0.76'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.73 cfs

12.0" Round Pipe
n= 0.012
Length= 30.0' Slope= 0.0050 '/'
Inlet Invert= 386.86', Outlet Invert= 386.71'



Reach CB9: CB 9

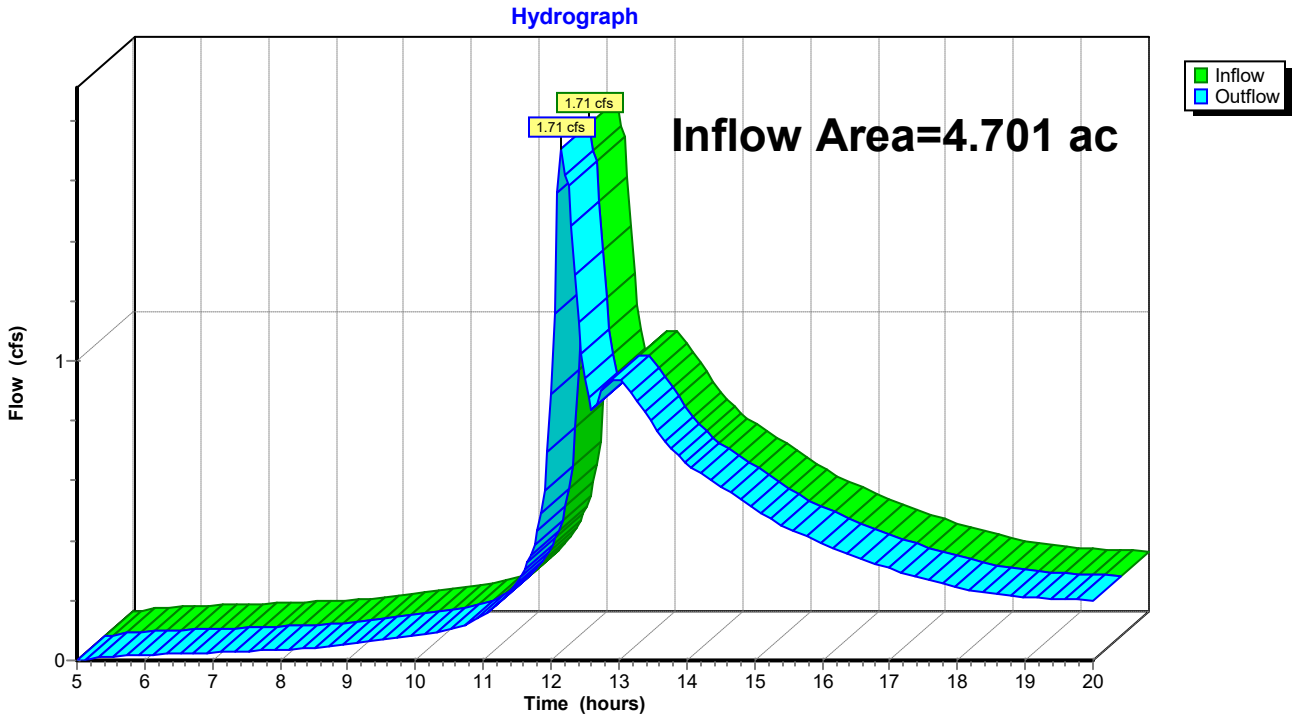


Summary for Reach DP2: Design Point 2

Inflow Area = 4.701 ac, 19.67% Impervious, Inflow Depth > 0.97" for 2-Year event
Inflow = 1.71 cfs @ 12.16 hrs, Volume= 0.380 af
Outflow = 1.71 cfs @ 12.16 hrs, Volume= 0.380 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP2: Design Point 2



Summary for Pond 2Pond: Pond 2

Inflow Area = 1.604 ac, 47.63% Impervious, Inflow Depth > 1.65" for 2-Year event
Inflow = 2.22 cfs @ 12.10 hrs, Volume= 0.220 af
Outflow = 0.36 cfs @ 13.06 hrs, Volume= 0.122 af, Atten= 84%, Lag= 57.8 min
Primary = 0.36 cfs @ 13.06 hrs, Volume= 0.122 af
Routed to Reach DP2 : Design Point 2

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 378.45' @ 13.06 hrs Surf.Area= 3,909 sf Storage= 4,662 cf

Plug-Flow detention time= 164.0 min calculated for 0.122 af (55% of inflow)
Center-of-Mass det. time= 65.9 min (846.9 - 780.9)

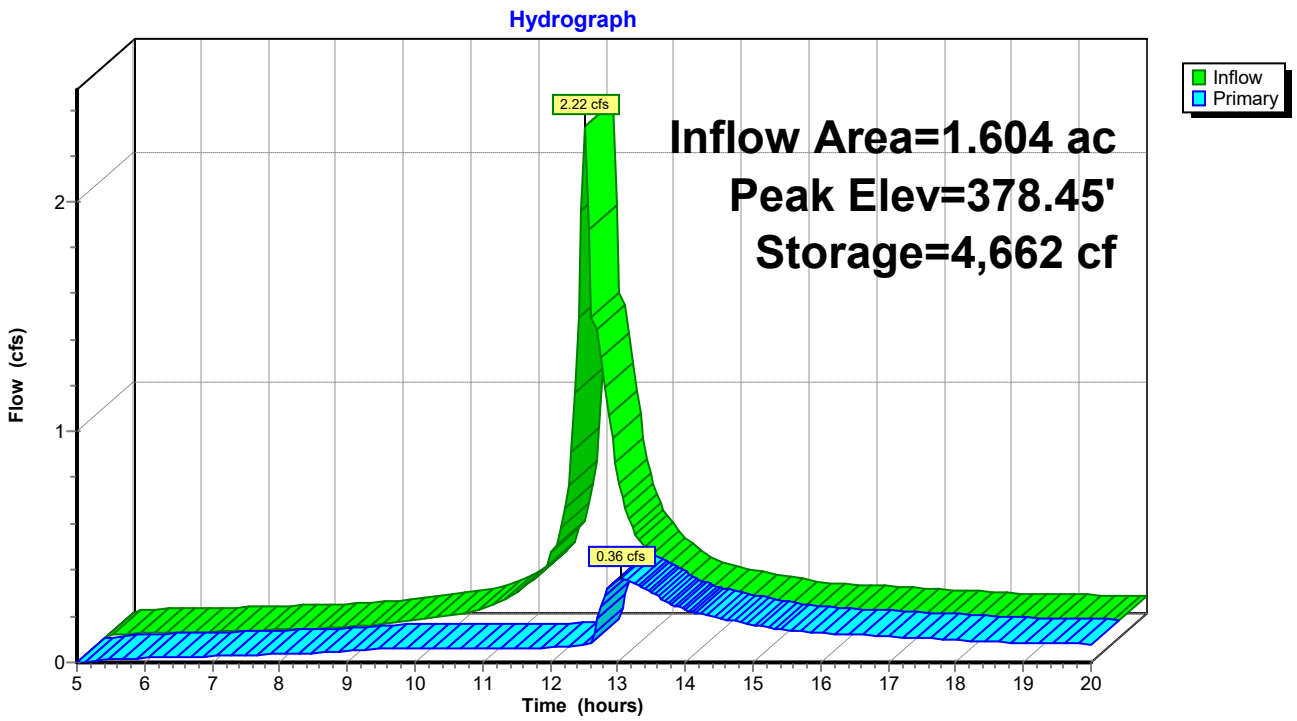
Volume	Invert	Avail.Storage	Storage Description
#1	377.00'	12,056 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
377.00	2,604	0	0
378.00	3,442	3,023	3,023
379.00	4,490	3,966	6,989
380.00	5,643	5,067	12,056

Device	Routing	Invert	Outlet Devices
#1	Primary	374.25'	**18.0" Round Culvert** L= 24.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 374.25' / 371.85' S= 0.1000 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	374.50'	**1.2" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	378.35'	**36.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	378.85'	**25.0' long x 15.0' 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) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.36 cfs @ 13.06 hrs HW=378.45' (Free Discharge)
- **1=Culvert** (Passes 0.36 cfs of 15.79 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.07 cfs @ 9.50 fps)
  - **3=Orifice/Grate** (Orifice Controls 0.29 cfs @ 0.99 fps)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 2Pond: Pond 2



Summary for Pond BP: Barn Bypass detention Pond

Inflow Area = 1.577 ac, 0.00% Impervious, Inflow Depth > 0.93" for 2-Year event
Inflow = 1.44 cfs @ 12.20 hrs, Volume= 0.123 af
Outflow = 0.31 cfs @ 12.79 hrs, Volume= 0.120 af, Atten= 79%, Lag= 34.9 min
Primary = 0.31 cfs @ 12.79 hrs, Volume= 0.120 af
Routed to Reach 14R : Exisitng Bypass Pipe

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 402.80' @ 12.78 hrs Surf.Area= 1,438 sf Storage= 1,617 cf

Plug-Flow detention time= 56.8 min calculated for 0.120 af (98% of inflow)
Center-of-Mass det. time= 50.3 min (880.1 - 829.8)

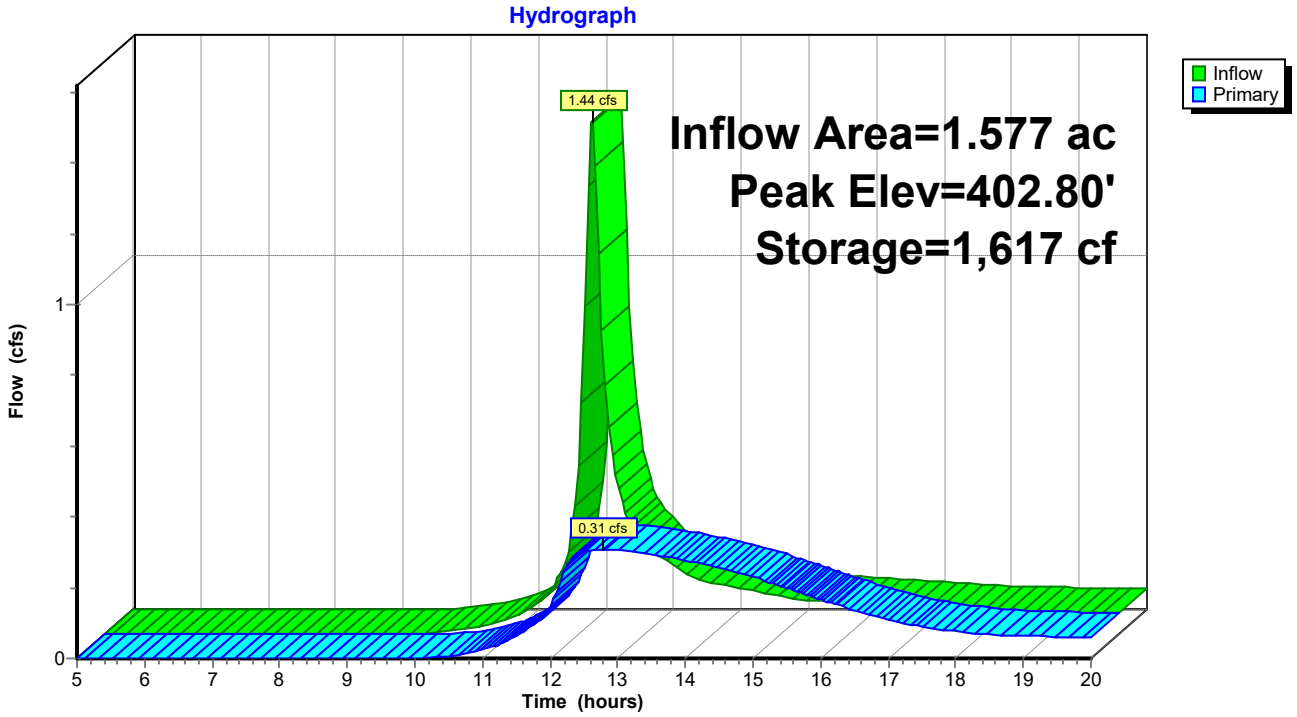
Volume	Invert	Avail.Storage	Storage Description
#1	401.00'	6,368 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
401.00	462	0	0
402.00	900	681	681
403.00	1,572	1,236	1,917
404.00	2,175	1,874	3,791
405.00	2,980	2,578	6,368

Device	Routing	Invert	Outlet Devices
#1	Primary	401.00'	**12.0" Round Culvert** L= 400.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 401.00' / 395.00' S= 0.0150 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	401.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	402.80'	**12.0" W x 8.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	403.80'	**20.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.31 cfs @ 12.79 hrs HW=402.80' (Free Discharge)
- **1=Culvert** (Passes 0.31 cfs of 4.31 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.31 cfs @ 6.23 fps)
  - **3=Orifice/Grate** (Orifice Controls 0.00 cfs @ 0.08 fps)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond BP: Barn Bypass detention Pond



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2A: Region 2A Runoff Area=1,620 sf 100.00% Impervious Runoff Depth>3.71"
Flow Length=130' Slope=0.0200 '/' Tc=0.9 min CN=98 Runoff=0.16 cfs 0.012 af

Subcatchment 2B: Region 2B Runoff Area=10,097 sf 87.10% Impervious Runoff Depth>3.57"
Flow Length=150' Slope=0.0200 '/' Tc=1.2 min CN=96 Runoff=1.01 cfs 0.069 af

Subcatchment 2C: Region 2C Runoff Area=8,813 sf 84.74% Impervious Runoff Depth>3.49"
Flow Length=150' Slope=0.0200 '/' Tc=1.2 min CN=95 Runoff=0.87 cfs 0.059 af

Subcatchment 2D: Region 2D Runoff Area=1,149 sf 100.00% Impervious Runoff Depth>3.71"
Flow Length=95' Slope=0.0200 '/' Tc=0.7 min CN=98 Runoff=0.12 cfs 0.008 af

Subcatchment 2E: Region 2E Runoff Area=5,502 sf 50.20% Impervious Runoff Depth>2.86"
Flow Length=230' Tc=1.5 min CN=88 Runoff=0.47 cfs 0.030 af

Subcatchment 2F: Region 2F Runoff Area=2,903 sf 100.00% Impervious Runoff Depth>3.71"
Flow Length=210' Tc=1.4 min CN=98 Runoff=0.30 cfs 0.021 af

Subcatchment 2G: Region 2G Runoff Area=685 sf 100.00% Impervious Runoff Depth>3.71"
Flow Length=55' Tc=0.6 min CN=98 Runoff=0.07 cfs 0.005 af

Subcatchment 2P: Region 2P Runoff Area=39,085 sf 20.19% Impervious Runoff Depth>2.31"
Flow Length=335' Tc=20.6 min UI Adjusted CN=82 Runoff=1.60 cfs 0.172 af

Subcatchment 2U: Untreated to DP2 Runoff Area=27,294 sf 1.63% Impervious Runoff Depth>2.00"
Flow Length=315' Tc=4.6 min CN=78 Runoff=1.58 cfs 0.104 af

Subcatchment 4B: Barn Region 4B Runoff Area=68,678 sf 0.00% Impervious Runoff Depth>1.92"
Flow Length=510' Tc=12.0 min CN=77 Runoff=2.98 cfs 0.252 af

Subcatchment 5S: Barn Region 2B Runoff Area=38,941 sf 16.86% Impervious Runoff Depth>2.23"
Flow Length=385' Tc=13.9 min CN=81 Runoff=1.84 cfs 0.166 af

Reach 14R: Exisitng Bypass Pipe Avg. Flow Depth=0.48' Max Vel=7.57 fps Inflow=3.31 cfs 0.413 af
15.0" Round Pipe n=0.012 L=200.0' S=0.0225 '/' Capacity=10.50 cfs Outflow=3.29 cfs 0.413 af

Reach CB4: CB 4 Avg. Flow Depth=0.29' Max Vel=2.58 fps Inflow=0.47 cfs 0.030 af
12.0" Round Pipe n=0.012 L=18.0' S=0.0050 '/' Capacity=2.73 cfs Outflow=0.48 cfs 0.030 af

Reach CB5: CB 5 Avg. Flow Depth=0.33' Max Vel=2.91 fps Inflow=0.78 cfs 0.051 af
15.0" Round Pipe n=0.012 L=180.0' S=0.0050 '/' Capacity=4.95 cfs Outflow=0.71 cfs 0.051 af

Reach CB6: CB 6 Avg. Flow Depth=0.62' Max Vel=4.16 fps Inflow=2.88 cfs 0.203 af
18.0" Round Pipe n=0.012 L=60.0' S=0.0050 '/' Capacity=8.05 cfs Outflow=2.83 cfs 0.203 af

Reach CB7: CB 7 Avg. Flow Depth=0.38' Max Vel=6.89 fps Inflow=2.10 cfs 0.147 af
15.0" Round Pipe n=0.012 L=135.0' S=0.0250 '/' Capacity=11.06 cfs Outflow=2.12 cfs 0.147 af

Reach CB8: CB 8 Avg. Flow Depth=0.43' Max Vel=3.30 fps Inflow=1.28 cfs 0.089 af
15.0" Round Pipe n=0.012 L=33.0' S=0.0048 '/' Capacity=4.87 cfs Outflow=1.24 cfs 0.089 af

Reach CB9: CB 9 Avg. Flow Depth=0.21' Max Vel=2.22 fps Inflow=0.28 cfs 0.020 af
12.0" Round Pipe n=0.012 L=30.0' S=0.0050 '/' Capacity=2.73 cfs Outflow=0.27 cfs 0.020 af

Reach DP2: Design Point 2 Inflow=5.62 cfs 0.791 af
Outflow=5.62 cfs 0.791 af

Pond 2Pond: Pond 2 Peak Elev=378.69' Storage=5,645 cf Inflow=3.61 cfs 0.375 af
Outflow=1.98 cfs 0.274 af

Pond BP: Barn Bypass detention Pond Peak Elev=403.39' Storage=2,578 cf Inflow=2.98 cfs 0.252 af
Outflow=1.81 cfs 0.247 af

Total Runoff Area = 4.701 ac Runoff Volume = 0.898 af Average Runoff Depth = 2.29"
80.33% Pervious = 3.776 ac 19.67% Impervious = 0.925 ac

Summary for Subcatchment 2A: Region 2A

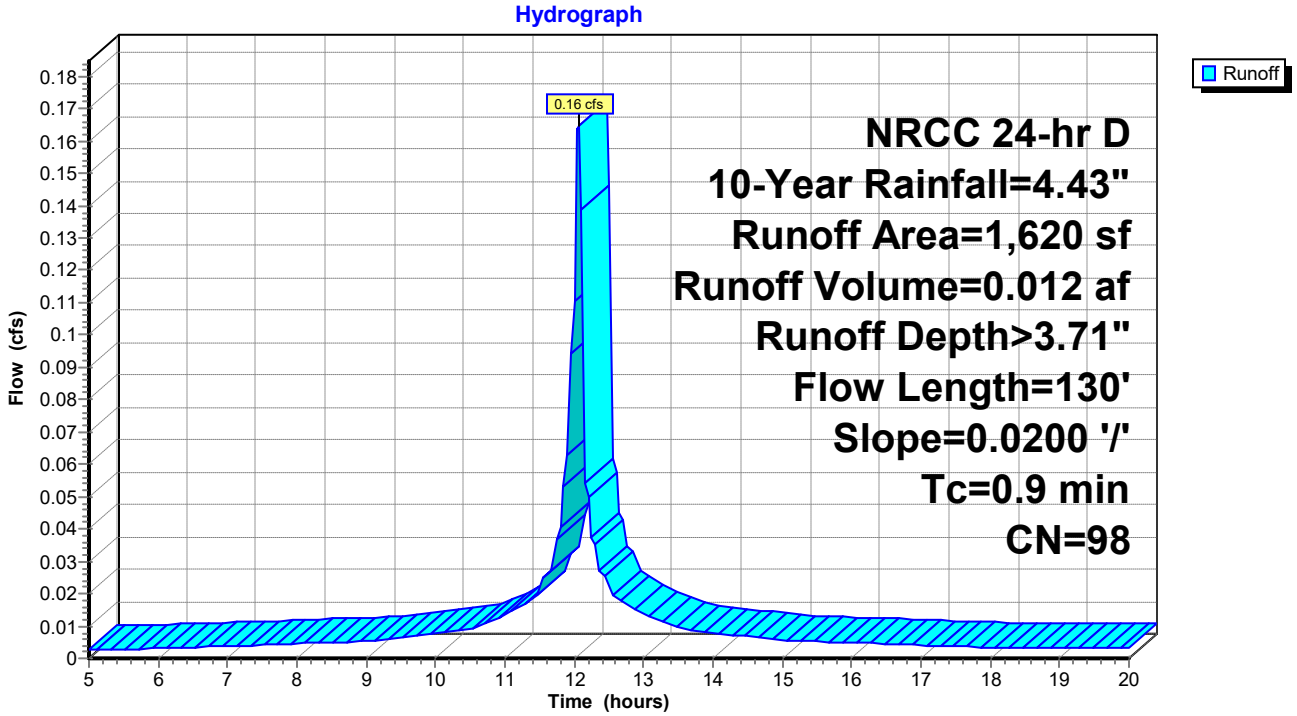
Runoff = 0.16 cfs @ 12.06 hrs, Volume= 0.012 af, Depth> 3.71"
Routed to Reach CB9 : CB 9

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.43"

Area (sf)	CN	Description
1,620	98	Unconnected pavement, HSG D
1,620		100.00% Impervious Area
1,620		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.97		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
0.6	110	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	130	Total			

Subcatchment 2A: Region 2A



Summary for Subcatchment 2B: Region 2B

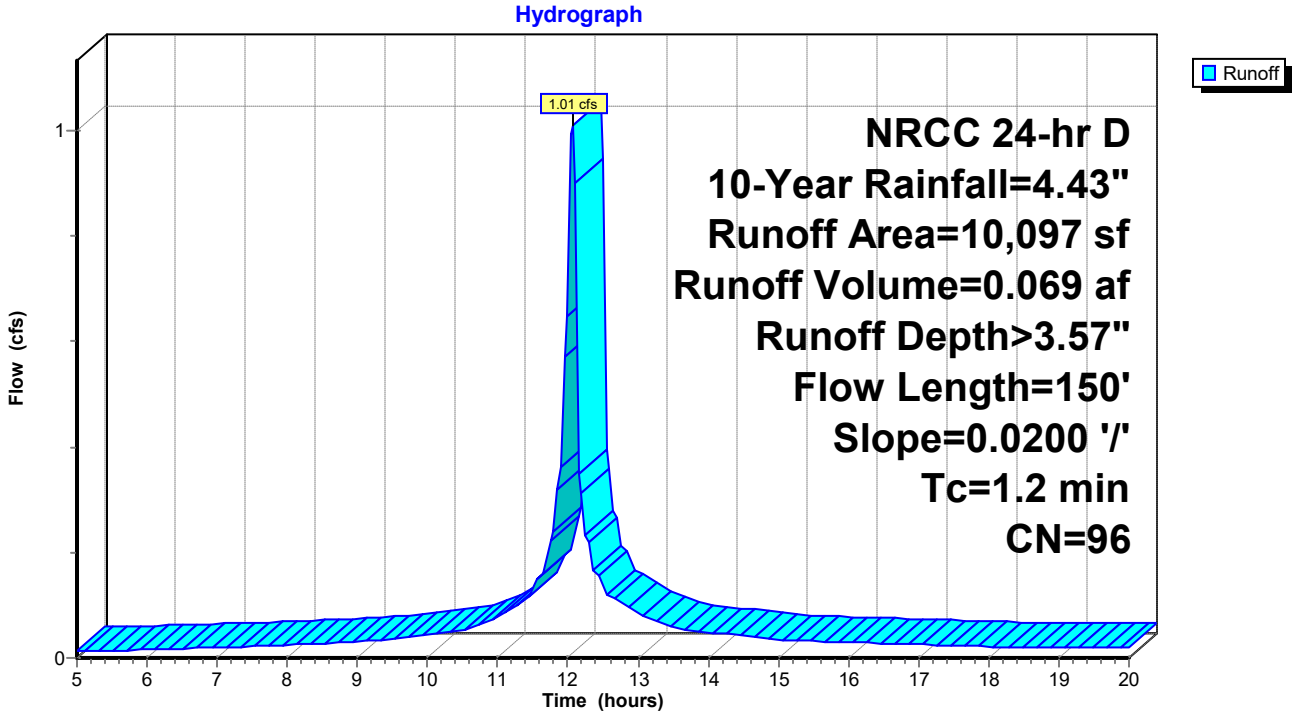
Runoff = 1.01 cfs @ 12.06 hrs, Volume= 0.069 af, Depth> 3.57"
Routed to Reach CB8 : CB 8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.43"

Area (sf)	CN	Description
8,794	98	Unconnected pavement, HSG D
1,303	80	>75% Grass cover, Good, HSG D
10,097	96	Weighted Average
1,303		12.90% Pervious Area
8,794		87.10% Impervious Area
8,794		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0200	1.05		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
0.7	120	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.2	150	Total			

Subcatchment 2B: Region 2B



Summary for Subcatchment 2C: Region 2C

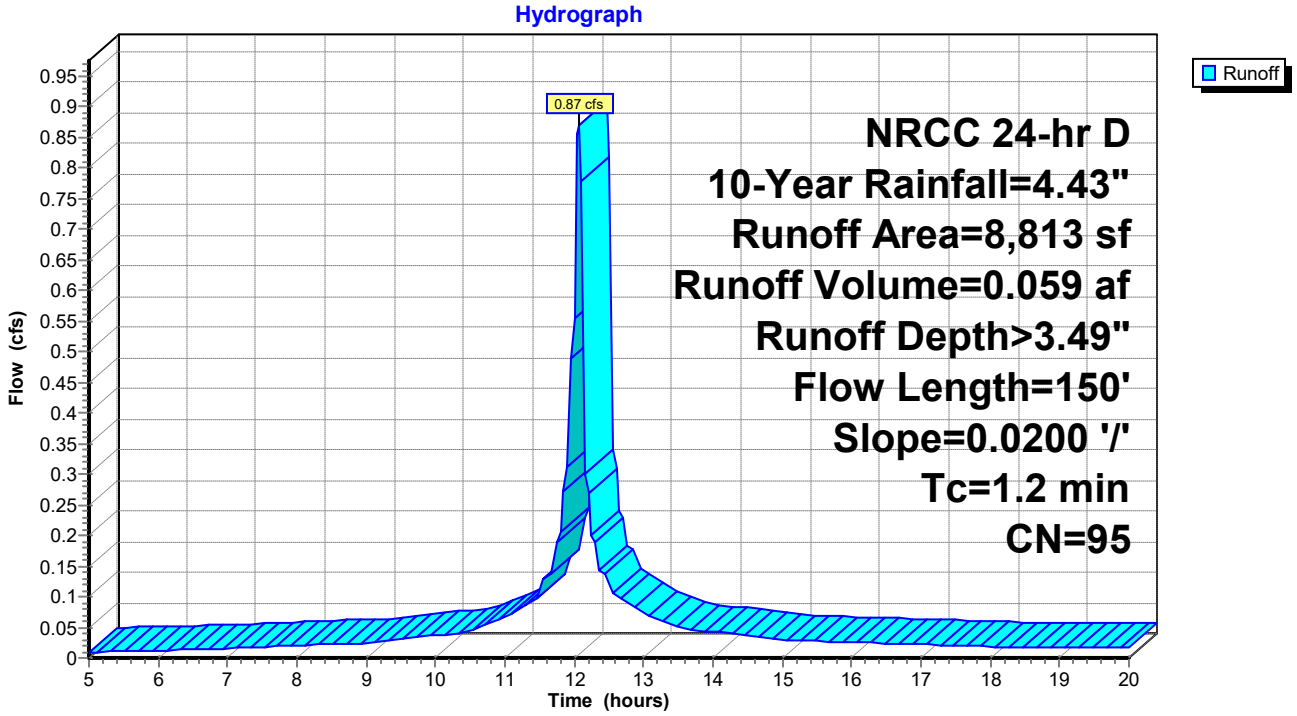
Runoff = 0.87 cfs @ 12.06 hrs, Volume= 0.059 af, Depth> 3.49"
Routed to Reach CB7 : CB 7

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.43"

Area (sf)	CN	Description
7,468	98	Unconnected pavement, HSG D
1,345	80	>75% Grass cover, Good, HSG D
8,813	95	Weighted Average
1,345		15.26% Pervious Area
7,468		84.74% Impervious Area
7,468		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0200	1.05		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
0.7	120	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.2	150	Total			

Subcatchment 2C: Region 2C



Summary for Subcatchment 2D: Region 2D

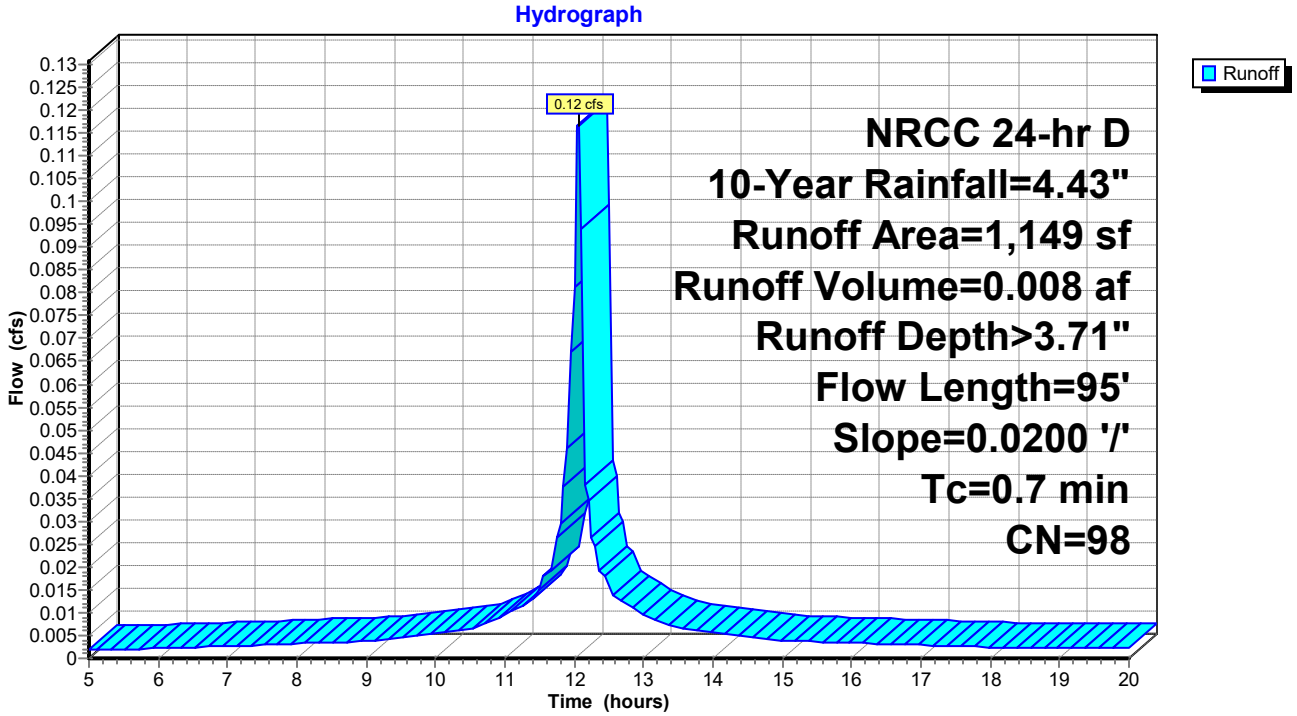
Runoff = 0.12 cfs @ 12.06 hrs, Volume= 0.008 af, Depth> 3.71"
Routed to Reach CB9 : CB 9

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.43"

Area (sf)	CN	Description
1,149	98	Unconnected pavement, HSG D
1,149		100.00% Impervious Area
1,149		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.97		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
0.4	75	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	95	Total			

Subcatchment 2D: Region 2D



Summary for Subcatchment 2E: Region 2E

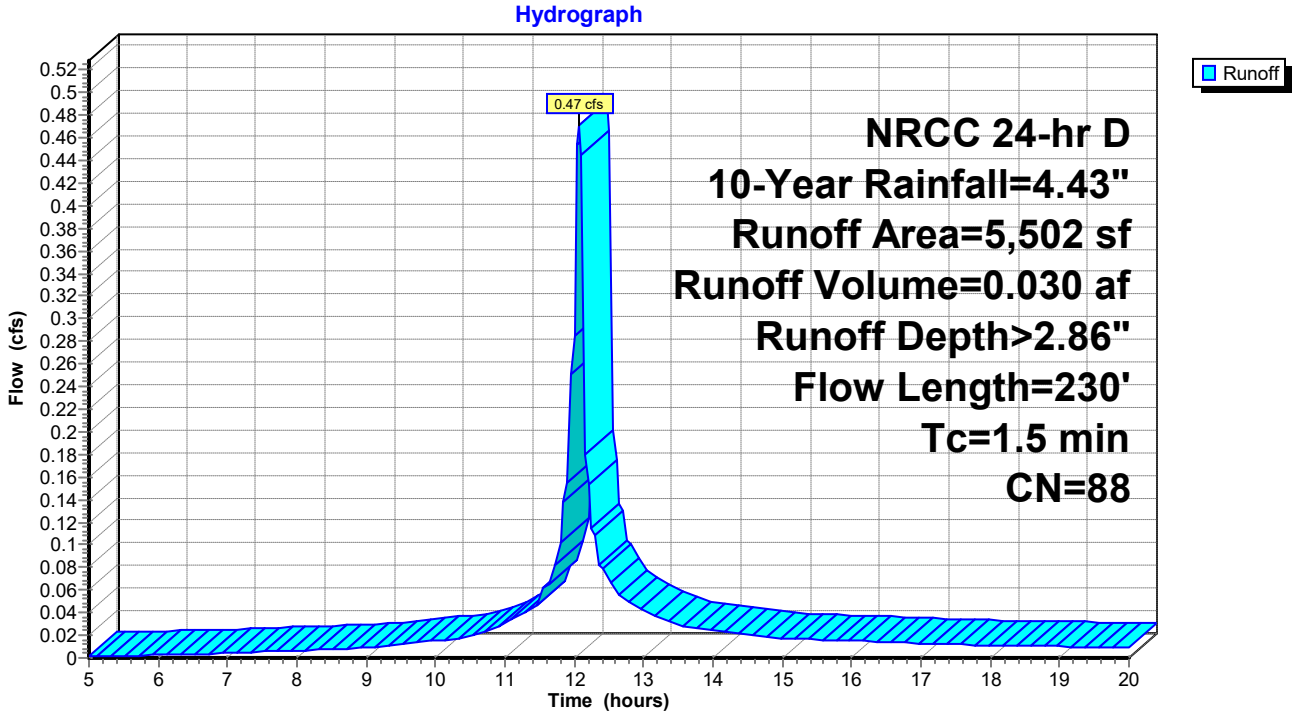
Runoff = 0.47 cfs @ 12.07 hrs, Volume= 0.030 af, Depth> 2.86"
Routed to Reach CB4 : CB 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.43"

Area (sf)	CN	Description
2,762	98	Unconnected pavement, HSG D
2,740	78	Meadow, non-grazed, HSG D
5,502	88	Weighted Average
2,740		49.80% Pervious Area
2,762		50.20% Impervious Area
2,762		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0200	1.05		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
1.0	200	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	230	Total			

Subcatchment 2E: Region 2E



Summary for Subcatchment 2F: Region 2F

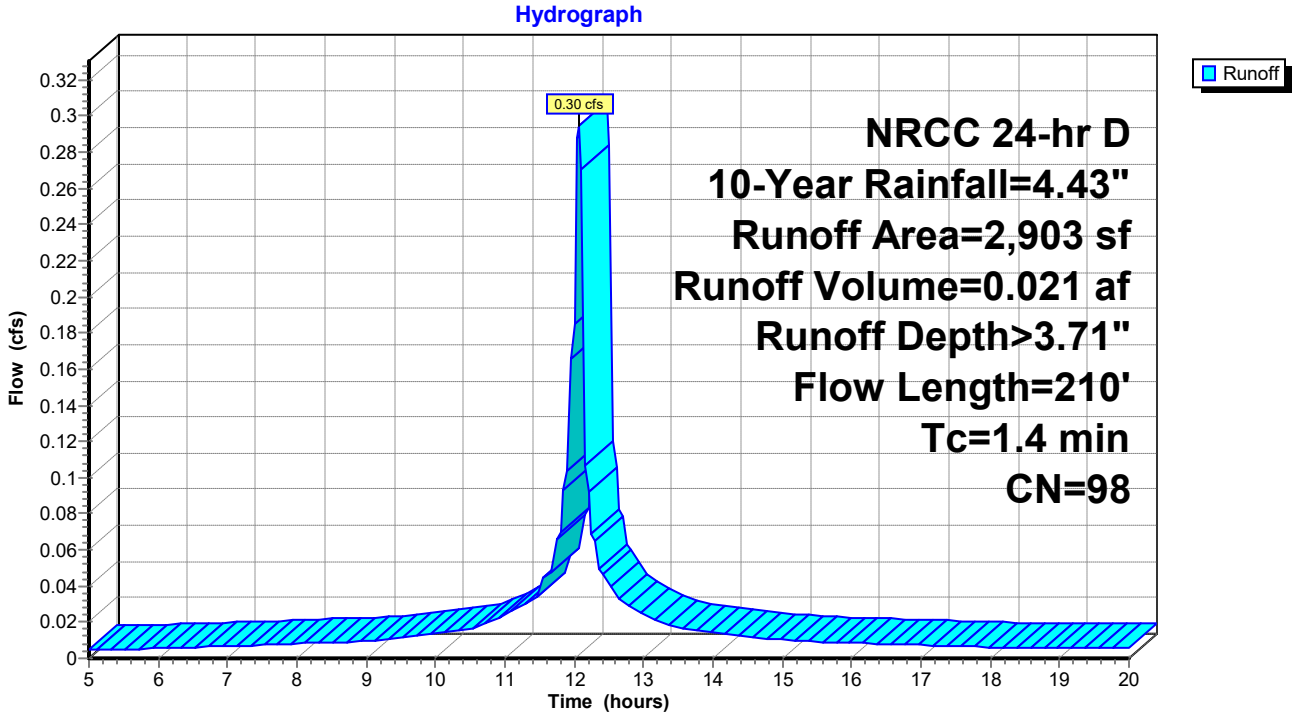
Runoff = 0.30 cfs @ 12.07 hrs, Volume= 0.021 af, Depth> 3.71"
Routed to Reach CB5 : CB 5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.43"

Area (sf)	CN	Description
2,903	98	Unconnected pavement, HSG D
2,903		100.00% Impervious Area
2,903		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0200	1.05		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
0.9	180	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	210	Total			

Subcatchment 2F: Region 2F



Summary for Subcatchment 2G: Region 2G

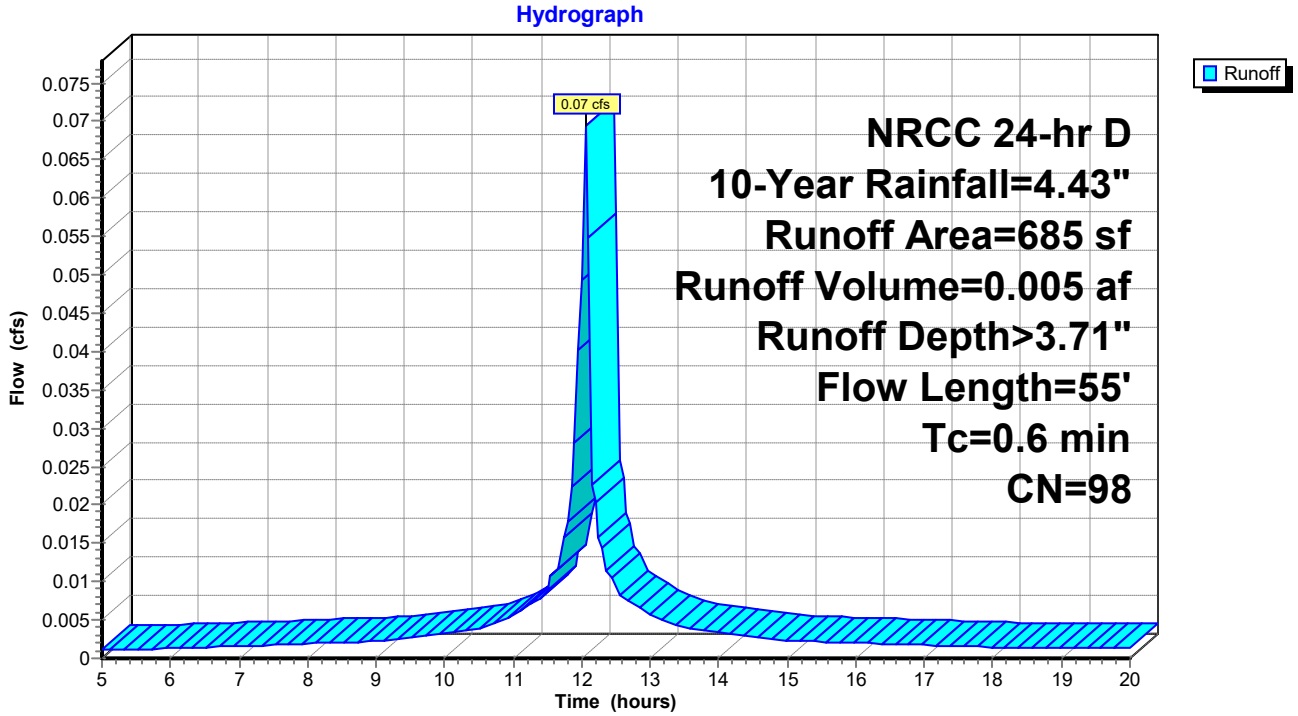
Runoff = 0.07 cfs @ 12.05 hrs, Volume= 0.005 af, Depth> 3.71"
Routed to Reach CB6 : CB 6

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.43"

Area (sf)	CN	Description
685	98	Unconnected pavement, HSG D
685		100.00% Impervious Area
685		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0200	1.05		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
0.1	25	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	55	Total			

Subcatchment 2G: Region 2G



Summary for Subcatchment 2P: Region 2P

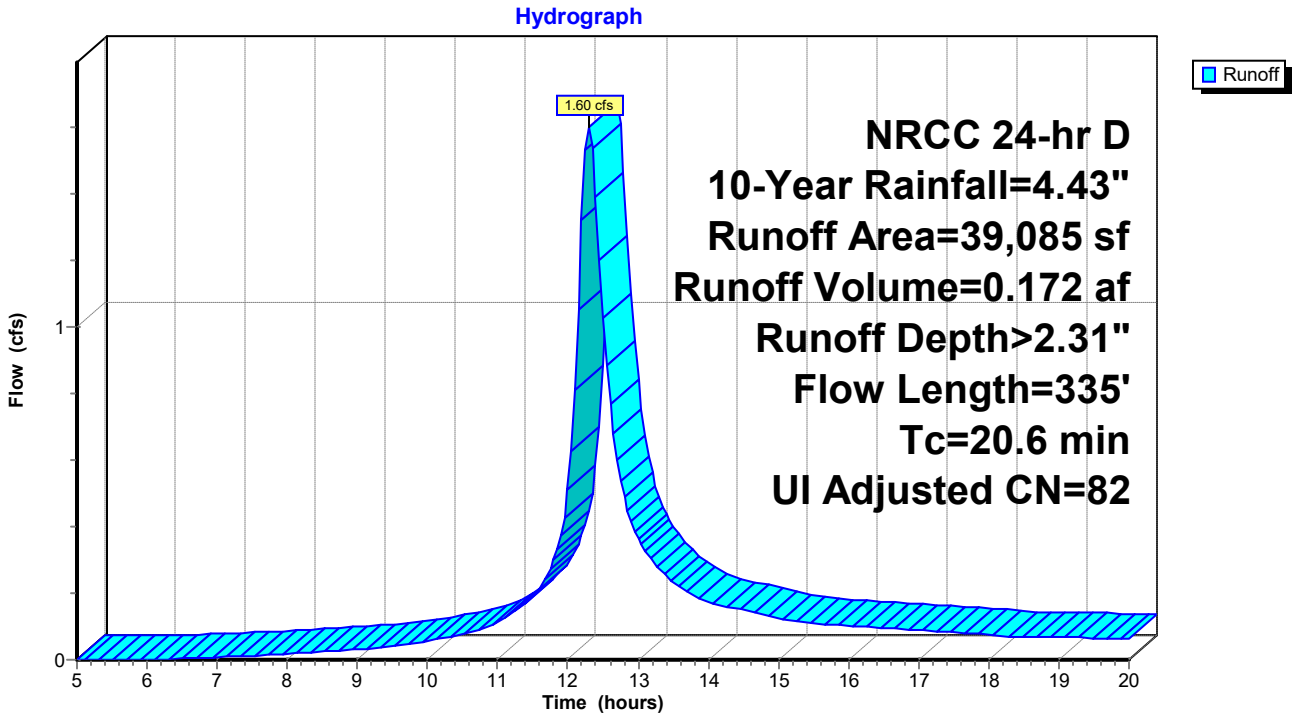
Runoff = 1.60 cfs @ 12.30 hrs, Volume= 0.172 af, Depth> 2.31"
Routed to Pond 2Pond : Pond 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.43"

Area (sf)	CN	Adj	Description
7,890	98		Unconnected pavement, HSG D
31,195	80		>75% Grass cover, Good, HSG D
39,085	84	82	Weighted Average, UI Adjusted
31,195			79.81% Pervious Area
7,890			20.19% Impervious Area
7,890			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0500	1.92		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
2.5	185	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.2	50	0.0010	0.05		**Sheet Flow,** Range n= 0.130 P2= 3.00"
20.6	335	Total			

Subcatchment 2P: Region 2P



Summary for Subcatchment 2U: Untreated to DP2

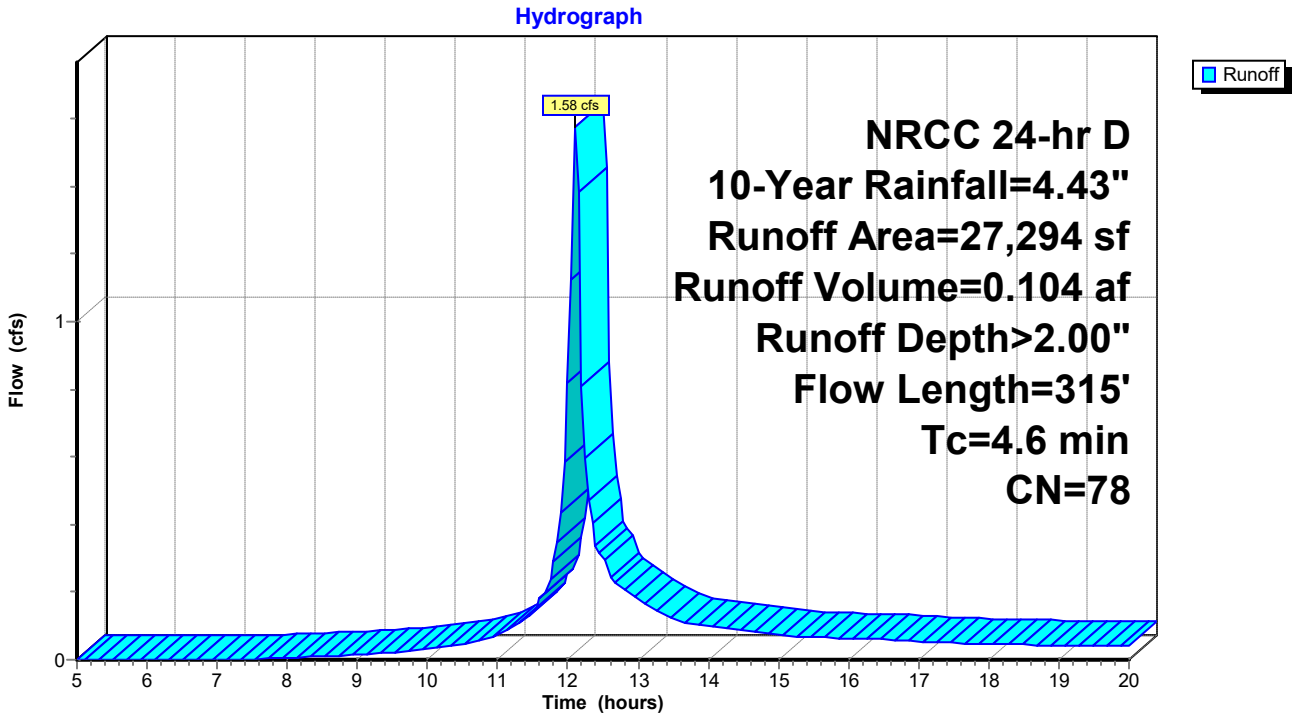
Runoff = 1.58 cfs @ 12.11 hrs, Volume= 0.104 af, Depth> 2.00"
Routed to Reach DP2 : Design Point 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.43"

Area (sf)	CN	Description
444	98	Unconnected pavement, HSG D
2,167	80	>75% Grass cover, Good, HSG D
18,188	78	Meadow, non-grazed, HSG D
6,495	77	Woods, Good, HSG D
27,294	78	Weighted Average
26,850		98.37% Pervious Area
444		1.63% Impervious Area
444		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	80	0.2200	0.46		**Sheet Flow,** Range n= 0.130 P2= 3.00"
1.7	235	0.1050	2.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.6	315	Total			

Subcatchment 2U: Untreated to DP2



Summary for Subcatchment 4B: Barn Region 4B

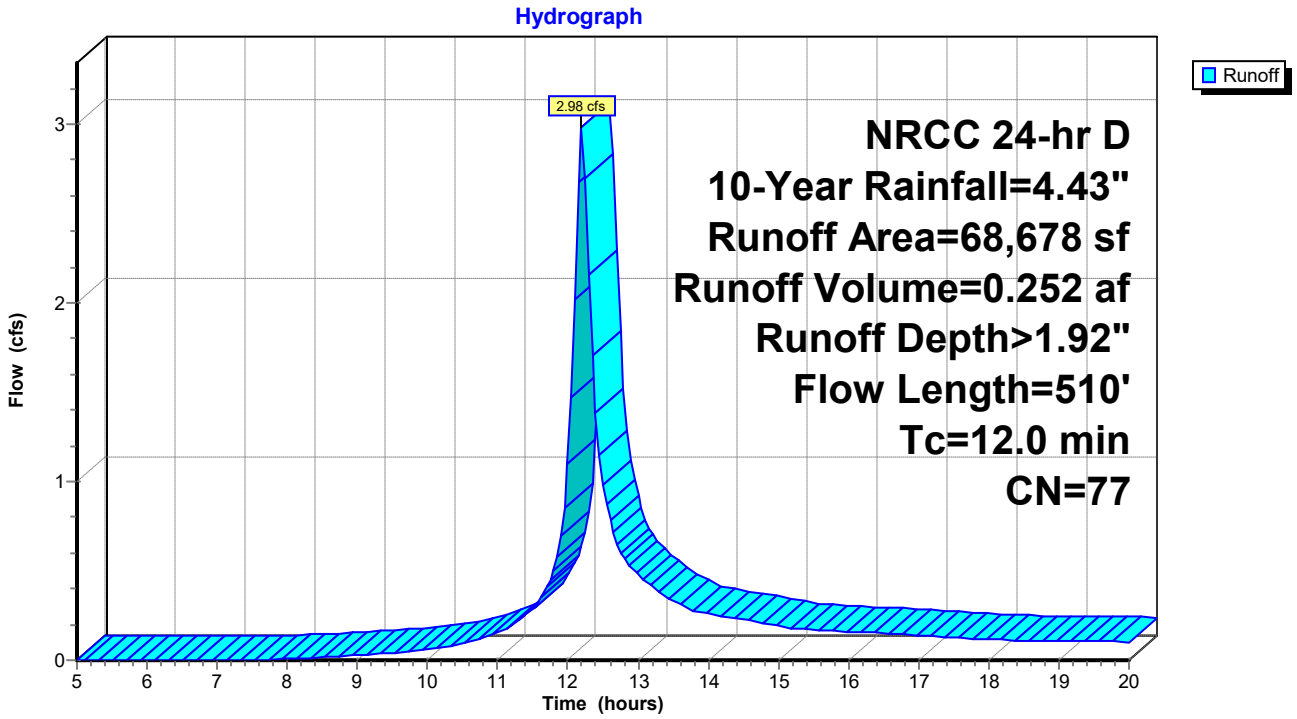
Runoff = 2.98 cfs @ 12.20 hrs, Volume= 0.252 af, Depth> 1.92"
Routed to Pond BP : Barn Bypass detention Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.43"

Area (sf)	CN	Description
11,285	78	Meadow, non-grazed, HSG D
57,393	77	Woods, Good, HSG D
68,678	77	Weighted Average
68,678		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.1500	0.17		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.00"
1.6	170	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	240	0.1100	7.58	121.21	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.069 Riprap, 6-inch
12.0	510	Total			

Subcatchment 4B: Barn Region 4B



Summary for Subcatchment 5S: Barn Region 2B

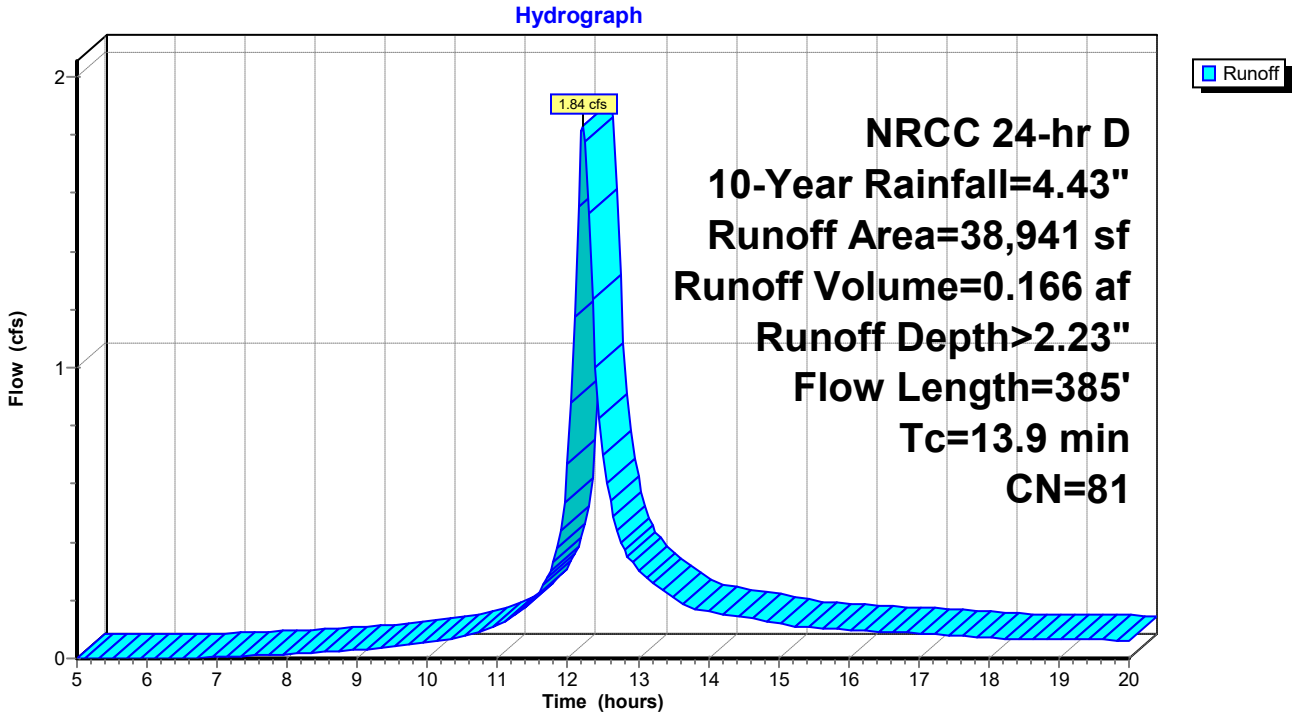
Runoff = 1.84 cfs @ 12.22 hrs, Volume= 0.166 af, Depth> 2.23"
Routed to Reach 14R : Exisitng Bypass Pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 10-Year Rainfall=4.43"

Area (sf)	CN	Description
6,567	98	Paved parking, HSG D
22,495	78	Meadow, non-grazed, HSG D
546	80	>75% Grass cover, Good, HSG D
9,333	77	Woods, Good, HSG D
38,941	81	Weighted Average
32,374		83.14% Pervious Area
6,567		16.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.1400	0.16		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.00"
0.6	60	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	160	0.0150	6.43	102.94	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.030 Short grass
2.7	65	0.1700	0.40		**Sheet Flow,** Range n= 0.130 P2= 3.00"
13.9	385	Total			

Subcatchment 5S: Barn Region 2B



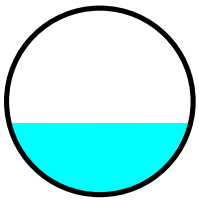
Summary for Reach 14R: Exisitng Bypass Pipe

Inflow Area = 2.471 ac, 6.10% Impervious, Inflow Depth > 2.01" for 10-Year event
Inflow = 3.31 cfs @ 12.28 hrs, Volume= 0.413 af
Outflow = 3.29 cfs @ 12.30 hrs, Volume= 0.413 af, Atten= 1%, Lag= 0.9 min
Routed to Reach DP2 : Design Point 2

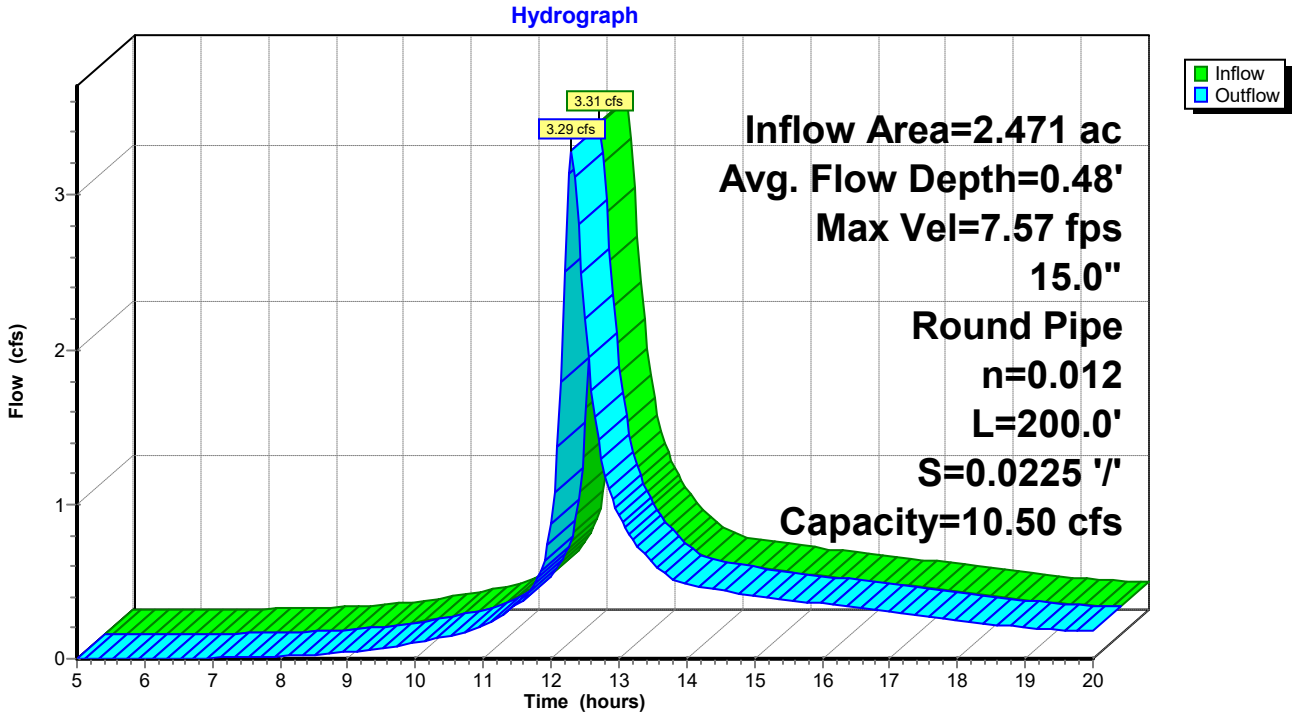
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.57 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 3.43 fps, Avg. Travel Time= 1.0 min

Peak Storage= 87 cf @ 12.29 hrs
Average Depth at Peak Storage= 0.48' , Surface Width= 1.22'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 10.50 cfs

15.0" Round Pipe
n= 0.012
Length= 200.0' Slope= 0.0225 '/'
Inlet Invert= 0.00', Outlet Invert= -4.50'



Reach 14R: Exisitng Bypass Pipe



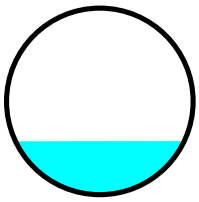
Summary for Reach CB4: CB 4

Inflow Area = 0.126 ac, 50.20% Impervious, Inflow Depth > 2.86" for 10-Year event
Inflow = 0.47 cfs @ 12.07 hrs, Volume= 0.030 af
Outflow = 0.48 cfs @ 12.08 hrs, Volume= 0.030 af, Atten= 0%, Lag= 0.4 min
Routed to Reach CB5 : CB 5

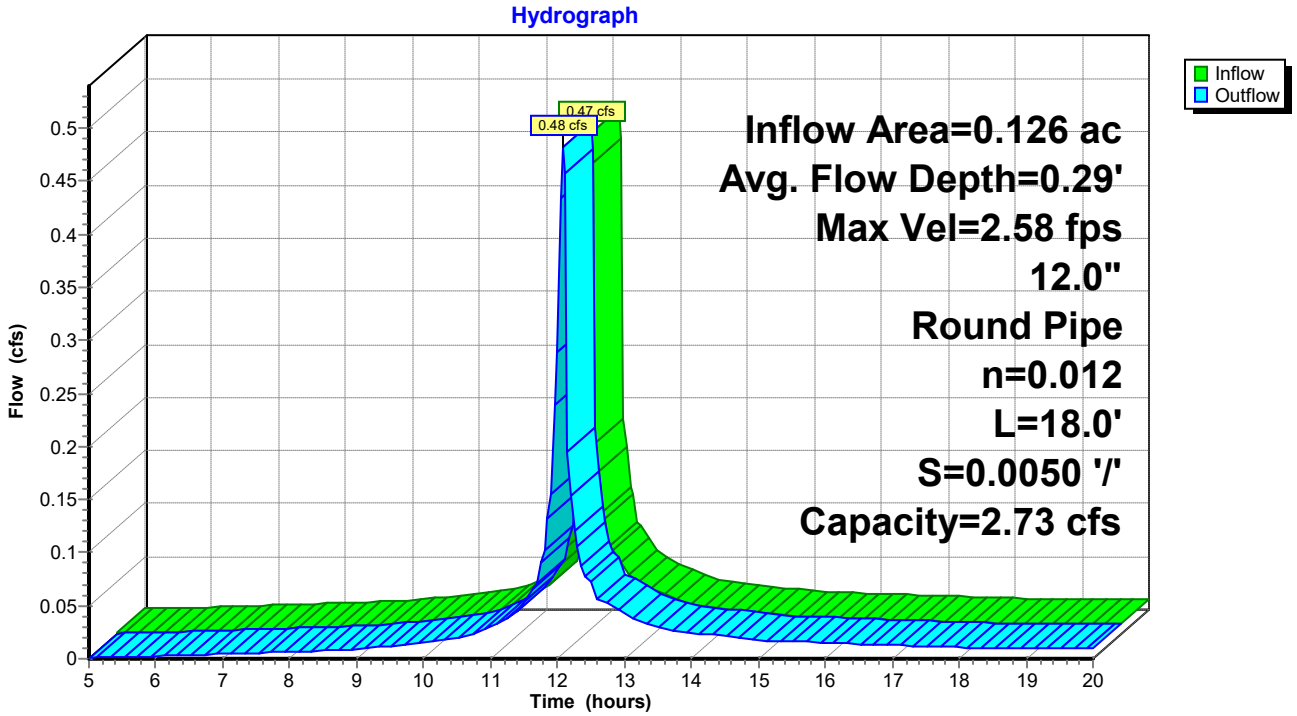
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.58 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 0.94 fps, Avg. Travel Time= 0.3 min

Peak Storage= 3 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.29' , Surface Width= 0.91'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.73 cfs

12.0" Round Pipe
n= 0.012
Length= 18.0' Slope= 0.0050 '/'
Inlet Invert= 384.20', Outlet Invert= 384.11'



Reach CB4: CB 4



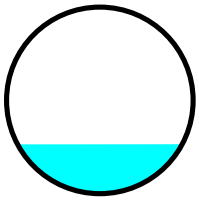
Summary for Reach CB5: CB 5

Inflow Area = 0.193 ac, 67.40% Impervious, Inflow Depth > 3.15" for 10-Year event
Inflow = 0.78 cfs @ 12.08 hrs, Volume= 0.051 af
Outflow = 0.71 cfs @ 12.10 hrs, Volume= 0.051 af, Atten= 8%, Lag= 1.3 min
Routed to Reach CB6 : CB 6

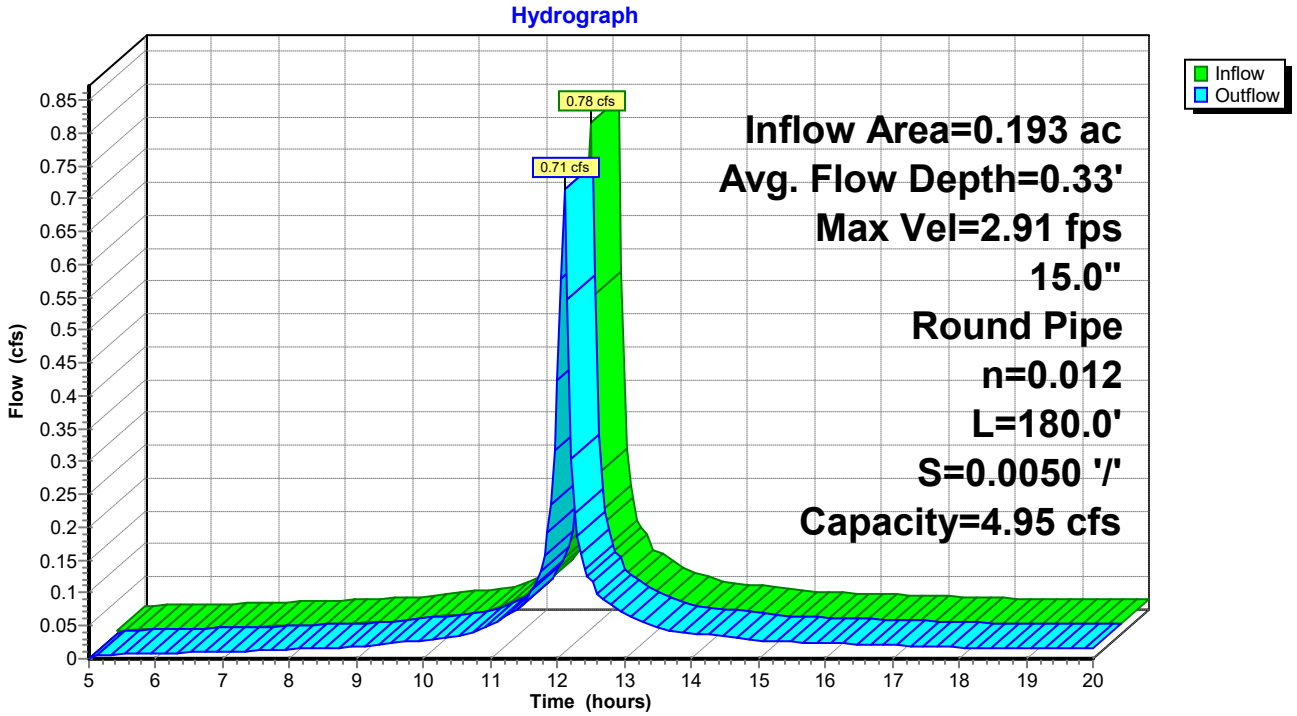
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.91 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 1.09 fps, Avg. Travel Time= 2.8 min

Peak Storage= 47 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.33' , Surface Width= 1.10'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 4.95 cfs

15.0" Round Pipe
n= 0.012
Length= 180.0' Slope= 0.0050 '/'
Inlet Invert= 384.11', Outlet Invert= 383.21'



Reach CB5: CB 5



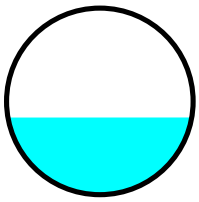
Summary for Reach CB6: CB 6

Inflow Area = 0.706 ac, 82.49% Impervious, Inflow Depth > 3.44" for 10-Year event
Inflow = 2.88 cfs @ 12.08 hrs, Volume= 0.203 af
Outflow = 2.83 cfs @ 12.09 hrs, Volume= 0.203 af, Atten= 2%, Lag= 0.3 min
Routed to Pond 2Pond : Pond 2

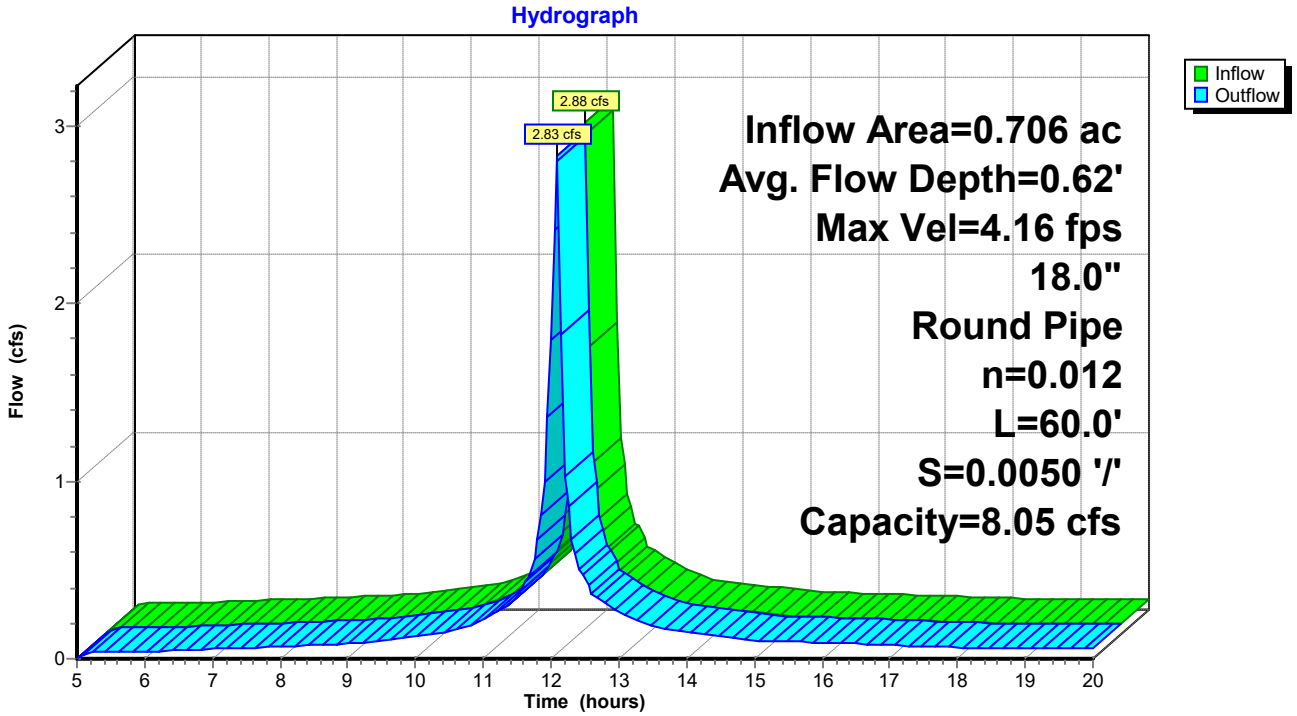
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.16 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.62 fps, Avg. Travel Time= 0.6 min

Peak Storage= 41 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.62' , Surface Width= 1.48'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 8.05 cfs

18.0" Round Pipe
n= 0.012
Length= 60.0' Slope= 0.0050 '/'
Inlet Invert= 383.21', Outlet Invert= 382.91'



Reach CB6: CB 6



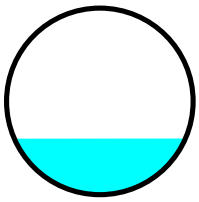
Summary for Reach CB7: CB 7

Inflow Area = 0.498 ac, 87.79% Impervious, Inflow Depth > 3.55" for 10-Year event
Inflow = 2.10 cfs @ 12.07 hrs, Volume= 0.147 af
Outflow = 2.12 cfs @ 12.08 hrs, Volume= 0.147 af, Atten= 0%, Lag= 0.7 min
Routed to Reach CB6 : CB 6

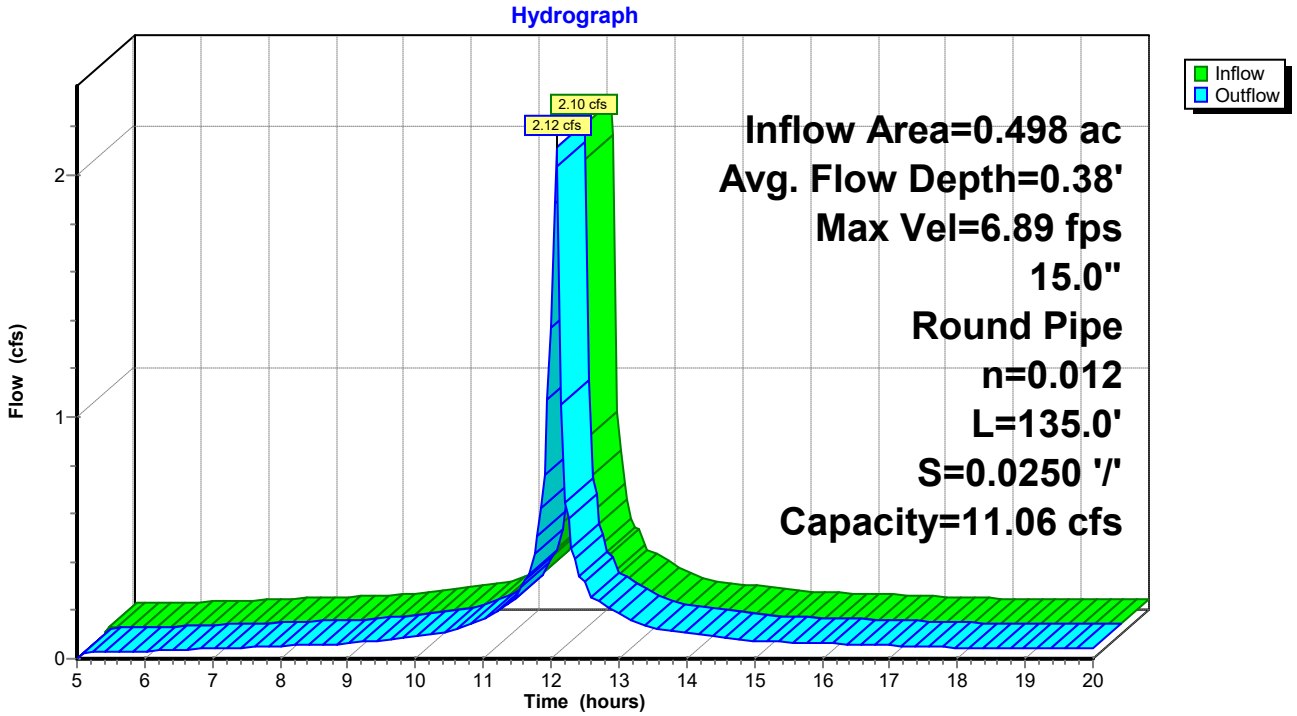
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.89 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.66 fps, Avg. Travel Time= 0.8 min

Peak Storage= 42 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.38' , Surface Width= 1.15'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 11.06 cfs

15.0" Round Pipe
n= 0.012
Length= 135.0' Slope= 0.0250 '/'
Inlet Invert= 386.55', Outlet Invert= 383.18'



Reach CB7: CB 7



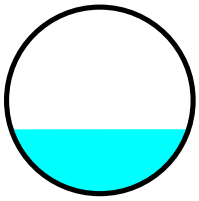
Summary for Reach CB8: CB 8

Inflow Area = 0.295 ac, 89.87% Impervious, Inflow Depth > 3.60" for 10-Year event
Inflow = 1.28 cfs @ 12.06 hrs, Volume= 0.089 af
Outflow = 1.24 cfs @ 12.07 hrs, Volume= 0.089 af, Atten= 3%, Lag= 0.6 min
Routed to Reach CB7 : CB 7

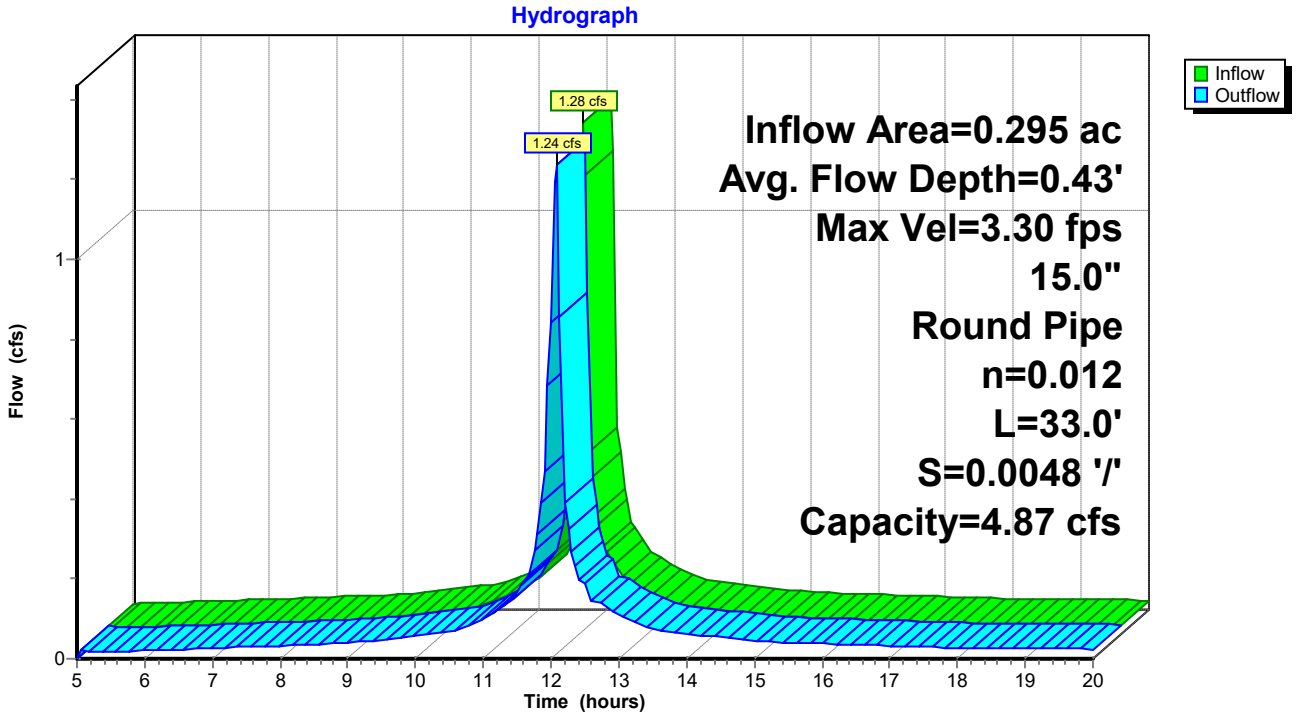
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.30 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.29 fps, Avg. Travel Time= 0.4 min

Peak Storage= 12 cf @ 12.07 hrs
Average Depth at Peak Storage= 0.43' , Surface Width= 1.19'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 4.87 cfs

15.0" Round Pipe
n= 0.012
Length= 33.0' Slope= 0.0048 '/'
Inlet Invert= 386.71', Outlet Invert= 386.55'



Reach CB8: CB 8



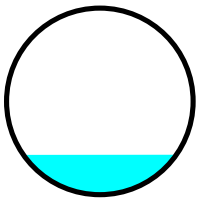
Summary for Reach CB9: CB 9

Inflow Area = 0.064 ac,100.00% Impervious, Inflow Depth > 3.71" for 10-Year event
Inflow = 0.28 cfs @ 12.06 hrs, Volume= 0.020 af
Outflow = 0.27 cfs @ 12.07 hrs, Volume= 0.020 af, Atten= 5%, Lag= 0.5 min
Routed to Reach CB8 : CB 8

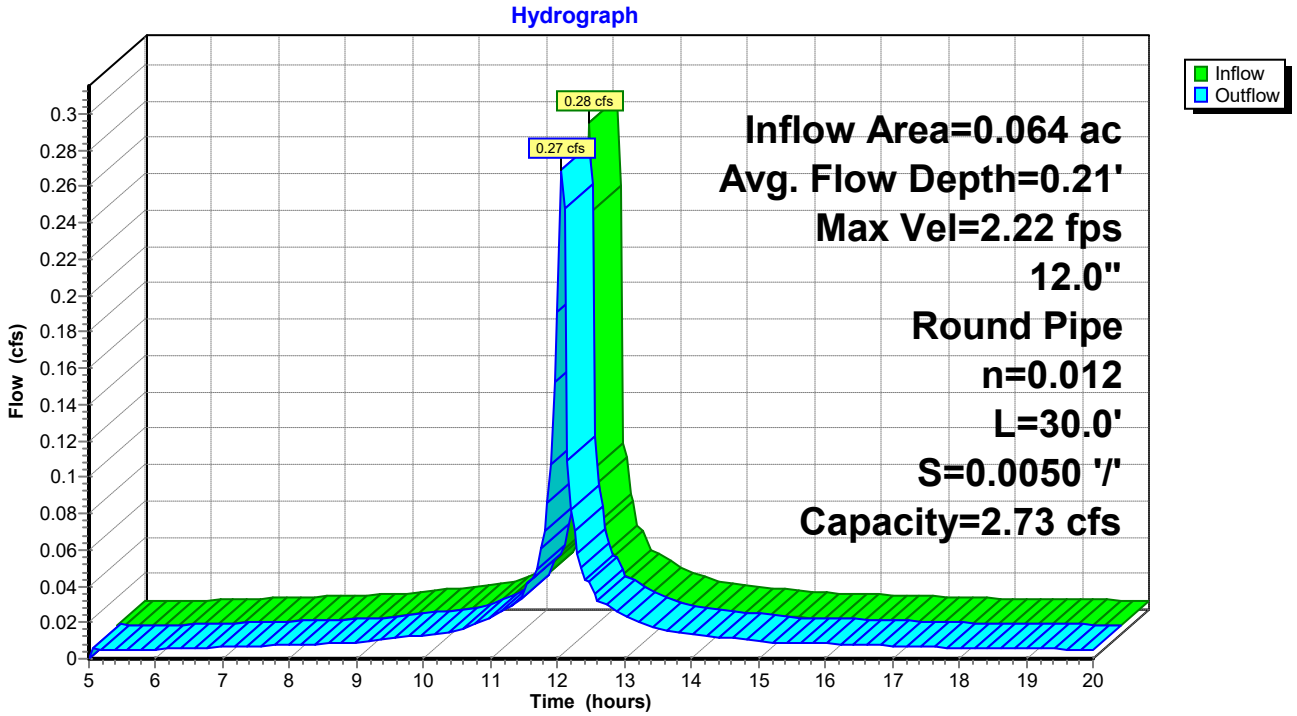
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.22 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 0.86 fps, Avg. Travel Time= 0.6 min

Peak Storage= 4 cf @ 12.06 hrs
Average Depth at Peak Storage= 0.21' , Surface Width= 0.82'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.73 cfs

12.0" Round Pipe
n= 0.012
Length= 30.0' Slope= 0.0050 '/'
Inlet Invert= 386.86', Outlet Invert= 386.71'



Reach CB9: CB 9

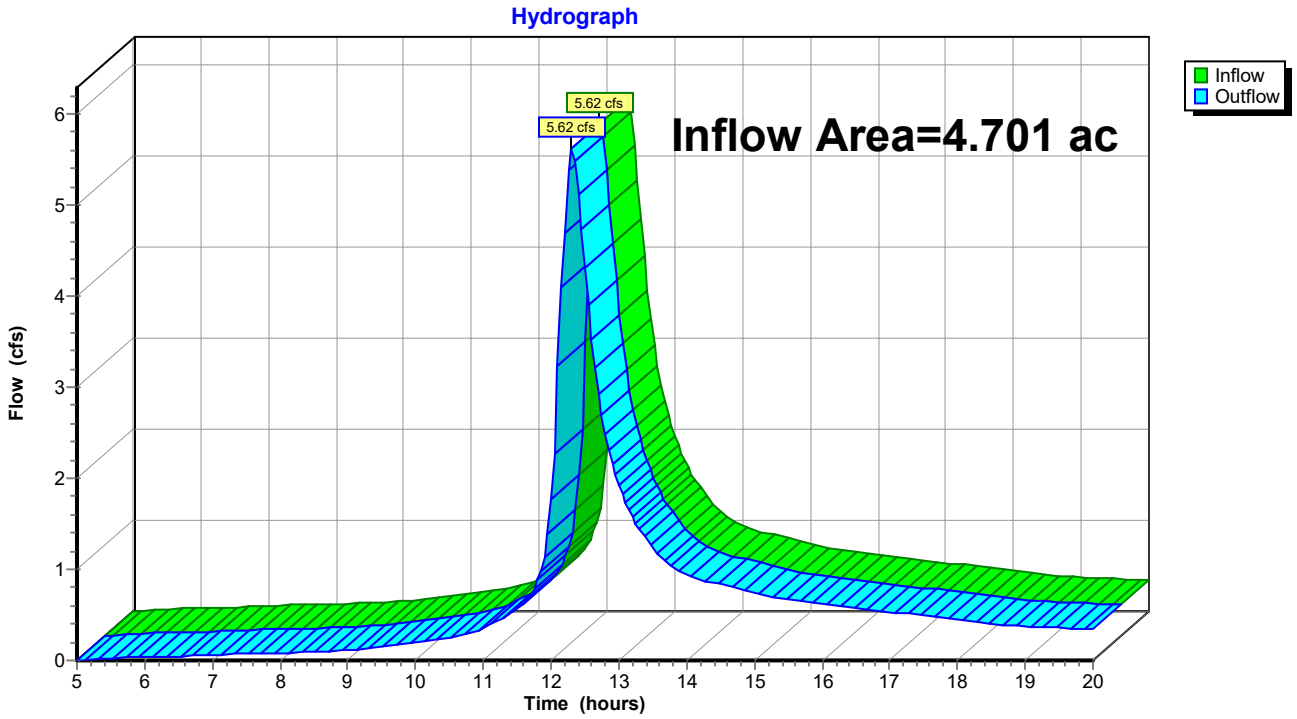


Summary for Reach DP2: Design Point 2

Inflow Area = 4.701 ac, 19.67% Impervious, Inflow Depth > 2.02" for 10-Year event
Inflow = 5.62 cfs @ 12.31 hrs, Volume= 0.791 af
Outflow = 5.62 cfs @ 12.31 hrs, Volume= 0.791 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP2: Design Point 2



Summary for Pond 2Pond: Pond 2

Inflow Area = 1.604 ac, 47.63% Impervious, Inflow Depth > 2.81" for 10-Year event
Inflow = 3.61 cfs @ 12.10 hrs, Volume= 0.375 af
Outflow = 1.98 cfs @ 12.38 hrs, Volume= 0.274 af, Atten= 45%, Lag= 17.3 min
Primary = 1.98 cfs @ 12.38 hrs, Volume= 0.274 af
Routed to Reach DP2 : Design Point 2

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 378.69' @ 12.38 hrs Surf.Area= 4,165 sf Storage= 5,645 cf

Plug-Flow detention time= 119.1 min calculated for 0.274 af (73% of inflow)
Center-of-Mass det. time= 45.7 min (817.8 - 772.1)

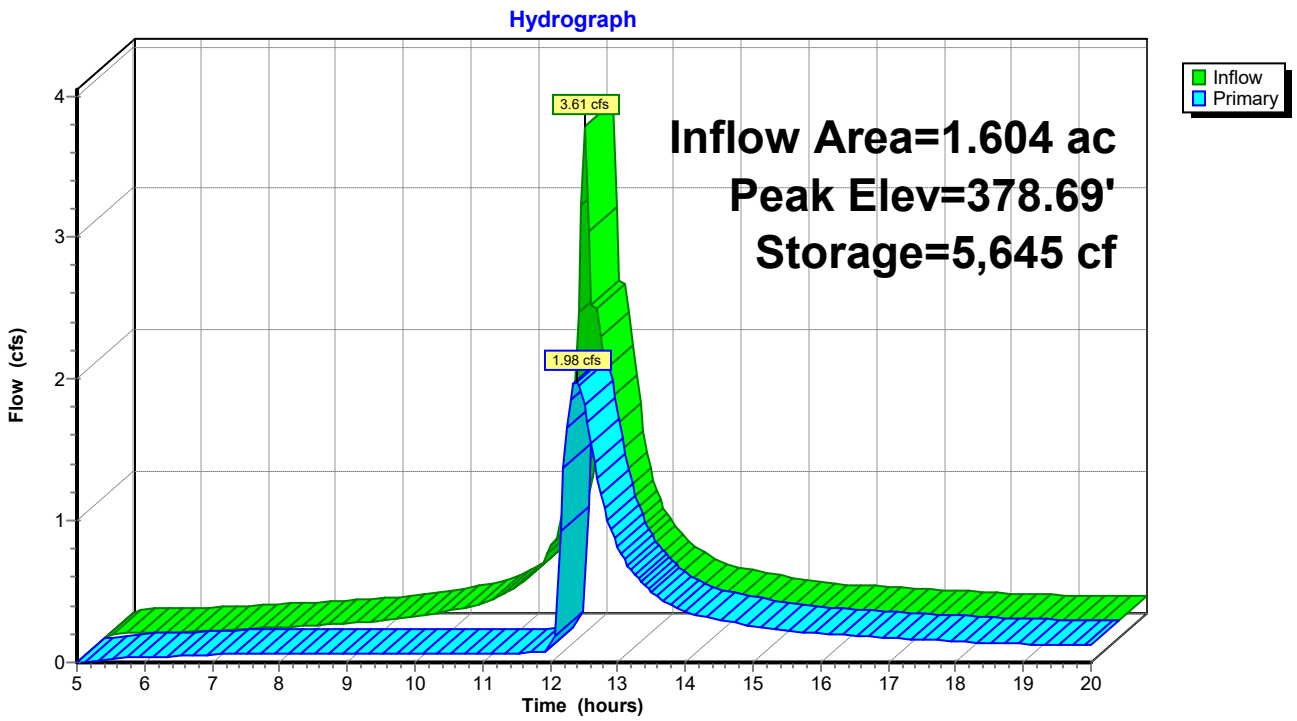
Volume	Invert	Avail.Storage	Storage Description
#1	377.00'	12,056 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
377.00	2,604	0	0
378.00	3,442	3,023	3,023
379.00	4,490	3,966	6,989
380.00	5,643	5,067	12,056

Device	Routing	Invert	Outlet Devices
#1	Primary	374.25'	**18.0" Round Culvert** L= 24.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 374.25' / 371.85' S= 0.1000 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	374.50'	**1.2" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	378.35'	**36.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	378.85'	**25.0' long x 15.0' 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) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=1.97 cfs @ 12.38 hrs HW=378.69' (Free Discharge)
- **1=Culvert** (Passes 1.97 cfs of 16.34 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.08 cfs @ 9.80 fps)
  - **3=Orifice/Grate** (Orifice Controls 1.90 cfs @ 1.87 fps)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 2Pond: Pond 2



Summary for Pond BP: Barn Bypass detention Pond

Inflow Area = 1.577 ac, 0.00% Impervious, Inflow Depth > 1.92" for 10-Year event
Inflow = 2.98 cfs @ 12.20 hrs, Volume= 0.252 af
Outflow = 1.81 cfs @ 12.34 hrs, Volume= 0.247 af, Atten= 39%, Lag= 8.6 min
Primary = 1.81 cfs @ 12.34 hrs, Volume= 0.247 af
Routed to Reach 14R : Exisitng Bypass Pipe

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 403.39' @ 12.34 hrs Surf.Area= 1,808 sf Storage= 2,578 cf

Plug-Flow detention time= 50.0 min calculated for 0.247 af (98% of inflow)
Center-of-Mass det. time= 43.4 min (853.5 - 810.1)

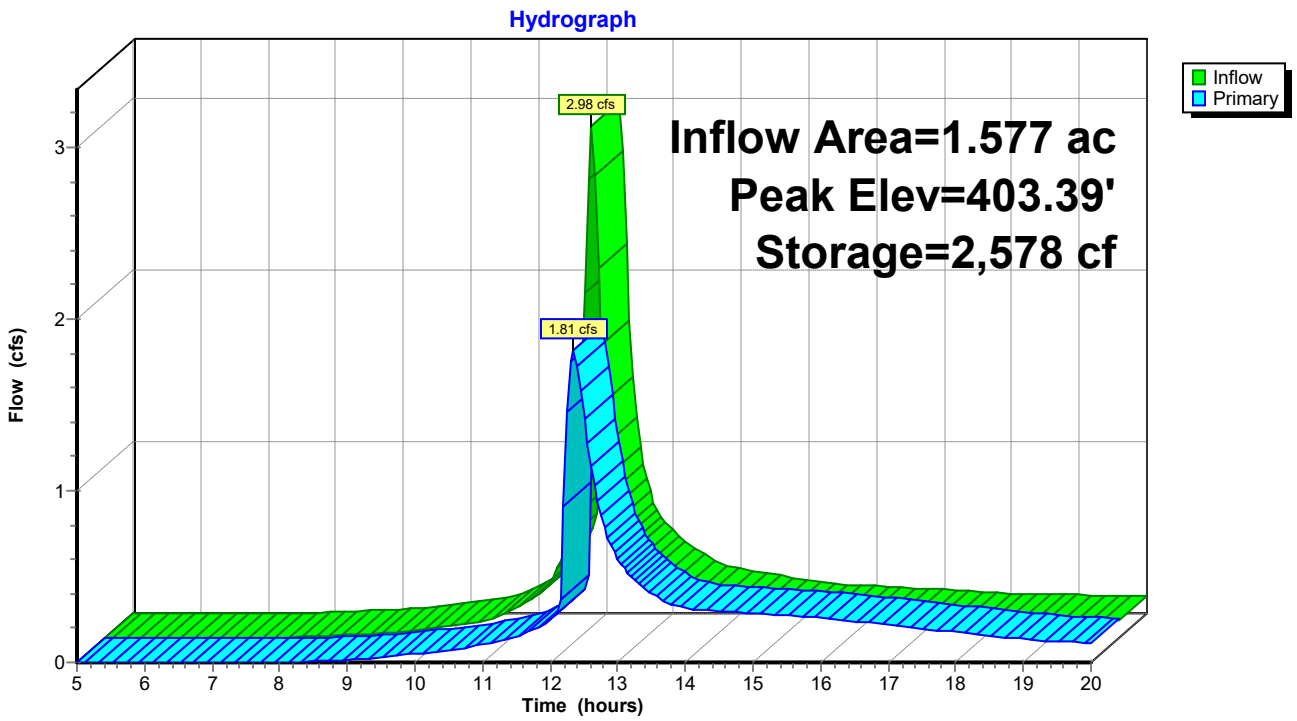
Volume	Invert	Avail.Storage	Storage Description
#1	401.00'	6,368 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
401.00	462	0	0
402.00	900	681	681
403.00	1,572	1,236	1,917
404.00	2,175	1,874	3,791
405.00	2,980	2,578	6,368

Device	Routing	Invert	Outlet Devices
#1	Primary	401.00'	**12.0" Round Culvert** L= 400.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 401.00' / 395.00' S= 0.0150 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	401.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	402.80'	**12.0" W x 8.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	403.80'	**20.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=1.81 cfs @ 12.34 hrs HW=403.39' (Free Discharge)
- **1=Culvert** (Passes 1.81 cfs of 4.90 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.36 cfs @ 7.24 fps)
  - **3=Orifice/Grate** (Orifice Controls 1.45 cfs @ 2.46 fps)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond BP: Barn Bypass detention Pond



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2A: Region 2A Runoff Area=1,620 sf 100.00% Impervious Runoff Depth>4.68"
Flow Length=130' Slope=0.0200 '/' Tc=0.9 min CN=98 Runoff=0.21 cfs 0.014 af

Subcatchment 2B: Region 2B Runoff Area=10,097 sf 87.10% Impervious Runoff Depth>4.55"
Flow Length=150' Slope=0.0200 '/' Tc=1.2 min CN=96 Runoff=1.28 cfs 0.088 af

Subcatchment 2C: Region 2C Runoff Area=8,813 sf 84.74% Impervious Runoff Depth>4.47"
Flow Length=150' Slope=0.0200 '/' Tc=1.2 min CN=95 Runoff=1.10 cfs 0.075 af

Subcatchment 2D: Region 2D Runoff Area=1,149 sf 100.00% Impervious Runoff Depth>4.68"
Flow Length=95' Slope=0.0200 '/' Tc=0.7 min CN=98 Runoff=0.15 cfs 0.010 af

Subcatchment 2E: Region 2E Runoff Area=5,502 sf 50.20% Impervious Runoff Depth>3.83"
Flow Length=230' Tc=1.5 min CN=88 Runoff=0.62 cfs 0.040 af

Subcatchment 2F: Region 2F Runoff Area=2,903 sf 100.00% Impervious Runoff Depth>4.68"
Flow Length=210' Tc=1.4 min CN=98 Runoff=0.37 cfs 0.026 af

Subcatchment 2G: Region 2G Runoff Area=685 sf 100.00% Impervious Runoff Depth>4.68"
Flow Length=55' Tc=0.6 min CN=98 Runoff=0.09 cfs 0.006 af

Subcatchment 2P: Region 2P Runoff Area=39,085 sf 20.19% Impervious Runoff Depth>3.22"
Flow Length=335' Tc=20.6 min UI Adjusted CN=82 Runoff=2.21 cfs 0.241 af

Subcatchment 2U: Untreated to DP2 Runoff Area=27,294 sf 1.63% Impervious Runoff Depth>2.87"
Flow Length=315' Tc=4.6 min CN=78 Runoff=2.24 cfs 0.150 af

Subcatchment 4B: Barn Region 4B Runoff Area=68,678 sf 0.00% Impervious Runoff Depth>2.77"
Flow Length=510' Tc=12.0 min CN=77 Runoff=4.28 cfs 0.364 af

Subcatchment 5S: Barn Region 2B Runoff Area=38,941 sf 16.86% Impervious Runoff Depth>3.14"
Flow Length=385' Tc=13.9 min CN=81 Runoff=2.55 cfs 0.234 af

Reach 14R: Exisitng Bypass Pipe Avg. Flow Depth=0.62' Max Vel=8.55 fps Inflow=5.23 cfs 0.589 af
15.0" Round Pipe n=0.012 L=200.0' S=0.0225 '/' Capacity=10.50 cfs Outflow=5.21 cfs 0.589 af

Reach CB4: CB 4 Avg. Flow Depth=0.33' Max Vel=2.79 fps Inflow=0.62 cfs 0.040 af
12.0" Round Pipe n=0.012 L=18.0' S=0.0050 '/' Capacity=2.73 cfs Outflow=0.63 cfs 0.040 af

Reach CB5: CB 5 Avg. Flow Depth=0.38' Max Vel=3.14 fps Inflow=1.01 cfs 0.066 af
15.0" Round Pipe n=0.012 L=180.0' S=0.0050 '/' Capacity=4.95 cfs Outflow=0.93 cfs 0.066 af

Reach CB6: CB 6 Avg. Flow Depth=0.71' Max Vel=4.43 fps Inflow=3.68 cfs 0.260 af
18.0" Round Pipe n=0.012 L=60.0' S=0.0050 '/' Capacity=8.05 cfs Outflow=3.62 cfs 0.260 af

Reach CB7: CB 7 Avg. Flow Depth=0.43' Max Vel=7.35 fps Inflow=2.66 cfs 0.188 af
15.0" Round Pipe n=0.012 L=135.0' S=0.0250 '/' Capacity=11.06 cfs Outflow=2.68 cfs 0.188 af

Reach CB8: CB 8 Avg. Flow Depth=0.49' Max Vel=3.52 fps Inflow=1.61 cfs 0.113 af
15.0" Round Pipe n=0.012 L=33.0' S=0.0048 '/' Capacity=4.87 cfs Outflow=1.56 cfs 0.113 af

Reach CB9: CB 9 Avg. Flow Depth=0.24' Max Vel=2.37 fps Inflow=0.35 cfs 0.025 af
12.0" Round Pipe n=0.012 L=30.0' S=0.0050 '/' Capacity=2.73 cfs Outflow=0.34 cfs 0.025 af

Reach DP2: Design Point 2 Inflow=9.24 cfs 1.137 af
Outflow=9.24 cfs 1.137 af

Pond 2Pond: Pond 2 Peak Elev=378.83' Storage=6,223 cf Inflow=4.72 cfs 0.501 af
Outflow=3.24 cfs 0.399 af

Pond BP: Barn Bypass detention Pond Peak Elev=403.76' Storage=3,288 cf Inflow=4.28 cfs 0.364 af
Outflow=2.90 cfs 0.355 af

Total Runoff Area = 4.701 ac Runoff Volume = 1.249 af Average Runoff Depth = 3.19"
80.33% Pervious = 3.776 ac 19.67% Impervious = 0.925 ac

Summary for Subcatchment 2A: Region 2A

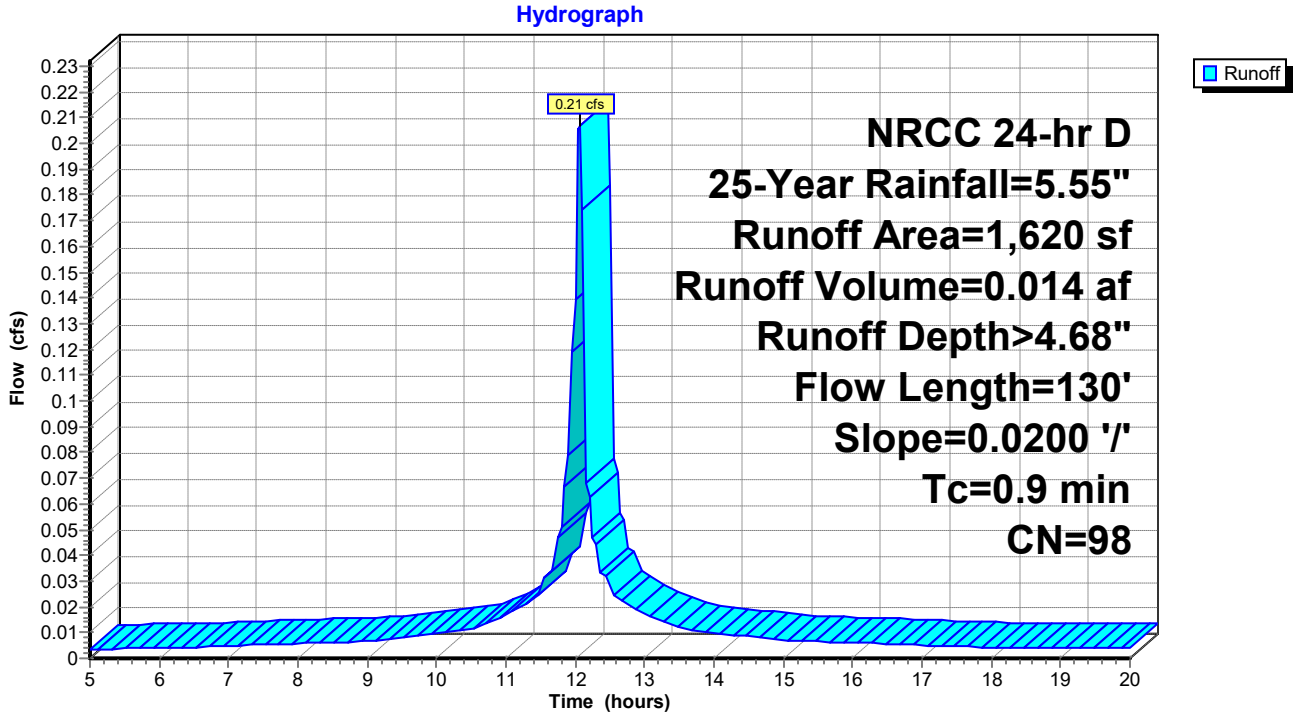
Runoff = 0.21 cfs @ 12.06 hrs, Volume= 0.014 af, Depth> 4.68"
Routed to Reach CB9 : CB 9

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=5.55"

Area (sf)	CN	Description
1,620	98	Unconnected pavement, HSG D
1,620		100.00% Impervious Area
1,620		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.97		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
0.6	110	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	130	Total			

Subcatchment 2A: Region 2A



Summary for Subcatchment 2B: Region 2B

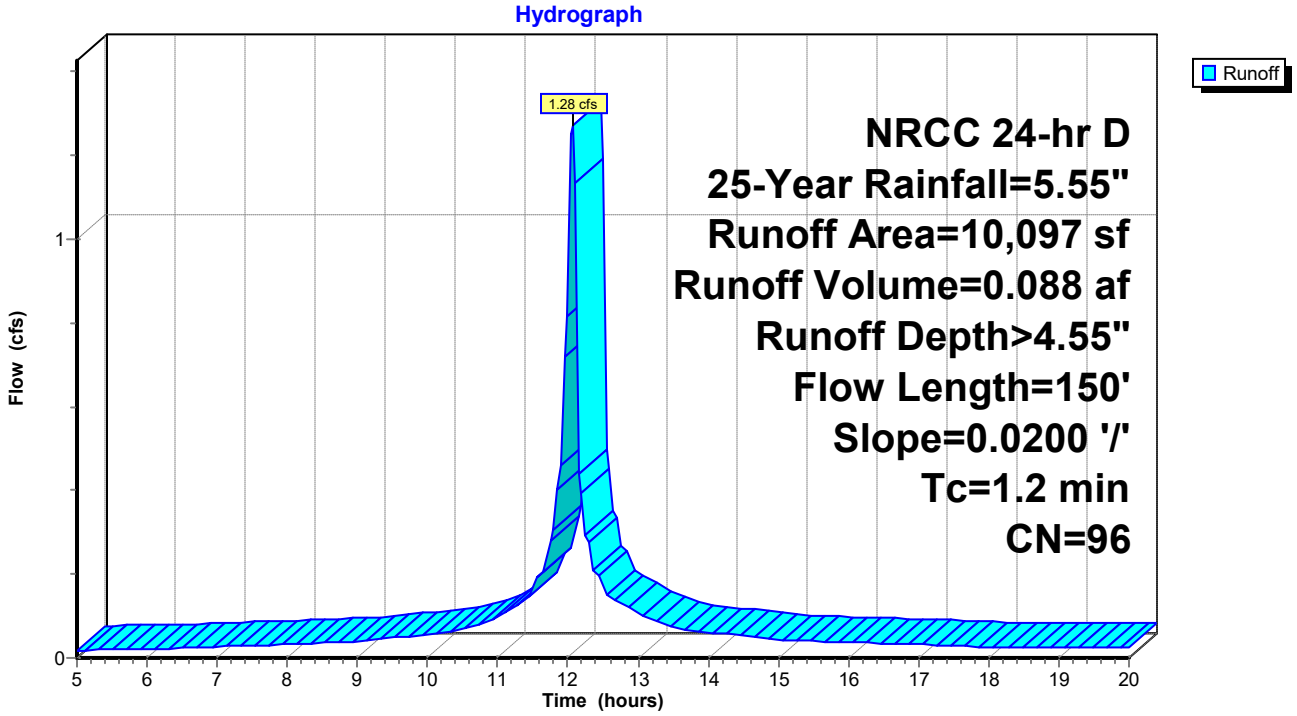
Runoff = 1.28 cfs @ 12.06 hrs, Volume= 0.088 af, Depth> 4.55"
Routed to Reach CB8 : CB 8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=5.55"

Area (sf)	CN	Description
8,794	98	Unconnected pavement, HSG D
1,303	80	>75% Grass cover, Good, HSG D
10,097	96	Weighted Average
1,303		12.90% Pervious Area
8,794		87.10% Impervious Area
8,794		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0200	1.05		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
0.7	120	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.2	150	Total			

Subcatchment 2B: Region 2B



Summary for Subcatchment 2C: Region 2C

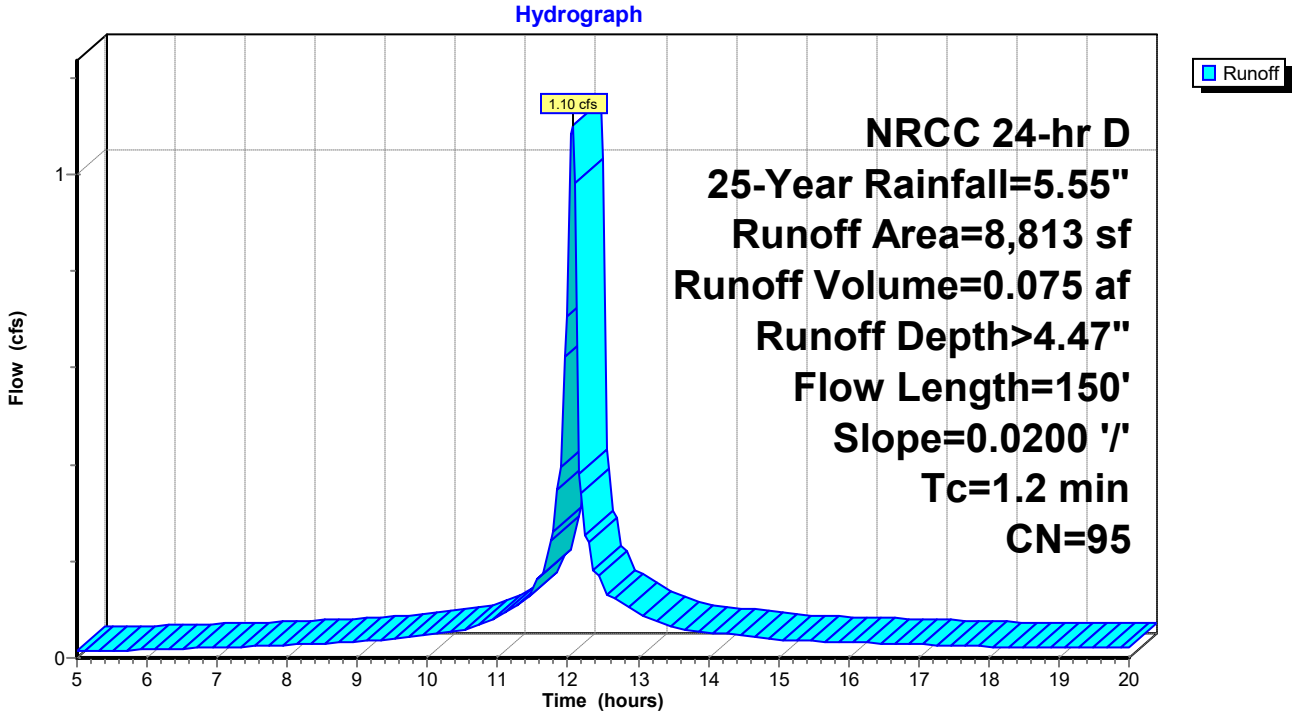
Runoff = 1.10 cfs @ 12.06 hrs, Volume= 0.075 af, Depth> 4.47"
Routed to Reach CB7 : CB 7

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=5.55"

Area (sf)	CN	Description
7,468	98	Unconnected pavement, HSG D
1,345	80	>75% Grass cover, Good, HSG D
8,813	95	Weighted Average
1,345		15.26% Pervious Area
7,468		84.74% Impervious Area
7,468		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0200	1.05		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
0.7	120	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.2	150	Total			

Subcatchment 2C: Region 2C



Summary for Subcatchment 2D: Region 2D

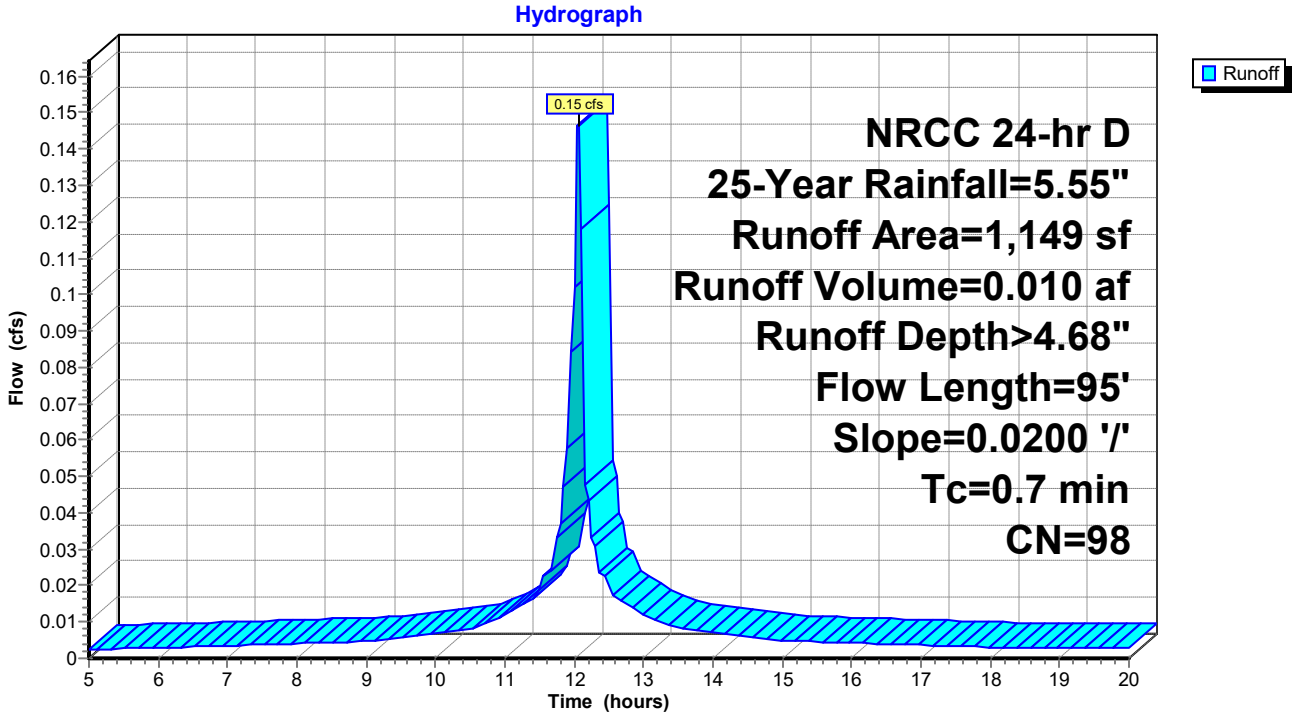
Runoff = 0.15 cfs @ 12.06 hrs, Volume= 0.010 af, Depth> 4.68"
Routed to Reach CB9 : CB 9

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=5.55"

Area (sf)	CN	Description
1,149	98	Unconnected pavement, HSG D
1,149		100.00% Impervious Area
1,149		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.97		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
0.4	75	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	95	Total			

Subcatchment 2D: Region 2D



Summary for Subcatchment 2E: Region 2E

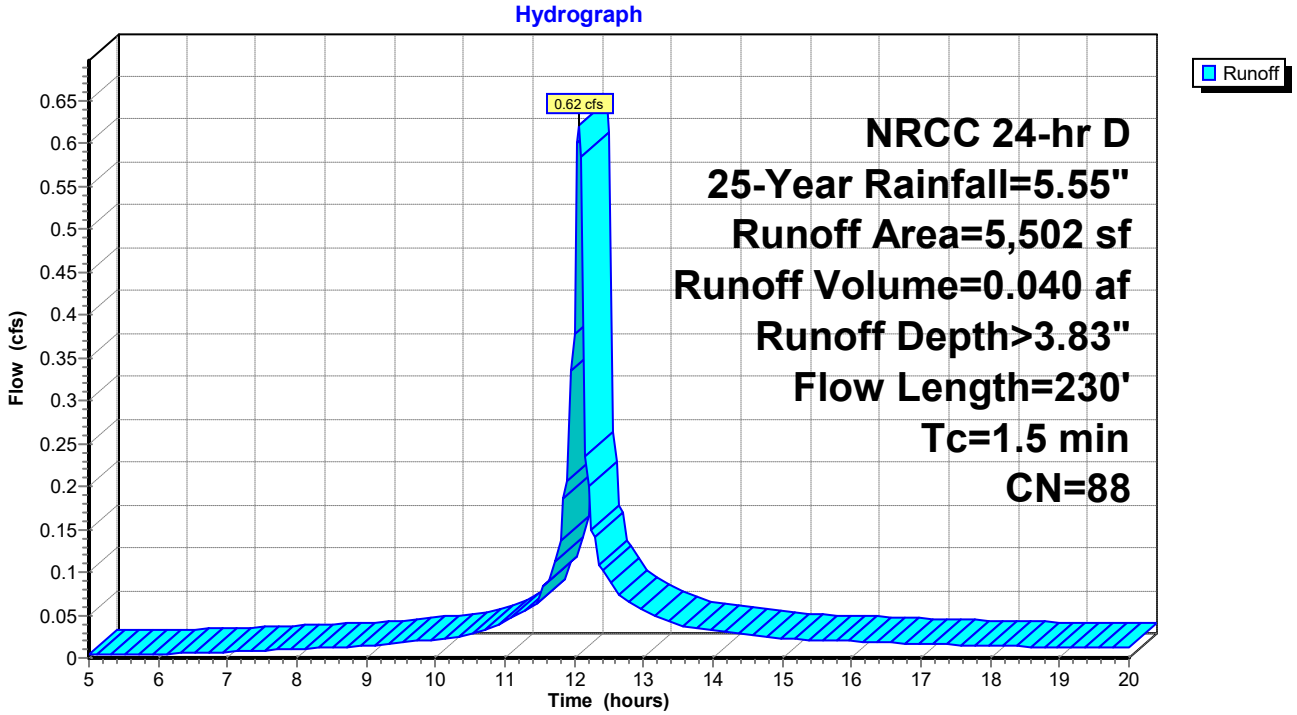
Runoff = 0.62 cfs @ 12.07 hrs, Volume= 0.040 af, Depth> 3.83"
Routed to Reach CB4 : CB 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=5.55"

Area (sf)	CN	Description
2,762	98	Unconnected pavement, HSG D
2,740	78	Meadow, non-grazed, HSG D
5,502	88	Weighted Average
2,740		49.80% Pervious Area
2,762		50.20% Impervious Area
2,762		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0200	1.05		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
1.0	200	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	230	Total			

Subcatchment 2E: Region 2E



Summary for Subcatchment 2F: Region 2F

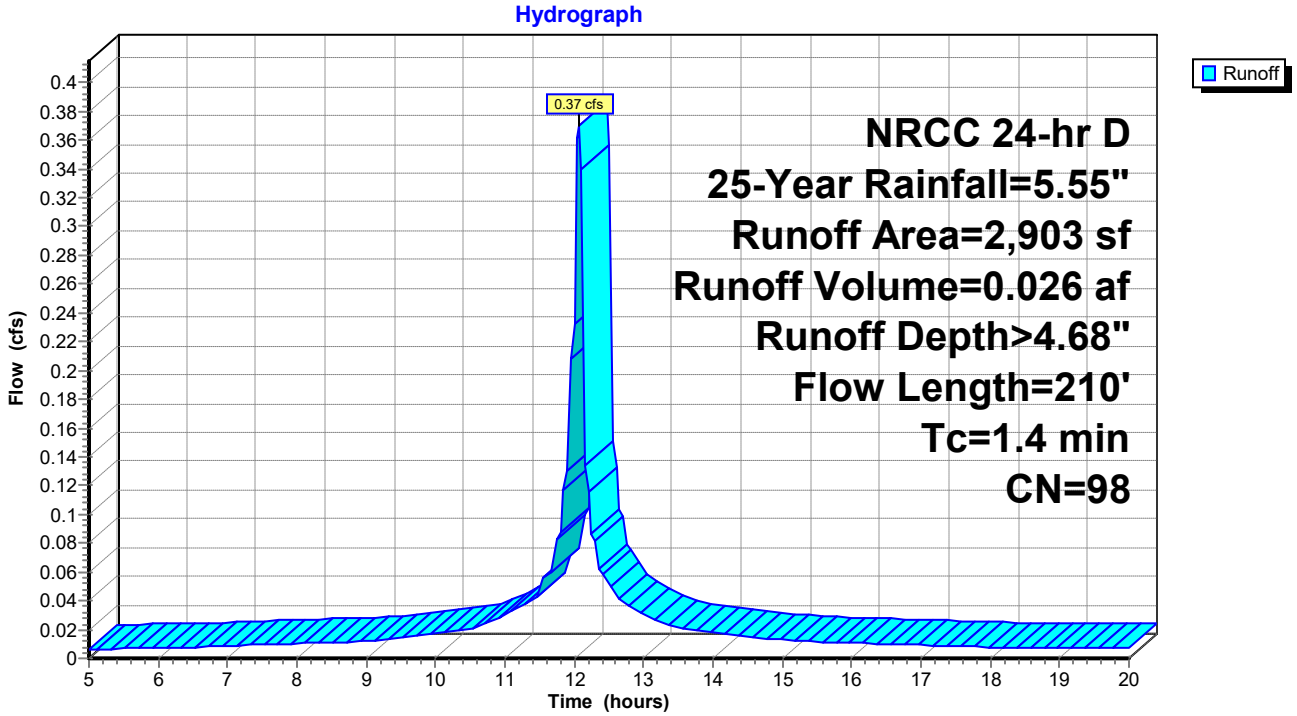
Runoff = 0.37 cfs @ 12.07 hrs, Volume= 0.026 af, Depth> 4.68"
Routed to Reach CB5 : CB 5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=5.55"

Area (sf)	CN	Description
2,903	98	Unconnected pavement, HSG D
2,903		100.00% Impervious Area
2,903		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0200	1.05		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
0.9	180	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	210	Total			

Subcatchment 2F: Region 2F



Summary for Subcatchment 2G: Region 2G

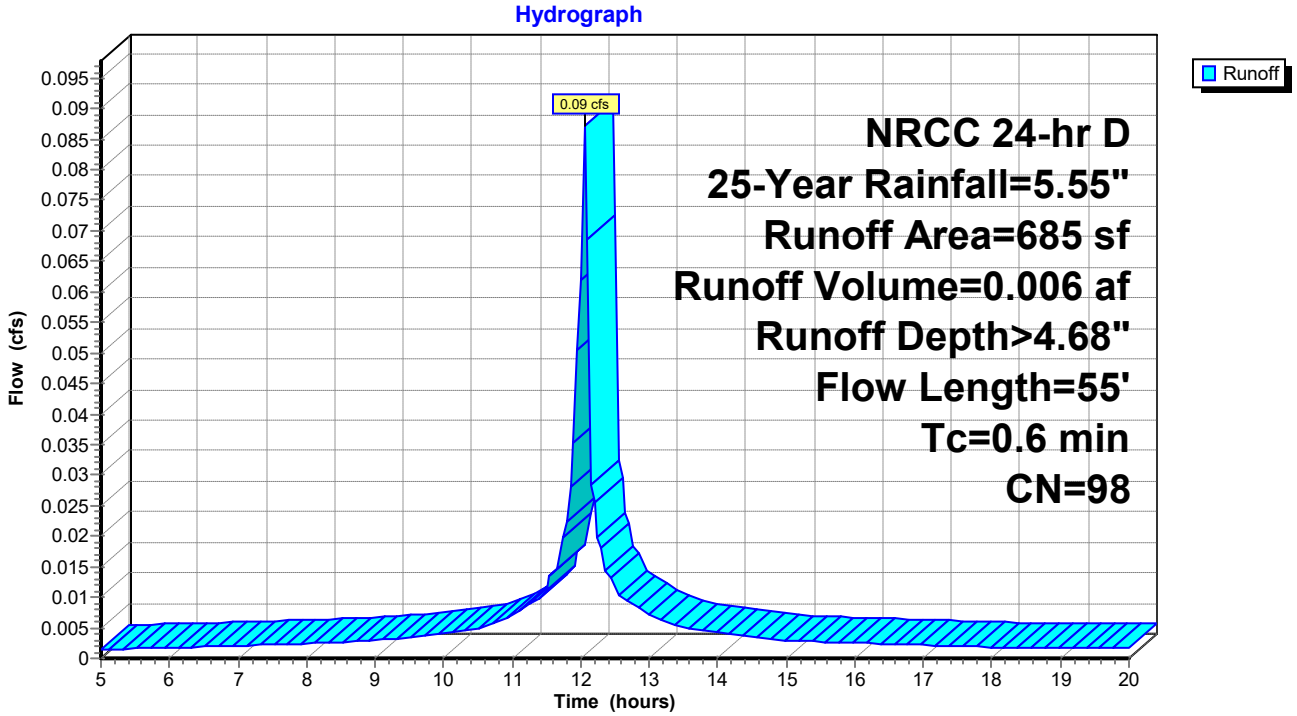
Runoff = 0.09 cfs @ 12.05 hrs, Volume= 0.006 af, Depth> 4.68"
Routed to Reach CB6 : CB 6

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=5.55"

Area (sf)	CN	Description
685	98	Unconnected pavement, HSG D
685		100.00% Impervious Area
685		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0200	1.05		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
0.1	25	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	55	Total			

Subcatchment 2G: Region 2G



Summary for Subcatchment 2P: Region 2P

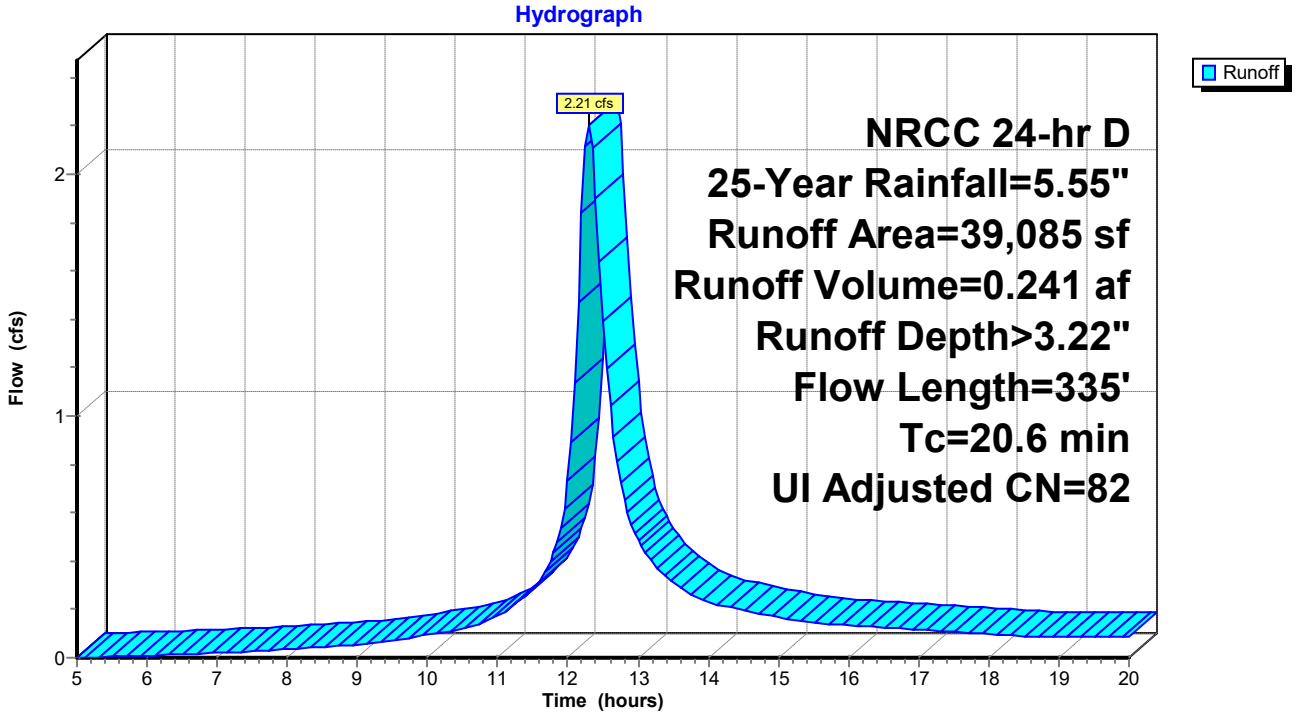
Runoff = 2.21 cfs @ 12.30 hrs, Volume= 0.241 af, Depth> 3.22"
Routed to Pond 2Pond : Pond 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=5.55"

Area (sf)	CN	Adj	Description
7,890	98		Unconnected pavement, HSG D
31,195	80		>75% Grass cover, Good, HSG D
39,085	84	82	Weighted Average, UI Adjusted
31,195			79.81% Pervious Area
7,890			20.19% Impervious Area
7,890			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0500	1.92		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
2.5	185	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.2	50	0.0010	0.05		**Sheet Flow,** Range n= 0.130 P2= 3.00"
20.6	335	Total			

Subcatchment 2P: Region 2P



Summary for Subcatchment 2U: Untreated to DP2

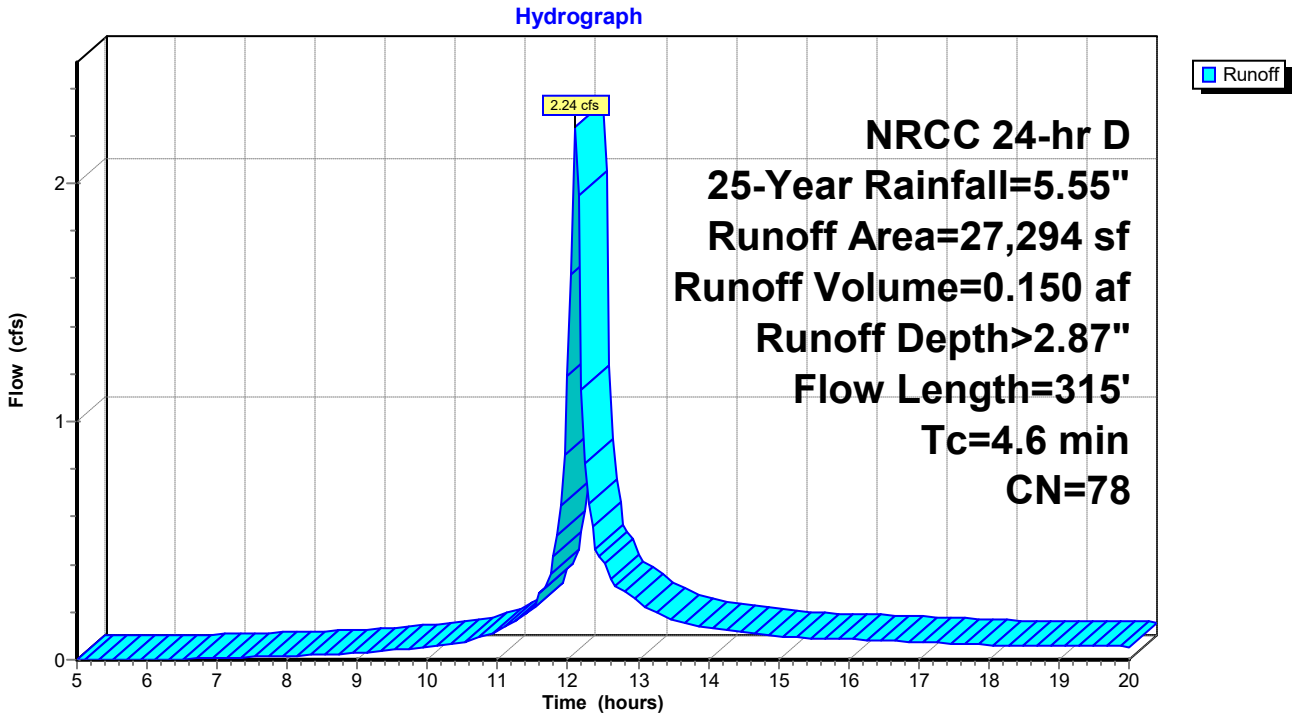
Runoff = 2.24 cfs @ 12.11 hrs, Volume= 0.150 af, Depth> 2.87"
Routed to Reach DP2 : Design Point 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=5.55"

Area (sf)	CN	Description
444	98	Unconnected pavement, HSG D
2,167	80	>75% Grass cover, Good, HSG D
18,188	78	Meadow, non-grazed, HSG D
6,495	77	Woods, Good, HSG D
27,294	78	Weighted Average
26,850		98.37% Pervious Area
444		1.63% Impervious Area
444		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	80	0.2200	0.46		**Sheet Flow,** Range n= 0.130 P2= 3.00"
1.7	235	0.1050	2.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.6	315	Total			

Subcatchment 2U: Untreated to DP2



Summary for Subcatchment 4B: Barn Region 4B

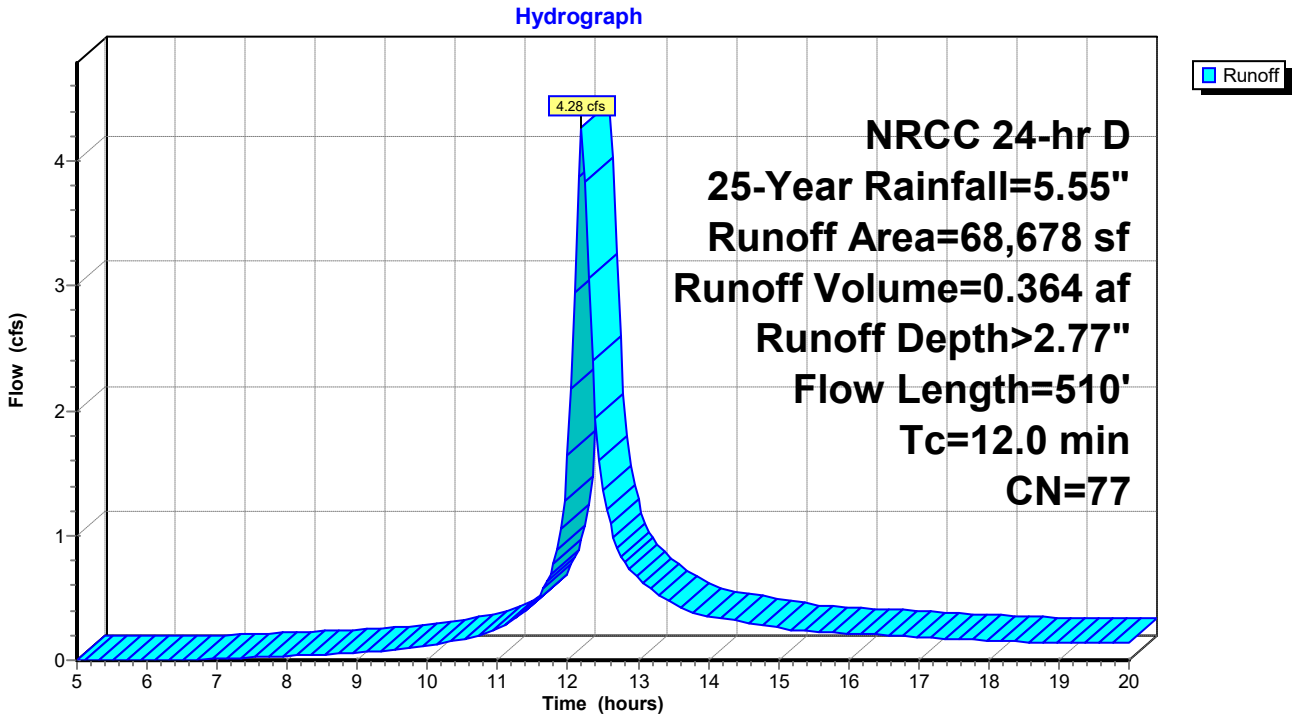
Runoff = 4.28 cfs @ 12.20 hrs, Volume= 0.364 af, Depth> 2.77"
Routed to Pond BP : Barn Bypass detention Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=5.55"

Area (sf)	CN	Description
11,285	78	Meadow, non-grazed, HSG D
57,393	77	Woods, Good, HSG D
68,678	77	Weighted Average
68,678		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.1500	0.17		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.00"
1.6	170	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	240	0.1100	7.58	121.21	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.069 Riprap, 6-inch
12.0	510	Total			

Subcatchment 4B: Barn Region 4B



Summary for Subcatchment 5S: Barn Region 2B

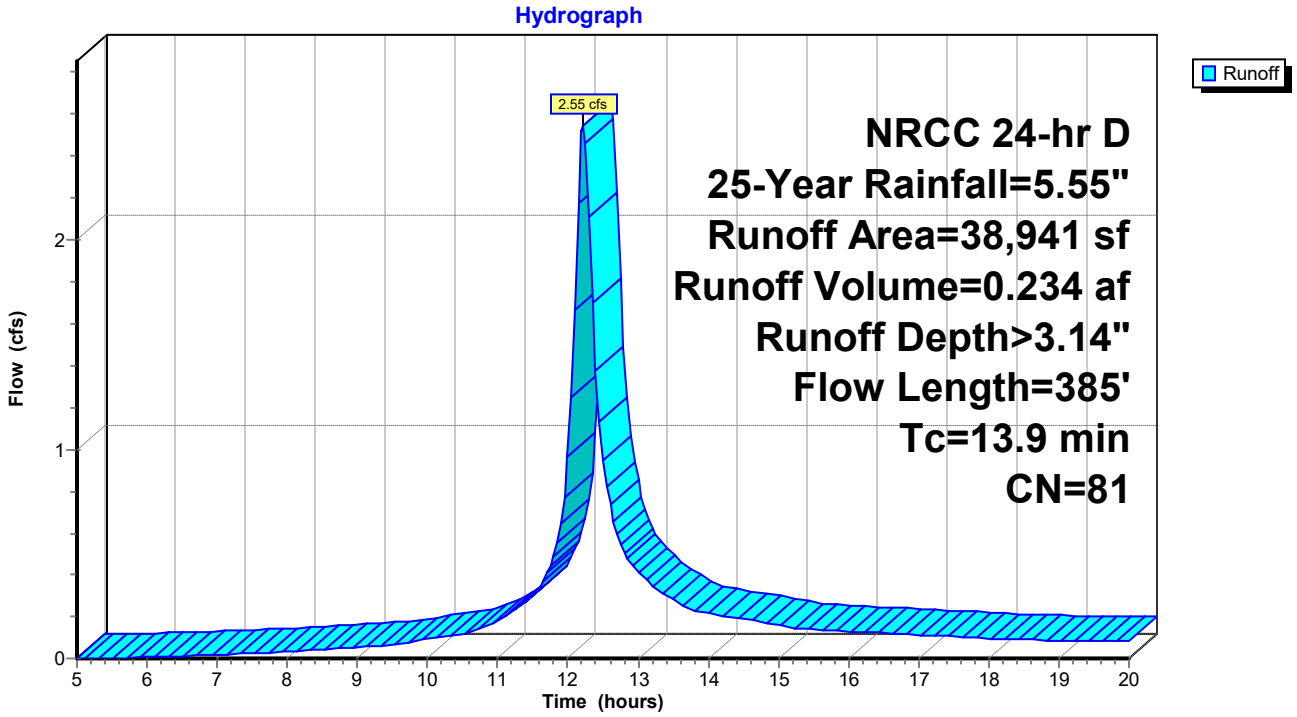
Runoff = 2.55 cfs @ 12.22 hrs, Volume= 0.234 af, Depth> 3.14"
Routed to Reach 14R : Exisitng Bypass Pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 25-Year Rainfall=5.55"

Area (sf)	CN	Description
6,567	98	Paved parking, HSG D
22,495	78	Meadow, non-grazed, HSG D
546	80	>75% Grass cover, Good, HSG D
9,333	77	Woods, Good, HSG D
38,941	81	Weighted Average
32,374		83.14% Pervious Area
6,567		16.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.1400	0.16		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.00"
0.6	60	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	160	0.0150	6.43	102.94	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.030 Short grass
2.7	65	0.1700	0.40		**Sheet Flow,** Range n= 0.130 P2= 3.00"
13.9	385	Total			

Subcatchment 5S: Barn Region 2B



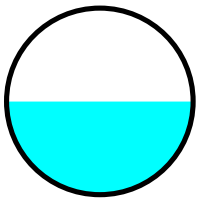
Summary for Reach 14R: Exisitng Bypass Pipe

Inflow Area = 2.471 ac, 6.10% Impervious, Inflow Depth > 2.86" for 25-Year event
Inflow = 5.23 cfs @ 12.25 hrs, Volume= 0.589 af
Outflow = 5.21 cfs @ 12.26 hrs, Volume= 0.589 af, Atten= 0%, Lag= 0.7 min
Routed to Reach DP2 : Design Point 2

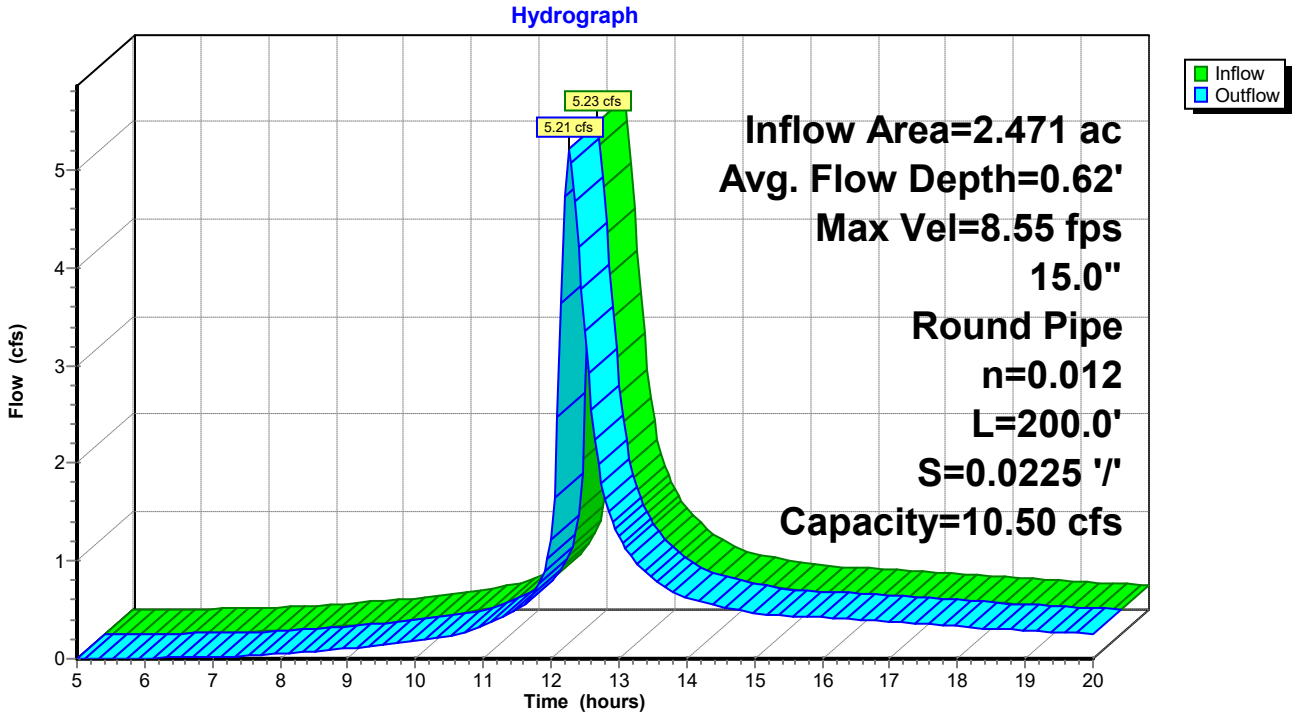
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.55 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 3.67 fps, Avg. Travel Time= 0.9 min

Peak Storage= 123 cf @ 12.26 hrs
Average Depth at Peak Storage= 0.62' , Surface Width= 1.25'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 10.50 cfs

15.0" Round Pipe
n= 0.012
Length= 200.0' Slope= 0.0225 '/'
Inlet Invert= 0.00', Outlet Invert= -4.50'



Reach 14R: Exisitng Bypass Pipe



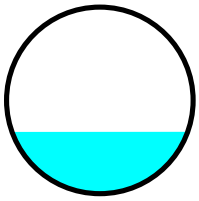
Summary for Reach CB4: CB 4

Inflow Area = 0.126 ac, 50.20% Impervious, Inflow Depth > 3.83" for 25-Year event
Inflow = 0.62 cfs @ 12.07 hrs, Volume= 0.040 af
Outflow = 0.63 cfs @ 12.08 hrs, Volume= 0.040 af, Atten= 0%, Lag= 0.4 min
Routed to Reach CB5 : CB 5

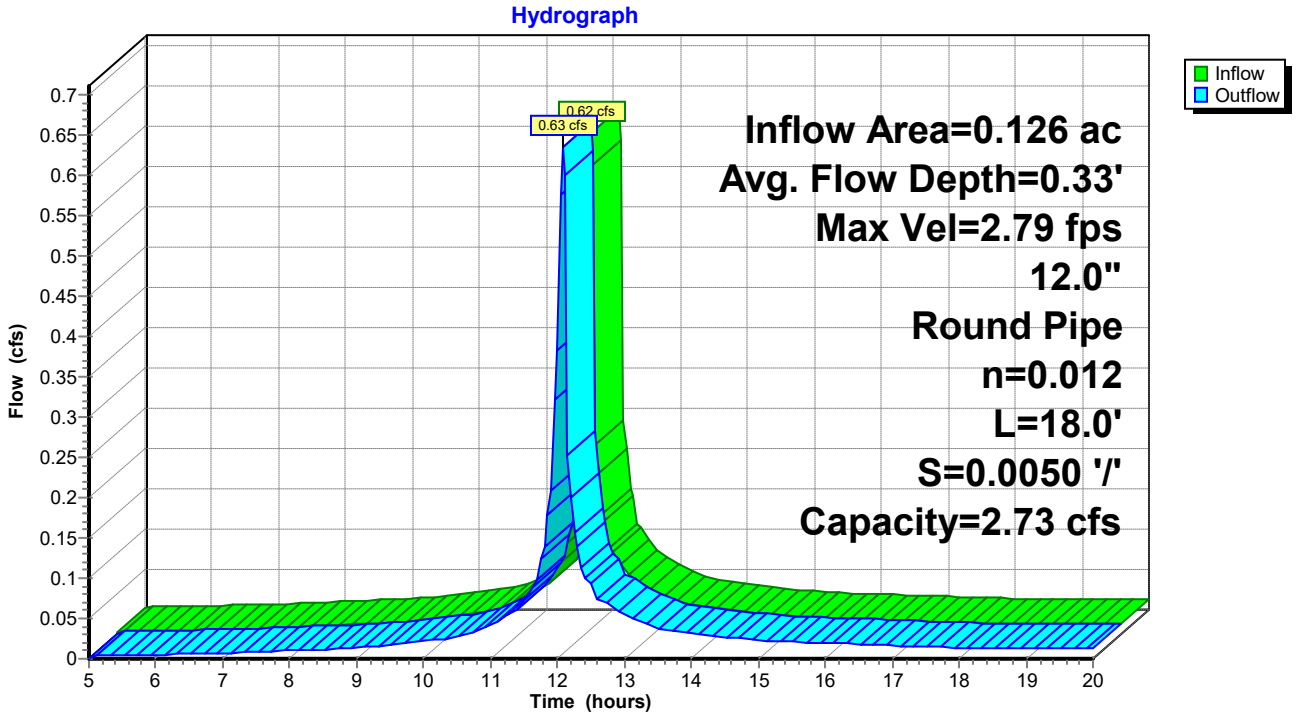
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.79 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.04 fps, Avg. Travel Time= 0.3 min

Peak Storage= 4 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.33' , Surface Width= 0.94'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.73 cfs

12.0" Round Pipe
n= 0.012
Length= 18.0' Slope= 0.0050 '/'
Inlet Invert= 384.20', Outlet Invert= 384.11'



Reach CB4: CB 4



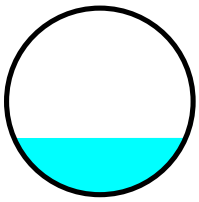
Summary for Reach CB5: CB 5

Inflow Area = 0.193 ac, 67.40% Impervious, Inflow Depth > 4.12" for 25-Year event
Inflow = 1.01 cfs @ 12.08 hrs, Volume= 0.066 af
Outflow = 0.93 cfs @ 12.10 hrs, Volume= 0.066 af, Atten= 7%, Lag= 1.2 min
Routed to Reach CB6 : CB 6

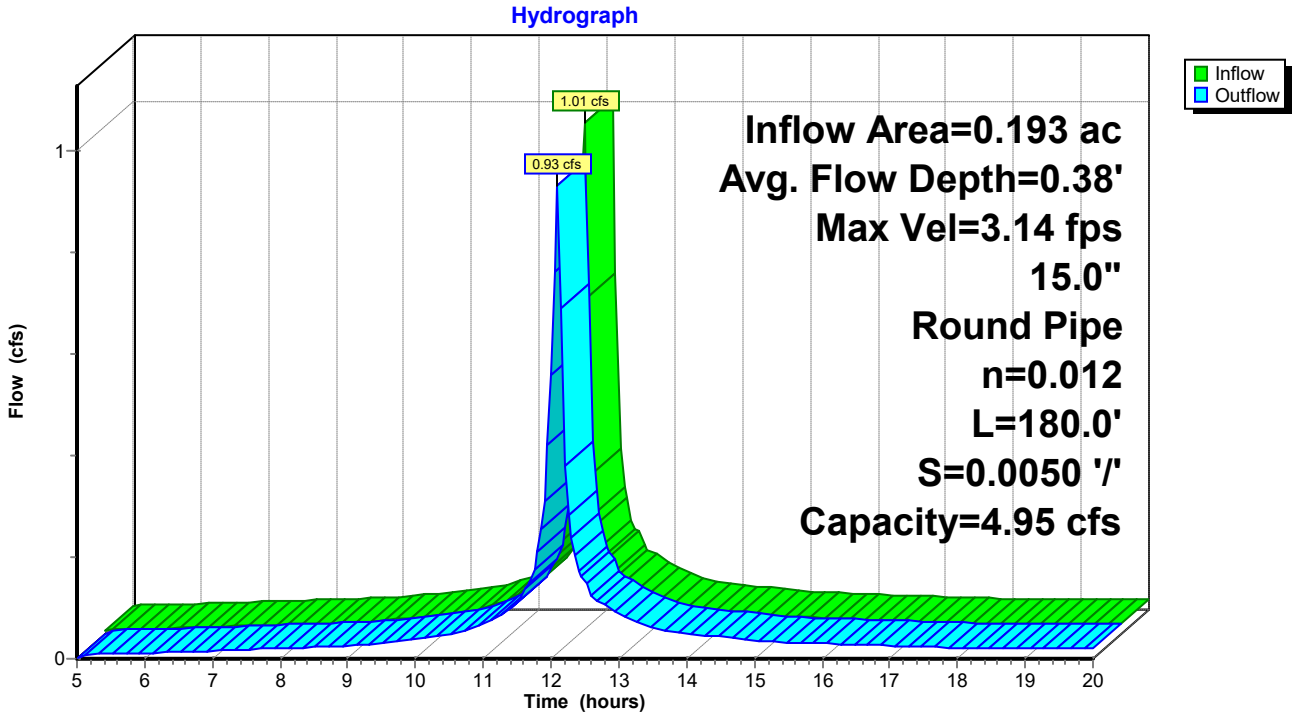
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.14 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 1.18 fps, Avg. Travel Time= 2.5 min

Peak Storage= 57 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.38' , Surface Width= 1.15'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 4.95 cfs

15.0" Round Pipe
n= 0.012
Length= 180.0' Slope= 0.0050 '/'
Inlet Invert= 384.11', Outlet Invert= 383.21'



Reach CB5: CB 5



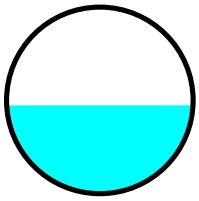
Summary for Reach CB6: CB 6

Inflow Area = 0.706 ac, 82.49% Impervious, Inflow Depth > 4.42" for 25-Year event
Inflow = 3.68 cfs @ 12.08 hrs, Volume= 0.260 af
Outflow = 3.62 cfs @ 12.09 hrs, Volume= 0.260 af, Atten= 1%, Lag= 0.3 min
Routed to Pond 2Pond : Pond 2

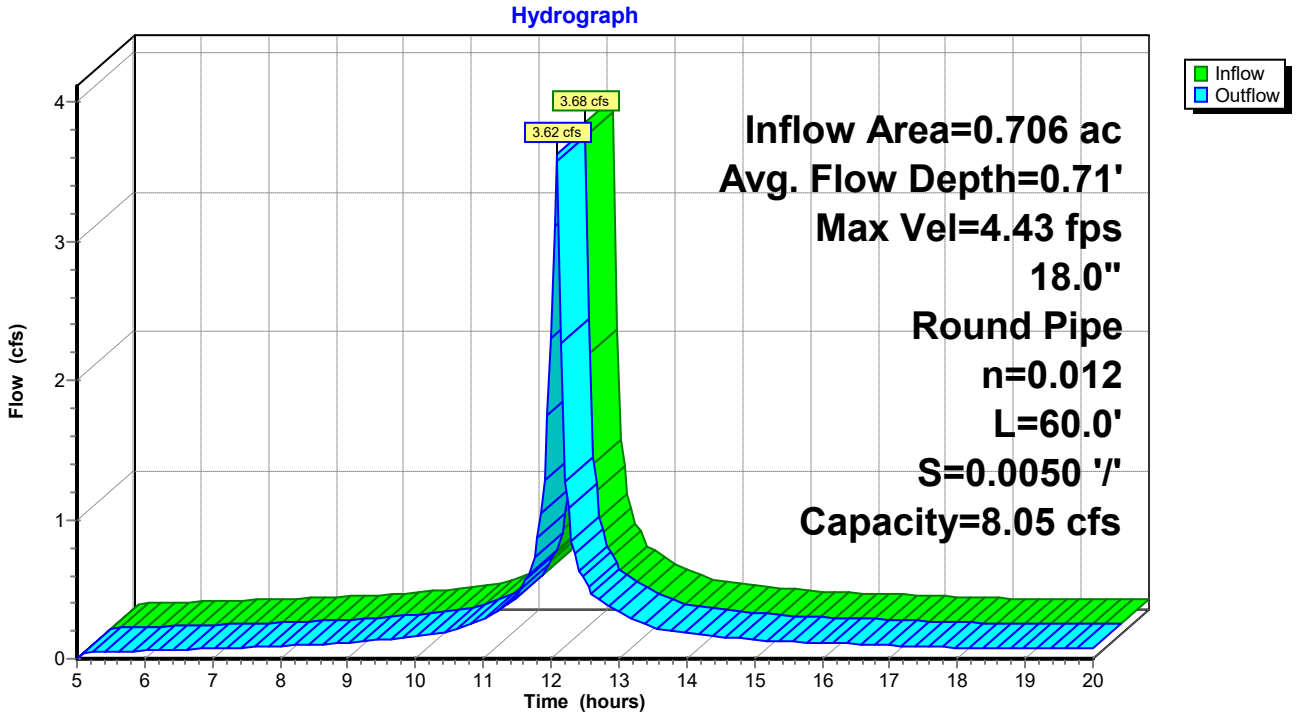
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.43 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.75 fps, Avg. Travel Time= 0.6 min

Peak Storage= 50 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.71' , Surface Width= 1.50'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 8.05 cfs

18.0" Round Pipe
n= 0.012
Length= 60.0' Slope= 0.0050 '/'
Inlet Invert= 383.21', Outlet Invert= 382.91'



Reach CB6: CB 6



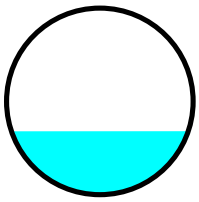
Summary for Reach CB7: CB 7

Inflow Area = 0.498 ac, 87.79% Impervious, Inflow Depth > 4.53" for 25-Year event
Inflow = 2.66 cfs @ 12.07 hrs, Volume= 0.188 af
Outflow = 2.68 cfs @ 12.08 hrs, Volume= 0.188 af, Atten= 0%, Lag= 0.7 min
Routed to Reach CB6 : CB 6

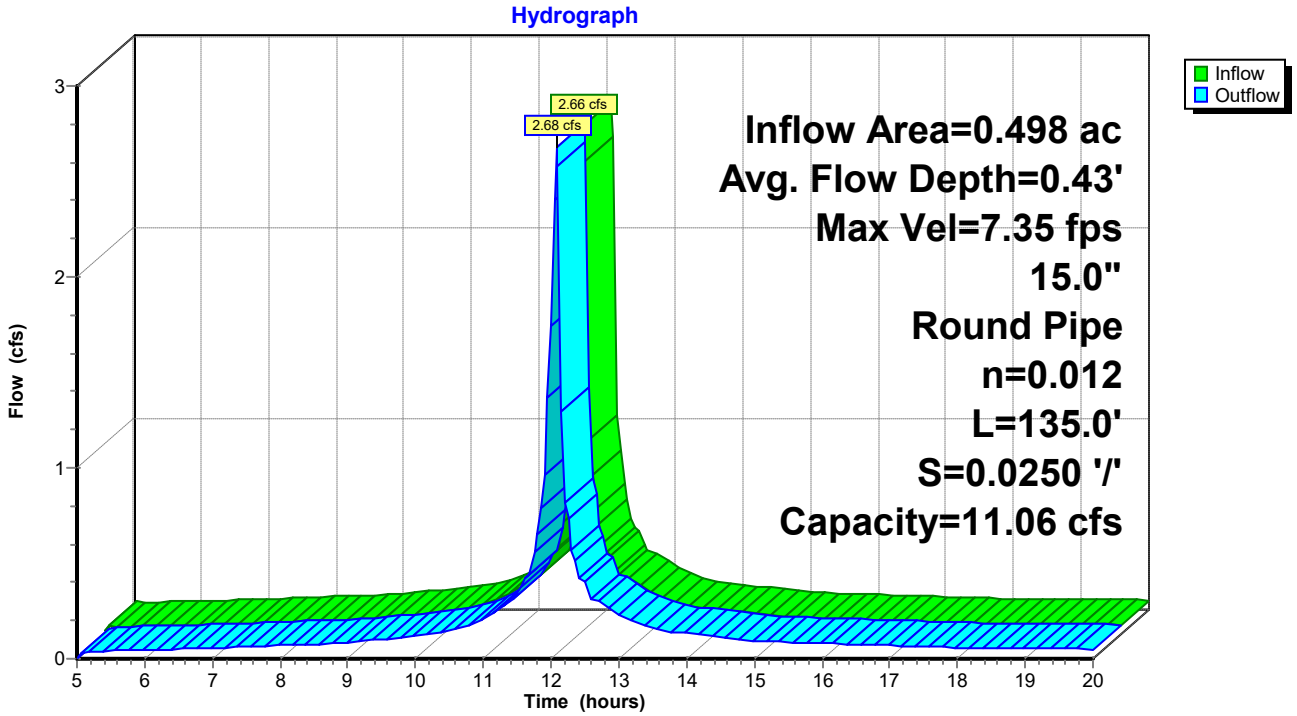
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.35 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.87 fps, Avg. Travel Time= 0.8 min

Peak Storage= 50 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.43' , Surface Width= 1.18'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 11.06 cfs

15.0" Round Pipe
n= 0.012
Length= 135.0' Slope= 0.0250 '/'
Inlet Invert= 386.55', Outlet Invert= 383.18'



Reach CB7: CB 7



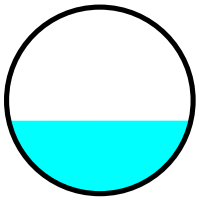
Summary for Reach CB8: CB 8

Inflow Area = 0.295 ac, 89.87% Impervious, Inflow Depth > 4.57" for 25-Year event
Inflow = 1.61 cfs @ 12.06 hrs, Volume= 0.113 af
Outflow = 1.56 cfs @ 12.07 hrs, Volume= 0.113 af, Atten= 3%, Lag= 0.6 min
Routed to Reach CB7 : CB 7

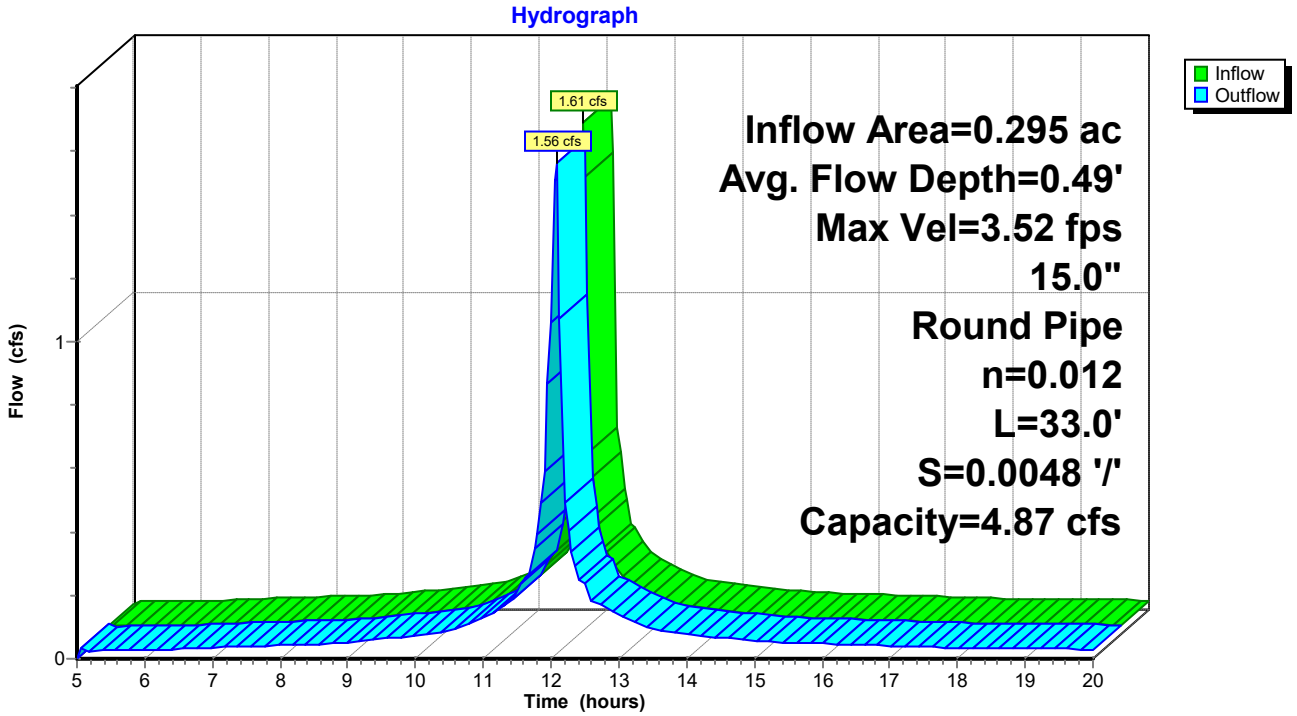
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.52 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.39 fps, Avg. Travel Time= 0.4 min

Peak Storage= 15 cf @ 12.07 hrs
Average Depth at Peak Storage= 0.49' , Surface Width= 1.22'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 4.87 cfs

15.0" Round Pipe
n= 0.012
Length= 33.0' Slope= 0.0048 '/'
Inlet Invert= 386.71', Outlet Invert= 386.55'



Reach CB8: CB 8



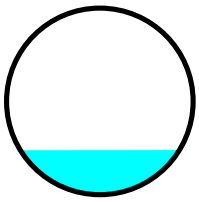
Summary for Reach CB9: CB 9

Inflow Area = 0.064 ac,100.00% Impervious, Inflow Depth > 4.68" for 25-Year event
Inflow = 0.35 cfs @ 12.06 hrs, Volume= 0.025 af
Outflow = 0.34 cfs @ 12.07 hrs, Volume= 0.025 af, Atten= 4%, Lag= 0.5 min
Routed to Reach CB8 : CB 8

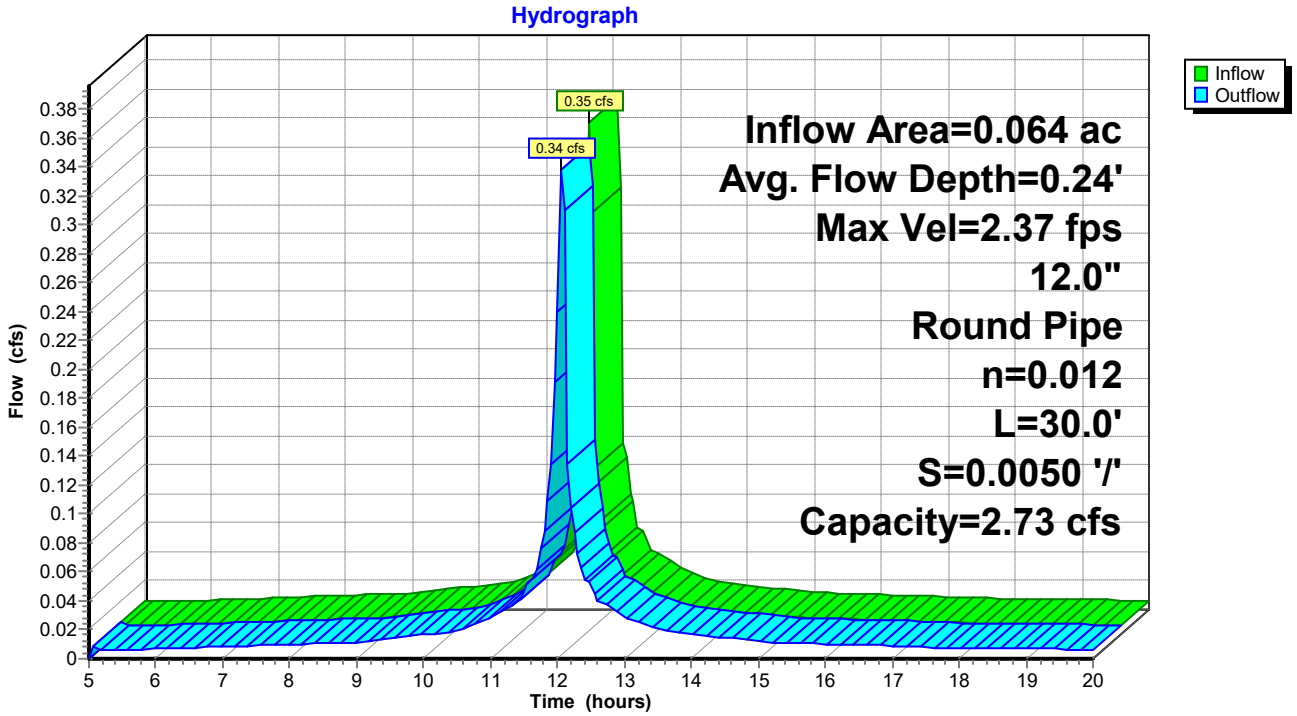
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.37 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 0.92 fps, Avg. Travel Time= 0.5 min

Peak Storage= 4 cf @ 12.06 hrs
Average Depth at Peak Storage= 0.24' , Surface Width= 0.85'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.73 cfs

12.0" Round Pipe
n= 0.012
Length= 30.0' Slope= 0.0050 '/'
Inlet Invert= 386.86', Outlet Invert= 386.71'



Reach CB9: CB 9

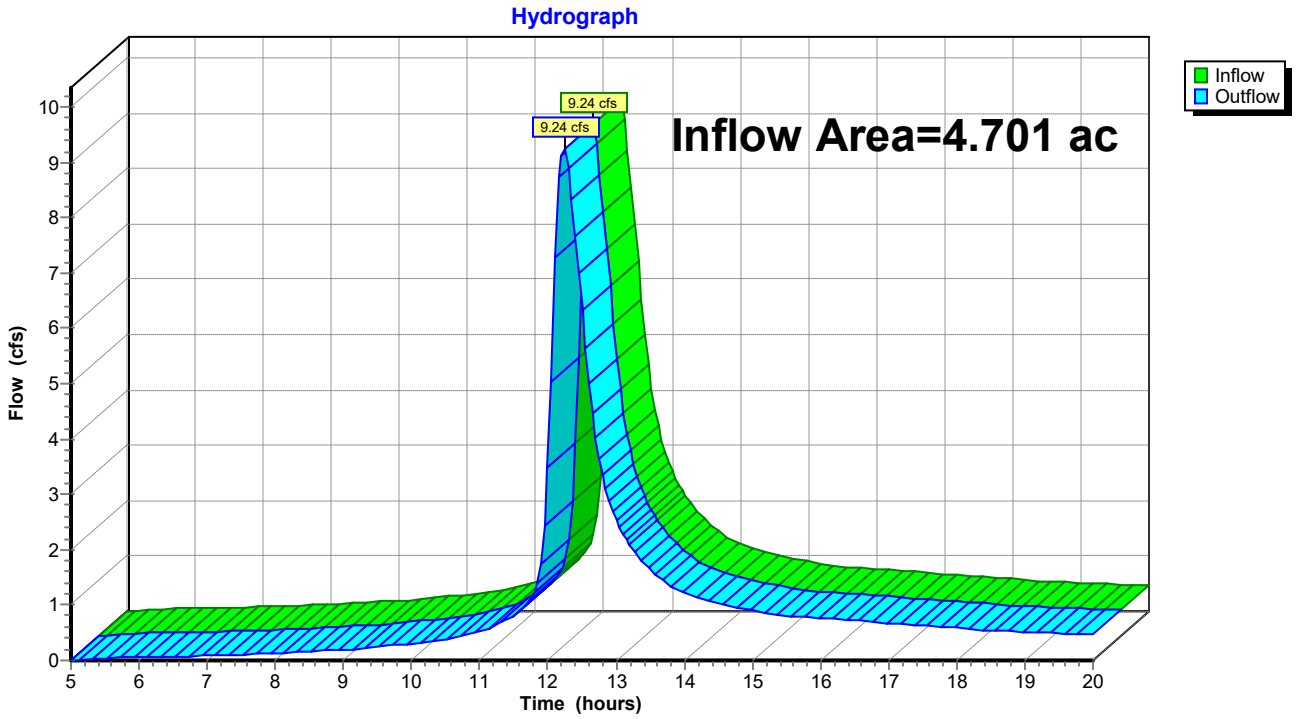


Summary for Reach DP2: Design Point 2

Inflow Area = 4.701 ac, 19.67% Impervious, Inflow Depth > 2.90" for 25-Year event
Inflow = 9.24 cfs @ 12.24 hrs, Volume= 1.137 af
Outflow = 9.24 cfs @ 12.24 hrs, Volume= 1.137 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP2: Design Point 2



Summary for Pond 2Pond: Pond 2

Inflow Area = 1.604 ac, 47.63% Impervious, Inflow Depth > 3.75" for 25-Year event
Inflow = 4.72 cfs @ 12.10 hrs, Volume= 0.501 af
Outflow = 3.24 cfs @ 12.21 hrs, Volume= 0.399 af, Atten= 31%, Lag= 7.1 min
Primary = 3.24 cfs @ 12.21 hrs, Volume= 0.399 af
Routed to Reach DP2 : Design Point 2

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 378.83' @ 12.21 hrs Surf.Area= 4,308 sf Storage= 6,223 cf

Plug-Flow detention time= 104.2 min calculated for 0.399 af (80% of inflow)
Center-of-Mass det. time= 42.5 min (809.3 - 766.9)

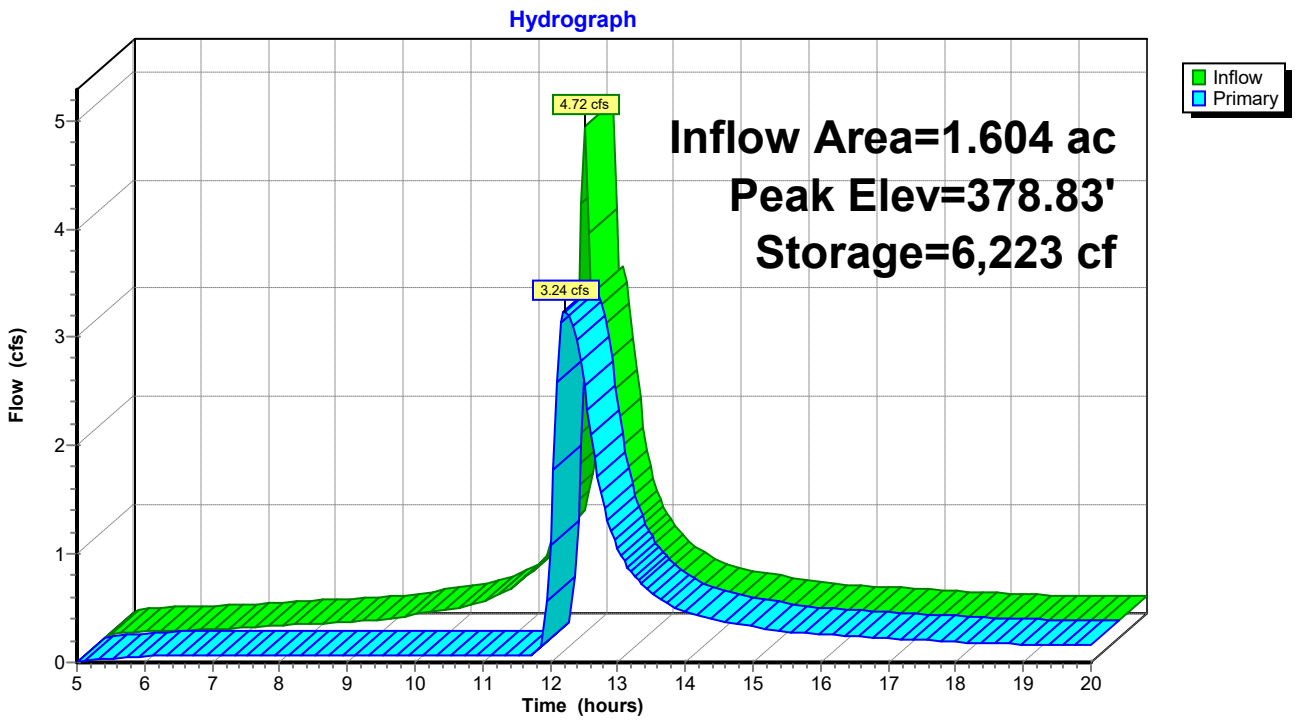
Volume	Invert	Avail.Storage	Storage Description
#1	377.00'	12,056 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
377.00	2,604	0	0
378.00	3,442	3,023	3,023
379.00	4,490	3,966	6,989
380.00	5,643	5,067	12,056

Device	Routing	Invert	Outlet Devices
#1	Primary	374.25'	**18.0" Round Culvert** L= 24.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 374.25' / 371.85' S= 0.1000 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	374.50'	**1.2" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	378.35'	**36.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	378.85'	**25.0' long x 15.0' 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) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=3.23 cfs @ 12.21 hrs HW=378.82' (Free Discharge)
- **1=Culvert** (Passes 3.23 cfs of 16.64 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.08 cfs @ 9.95 fps)
  - **3=Orifice/Grate** (Orifice Controls 3.15 cfs @ 2.21 fps)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 2Pond: Pond 2



Summary for Pond BP: Barn Bypass detention Pond

Inflow Area = 1.577 ac, 0.00% Impervious, Inflow Depth > 2.77" for 25-Year event
Inflow = 4.28 cfs @ 12.20 hrs, Volume= 0.364 af
Outflow = 2.90 cfs @ 12.32 hrs, Volume= 0.355 af, Atten= 32%, Lag= 7.0 min
Primary = 2.90 cfs @ 12.32 hrs, Volume= 0.355 af
Routed to Reach 14R : Exisitng Bypass Pipe

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 403.76' @ 12.32 hrs Surf.Area= 2,031 sf Storage= 3,288 cf

Plug-Flow detention time= 46.1 min calculated for 0.355 af (98% of inflow)
Center-of-Mass det. time= 36.7 min (836.3 - 799.5)

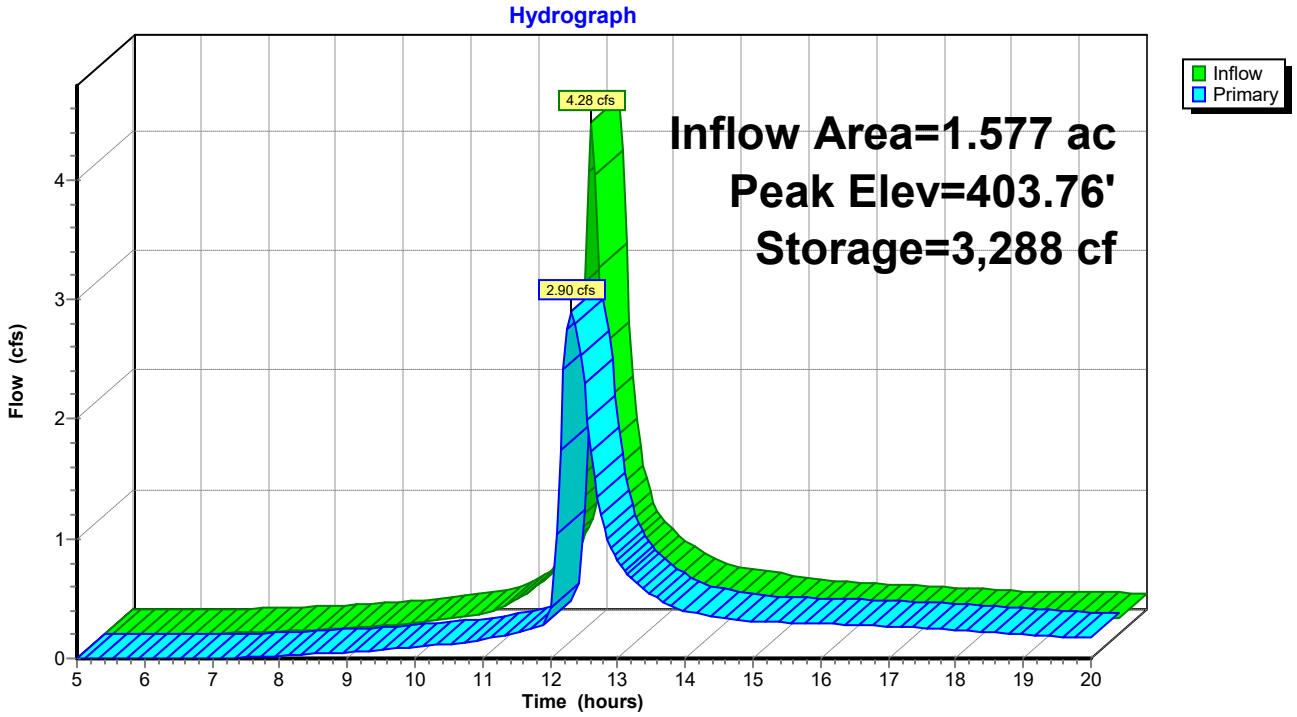
Volume	Invert	Avail.Storage	Storage Description
#1	401.00'	6,368 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
401.00	462	0	0
402.00	900	681	681
403.00	1,572	1,236	1,917
404.00	2,175	1,874	3,791
405.00	2,980	2,578	6,368

Device	Routing	Invert	Outlet Devices
#1	Primary	401.00'	**12.0" Round Culvert** L= 400.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 401.00' / 395.00' S= 0.0150 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	401.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	402.80'	**12.0" W x 8.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	403.80'	**20.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=2.88 cfs @ 12.32 hrs HW=403.75' (Free Discharge)
- **1=Culvert** (Passes 2.88 cfs of 5.02 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.38 cfs @ 7.81 fps)
  - **3=Orifice/Grate** (Orifice Controls 2.50 cfs @ 3.74 fps)
- **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond BP: Barn Bypass detention Pond



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2A: Region 2A Runoff Area=1,620 sf 100.00% Impervious Runoff Depth>6.59"
Flow Length=130' Slope=0.0200 '/' Tc=0.9 min CN=98 Runoff=0.29 cfs 0.020 af

Subcatchment 2B: Region 2B Runoff Area=10,097 sf 87.10% Impervious Runoff Depth>6.48"
Flow Length=150' Slope=0.0200 '/' Tc=1.2 min CN=96 Runoff=1.80 cfs 0.125 af

Subcatchment 2C: Region 2C Runoff Area=8,813 sf 84.74% Impervious Runoff Depth>6.41"
Flow Length=150' Slope=0.0200 '/' Tc=1.2 min CN=95 Runoff=1.57 cfs 0.108 af

Subcatchment 2D: Region 2D Runoff Area=1,149 sf 100.00% Impervious Runoff Depth>6.59"
Flow Length=95' Slope=0.0200 '/' Tc=0.7 min CN=98 Runoff=0.21 cfs 0.014 af

Subcatchment 2E: Region 2E Runoff Area=5,502 sf 50.20% Impervious Runoff Depth>5.79"
Flow Length=230' Tc=1.5 min CN=88 Runoff=0.92 cfs 0.061 af

Subcatchment 2F: Region 2F Runoff Area=2,903 sf 100.00% Impervious Runoff Depth>6.59"
Flow Length=210' Tc=1.4 min CN=98 Runoff=0.52 cfs 0.037 af

Subcatchment 2G: Region 2G Runoff Area=685 sf 100.00% Impervious Runoff Depth>6.59"
Flow Length=55' Tc=0.6 min CN=98 Runoff=0.12 cfs 0.009 af

Subcatchment 2P: Region 2P Runoff Area=39,085 sf 20.19% Impervious Runoff Depth>5.13"
Flow Length=335' Tc=20.6 min UI Adjusted CN=82 Runoff=3.44 cfs 0.383 af

Subcatchment 2U: Untreated to DP2 Runoff Area=27,294 sf 1.63% Impervious Runoff Depth>4.72"
Flow Length=315' Tc=4.6 min CN=78 Runoff=3.60 cfs 0.246 af

Subcatchment 4B: Barn Region 4B Runoff Area=68,678 sf 0.00% Impervious Runoff Depth>4.60"
Flow Length=510' Tc=12.0 min CN=77 Runoff=6.95 cfs 0.604 af

Subcatchment 5S: Barn Region 2B Runoff Area=38,941 sf 16.86% Impervious Runoff Depth>5.03"
Flow Length=385' Tc=13.9 min CN=81 Runoff=4.00 cfs 0.375 af

Reach 14R: Exisitng Bypass Pipe Avg. Flow Depth=1.06' Max Vel=9.75 fps Inflow=11.06 cfs 0.955 af
15.0" Round Pipe n=0.012 L=200.0' S=0.0225 '/' Capacity=10.50 cfs Outflow=10.71 cfs 0.955 af

Reach CB4: CB 4 Avg. Flow Depth=0.41' Max Vel=3.10 fps Inflow=0.92 cfs 0.061 af
12.0" Round Pipe n=0.012 L=18.0' S=0.0050 '/' Capacity=2.73 cfs Outflow=0.93 cfs 0.061 af

Reach CB5: CB 5 Avg. Flow Depth=0.46' Max Vel=3.48 fps Inflow=1.42 cfs 0.097 af
15.0" Round Pipe n=0.012 L=180.0' S=0.0050 '/' Capacity=4.95 cfs Outflow=1.36 cfs 0.097 af

Reach CB6: CB 6 Avg. Flow Depth=0.88' Max Vel=4.83 fps Inflow=5.26 cfs 0.374 af
18.0" Round Pipe n=0.012 L=60.0' S=0.0050 '/' Capacity=8.05 cfs Outflow=5.19 cfs 0.374 af

Reach CB7: CB 7 Avg. Flow Depth=0.51' Max Vel=8.08 fps Inflow=3.77 cfs 0.268 af
15.0" Round Pipe n=0.012 L=135.0' S=0.0250 '/' Capacity=11.06 cfs Outflow=3.80 cfs 0.268 af

Reach CB8: CB 8 Avg. Flow Depth=0.59' Max Vel=3.86 fps Inflow=2.28 cfs 0.160 af
15.0" Round Pipe n=0.012 L=33.0' S=0.0048 '/' Capacity=4.87 cfs Outflow=2.21 cfs 0.160 af

Reach CB9: CB 9 Avg. Flow Depth=0.29' Max Vel=2.61 fps Inflow=0.50 cfs 0.035 af
12.0" Round Pipe n=0.012 L=30.0' S=0.0050 '/' Capacity=2.73 cfs Outflow=0.48 cfs 0.035 af

Reach DP2: Design Point 2 Inflow=17.10 cfs 1.854 af
Outflow=17.10 cfs 1.854 af

Pond 2Pond: Pond 2 Peak Elev=378.94' Storage=6,740 cf Inflow=6.94 cfs 0.757 af
Outflow=6.16 cfs 0.653 af

Pond BP: Barn Bypass detention Pond Peak Elev=403.98' Storage=3,758 cf Inflow=6.95 cfs 0.604 af
Outflow=7.06 cfs 0.580 af

Total Runoff Area = 4.701 ac Runoff Volume = 1.983 af Average Runoff Depth = 5.06"
80.33% Pervious = 3.776 ac 19.67% Impervious = 0.925 ac

Summary for Subcatchment 2A: Region 2A

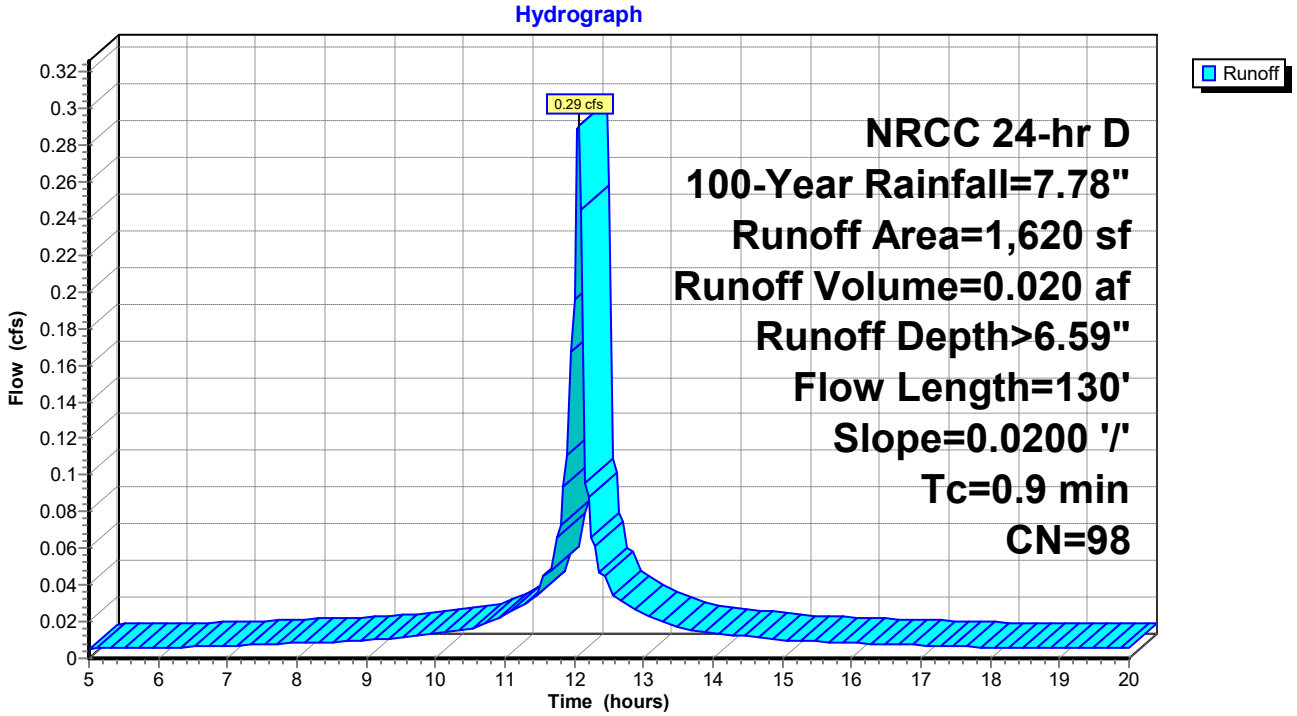
Runoff = 0.29 cfs @ 12.06 hrs, Volume= 0.020 af, Depth> 6.59"
Routed to Reach CB9 : CB 9

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=7.78"

Area (sf)	CN	Description
1,620	98	Unconnected pavement, HSG D
1,620		100.00% Impervious Area
1,620		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.97		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
0.6	110	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	130	Total			

Subcatchment 2A: Region 2A



Summary for Subcatchment 2B: Region 2B

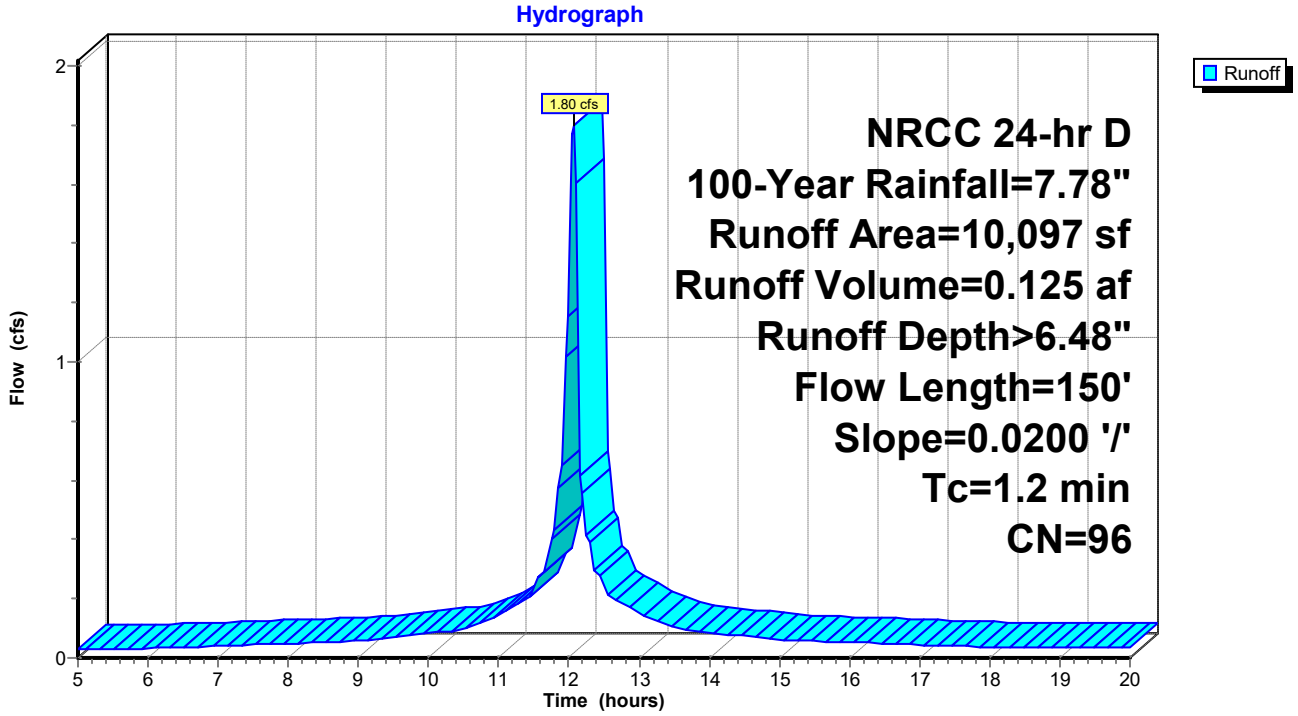
Runoff = 1.80 cfs @ 12.06 hrs, Volume= 0.125 af, Depth> 6.48"
Routed to Reach CB8 : CB 8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=7.78"

Area (sf)	CN	Description
8,794	98	Unconnected pavement, HSG D
1,303	80	>75% Grass cover, Good, HSG D
10,097	96	Weighted Average
1,303		12.90% Pervious Area
8,794		87.10% Impervious Area
8,794		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0200	1.05		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
0.7	120	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.2	150	Total			

Subcatchment 2B: Region 2B



Summary for Subcatchment 2C: Region 2C

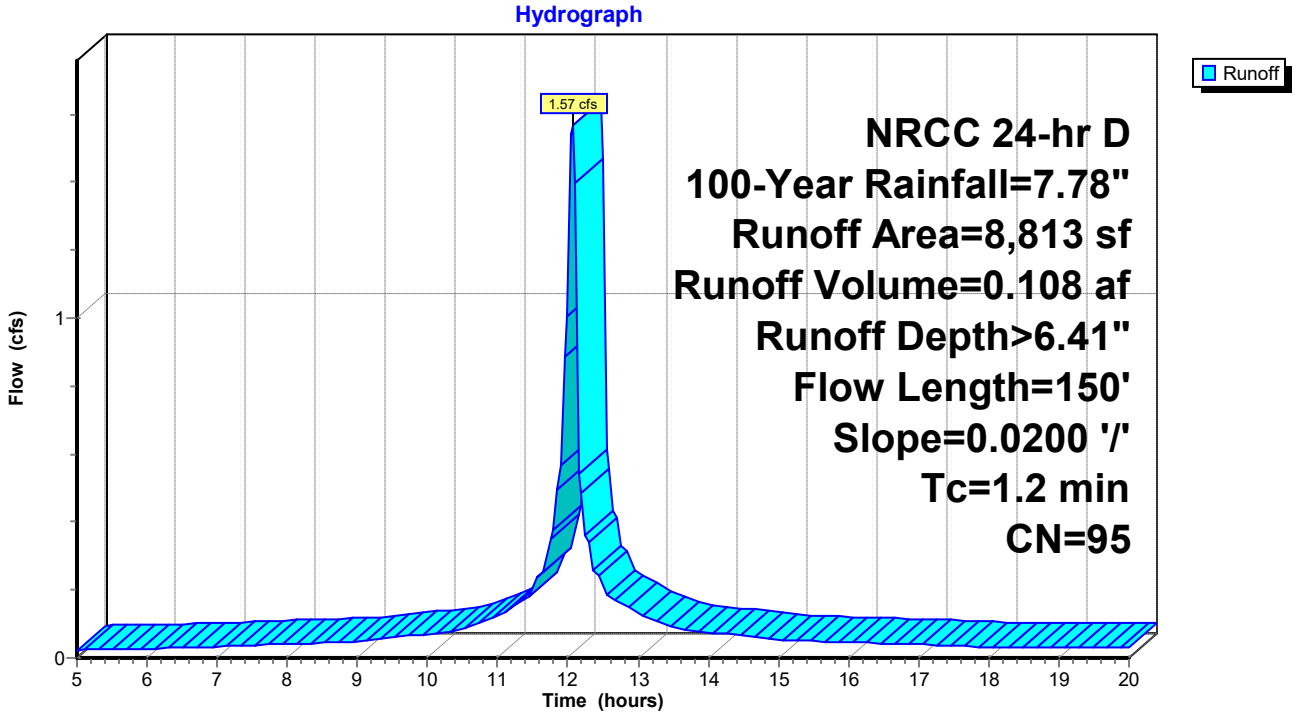
Runoff = 1.57 cfs @ 12.06 hrs, Volume= 0.108 af, Depth> 6.41"
Routed to Reach CB7 : CB 7

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=7.78"

Area (sf)	CN	Description
7,468	98	Unconnected pavement, HSG D
1,345	80	>75% Grass cover, Good, HSG D
8,813	95	Weighted Average
1,345		15.26% Pervious Area
7,468		84.74% Impervious Area
7,468		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0200	1.05		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
0.7	120	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.2	150	Total			

Subcatchment 2C: Region 2C



Summary for Subcatchment 2D: Region 2D

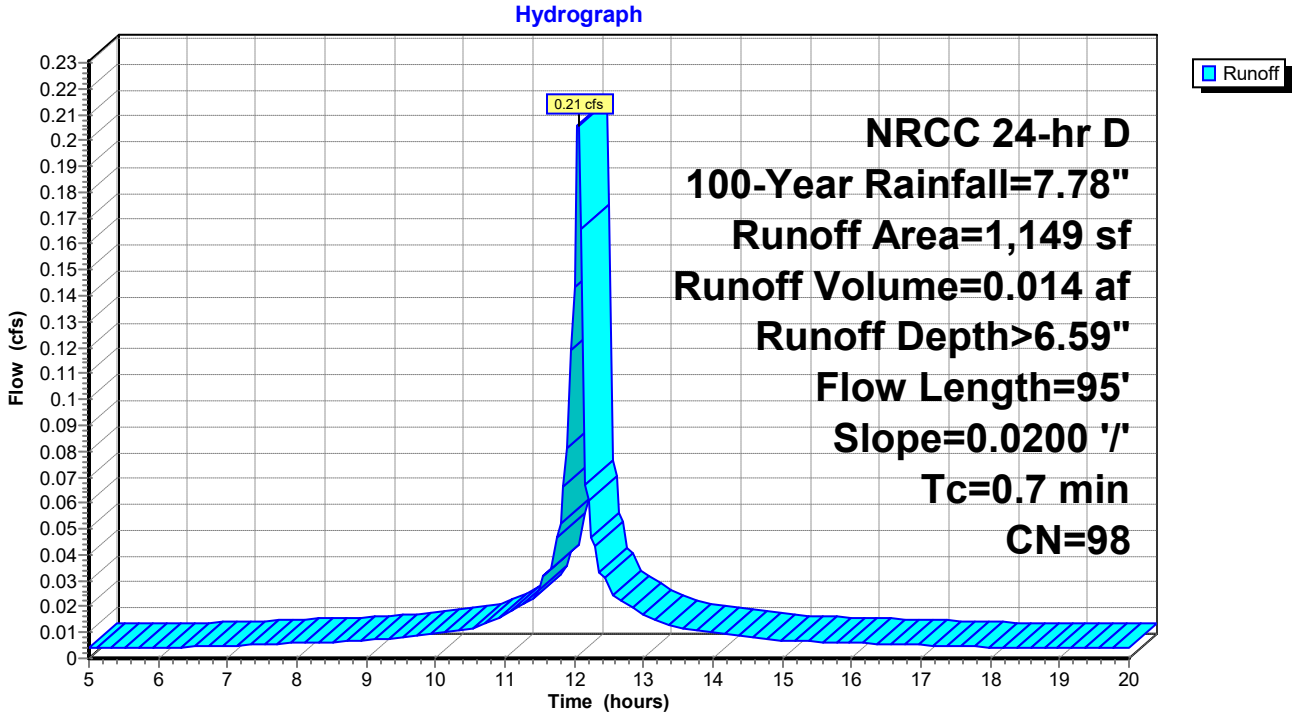
Runoff = 0.21 cfs @ 12.06 hrs, Volume= 0.014 af, Depth> 6.59"
Routed to Reach CB9 : CB 9

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=7.78"

Area (sf)	CN	Description
1,149	98	Unconnected pavement, HSG D
1,149		100.00% Impervious Area
1,149		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	0.97		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
0.4	75	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	95	Total			

Subcatchment 2D: Region 2D



Summary for Subcatchment 2E: Region 2E

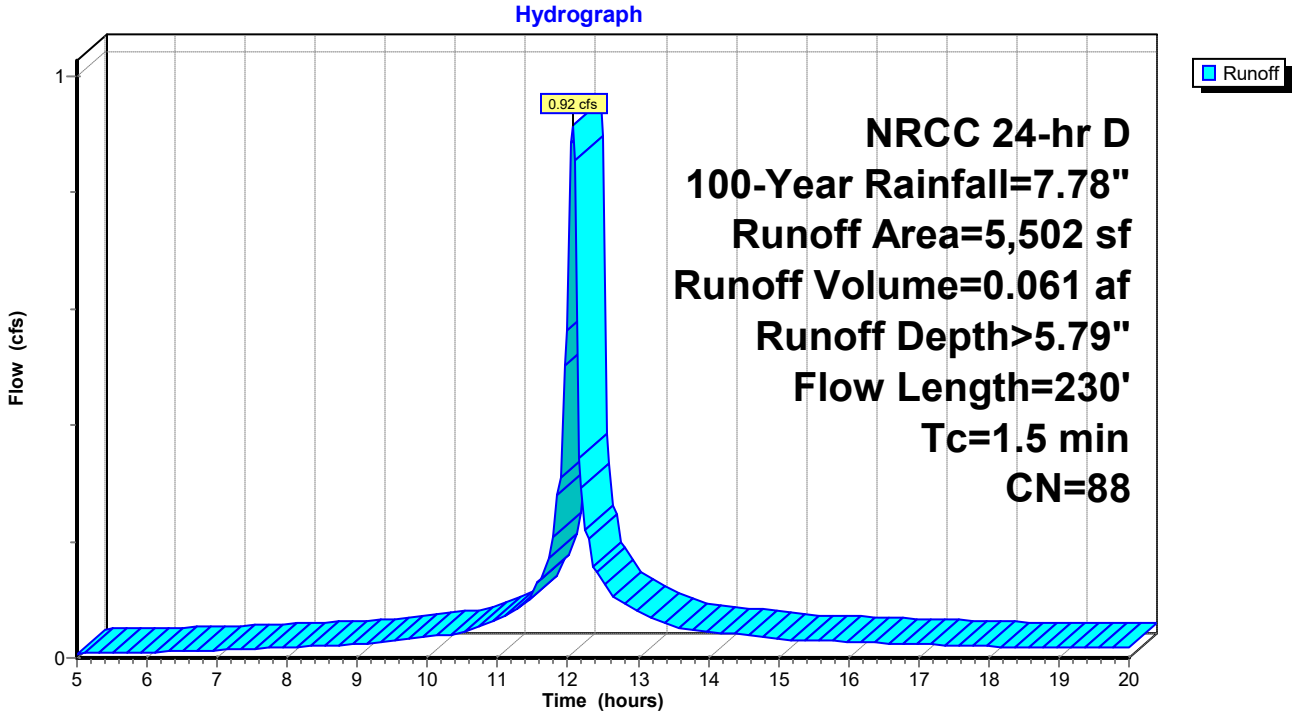
Runoff = 0.92 cfs @ 12.07 hrs, Volume= 0.061 af, Depth> 5.79"
Routed to Reach CB4 : CB 4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=7.78"

Area (sf)	CN	Description
2,762	98	Unconnected pavement, HSG D
2,740	78	Meadow, non-grazed, HSG D
5,502	88	Weighted Average
2,740		49.80% Pervious Area
2,762		50.20% Impervious Area
2,762		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0200	1.05		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
1.0	200	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	230	Total			

Subcatchment 2E: Region 2E



Summary for Subcatchment 2F: Region 2F

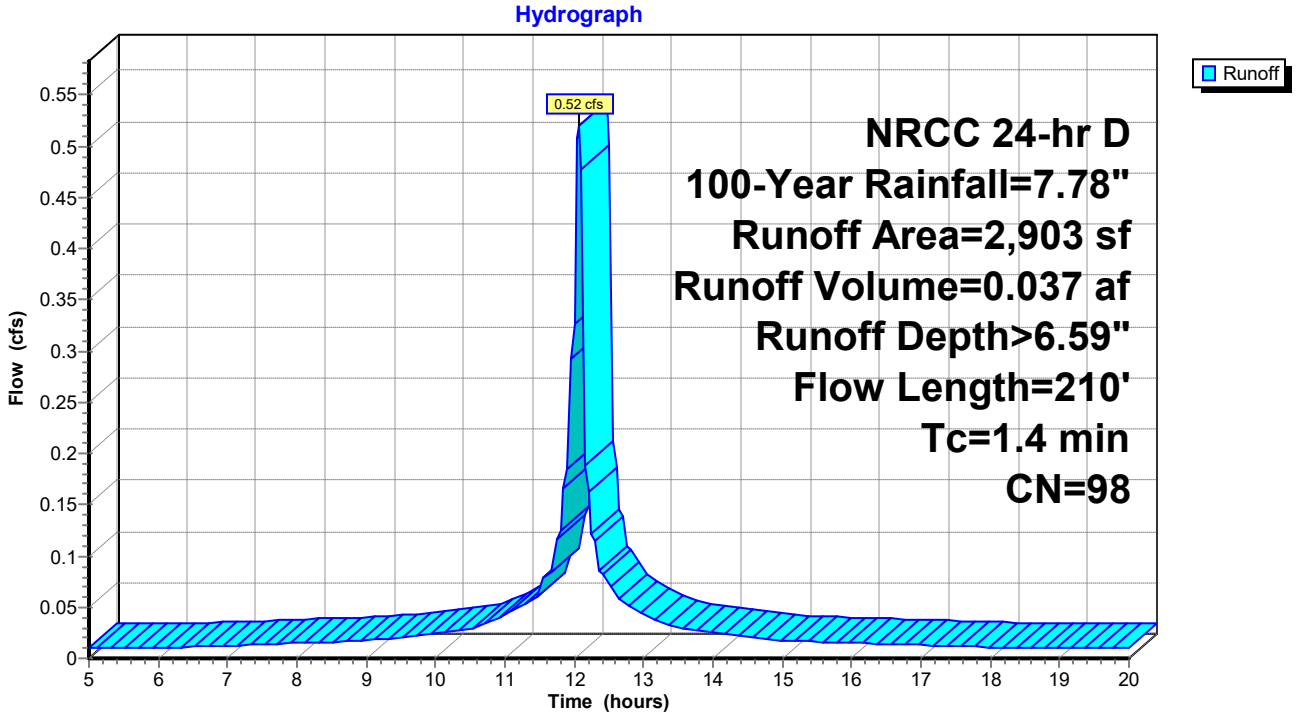
Runoff = 0.52 cfs @ 12.07 hrs, Volume= 0.037 af, Depth> 6.59"
Routed to Reach CB5 : CB 5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=7.78"

Area (sf)	CN	Description
2,903	98	Unconnected pavement, HSG D
2,903		100.00% Impervious Area
2,903		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0200	1.05		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
0.9	180	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	210	Total			

Subcatchment 2F: Region 2F



Summary for Subcatchment 2G: Region 2G

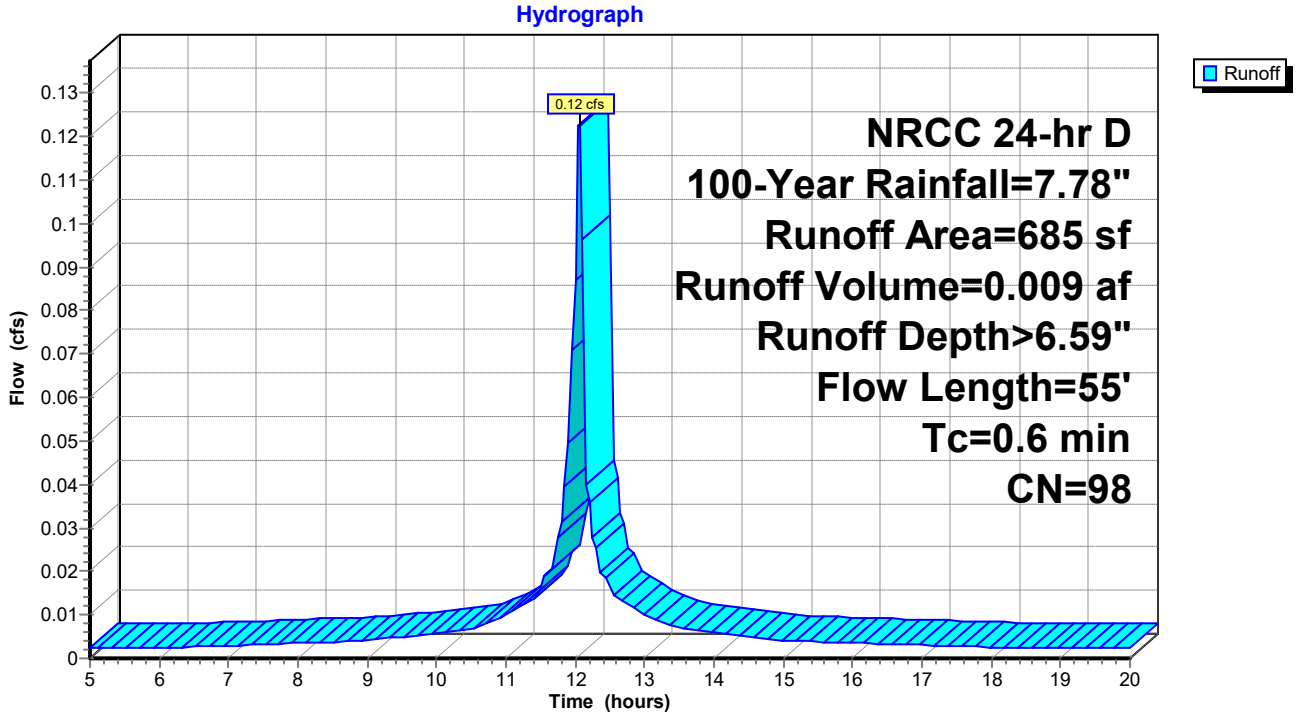
Runoff = 0.12 cfs @ 12.05 hrs, Volume= 0.009 af, Depth> 6.59"
Routed to Reach CB6 : CB 6

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=7.78"

Area (sf)	CN	Description
685	98	Unconnected pavement, HSG D
685		100.00% Impervious Area
685		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0200	1.05		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
0.1	25	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	55	Total			

Subcatchment 2G: Region 2G



Summary for Subcatchment 2P: Region 2P

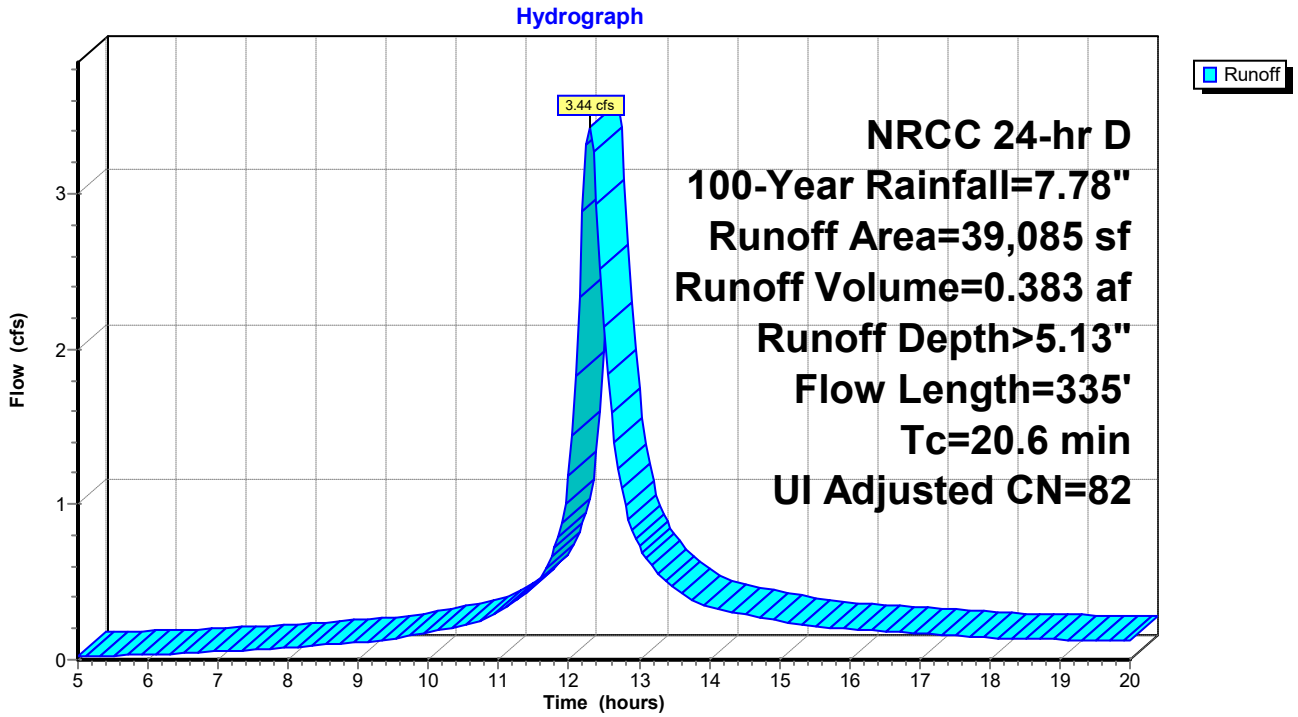
Runoff = 3.44 cfs @ 12.30 hrs, Volume= 0.383 af, Depth> 5.13"
Routed to Pond 2Pond : Pond 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=7.78"

Area (sf)	CN	Adj	Description
7,890	98		Unconnected pavement, HSG D
31,195	80		>75% Grass cover, Good, HSG D
39,085	84	82	Weighted Average, UI Adjusted
31,195			79.81% Pervious Area
7,890			20.19% Impervious Area
7,890			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	100	0.0500	1.92		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
2.5	185	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.2	50	0.0010	0.05		**Sheet Flow,** Range n= 0.130 P2= 3.00"
20.6	335	Total			

Subcatchment 2P: Region 2P



Summary for Subcatchment 2U: Untreated to DP2

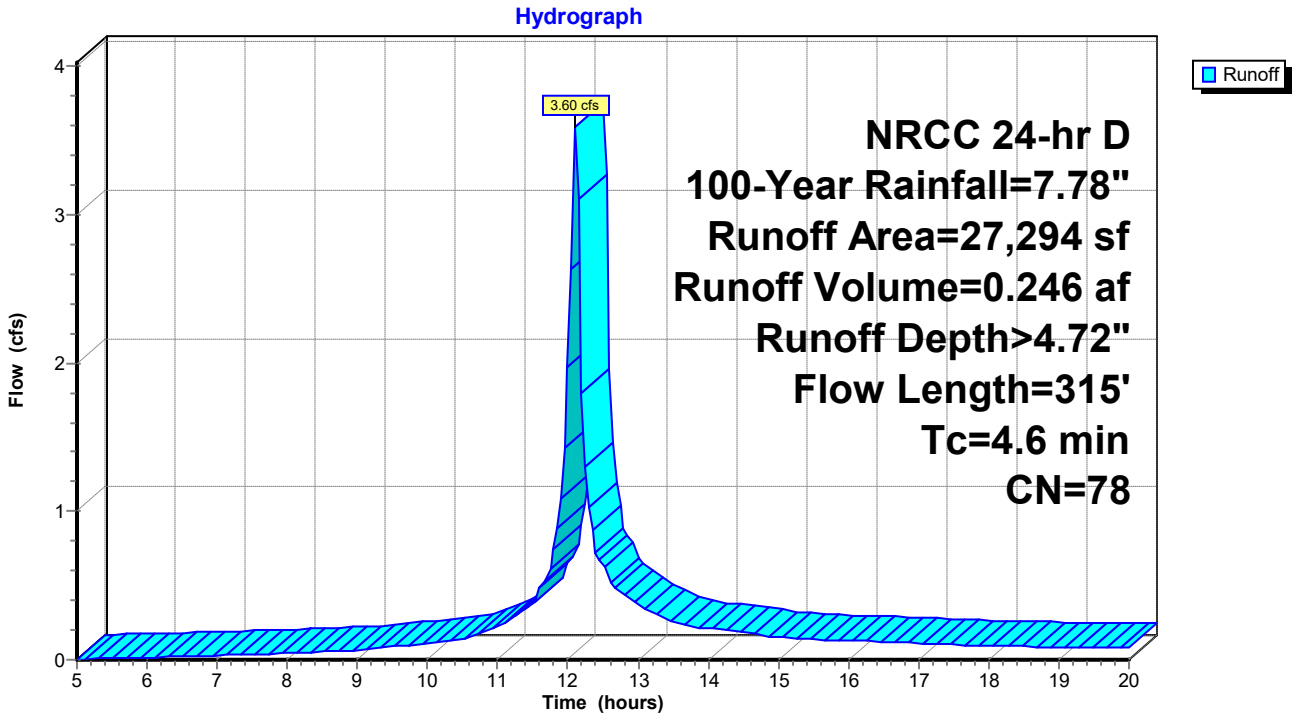
Runoff = 3.60 cfs @ 12.11 hrs, Volume= 0.246 af, Depth> 4.72"
Routed to Reach DP2 : Design Point 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=7.78"

Area (sf)	CN	Description
444	98	Unconnected pavement, HSG D
2,167	80	>75% Grass cover, Good, HSG D
18,188	78	Meadow, non-grazed, HSG D
6,495	77	Woods, Good, HSG D
27,294	78	Weighted Average
26,850		98.37% Pervious Area
444		1.63% Impervious Area
444		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	80	0.2200	0.46		**Sheet Flow,** Range n= 0.130 P2= 3.00"
1.7	235	0.1050	2.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.6	315	Total			

Subcatchment 2U: Untreated to DP2



Summary for Subcatchment 4B: Barn Region 4B

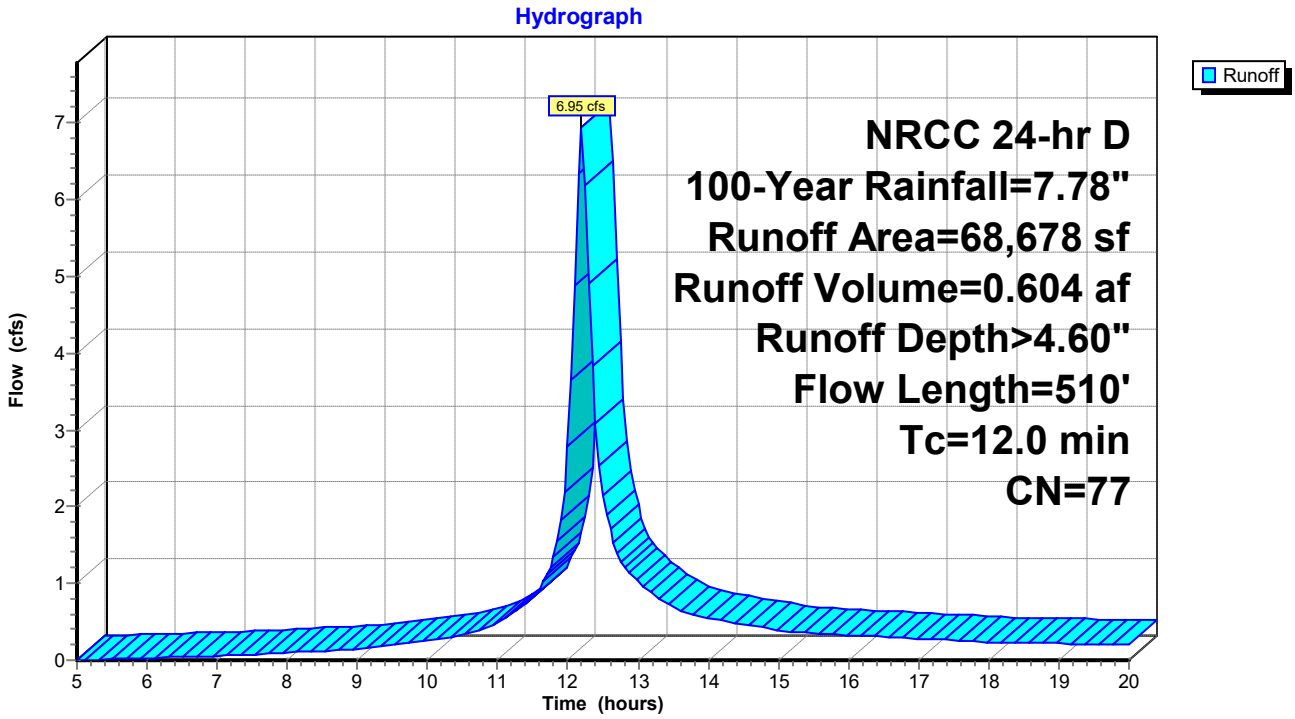
Runoff = 6.95 cfs @ 12.20 hrs, Volume= 0.604 af, Depth> 4.60"
Routed to Pond BP : Barn Bypass detention Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=7.78"

Area (sf)	CN	Description
11,285	78	Meadow, non-grazed, HSG D
57,393	77	Woods, Good, HSG D
68,678	77	Weighted Average
68,678		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.1500	0.17		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.00"
1.6	170	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	240	0.1100	7.58	121.21	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.069 Riprap, 6-inch
12.0	510	Total			

Subcatchment 4B: Barn Region 4B



Summary for Subcatchment 5S: Barn Region 2B

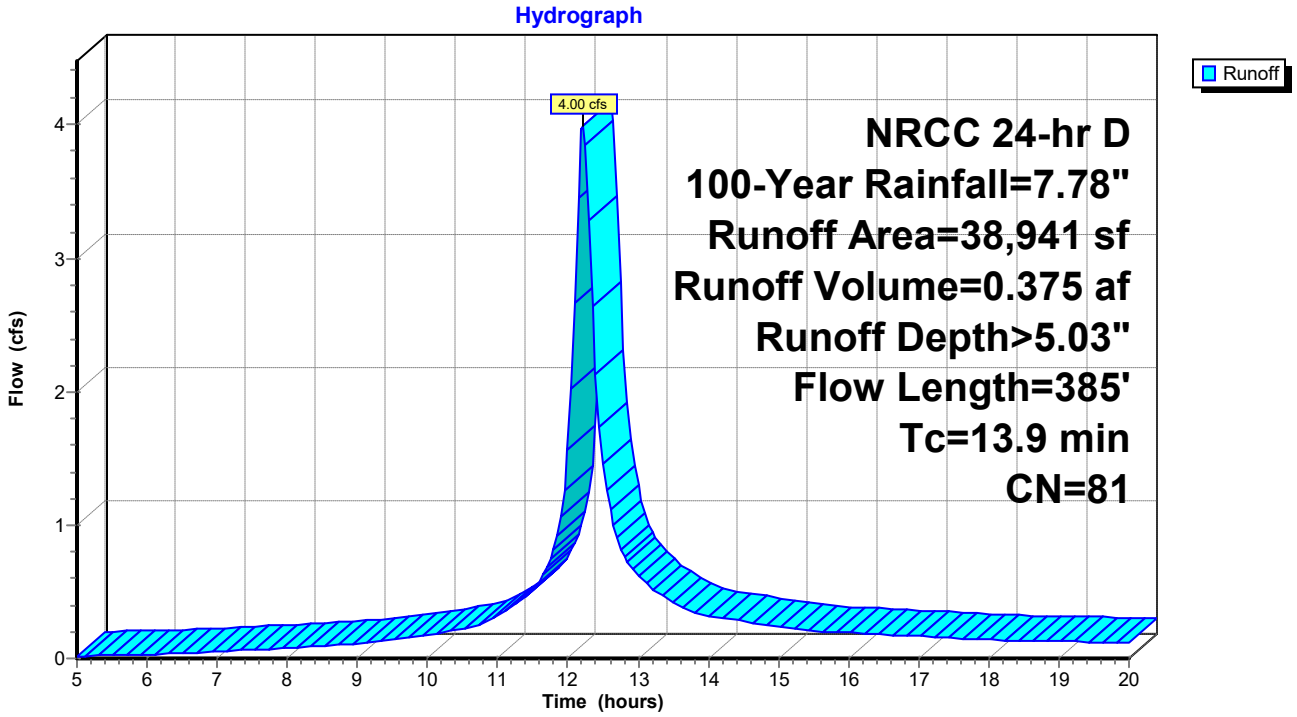
Runoff = 4.00 cfs @ 12.22 hrs, Volume= 0.375 af, Depth> 5.03"
Routed to Reach 14R : Exisitng Bypass Pipe

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr D 100-Year Rainfall=7.78"

Area (sf)	CN	Description
6,567	98	Paved parking, HSG D
22,495	78	Meadow, non-grazed, HSG D
546	80	>75% Grass cover, Good, HSG D
9,333	77	Woods, Good, HSG D
38,941	81	Weighted Average
32,374		83.14% Pervious Area
6,567		16.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.1400	0.16		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.00"
0.6	60	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	160	0.0150	6.43	102.94	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=2.00' Z= 3.0 '/' Top.W=14.00' n= 0.030 Short grass
2.7	65	0.1700	0.40		**Sheet Flow,** Range n= 0.130 P2= 3.00"
13.9	385	Total			

Subcatchment 5S: Barn Region 2B



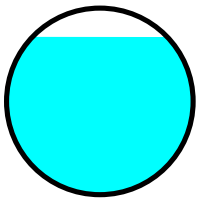
Summary for Reach 14R: Exisitng Bypass Pipe

Inflow Area = 2.471 ac, 6.10% Impervious, Inflow Depth > 4.64" for 100-Year event
Inflow = 11.06 cfs @ 12.22 hrs, Volume= 0.955 af
Outflow = 10.71 cfs @ 12.24 hrs, Volume= 0.955 af, Atten= 3%, Lag= 1.1 min
Routed to Reach DP2 : Design Point 2

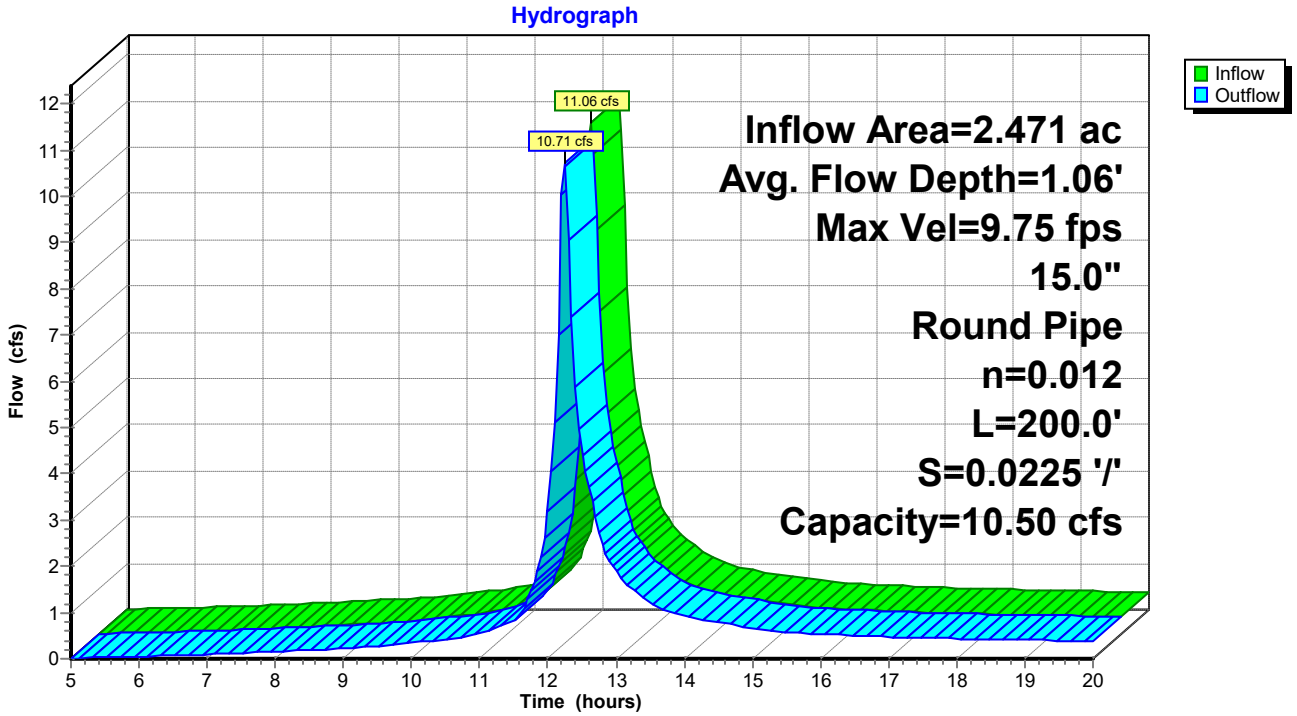
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.75 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 4.28 fps, Avg. Travel Time= 0.8 min

Peak Storage= 222 cf @ 12.23 hrs
Average Depth at Peak Storage= 1.06' , Surface Width= 0.90'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 10.50 cfs

15.0" Round Pipe
n= 0.012
Length= 200.0' Slope= 0.0225 '/'
Inlet Invert= 0.00', Outlet Invert= -4.50'



Reach 14R: Exisitng Bypass Pipe



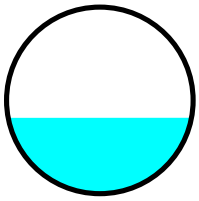
Summary for Reach CB4: CB 4

Inflow Area = 0.126 ac, 50.20% Impervious, Inflow Depth > 5.79" for 100-Year event
Inflow = 0.92 cfs @ 12.07 hrs, Volume= 0.061 af
Outflow = 0.93 cfs @ 12.08 hrs, Volume= 0.061 af, Atten= 0%, Lag= 0.4 min
Routed to Reach CB5 : CB 5

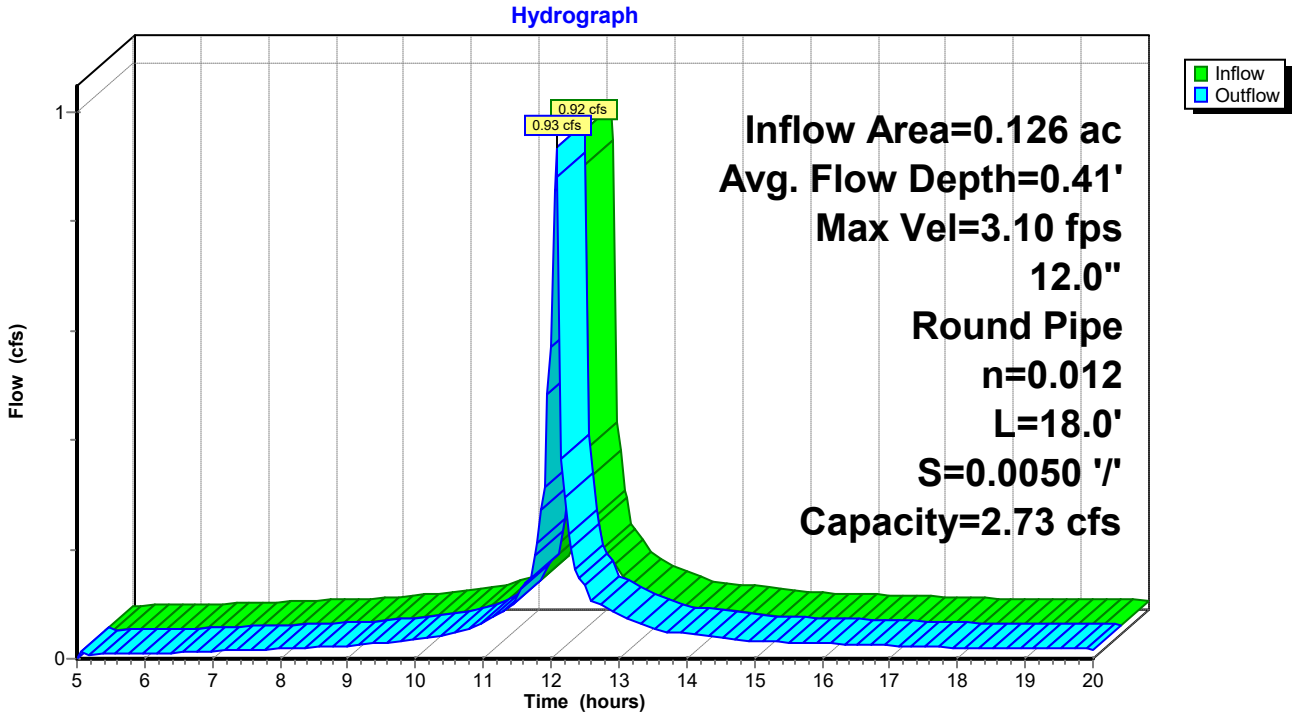
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.10 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.19 fps, Avg. Travel Time= 0.3 min

Peak Storage= 5 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.41' , Surface Width= 0.98'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.73 cfs

12.0" Round Pipe
n= 0.012
Length= 18.0' Slope= 0.0050 '/'
Inlet Invert= 384.20', Outlet Invert= 384.11'



Reach CB4: CB 4



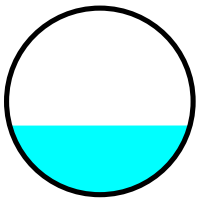
Summary for Reach CB5: CB 5

Inflow Area = 0.193 ac, 67.40% Impervious, Inflow Depth > 6.06" for 100-Year event
Inflow = 1.42 cfs @ 12.07 hrs, Volume= 0.097 af
Outflow = 1.36 cfs @ 12.09 hrs, Volume= 0.097 af, Atten= 4%, Lag= 1.1 min
Routed to Reach CB6 : CB 6

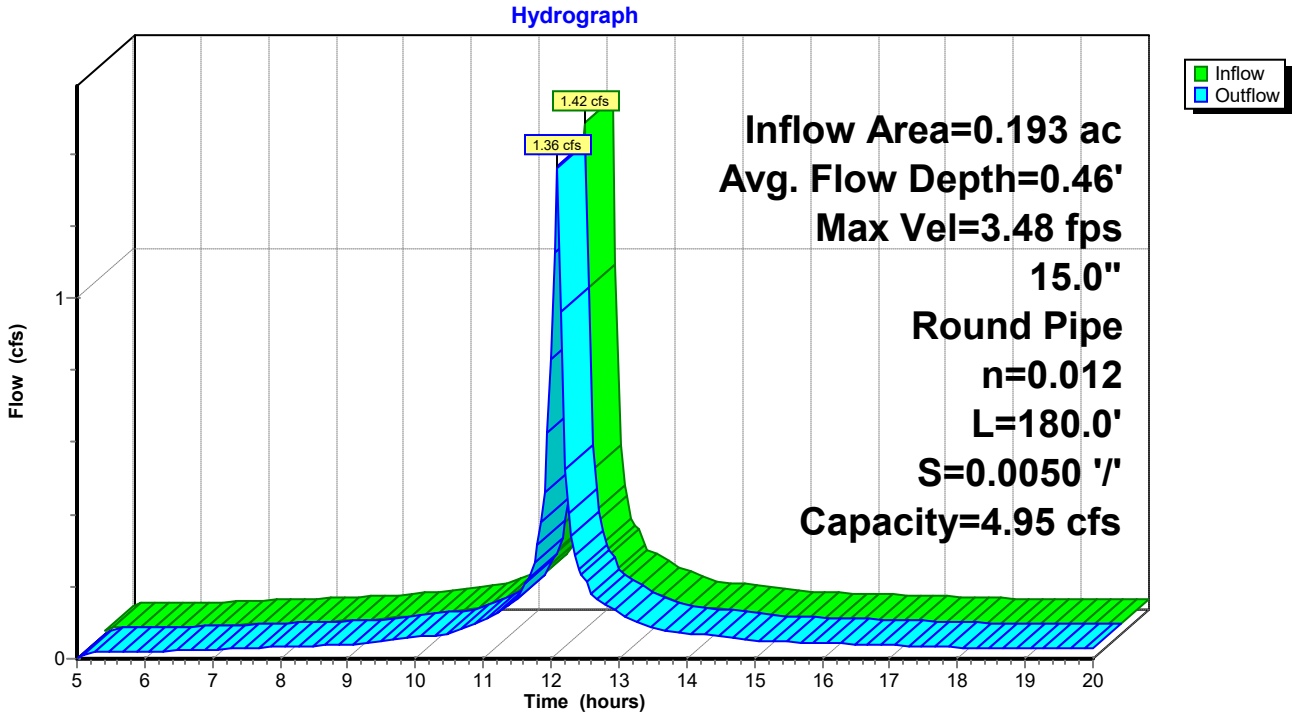
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.48 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 1.34 fps, Avg. Travel Time= 2.2 min

Peak Storage= 74 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.46' , Surface Width= 1.21'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 4.95 cfs

15.0" Round Pipe
n= 0.012
Length= 180.0' Slope= 0.0050 '/'
Inlet Invert= 384.11', Outlet Invert= 383.21'



Reach CB5: CB 5



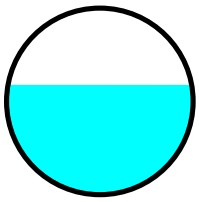
Summary for Reach CB6: CB 6

Inflow Area = 0.706 ac, 82.49% Impervious, Inflow Depth > 6.35" for 100-Year event
Inflow = 5.26 cfs @ 12.08 hrs, Volume= 0.374 af
Outflow = 5.19 cfs @ 12.09 hrs, Volume= 0.374 af, Atten= 1%, Lag= 0.3 min
Routed to Pond 2Pond : Pond 2

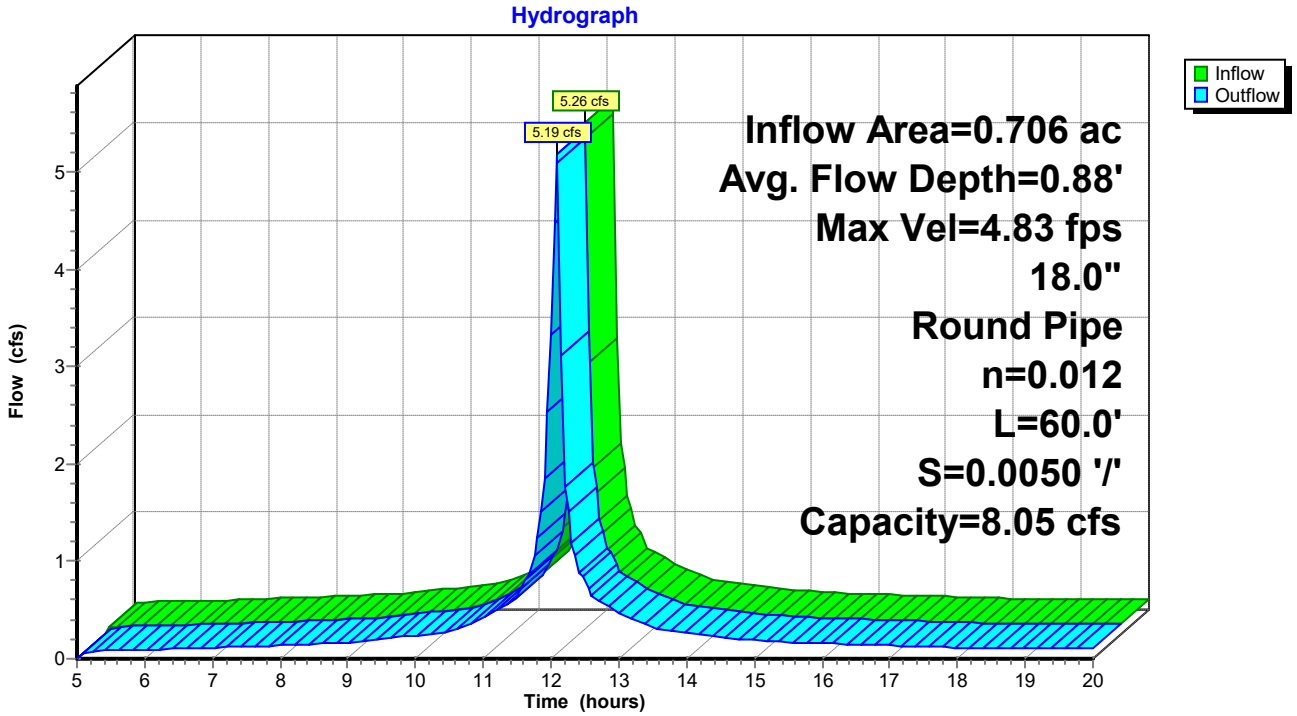
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.83 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.96 fps, Avg. Travel Time= 0.5 min

Peak Storage= 65 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.88' , Surface Width= 1.48'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 8.05 cfs

18.0" Round Pipe
n= 0.012
Length= 60.0' Slope= 0.0050 '/'
Inlet Invert= 383.21', Outlet Invert= 382.91'



Reach CB6: CB 6



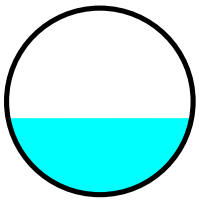
Summary for Reach CB7: CB 7

Inflow Area = 0.498 ac, 87.79% Impervious, Inflow Depth > 6.47" for 100-Year event
Inflow = 3.77 cfs @ 12.07 hrs, Volume= 0.268 af
Outflow = 3.80 cfs @ 12.08 hrs, Volume= 0.268 af, Atten= 0%, Lag= 0.7 min
Routed to Reach CB6 : CB 6

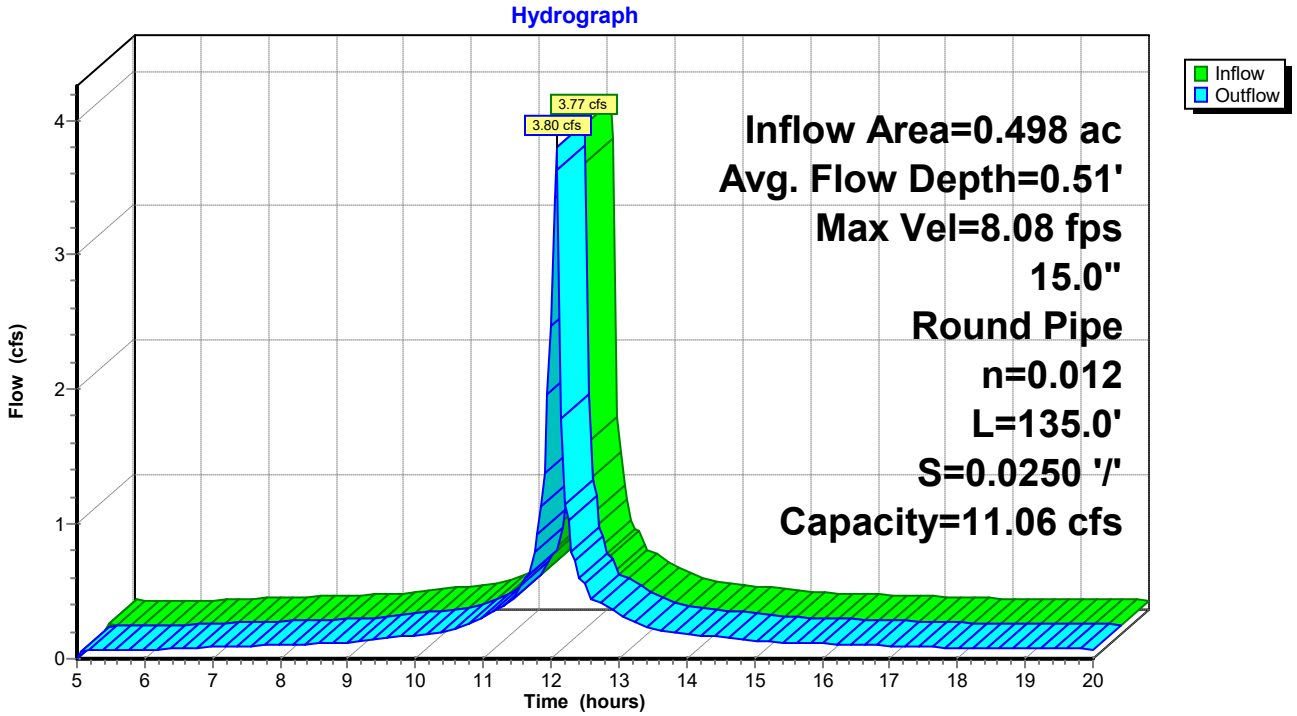
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.08 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 3.20 fps, Avg. Travel Time= 0.7 min

Peak Storage= 64 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.51' , Surface Width= 1.23'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 11.06 cfs

15.0" Round Pipe
n= 0.012
Length= 135.0' Slope= 0.0250 '/'
Inlet Invert= 386.55', Outlet Invert= 383.18'



Reach CB7: CB 7



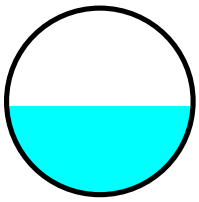
Summary for Reach CB8: CB 8

Inflow Area = 0.295 ac, 89.87% Impervious, Inflow Depth > 6.51" for 100-Year event
Inflow = 2.28 cfs @ 12.06 hrs, Volume= 0.160 af
Outflow = 2.21 cfs @ 12.07 hrs, Volume= 0.160 af, Atten= 3%, Lag= 0.5 min
Routed to Reach CB7 : CB 7

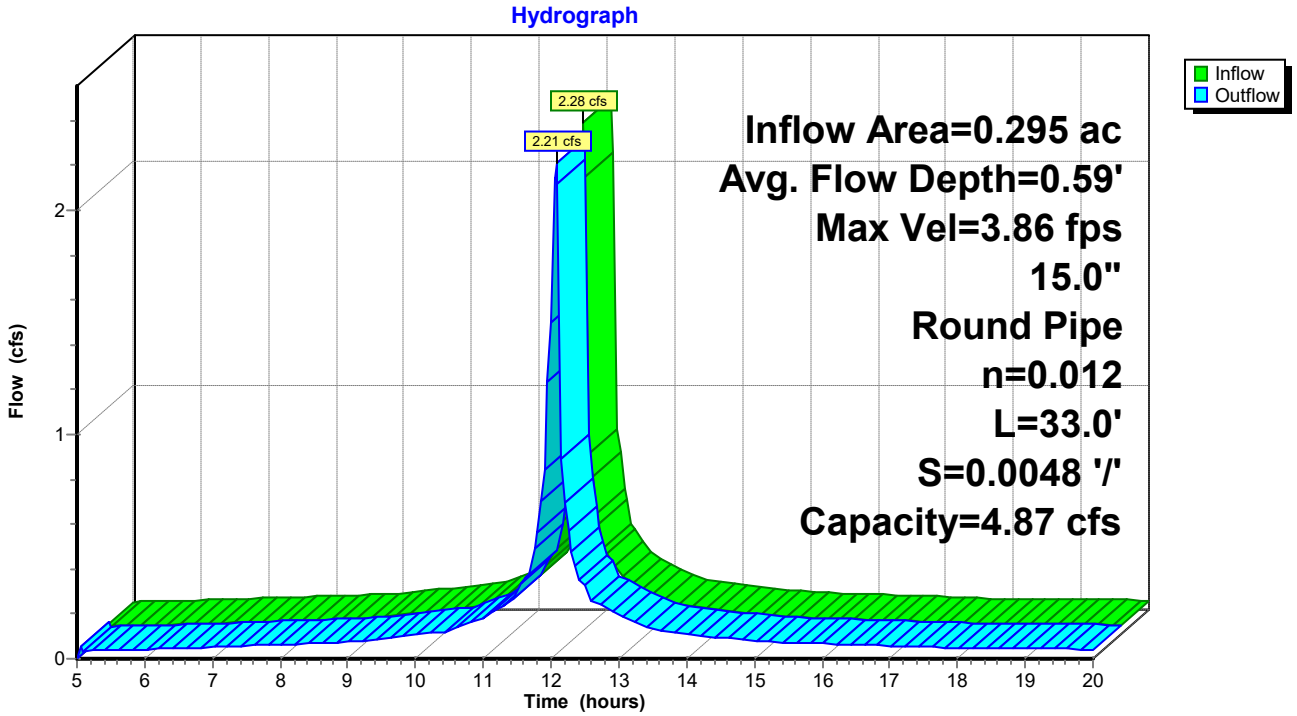
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.86 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.55 fps, Avg. Travel Time= 0.4 min

Peak Storage= 19 cf @ 12.07 hrs
Average Depth at Peak Storage= 0.59' , Surface Width= 1.25'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 4.87 cfs

15.0" Round Pipe
n= 0.012
Length= 33.0' Slope= 0.0048 '/'
Inlet Invert= 386.71', Outlet Invert= 386.55'



Reach CB8: CB 8



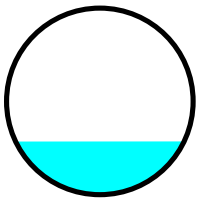
Summary for Reach CB9: CB 9

Inflow Area = 0.064 ac,100.00% Impervious, Inflow Depth > 6.59" for 100-Year event
Inflow = 0.50 cfs @ 12.06 hrs, Volume= 0.035 af
Outflow = 0.48 cfs @ 12.06 hrs, Volume= 0.035 af, Atten= 4%, Lag= 0.4 min
Routed to Reach CB8 : CB 8

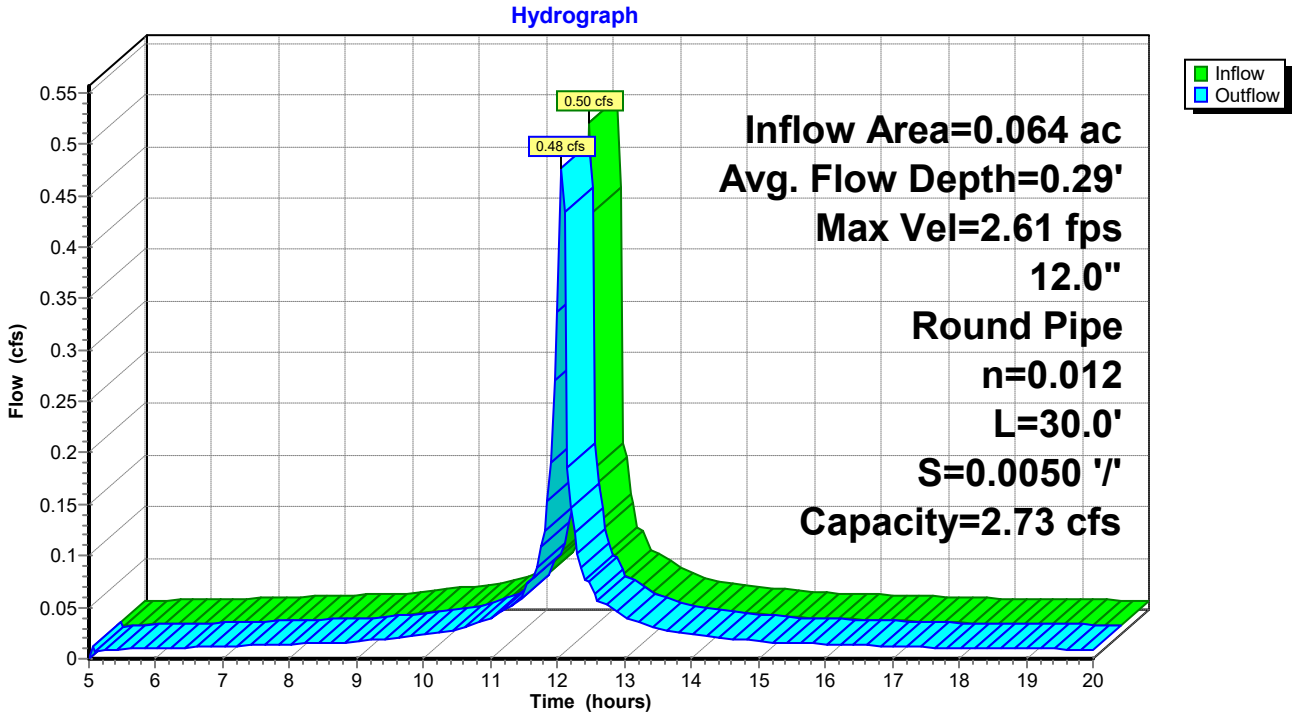
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.61 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.02 fps, Avg. Travel Time= 0.5 min

Peak Storage= 6 cf @ 12.06 hrs
Average Depth at Peak Storage= 0.29' , Surface Width= 0.90'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.73 cfs

12.0" Round Pipe
n= 0.012
Length= 30.0' Slope= 0.0050 '/'
Inlet Invert= 386.86', Outlet Invert= 386.71'



Reach CB9: CB 9

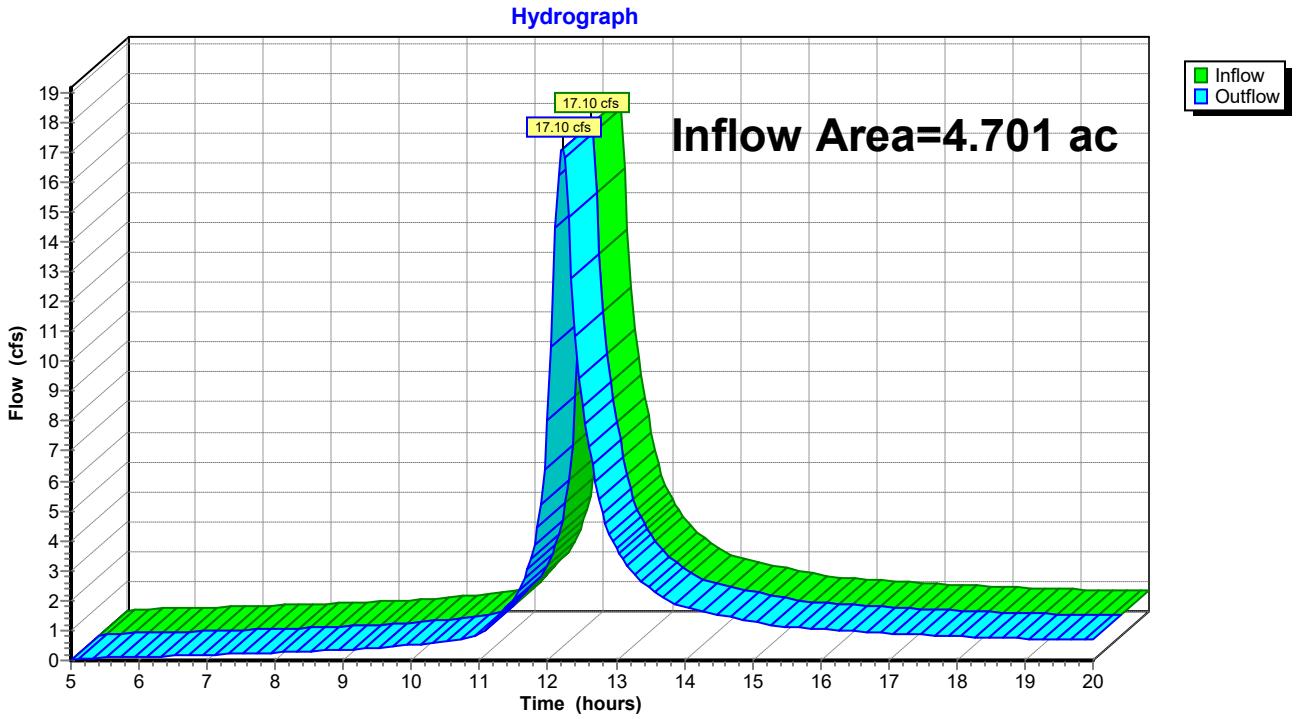


Summary for Reach DP2: Design Point 2

Inflow Area = 4.701 ac, 19.67% Impervious, Inflow Depth > 4.73" for 100-Year event
Inflow = 17.10 cfs @ 12.21 hrs, Volume= 1.854 af
Outflow = 17.10 cfs @ 12.21 hrs, Volume= 1.854 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach DP2: Design Point 2



Summary for Pond 2Pond: Pond 2

Inflow Area = 1.604 ac, 47.63% Impervious, Inflow Depth > 5.67" for 100-Year event
Inflow = 6.94 cfs @ 12.10 hrs, Volume= 0.757 af
Outflow = 6.16 cfs @ 12.14 hrs, Volume= 0.653 af, Atten= 11%, Lag= 2.6 min
Primary = 6.16 cfs @ 12.14 hrs, Volume= 0.653 af
Routed to Reach DP2 : Design Point 2

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 378.94' @ 12.14 hrs Surf.Area= 4,431 sf Storage= 6,740 cf

Plug-Flow detention time= 86.1 min calculated for 0.651 af (86% of inflow)
Center-of-Mass det. time= 39.7 min (799.4 - 759.7)

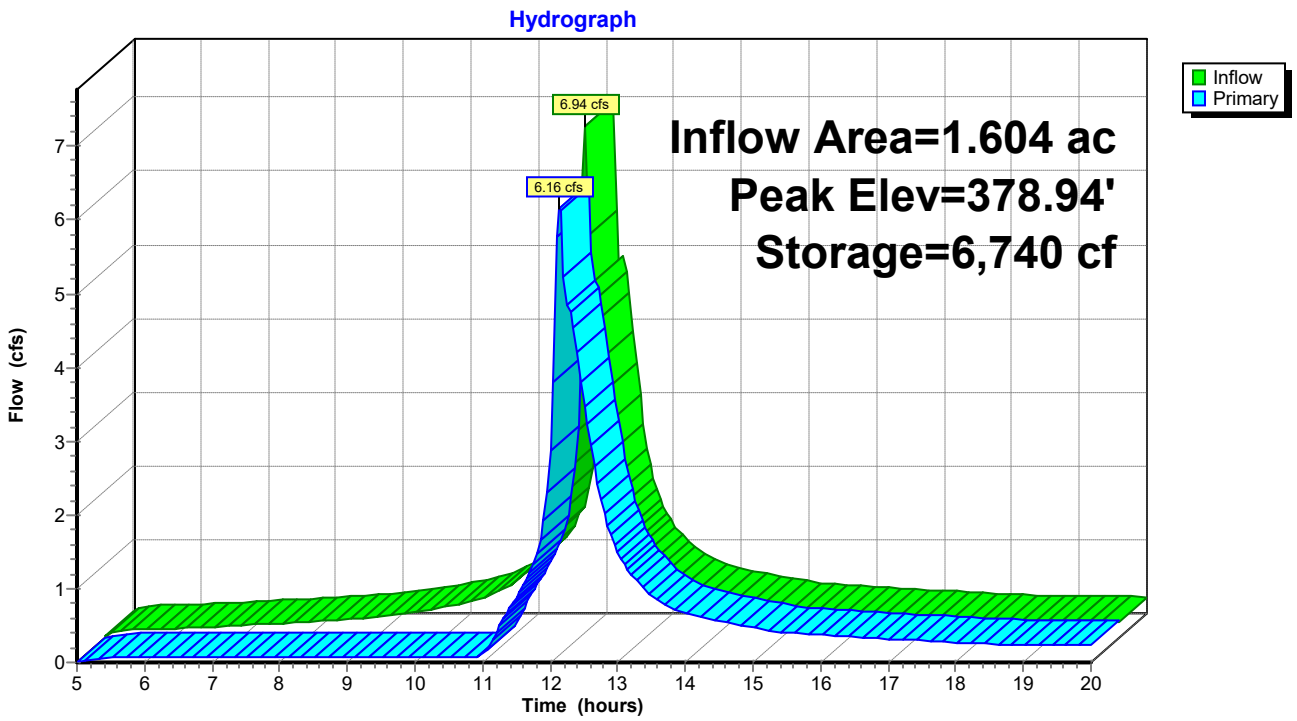
Volume	Invert	Avail.Storage	Storage Description
#1	377.00'	12,056 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
377.00	2,604	0	0
378.00	3,442	3,023	3,023
379.00	4,490	3,966	6,989
380.00	5,643	5,067	12,056

Device	Routing	Invert	Outlet Devices
#1	Primary	374.25'	**18.0" Round Culvert** L= 24.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 374.25' / 371.85' S= 0.1000 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Device 1	374.50'	**1.2" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	378.35'	**36.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	378.85'	**25.0' long x 15.0' 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) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=6.04 cfs @ 12.14 hrs HW=378.94' (Free Discharge)
- **1=Culvert** (Passes 4.19 cfs of 16.89 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.08 cfs @ 10.09 fps)
  - **3=Orifice/Grate** (Orifice Controls 4.11 cfs @ 2.74 fps)
- **4=Broad-Crested Rectangular Weir** (Weir Controls 1.85 cfs @ 0.81 fps)

Pond 2Pond: Pond 2



Summary for Pond BP: Barn Bypass detention Pond

Inflow Area = 1.577 ac, 0.00% Impervious, Inflow Depth > 4.60" for 100-Year event
Inflow = 6.95 cfs @ 12.20 hrs, Volume= 0.604 af
Outflow = 7.06 cfs @ 12.22 hrs, Volume= 0.580 af, Atten= 0%, Lag= 1.4 min
Primary = 7.06 cfs @ 12.22 hrs, Volume= 0.580 af
Routed to Reach 14R : Exisitng Bypass Pipe

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 403.98' @ 12.22 hrs Surf.Area= 2,166 sf Storage= 3,758 cf

Plug-Flow detention time= 39.0 min calculated for 0.579 af (96% of inflow)
Center-of-Mass det. time= 24.0 min (808.5 - 784.5)

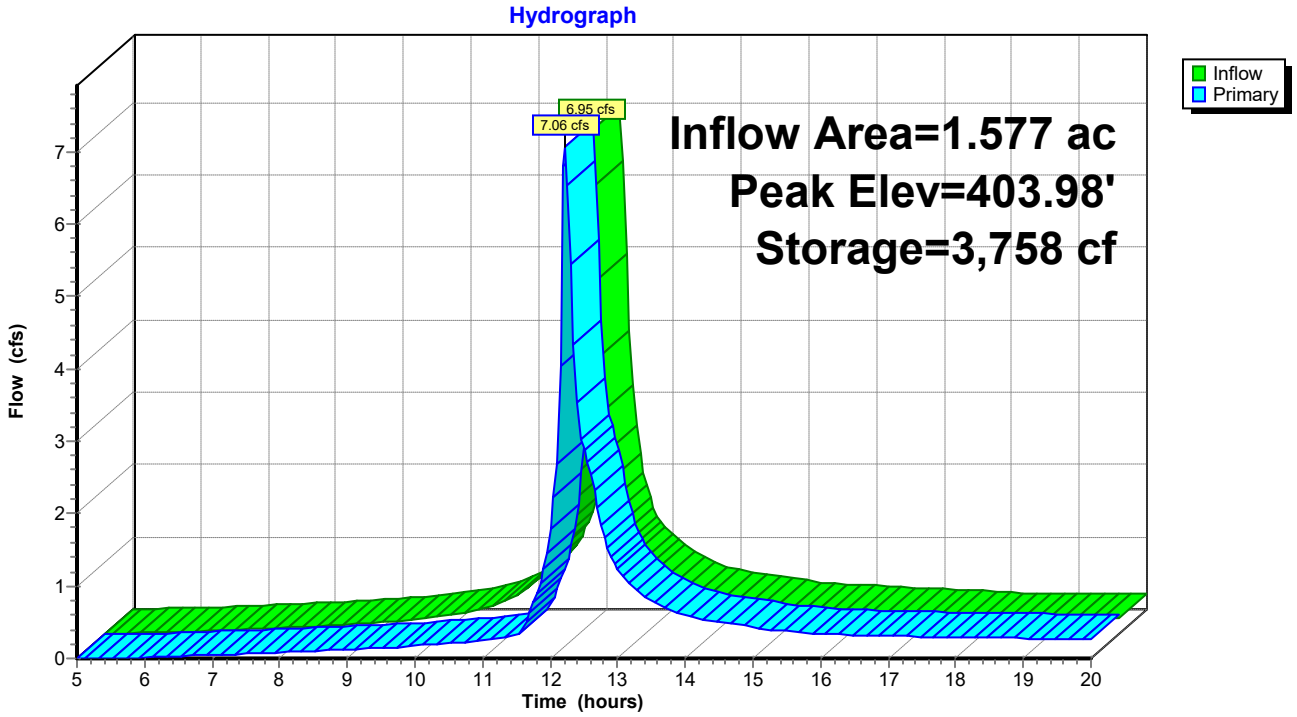
Volume	Invert	Avail.Storage	Storage Description
#1	401.00'	6,368 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

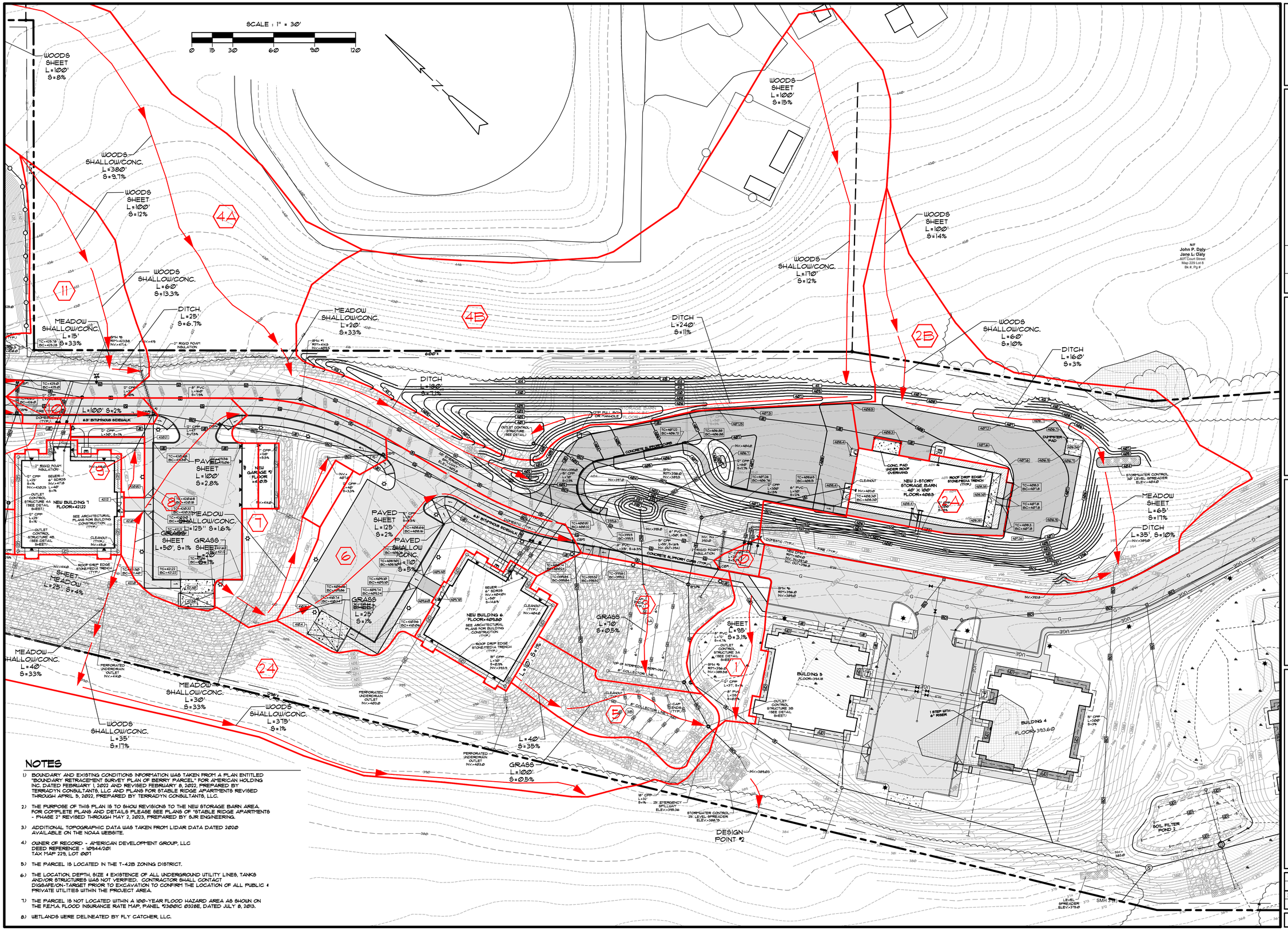
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
401.00	462	0	0
402.00	900	681	681
403.00	1,572	1,236	1,917
404.00	2,175	1,874	3,791
405.00	2,980	2,578	6,368

Device	Routing	Invert	Outlet Devices
#1	Primary	401.00'	**12.0" Round Culvert** L= 400.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 401.00' / 395.00' S= 0.0150 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	401.00'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	402.80'	**12.0" W x 8.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	403.80'	**20.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=6.68 cfs @ 12.22 hrs HW=403.97' (Free Discharge)
- **1=Culvert** (Passes 3.32 cfs of 5.09 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.40 cfs @ 8.12 fps)
  - **3=Orifice/Grate** (Orifice Controls 2.92 cfs @ 4.38 fps)
- **4=Broad-Crested Rectangular Weir** (Weir Controls 3.36 cfs @ 0.98 fps)

Pond BP: Barn Bypass detention Pond





NOTES

1) BOUNDARY AND EXISTING CONDITIONS INFORMATION WAS TAKEN FROM A PLAN ENTITLED "BOUNDARY RETRACEMENT SURVEY PLAN OF BERRY PARCEL" FOR AMERICAN HOLDING INC. DATED FEBRUARY 1, 2022 AND REVISED FEBRUARY 8, 2022, PREPARED BY TERRADYN CONSULTANTS, LLC AND PLANS FOR STABLE RIDGE APARTMENTS REVISED THROUGH APRIL 5, 2022, PREPARED BY TERRADYN CONSULTANTS, LLC.

2) THE PURPOSE OF THIS PLAN IS TO SHOW REVISIONS TO THE NEW STORAGE BARN AREA. FOR COMPLETE PLANS AND DETAILS PLEASE SEE PLANS OF "STABLE RIDGE APARTMENTS - PHASE 2" REVISED THROUGH MAY 2, 2023, PREPARED BY SJR ENGINEERING.

3) ADDITIONAL TOPOGRAPHIC DATA WAS TAKEN FROM LIDAR DATA DATED 2020 AVAILABLE ON THE NOAA WEBSITE.

4) OWNER OF RECORD - AMERICAN DEVELOPMENT GROUP, LLC
DEED REFERENCE - 10944/201
TAX MAP 229, LOT 001

5) THE PARCEL IS LOCATED IN THE T-42B ZONING DISTRICT.

6) THE LOCATION, DEPTH, SIZE & EXISTENCE OF ALL UNDERGROUND UTILITY LINES, TANKS AND/OR STRUCTURES WAS NOT VERIFIED. CONTRACTOR SHALL CONTACT DIGSAFE/ON-TARGET PRIOR TO EXCAVATION TO CONFIRM THE LOCATION OF ALL PUBLIC & PRIVATE UTILITIES WITHIN THE PROJECT AREA.

7) THE PARCEL IS NOT LOCATED WITHIN A 100-YEAR FLOOD HAZARD AREA AS SHOWN ON THE F.E.M.A. FLOOD INSURANCE RATE MAP, PANEL #23001C 0328E, DATED JULY 8, 2013.

8) WETLANDS WERE DELINEATED BY FLY CATCHER, LLC.

REV:	DATE:	CHANGES:
1	11/8/23	GRADING CHANGES

DO NOT MODIFY PLAN WITHOUT WRITTEN PERMISSION FROM SJR ENG., INC.

Stoneybrook
Land Use, Inc.
4846 Sun City Center Blvd., #300
Sun City Center, FL 33573-6281

SJR ENGINEERING, INC.
16 THURSTON DRIVE
MONMOUTH, MAINE 04259
(207) 242-6248 tel
steve@sjreng.com
SJR ENGINEERING

WATERSHED PLAN
STABLE RIDGE APARTMENTS
555 COURT STREET - AUBURN, ME

PREPARED FOR
AMERICAN DEVELOPMENT GROUP
P.O. BOX 1499 - NAPLES, ME 04055

DATE	PROJECT
NOV. 2023	22-006
DRAWN BY	SCALE
BRJ	1" = 30'

WTR-A

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1) THE PURPOSE OF THIS PLAN IS TO SHOW REVISIONS TO THE NEW STORAGE BARN AREA. FOR COMPLETE PLANS AND DETAILS PLEASE SEE PLANS OF "STABLE RIDGE APARTMENTS - PHASE 2" REVISED THROUGH MAY 2, 2023, PREPARED BY SJR ENGINEERING.

2) BOUNDARY AND EXISTING CONDITIONS INFORMATION WAS TAKEN FROM A PLAN ENTITLED "BOUNDARY RETRACEMENT SURVEY PLAN OF BERRY PARCEL" FOR AMERICAN HOLDING INC. DATED FEBRUARY 1, 2021 AND REVISED FEBRUARY 8, 2022, PREPARED BY TERRADYN CONSULTANTS, LLC AND PLANS FOR STABLE RIDGE APARTMENTS REVISED THROUGH APRIL 5, 2022, PREPARED BY TERRADYN CONSULTANTS, LLC.

3) OWNER OF RECORD - AMERICAN DEVELOPMENT GROUP, LLC
DEED REFERENCE - 10944/201
TAX MAP 229, LOT 007

4) THE PARCEL IS LOCATED IN THE T-42B ZONING DISTRICT.

5) THE LOCATION, DEPTH, SIZE & EXISTENCE OF ALL UNDERGROUND UTILITY LINES, TANKS AND/OR STRUCTURES WAS NOT VERIFIED. CONTRACTOR SHALL CONTACT DIGSAFE/ON-TARGET PRIOR TO EXCAVATION TO CONFIRM THE LOCATION OF ALL PUBLIC & PRIVATE UTILITIES WITHIN THE PROJECT AREA.

6) THE PARCEL IS NOT LOCATED WITHIN A 100-YEAR FLOOD HAZARD AREA AS SHOWN ON THE F.E.M.A. FLOOD INSURANCE RATE MAP, PANEL #23001C 0328E, DATED JULY 8, 2013.

7) WETLANDS WERE DELINEATED BY FLY CATCHER, LLC.

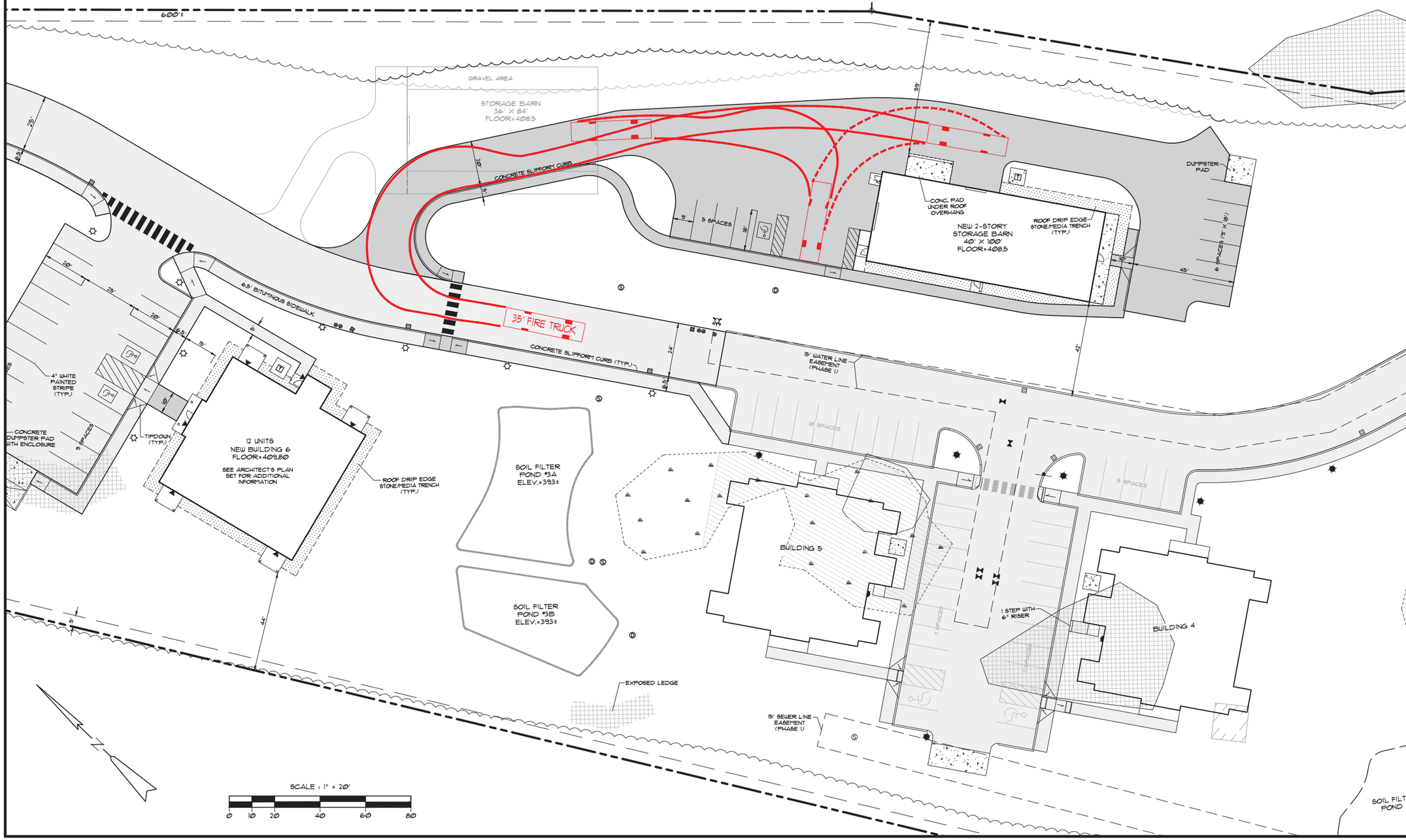
8) SEE LIGHTING PLANS BY OTHERS.

SITE TABULATIONS

TOTAL PARCEL AREA	= 13.26 ACRES
TOTAL (PHASES 1 AND 2)	
BUILDING	= 49,534 sf / 1.14 ACRES (8.6%)
PAVEMENT/GRAVEL	= 132,241 sf / 3.04 ACRES (22.9%)
TOTAL IMPERVIOUS AREA	= 181,775 sf / 4.17 ACRES (31.5%)
BARN MODIFICATIONS	
ADDITIONAL BUILDING AREA	= 1,416 sf
REMOVAL OF GARAGES (4)	= (4,608) sf
REDUCTION OF BUILDING AREA	= (3,192) sf / 6.4% DECREASE
ADDITIONAL IMPERVIOUS AREA	= 11,441 sf / 6.3% INCREASE

LEGEND

- BOUNDARY LINE (SUBJECT PARCEL)
- NEW CATCH BASIN
- NEW SEWER MANHOLE
- NEW HYDRANT
- NEW WATER VALVE
- NEW GAS VALVE
- EXISTING CURB
- NEW CURB
- NEW LIGHT POLE
- NEW TRANSFORMER PAD
- EXISTING BUILDING
- NEW BUILDING
- EXISTING PAVEMENT
- NEW PAVEMENT
- NEW CONCRETE PAD



REV.	DATE:	CHANGES:
1	11/14/23	GRADING CHANGES

DO NOT MODIFY PLAN WITHOUT WRITTEN PERMISSION FROM SJR ENG., INC.

Stoneybrook
Land Use, Inc.
4846 Sun City Center Blvd., #300
Sun City Center, FL 33573-6281

SJR ENGINEERING, INC.
16 THURSTON DRIVE
MONMOUTH, MAINE 04259
(207) 242-6248 tel
steve@sjreng.com
SJR ENGINEERING

SITE PLAN - REVISION 1
STABLE RIDGE APARTMENTS
555 COURT STREET - AUBURN, ME

PREPARED FOR
AMERICAN DEVELOPMENT GROUP
P.O. BOX 1495 - NAPLES, ME 04055

DATE	PROJECT
NOV. 2023	22-006
DRAWN BY	SCALE
BRJ	1" = 20'

SHEET 1

NOTES

1) THE PURPOSE OF THIS PLAN IS TO SHOW REVISIONS TO THE NEW STORAGE BARN AREA. FOR COMPLETE PLANS AND DETAILS PLEASE SEE PLANS OF "STABLE RIDGE APARTMENTS - PHASE 2" REVISED THROUGH MAY 2, 2023, PREPARED BY SJR ENGINEERING.

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3) OWNER OF RECORD - AMERICAN DEVELOPMENT GROUP, LLC
DEED REFERENCE - 16944/201
TAX MAP 229, LOT 8001

4) THE PARCEL IS LOCATED IN THE T-42B ZONING DISTRICT.

5) THE LOCATION, DEPTH, SIZE & EXISTENCE OF ALL UNDERGROUND UTILITY LINES, TANKS AND/OR STRUCTURES WAS NOT VERIFIED. CONTRACTOR SHALL CONTACT DIGSAFE/CN-TARGET PRIOR TO EXCAVATION TO CONFIRM THE LOCATION OF ALL PUBLIC & PRIVATE UTILITIES WITHIN THE PROJECT AREA.

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7) WETLANDS WERE DELINEATED BY FLY CATCHER, LLC.

8) SEE LIGHTING AND LANDSCAPE PLANS BY OTHERS.

SITE TABULATIONS

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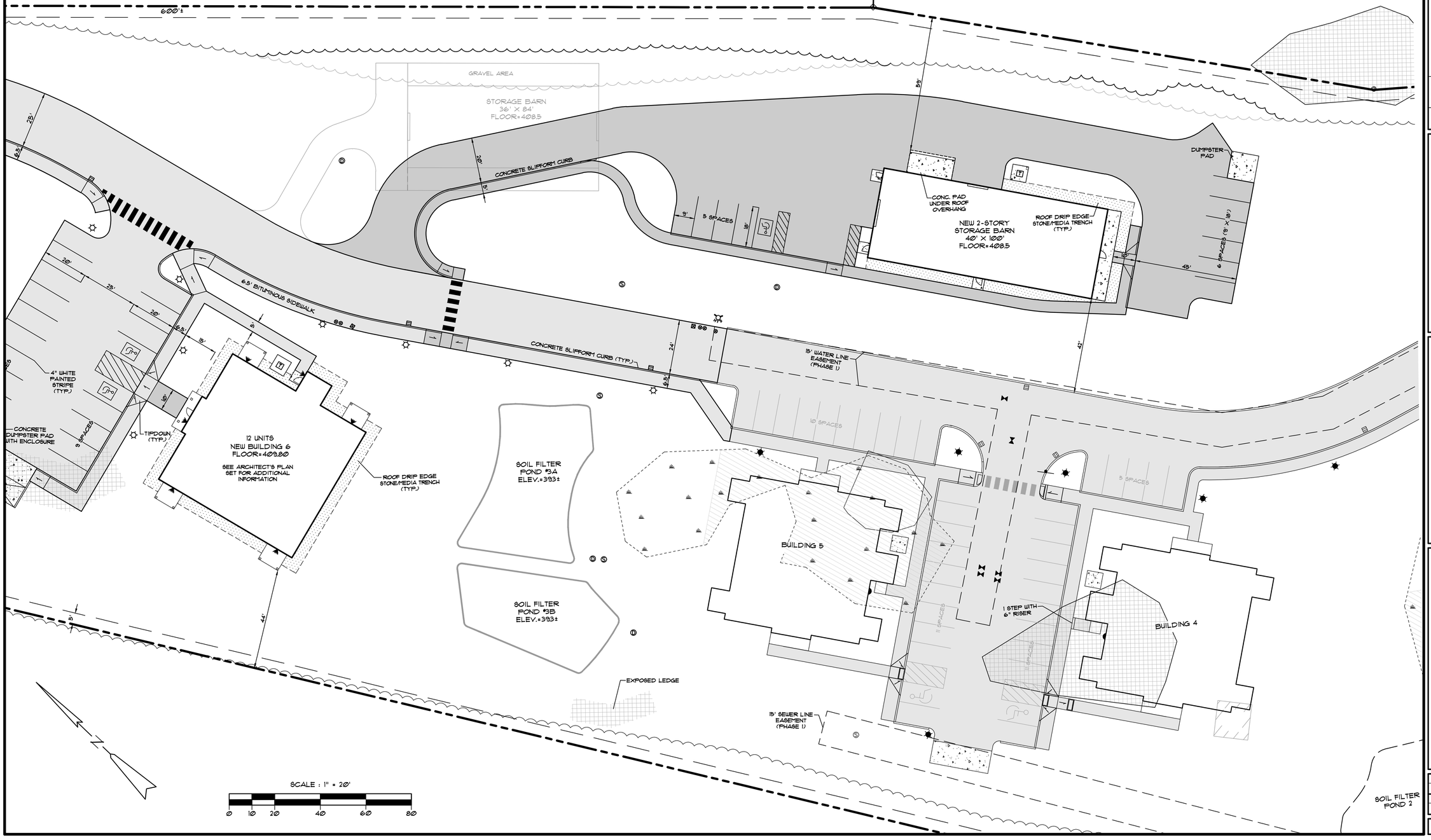
LEGEND

- BOUNDARY LINE (SUBJECT PARCEL)
- NEW CATCH BASIN
- NEW SEWER MANHOLE
- NEW HYDRANT
- NEW WATER VALVE
- NEW GAS VALVE
- EXISTING CURB
- NEW CURB
- NEW LIGHT POLE
- NEW TRANSFORMER PAD
- EXISTING BUILDING
- NEW BUILDING
- EXISTING PAVEMENT
- NEW PAVEMENT
- NEW CONCRETE PAD



STATE OF MAINE
STEPHEN J. ROBERTS
#13350
PROFESSIONAL ENGINEER
FOR APPROVALS ONLY

REV:	DATE:	CHANGES:
1	11/18/23	GRADING CHANGES

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SITE PLAN - REVISION 1
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555 COURT STREET - AUBURN, ME

PREPARED FOR
AMERICAN DEVELOPMENT GROUP
P.O. BOX 1495 - NAPLES, ME 04055

DATE	PROJECT
NOV. 2023	22-006
DRAWN BY	SCALE
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SHEET 1

NOTES

1) BOUNDARY AND EXISTING CONDITIONS INFORMATION WAS TAKEN FROM A PLAN ENTITLED "BOUNDARY RETRACEMENT SURVEY PLAN OF BERRY PARCEL" FOR AMERICAN HOLDING INC. DATED FEBRUARY 1, 2022 AND REVISED FEBRUARY 8, 2022, PREPARED BY TERRADYN CONSULTANTS, LLC AND PLANS FOR STABLE RIDGE APARTMENTS REVISED THROUGH APRIL 5, 2022, PREPARED BY TERRADYN CONSULTANTS, LLC.

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3) ADDITIONAL TOPOGRAPHIC DATA WAS TAKEN FROM LIDAR DATA DATED 2020 AVAILABLE ON THE NOAA WEBSITE.

4) OWNER OF RECORD - AMERICAN DEVELOPMENT GROUP, LLC
DEED REFERENCE - 10944/201
TAX MAP 229, LOT 007

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8) WETLANDS WERE DELINEATED BY FLY CATCHER, LLC.

SCALE : 1" = 20'

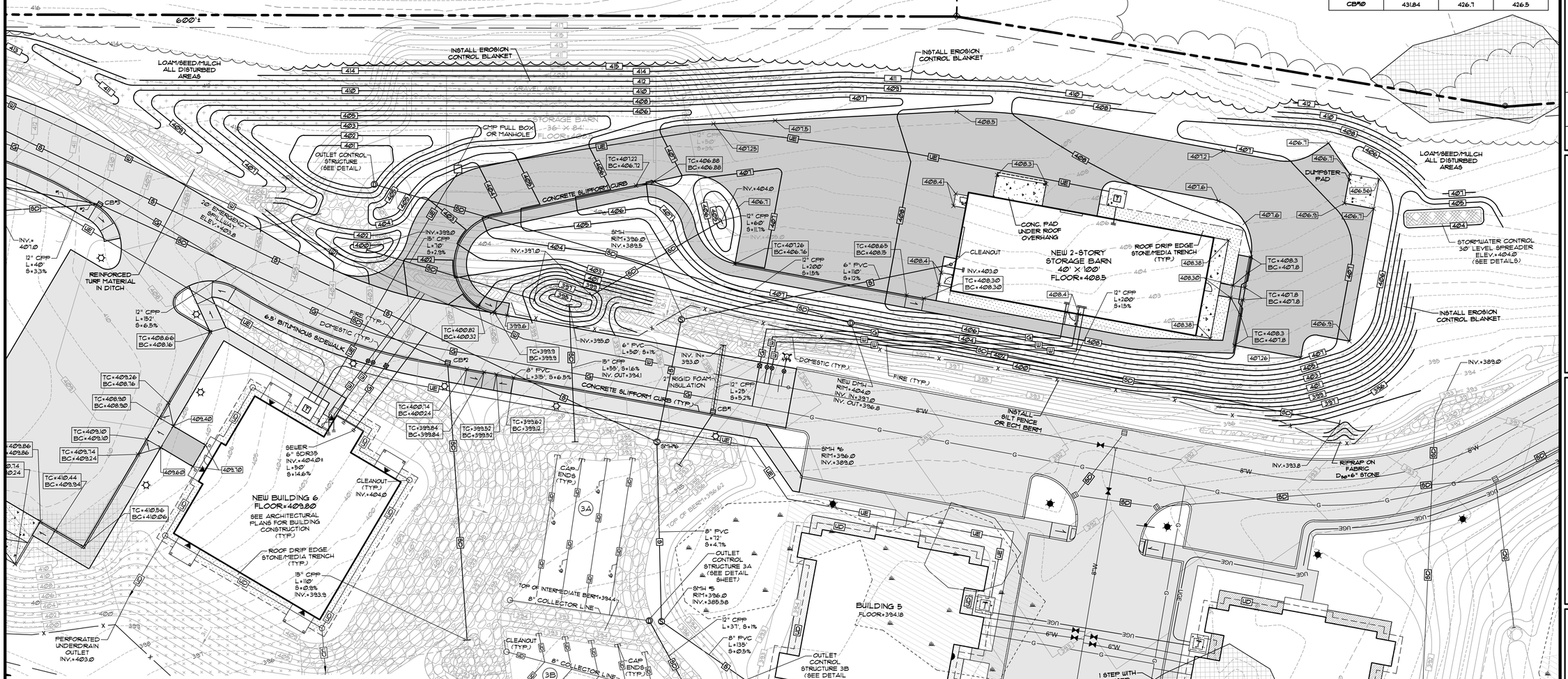
0 10 20 40 60 80

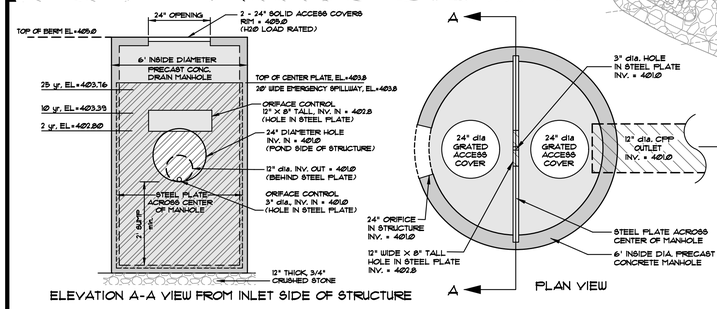
LEGEND

- BOUNDARY LINE (SUBJECT PARCEL)
- NEW CATCH BASIN
- NEW SEWER MANHOLE
- NEW HYDRANT
- NEW WATER VALVE
- NEW GAS VALVE
- 263 EXISTING CONTOUR
- 263 NEW CONTOUR
- SD NEW STORM DRAIN
- W NEW WATER LINE
- S NEW SEWER LINE
- G NEW GAS LINE
- X NEW SILT FENCE
- EXISTING CURB
- NEW CURB
- NEW LIGHT POLE
- T NEW TRANSFORMER PAD
- LEDGE TEST PIT
- 205.4 SPOT GRADE
- EXISTING BUILDING
- NEW BUILDING
- EXISTING PAVEMENT
- NEW PAVEMENT
- NEW RIPRAP
- NEW CONCRETE PAD

CATCH BASIN SCHEDULE

	RIM	INV. IN	INV. OUT
CB#1	394.75	391.69	391.59
CB#2	400.54	395.0	394.9
CB#3	409.57	405.20 (1)	405.00
		405.70 (2)	
CB#4	418.0	412.0	411.8
CB#5	420.22	415.70 (1)	415.50
		415.80 (2)	
CB#6	425.43	420.7	420.5
CB#7	425.43		420.9
CB#8	427.7	422.0 (1)	421.40
		423.0 (2)	
		422.0 (3)	
CB#9	429.7	424.5 (1)	424.30
		425.5 (2)	
CB#10	431.84	426.7	426.5





ELEVATION A-A VIEW FROM INLET SIDE OF STRUCTURE

BYPASS POND - OUTLET CONTROL STRUCTURE DETAIL

(NOT TO SCALE)

STATE OF MAINE — STEPHEN ROBERT JENNINGS — LICENSED PROFESSIONAL ENGINEER — FOR APPROVALS ONLY

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SHEET 2