Drainage Report

~ Tyler Lawn Care Site Development ~

For

Tax Map 16 / Lot 61

N.H. Route 103 & Bagley Hill Road
Warner, New Hampshire

Prepared for:

Tyler Lawn Care

November 15, 2021

Prepared by:
A.C.Engineering & Consulting
43 Bear Hill Road
East Washington, N.H. 03280

1. Project Description

The project will consist of the clearing and re-grading of land on Bagley Hill Road, Warner, N.H. for the construction of a new 6,400 s.f. metal framed commercial building with a 720 s.f. porch, outdoor storage of materials, paved parking and a new leach field for a landscape service business. Disturbance activities will include clearing and grubbing within the limits of the work area, the installation of sediment and erosion controls, removal and stockpile of topsoil and preparation for final grading, paving, building construction and planting and seeding. Approximately 75,000 s.f. of the property will be disturbed for development. There are no proposed wetland impacts for this project.

2. Site Conditions

The site is located at the intersection of N.H. Route 103 and Bagley Hill Road in Warner, N.H. Soils on the property are classified by NRCS as Colton gravelly sandy loam (soil group A) and Turnbridge-Lyman-Becket complex (soil group C) with slopes ranging from 0 to 15%. The site is partially logged with wetlands running through the middle of the property running north-south and eventually discharging offsite to the south east at Route 103.

3. Methodology

Runoff computations have been estimated using the SCS TR-55/TR-20 methodology as implemented by HydroCAD 10.10-6a computer software. Summaries have been provided for the 2, 10 & 50-year storm events and calculations have been provided for the 10-year storm event.

4. Results

	Peak Flow Rates		**Offsite Runoff Volume**	
	Pre-Development	Post Development	Pre-Development	Post Development
2 Year Storm	7.31 cfs	6.42 cfs	1.181 af	1.044 af
10 Year Storm	18.76 cfs	16.64 cfs	2.611 af	2.337 af
50 Year Storm	39.23 cfs	38.18 cfs	5.135 af	4.709 af

5. Erosion Control

Control Measures: Install hay bales, check dams, silt fence and stump grindings as shown on plans. Sediment and erosion control measures shall be in place prior to any excavation operations including the removal of stumps and the removal and stockpile of topsoil. It is recommended that all stumps be ground into mulch and that the mulch be used for erosion control.

Construct additional temporary berms, ditches, traps and basins as may be required during the various phases of construction. Inspect and maintain sediment and erosion control measures on a weekly basis and after every rainfall of 0.5" or greater.

Existing Vegetation & Topsoil: Existing vegetation is to remain undisturbed wherever possible. Stripped topsoil shall be stockpiled, without compaction, and stabilized against erosion. Topsoil stockpiles and disturbed areas where construction activity will temporarily cease for at least 21 days shall be stabilized with temporary seed and straw mulch or stump grindings.

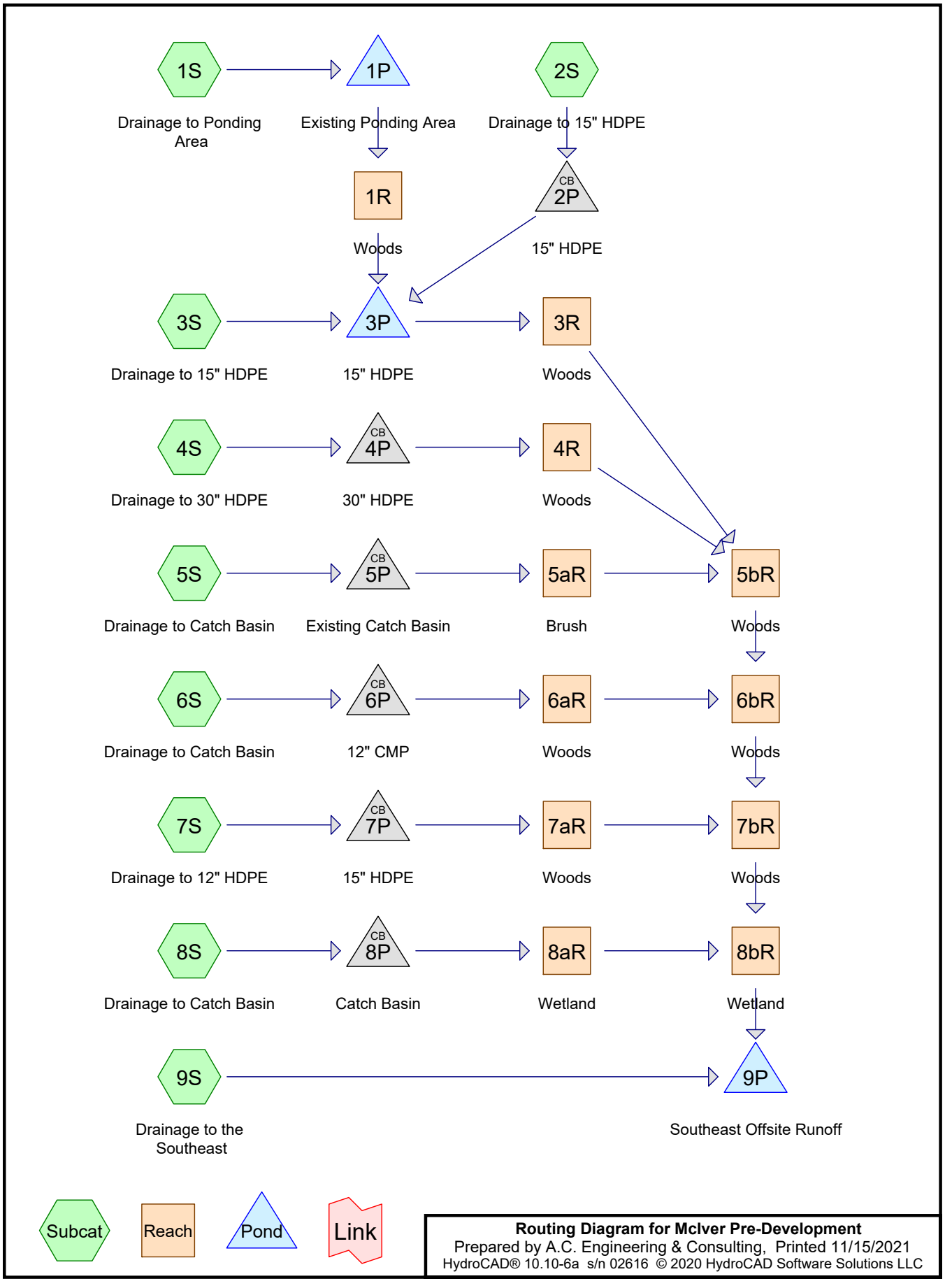
Drainage Structures: Install infiltration trenches and incorporate appropriate sedimentation control measures. The installation of all underground utilities should coincide with that of the drainage structures.

6. Storm Water Control

Drip edge trenches have been provided to collect and infiltrate all roof runoff from the metal building. A majority of site runoff from impervious areas will be directed to infiltration trenches located around the parking and storage areas. The pond has been sized to infiltrate 100% of runoff for the 2 year storm event. Additional infiltration will also be provided for offsite runoff flowing onto the property from an existing culvert under Bagley Hill Road. A spillway has been provided for overflow located at the northeast corner of the proposed parking area. The proposed drainage practices result in decreases in the pre-development peak flow rates and offsite flow volumes for the 2, 10 and 50 year storm events.

Pre-Development Drainage Summaries

2, 10 & 50 Year Storm Events



Routing Diagram for McIver Pre-Development

Prepared by A.C. Engineering & Consulting, Printed 11/15/2021

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2 Year	Type III 24-hr		Default	24.00	1	2.75	2
2	10 Year	Type III 24-hr		Default	24.00	1	4.01	2
3	50 Year	Type III 24-hr		Default	24.00	1	5.86	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.800	39	>75% Grass cover, Good, HSG A (9S)
4.050	74	>75% Grass cover, Good, HSG C (5S, 6S, 7S, 8S, 9S)
0.340	98	Paved roads w/curbs & sewers, HSG A (9S)
0.210	98	Paved roads w/curbs & sewers, HSG C (8S, 9S)
2.150	98	Roofs & Gravel Roads, HSG C (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S)
4.620	73	Woods, Fair, HSG C (1S, 3S, 4S)
1.100	30	Woods, Good, HSG A (9S)
19.270	70	Woods, Good, HSG C (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S)
32.540	**71**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
2.240	HSG A	9S
0.000	HSG B	
30.300	HSG C	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S
0.000	HSG D	
0.000	Other	
32.540		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.800	0.000	4.050	0.000	0.000	4.850	>75% Grass cover, Good	5S, 6S, 7S, 8S, 9S
0.340	0.000	0.210	0.000	0.000	0.550	Paved roads w/curbs & sewers	8S, 9S
0.000	0.000	2.150	0.000	0.000	2.150	Roofs & Gravel Roads	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S
0.000	0.000	4.620	0.000	0.000	4.620	Woods, Fair	1S, 3S, 4S
1.100	0.000	19.270	0.000	0.000	20.370	Woods, Good	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S
2.240	**0.000**	**30.300**	**0.000**	**0.000**	**32.540**	**TOTAL AREA**	

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 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: Drainage to Ponding Area Runoff Area=5.220 ac 0.38% Impervious Runoff Depth>0.66"
Flow Length=800' Tc=21.0 min CN=72 Runoff=2.32 cfs 0.287 af

Subcatchment 2S: Drainage to 15" HDPE Runoff Area=0.640 ac 28.13% Impervious Runoff Depth>0.95"
Flow Length=425' Tc=10.0 min CN=78 Runoff=0.59 cfs 0.051 af

Subcatchment 3S: Drainage to 15" HDPE Runoff Area=5.410 ac 2.40% Impervious Runoff Depth>0.66"
Flow Length=1,260' Tc=31.7 min CN=72 Runoff=2.03 cfs 0.296 af

Subcatchment 4S: Drainage to 30" HDPE Runoff Area=2.700 ac 0.74% Impervious Runoff Depth>0.58"
Flow Length=650' Tc=26.5 min CN=70 Runoff=0.91 cfs 0.129 af

Subcatchment 5S: Drainage to Catch Basin Runoff Area=2.560 ac 10.16% Impervious Runoff Depth>0.75"
Flow Length=540' Tc=21.9 min CN=74 Runoff=1.32 cfs 0.160 af

Subcatchment 6S: Drainage to Catch Basin Runoff Area=0.650 ac 29.23% Impervious Runoff Depth>1.06"
Flow Length=360' Tc=25.4 min CN=80 Runoff=0.48 cfs 0.057 af

Subcatchment 7S: Drainage to 12" HDPE Runoff Area=1.130 ac 17.70% Impervious Runoff Depth>0.84"
Flow Length=430' Tc=26.1 min CN=76 Runoff=0.63 cfs 0.080 af

Subcatchment 8S: Drainage to Catch Basin Runoff Area=2.650 ac 27.55% Impervious Runoff Depth>0.95"
Flow Length=805' Tc=17.0 min CN=78 Runoff=2.03 cfs 0.210 af

Subcatchment 9S: Drainage to the Southeast Runoff Area=11.580 ac 8.38% Impervious Runoff Depth>0.46"
Flow Length=1,595' Tc=28.7 min CN=67 Runoff=2.76 cfs 0.445 af

Reach 1R: Woods Avg. Flow Depth=0.13' Max Vel=2.23 fps Inflow=1.98 cfs 0.281 af
n=0.035 L=540.0' S=0.0722 '/' Capacity=733.95 cfs Outflow=1.94 cfs 0.279 af

Reach 3R: Woods Avg. Flow Depth=0.03' Max Vel=1.41 fps Inflow=0.13 cfs 0.110 af
n=0.035 L=625.0' S=0.1824 '/' Capacity=1,166.39 cfs Outflow=0.13 cfs 0.107 af

Reach 4R: Woods Avg. Flow Depth=0.05' Max Vel=1.98 fps Inflow=0.91 cfs 0.129 af
n=0.035 L=350.0' S=0.1886 '/' Capacity=118.15 cfs Outflow=0.90 cfs 0.129 af

Reach 5aR: Brush Avg. Flow Depth=0.08' Max Vel=2.26 fps Inflow=1.32 cfs 0.160 af
n=0.035 L=210.0' S=0.1286 '/' Capacity=1,226.02 cfs Outflow=1.31 cfs 0.160 af

Reach 5bR: Woods Avg. Flow Depth=0.10' Max Vel=2.36 fps Inflow=2.14 cfs 0.396 af
n=0.035 L=175.0' S=0.1029 '/' Capacity=5,561.52 cfs Outflow=2.13 cfs 0.395 af

Reach 6aR: Woods Avg. Flow Depth=0.04' Max Vel=1.41 fps Inflow=0.48 cfs 0.057 af
n=0.035 L=250.0' S=0.1240 '/' Capacity=95.81 cfs Outflow=0.47 cfs 0.057 af

Reach 6bR: Woods Avg. Flow Depth=0.13' Max Vel=1.66 fps Inflow=2.60 cfs 0.452 af
n=0.035 L=150.0' S=0.0400 '/' Capacity=215.85 cfs Outflow=2.58 cfs 0.451 af

Reach 7aR: Woods Avg. Flow Depth=0.06' Max Vel=1.62 fps Inflow=0.63 cfs 0.080 af
n=0.035 L=265.0' S=0.0943 '/' Capacity=1,050.20 cfs Outflow=0.63 cfs 0.079 af

Reach 7bR: Woods Avg. Flow Depth=0.15' Max Vel=2.07 fps Inflow=3.20 cfs 0.530 af
n=0.035 L=290.0' S=0.0517 '/' Capacity=196.29 cfs Outflow=3.17 cfs 0.528 af

Reach 8aR: Wetland Avg. Flow Depth=0.14' Max Vel=1.60 fps Inflow=2.03 cfs 0.210 af
n=0.035 L=300.0' S=0.0333 '/' Capacity=624.26 cfs Outflow=1.97 cfs 0.209 af

Reach 8bR: Wetland Avg. Flow Depth=0.23' Max Vel=2.55 fps Inflow=4.58 cfs 0.737 af
n=0.035 L=90.0' S=0.0444 '/' Capacity=503.12 cfs Outflow=4.57 cfs 0.736 af

Pond 1P: Existing Ponding Area Peak Elev=851.46' Storage=0.035 af Inflow=2.32 cfs 0.287 af
Outflow=1.98 cfs 0.281 af

Pond 2P: 15" HDPE Peak Elev=815.41' Inflow=0.59 cfs 0.051 af
15.0" Round Culvert n=0.013 L=40.0' S=0.0500 '/' Outflow=0.59 cfs 0.051 af

Pond 3P: 15" HDPE Peak Elev=809.18' Storage=0.514 af Inflow=4.07 cfs 0.627 af
15.0" Round Culvert n=0.013 L=50.0' S=0.0200 '/' Outflow=0.13 cfs 0.110 af

Pond 4P: 30" HDPE Peak Elev=766.41' Inflow=0.91 cfs 0.129 af
30.0" Round Culvert n=0.013 L=40.0' S=0.1000 '/' Outflow=0.91 cfs 0.129 af

Pond 5P: Existing Catch Basin Peak Elev=730.52' Inflow=1.32 cfs 0.160 af
18.0" Round Culvert n=0.013 L=80.0' S=0.1000 '/' Outflow=1.32 cfs 0.160 af

Pond 6P: 12" CMP Peak Elev=710.39' Inflow=0.48 cfs 0.057 af
12.0" Round Culvert n=0.025 L=30.0' S=0.0333 '/' Outflow=0.48 cfs 0.057 af

Pond 7P: 15" HDPE Peak Elev=698.85' Inflow=0.63 cfs 0.080 af
15.0" Round Culvert n=0.013 L=40.0' S=0.0330 '/' Outflow=0.63 cfs 0.080 af

Pond 8P: Catch Basin Peak Elev=667.00' Inflow=2.03 cfs 0.210 af
15.0" Round Culvert n=0.020 L=160.0' S=0.0141 '/' Outflow=2.03 cfs 0.210 af

Pond 9P: Southeast Offsite Runoff Inflow=7.31 cfs 1.181 af
Primary=7.31 cfs 1.181 af

Total Runoff Area = 32.540 ac Runoff Volume = 1.715 af Average Runoff Depth = 0.63"
91.70% Pervious = 29.840 ac 8.30% Impervious = 2.700 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 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: Drainage to Ponding Area Runoff Area=5.220 ac 0.38% Impervious Runoff Depth>1.46"
Flow Length=800' Tc=21.0 min CN=72 Runoff=5.70 cfs 0.635 af

Subcatchment 2S: Drainage to 15" HDPE Runoff Area=0.640 ac 28.13% Impervious Runoff Depth>1.89"
Flow Length=425' Tc=10.0 min CN=78 Runoff=1.22 cfs 0.101 af

Subcatchment 3S: Drainage to 15" HDPE Runoff Area=5.410 ac 2.40% Impervious Runoff Depth>1.46"
Flow Length=1,260' Tc=31.7 min CN=72 Runoff=4.95 cfs 0.656 af

Subcatchment 4S: Drainage to 30" HDPE Runoff Area=2.700 ac 0.74% Impervious Runoff Depth>1.33"
Flow Length=650' Tc=26.5 min CN=70 Runoff=2.39 cfs 0.299 af

Subcatchment 5S: Drainage to Catch Basin Runoff Area=2.560 ac 10.16% Impervious Runoff Depth>1.60"
Flow Length=540' Tc=21.9 min CN=74 Runoff=3.04 cfs 0.340 af

Subcatchment 6S: Drainage to Catch Basin Runoff Area=0.650 ac 29.23% Impervious Runoff Depth>2.04"
Flow Length=360' Tc=25.4 min CN=80 Runoff=0.95 cfs 0.110 af

Subcatchment 7S: Drainage to 12" HDPE Runoff Area=1.130 ac 17.70% Impervious Runoff Depth>1.74"
Flow Length=430' Tc=26.1 min CN=76 Runoff=1.37 cfs 0.163 af

Subcatchment 8S: Drainage to Catch Basin Runoff Area=2.650 ac 27.55% Impervious Runoff Depth>1.89"
Flow Length=805' Tc=17.0 min CN=78 Runoff=4.19 cfs 0.417 af

Subcatchment 9S: Drainage to the Southeast Runoff Area=11.580 ac 8.38% Impervious Runoff Depth>1.14"
Flow Length=1,595' Tc=28.7 min CN=67 Runoff=8.28 cfs 1.102 af

Reach 1R: Woods Avg. Flow Depth=0.20' Max Vel=3.02 fps Inflow=5.35 cfs 0.626 af
n=0.035 L=540.0' S=0.0722 '/' Capacity=733.95 cfs Outflow=5.28 cfs 0.624 af

Reach 3R: Woods Avg. Flow Depth=0.04' Max Vel=1.59 fps Inflow=0.22 cfs 0.195 af
n=0.035 L=625.0' S=0.1824 '/' Capacity=1,166.39 cfs Outflow=0.22 cfs 0.191 af

Reach 4R: Woods Avg. Flow Depth=0.08' Max Vel=2.66 fps Inflow=2.39 cfs 0.299 af
n=0.035 L=350.0' S=0.1886 '/' Capacity=118.15 cfs Outflow=2.37 cfs 0.298 af

Reach 5aR: Brush Avg. Flow Depth=0.12' Max Vel=2.91 fps Inflow=3.04 cfs 0.340 af
n=0.035 L=210.0' S=0.1286 '/' Capacity=1,226.02 cfs Outflow=3.02 cfs 0.340 af

Reach 5bR: Woods Avg. Flow Depth=0.16' Max Vel=3.07 fps Inflow=5.28 cfs 0.828 af
n=0.035 L=175.0' S=0.1029 '/' Capacity=5,561.52 cfs Outflow=5.25 cfs 0.827 af

Reach 6aR: Woods Avg. Flow Depth=0.06' Max Vel=1.73 fps Inflow=0.95 cfs 0.110 af
n=0.035 L=250.0' S=0.1240 '/' Capacity=95.81 cfs Outflow=0.94 cfs 0.110 af

Reach 6bR: Woods Avg. Flow Depth=0.19' Max Vel=2.17 fps Inflow=6.19 cfs 0.937 af
n=0.035 L=150.0' S=0.0400 '/' Capacity=215.85 cfs Outflow=6.16 cfs 0.935 af

Reach 7aR: Woods Avg. Flow Depth=0.09' Max Vel=2.05 fps Inflow=1.37 cfs 0.163 af
n=0.035 L=265.0' S=0.0943 '/' Capacity=1,050.20 cfs Outflow=1.36 cfs 0.163 af

Reach 7bR: Woods Avg. Flow Depth=0.22' Max Vel=2.69 fps Inflow=7.51 cfs 1.098 af
n=0.035 L=290.0' S=0.0517 '/' Capacity=196.29 cfs Outflow=7.45 cfs 1.095 af

Reach 8aR: Wetland Avg. Flow Depth=0.20' Max Vel=2.00 fps Inflow=4.19 cfs 0.417 af
n=0.035 L=300.0' S=0.0333 '/' Capacity=624.26 cfs Outflow=4.11 cfs 0.416 af

Reach 8bR: Wetland Avg. Flow Depth=0.33' Max Vel=3.29 fps Inflow=10.53 cfs 1.511 af
n=0.035 L=90.0' S=0.0444 '/' Capacity=503.12 cfs Outflow=10.51 cfs 1.510 af

Pond 1P: Existing Ponding Area Peak Elev=851.72' Storage=0.058 af Inflow=5.70 cfs 0.635 af
Outflow=5.35 cfs 0.626 af

Pond 2P: 15" HDPE Peak Elev=815.60' Inflow=1.22 cfs 0.101 af
15.0" Round Culvert n=0.013 L=40.0' S=0.0500 '/' Outflow=1.22 cfs 0.101 af

Pond 3P: 15" HDPE Peak Elev=809.24' Storage=1.184 af Inflow=10.72 cfs 1.381 af
15.0" Round Culvert n=0.013 L=50.0' S=0.0200 '/' Outflow=0.22 cfs 0.195 af

Pond 4P: 30" HDPE Peak Elev=766.68' Inflow=2.39 cfs 0.299 af
30.0" Round Culvert n=0.013 L=40.0' S=0.1000 '/' Outflow=2.39 cfs 0.299 af

Pond 5P: Existing Catch Basin Peak Elev=730.82' Inflow=3.04 cfs 0.340 af
18.0" Round Culvert n=0.013 L=80.0' S=0.1000 '/' Outflow=3.04 cfs 0.340 af

Pond 6P: 12" CMP Peak Elev=710.57' Inflow=0.95 cfs 0.110 af
12.0" Round Culvert n=0.025 L=30.0' S=0.0333 '/' Outflow=0.95 cfs 0.110 af

Pond 7P: 15" HDPE Peak Elev=699.07' Inflow=1.37 cfs 0.163 af
15.0" Round Culvert n=0.013 L=40.0' S=0.0330 '/' Outflow=1.37 cfs 0.163 af

Pond 8P: Catch Basin Peak Elev=667.45' Inflow=4.19 cfs 0.417 af
15.0" Round Culvert n=0.020 L=160.0' S=0.0141 '/' Outflow=4.19 cfs 0.417 af

Pond 9P: Southeast Offsite Runoff Inflow=18.76 cfs 2.611 af
Primary=18.76 cfs 2.611 af

Total Runoff Area = 32.540 ac Runoff Volume = 3.824 af Average Runoff Depth = 1.41"
91.70% Pervious = 29.840 ac 8.30% Impervious = 2.700 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 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: Drainage to Ponding Area Runoff Area=5.220 ac 0.38% Impervious Runoff Depth>2.87"
Flow Length=800' Tc=21.0 min CN=72 Runoff=11.55 cfs 1.247 af

Subcatchment 2S: Drainage to 15" HDPE Runoff Area=0.640 ac 28.13% Impervious Runoff Depth>3.45"
Flow Length=425' Tc=10.0 min CN=78 Runoff=2.24 cfs 0.184 af

Subcatchment 3S: Drainage to 15" HDPE Runoff Area=5.410 ac 2.40% Impervious Runoff Depth>2.86"
Flow Length=1,260' Tc=31.7 min CN=72 Runoff=10.02 cfs 1.289 af

Subcatchment 4S: Drainage to 30" HDPE Runoff Area=2.700 ac 0.74% Impervious Runoff Depth>2.68"
Flow Length=650' Tc=26.5 min CN=70 Runoff=5.04 cfs 0.603 af

Subcatchment 5S: Drainage to Catch Basin Runoff Area=2.560 ac 10.16% Impervious Runoff Depth>3.05"
Flow Length=540' Tc=21.9 min CN=74 Runoff=5.95 cfs 0.652 af

Subcatchment 6S: Drainage to Catch Basin Runoff Area=0.650 ac 29.23% Impervious Runoff Depth>3.64"
Flow Length=360' Tc=25.4 min CN=80 Runoff=1.69 cfs 0.197 af

Subcatchment 7S: Drainage to 12" HDPE Runoff Area=1.130 ac 17.70% Impervious Runoff Depth>3.24"
Flow Length=430' Tc=26.1 min CN=76 Runoff=2.59 cfs 0.305 af

Subcatchment 8S: Drainage to Catch Basin Runoff Area=2.650 ac 27.55% Impervious Runoff Depth>3.44"
Flow Length=805' Tc=17.0 min CN=78 Runoff=7.69 cfs 0.761 af

Subcatchment 9S: Drainage to the Southeast Runoff Area=11.580 ac 8.38% Impervious Runoff Depth>2.41"
Flow Length=1,595' Tc=28.7 min CN=67 Runoff=18.61 cfs 2.324 af

Reach 1R: Woods Avg. Flow Depth=0.29' Max Vel=3.80 fps Inflow=11.29 cfs 1.236 af
n=0.035 L=540.0' S=0.0722 '/' Capacity=733.95 cfs Outflow=11.08 cfs 1.232 af

Reach 3R: Woods Avg. Flow Depth=0.05' Max Vel=1.84 fps Inflow=0.35 cfs 0.314 af
n=0.035 L=625.0' S=0.1824 '/' Capacity=1,166.39 cfs Outflow=0.35 cfs 0.308 af

Reach 4R: Woods Avg. Flow Depth=0.12' Max Vel=3.36 fps Inflow=5.04 cfs 0.603 af
n=0.035 L=350.0' S=0.1886 '/' Capacity=118.15 cfs Outflow=5.00 cfs 0.602 af

Reach 5aR: Brush Avg. Flow Depth=0.17' Max Vel=3.58 fps Inflow=5.95 cfs 0.652 af
n=0.035 L=210.0' S=0.1286 '/' Capacity=1,226.02 cfs Outflow=5.90 cfs 0.651 af

Reach 5bR: Woods Avg. Flow Depth=0.22' Max Vel=3.84 fps Inflow=10.77 cfs 1.561 af
n=0.035 L=175.0' S=0.1029 '/' Capacity=5,561.52 cfs Outflow=10.73 cfs 1.559 af

Reach 6aR: Woods Avg. Flow Depth=0.08' Max Vel=2.07 fps Inflow=1.69 cfs 0.197 af
n=0.035 L=250.0' S=0.1240 '/' Capacity=95.81 cfs Outflow=1.68 cfs 0.197 af

Reach 6bR: Woods Avg. Flow Depth=0.27' Max Vel=2.69 fps Inflow=12.40 cfs 1.756 af
n=0.035 L=150.0' S=0.0400 '/' Capacity=215.85 cfs Outflow=12.32 cfs 1.753 af

Reach 7aR: Woods Avg. Flow Depth=0.12' Max Vel=2.49 fps Inflow=2.59 cfs 0.305 af
n=0.035 L=265.0' S=0.0943 '/' Capacity=1,050.20 cfs Outflow=2.57 cfs 0.305 af

Reach 7bR: Woods Avg. Flow Depth=0.30' Max Vel=3.33 fps Inflow=14.89 cfs 2.058 af
n=0.035 L=290.0' S=0.0517 '/' Capacity=196.29 cfs Outflow=14.79 cfs 2.053 af

Reach 8aR: Wetland Avg. Flow Depth=0.26' Max Vel=2.42 fps Inflow=7.69 cfs 0.761 af
n=0.035 L=300.0' S=0.0333 '/' Capacity=624.26 cfs Outflow=7.55 cfs 0.759 af

Reach 8bR: Wetland Avg. Flow Depth=0.46' Max Vel=4.05 fps Inflow=20.71 cfs 2.812 af
n=0.035 L=90.0' S=0.0444 '/' Capacity=503.12 cfs Outflow=20.65 cfs 2.811 af

Pond 1P: Existing Ponding Area Peak Elev=852.01' Storage=0.085 af Inflow=11.55 cfs 1.247 af
Outflow=11.29 cfs 1.236 af

Pond 2P: 15" HDPE Peak Elev=815.86' Inflow=2.24 cfs 0.184 af
15.0" Round Culvert n=0.013 L=40.0' S=0.0500 '/' Outflow=2.24 cfs 0.184 af

Pond 3P: 15" HDPE Peak Elev=809.31' Storage=2.385 af Inflow=22.02 cfs 2.706 af
15.0" Round Culvert n=0.013 L=50.0' S=0.0200 '/' Outflow=0.35 cfs 0.314 af

Pond 4P: 30" HDPE Peak Elev=767.01' Inflow=5.04 cfs 0.603 af
30.0" Round Culvert n=0.013 L=40.0' S=0.1000 '/' Outflow=5.04 cfs 0.603 af

Pond 5P: Existing Catch Basin Peak Elev=731.24' Inflow=5.95 cfs 0.652 af
18.0" Round Culvert n=0.013 L=80.0' S=0.1000 '/' Outflow=5.95 cfs 0.652 af

Pond 6P: 12" CMP Peak Elev=710.82' Inflow=1.69 cfs 0.197 af
12.0" Round Culvert n=0.025 L=30.0' S=0.0333 '/' Outflow=1.69 cfs 0.197 af

Pond 7P: 15" HDPE Peak Elev=699.37' Inflow=2.59 cfs 0.305 af
15.0" Round Culvert n=0.013 L=40.0' S=0.0330 '/' Outflow=2.59 cfs 0.305 af

Pond 8P: Catch Basin Peak Elev=671.54' Inflow=7.69 cfs 0.761 af
15.0" Round Culvert n=0.020 L=160.0' S=0.0141 '/' Outflow=7.69 cfs 0.761 af

Pond 9P: Southeast Offsite Runoff Inflow=39.23 cfs 5.135 af
Primary=39.23 cfs 5.135 af

Total Runoff Area = 32.540 ac Runoff Volume = 7.562 af Average Runoff Depth = 2.79"
91.70% Pervious = 29.840 ac 8.30% Impervious = 2.700 ac

Pre-Development Drainage Calculations

10 Year Storm Event

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 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: Drainage to Ponding Area Runoff Area=5.220 ac 0.38% Impervious Runoff Depth>1.46"
Flow Length=800' Tc=21.0 min CN=72 Runoff=5.70 cfs 0.635 af

Subcatchment 2S: Drainage to 15" HDPE Runoff Area=0.640 ac 28.13% Impervious Runoff Depth>1.89"
Flow Length=425' Tc=10.0 min CN=78 Runoff=1.22 cfs 0.101 af

Subcatchment 3S: Drainage to 15" HDPE Runoff Area=5.410 ac 2.40% Impervious Runoff Depth>1.46"
Flow Length=1,260' Tc=31.7 min CN=72 Runoff=4.95 cfs 0.656 af

Subcatchment 4S: Drainage to 30" HDPE Runoff Area=2.700 ac 0.74% Impervious Runoff Depth>1.33"
Flow Length=650' Tc=26.5 min CN=70 Runoff=2.39 cfs 0.299 af

Subcatchment 5S: Drainage to Catch Basin Runoff Area=2.560 ac 10.16% Impervious Runoff Depth>1.60"
Flow Length=540' Tc=21.9 min CN=74 Runoff=3.04 cfs 0.340 af

Subcatchment 6S: Drainage to Catch Basin Runoff Area=0.650 ac 29.23% Impervious Runoff Depth>2.04"
Flow Length=360' Tc=25.4 min CN=80 Runoff=0.95 cfs 0.110 af

Subcatchment 7S: Drainage to 12" HDPE Runoff Area=1.130 ac 17.70% Impervious Runoff Depth>1.74"
Flow Length=430' Tc=26.1 min CN=76 Runoff=1.37 cfs 0.163 af

Subcatchment 8S: Drainage to Catch Basin Runoff Area=2.650 ac 27.55% Impervious Runoff Depth>1.89"
Flow Length=805' Tc=17.0 min CN=78 Runoff=4.19 cfs 0.417 af

Subcatchment 9S: Drainage to the Southeast Runoff Area=11.580 ac 8.38% Impervious Runoff Depth>1.14"
Flow Length=1,595' Tc=28.7 min CN=67 Runoff=8.28 cfs 1.102 af

Reach 1R: Woods Avg. Flow Depth=0.20' Max Vel=3.02 fps Inflow=5.35 cfs 0.626 af
n=0.035 L=540.0' S=0.0722 '/' Capacity=733.95 cfs Outflow=5.28 cfs 0.624 af

Reach 3R: Woods Avg. Flow Depth=0.04' Max Vel=1.59 fps Inflow=0.22 cfs 0.195 af
n=0.035 L=625.0' S=0.1824 '/' Capacity=1,166.39 cfs Outflow=0.22 cfs 0.191 af

Reach 4R: Woods Avg. Flow Depth=0.08' Max Vel=2.66 fps Inflow=2.39 cfs 0.299 af
n=0.035 L=350.0' S=0.1886 '/' Capacity=118.15 cfs Outflow=2.37 cfs 0.298 af

Reach 5aR: Brush Avg. Flow Depth=0.12' Max Vel=2.91 fps Inflow=3.04 cfs 0.340 af
n=0.035 L=210.0' S=0.1286 '/' Capacity=1,226.02 cfs Outflow=3.02 cfs 0.340 af

Reach 5bR: Woods Avg. Flow Depth=0.16' Max Vel=3.07 fps Inflow=5.28 cfs 0.828 af
n=0.035 L=175.0' S=0.1029 '/' Capacity=5,561.52 cfs Outflow=5.25 cfs 0.827 af

Reach 6aR: Woods Avg. Flow Depth=0.06' Max Vel=1.73 fps Inflow=0.95 cfs 0.110 af
n=0.035 L=250.0' S=0.1240 '/' Capacity=95.81 cfs Outflow=0.94 cfs 0.110 af

Reach 6bR: Woods Avg. Flow Depth=0.19' Max Vel=2.17 fps Inflow=6.19 cfs 0.937 af
n=0.035 L=150.0' S=0.0400 '/' Capacity=215.85 cfs Outflow=6.16 cfs 0.935 af

Reach 7aR: Woods Avg. Flow Depth=0.09' Max Vel=2.05 fps Inflow=1.37 cfs 0.163 af
n=0.035 L=265.0' S=0.0943 '/' Capacity=1,050.20 cfs Outflow=1.36 cfs 0.163 af

Reach 7bR: Woods Avg. Flow Depth=0.22' Max Vel=2.69 fps Inflow=7.51 cfs 1.098 af
n=0.035 L=290.0' S=0.0517 '/' Capacity=196.29 cfs Outflow=7.45 cfs 1.095 af

Reach 8aR: Wetland Avg. Flow Depth=0.20' Max Vel=2.00 fps Inflow=4.19 cfs 0.417 af
n=0.035 L=300.0' S=0.0333 '/' Capacity=624.26 cfs Outflow=4.11 cfs 0.416 af

Reach 8bR: Wetland Avg. Flow Depth=0.33' Max Vel=3.29 fps Inflow=10.53 cfs 1.511 af
n=0.035 L=90.0' S=0.0444 '/' Capacity=503.12 cfs Outflow=10.51 cfs 1.510 af

Pond 1P: Existing Ponding Area Peak Elev=851.72' Storage=0.058 af Inflow=5.70 cfs 0.635 af
Outflow=5.35 cfs 0.626 af

Pond 2P: 15" HDPE Peak Elev=815.60' Inflow=1.22 cfs 0.101 af
15.0" Round Culvert n=0.013 L=40.0' S=0.0500 '/' Outflow=1.22 cfs 0.101 af

Pond 3P: 15" HDPE Peak Elev=809.24' Storage=1.184 af Inflow=10.72 cfs 1.381 af
15.0" Round Culvert n=0.013 L=50.0' S=0.0200 '/' Outflow=0.22 cfs 0.195 af

Pond 4P: 30" HDPE Peak Elev=766.68' Inflow=2.39 cfs 0.299 af
30.0" Round Culvert n=0.013 L=40.0' S=0.1000 '/' Outflow=2.39 cfs 0.299 af

Pond 5P: Existing Catch Basin Peak Elev=730.82' Inflow=3.04 cfs 0.340 af
18.0" Round Culvert n=0.013 L=80.0' S=0.1000 '/' Outflow=3.04 cfs 0.340 af

Pond 6P: 12" CMP Peak Elev=710.57' Inflow=0.95 cfs 0.110 af
12.0" Round Culvert n=0.025 L=30.0' S=0.0333 '/' Outflow=0.95 cfs 0.110 af

Pond 7P: 15" HDPE Peak Elev=699.07' Inflow=1.37 cfs 0.163 af
15.0" Round Culvert n=0.013 L=40.0' S=0.0330 '/' Outflow=1.37 cfs 0.163 af

Pond 8P: Catch Basin Peak Elev=667.45' Inflow=4.19 cfs 0.417 af
15.0" Round Culvert n=0.020 L=160.0' S=0.0141 '/' Outflow=4.19 cfs 0.417 af

Pond 9P: Southeast Offsite Runoff Inflow=18.76 cfs 2.611 af
Primary=18.76 cfs 2.611 af

Total Runoff Area = 32.540 ac Runoff Volume = 3.824 af Average Runoff Depth = 1.41"
91.70% Pervious = 29.840 ac 8.30% Impervious = 2.700 ac

Summary for Subcatchment 1S: Drainage to Ponding Area

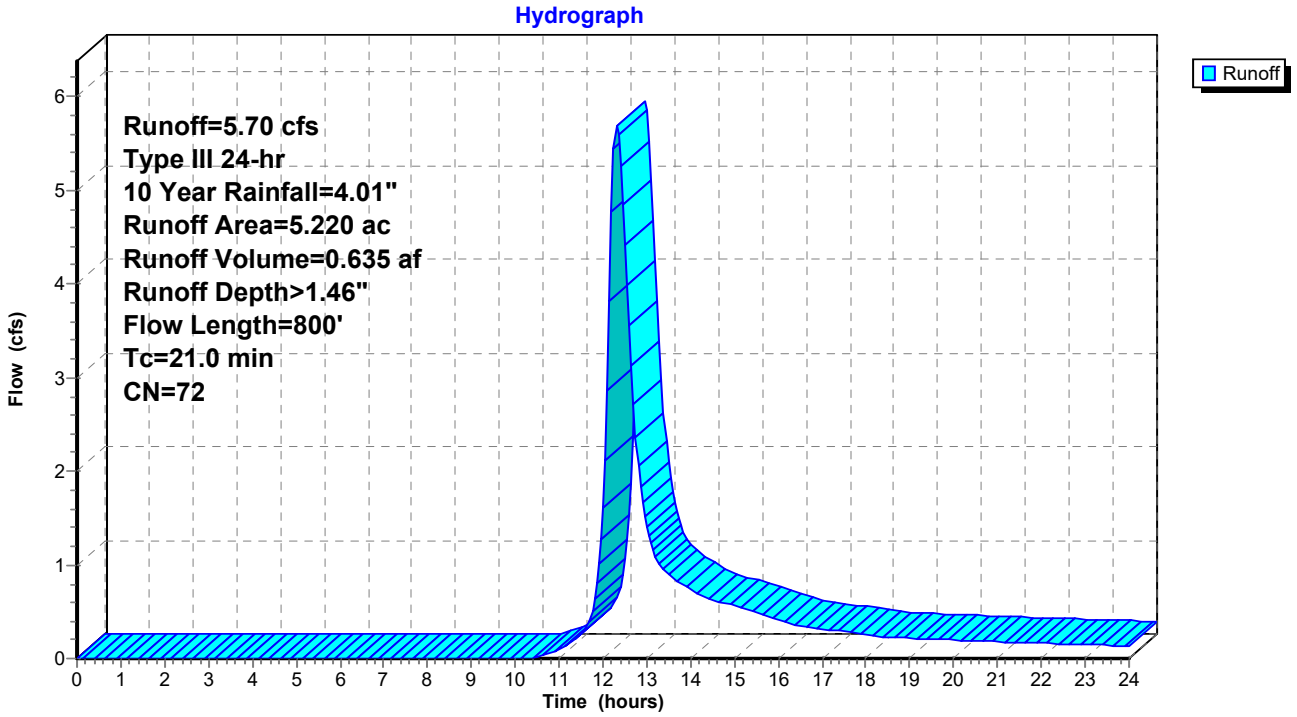
Runoff = 5.70 cfs @ 12.31 hrs, Volume= 0.635 af, Depth> 1.46"
Routed to Pond 1P : Existing Ponding Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.01"

	Area (ac)	CN	Description
	2.540	70	Woods, Good, HSG C
	2.660	73	Woods, Fair, HSG C
*	0.020	98	Roofs & Gravel Roads, HSG C
	5.220	72	Weighted Average
	5.200		99.62% Pervious Area
	0.020		0.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	100	0.3000	0.12		**Sheet Flow, Woods**
					Woods: Dense underbrush n= 0.800 P2= 2.75"
2.2	200	0.3750	1.53		**Shallow Concentrated Flow, Woods**
					Forest w/Heavy Litter Kv= 2.5 fps
3.4	450	0.1900	2.18		**Shallow Concentrated Flow, Light Woods**
					Woodland Kv= 5.0 fps
1.7	50	0.0400	0.50		**Shallow Concentrated Flow, Woods**
					Forest w/Heavy Litter Kv= 2.5 fps
21.0	800	Total			

Subcatchment 1S: Drainage to Ponding Area



Summary for Subcatchment 2S: Drainage to 15" HDPE

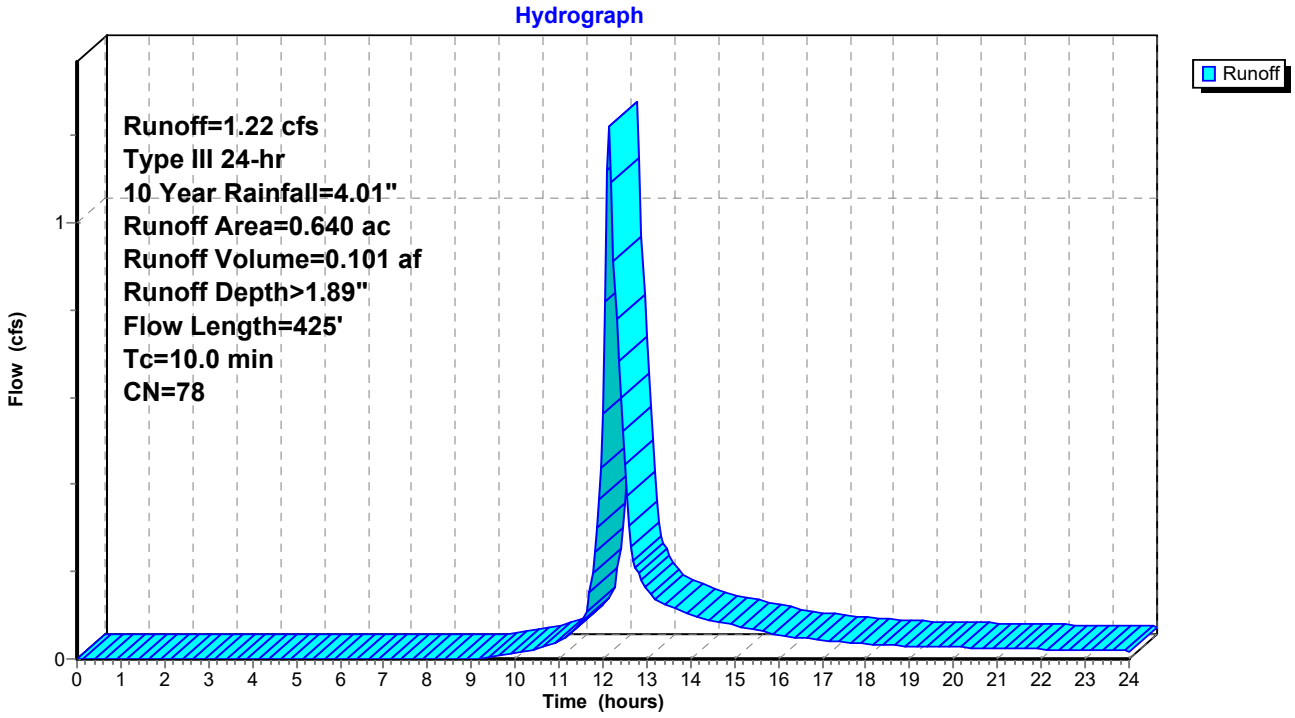
Runoff = 1.22 cfs @ 12.15 hrs, Volume= 0.101 af, Depth> 1.89"
Routed to Pond 2P : 15" HDPE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.01"

	Area (ac)	CN	Description
	0.460	70	Woods, Good, HSG C
*	0.180	98	Roofs & Gravel Roads, HSG C
	0.640	78	Weighted Average
	0.460		71.88% Pervious Area
	0.180		28.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	40	0.1500	0.08		**Sheet Flow, Woods** Woods: Dense underbrush n= 0.800 P2= 2.75"
1.3	385	0.0900	4.83		**Shallow Concentrated Flow, Edge of Travelway** Unpaved Kv= 16.1 fps
10.0	425	Total			

Subcatchment 2S: Drainage to 15" HDPE



Summary for Subcatchment 3S: Drainage to 15" HDPE

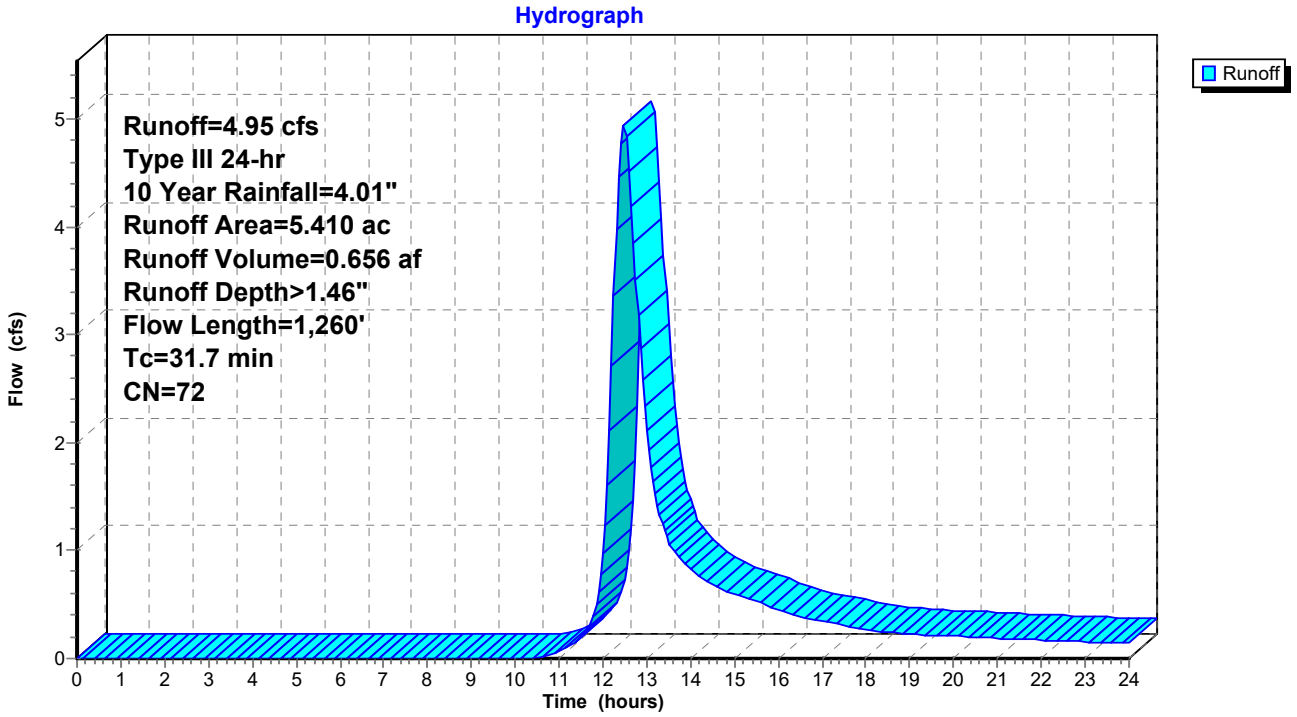
Runoff = 4.95 cfs @ 12.47 hrs, Volume= 0.656 af, Depth> 1.46"
Routed to Pond 3P : 15" HDPE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.01"

	Area (ac)	CN	Description
	3.390	70	Woods, Good, HSG C
	1.890	73	Woods, Fair, HSG C
*	0.130	98	Roofs & Gravel Roads, HSG C
	5.410	72	Weighted Average
	5.280		97.60% Pervious Area
	0.130		2.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	100	0.3300	0.13		**Sheet Flow, Woods**
					Woods: Dense underbrush n= 0.800 P2= 2.75"
9.8	640	0.1900	1.09		**Shallow Concentrated Flow, Woods**
					Forest w/Heavy Litter Kv= 2.5 fps
2.0	270	0.2100	2.29		**Shallow Concentrated Flow, Light Woods**
					Woodland Kv= 5.0 fps
6.8	250	0.0600	0.61		**Shallow Concentrated Flow, Woods**
					Forest w/Heavy Litter Kv= 2.5 fps
31.7	1,260	Total			

Subcatchment 3S: Drainage to 15" HDPE



Summary for Subcatchment 4S: Drainage to 30" HDPE

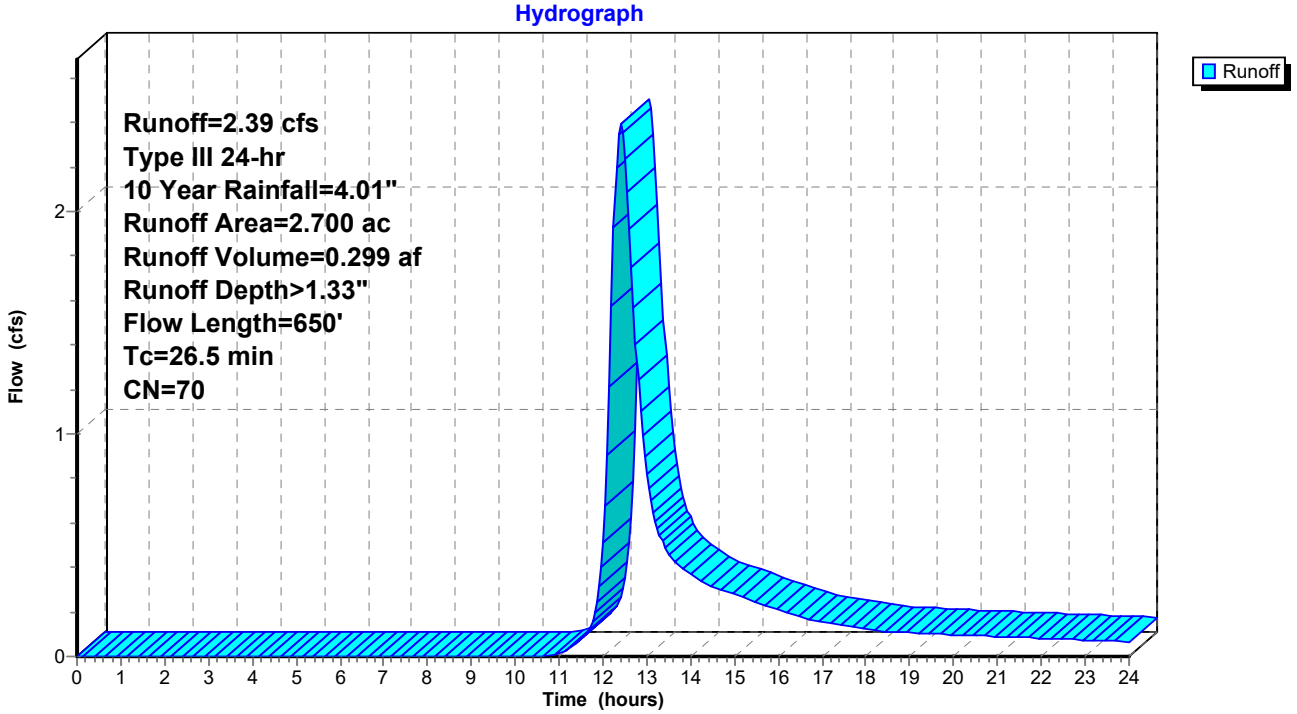
Runoff = 2.39 cfs @ 12.40 hrs, Volume= 0.299 af, Depth> 1.33"
Routed to Pond 4P : 30" HDPE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.01"

	Area (ac)	CN	Description
	2.610	70	Woods, Good, HSG C
	0.070	73	Woods, Fair, HSG C
*	0.020	98	Roofs & Gravel Roads, HSG C
	2.700	70	Weighted Average
	2.680		99.26% Pervious Area
	0.020		0.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.6	100	0.1600	0.09		**Sheet Flow, Woods** Woods: Dense underbrush n= 0.800 P2= 2.75"
8.9	550	0.1700	1.03		**Shallow Concentrated Flow, Woods** Forest w/Heavy Litter Kv= 2.5 fps
26.5	650	Total			

Subcatchment 4S: Drainage to 30" HDPE



Summary for Subcatchment 5S: Drainage to Catch Basin

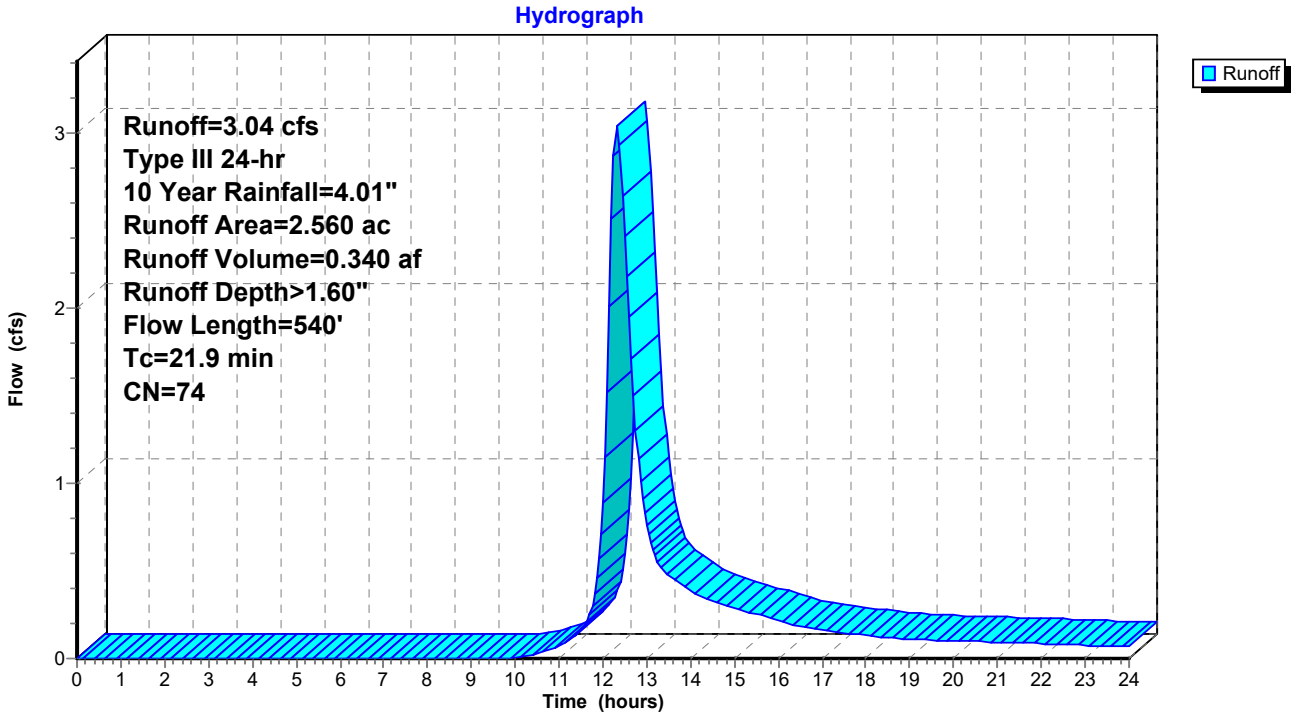
Runoff = 3.04 cfs @ 12.32 hrs, Volume= 0.340 af, Depth> 1.60"
Routed to Pond 5P : Existing Catch Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.01"

	Area (ac)	CN	Description
	1.830	70	Woods, Good, HSG C
	0.470	74	>75% Grass cover, Good, HSG C
*	0.260	98	Roofs & Gravel Roads, HSG C
	2.560	74	Weighted Average
	2.300		89.84% Pervious Area
	0.260		10.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.6	100	0.1600	0.09		**Sheet Flow, Woods** Woods: Dense underbrush n= 0.800 P2= 2.75"
2.3	180	0.2700	1.30		**Shallow Concentrated Flow, Woods** Forest w/Heavy Litter Kv= 2.5 fps
2.0	260	0.1000	2.21		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
21.9	540	Total			

Subcatchment 5S: Drainage to Catch Basin



Summary for Subcatchment 6S: Drainage to Catch Basin

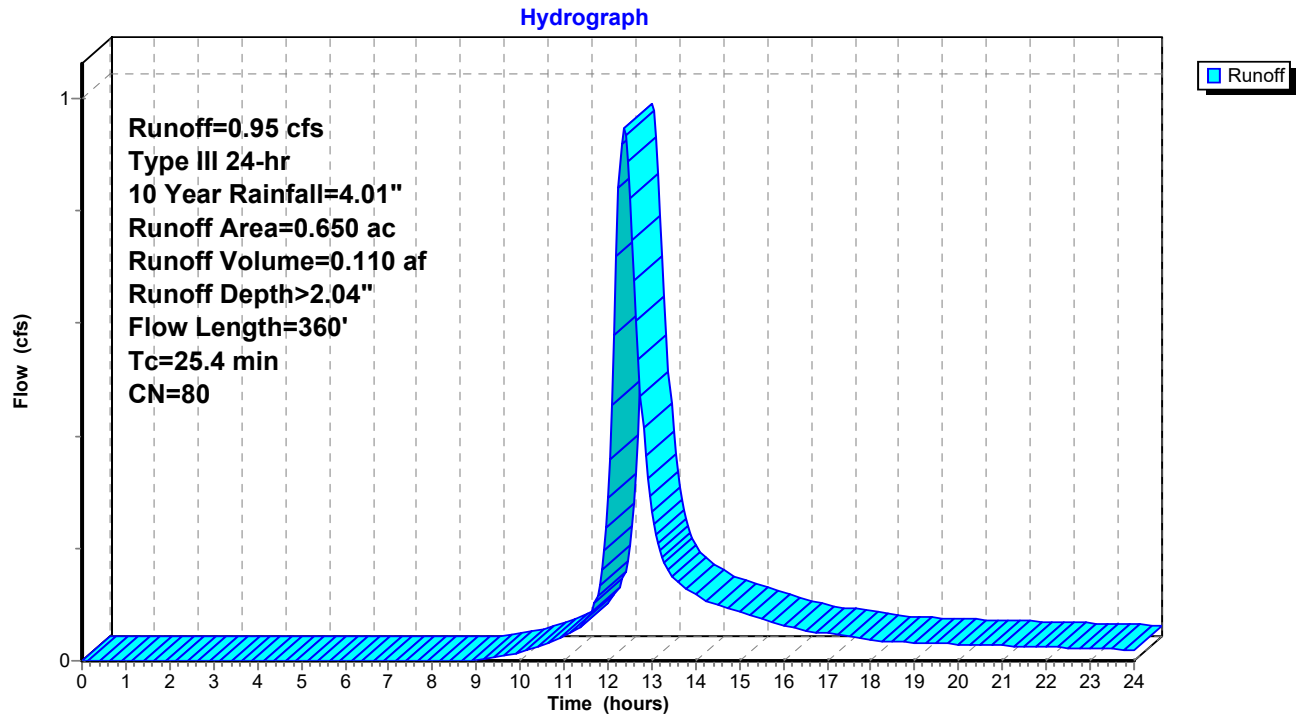
Runoff = 0.95 cfs @ 12.36 hrs, Volume= 0.110 af, Depth> 2.04"
Routed to Pond 6P : 12" CMP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.01"

	Area (ac)	CN	Description
	0.220	70	Woods, Good, HSG C
	0.240	74	>75% Grass cover, Good, HSG C
*	0.190	98	Roofs & Gravel Roads, HSG C
	0.650	80	Weighted Average
	0.460		70.77% Pervious Area
	0.190		29.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.4	100	0.0700	0.07		**Sheet Flow, Woods** Woods: Dense underbrush n= 0.800 P2= 2.75"
0.8	140	0.1900	3.05		**Shallow Concentrated Flow, Brush** Short Grass Pasture Kv= 7.0 fps
0.2	120	0.1000	9.40	56.38	**Trap/Vee/Rect Channel Flow, Roadside Ditch** Bot.W=2.00' D=1.00' Z= 4.0 '/' Top.W=10.00' n= 0.035 Earth, dense weeds
25.4	360	Total			

Subcatchment 6S: Drainage to Catch Basin



Summary for Subcatchment 7S: Drainage to 12" HDPE

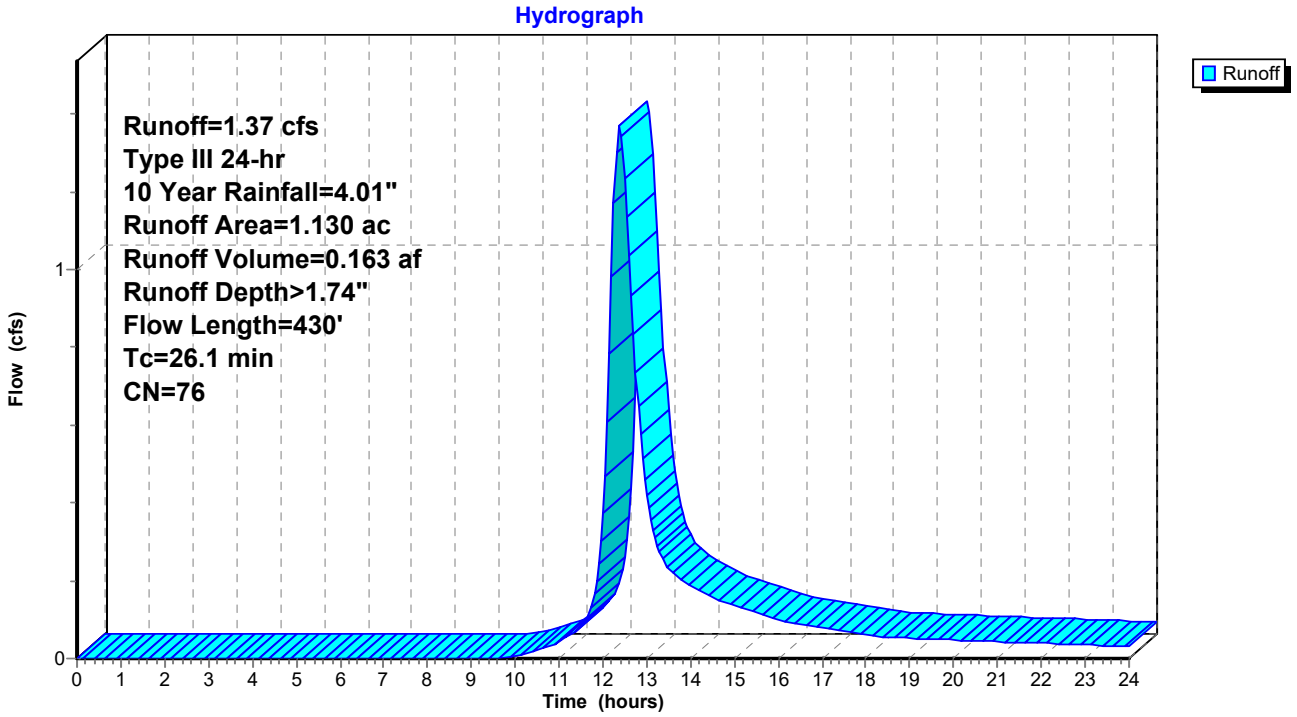
Runoff = 1.37 cfs @ 12.38 hrs, Volume= 0.163 af, Depth> 1.74"
Routed to Pond 7P : 15" HDPE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.01"

	Area (ac)	CN	Description
	0.660	70	Woods, Good, HSG C
	0.270	74	>75% Grass cover, Good, HSG C
*	0.200	98	Roofs & Gravel Roads, HSG C
	1.130	76	Weighted Average
	0.930		82.30% Pervious Area
	0.200		17.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.1	100	0.0900	0.08		**Sheet Flow, Woods** Woods: Dense underbrush n= 0.800 P2= 2.75"
0.6	110	0.2100	3.21		**Shallow Concentrated Flow, Brush** Short Grass Pasture Kv= 7.0 fps
3.2	160	0.1100	0.83		**Shallow Concentrated Flow, Woods** Forest w/Heavy Litter Kv= 2.5 fps
0.2	60	0.0500	6.64	39.87	**Trap/Vee/Rect Channel Flow, Roadside Ditch** Bot.W=2.00' D=1.00' Z= 4.0 '/' Top.W=10.00' n= 0.035 Earth, dense weeds
26.1	430	Total			

Subcatchment 7S: Drainage to 12" HDPE



Summary for Subcatchment 8S: Drainage to Catch Basin

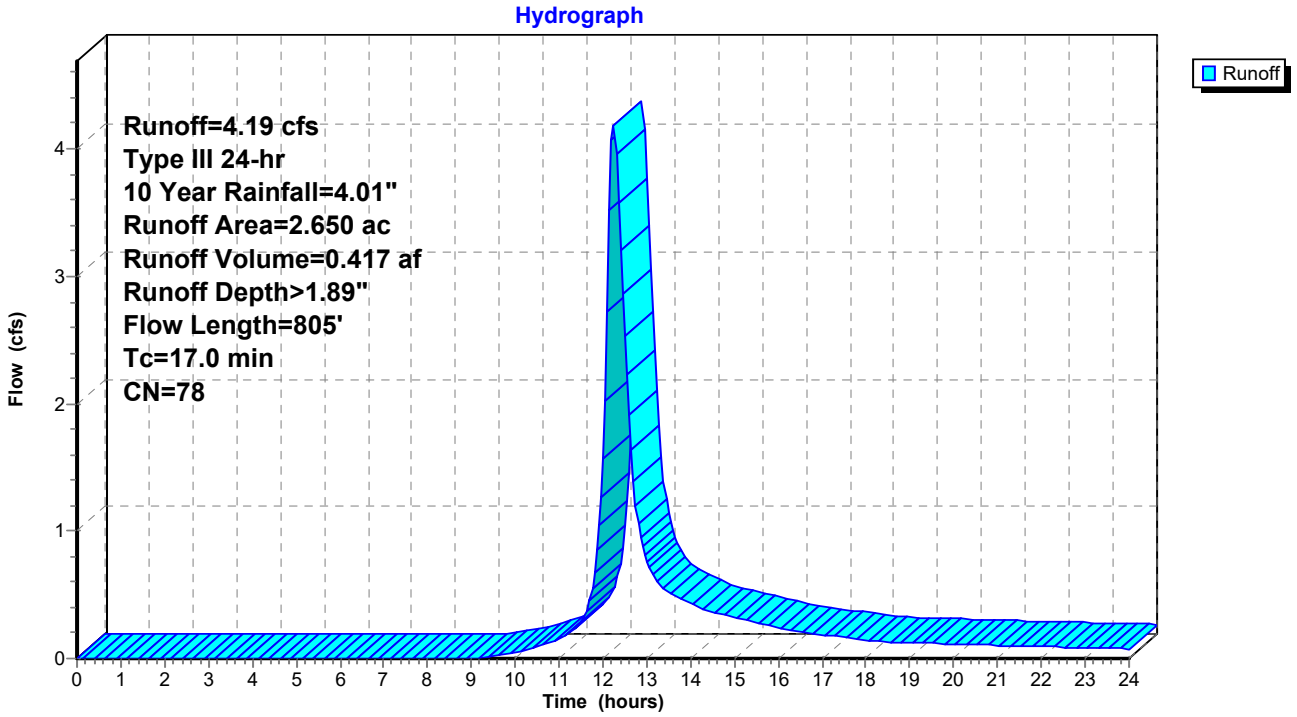
Runoff = 4.19 cfs @ 12.24 hrs, Volume= 0.417 af, Depth> 1.89"
Routed to Pond 8P : Catch Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.01"

	Area (ac)	CN	Description
	1.540	70	Woods, Good, HSG C
	0.380	74	>75% Grass cover, Good, HSG C
*	0.540	98	Roofs & Gravel Roads, HSG C
	0.190	98	Paved roads w/curbs & sewers, HSG C
	2.650	78	Weighted Average
	1.920		72.45% Pervious Area
	0.730		27.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	100	0.1000	0.34		**Sheet Flow, Brush** Range n= 0.130 P2= 2.75"
1.3	60	0.1000	0.79		**Shallow Concentrated Flow, Woods** Forest w/Heavy Litter Kv= 2.5 fps
0.5	200	0.1500	6.24		**Shallow Concentrated Flow, Gravel** Unpaved Kv= 16.1 fps
10.1	370	0.0600	0.61		**Shallow Concentrated Flow, Woods** Forest w/Heavy Litter Kv= 2.5 fps
0.1	75	0.1200	9.01	54.05	**Trap/Vee/Rect Channel Flow, Roadside Ditch** Bot.W=2.00' D=1.00' Z= 4.0 '/' Top.W=10.00' n= 0.040 Earth, cobble bottom, clean sides
17.0	805	Total			

Subcatchment 8S: Drainage to Catch Basin



Summary for Subcatchment 9S: Drainage to the Southeast

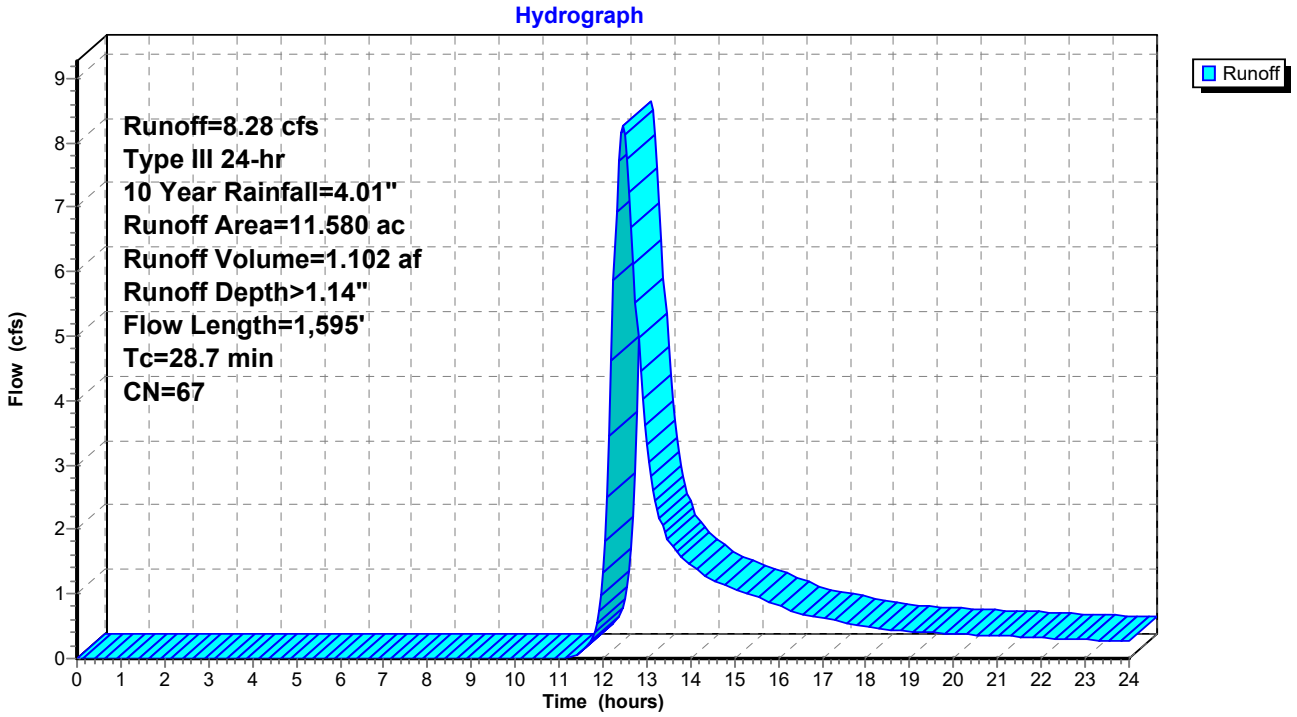
Runoff = 8.28 cfs @ 12.45 hrs, Volume= 1.102 af, Depth> 1.14"
Routed to Pond 9P : Southeast Offsite Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.01"

	Area (ac)	CN	Description
	1.100	30	Woods, Good, HSG A
	0.800	39	>75% Grass cover, Good, HSG A
	0.340	98	Paved roads w/curbs & sewers, HSG A
	6.020	70	Woods, Good, HSG C
	2.690	74	>75% Grass cover, Good, HSG C
*	0.610	98	Roofs & Gravel Roads, HSG C
	0.020	98	Paved roads w/curbs & sewers, HSG C
	11.580	67	Weighted Average
	10.610		91.62% Pervious Area
	0.970		8.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.1	100	0.2000	0.10		**Sheet Flow, Woods** Woods: Dense underbrush n= 0.800 P2= 2.75"
0.5	30	0.1700	1.03		**Shallow Concentrated Flow, Woods** Forest w/Heavy Litter Kv= 2.5 fps
0.3	40	0.0200	2.28		**Shallow Concentrated Flow, Gravel** Unpaved Kv= 16.1 fps
10.1	640	0.1800	1.06		**Shallow Concentrated Flow, Woods** Forest w/Heavy Litter Kv= 2.5 fps
1.7	785	0.0600	7.92	158.42	**Parabolic Channel, Woods** W=30.00' D=1.00' Area=20.0 sf Perim=30.1' n= 0.035 Earth, dense weeds
28.7	1,595	Total			

Subcatchment 9S: Drainage to the Southeast



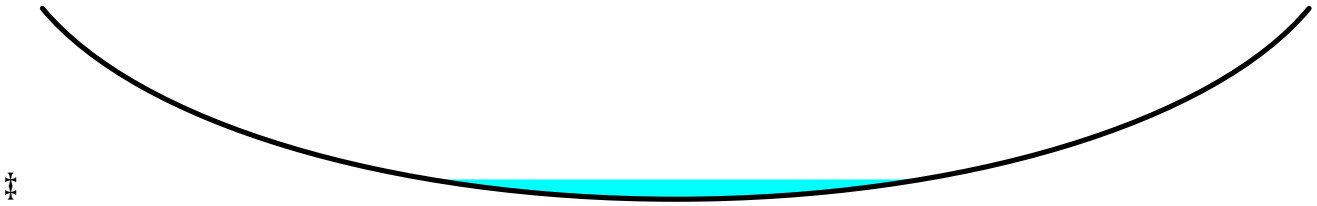
Summary for Reach 1R: Woods

Inflow Area = 5.220 ac, 0.38% Impervious, Inflow Depth > 1.44" for 10 Year event
Inflow = 5.35 cfs @ 12.39 hrs, Volume= 0.626 af
Outflow = 5.28 cfs @ 12.48 hrs, Volume= 0.624 af, Atten= 1%, Lag= 5.3 min
Routed to Pond 3P : 15" HDPE

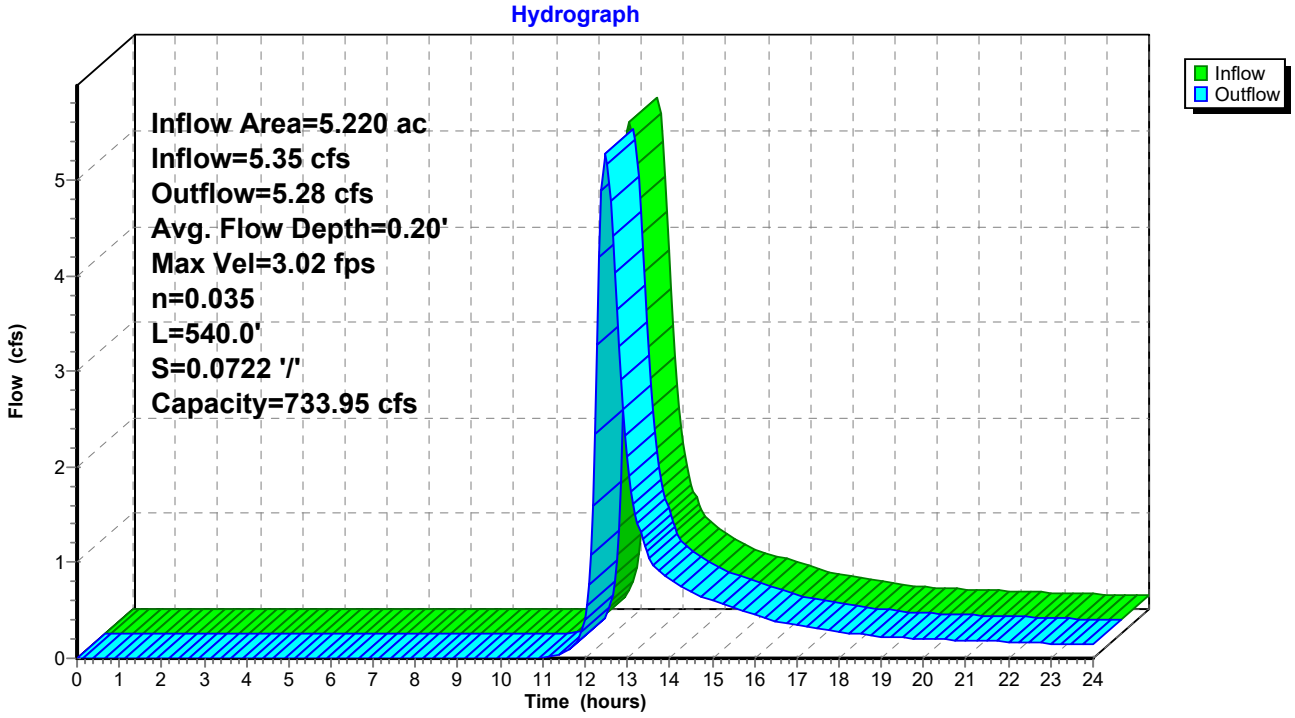
Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.02 fps, Min. Travel Time= 3.0 min
Avg. Velocity = 1.33 fps, Avg. Travel Time= 6.8 min

Peak Storage= 942 cf @ 12.43 hrs
Average Depth at Peak Storage= 0.20' , Surface Width= 12.79'
Bank-Full Depth= 2.00' Flow Area= 53.3 sf, Capacity= 733.95 cfs

40.00' x 2.00' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 540.0' Slope= 0.0722 '/'
Inlet Invert= 850.00', Outlet Invert= 811.00'



Reach 1R: Woods



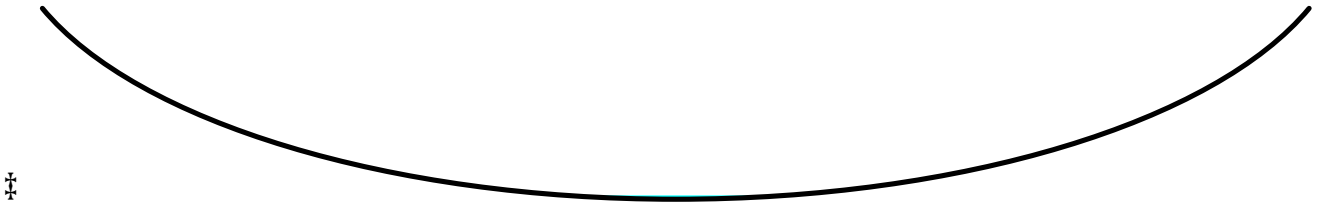
Summary for Reach 3R: Woods

Inflow Area = 11.270 ac, 2.93% Impervious, Inflow Depth > 0.21" for 10 Year event
Inflow = 0.22 cfs @ 24.00 hrs, Volume= 0.195 af
Outflow = 0.22 cfs @ 24.00 hrs, Volume= 0.191 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 5bR : Woods

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.59 fps, Min. Travel Time= 6.6 min
Avg. Velocity = 1.44 fps, Avg. Travel Time= 7.2 min

Peak Storage= 87 cf @ 24.00 hrs
Average Depth at Peak Storage= 0.04' , Surface Width= 5.48'
Bank-Full Depth= 2.00' Flow Area= 53.3 sf, Capacity= 1,166.39 cfs

40.00' x 2.00' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 625.0' Slope= 0.1824 '/'
Inlet Invert= 810.00', Outlet Invert= 696.00'



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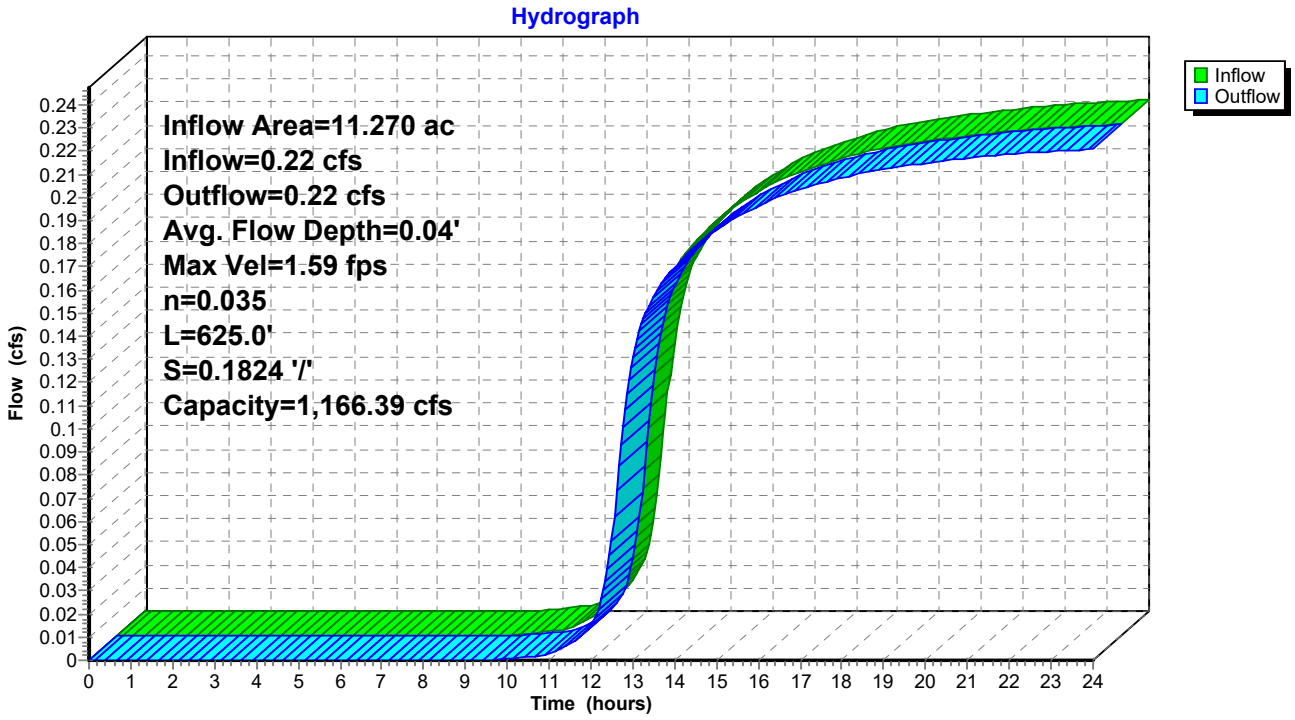
Reach 3R: Woods



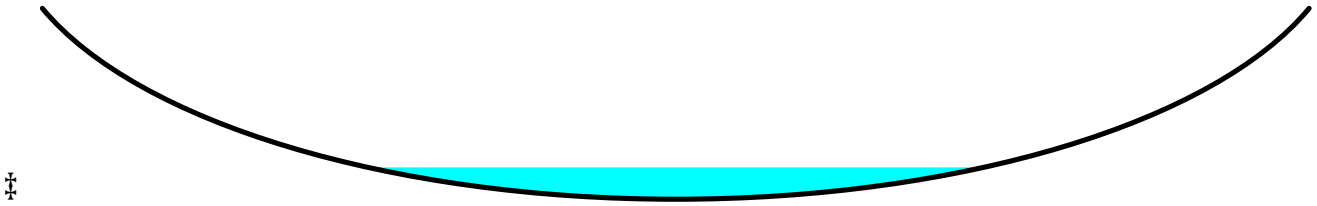
Summary for Reach 4R: Woods

Inflow Area = 2.700 ac, 0.74% Impervious, Inflow Depth > 1.33" for 10 Year event
Inflow = 2.39 cfs @ 12.40 hrs, Volume= 0.299 af
Outflow = 2.37 cfs @ 12.46 hrs, Volume= 0.298 af, Atten= 1%, Lag= 3.8 min
Routed to Reach 5bR : Woods

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.66 fps, Min. Travel Time= 2.2 min
Avg. Velocity = 1.20 fps, Avg. Travel Time= 4.9 min

Peak Storage= 312 cf @ 12.43 hrs
Average Depth at Peak Storage= 0.08' , Surface Width= 16.24'
Bank-Full Depth= 0.50' Flow Area= 13.3 sf, Capacity= 118.15 cfs

40.00' x 0.50' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 350.0' Slope= 0.1886 '/'
Inlet Invert= 762.00', Outlet Invert= 696.00'



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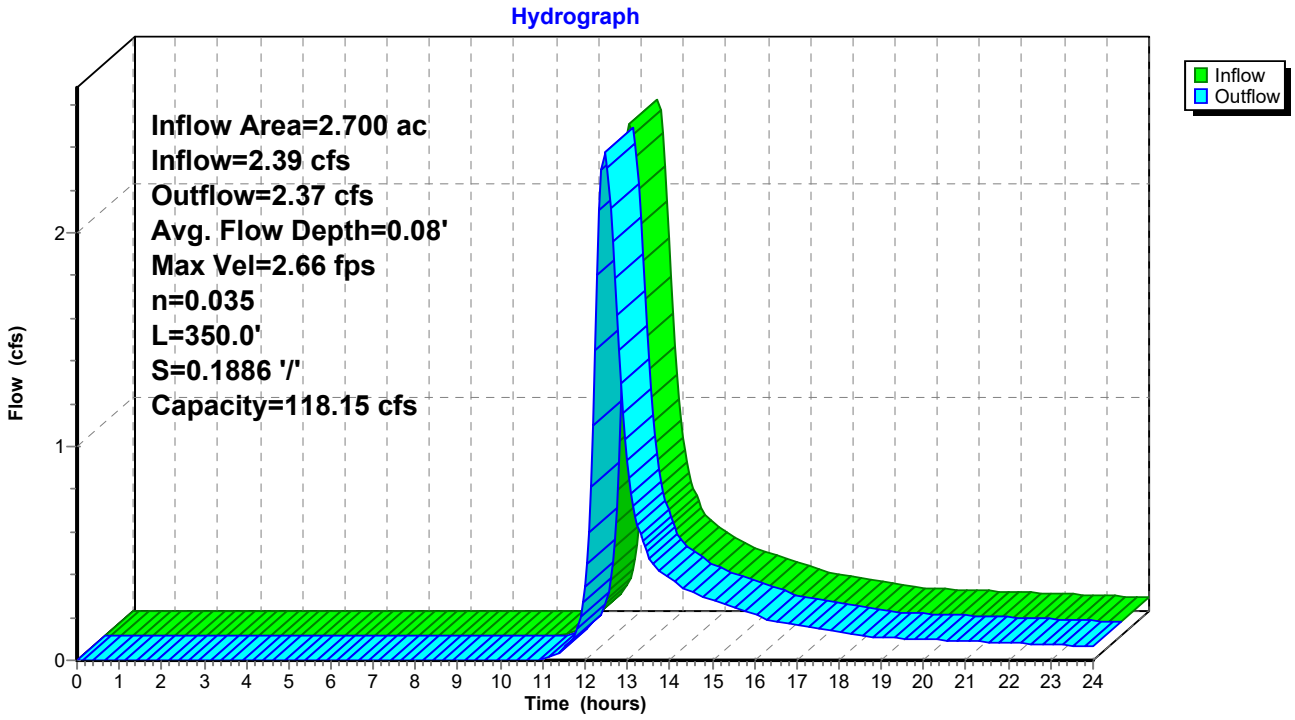
Reach 4R: Woods



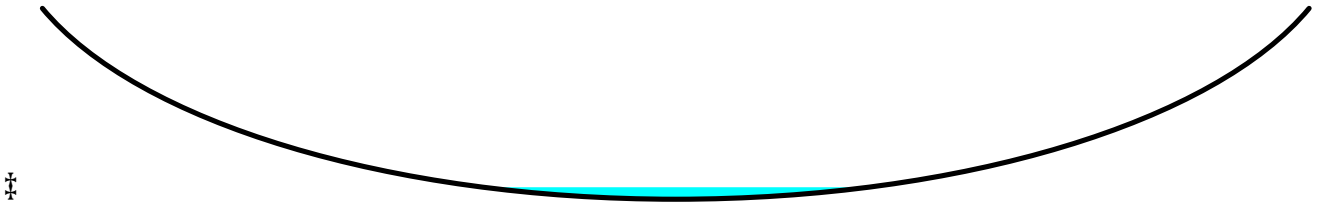
Summary for Reach 5aR: Brush

Inflow Area = 2.560 ac, 10.16% Impervious, Inflow Depth > 1.60" for 10 Year event
Inflow = 3.04 cfs @ 12.32 hrs, Volume= 0.340 af
Outflow = 3.02 cfs @ 12.36 hrs, Volume= 0.340 af, Atten= 1%, Lag= 2.2 min
Routed to Reach 5bR : Woods

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.91 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 1.28 fps, Avg. Travel Time= 2.7 min

Peak Storage= 219 cf @ 12.33 hrs
Average Depth at Peak Storage= 0.12' , Surface Width= 12.49'
Bank-Full Depth= 2.00' Flow Area= 66.7 sf, Capacity= 1,226.02 cfs

50.00' x 2.00' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 210.0' Slope= 0.1286 '/'
Inlet Invert= 722.00', Outlet Invert= 695.00'



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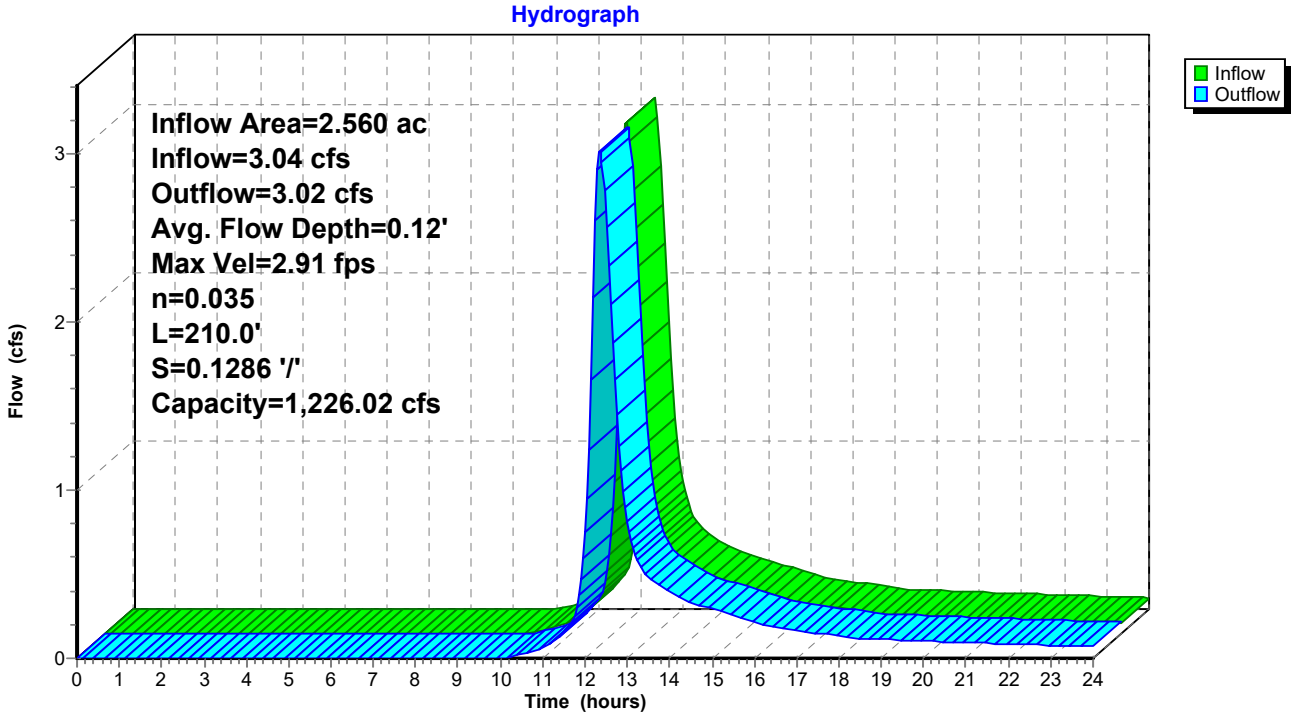
Reach 5aR: Brush



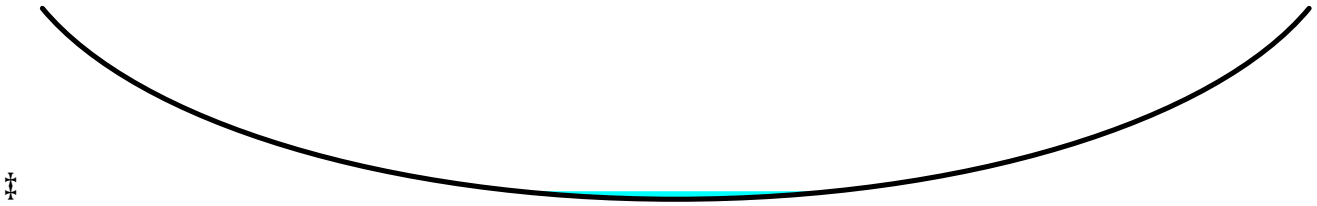
Summary for Reach 5bR: Woods

Inflow Area = 16.530 ac, 3.69% Impervious, Inflow Depth > 0.60" for 10 Year event
Inflow = 5.28 cfs @ 12.41 hrs, Volume= 0.828 af
Outflow = 5.25 cfs @ 12.43 hrs, Volume= 0.827 af, Atten= 1%, Lag= 1.7 min
Routed to Reach 6bR : Woods

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.07 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 1.61 fps, Avg. Travel Time= 1.8 min

Peak Storage= 301 cf @ 12.42 hrs
Average Depth at Peak Storage= 0.16' , Surface Width= 16.04'
Bank-Full Depth= 4.00' Flow Area= 213.3 sf, Capacity= 5,561.52 cfs

80.00' x 4.00' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 175.0' Slope= 0.1029 '/'
Inlet Invert= 695.00', Outlet Invert= 677.00'



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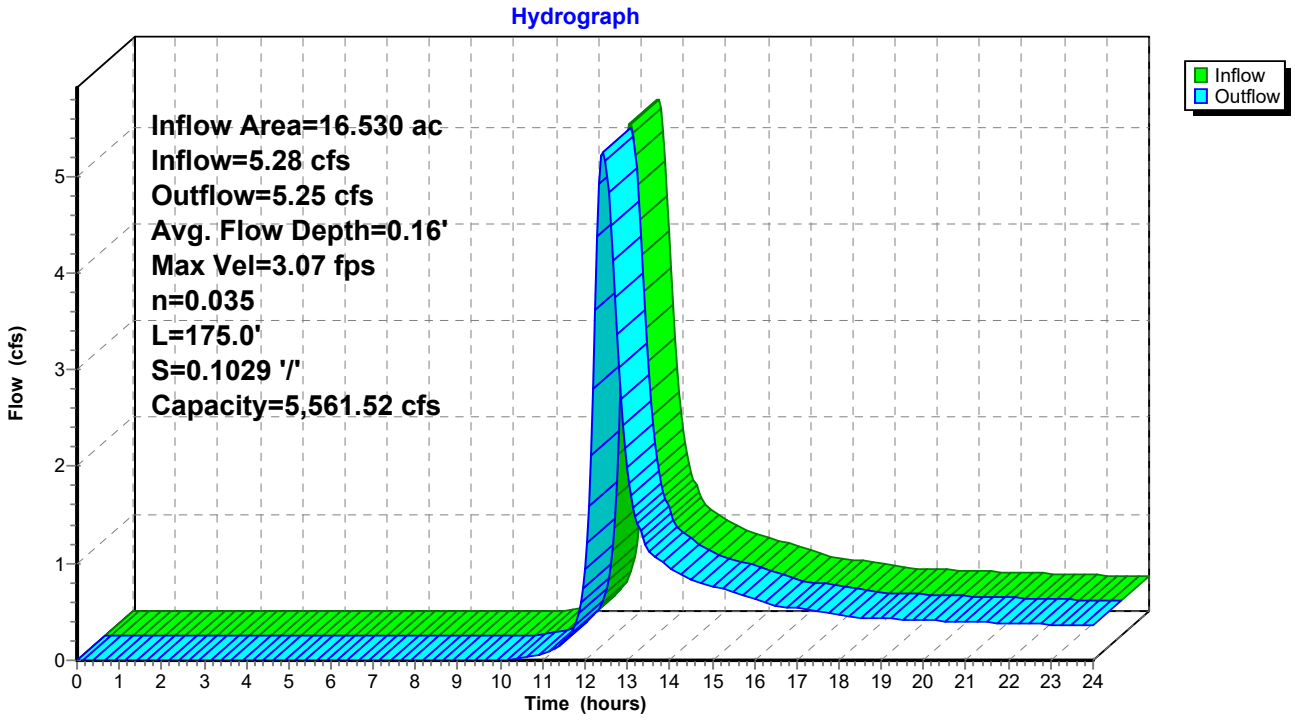
Reach 5bR: Woods



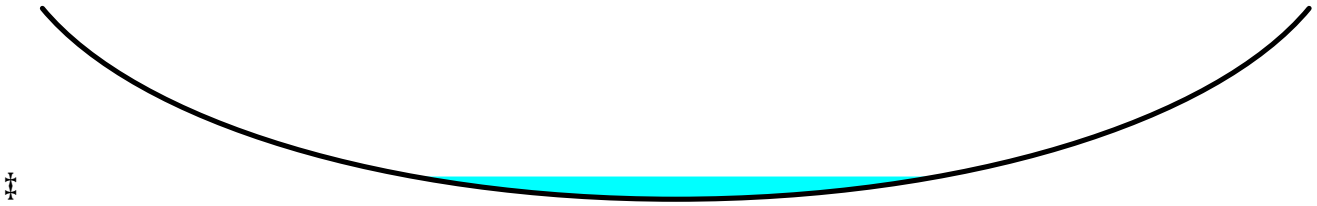
Summary for Reach 6aR: Woods

Inflow Area = 0.650 ac, 29.23% Impervious, Inflow Depth > 2.04" for 10 Year event
Inflow = 0.95 cfs @ 12.36 hrs, Volume= 0.110 af
Outflow = 0.94 cfs @ 12.43 hrs, Volume= 0.110 af, Atten= 1%, Lag= 4.2 min
Routed to Reach 6bR : Woods

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.73 fps, Min. Travel Time= 2.4 min
Avg. Velocity = 0.72 fps, Avg. Travel Time= 5.8 min

Peak Storage= 136 cf @ 12.39 hrs
Average Depth at Peak Storage= 0.06' , Surface Width= 13.76'
Bank-Full Depth= 0.50' Flow Area= 13.3 sf, Capacity= 95.81 cfs

40.00' x 0.50' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 250.0' Slope= 0.1240 '/'
Inlet Invert= 708.00', Outlet Invert= 677.00'



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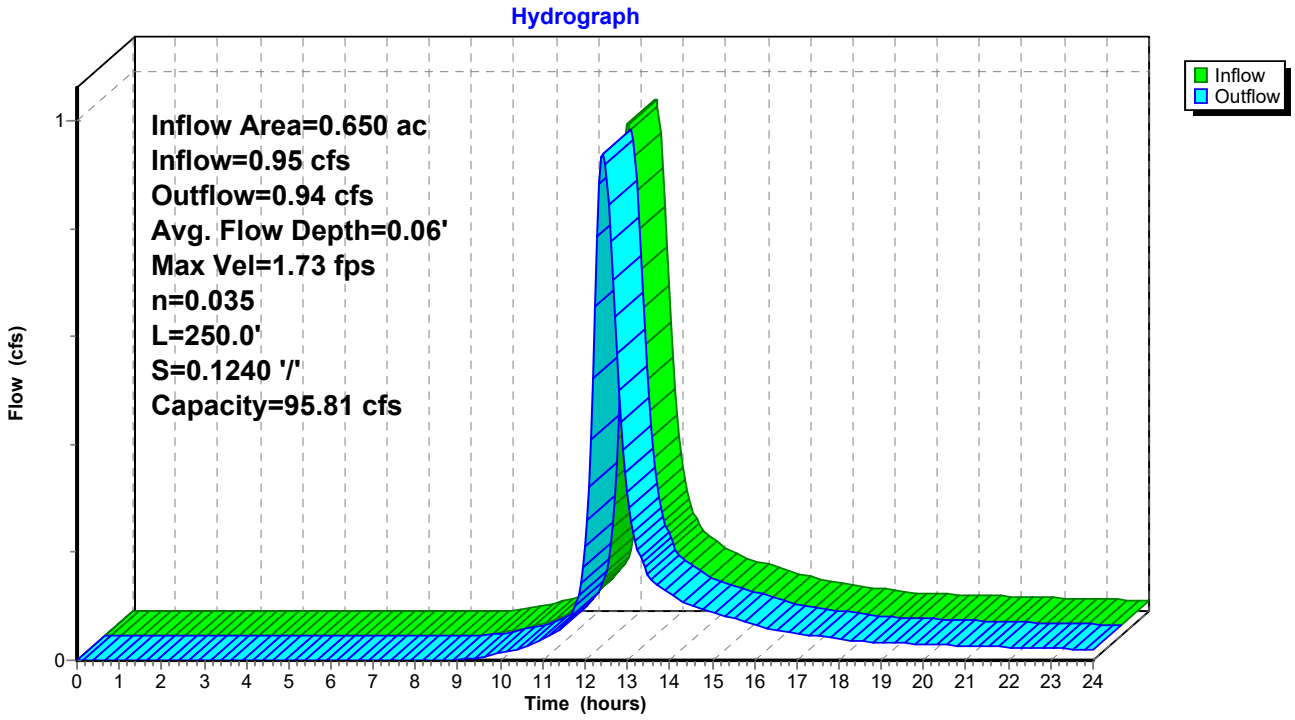
Reach 6aR: Woods



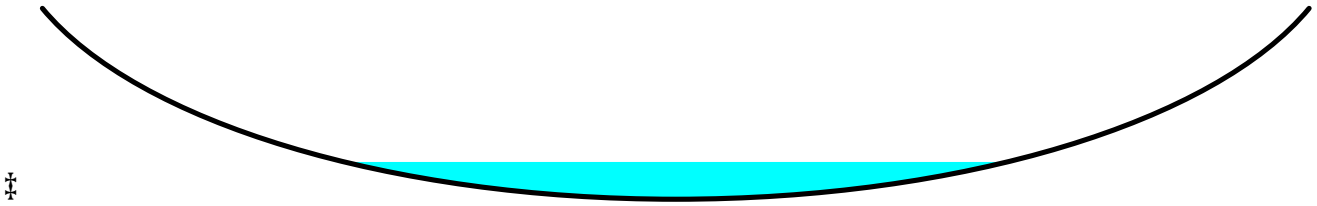
Summary for Reach 6bR: Woods

Inflow Area = 17.180 ac, 4.66% Impervious, Inflow Depth > 0.65" for 10 Year event
Inflow = 6.19 cfs @ 12.43 hrs, Volume= 0.937 af
Outflow = 6.16 cfs @ 12.47 hrs, Volume= 0.935 af, Atten= 0%, Lag= 2.1 min
Routed to Reach 7bR : Woods

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.17 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 0.99 fps, Avg. Travel Time= 2.5 min

Peak Storage= 427 cf @ 12.45 hrs
Average Depth at Peak Storage= 0.19' , Surface Width= 22.02'
Bank-Full Depth= 1.00' Flow Area= 33.3 sf, Capacity= 215.85 cfs

50.00' x 1.00' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 150.0' Slope= 0.0400 '/'
Inlet Invert= 677.00', Outlet Invert= 671.00'



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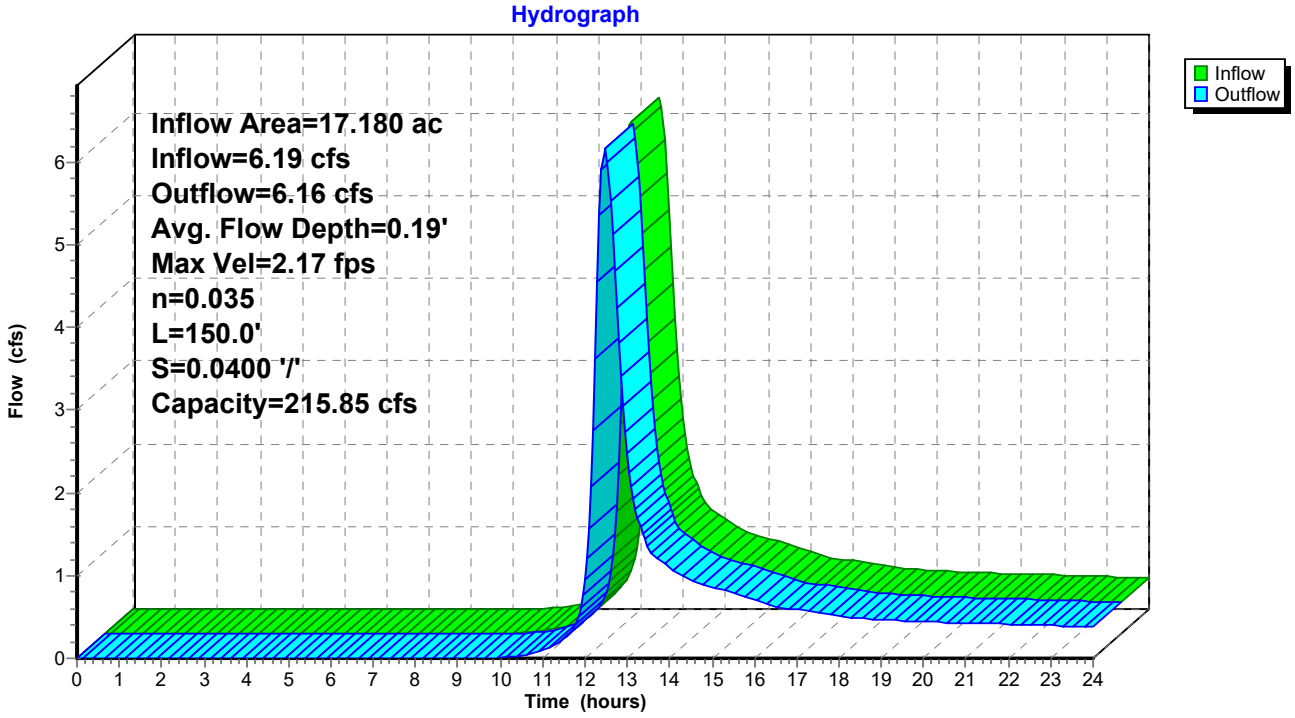
Reach 6bR: Woods



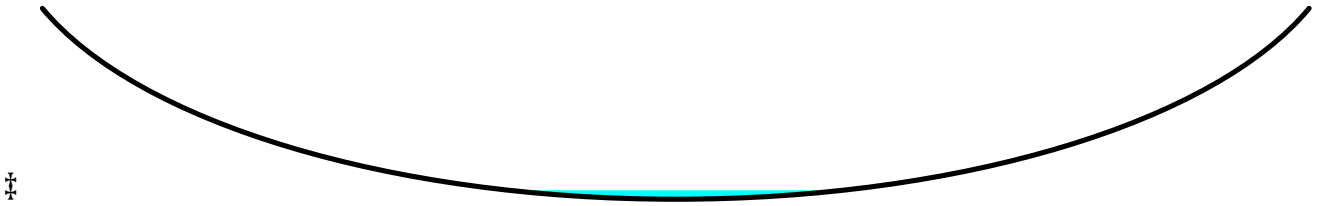
Summary for Reach 7aR: Woods

Inflow Area = 1.130 ac, 17.70% Impervious, Inflow Depth > 1.74" for 10 Year event
Inflow = 1.37 cfs @ 12.38 hrs, Volume= 0.163 af
Outflow = 1.36 cfs @ 12.44 hrs, Volume= 0.163 af, Atten= 1%, Lag= 3.9 min
Routed to Reach 7bR : Woods

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.05 fps, Min. Travel Time= 2.2 min
Avg. Velocity = 0.92 fps, Avg. Travel Time= 4.8 min

Peak Storage= 176 cf @ 12.41 hrs
Average Depth at Peak Storage= 0.09' , Surface Width= 10.74'
Bank-Full Depth= 2.00' Flow Area= 66.7 sf, Capacity= 1,050.20 cfs

50.00' x 2.00' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 265.0' Slope= 0.0943 '/'
Inlet Invert= 696.00', Outlet Invert= 671.00'



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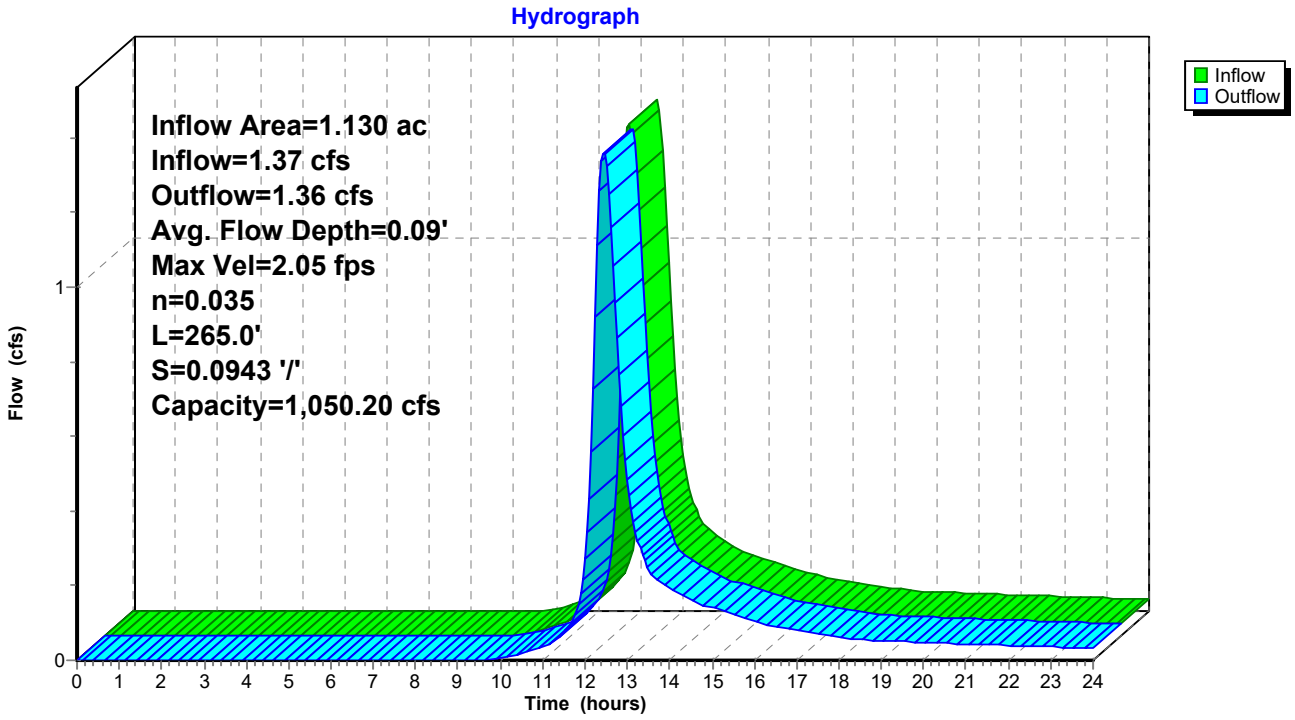
Reach 7aR: Woods



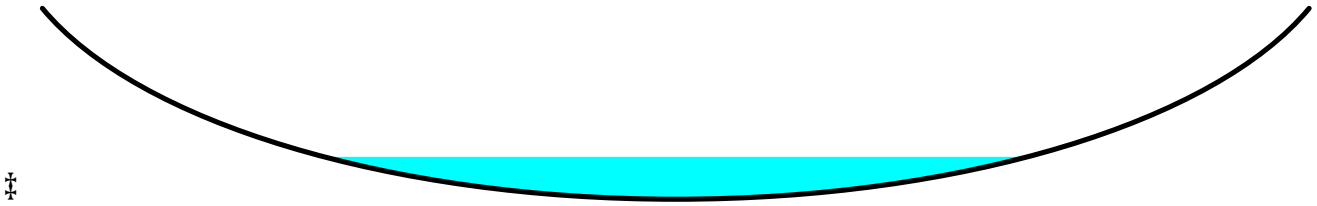
Summary for Reach 7bR: Woods

Inflow Area = 18.310 ac, 5.46% Impervious, Inflow Depth > 0.72" for 10 Year event
Inflow = 7.51 cfs @ 12.46 hrs, Volume= 1.098 af
Outflow = 7.45 cfs @ 12.52 hrs, Volume= 1.095 af, Atten= 1%, Lag= 3.2 min
Routed to Reach 8bR : Wetland

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.69 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 1.22 fps, Avg. Travel Time= 4.0 min

Peak Storage= 804 cf @ 12.49 hrs
Average Depth at Peak Storage= 0.22' , Surface Width= 18.81'
Bank-Full Depth= 1.00' Flow Area= 26.7 sf, Capacity= 196.29 cfs

40.00' x 1.00' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 290.0' Slope= 0.0517 '/'
Inlet Invert= 671.00', Outlet Invert= 656.00'



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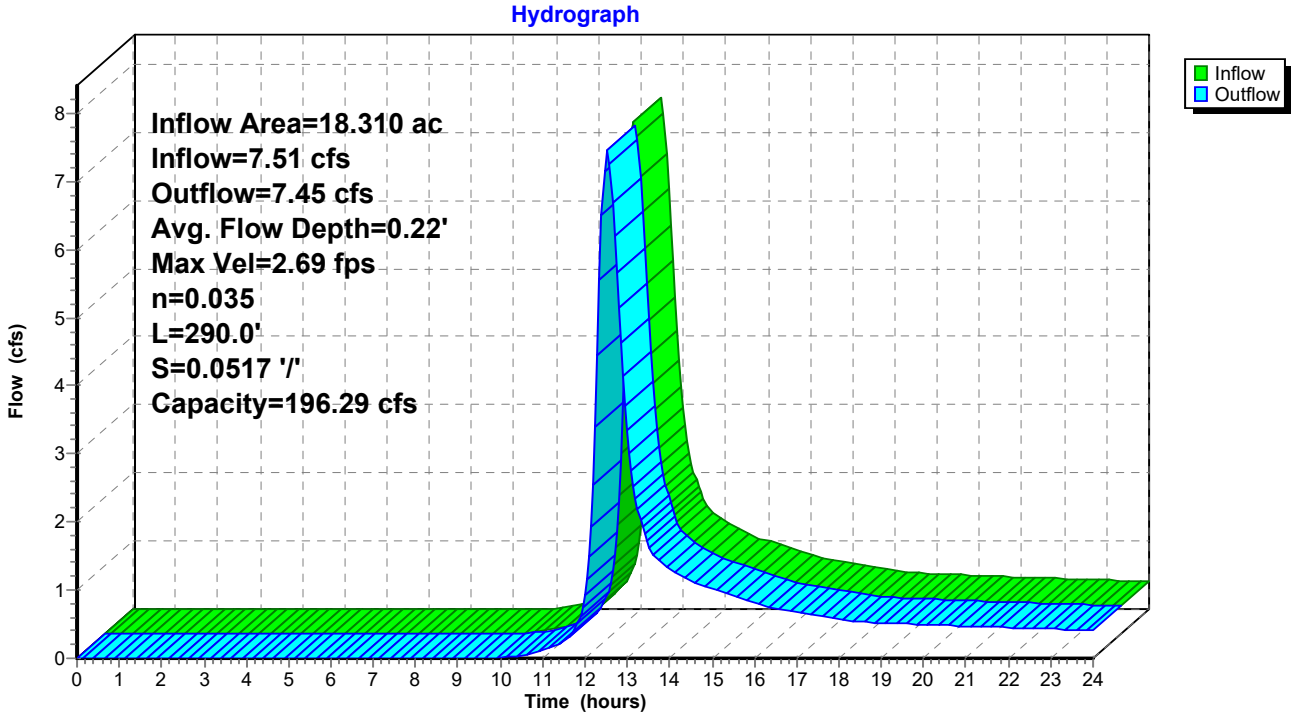
Reach 7bR: Woods



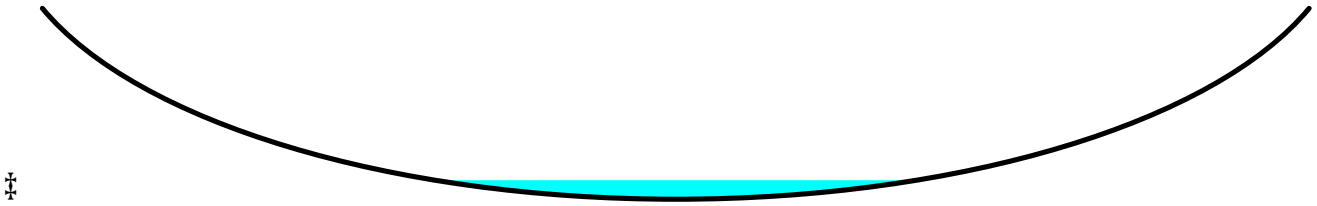
Summary for Reach 8aR: Wetland

Inflow Area = 2.650 ac, 27.55% Impervious, Inflow Depth > 1.89" for 10 Year event
Inflow = 4.19 cfs @ 12.24 hrs, Volume= 0.417 af
Outflow = 4.11 cfs @ 12.32 hrs, Volume= 0.416 af, Atten= 2%, Lag= 4.5 min
Routed to Reach 8bR : Wetland

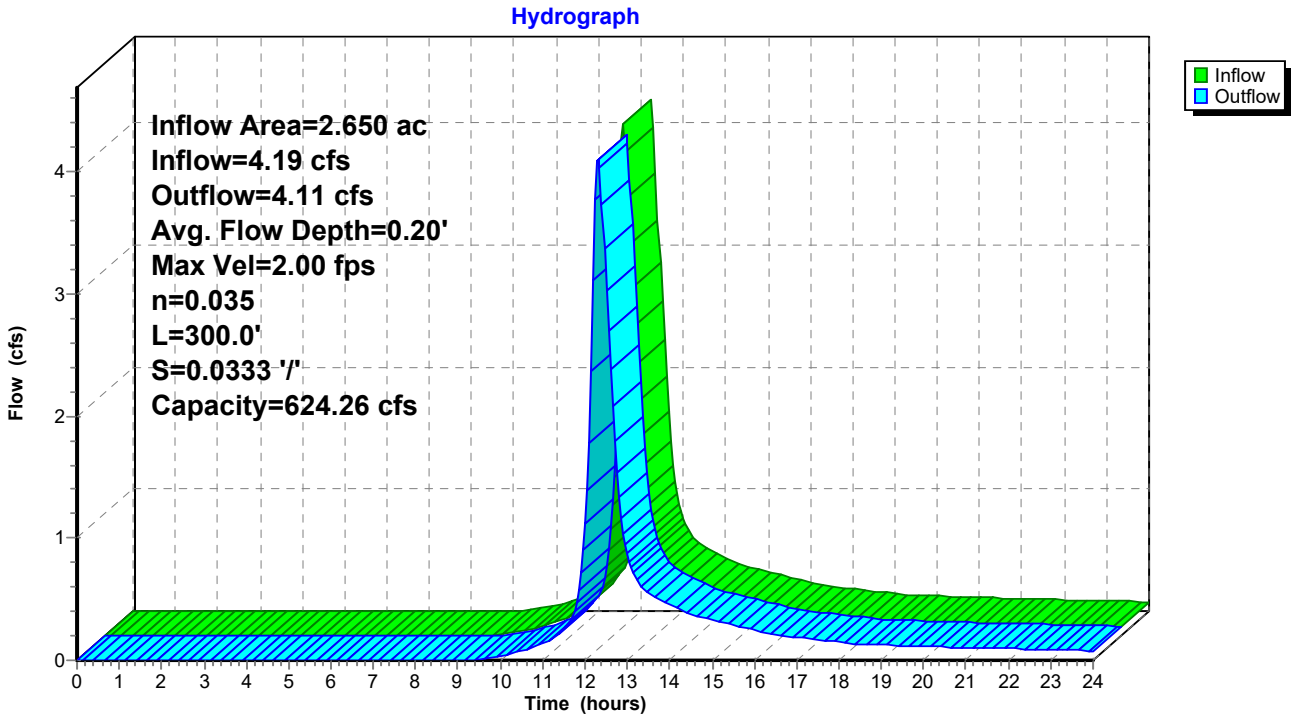
Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.00 fps, Min. Travel Time= 2.5 min
Avg. Velocity = 0.81 fps, Avg. Travel Time= 6.2 min

Peak Storage= 618 cf @ 12.27 hrs
Average Depth at Peak Storage= 0.20' , Surface Width= 15.69'
Bank-Full Depth= 2.00' Flow Area= 66.7 sf, Capacity= 624.26 cfs

50.00' x 2.00' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 300.0' Slope= 0.0333 '/'
Inlet Invert= 666.00', Outlet Invert= 656.00'



Reach 8aR: Wetland



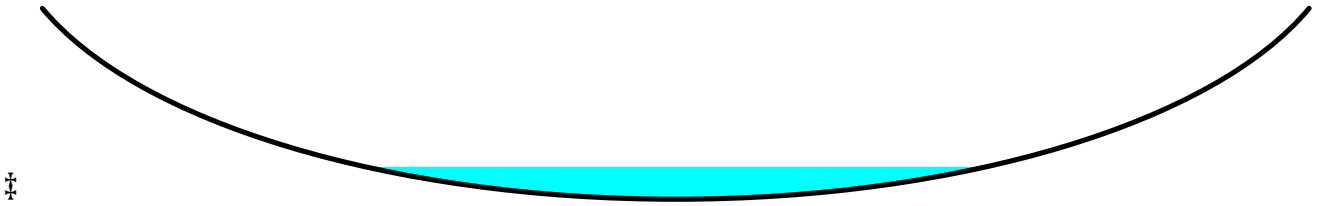
Summary for Reach 8bR: Wetland

Inflow Area = 20.960 ac, 8.25% Impervious, Inflow Depth > 0.86" for 10 Year event
Inflow = 10.53 cfs @ 12.46 hrs, Volume= 1.511 af
Outflow = 10.51 cfs @ 12.48 hrs, Volume= 1.510 af, Atten= 0%, Lag= 0.8 min
Routed to Pond 9P : Southeast Offsite Runoff

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.29 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.49 fps, Avg. Travel Time= 1.0 min

Peak Storage= 288 cf @ 12.47 hrs
Average Depth at Peak Storage= 0.33' , Surface Width= 14.32'
Bank-Full Depth= 2.00' Flow Area= 46.7 sf, Capacity= 503.12 cfs

35.00' x 2.00' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 90.0' Slope= 0.0444 '/'
Inlet Invert= 656.00', Outlet Invert= 652.00'



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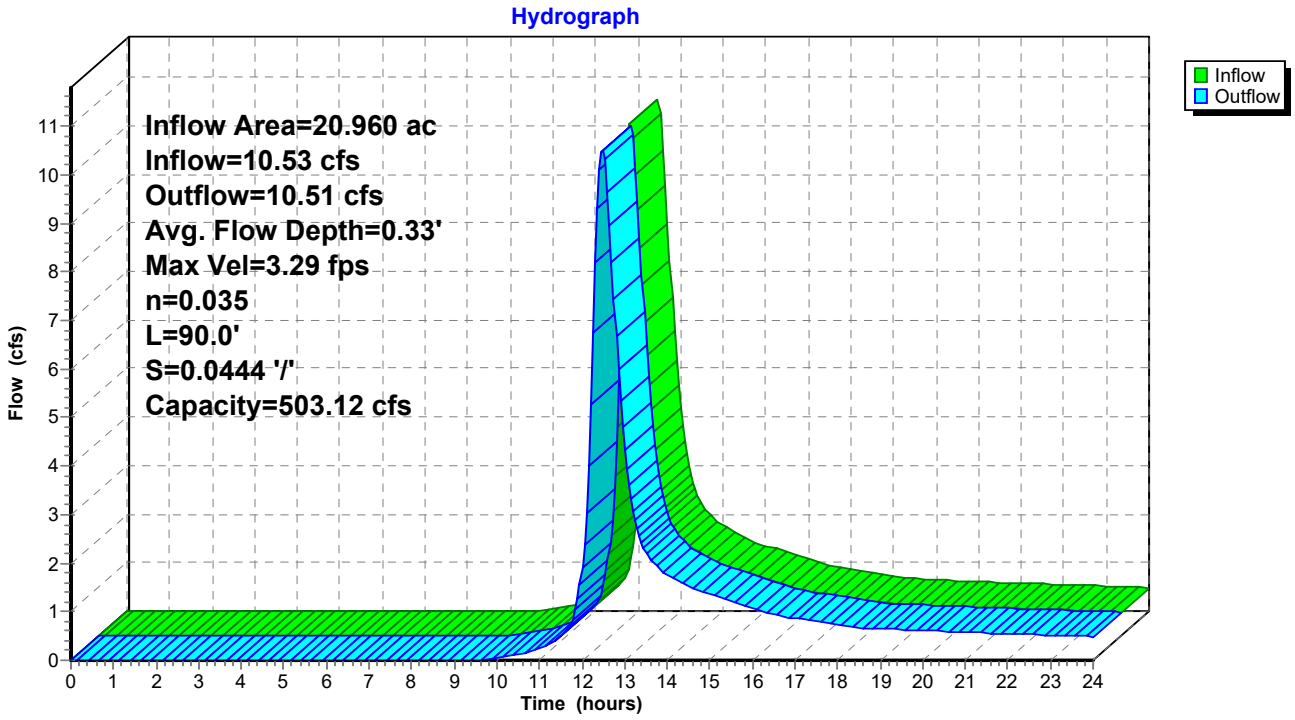
Reach 8bR: Wetland



Summary for Pond 1P: Existing Ponding Area

Inflow Area = 5.220 ac, 0.38% Impervious, Inflow Depth > 1.46" for 10 Year event
Inflow = 5.70 cfs @ 12.31 hrs, Volume= 0.635 af
Outflow = 5.35 cfs @ 12.39 hrs, Volume= 0.626 af, Atten= 6%, Lag= 5.0 min
Primary = 5.35 cfs @ 12.39 hrs, Volume= 0.626 af
Routed to Reach 1R : Woods

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 851.72' @ 12.39 hrs Surf.Area= 0.091 ac Storage= 0.058 af

Plug-Flow detention time= 19.3 min calculated for 0.625 af (98% of inflow)
Center-of-Mass det. time= 11.9 min (877.4 - 865.5)

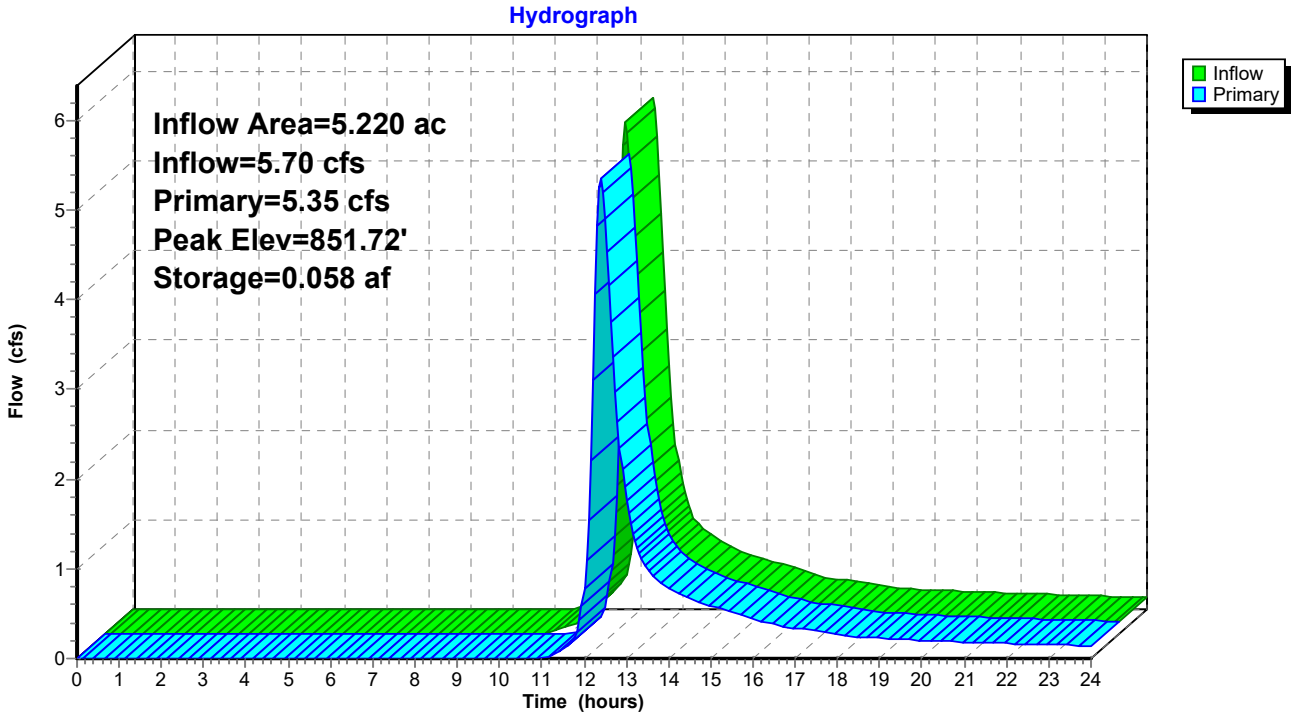
Volume	Invert	Avail.Storage	Storage Description
#1	851.00'	0.085 af	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
851.00	0.070	310.0	0.000	0.000	0.070
852.00	0.100	140.0	0.085	0.085	0.210

Device	Routing	Invert	Outlet Devices
#1	Primary	851.00'	**1.0' long + 4.0 '/' SideZ x 3.0' 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 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=5.33 cfs @ 12.39 hrs HW=851.72' (Free Discharge)
↑—1=Broad-Crested Rectangular Weir (Weir Controls 5.33 cfs @ 1.93 fps)

Pond 1P: Existing Ponding Area



Summary for Pond 2P: 15" HDPE

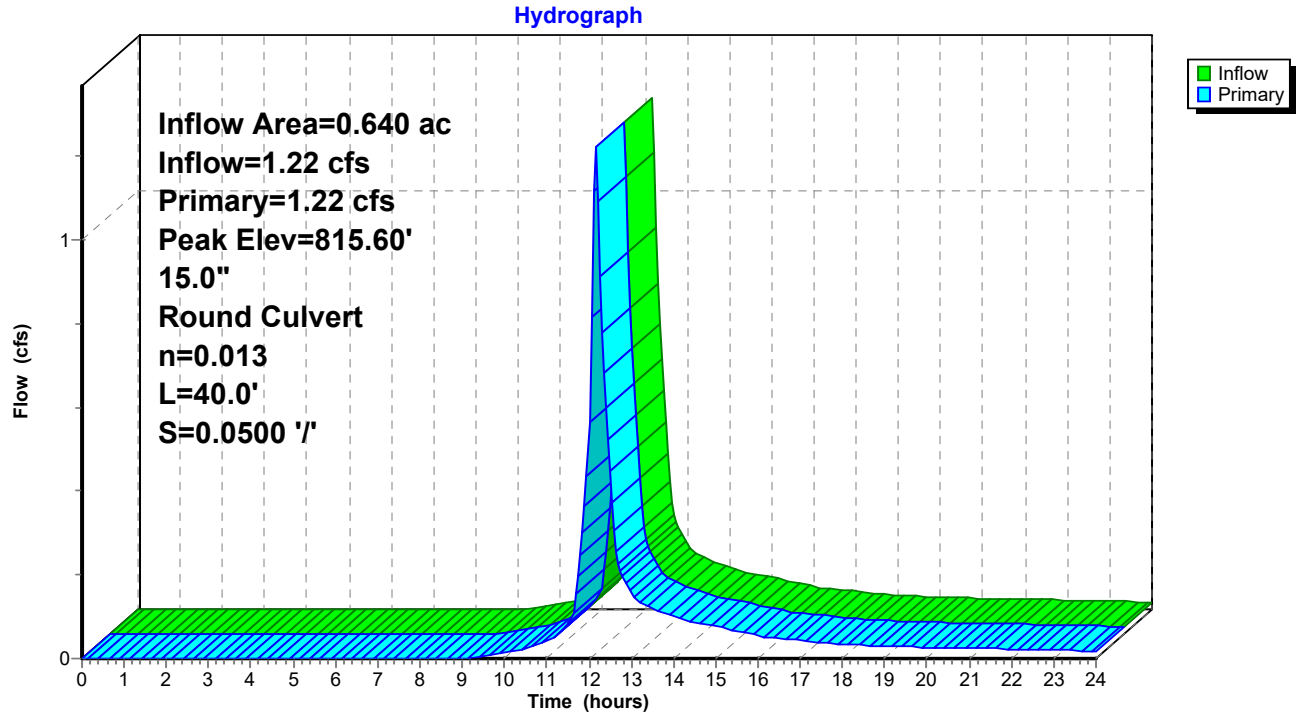
Inflow Area = 0.640 ac, 28.13% Impervious, Inflow Depth > 1.89" for 10 Year event
Inflow = 1.22 cfs @ 12.15 hrs, Volume= 0.101 af
Outflow = 1.22 cfs @ 12.15 hrs, Volume= 0.101 af, Atten= 0%, Lag= 0.0 min
Primary = 1.22 cfs @ 12.15 hrs, Volume= 0.101 af
Routed to Pond 3P : 15" HDPE

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 815.60' @ 12.15 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	815.00'	**15.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 815.00' / 813.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.21 cfs @ 12.15 hrs HW=815.60' (Free Discharge)
1=Culvert (Inlet Controls 1.21 cfs @ 2.08 fps)

Pond 2P: 15" HDPE



Summary for Pond 3P: 15" HDPE

Inflow Area = 11.270 ac, 2.93% Impervious, Inflow Depth > 1.47" for 10 Year event
Inflow = 10.72 cfs @ 12.47 hrs, Volume= 1.381 af
Outflow = 0.22 cfs @ 24.00 hrs, Volume= 0.195 af, Atten= 98%, Lag= 691.9 min
Primary = 0.22 cfs @ 24.00 hrs, Volume= 0.195 af
Routed to Reach 3R : Woods

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 809.24' @ 24.00 hrs Surf.Area= 14.666 ac Storage= 1.184 af

Plug-Flow detention time= 383.8 min calculated for 0.194 af (14% of inflow)
Center-of-Mass det. time= 233.4 min (1,109.0 - 875.7)

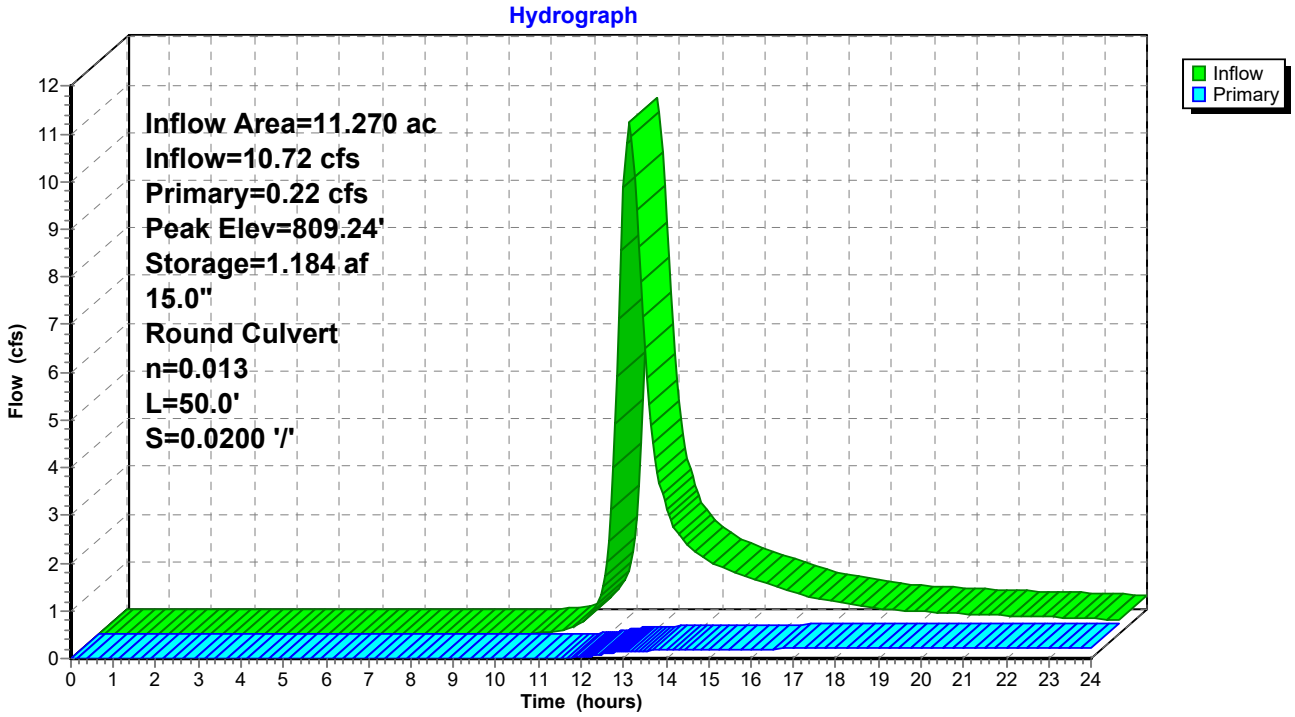
Volume	Invert	Avail.Storage	Storage Description
#1	809.00'	1,321.314 af	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
809.00	0.000	0.0	0.000	0.000	0.000
810.00	250.000	60.0	83.333	83.333	0.007
811.00	2,650.000	220.0	1,237.980	1,321.314	0.089

Device	Routing	Invert	Outlet Devices
#1	Primary	809.00'	**15.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 809.00' / 808.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.22 cfs @ 24.00 hrs HW=809.24' (Free Discharge)
1=Culvert (Inlet Controls 0.22 cfs @ 1.32 fps)

Pond 3P: 15" HDPE



Summary for Pond 4P: 30" HDPE

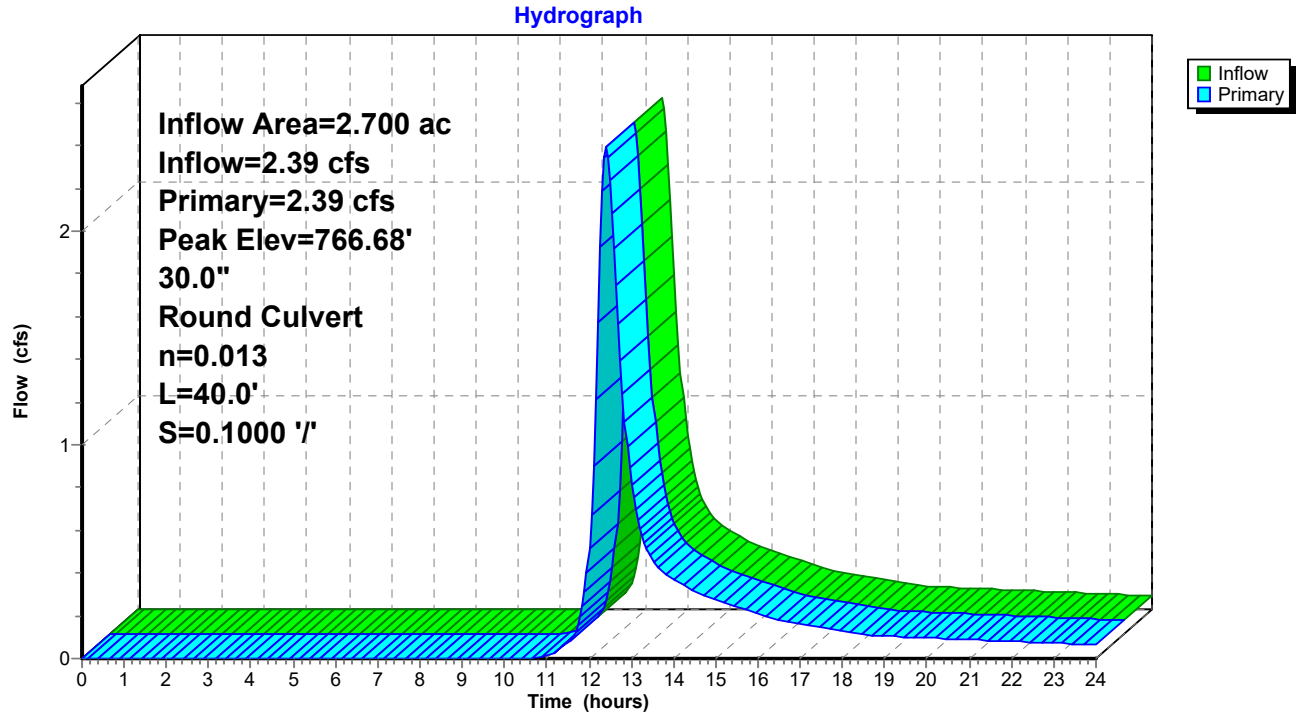
Inflow Area = 2.700 ac, 0.74% Impervious, Inflow Depth > 1.33" for 10 Year event
Inflow = 2.39 cfs @ 12.40 hrs, Volume= 0.299 af
Outflow = 2.39 cfs @ 12.40 hrs, Volume= 0.299 af, Atten= 0%, Lag= 0.0 min
Primary = 2.39 cfs @ 12.40 hrs, Volume= 0.299 af
Routed to Reach 4R : Woods

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 766.68' @ 12.40 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	766.00'	**30.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 766.00' / 762.00' S= 0.1000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=2.39 cfs @ 12.40 hrs HW=766.68' (Free Discharge)
1=Culvert (Inlet Controls 2.39 cfs @ 2.22 fps)

Pond 4P: 30" HDPE



Summary for Pond 5P: Existing Catch Basin

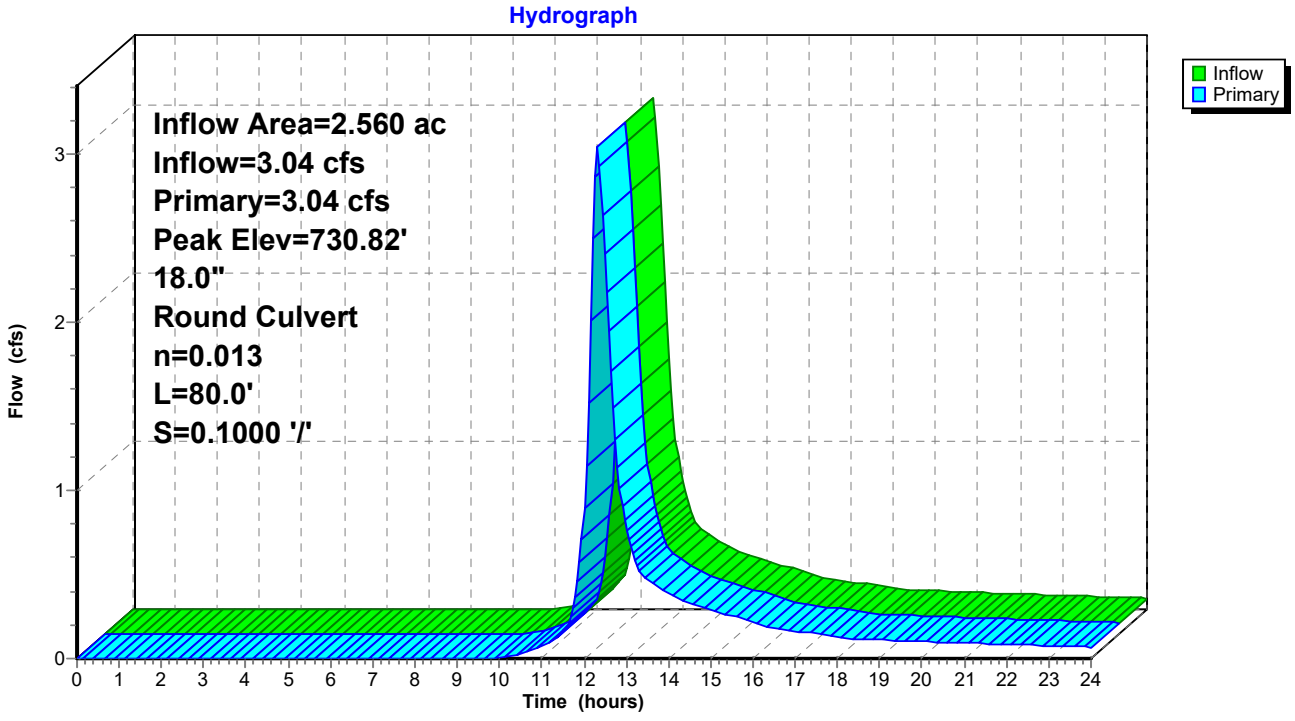
Inflow Area = 2.560 ac, 10.16% Impervious, Inflow Depth > 1.60" for 10 Year event
Inflow = 3.04 cfs @ 12.32 hrs, Volume= 0.340 af
Outflow = 3.04 cfs @ 12.32 hrs, Volume= 0.340 af, Atten= 0%, Lag= 0.0 min
Primary = 3.04 cfs @ 12.32 hrs, Volume= 0.340 af
Routed to Reach 5aR : Brush

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 730.82' @ 12.32 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	730.00'	**18.0" Round Culvert** L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 730.00' / 722.00' S= 0.1000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.02 cfs @ 12.32 hrs HW=730.82' (Free Discharge)
1=Culvert (Inlet Controls 3.02 cfs @ 3.08 fps)

Pond 5P: Existing Catch Basin



Summary for Pond 6P: 12" CMP

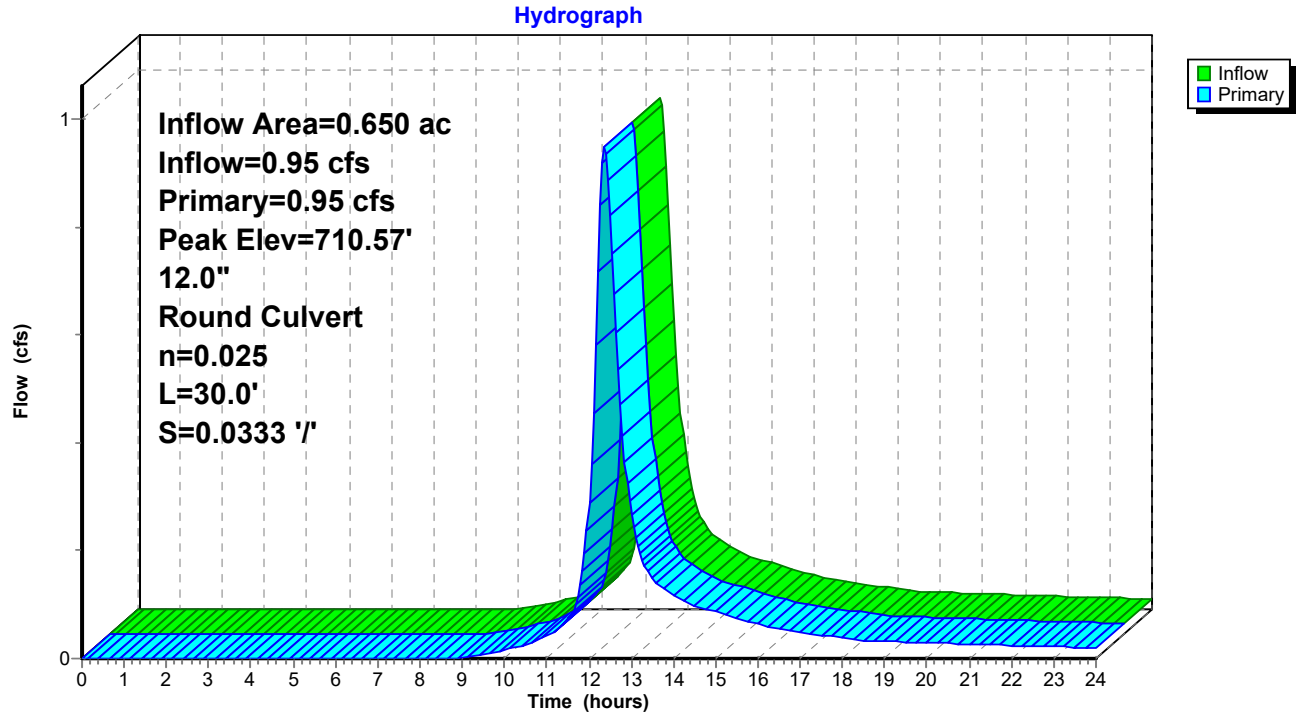
Inflow Area = 0.650 ac, 29.23% Impervious, Inflow Depth > 2.04" for 10 Year event
Inflow = 0.95 cfs @ 12.36 hrs, Volume= 0.110 af
Outflow = 0.95 cfs @ 12.36 hrs, Volume= 0.110 af, Atten= 0%, Lag= 0.0 min
Primary = 0.95 cfs @ 12.36 hrs, Volume= 0.110 af
Routed to Reach 6aR : Woods

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 710.57' @ 12.36 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	710.00'	**12.0" Round Culvert** L= 30.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 710.00' / 709.00' S= 0.0333 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.79 sf

Primary OutFlow Max=0.94 cfs @ 12.36 hrs HW=710.57' (Free Discharge)
1=Culvert (Inlet Controls 0.94 cfs @ 2.03 fps)

Pond 6P: 12" CMP



Summary for Pond 7P: 15" HDPE

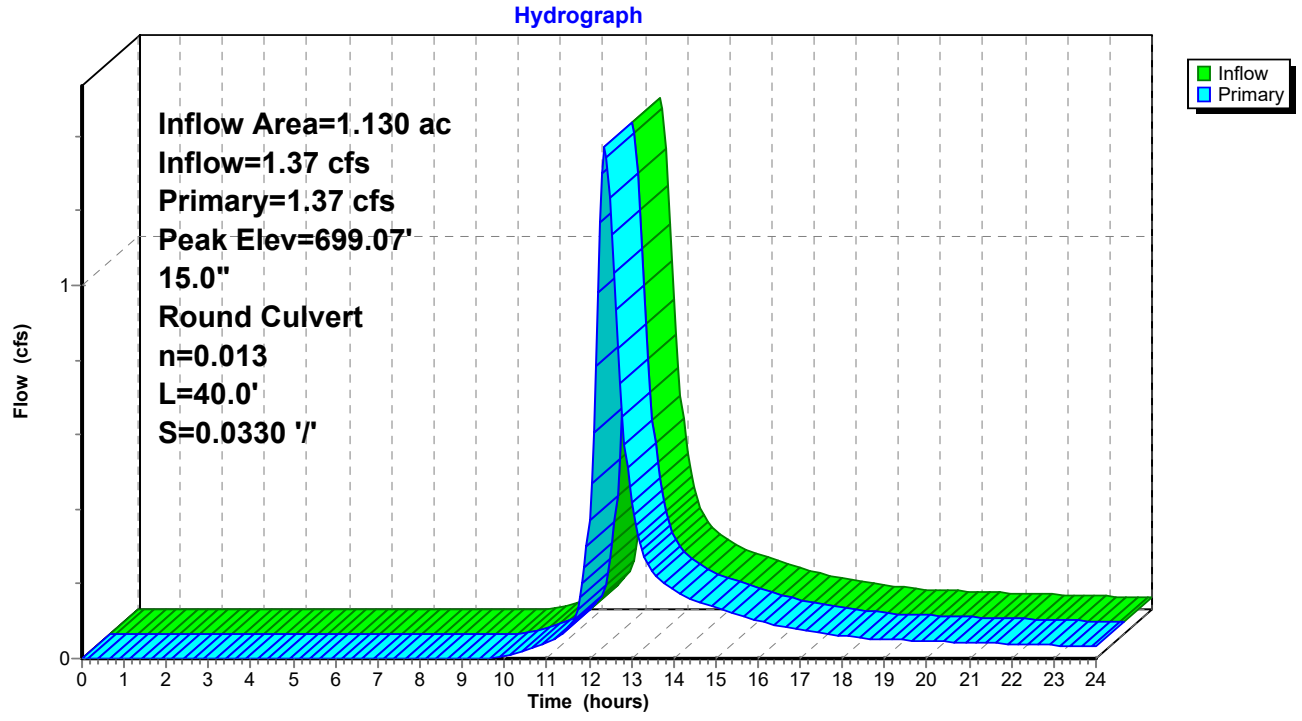
Inflow Area = 1.130 ac, 17.70% Impervious, Inflow Depth > 1.74" for 10 Year event
Inflow = 1.37 cfs @ 12.38 hrs, Volume= 0.163 af
Outflow = 1.37 cfs @ 12.38 hrs, Volume= 0.163 af, Atten= 0%, Lag= 0.0 min
Primary = 1.37 cfs @ 12.38 hrs, Volume= 0.163 af
Routed to Reach 7aR : Woods

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 699.07' @ 12.38 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	698.43'	**15.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 698.43' / 697.11' S= 0.0330 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.36 cfs @ 12.38 hrs HW=699.07' (Free Discharge)
1=Culvert (Inlet Controls 1.36 cfs @ 2.15 fps)

Pond 7P: 15" HDPE



Summary for Pond 8P: Catch Basin

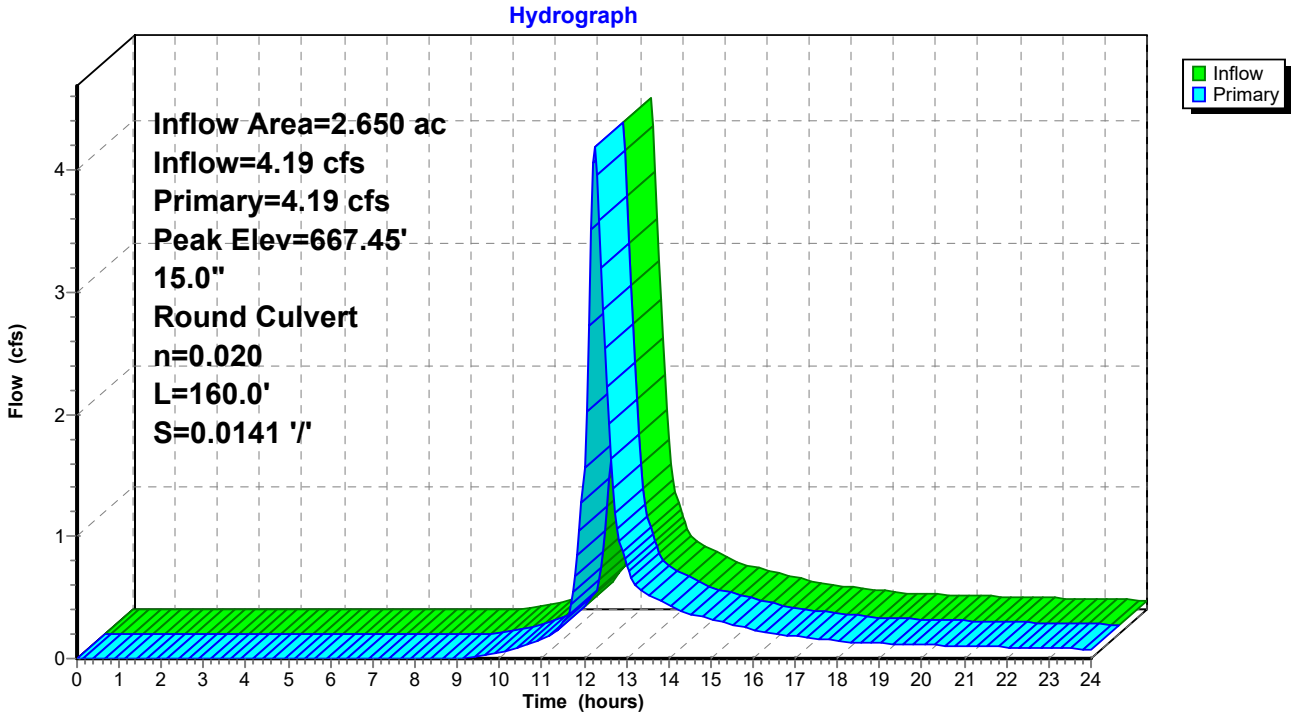
Inflow Area = 2.650 ac, 27.55% Impervious, Inflow Depth > 1.89" for 10 Year event
Inflow = 4.19 cfs @ 12.24 hrs, Volume= 0.417 af
Outflow = 4.19 cfs @ 12.24 hrs, Volume= 0.417 af, Atten= 0%, Lag= 0.0 min
Primary = 4.19 cfs @ 12.24 hrs, Volume= 0.417 af
Routed to Reach 8aR : Wetland

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 667.45' @ 12.24 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	666.25'	**15.0" Round Culvert** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 666.25' / 663.99' S= 0.0141 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.23 sf

Primary OutFlow Max=4.17 cfs @ 12.24 hrs HW=667.45' (Free Discharge)
1=Culvert (Barrel Controls 4.17 cfs @ 4.41 fps)

Pond 8P: Catch Basin

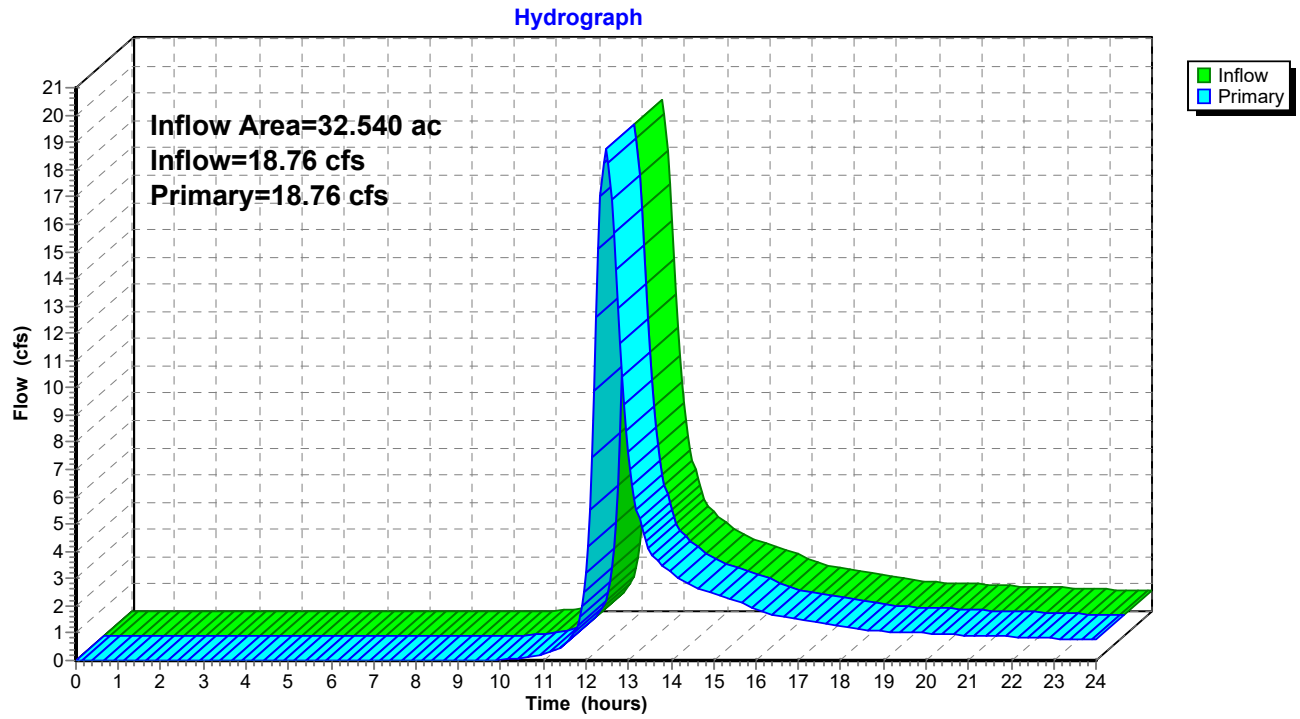


Summary for Pond 9P: Southeast Offsite Runoff

Inflow Area = 32.540 ac, 8.30% Impervious, Inflow Depth > 0.96" for 10 Year event
Inflow = 18.76 cfs @ 12.46 hrs, Volume= 2.611 af
Primary = 18.76 cfs @ 12.46 hrs, Volume= 2.611 af, Atten= 0%, Lag= 0.0 min

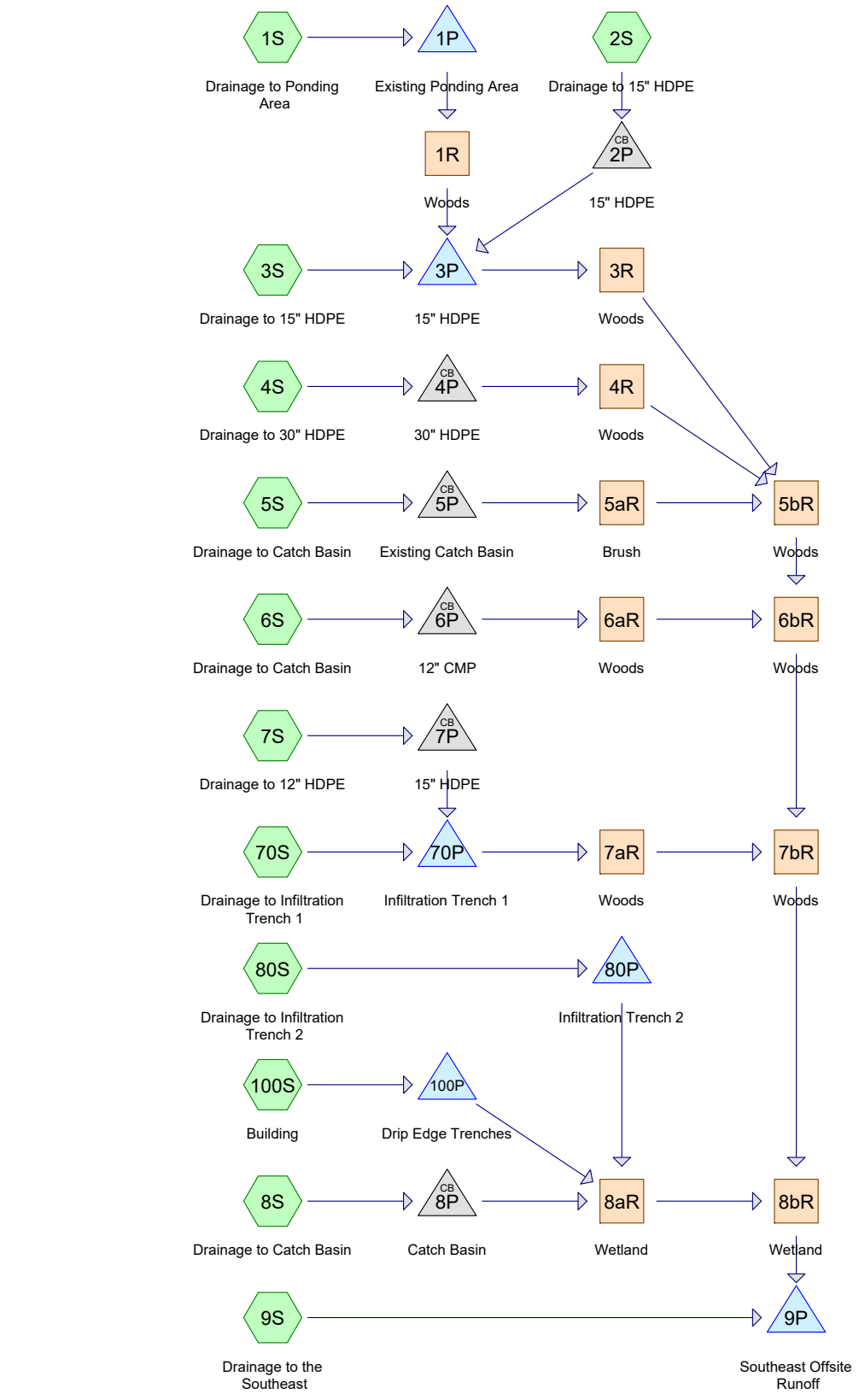
Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Pond 9P: Southeast Offsite Runoff



Post Development Drainage Summaries

2, 10 & 50 Year Storm Events



Routing Diagram for McIver Post Development

Prepared by A.C. Engineering & Consulting, Printed 11/15/2021

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2 Year	Type III 24-hr		Default	24.00	1	2.75	2
2	10 Year	Type III 24-hr		Default	24.00	1	4.01	2
3	50 Year	Type III 24-hr		Default	24.00	1	5.86	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.020	39	>75% Grass cover, Good, HSG A (9S, 80S)
3.690	74	>75% Grass cover, Good, HSG C (5S, 6S, 7S, 8S, 9S, 70S, 80S, 100S)
0.340	98	Paved roads w/curbs & sewers, HSG A (9S)
0.210	98	Paved roads w/curbs & sewers, HSG C (8S, 9S)
0.020	98	Roofs & Gravel Roads, HSG A (80S)
2.780	98	Roofs & Gravel Roads, HSG C (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 70S, 80S)
0.160	98	Roofs, HSG C (100S)
4.620	73	Woods, Fair, HSG C (1S, 3S, 4S)
0.860	30	Woods, Good, HSG A (9S)
18.840	70	Woods, Good, HSG C (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 70S)
32.540	**72**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
2.240	HSG A	9S, 80S
0.000	HSG B	
30.300	HSG C	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 70S, 80S, 100S
0.000	HSG D	
0.000	Other	
32.540		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
1.020	0.000	3.690	0.000	0.000	4.710	>75% Grass cover, Good	5S, 6S, 7S, 8S, 9S, 70S, 80S, 100S
0.340	0.000	0.210	0.000	0.000	0.550	Paved roads w/curbs & sewers	8S, 9S
0.000	0.000	0.160	0.000	0.000	0.160	Roofs	100S
0.020	0.000	2.780	0.000	0.000	2.800	Roofs & Gravel Roads	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 70S, 80S
0.000	0.000	4.620	0.000	0.000	4.620	Woods, Fair	1S, 3S, 4S
0.860	0.000	18.840	0.000	0.000	19.700	Woods, Good	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 70S
2.240	**0.000**	**30.300**	**0.000**	**0.000**	**32.540**	**TOTAL AREA**	

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 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: Drainage to Ponding Area Runoff Area=5.220 ac 0.38% Impervious Runoff Depth>0.66"
Flow Length=800' Tc=21.0 min CN=72 Runoff=2.32 cfs 0.287 af

Subcatchment 2S: Drainage to 15" HDPE Runoff Area=0.640 ac 28.13% Impervious Runoff Depth>0.95"
Flow Length=425' Tc=10.0 min CN=78 Runoff=0.59 cfs 0.051 af

Subcatchment 3S: Drainage to 15" HDPE Runoff Area=5.410 ac 2.40% Impervious Runoff Depth>0.66"
Flow Length=1,260' Tc=31.7 min CN=72 Runoff=2.03 cfs 0.296 af

Subcatchment 4S: Drainage to 30" HDPE Runoff Area=2.700 ac 0.74% Impervious Runoff Depth>0.58"
Flow Length=650' Tc=26.5 min CN=70 Runoff=0.91 cfs 0.129 af

Subcatchment 5S: Drainage to Catch Basin Runoff Area=2.560 ac 10.16% Impervious Runoff Depth>0.75"
Flow Length=540' Tc=21.9 min CN=74 Runoff=1.32 cfs 0.160 af

Subcatchment 6S: Drainage to Catch Basin Runoff Area=0.650 ac 29.23% Impervious Runoff Depth>1.06"
Flow Length=360' Tc=25.4 min CN=80 Runoff=0.48 cfs 0.057 af

Subcatchment 7S: Drainage to 12" HDPE Runoff Area=1.130 ac 17.70% Impervious Runoff Depth>0.84"
Flow Length=430' Tc=26.1 min CN=76 Runoff=0.63 cfs 0.080 af

Subcatchment 8S: Drainage to Catch Basin Runoff Area=2.650 ac 27.55% Impervious Runoff Depth>0.95"
Flow Length=805' Tc=17.0 min CN=78 Runoff=2.03 cfs 0.210 af

Subcatchment 9S: Drainage to the Southeast Runoff Area=10.100 ac 9.60% Impervious Runoff Depth>0.46"
Flow Length=1,595' Tc=28.7 min CN=67 Runoff=2.41 cfs 0.388 af

Subcatchment 70S: Drainage to Infiltration Runoff Area=1.180 ac 48.31% Impervious Runoff Depth>1.38"
Flow Length=150' Tc=14.4 min CN=85 Runoff=1.46 cfs 0.135 af

Subcatchment 80S: Drainage to Infiltration Runoff Area=0.120 ac 66.67% Impervious Runoff Depth>1.12"
Flow Length=44' Slope=0.0200 '/' Tc=0.7 min CN=81 Runoff=0.18 cfs 0.011 af

Subcatchment 100S: Building Runoff Area=0.180 ac 88.89% Impervious Runoff Depth>2.21"
Flow Length=40' Slope=0.5000 '/' Tc=0.2 min CN=95 Runoff=0.51 cfs 0.033 af

Reach 1R: Woods Avg. Flow Depth=0.13' Max Vel=2.23 fps Inflow=1.98 cfs 0.281 af
n=0.035 L=540.0' S=0.0722 '/' Capacity=733.95 cfs Outflow=1.94 cfs 0.279 af

Reach 3R: Woods Avg. Flow Depth=0.03' Max Vel=1.41 fps Inflow=0.13 cfs 0.110 af
n=0.035 L=625.0' S=0.1824 '/' Capacity=1,166.39 cfs Outflow=0.13 cfs 0.107 af

Reach 4R: Woods Avg. Flow Depth=0.05' Max Vel=1.98 fps Inflow=0.91 cfs 0.129 af
n=0.035 L=350.0' S=0.1886 '/' Capacity=118.15 cfs Outflow=0.90 cfs 0.129 af

Reach 5aR: Brush Avg. Flow Depth=0.08' Max Vel=2.26 fps Inflow=1.32 cfs 0.160 af
n=0.035 L=210.0' S=0.1286 '/' Capacity=1,226.02 cfs Outflow=1.31 cfs 0.160 af

Reach 5bR: Woods Avg. Flow Depth=0.10' Max Vel=2.36 fps Inflow=2.14 cfs 0.396 af
n=0.035 L=175.0' S=0.1029 '/' Capacity=5,561.52 cfs Outflow=2.13 cfs 0.395 af

Reach 6aR: Woods Avg. Flow Depth=0.04' Max Vel=1.41 fps Inflow=0.48 cfs 0.057 af
n=0.035 L=250.0' S=0.1240 '/' Capacity=95.81 cfs Outflow=0.47 cfs 0.057 af

Reach 6bR: Woods Avg. Flow Depth=0.13' Max Vel=1.66 fps Inflow=2.60 cfs 0.452 af
n=0.035 L=150.0' S=0.0400 '/' Capacity=215.85 cfs Outflow=2.58 cfs 0.451 af

Reach 7aR: Woods Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.035 L=100.0' S=0.0700 '/' Capacity=904.63 cfs Outflow=0.00 cfs 0.000 af

Reach 7bR: Woods Avg. Flow Depth=0.14' Max Vel=1.94 fps Inflow=2.58 cfs 0.451 af
n=0.035 L=290.0' S=0.0517 '/' Capacity=196.29 cfs Outflow=2.56 cfs 0.448 af

Reach 8aR: Wetland Avg. Flow Depth=0.17' Max Vel=1.16 fps Inflow=2.03 cfs 0.210 af
n=0.035 L=300.0' S=0.0133 '/' Capacity=394.81 cfs Outflow=1.92 cfs 0.209 af

Reach 8bR: Wetland Avg. Flow Depth=0.22' Max Vel=2.46 fps Inflow=4.05 cfs 0.657 af
n=0.035 L=90.0' S=0.0444 '/' Capacity=503.12 cfs Outflow=4.04 cfs 0.656 af

Pond 1P: Existing Ponding Area Peak Elev=851.46' Storage=0.035 af Inflow=2.32 cfs 0.287 af
Outflow=1.98 cfs 0.281 af

Pond 2P: 15" HDPE Peak Elev=815.41' Inflow=0.59 cfs 0.051 af
15.0" Round Culvert n=0.013 L=40.0' S=0.0500 '/' Outflow=0.59 cfs 0.051 af

Pond 3P: 15" HDPE Peak Elev=809.18' Storage=0.514 af Inflow=4.07 cfs 0.627 af
15.0" Round Culvert n=0.013 L=50.0' S=0.0200 '/' Outflow=0.13 cfs 0.110 af

Pond 4P: 30" HDPE Peak Elev=766.41' Inflow=0.91 cfs 0.129 af
30.0" Round Culvert n=0.013 L=40.0' S=0.1000 '/' Outflow=0.91 cfs 0.129 af

Pond 5P: Existing Catch Basin Peak Elev=730.52' Inflow=1.32 cfs 0.160 af
18.0" Round Culvert n=0.013 L=80.0' S=0.1000 '/' Outflow=1.32 cfs 0.160 af

Pond 6P: 12" CMP Peak Elev=710.39' Inflow=0.48 cfs 0.057 af
12.0" Round Culvert n=0.025 L=30.0' S=0.0333 '/' Outflow=0.48 cfs 0.057 af

Pond 7P: 15" HDPE Peak Elev=698.85' Inflow=0.63 cfs 0.080 af
15.0" Round Culvert n=0.013 L=40.0' S=0.0330 '/' Outflow=0.63 cfs 0.080 af

Pond 8P: Catch Basin Peak Elev=667.00' Inflow=2.03 cfs 0.210 af
15.0" Round Culvert n=0.020 L=160.0' S=0.0141 '/' Outflow=2.03 cfs 0.210 af

Pond 9P: Southeast Offsite Runoff Inflow=6.42 cfs 1.044 af
Primary=6.42 cfs 1.044 af

Pond 70P: Infiltration Trench 1 Peak Elev=677.83' Storage=1,943 cf Inflow=1.89 cfs 0.215 af
Discarded=0.80 cfs 0.215 af Primary=0.00 cfs 0.000 af Outflow=0.80 cfs 0.215 af

Pond 80P: Infiltration Trench 2 Peak Elev=676.15' Storage=50 cf Inflow=0.18 cfs 0.011 af
Discarded=0.08 cfs 0.011 af Primary=0.00 cfs 0.000 af Outflow=0.08 cfs 0.011 af

Pond 100P: Drip Edge Trenches Peak Elev=676.59' Storage=0.004 af Inflow=0.51 cfs 0.033 af
Discarded=0.17 cfs 0.033 af Primary=0.00 cfs 0.000 af Outflow=0.17 cfs 0.033 af

Total Runoff Area = 32.540 ac Runoff Volume = 1.838 af Average Runoff Depth = 0.68"
89.21% Pervious = 29.030 ac 10.79% Impervious = 3.510 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 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: Drainage to Ponding Area Runoff Area=5.220 ac 0.38% Impervious Runoff Depth>1.46"
Flow Length=800' Tc=21.0 min CN=72 Runoff=5.70 cfs 0.635 af

Subcatchment 2S: Drainage to 15" HDPE Runoff Area=0.640 ac 28.13% Impervious Runoff Depth>1.89"
Flow Length=425' Tc=10.0 min CN=78 Runoff=1.22 cfs 0.101 af

Subcatchment 3S: Drainage to 15" HDPE Runoff Area=5.410 ac 2.40% Impervious Runoff Depth>1.46"
Flow Length=1,260' Tc=31.7 min CN=72 Runoff=4.95 cfs 0.656 af

Subcatchment 4S: Drainage to 30" HDPE Runoff Area=2.700 ac 0.74% Impervious Runoff Depth>1.33"
Flow Length=650' Tc=26.5 min CN=70 Runoff=2.39 cfs 0.299 af

Subcatchment 5S: Drainage to Catch Basin Runoff Area=2.560 ac 10.16% Impervious Runoff Depth>1.60"
Flow Length=540' Tc=21.9 min CN=74 Runoff=3.04 cfs 0.340 af

Subcatchment 6S: Drainage to Catch Basin Runoff Area=0.650 ac 29.23% Impervious Runoff Depth>2.04"
Flow Length=360' Tc=25.4 min CN=80 Runoff=0.95 cfs 0.110 af

Subcatchment 7S: Drainage to 12" HDPE Runoff Area=1.130 ac 17.70% Impervious Runoff Depth>1.74"
Flow Length=430' Tc=26.1 min CN=76 Runoff=1.37 cfs 0.163 af

Subcatchment 8S: Drainage to Catch Basin Runoff Area=2.650 ac 27.55% Impervious Runoff Depth>1.89"
Flow Length=805' Tc=17.0 min CN=78 Runoff=4.19 cfs 0.417 af

Subcatchment 9S: Drainage to the Southeast Runoff Area=10.100 ac 9.60% Impervious Runoff Depth>1.14"
Flow Length=1,595' Tc=28.7 min CN=67 Runoff=7.22 cfs 0.961 af

Subcatchment 70S: Drainage to Infiltration Runoff Area=1.180 ac 48.31% Impervious Runoff Depth>2.46"
Flow Length=150' Tc=14.4 min CN=85 Runoff=2.61 cfs 0.242 af

Subcatchment 80S: Drainage to Infiltration Runoff Area=0.120 ac 66.67% Impervious Runoff Depth>2.13"
Flow Length=44' Slope=0.0200 '/' Tc=0.7 min CN=81 Runoff=0.34 cfs 0.021 af

Subcatchment 100S: Building Runoff Area=0.180 ac 88.89% Impervious Runoff Depth>3.44"
Flow Length=40' Slope=0.5000 '/' Tc=0.2 min CN=95 Runoff=0.77 cfs 0.052 af

Reach 1R: Woods Avg. Flow Depth=0.20' Max Vel=3.02 fps Inflow=5.35 cfs 0.626 af
n=0.035 L=540.0' S=0.0722 '/' Capacity=733.95 cfs Outflow=5.28 cfs 0.624 af

Reach 3R: Woods Avg. Flow Depth=0.04' Max Vel=1.59 fps Inflow=0.22 cfs 0.195 af
n=0.035 L=625.0' S=0.1824 '/' Capacity=1,166.39 cfs Outflow=0.22 cfs 0.191 af

Reach 4R: Woods Avg. Flow Depth=0.08' Max Vel=2.66 fps Inflow=2.39 cfs 0.299 af
n=0.035 L=350.0' S=0.1886 '/' Capacity=118.15 cfs Outflow=2.37 cfs 0.298 af

Reach 5aR: Brush Avg. Flow Depth=0.12' Max Vel=2.91 fps Inflow=3.04 cfs 0.340 af
n=0.035 L=210.0' S=0.1286 '/' Capacity=1,226.02 cfs Outflow=3.02 cfs 0.340 af

Reach 5bR: Woods Avg. Flow Depth=0.16' Max Vel=3.07 fps Inflow=5.28 cfs 0.828 af
n=0.035 L=175.0' S=0.1029 '/' Capacity=5,561.52 cfs Outflow=5.25 cfs 0.827 af

Reach 6aR: Woods Avg. Flow Depth=0.06' Max Vel=1.73 fps Inflow=0.95 cfs 0.110 af
n=0.035 L=250.0' S=0.1240 '/' Capacity=95.81 cfs Outflow=0.94 cfs 0.110 af

Reach 6bR: Woods Avg. Flow Depth=0.19' Max Vel=2.17 fps Inflow=6.19 cfs 0.937 af
n=0.035 L=150.0' S=0.0400 '/' Capacity=215.85 cfs Outflow=6.16 cfs 0.935 af

Reach 7aR: Woods Avg. Flow Depth=0.08' Max Vel=1.58 fps Inflow=0.83 cfs 0.030 af
n=0.035 L=100.0' S=0.0700 '/' Capacity=904.63 cfs Outflow=0.82 cfs 0.030 af

Reach 7bR: Woods Avg. Flow Depth=0.21' Max Vel=2.60 fps Inflow=6.66 cfs 0.965 af
n=0.035 L=290.0' S=0.0517 '/' Capacity=196.29 cfs Outflow=6.60 cfs 0.962 af

Reach 8aR: Wetland Avg. Flow Depth=0.24' Max Vel=1.45 fps Inflow=4.19 cfs 0.417 af
n=0.035 L=300.0' S=0.0133 '/' Capacity=394.81 cfs Outflow=4.04 cfs 0.415 af

Reach 8bR: Wetland Avg. Flow Depth=0.32' Max Vel=3.19 fps Inflow=9.54 cfs 1.377 af
n=0.035 L=90.0' S=0.0444 '/' Capacity=503.12 cfs Outflow=9.53 cfs 1.376 af

Pond 1P: Existing Ponding Area Peak Elev=851.72' Storage=0.058 af Inflow=5.70 cfs 0.635 af
Outflow=5.35 cfs 0.626 af

Pond 2P: 15" HDPE Peak Elev=815.60' Inflow=1.22 cfs 0.101 af
15.0" Round Culvert n=0.013 L=40.0' S=0.0500 '/' Outflow=1.22 cfs 0.101 af

Pond 3P: 15" HDPE Peak Elev=809.24' Storage=1.184 af Inflow=10.72 cfs 1.381 af
15.0" Round Culvert n=0.013 L=50.0' S=0.0200 '/' Outflow=0.22 cfs 0.195 af

Pond 4P: 30" HDPE Peak Elev=766.68' Inflow=2.39 cfs 0.299 af
30.0" Round Culvert n=0.013 L=40.0' S=0.1000 '/' Outflow=2.39 cfs 0.299 af

Pond 5P: Existing Catch Basin Peak Elev=730.82' Inflow=3.04 cfs 0.340 af
18.0" Round Culvert n=0.013 L=80.0' S=0.1000 '/' Outflow=3.04 cfs 0.340 af

Pond 6P: 12" CMP Peak Elev=710.57' Inflow=0.95 cfs 0.110 af
12.0" Round Culvert n=0.025 L=30.0' S=0.0333 '/' Outflow=0.95 cfs 0.110 af

Pond 7P: 15" HDPE Peak Elev=699.07' Inflow=1.37 cfs 0.163 af
15.0" Round Culvert n=0.013 L=40.0' S=0.0330 '/' Outflow=1.37 cfs 0.163 af

Pond 8P: Catch Basin Peak Elev=667.45' Inflow=4.19 cfs 0.417 af
15.0" Round Culvert n=0.020 L=160.0' S=0.0141 '/' Outflow=4.19 cfs 0.417 af

Pond 9P: Southeast Offsite Runoff Inflow=16.64 cfs 2.337 af
Primary=16.64 cfs 2.337 af

Pond 70P: Infiltration Trench 1 Peak Elev=678.34' Storage=4,248 cf Inflow=3.63 cfs 0.405 af
Discarded=1.10 cfs 0.375 af Primary=0.83 cfs 0.030 af Outflow=1.94 cfs 0.405 af

Pond 80P: Infiltration Trench 2 Peak Elev=676.42' Storage=169 cf Inflow=0.34 cfs 0.021 af
Discarded=0.11 cfs 0.021 af Primary=0.00 cfs 0.000 af Outflow=0.11 cfs 0.021 af

Pond 100P: Drip Edge Trenches Peak Elev=677.43' Storage=0.011 af Inflow=0.77 cfs 0.052 af
Discarded=0.17 cfs 0.052 af Primary=0.00 cfs 0.000 af Outflow=0.17 cfs 0.052 af

Total Runoff Area = 32.540 ac Runoff Volume = 3.998 af Average Runoff Depth = 1.47"
89.21% Pervious = 29.030 ac 10.79% Impervious = 3.510 ac

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 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: Drainage to Ponding Area Runoff Area=5.220 ac 0.38% Impervious Runoff Depth>2.87"
Flow Length=800' Tc=21.0 min CN=72 Runoff=11.55 cfs 1.247 af

Subcatchment 2S: Drainage to 15" HDPE Runoff Area=0.640 ac 28.13% Impervious Runoff Depth>3.45"
Flow Length=425' Tc=10.0 min CN=78 Runoff=2.24 cfs 0.184 af

Subcatchment 3S: Drainage to 15" HDPE Runoff Area=5.410 ac 2.40% Impervious Runoff Depth>2.86"
Flow Length=1,260' Tc=31.7 min CN=72 Runoff=10.02 cfs 1.289 af

Subcatchment 4S: Drainage to 30" HDPE Runoff Area=2.700 ac 0.74% Impervious Runoff Depth>2.68"
Flow Length=650' Tc=26.5 min CN=70 Runoff=5.04 cfs 0.603 af

Subcatchment 5S: Drainage to Catch Basin Runoff Area=2.560 ac 10.16% Impervious Runoff Depth>3.05"
Flow Length=540' Tc=21.9 min CN=74 Runoff=5.95 cfs 0.652 af

Subcatchment 6S: Drainage to Catch Basin Runoff Area=0.650 ac 29.23% Impervious Runoff Depth>3.64"
Flow Length=360' Tc=25.4 min CN=80 Runoff=1.69 cfs 0.197 af

Subcatchment 7S: Drainage to 12" HDPE Runoff Area=1.130 ac 17.70% Impervious Runoff Depth>3.24"
Flow Length=430' Tc=26.1 min CN=76 Runoff=2.59 cfs 0.305 af

Subcatchment 8S: Drainage to Catch Basin Runoff Area=2.650 ac 27.55% Impervious Runoff Depth>3.44"
Flow Length=805' Tc=17.0 min CN=78 Runoff=7.69 cfs 0.761 af

Subcatchment 9S: Drainage to the Southeast Runoff Area=10.100 ac 9.60% Impervious Runoff Depth>2.41"
Flow Length=1,595' Tc=28.7 min CN=67 Runoff=16.23 cfs 2.027 af

Subcatchment 70S: Drainage to Infiltration Runoff Area=1.180 ac 48.31% Impervious Runoff Depth>4.16"
Flow Length=150' Tc=14.4 min CN=85 Runoff=4.35 cfs 0.409 af

Subcatchment 80S: Drainage to Infiltration Runoff Area=0.120 ac 66.67% Impervious Runoff Depth>3.76"
Flow Length=44' Slope=0.0200 '/' Tc=0.7 min CN=81 Runoff=0.59 cfs 0.038 af

Subcatchment 100S: Building Runoff Area=0.180 ac 88.89% Impervious Runoff Depth>5.27"
Flow Length=40' Slope=0.5000 '/' Tc=0.2 min CN=95 Runoff=1.16 cfs 0.079 af

Reach 1R: Woods Avg. Flow Depth=0.29' Max Vel=3.80 fps Inflow=11.29 cfs 1.236 af
n=0.035 L=540.0' S=0.0722 '/' Capacity=733.95 cfs Outflow=11.08 cfs 1.232 af

Reach 3R: Woods Avg. Flow Depth=0.05' Max Vel=1.84 fps Inflow=0.35 cfs 0.314 af
n=0.035 L=625.0' S=0.1824 '/' Capacity=1,166.39 cfs Outflow=0.35 cfs 0.308 af

Reach 4R: Woods Avg. Flow Depth=0.12' Max Vel=3.36 fps Inflow=5.04 cfs 0.603 af
n=0.035 L=350.0' S=0.1886 '/' Capacity=118.15 cfs Outflow=5.00 cfs 0.602 af

Reach 5aR: Brush Avg. Flow Depth=0.17' Max Vel=3.58 fps Inflow=5.95 cfs 0.652 af
n=0.035 L=210.0' S=0.1286 '/' Capacity=1,226.02 cfs Outflow=5.90 cfs 0.651 af

Reach 5bR: Woods Avg. Flow Depth=0.22' Max Vel=3.84 fps Inflow=10.77 cfs 1.561 af
n=0.035 L=175.0' S=0.1029 '/' Capacity=5,561.52 cfs Outflow=10.73 cfs 1.559 af

Reach 6aR: Woods Avg. Flow Depth=0.08' Max Vel=2.07 fps Inflow=1.69 cfs 0.197 af
n=0.035 L=250.0' S=0.1240 '/' Capacity=95.81 cfs Outflow=1.68 cfs 0.197 af

Reach 6bR: Woods Avg. Flow Depth=0.27' Max Vel=2.69 fps Inflow=12.40 cfs 1.756 af
n=0.035 L=150.0' S=0.0400 '/' Capacity=215.85 cfs Outflow=12.32 cfs 1.753 af

Reach 7aR: Woods Avg. Flow Depth=0.16' Max Vel=2.52 fps Inflow=3.82 cfs 0.176 af
n=0.035 L=100.0' S=0.0700 '/' Capacity=904.63 cfs Outflow=3.79 cfs 0.176 af

Reach 7bR: Woods Avg. Flow Depth=0.32' Max Vel=3.41 fps Inflow=16.11 cfs 1.929 af
n=0.035 L=290.0' S=0.0517 '/' Capacity=196.29 cfs Outflow=15.98 cfs 1.925 af

Reach 8aR: Wetland Avg. Flow Depth=0.32' Max Vel=1.75 fps Inflow=7.69 cfs 0.761 af
n=0.035 L=300.0' S=0.0133 '/' Capacity=394.81 cfs Outflow=7.54 cfs 0.759 af

Reach 8bR: Wetland Avg. Flow Depth=0.47' Max Vel=4.13 fps Inflow=22.07 cfs 2.683 af
n=0.035 L=90.0' S=0.0444 '/' Capacity=503.12 cfs Outflow=22.02 cfs 2.682 af

Pond 1P: Existing Ponding Area Peak Elev=852.01' Storage=0.085 af Inflow=11.55 cfs 1.247 af
Outflow=11.29 cfs 1.236 af

Pond 2P: 15" HDPE Peak Elev=815.86' Inflow=2.24 cfs 0.184 af
15.0" Round Culvert n=0.013 L=40.0' S=0.0500 '/' Outflow=2.24 cfs 0.184 af

Pond 3P: 15" HDPE Peak Elev=809.31' Storage=2.385 af Inflow=22.02 cfs 2.706 af
15.0" Round Culvert n=0.013 L=50.0' S=0.0200 '/' Outflow=0.35 cfs 0.314 af

Pond 4P: 30" HDPE Peak Elev=767.01' Inflow=5.04 cfs 0.603 af
30.0" Round Culvert n=0.013 L=40.0' S=0.1000 '/' Outflow=5.04 cfs 0.603 af

Pond 5P: Existing Catch Basin Peak Elev=731.24' Inflow=5.95 cfs 0.652 af
18.0" Round Culvert n=0.013 L=80.0' S=0.1000 '/' Outflow=5.95 cfs 0.652 af

Pond 6P: 12" CMP Peak Elev=710.82' Inflow=1.69 cfs 0.197 af
12.0" Round Culvert n=0.025 L=30.0' S=0.0333 '/' Outflow=1.69 cfs 0.197 af

Pond 7P: 15" HDPE Peak Elev=699.37' Inflow=2.59 cfs 0.305 af
15.0" Round Culvert n=0.013 L=40.0' S=0.0330 '/' Outflow=2.59 cfs 0.305 af

Pond 8P: Catch Basin Peak Elev=671.54' Inflow=7.69 cfs 0.761 af
15.0" Round Culvert n=0.020 L=160.0' S=0.0141 '/' Outflow=7.69 cfs 0.761 af

Pond 9P: Southeast Offsite Runoff Inflow=38.18 cfs 4.709 af
Primary=38.18 cfs 4.709 af

Pond 70P: Infiltration Trench 1 Peak Elev=678.59' Storage=5,719 cf Inflow=6.36 cfs 0.715 af
Discarded=1.26 cfs 0.538 af Primary=3.82 cfs 0.176 af Outflow=5.08 cfs 0.714 af

Pond 80P: Infiltration Trench 2 Peak Elev=676.80' Storage=400 cf Inflow=0.59 cfs 0.038 af
Discarded=0.15 cfs 0.038 af Primary=0.00 cfs 0.000 af Outflow=0.15 cfs 0.038 af

Pond 100P: Drip Edge Trenches Peak Elev=678.88' Storage=0.021 af Inflow=1.16 cfs 0.079 af
Discarded=0.17 cfs 0.079 af Primary=0.00 cfs 0.000 af Outflow=0.17 cfs 0.079 af

Total Runoff Area = 32.540 ac Runoff Volume = 7.791 af Average Runoff Depth = 2.87"
89.21% Pervious = 29.030 ac 10.79% Impervious = 3.510 ac

Post Development Drainage Calculations

10 Year Storm Event

Summary for Subcatchment 1S: Drainage to Ponding Area

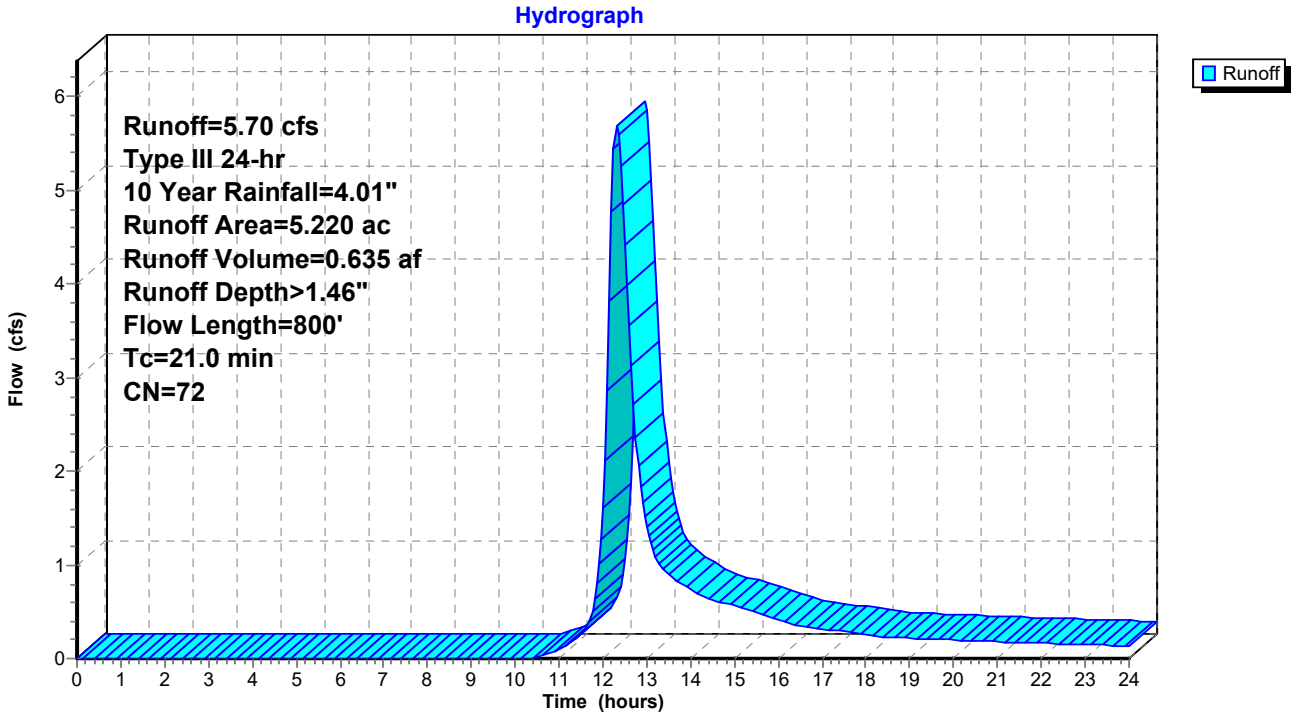
Runoff = 5.70 cfs @ 12.31 hrs, Volume= 0.635 af, Depth> 1.46"
Routed to Pond 1P : Existing Ponding Area

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.01"

	Area (ac)	CN	Description
	2.540	70	Woods, Good, HSG C
	2.660	73	Woods, Fair, HSG C
*	0.020	98	Roofs & Gravel Roads, HSG C
	5.220	72	Weighted Average
	5.200		99.62% Pervious Area
	0.020		0.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	100	0.3000	0.12		**Sheet Flow, Woods** Woods: Dense underbrush n= 0.800 P2= 2.75"
2.2	200	0.3750	1.53		**Shallow Concentrated Flow, Woods** Forest w/Heavy Litter Kv= 2.5 fps
3.4	450	0.1900	2.18		**Shallow Concentrated Flow, Light Woods** Woodland Kv= 5.0 fps
1.7	50	0.0400	0.50		**Shallow Concentrated Flow, Woods** Forest w/Heavy Litter Kv= 2.5 fps
21.0	800	Total			

Subcatchment 1S: Drainage to Ponding Area



Summary for Subcatchment 2S: Drainage to 15" HDPE

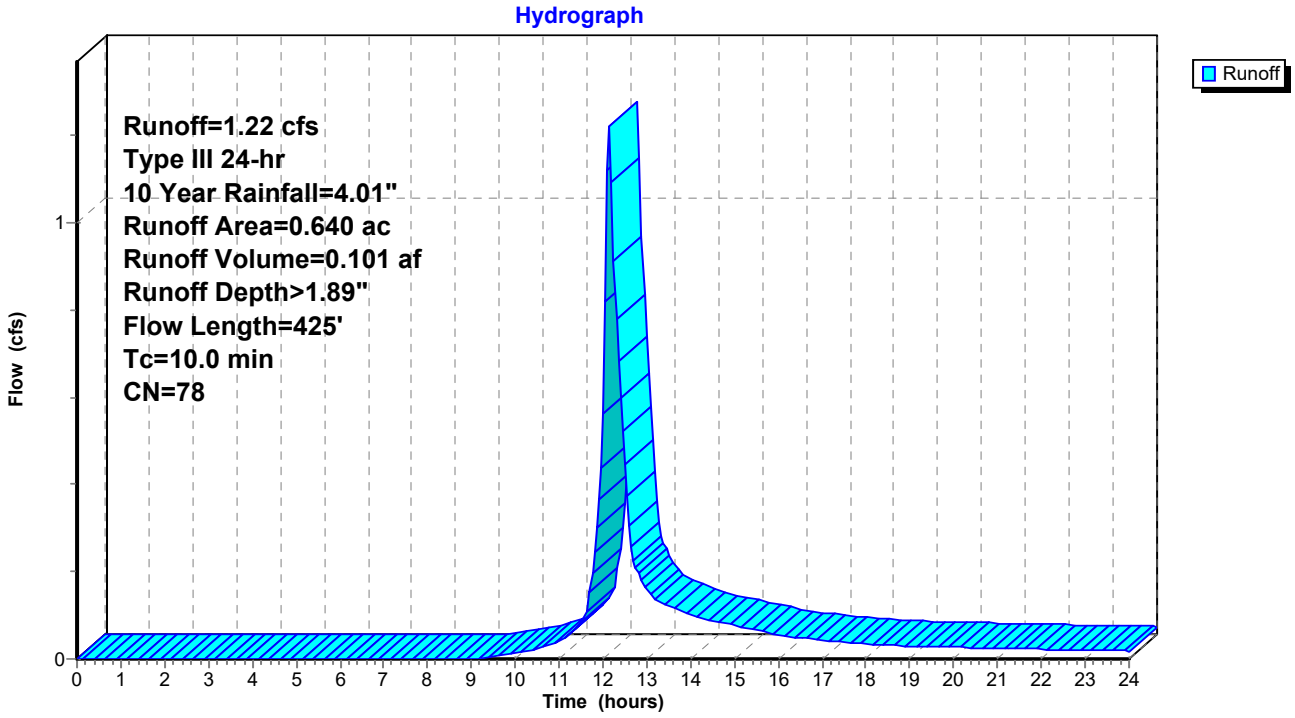
Runoff = 1.22 cfs @ 12.15 hrs, Volume= 0.101 af, Depth> 1.89"
Routed to Pond 2P : 15" HDPE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.01"

	Area (ac)	CN	Description
	0.460	70	Woods, Good, HSG C
*	0.180	98	Roofs & Gravel Roads, HSG C
	0.640	78	Weighted Average
	0.460		71.88% Pervious Area
	0.180		28.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	40	0.1500	0.08		**Sheet Flow, Woods** Woods: Dense underbrush n= 0.800 P2= 2.75"
1.3	385	0.0900	4.83		**Shallow Concentrated Flow, Edge of Travelway** Unpaved Kv= 16.1 fps
10.0	425	Total			

Subcatchment 2S: Drainage to 15" HDPE



Summary for Subcatchment 3S: Drainage to 15" HDPE

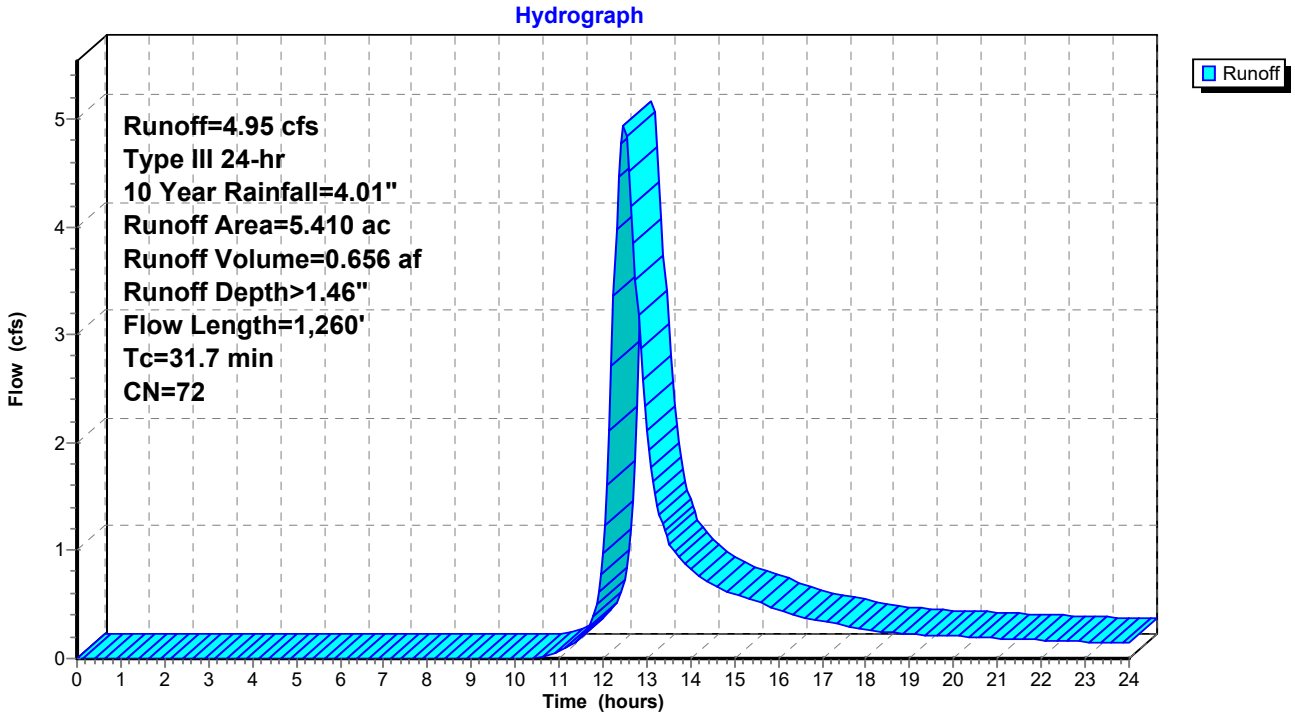
Runoff = 4.95 cfs @ 12.47 hrs, Volume= 0.656 af, Depth> 1.46"
Routed to Pond 3P : 15" HDPE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.01"

	Area (ac)	CN	Description
	3.390	70	Woods, Good, HSG C
	1.890	73	Woods, Fair, HSG C
*	0.130	98	Roofs & Gravel Roads, HSG C
	5.410	72	Weighted Average
	5.280		97.60% Pervious Area
	0.130		2.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	100	0.3300	0.13		**Sheet Flow, Woods** Woods: Dense underbrush n= 0.800 P2= 2.75"
9.8	640	0.1900	1.09		**Shallow Concentrated Flow, Woods** Forest w/Heavy Litter Kv= 2.5 fps
2.0	270	0.2100	2.29		**Shallow Concentrated Flow, Light Woods** Woodland Kv= 5.0 fps
6.8	250	0.0600	0.61		**Shallow Concentrated Flow, Woods** Forest w/Heavy Litter Kv= 2.5 fps
31.7	1,260	Total			

Subcatchment 3S: Drainage to 15" HDPE



Summary for Subcatchment 4S: Drainage to 30" HDPE

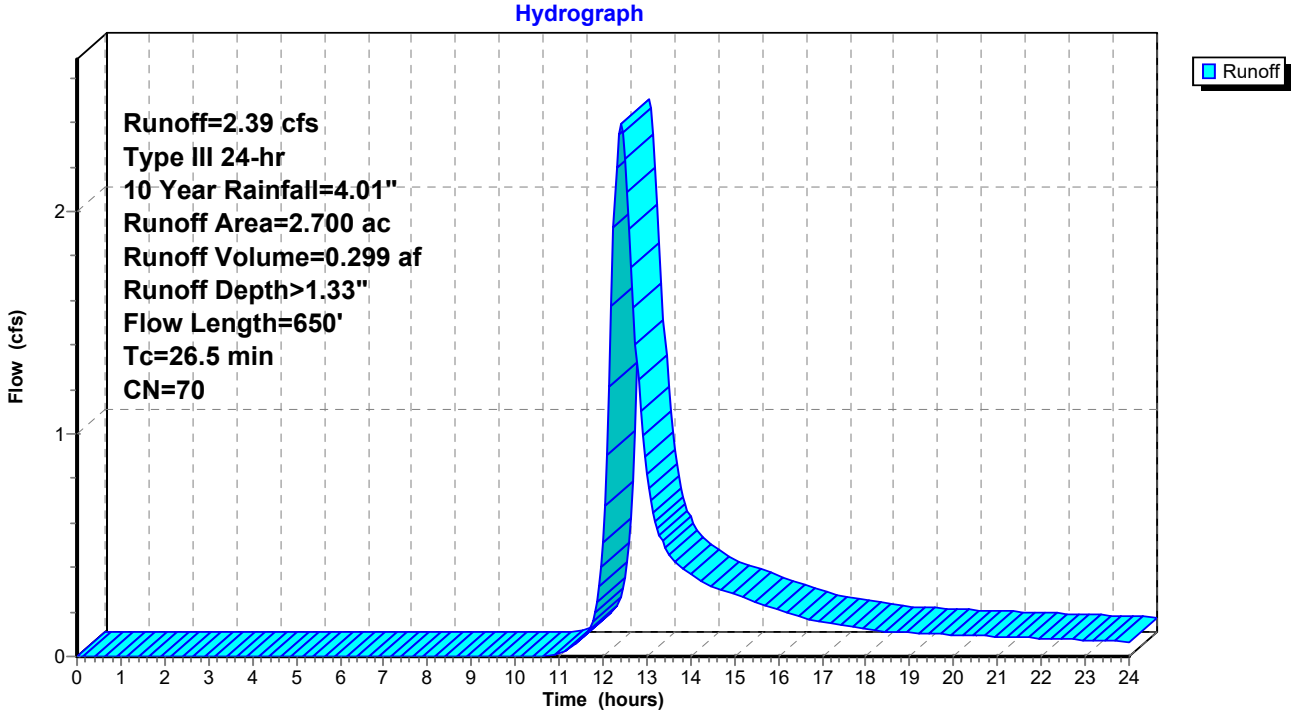
Runoff = 2.39 cfs @ 12.40 hrs, Volume= 0.299 af, Depth> 1.33"
Routed to Pond 4P : 30" HDPE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.01"

	Area (ac)	CN	Description
	2.610	70	Woods, Good, HSG C
	0.070	73	Woods, Fair, HSG C
*	0.020	98	Roofs & Gravel Roads, HSG C
	2.700	70	Weighted Average
	2.680		99.26% Pervious Area
	0.020		0.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.6	100	0.1600	0.09		**Sheet Flow, Woods** Woods: Dense underbrush n= 0.800 P2= 2.75"
8.9	550	0.1700	1.03		**Shallow Concentrated Flow, Woods** Forest w/Heavy Litter Kv= 2.5 fps
26.5	650	Total			

Subcatchment 4S: Drainage to 30" HDPE



Summary for Subcatchment 5S: Drainage to Catch Basin

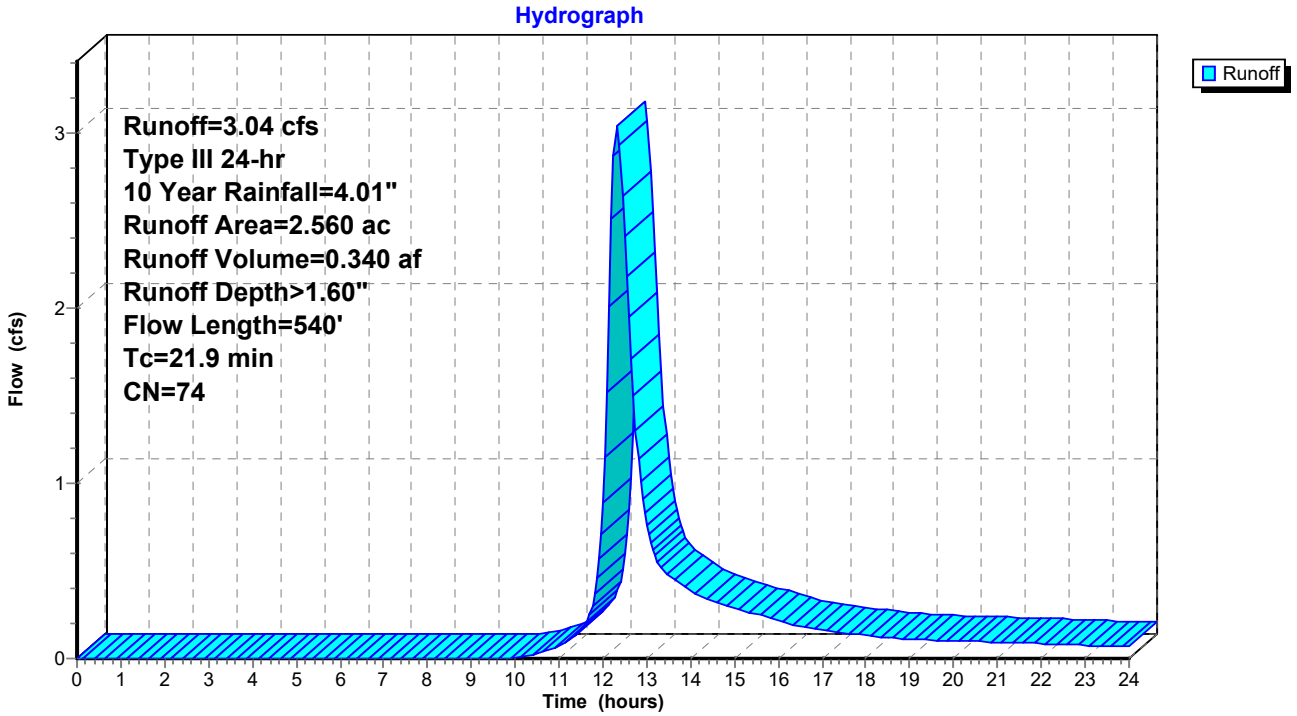
Runoff = 3.04 cfs @ 12.32 hrs, Volume= 0.340 af, Depth> 1.60"
Routed to Pond 5P : Existing Catch Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.01"

	Area (ac)	CN	Description
	1.830	70	Woods, Good, HSG C
	0.470	74	>75% Grass cover, Good, HSG C
*	0.260	98	Roofs & Gravel Roads, HSG C
	2.560	74	Weighted Average
	2.300		89.84% Pervious Area
	0.260		10.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.6	100	0.1600	0.09		**Sheet Flow, Woods** Woods: Dense underbrush n= 0.800 P2= 2.75"
2.3	180	0.2700	1.30		**Shallow Concentrated Flow, Woods** Forest w/Heavy Litter Kv= 2.5 fps
2.0	260	0.1000	2.21		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
21.9	540	Total			

Subcatchment 5S: Drainage to Catch Basin



Summary for Subcatchment 6S: Drainage to Catch Basin

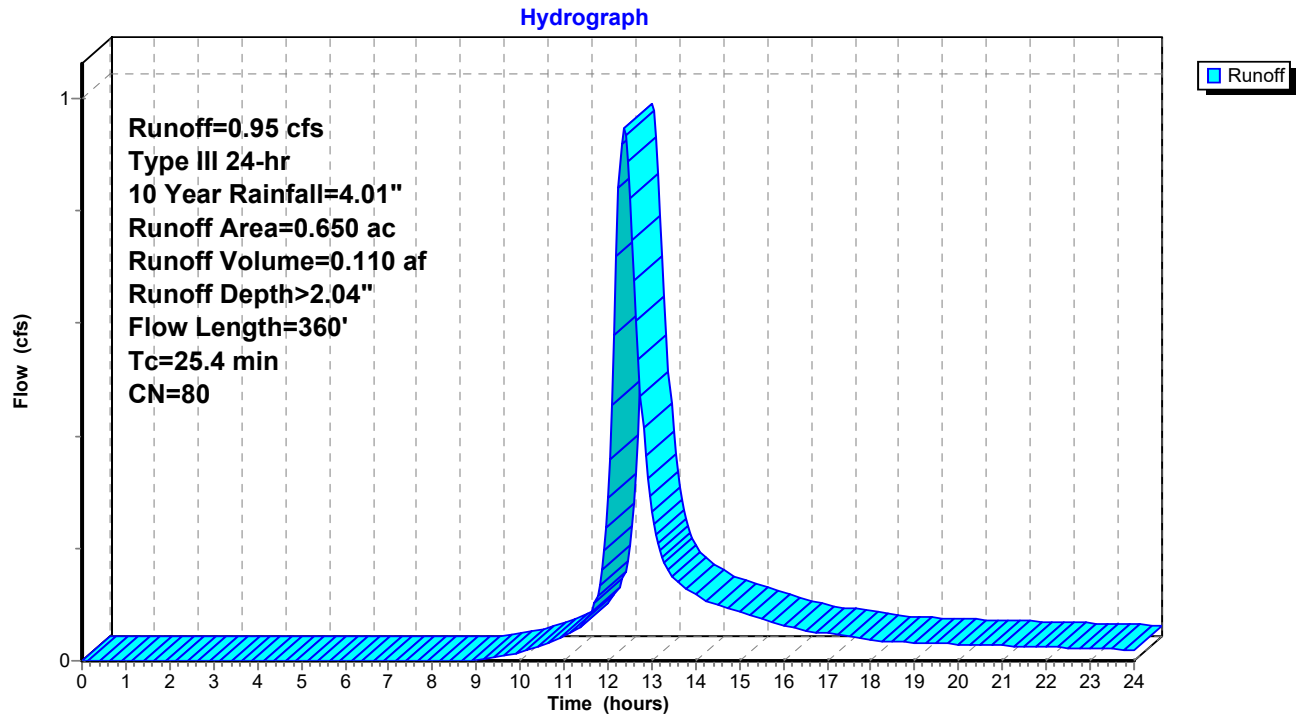
Runoff = 0.95 cfs @ 12.36 hrs, Volume= 0.110 af, Depth> 2.04"
Routed to Pond 6P : 12" CMP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.01"

	Area (ac)	CN	Description
	0.220	70	Woods, Good, HSG C
	0.240	74	>75% Grass cover, Good, HSG C
*	0.190	98	Roofs & Gravel Roads, HSG C
	0.650	80	Weighted Average
	0.460		70.77% Pervious Area
	0.190		29.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.4	100	0.0700	0.07		**Sheet Flow, Woods** Woods: Dense underbrush n= 0.800 P2= 2.75"
0.8	140	0.1900	3.05		**Shallow Concentrated Flow, Brush** Short Grass Pasture Kv= 7.0 fps
0.2	120	0.1000	9.40	56.38	**Trap/Vee/Rect Channel Flow, Roadside Ditch** Bot.W=2.00' D=1.00' Z= 4.0 '/' Top.W=10.00' n= 0.035 Earth, dense weeds
25.4	360	Total			

Subcatchment 6S: Drainage to Catch Basin



Summary for Subcatchment 7S: Drainage to 12" HDPE

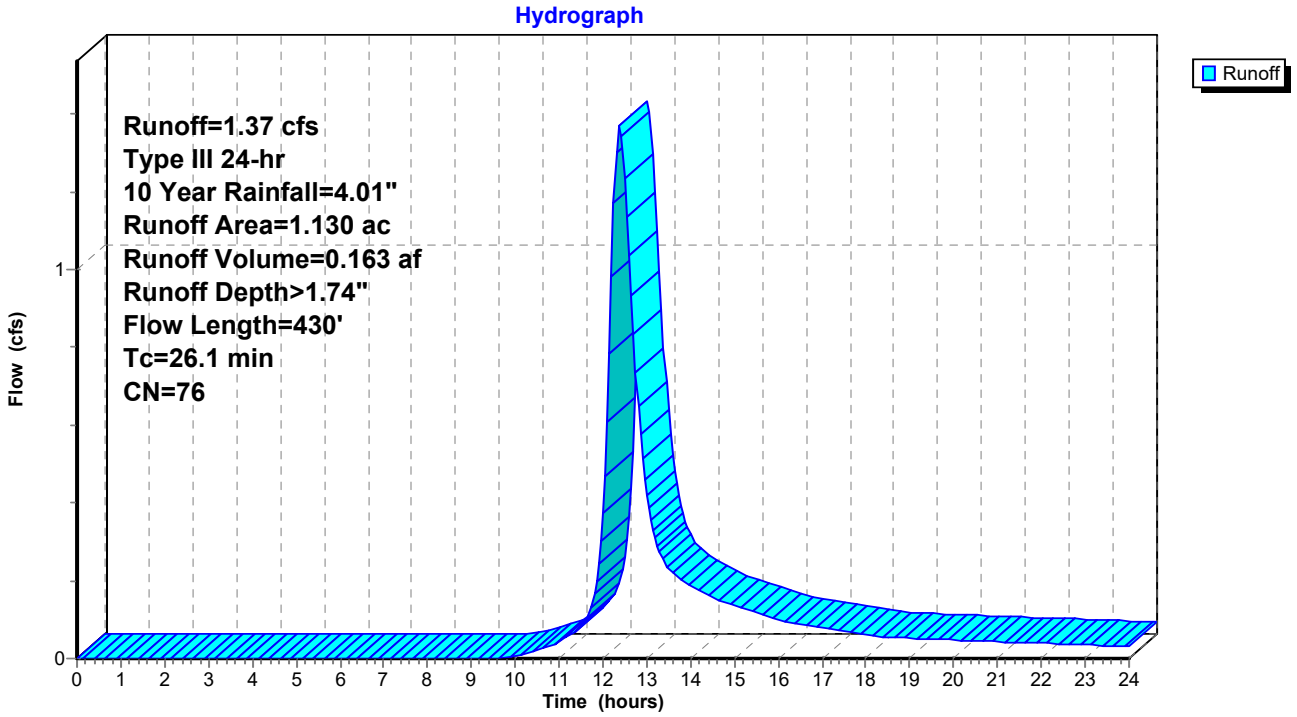
Runoff = 1.37 cfs @ 12.38 hrs, Volume= 0.163 af, Depth> 1.74"
Routed to Pond 7P : 15" HDPE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.01"

	Area (ac)	CN	Description
	0.660	70	Woods, Good, HSG C
	0.270	74	>75% Grass cover, Good, HSG C
*	0.200	98	Roofs & Gravel Roads, HSG C
	1.130	76	Weighted Average
	0.930		82.30% Pervious Area
	0.200		17.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.1	100	0.0900	0.08		**Sheet Flow, Woods** Woods: Dense underbrush n= 0.800 P2= 2.75"
0.6	110	0.2100	3.21		**Shallow Concentrated Flow, Brush** Short Grass Pasture Kv= 7.0 fps
3.2	160	0.1100	0.83		**Shallow Concentrated Flow, Woods** Forest w/Heavy Litter Kv= 2.5 fps
0.2	60	0.0500	6.64	39.87	**Trap/Vee/Rect Channel Flow, Roadside Ditch** Bot.W=2.00' D=1.00' Z= 4.0 '/' Top.W=10.00' n= 0.035 Earth, dense weeds
26.1	430	Total			

Subcatchment 7S: Drainage to 12" HDPE



Summary for Subcatchment 8S: Drainage to Catch Basin

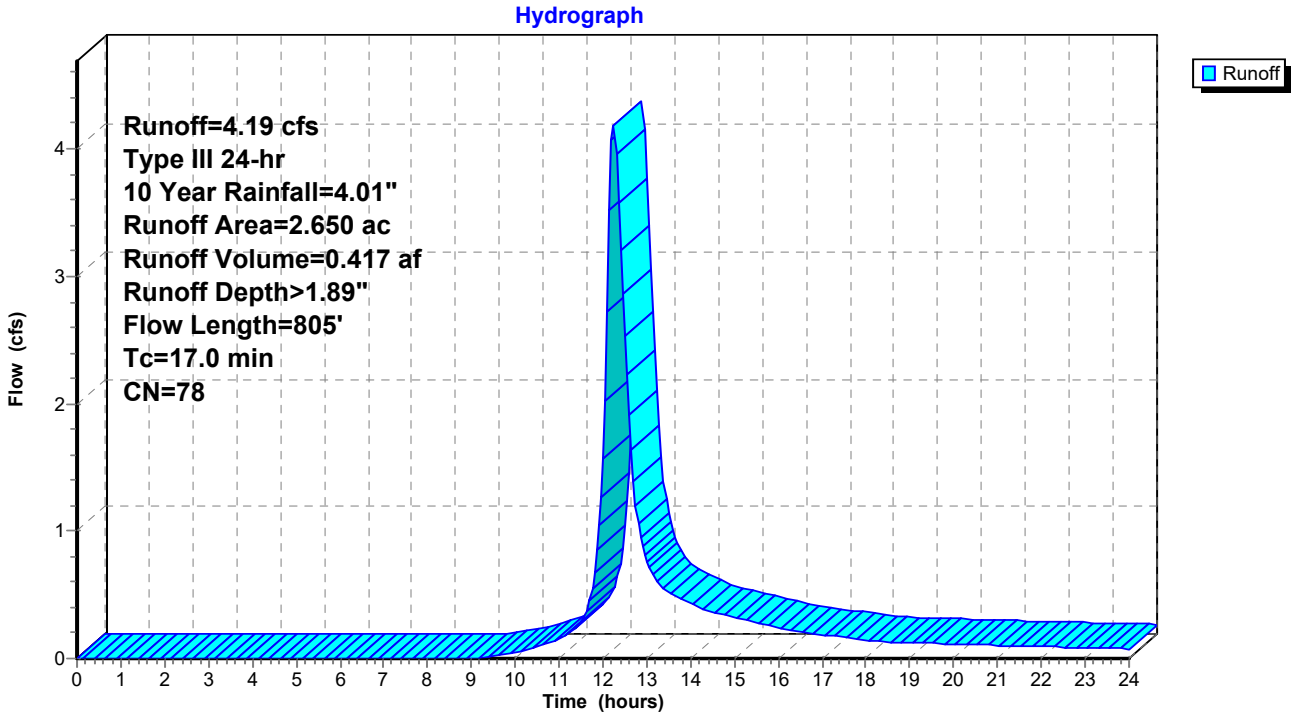
Runoff = 4.19 cfs @ 12.24 hrs, Volume= 0.417 af, Depth> 1.89"
Routed to Pond 8P : Catch Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.01"

	Area (ac)	CN	Description
	1.540	70	Woods, Good, HSG C
	0.380	74	>75% Grass cover, Good, HSG C
*	0.540	98	Roofs & Gravel Roads, HSG C
	0.190	98	Paved roads w/curbs & sewers, HSG C
	2.650	78	Weighted Average
	1.920		72.45% Pervious Area
	0.730		27.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	100	0.1000	0.34		**Sheet Flow, Brush** Range n= 0.130 P2= 2.75"
1.3	60	0.1000	0.79		**Shallow Concentrated Flow, Woods** Forest w/Heavy Litter Kv= 2.5 fps
0.5	200	0.1500	6.24		**Shallow Concentrated Flow, Gravel** Unpaved Kv= 16.1 fps
10.1	370	0.0600	0.61		**Shallow Concentrated Flow, Woods** Forest w/Heavy Litter Kv= 2.5 fps
0.1	75	0.1200	9.01	54.05	**Trap/Vee/Rect Channel Flow, Roadside Ditch** Bot.W=2.00' D=1.00' Z= 4.0 '/' Top.W=10.00' n= 0.040 Earth, cobble bottom, clean sides
17.0	805	Total			

Subcatchment 8S: Drainage to Catch Basin



Summary for Subcatchment 9S: Drainage to the Southeast

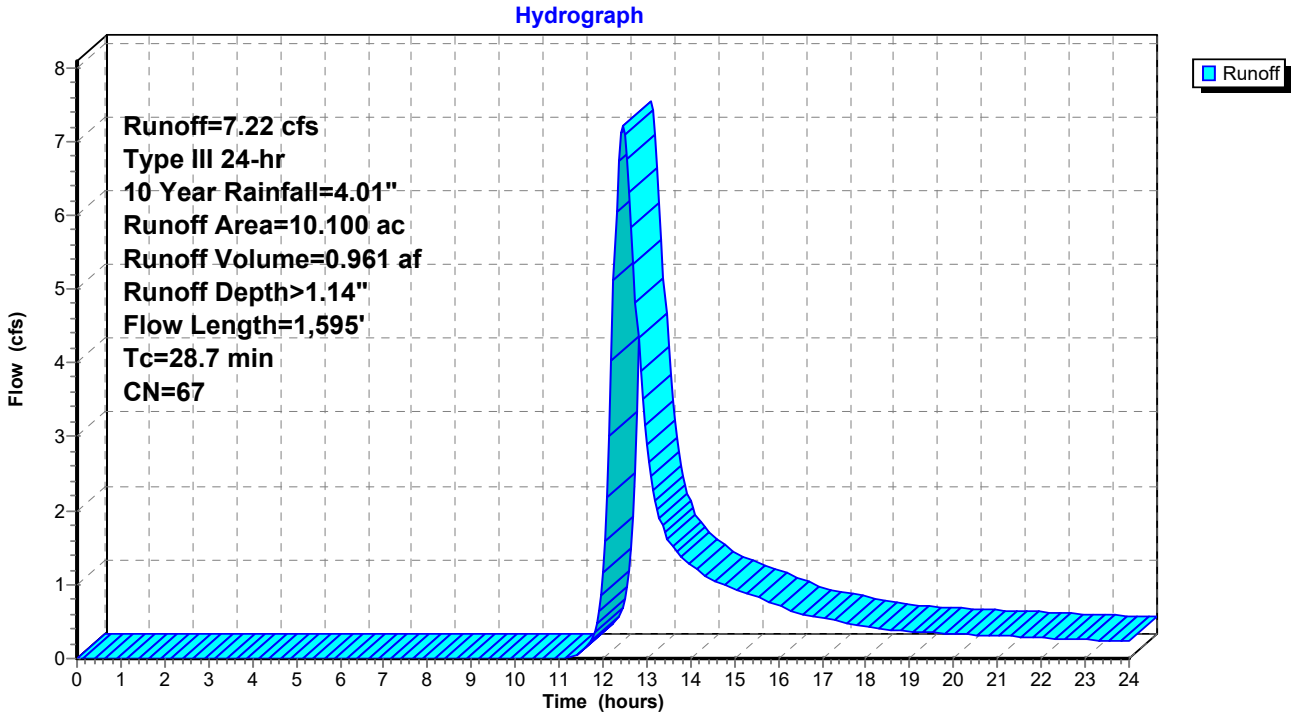
Runoff = 7.22 cfs @ 12.45 hrs, Volume= 0.961 af, Depth> 1.14"
Routed to Pond 9P : Southeast Offsite Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.01"

	Area (ac)	CN	Description
	0.860	30	Woods, Good, HSG A
	0.990	39	>75% Grass cover, Good, HSG A
	0.340	98	Paved roads w/curbs & sewers, HSG A
	5.520	70	Woods, Good, HSG C
	1.760	74	>75% Grass cover, Good, HSG C
*	0.610	98	Roofs & Gravel Roads, HSG C
	0.020	98	Paved roads w/curbs & sewers, HSG C
	10.100	67	Weighted Average
	9.130		90.40% Pervious Area
	0.970		9.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.1	100	0.2000	0.10		**Sheet Flow, Woods** Woods: Dense underbrush n= 0.800 P2= 2.75"
0.5	30	0.1700	1.03		**Shallow Concentrated Flow, Woods** Forest w/Heavy Litter Kv= 2.5 fps
0.3	40	0.0200	2.28		**Shallow Concentrated Flow, Gravel** Unpaved Kv= 16.1 fps
10.1	640	0.1800	1.06		**Shallow Concentrated Flow, Woods** Forest w/Heavy Litter Kv= 2.5 fps
1.7	785	0.0600	7.92	158.42	**Parabolic Channel, Woods** W=30.00' D=1.00' Area=20.0 sf Perim=30.1' n= 0.035 Earth, dense weeds
28.7	1,595	Total			

Subcatchment 9S: Drainage to the Southeast



Summary for Subcatchment 70S: Drainage to Infiltration Trench 1

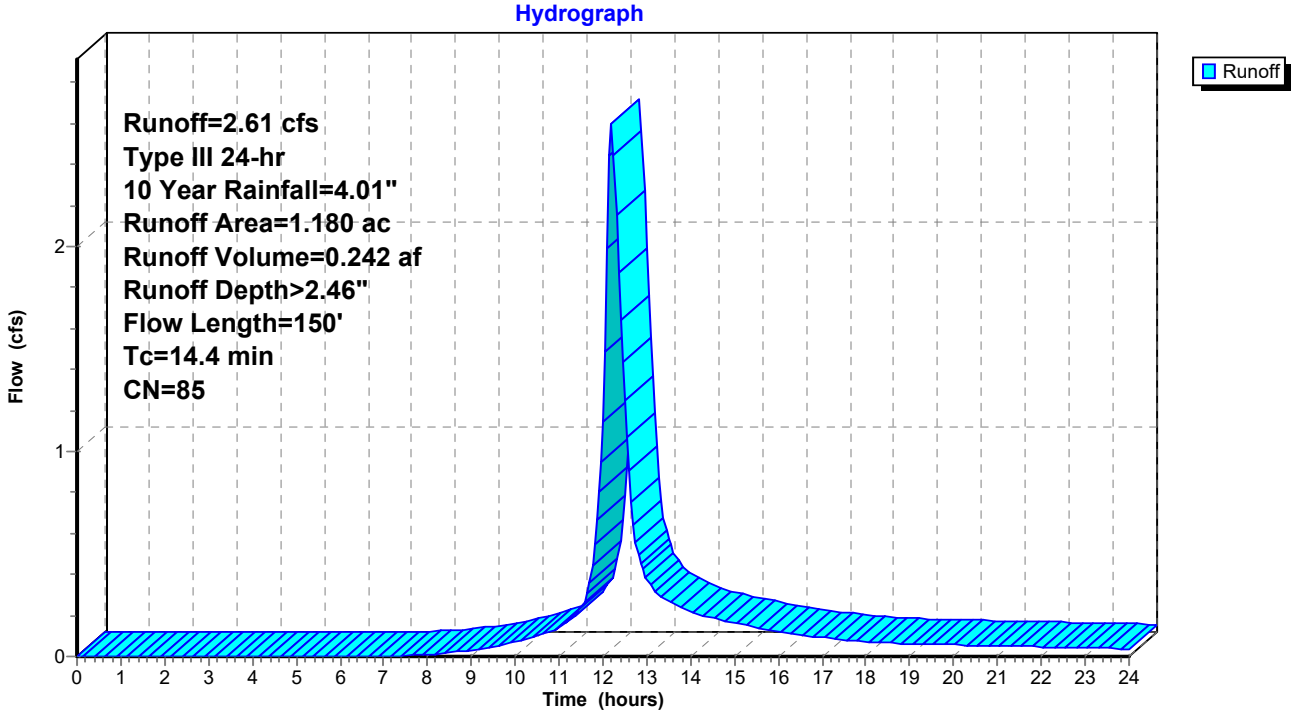
Runoff = 2.61 cfs @ 12.20 hrs, Volume= 0.242 af, Depth> 2.46"
Routed to Pond 70P : Infiltration Trench 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.01"

	Area (ac)	CN	Description
	0.070	70	Woods, Good, HSG C
	0.540	74	>75% Grass cover, Good, HSG C
*	0.570	98	Roofs & Gravel Roads, HSG C
	1.180	85	Weighted Average
	0.610		51.69% Pervious Area
	0.570		48.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	80	0.1800	0.10		**Sheet Flow, Woods** Woods: Dense underbrush n= 0.800 P2= 2.75"
0.4	70	0.1500	2.71		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
14.4	150	Total			

Subcatchment 70S: Drainage to Infiltration Trench 1



Summary for Subcatchment 80S: Drainage to Infiltration Trench 2

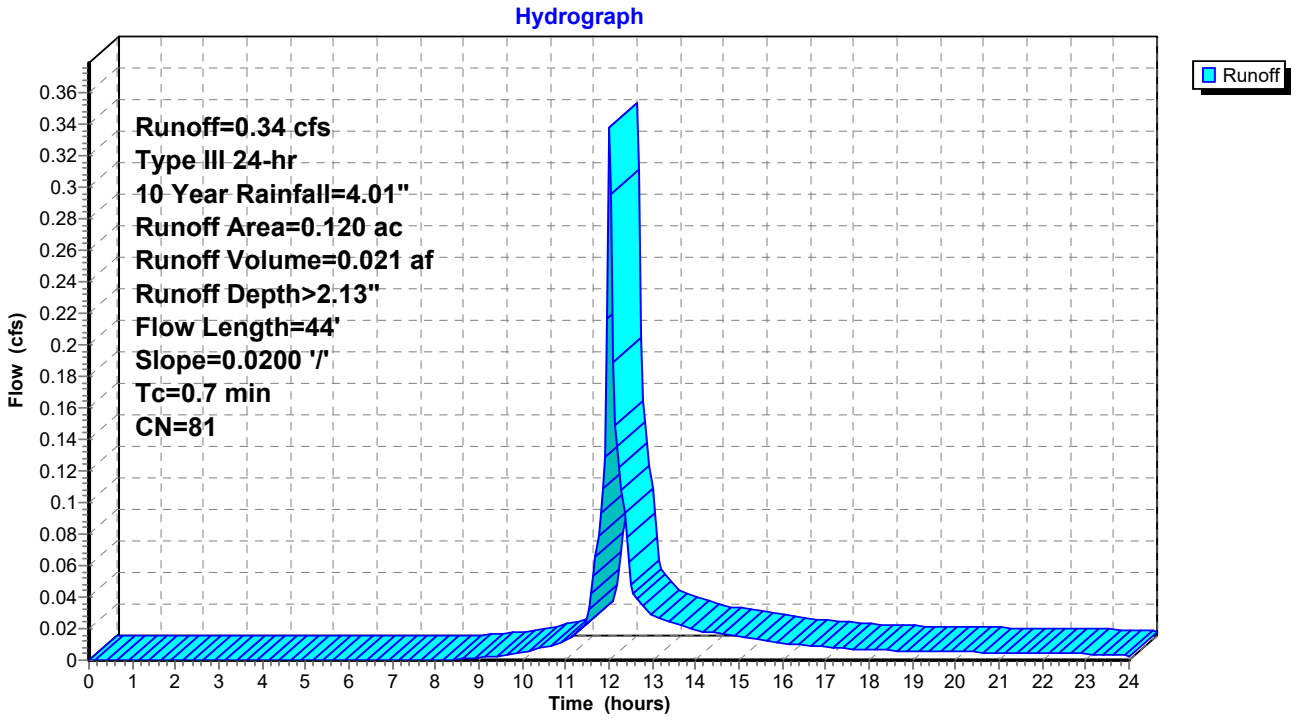
Runoff = 0.34 cfs @ 12.01 hrs, Volume= 0.021 af, Depth> 2.13"
Routed to Pond 80P : Infiltration Trench 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.01"

	Area (ac)	CN	Description
	0.010	74	>75% Grass cover, Good, HSG C
*	0.020	98	Roofs & Gravel Roads, HSG A
	0.030	39	>75% Grass cover, Good, HSG A
*	0.060	98	Roofs & Gravel Roads, HSG C
	0.120	81	Weighted Average
	0.040		33.33% Pervious Area
	0.080		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	44	0.0200	1.08		**Sheet Flow, Gravel** Smooth surfaces n= 0.011 P2= 2.75"

Subcatchment 80S: Drainage to Infiltration Trench 2



Summary for Subcatchment 100S: Building

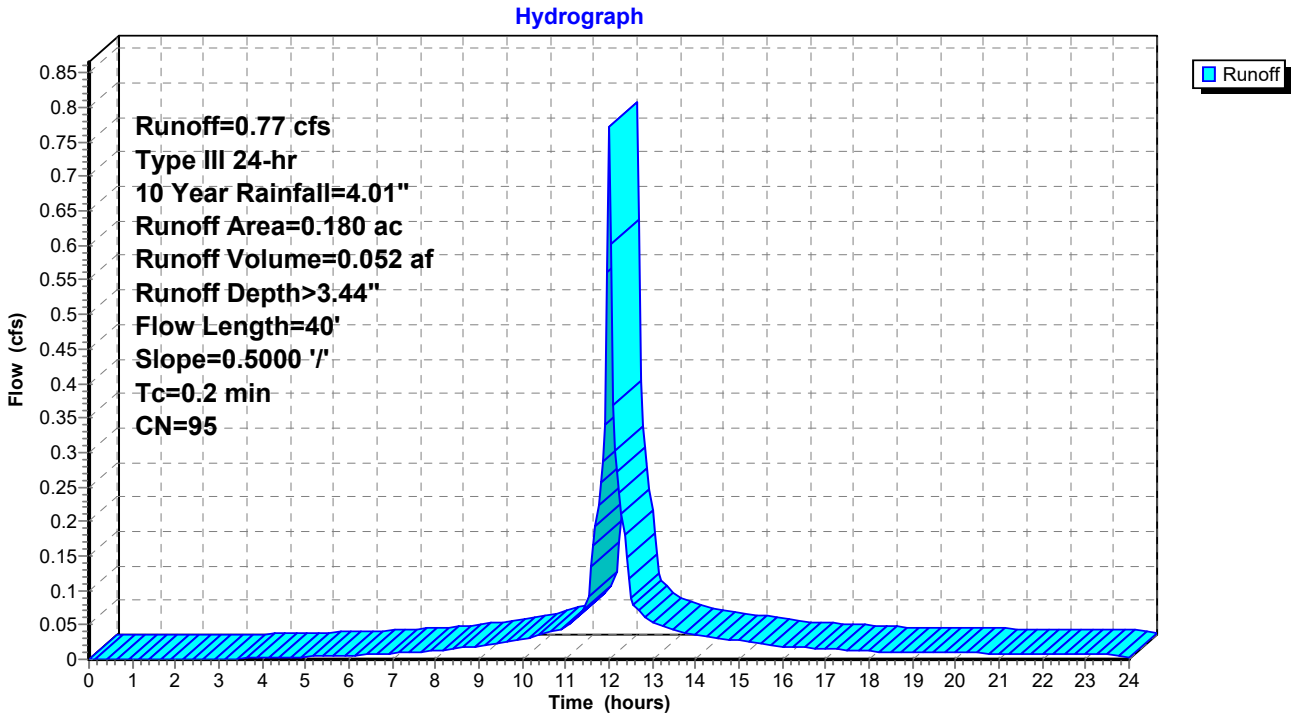
Runoff = 0.77 cfs @ 12.00 hrs, Volume= 0.052 af, Depth> 3.44"
Routed to Pond 100P : Drip Edge Trenches

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Rainfall=4.01"

Area (ac)	CN	Description
0.160	98	Roofs, HSG C
0.020	74	>75% Grass cover, Good, HSG C
0.180	95	Weighted Average
0.020		11.11% Pervious Area
0.160		88.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	40	0.5000	3.85		**Sheet Flow, Roof** Smooth surfaces n= 0.011 P2= 2.75"

Subcatchment 100S: Building



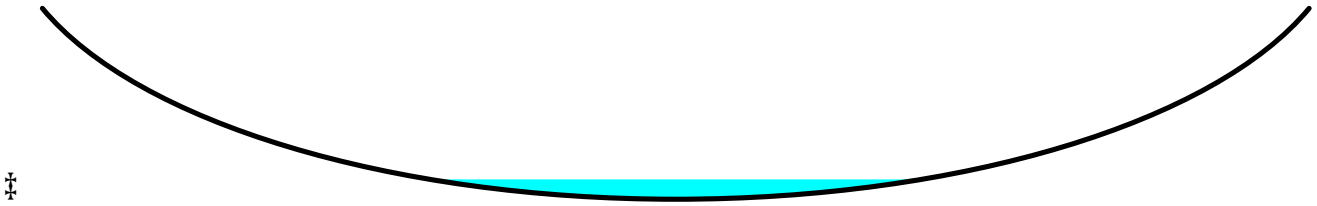
Summary for Reach 1R: Woods

Inflow Area = 5.220 ac, 0.38% Impervious, Inflow Depth > 1.44" for 10 Year event
Inflow = 5.35 cfs @ 12.39 hrs, Volume= 0.626 af
Outflow = 5.28 cfs @ 12.48 hrs, Volume= 0.624 af, Atten= 1%, Lag= 5.3 min
Routed to Pond 3P : 15" HDPE

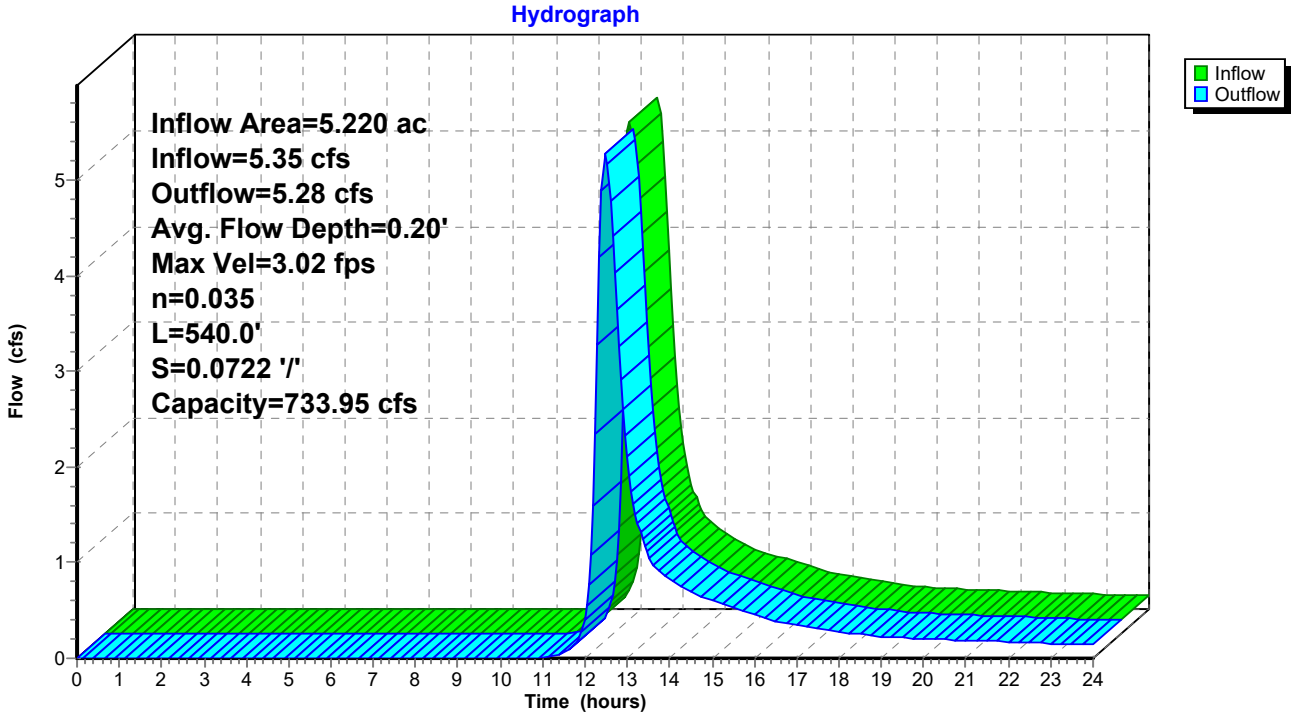
Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.02 fps, Min. Travel Time= 3.0 min
Avg. Velocity = 1.33 fps, Avg. Travel Time= 6.8 min

Peak Storage= 942 cf @ 12.43 hrs
Average Depth at Peak Storage= 0.20' , Surface Width= 12.79'
Bank-Full Depth= 2.00' Flow Area= 53.3 sf, Capacity= 733.95 cfs

40.00' x 2.00' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 540.0' Slope= 0.0722 '/'
Inlet Invert= 850.00', Outlet Invert= 811.00'



Reach 1R: Woods



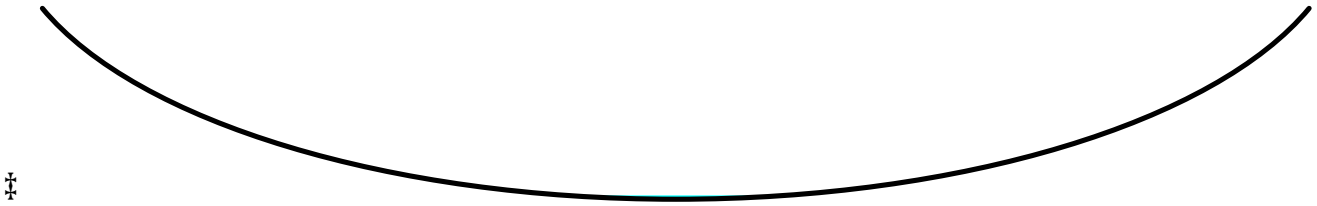
Summary for Reach 3R: Woods

Inflow Area = 11.270 ac, 2.93% Impervious, Inflow Depth > 0.21" for 10 Year event
Inflow = 0.22 cfs @ 24.00 hrs, Volume= 0.195 af
Outflow = 0.22 cfs @ 24.00 hrs, Volume= 0.191 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 5bR : Woods

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.59 fps, Min. Travel Time= 6.6 min
Avg. Velocity = 1.44 fps, Avg. Travel Time= 7.2 min

Peak Storage= 87 cf @ 24.00 hrs
Average Depth at Peak Storage= 0.04' , Surface Width= 5.48'
Bank-Full Depth= 2.00' Flow Area= 53.3 sf, Capacity= 1,166.39 cfs

40.00' x 2.00' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 625.0' Slope= 0.1824 '/'
Inlet Invert= 810.00', Outlet Invert= 696.00'



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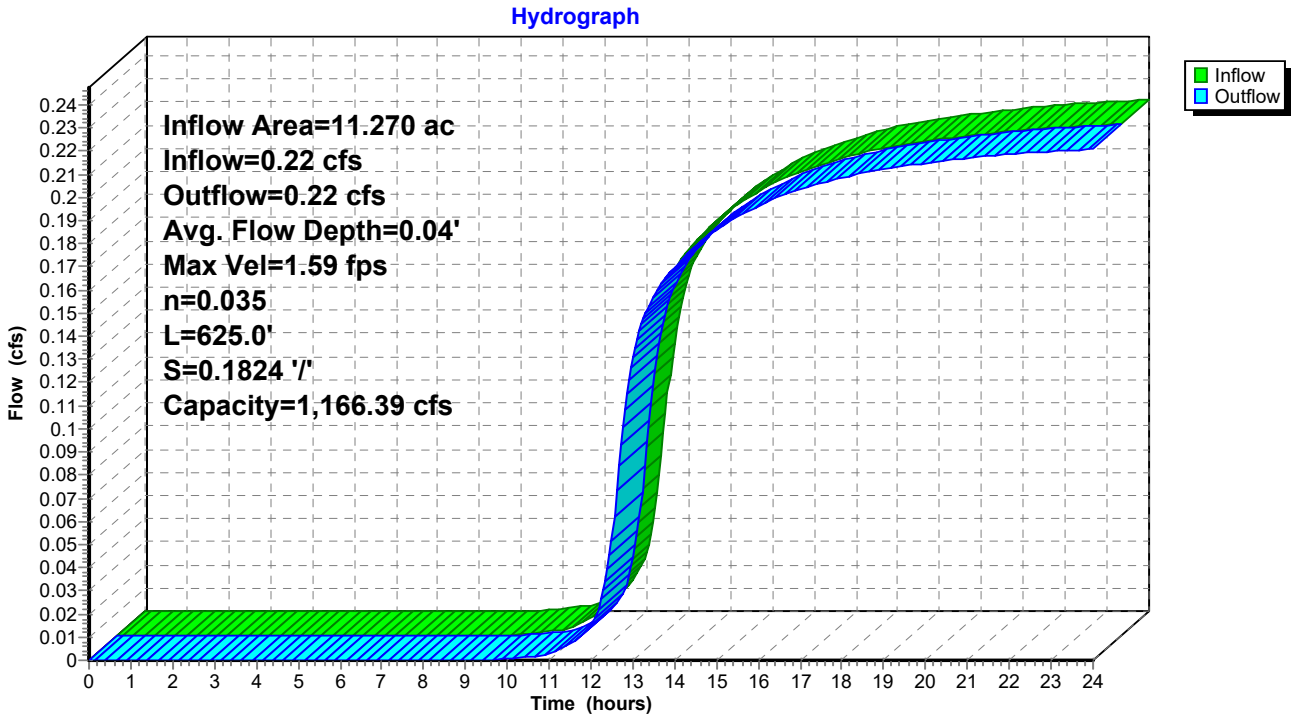
Reach 3R: Woods



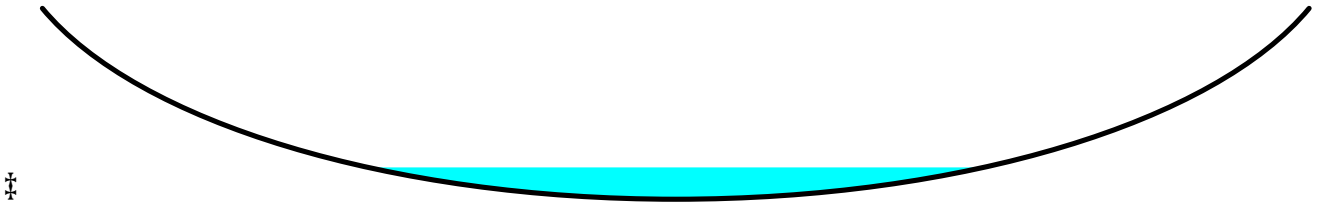
Summary for Reach 4R: Woods

Inflow Area = 2.700 ac, 0.74% Impervious, Inflow Depth > 1.33" for 10 Year event
Inflow = 2.39 cfs @ 12.40 hrs, Volume= 0.299 af
Outflow = 2.37 cfs @ 12.46 hrs, Volume= 0.298 af, Atten= 1%, Lag= 3.8 min
Routed to Reach 5bR : Woods

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.66 fps, Min. Travel Time= 2.2 min
Avg. Velocity = 1.20 fps, Avg. Travel Time= 4.9 min

Peak Storage= 312 cf @ 12.43 hrs
Average Depth at Peak Storage= 0.08' , Surface Width= 16.24'
Bank-Full Depth= 0.50' Flow Area= 13.3 sf, Capacity= 118.15 cfs

40.00' x 0.50' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 350.0' Slope= 0.1886 '/'
Inlet Invert= 762.00', Outlet Invert= 696.00'



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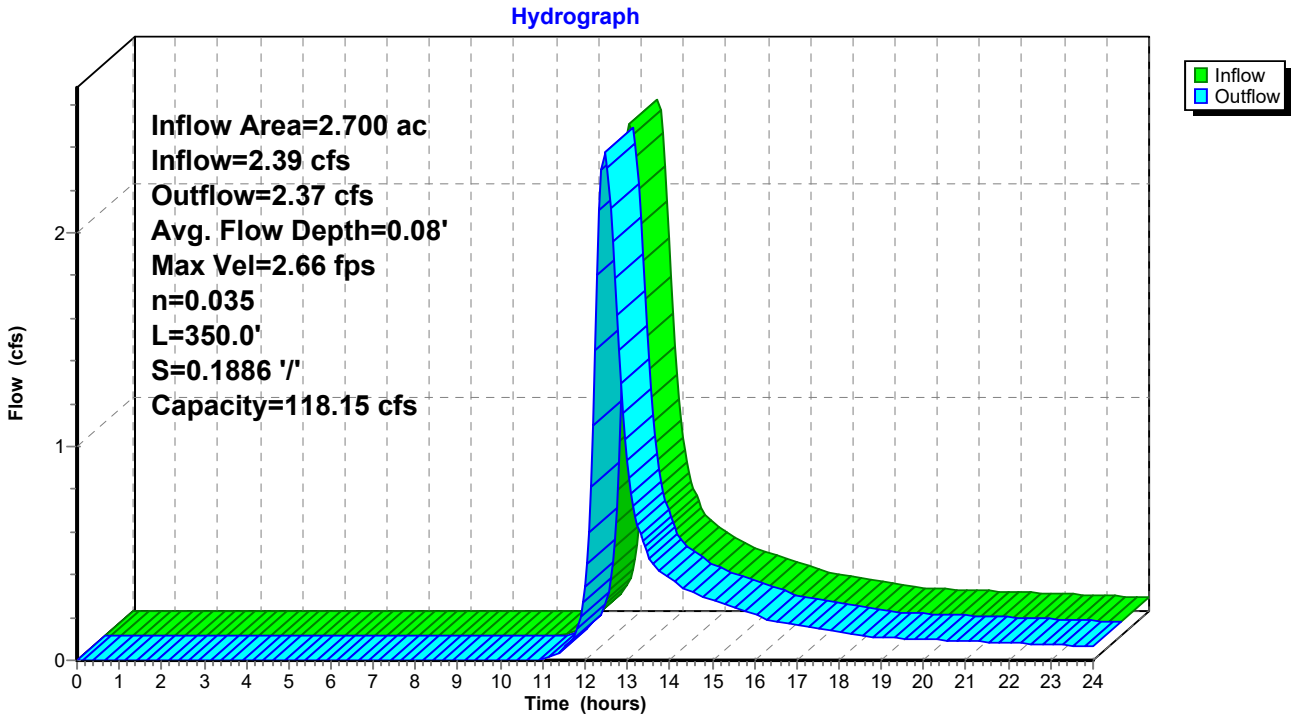
Reach 4R: Woods



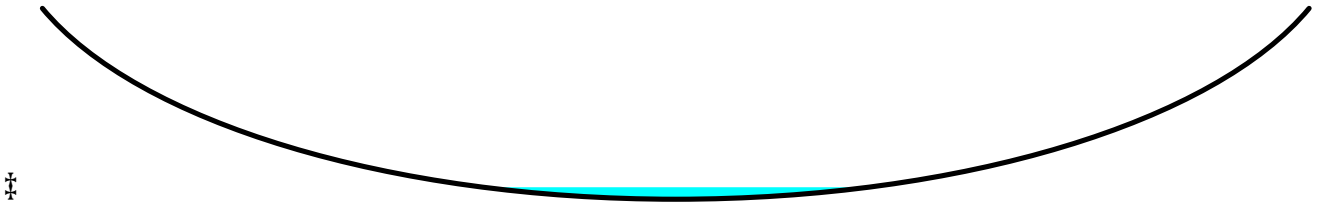
Summary for Reach 5aR: Brush

Inflow Area = 2.560 ac, 10.16% Impervious, Inflow Depth > 1.60" for 10 Year event
Inflow = 3.04 cfs @ 12.32 hrs, Volume= 0.340 af
Outflow = 3.02 cfs @ 12.36 hrs, Volume= 0.340 af, Atten= 1%, Lag= 2.2 min
Routed to Reach 5bR : Woods

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.91 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 1.28 fps, Avg. Travel Time= 2.7 min

Peak Storage= 219 cf @ 12.33 hrs
Average Depth at Peak Storage= 0.12' , Surface Width= 12.49'
Bank-Full Depth= 2.00' Flow Area= 66.7 sf, Capacity= 1,226.02 cfs

50.00' x 2.00' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 210.0' Slope= 0.1286 '/'
Inlet Invert= 722.00', Outlet Invert= 695.00'



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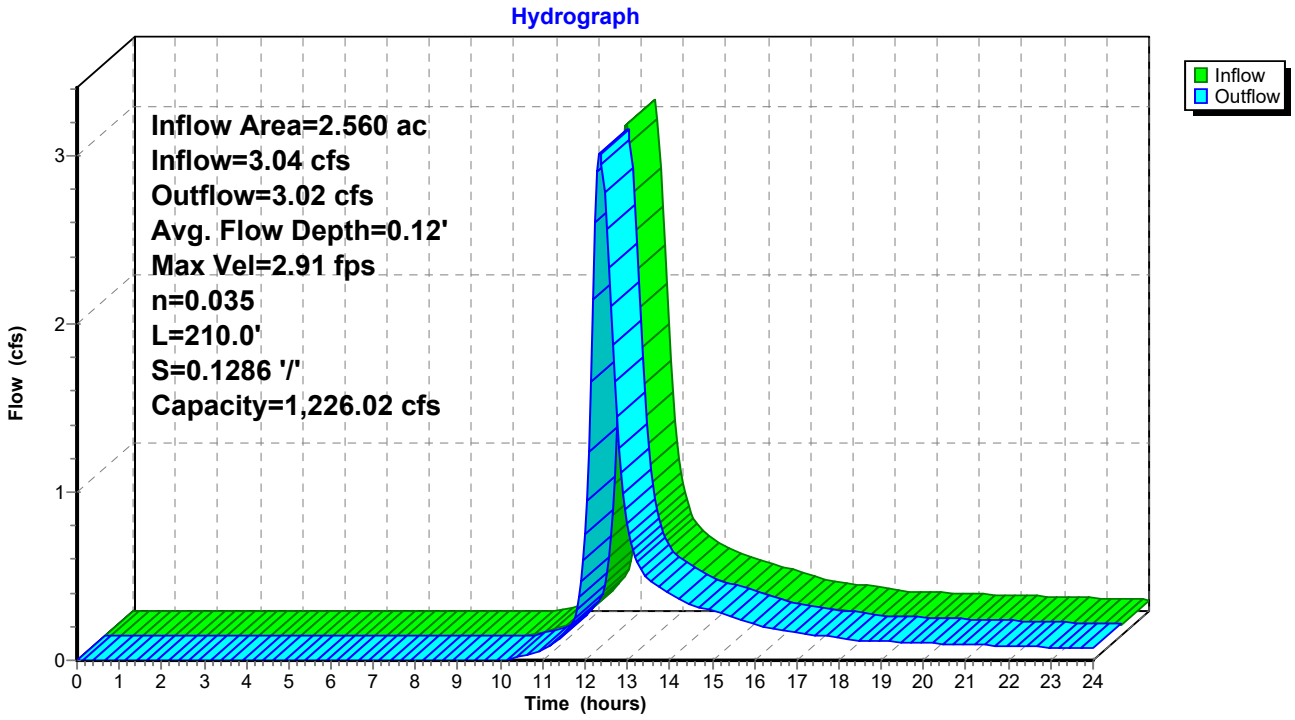
Reach 5aR: Brush



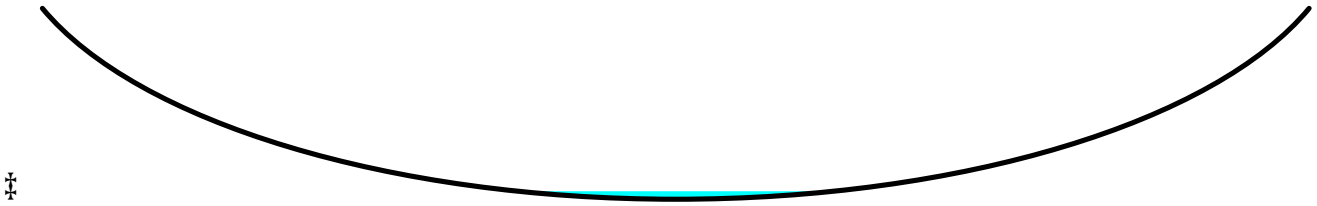
Summary for Reach 5bR: Woods

Inflow Area = 16.530 ac, 3.69% Impervious, Inflow Depth > 0.60" for 10 Year event
Inflow = 5.28 cfs @ 12.41 hrs, Volume= 0.828 af
Outflow = 5.25 cfs @ 12.43 hrs, Volume= 0.827 af, Atten= 1%, Lag= 1.7 min
Routed to Reach 6bR : Woods

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.07 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 1.61 fps, Avg. Travel Time= 1.8 min

Peak Storage= 301 cf @ 12.42 hrs
Average Depth at Peak Storage= 0.16' , Surface Width= 16.04'
Bank-Full Depth= 4.00' Flow Area= 213.3 sf, Capacity= 5,561.52 cfs

80.00' x 4.00' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 175.0' Slope= 0.1029 '/'
Inlet Invert= 695.00', Outlet Invert= 677.00'



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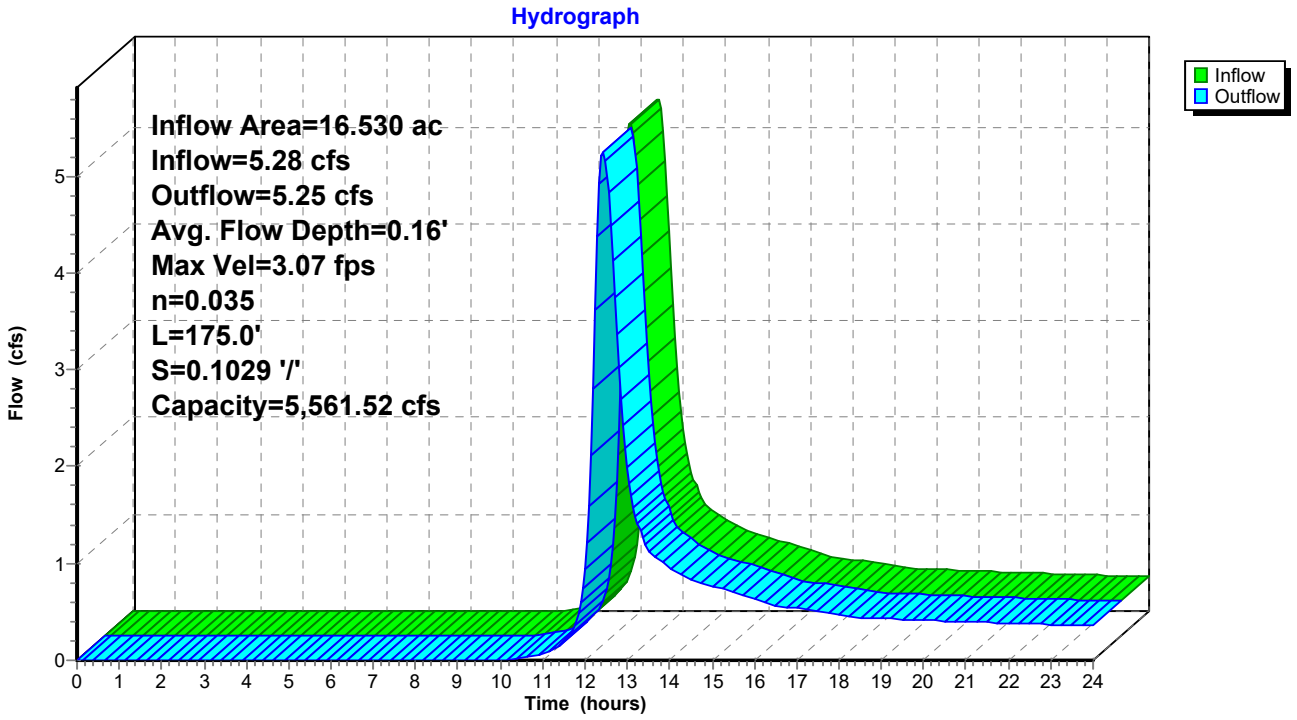
Reach 5bR: Woods



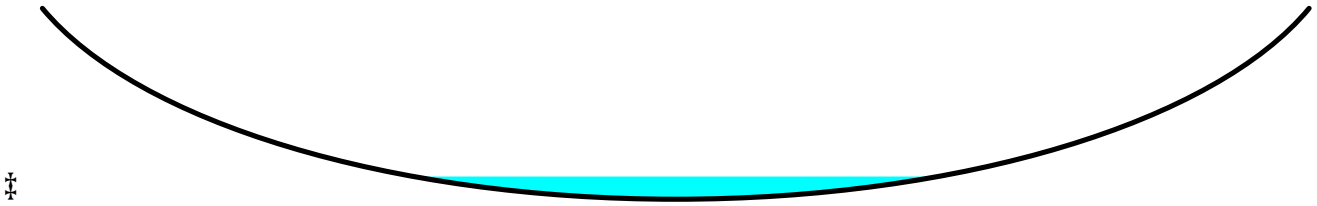
Summary for Reach 6aR: Woods

Inflow Area = 0.650 ac, 29.23% Impervious, Inflow Depth > 2.04" for 10 Year event
Inflow = 0.95 cfs @ 12.36 hrs, Volume= 0.110 af
Outflow = 0.94 cfs @ 12.43 hrs, Volume= 0.110 af, Atten= 1%, Lag= 4.2 min
Routed to Reach 6bR : Woods

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.73 fps, Min. Travel Time= 2.4 min
Avg. Velocity = 0.72 fps, Avg. Travel Time= 5.8 min

Peak Storage= 136 cf @ 12.39 hrs
Average Depth at Peak Storage= 0.06' , Surface Width= 13.76'
Bank-Full Depth= 0.50' Flow Area= 13.3 sf, Capacity= 95.81 cfs

40.00' x 0.50' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 250.0' Slope= 0.1240 '/'
Inlet Invert= 708.00', Outlet Invert= 677.00'



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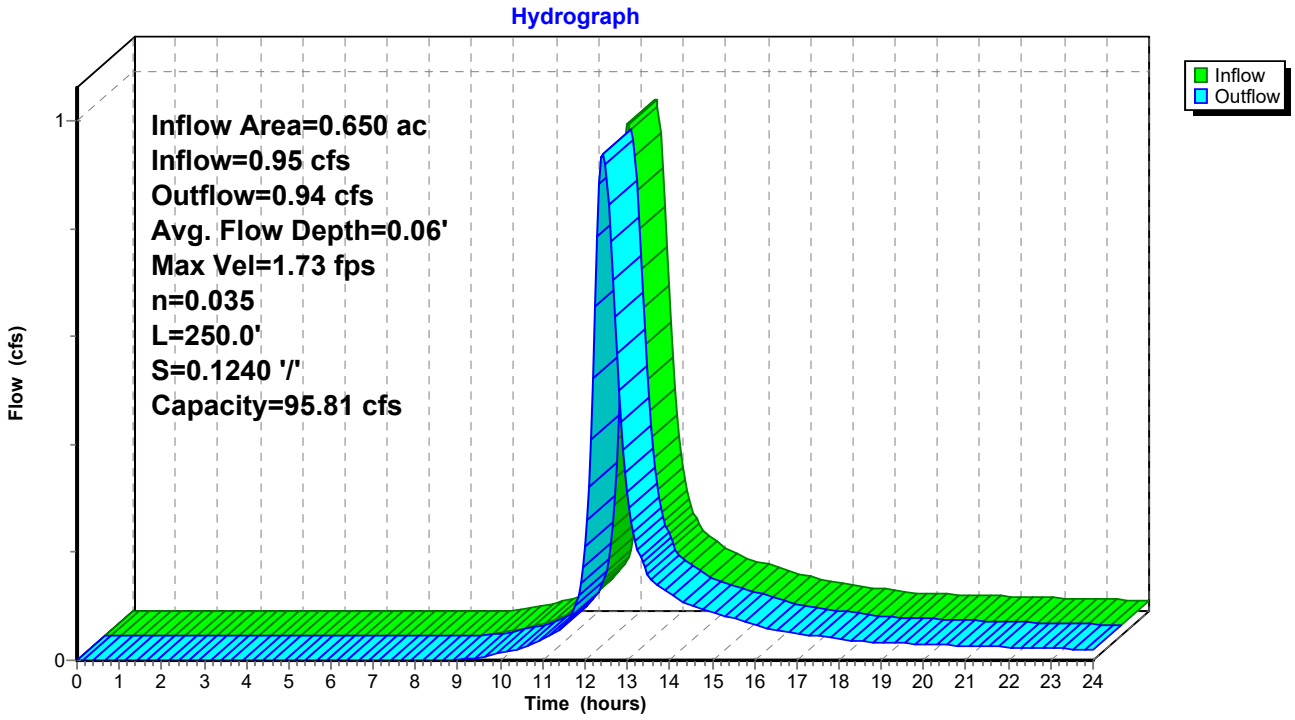
Reach 6aR: Woods



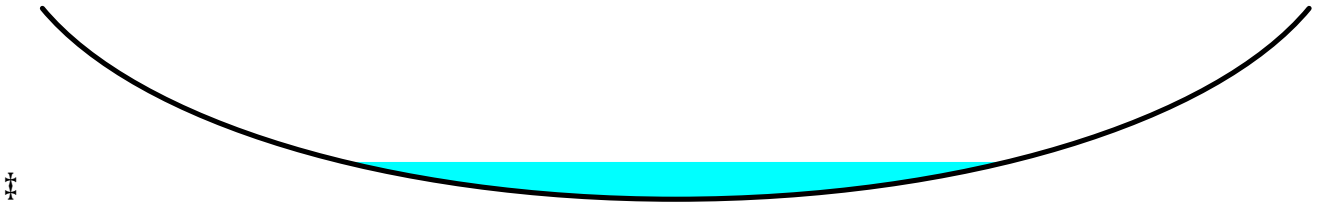
Summary for Reach 6bR: Woods

Inflow Area = 17.180 ac, 4.66% Impervious, Inflow Depth > 0.65" for 10 Year event
Inflow = 6.19 cfs @ 12.43 hrs, Volume= 0.937 af
Outflow = 6.16 cfs @ 12.47 hrs, Volume= 0.935 af, Atten= 0%, Lag= 2.1 min
Routed to Reach 7bR : Woods

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.17 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 0.99 fps, Avg. Travel Time= 2.5 min

Peak Storage= 427 cf @ 12.45 hrs
Average Depth at Peak Storage= 0.19' , Surface Width= 22.02'
Bank-Full Depth= 1.00' Flow Area= 33.3 sf, Capacity= 215.85 cfs

50.00' x 1.00' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 150.0' Slope= 0.0400 '/'
Inlet Invert= 677.00', Outlet Invert= 671.00'



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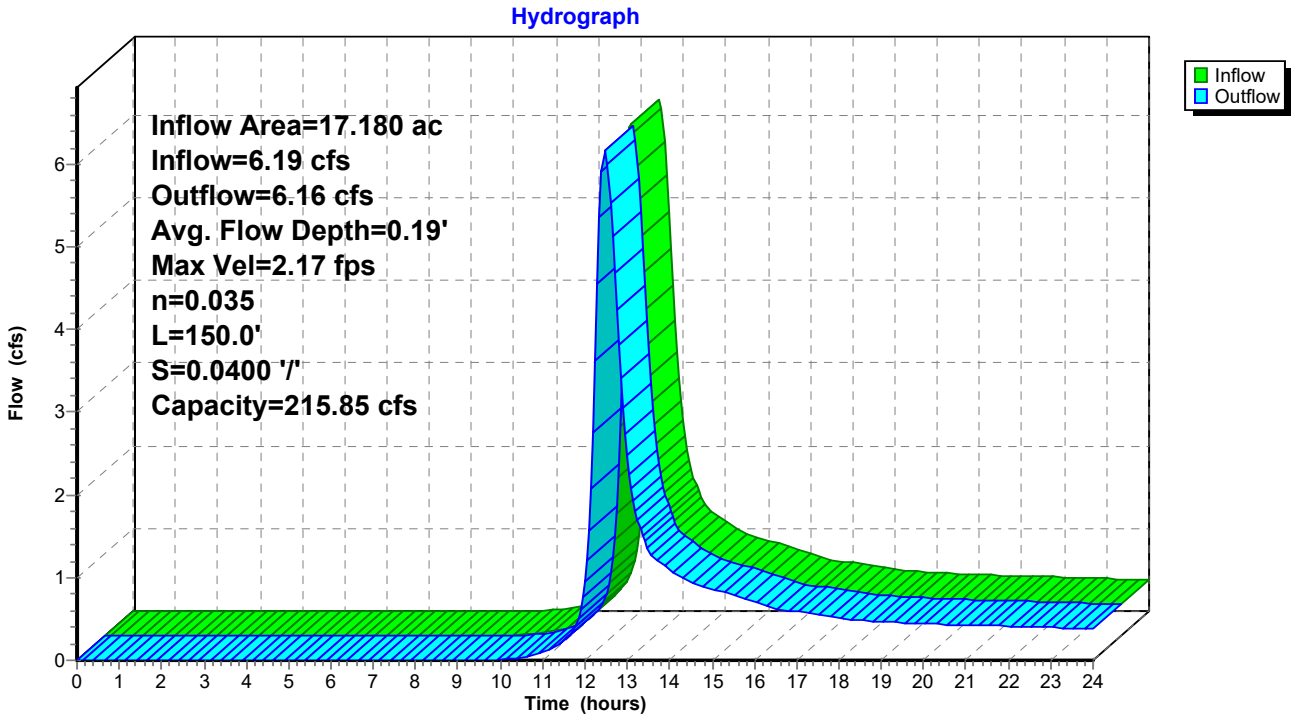
Reach 6bR: Woods



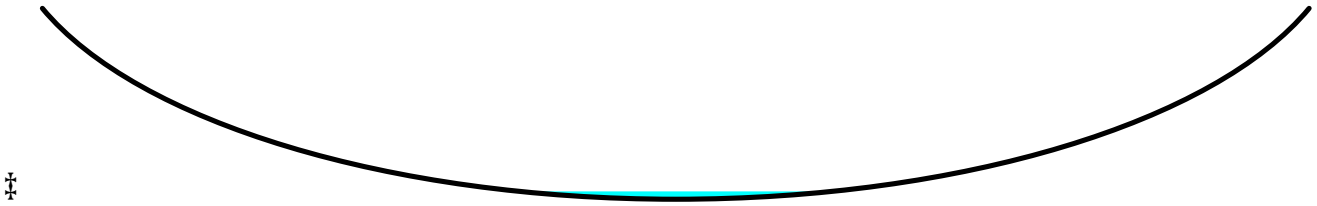
Summary for Reach 7aR: Woods

Inflow Area = 2.310 ac, 33.33% Impervious, Inflow Depth = 0.16" for 10 Year event
Inflow = 0.83 cfs @ 12.60 hrs, Volume= 0.030 af
Outflow = 0.82 cfs @ 12.64 hrs, Volume= 0.030 af, Atten= 1%, Lag= 2.0 min
Routed to Reach 7bR : Woods

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.58 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 1.07 fps, Avg. Travel Time= 1.6 min

Peak Storage= 52 cf @ 12.62 hrs
Average Depth at Peak Storage= 0.08' , Surface Width= 9.94'
Bank-Full Depth= 2.00' Flow Area= 66.7 sf, Capacity= 904.63 cfs

50.00' x 2.00' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 100.0' Slope= 0.0700 '/'
Inlet Invert= 678.00', Outlet Invert= 671.00'



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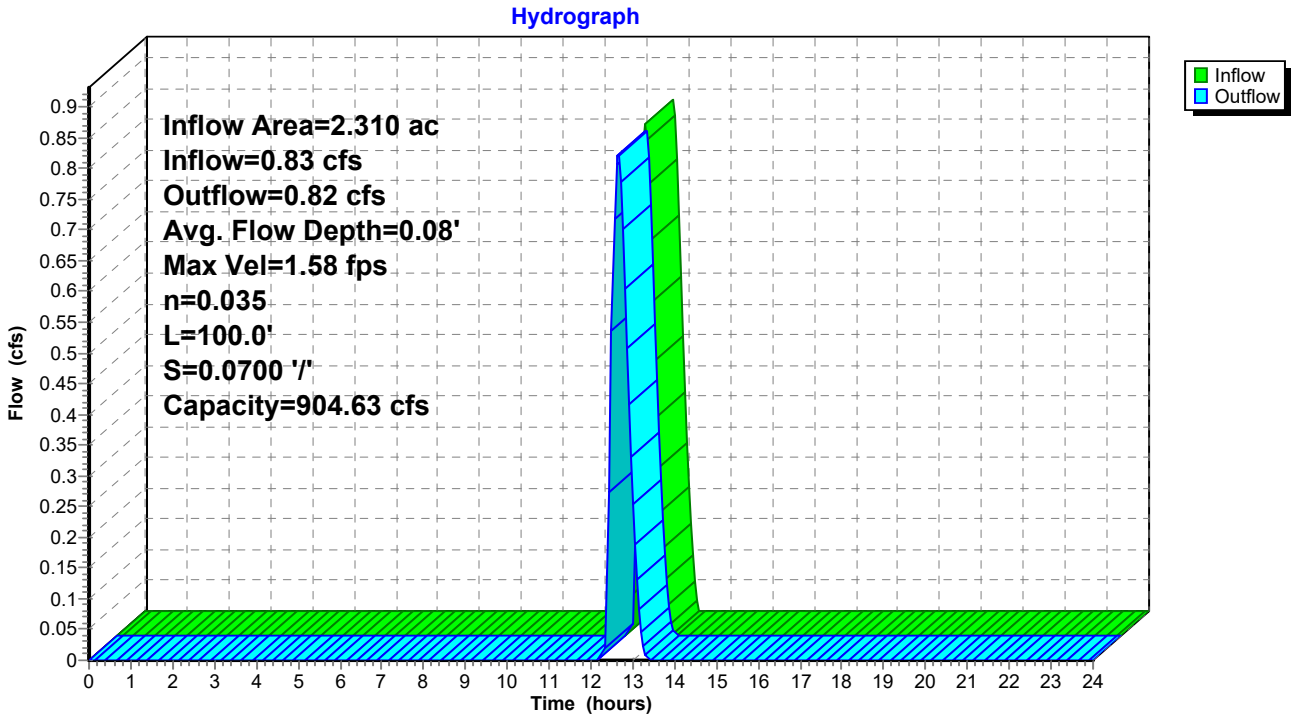
Reach 7aR: Woods



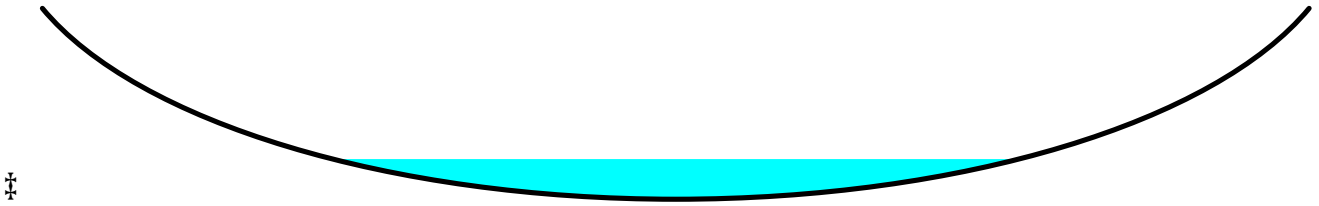
Summary for Reach 7bR: Woods

Inflow Area = 19.490 ac, 8.06% Impervious, Inflow Depth > 0.59" for 10 Year event
Inflow = 6.66 cfs @ 12.52 hrs, Volume= 0.965 af
Outflow = 6.60 cfs @ 12.57 hrs, Volume= 0.962 af, Atten= 1%, Lag= 3.3 min
Routed to Reach 8bR : Wetland

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.60 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 1.17 fps, Avg. Travel Time= 4.1 min

Peak Storage= 740 cf @ 12.54 hrs
Average Depth at Peak Storage= 0.21' , Surface Width= 18.30'
Bank-Full Depth= 1.00' Flow Area= 26.7 sf, Capacity= 196.29 cfs

40.00' x 1.00' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 290.0' Slope= 0.0517 '/'
Inlet Invert= 671.00', Outlet Invert= 656.00'



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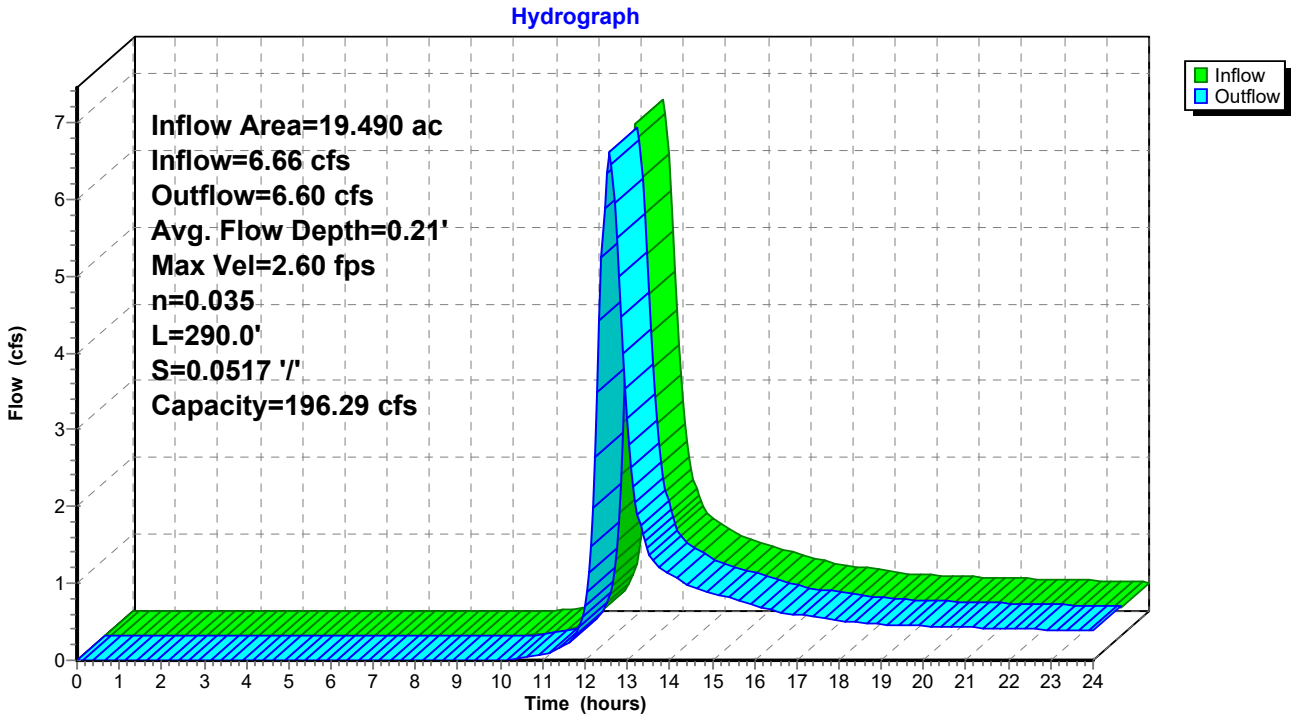
Reach 7bR: Woods



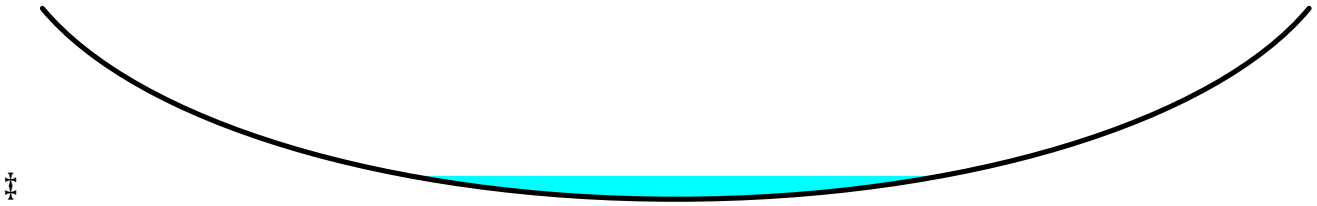
Summary for Reach 8aR: Wetland

Inflow Area = 2.950 ac, 32.88% Impervious, Inflow Depth > 1.70" for 10 Year event
Inflow = 4.19 cfs @ 12.24 hrs, Volume= 0.417 af
Outflow = 4.04 cfs @ 12.35 hrs, Volume= 0.415 af, Atten= 4%, Lag= 6.2 min
Routed to Reach 8bR : Wetland

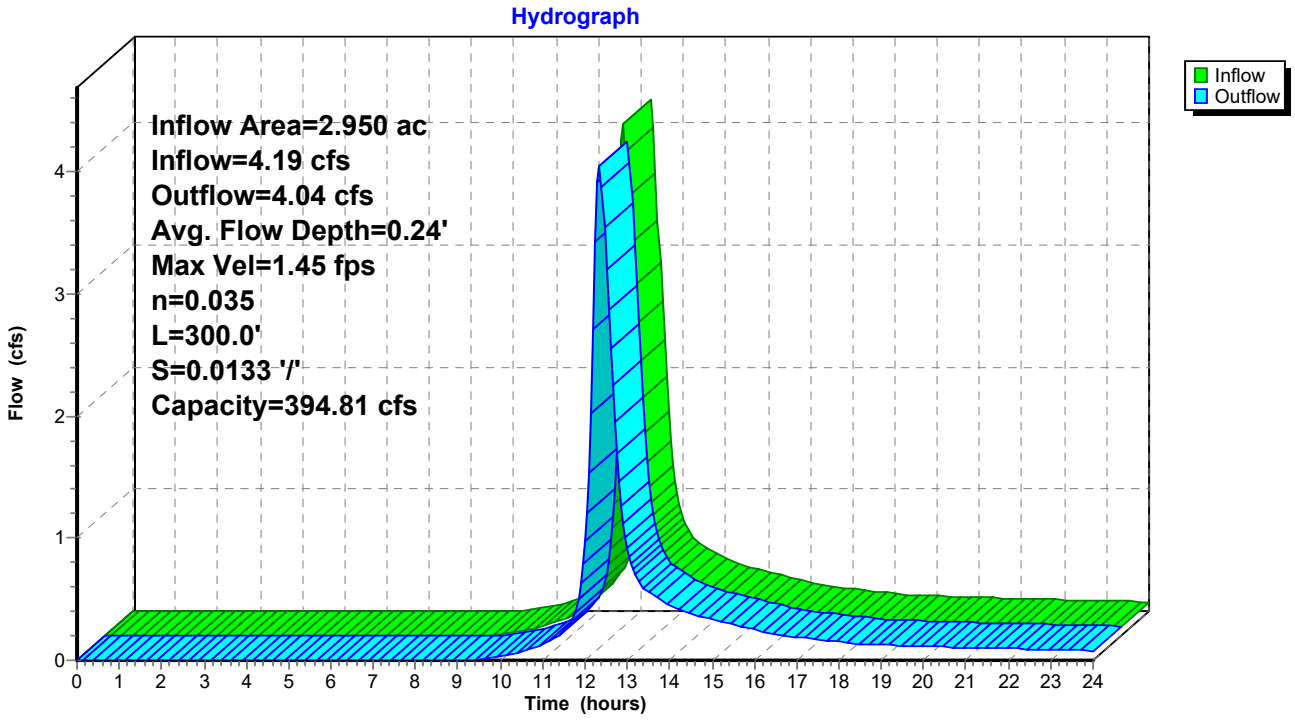
Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.45 fps, Min. Travel Time= 3.4 min
Avg. Velocity = 0.58 fps, Avg. Travel Time= 8.6 min

Peak Storage= 839 cf @ 12.29 hrs
Average Depth at Peak Storage= 0.24' , Surface Width= 17.38'
Bank-Full Depth= 2.00' Flow Area= 66.7 sf, Capacity= 394.81 cfs

50.00' x 2.00' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 300.0' Slope= 0.0133 '/'
Inlet Invert= 660.00', Outlet Invert= 656.00'



Reach 8aR: Wetland



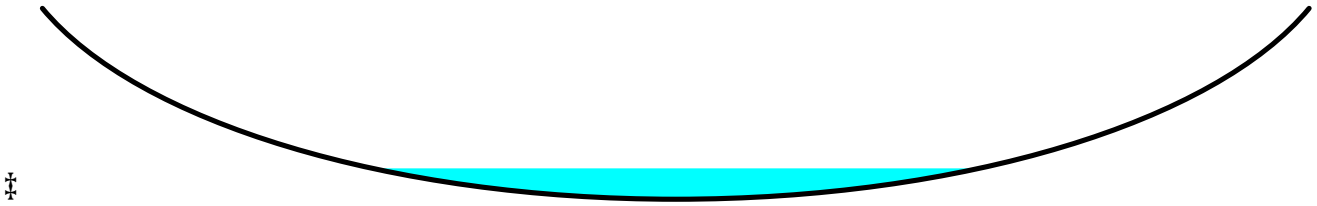
Summary for Reach 8bR: Wetland

Inflow Area = 22.440 ac, 11.32% Impervious, Inflow Depth > 0.74" for 10 Year event
Inflow = 9.54 cfs @ 12.50 hrs, Volume= 1.377 af
Outflow = 9.53 cfs @ 12.51 hrs, Volume= 1.376 af, Atten= 0%, Lag= 0.8 min
Routed to Pond 9P : Southeast Offsite Runoff

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.19 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.45 fps, Avg. Travel Time= 1.0 min

Peak Storage= 269 cf @ 12.51 hrs
Average Depth at Peak Storage= 0.32' , Surface Width= 14.00'
Bank-Full Depth= 2.00' Flow Area= 46.7 sf, Capacity= 503.12 cfs

35.00' x 2.00' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 90.0' Slope= 0.0444 '/'
Inlet Invert= 656.00', Outlet Invert= 652.00'



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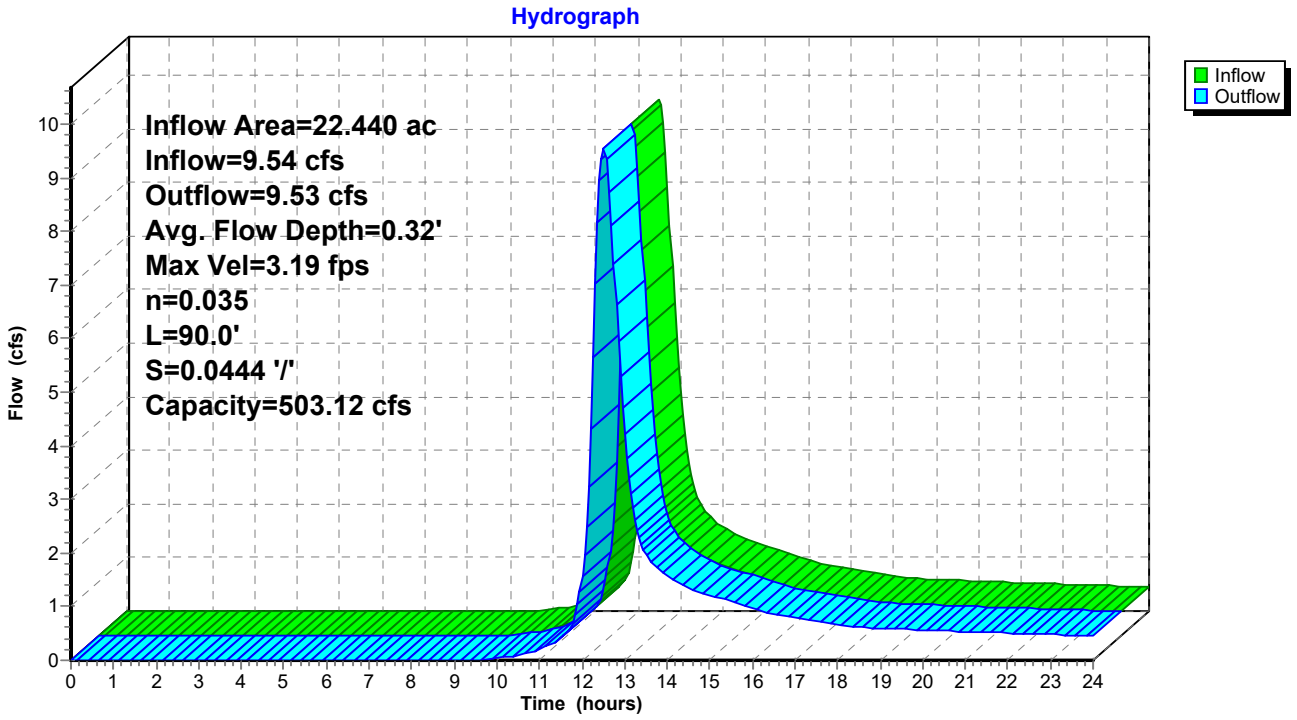
Reach 8bR: Wetland



Summary for Pond 1P: Existing Ponding Area

Inflow Area = 5.220 ac, 0.38% Impervious, Inflow Depth > 1.46" for 10 Year event
Inflow = 5.70 cfs @ 12.31 hrs, Volume= 0.635 af
Outflow = 5.35 cfs @ 12.39 hrs, Volume= 0.626 af, Atten= 6%, Lag= 5.0 min
Primary = 5.35 cfs @ 12.39 hrs, Volume= 0.626 af
Routed to Reach 1R : Woods

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 851.72' @ 12.39 hrs Surf.Area= 0.091 ac Storage= 0.058 af

Plug-Flow detention time= 19.3 min calculated for 0.625 af (98% of inflow)
Center-of-Mass det. time= 11.9 min (877.4 - 865.5)

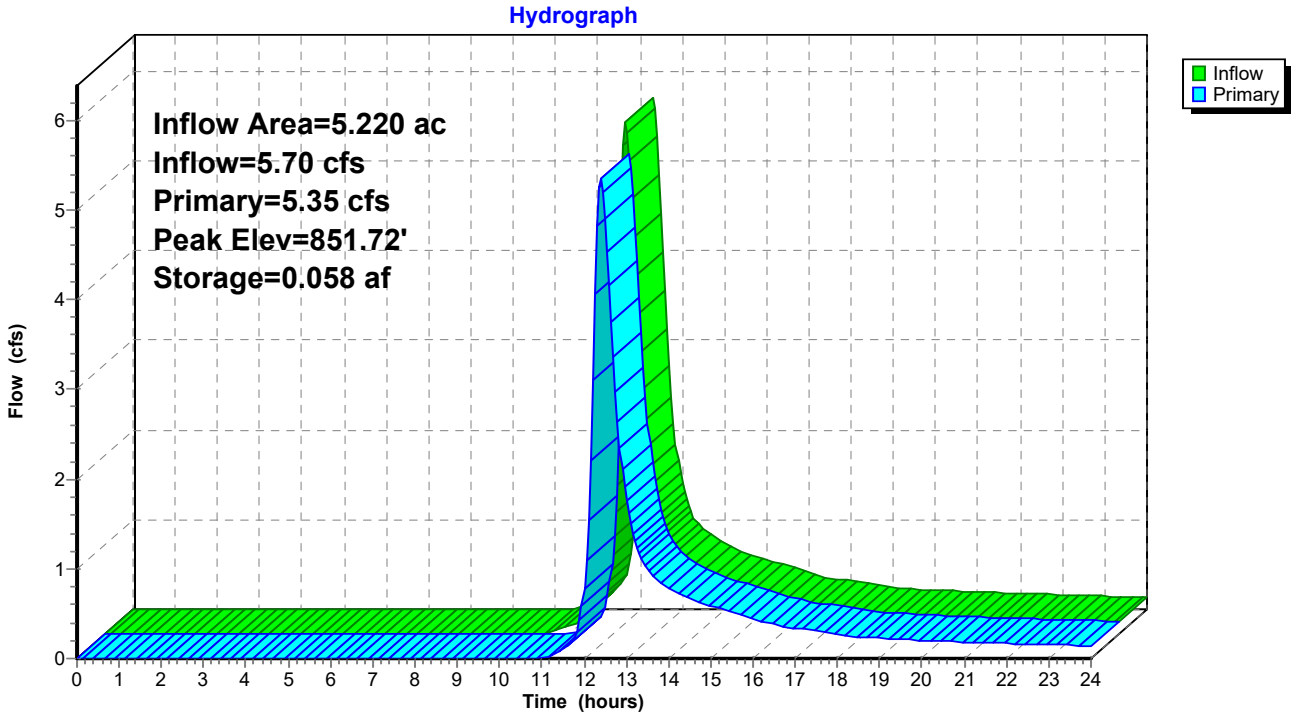
Volume	Invert	Avail.Storage	Storage Description
#1	851.00'	0.085 af	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
851.00	0.070	310.0	0.000	0.000	0.070
852.00	0.100	140.0	0.085	0.085	0.210

Device	Routing	Invert	Outlet Devices
#1	Primary	851.00'	**1.0' long + 4.0 '/' SideZ x 3.0' 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 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=5.33 cfs @ 12.39 hrs HW=851.72' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 5.33 cfs @ 1.93 fps)

Pond 1P: Existing Ponding Area



Summary for Pond 2P: 15" HDPE

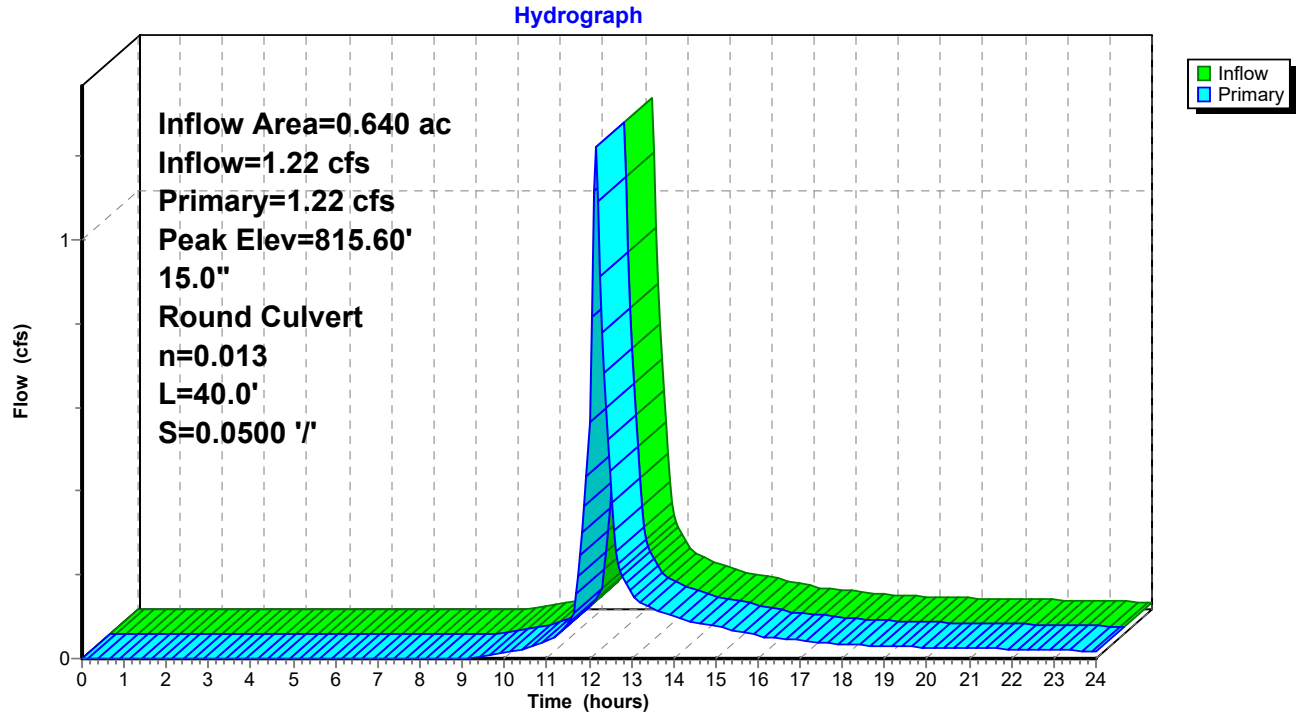
Inflow Area = 0.640 ac, 28.13% Impervious, Inflow Depth > 1.89" for 10 Year event
Inflow = 1.22 cfs @ 12.15 hrs, Volume= 0.101 af
Outflow = 1.22 cfs @ 12.15 hrs, Volume= 0.101 af, Atten= 0%, Lag= 0.0 min
Primary = 1.22 cfs @ 12.15 hrs, Volume= 0.101 af
Routed to Pond 3P : 15" HDPE

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 815.60' @ 12.15 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	815.00'	**15.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 815.00' / 813.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.21 cfs @ 12.15 hrs HW=815.60' (Free Discharge)
1=Culvert (Inlet Controls 1.21 cfs @ 2.08 fps)

Pond 2P: 15" HDPE



Summary for Pond 3P: 15" HDPE

Inflow Area = 11.270 ac, 2.93% Impervious, Inflow Depth > 1.47" for 10 Year event
Inflow = 10.72 cfs @ 12.47 hrs, Volume= 1.381 af
Outflow = 0.22 cfs @ 24.00 hrs, Volume= 0.195 af, Atten= 98%, Lag= 691.9 min
Primary = 0.22 cfs @ 24.00 hrs, Volume= 0.195 af
Routed to Reach 3R : Woods

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 809.24' @ 24.00 hrs Surf.Area= 14.666 ac Storage= 1.184 af

Plug-Flow detention time= 383.8 min calculated for 0.194 af (14% of inflow)
Center-of-Mass det. time= 233.4 min (1,109.0 - 875.7)

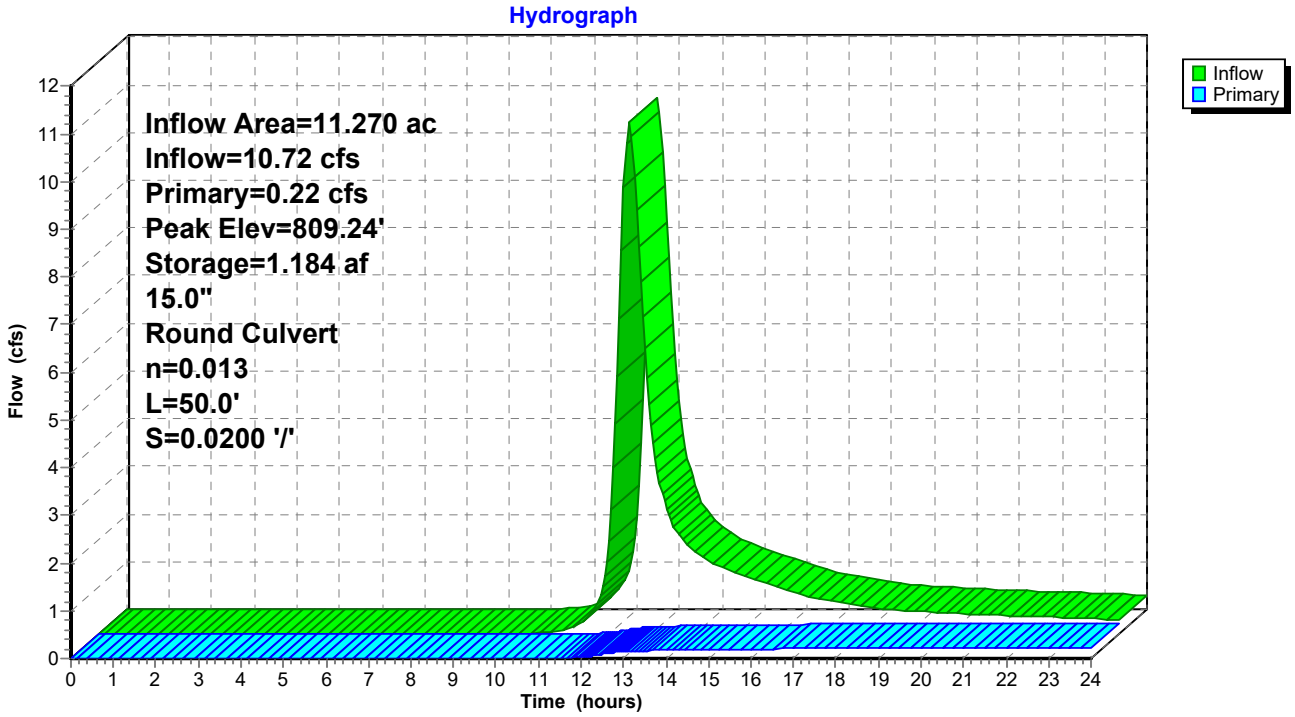
Volume	Invert	Avail.Storage	Storage Description
#1	809.00'	1,321.314 af	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
809.00	0.000	0.0	0.000	0.000	0.000
810.00	250.000	60.0	83.333	83.333	0.007
811.00	2,650.000	220.0	1,237.980	1,321.314	0.089

Device	Routing	Invert	Outlet Devices
#1	Primary	809.00'	**15.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 809.00' / 808.00' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.22 cfs @ 24.00 hrs HW=809.24' (Free Discharge)
1=Culvert (Inlet Controls 0.22 cfs @ 1.32 fps)

Pond 3P: 15" HDPE



Summary for Pond 4P: 30" HDPE

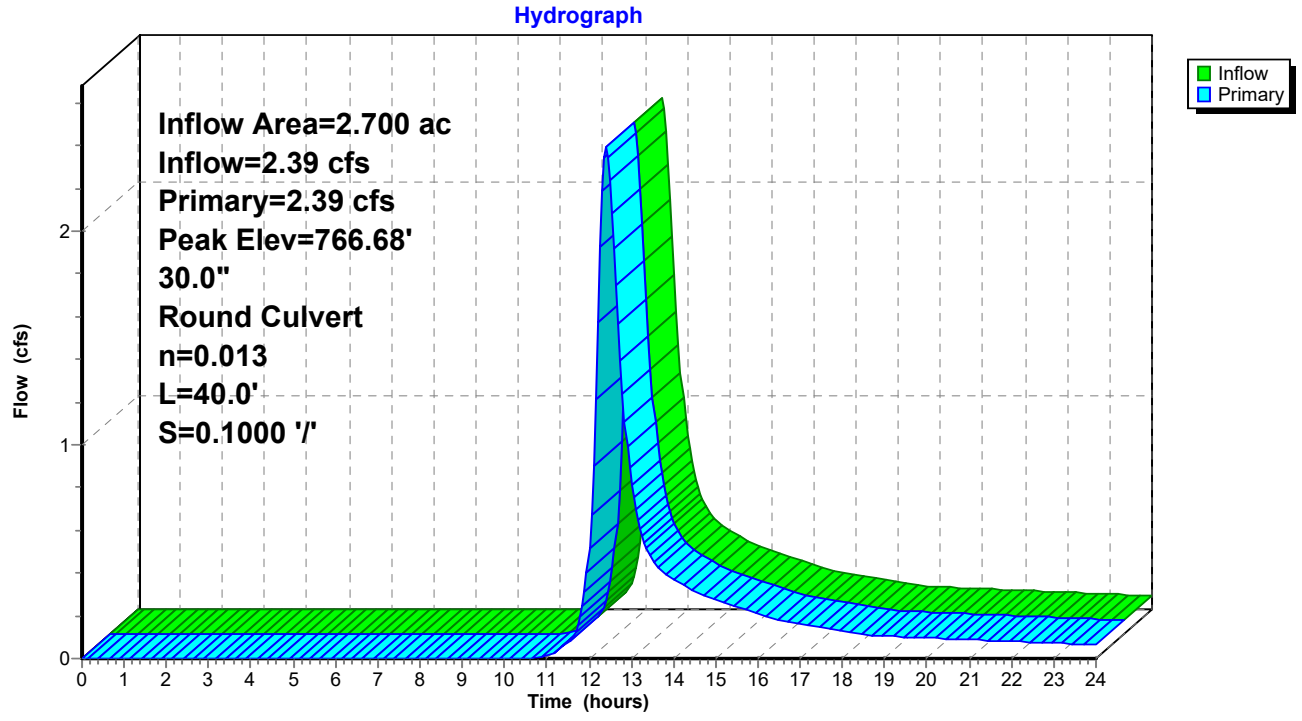
Inflow Area = 2.700 ac, 0.74% Impervious, Inflow Depth > 1.33" for 10 Year event
Inflow = 2.39 cfs @ 12.40 hrs, Volume= 0.299 af
Outflow = 2.39 cfs @ 12.40 hrs, Volume= 0.299 af, Atten= 0%, Lag= 0.0 min
Primary = 2.39 cfs @ 12.40 hrs, Volume= 0.299 af
Routed to Reach 4R : Woods

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 766.68' @ 12.40 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	766.00'	**30.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 766.00' / 762.00' S= 0.1000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=2.39 cfs @ 12.40 hrs HW=766.68' (Free Discharge)
1=Culvert (Inlet Controls 2.39 cfs @ 2.22 fps)

Pond 4P: 30" HDPE



Summary for Pond 5P: Existing Catch Basin

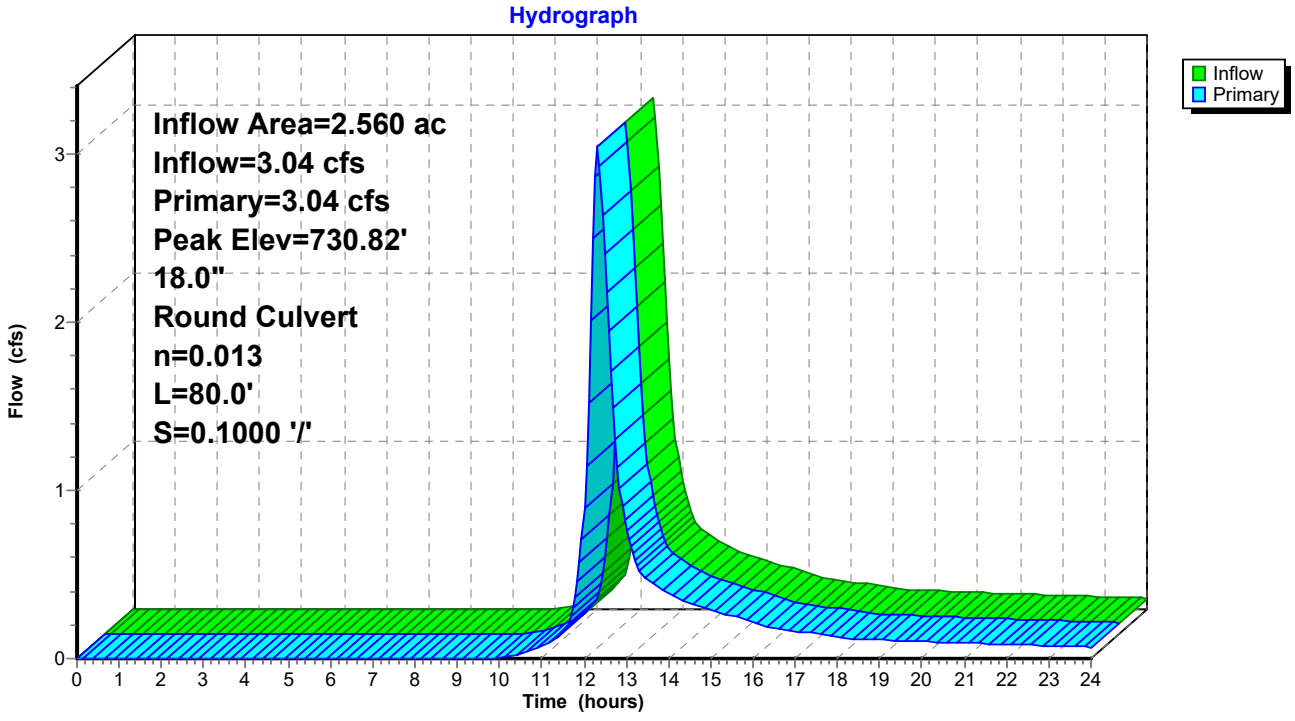
Inflow Area = 2.560 ac, 10.16% Impervious, Inflow Depth > 1.60" for 10 Year event
Inflow = 3.04 cfs @ 12.32 hrs, Volume= 0.340 af
Outflow = 3.04 cfs @ 12.32 hrs, Volume= 0.340 af, Atten= 0%, Lag= 0.0 min
Primary = 3.04 cfs @ 12.32 hrs, Volume= 0.340 af
Routed to Reach 5aR : Brush

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 730.82' @ 12.32 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	730.00'	**18.0" Round Culvert** L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 730.00' / 722.00' S= 0.1000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.02 cfs @ 12.32 hrs HW=730.82' (Free Discharge)
1=Culvert (Inlet Controls 3.02 cfs @ 3.08 fps)

Pond 5P: Existing Catch Basin



Summary for Pond 6P: 12" CMP

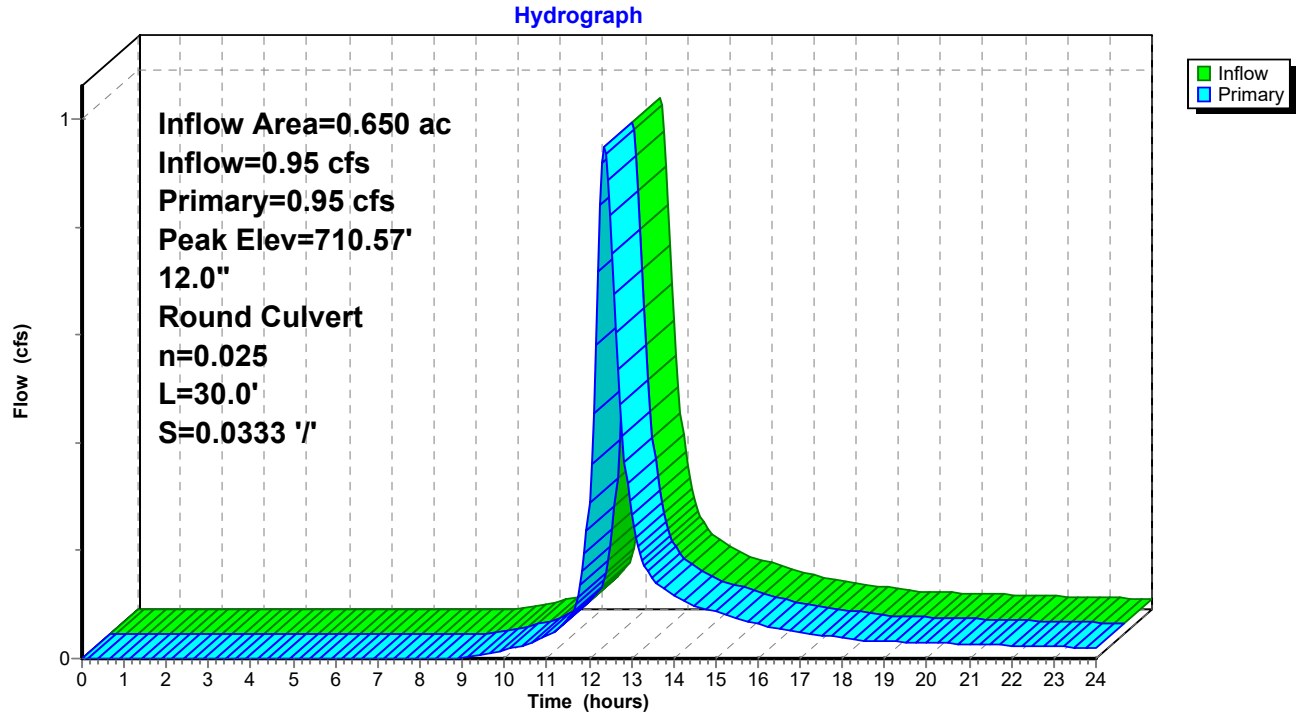
Inflow Area = 0.650 ac, 29.23% Impervious, Inflow Depth > 2.04" for 10 Year event
Inflow = 0.95 cfs @ 12.36 hrs, Volume= 0.110 af
Outflow = 0.95 cfs @ 12.36 hrs, Volume= 0.110 af, Atten= 0%, Lag= 0.0 min
Primary = 0.95 cfs @ 12.36 hrs, Volume= 0.110 af
Routed to Reach 6aR : Woods

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 710.57' @ 12.36 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	710.00'	**12.0" Round Culvert** L= 30.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 710.00' / 709.00' S= 0.0333 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.79 sf

Primary OutFlow Max=0.94 cfs @ 12.36 hrs HW=710.57' (Free Discharge)
1=Culvert (Inlet Controls 0.94 cfs @ 2.03 fps)

Pond 6P: 12" CMP



Summary for Pond 7P: 15" HDPE

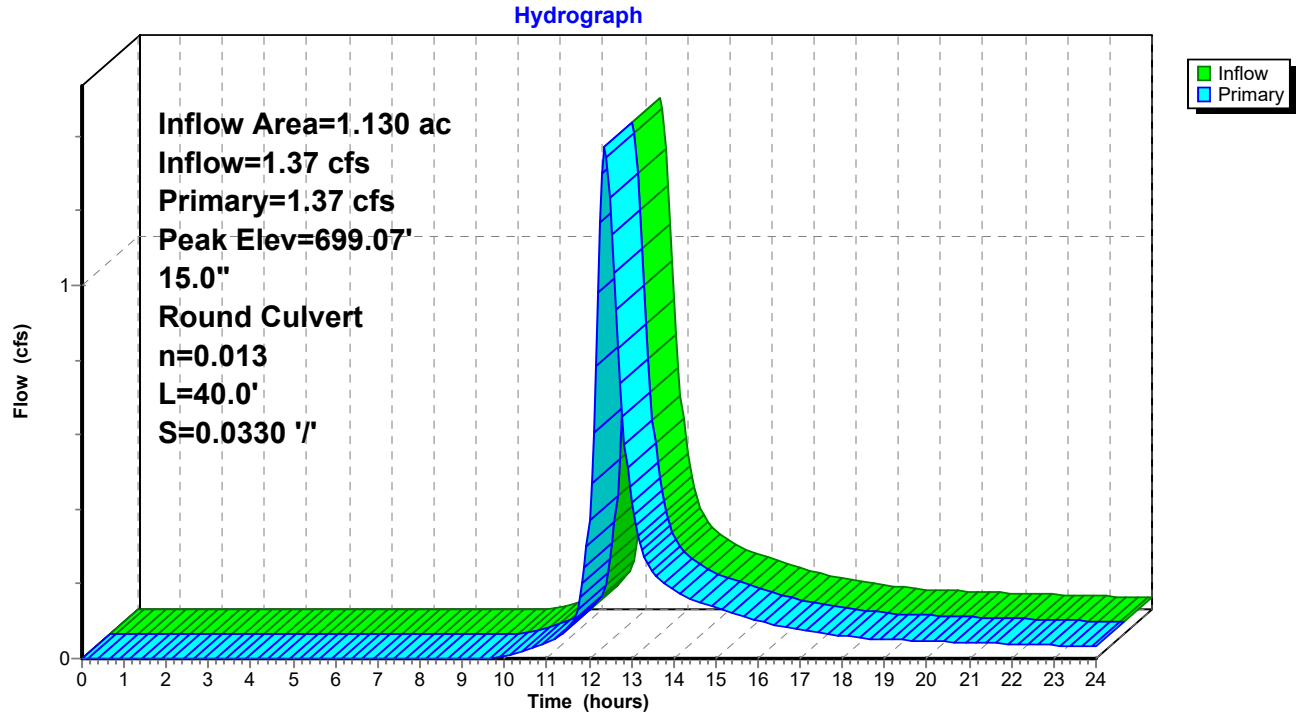
Inflow Area = 1.130 ac, 17.70% Impervious, Inflow Depth > 1.74" for 10 Year event
Inflow = 1.37 cfs @ 12.38 hrs, Volume= 0.163 af
Outflow = 1.37 cfs @ 12.38 hrs, Volume= 0.163 af, Atten= 0%, Lag= 0.0 min
Primary = 1.37 cfs @ 12.38 hrs, Volume= 0.163 af
Routed to Pond 70P : Infiltration Trench 1

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 699.07' @ 12.38 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	698.43'	**15.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 698.43' / 697.11' S= 0.0330 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.36 cfs @ 12.38 hrs HW=699.07' (Free Discharge)
1=Culvert (Inlet Controls 1.36 cfs @ 2.15 fps)

Pond 7P: 15" HDPE



Summary for Pond 8P: Catch Basin

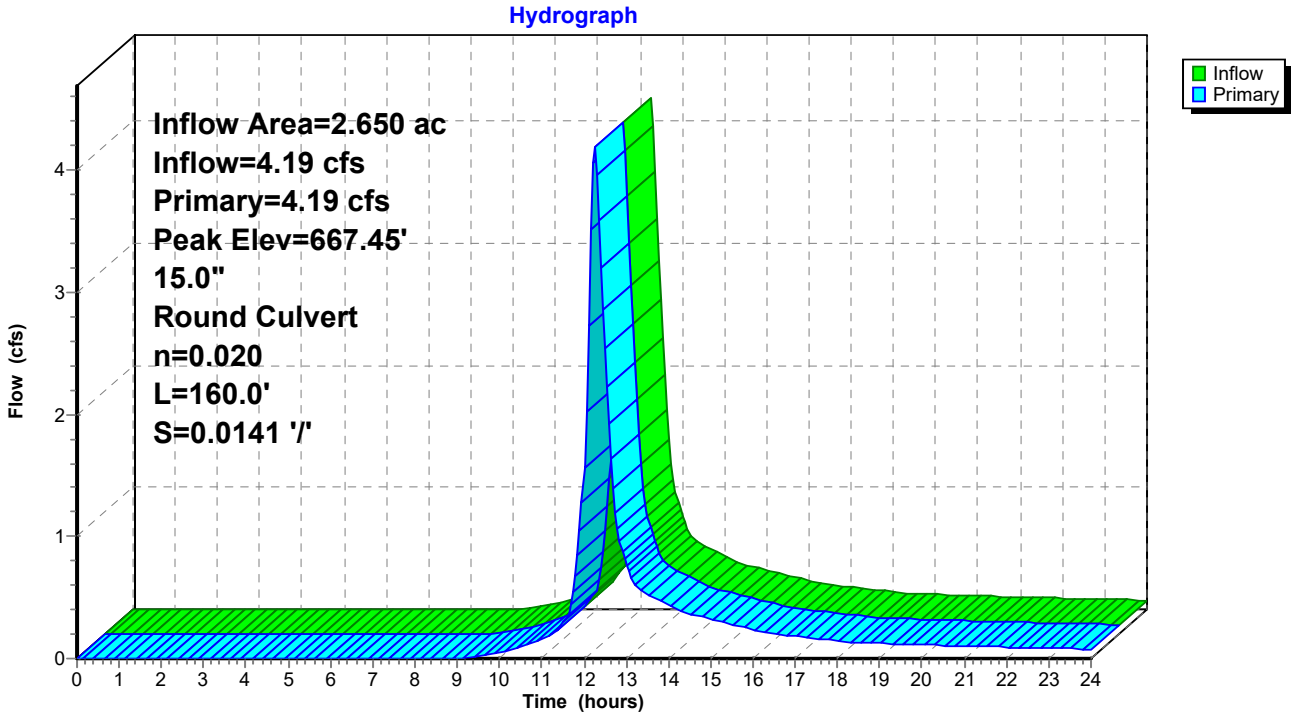
Inflow Area = 2.650 ac, 27.55% Impervious, Inflow Depth > 1.89" for 10 Year event
Inflow = 4.19 cfs @ 12.24 hrs, Volume= 0.417 af
Outflow = 4.19 cfs @ 12.24 hrs, Volume= 0.417 af, Atten= 0%, Lag= 0.0 min
Primary = 4.19 cfs @ 12.24 hrs, Volume= 0.417 af
Routed to Reach 8aR : Wetland

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 667.45' @ 12.24 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	666.25'	**15.0" Round Culvert** L= 160.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 666.25' / 663.99' S= 0.0141 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.23 sf

Primary OutFlow Max=4.17 cfs @ 12.24 hrs HW=667.45' (Free Discharge)
1=Culvert (Barrel Controls 4.17 cfs @ 4.41 fps)

Pond 8P: Catch Basin

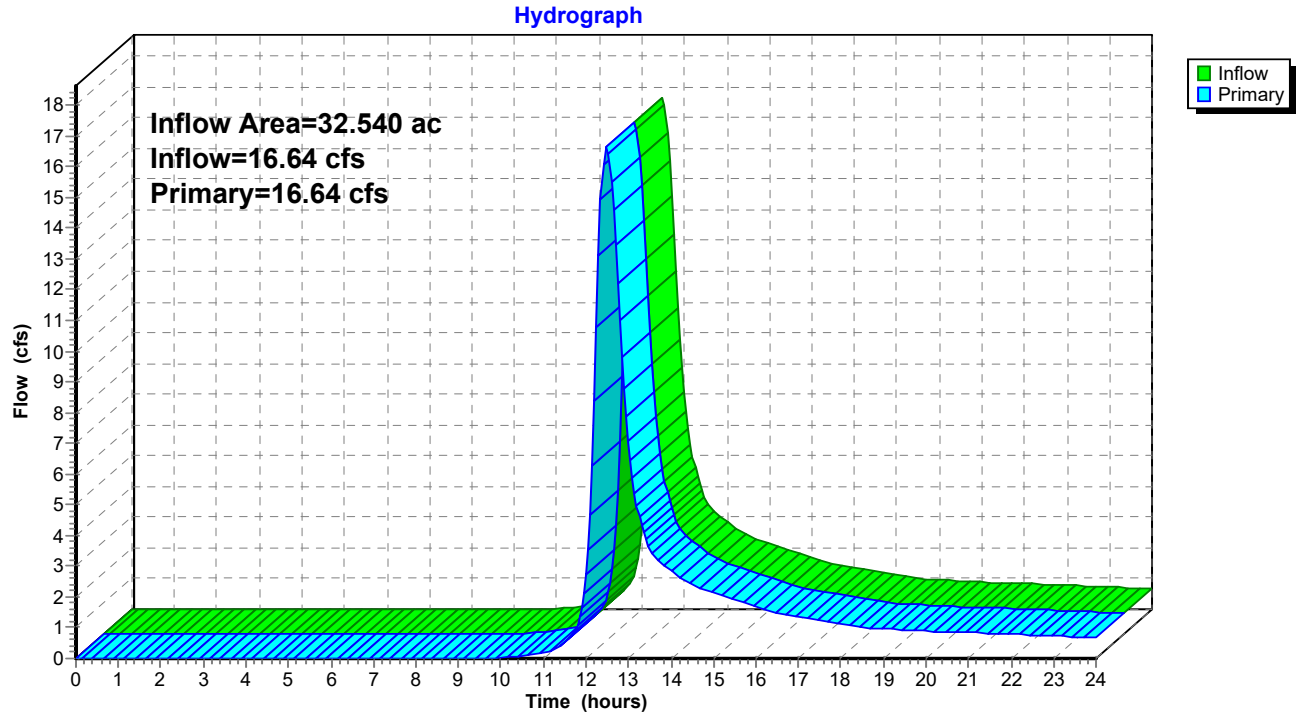


Summary for Pond 9P: Southeast Offsite Runoff

Inflow Area = 32.540 ac, 10.79% Impervious, Inflow Depth > 0.86" for 10 Year event
Inflow = 16.64 cfs @ 12.48 hrs, Volume= 2.337 af
Primary = 16.64 cfs @ 12.48 hrs, Volume= 2.337 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Pond 9P: Southeast Offsite Runoff



Summary for Pond 70P: Infiltration Trench 1

Inflow Area = 2.310 ac, 33.33% Impervious, Inflow Depth > 2.11" for 10 Year event
Inflow = 3.63 cfs @ 12.23 hrs, Volume= 0.405 af
Outflow = 1.94 cfs @ 12.60 hrs, Volume= 0.405 af, Atten= 47%, Lag= 22.3 min
Discarded = 1.10 cfs @ 12.60 hrs, Volume= 0.375 af
Primary = 0.83 cfs @ 12.60 hrs, Volume= 0.030 af
Routed to Reach 7aR : Woods

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 678.34' @ 12.60 hrs Surf.Area= 5,303 sf Storage= 4,248 cf

Plug-Flow detention time= 27.6 min calculated for 0.404 af (100% of inflow)
Center-of-Mass det. time= 27.4 min (864.4 - 837.0)

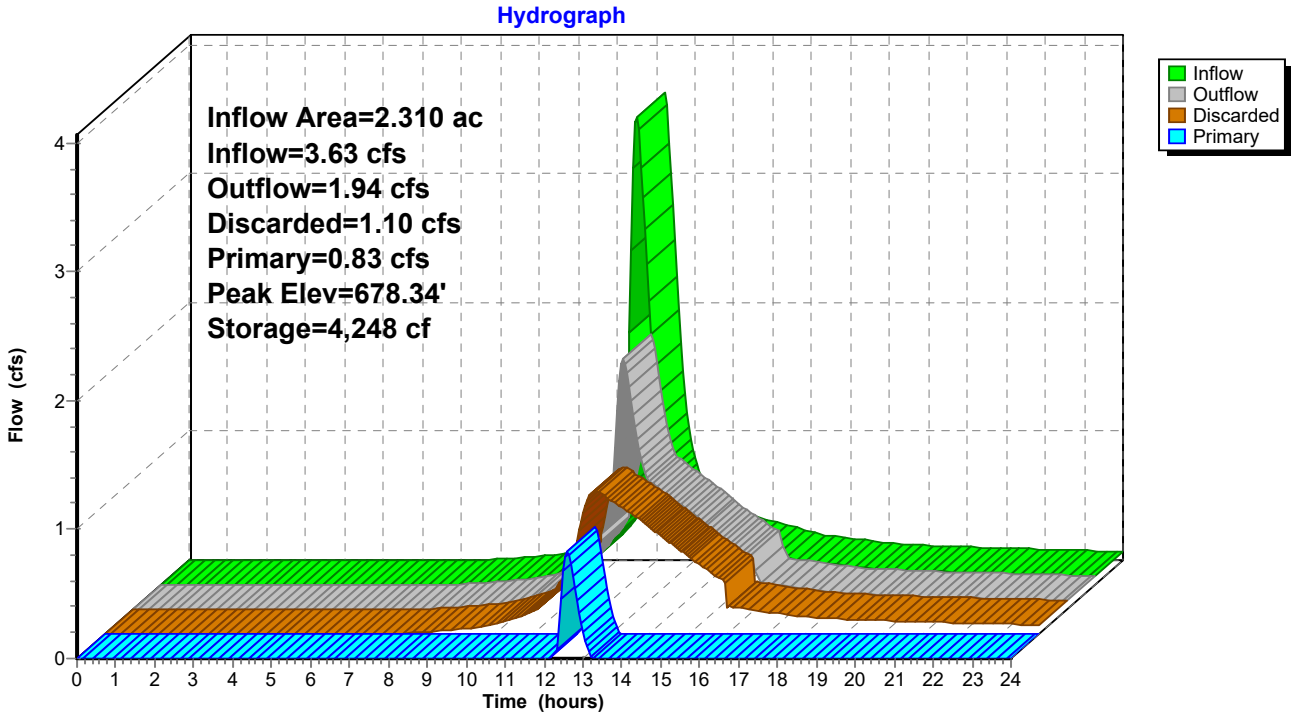
Volume	Invert	Avail.Storage	Storage Description
#1	677.15'	6,060 cf	**4.00'W x 470.00'L x 1.50'H Prismatoid Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Discarded	677.15'	**9.000 in/hr Exfiltration over Surface area**
#2	Primary	678.15'	**4.0' long + 3.0 '/' SideZ x 5.0' 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) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=1.10 cfs @ 12.60 hrs HW=678.34' (Free Discharge)
1=Exfiltration (Exfiltration Controls 1.10 cfs)

Primary OutFlow Max=0.83 cfs @ 12.60 hrs HW=678.34' (Free Discharge)
2=Broad-Crested Rectangular Weir (Weir Controls 0.83 cfs @ 0.98 fps)

Pond 70P: Infiltration Trench 1



Summary for Pond 80P: Infiltration Trench 2

Inflow Area = 0.120 ac, 66.67% Impervious, Inflow Depth > 2.13" for 10 Year event
Inflow = 0.34 cfs @ 12.01 hrs, Volume= 0.021 af
Outflow = 0.11 cfs @ 12.31 hrs, Volume= 0.021 af, Atten= 69%, Lag= 17.7 min
Discarded = 0.11 cfs @ 12.31 hrs, Volume= 0.021 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 8aR : Wetland

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 676.42' @ 12.31 hrs Surf.Area= 506 sf Storage= 169 cf

Plug-Flow detention time= 9.7 min calculated for 0.021 af (100% of inflow)
Center-of-Mass det. time= 9.6 min (833.5 - 823.8)

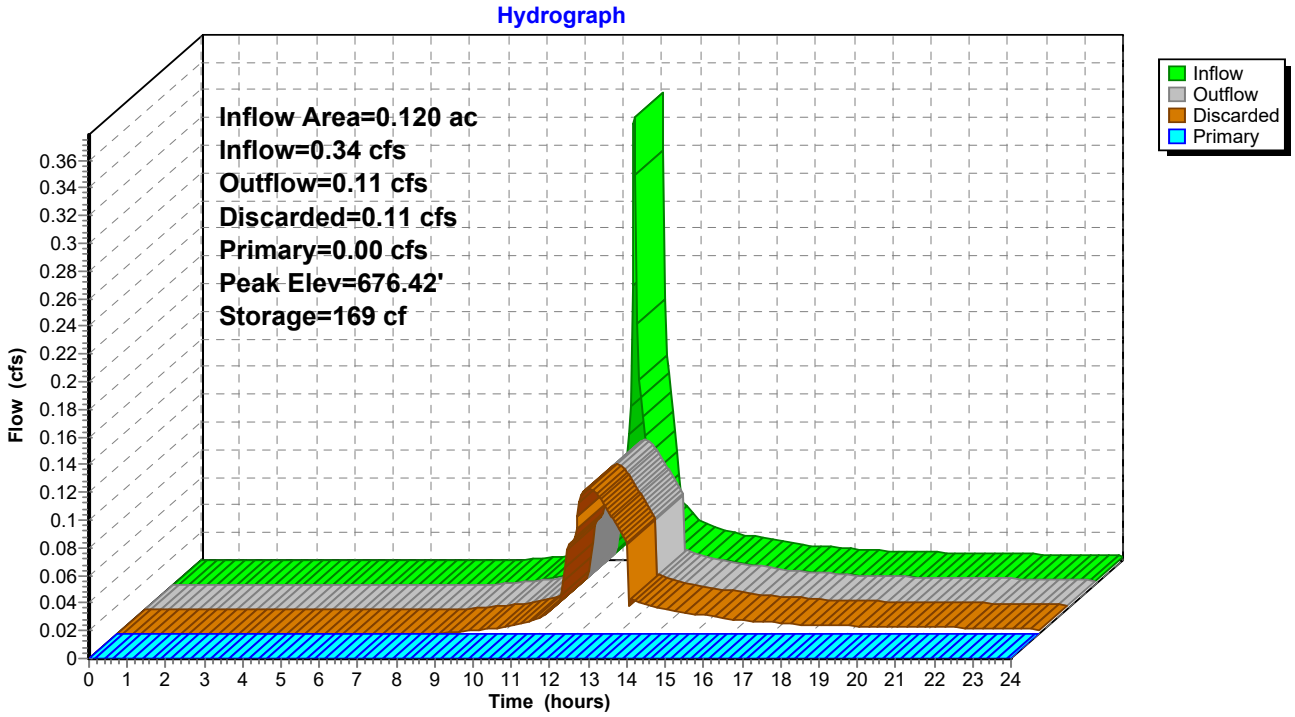
Volume	Invert	Avail.Storage	Storage Description
#1	676.00'	1,024 cf	**4.00'W x 75.00'L x 1.50'H Prismatoid Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Discarded	676.00'	**9.000 in/hr Exfiltration over Surface area**
#2	Primary	677.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.11 cfs @ 12.31 hrs HW=676.42' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=676.00' (Free Discharge)
↑**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 80P: Infiltration Trench 2



Summary for Pond 100P: Drip Edge Trenches

Inflow Area = 0.180 ac, 88.89% Impervious, Inflow Depth > 3.44" for 10 Year event
Inflow = 0.77 cfs @ 12.00 hrs, Volume= 0.052 af
Outflow = 0.17 cfs @ 11.70 hrs, Volume= 0.052 af, Atten= 78%, Lag= 0.0 min
Discarded = 0.17 cfs @ 11.70 hrs, Volume= 0.052 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 8aR : Wetland

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 677.43' @ 12.37 hrs Surf.Area= 0.018 ac Storage= 0.011 af

Plug-Flow detention time= 13.7 min calculated for 0.052 af (100% of inflow)
Center-of-Mass det. time= 13.6 min (782.5 - 768.9)

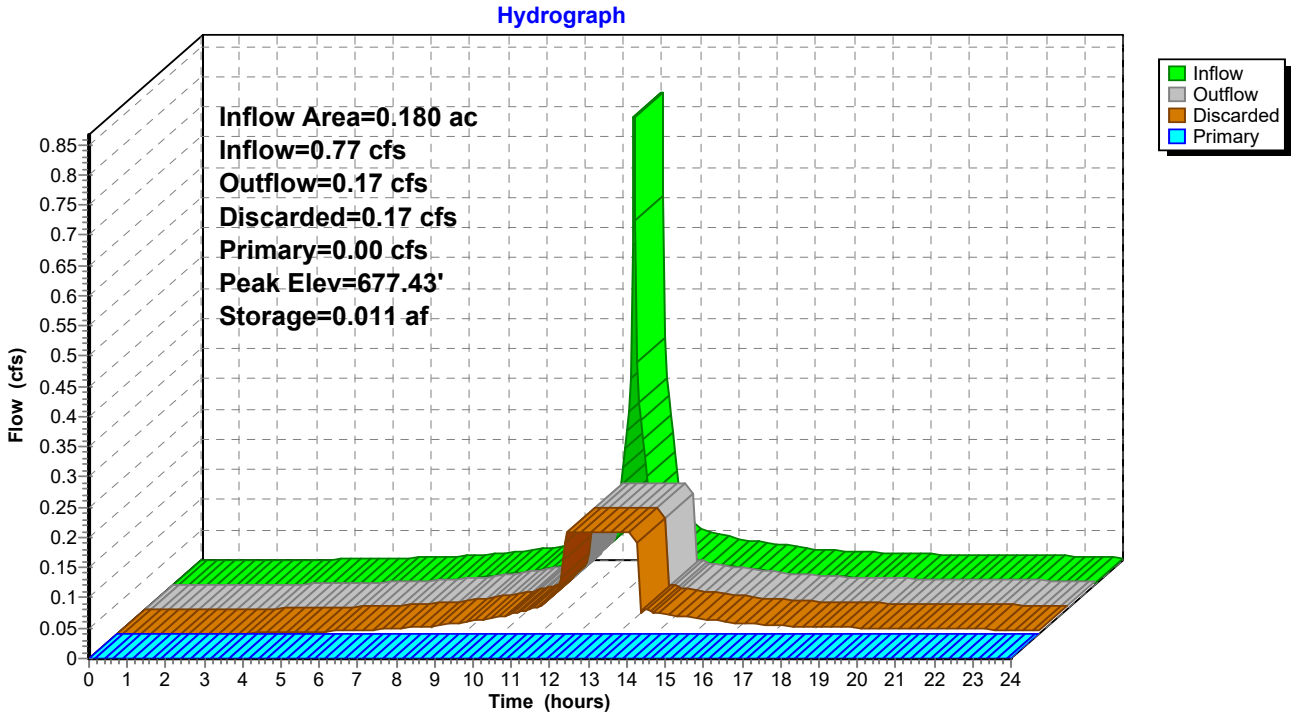
Volume	Invert	Avail.Storage	Storage Description
#1	676.00'	0.029 af	**5.00'W x 80.00'L x 4.00'H Prismatoid** x 2 0.073 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Discarded	676.00'	**9.000 in/hr Exfiltration over Surface area**
#2	Primary	679.90'	**80.0' long + 3.0 '/' SideZ x 5.0' breadth Overflow X 2.00** 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) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.17 cfs @ 11.70 hrs HW=676.05' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.17 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=676.00' (Free Discharge)
2=Overflow (Controls 0.00 cfs)

Pond 100P: Drip Edge Trenches



Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	New Hampshire
Location	
Longitude	71.915 degrees West
Latitude	43.270 degrees North
Elevation	0 feet
Date/Time	Tue, 22 Jun 2021 12:35:37 -0400

Extreme Precipitation Estimates

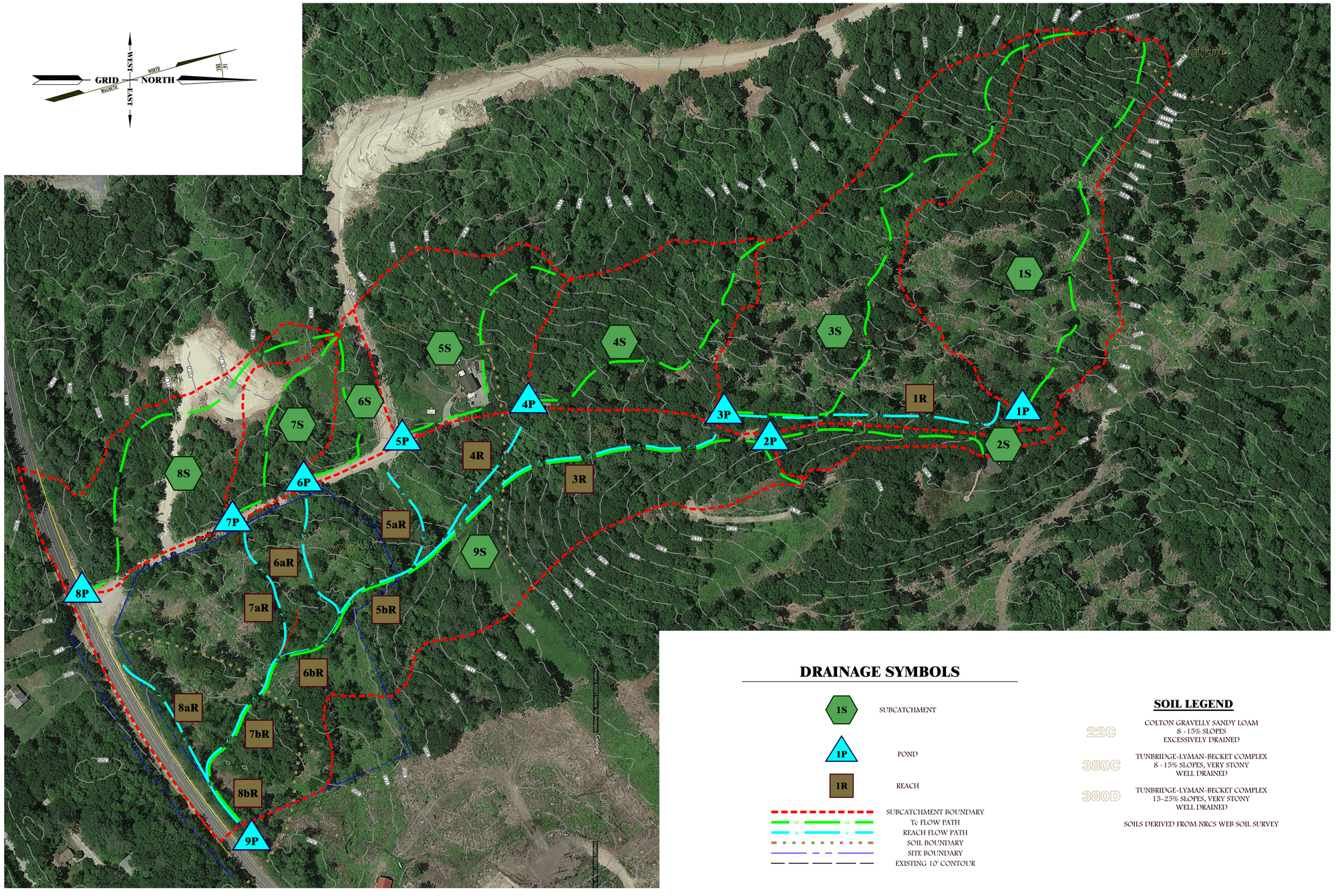
	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.39	0.49	0.64	0.80	1.00	**1yr**	0.69	0.95	1.16	1.46	1.83	2.31	2.59	**1yr**	2.04	2.49	2.92	3.61	4.16	**1yr**
2yr	0.31	0.48	0.60	0.79	0.99	1.24	**2yr**	0.85	1.13	1.43	1.79	2.22	2.75	3.11	**2yr**	2.44	2.99	3.49	4.17	4.77	**2yr**
5yr	0.37	0.57	0.72	0.97	1.23	1.56	**5yr**	1.07	1.42	1.81	2.24	2.77	3.41	3.93	**5yr**	3.02	3.78	4.39	5.16	5.84	**5yr**
10yr	0.41	0.65	0.82	1.12	1.46	1.86	**10yr**	1.26	1.69	2.16	2.68	3.29	4.01	4.69	**10yr**	3.55	4.51	5.23	6.07	6.81	**10yr**
25yr	0.49	0.78	1.00	1.37	1.82	2.34	**25yr**	1.57	2.13	2.71	3.36	4.12	4.98	5.94	**25yr**	4.41	5.71	6.58	7.52	8.36	**25yr**
50yr	0.56	0.90	1.15	1.61	2.16	2.79	**50yr**	1.87	2.54	3.24	4.01	4.88	5.86	7.10	**50yr**	5.19	6.83	7.84	8.85	9.75	**50yr**
100yr	0.63	1.03	1.32	1.88	2.56	3.33	**100yr**	2.21	3.03	3.87	4.77	5.78	6.91	8.49	**100yr**	6.12	8.17	9.35	10.41	11.39	**100yr**
200yr	0.73	1.19	1.54	2.20	3.04	3.96	**200yr**	2.62	3.61	4.61	5.67	6.85	8.14	10.17	**200yr**	7.21	9.78	11.14	12.26	13.31	**200yr**
500yr	0.87	1.44	1.87	2.72	3.81	4.98	**500yr**	3.28	4.55	5.81	7.14	8.57	10.13	12.90	**500yr**	8.97	12.40	14.06	15.24	16.35	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.22	0.34	0.42	0.56	0.69	0.83	**1yr**	0.60	0.81	0.94	1.22	1.62	1.98	2.41	**1yr**	1.75	2.32	2.64	3.24	3.68	**1yr**
2yr	0.30	0.46	0.57	0.77	0.95	1.12	**2yr**	0.82	1.10	1.29	1.69	2.18	2.67	3.00	**2yr**	2.36	2.88	3.36	4.03	4.64	**2yr**
5yr	0.34	0.52	0.65	0.89	1.13	1.33	**5yr**	0.98	1.30	1.50	1.96	2.51	3.16	3.59	**5yr**	2.79	3.45	3.99	4.75	5.44	**5yr**
10yr	0.38	0.59	0.73	1.02	1.32	1.50	**10yr**	1.14	1.47	1.69	2.18	2.78	3.59	4.11	**10yr**	3.18	3.95	4.54	5.38	6.12	**10yr**
25yr	0.43	0.66	0.82	1.17	1.54	1.74	**25yr**	1.33	1.70	1.97	2.51	3.17	4.27	4.87	**25yr**	3.78	4.68	5.38	6.37	7.16	**25yr**
50yr	0.47	0.72	0.89	1.28	1.73	1.94	**50yr**	1.49	1.90	2.21	2.79	3.49	4.86	5.53	**50yr**	4.30	5.32	6.11	7.24	8.09	**50yr**
100yr	0.51	0.77	0.97	1.40	1.92	2.16	**100yr**	1.65	2.11	2.47	3.10	3.87	5.56	6.27	**100yr**	4.92	6.03	6.93	8.25	9.12	**100yr**
200yr	0.55	0.83	1.05	1.52	2.12	2.41	**200yr**	1.83	2.36	2.77	3.46	4.27	6.35	7.11	**200yr**	5.62	6.84	7.84	9.41	10.31	**200yr**
500yr	0.62	0.92	1.19	1.72	2.45	2.76	**500yr**	2.11	2.70	3.22	4.01	4.89	7.58	8.35	**500yr**	6.71	8.03	9.24	11.23	12.12	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.29	0.45	0.55	0.73	0.90	1.10	**1yr**	0.78	1.08	1.21	1.57	1.98	2.51	2.79	**1yr**	2.22	2.68	3.16	3.91	4.46	**1yr**
2yr	0.34	0.52	0.64	0.87	1.07	1.23	**2yr**	0.93	1.21	1.40	1.83	2.34	2.85	3.23	**2yr**	2.52	3.11	3.63	4.32	4.95	**2yr**
5yr	0.40	0.62	0.77	1.05	1.34	1.59	**5yr**	1.16	1.56	1.81	2.33	2.97	3.69	4.34	**5yr**	3.27	4.17	4.83	5.58	6.33	**5yr**
10yr	0.48	0.74	0.92	1.28	1.66	1.96	**10yr**	1.43	1.92	2.23	2.82	3.57	4.48	5.43	**10yr**	3.96	5.22	5.98	6.78	7.64	**10yr**
25yr	0.61	0.93	1.16	1.65	2.17	2.60	**25yr**	1.87	2.54	2.93	3.63	4.57	5.80	7.30	**25yr**	5.13	7.02	7.99	8.76	9.80	**25yr**
50yr	0.73	1.11	1.39	1.99	2.68	3.22	**50yr**	2.32	3.15	3.60	4.39	5.51	7.04	9.16	**50yr**	6.23	8.81	9.93	10.64	11.84	**50yr**
100yr	0.89	1.34	1.68	2.42	3.32	4.01	**100yr**	2.87	3.92	4.44	5.31	6.66	8.57	11.52	**100yr**	7.58	11.08	12.37	12.91	14.30	**100yr**
200yr	1.07	1.60	2.03	2.94	4.10	4.98	**200yr**	3.54	4.86	5.47	6.43	8.03	10.40	14.50	**200yr**	9.20	13.94	15.43	15.67	17.26	**200yr**
500yr	1.37	2.05	2.63	3.82	5.44	6.64	**500yr**	4.69	6.49	7.21	8.30	10.32	13.45	19.69	**500yr**	11.90	18.94	20.65	20.24	22.13	**500yr**



DRAINAGE SYMBOLS

- 1S — SUBCATCHMENT
- 1P — POND
- 1R — REACH
- SUBCATCHMENT BOUNDARY
- Tc FLOW PATH
- REACH FLOW PATH
- SOIL BOUNDARY
- SITE BOUNDARY
- EXISTING 10' CONTOUR

SOIL LEGEND

22C	COLTON GRAVELLY SANDY LOAM 8 -15% SLOPES EXCESSIVELY DRAINED
380C	TUNBRIDGE-LYMAN-BECKET COMPLEX 8 -15% SLOPES, VERY STONY WELL DRAINED
380D	TUNBRIDGE-LYMAN-BECKET COMPLEX 15-25% SLOPES, VERY STONY WELL DRAINED

SOILS DERIVED FROM NRCS WEB SOIL SURVEY

STATE OF NEW HAMPSHIRE — ANTHONY T. COSTELLO No. 10020 LICENSED PROFESSIONAL ENGINEER

A.C.Engineering & Consulting
Civil Engineering & Land Planning
43 Bear Hill Road
East Washington, N.H. 03280
Phone: (603) 325-5114
acengineer@gsinet.net

NO.	DATE	DESCRIPTION	BY

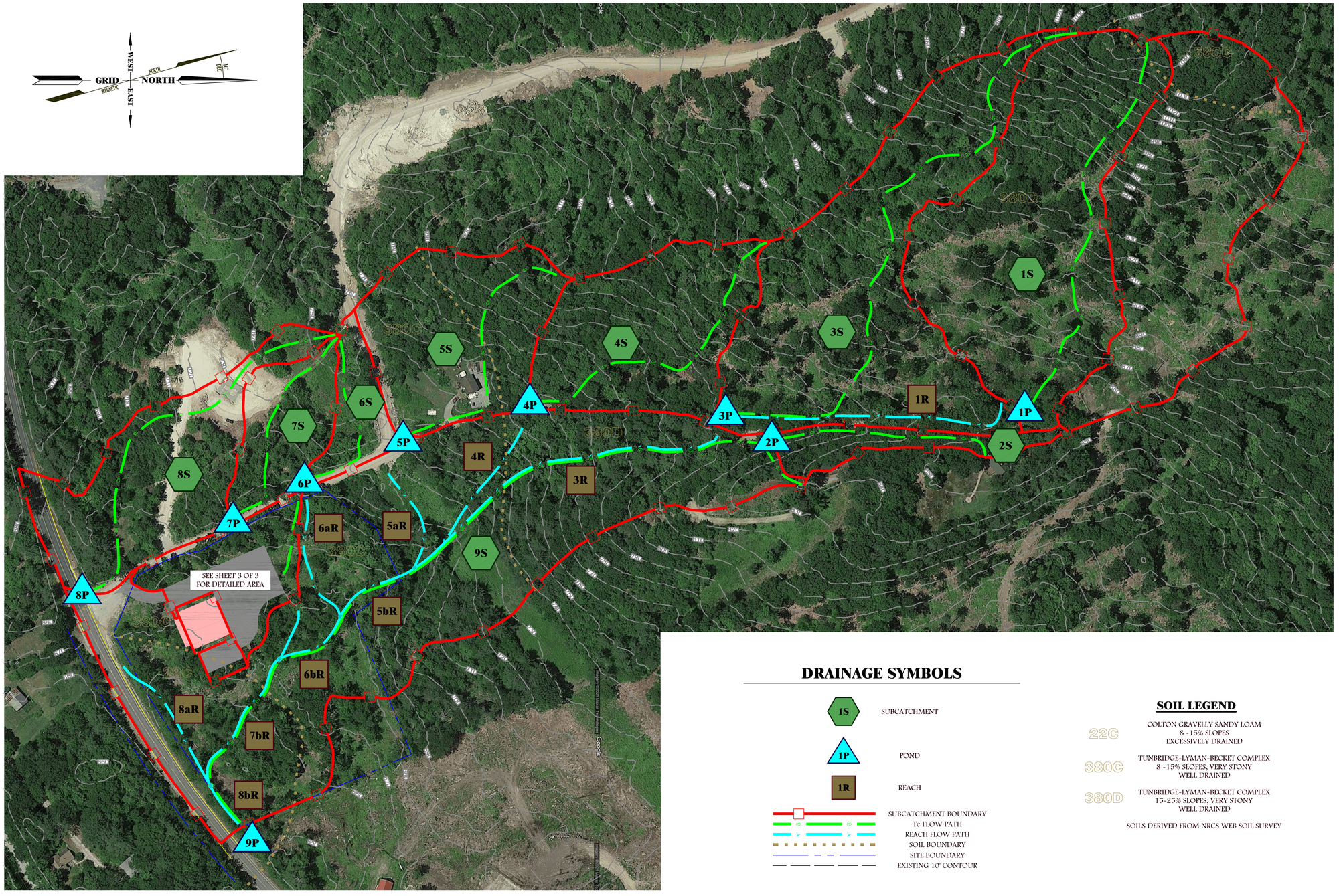
OWNER OF RECORD:
Tyler McIver
35 Ring Hill Road
Bradford, N.H. 03221

PRE-DEVELOPMENT DRAINAGE PLAN

Tyler Lawn Care
Tax Map 18 / Lot 61
N.H. Route 103 West ~ Warner, N.H.

100 0 50 100
SCALE: 1" = 100 ft.

DATE: 11-15-21
DWG: 1922~BASE



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SOILS DERIVED FROM NRCS WEB SOIL SURVEY

ANTHONY T. COSTELLO No. 10020 LICENSED PROFESSIONAL ENGINEER — STATE OF NEW HAMPSHIRE

A.C.Engineering & Consulting
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43 Bear Hill Road
East Washington, N.H. 03280
Phone: (603) 325-5114
acengineer@gsinet.net

NO.	DATE	DESCRIPTION	BY

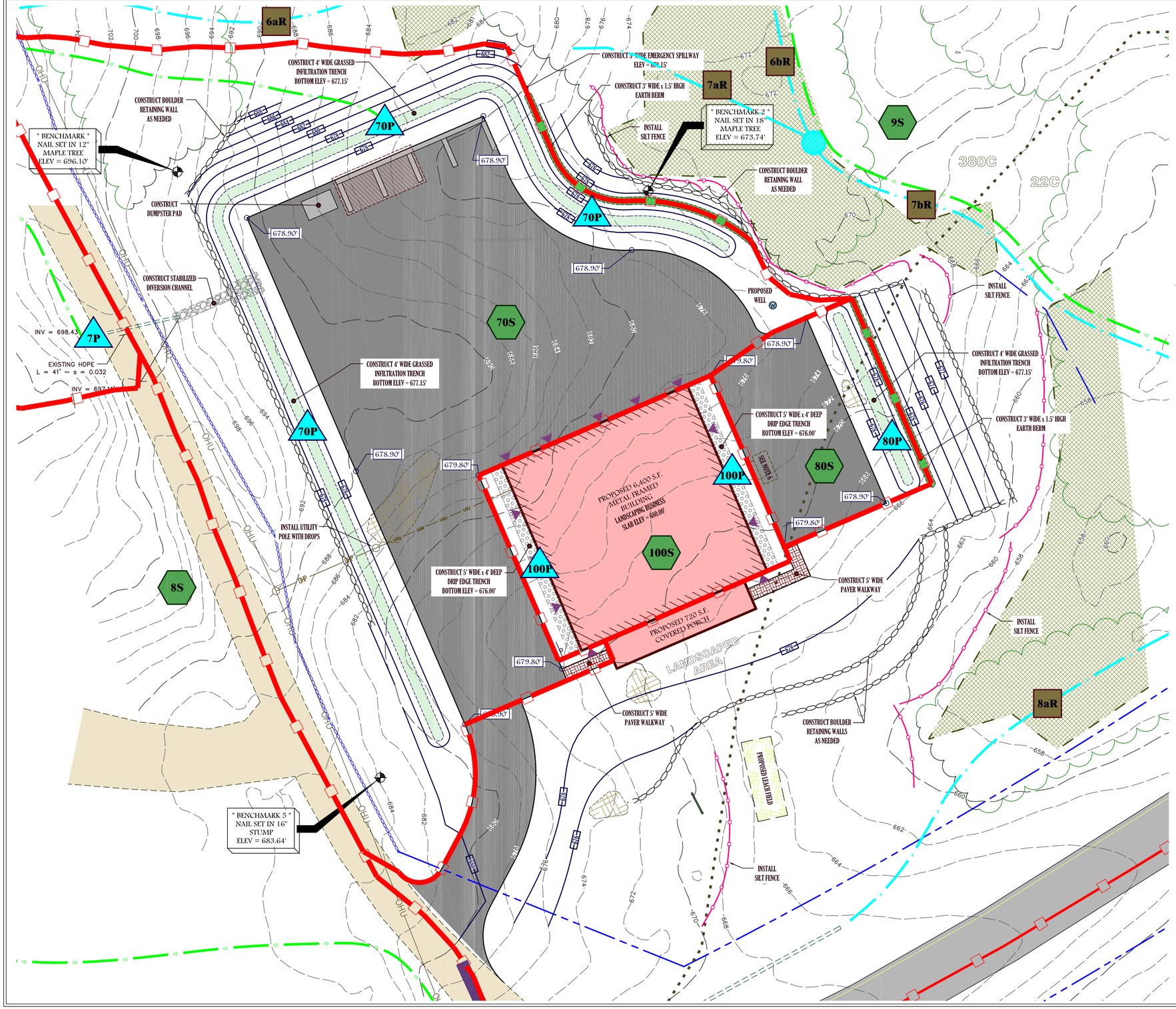
OWNER OF RECORD:
Tyler McIver
35 Ring Hill Road
Bradford, N.H. 03221

POST DEVELOPMENT DRAINAGE PLAN 1

Tyler Lawn Care
Tax Map 18 / Lot 61
N.H. Route 103 West ~ Warner, N.H.

100 0 50 100
SCALE: 1" = 100 ft.

DATE: 11-15-21
DWG: 1922~BASE



LEGEND

EXISTING / PROPOSED

- PROPERTY LINE
- EDGE OF PAVEMENT
- EDGE OF GRAVEL
- 2' CONTOUR
- 10' CONTOUR
- SOIL BOUNDARY
- STONE WALL
- TREELINE
- DRAINAGE PIPE
- WETLAND
- SEASONAL RUNOFF
- RETAINING WALL
- SILT FENCE
- OHP — OVERHEAD UTILITIES
- UNDERGROUND UTILITIES — UGU
- WALL MOUNTED LIGHT

DRAINAGE SYMBOLS

- 1S — SUBCATCHMENT
- 1P — POND
- 1R — REACH
- SUBCATCHMENT BOUNDARY
- Tc FLOW PATH
- REACH FLOW PATH

SOIL LEGEND

- 22C — COLTON GRAVELLY SANDY LOAM, 8 -15% SLOPES, EXCESSIVELY DRAINED
- 380C — TUNBRIDGE-LYMAN-BECKET COMPLEX, 8 -15% SLOPES, VERY STONY, WELL DRAINED
- 380D — TUNBRIDGE-LYMAN-BECKET COMPLEX, 15-25% SLOPES, VERY STONY, WELL DRAINED

SOILS DERIVED FROM NRCS WEB SOIL SURVEY

DIG SAFE — STOP! CALL DIG SAFE BEFORE YOU DIG, GRADE OR EXCAVATE FOR THE MARKING OF UNDERGROUND UTILITIES 1-888-344-7233 (888-DIG-SAFE)

ANTHONY T. COSTELLO No. 10020 — STATE OF NEW HAMPSHIRE — LICENSED PROFESSIONAL ENGINEER

A.C.Engineering & Consulting
Civil Engineering & Land Planning
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East Washington, N.H. 03280
Phone: (603) 325-5114
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NO.	DATE	DESCRIPTION	BY

OWNER OF RECORD:
Tyler McIver
35 Ring Hill Road
Bradford, N.H. 03221

POST DEVELOPMENT DRAINAGE PLAN 2

Tyler Lawn Care
Tax Map 16 / Lot 61
N.H. Route 103 West ~ Warner, N.H.

SCALE: 1" = 20 ft.

DATE: 11-12-21
DWG: 1922~BASE