

From: dustin@dmroma.com
Sent: Monday, June 8, 2020 12:32 PM
To: Mark T. Arienti; 'Jayson Haskell'
Cc: Jennifer Curtis
Subject: RE: Depot Street Final - Completeness Review
Attachments: Hydrocad - Depot St - 25yr POST.pdf; Bike Rack Detail.pdf; 04 - Site Plan.pdf; Grade Comparison.pdf; 464803-WI-~6DepotSt-Ability to Serve Determination.pdf; 03 - Subdivision Plan.pdf; Light Fixture Cut Sheet.pdf

Hi Mark & Jennifer, please see my response to the comments below in **RED**

Additionally, we are in agreement to include "no parking, fire lane" signs along the driveway that runs between the two 12-unit buildings, as suggested by the Fire Chief.

Dustin M. Roma, P.E.



PO Box 1116, Windham, ME 04062
P: (207) 310-0506

From: Mark T. Arienti <mtarienti@windhammaine.us>
Sent: Thursday, May 28, 2020 11:19 AM
To: Dustin Roma <dustin@dmroma.com>; Jayson Haskell <jayson@dmroma.com>
Cc: Jennifer Curtis <jcurtis@windhammaine.us>
Subject: FW: Depot Street Final - Completeness Review

I reviewed the MCL Realty Depot Street Residential Development Final Plan set dated 5/8/20 as well as the comments and response prepared by the Maine DEP for their review of DM Roma's Stormwater Permit Application including their 4/28/20 Stormwater Management Report, response to DEP comments dated 5/8/20 and the response to their submittals by Aubrey Strause, Maine DEP Stormwater Engineer in a memorandum dated 5/8/20.

In addition, on 2/26/20 I e-mailed some comments on the previous (2/18/20) set of plans and application materials. If not addressed in the DM Roma plans or other materials submitted since that time, then I've reiterated below.

I have the following comments on the above documents in addition to the ones provided by Jenn below:

- The MEDEP has conducted a detailed review of compliance with Maine DEP Stormwater rules as part of the review for the stormwater permit, which is required because the project will create greater than 1 acre of new impervious area. The Maine DEP memorandum dated 5/8/20 concluded that the proposed project results in treatment of almost 97% of the on-site impervious area (29,783 SF) and 82% of the total developed area (49,697 SF including 1,909 SF of off-site area) using an underdrain soil filter (UDSF). This meets the General Standards of Ch. 500 in accordance with Windham's Land use Ordinance section 911.J.
- Per Windham Land Use Ordinance, 911.J, a stormwater management plan must be submitted that complies with Section 4E Flooding Standard of the DEP Chapter 500 Stormwater Management. A Stormwater Management Plan was submitted with the preliminary application dated 2/18/20 that

included a waiver request from the flooding standard since their evaluation showed only a small increase in peak flow from the pre- to the post-development condition for the 25-yr storm of 1.77 cfs (5.36%). The Planning Board granted the waiver request in their 3/9/20 meeting. The 4/28/20 Stormwater Management report stated that a comparison of the pre- and post-development peak flow rates was not been included, but storm drain sizing calculations have been included as Attachment 4 of this report. This is appropriate, but why is only the summary page for the 25-hr storm and not the detailed HydroCAD output pages for each component not included as they are for the 2- and 10-yr storms? Can these be included? **Attached is the detailed HydroCAD report for the 25-year storm.**

- The 4/28/20 submittal includes a filter basin drain-down analysis for the 2-yr storm, but not the 10-yr or 25-yr storms. Please clarify. **The MDEP requested a draw-down analysis for only the 2-year storm event because it is a relatively close model of the Channel Protection Volume. It is not appropriate to model the 10 and 25-year storm events for draw-down time because the Channel Protection Volume is significantly exceeded during these storm events, so the filter basins will engage overflow grates and spillways to discharge the excess water, and then a pond draw-down will occur for the Channel Protection Volume, which is represented generally with the 2-year storm model.**
- The generator pad should be shown on the Grading & Utility Plan for the proposed pump station in a manner consistent with that on the Gorrill Palmer plans for the pump station. The determination of whether the generator will be oil- or natural gas-fired has not been finalized, and therefore there should be a note to indicate that spill prevention, control and countermeasures, appropriate to the type of fuel employed, per Maine DEP's comment in their 5/8/20 Final Review. **It is our understanding that the Pump Station design has been modified to no longer include a building and that final specifications will be provided to us to incorporate on the final plans to be signed by the Planning Board. We will work with the Town to make sure all details associated with the pump station, including any provisions for a generator pad, are shown on our plans prior to Planning Board signature.**

Unresolved Comments from Earlier Peer Review

- The location(s) and a detail for bike racks should be shown on the plans. **Attached is a bike rack detail. Also attached is a revised Site Plan showing the three locations of proposed bike racks, one for each building.**
- Please provide additional ground topography for the footprints for each of the filter basins rather than relying solely LIDAR aerial survey for the final plan submission. **Attached is a plan titled "Grade Comparison" which shows spot grades that were surveyed on the ground to confirm accuracy of LIDAR grades.**
- The proposed subdivision is part of the property that was the subject of a Maine DEP VRAP, and there is a potential for oil or hazardous substances in the subsurface soils at the Site. It is recommended that several test pits be dug in advance of construction and the soils be evaluated by an Environmental Professional to assess any potential impact on how excavated soils should be handled (see below). Please add a note to this effect on the Subdivision Plan. **We understand that this will be a condition of approval as shown as COA's #3 and #4 in the Staff Review Memo dated June 3.**
- Sight distance on Depot Street needs to be added to the plans as well as a note requiring that all trees and low-level vegetation located in the public street right of way of Depot Street, extending a distance of approximately 150-feet in either direction from the center of the proposed driveway entrance, be removed and maintained as necessary to ensure adequate sight distance. **Note 12 was added to the attached revised Subdivision Plan indicating that adequate sight distance will be achieved once the vegetation is removed and maintained.**

Please don't hesitate to contact me if you have any questions on these comments,

Thanks,

Mark

From: Jennifer Curtis <jcurtis@windhammaine.us>

Sent: Friday, May 22, 2020 1:31 PM

To: Dustin Roma <dustin@dmroma.com>

Cc: Amanda L. Lessard <allessard@windhammaine.us>; Mark T. Arienti <mtarienti@windhammaine.us>

Subject: Depot Street Final - Completeness Review

Hi Dustin,

I reviewed the Depot Street Residential Final Plan application, and found it complete, with the following exceptions:

- Ability to serve from PWD/Sewerage **Ability to Serve letter is attached. Sewer service is dependent upon the Town building the pump station.**
- PWD easement (I see it drawn on the plan – just need the language) **The easement deed will be prepared by the Portland Water District.**
- Building elevations (I have a question out to the Town Attorney if the Planning Board can re-assign their review authority for Commercial District Design Standards through a condition of approval as requested in the application – my personal feeling is that they cannot) **We request that the developer submit plans to the Planning Board for approval of the building once final architectural design is complete. We request that this be made a condition of approval.**
- Proposed light poles should be shown on SB-1 (I see it on the landscaping plan), and details of fixtures must be included in the submission. **Light poles were added to the attached revised Subdivision Plan. Attached is a light fixture cut sheet that was included in our February 18th submittal.**
- The 75' stream setback should be shown on the plan **The 75-foot stream setback was added to the attached revised Subdivision Plan.**

Notes:

Street trees meeting the subdivision ordinance requirement should be shown on the plan, with a reference in the note including the language for 911.E.1.(b) **The street tree requirement for a tree every 50 feet along a roadway does not seem to be strictly applicable to this application. Instead, we have prepared an overall landscaping plan that includes street trees, shrubs and perennial plantings.**

The applicant should clarify if the proposed driveway is intended to be a named street, and if so, the name must be approved by the assessing department, and show appropriate monumentation **We understand that the street requires a name and we will work with the Assessing Department on the assignment of a name for this driveway.**

Jenn Curtis, Planner

Town of Windham
8 School Road
Windham, ME 04062

office: (207) 894-5900 x 6123

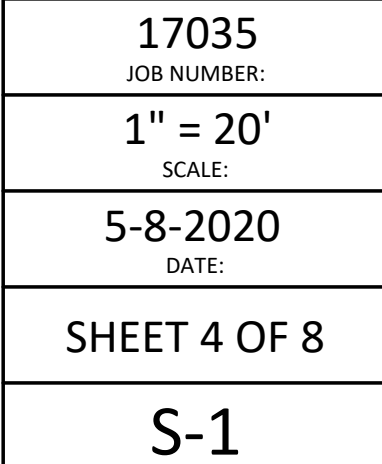
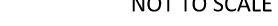
cell: (207) 712-1069

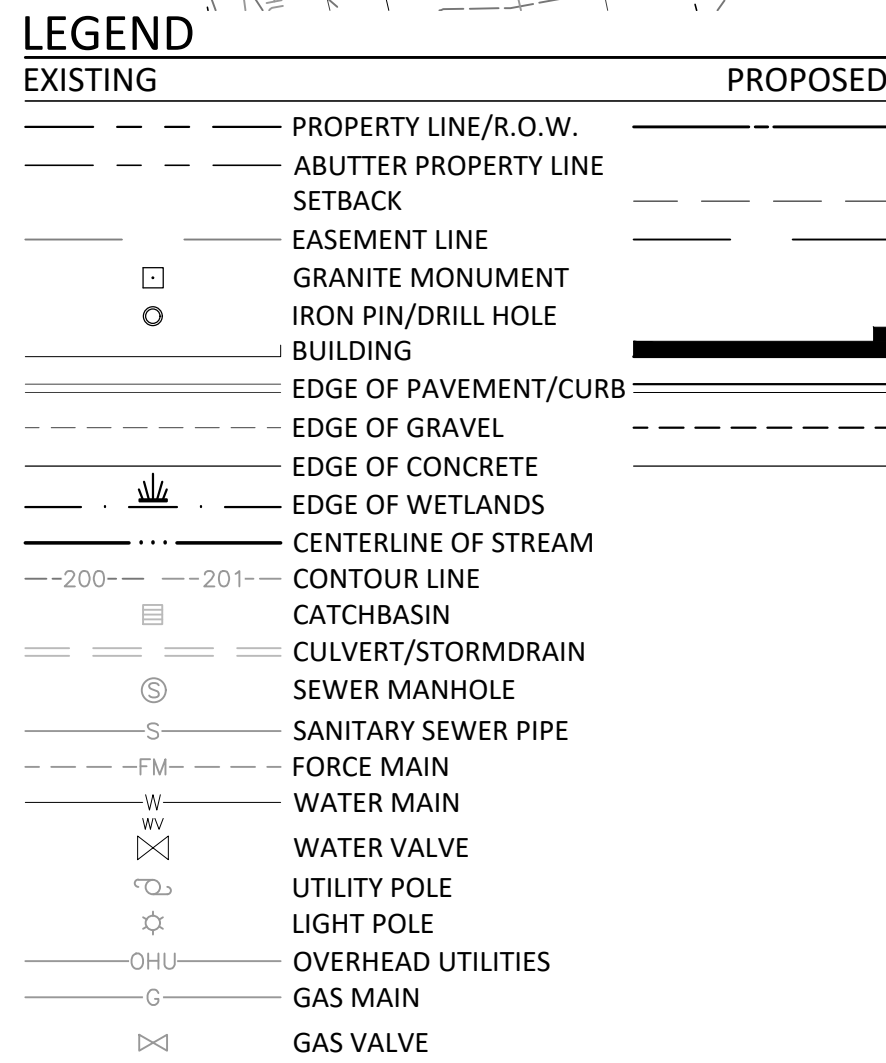
fax: (207) 892-1916

www.windhammaine.us

NOTICE: Under Maine's Freedom of Access ("Right to Know") law, documents – including emails – in the possession of public officials about town business are considered public records. This means if anyone asks to see it, we are required to

provide it. There are very few exceptions. We welcome citizen comments and want to hear from our constituents, but please keep in mind that what you write in an email is not private and will be made available to any interested party.

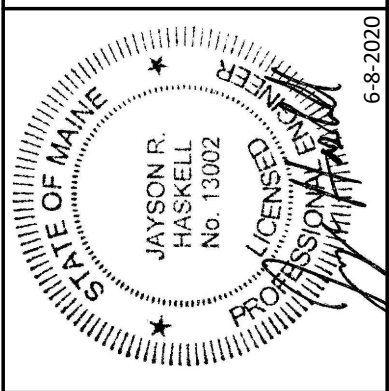




NET RESIDENTIAL DENSITY CALCULATIONS:	
GROSS LAND AREA:	91,766 S.F.
DEDUCTIONS:	
1. RIGHT-OF-WAY	0 S.F.
2. STEEP SLOPES (OVER 25%)	0 S.F.
3. 100-YEAR FLOOD PLAIN	0 S.F.
4. RESOURCE PROTECTION DISTRICT	0 S.F.
5. VERY POORLY DRAINED SOILS	11,761 S.F.
6. SURFACE WATERBODIES	0 S.F.
7. SIGNIFICANT WILDLIFE HABITAT	0 S.F.
8. ENDANGERED BOTANICAL RESOURCES	0 S.F.
TOTAL NET AREA:	80,005 S.F.
REQUIRED NET AREA PER DWELLING:	2,500 S.F.
MAXIMUM ALLOWABLE LOTS/DWELLINGS:	32
NUMBER OF LOTS PROPOSED:	32

[illegible]

STATE OF MAINE	
_____	COUNTY SS. REGISTRY OF DEEDS
RECEIVED _____, 20____	
AT _____h _____m _____M	
AND RECORDED IN	
PLAN BOOK _____	PAGE _____
ATTEST: _____	
REGISTER	

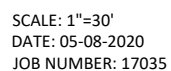


DM ROMA
CONSULTING ENGINEERS
P.O. BOX 11116
WINDHAM, ME 04062
(207) 310 - 0506

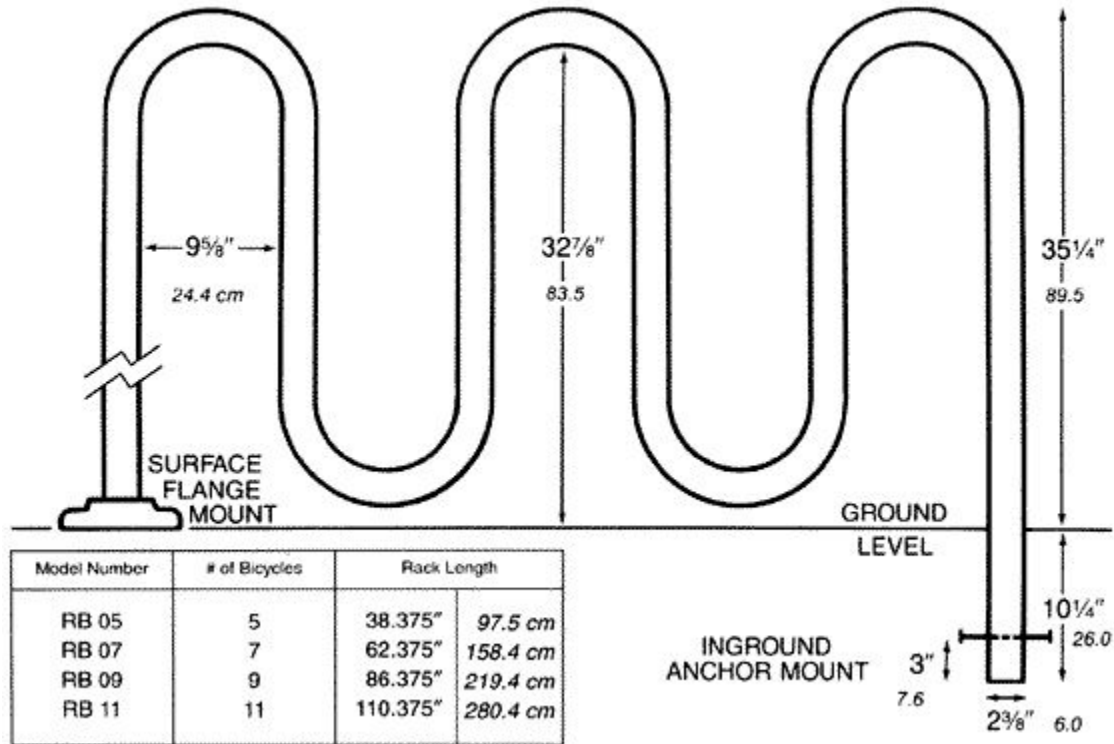
REV	DATE	BY	DESCRIPTION
A	11-18-19	DMR	ISSUED FOR PRELIMINARY SUBDIVISION REVIEW
B	1-27-20	DMR	ISSUED FOR MDEP REVIEW
C	2-18-20	DMR	REVISED PER MDEP REVIEW
D	4-28-20	DMR	REVISED PER MDEP REVIEW
E	5-8-20	DMR	REVISED PER MDEP REVIEW
F	6-8-20	DMR	REVISED PER TOWN REVIEW

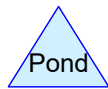
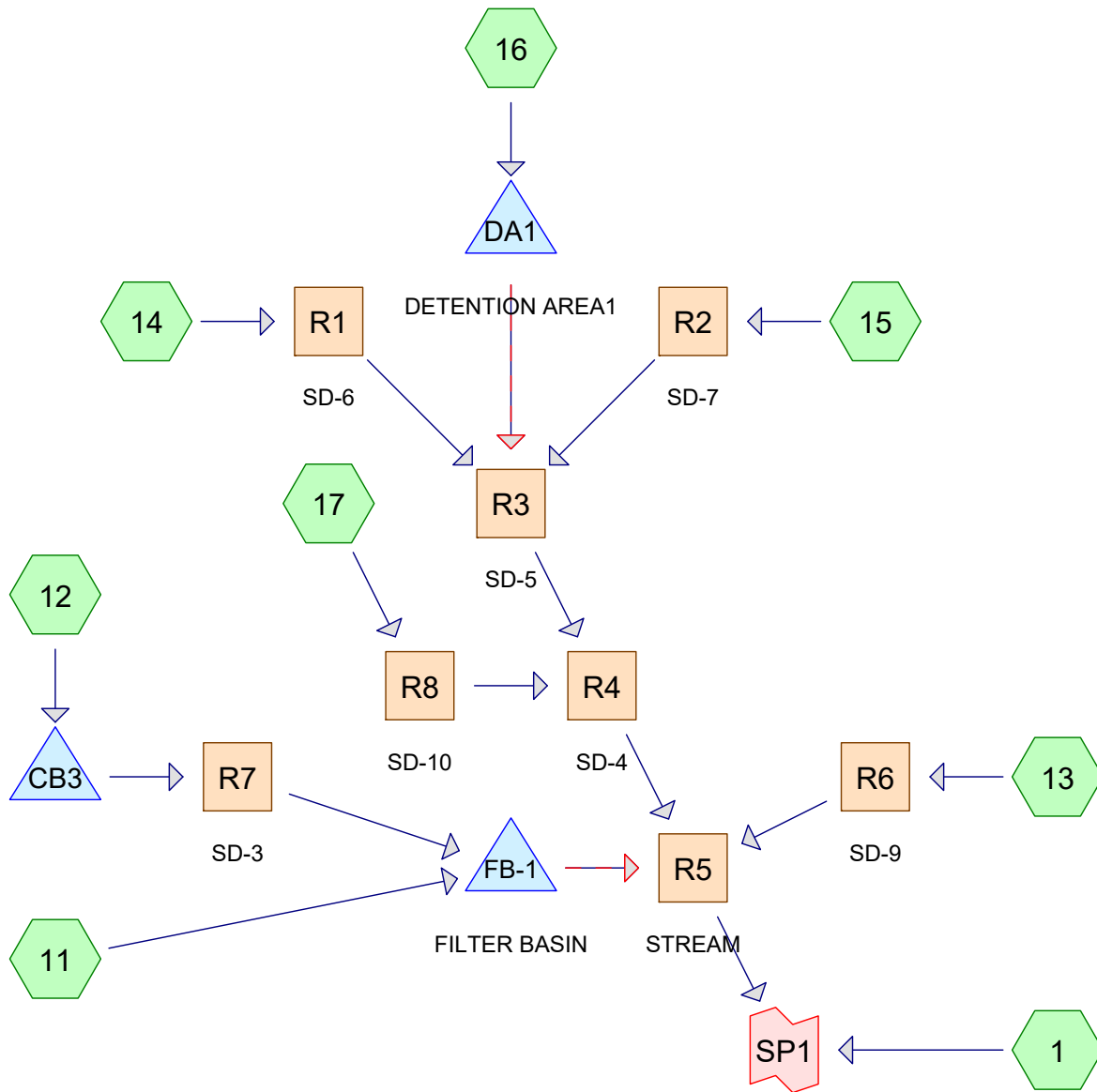
SUBDIVISION PLAN
DEPOT STREET RESIDENTIAL DEVELOPMENT
DEPOT STREET
WINDHAM, MAINE
FOR RECORD OWNER:
MCL REALTY, LLC
PO BOX 1206
WINDHAM, ME 04092

17035 JOB NUMBER:
1" = 20' SCALE:
6-8-2020 DATE:
SHEET 3 OF 8
SB-1



BIKE RACK SPECIFICATION





Routing Diagram for 17035 - POST

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Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover
0	0	0	25,114	0	25,114	50-75% Grass cover, Fair
0	0	0	37,910	0	37,910	>75% Grass cover, Good
0	0	0	0	3,207	3,207	Ex. Paved roads and driveways
0	0	0	0	10,714	10,714	Ex. Paved/gravel roads and driveways
0	0	0	0	2,857	2,857	Ex. Roofs
0	0	0	0	1,405	1,405	Existing Offsite Impervious
0	0	0	0	693	693	Offsite Grass D
0	0	0	0	30,048	30,048	Offsite Impervious Area
0	0	0	0	11,957	11,957	Prop. Roofs
0	0	0	0	36,688	36,688	Prop. pavement (parking, drive & sw)
0	0	0	174,894	0	174,894	Urban industrial, 72% imp
0	0	0	75,019	0	75,019	Woods/grass comb., Good
0	0	0	312,937	97,569	410,506	TOTAL AREA

17035 - POST

Type III 24-hr 25-Year Rainfall=5.80", Ia/S=0.18

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Time span=0.00-48.00 hrs, dt=0.04 hrs, 1201 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: Runoff Area=41,497 sf 27.35% Impervious Runoff Depth=4.17"
 Flow Length=336' Tc=10.5 min CN=WQ Runoff=3.77 cfs 14,412 cf

Subcatchment 11: Runoff Area=16,522 sf 10.14% Impervious Runoff Depth=3.94"
 Flow Length=152' Tc=6.5 min CN=WQ Runoff=1.66 cfs 5,424 cf

Subcatchment 12: Runoff Area=34,080 sf 86.18% Impervious Runoff Depth=5.30"
 Flow Length=157' Tc=6.0 min CN=WQ Runoff=4.25 cfs 15,054 cf

Subcatchment 13: Runoff Area=23,838 sf 68.04% Impervious Runoff Depth=4.95"
 Flow Length=282' Tc=6.0 min CN=WQ Runoff=2.83 cfs 9,823 cf

Subcatchment 14: Runoff Area=17,248 sf 6.82% Impervious Runoff Depth=3.80"
 Flow Length=223' Tc=16.1 min CN=WQ Runoff=1.27 cfs 5,469 cf

Subcatchment 15: Runoff Area=44,750 sf 58.93% Impervious Runoff Depth=4.79"
 Flow Length=183' Tc=6.0 min CN=WQ Runoff=5.19 cfs 17,846 cf

Subcatchment 16: Runoff Area=224,991 sf 60.73% Impervious Runoff Depth=4.79"
 Flow Length=272' Tc=14.4 min CN=WQ Runoff=20.88 cfs 89,858 cf

Subcatchment 17: Runoff Area=7,580 sf 0.00% Impervious Runoff Depth=3.65"
 Flow Length=167' Tc=8.6 min CN=WQ Runoff=0.67 cfs 2,304 cf

Reach R1: SD-6 Avg. Flow Depth=0.29' Max Vel=6.76 fps Inflow=1.27 cfs 5,469 cf
 12.0" Round Pipe n=0.013 L=84.0' S=0.0387 ' Capacity=7.01 cfs Outflow=1.27 cfs 5,469 cf

Reach R2: SD-7 Avg. Flow Depth=1.02' Max Vel=4.80 fps Inflow=5.19 cfs 17,846 cf
 15.0" Round Pipe n=0.013 L=78.0' S=0.0064 ' Capacity=5.17 cfs Outflow=5.17 cfs 17,846 cf

Reach R3: SD-5 Avg. Flow Depth=1.31' Max Vel=11.62 fps Inflow=25.40 cfs 113,173 cf
 24.0" Round Pipe n=0.013 L=144.0' S=0.0215 ' Capacity=33.19 cfs Outflow=25.40 cfs 113,173 cf

Reach R4: SD-4 Avg. Flow Depth=1.81' Max Vel=6.81 fps Inflow=25.99 cfs 115,477 cf
 30.0" Round Pipe n=0.013 L=124.0' S=0.0052 ' Capacity=29.70 cfs Outflow=25.94 cfs 115,477 cf

Reach R5: STREAM Avg. Flow Depth=0.67' Max Vel=9.18 fps Inflow=31.03 cfs 145,779 cf
 n=0.013 L=137.3' S=0.0280 ' Capacity=5,811.33 cfs Outflow=31.05 cfs 145,779 cf

Reach R6: SD-9 Avg. Flow Depth=0.40' Max Vel=9.48 fps Inflow=2.83 cfs 9,823 cf
 12.0" Round Pipe n=0.013 L=64.0' S=0.0531 ' Capacity=8.21 cfs Outflow=2.83 cfs 9,823 cf

Reach R7: SD-3 Avg. Flow Depth=0.89' Max Vel=4.53 fps Inflow=4.23 cfs 15,054 cf
 15.0" Round Pipe n=0.013 L=17.0' S=0.0059 ' Capacity=4.95 cfs Outflow=4.23 cfs 15,054 cf

Reach R8: SD-10 Avg. Flow Depth=0.19' Max Vel=6.48 fps Inflow=0.67 cfs 2,304 cf
 12.0" Round Pipe n=0.013 L=110.0' S=0.0577 ' Capacity=8.56 cfs Outflow=0.67 cfs 2,304 cf

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Pond CB3:Peak Elev=115.31' Storage=60 cf Inflow=4.25 cfs 15,054 cf
Outflow=4.23 cfs 15,054 cf**Pond DA1: DETENTION AREA1**Peak Elev=118.11' Storage=105 cf Inflow=20.88 cfs 89,858 cf
Primary=13.26 cfs 83,378 cf Secondary=7.59 cfs 6,480 cf Outflow=20.84 cfs 89,858 cf**Pond FB-1: FILTER BASIN**Peak Elev=112.75' Storage=7,505 cf Inflow=5.88 cfs 20,478 cf
Primary=3.47 cfs 20,479 cf Secondary=0.00 cfs 0 cf Outflow=3.47 cfs 20,479 cf**Link SP1:**Inflow=34.67 cfs 160,191 cf
Primary=34.67 cfs 160,191 cf**Total Runoff Area = 410,506 sf Runoff Volume = 160,191 cf Average Runoff Depth = 4.68"**
45.73% Pervious = 187,706 sf 54.27% Impervious = 222,800 sf

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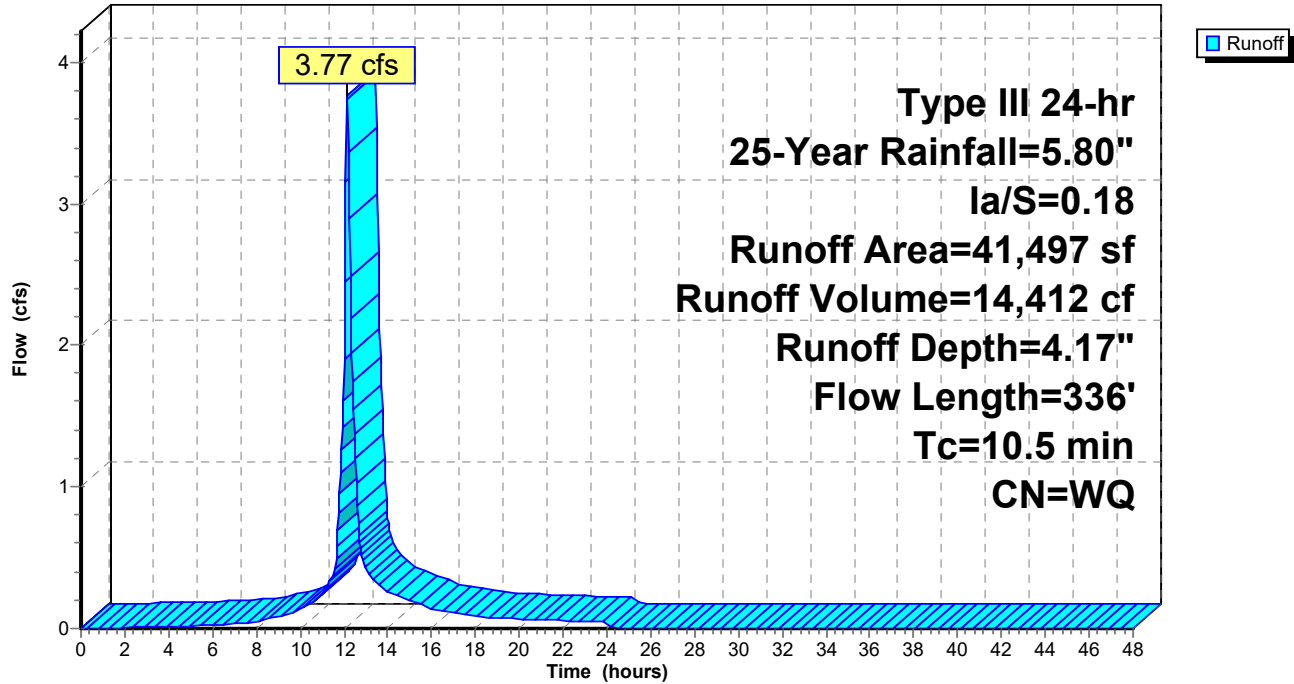
Summary for Subcatchment 1:

Runoff = 3.77 cfs @ 12.14 hrs, Volume= 14,412 cf, Depth= 4.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
Type III 24-hr 25-Year Rainfall=5.80", Ia/S=0.18

	Area (sf)	CN	Description
*	2,857	98	Ex. Roofs
*	1,555	98	Prop. Roofs
	4,402	84	50-75% Grass cover, Fair, HSG D
	6,129	80	>75% Grass cover, Good, HSG D
	19,615	79	Woods/grass comb., Good, HSG D
*	3,732	98	Prop. pavement (parking, drive & sw)
*	3,207	98	Ex. Paved roads and driveways
	41,497		Weighted Average
	30,146		72.65% Pervious Area
	11,351		27.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	32	0.1622	0.21		Sheet Flow, Seg A to B Grass: Dense n= 0.240 P2= 3.10"
7.5	94	0.2552	0.21		Sheet Flow, Seg B to C Woods: Light underbrush n= 0.400 P2= 3.10"
0.2	103	0.0585	10.08	180.47	Channel Flow, Seg C to D Area= 17.9 sf Perim= 18.4' r= 0.97' n= 0.035 Earth, dense weeds
0.3	107	0.0187	5.78	191.41	Channel Flow, Seg D to E Area= 33.1 sf Perim= 33.3' r= 0.99' n= 0.035 Earth, dense weeds
10.5	336	Total			

Subcatchment 1:**Hydrograph**

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Summary for Subcatchment 11:

Runoff = 1.66 cfs @ 12.09 hrs, Volume= 5,424 cf, Depth= 3.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
Type III 24-hr 25-Year Rainfall=5.80", Ia/S=0.18

	Area (sf)	CN	Description
*	271	98	Prop. Roofs
*	1,405	98	Existing Offsite Impervious
	9,528	80	>75% Grass cover, Good, HSG D
	4,315	84	50-75% Grass cover, Fair, HSG D
	1,003	79	Woods/grass comb., Good, HSG D
	16,522		Weighted Average
	14,846		89.86% Pervious Area
	1,676		10.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	33	0.1200	0.19		Sheet Flow, Seg A to B Grass: Dense n= 0.240 P2= 3.10"
3.5	75	0.3975	0.36		Sheet Flow, Seg B to C Grass: Dense n= 0.240 P2= 3.10"
0.1	44	0.0347	5.01	5.63	Trap/Vee/Rect Channel Flow, Seg C to D Bot.W=1.00' D=0.50' Z= 3.0 & 2.0 '/' Top.W=3.50' n= 0.025 Earth, clean & winding
6.5	152	Total			

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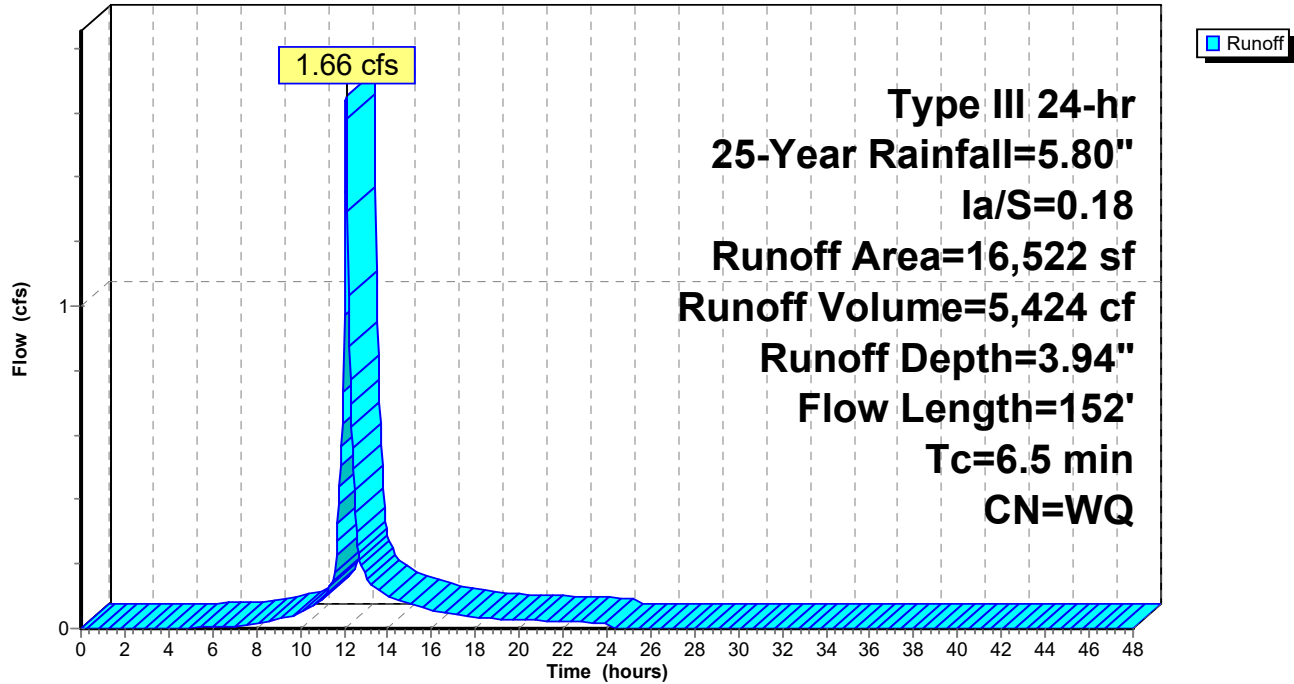
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Subcatchment 11:

Hydrograph



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Summary for Subcatchment 12:

Runoff = 4.25 cfs @ 12.08 hrs, Volume= 15,054 cf, Depth= 5.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs

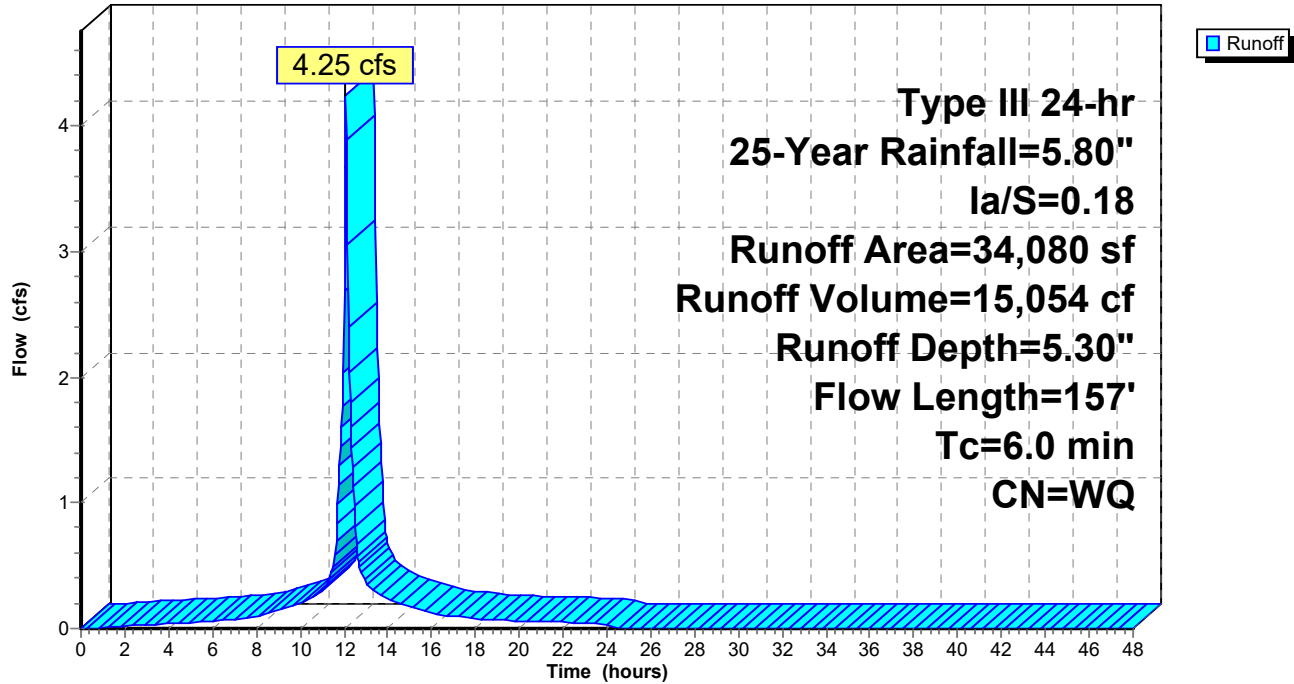
Type III 24-hr 25-Year Rainfall=5.80", Ia/S=0.18

	Area (sf)	CN	Description
*	5,177	98	Prop. Roofs
	4,016	80	>75% Grass cover, Good, HSG D
*	23,690	98	Prop. pavement (parking, drive & sw)
*	504	98	Offsite Impervious Area
*	693	80	Offsite Grass D
	34,080		Weighted Average
	4,709		13.82% Pervious Area
	29,371		86.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	27	0.0213	0.09		Sheet Flow, Seg A to B Grass: Dense n= 0.240 P2= 3.10"
0.5	36	0.0239	1.19		Sheet Flow, Seg B to C Smooth surfaces n= 0.011 P2= 3.10"
0.3	94	0.0131	5.14	32.23	Trap/Vee/Rect Channel Flow, Seg C to D Bot.W=0.00' D=0.50' Z= 0.2 & 50.0 ' Top.W=25.10' n= 0.013 Asphalt, smooth
5.8	157	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 12:

Hydrograph



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Summary for Subcatchment 13:

Runoff = 2.83 cfs @ 12.09 hrs, Volume= 9,823 cf, Depth= 4.95"

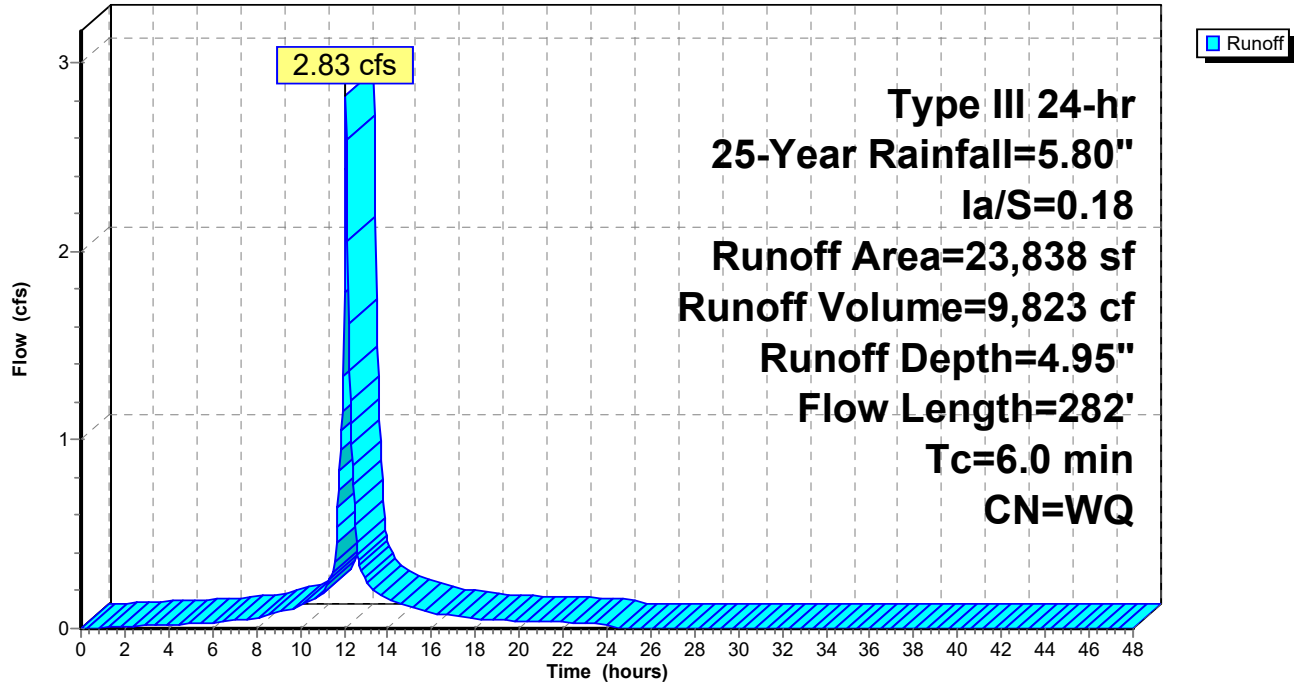
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
Type III 24-hr 25-Year Rainfall=5.80", Ia/S=0.18

	Area (sf)	CN	Description
*	5,820	98	Offsite Impervious Area
*	1,374	98	Prop. Roofs
	842	84	50-75% Grass cover, Fair, HSG D
	1,492	80	>75% Grass cover, Good, HSG D
	5,285	79	Woods/grass comb., Good, HSG D
*	9,025	98	Prop. pavement (parking, drive & sw)
	23,838		Weighted Average
	7,619		31.96% Pervious Area
	16,219		68.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	22	0.1011	1.91		Sheet Flow, Seg A to B Smooth surfaces n= 0.011 P2= 3.10"
3.3	40	0.3556	0.20		Sheet Flow, Seg B to C Woods: Light underbrush n= 0.400 P2= 3.10"
0.4	5	0.4897	0.23		Sheet Flow, Seg C to D Grass: Dense n= 0.240 P2= 3.10"
0.3	54	0.0234	3.11		Shallow Concentrated Flow, Seg D to E Paved Kv= 20.3 fps
0.3	97	0.0110	4.71	29.53	Trap/Vee/Rect Channel Flow, Seg E to F Bot.W=0.00' D=0.50' Z= 0.2 & 50.0 ' Top.W=25.10' n= 0.013 Asphalt, smooth
0.1	64	0.0547	10.61	8.33	Pipe Channel, Seg F to G 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
4.6	282	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 13:

Hydrograph



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Type III 24-hr 25-Year Rainfall=5.80", Ia/S=0.18

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Summary for Subcatchment 14:

Runoff = 1.27 cfs @ 12.22 hrs, Volume= 5,469 cf, Depth= 3.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs

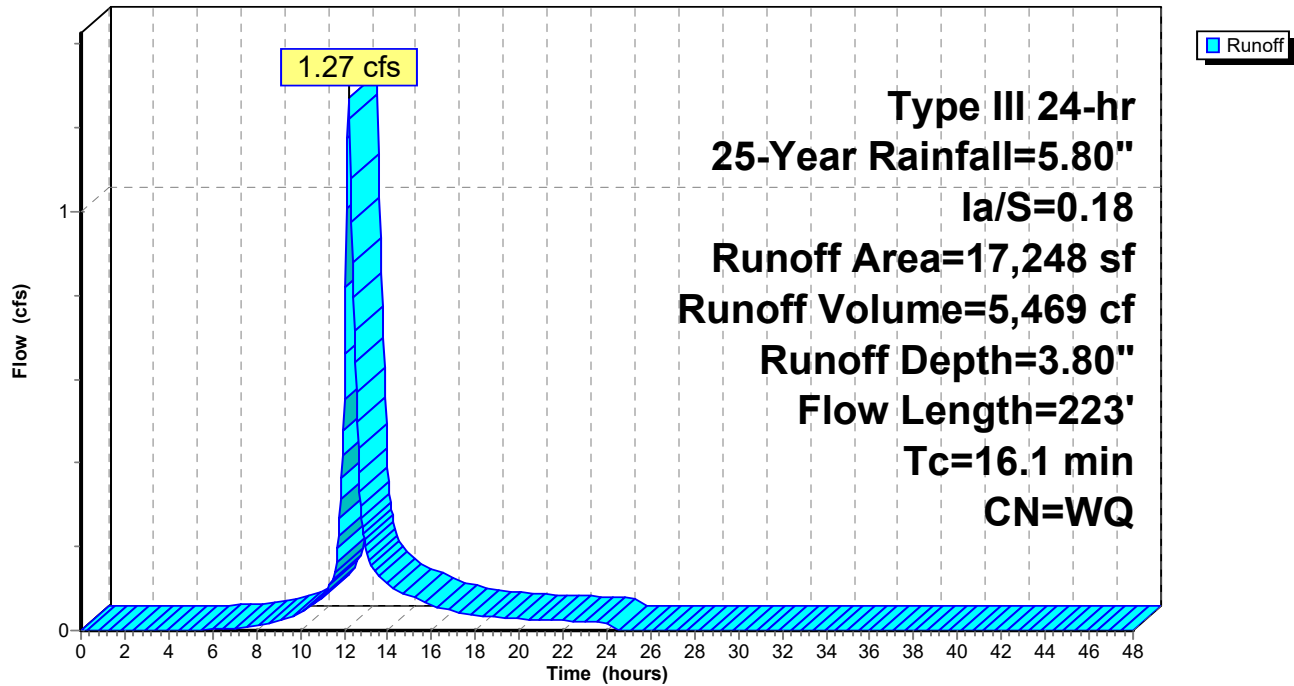
Type III 24-hr 25-Year Rainfall=5.80", Ia/S=0.18

Area (sf)	CN	Description
* 1,176	98	Prop. Roofs
2,757	84	50-75% Grass cover, Fair, HSG D
6,904	80	>75% Grass cover, Good, HSG D
6,411	79	Woods/grass comb., Good, HSG D
17,248		Weighted Average
16,072		93.18% Pervious Area
1,176		6.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	30	0.0394	0.12		Sheet Flow, Seg A to B Grass: Dense n= 0.240 P2= 3.10"
11.5	100	0.0984	0.14		Sheet Flow, Seg B to C Woods: Light underbrush n= 0.400 P2= 3.10"
0.1	47	0.3193	9.10		Shallow Concentrated Flow, Seg C to D Unpaved Kv= 16.1 fps
0.3	46	0.0119	2.69	8.76	Trap/Vee/Rect Channel Flow, Seg D to E Bot.W=1.00' D=0.50' Z= 2.0 & 20.0 ' Top.W=12.00' n= 0.025 Earth, clean & winding
16.1	223	Total			

Subcatchment 14:

Hydrograph



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Type III 24-hr 25-Year Rainfall=5.80", Ia/S=0.18

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Summary for Subcatchment 15:

Runoff = 5.19 cfs @ 12.09 hrs, Volume= 17,846 cf, Depth= 4.79"

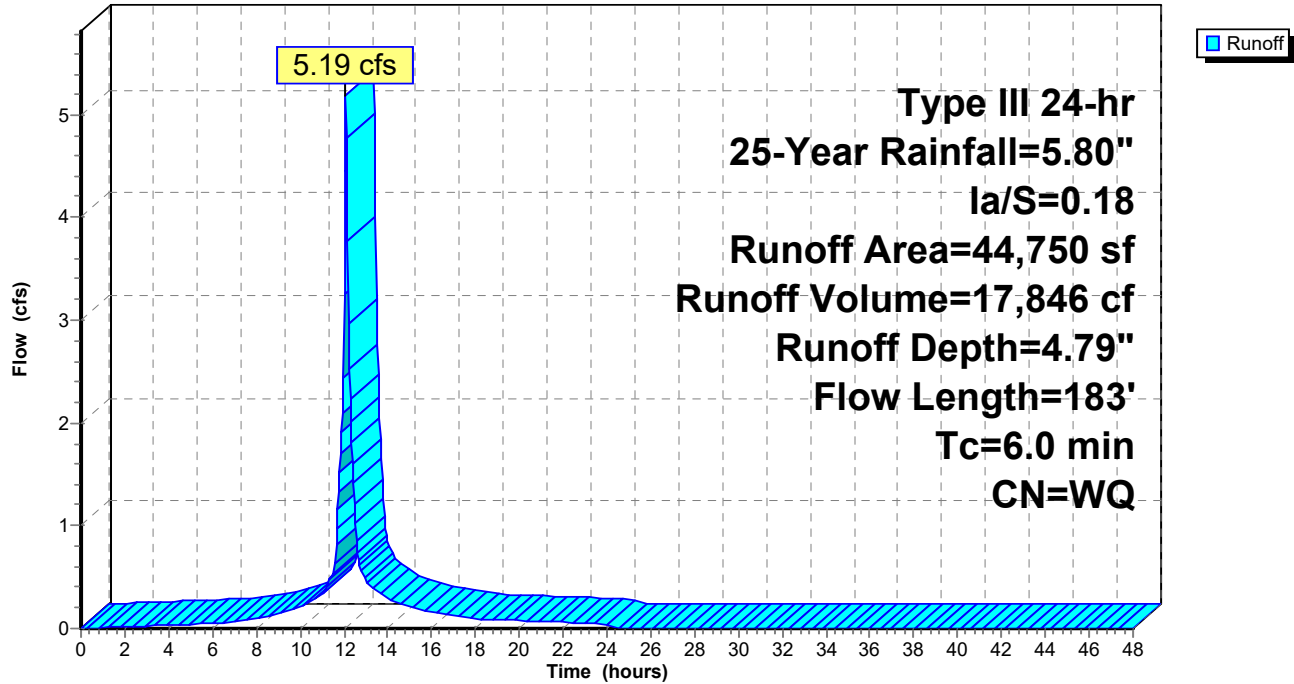
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
Type III 24-hr 25-Year Rainfall=5.80", Ia/S=0.18

	Area (sf)	CN	Description
*	2,404	98	Prop. Roofs
	5,402	80	>75% Grass cover, Good, HSG D
	9,706	79	Woods/grass comb., Good, HSG D
*	241	98	Prop. pavement (parking, drive & sw)
*	23,724	98	Offsite Impervious Area
	3,273	84	50-75% Grass cover, Fair, HSG D
	44,750		Weighted Average
	18,381		41.07% Pervious Area
	26,369		58.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	84	0.0416	1.75		Sheet Flow, Seg A to B Smooth surfaces n= 0.011 P2= 3.10"
3.4	58	0.2570	0.29		Sheet Flow, Seg B to C Grass: Dense n= 0.240 P2= 3.10"
0.1	41	0.1603	6.45		Shallow Concentrated Flow, Seg C to D Unpaved Kv= 16.1 fps
4.3	183	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 15:

Hydrograph



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Type III 24-hr 25-Year Rainfall=5.80", Ia/S=0.18

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Summary for Subcatchment 16:

Runoff = 20.88 cfs @ 12.19 hrs, Volume= 89,858 cf, Depth= 4.79"

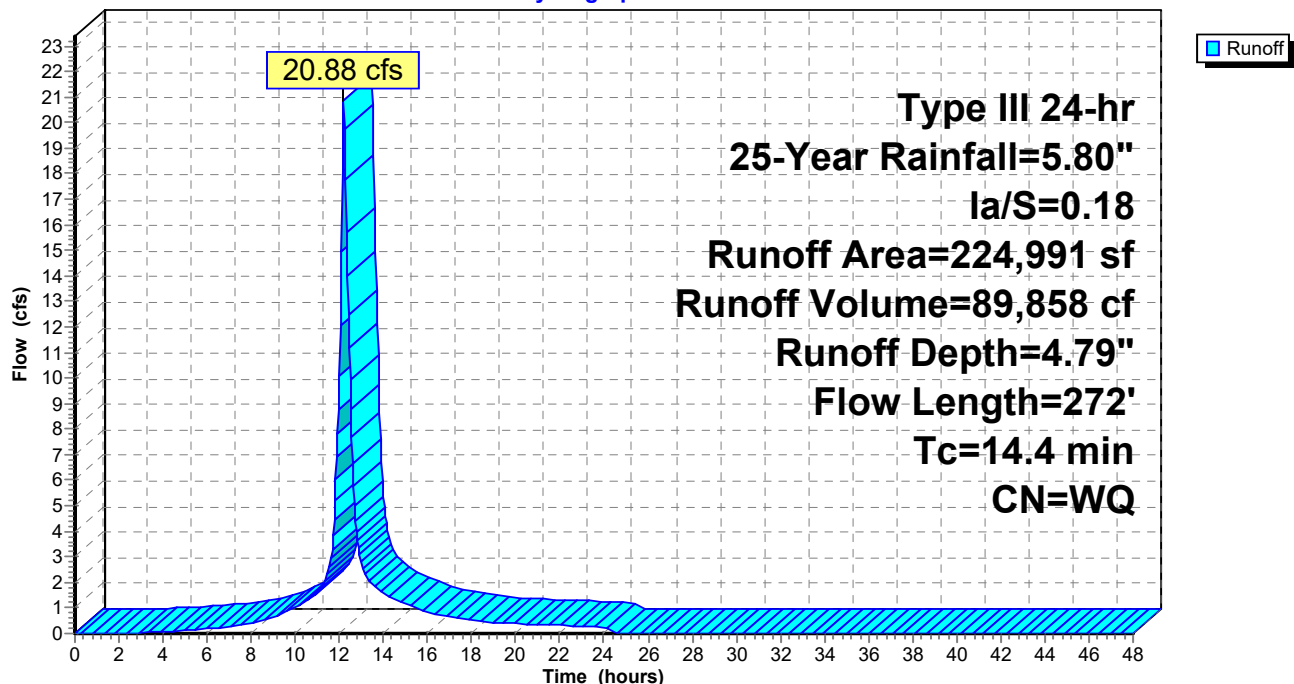
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
Type III 24-hr 25-Year Rainfall=5.80", Ia/S=0.18

Area (sf)	CN	Description
8,620	84	50-75% Grass cover, Fair, HSG D
1,321	80	>75% Grass cover, Good, HSG D
29,442	79	Woods/grass comb., Good, HSG D
* 10,714	98	Ex. Paved/gravel roads and driveways
174,894	93	Urban industrial, 72% imp, HSG D
224,991		Weighted Average
88,353		39.27% Pervious Area
136,638		60.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	42	0.0665	0.16		Sheet Flow, Seg A to B Grass: Dense n= 0.240 P2= 3.10"
8.6	99	0.2020	0.19		Sheet Flow, Seg B to C Woods: Light underbrush n= 0.400 P2= 3.10"
1.3	131	0.1107	1.66		Shallow Concentrated Flow, Seg C to D Woodland Kv= 5.0 fps
14.4	272	Total			

Subcatchment 16:

Hydrograph



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Summary for Subcatchment 17:

Runoff = 0.67 cfs @ 12.12 hrs, Volume= 2,304 cf, Depth= 3.65"

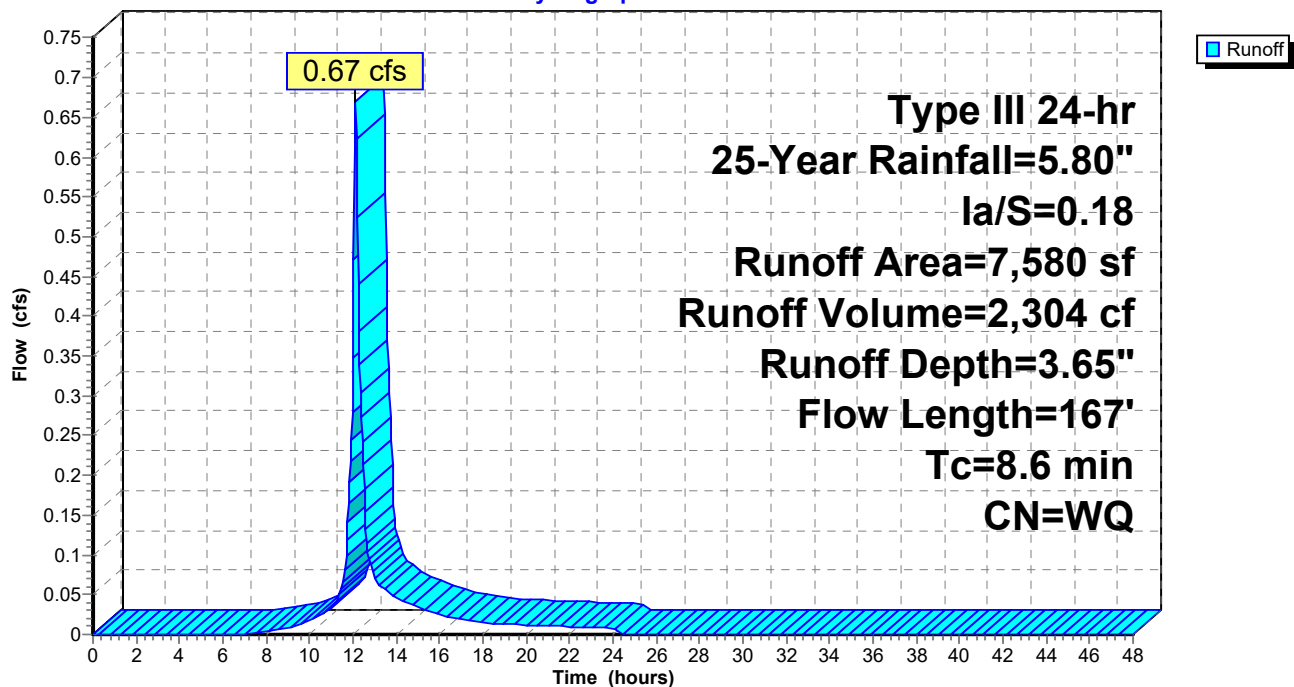
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
Type III 24-hr 25-Year Rainfall=5.80", Ia/S=0.18

Area (sf)	CN	Description
3,118	80	>75% Grass cover, Good, HSG D
905	84	50-75% Grass cover, Fair, HSG D
3,557	79	Woods/grass comb., Good, HSG D
7,580		Weighted Average
7,580		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	69	0.1880	0.17		Sheet Flow, a to b Woods: Light underbrush n= 0.400 P2= 3.10"
1.9	36	0.3975	0.31		Sheet Flow, b to c Grass: Dense n= 0.240 P2= 3.10"
0.1	62	0.0347	7.40	29.59	Trap/Vee/Rect Channel Flow, c to d Bot.W=1.00' D=1.00' Z= 3.0 ' Top.W=7.00' n= 0.025
8.6	167	Total			

Subcatchment 17:

Hydrograph



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Type III 24-hr 25-Year Rainfall=5.80", Ia/S=0.18

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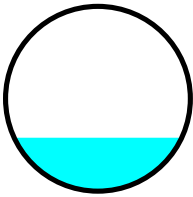
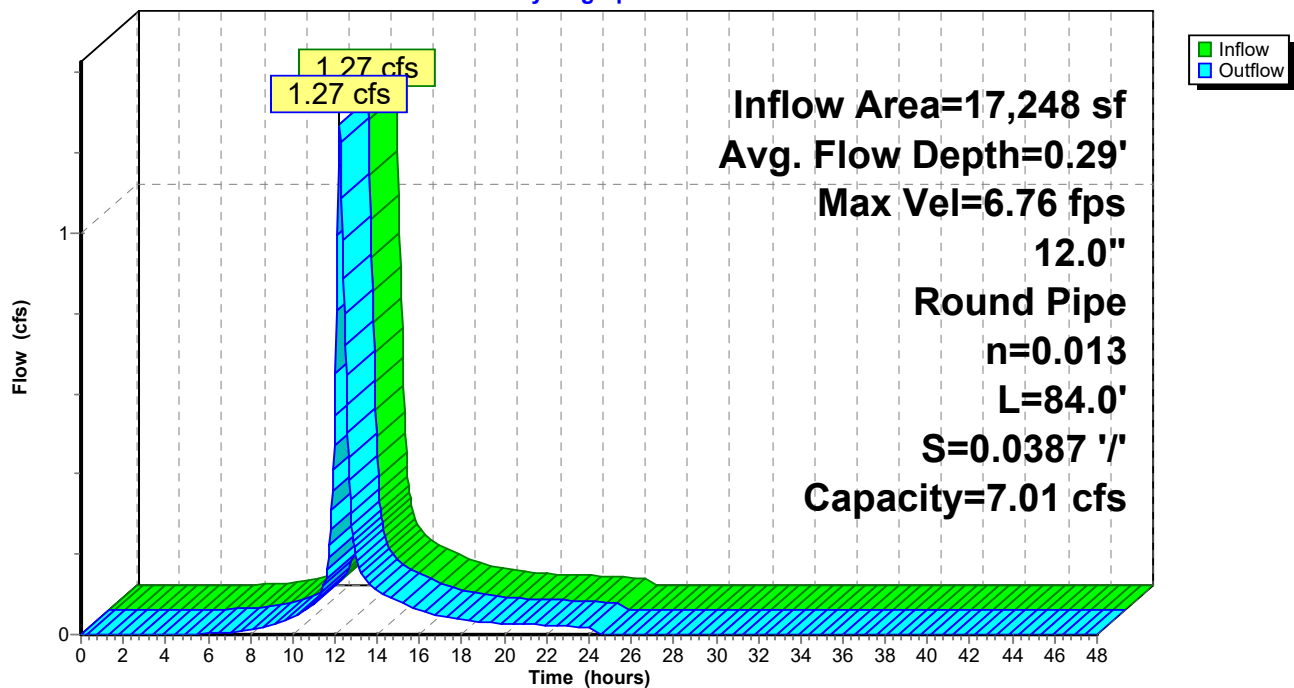
Summary for Reach R1: SD-6

Inflow Area = 17,248 sf, 6.82% Impervious, Inflow Depth = 3.80" for 25-Year event
Inflow = 1.27 cfs @ 12.22 hrs, Volume= 5,469 cf
Outflow = 1.27 cfs @ 12.22 hrs, Volume= 5,469 cf, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
Max. Velocity= 6.76 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.15 fps, Avg. Travel Time= 0.7 min

Peak Storage= 16 cf @ 12.22 hrs
Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 7.01 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 84.0' Slope= 0.0387 '/
Inlet Invert= 113.50', Outlet Invert= 110.25'

**Reach R1: SD-6****Hydrograph**

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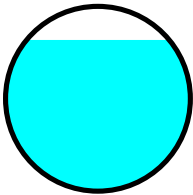
Summary for Reach R2: SD-7

Inflow Area = 44,750 sf, 58.93% Impervious, Inflow Depth = 4.79" for 25-Year event
Inflow = 5.19 cfs @ 12.09 hrs, Volume= 17,846 cf
Outflow = 5.17 cfs @ 12.09 hrs, Volume= 17,846 cf, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.80 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.70 fps, Avg. Travel Time= 0.8 min

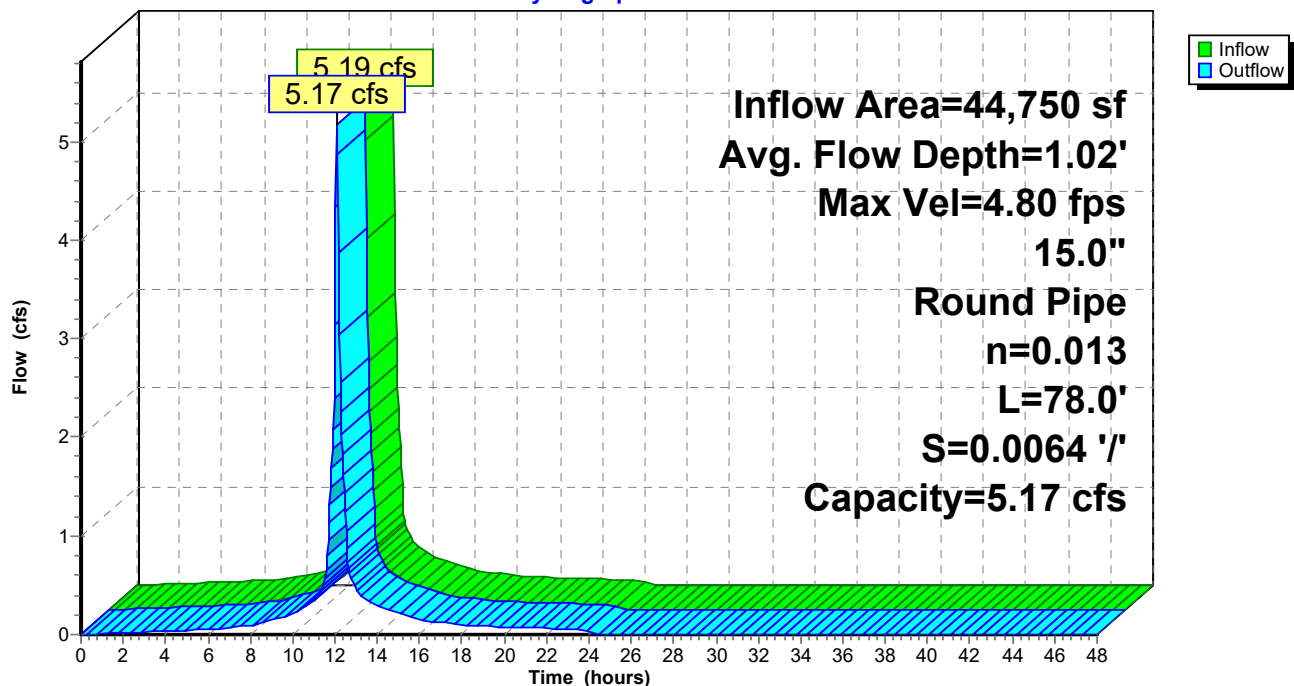
Peak Storage= 84 cf @ 12.09 hrs
Average Depth at Peak Storage= 1.02'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 5.17 cfs

15.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 78.0' Slope= 0.0064 '/
Inlet Invert= 110.50', Outlet Invert= 110.00'



Reach R2: SD-7

Hydrograph



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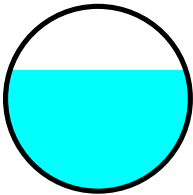
Summary for Reach R3: SD-5

Inflow Area = 286,989 sf, 57.21% Impervious, Inflow Depth = 4.73" for 25-Year event
Inflow = 25.40 cfs @ 12.18 hrs, Volume= 113,173 cf
Outflow = 25.40 cfs @ 12.18 hrs, Volume= 113,173 cf, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
Max. Velocity= 11.62 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 4.08 fps, Avg. Travel Time= 0.6 min

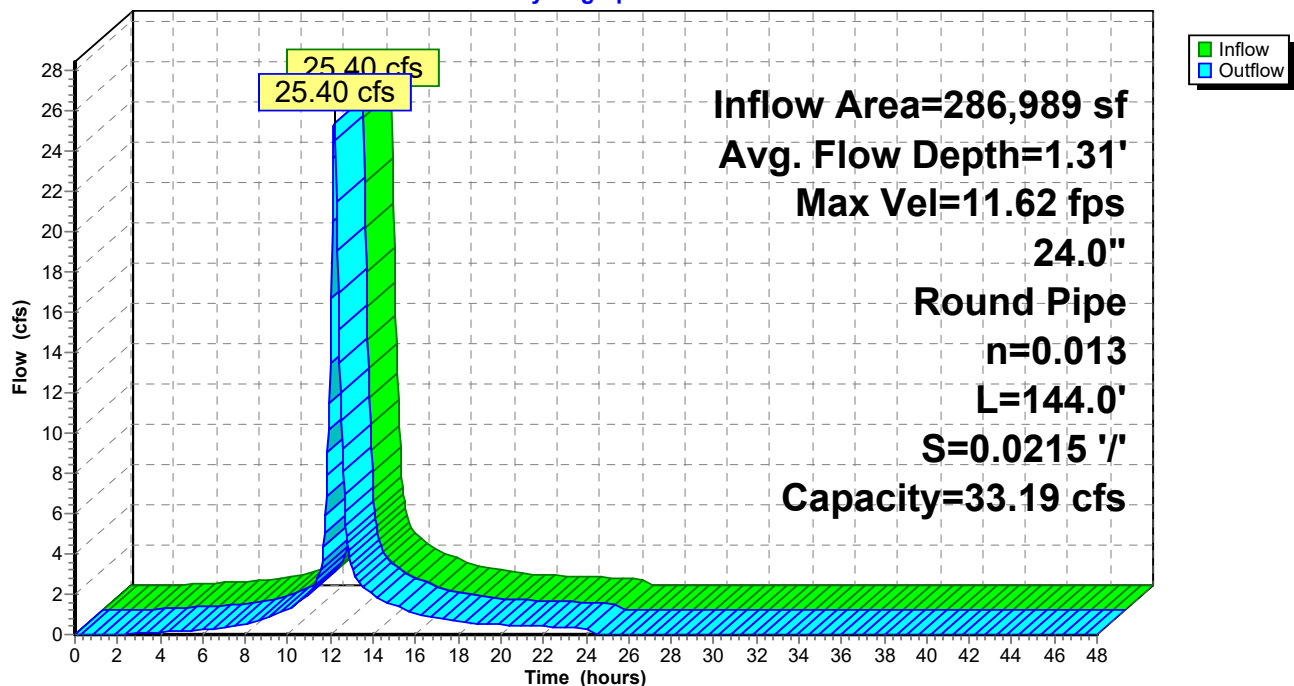
Peak Storage= 314 cf @ 12.18 hrs
Average Depth at Peak Storage= 1.31'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 33.19 cfs

24.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 144.0' Slope= 0.0215 '/
Inlet Invert= 109.25', Outlet Invert= 106.15'



Reach R3: SD-5

Hydrograph



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Summary for Reach R4: SD-4

Inflow Area = 294,569 sf, 55.74% Impervious, Inflow Depth = 4.70" for 25-Year event
Inflow = 25.99 cfs @ 12.18 hrs, Volume= 115,477 cf
Outflow = 25.94 cfs @ 12.18 hrs, Volume= 115,477 cf, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs

Max. Velocity= 6.81 fps, Min. Travel Time= 0.3 min

Avg. Velocity = 2.42 fps, Avg. Travel Time= 0.9 min

Peak Storage= 472 cf @ 12.18 hrs

Average Depth at Peak Storage= 1.81'

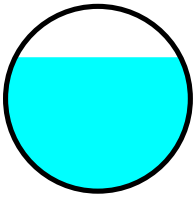
Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 29.70 cfs

30.0" Round Pipe

n= 0.013 Corrugated PE, smooth interior

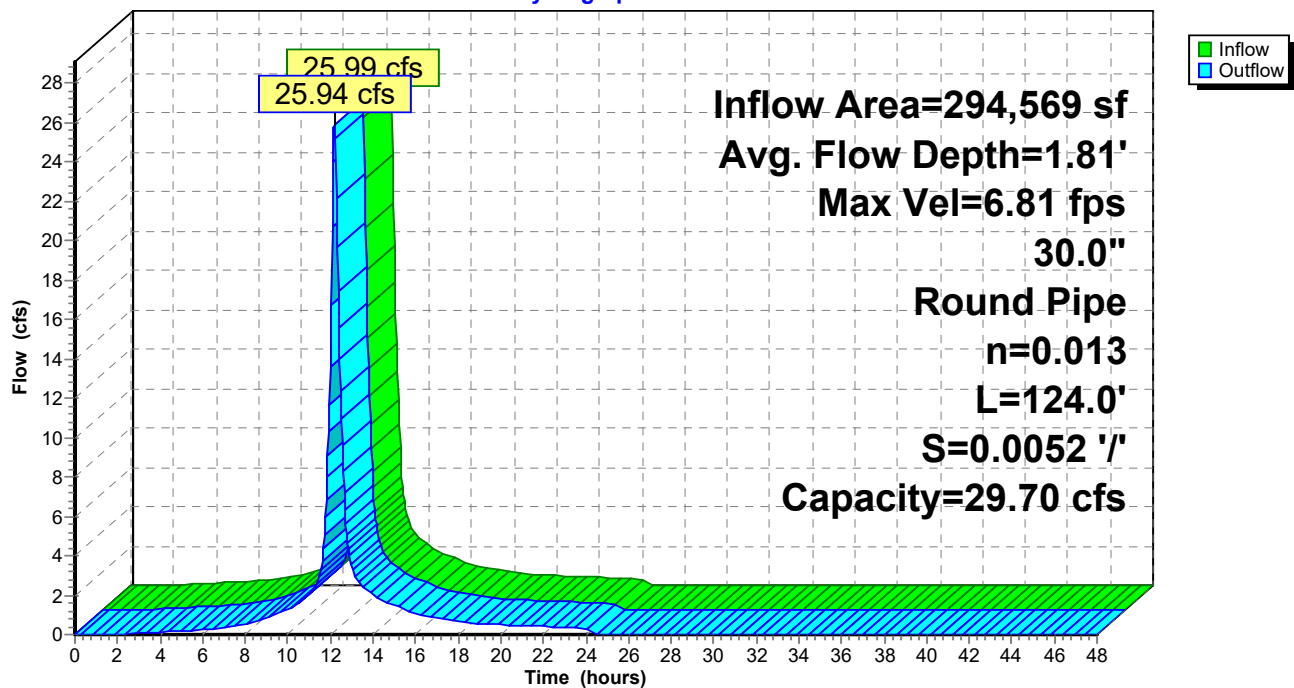
Length= 124.0' Slope= 0.0052 %

Inlet Invert= 105.65', Outlet Invert= 105.00'



Reach R4: SD-4

Hydrograph



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Type III 24-hr 25-Year Rainfall=5.80", Ia/S=0.18

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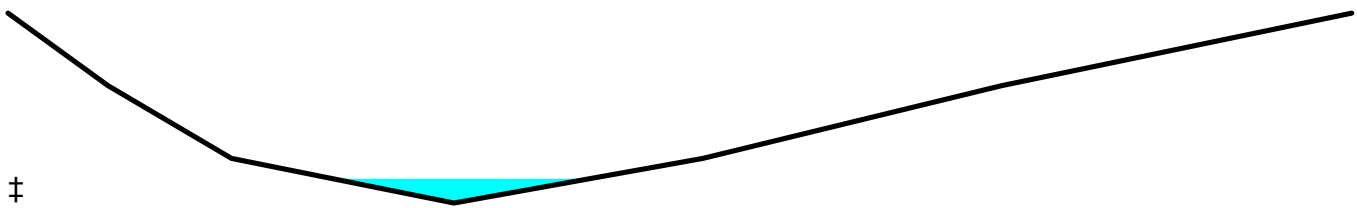
Summary for Reach R5: STREAM

Inflow Area = 369,009 sf, 57.30% Impervious, Inflow Depth = 4.74" for 25-Year event
 Inflow = 31.03 cfs @ 12.18 hrs, Volume= 145,779 cf
 Outflow = 31.05 cfs @ 12.19 hrs, Volume= 145,779 cf, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
 Max. Velocity= 9.18 fps, Min. Travel Time= 0.2 min
 Avg. Velocity= 3.10 fps, Avg. Travel Time= 0.7 min

Peak Storage= 464 cf @ 12.19 hrs
 Average Depth at Peak Storage= 0.67'
 Bank-Full Depth= 5.23' Flow Area= 152.2 sf, Capacity= 5,811.33 cfs

Custom cross-section, Length= 137.3' Slope= 0.0280 '/' (102 Elevation Intervals)
 Constant n= 0.013 Corrugated PE, smooth interior
 Inlet Invert= 105.00', Outlet Invert= 101.16'

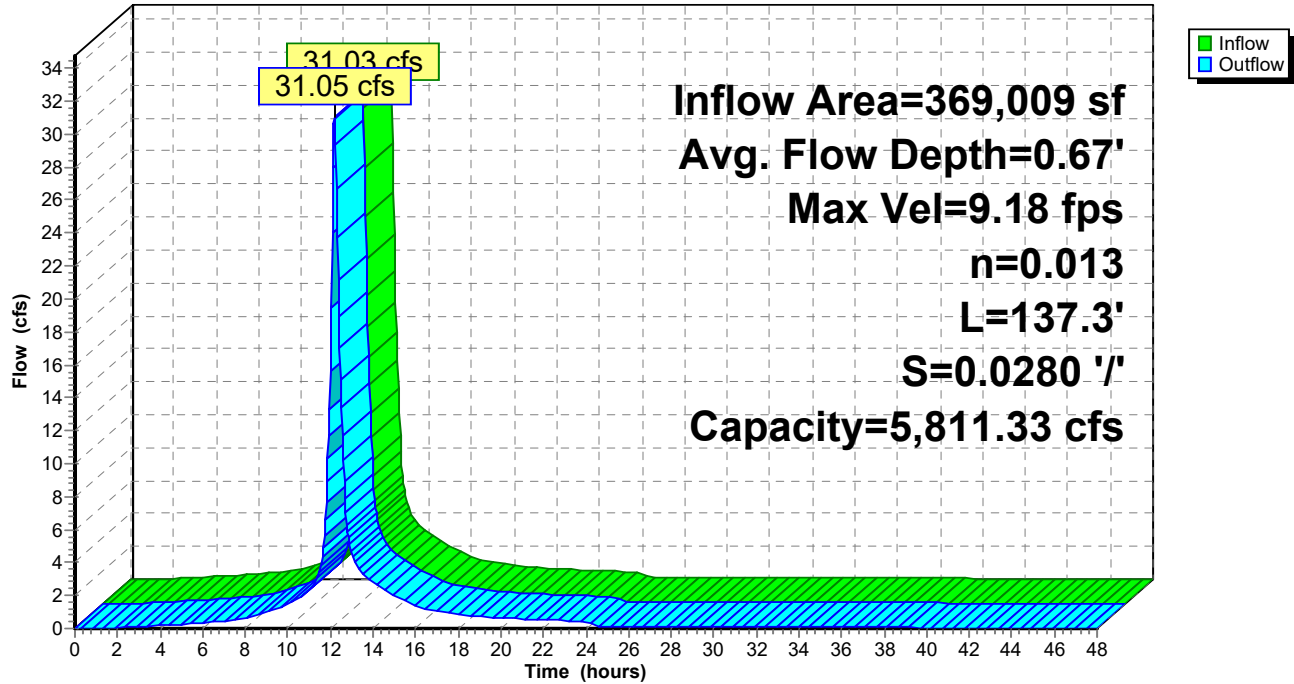


Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	108.00	0.00
3.92	106.00	2.00
8.74	104.00	4.00
17.44	102.77	5.23
27.18	104.00	4.00
38.85	106.00	2.00
52.56	108.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
1.23	11.3	18.6	1,557	155.86
3.23	64.7	35.7	8,885	1,840.31
5.23	152.2	53.9	20,897	5,811.33

Reach R5: STREAM

Hydrograph



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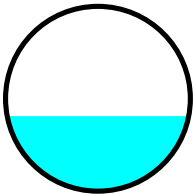
Summary for Reach R6: SD-9

Inflow Area = 23,838 sf, 68.04% Impervious, Inflow Depth = 4.95" for 25-Year event
Inflow = 2.83 cfs @ 12.09 hrs, Volume= 9,823 cf
Outflow = 2.83 cfs @ 12.09 hrs, Volume= 9,823 cf, Atten= 0%, Lag= 0.1 min

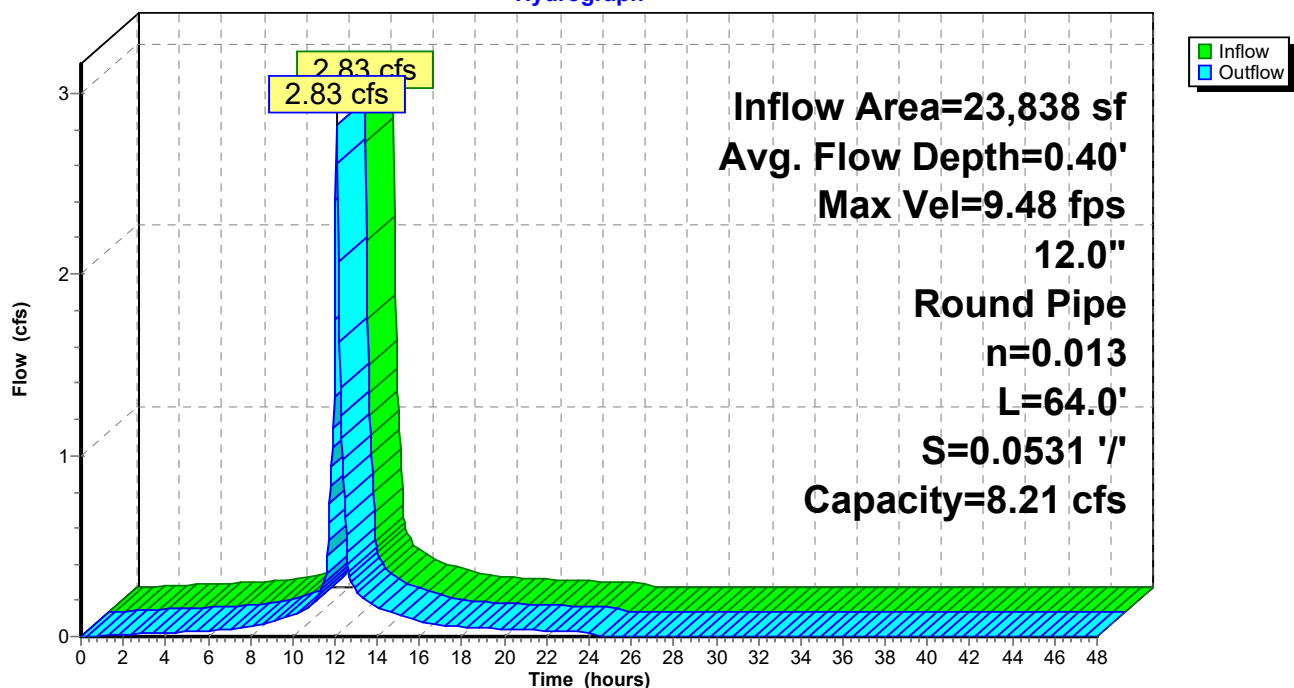
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
Max. Velocity= 9.48 fps, Min. Travel Time= 0.1 min
Avg. Velocity= 3.11 fps, Avg. Travel Time= 0.3 min

Peak Storage= 19 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.40'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 8.21 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 64.0' Slope= 0.0531 '/
Inlet Invert= 111.40', Outlet Invert= 108.00'

**Reach R6: SD-9**

Hydrograph



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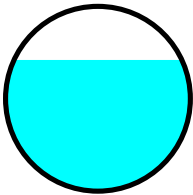
Summary for Reach R7: SD-3

Inflow Area = 34,080 sf, 86.18% Impervious, Inflow Depth = 5.30" for 25-Year event
Inflow = 4.23 cfs @ 12.09 hrs, Volume= 15,054 cf
Outflow = 4.23 cfs @ 12.09 hrs, Volume= 15,054 cf, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.53 fps, Min. Travel Time= 0.1 min
Avg. Velocity= 1.59 fps, Avg. Travel Time= 0.2 min

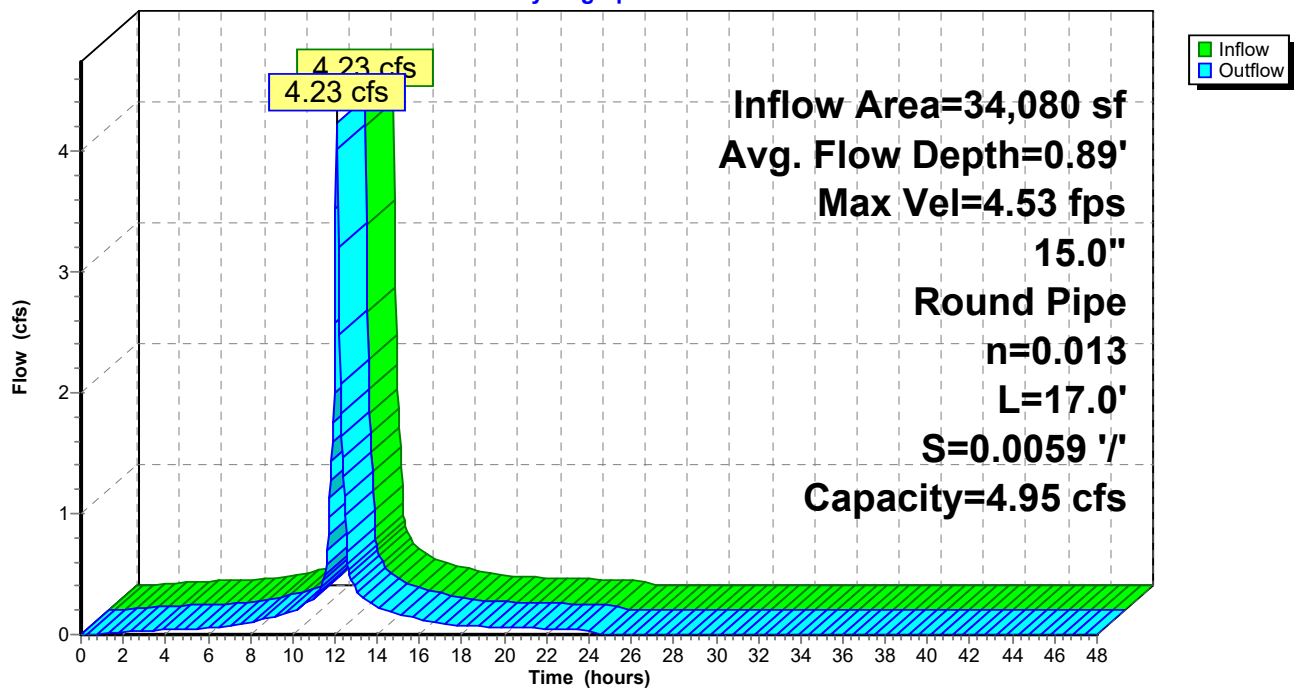
Peak Storage= 16 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.89'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 4.95 cfs

15.0" Round Pipe
n= 0.013
Length= 17.0' Slope= 0.0059 '/
Inlet Invert= 111.00', Outlet Invert= 110.90'



Reach R7: SD-3

Hydrograph



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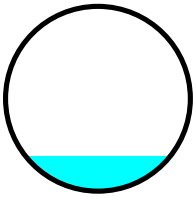
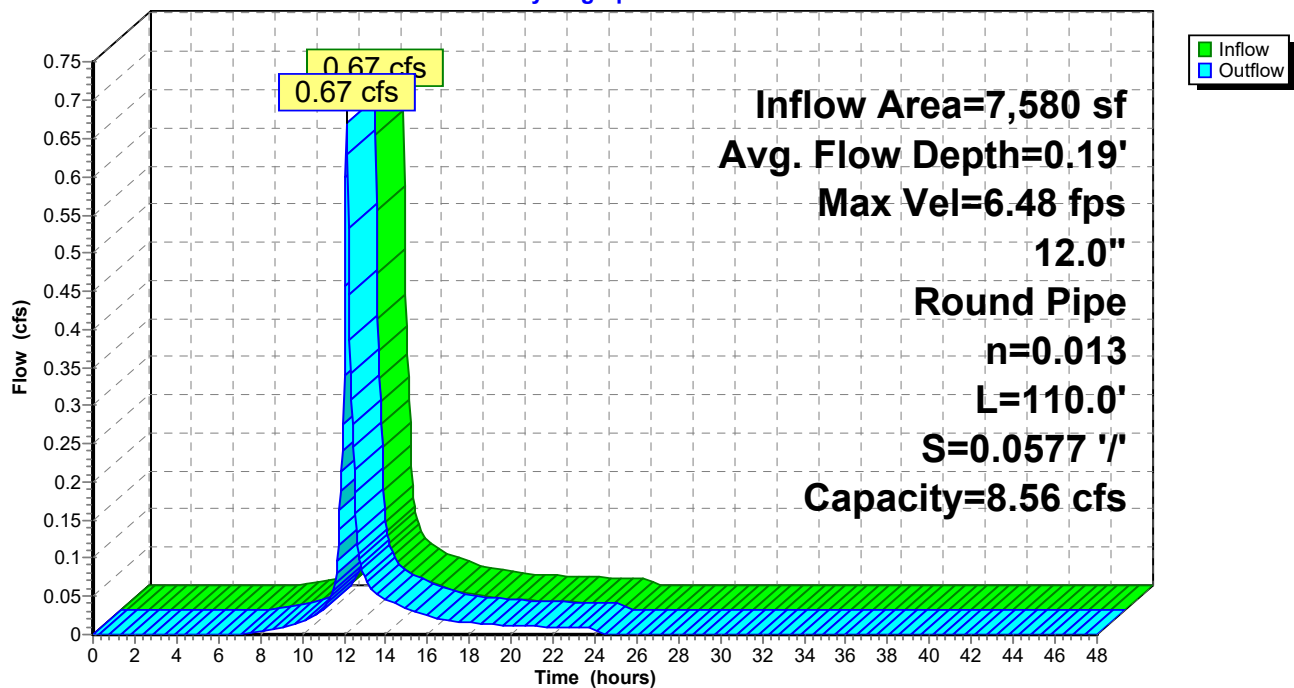
Summary for Reach R8: SD-10

Inflow Area = 7,580 sf, 0.00% Impervious, Inflow Depth = 3.65" for 25-Year event
Inflow = 0.67 cfs @ 12.12 hrs, Volume= 2,304 cf
Outflow = 0.67 cfs @ 12.13 hrs, Volume= 2,304 cf, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
Max. Velocity= 6.48 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.22 fps, Avg. Travel Time= 0.8 min

Peak Storage= 11 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.19'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 8.56 cfs

12.0" Round Pipe
n= 0.013
Length= 110.0' Slope= 0.0577 '/
Inlet Invert= 113.50', Outlet Invert= 107.15'

**Reach R8: SD-10****Hydrograph**

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Type III 24-hr 25-Year Rainfall=5.80", Ia/S=0.18

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Summary for Pond CB3:

Inflow Area = 34,080 sf, 86.18% Impervious, Inflow Depth = 5.30" for 25-Year event
 Inflow = 4.25 cfs @ 12.08 hrs, Volume= 15,054 cf
 Outflow = 4.23 cfs @ 12.09 hrs, Volume= 15,054 cf, Atten= 1%, Lag= 0.4 min
 Primary = 4.23 cfs @ 12.09 hrs, Volume= 15,054 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
 Peak Elev= 115.31' @ 12.09 hrs Surf.Area= 375 sf Storage= 60 cf

Plug-Flow detention time= 0.1 min calculated for 15,042 cf (100% of inflow)
 Center-of-Mass det. time= 0.1 min (751.8 - 751.7)

Volume	Invert	Avail.Storage	Storage Description
#1	114.95'	1,184 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
114.95	4	0	0
115.00	10	0	0
115.50	600	153	153
116.00	3,526	1,032	1,184

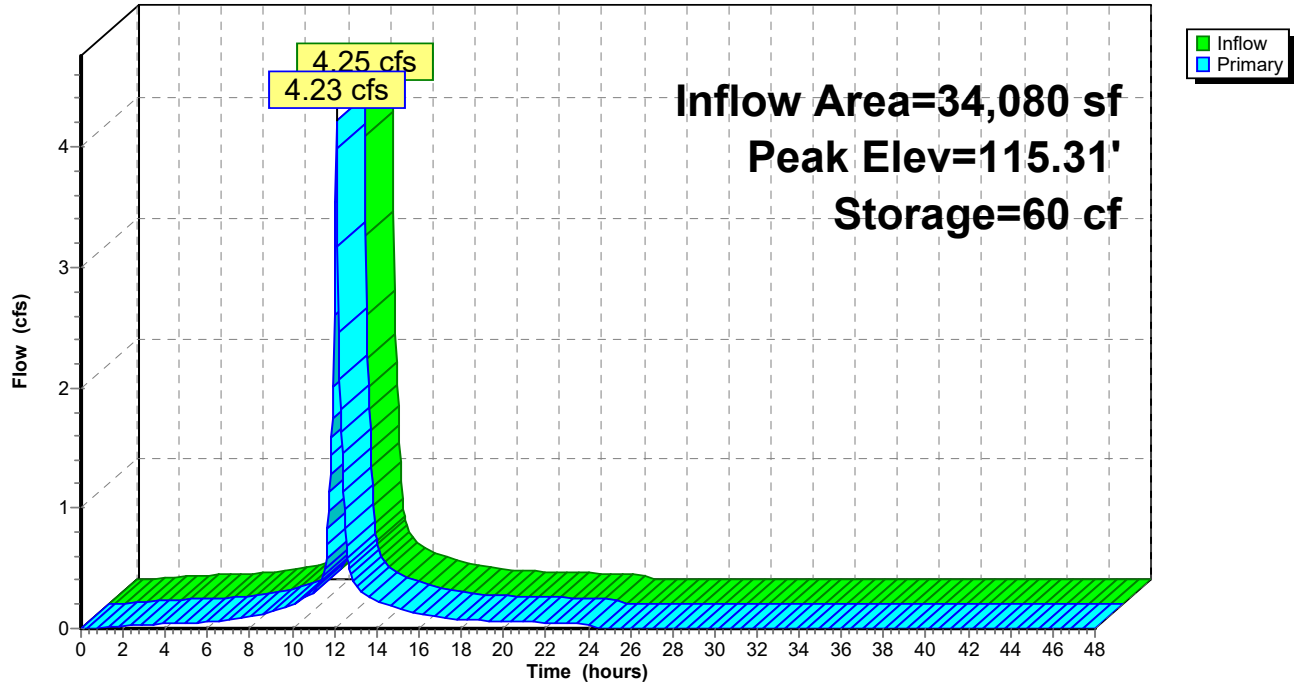
Device	Routing	Invert	Outlet Devices
#1	Primary	111.00'	12.0" Round Culvert L= 17.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 111.00' / 110.90' S= 0.0059 ' /' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	114.95'	Curb Inlet, Cv= 2.62 (C= 3.28) Head (feet) 0.00 0.37 Width (feet) 2.00 2.00
#3	Device 1	114.95'	12.0" x 12.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.14 cfs @ 12.09 hrs HW=115.30' TW=111.87' (Dynamic Tailwater)

1=Culvert (Passes 4.14 cfs of 7.00 cfs potential flow)
 2=Curb Inlet (Weir Controls 1.38 cfs @ 1.95 fps)
 3=Grate (Weir Controls 2.76 cfs @ 1.95 fps)

Pond CB3:

Hydrograph



17035 - POST

Type III 24-hr 25-Year Rainfall=5.80", Ia/S=0.18

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Summary for Pond DA1: DETENTION AREA1

Inflow Area = 224,991 sf, 60.73% Impervious, Inflow Depth = 4.79" for 25-Year event
 Inflow = 20.88 cfs @ 12.19 hrs, Volume= 89,858 cf
 Outflow = 20.84 cfs @ 12.20 hrs, Volume= 89,858 cf, Atten= 0%, Lag= 0.2 min
 Primary = 13.26 cfs @ 12.20 hrs, Volume= 83,378 cf
 Secondary = 7.59 cfs @ 12.20 hrs, Volume= 6,480 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
 Peak Elev= 118.11' @ 12.20 hrs Surf.Area= 188 sf Storage= 105 cf

Plug-Flow detention time= 0.1 min calculated for 89,783 cf (100% of inflow)
 Center-of-Mass det. time= 0.1 min (784.5 - 784.4)

Volume	Invert	Avail.Storage	Storage Description		
#1	116.00'	523 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
116.00	25	17.0	0	0	25
117.50	28	18.9	40	40	52
118.00	170	51.4	44	84	235
118.35	228	58.0	69	154	296
119.00	1,000	75.0	370	523	481

Device	Routing	Invert	Outlet Devices
#1	Primary	116.00'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28) Head (feet) 0.00 0.83 Width (feet) 2.50 2.50
#2	Secondary	117.50'	Neenah R4345 Beehive Grate Light Duty-req. structure Head (feet) 0.00 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.50 0.60 0.70 0.80 0.90 1.00 Disch. (cfs) 0.000 0.900 1.600 2.500 3.500 4.000 4.600 5.300 6.800 7.500 8.100 8.600 9.100 9.600

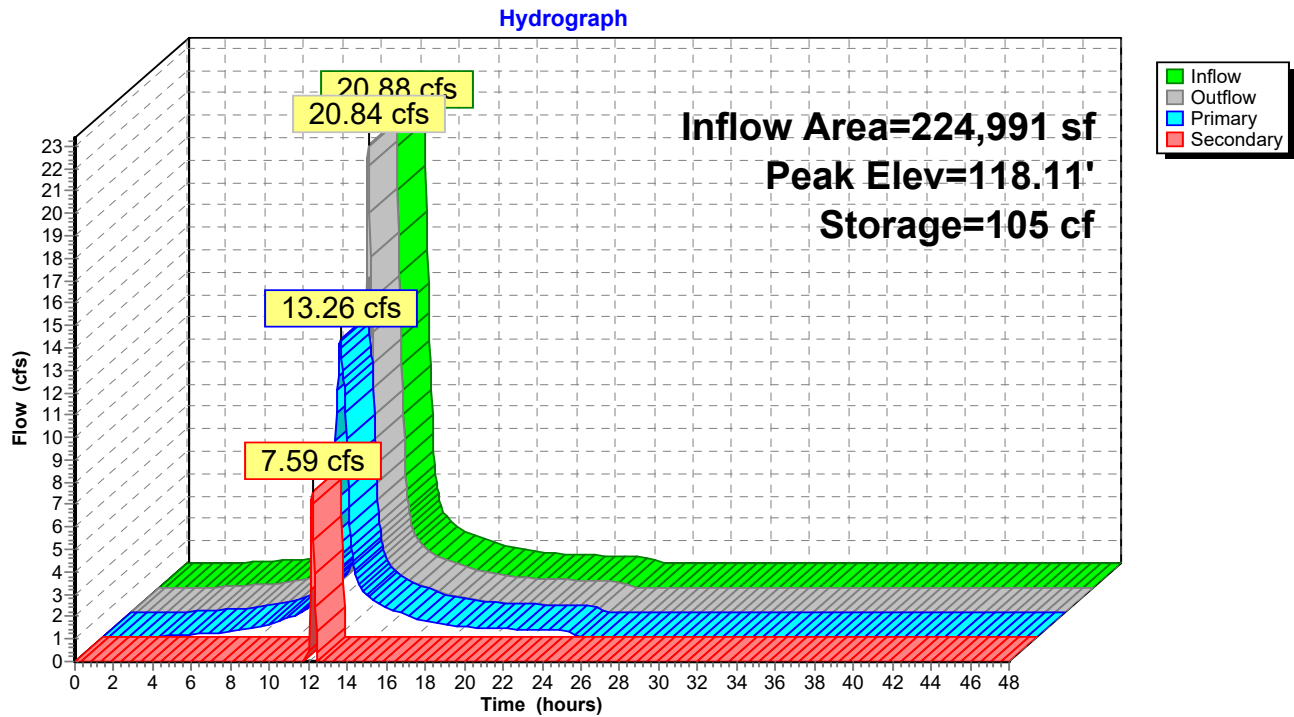
Primary OutFlow Max=13.23 cfs @ 12.20 hrs HW=118.11' TW=110.55' (Dynamic Tailwater)

↑1=Custom Weir/Orifice (Orifice Controls 13.23 cfs @ 6.38 fps)

Secondary OutFlow Max=7.55 cfs @ 12.20 hrs HW=118.11' TW=110.55' (Dynamic Tailwater)

↑2=Neenah R4345 Beehive Grate Light Duty-req. structure(Custom Controls 7.55 cfs)

Pond DA1: DETENTION AREA1



17035 - POST

Type III 24-hr 25-Year Rainfall=5.80", Ia/S=0.18

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Summary for Pond FB-1: FILTER BASIN

Inflow Area = 50,602 sf, 61.36% Impervious, Inflow Depth = 4.86" for 25-Year event
 Inflow = 5.88 cfs @ 12.09 hrs, Volume= 20,478 cf
 Outflow = 3.47 cfs @ 12.21 hrs, Volume= 20,479 cf, Atten= 41%, Lag= 7.3 min
 Primary = 3.47 cfs @ 12.21 hrs, Volume= 20,479 cf
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs
 Peak Elev= 112.75' @ 12.21 hrs Surf.Area= 4,397 sf Storage= 7,505 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 251.6 min (1,016.6 - 765.0)

Volume	Invert	Avail.Storage	Storage Description
#1	110.25'	13,890 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
110.25	1,651	279.1	0	0	1,651
112.00	3,622	354.2	4,502	4,502	5,476
114.00	5,855	396.3	9,388	13,890	8,100

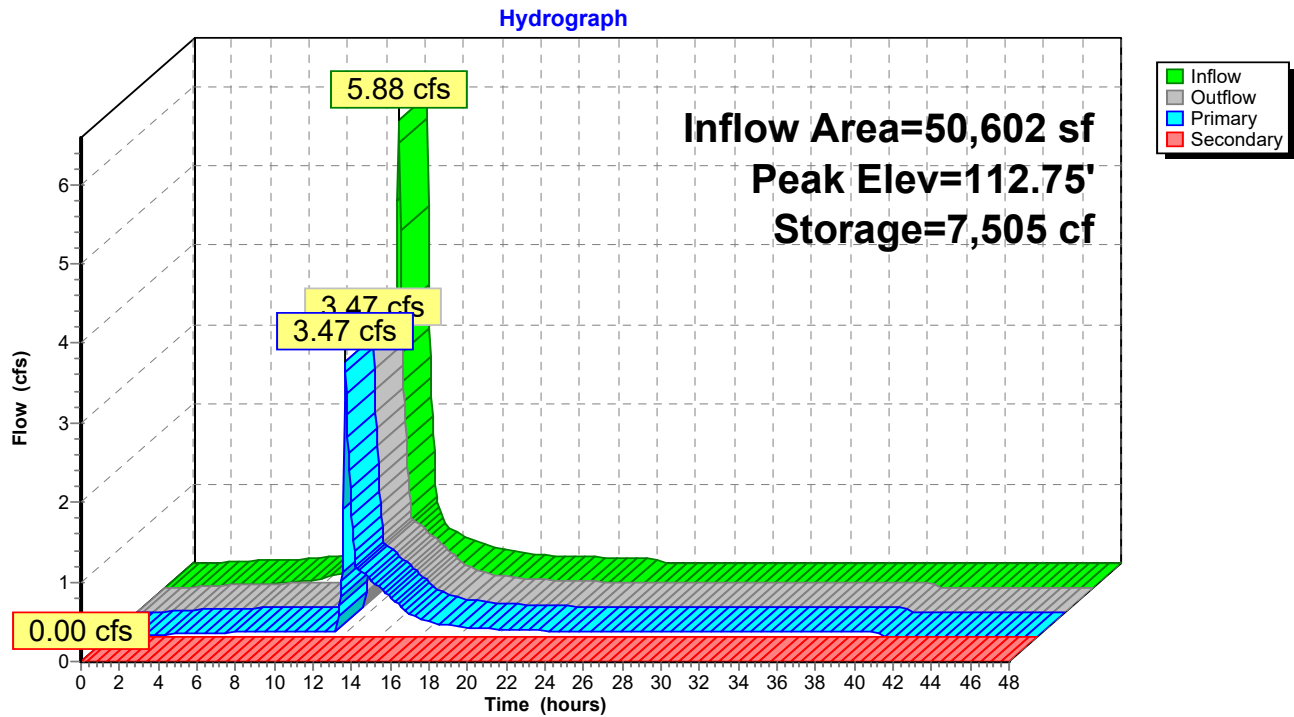
Device	Routing	Invert	Outlet Devices
#1	Primary	107.41'	12.0" Round Culvert L= 32.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 107.41' / 107.00' S= 0.0126 ' S= 0.0126 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	108.08'	1.2" Vert. Orifice on Underdrain C= 0.600
#3	Device 2	110.25'	2.410 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 106.00'
#4	Device 1	111.75'	3.0" Vert. Orifice/Grate X 4.00 C= 0.600
#5	Device 1	112.55'	Neenah R4345 Beehive Grate Light Duty-req. structure Head (feet) 0.00 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.50 0.60 0.70 0.80 0.90 1.00 Disch. (cfs) 0.000 0.900 1.600 2.500 3.500 4.000 4.600 5.300 6.800 7.500 8.100 8.600 9.100 9.600
#6	Secondary	112.75'	14.0' long x 12.2' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=3.40 cfs @ 12.21 hrs HW=112.75' TW=105.67' (Dynamic Tailwater)

1=Culvert (Passes 3.40 cfs of 8.32 cfs potential flow)
 2=Orifice on Underdrain (Orifice Controls 0.08 cfs @ 10.35 fps)
 3=Exfiltration (Passes 0.08 cfs of 0.34 cfs potential flow)
 4=Orifice/Grate (Orifice Controls 0.88 cfs @ 4.50 fps)
 5=Neenah R4345 Beehive Grate Light Duty-req. structure(Custom Controls 2.44 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=110.25' TW=105.00' (Dynamic Tailwater)

6=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond FB-1: FILTER BASIN

Summary for Link SP1:

Inflow Area = 410,506 sf, 54.27% Impervious, Inflow Depth = 4.68" for 25-Year event
Inflow = 34.67 cfs @ 12.18 hrs, Volume= 160,191 cf
Primary = 34.67 cfs @ 12.18 hrs, Volume= 160,191 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.04 hrs

Link SP1: