



**860 WEAVER DAIRY ROAD
OFFSITE ANALYSIS OF STORMWATER
IMPACTS
CHAPEL HILL, NC**



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F-0871**

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DATE
DECEMBER 01, 2025

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3. PROJECT NARRATIVE

A. STUDY AREA

This study has been commissioned to evaluate the impact of the 860 Weaver Dairy Road project on three offsite locations downstream of the project. The first location is the drainage feature flowing north to south between the Coventry neighborhood and the Carolwoods Retirement Village. The second location is Booker Creek near 110 Cedar Hills Dr. The third analysis is the drainage system in Weaver Dairy Road from the project connection point in the system to the discharge of the system near Cedar Hills Drive.

- 1) The drainage feature located on the eastern property line of the Coventry Homeowners Association property is to be evaluated for its ability to convey the predevelopment and post development of peak flow rates from the 860 Weaver Dairy Road project for the 10, 25, and 100-yr 24-hour storms.
- 2) The Booker Creek drainage basin at a point near 110 Cedar Hills Road is to be evaluated with the inclusion of the predevelopment and post development peak flow rates for the 1, 2, 25, and 100-yr 24-hour storms from the 860 Weaver Dairy Road Project.
- 3) The hydraulic gradeline of the drainage system in Weaver Dairy Road will be analyzed from the tie-in point of the 860 Weaver Dairy Road project to the discharge point near Cedar Hills Drive for the pre-development and post development of the 10-year and 25-year storms.

B. PROJECT DESCRIPTION

Based on feedback from the neighbors during public comments for the Conditional Zoning Permit, concerns were expressed with the impact of peak flow runoff rates from the 860 Weaver Dairy Road Project. This study has been assembled to evaluate the three locations and the impacts from the post development flows from the 860 Weaver Dairy Road project.

The 860 Weaver Dairy Road project is a residential / mixed use project encompassing 45.23 acres of multi-family and town home housing located north of Weaver Dairy Road and south of I-40 and between Chapel Hill North and Carol Woods. The project involves 425-450 apartment rental units in two 6-story apartment buildings with 700 parking spaces, all located in a parking structure behind the apartments. The project also includes 120-140 townhomes with garages to reduce surface parking.

Calculations for peak discharge, runoff volume (2-yr only), and water quality treatment (85% TSS) for all of the proposed improvements are provided. Soils on the site are mainly hydrologic soil group B with some D. The proposed site is located in the Cape Fear River Basin in the Jordan Lake Watershed.

Per the Town of Chapel Hill stormwater ordinance, the stormwater runoff rate leaving the site under post-development conditions may not exceed the stormwater runoff rate under predevelopment conditions for the 1-year, 2-year, 25-year, and 100-year storms. The additional runoff volume from the re-development to post-development conditions for the 2-year storm must also be captured on-site. Added impervious surfaces must be treated for 85% total suspended solids (TSS) removal. Pre-development and post development flows from 860 Weaver Dairy Road Project can be found in the Stormwater Impact Statement approved at the Conditional Zoning Permit. The approved Stormwater Impact Statement can be found in Appendix A.

The Booker Creek drainage basin to the point of analysis at 110 Cedar Hills Drive consists mainly of residential properties with commercial property along Weaver Dairy Road.

The drainage feature along the western property line of the Coventry neighborhood is an irregular channel with dense vegetation and a loosely defined flowpath. The neighborhoods along the drainage feature are townhomes and retirement community without riparian buffers or stormwater controls for this portion of the drainage feature. The Coventry neighborhood was built in 1985 and the original Carolwoods community was built in 1979.

Weaver Dairy Road between Timberlyne Road and Silo Dr was improved by NCDOT in 2010 with final construction certified in 2015. Hydraulic analysis for this portion of roadway was designed by NCDOT and improvements in the area have been minimal since the final design.

C. STUDY

Methodology

- The Orange County Soil Survey is used to identify the soil types located in the area.
- HydroCAD software is used to calculate pre- and post-development peak flow rates and volumes for each sub-basin. HydroCAD uses the SCS TR-20 method to develop hydrographs.
- HydroCAD software is used to calculate the composite curve number for the basin.
- HydroCAD uses the NRCS TR-55 method for calculation composite curve numbers.
- Hydraflow software is used to calculate channel capacity and elevation of the energy grade line.
- AutoCAD Civil 3D is used to calculate hydraulic grade line modeling for storm drain systems.
- Kirpich equation is used for calculating time of concentration (T_c).

For this study, the following assumptions were made:

- The characteristics of the basin remain the same, with the exception of those proposed for 860 Weaver Dairy Road.
- Land type data was taken from GIS, aerial imagery, and USGS Stream Stats.
- Topographic information was taken from GIS.
- Time of Concentration was developed using the Kirpich Method for generalized overland flow.

Analysis 1 (Drainage Feature along Western Property Line of Coventry):

Using GIS data, four channel cross-sections were created in locations identified on Exhibit **PRE DEV. STUDY 1 & POST DEV. STUDY 2** as Points 1,2,3, and 4. Drainage Basins were delineated for each of these points. The peak flow for the 10-year and 25-year storm events was calculated at each point using data from the 860 Weaver Dairy pre and post development conditions and the existing conditions for the remainder of the drainage basins. Each cross-section was modeled utilizing the 10 and 25-yr 24-hr storm events in *Hydraflow Channel Design*. Inadequate channel capacity for the pre-development conditions caused the water to overtop at all four points for the 100-yr 24-hr storm events in *Hydraflow*, therefore the peak flow results were shown as not applicable (N/A).

Analysis 2 (Booker Creek Drainage Basin near 110 Cedar Hills Drive):

Using *USGS Stream Stat* and the peakflow data from the approved *Conditional Zoning Stormwater Management Report*, the pre and post peak flow was modeled utilizing the 1, 2, 25 and 100-yr 24-hr storm events in *HydroCAD Stormwater Modeling* software. The location of the analysis and contributing drainage basin are shown on Exhibit **PRE DEV. STUDY 3 & POST DEV. STUDY 4**.

Analysis 3 (Hydraulic Grade Line for the portion of Weaver Dairy Road from the 860 project site to Cedar Hills Drive):

Using NCDOT As-built drawings for U-3306 (portions of Weaver Dairy Road), a three-dimensional model of the drainage system was developed in *AutoCAD Civil 3D*. The system was analyzed for the 10 and 25-year storms pre and post utilizing the existing drainage basins as defined with GIS and the data from the 860 Weaver Dairy pre and post development conditions. The culvert capacity was calculated by adding the total flow generated in the HGL calculations and the peak flow from the drainage basin nearby; the 25-year storm events were used to generate both peak flows. The location of the analysis and contributing drainage basins are shown on Exhibit **PRE DEV. STUDY 5 & POST DEV. STUDY 6**.

D. CONCLUSIONS

Analysis 1 (Drainage Feature along Western Property Line of Coventry):

Prior to the development of 86o Weaver Dairy Road project, the model demonstrates that the elevation of the Energy Grade Line (EGL) at Point 1 almost exceeds the top of bank for the 25-year storm events. The post development condition of 86o Weaver Dairy Road modeling at Point 1 demonstrates that the EGL is lower for the 25-year storm although it is still almost exceeding the top of bank. Similar conditions are shown at point 2 where the model shows a decrease of the EGL for the Post development conditions for the 25-year storm events. At points 3 and 4, the model shows the EGL below the top of bank for the 25-year storm events prior construction of the Weaver Dairy Road project. The post development condition at points 3 and 4 demonstrates that the EGL is still below the top of bank and elevation has been decreased by a small amount.

Although the pre-development condition of the model demonstrates that the existing channel is currently failing for the 100-yr storm event, the proposed 86o Weaver Dairy Road project will decrease post development peak flow for the 100-yr storm event and not compound the existing issue. Approximately half of the predevelopment flow across the neighborhood to the South is generated from the subject property, it is important to note that nearly 70% of drainage basin remains undisturbed and the stormwater controls that are planned to be implemented will improve the post development channel "over-topping" issue.

This modeling demonstrates that the construction of the Weaver Dairy Road project has no increase on the drainage conditions along Western Line of Coventry. Results are summarized below.

ANALYSIS 1						
10-YEAR STORM	PRE DEV. Q (CFS)	POST DEV. Q(CFS)	% DIFF FROM PRE TO POST	PRE WATER ELV.	POST WATER ELV.	WATER ELV. DIFFERENCE
POINT 1	23.82	21.17	-11%	512.55	512.18	-0.37
POINT 2	35.69	32.92	-8%	509.97	509.68	-0.29
POINT 3	38.1	35.29	-7%	508.01	507.77	-0.24
POINT 4	43.46	40.69	-6%	502.67	502.49	-0.18
25-YEAR STORM	PRE DEV. Q (CFS)	POST DEV. Q(CFS)	% DIFF FROM PRE TO POST	PRE WATER ELV.	POST WATER ELV.	WATER ELV. DIFFERENCE
POINT 1	39.15	37.23	-5%	514.22	514.07	-0.15
POINT 2	55.1	53.06	-4%	511.44	511.32	-0.12
POINT 3	58.33	56.23	-4%	509.25	509.17	-0.08
POINT 4	65.99	63.81	-3%	503.83	503.73	-0.1
100-YEAR STORM*	PRE DEV. Q (CFS)	POST DEV. Q(CFS)	% DIFF FROM PRE TO POST	* ALTHOUGH FLOW IS REDUCED POST DEVELOPMENT, THE CHANNEL MODEL IS UNABLE TO GENERATE RESULTS DUE TO HGL OVERTOPPING CHANNEL AT EXISTING CONDITIONS		
POINT 1	59.04	58.35	-1%			
POINT 2	79.88	78.95	-1%			
POINT 3	84.08	83.02	-1%			
POINT 4	94.01	92.71	-1%			

Analysis 2 (Booker Creek Drainage Basin near 110 Cedar Hills Drive):

Prior to the development of 86o Weaver Dairy Road project, the model demonstrates that the Peak Flow (Q) at 110 Cedar Hill Dr was higher for the 1-year, 2-year, 25-year, and 100-year storm events. Based on the model results, it can be said that the development of the Weaver Dairy Road project will have no impact on the existing conditions at 110 Cedar Hills Drive. Results are summarized below.

ANALYSIS 2			
POA AT 110 CEDAR HILL DR	PRE DEV. Q (CFS)	POST DEV. Q(CFS)	% DIFF FROM PRE TO POST
1-YEAR	76.61	76.41	-0.3%
2-YEAR	132.96	130.98	-1.5%
25-YEAR	428.78	426.69	-0.5%
100-YEAR	633.58	631.46	-0.3%
POA DOWNSTREAM OF 110 CEDAR HILL DR	PRE DEV. Q (CFS)	POST DEV. Q(CFS)	% DIFF FROM PRE TO POST
1-YEAR	103.4	103.38	0.0%
2-YEAR	182.69	181.12	-0.9%
25-YEAR	600.22	598.98	-0.2%
100-YEAR	889.39	888.53	-0.1%

Analysis 3 (Hydraulic Grade Line for the portion of Weaver Dairy Road from the 86o project site to Cedar Hills Drive):

For HGL results and conclusions, refer to HGL profiles in Section 12 where it can be seen how the HGL decreases for the Post development conditions, thus producing no change on the existing conditions around the portions of Weaver Dairy Road. The culvert shows a decrease in the water elevation from Post to Pre development conditions. Results are summarized below.

ANALYSIS 3				
EXISTING 48" CULVERT	*Q (CFS)	% DIFF FROM PRE TO POST	HW ELEVATION (FT)	DIFF HW ELEVATION
25-YEAR STORM PRE DEV	103.7	-0.37%	492.61	-0.01
25-YEAR STORM POST DEV	103.32		492.60	

4. PRE AND POST DEVELOPMENT MAPS FOR FIRST STUDY

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860 WEAVER DAIRY ROAD

CLIENT/OWNER:
LAND PLANNING & ENTITLEMENTS
157 EAST FRANKLIN STREET
CHAPEL HILL, NC 27514

150.0001 0 75 150.0001

GRAPHIC SCALE:
1 INCH = 150.0001 FEET

DATUM: HORIZ: NAV 83 VERT.: NAVD 88

JOB NO: 32044.0000
DATE: 10/21/25
DRAWN: ASL
DESIGNED:
REVIEWED: AO
APPROVED:
SCALE: 1" = 150.0001'

PRE

POST DEV. STUDY 2

#####

860 WEAVER DAIRY ROAD

#####

PROJECT LOCATION:

#####

#####

#####

CLIENT/OWNER:

LAND PLANNING & ENTITLEMENTS
157 EAST FRANKLINING STREET
CHAPEL HILL, NC 27514

#####

#####

#####

#####

POST

5. PRE AND POST DEVELOPMENT ANALYSIS AT DIFFERENT POINTS

Thursday, Nov 6 2025

Depth (ft)	= 10.55
Q (cfs)	= 23.82
Area (sqft)	= 6.41
Velocity (ft/s)	= 3.72
Wetted Perim (ft)	= 21.18
Crit Depth, Yc (ft)	= 6.85
Top Width (ft)	= 1.45
EGL (ft)	= 10.76

(0.00, 514.30)-(0.69, 513.80, 0.026)-(1.30, 508.00, 0.026)-(1.54, 502.00, 0.026)-(1.56, 502.00, 0.026)-(1.88, 508.00, 0.026)-(2.39, 514.00, 0.026)
 -(3.06, 516.00, 0.026)-(3.26, 518.00, 0.026)-(3.82, 520.00, 0.026)

The diagram shows a cross-section of a ditch. The horizontal axis is labeled 'Sta (ft)' and ranges from -0.5 to 4.5. The left vertical axis is labeled 'Elev (ft)' and ranges from 99.00 to 23.00. The right vertical axis is labeled 'Depth (ft)' and ranges from -3.00 to 21.00. A green line represents the ditch profile, starting at an elevation of approximately 14.1 ft at Sta -0.5, dipping to a minimum of 2.0 ft at Sta 1.5, and rising to 20.0 ft at Sta 4.0. A blue line with a downward-pointing triangle indicates the 'EXCEEDING TOP OF BANK/DITCH' at an elevation of approximately 13.5 ft between Sta 0.8 and Sta 2.2.

Sta (ft)	Elev (ft)	Depth (ft)
-0.5	14.1	11.9
0.0	14.1	11.9
0.5	14.0	12.0
0.8	13.9	12.1
1.3	8.0	16.0
1.5	2.0	20.0
1.8	8.0	16.0
2.2	14.0	12.0
2.5	14.2	11.8
3.0	15.5	10.5
3.3	17.5	8.5
3.8	20.0	6.0
4.0	20.0	6.0
4.3	20.0	6.0

Channel Report

25- Yr Pre Dev Point 1

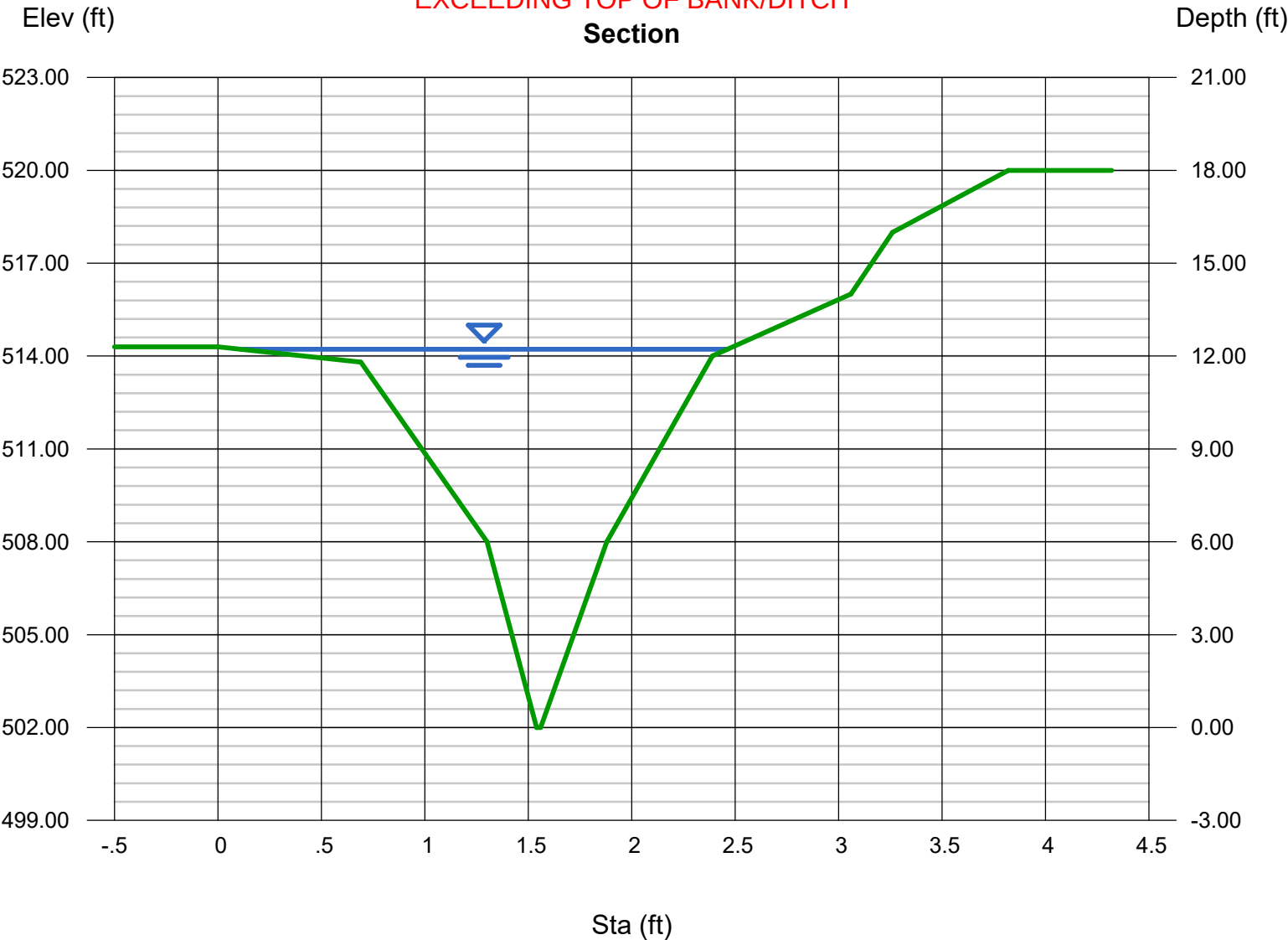
User-defined		Highlighted	
Invert Elev (ft)	= 502.00	Depth (ft)	= 12.22
Slope (%)	= 2.08	Q (cfs)	= 39.15
N-Value	= 0.026	Area (sqft)	= 9.21
		Velocity (ft/s)	= 4.25
		Wetted Perim (ft)	= 24.84
Calculations		Crit Depth, Yc (ft)	= 8.32
Compute by:	Known Q	Top Width (ft)	= 2.35
Known Q (cfs)	= 39.15	EGL (ft)	= 12.50

(Sta, El, n)-(Sta, El, n)...

(0.00, 514.30)-(0.69, 513.80, 0.026)-(1.30, 508.00, 0.026)-(1.54, 502.00, 0.026)-(1.56, 502.00, 0.026)-(1.88, 508.00, 0.026)-(2.39, 514.00, 0.026)

-(3.06, 516.00, 0.026)-(3.26, 518.00, 0.026)-(3.82, 520.00, 0.026)

MODEL WAS NOT ABLE TO GENERATE
100-YR STORM DUE TO ELEVATION
EXCEEDING TOP OF BANK/DITCH



Channel Report

10-Yr Pre Dev Point 2

User-defined

Invert Elev (ft) = 500.00
Slope (%) = 2.08
N-Value = 0.026

Calculations

Compute by: Known Q
Known Q (cfs) = 35.69

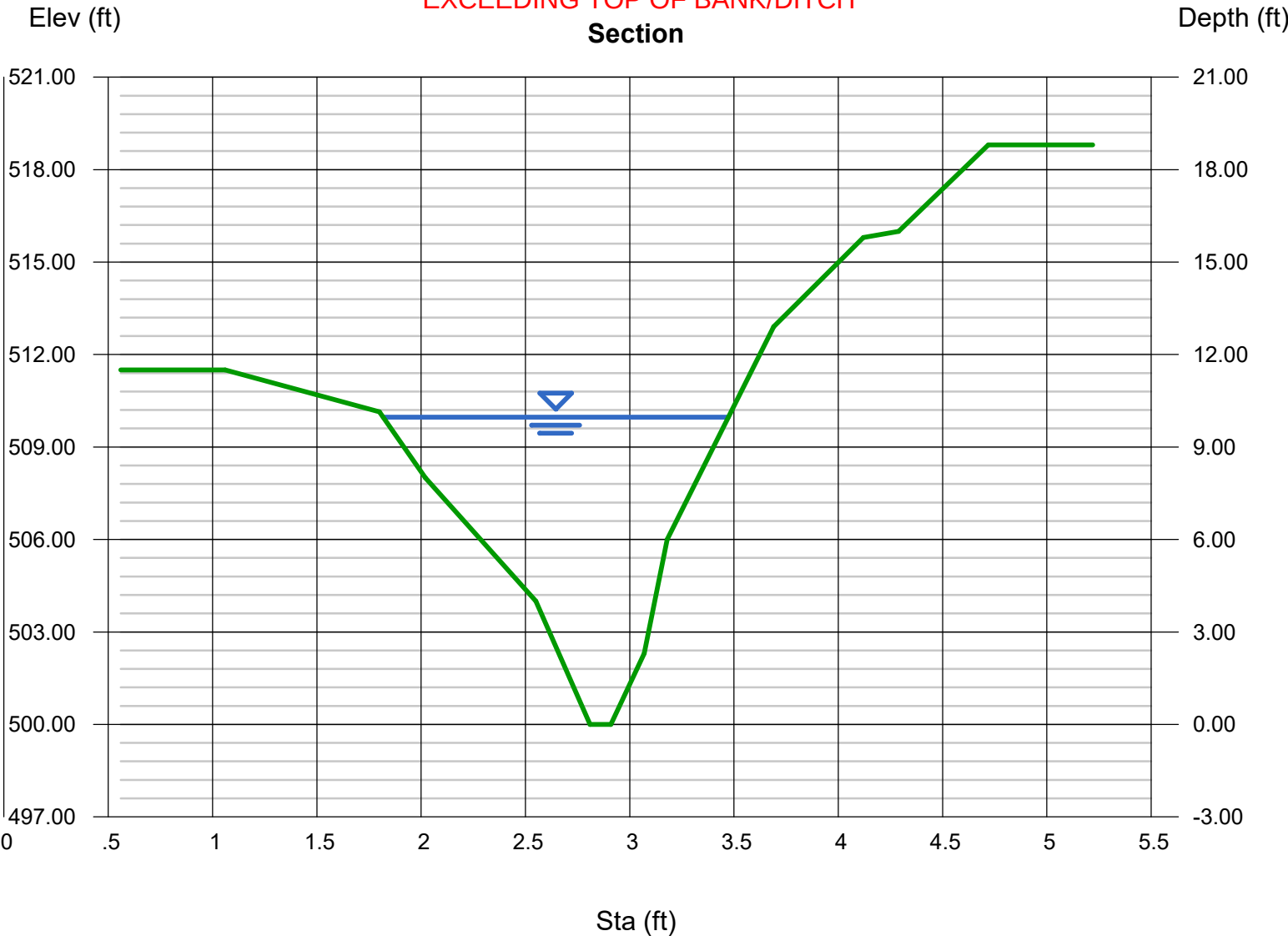
Highlighted

Depth (ft) = 9.97
Q (cfs) = 35.69
Area (sqft) = 8.01
Velocity (ft/s) = 4.46
Wetted Perim (ft) = 20.11
Crit Depth, Yc (ft) = 6.57
Top Width (ft) = 1.66
EGL (ft) = 10.28

(Sta, El, n)-(Sta, El, n)...

(1.06, 511.50)-(1.80, 510.14, 0.026)-(2.02, 508.00, 0.026)-(2.55, 504.00, 0.026)-(2.81, 500.00, 0.026)-(2.91, 500.00, 0.026)-(3.07, 502.30, 0.026)
-(3.18, 506.00, 0.026)-(3.69, 512.90, 0.026)-(4.12, 515.80, 0.026)-(4.29, 516.00, 0.026)-(4.72, 518.80, 0.026)

MODEL WAS NOT ABLE TO GENERATE
100-YR STORM DUE TO ELEVATION
EXCEEDING TOP OF BANK/DITCH



Channel Report

25-Yr Pre Dev Point 2

User-defined

Invert Elev (ft) = 500.00
Slope (%) = 2.08
N-Value = 0.026

Calculations

Compute by: Known Q
Known Q (cfs) = 55.10

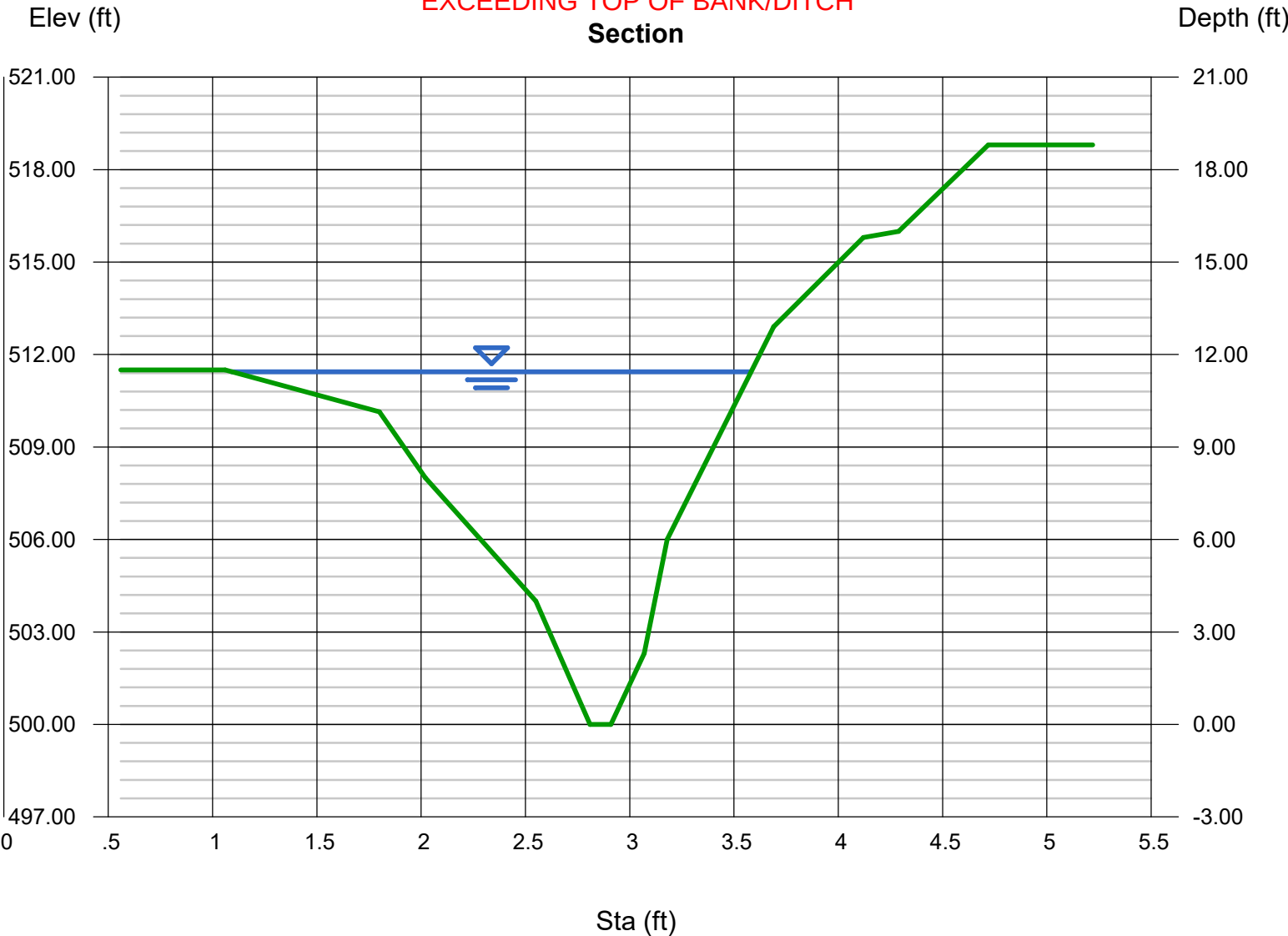
Highlighted

Depth (ft) = 11.44
Q (cfs) = 55.10
Area (sqft) = 11.01
Velocity (ft/s) = 5.01
Wetted Perim (ft) = 23.24
Crit Depth, Yc (ft) = 7.90
Top Width (ft) = 2.49
EGL (ft) = 11.83

(Sta, El, n)-(Sta, El, n)...

(1.06, 511.50)-(1.80, 510.14, 0.026)-(2.02, 508.00, 0.026)-(2.55, 504.00, 0.026)-(2.81, 500.00, 0.026)-(2.91, 500.00, 0.026)-(3.07, 502.30, 0.026)
-(3.18, 506.00, 0.026)-(3.69, 512.90, 0.026)-(4.12, 515.80, 0.026)-(4.29, 516.00, 0.026)-(4.72, 518.80, 0.026)

MODEL WAS NOT ABLE TO GENERATE
100-YR STORM DUE TO ELEVATION
EXCEEDING TOP OF BANK/DITCH

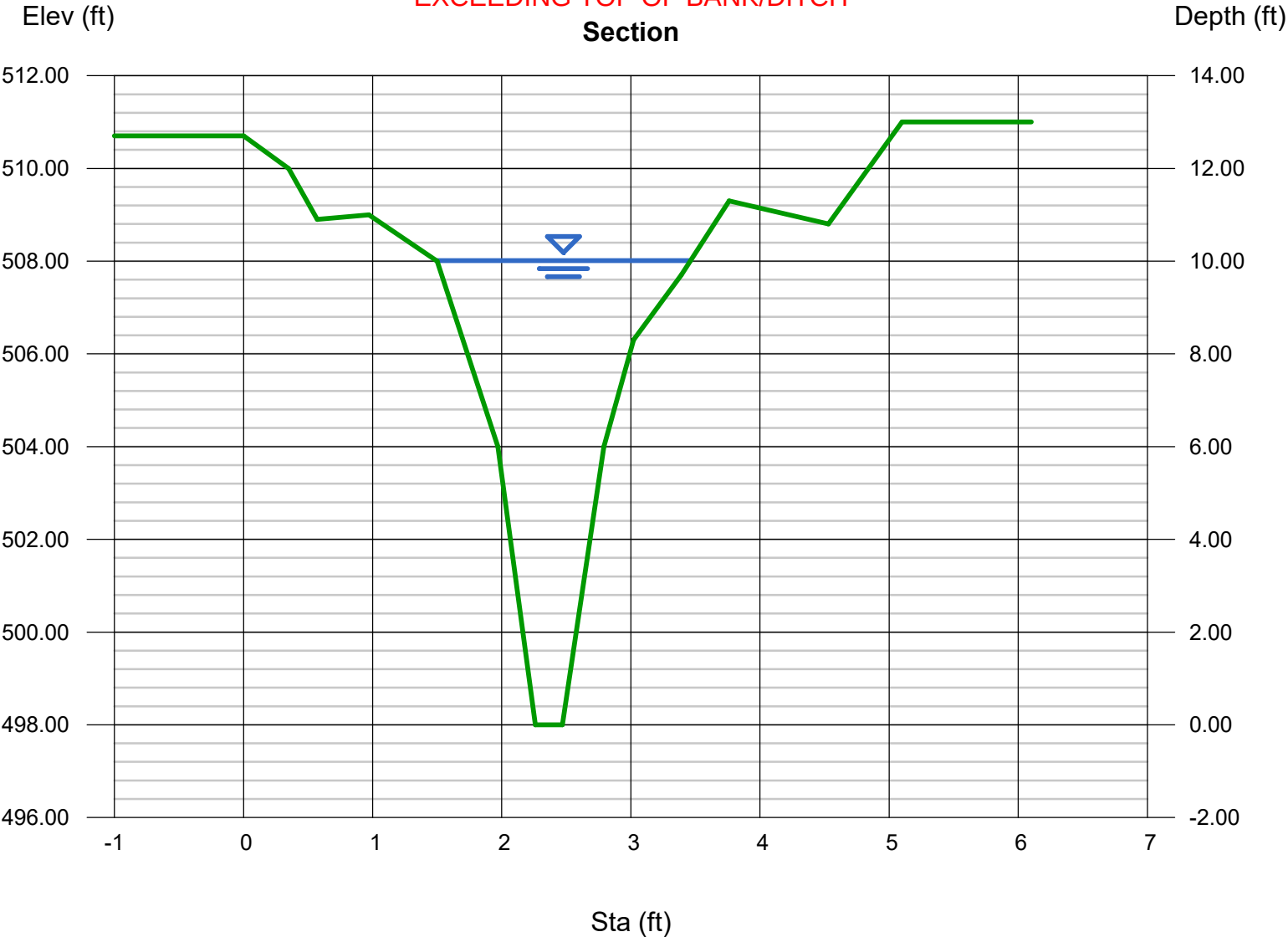


Channel Report

10-Yr Pre Dev Point 3

User-defined		Highlighted	
Invert Elev (ft)	= 498.00	Depth (ft)	= 10.01
Slope (%)	= 2.08	Q (cfs)	= 38.10
N-Value	= 0.026	Area (sqft)	= 8.37
Calculations		Velocity (ft/s)	= 4.55
Compute by:	Known Q	Wetted Perim (ft)	= 20.34
Known Q (cfs)	= 38.10	Crit Depth, Yc (ft)	= 6.42
		Top Width (ft)	= 1.97
		EGL (ft)	= 10.33
(Sta, El, n)-(Sta, El, n)...			
(0.00, 510.70)-(0.35, 510.00, 0.026)-(0.57, 508.90, 0.026)-(0.97, 509.00, 0.026)-(1.50, 508.00, 0.026)-(1.97, 504.00, 0.026)-(2.26, 498.00, 0.026)			
-(2.47, 498.00, 0.026)-(2.79, 504.00, 0.026)-(3.02, 506.30, 0.026)-(3.39, 507.70, 0.026)-(3.76, 509.30, 0.026)-(4.53, 508.80, 0.026)-(5.10, 511.00, 0.026)			

MODEL WAS NOT ABLE TO GENERATE
100-YR STORM DUE TO ELEVATION
EXCEEDING TOP OF BANK/DITCH

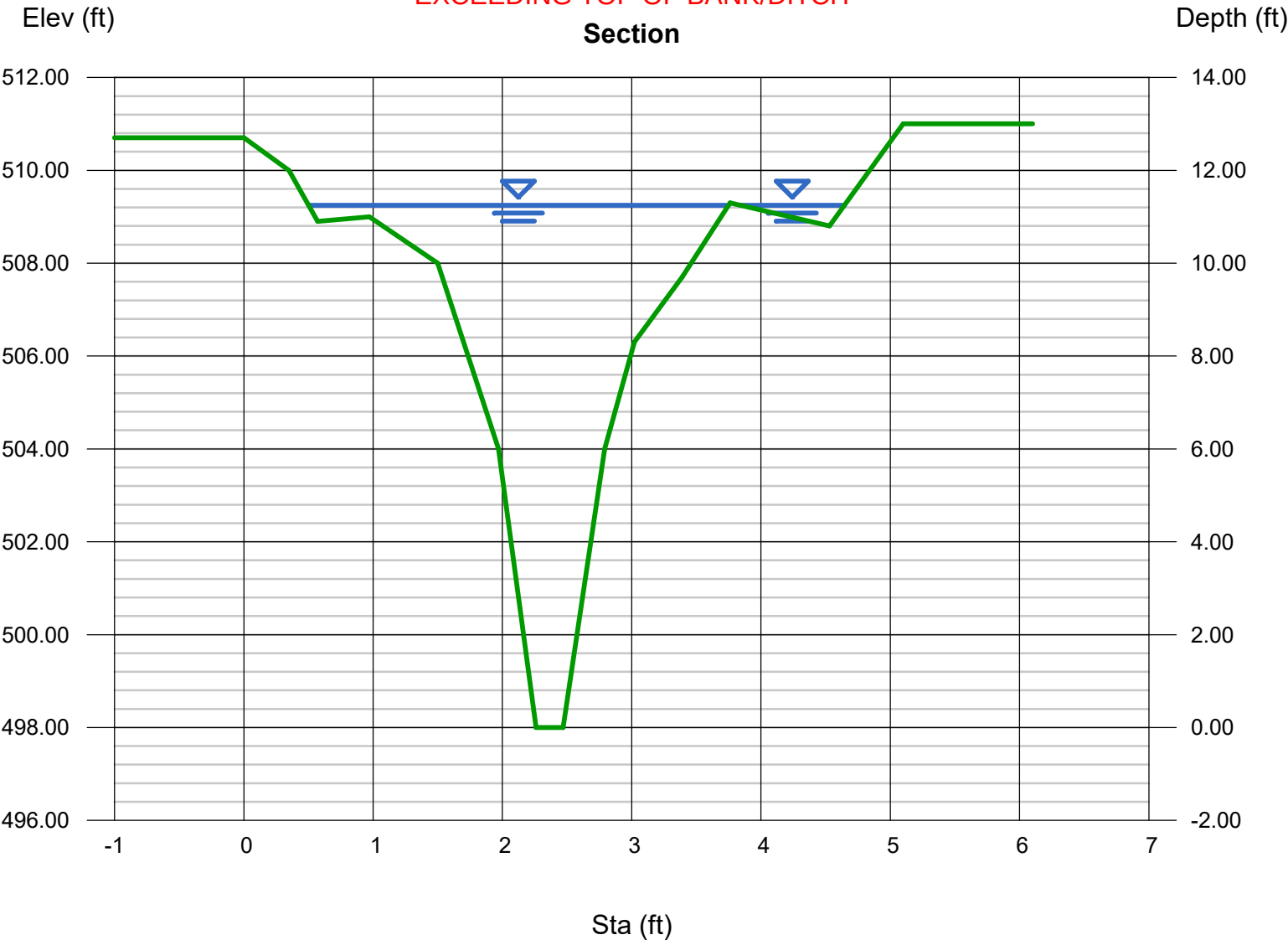


Channel Report

25-Yr Pre Dev Point 3

User-defined		Highlighted	
Invert Elev (ft)	= 498.00	Depth (ft)	= 11.25
Slope (%)	= 2.08	Q (cfs)	= 58.33
N-Value	= 0.026	Area (sqft)	= 11.69
Calculations		Velocity (ft/s)	= 4.99
Compute by:	Known Q	Wetted Perim (ft)	= 24.80
Known Q (cfs)	= 58.33	Crit Depth, Yc (ft)	= 7.94
		Top Width (ft)	= 4.06
		EGL (ft)	= 11.64
(Sta, El, n)-(Sta, El, n)...			
(0.00, 510.70)-(0.35, 510.00, 0.026)-(0.57, 508.90, 0.026)-(0.97, 509.00, 0.026)-(1.50, 508.00, 0.026)-(1.97, 504.00, 0.026)-(2.26, 498.00, 0.026)			
-(2.47, 498.00, 0.026)-(2.79, 504.00, 0.026)-(3.02, 506.30, 0.026)-(3.39, 507.70, 0.026)-(3.76, 509.30, 0.026)-(4.53, 508.80, 0.026)-(5.10, 511.00, 0.026)			

MODEL WAS NOT ABLE TO GENERATE
100-YR STORM DUE TO ELEVATION
EXCEEDING TOP OF BANK/DITCH



Channel Report

10-Yr Pre Dev Point 4

User-defined

Invert Elev (ft) = 496.00
Slope (%) = 2.08
N-Value = 0.026

Calculations

Compute by: Known Q
Known Q (cfs) = 43.46

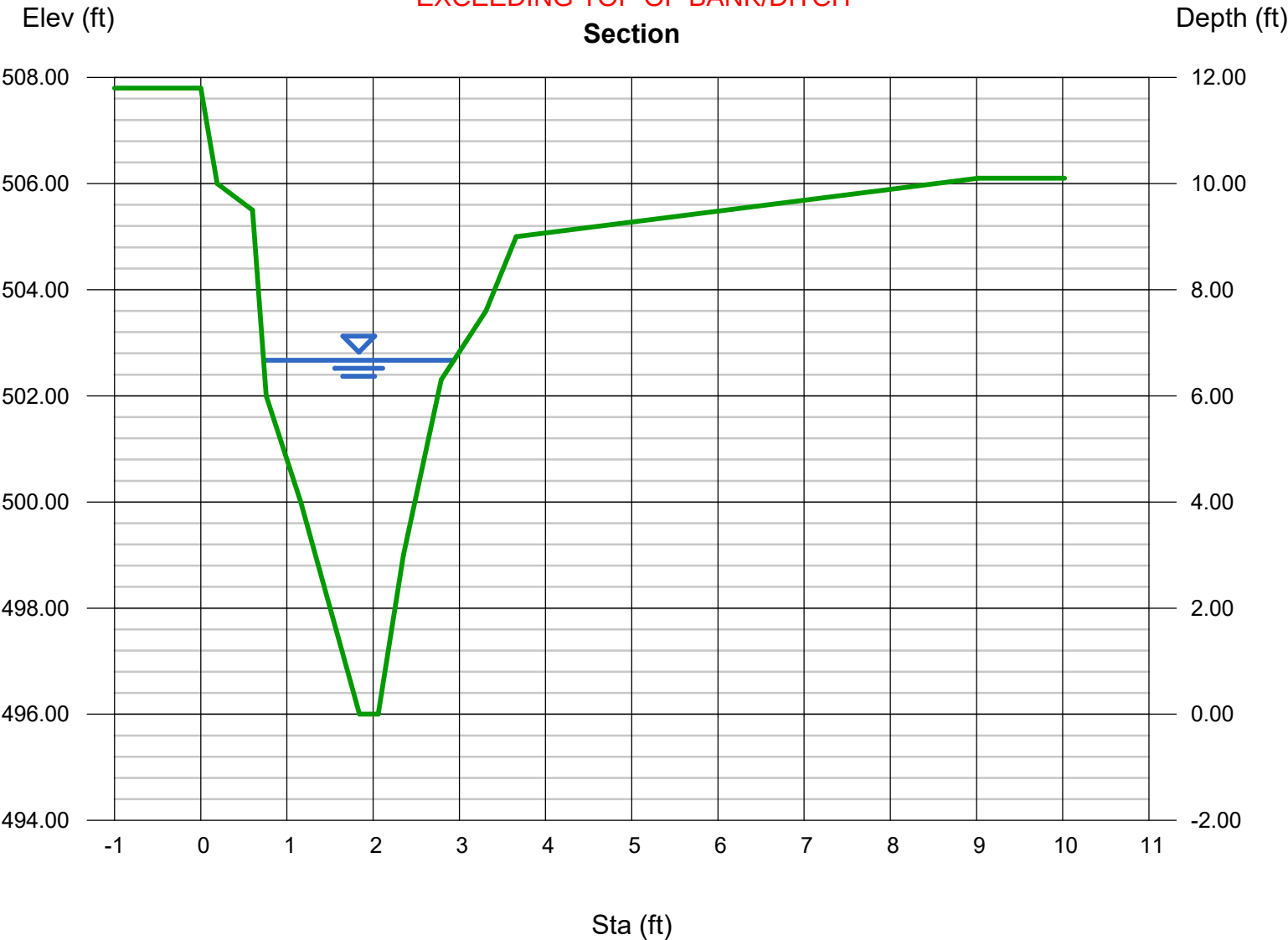
Highlighted

Depth (ft) = 6.67
Q (cfs) = 43.46
Area (sqft) = 7.74
Velocity (ft/s) = 5.62
Wetted Perim (ft) = 13.73
Crit Depth, Yc (ft) = 5.06
Top Width (ft) = 2.21
EGL (ft) = 7.16

(Sta, El, n)-(Sta, El, n)...

(0.00, 507.80)-(0.19, 506.00, 0.026)-(0.60, 505.50, 0.026)-(0.76, 502.00, 0.026)-(1.16, 500.00, 0.026)-(1.84, 496.00, 0.026)-(2.06, 496.00, 0.026)
-(2.35, 499.00, 0.026)-(2.79, 502.30, 0.026)-(3.31, 503.60, 0.026)-(3.66, 505.00, 0.026)-(9.02, 506.10, 0.026)

MODEL WAS NOT ABLE TO GENERATE
100-YR STORM DUE TO ELEVATION
EXCEEDING TOP OF BANK/DITCH



Channel Report

25-Yr Pre Dev Point 4

User-defined

Invert Elev (ft)

= 496.00

Slope (%)

= 2.08

N-Value

= 0.026

Highlighted

Depth (ft)

= 7.83

Q (cfs)

= 65.99

Area (sqft)

= 10.59

Velocity (ft/s)

= 6.23

Wetted Perim (ft)

= 16.13

Crit Depth, Yc (ft)

= 6.07

Top Width (ft)

= 2.69

EGL (ft)

= 8.43

Calculations

Compute by:

Known Q

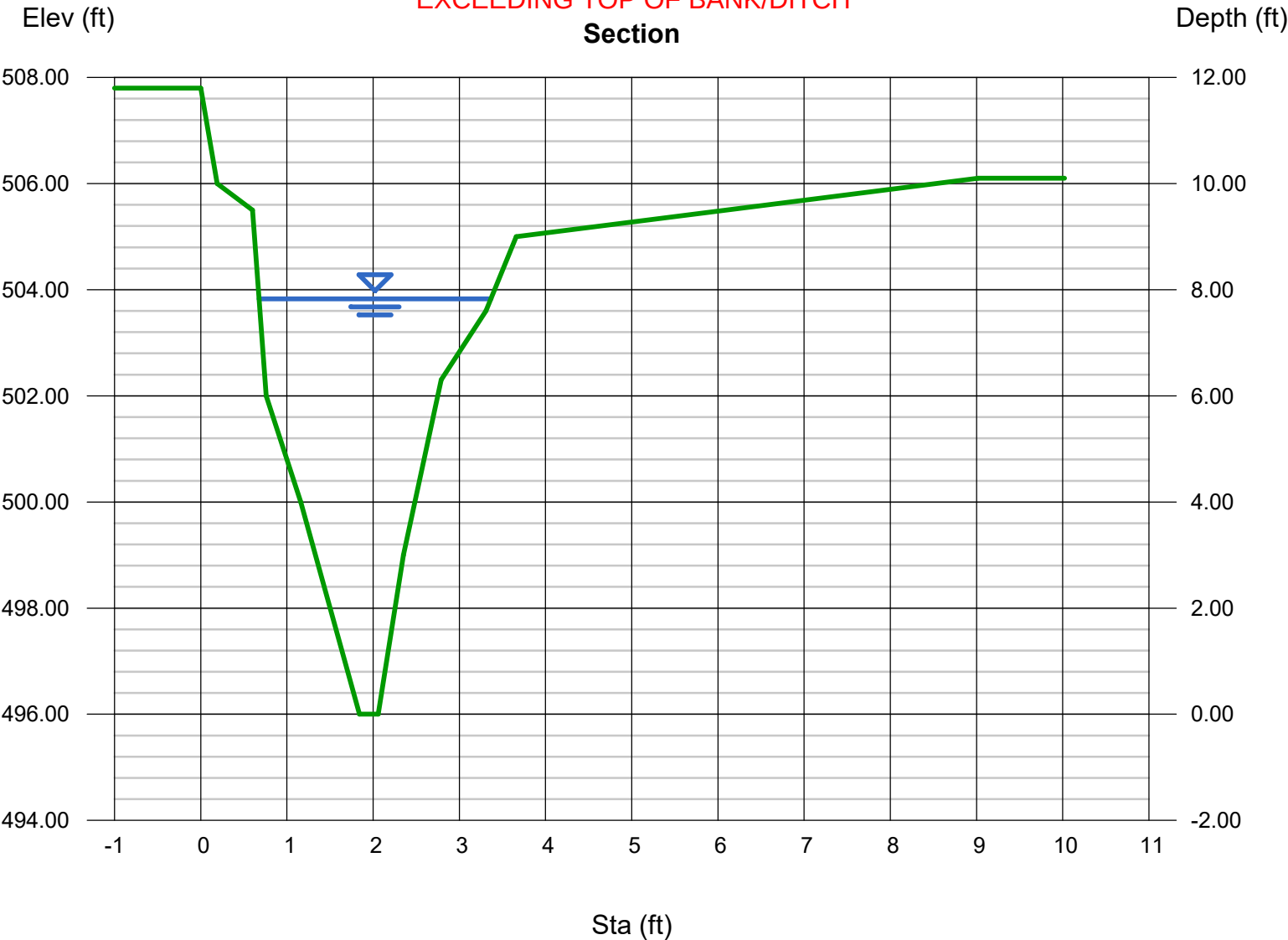
Known Q (cfs)

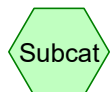
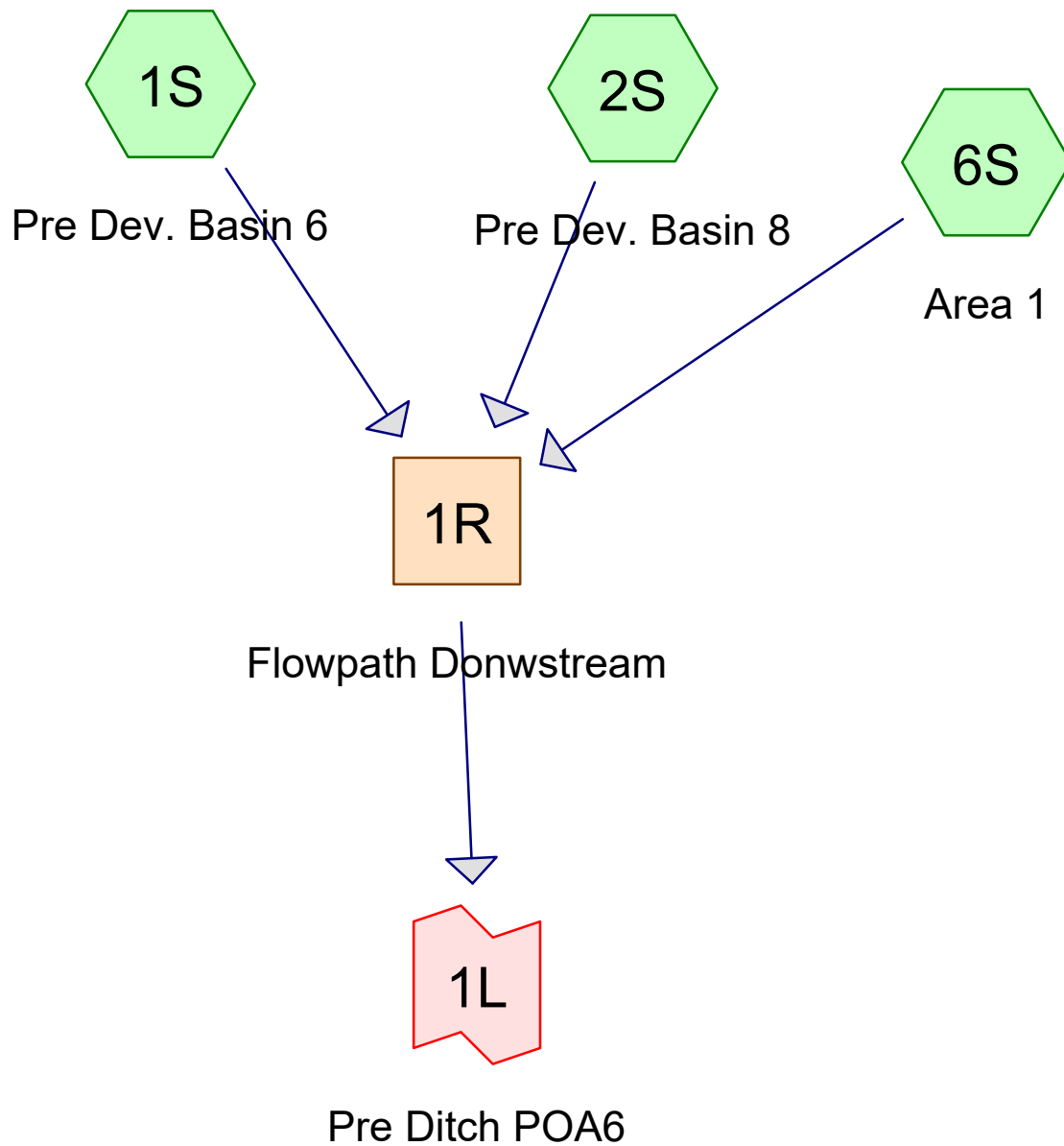
= 65.99

(Sta, El, n)-(Sta, El, n)...

(0.00, 507.80)-(0.19, 506.00, 0.026)-(0.60, 505.50, 0.026)-(0.76, 502.00, 0.026)-(1.16, 500.00, 0.026)-(1.84, 496.00, 0.026)-(2.06, 496.00, 0.026)
-(2.35, 499.00, 0.026)-(2.79, 502.30, 0.026)-(3.31, 503.60, 0.026)-(3.66, 505.00, 0.026)-(9.02, 506.10, 0.026)

MODEL WAS NOT ABLE TO GENERATE
100-YR STORM DUE TO ELEVATION
EXCEEDING TOP OF BANK/DITCH

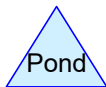




Subcat



Reach



Pond



Link

Routing Diagram for 32044.0000 - Ditch Analysis

Prepared by Thomas & Hutton, Printed 11/6/2025

HydroCAD® 10.20-7a s/n 02108 © 2025 HydroCAD Software Solutions LLC

32044.0000 - Ditch Analysis

Prepared by Thomas & Hutton

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Printed 11/6/2025

Page 3

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	10-yr	Type II 24-hr		Default	24.00	1	5.17	2
2	25-yr	Type II 24-hr		Default	24.00	1	6.54	2
3	100-yr	Type II 24-hr		Default	24.00	1	8.17	2

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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.103	85	1/8 acre lots, 65% imp, HSG B (6S)
1.351	69	50-75% Grass cover, Fair, HSG B (2S)
0.914	56	Brush, Fair, HSG B (1S)
14.513	60	Woods, Fair, HSG B (1S, 2S)
18.882	63	TOTAL AREA

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Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
18.882	HSG B	1S, 2S, 6S
0.000	HSG C	
0.000	HSG D	
0.000	Other	
18.882		TOTAL AREA

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Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	2.103	0.000	0.000	0.000	2.103	1/8 acre lots, 65% imp	6S
0.000	1.351	0.000	0.000	0.000	1.351	50-75% Grass cover, Fair	2S
0.000	0.914	0.000	0.000	0.000	0.914	Brush, Fair	1S
0.000	14.513	0.000	0.000	0.000	14.513	Woods, Fair	1S, 2S
0.000	18.882	0.000	0.000	0.000	18.882	TOTAL AREA	

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Type II 24-hr 10-yr Rainfall=5.17"

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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre Dev. Basin 6 Runoff Area=441,055 sf 0.00% Impervious Runoff Depth=1.40"
Flow Length=1,222' Slope=0.0441 '/' Tc=12.4 min CN=60 Runoff=17.25 cfs 1.183 af

Subcatchment2S: Pre Dev. Basin 8 Runoff Area=289,814 sf 0.00% Impervious Runoff Depth=1.54"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=14.84 cfs 0.856 af

Subcatchment6S: Area 1 Runoff Area=91,613 sf 65.00% Impervious Runoff Depth=3.53"
Tc=15.0 min CN=85 Runoff=9.04 cfs 0.618 af

Reach 1R: Flowpath Downstream Avg. Flow Depth=2.08' Max Vel=1.68 fps Inflow=39.94 cfs 2.657 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=23.82 cfs 2.657 af

Link 1L: Pre Ditch POA6 Inflow=23.82 cfs 2.657 af
Primary=23.82 cfs 2.657 af

Total Runoff Area = 18.882 ac Runoff Volume = 2.657 af Average Runoff Depth = 1.69"
92.76% Pervious = 17.515 ac 7.24% Impervious = 1.367 ac

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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Subcatchment 1S: Pre Dev. Basin 6

Runoff = 17.25 cfs @ 12.06 hrs, Volume= 1.183 af, Depth= 1.40"
Routed to Reach 1R : Flowpath Downstream

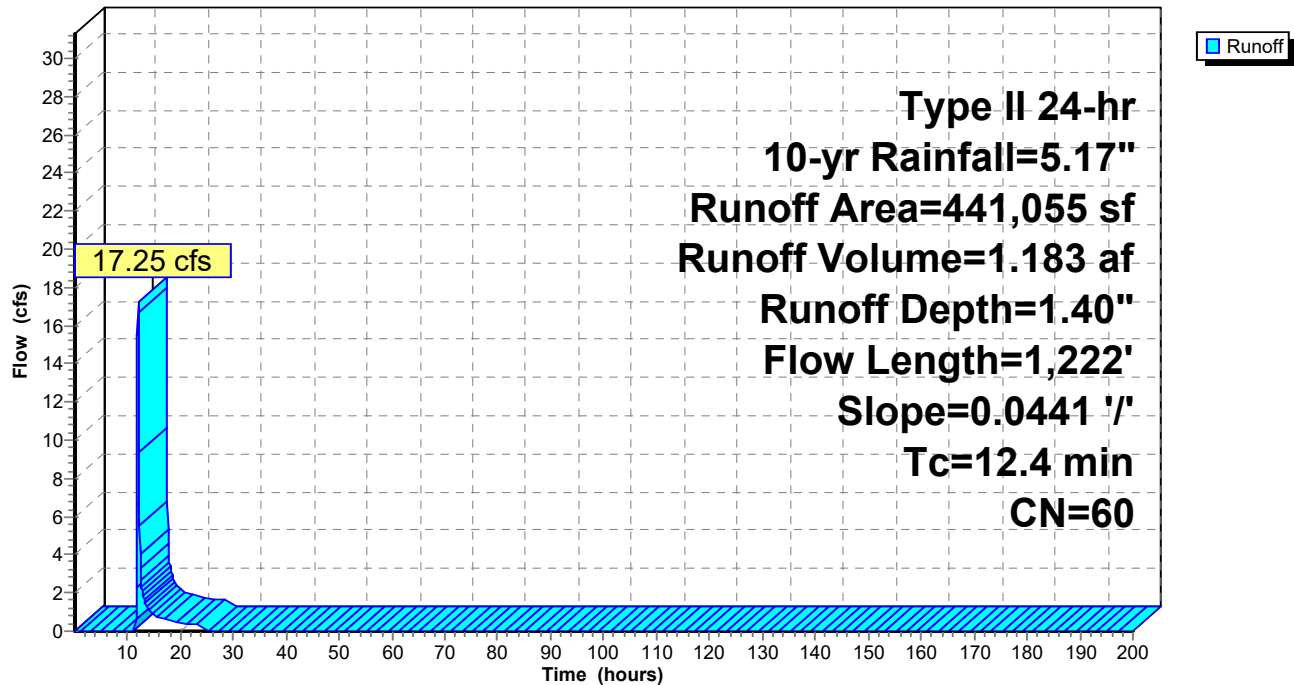
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 10-yr Rainfall=5.17"

Area (sf)	CN	Description
401,238	60	Woods, Fair, HSG B
39,817	56	Brush, Fair, HSG B
441,055	60	Weighted Average
441,055		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	1,222	0.0441	1.65		Kirpich Method, Estimated Tc General overland flow k= 2.00

Subcatchment 1S: Pre Dev. Basin 6

Hydrograph



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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Subcatchment 2S: Pre Dev. Basin 8

Runoff = 14.84 cfs @ 12.01 hrs, Volume= 0.856 af, Depth= 1.54"
Routed to Reach 1R : Flowpath Downstream

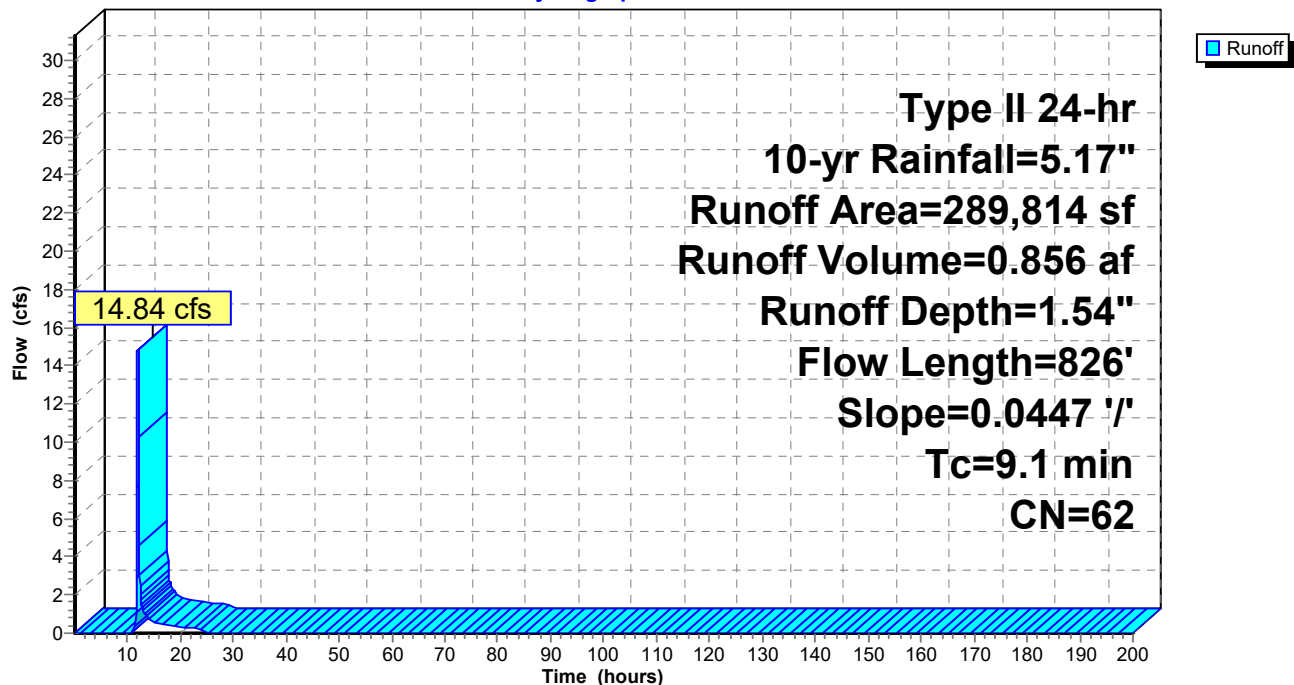
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 10-yr Rainfall=5.17"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
58,855	69	50-75% Grass cover, Fair, HSG B
289,814	62	Weighted Average
289,814		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 2S: Pre Dev. Basin 8

Hydrograph



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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Subcatchment 6S: Area 1

Runoff = 9.04 cfs @ 12.07 hrs, Volume= 0.618 af, Depth= 3.53"
Routed to Reach 1R : Flowpath Downstream

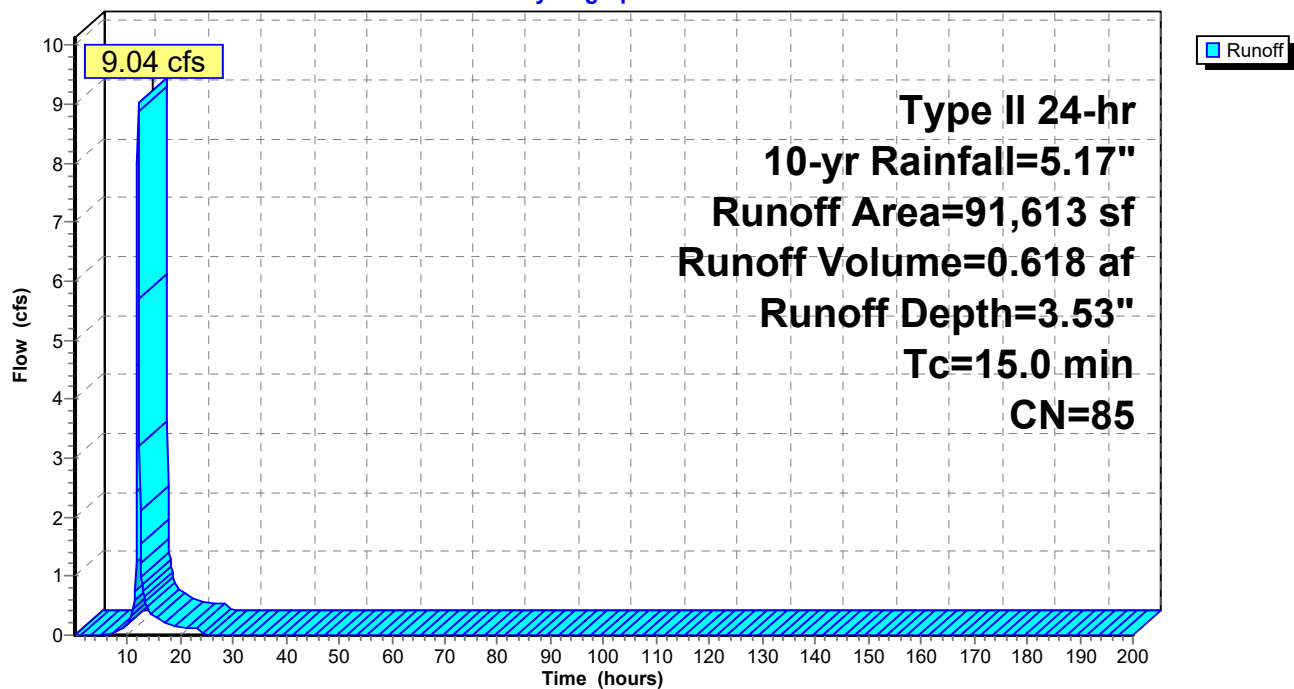
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 10-yr Rainfall=5.17"

Area (sf)	CN	Description
91,613	85	1/8 acre lots, 65% imp, HSG B
32,065		35.00% Pervious Area
59,548		65.00% Impervious Area

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

Subcatchment 6S: Area 1

Hydrograph



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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Reach 1R: Flowpath Downstream

Inflow Area = 18.882 ac, 7.24% Impervious, Inflow Depth = 1.69" for 10-yr event
Inflow = 39.94 cfs @ 12.04 hrs, Volume= 2.657 af
Outflow = 23.82 cfs @ 12.44 hrs, Volume= 2.657 af, Atten= 40%, Lag= 24.0 min
Routed to Link 1L : Pre Ditch POA6

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.68 fps, Min. Travel Time= 15.0 min

Avg. Velocity= 0.28 fps, Avg. Travel Time= 89.7 min

Peak Storage= 21,881 cf @ 12.19 hrs

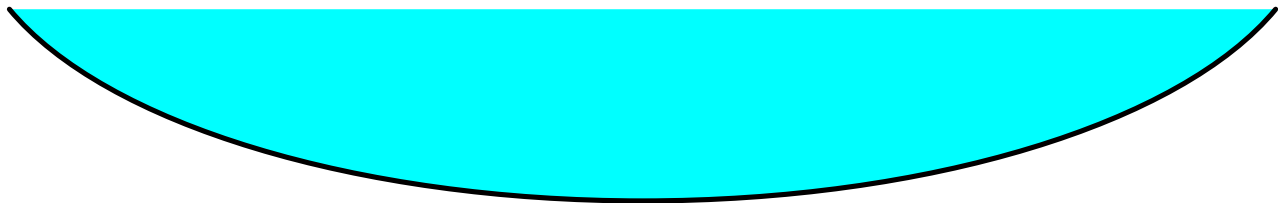
Average Depth at Peak Storage= 2.08' , Surface Width= 12.21'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

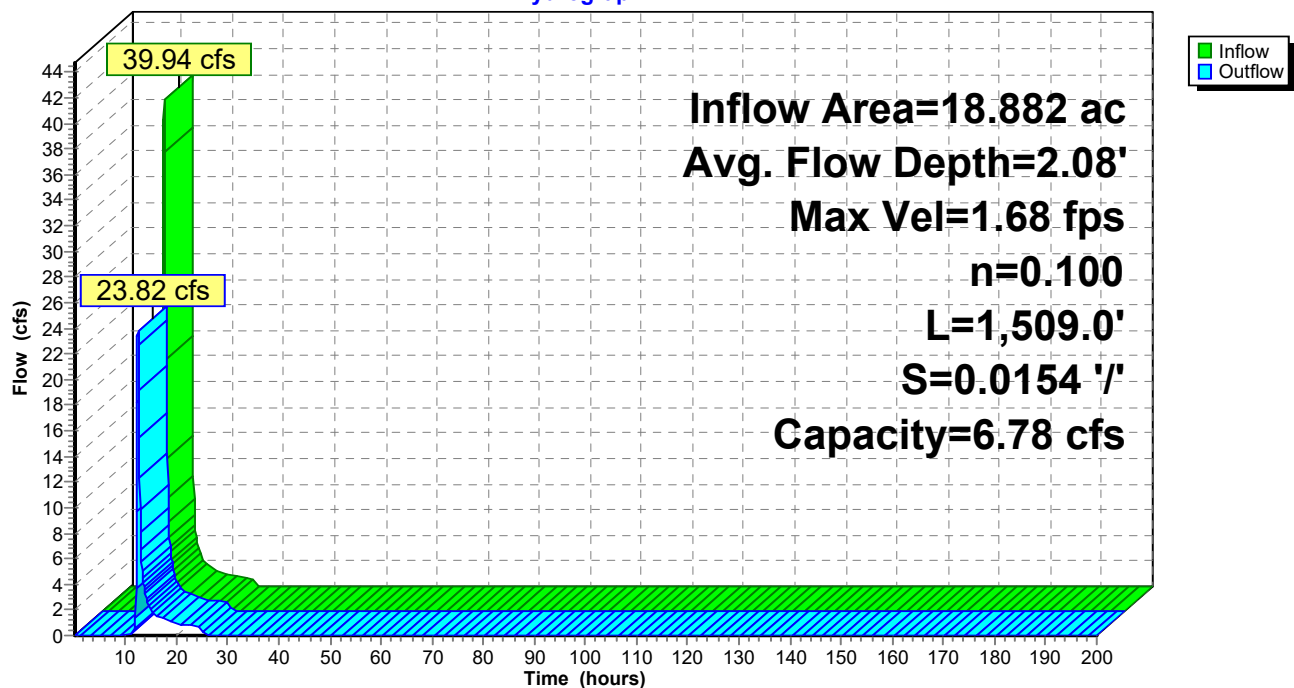
Length= 1,509.0' Slope= 0.0154 '/'

Inlet Invert= 505.43', Outlet Invert= 482.25'



Reach 1R: Flowpath Downstream

Hydrograph



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Type II 24-hr 10-yr Rainfall=5.17"

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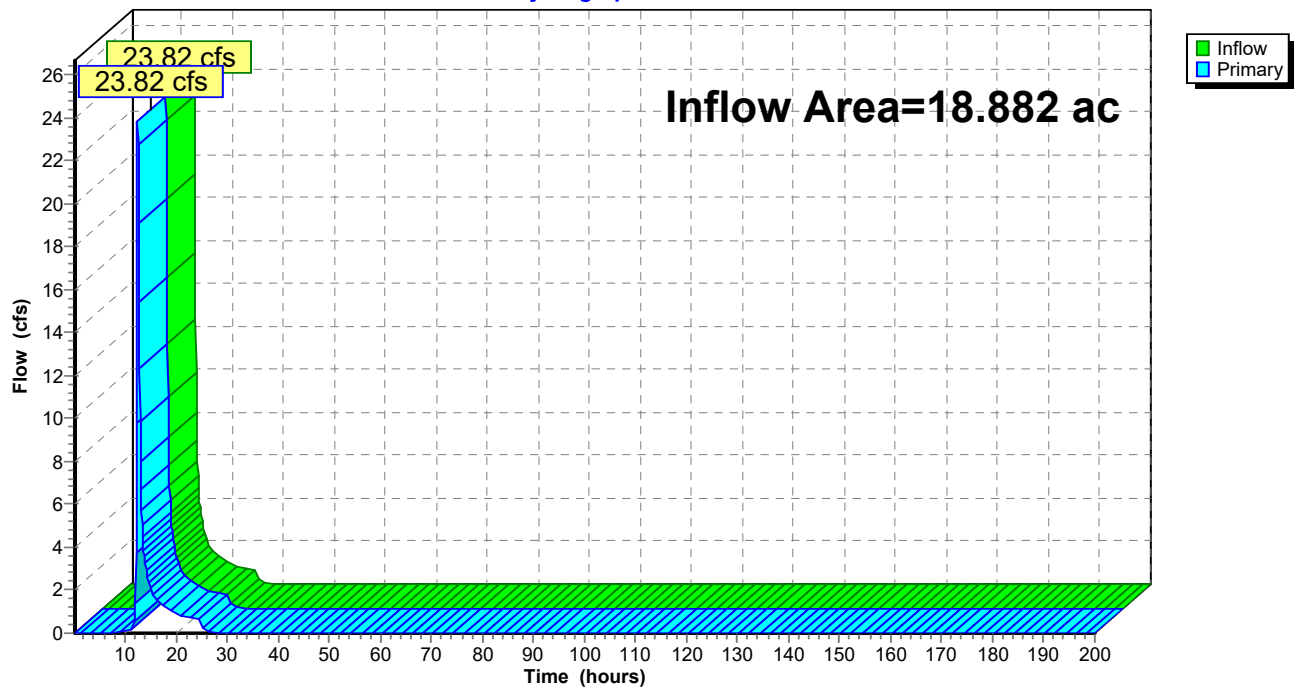
Summary for Link 1L: Pre Ditch POA6

Inflow Area = 18.882 ac, 7.24% Impervious, Inflow Depth = 1.69" for 10-yr event
Inflow = 23.82 cfs @ 12.44 hrs, Volume= 2.657 af
Primary = 23.82 cfs @ 12.44 hrs, Volume= 2.657 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 1L: Pre Ditch POA6

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre Dev. Basin 6 Runoff Area=441,055 sf 0.00% Impervious Runoff Depth=2.28"
Flow Length=1,222' Slope=0.0441 '/' Tc=12.4 min CN=60 Runoff=29.27 cfs 1.927 af

Subcatchment2S: Pre Dev. Basin 8 Runoff Area=289,814 sf 0.00% Impervious Runoff Depth=2.47"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=24.46 cfs 1.368 af

Subcatchment6S: Area 1 Runoff Area=91,613 sf 65.00% Impervious Runoff Depth=4.81"
Tc=15.0 min CN=85 Runoff=12.18 cfs 0.844 af

Reach 1R: Flowpath Downstream Avg. Flow Depth=3.10' Max Vel=1.75 fps Inflow=64.47 cfs 4.139 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=39.15 cfs 4.139 af

Link 1L: Pre Ditch POA6 Inflow=39.15 cfs 4.139 af
Primary=39.15 cfs 4.139 af

Total Runoff Area = 18.882 ac Runoff Volume = 4.139 af Average Runoff Depth = 2.63"
92.76% Pervious = 17.515 ac 7.24% Impervious = 1.367 ac

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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 1S: Pre Dev. Basin 6

Runoff = 29.27 cfs @ 12.05 hrs, Volume= 1.927 af, Depth= 2.28"
Routed to Reach 1R : Flowpath Downstream

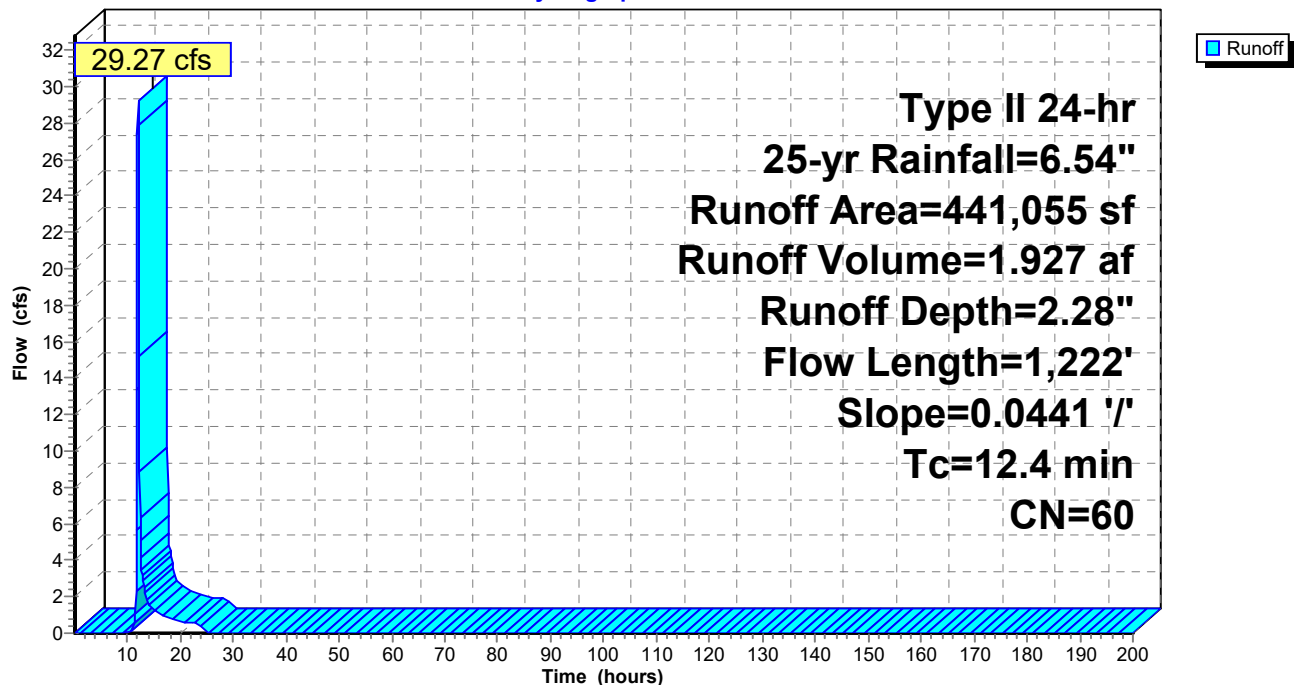
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
401,238	60	Woods, Fair, HSG B
39,817	56	Brush, Fair, HSG B
441,055	60	Weighted Average
441,055		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	1,222	0.0441	1.65		Kirpich Method, Estimated Tc General overland flow k= 2.00

Subcatchment 1S: Pre Dev. Basin 6

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 2S: Pre Dev. Basin 8

Runoff = 24.46 cfs @ 12.01 hrs, Volume= 1.368 af, Depth= 2.47"
Routed to Reach 1R : Flowpath Downstream

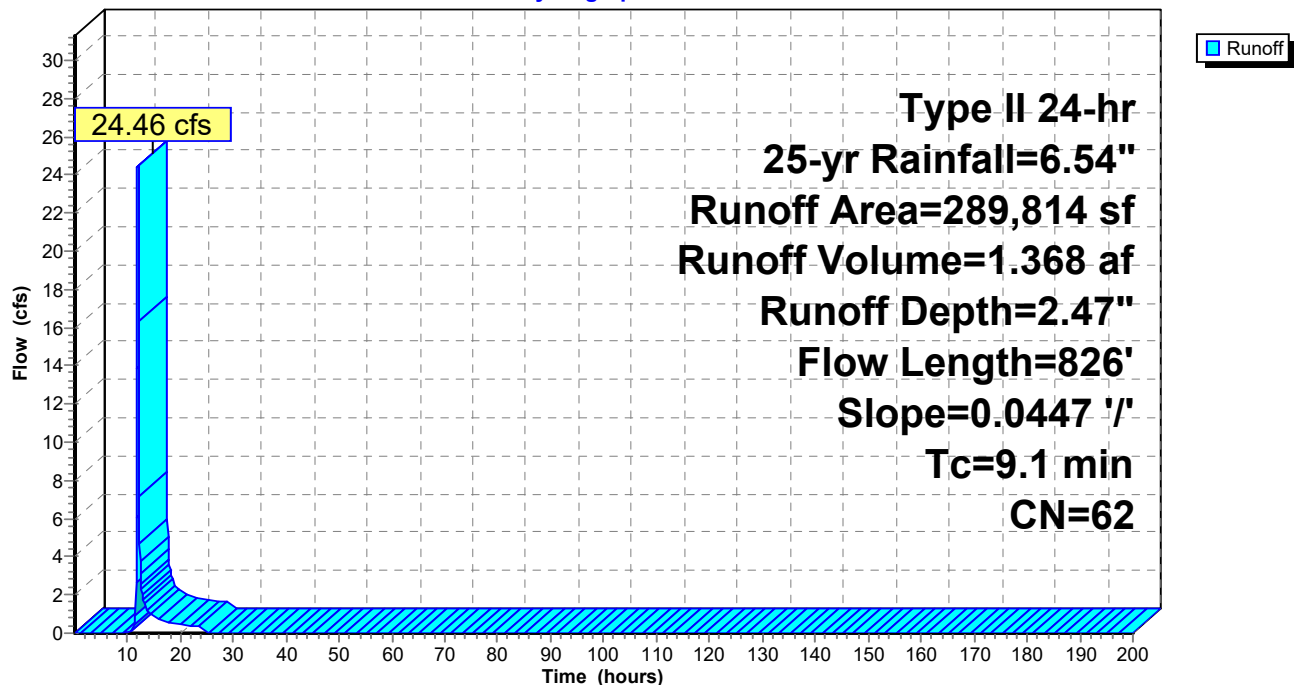
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
58,855	69	50-75% Grass cover, Fair, HSG B
289,814	62	Weighted Average
289,814		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 2S: Pre Dev. Basin 8

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 6S: Area 1

Runoff = 12.18 cfs @ 12.07 hrs, Volume= 0.844 af, Depth= 4.81"
Routed to Reach 1R : Flowpath Downstream

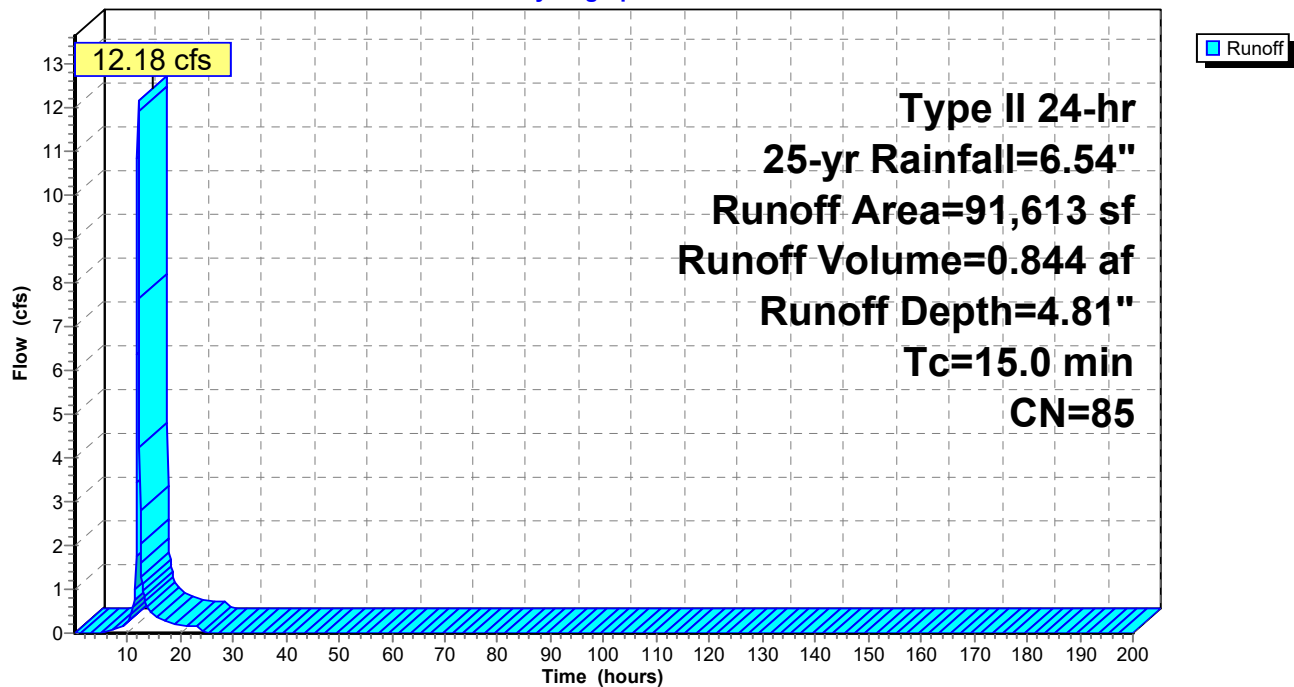
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
91,613	85	1/8 acre lots, 65% imp, HSG B
32,065		35.00% Pervious Area
59,548		65.00% Impervious Area

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

Subcatchment 6S: Area 1

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Reach 1R: Flowpath Downstream

Inflow Area = 18.882 ac, 7.24% Impervious, Inflow Depth = 2.63" for 25-yr event
Inflow = 64.47 cfs @ 12.03 hrs, Volume= 4.139 af
Outflow = 39.15 cfs @ 12.42 hrs, Volume= 4.139 af, Atten= 39%, Lag= 23.2 min
Routed to Link 1L : Pre Ditch POA6

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.75 fps, Min. Travel Time= 14.3 min

Avg. Velocity = 0.31 fps, Avg. Travel Time= 81.5 min

Peak Storage= 34,411 cf @ 12.17 hrs

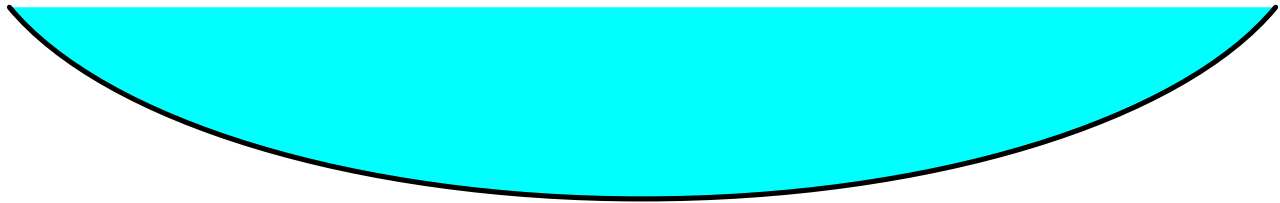
Average Depth at Peak Storage= 3.10' , Surface Width= 14.89'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

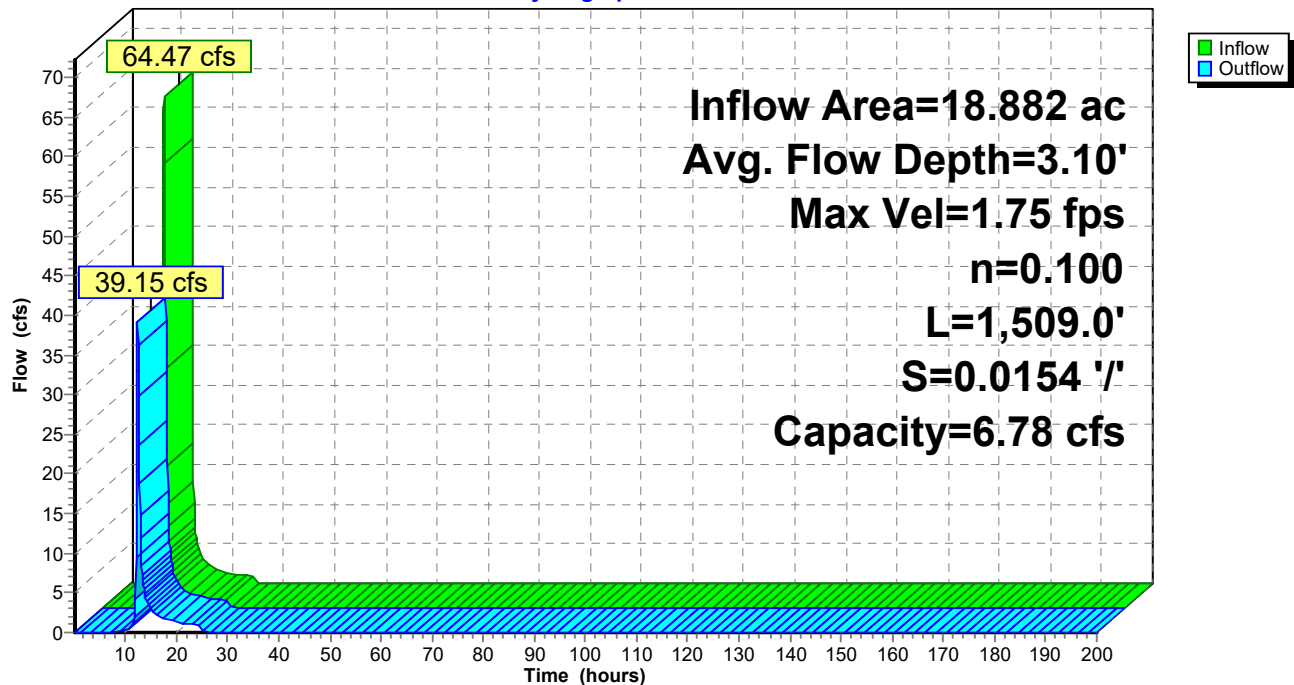
Length= 1,509.0' Slope= 0.0154 '/'

Inlet Invert= 505.43', Outlet Invert= 482.25'



Reach 1R: Flowpath Downstream

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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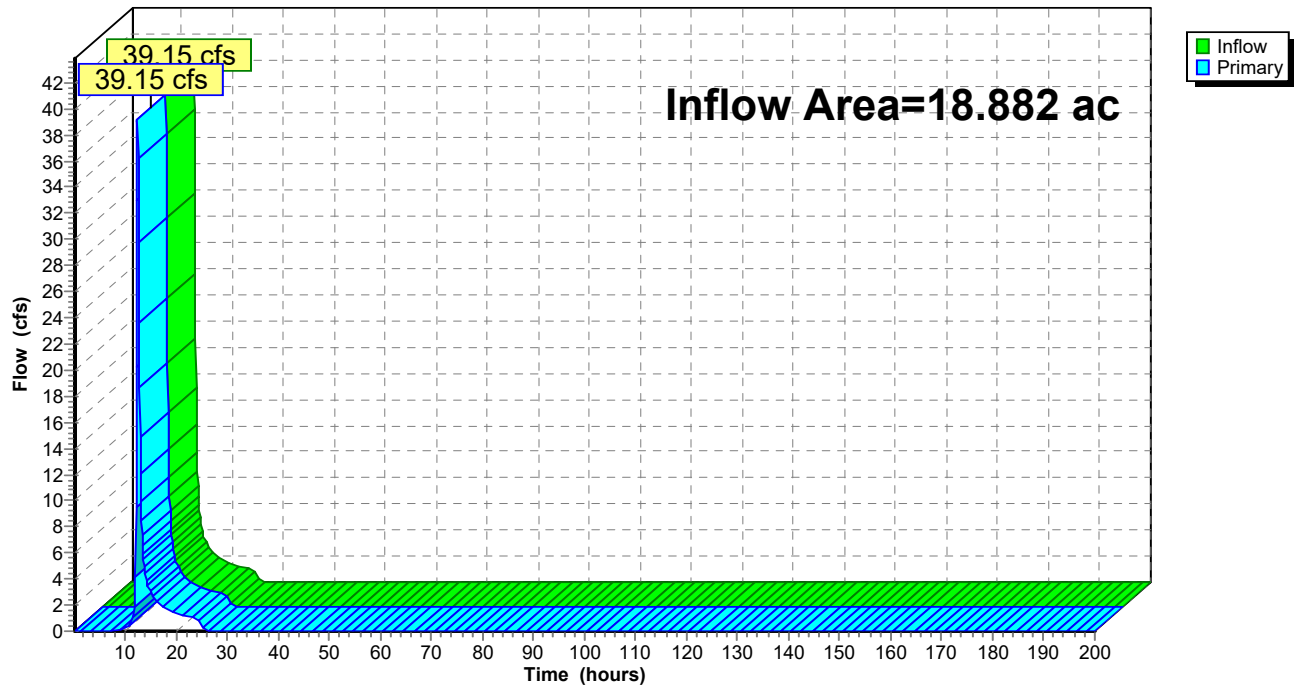
Summary for Link 1L: Pre Ditch POA6

Inflow Area = 18.882 ac, 7.24% Impervious, Inflow Depth = 2.63" for 25-yr event
Inflow = 39.15 cfs @ 12.42 hrs, Volume= 4.139 af
Primary = 39.15 cfs @ 12.42 hrs, Volume= 4.139 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 1L: Pre Ditch POA6

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre Dev. Basin 6 Runoff Area=441,055 sf 0.00% Impervious Runoff Depth=3.46"
Flow Length=1,222' Slope=0.0441 '/' Tc=12.4 min CN=60 Runoff=45.48 cfs 2.921 af

Subcatchment2S: Pre Dev. Basin 8 Runoff Area=289,814 sf 0.00% Impervious Runoff Depth=3.69"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=36.97 cfs 2.045 af

Subcatchment6S: Area 1 Runoff Area=91,613 sf 65.00% Impervious Runoff Depth=6.38"
Tc=15.0 min CN=85 Runoff=15.90 cfs 1.118 af

Reach 1R: Flowpath Downstream Avg. Flow Depth=4.42' Max Vel=1.79 fps Inflow=96.36 cfs 6.083 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=59.04 cfs 6.083 af

Link 1L: Pre Ditch POA6 Inflow=59.04 cfs 6.083 af
Primary=59.04 cfs 6.083 af

Total Runoff Area = 18.882 ac Runoff Volume = 6.083 af Average Runoff Depth = 3.87"
92.76% Pervious = 17.515 ac 7.24% Impervious = 1.367 ac

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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 1S: Pre Dev. Basin 6

Runoff = 45.48 cfs @ 12.05 hrs, Volume= 2.921 af, Depth= 3.46"
Routed to Reach 1R : Flowpath Downstream

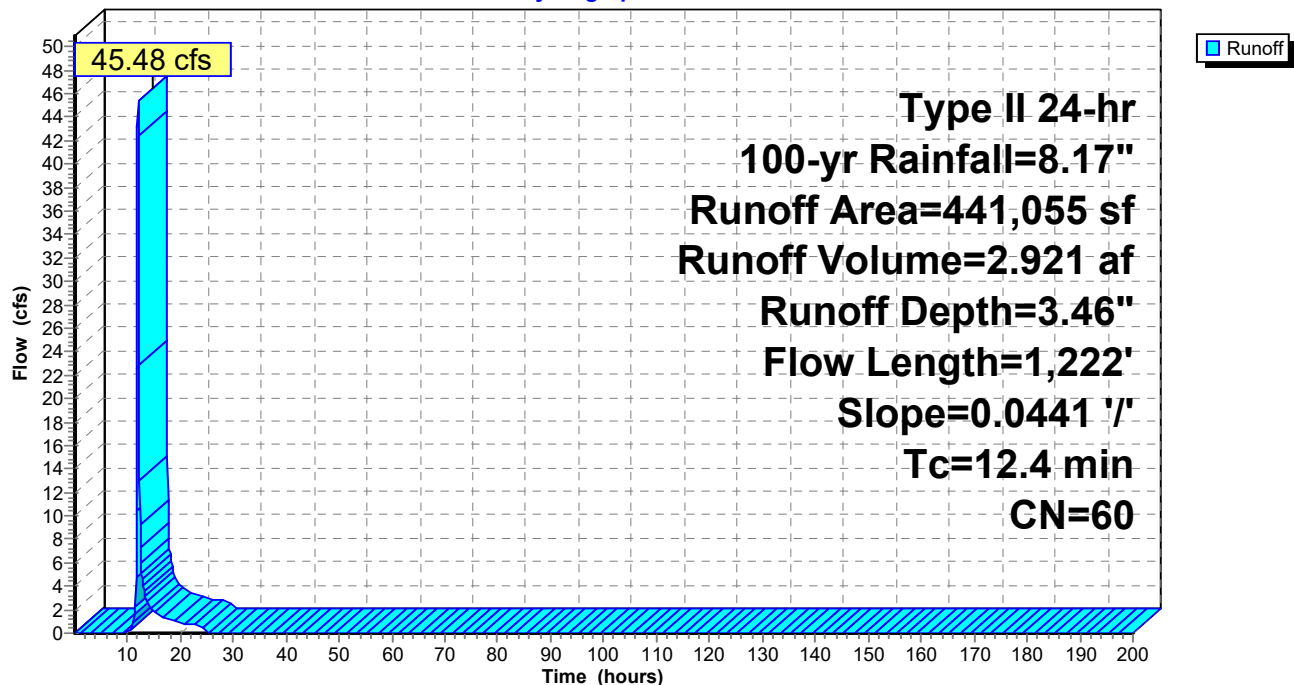
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
401,238	60	Woods, Fair, HSG B
39,817	56	Brush, Fair, HSG B
441,055	60	Weighted Average
441,055		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	1,222	0.0441	1.65		Kirpich Method, Estimated Tc General overland flow k= 2.00

Subcatchment 1S: Pre Dev. Basin 6

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 2S: Pre Dev. Basin 8

Runoff = 36.97 cfs @ 12.00 hrs, Volume= 2.045 af, Depth= 3.69"
Routed to Reach 1R : Flowpath Downstream

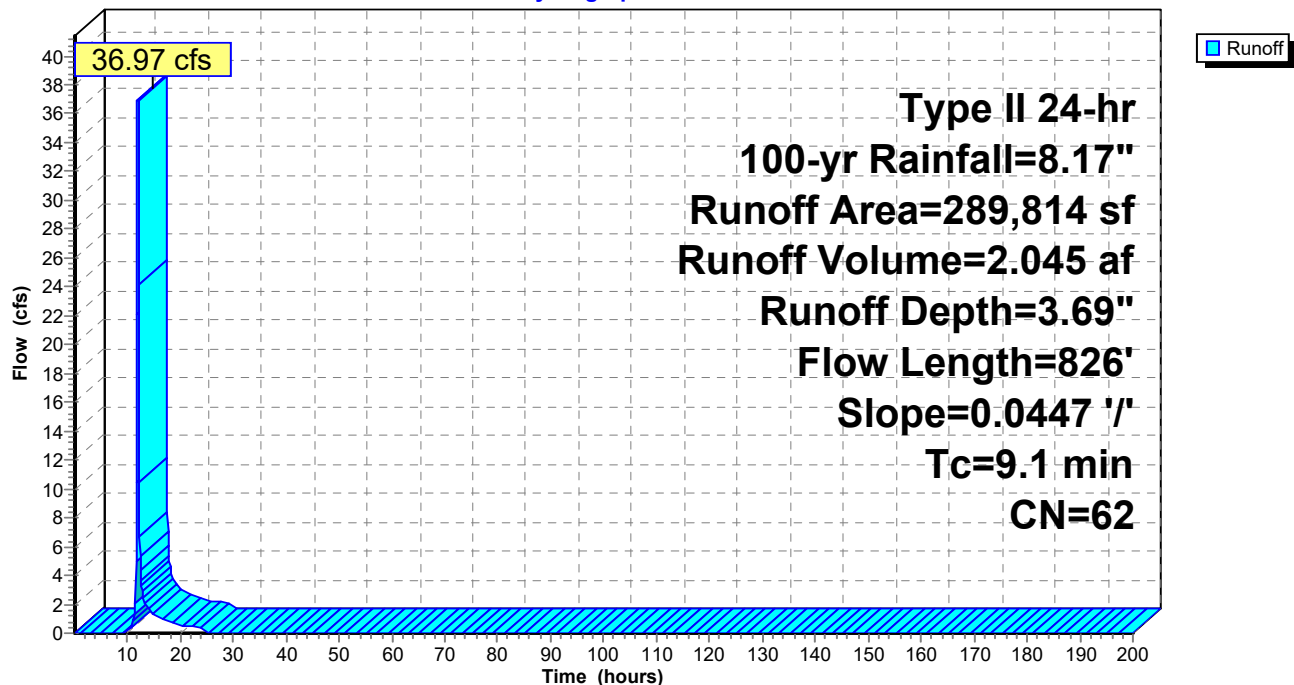
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
58,855	69	50-75% Grass cover, Fair, HSG B
289,814	62	Weighted Average
289,814		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 2S: Pre Dev. Basin 8

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 6S: Area 1

Runoff = 15.90 cfs @ 12.07 hrs, Volume= 1.118 af, Depth= 6.38"
Routed to Reach 1R : Flowpath Downstream

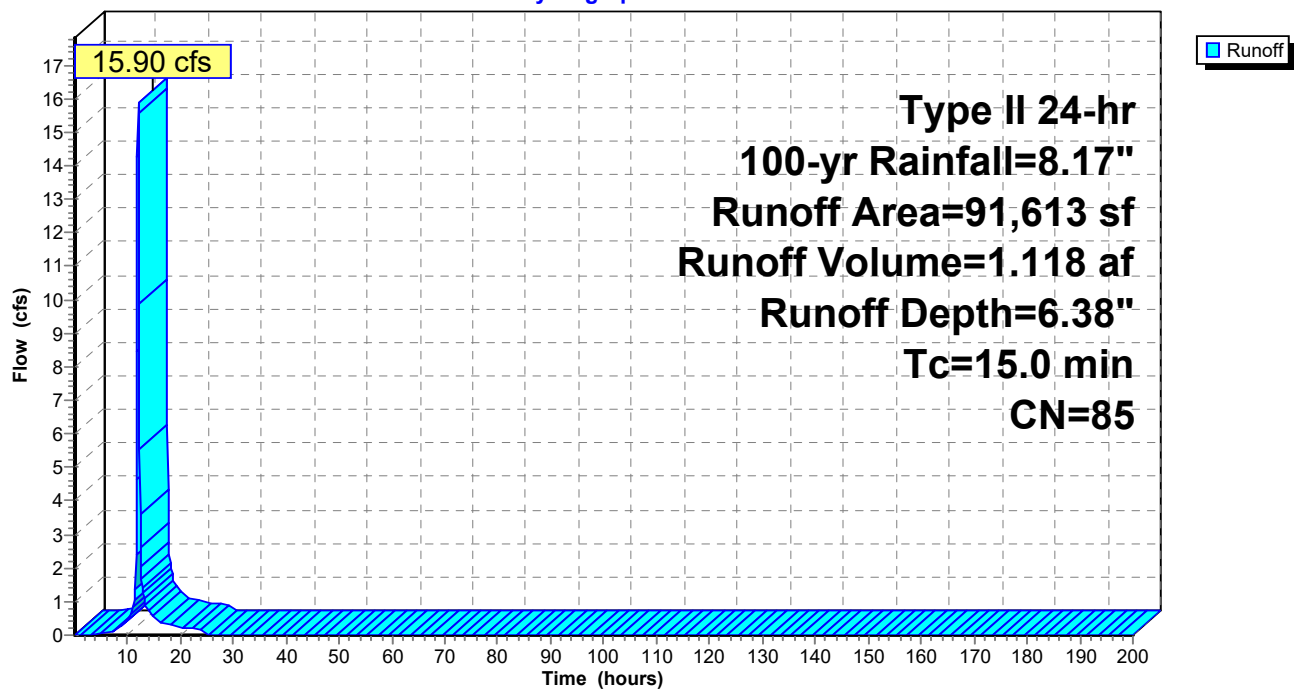
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
91,613	85	1/8 acre lots, 65% imp, HSG B
32,065		35.00% Pervious Area
59,548		65.00% Impervious Area

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

Subcatchment 6S: Area 1

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Reach 1R: Flowpath Downstream

Inflow Area = 18.882 ac, 7.24% Impervious, Inflow Depth = 3.87" for 100-yr event
Inflow = 96.36 cfs @ 12.03 hrs, Volume= 6.083 af
Outflow = 59.04 cfs @ 12.41 hrs, Volume= 6.083 af, Atten= 39%, Lag= 22.7 min
Routed to Link 1L : Pre Ditch POA6

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.79 fps, Min. Travel Time= 14.0 min

Avg. Velocity= 0.34 fps, Avg. Travel Time= 74.5 min

Peak Storage= 50,669 cf @ 12.17 hrs

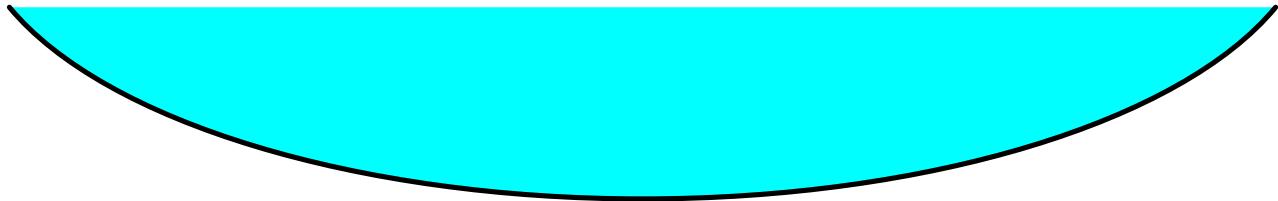
Average Depth at Peak Storage= 4.42' , Surface Width= 17.77'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

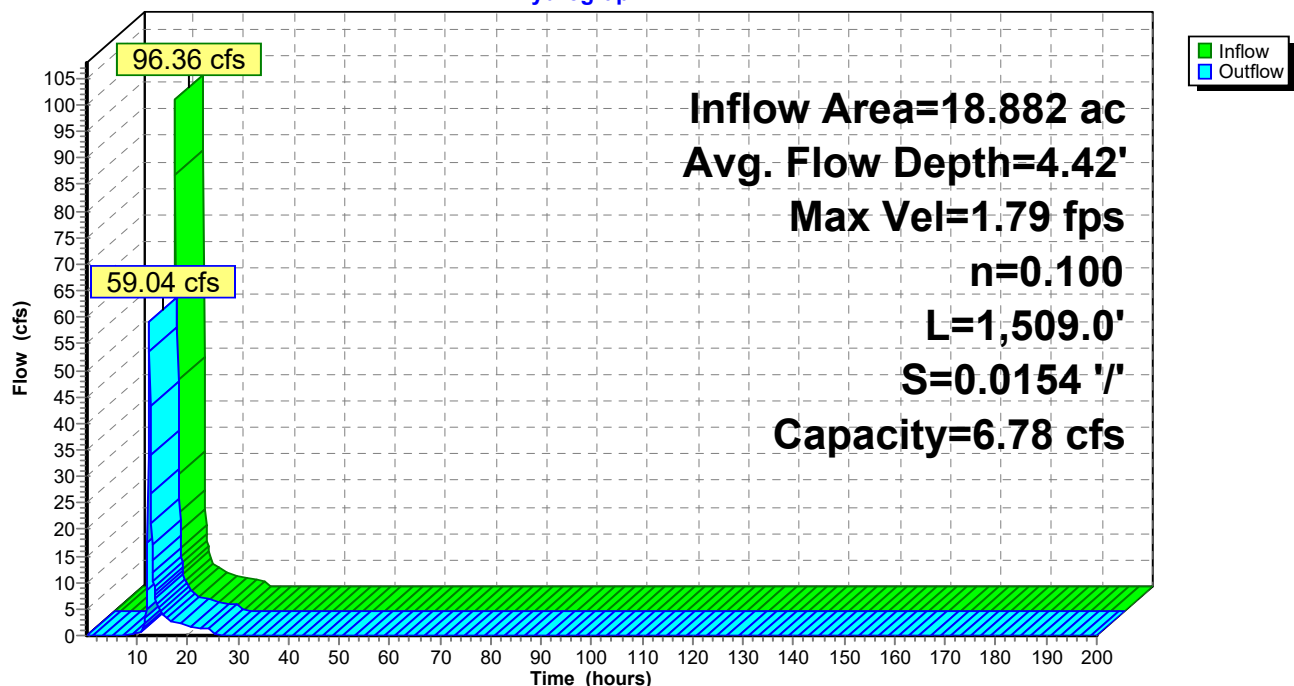
Length= 1,509.0' Slope= 0.0154 '/'

Inlet Invert= 505.43', Outlet Invert= 482.25'



Reach 1R: Flowpath Downstream

Hydrograph



32044.0000 - Ditch Analysis

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Type II 24-hr 100-yr Rainfall=8.17"

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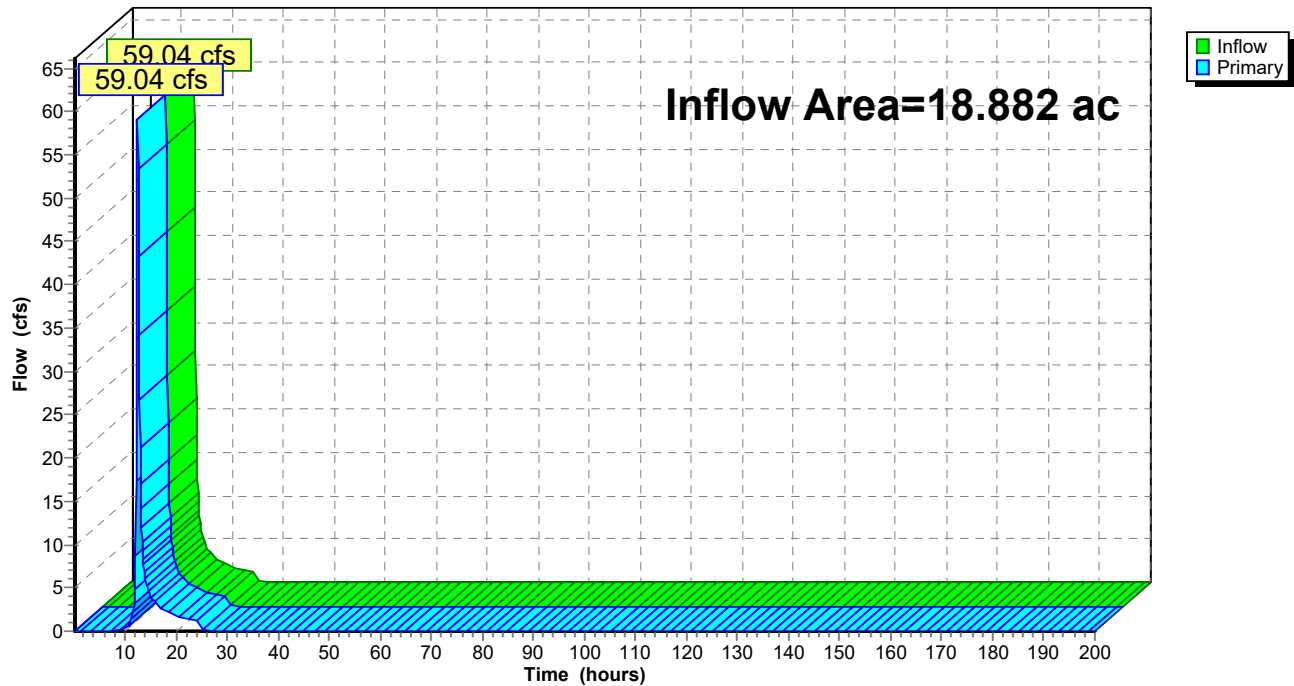
Summary for Link 1L: Pre Ditch POA6

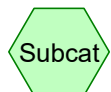
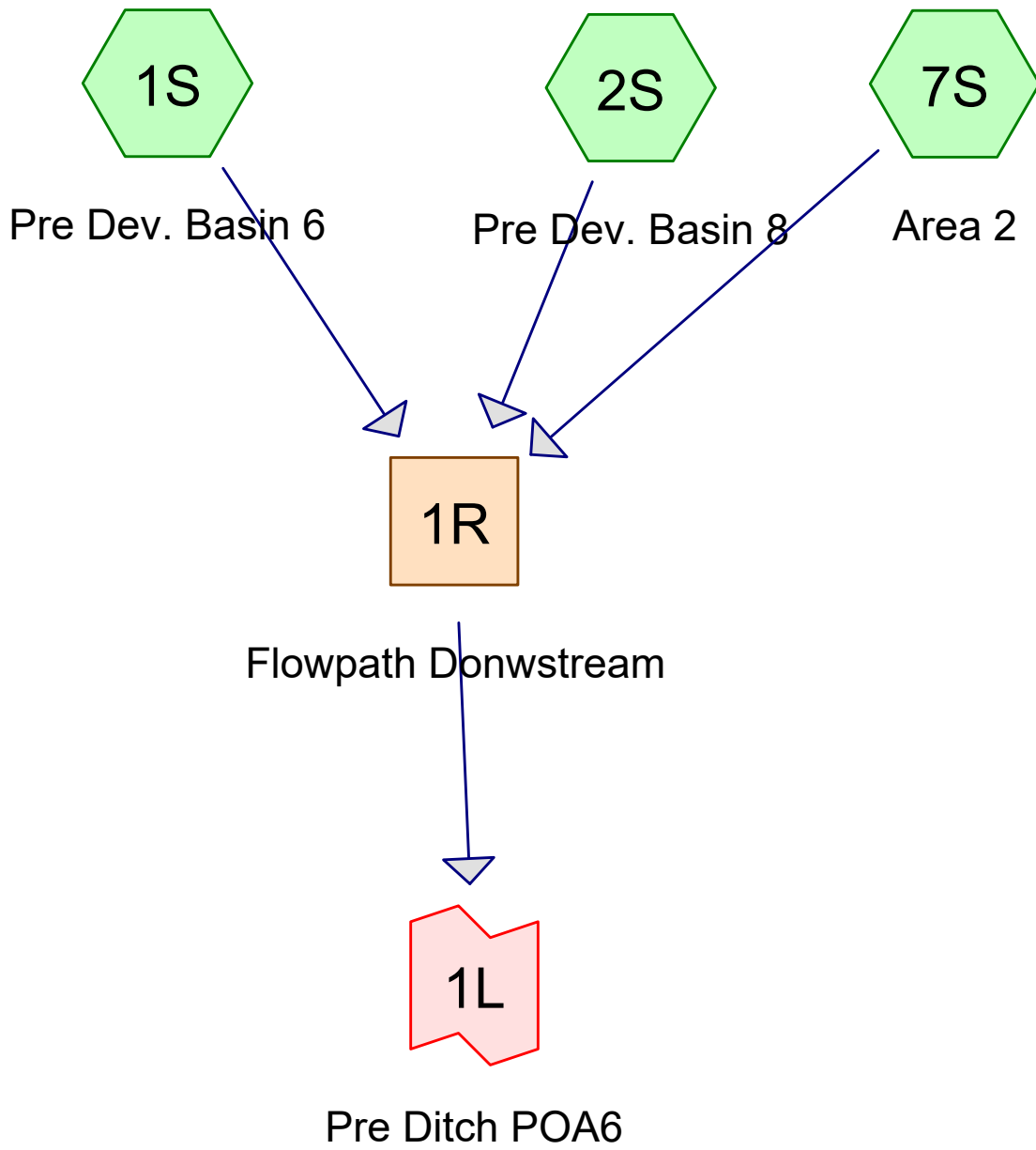
Inflow Area = 18.882 ac, 7.24% Impervious, Inflow Depth = 3.87" for 100-yr event
Inflow = 59.04 cfs @ 12.41 hrs, Volume= 6.083 af
Primary = 59.04 cfs @ 12.41 hrs, Volume= 6.083 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 1L: Pre Ditch POA6

Hydrograph

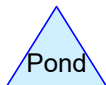




Subcat



Reach



Pond



Link

Routing Diagram for 32044.0000 - Ditch Analysis
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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
6.281	85	1/8 acre lots, 65% imp, HSG B (7S)
1.351	69	50-75% Grass cover, Fair, HSG B (2S)
0.914	56	Brush, Fair, HSG B (1S)
14.513	60	Woods, Fair, HSG B (1S, 2S)
23.060	67	TOTAL AREA

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Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
23.060	HSG B	1S, 2S, 7S
0.000	HSG C	
0.000	HSG D	
0.000	Other	
23.060		TOTAL AREA

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Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	6.281	0.000	0.000	0.000	6.281	1/8 acre lots, 65% imp	7S
0.000	1.351	0.000	0.000	0.000	1.351	50-75% Grass cover, Fair	2S
0.000	0.914	0.000	0.000	0.000	0.914	Brush, Fair	1S
0.000	14.513	0.000	0.000	0.000	14.513	Woods, Fair	1S, 2S
0.000	23.060	0.000	0.000	0.000	23.060	TOTAL AREA	

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Type II 24-hr 10-yr Rainfall=5.17"

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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre Dev. Basin 6 Runoff Area=441,055 sf 0.00% Impervious Runoff Depth=1.40"
Flow Length=1,222' Slope=0.0441 '/' Tc=12.4 min CN=60 Runoff=17.25 cfs 1.183 af

Subcatchment2S: Pre Dev. Basin 8 Runoff Area=289,814 sf 0.00% Impervious Runoff Depth=1.54"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=14.84 cfs 0.856 af

Subcatchment7S: Area 2 Runoff Area=273,607 sf 65.00% Impervious Runoff Depth=3.53"
Tc=15.0 min CN=85 Runoff=27.00 cfs 1.845 af

Reach 1R: Flowpath Downstream Avg. Flow Depth=2.88' Max Vel=1.74 fps Inflow=57.18 cfs 3.884 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=35.69 cfs 3.884 af

Link 1L: Pre Ditch POA6 Inflow=35.69 cfs 3.884 af
Primary=35.69 cfs 3.884 af

Total Runoff Area = 23.060 ac Runoff Volume = 3.884 af Average Runoff Depth = 2.02"
82.29% Pervious = 18.977 ac 17.71% Impervious = 4.083 ac

32044.0000 - Ditch Analysis

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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Subcatchment 1S: Pre Dev. Basin 6

Runoff = 17.25 cfs @ 12.06 hrs, Volume= 1.183 af, Depth= 1.40"
Routed to Reach 1R : Flowpath Downstream

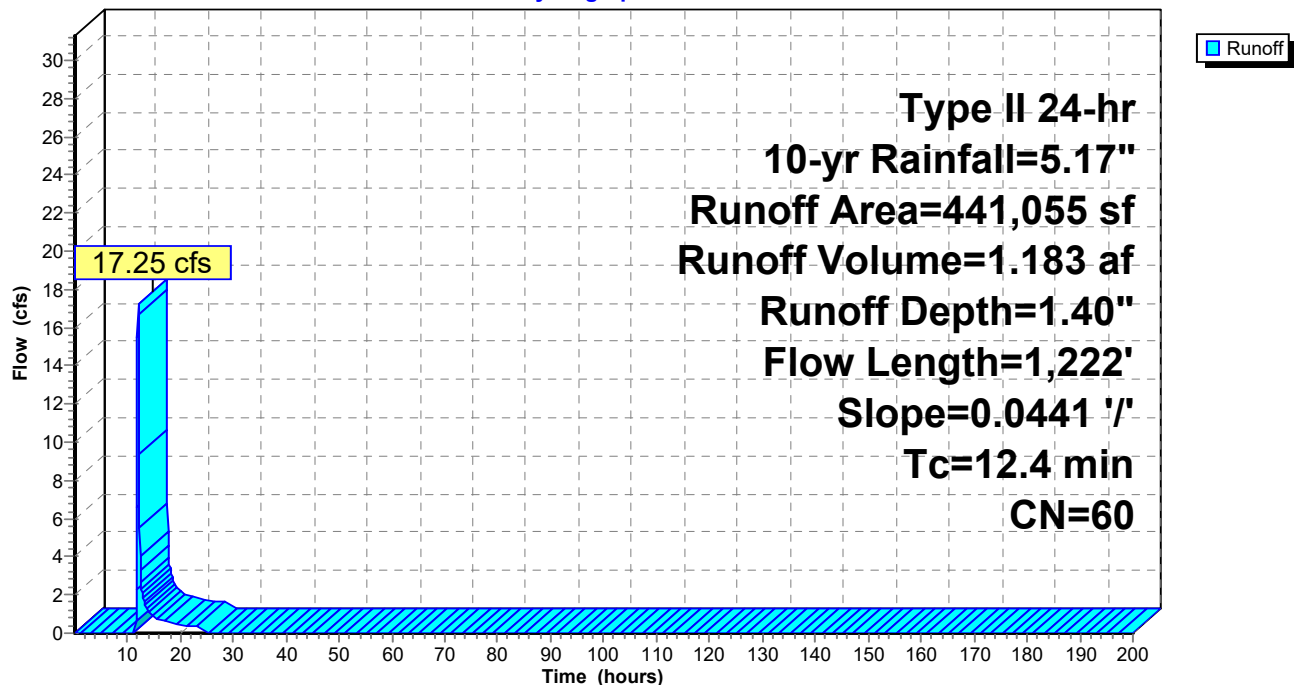
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 10-yr Rainfall=5.17"

Area (sf)	CN	Description
401,238	60	Woods, Fair, HSG B
39,817	56	Brush, Fair, HSG B
441,055	60	Weighted Average
441,055		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	1,222	0.0441	1.65		Kirpich Method, Estimated Tc General overland flow k= 2.00

Subcatchment 1S: Pre Dev. Basin 6

Hydrograph



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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Subcatchment 2S: Pre Dev. Basin 8

Runoff = 14.84 cfs @ 12.01 hrs, Volume= 0.856 af, Depth= 1.54"
Routed to Reach 1R : Flowpath Downstream

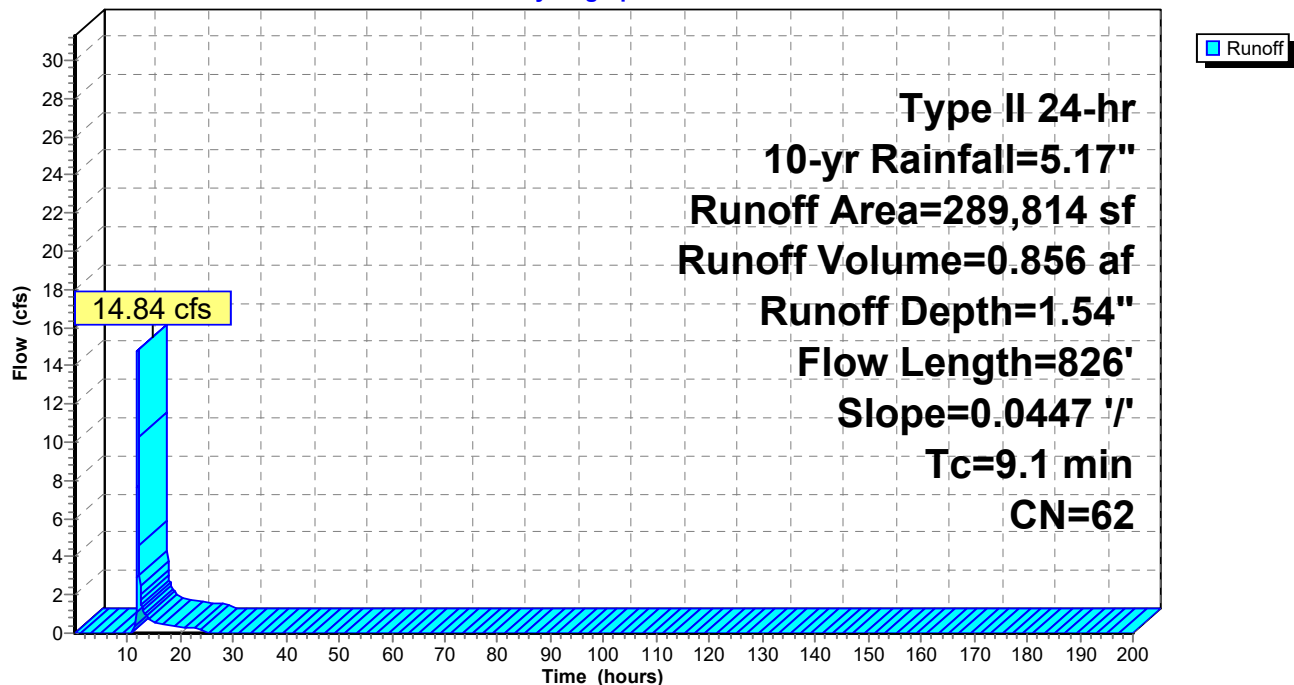
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 10-yr Rainfall=5.17"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
58,855	69	50-75% Grass cover, Fair, HSG B
289,814	62	Weighted Average
289,814		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 2S: Pre Dev. Basin 8

Hydrograph



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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Subcatchment 7S: Area 2

Runoff = 27.00 cfs @ 12.07 hrs, Volume= 1.845 af, Depth= 3.53"
Routed to Reach 1R : Flowpath Downstream

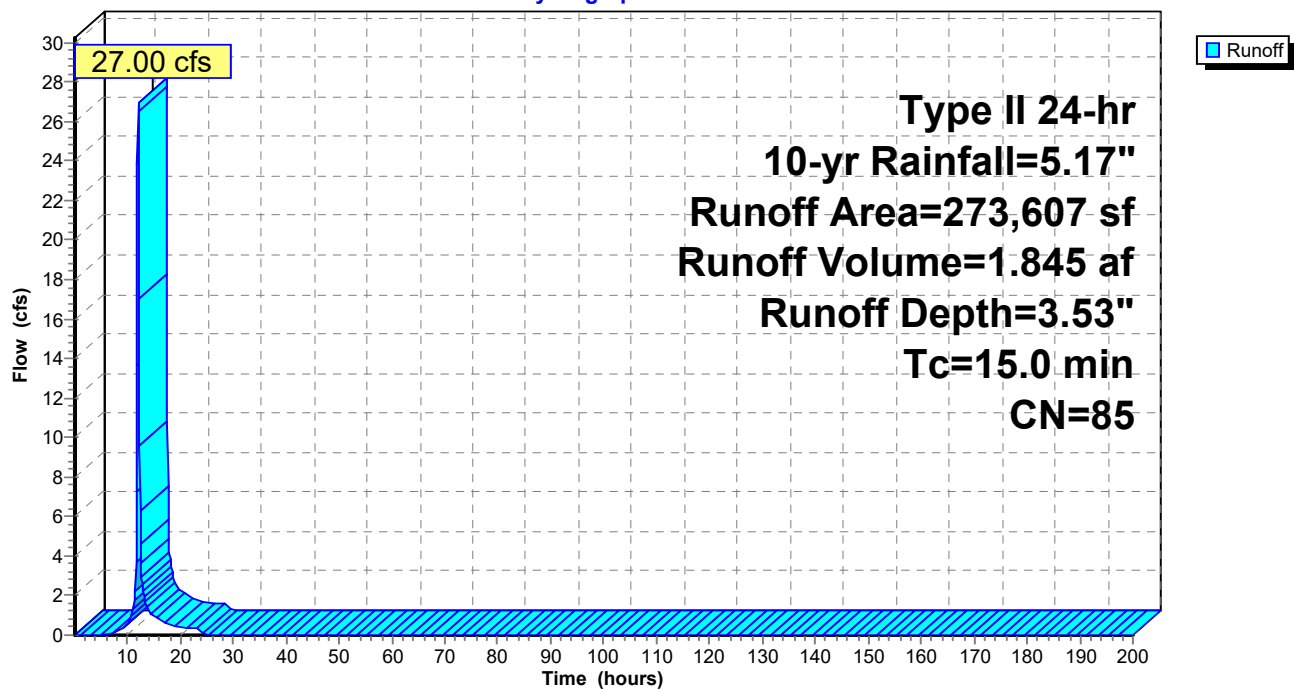
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 10-yr Rainfall=5.17"

Area (sf)	CN	Description
273,607	85	1/8 acre lots, 65% imp, HSG B
95,762		35.00% Pervious Area
177,845		65.00% Impervious Area

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

Subcatchment 7S: Area 2

Hydrograph



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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Reach 1R: Flowpath Downstream

Inflow Area = 23.060 ac, 17.71% Impervious, Inflow Depth = 2.02" for 10-yr event
Inflow = 57.18 cfs @ 12.05 hrs, Volume= 3.884 af
Outflow = 35.69 cfs @ 12.43 hrs, Volume= 3.884 af, Atten= 38%, Lag= 23.2 min
Routed to Link 1L : Pre Ditch POA6

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.74 fps, Min. Travel Time= 14.4 min

Avg. Velocity= 0.31 fps, Avg. Travel Time= 80.8 min

Peak Storage= 31,660 cf @ 12.19 hrs

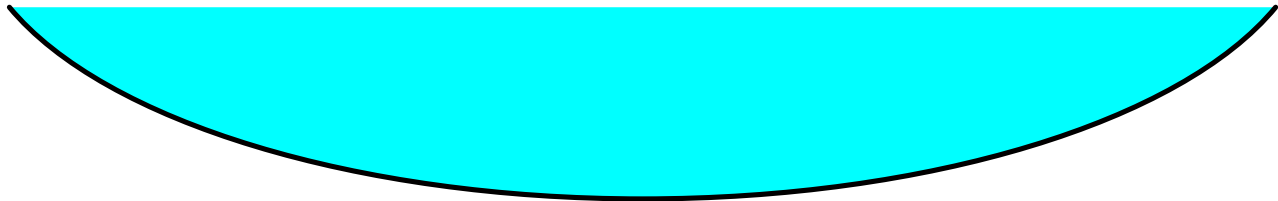
Average Depth at Peak Storage= 2.88', Surface Width= 14.35'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

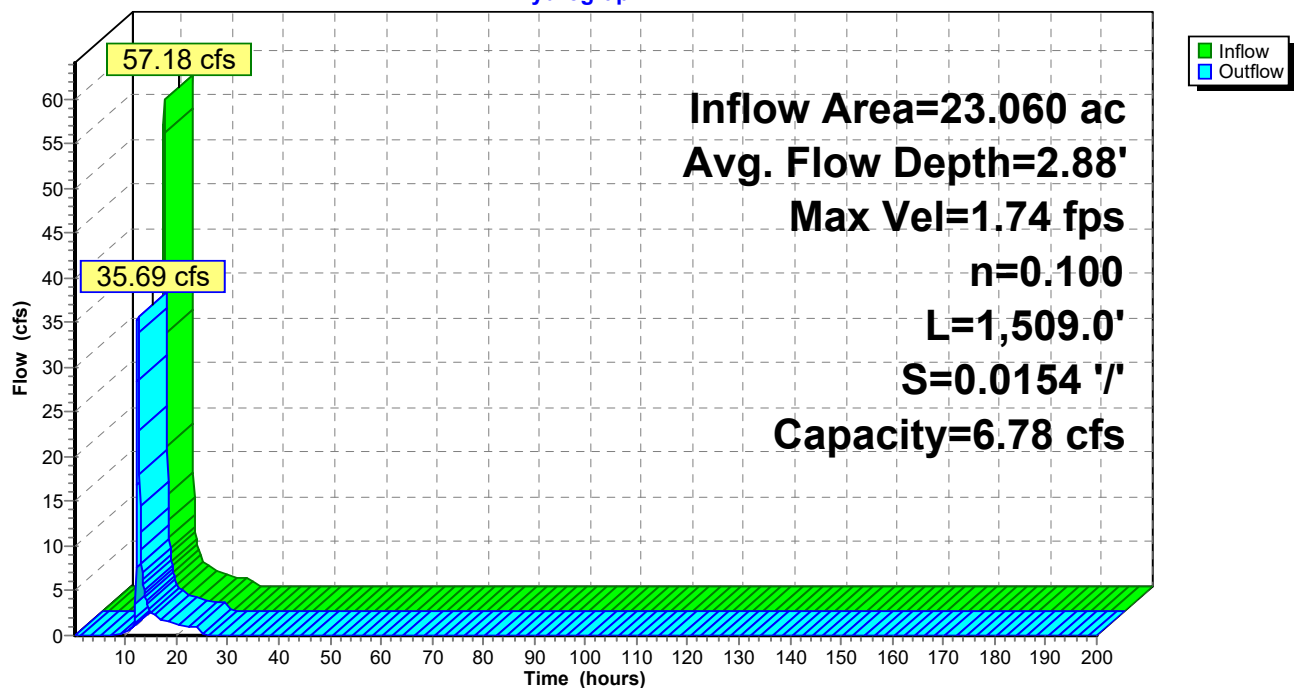
Length= 1,509.0' Slope= 0.0154 '/'

Inlet Invert= 505.43', Outlet Invert= 482.25'



Reach 1R: Flowpath Downstream

Hydrograph



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Type II 24-hr 10-yr Rainfall=5.17"

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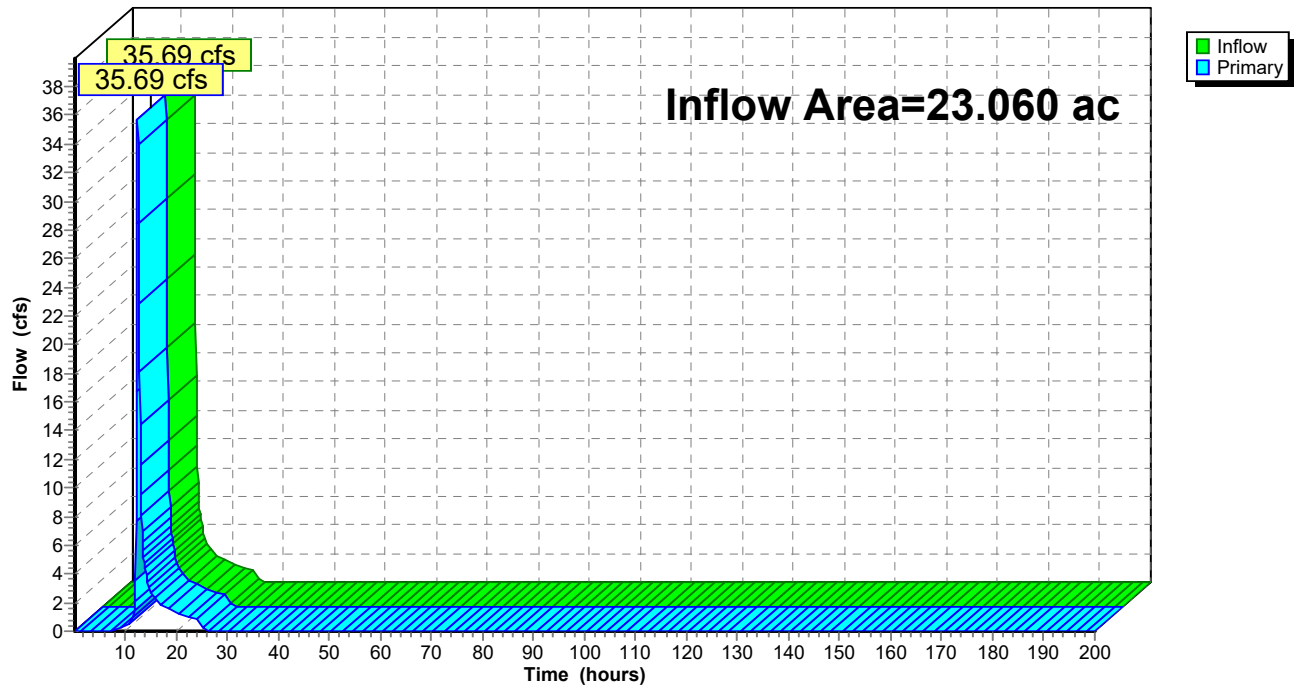
Summary for Link 1L: Pre Ditch POA6

Inflow Area = 23.060 ac, 17.71% Impervious, Inflow Depth = 2.02" for 10-yr event
Inflow = 35.69 cfs @ 12.43 hrs, Volume= 3.884 af
Primary = 35.69 cfs @ 12.43 hrs, Volume= 3.884 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 1L: Pre Ditch POA6

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre Dev. Basin 6 Runoff Area=441,055 sf 0.00% Impervious Runoff Depth=2.28"
Flow Length=1,222' Slope=0.0441 '/' Tc=12.4 min CN=60 Runoff=29.27 cfs 1.927 af

Subcatchment2S: Pre Dev. Basin 8 Runoff Area=289,814 sf 0.00% Impervious Runoff Depth=2.47"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=24.46 cfs 1.368 af

Subcatchment7S: Area 2 Runoff Area=273,607 sf 65.00% Impervious Runoff Depth=4.81"
Tc=15.0 min CN=85 Runoff=36.37 cfs 2.520 af

Reach 1R: Flowpath Downstream Avg. Flow Depth=4.16' Max Vel=1.79 fps Inflow=87.59 cfs 5.815 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=55.10 cfs 5.815 af

Link 1L: Pre Ditch POA6 Inflow=55.10 cfs 5.815 af
Primary=55.10 cfs 5.815 af

Total Runoff Area = 23.060 ac Runoff Volume = 5.815 af Average Runoff Depth = 3.03"
82.29% Pervious = 18.977 ac 17.71% Impervious = 4.083 ac

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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 1S: Pre Dev. Basin 6

Runoff = 29.27 cfs @ 12.05 hrs, Volume= 1.927 af, Depth= 2.28"
Routed to Reach 1R : Flowpath Downstream

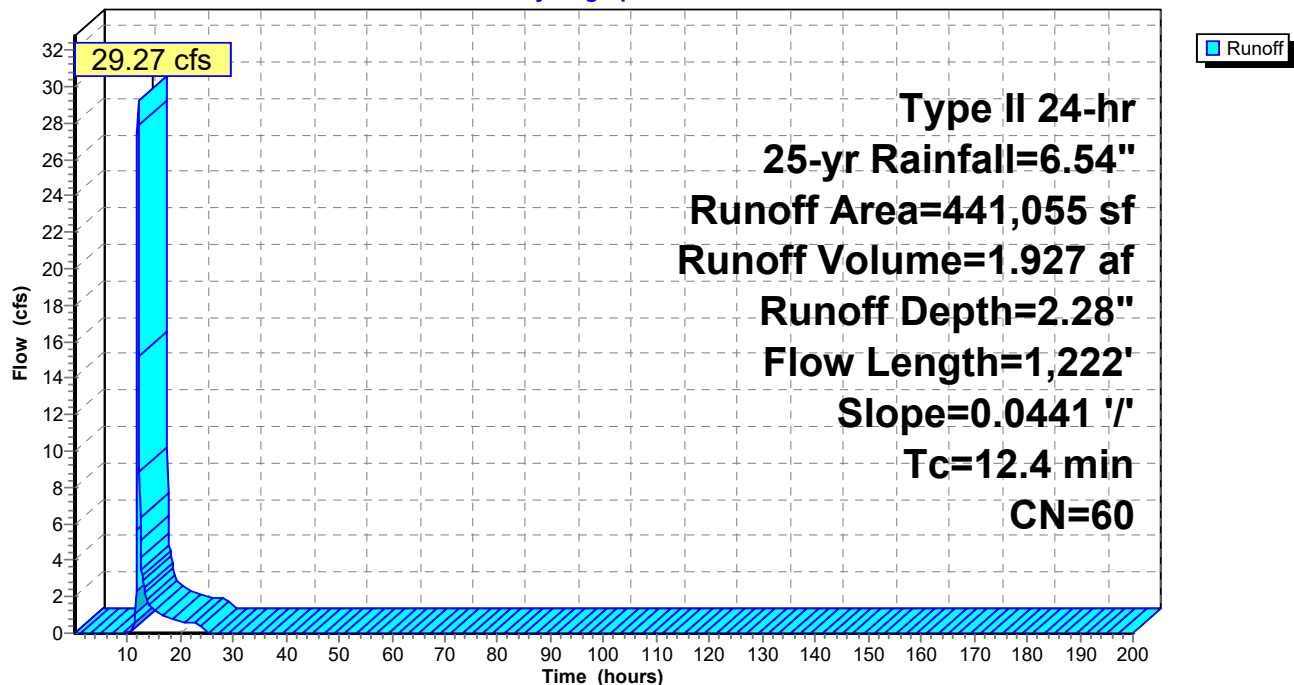
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
401,238	60	Woods, Fair, HSG B
39,817	56	Brush, Fair, HSG B
441,055	60	Weighted Average
441,055		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	1,222	0.0441	1.65		Kirpich Method, Estimated Tc General overland flow k= 2.00

Subcatchment 1S: Pre Dev. Basin 6

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 2S: Pre Dev. Basin 8

Runoff = 24.46 cfs @ 12.01 hrs, Volume= 1.368 af, Depth= 2.47"
Routed to Reach 1R : Flowpath Downstream

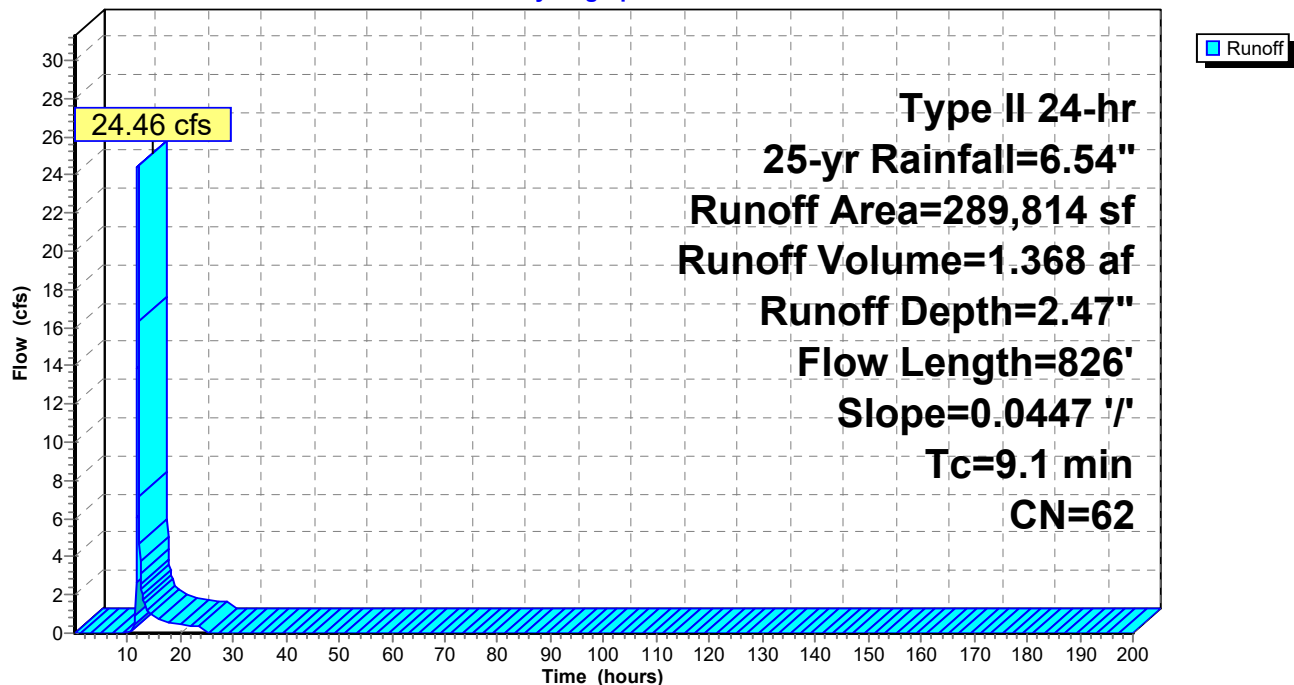
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
58,855	69	50-75% Grass cover, Fair, HSG B
289,814	62	Weighted Average
289,814		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 2S: Pre Dev. Basin 8

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 7S: Area 2

Runoff = 36.37 cfs @ 12.07 hrs, Volume= 2.520 af, Depth= 4.81"
Routed to Reach 1R : Flowpath Downstream

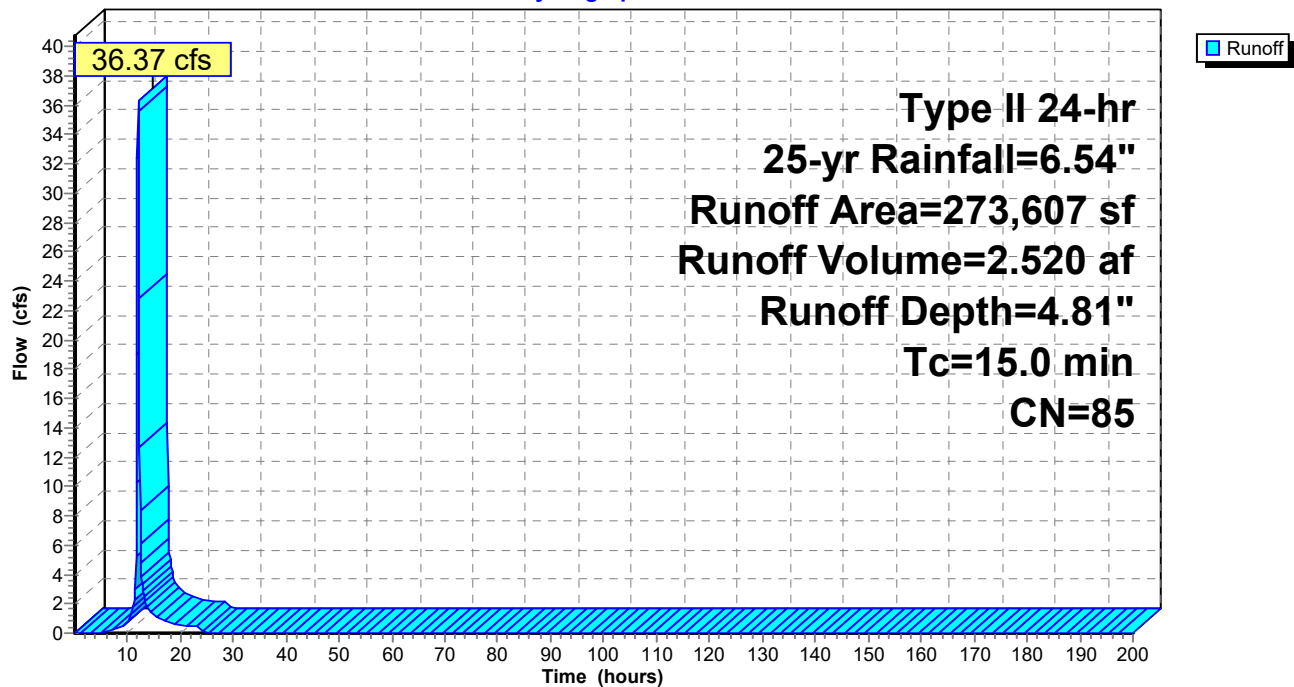
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
273,607	85	1/8 acre lots, 65% imp, HSG B
95,762		35.00% Pervious Area
177,845		65.00% Impervious Area

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

Subcatchment 7S: Area 2

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Reach 1R: Flowpath Downstream

Inflow Area = 23.060 ac, 17.71% Impervious, Inflow Depth = 3.03" for 25-yr event
Inflow = 87.59 cfs @ 12.04 hrs, Volume= 5.815 af
Outflow = 55.10 cfs @ 12.42 hrs, Volume= 5.815 af, Atten= 37%, Lag= 22.8 min
Routed to Link 1L : Pre Ditch POA6

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.79 fps, Min. Travel Time= 14.1 min

Avg. Velocity = 0.34 fps, Avg. Travel Time= 73.6 min

Peak Storage= 47,499 cf @ 12.18 hrs

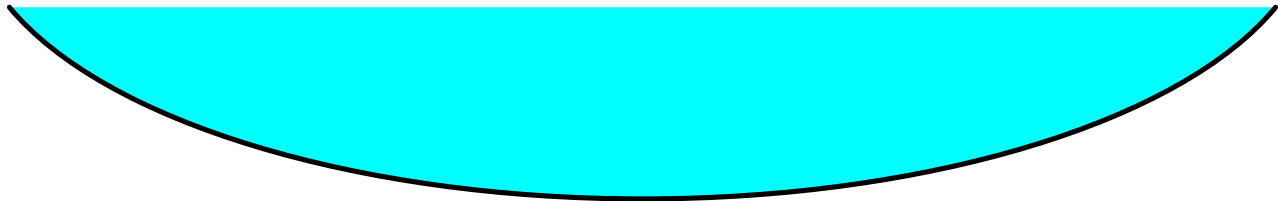
Average Depth at Peak Storage= 4.16' , Surface Width= 17.25'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

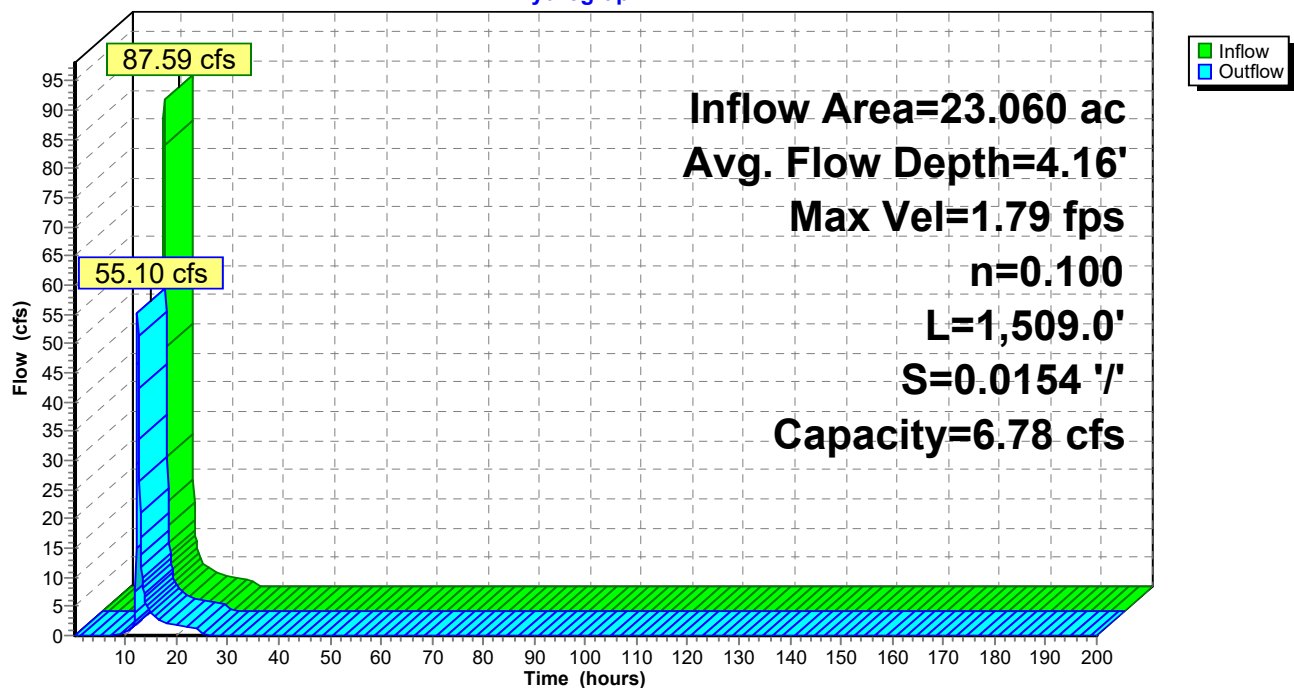
Length= 1,509.0' Slope= 0.0154 '/'

Inlet Invert= 505.43', Outlet Invert= 482.25'



Reach 1R: Flowpath Downstream

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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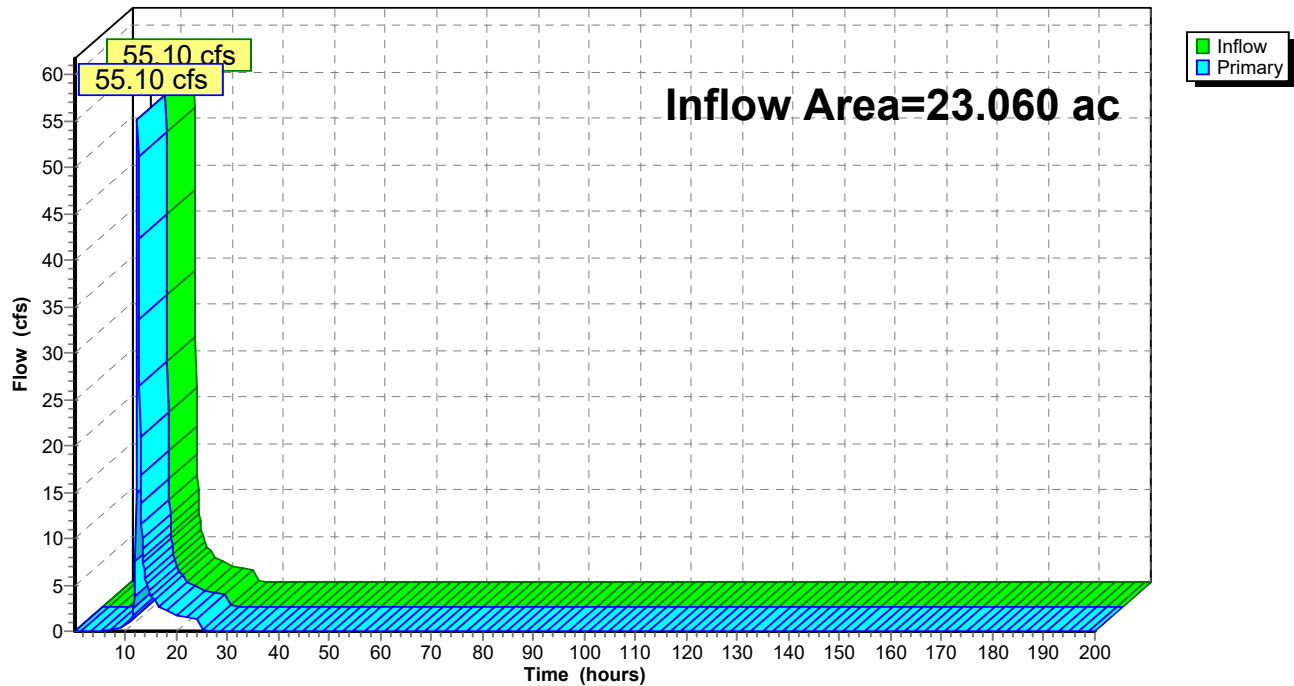
Summary for Link 1L: Pre Ditch POA6

Inflow Area = 23.060 ac, 17.71% Impervious, Inflow Depth = 3.03" for 25-yr event
Inflow = 55.10 cfs @ 12.42 hrs, Volume= 5.815 af
Primary = 55.10 cfs @ 12.42 hrs, Volume= 5.815 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 1L: Pre Ditch POA6

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre Dev. Basin 6 Runoff Area=441,055 sf 0.00% Impervious Runoff Depth=3.46"
Flow Length=1,222' Slope=0.0441 '/' Tc=12.4 min CN=60 Runoff=45.48 cfs 2.921 af

Subcatchment2S: Pre Dev. Basin 8 Runoff Area=289,814 sf 0.00% Impervious Runoff Depth=3.69"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=36.97 cfs 2.045 af

Subcatchment7S: Area 2 Runoff Area=273,607 sf 65.00% Impervious Runoff Depth=6.38"
Tc=15.0 min CN=85 Runoff=47.49 cfs 3.338 af

Reach 1R: Flowpath Downstream Avg. Flow Depth=5.80' Max Vel=1.82 fps Inflow=126.46 cfs 8.304 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=79.88 cfs 8.304 af

Link 1L: Pre Ditch POA6 Inflow=79.88 cfs 8.304 af
Primary=79.88 cfs 8.304 af

Total Runoff Area = 23.060 ac Runoff Volume = 8.304 af Average Runoff Depth = 4.32"
82.29% Pervious = 18.977 ac 17.71% Impervious = 4.083 ac

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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 1S: Pre Dev. Basin 6

Runoff = 45.48 cfs @ 12.05 hrs, Volume= 2.921 af, Depth= 3.46"
Routed to Reach 1R : Flowpath Downstream

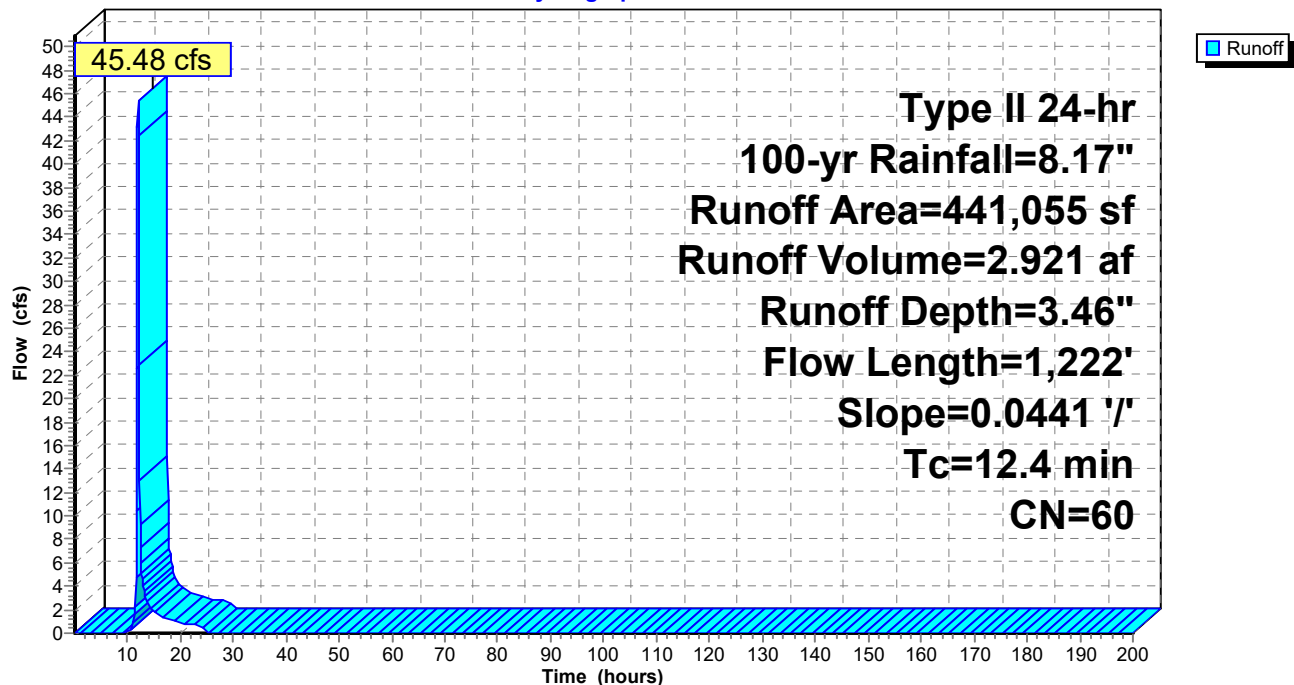
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
401,238	60	Woods, Fair, HSG B
39,817	56	Brush, Fair, HSG B
441,055	60	Weighted Average
441,055		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	1,222	0.0441	1.65		Kirpich Method, Estimated Tc General overland flow k= 2.00

Subcatchment 1S: Pre Dev. Basin 6

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 2S: Pre Dev. Basin 8

Runoff = 36.97 cfs @ 12.00 hrs, Volume= 2.045 af, Depth= 3.69"
Routed to Reach 1R : Flowpath Downstream

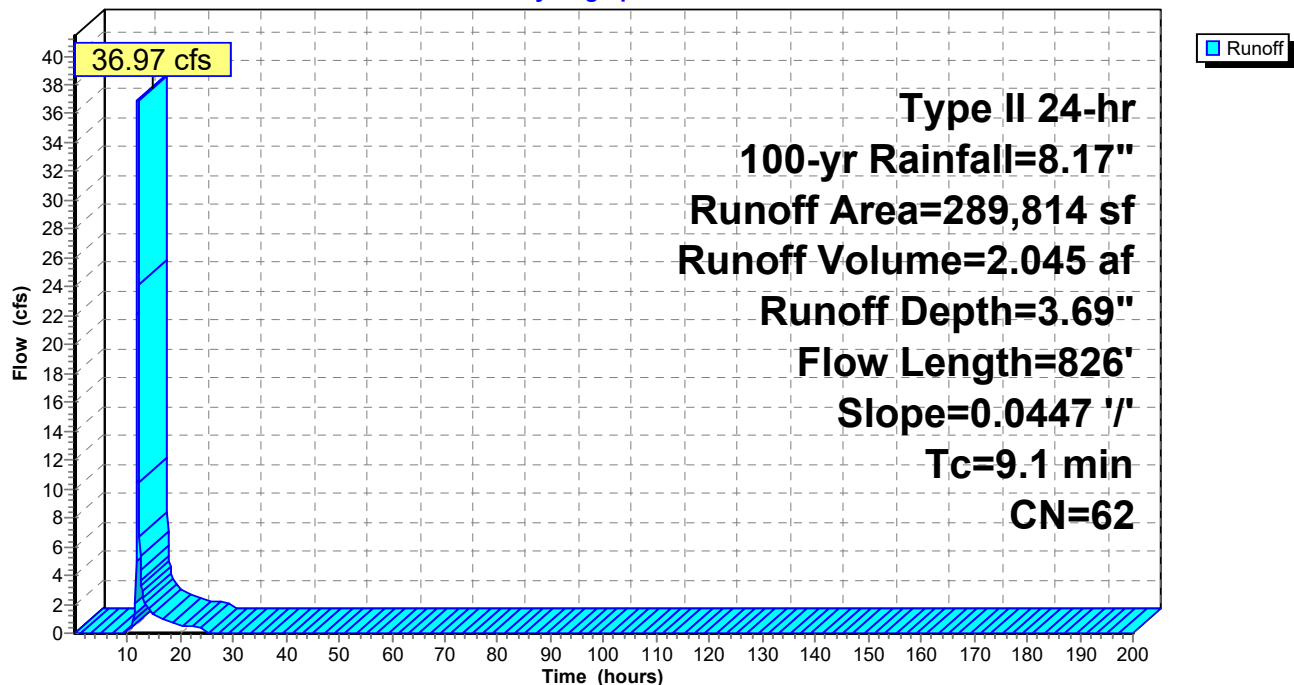
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
58,855	69	50-75% Grass cover, Fair, HSG B
289,814	62	Weighted Average
289,814		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 2S: Pre Dev. Basin 8

Hydrograph



32044.0000 - Ditch Analysis

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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 7S: Area 2

Runoff = 47.49 cfs @ 12.07 hrs, Volume= 3.338 af, Depth= 6.38"
Routed to Reach 1R : Flowpath Downstream

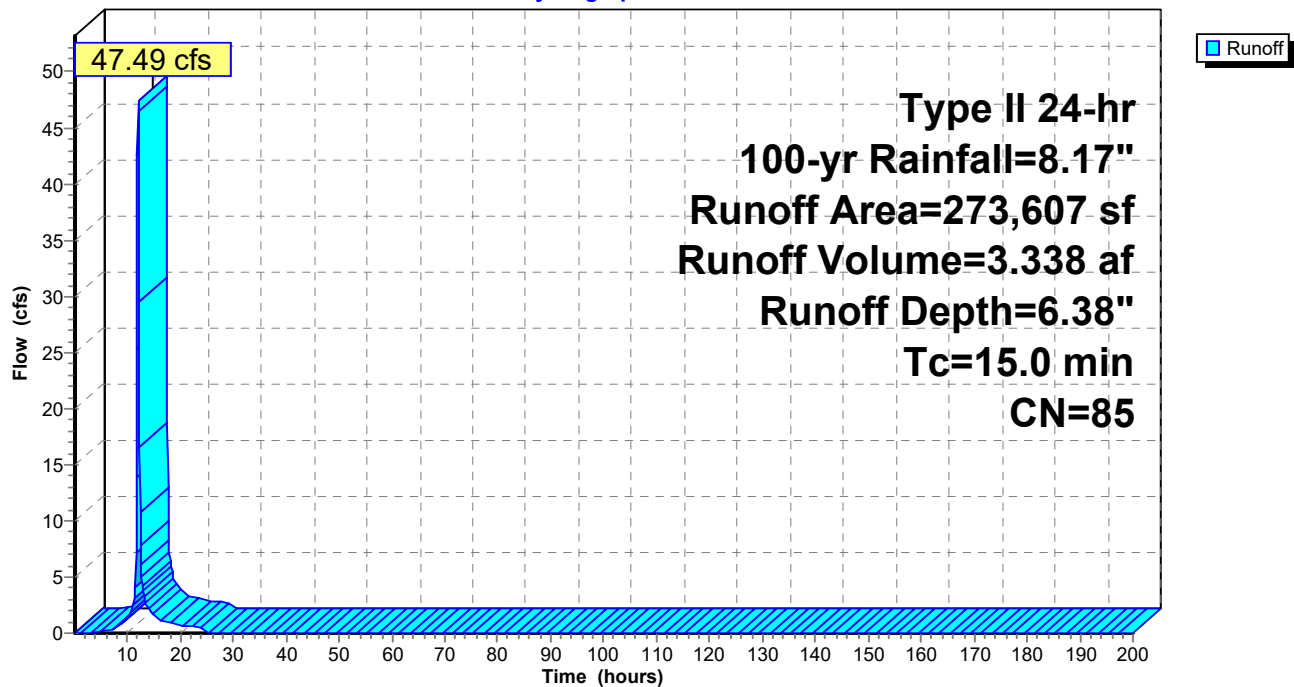
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
273,607	85	1/8 acre lots, 65% imp, HSG B
95,762		35.00% Pervious Area
177,845		65.00% Impervious Area

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

Subcatchment 7S: Area 2

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Reach 1R: Flowpath Downstream

Inflow Area = 23.060 ac, 17.71% Impervious, Inflow Depth = 4.32" for 100-yr event
Inflow = 126.46 cfs @ 12.03 hrs, Volume= 8.304 af
Outflow = 79.88 cfs @ 12.41 hrs, Volume= 8.304 af, Atten= 37%, Lag= 22.5 min
Routed to Link 1L : Pre Ditch POA6

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.82 fps, Min. Travel Time= 13.9 min

Avg. Velocity= 0.37 fps, Avg. Travel Time= 67.6 min

Peak Storage= 67,706 cf @ 12.18 hrs

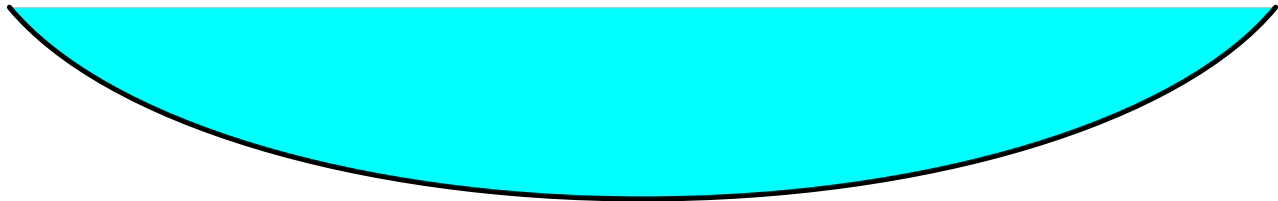
Average Depth at Peak Storage= 5.80' , Surface Width= 20.36'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

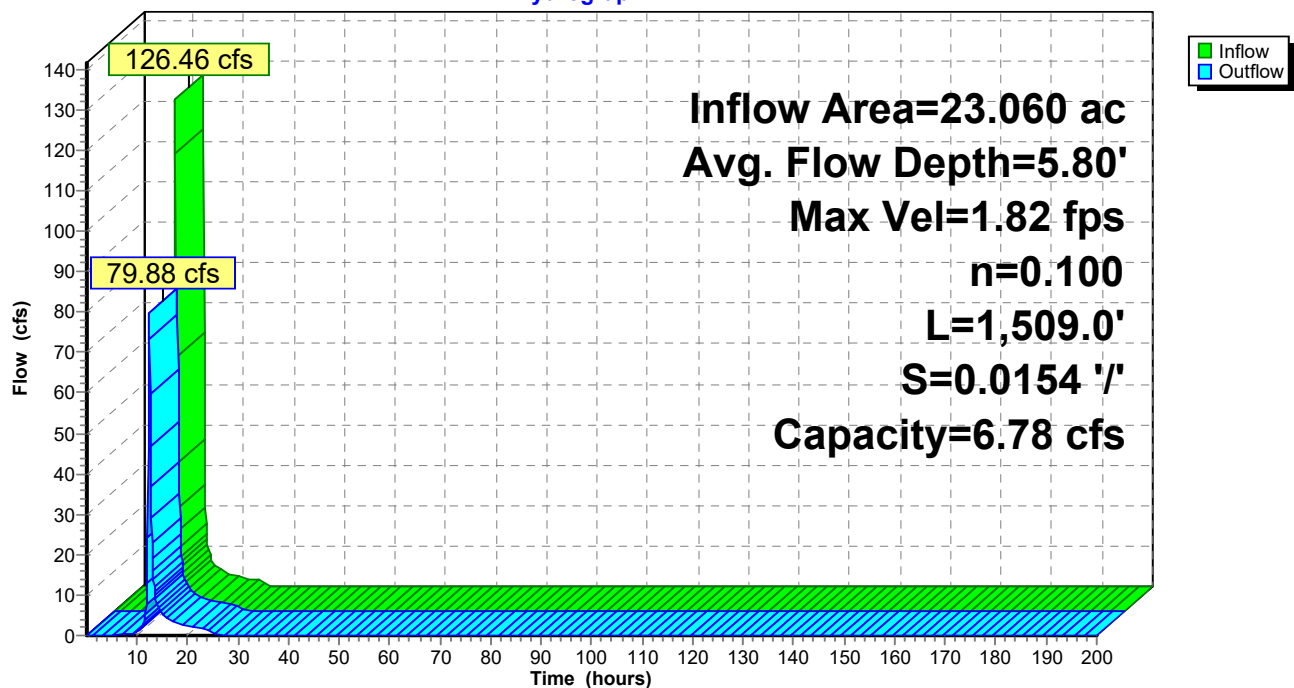
Length= 1,509.0' Slope= 0.0154 '/'

Inlet Invert= 505.43', Outlet Invert= 482.25'



Reach 1R: Flowpath Downstream

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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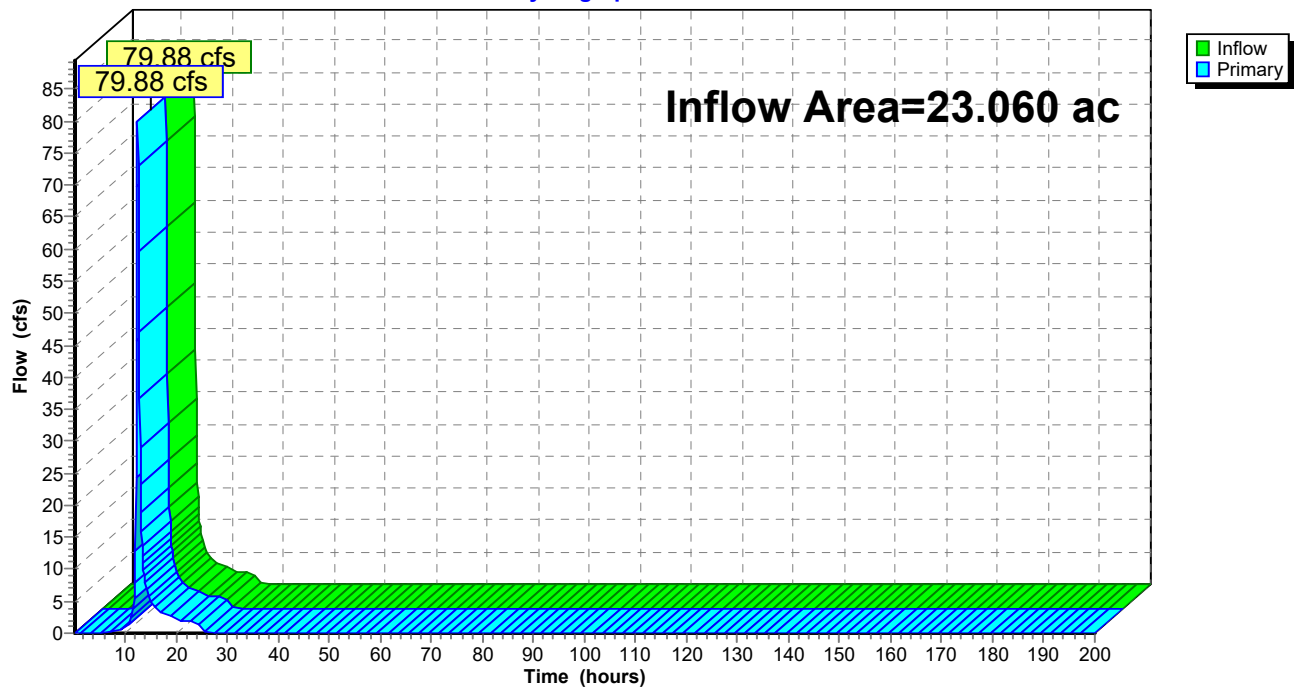
Summary for Link 1L: Pre Ditch POA6

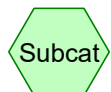
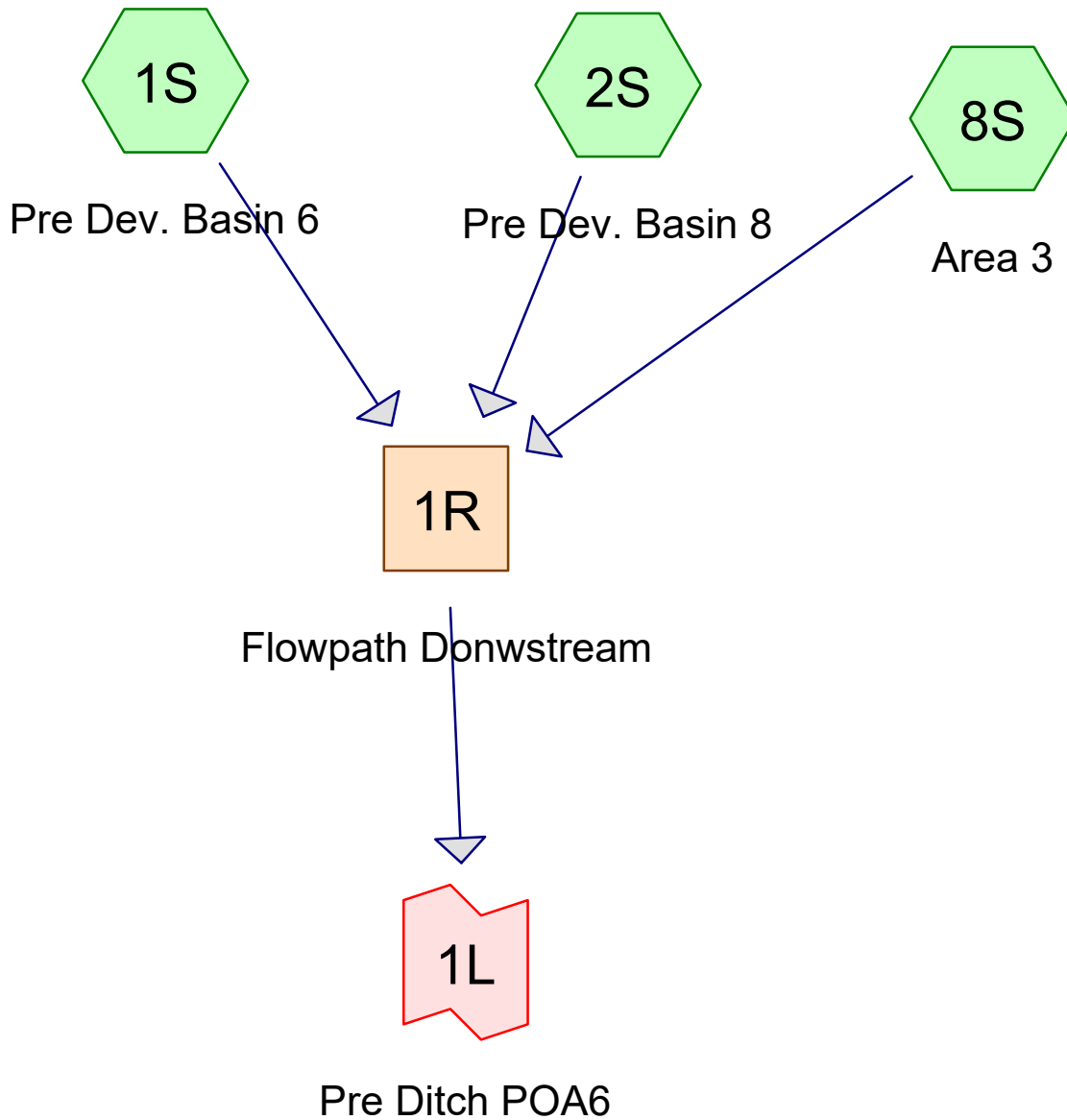
Inflow Area = 23.060 ac, 17.71% Impervious, Inflow Depth = 4.32" for 100-yr event
Inflow = 79.88 cfs @ 12.41 hrs, Volume= 8.304 af
Primary = 79.88 cfs @ 12.41 hrs, Volume= 8.304 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 1L: Pre Ditch POA6

Hydrograph

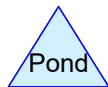




Subcat



Reach



Pond



Link

Routing Diagram for 32044.0000 - Ditch Analysis
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Page 3

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
7.267	85	1/8 acre lots, 65% imp, HSG B (8S)
1.351	69	50-75% Grass cover, Fair, HSG B (2S)
0.914	56	Brush, Fair, HSG B (1S)
14.513	60	Woods, Fair, HSG B (1S, 2S)
24.046	68	TOTAL AREA

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Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
24.046	HSG B	1S, 2S, 8S
0.000	HSG C	
0.000	HSG D	
0.000	Other	
24.046		TOTAL AREA

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Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	7.267	0.000	0.000	0.000	7.267	1/8 acre lots, 65% imp	8S
0.000	1.351	0.000	0.000	0.000	1.351	50-75% Grass cover, Fair	2S
0.000	0.914	0.000	0.000	0.000	0.914	Brush, Fair	1S
0.000	14.513	0.000	0.000	0.000	14.513	Woods, Fair	1S, 2S
0.000	24.046	0.000	0.000	0.000	24.046	TOTAL AREA	

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Type II 24-hr 10-yr Rainfall=5.17"

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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre Dev. Basin 6 Runoff Area=441,055 sf 0.00% Impervious Runoff Depth=1.40"
Flow Length=1,222' Slope=0.0441 '/' Tc=12.4 min CN=60 Runoff=17.25 cfs 1.183 af

Subcatchment2S: Pre Dev. Basin 8 Runoff Area=289,814 sf 0.00% Impervious Runoff Depth=1.54"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=14.84 cfs 0.856 af

Subcatchment8S: Area 3 Runoff Area=316,553 sf 65.00% Impervious Runoff Depth=3.53"
Tc=16.0 min CN=85 Runoff=30.64 cfs 2.135 af

Reach 1R: Flowpath Downstream Avg. Flow Depth=3.04' Max Vel=1.75 fps Inflow=59.75 cfs 4.174 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=38.10 cfs 4.174 af

Link 1L: Pre Ditch POA6 Inflow=38.10 cfs 4.174 af
Primary=38.10 cfs 4.174 af

Total Runoff Area = 24.046 ac Runoff Volume = 4.174 af Average Runoff Depth = 2.08"
80.36% Pervious = 19.322 ac 19.64% Impervious = 4.724 ac

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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Subcatchment 1S: Pre Dev. Basin 6

Runoff = 17.25 cfs @ 12.06 hrs, Volume= 1.183 af, Depth= 1.40"
Routed to Reach 1R : Flowpath Downstream

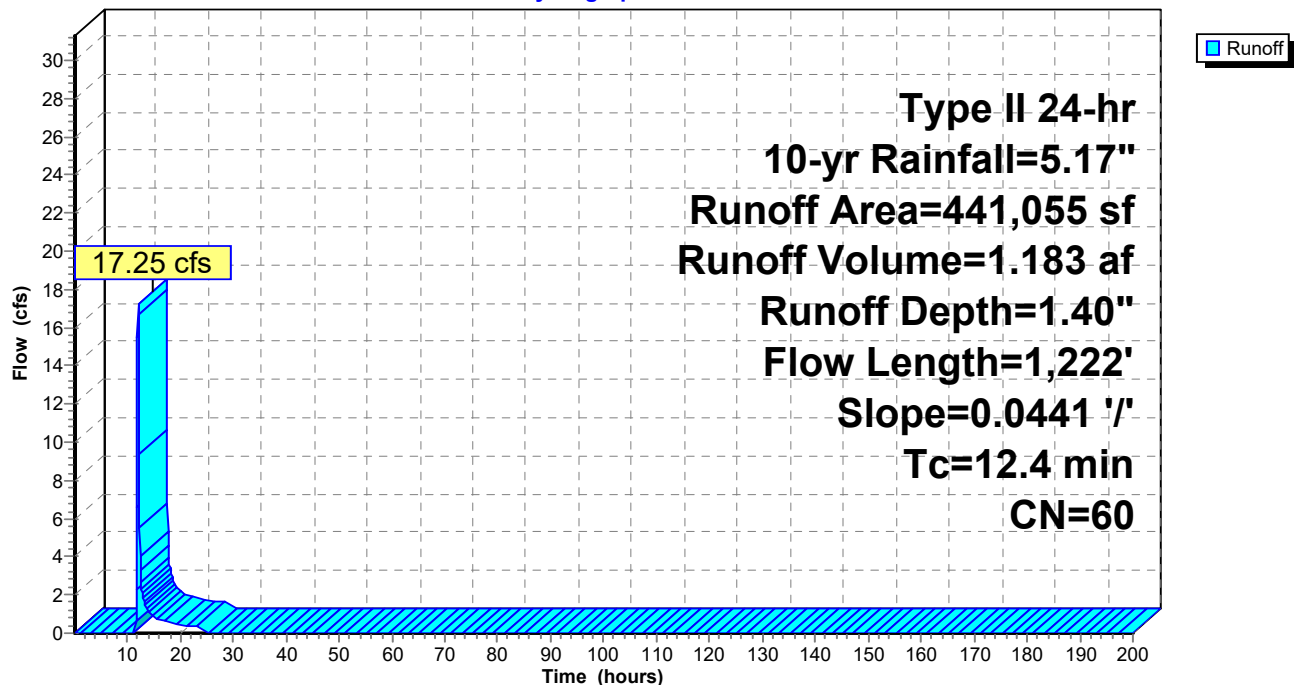
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 10-yr Rainfall=5.17"

Area (sf)	CN	Description
401,238	60	Woods, Fair, HSG B
39,817	56	Brush, Fair, HSG B
441,055	60	Weighted Average
441,055		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	1,222	0.0441	1.65		Kirpich Method, Estimated Tc General overland flow k= 2.00

Subcatchment 1S: Pre Dev. Basin 6

Hydrograph



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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Subcatchment 2S: Pre Dev. Basin 8

Runoff = 14.84 cfs @ 12.01 hrs, Volume= 0.856 af, Depth= 1.54"
Routed to Reach 1R : Flowpath Downstream

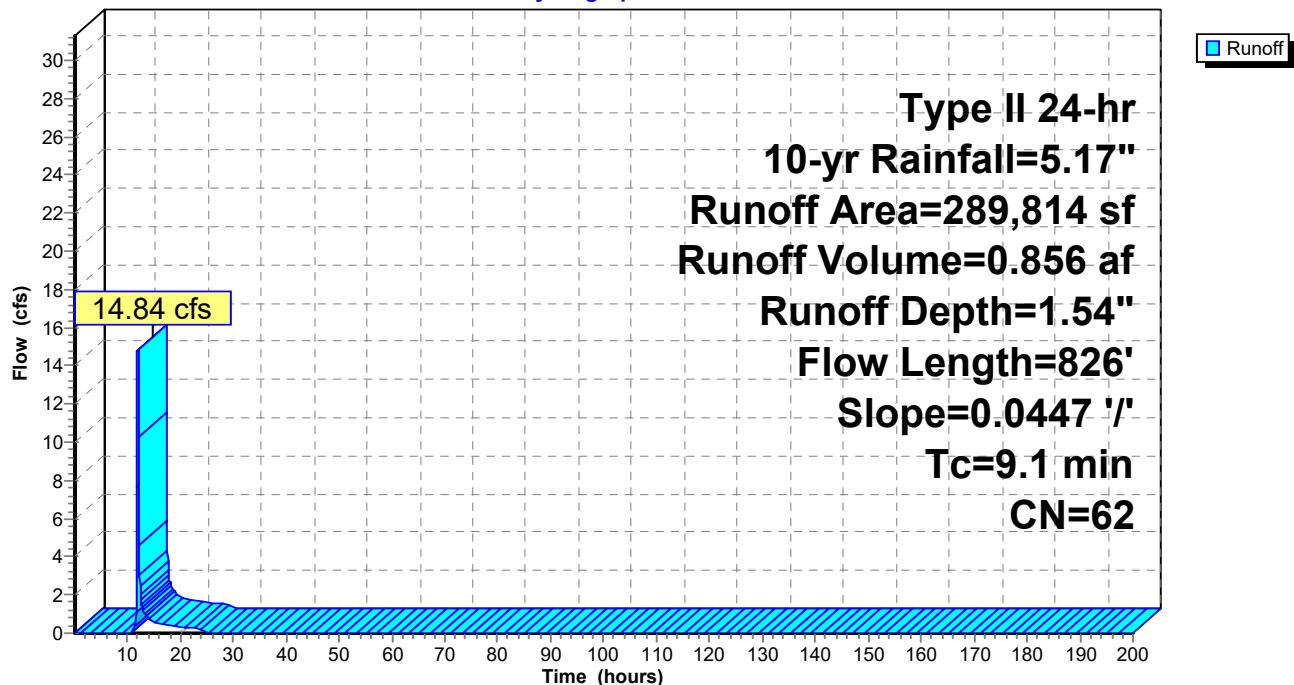
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 10-yr Rainfall=5.17"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
58,855	69	50-75% Grass cover, Fair, HSG B
289,814	62	Weighted Average
289,814		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 2S: Pre Dev. Basin 8

Hydrograph



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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Subcatchment 8S: Area 3

Runoff = 30.64 cfs @ 12.08 hrs, Volume= 2.135 af, Depth= 3.53"
Routed to Reach 1R : Flowpath Downstream

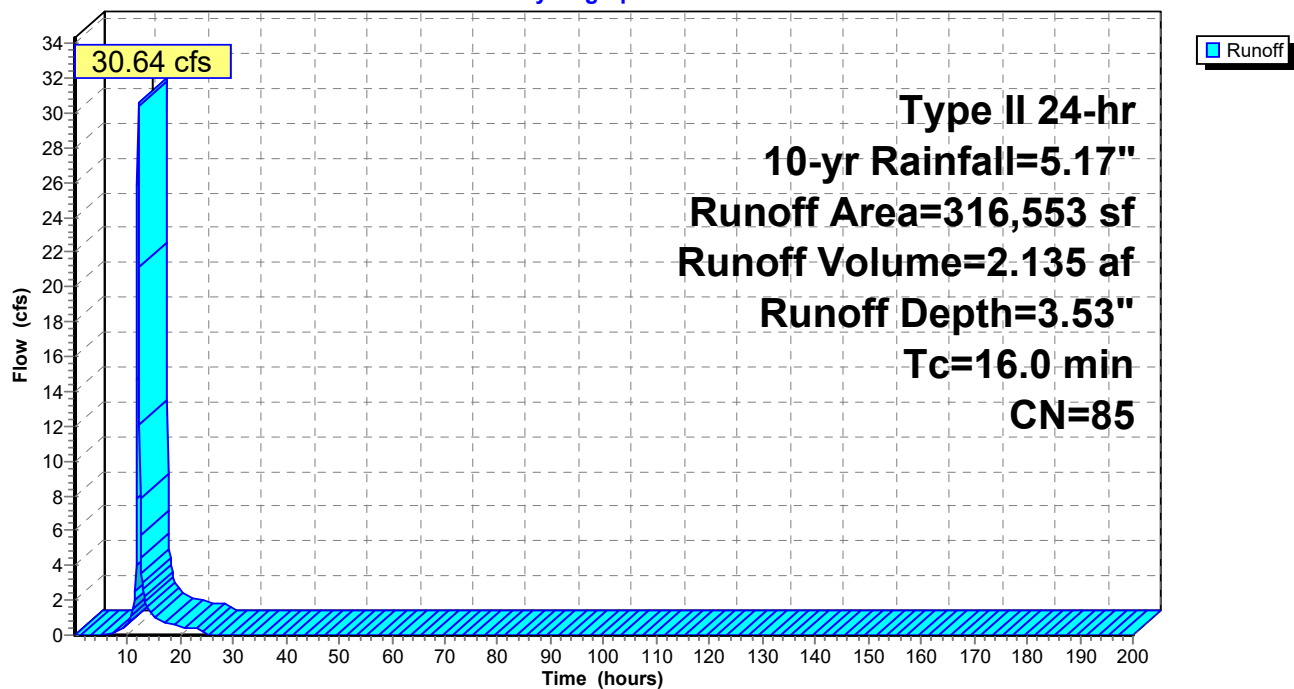
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 10-yr Rainfall=5.17"

Area (sf)	CN	Description
316,553	85	1/8 acre lots, 65% imp, HSG B
110,794		35.00% Pervious Area
205,759		65.00% Impervious Area

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

Subcatchment 8S: Area 3

Hydrograph



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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Reach 1R: Flowpath Downstream

Inflow Area = 24.046 ac, 19.64% Impervious, Inflow Depth = 2.08" for 10-yr event
Inflow = 59.75 cfs @ 12.06 hrs, Volume= 4.174 af
Outflow = 38.10 cfs @ 12.44 hrs, Volume= 4.174 af, Atten= 36%, Lag= 23.1 min
Routed to Link 1L : Pre Ditch POA6

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.75 fps, Min. Travel Time= 14.4 min

Avg. Velocity = 0.32 fps, Avg. Travel Time= 79.3 min

Peak Storage= 33,666 cf @ 12.20 hrs

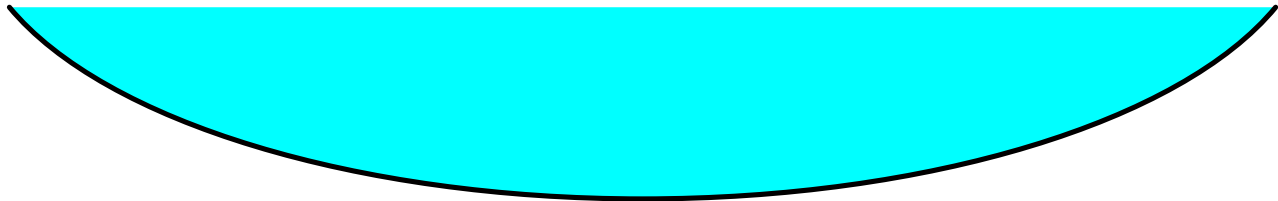
Average Depth at Peak Storage= 3.04' , Surface Width= 14.74'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

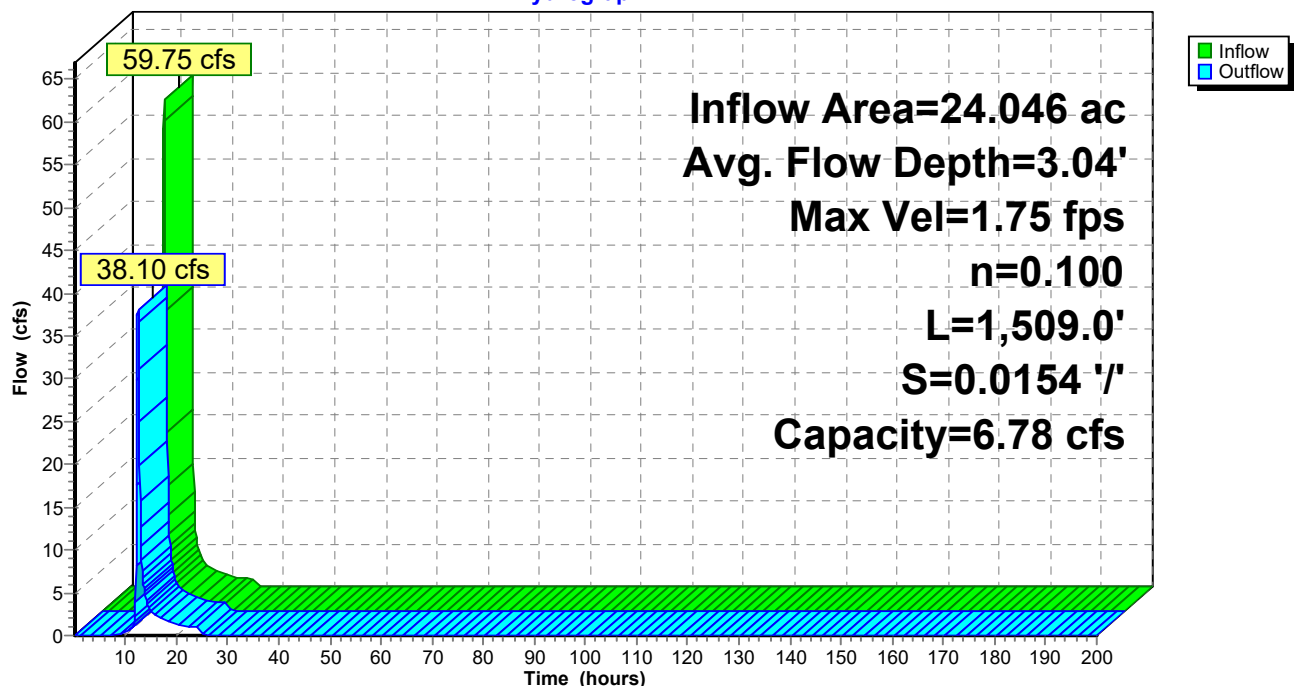
Length= 1,509.0' Slope= 0.0154 '/'

Inlet Invert= 505.43', Outlet Invert= 482.25'



Reach 1R: Flowpath Downstream

Hydrograph



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Type II 24-hr 10-yr Rainfall=5.17"

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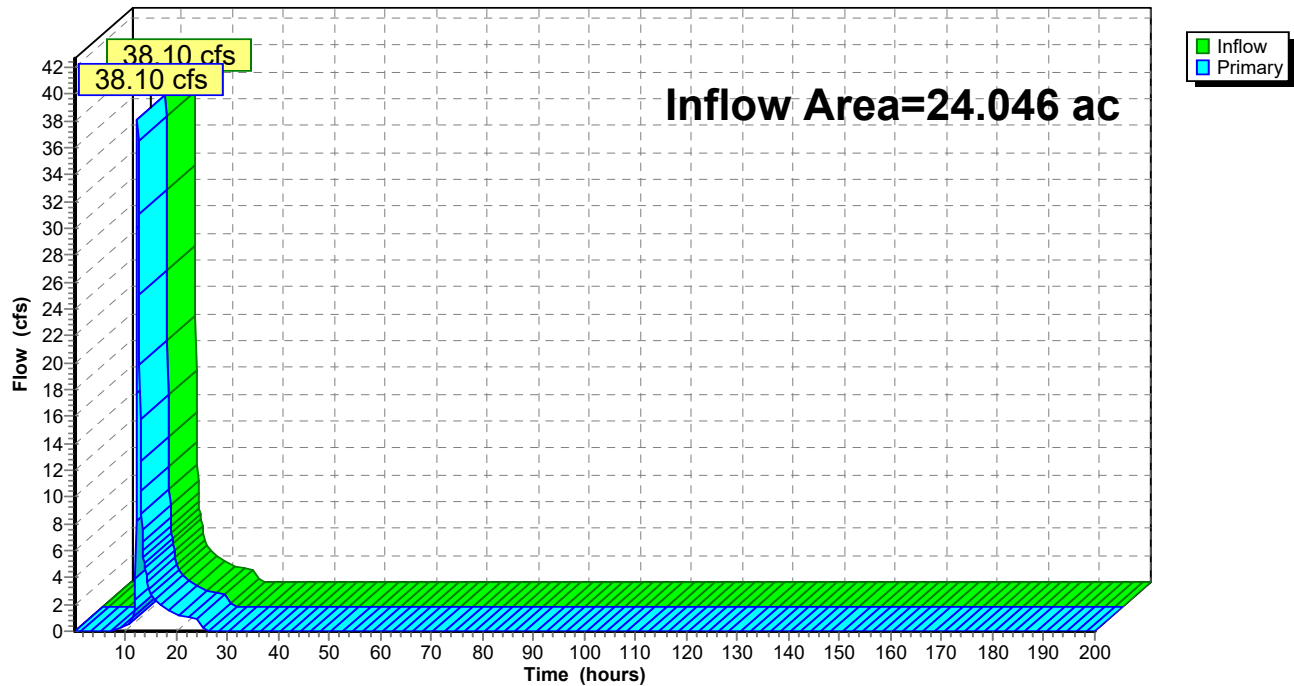
Summary for Link 1L: Pre Ditch POA6

Inflow Area = 24.046 ac, 19.64% Impervious, Inflow Depth = 2.08" for 10-yr event
Inflow = 38.10 cfs @ 12.44 hrs, Volume= 4.174 af
Primary = 38.10 cfs @ 12.44 hrs, Volume= 4.174 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 1L: Pre Ditch POA6

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre Dev. Basin 6 Runoff Area=441,055 sf 0.00% Impervious Runoff Depth=2.28"
Flow Length=1,222' Slope=0.0441 '/' Tc=12.4 min CN=60 Runoff=29.27 cfs 1.927 af

Subcatchment2S: Pre Dev. Basin 8 Runoff Area=289,814 sf 0.00% Impervious Runoff Depth=2.47"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=24.46 cfs 1.368 af

Subcatchment8S: Area 3 Runoff Area=316,553 sf 65.00% Impervious Runoff Depth=4.81"
Tc=16.0 min CN=85 Runoff=41.30 cfs 2.915 af

Reach 1R: Flowpath Downstream Avg. Flow Depth=4.38' Max Vel=1.79 fps Inflow=91.34 cfs 6.210 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=58.33 cfs 6.210 af

Link 1L: Pre Ditch POA6 Inflow=58.33 cfs 6.210 af
Primary=58.33 cfs 6.210 af

Total Runoff Area = 24.046 ac Runoff Volume = 6.210 af Average Runoff Depth = 3.10"
80.36% Pervious = 19.322 ac 19.64% Impervious = 4.724 ac

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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 1S: Pre Dev. Basin 6

Runoff = 29.27 cfs @ 12.05 hrs, Volume= 1.927 af, Depth= 2.28"
Routed to Reach 1R : Flowpath Downstream

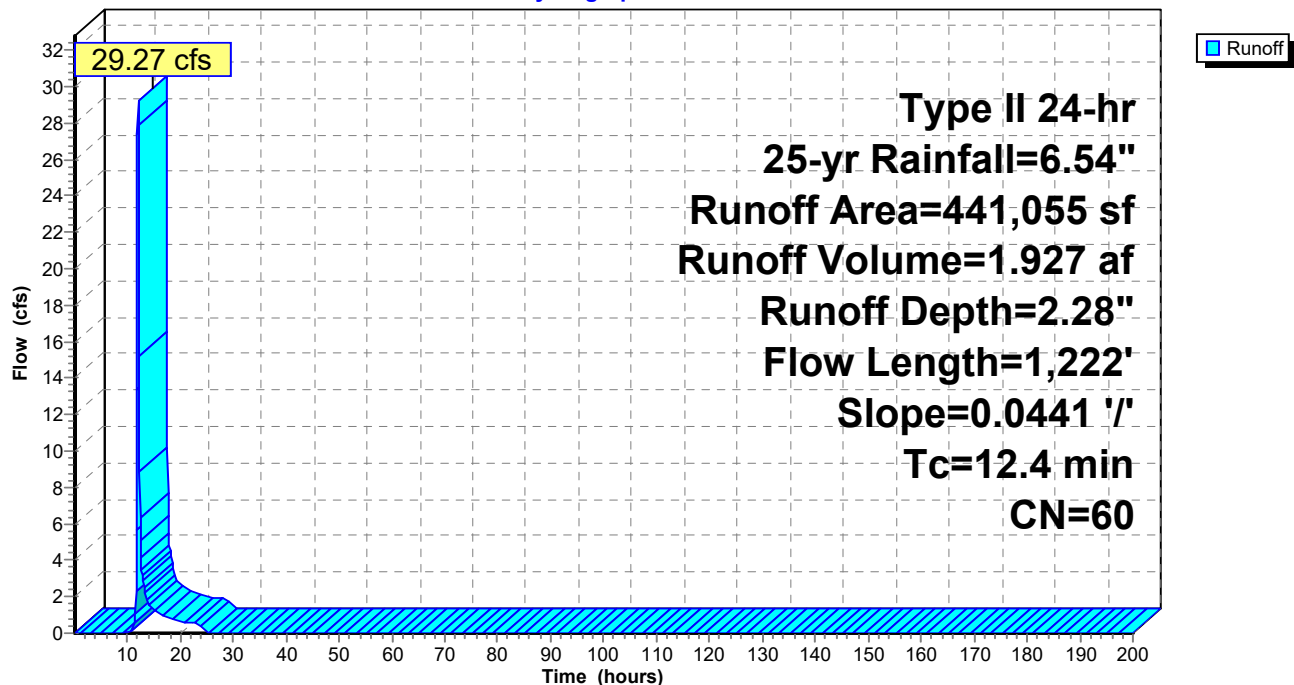
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
401,238	60	Woods, Fair, HSG B
39,817	56	Brush, Fair, HSG B
441,055	60	Weighted Average
441,055		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	1,222	0.0441	1.65		Kirpich Method, Estimated Tc General overland flow k= 2.00

Subcatchment 1S: Pre Dev. Basin 6

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 2S: Pre Dev. Basin 8

Runoff = 24.46 cfs @ 12.01 hrs, Volume= 1.368 af, Depth= 2.47"
Routed to Reach 1R : Flowpath Downstream

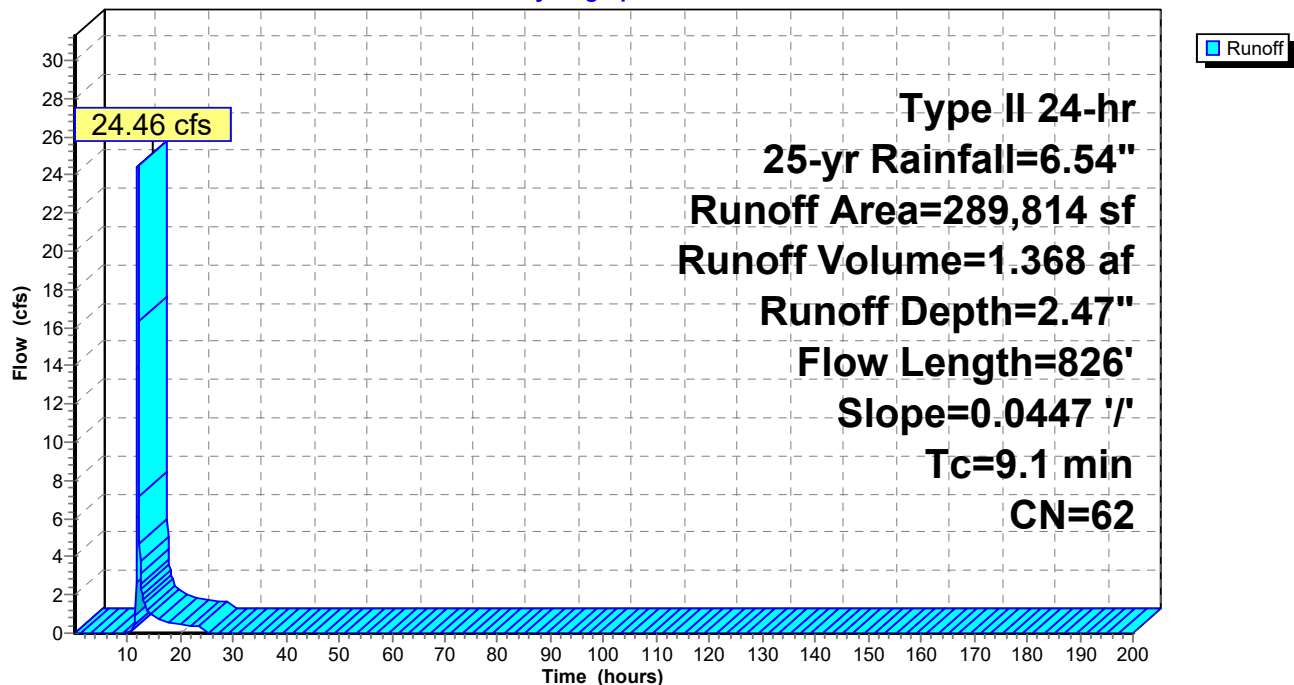
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
58,855	69	50-75% Grass cover, Fair, HSG B
289,814	62	Weighted Average
289,814		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 2S: Pre Dev. Basin 8

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 8S: Area 3

Runoff = 41.30 cfs @ 12.08 hrs, Volume= 2.915 af, Depth= 4.81"
Routed to Reach 1R : Flowpath Downstream

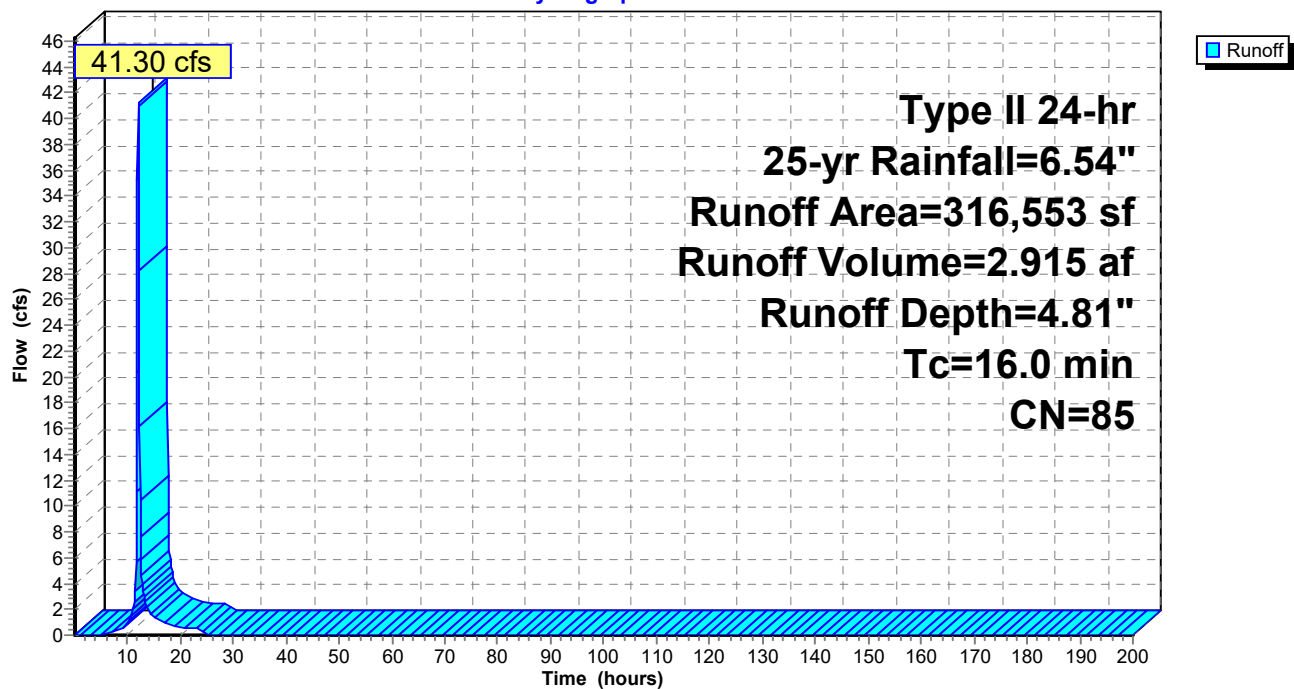
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
316,553	85	1/8 acre lots, 65% imp, HSG B
110,794		35.00% Pervious Area
205,759		65.00% Impervious Area

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

Subcatchment 8S: Area 3

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Reach 1R: Flowpath Downstream

Inflow Area = 24.046 ac, 19.64% Impervious, Inflow Depth = 3.10" for 25-yr event
Inflow = 91.34 cfs @ 12.05 hrs, Volume= 6.210 af
Outflow = 58.33 cfs @ 12.42 hrs, Volume= 6.210 af, Atten= 36%, Lag= 22.8 min
Routed to Link 1L : Pre Ditch POA6

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.79 fps, Min. Travel Time= 14.0 min

Avg. Velocity= 0.35 fps, Avg. Travel Time= 72.3 min

Peak Storage= 50,161 cf @ 12.19 hrs

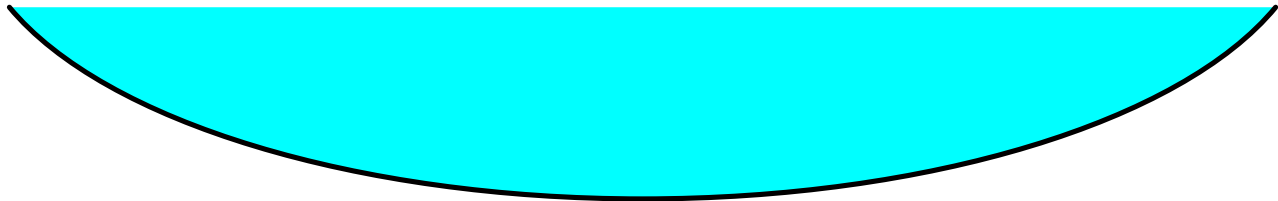
Average Depth at Peak Storage= 4.38' , Surface Width= 17.69'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

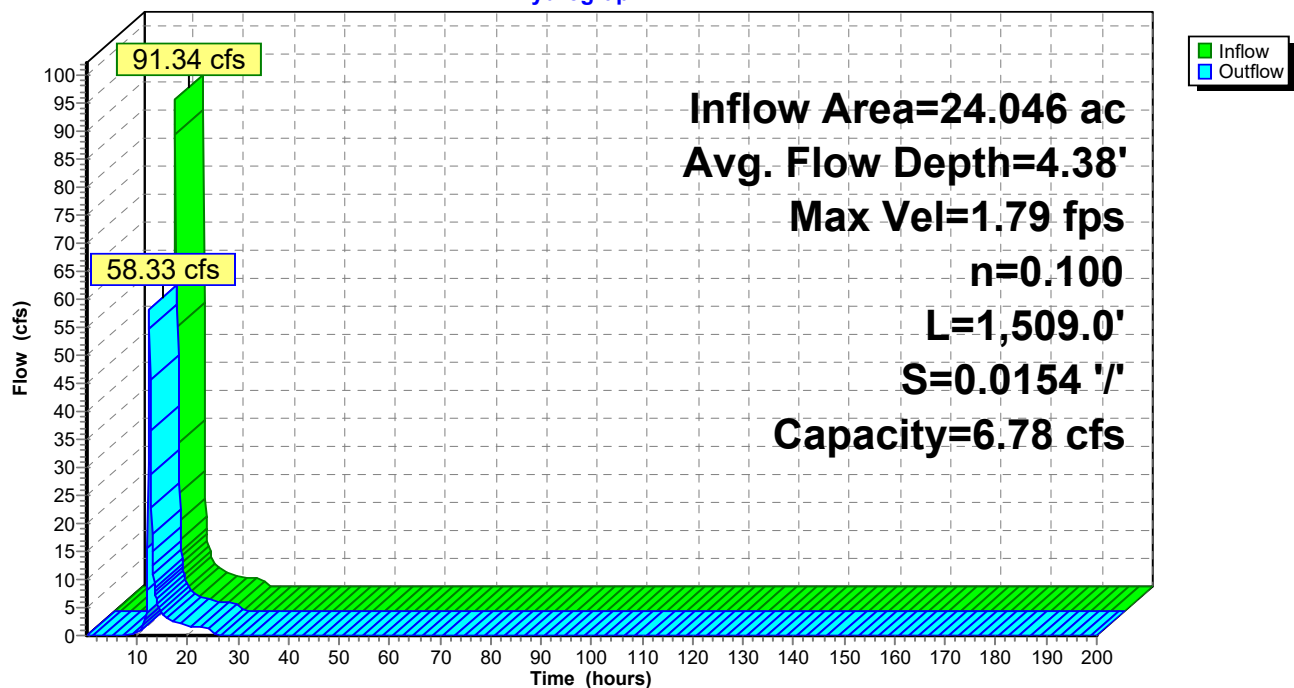
Length= 1,509.0' Slope= 0.0154 '/'

Inlet Invert= 505.43', Outlet Invert= 482.25'



Reach 1R: Flowpath Downstream

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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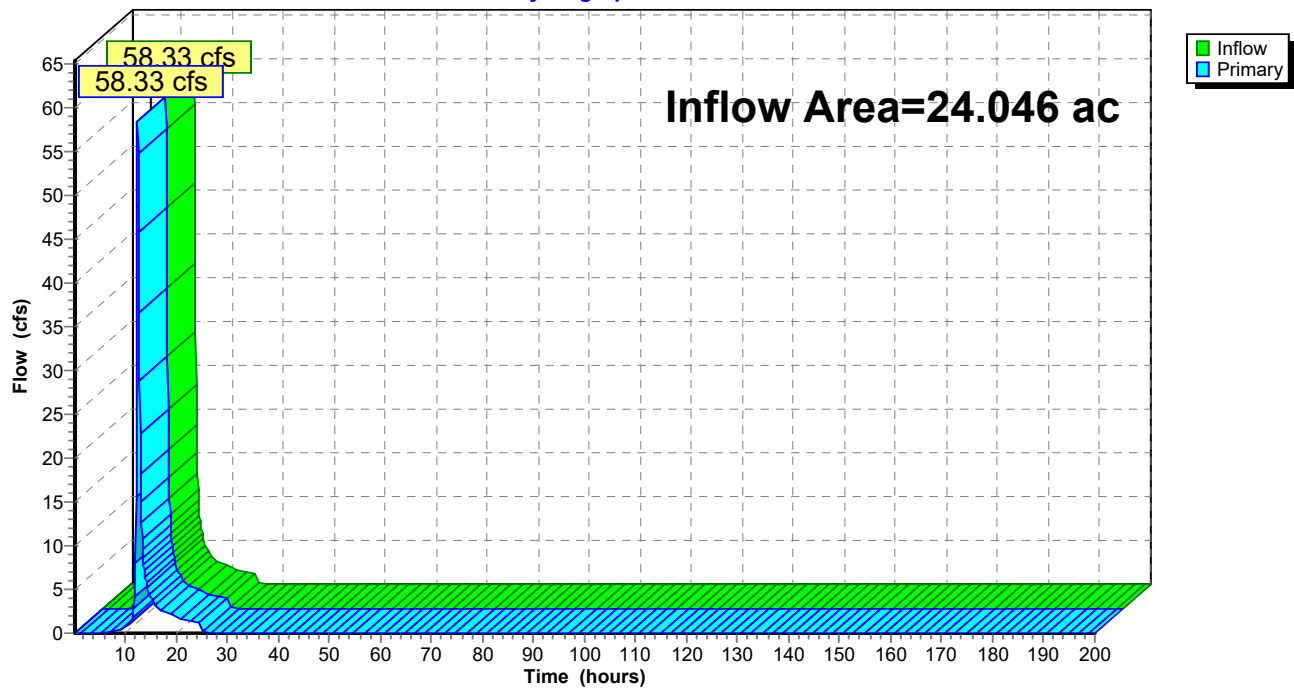
Summary for Link 1L: Pre Ditch POA6

Inflow Area = 24.046 ac, 19.64% Impervious, Inflow Depth = 3.10" for 25-yr event
Inflow = 58.33 cfs @ 12.42 hrs, Volume= 6.210 af
Primary = 58.33 cfs @ 12.42 hrs, Volume= 6.210 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 1L: Pre Ditch POA6

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre Dev. Basin 6 Runoff Area=441,055 sf 0.00% Impervious Runoff Depth=3.46"
Flow Length=1,222' Slope=0.0441 '/' Tc=12.4 min CN=60 Runoff=45.48 cfs 2.921 af

Subcatchment2S: Pre Dev. Basin 8 Runoff Area=289,814 sf 0.00% Impervious Runoff Depth=3.69"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=36.97 cfs 2.045 af

Subcatchment8S: Area 3 Runoff Area=316,553 sf 65.00% Impervious Runoff Depth=6.38"
Tc=16.0 min CN=85 Runoff=53.95 cfs 3.862 af

Reach 1R: Flowpath Downstream Avg. Flow Depth=6.08' Max Vel=1.82 fps Inflow=131.26 cfs 8.828 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=84.08 cfs 8.828 af

Link 1L: Pre Ditch POA6 Inflow=84.08 cfs 8.828 af
Primary=84.08 cfs 8.828 af

Total Runoff Area = 24.046 ac Runoff Volume = 8.828 af Average Runoff Depth = 4.41"
80.36% Pervious = 19.322 ac 19.64% Impervious = 4.724 ac

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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 1S: Pre Dev. Basin 6

Runoff = 45.48 cfs @ 12.05 hrs, Volume= 2.921 af, Depth= 3.46"
Routed to Reach 1R : Flowpath Downstream

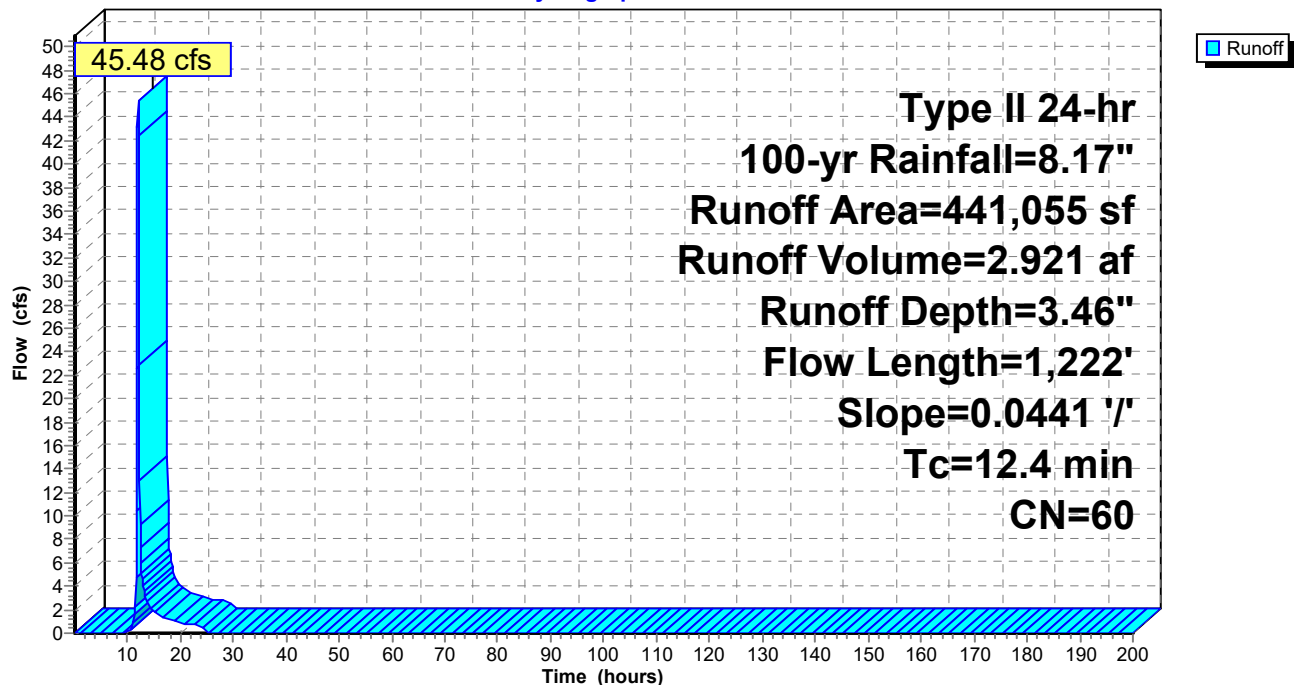
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
401,238	60	Woods, Fair, HSG B
39,817	56	Brush, Fair, HSG B
441,055	60	Weighted Average
441,055		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	1,222	0.0441	1.65		Kirpich Method, Estimated Tc General overland flow k= 2.00

Subcatchment 1S: Pre Dev. Basin 6

Hydrograph



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Summary for Subcatchment 2S: Pre Dev. Basin 8

Runoff = 36.97 cfs @ 12.00 hrs, Volume= 2.045 af, Depth= 3.69"
Routed to Reach 1R : Flowpath Downstream

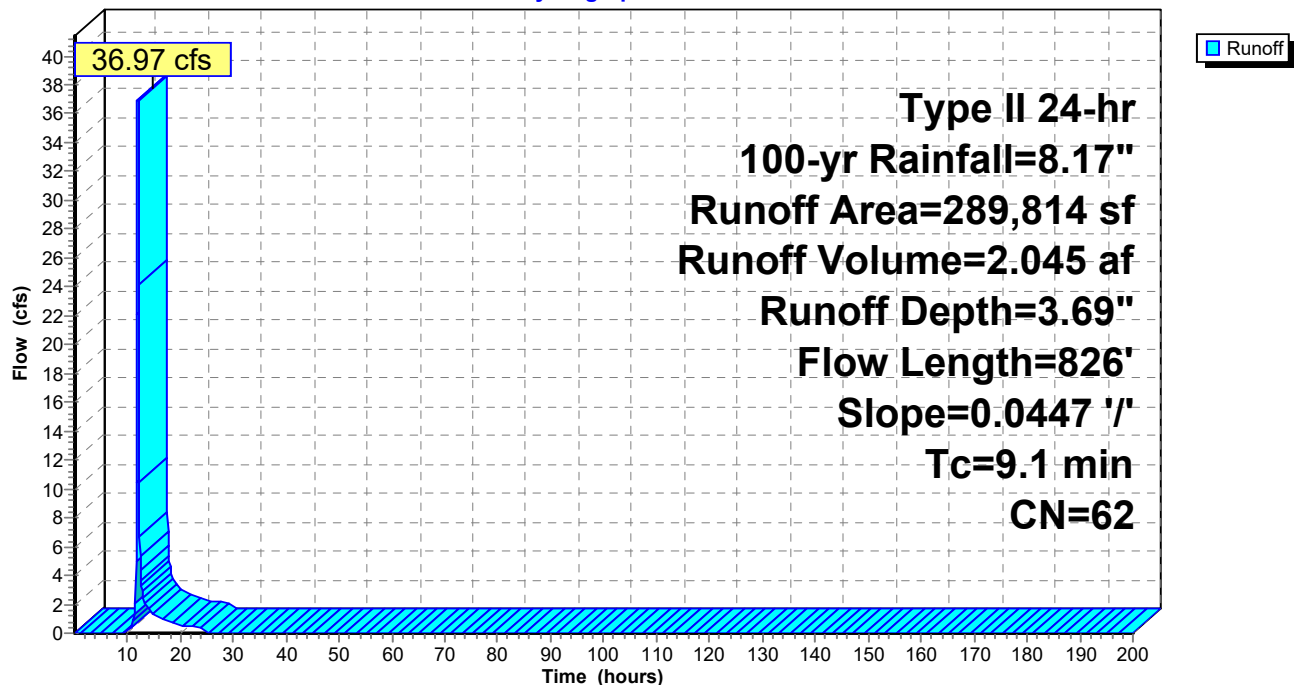
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
58,855	69	50-75% Grass cover, Fair, HSG B
289,814	62	Weighted Average
289,814		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 2S: Pre Dev. Basin 8

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 8S: Area 3

Runoff = 53.95 cfs @ 12.08 hrs, Volume= 3.862 af, Depth= 6.38"
Routed to Reach 1R : Flowpath Downstream

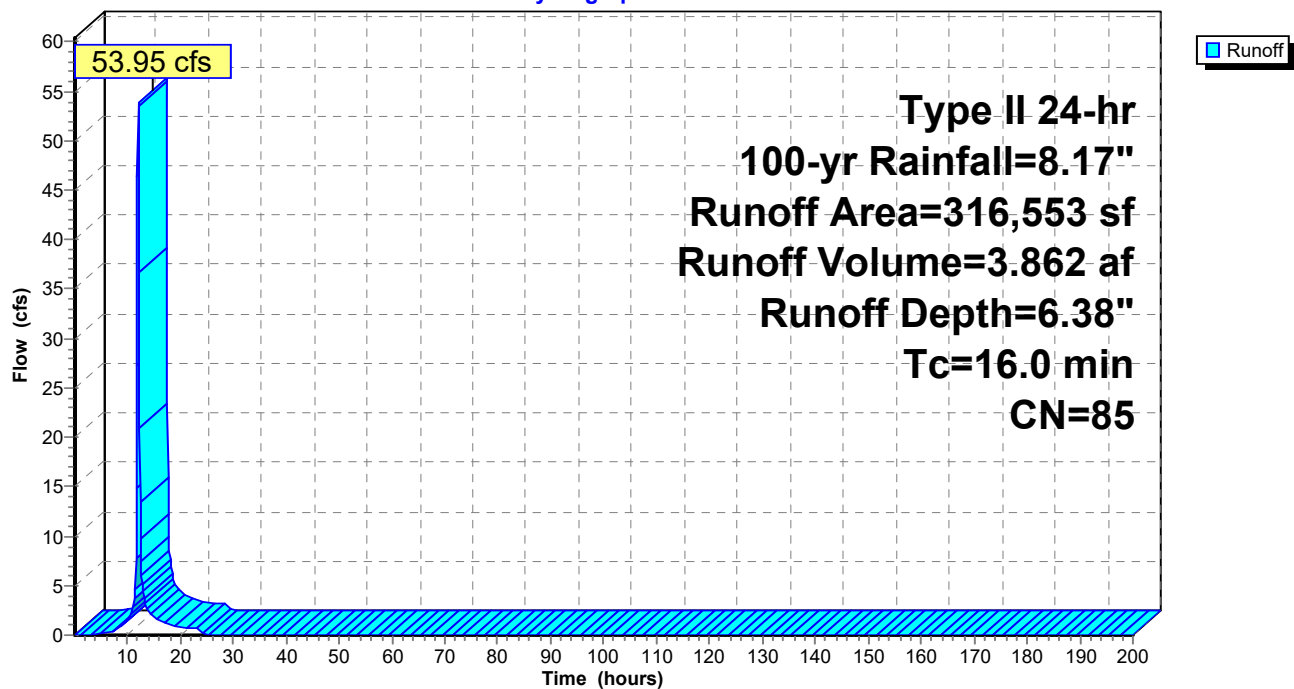
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
316,553	85	1/8 acre lots, 65% imp, HSG B
110,794		35.00% Pervious Area
205,759		65.00% Impervious Area

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

Subcatchment 8S: Area 3

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Reach 1R: Flowpath Downstream

Inflow Area = 24.046 ac, 19.64% Impervious, Inflow Depth = 4.41" for 100-yr event
Inflow = 131.26 cfs @ 12.04 hrs, Volume= 8.828 af
Outflow = 84.08 cfs @ 12.42 hrs, Volume= 8.828 af, Atten= 36%, Lag= 22.6 min
Routed to Link 1L : Pre Ditch POA6

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.82 fps, Min. Travel Time= 13.8 min

Avg. Velocity= 0.38 fps, Avg. Travel Time= 66.4 min

Peak Storage= 71,144 cf @ 12.18 hrs

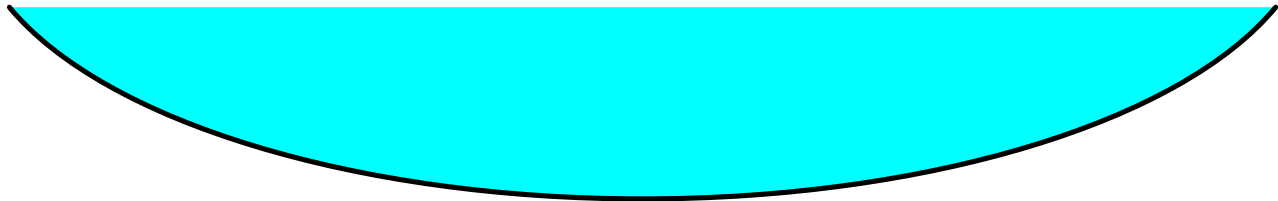
Average Depth at Peak Storage= 6.08' , Surface Width= 20.85'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

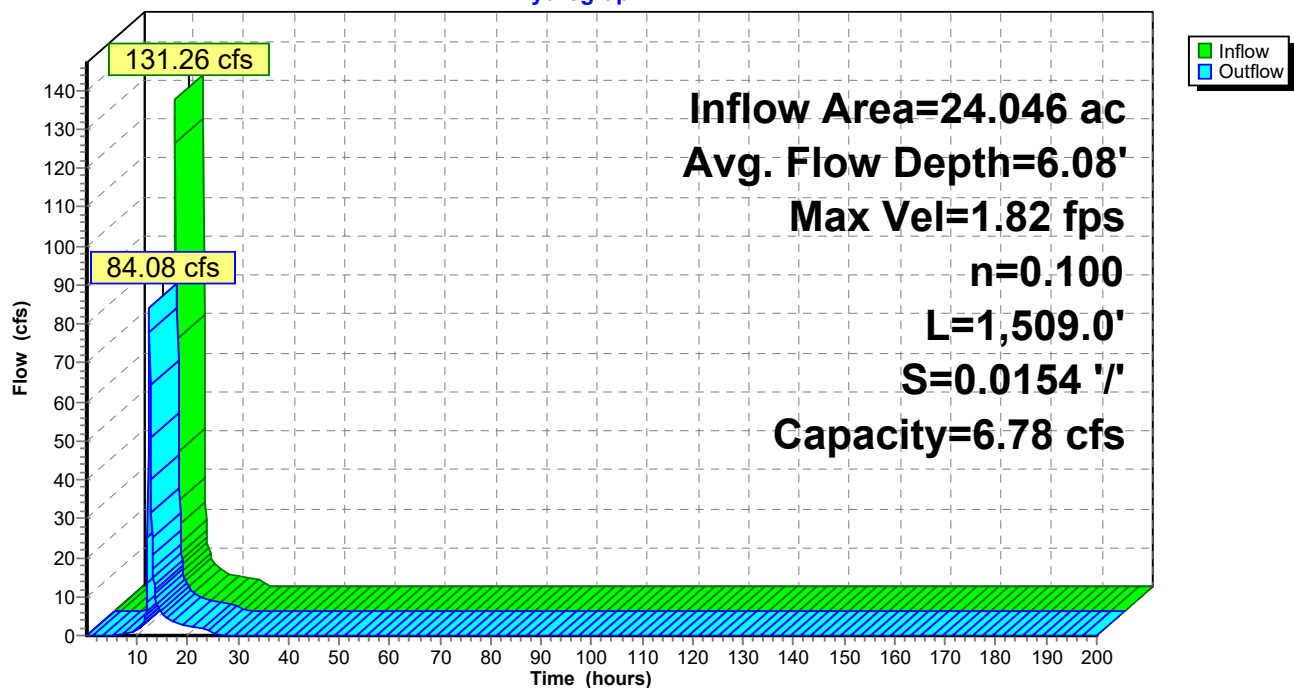
Length= 1,509.0' Slope= 0.0154 '/'

Inlet Invert= 505.43', Outlet Invert= 482.25'



Reach 1R: Flowpath Downstream

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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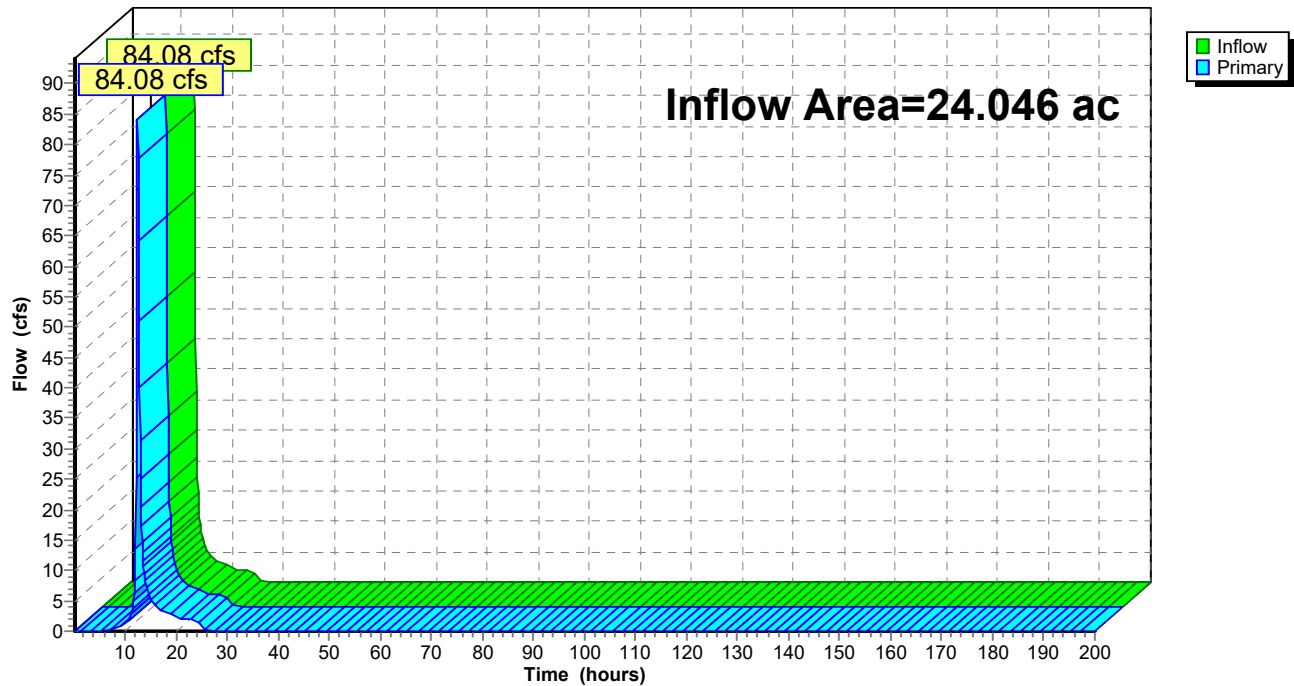
Summary for Link 1L: Pre Ditch POA6

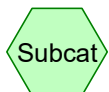
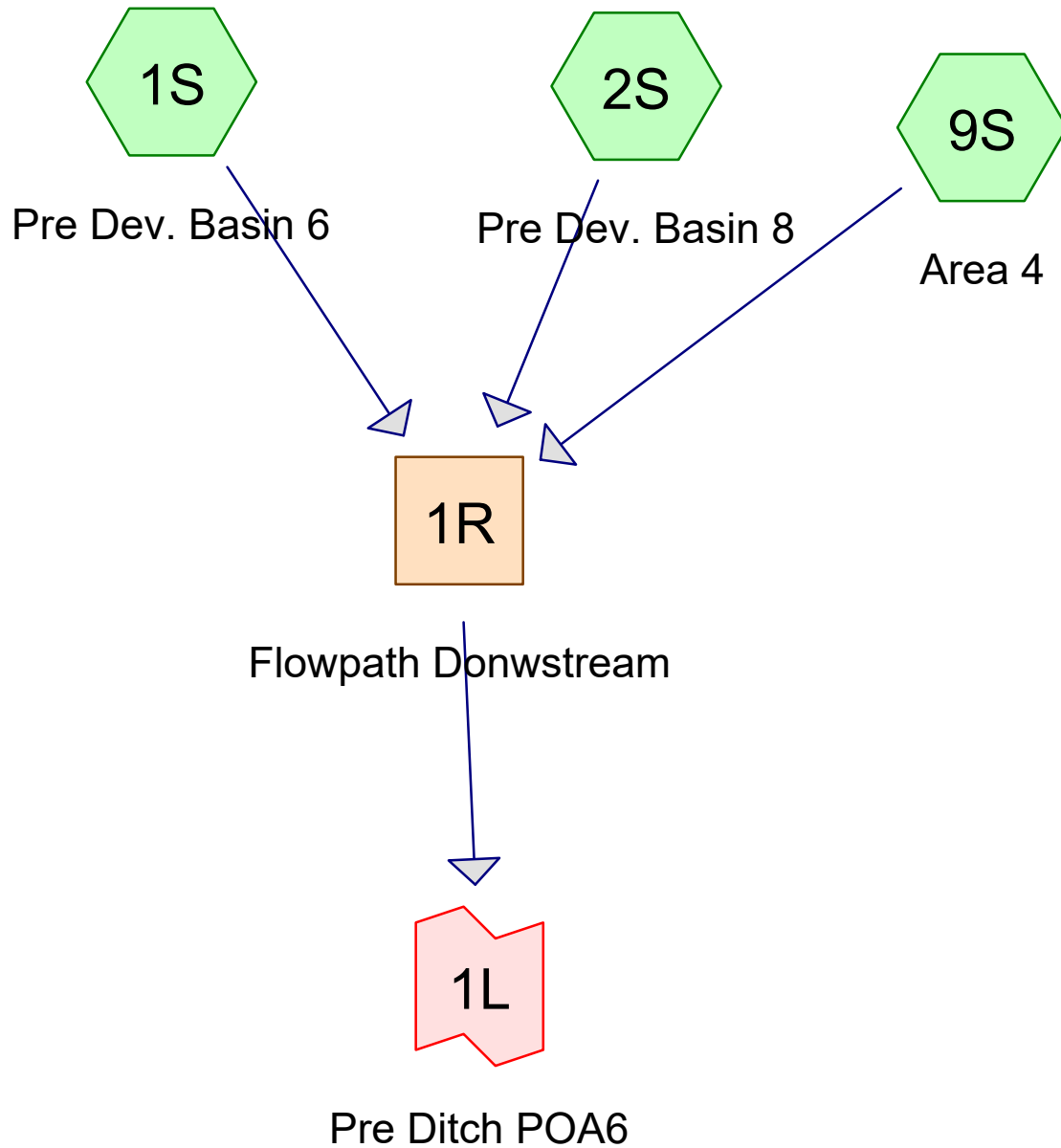
Inflow Area = 24.046 ac, 19.64% Impervious, Inflow Depth = 4.41" for 100-yr event
Inflow = 84.08 cfs @ 12.42 hrs, Volume= 8.828 af
Primary = 84.08 cfs @ 12.42 hrs, Volume= 8.828 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 1L: Pre Ditch POA6

Hydrograph

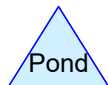




Subcat



Reach



Pond



Link

Routing Diagram for 32044.0000 - Ditch Analysis
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Page 3

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
9.726	85	1/8 acre lots, 65% imp, HSG B (9S)
1.351	69	50-75% Grass cover, Fair, HSG B (2S)
0.914	56	Brush, Fair, HSG B (1S)
14.513	60	Woods, Fair, HSG B (1S, 2S)
26.504	69	TOTAL AREA

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Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
26.504	HSG B	1S, 2S, 9S
0.000	HSG C	
0.000	HSG D	
0.000	Other	
26.504		TOTAL AREA

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Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	9.726	0.000	0.000	0.000	9.726	1/8 acre lots, 65% imp	9S
0.000	1.351	0.000	0.000	0.000	1.351	50-75% Grass cover, Fair	2S
0.000	0.914	0.000	0.000	0.000	0.914	Brush, Fair	1S
0.000	14.513	0.000	0.000	0.000	14.513	Woods, Fair	1S, 2S
0.000	26.504	0.000	0.000	0.000	26.504	TOTAL AREA	

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Type II 24-hr 10-yr Rainfall=5.17"

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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre Dev. Basin 6 Runoff Area=441,055 sf 0.00% Impervious Runoff Depth=1.40"
Flow Length=1,222' Slope=0.0441 '/' Tc=12.4 min CN=60 Runoff=17.25 cfs 1.183 af

Subcatchment2S: Pre Dev. Basin 8 Runoff Area=289,814 sf 0.00% Impervious Runoff Depth=1.54"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=14.84 cfs 0.856 af

Subcatchment9S: Area 4 Runoff Area=423,660 sf 65.00% Impervious Runoff Depth=3.53"
Tc=18.0 min CN=85 Runoff=39.09 cfs 2.857 af

Reach 1R: Flowpath Downstream Avg. Flow Depth=3.42' Max Vel=1.77 fps Inflow=67.19 cfs 4.896 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=43.46 cfs 4.896 af

Link 1L: Pre Ditch POA6 Inflow=43.46 cfs 4.896 af
Primary=43.46 cfs 4.896 af

Total Runoff Area = 26.504 ac Runoff Volume = 4.896 af Average Runoff Depth = 2.22"
76.15% Pervious = 20.183 ac 23.85% Impervious = 6.322 ac

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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Subcatchment 1S: Pre Dev. Basin 6

Runoff = 17.25 cfs @ 12.06 hrs, Volume= 1.183 af, Depth= 1.40"
Routed to Reach 1R : Flowpath Downstream

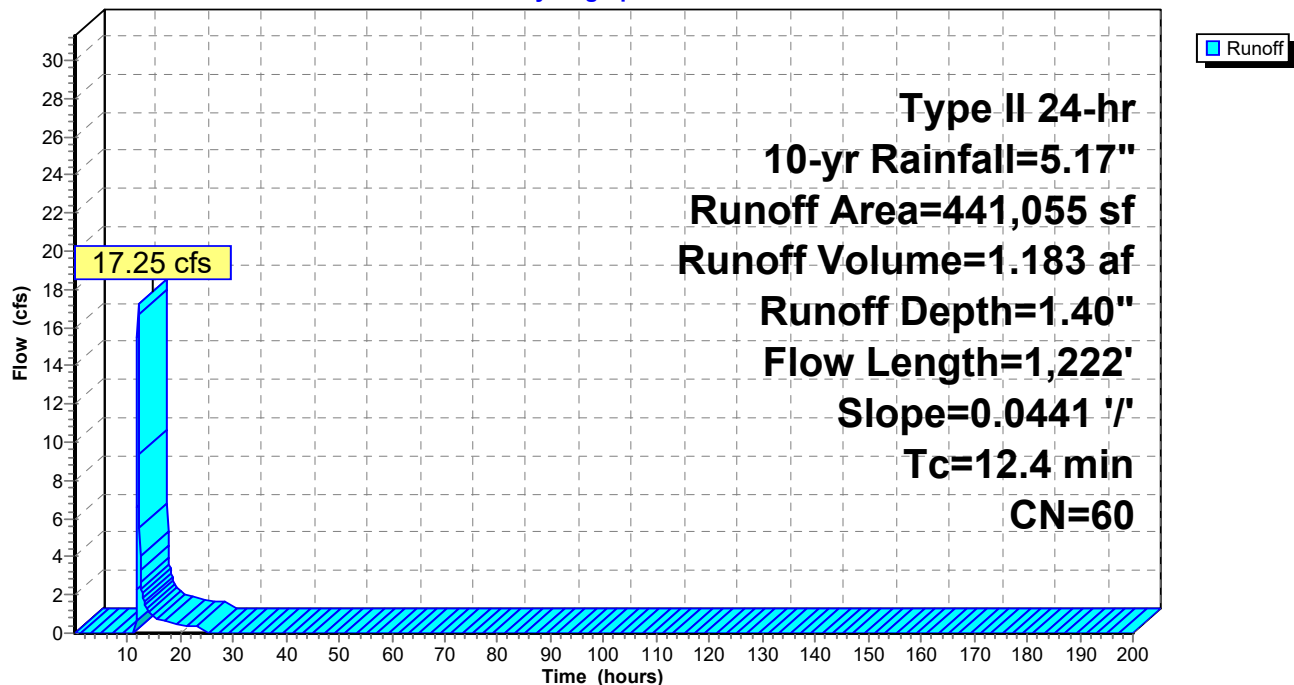
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 10-yr Rainfall=5.17"

Area (sf)	CN	Description
401,238	60	Woods, Fair, HSG B
39,817	56	Brush, Fair, HSG B
441,055	60	Weighted Average
441,055		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	1,222	0.0441	1.65		Kirpich Method, Estimated Tc General overland flow k= 2.00

Subcatchment 1S: Pre Dev. Basin 6

Hydrograph



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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Subcatchment 2S: Pre Dev. Basin 8

Runoff = 14.84 cfs @ 12.01 hrs, Volume= 0.856 af, Depth= 1.54"
Routed to Reach 1R : Flowpath Downstream

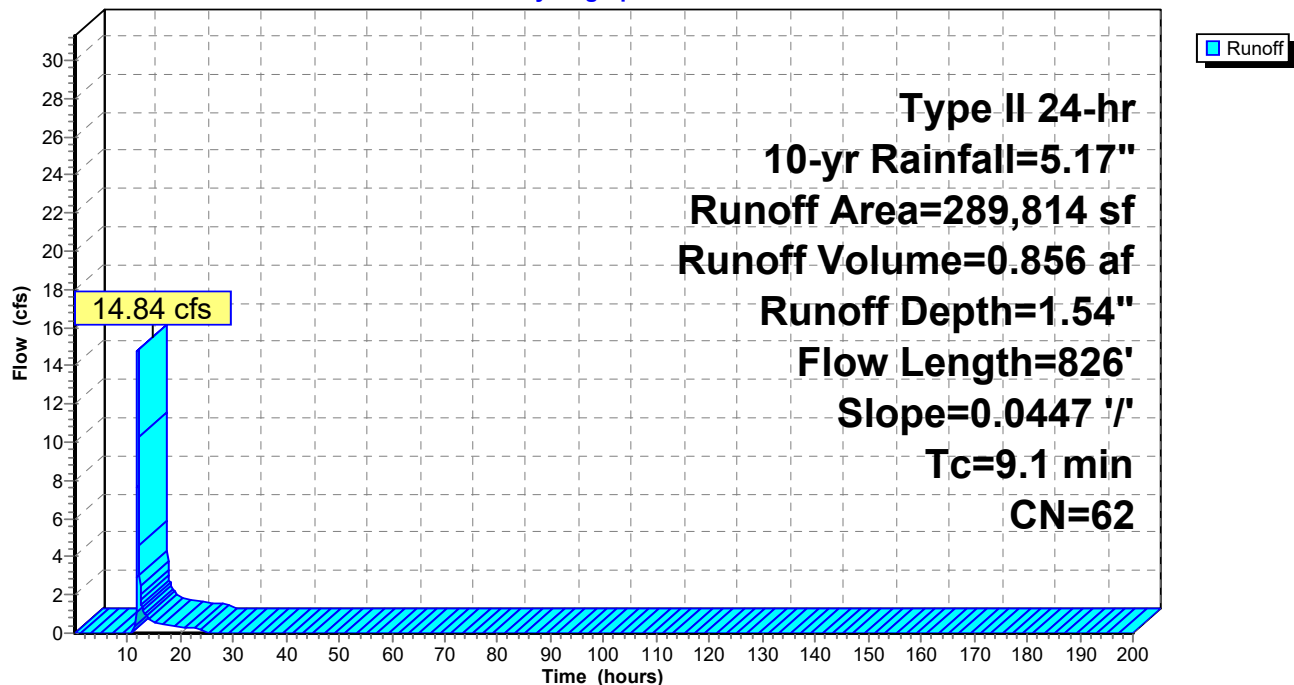
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 10-yr Rainfall=5.17"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
58,855	69	50-75% Grass cover, Fair, HSG B
289,814	62	Weighted Average
289,814		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 2S: Pre Dev. Basin 8

Hydrograph



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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Subcatchment 9S: Area 4

Runoff = 39.09 cfs @ 12.10 hrs, Volume= 2.857 af, Depth= 3.53"
Routed to Reach 1R : Flowpath Downstream

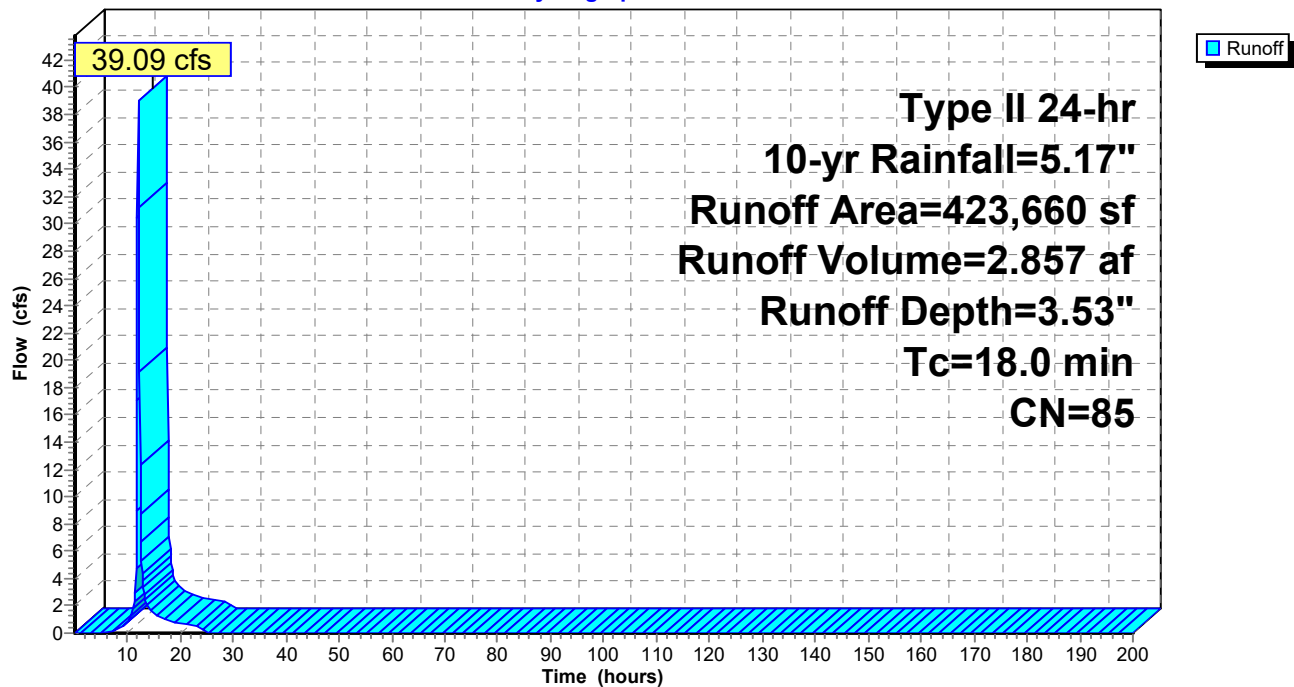
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 10-yr Rainfall=5.17"

Area (sf)	CN	Description
423,660	85	1/8 acre lots, 65% imp, HSG B
148,281		35.00% Pervious Area
275,379		65.00% Impervious Area

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

Subcatchment 9S: Area 4

Hydrograph



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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Reach 1R: Flowpath Downstream

Inflow Area = 26.504 ac, 23.85% Impervious, Inflow Depth = 2.22" for 10-yr event
Inflow = 67.19 cfs @ 12.07 hrs, Volume= 4.896 af
Outflow = 43.46 cfs @ 12.46 hrs, Volume= 4.896 af, Atten= 35%, Lag= 23.2 min
Routed to Link 1L : Pre Ditch POA6

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.77 fps, Min. Travel Time= 14.2 min

Avg. Velocity = 0.33 fps, Avg. Travel Time= 76.3 min

Peak Storage= 38,412 cf @ 12.22 hrs

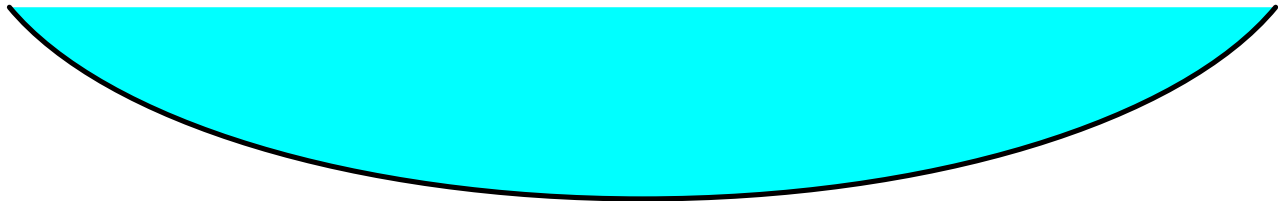
Average Depth at Peak Storage= 3.42' , Surface Width= 15.65'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

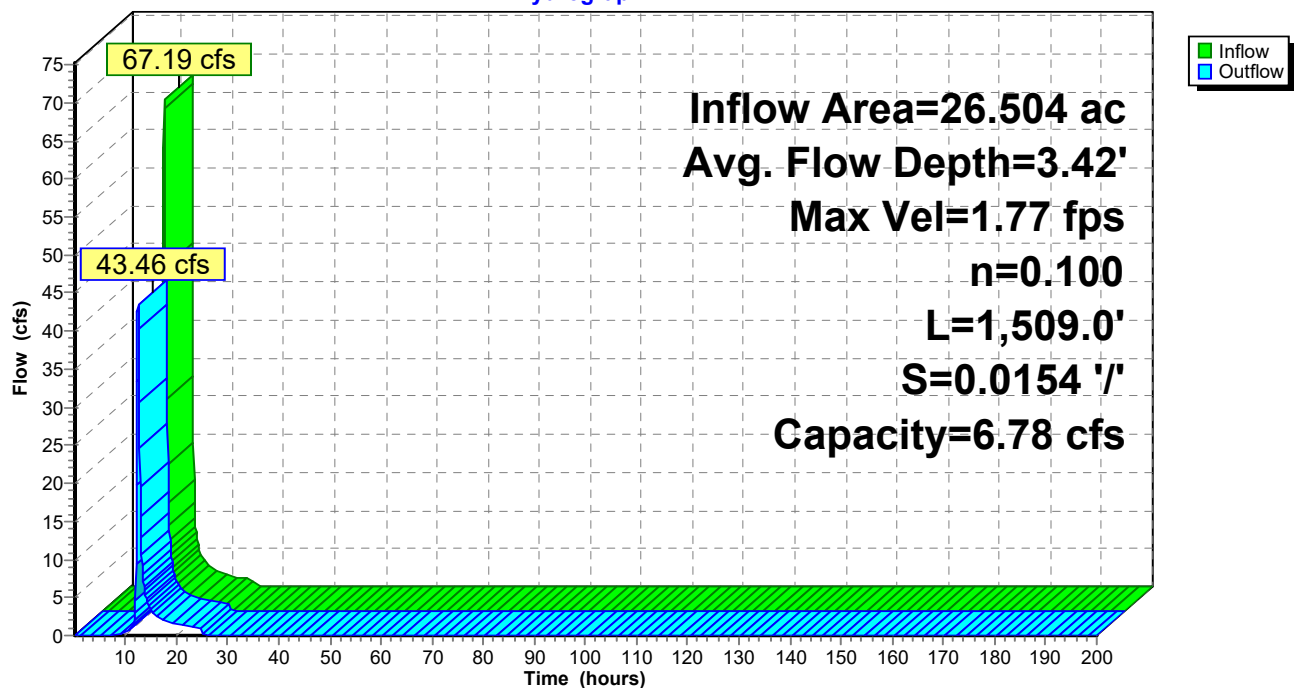
Length= 1,509.0' Slope= 0.0154 '/'

Inlet Invert= 505.43', Outlet Invert= 482.25'



Reach 1R: Flowpath Downstream

Hydrograph



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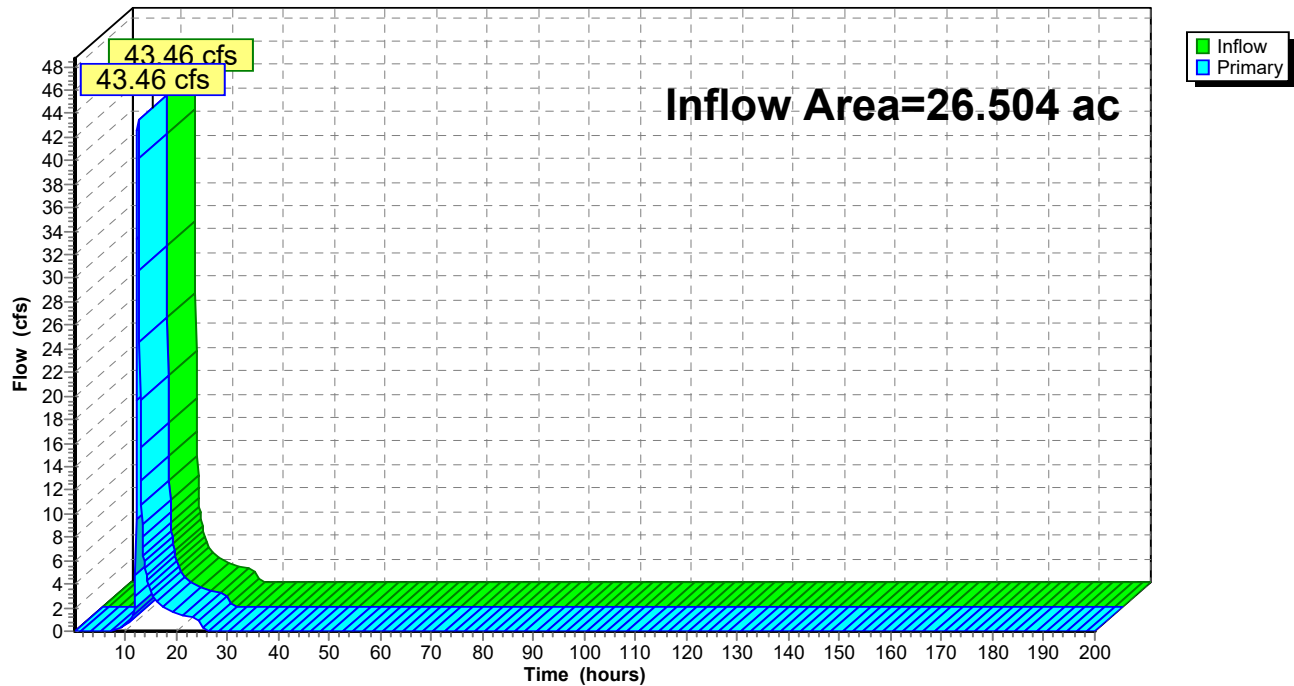
Summary for Link 1L: Pre Ditch POA6

Inflow Area = 26.504 ac, 23.85% Impervious, Inflow Depth = 2.22" for 10-yr event
Inflow = 43.46 cfs @ 12.46 hrs, Volume= 4.896 af
Primary = 43.46 cfs @ 12.46 hrs, Volume= 4.896 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 1L: Pre Ditch POA6

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre Dev. Basin 6 Runoff Area=441,055 sf 0.00% Impervious Runoff Depth=2.28"
Flow Length=1,222' Slope=0.0441 '/' Tc=12.4 min CN=60 Runoff=29.27 cfs 1.927 af

Subcatchment2S: Pre Dev. Basin 8 Runoff Area=289,814 sf 0.00% Impervious Runoff Depth=2.47"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=24.46 cfs 1.368 af

Subcatchment9S: Area 4 Runoff Area=423,660 sf 65.00% Impervious Runoff Depth=4.81"
Tc=18.0 min CN=85 Runoff=52.76 cfs 3.902 af

Reach 1R: Flowpath Downstream Avg. Flow Depth=4.89' Max Vel=1.80 fps Inflow=99.88 cfs 7.196 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=65.99 cfs 7.196 af

Link 1L: Pre Ditch POA6 Inflow=65.99 cfs 7.196 af
Primary=65.99 cfs 7.196 af

Total Runoff Area = 26.504 ac Runoff Volume = 7.196 af Average Runoff Depth = 3.26"
76.15% Pervious = 20.183 ac 23.85% Impervious = 6.322 ac

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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 1S: Pre Dev. Basin 6

Runoff = 29.27 cfs @ 12.05 hrs, Volume= 1.927 af, Depth= 2.28"
Routed to Reach 1R : Flowpath Downstream

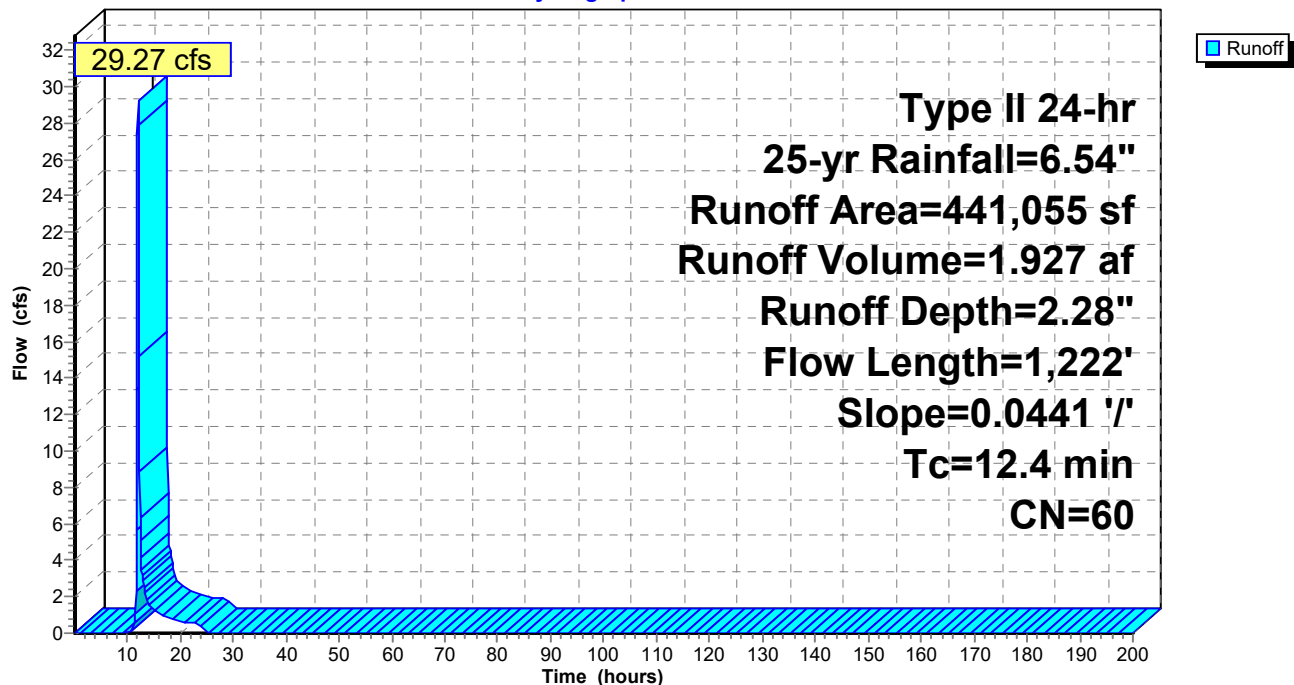
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
401,238	60	Woods, Fair, HSG B
39,817	56	Brush, Fair, HSG B
441,055	60	Weighted Average
441,055		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	1,222	0.0441	1.65		Kirpich Method, Estimated Tc General overland flow k= 2.00

Subcatchment 1S: Pre Dev. Basin 6

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 2S: Pre Dev. Basin 8

Runoff = 24.46 cfs @ 12.01 hrs, Volume= 1.368 af, Depth= 2.47"
Routed to Reach 1R : Flowpath Downstream

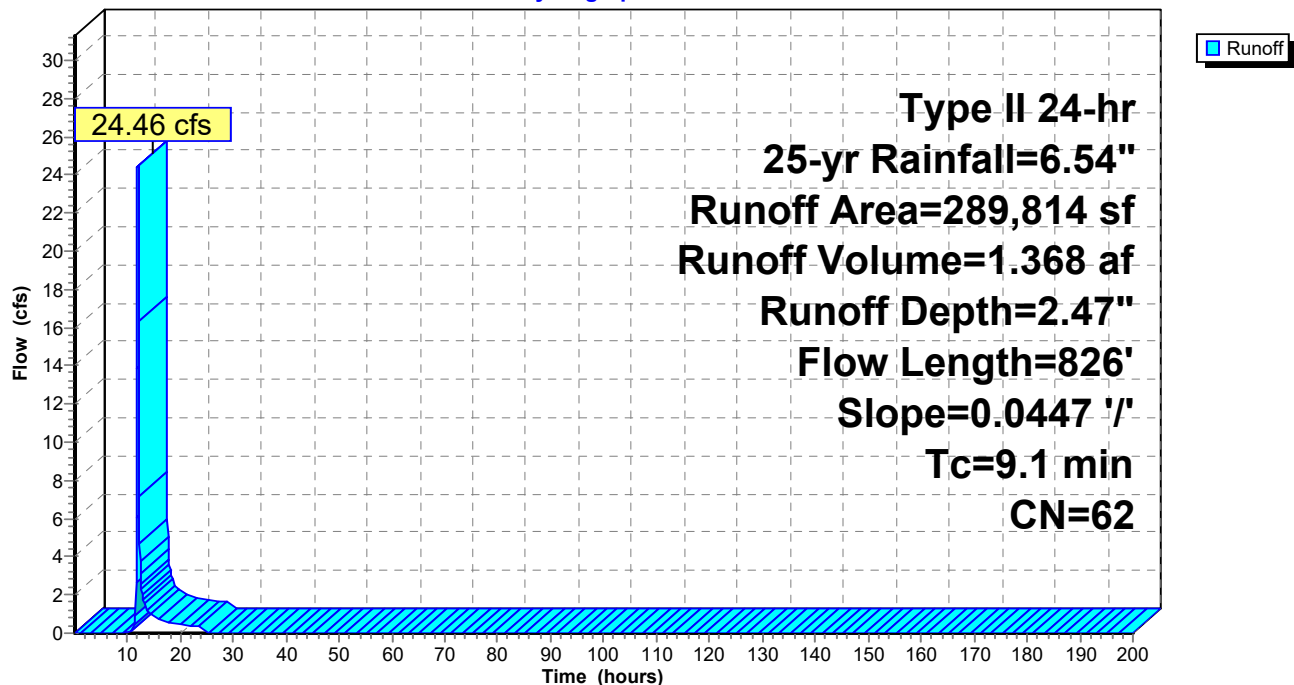
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
58,855	69	50-75% Grass cover, Fair, HSG B
289,814	62	Weighted Average
289,814		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 2S: Pre Dev. Basin 8

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 9S: Area 4

Runoff = 52.76 cfs @ 12.10 hrs, Volume= 3.902 af, Depth= 4.81"
Routed to Reach 1R : Flowpath Downstream

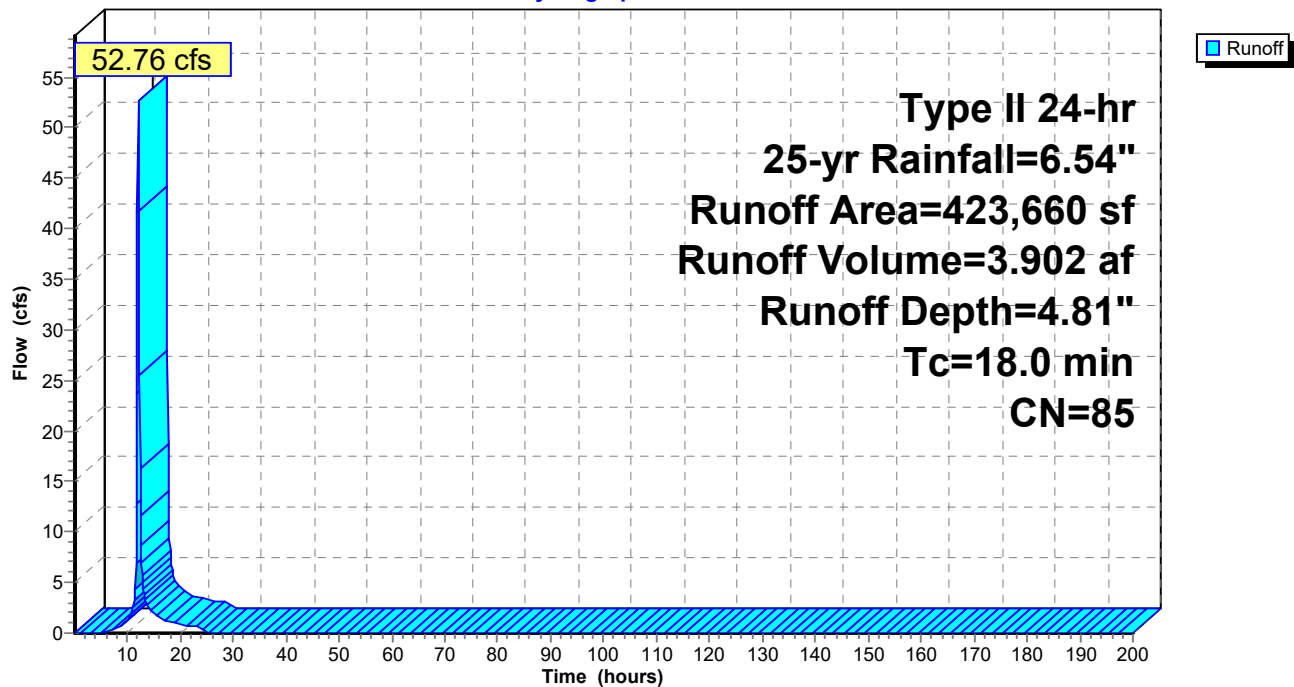
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
423,660	85	1/8 acre lots, 65% imp, HSG B
148,281		35.00% Pervious Area
275,379		65.00% Impervious Area

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

Subcatchment 9S: Area 4

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Reach 1R: Flowpath Downstream

Inflow Area = 26.504 ac, 23.85% Impervious, Inflow Depth = 3.26" for 25-yr event
Inflow = 99.88 cfs @ 12.06 hrs, Volume= 7.196 af
Outflow = 65.99 cfs @ 12.44 hrs, Volume= 7.196 af, Atten= 34%, Lag= 22.7 min
Routed to Link 1L : Pre Ditch POA6

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.80 fps, Min. Travel Time= 13.9 min

Avg. Velocity= 0.36 fps, Avg. Travel Time= 69.6 min

Peak Storage= 56,463 cf @ 12.21 hrs

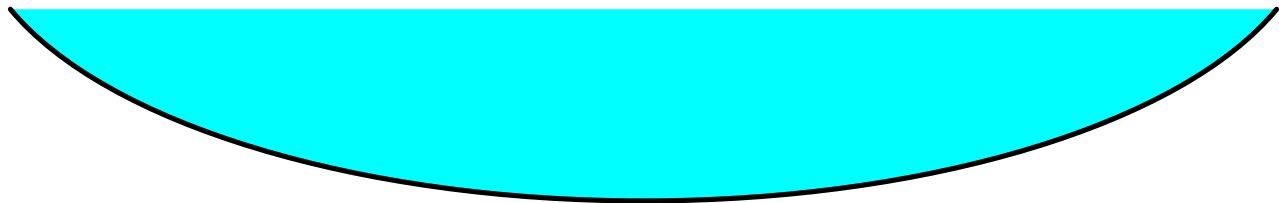
Average Depth at Peak Storage= 4.89' , Surface Width= 18.70'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

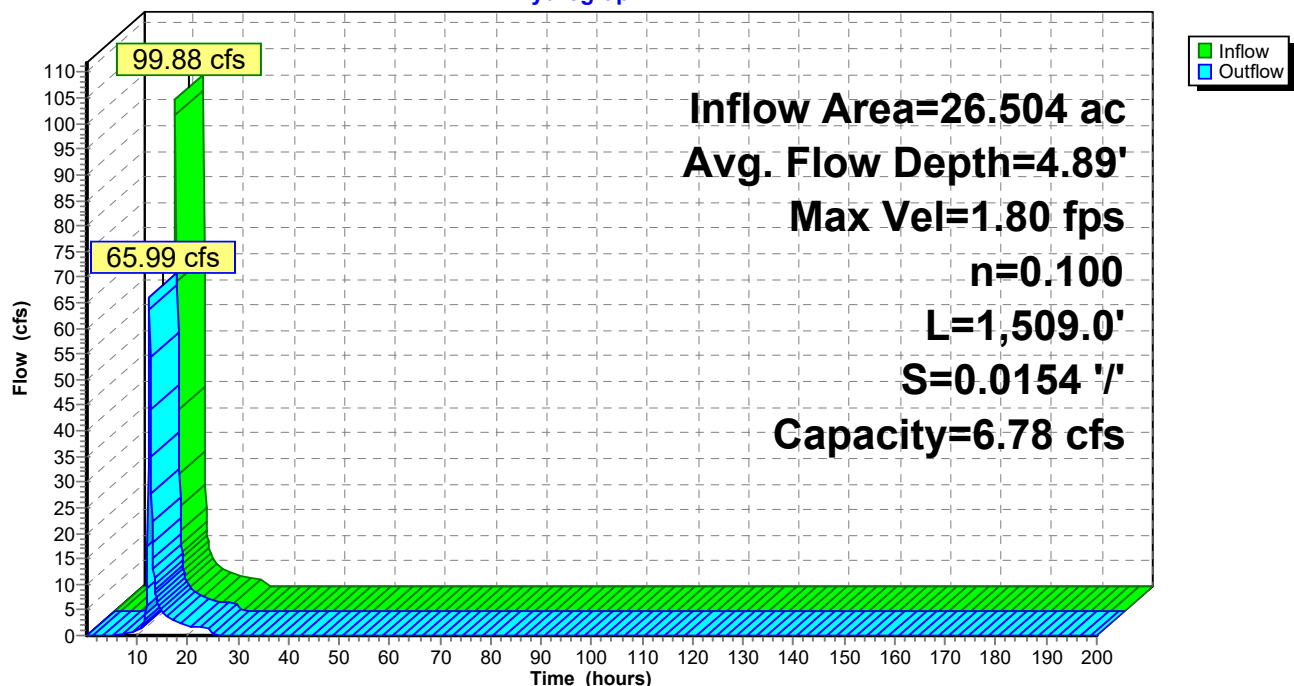
Length= 1,509.0' Slope= 0.0154 '/'

Inlet Invert= 505.43', Outlet Invert= 482.25'



Reach 1R: Flowpath Downstream

Hydrograph



32044.0000 - Ditch Analysis

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Type II 24-hr 25-yr Rainfall=6.54"

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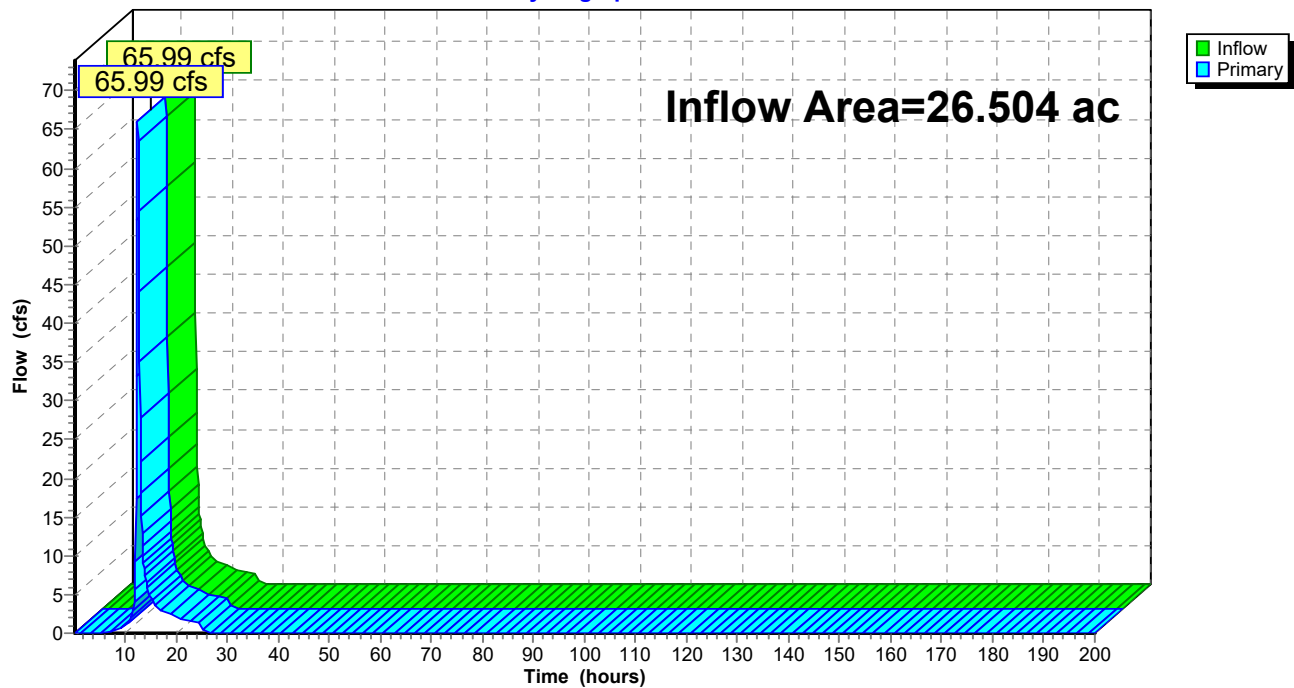
Summary for Link 1L: Pre Ditch POA6

Inflow Area = 26.504 ac, 23.85% Impervious, Inflow Depth = 3.26" for 25-yr event
Inflow = 65.99 cfs @ 12.44 hrs, Volume= 7.196 af
Primary = 65.99 cfs @ 12.44 hrs, Volume= 7.196 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 1L: Pre Ditch POA6

Hydrograph



32044.0000 - Ditch Analysis

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Type II 24-hr 100-yr Rainfall=8.17"

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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre Dev. Basin 6 Runoff Area=441,055 sf 0.00% Impervious Runoff Depth=3.46"
Flow Length=1,222' Slope=0.0441 '/' Tc=12.4 min CN=60 Runoff=45.48 cfs 2.921 af

Subcatchment2S: Pre Dev. Basin 8 Runoff Area=289,814 sf 0.00% Impervious Runoff Depth=3.69"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=36.97 cfs 2.045 af

Subcatchment9S: Area 4 Runoff Area=423,660 sf 65.00% Impervious Runoff Depth=6.38"
Tc=18.0 min CN=85 Runoff=68.97 cfs 5.169 af

Reach 1R: Flowpath Downstream Avg. Flow Depth=6.74' Max Vel=1.83 fps Inflow=141.30 cfs 10.134 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=94.01 cfs 10.134 af

Link 1L: Pre Ditch POA6 Inflow=94.01 cfs 10.134 af
Primary=94.01 cfs 10.134 af

Total Runoff Area = 26.504 ac Runoff Volume = 10.134 af Average Runoff Depth = 4.59"
76.15% Pervious = 20.183 ac 23.85% Impervious = 6.322 ac

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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 1S: Pre Dev. Basin 6

Runoff = 45.48 cfs @ 12.05 hrs, Volume= 2.921 af, Depth= 3.46"
Routed to Reach 1R : Flowpath Downstream

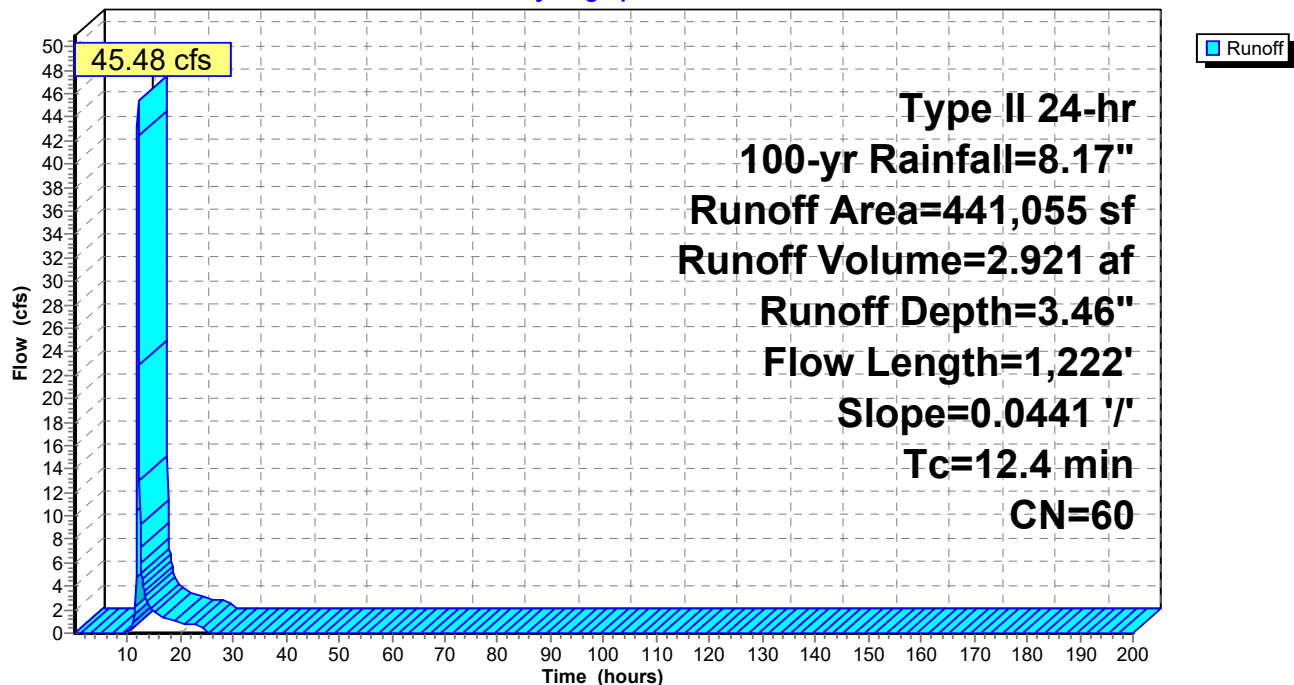
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
401,238	60	Woods, Fair, HSG B
39,817	56	Brush, Fair, HSG B
441,055	60	Weighted Average
441,055		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.4	1,222	0.0441	1.65		Kirpich Method, Estimated Tc General overland flow k= 2.00

Subcatchment 1S: Pre Dev. Basin 6

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 2S: Pre Dev. Basin 8

Runoff = 36.97 cfs @ 12.00 hrs, Volume= 2.045 af, Depth= 3.69"
Routed to Reach 1R : Flowpath Downstream

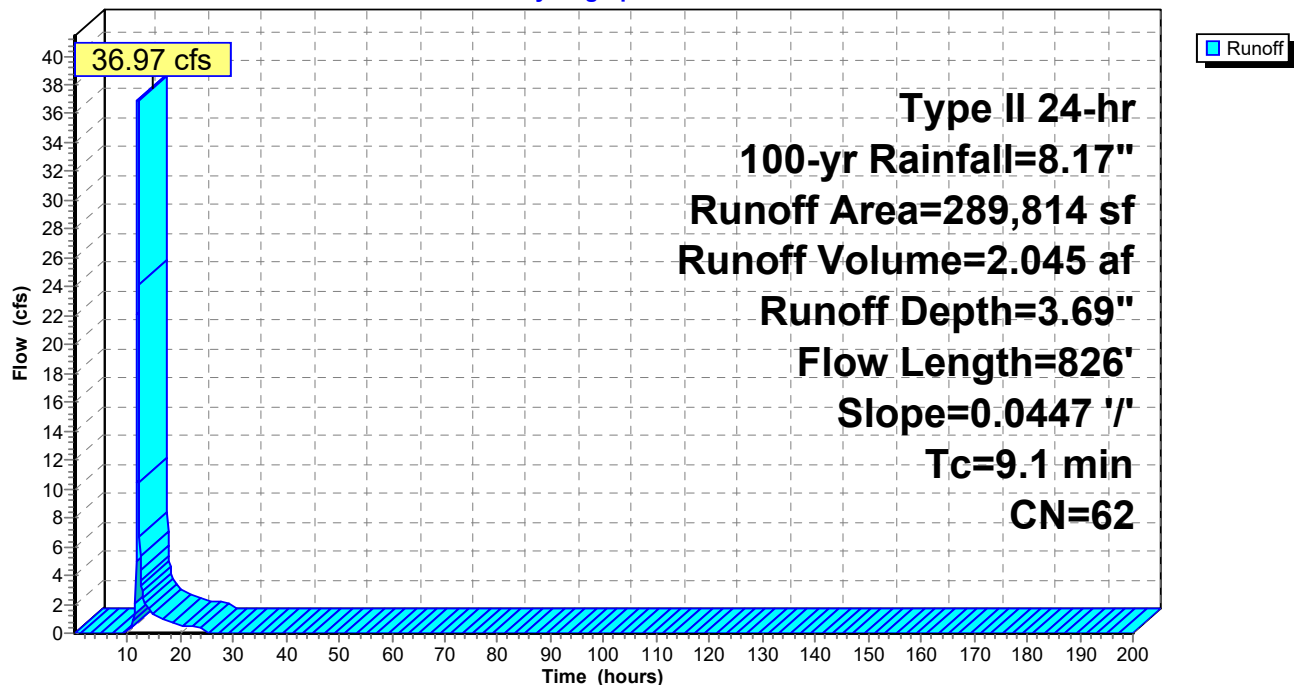
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
58,855	69	50-75% Grass cover, Fair, HSG B
289,814	62	Weighted Average
289,814		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 2S: Pre Dev. Basin 8

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 9S: Area 4

Runoff = 68.97 cfs @ 12.10 hrs, Volume= 5.169 af, Depth= 6.38"
Routed to Reach 1R : Flowpath Downstream

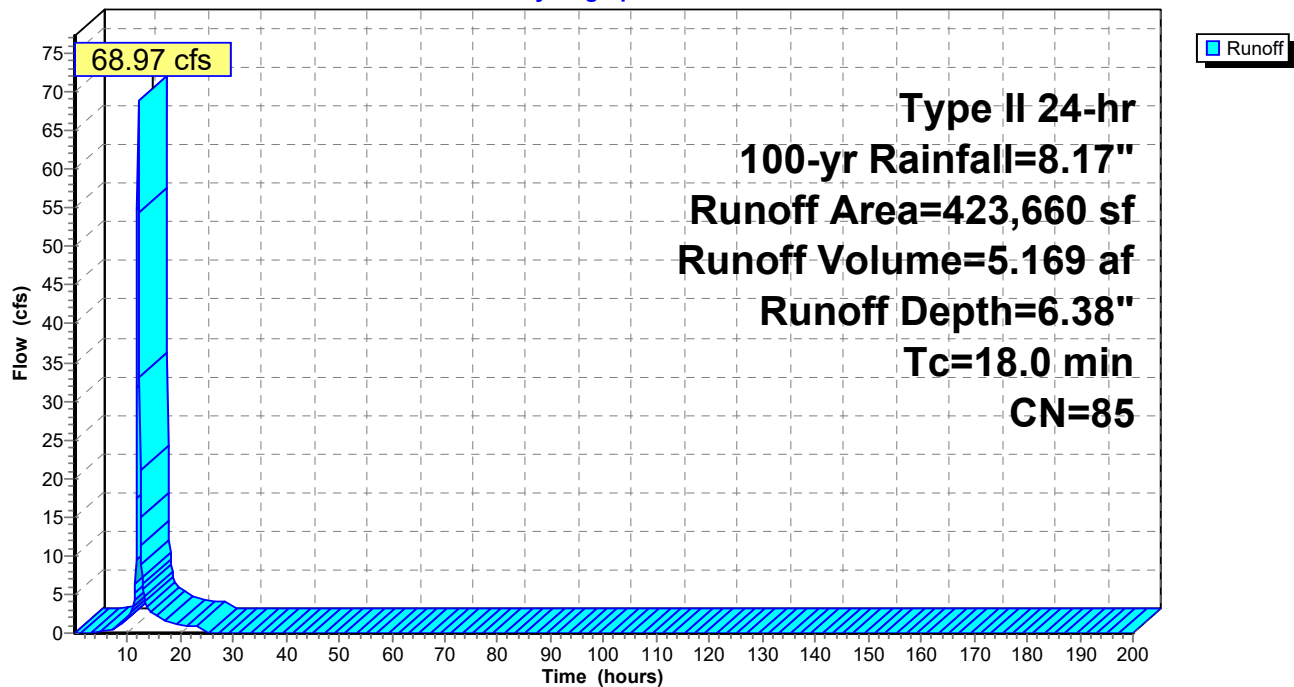
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
423,660	85	1/8 acre lots, 65% imp, HSG B
148,281		35.00% Pervious Area
275,379		65.00% Impervious Area

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

Subcatchment 9S: Area 4

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Reach 1R: Flowpath Downstream

Inflow Area = 26.504 ac, 23.85% Impervious, Inflow Depth = 4.59" for 100-yr event
Inflow = 141.30 cfs @ 12.05 hrs, Volume= 10.134 af
Outflow = 94.01 cfs @ 12.43 hrs, Volume= 10.134 af, Atten= 33%, Lag= 22.7 min
Routed to Link 1L : Pre Ditch POA6

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.83 fps, Min. Travel Time= 13.8 min

Avg. Velocity= 0.39 fps, Avg. Travel Time= 64.0 min

Peak Storage= 79,289 cf @ 12.20 hrs

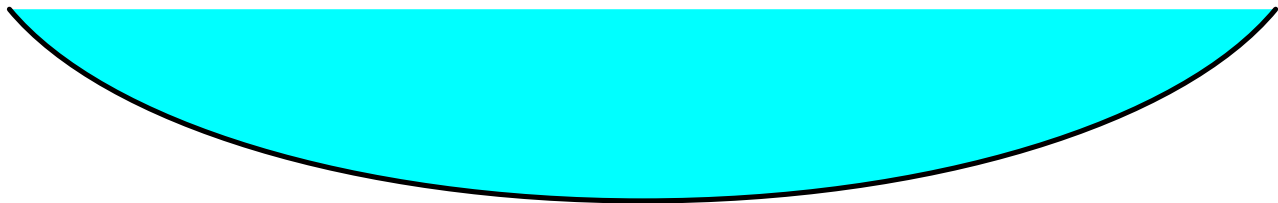
Average Depth at Peak Storage= 6.74' , Surface Width= 21.95'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

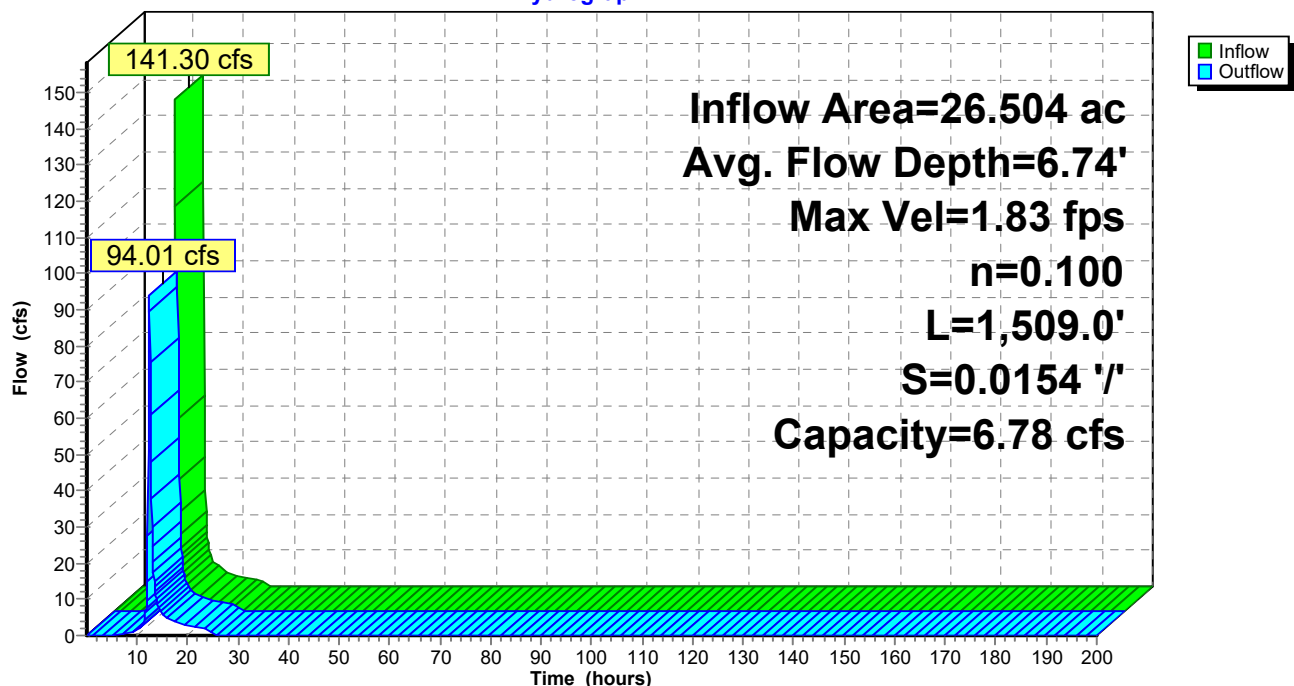
Length= 1,509.0' Slope= 0.0154 '/'

Inlet Invert= 505.43', Outlet Invert= 482.25'



Reach 1R: Flowpath Downstream

Hydrograph



32044.0000 - Ditch Analysis

Prepared by Thomas & Hutton

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Type II 24-hr 100-yr Rainfall=8.17"

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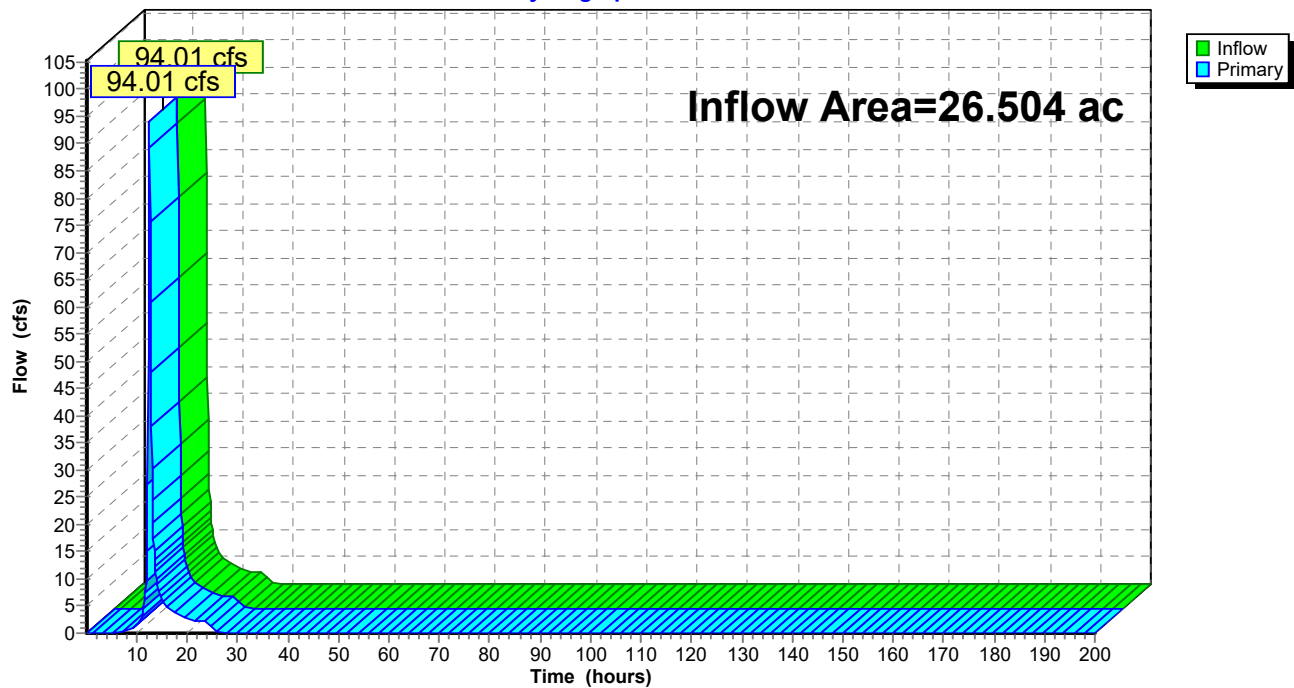
Summary for Link 1L: Pre Ditch POA6

Inflow Area = 26.504 ac, 23.85% Impervious, Inflow Depth = 4.59" for 100-yr event
Inflow = 94.01 cfs @ 12.43 hrs, Volume= 10.134 af
Primary = 94.01 cfs @ 12.43 hrs, Volume= 10.134 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 1L: Pre Ditch POA6

Hydrograph



Channel Report

10-Yr Post Dev Point 1

User-defined

Invert Elev (ft) = 502.00
Slope (%) = 2.08
N-Value = 0.026

Highlighted

Depth (ft) = 10.18
Q (cfs) = 21.17
Area (sqft) = 5.89
Velocity (ft/s) = 3.60
Wetted Perim (ft) = 20.43
Crit Depth, Yc (ft) = 6.50
Top Width (ft) = 1.37
EGL (ft) = 10.38

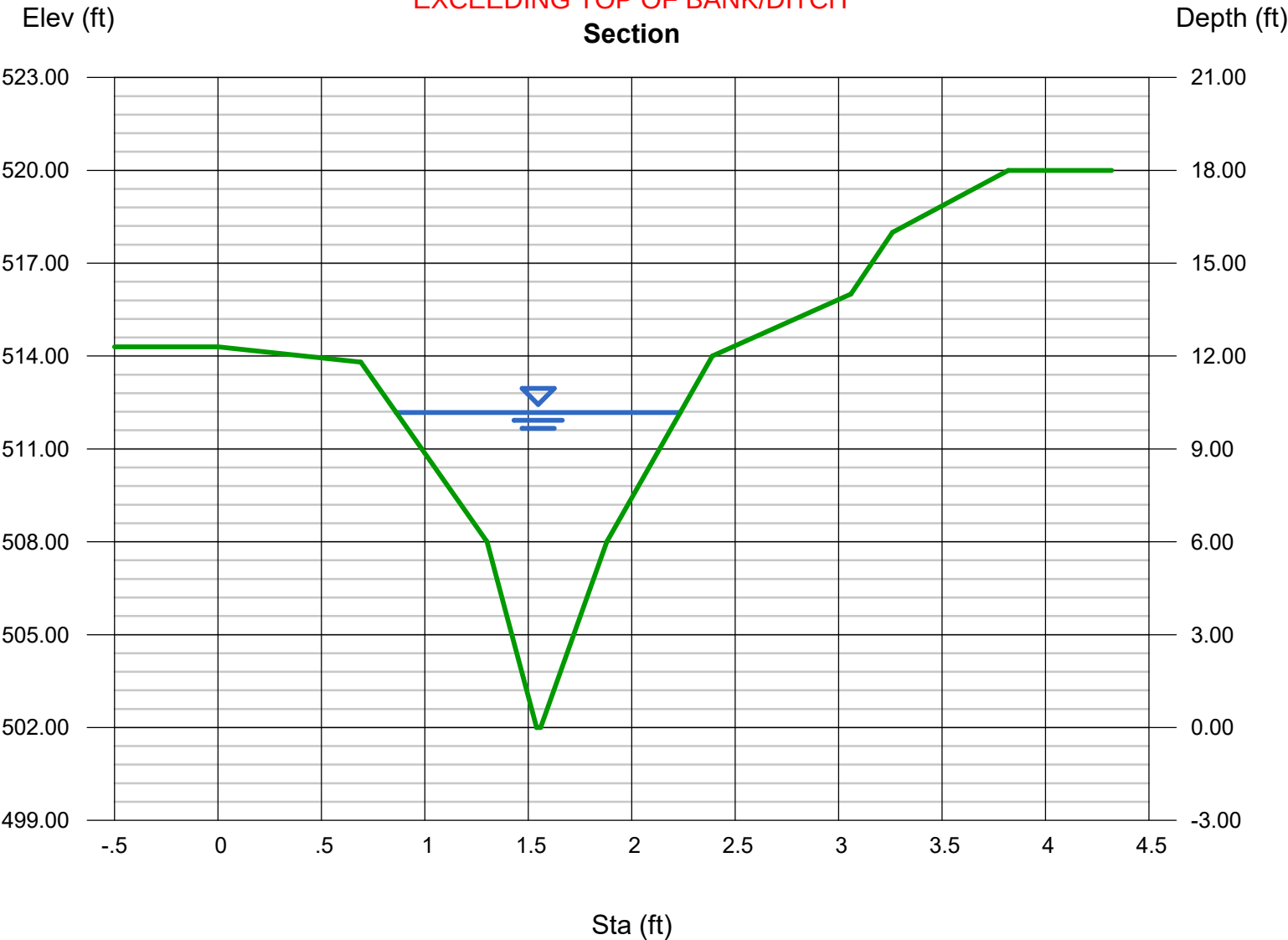
Calculations

Compute by: Known Q
Known Q (cfs) = 21.17

(Sta, El, n)-(Sta, El, n)...

(0.00, 514.30)-(0.69, 513.80, 0.026)-(1.30, 508.00, 0.026)-(1.54, 502.00, 0.026)-(1.56, 502.00, 0.026)-(1.88, 508.00, 0.026)-(2.39, 514.00, 0.026)
-(3.06, 516.00, 0.026)-(3.26, 518.00, 0.026)-(3.82, 520.00, 0.026)

MODEL WAS NOT ABLE TO GENERATE
100-YR STORM DUE TO ELEVATION
EXCEEDING TOP OF BANK/DITCH



Thursday, Nov 6 2025

Depth (ft)	= 12.07
Q (cfs)	= 37.23
Area (sqft)	= 8.87
Velocity (ft/s)	= 4.20
Wetted Perim (ft)	= 24.42
Crit Depth, Yc (ft)	= 8.16
Top Width (ft)	= 2.10
EGL (ft)	= 12.34

(0.00, 514.30)-(0.69, 513.80, 0.026)-(1.30, 508.00, 0.026)-(1.54, 502.00, 0.026)-(1.56, 502.00, 0.026)-(1.88, 508.00, 0.026)-(2.39, 514.00, 0.026)
 -(3.06, 516.00, 0.026)-(3.26, 518.00, 0.026)-(3.82, 520.00, 0.026)

The diagram shows a cross-section of a ditch. The horizontal axis is labeled 'Sta (ft)' and ranges from -0.5 to 4.5. The left vertical axis is labeled 'Elev (ft)' and ranges from 99.00 to 23.00. The right vertical axis is labeled 'Depth (ft)' and ranges from -3.00 to 21.00. A green line represents the ditch profile, starting at an elevation of 14.00 ft at Sta -0.5, dipping to a minimum of 2.00 ft at Sta 1.5, and then rising to 20.00 ft at Sta 4.0. A blue line at an elevation of 14.00 ft represents the ground surface. A blue triangle symbol is located at Sta 1.5, indicating the ditch bottom. The text 'EXCEEDING TOP OF BANKDITCH' is written in red at the top of the diagram.

Sta (ft)	Elev (ft)	Depth (ft)
-0.5	14.00	12.00
0.0	14.00	12.00
0.5	13.80	12.20
1.0	11.00	15.00
1.5	2.00	21.00
2.0	8.00	15.00
2.5	14.00	12.00
3.0	16.50	9.50
3.5	18.00	8.00
4.0	20.00	6.00

Channel Report

10-Yr Post Dev Point 2

User-defined

Invert Elev (ft)

= 500.00

Slope (%)

= 2.08

N-Value

= 0.026

Highlighted

Depth (ft)

= 9.68

Q (cfs)

= 32.92

Area (sqft)

= 7.53

Velocity (ft/s)

= 4.37

Wetted Perim (ft)

= 19.53

Crit Depth, Yc (ft)

= 6.33

Top Width (ft)

= 1.60

EGL (ft)

= 9.98

Calculations

Compute by:

Known Q

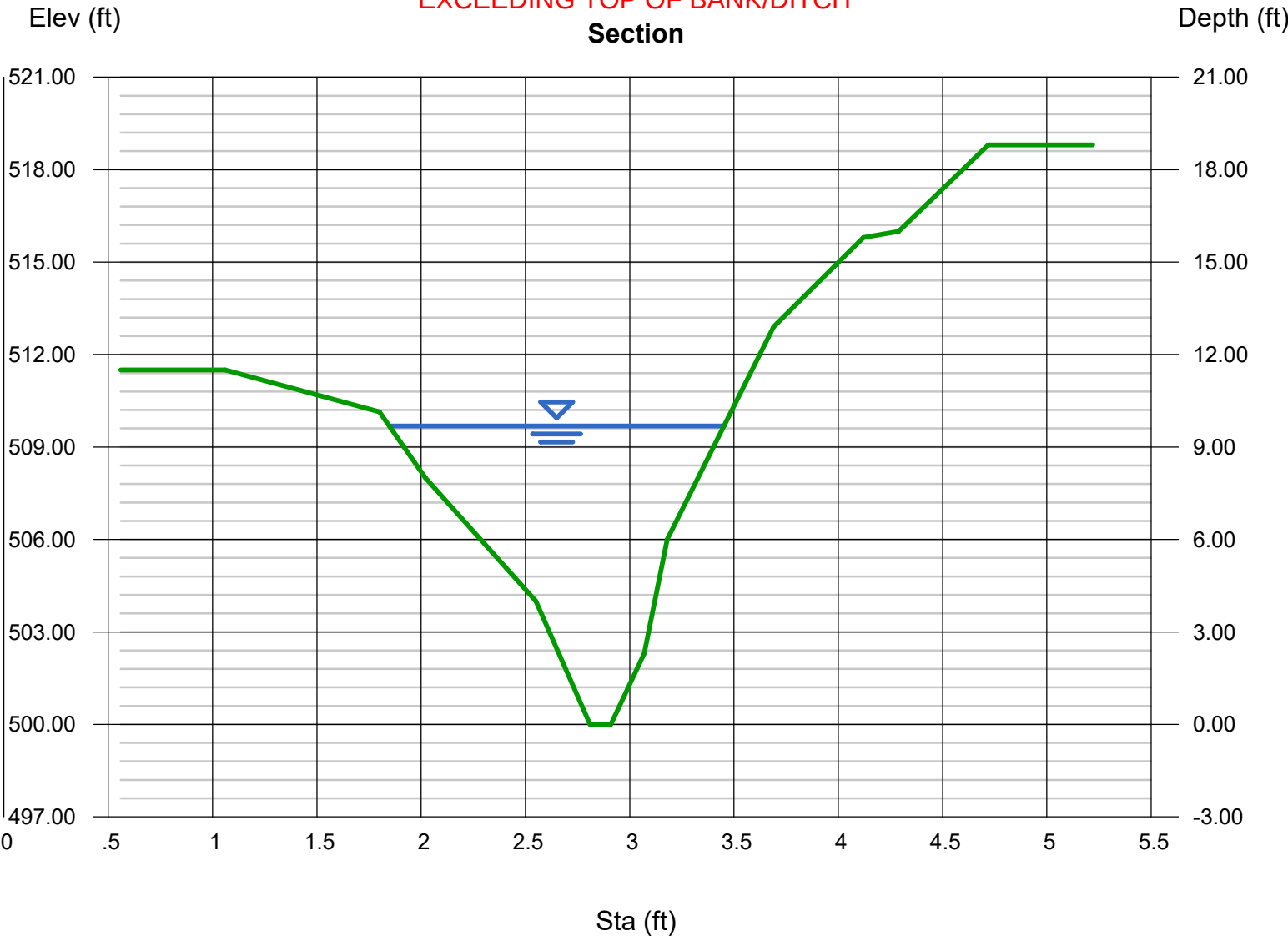
Known Q (cfs)

= 32.92

(Sta, El, n)-(Sta, El, n)...

(1.06, 511.50)-(1.80, 510.14, 0.026)-(2.02, 508.00, 0.026)-(2.55, 504.00, 0.026)-(2.81, 500.00, 0.026)-(2.91, 500.00, 0.026)-(3.07, 502.30, 0.026)
-(3.18, 506.00, 0.026)-(3.69, 512.90, 0.026)-(4.12, 515.80, 0.026)-(4.29, 516.00, 0.026)-(4.72, 518.80, 0.026)

MODEL WAS NOT ABLE TO GENERATE
100-YR STORM DUE TO ELEVATION
EXCEEDING TOP OF BANK/DITCH



Channel Report

25-Yr Post Dev Point 2

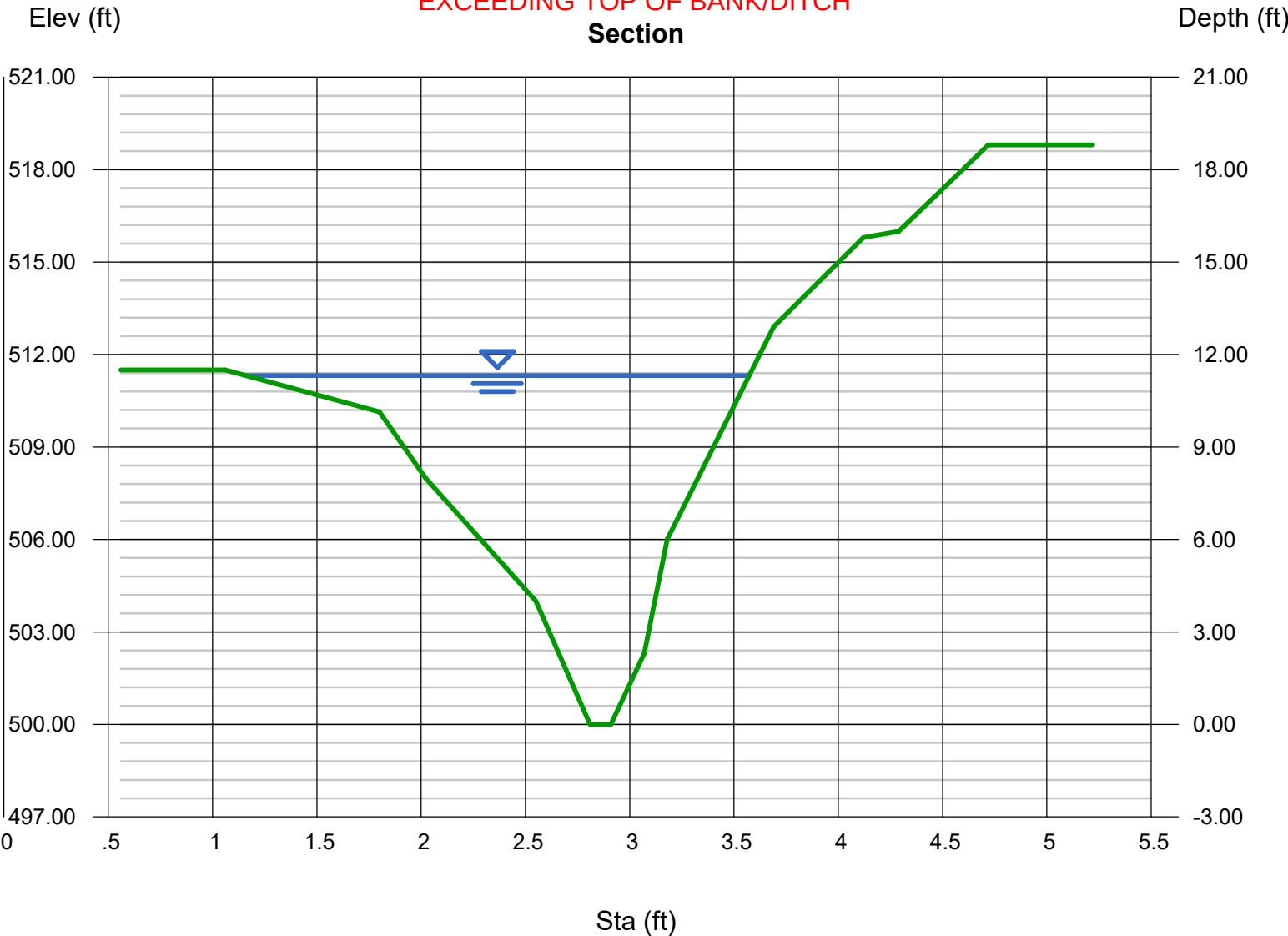
User-defined		Highlighted	
Invert Elev (ft)	= 500.00	Depth (ft)	= 11.32
Slope (%)	= 2.08	Q (cfs)	= 53.06
N-Value	= 0.026	Area (sqft)	= 10.71
Calculations		Velocity (ft/s)	= 4.95
Compute by:	Known Q	Wetted Perim (ft)	= 22.98
Known Q (cfs)	= 53.06	Crit Depth, Yc (ft)	= 7.78
		Top Width (ft)	= 2.42
		EGL (ft)	= 11.70

(Sta, El, n)-(Sta, El, n)...

(1.06, 511.50)-(1.80, 510.14, 0.026)-(2.02, 508.00, 0.026)-(2.55, 504.00, 0.026)-(2.81, 500.00, 0.026)-(2.91, 500.00, 0.026)-(3.07, 502.30, 0.026)

-(3.18, 506.00, 0.026)-(3.69, 512.90, 0.026)-(4.12, 515.80, 0.026)-(4.29, 516.00, 0.026)-(4.72, 518.80, 0.026)

MODEL WAS NOT ABLE TO GENERATE
100-YR STORM DUE TO ELEVATION
EXCEEDING TOP OF BANK/DITCH

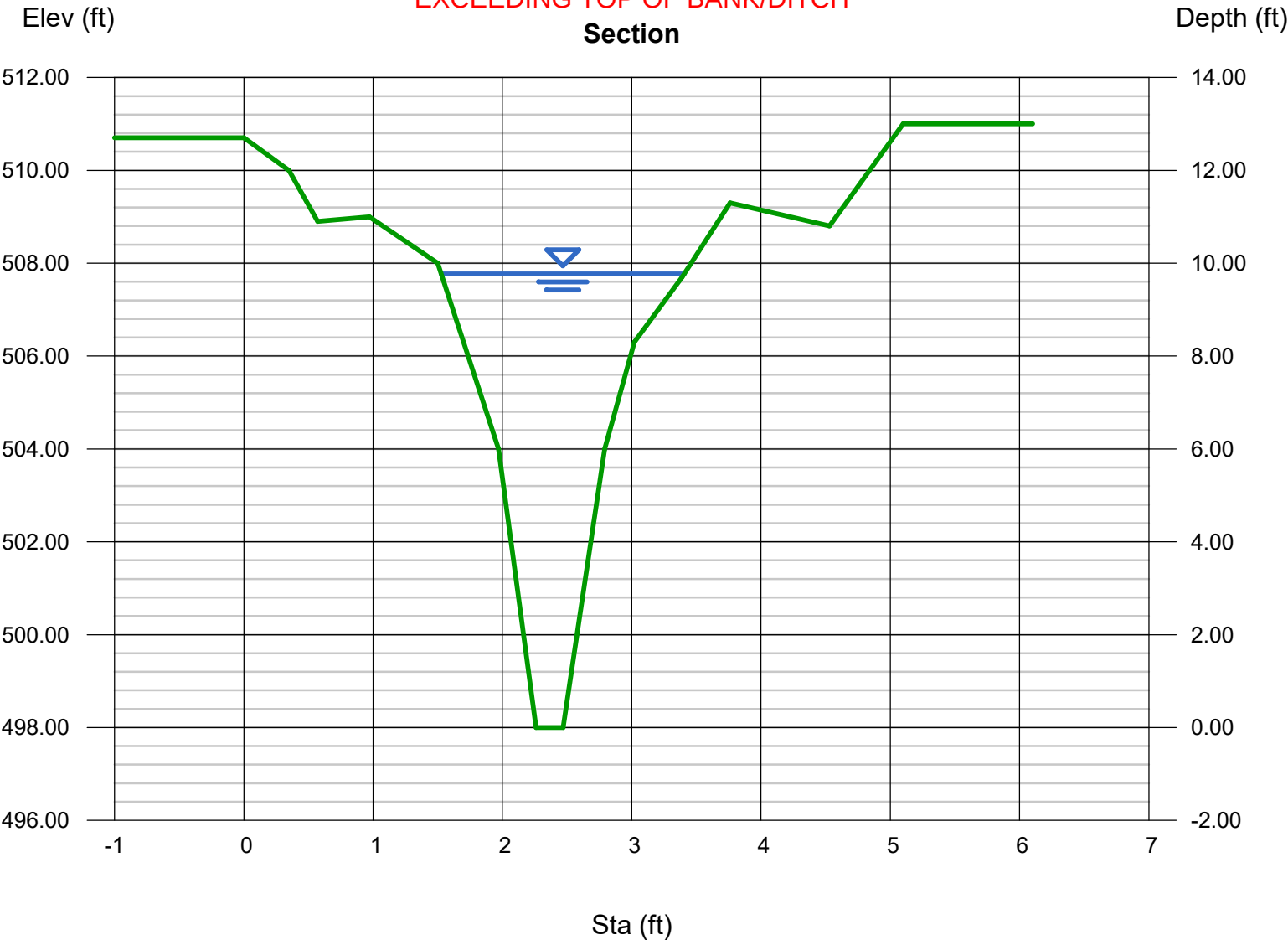


Channel Report

10-Yr Post Dev Point 3

User-defined		Highlighted	
Invert Elev (ft)	= 498.00	Depth (ft)	= 9.77
Slope (%)	= 2.08	Q (cfs)	= 35.29
N-Value	= 0.026	Area (sqft)	= 7.90
Calculations		Velocity (ft/s)	= 4.46
Compute by:	Known Q	Wetted Perim (ft)	= 19.85
Known Q (cfs)	= 35.29	Crit Depth, Yc (ft)	= 6.14
		Top Width (ft)	= 1.88
		EGL (ft)	= 10.08
(Sta, El, n)-(Sta, El, n)...			
(0.00, 510.70)-(0.35, 510.00, 0.026)-(0.57, 508.90, 0.026)-(0.97, 509.00, 0.026)-(1.50, 508.00, 0.026)-(1.97, 504.00, 0.026)-(2.26, 498.00, 0.026)			
-(2.47, 498.00, 0.026)-(2.79, 504.00, 0.026)-(3.02, 506.30, 0.026)-(3.39, 507.70, 0.026)-(3.76, 509.30, 0.026)-(4.53, 508.80, 0.026)-(5.10, 511.00, 0.026)			

MODEL WAS NOT ABLE TO GENERATE
100-YR STORM DUE TO ELEVATION
EXCEEDING TOP OF BANK/DITCH

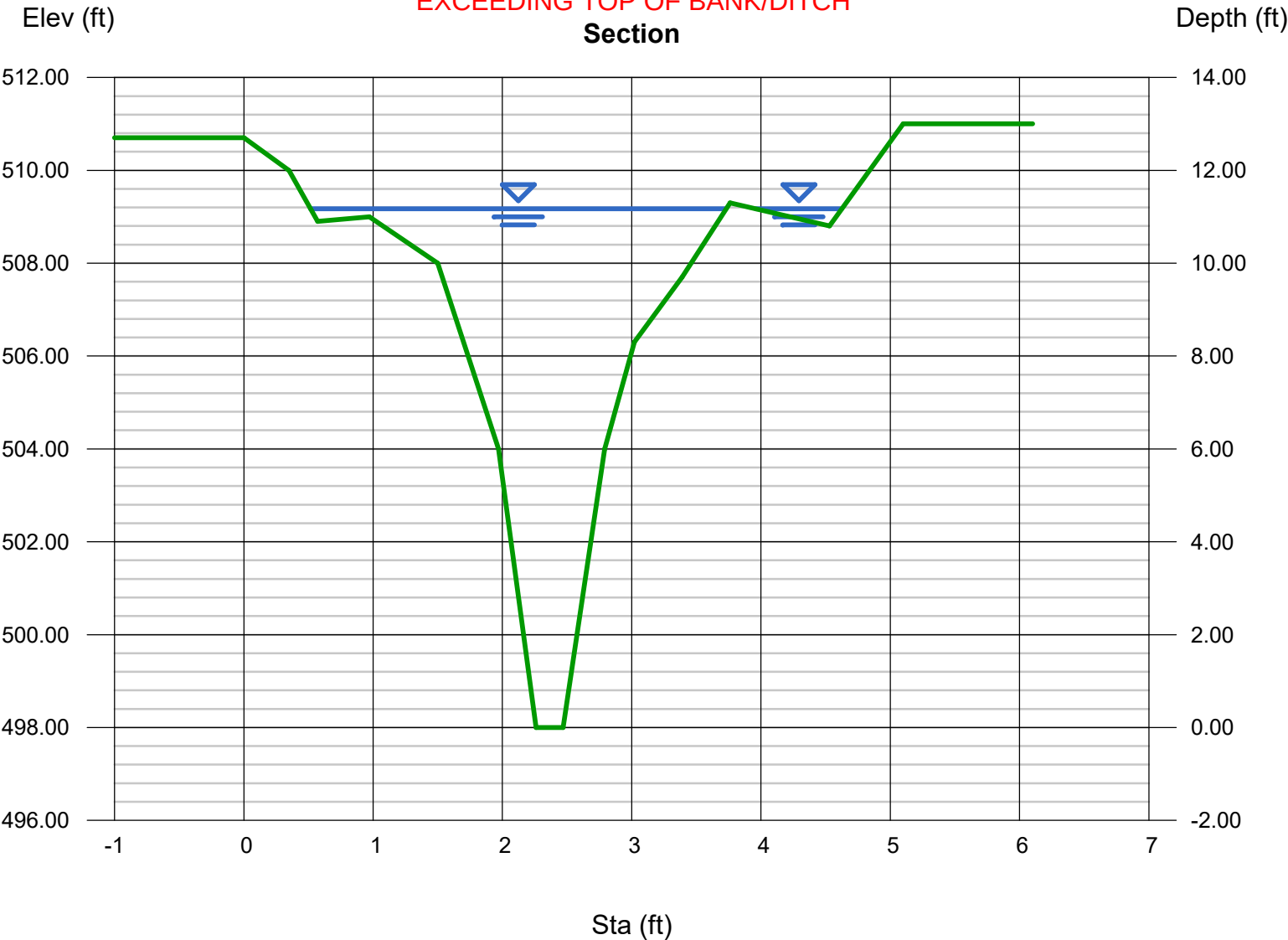


Channel Report

25-Yr Post Dev Point 3

User-defined		Highlighted	
Invert Elev (ft)	= 498.00	Depth (ft)	= 11.17
Slope (%)	= 2.08	Q (cfs)	= 56.23
N-Value	= 0.026	Area (sqft)	= 11.37
Calculations		Velocity (ft/s)	= 4.95
Compute by:	Known Q	Wetted Perim (ft)	= 24.40
Known Q (cfs)	= 56.23	Crit Depth, Yc (ft)	= 7.81
		Top Width (ft)	= 3.88
		EGL (ft)	= 11.55
(Sta, El, n)-(Sta, El, n)...			
(0.00, 510.70)-(0.35, 510.00, 0.026)-(0.57, 508.90, 0.026)-(0.97, 509.00, 0.026)-(1.50, 508.00, 0.026)-(1.97, 504.00, 0.026)-(2.26, 498.00, 0.026)			
-(2.47, 498.00, 0.026)-(2.79, 504.00, 0.026)-(3.02, 506.30, 0.026)-(3.39, 507.70, 0.026)-(3.76, 509.30, 0.026)-(4.53, 508.80, 0.026)-(5.10, 511.00, 0.026)			

MODEL WAS NOT ABLE TO GENERATE
100-YR STORM DUE TO ELEVATION
EXCEEDING TOP OF BANK/DITCH



Channel Report

10-Yr Post Dev Point 4

User-defined

Invert Elev (ft) = 496.00
Slope (%) = 2.08
N-Value = 0.026

Calculations

Compute by: Known Q
Known Q (cfs) = 40.69

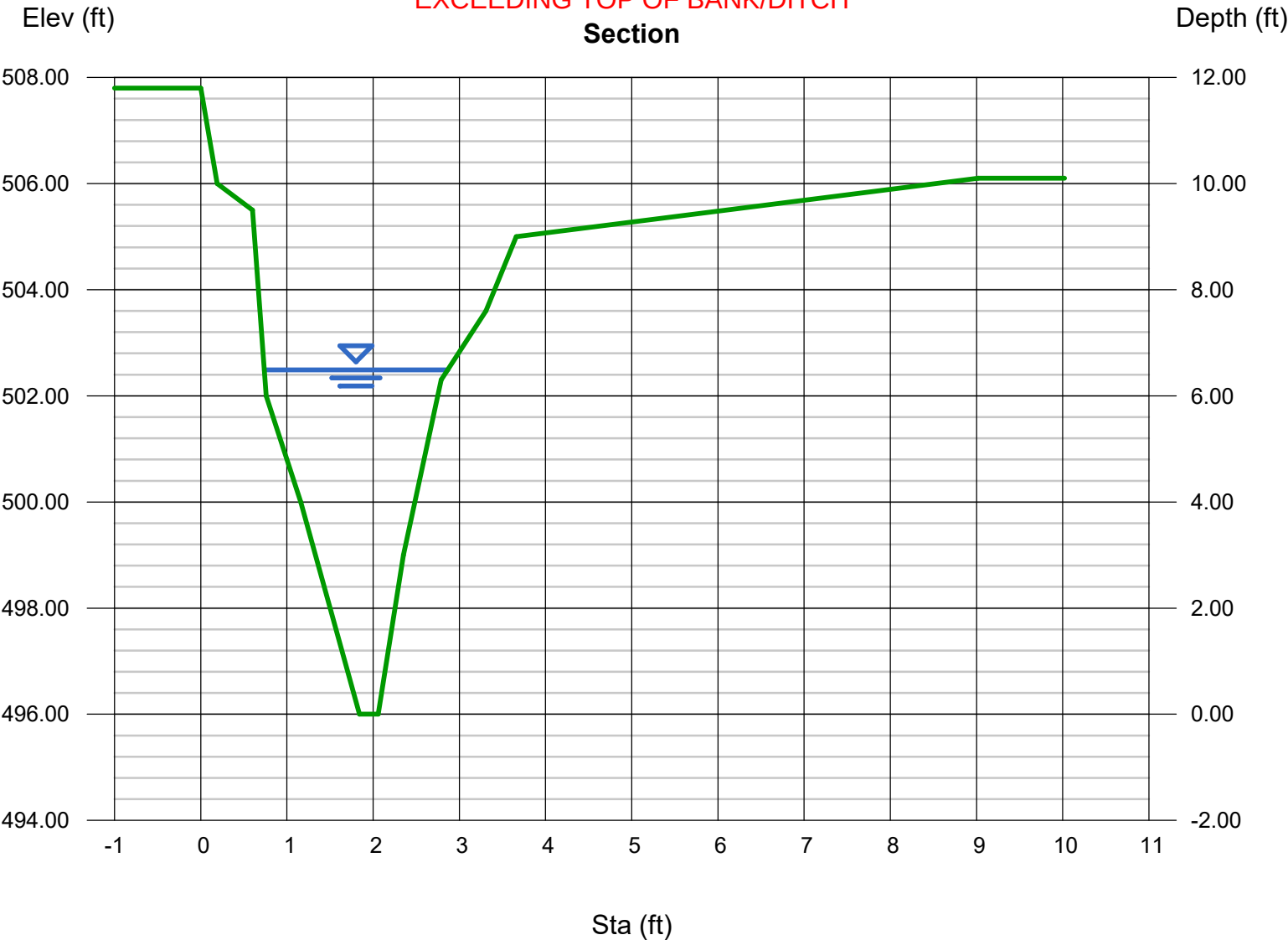
Highlighted

Depth (ft) = 6.49
Q (cfs) = 40.69
Area (sqft) = 7.35
Velocity (ft/s) = 5.54
Wetted Perim (ft) = 13.36
Crit Depth, Yc (ft) = 4.92
Top Width (ft) = 2.13
EGL (ft) = 6.97

(Sta, El, n)-(Sta, El, n)...

(0.00, 507.80)-(0.19, 506.00, 0.026)-(0.60, 505.50, 0.026)-(0.76, 502.00, 0.026)-(1.16, 500.00, 0.026)-(1.84, 496.00, 0.026)-(2.06, 496.00, 0.026)
-(2.35, 499.00, 0.026)-(2.79, 502.30, 0.026)-(3.31, 503.60, 0.026)-(3.66, 505.00, 0.026)-(9.02, 506.10, 0.026)

MODEL WAS NOT ABLE TO GENERATE
100-YR STORM DUE TO ELEVATION
EXCEEDING TOP OF BANK/DITCH



Channel Report

25-Yr Post Dev Point 4

User-defined

Invert Elev (ft) = 496.00
Slope (%) = 2.08
N-Value = 0.026

Highlighted

Depth (ft) = 7.73
Q (cfs) = 63.81
Area (sqft) = 10.33
Velocity (ft/s) = 6.18
Wetted Perim (ft) = 15.93
Crit Depth, Yc (ft) = 5.99
Top Width (ft) = 2.66
EGL (ft) = 8.32

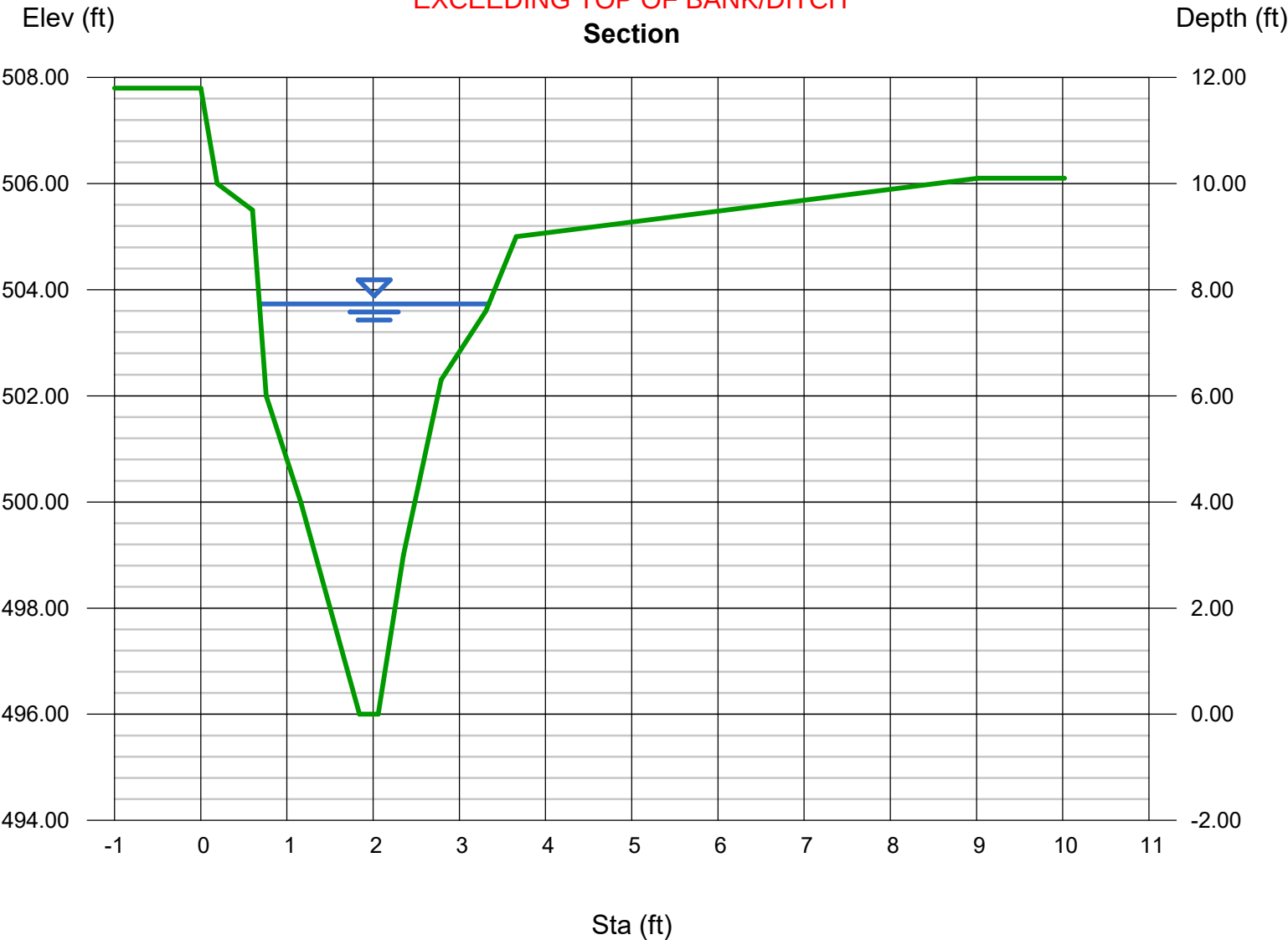
Calculations

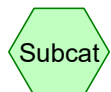
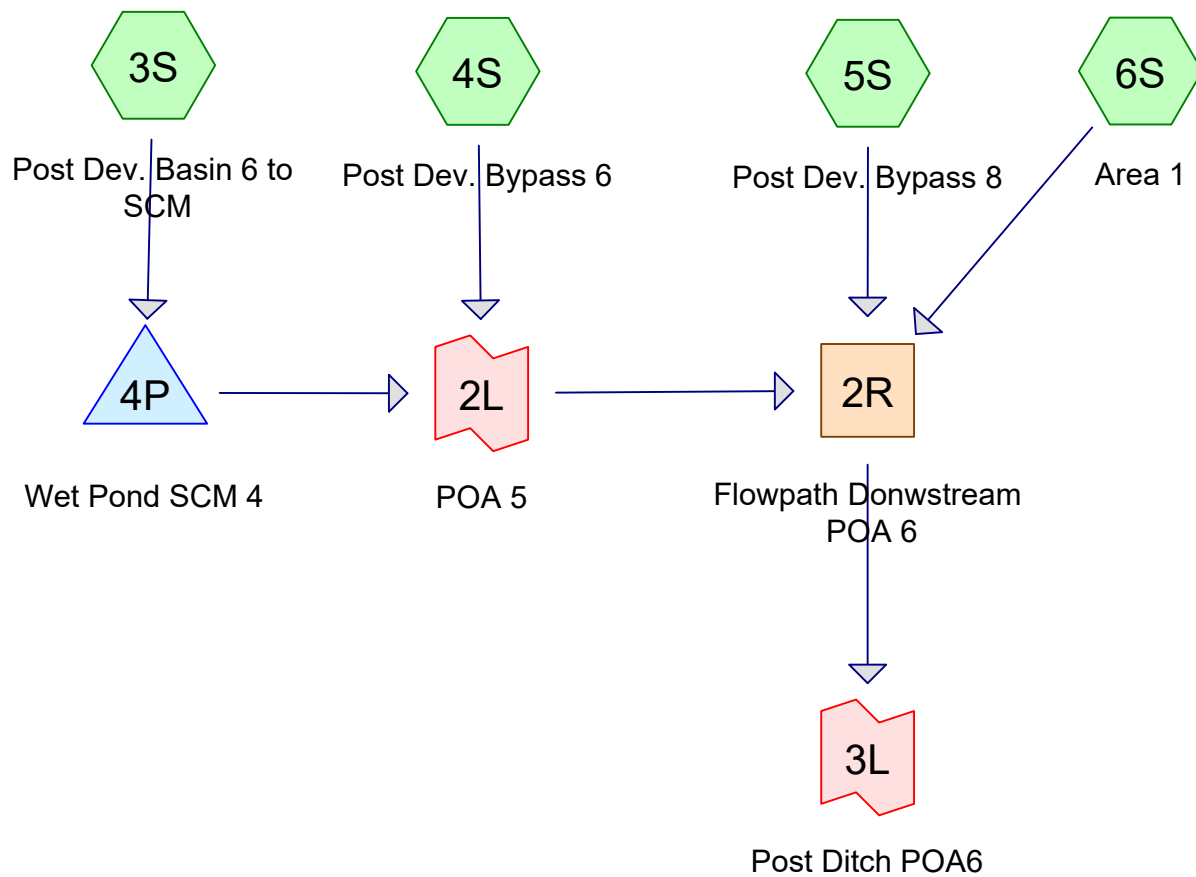
Compute by: Known Q
Known Q (cfs) = 63.81

(Sta, El, n)-(Sta, El, n)...

(0.00, 507.80)-(0.19, 506.00, 0.026)-(0.60, 505.50, 0.026)-(0.76, 502.00, 0.026)-(1.16, 500.00, 0.026)-(1.84, 496.00, 0.026)-(2.06, 496.00, 0.026)
-(2.35, 499.00, 0.026)-(2.79, 502.30, 0.026)-(3.31, 503.60, 0.026)-(3.66, 505.00, 0.026)-(9.02, 506.10, 0.026)

MODEL WAS NOT ABLE TO GENERATE
100-YR STORM DUE TO ELEVATION
EXCEEDING TOP OF BANK/DITCH

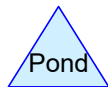




Subcat



Reach



Pond



Link

Routing Diagram for 32044.0000 - Ditch Analysis

Prepared by Thomas & Hutton, Printed 11/6/2025

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32044.0000 - Ditch Analysis

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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	10-yr	Type II 24-hr		Default	24.00	1	5.17	2
2	25-yr	Type II 24-hr		Default	24.00	1	6.54	2
3	100-yr	Type II 24-hr		Default	24.00	1	8.17	2

32044.0000 - Ditch Analysis

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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.103	85	1/8 acre lots, 65% imp, HSG B (6S)
1.227	69	50-75% Grass cover, Fair, HSG B (5S)
1.880	56	Brush, Fair, HSG B (3S, 4S)
1.986	98	Paved parking, HSG B (3S, 4S, 5S)
1.455	98	Roofs, HSG B (3S)
0.326	98	Water Surface, 0% imp, HSG B (3S)
9.943	60	Woods, Fair, HSG B (4S, 5S)
18.920	71	TOTAL AREA

32044.0000 - Ditch Analysis

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Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
18.920	HSG B	3S, 4S, 5S, 6S
0.000	HSG C	
0.000	HSG D	
0.000	Other	
18.920		TOTAL AREA

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Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	2.103	0.000	0.000	0.000	2.103	1/8 acre lots, 65% imp	6S
0.000	1.227	0.000	0.000	0.000	1.227	50-75% Grass cover, Fair	5S
0.000	1.880	0.000	0.000	0.000	1.880	Brush, Fair	3S, 4S
0.000	1.986	0.000	0.000	0.000	1.986	Paved parking	3S, 4S, 5S
0.000	1.455	0.000	0.000	0.000	1.455	Roofs	3S
0.000	0.326	0.000	0.000	0.000	0.326	Water Surface, 0% imp	3S
0.000	9.943	0.000	0.000	0.000	9.943	Woods, Fair	4S, 5S
0.000	18.920	0.000	0.000	0.000	18.920	TOTAL AREA	

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Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	4P	522.00	521.50	45.0	0.0111	0.011	0.0	36.0	0.0	

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Type II 24-hr 10-yr Rainfall=5.17"

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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment3S: Post Dev. Basin 6 to Runoff Area=185,285 sf 75.67% Impervious Runoff Depth=4.15"
Tc=5.0 min CN=91 Runoff=25.26 cfs 1.470 af

Subcatchment4S: Post Dev. Bypass 6 Runoff Area=257,427 sf 1.66% Impervious Runoff Depth=1.40"
Tc=5.0 min CN=60 Runoff=13.01 cfs 0.690 af

Subcatchment5S: Post Dev. Bypass 8 Runoff Area=289,814 sf 1.87% Impervious Runoff Depth=1.54"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=14.84 cfs 0.856 af

Subcatchment6S: Area 1 Runoff Area=91,613 sf 65.00% Impervious Runoff Depth=3.53"
Tc=15.0 min CN=85 Runoff=9.04 cfs 0.618 af

Reach 2R: Flowpath Downstream POA Avg. Flow Depth=1.89' Max Vel=1.66 fps Inflow=35.66 cfs 3.630 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=21.17 cfs 3.629 af

Pond 4P: Wet Pond SCM 4 Peak Elev=525.74' Storage=43,618 cf Inflow=25.26 cfs 1.470 af
Outflow=4.35 cfs 1.466 af

Link 2L: POA 5 Inflow=12.84 cfs 2.156 af
Primary=12.84 cfs 2.156 af

Link 3L: Post Ditch POA6 Inflow=21.17 cfs 3.629 af
Primary=21.17 cfs 3.629 af

Total Runoff Area = 18.920 ac Runoff Volume = 3.634 af Average Runoff Depth = 2.31"
74.59% Pervious = 14.111 ac 25.41% Impervious = 4.808 ac

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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Subcatchment 3S: Post Dev. Basin 6 to SCM

Runoff = 25.26 cfs @ 11.95 hrs, Volume= 1.470 af, Depth= 4.15"
Routed to Pond 4P : Wet Pond SCM 4

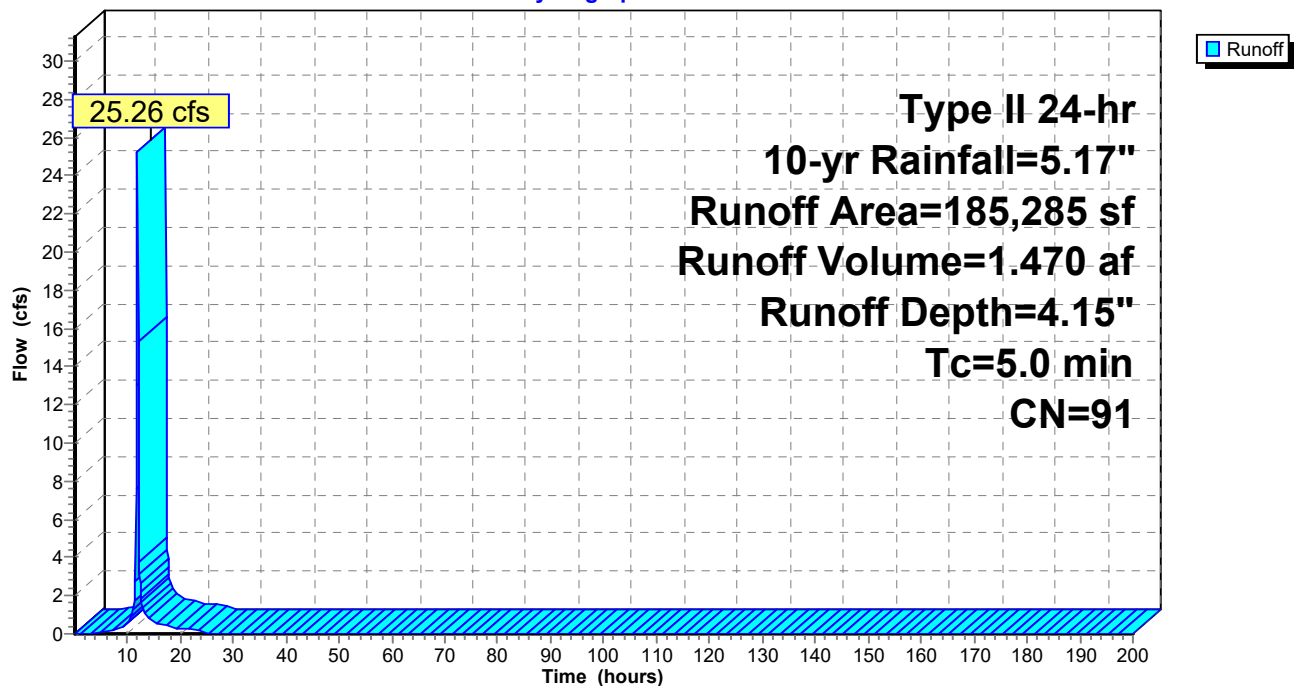
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 10-yr Rainfall=5.17"

Area (sf)	CN	Description
76,830	98	Paved parking, HSG B
63,382	98	Roofs, HSG B
30,858	56	Brush, Fair, HSG B
14,215	98	Water Surface, 0% imp, HSG B
185,285	91	Weighted Average
45,073		24.33% Pervious Area
140,212		75.67% Impervious Area

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

Subcatchment 3S: Post Dev. Basin 6 to SCM

Hydrograph



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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Subcatchment 4S: Post Dev. Bypass 6

Runoff = 13.01 cfs @ 11.98 hrs, Volume= 0.690 af, Depth= 1.40"
Routed to Link 2L : POA 5

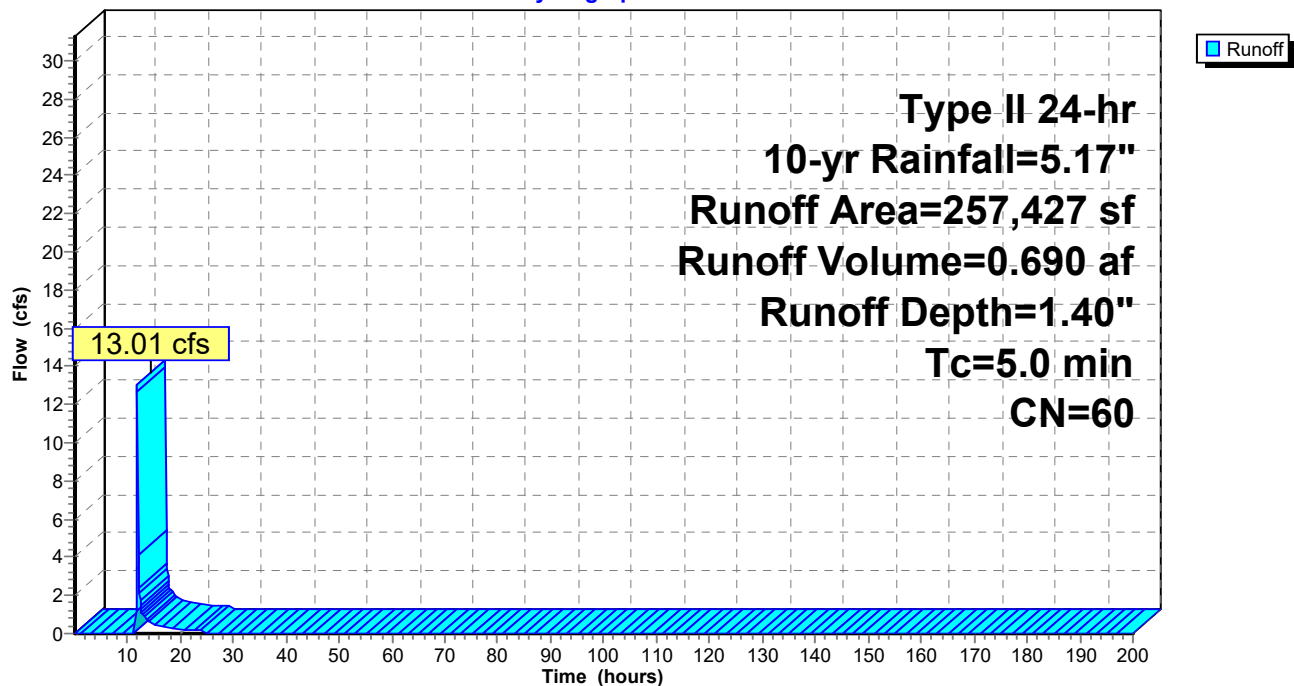
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 10-yr Rainfall=5.17"

Area (sf)	CN	Description
4,268	98	Paved parking, HSG B
51,015	56	Brush, Fair, HSG B
202,144	60	Woods, Fair, HSG B
257,427	60	Weighted Average
253,159		98.34% Pervious Area
4,268		1.66% Impervious Area

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

Subcatchment 4S: Post Dev. Bypass 6

Hydrograph



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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Subcatchment 5S: Post Dev. Bypass 8

Runoff = 14.84 cfs @ 12.01 hrs, Volume= 0.856 af, Depth= 1.54"

Routed to Reach 2R : Flowpath Downstream POA 6

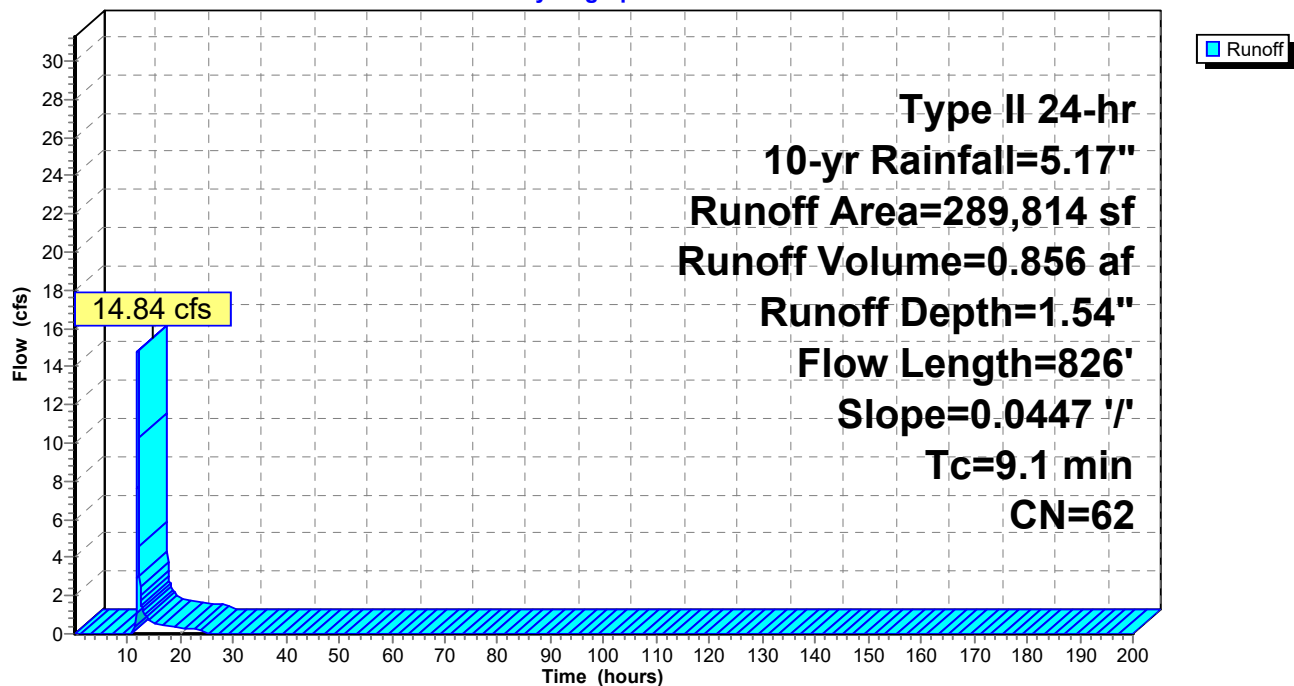
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 10-yr Rainfall=5.17"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
53,439	69	50-75% Grass cover, Fair, HSG B
5,416	98	Paved parking, HSG B
289,814	62	Weighted Average
284,398		98.13% Pervious Area
5,416		1.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 5S: Post Dev. Bypass 8

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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Subcatchment 6S: Area 1

Runoff = 9.04 cfs @ 12.07 hrs, Volume= 0.618 af, Depth= 3.53"

Routed to Reach 2R : Flowpath Downstream POA 6

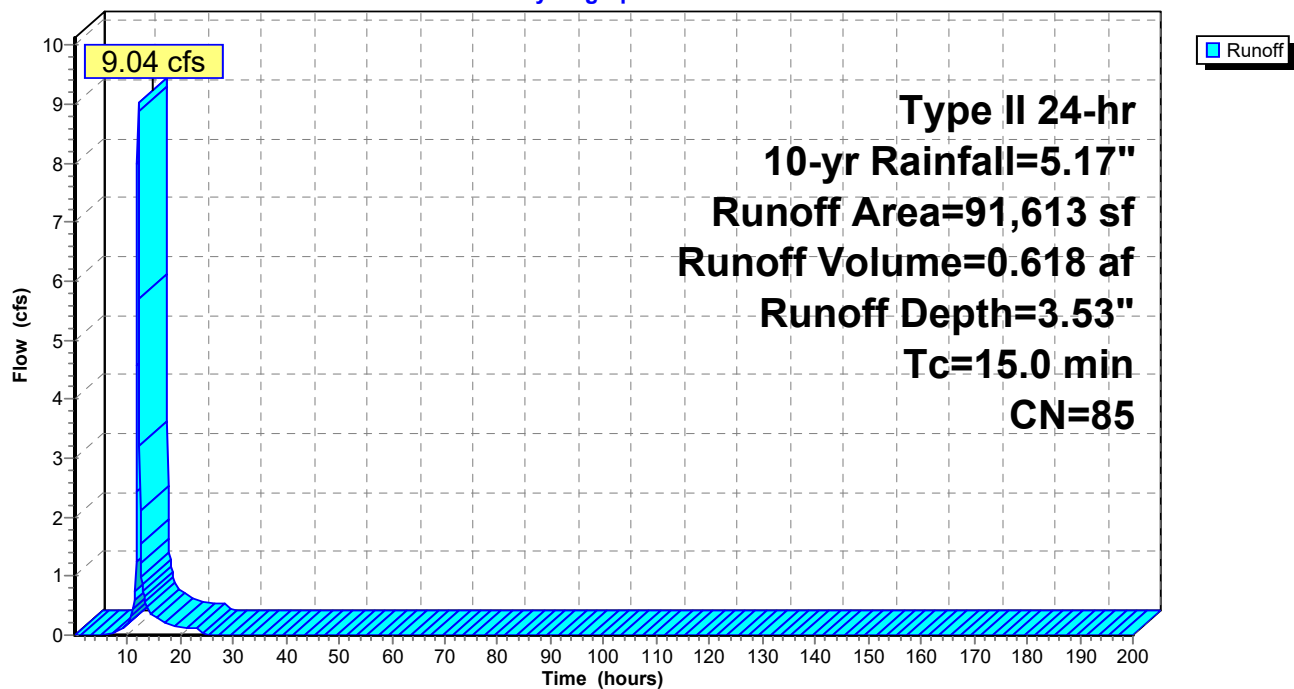
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 10-yr Rainfall=5.17"

Area (sf)	CN	Description
91,613	85	1/8 acre lots, 65% imp, HSG B
32,065		35.00% Pervious Area
59,548		65.00% Impervious Area

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

Subcatchment 6S: Area 1

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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Reach 2R: Flowpath Downstream POA 6

Inflow Area = 18.920 ac, 25.41% Impervious, Inflow Depth = 2.30" for 10-yr event
Inflow = 35.66 cfs @ 12.01 hrs, Volume= 3.630 af
Outflow = 21.17 cfs @ 12.43 hrs, Volume= 3.629 af, Atten= 41%, Lag= 25.1 min
Routed to Link 3L : Post Ditch POA6

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.66 fps, Min. Travel Time= 15.2 min

Avg. Velocity = 0.32 fps, Avg. Travel Time= 78.8 min

Peak Storage= 19,481 cf @ 12.16 hrs

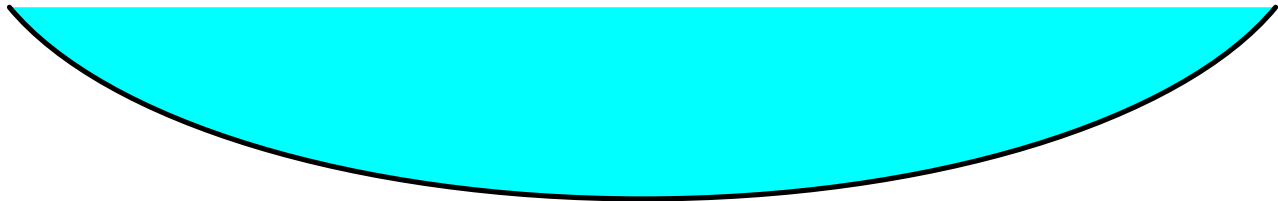
Average Depth at Peak Storage= 1.89' , Surface Width= 11.63'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

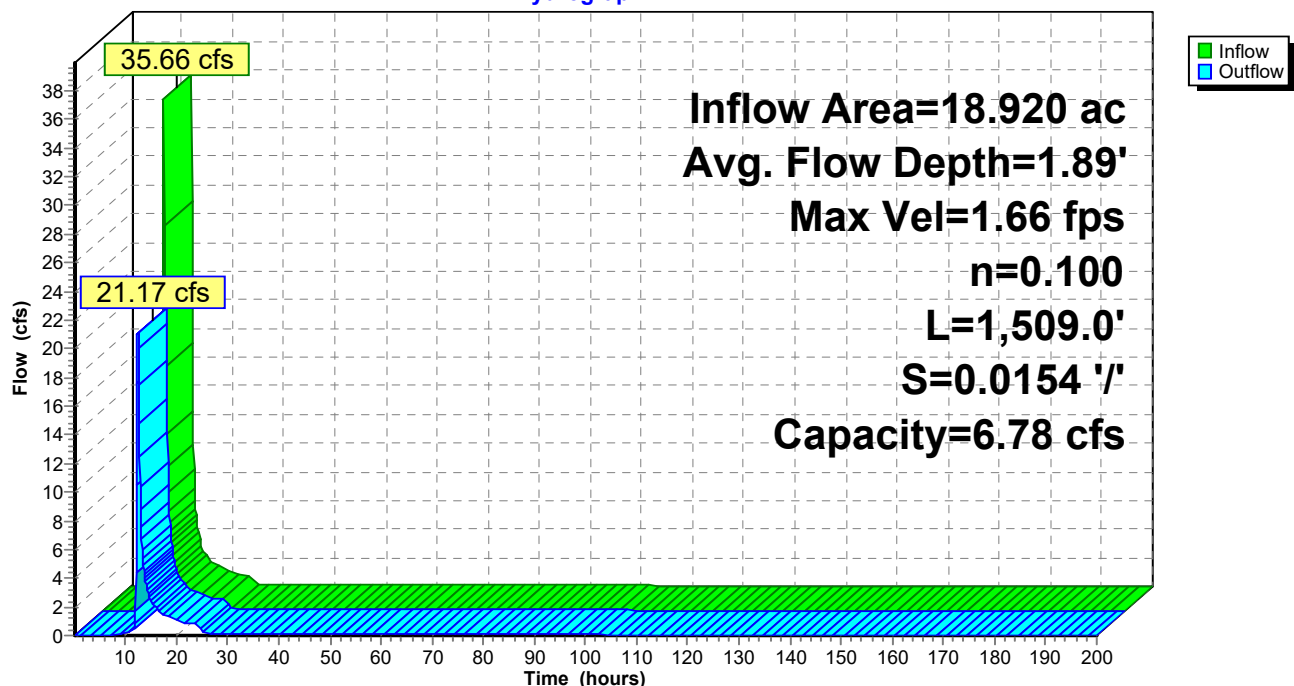
Length= 1,509.0' Slope= 0.0154 '/'

Inlet Invert= 505.43', Outlet Invert= 482.25'



Reach 2R: Flowpath Downstream POA 6

Hydrograph



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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Pond 4P: Wet Pond SCM 4

Inflow Area = 4.254 ac, 75.67% Impervious, Inflow Depth = 4.15" for 10-yr event
 Inflow = 25.26 cfs @ 11.95 hrs, Volume= 1.470 af
 Outflow = 4.35 cfs @ 12.22 hrs, Volume= 1.466 af, Atten= 83%, Lag= 16.1 min
 Primary = 4.35 cfs @ 12.22 hrs, Volume= 1.466 af
 Routed to Link 2L : POA 5

Routing by Stor-Ind method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Starting Elev= 522.00' Surf.Area= 7,056 sf Storage= 6,623 cf

Peak Elev= 525.74' @ 12.22 hrs Surf.Area= 11,404 sf Storage= 43,618 cf (36,995 cf above start)

Plug-Flow detention time= 2,434.7 min calculated for 1.314 af (89% of inflow)

Center-of-Mass det. time= 2,127.3 min (2,908.8 - 781.5)

Volume	Invert	Avail.Storage	Storage Description
#1	521.00'	71,189 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
521.00	6,190	0	0
522.00	7,056	6,623	6,623
522.50	8,333	3,847	10,470
523.00	9,531	4,466	14,936
524.00	10,198	9,865	24,801
525.00	10,883	10,541	35,341
526.00	11,584	11,234	46,575
527.00	12,303	11,944	58,518
528.00	13,038	12,671	71,189

Device	Routing	Invert	Outlet Devices
#1	Primary	522.00'	36.0" Round Culvert L= 45.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 522.00' / 521.50' S= 0.0111 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf
#2	Device 1	522.00'	1.5" Vert. Drawdown C= 0.600 Limited to weir flow at low heads
#3	Device 1	525.40'	40.0" W x 4.0" H Vert. Peakflow Orifice X 2.00 C= 0.600 Limited to weir flow at low heads
#4	Device 1	526.90'	48.0" x 48.0" Horiz. Overflow C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.31 cfs @ 12.22 hrs HW=525.74' (Free Discharge)

1=Culvert (Passes 4.31 cfs of 50.79 cfs potential flow)
 2=Drawdown (Orifice Controls 0.11 cfs @ 9.23 fps)
 3=Peakflow Orifice (Orifice Controls 4.20 cfs @ 1.89 fps)
 4=Overflow (Controls 0.00 cfs)

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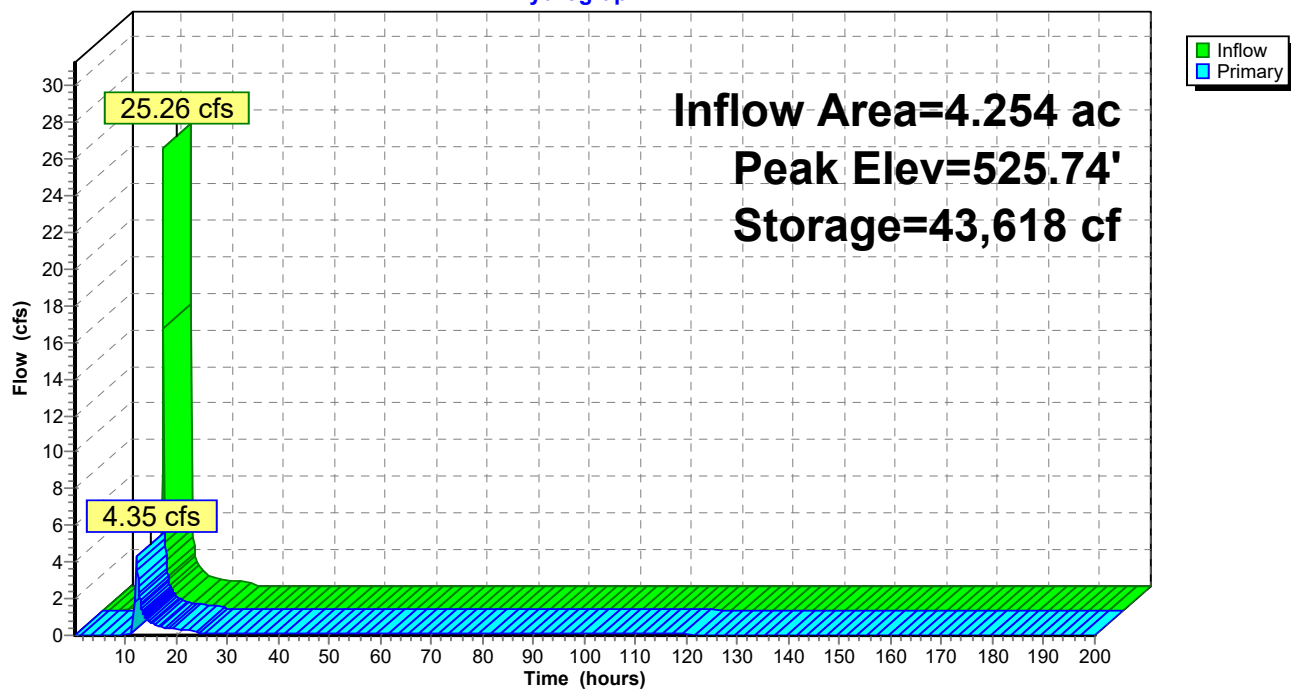
Type II 24-hr 10-yr Rainfall=5.17"

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Pond 4P: Wet Pond SCM 4

Hydrograph



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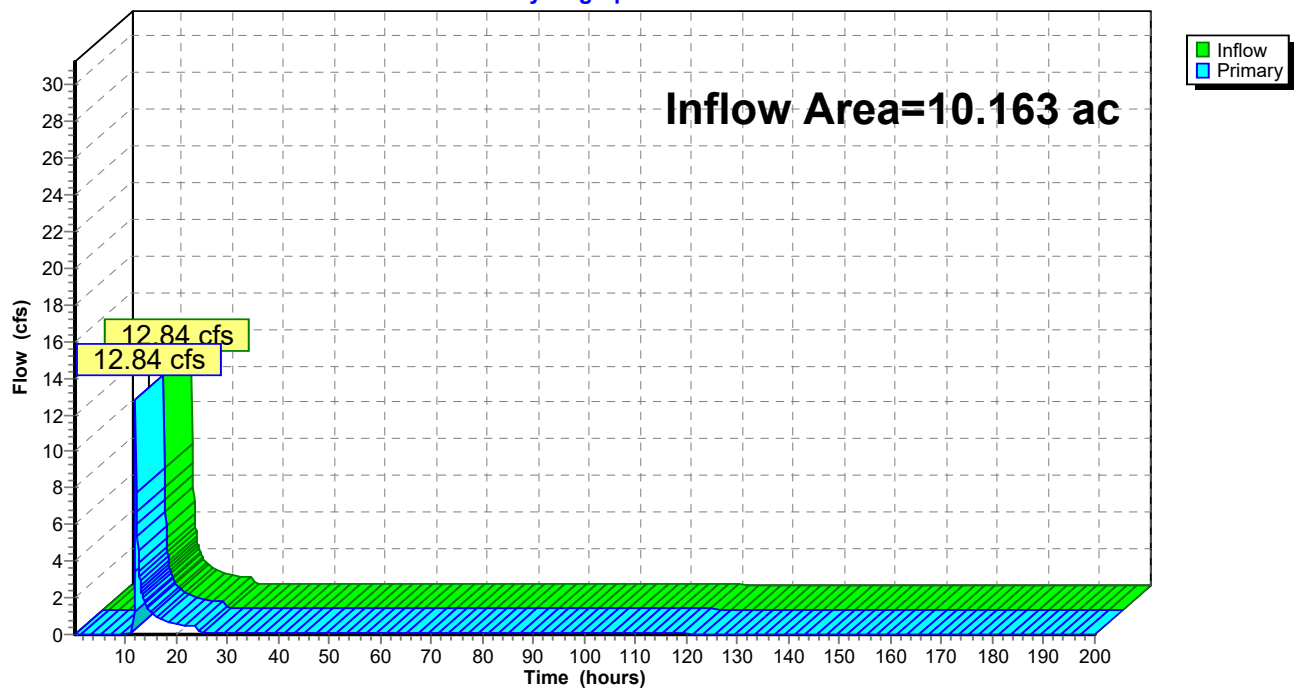
Summary for Link 2L: POA 5

Inflow Area = 10.163 ac, 32.64% Impervious, Inflow Depth > 2.55" for 10-yr event
Inflow = 12.84 cfs @ 11.99 hrs, Volume= 2.156 af
Primary = 12.84 cfs @ 11.99 hrs, Volume= 2.156 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 2R : Flowpath Downstream POA 6

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 2L: POA 5

Hydrograph



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Type II 24-hr 10-yr Rainfall=5.17"

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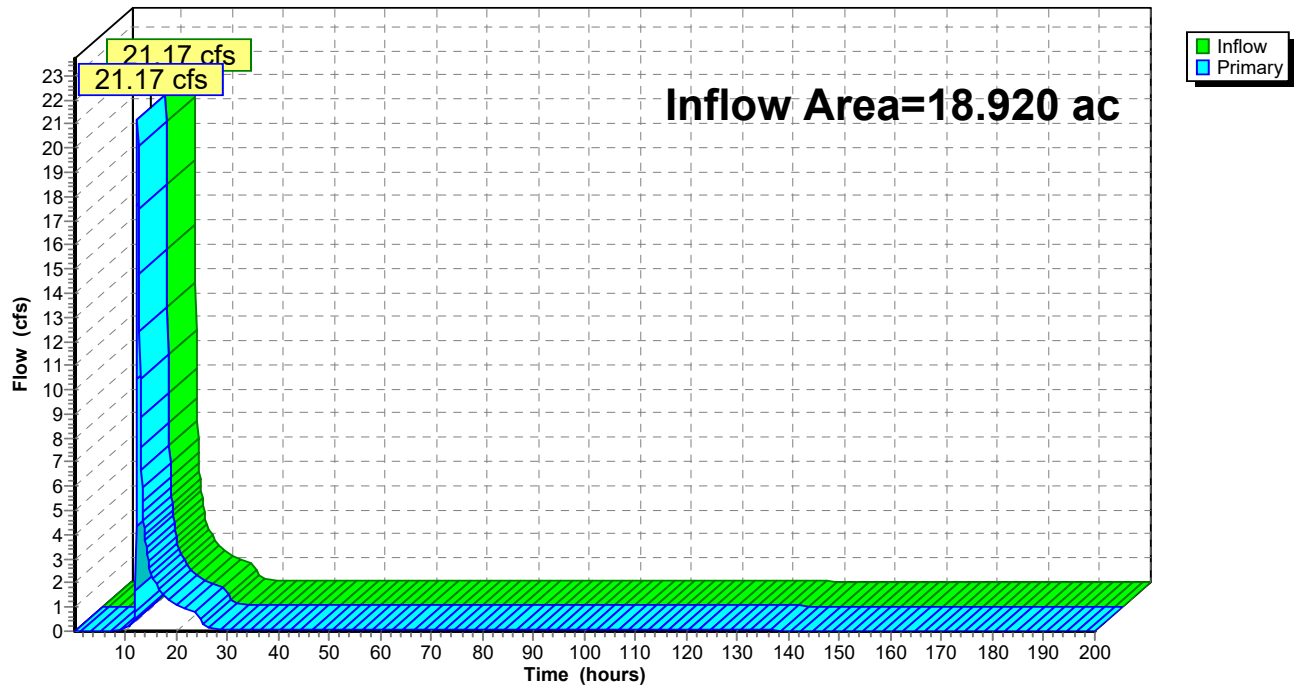
Summary for Link 3L: Post Ditch POA6

Inflow Area = 18.920 ac, 25.41% Impervious, Inflow Depth > 2.30" for 10-yr event
Inflow = 21.17 cfs @ 12.43 hrs, Volume= 3.629 af
Primary = 21.17 cfs @ 12.43 hrs, Volume= 3.629 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 3L: Post Ditch POA6

Hydrograph



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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment3S: Post Dev. Basin 6 to Runoff Area=185,285 sf 75.67% Impervious Runoff Depth=5.49"
Tc=5.0 min CN=91 Runoff=32.86 cfs 1.945 af

Subcatchment4S: Post Dev. Bypass 6 Runoff Area=257,427 sf 1.66% Impervious Runoff Depth=2.28"
Tc=5.0 min CN=60 Runoff=21.62 cfs 1.124 af

Subcatchment5S: Post Dev. Bypass 8 Runoff Area=289,814 sf 1.87% Impervious Runoff Depth=2.47"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=24.46 cfs 1.368 af

Subcatchment6S: Area 1 Runoff Area=91,613 sf 65.00% Impervious Runoff Depth=4.81"
Tc=15.0 min CN=85 Runoff=12.18 cfs 0.844 af

Reach 2R: Flowpath Downstream POA Avg. Flow Depth=3.00' Max Vel=1.75 fps Inflow=64.42 cfs 5.277 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=37.23 cfs 5.276 af

Pond 4P: Wet Pond SCM 4 Peak Elev=526.48' Storage=52,233 cf Inflow=32.86 cfs 1.945 af
Outflow=10.36 cfs 1.940 af

Link 2L: POA 5 Inflow=28.99 cfs 3.065 af
Primary=28.99 cfs 3.065 af

Link 3L: Post Ditch POA6 Inflow=37.23 cfs 5.276 af
Primary=37.23 cfs 5.276 af

Total Runoff Area = 18.920 ac Runoff Volume = 5.281 af Average Runoff Depth = 3.35"
74.59% Pervious = 14.111 ac 25.41% Impervious = 4.808 ac

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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 3S: Post Dev. Basin 6 to SCM

Runoff = 32.86 cfs @ 11.95 hrs, Volume= 1.945 af, Depth= 5.49"
Routed to Pond 4P : Wet Pond SCM 4

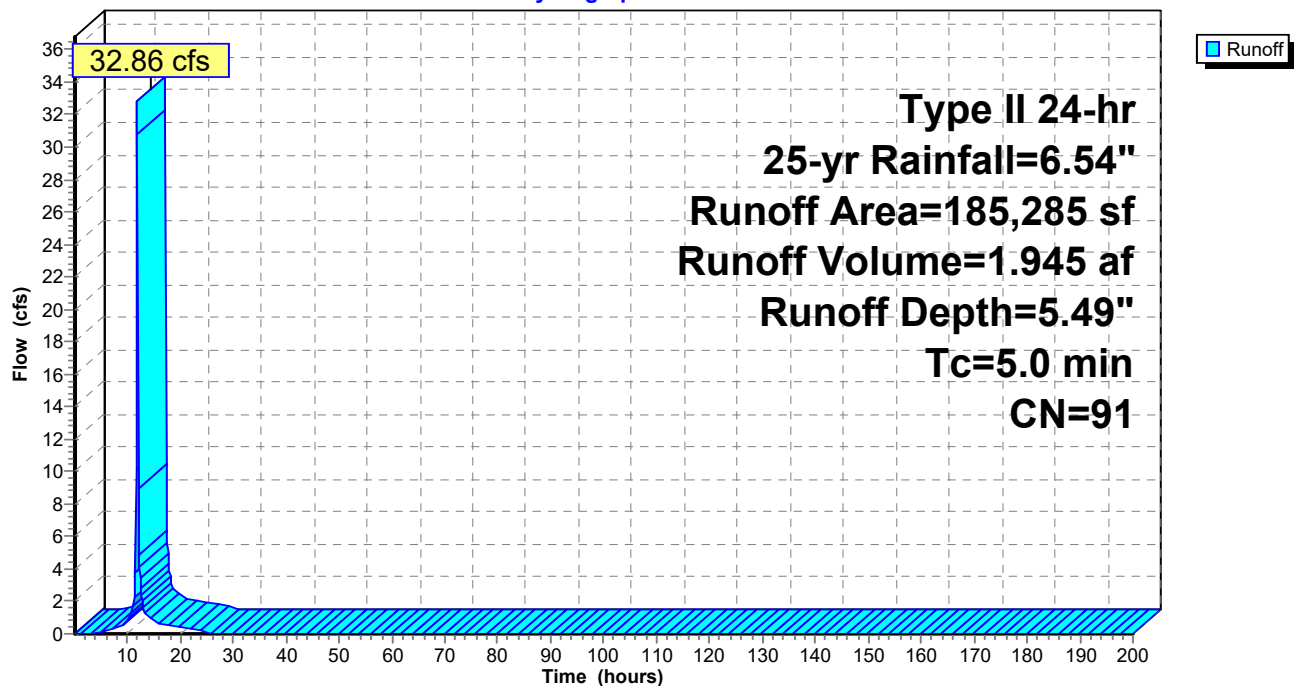
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
76,830	98	Paved parking, HSG B
63,382	98	Roofs, HSG B
30,858	56	Brush, Fair, HSG B
14,215	98	Water Surface, 0% imp, HSG B
185,285	91	Weighted Average
45,073		24.33% Pervious Area
140,212		75.67% Impervious Area

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

Subcatchment 3S: Post Dev. Basin 6 to SCM

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 4S: Post Dev. Bypass 6

Runoff = 21.62 cfs @ 11.97 hrs, Volume= 1.124 af, Depth= 2.28"
Routed to Link 2L : POA 5

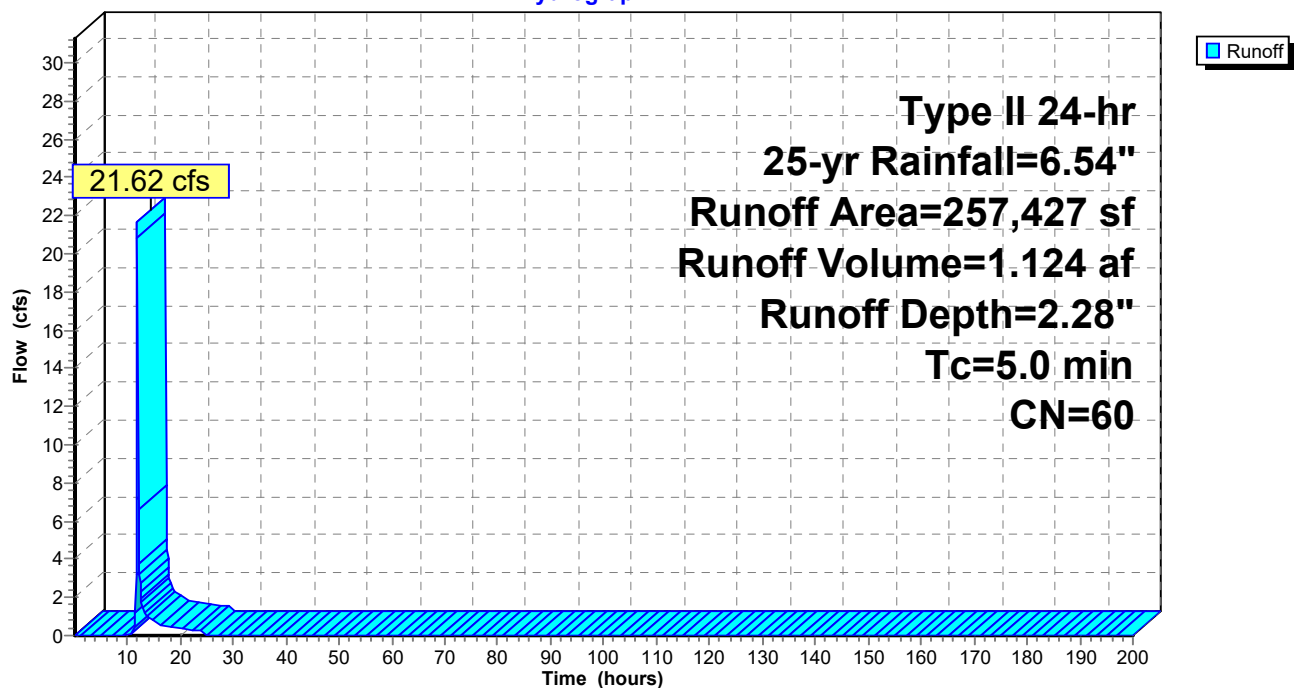
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
4,268	98	Paved parking, HSG B
51,015	56	Brush, Fair, HSG B
202,144	60	Woods, Fair, HSG B
257,427	60	Weighted Average
253,159		98.34% Pervious Area
4,268		1.66% Impervious Area

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

Subcatchment 4S: Post Dev. Bypass 6

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 5S: Post Dev. Bypass 8

Runoff = 24.46 cfs @ 12.01 hrs, Volume= 1.368 af, Depth= 2.47"
Routed to Reach 2R : Flowpath Downstream POA 6

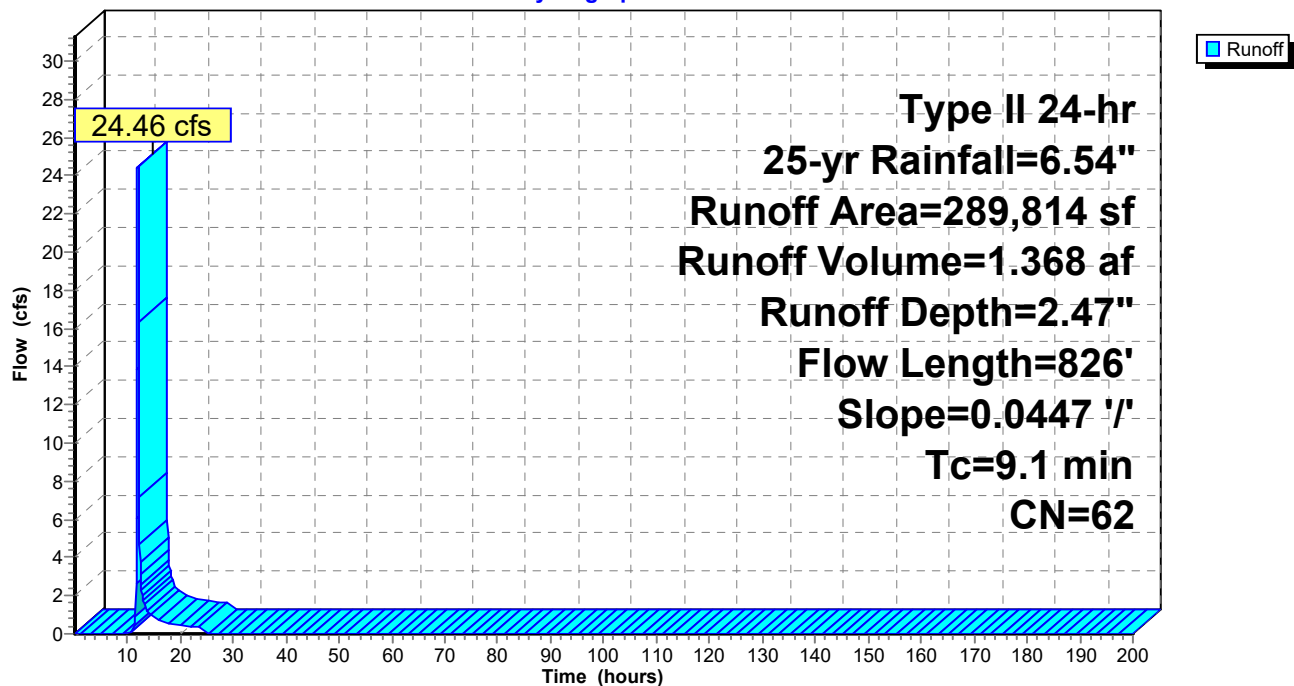
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
53,439	69	50-75% Grass cover, Fair, HSG B
5,416	98	Paved parking, HSG B
289,814	62	Weighted Average
284,398		98.13% Pervious Area
5,416		1.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 5S: Post Dev. Bypass 8

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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 6S: Area 1

Runoff = 12.18 cfs @ 12.07 hrs, Volume= 0.844 af, Depth= 4.81"

Routed to Reach 2R : Flowpath Downstream POA 6

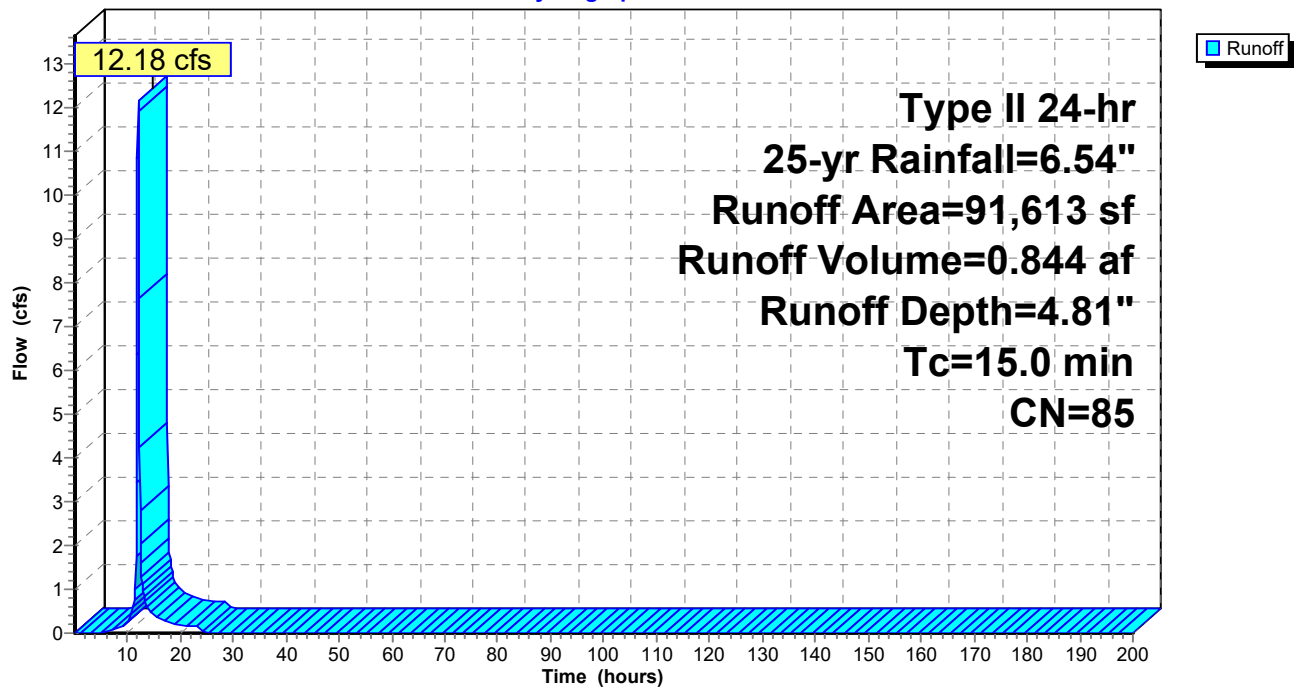
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
91,613	85	1/8 acre lots, 65% imp, HSG B
32,065		35.00% Pervious Area
59,548		65.00% Impervious Area

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

Subcatchment 6S: Area 1

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Reach 2R: Flowpath Downstream POA 6

Inflow Area = 18.920 ac, 25.41% Impervious, Inflow Depth = 3.35" for 25-yr event
Inflow = 64.42 cfs @ 12.01 hrs, Volume= 5.277 af
Outflow = 37.23 cfs @ 12.41 hrs, Volume= 5.276 af, Atten= 42%, Lag= 24.0 min
Routed to Link 3L : Post Ditch POA6

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.75 fps, Min. Travel Time= 14.4 min

Avg. Velocity = 0.33 fps, Avg. Travel Time= 76.7 min

Peak Storage= 33,230 cf @ 12.15 hrs

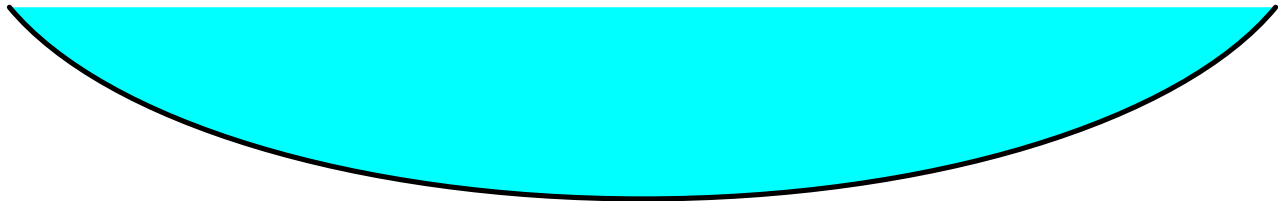
Average Depth at Peak Storage= 3.00' , Surface Width= 14.66'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

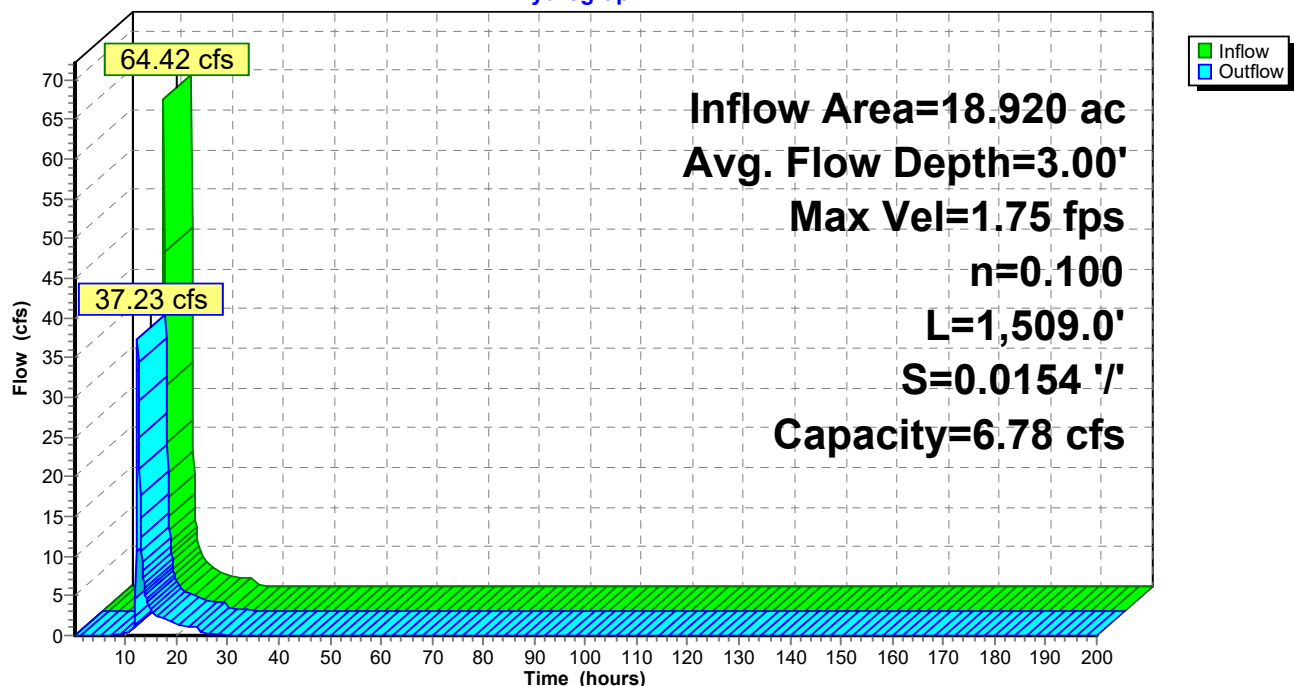
Length= 1,509.0' Slope= 0.0154 '/'

Inlet Invert= 505.43', Outlet Invert= 482.25'



Reach 2R: Flowpath Downstream POA 6

Hydrograph



32044.0000 - Ditch Analysis

Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Pond 4P: Wet Pond SCM 4

Inflow Area = 4.254 ac, 75.67% Impervious, Inflow Depth = 5.49" for 25-yr event
 Inflow = 32.86 cfs @ 11.95 hrs, Volume= 1.945 af
 Outflow = 10.36 cfs @ 12.13 hrs, Volume= 1.940 af, Atten= 68%, Lag= 11.0 min
 Primary = 10.36 cfs @ 12.13 hrs, Volume= 1.940 af
 Routed to Link 2L : POA 5

Routing by Stor-Ind method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Starting Elev= 522.00' Surf.Area= 7,056 sf Storage= 6,623 cf

Peak Elev= 526.48' @ 12.13 hrs Surf.Area= 11,930 sf Storage= 52,233 cf (45,610 cf above start)

Plug-Flow detention time= 1,812.3 min calculated for 1.788 af (92% of inflow)

Center-of-Mass det. time= 1,624.1 min (2,398.1 - 774.1)

Volume	Invert	Avail.Storage	Storage Description
#1	521.00'	71,189 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
521.00	6,190	0	0
522.00	7,056	6,623	6,623
522.50	8,333	3,847	10,470
523.00	9,531	4,466	14,936
524.00	10,198	9,865	24,801
525.00	10,883	10,541	35,341
526.00	11,584	11,234	46,575
527.00	12,303	11,944	58,518
528.00	13,038	12,671	71,189

Device	Routing	Invert	Outlet Devices
#1	Primary	522.00'	36.0" Round Culvert L= 45.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 522.00' / 521.50' S= 0.0111 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf
#2	Device 1	522.00'	1.5" Vert. Drawdown C= 0.600 Limited to weir flow at low heads
#3	Device 1	525.40'	40.0" W x 4.0" H Vert. Peakflow Orifice X 2.00 C= 0.600 Limited to weir flow at low heads
#4	Device 1	526.90'	48.0" x 48.0" Horiz. Overflow C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=10.10 cfs @ 12.13 hrs HW=526.44' (Free Discharge)

1=Culvert (Passes 10.10 cfs of 58.34 cfs potential flow)
 2=Drawdown (Orifice Controls 0.12 cfs @ 10.07 fps)
 3=Peakflow Orifice (Orifice Controls 9.97 cfs @ 4.49 fps)
 4=Overflow (Controls 0.00 cfs)

32044.0000 - Ditch Analysis

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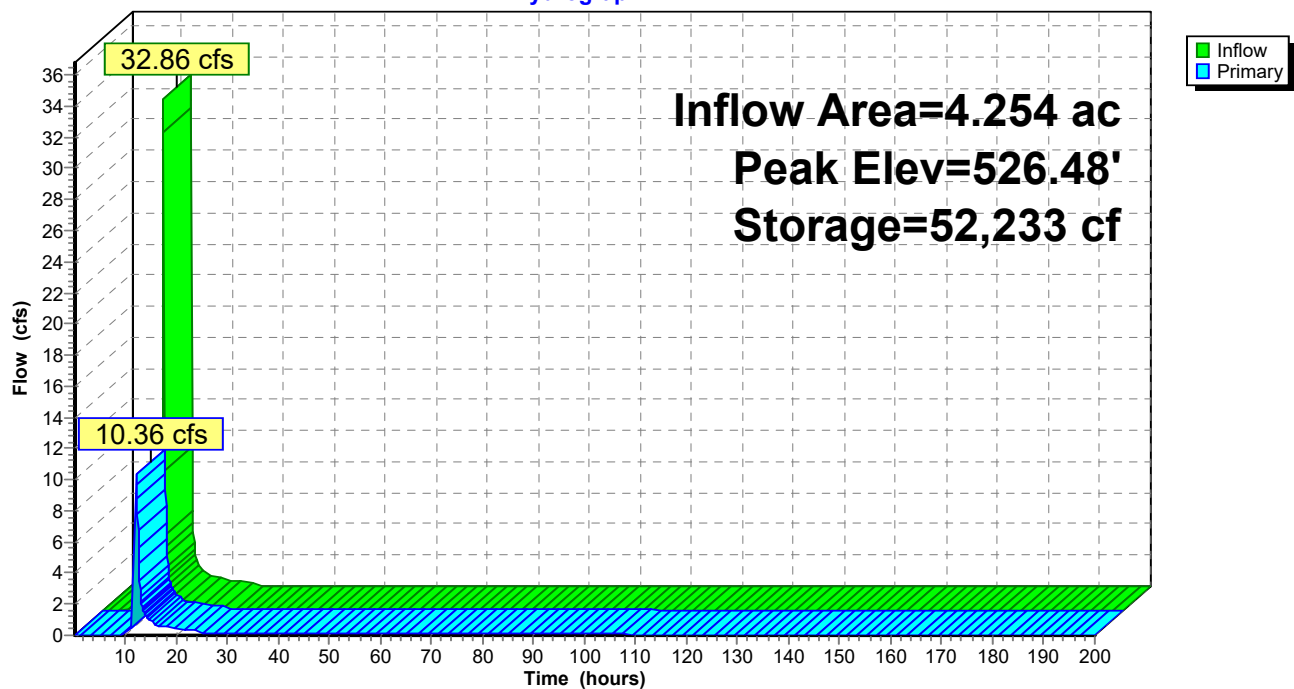
Type II 24-hr 25-yr Rainfall=6.54"

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Pond 4P: Wet Pond SCM 4

Hydrograph



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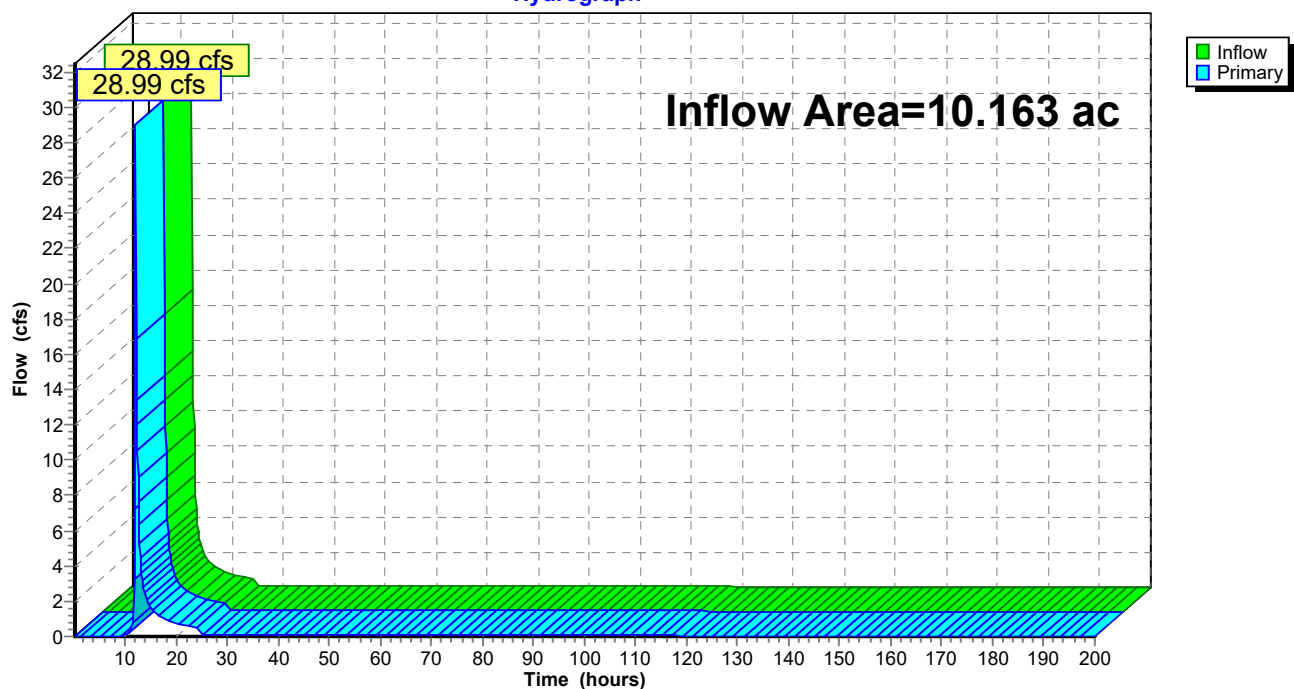
Summary for Link 2L: POA 5

Inflow Area = 10.163 ac, 32.64% Impervious, Inflow Depth = 3.62" for 25-yr event
Inflow = 28.99 cfs @ 12.00 hrs, Volume= 3.065 af
Primary = 28.99 cfs @ 12.00 hrs, Volume= 3.065 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 2R : Flowpath Downstream POA 6

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 2L: POA 5

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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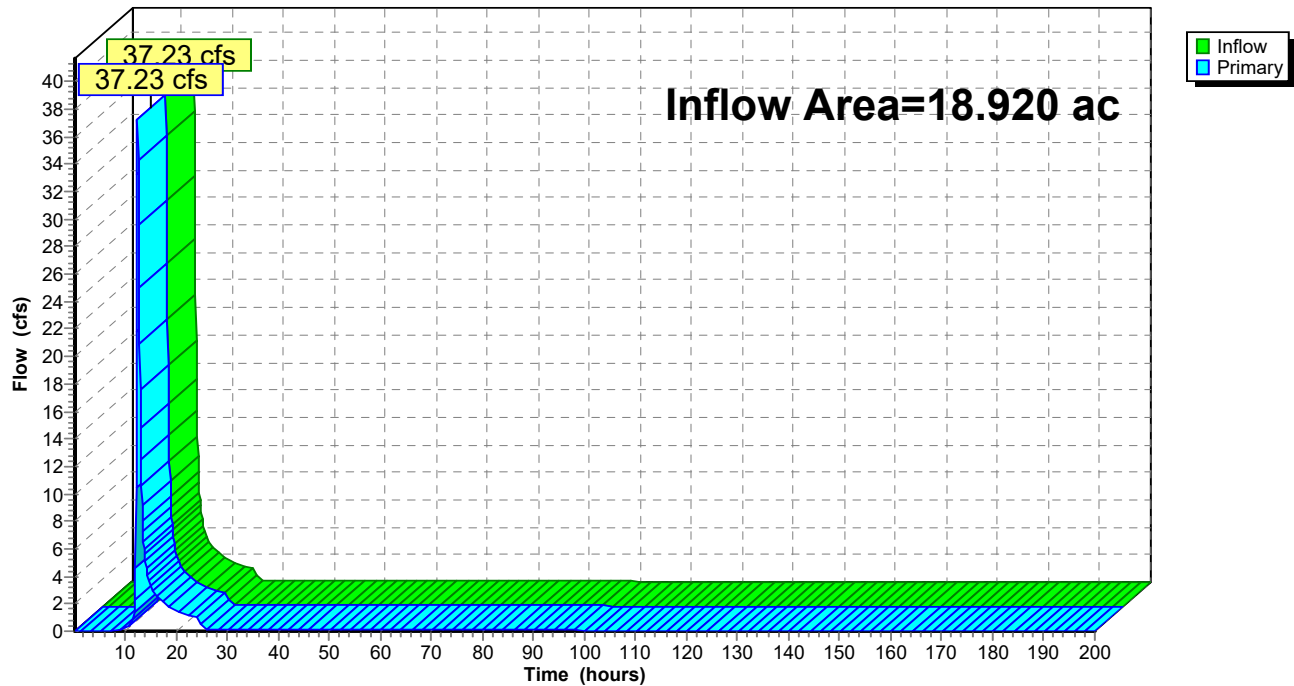
Summary for Link 3L: Post Ditch POA6

Inflow Area = 18.920 ac, 25.41% Impervious, Inflow Depth = 3.35" for 25-yr event
Inflow = 37.23 cfs @ 12.41 hrs, Volume= 5.276 af
Primary = 37.23 cfs @ 12.41 hrs, Volume= 5.276 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 3L: Post Ditch POA6

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment3S: Post Dev. Basin 6 to Runoff Area=185,285 sf 75.67% Impervious Runoff Depth=7.09"
Tc=5.0 min CN=91 Runoff=41.82 cfs 2.514 af

Subcatchment4S: Post Dev. Bypass 6 Runoff Area=257,427 sf 1.66% Impervious Runoff Depth=3.46"
Tc=5.0 min CN=60 Runoff=32.88 cfs 1.705 af

Subcatchment5S: Post Dev. Bypass 8 Runoff Area=289,814 sf 1.87% Impervious Runoff Depth=3.69"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=36.97 cfs 2.045 af

Subcatchment6S: Area 1 Runoff Area=91,613 sf 65.00% Impervious Runoff Depth=6.38"
Tc=15.0 min CN=85 Runoff=15.90 cfs 1.118 af

Reach 2R: Flowpath Downstream POA Avg. Flow Depth=4.44' Max Vel=1.79 fps Inflow=96.54 cfs 7.377 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=58.35 cfs 7.376 af

Pond 4P: Wet Pond SCM 4 Peak Elev=527.19' Storage=60,840 cf Inflow=41.82 cfs 2.514 af
Outflow=21.85 cfs 2.510 af

Link 2L: POA 5 Inflow=45.34 cfs 4.214 af
Primary=45.34 cfs 4.214 af

Link 3L: Post Ditch POA6 Inflow=58.35 cfs 7.376 af
Primary=58.35 cfs 7.376 af

Total Runoff Area = 18.920 ac Runoff Volume = 7.381 af Average Runoff Depth = 4.68"
74.59% Pervious = 14.111 ac 25.41% Impervious = 4.808 ac

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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 3S: Post Dev. Basin 6 to SCM

Runoff = 41.82 cfs @ 11.95 hrs, Volume= 2.514 af, Depth= 7.09"
Routed to Pond 4P : Wet Pond SCM 4

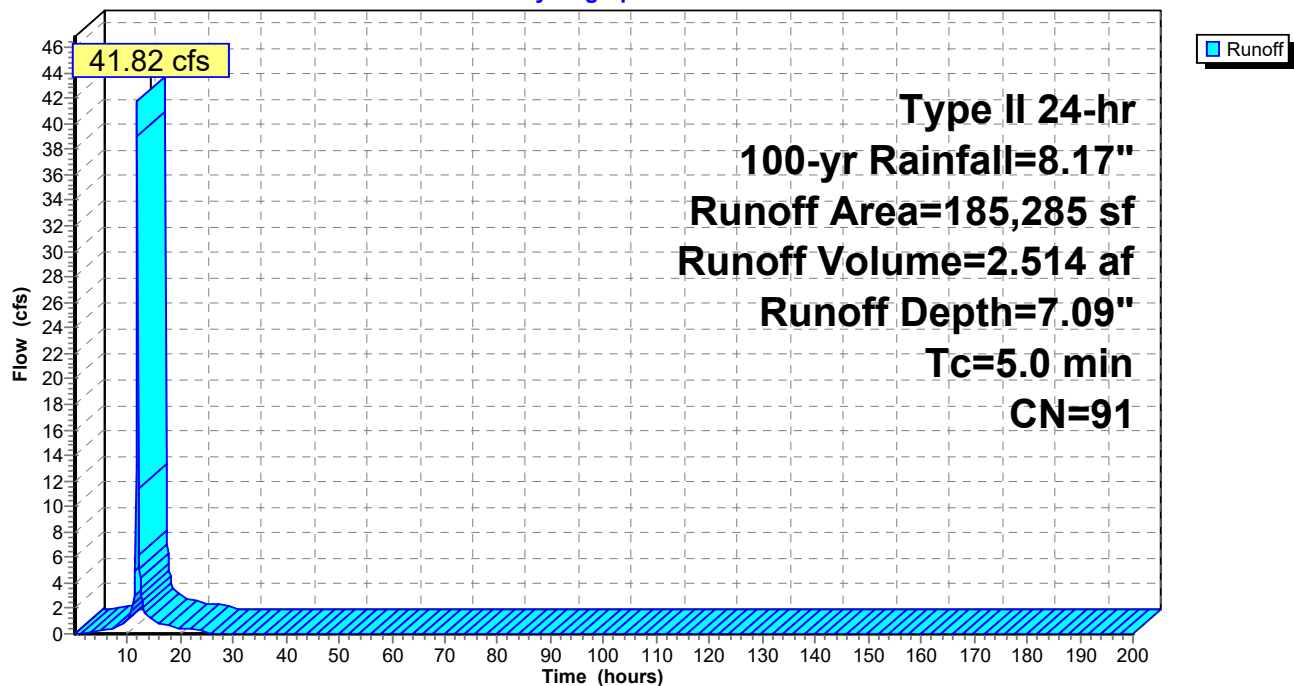
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
76,830	98	Paved parking, HSG B
63,382	98	Roofs, HSG B
30,858	56	Brush, Fair, HSG B
14,215	98	Water Surface, 0% imp, HSG B
185,285	91	Weighted Average
45,073		24.33% Pervious Area
140,212		75.67% Impervious Area

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

Subcatchment 3S: Post Dev. Basin 6 to SCM

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 4S: Post Dev. Bypass 6

Runoff = 32.88 cfs @ 11.96 hrs, Volume= 1.705 af, Depth= 3.46"
Routed to Link 2L : POA 5

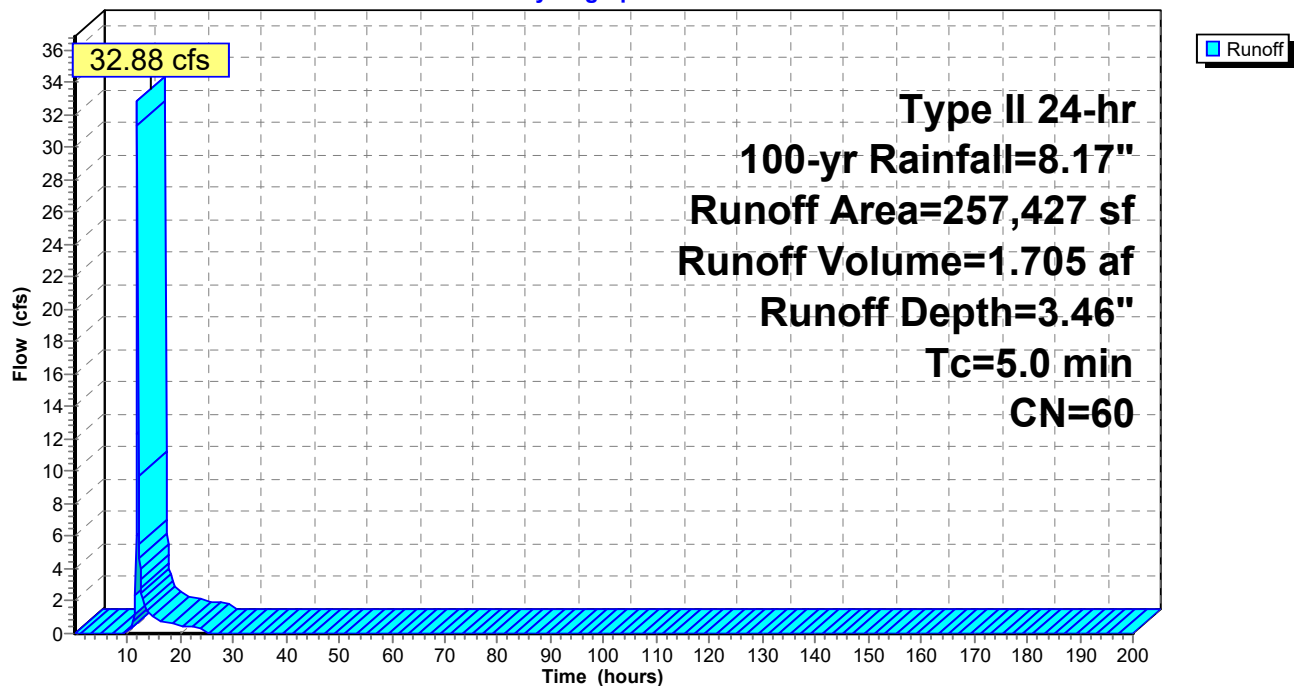
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
4,268	98	Paved parking, HSG B
51,015	56	Brush, Fair, HSG B
202,144	60	Woods, Fair, HSG B
257,427	60	Weighted Average
253,159		98.34% Pervious Area
4,268		1.66% Impervious Area

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

Subcatchment 4S: Post Dev. Bypass 6

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 5S: Post Dev. Bypass 8

Runoff = 36.97 cfs @ 12.00 hrs, Volume= 2.045 af, Depth= 3.69"
Routed to Reach 2R : Flowpath Downstream POA 6

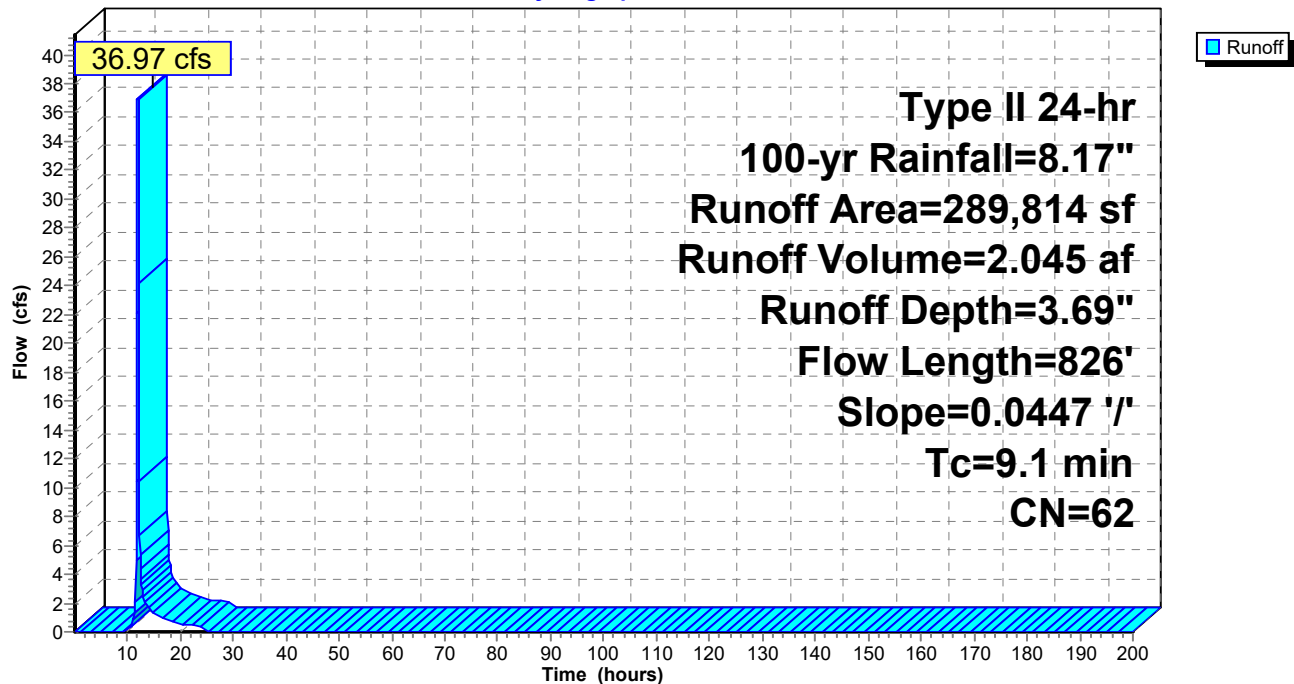
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
53,439	69	50-75% Grass cover, Fair, HSG B
5,416	98	Paved parking, HSG B
289,814	62	Weighted Average
284,398		98.13% Pervious Area
5,416		1.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 5S: Post Dev. Bypass 8

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 6S: Area 1

Runoff = 15.90 cfs @ 12.07 hrs, Volume= 1.118 af, Depth= 6.38"

Routed to Reach 2R : Flowpath Downstream POA 6

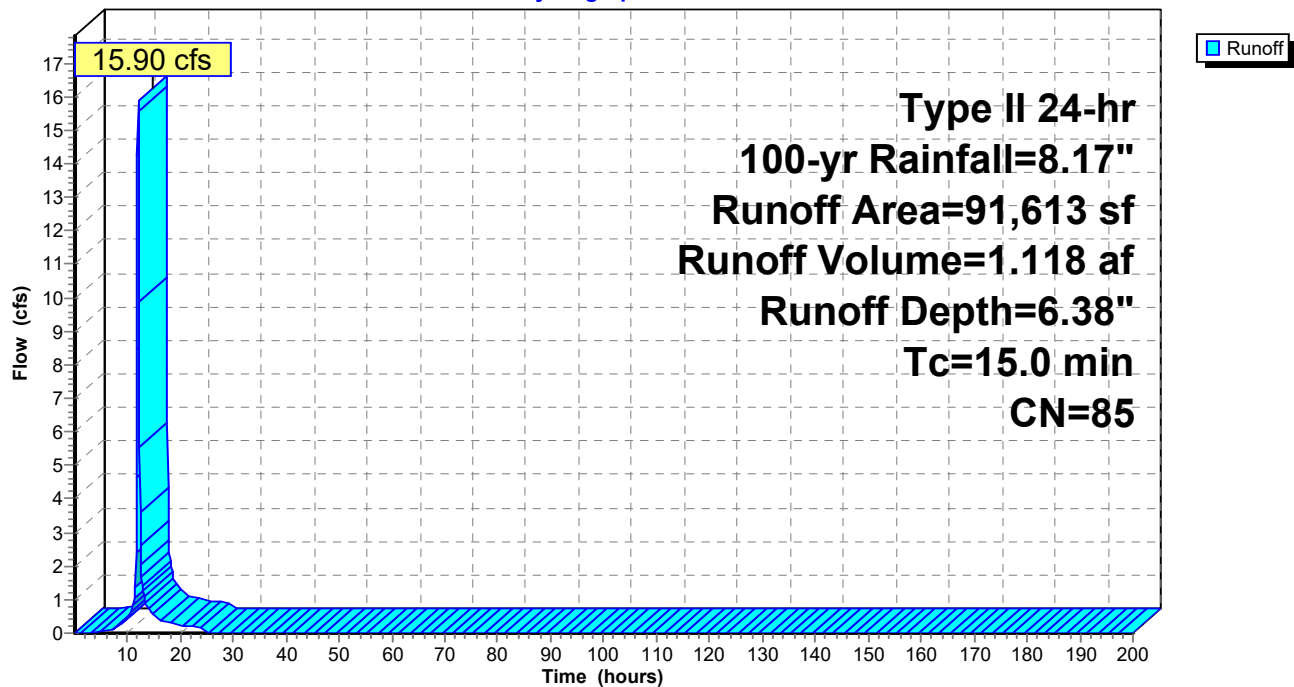
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
91,613	85	1/8 acre lots, 65% imp, HSG B
32,065		35.00% Pervious Area
59,548		65.00% Impervious Area

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

Subcatchment 6S: Area 1

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Reach 2R: Flowpath Downstream POA 6

Inflow Area = 18.920 ac, 25.41% Impervious, Inflow Depth = 4.68" for 100-yr event
Inflow = 96.54 cfs @ 12.00 hrs, Volume= 7.377 af
Outflow = 58.35 cfs @ 12.39 hrs, Volume= 7.376 af, Atten= 40%, Lag= 23.0 min
Routed to Link 3L : Post Ditch POA6

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.79 fps, Min. Travel Time= 14.0 min

Avg. Velocity= 0.34 fps, Avg. Travel Time= 74.7 min

Peak Storage= 50,916 cf @ 12.14 hrs

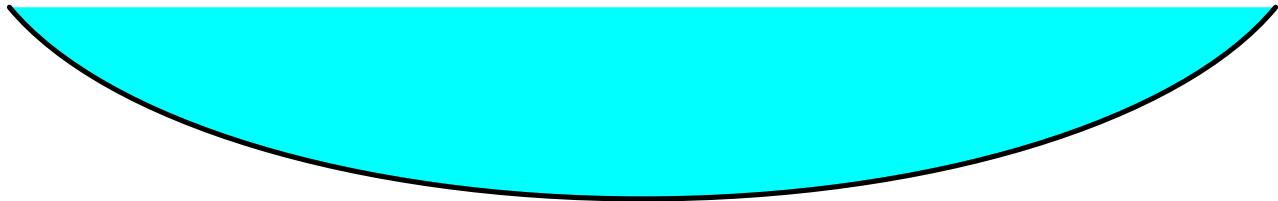
Average Depth at Peak Storage= 4.44' , Surface Width= 17.82'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

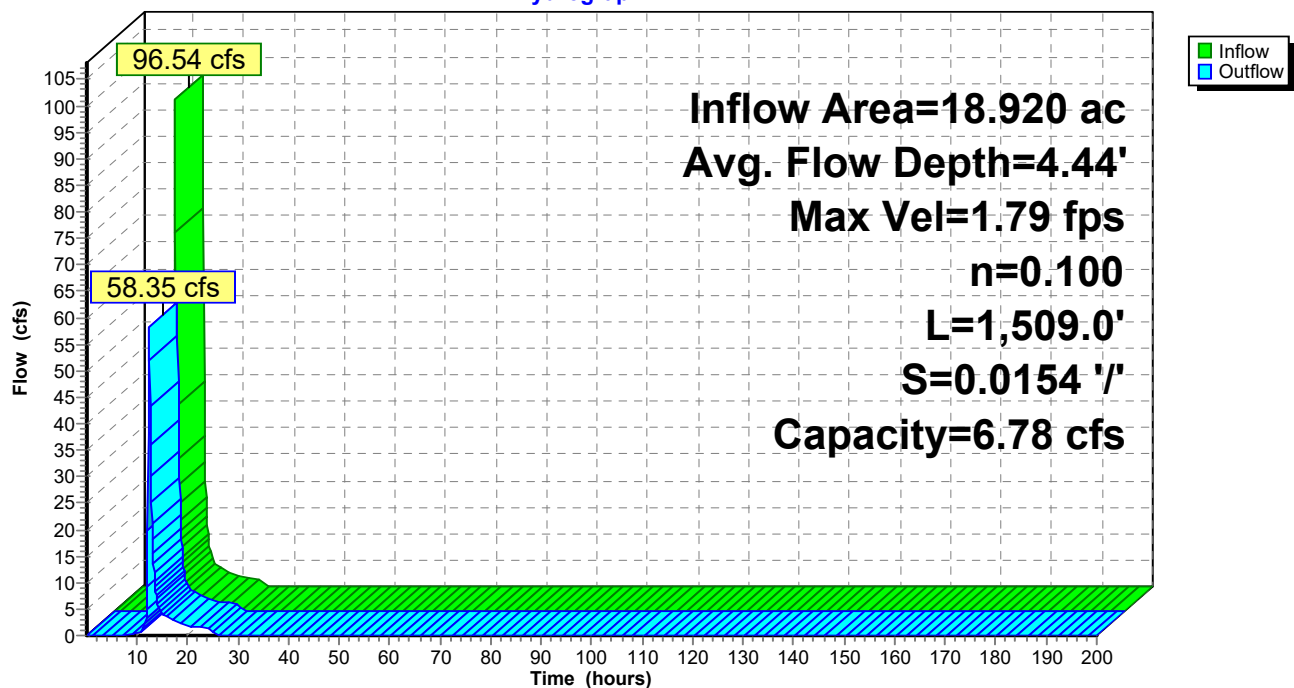
Length= 1,509.0' Slope= 0.0154 '/'

Inlet Invert= 505.43', Outlet Invert= 482.25'



Reach 2R: Flowpath Downstream POA 6

Hydrograph



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Summary for Pond 4P: Wet Pond SCM 4

Inflow Area = 4.254 ac, 75.67% Impervious, Inflow Depth = 7.09" for 100-yr event
 Inflow = 41.82 cfs @ 11.95 hrs, Volume= 2.514 af
 Outflow = 21.85 cfs @ 12.10 hrs, Volume= 2.510 af, Atten= 48%, Lag= 9.1 min
 Primary = 21.85 cfs @ 12.10 hrs, Volume= 2.510 af
 Routed to Link 2L : POA 5

Routing by Stor-Ind method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Starting Elev= 522.00' Surf.Area= 7,056 sf Storage= 6,623 cf

Peak Elev= 527.19' @ 12.10 hrs Surf.Area= 12,441 sf Storage= 60,840 cf (54,217 cf above start)

Plug-Flow detention time= 1,395.3 min calculated for 2.357 af (94% of inflow)

Center-of-Mass det. time= 1,272.0 min (2,039.5 - 767.5)

Volume	Invert	Avail.Storage	Storage Description
#1	521.00'	71,189 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
521.00	6,190	0	0
522.00	7,056	6,623	6,623
522.50	8,333	3,847	10,470
523.00	9,531	4,466	14,936
524.00	10,198	9,865	24,801
525.00	10,883	10,541	35,341
526.00	11,584	11,234	46,575
527.00	12,303	11,944	58,518
528.00	13,038	12,671	71,189

Device	Routing	Invert	Outlet Devices
#1	Primary	522.00'	36.0" Round Culvert L= 45.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 522.00' / 521.50' S= 0.0111 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf
#2	Device 1	522.00'	1.5" Vert. Drawdown C= 0.600 Limited to weir flow at low heads
#3	Device 1	525.40'	40.0" W x 4.0" H Vert. Peakflow Orifice X 2.00 C= 0.600 Limited to weir flow at low heads
#4	Device 1	526.90'	48.0" x 48.0" Horiz. Overflow C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=21.54 cfs @ 12.10 hrs HW=527.18' (Free Discharge)

- 1=Culvert (Passes 21.54 cfs of 65.30 cfs potential flow)
 2=Drawdown (Orifice Controls 0.13 cfs @ 10.89 fps)
 3=Peakflow Orifice (Orifice Controls 13.59 cfs @ 6.12 fps)
 4=Overflow (Weir Controls 7.81 cfs @ 1.73 fps)

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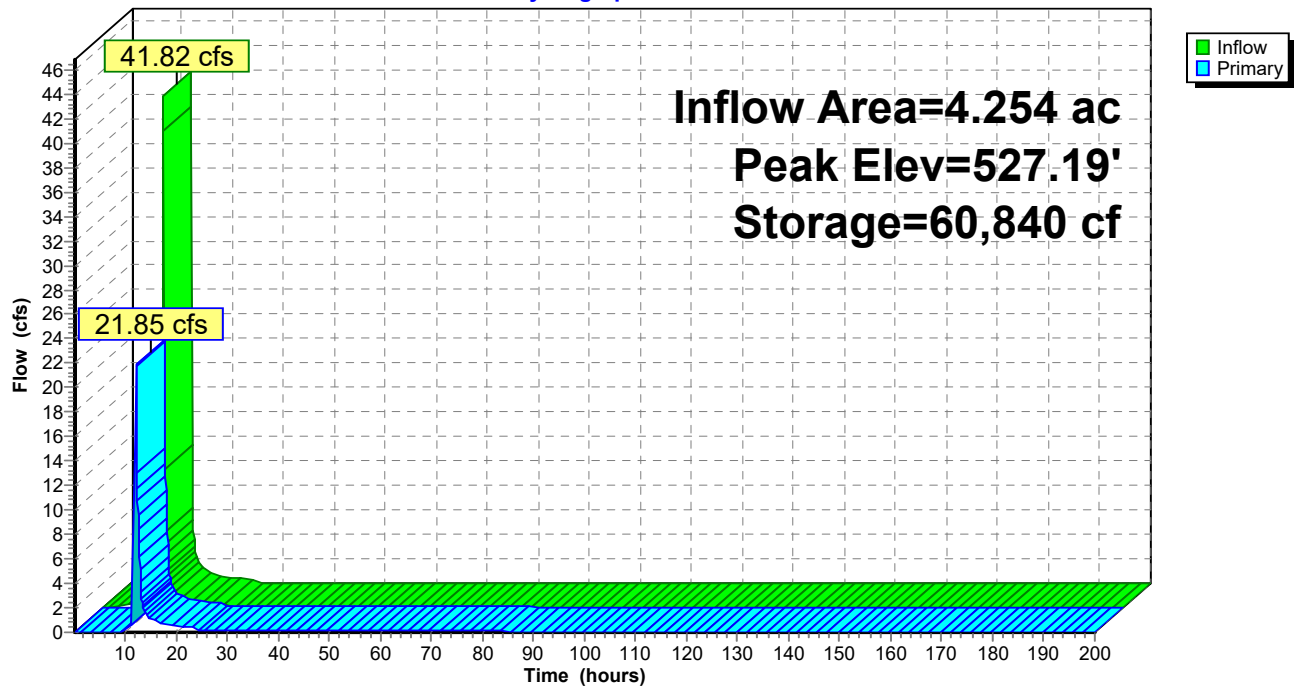
Type II 24-hr 100-yr Rainfall=8.17"

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Pond 4P: Wet Pond SCM 4

Hydrograph



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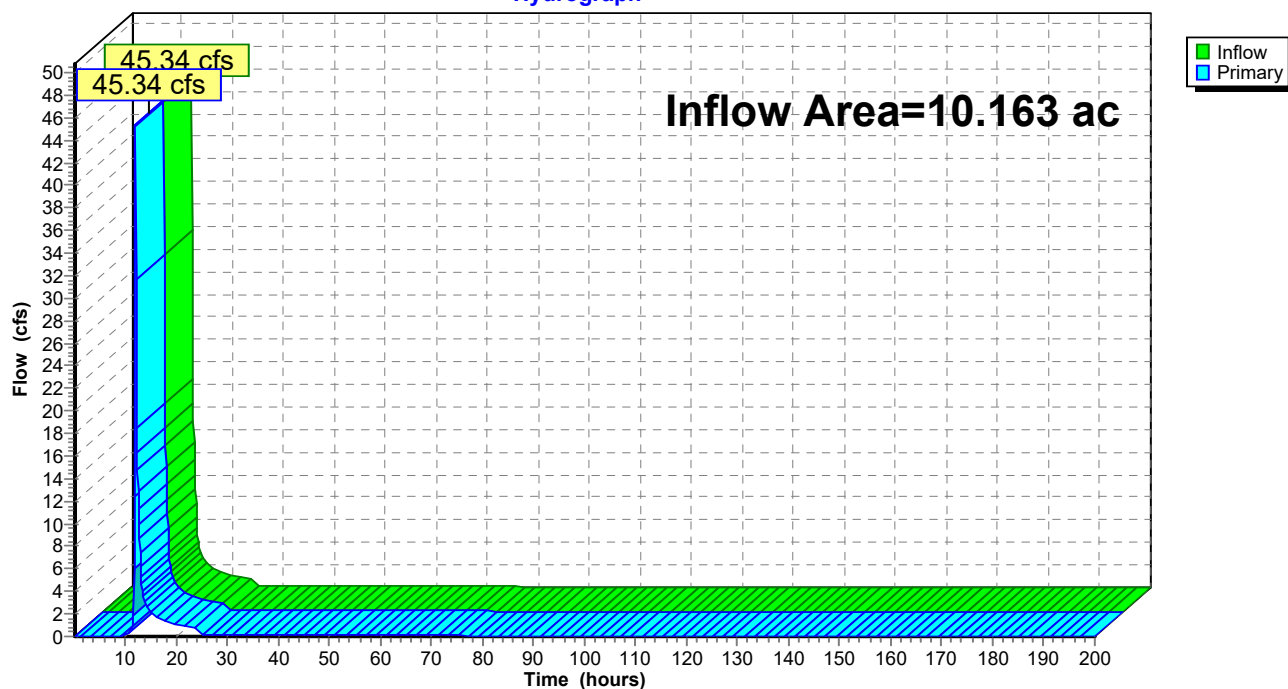
Summary for Link 2L: POA 5

Inflow Area = 10.163 ac, 32.64% Impervious, Inflow Depth = 4.98" for 100-yr event
Inflow = 45.34 cfs @ 11.99 hrs, Volume= 4.214 af
Primary = 45.34 cfs @ 11.99 hrs, Volume= 4.214 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 2R : Flowpath Downstream POA 6

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 2L: POA 5

Hydrograph



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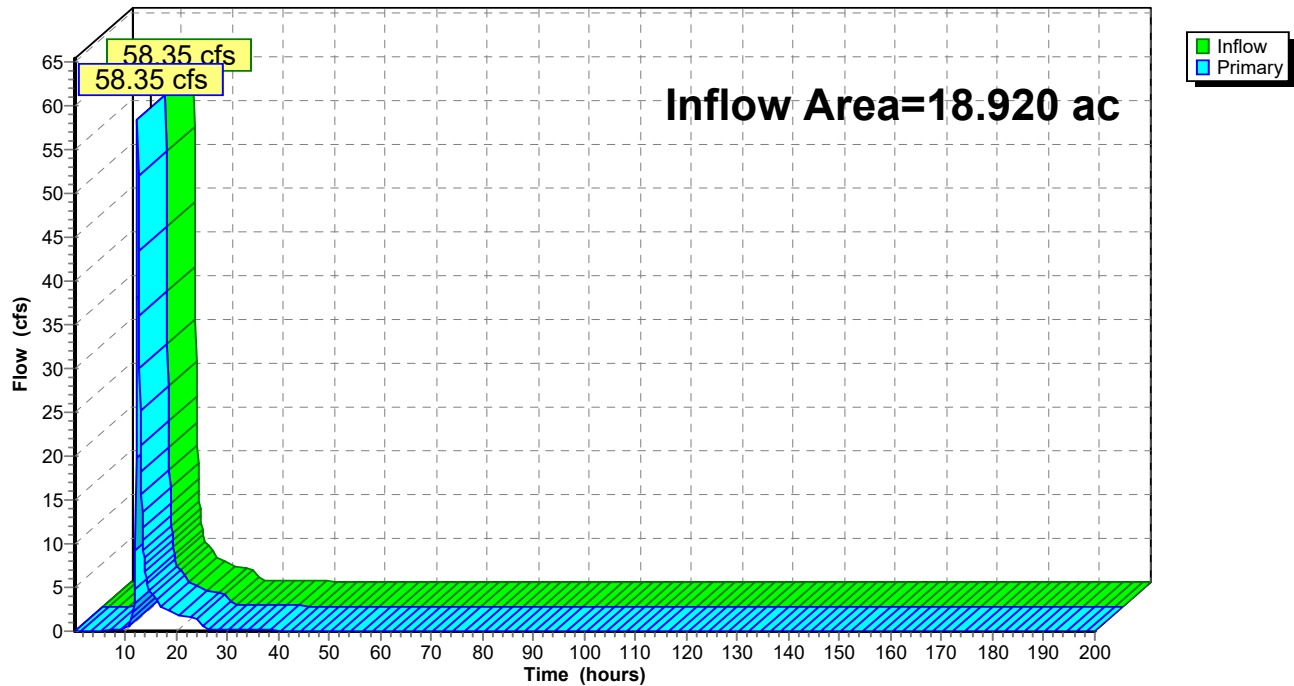
Summary for Link 3L: Post Ditch POA6

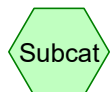
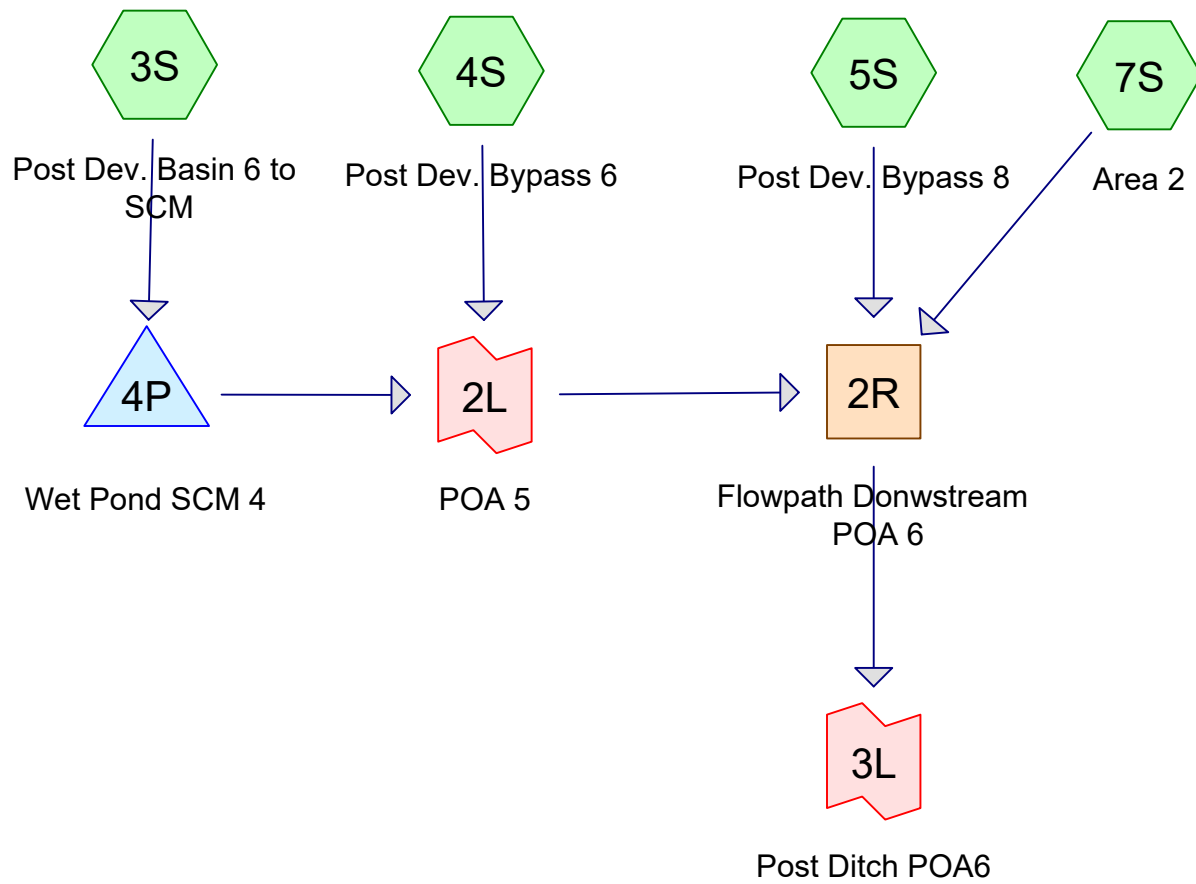
Inflow Area = 18.920 ac, 25.41% Impervious, Inflow Depth = 4.68" for 100-yr event
Inflow = 58.35 cfs @ 12.39 hrs, Volume= 7.376 af
Primary = 58.35 cfs @ 12.39 hrs, Volume= 7.376 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 3L: Post Ditch POA6

Hydrograph

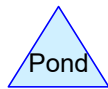




Subcat



Reach



Pond



Link

Routing Diagram for 32044.0000 - Ditch Analysis
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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
6.281	85	1/8 acre lots, 65% imp, HSG B (7S)
1.227	69	50-75% Grass cover, Fair, HSG B (5S)
1.880	56	Brush, Fair, HSG B (3S, 4S)
1.986	98	Paved parking, HSG B (3S, 4S, 5S)
1.455	98	Roofs, HSG B (3S)
0.326	98	Water Surface, 0% imp, HSG B (3S)
9.943	60	Woods, Fair, HSG B (4S, 5S)
23.098	73	TOTAL AREA

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Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
23.098	HSG B	3S, 4S, 5S, 7S
0.000	HSG C	
0.000	HSG D	
0.000	Other	
23.098		TOTAL AREA

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Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	6.281	0.000	0.000	0.000	6.281	1/8 acre lots, 65% imp	7S
0.000	1.227	0.000	0.000	0.000	1.227	50-75% Grass cover, Fair	5S
0.000	1.880	0.000	0.000	0.000	1.880	Brush, Fair	3S, 4S
0.000	1.986	0.000	0.000	0.000	1.986	Paved parking	3S, 4S, 5S
0.000	1.455	0.000	0.000	0.000	1.455	Roofs	3S
0.000	0.326	0.000	0.000	0.000	0.326	Water Surface, 0% imp	3S
0.000	9.943	0.000	0.000	0.000	9.943	Woods, Fair	4S, 5S
0.000	23.098	0.000	0.000	0.000	23.098	TOTAL AREA	

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Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	4P	522.00	521.50	45.0	0.0111	0.011	0.0	36.0	0.0	

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Type II 24-hr 10-yr Rainfall=5.17"

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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment3S: Post Dev. Basin 6 to Runoff Area=185,285 sf 75.67% Impervious Runoff Depth=4.15"
Tc=5.0 min CN=91 Runoff=25.26 cfs 1.470 af

Subcatchment4S: Post Dev. Bypass 6 Runoff Area=257,427 sf 1.66% Impervious Runoff Depth=1.40"
Tc=5.0 min CN=60 Runoff=13.01 cfs 0.690 af

Subcatchment5S: Post Dev. Bypass 8 Runoff Area=289,814 sf 1.87% Impervious Runoff Depth=1.54"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=14.84 cfs 0.856 af

Subcatchment7S: Area 2 Runoff Area=273,607 sf 65.00% Impervious Runoff Depth=3.53"
Tc=15.0 min CN=85 Runoff=27.00 cfs 1.845 af

Reach 2R: Flowpath Downstream POA Avg. Flow Depth=2.68' Max Vel=1.73 fps Inflow=52.21 cfs 4.857 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=32.92 cfs 4.857 af

Pond 4P: Wet Pond SCM 4 Peak Elev=525.74' Storage=43,618 cf Inflow=25.26 cfs 1.470 af
Outflow=4.35 cfs 1.466 af

Link 2L: POA 5 Inflow=12.84 cfs 2.156 af
Primary=12.84 cfs 2.156 af

Link 3L: Post Ditch POA6 Inflow=32.92 cfs 4.857 af
Primary=32.92 cfs 4.857 af

Total Runoff Area = 23.098 ac Runoff Volume = 4.862 af Average Runoff Depth = 2.53"
67.43% Pervious = 15.574 ac 32.57% Impervious = 7.524 ac

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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Subcatchment 3S: Post Dev. Basin 6 to SCM

Runoff = 25.26 cfs @ 11.95 hrs, Volume= 1.470 af, Depth= 4.15"
Routed to Pond 4P : Wet Pond SCM 4

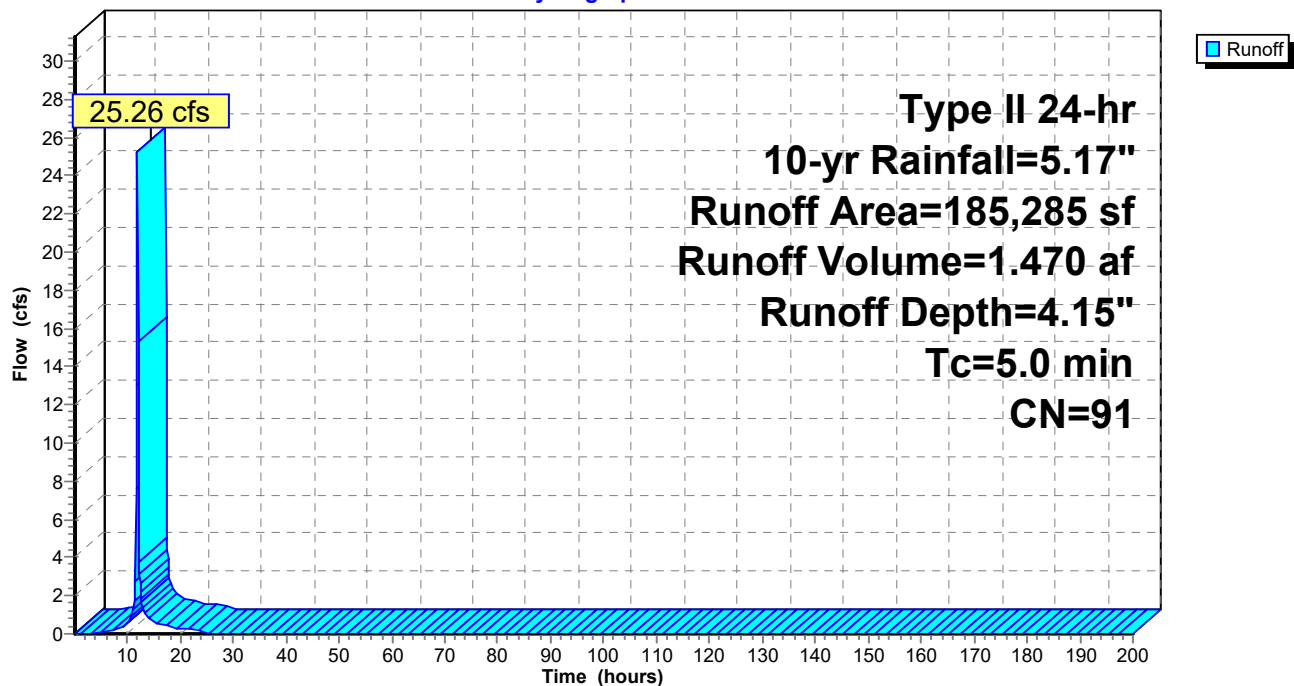
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 10-yr Rainfall=5.17"

Area (sf)	CN	Description
76,830	98	Paved parking, HSG B
63,382	98	Roofs, HSG B
30,858	56	Brush, Fair, HSG B
14,215	98	Water Surface, 0% imp, HSG B
185,285	91	Weighted Average
45,073		24.33% Pervious Area
140,212		75.67% Impervious Area

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

Subcatchment 3S: Post Dev. Basin 6 to SCM

Hydrograph



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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Subcatchment 4S: Post Dev. Bypass 6

Runoff = 13.01 cfs @ 11.98 hrs, Volume= 0.690 af, Depth= 1.40"
Routed to Link 2L : POA 5

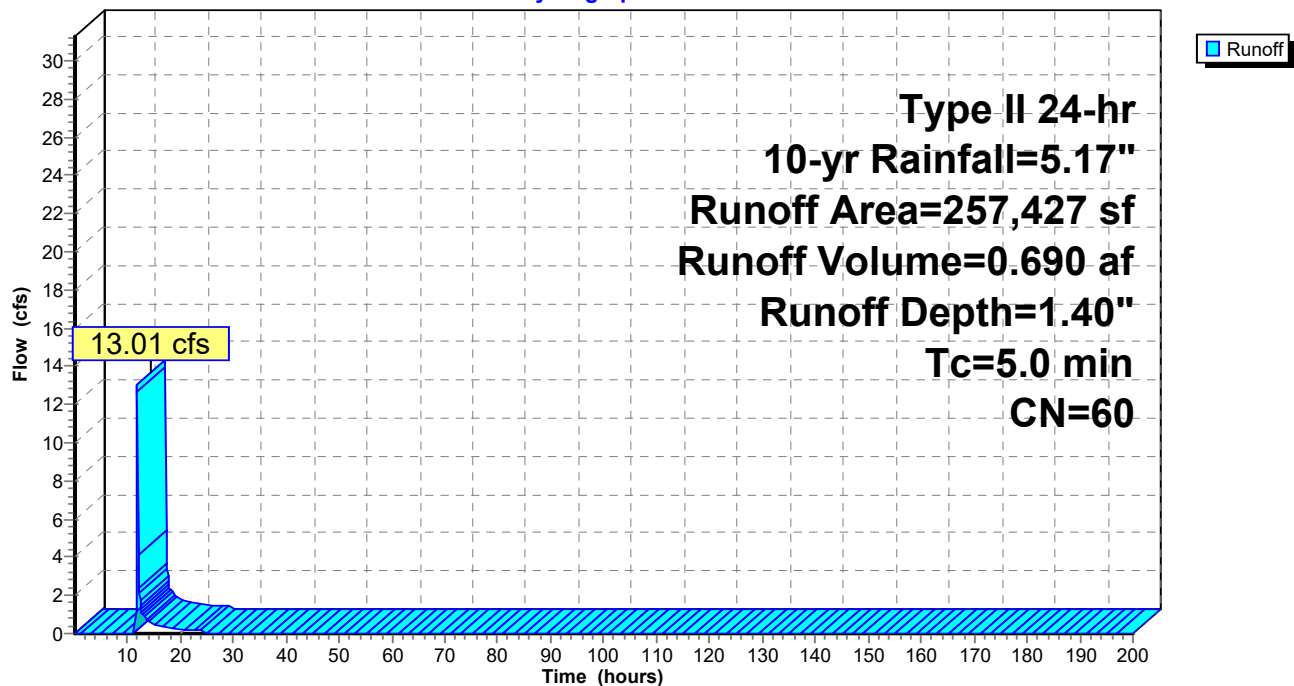
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 10-yr Rainfall=5.17"

Area (sf)	CN	Description
4,268	98	Paved parking, HSG B
51,015	56	Brush, Fair, HSG B
202,144	60	Woods, Fair, HSG B
257,427	60	Weighted Average
253,159		98.34% Pervious Area
4,268		1.66% Impervious Area

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

Subcatchment 4S: Post Dev. Bypass 6

Hydrograph



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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Subcatchment 5S: Post Dev. Bypass 8

Runoff = 14.84 cfs @ 12.01 hrs, Volume= 0.856 af, Depth= 1.54"

Routed to Reach 2R : Flowpath Downstream POA 6

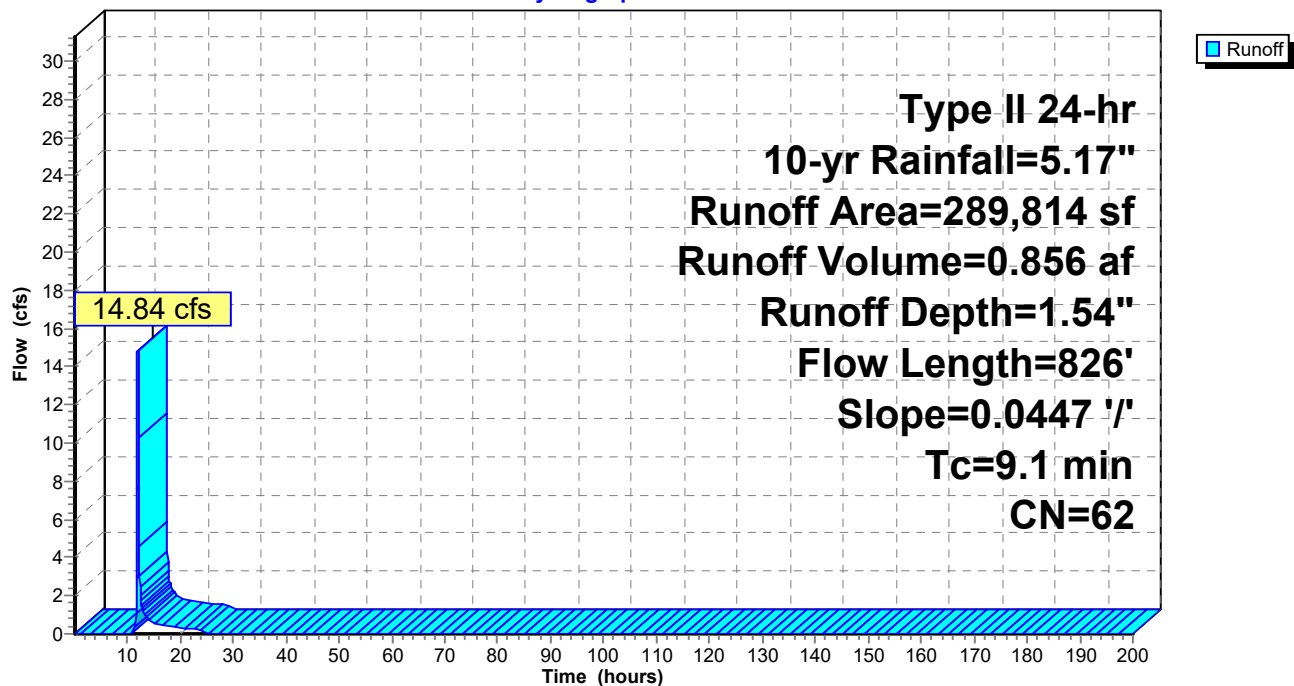
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 10-yr Rainfall=5.17"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
53,439	69	50-75% Grass cover, Fair, HSG B
5,416	98	Paved parking, HSG B
289,814	62	Weighted Average
284,398		98.13% Pervious Area
5,416		1.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 5S: Post Dev. Bypass 8

Hydrograph



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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Subcatchment 7S: Area 2

Runoff = 27.00 cfs @ 12.07 hrs, Volume= 1.845 af, Depth= 3.53"

Routed to Reach 2R : Flowpath Downstream POA 6

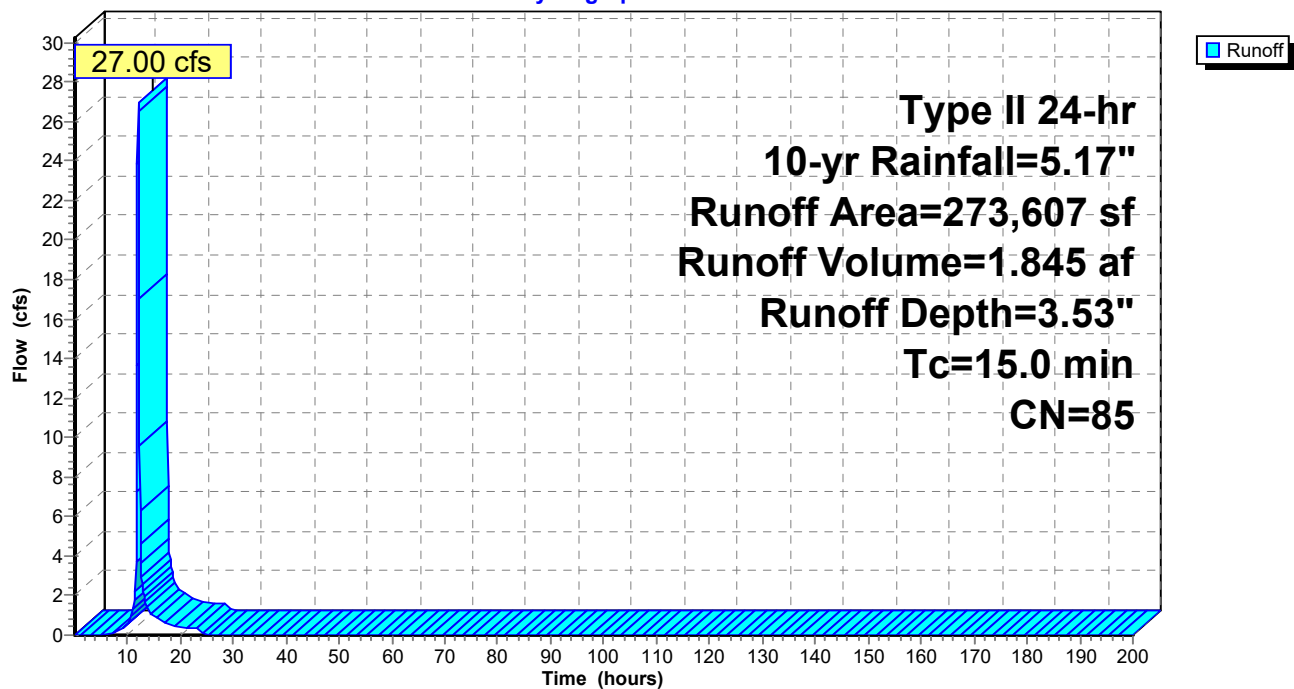
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 10-yr Rainfall=5.17"

Area (sf)	CN	Description
273,607	85	1/8 acre lots, 65% imp, HSG B
95,762		35.00% Pervious Area
177,845		65.00% Impervious Area

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

Subcatchment 7S: Area 2

Hydrograph



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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Reach 2R: Flowpath Downstream POA 6

Inflow Area = 23.098 ac, 32.57% Impervious, Inflow Depth = 2.52" for 10-yr event
Inflow = 52.21 cfs @ 12.02 hrs, Volume= 4.857 af
Outflow = 32.92 cfs @ 12.43 hrs, Volume= 4.857 af, Atten= 37%, Lag= 24.2 min
Routed to Link 3L : Post Ditch POA6

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.73 fps, Min. Travel Time= 14.5 min

Avg. Velocity= 0.33 fps, Avg. Travel Time= 76.7 min

Peak Storage= 29,183 cf @ 12.18 hrs

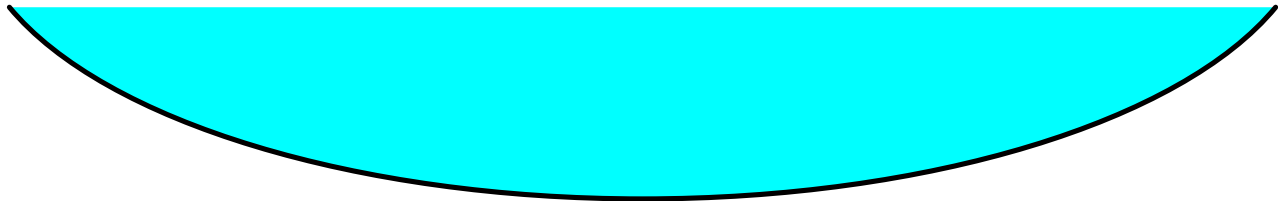
Average Depth at Peak Storage= 2.68' , Surface Width= 13.84'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

Length= 1,509.0' Slope= 0.0154 '/'

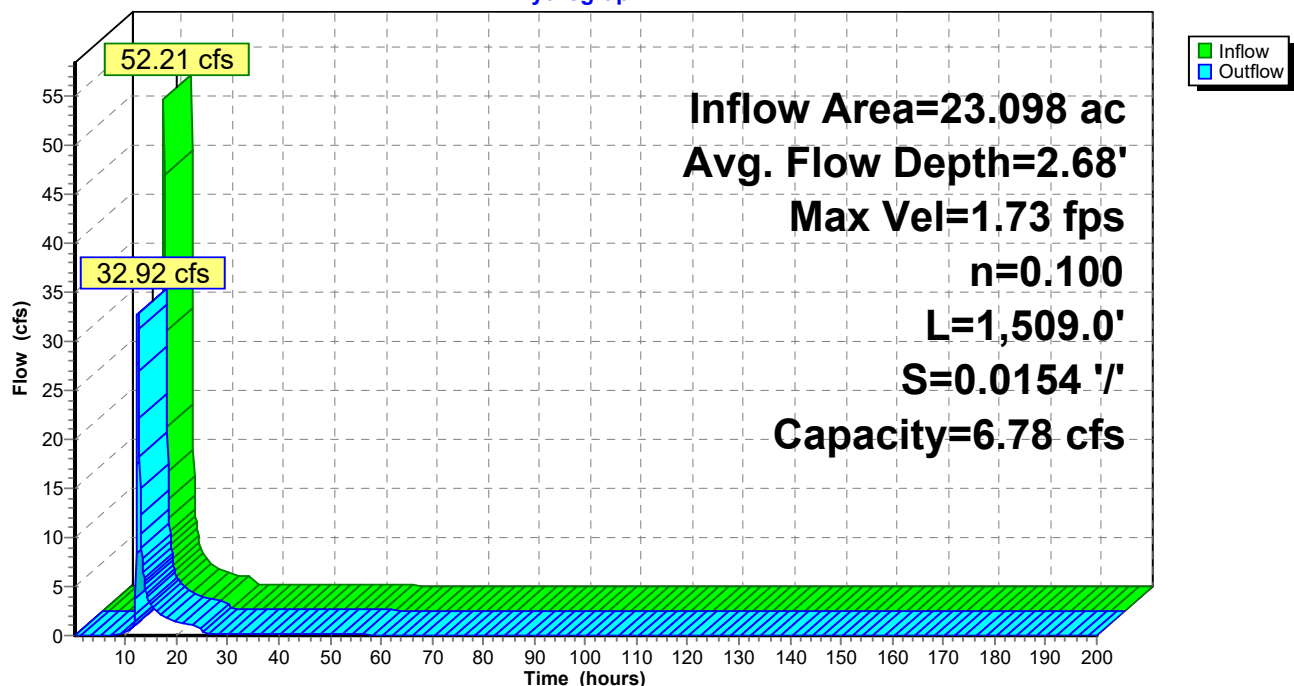
Inlet Invert= 505.43', Outlet Invert= 482.25'



‡

Reach 2R: Flowpath Downstream POA 6

Hydrograph



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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Pond 4P: Wet Pond SCM 4

Inflow Area = 4.254 ac, 75.67% Impervious, Inflow Depth = 4.15" for 10-yr event
 Inflow = 25.26 cfs @ 11.95 hrs, Volume= 1.470 af
 Outflow = 4.35 cfs @ 12.22 hrs, Volume= 1.466 af, Atten= 83%, Lag= 16.1 min
 Primary = 4.35 cfs @ 12.22 hrs, Volume= 1.466 af
 Routed to Link 2L : POA 5

Routing by Stor-Ind method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Starting Elev= 522.00' Surf.Area= 7,056 sf Storage= 6,623 cf

Peak Elev= 525.74' @ 12.22 hrs Surf.Area= 11,404 sf Storage= 43,618 cf (36,995 cf above start)

Plug-Flow detention time= 2,434.7 min calculated for 1.314 af (89% of inflow)

Center-of-Mass det. time= 2,127.3 min (2,908.8 - 781.5)

Volume	Invert	Avail.Storage	Storage Description
#1	521.00'	71,189 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
521.00	6,190	0	0
522.00	7,056	6,623	6,623
522.50	8,333	3,847	10,470
523.00	9,531	4,466	14,936
524.00	10,198	9,865	24,801
525.00	10,883	10,541	35,341
526.00	11,584	11,234	46,575
527.00	12,303	11,944	58,518
528.00	13,038	12,671	71,189

Device	Routing	Invert	Outlet Devices
#1	Primary	522.00'	36.0" Round Culvert L= 45.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 522.00' / 521.50' S= 0.0111 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf
#2	Device 1	522.00'	1.5" Vert. Drawdown C= 0.600 Limited to weir flow at low heads
#3	Device 1	525.40'	40.0" W x 4.0" H Vert. Peakflow Orifice X 2.00 C= 0.600 Limited to weir flow at low heads
#4	Device 1	526.90'	48.0" x 48.0" Horiz. Overflow C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.31 cfs @ 12.22 hrs HW=525.74' (Free Discharge)

1=Culvert (Passes 4.31 cfs of 50.79 cfs potential flow)
 2=Drawdown (Orifice Controls 0.11 cfs @ 9.23 fps)
 3=Peakflow Orifice (Orifice Controls 4.20 cfs @ 1.89 fps)
 4=Overflow (Controls 0.00 cfs)

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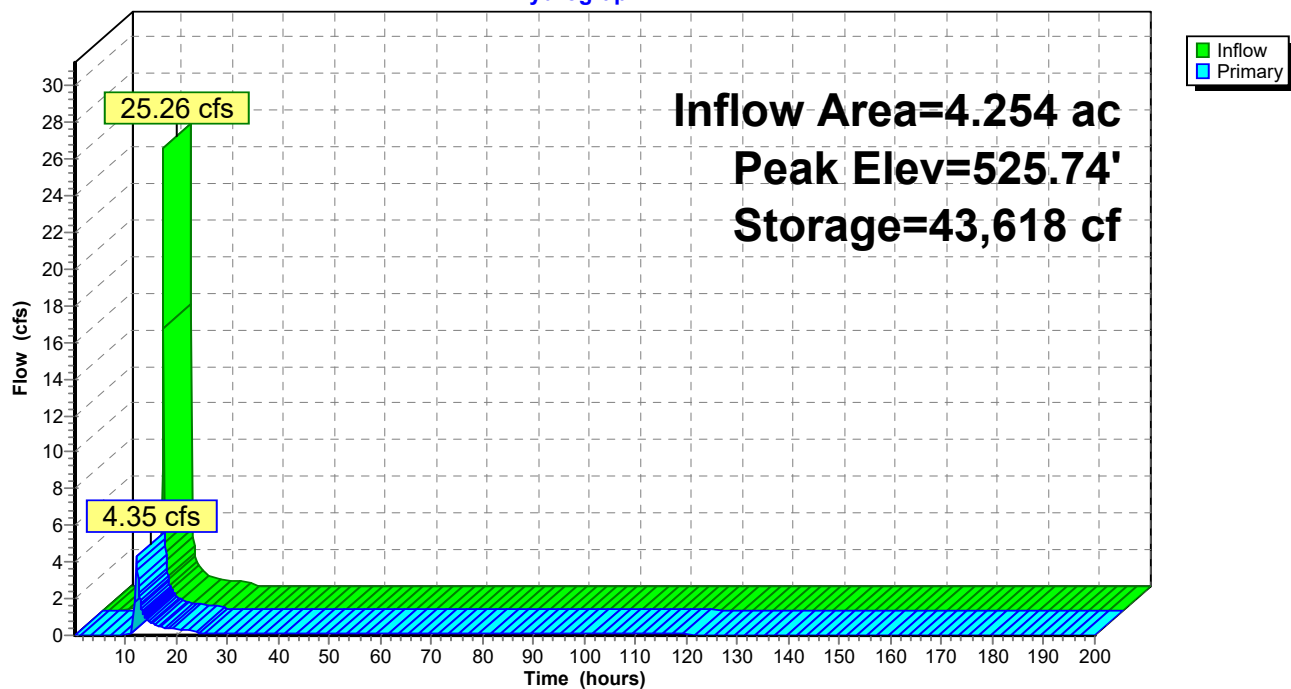
Type II 24-hr 10-yr Rainfall=5.17"

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Pond 4P: Wet Pond SCM 4

Hydrograph



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Type II 24-hr 10-yr Rainfall=5.17"

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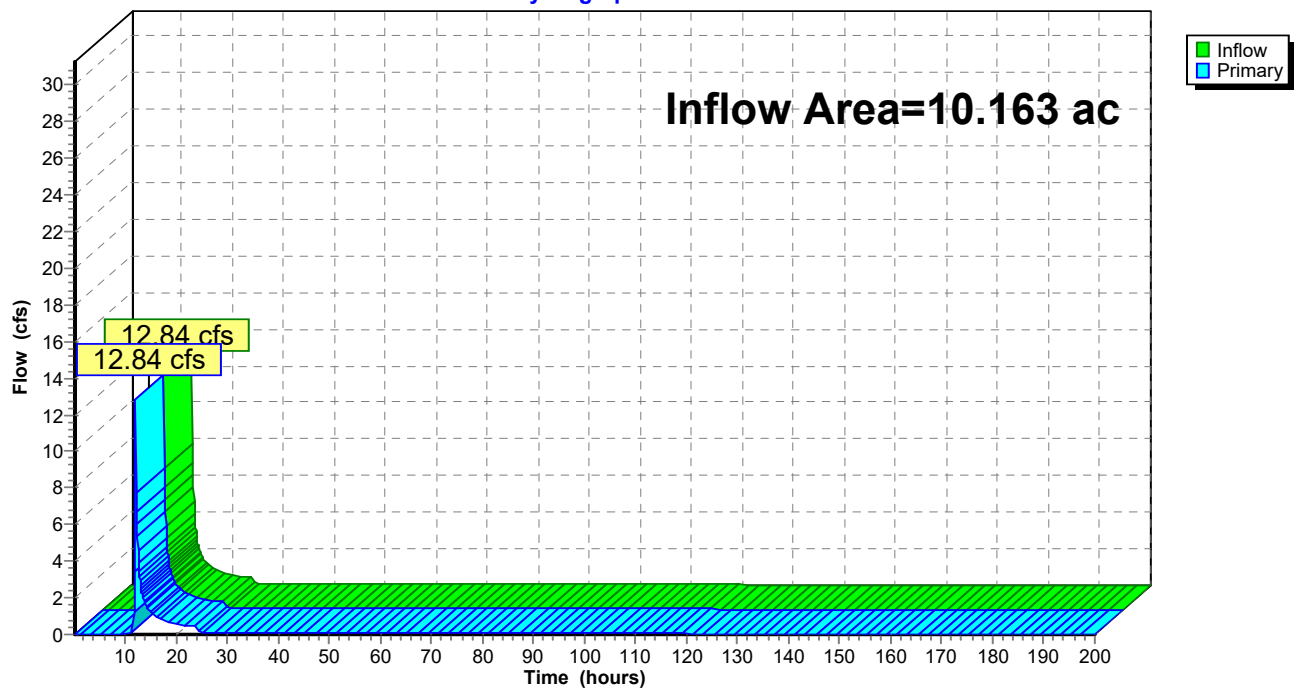
Summary for Link 2L: POA 5

Inflow Area = 10.163 ac, 32.64% Impervious, Inflow Depth > 2.55" for 10-yr event
Inflow = 12.84 cfs @ 11.99 hrs, Volume= 2.156 af
Primary = 12.84 cfs @ 11.99 hrs, Volume= 2.156 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 2R : Flowpath Downstream POA 6

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 2L: POA 5

Hydrograph



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Type II 24-hr 10-yr Rainfall=5.17"

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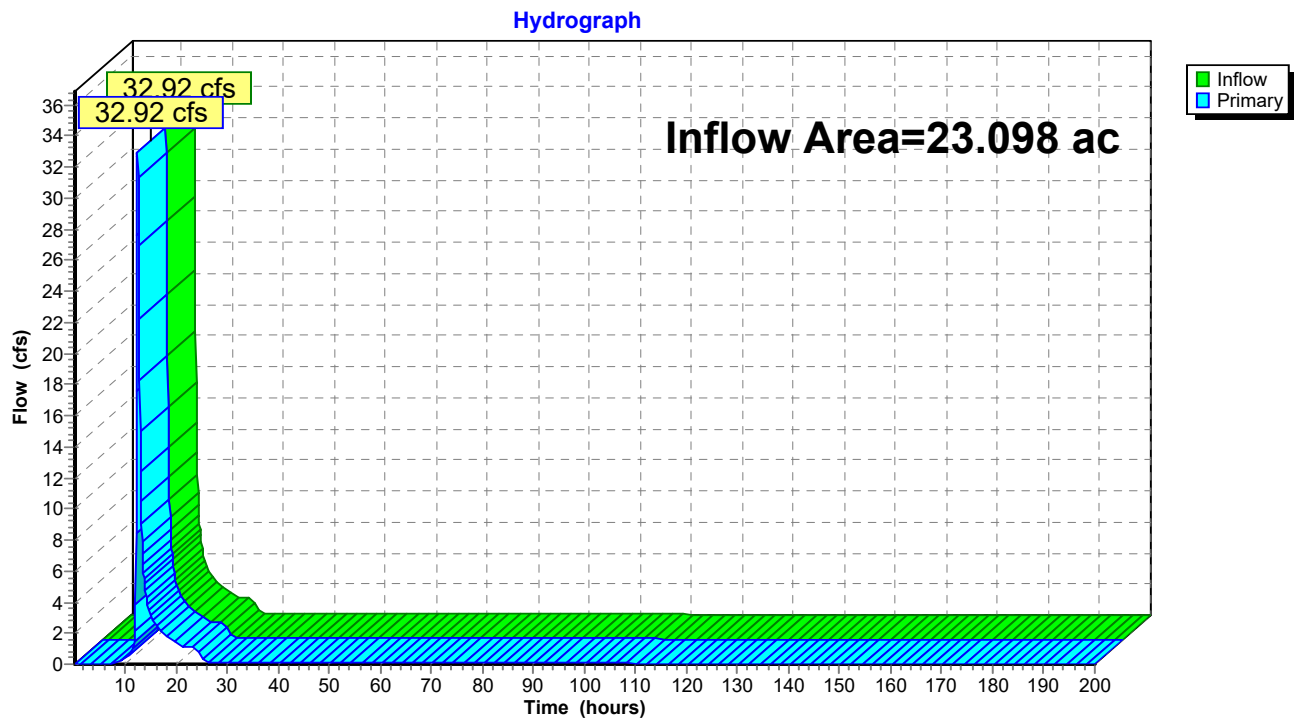
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Summary for Link 3L: Post Ditch POA6

Inflow Area = 23.098 ac, 32.57% Impervious, Inflow Depth = 2.52" for 10-yr event
Inflow = 32.92 cfs @ 12.43 hrs, Volume= 4.857 af
Primary = 32.92 cfs @ 12.43 hrs, Volume= 4.857 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 3L: Post Ditch POA6



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Type II 24-hr 25-yr Rainfall=6.54"

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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment3S: Post Dev. Basin 6 to Runoff Area=185,285 sf 75.67% Impervious Runoff Depth=5.49"
Tc=5.0 min CN=91 Runoff=32.86 cfs 1.945 af

Subcatchment4S: Post Dev. Bypass 6 Runoff Area=257,427 sf 1.66% Impervious Runoff Depth=2.28"
Tc=5.0 min CN=60 Runoff=21.62 cfs 1.124 af

Subcatchment5S: Post Dev. Bypass 8 Runoff Area=289,814 sf 1.87% Impervious Runoff Depth=2.47"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=24.46 cfs 1.368 af

Subcatchment7S: Area 2 Runoff Area=273,607 sf 65.00% Impervious Runoff Depth=4.81"
Tc=15.0 min CN=85 Runoff=36.37 cfs 2.520 af

Reach 2R: Flowpath Downstream POA Avg. Flow Depth=4.00' Max Vel=1.78 fps Inflow=86.65 cfs 6.953 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=53.06 cfs 6.952 af

Pond 4P: Wet Pond SCM 4 Peak Elev=526.48' Storage=52,233 cf Inflow=32.86 cfs 1.945 af
Outflow=10.36 cfs 1.940 af

Link 2L: POA 5 Inflow=28.99 cfs 3.065 af
Primary=28.99 cfs 3.065 af

Link 3L: Post Ditch POA6 Inflow=53.06 cfs 6.952 af
Primary=53.06 cfs 6.952 af

Total Runoff Area = 23.098 ac Runoff Volume = 6.957 af Average Runoff Depth = 3.61"
67.43% Pervious = 15.574 ac 32.57% Impervious = 7.524 ac

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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 3S: Post Dev. Basin 6 to SCM

Runoff = 32.86 cfs @ 11.95 hrs, Volume= 1.945 af, Depth= 5.49"
Routed to Pond 4P : Wet Pond SCM 4

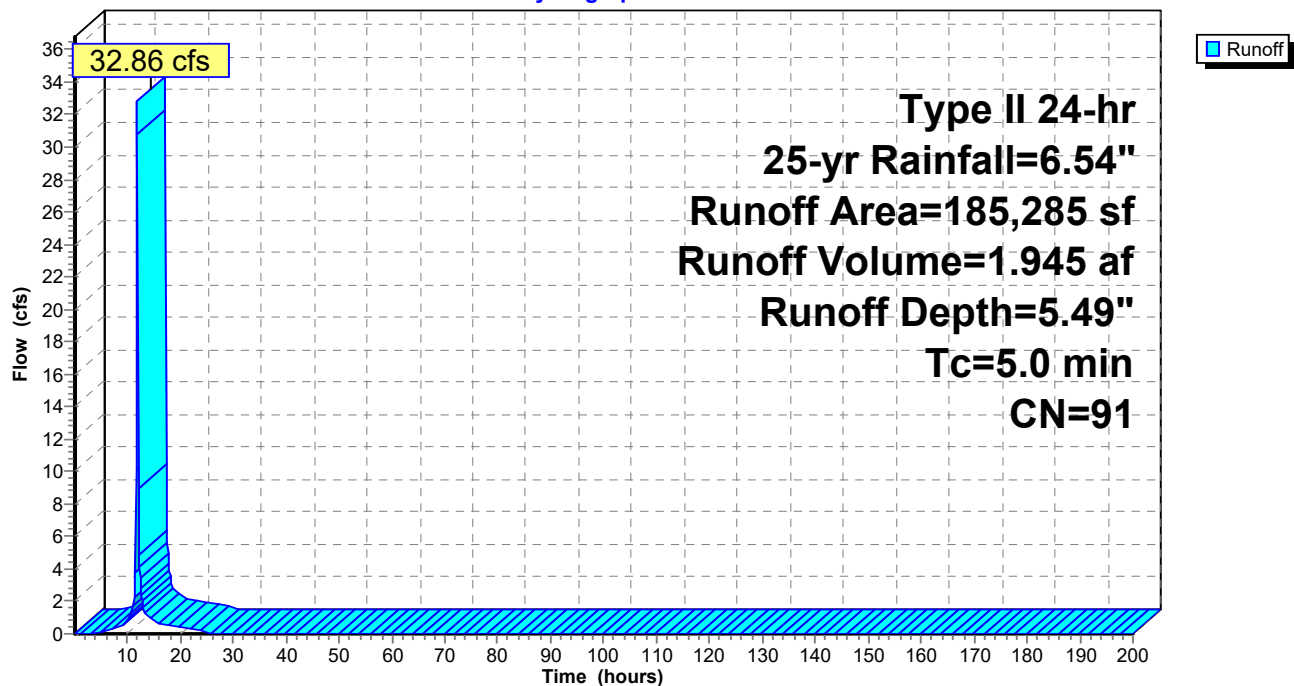
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
76,830	98	Paved parking, HSG B
63,382	98	Roofs, HSG B
30,858	56	Brush, Fair, HSG B
14,215	98	Water Surface, 0% imp, HSG B
185,285	91	Weighted Average
45,073		24.33% Pervious Area
140,212		75.67% Impervious Area

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

Subcatchment 3S: Post Dev. Basin 6 to SCM

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 4S: Post Dev. Bypass 6

Runoff = 21.62 cfs @ 11.97 hrs, Volume= 1.124 af, Depth= 2.28"
Routed to Link 2L : POA 5

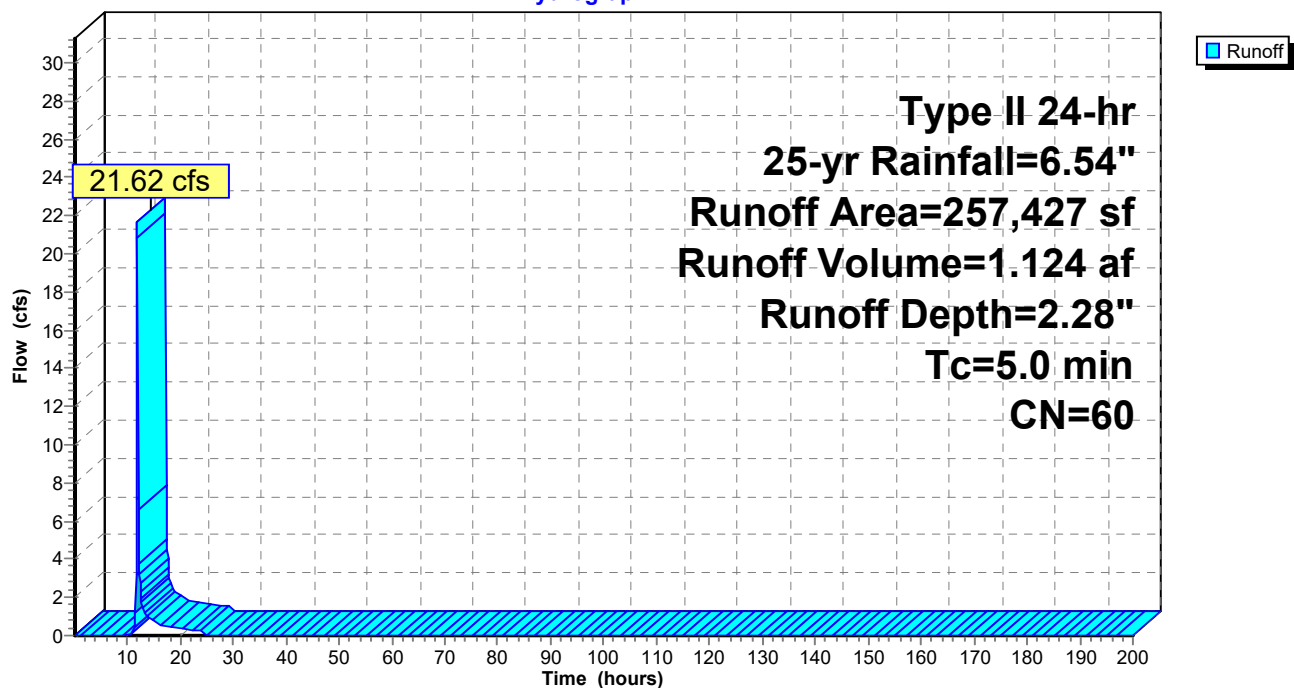
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
4,268	98	Paved parking, HSG B
51,015	56	Brush, Fair, HSG B
202,144	60	Woods, Fair, HSG B
257,427	60	Weighted Average
253,159		98.34% Pervious Area
4,268		1.66% Impervious Area

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

Subcatchment 4S: Post Dev. Bypass 6

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 5S: Post Dev. Bypass 8

Runoff = 24.46 cfs @ 12.01 hrs, Volume= 1.368 af, Depth= 2.47"
Routed to Reach 2R : Flowpath Downstream POA 6

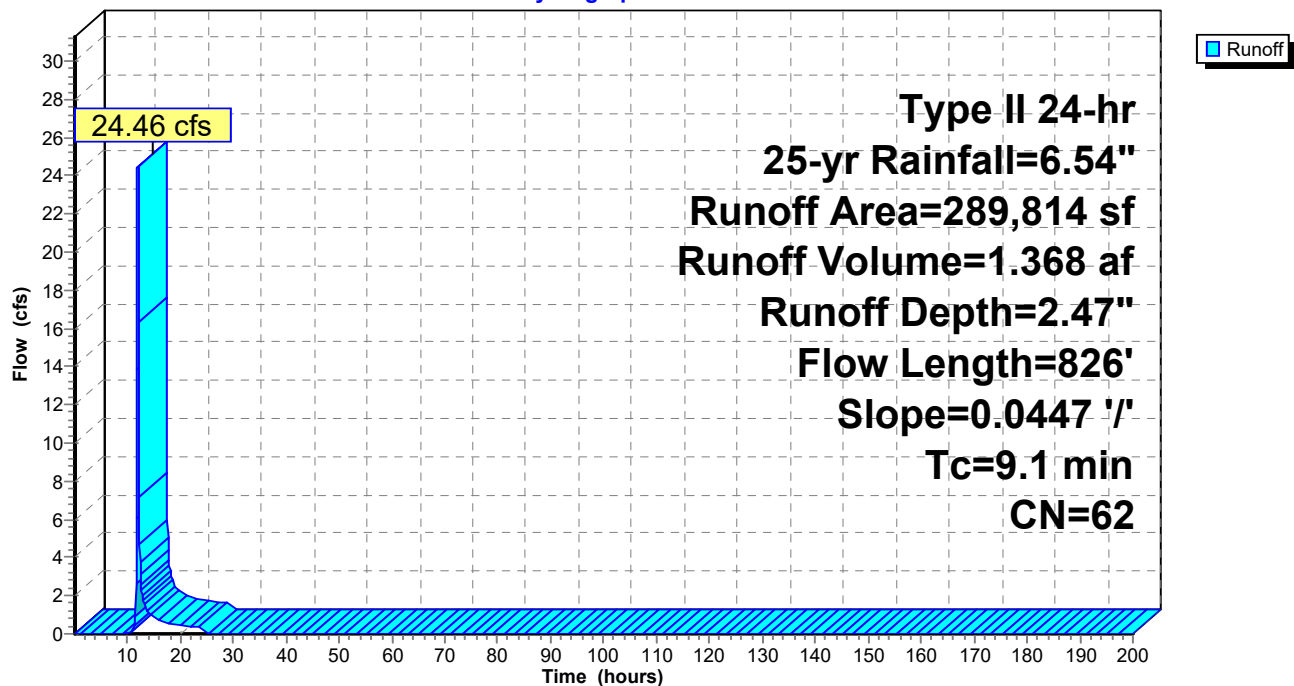
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
53,439	69	50-75% Grass cover, Fair, HSG B
5,416	98	Paved parking, HSG B
289,814	62	Weighted Average
284,398		98.13% Pervious Area
5,416		1.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 5S: Post Dev. Bypass 8

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 7S: Area 2

Runoff = 36.37 cfs @ 12.07 hrs, Volume= 2.520 af, Depth= 4.81"

Routed to Reach 2R : Flowpath Downstream POA 6

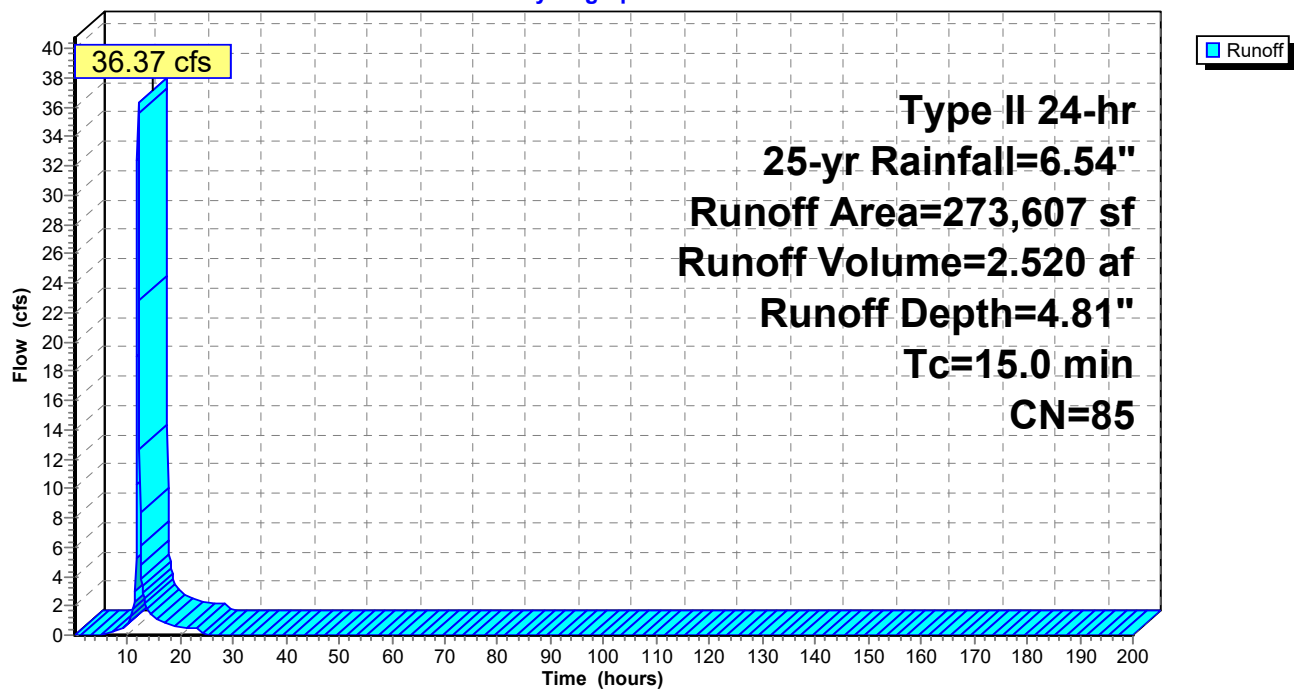
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
273,607	85	1/8 acre lots, 65% imp, HSG B
95,762		35.00% Pervious Area
177,845		65.00% Impervious Area

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

Subcatchment 7S: Area 2

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Reach 2R: Flowpath Downstream POA 6

Inflow Area = 23.098 ac, 32.57% Impervious, Inflow Depth = 3.61" for 25-yr event
Inflow = 86.65 cfs @ 12.02 hrs, Volume= 6.953 af
Outflow = 53.06 cfs @ 12.41 hrs, Volume= 6.952 af, Atten= 39%, Lag= 23.7 min
Routed to Link 3L : Post Ditch POA6

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.78 fps, Min. Travel Time= 14.1 min

Avg. Velocity= 0.34 fps, Avg. Travel Time= 74.6 min

Peak Storage= 45,541 cf @ 12.17 hrs

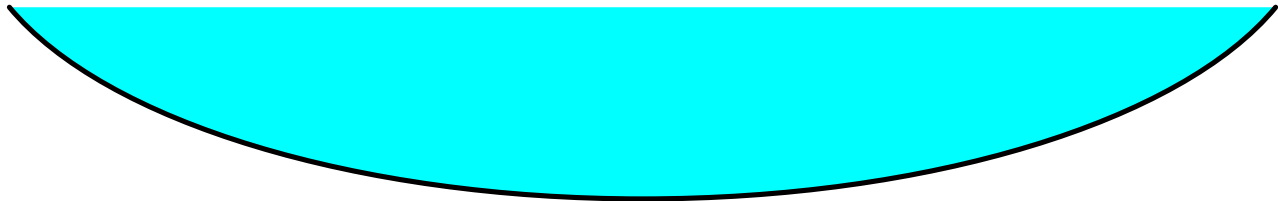
Average Depth at Peak Storage= 4.00' , Surface Width= 16.92'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

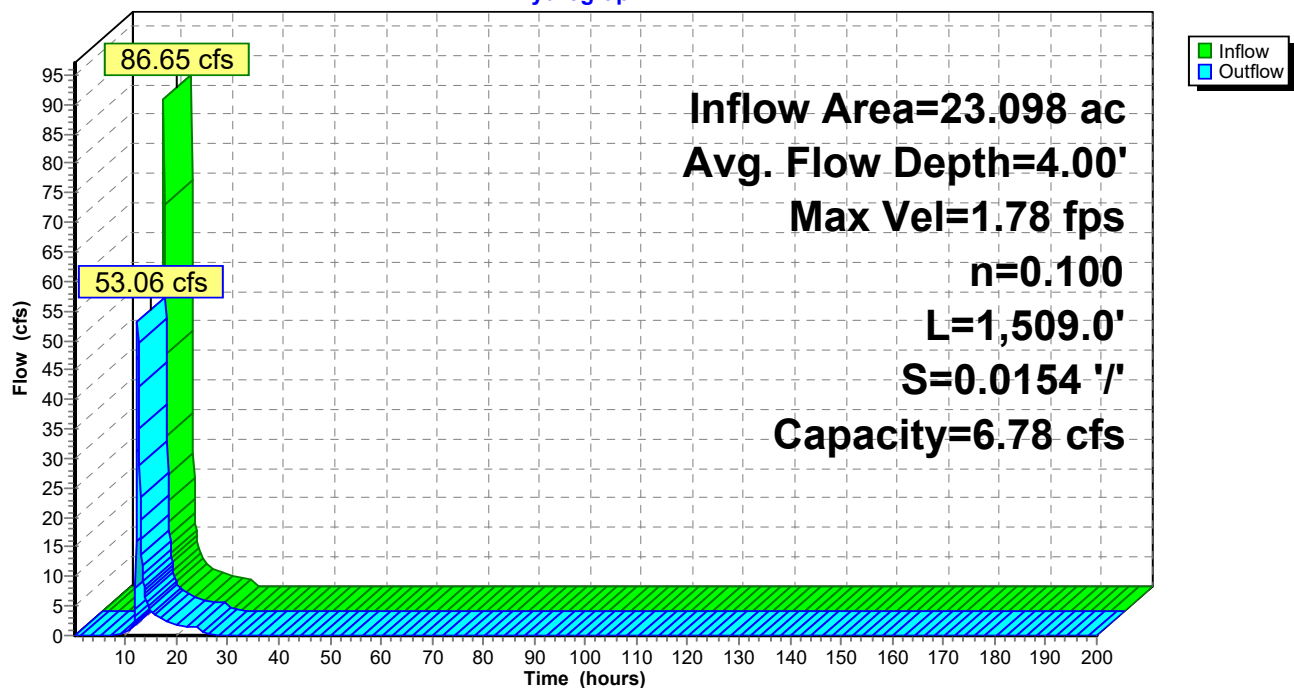
Length= 1,509.0' Slope= 0.0154 '/'

Inlet Invert= 505.43', Outlet Invert= 482.25'



Reach 2R: Flowpath Downstream POA 6

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Pond 4P: Wet Pond SCM 4

Inflow Area = 4.254 ac, 75.67% Impervious, Inflow Depth = 5.49" for 25-yr event
 Inflow = 32.86 cfs @ 11.95 hrs, Volume= 1.945 af
 Outflow = 10.36 cfs @ 12.13 hrs, Volume= 1.940 af, Atten= 68%, Lag= 11.0 min
 Primary = 10.36 cfs @ 12.13 hrs, Volume= 1.940 af
 Routed to Link 2L : POA 5

Routing by Stor-Ind method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Starting Elev= 522.00' Surf.Area= 7,056 sf Storage= 6,623 cf

Peak Elev= 526.48' @ 12.13 hrs Surf.Area= 11,930 sf Storage= 52,233 cf (45,610 cf above start)

Plug-Flow detention time= 1,812.3 min calculated for 1.788 af (92% of inflow)

Center-of-Mass det. time= 1,624.1 min (2,398.1 - 774.1)

Volume	Invert	Avail.Storage	Storage Description
#1	521.00'	71,189 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
521.00	6,190	0	0
522.00	7,056	6,623	6,623
522.50	8,333	3,847	10,470
523.00	9,531	4,466	14,936
524.00	10,198	9,865	24,801
525.00	10,883	10,541	35,341
526.00	11,584	11,234	46,575
527.00	12,303	11,944	58,518
528.00	13,038	12,671	71,189

Device	Routing	Invert	Outlet Devices
#1	Primary	522.00'	36.0" Round Culvert L= 45.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 522.00' / 521.50' S= 0.0111 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf
#2	Device 1	522.00'	1.5" Vert. Drawdown C= 0.600 Limited to weir flow at low heads
#3	Device 1	525.40'	40.0" W x 4.0" H Vert. Peakflow Orifice X 2.00 C= 0.600 Limited to weir flow at low heads
#4	Device 1	526.90'	48.0" x 48.0" Horiz. Overflow C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=10.10 cfs @ 12.13 hrs HW=526.44' (Free Discharge)

1=Culvert (Passes 10.10 cfs of 58.34 cfs potential flow)
 2=Drawdown (Orifice Controls 0.12 cfs @ 10.07 fps)
 3=Peakflow Orifice (Orifice Controls 9.97 cfs @ 4.49 fps)
 4=Overflow (Controls 0.00 cfs)

32044.0000 - Ditch Analysis

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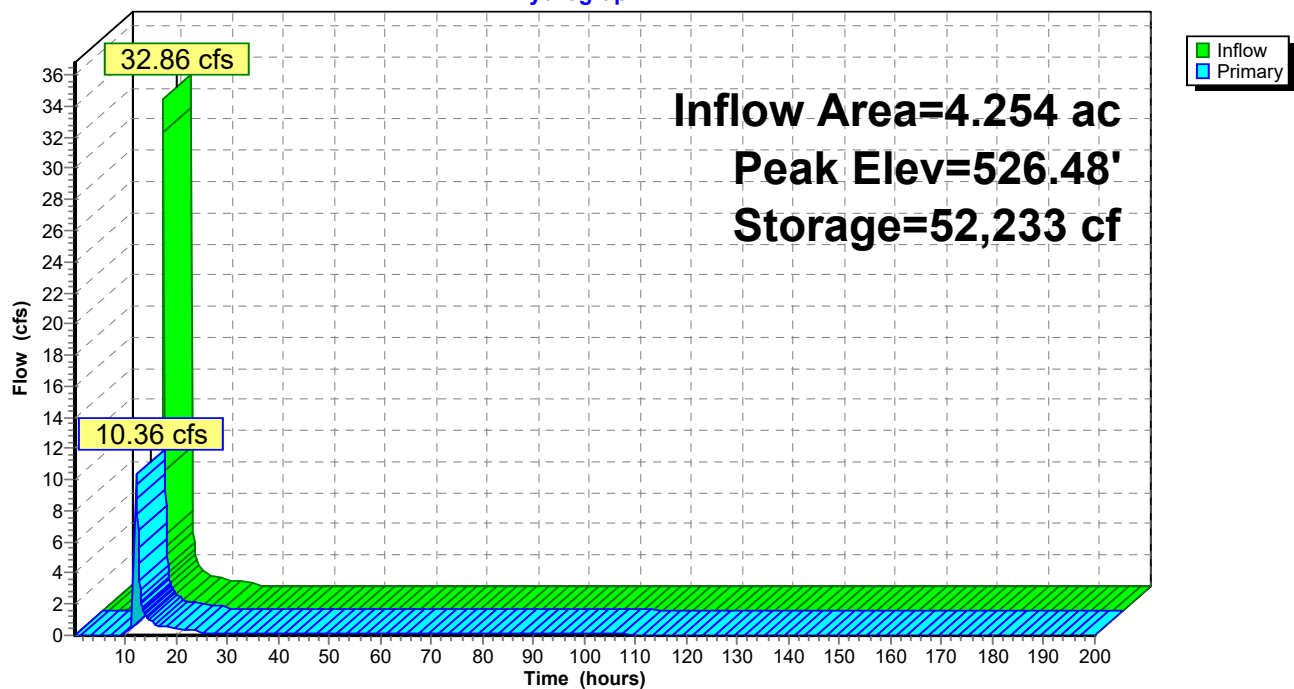
Type II 24-hr 25-yr Rainfall=6.54"

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Pond 4P: Wet Pond SCM 4

Hydrograph



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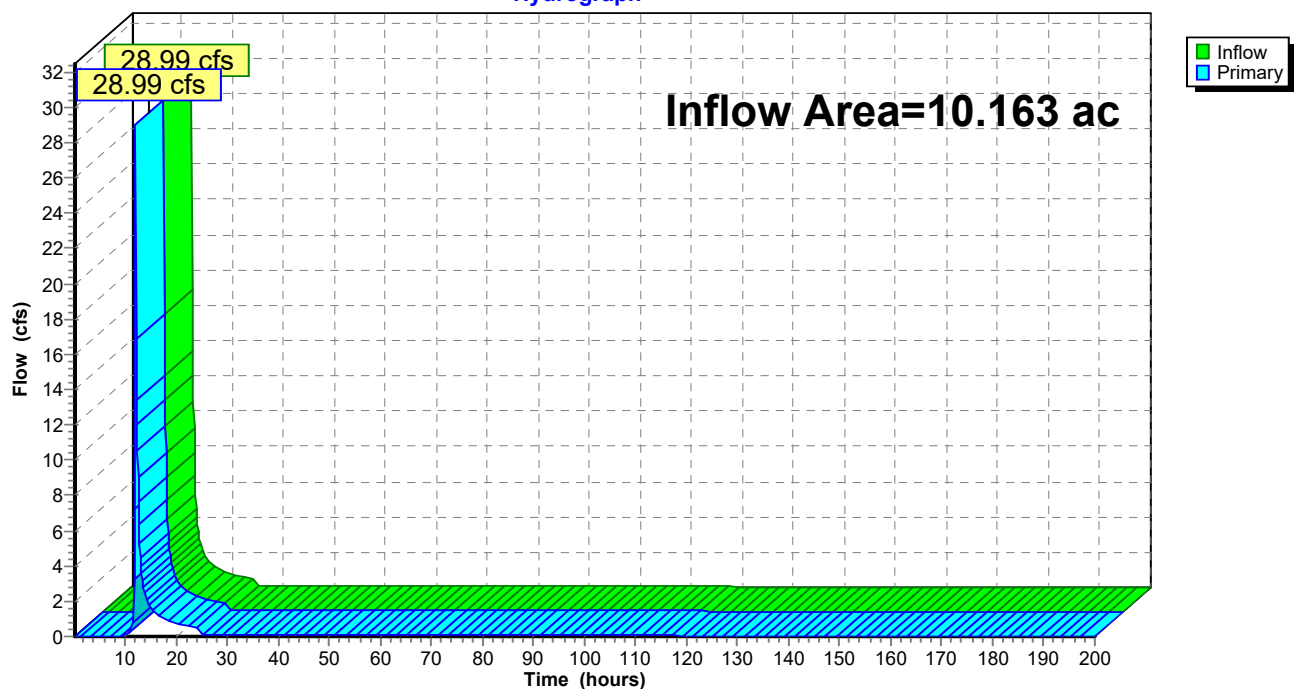
Summary for Link 2L: POA 5

Inflow Area = 10.163 ac, 32.64% Impervious, Inflow Depth = 3.62" for 25-yr event
Inflow = 28.99 cfs @ 12.00 hrs, Volume= 3.065 af
Primary = 28.99 cfs @ 12.00 hrs, Volume= 3.065 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 2R : Flowpath Downstream POA 6

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 2L: POA 5

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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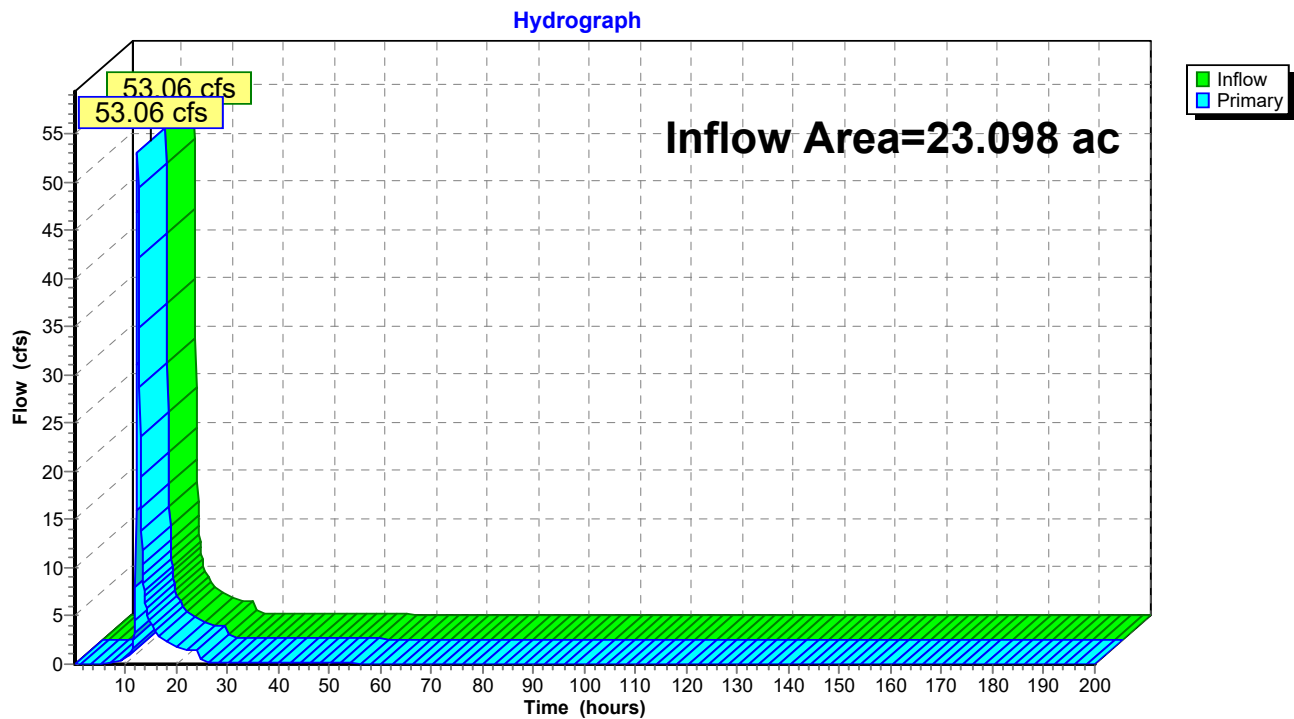
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Summary for Link 3L: Post Ditch POA6

Inflow Area = 23.098 ac, 32.57% Impervious, Inflow Depth = 3.61" for 25-yr event
Inflow = 53.06 cfs @ 12.41 hrs, Volume= 6.952 af
Primary = 53.06 cfs @ 12.41 hrs, Volume= 6.952 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 3L: Post Ditch POA6



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Type II 24-hr 100-yr Rainfall=8.17"

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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment3S: Post Dev. Basin 6 to Runoff Area=185,285 sf 75.67% Impervious Runoff Depth=7.09"
Tc=5.0 min CN=91 Runoff=41.82 cfs 2.514 af

Subcatchment4S: Post Dev. Bypass 6 Runoff Area=257,427 sf 1.66% Impervious Runoff Depth=3.46"
Tc=5.0 min CN=60 Runoff=32.88 cfs 1.705 af

Subcatchment5S: Post Dev. Bypass 8 Runoff Area=289,814 sf 1.87% Impervious Runoff Depth=3.69"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=36.97 cfs 2.045 af

Subcatchment7S: Area 2 Runoff Area=273,607 sf 65.00% Impervious Runoff Depth=6.38"
Tc=15.0 min CN=85 Runoff=47.49 cfs 3.338 af

Reach 2R: Flowpath Downstream Avg. Flow Depth=5.72' Max Vel=1.81 fps Inflow=125.55 cfs 9.597 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=78.95 cfs 9.597 af

Pond 4P: Wet Pond SCM 4 Peak Elev=527.19' Storage=60,840 cf Inflow=41.82 cfs 2.514 af
Outflow=21.85 cfs 2.510 af

Link 2L: POA 5 Inflow=45.34 cfs 4.214 af
Primary=45.34 cfs 4.214 af

Link 3L: Post Ditch POA6 Inflow=78.95 cfs 9.597 af
Primary=78.95 cfs 9.597 af

Total Runoff Area = 23.098 ac Runoff Volume = 9.602 af Average Runoff Depth = 4.99"
67.43% Pervious = 15.574 ac 32.57% Impervious = 7.524 ac

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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 3S: Post Dev. Basin 6 to SCM

Runoff = 41.82 cfs @ 11.95 hrs, Volume= 2.514 af, Depth= 7.09"
Routed to Pond 4P : Wet Pond SCM 4

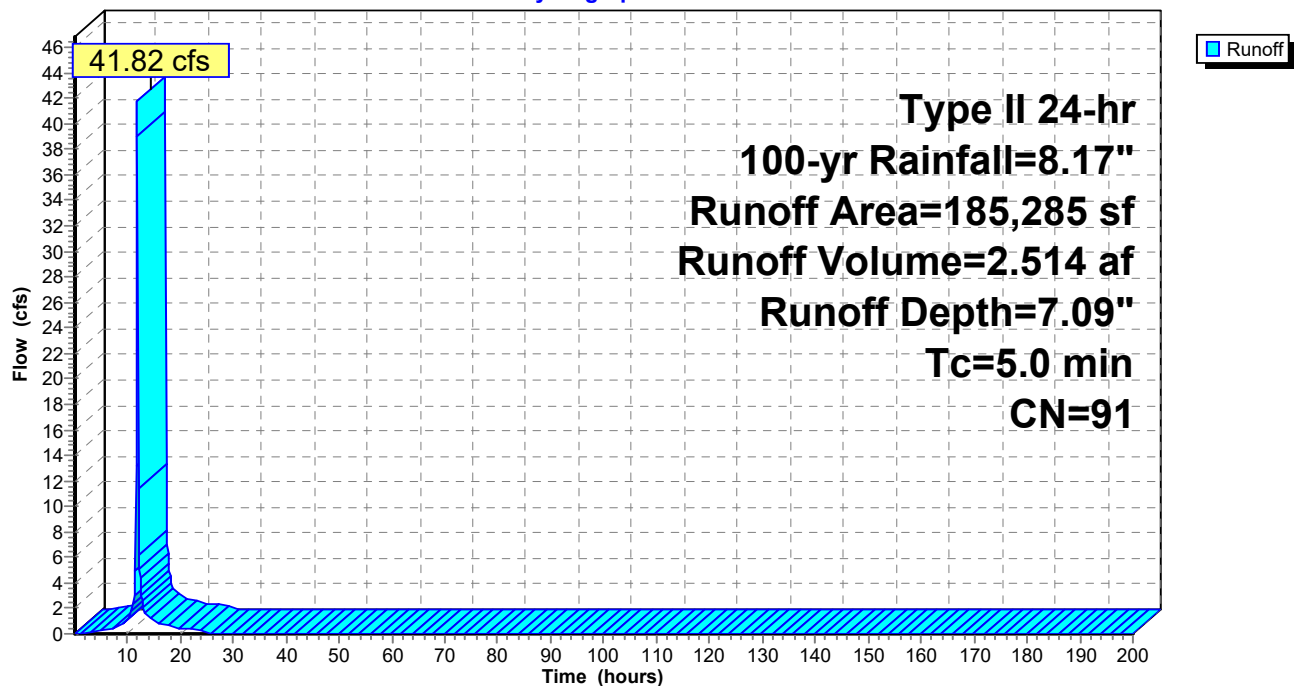
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
76,830	98	Paved parking, HSG B
63,382	98	Roofs, HSG B
30,858	56	Brush, Fair, HSG B
14,215	98	Water Surface, 0% imp, HSG B
185,285	91	Weighted Average
45,073		24.33% Pervious Area
140,212		75.67% Impervious Area

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

Subcatchment 3S: Post Dev. Basin 6 to SCM

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 4S: Post Dev. Bypass 6

Runoff = 32.88 cfs @ 11.96 hrs, Volume= 1.705 af, Depth= 3.46"
Routed to Link 2L : POA 5

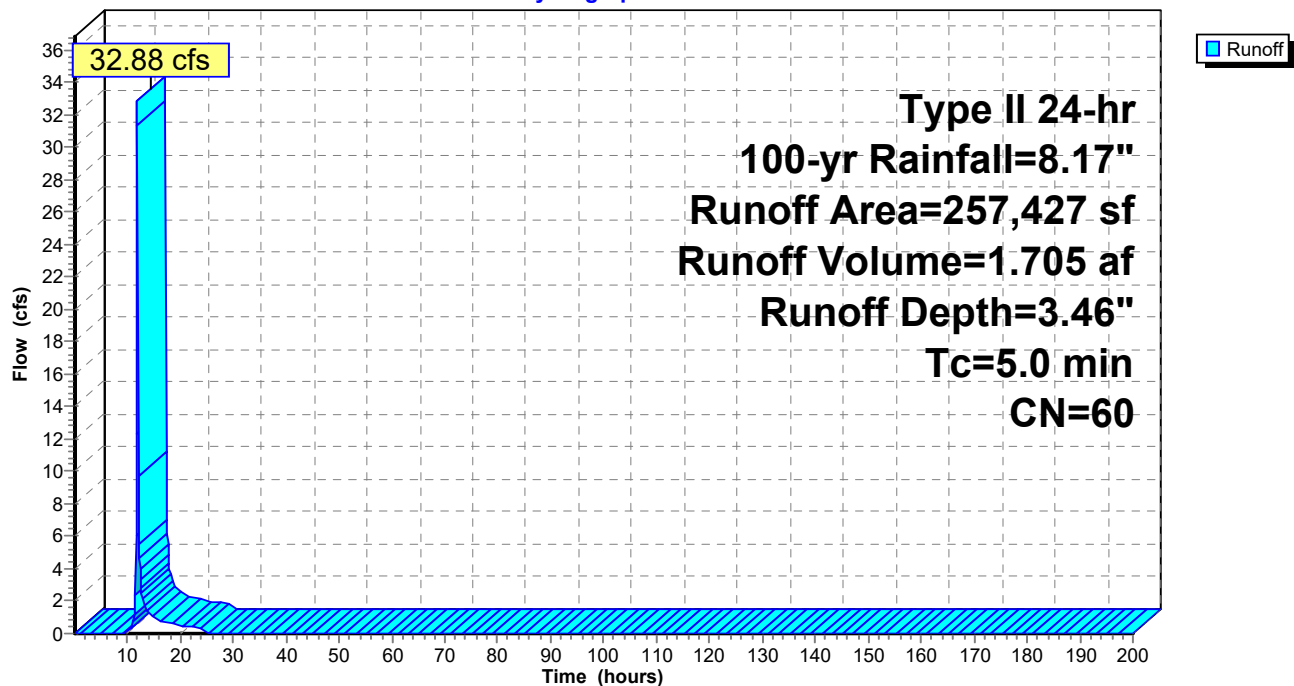
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
4,268	98	Paved parking, HSG B
51,015	56	Brush, Fair, HSG B
202,144	60	Woods, Fair, HSG B
257,427	60	Weighted Average
253,159		98.34% Pervious Area
4,268		1.66% Impervious Area

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

Subcatchment 4S: Post Dev. Bypass 6

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 5S: Post Dev. Bypass 8

Runoff = 36.97 cfs @ 12.00 hrs, Volume= 2.045 af, Depth= 3.69"
Routed to Reach 2R : Flowpath Downstream POA 6

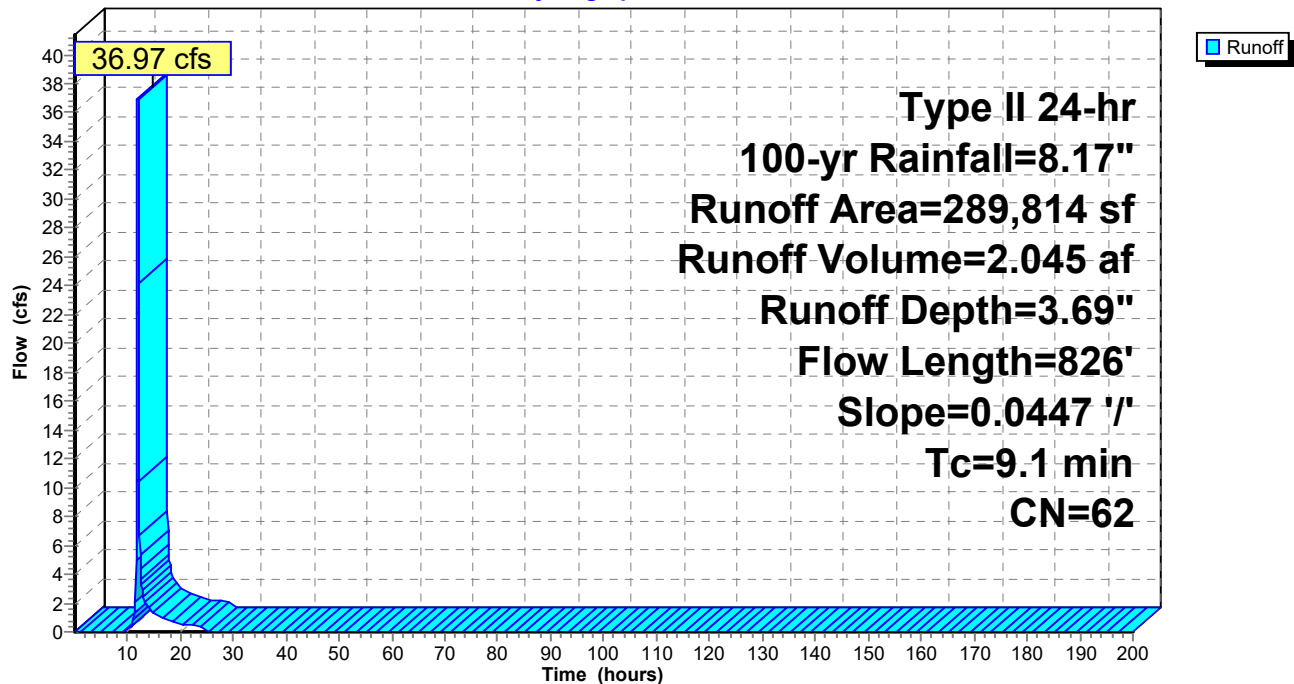
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
53,439	69	50-75% Grass cover, Fair, HSG B
5,416	98	Paved parking, HSG B
289,814	62	Weighted Average
284,398		98.13% Pervious Area
5,416		1.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 5S: Post Dev. Bypass 8

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 7S: Area 2

Runoff = 47.49 cfs @ 12.07 hrs, Volume= 3.338 af, Depth= 6.38"

Routed to Reach 2R : Flowpath Downstream POA 6

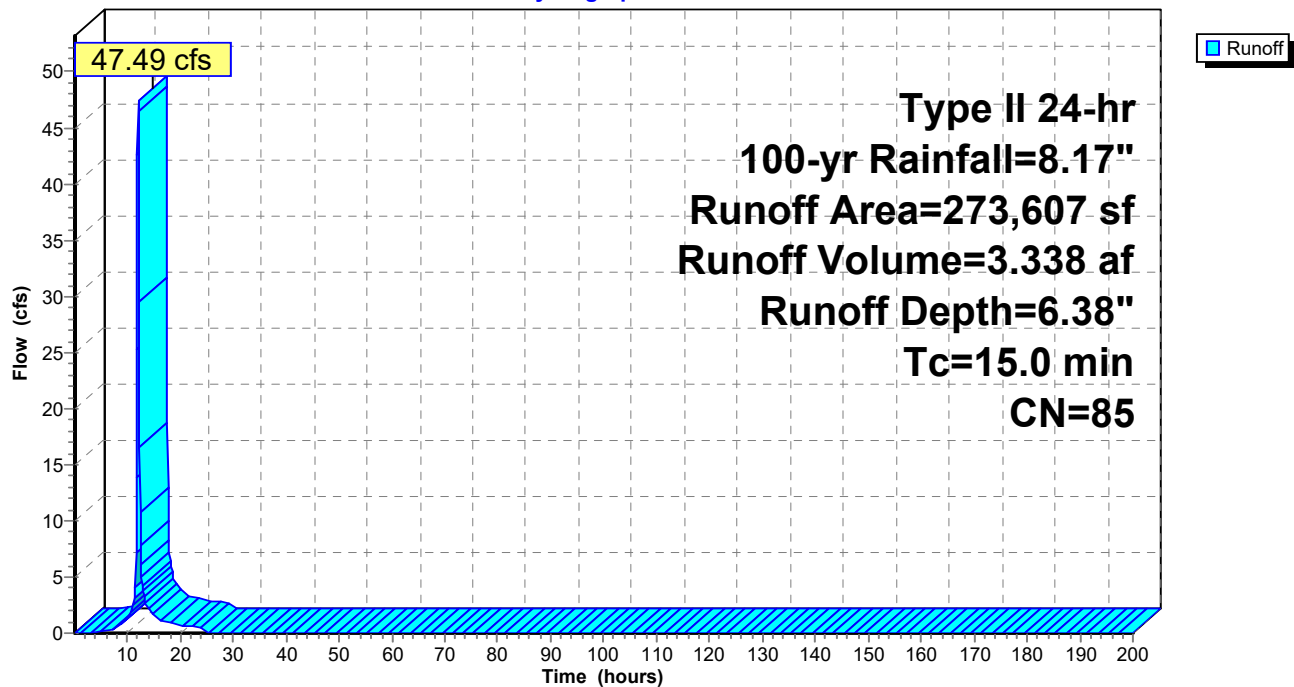
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
273,607	85	1/8 acre lots, 65% imp, HSG B
95,762		35.00% Pervious Area
177,845		65.00% Impervious Area

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

Subcatchment 7S: Area 2

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Reach 2R: Flowpath Downstream POA 6

Inflow Area = 23.098 ac, 32.57% Impervious, Inflow Depth = 4.99" for 100-yr event
Inflow = 125.55 cfs @ 12.01 hrs, Volume= 9.597 af
Outflow = 78.95 cfs @ 12.40 hrs, Volume= 9.597 af, Atten= 37%, Lag= 23.0 min
Routed to Link 3L : Post Ditch POA6

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.81 fps, Min. Travel Time= 13.9 min

Avg. Velocity= 0.35 fps, Avg. Travel Time= 72.6 min

Peak Storage= 66,759 cf @ 12.16 hrs

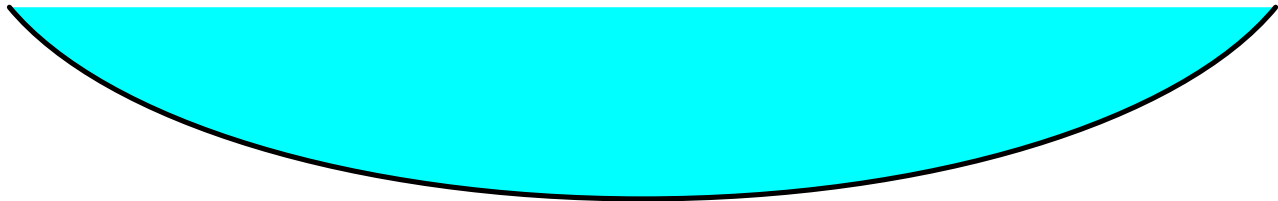
Average Depth at Peak Storage= 5.72' , Surface Width= 20.23'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

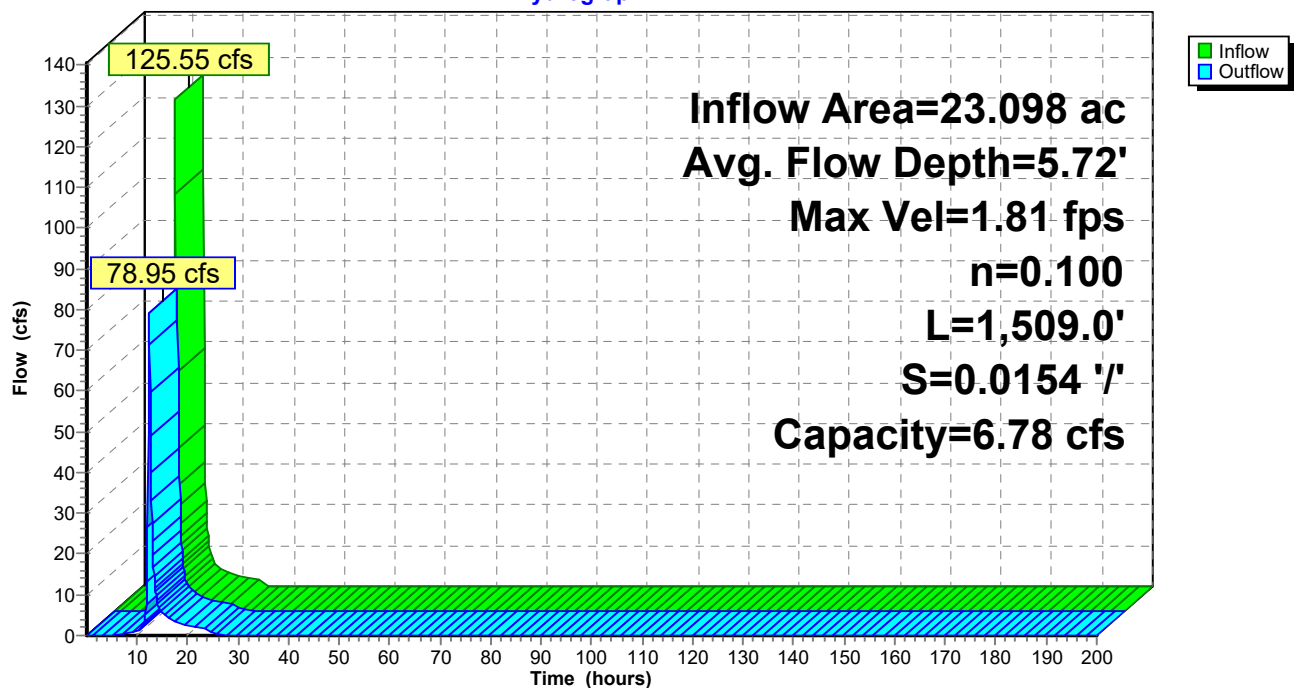
Length= 1,509.0' Slope= 0.0154 '/'

Inlet Invert= 505.43', Outlet Invert= 482.25'



Reach 2R: Flowpath Downstream POA 6

Hydrograph



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Summary for Pond 4P: Wet Pond SCM 4

Inflow Area = 4.254 ac, 75.67% Impervious, Inflow Depth = 7.09" for 100-yr event
 Inflow = 41.82 cfs @ 11.95 hrs, Volume= 2.514 af
 Outflow = 21.85 cfs @ 12.10 hrs, Volume= 2.510 af, Atten= 48%, Lag= 9.1 min
 Primary = 21.85 cfs @ 12.10 hrs, Volume= 2.510 af
 Routed to Link 2L : POA 5

Routing by Stor-Ind method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Starting Elev= 522.00' Surf.Area= 7,056 sf Storage= 6,623 cf

Peak Elev= 527.19' @ 12.10 hrs Surf.Area= 12,441 sf Storage= 60,840 cf (54,217 cf above start)

Plug-Flow detention time= 1,395.3 min calculated for 2.357 af (94% of inflow)

Center-of-Mass det. time= 1,272.0 min (2,039.5 - 767.5)

Volume	Invert	Avail.Storage	Storage Description
#1	521.00'	71,189 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
521.00	6,190	0	0
522.00	7,056	6,623	6,623
522.50	8,333	3,847	10,470
523.00	9,531	4,466	14,936
524.00	10,198	9,865	24,801
525.00	10,883	10,541	35,341
526.00	11,584	11,234	46,575
527.00	12,303	11,944	58,518
528.00	13,038	12,671	71,189

Device	Routing	Invert	Outlet Devices
#1	Primary	522.00'	36.0" Round Culvert L= 45.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 522.00' / 521.50' S= 0.0111 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf
#2	Device 1	522.00'	1.5" Vert. Drawdown C= 0.600 Limited to weir flow at low heads
#3	Device 1	525.40'	40.0" W x 4.0" H Vert. Peakflow Orifice X 2.00 C= 0.600 Limited to weir flow at low heads
#4	Device 1	526.90'	48.0" x 48.0" Horiz. Overflow C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=21.54 cfs @ 12.10 hrs HW=527.18' (Free Discharge)

- 1=Culvert (Passes 21.54 cfs of 65.30 cfs potential flow)
- 2=Drawdown (Orifice Controls 0.13 cfs @ 10.89 fps)
- 3=Peakflow Orifice (Orifice Controls 13.59 cfs @ 6.12 fps)
- 4=Overflow (Weir Controls 7.81 cfs @ 1.73 fps)

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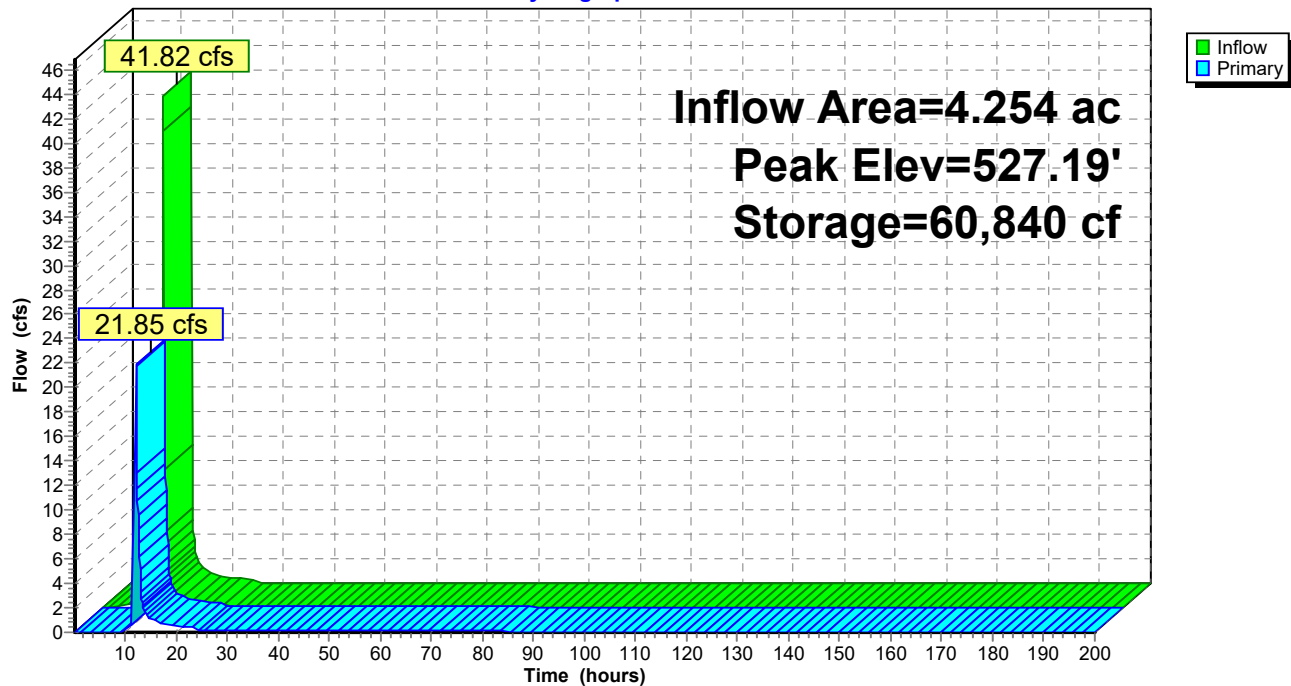
Type II 24-hr 100-yr Rainfall=8.17"

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Pond 4P: Wet Pond SCM 4

Hydrograph



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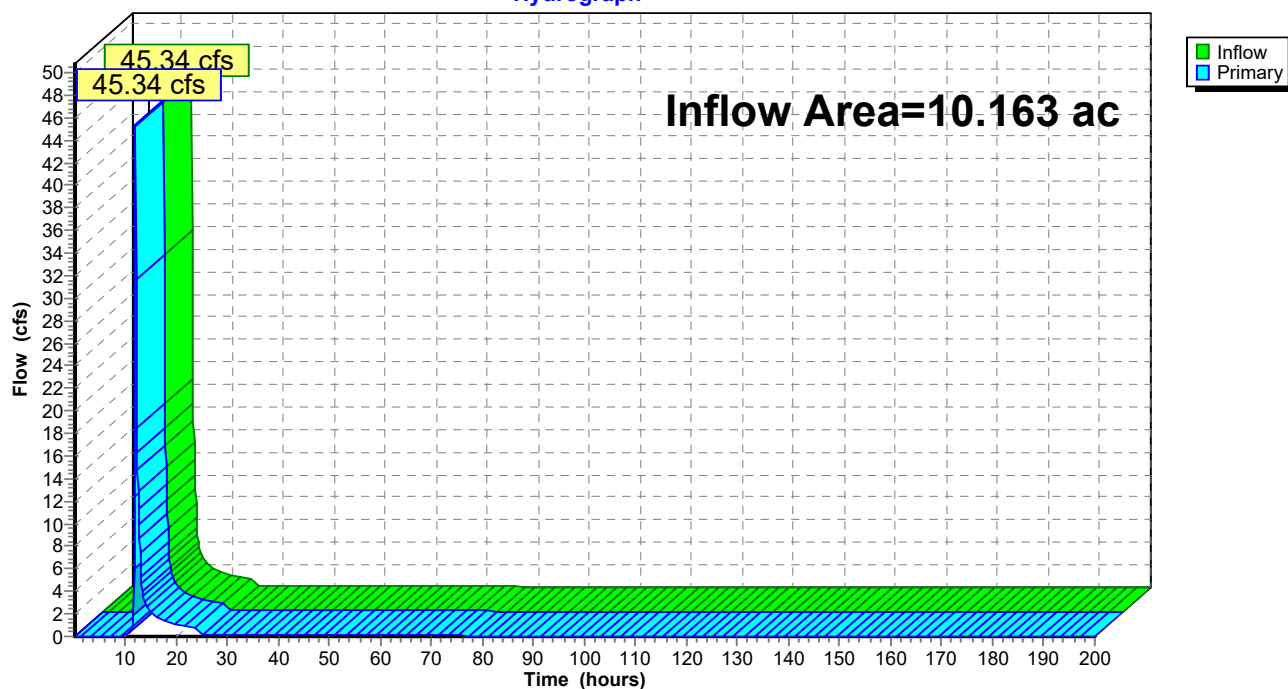
Summary for Link 2L: POA 5

Inflow Area = 10.163 ac, 32.64% Impervious, Inflow Depth = 4.98" for 100-yr event
Inflow = 45.34 cfs @ 11.99 hrs, Volume= 4.214 af
Primary = 45.34 cfs @ 11.99 hrs, Volume= 4.214 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 2R : Flowpath Downstream POA 6

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 2L: POA 5

Hydrograph



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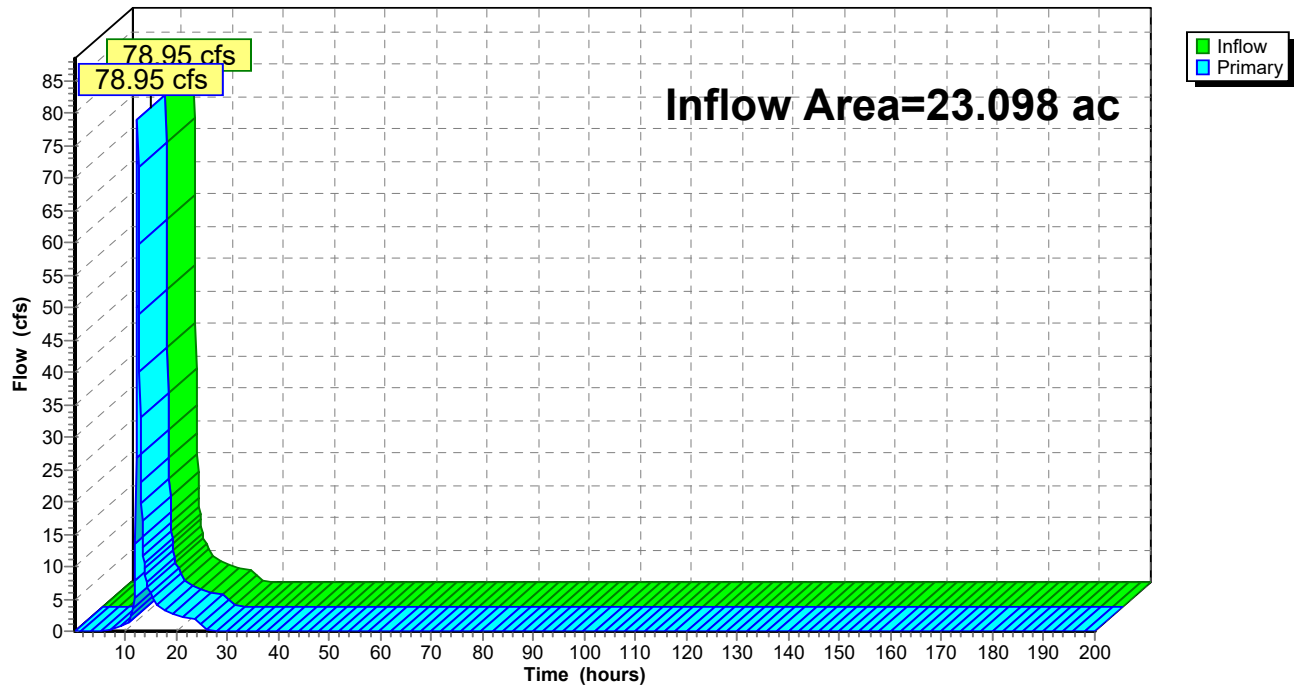
Summary for Link 3L: Post Ditch POA6

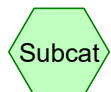
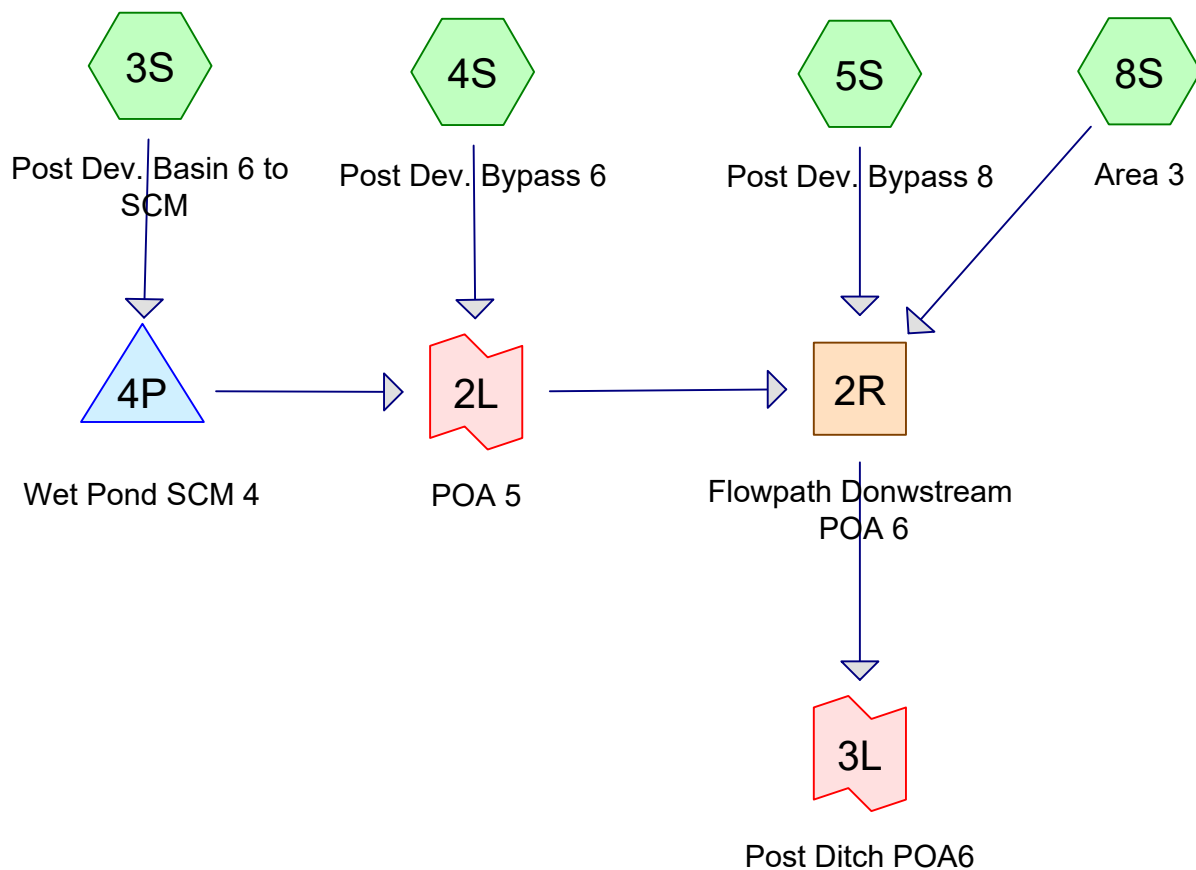
Inflow Area = 23.098 ac, 32.57% Impervious, Inflow Depth = 4.99" for 100-yr event
Inflow = 78.95 cfs @ 12.40 hrs, Volume= 9.597 af
Primary = 78.95 cfs @ 12.40 hrs, Volume= 9.597 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 3L: Post Ditch POA6

Hydrograph

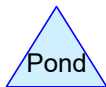




Subcat



Reach



Pond



Link

Routing Diagram for 32044.0000 - Ditch Analysis

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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
7.267	85	1/8 acre lots, 65% imp, HSG B (8S)
1.227	69	50-75% Grass cover, Fair, HSG B (5S)
1.880	56	Brush, Fair, HSG B (3S, 4S)
1.986	98	Paved parking, HSG B (3S, 4S, 5S)
1.455	98	Roofs, HSG B (3S)
0.326	98	Water Surface, 0% imp, HSG B (3S)
9.943	60	Woods, Fair, HSG B (4S, 5S)
24.084	74	TOTAL AREA

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Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
24.084	HSG B	3S, 4S, 5S, 8S
0.000	HSG C	
0.000	HSG D	
0.000	Other	
24.084		TOTAL AREA

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Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	7.267	0.000	0.000	0.000	7.267	1/8 acre lots, 65% imp	8S
0.000	1.227	0.000	0.000	0.000	1.227	50-75% Grass cover, Fair	5S
0.000	1.880	0.000	0.000	0.000	1.880	Brush, Fair	3S, 4S
0.000	1.986	0.000	0.000	0.000	1.986	Paved parking	3S, 4S, 5S
0.000	1.455	0.000	0.000	0.000	1.455	Roofs	3S
0.000	0.326	0.000	0.000	0.000	0.326	Water Surface, 0% imp	3S
0.000	9.943	0.000	0.000	0.000	9.943	Woods, Fair	4S, 5S
0.000	24.084	0.000	0.000	0.000	24.084	TOTAL AREA	

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Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	4P	522.00	521.50	45.0	0.0111	0.011	0.0	36.0	0.0	

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Type II 24-hr 10-yr Rainfall=5.17"

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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment3S: Post Dev. Basin 6 to Runoff Area=185,285 sf 75.67% Impervious Runoff Depth=4.15"
Tc=5.0 min CN=91 Runoff=25.26 cfs 1.470 af

Subcatchment4S: Post Dev. Bypass 6 Runoff Area=257,427 sf 1.66% Impervious Runoff Depth=1.40"
Tc=5.0 min CN=60 Runoff=13.01 cfs 0.690 af

Subcatchment5S: Post Dev. Bypass 8 Runoff Area=289,814 sf 1.87% Impervious Runoff Depth=1.54"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=14.84 cfs 0.856 af

Subcatchment8S: Area 3 Runoff Area=316,553 sf 65.00% Impervious Runoff Depth=3.53"
Tc=16.0 min CN=85 Runoff=30.64 cfs 2.135 af

Reach 2R: Flowpath Downstream POA Avg. Flow Depth=2.84' Max Vel=1.74 fps Inflow=54.68 cfs 5.147 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=35.29 cfs 5.146 af

Pond 4P: Wet Pond SCM 4 Peak Elev=525.74' Storage=43,618 cf Inflow=25.26 cfs 1.470 af
Outflow=4.35 cfs 1.466 af

Link 2L: POA 5 Inflow=12.84 cfs 2.156 af
Primary=12.84 cfs 2.156 af

Link 3L: Post Ditch POA6 Inflow=35.29 cfs 5.146 af
Primary=35.29 cfs 5.146 af

Total Runoff Area = 24.084 ac Runoff Volume = 5.151 af Average Runoff Depth = 2.57"
66.10% Pervious = 15.919 ac 33.90% Impervious = 8.165 ac

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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Subcatchment 3S: Post Dev. Basin 6 to SCM

Runoff = 25.26 cfs @ 11.95 hrs, Volume= 1.470 af, Depth= 4.15"
Routed to Pond 4P : Wet Pond SCM 4

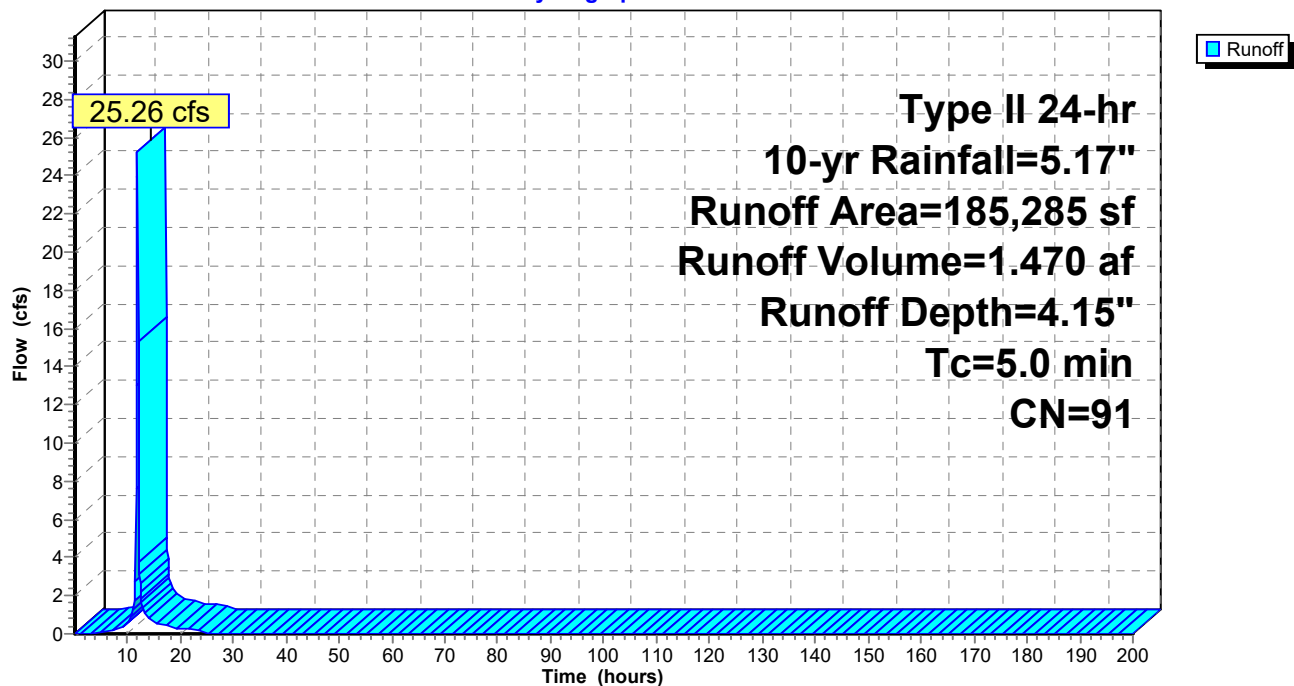
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 10-yr Rainfall=5.17"

Area (sf)	CN	Description
76,830	98	Paved parking, HSG B
63,382	98	Roofs, HSG B
30,858	56	Brush, Fair, HSG B
14,215	98	Water Surface, 0% imp, HSG B
185,285	91	Weighted Average
45,073		24.33% Pervious Area
140,212		75.67% Impervious Area

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

Subcatchment 3S: Post Dev. Basin 6 to SCM

Hydrograph



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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Subcatchment 4S: Post Dev. Bypass 6

Runoff = 13.01 cfs @ 11.98 hrs, Volume= 0.690 af, Depth= 1.40"
Routed to Link 2L : POA 5

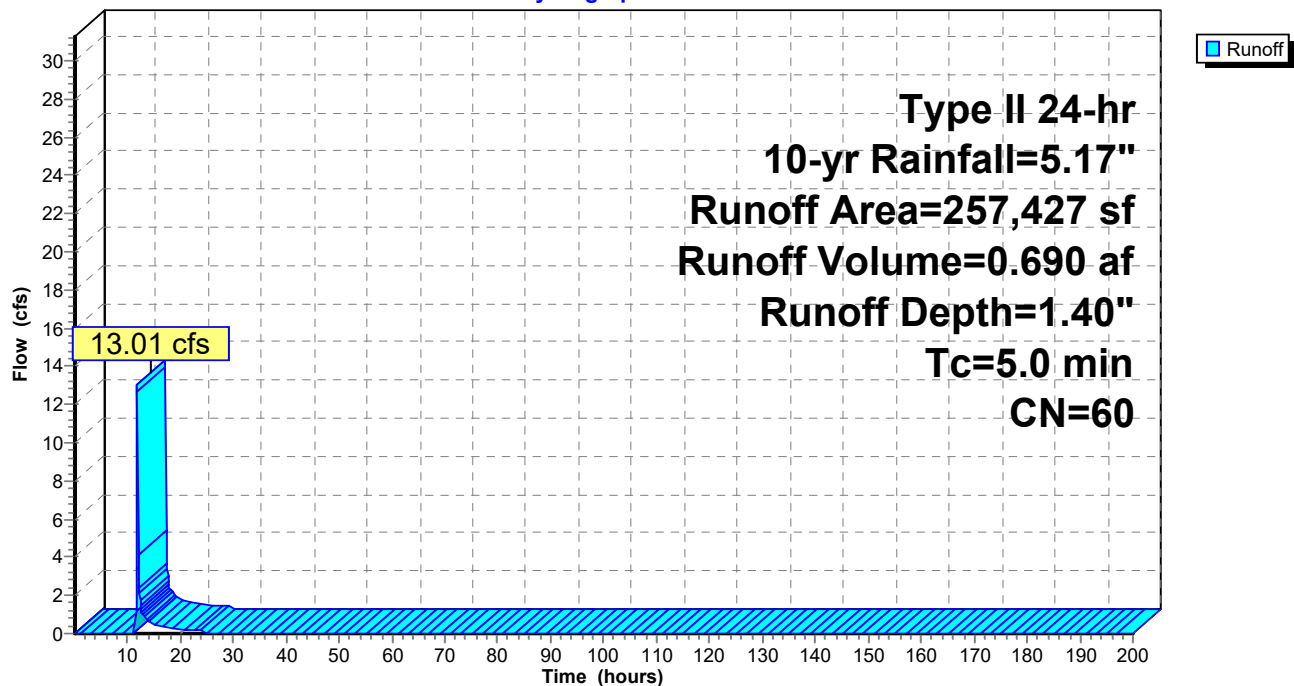
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 10-yr Rainfall=5.17"

Area (sf)	CN	Description
4,268	98	Paved parking, HSG B
51,015	56	Brush, Fair, HSG B
202,144	60	Woods, Fair, HSG B
257,427	60	Weighted Average
253,159		98.34% Pervious Area
4,268		1.66% Impervious Area

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

Subcatchment 4S: Post Dev. Bypass 6

Hydrograph



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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Subcatchment 5S: Post Dev. Bypass 8

Runoff = 14.84 cfs @ 12.01 hrs, Volume= 0.856 af, Depth= 1.54"

Routed to Reach 2R : Flowpath Downstream POA 6

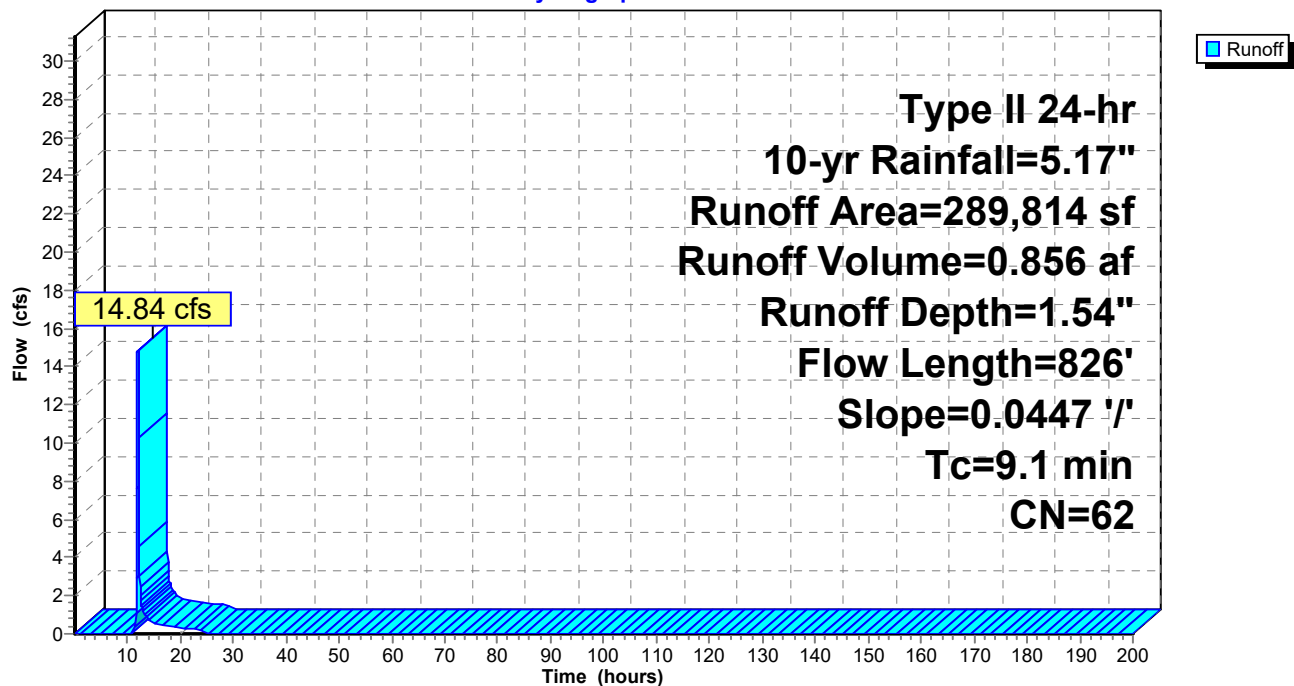
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 10-yr Rainfall=5.17"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
53,439	69	50-75% Grass cover, Fair, HSG B
5,416	98	Paved parking, HSG B
289,814	62	Weighted Average
284,398		98.13% Pervious Area
5,416		1.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 5S: Post Dev. Bypass 8

Hydrograph



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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Subcatchment 8S: Area 3

Runoff = 30.64 cfs @ 12.08 hrs, Volume= 2.135 af, Depth= 3.53"

Routed to Reach 2R : Flowpath Downstream POA 6

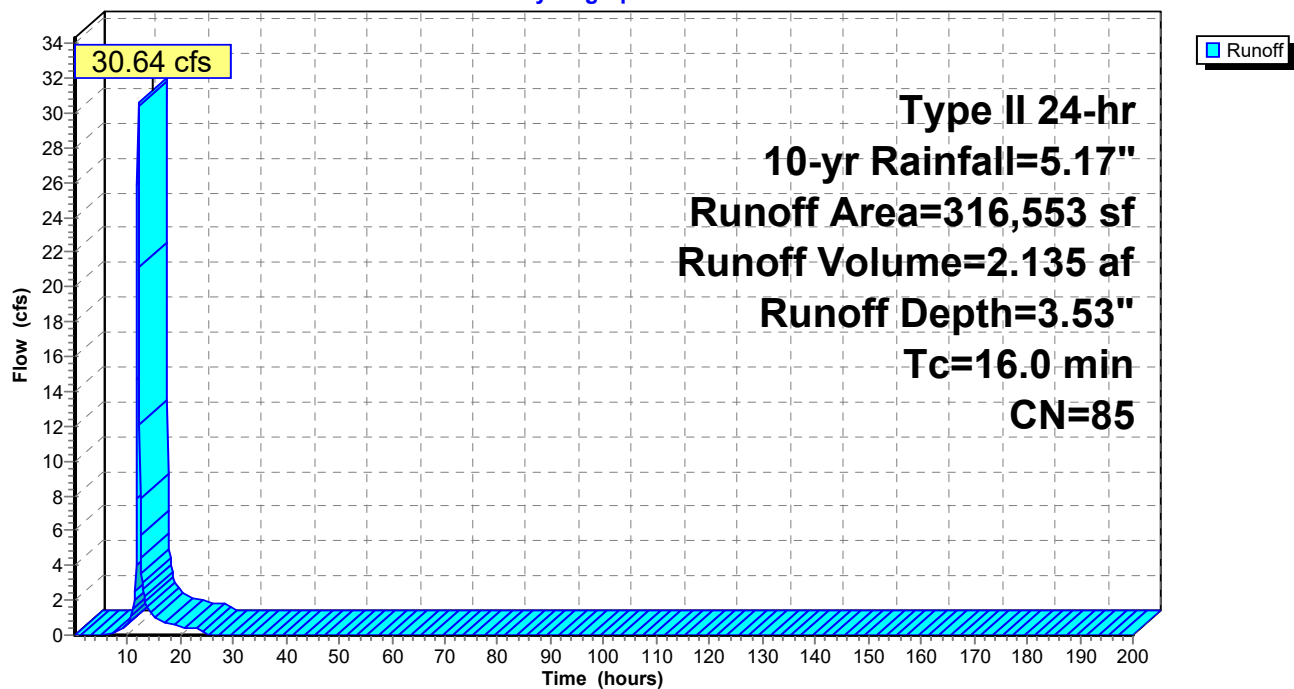
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 10-yr Rainfall=5.17"

Area (sf)	CN	Description
316,553	85	1/8 acre lots, 65% imp, HSG B
110,794		35.00% Pervious Area
205,759		65.00% Impervious Area

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

Subcatchment 8S: Area 3

Hydrograph



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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Reach 2R: Flowpath Downstream POA 6

Inflow Area = 24.084 ac, 33.90% Impervious, Inflow Depth = 2.56" for 10-yr event
Inflow = 54.68 cfs @ 12.03 hrs, Volume= 5.147 af
Outflow = 35.29 cfs @ 12.44 hrs, Volume= 5.146 af, Atten= 35%, Lag= 24.3 min
Routed to Link 3L : Post Ditch POA6

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.74 fps, Min. Travel Time= 14.4 min

Avg. Velocity= 0.33 fps, Avg. Travel Time= 76.4 min

Peak Storage= 31,148 cf @ 12.19 hrs

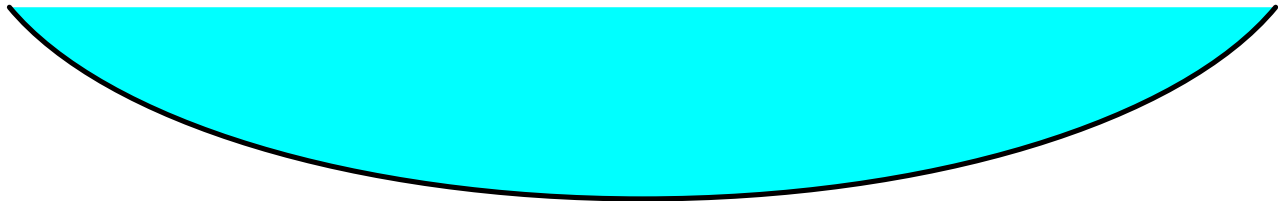
Average Depth at Peak Storage= 2.84' , Surface Width= 14.24'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

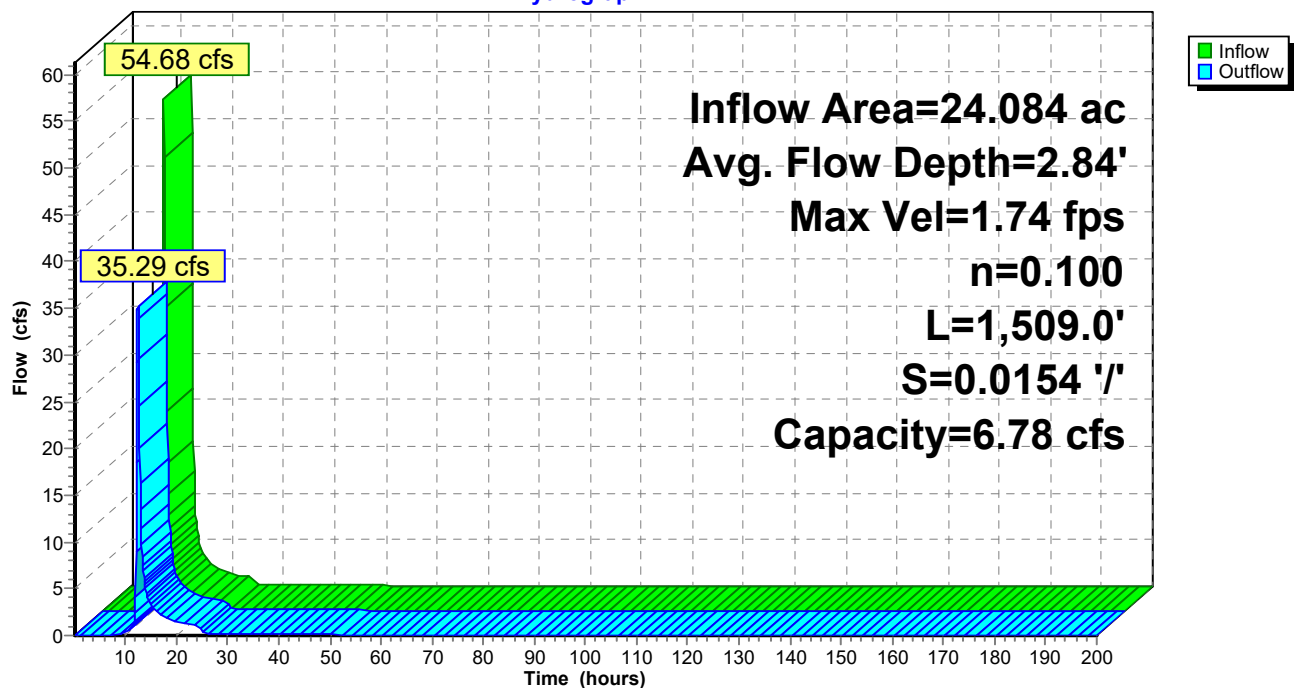
Length= 1,509.0' Slope= 0.0154 '/'

Inlet Invert= 505.43', Outlet Invert= 482.25'



Reach 2R: Flowpath Downstream POA 6

Hydrograph



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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Pond 4P: Wet Pond SCM 4

Inflow Area = 4.254 ac, 75.67% Impervious, Inflow Depth = 4.15" for 10-yr event
 Inflow = 25.26 cfs @ 11.95 hrs, Volume= 1.470 af
 Outflow = 4.35 cfs @ 12.22 hrs, Volume= 1.466 af, Atten= 83%, Lag= 16.1 min
 Primary = 4.35 cfs @ 12.22 hrs, Volume= 1.466 af
 Routed to Link 2L : POA 5

Routing by Stor-Ind method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Starting Elev= 522.00' Surf.Area= 7,056 sf Storage= 6,623 cf

Peak Elev= 525.74' @ 12.22 hrs Surf.Area= 11,404 sf Storage= 43,618 cf (36,995 cf above start)

Plug-Flow detention time= 2,434.7 min calculated for 1.314 af (89% of inflow)

Center-of-Mass det. time= 2,127.3 min (2,908.8 - 781.5)

Volume	Invert	Avail.Storage	Storage Description
#1	521.00'	71,189 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
521.00	6,190	0	0
522.00	7,056	6,623	6,623
522.50	8,333	3,847	10,470
523.00	9,531	4,466	14,936
524.00	10,198	9,865	24,801
525.00	10,883	10,541	35,341
526.00	11,584	11,234	46,575
527.00	12,303	11,944	58,518
528.00	13,038	12,671	71,189

Device	Routing	Invert	Outlet Devices
#1	Primary	522.00'	36.0" Round Culvert L= 45.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 522.00' / 521.50' S= 0.0111 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf
#2	Device 1	522.00'	1.5" Vert. Drawdown C= 0.600 Limited to weir flow at low heads
#3	Device 1	525.40'	40.0" W x 4.0" H Vert. Peakflow Orifice X 2.00 C= 0.600 Limited to weir flow at low heads
#4	Device 1	526.90'	48.0" x 48.0" Horiz. Overflow C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.31 cfs @ 12.22 hrs HW=525.74' (Free Discharge)

1=Culvert (Passes 4.31 cfs of 50.79 cfs potential flow)
 2=Drawdown (Orifice Controls 0.11 cfs @ 9.23 fps)
 3=Peakflow Orifice (Orifice Controls 4.20 cfs @ 1.89 fps)
 4=Overflow (Controls 0.00 cfs)

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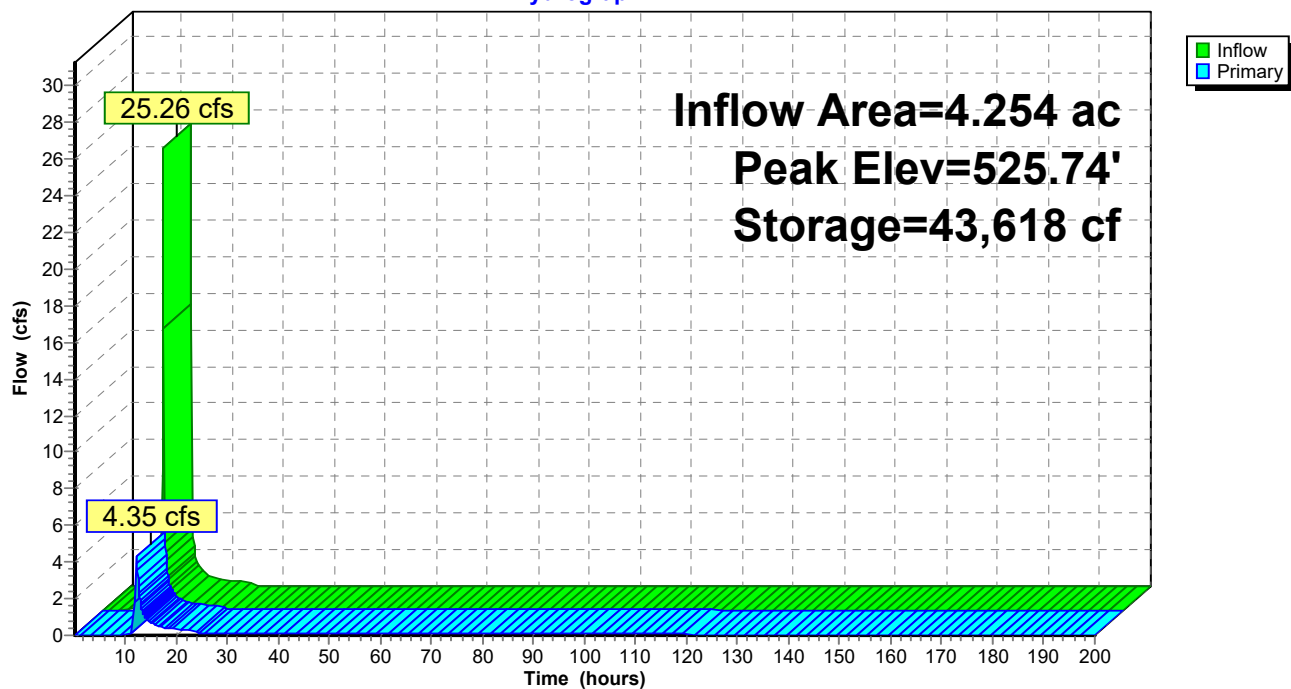
Type II 24-hr 10-yr Rainfall=5.17"

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Pond 4P: Wet Pond SCM 4

Hydrograph



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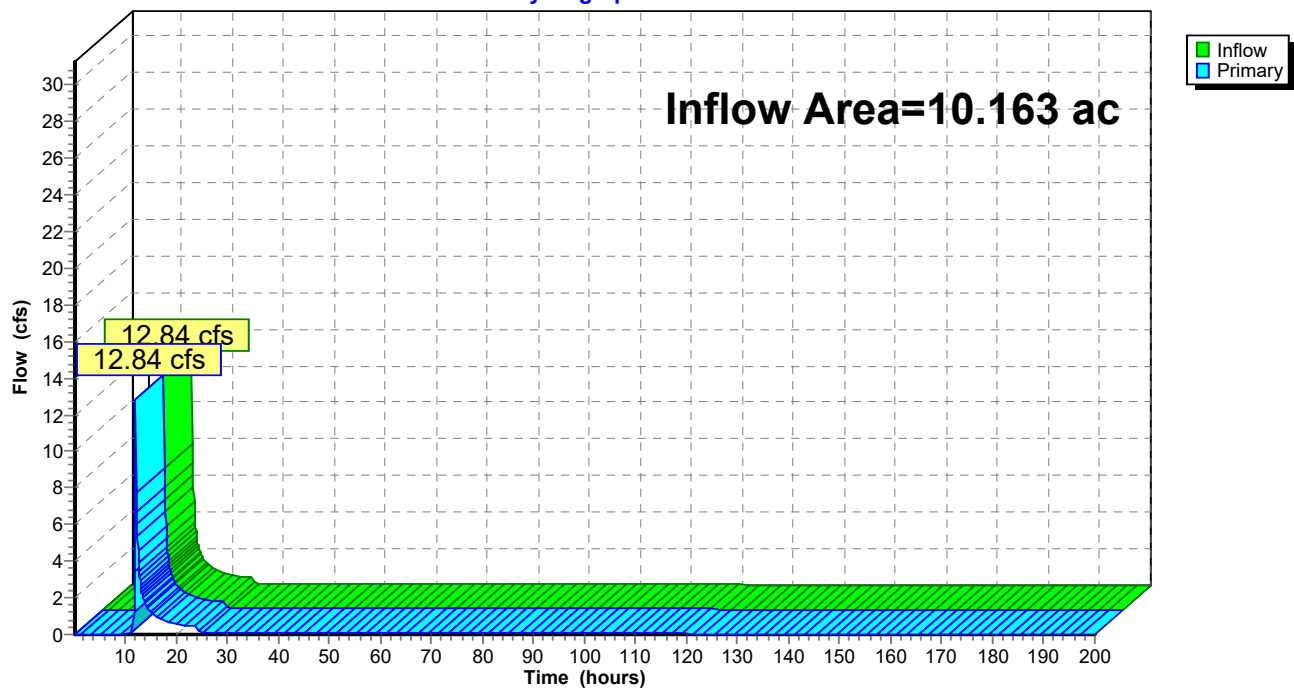
Summary for Link 2L: POA 5

Inflow Area = 10.163 ac, 32.64% Impervious, Inflow Depth > 2.55" for 10-yr event
Inflow = 12.84 cfs @ 11.99 hrs, Volume= 2.156 af
Primary = 12.84 cfs @ 11.99 hrs, Volume= 2.156 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 2R : Flowpath Downstream POA 6

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 2L: POA 5

Hydrograph



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Type II 24-hr 10-yr Rainfall=5.17"

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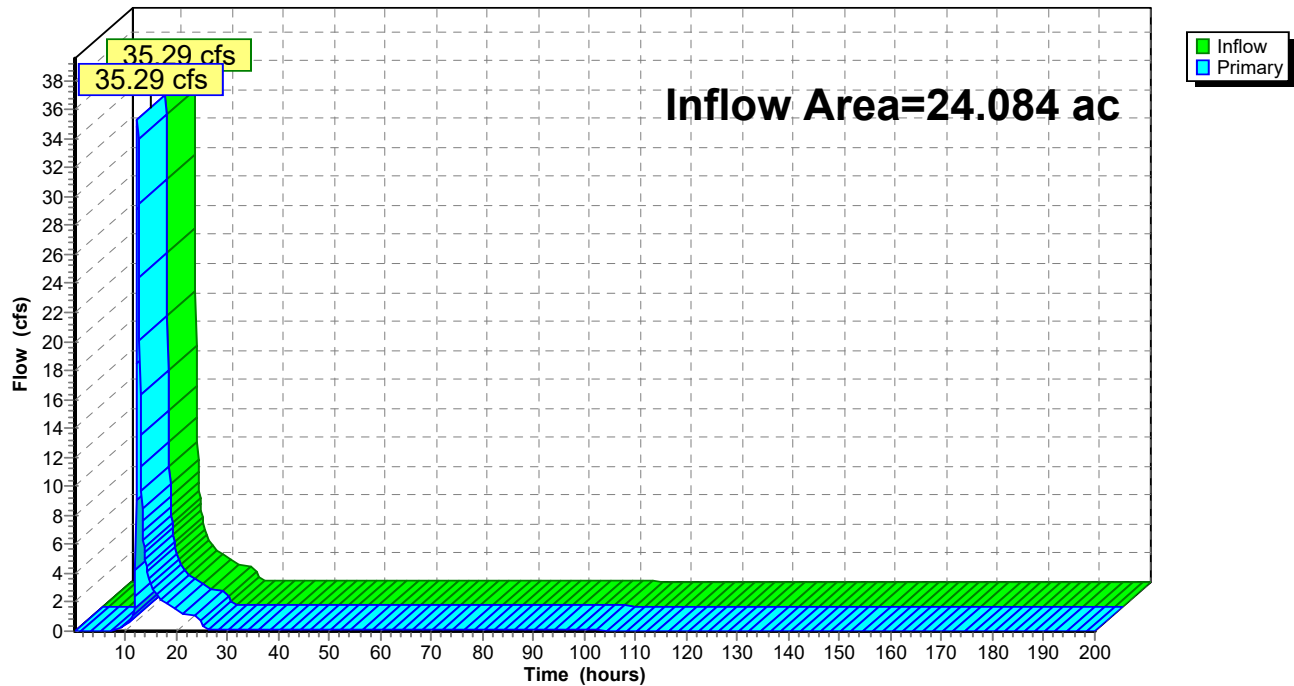
Summary for Link 3L: Post Ditch POA6

Inflow Area = 24.084 ac, 33.90% Impervious, Inflow Depth = 2.56" for 10-yr event
Inflow = 35.29 cfs @ 12.44 hrs, Volume= 5.146 af
Primary = 35.29 cfs @ 12.44 hrs, Volume= 5.146 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 3L: Post Ditch POA6

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment3S: Post Dev. Basin 6 to Runoff Area=185,285 sf 75.67% Impervious Runoff Depth=5.49"
Tc=5.0 min CN=91 Runoff=32.86 cfs 1.945 af

Subcatchment4S: Post Dev. Bypass 6 Runoff Area=257,427 sf 1.66% Impervious Runoff Depth=2.28"
Tc=5.0 min CN=60 Runoff=21.62 cfs 1.124 af

Subcatchment5S: Post Dev. Bypass 8 Runoff Area=289,814 sf 1.87% Impervious Runoff Depth=2.47"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=24.46 cfs 1.368 af

Subcatchment8S: Area 3 Runoff Area=316,553 sf 65.00% Impervious Runoff Depth=4.81"
Tc=16.0 min CN=85 Runoff=41.30 cfs 2.915 af

Reach 2R: Flowpath Downstream POA Avg. Flow Depth=4.21' Max Vel=1.79 fps Inflow=89.88 cfs 7.348 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=56.23 cfs 7.348 af

Pond 4P: Wet Pond SCM 4 Peak Elev=526.48' Storage=52,233 cf Inflow=32.86 cfs 1.945 af
Outflow=10.36 cfs 1.940 af

Link 2L: POA 5 Inflow=28.99 cfs 3.065 af
Primary=28.99 cfs 3.065 af

Link 3L: Post Ditch POA6 Inflow=56.23 cfs 7.348 af
Primary=56.23 cfs 7.348 af

Total Runoff Area = 24.084 ac Runoff Volume = 7.353 af Average Runoff Depth = 3.66"
66.10% Pervious = 15.919 ac 33.90% Impervious = 8.165 ac

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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 3S: Post Dev. Basin 6 to SCM

Runoff = 32.86 cfs @ 11.95 hrs, Volume= 1.945 af, Depth= 5.49"
Routed to Pond 4P : Wet Pond SCM 4

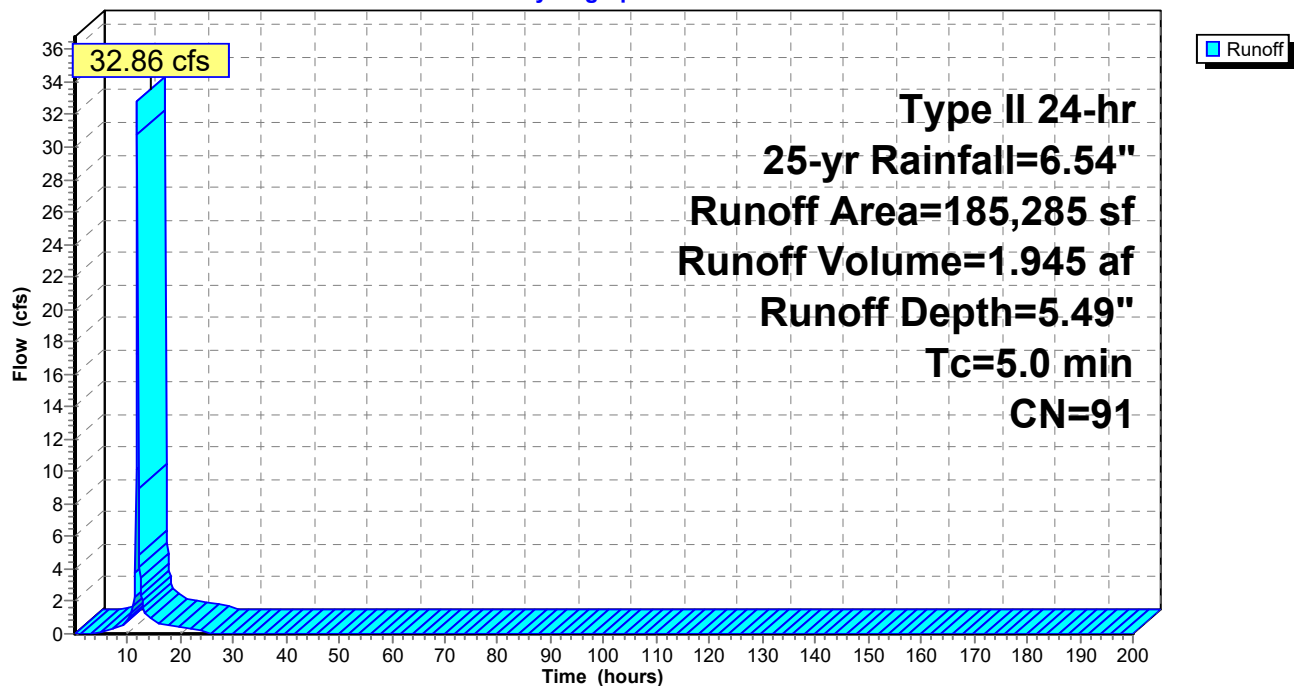
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
76,830	98	Paved parking, HSG B
63,382	98	Roofs, HSG B
30,858	56	Brush, Fair, HSG B
14,215	98	Water Surface, 0% imp, HSG B
185,285	91	Weighted Average
45,073		24.33% Pervious Area
140,212		75.67% Impervious Area

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

Subcatchment 3S: Post Dev. Basin 6 to SCM

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 4S: Post Dev. Bypass 6

Runoff = 21.62 cfs @ 11.97 hrs, Volume= 1.124 af, Depth= 2.28"
Routed to Link 2L : POA 5

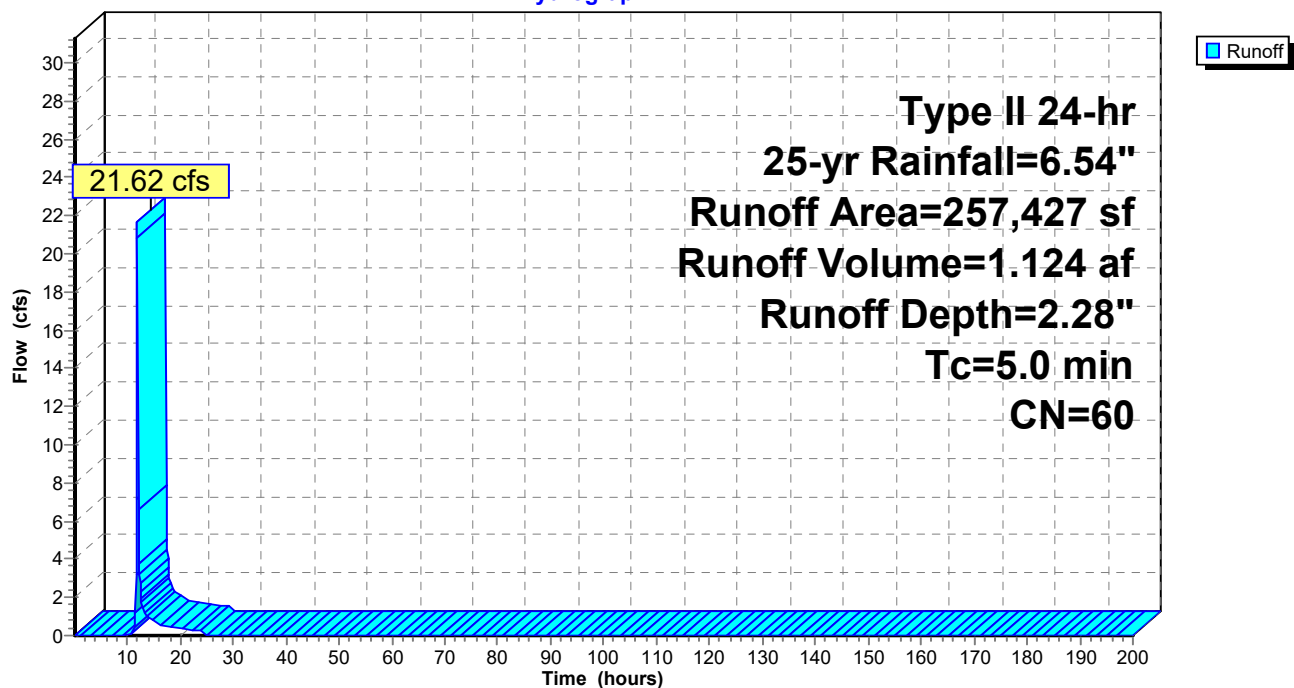
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
4,268	98	Paved parking, HSG B
51,015	56	Brush, Fair, HSG B
202,144	60	Woods, Fair, HSG B
257,427	60	Weighted Average
253,159		98.34% Pervious Area
4,268		1.66% Impervious Area

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

Subcatchment 4S: Post Dev. Bypass 6

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 5S: Post Dev. Bypass 8

Runoff = 24.46 cfs @ 12.01 hrs, Volume= 1.368 af, Depth= 2.47"
Routed to Reach 2R : Flowpath Downstream POA 6

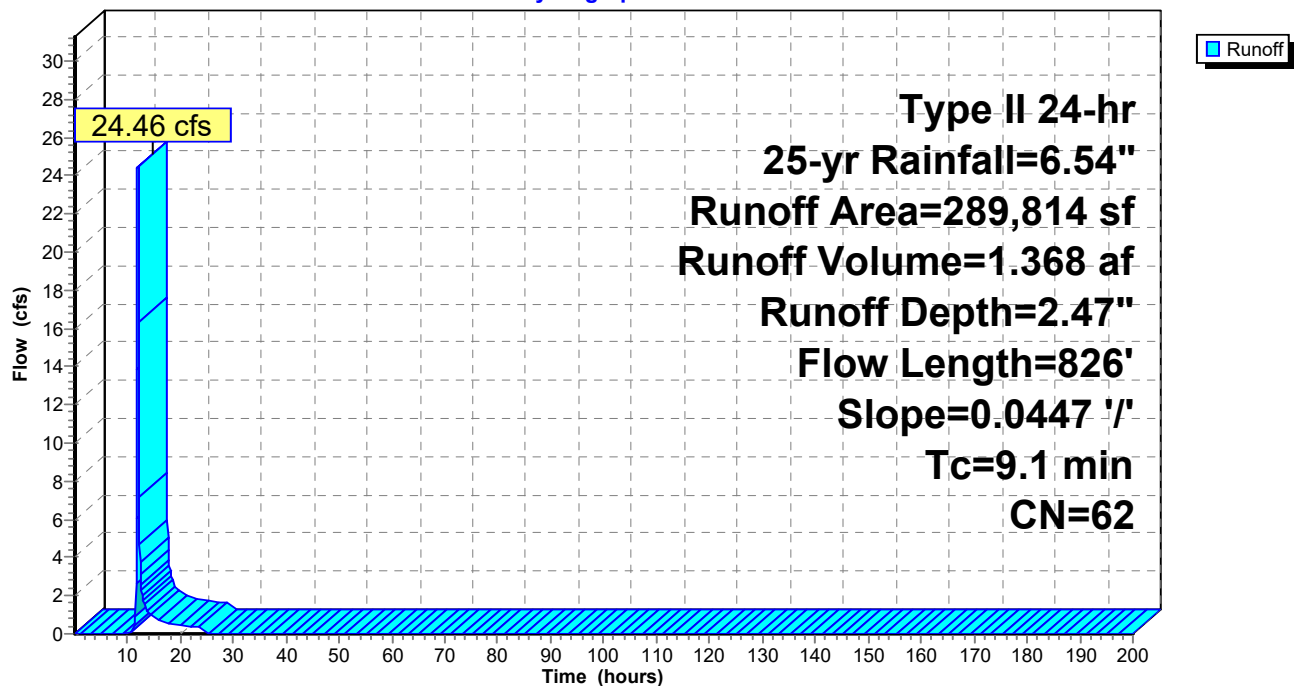
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
53,439	69	50-75% Grass cover, Fair, HSG B
5,416	98	Paved parking, HSG B
289,814	62	Weighted Average
284,398		98.13% Pervious Area
5,416		1.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 5S: Post Dev. Bypass 8

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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 8S: Area 3

Runoff = 41.30 cfs @ 12.08 hrs, Volume= 2.915 af, Depth= 4.81"

Routed to Reach 2R : Flowpath Downstream POA 6

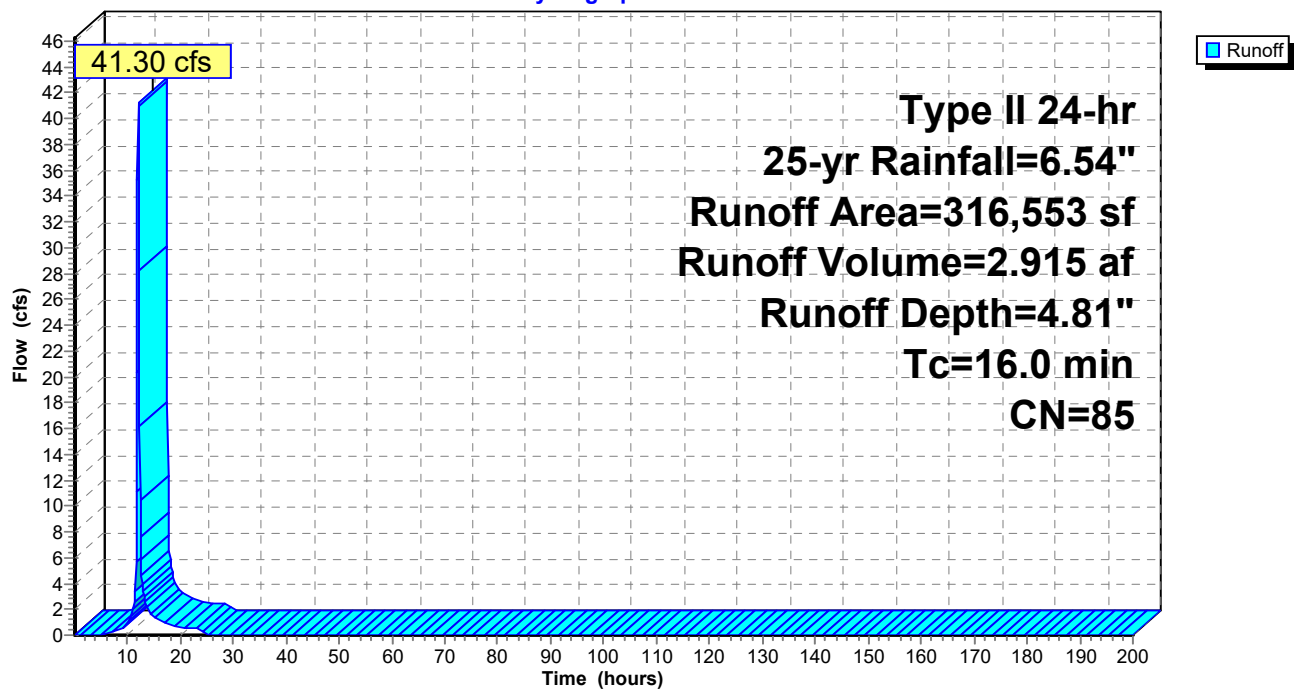
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
316,553	85	1/8 acre lots, 65% imp, HSG B
110,794		35.00% Pervious Area
205,759		65.00% Impervious Area

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

Subcatchment 8S: Area 3

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Reach 2R: Flowpath Downstream POA 6

Inflow Area = 24.084 ac, 33.90% Impervious, Inflow Depth = 3.66" for 25-yr event
Inflow = 89.88 cfs @ 12.02 hrs, Volume= 7.348 af
Outflow = 56.23 cfs @ 12.42 hrs, Volume= 7.348 af, Atten= 37%, Lag= 23.9 min
Routed to Link 3L : Post Ditch POA6

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.79 fps, Min. Travel Time= 14.1 min

Avg. Velocity= 0.34 fps, Avg. Travel Time= 74.2 min

Peak Storage= 48,121 cf @ 12.18 hrs

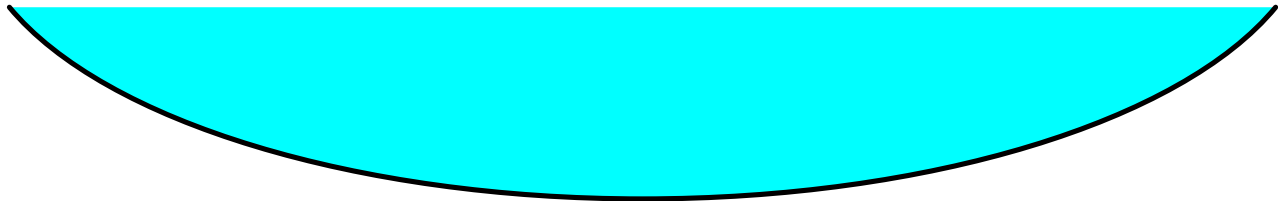
Average Depth at Peak Storage= 4.21', Surface Width= 17.35'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

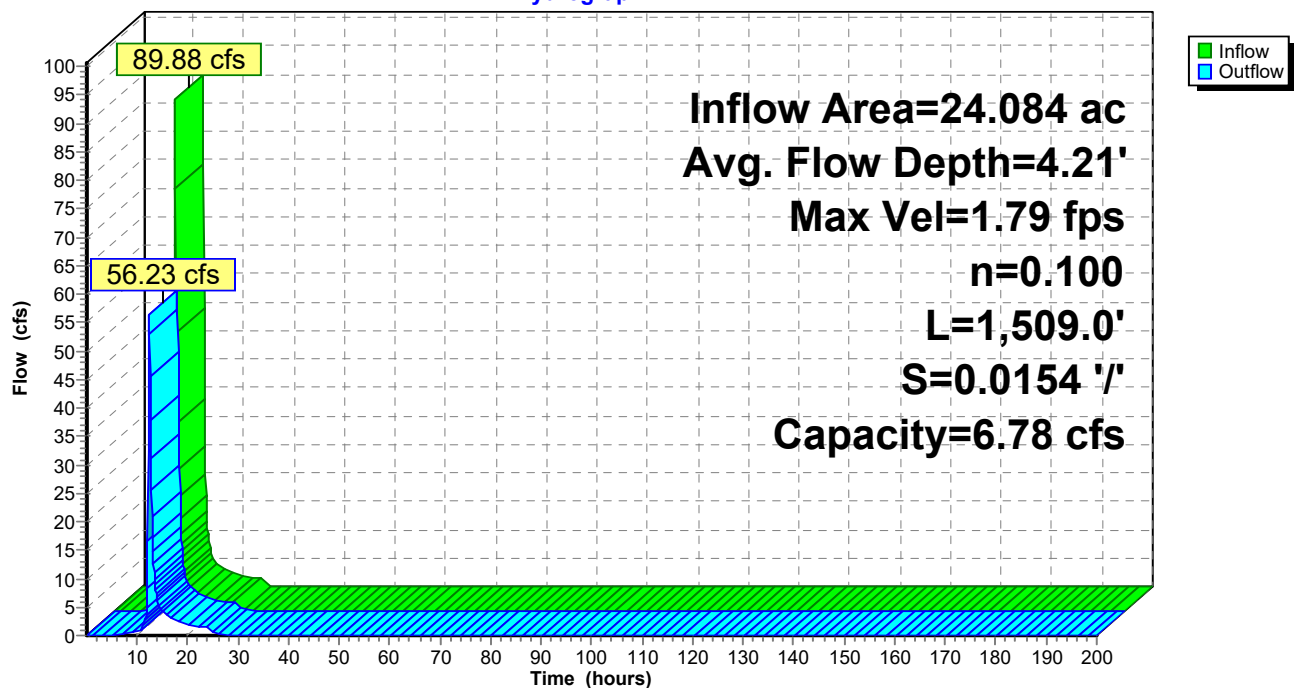
Length= 1,509.0' Slope= 0.0154 '/'

Inlet Invert= 505.43', Outlet Invert= 482.25'



Reach 2R: Flowpath Downstream POA 6

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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Pond 4P: Wet Pond SCM 4

Inflow Area = 4.254 ac, 75.67% Impervious, Inflow Depth = 5.49" for 25-yr event
 Inflow = 32.86 cfs @ 11.95 hrs, Volume= 1.945 af
 Outflow = 10.36 cfs @ 12.13 hrs, Volume= 1.940 af, Atten= 68%, Lag= 11.0 min
 Primary = 10.36 cfs @ 12.13 hrs, Volume= 1.940 af
 Routed to Link 2L : POA 5

Routing by Stor-Ind method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Starting Elev= 522.00' Surf.Area= 7,056 sf Storage= 6,623 cf

Peak Elev= 526.48' @ 12.13 hrs Surf.Area= 11,930 sf Storage= 52,233 cf (45,610 cf above start)

Plug-Flow detention time= 1,812.3 min calculated for 1.788 af (92% of inflow)

Center-of-Mass det. time= 1,624.1 min (2,398.1 - 774.1)

Volume	Invert	Avail.Storage	Storage Description
#1	521.00'	71,189 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
521.00	6,190	0	0
522.00	7,056	6,623	6,623
522.50	8,333	3,847	10,470
523.00	9,531	4,466	14,936
524.00	10,198	9,865	24,801
525.00	10,883	10,541	35,341
526.00	11,584	11,234	46,575
527.00	12,303	11,944	58,518
528.00	13,038	12,671	71,189

Device	Routing	Invert	Outlet Devices
#1	Primary	522.00'	36.0" Round Culvert L= 45.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 522.00' / 521.50' S= 0.0111 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf
#2	Device 1	522.00'	1.5" Vert. Drawdown C= 0.600 Limited to weir flow at low heads
#3	Device 1	525.40'	40.0" W x 4.0" H Vert. Peakflow Orifice X 2.00 C= 0.600 Limited to weir flow at low heads
#4	Device 1	526.90'	48.0" x 48.0" Horiz. Overflow C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=10.10 cfs @ 12.13 hrs HW=526.44' (Free Discharge)

1=Culvert (Passes 10.10 cfs of 58.34 cfs potential flow)
 2=Drawdown (Orifice Controls 0.12 cfs @ 10.07 fps)
 3=Peakflow Orifice (Orifice Controls 9.97 cfs @ 4.49 fps)
 4=Overflow (Controls 0.00 cfs)

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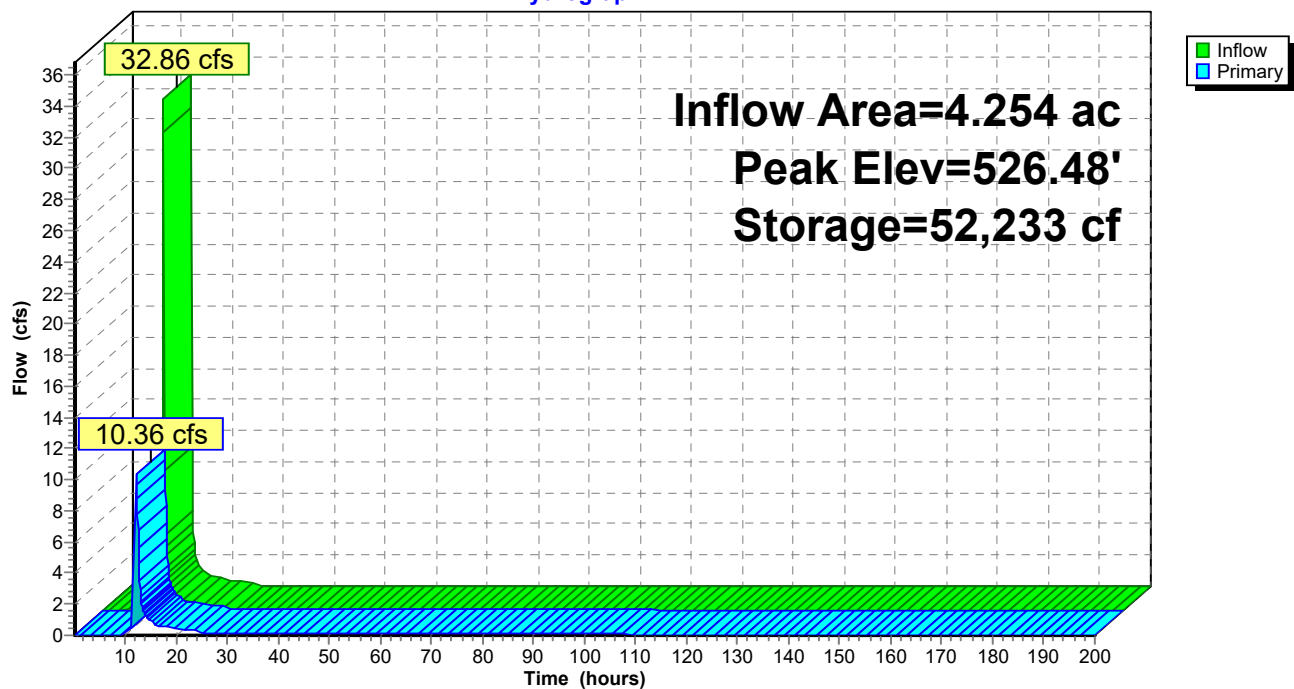
Type II 24-hr 25-yr Rainfall=6.54"

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Pond 4P: Wet Pond SCM 4

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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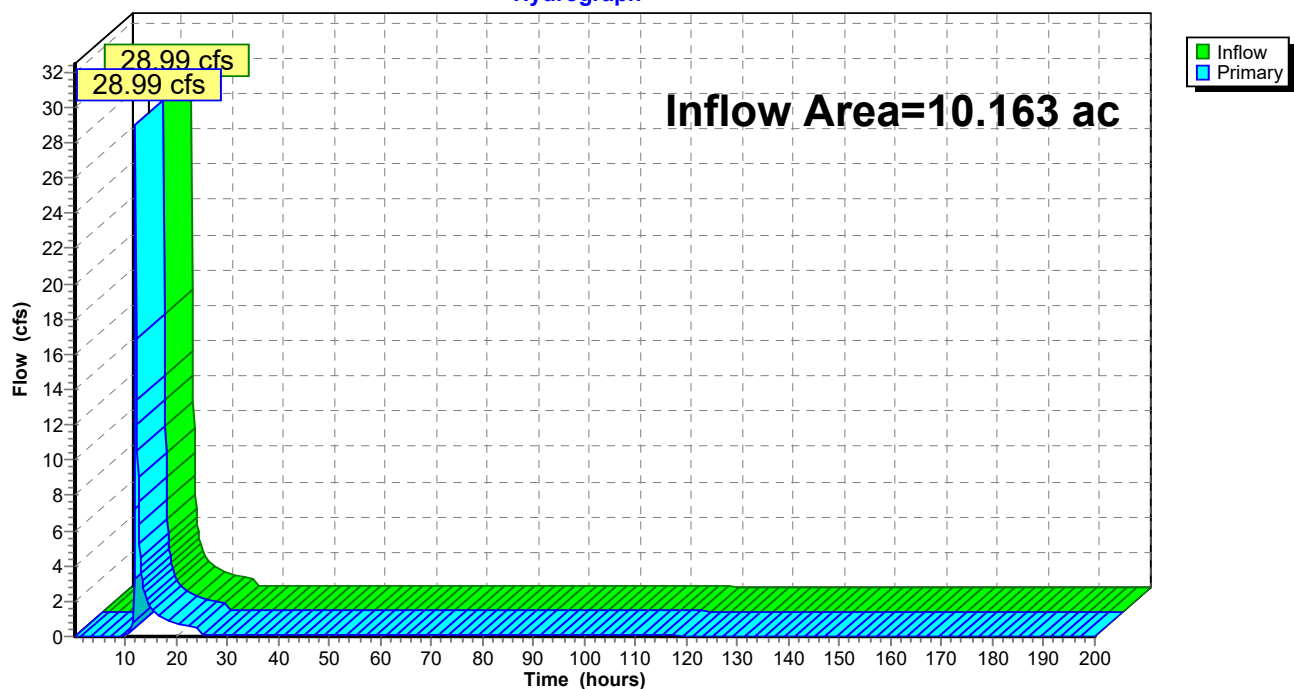
Summary for Link 2L: POA 5

Inflow Area = 10.163 ac, 32.64% Impervious, Inflow Depth = 3.62" for 25-yr event
Inflow = 28.99 cfs @ 12.00 hrs, Volume= 3.065 af
Primary = 28.99 cfs @ 12.00 hrs, Volume= 3.065 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 2R : Flowpath Downstream POA 6

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 2L: POA 5

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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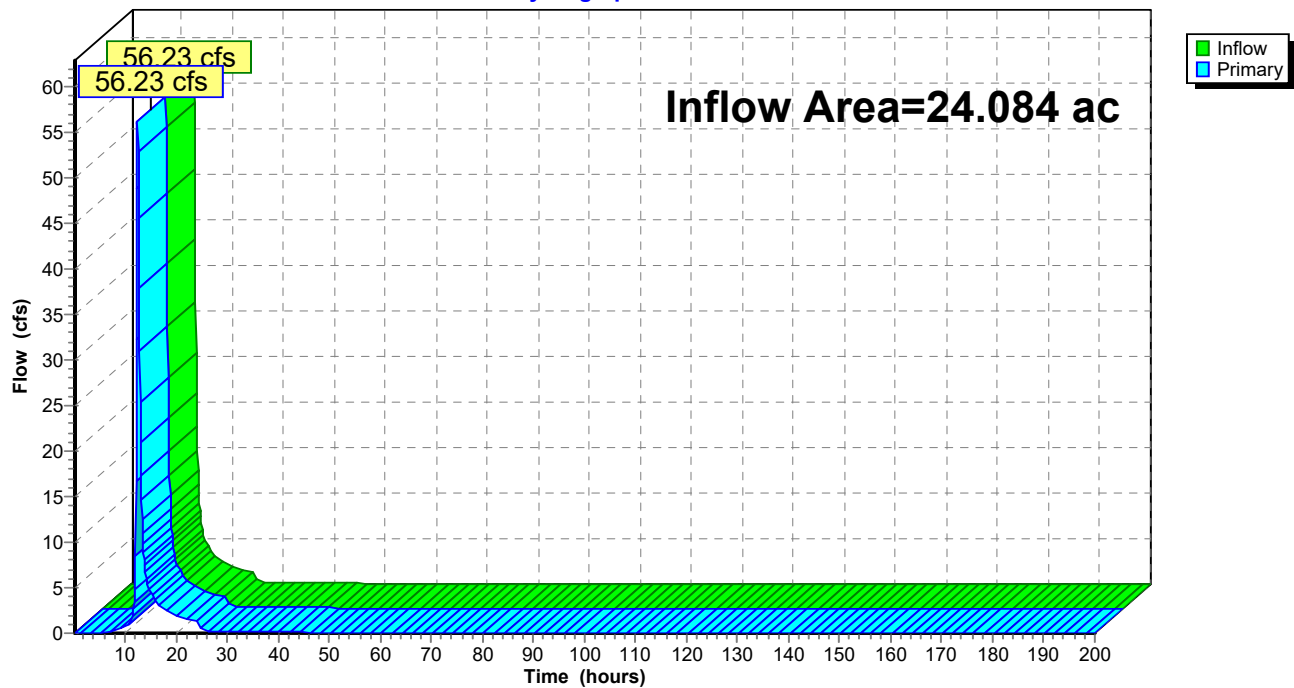
Summary for Link 3L: Post Ditch POA6

Inflow Area = 24.084 ac, 33.90% Impervious, Inflow Depth = 3.66" for 25-yr event
Inflow = 56.23 cfs @ 12.42 hrs, Volume= 7.348 af
Primary = 56.23 cfs @ 12.42 hrs, Volume= 7.348 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 3L: Post Ditch POA6

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment3S: Post Dev. Basin 6 to Runoff Area=185,285 sf 75.67% Impervious Runoff Depth=7.09"
Tc=5.0 min CN=91 Runoff=41.82 cfs 2.514 af

Subcatchment4S: Post Dev. Bypass 6 Runoff Area=257,427 sf 1.66% Impervious Runoff Depth=3.46"
Tc=5.0 min CN=60 Runoff=32.88 cfs 1.705 af

Subcatchment5S: Post Dev. Bypass 8 Runoff Area=289,814 sf 1.87% Impervious Runoff Depth=3.69"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=36.97 cfs 2.045 af

Subcatchment8S: Area 3 Runoff Area=316,553 sf 65.00% Impervious Runoff Depth=6.38"
Tc=16.0 min CN=85 Runoff=53.95 cfs 3.862 af

Reach 2R: Flowpath Downstream Avg. Flow Depth=5.98' Max Vel=1.82 fps Inflow=129.77 cfs 10.121 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=83.02 cfs 10.121 af

Pond 4P: Wet Pond SCM 4 Peak Elev=527.19' Storage=60,840 cf Inflow=41.82 cfs 2.514 af
Outflow=21.85 cfs 2.510 af

Link 2L: POA 5 Inflow=45.34 cfs 4.214 af
Primary=45.34 cfs 4.214 af

Link 3L: Post Ditch POA6 Inflow=83.02 cfs 10.121 af
Primary=83.02 cfs 10.121 af

Total Runoff Area = 24.084 ac Runoff Volume = 10.126 af Average Runoff Depth = 5.05"
66.10% Pervious = 15.919 ac 33.90% Impervious = 8.165 ac

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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 3S: Post Dev. Basin 6 to SCM

Runoff = 41.82 cfs @ 11.95 hrs, Volume= 2.514 af, Depth= 7.09"
Routed to Pond 4P : Wet Pond SCM 4

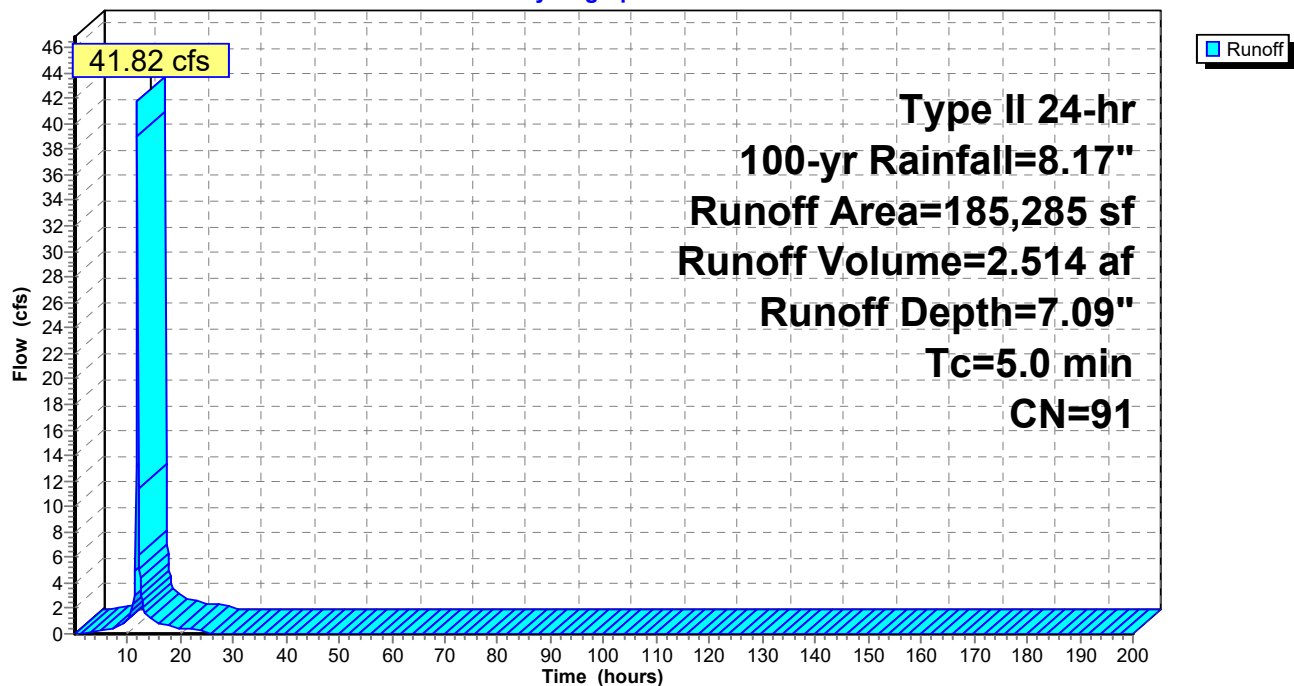
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
76,830	98	Paved parking, HSG B
63,382	98	Roofs, HSG B
30,858	56	Brush, Fair, HSG B
14,215	98	Water Surface, 0% imp, HSG B
185,285	91	Weighted Average
45,073		24.33% Pervious Area
140,212		75.67% Impervious Area

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

Subcatchment 3S: Post Dev. Basin 6 to SCM

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 4S: Post Dev. Bypass 6

Runoff = 32.88 cfs @ 11.96 hrs, Volume= 1.705 af, Depth= 3.46"
Routed to Link 2L : POA 5

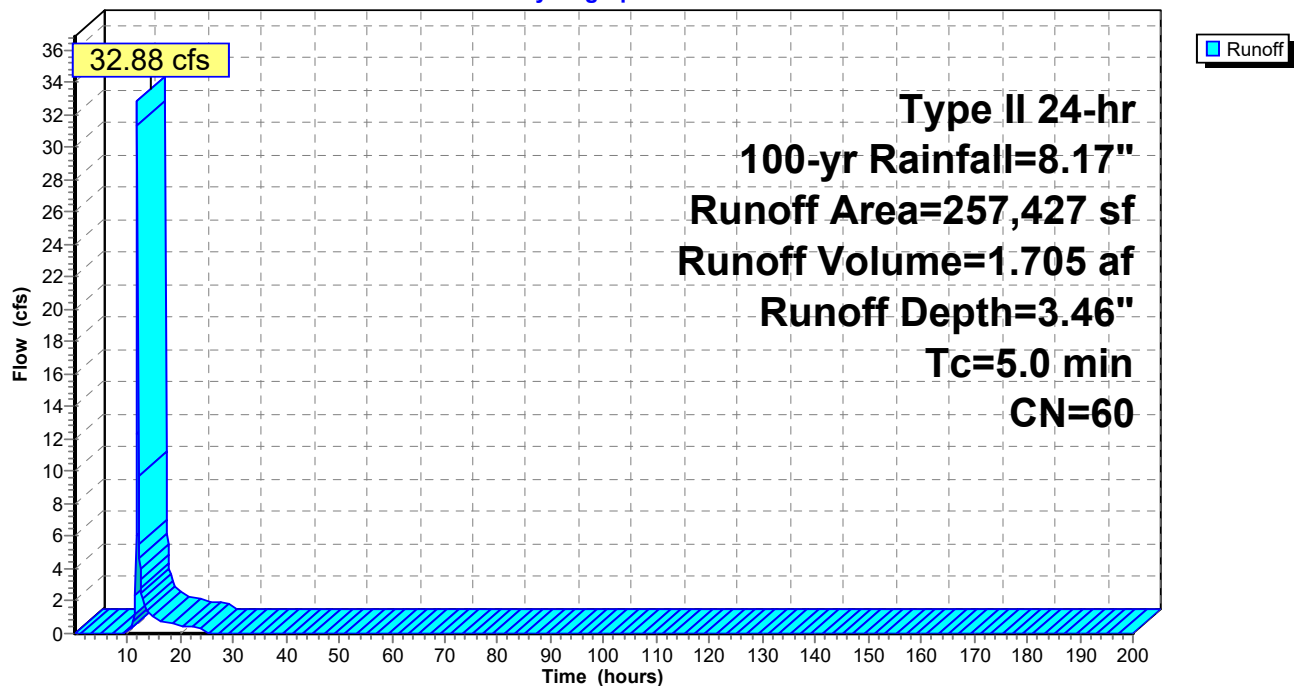
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
4,268	98	Paved parking, HSG B
51,015	56	Brush, Fair, HSG B
202,144	60	Woods, Fair, HSG B
257,427	60	Weighted Average
253,159		98.34% Pervious Area
4,268		1.66% Impervious Area

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

Subcatchment 4S: Post Dev. Bypass 6

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 5S: Post Dev. Bypass 8

Runoff = 36.97 cfs @ 12.00 hrs, Volume= 2.045 af, Depth= 3.69"
Routed to Reach 2R : Flowpath Downstream POA 6

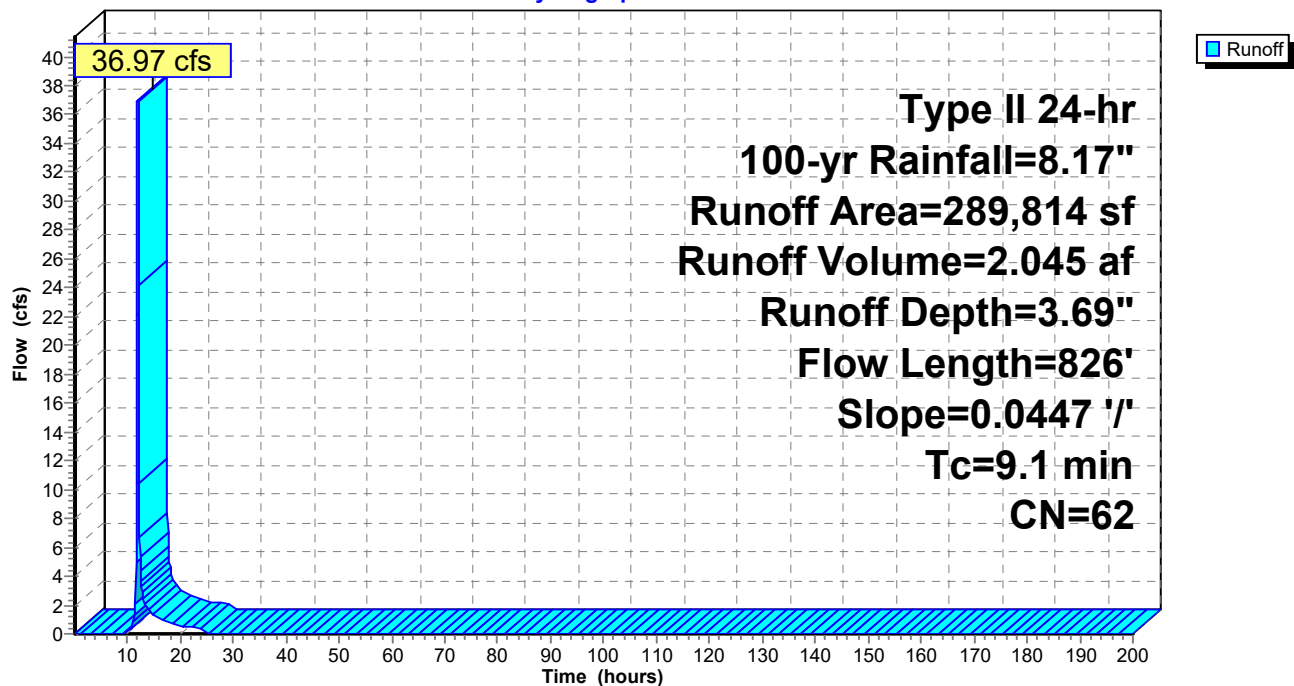
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
53,439	69	50-75% Grass cover, Fair, HSG B
5,416	98	Paved parking, HSG B
289,814	62	Weighted Average
284,398		98.13% Pervious Area
5,416		1.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 5S: Post Dev. Bypass 8

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 8S: Area 3

Runoff = 53.95 cfs @ 12.08 hrs, Volume= 3.862 af, Depth= 6.38"

Routed to Reach 2R : Flowpath Downstream POA 6

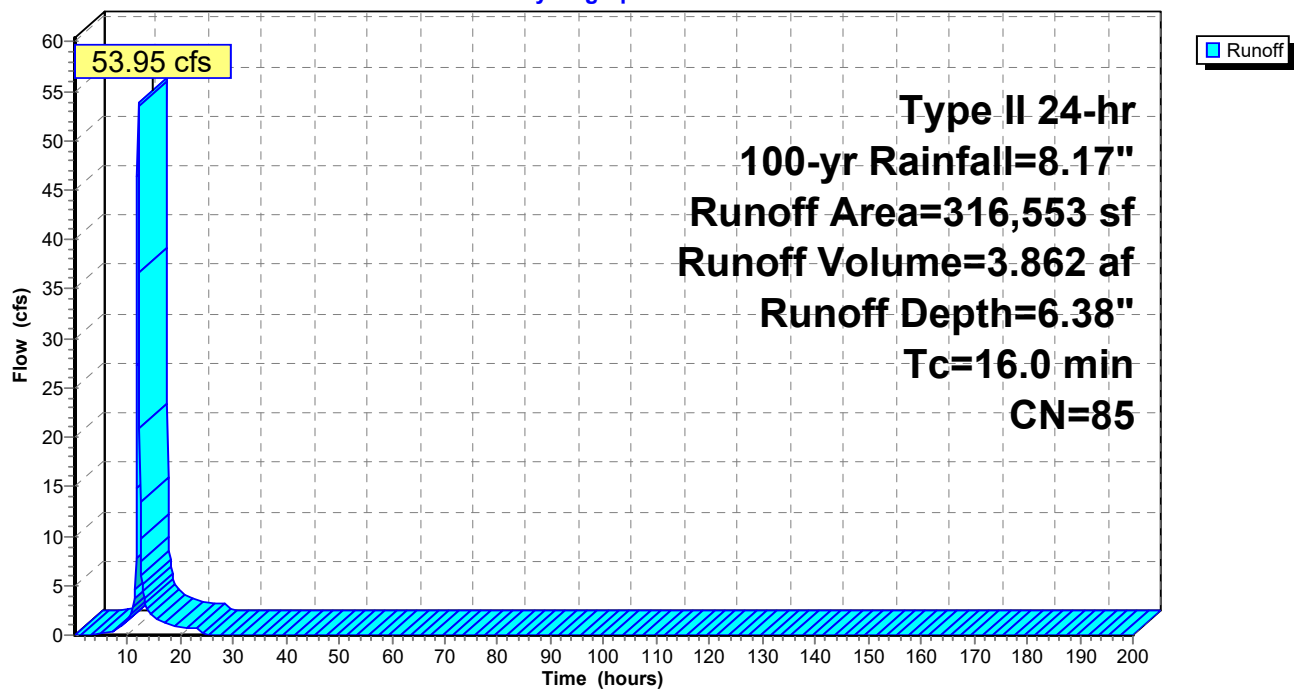
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
316,553	85	1/8 acre lots, 65% imp, HSG B
110,794		35.00% Pervious Area
205,759		65.00% Impervious Area

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

Subcatchment 8S: Area 3

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Reach 2R: Flowpath Downstream POA 6

Inflow Area = 24.084 ac, 33.90% Impervious, Inflow Depth = 5.04" for 100-yr event
Inflow = 129.77 cfs @ 12.02 hrs, Volume= 10.121 af
Outflow = 83.02 cfs @ 12.40 hrs, Volume= 10.121 af, Atten= 36%, Lag= 23.1 min
Routed to Link 3L : Post Ditch POA6

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.82 fps, Min. Travel Time= 13.8 min

Avg. Velocity= 0.35 fps, Avg. Travel Time= 72.2 min

Peak Storage= 70,015 cf @ 12.17 hrs

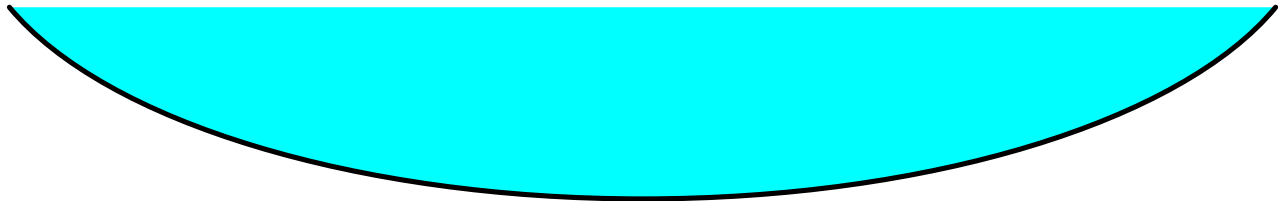
Average Depth at Peak Storage= 5.98', Surface Width= 20.69'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

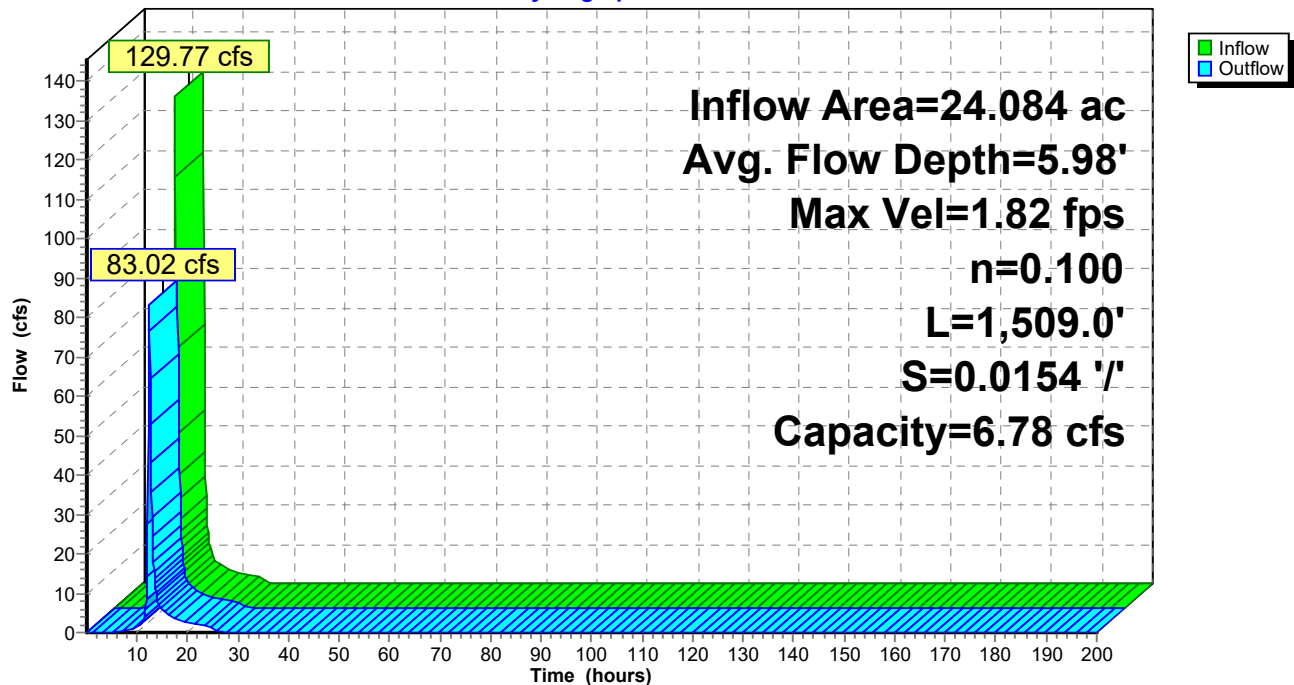
Length= 1,509.0' Slope= 0.0154 '/'

Inlet Invert= 505.43', Outlet Invert= 482.25'



Reach 2R: Flowpath Downstream POA 6

Hydrograph



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Summary for Pond 4P: Wet Pond SCM 4

Inflow Area = 4.254 ac, 75.67% Impervious, Inflow Depth = 7.09" for 100-yr event
 Inflow = 41.82 cfs @ 11.95 hrs, Volume= 2.514 af
 Outflow = 21.85 cfs @ 12.10 hrs, Volume= 2.510 af, Atten= 48%, Lag= 9.1 min
 Primary = 21.85 cfs @ 12.10 hrs, Volume= 2.510 af
 Routed to Link 2L : POA 5

Routing by Stor-Ind method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Starting Elev= 522.00' Surf.Area= 7,056 sf Storage= 6,623 cf

Peak Elev= 527.19' @ 12.10 hrs Surf.Area= 12,441 sf Storage= 60,840 cf (54,217 cf above start)

Plug-Flow detention time= 1,395.3 min calculated for 2.357 af (94% of inflow)

Center-of-Mass det. time= 1,272.0 min (2,039.5 - 767.5)

Volume	Invert	Avail.Storage	Storage Description
#1	521.00'	71,189 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
521.00	6,190	0	0
522.00	7,056	6,623	6,623
522.50	8,333	3,847	10,470
523.00	9,531	4,466	14,936
524.00	10,198	9,865	24,801
525.00	10,883	10,541	35,341
526.00	11,584	11,234	46,575
527.00	12,303	11,944	58,518
528.00	13,038	12,671	71,189

Device	Routing	Invert	Outlet Devices
#1	Primary	522.00'	36.0" Round Culvert L= 45.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 522.00' / 521.50' S= 0.0111 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf
#2	Device 1	522.00'	1.5" Vert. Drawdown C= 0.600 Limited to weir flow at low heads
#3	Device 1	525.40'	40.0" W x 4.0" H Vert. Peakflow Orifice X 2.00 C= 0.600 Limited to weir flow at low heads
#4	Device 1	526.90'	48.0" x 48.0" Horiz. Overflow C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=21.54 cfs @ 12.10 hrs HW=527.18' (Free Discharge)

1=Culvert (Passes 21.54 cfs of 65.30 cfs potential flow)
 2=Drawdown (Orifice Controls 0.13 cfs @ 10.89 fps)
 3=Peakflow Orifice (Orifice Controls 13.59 cfs @ 6.12 fps)
 4=Overflow (Weir Controls 7.81 cfs @ 1.73 fps)

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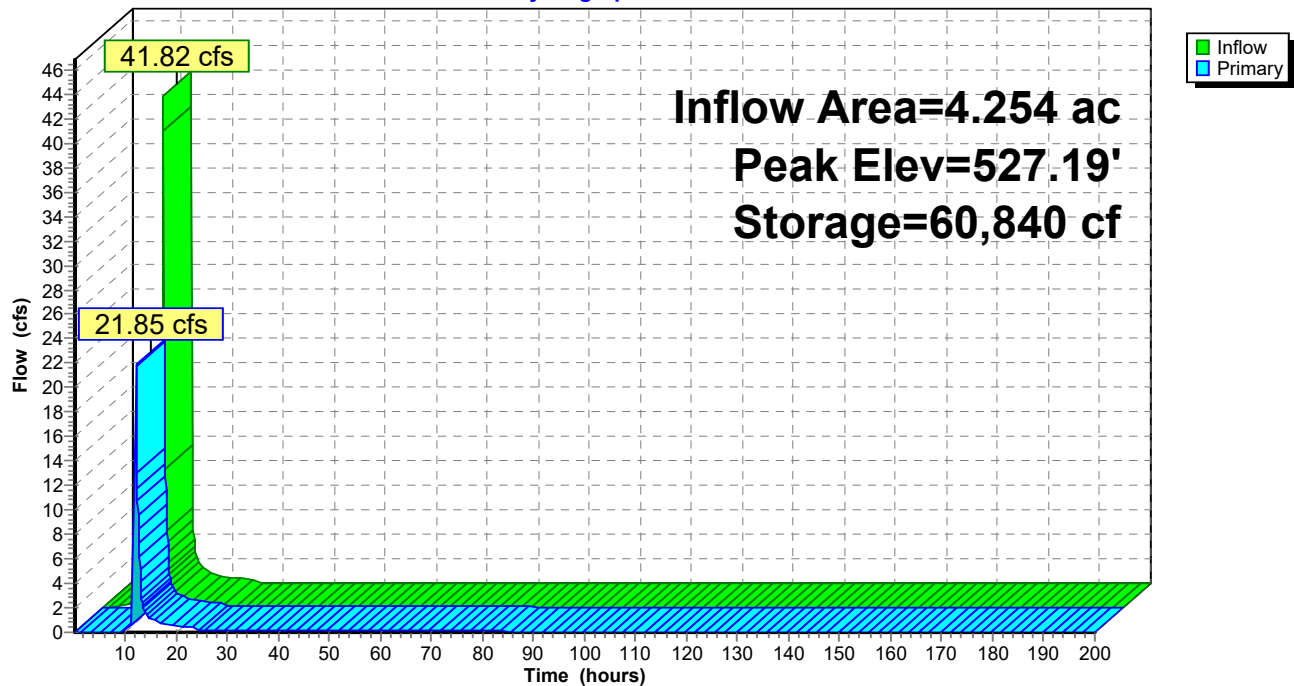
Type II 24-hr 100-yr Rainfall=8.17"

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Pond 4P: Wet Pond SCM 4

Hydrograph



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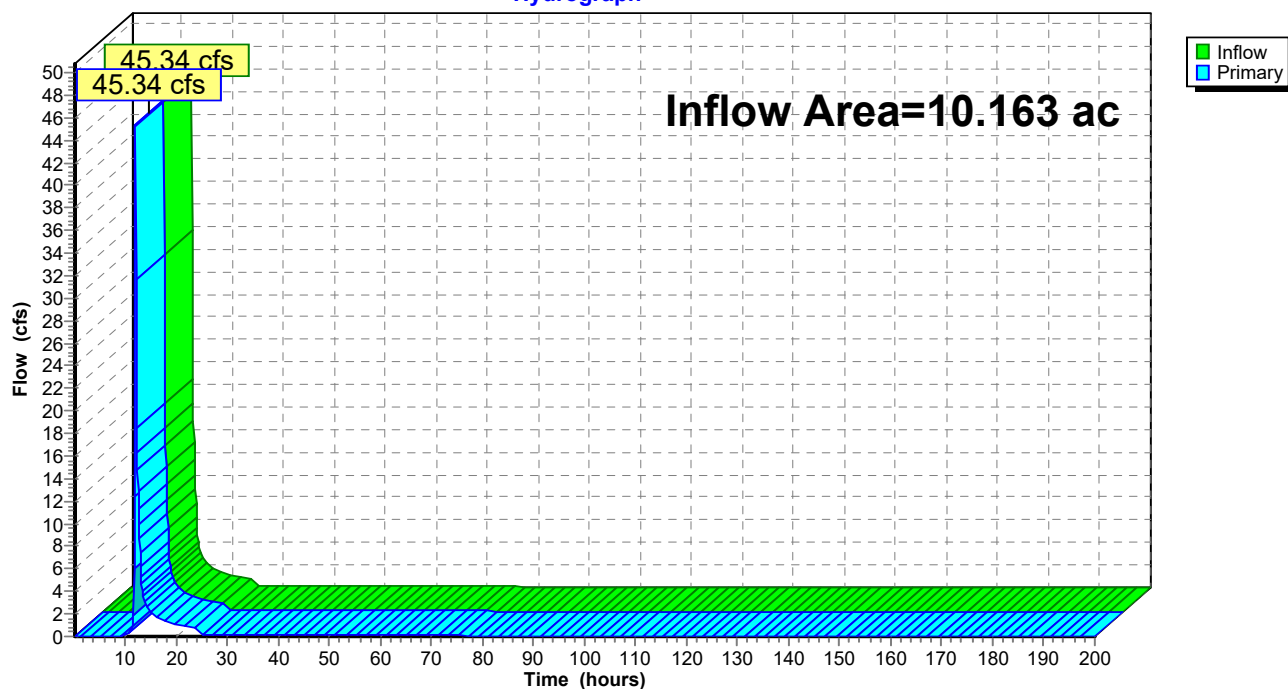
Summary for Link 2L: POA 5

Inflow Area = 10.163 ac, 32.64% Impervious, Inflow Depth = 4.98" for 100-yr event
Inflow = 45.34 cfs @ 11.99 hrs, Volume= 4.214 af
Primary = 45.34 cfs @ 11.99 hrs, Volume= 4.214 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 2R : Flowpath Downstream POA 6

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 2L: POA 5

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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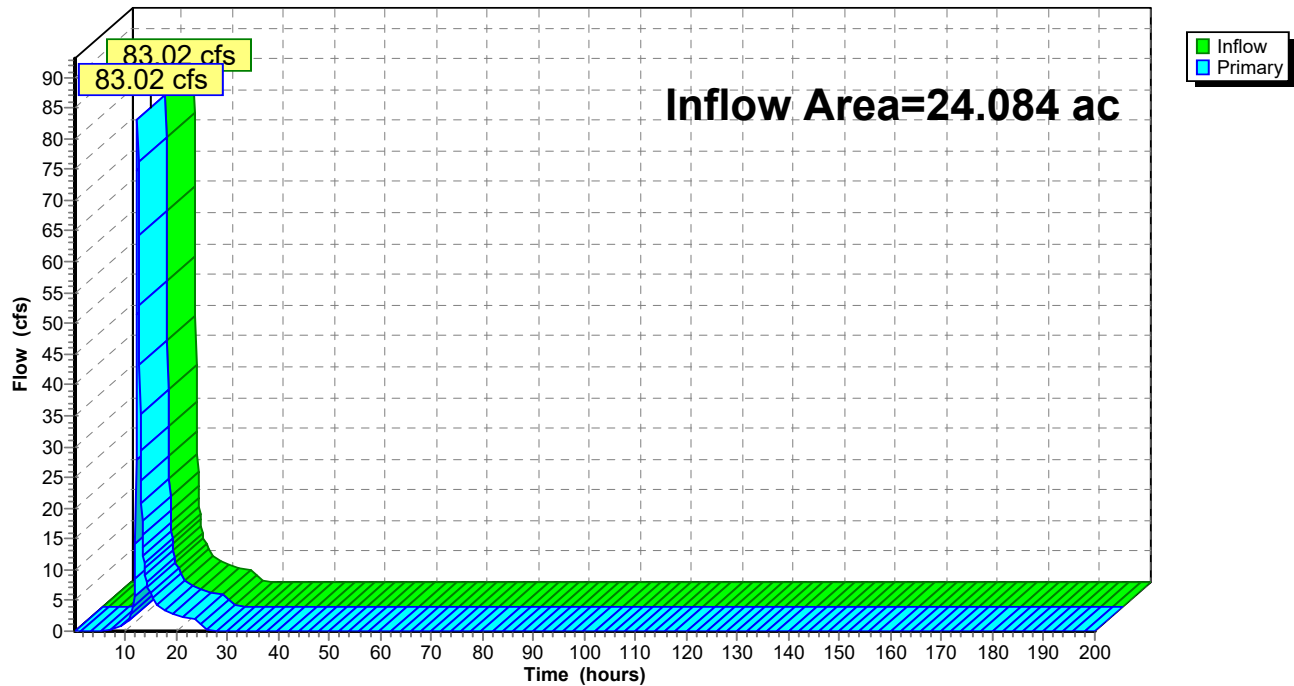
Summary for Link 3L: Post Ditch POA6

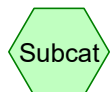
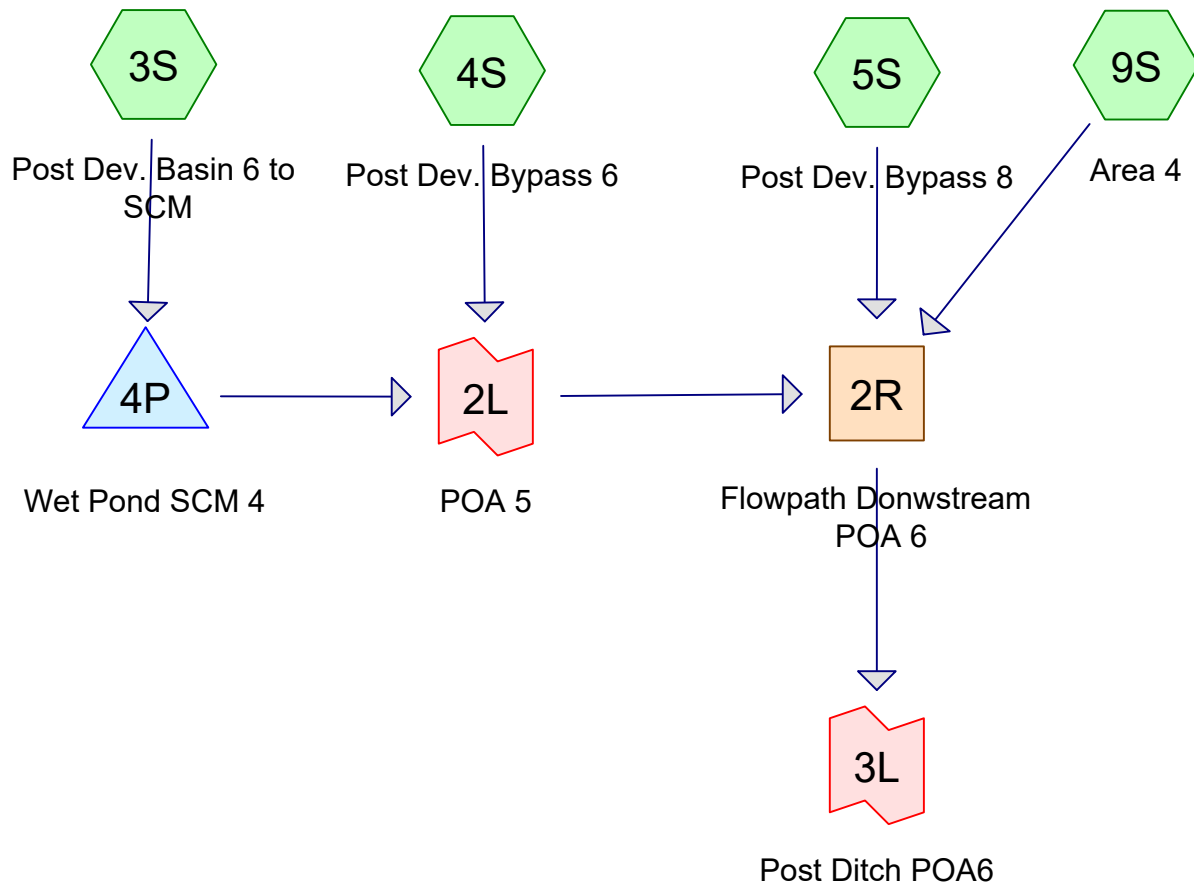
Inflow Area = 24.084 ac, 33.90% Impervious, Inflow Depth = 5.04" for 100-yr event
Inflow = 83.02 cfs @ 12.40 hrs, Volume= 10.121 af
Primary = 83.02 cfs @ 12.40 hrs, Volume= 10.121 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 3L: Post Ditch POA6

Hydrograph

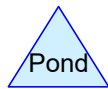




Subcat



Reach



Pond



Link

Routing Diagram for 32044.0000 - Ditch Analysis
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32044.0000 - Ditch Analysis

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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
9.726	85	1/8 acre lots, 65% imp, HSG B (9S)
1.227	69	50-75% Grass cover, Fair, HSG B (5S)
1.880	56	Brush, Fair, HSG B (3S, 4S)
1.986	98	Paved parking, HSG B (3S, 4S, 5S)
1.455	98	Roofs, HSG B (3S)
0.326	98	Water Surface, 0% imp, HSG B (3S)
9.943	60	Woods, Fair, HSG B (4S, 5S)
26.542	75	TOTAL AREA

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Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
26.542	HSG B	3S, 4S, 5S, 9S
0.000	HSG C	
0.000	HSG D	
0.000	Other	
26.542		TOTAL AREA

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Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	9.726	0.000	0.000	0.000	9.726	1/8 acre lots, 65% imp	9S
0.000	1.227	0.000	0.000	0.000	1.227	50-75% Grass cover, Fair	5S
0.000	1.880	0.000	0.000	0.000	1.880	Brush, Fair	3S, 4S
0.000	1.986	0.000	0.000	0.000	1.986	Paved parking	3S, 4S, 5S
0.000	1.455	0.000	0.000	0.000	1.455	Roofs	3S
0.000	0.326	0.000	0.000	0.000	0.326	Water Surface, 0% imp	3S
0.000	9.943	0.000	0.000	0.000	9.943	Woods, Fair	4S, 5S
0.000	26.542	0.000	0.000	0.000	26.542	TOTAL AREA	

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Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	4P	522.00	521.50	45.0	0.0111	0.011	0.0	36.0	0.0	

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Type II 24-hr 10-yr Rainfall=5.17"

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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment3S: Post Dev. Basin 6 to Runoff Area=185,285 sf 75.67% Impervious Runoff Depth=4.15"
Tc=5.0 min CN=91 Runoff=25.26 cfs 1.470 af

Subcatchment4S: Post Dev. Bypass 6 Runoff Area=257,427 sf 1.66% Impervious Runoff Depth=1.40"
Tc=5.0 min CN=60 Runoff=13.01 cfs 0.690 af

Subcatchment5S: Post Dev. Bypass 8 Runoff Area=289,814 sf 1.87% Impervious Runoff Depth=1.54"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=14.84 cfs 0.856 af

Subcatchment9S: Area 4 Runoff Area=423,660 sf 65.00% Impervious Runoff Depth=3.53"
Tc=18.0 min CN=85 Runoff=39.09 cfs 2.857 af

Reach 2R: Flowpath Downstream POA Avg. Flow Depth=3.22' Max Vel=1.76 fps Inflow=60.56 cfs 5.869 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=40.69 cfs 5.869 af

Pond 4P: Wet Pond SCM 4 Peak Elev=525.74' Storage=43,618 cf Inflow=25.26 cfs 1.470 af
Outflow=4.35 cfs 1.466 af

Link 2L: POA 5 Inflow=12.84 cfs 2.156 af
Primary=12.84 cfs 2.156 af

Link 3L: Post Ditch POA6 Inflow=40.69 cfs 5.869 af
Primary=40.69 cfs 5.869 af

Total Runoff Area = 26.542 ac Runoff Volume = 5.874 af Average Runoff Depth = 2.66"
63.22% Pervious = 16.779 ac 36.78% Impervious = 9.763 ac

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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Subcatchment 3S: Post Dev. Basin 6 to SCM

Runoff = 25.26 cfs @ 11.95 hrs, Volume= 1.470 af, Depth= 4.15"
Routed to Pond 4P : Wet Pond SCM 4

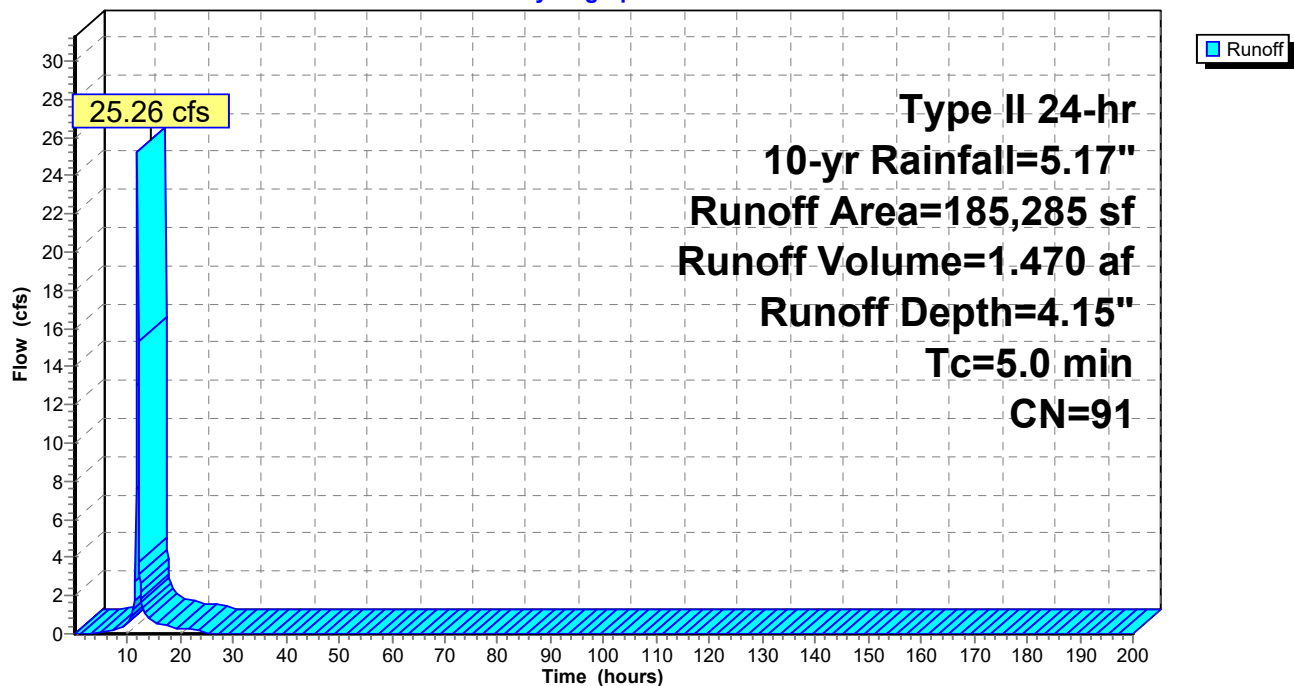
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 10-yr Rainfall=5.17"

Area (sf)	CN	Description
76,830	98	Paved parking, HSG B
63,382	98	Roofs, HSG B
30,858	56	Brush, Fair, HSG B
14,215	98	Water Surface, 0% imp, HSG B
185,285	91	Weighted Average
45,073		24.33% Pervious Area
140,212		75.67% Impervious Area

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

Subcatchment 3S: Post Dev. Basin 6 to SCM

Hydrograph



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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Subcatchment 4S: Post Dev. Bypass 6

Runoff = 13.01 cfs @ 11.98 hrs, Volume= 0.690 af, Depth= 1.40"
Routed to Link 2L : POA 5

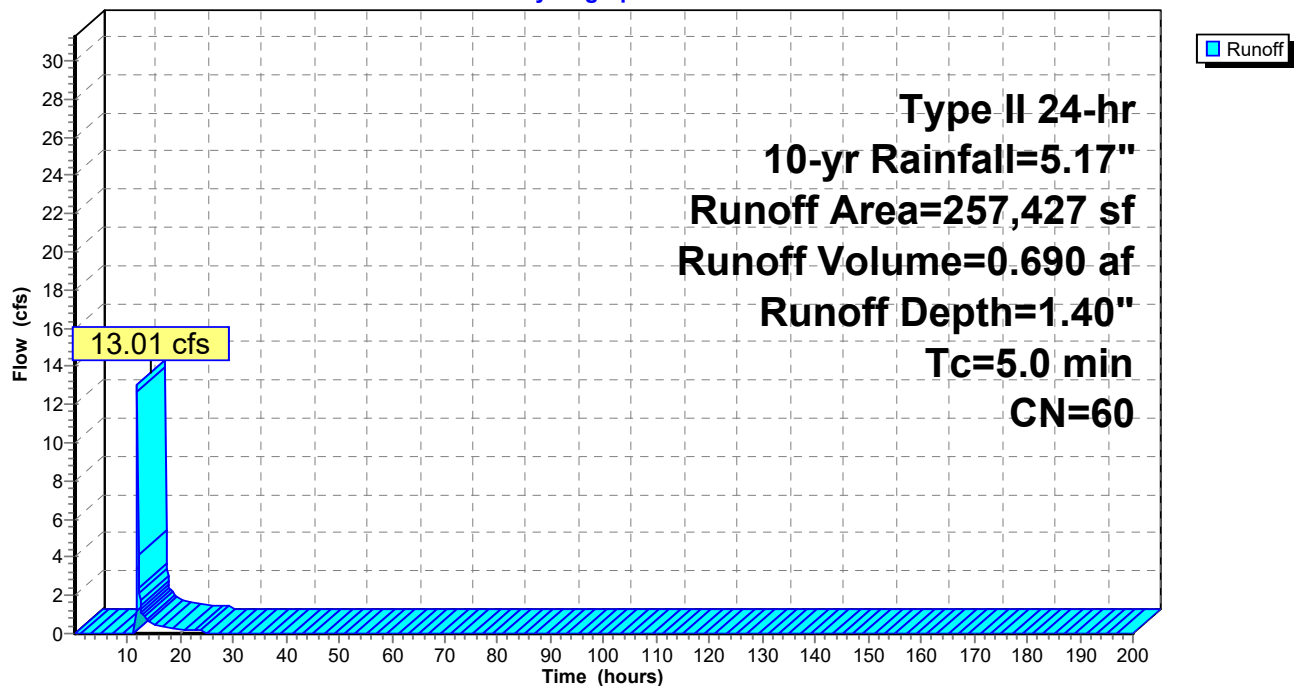
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 10-yr Rainfall=5.17"

Area (sf)	CN	Description
4,268	98	Paved parking, HSG B
51,015	56	Brush, Fair, HSG B
202,144	60	Woods, Fair, HSG B
257,427	60	Weighted Average
253,159		98.34% Pervious Area
4,268		1.66% Impervious Area

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

Subcatchment 4S: Post Dev. Bypass 6

Hydrograph



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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Subcatchment 5S: Post Dev. Bypass 8

Runoff = 14.84 cfs @ 12.01 hrs, Volume= 0.856 af, Depth= 1.54"
Routed to Reach 2R : Flowpath Downstream POA 6

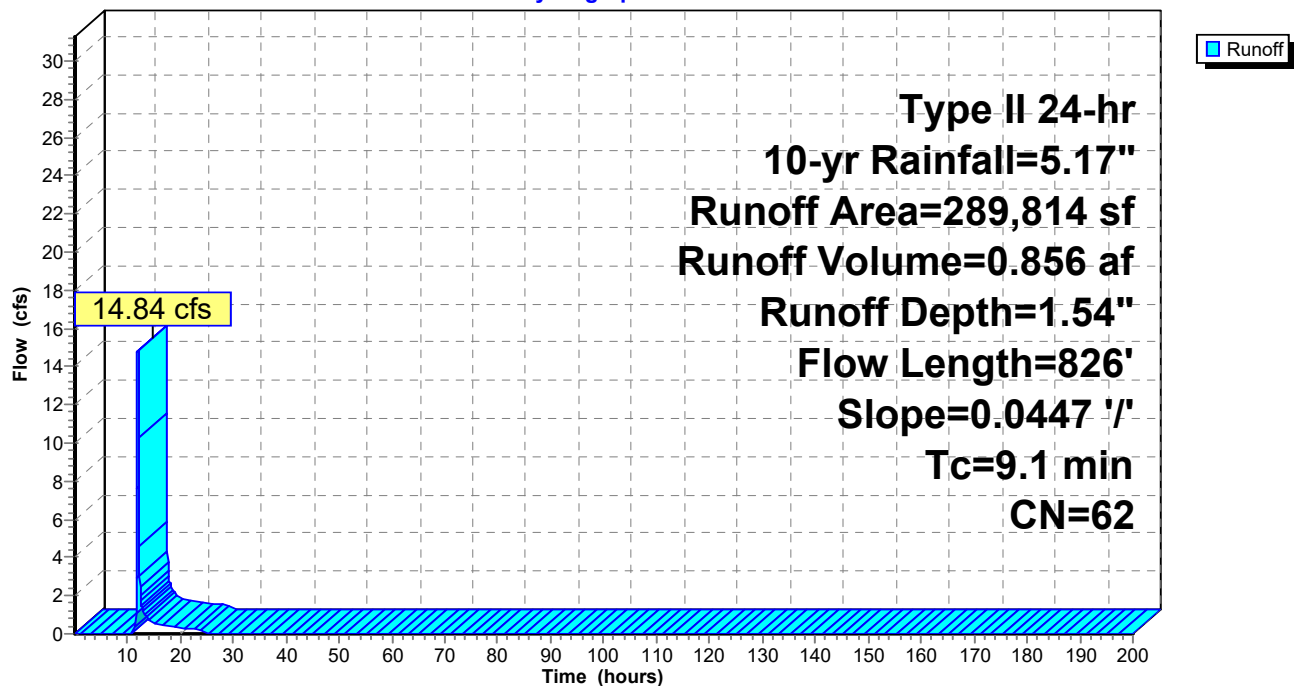
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 10-yr Rainfall=5.17"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
53,439	69	50-75% Grass cover, Fair, HSG B
5,416	98	Paved parking, HSG B
289,814	62	Weighted Average
284,398		98.13% Pervious Area
5,416		1.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 5S: Post Dev. Bypass 8

Hydrograph



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Summary for Subcatchment 9S: Area 4

Runoff = 39.09 cfs @ 12.10 hrs, Volume= 2.857 af, Depth= 3.53"

Routed to Reach 2R : Flowpath Downstream POA 6

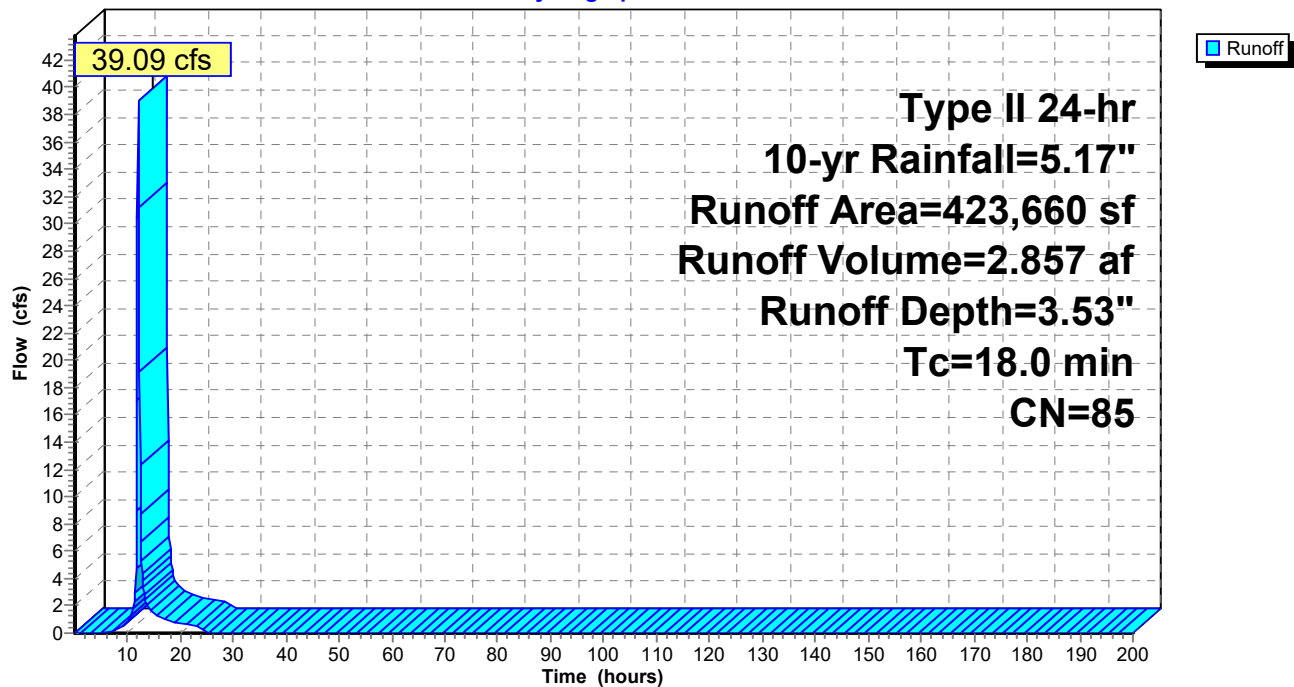
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 10-yr Rainfall=5.17"

Area (sf)	CN	Description
423,660	85	1/8 acre lots, 65% imp, HSG B
148,281		35.00% Pervious Area
275,379		65.00% Impervious Area

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

Subcatchment 9S: Area 4

Hydrograph



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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Reach 2R: Flowpath Downstream POA 6

Inflow Area = 26.542 ac, 36.78% Impervious, Inflow Depth = 2.65" for 10-yr event
Inflow = 60.56 cfs @ 12.05 hrs, Volume= 5.869 af
Outflow = 40.69 cfs @ 12.46 hrs, Volume= 5.869 af, Atten= 33%, Lag= 24.7 min
Routed to Link 3L : Post Ditch POA6

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.76 fps, Min. Travel Time= 14.3 min

Avg. Velocity = 0.33 fps, Avg. Travel Time= 75.6 min

Peak Storage= 35,858 cf @ 12.22 hrs

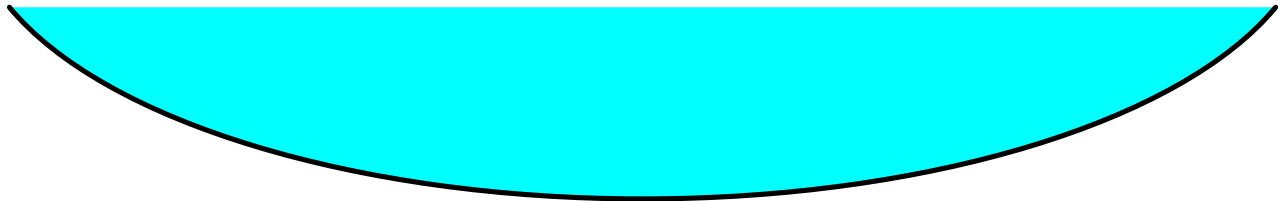
Average Depth at Peak Storage= 3.22' , Surface Width= 15.17'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

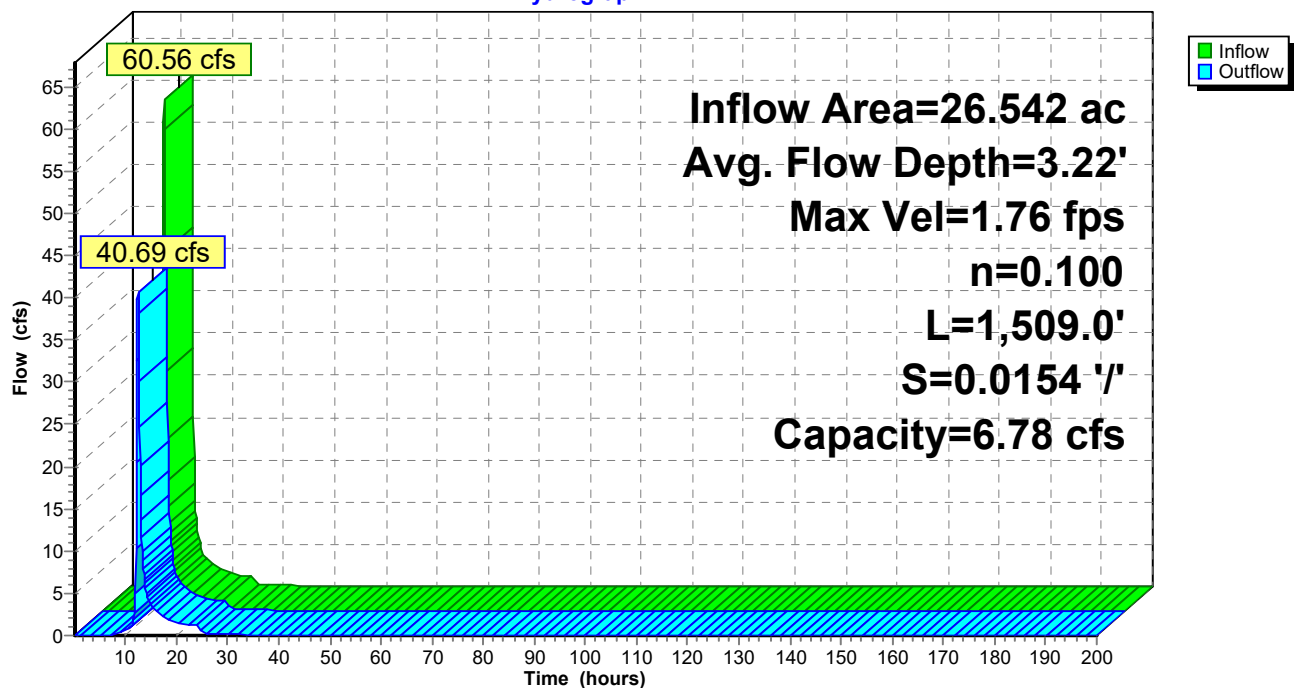
Length= 1,509.0' Slope= 0.0154 '/'

Inlet Invert= 505.43', Outlet Invert= 482.25'



Reach 2R: Flowpath Downstream POA 6

Hydrograph



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Type II 24-hr 10-yr Rainfall=5.17"

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Summary for Pond 4P: Wet Pond SCM 4

Inflow Area = 4.254 ac, 75.67% Impervious, Inflow Depth = 4.15" for 10-yr event
 Inflow = 25.26 cfs @ 11.95 hrs, Volume= 1.470 af
 Outflow = 4.35 cfs @ 12.22 hrs, Volume= 1.466 af, Atten= 83%, Lag= 16.1 min
 Primary = 4.35 cfs @ 12.22 hrs, Volume= 1.466 af
 Routed to Link 2L : POA 5

Routing by Stor-Ind method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Starting Elev= 522.00' Surf.Area= 7,056 sf Storage= 6,623 cf

Peak Elev= 525.74' @ 12.22 hrs Surf.Area= 11,404 sf Storage= 43,618 cf (36,995 cf above start)

Plug-Flow detention time= 2,434.7 min calculated for 1.314 af (89% of inflow)

Center-of-Mass det. time= 2,127.3 min (2,908.8 - 781.5)

Volume	Invert	Avail.Storage	Storage Description
#1	521.00'	71,189 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
521.00	6,190	0	0
522.00	7,056	6,623	6,623
522.50	8,333	3,847	10,470
523.00	9,531	4,466	14,936
524.00	10,198	9,865	24,801
525.00	10,883	10,541	35,341
526.00	11,584	11,234	46,575
527.00	12,303	11,944	58,518
528.00	13,038	12,671	71,189

Device	Routing	Invert	Outlet Devices
#1	Primary	522.00'	36.0" Round Culvert L= 45.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 522.00' / 521.50' S= 0.0111 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf
#2	Device 1	522.00'	1.5" Vert. Drawdown C= 0.600 Limited to weir flow at low heads
#3	Device 1	525.40'	40.0" W x 4.0" H Vert. Peakflow Orifice X 2.00 C= 0.600 Limited to weir flow at low heads
#4	Device 1	526.90'	48.0" x 48.0" Horiz. Overflow C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.31 cfs @ 12.22 hrs HW=525.74' (Free Discharge)

1=Culvert (Passes 4.31 cfs of 50.79 cfs potential flow)
 2=Drawdown (Orifice Controls 0.11 cfs @ 9.23 fps)
 3=Peakflow Orifice (Orifice Controls 4.20 cfs @ 1.89 fps)
 4=Overflow (Controls 0.00 cfs)

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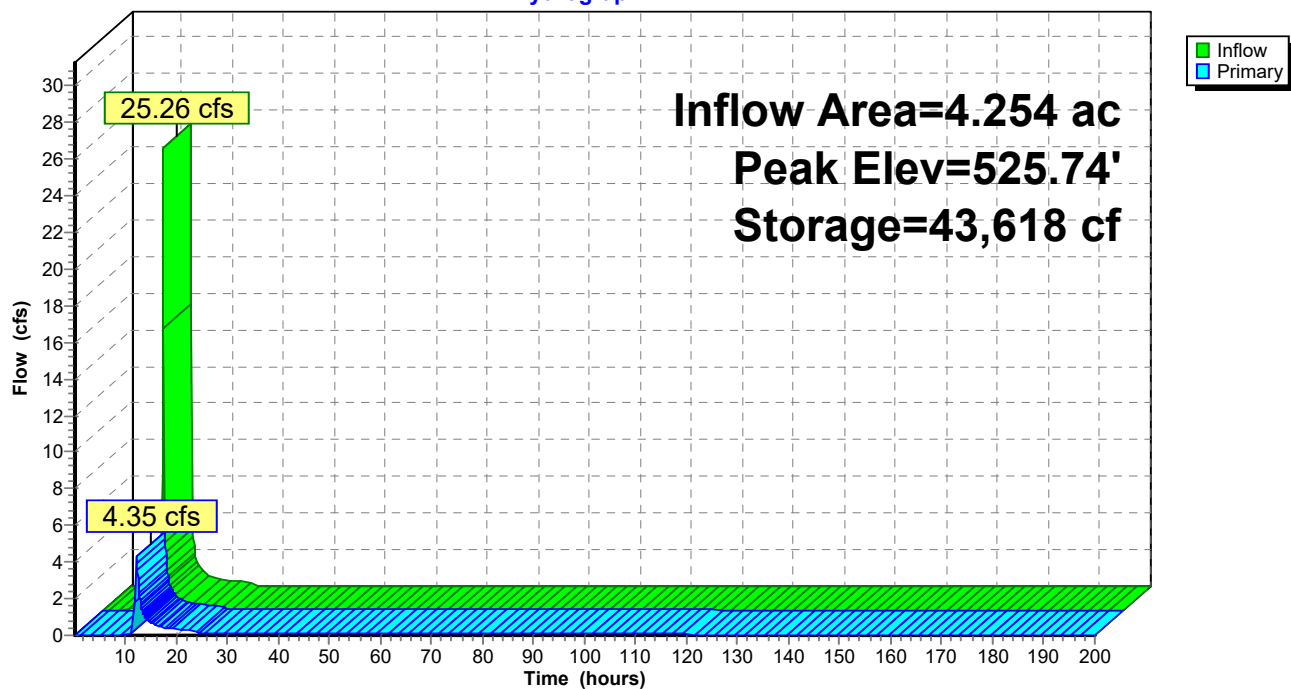
Type II 24-hr 10-yr Rainfall=5.17"

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Pond 4P: Wet Pond SCM 4

Hydrograph



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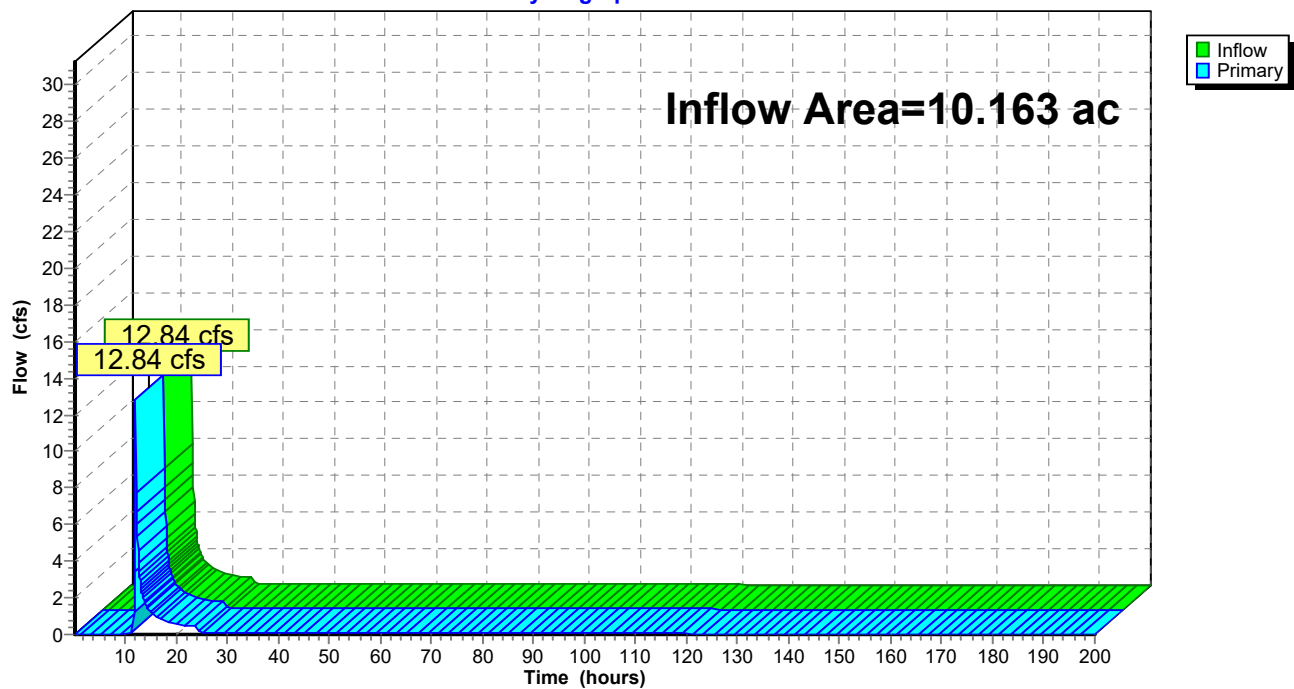
Summary for Link 2L: POA 5

Inflow Area = 10.163 ac, 32.64% Impervious, Inflow Depth > 2.55" for 10-yr event
Inflow = 12.84 cfs @ 11.99 hrs, Volume= 2.156 af
Primary = 12.84 cfs @ 11.99 hrs, Volume= 2.156 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 2R : Flowpath Downstream POA 6

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 2L: POA 5

Hydrograph



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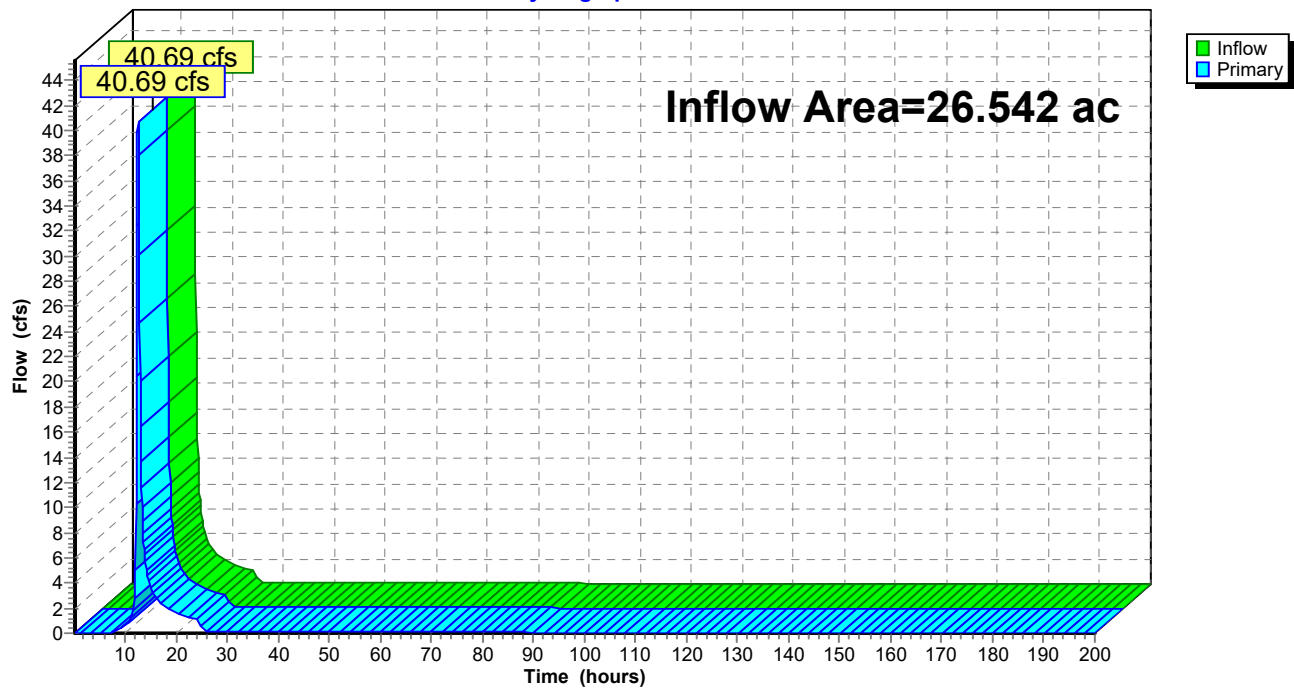
Summary for Link 3L: Post Ditch POA6

Inflow Area = 26.542 ac, 36.78% Impervious, Inflow Depth = 2.65" for 10-yr event
Inflow = 40.69 cfs @ 12.46 hrs, Volume= 5.869 af
Primary = 40.69 cfs @ 12.46 hrs, Volume= 5.869 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 3L: Post Ditch POA6

Hydrograph



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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment3S: Post Dev. Basin 6 to Runoff Area=185,285 sf 75.67% Impervious Runoff Depth=5.49"
Tc=5.0 min CN=91 Runoff=32.86 cfs 1.945 af

Subcatchment4S: Post Dev. Bypass 6 Runoff Area=257,427 sf 1.66% Impervious Runoff Depth=2.28"
Tc=5.0 min CN=60 Runoff=21.62 cfs 1.124 af

Subcatchment5S: Post Dev. Bypass 8 Runoff Area=289,814 sf 1.87% Impervious Runoff Depth=2.47"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=24.46 cfs 1.368 af

Subcatchment9S: Area 4 Runoff Area=423,660 sf 65.00% Impervious Runoff Depth=4.81"
Tc=18.0 min CN=85 Runoff=52.76 cfs 3.902 af

Reach 2R: Flowpath Downstream POA Avg. Flow Depth=4.71' Max Vel=1.80 fps Inflow=97.39 cfs 8.335 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=63.81 cfs 8.334 af

Pond 4P: Wet Pond SCM 4 Peak Elev=526.48' Storage=52,233 cf Inflow=32.86 cfs 1.945 af
Outflow=10.36 cfs 1.940 af

Link 2L: POA 5 Inflow=28.99 cfs 3.065 af
Primary=28.99 cfs 3.065 af

Link 3L: Post Ditch POA6 Inflow=63.81 cfs 8.334 af
Primary=63.81 cfs 8.334 af

Total Runoff Area = 26.542 ac Runoff Volume = 8.339 af Average Runoff Depth = 3.77"
63.22% Pervious = 16.779 ac 36.78% Impervious = 9.763 ac

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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 3S: Post Dev. Basin 6 to SCM

Runoff = 32.86 cfs @ 11.95 hrs, Volume= 1.945 af, Depth= 5.49"
Routed to Pond 4P : Wet Pond SCM 4

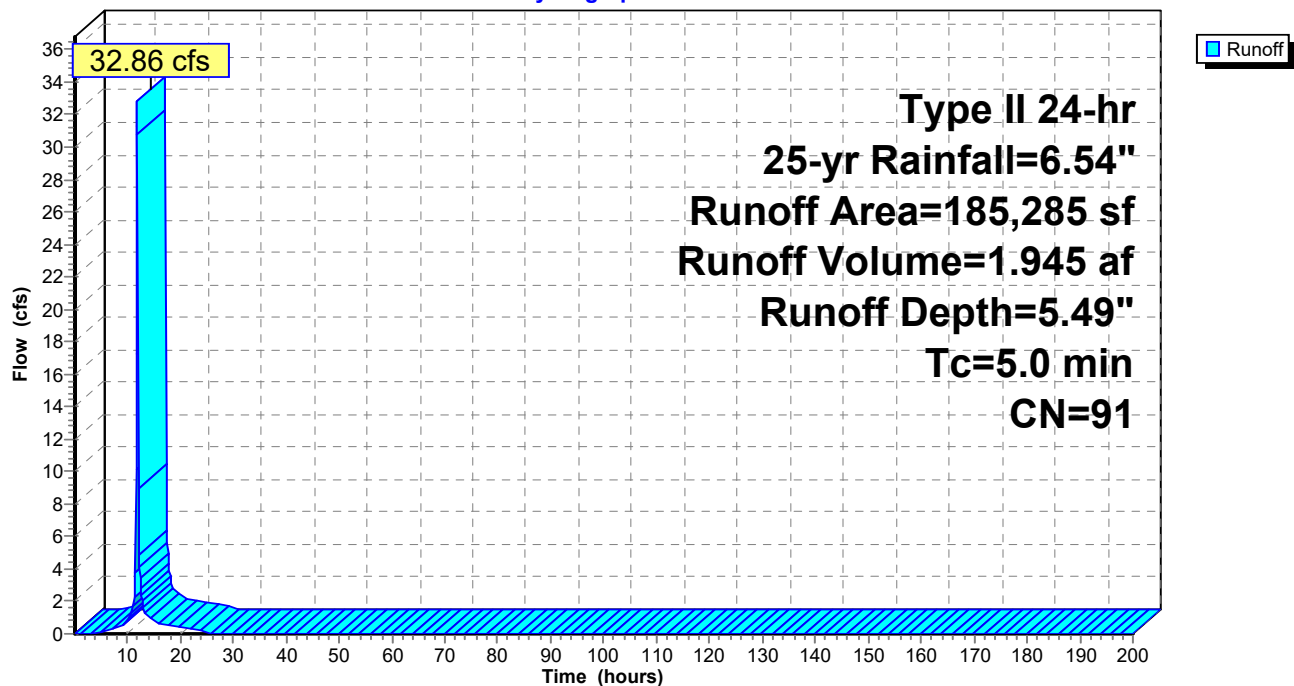
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
76,830	98	Paved parking, HSG B
63,382	98	Roofs, HSG B
30,858	56	Brush, Fair, HSG B
14,215	98	Water Surface, 0% imp, HSG B
185,285	91	Weighted Average
45,073		24.33% Pervious Area
140,212		75.67% Impervious Area

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

Subcatchment 3S: Post Dev. Basin 6 to SCM

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 4S: Post Dev. Bypass 6

Runoff = 21.62 cfs @ 11.97 hrs, Volume= 1.124 af, Depth= 2.28"
Routed to Link 2L : POA 5

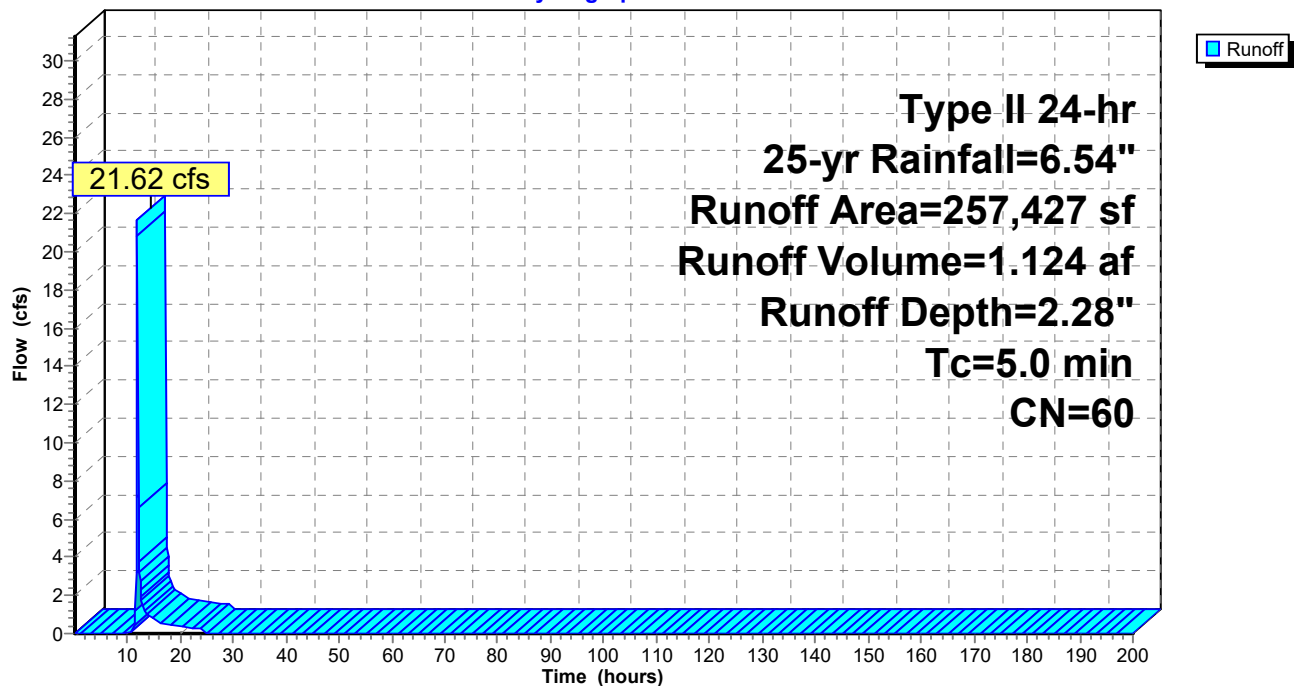
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
4,268	98	Paved parking, HSG B
51,015	56	Brush, Fair, HSG B
202,144	60	Woods, Fair, HSG B
257,427	60	Weighted Average
253,159		98.34% Pervious Area
4,268		1.66% Impervious Area

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

Subcatchment 4S: Post Dev. Bypass 6

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 5S: Post Dev. Bypass 8

Runoff = 24.46 cfs @ 12.01 hrs, Volume= 1.368 af, Depth= 2.47"
Routed to Reach 2R : Flowpath Downstream POA 6

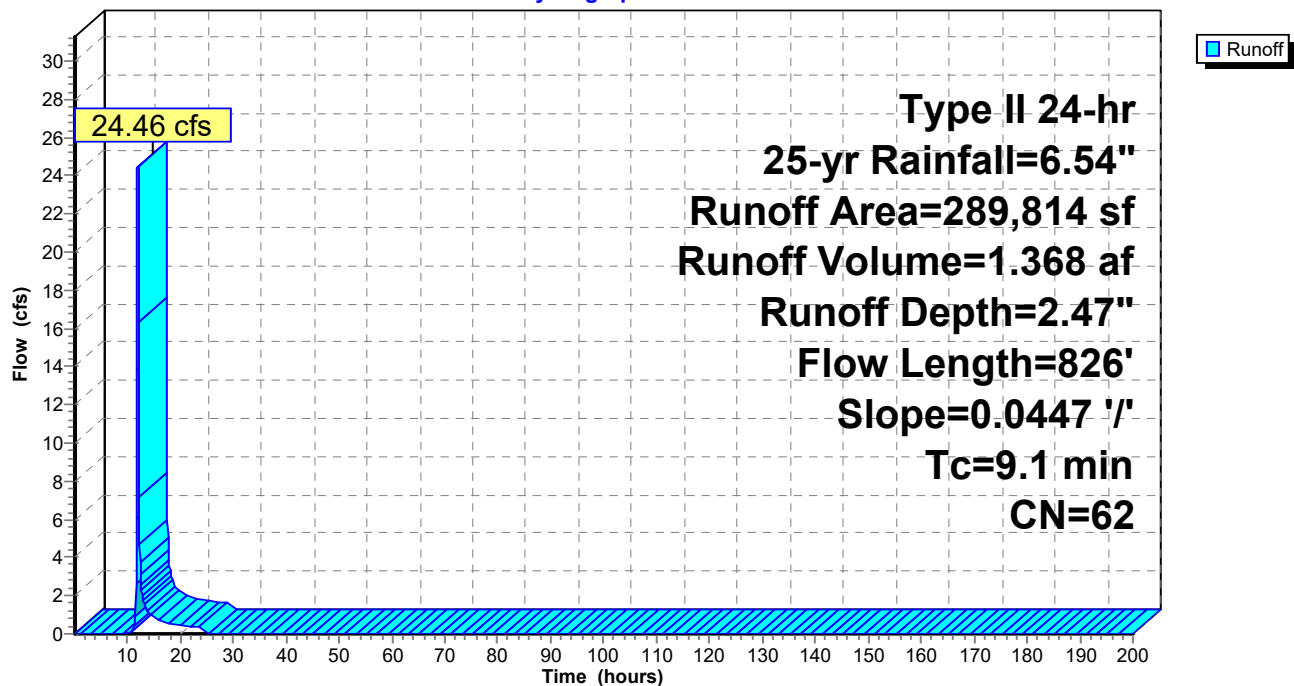
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
53,439	69	50-75% Grass cover, Fair, HSG B
5,416	98	Paved parking, HSG B
289,814	62	Weighted Average
284,398		98.13% Pervious Area
5,416		1.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 5S: Post Dev. Bypass 8

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Subcatchment 9S: Area 4

Runoff = 52.76 cfs @ 12.10 hrs, Volume= 3.902 af, Depth= 4.81"

Routed to Reach 2R : Flowpath Downstream POA 6

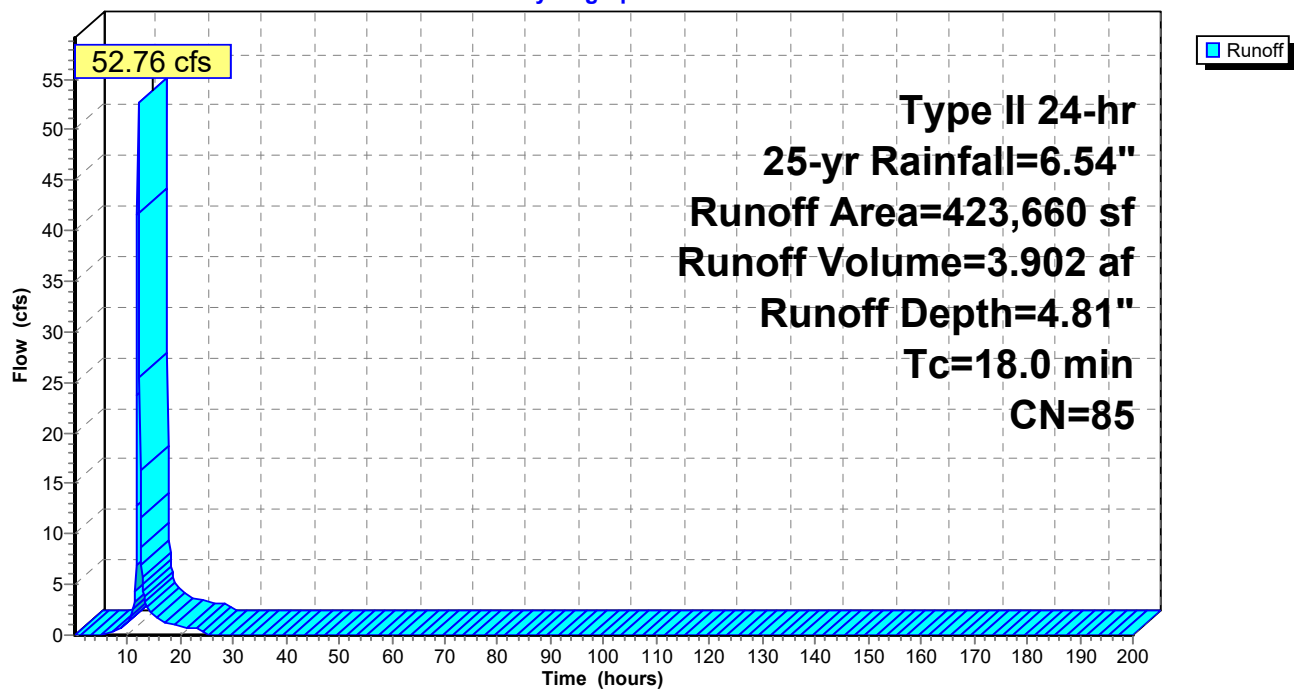
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 25-yr Rainfall=6.54"

Area (sf)	CN	Description
423,660	85	1/8 acre lots, 65% imp, HSG B
148,281		35.00% Pervious Area
275,379		65.00% Impervious Area

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

Subcatchment 9S: Area 4

Hydrograph



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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Reach 2R: Flowpath Downstream POA 6

Inflow Area = 26.542 ac, 36.78% Impervious, Inflow Depth = 3.77" for 25-yr event
Inflow = 97.39 cfs @ 12.03 hrs, Volume= 8.335 af
Outflow = 63.81 cfs @ 12.44 hrs, Volume= 8.334 af, Atten= 34%, Lag= 24.4 min
Routed to Link 3L : Post Ditch POA6

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.80 fps, Min. Travel Time= 14.0 min

Avg. Velocity= 0.34 fps, Avg. Travel Time= 73.4 min

Peak Storage= 54,328 cf @ 12.20 hrs

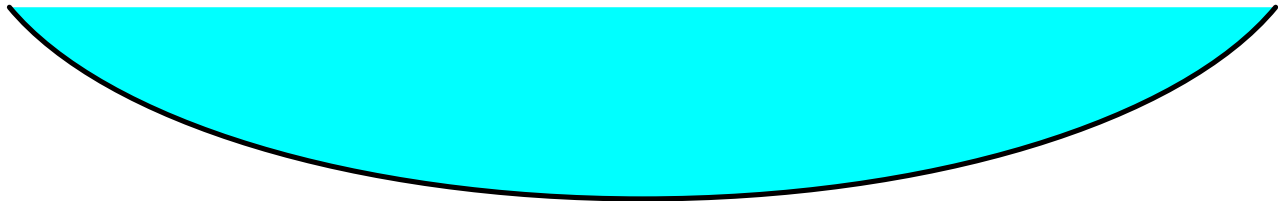
Average Depth at Peak Storage= 4.71', Surface Width= 18.36'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

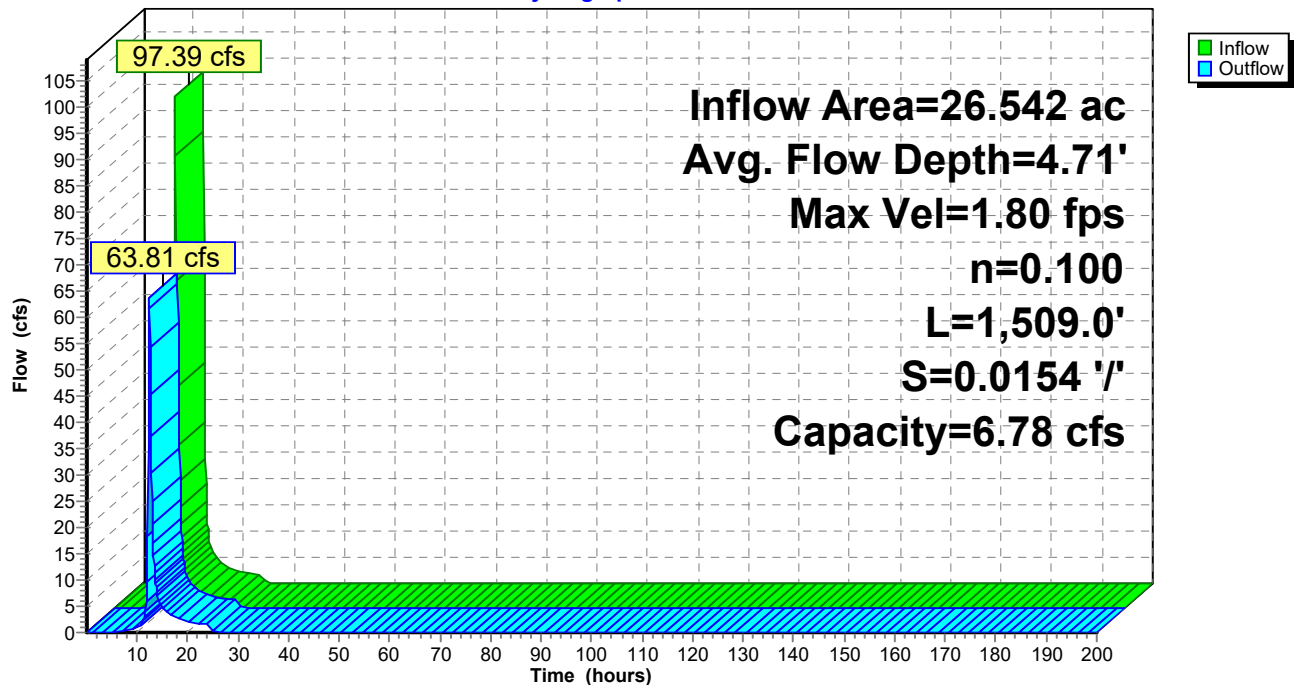
Length= 1,509.0' Slope= 0.0154 '/'

Inlet Invert= 505.43', Outlet Invert= 482.25'



Reach 2R: Flowpath Downstream POA 6

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Type II 24-hr 25-yr Rainfall=6.54"

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Summary for Pond 4P: Wet Pond SCM 4

Inflow Area = 4.254 ac, 75.67% Impervious, Inflow Depth = 5.49" for 25-yr event
 Inflow = 32.86 cfs @ 11.95 hrs, Volume= 1.945 af
 Outflow = 10.36 cfs @ 12.13 hrs, Volume= 1.940 af, Atten= 68%, Lag= 11.0 min
 Primary = 10.36 cfs @ 12.13 hrs, Volume= 1.940 af
 Routed to Link 2L : POA 5

Routing by Stor-Ind method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Starting Elev= 522.00' Surf.Area= 7,056 sf Storage= 6,623 cf

Peak Elev= 526.48' @ 12.13 hrs Surf.Area= 11,930 sf Storage= 52,233 cf (45,610 cf above start)

Plug-Flow detention time= 1,812.3 min calculated for 1.788 af (92% of inflow)

Center-of-Mass det. time= 1,624.1 min (2,398.1 - 774.1)

Volume	Invert	Avail.Storage	Storage Description
#1	521.00'	71,189 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
521.00	6,190	0	0
522.00	7,056	6,623	6,623
522.50	8,333	3,847	10,470
523.00	9,531	4,466	14,936
524.00	10,198	9,865	24,801
525.00	10,883	10,541	35,341
526.00	11,584	11,234	46,575
527.00	12,303	11,944	58,518
528.00	13,038	12,671	71,189

Device	Routing	Invert	Outlet Devices
#1	Primary	522.00'	36.0" Round Culvert L= 45.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 522.00' / 521.50' S= 0.0111 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf
#2	Device 1	522.00'	1.5" Vert. Drawdown C= 0.600 Limited to weir flow at low heads
#3	Device 1	525.40'	40.0" W x 4.0" H Vert. Peakflow Orifice X 2.00 C= 0.600 Limited to weir flow at low heads
#4	Device 1	526.90'	48.0" x 48.0" Horiz. Overflow C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=10.10 cfs @ 12.13 hrs HW=526.44' (Free Discharge)

1=Culvert (Passes 10.10 cfs of 58.34 cfs potential flow)
 2=Drawdown (Orifice Controls 0.12 cfs @ 10.07 fps)
 3=Peakflow Orifice (Orifice Controls 9.97 cfs @ 4.49 fps)
 4=Overflow (Controls 0.00 cfs)

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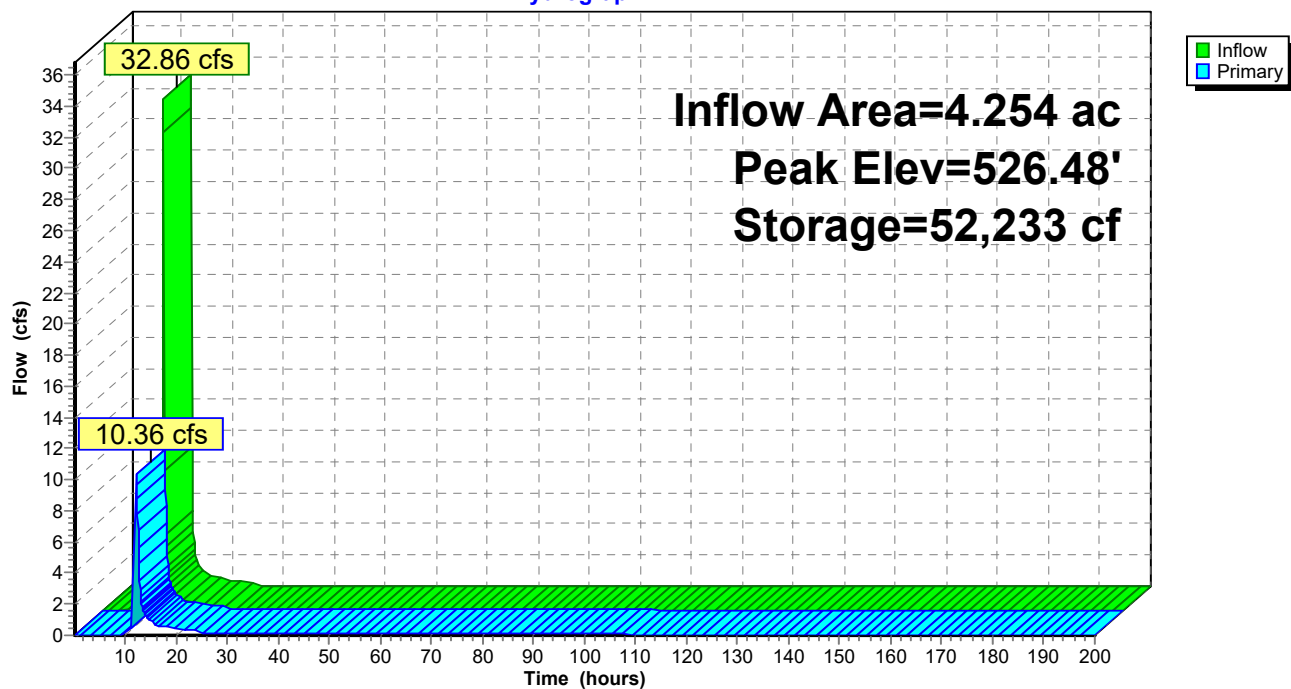
Type II 24-hr 25-yr Rainfall=6.54"

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Pond 4P: Wet Pond SCM 4

Hydrograph



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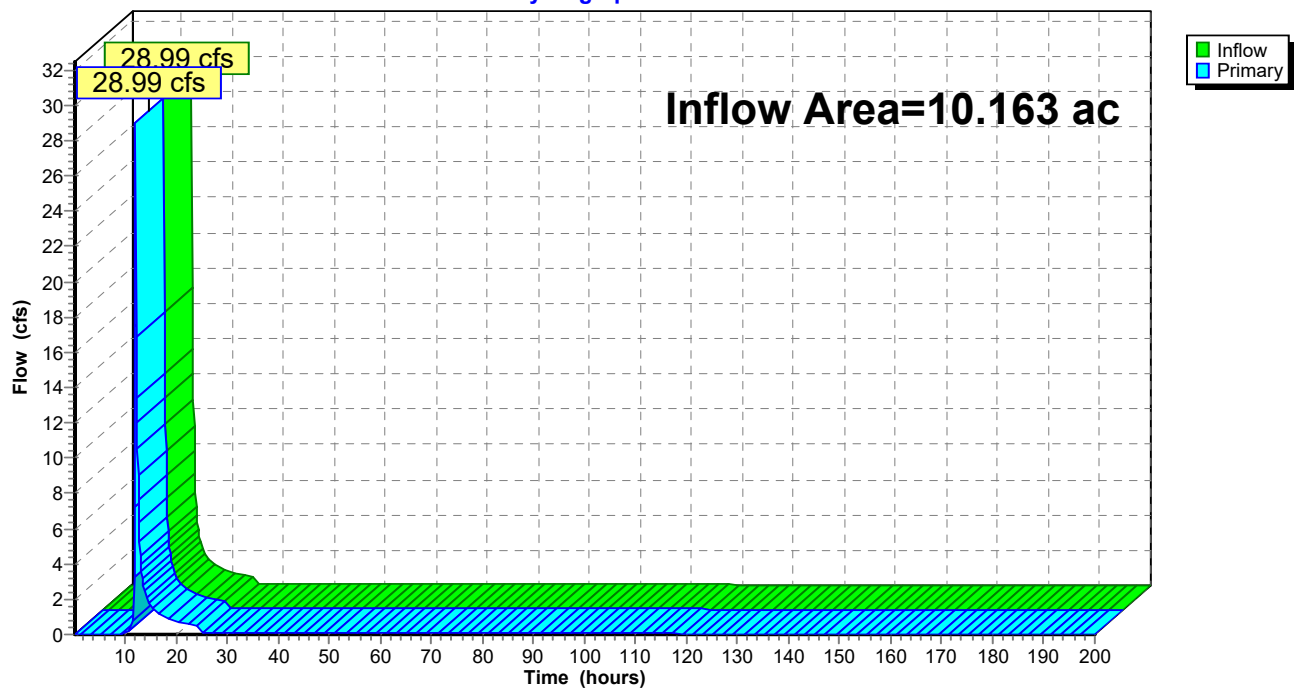
Summary for Link 2L: POA 5

Inflow Area = 10.163 ac, 32.64% Impervious, Inflow Depth = 3.62" for 25-yr event
Inflow = 28.99 cfs @ 12.00 hrs, Volume= 3.065 af
Primary = 28.99 cfs @ 12.00 hrs, Volume= 3.065 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 2R : Flowpath Downstream POA 6

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 2L: POA 5

Hydrograph



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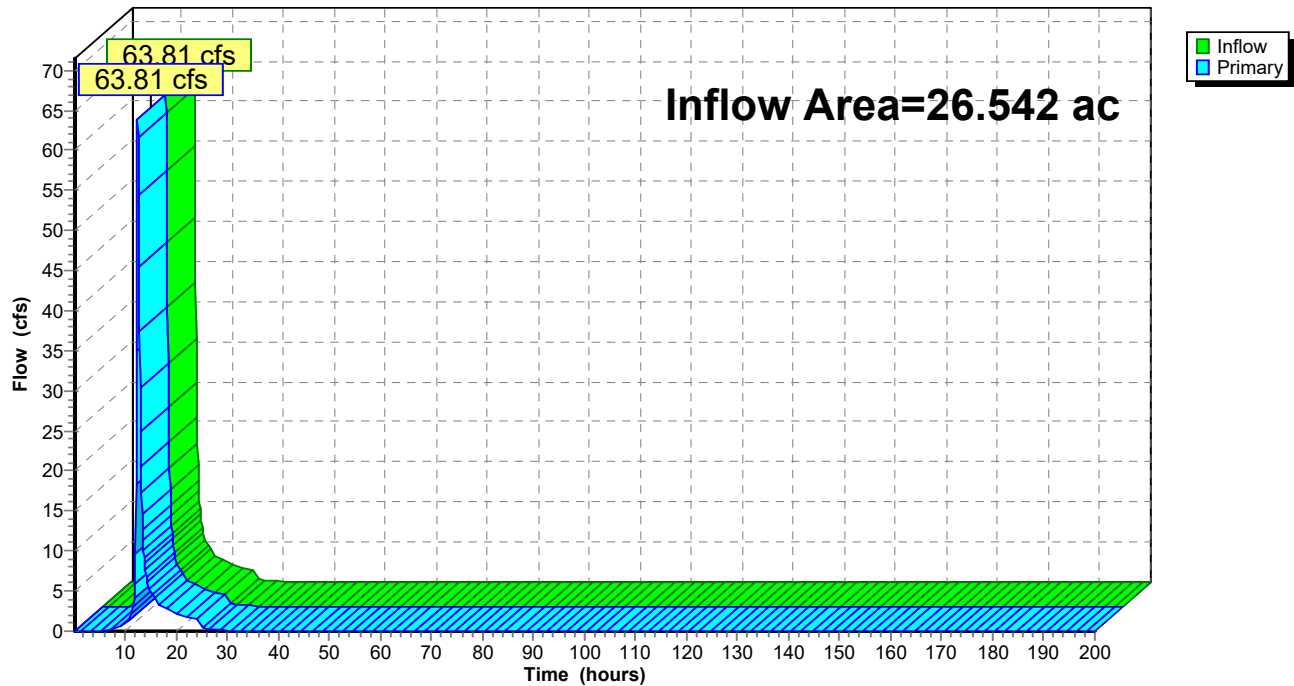
Summary for Link 3L: Post Ditch POA6

Inflow Area = 26.542 ac, 36.78% Impervious, Inflow Depth = 3.77" for 25-yr event
Inflow = 63.81 cfs @ 12.44 hrs, Volume= 8.334 af
Primary = 63.81 cfs @ 12.44 hrs, Volume= 8.334 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 3L: Post Ditch POA6

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Type II 24-hr 100-yr Rainfall=8.17"

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Time span=0.10-200.00 hrs, dt=0.10 hrs, 2000 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment3S: Post Dev. Basin 6 to Runoff Area=185,285 sf 75.67% Impervious Runoff Depth=7.09"
Tc=5.0 min CN=91 Runoff=41.82 cfs 2.514 af

Subcatchment4S: Post Dev. Bypass 6 Runoff Area=257,427 sf 1.66% Impervious Runoff Depth=3.46"
Tc=5.0 min CN=60 Runoff=32.88 cfs 1.705 af

Subcatchment5S: Post Dev. Bypass 8 Runoff Area=289,814 sf 1.87% Impervious Runoff Depth=3.69"
Flow Length=826' Slope=0.0447 '/' Tc=9.1 min CN=62 Runoff=36.97 cfs 2.045 af

Subcatchment9S: Area 4 Runoff Area=423,660 sf 65.00% Impervious Runoff Depth=6.38"
Tc=18.0 min CN=85 Runoff=68.97 cfs 5.169 af

Reach 2R: Flowpath Downstream Avg. Flow Depth=6.62' Max Vel=1.82 fps Inflow=139.62 cfs 11.428 af
n=0.100 L=1,509.0' S=0.0154 '/' Capacity=6.78 cfs Outflow=92.71 cfs 11.427 af

Pond 4P: Wet Pond SCM 4 Peak Elev=527.19' Storage=60,840 cf Inflow=41.82 cfs 2.514 af
Outflow=21.85 cfs 2.510 af

Link 2L: POA 5 Inflow=45.34 cfs 4.214 af
Primary=45.34 cfs 4.214 af

Link 3L: Post Ditch POA6 Inflow=92.71 cfs 11.427 af
Primary=92.71 cfs 11.427 af

Total Runoff Area = 26.542 ac Runoff Volume = 11.432 af Average Runoff Depth = 5.17"
63.22% Pervious = 16.779 ac 36.78% Impervious = 9.763 ac

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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 3S: Post Dev. Basin 6 to SCM

Runoff = 41.82 cfs @ 11.95 hrs, Volume= 2.514 af, Depth= 7.09"
Routed to Pond 4P : Wet Pond SCM 4

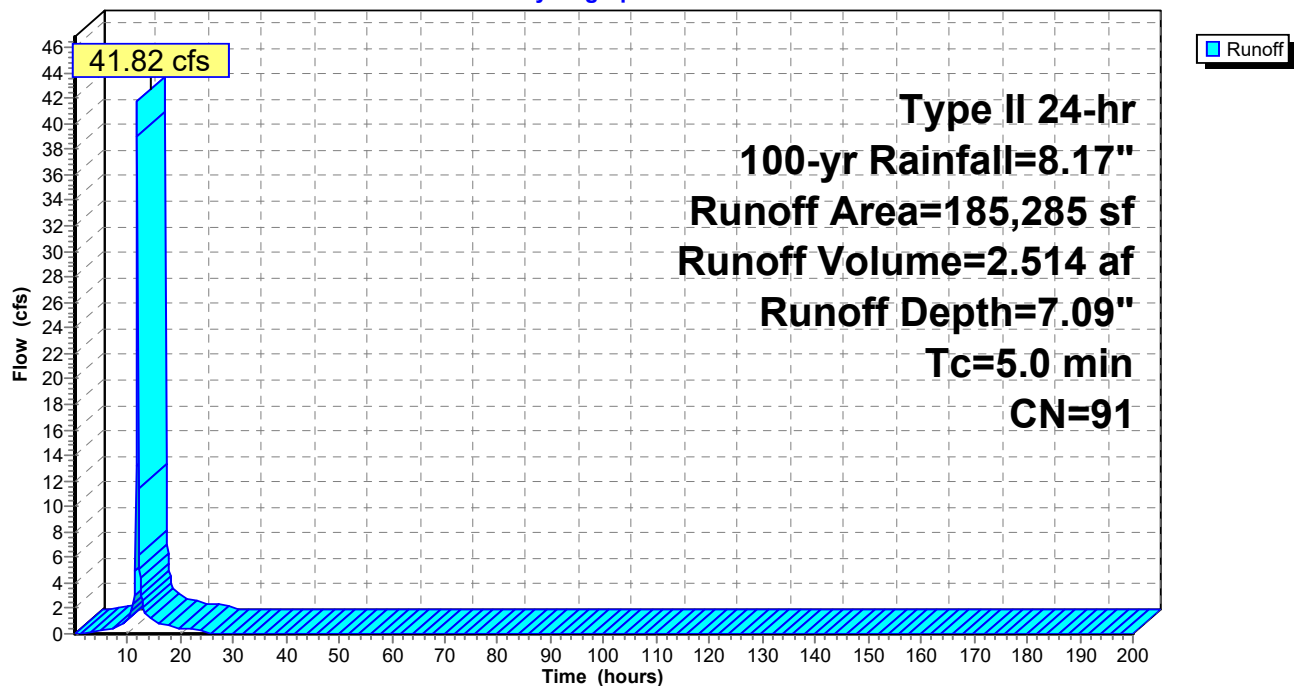
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
76,830	98	Paved parking, HSG B
63,382	98	Roofs, HSG B
30,858	56	Brush, Fair, HSG B
14,215	98	Water Surface, 0% imp, HSG B
185,285	91	Weighted Average
45,073		24.33% Pervious Area
140,212		75.67% Impervious Area

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

Subcatchment 3S: Post Dev. Basin 6 to SCM

Hydrograph



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Summary for Subcatchment 4S: Post Dev. Bypass 6

Runoff = 32.88 cfs @ 11.96 hrs, Volume= 1.705 af, Depth= 3.46"
Routed to Link 2L : POA 5

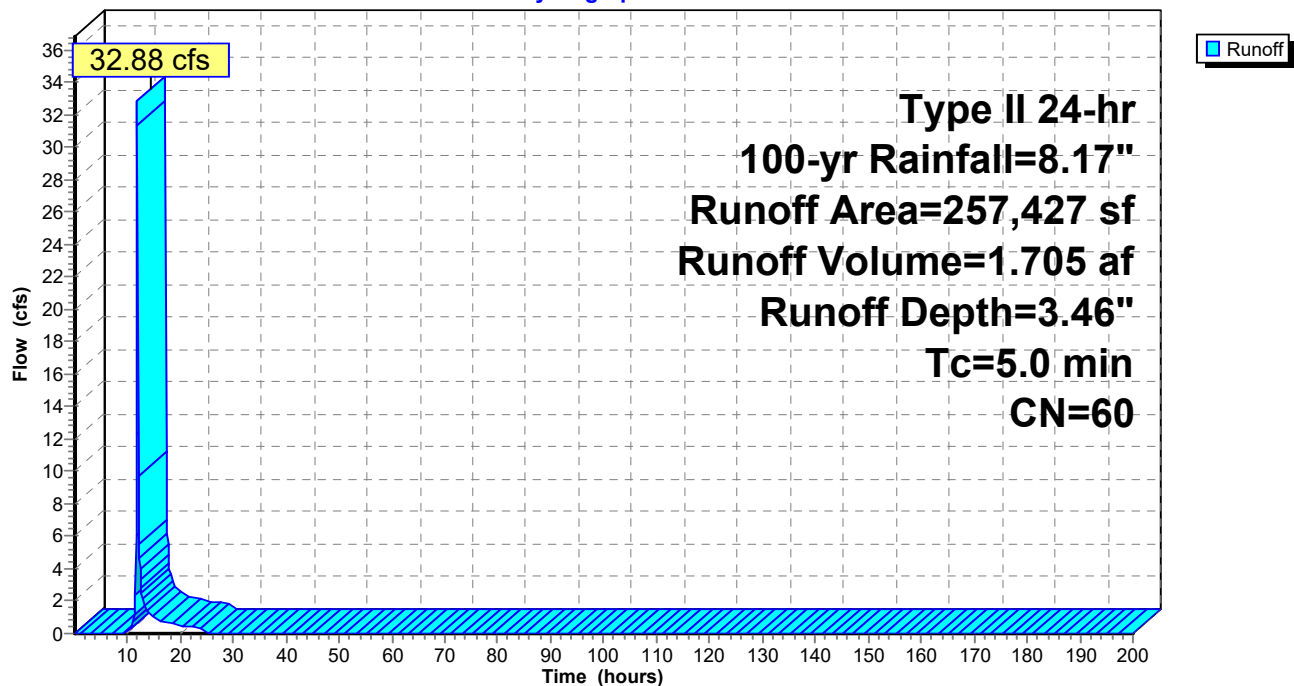
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
4,268	98	Paved parking, HSG B
51,015	56	Brush, Fair, HSG B
202,144	60	Woods, Fair, HSG B
257,427	60	Weighted Average
253,159		98.34% Pervious Area
4,268		1.66% Impervious Area

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

Subcatchment 4S: Post Dev. Bypass 6

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 5S: Post Dev. Bypass 8

Runoff = 36.97 cfs @ 12.00 hrs, Volume= 2.045 af, Depth= 3.69"
Routed to Reach 2R : Flowpath Downstream POA 6

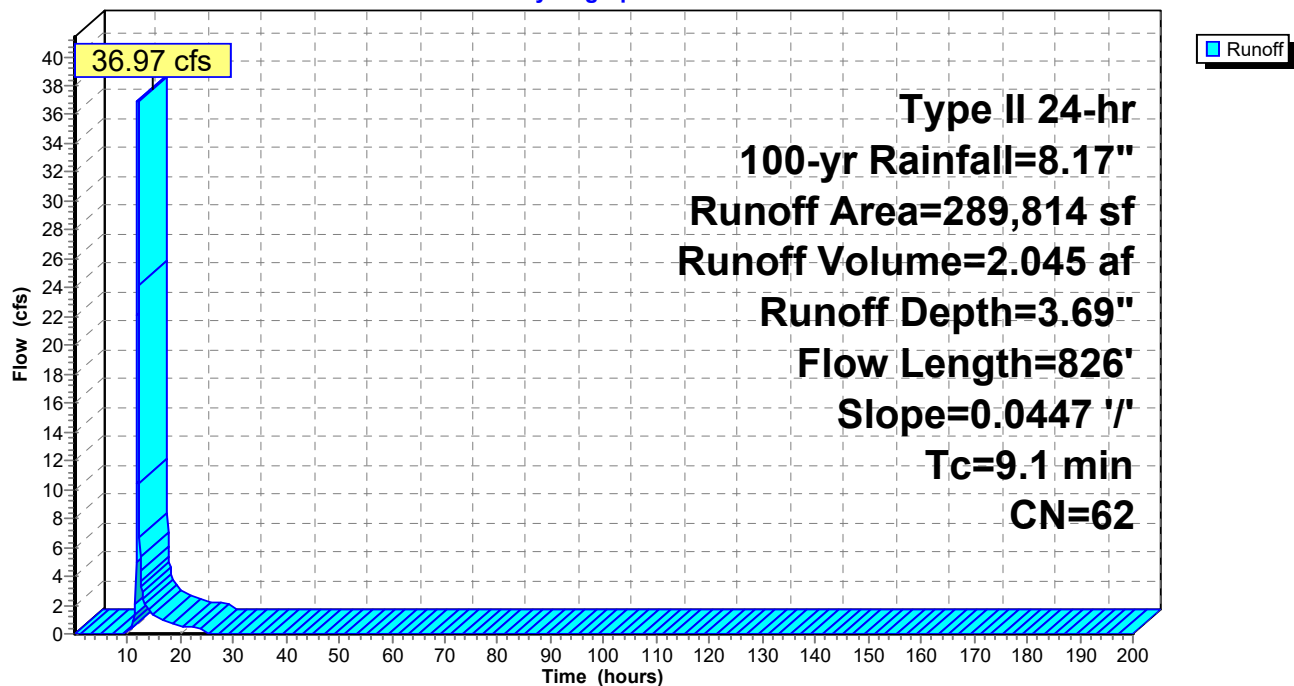
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
230,959	60	Woods, Fair, HSG B
53,439	69	50-75% Grass cover, Fair, HSG B
5,416	98	Paved parking, HSG B
289,814	62	Weighted Average
284,398		98.13% Pervious Area
5,416		1.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	826	0.0447	1.51		Kirpich Method, General overland flow k= 2.00

Subcatchment 5S: Post Dev. Bypass 8

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Subcatchment 9S: Area 4

Runoff = 68.97 cfs @ 12.10 hrs, Volume= 5.169 af, Depth= 6.38"

Routed to Reach 2R : Flowpath Downstream POA 6

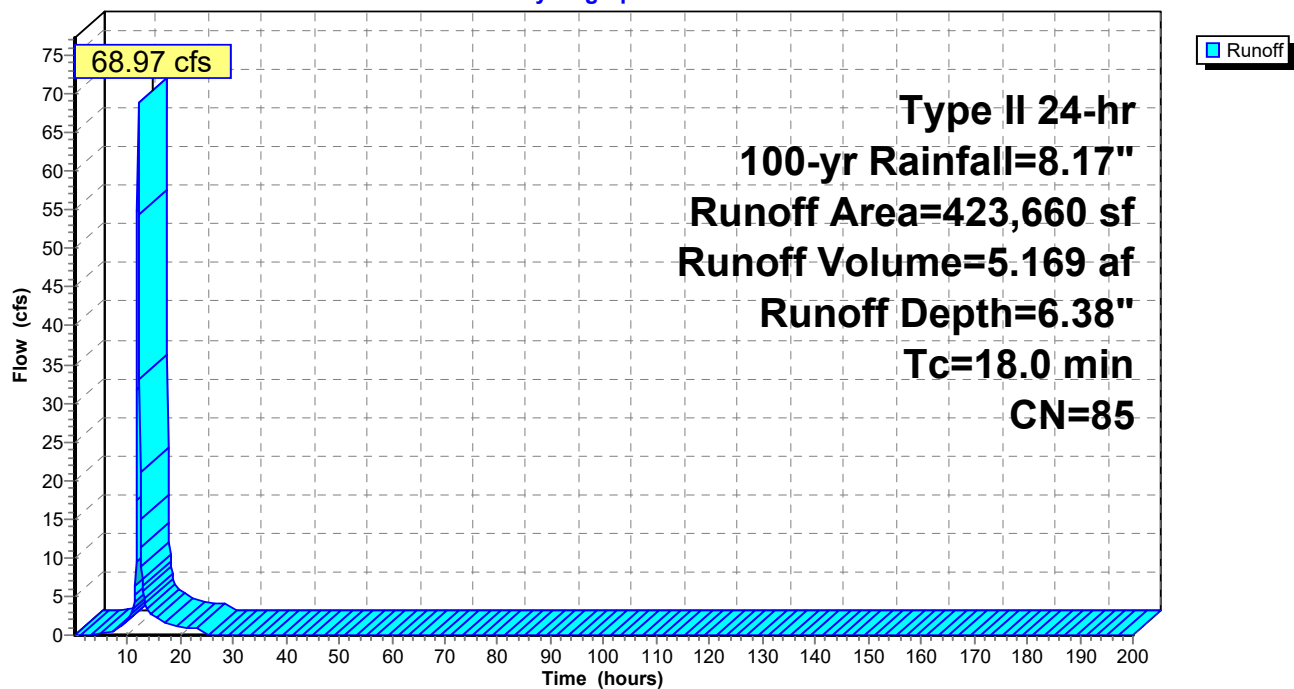
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs
Type II 24-hr 100-yr Rainfall=8.17"

Area (sf)	CN	Description
423,660	85	1/8 acre lots, 65% imp, HSG B
148,281		35.00% Pervious Area
275,379		65.00% Impervious Area

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

Subcatchment 9S: Area 4

Hydrograph



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Type II 24-hr 100-yr Rainfall=8.17"

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Summary for Reach 2R: Flowpath Downstream POA 6

Inflow Area = 26.542 ac, 36.78% Impervious, Inflow Depth = 5.17" for 100-yr event
Inflow = 139.62 cfs @ 12.03 hrs, Volume= 11.428 af
Outflow = 92.71 cfs @ 12.42 hrs, Volume= 11.427 af, Atten= 34%, Lag= 23.5 min
Routed to Link 3L : Post Ditch POA6

Routing by Stor-Ind+Trans method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Max. Velocity= 1.82 fps, Min. Travel Time= 13.8 min

Avg. Velocity= 0.35 fps, Avg. Travel Time= 71.4 min

Peak Storage= 77,862 cf @ 12.19 hrs

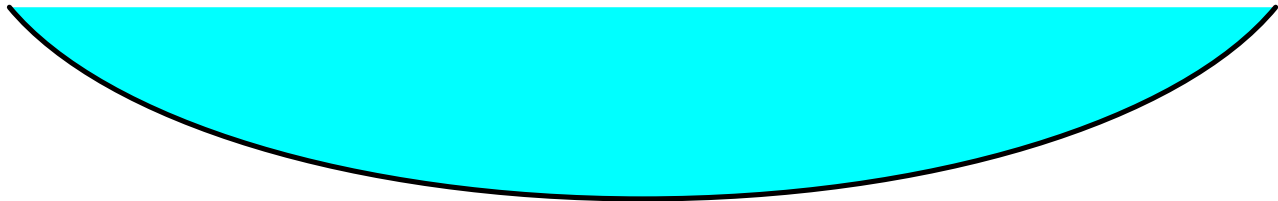
Average Depth at Peak Storage= 6.62' , Surface Width= 21.76'

Bank-Full Depth= 0.94' Flow Area= 5.1 sf, Capacity= 6.78 cfs

8.20' x 0.94' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

Length= 1,509.0' Slope= 0.0154 '/'

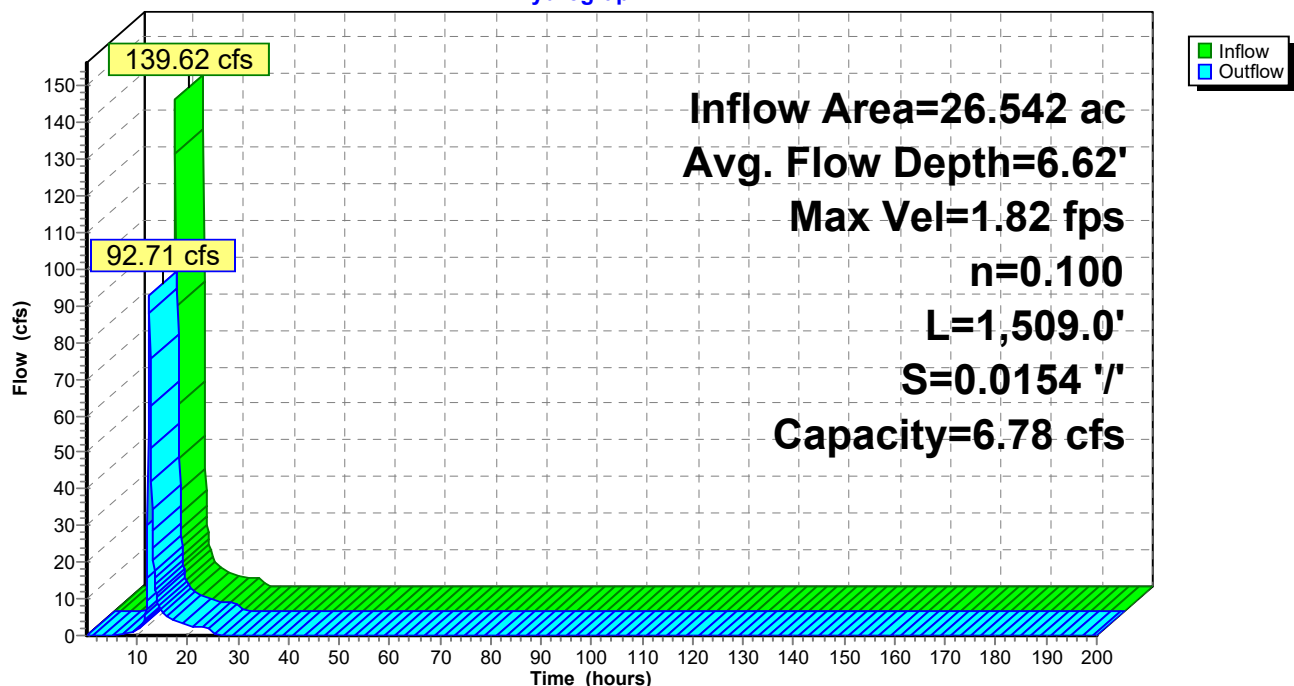
Inlet Invert= 505.43', Outlet Invert= 482.25'



‡

Reach 2R: Flowpath Downstream POA 6

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Summary for Pond 4P: Wet Pond SCM 4

Inflow Area = 4.254 ac, 75.67% Impervious, Inflow Depth = 7.09" for 100-yr event
 Inflow = 41.82 cfs @ 11.95 hrs, Volume= 2.514 af
 Outflow = 21.85 cfs @ 12.10 hrs, Volume= 2.510 af, Atten= 48%, Lag= 9.1 min
 Primary = 21.85 cfs @ 12.10 hrs, Volume= 2.510 af
 Routed to Link 2L : POA 5

Routing by Stor-Ind method, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Starting Elev= 522.00' Surf.Area= 7,056 sf Storage= 6,623 cf

Peak Elev= 527.19' @ 12.10 hrs Surf.Area= 12,441 sf Storage= 60,840 cf (54,217 cf above start)

Plug-Flow detention time= 1,395.3 min calculated for 2.357 af (94% of inflow)

Center-of-Mass det. time= 1,272.0 min (2,039.5 - 767.5)

Volume	Invert	Avail.Storage	Storage Description
#1	521.00'	71,189 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
521.00	6,190	0	0
522.00	7,056	6,623	6,623
522.50	8,333	3,847	10,470
523.00	9,531	4,466	14,936
524.00	10,198	9,865	24,801
525.00	10,883	10,541	35,341
526.00	11,584	11,234	46,575
527.00	12,303	11,944	58,518
528.00	13,038	12,671	71,189

Device	Routing	Invert	Outlet Devices
#1	Primary	522.00'	36.0" Round Culvert L= 45.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 522.00' / 521.50' S= 0.0111 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf
#2	Device 1	522.00'	1.5" Vert. Drawdown C= 0.600 Limited to weir flow at low heads
#3	Device 1	525.40'	40.0" W x 4.0" H Vert. Peakflow Orifice X 2.00 C= 0.600 Limited to weir flow at low heads
#4	Device 1	526.90'	48.0" x 48.0" Horiz. Overflow C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=21.54 cfs @ 12.10 hrs HW=527.18' (Free Discharge)

1=Culvert (Passes 21.54 cfs of 65.30 cfs potential flow)
 2=Drawdown (Orifice Controls 0.13 cfs @ 10.89 fps)
 3=Peakflow Orifice (Orifice Controls 13.59 cfs @ 6.12 fps)
 4=Overflow (Weir Controls 7.81 cfs @ 1.73 fps)

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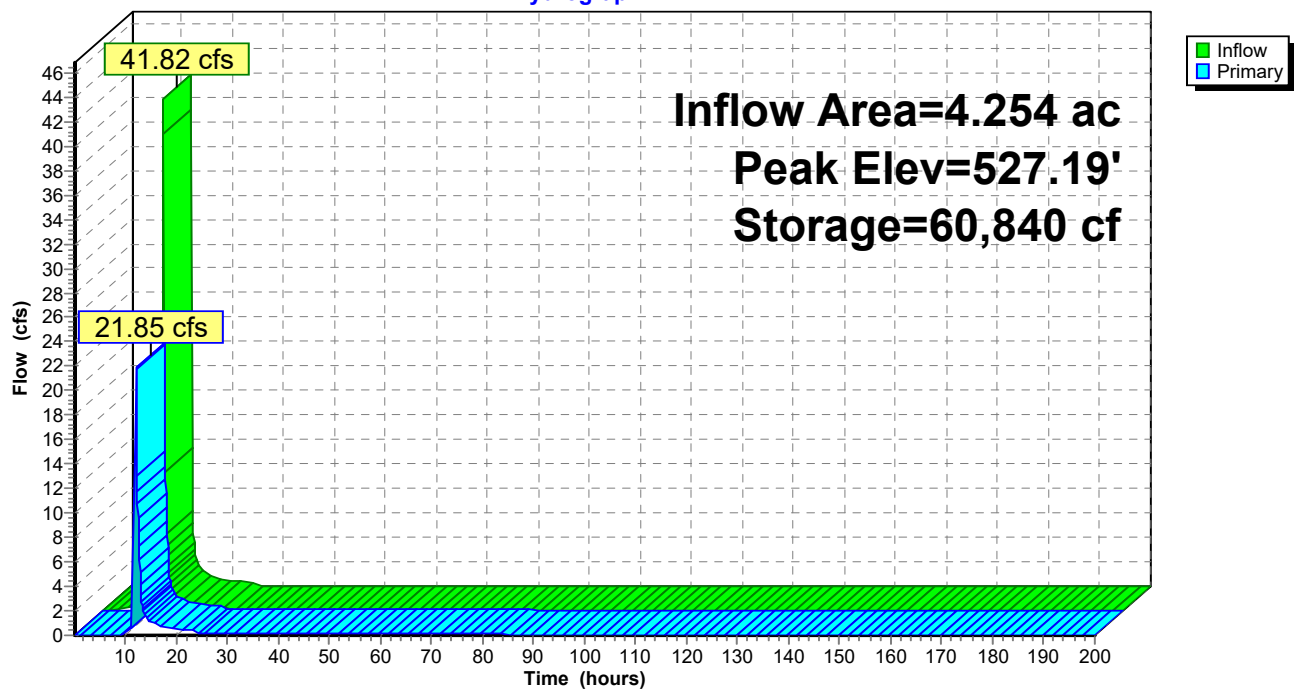
Type II 24-hr 100-yr Rainfall=8.17"

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Pond 4P: Wet Pond SCM 4

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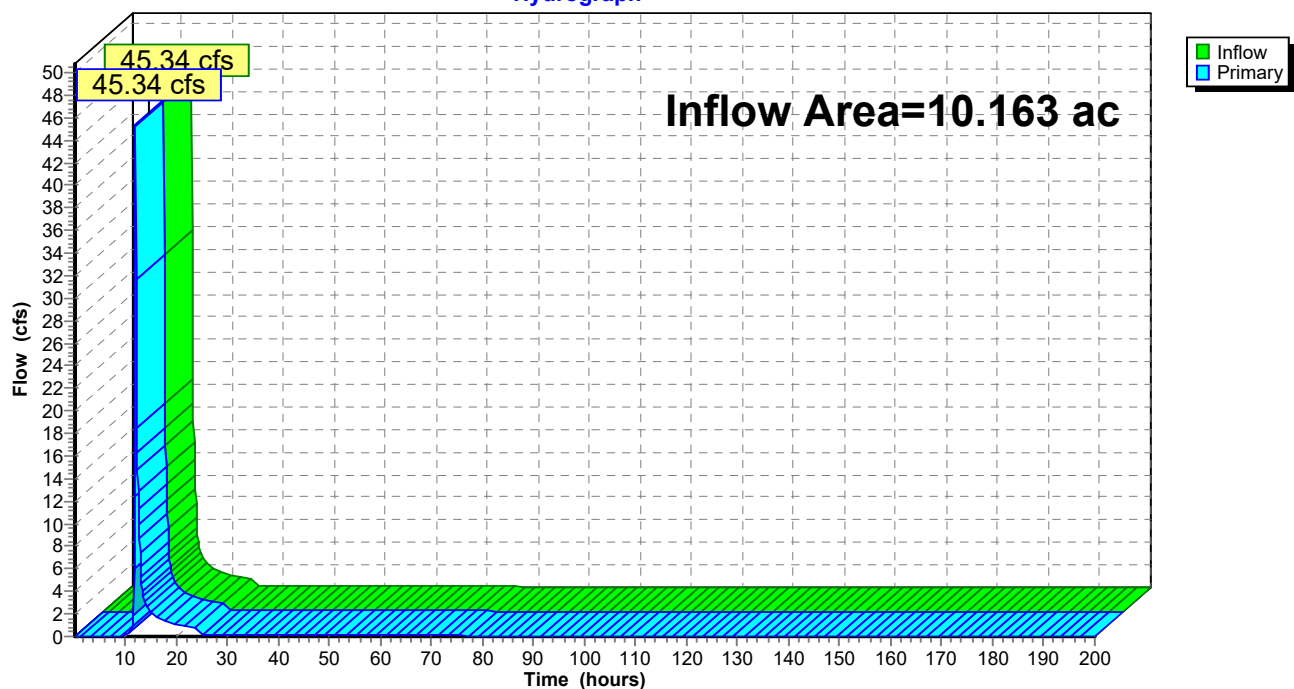
Summary for Link 2L: POA 5

Inflow Area = 10.163 ac, 32.64% Impervious, Inflow Depth = 4.98" for 100-yr event
Inflow = 45.34 cfs @ 11.99 hrs, Volume= 4.214 af
Primary = 45.34 cfs @ 11.99 hrs, Volume= 4.214 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 2R : Flowpath Downstream POA 6

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 2L: POA 5

Hydrograph



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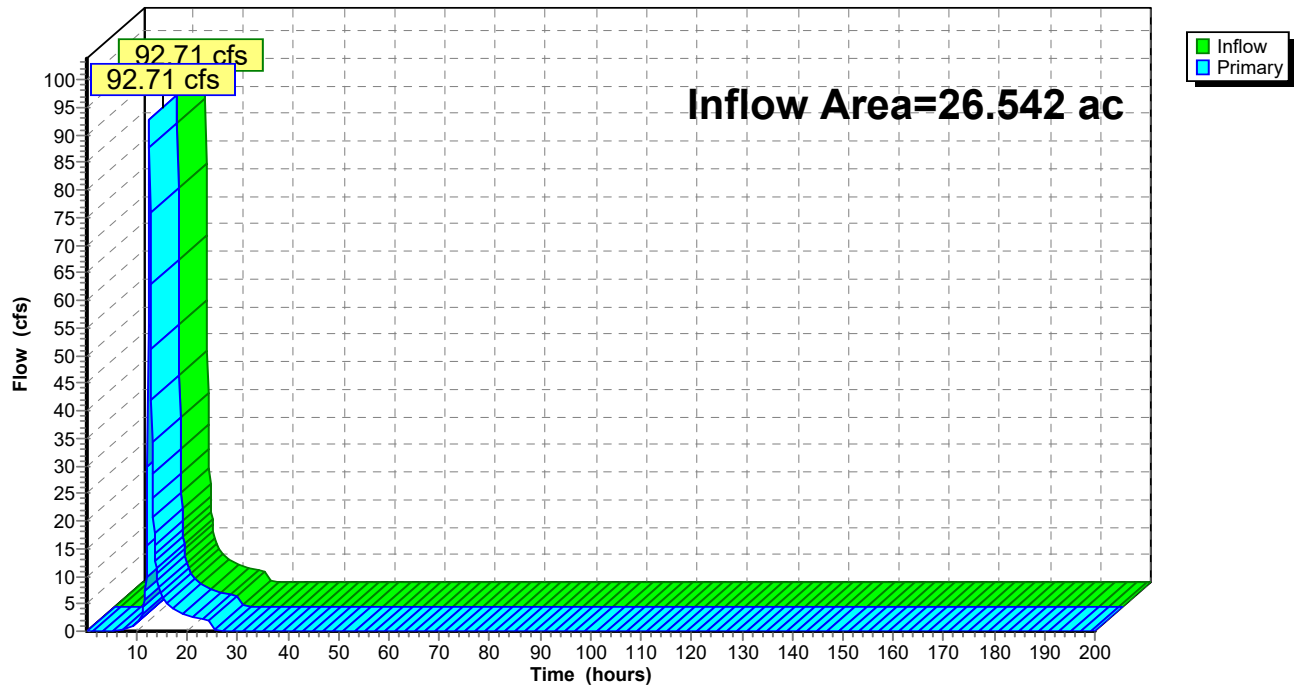
Summary for Link 3L: Post Ditch POA6

Inflow Area = 26.542 ac, 36.78% Impervious, Inflow Depth = 5.17" for 100-yr event
Inflow = 92.71 cfs @ 12.42 hrs, Volume= 11.427 af
Primary = 92.71 cfs @ 12.42 hrs, Volume= 11.427 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.10-200.00 hrs, dt= 0.10 hrs

Link 3L: Post Ditch POA6

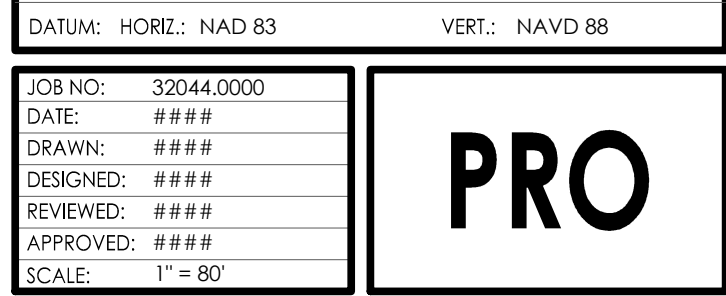
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6. DITCH PROFILES WITH STATIONS & ELEVATIONS

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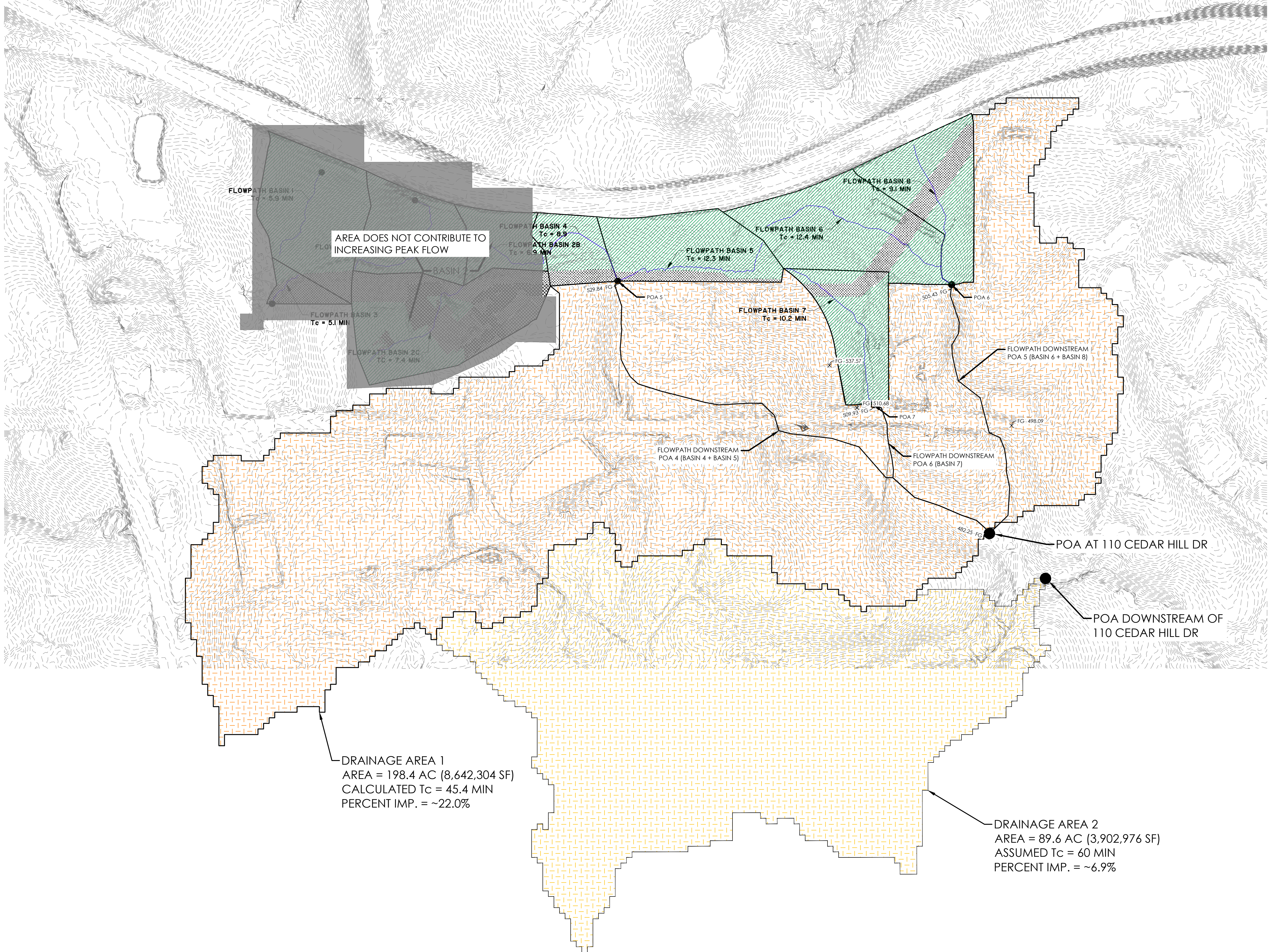
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NO.	REVISIONS	BY	DATE



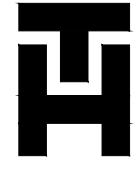
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7. PRE AND POST DEVELOPMENT MAPS FOR SECOND STUDY

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NO.	REVISIONS	BY	DATE



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Durham, NC 27713 • 919.682.0368
www.thomasandhutton.com

PRE DEV STUDY 3

860 WEAVER DAIRY ROAD

PROJECT LOCATION:

####

CLIENT/OWNER:
LAND PLANNING & ENTITLEMENTS
157 EAST FRANKLIN STREET
CHAPEL HILL, NC 27514



GRAPHIC SCALE:
1 INCH = 250 FEET

DATUM: HORIZ.: NAV 83 VERT.: NAVD 88

JOB NO: 32044.0000
DATE: 10/21/25
DRAWN: ASL
DESIGNED:
REVIEWED: AO
APPROVED:
SCALE: 1" = 250'

PRE