

## Appendix M – Stormwater Management

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# M.1 - Rainfall Totals and Distributions



Client: Zion Landfill, Inc.  
 Project: Zion Landfill – Site 2 North Expansion  
 Project #: 631020105  
 Calculated By: SJW Date: 05/2022  
 Checked By: DAM Date: 05/2022

**TITLE: RAINFALL TOTALS AND DISTRIBUTIONS**

## Problem Statement

Determine the rainfall totals and distributions of the 24-hour and 1-hour storm events for the 2-year, 10-year, 25-year, and 100-year frequencies. The rainfall totals and distributions are used in the HydroCAD Version 10 (HydroCAD) computer model to determine rainfall runoff quantities.

## Given

Rainfall data used for the Site 2 North Expansion area was obtained from Appendix I of the Lake County Watershed Development Ordinance (WDO) published by the Lake County Stormwater Management Commission, effective October 13, 2020 (see attached reference). The most recent version of the WDO includes updated rainfall depths obtained from the Illinois State Water Survey (ISWS) Bulletin 75 - Precipitation Frequency Study for Illinois authored by James R. Angel and Momcilo Markus in March 2020.

In addition to updating rainfall depths, the ISWS Bulletin 75 also provides an update to the companion distribution bulletin (Bulletin 70) that defines rainfall distributions. The rainfall distributions defined in Bulletin 70 are commonly known as “Huff distributions” named after the author of the bulletin. Bulletin 70 and consequently Bulletin 75 outlines that first-quartile distribution patterns are appropriate for use in short duration events (1-hour storms), while third-quartile distribution patterns are appropriate for long duration events (24-hour storms). These distribution patterns are programmed into HydroCAD based on the information provided in Appendix I of the WDO (see attached reference).

## Results

The 24-hour and 1-hour storm events for the 2-year, 10-year, 25-year and 100-year frequencies for the “Northeast” climatic section of Illinois, where the proposed Site 2 North Expansion area is located, are summarized below.

Recurrence Interval	1-Hour (inches)	24-Hour (inches)
2-Year	1.57	3.34
10-Year	2.42	5.15
25-Year	3.03	6.45
100-Year	4.03	8.57



LAKE COUNTY  
WATERSHED DEVELOPMENT ORDINANCE

OF

LAKE COUNTY, ILLINOIS

ORIGINAL EFFECTIVE DATE

October 18, 1992

Approved as Amended

By the

Lake County Board

July 12, 1994

August 10, 1999

October 10, 2000

August 14, 2001

November 8, 2005

January 10, 2006

October 10, 2006 (Appendix C)

November 18, 2008

July 10, 2012

June 11, 2013

October 13, 2015

October 13, 2020

# Appendix I: Rainfall Depth Duration Frequency Tables for Lake County

**Rainfall Depth Duration Frequency Tables for Lake County**  
**Rainfall is in Inches**

Storm Duration	2-month	3-month	4-month	6-month	9-month	1-year	2-year	5-year	10-year	25-year	50-year	100-year	500-year
5 minutes	0.19	0.22	0.24	0.27	0.31	0.33	0.40	0.52	0.62	0.77	0.90	1.03	1.35
10 minutes	0.35	0.40	0.43	0.49	0.56	0.61	0.73	0.95	1.13	1.42	1.65	1.89	2.47
15 minutes	0.42	0.49	0.53	0.61	0.69	0.75	0.90	1.16	1.39	1.74	2.03	2.32	3.04
30 minutes	0.58	0.66	0.73	0.83	0.94	1.03	1.24	1.59	1.91	2.39	2.78	3.17	4.16
1 hour	0.74	0.84	0.93	1.05	1.20	1.30	1.57	2.02	2.42	3.03	3.53	4.03	5.28
2 hours	0.91	1.04	1.14	1.30	1.48	1.61	1.94	2.49	2.99	3.74	4.35	4.97	6.52
3 hours	1.00	1.15	1.26	1.44	1.63	1.77	2.14	2.75	3.30	4.13	4.80	5.49	7.20
6 hours	1.18	1.35	1.48	1.68	1.91	2.08	2.51	3.23	3.86	4.84	5.63	6.43	8.43
12 hours	1.37	1.56	1.71	1.95	2.21	2.41	2.91	3.74	4.48	5.61	6.53	7.46	9.78
18 hours	1.48	1.69	1.85	2.11	2.39	2.61	3.14	4.04	4.84	6.06	7.05	8.06	10.57
24 hours	1.57	1.80	1.97	2.24	2.55	2.77	3.34	4.30	5.15	6.45	7.50	8.57	11.24
48 hours	1.72	1.97	2.16	2.46	2.79	3.04	3.66	4.71	5.62	6.99	8.13	9.28	12.10
72 hours	1.87	2.14	2.34	2.67	3.03	3.30	3.97	5.08	6.05	7.49	8.64	9.85	12.81
120 hours	2.08	2.38	2.61	2.97	3.37	3.67	4.42	5.63	6.68	8.16	9.39	10.66	13.81
240 hours	2.63	3.01	3.30	3.76	4.27	4.65	5.60	7.09	8.25	9.90	11.26	12.65	16.00

References: ISWS Bulletin 75 Precipitation Frequency Study for Illinois  
 James R. Angel and Momcilo Markus  
 Illinois State Water Survey, March 2020

## HUFF RAINFALL DISTRIBUTIONS

The Huff quartiles represent the typical rainfall distribution for 4 different storm duration ranges. The First quartile applies to storms less than or equal to 6 hours long. Second is for storms greater than 6 hours and less than or equal to 12 while the third is Huff quartile is for storms greater than 12 hours and less than or equal to 24 hours. Fourth quartile storms apply to storm durations greater than 24 hours.

AREA < 10 SM

AREA > 10 & AREA < 50

AREA > 50 & AREA < 400

Portion of the Storm	AREA < 10 SM				AREA > 10 & AREA < 50				AREA > 50 & AREA < 400			
	First Quartile	Second Quartile	Third Quartile	Fourth Quartile	First Quartile	Second Quartile	Third Quartile	Fourth Quartile	First Quartile	Second Quartile	Third Quartile	Fourth Quartile
0/24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1/24	8.36	2.29	2.05	2.31	6.41	1.48	1.33	1.48	4.59	0.88	0.72	0.90
2/24	17.73	4.82	4.31	4.79	15.69	3.57	3.02	3.34	13.49	2.38	1.85	2.29
3/24	28.11	7.78	6.67	7.12	27.45	6.39	5.13	5.72	25.94	4.93	3.47	4.36
4/24	38.33	11.33	9.12	9.78	38.91	10.02	7.53	8.56	39.17	8.52	5.57	7.10
5/24	47.45	15.79	11.71	12.53	49.34	14.71	10.01	11.69	51.04	13.19	8.28	9.93
6/24	55.50	21.39	14.36	15.23	58.55	20.89	12.65	14.19	60.79	19.59	10.96	12.84
7/24	62.25	28.41	16.91	17.91	65.88	28.91	15.24	17.19	69.26	27.46	13.79	15.46
8/24	67.22	36.44	19.64	20.33	71.10	37.55	18.17	19.69	74.80	37.17	16.35	17.83
9/24	70.82	45.29	22.78	22.83	74.92	46.86	21.46	22.27	78.74	47.77	19.66	20.12
10/24	74.17	54.35	26.33	25.41	78.30	56.25	25.36	24.81	82.20	58.18	23.46	23.12
11/24	76.97	62.38	30.93	28.35	81.16	64.84	29.90	27.46	85.13	67.64	28.07	25.76
12/24	79.81	69.76	36.35	31.25	83.75	72.90	35.60	30.33	87.38	75.86	34.06	28.26
13/24	82.55	75.48	43.92	33.90	86.20	79.07	43.42	32.42	89.58	82.04	42.30	30.99
14/24	85.18	80.38	52.11	36.33	88.64	83.97	52.18	34.28	91.45	86.92	52.02	33.68
15/24	87.40	84.70	61.02	38.61	90.81	87.58	61.88	36.89	93.35	90.33	62.76	36.12
16/24	89.47	87.81	69.89	41.24	92.58	90.67	71.81	39.73	94.80	93.09	72.80	39.07
17/24	91.17	90.22	78.19	45.08	93.99	92.76	80.43	43.85	95.99	94.82	82.27	42.93
18/24	92.70	92.17	84.92	51.29	95.19	94.59	87.25	49.87	96.94	96.25	89.19	48.98
19/24	94.03	93.81	89.74	59.31	96.35	95.97	92.01	58.93	97.70	97.34	93.60	59.22
20/24	95.36	95.29	93.11	69.19	97.27	97.10	95.04	69.85	98.35	98.21	96.33	71.66
21/24	96.56	96.57	95.34	80.05	98.03	97.99	96.90	82.36	98.86	98.83	97.97	85.18
22/24	97.74	97.74	97.06	89.71	98.74	98.72	98.22	92.59	99.28	99.30	98.98	94.64
23/24	98.85	98.84	98.56	96.04	99.37	99.39	99.21	97.96	99.66	99.67	99.58	98.77
24/24	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

References: ISWS Bulletin 75 Precipitation Frequency Study for Illinois  
 James R. Angel and Momcilo Markus  
 Illinois State Water Survey, March 2020

## M.2 - Subcatchment Delineation



Client: Zion Landfill, Inc.  
 Project: Zion Landfill – Site 2 North Expansion  
 Project #: 631020105  
 Calculated By: SJW Date: 05/2022  
 Checked By: DAM Date: 05/2022

**TITLE: SUBCATCHMENT DELINEATION**

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## Problem Statement

Delineate the subcatchment areas (watersheds) for existing and proposed final conditions for the Site 2 North Expansion area.

## Given

The stormwater management system that is described in this calculation represents all areas that will convey stormwater associated with the proposed Site 2 North Expansion. As such, the area for analysis in both the existing and proposed conditions includes all land development areas that will be hydrologically disturb and hydraulically connected portions of the existing facility that share common stormwater management features. For example, the existing landfill facility currently uses Stormwater Basin 5R. With the new landfill expansion design, stormwater from both the existing landfill and the proposed landfill expansion area will be directed to Stormwater Basin 5R will be accepting stormwater from both the existing landfill and the proposed expanded landfill; therefore, all areas that drain into Stormwater Basin 5R are delineated for evaluation.

Existing landfill areas that do not share common stormwater management areas or features with the expansion footprint are not included in this analysis. These features, which will remain unchanged, have already been analyzed and permitted.

## Permitted and Existing Conditions

The existing landfill facility is generally bounded to the east by Kenosha Road, to the west by Green Bay Road, to the south by 9th Street and to the north by a tree nursery, golf course, and residential properties along Kenosha Road. The proposed landfill expansion will increase the footprint of the facility to the north in the location of the existing tree nursery and current residential properties along Kenosha Road that are owned by GFL. The proposed landfill expansion area will be bounded to the west by a golf course, to the north by Russell Road, and to the east by Kenosha Road and residential properties.

The proposed landfill expansion area is located in two distinct sub-watershed boundaries. The western side of the proposed landfill area drains to the Upper Des Plaines River sub-watershed (part of the Des Plaines River Watershed), while the eastern side is part of the Kellogg Creek sub-watershed (part of the Lake Michigan Watershed). These sub-watershed boundaries were adapted from the Lake County Stormwater Management Commission maps and GIS Division maps.

As noted above, Stormwater Basin 5R is an existing, permitted stormwater detention basin that will collect water from the proposed landfill expansion area. A detailed stormwater analysis for this detention basin was developed for the existing landfill application, which was reviewed and approved by the Lake County Stormwater Management Commission. As such, Stormwater Basin 5R has been omitted from the existing conditions analysis because it has been previously reviewed and approved.

The subcatchment areas for the existing conditions are shown on **Figure M.2-1**.





Client: Zion Landfill, Inc.  
 Project: Zion Landfill – Site 2 North Expansion  
 Project #: 631020105  
 Calculated By: SJW Date: 05/2022  
 Checked By: DAM Date: 05/2022

**TITLE: SUBCATCHMENT DELINEATION**

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### Proposed Conditions

The proposed conditions analysis considers the entire proposed landfill expansion footprint as well as portions of the existing landfill that will be directed into the proposed stormwater management system and areas that will flow into Stormwater Basin 5R. The proposed conditions analysis considers more acreage than the existing conditions analysis due to the modification of the drainage area flowing to Stormwater Basin 5R and the stormwater modeling necessary to ensure compliance is maintained at Stormwater Basin 5R.

A new stormwater basin, Stormwater Basin 8, will be constructed to the north of the proposed expansion waste boundary. Stormwater Basin 8 will collect and convey stormwater from the western and northern portions of the proposed landfill expansion area and stormwater from the north slope of the existing landfill that previously flowed to Stormwater Basin 5R. The eastern portion of the proposed landfill expansion area, as well as the east and southeast areas of the existing landfill will be directed to flow into Stormwater Basin 5R.

For the proposed conditions analysis, subcatchment areas were delineated based on final buildout conditions of the proposed landfill expansion. Subcatchment areas were delineated using topographic divides and stormwater management feature locations including terrace berms, downchutes, flume pipes (letdown pipes), perimeter ditches, and stormwater basins. In addition, hydrologically disturbed areas that are not conveyed to stormwater basins have also been delineated including portions of the perimeter screening berm.

Portions of the landfill expansion area will not be hydrologically disturbed. Effort has been made to preserve a stand of old trees that are located to the east of the proposed landfill expansion area. A drain tile will be constructed to ensure that ponding does not occur in this area. The drain tile will be routed to Stormwater Basin 8.

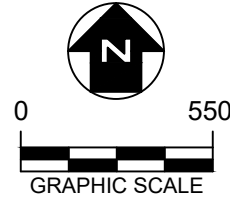
The subcatchment areas for the proposed conditions are shown on **Figure M.2-2**.

### **Results**

**Figures M.2-1** and **M.2-2** depict the delineations of the existing and proposed stormwater subcatchment areas for the Site 2 North Expansion. The attached **Tables M.2-1** and **M.2-2** summarize the approximate acreage of all subcatchment areas for the existing and proposed conditions, respectively, and identify the ultimate discharge locations for each area.



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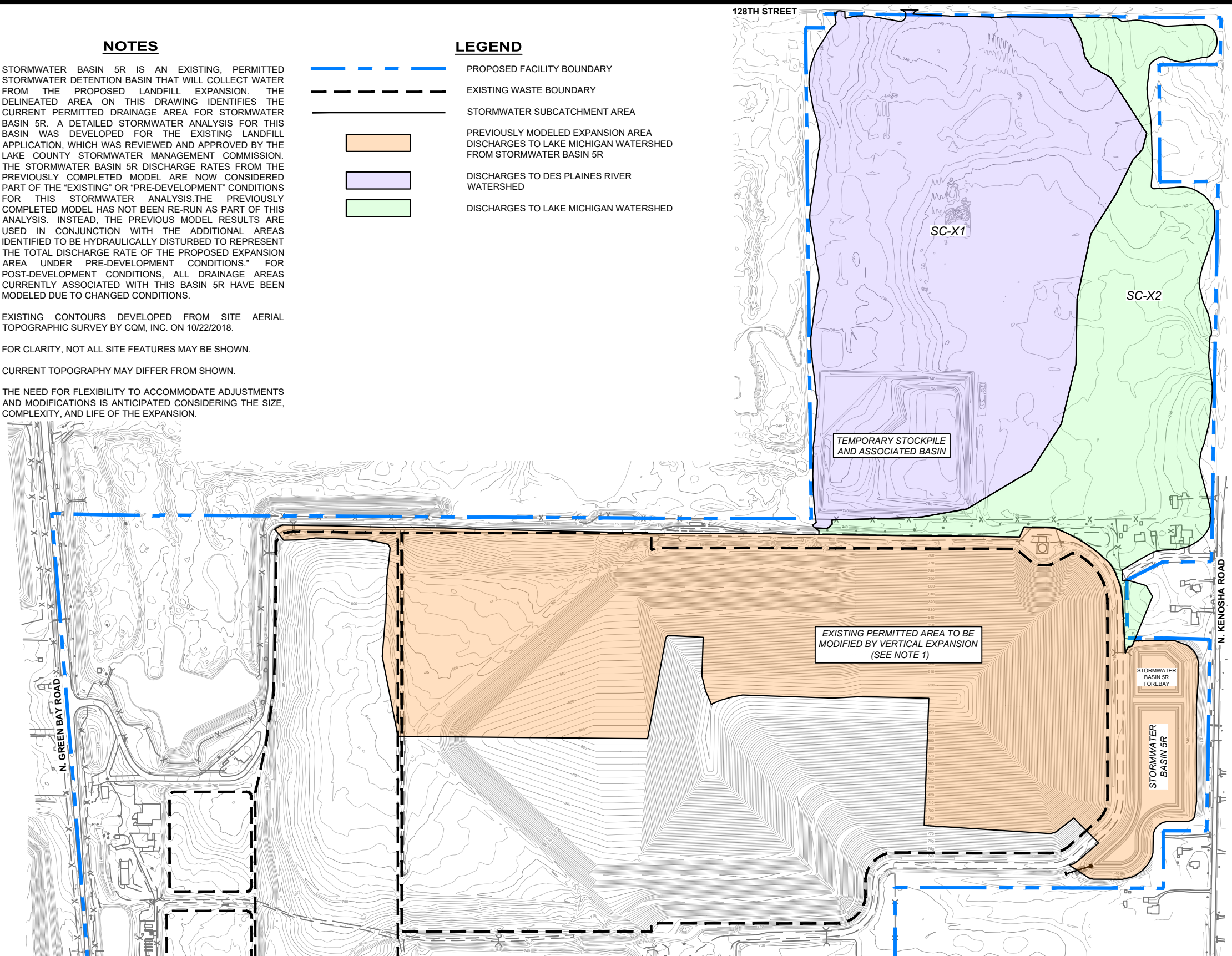


**NOTES**

1. STORMWATER BASIN 5R IS AN EXISTING, PERMITTED STORMWATER DETENTION BASIN THAT WILL COLLECT WATER FROM THE PROPOSED LANDFILL EXPANSION. THE DELINEATED AREA ON THIS DRAWING IDENTIFIES THE CURRENT PERMITTED DRAINAGE AREA FOR STORMWATER BASIN 5R. A DETAILED STORMWATER ANALYSIS FOR THIS BASIN WAS DEVELOPED FOR THE EXISTING LANDFILL APPLICATION, WHICH WAS REVIEWED AND APPROVED BY THE LAKE COUNTY STORMWATER MANAGEMENT COMMISSION. THE STORMWATER BASIN 5R DISCHARGE RATES FROM THE PREVIOUSLY COMPLETED MODEL ARE NOW CONSIDERED PART OF THE "EXISTING" OR "PRE-DEVELOPMENT" CONDITIONS FOR THIS STORMWATER ANALYSIS. THE PREVIOUSLY COMPLETED MODEL HAS NOT BEEN RE-RUN AS PART OF THIS ANALYSIS. INSTEAD, THE PREVIOUS MODEL RESULTS ARE USED IN CONJUNCTION WITH THE ADDITIONAL AREAS IDENTIFIED TO BE HYDRAULICALLY DISTURBED TO REPRESENT THE TOTAL DISCHARGE RATE OF THE PROPOSED EXPANSION AREA UNDER "PRE-DEVELOPMENT" CONDITIONS." FOR POST-DEVELOPMENT CONDITIONS, ALL DRAINAGE AREAS CURRENTLY ASSOCIATED WITH THIS BASIN 5R HAVE BEEN MODELED DUE TO CHANGED CONDITIONS.
2. EXISTING CONTOURS DEVELOPED FROM SITE AERIAL TOPOGRAPHIC SURVEY BY CQM, INC. ON 10/22/2018.
3. FOR CLARITY, NOT ALL SITE FEATURES MAY BE SHOWN.
4. CURRENT TOPOGRAPHY MAY DIFFER FROM SHOWN.
5. THE NEED FOR FLEXIBILITY TO ACCOMMODATE ADJUSTMENTS AND MODIFICATIONS IS ANTICIPATED CONSIDERING THE SIZE, COMPLEXITY, AND LIFE OF THE EXPANSION.

**LEGEND**

- PROPOSED FACILITY BOUNDARY
- EXISTING WASTE BOUNDARY
- STORMWATER SUBCATCHMENT AREA
- PREVIOUSLY MODELED EXPANSION AREA DISCHARGES TO LAKE MICHIGAN WATERSHED FROM STORMWATER BASIN 5R
- DISCHARGES TO DES PLAINES RIVER WATERSHED
- DISCHARGES TO LAKE MICHIGAN WATERSHED



REV. NO.	DATE	DESCRIPTION
REV. 1	OCT. 2020	REVISION BASED ON UPDATE TO WDO



**APTIM Environmental & Infrastructure, LLC**

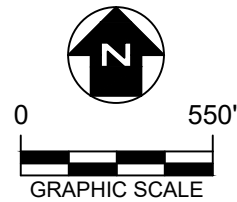
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**ZION LANDFILL SITE 2 NORTH EXPANSION  
LAKE COUNTY, ILLINOIS**

**M.2-1  
STORMWATER SUBCATCHMENT AREAS  
PERMITTED/EXISTING CONDITIONS**

DRAWN BY:	SJW	APPROVED BY:	DAM	PROJ. NO.:	631020105	DATE:	AUGUST 2021
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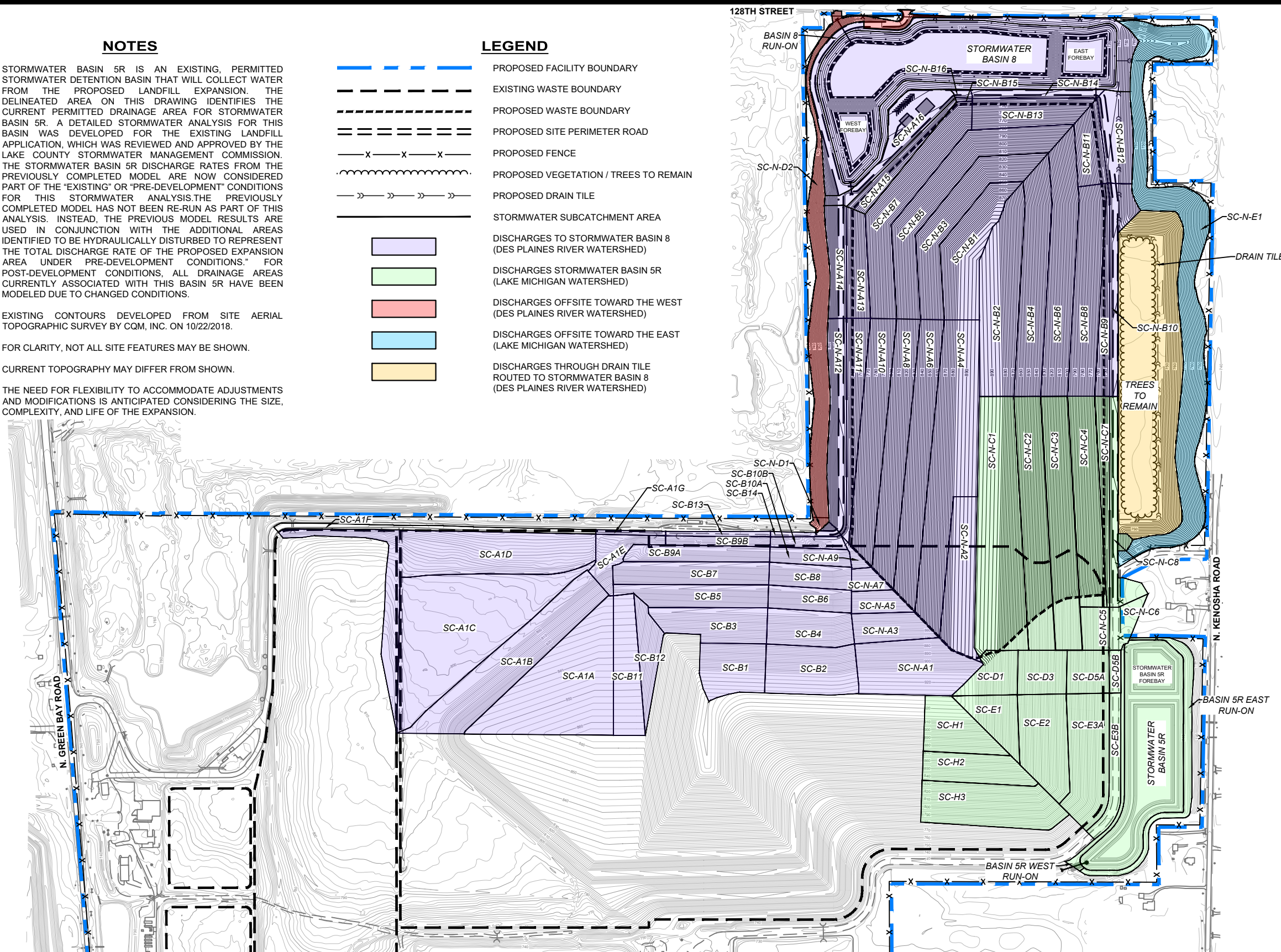


**NOTES**

1. STORMWATER BASIN 5R IS AN EXISTING, PERMITTED STORMWATER DETENTION BASIN THAT WILL COLLECT WATER FROM THE PROPOSED LANDFILL EXPANSION. THE DELINEATED AREA ON THIS DRAWING IDENTIFIES THE CURRENT PERMITTED DRAINAGE AREA FOR STORMWATER BASIN 5R. A DETAILED STORMWATER ANALYSIS FOR THIS BASIN WAS DEVELOPED FOR THE EXISTING LANDFILL APPLICATION, WHICH WAS REVIEWED AND APPROVED BY THE LAKE COUNTY STORMWATER MANAGEMENT COMMISSION. THE STORMWATER BASIN 5R DISCHARGE RATES FROM THE PREVIOUSLY COMPLETED MODEL ARE NOW CONSIDERED PART OF THE "EXISTING" OR "PRE-DEVELOPMENT" CONDITIONS FOR THIS STORMWATER ANALYSIS. THE PREVIOUSLY COMPLETED MODEL HAS NOT BEEN RE-RUN AS PART OF THIS ANALYSIS. INSTEAD, THE PREVIOUS MODEL RESULTS ARE USED IN CONJUNCTION WITH THE ADDITIONAL AREAS IDENTIFIED TO BE HYDRAULICALLY DISTURBED TO REPRESENT THE TOTAL DISCHARGE RATE OF THE PROPOSED EXPANSION AREA UNDER "PRE-DEVELOPMENT CONDITIONS." FOR POST-DEVELOPMENT CONDITIONS, ALL DRAINAGE AREAS CURRENTLY ASSOCIATED WITH THIS BASIN 5R HAVE BEEN MODELED DUE TO CHANGED CONDITIONS.
2. EXISTING CONTOURS DEVELOPED FROM SITE AERIAL TOPOGRAPHIC SURVEY BY CQM, INC. ON 10/22/2018.
3. FOR CLARITY, NOT ALL SITE FEATURES MAY BE SHOWN.
4. CURRENT TOPOGRAPHY MAY DIFFER FROM SHOWN.
5. THE NEED FOR FLEXIBILITY TO ACCOMMODATE ADJUSTMENTS AND MODIFICATIONS IS ANTICIPATED CONSIDERING THE SIZE, COMPLEXITY, AND LIFE OF THE EXPANSION.

**LEGEND**

- PROPOSED FACILITY BOUNDARY
- EXISTING WASTE BOUNDARY
- PROPOSED WASTE BOUNDARY
- PROPOSED SITE PERIMETER ROAD
- PROPOSED FENCE
- PROPOSED VEGETATION / TREES TO REMAIN
- PROPOSED DRAIN TILE
- STORMWATER SUBCATCHMENT AREA
- DISCHARGES TO STORMWATER BASIN 8 (DES PLAINES RIVER WATERSHED)
- DISCHARGES STORMWATER BASIN 5R (LAKE MICHIGAN WATERSHED)
- DISCHARGES OFFSITE TOWARD THE WEST (DES PLAINES RIVER WATERSHED)
- DISCHARGES OFFSITE TOWARD THE EAST (LAKE MICHIGAN WATERSHED)
- DISCHARGES THROUGH DRAIN TILE ROUTED TO STORMWATER BASIN 8 (DES PLAINES RIVER WATERSHED)



REV. NO.	DATE	DESCRIPTION
REV. 1	OCT. 2020	REVISION BASED ON UPDATE TO WDO



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**ZION LANDFILL SITE 2 NORTH EXPANSION  
LAKE COUNTY, ILLINOIS**

**M.2-2  
STORMWATER SUBCATCHMENT AREAS  
PROPOSED CONDITIONS**

DRAWN BY:	SJW	APPROVED BY:	DAM	PROJ. NO.:	631020105	DATE:	AUGUST 2021
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**Zion Landfill - Site 2 North Expansion**

<b>Table M.2-1 Subcatchment Area Summary Table Existing Conditions</b>			
<b>81.7 Acres</b>		<b>40.2 Acres</b>	
<b>Ultimate Discharge Location: Des Plaines River Watershed</b>		<b>Ultimate Discharge Location: Lake Michigan Watershed</b>	
<b>Identifier</b>	<b>Area (Acres)</b>	<b>Identifier</b>	<b>Area (Acres)</b>
Subcat X1	81.7	Subcat X2	40.2
<p>Note: 1. The total area evaluated for the existing conditions (227.0 acres) includes the areas identified above (121.9 acres) and the areas currently routed to Stormwater Basin 5R under the permitted landfill design (105.1 acres).</p>			

## Zion Landfill - Site 2 North Expansion

Table M.2-2 Subcatchment Area Summary Table Proposed Conditions													
Subcatchment A1		Subcatchment B		Subcatchment N-A		Subcatchment N-B		Subcatchment N-C		Subcatchment N-D		Subcatchment N-E	
30.5 Acres		22.7 Acres		37.5 Acres		39.7 Acres		23.1 Acres		4.8 Acres		9 Acres	
Ultimate Discharge Location: Stormwater Basin 8 (Des Plaines River Watershed)		Ultimate Discharge Location: Stormwater Basin 8 (Des Plaines River Watershed)		Ultimate Discharge Location: Stormwater Basin 8 (Des Plaines River Watershed)		Ultimate Discharge Location: Stormwater Basin 8 (Des Plaines River Watershed)		Ultimate Discharge Location: Stormwater Basin 5R (Lake Michigan Watershed)		Ultimate Discharge Location: Des Plaines Watershed		Ultimate Discharge Location: Lake Michigan Watershed	
Identifier	Area (Acres)	Identifier	Area (Acres)	Identifier	Area (Acres)	Identifier	Area (Acres)	Identifier	Area (Acres)	Identifier	Area (Acres)	Identifier	Area (Acres)
Subcat A1A	6.7	Subcat B1	2.0	Subcat N-A1	3.6	Subcat N-B1	3.2	Subcat N-C1	7.0	Subcat N-D1	0.1	Subcat N-E1	9.0
Subcat A1B	5.2	Subcat B2	2.7	Subcat N-A2	2.8	Subcat N-B2	4.5	Subcat N-C2	4.2	Subcat N-D2	4.7		
Subcat A1C	9.2	Subcat B3	2.2	Subcat N-A3	1.3	Subcat N-B3	3.4	Subcat N-C3	4.2				
Subcat A1D	7.1	Subcat B4	1.9	Subcat N-A4	6.9	Subcat N-B4	3.8	Subcat N-C4	3.5				
Subcat A1E	1.1	Subcat B5	1.9	Subcat N-A5	0.7	Subcat N-B5	4.5	Subcat N-C5	0.7				
Subcat A1F	1.0	Subcat B6	1.2	Subcat N-A6	4.1	Subcat N-B6	4.3	Subcat N-C6	0.7				
Subcat A1G	0.2	Subcat B7	2.2	Subcat N-A7	0.4	Subcat N-B7	4.0	Subcat N-C7	1.2				
		Subcat B8	1.2	Subcat N-A8	3.8	Subcat N-B8	3.5	Subcat N-C8	1.6				
		Subcat B9A	1.4	Subcat N-A9	0.2	Subcat N-B9	1.2						
		Subcat B9B	0.6	Subcat N-A10	3.8	Subcat N-B10	1.5						
		Subcat B10A	0.8	Subcat N-A11	1.8	Subcat N-B11	1.3						
		Subcat B10B	0.5	Subcat N-A12	2.4	Subcat N-B12	1.7						
		Subcat B11	2.3	Subcat N-A13	1.3	Subcat N-B13	2.0						
		Subcat B12	1.2	Subcat N-A14	1.3	Subcat N-B14	0.7						
		Subcat B13	0.3	Subcat N-A15	1.0	Subcat N-B15	0.0						
		Subcat B14	0.3	Subcat N-A16	2.1	Subcat N-B16	0.1						
Subcatchment D		Subcatchment E		Subcatchment H		Drain Tile		Basin 8		Basin 5R			
4 Acres		8.6 Acres		7.5 Acres		12.2 Acres		17.5 Acres		9.8 Acres			
Ultimate Discharge Location: Stormwater Basin 5R (Lake Michigan Watershed)		Ultimate Discharge Location: Stormwater Basin 5R (Lake Michigan Watershed)		Ultimate Discharge Location: Stormwater Basin 5R (Lake Michigan Watershed)		Ultimate Discharge Location: Stormwater Basin 8 (Des Plaines River Watershed)		Ultimate Discharge Location: Stormwater Basin 8 (Des Plaines River Watershed)		Ultimate Discharge Location: Stormwater Basin 5R (Lake Michigan Watershed)			
Identifier	Area (Acres)	Identifier	Area (Acres)	Identifier	Area (Acres)	Identifier	Area (Acres)	Identifier	Area (Acres)	Identifier	Area (Acres)		
Subcat D1	1.3	Subcat E1	1.4	Subcat H1	2.0	Subcat Drain Tile	12.2	Subcat Basin 8 Run-On	4.1	Subcat Basin 5R West	0.6		
Subcat D3	1.3	Subcat E2	2.8	Subcat H2	1.9			Subcat Basin 8	13.4	Subcat Basin 5R East	1.5		
Subcat D5A	1.1	Subcat E3A	3.3	Subcat H3	3.6					Subcat Basin 5R	7.7		
Subcat D5B	0.3	Subcat E3B	1.1										

## M.3 – Weighted Curve Number Determination





Client: Zion Landfill, Inc.  
 Project: Zion Landfill – Site 2 North Expansion  
 Project #: 631020105  
 Calculated By: SJW Date: 05/2022  
 Checked By: DAM Date: 05/2022

**TITLE: WEIGHTED CURVE NUMBER DETERMINATION**

---

## Problem Statement

Determine the weighted curve number (CN) for each subcatchment area for both existing and proposed conditions to be modeled. The CN is used to calculate stormwater runoff for catchment areas.

## Given

The software utilized to model both the existing and proposed conditions is HydroCAD. This program has the ability to calculate the weighted curve number values for each subcatchment based on soil type and ground covers that are delineated using AutoCAD Civil 3D 2018 software. This method was utilized in this evaluation and is further described in the “Calculation” section below.

Please find the following supporting information attached to this calculation:

- Technical Release 55 (TR-55), *Urban Hydrology for Small Watersheds*, United States Department of Agriculture – Natural Resources Conservation Service (USDA-NRCS).
- USDA-NRCS Custom Soil Resource Report for Lake County, Illinois
- The existing surficial soil type areas are shown on **Figure M.3-1** and were obtained from the Soil Survey of Lake County, Illinois published by the USDA-NRCS.
- The existing ground cover type areas are shown on **Figure M.3-2**. The ground cover type is based on a review of aerial photographs. These areas have been delineated in AutoCAD Civil 3D 2018 software and are manually imported into HydroCAD.
- The surficial soil type areas for the proposed landfill expansion were conservatively assumed to have soils that reflect Hydrologic Soil Group D (HSG-D), resulting in the highest runoff potential associated with all ground cover types. These areas are shown on **Figure M.3-3**.
- The proposed ground cover type areas are shown on **Figure M.3-4**. These areas have been delineated in AutoCAD Civil3D 2018 software and manually imported into HydroCAD.

It is noted that Stormwater Basin 5R is an existing, permitted stormwater detention basin that will collect water from the proposed landfill expansion area. A detailed stormwater analysis for this detention basin was developed for the existing landfill application, which was reviewed and approved by the Lake County Stormwater Management Commission. The Stormwater Basin 5R discharge rates from the previously completed model are considered part of the “existing” or “pre-development” conditions. The previously completed model has not been re-run as part of this analysis. Instead, the previous model results are used in conjunction with the additional areas identified to be hydraulically disturbed to represent the total discharge rate of the proposed expansion area under pre-development conditions. For post-development conditions, all drainage areas associated with Stormwater Basin 5R, including areas that will be re-routed to the proposed Stormwater Basin 8, have been modeled due to modified conditions.



Client: Zion Landfill, Inc.  
 Project: Zion Landfill – Site 2 North Expansion  
 Project #: 631020105  
 Calculated By: SJW Date: 05/2022  
 Checked By: DAM Date: 05/2022

**TITLE: WEIGHTED CURVE NUMBER DETERMINATION**

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## Assumptions

### *Overview of Curve Numbers*

Weighted curve numbers are used to identify the runoff characteristics of a subcatchment area. The curve number is determined by both the land cover that will be encountered by surface water (such as grass, road, etc.) as well as the type of soil that lies under the land cover. The underlying soil is important because soil matrix has a large impact on whether water infiltrates the soil or is shed.

HydroCAD utilizes curve number table values that are published by the USDA-NRCS in technical resource TR-55. The tables provide typical curve numbers for each land cover and soil group pairing.

TR-55 describes the various Hydrologic Soil Groups (HSG) as follows:

- Group A: Soils with low runoff potential; typically more than 90 percent sand or gravel.
- Group B: Moderately low runoff potential with water transmission through the soil unimpeded. Group B soils typically have between 10 and 20 percent clay and 50 to 90 percent sand and have loamy sand or sandy loam textures.
- Group C: Moderately high runoff potential. Typically have between 20 and 40 percent clay and less than 50 percent sand, and have loam, silt loam, sandy clay loam, clay loam, and silty clay loam textures.
- Group D: High runoff potential. Typically have greater than 40 percent clay, less than 50 percent sand, and have clayey textures.

The NRCS publishes surficial soil surveys for most areas of the United States. A surficial soils report was generated for the property in which the proposed landfill will be located. This report, entitled *Custom Soil Resource Report for Lake County, Illinois*, was consulted to identify surficial soils within the property. For each surficial soil, a name, general description, and an HSG is provided. The NRCS report, in addition to the known landcovers and boundaries of various features, is used to determine the weighted curve number for each subcatchment.

It is noted that portions of the proposed landfill expansion area have been permitted for temporary soil stockpiles that have been or will be in place prior to landfill expansion development. Dedicated basins have been or will be developed to serve these stockpiles and the stockpiles will not increase discharge rates. Therefore, these temporary stockpiles have not been included in the pre-development condition. The groundcover and surficial soil type prior to stockpile development are assumed in these locations.

All land areas proposed to be developed as part of the landfill expansion within the perimeter berm surrounding the expansion are included in the proposed stormwater management system. Stormwater from exterior portions of the perimeter berm surrounding the horizontal expansion area will drain off-site. It is noted that runoff in this area is de minimis and curve numbers are calculated for completeness purposes only.



Client: Zion Landfill, Inc.  
 Project: Zion Landfill – Site 2 North Expansion  
 Project #: 631020105  
 Calculated By: SJW Date: 05/2022  
 Checked By: DAM Date: 05/2022

**TITLE: WEIGHTED CURVE NUMBER DETERMINATION**

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## Calculation Method

Each subcatchment area identified in **Appendix M.2** was evaluated to provide an appropriate curve number that is weighted to reflect surficial soils, landcover and antecedent moisture condition. AutoCAD Civil3D 2018 was used to delineate land covers for the existing and proposed conditions of the landfill, as further described in the following text. The areas were then manually imported into HydroCAD. HydroCAD then overlies the information and calculates a composite (weighted) curve number for each subcatchment area using the following equation:

$$CN_c = \frac{CN_1A_1 + CN_2A_2 \dots CN_nA_n}{A_1 + A_2 \dots A_n}$$

Where:  $CN_c$  = Composite CN value  
 $CN_1 - CN_n$  = Individual CN values  
 $A_1 - A_n$  = Area associated with each CN value

## Surficial Soils

The NRCS was used to delineate surficial soils at the facility in all undisturbed areas. Based on the NRCS Soil Survey for Lake County, some of the existing land area is comprised of soils in the Dual Hydrologic Soil Groups B/D and C/D. This means the soils can behave differently depending on whether drained or undrained conditions are exhibited (the first letter represents drained conditions and the second letter represents undrained conditions). For all soils within the “Dual Hydrologic Soil Group”, an assumption of HSG-D was made.

Refer to the attached figures and tables for more information. A description of each identified soil type is attached in the NRCS Report.



Client: Zion Landfill, Inc.  
 Project: Zion Landfill – Site 2 North Expansion  
 Project #: 631020105  
 Calculated By: SJW Date: 05/2022  
 Checked By: DAM Date: 05/2022

**TITLE: WEIGHTED CURVE NUMBER DETERMINATION**

*Land Cover*

The land covers were delineated for the proposed landfill expansion area for both existing and proposed conditions. For existing conditions, the land covers were determined based on a review of aerial photography. For proposed conditions, the land covers were determined by the proposed landfill design including the location of perimeter roadways, landfill infrastructure, and stormwater management features.

Delineated Area	Comments	Corresponding TR-55 Description and Runoff Coefficients				
		Description	Soil Group			
			A	B	C	D
Woods/Grass Combination	Present throughout existing conditions in the tree nursery north of the permitted landfill.	Woods/Grass Combination, Fair	43	65	76	82
Streets and Roads	Present in areas with roads, where surface water is unlikely to infiltrate into the ground.	Streets and Roads, Paved, Open Ditches with Right-of-Way, 50% Impervious	83	89	92	93
Water	Water areas were delineated for sediment basins, ponds, and other surface water features.	Water	98	98	98	98
Open Space / Grass Cover	Open grassy spaces were identified for proposed conditions for vegetated areas within the landfill boundary including the final landform and perimeter berm areas.	Open space, Good Condition (grass cover > 75%)	39	61	74	80

Antecedent Moisture Condition (AMC)

The antecedent moisture condition indicates the moisture level in the ground immediately preceding a storm event. HydroCAD implements four AMC conditions.

- AMC 1 – Dry
- AMC 2 – Normal
- AMC 3 – Wet
- AMC 4 – Saturated or frozen

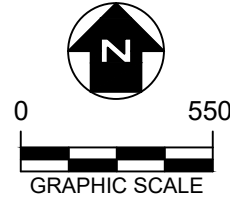
AMC 2 was used for existing and proposed conditions, which is typical engineering practice.

**Results**

Based on the parameters and methods discussed previously, weighted curve numbers were calculated for all subcatchment areas for both the existing and proposed conditions. A summary of the weighted curve numbers for each subcatchment has been provided for the existing and proposed conditions in **Table M.3-1** and **Table M.3-2**, respectively.



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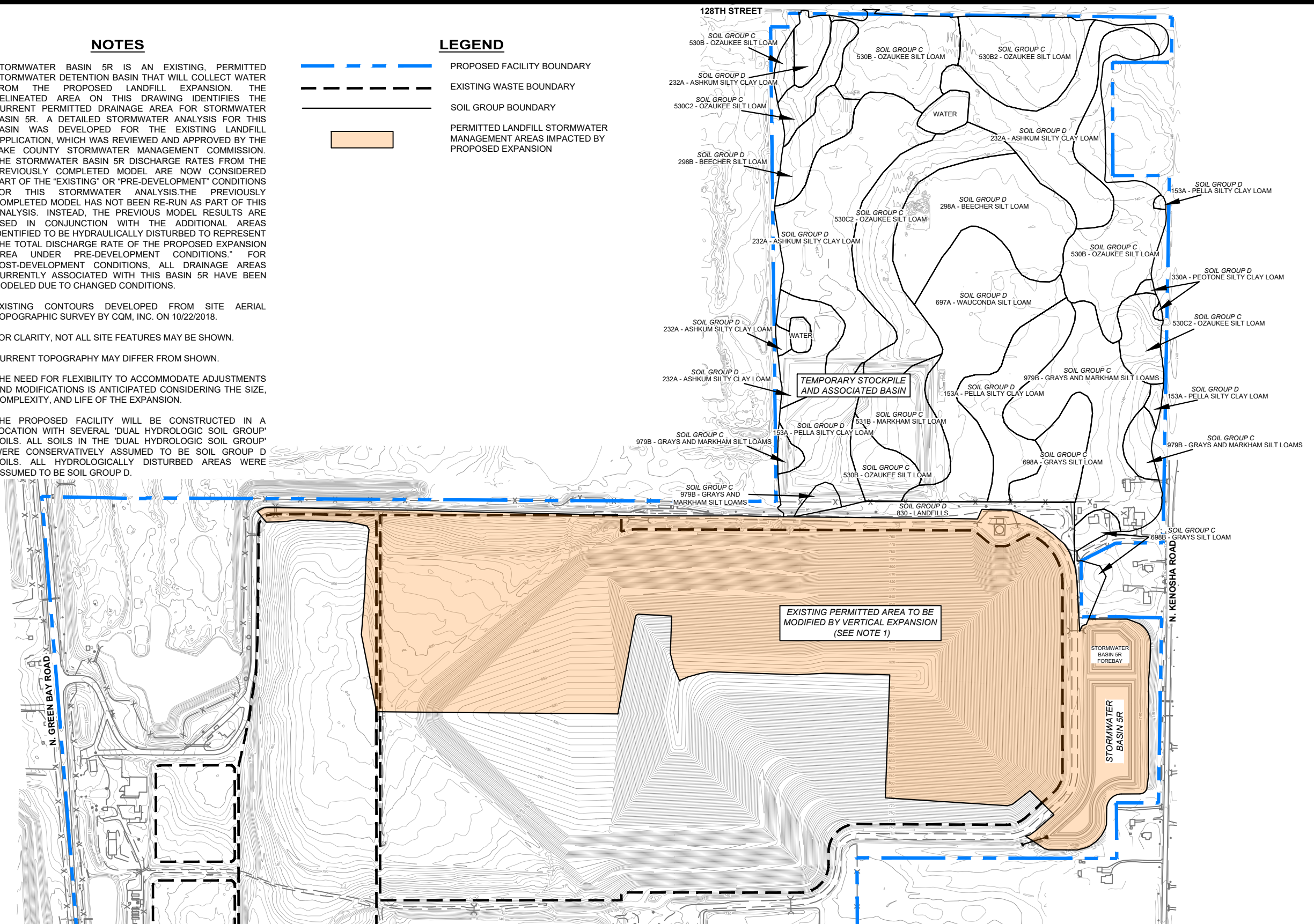


**NOTES**

1. STORMWATER BASIN 5R IS AN EXISTING, PERMITTED STORMWATER DETENTION BASIN THAT WILL COLLECT WATER FROM THE PROPOSED LANDFILL EXPANSION. THE DELINEATED AREA ON THIS DRAWING IDENTIFIES THE CURRENT PERMITTED DRAINAGE AREA FOR STORMWATER BASIN 5R. A DETAILED STORMWATER ANALYSIS FOR THIS BASIN WAS DEVELOPED FOR THE EXISTING LANDFILL APPLICATION, WHICH WAS REVIEWED AND APPROVED BY THE LAKE COUNTY STORMWATER MANAGEMENT COMMISSION. THE STORMWATER BASIN 5R DISCHARGE RATES FROM THE PREVIOUSLY COMPLETED MODEL ARE NOW CONSIDERED PART OF THE "EXISTING" OR "PRE-DEVELOPMENT" CONDITIONS FOR THIS STORMWATER ANALYSIS. THE PREVIOUSLY COMPLETED MODEL HAS NOT BEEN RE-RUN AS PART OF THIS ANALYSIS. INSTEAD, THE PREVIOUS MODEL RESULTS ARE USED IN CONJUNCTION WITH THE ADDITIONAL AREAS IDENTIFIED TO BE HYDRAULICALLY DISTURBED TO REPRESENT THE TOTAL DISCHARGE RATE OF THE PROPOSED EXPANSION AREA UNDER "PRE-DEVELOPMENT" CONDITIONS." FOR POST-DEVELOPMENT CONDITIONS, ALL DRAINAGE AREAS CURRENTLY ASSOCIATED WITH THIS BASIN 5R HAVE BEEN MODELED DUE TO CHANGED CONDITIONS.
2. EXISTING CONTOURS DEVELOPED FROM SITE AERIAL TOPOGRAPHIC SURVEY BY CQM, INC. ON 10/22/2018.
3. FOR CLARITY, NOT ALL SITE FEATURES MAY BE SHOWN.
4. CURRENT TOPOGRAPHY MAY DIFFER FROM SHOWN.
5. THE NEED FOR FLEXIBILITY TO ACCOMMODATE ADJUSTMENTS AND MODIFICATIONS IS ANTICIPATED CONSIDERING THE SIZE, COMPLEXITY, AND LIFE OF THE EXPANSION.
6. THE PROPOSED FACILITY WILL BE CONSTRUCTED IN A LOCATION WITH SEVERAL 'DUAL HYDROLOGIC SOIL GROUP' SOILS. ALL SOILS IN THE 'DUAL HYDROLOGIC SOIL GROUP' WERE CONSERVATIVELY ASSUMED TO BE SOIL GROUP D SOILS. ALL HYDROLOGICALLY DISTURBED AREAS WERE ASSUMED TO BE SOIL GROUP D.

**LEGEND**

- PROPOSED FACILITY BOUNDARY
- EXISTING WASTE BOUNDARY
- SOIL GROUP BOUNDARY
- PERMITTED LANDFILL STORMWATER MANAGEMENT AREAS IMPACTED BY PROPOSED EXPANSION



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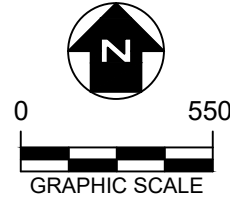


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**ZION LANDFILL SITE 2 NORTH EXPANSION  
LAKE COUNTY, ILLINOIS**

**M.3-1  
SURFICIAL SOIL TYPES  
PERMITTED / EXISTING CONDITIONS**





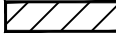
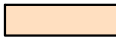
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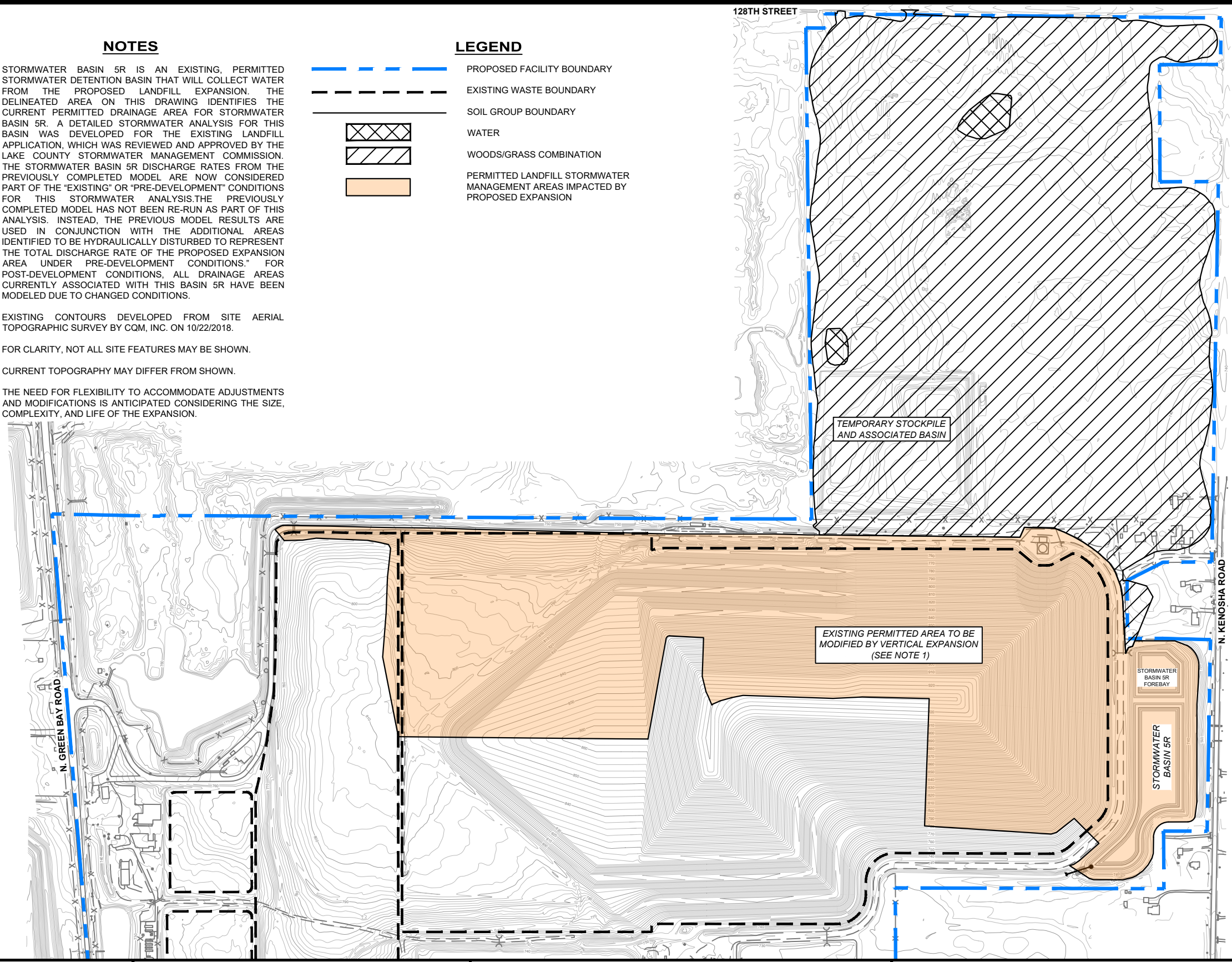


**NOTES**

1. STORMWATER BASIN 5R IS AN EXISTING, PERMITTED STORMWATER DETENTION BASIN THAT WILL COLLECT WATER FROM THE PROPOSED LANDFILL EXPANSION. THE DELINEATED AREA ON THIS DRAWING IDENTIFIES THE CURRENT PERMITTED DRAINAGE AREA FOR STORMWATER BASIN 5R. A DETAILED STORMWATER ANALYSIS FOR THIS BASIN WAS DEVELOPED FOR THE EXISTING LANDFILL APPLICATION, WHICH WAS REVIEWED AND APPROVED BY THE LAKE COUNTY STORMWATER MANAGEMENT COMMISSION. THE STORMWATER BASIN 5R DISCHARGE RATES FROM THE PREVIOUSLY COMPLETED MODEL ARE NOW CONSIDERED PART OF THE "EXISTING" OR "PRE-DEVELOPMENT" CONDITIONS FOR THIS STORMWATER ANALYSIS. THE PREVIOUSLY COMPLETED MODEL HAS NOT BEEN RE-RUN AS PART OF THIS ANALYSIS. INSTEAD, THE PREVIOUS MODEL RESULTS ARE USED IN CONJUNCTION WITH THE ADDITIONAL AREAS IDENTIFIED TO BE HYDRAULICALLY DISTURBED TO REPRESENT THE TOTAL DISCHARGE RATE OF THE PROPOSED EXPANSION AREA UNDER "PRE-DEVELOPMENT" CONDITIONS." FOR POST-DEVELOPMENT CONDITIONS, ALL DRAINAGE AREAS CURRENTLY ASSOCIATED WITH THIS BASIN 5R HAVE BEEN MODELED DUE TO CHANGED CONDITIONS.
2. EXISTING CONTOURS DEVELOPED FROM SITE AERIAL TOPOGRAPHIC SURVEY BY CQM, INC. ON 10/22/2018.
3. FOR CLARITY, NOT ALL SITE FEATURES MAY BE SHOWN.
4. CURRENT TOPOGRAPHY MAY DIFFER FROM SHOWN.
5. THE NEED FOR FLEXIBILITY TO ACCOMMODATE ADJUSTMENTS AND MODIFICATIONS IS ANTICIPATED CONSIDERING THE SIZE, COMPLEXITY, AND LIFE OF THE EXPANSION.

**LEGEND**

-  PROPOSED FACILITY BOUNDARY
-  EXISTING WASTE BOUNDARY
-  SOIL GROUP BOUNDARY
-  WATER
-  WOODS/GRASS COMBINATION
-  PERMITTED LANDFILL STORMWATER MANAGEMENT AREAS IMPACTED BY PROPOSED EXPANSION



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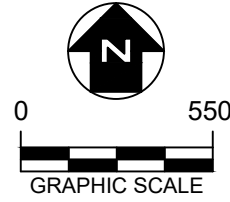
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**ZION LANDFILL SITE 2 NORTH EXPANSION  
LAKE COUNTY, ILLINOIS**

**M.3-2  
LANDCOVER  
PERMITTED / EXISTING CONDITIONS**

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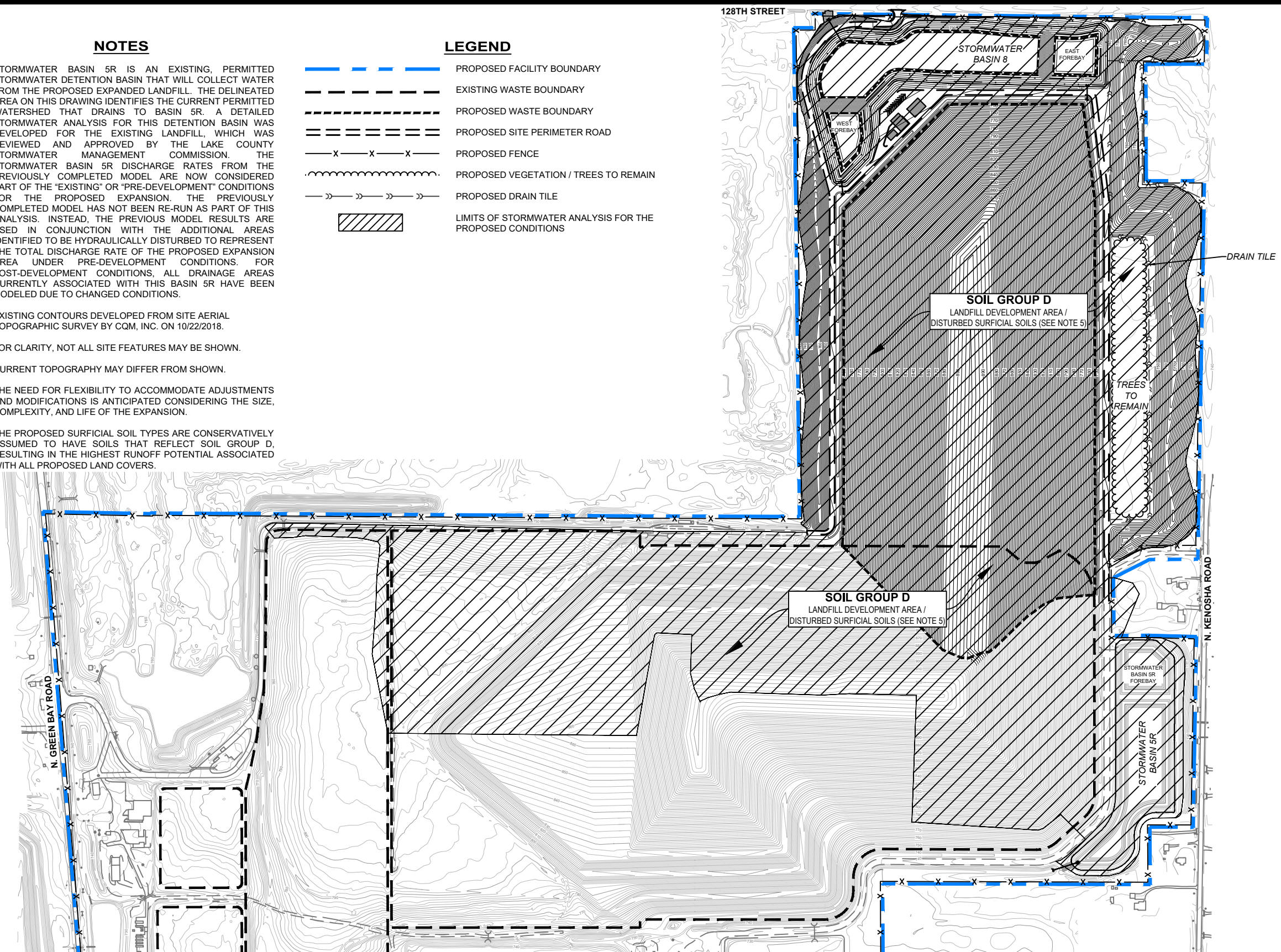


**NOTES**

1. STORMWATER BASIN 5R IS AN EXISTING, PERMITTED STORMWATER DETENTION BASIN THAT WILL COLLECT WATER FROM THE PROPOSED EXPANDED LANDFILL. THE DELINEATED AREA ON THIS DRAWING IDENTIFIES THE CURRENT PERMITTED WATERSHED THAT DRAINS TO BASIN 5R. A DETAILED STORMWATER ANALYSIS FOR THIS DETENTION BASIN WAS DEVELOPED FOR THE EXISTING LANDFILL, WHICH WAS REVIEWED AND APPROVED BY THE LAKE COUNTY STORMWATER MANAGEMENT COMMISSION. THE STORMWATER BASIN 5R DISCHARGE RATES FROM THE PREVIOUSLY COMPLETED MODEL ARE NOW CONSIDERED PART OF THE "EXISTING" OR "PRE-DEVELOPMENT" CONDITIONS FOR THE PROPOSED EXPANSION. THE PREVIOUSLY COMPLETED MODEL HAS NOT BEEN RE-RUN AS PART OF THIS ANALYSIS. INSTEAD, THE PREVIOUS MODEL RESULTS ARE USED IN CONJUNCTION WITH THE ADDITIONAL AREAS IDENTIFIED TO BE HYDRAULICALLY DISTURBED TO REPRESENT THE TOTAL DISCHARGE RATE OF THE PROPOSED EXPANSION AREA UNDER PRE-DEVELOPMENT CONDITIONS. FOR POST-DEVELOPMENT CONDITIONS, ALL DRAINAGE AREAS CURRENTLY ASSOCIATED WITH THIS BASIN 5R HAVE BEEN MODELED DUE TO CHANGED CONDITIONS.
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3. FOR CLARITY, NOT ALL SITE FEATURES MAY BE SHOWN.
4. CURRENT TOPOGRAPHY MAY DIFFER FROM SHOWN.
5. THE NEED FOR FLEXIBILITY TO ACCOMMODATE ADJUSTMENTS AND MODIFICATIONS IS ANTICIPATED CONSIDERING THE SIZE, COMPLEXITY, AND LIFE OF THE EXPANSION.
6. THE PROPOSED SURFICIAL SOIL TYPES ARE CONSERVATIVELY ASSUMED TO HAVE SOILS THAT REFLECT SOIL GROUP D, RESULTING IN THE HIGHEST RUNOFF POTENTIAL ASSOCIATED WITH ALL PROPOSED LAND COVERS.

**LEGEND**

- PROPOSED FACILITY BOUNDARY
- EXISTING WASTE BOUNDARY
- PROPOSED WASTE BOUNDARY
- PROPOSED SITE PERIMETER ROAD
- PROPOSED FENCE
- PROPOSED VEGETATION / TREES TO REMAIN
- PROPOSED DRAIN TILE
- LIMITS OF STORMWATER ANALYSIS FOR THE PROPOSED CONDITIONS



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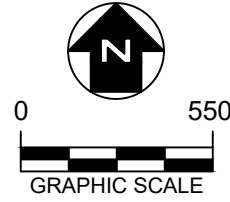
**ZION LANDFILL SITE 2 NORTH EXPANSION  
LAKE COUNTY, ILLINOIS**

**M.3-3  
SURFICIAL SOIL TYPES  
PROPOSED CONDITIONS**

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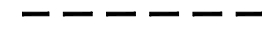

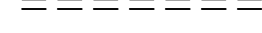
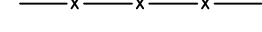
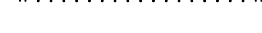
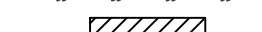

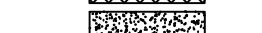



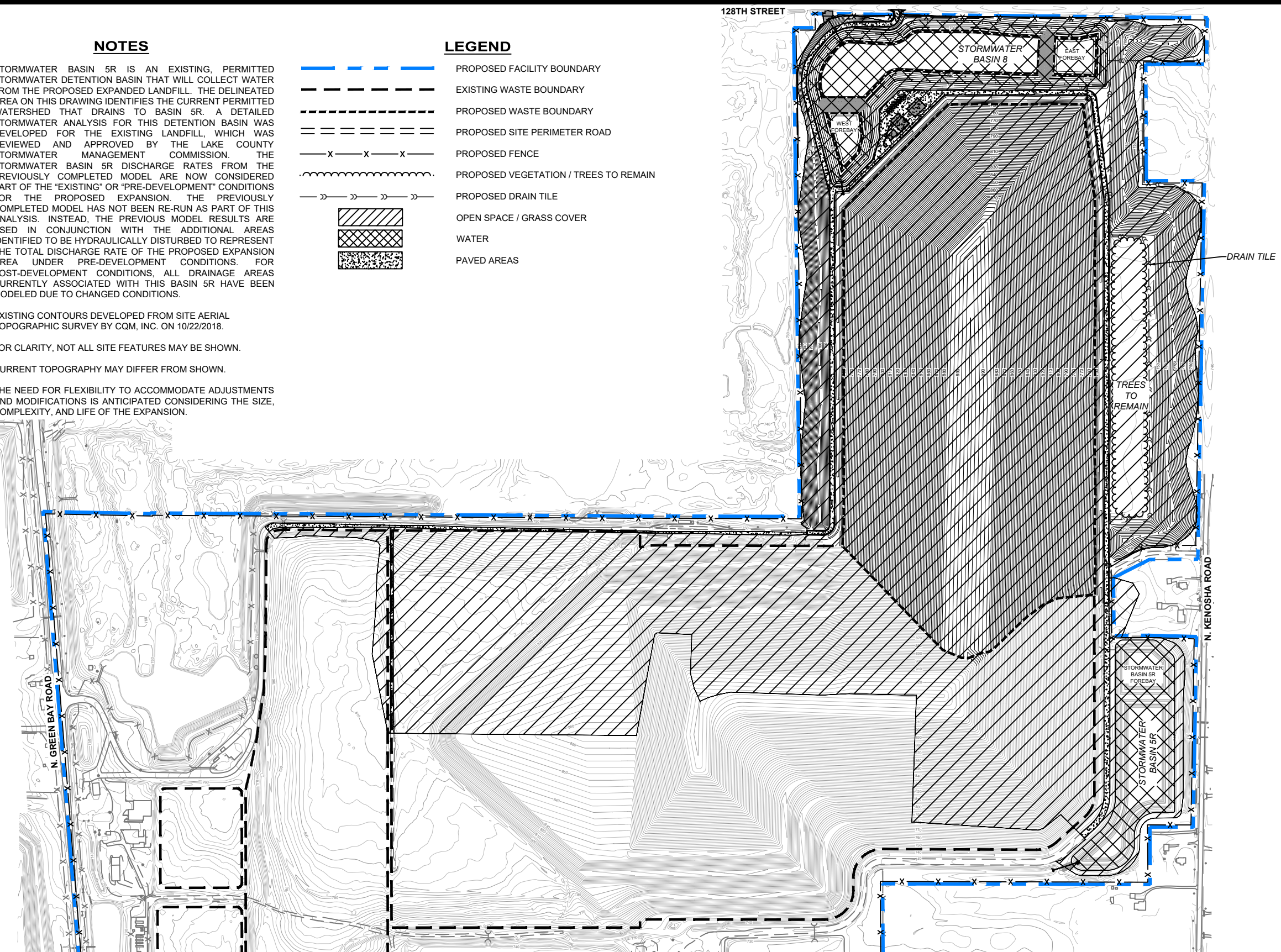


**NOTES**

1. STORMWATER BASIN 5R IS AN EXISTING, PERMITTED STORMWATER DETENTION BASIN THAT WILL COLLECT WATER FROM THE PROPOSED EXPANDED LANDFILL. THE DELINEATED AREA ON THIS DRAWING IDENTIFIES THE CURRENT PERMITTED WATERSHED THAT DRAINS TO BASIN 5R. A DETAILED STORMWATER ANALYSIS FOR THIS DETENTION BASIN WAS DEVELOPED FOR THE EXISTING LANDFILL, WHICH WAS REVIEWED AND APPROVED BY THE LAKE COUNTY STORMWATER MANAGEMENT COMMISSION. THE STORMWATER BASIN 5R DISCHARGE RATES FROM THE PREVIOUSLY COMPLETED MODEL ARE NOW CONSIDERED PART OF THE "EXISTING" OR "PRE-DEVELOPMENT" CONDITIONS FOR THE PROPOSED EXPANSION. THE PREVIOUSLY COMPLETED MODEL HAS NOT BEEN RE-RUN AS PART OF THIS ANALYSIS. INSTEAD, THE PREVIOUS MODEL RESULTS ARE USED IN CONJUNCTION WITH THE ADDITIONAL AREAS IDENTIFIED TO BE HYDRAULICALLY DISTURBED TO REPRESENT THE TOTAL DISCHARGE RATE OF THE PROPOSED EXPANSION AREA UNDER PRE-DEVELOPMENT CONDITIONS. FOR POST-DEVELOPMENT CONDITIONS, ALL DRAINAGE AREAS CURRENTLY ASSOCIATED WITH THIS BASIN 5R HAVE BEEN MODELED DUE TO CHANGED CONDITIONS.
2. EXISTING CONTOURS DEVELOPED FROM SITE AERIAL TOPOGRAPHIC SURVEY BY CQM, INC. ON 10/22/2018.
3. FOR CLARITY, NOT ALL SITE FEATURES MAY BE SHOWN.
4. CURRENT TOPOGRAPHY MAY DIFFER FROM SHOWN.
5. THE NEED FOR FLEXIBILITY TO ACCOMMODATE ADJUSTMENTS AND MODIFICATIONS IS ANTICIPATED CONSIDERING THE SIZE, COMPLEXITY, AND LIFE OF THE EXPANSION.

**LEGEND**

-  PROPOSED FACILITY BOUNDARY
-  EXISTING WASTE BOUNDARY
-  PROPOSED WASTE BOUNDARY
-  PROPOSED SITE PERIMETER ROAD
-  PROPOSED FENCE
-  PROPOSED VEGETATION / TREES TO REMAIN
-  PROPOSED DRAIN TILE
-  OPEN SPACE / GRASS COVER
-  WATER
-  PAVED AREAS



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**ZION LANDFILL SITE 2 NORTH EXPANSION  
LAKE COUNTY, ILLINOIS**

**M.3-4  
LANDCOVER  
PROPOSED CONDITIONS**

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## Zion Landfill - Site 2 North Expansion

Table M.3-1 Determination of Weighted Curve Number Existing Conditions						
Subcatchment Area	Landcover Type	Soil Group <sup>1</sup>	Curve Number	Acreage	Percentage of Subcatchment	Weighted Curve Number
Subcat X1	Woods/grass comb., Fair	C	76	33.52	41.0%	80
	Woods/grass comb., Fair	D	82	46.72	57.2%	
	Water Surface	D	98	1.48	1.8%	
Subcat X2	Woods/grass comb., Fair	D	82	13.40	33.3%	78
	Woods/grass comb., Fair	C	76	26.80	66.7%	
Notes: 1. All areas with surficial soils in the dual hydrologic soil group conservatively assume Soil Group D soil properties.						

## Zion Landfill - Site 2 North Expansion

Table M.3-2 Determination of Weighted Curve Number Proposed Conditions							
Subcatchment Area	Landcover Type	Soil Group	Curve Number	Acreage	Percentage of Subcatchment	Weighted Curve Number	
Subcatchment A1	Subcat A1A	>75% Grass cover, Good	D	80	6.74	100.0%	80
	Subcat A1B	>75% Grass cover, Good	D	80	5.23	100.0%	80
	Subcat A1C	Paved roads w/open ditches, 50% imp	D	93	0.27	3.0%	80
		>75% Grass cover, Good	D	80	8.89	97.0%	
	Subcat A1D	Paved roads w/open ditches, 50% imp	D	93	0.10	1.4%	80
		>75% Grass cover, Good	D	80	6.97	98.6%	
	Subcat A1E	>75% Grass cover, Good	D	80	1.10	100.0%	80
	Subcat A1F	Paved roads w/open ditches, 50% imp	D	93	0.36	36.7%	88
>75% Grass cover, Good		D	80	0.63	63.3%		
Subcat A1G	Paved roads w/open ditches, 50% imp	D	93	0.09	45.3%	86	
	>75% Grass cover, Good	D	80	0.11	54.7%		
Subcatchment B	Subcat B1	>75% Grass cover, Good	D	80	2.04	100.0%	80
	Subcat B2	>75% Grass cover, Good	D	80	2.74	100.0%	80
	Subcat B3	>75% Grass cover, Good	D	80	2.21	100.0%	80
	Subcat B4	>75% Grass cover, Good	D	80	1.87	100.0%	80
	Subcat B5	>75% Grass cover, Good	D	80	1.93	100.0%	80
	Subcat B6	>75% Grass cover, Good	D	80	1.18	100.0%	80
	Subcat B7	>75% Grass cover, Good	D	80	2.19	100.0%	80
	Subcat B8	>75% Grass cover, Good	D	80	1.17	100.0%	80
	Subcat B9A	>75% Grass cover, Good	D	80	1.44	100.0%	80
	Subcat B9B	>75% Grass cover, Good	D	80	0.61	100.0%	80
	Subcat B10A	>75% Grass cover, Good	D	80	0.81	100.0%	80
	Subcat B10B	>75% Grass cover, Good	D	80	0.53	100.0%	80
	Subcat B11	>75% Grass cover, Good	D	80	2.27	100.0%	80
	Subcat B12	>75% Grass cover, Good	D	80	1.20	100.0%	80
	Subcat B13	Paved roads w/open ditches, 50% imp	D	93	0.16	48.1%	86
		>75% Grass cover, Good	D	80	0.17	51.9%	
Subcat B14	Paved roads w/open ditches, 50% imp	D	93	0.13	47.0%	86	
	>75% Grass cover, Good	D	80	0.14	53.0%		
Subcatchment N-A	Subcat N-A1	>75% Grass cover, Good	D	80	3.60	100.0%	80
	Subcat N-A2	>75% Grass cover, Good	D	80	2.83	100.0%	80
	Subcat N-A3	>75% Grass cover, Good	D	80	1.31	100.0%	80
	Subcat N-A4	>75% Grass cover, Good	D	80	6.88	100.0%	80
	Subcat N-A5	>75% Grass cover, Good	D	80	0.73	100.0%	80
	Subcat N-A6	>75% Grass cover, Good	D	80	4.13	100.0%	80
	Subcat N-A7	>75% Grass cover, Good	D	80	0.44	100.0%	80
	Subcat N-A8	>75% Grass cover, Good	D	80	3.80	100.0%	80
	Subcat N-A9	>75% Grass cover, Good	D	80	0.18	100.0%	80
	Subcat N-A10	>75% Grass cover, Good	D	80	3.78	100.0%	80
	Subcat N-A11	>75% Grass cover, Good	D	80	1.84	100.0%	80
	Subcat N-A12	>75% Grass cover, Good	D	80	1.74	73.4%	83
		Paved roads w/open ditches, 50% imp	D	93	0.63	26.6%	
	Subcat N-A13	>75% Grass cover, Good	D	80	1.25	100.0%	80
	Subcat N-A14	>75% Grass cover, Good	D	80	0.97	74.2%	83
		Paved roads w/open ditches, 50% imp	D	93	0.34	25.8%	
Subcat N-A15	>75% Grass cover, Good	D	80	1.04	100.0%	80	
Subcat N-A16	>75% Grass cover, Good	D	80	0.08	4.1%	92	
	Paved roads w/open ditches, 50% imp	D	93	2.00	96.0%		

## Zion Landfill - Site 2 North Expansion

Table M.3-2 Determination of Weighted Curve Number Proposed Conditions							
Subcatchment Area	Landcover Type	Soil Group	Curve Number	Acreage	Percentage of Subcatchment	Weighted Curve Number	
Subcatchment N-B	Subcat N-B1	>75% Grass cover, Good	D	80	3.15	100.0%	80
	Subcat N-B2	>75% Grass cover, Good	D	80	4.49	100.0%	80
	Subcat N-B3	>75% Grass cover, Good	D	80	3.43	100.0%	80
	Subcat N-B4	>75% Grass cover, Good	D	80	3.80	100.0%	80
	Subcat N-B5	>75% Grass cover, Good	D	80	4.50	100.0%	80
	Subcat N-B6	>75% Grass cover, Good	D	80	4.29	100.0%	80
	Subcat N-B7	>75% Grass cover, Good	D	80	3.96	100.0%	80
	Subcat N-B8	>75% Grass cover, Good	D	80	3.52	100.0%	80
	Subcat N-B9	>75% Grass cover, Good	D	80	1.16	100.0%	80
	Subcat N-B10	>75% Grass cover, Good	D	80	0.91	59.0%	85
		Paved roads w/open ditches, 50% imp	D	93	0.63	40.8%	
	Subcat N-B11	>75% Grass cover, Good	D	80	1.27	100.0%	80
	Subcat N-B12	>75% Grass cover, Good	D	80	1.45	84.5%	82
		Paved roads w/open ditches, 50% imp	D	93	0.27	15.5%	
	Subcat N-B13	>75% Grass cover, Good	D	80	2.01	100.0%	80
	Subcat N-B14	>75% Grass cover, Good	D	80	0.29	43.4%	87
Paved roads w/open ditches, 50% imp		D	93	0.38	56.6%		
Subcat N-B15	>75% Grass cover, Good	D	80	0.04	100.0%	80	
Subcat N-B16	>75% Grass cover, Good	D	80	0.06	58.3%	85	
	Paved roads w/open ditches, 50% imp	D	93	0.04	41.7%		
Subcatchment N-C	Subcat N-C1	>75% Grass cover, Good	D	80	6.98	100.0%	80
	Subcat N-C2	>75% Grass cover, Good	D	80	4.20	100.0%	80
	Subcat N-C3	>75% Grass cover, Good	D	80	4.22	100.0%	80
	Subcat N-C4	>75% Grass cover, Good	D	80	3.52	100.0%	80
	Subcat N-C5	>75% Grass cover, Good	D	80	0.75	100.0%	80
	Subcat N-C6	>75% Grass cover, Good	D	80	0.60	80.7%	83
		Paved roads w/open ditches, 50% imp	D	93	0.14	19.3%	
	Subcat N-C7	>75% Grass cover, Good	D	80	1.16	100.0%	80
Subcat N-C8	>75% Grass cover, Good	D	80	0.65	41.3%	85	
	Paved roads w/open ditches, 50% imp	D	93	0.63	39.8%		
	Woods/grass comb., Good	D	79	0.30	18.9%		
Subcatchment N-D	Subcat N-D1	>75% Grass cover, Good	D	80	0.11	100.1%	80
	Subcat N-D2	>75% Grass cover, Good	D	80	4.54	64.1%	80
Paved roads w/open ditches, 50% imp		D	93	0.16	2.3%		
Subcatchment N-E	Subcat N-E1	>75% Grass cover, Good	D	80	9.17	100.0%	80
Subcatchment D	Subcat D1	>75% Grass cover, Good	D	80	1.26	100.0%	80
	Subcat D3	>75% Grass cover, Good	D	80	1.33	100.0%	80
	Subcat D5A	>75% Grass cover, Good	D	80	1.13	100.0%	80
	Subcat D5B	>75% Grass cover, Good	D	80	0.16	50.6%	86
Paved roads w/open ditches, 50% imp		D	93	0.15	49.4%		
Subcatchment E	Subcat E1	>75% Grass cover, Good	D	80	1.42	100.0%	80
	Subcat E2	>75% Grass cover, Good	D	80	2.82	100.0%	80
	Subcat E3A	>75% Grass cover, Good	D	80	3.28	100.0%	80
	Subcat E3B	>75% Grass cover, Good	D	80	0.55	50.1%	86
Paved roads w/open ditches, 50% imp		D	93	0.54	49.9%		

## Zion Landfill - Site 2 North Expansion

Table M.3-2 Determination of Weighted Curve Number Proposed Conditions							
	Subcatchment Area	Landcover Type	Soil Group	Curve Number	Acreage	Percentage of Subacatchment	Weighted Curve Number
Subcatchment H	Subcat H1	>75% Grass cover, Good	D	80	1.98	100.0%	80
	Subcat H2	>75% Grass cover, Good	D	80	1.86	100.0%	80
	Subcat H3	>75% Grass cover, Good	D	80	3.57	100.0%	80
Drain Tile	Subcat Drain Tile	Woods/grass comb, Fair	D	82	4.80	39.4%	81
		>75% Grass cover, Good	D	80	7.38	60.6%	
Basin 5R	Subcat Basin 5R East	>75% Grass cover, Good	D	80	1.51	100.0%	80
	Subcat Basin 5R West	>75% Grass cover, Good	D	80	0.60	100.0%	80
	Subcat Basin 5R	Water Surface	D	98	7.72	100.0%	98
Basin 8	Subcat Basin 8 Run-On	>75% Grass cover, Good	D	80	4.01	83.5%	82
		Paved roads w/open ditches, 50% imp	D	93	0.79	16.5%	
	Subcat Basin 8	Water Surface	D	98	9.36	100.0%	98





United States  
Department of  
Agriculture

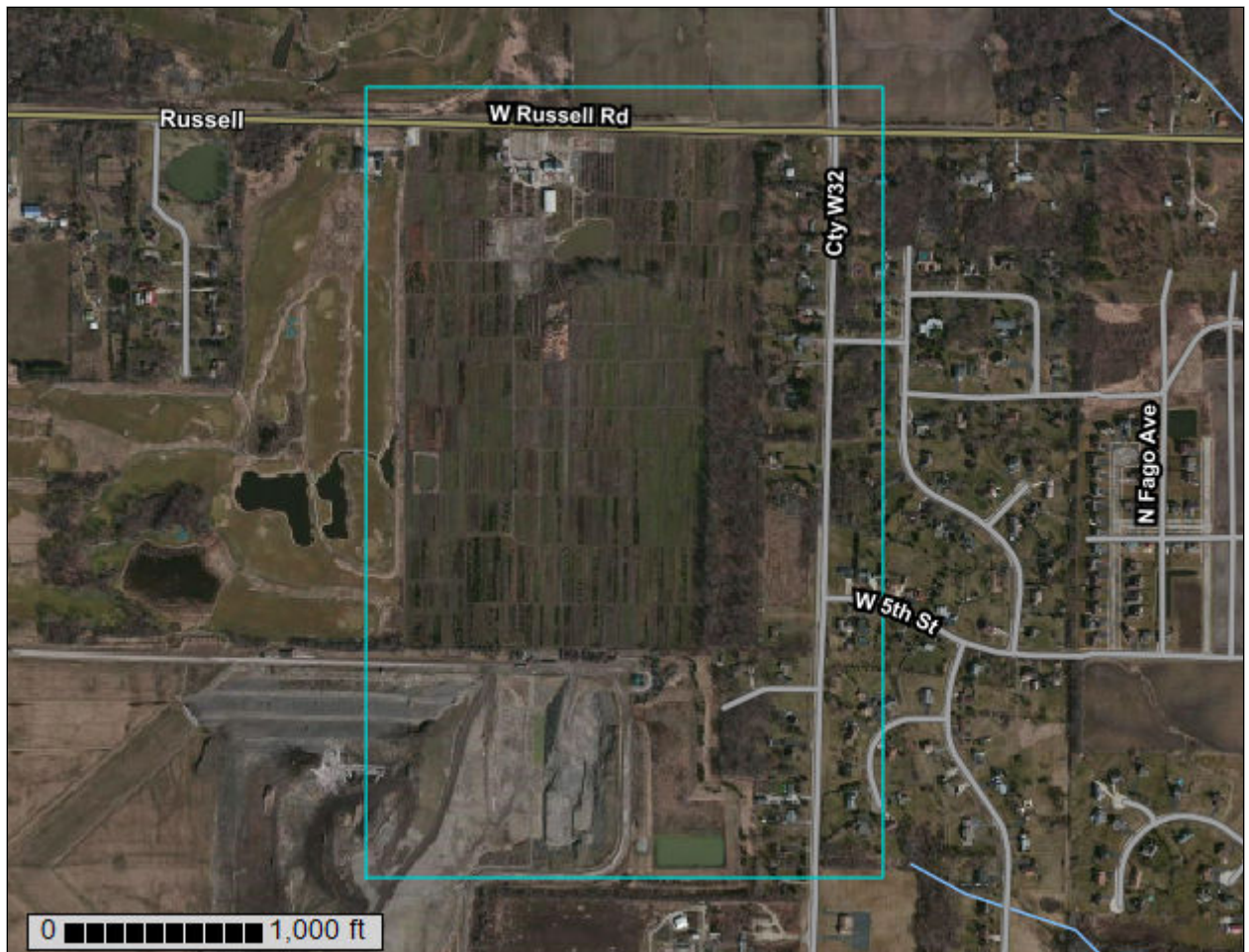
**NRCS**

Natural  
Resources  
Conservation  
Service

A product of the National  
Cooperative Soil Survey,  
a joint effort of the United  
States Department of  
Agriculture and other  
Federal agencies, State  
agencies including the  
Agricultural Experiment  
Stations, and local  
participants

# Custom Soil Resource Report for Kenosha and Racine Counties, Wisconsin, and Lake County, Illinois

## Zion Landfill - Site 2 North Expansion





# Preface

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Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist ([http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2\\_053951](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951)).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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# How Soil Surveys Are Made

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Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

## Custom Soil Resource Report

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

## Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

# Soil Map

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The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

# Custom Soil Resource Report Soil Map



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




Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84




### MAP LEGEND

**Area of Interest (AOI)**

 Area of Interest (AOI)

**Soils**

 Soil Map Unit Polygons

 Soil Map Unit Lines


 Soil Map Unit Points

**Special Point Features**






-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features

**Water Features**

 Streams and Canals

**Transportation**

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

**Background**

 Aerial Photography

### MAP INFORMATION

The soil surveys that comprise your AOI were mapped at scales ranging from 1:12,000 to 1:15,800.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL:  
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Kenosha and Racine Counties, Wisconsin  
 Survey Area Data: Version 16, Sep 14, 2019

Soil Survey Area: Lake County, Illinois  
 Survey Area Data: Version 14, Sep 16, 2019

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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

Date(s) aerial images were photographed: Mar 13, 2012—Mar 28, 2012

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

**MAP LEGEND**

**MAP INFORMATION**

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AtA	Ashkum silty clay loam, 0 to 2 percent slopes	1.0	0.4%
BcA	Beecher silt loam, 1 to 3 percent slopes	3.0	1.3%
OzaB	Ozaukee silt loam, 2 to 6 percent slopes	2.8	1.2%
OzaB2	Ozaukee silt loam, 2 to 6 percent slopes, eroded	5.8	2.4%
<b>Subtotals for Soil Survey Area</b>		<b>12.6</b>	<b>5.3%</b>
<b>Totals for Area of Interest</b>		<b>239.1</b>	<b>100.0%</b>

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
67A	Harpster silty clay loam, 0 to 2 percent slopes	3.7	1.6%
153A	Pella silty clay loam, 0 to 2 percent slopes	19.5	8.1%
232A	Ashkum silty clay loam, 0 to 2 percent slopes	28.4	11.9%
298A	Beecher silt loam, 0 to 2 percent slopes	10.2	4.3%
298B	Beecher silt loam, 2 to 4 percent slopes	4.9	2.0%
330A	Peotone silty clay loam, 0 to 2 percent slopes	1.1	0.4%
442A	Mundelein silt loam, 0 to 2 percent slopes	1.4	0.6%
443B	Barrington silt loam, 2 to 4 percent slopes	1.9	0.8%
530B	Ozaukee silt loam, 2 to 4 percent slopes	32.8	13.7%
530B2	Ozaukee silt loam, 2 to 4 percent slopes, eroded	9.7	4.1%
530C2	Ozaukee silt loam, 4 to 6 percent slopes, eroded	16.1	6.7%
530D2	Ozaukee silt loam, 6 to 12 percent slopes, eroded	0.2	0.1%
531B	Markham silt loam, 2 to 4 percent slopes	4.2	1.8%
531C2	Markham silt loam, 4 to 6 percent slopes, eroded	1.3	0.5%
697A	Wauconda silt loam, 0 to 2 percent slopes	12.0	5.0%

## Custom Soil Resource Report

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
698A	Grays silt loam, 0 to 2 percent slopes	3.1	1.3%
698B	Grays silt loam, 2 to 4 percent slopes	8.0	3.3%
830	Landfills	47.4	19.8%
979B	Grays and Markham silt loams, 2 to 4 percent slopes	16.9	7.1%
989B	Mundelein and Elliott silt loams, 2 to 4 percent slopes	2.2	0.9%
W	Water	1.5	0.6%
<b>Subtotals for Soil Survey Area</b>		<b>226.6</b>	<b>94.7%</b>
<b>Totals for Area of Interest</b>		<b>239.1</b>	<b>100.0%</b>

## Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate

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pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

## Kenosha and Racine Counties, Wisconsin

### AtA—Ashkum silty clay loam, 0 to 2 percent slopes

#### Map Unit Setting

*National map unit symbol:* 2ssrw  
*Elevation:* 520 to 930 feet  
*Mean annual precipitation:* 33 to 41 inches  
*Mean annual air temperature:* 46 to 54 degrees F  
*Frost-free period:* 160 to 190 days  
*Farmland classification:* Prime farmland if drained

#### Map Unit Composition

*Ashkum, drained, and similar soils:* 92 percent  
*Minor components:* 8 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Ashkum, Drained

##### Setting

*Landform:* Ground moraines, end moraines  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Parent material:* Clayey colluvium over till

##### Typical profile

*Ap - 0 to 12 inches:* silty clay loam  
*Bg1 - 12 to 29 inches:* silty clay  
*2Bg2 - 29 to 54 inches:* silty clay loam  
*2Cg - 54 to 60 inches:* silty clay loam

##### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Poorly drained  
*Runoff class:* Negligible  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.60 in/hr)  
*Depth to water table:* About 0 to 12 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* Frequent  
*Calcium carbonate, maximum in profile:* 25 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* Moderate (about 8.1 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2w  
*Hydrologic Soil Group:* C/D  
*Hydric soil rating:* Yes

**Minor Components**

**Peotone, drained**

*Percent of map unit:* 5 percent  
*Landform:* Depressions on ground moraines  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Dip  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Hydric soil rating:* Yes

**Orthents, clayey**

*Percent of map unit:* 2 percent  
*Landform:* Ground moraines, lake plains  
*Landform position (two-dimensional):* Summit  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

**Urban land**

*Percent of map unit:* 1 percent  
*Landform:* Ground moraines  
*Landform position (two-dimensional):* Summit  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

**BcA—Beecher silt loam, 1 to 3 percent slopes**

**Map Unit Setting**

*National map unit symbol:* g76j  
*Elevation:* 680 to 1,020 feet  
*Mean annual precipitation:* 29 to 35 inches  
*Mean annual air temperature:* 45 to 55 degrees F  
*Frost-free period:* 140 to 180 days  
*Farmland classification:* Prime farmland if drained

**Map Unit Composition**

*Beecher and similar soils:* 95 percent  
*Minor components:* 5 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Beecher**

**Setting**

*Landform:* Moraines  
*Landform position (two-dimensional):* Footslope  
*Landform position (three-dimensional):* Interfluve

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*Down-slope shape:* Concave  
*Across-slope shape:* Linear  
*Parent material:* Loess over calcareous, silty or loamy till

### Typical profile

*Ap - 0 to 9 inches:* silt loam  
*A2 - 9 to 12 inches:* silt loam  
*B1t,2B2t-B3t - 12 to 28 inches:* silty clay  
*2C - 28 to 60 inches:* silty clay loam

### Properties and qualities

*Slope:* 1 to 3 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Somewhat poorly drained  
*Runoff class:* High  
*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately low (0.00 to 0.14 in/hr)  
*Depth to water table:* About 0 to 12 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* Occasional  
*Calcium carbonate, maximum in profile:* 30 percent  
*Available water storage in profile:* High (about 10.4 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2w  
*Hydrologic Soil Group:* C/D  
*Forage suitability group:* High AWC, high water table (G095BY007WI)  
*Hydric soil rating:* No

### Minor Components

#### Ashkum

*Percent of map unit:* 5 percent  
*Landform:* Depressions  
*Landform position (three-dimensional):* Dip  
*Hydric soil rating:* Yes

## OzaB—Ozaukee silt loam, 2 to 6 percent slopes

### Map Unit Setting

*National map unit symbol:* 2sn0b  
*Elevation:* 640 to 890 feet  
*Mean annual precipitation:* 31 to 40 inches  
*Mean annual air temperature:* 46 to 51 degrees F  
*Frost-free period:* 135 to 190 days  
*Farmland classification:* All areas are prime farmland

### Map Unit Composition

*Ozaukee and similar soils:* 93 percent  
*Minor components:* 7 percent



## Custom Soil Resource Report

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Ozaukee

#### Setting

*Landform:* Ground moraines, end moraines  
*Landform position (two-dimensional):* Shoulder, summit  
*Landform position (three-dimensional):* Interfluvium  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Parent material:* Loess over Wisconsinan age silty and clayey till

#### Typical profile

*Ap - 0 to 6 inches:* silt loam  
*E - 6 to 8 inches:* silt loam  
*Bt1 - 8 to 12 inches:* silty clay loam  
*2Bt2 - 12 to 36 inches:* silty clay  
*2BCt - 36 to 39 inches:* silty clay loam  
*2Cd - 39 to 60 inches:* silty clay loam

#### Properties and qualities

*Slope:* 2 to 6 percent  
*Depth to restrictive feature:* 24 to 45 inches to dense material  
*Natural drainage class:* Moderately well drained  
*Runoff class:* Medium  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)  
*Depth to water table:* About 24 to 42 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 35 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* Low (about 5.7 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2e  
*Hydrologic Soil Group:* C  
*Other vegetative classification:* Trees/Timber (Woody Vegetation)  
*Hydric soil rating:* No

### Minor Components

#### Pewamo, drained

*Percent of map unit:* 3 percent  
*Landform:* Depressions on ground moraines, drainageways on ground moraines  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Base slope  
*Down-slope shape:* Concave, linear  
*Across-slope shape:* Concave  
*Other vegetative classification:* Mixed/Transitional (Mixed Native Vegetation)  
*Hydric soil rating:* Yes

#### Ashkum, drained

*Percent of map unit:* 3 percent  
*Landform:* Ground moraines, end moraines

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*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Base slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Other vegetative classification:* Grass/Prairie (Herbaceous Vegetation)  
*Hydric soil rating:* Yes

### Urban land

*Percent of map unit:* 1 percent  
*Landform:* Ground moraines  
*Landform position (two-dimensional):* Summit  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

## OzaB2—Ozaukee silt loam, 2 to 6 percent slopes, eroded

### Map Unit Setting

*National map unit symbol:* 2sn0d  
*Elevation:* 600 to 930 feet  
*Mean annual precipitation:* 31 to 42 inches  
*Mean annual air temperature:* 46 to 51 degrees F  
*Frost-free period:* 135 to 190 days  
*Farmland classification:* All areas are prime farmland

### Map Unit Composition

*Ozaukee, eroded, and similar soils:* 93 percent  
*Minor components:* 7 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Ozaukee, Eroded

#### Setting

*Landform:* Ground moraines, end moraines  
*Landform position (two-dimensional):* Shoulder, summit, backslope  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Parent material:* Loess over wisconsinan age silty and clayey till

#### Typical profile

*Ap - 0 to 8 inches:* silt loam  
*Bt1 - 8 to 11 inches:* silty clay loam  
*2Bt2 - 11 to 29 inches:* silty clay  
*2BCt - 29 to 34 inches:* silty clay loam  
*2Cd - 34 to 60 inches:* silty clay loam

#### Properties and qualities

*Slope:* 2 to 6 percent  
*Depth to restrictive feature:* 23 to 43 inches to densic material

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*Natural drainage class:* Moderately well drained  
*Runoff class:* Medium  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)  
*Depth to water table:* About 24 to 42 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 35 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* Low (about 5.0 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2e  
*Hydrologic Soil Group:* C  
*Other vegetative classification:* Trees/Timber (Woody Vegetation)  
*Hydric soil rating:* No

### Minor Components

#### Ashkum, drained

*Percent of map unit:* 3 percent  
*Landform:* Ground moraines, end moraines  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Base slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Other vegetative classification:* Grass/Prairie (Herbaceous Vegetation)  
*Hydric soil rating:* Yes

#### Pewamo, drained

*Percent of map unit:* 3 percent  
*Landform:* Depressions on ground moraines, drainageways on ground moraines  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Base slope  
*Down-slope shape:* Concave, linear  
*Across-slope shape:* Concave  
*Other vegetative classification:* Mixed/Transitional (Mixed Native Vegetation)  
*Hydric soil rating:* Yes

#### Urban land

*Percent of map unit:* 1 percent  
*Landform:* Ground moraines  
*Landform position (two-dimensional):* Summit  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

## Lake County, Illinois

### 67A—Harpster silty clay loam, 0 to 2 percent slopes

#### Map Unit Setting

*National map unit symbol:* 2t705  
*Elevation:* 490 to 960 feet  
*Mean annual precipitation:* 33 to 43 inches  
*Mean annual air temperature:* 46 to 55 degrees F  
*Frost-free period:* 145 to 195 days  
*Farmland classification:* Prime farmland if drained

#### Map Unit Composition

*Harpster, drained, and similar soils:* 93 percent  
*Minor components:* 7 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Harpster, Drained

##### Setting

*Landform:* Depressions on till plains, depressions on outwash plains, depressions on lake plains  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Dip  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Parent material:* Calcareous loess and/or glacial drift

##### Typical profile

*Akp - 0 to 18 inches:* silty clay loam  
*Bg1 - 18 to 36 inches:* silty clay loam  
*Bg2 - 36 to 41 inches:* silty clay loam  
*Cg - 41 to 60 inches:* silt loam

##### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Poorly drained  
*Runoff class:* Negligible  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.60 to 2.00 in/hr)  
*Depth to water table:* About 0 to 12 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* Frequent  
*Calcium carbonate, maximum in profile:* 40 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* High (about 11.2 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2w  
*Hydrologic Soil Group:* B/D  
*Hydric soil rating:* Yes

## Minor Components

### Drummer, drained

*Percent of map unit:* 5 percent  
*Landform:* Swales on outwash plains, swales on till plains  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Base slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Hydric soil rating:* Yes

### Elburn

*Percent of map unit:* 2 percent  
*Landform:* Outwash plains, till plains  
*Landform position (two-dimensional):* Summit, footslope  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

## 153A—Pella silty clay loam, 0 to 2 percent slopes

### Map Unit Setting

*National map unit symbol:* 2smzn  
*Elevation:* 490 to 830 feet  
*Mean annual precipitation:* 34 to 41 inches  
*Mean annual air temperature:* 46 to 54 degrees F  
*Frost-free period:* 150 to 195 days  
*Farmland classification:* Prime farmland if drained

### Map Unit Composition

*Pella, drained, and similar soils:* 96 percent  
*Minor components:* 4 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Pella, Drained

#### Setting

*Landform:* Outwash plains, till plains, lake plains  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Base slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Loess or silty material over calcareous loamy outwash

#### Typical profile

*Ap - 0 to 12 inches:* silty clay loam  
*Bg - 12 to 28 inches:* silty clay loam  
*2Bkg - 28 to 36 inches:* silt loam  
*2Cg - 36 to 60 inches:* stratified sandy loam to silty clay loam

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### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Poorly drained  
*Runoff class:* Negligible  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.60 to 2.00 in/hr)  
*Depth to water table:* About 0 to 12 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* Frequent  
*Calcium carbonate, maximum in profile:* 40 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* High (about 9.7 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2w  
*Hydrologic Soil Group:* B/D  
*Hydric soil rating:* Yes

### Minor Components

#### Harpster, drained

*Percent of map unit:* 3 percent  
*Landform:* Depressions on till plains, depressions on outwash plains  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Dip  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Hydric soil rating:* Yes

#### Urban land

*Percent of map unit:* 1 percent  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

## 232A—Ashkum silty clay loam, 0 to 2 percent slopes

### Map Unit Setting

*National map unit symbol:* 2ssrw  
*Elevation:* 520 to 930 feet  
*Mean annual precipitation:* 33 to 41 inches  
*Mean annual air temperature:* 46 to 54 degrees F  
*Frost-free period:* 160 to 190 days  
*Farmland classification:* Prime farmland if drained

### Map Unit Composition

*Ashkum, drained, and similar soils:* 92 percent

## Custom Soil Resource Report

*Minor components: 8 percent*

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Ashkum, Drained

#### Setting

*Landform: Ground moraines, end moraines*

*Landform position (two-dimensional): Toeslope*

*Landform position (three-dimensional): Talf*

*Down-slope shape: Linear*

*Across-slope shape: Concave*

*Parent material: Clayey colluvium over till*

#### Typical profile

*Ap - 0 to 12 inches: silty clay loam*

*Bg1 - 12 to 29 inches: silty clay*

*2Bg2 - 29 to 54 inches: silty clay loam*

*2Cg - 54 to 60 inches: silty clay loam*

#### Properties and qualities

*Slope: 0 to 2 percent*

*Depth to restrictive feature: More than 80 inches*

*Natural drainage class: Poorly drained*

*Runoff class: Negligible*

*Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)*

*Depth to water table: About 0 to 12 inches*

*Frequency of flooding: None*

*Frequency of ponding: Frequent*

*Calcium carbonate, maximum in profile: 25 percent*

*Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)*

*Available water storage in profile: Moderate (about 8.1 inches)*

#### Interpretive groups

*Land capability classification (irrigated): None specified*

*Land capability classification (nonirrigated): 2w*

*Hydrologic Soil Group: C/D*

*Hydric soil rating: Yes*

### Minor Components

#### Peotone, drained

*Percent of map unit: 5 percent*

*Landform: Depressions on ground moraines*

*Landform position (two-dimensional): Toeslope*

*Landform position (three-dimensional): Dip*

*Down-slope shape: Concave*

*Across-slope shape: Concave*

*Hydric soil rating: Yes*

#### Orthents, clayey

*Percent of map unit: 2 percent*

*Landform: Lake plains, ground moraines*

*Landform position (two-dimensional): Summit*

*Landform position (three-dimensional): Interfluvium*

*Down-slope shape: Linear*

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*Across-slope shape:* Linear

*Hydric soil rating:* No

### **Urban land**

*Percent of map unit:* 1 percent

*Landform:* Ground moraines

*Landform position (two-dimensional):* Summit

*Landform position (three-dimensional):* Interfluve

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Hydric soil rating:* No

## **298A—Beecher silt loam, 0 to 2 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* v2tj

*Elevation:* 510 to 980 feet

*Mean annual precipitation:* 28 to 40 inches

*Mean annual air temperature:* 45 to 54 degrees F

*Frost-free period:* 140 to 180 days

*Farmland classification:* Prime farmland if drained

### **Map Unit Composition**

*Beecher and similar soils:* 90 percent

*Minor components:* 10 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Beecher**

#### **Setting**

*Landform:* Ground moraines, end moraines

*Landform position (two-dimensional):* Footslope, summit

*Landform position (three-dimensional):* Interfluve

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Thin mantle of loess or other silty material and in the underlying till

#### **Typical profile**

*H1 - 0 to 9 inches:* silt loam

*H2 - 9 to 21 inches:* silty clay loam

*H3 - 21 to 37 inches:* silty clay loam

*H4 - 37 to 60 inches:* silty clay loam

#### **Properties and qualities**

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* 24 to 45 inches to densic material

*Natural drainage class:* Somewhat poorly drained

*Runoff class:* Medium

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)



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*Depth to water table:* About 6 to 24 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 35 percent  
*Available water storage in profile:* Low (about 5.8 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2w  
*Hydrologic Soil Group:* D  
*Hydric soil rating:* No

### Minor Components

#### Ashkum

*Percent of map unit:* 4 percent  
*Landform:* Ground moraines, end moraines  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Hydric soil rating:* Yes

#### Orthents, clayey

*Percent of map unit:* 3 percent  
*Landform:* Ground moraines, lake plains  
*Landform position (two-dimensional):* Summit  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

#### Urban land

*Percent of map unit:* 3 percent  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

## 298B—Beecher silt loam, 2 to 4 percent slopes

### Map Unit Setting

*National map unit symbol:* v2tk  
*Elevation:* 510 to 980 feet  
*Mean annual precipitation:* 28 to 40 inches  
*Mean annual air temperature:* 45 to 54 degrees F  
*Frost-free period:* 140 to 180 days  
*Farmland classification:* All areas are prime farmland

### Map Unit Composition

*Beecher and similar soils:* 90 percent  
*Minor components:* 10 percent

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*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Beecher

#### Setting

*Landform:* Ground moraines, end moraines

*Landform position (two-dimensional):* Backslope, footslope

*Landform position (three-dimensional):* Interfluvium

*Down-slope shape:* Convex

*Across-slope shape:* Convex

*Parent material:* Thin mantle of loess or other silty material and in the underlying till

#### Typical profile

*H1 - 0 to 7 inches:* silt loam

*H2 - 7 to 24 inches:* silty clay loam

*H3 - 24 to 36 inches:* silty clay loam

*H4 - 36 to 60 inches:* silty clay loam

#### Properties and qualities

*Slope:* 2 to 4 percent

*Depth to restrictive feature:* 24 to 45 inches to densic material

*Natural drainage class:* Somewhat poorly drained

*Runoff class:* High

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)

*Depth to water table:* About 6 to 24 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 35 percent

*Available water storage in profile:* Low (about 5.4 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 2e

*Hydrologic Soil Group:* C/D

*Hydric soil rating:* No

### Minor Components

#### Ashkum

*Percent of map unit:* 4 percent

*Landform:* Ground moraines, end moraines

*Landform position (two-dimensional):* Toeslope

*Landform position (three-dimensional):* Talf

*Down-slope shape:* Linear

*Across-slope shape:* Concave

*Hydric soil rating:* Yes

#### Urban land

*Percent of map unit:* 3 percent

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Hydric soil rating:* No

#### Orthents, clayey

*Percent of map unit:* 3 percent

*Landform:* Ground moraines, lake plains

## Custom Soil Resource Report

*Landform position (two-dimensional):* Summit, backslope  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

### 330A—Peotone silty clay loam, 0 to 2 percent slopes

#### Map Unit Setting

*National map unit symbol:* 2sn05  
*Elevation:* 500 to 1,020 feet  
*Mean annual precipitation:* 33 to 43 inches  
*Mean annual air temperature:* 46 to 55 degrees F  
*Frost-free period:* 140 to 195 days  
*Farmland classification:* Prime farmland if drained

#### Map Unit Composition

*Peotone, drained, and similar soils:* 95 percent  
*Minor components:* 5 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Peotone, Drained

##### Setting

*Landform:* Depressions  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Dip  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Parent material:* Silty and clayey colluvium

##### Typical profile

*Ap - 0 to 7 inches:* silty clay loam  
*Bg1 - 7 to 27 inches:* silty clay loam  
*Bg2 - 27 to 50 inches:* silty clay  
*Cg - 50 to 60 inches:* silty clay loam

##### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Very poorly drained  
*Runoff class:* Negligible  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.60 in/hr)  
*Depth to water table:* About 0 to 12 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* Frequent  
*Calcium carbonate, maximum in profile:* 20 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

## Custom Soil Resource Report

*Available water storage in profile:* High (about 9.8 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 3w

*Hydrologic Soil Group:* C/D

*Hydric soil rating:* Yes

### Minor Components

#### Peotone, long duration ponding

*Percent of map unit:* 5 percent

*Landform:* Depressions

*Landform position (two-dimensional):* Toeslope

*Landform position (three-dimensional):* Dip

*Down-slope shape:* Concave

*Across-slope shape:* Concave

*Hydric soil rating:* Yes

## 442A—Mundelein silt loam, 0 to 2 percent slopes

### Map Unit Setting

*National map unit symbol:* v32m

*Elevation:* 510 to 1,020 feet

*Mean annual precipitation:* 28 to 40 inches

*Mean annual air temperature:* 45 to 54 degrees F

*Frost-free period:* 140 to 180 days

*Farmland classification:* All areas are prime farmland

### Map Unit Composition

*Mundelein and similar soils:* 92 percent

*Minor components:* 8 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Mundelein

#### Setting

*Landform:* Outwash plains, stream terraces, lake plains

*Landform position (two-dimensional):* Summit, footslope

*Landform position (three-dimensional):* Rise

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Loess or other silty material and in the underlying outwash

#### Typical profile

*H1 - 0 to 17 inches:* silt loam

*H2 - 17 to 31 inches:* silty clay loam

*H3 - 31 to 42 inches:* silt loam

*H4 - 42 to 60 inches:* stratified sandy loam to silt loam

## Custom Soil Resource Report

### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Somewhat poorly drained  
*Runoff class:* Negligible  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.60 to 2.00 in/hr)  
*Depth to water table:* About 12 to 24 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 30 percent  
*Available water storage in profile:* High (about 10.2 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 1  
*Hydrologic Soil Group:* B/D  
*Hydric soil rating:* No

### Minor Components

#### Drummer

*Percent of map unit:* 4 percent  
*Landform:* Outwash plains, ground moraines  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* Yes

#### Pella

*Percent of map unit:* 2 percent  
*Landform:* Lake plains, outwash plains, ground moraines  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* Yes

#### Orthents, loamy

*Percent of map unit:* 1 percent  
*Landform:* Ground moraines, lake plains  
*Landform position (two-dimensional):* Summit  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

#### Urban land

*Percent of map unit:* 1 percent  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

## 443B—Barrington silt loam, 2 to 4 percent slopes

### Map Unit Setting

*National map unit symbol:* v32q  
*Elevation:* 510 to 1,020 feet  
*Mean annual precipitation:* 28 to 40 inches  
*Mean annual air temperature:* 45 to 54 degrees F  
*Frost-free period:* 140 to 180 days  
*Farmland classification:* All areas are prime farmland

### Map Unit Composition

*Barrington and similar soils:* 92 percent  
*Minor components:* 8 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Barrington

#### Setting

*Landform:* Lake plains, outwash plains, stream terraces  
*Landform position (two-dimensional):* Backslope, summit  
*Landform position (three-dimensional):* Interfluve, tread  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Parent material:* Loess or other silty material and in the underlying outwash

#### Typical profile

*H1 - 0 to 11 inches:* silt loam  
*H2 - 11 to 32 inches:* silty clay loam  
*H3 - 32 to 42 inches:* silt loam  
*H4 - 42 to 60 inches:* stratified fine sand to silt loam

#### Properties and qualities

*Slope:* 2 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Moderately well drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.60 to 2.00 in/hr)  
*Depth to water table:* About 24 to 42 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 30 percent  
*Available water storage in profile:* High (about 10.3 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2e  
*Hydrologic Soil Group:* C  
*Hydric soil rating:* No

## Minor Components

### Drummer

*Percent of map unit:* 4 percent  
*Landform:* Ground moraines, outwash plains  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* Yes

### Pella

*Percent of map unit:* 2 percent  
*Landform:* Outwash plains, ground moraines, lake plains  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* Yes

### Urban land

*Percent of map unit:* 1 percent  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

### Orthents, loamy

*Percent of map unit:* 1 percent  
*Landform:* Outwash plains, ground moraines, lake plains  
*Landform position (two-dimensional):* Summit, backslope  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

## 530B—Ozaukee silt loam, 2 to 4 percent slopes

### Map Unit Setting

*National map unit symbol:* 2sn06  
*Elevation:* 550 to 980 feet  
*Mean annual precipitation:* 35 to 41 inches  
*Mean annual air temperature:* 47 to 52 degrees F  
*Frost-free period:* 140 to 185 days  
*Farmland classification:* All areas are prime farmland

### Map Unit Composition

*Ozaukee and similar soils:* 94 percent  
*Minor components:* 6 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

## Description of Ozaukee

### Setting

*Landform:* End moraines, ground moraines  
*Landform position (two-dimensional):* Summit, shoulder  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Parent material:* Thin mantle of loess over silty clay loam till

### Typical profile

*Ap - 0 to 4 inches:* silt loam  
*BE - 4 to 10 inches:* silt loam  
*2Bt1 - 10 to 21 inches:* silty clay  
*2Bt2 - 21 to 39 inches:* silty clay loam  
*2Cd - 39 to 60 inches:* silty clay loam

### Properties and qualities

*Slope:* 2 to 4 percent  
*Depth to restrictive feature:* 23 to 45 inches to densic material  
*Natural drainage class:* Moderately well drained  
*Runoff class:* Medium  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)  
*Depth to water table:* About 24 to 42 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 35 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* Low (about 5.4 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2e  
*Hydrologic Soil Group:* C  
*Hydric soil rating:* No

## Minor Components

### Ashkum, drained

*Percent of map unit:* 4 percent  
*Landform:* Ground moraines, end moraines  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Base slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Hydric soil rating:* Yes

### Urban land

*Percent of map unit:* 1 percent  
*Landform:* Ground moraines  
*Landform position (two-dimensional):* Summit  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear



## Custom Soil Resource Report

*Hydric soil rating:* No

### **Orthents, clayey**

*Percent of map unit:* 1 percent

*Landform:* Ground moraines

*Landform position (two-dimensional):* Backslope, summit

*Landform position (three-dimensional):* Interfluve

*Down-slope shape:* Convex

*Across-slope shape:* Convex

*Hydric soil rating:* No

## **530B2—Ozaukee silt loam, 2 to 4 percent slopes, eroded**

### **Map Unit Setting**

*National map unit symbol:* 2yrqk

*Elevation:* 700 to 840 feet

*Mean annual precipitation:* 36 to 38 inches

*Mean annual air temperature:* 46 to 50 degrees F

*Frost-free period:* 157 to 185 days

*Farmland classification:* All areas are prime farmland

### **Map Unit Composition**

*Ozaukee and similar soils:* 92 percent

*Minor components:* 8 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Ozaukee**

#### **Setting**

*Landform:* Ground moraines, end moraines

*Landform position (two-dimensional):* Shoulder, summit, backslope

*Landform position (three-dimensional):* Interfluve, side slope

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Thin mantle of loess over silty clay loam till

#### **Typical profile**

*Ap - 0 to 7 inches:* silt loam

*Bt1 - 7 to 11 inches:* silty clay loam

*2Bt2 - 11 to 22 inches:* silty clay

*2Bt3 - 22 to 27 inches:* silty clay loam

*2Cd - 27 to 60 inches:* silty clay loam

#### **Properties and qualities**

*Slope:* 2 to 4 percent

*Depth to restrictive feature:* 23 to 45 inches to densic material

*Natural drainage class:* Moderately well drained

*Runoff class:* Medium

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)

*Depth to water table:* About 24 to 42 inches

## Custom Soil Resource Report

*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 35 percent  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water storage in profile:* Low (about 4.1 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2e  
*Hydrologic Soil Group:* C  
*Hydric soil rating:* No

### Minor Components

#### Ashkum, drained

*Percent of map unit:* 4 percent  
*Landform:* Ground moraines, end moraines  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Base slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Concave  
*Hydric soil rating:* Yes

#### Urban land

*Percent of map unit:* 2 percent  
*Landform:* Ground moraines  
*Landform position (two-dimensional):* Summit  
*Landform position (three-dimensional):* Interfluvium  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

#### Orthents, clayey

*Percent of map unit:* 2 percent  
*Landform:* Ground moraines  
*Landform position (two-dimensional):* Summit, backslope  
*Landform position (three-dimensional):* Interfluvium, side slope  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

## 530C2—Ozaukee silt loam, 4 to 6 percent slopes, eroded

### Map Unit Setting

*National map unit symbol:* 2sn07  
*Elevation:* 540 to 980 feet  
*Mean annual precipitation:* 35 to 42 inches  
*Mean annual air temperature:* 47 to 53 degrees F  
*Frost-free period:* 140 to 185 days  
*Farmland classification:* All areas are prime farmland

### Map Unit Composition

*Ozaukee, eroded, and similar soils:* 96 percent

*Minor components:* 4 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Ozaukee, Eroded

#### Setting

*Landform:* Ground moraines, end moraines

*Landform position (two-dimensional):* Shoulder, backslope

*Landform position (three-dimensional):* Side slope

*Down-slope shape:* Convex

*Across-slope shape:* Linear

*Parent material:* Thin mantle of loess over silty and clayey till

#### Typical profile

*Ap - 0 to 7 inches:* silt loam

*2Bt1 - 7 to 26 inches:* silty clay

*2Bt2 - 26 to 37 inches:* silty clay loam

*2Cd - 37 to 60 inches:* silty clay loam

#### Properties and qualities

*Slope:* 4 to 6 percent

*Depth to restrictive feature:* 22 to 45 inches to densic material

*Natural drainage class:* Moderately well drained

*Runoff class:* High

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)

*Depth to water table:* About 24 to 42 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 35 percent

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water storage in profile:* Low (about 5.0 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 3e

*Hydrologic Soil Group:* C

*Hydric soil rating:* No

### Minor Components

#### Urban land

*Percent of map unit:* 2 percent

*Landform:* Ground moraines

*Landform position (two-dimensional):* Summit

*Landform position (three-dimensional):* Interfluvium

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Hydric soil rating:* No

#### Orthents, clayey

*Percent of map unit:* 2 percent

*Landform:* Ground moraines

## Custom Soil Resource Report

*Landform position (two-dimensional):* Summit, backslope  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

### **530D2—Ozaukee silt loam, 6 to 12 percent slopes, eroded**

#### **Map Unit Setting**

*National map unit symbol:* 2sn0j  
*Elevation:* 520 to 1,000 feet  
*Mean annual precipitation:* 31 to 42 inches  
*Mean annual air temperature:* 46 to 53 degrees F  
*Frost-free period:* 135 to 195 days  
*Farmland classification:* Farmland of statewide importance

#### **Map Unit Composition**

*Ozaukee, eroded, and similar soils:* 93 percent  
*Minor components:* 7 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### **Description of Ozaukee, Eroded**

##### **Setting**

*Landform:* Ground moraines, end moraines  
*Landform position (two-dimensional):* Shoulder, backslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Loess over wisconsinan age silty and clayey till

##### **Typical profile**

*Ap - 0 to 7 inches:* silt loam  
*Bt1 - 7 to 11 inches:* silty clay loam  
*2Bt2 - 11 to 27 inches:* silty clay  
*2BCt - 27 to 32 inches:* silty clay loam  
*2Cd - 32 to 60 inches:* silty clay loam

##### **Properties and qualities**

*Slope:* 6 to 12 percent  
*Depth to restrictive feature:* 22 to 39 inches to densic material  
*Natural drainage class:* Moderately well drained  
*Runoff class:* High  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)  
*Depth to water table:* About 24 to 42 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 35 percent

## Custom Soil Resource Report

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water storage in profile:* Low (about 4.7 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 3e

*Hydrologic Soil Group:* C

*Other vegetative classification:* Trees/Timber (Woody Vegetation)

*Hydric soil rating:* No

### Minor Components

#### Blount, lake michigan lobe

*Percent of map unit:* 3 percent

*Landform:* End moraines, ground moraines

*Landform position (two-dimensional):* Footslope, summit

*Landform position (three-dimensional):* Interfluve

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Other vegetative classification:* Trees/Timber (Woody Vegetation)

*Hydric soil rating:* No

#### Urban land

*Percent of map unit:* 2 percent

*Landform:* Ground moraines

*Landform position (two-dimensional):* Summit

*Landform position (three-dimensional):* Interfluve

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Hydric soil rating:* No

#### Ozaukee, severely eroded

*Percent of map unit:* 2 percent

*Landform:* End moraines, ground moraines

*Landform position (two-dimensional):* Shoulder, backslope

*Landform position (three-dimensional):* Side slope

*Down-slope shape:* Convex

*Across-slope shape:* Linear

*Other vegetative classification:* Trees/Timber (Woody Vegetation)

*Hydric soil rating:* No

## 531B—Markham silt loam, 2 to 4 percent slopes

### Map Unit Setting

*National map unit symbol:* 2ytp

*Elevation:* 540 to 900 feet

*Mean annual precipitation:* 34 to 41 inches

*Mean annual air temperature:* 46 to 52 degrees F

*Frost-free period:* 160 to 180 days

*Farmland classification:* All areas are prime farmland

### Map Unit Composition

*Markham and similar soils:* 90 percent

*Minor components:* 10 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Markham

#### Setting

*Landform:* Ground moraines, end moraines

*Landform position (two-dimensional):* Summit, shoulder

*Landform position (three-dimensional):* Interfluvium

*Down-slope shape:* Convex

*Across-slope shape:* Convex

*Parent material:* Loess over silty clay loam till

#### Typical profile

*Ap - 0 to 8 inches:* silt loam

*2Bt1 - 8 to 21 inches:* silty clay loam

*2Bt2 - 21 to 32 inches:* silty clay loam

*2Cd - 32 to 60 inches:* silty clay loam

#### Properties and qualities

*Slope:* 2 to 4 percent

*Depth to restrictive feature:* 20 to 55 inches to densic material

*Natural drainage class:* Moderately well drained

*Runoff class:* Medium

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)

*Depth to water table:* About 24 to 42 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 30 percent

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water storage in profile:* Low (about 4.8 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 2e

*Hydrologic Soil Group:* C

*Hydric soil rating:* No

### Minor Components

#### Ashkum, drained

*Percent of map unit:* 6 percent

*Landform:* Ground moraines, end moraines

*Landform position (two-dimensional):* Toeslope

*Landform position (three-dimensional):* Base slope

*Down-slope shape:* Linear

*Across-slope shape:* Concave

*Hydric soil rating:* Yes

#### Orthents, clayey

*Percent of map unit:* 2 percent

*Landform:* Ground moraines

## Custom Soil Resource Report

*Landform position (two-dimensional):* Backslope, summit  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

### Urban land

*Percent of map unit:* 2 percent  
*Landform:* Ground moraines  
*Landform position (two-dimensional):* Summit  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

## 531C2—Markham silt loam, 4 to 6 percent slopes, eroded

### Map Unit Setting

*National map unit symbol:* 2ytps  
*Elevation:* 620 to 920 feet  
*Mean annual precipitation:* 34 to 41 inches  
*Mean annual air temperature:* 46 to 52 degrees F  
*Frost-free period:* 160 to 180 days  
*Farmland classification:* All areas are prime farmland

### Map Unit Composition

*Markham, eroded, and similar soils:* 90 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Markham, Eroded

#### Setting

*Landform:* Ground moraines, end moraines  
*Landform position (two-dimensional):* Shoulder, backslope  
*Landform position (three-dimensional):* Interfluve, side slope  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Parent material:* Loess over silty clay loam till

#### Typical profile

*Ap - 0 to 8 inches:* silt loam  
*2Bt1 - 8 to 21 inches:* silty clay loam  
*2Bt2 - 21 to 32 inches:* silty clay loam  
*2Cd - 32 to 60 inches:* silty clay loam

#### Properties and qualities

*Slope:* 4 to 6 percent  
*Depth to restrictive feature:* 20 to 55 inches to densic material  
*Natural drainage class:* Moderately well drained  
*Runoff class:* High

## Custom Soil Resource Report

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)

*Depth to water table:* About 24 to 42 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 30 percent

*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water storage in profile:* Low (about 4.8 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 3e

*Hydrologic Soil Group:* C

*Hydric soil rating:* No

### Minor Components

#### Ashkum, drained

*Percent of map unit:* 6 percent

*Landform:* Ground moraines, end moraines

*Landform position (two-dimensional):* Toeslope

*Landform position (three-dimensional):* Base slope

*Down-slope shape:* Linear

*Across-slope shape:* Concave

*Hydric soil rating:* Yes

#### Orthents, clayey

*Percent of map unit:* 2 percent

*Landform:* Ground moraines

*Landform position (two-dimensional):* Summit, backslope

*Landform position (three-dimensional):* Interfluvium

*Down-slope shape:* Convex

*Across-slope shape:* Convex

*Hydric soil rating:* No

#### Urban land

*Percent of map unit:* 2 percent

*Landform:* Ground moraines

*Landform position (two-dimensional):* Summit

*Landform position (three-dimensional):* Interfluvium

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Hydric soil rating:* No

## 697A—Wauconda silt loam, 0 to 2 percent slopes

### Map Unit Setting

*National map unit symbol:* v399

*Elevation:* 510 to 1,020 feet

*Mean annual precipitation:* 28 to 40 inches



## Custom Soil Resource Report

*Mean annual air temperature:* 45 to 54 degrees F  
*Frost-free period:* 140 to 180 days  
*Farmland classification:* Prime farmland if drained

### Map Unit Composition

*Wauconda and similar soils:* 92 percent  
*Minor components:* 8 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Wauconda

#### Setting

*Landform:* Outwash plains, stream terraces, lake plains  
*Landform position (two-dimensional):* Summit, footslope  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Loess or other silty material and in the underlying outwash

#### Typical profile

*H1 - 0 to 9 inches:* silt loam  
*H2 - 9 to 14 inches:* silt loam  
*H3 - 14 to 30 inches:* silty clay loam  
*H4 - 30 to 38 inches:* loam  
*H5 - 38 to 60 inches:* stratified loamy sand to silt loam

#### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Somewhat poorly drained  
*Runoff class:* Negligible  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.60 to 2.00 in/hr)  
*Depth to water table:* About 6 to 24 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 30 percent  
*Available water storage in profile:* High (about 9.6 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2w  
*Hydrologic Soil Group:* B/D  
*Hydric soil rating:* No

### Minor Components

#### Urban land

*Percent of map unit:* 2 percent  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

#### Pella

*Percent of map unit:* 2 percent  
*Landform:* Outwash plains, ground moraines, lake plains  
*Landform position (two-dimensional):* Toeslope

## Custom Soil Resource Report

*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* Yes

### **Orthents, loamy**

*Percent of map unit:* 2 percent  
*Landform:* Lake plains, ground moraines  
*Landform position (two-dimensional):* Summit  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

### **Drummer**

*Percent of map unit:* 2 percent  
*Landform:* Ground moraines, outwash plains  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* Yes

## **698A—Grays silt loam, 0 to 2 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* v39c  
*Elevation:* 510 to 970 feet  
*Mean annual precipitation:* 28 to 40 inches  
*Mean annual air temperature:* 45 to 52 degrees F  
*Frost-free period:* 140 to 180 days  
*Farmland classification:* All areas are prime farmland

### **Map Unit Composition**

*Grays and similar soils:* 90 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Grays**

#### **Setting**

*Landform:* Outwash plains, stream terraces  
*Landform position (two-dimensional):* Summit  
*Parent material:* Loess or other silty material and in the underlying outwash

#### **Typical profile**

*H1 - 0 to 9 inches:* silt loam  
*H2 - 9 to 12 inches:* silt loam  
*H3 - 12 to 35 inches:* silty clay loam  
*H4 - 35 to 42 inches:* loam  
*H5 - 42 to 60 inches:* stratified loamy sand to silt loam

## Custom Soil Resource Report

### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Moderately well drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.60 to 2.00 in/hr)  
*Depth to water table:* About 24 to 42 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 30 percent  
*Available water storage in profile:* High (about 10.0 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 1  
*Hydrologic Soil Group:* C  
*Hydric soil rating:* No

### Minor Components

#### Pella

*Percent of map unit:*  
*Landform:* Ground moraines, outwash plains, lake plains  
*Landform position (two-dimensional):* Toeslope  
*Hydric soil rating:* Yes

## 698B—Grays silt loam, 2 to 4 percent slopes

### Map Unit Setting

*National map unit symbol:* v39d  
*Elevation:* 510 to 1,020 feet  
*Mean annual precipitation:* 28 to 40 inches  
*Mean annual air temperature:* 45 to 54 degrees F  
*Frost-free period:* 140 to 180 days  
*Farmland classification:* All areas are prime farmland

### Map Unit Composition

*Grays and similar soils:* 92 percent  
*Minor components:* 8 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Grays

#### Setting

*Landform:* Outwash plains, stream terraces, lake plains  
*Landform position (two-dimensional):* Summit, backslope  
*Landform position (three-dimensional):* Interfluvium, tread  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex

## Custom Soil Resource Report

*Parent material:* Loess or other silty material and in the underlying outwash

### Typical profile

*H1 - 0 to 8 inches:* silt loam  
*H2 - 8 to 11 inches:* silt loam  
*H3 - 11 to 34 inches:* silty clay loam  
*H4 - 34 to 42 inches:* loam  
*H5 - 42 to 60 inches:* stratified loamy sand to silt loam

### Properties and qualities

*Slope:* 2 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Moderately well drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.60 to 2.00 in/hr)  
*Depth to water table:* About 24 to 42 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 30 percent  
*Available water storage in profile:* High (about 9.9 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2e  
*Hydrologic Soil Group:* C  
*Hydric soil rating:* No

### Minor Components

#### Orthents, loamy

*Percent of map unit:* 2 percent  
*Landform:* Lake plains, outwash plains, ground moraines  
*Landform position (two-dimensional):* Summit, backslope  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

#### Urban land

*Percent of map unit:* 2 percent  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

#### Drummer

*Percent of map unit:* 2 percent  
*Landform:* Outwash plains, ground moraines  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* Yes

#### Pella

*Percent of map unit:* 2 percent  
*Landform:* Outwash plains, ground moraines, lake plains  
*Landform position (two-dimensional):* Toeslope

*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* Yes

## 830—Landfills

### Map Unit Setting

*National map unit symbol:* w32n  
*Elevation:* 510 to 930 feet  
*Mean annual precipitation:* 28 to 40 inches  
*Mean annual air temperature:* 45 to 54 degrees F  
*Frost-free period:* 140 to 180 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Orthents, landfill, and similar soils:* 90 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Orthents, Landfill

#### Setting

*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Human transported material

#### Properties and qualities

*Slope:* 2 to 7 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Moderately well drained  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None

### Minor Components

#### Orthents, loamy, undulating

*Percent of map unit:* 5 percent  
*Landform:* Lake plains, outwash plains, ground moraines  
*Landform position (two-dimensional):* Summit, backslope  
*Landform position (three-dimensional):* Interfluve  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

#### Orthents, clayey, undulating

*Percent of map unit:* 5 percent  
*Landform:* Ground moraines, lake plains  
*Landform position (two-dimensional):* Summit, backslope  
*Landform position (three-dimensional):* Interfluve

## Custom Soil Resource Report

*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

### 979B—Grays and Markham silt loams, 2 to 4 percent slopes

#### Map Unit Setting

*National map unit symbol:* w52j  
*Elevation:* 510 to 970 feet  
*Mean annual precipitation:* 28 to 40 inches  
*Mean annual air temperature:* 45 to 52 degrees F  
*Frost-free period:* 140 to 180 days  
*Farmland classification:* All areas are prime farmland

#### Map Unit Composition

*Grays and similar soils:* 46 percent  
*Markham and similar soils:* 44 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Grays

##### Setting

*Landform:* Lake plains, outwash plains  
*Landform position (two-dimensional):* Backslope, summit  
*Parent material:* Loess or other silty material and in the underlying outwash

##### Typical profile

*H1 - 0 to 8 inches:* silt loam  
*H2 - 8 to 11 inches:* silt loam  
*H3 - 11 to 34 inches:* silty clay loam  
*H4 - 34 to 42 inches:* loam  
*H5 - 42 to 60 inches:* stratified loamy sand to silt loam

##### Properties and qualities

*Slope:* 2 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Moderately well drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.60 to 2.00 in/hr)  
*Depth to water table:* About 24 to 42 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 30 percent  
*Available water storage in profile:* High (about 9.9 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2e  
*Hydrologic Soil Group:* C  
*Hydric soil rating:* No

## Description of Markham

### Setting

*Landform:* Ground moraines, lake plains

*Landform position (two-dimensional):* Backslope, summit

*Parent material:* Thin mantle of loess or other silty material and in the underlying till

### Typical profile

*H1 - 0 to 8 inches:* silt loam

*H2 - 8 to 21 inches:* silty clay loam

*H3 - 21 to 32 inches:* silty clay loam

*H4 - 32 to 60 inches:* silty clay loam

### Properties and qualities

*Slope:* 2 to 4 percent

*Depth to restrictive feature:* 20 to 55 inches to densic material

*Natural drainage class:* Moderately well drained

*Runoff class:* Medium

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)

*Depth to water table:* About 24 to 42 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 30 percent

*Available water storage in profile:* Moderate (about 6.0 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 2e

*Hydrologic Soil Group:* C

*Hydric soil rating:* No

## Minor Components

### Pella

*Percent of map unit:*

*Landform:* Ground moraines, outwash plains, lake plains

*Landform position (two-dimensional):* Toeslope

*Hydric soil rating:* Yes

### Ashkum

*Percent of map unit:*

*Landform:* Ground moraines, end moraines

*Landform position (two-dimensional):* Toeslope

*Hydric soil rating:* Yes

## 989B—Mundelein and Elliott silt loams, 2 to 4 percent slopes

### Map Unit Setting

*National map unit symbol:* w52w  
*Elevation:* 510 to 970 feet  
*Mean annual precipitation:* 28 to 40 inches  
*Mean annual air temperature:* 45 to 52 degrees F  
*Frost-free period:* 140 to 180 days  
*Farmland classification:* All areas are prime farmland

### Map Unit Composition

*Mundelein and similar soils:* 46 percent  
*Elliott and similar soils:* 44 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Mundelein

#### Setting

*Landform:* Outwash plains, lake plains  
*Landform position (two-dimensional):* Backslope, footslope  
*Parent material:* Loess or other silty material and in the underlying outwash

#### Typical profile

*H1 - 0 to 12 inches:* silt loam  
*H2 - 12 to 30 inches:* silty clay loam  
*H3 - 30 to 37 inches:* silt loam  
*H4 - 37 to 60 inches:* stratified fine sand to silt loam

#### Properties and qualities

*Slope:* 2 to 4 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Somewhat poorly drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.60 to 2.00 in/hr)  
*Depth to water table:* About 12 to 24 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 30 percent  
*Available water storage in profile:* High (about 9.5 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2e  
*Hydrologic Soil Group:* B/D  
*Hydric soil rating:* No



## Description of Elliott

### Setting

*Landform:* Lake plains, ground moraines

*Landform position (two-dimensional):* Backslope, footslope

*Parent material:* Thin mantle of loess or other silty material and in the underlying till

### Typical profile

*H1 - 0 to 9 inches:* silt loam

*H2 - 9 to 13 inches:* silty clay loam

*H3 - 13 to 17 inches:* silty clay loam

*H4 - 17 to 35 inches:* silty clay loam

*H5 - 35 to 60 inches:* silty clay loam

### Properties and qualities

*Slope:* 2 to 4 percent

*Depth to restrictive feature:* 20 to 45 inches to densic material

*Natural drainage class:* Somewhat poorly drained

*Runoff class:* High

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)

*Depth to water table:* About 12 to 24 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 35 percent

*Available water storage in profile:* Low (about 5.9 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 2e

*Hydrologic Soil Group:* D

*Hydric soil rating:* No

## Minor Components

### Ashkum

*Percent of map unit:*

*Landform:* Ground moraines, end moraines

*Landform position (two-dimensional):* Toeslope

*Hydric soil rating:* Yes

### Pella

*Percent of map unit:*

*Landform:* Ground moraines, outwash plains, lake plains

*Landform position (two-dimensional):* Toeslope

*Hydric soil rating:* Yes

## **W—Water**

### **Map Unit Composition**

*Water:* 100 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Water**

#### **Setting**

*Landform:* Drainageways, lakes, oxbows, rivers, channels, perennial streams

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 8w

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## Custom Soil Resource Report

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## M.4 - Time of Concentration Calculation



Client: Zion Landfill, Inc.  
 Project: Zion Landfill – Site 2 North Expansion  
 Project #: 631020105  
 Calculated By: SJW Date: 05/2022  
 Checked By: DAM Date: 05/2022

**TITLE: TIME OF CONCENTRATION CALCULATION**

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### Problem Statement

Summarize the time of concentration input parameters for HydroCAD for both existing and proposed conditions. These parameters are used to describe how stormwater runoff is distributed over time. The time of concentration is defined as the longest amount of time that it would take for a drop of water to travel from the headwater of a subcatchment area to its downstream edge (i.e. prior to exiting the subcatchment area and being managed by a downstream element).

### Given

- The time of concentration flow paths for the existing conditions are shown on **Figure M.4-1**.
- The time of concentration flow paths for the proposed conditions are shown on **Figure M.4-2**.
- The methodology that HydroCAD uses to calculate the time of concentration is based on Technical Release (TR) 20 / TR-55, published by the Soil Conservation Service.

### Assumptions

The following assumptions were made in the calculations:

- Stormwater Basin 5R is an existing, permitted stormwater detention basin that will collect water from the proposed landfill expansion area. A detailed stormwater analysis for this detention basin was developed for the existing landfill application, which was reviewed and approved by the Lake County Stormwater Management Commission. The Stormwater Basin 5R discharge rates from the previously completed model are considered part of the “existing” or “pre-development” conditions. The previously completed model has not been re-run as part of this analysis. Instead, the previous model results are used in conjunction with the additional areas identified to be hydraulically disturbed to represent the total discharge rate of the proposed expansion area under pre-development conditions.
- For post-development conditions, all drainage areas associated with Stormwater Basin 5R, including areas that will be re-routed to the proposed Stormwater Basin 8 have been modeled due to modified conditions.
- Portions of the proposed landfill expansion area have been permitted for temporary soil stockpiles that have been or will be in place prior to landfill expansion development. Due to the temporary nature of these stockpiles, they are not considered in time of concentration determinations.
- All land areas proposed to be developed as part of the landfill expansion within the perimeter berm surrounding the expansion are included in the proposed stormwater management system. Stormwater from exterior portions of the perimeter berm surrounding the horizontal expansion area will drain off-site. It is noted that runoff in this area is de minimis and curve numbers are calculated for completeness purposes only.



Client: Zion Landfill, Inc.  
 Project: Zion Landfill – Site 2 North Expansion  
 Project #: 631020105  
 Calculated By: SJW Date: 05/2022  
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**TITLE: TIME OF CONCENTRATION CALCULATION**

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- Terrace berms and downchutes or flume pipes will be utilized in the proposed landfill. The most conservative assumption is to exclude these control measures during the time of concentration calculations. These elements have been modeled and sized appropriately, as shown in **Appendix M.6**.
- For each subcatchment, the time of concentration ( $T_c$ ) is the sum of the travel times ( $T_t$ ) of various consecutive flow segments. Two types of flow are used in the time of concentration calculations: sheet flow and shallow concentrated flow.
- Sheet flow is assumed to become shallow concentrated flow at 100 feet, which is conservative in comparison to 300 feet, which is designated in the TR-55 procedures.
- The Manning's coefficient "n" for sheet flow in the existing model is assumed to be 0.400, indicative of a wooded area with light underbrush. This number is appropriate for modeling a well-maintained wooded area. During shallow concentrated flow, the average flow velocity in cultivated areas was assumed to be 5.0 ft/sec. This is the HydroCAD default for, "Woodland."
- The Manning's coefficient "n" for sheet flow on the proposed landfill final cover is assumed to be 0.150. This is indicative of short grass cover. During shallow concentrated flow, the average flow velocity on the landfill final cover is assumed to be 7.0 ft/sec. This is the HydroCAD default for, "Short Grass Pasture."
- The Manning's coefficient "n" for sheet flow over the paved surfaces lots such as the leachate loadout area is assumed to be 0.011, indicative of smooth surfaces. During shallow concentrated flow, the average velocity on paved surfaces is assumed to be 20.3 ft/sec. This is the HydroCAD default for, "Paved." These values were not used for time of concentration flowpaths over perimeter roads.
- The time of concentration flow paths for the existing and proposed conditions are represented in **Figures M.4-1** and **M.4-2**, respectively.



Client: Zion Landfill, Inc.  
 Project: Zion Landfill – Site 2 North Expansion  
 Project #: 631020105  
 Calculated By: SJW Date: 05/2022  
 Checked By: DAM Date: 05/2022

**TITLE: TIME OF CONCENTRATION CALCULATION**

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### Calculations

The following formulas are used by HydroCAD to determine lag times:

#### *Sheet Flow:*

Sheet flow is flow over plane surfaces and is calculated by HydroCAD using the following equation.

$$T_t = \frac{(0.007(nL))^{0.8}}{P_2^{0.5} S^{0.4}}$$

Where:

$T_t$  = Travel time (hours)  
 $P_2$  = 2-year, 24-hour rainfall depth  
 $S$  = Land slope along flow path (ft/ft)  
 $L$  = Flow Length (ft)  
 $n$  = Manning's coefficient

#### *Shallow Concentrated Flow:*

Average velocity is calculated by HydroCAD using the following equation.

$$T_t = \frac{L}{3,600V}$$

Where:

$L$  = Flow Length (ft)  
 $V$  = Average velocity (ft/sec)  
 3,600= Conversion factor from seconds to hours

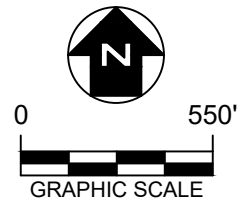
### Results

A summary of the flow lengths and slopes used to calculate the time of concentration for each subcatchment area is provided in attached **Tables M.4-1 and M.4-2** for existing and proposed conditions. The table also includes the time of concentration values calculated by HydroCAD for each subcatchment area. Refer to **Appendix M.8** for a copy of the HydroCAD summary pages for each subcatchment area, which lists the slopes, flow lengths, and cover types that have been entered in the stormwater model.







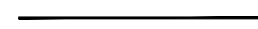


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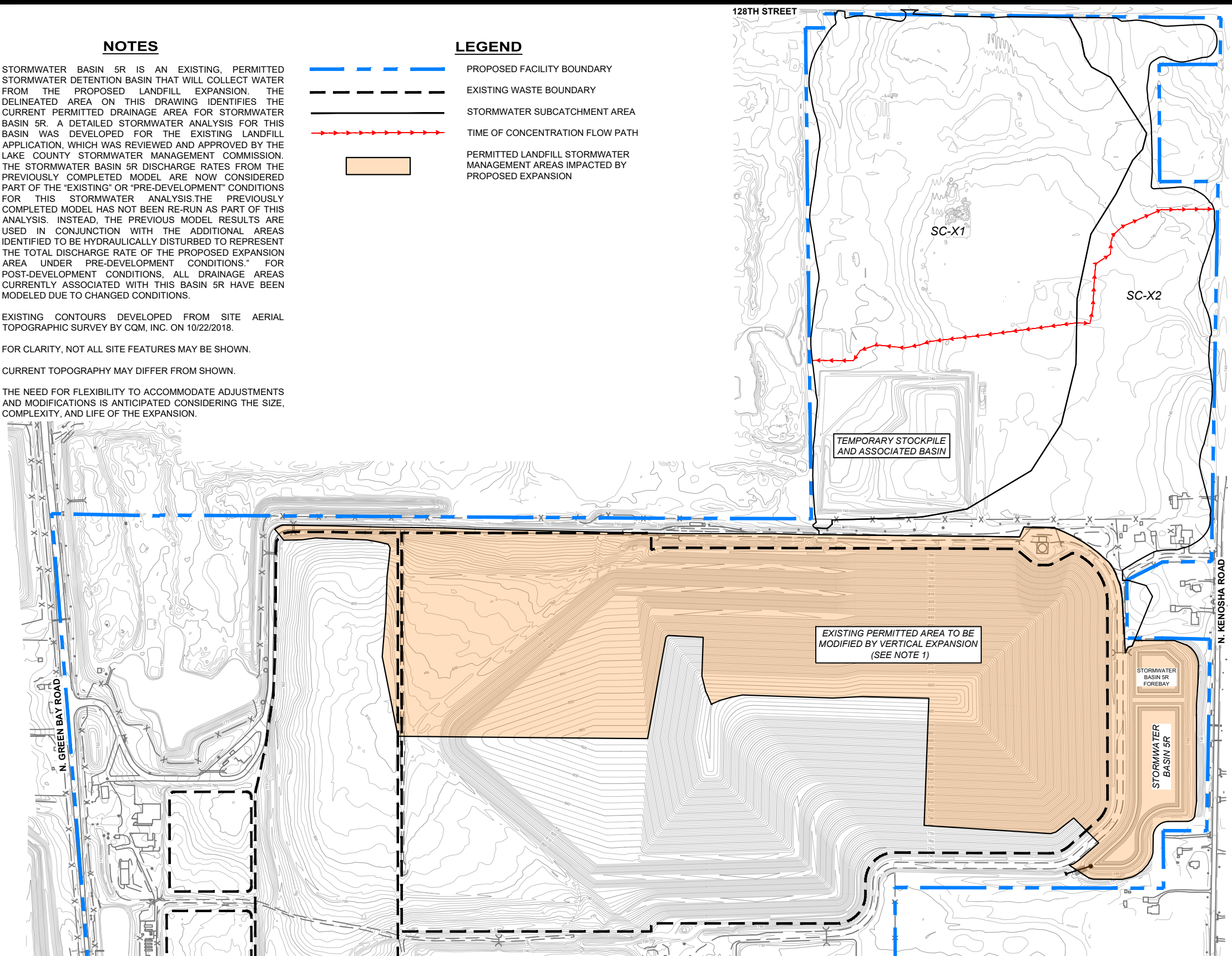


**NOTES**

1. STORMWATER BASIN 5R IS AN EXISTING, PERMITTED STORMWATER DETENTION BASIN THAT WILL COLLECT WATER FROM THE PROPOSED LANDFILL EXPANSION. THE DELINEATED AREA ON THIS DRAWING IDENTIFIES THE CURRENT PERMITTED DRAINAGE AREA FOR STORMWATER BASIN 5R. A DETAILED STORMWATER ANALYSIS FOR THIS BASIN WAS DEVELOPED FOR THE EXISTING LANDFILL APPLICATION, WHICH WAS REVIEWED AND APPROVED BY THE LAKE COUNTY STORMWATER MANAGEMENT COMMISSION. THE STORMWATER BASIN 5R DISCHARGE RATES FROM THE PREVIOUSLY COMPLETED MODEL ARE NOW CONSIDERED PART OF THE "EXISTING" OR "PRE-DEVELOPMENT" CONDITIONS FOR THIS STORMWATER ANALYSIS. THE PREVIOUSLY COMPLETED MODEL HAS NOT BEEN RE-RUN AS PART OF THIS ANALYSIS. INSTEAD, THE PREVIOUS MODEL RESULTS ARE USED IN CONJUNCTION WITH THE ADDITIONAL AREAS IDENTIFIED TO BE HYDRAULICALLY DISTURBED TO REPRESENT THE TOTAL DISCHARGE RATE OF THE PROPOSED EXPANSION AREA UNDER "PRE-DEVELOPMENT" CONDITIONS." FOR POST-DEVELOPMENT CONDITIONS, ALL DRAINAGE AREAS CURRENTLY ASSOCIATED WITH THIS BASIN 5R HAVE BEEN MODELED DUE TO CHANGED CONDITIONS.
2. EXISTING CONTOURS DEVELOPED FROM SITE AERIAL TOPOGRAPHIC SURVEY BY CQM, INC. ON 10/22/2018.
3. FOR CLARITY, NOT ALL SITE FEATURES MAY BE SHOWN.
4. CURRENT TOPOGRAPHY MAY DIFFER FROM SHOWN.
5. THE NEED FOR FLEXIBILITY TO ACCOMMODATE ADJUSTMENTS AND MODIFICATIONS IS ANTICIPATED CONSIDERING THE SIZE, COMPLEXITY, AND LIFE OF THE EXPANSION.

**LEGEND**

-  PROPOSED FACILITY BOUNDARY
-  EXISTING WASTE BOUNDARY
-  STORMWATER SUBCATCHMENT AREA
-  TIME OF CONCENTRATION FLOW PATH
-  PERMITTED LANDFILL STORMWATER MANAGEMENT AREAS IMPACTED BY PROPOSED EXPANSION



REV. NO.	DATE	DESCRIPTION
REV. 1	OCT. 2020	REVISION BASED ON UPDATE TO WDO

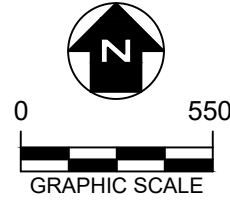


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**ZION LANDFILL SITE 2 NORTH EXPANSION  
LAKE COUNTY, ILLINOIS**

**M.4-1  
TIME OF CONCENTRATION FLOW PATHS  
PERMITTED / EXISTING CONDITIONS**

DRAWN BY:	SJW	APPROVED BY:	DAM	PROJ. NO.:	631020105	DATE:	AUGUST 2021
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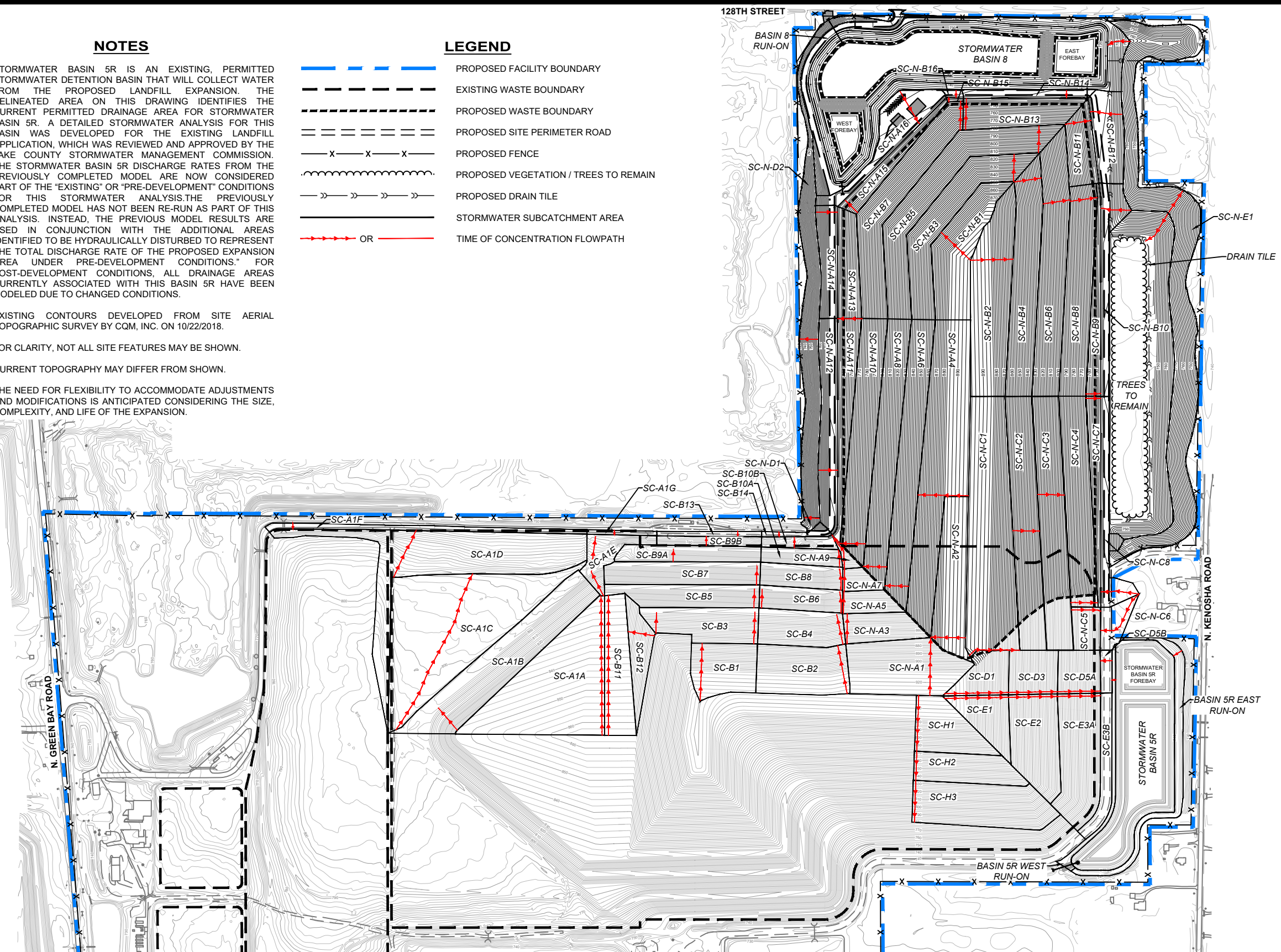


**NOTES**

1. STORMWATER BASIN 5R IS AN EXISTING, PERMITTED STORMWATER DETENTION BASIN THAT WILL COLLECT WATER FROM THE PROPOSED LANDFILL EXPANSION. THE DELINEATED AREA ON THIS DRAWING IDENTIFIES THE CURRENT PERMITTED DRAINAGE AREA FOR STORMWATER BASIN 5R. A DETAILED STORMWATER ANALYSIS FOR THIS BASIN WAS DEVELOPED FOR THE EXISTING LANDFILL APPLICATION, WHICH WAS REVIEWED AND APPROVED BY THE LAKE COUNTY STORMWATER MANAGEMENT COMMISSION. THE STORMWATER BASIN 5R DISCHARGE RATES FROM THE PREVIOUSLY COMPLETED MODEL ARE NOW CONSIDERED PART OF THE "EXISTING" OR "PRE-DEVELOPMENT" CONDITIONS FOR THIS STORMWATER ANALYSIS. THE PREVIOUSLY COMPLETED MODEL HAS NOT BEEN RE-RUN AS PART OF THIS ANALYSIS. INSTEAD, THE PREVIOUS MODEL RESULTS ARE USED IN CONJUNCTION WITH THE ADDITIONAL AREAS IDENTIFIED TO BE HYDRAULICALLY DISTURBED TO REPRESENT THE TOTAL DISCHARGE RATE OF THE PROPOSED EXPANSION AREA UNDER "PRE-DEVELOPMENT" CONDITIONS." FOR POST-DEVELOPMENT CONDITIONS, ALL DRAINAGE AREAS CURRENTLY ASSOCIATED WITH THIS BASIN 5R HAVE BEEN MODELED DUE TO CHANGED CONDITIONS.
2. EXISTING CONTOURS DEVELOPED FROM SITE AERIAL TOPOGRAPHIC SURVEY BY CQM, INC. ON 10/22/2018.
3. FOR CLARITY, NOT ALL SITE FEATURES MAY BE SHOWN.
4. CURRENT TOPOGRAPHY MAY DIFFER FROM SHOWN.
5. THE NEED FOR FLEXIBILITY TO ACCOMMODATE ADJUSTMENTS AND MODIFICATIONS IS ANTICIPATED CONSIDERING THE SIZE, COMPLEXITY, AND LIFE OF THE EXPANSION.

**LEGEND**

- PROPOSED FACILITY BOUNDARY
- EXISTING WASTE BOUNDARY
- PROPOSED WASTE BOUNDARY
- PROPOSED SITE PERIMETER ROAD
- PROPOSED FENCE
- PROPOSED VEGETATION / TREES TO REMAIN
- PROPOSED DRAIN TILE
- STORMWATER SUBCATCHMENT AREA
- OR TIME OF CONCENTRATION FLOWPATH



REV. 1	OCT. 2020	REVISION BASED ON UPDATE TO WDO
REV. NO.	DATE	DESCRIPTION



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**ZION LANDFILL SITE 2 NORTH EXPANSION  
LAKE COUNTY, ILLINOIS**

**M.4-2  
TIME OF CONCENTRATION FLOW PATHS  
PROPOSED CONDITIONS**

DRAWN BY:	SJW	APPROVED BY:	DAM	PROJ. NO.:	631020105	DATE:	AUGUST 2021
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Zion Landfill - Site 2 North Expansion

Table M.4-1 Subcatchment Time of Concentration Summary Existing Conditions							
Subcatchment Name	Area (Acres)	Curve Number	Sheet Flow		Shallow Concentrated Flow		Time of Concentration (Min)
			Length (ft)	Slope (ft/ft)	Length (ft)	Slope (ft/ft)	
Subcat X1	81.7	80	100	0.002	1323	0.013	98.8
Subcat X2	40.2	78	100	0.014	1041	0.0042	80.3

## Zion Landfill - Site 2 North Expansion

Table M.4-2 Subcatchment Time of Concentration Summary Proposed Conditions								
Subcatchment Name	Area (Acres)	Curve Number	Sheet Flow		Shallow Concentrated Flow		Time of Concentration	
			Length (ft)	Slope (ft/ft)	Length (ft)	Slope (ft/ft)	(Min)	
Subcatchment A1	Subcat A1A	6.74	80	100	0.060	623	0.060	12.8
	Subcat A1B	5.23	80	100	0.250	52	0.250	4.0
	Subcat A1C	9.16	80	100	0.022	805	0.022	23.3
	Subcat A1D	7.07	80	100	0.119	169	0.119	6.3
	Subcat A1E	1.09	80	100	0.250	224	0.250	4.9
	Subcat A1F	0.99	88	25	0.333	0	0.000	1.1
	Subcat A1G	0.19	86	23	0.333	0	0.000	1.0
Subcatchment B	Subcat B1	2.04	80	100	0.100	197	0.213	6.5
	Subcat B2	2.74	80	100	0.100	154	0.240	6.2
	Subcat B3	2.21	80	100	0.250	65	0.250	4.1
	Subcat B4	1.87	80	100	0.250	58	0.250	4.1
	Subcat B5	1.93	80	98	0.333	0	0.000	3.3
	Subcat B6	1.18	80	100	0.255	10	0.255	3.8
	Subcat B7	2.19	80	98	0.333	0	0.000	3.3
	Subcat B8	1.17	80	100	0.287	9	0.257	3.6
	Subcat B9A	1.44	80	67	0.333	0	0.000	2.5
	Subcat B9B	0.61	80	49	0.333	0	0.000	1.9
	Subcat B10A	0.81	80	90	0.333	0	0.000	3.1
	Subcat B10B	0.53	80	57	0.333	0	0.000	2.2
	Subcat B11	2.27	80	100	0.059	626	0.059	12.9
	Subcat B12	1.20	80	100	0.250	38	0.250	4.0
Subcat B13	0.32	86	27	0.333	0	0.000	1.2	
Subcat B14	0.27	86	76	0.211	0	0.000	3.3	

Zion Landfill - Site 2 North Expansion

Table M.4-2 Subcatchment Time of Concentration Summary Proposed Conditions								
Subcatchment Name	Area (Acres)	Curve Number	Sheet Flow		Shallow Concentrated Flow		Time of Concentration	
			Length (ft)	Slope (ft/ft)	Length (ft)	Slope (ft/ft)	(Min)	
Subcatchment N-A	Subcat N-A1	3.60	80	100	0.100	201	0.250	6.5
	Subcat N-A2	2.82	80	100	0.100	80	0.220	5.9
	Subcat N-A3	1.31	80	100	0.250	57	0.250	4.1
	Subcat N-A4	6.88	80	100	0.100	162	0.233	6.3
	Subcat N-A5	0.73	80	100	0.250	14	0.250	3.9
	Subcat N-A6	4.13	80	100	0.250	23	0.250	3.9
	Subcat N-A7	0.44	80	100	0.250	117	0.250	4.4
	Subcat N-A8	3.80	80	100	0.250	23	0.250	3.9
	Subcat N-A9	0.18	80	100	0.250	96	0.250	4.3
	Subcat N-A10	3.77	80	100	0.250	32	0.250	4.0
	Subcat N-A11	1.84	80	100	0.250	29	0.250	3.9
	Subcat N-A12	2.37	83	100	0.198	2	0.198	4.2
	Subcat N-A13	1.25	80	100	0.250	14	0.321	3.9
	Subcat N-A14	1.31	83	100	0.215	15	0.215	4.1
	Subcat N-A15	1.04	80	95	0.250	0	0.000	3.7
	Subcat N-A16	2.08	92	100	0.033	106	0.033	1.6

## Zion Landfill - Site 2 North Expansion

Table M.4-2 Subcatchment Time of Concentration Summary Proposed Conditions								
Subcatchment Name	Area (Acres)	Curve Number	Sheet Flow		Shallow Concentrated Flow		Time of Concentration	
			Length (ft)	Slope (ft/ft)	Length (ft)	Slope (ft/ft)	(Min)	
<b>Subcatchment N-B</b>	Subcat N-B1	3.15	80	100	0.100	109	0.250	6.0
	Subcat N-B2	4.49	80	100	0.100	121	0.250	6.1
	Subcat N-B3	3.43	80	100	0.250	40	0.250	4.0
	Subcat N-B4	3.80	80	100	0.250	41	0.250	4.0
	Subcat N-B5	4.50	80	100	0.250	40	0.250	4.0
	Subcat N-B6	4.29	80	100	0.250	41	0.250	4.0
	Subcat N-B7	3.96	80	100	0.250	47	0.250	4.0
	Subcat N-B8	3.52	80	100	0.250	42	0.250	4.0
	Subcat N-B9	1.16	80	79	0.250	0	0.000	3.2
	Subcat N-B10	1.54	85	100	0.250	62	0.120	4.2
	Subcat N-B11	1.27	80	100	0.250	36	0.250	4.0
	Subcat N-B12	1.72	82	100	0.159	70	0.061	5.3
	Subcat N-B13	2.01	80	100	0.250	65	0.250	0.8
	Subcat N-B14	0.67	87	44	0.086	0	0.000	0.4
	Subcat N-B15	0.04	80	21	0.250	0	0.000	1.1
	Subcat N-B16	0.10	85	45	0.086	0	0.000	0.4
<b>Subcatchment N-C</b>	Subcat N-C1	6.98	80	100	0.100	173	0.242	6.3
	Subcat N-C2	4.20	80	100	0.250	39	0.250	4.0
	Subcat N-C3	4.22	80	100	0.250	40	0.250	4.0
	Subcat N-C4	3.52	80	100	0.250	40	0.250	4.0
	Subcat N-C5	0.75	80	100	0.250	54	0.250	4.1
	Subcat N-C6	0.74	83	100	0.020	207	0.035	25.6
	Subcat N-C7	1.16	80	78	0.250	0	0.000	3.1
	Subcat N-C8	1.57	85	100	0.020	100	0.061	24.0



## Zion Landfill - Site 2 North Expansion

Table M.4-2 Subcatchment Time of Concentration Summary Proposed Conditions								
Subcatchment Name	Area (Acres)	Curve Number	Sheet Flow		Shallow Concentrated Flow		Time of Concentration	
			Length (ft)	Slope (ft/ft)	Length (ft)	Slope (ft/ft)	(Min)	
Subcatchment N-D	Subcat N-D1	0.11	80	83	0.300	0	0.000	3.1
	Subcat N-D2	4.70	80	100	0.300	1	0.300	3.5
Subcatchment N-E	Subcat N-E1	8.95	80	47	0.210	0	0.000	2.2
Subcatchment D	Subcat D1	1.26	80	100	0.100	232	0.250	6.6
	Subcat D3	1.33	80	100	0.250	154	0.250	4.5
	Subcat D5A	1.13	80	100	0.250	124	0.250	4.4
	Subcat D5B	0.31	86	62	0.044	0	0.000	0.6
Subcatchment E	Subcat E1	1.42	80	100	0.100	233	0.250	6.6
	Subcat E2	2.82	80	100	0.250	154	0.250	4.5
	Subcat E3A	3.27	80	100	0.250	124	0.250	4.4
	Subcat E3B	1.09	86	61	0.051	0	0.000	0.6
Subcatchment H	Subcat H1	1.98	80	100	0.100	189	0.250	6.4
	Subcat H2	1.86	80	100	0.250	51	0.250	4.0
	Subcat H3	3.57	80	100	0.250	117	0.250	4.4
Drain Tile	Subcat Drain Tile	12.18	81	100	0.250	94	0.250	4.2
Basin 5R	Subcat Basin 5R East	1.51	80	52	0.214	0	0.000	0.3
	Subcat Basin 5R West	0.60	80	22	0.250	0	0.000	0.1
	Subcat Basin 5R	7.72	98	N/A	N/A	N/A	N/A	N/A <sup>1</sup>
Basin 8	Subcat Basin 8 Run-On	4.10	82	100	0.250	18	0.250	3.9
	Subcat Basin 8	13.44	98	N/A	N/A	N/A	N/A	N/A <sup>1</sup>

Note: 1. Subcatchments for Stormwater Basins 5R and 8 account for the water surface, therefore, they do not have a time of concentration values.

# M.5 - Subcatchment Area Discharge Rates



Client: Zion Landfill, Inc.  
 Project: Zion Landfill – Site 2 North Expansion  
 Project #: 631020105  
 Calculated By: SJW Date: 05/2022  
 Checked By: DAM Date: 05/2022

**TITLE: SUBCATCHMENT DISCHARGE RATES**

---

### Problem Statement

Determine the stormwater runoff rates for the existing and proposed conditions for the Site 2 North Expansion. Stormwater discharge rates from the various subcatchment areas are used to determine the adequacy of terrace berms, downchutes, flume pipes (also known as letdown pipes), ditches, and basins.

### Given

Parameters, such as rainfall, acreage, curve number, and flow length discussed in previous sections are entered into HydroCAD for each subcatchment. The stormwater discharge rates for each subcatchment are calculated in HydroCAD using these parameters. Runoff from subcatchments on the exterior portions of the perimeter berm surrounding the horizontal expansion area is de minimis and discharge rates are calculated in these areas for completeness purposes only. This calculation sheet provides a summary of the input values and the HydroCAD model results. Equations to determine these parameters are described in previous portions of **Appendix M**.

As discussed in previous calculations, Stormwater Basin 5R is an existing, permitted stormwater detention basin that will collect water from the proposed landfill expansion area. A detailed stormwater analysis for this detention basin was developed for the existing landfill application, which was reviewed and approved by the Lake County Stormwater Management Commission. The Stormwater Basin 5R discharge rates from the previously completed model are considered part of the “existing” or “pre-development” conditions. The previously completed model has not been re-run as part of this analysis. Instead, the previous model results are used in conjunction with the additional areas identified to be hydraulically disturbed to represent the total discharge rate of the proposed expansion area under pre-development conditions.

### Storm Model Setup

The stormwater methodology and base information was defined as follows:

Runoff Calculation Method:	SCS TR-20
Reach Routing Method:	Storage Indication Plus Translation Method
Pond Routing Method:	Storage Indication Method (Modified-Plus)
Storm Distribution:	Updated Huff Distribution - Bulletin 75 (Rainfall Distributions for Illinois) 1 <sup>st</sup> Quartile, 1-hour storms 3 <sup>rd</sup> Quartile, 24-hour storms
Unit Hydrograph:	SCS
Antecedent Moisture Condition:	2

The Natural Resources Conservation Service (NRCS) developed methods TR-20 and TR-55 as standardized stormwater modeling. Both provide similar results. TR-20 is the computer-based modeling approach that is more complex and generally considered slightly more accurate than TR-



Client: Zion Landfill, Inc.  
Project: Zion Landfill – Site 2 North Expansion  
Project #: 631020105  
Calculated By: SJW Date: 05/2022  
Checked By: DAM Date: 05/2022

**TITLE: SUBCATCHMENT DISCHARGE RATES**

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55. TR-55, frequently called the tabular method, was developed after TR-20 to help simplify the modeling process. TR-55 was developed to use chart-based solutions with the SCS runoff equation. For the purpose of this hydrologic model, TR-20 methodology was used.

### **Model Calculations and Results**

The stormwater model was analyzed for the 1-hour and 24-hour storm events for the 2-year, 10-year, 25-year, and 100-year frequencies. A summary of the discharge rates for the modeled storms for both existing and proposed conditions are provided in **Table M.5-1** and **Table M.5-2**, respectively. In addition, reports summarizing the results of the HydroCAD model runs are provided in **Appendix M.8**.



## Zion Landfill - Site 2 North Expansion

**Table M.5-1  
Subcatchment Discharge Summary - Peak Discharge Rates  
Existing Conditions**

Subcatchment Name	1-Hour Storm Duration				24-Hour Storm Duration			
	2-Year (cfs)	10-Year (cfs)	25-Year (cfs)	100-Year (cfs)	2-Year (cfs)	10-Year (cfs)	25-Year (cfs)	100-Year (cfs)
Subcat X1	16.55	42.66	65.10	105.58	15.52	29.10	39.06	55.40
Subcat X2	7.96	21.95	34.12	56.44	7.17	13.80	18.72	26.81

Note: 1. The total area evaluated for the existing conditions (227.0 acres) includes the areas identified above (121.9 acres) and the areas currently routed to Stormwater Basin 5R under the permitted landfill design (105.1 acres).

**Zion Landfill - Site 2 North Expansion**

Table M.5-2 Subcatchment Discharge Summary - Peak Discharge Rates Proposed Conditions									
Subcatchment Name		1-Hour Storm Duration				24-Hour Storm Duration			
		2-Year (cfs)	10-Year (cfs)	25-Year (cfs)	100-Year (cfs)	2-Year (cfs)	10-Year (cfs)	25-Year (cfs)	100-Year (cfs)
Subcatchment A1	Subcat A1A	3.47	9.82	15.43	25.84	1.31	2.48	3.34	4.74
	Subcat A1B	3.27	9.54	15.02	25.09	1.02	1.93	2.60	3.69
	Subcat A1C	3.96	10.71	16.74	27.84	1.79	3.36	4.52	6.41
	Subcat A1D	4.22	12.13	19.06	31.91	1.38	2.61	3.51	4.98
	Subcat A1E	0.67	1.92	3.08	5.17	0.21	0.40	0.54	0.77
	Subcat A1F	1.46	3.14	4.48	6.81	0.25	0.43	0.55	0.75
	Subcat A1G	0.24	0.54	0.79	1.22	0.05	0.08	0.10	0.14
Subcatchment B	Subcat B1	1.21	3.49	5.48	9.17	0.4	0.75	1.01	1.44
	Subcat B2	1.64	4.71	7.40	12.39	0.53	1.01	1.36	1.93
	Subcat B3	1.38	4.02	6.34	10.59	0.43	0.82	1.10	1.56
	Subcat B4	1.17	3.40	5.36	8.96	0.36	0.69	0.93	1.32
	Subcat B5	1.21	3.57	5.60	9.34	0.38	0.71	0.96	1.36
	Subcat B6	0.74	2.16	3.40	5.68	0.23	0.44	0.59	0.83
	Subcat B7	1.37	4.05	6.36	10.59	0.43	0.81	1.09	1.55
	Subcat B8	0.73	2.15	3.39	5.64	0.23	0.43	0.58	0.83
	Subcat B9A	0.94	2.67	4.18	7.01	0.28	0.53	0.71	1.01
	Subcat B9B	0.40	1.13	1.80	3.00	0.12	0.23	0.30	0.43
	Subcat B10A	0.51	1.51	2.36	3.93	0.16	0.30	0.40	0.57
	Subcat B10B	0.35	0.99	1.55	2.60	0.1	0.20	0.26	0.37
	Subcat B11	1.17	3.30	5.19	8.68	0.44	0.84	1.12	1.60
	Subcat B12	0.75	2.19	3.45	5.76	0.23	0.44	0.60	0.85
Subcat B13	0.39	0.91	1.32	2.05	0.08	0.13	0.18	0.24	
Subcat B14	0.32	0.73	1.07	1.66	0.06	0.11	0.15	0.20	

## Zion Landfill - Site 2 North Expansion

Table M.5-2 Subcatchment Discharge Summary - Peak Discharge Rates Proposed Conditions									
Subcatchment Name	1-Hour Storm Duration				24-Hour Storm Duration				
	2-Year (cfs)	10-Year (cfs)	25-Year (cfs)	100-Year (cfs)	2-Year (cfs)	10-Year (cfs)	25-Year (cfs)	100-Year (cfs)	
Subcatchment N-A	Subcat N-A1	2.14	6.15	9.67	16.18	0.7	1.33	1.79	2.54
	Subcat N-A2	1.70	4.88	7.67	13.01	0.55	1.04	1.40	1.99
	Subcat N-A3	0.82	2.38	3.76	6.28	0.26	0.48	0.65	0.92
	Subcat N-A4	4.11	11.80	18.54	31.04	1.34	2.54	3.41	4.85
	Subcat N-A5	0.46	1.34	2.11	3.53	0.14	0.27	0.36	0.52
	Subcat N-A6	2.59	7.55	11.89	19.85	0.81	1.52	2.05	2.91
	Subcat N-A7	0.28	0.80	1.26	2.11	0.09	0.16	0.22	0.31
	Subcat N-A8	2.38	6.95	10.94	18.27	0.74	1.40	1.89	2.68
	Subcat N-A9	0.11	0.33	0.53	0.88	0.04	0.07	0.09	0.13
	Subcat N-A10	2.36	6.89	10.85	18.11	0.74	1.39	1.88	2.66
	Subcat N-A11	1.15	3.37	5.30	8.84	0.36	0.68	0.91	1.30
	Subcat N-A12	2.02	5.30	8.02	12.90	0.51	0.94	1.24	1.73
	Subcat N-A13	0.78	2.29	3.61	6.02	0.24	0.46	0.62	0.88
	Subcat N-A14	1.12	2.93	4.43	7.12	0.28	0.52	0.68	0.95
	Subcat N-A15	0.65	1.90	2.99	4.99	0.2	0.38	0.51	0.73
	Subcat N-A16	4.32	8.46	11.57	16.79	0.59	0.95	1.21	1.63



Zion Landfill - Site 2 North Expansion

**Table M.5-2  
Subcatchment Discharge Summary - Peak Discharge Rates  
Proposed Conditions**

Subcatchment Name	1-Hour Storm Duration				24-Hour Storm Duration				
	2-Year (cfs)	10-Year (cfs)	25-Year (cfs)	100-Year (cfs)	2-Year (cfs)	10-Year (cfs)	25-Year (cfs)	100-Year (cfs)	
Subcatchment N-B	Subcat N-B1	1.90	5.44	8.55	14.49	0.62	1.16	1.57	2.22
	Subcat N-B2	2.69	7.72	12.14	20.56	0.88	1.66	2.23	3.16
	Subcat N-B3	2.15	6.26	9.85	16.45	0.67	1.27	1.70	2.42
	Subcat N-B4	2.38	6.94	10.93	18.26	0.74	1.40	1.89	2.68
	Subcat N-B5	2.81	8.21	12.93	21.58	0.88	1.66	2.24	3.17
	Subcat N-B6	2.68	7.83	12.33	20.58	0.84	1.58	2.13	3.03
	Subcat N-B7	2.48	7.23	11.39	19.02	0.77	1.46	1.97	2.80
	Subcat N-B8	2.21	6.43	10.13	16.91	0.69	1.30	1.75	2.49
	Subcat N-B9	0.73	2.15	3.37	5.61	0.23	0.43	0.58	0.82
	Subcat N-B10	1.64	3.92	5.78	9.08	0.36	0.63	0.83	1.15
	Subcat N-B11	0.79	2.31	3.64	6.09	0.25	0.47	0.63	0.89
	Subcat N-B12	1.31	3.44	5.37	8.77	0.36	0.66	0.88	1.24
	Subcat N-B13	1.29	3.83	6.03	10.04	0.39	0.74	1.00	1.42
	Subcat N-B14	0.91	2.02	2.90	4.41	0.17	0.28	0.37	0.51
	Subcat N-B15	0.03	0.08	0.12	0.20	0.01	0.01	0.02	0.03
	Subcat N-B16	0.11	0.27	0.39	0.61	0.02	0.04	0.05	0.07
Subcatchment N-C	Subcat N-C1	4.17	11.98	18.83	31.53	1.36	2.58	3.47	4.92
	Subcat N-C2	2.63	7.67	12.07	20.16	0.82	1.55	2.09	2.96
	Subcat N-C3	2.64	7.70	12.13	20.25	0.82	1.56	2.10	2.98
	Subcat N-C4	2.20	6.42	10.10	16.87	0.69	1.30	1.75	2.48
	Subcat N-C5	0.47	1.36	2.15	3.59	0.15	0.28	0.37	0.53
	Subcat N-C6	0.41	1.01	1.52	2.44	0.16	0.29	0.38	0.53
	Subcat N-C7	0.73	2.16	3.39	5.64	0.23	0.43	0.58	0.82
	Subcat N-C8	1.08	2.52	3.70	5.81	0.36	0.64	0.84	1.16

Zion Landfill - Site 2 North Expansion

Table M.5-2 Subcatchment Discharge Summary - Peak Discharge Rates Proposed Conditions									
Subcatchment Name		1-Hour Storm Duration				24-Hour Storm Duration			
		2-Year (cfs)	10-Year (cfs)	25-Year (cfs)	100-Year (cfs)	2-Year (cfs)	10-Year (cfs)	25-Year (cfs)	100-Year (cfs)
Subcatchment N-D	Subcat N-D1	0.07	0.20	0.31	0.52	0.02	0.04	0.05	0.08
	Subcat N-D2	2.95	8.68	13.63	22.72	0.92	1.74	2.34	3.32
Subcatchment N-E	Subcat N-E1	3.44	8.30	13.25	24.87	1.61	2.72	3.64	5.51
Subcatchment D	Subcat D1	0.75	2.14	3.37	5.64	0.25	0.46	0.62	0.89
	Subcat D3	0.83	2.40	3.79	6.34	0.26	0.49	0.66	0.94
	Subcat D5A	0.71	2.05	3.23	5.40	0.22	0.42	0.56	0.80
	Subcat D5B	0.38	0.88	1.28	1.97	0.07	0.13	0.17	0.23
Subcatchment E	Subcat E1	0.84	2.42	3.81	6.38	0.28	0.52	0.71	1.00
	Subcat E2	1.76	5.07	8.01	13.40	0.55	1.04	1.40	1.99
	Subcat E3A	2.04	5.91	9.33	15.61	0.64	1.21	1.63	2.31
	Subcat E3B	1.34	3.08	4.49	6.91	0.26	0.45	0.59	0.82
Subcatchment H	Subcat H1	1.18	3.39	5.33	8.92	0.39	0.73	0.98	1.40
	Subcat H2	1.17	3.40	5.35	8.94	0.36	0.69	0.93	1.31
	Subcat H3	2.23	6.45	10.18	17.02	0.7	1.32	1.78	2.52
Drain Tile	Subcat Drain Tile	8.47	23.74	36.89	60.84	2.46	4.60	6.16	8.69
Basin 5R	Subcat Basin 5R East	0.96	2.90	4.55	7.56	0.29	0.56	0.75	1.07
	Subcat Basin 5R West	0.38	1.15	1.80	2.99	0.12	0.22	0.30	0.42
	Subcat Basin 5R	27.71	45.07	57.46	77.66	2.39	3.70	4.64	6.17
Basin 8	Subcat Basin 8 Run-On	3.17	8.61	13.19	21.46	0.86	1.58	2.11	2.96
	Subcat Basin 8	48.21	78.44	99.99	135.14	4.15	6.43	8.07	10.73

# M.6 - Stormwater Conveyance Feature Sizing



Client: Zion Landfill, Inc.  
 Project: Zion Landfill – Site 2 North Expansion  
 Project #: 631020105  
 Calculated By: SJW Date: 05/2022  
 Checked By: DAM Date: 05/2022

**TITLE: STORMWATER CONVEYANCE FEATURE SIZING**

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## Problem Statement

Determine whether the proposed stormwater conveyance features are designed to convey storms up to the 100-year storm without erosion or overtopping. Specifically, evaluate the 100-year, 1-hour storm (which produces the highest peak flow velocity and peak depth of all modeled storm events) and the 10-year, 24-hour storm, in accordance with Section 600.12 of the Lake County Watershed Development Ordinance.

## Given

- Proposed stormwater conveyance features include the following:
  - Terrace berms/benches
  - Flume pipes (Letdown pipes)
  - Perimeter ditches
  - Culverts
  - Drain Tiles
  
- The locations of the existing and proposed stormwater conveyance features serving or being modified to accommodate the proposed landfill expansion area are shown on **Figure M.6-1**.
  
- The design summary of the existing and proposed landfill stormwater conveyance features that will serve or be modified to accommodate the proposed landfill expansion area are provided in the following attached tables:
  - **M.6-1** – Terrace Berm Design Summary
  - **M.6-2** – Flume Pipe Design Summary
  - **M.6-3** – Downchute Ditch Design Summary
  - **M.6-4** – Perimeter Ditch Design Summary
  - **M.6-5** – Culvert Design Summary
  
- The existing stormwater conveyance features that are hydraulically connected to the Site 2 North Expansion and proposed stormwater infrastructure have been modeled as part of the proposed conditions evaluation using design information obtained from the Site 2 East Expansion permitted stormwater design.
  
- Discharge rates for each subcatchment area model for the proposed conditions evaluation are provided in **Appendix M.5**.
  
- The details of the stormwater conveyance features are provided in the stormwater management details provided in the **Design Drawings** section of this application.



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**TITLE: STORMWATER CONVEYANCE FEATURE SIZING**

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## Design Assumptions

### *Terrace Berms/Benches*

- Proposed terrace berms will be 2.0-foot deep V-notch channels with 4H:1V and 2H:1V sideslopes. The proposed terrace berms are generally sloped at 0.02 ft/ft (2%). See **Table M.6-1** for specific slopes of each segment.
- Dimensions and slopes of existing terrace berms and benches modeled as part of the proposed conditions evaluation vary. Design details are provided in **Table M.6-1**.
- A Manning's coefficient of 0.030 was modeled in HydroCAD to represent grass-lined terrace berms. This value is used to calculate the critical velocity for the terrace berms.
- Terrace berms with identified flow velocities greater than 5 feet per second (fps) will be evaluated at the time of installation to determine if erosion control measures are necessary. Tractive forces (shear stress) acting along the terrace bed and sideslope lining shall not exceed the maximum allowable shearing resistance for the selected lining material. It is assumed that all terraces with a flow velocity less than 5 fps meet this criterion and are not anticipated to require erosion control lining material.
- Terrace berms shall convey run-off from the all modeled storm events without overtopping.

### *Flume Pipes (Letdown Pipes)*

- Flume pipes will be a constant diameter for their entire run (e.g. the same above and below on each feeder line). Pipe sizes vary based on location and the volume of water directed to the pipe.
- Proposed flume pipes will be either 16, 18, 24, or 30-inch ADS-N12 corrugated polyethylene (PE) pipes with smooth interior or equivalent materials. Proposed Flume Pipe Runs 3A/3B and 4A/4B are designed to have two (2) flume pipe trunk lines that will run parallel to each other and perpendicular to the 4H:1V proposed sideslopes of the final cover. Both proposed flume pipe runs will consist of dual, parallel flume pipes that collect and convey stormwater from separate terrace berm sections, as provided in **Table M.6-2**.
- Existing flume pipes modeled as part of the proposed conditions evaluation include Flume Pipe Runs 1, 2, 5, and 6 and consist of corrugated PE pipes with smooth interior. Flume Pipe Runs 5 and 6 were designed to be 12-inch and 16-inch corrugated PE pipes with smooth interior, respectively, in the Site 2 East Expansion Application and have not yet been constructed. For the Site 2 North Expansion, Flume Pipe Run 5 has been modified to a 24-inch corrugated PE pipe with smooth interior and Flume Pipe Run 6 has been modified to a 18-inch corrugated PE pipe smooth interior to accommodate stormwater flows from both the permitted and proposed landfill expansion area.



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**TITLE: STORMWATER CONVEYANCE FEATURE SIZING**

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- Flume pipe inlet risers have been designed to be the same size as the flume pipe trunk line that the inlet feeds into.
- Flume pipes shall convey run-off from the modeled storm events without achieving full flow capacity.
- A Manning's coefficient of 0.013 was modeled in HydroCAD to represent corrugated PE pipes with smooth interior. This value is used to calculate the peak flow depths and velocities for the flume pipes.

*Downchute Ditches*

- Existing downchute ditches modeled as part of the proposed conditions evaluation are 2.0-foot deep channels with 5H:1V sideslopes and base widths of 20 feet.
- The existing downchute ditches are lined with riprap.
- Downchute ditches shall convey run-off from the modeled storm events without overtopping or backing up.
- A Manning's coefficient of 0.035 was modeled in HydroCAD to represent riprap lined down-chutes.

*Perimeter Ditches*

- Proposed perimeter ditches have been modeled to have 3H:1V sideslopes and a bottom width of 10 feet. The landfill perimeter ditches have a channel slope ranging from 0.0050 ft/ft to 0.0057 ft/ft. The wide grassed bottoms will promote sedimentation and foster a natural environment.
- Existing perimeter ditches modeled as part of the proposed conditions evaluation vary in bottom width and depth while maintain 3H:1V sideslopes. Existing perimeter ditches range from V-notch channels (0-ft bottom width) to a bottom width of 10 feet, depths ranging from 2.5 - 3.0 ft, and slopes ranging from 0.0039 to 0.0080 ft/ft.
- A Manning's coefficient of 0.030 was modeled in HydroCAD to represent grass-lined perimeter ditches. This value is used to calculate the critical velocity for the perimeter ditches.
- Perimeter ditch segments with identified flow velocities greater than 5 fps will be evaluated at the time of installation to determine if erosion control measures are necessary. Tractive forces (shear stress) acting along the ditch bed and sideslope lining shall not exceed the maximum allowable shearing resistance for the selected lining material. It is assumed that all ditches with a flow velocity less than 5 fps meet this criterion and are not anticipated to require erosion control lining material.



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*Culverts*

- Four (4) sets of culverts have been modeled including two (2) sets of existing culverts and two (2) sets of proposed box culverts.
- Multiple culverts may be located at each culvert location. The maximum allowable discharge of each culvert is multiplied by the number of culverts when determining its ability to convey each storm event.
- The following Manning's coefficients were modeled to represent the corresponding culvert material:
  - Manning's coefficient = 0.013 = corrugated polyethylene culverts (Existing)
  - Manning's coefficient = 0.011 = concrete culverts (Proposed)

*Drain Tile*

- A drain tile system will be installed in the wooded area east of the proposed landfill expansion area and adjacent to the property line in the northeast corner of the proposed landfill expansion area to facilitate stormwater drainage. This is intended to be a redundant drainage feature after infiltration through the ground soil occurs. Although the ultimate drainage discharge point of the drain tile system will be Stormwater Basin 8, the significant lead time prior to discharge will result in negligent flows during storm events. Therefore, these areas are not modeled within HydroCAD.

**Calculations and Results**

As identified in the Problem Statement, the peak velocities were analyzed for all stormwater conveyance features for the 10-year, 24-hour storm to demonstrate that flows will be non-erosive, demonstrating compliance with Section 600.12 of the Lake County Watershed Development Ordinance.

In addition, all stormwater conveyance features were evaluated for the 100-year, 1-hour storm event. This storm event produces the highest peak flow velocity and peak depth of all modeled storm events (see Model Output Files in **Appendix M.8**). Therefore, this storm can be used to ensure that the conveyance features are appropriately sized for all modeled storm events.

The model results and sizing analysis of the stormwater conveyance features serving the proposed landfill are provided in the following attached tables:

- M.6-1** – Terrace Berm/Bench Design Summary
- M.6-2** – Flume Pipe Design Summary
- M.6-3** – Downchute Ditch Design Summary
- M.6-4** – Perimeter Ditch Design Summary
- M.6-5** – Culvert Design Summary



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Project: Zion Landfill – Site 2 North Expansion  
Project #: 631020105  
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**TITLE: STORMWATER CONVEYANCE FEATURE SIZING**

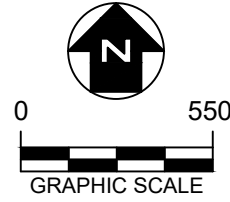
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The following key points are noted:

- All features will convey the stormwater associated with the peak storm (100-year, 1-hour storm) without overtopping, including:
  - Terrace Berms;
  - Flume Pipes;
  - Downchute Ditches;
  - Perimeter Ditches;
  - Culverts; and
  - Drain Tiles
- All terrace berms are able to convey the 10-year, 24-hour storm and the peak storm with flow velocities less than 5 fps with the exception of Terrace Berms N-A4, N-C1, and B-10A. These terrace berms will be lined with riprap or other approved erosion control lining material to ensure that the terrace berms will not erode or scour during the peak storm.
- All perimeter ditches are able to convey 10-year, 24-hour storm and the peak storm with flow velocities less than 5 fps with the exception of Perimeter Ditches 3, 4, 5, and 6. These ditch segments will be lined with riprap or other approved erosion control lining material to ensure that the ditch will not erode or scour during the peak storm.
- All culverts and flume pipes will have riprap or other approved erosion control lining material placed at the outlet location to reduce exit flow velocities and to minimize erosion and scour due to flow velocities exceeding 5 fps.





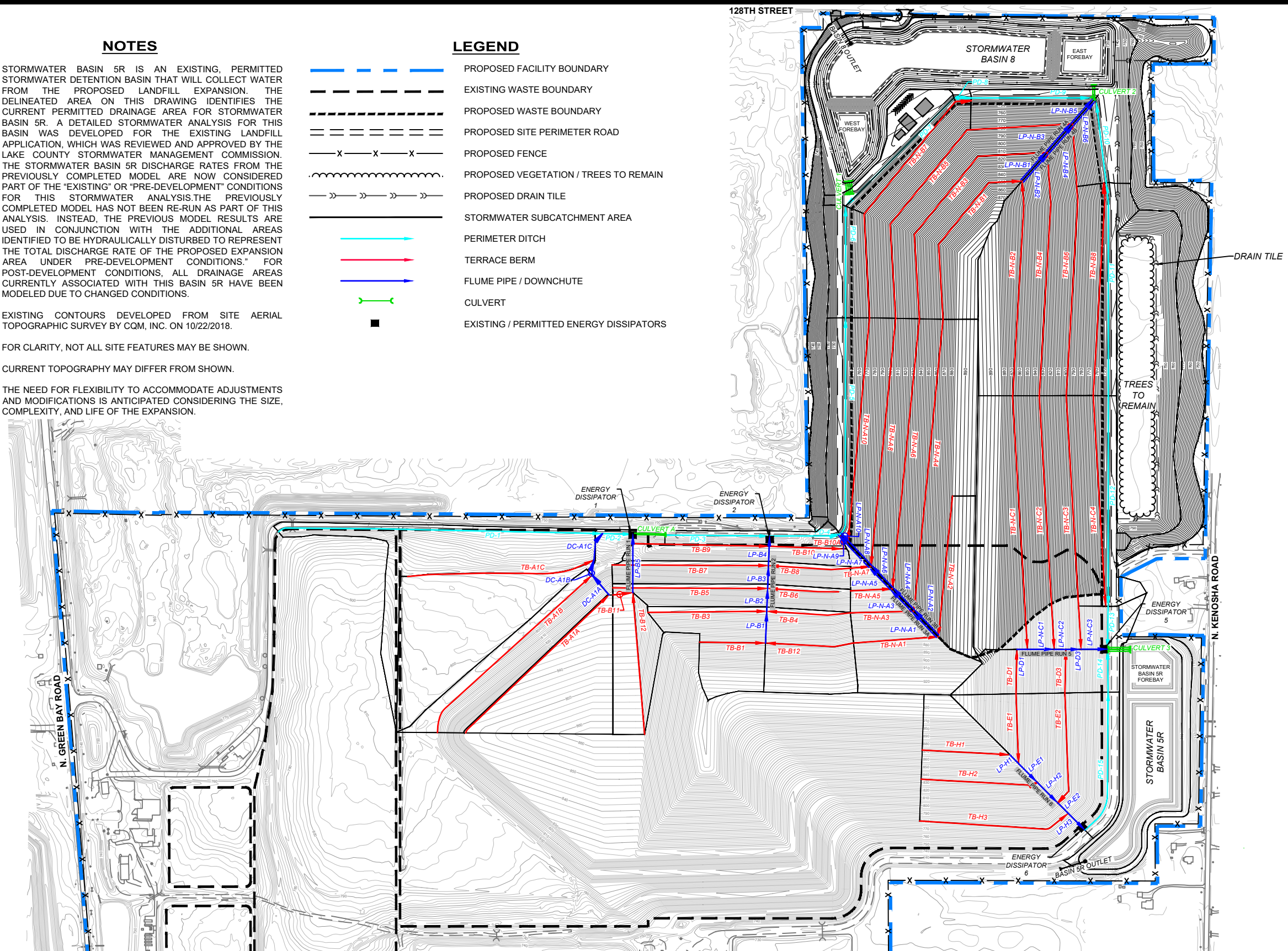


**NOTES**

1. STORMWATER BASIN 5R IS AN EXISTING, PERMITTED STORMWATER DETENTION BASIN THAT WILL COLLECT WATER FROM THE PROPOSED LANDFILL EXPANSION. THE DELINEATED AREA ON THIS DRAWING IDENTIFIES THE CURRENT PERMITTED DRAINAGE AREA FOR STORMWATER BASIN 5R. A DETAILED STORMWATER ANALYSIS FOR THIS BASIN WAS DEVELOPED FOR THE EXISTING LANDFILL APPLICATION, WHICH WAS REVIEWED AND APPROVED BY THE LAKE COUNTY STORMWATER MANAGEMENT COMMISSION. THE STORMWATER BASIN 5R DISCHARGE RATES FROM THE PREVIOUSLY COMPLETED MODEL ARE NOW CONSIDERED PART OF THE "EXISTING" OR "PRE-DEVELOPMENT" CONDITIONS FOR THIS STORMWATER ANALYSIS. THE PREVIOUSLY COMPLETED MODEL HAS NOT BEEN RE-RUN AS PART OF THIS ANALYSIS. INSTEAD, THE PREVIOUS MODEL RESULTS ARE USED IN CONJUNCTION WITH THE ADDITIONAL AREAS IDENTIFIED TO BE HYDRAULICALLY DISTURBED TO REPRESENT THE TOTAL DISCHARGE RATE OF THE PROPOSED EXPANSION AREA UNDER "PRE-DEVELOPMENT" CONDITIONS." FOR POST-DEVELOPMENT CONDITIONS, ALL DRAINAGE AREAS CURRENTLY ASSOCIATED WITH THIS BASIN 5R HAVE BEEN MODELED DUE TO CHANGED CONDITIONS.
2. EXISTING CONTOURS DEVELOPED FROM SITE AERIAL TOPOGRAPHIC SURVEY BY CQM, INC. ON 10/22/2018.
3. FOR CLARITY, NOT ALL SITE FEATURES MAY BE SHOWN.
4. CURRENT TOPOGRAPHY MAY DIFFER FROM SHOWN.
5. THE NEED FOR FLEXIBILITY TO ACCOMMODATE ADJUSTMENTS AND MODIFICATIONS IS ANTICIPATED CONSIDERING THE SIZE, COMPLEXITY, AND LIFE OF THE EXPANSION.

**LEGEND**

- PROPOSED FACILITY BOUNDARY
- EXISTING WASTE BOUNDARY
- PROPOSED WASTE BOUNDARY
- PROPOSED SITE PERIMETER ROAD
- PROPOSED FENCE
- PROPOSED VEGETATION / TREES TO REMAIN
- PROPOSED DRAIN TILE
- STORMWATER SUBCATCHMENT AREA
- PERIMETER DITCH
- TERRACE BERM
- FLUME PIPE / DOWNCHUTE
- CULVERT
- EXISTING / PERMITTED ENERGY DISSIPATORS



REV. NO.	DATE	DESCRIPTION
REV. 1	OCT. 2020	REVISION BASED ON UPDATE TO WDO



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**ZION LANDFILL SITE 2 NORTH EXPANSION  
LAKE COUNTY, ILLINOIS**

**M.6-1  
STORMWATER CONVEYANCE FEATURES  
PROPOSED CONDITIONS**

DRAWN BY:	SJW	APPROVED BY:	DAM	PROJ. NO.:	631020105	DATE:	AUGUST 2021
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## Zion Landfill - Site 2 North Expansion

Table M.6-1 Terrace Berm/Bench Design Summary Proposed Conditions											
Area	Terrace Berm/Bench Name	Design Parameters				Model Results					
		Left Sideslope	Right Sideslope	Slope	Depth <sup>1</sup>	10-Year Storm Velocity	100-Year Storm Peak Velocity	Peak Depth	Design Depth > Peak Depth?	Flow Rate < 5 fps?	Erosion Control Anticipated to be Required? <sup>2</sup>
		(H:V)	(H:V)	(ft/ft)	(ft)	(ft/sec)	(ft/sec)	(ft)	YES/NO	YES/NO	YES/NO
Subcatchment A1	TB-A1A	15:1	3:1	0.020	1.00	2.07	3.87	0.83	YES	YES	NO
	TB-A1B	40:1	4:1	0.020	1.50	1.56	2.96	0.55	YES	YES	NO
	TB-A1C	45:1	3:1	0.015	1.00	1.57	2.79	0.62	YES	YES	NO
Subcatchment B	TB-B1	4:1	2:1	0.020	1.25	1.98	3.91	0.88	YES	YES	NO
	TB-B2	4:1	2:1	0.020	1.25	2.13	4.21	0.99	YES	YES	NO
	TB-B3	3:1	10:1	0.010	2.00	1.31	2.56	0.75	YES	YES	NO
	TB-B4	3:1	10:1	0.010	2.00	1.26	2.48	0.72	YES	YES	NO
	TB-B5	3:1	10:1	0.010	2.00	1.27	2.43	0.70	YES	YES	NO
	TB-B6	3:1	10:1	0.010	2.00	1.12	2.20	0.60	YES	YES	NO
	TB-B7	3:1	10:1	0.010	2.00	1.31	2.52	0.74	YES	YES	NO
	TB-B8	3:1	10:1	0.010	2.00	1.12	2.20	0.60	YES	YES	NO
	TB-B9	3:1	3:1	0.005	3.00	0.64	1.69	0.38	YES	YES	NO
	TB-B10	3:1	3:1	0.005	3.00	0.76	1.88	0.46	YES	YES	NO
	TB-B10A	3:1	3:1	0.150	3.00	2.20	5.60	0.17	YES	NO	YES
	TB-B11	4:1	2:1	0.020	1.25	2.03	3.85	0.87	YES	YES	NO
TB-B12	4:1	2:1	0.020	1.25	1.73	3.40	0.72	YES	YES	NO	
Subcatchment N-A	TB-N-A1	4:1	2:1	0.022	2.00	2.37	4.67	1.07	YES	YES	NO
	TB-N-A2	4:1	2:1	0.020	2.00	2.14	4.20	0.99	YES	YES	NO
	TB-N-A3	4:1	2:1	0.009	2.00	1.31	2.60	0.88	YES	YES	NO
	TB-N-A4	4:1	2:1	0.020	2.00	2.68	5.14	1.33	YES	NO	YES
	TB-N-A5	4:1	2:1	0.015	2.00	1.39	2.78	0.65	YES	YES	NO
	TB-N-A6	4:1	2:1	0.020	2.00	2.36	4.54	1.11	YES	YES	NO
	TB-N-A7	4:1	2:1	0.020	2.00	1.36	2.71	0.51	YES	YES	NO
	TB-N-A8	4:1	2:1	0.020	2.00	2.31	4.47	1.08	YES	YES	NO
	TB-N-A10	4:1	2:1	0.020	2.00	2.31	4.49	1.09	YES	YES	NO

## Zion Landfill - Site 2 North Expansion

Table M.6-1 Terrace Berm/Bench Design Summary Proposed Conditions											
Area	Terrace Berm/Bench Name	Design Parameters				Model Results					
		Left Sideslope	Right Sideslope	Slope	Depth <sup>1</sup>	10-Year Storm Velocity	100-Year Storm Peak Velocity	Peak Depth	Design Depth > Peak Depth?	Flow Rate < 5 fps?	Erosion Control Anticipated to be Required? <sup>2</sup>
		(H:V)	(H:V)	(ft/ft)	(ft)	(ft/sec)	(ft/sec)	(ft)	YES/NO	YES/NO	YES/NO
Subcatchment N-B	TB-N-B1	4:1	2:1	0.020	2.00	2.21	4.27	1.01	YES	YES	NO
	TB-N-B2	4:1	2:1	0.020	2.00	2.41	4.66	1.15	YES	YES	NO
	TB-N-B3	4:1	2:1	0.020	2.00	2.25	4.34	1.04	YES	YES	NO
	TB-N-B4	4:1	2:1	0.020	2.00	2.31	4.48	1.08	YES	YES	NO
	TB-N-B5	4:1	2:1	0.020	2.00	2.41	4.58	1.12	YES	YES	NO
	TB-N-B6	4:1	2:1	0.020	2.00	2.38	4.58	1.13	YES	YES	NO
	TB-N-B7	4:1	2:1	0.020	2.00	2.33	4.50	1.09	YES	YES	NO
	TB-N-B8	4:1	2:1	0.021	2.00	2.31	4.52	1.06	YES	YES	NO
Subcatchment N-C	TB-N-C1	4:1	2:1	0.020	2.00	2.69	5.19	1.35	YES	NO	YES
	TB-N-C2	4:1	2:1	0.020	2.00	2.37	4.58	1.12	YES	YES	NO
	TB-N-C3	4:1	2:1	0.020	2.00	2.37	4.59	1.13	YES	YES	NO
	TB-N-C4	4:1	2:1	0.020	2.00	2.27	4.42	1.06	YES	YES	NO
Subcatchment D	TB-D1	4:1	2:1	0.020	2.00	1.76	3.46	0.74	YES	YES	NO
	TB-D3	4:1	2:1	0.020	2.00	1.78	3.55	0.77	YES	YES	NO
Subcatchment E	TB-E1	4:1	2:1	0.010	2.00	1.39	2.73	0.87	YES	YES	NO
	TB-E2	4:1	2:1	0.010	2.00	1.65	3.11	1.06	YES	YES	NO
Subcatchment H	TB-H1	4:1	2:1	0.010	2.00	1.51	2.96	0.99	YES	YES	NO
	TB-H2	4:1	2:1	0.010	2.00	1.49	2.93	0.96	YES	YES	NO
	TB-H3	4:1	2:1	0.010	2.00	1.76	3.43	1.22	YES	YES	NO

Note: 1. Existing permitted terrace berm dimensions obtained from Site 2 East Expansion Application including all terrace berms in Subcatchments A1, B, D, E, and H.  
 2. Tractive forces (shear stress) acting along the channel bed and sideslope lining shall not exceed the maximum allowable shearing resistance for the selected lining material. It is assumed that all channels with a flow velocity less than 5 fps meet this criterion and are not anticipated to require erosion control lining.

## Zion Landfill - Site 2 North Expansion

Table M.6-2 Flume Pipe Design Summary Proposed Conditions									
Area	Flume Pipe (Letdown Pipe) Name	Terrace Berm Section Collected	Design Parameters			Model Results			
			Lining Material	Diameter (in)	Slope (ft/ft)	10-Year Storm Velocity (ft/sec)	100-Year Storm Peak Velocity (ft/sec)	Peak Depth (ft)	Design Depth > Peak Depth? YES/NO
Existing Flume Pipe Run 1 <sup>2</sup>	LP-B5	TB-B11 / TB-B12	Corrugated Polyethylene	16	0.21	11.99	23.68	0.57	YES
Existing Flume Pipe Run 2 <sup>2</sup>	LP-B1	TB-B1 / TB-B2	Corrugated Polyethylene	24	0.24	13.09	27.13	0.59	YES
	LP-B2	TB-B3 / TB-B4	Corrugated Polyethylene	24	0.26	16.22	33.12	0.79	YES
	LP-B3	TB-B5 / TB-B6	Corrugated Polyethylene	24	0.26	17.57	35.27	0.93	YES
	LP-B4	TB-B7 / TB-B8	Corrugated Polyethylene	24	0.19	17.12	33.54	1.17	YES
Proposed Flume Pipe Run 3A	LP-N-A1	TB-N-A1	Corrugated Polyethylene	24	0.18	10.77	22.36	0.55	YES
	LP-N-A3	TB-N-A3	Corrugated Polyethylene	24	0.18	11.85	24.46	0.64	YES
	LP-N-A5	TB-N-A5	Corrugated Polyethylene	24	0.18	12.31	25.28	0.69	YES
	LP-N-A7	TB-N-A7	Corrugated Polyethylene	24	0.18	12.78	26.17	0.71	YES
	LP-N-A9	TB-N-A9	Corrugated Polyethylene	24	0.04	7.56	15.06	1.08	YES
Proposed Flume Pipe Run 3B	LP-N-A2	TB-N-A2	Corrugated Polyethylene	30	0.18	9.72	20.29	0.45	YES
	LP-N-A4	TB-N-A4	Corrugated Polyethylene	30	0.18	14.09	28.19	0.80	YES
	LP-N-A6	TB-N-A6	Corrugated Polyethylene	30	0.18	15.62	31.03	0.97	YES
	LP-N-A8	TB-N-A8	Corrugated Polyethylene	30	0.18	17.04	33.67	1.10	YES
	LP-N-A10	TB-N-A10	Corrugated Polyethylene	30	0.04	10.66	19.30	2.10	YES
Proposed Flume Pipe Run 4A	LP-N-B1	TB-N-B1	Corrugated Polyethylene	18	0.19	11.00	22.27	0.55	YES
	LP-N-B3	TB-N-B3	Corrugated Polyethylene	18	0.19	13.65	26.74	0.83	YES
	LP-N-B5	TB-N-B5	Corrugated Polyethylene	18	0.19	16.14	29.80	1.17	YES
Proposed Flume Pipe Run 4B	LP-N-B2	TB-N-B2	Corrugated Polyethylene	24	0.19	11.76	23.94	0.59	YES
	LP-N-B4	TB-N-B4	Corrugated Polyethylene	24	0.19	14.09	28.25	0.81	YES
	LP-N-B6	TB-N-B6	Corrugated Polyethylene	24	0.19	16.19	31.88	1.01	YES
Permitted Flume Pipe Run 5 <sup>2,3</sup> (Not Constructed)	LP-D1	TB-D1	Corrugated Polyethylene	24	0.25	8.86	18.58	0.30	YES
	LP-N-C1	TB-N-C1	Corrugated Polyethylene	24	0.25	15.58	31.15	0.74	YES
	LP-N-C2	TB-N-C2	Corrugated Polyethylene	24	0.25	17.62	34.83	0.93	YES
	LP-D3	TB-D3	Corrugated Polyethylene	24	0.25	18.08	35.42	0.98	YES
	LP-N-C3	TB-N-C3	Corrugated Polyethylene	24	0.26	19.86	38.47	1.14	YES
Permitted Flume Pipe Run 6 <sup>2,3</sup> (Not Constructed)	LP-H1	TB-H1	Corrugated Polyethylene	18	0.17	9.23	19.07	0.45	YES
	LP-E1	TB-E1	Corrugated Polyethylene	18	0.19	11.21	22.90	0.59	YES
	LP-H2	TB-H2	Corrugated Polyethylene	18	0.25	14.14	28.59	0.69	YES
	LP-E2	TB-E2	Corrugated Polyethylene	18	0.25	16.05	30.86	0.83	YES
	LP-H3	TB-H3	Corrugated Polyethylene	18	0.25	17.98	33.64	1.07	YES

Note: 1. All existing / permitted and proposed flume pipes shall be constructed of ADS-N12 or equivalent material.  
 2. Existing / permitted flume pipe dimensions obtained from Site 2 East Expansion Application. Each existing / permitted Flume Pipe Run flows through a permitted energy dissipator that is sized to accommodate the pipe flow velocities.  
 3. Flume pipe diameters for Existing Flume Pipe Runs 5 and 6 have been modified from the permitted Site 2 East Expansion design. The pipe diameters have been increased to 24-in. and 18-in., respectively, to accommodate the permitted landfill area and proposed expansion area. Permitted Energy Dissipators 5 and 6 have been revised to accommodate the anticipated pipe flow velocities. Refer to the Design Drawing set for details.

## Zion Landfill - Site 2 North Expansion

Table M.6-3 Downchute Ditch Design Summary Proposed Conditions										
Area	Downchute Ditch Name	Design Parameters					Model Results			
		Left Sideslope	Right Sideslope	Slope	Bottom Width	Depth	10-Year Storm Velocity	100-Year Storm Peak Velocity	Peak Depth	Design Depth > Peak Depth?
		(H:V)	(H:V)	(ft/ft)	(ft)	(ft)	(ft/sec)	(ft/sec)	(ft)	YES/NO
Existing Downchute Ditch Run A1 <sup>1</sup>	DC-A1A	5:1	5:1	0.28	20	2	2.80	6.68	0.17	YES
	DC-A1B	5:1	5:1	0.10	20	2	2.52	5.92	0.33	YES
	DC-A1C	5:1	5:1	0.12	20	2	3.36	7.18	0.37	YES
Note: 1. Existing permitted downchute ditch geometry obtained from Site 2 East Expansion Application.										

## Zion Landfill - Site 2 North Expansion

**Table M.6-4  
Perimeter Ditch Design Summary  
Proposed Conditions**

Ditch Name	Design Parameters				Model Results					
	Sideslopes	Slope	Depth	Base Width	10-Year Storm Velocity	100-Year Storm Peak Velocity	Peak Depth	Design Depth > Peak Depth?	Flow Rate < 5 fps?	Erosion Control Anticipated to be Required? <sup>2</sup>
	(H:V)	(ft/ft)	(ft)	(ft)	(ft/sec)	(ft/sec)	(ft)	YES/NO	YES/NO	YES/NO
PD-1	3:1	0.0057	3.0	0	1.85	3.24	1.70	YES	YES	NO
PD-2	3:1	0.0039	3.0	0	2.23	3.73	2.79	YES	YES	NO
PD-3	3:1	0.0080	3.0	10	2.76	5.12	1.71	YES	NO	YES
PD-4	3:1	0.0164	2.5	10	3.57	6.71	1.45	YES	NO	YES
PD-5	3:1	0.0052	3.0	10	2.84	5.10	2.51	YES	NO	YES
PD-6	3:1	0.0050	3.0	10	2.83	5.03	2.56	YES	NO	YES
PD-7	3:1	0.0050	3.0	10	0.91	2.44	0.70	YES	YES	NO
PD-8	3:1	0.0050	3.0	10	0.33	0.76	0.10	YES	YES	NO
PD-9	3:1	0.0057	3.0	10	1.21	2.61	0.70	YES	YES	NO
PD-10	3:1	0.0051	3.0	10	1.32	2.80	0.87	YES	YES	NO
PD-11	3:1	0.0050	3.0	10	0.84	1.95	0.47	YES	YES	NO
PD-12	3:1	0.0049	3.0	10	0.84	1.73	0.39	YES	YES	NO
PD-13	3:1	0.0029	2.5	10	1.58	3.20	1.83	YES	YES	NO
PD-14	3:1	0.0045	2.5	10	1.58	3.28	1.29	YES	YES	NO
PD-15	3:1	0.0045	2.5	10	1.53	3.23	1.26	YES	YES	NO

Notes: 1. Existing permitted perimeter ditch geometry obtained from Site 2 East Expansion Application including PD-1, PD-2, PD-3, PD-4, PD-13, PD-14, and PD-15.

2. Tractive forces (shear stress) acting along the ditch bed and sideslope lining shall not exceed the maximum allowable shearing resistance for the selected lining material. It is assumed that all ditches with a flow velocity less than 5 fps meet this criterion and are not anticipated to require erosion control lining material.



## Zion Landfill - Site 2 North Expansion

Table M.6-5 Culvert Design Summary Proposed Conditions											
Culvert Name		Design Parameters						Model Results			
		Width (in)	Height (in)	Diameter (in)	Slope (%)	Pipe Material	Number of Culverts at Location	10-Year Storm Velocity <sup>1</sup> (ft/sec)	100-Year Storm Peak Velocity <sup>1</sup> (ft/sec)	Peak Depth (in)	Design Diameter > Peak Depth? YES/NO
Existing Culvert Locations	Cu-A	-	-	36	1.00	Corrugated Polyethylene	2	5.92	10.23	22.44	YES
	Cu-3	-	-	36	0.97	Corrugated Polyethylene	3	5.59	10.12	22.80	YES
Proposed Culvert Locations	Cu-1	48	24	-	0.45	Concrete	4	4.63	8.54	20.52	YES
	Cu-2	48	24	-	0.95	Concrete	2	5.63	11.89	18.24	YES
Note: 1. Riprap or other erosion control material will be placed at culvert outlets to minimize the potential for erosion and scour. 2. Existing permitted Cu-A and Cu-3 dimensions obtained from Site 2 East Expansion Application. An additional 36-in. culvert is proposed to be added to existing culvert location Cu-A to accommodate the permitted landfill area and proposed expansion area.											

## M.7 – Detention Basins



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### Problem Statement

Quantify design requirements that will be used to evaluate the design of the Site 2 North Detention Basins:

1. The basins must meet the maximum allowable release rates specified Section 502.01 of the Lake County Watershed Development Ordinance;
2. The basins must provide appropriate live storage (storage above the normal water level):
  - 2A. The basins must maintain minimum live storage volume equal to the runoff amount of a 2-year, 24-hour event over the disturbed drainage area of the basin (See Section 600.06(D) of the Lake County Watershed Development Ordinance).
  - 2B. The basins must provide additional live storage capacity above the 100-year, 24-hour storm high water level to offset depressional storage volume that will be removed as part of development. (See Section 501.05 of the Lake County Watershed Development Ordinance);
3. The basins must provide appropriate dead storage (storage below the normal water level):
  - 3A. The basins must maintain minimum dead storage volume equal to the runoff amount of a 2-year, 24-hour event over the disturbed drainage area of the basin (See Section 600.06(D) of the Lake County Watershed Development Ordinance).
  - 3B. The basins must provide additional dead storage capacity for sediment accumulation below the normal water level to store the estimated sediment load generated from the site over one year, per Section 600.06(D) of the Lake County Watershed Development Ordinance.
4. The basin high water level for the 100-year 24-hour storm must remain below the inlet pipe invert elevations and spillway.
5. The basin's emergency overflow structure (spillway) must be sized to convey the critical duration base flood inflow rate without damages to downstream structures or property while maintaining one foot of freeboard from the basin crest in order to meet requirements of Section 507.01 (A) & (B) of the Lake County Watershed Development Ordinance. The 100-year, 1-hour storm event (peak inflow rate) and the 100-year, 24-hour storm (peak inflow volume) are evaluated.
6. The basins must discharge at a lower release rate under proposed conditions than existing conditions. Although not required by regulation, this evaluation is performed as a best engineering practice.

The first part of this calculation quantifies the values for the design requirements listed above and provides the method for analysis. The results section compares the model output files from **Appendix M.8** to these values to determine whether the basin designs are appropriate to manage stormwater for the proposed Site 2 North Expansion.



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### Given

- The proposed contributing drainage area to each basin, including the area of the basin:
  - Stormwater Basin 5R: 53.0 acres
  - Stormwater Basin 8: 148.0 acres
- The peak inflow rate to each basin for the 100-year, 1-hour storm:
  - Stormwater Basin 5R: 166.28 cfs
  - Stormwater Basin 8: 371.64 cfs
- The peak inflow volume to each basin for the 100-year, 24-hour storm:
  - Stormwater Basin 5R: 28.8 acre-ft
  - Stormwater Basin 8: 79.2 acre-ft
- Stormwater Inlet Pipe elevations into each basin:
  - Stormwater Basin 5R: 738.0 ft MSL
  - Stormwater Basin 8 West Forebay: 736.5 ft. MSL
  - Stormwater Basin 8 East Forebay: 736.8 ft MSL
- A summary of design requirements is provided in **Table M.7-1**.
- Elevation-area live and dead storage summaries for Stormwater Basin 5R and Stormwater Basin 8 are provided in **Tables M.7-2** and **M.7-3**, respectively.
- All other key model parameters for the outlet structures, including key elevations of orifices, pipes, and spillway elements are provided in **Table M.7-4**.
- A summary of modeled peak elevations and peak discharge rates during all modeled storms is provided in **Table M.7-5**.
- Existing depressional storage volumes were calculated using existing topography to determine non-riverine depressions where stormwater collects within the proposed landfill expansion footprint. These areas were delineated as shown in **Figure 1** attached to this appendix.
- HydroCAD Model Results provided in **Appendix M.8**



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## Calculations

### ***Design Requirement 1 – Maximum Allowable Release Rates***

The Lake County Watershed Development Ordinance requires that detention basins discharge with the following maximum release rates:

- 0.04 cubic feet/second/acre for the 2-year, 24-hour storm event; and
- 0.15 cubic feet/second/acre for the 100-year, 24-hour storm event.

The maximum allowable discharge rates for Stormwater Basin 5R and Stormwater Basin 8 are calculated using the following equation:

Maximum Allowable Discharge ( $Q_{\max}$ ) = (Maximum Release Rate) × (Stormwater Basin Inflow Area)

#### 2-Year, 24-Hour Storm Event

Stormwater Basin 5R:  $Q_{\max} = 0.04 \text{ cfs/acre} \times 53.0 \text{ acres} = \mathbf{2.1 \text{ cfs}}$   
 Stormwater Basin 8:  $Q_{\max} = 0.04 \text{ cfs/acre} \times 148.0 \text{ acres} = \mathbf{5.9 \text{ cfs}}$

#### 100-Year, 24-Hour Storm Event

Stormwater Basin 5R:  $Q_{\max} = 0.15 \text{ cfs/acre} \times 53.0 \text{ acres} = \mathbf{8.0 \text{ cfs}}$   
 Stormwater Basin 8:  $Q_{\max} = 0.15 \text{ cfs/acre} \times 148.0 \text{ acres} = \mathbf{22.2 \text{ cfs}}$

The inflow areas are presented on the basin model output files in **Appendix M.8**.

### ***Design Requirement 2 – Live Storage Requirements***

The basins must maintain live storage volumes equal to the runoff amount of a 2-year, 24-hour event over the disturbed drainage area of the basin (See Section 600.06(D) of the Lake County Watershed Development Ordinance). Additionally, the basins must also provide live storage for depressional storage offsets to maintain the existing depressional storage volume that will be disturbed by the proposed landfill expansion area in accordance with Section 501.05 of the Lake County Watershed Development Ordinance.

Elevation-area live and dead storage summaries for Stormwater Basins 5R and 8 are provided in **Tables M.7-2** and **M.7-3**, respectively.



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*Design Requirement 2A – 2-Year, 24-Hour Storm Volume Determination*

The 2-Year, 24-Hour storm for the proposed expansion was modeled in HydroCAD. The model results are provided in **Appendix M.8**. The 2-Year, 24-Hour inflow volumes are as follows:

Stormwater Basin 5R: 7.8 acre-feet.  
 Stormwater Basin 8: 20.8 acre-feet

*Design Requirement 2B – Depressional Storage Offset*

An evaluation of depressional storage was conducted in the previous Site 2 East Expansion application and no depressional areas were located within the landfill footprint. Existing depressional storage volumes within the horizontal expansion area were calculated using existing topography to determine non-riverine depressions where stormwater collects within the proposed landfill expansion footprint. These areas were delineated as shown in **Figure 1** attached to this appendix.

- Depression 1 = 1.3 acre-feet
- Depression 2 = 2.3 acre-feet
- Depression 3 = 1.8 acre-feet

Depression 1 is located within the Basin 5R drainage area. Depressions 2 and 3 are located within the Basin 8 area. The total required depressional storage offset for Basins 5R and 8 are as follows:

Stormwater Basin 5R: 1.3 acre-feet  
 Stormwater Basin 8: 4.1 acre-feet

*Summary of Live Storage Requirements*

Total Required Live Storage Volume = (2-Year, 24-Hour Inflow Volume) + (Depressional Offset)

Stormwater Basin 5R: (7.8 acre-feet) + (1.3 acre-feet) = 9.1 acre-feet  
 Stormwater Basin 8: (20.8 acre-feet) + (4.1 acre-feet) = 24.9 acre-feet

***Design Requirement 3 – Dead Storage Requirements***

Similar to the live storage requirement, the basins must maintain dead storage volumes equal to the runoff amount of a 2-year, 24-hour event over the disturbed drainage area of the basin (See Section 600.06(D) of the Lake County Watershed Development Ordinance). In addition to the necessary dead storage volume associated with the 2-year, 24-hour storm volume and the depressional storage offset, the basins must provide sufficient storage for sediment accumulation below the normal water level to store the estimated sediment load generated from the site over one year, per Section 600.06(D) of the Lake County Watershed Development Ordinance.



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Elevation-area live and dead storage summaries for Stormwater Basins 5R and 8 are provided in **Tables M.7-2** and **M.7-3**, respectively.

*Design Requirement 3A – 2-Year, 24-Hour Storm Volume Determination*

The 2-Year, 24-Hour Storm for the proposed expansion was modeled in HydroCAD. The model results are provided in **Appendix M.9**. The 2-Year, 24-Hour inflow volumes are as follows:

Stormwater Basin 5R: 7.8 acre-feet.  
 Stormwater Basin 8: 20.8 acre-feet

*Design Requirement 3B – Sediment Storage Capacity*

Both basins have been designed with sedimentation forebays to facilitate an initial sediment drop-out before moving through the rest of the basin. Stormwater Basin 8 has two forebays due to the fact that it has two inlet locations (east and west).

In addition, both basins are designed to be wet-bottom basins (permanent pools) that are vegetated, both within the forebays and main basin area. This design element further enhances sediment drop-out, promotes bioretention, and improves stormwater quality prior to off-site discharge. Vegetative growth will be monitored as part of the facility's routine maintenance practices to prevent overgrowth within the basins.

In order to calculate the estimated sediment load generated from the Site 2 North Expansion, the revised universal soil-loss equation (RUSLE) is used. The RUSLE equation calculates the average soil loss per unit of area using the following parameters:

$$A = R \times K \times LS \times C \times P$$

where:

A = Soil loss (tons/acre/year)  
 R = Rainfall Erosivity Factor  
 K = Soil Erodibility  
 LS = Slope Length / Slope Steepness  
 (Topographic Factor)  
 C = Cover Management Factor  
 P = Support Practice Factor

The following values were obtained from sources including the United States Environmental Protection Agency (USEPA) and the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS).

R = **146** (For one-year construction in Zion, IL)  
 K = **0.10** (clay material)  
 LS = **23.24** (Max. 800-foot slope length at 4H:1V)



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$$C = 1.0 \text{ (Bare Soils - worst case scenario)}$$

$$P = 1.2 \text{ (Compact and Smooth across slope)}$$

$$A \text{ (tons/acre/year)} = 146 \times 0.10 \times 23.24 \times 1.0 \times 1.2$$

$$A = 407.2 \text{ tons/acre/year}$$

An average clay density of 1.7 g/cm<sup>3</sup> (106.1 pcf) is assumed (refer to attached Table B.14 from *Principles of Groundwater Engineering* by William C. Walton).

Therefore, A = **0.18 acre-ft of clay/acre/year**

This calculation reflects the worst-case scenario for any portion of the Site 2 North Expansion landfill face that has not been seeded or covered for a one-year period. It is assumed for purposes of this calculation that up to 20% of the total acreage of the Site 2 North Expansion landfill area will not be seeded or covered over a one-year period, approximately 15.8 total acres. This assumption is applied to both basins because the 15.8 acres may be in either the drainage area of Stormwater Basin 5R or Stormwater Basin 8 depending on the current phase of construction.

$$0.18 \text{ acre-ft of clay/acre/year} \times 15.8 \text{ acres} = \mathbf{2.8 \text{ acre-ft of clay/year}}$$

Stormwater Basin 5R: 2.8 acre-feet  
 Stormwater Basin 8: 2.8 acre-feet

**Summary of Dead Storage Requirements**

Total Required Dead Storage Volume = (2-Year, 24-Hour Inflow Volume) + (1-Year Sediment Storage Volume)

Stormwater Basin 5R: (7.8 acre-feet) + (2.8 acre-feet) = 10.6 acre-feet  
 Stormwater Basin 8: (20.8 acre-feet) + (2.8 acre-feet) = 23.6 acre-feet

**Design Requirement 4 – High Water Level Restrictions**

The basins are considered to be appropriately designed if the high water level associated with the 100-year, 24-hour storm remains below the inlet pipe invert elevation. By association, this also means that the high water level will remain below the bottom of the secondary spillway and basin crest. It is noted that this storm is selected because it produces the highest water level of all modeled events.

This criterion is used to ensure that there is no water backing up into the ditches of the proposed design for storms up to and equal to the 100-year, 24-hour storm.

As previously mentioned, the Stormwater inlet pipe elevations into each basin:

- Stormwater Basin 5R: 738.0 ft MSL
- Stormwater Basin 8 West Forebay: 736.5 ft. MSL





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- Stormwater Basin 8 East. Forebay: 736.8 ft MSL

Therefore, the basins are considered appropriately designed with respect to Design Requirement 4 if the 100-year 24-Hour high water level is equal to or lower than 738.0 ft. MSL and 736.5 ft. MSL for Stormwater Basins 5R and 8, respectively.

***Design Requirement 5 – Spillway Design***

The basin's spillway must be sized to convey the critical duration base flood inflow rate while maintaining one foot of freeboard from the basin crest in order to meet requirements of Section 507.01 (A) & (B) of the Lake County Watershed Development Ordinance. The critical duration base flood is the storm frequency that produces the greatest peak inflow rate, volume, or stage. Based on modeling results presented in **Appendix M.8**, the 100-year, 1-hour storm produces the highest inflow rate while the 100-year, 24-hour storm produces the largest volume. Both storm events are used in the analysis.

Both Stormwater Basins 5R and 8 are designed with perforated standpipe outlet structures. The standpipe is sized to be larger than the maximum combined flow rate through the perforations. Under normal conditions, stormwater is intended to enter the perforations located on the sides of the standpipes. For extremely large storms, considered all storms greater than the 100-year storms, water will rise to a level where it can spill through the top of the pipe. Water can also enter the standpipe in the unlikely scenario that the orifices are clogged.

Due to the fact that Stormwater Basin 8 is located inside of a screening berm and perimeter screening barrier wall, Stormwater Basin 8 will use pipe flow as its primary spillway mechanism. The primary spillway overflow is designed to convey the 100-year, 1-hour and 24-hour storm events.

Stormwater Basin 5R was constructed with a rip-rap lined weir structure that is designed to function as the primary spillway overflow. The weir spillway is 2-feet deep with a 20-foot base width and 3H:1V sideslopes. This weir spillway discharges into a wetland system to the south of the existing and proposed facility boundary.

Spillway model analyses were completed to determine the resultant freeboard of the basins when all discharge is passed through the spillways. This was accomplished by restricting flow from the spillway standpipe perforations and setting the initial water level to be the base elevation of the spillway. The design is deemed acceptable if the spillway is sized to pass the 100-year, 1-hour and 24-hour storms and maintains a one foot of freeboard from the crest.

***Design Requirement 6 – Lower Proposed Discharge Rate Than Existing Conditions***

Although not required by regulation, an evaluation is performed as a best engineering practice to ensure that the basins discharge at a lower release rate under proposed conditions than existing conditions to minimize the potential for downstream flooding. No upstream impacts are considered because the proposed landfill expansion is located on a watershed divide.



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 Checked By: DAM Date: 05/2022

**TITLE: DETENTION BASINS**

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Existing Conditions

For the existing conditions, the west portion of the proposed landfill expansion area is directed to the Des Plaines River Watershed. The discharge rate to the Des Plaines River Watershed is determined by the total rate of discharge from Subcatchment SC-X1 within the existing model.

The east portion of the proposed landfill expansion area and the drainage area for Stormwater Basin 5R are directed to the Lake Michigan Watershed. It is noted that the discharge rates for Stormwater Basin 5R has been reviewed and approved by the Lake County Stormwater Management Commission through the existing landfill application. The discharge rate to the Lake Michigan Watershed is determined by accumulating the total discharge rate from the proposed landfill expansion area (Subcatchment SC-X2) and the discharge rate from Stormwater Basin 5R that was reviewed and approved by the Lake County Stormwater Management Commission.

Proposed Conditions

For the proposed conditions, the drainage area for Stormwater Basin 8 in addition to the exterior portions of the perimeter berm surround the proposed landfill expansion area on the west and north borders (Subcatchment SC-N-D1 and Subcatchment SC-N-D2) will be directed to the Des Plaines River Watershed. The discharge rate was determined by accumulating the total rate of discharge from these areas.

The drainage area for Stormwater Basin 5R in addition to the exterior portions of the perimeter berm surround the proposed landfill expansion area on the east border (Subcatchment SC-N-E1) will be directed to the Lake Michigan Watershed. The discharge rate was determined by accumulating the total rate of discharge from these areas.

**Results**

HydroCAD was used to determine inflow rates, outflow rates, and peak elevations for multiple design storms. The results of all modeled storm events were used to analyze the Design Requirements specified previously in this calculation.

Storage volumes were determining by measuring the area of each elevation contour in AutoCAD Civil 3D 2018 and entering the results into HydroCAD. HydroCAD then calculates a prismatic volume such that it can recalculate a storage volume at any bounded elevation. It is noted that dead storage is provided for each basin segment (forebays and main basin) while the live storage volume within the basins include the cumulative acreage spanning the entire basin (both forebays and main basin volumes).

All design requirements specified in this calculation were determined to be met, demonstrating that the basins are appropriately designed. Please See **Table M.7-1** for a summary of each design requirement evaluation and conclusion.



Client: Zion Landfill, Inc.  
Project: Zion Landfill – Site 2 North Expansion  
Project #: 631020105  
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Additional supporting information is attached:

- Elevation-area live and dead storage summaries for Stormwater Basin 5R and Stormwater Basin 8 are provided in **Tables M.7-2** and **M.7-3**, respectively.
- All other key model parameters for the outlet structures, including key elevations of orifices, pipes, and spillway elements are provided in **Table M.7-4**.
- Table M.7-5** provides a comparison of the peak elevations and discharge rates for all modeled storm events. In addition, this table summarizes the minimum remaining volume during the peak elevation in each Stormwater Basin, the minimum freeboard from the basin crest, and the minimum freeboard from the inlet pipes.
- Table M.7-7** provides key model parameters for the outlet structures, including key elevations of orifices, pipes, and spillway elements.
- Attachment M.7-1** provides the results of the spillway sensitivity analyses for both primary spillways systems in Stormwater Basin 5R and Stormwater Basin 8.
- Figure 1** provides the location and sizes of existing depressional areas.
- HydroCAD Model Results provided in **Appendix M.8**



**TABLE M.7-1  
DESIGN REQUIREMENT SUMMARY AND EVALUATION**

Design Requirement	Objective	Determination	Supporting Information
<b>1 – Maximum Allowable Release Rates</b>	The basins must meet the maximum allowable release rates: <u>2-Year, 24-Hour Storm Event</u> Stormwater Basin 5R: 2.1 cfs Stormwater Basin 8: 5.9 cfs  <u>100-Year, 24-Hour Storm Event</u> Stormwater Basin 5R: 8.0 cfs Stormwater Basin 8: 22.2 cfs	<u>2-Year, 24-Hour Storm Release Rates</u> Stormwater Basin 5R: 1.6 cfs Actual ≤ 2.1 cfs Allowable Stormwater Basin 8: 5.6 cfs Actual ≤ 5.9 cfs Allowable  <u>100-Year, 24-Hour Storm Release Rates</u> Stormwater Basin 5R: 3.3 cfs Actual ≤ 8.0 cfs Allowable Stormwater Basin 8: 22.16 cfs Actual ≤ 22.2 cfs Allowable  <b>Requirement 1 is met.</b>	Inflow areas are presented on basin model output files in <b>Appendix M.8</b> to support the calculation
<b>2 - Live Storage Volume</b>	The basins must maintain both minimum live storage volumes:  Stormwater Basin 5R: 9.1 acre-feet Stormwater Basin 8: 24.9 acre-feet	<u>Live Storage Volume</u> Stormwater Basin 5R: 44.4 acre-feet Actual ≥ 9.1 acre-feet Required Stormwater Basin 8: 86.4 acre-feet Actual ≥ 24.9 acre-feet Required  <b>Requirement 2 is met.</b>	Elevation-area functions and live/dead storage volumes for Stormwater Basins 5R and 8 are provided in <b>Tables M.7-2</b> and <b>M.7-3</b> , respectively.
<b>3 - Dead Storage Volume</b>	The basins must maintain both minimum dead storage volumes:  Stormwater Basin 5R: 10.8 acre-feet Stormwater Basin 8: 23.8 acre-feet	<u>Dead Storage Volume</u> Stormwater Basin 5R: 35.1 acre-feet Actual ≥ 10.8 acre-feet Required Stormwater Basin 8: 36.6 acre-feet Actual ≥ 23.8 acre-feet Required  <b>Requirement 3 is met.</b>	Elevation-area functions and live/dead storage volumes for Stormwater Basins 5R and 8 are provided in <b>Tables M.7-2</b> and <b>M.7-3</b> , respectively.
<b>4 - High Water Level Restrictions</b>	The basins must maintain high water levels associated with the 100-year storm below the inlet pipe inverts:  Stormwater Basin 5R: 738.0 ft MSL Stormwater Basin 8: 736.5 ft MSL	<u>High Water Level of 100-Year, 24-Hour Storm:</u> Stormwater Basin 5R: 737.5 ft MSL Actual ≤ 738.0 ft MSL Required Stormwater Basin 8: 736.0 ft MSL Actual ≤ 736.5 ft MSL Required  <b>Requirement 4 is met.</b>	<b>Table M.7-4</b> provides a summary of key elevations and design considerations for Stormwater Basin Outlet Structures and other key basin considerations such as inlet pipe and basin crest elevations.  <b>Table M.7-5</b> provides a comparison of the peak elevations and discharge rates for all modeled storm events. In addition, this table summarizes the minimum remaining volume during the peak elevation in each Stormwater basin, the minimum freeboard from the basin crest, and the minimum freeboard from the inlet pipes.
<b>5– Spillway Design</b>	The basin spillway shall be designed to convey the peak flow from the 100-year, 1-hour storm event and 100-year, 24-hour storm event while maintaining one foot of freeboard from the basin crest.  <u>100-Year, 1-Hour Storm Event (Peak Inflow Rate)</u> Stormwater Basin 5R: 166.28 cfs Stormwater Basin 8: 371.64 cfs  <u>100-Year, 24-Hour Storm Event (Peak Inflow Volume)</u> Stormwater Basin 5R: 28.2 acre feet Stormwater Basin 8: 79.2 acre feet	Models All Flow Through Spillway Structure Using Initial Water Level Set at Spillway Base Elevation  <u>100-Year, 1-Hour Storm Event (Peak Inflow Rate)</u> Stormwater Basin 5R Freeboard From Crest: 1.14 ft ≥ 1.0 ft Required Stormwater Basin 8 Freeboard From Crest: 1.76 ft > 1.0 ft Required  <u>100-Year, 24-Hour Storm Event (Peak Inflow Volume)</u> Stormwater Basin 5R Freeboard From Crest: 1.37 ft > 1.0 ft Required Stormwater Basin 8 Freeboard From Crest: 1.04 ft > 1.0 ft Required  <b>Requirement 5 is met.</b>	<b>Table M.7-4</b> provides a summary of key elevations and design considerations for Stormwater Basin Outlet Structures and other key basin considerations such as inlet pipe and basin crest elevations.  <b>Table M.7-6</b> provides key model parameters for the outlet structures, including key elevations of orifices, pipes, and spillway elements. Model Results are provided in <b>Attachment 1</b> of this appendix.
<b>6- Lower Proposed Discharge Rates than Existing Conditions</b>	The basins discharge at a lower release rate under proposed conditions than existing conditions.	The proposed discharge rates are less than or equal to existing discharge rates to both watershed areas for all modeled storm events.  <b>Requirement 6 is met.</b>	The discharge rates for the existing and proposed conditions directed to both the Des Plaines River Watershed and the Lake Michigan Watershed are presented for each modeled storm event in <b>Table M.7-7</b> and <b>Table M.7-8</b> , respectively.

TABLE M.7-2 Stormwater Basin 5R Elevation and Storage Summary										
Elevation Summary		Area per Elevation			Storage					
Elevation	Elevation Notes	North Forebay	Main Basin	Total Basin	Incremental Storage	Cumulative Storage	Cumulative Storage	Live/Dead Storage		
ft MSL	NA	sq. ft	sq. ft	sq. ft	cu. ft	cu. ft	acre-ft	NA	cu. Ft	acre-ft
726	Bottom of Basin	30,013	102,627	132,640	-	-	-	Dead Storage	-	-
728		35,681	119,616	155,297	287,937	287,937	6.6		287,937.0	6.6
730		41,842	137,258	179,100	334,397	622,334	14.3		622,334.0	14.3
731	Safety Ledge/ Bottom of Forebay Riprap	45,940	72,539	118,479	148,790	771,124	17.7		771,123.5	17.7
732		55,626	311,454	367,080	242,780	1,013,903	23.3		1,013,903.3	23.3
733.5	Normal Water Level	59,372	259,449	318,821	514,426	1,528,329	35.1	1,528,329.1	35.1	
733.5	Normal Water Level	59,372	259,449	318,821	-	-	-	Live Storage	-	-
734		60,521	193,391	253,912	143,183	1,671,512	38.4		143,183.0	3.3
735	Top of Forebay Riprap	64,815	205,636	270,451	262,182	1,933,694	44.4		405,364.5	9.3
736		-	287,631	287,631	279,041	2,212,735	50.8		684,405.5	15.7
738	Inlet Elevation	-	311,683	311,683	599,314	2,812,049	64.6		1,283,719.5	29.5
740	Spillway Elevation	-	336,524	336,524	648,208	3,460,257	79.4		1,931,927.5	44.4
742	Basin Crest	-	361,556	361,556	700,080	4,160,337	95.5		-	-

TABLE M.7-3 Stormwater Basin 8 Elevation and Storage Summary											
Elevation Summary		Area per Elevation				Storage					
Elevation	Elevation Notes	East Forebay	Main Basin	West Forebay	Total Basin	Incremental Storage	Cumulative Storage	Cumulative Storage	Live/Dead Storage		
ft MSL	NA	sq. ft	sq. ft	sq. ft	sq. ft	cu. ft	cu. ft	acre-ft	NA	cu. Ft	acre-ft
726	Bottom of Basin	37,128	216,998	29,436	283,562	526,291	-	-	Dead Storage	-	-
727.5	Safety Ledge/Bottom of Forebay Riprap	48,062	252,431	39,825	340,318	467,910	467,910	10.7		467,910	10.7
728		50,325	259,389	41,995	351,709	173,007	640,917	14.7		640,917	14.7
730		59,863	287,683	51,215	398,761	750,470	1,391,387	31.9		1,391,387	31.9
730.5	Normal Water Level	62,366	294,873	53,645	410,884	202,411	1,593,798	36.6		1,593,798	36.6
730.5	Normal Water Level	62,366	294,873	53,645	410,884	-	-	-	Live Storage	-	-
732		70,161	316,721	61,232	448,114	644,249	644,249	14.8		644,249	14.8
733	Top of Forebay Riprap	75,595	331,520	66,540	473,655	460,885	1,105,134	25.4		1,105,134	25.4
734		-	499,775	-	499,775	486,715	1,591,849	36.5		1,591,849	36.5
736		-	542,314	-	542,314	1,042,089	2,633,938	60.5		2,633,938	60.5
736.5	Spillway Elevation / Lowest Inlet Elevation (East Forebay)	-	553,047	-	553,047	273,840	2,907,778	66.8		2,907,778	66.8
738		-	585,482	-	585,482	853,897	3,761,675	86.4		3,761,675	86.4
740	Basin Crest	-	630,393	-	630,393	1,215,875	4,977,550	114.3		-	-

## Zion Landfill Site 2 North Expansion

TABLE M.7-4 Stormwater Basin Outlet Structure Summary Table					
Proposed Expansion Design					
Design Parameters		Stormwater Basin 5R Outlet Structure	Stormwater Basin 8 Outlet Structure	Unit of Measure	
<b>Outlet Pipe</b>	Outlet Pipe Diameter	30.0	36.0	inches	
	Outlet Pipe Inlet Invert	733.50	727.00	ft MSL	
	Outlet Pipe Outlet Invert	733.20	725.10	ft MSL	
	Outlet Pipe Length	100.0	140.0	feet	
	Outlet Pipe Slope	0.30	1.36	percent	
<b>Standpipe</b>	Standpipe Diameter		30.0	36.0	inches
	Standpipe Overflow Invert		739.00	736.50	ft MSL
	Elevation 4	Perforation Size	-	4.0	inches
		Number of Orifices	-	6.0	count
		Invert Elevation	-	734.50	ft MSL
	Elevation 3	Perforation Size	4.0	4.0	inches
		Number of Orifices	4.0	6.0	count
		Invert Elevation	738.50	733.50	ft MSL
	Elevation 2	Perforation Size	4.0	4.0	inches
		Number of Orifices	4.0	6.0	count
		Invert Elevation	737.50	732.50	ft MSL
	Elevation 1	Perforation Size	4.0	4.0	inches
		Number of Orifices	4.0	11.0	count
		Invert Elevation	733.50	730.50	ft MSL
	<b>Weir Spillway</b>	Spillway Elevation		740.0	-
Spillway Depth		2.0	-	ft	
Spillway Base Width		20.0	-	ft	
Spillway Sideslopes		3:1	-	H:1V	
<b>Standpipe Spillway</b>	Standpipe Diameter		-	36.0	inches
	Standpipe Invert		-	736.50	ft MSL
	Outlet Pipe Diameter		-	36.0	inches
	Outlet Pipe Inlet Invert		-	727.50	ft MSL
	Outlet Pipe Outlet Invert		-	725.10	ft MSL
	Outlet Pipe Length		-	140.0	feet
	Outlet Pipe Slope		-	1.36	percent
<b>General</b>	Basin Crest		742.00	740.00	ft MSL
	Top of Forebay Riprap		735.00	733.00	ft MSL
	Normal Water Level		733.50	730.50	ft MSL
	Safety Ledge/Bottom of Forebay Riprap		731.00	727.50	ft MSL
	Bottom of Basin		726.00	726.00	ft MSL
	Lowest Inlet Elevation		738.00	736.50	ft MSL

Zion Landfill Site 2 North Expansion

TABLE M.7-5  
Stormwater Basin Summary Table  
Proposed Conditions

Stormwater Basin Name	Design				Modeled Peak Elevations																Results		
	Normal Water Level	Top of Berm Elev.	Base of Spillway Elev.	Minimum Inlet Pipe Invert Elev.	1-Hour Storm Events								24-Hour Storm Events								Highest Water Level	Minimum Freeboard from Basin Crest	Minimum Freeboard from Inlet Pipe
					2-Year		10-Year		25-Year		100-Year		2-Year <sup>1</sup>		10-Year		25-Year		100-Year <sup>2</sup>				
					Peak Elev.	Peak Discharge Rate	Peak Elev.	Peak Discharge Rate	Peak Elev.	Peak Discharge Rate	Peak Elev.	Peak Discharge Rate	Peak Elev.	Peak Discharge Rate	Peak Elev.	Peak Discharge Rate	Peak Elev.	Peak Discharge Rate	Peak Elev.	Peak Discharge Rate			
(ft MSL)	(ft MSL)	(ft MSL)	(ft MSL)	(ft MSL)	(cfs)	(ft MSL)	(cfs)	(ft MSL)	(cfs)	(ft MSL)	(cfs)	(ft MSL)	(cfs)	(ft MSL)	(cfs)	(ft MSL)	(cfs)	(ft MSL)	(cfs)	(ft MSL)	(ft)	(ft)	
Stormwater Basin 5R	733.5	742.0	740.0	738.0	733.80	0.23	734.20	1.21	734.54	1.57	735.13	2.03	734.57	<b>1.60</b>	735.55	2.31	736.28	2.72	737.47	<b>3.28</b>	737.47	4.53	0.53
Stormwater Basin 8	730.5	740.0	736.5	736.5	731.01	2.69	731.67	4.62	732.20	5.73	733.12	8.92	732.13	<b>5.59</b>	733.55	10.26	734.51	14.79	736.04	<b>22.16</b>	736.04	3.96	0.46

Note: 1. In accordance with Section 502.01 of the Lake County Watershed Development Ordinance, the maximum discharge rate for the 2-year, 24-hour storm is 0.04 cfs/acre for the contributing drainage area to each basin.  
2. In accordance with Section 502.01 of the Lake County Watershed Development Ordinance, the maximum discharge rate for the 100-year, 24-hour storm is 0.15 cfs/acre for the contributing drainage area to each basin.



**TABLE M.7-6  
Stormwater Basin Spillway Design Summary Table  
Proposed Conditions**

Stormwater Basin	Adjusted Model Elevation			Results					
	Initial Water Level for Sensitivity Analysis	Base of Spillway Structure Elevation	Basin Crest Elevation	100-Year, 1-Hour (Peak Inflow Rate) High Water Elevation	Freeboard (from Peak Elevation to Basin Crest)	100-Year, 24-Hour (Peak Inflow Volume) High Water Elevation	Freeboard (from Peak Elevation to Basin Crest)	Maintains 1-ft of Freeboard for Both Storms?	Does not overtop the basin crest for Both Storms?
	(ft MSL)	(ft MSL)	(ft MSL)	(ft MSL)	(ft)	(ft MSL)	(ft)	Y/N	Y/N
Stormwater Basin 5R	740.0	740.0	742.0	740.86	1.14	740.63	1.37	Y	Y
Stormwater Basin 8	736.5	736.5	740.0	738.24	1.76	738.96	1.04	Y	Y

- Notes:
1. Primary spillway for Basin 5R is a 2-foot deep, 20-ft bottom width weir structure with 3H:1V sideslopes.
  2. Primary spillway for Basin 8 is the 36-inch vertical standpipe overflow structure.
  3. Spillway Design Models evaluate the 100-year 1-hour and 100-year, 24-hour storms passing through the spillway with the following conservative assumptions:
    - a. All outflow is directed through the spillway (excludes outflow from other features).
    - b. Initial water level in basin is at the base of the spillway (which is at an elevation higher than modeled for the 100-year, 24-hour storm during normal conditions).

Zion Landfill - Site 2 North Expansion

Table M.7-7 Des Plaines River Watershed Summary Table				
Storm Event Duration and Frequency		Existing Conditions	Proposed Conditions	Proposed ≤ Existing Discharge Rates? (Y/N)
		Des Plaines River Watershed	Des Plaines River Watershed	
1-Hour Storm Duration	2-Year (cfs)	16.55	11.85	Y
	10-Year (cfs)	42.66	33.33	Y
	25-Year (cfs)	65.10	51.92	Y
	100-Year (cfs)	105.58	85.79	Y
24-Hour Storm Duration	2-Year (cfs)	15.52	7.59	Y
	10-Year (cfs)	29.10	13.27	Y
	25-Year (cfs)	39.06	18.84	Y
	100-Year (cfs)	55.40	28.06	Y

Table M.7-8 Lake Michigan Watershed Summary Table						
Storm Event Duration and Frequency		Existing Conditions			Proposed Conditions	Proposed ≤ Existing Discharge Rates? (Y/N)
		Lake Michigan Watershed			Lake Michigan Watershed	
		Expansion Area	Stormwater Basin 5R <sup>1</sup>	Total		
1-Hour Storm Duration	2-Year (cfs)	7.96	1.00	8.96	5.90	Y
	10-Year (cfs)	21.95	1.80	23.75	16.68	Y
	25-Year (cfs)	34.12	2.20	36.32	26.12	Y
	100-Year (cfs)	56.44	3.00	59.44	43.95	Y
24-Hour Storm Duration	2-Year (cfs)	7.17	2.50	9.67	2.86	Y
	10-Year (cfs)	13.80	3.30	17.10	4.98	Y
	25-Year (cfs)	18.72	3.90	22.62	6.40	Y
	100-Year (cfs)	26.81	6.50	33.31	8.71	Y

Note: 1. Discharge rates for Stormwater Basin 5R were obtained from the previously approved Site 2 East permit application. These values were reviewed and approved by the Lake County Stormwater Management Commission.

# Attachment M.7-1 **Spillway Analysis**

# Proposed Conditions – Spillway Model (100-year, 1-hour)

**Summary for Pond Basin 5R: Stormwater Basin 5R**

Inflow Area = 53.03 ac, 15.95% Impervious, Inflow Depth = 2.35" for 100-Year, 1-Hour event  
Inflow = 166.28 cfs @ 0.52 hrs, Volume= 10.373 af  
 Outflow = 57.55 cfs @ 1.06 hrs, Volume= 10.373 af, Atten= 65%, Lag= 32.1 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Secondary = 57.55 cfs @ 1.06 hrs, Volume= 10.373 af

Initial Water  
Level set to  
base of spillway

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

Starting Elev= 740.00' Surf.Area= 336,524 sf Storage= 3,460,256 cf

Peak Elev= 740.86' @ 1.06 hrs Surf.Area= 347,275 sf Storage= 3,753,941 cf (293,686 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= 129.3 min ( 168.3 - 38.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	726.00'	4,158,336 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
726.00	132,640	0	0
728.00	155,297	287,937	287,937
730.00	179,100	334,397	622,334
731.00	118,479	148,790	771,124
732.00	367,080	242,780	1,013,903
733.50	318,821	514,426	1,528,329
734.00	253,912	143,183	1,671,512
735.00	270,451	262,182	1,933,694
736.00	287,631	279,041	2,212,735
738.00	311,683	599,314	2,812,049
740.00	336,524	648,207	3,460,256
742.00	361,556	698,080	4,158,336

Device	Routing	Invert	Outlet Devices
#1	Primary	733.50'	<b>30.0" Round Culvert X 0.00</b> L= 100.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 733.50' / 733.20' S= 0.0030 1/1' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf
#2	Device 1	733.50'	<b>4.0" Vert. Lower Orifice X 0.00</b> C= 0.600
#3	Device 1	737.50'	<b>4.0" Vert. Middle Orifice X 0.00</b> C= 0.600
#4	Device 1	738.50'	<b>4.0" Vert. Upper Orifice X 0.00</b> C= 0.600
#5	Device 1	739.00'	<b>30.0" Horiz. Orifice/Grate X 0.00</b> C= 0.600
#6	Secondary	740.00'	<b>Secondary Spillway, C= 3.27</b> Offset (feet) 0.00 6.00 26.00 32.00 Height (feet) 2.00 0.00 0.00 2.00

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=740.00' (Free Discharge)

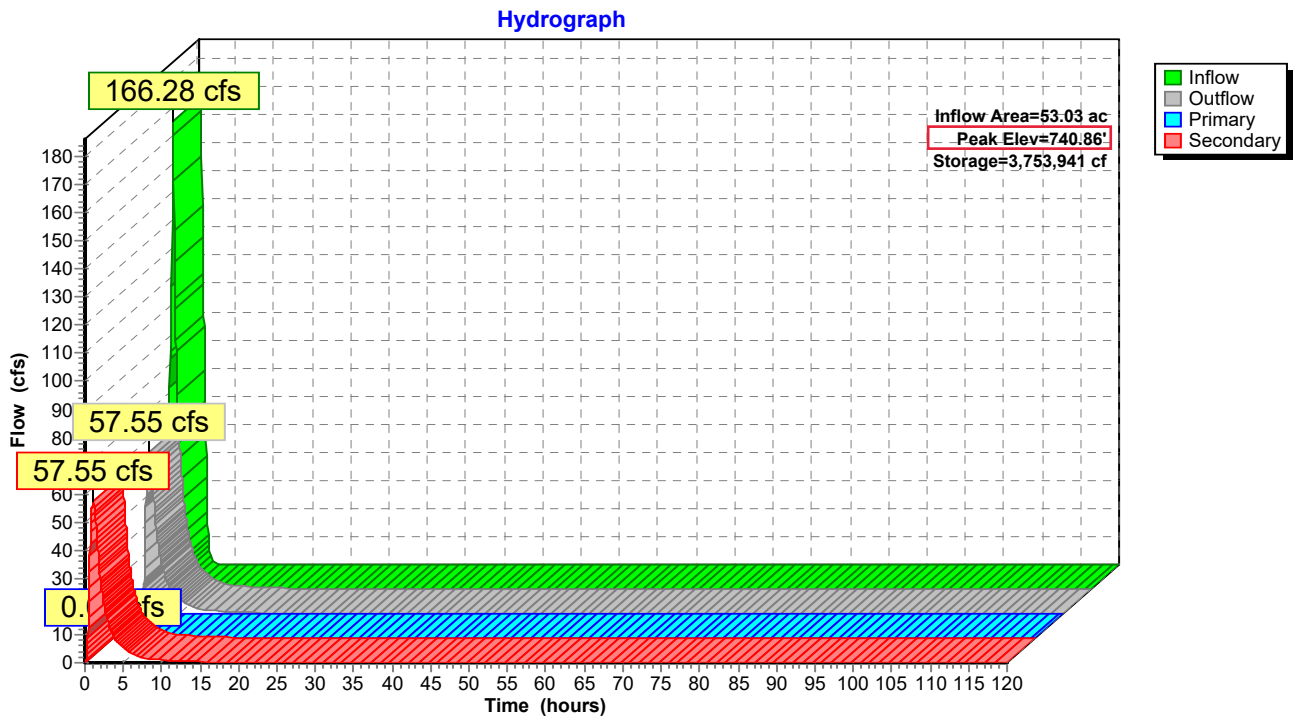
- 1=Culvert ( Controls 0.00 cfs)
- 2=Lower Orifice ( Controls 0.00 cfs)
- 3=Middle Orifice ( Controls 0.00 cfs)
- 4=Upper Orifice ( Controls 0.00 cfs)
- 5=Orifice/Grate ( Controls 0.00 cfs)

No Flow permitted through standpipe (all flow passes through weir spillway)

Secondary OutFlow Max=57.40 cfs @ 1.06 hrs HW=740.86' (Free Discharge)

6=Secondary Spillway (Weir Controls 57.40 cfs @ 2.66 fps)

Pond Basin 5R: Stormwater Basin 5R



**Summary for Pond Basin 8: Stormwater Basin 8**

Inflow Area = 148.01 ac, 11.19% Impervious, Inflow Depth = 2.27" for 100-Year, 1-Hour event  
Inflow = 371.64 cfs @ 0.65 hrs, Volume= 27.947 af  
 Outflow = 44.82 cfs @ 1.58 hrs, Volume= 27.947 af, Atten= 88%, Lag= 56.2 min  
 Primary = 44.82 cfs @ 1.58 hrs, Volume= 27.947 af

Initial Water  
Level set to  
base of spillway

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
Starting Elev= 736.50' Surf.Area= 553,047 sf Storage= 4,501,575 cf  
 Peak Elev= 738.24' @ 1.58 hrs Surf.Area= 590,763 sf Storage= 5,493,779 cf (992,204 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= 259.9 min ( 307.4 - 47.4 )

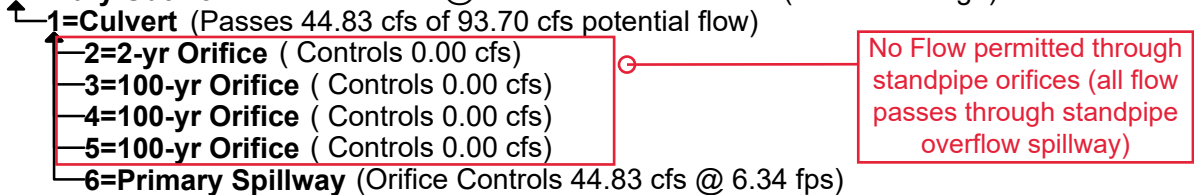
Volume	Invert	Avail.Storage	Storage Description
#1	726.00'	6,571,347 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
726.00	283,562	0	0
727.50	340,318	467,910	467,910
728.00	351,709	173,007	640,917
730.00	398,761	750,470	1,391,387
730.50	410,884	202,411	1,593,798
732.00	448,114	644,249	2,238,047
733.00	473,655	460,885	2,698,931
734.00	499,775	486,715	3,185,646
736.00	542,314	1,042,089	4,227,735
736.50	553,047	273,840	4,501,575
738.00	585,482	853,897	5,355,472
740.00	630,393	1,215,875	6,571,347

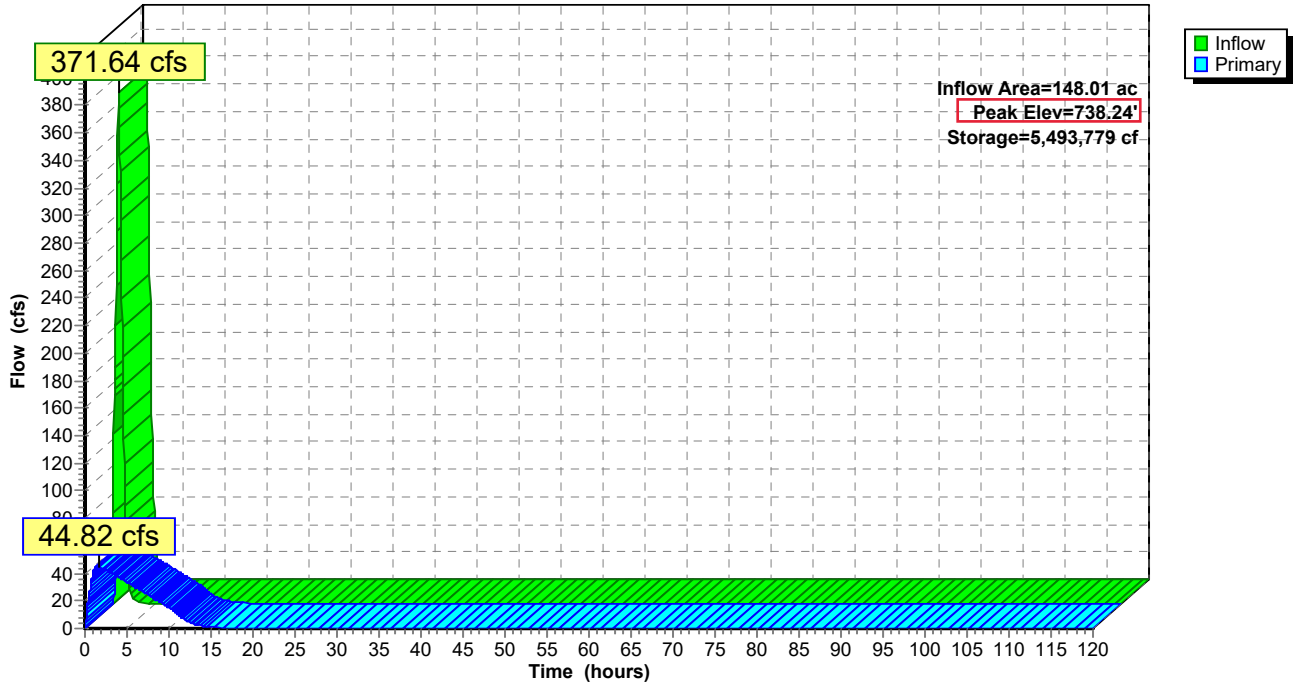
Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	<b>36.0" Round Culvert</b> L= 140.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 727.00' / 725.10' S= 0.0136 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Device 1	730.50'	<b>4.0" Vert. 2-yr Orifice X 0.00</b> C= 0.600
#3	Device 1	732.50'	<b>4.0" Vert. 100-yr Orifice X 0.00</b> C= 0.600
#4	Device 1	733.50'	<b>4.0" Vert. 100-yr Orifice X 0.00</b> C= 0.600
#5	Device 1	734.50'	<b>4.0" Vert. 100-yr Orifice X 0.00</b> C= 0.600
#6	Device 1	736.50'	<b>36.0" Horiz. Primary Spillway</b> C= 0.600

**Primary OutFlow** Max=44.83 cfs @ 1.58 hrs HW=738.23' (Free Discharge)



### Pond Basin 8: Stormwater Basin 8

Hydrograph





# Proposed Conditions – Spillway Model (100-year, 24-hour)

### Summary for Pond Basin 5R: Stormwater Basin 5R

Inflow Area = 53.03 ac, 15.95% Impervious, Inflow Depth = 6.52" for 100-Year, 24-Hour event  
 Inflow = 37.79 cfs @ 15.98 hrs, Volume= 28.807 af  
 Outflow = 35.61 cfs @ 17.04 hrs, Volume= 28.807 af, Atten= 6%, Lag= 63.3 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Secondary = 35.61 cfs @ 17.04 hrs, Volume= 28.807 af

Initial Water Level set to base of spillway

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

Starting Elev= 740.00' Surf.Area= 336,524 sf Storage= 3,460,256 cf

Peak Elev= 740.63' @ 17.04 hrs Surf.Area= 344,433 sf Storage= 3,675,395 cf (215,140 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= 131.0 min ( 1,049.6 - 918.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	726.00'	4,158,336 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
726.00	132,640	0	0
728.00	155,297	287,937	287,937
730.00	179,100	334,397	622,334
731.00	118,479	148,790	771,124
732.00	367,080	242,780	1,013,903
733.50	318,821	514,426	1,528,329
734.00	253,912	143,183	1,671,512
735.00	270,451	262,182	1,933,694
736.00	287,631	279,041	2,212,735
738.00	311,683	599,314	2,812,049
740.00	336,524	648,207	3,460,256
742.00	361,556	698,080	4,158,336

Device	Routing	Invert	Outlet Devices
#1	Primary	733.50'	<b>30.0" Round Culvert X 0.00</b> L= 100.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 733.50' / 733.20' S= 0.0030 1/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf
#2	Device 1	733.50'	<b>4.0" Vert. Lower Orifice X 0.00</b> C= 0.600
#3	Device 1	737.50'	<b>4.0" Vert. Middle Orifice X 0.00</b> C= 0.600
#4	Device 1	738.50'	<b>4.0" Vert. Upper Orifice X 0.00</b> C= 0.600
#5	Device 1	739.00'	<b>30.0" Horiz. Orifice/Grate X 0.00</b> C= 0.600
#6	Secondary	740.00'	<b>Secondary Spillway, C= 3.27</b> Offset (feet) 0.00 6.00 26.00 32.00 Height (feet) 2.00 0.00 0.00 2.00

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=740.00' (Free Discharge)

- 1=Culvert ( Controls 0.00 cfs)
- 2=Lower Orifice ( Controls 0.00 cfs)
- 3=Middle Orifice ( Controls 0.00 cfs)
- 4=Upper Orifice ( Controls 0.00 cfs)
- 5=Orifice/Grate ( Controls 0.00 cfs)

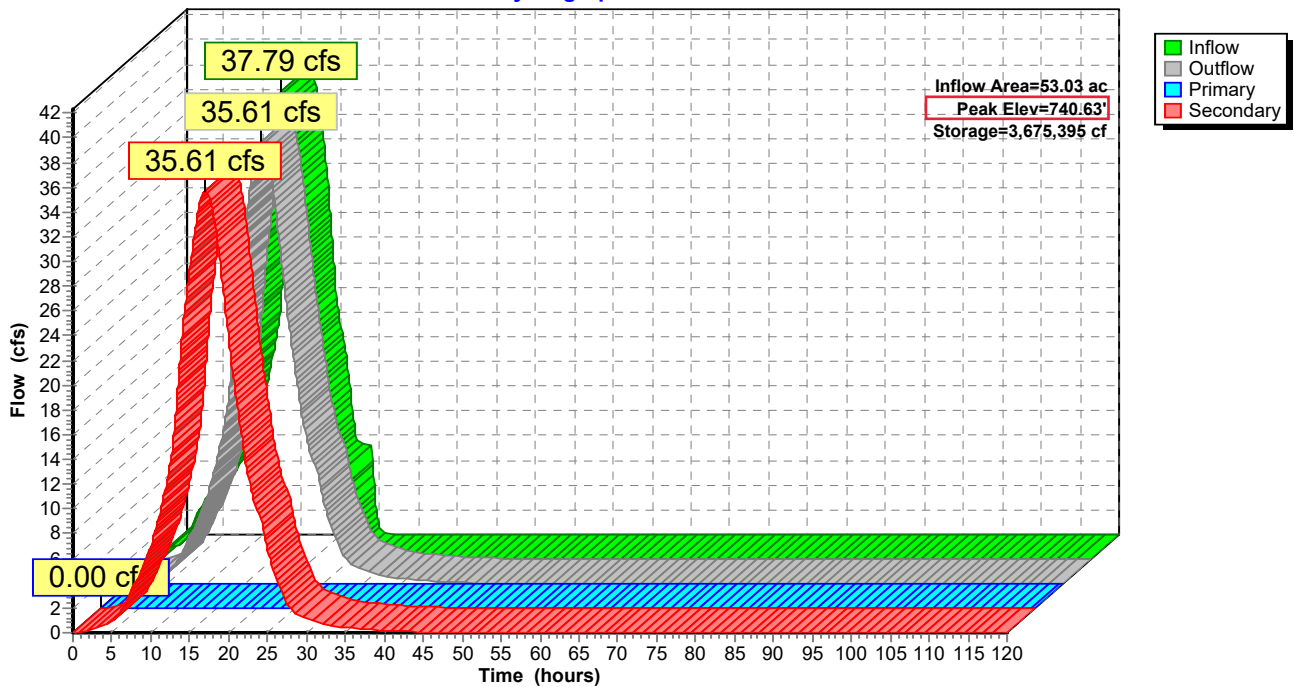
No Flow permitted through standpipe (all flow passes through weir spillway)

Secondary OutFlow Max=35.34 cfs @ 17.04 hrs HW=740.63' (Free Discharge)

6=Secondary Spillway (Weir Controls 35.34 cfs @ 2.35 fps)

### Pond Basin 5R: Stormwater Basin 5R

Hydrograph



### Summary for Pond Basin 8: Stormwater Basin 8

Inflow Area = 148.01 ac, 11.19% Impervious, Inflow Depth = 6.42" for 100-Year, 24-Hour event  
 Inflow = 104.29 cfs @ 16.16 hrs, Volume= 79.161 af  
 Outflow = 53.35 cfs @ 19.66 hrs, Volume= 79.161 af, Atten= 49%, Lag= 210.0 min  
 Primary = 53.35 cfs @ 19.66 hrs, Volume= 79.161 af

Initial Water Level set to base of spillway

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

Starting Elev= 736.50' Surf.Area= 553,047 sf Storage= 4,501,575 cf

Peak Elev= 738.96' @ 19.66 hrs Surf.Area= 606,991 sf Storage= 5,926,583 cf (1,425,008 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= 320.3 min ( 1,255.8 - 935.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	726.00'	6,571,347 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
726.00	283,562	0	0
727.50	340,318	467,910	467,910
728.00	351,709	173,007	640,917
730.00	398,761	750,470	1,391,387
730.50	410,884	202,411	1,593,798
732.00	448,114	644,249	2,238,047
733.00	473,655	460,885	2,698,931
734.00	499,775	486,715	3,185,646
736.00	542,314	1,042,089	4,227,735
736.50	553,047	273,840	4,501,575
738.00	585,482	853,897	5,355,472
740.00	630,393	1,215,875	6,571,347

Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	<b>36.0" Round Culvert</b> L= 140.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 727.00' / 725.10' S= 0.0136 1' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Device 1	730.50'	<b>4.0" Vert. 2-yr Orifice X 0.00</b> C= 0.600
#3	Device 1	732.50'	<b>4.0" Vert. 100-yr Orifice X 0.00</b> C= 0.600
#4	Device 1	733.50'	<b>4.0" Vert. 100-yr Orifice X 0.00</b> C= 0.600
#5	Device 1	734.50'	<b>4.0" Vert. 100-yr Orifice X 0.00</b> C= 0.600
#6	Device 1	736.50'	<b>36.0" Horiz. Primary Spillway</b> C= 0.600

**Primary OutFlow** Max=53.36 cfs @ 19.66 hrs HW=738.96' (Free Discharge)

1=Culvert (Passes 53.36 cfs of 97.12 cfs potential flow)

2=2-yr Orifice ( Controls 0.00 cfs)

3=100-yr Orifice ( Controls 0.00 cfs)

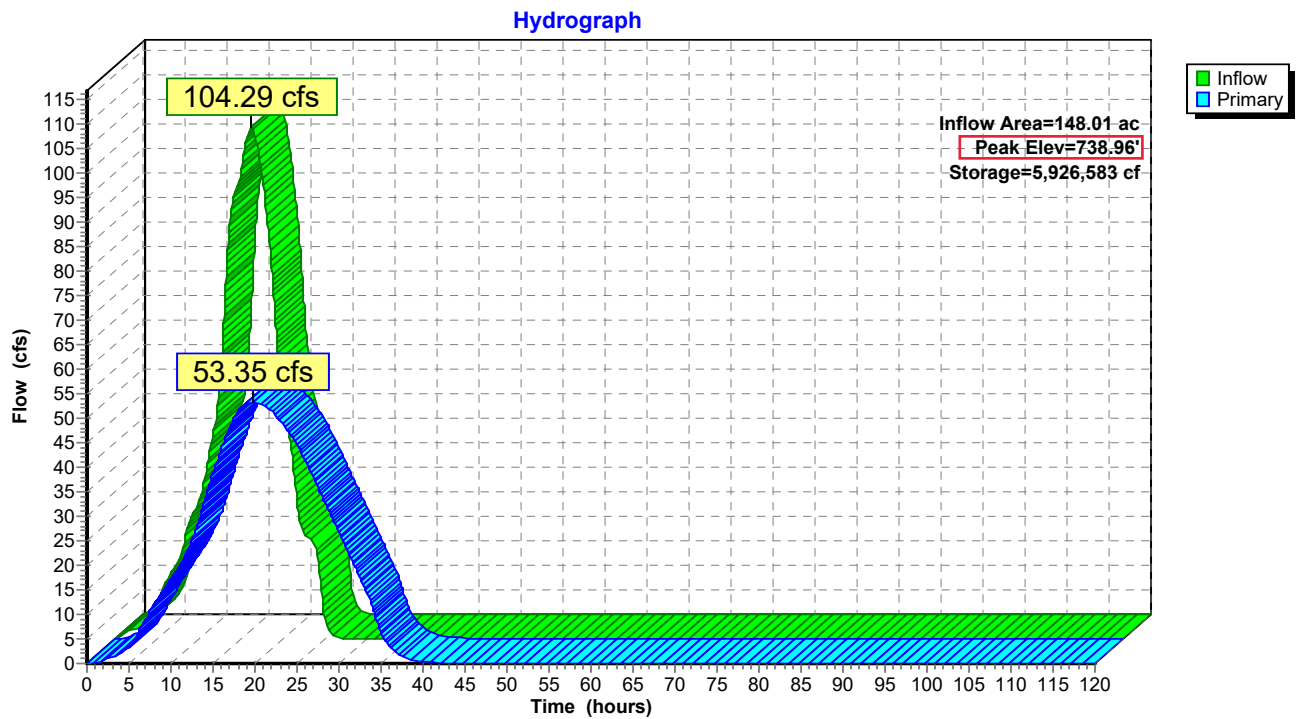
4=100-yr Orifice ( Controls 0.00 cfs)

5=100-yr Orifice ( Controls 0.00 cfs)

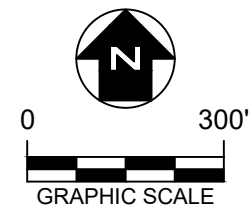
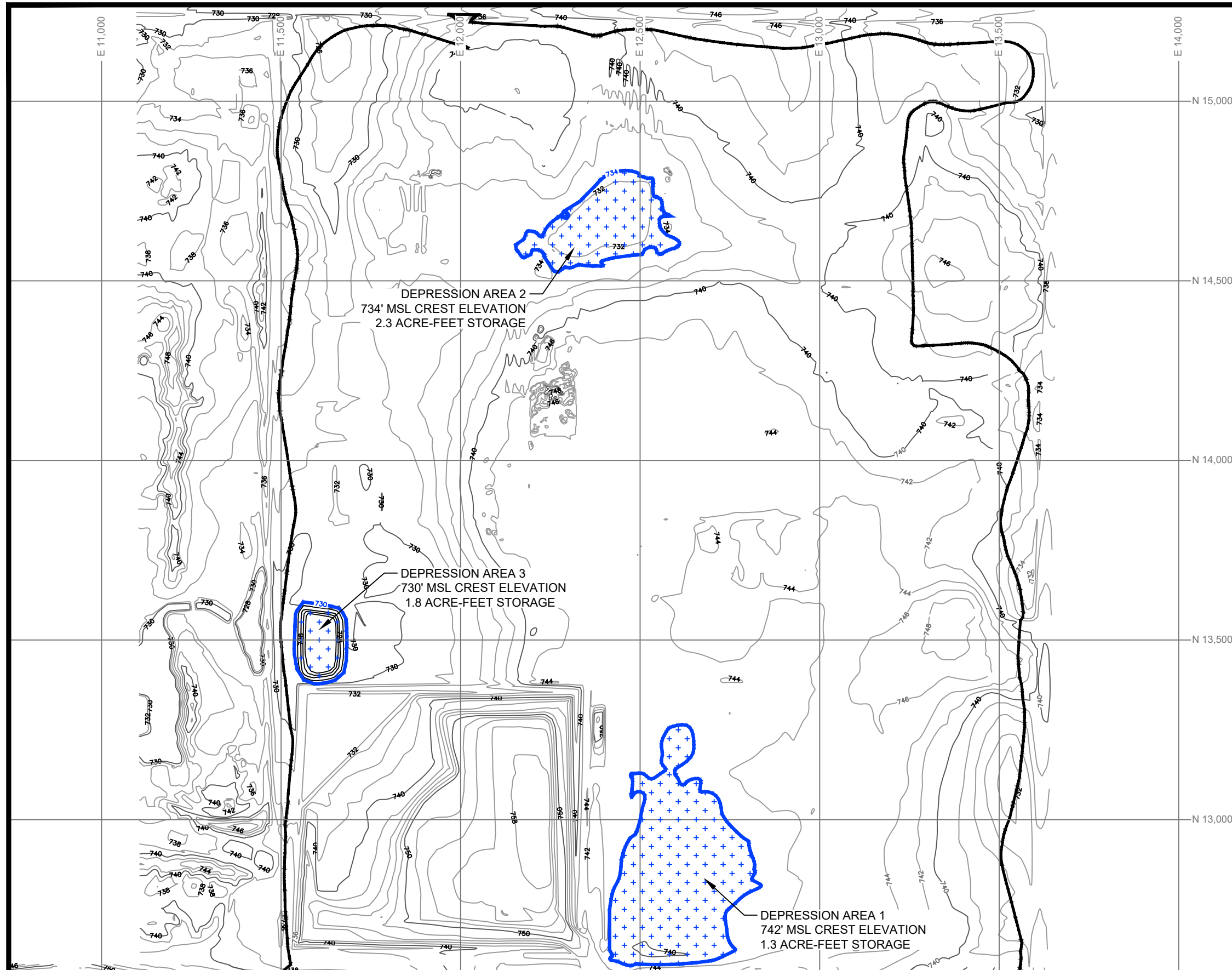
6=Primary Spillway (Orifice Controls 53.36 cfs @ 7.55 fps)

No Flow permitted through standpipe orifices (all flow passes through standpipe overflow spillway)




### Pond Basin 8: Stormwater Basin 8







**LEGEND**

-  APPROXIMATE PROPOSED LIMIT OF DISTURBANCE
-  744 EXISTING CONTOUR - 2 FT. INTERVAL (FT. MSL) (NAV88)
-  DEPRESSION AREA

**NOTES**

1. EXISTING CONTOURS DEVELOPED FROM SITE AERIAL TOPOGRAPHIC SURVEY BY ARES ASSOCIATES ON APRIL 16, 2013 AND UPDATED WITH CQM, INC. SURVEYS AS OF 2017.
2. CURRENT TOPOGRAPHY MAY DIFFER FROM THAT SHOWN.
3. FOR CLARITY, NOT ALL SITE FEATURES MAY BE SHOWN.

REV. NO.	DATE	DESCRIPTION



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**ZION LANDFILL SITE 2 NORTH EXPANSION  
LAKE COUNTY, ILLINOIS**

**FIGURE M.7-1  
SITE DEPRESSION AREAS**

DRAWN BY: NV APPROVED BY: DAM PROJ. NO.: 631020105 DATE: MAY 2022

T:\Projects\2018\Advanced Zion Landfill Expansion\GIS\Map\_Application\03 - Appendix M - Stormwater Management\Map7 - Depression Areas\Support Docs\Depositional Areas.dwg, 11/17/2022 4:39:02 PM





**Table B.14 Dry Deposit Density (continued)**

Deposit	Density (g/cm <sup>3</sup> )
Coarse Sand	1.42—1.94
Medium Gravel	1.47—2.09
Coarse Gravel	1.69—2.08
Loess	0.75—1.62
Eolian Sand	1.33—1.70
Soil	1.13—2.00
Rock Salt	1.68—2.14
Sandstone	1.60—2.68
Siltstone	1.35—2.12
Claystone	1.37—1.60
Clay	1.00—2.40
Till	1.61—2.12
Glacial Drift	1.11—1.83
Coal	0.70—1.50

(after Carslaw and Jaeger, 1959; Oudijk and Mujica, 1989, p. 149)

**Table B.15 Dry Deposit Thermal Conductivity**

Deposit	Thermal Conductivity (Cal/cm sec °C)
Gneiss	$5 \times 10^{-3} - 6 \times 10^{-3}$
Shale	$4 \times 10^{-3} - 8 \times 10^{-3}$
Salt	$8 \times 10^{-3} - 1 \times 10^{-2}$
Marl	$5 \times 10^{-3} - 7 \times 10^{-3}$
Sandstone	$2 \times 10^{-3} - 9 \times 10^{-3}$
Marble	$7 \times 10^{-3}$
Limestone	$5 \times 10^{-3} - 8 \times 10^{-3}$
Chalk	$2 \times 10^{-3}$
Dolomite	$4 \times 10^{-3} - 1 \times 10^{-2}$
Basalt	$5 \times 10^{-3}$
Granite	$4 \times 10^{-3} - 8 \times 10^{-3}$
Gypsum	$3 \times 10^{-3}$
Clay	$2 \times 10^{-3} - 3 \times 10^{-3}$
Sand	$3 \times 10^{-3} - 6 \times 10^{-3}$

**Table B.15 Dry Deposit Thermal**

Deposit
Soil
Coal

(after Ingersol, et al., 1948; Carslaw

**Table B.16 Dry Deposit Thermal**

Deposit
Sandstone
Dolomite
Granite
Limestone
Shale
Soil
Gravel
Sandy Clay
Quartz Sand
Peat

(after Ingersol, et al., 1954; Nation  
p. 199)

**Table B.17 Dry Deposit Specific**

Deposit
Sandstone
Limestone
Clay
Salt

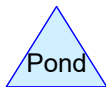
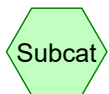
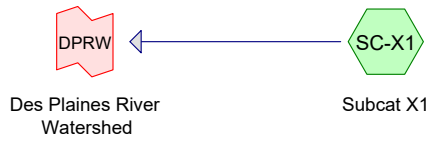
# M.8 - HydroCAD Output Files

# HydroCAD Output Files

## Existing Conditions

# HydroCAD Output Files

## **Existing Conditions – 2-year, 1-hour**



**Summary for Subcatchment SC-X1: Subcat X1**

Runoff = 16.55 cfs @ 1.76 hrs, Volume= 2.184 af, Depth= 0.32"

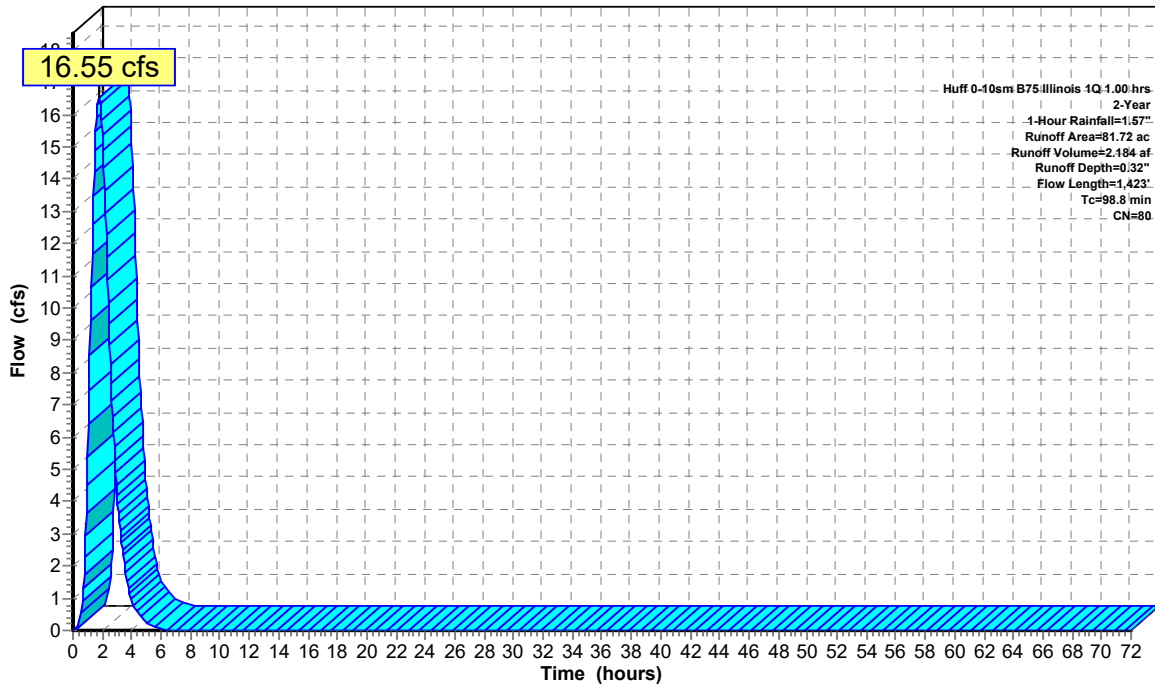
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

Area (ac)	CN	Description
33.52	76	Woods/grass comb., Fair, HSG C
* 46.72	82	Woods/grass comb., Fair, HSG D
1.48	98	Water Surface, HSG D
81.72	80	Weighted Average
80.24		98.19% Pervious Area
1.48		1.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
60.1	100	0.0018	0.03		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.80"
38.7	1,323	0.0130	0.57		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
98.8	1,423	Total			

**Subcatchment SC-X1: Subcat X1**

Hydrograph



Runoff

**Summary for Subcatchment SC-X2: Subcat X2**

Runoff = 7.96 cfs @ 1.56 hrs, Volume= 0.886 af, Depth= 0.26"

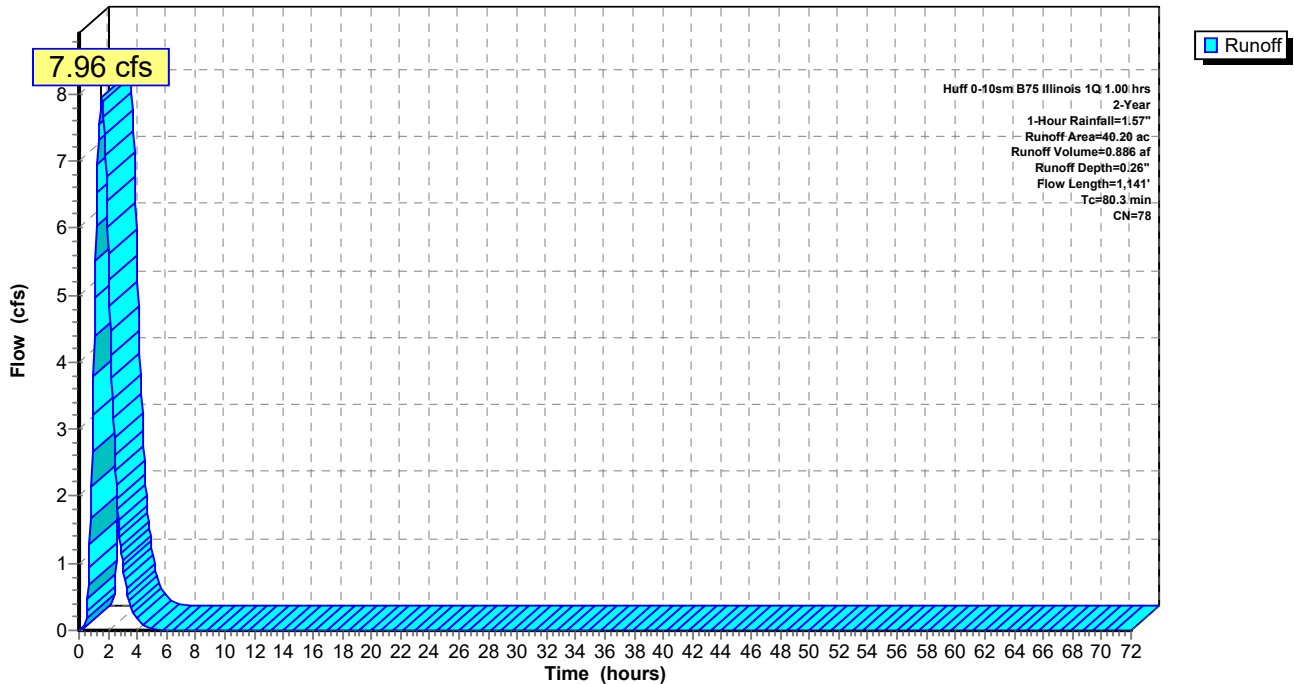
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

Area (ac)	CN	Description
13.40	82	Woods/grass comb., Fair, HSG D
26.80	76	Woods/grass comb., Fair, HSG C
40.20	78	Weighted Average
40.20		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.8	100	0.0136	0.06		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.80"
53.5	1,041	0.0042	0.32		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
80.3	1,141	Total			

**Subcatchment SC-X2: Subcat X2**

Hydrograph



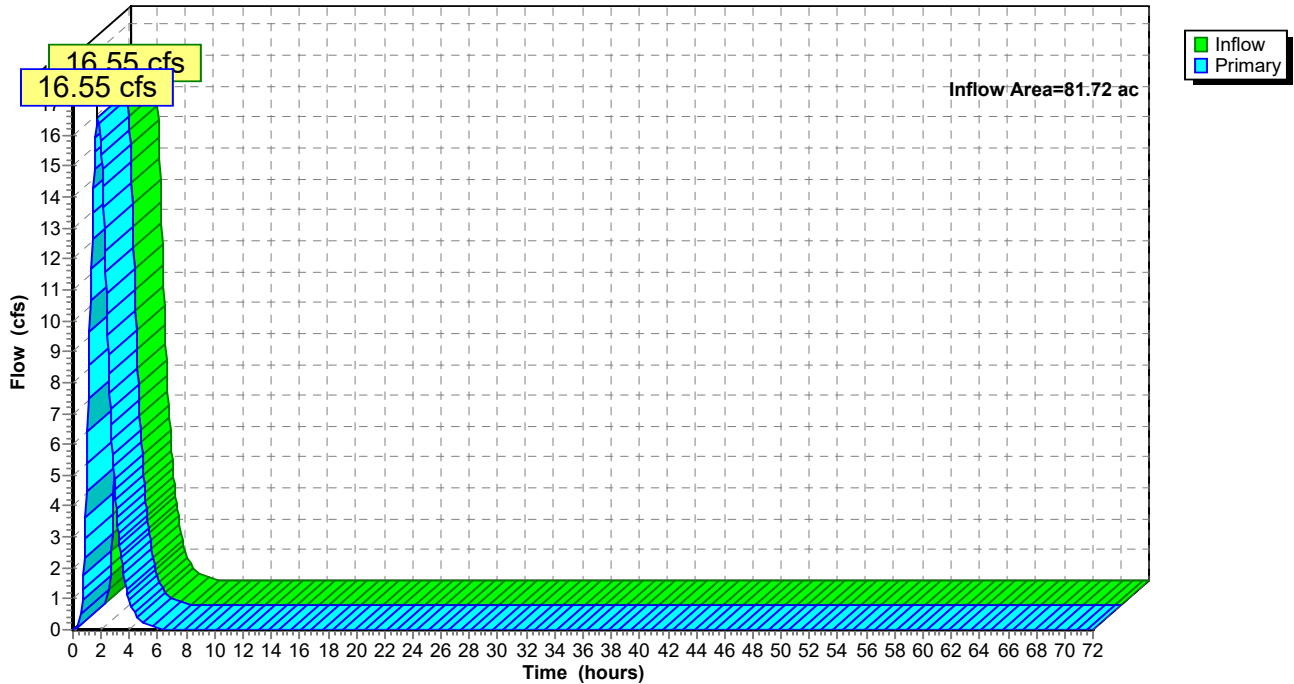
### Summary for Link DPRW: Des Plaines River Watershed

Inflow Area = 81.72 ac, 1.81% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
Inflow = 16.55 cfs @ 1.76 hrs, Volume= 2.184 af  
Primary = 16.55 cfs @ 1.76 hrs, Volume= 2.184 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

### Link DPRW: Des Plaines River Watershed

Hydrograph





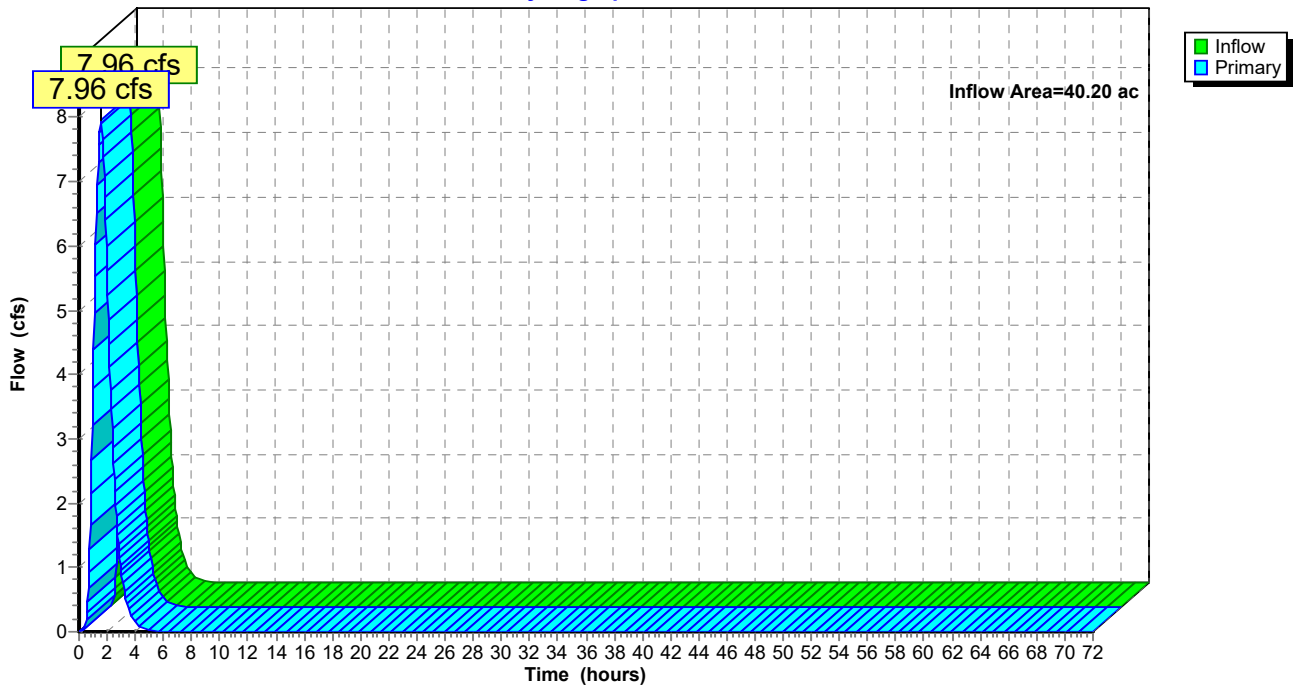
### Summary for Link LMW: Lake Michigan Watershed

Inflow Area = 40.20 ac, 0.00% Impervious, Inflow Depth = 0.26" for 2-Year, 1-Hour event  
Inflow = 7.96 cfs @ 1.56 hrs, Volume= 0.886 af  
Primary = 7.96 cfs @ 1.56 hrs, Volume= 0.886 af, Atten= 0%, Lag= 0.0 min

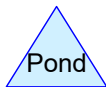
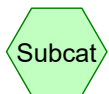
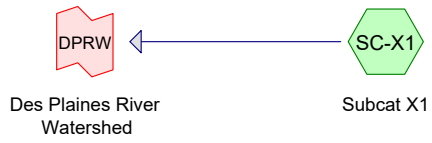
Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

### Link LMW: Lake Michigan Watershed

Hydrograph



HydroCAD Output Files  
**Existing Conditions – 2-year, 24-hour**



**Summary for Subcatchment SC-X1: Subcat X1**

Runoff = 15.52 cfs @ 17.69 hrs, Volume= 10.286 af, Depth= 1.51"

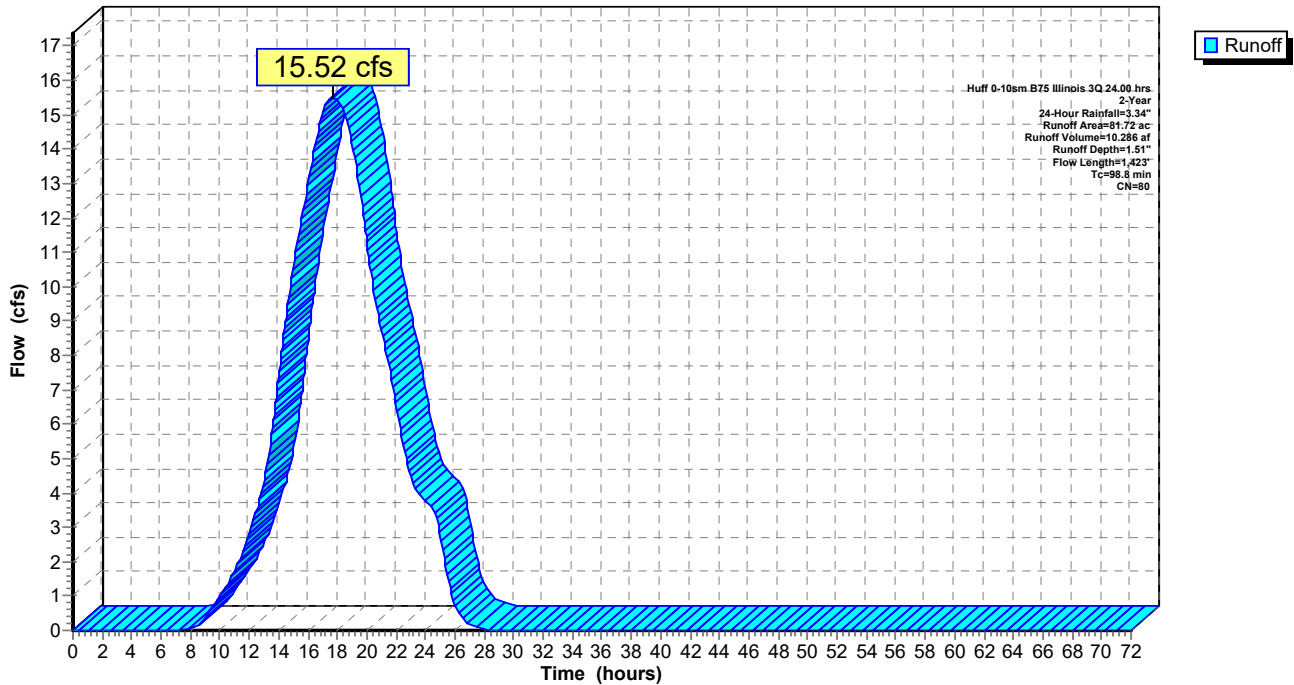
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

Area (ac)	CN	Description
33.52	76	Woods/grass comb., Fair, HSG C
* 46.72	82	Woods/grass comb., Fair, HSG D
1.48	98	Water Surface, HSG D
81.72	80	Weighted Average
80.24		98.19% Pervious Area
1.48		1.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
60.1	100	0.0018	0.03		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.80"
38.7	1,323	0.0130	0.57		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
98.8	1,423	Total			

**Subcatchment SC-X1: Subcat X1**

Hydrograph



**Summary for Subcatchment SC-X2: Subcat X2**

Runoff = 7.17 cfs @ 17.57 hrs, Volume= 4.613 af, Depth= 1.38"

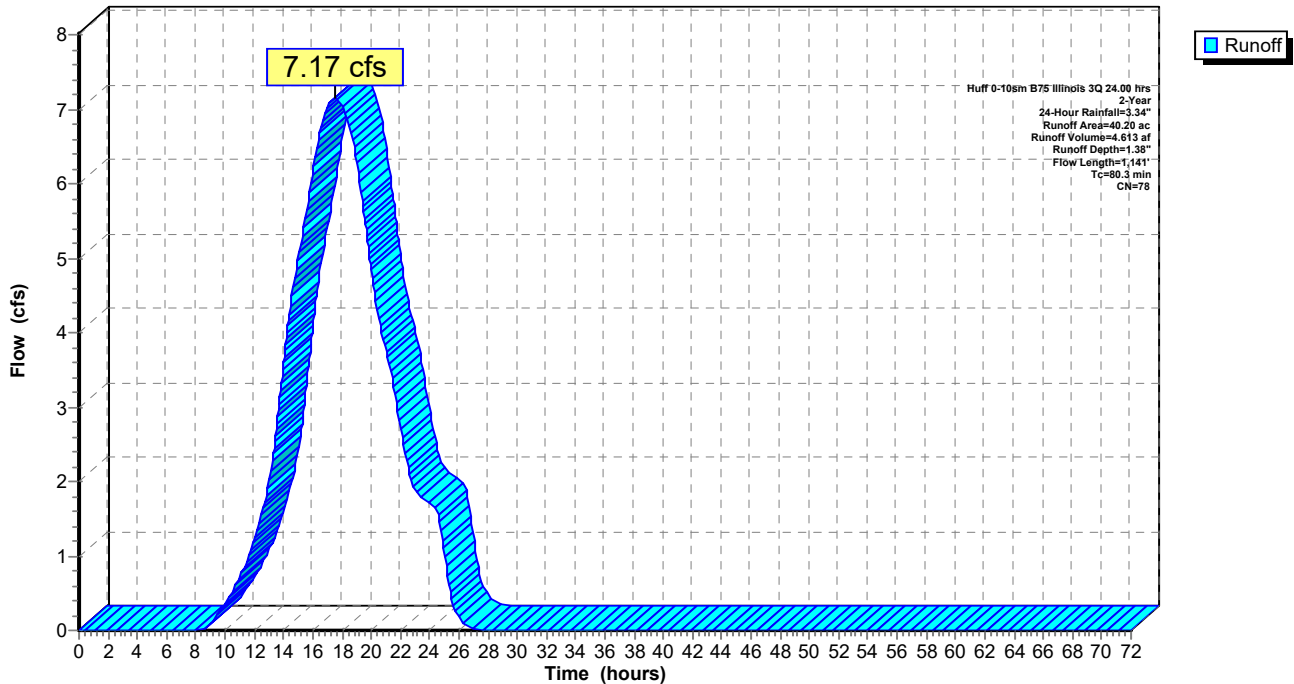
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

Area (ac)	CN	Description
13.40	82	Woods/grass comb., Fair, HSG D
26.80	76	Woods/grass comb., Fair, HSG C
40.20	78	Weighted Average
40.20		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.8	100	0.0136	0.06		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.80"
53.5	1,041	0.0042	0.32		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
80.3	1,141	Total			

**Subcatchment SC-X2: Subcat X2**

Hydrograph



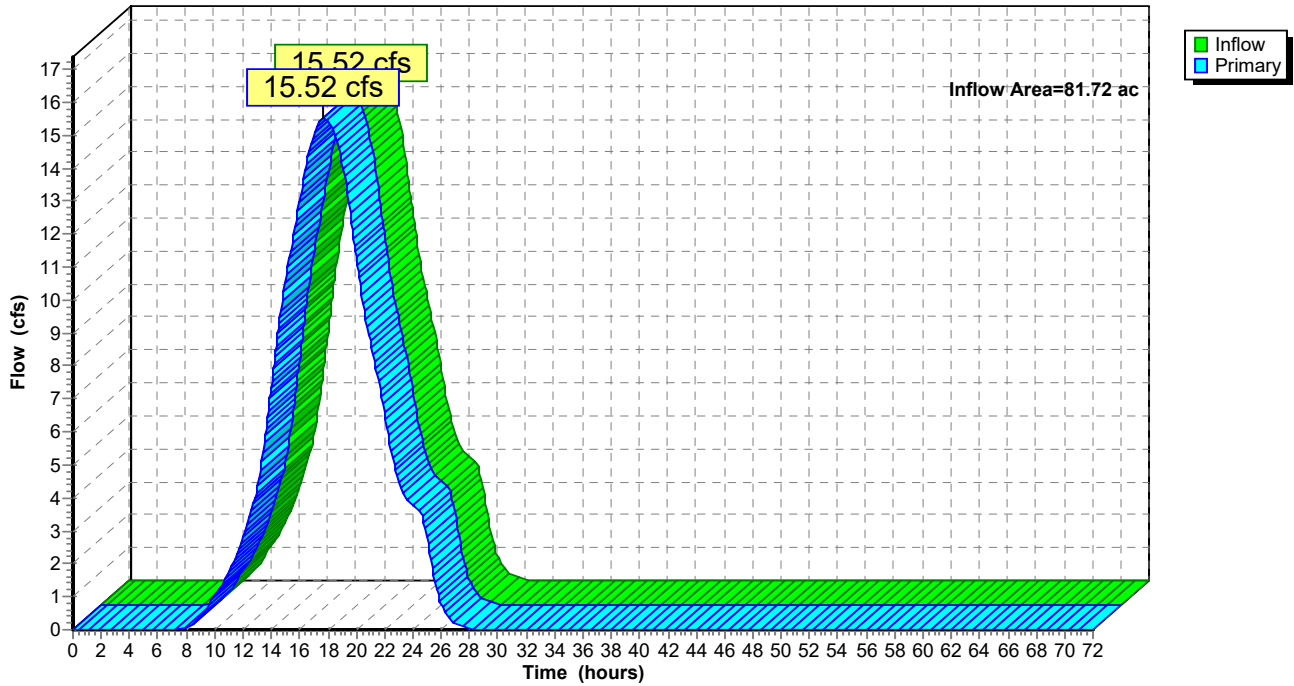
### Summary for Link DPRW: Des Plaines River Watershed

Inflow Area = 81.72 ac, 1.81% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
Inflow = 15.52 cfs @ 17.69 hrs, Volume= 10.286 af  
Primary = 15.52 cfs @ 17.69 hrs, Volume= 10.286 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

### Link DPRW: Des Plaines River Watershed

Hydrograph

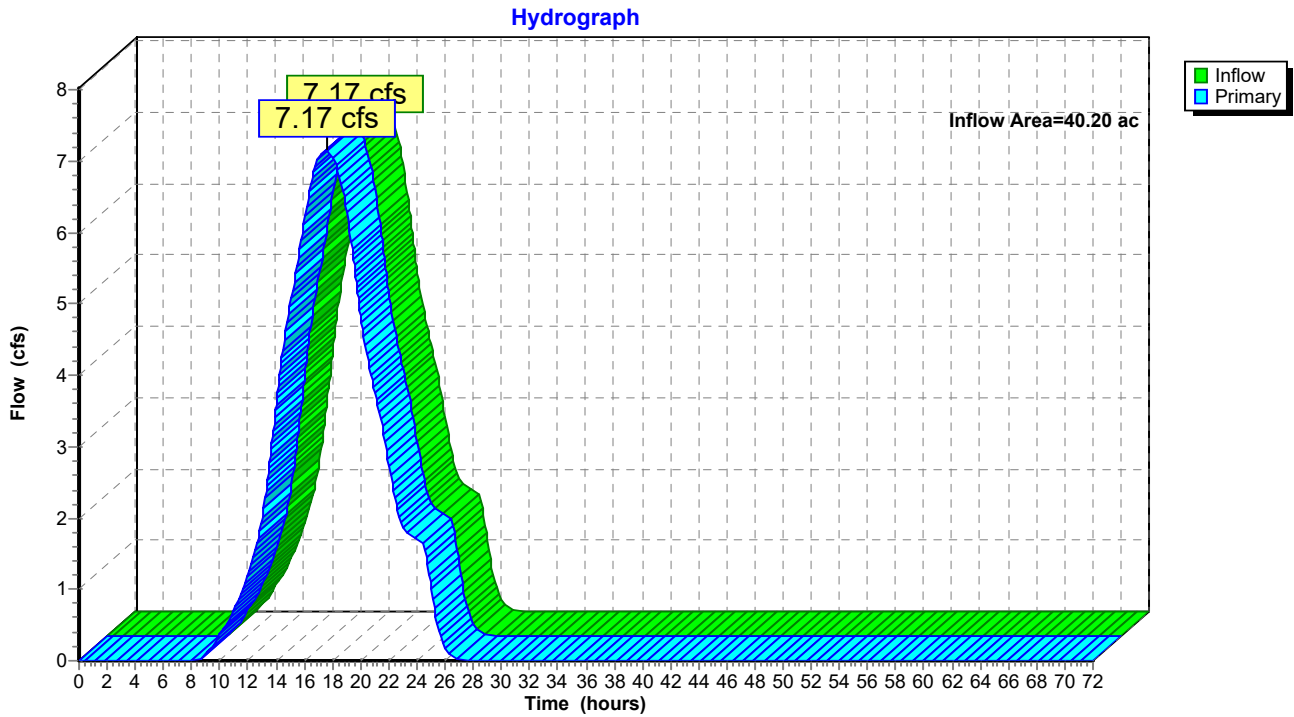


### Summary for Link LMW: Lake Michigan Watershed

Inflow Area = 40.20 ac, 0.00% Impervious, Inflow Depth = 1.38" for 2-Year, 24-Hour event  
Inflow = 7.17 cfs @ 17.57 hrs, Volume= 4.613 af  
Primary = 7.17 cfs @ 17.57 hrs, Volume= 4.613 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

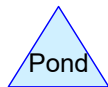
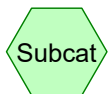
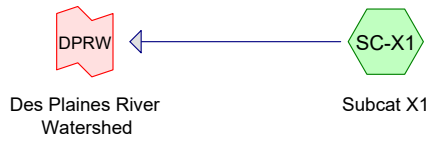
### Link LMW: Lake Michigan Watershed



# HydroCAD Output Files

## **Existing Conditions – 10-year, 1-hour**





**Summary for Subcatchment SC-X1: Subcat X1**

Runoff = 42.66 cfs @ 1.69 hrs, Volume= 5.680 af, Depth= 0.83"

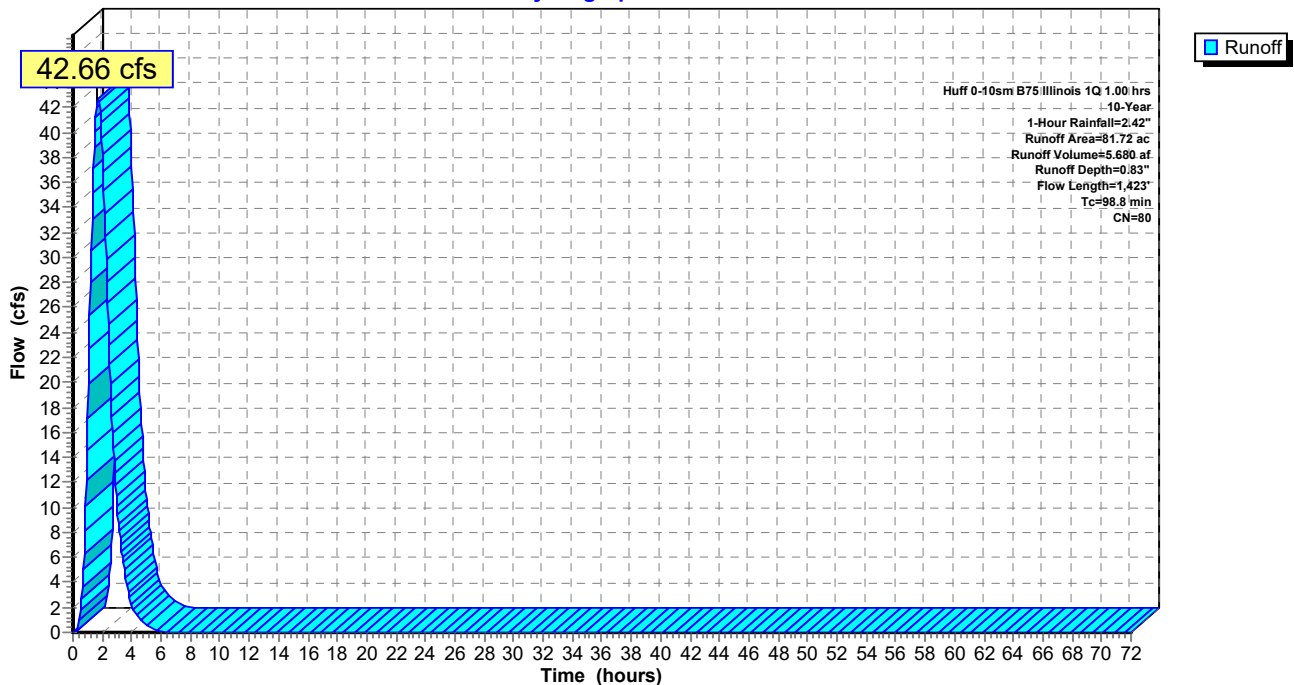
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

Area (ac)	CN	Description
33.52	76	Woods/grass comb., Fair, HSG C
* 46.72	82	Woods/grass comb., Fair, HSG D
1.48	98	Water Surface, HSG D
81.72	80	Weighted Average
80.24		98.19% Pervious Area
1.48		1.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
60.1	100	0.0018	0.03		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.80"
38.7	1,323	0.0130	0.57		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
98.8	1,423	Total			

**Subcatchment SC-X1: Subcat X1**

Hydrograph



**Summary for Subcatchment SC-X2: Subcat X2**

Runoff = 21.95 cfs @ 1.50 hrs, Volume= 2.467 af, Depth= 0.74"

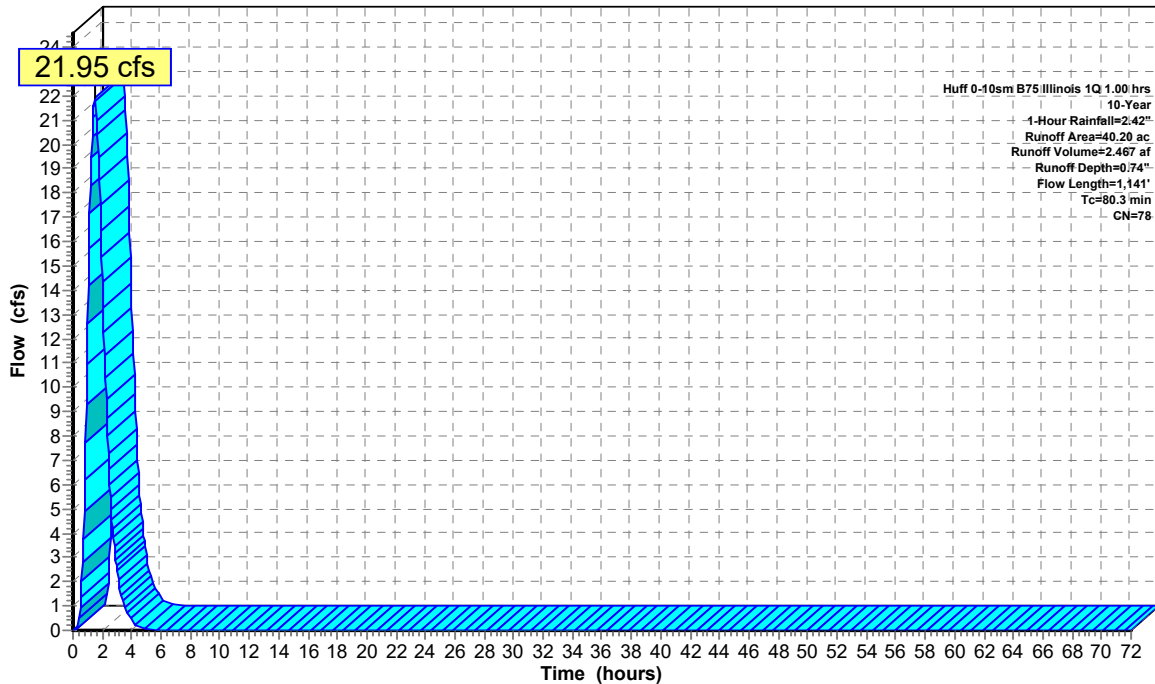
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

Area (ac)	CN	Description
13.40	82	Woods/grass comb., Fair, HSG D
26.80	76	Woods/grass comb., Fair, HSG C
40.20	78	Weighted Average
40.20		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.8	100	0.0136	0.06		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.80"
53.5	1,041	0.0042	0.32		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
80.3	1,141	Total			

**Subcatchment SC-X2: Subcat X2**

Hydrograph



Runoff

**Existing Model**

Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

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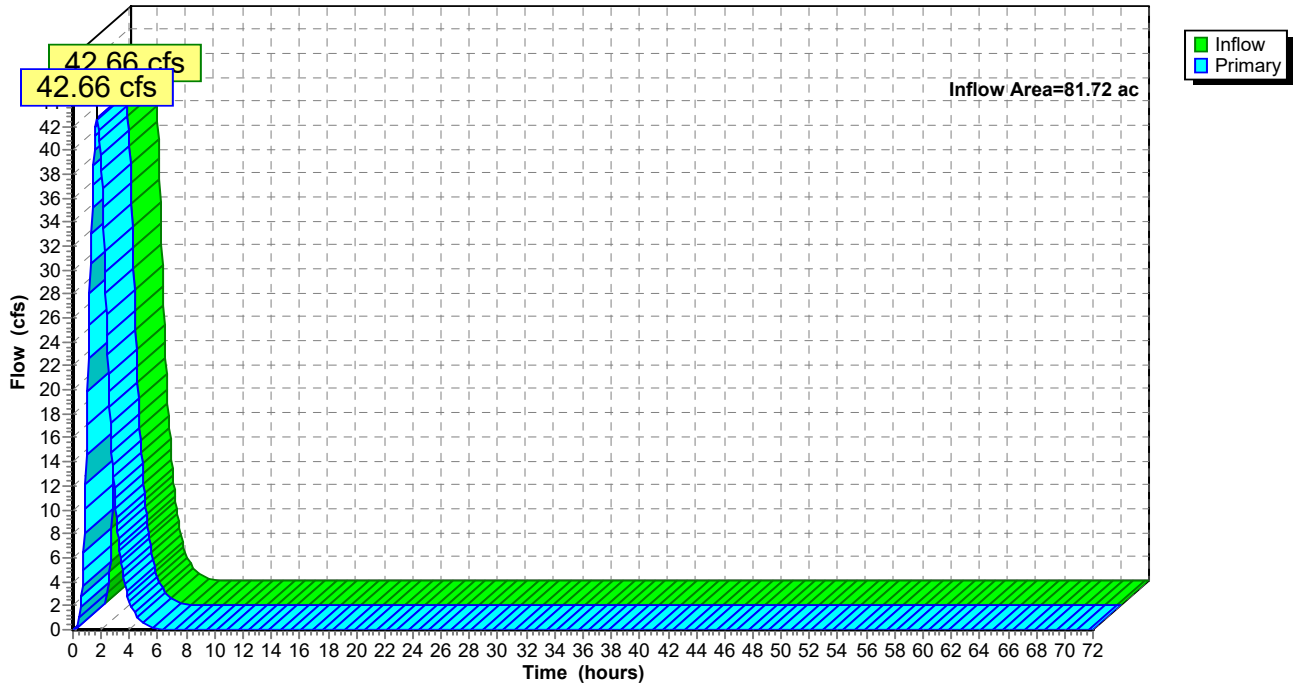
**Summary for Link DPRW: Des Plaines River Watershed**

Inflow Area = 81.72 ac, 1.81% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
Inflow = 42.66 cfs @ 1.69 hrs, Volume= 5.680 af  
Primary = 42.66 cfs @ 1.69 hrs, Volume= 5.680 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Link DPRW: Des Plaines River Watershed**

Hydrograph



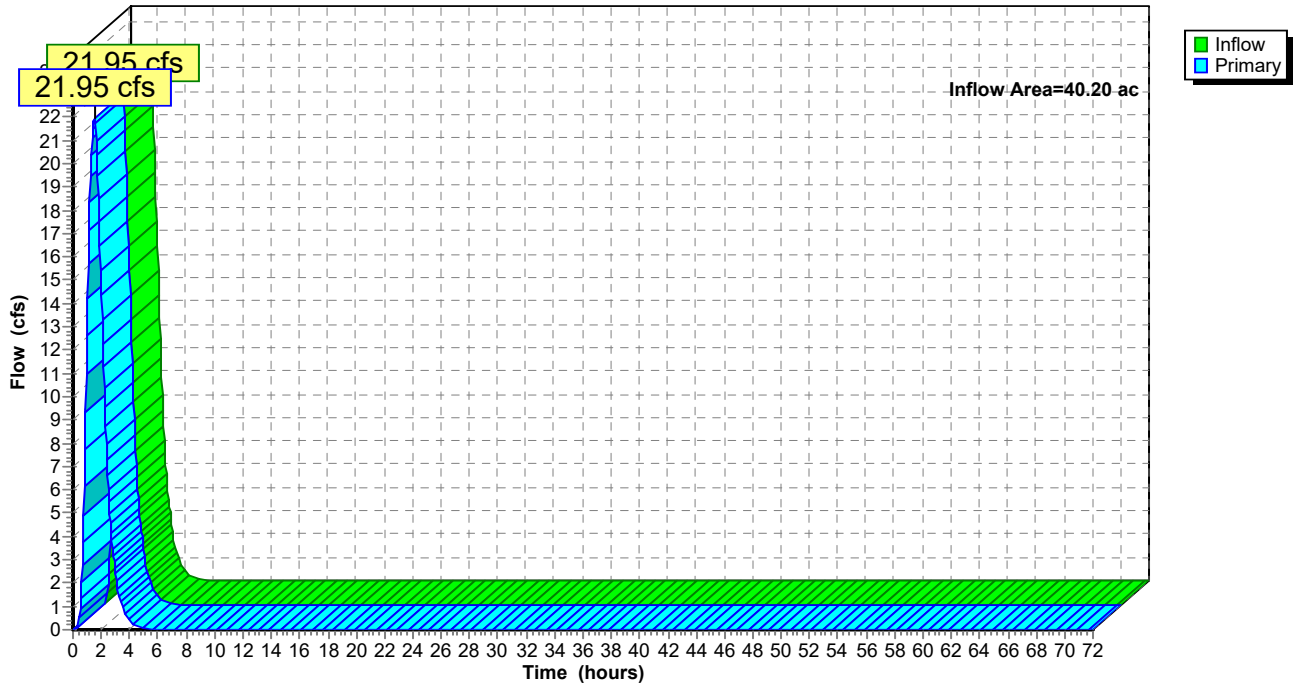
### Summary for Link LMW: Lake Michigan Watershed

Inflow Area = 40.20 ac, 0.00% Impervious, Inflow Depth = 0.74" for 10-Year, 1-Hour event  
Inflow = 21.95 cfs @ 1.50 hrs, Volume= 2.467 af  
Primary = 21.95 cfs @ 1.50 hrs, Volume= 2.467 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

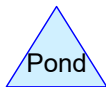
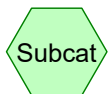
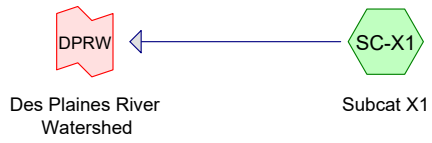
### Link LMW: Lake Michigan Watershed

Hydrograph



# HydroCAD Output Files

## **Existing Conditions – 10-year, 24-hour**



**Summary for Subcatchment SC-X1: Subcat X1**

Runoff = 29.10 cfs @ 17.45 hrs, Volume= 20.594 af, Depth= 3.02"

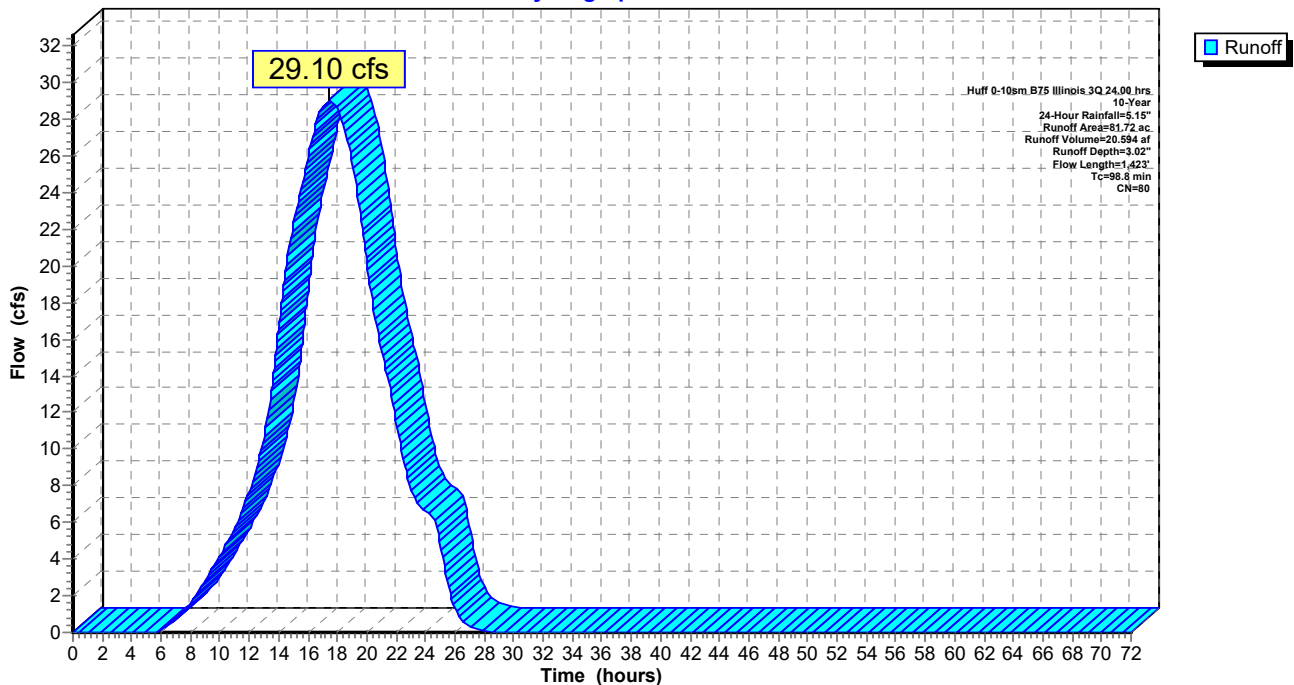
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (ac)	CN	Description
33.52	76	Woods/grass comb., Fair, HSG C
* 46.72	82	Woods/grass comb., Fair, HSG D
1.48	98	Water Surface, HSG D
81.72	80	Weighted Average
80.24		98.19% Pervious Area
1.48		1.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
60.1	100	0.0018	0.03		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.80"
38.7	1,323	0.0130	0.57		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
98.8	1,423	Total			

**Subcatchment SC-X1: Subcat X1**

Hydrograph





**Summary for Subcatchment SC-X2: Subcat X2**

Runoff = 13.80 cfs @ 17.22 hrs, Volume= 9.512 af, Depth= 2.84"

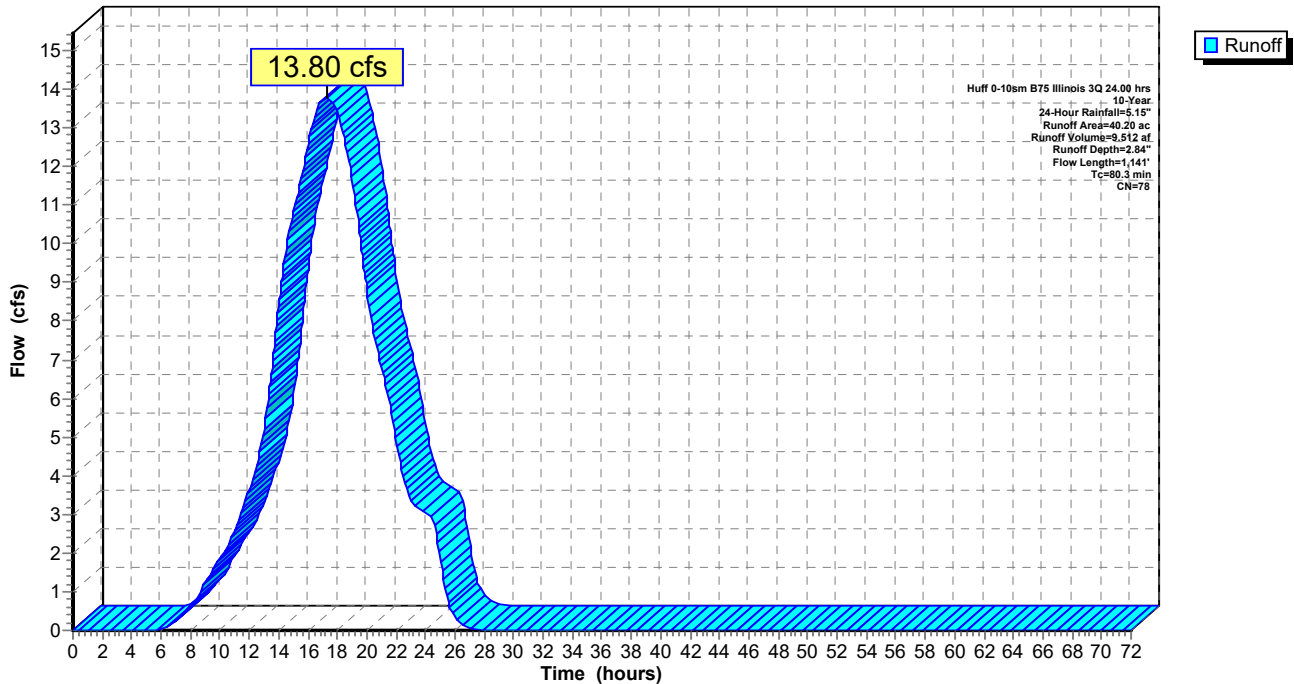
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (ac)	CN	Description
13.40	82	Woods/grass comb., Fair, HSG D
26.80	76	Woods/grass comb., Fair, HSG C
40.20	78	Weighted Average
40.20		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.8	100	0.0136	0.06		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.80"
53.5	1,041	0.0042	0.32		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
80.3	1,141	Total			

**Subcatchment SC-X2: Subcat X2**

Hydrograph



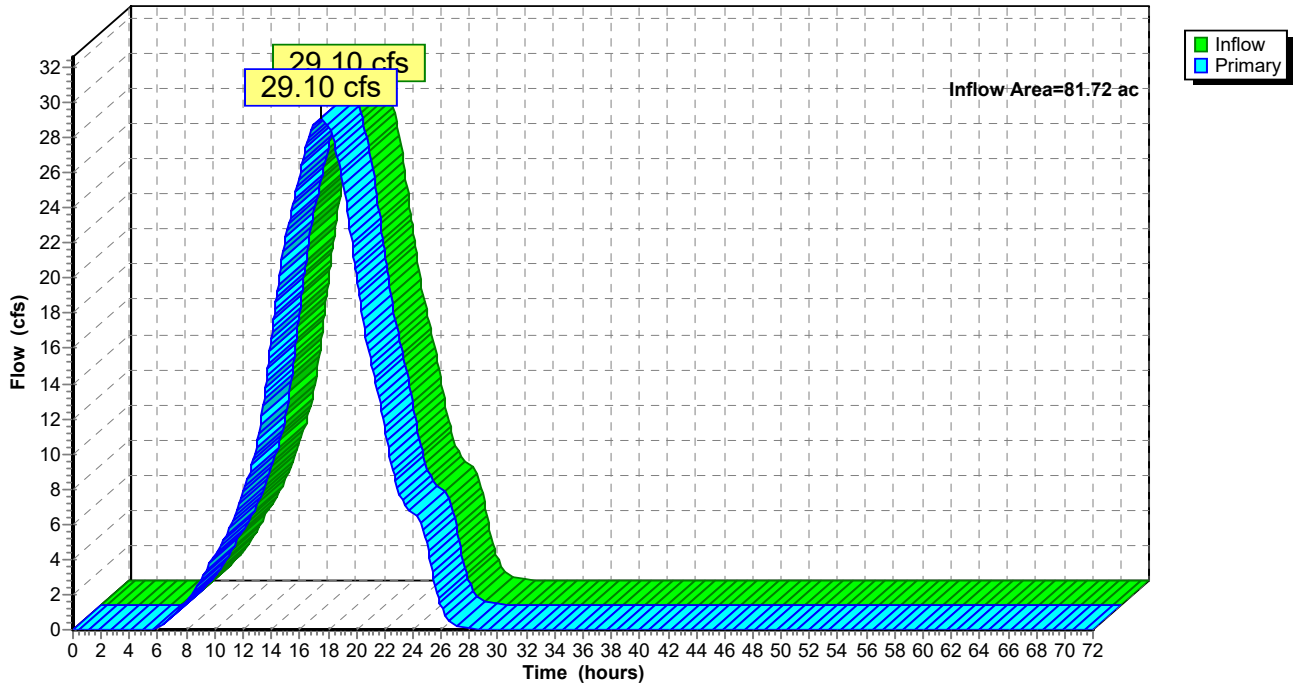
### Summary for Link DPRW: Des Plaines River Watershed

Inflow Area = 81.72 ac, 1.81% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
Inflow = 29.10 cfs @ 17.45 hrs, Volume= 20.594 af  
Primary = 29.10 cfs @ 17.45 hrs, Volume= 20.594 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

### Link DPRW: Des Plaines River Watershed

Hydrograph

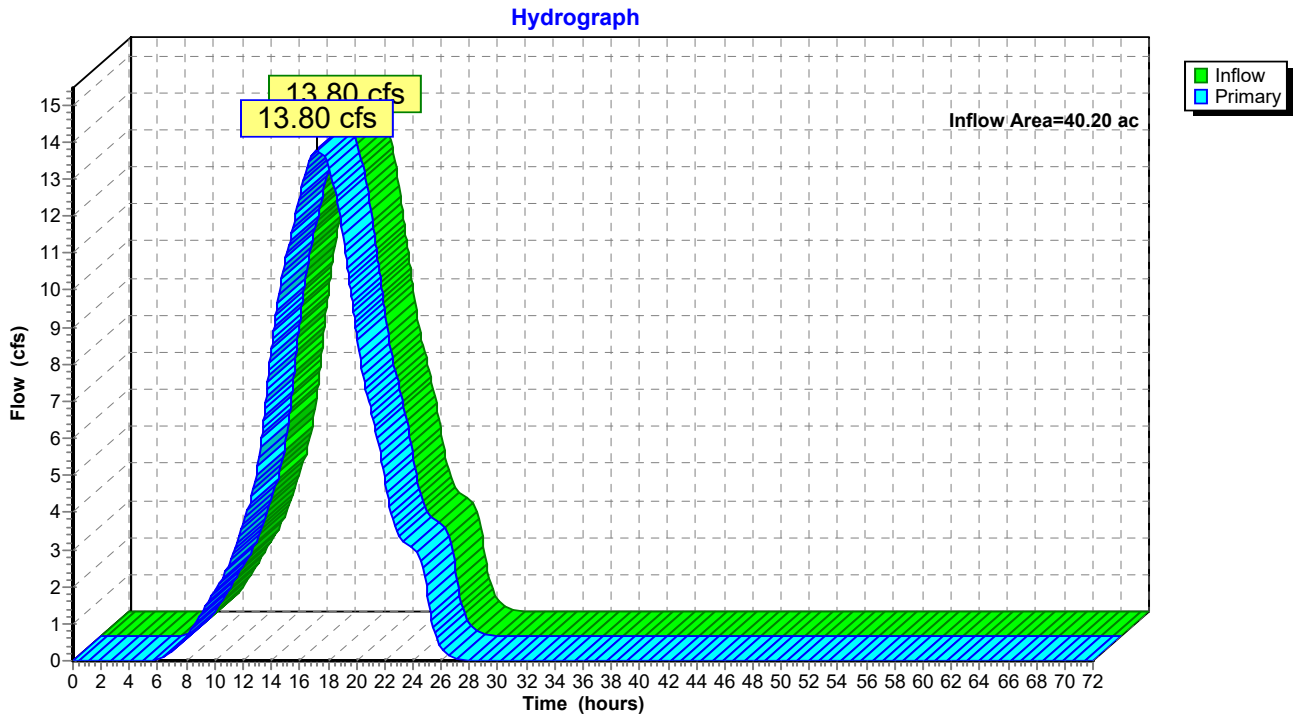


### Summary for Link LMW: Lake Michigan Watershed

Inflow Area = 40.20 ac, 0.00% Impervious, Inflow Depth = 2.84" for 10-Year, 24-Hour event  
Inflow = 13.80 cfs @ 17.22 hrs, Volume= 9.512 af  
Primary = 13.80 cfs @ 17.22 hrs, Volume= 9.512 af, Atten= 0%, Lag= 0.0 min

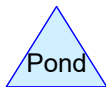
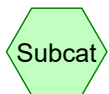
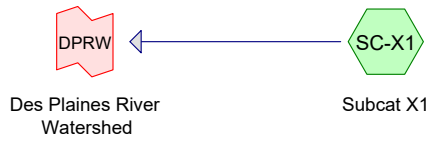
Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

### Link LMW: Lake Michigan Watershed



# HydroCAD Output Files

## **Existing Conditions – 25-year, 1-hour**



**Summary for Subcatchment SC-X1: Subcat X1**

Runoff = 65.10 cfs @ 1.67 hrs, Volume= 8.666 af, Depth= 1.27"

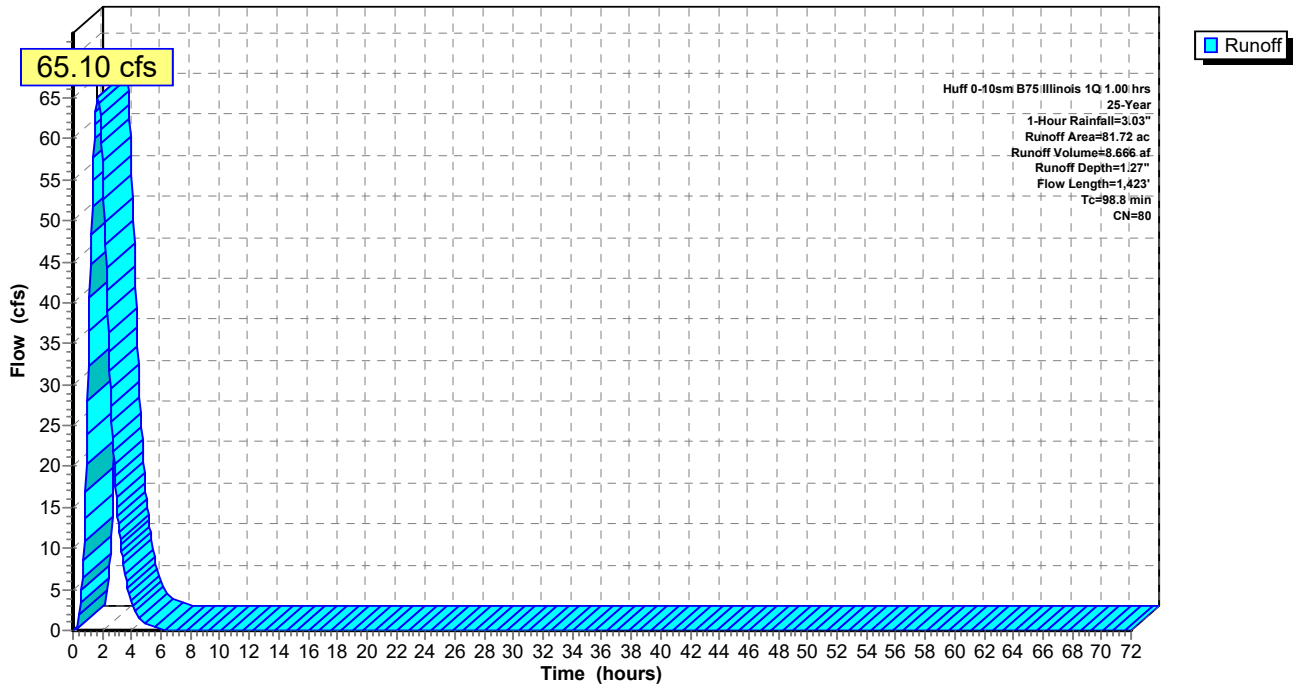
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

Area (ac)	CN	Description
33.52	76	Woods/grass comb., Fair, HSG C
* 46.72	82	Woods/grass comb., Fair, HSG D
1.48	98	Water Surface, HSG D
81.72	80	Weighted Average
80.24		98.19% Pervious Area
1.48		1.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
60.1	100	0.0018	0.03		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.80"
38.7	1,323	0.0130	0.57		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
98.8	1,423	Total			

**Subcatchment SC-X1: Subcat X1**

Hydrograph



**Summary for Subcatchment SC-X2: Subcat X2**

Runoff = 34.12 cfs @ 1.48 hrs, Volume= 3.853 af, Depth= 1.15"

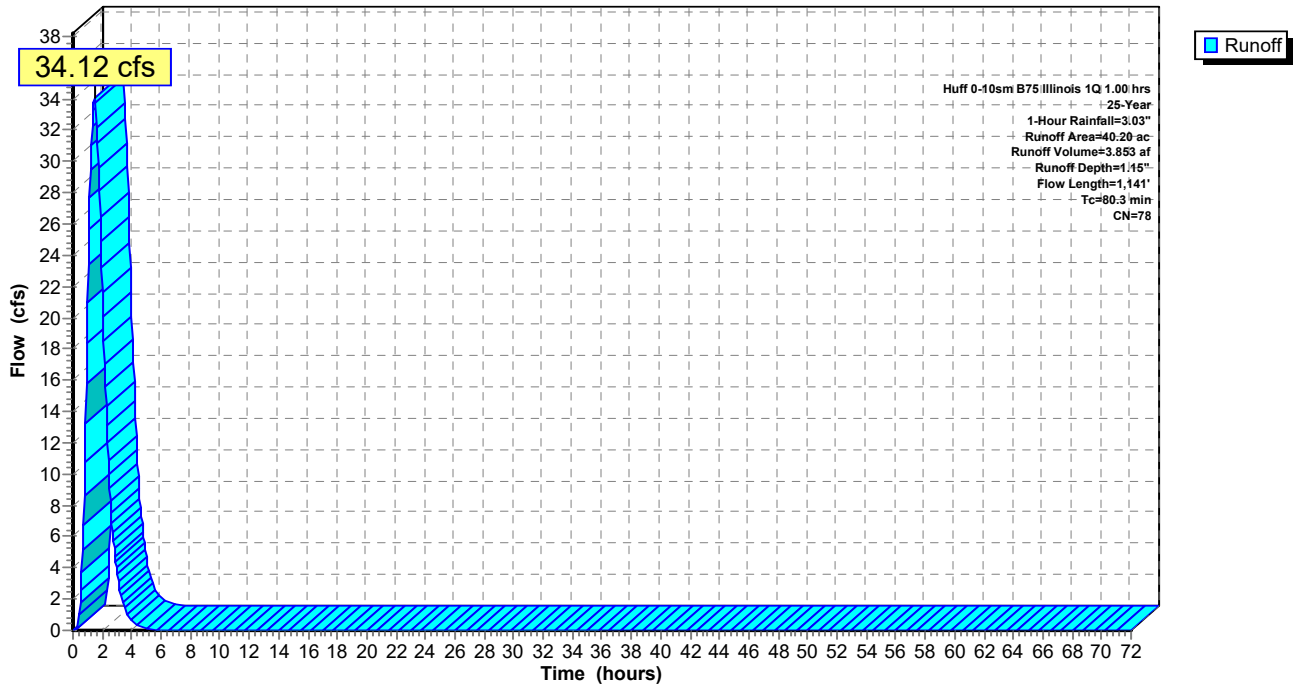
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

Area (ac)	CN	Description
13.40	82	Woods/grass comb., Fair, HSG D
26.80	76	Woods/grass comb., Fair, HSG C
40.20	78	Weighted Average
40.20		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.8	100	0.0136	0.06		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.80"
53.5	1,041	0.0042	0.32		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
80.3	1,141	Total			

**Subcatchment SC-X2: Subcat X2**

Hydrograph



**Existing Model**

Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

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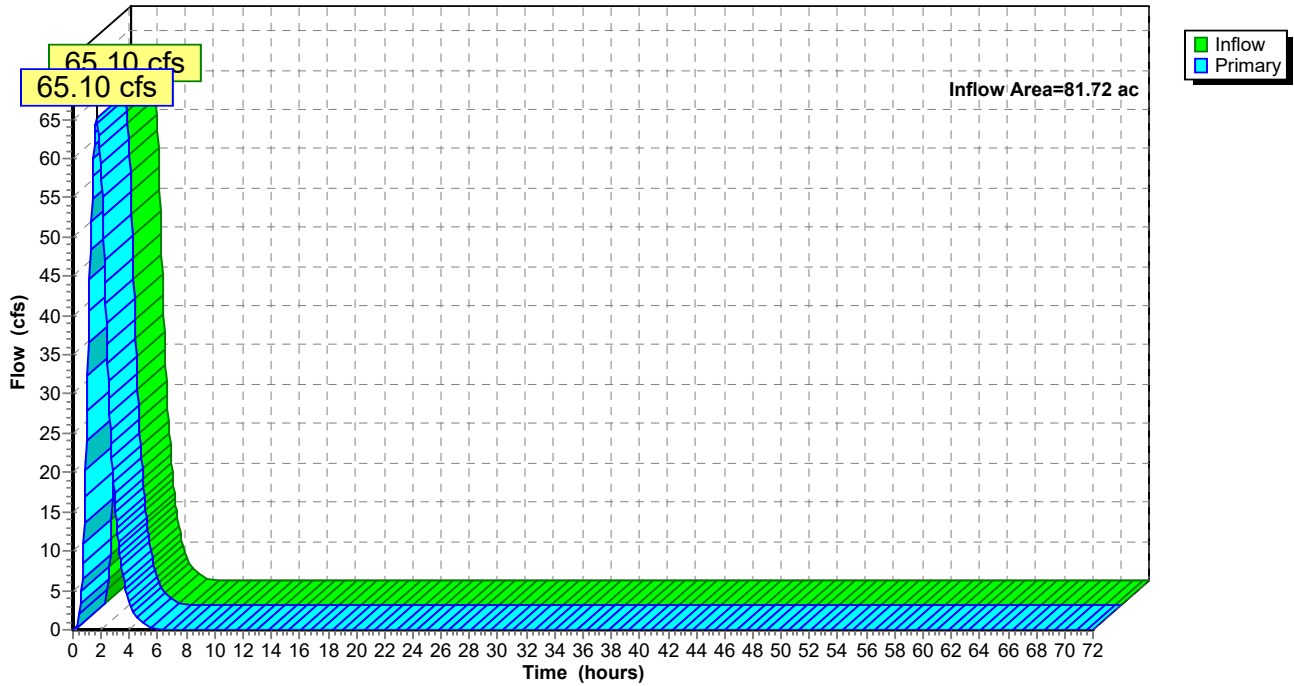
**Summary for Link DPRW: Des Plaines River Watershed**

Inflow Area = 81.72 ac, 1.81% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
Inflow = 65.10 cfs @ 1.67 hrs, Volume= 8.666 af  
Primary = 65.10 cfs @ 1.67 hrs, Volume= 8.666 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Link DPRW: Des Plaines River Watershed**

Hydrograph





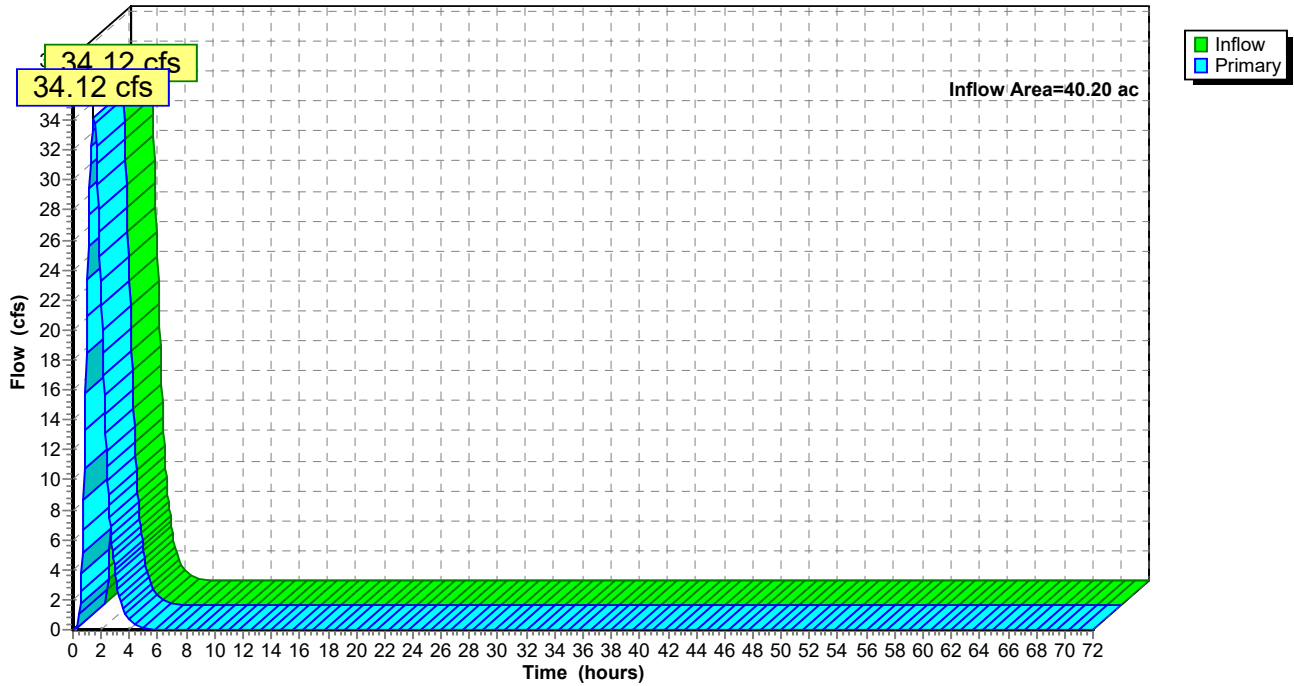
### Summary for Link LMW: Lake Michigan Watershed

Inflow Area = 40.20 ac, 0.00% Impervious, Inflow Depth = 1.15" for 25-Year, 1-Hour event  
Inflow = 34.12 cfs @ 1.48 hrs, Volume= 3.853 af  
Primary = 34.12 cfs @ 1.48 hrs, Volume= 3.853 af, Atten= 0%, Lag= 0.0 min

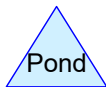
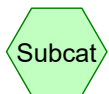
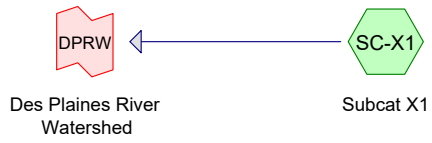
Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

### Link LMW: Lake Michigan Watershed

Hydrograph



HydroCAD Output Files  
**Existing Conditions – 25-year, 24-hour**



**Summary for Subcatchment SC-X1: Subcat X1**

Runoff = 39.06 cfs @ 17.44 hrs, Volume= 28.531 af, Depth= 4.19"

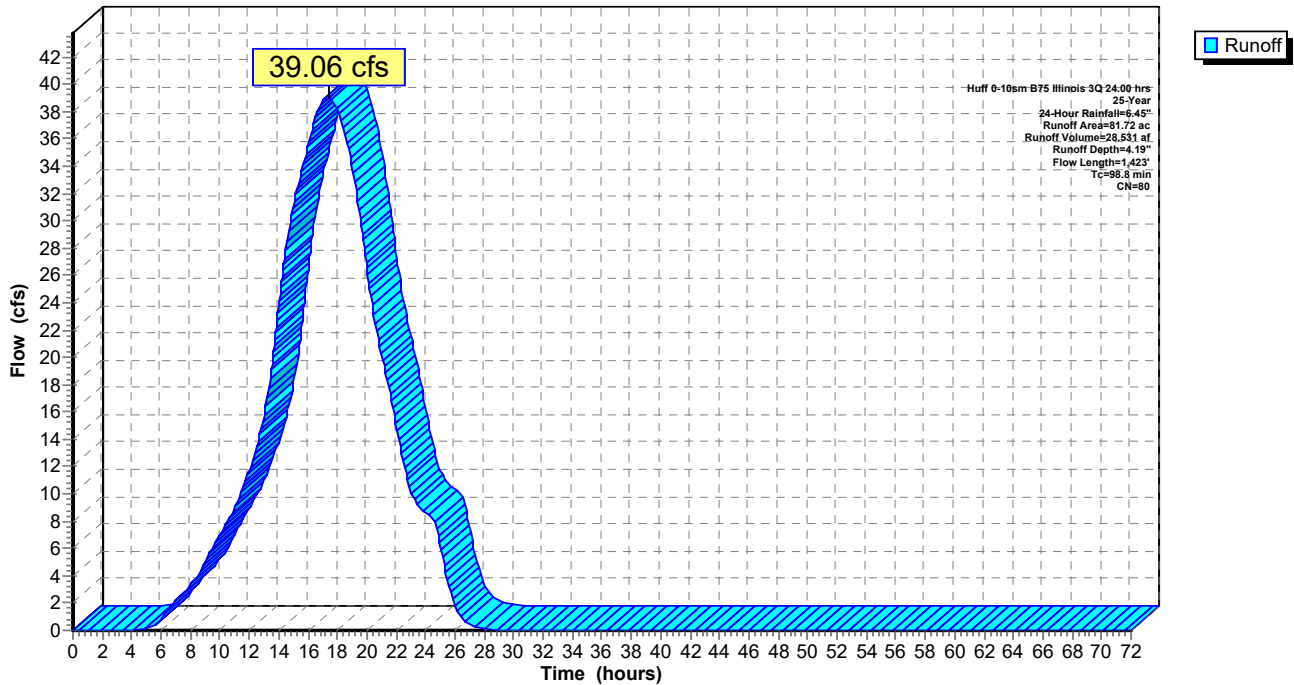
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (ac)	CN	Description
33.52	76	Woods/grass comb., Fair, HSG C
* 46.72	82	Woods/grass comb., Fair, HSG D
1.48	98	Water Surface, HSG D
81.72	80	Weighted Average
80.24		98.19% Pervious Area
1.48		1.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
60.1	100	0.0018	0.03		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.80"
38.7	1,323	0.0130	0.57		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
98.8	1,423	Total			

**Subcatchment SC-X1: Subcat X1**

Hydrograph



**Summary for Subcatchment SC-X2: Subcat X2**

Runoff = 18.72 cfs @ 17.06 hrs, Volume= 13.330 af, Depth= 3.98"

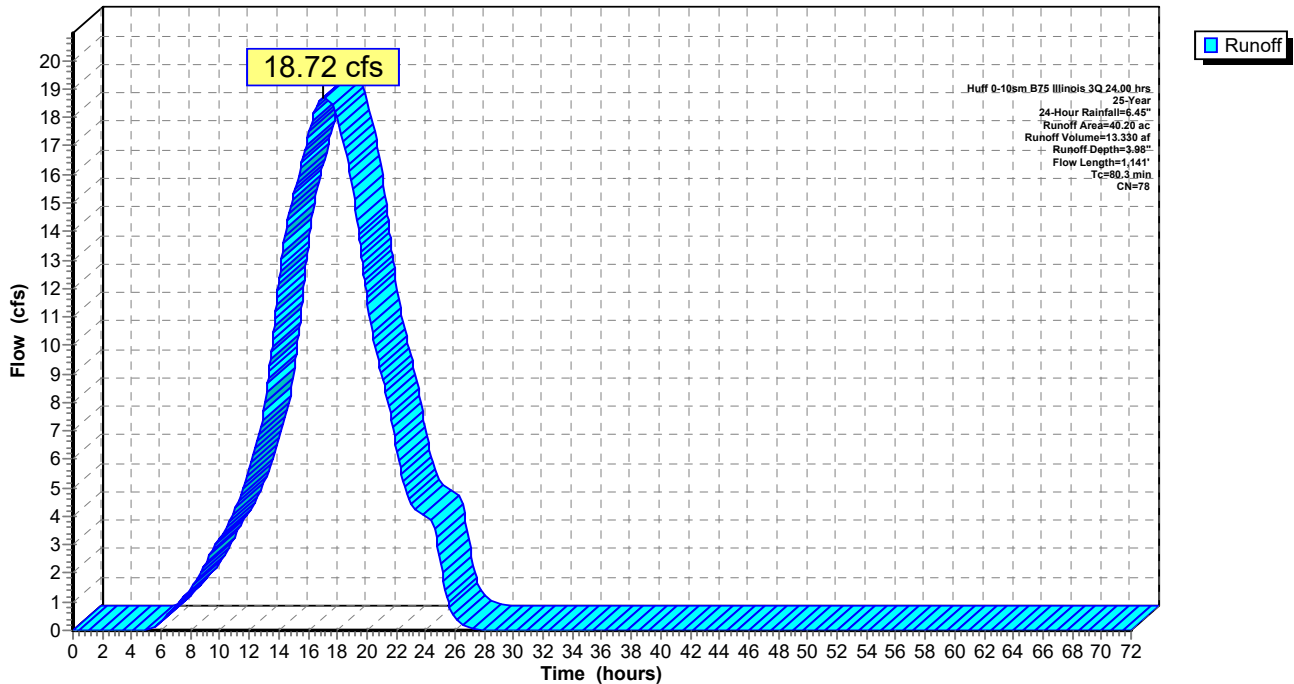
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (ac)	CN	Description
13.40	82	Woods/grass comb., Fair, HSG D
26.80	76	Woods/grass comb., Fair, HSG C
40.20	78	Weighted Average
40.20		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.8	100	0.0136	0.06		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.80"
53.5	1,041	0.0042	0.32		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
80.3	1,141	Total			

**Subcatchment SC-X2: Subcat X2**

Hydrograph



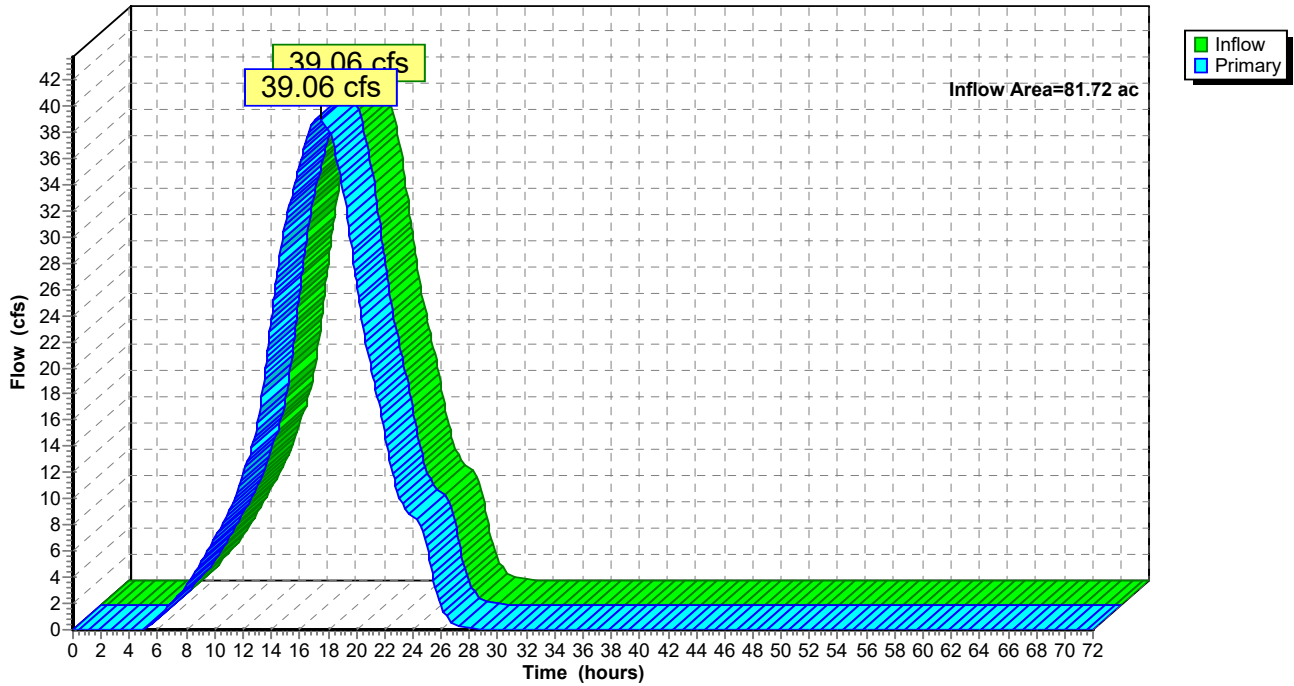
### Summary for Link DPRW: Des Plaines River Watershed

Inflow Area = 81.72 ac, 1.81% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
Inflow = 39.06 cfs @ 17.44 hrs, Volume= 28.531 af  
Primary = 39.06 cfs @ 17.44 hrs, Volume= 28.531 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

### Link DPRW: Des Plaines River Watershed

Hydrograph



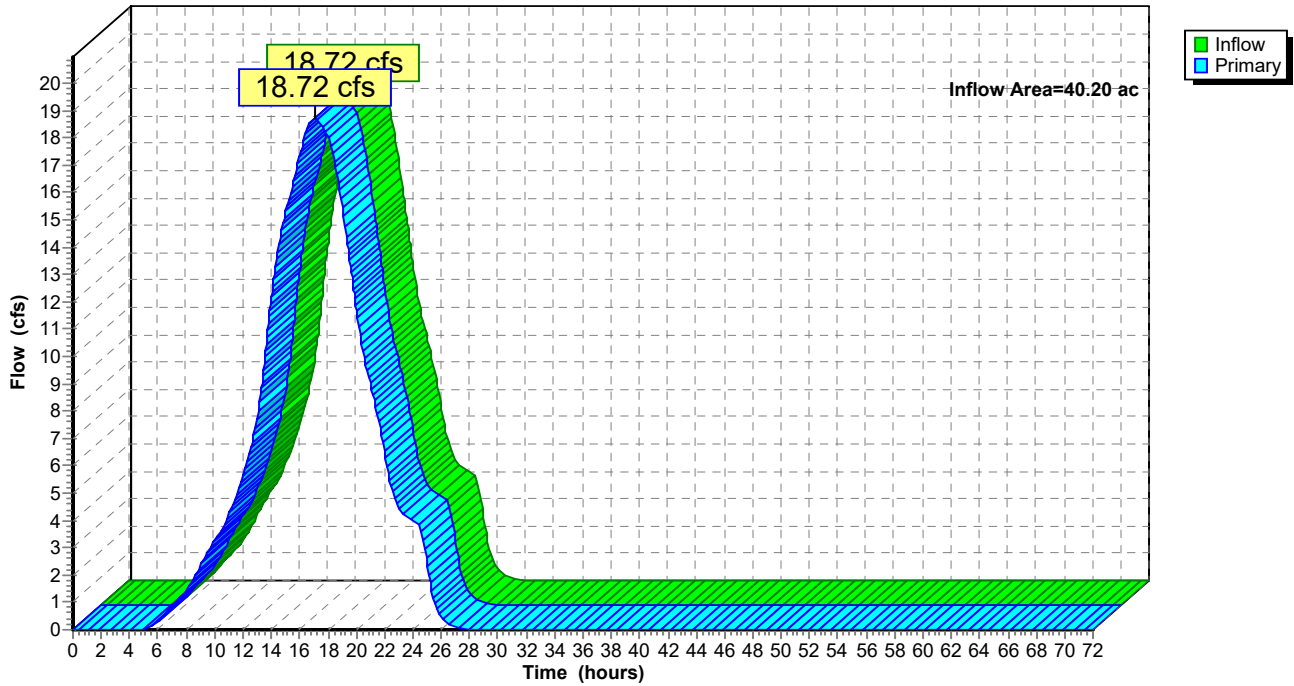
### Summary for Link LMW: Lake Michigan Watershed

Inflow Area = 40.20 ac, 0.00% Impervious, Inflow Depth = 3.98" for 25-Year, 24-Hour event  
Inflow = 18.72 cfs @ 17.06 hrs, Volume= 13.330 af  
Primary = 18.72 cfs @ 17.06 hrs, Volume= 13.330 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

### Link LMW: Lake Michigan Watershed

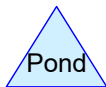
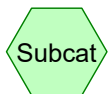
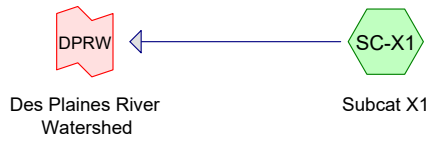
Hydrograph



# HydroCAD Output Files

## **Existing Conditions – 100-year, 1-hour**





**Existing Model**

Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

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**Summary for Subcatchment SC-X1: Subcat X1**

Runoff = 105.58 cfs @ 1.66 hrs, Volume= 14.073 af, Depth= 2.07"

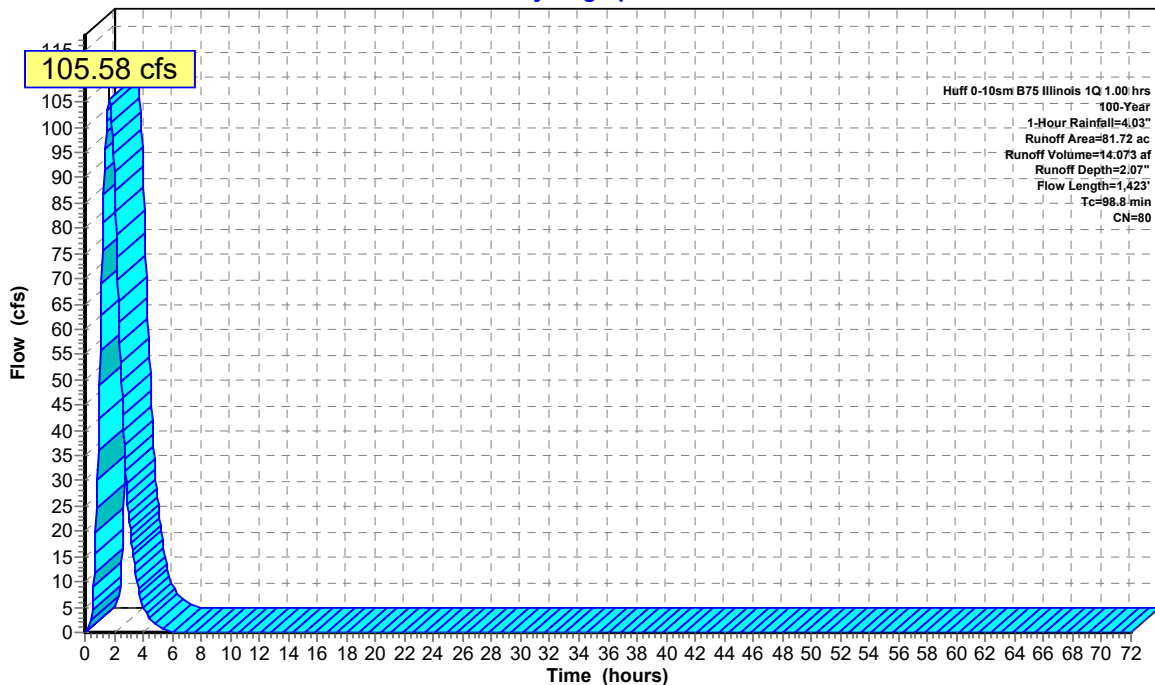
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

Area (ac)	CN	Description
33.52	76	Woods/grass comb., Fair, HSG C
* 46.72	82	Woods/grass comb., Fair, HSG D
1.48	98	Water Surface, HSG D
81.72	80	Weighted Average
80.24		98.19% Pervious Area
1.48		1.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
60.1	100	0.0018	0.03		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.80"
38.7	1,323	0.0130	0.57		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
98.8	1,423	Total			

**Subcatchment SC-X1: Subcat X1**

Hydrograph



**Existing Model**

Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

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**Summary for Subcatchment SC-X2: Subcat X2**

Runoff = 56.44 cfs @ 1.45 hrs, Volume= 6.401 af, Depth= 1.91"

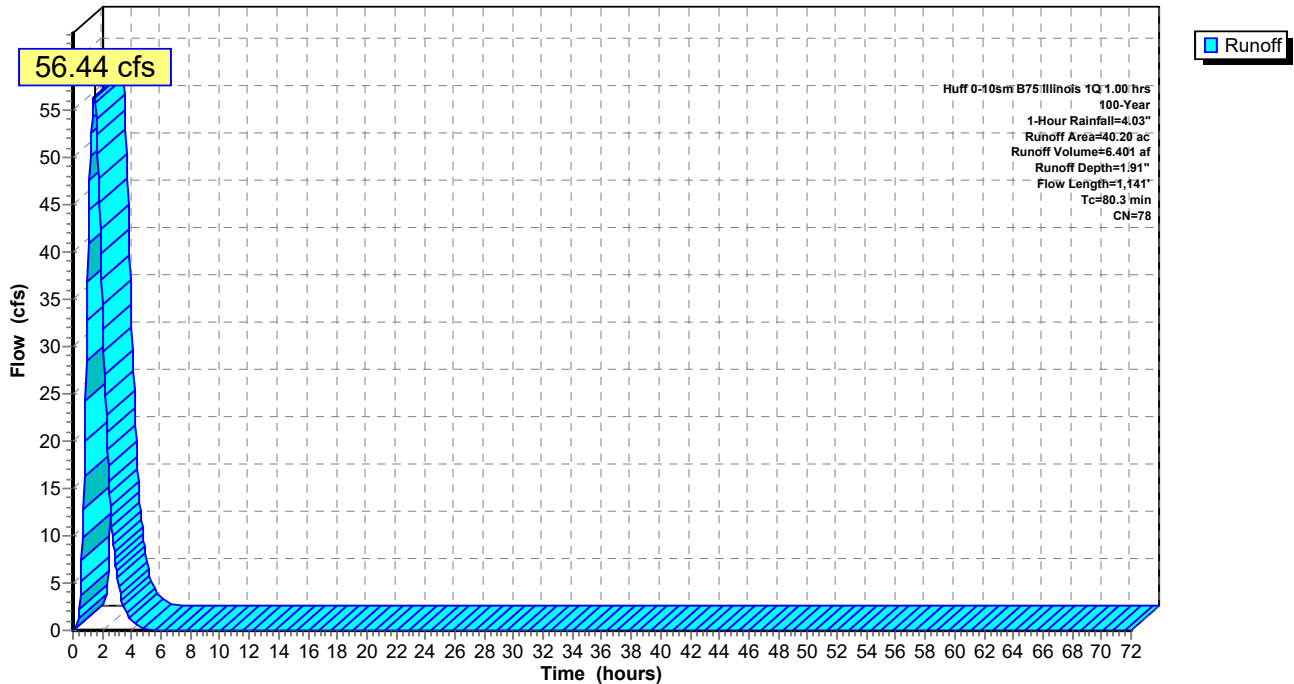
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

Area (ac)	CN	Description
13.40	82	Woods/grass comb., Fair, HSG D
26.80	76	Woods/grass comb., Fair, HSG C
40.20	78	Weighted Average
40.20		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.8	100	0.0136	0.06		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.80"
53.5	1,041	0.0042	0.32		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
80.3	1,141	Total			

**Subcatchment SC-X2: Subcat X2**

Hydrograph



**Existing Model**

Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

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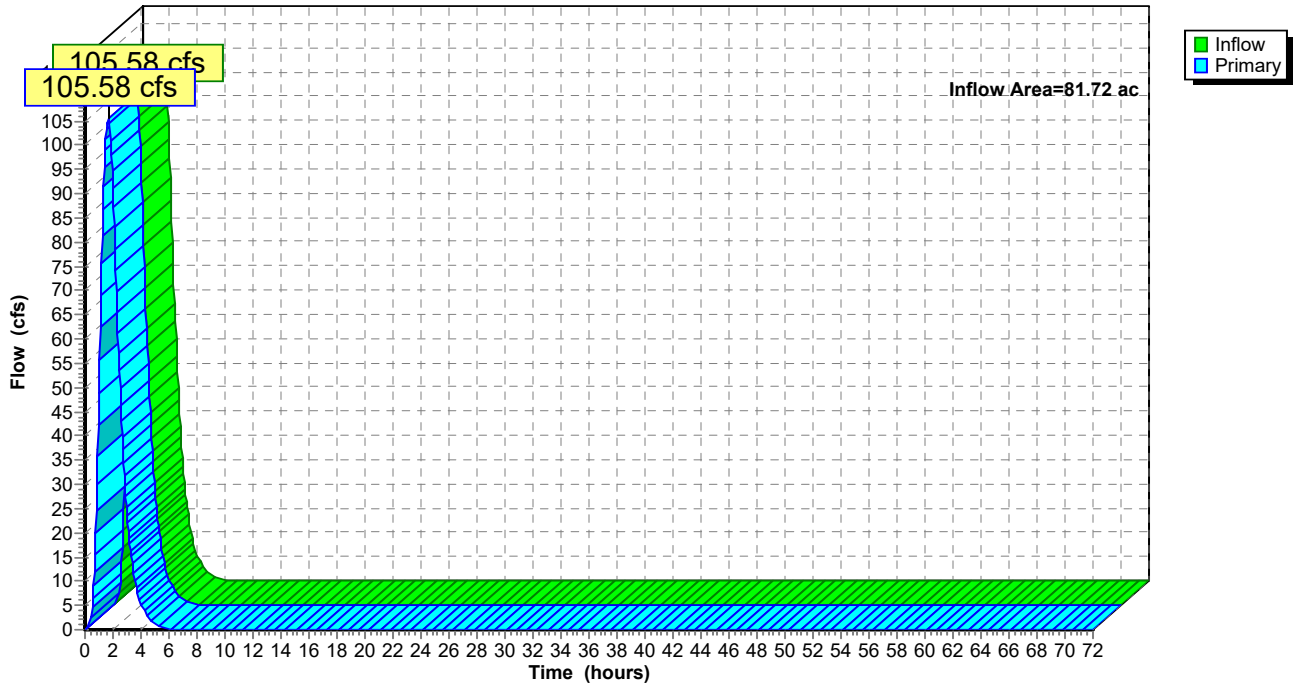
**Summary for Link DPRW: Des Plaines River Watershed**

Inflow Area = 81.72 ac, 1.81% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
Inflow = 105.58 cfs @ 1.66 hrs, Volume= 14.073 af  
Primary = 105.58 cfs @ 1.66 hrs, Volume= 14.073 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

**Link DPRW: Des Plaines River Watershed**

Hydrograph



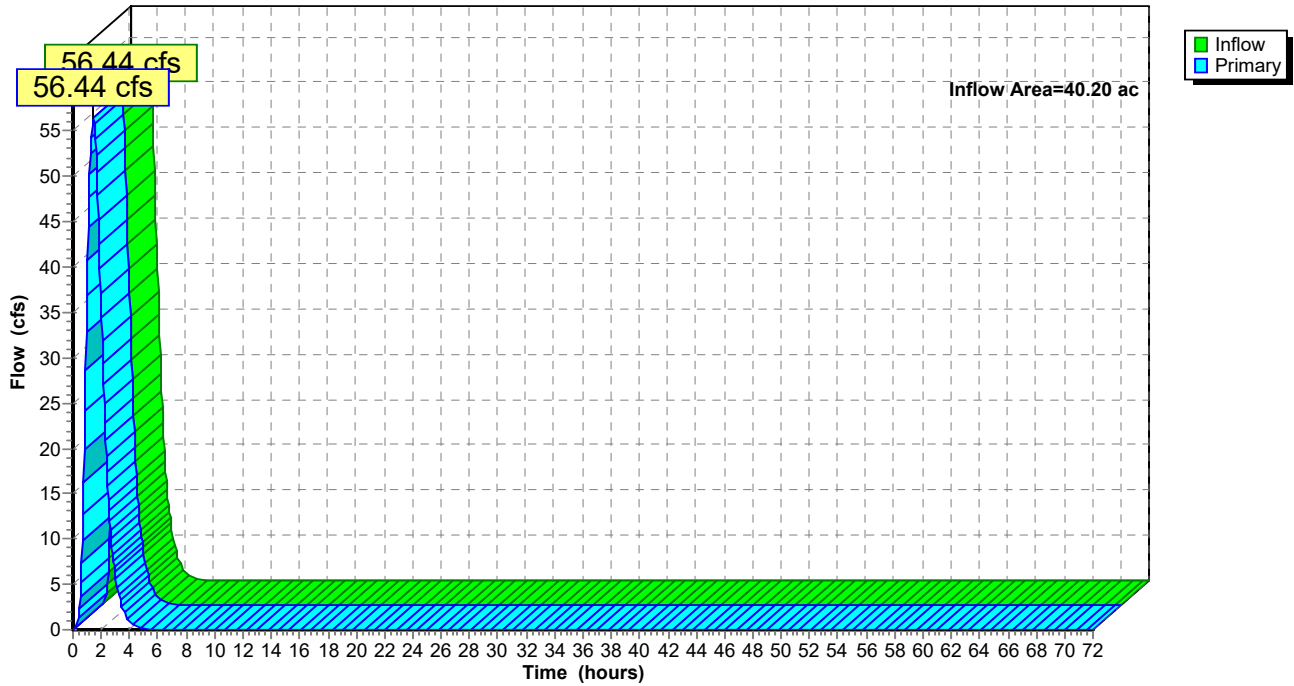
### Summary for Link LMW: Lake Michigan Watershed

Inflow Area = 40.20 ac, 0.00% Impervious, Inflow Depth = 1.91" for 100-Year, 1-Hour event  
Inflow = 56.44 cfs @ 1.45 hrs, Volume= 6.401 af  
Primary = 56.44 cfs @ 1.45 hrs, Volume= 6.401 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

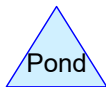
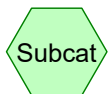
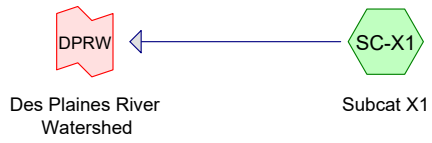
### Link LMW: Lake Michigan Watershed

Hydrograph



# HydroCAD Output Files

## **Existing Conditions – 100-year, 24-hour**



**Existing Model**

Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

Prepared by APTIM

Printed 10/29/2020

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**Summary for Subcatchment SC-X1: Subcat X1**

Runoff = 55.40 cfs @ 17.24 hrs, Volume= 41.958 af, Depth= 6.16"

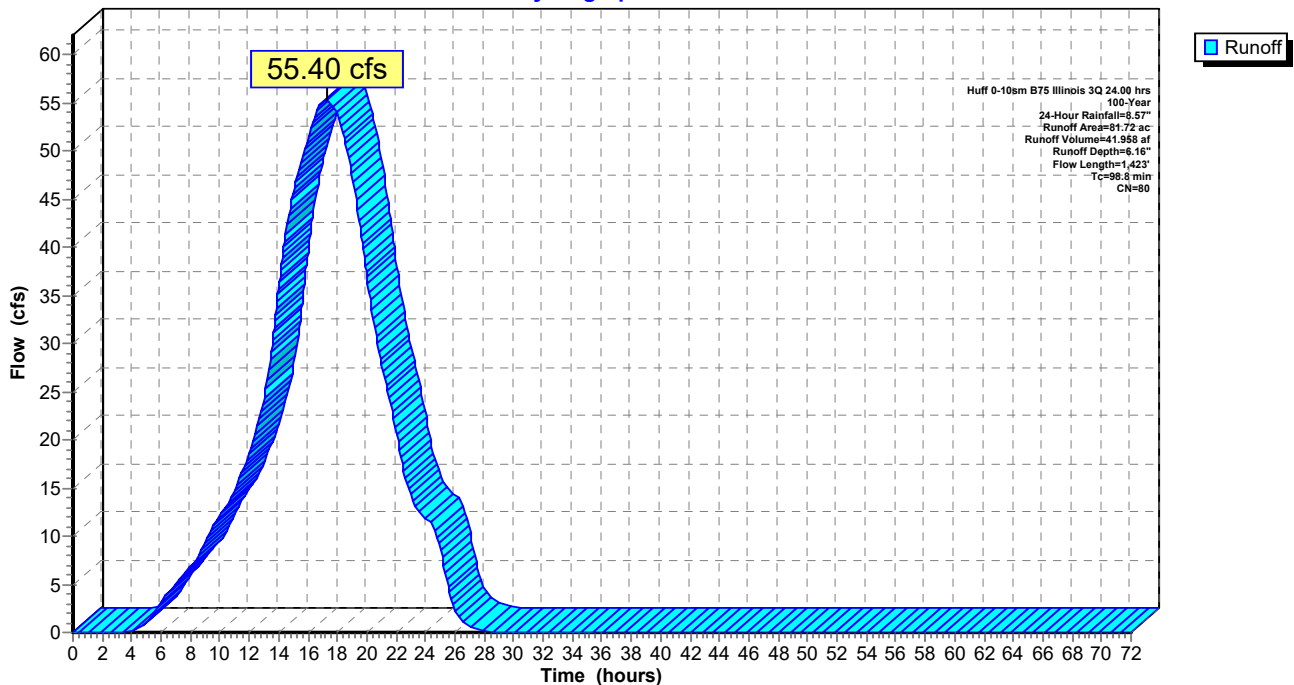
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

Area (ac)	CN	Description
33.52	76	Woods/grass comb., Fair, HSG C
* 46.72	82	Woods/grass comb., Fair, HSG D
1.48	98	Water Surface, HSG D
81.72	80	Weighted Average
80.24		98.19% Pervious Area
1.48		1.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
60.1	100	0.0018	0.03		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.80"
38.7	1,323	0.0130	0.57		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
98.8	1,423	Total			

**Subcatchment SC-X1: Subcat X1**

Hydrograph





**Summary for Subcatchment SC-X2: Subcat X2**

Runoff = 26.81 cfs @ 17.04 hrs, Volume= 19.833 af, Depth= 5.92"

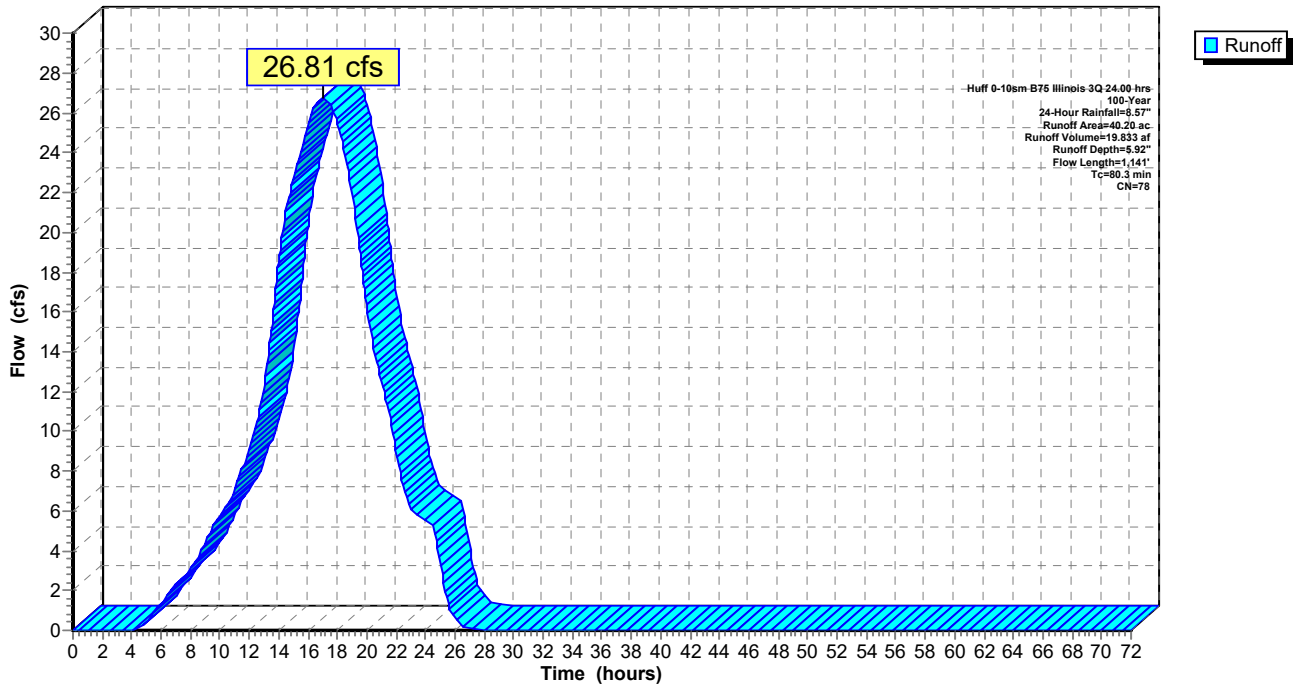
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

Area (ac)	CN	Description
13.40	82	Woods/grass comb., Fair, HSG D
26.80	76	Woods/grass comb., Fair, HSG C
40.20	78	Weighted Average
40.20		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.8	100	0.0136	0.06		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.80"
53.5	1,041	0.0042	0.32		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
80.3	1,141	Total			

**Subcatchment SC-X2: Subcat X2**

Hydrograph



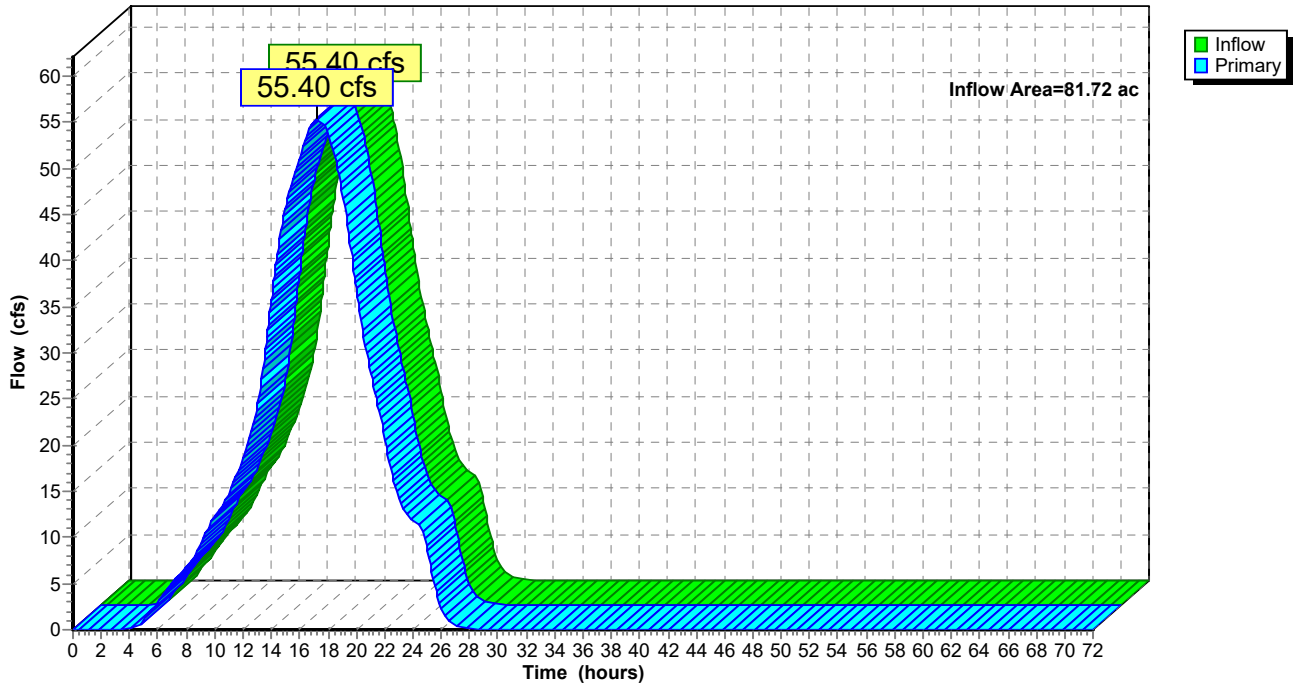
### Summary for Link DPRW: Des Plaines River Watershed

Inflow Area = 81.72 ac, 1.81% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
Inflow = 55.40 cfs @ 17.24 hrs, Volume= 41.958 af  
Primary = 55.40 cfs @ 17.24 hrs, Volume= 41.958 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

### Link DPRW: Des Plaines River Watershed

Hydrograph



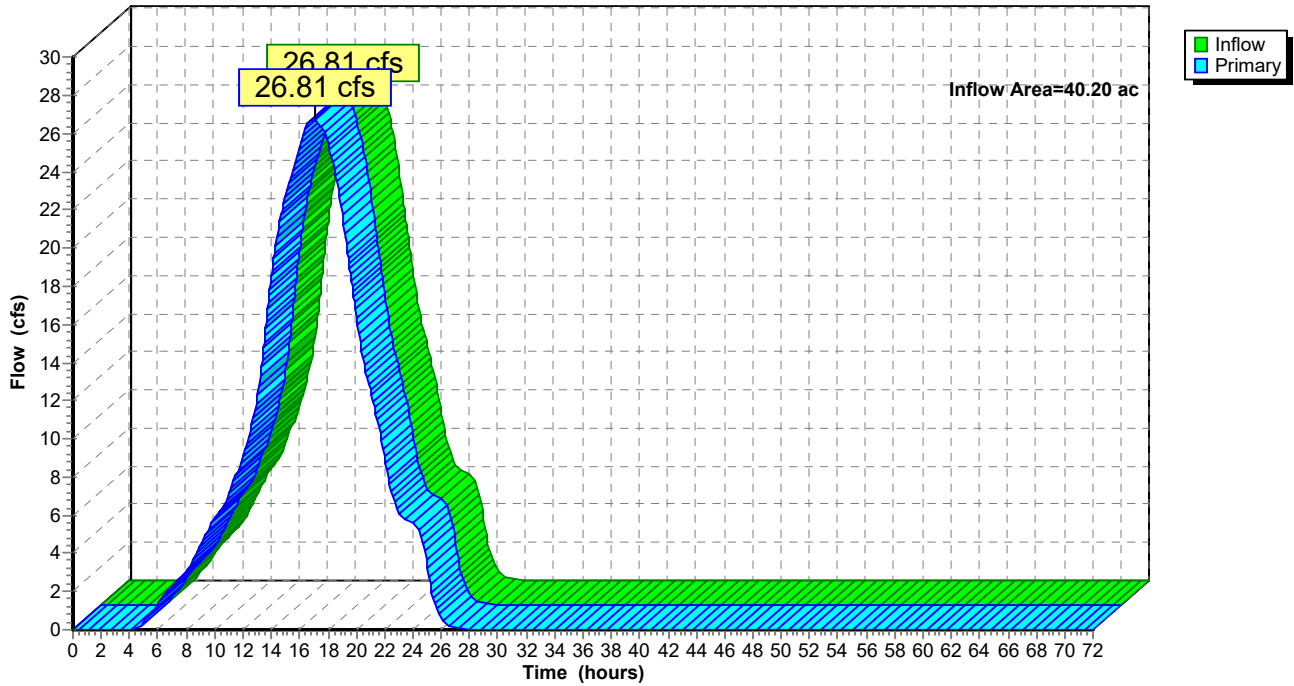
### Summary for Link LMW: Lake Michigan Watershed

Inflow Area = 40.20 ac, 0.00% Impervious, Inflow Depth = 5.92" for 100-Year, 24-Hour event  
Inflow = 26.81 cfs @ 17.04 hrs, Volume= 19.833 af  
Primary = 26.81 cfs @ 17.04 hrs, Volume= 19.833 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

### Link LMW: Lake Michigan Watershed

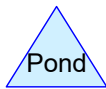
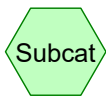
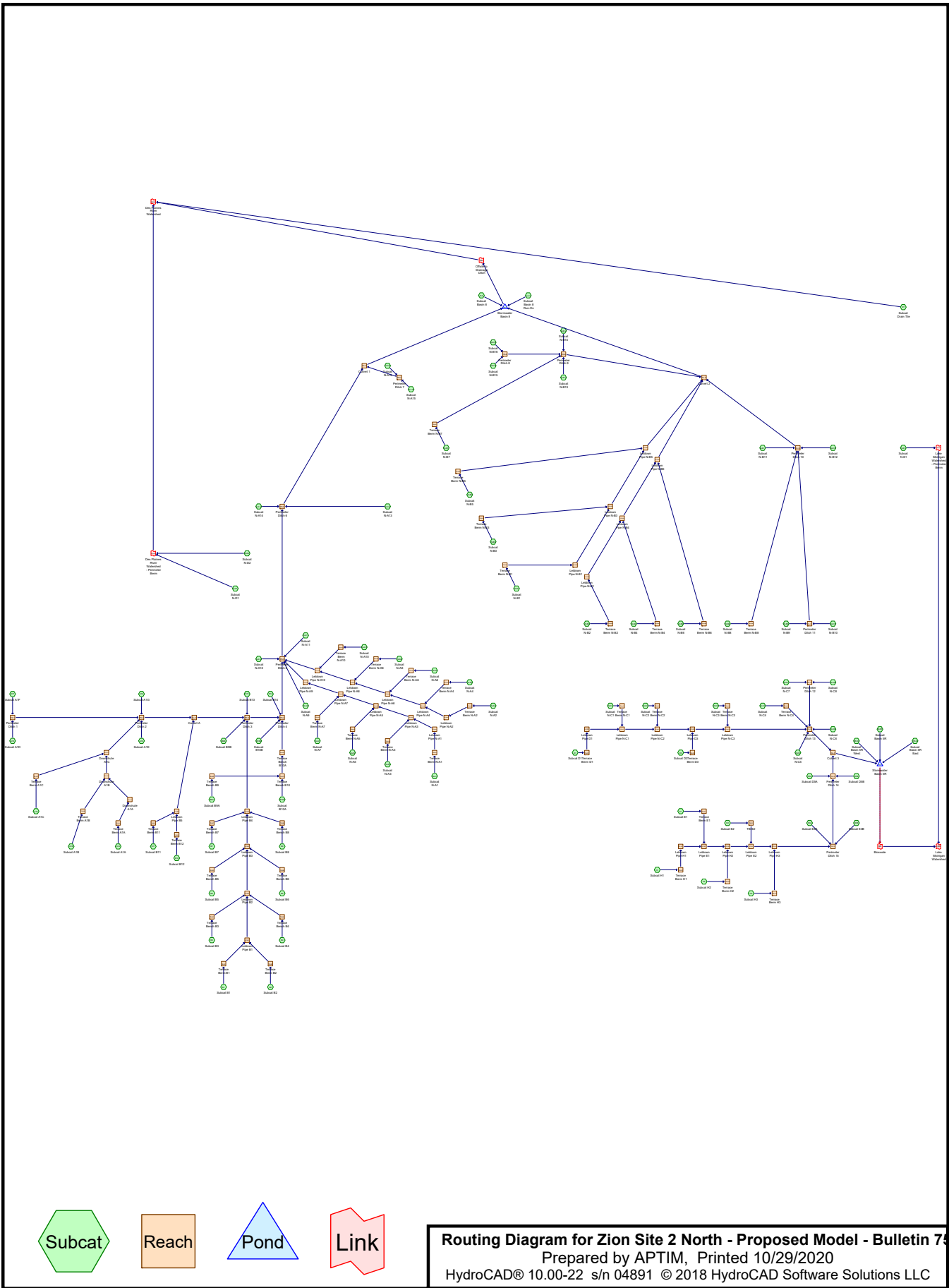
Hydrograph



# HydroCAD Output Files

## **Proposed Conditions**

HydroCAD Output Files  
**Proposed Conditions – 2-year, 1-hour**



**Routing Diagram for Zion Site 2 North - Proposed Model - Bulletin 75**

Prepared by APTIM, Printed 10/29/2020

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**Summary for Subcatchment 5R-E: Subcat Basin 5R East**

Runoff = 0.96 cfs @ 0.30 hrs, Volume= 0.040 af, Depth= 0.32"

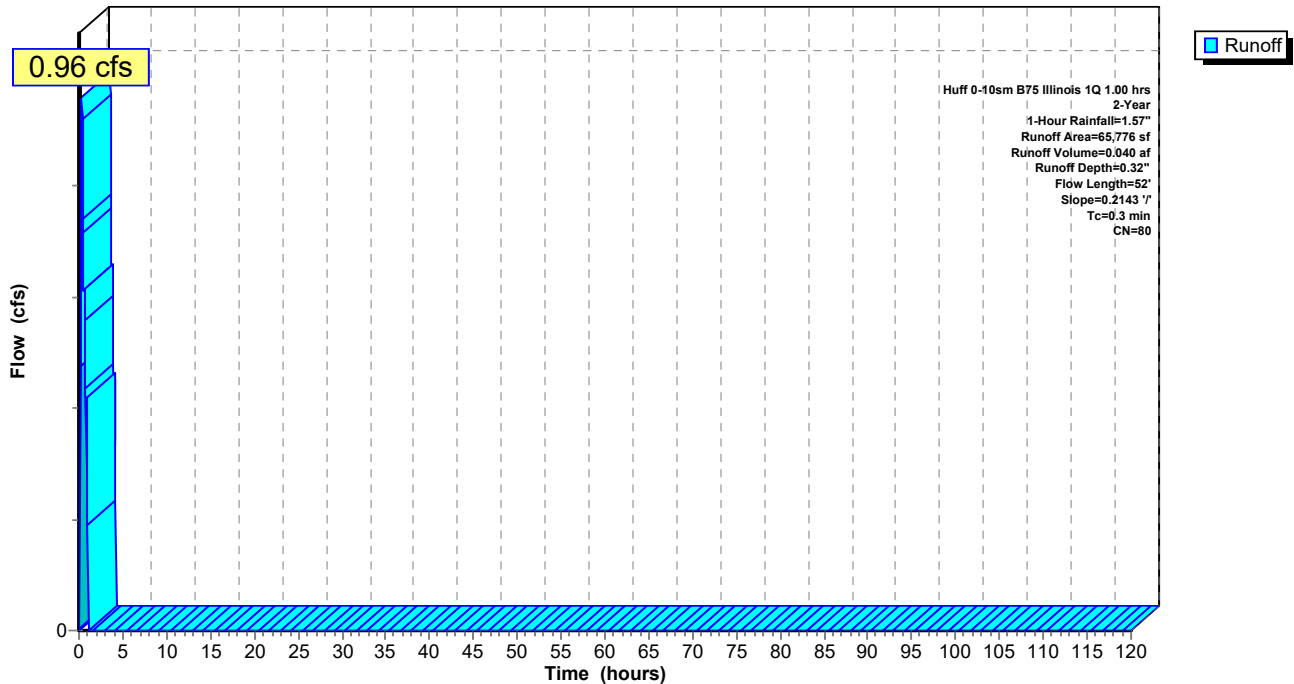
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

Area (sf)	CN	Description
65,776	80	>75% Grass cover, Good, HSG D
65,776		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	52	0.2143	2.92		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment 5R-E: Subcat Basin 5R East**

Hydrograph



**Summary for Subcatchment 5R-W: Subcat Basin 5R West**

Runoff = 0.38 cfs @ 0.29 hrs, Volume= 0.016 af, Depth= 0.32"

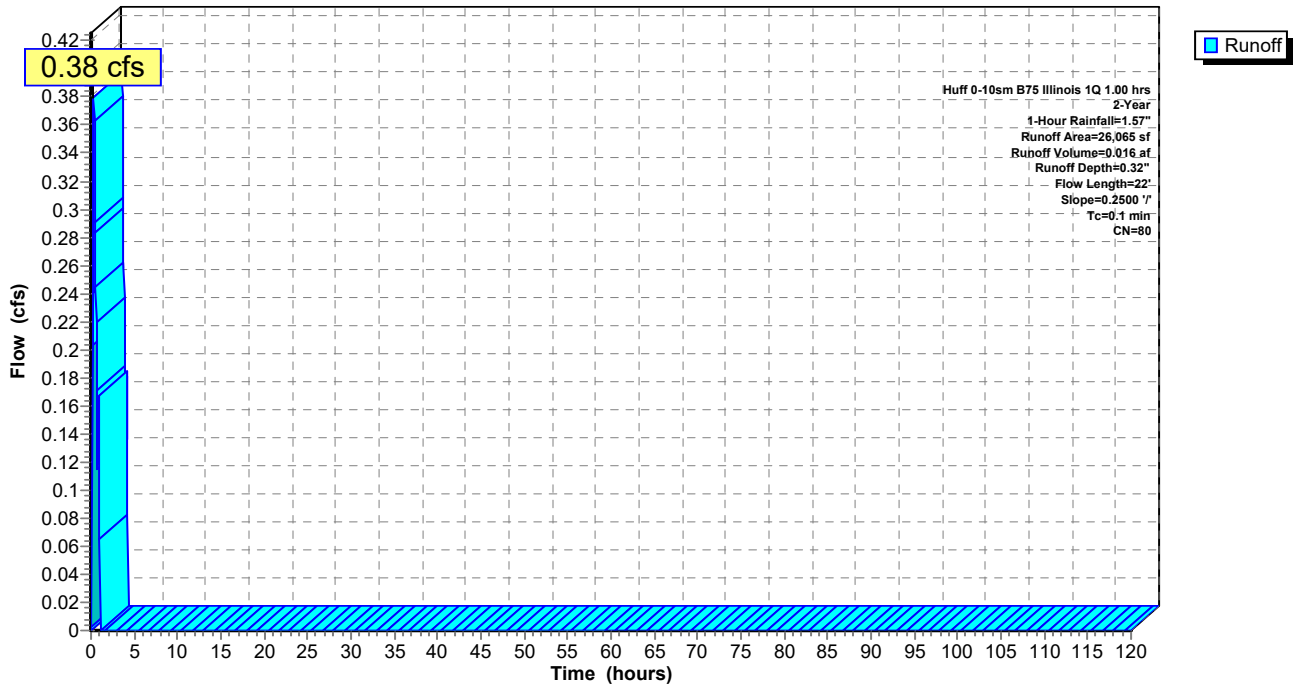
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

Area (sf)	CN	Description
26,065	80	>75% Grass cover, Good, HSG D
26,065		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	22	0.2500	2.61		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment 5R-W: Subcat Basin 5R West**

Hydrograph





**Summary for Subcatchment A1A: Subcat A1A**

Runoff = 3.47 cfs @ 0.52 hrs, Volume= 0.180 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

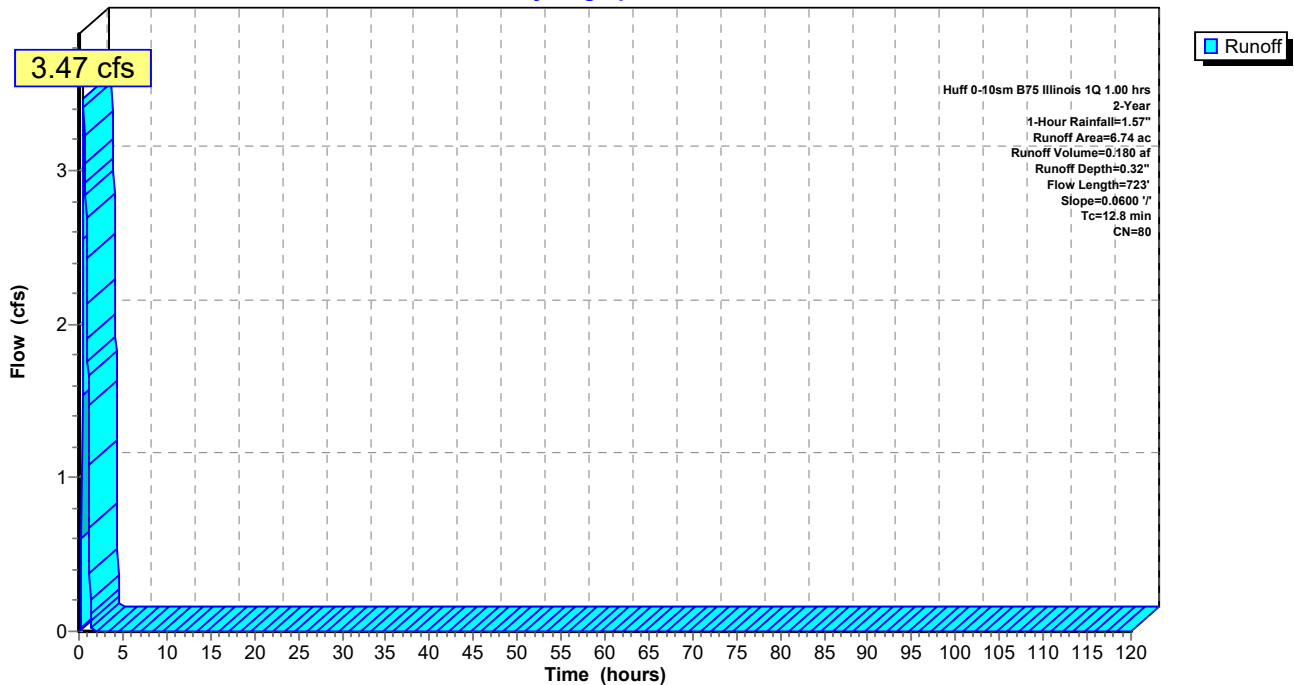
Area (ac)	CN	Description
6.74	80	>75% Grass cover, Good, HSG D
6.74		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	100	0.0600	0.25		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
6.1	623	0.0600	1.71		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
12.8	723	Total			

**Subcatchment A1A: Subcat A1A**

Hydrograph



**Summary for Subcatchment A1B: Subcat A1B**

Runoff = 3.27 cfs @ 0.36 hrs, Volume= 0.140 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

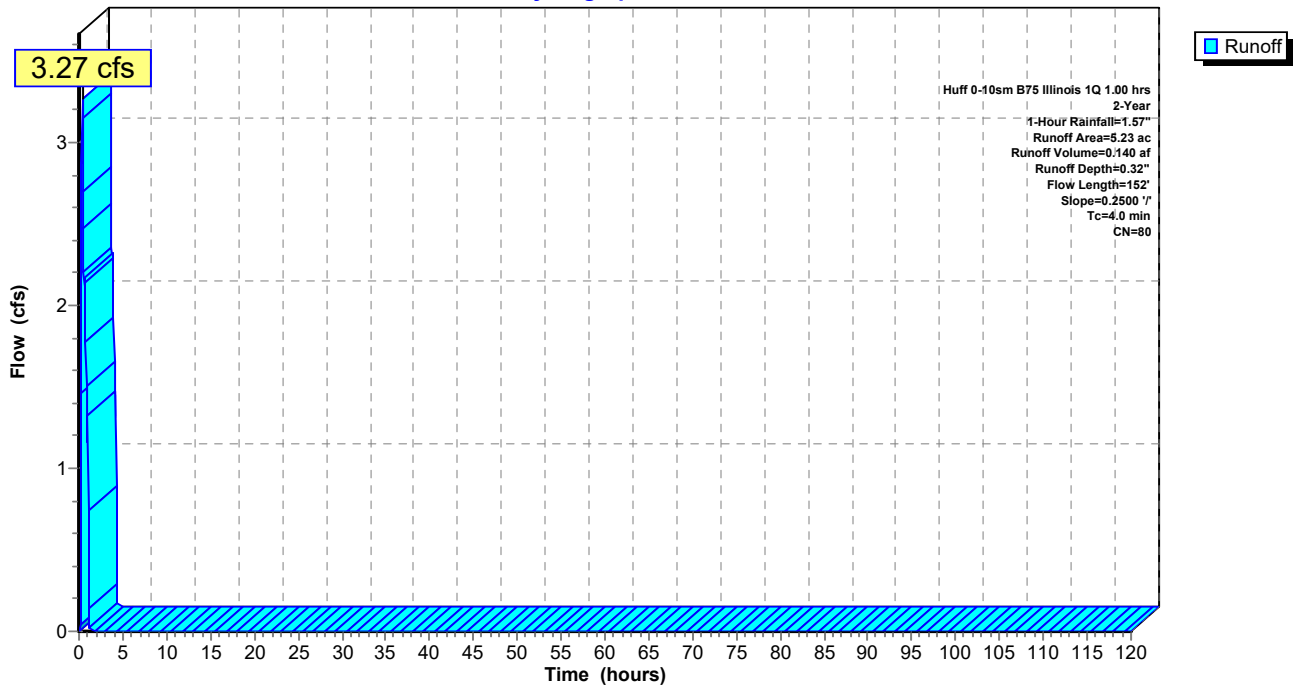
Area (ac)	CN	Description
5.23	80	>75% Grass cover, Good, HSG D
5.23		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	52	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	152	Total			

**Subcatchment A1B: Subcat A1B**

Hydrograph



**Summary for Subcatchment A1C: Subcat A1C**

Runoff = 3.96 cfs @ 0.72 hrs, Volume= 0.245 af, Depth= 0.32"

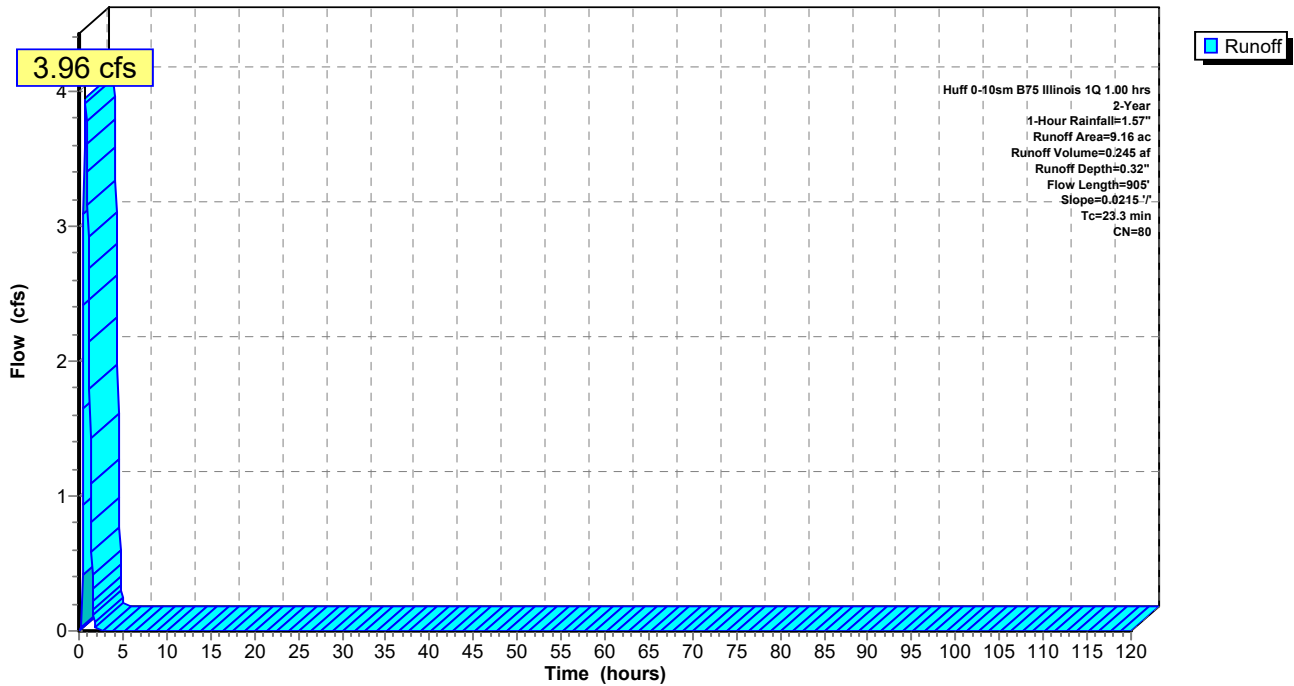
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

Area (ac)	CN	Description
8.89	80	>75% Grass cover, Good, HSG D
0.27	93	Paved roads w/open ditches, 50% imp, HSG D
9.16	80	Weighted Average
9.03		98.52% Pervious Area
0.14		1.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.0215	0.16		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
13.1	805	0.0215	1.03		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
23.3	905	Total			

**Subcatchment A1C: Subcat A1C**

Hydrograph



**Summary for Subcatchment A1D: Subcat A1D**

Runoff = 4.22 cfs @ 0.40 hrs, Volume= 0.189 af, Depth= 0.32"

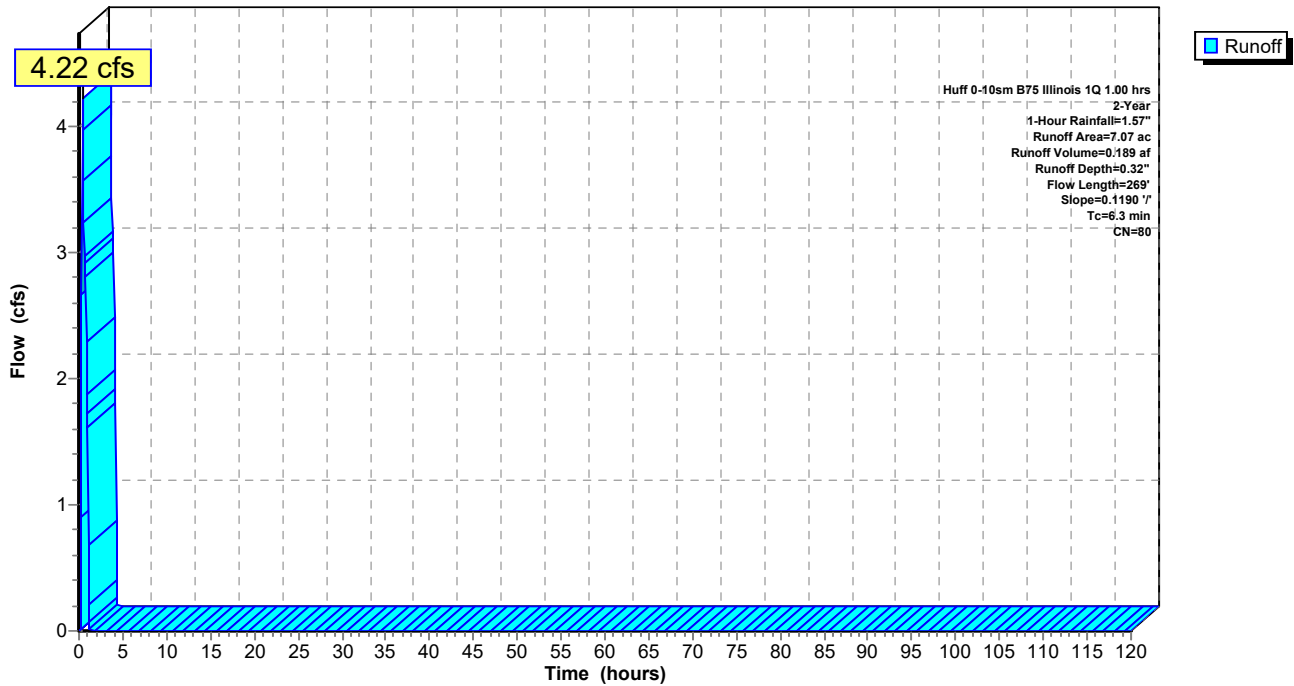
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

Area (ac)	CN	Description
6.97	80	>75% Grass cover, Good, HSG D
0.10	93	Paved roads w/open ditches, 50% imp, HSG D
7.07	80	Weighted Average
7.02		99.31% Pervious Area
0.05		0.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	100	0.1190	0.32		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.2	169	0.1190	2.41		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.3	269	Total			

**Subcatchment A1D: Subcat A1D**

Hydrograph



**Summary for Subcatchment A1E: Subcat A1E**

Runoff = 0.67 cfs @ 0.38 hrs, Volume= 0.029 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

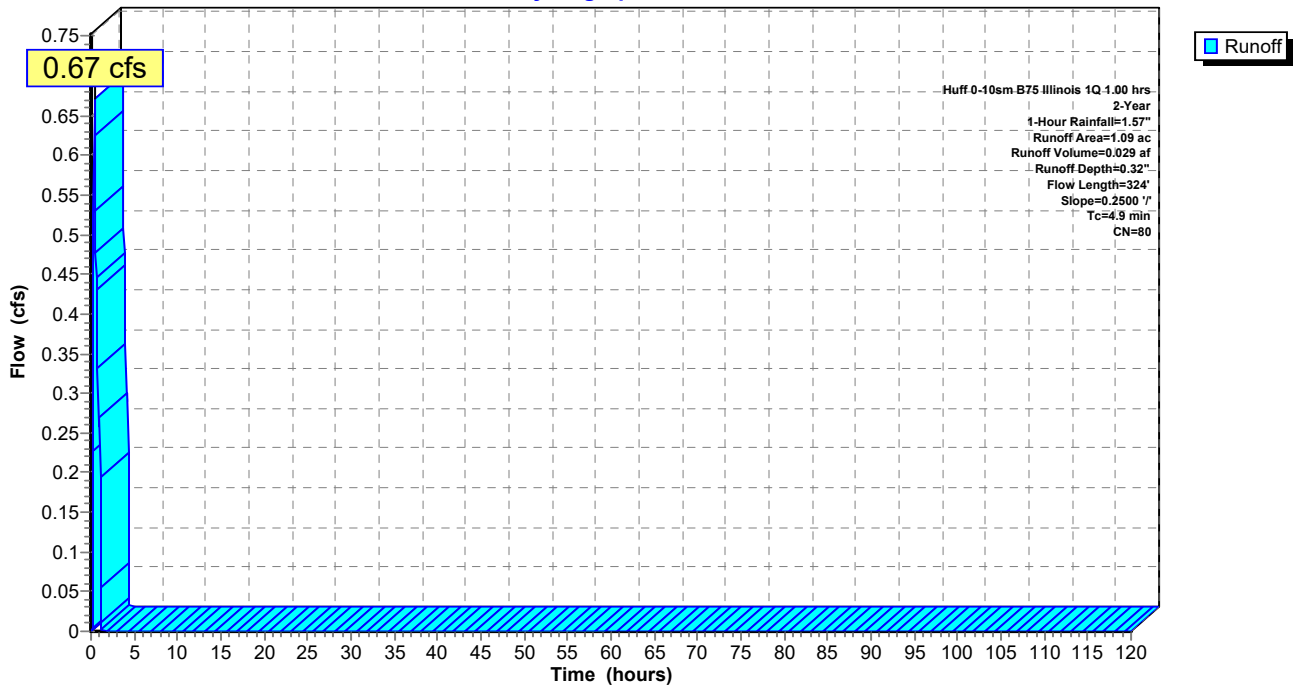
Area (ac)	CN	Description
1.09	80	>75% Grass cover, Good, HSG D
1.09		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.1	224	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.9	324	Total			

**Subcatchment A1E: Subcat A1E**

Hydrograph



**Summary for Subcatchment A1F: Subcat A1F**

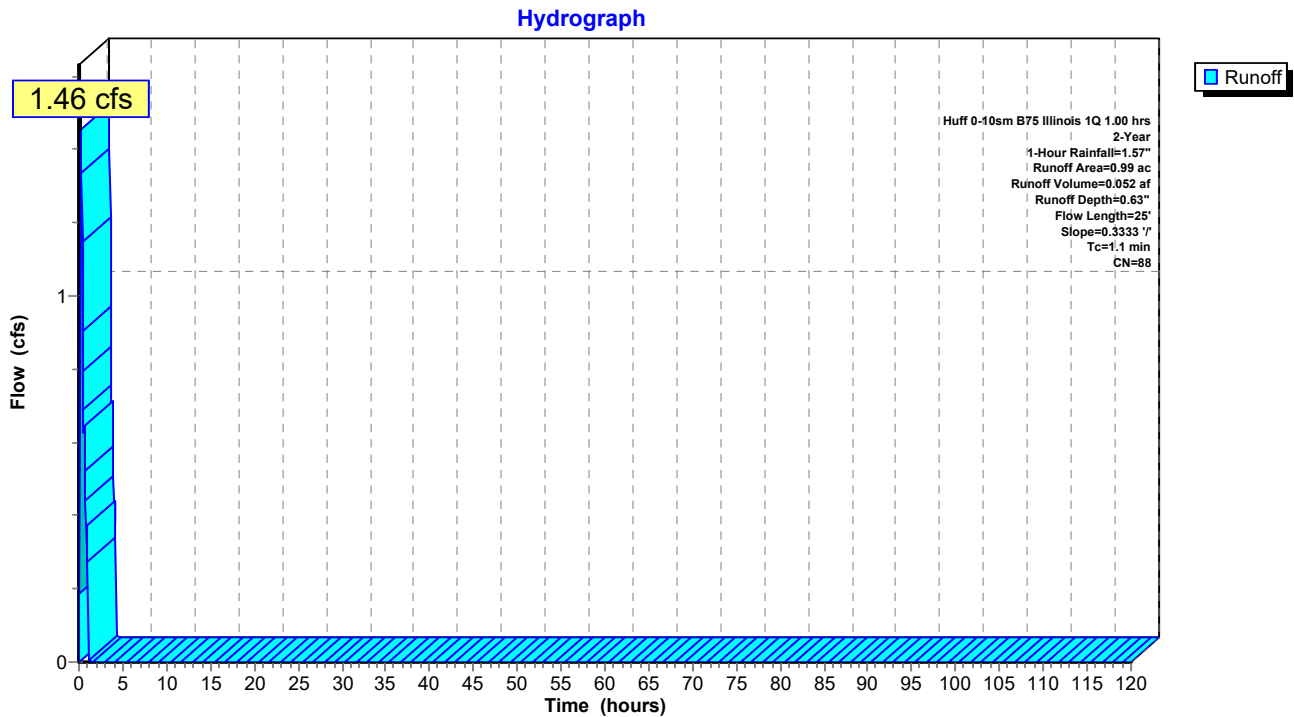
Runoff = 1.46 cfs @ 0.26 hrs, Volume= 0.052 af, Depth= 0.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

Area (ac)	CN	Description
0.36	80	>75% Grass cover, Good, HSG D
0.62	93	Paved roads w/open ditches, 50% imp, HSG D
0.99	88	Weighted Average
0.67		68.34% Pervious Area
0.31		31.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	25	0.3333	0.37		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment A1F: Subcat A1F**



**Summary for Subcatchment A1G: Subcat A1G**

Runoff = 0.24 cfs @ 0.27 hrs, Volume= 0.009 af, Depth= 0.54"

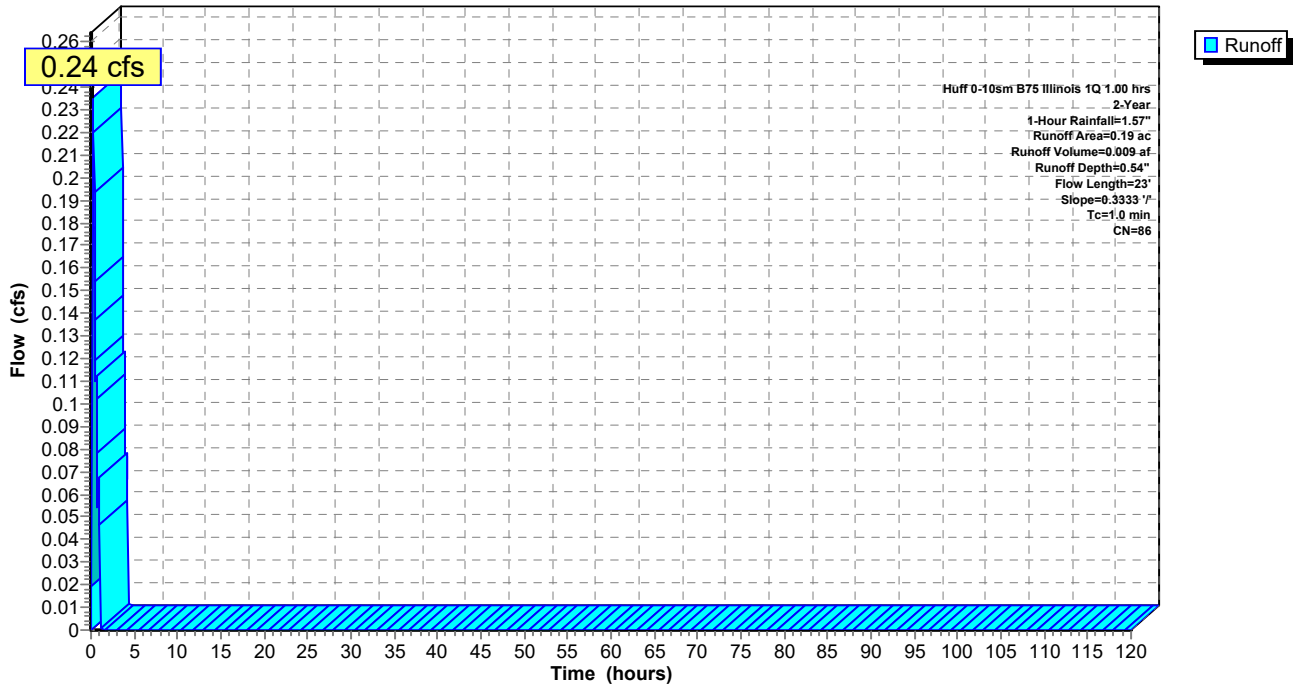
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

Area (ac)	CN	Description
0.11	80	>75% Grass cover, Good, HSG D
0.09	93	Paved roads w/open ditches, 50% imp, HSG D
0.19	86	Weighted Average
0.15		77.34% Pervious Area
0.04		22.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	23	0.3333	0.37		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment A1G: Subcat A1G**

Hydrograph



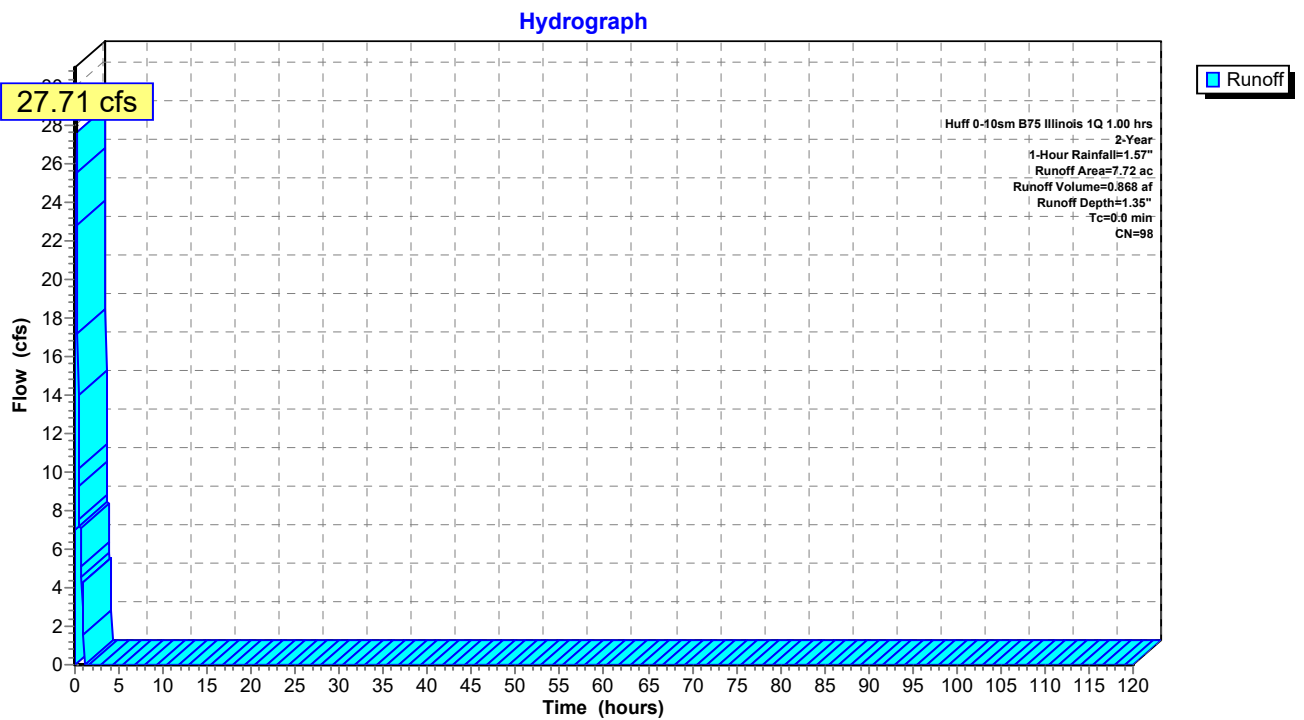
**Summary for Subcatchment B-5R: Subcat Basin 5R**

Runoff = 27.71 cfs @ 0.16 hrs, Volume= 0.868 af, Depth= 1.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

Area (ac)	CN	Description
7.72	98	Water Surface, HSG D
7.72		100.00% Impervious Area

**Subcatchment B-5R: Subcat Basin 5R**





### Summary for Subcatchment B-8: Subcat Basin 8

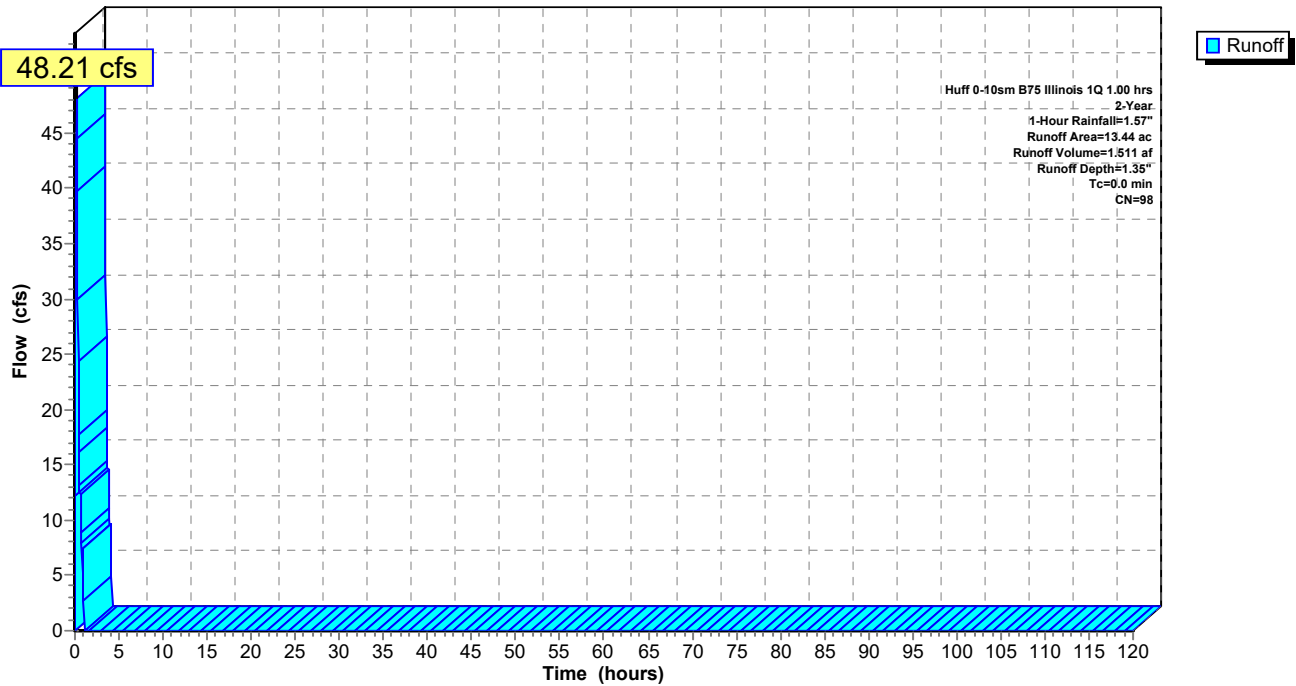
Runoff = 48.21 cfs @ 0.16 hrs, Volume= 1.511 af, Depth= 1.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

Area (ac)	CN	Description
13.44	98	Water Surface, HSG D
13.44		100.00% Impervious Area

### Subcatchment B-8: Subcat Basin 8

Hydrograph



**Summary for Subcatchment B-8-RO: Subcat Basin 8 Run-On**

Runoff = 3.17 cfs @ 0.34 hrs, Volume= 0.131 af, Depth= 0.38"

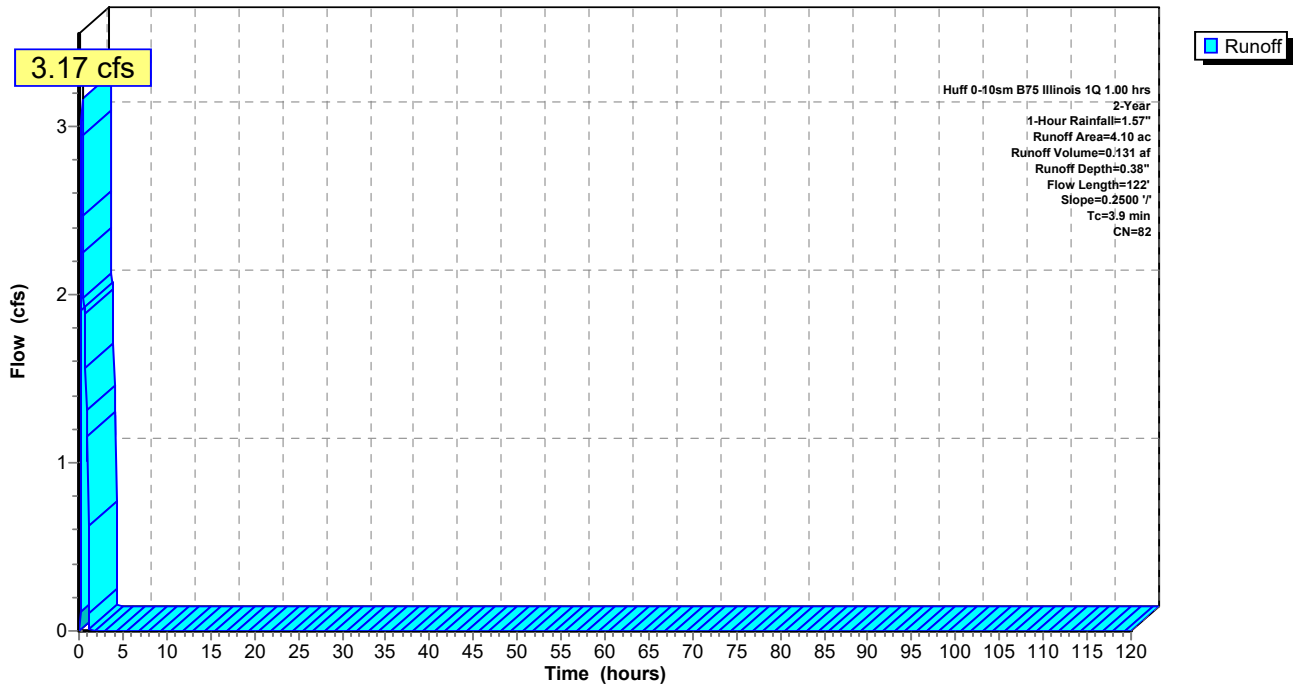
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

Area (ac)	CN	Description
3.50	80	>75% Grass cover, Good, HSG D
0.60	93	Paved roads w/open ditches, 50% imp, HSG D
4.10	82	Weighted Average
3.80		92.68% Pervious Area
0.30		7.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	22	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	122	Total			

**Subcatchment B-8-RO: Subcat Basin 8 Run-On**

Hydrograph



**Summary for Subcatchment B1: Subcat B1**

Runoff = 1.21 cfs @ 0.41 hrs, Volume= 0.055 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

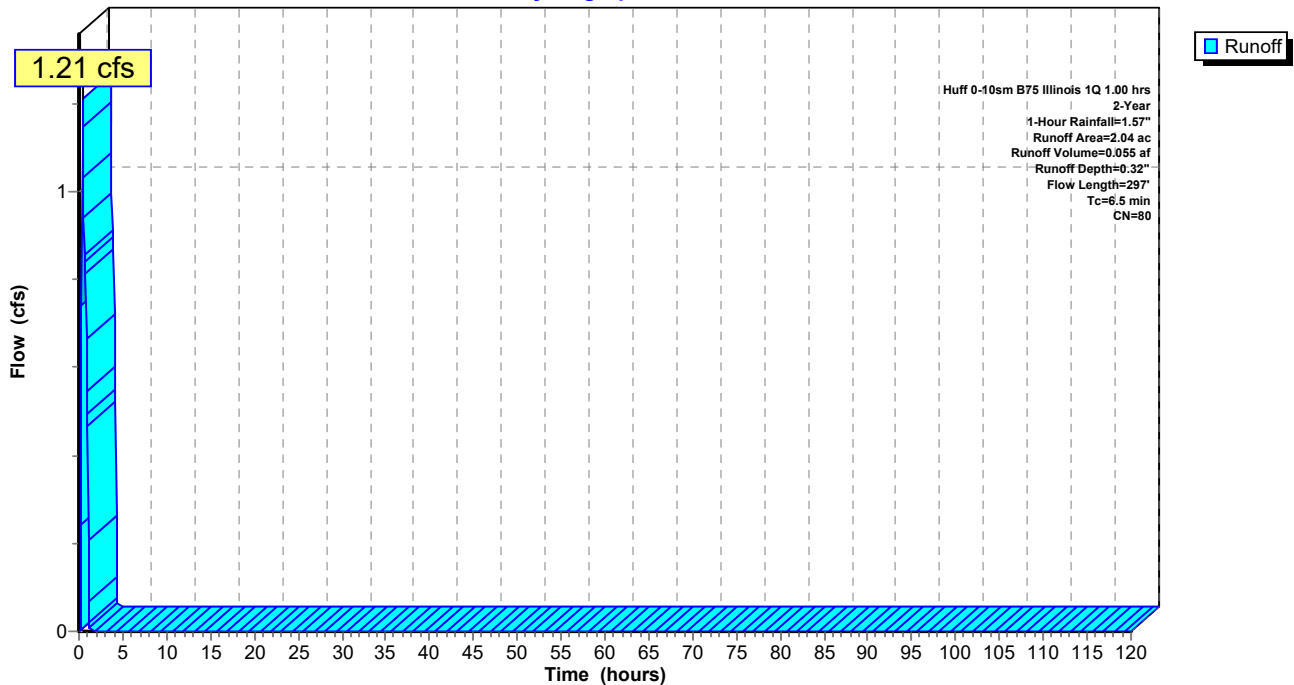
Area (ac)	CN	Description
2.04	80	>75% Grass cover, Good, HSG D
2.04		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.0	197	0.2132	3.23		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.5	297	Total			

**Subcatchment B1: Subcat B1**

Hydrograph



**Summary for Subcatchment B10A: Subcat B10A**

Runoff = 0.51 cfs @ 0.34 hrs, Volume= 0.022 af, Depth= 0.32"

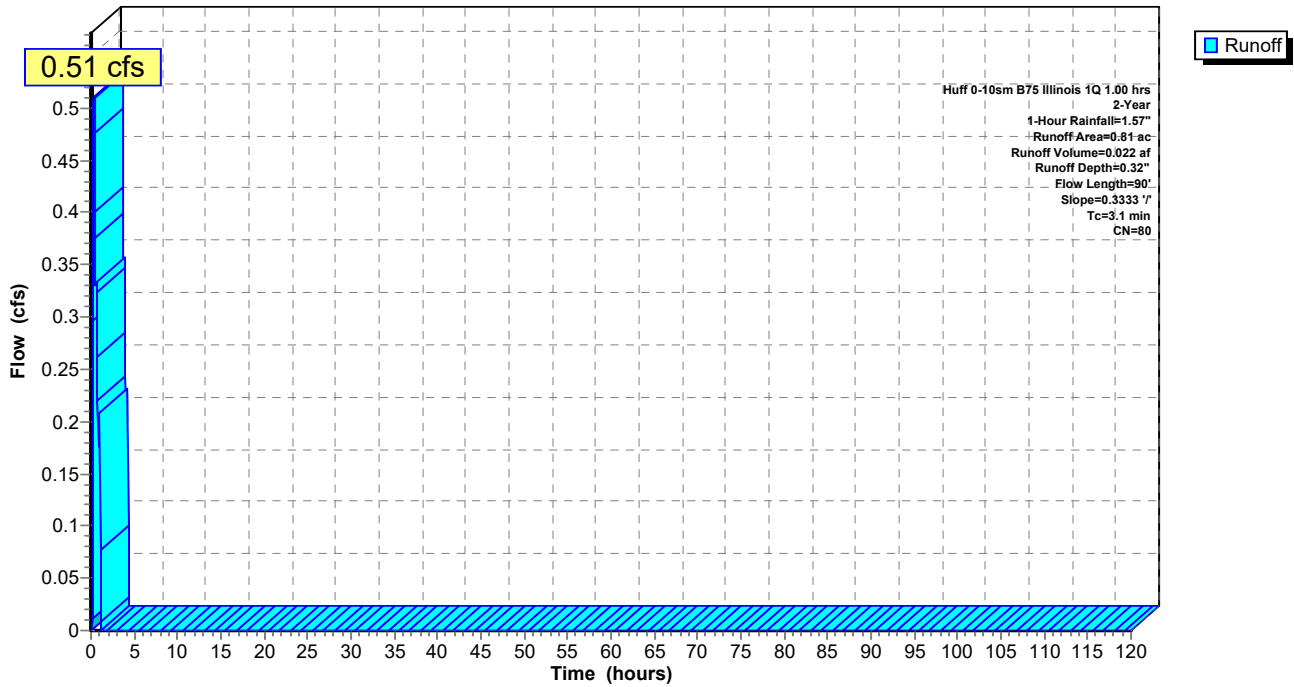
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

Area (ac)	CN	Description
0.81	80	>75% Grass cover, Good, HSG D
0.81		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	90	0.3333	0.48		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B10A: Subcat B10A**

Hydrograph



**Summary for Subcatchment B10B: Subcat B10B**

Runoff = 0.35 cfs @ 0.32 hrs, Volume= 0.014 af, Depth= 0.32"

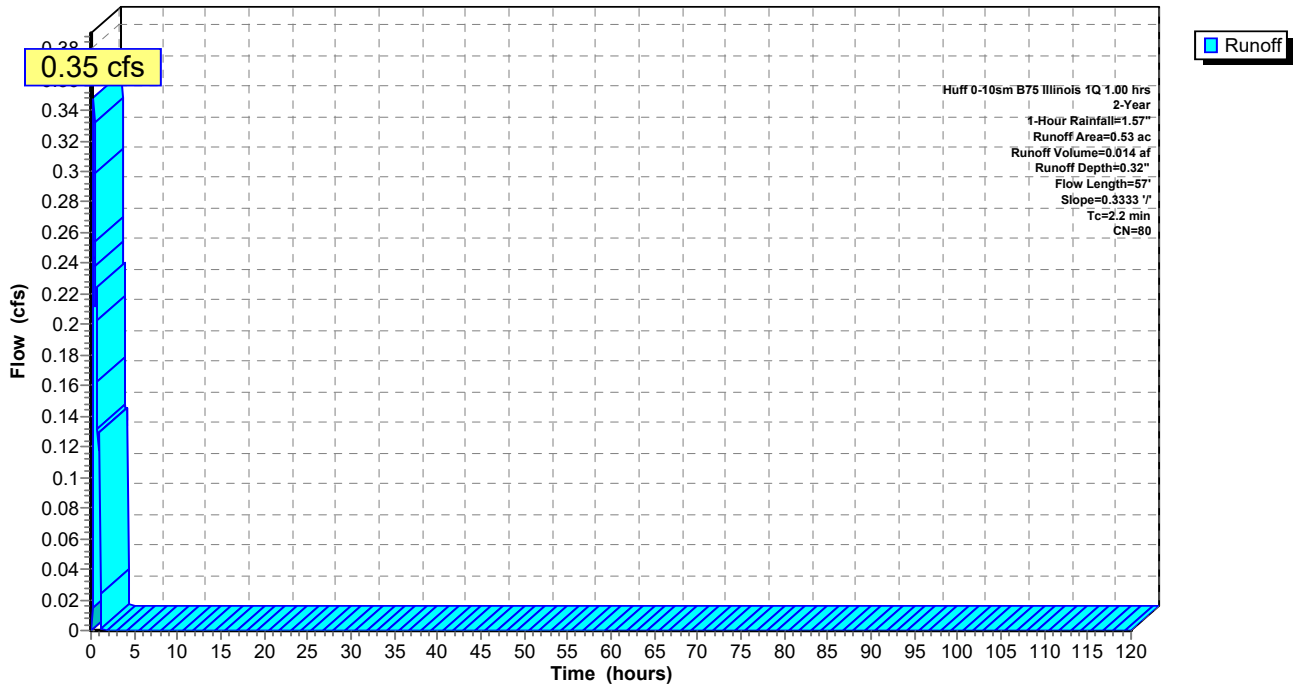
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

Area (ac)	CN	Description
0.53	80	>75% Grass cover, Good, HSG D
0.53		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	57	0.3333	0.44		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B10B: Subcat B10B**

Hydrograph



**Summary for Subcatchment B11: Subcat B11**

Runoff = 1.17 cfs @ 0.52 hrs, Volume= 0.061 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

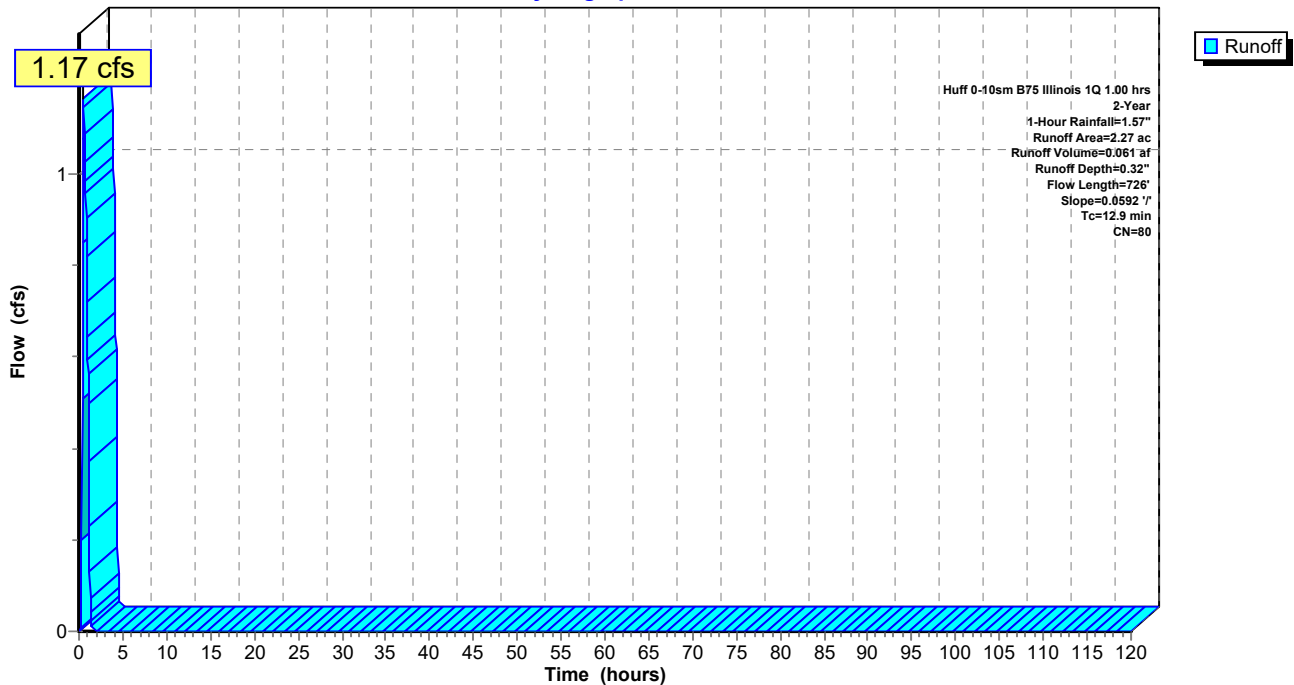
Area (ac)	CN	Description
2.27	80	>75% Grass cover, Good, HSG D
2.27		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	100	0.0592	0.25		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
6.1	626	0.0592	1.70		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
12.9	726	Total			

**Subcatchment B11: Subcat B11**

Hydrograph



**Summary for Subcatchment B12: Subcat B12**

Runoff = 0.75 cfs @ 0.36 hrs, Volume= 0.032 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

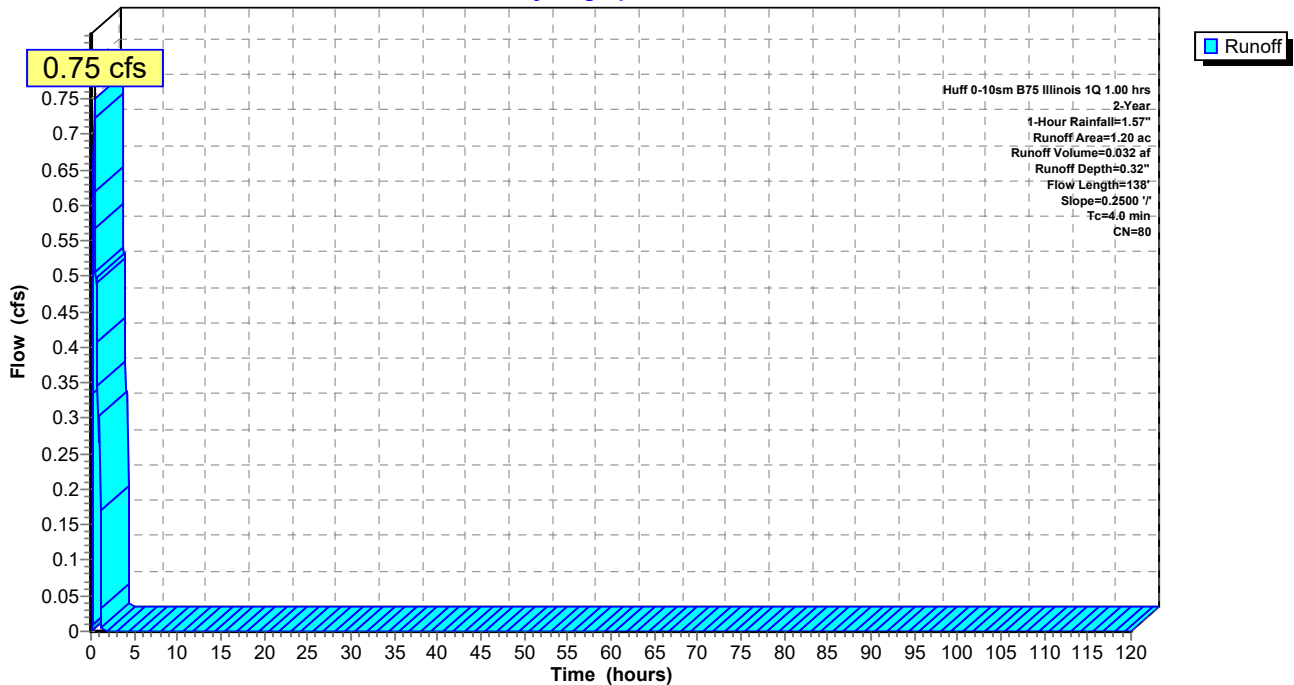
Area (ac)	CN	Description
1.20	80	>75% Grass cover, Good, HSG D
1.20		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	38	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	138	Total			

**Subcatchment B12: Subcat B12**

Hydrograph



**Summary for Subcatchment B13: Subcat B13**

Runoff = 0.39 cfs @ 0.27 hrs, Volume= 0.014 af, Depth= 0.54"

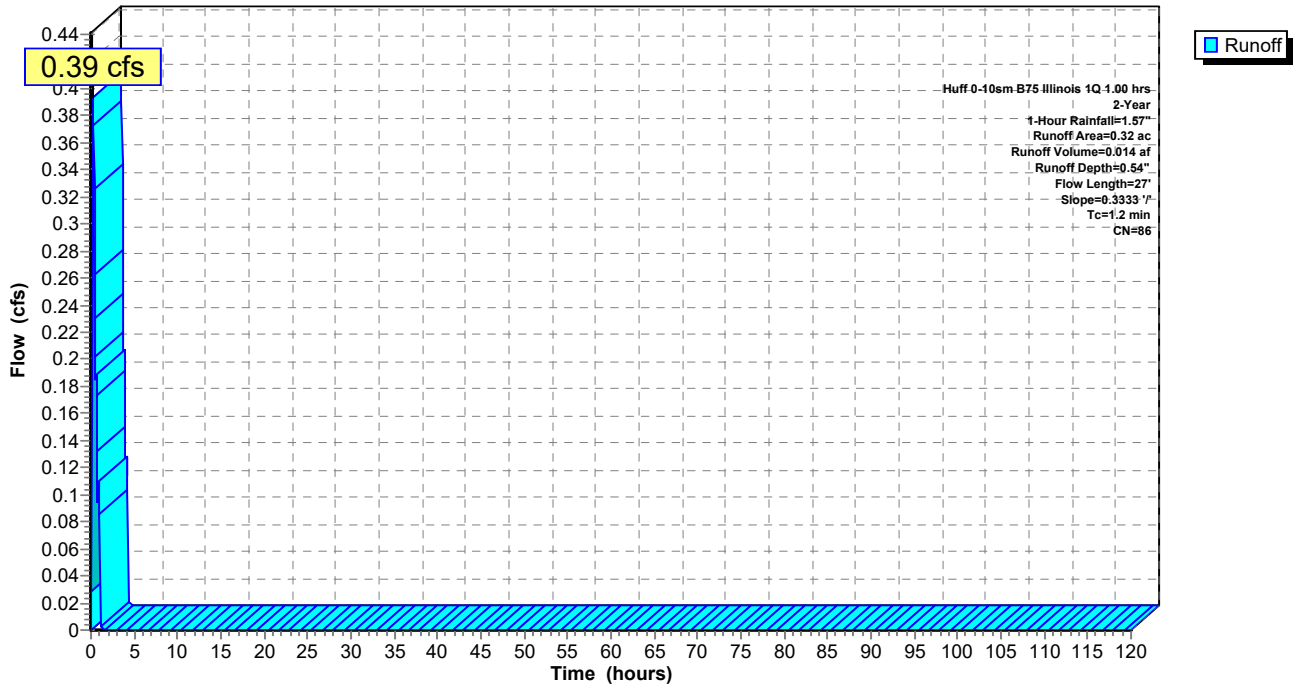
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

Area (ac)	CN	Description
0.17	80	>75% Grass cover, Good, HSG D
* 0.15	93	Paved roads w/open ditches, 50% imp, HSG D
0.32	86	Weighted Average
0.24		75.93% Pervious Area
0.08		24.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	27	0.3333	0.38		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B13: Subcat B13**

Hydrograph





**Summary for Subcatchment B14: Subcat B14**

Runoff = 0.32 cfs @ 0.31 hrs, Volume= 0.012 af, Depth= 0.54"

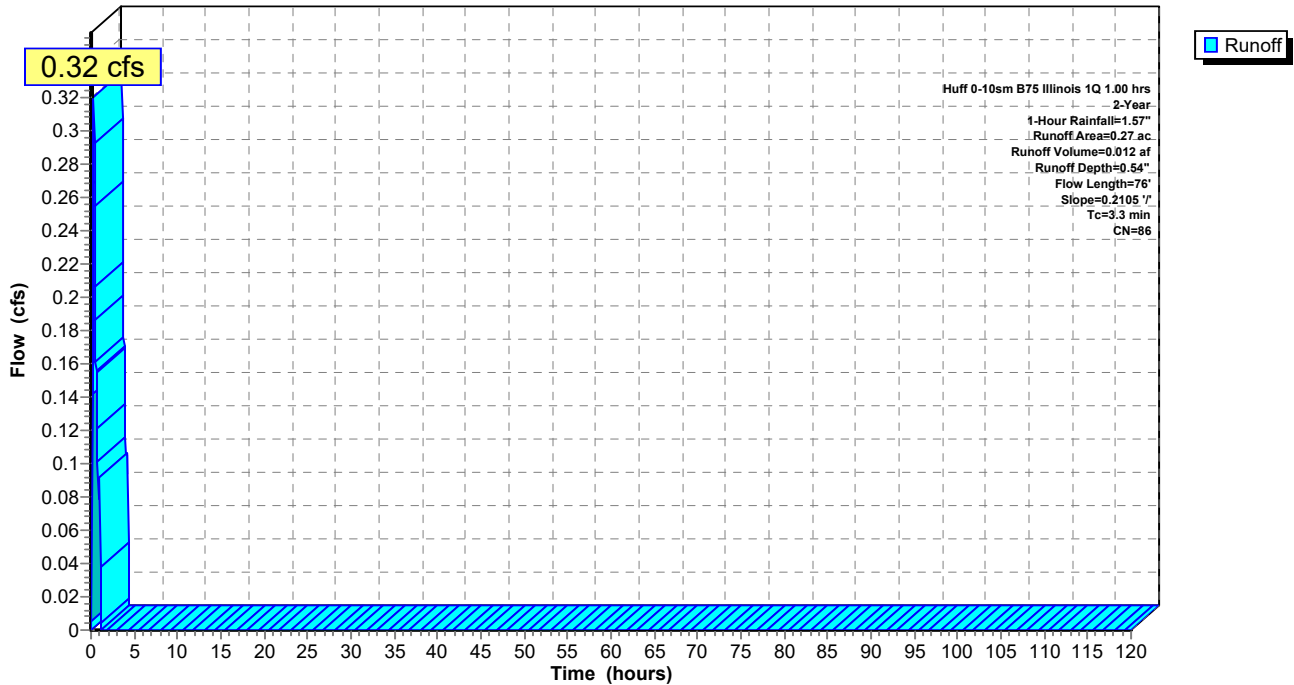
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

Area (ac)	CN	Description
0.14	80	>75% Grass cover, Good, HSG D
0.13	93	Paved roads w/open ditches, 50% imp, HSG D
0.27	86	Weighted Average
0.21		76.49% Pervious Area
0.06		23.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	76	0.2105	0.39		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B14: Subcat B14**

Hydrograph



**Summary for Subcatchment B2: Subcat B2**

Runoff = 1.64 cfs @ 0.40 hrs, Volume= 0.073 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

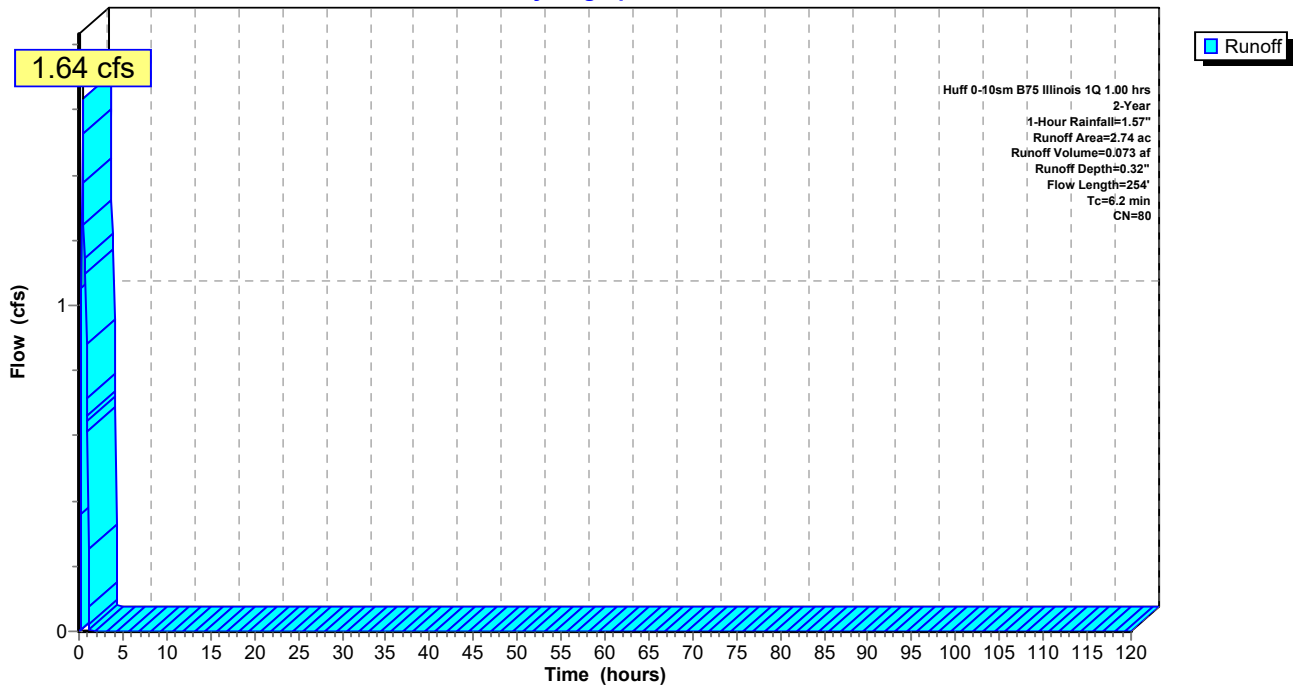
Area (ac)	CN	Description
2.74	80	>75% Grass cover, Good, HSG D
2.74		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.7	154	0.2403	3.43		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.2	254	Total			

**Subcatchment B2: Subcat B2**

Hydrograph



**Summary for Subcatchment B3: Subcat B3**

Runoff = 1.38 cfs @ 0.37 hrs, Volume= 0.059 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

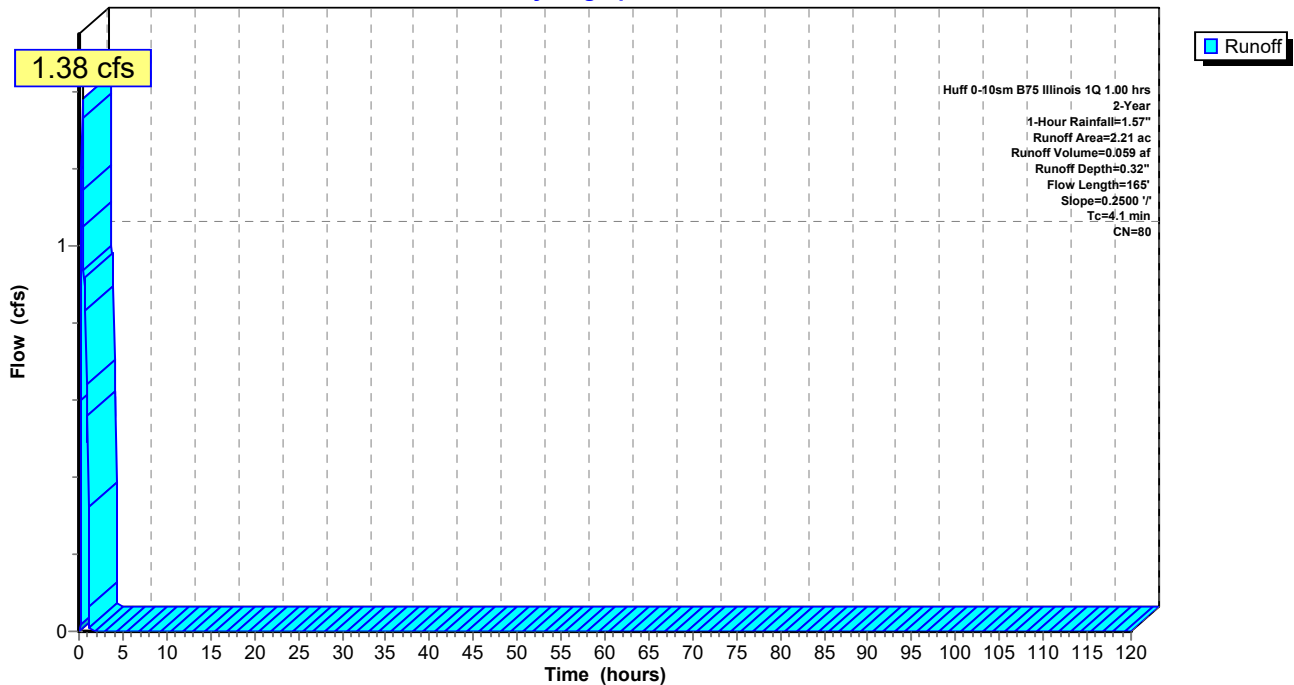
Area (ac)	CN	Description
2.21	80	>75% Grass cover, Good, HSG D
2.21		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.3	65	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	165	Total			

**Subcatchment B3: Subcat B3**

Hydrograph



**Summary for Subcatchment B4: Subcat B4**

Runoff = 1.17 cfs @ 0.37 hrs, Volume= 0.050 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

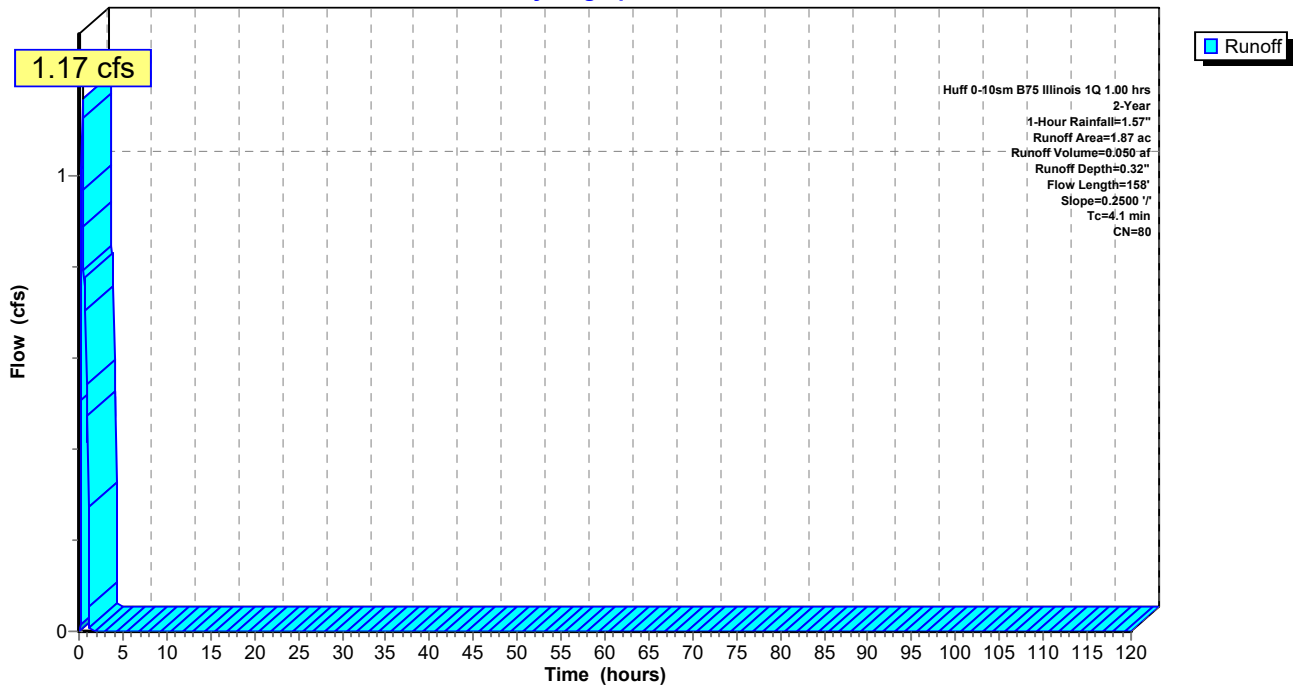
Area (ac)	CN	Description
1.87	80	>75% Grass cover, Good, HSG D
1.87		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.3	58	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	158	Total			

**Subcatchment B4: Subcat B4**

Hydrograph



**Summary for Subcatchment B5: Subcat B5**

Runoff = 1.21 cfs @ 0.35 hrs, Volume= 0.052 af, Depth= 0.32"

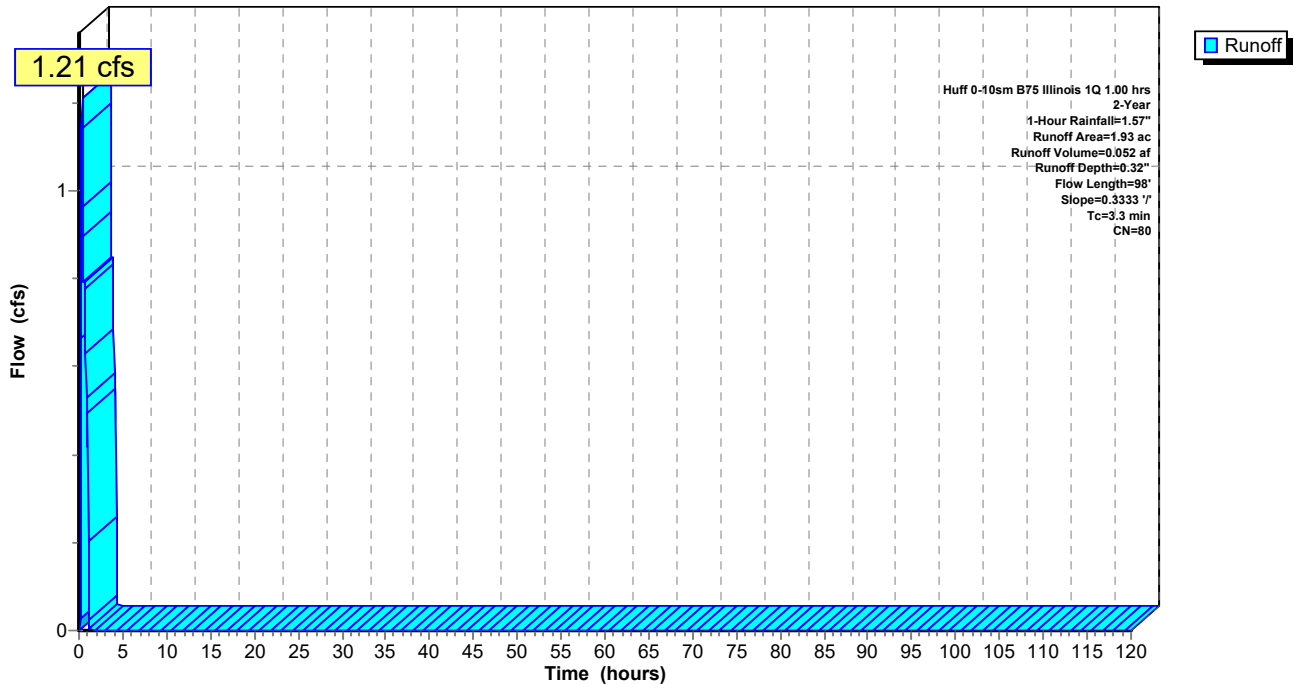
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

Area (ac)	CN	Description
1.93	80	>75% Grass cover, Good, HSG D
1.93		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	98	0.3333	0.49		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B5: Subcat B5**

Hydrograph



**Summary for Subcatchment B6: Subcat B6**

Runoff = 0.74 cfs @ 0.36 hrs, Volume= 0.032 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

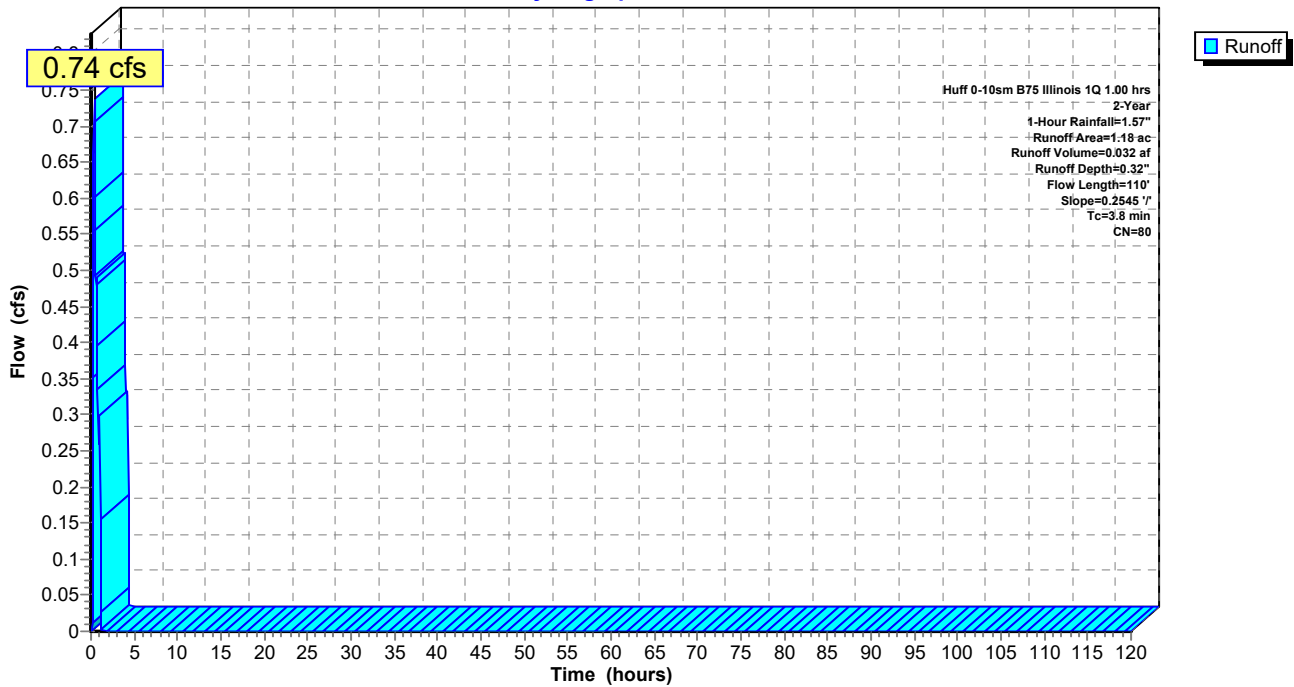
Area (ac)	CN	Description
1.18	80	>75% Grass cover, Good, HSG D
1.18		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2545	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.0	10	0.2545	3.53		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.8	110	Total			

**Subcatchment B6: Subcat B6**

Hydrograph



**Summary for Subcatchment B7: Subcat B7**

Runoff = 1.37 cfs @ 0.35 hrs, Volume= 0.059 af, Depth= 0.32"

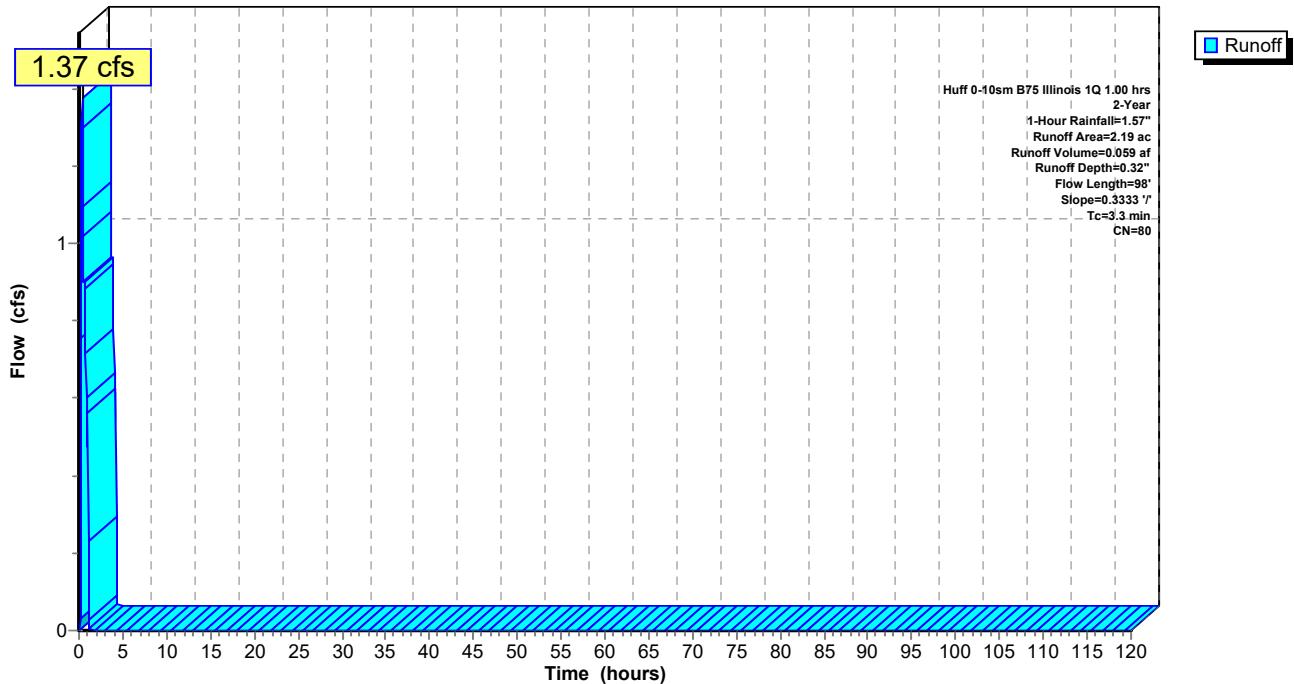
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

Area (ac)	CN	Description
2.19	80	>75% Grass cover, Good, HSG D
2.19		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	98	0.3333	0.49		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B7: Subcat B7**

Hydrograph



**Summary for Subcatchment B8: Subcat B8**

Runoff = 0.73 cfs @ 0.36 hrs, Volume= 0.031 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

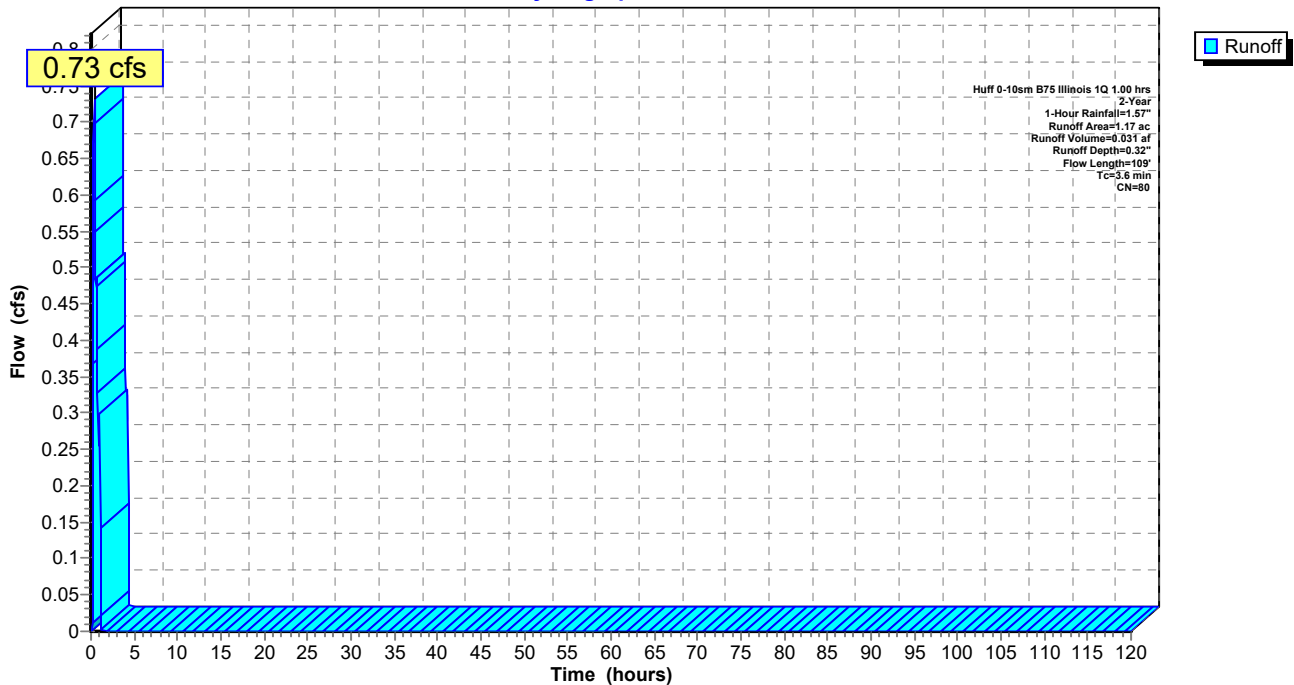
Area (ac)	CN	Description
1.17	80	>75% Grass cover, Good, HSG D
1.17		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	100	0.2873	0.46		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.0	9	0.2574	3.55		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.6	109	Total			

**Subcatchment B8: Subcat B8**

Hydrograph





**Summary for Subcatchment B9A: Subcat B9A**

Runoff = 0.94 cfs @ 0.32 hrs, Volume= 0.038 af, Depth= 0.32"

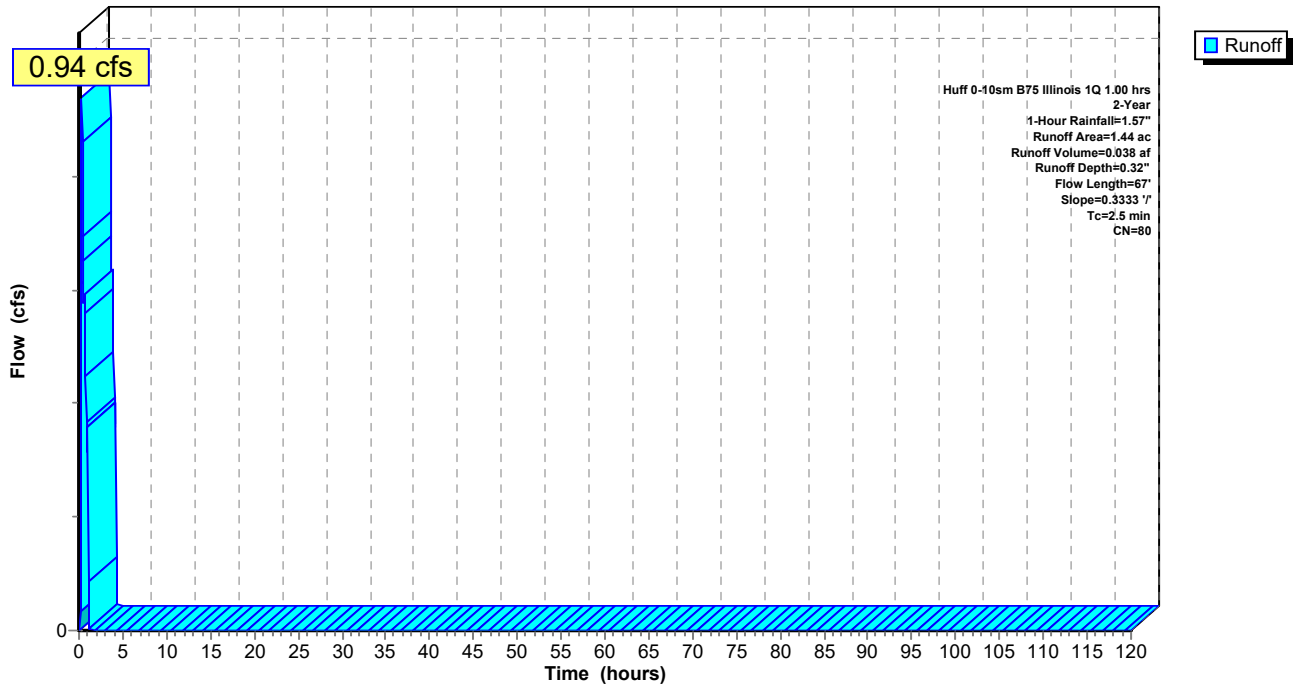
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

Area (ac)	CN	Description
1.44	80	>75% Grass cover, Good, HSG D
1.44		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	67	0.3333	0.45		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B9A: Subcat B9A**

Hydrograph



**Summary for Subcatchment B9B: Subcat B9B**

Runoff = 0.40 cfs @ 0.32 hrs, Volume= 0.016 af, Depth= 0.32"

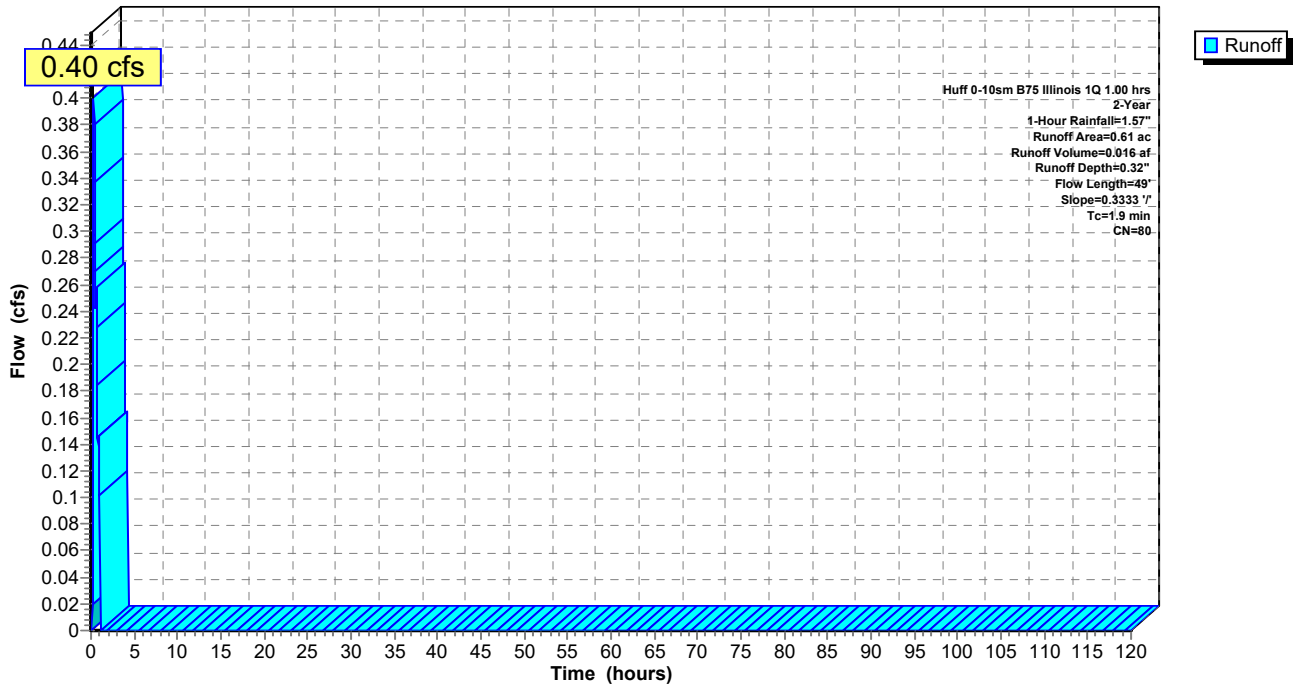
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

Area (ac)	CN	Description
0.61	80	>75% Grass cover, Good, HSG D
0.61		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	49	0.3333	0.43		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B9B: Subcat B9B**

Hydrograph



**Summary for Subcatchment D1: Subcat D1**

Runoff = 0.75 cfs @ 0.41 hrs, Volume= 0.034 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

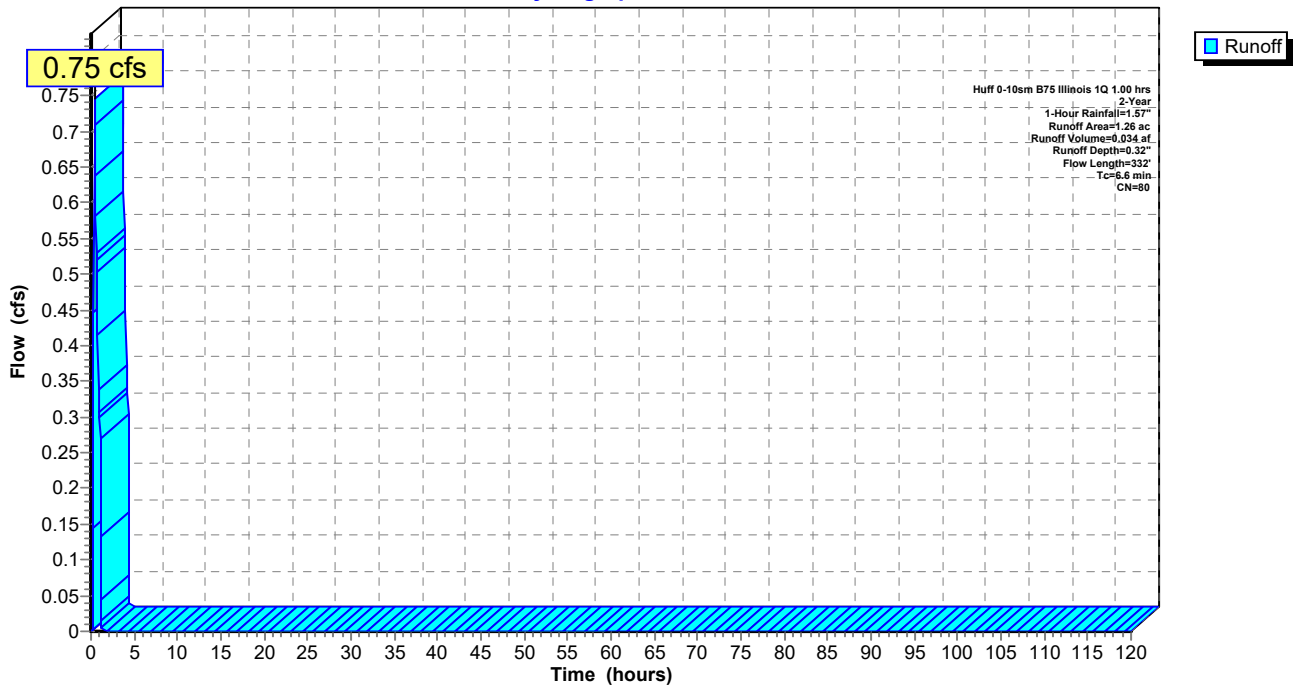
Area (ac)	CN	Description
1.26	80	>75% Grass cover, Good, HSG D
1.26		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.1	232	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.6	332	Total			

**Subcatchment D1: Subcat D1**

Hydrograph



**Summary for Subcatchment D3: Subcat D3**

Runoff = 0.83 cfs @ 0.37 hrs, Volume= 0.036 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

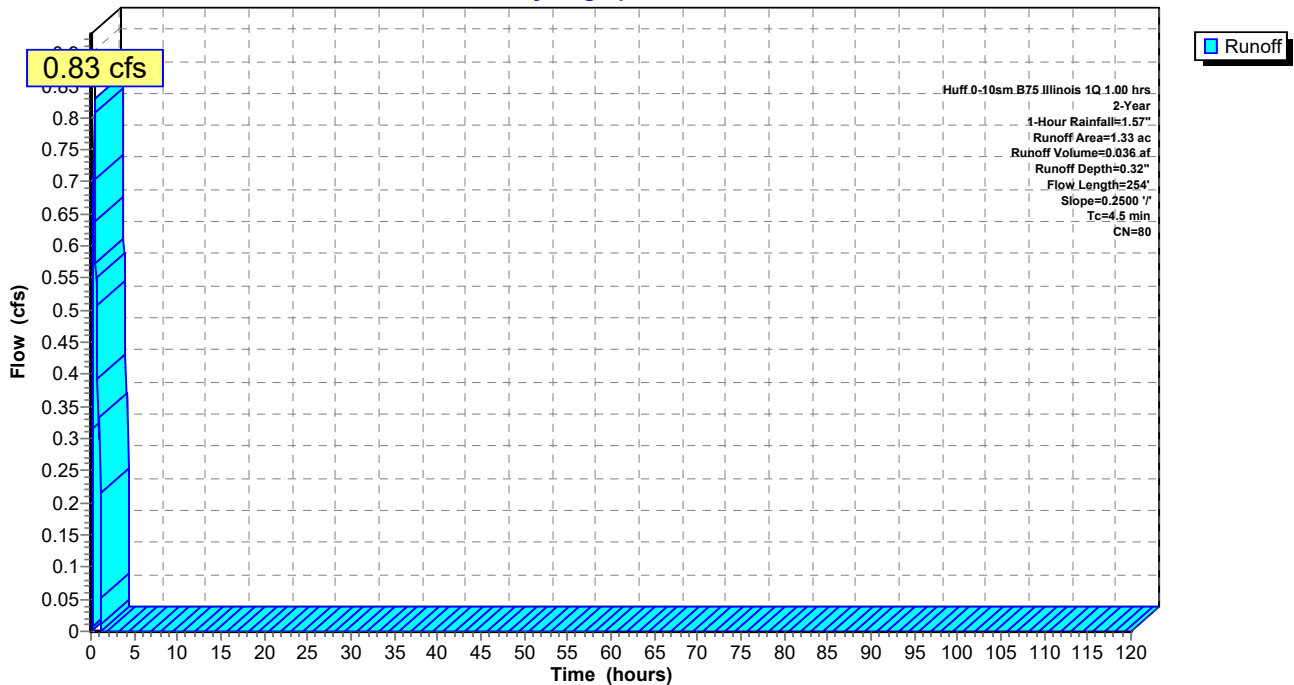
Area (ac)	CN	Description
1.33	80	>75% Grass cover, Good, HSG D
1.33		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.7	154	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.5	254	Total			

**Subcatchment D3: Subcat D3**

Hydrograph



**Summary for Subcatchment D5A: Subcat D5A**

Runoff = 0.71 cfs @ 0.37 hrs, Volume= 0.030 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

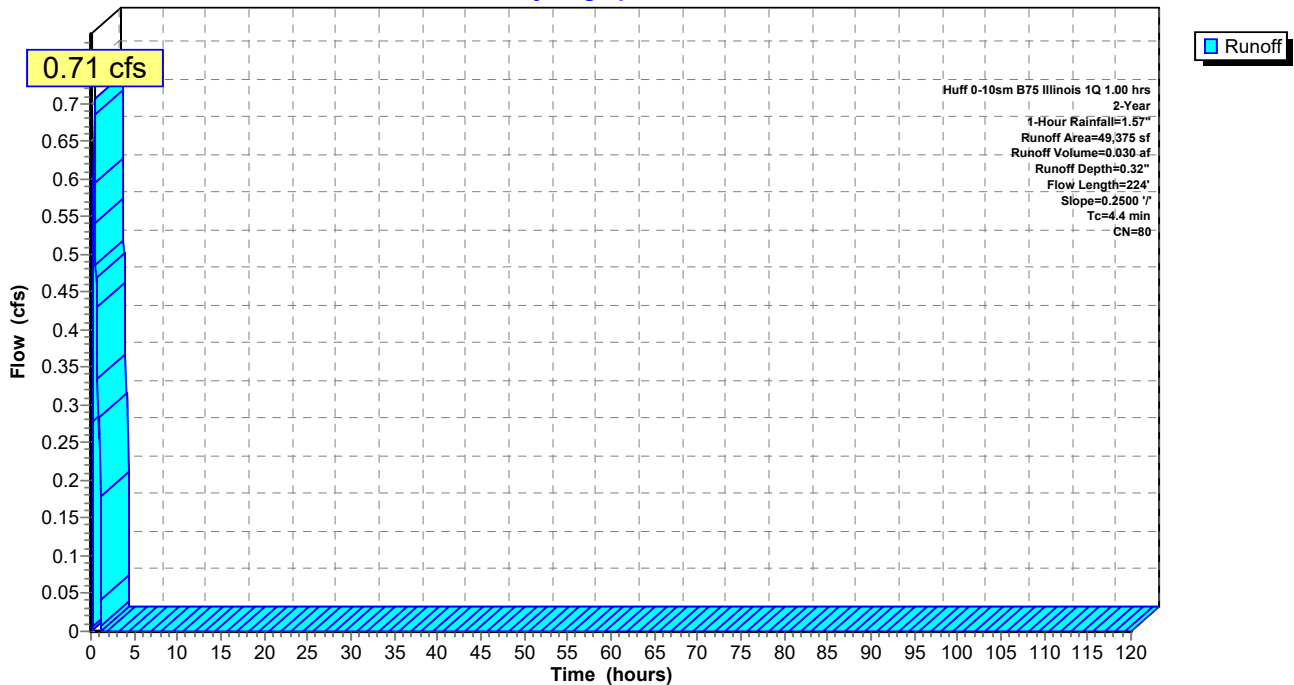
Area (sf)	CN	Description
49,375	80	>75% Grass cover, Good, HSG D
49,375		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	124	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.4	224	Total			

**Subcatchment D5A: Subcat D5A**

Hydrograph



**Summary for Subcatchment D5B: Subcat D5B**

Runoff = 0.38 cfs @ 0.26 hrs, Volume= 0.014 af, Depth= 0.54"

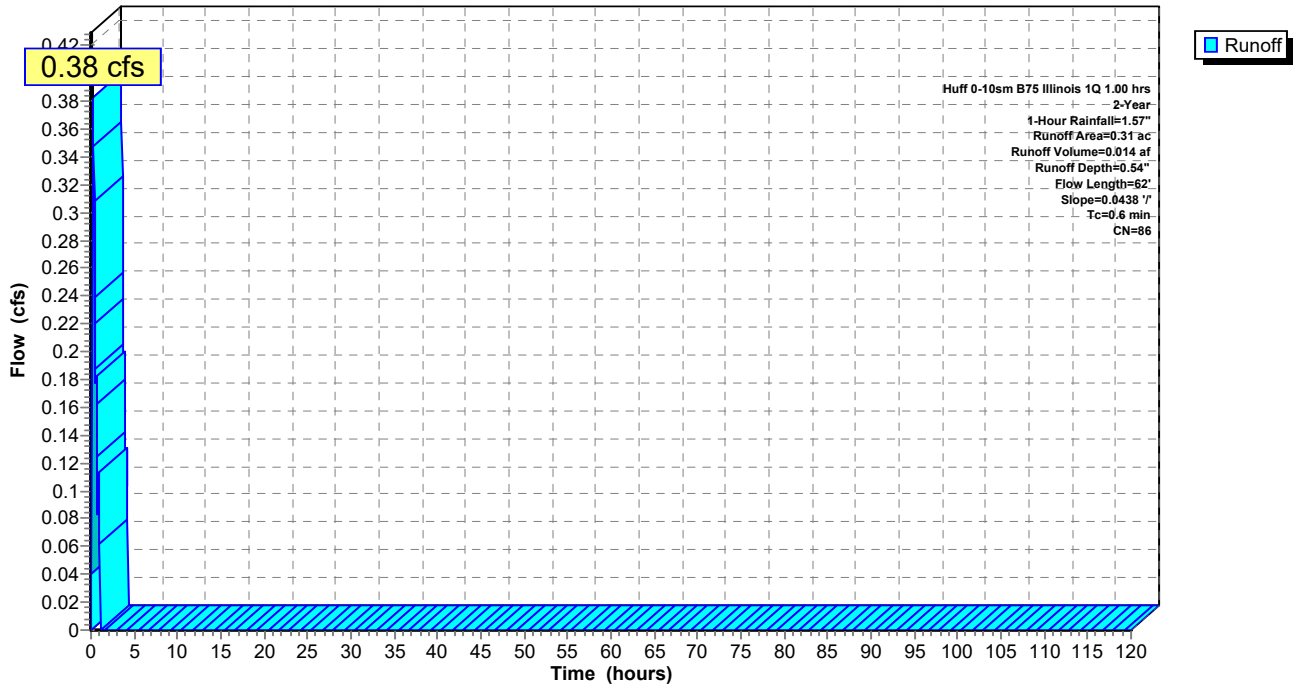
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

Area (ac)	CN	Description
0.16	80	>75% Grass cover, Good, HSG D
0.15	93	Paved roads w/open ditches, 50% imp, HSG D
0.31	86	Weighted Average
0.23		75.32% Pervious Area
0.08		24.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	62	0.0438	1.60		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment D5B: Subcat D5B**

Hydrograph



**Summary for Subcatchment DT: Subcat Drain Tile**

Runoff = 8.47 cfs @ 0.36 hrs, Volume= 0.357 af, Depth= 0.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

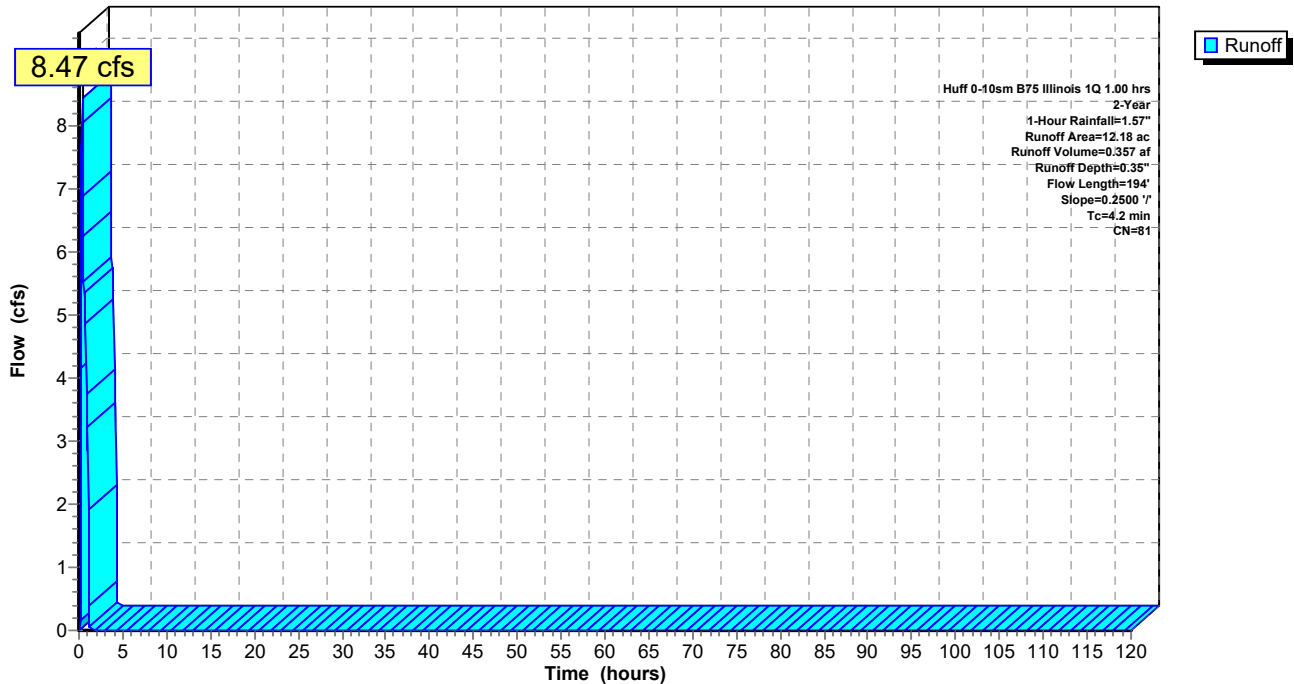
Area (ac)	CN	Description
7.38	80	>75% Grass cover, Good, HSG D
4.80	82	Woods/grass comb., Fair, HSG D
12.18	81	Weighted Average
12.18		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.4	94	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.2	194	Total			

**Subcatchment DT: Subcat Drain Tile**

Hydrograph



**Summary for Subcatchment E1: Subcat E1**

Runoff = 0.84 cfs @ 0.41 hrs, Volume= 0.038 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

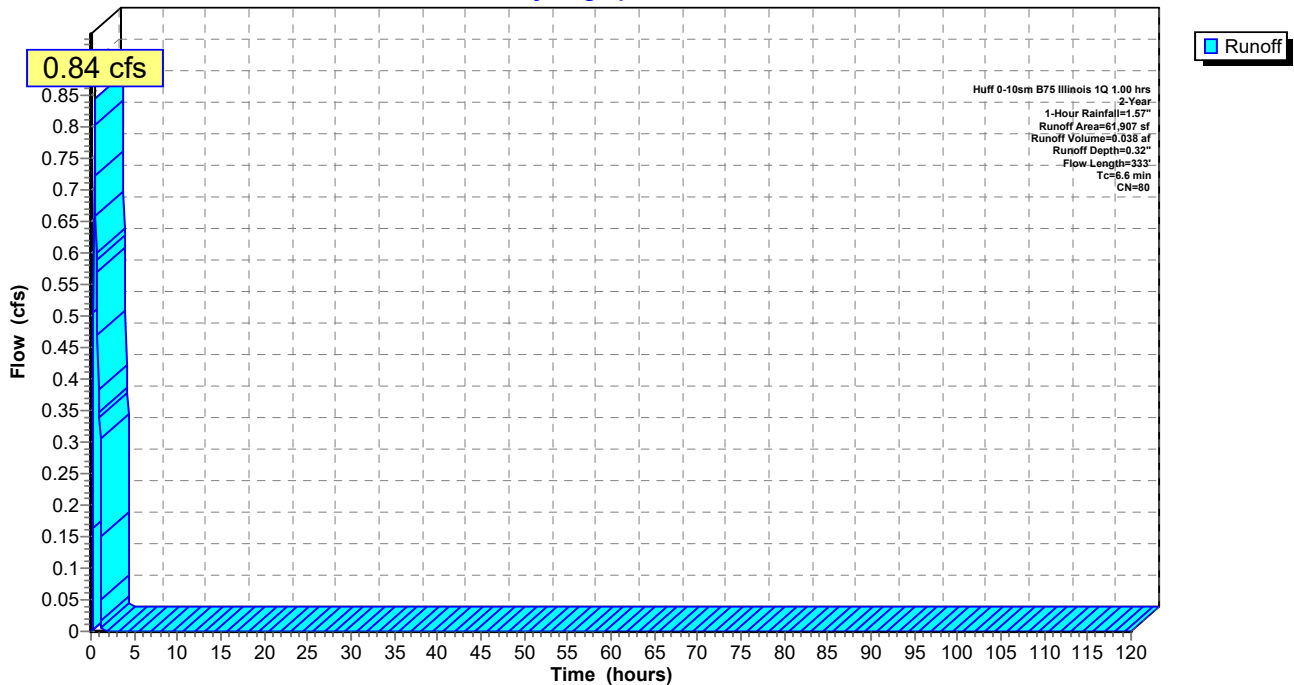
Area (sf)	CN	Description
61,907	80	>75% Grass cover, Good, HSG D
61,907		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.1	233	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.6	333	Total			

**Subcatchment E1: Subcat E1**

Hydrograph





**Summary for Subcatchment E2: Subcat E2**

Runoff = 1.76 cfs @ 0.37 hrs, Volume= 0.075 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

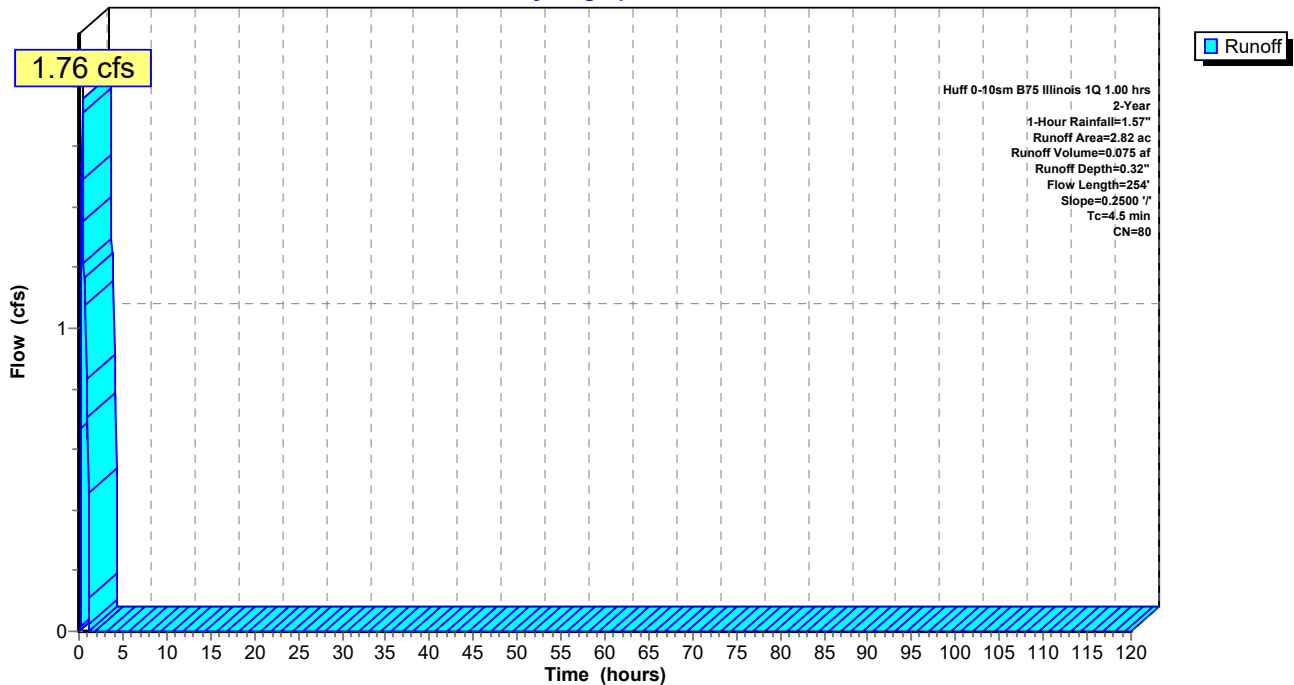
Area (ac)	CN	Description
2.82	80	>75% Grass cover, Good, HSG D
2.82		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.7	154	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.5	254	Total			

**Subcatchment E2: Subcat E2**

Hydrograph



**Summary for Subcatchment E3A: Subcat E3A**

Runoff = 2.04 cfs @ 0.37 hrs, Volume= 0.088 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

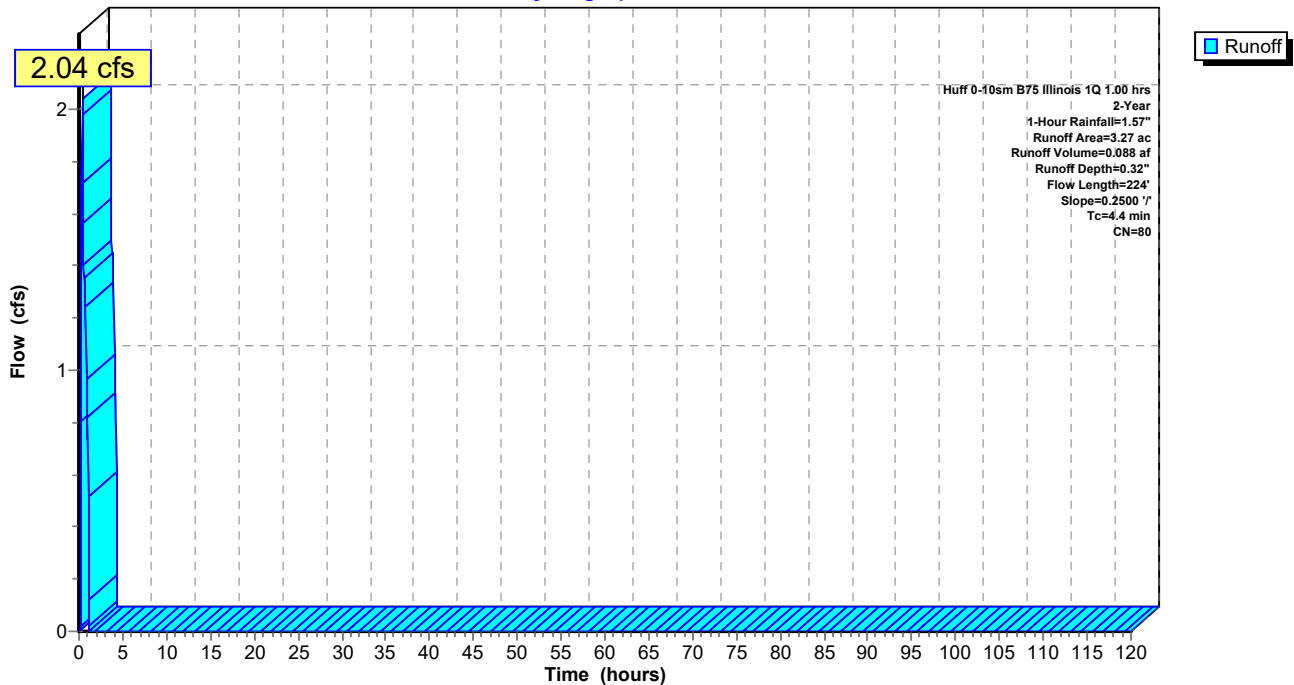
Area (ac)	CN	Description
3.27	80	>75% Grass cover, Good, HSG D
3.27		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	124	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.4	224	Total			

**Subcatchment E3A: Subcat E3A**

Hydrograph



**Summary for Subcatchment E3B: Subcat E3B**

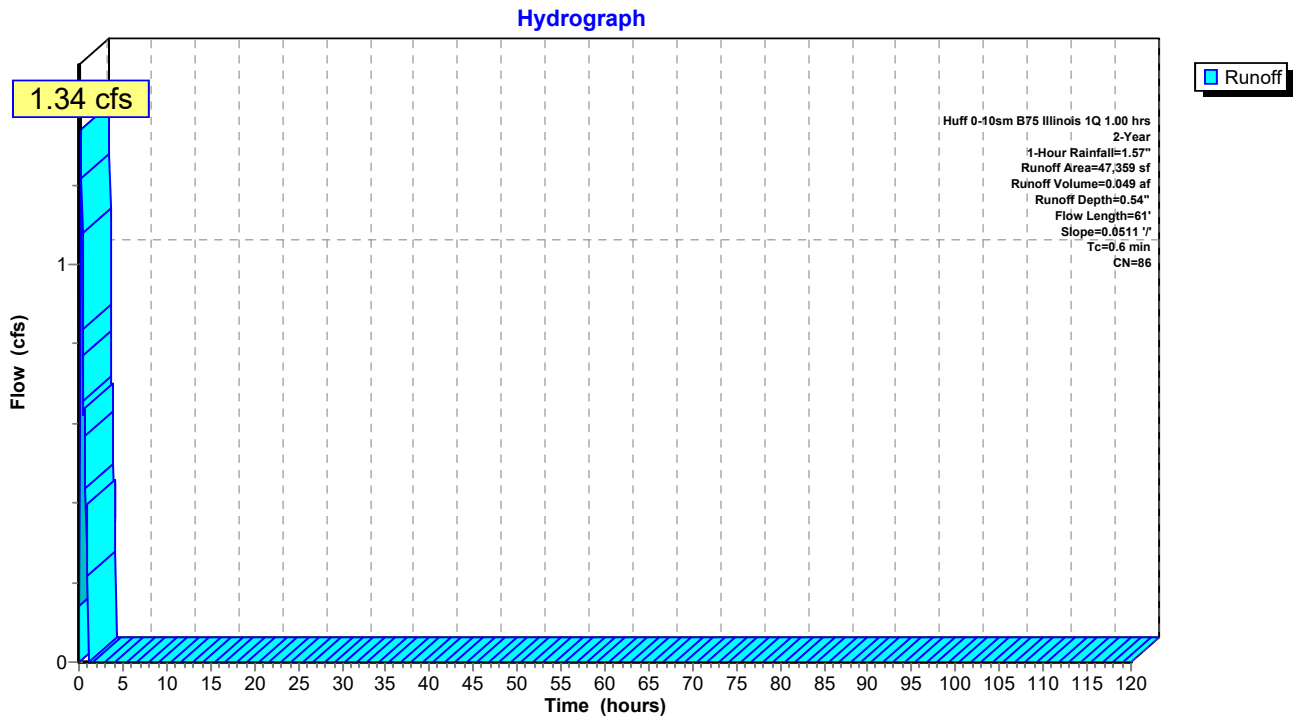
Runoff = 1.34 cfs @ 0.26 hrs, Volume= 0.049 af, Depth= 0.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

Area (sf)	CN	Description
23,741	80	>75% Grass cover, Good, HSG D
23,618	93	Paved roads w/open ditches, 50% imp, HSG D
47,359	86	Weighted Average
35,550		75.06% Pervious Area
11,809		24.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	61	0.0511	1.70		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment E3B: Subcat E3B**



**Summary for Subcatchment H1: Subcat H1**

Runoff = 1.18 cfs @ 0.40 hrs, Volume= 0.053 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

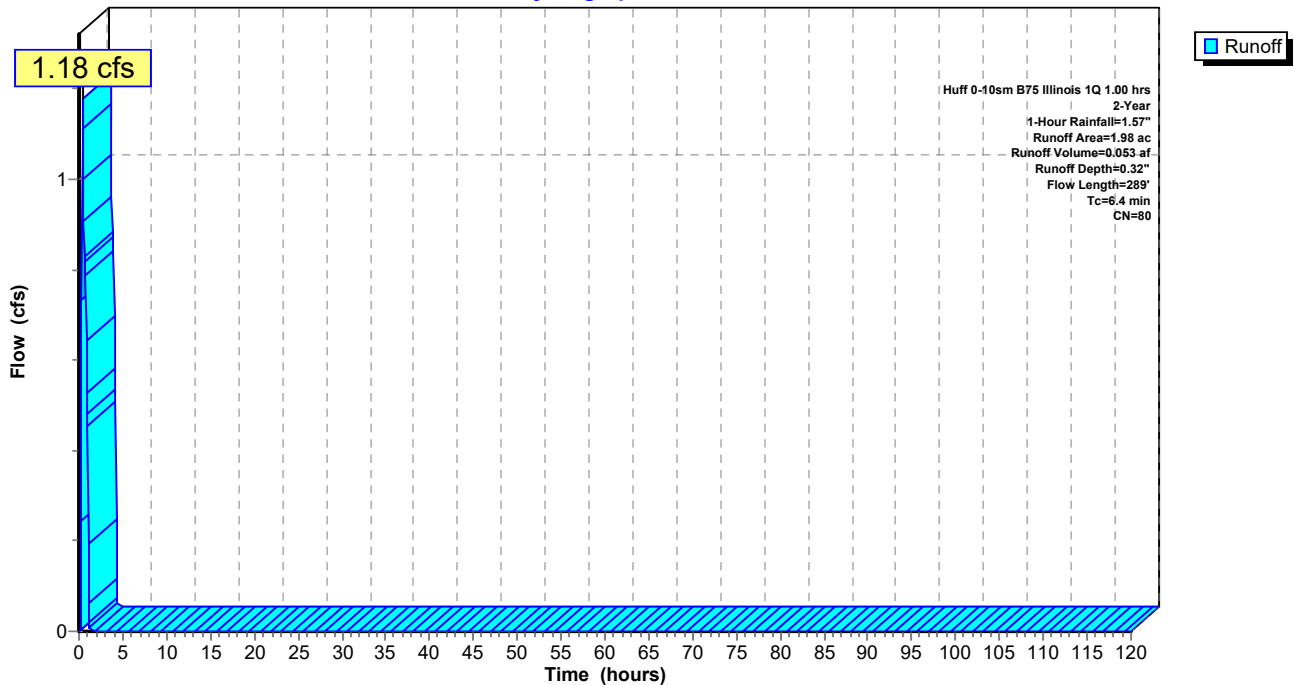
Area (ac)	CN	Description
1.98	80	>75% Grass cover, Good, HSG D
1.98		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.9	189	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.4	289	Total			

**Subcatchment H1: Subcat H1**

Hydrograph



**Summary for Subcatchment H2: Subcat H2**

Runoff = 1.17 cfs @ 0.36 hrs, Volume= 0.050 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

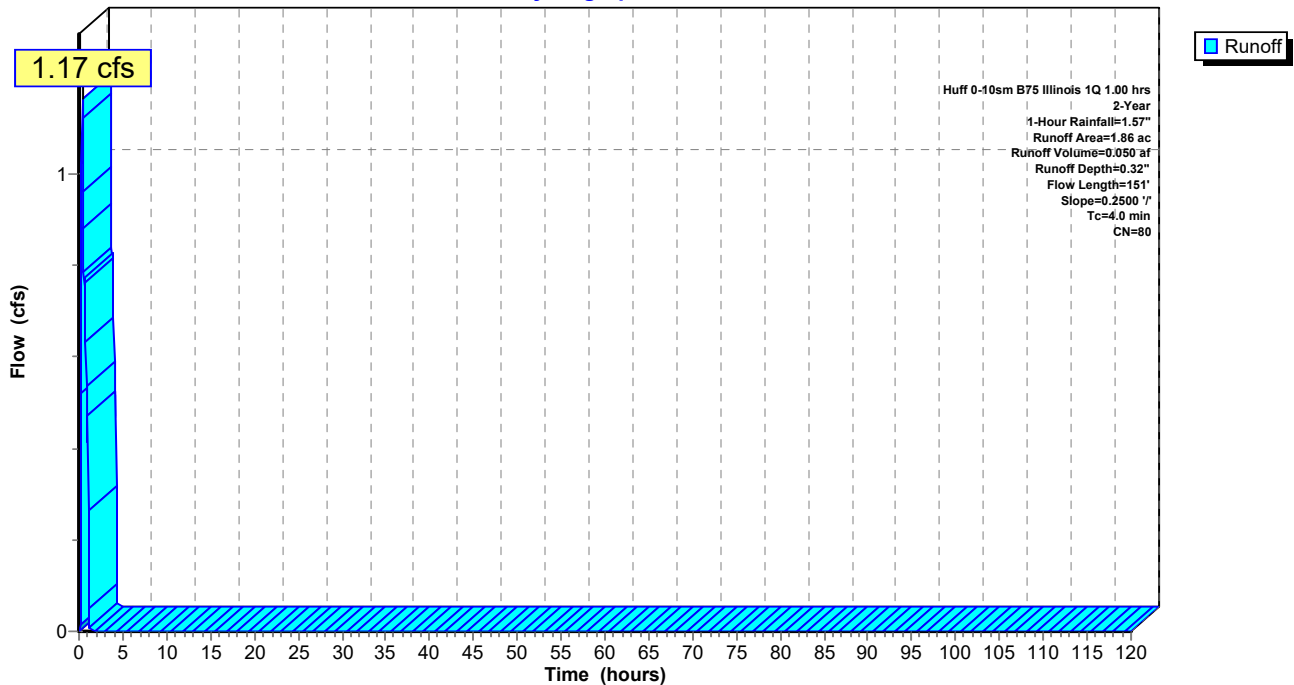
Area (ac)	CN	Description
1.86	80	>75% Grass cover, Good, HSG D
1.86		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	51	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	151	Total			

**Subcatchment H2: Subcat H2**

Hydrograph



**Summary for Subcatchment H3: Subcat H3**

Runoff = 2.23 cfs @ 0.37 hrs, Volume= 0.095 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

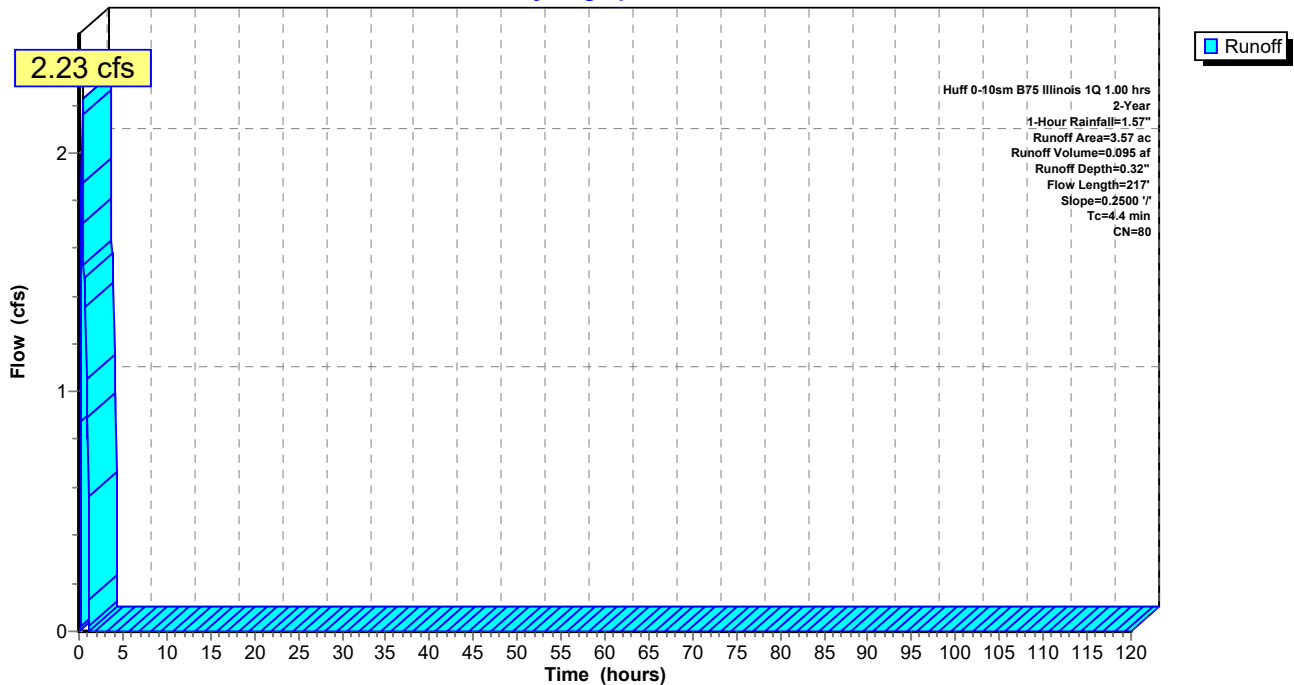
Area (ac)	CN	Description
3.57	80	>75% Grass cover, Good, HSG D
3.57		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	117	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.4	217	Total			

**Subcatchment H3: Subcat H3**

Hydrograph



**Summary for Subcatchment N-A1: Subcat N-A1**

Runoff = 2.14 cfs @ 0.41 hrs, Volume= 0.096 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

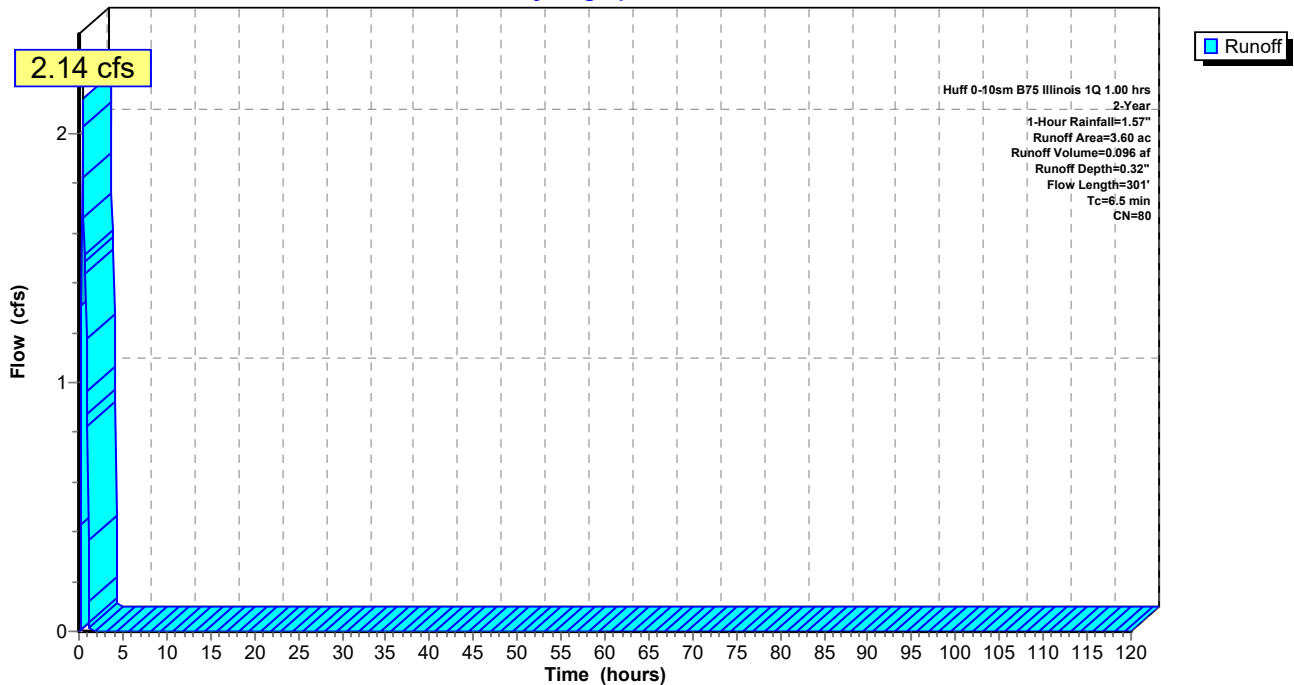
Area (ac)	CN	Description
3.60	80	>75% Grass cover, Good, HSG D
3.60		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.0	201	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.5	301	Total			

**Subcatchment N-A1: Subcat N-A1**

Hydrograph



**Summary for Subcatchment N-A10: Subcat N-A10**

Runoff = 2.36 cfs @ 0.36 hrs, Volume= 0.101 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

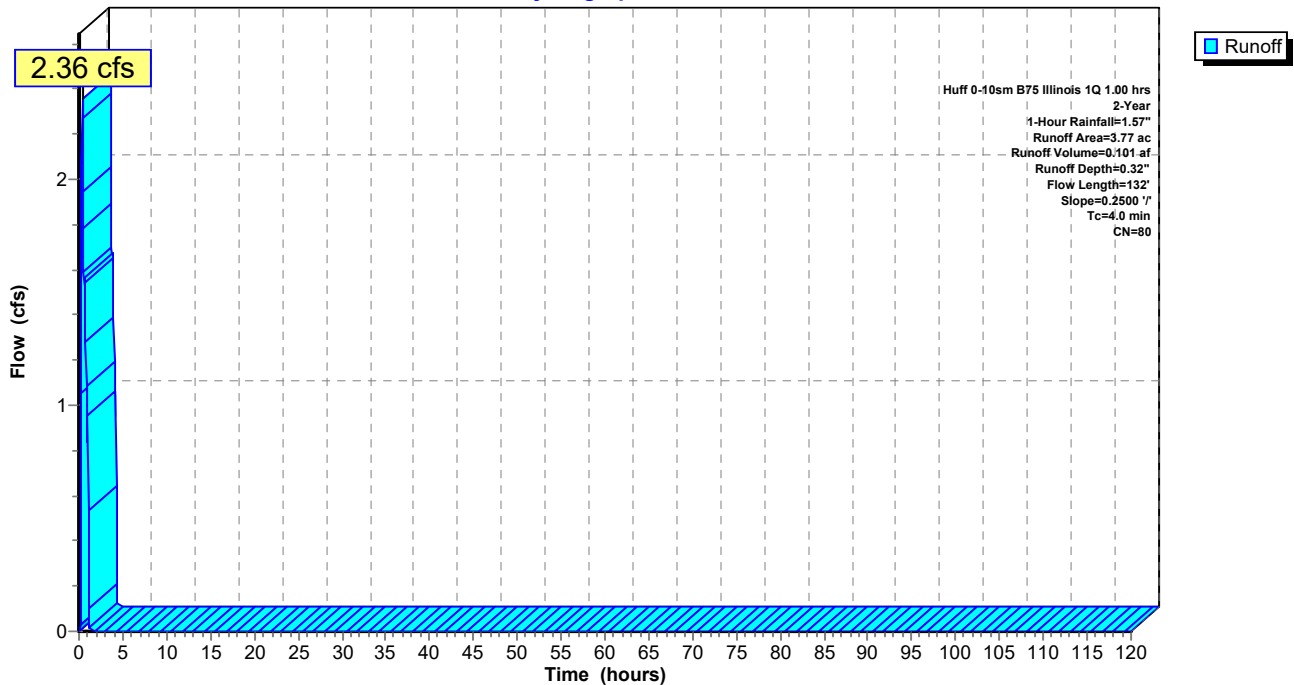
Area (ac)	CN	Description
3.77	80	>75% Grass cover, Good, HSG D
3.77		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	32	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	132	Total			

**Subcatchment N-A10: Subcat N-A10**

Hydrograph





**Summary for Subcatchment N-A11: Subcat N-A11**

Runoff = 1.15 cfs @ 0.36 hrs, Volume= 0.049 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

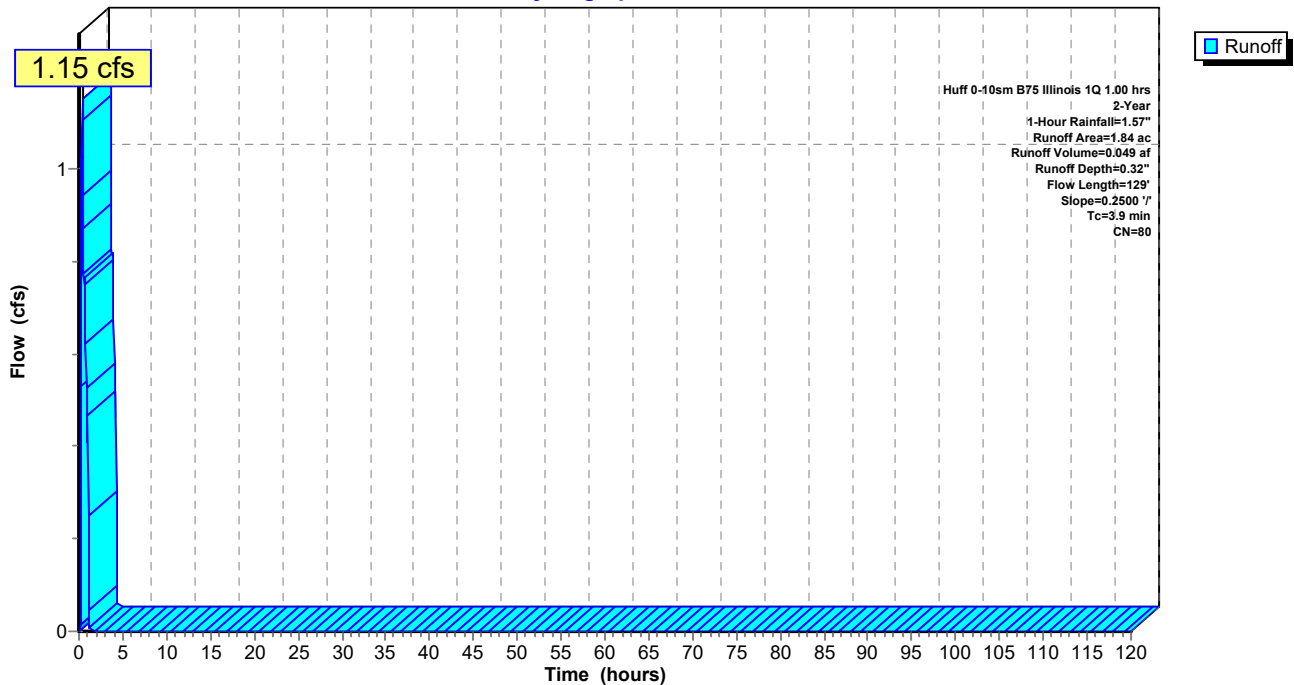
Area (ac)	CN	Description
1.84	80	>75% Grass cover, Good, HSG D
1.84		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	29	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	129	Total			

**Subcatchment N-A11: Subcat N-A11**

Hydrograph



**Summary for Subcatchment N-A12: Subcat N-A12**

Runoff = 2.02 cfs @ 0.34 hrs, Volume= 0.083 af, Depth= 0.42"

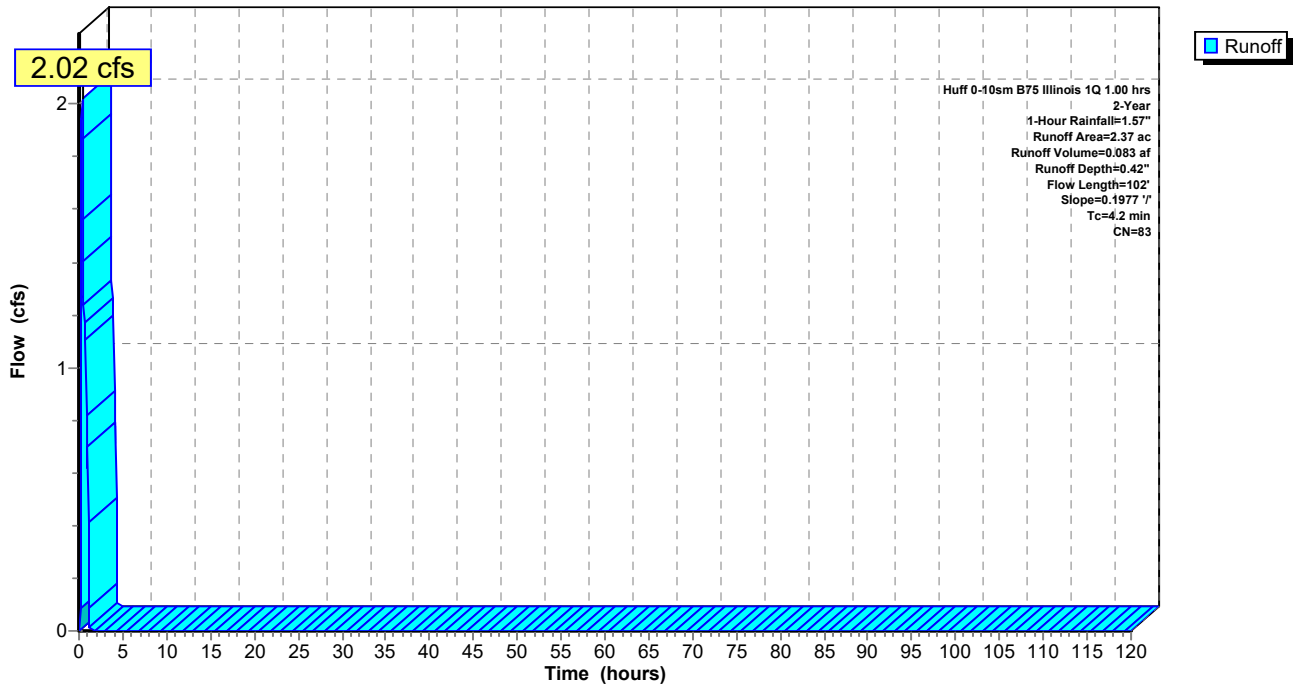
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

Area (ac)	CN	Description
1.74	80	>75% Grass cover, Good, HSG D
0.63	93	Paved roads w/open ditches, 50% imp, HSG D
2.37	83	Weighted Average
2.06		86.69% Pervious Area
0.32		13.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	100	0.1977	0.40		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.0	2	0.1977	3.11		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.2	102	Total			

**Subcatchment N-A12: Subcat N-A12**

Hydrograph



**Summary for Subcatchment N-A13: Subcat N-A13**

Runoff = 0.78 cfs @ 0.36 hrs, Volume= 0.033 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

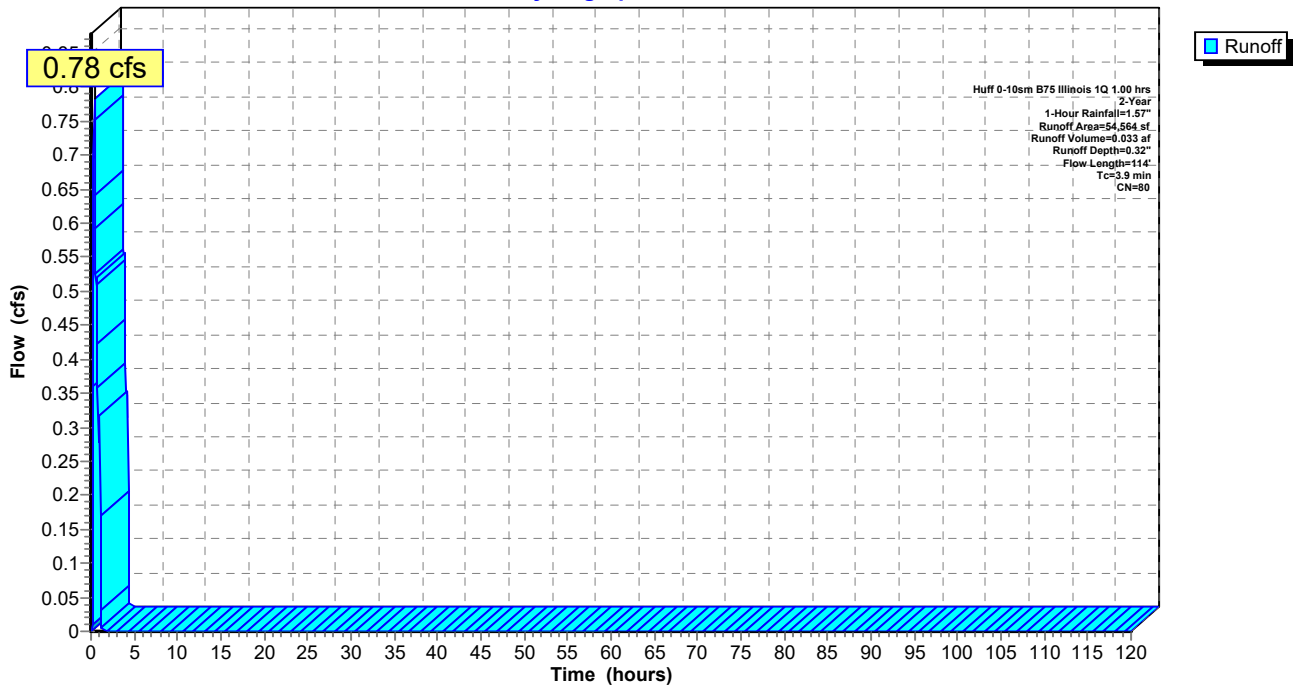
Area (sf)	CN	Description
54,564	80	>75% Grass cover, Good, HSG D
54,564		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	14	0.3210	3.97		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	114	Total			

**Subcatchment N-A13: Subcat N-A13**

Hydrograph



**Summary for Subcatchment N-A14: Subcat N-A14**

Runoff = 1.12 cfs @ 0.34 hrs, Volume= 0.046 af, Depth= 0.42"

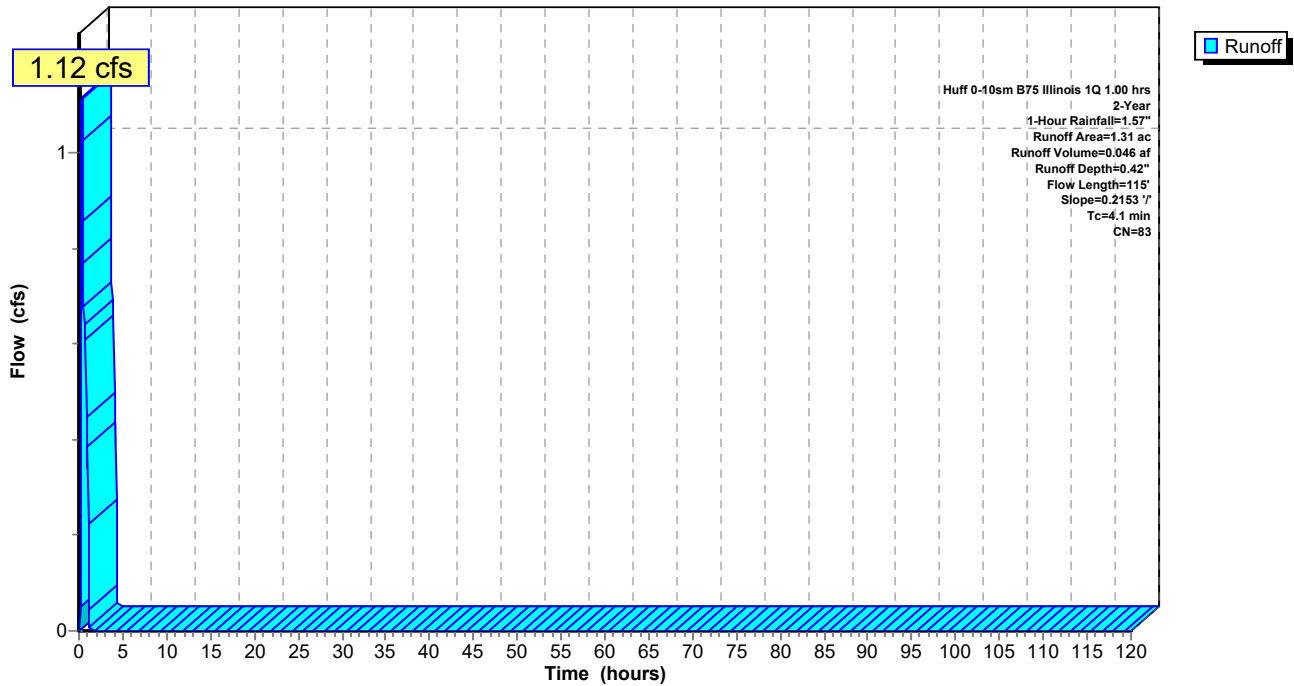
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

Area (ac)	CN	Description
0.97	80	>75% Grass cover, Good, HSG D
0.34	93	Paved roads w/open ditches, 50% imp, HSG D
1.31	83	Weighted Average
1.14		87.12% Pervious Area
0.17		12.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	100	0.2153	0.41		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	15	0.2153	3.25		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	115	Total			

**Subcatchment N-A14: Subcat N-A14**

Hydrograph



**Summary for Subcatchment N-A15: Subcat N-A15**

Runoff = 0.65 cfs @ 0.36 hrs, Volume= 0.028 af, Depth= 0.32"

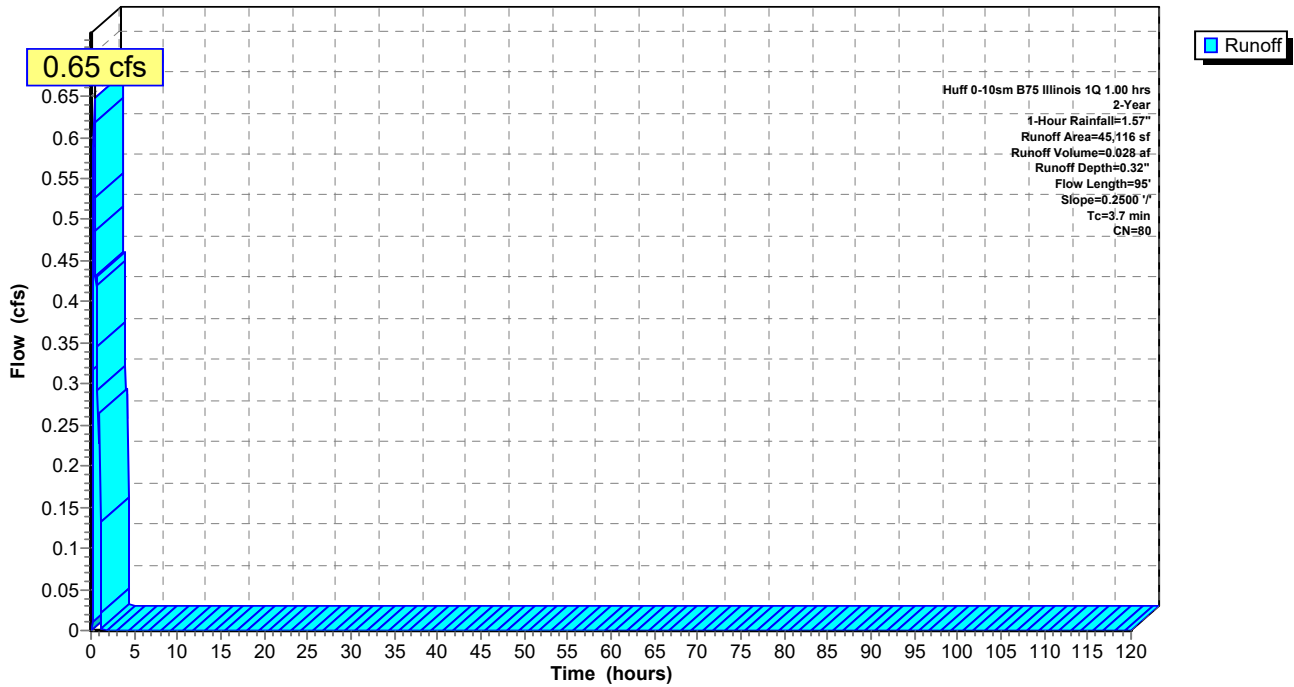
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

Area (sf)	CN	Description
45,116	80	>75% Grass cover, Good, HSG D
45,116		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	95	0.2500	0.43		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-A15: Subcat N-A15**

Hydrograph



**Summary for Subcatchment N-A16: Subcat N-A16**

Runoff = 4.32 cfs @ 0.25 hrs, Volume= 0.149 af, Depth= 0.86"

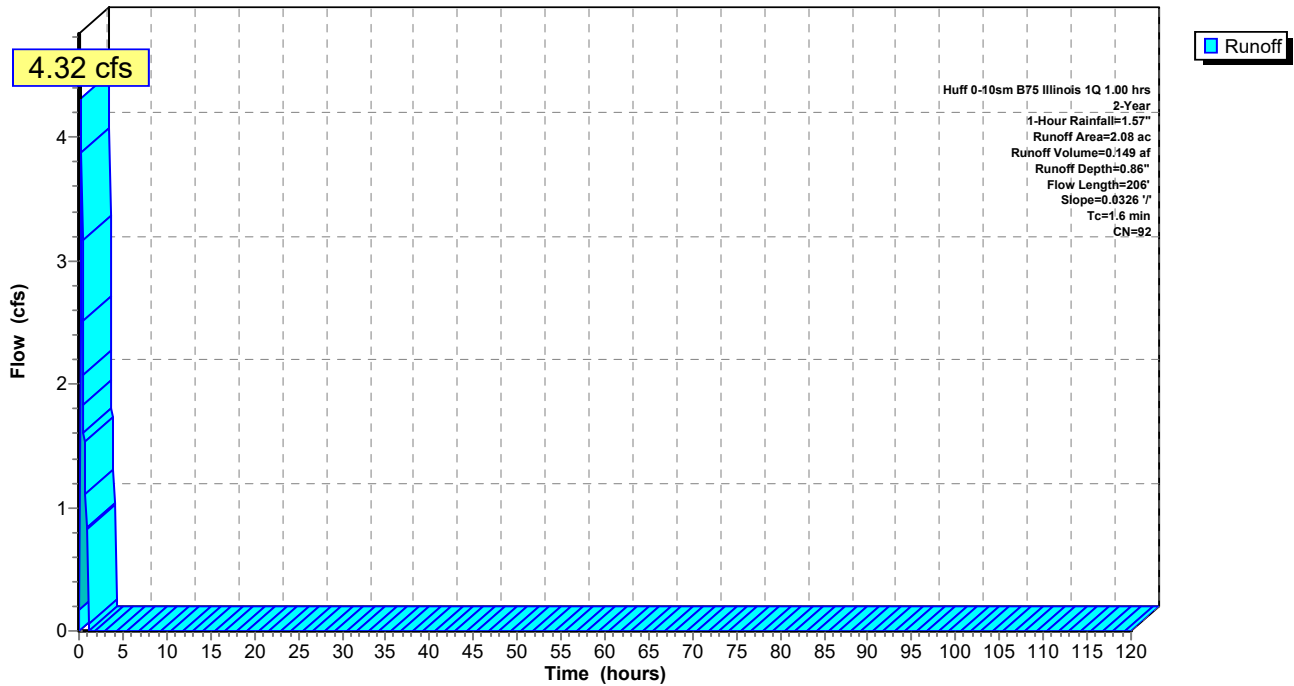
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

Area (ac)	CN	Description
0.08	80	>75% Grass cover, Good, HSG D
2.00	93	Paved roads w/open ditches, 50% imp, HSG D
2.08	92	Weighted Average
1.08		51.99% Pervious Area
1.00		48.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0326	1.56		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 2.80"
0.5	106	0.0326	3.67		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
1.6	206	Total			

**Subcatchment N-A16: Subcat N-A16**

Hydrograph



**Summary for Subcatchment N-A2: Subcat N-A2**

Runoff = 1.70 cfs @ 0.40 hrs, Volume= 0.075 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

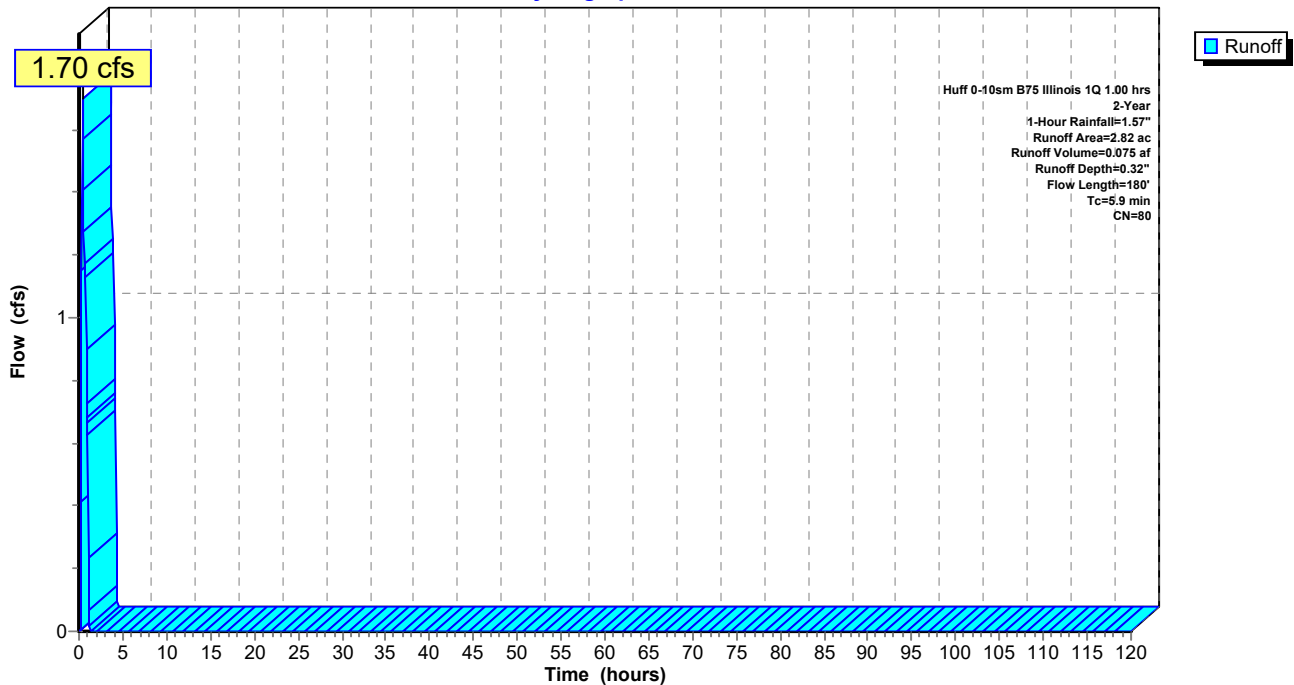
Area (ac)	CN	Description
2.82	80	>75% Grass cover, Good, HSG D
2.82		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.4	80	0.2199	3.28		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
5.9	180	Total			

**Subcatchment N-A2: Subcat N-A2**

Hydrograph



**Summary for Subcatchment N-A3: Subcat N-A3**

Runoff = 0.82 cfs @ 0.37 hrs, Volume= 0.035 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

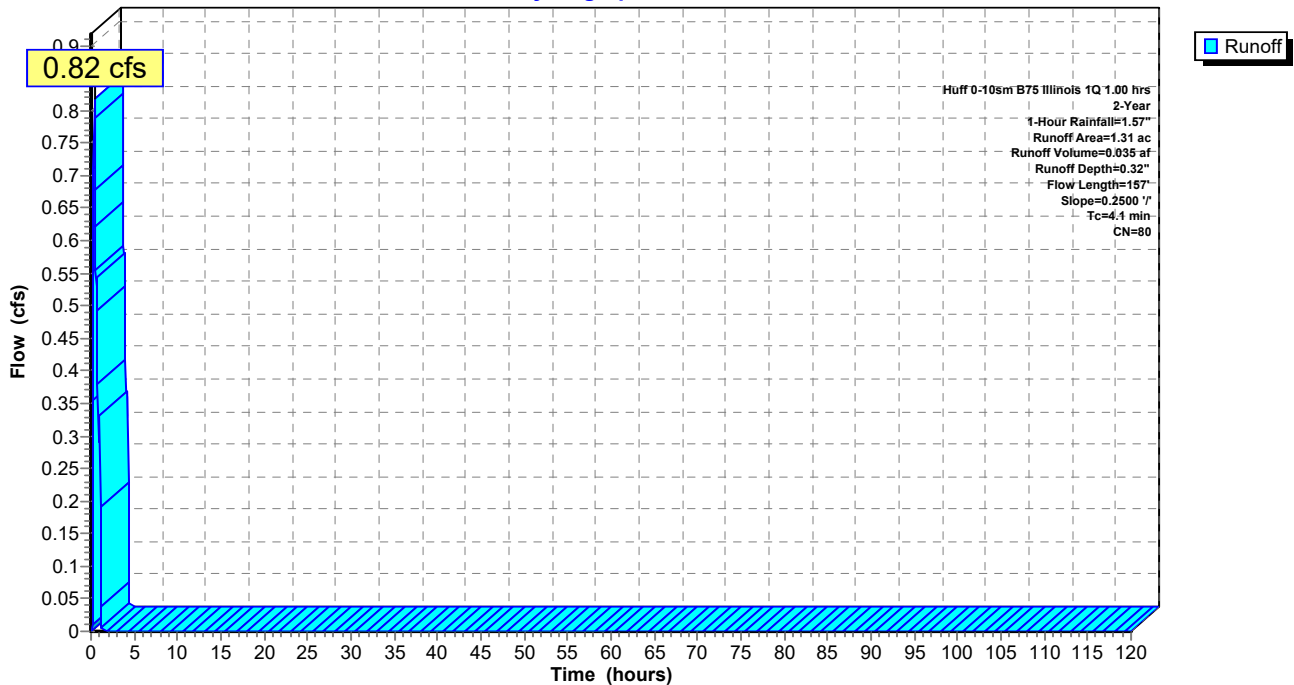
Area (ac)	CN	Description
1.31	80	>75% Grass cover, Good, HSG D
1.31		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.3	57	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	157	Total			

**Subcatchment N-A3: Subcat N-A3**

Hydrograph





**Summary for Subcatchment N-A4: Subcat N-A4**

Runoff = 4.11 cfs @ 0.40 hrs, Volume= 0.184 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

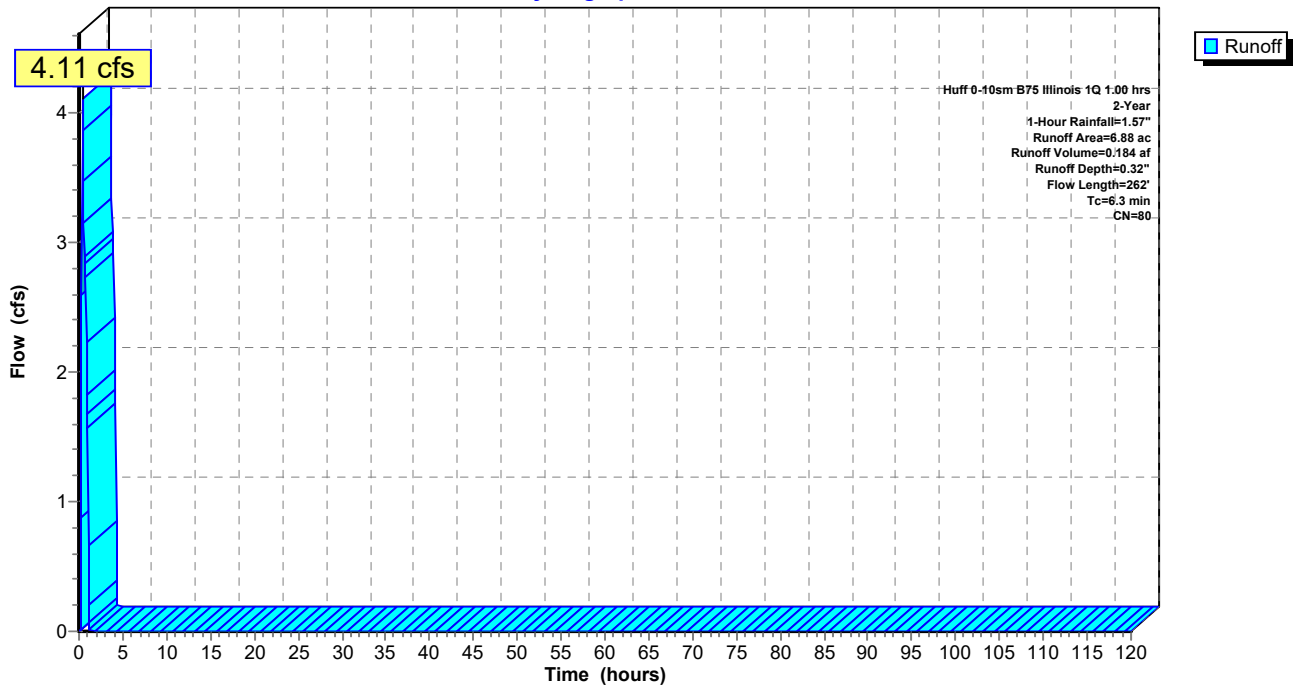
Area (ac)	CN	Description
6.88	80	>75% Grass cover, Good, HSG D
6.88		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.8	162	0.2330	3.38		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.3	262	Total			

**Subcatchment N-A4: Subcat N-A4**

Hydrograph



**Summary for Subcatchment N-A5: Subcat N-A5**

Runoff = 0.46 cfs @ 0.36 hrs, Volume= 0.020 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

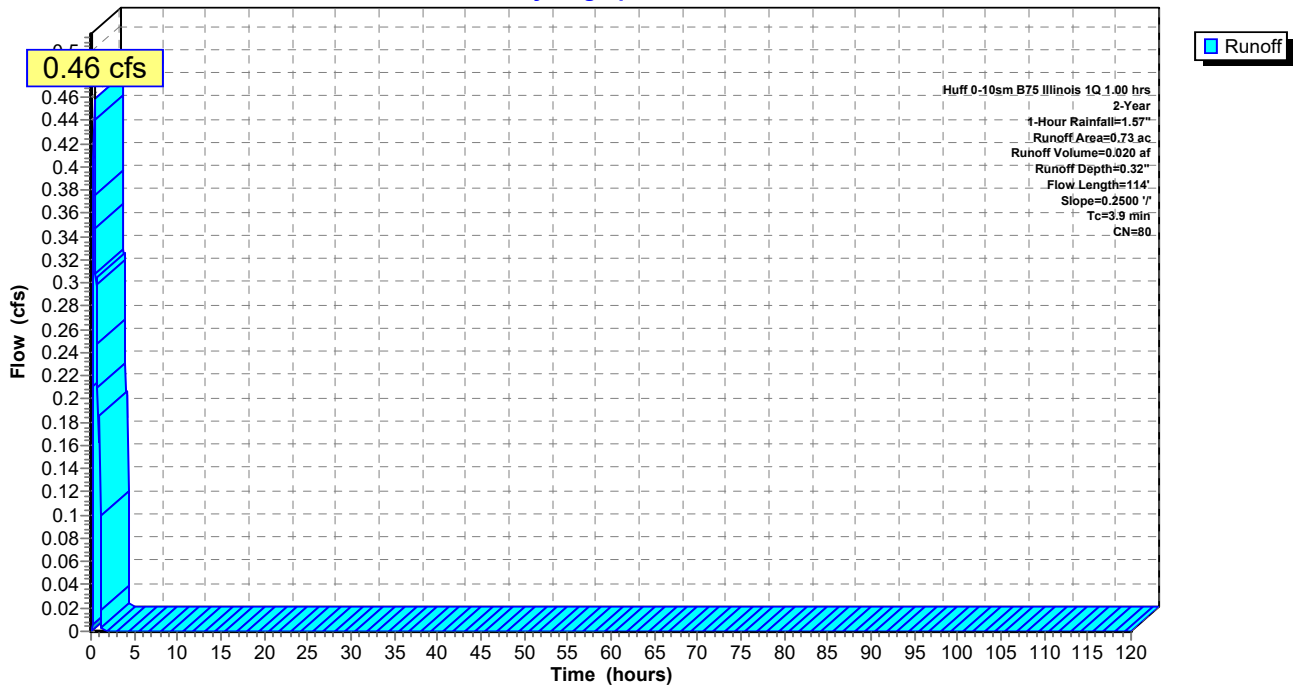
Area (ac)	CN	Description
0.73	80	>75% Grass cover, Good, HSG D
0.73		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	14	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	114	Total			

**Subcatchment N-A5: Subcat N-A5**

Hydrograph



**Summary for Subcatchment N-A6: Subcat N-A6**

Runoff = 2.59 cfs @ 0.36 hrs, Volume= 0.110 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

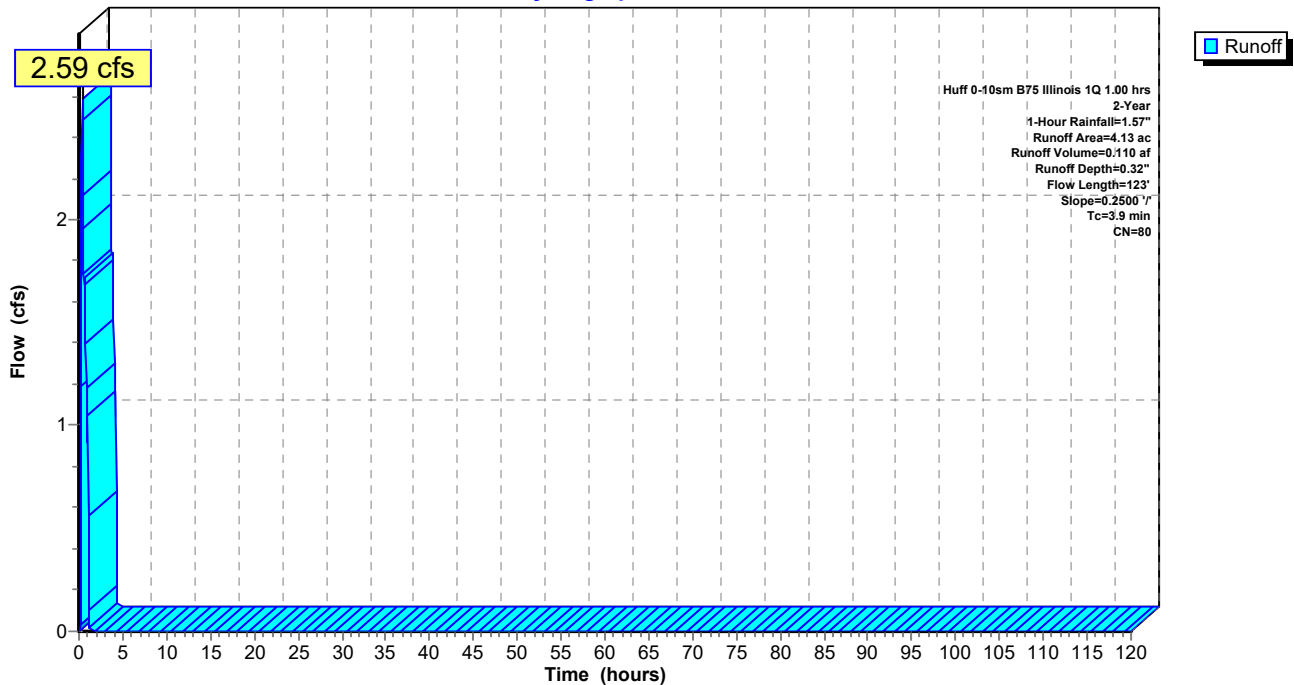
Area (ac)	CN	Description
4.13	80	>75% Grass cover, Good, HSG D
4.13		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	23	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	123	Total			

**Subcatchment N-A6: Subcat N-A6**

Hydrograph



**Summary for Subcatchment N-A7: Subcat N-A7**

Runoff = 0.28 cfs @ 0.37 hrs, Volume= 0.012 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

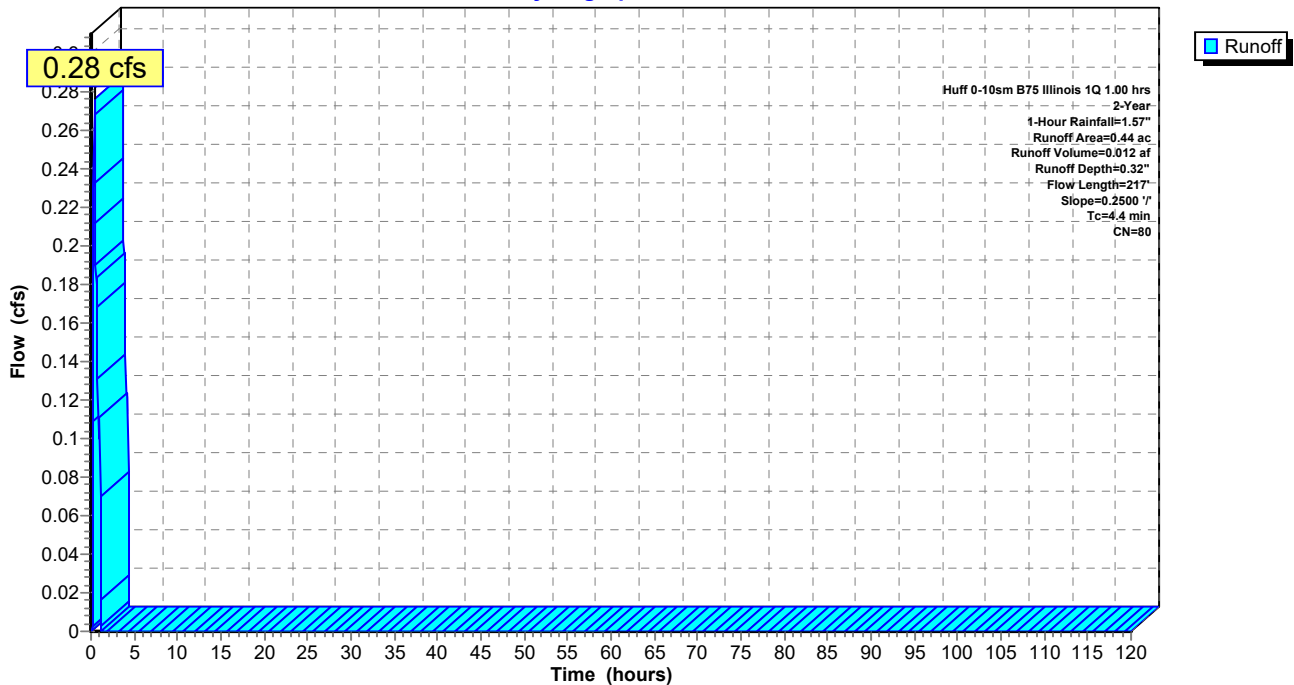
Area (ac)	CN	Description
0.44	80	>75% Grass cover, Good, HSG D
0.44		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	117	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.4	217	Total			

**Subcatchment N-A7: Subcat N-A7**

Hydrograph



**Summary for Subcatchment N-A8: Subcat N-A8**

Runoff = 2.38 cfs @ 0.36 hrs, Volume= 0.102 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

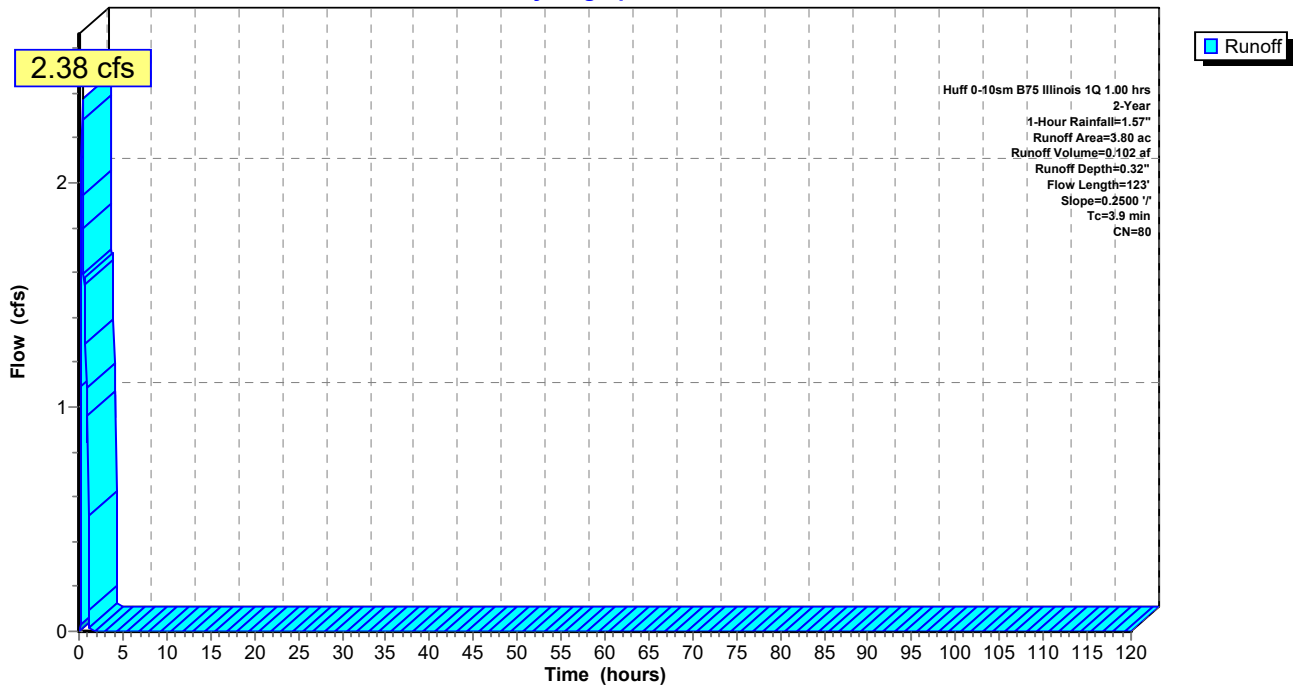
Area (ac)	CN	Description
3.80	80	>75% Grass cover, Good, HSG D
3.80		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	23	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	123	Total			

**Subcatchment N-A8: Subcat N-A8**

Hydrograph



**Summary for Subcatchment N-A9: Subcat N-A9**

Runoff = 0.11 cfs @ 0.37 hrs, Volume= 0.005 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

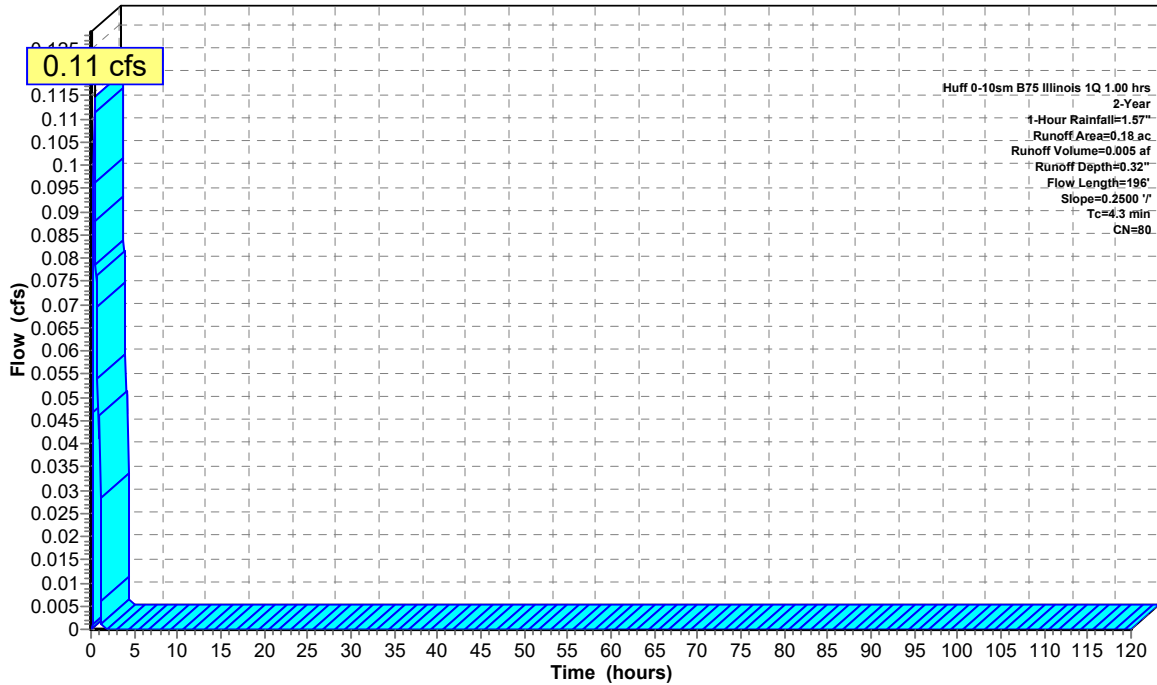
Area (ac)	CN	Description
0.18	80	>75% Grass cover, Good, HSG D
0.18		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.5	96	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.3	196	Total			

**Subcatchment N-A9: Subcat N-A9**

Hydrograph



**Summary for Subcatchment N-B1: Subcat N-B1**

Runoff = 1.90 cfs @ 0.40 hrs, Volume= 0.084 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

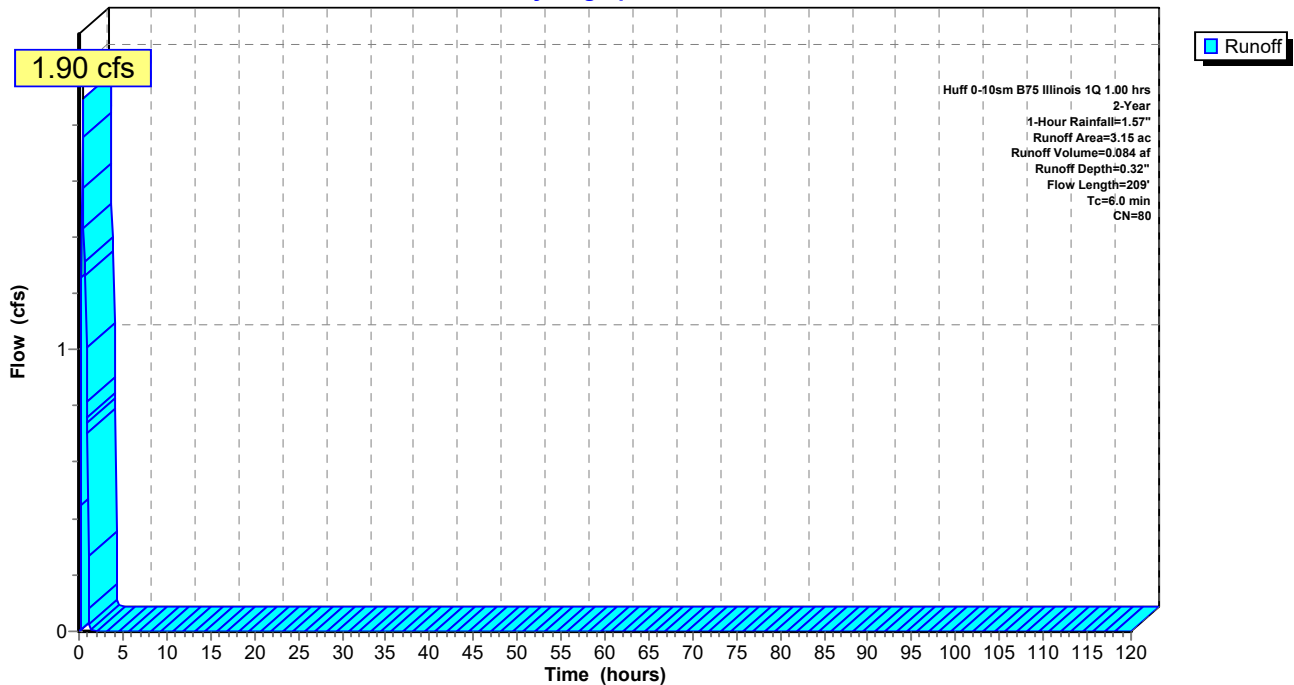
Area (ac)	CN	Description
3.15	80	>75% Grass cover, Good, HSG D
3.15		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.5	109	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.0	209	Total			

**Subcatchment N-B1: Subcat N-B1**

Hydrograph



**Summary for Subcatchment N-B10: Subcat N-B10**

Runoff = 1.64 cfs @ 0.32 hrs, Volume= 0.064 af, Depth= 0.50"

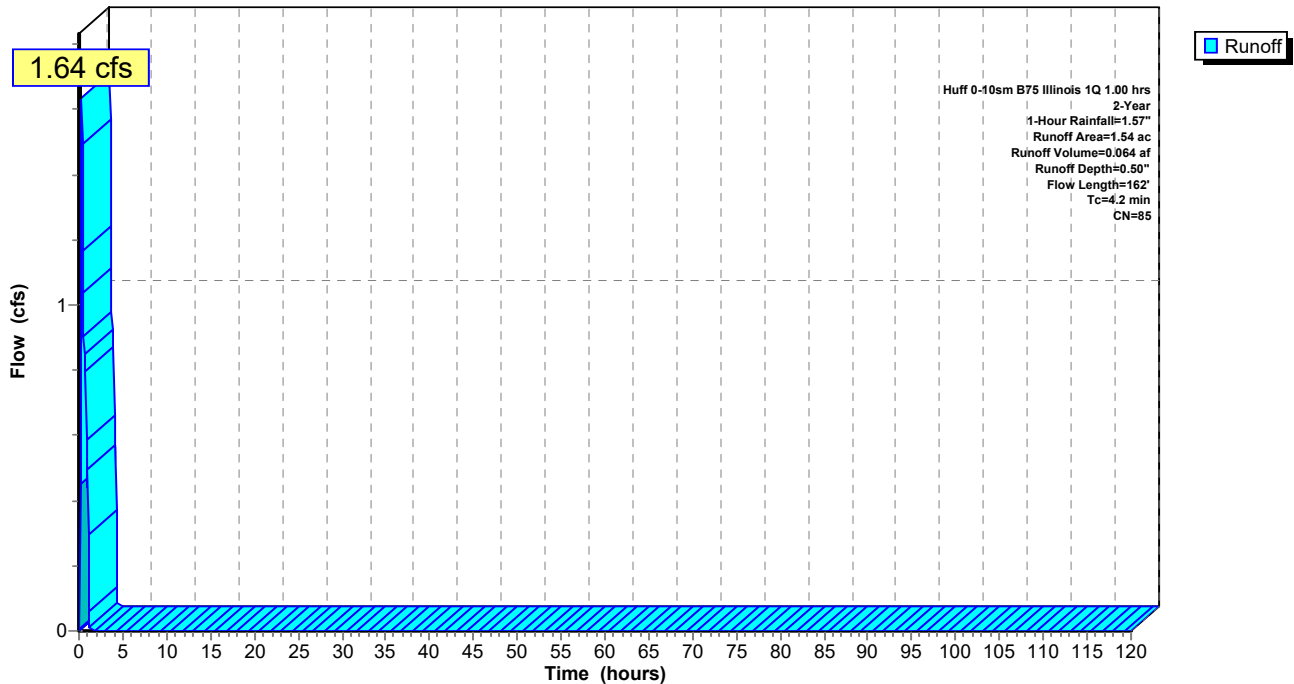
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

Area (ac)	CN	Description
0.91	80	>75% Grass cover, Good, HSG D
0.63	93	Paved roads w/open ditches, 50% imp, HSG D
1.54	85	Weighted Average
1.22		79.55% Pervious Area
0.31		20.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.4	62	0.1195	2.42		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.2	162	Total			

**Subcatchment N-B10: Subcat N-B10**

Hydrograph





**Summary for Subcatchment N-B11: Subcat N-B11**

Runoff = 0.79 cfs @ 0.36 hrs, Volume= 0.034 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

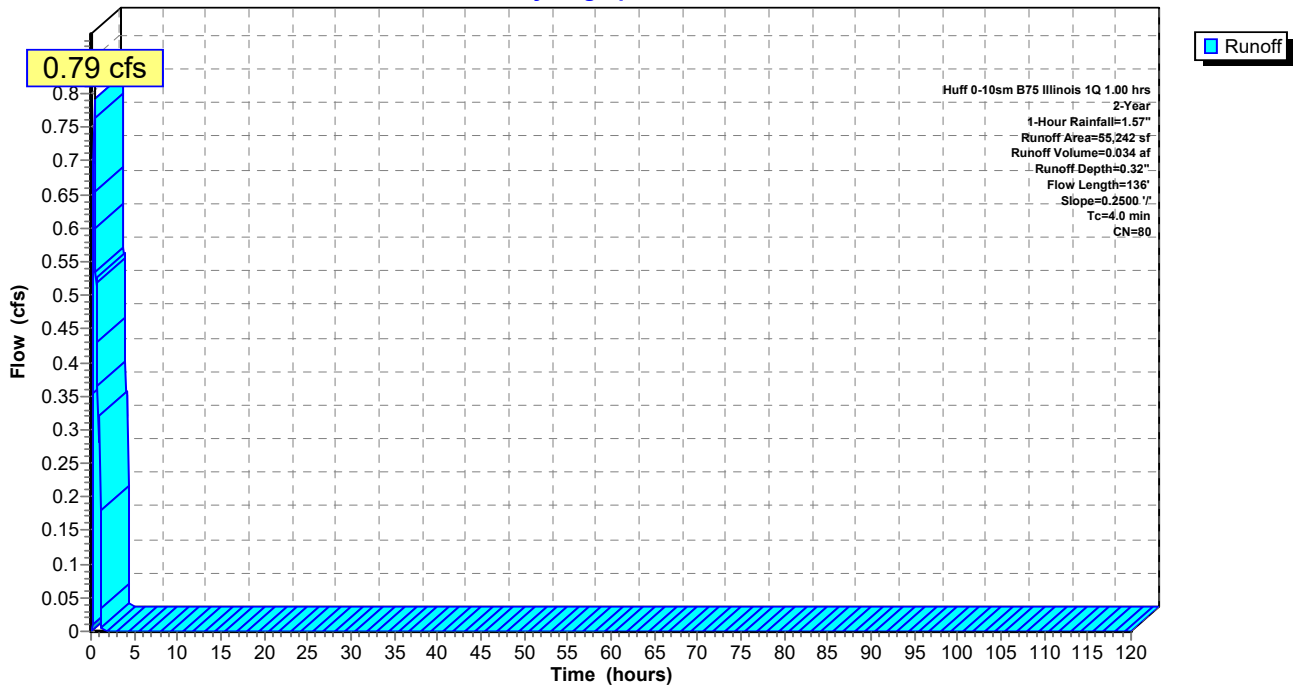
Area (sf)	CN	Description
55,242	80	>75% Grass cover, Good, HSG D
55,242		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	36	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	136	Total			

**Subcatchment N-B11: Subcat N-B11**

Hydrograph



**Summary for Subcatchment N-B12: Subcat N-B12**

Runoff = 1.31 cfs @ 0.37 hrs, Volume= 0.055 af, Depth= 0.38"

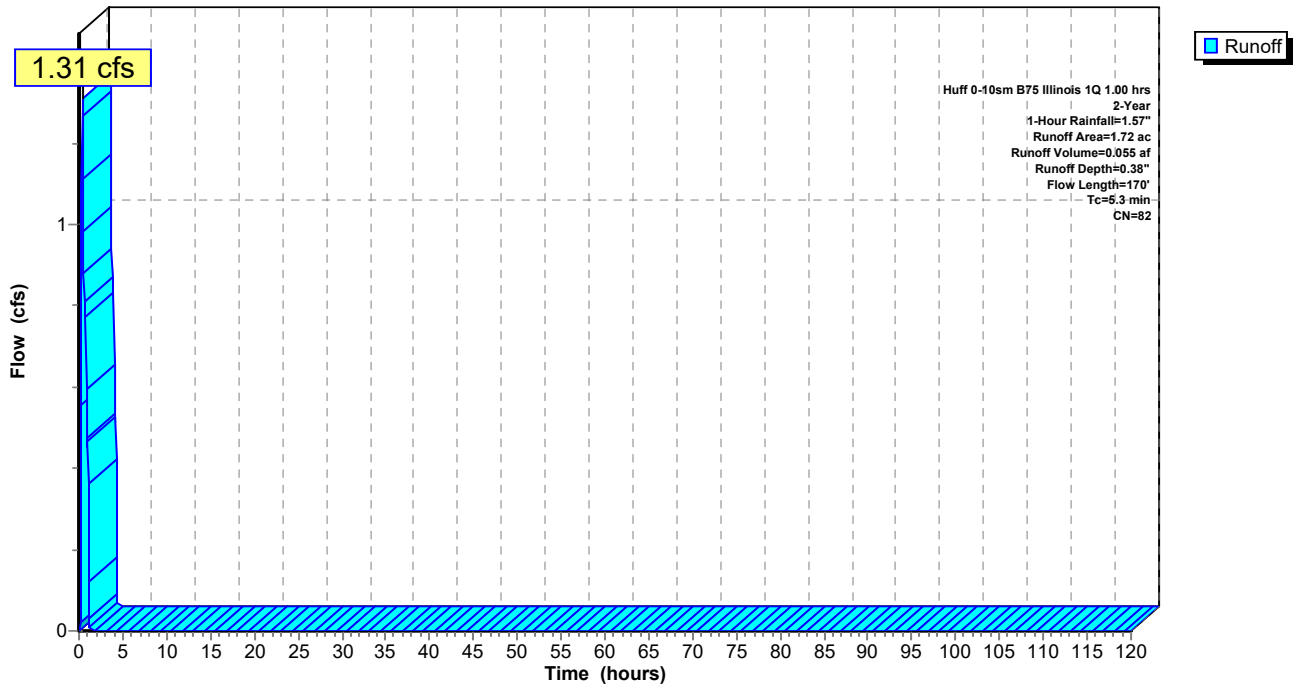
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

Area (ac)	CN	Description
1.45	80	>75% Grass cover, Good, HSG D
0.27	93	Paved roads w/open ditches, 50% imp, HSG D
1.72	82	Weighted Average
1.59		92.15% Pervious Area
0.14		7.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	100	0.1588	0.36		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.7	70	0.0608	1.73		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
5.3	170	Total			

**Subcatchment N-B12: Subcat N-B12**

Hydrograph



**Summary for Subcatchment N-B13: Subcat N-B13**

Runoff = 1.29 cfs @ 0.31 hrs, Volume= 0.054 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

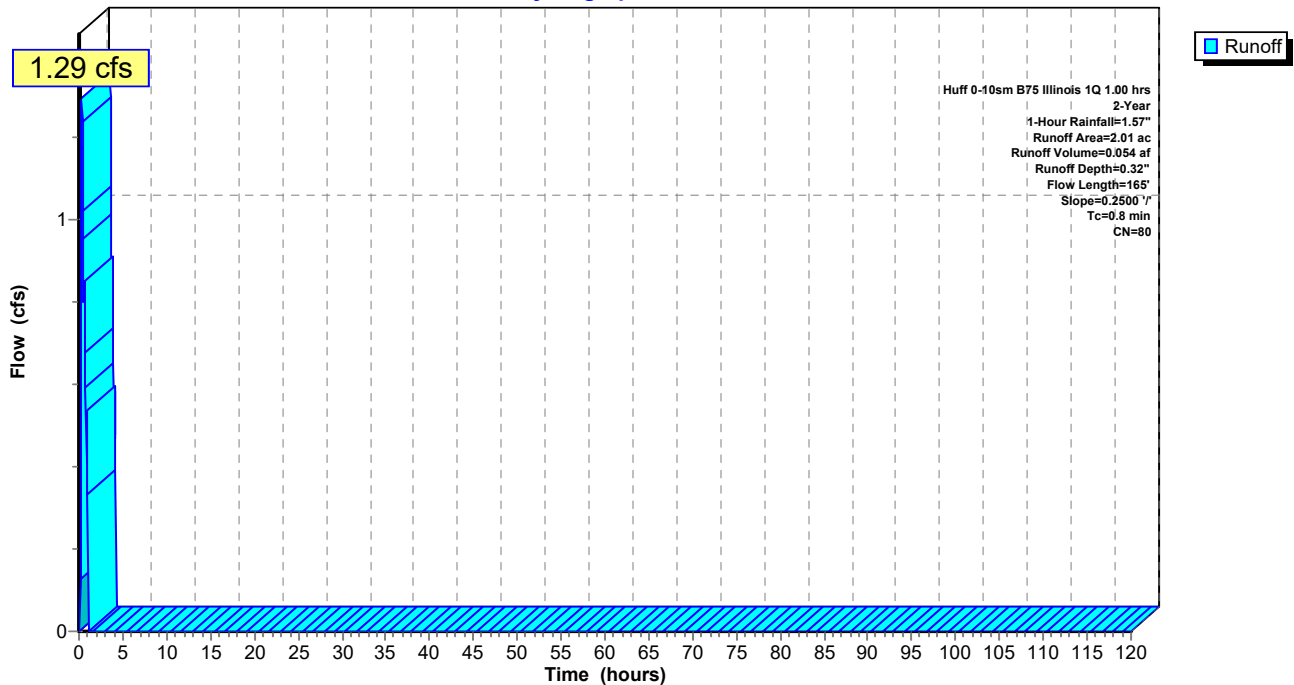
Area (ac)	CN	Description
2.01	80	>75% Grass cover, Good, HSG D
2.01		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.2500	3.53		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 2.80"
0.3	65	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.8	165	Total			

**Subcatchment N-B13: Subcat N-B13**

Hydrograph



**Summary for Subcatchment N-B14: Subcat N-B14**

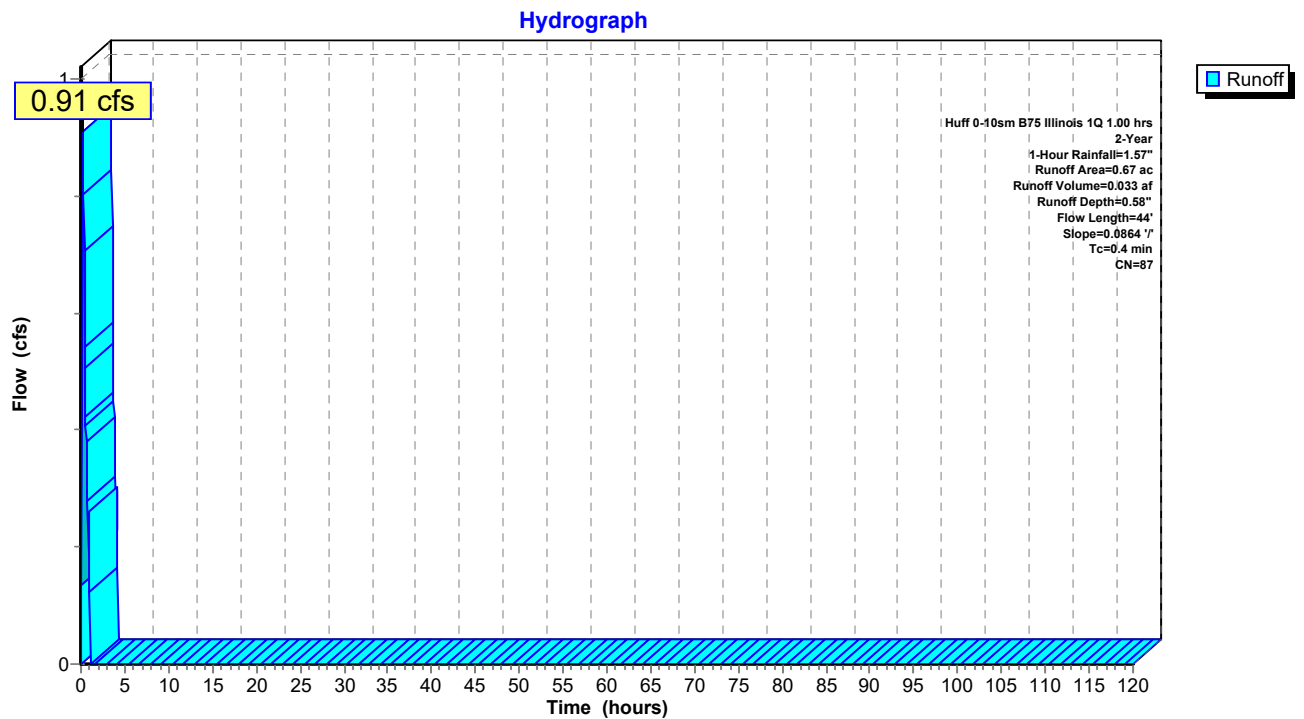
Runoff = 0.91 cfs @ 0.25 hrs, Volume= 0.033 af, Depth= 0.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

Area (ac)	CN	Description
0.29	80	>75% Grass cover, Good, HSG D
0.38	93	Paved roads w/open ditches, 50% imp, HSG D
0.67	87	Weighted Average
0.48		71.64% Pervious Area
0.19		28.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	44	0.0864	1.96		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment N-B14: Subcat N-B14**



**Summary for Subcatchment N-B15: Subcat N-B15**

Runoff = 0.03 cfs @ 0.31 hrs, Volume= 0.001 af, Depth= 0.32"

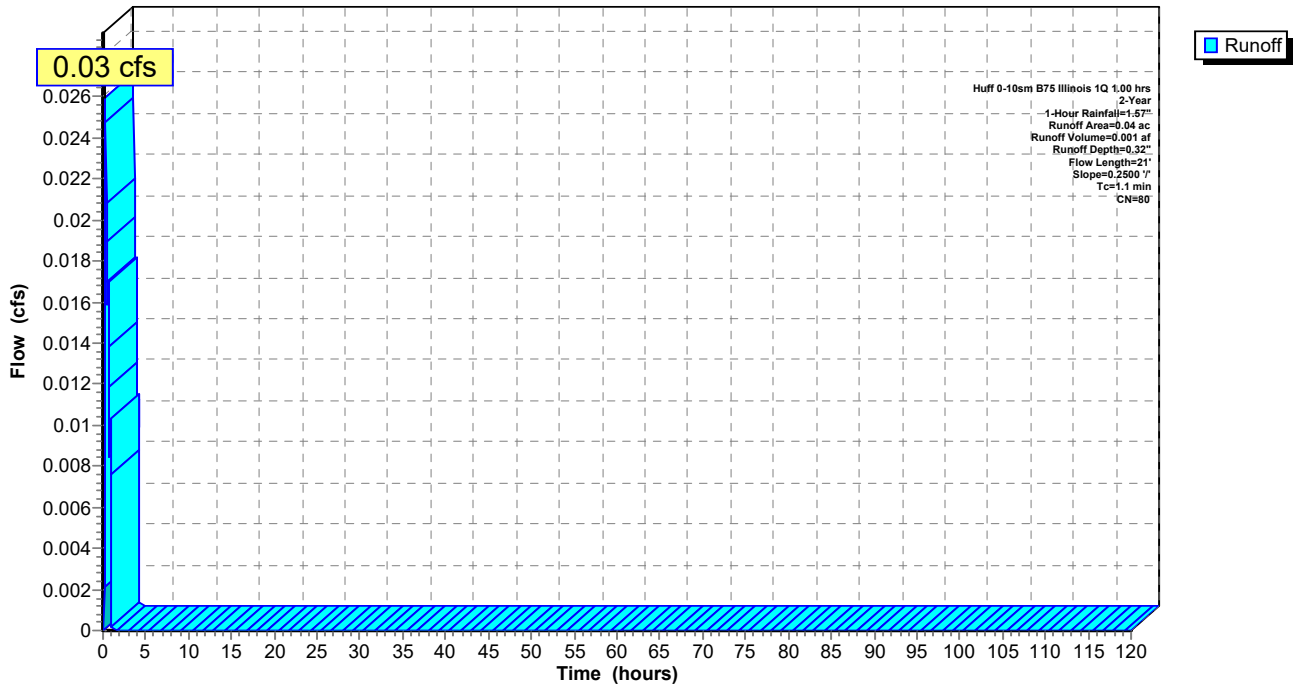
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

Area (ac)	CN	Description
0.04	80	>75% Grass cover, Good, HSG D
0.04		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	21	0.2500	0.32		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-B15: Subcat N-B15**

Hydrograph



**Summary for Subcatchment N-B16: Subcat N-B16**

Runoff = 0.11 cfs @ 0.26 hrs, Volume= 0.004 af, Depth= 0.50"

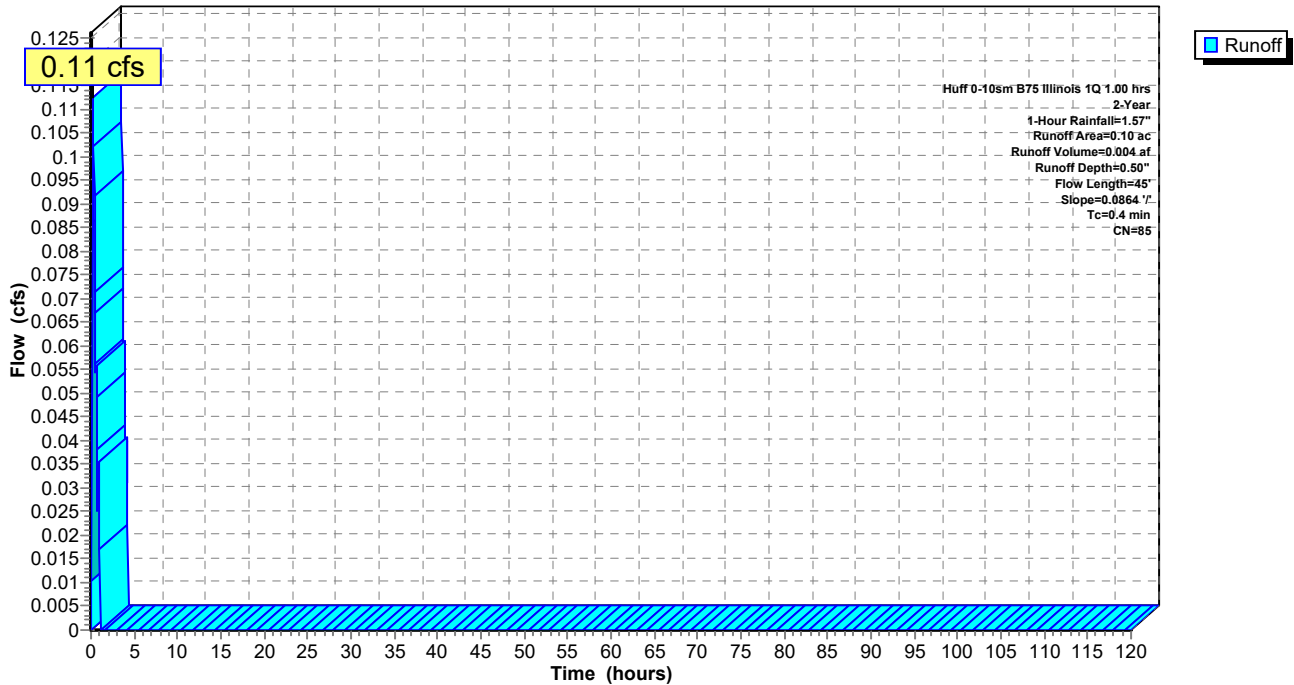
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

Area (ac)	CN	Description
0.06	80	>75% Grass cover, Good, HSG D
0.04	93	Paved roads w/open ditches, 50% imp, HSG D
0.10	85	Weighted Average
0.08		80.00% Pervious Area
0.02		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	45	0.0864	1.97		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment N-B16: Subcat N-B16**

Hydrograph



**Summary for Subcatchment N-B2: Subcat N-B2**

Runoff = 2.69 cfs @ 0.40 hrs, Volume= 0.120 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

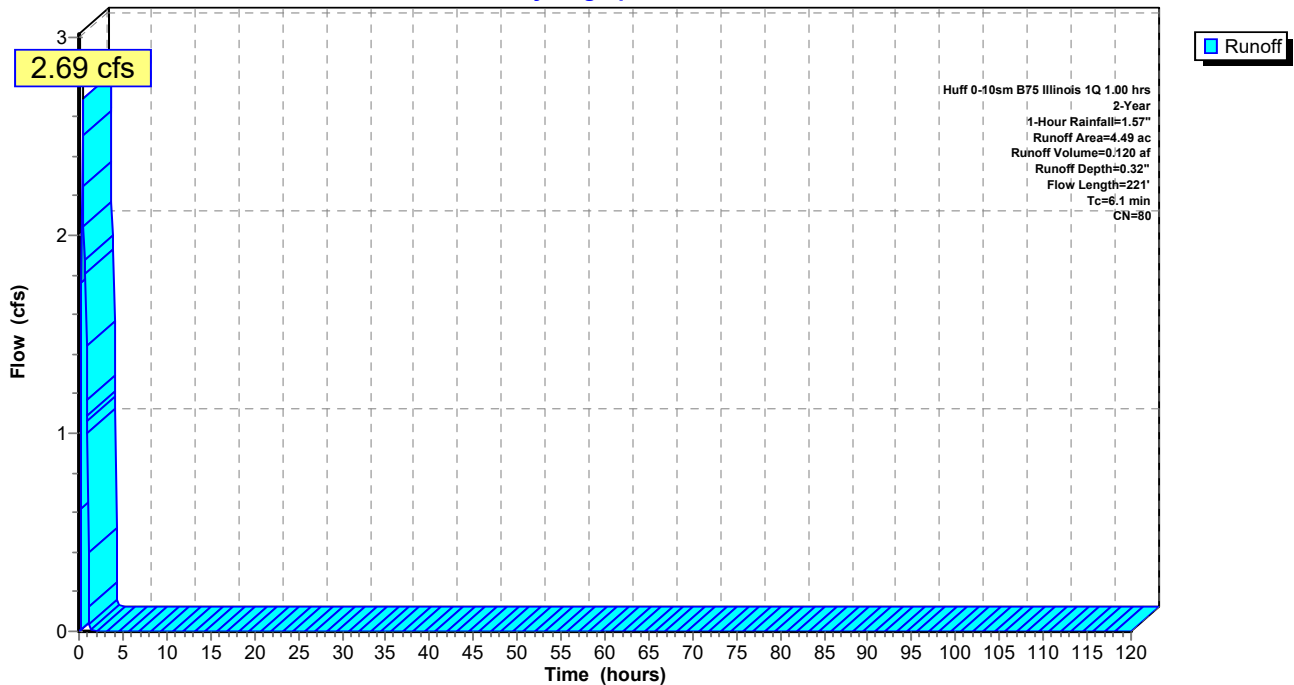
Area (ac)	CN	Description
4.49	80	>75% Grass cover, Good, HSG D
4.49		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	121	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.1	221	Total			

**Subcatchment N-B2: Subcat N-B2**

Hydrograph



**Summary for Subcatchment N-B3: Subcat N-B3**

Runoff = 2.15 cfs @ 0.36 hrs, Volume= 0.092 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

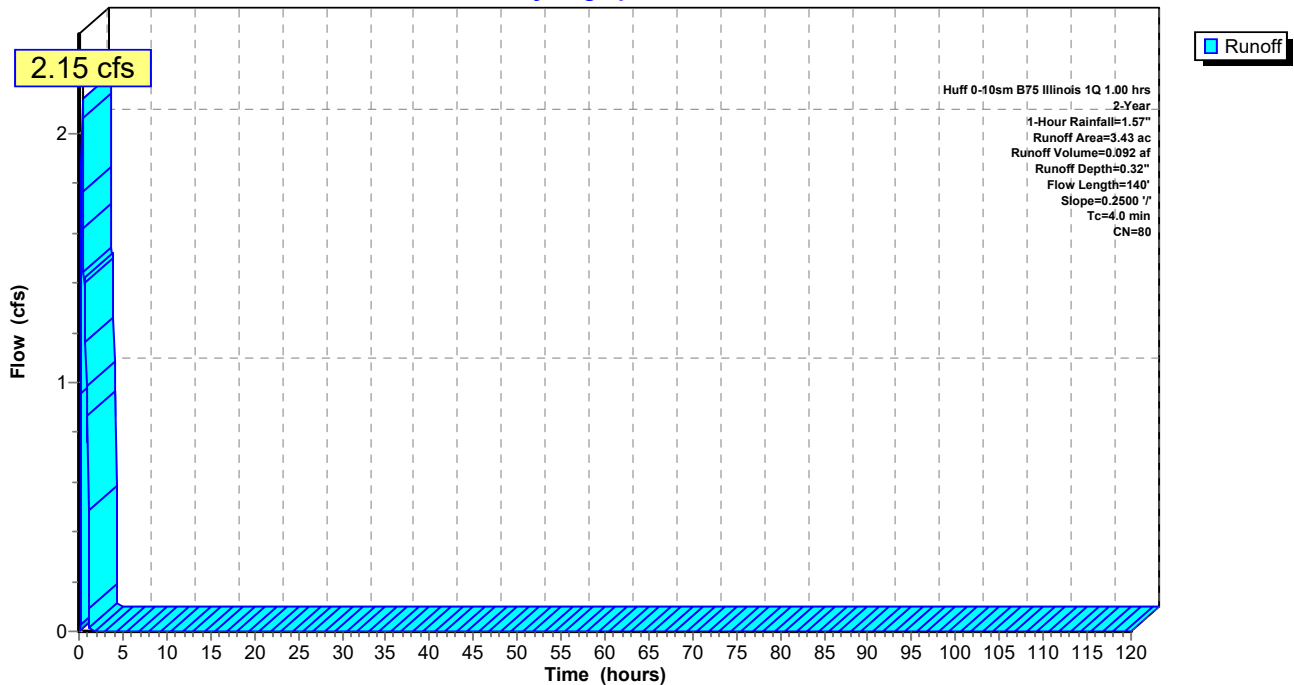
Area (ac)	CN	Description
3.43	80	>75% Grass cover, Good, HSG D
3.43		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	40	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	140	Total			

**Subcatchment N-B3: Subcat N-B3**

Hydrograph





**Summary for Subcatchment N-B4: Subcat N-B4**

Runoff = 2.38 cfs @ 0.36 hrs, Volume= 0.102 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

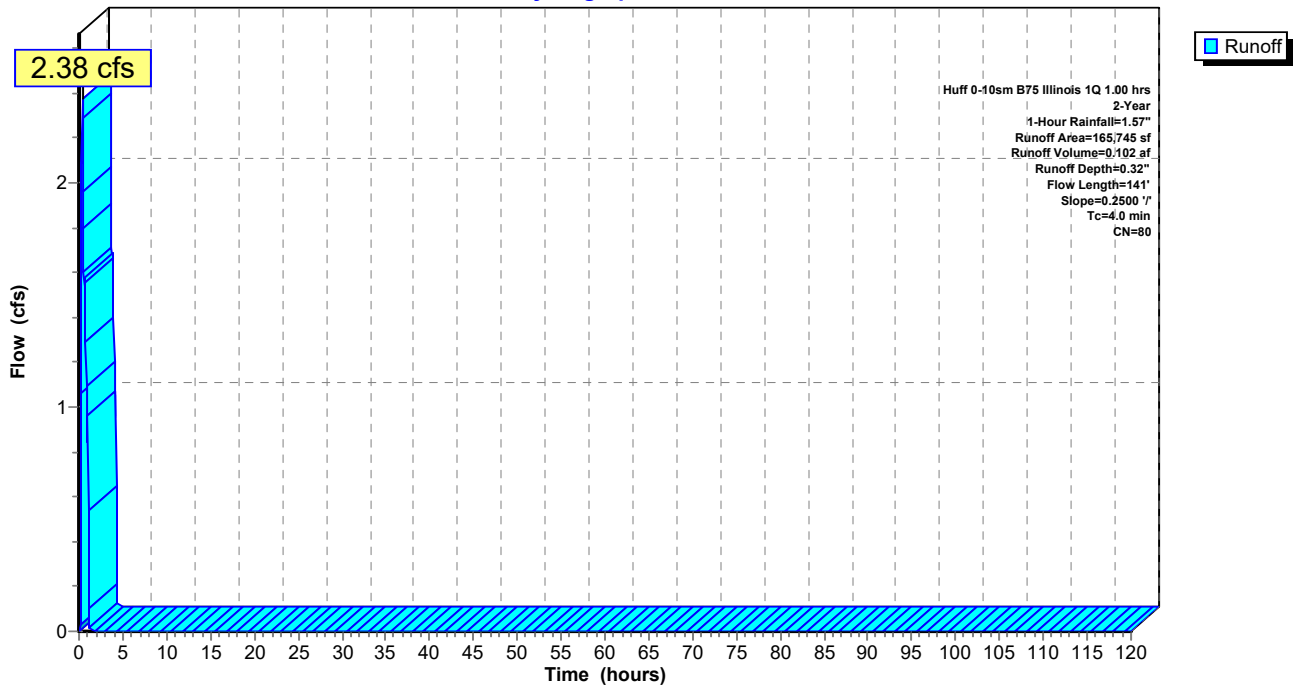
Area (sf)	CN	Description
165,745	80	>75% Grass cover, Good, HSG D
165,745		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	41	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	141	Total			

**Subcatchment N-B4: Subcat N-B4**

Hydrograph



**Summary for Subcatchment N-B5: Subcat N-B5**

Runoff = 2.81 cfs @ 0.36 hrs, Volume= 0.120 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

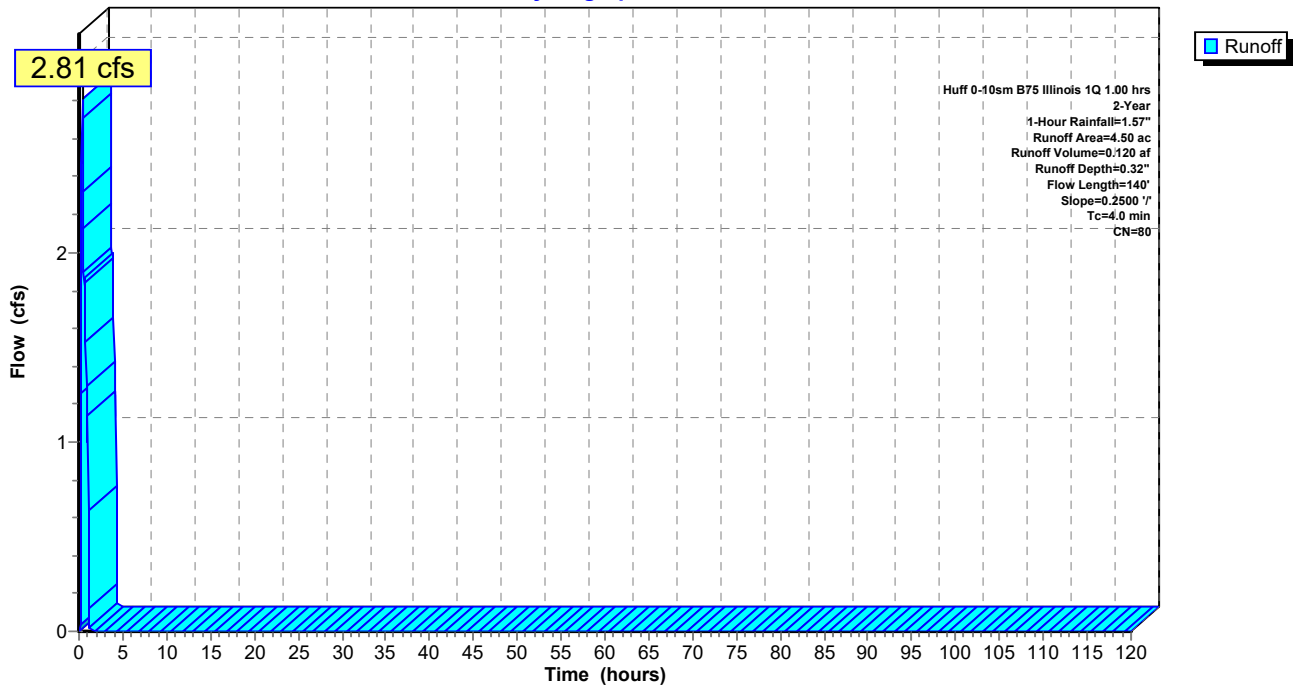
Area (ac)	CN	Description
4.50	80	>75% Grass cover, Good, HSG D
4.50		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	40	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	140	Total			

**Subcatchment N-B5: Subcat N-B5**

Hydrograph



**Summary for Subcatchment N-B6: Subcat N-B6**

Runoff = 2.68 cfs @ 0.36 hrs, Volume= 0.115 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

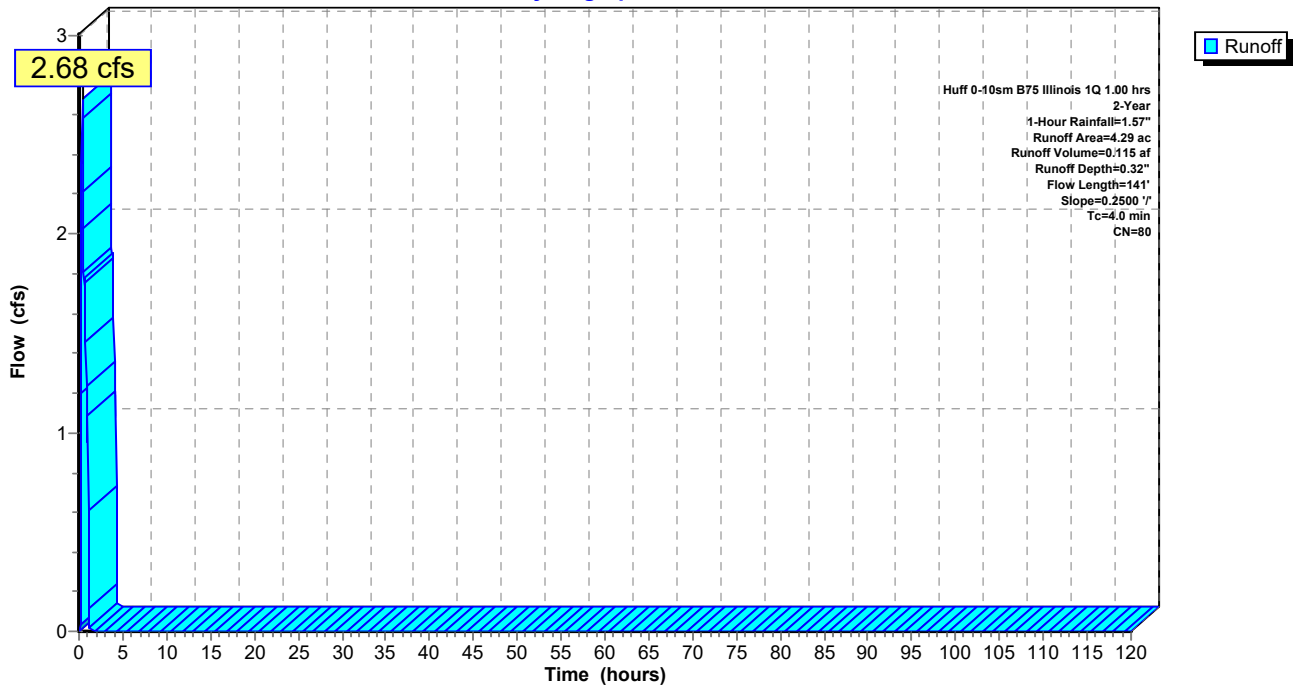
Area (ac)	CN	Description
4.29	80	>75% Grass cover, Good, HSG D
4.29		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	41	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	141	Total			

**Subcatchment N-B6: Subcat N-B6**

Hydrograph



**Summary for Subcatchment N-B7: Subcat N-B7**

Runoff = 2.48 cfs @ 0.36 hrs, Volume= 0.106 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

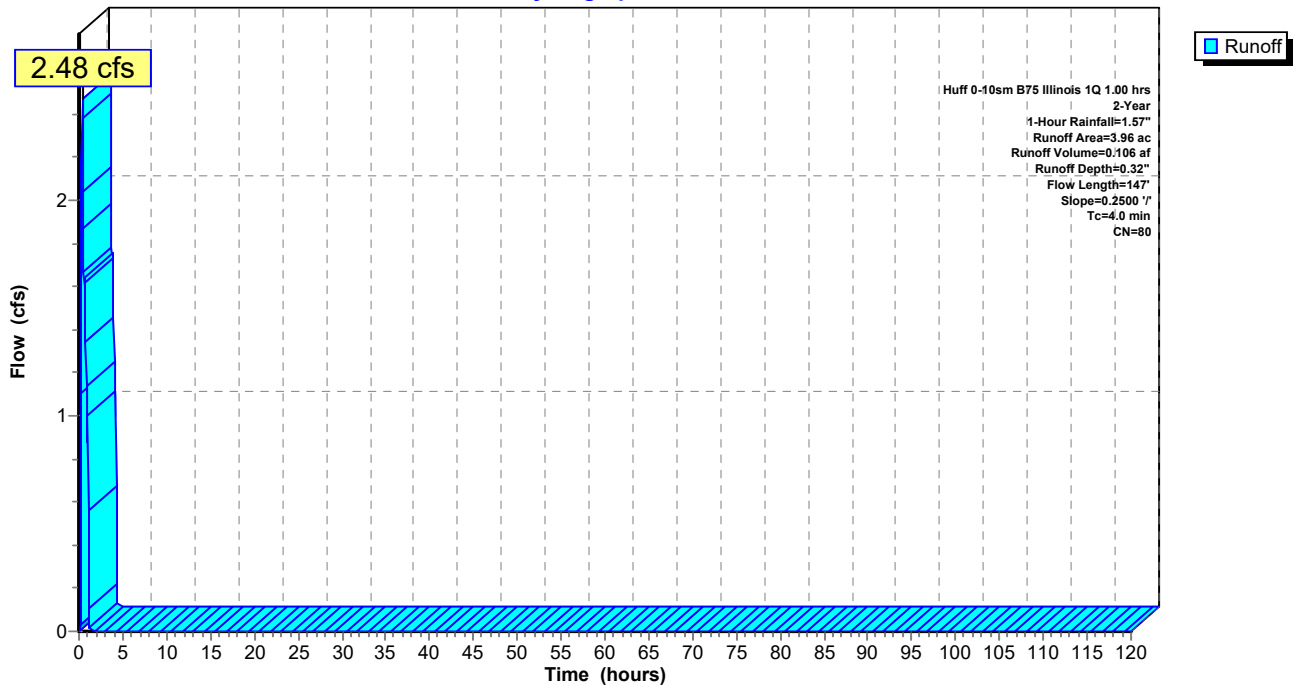
Area (ac)	CN	Description
3.96	80	>75% Grass cover, Good, HSG D
3.96		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	47	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	147	Total			

**Subcatchment N-B7: Subcat N-B7**

Hydrograph



**Summary for Subcatchment N-B8: Subcat N-B8**

Runoff = 2.21 cfs @ 0.36 hrs, Volume= 0.094 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

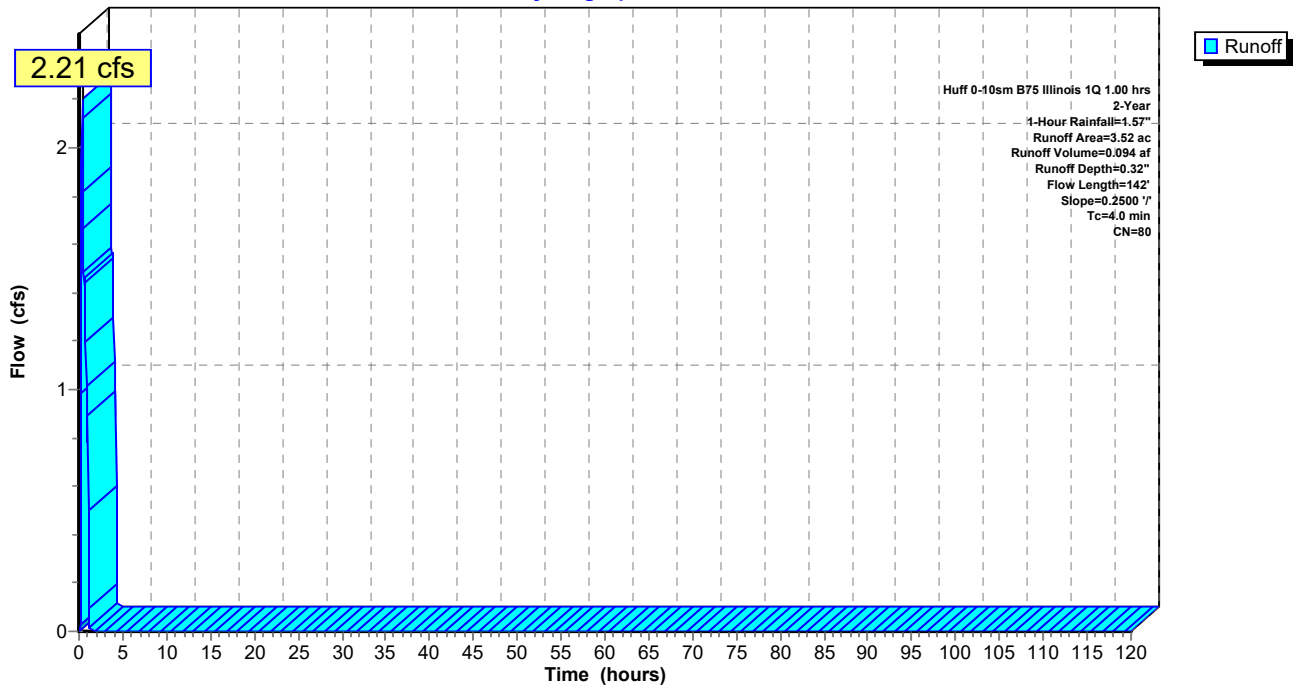
Area (ac)	CN	Description
3.52	80	>75% Grass cover, Good, HSG D
3.52		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	42	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	142	Total			

**Subcatchment N-B8: Subcat N-B8**

Hydrograph



**Summary for Subcatchment N-B9: Subcat N-B9**

Runoff = 0.73 cfs @ 0.35 hrs, Volume= 0.031 af, Depth= 0.32"

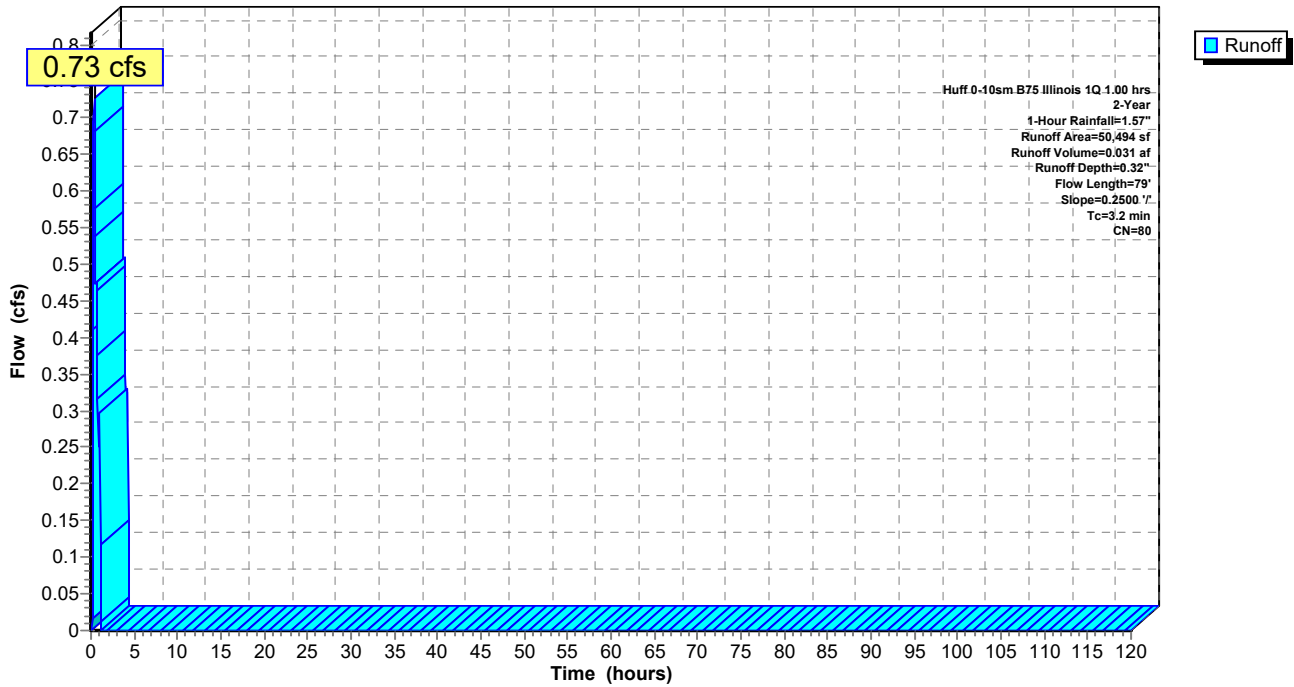
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

Area (sf)	CN	Description
50,494	80	>75% Grass cover, Good, HSG D
50,494		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	79	0.2500	0.42		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-B9: Subcat N-B9**

Hydrograph



**Summary for Subcatchment N-C1: Subcat N-C1**

Runoff = 4.17 cfs @ 0.40 hrs, Volume= 0.187 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

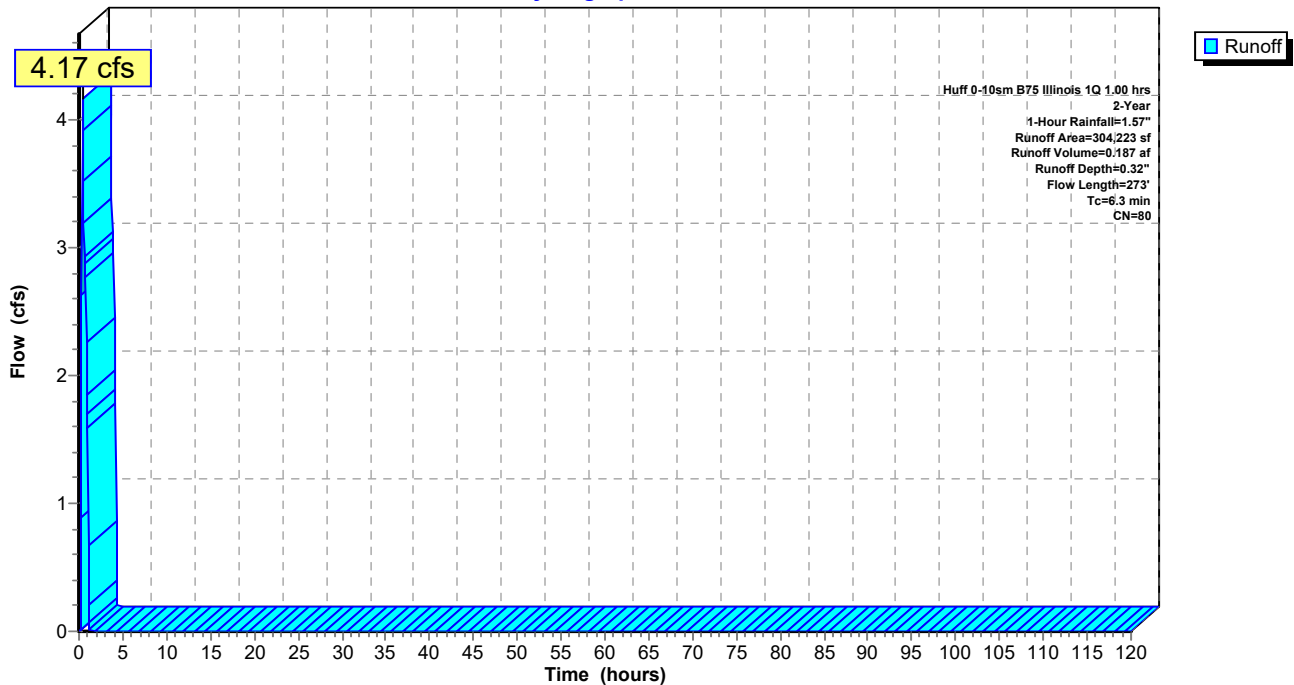
Area (sf)	CN	Description
304,223	80	>75% Grass cover, Good, HSG D
304,223		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.8	173	0.2418	3.44		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.3	273	Total			

**Subcatchment N-C1: Subcat N-C1**

Hydrograph



**Summary for Subcatchment N-C2: Subcat N-C2**

Runoff = 2.63 cfs @ 0.36 hrs, Volume= 0.112 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

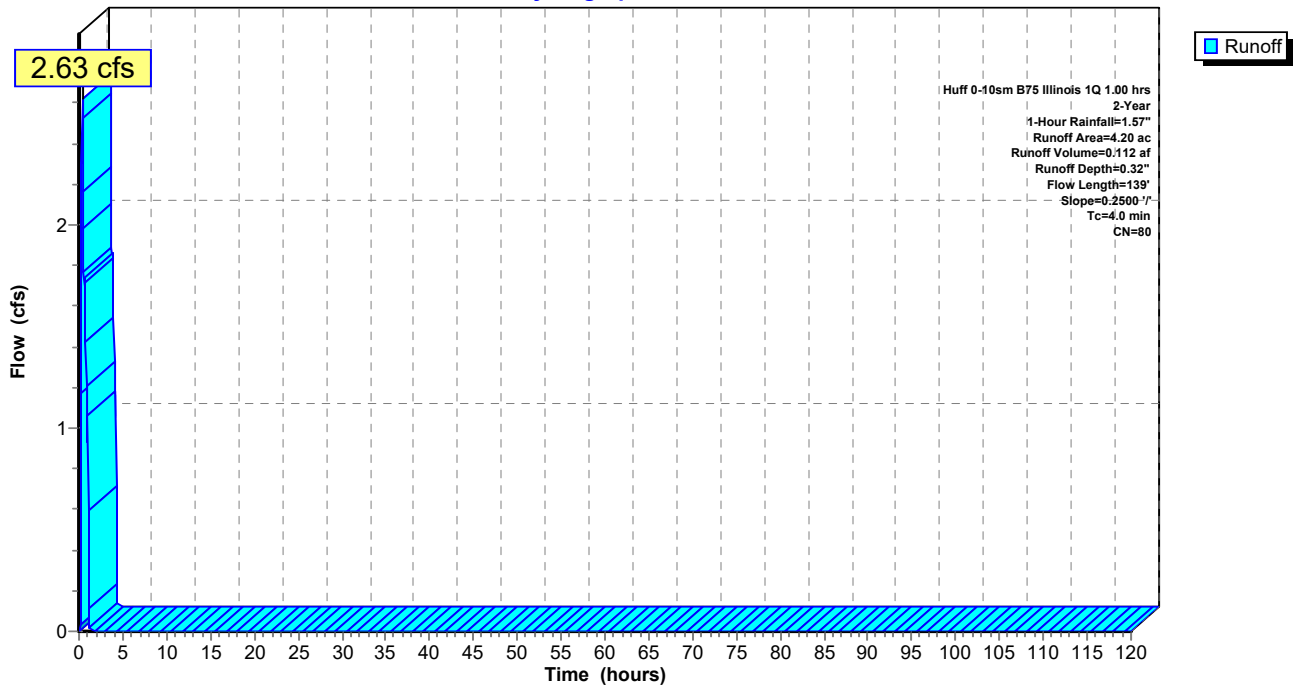
Area (ac)	CN	Description
4.20	80	>75% Grass cover, Good, HSG D
4.20		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	39	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	139	Total			

**Subcatchment N-C2: Subcat N-C2**

Hydrograph





**Summary for Subcatchment N-C3: Subcat N-C3**

Runoff = 2.64 cfs @ 0.36 hrs, Volume= 0.113 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

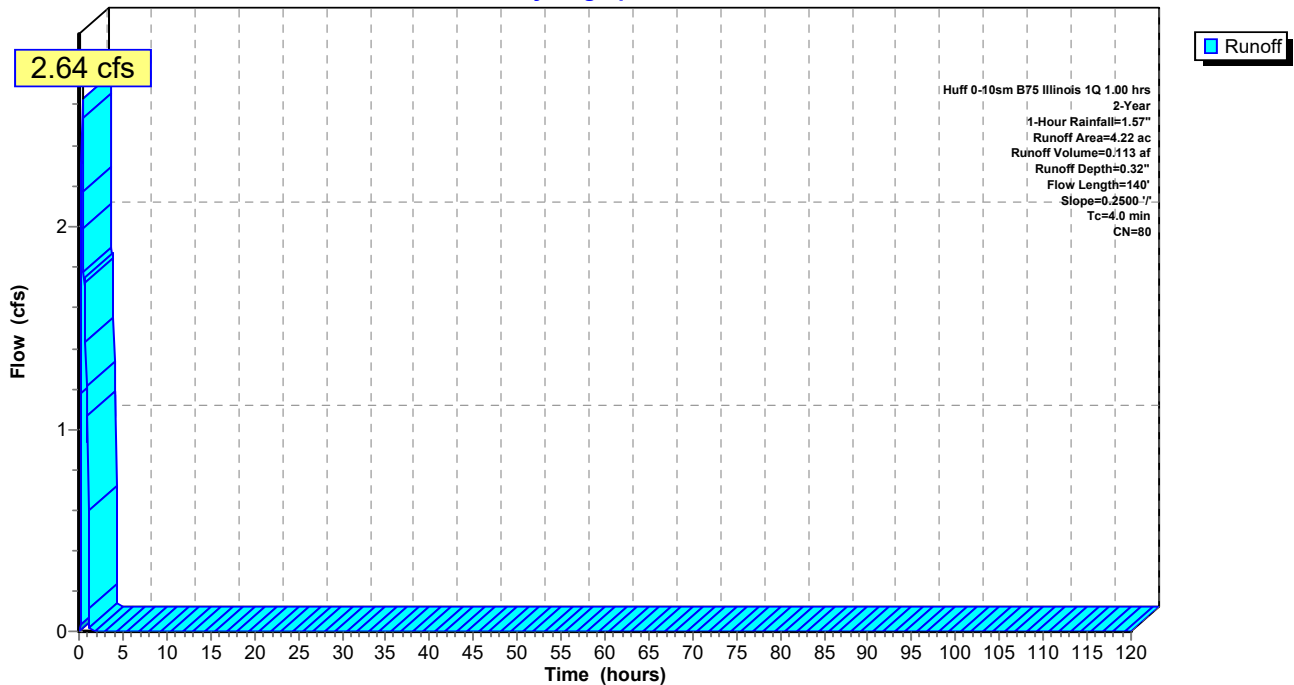
Area (ac)	CN	Description
4.22	80	>75% Grass cover, Good, HSG D
4.22		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	40	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	140	Total			

**Subcatchment N-C3: Subcat N-C3**

Hydrograph



**Summary for Subcatchment N-C4: Subcat N-C4**

Runoff = 2.20 cfs @ 0.36 hrs, Volume= 0.094 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

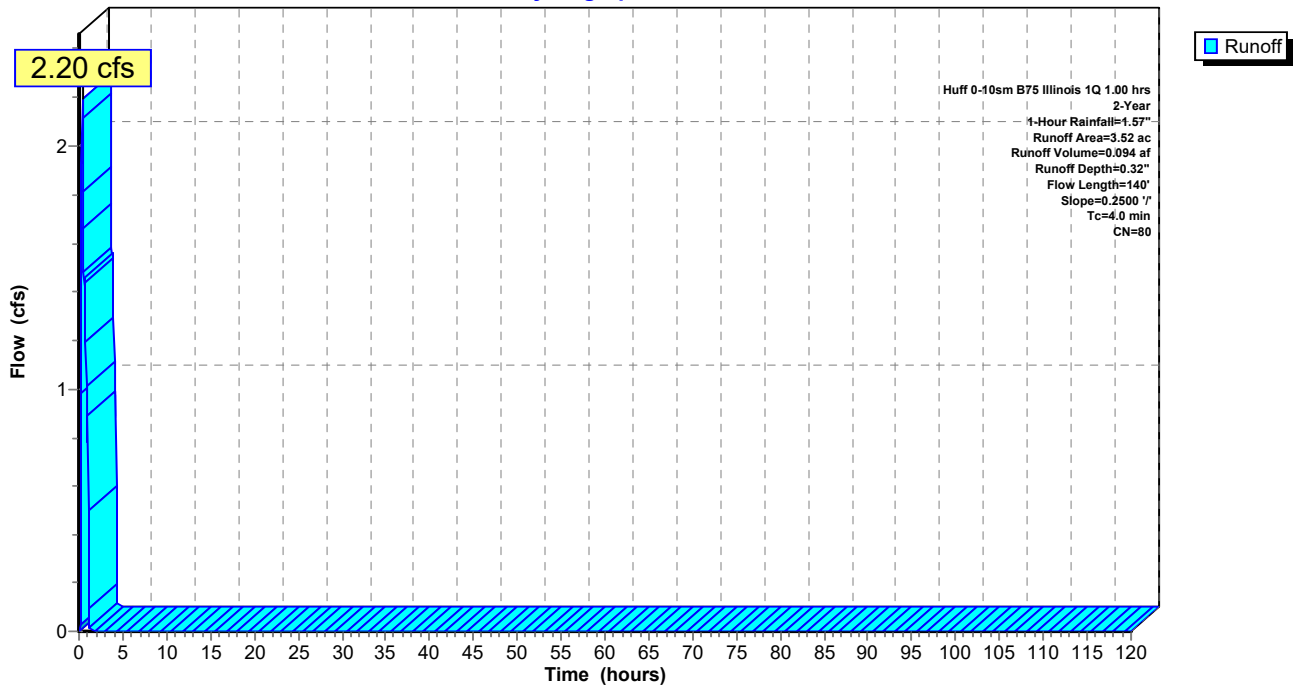
Area (ac)	CN	Description
3.52	80	>75% Grass cover, Good, HSG D
3.52		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	40	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	140	Total			

**Subcatchment N-C4: Subcat N-C4**

Hydrograph



**Summary for Subcatchment N-C5: Subcat N-C5**

Runoff = 0.47 cfs @ 0.37 hrs, Volume= 0.020 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

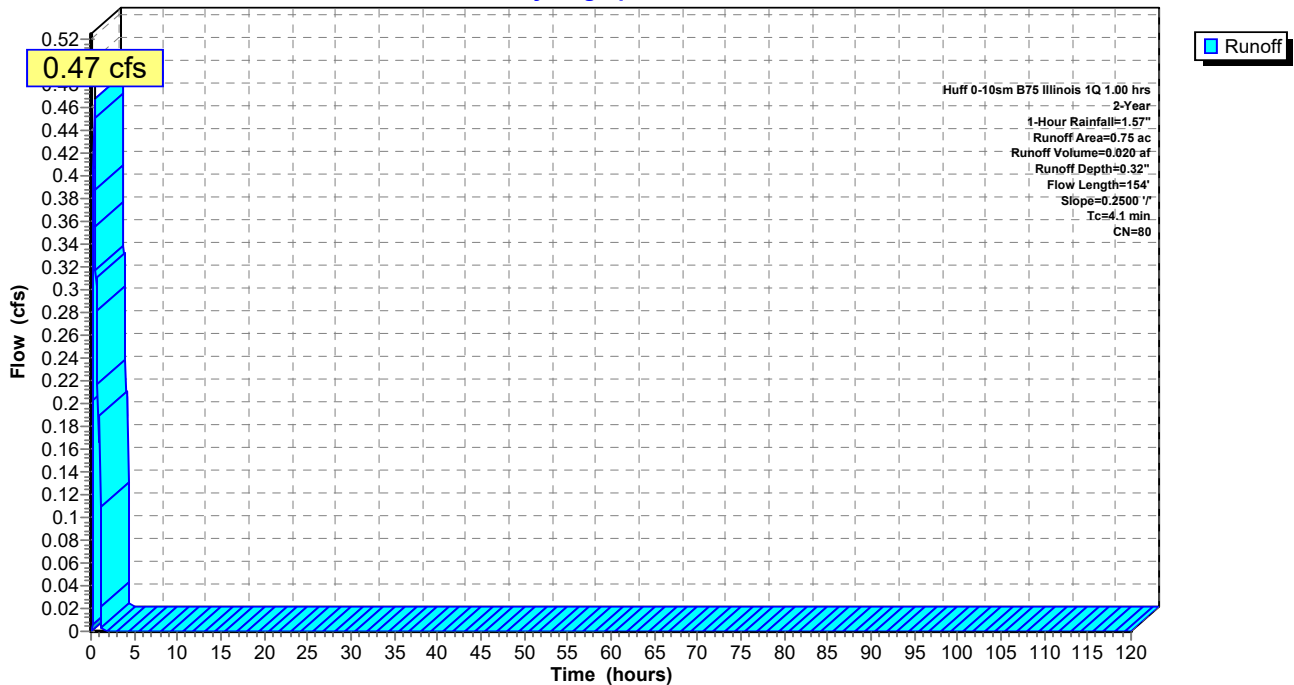
Area (ac)	CN	Description
0.75	80	>75% Grass cover, Good, HSG D
0.75		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.3	54	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	154	Total			

**Subcatchment N-C5: Subcat N-C5**

Hydrograph



**Summary for Subcatchment N-C6: Subcat N-C6**

Runoff = 0.41 cfs @ 0.72 hrs, Volume= 0.026 af, Depth= 0.42"

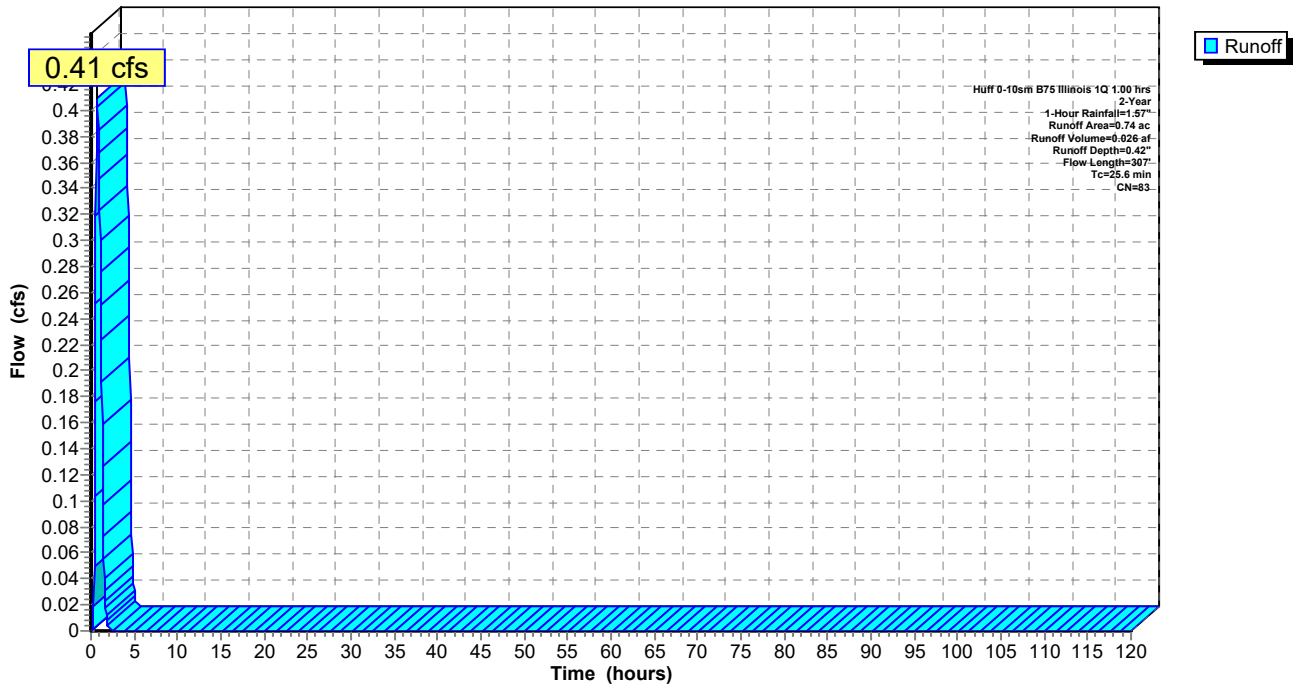
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

Area (ac)	CN	Description
0.59	80	>75% Grass cover, Good, HSG D
0.14	93	Paved roads w/open ditches, 50% imp, HSG D
0.74	83	Weighted Average
0.67		90.37% Pervious Area
0.07		9.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.0	100	0.0200	0.07		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.80"
2.6	207	0.0352	1.31		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
25.6	307	Total			

**Subcatchment N-C6: Subcat N-C6**

Hydrograph



**Summary for Subcatchment N-C7: Subcat N-C7**

Runoff = 0.73 cfs @ 0.34 hrs, Volume= 0.031 af, Depth= 0.32"

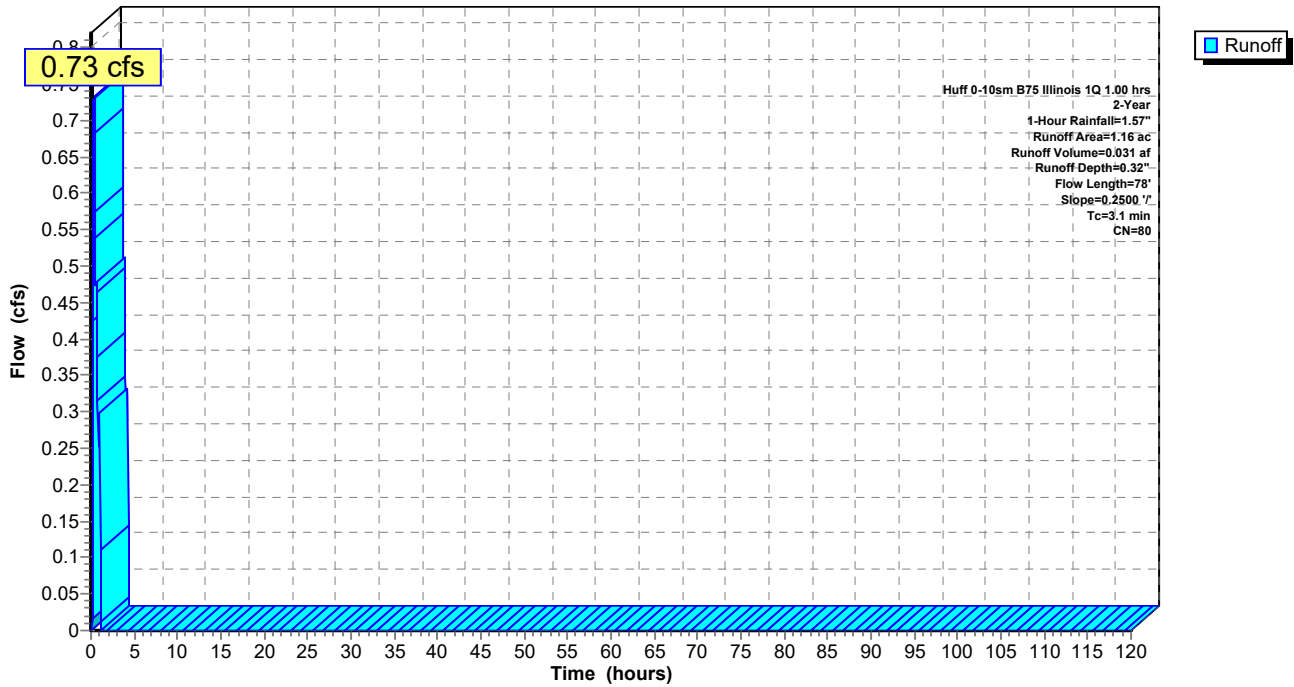
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

Area (ac)	CN	Description
1.16	80	>75% Grass cover, Good, HSG D
1.16		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	78	0.2500	0.42		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-C7: Subcat N-C7**

Hydrograph



**Summary for Subcatchment N-C8: Subcat N-C8**

Runoff = 1.08 cfs @ 0.66 hrs, Volume= 0.065 af, Depth= 0.50"

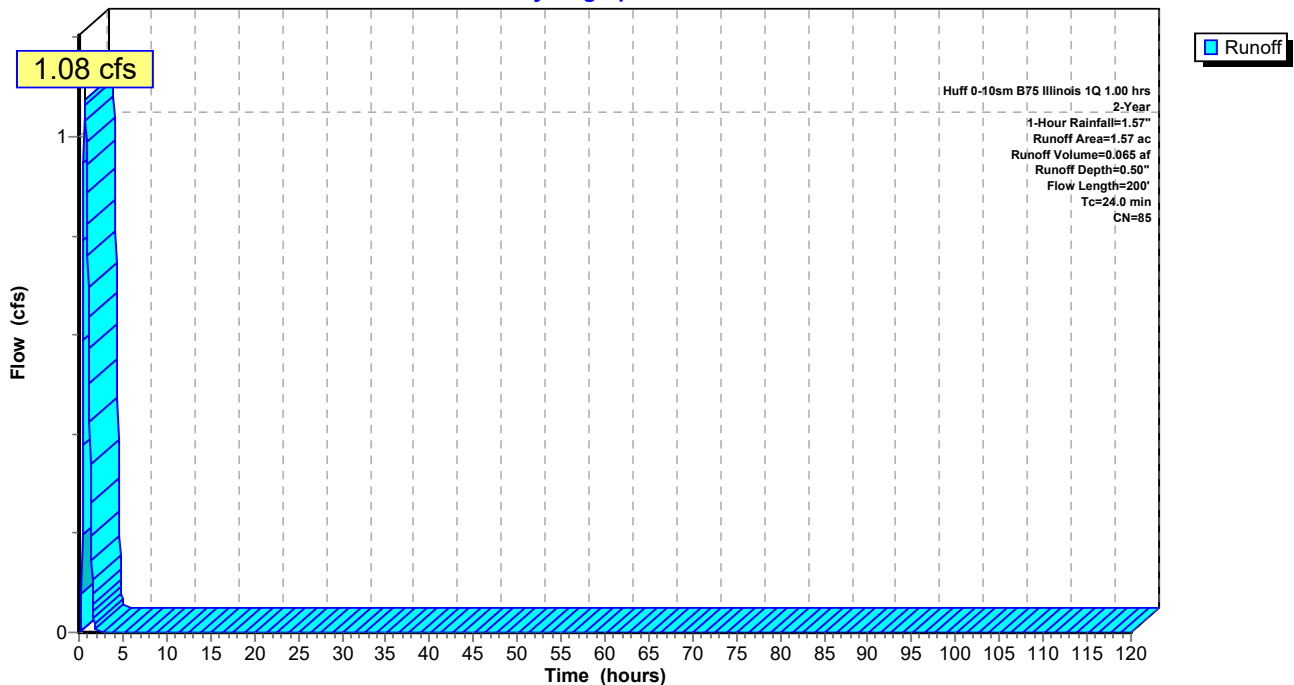
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

Area (ac)	CN	Description
0.65	80	>75% Grass cover, Good, HSG D
0.63	93	Paved roads w/open ditches, 50% imp, HSG D
0.30	79	Woods/grass comb., Good, HSG D
1.57	85	Weighted Average
1.26		80.08% Pervious Area
0.31		19.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.0	100	0.0200	0.07		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.80"
1.0	100	0.0611	1.73		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
24.0	200	Total			

**Subcatchment N-C8: Subcat N-C8**

Hydrograph



**Summary for Subcatchment N-D1: Subcat N-D1**

Runoff = 0.07 cfs @ 0.34 hrs, Volume= 0.003 af, Depth= 0.32"

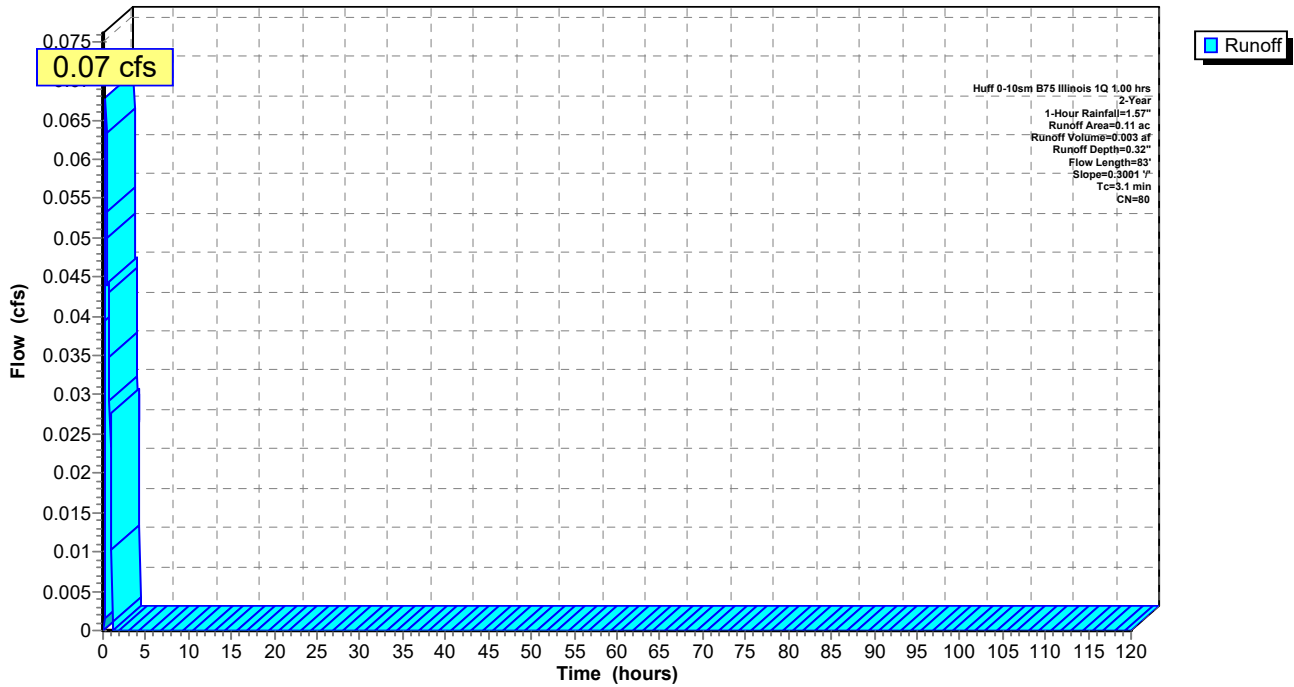
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

Area (ac)	CN	Description
0.11	80	>75% Grass cover, Good, HSG D
0.11		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	83	0.3001	0.45		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-D1: Subcat N-D1**

Hydrograph



**Summary for Subcatchment N-D2: Subcat N-D2**

Runoff = 2.95 cfs @ 0.35 hrs, Volume= 0.126 af, Depth= 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

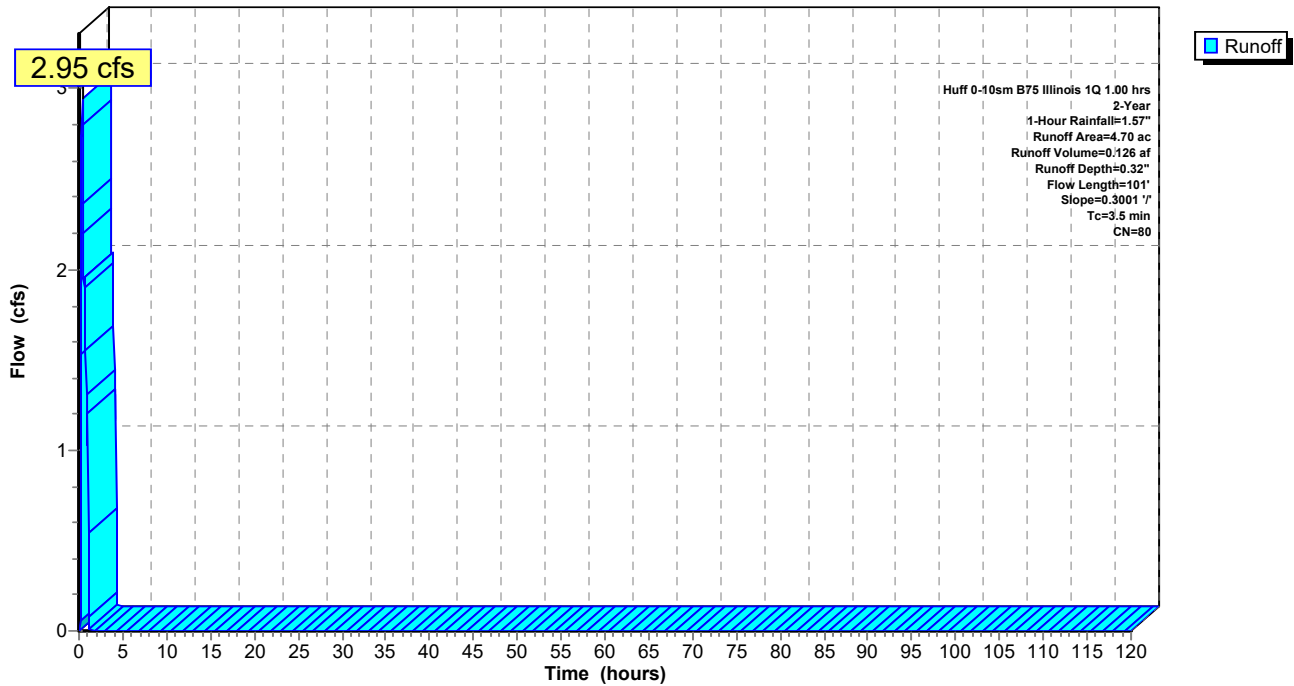
Area (ac)	CN	Description
4.54	80	>75% Grass cover, Good, HSG D
0.16	93	Paved roads w/open ditches, 50% imp, HSG D
4.70	80	Weighted Average
4.62		98.26% Pervious Area
0.08		1.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	100	0.3001	0.47		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.0	1	0.3001	3.83		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.5	101	Total			

**Subcatchment N-D2: Subcat N-D2**

Hydrograph





**Summary for Subcatchment N-E1: Subcat N-E1**

Runoff = 5.88 cfs @ 0.32 hrs, Volume= 0.239 af, Depth= 0.32"

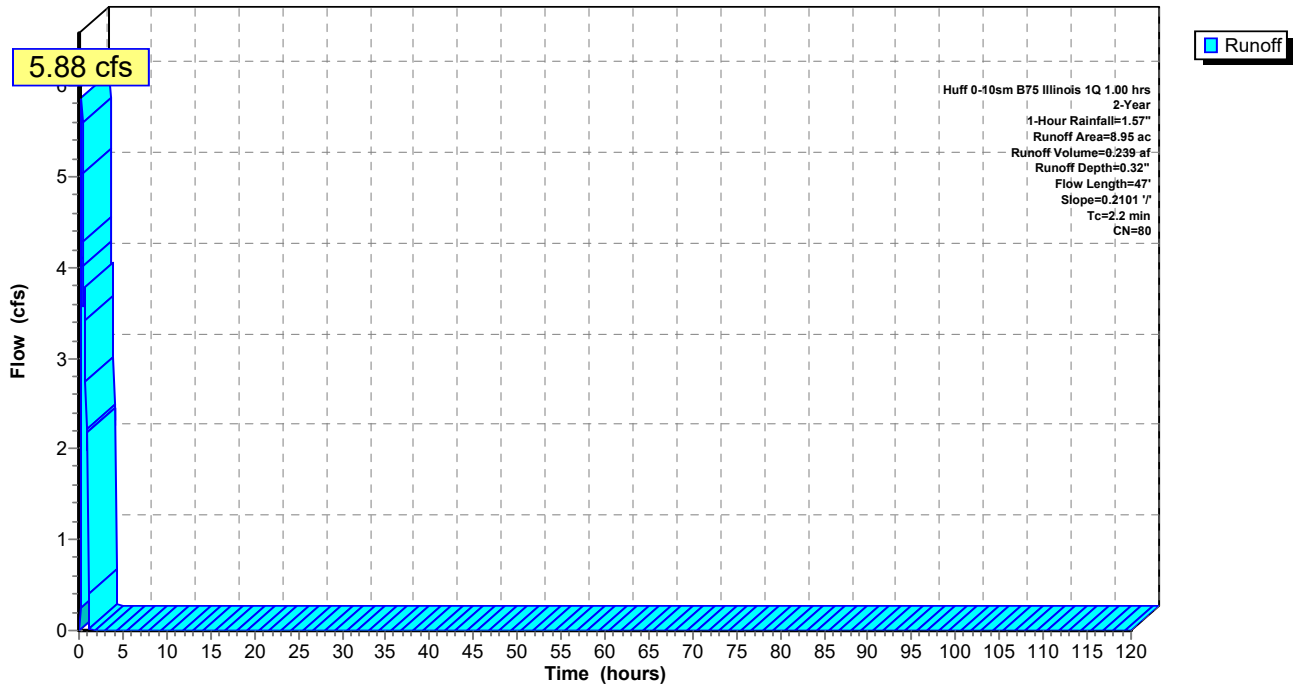
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 2-Year, 1-Hour Rainfall=1.57"

Area (ac)	CN	Description
8.95	80	>75% Grass cover, Good, HSG D
8.95		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	47	0.2101	0.35		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-E1: Subcat N-E1**

Hydrograph



### Summary for Reach Cu-1: Culvert 1

Inflow Area = 90.82 ac, 2.38% Impervious, Inflow Depth = 0.34" for 2-Year, 1-Hour event  
 Inflow = 28.52 cfs @ 1.21 hrs, Volume= 2.591 af  
 Outflow = 28.49 cfs @ 1.22 hrs, Volume= 2.591 af, Atten= 0%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.38 fps, Min. Travel Time= 0.4 min  
 Avg. Velocity = 1.07 fps, Avg. Travel Time= 1.8 min

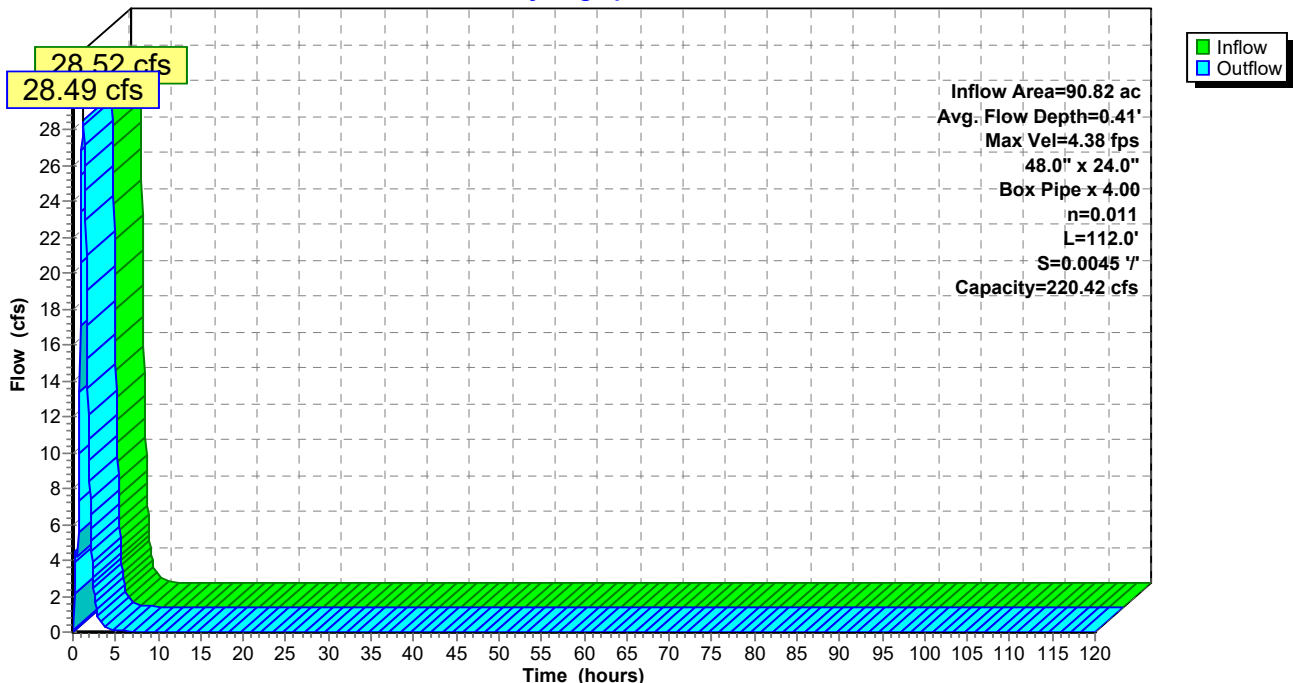
Peak Storage= 729 cf @ 1.21 hrs  
 Average Depth at Peak Storage= 0.41'  
 Bank-Full Depth= 2.00' Flow Area= 32.0 sf, Capacity= 220.42 cfs

A factor of 4.00 has been applied to the storage and discharge capacity  
 48.0" W x 24.0" H Box Pipe  
 n= 0.011 Concrete pipe, straight & clean  
 Length= 112.0' Slope= 0.0045 1/100'  
 Inlet Invert= 737.00', Outlet Invert= 736.50'



### Reach Cu-1: Culvert 1

Hydrograph



**Summary for Reach Cu-2: Culvert 2**

Inflow Area = 39.65 ac, 1.66% Impervious, Inflow Depth = 0.34" for 2-Year, 1-Hour event  
 Inflow = 16.37 cfs @ 0.79 hrs, Volume= 1.108 af  
 Outflow = 16.36 cfs @ 0.80 hrs, Volume= 1.108 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 5.86 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 1.53 fps, Avg. Travel Time= 0.8 min

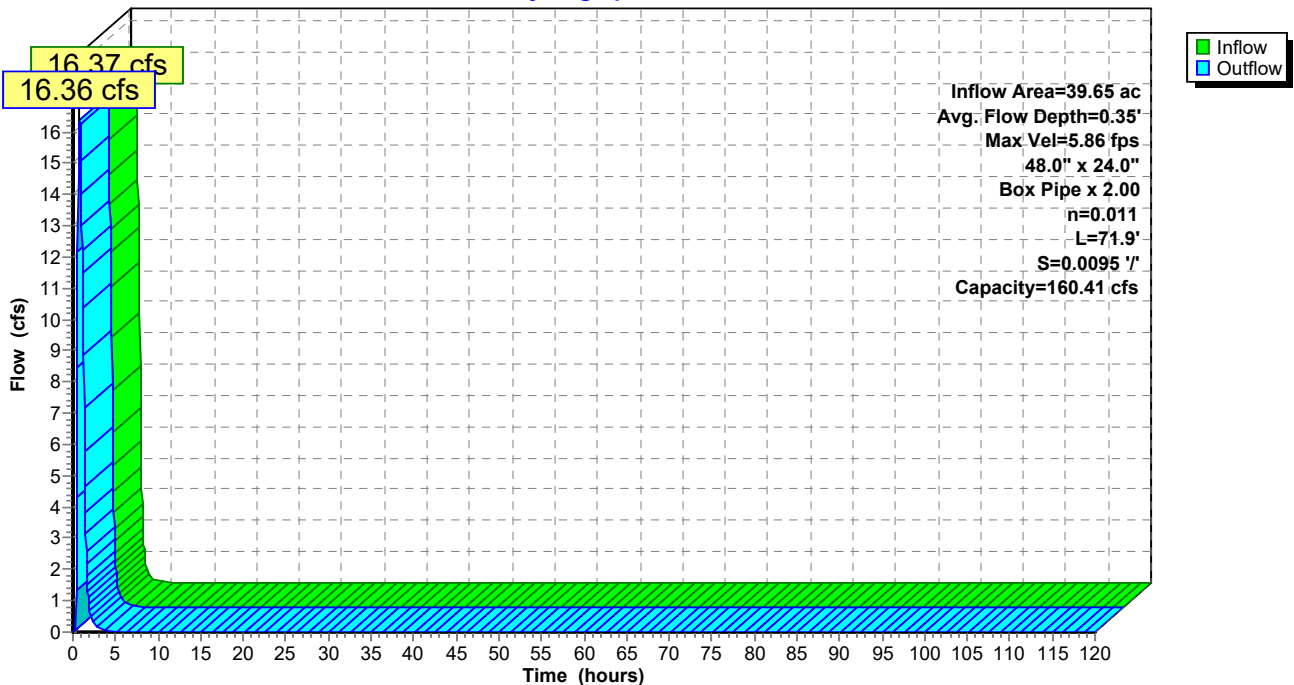
Peak Storage= 201 cf @ 0.80 hrs  
 Average Depth at Peak Storage= 0.35'  
 Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 160.41 cfs

A factor of 2.00 has been applied to the storage and discharge capacity  
 48.0" W x 24.0" H Box Pipe  
 n= 0.011 Concrete pipe, straight & clean  
 Length= 71.9' Slope= 0.0095 '/  
 Inlet Invert= 737.18', Outlet Invert= 736.50'



**Reach Cu-2: Culvert 2**

Hydrograph



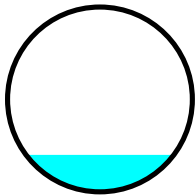
### Summary for Reach Cu-3: Culvert 3

Inflow Area = 43.19 ac, 1.69% Impervious, Inflow Depth = 0.34" for 2-Year, 1-Hour event  
 Inflow = 17.09 cfs @ 0.85 hrs, Volume= 1.209 af  
 Outflow = 17.07 cfs @ 0.86 hrs, Volume= 1.209 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 5.70 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 1.54 fps, Avg. Travel Time= 1.0 min

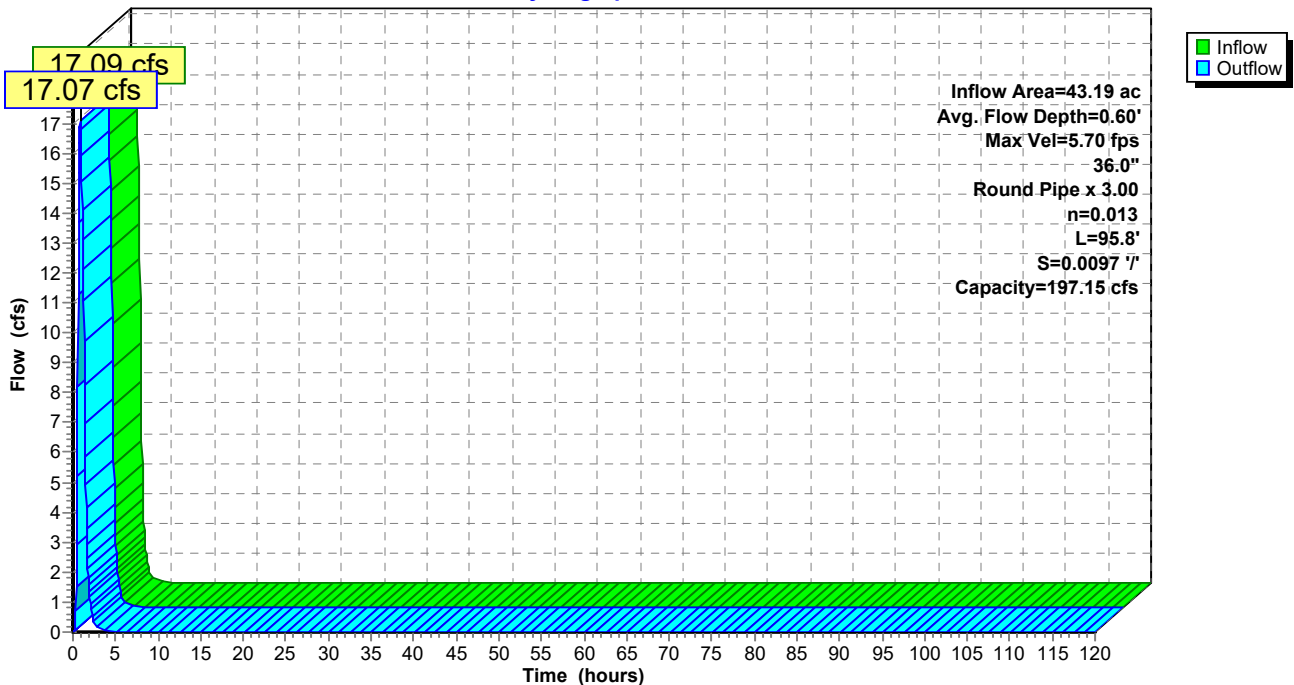
Peak Storage= 287 cf @ 0.85 hrs  
 Average Depth at Peak Storage= 0.60'  
 Bank-Full Depth= 3.00' Flow Area= 21.2 sf, Capacity= 197.15 cfs

A factor of 3.00 has been applied to the storage and discharge capacity  
 36.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 95.8' Slope= 0.0097 '/  
 Inlet Invert= 738.93', Outlet Invert= 738.00'



### Reach Cu-3: Culvert 3

Hydrograph



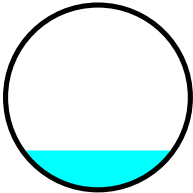
**Summary for Reach Cu-A: Culvert A**

Inflow Area = 33.94 ac, 1.59% Impervious, Inflow Depth = 0.33" for 2-Year, 1-Hour event  
 Inflow = 13.12 cfs @ 1.00 hrs, Volume= 0.936 af  
 Outflow = 13.10 cfs @ 1.01 hrs, Volume= 0.936 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 6.00 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 1.48 fps, Avg. Travel Time= 1.1 min

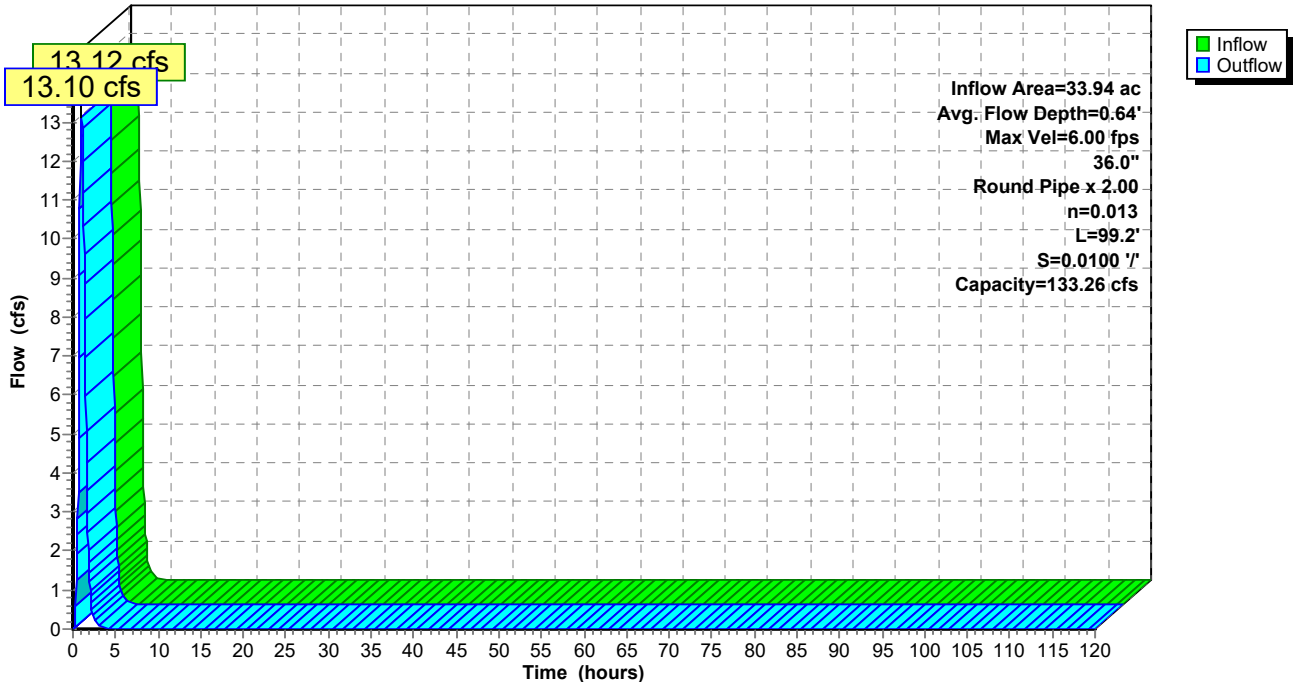
Peak Storage= 217 cf @ 1.00 hrs  
 Average Depth at Peak Storage= 0.64'  
 Bank-Full Depth= 3.00' Flow Area= 14.1 sf, Capacity= 133.26 cfs

A factor of 2.00 has been applied to the storage and discharge capacity  
 36.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 99.2' Slope= 0.0100 '/  
 Inlet Invert= 756.77', Outlet Invert= 755.78'



**Reach Cu-A: Culvert A**

Hydrograph



**Summary for Reach DC-A1A: Downchute A1A**

Inflow Area = 6.74 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 3.03 cfs @ 0.79 hrs, Volume= 0.180 af  
 Outflow = 3.02 cfs @ 0.82 hrs, Volume= 0.180 af, Atten= 0%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.05 fps, Min. Travel Time= 0.7 min  
 Avg. Velocity = 1.83 fps, Avg. Travel Time= 1.2 min

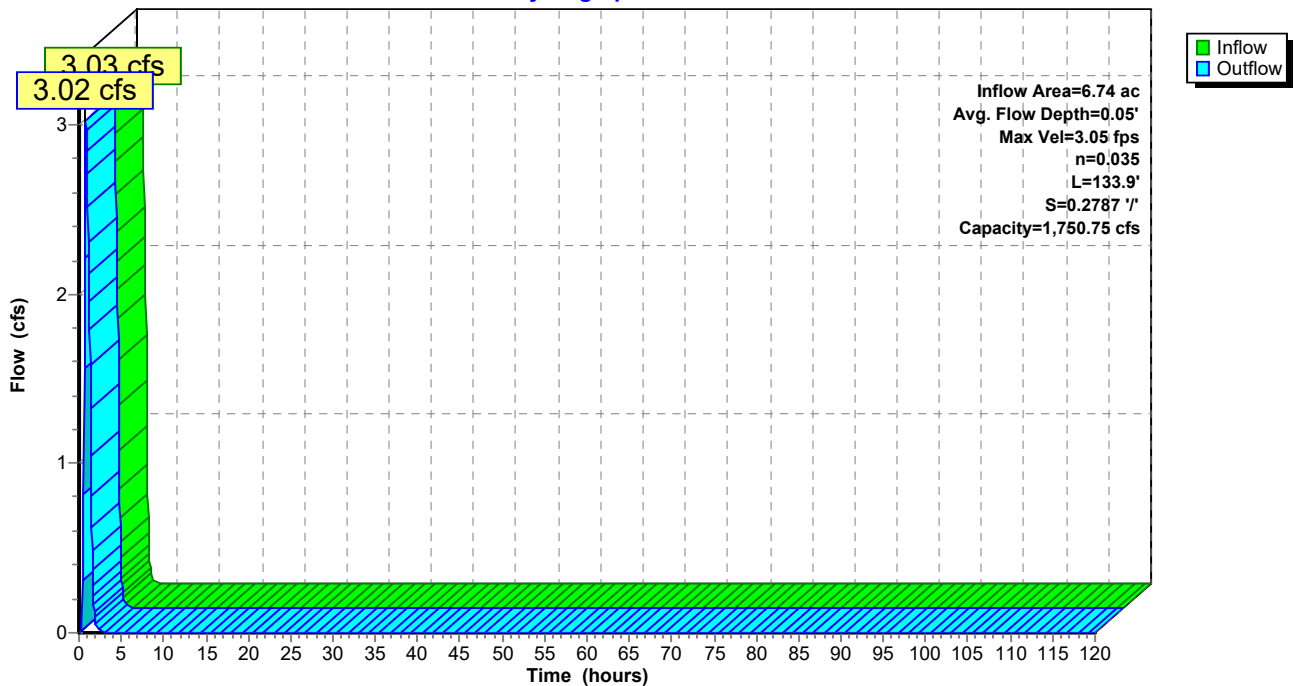
Peak Storage= 133 cf @ 0.80 hrs  
 Average Depth at Peak Storage= 0.05'  
 Bank-Full Depth= 2.00' Flow Area= 60.0 sf, Capacity= 1,750.75 cfs

20.00' x 2.00' deep channel, n= 0.035  
 Side Slope Z-value= 5.0 '/' Top Width= 40.00'  
 Length= 133.9' Slope= 0.2787 '/'  
 Inlet Invert= 821.32', Outlet Invert= 784.00'



**Reach DC-A1A: Downchute A1A**

Hydrograph



**Summary for Reach DC-A1B: Downchute A1B**

Inflow Area = 11.96 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 5.23 cfs @ 0.80 hrs, Volume= 0.320 af  
 Outflow = 5.22 cfs @ 0.82 hrs, Volume= 0.320 af, Atten= 0%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.70 fps, Min. Travel Time= 0.5 min  
 Avg. Velocity = 1.15 fps, Avg. Travel Time= 1.2 min

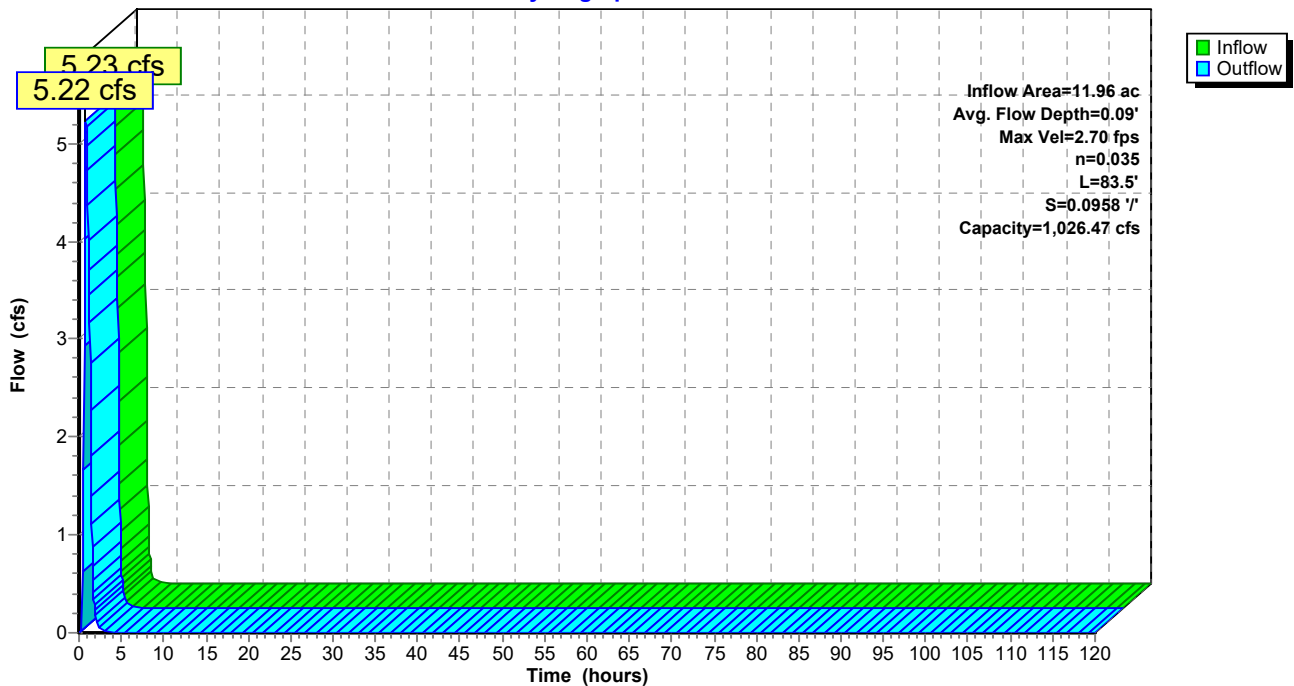
Peak Storage= 162 cf @ 0.81 hrs  
 Average Depth at Peak Storage= 0.09'  
 Bank-Full Depth= 2.00' Flow Area= 60.0 sf, Capacity= 1,026.47 cfs

20.00' x 2.00' deep channel, n= 0.035  
 Side Slope Z-value= 5.0 '/' Top Width= 40.00'  
 Length= 83.5' Slope= 0.0958 '/'  
 Inlet Invert= 784.00', Outlet Invert= 776.00'



**Reach DC-A1B: Downchute A1B**

Hydrograph



**Summary for Reach DC-A1C: Downchute A1C**

Inflow Area = 21.13 ac, 0.64% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 8.44 cfs @ 0.95 hrs, Volume= 0.565 af  
 Outflow = 8.42 cfs @ 0.97 hrs, Volume= 0.565 af, Atten= 0%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.47 fps, Min. Travel Time= 0.7 min  
 Avg. Velocity = 1.34 fps, Avg. Travel Time= 1.9 min

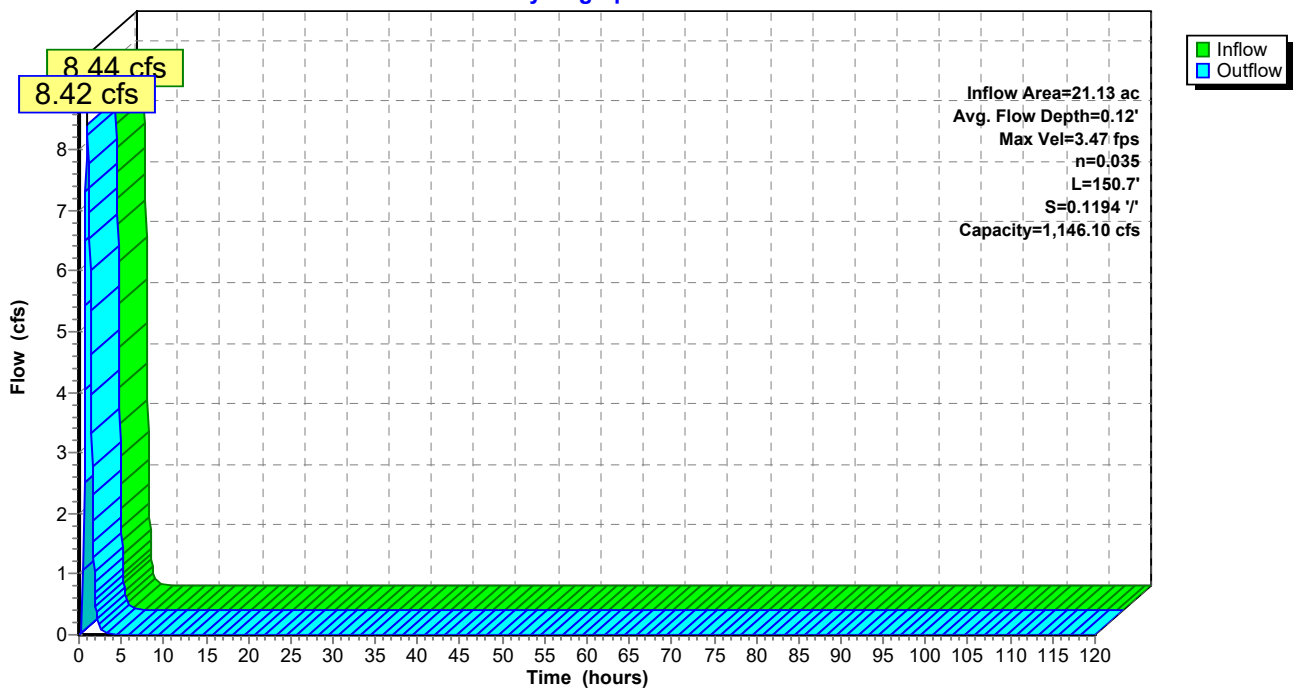
Peak Storage= 367 cf @ 0.95 hrs  
 Average Depth at Peak Storage= 0.12'  
 Bank-Full Depth= 2.00' Flow Area= 60.0 sf, Capacity= 1,146.10 cfs

20.00' x 2.00' deep channel, n= 0.035  
 Side Slope Z-value= 5.0 '/' Top Width= 40.00'  
 Length= 150.7' Slope= 0.1194 '/'  
 Inlet Invert= 776.00', Outlet Invert= 758.00'



**Reach DC-A1C: Downchute A1C**

Hydrograph





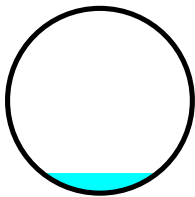
**Summary for Reach LP-B1: Letdown Pipe B1**

Inflow Area = 4.78 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 2.72 cfs @ 0.50 hrs, Volume= 0.128 af  
 Outflow = 2.71 cfs @ 0.50 hrs, Volume= 0.128 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 14.91 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 7.46 fps, Avg. Travel Time= 0.4 min

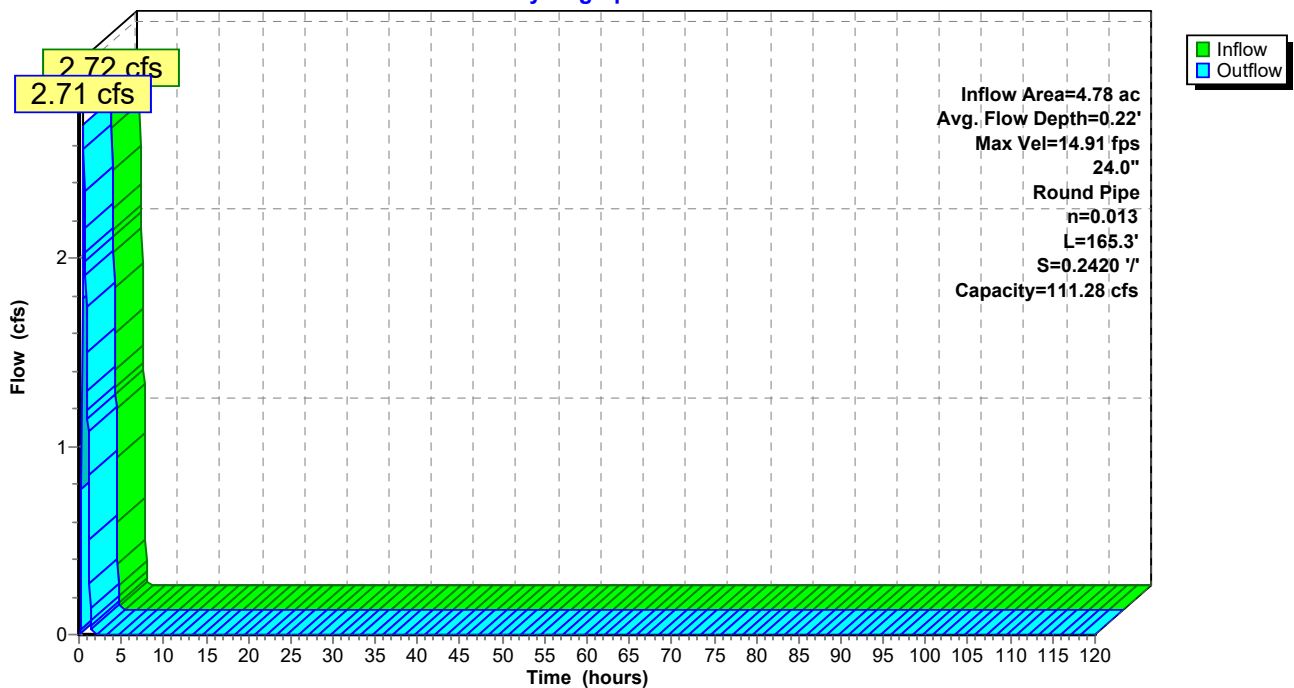
Peak Storage= 30 cf @ 0.50 hrs  
 Average Depth at Peak Storage= 0.22'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 111.28 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 165.3' Slope= 0.2420 '/'  
 Inlet Invert= 877.00', Outlet Invert= 837.00'



**Reach LP-B1: Letdown Pipe B1**

Hydrograph



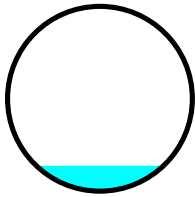
**Summary for Reach LP-B2: Letdown Pipe B2**

Inflow Area = 8.86 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 4.65 cfs @ 0.53 hrs, Volume= 0.237 af  
 Outflow = 4.64 cfs @ 0.54 hrs, Volume= 0.237 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 18.01 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 7.08 fps, Avg. Travel Time= 0.3 min

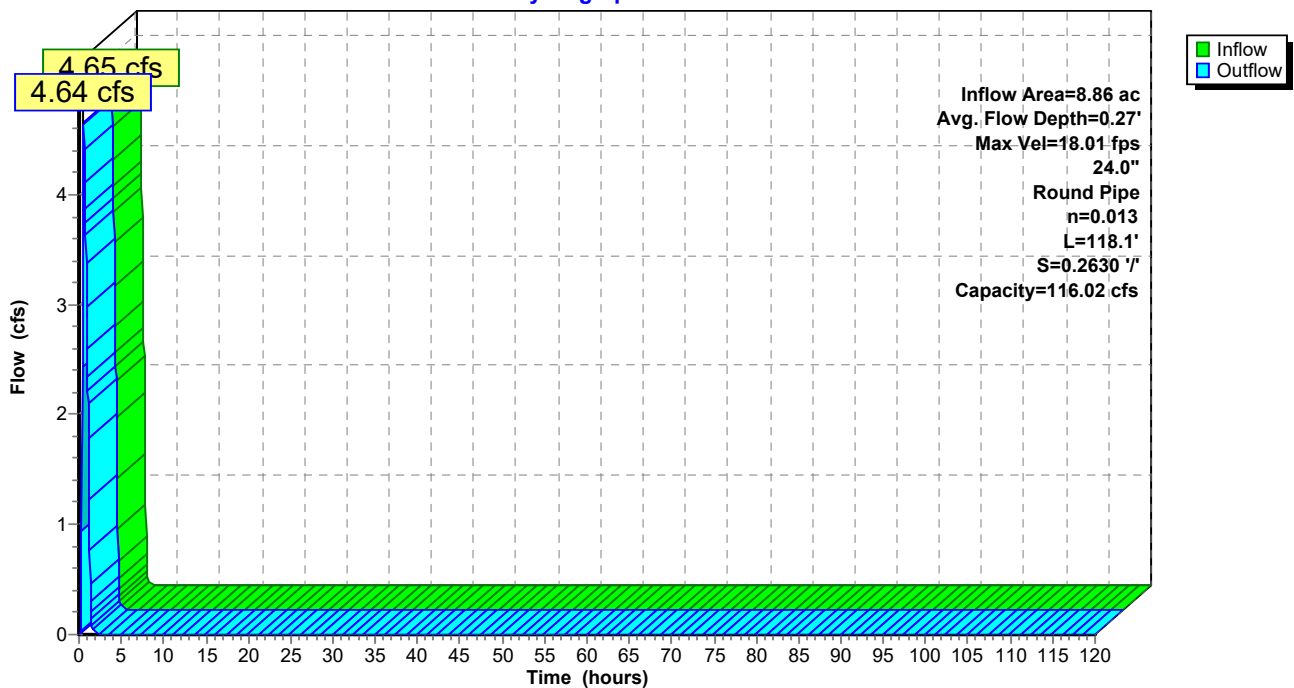
Peak Storage= 30 cf @ 0.53 hrs  
 Average Depth at Peak Storage= 0.27'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 116.02 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 118.1' Slope= 0.2630 '/'  
 Inlet Invert= 837.00', Outlet Invert= 805.94'



**Reach LP-B2: Letdown Pipe B2**

Hydrograph



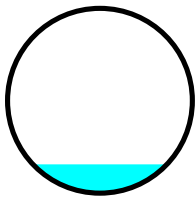
**Summary for Reach LP-B3: Letdown Pipe B3**

Inflow Area = 11.97 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 5.97 cfs @ 0.56 hrs, Volume= 0.320 af  
 Outflow = 5.97 cfs @ 0.56 hrs, Volume= 0.320 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 19.23 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 6.76 fps, Avg. Travel Time= 0.3 min

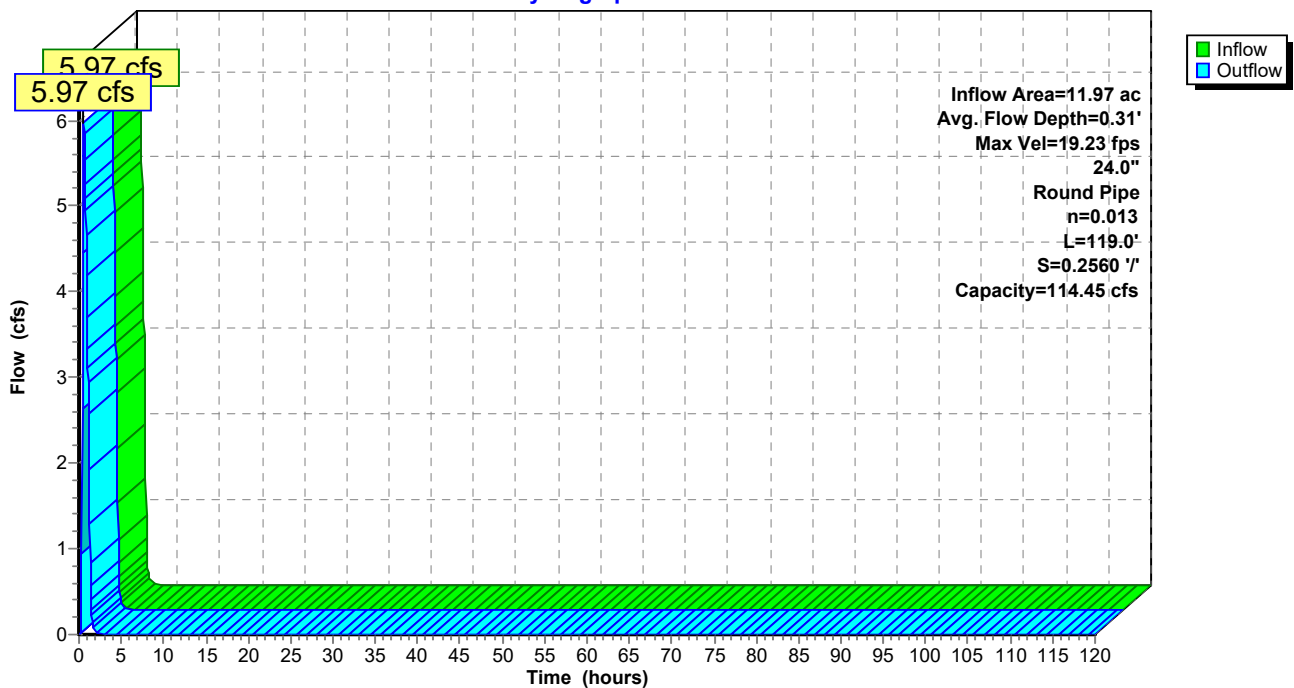
Peak Storage= 37 cf @ 0.56 hrs  
 Average Depth at Peak Storage= 0.31'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 114.45 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 119.0' Slope= 0.2560 '/'  
 Inlet Invert= 805.94', Outlet Invert= 775.48'



**Reach LP-B3: Letdown Pipe B3**

Hydrograph



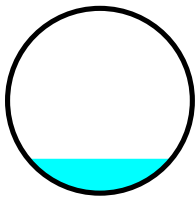
**Summary for Reach LP-B4: Letdown Pipe B4**

Inflow Area = 15.33 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 7.47 cfs @ 0.57 hrs, Volume= 0.410 af  
 Outflow = 7.42 cfs @ 0.58 hrs, Volume= 0.410 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 18.55 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 5.99 fps, Avg. Travel Time= 0.4 min

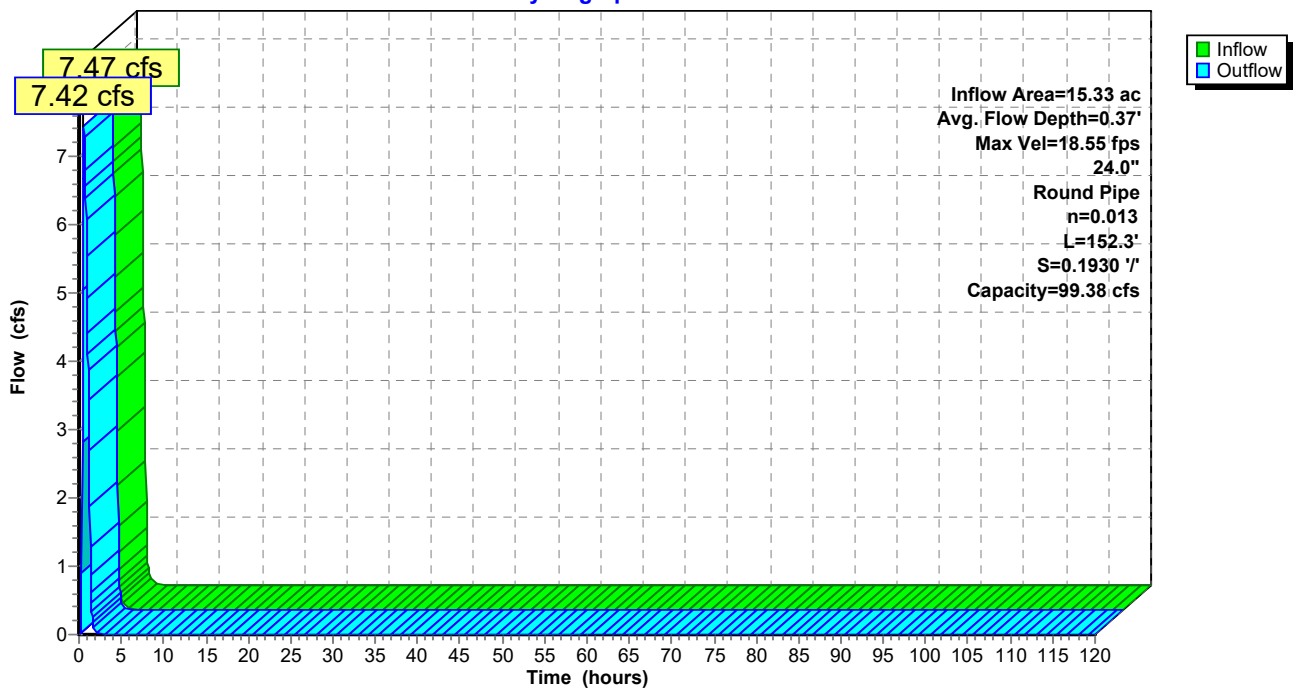
Peak Storage= 61 cf @ 0.58 hrs  
 Average Depth at Peak Storage= 0.37'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 99.38 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 152.3' Slope= 0.1930 '/'  
 Inlet Invert= 775.48', Outlet Invert= 746.09'



**Reach LP-B4: Letdown Pipe B4**

Hydrograph



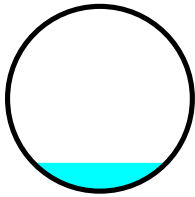
**Summary for Reach LP-B5: Letdown Pipe B5**

Inflow Area = 3.47 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 1.77 cfs @ 0.56 hrs, Volume= 0.093 af  
 Outflow = 1.76 cfs @ 0.57 hrs, Volume= 0.093 af, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 13.21 fps, Min. Travel Time= 0.4 min  
 Avg. Velocity = 5.71 fps, Avg. Travel Time= 0.9 min

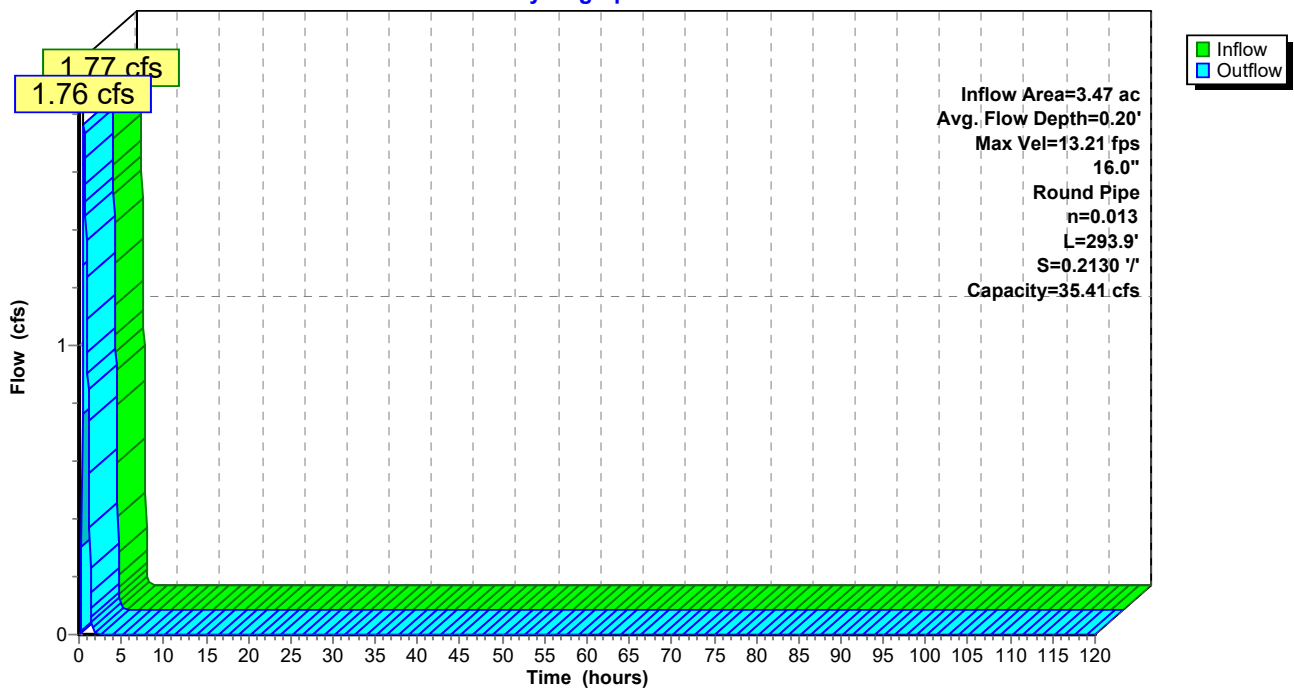
Peak Storage= 39 cf @ 0.56 hrs  
 Average Depth at Peak Storage= 0.20'  
 Bank-Full Depth= 1.33' Flow Area= 1.4 sf, Capacity= 35.41 cfs

16.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 293.9' Slope= 0.2130 '/'  
 Inlet Invert= 820.00', Outlet Invert= 757.40'



**Reach LP-B5: Letdown Pipe B5**

Hydrograph



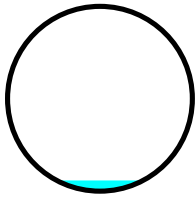
**Summary for Reach LP-D1: Letdown Pipe D1**

Inflow Area = 1.26 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 0.73 cfs @ 0.47 hrs, Volume= 0.034 af  
 Outflow = 0.73 cfs @ 0.47 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 10.10 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 6.53 fps, Avg. Travel Time= 0.1 min

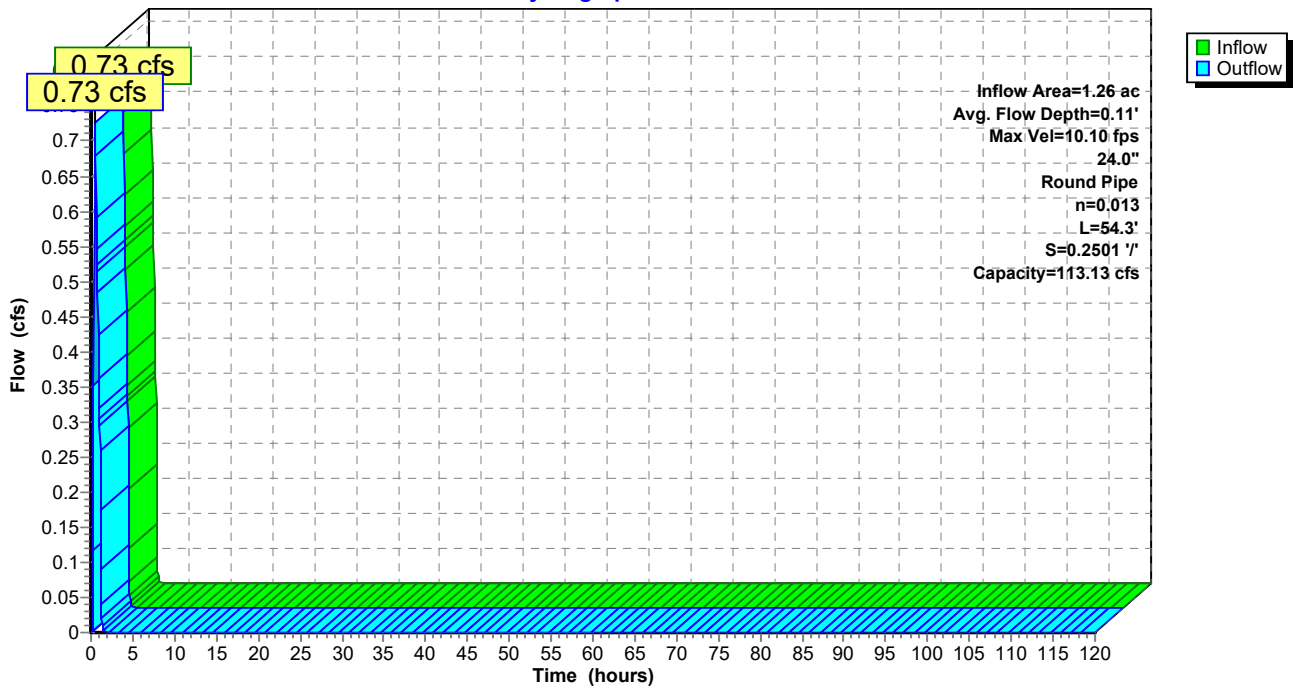
Peak Storage= 4 cf @ 0.47 hrs  
 Average Depth at Peak Storage= 0.11'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 113.13 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 54.3' Slope= 0.2501 '/  
 Inlet Invert= 857.24', Outlet Invert= 843.66'



**Reach LP-D1: Letdown Pipe D1**

Hydrograph



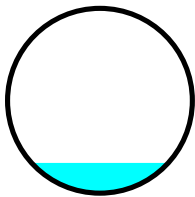
**Summary for Reach LP-D3: Letdown Pipe D3**

Inflow Area = 13.77 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 6.44 cfs @ 0.64 hrs, Volume= 0.368 af  
 Outflow = 6.44 cfs @ 0.65 hrs, Volume= 0.368 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 19.41 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 6.55 fps, Avg. Travel Time= 0.2 min

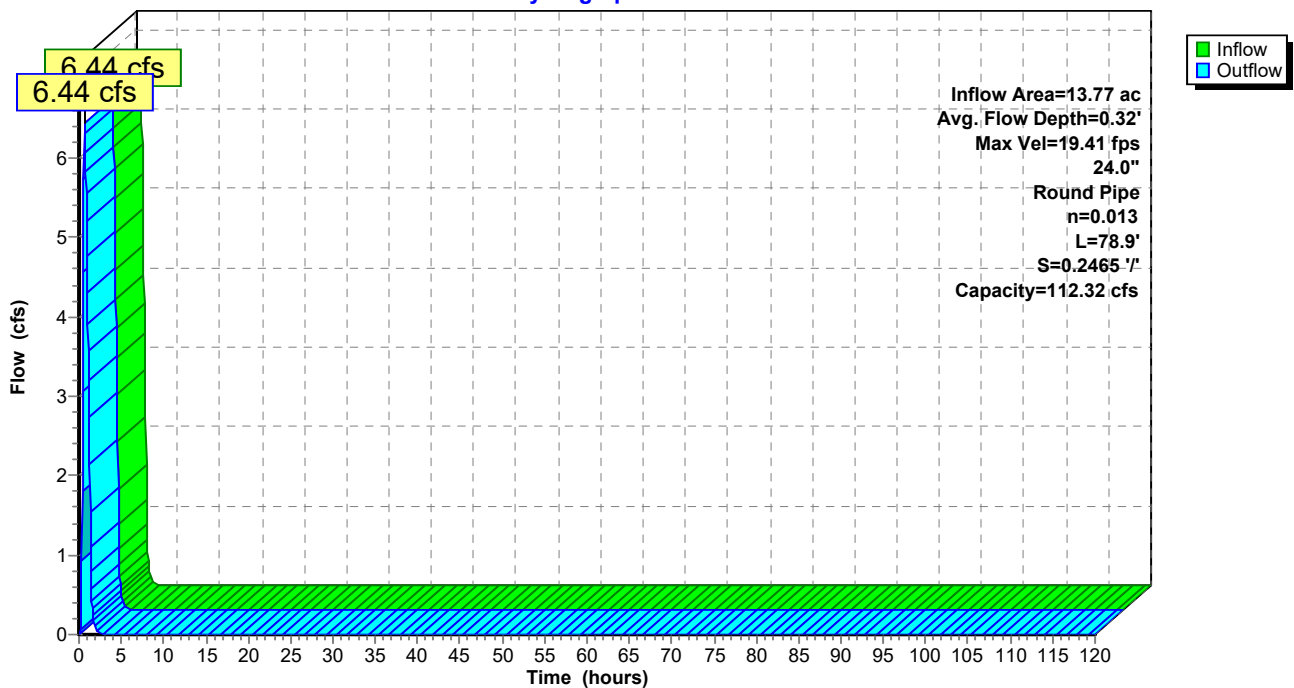
Peak Storage= 26 cf @ 0.65 hrs  
 Average Depth at Peak Storage= 0.32'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 112.32 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 78.9' Slope= 0.2465 '/'  
 Inlet Invert= 793.71', Outlet Invert= 774.26'



**Reach LP-D3: Letdown Pipe D3**

Hydrograph



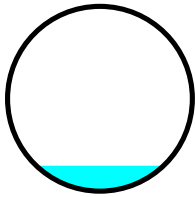
**Summary for Reach LP-E1: Letdown Pipe E1**

Inflow Area = 3.40 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 1.83 cfs @ 0.55 hrs, Volume= 0.091 af  
 Outflow = 1.82 cfs @ 0.56 hrs, Volume= 0.091 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 12.55 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 5.55 fps, Avg. Travel Time= 0.4 min

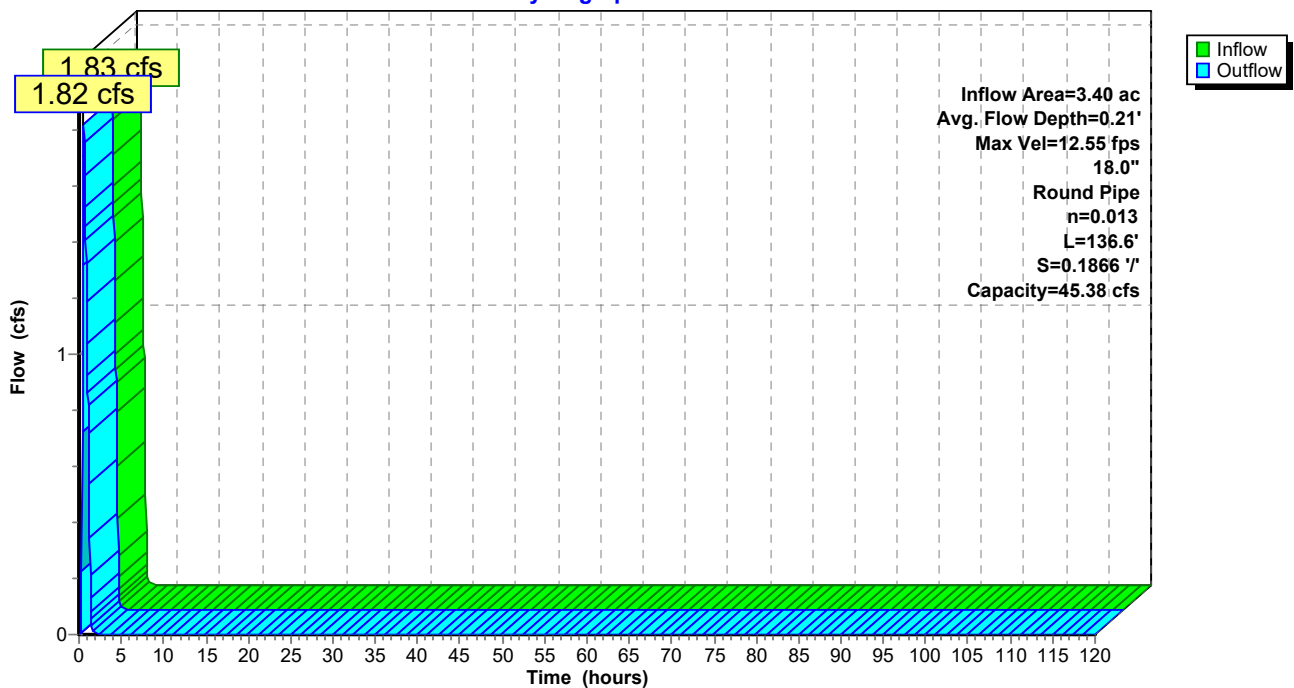
Peak Storage= 20 cf @ 0.55 hrs  
 Average Depth at Peak Storage= 0.21'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 45.38 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 136.6' Slope= 0.1866 '/'  
 Inlet Invert= 856.64', Outlet Invert= 831.15'



**Reach LP-E1: Letdown Pipe E1**

Hydrograph





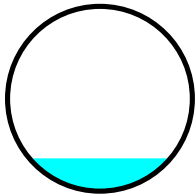
**Summary for Reach LP-E2: Letdown Pipe E2**

Inflow Area = 8.08 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 3.55 cfs @ 0.65 hrs, Volume= 0.216 af  
 Outflow = 3.54 cfs @ 0.65 hrs, Volume= 0.216 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 16.92 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity= 5.63 fps, Avg. Travel Time= 0.2 min

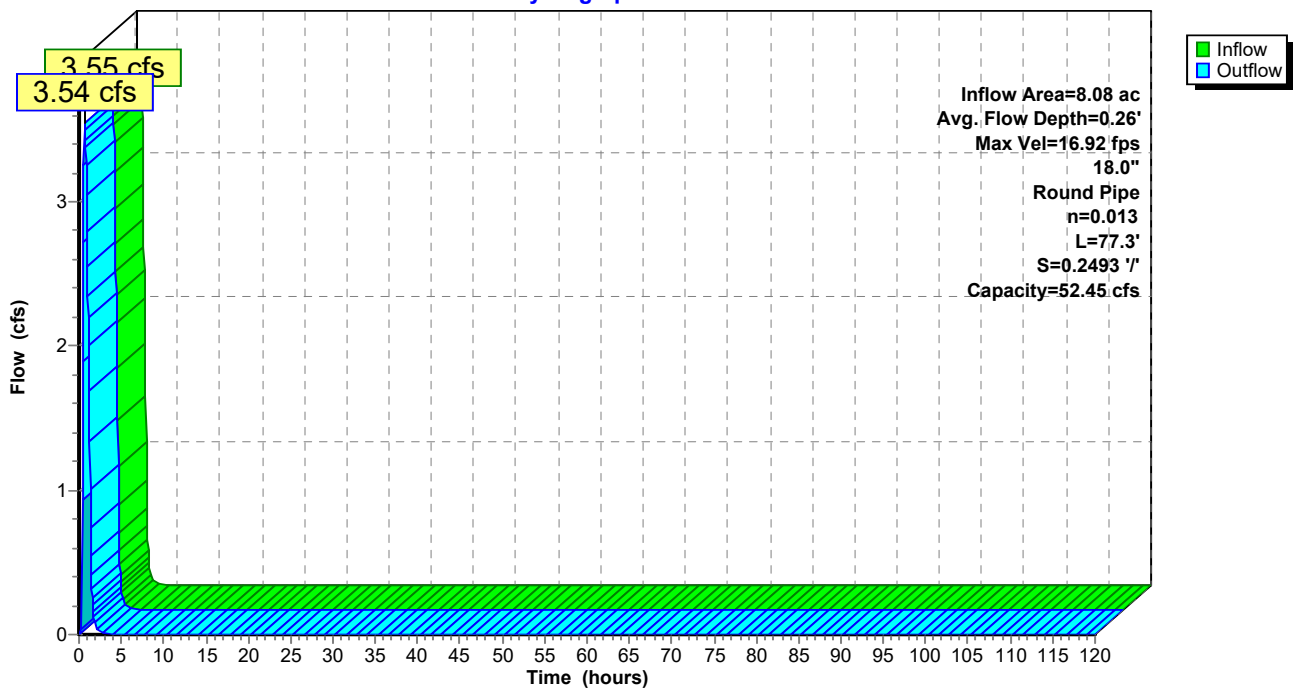
Peak Storage= 16 cf @ 0.65 hrs  
 Average Depth at Peak Storage= 0.26'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 52.45 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 77.3' Slope= 0.2493 '/'  
 Inlet Invert= 793.51', Outlet Invert= 774.24'



**Reach LP-E2: Letdown Pipe E2**

Hydrograph



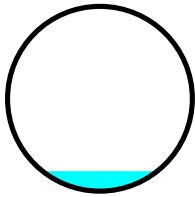
**Summary for Reach LP-H1: Letdown Pipe H1**

Inflow Area = 1.98 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 1.06 cfs @ 0.56 hrs, Volume= 0.053 af  
 Outflow = 1.06 cfs @ 0.56 hrs, Volume= 0.053 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 10.33 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 4.92 fps, Avg. Travel Time= 0.2 min

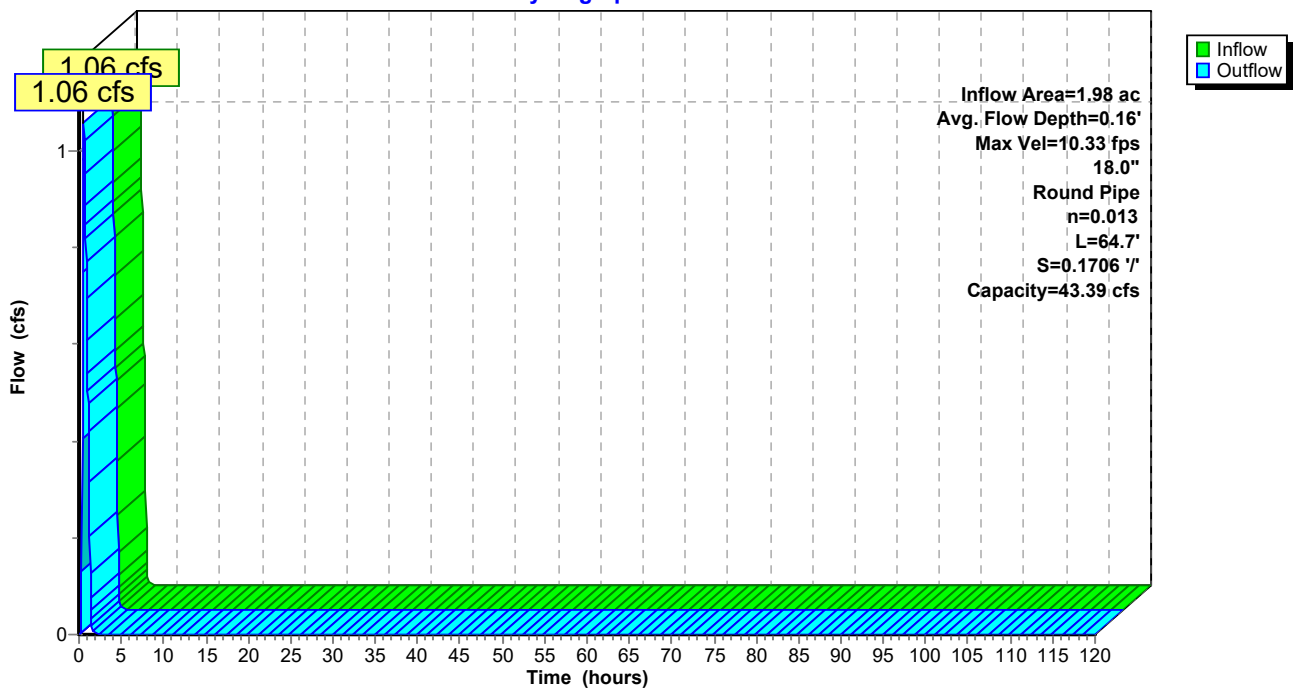
Peak Storage= 7 cf @ 0.56 hrs  
 Average Depth at Peak Storage= 0.16'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 43.39 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 64.7' Slope= 0.1706 '/'  
 Inlet Invert= 867.73', Outlet Invert= 856.69'



**Reach LP-H1: Letdown Pipe H1**

Hydrograph



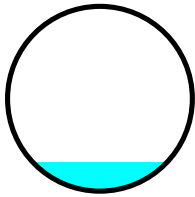
**Summary for Reach LP-H2: Letdown Pipe H2**

Inflow Area = 5.26 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 2.79 cfs @ 0.56 hrs, Volume= 0.141 af  
 Outflow = 2.79 cfs @ 0.56 hrs, Volume= 0.141 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 15.76 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 6.34 fps, Avg. Travel Time= 0.4 min

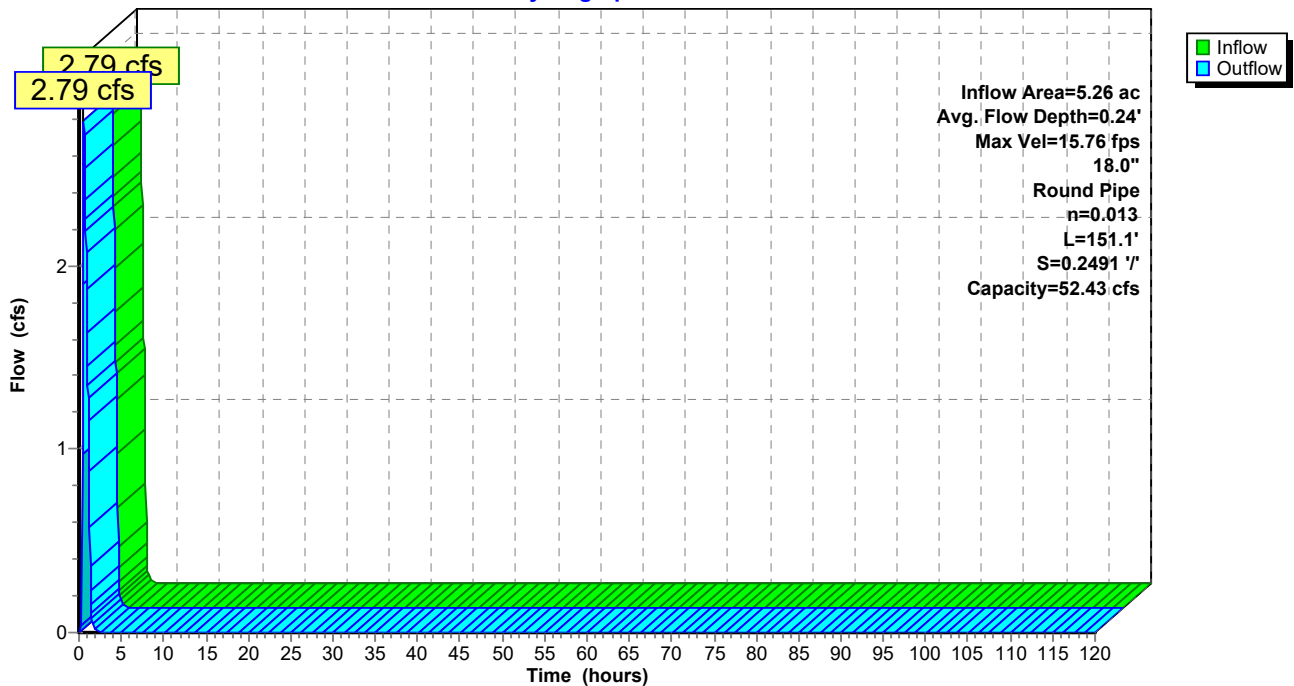
Peak Storage= 27 cf @ 0.56 hrs  
 Average Depth at Peak Storage= 0.24'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 52.43 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 151.1' Slope= 0.2491 1/100'  
 Inlet Invert= 831.15', Outlet Invert= 793.51'



**Reach LP-H2: Letdown Pipe H2**

Hydrograph



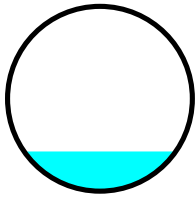
**Summary for Reach LP-H3: Letdown Pipe H3**

Inflow Area = 11.65 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 5.31 cfs @ 0.62 hrs, Volume= 0.311 af  
 Outflow = 5.29 cfs @ 0.63 hrs, Volume= 0.311 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 19.11 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 5.98 fps, Avg. Travel Time= 0.3 min

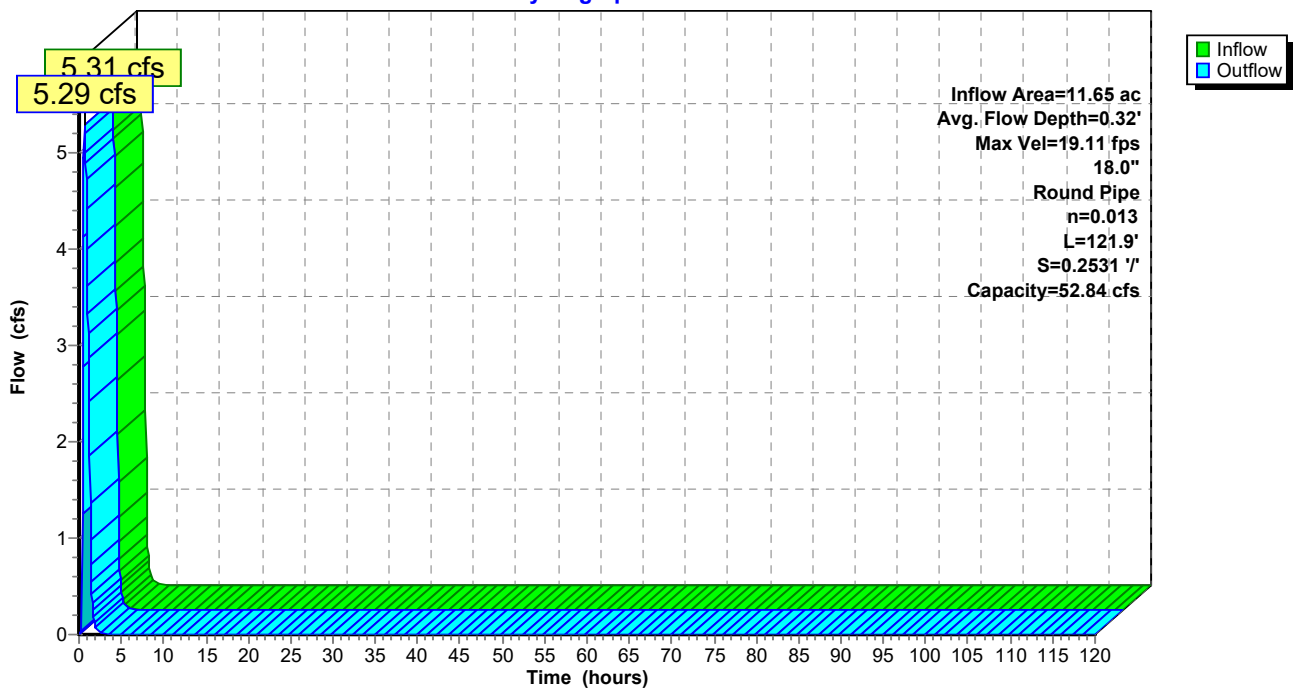
Peak Storage= 34 cf @ 0.62 hrs  
 Average Depth at Peak Storage= 0.32'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 52.84 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 121.9' Slope= 0.2531 '/'  
 Inlet Invert= 774.24', Outlet Invert= 743.39'



**Reach LP-H3: Letdown Pipe H3**

Hydrograph



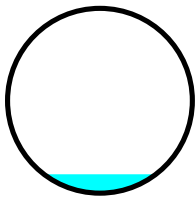
**Summary for Reach LP-N-A1: Letdown Pipe N-A1**

Inflow Area = 3.60 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 2.05 cfs @ 0.50 hrs, Volume= 0.096 af  
 Outflow = 2.04 cfs @ 0.50 hrs, Volume= 0.096 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 12.28 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 6.35 fps, Avg. Travel Time= 0.5 min

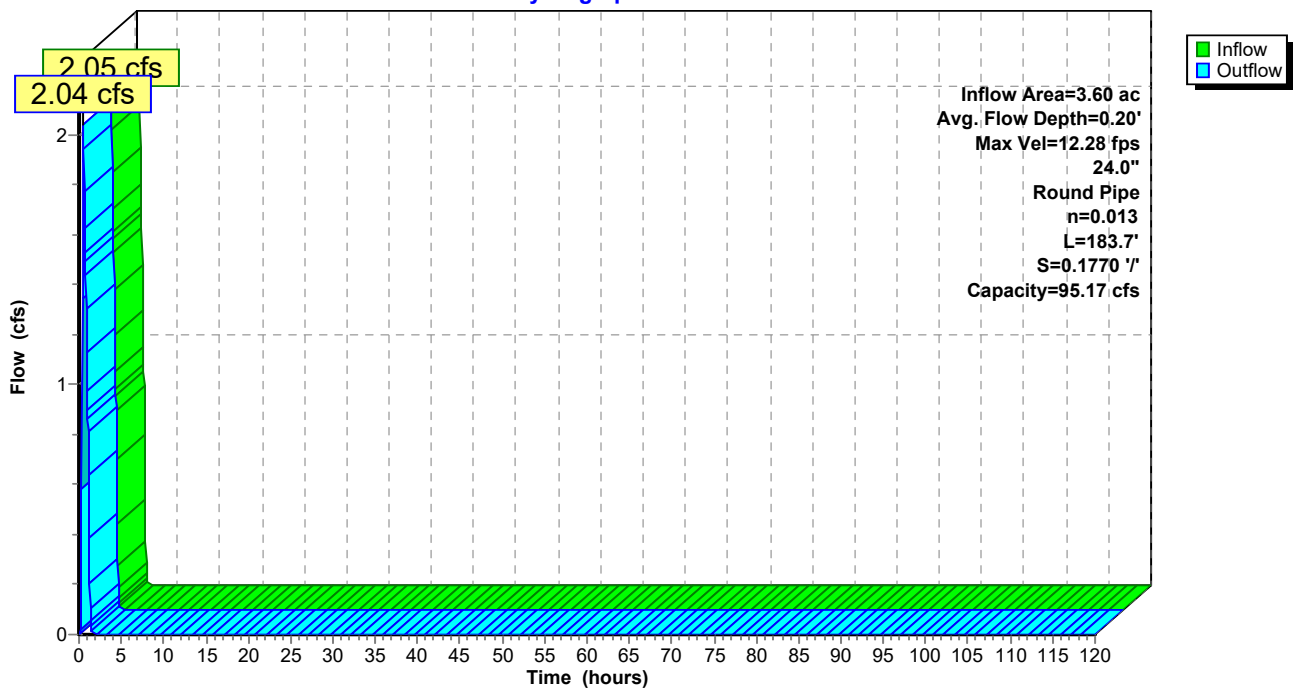
Peak Storage= 31 cf @ 0.50 hrs  
 Average Depth at Peak Storage= 0.20'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 95.17 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 183.7' Slope= 0.1770 '/'  
 Inlet Invert= 869.36', Outlet Invert= 836.85'



**Reach LP-N-A1: Letdown Pipe N-A1**

Hydrograph



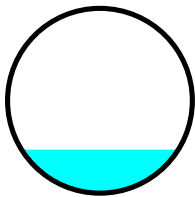
**Summary for Reach LP-N-A10: Letdown Pipe N-A10**

Inflow Area = 21.41 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 9.99 cfs @ 0.66 hrs, Volume= 0.572 af  
 Outflow = 9.98 cfs @ 0.67 hrs, Volume= 0.572 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 11.42 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 3.09 fps, Avg. Travel Time= 0.3 min

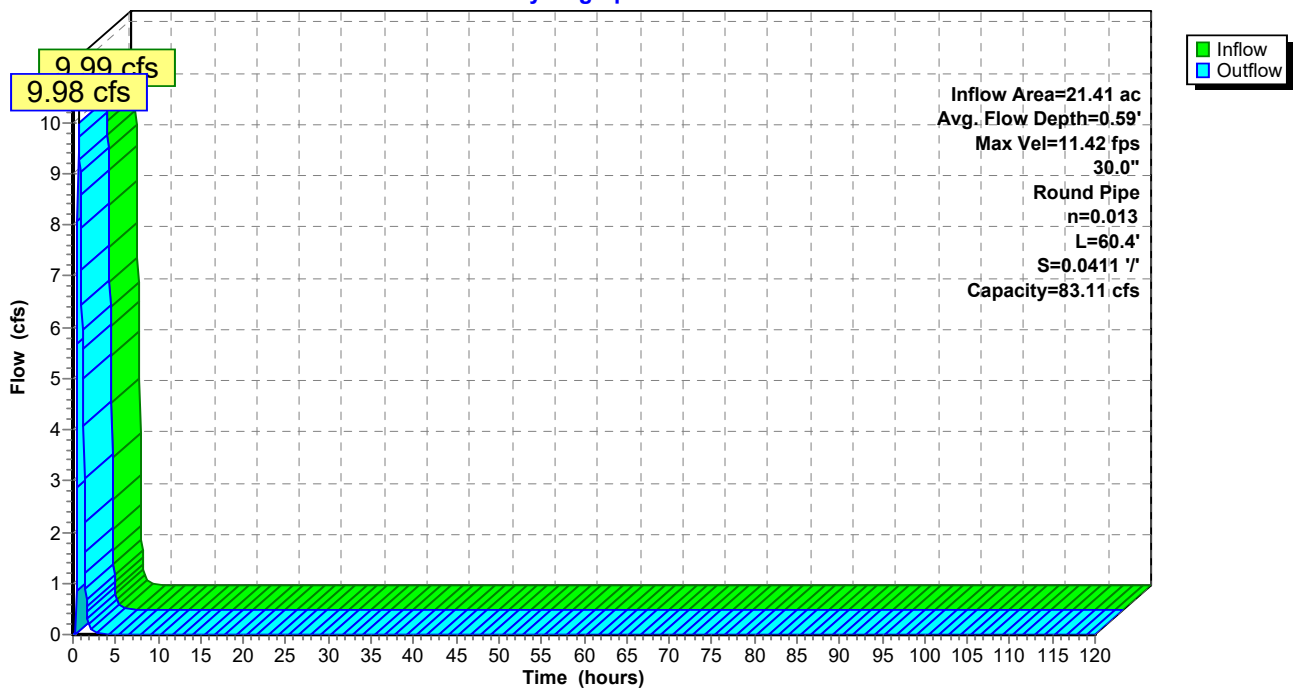
Peak Storage= 53 cf @ 0.67 hrs  
 Average Depth at Peak Storage= 0.59'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 83.11 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 60.4' Slope= 0.0411 '/  
 Inlet Invert= 748.28', Outlet Invert= 745.80'



**Reach LP-N-A10: Letdown Pipe N-A10**

Hydrograph



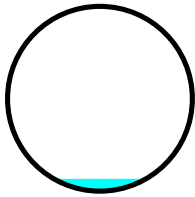
**Summary for Reach LP-N-A2: Letdown Pipe N-A2**

Inflow Area = 2.82 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 1.49 cfs @ 0.57 hrs, Volume= 0.075 af  
 Outflow = 1.49 cfs @ 0.57 hrs, Volume= 0.075 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 10.81 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 5.40 fps, Avg. Travel Time= 0.6 min

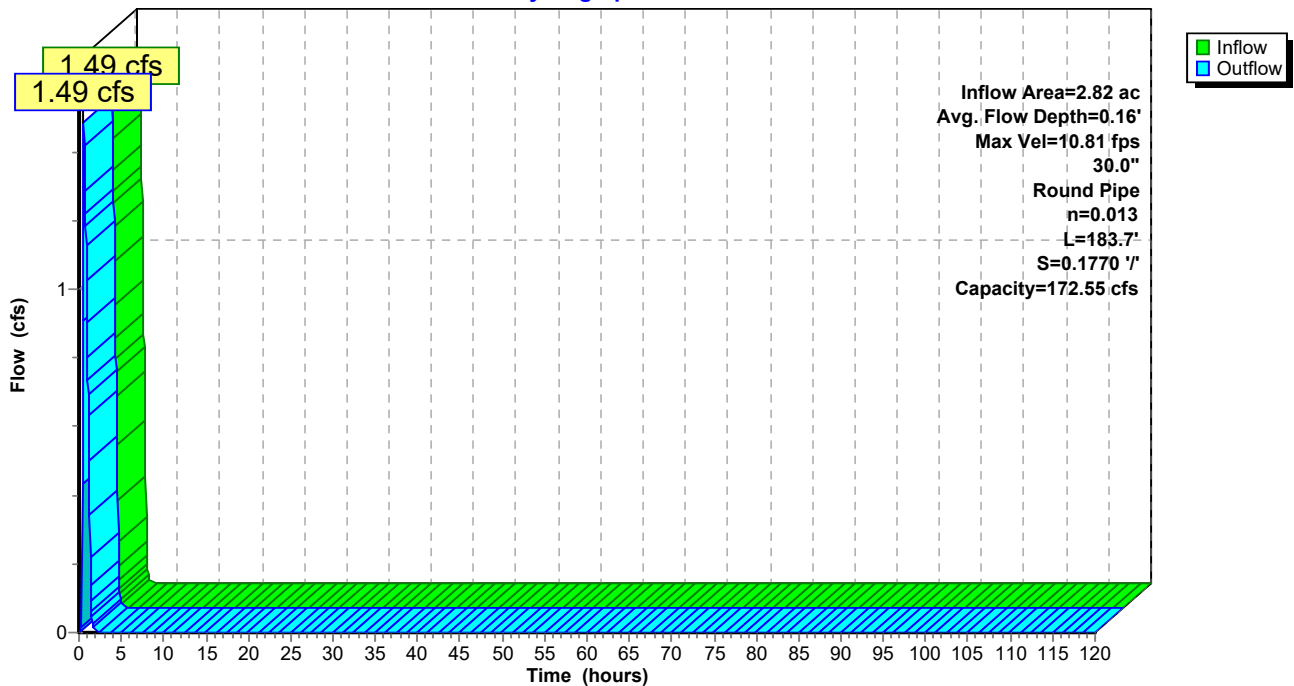
Peak Storage= 25 cf @ 0.57 hrs  
 Average Depth at Peak Storage= 0.16'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 172.55 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 183.7' Slope= 0.1770 '/'  
 Inlet Invert= 869.36', Outlet Invert= 836.85'



**Reach LP-N-A2: Letdown Pipe N-A2**

Hydrograph



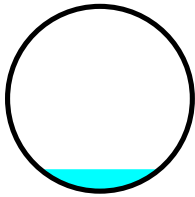
**Summary for Reach LP-N-A3: Letdown Pipe N-A3**

Inflow Area = 4.91 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 2.78 cfs @ 0.50 hrs, Volume= 0.131 af  
 Outflow = 2.78 cfs @ 0.51 hrs, Volume= 0.131 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 13.48 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 6.44 fps, Avg. Travel Time= 0.4 min

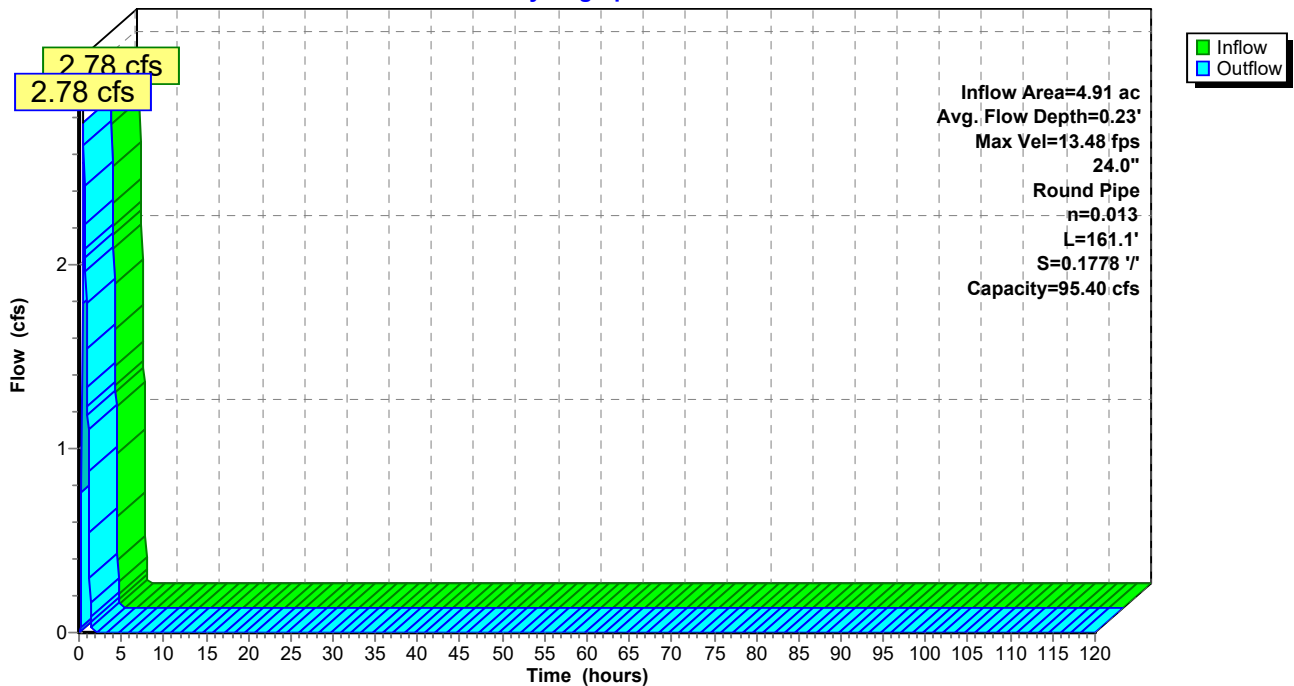
Peak Storage= 33 cf @ 0.50 hrs  
 Average Depth at Peak Storage= 0.23'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 95.40 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 161.1' Slope= 0.1778 '/'  
 Inlet Invert= 836.85', Outlet Invert= 808.20'



**Reach LP-N-A3: Letdown Pipe N-A3**

Hydrograph





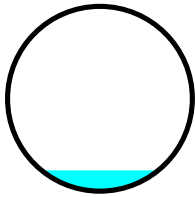
**Summary for Reach LP-N-A4: Letdown Pipe N-A4**

Inflow Area = 9.70 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 4.53 cfs @ 0.67 hrs, Volume= 0.259 af  
 Outflow = 4.53 cfs @ 0.67 hrs, Volume= 0.259 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 15.13 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 5.60 fps, Avg. Travel Time= 0.5 min

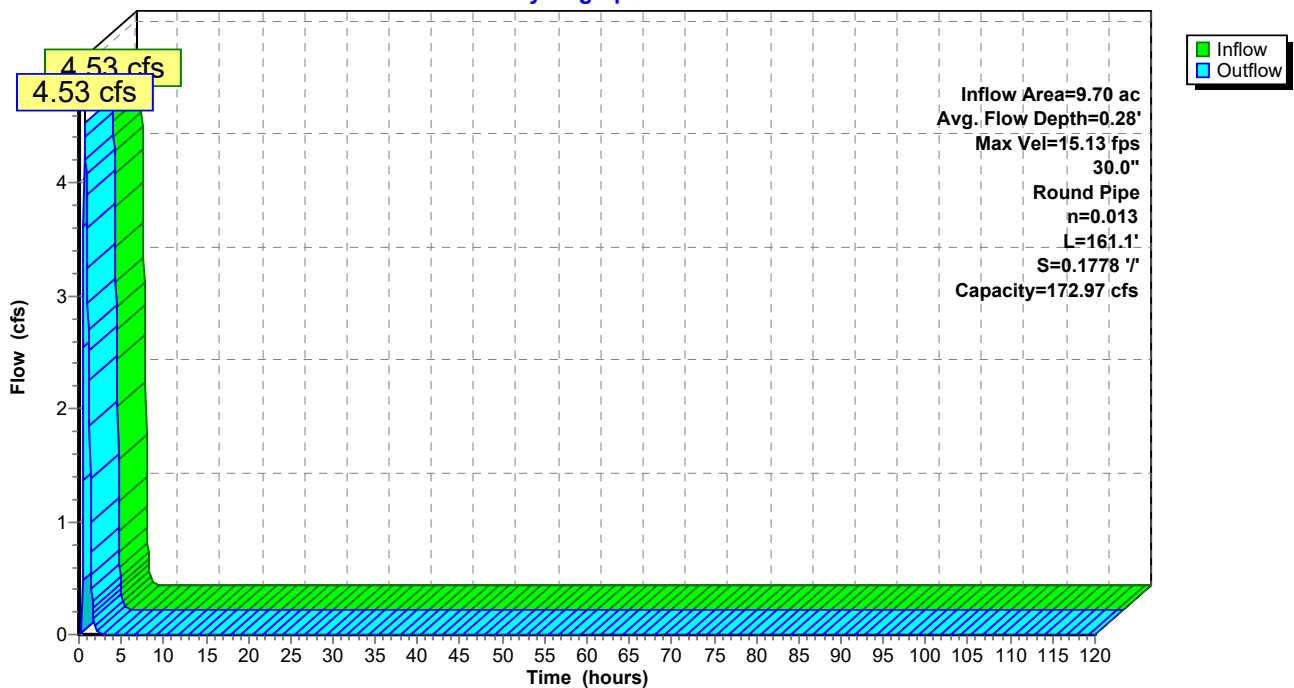
Peak Storage= 48 cf @ 0.67 hrs  
 Average Depth at Peak Storage= 0.28'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 172.97 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 161.1' Slope= 0.1778 '/'  
 Inlet Invert= 836.85', Outlet Invert= 808.20'



**Reach LP-N-A4: Letdown Pipe N-A4**

Hydrograph



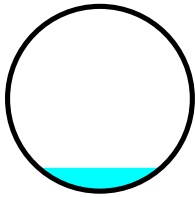
**Summary for Reach LP-N-A5: Letdown Pipe N-A5**

Inflow Area = 5.64 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 3.17 cfs @ 0.50 hrs, Volume= 0.151 af  
 Outflow = 3.16 cfs @ 0.51 hrs, Volume= 0.151 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 13.97 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 6.58 fps, Avg. Travel Time= 0.4 min

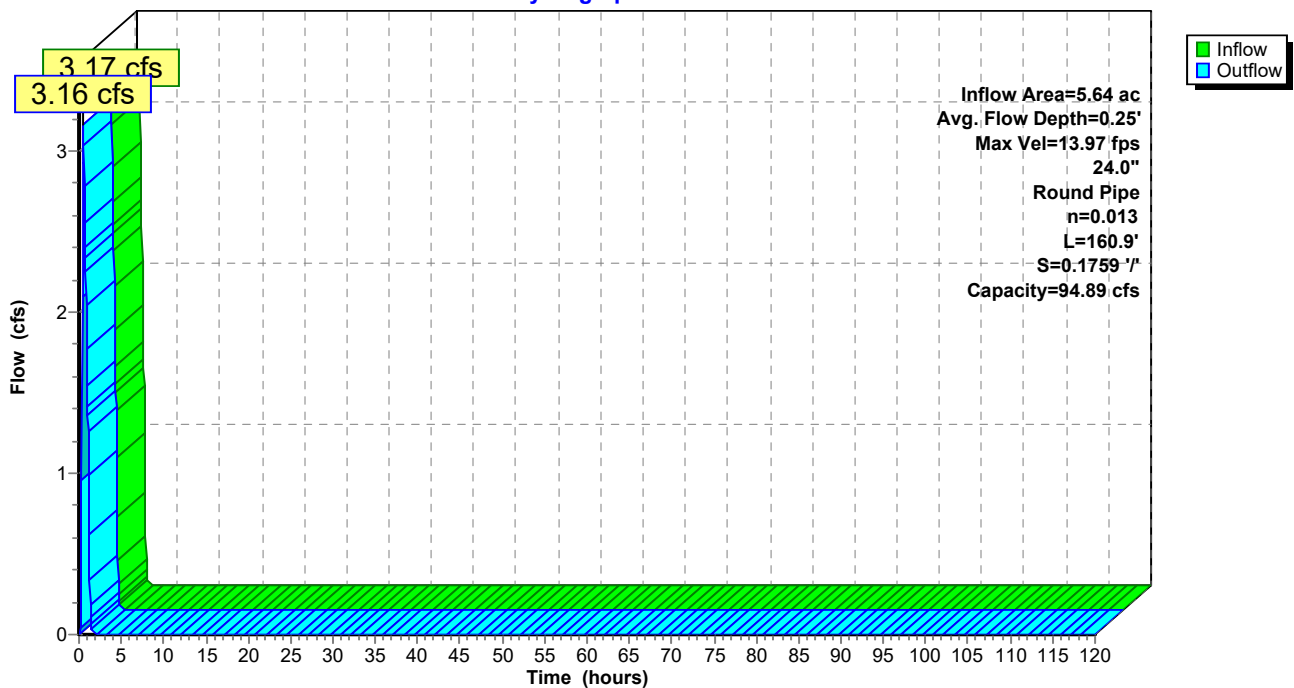
Peak Storage= 37 cf @ 0.50 hrs  
 Average Depth at Peak Storage= 0.25'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 94.89 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 160.9' Slope= 0.1759 '/'  
 Inlet Invert= 808.20', Outlet Invert= 779.89'



**Reach LP-N-A5: Letdown Pipe N-A5**

Hydrograph



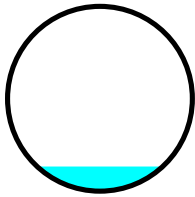
**Summary for Reach LP-N-A6: Letdown Pipe N-A6**

Inflow Area = 13.83 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 6.44 cfs @ 0.67 hrs, Volume= 0.370 af  
 Outflow = 6.43 cfs @ 0.67 hrs, Volume= 0.370 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 16.74 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 5.64 fps, Avg. Travel Time= 0.5 min

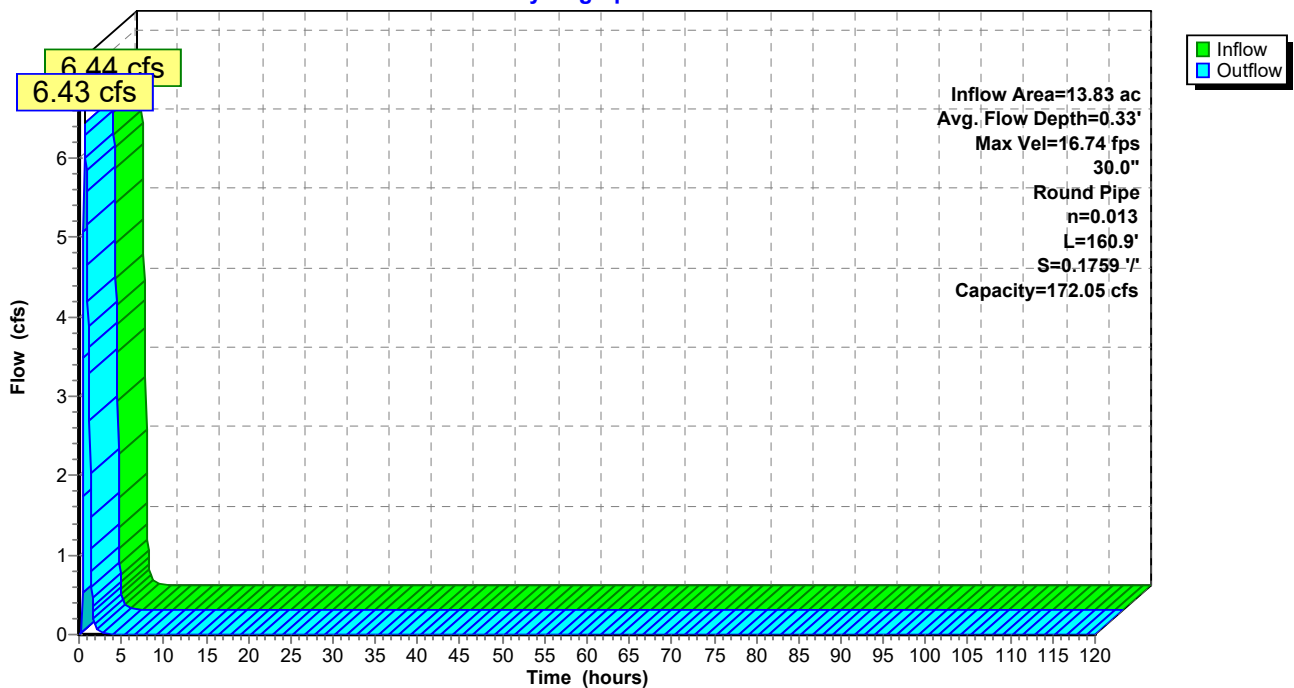
Peak Storage= 62 cf @ 0.67 hrs  
 Average Depth at Peak Storage= 0.33'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 172.05 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 160.9' Slope= 0.1759 '/'  
 Inlet Invert= 808.20', Outlet Invert= 779.89'



**Reach LP-N-A6: Letdown Pipe N-A6**

Hydrograph



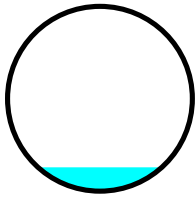
**Summary for Reach LP-N-A7: Letdown Pipe N-A7**

Inflow Area = 6.09 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 3.39 cfs @ 0.50 hrs, Volume= 0.163 af  
 Outflow = 3.38 cfs @ 0.51 hrs, Volume= 0.163 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 14.45 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 6.84 fps, Avg. Travel Time= 0.4 min

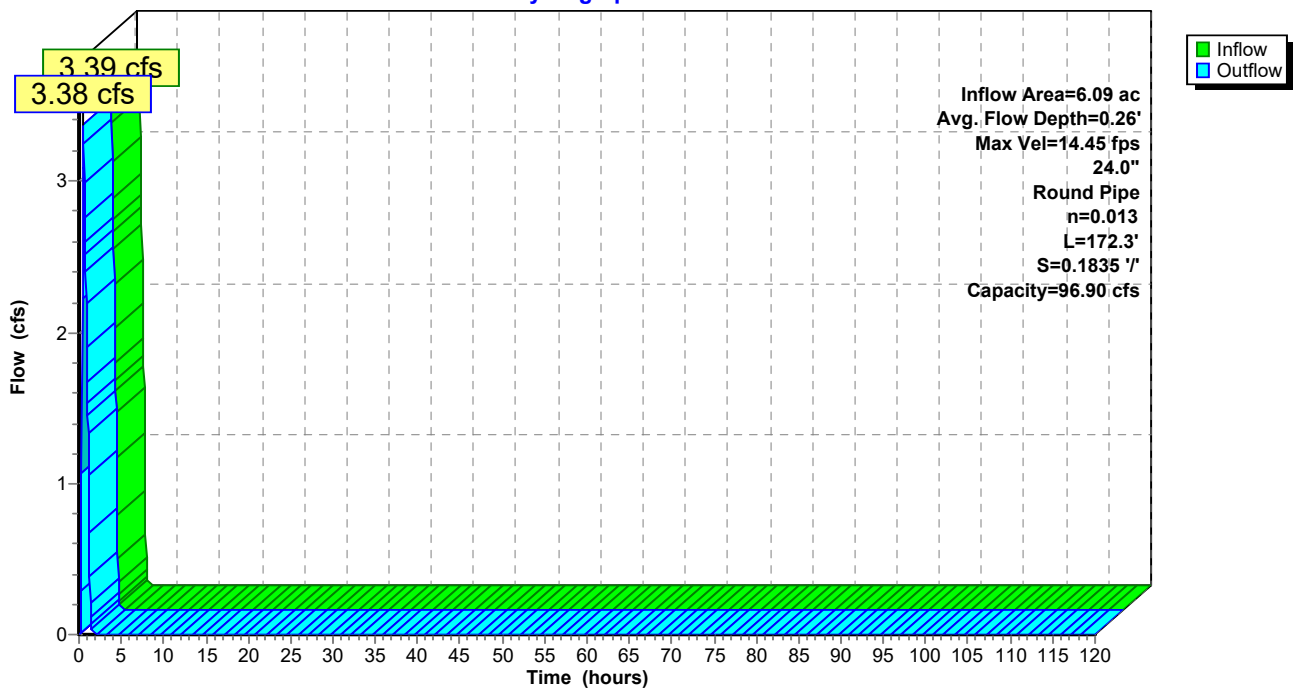
Peak Storage= 40 cf @ 0.51 hrs  
 Average Depth at Peak Storage= 0.26'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 96.90 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 172.3' Slope= 0.1835 '/'  
 Inlet Invert= 779.89', Outlet Invert= 748.28'



**Reach LP-N-A7: Letdown Pipe N-A7**

Hydrograph



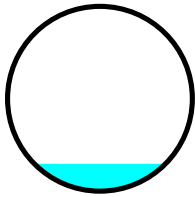
**Summary for Reach LP-N-A8: Letdown Pipe N-A8**

Inflow Area = 17.63 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 8.21 cfs @ 0.67 hrs, Volume= 0.471 af  
 Outflow = 8.20 cfs @ 0.67 hrs, Volume= 0.471 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 18.27 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity= 5.88 fps, Avg. Travel Time= 0.5 min

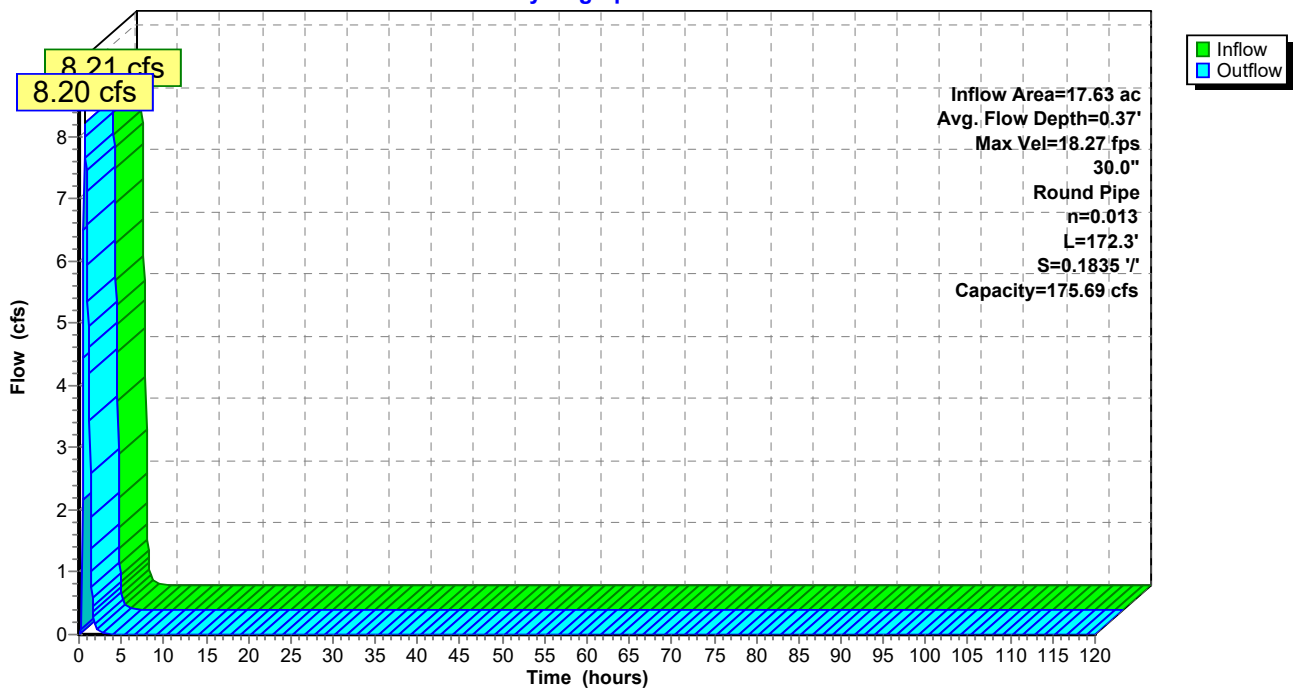
Peak Storage= 77 cf @ 0.67 hrs  
 Average Depth at Peak Storage= 0.37'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 175.69 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 172.3' Slope= 0.1835 '/'  
 Inlet Invert= 779.89', Outlet Invert= 748.28'



**Reach LP-N-A8: Letdown Pipe N-A8**

Hydrograph



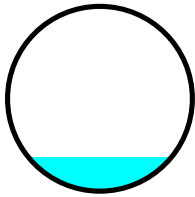
**Summary for Reach LP-N-A9: Letdown Pipe N-A9**

Inflow Area = 6.09 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 3.38 cfs @ 0.51 hrs, Volume= 0.163 af  
 Outflow = 3.37 cfs @ 0.51 hrs, Volume= 0.163 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 8.53 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 3.59 fps, Avg. Travel Time= 0.3 min

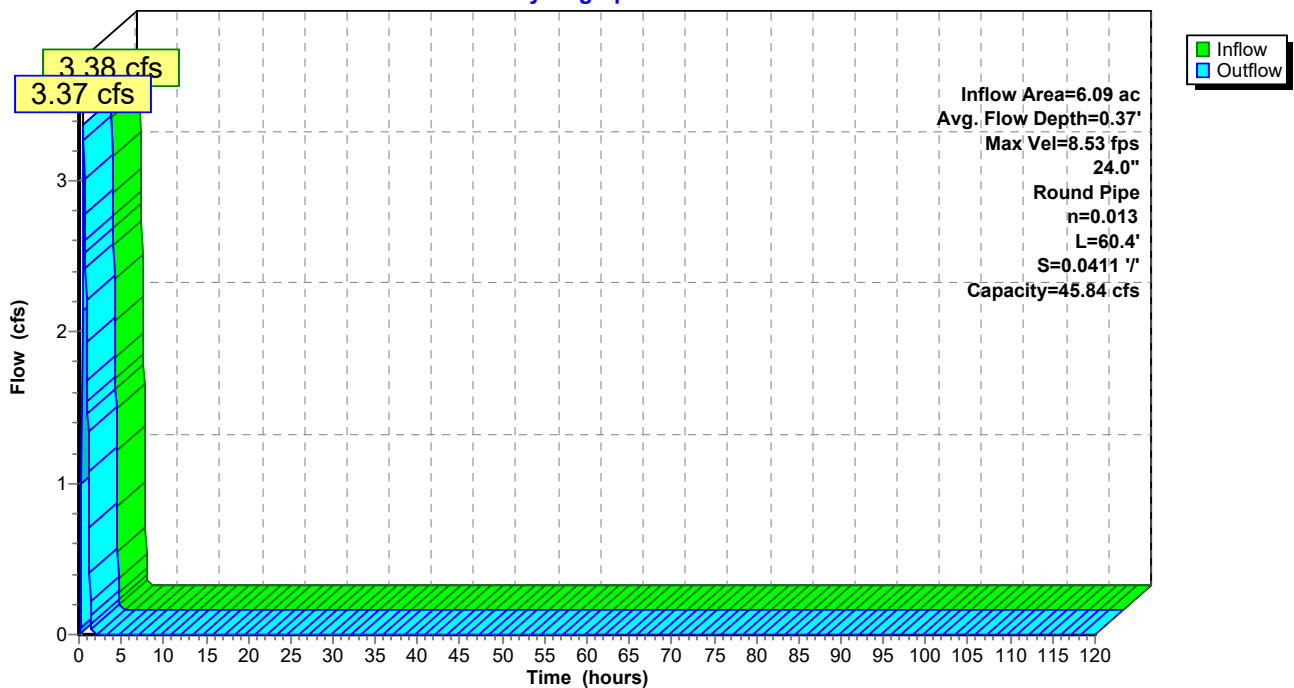
Peak Storage= 24 cf @ 0.51 hrs  
 Average Depth at Peak Storage= 0.37'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 45.84 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 60.4' Slope= 0.0411 '/  
 Inlet Invert= 748.28', Outlet Invert= 745.80'



**Reach LP-N-A9: Letdown Pipe N-A9**

Hydrograph



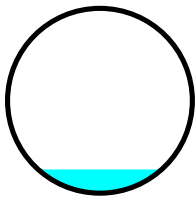
**Summary for Reach LP-N-B1: Letdown Pipe N-B1**

Inflow Area = 3.15 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 1.57 cfs @ 0.62 hrs, Volume= 0.084 af  
 Outflow = 1.56 cfs @ 0.63 hrs, Volume= 0.084 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 12.03 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 4.88 fps, Avg. Travel Time= 0.7 min

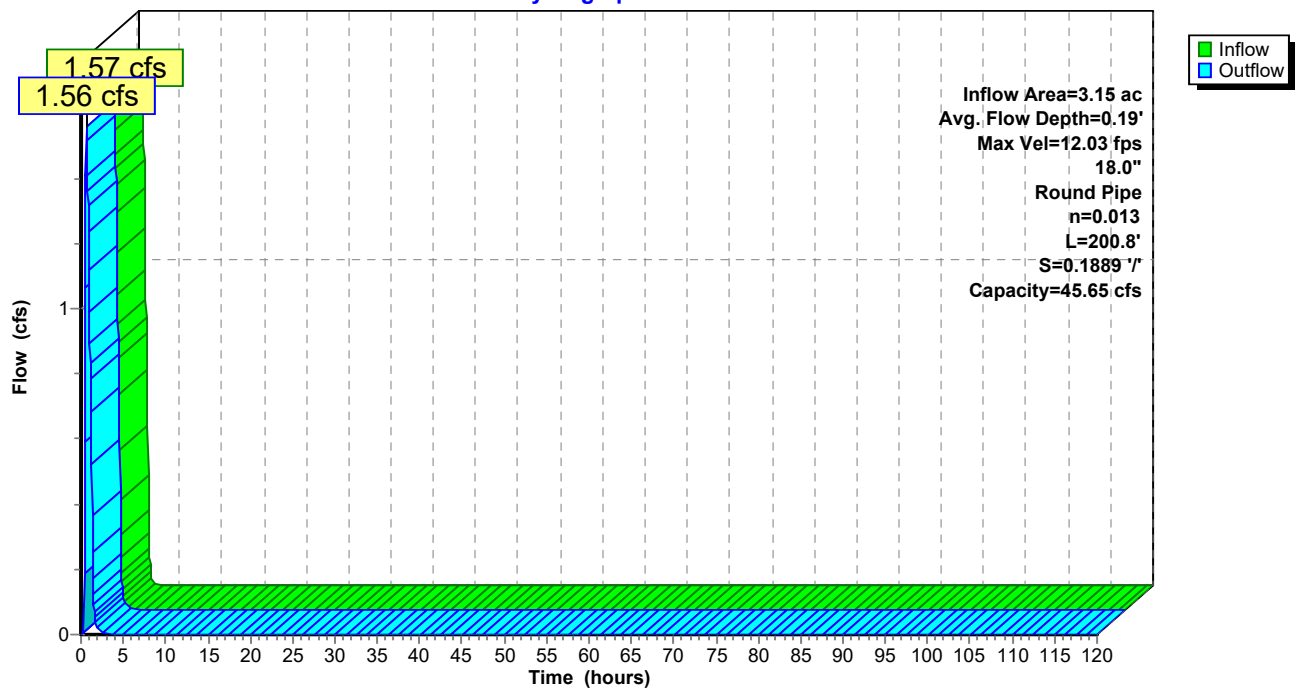
Peak Storage= 26 cf @ 0.62 hrs  
 Average Depth at Peak Storage= 0.19'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 45.65 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 200.8' Slope= 0.1889 '/'  
 Inlet Invert= 847.84', Outlet Invert= 809.91'



**Reach LP-N-B1: Letdown Pipe N-B1**

Hydrograph



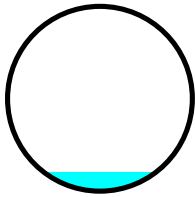
**Summary for Reach LP-N-B2: Letdown Pipe N-B2**

Inflow Area = 4.49 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 2.19 cfs @ 0.63 hrs, Volume= 0.120 af  
 Outflow = 2.19 cfs @ 0.64 hrs, Volume= 0.120 af, Atten= 0%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 12.81 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 5.24 fps, Avg. Travel Time= 0.6 min

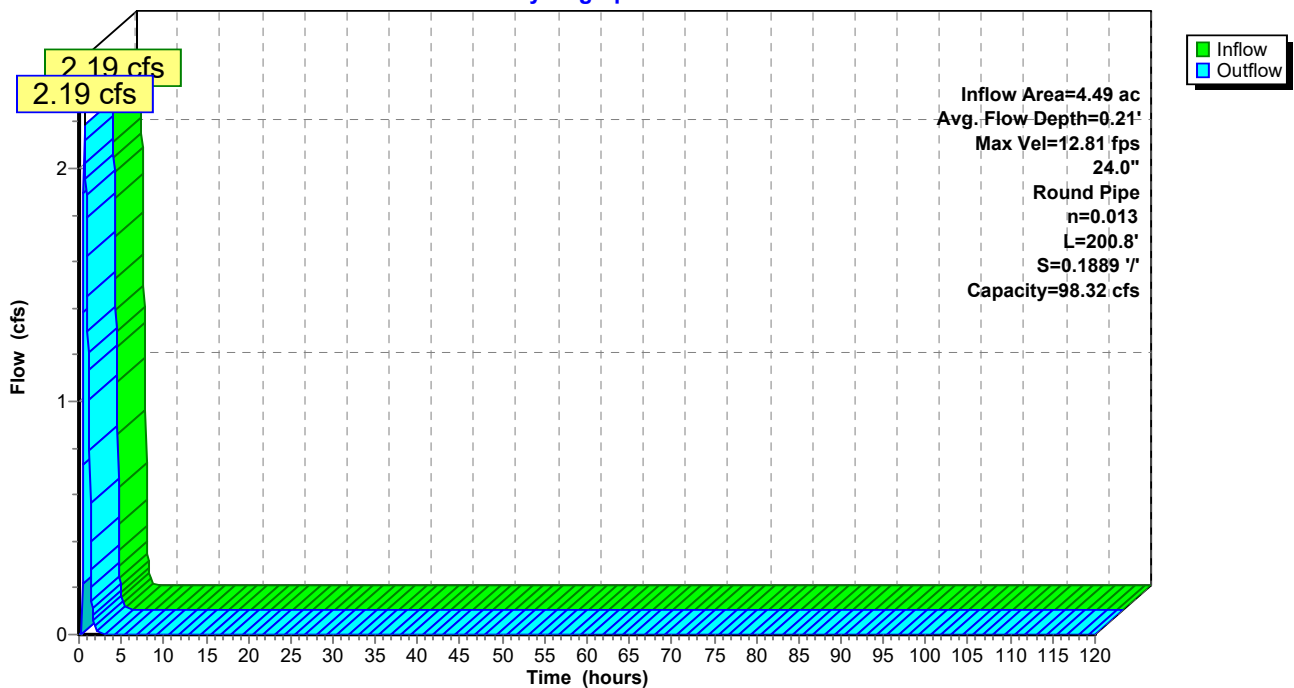
Peak Storage= 34 cf @ 0.64 hrs  
 Average Depth at Peak Storage= 0.21'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 98.32 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 200.8' Slope= 0.1889 '/'  
 Inlet Invert= 847.84', Outlet Invert= 809.91'



**Reach LP-N-B2: Letdown Pipe N-B2**

Hydrograph





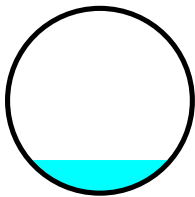
**Summary for Reach LP-N-B3: Letdown Pipe N-B3**

Inflow Area = 6.58 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 3.15 cfs @ 0.64 hrs, Volume= 0.176 af  
 Outflow = 3.14 cfs @ 0.65 hrs, Volume= 0.176 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 14.76 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 4.94 fps, Avg. Travel Time= 0.7 min

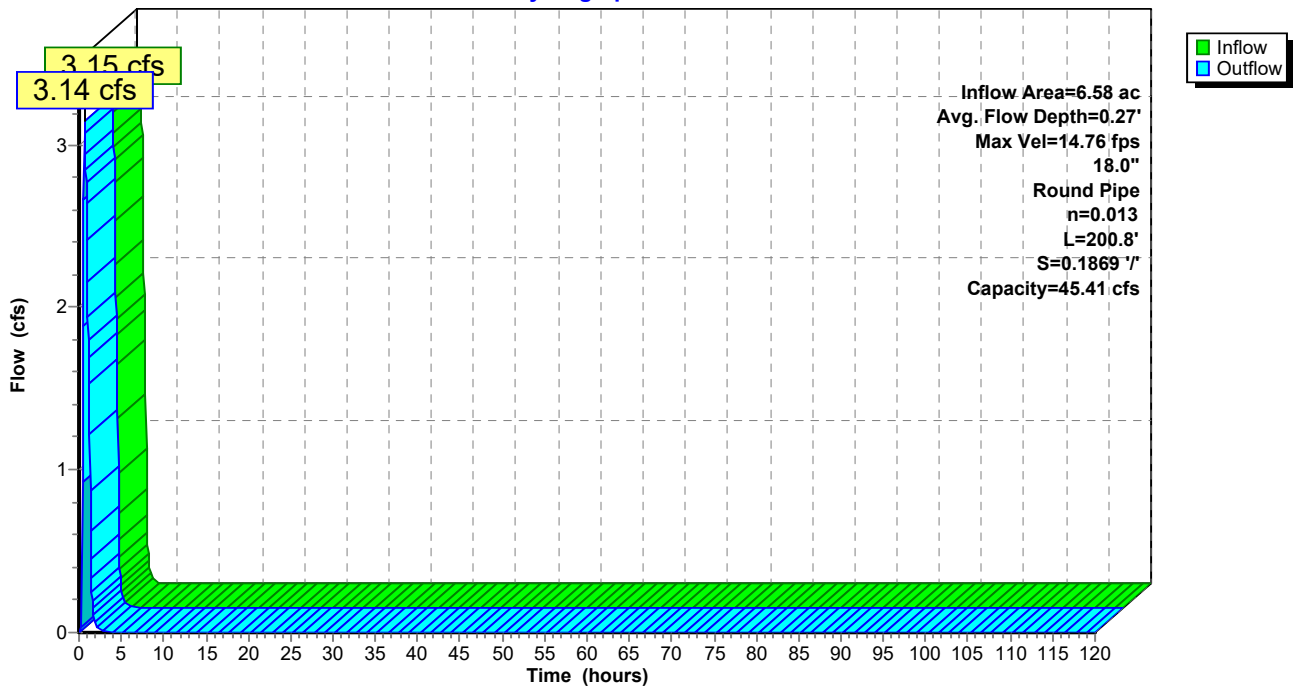
Peak Storage= 43 cf @ 0.65 hrs  
 Average Depth at Peak Storage= 0.27'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 45.41 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 200.8' Slope= 0.1869 '/'  
 Inlet Invert= 809.91', Outlet Invert= 772.39'



**Reach LP-N-B3: Letdown Pipe N-B3**

Hydrograph



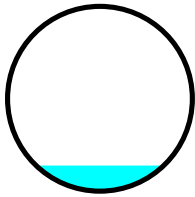
**Summary for Reach LP-N-B4: Letdown Pipe N-B4**

Inflow Area = 8.29 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 3.99 cfs @ 0.64 hrs, Volume= 0.222 af  
 Outflow = 3.98 cfs @ 0.65 hrs, Volume= 0.222 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 15.27 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 5.40 fps, Avg. Travel Time= 0.6 min

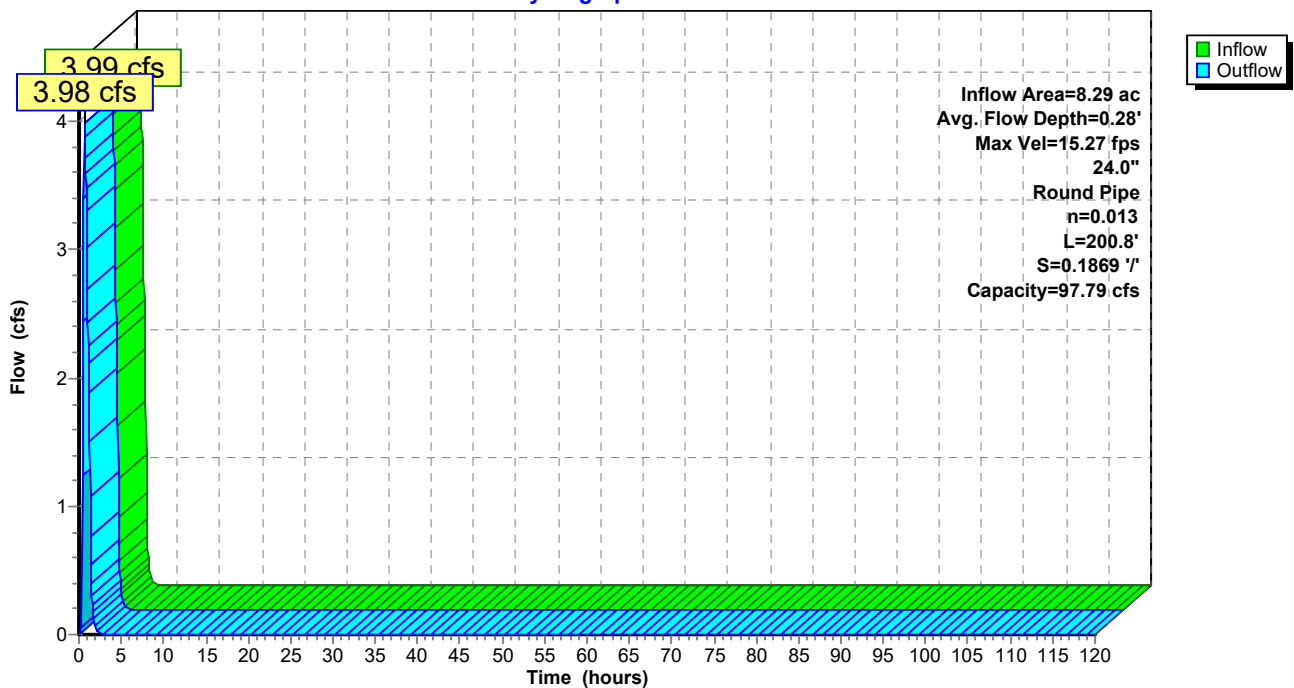
Peak Storage= 52 cf @ 0.64 hrs  
 Average Depth at Peak Storage= 0.28'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 97.79 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 200.8' Slope= 0.1869 '/'  
 Inlet Invert= 809.91', Outlet Invert= 772.39'



**Reach LP-N-B4: Letdown Pipe N-B4**

Hydrograph



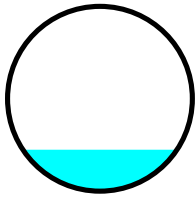
**Summary for Reach LP-N-B5: Letdown Pipe N-B5**

Inflow Area = 11.08 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 5.08 cfs @ 0.67 hrs, Volume= 0.296 af  
 Outflow = 5.05 cfs @ 0.68 hrs, Volume= 0.296 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 17.18 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 5.11 fps, Avg. Travel Time= 0.5 min

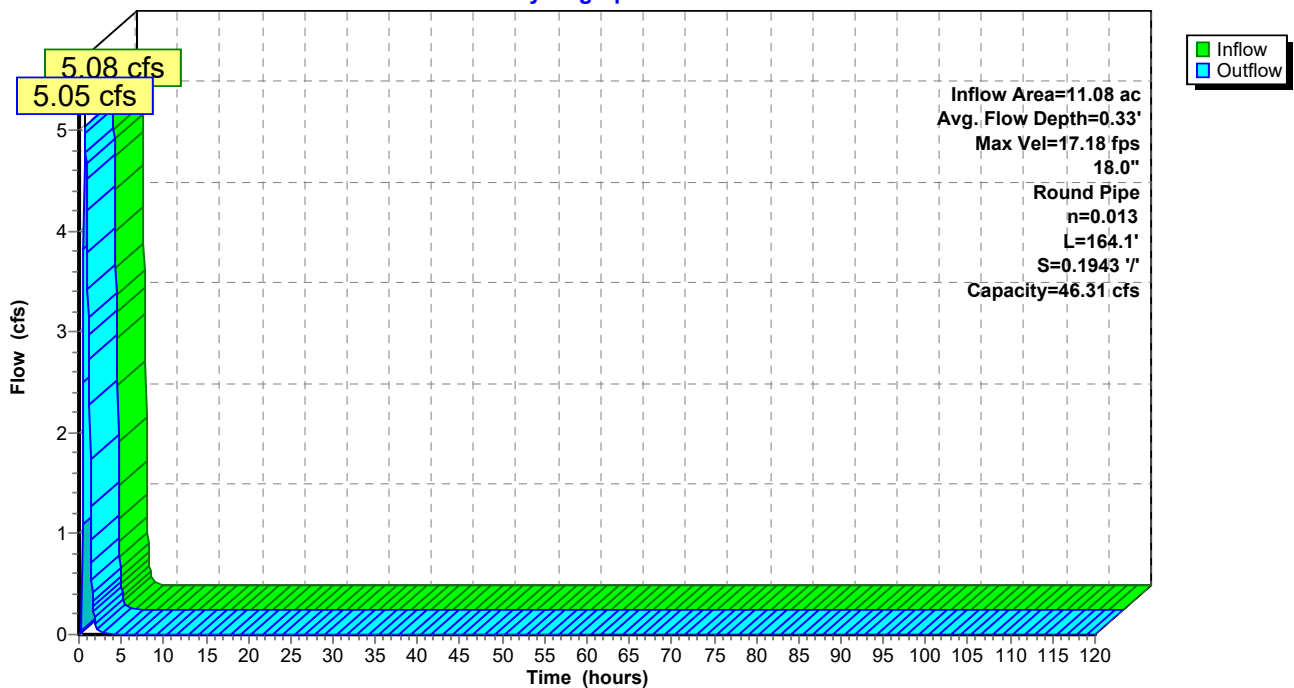
Peak Storage= 48 cf @ 0.68 hrs  
 Average Depth at Peak Storage= 0.33'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 46.31 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 164.1' Slope= 0.1943 '/'  
 Inlet Invert= 772.39', Outlet Invert= 740.50'



**Reach LP-N-B5: Letdown Pipe N-B5**

Hydrograph



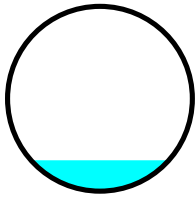
**Summary for Reach LP-N-B6: Letdown Pipe N-B6**

Inflow Area = 12.58 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 5.97 cfs @ 0.65 hrs, Volume= 0.336 af  
 Outflow = 5.97 cfs @ 0.66 hrs, Volume= 0.336 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 17.46 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 5.62 fps, Avg. Travel Time= 0.5 min

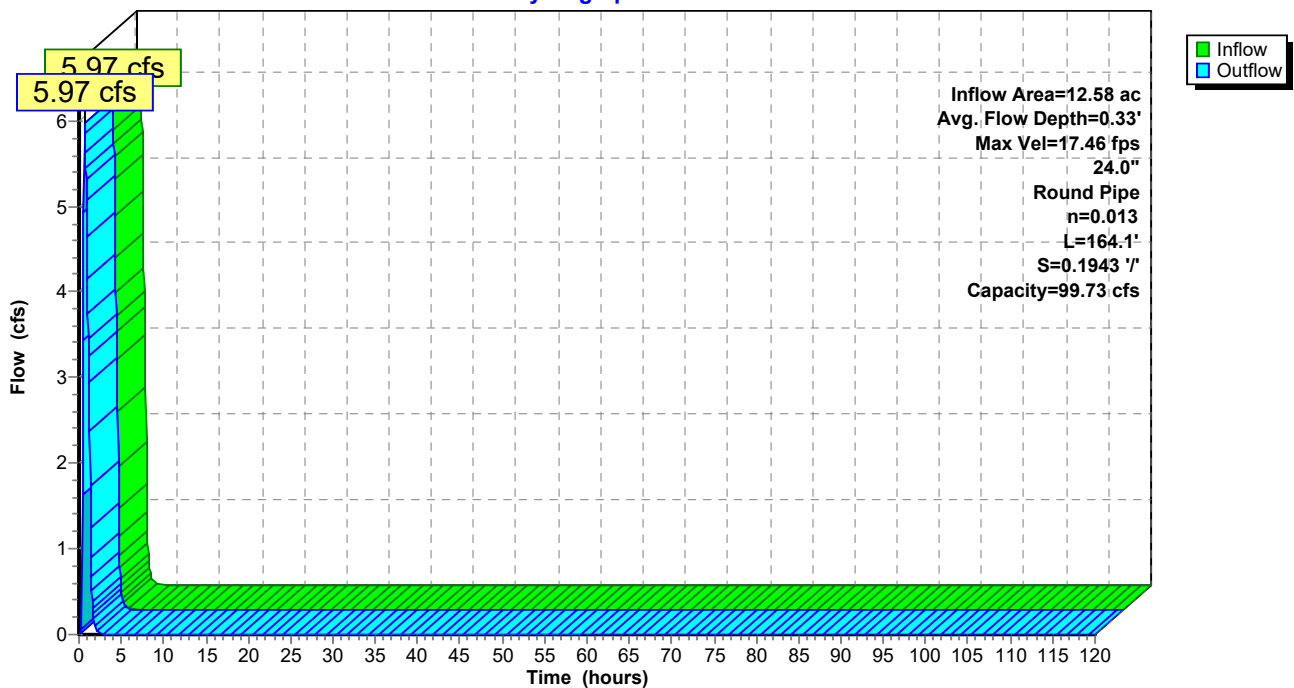
Peak Storage= 56 cf @ 0.65 hrs  
 Average Depth at Peak Storage= 0.33'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 99.73 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 164.1' Slope= 0.1943 '/'  
 Inlet Invert= 772.39', Outlet Invert= 740.50'



**Reach LP-N-B6: Letdown Pipe N-B6**

Hydrograph



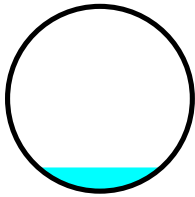
**Summary for Reach LP-N-C1: Letdown Pipe N-C1**

Inflow Area = 8.24 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 3.91 cfs @ 0.64 hrs, Volume= 0.220 af  
 Outflow = 3.91 cfs @ 0.65 hrs, Volume= 0.220 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 16.82 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 6.35 fps, Avg. Travel Time= 0.4 min

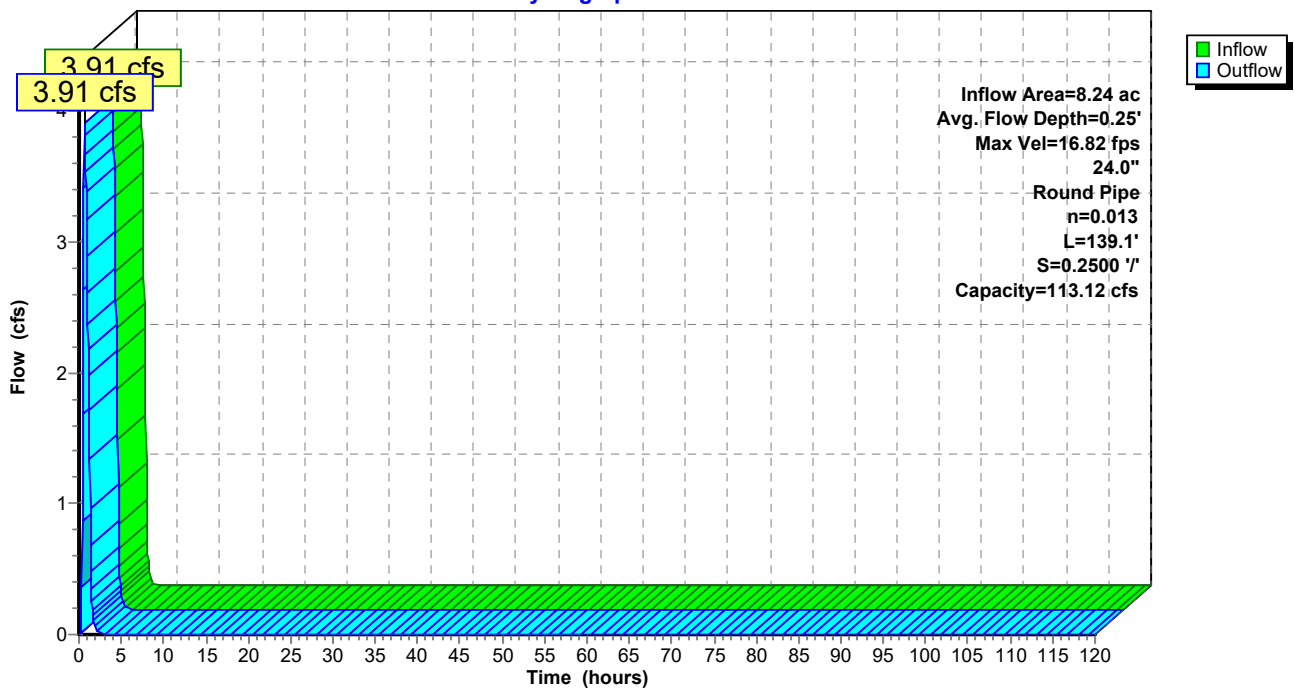
Peak Storage= 32 cf @ 0.65 hrs  
 Average Depth at Peak Storage= 0.25'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 113.12 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 139.1' Slope= 0.2500 '/'  
 Inlet Invert= 843.66', Outlet Invert= 808.88'



**Reach LP-N-C1: Letdown Pipe N-C1**

Hydrograph



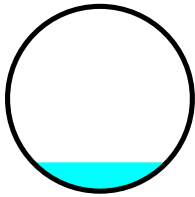
**Summary for Reach LP-N-C2: Letdown Pipe N-C2**

Inflow Area = 12.44 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 5.89 cfs @ 0.65 hrs, Volume= 0.333 af  
 Outflow = 5.89 cfs @ 0.65 hrs, Volume= 0.333 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 19.00 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 6.44 fps, Avg. Travel Time= 0.2 min

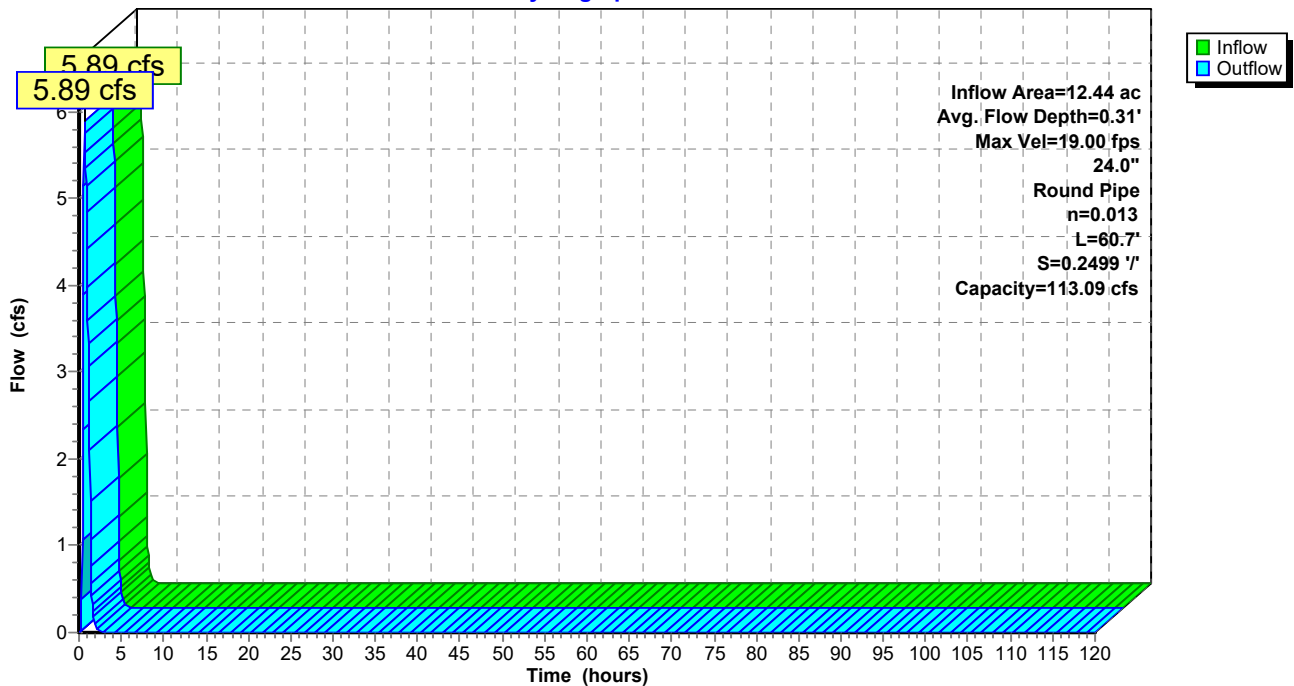
Peak Storage= 19 cf @ 0.65 hrs  
 Average Depth at Peak Storage= 0.31'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 113.09 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 60.7' Slope= 0.2499 '/  
 Inlet Invert= 808.88', Outlet Invert= 793.71'



**Reach LP-N-C2: Letdown Pipe N-C2**

Hydrograph



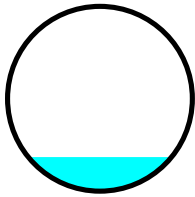
**Summary for Reach LP-N-C3: Letdown Pipe N-C3**

Inflow Area = 17.99 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 8.43 cfs @ 0.65 hrs, Volume= 0.481 af  
 Outflow = 8.42 cfs @ 0.65 hrs, Volume= 0.481 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 21.33 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 6.76 fps, Avg. Travel Time= 0.3 min

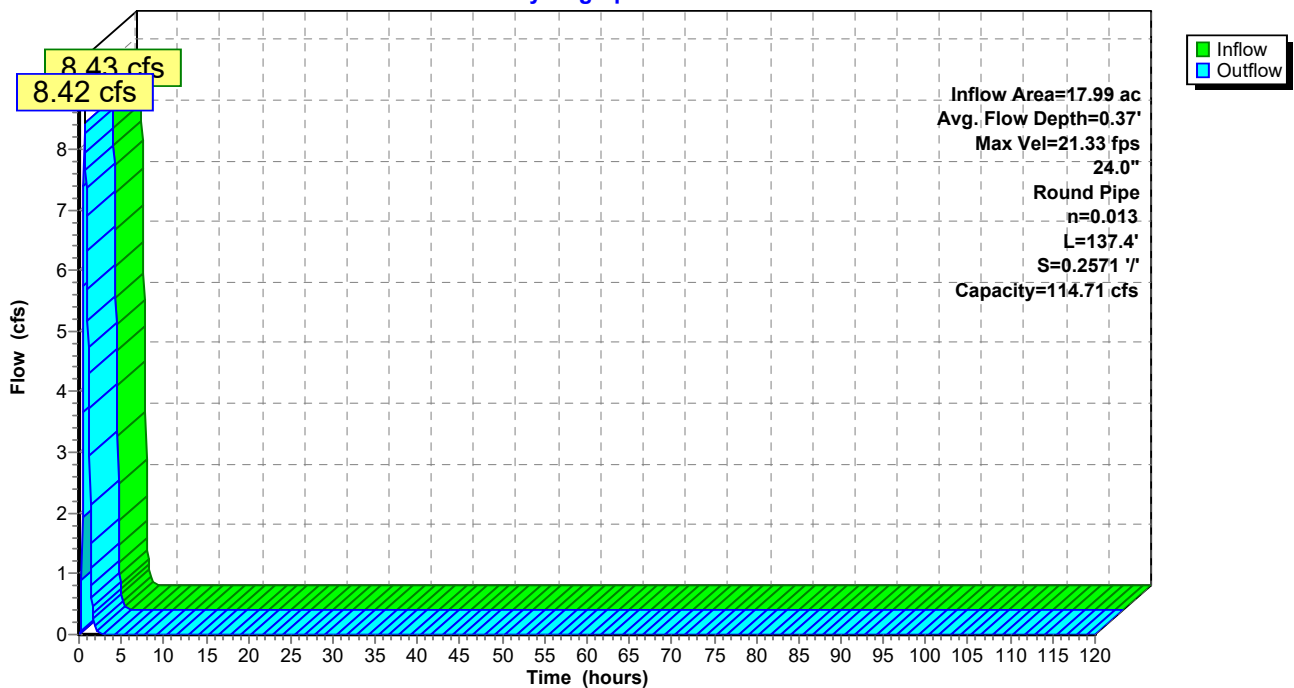
Peak Storage= 54 cf @ 0.65 hrs  
 Average Depth at Peak Storage= 0.37'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 114.71 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 137.4' Slope= 0.2571 1/100'  
 Inlet Invert= 774.26', Outlet Invert= 738.93'



**Reach LP-N-C3: Letdown Pipe N-C3**

Hydrograph



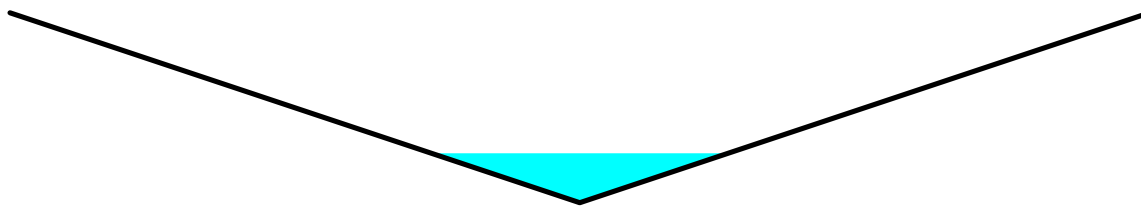
**Summary for Reach PD-1: Perimeter Ditch 1**

Inflow Area = 8.06 ac, 4.48% Impervious, Inflow Depth = 0.36" for 2-Year, 1-Hour event  
 Inflow = 5.15 cfs @ 0.38 hrs, Volume= 0.241 af  
 Outflow = 3.52 cfs @ 0.90 hrs, Volume= 0.241 af, Atten= 32%, Lag= 31.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.93 fps, Min. Travel Time= 14.5 min  
 Avg. Velocity = 0.45 fps, Avg. Travel Time= 62.0 min

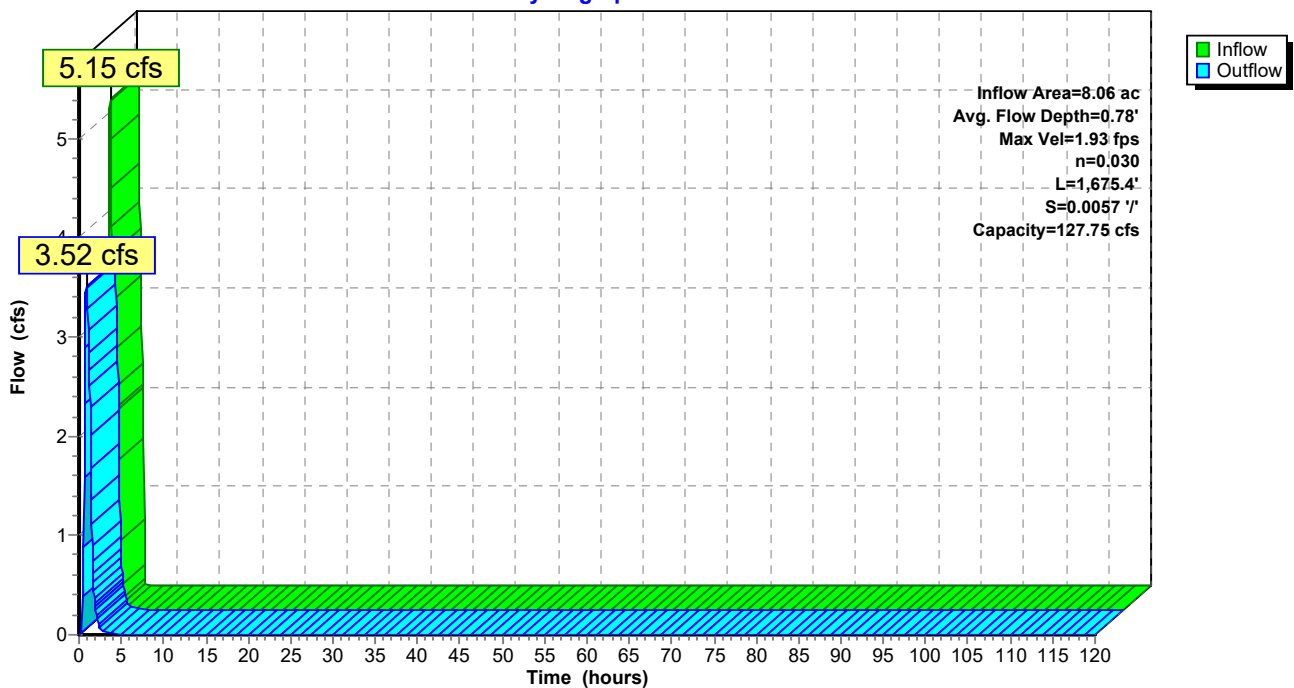
Peak Storage= 3,060 cf @ 0.67 hrs  
 Average Depth at Peak Storage= 0.78'  
 Bank-Full Depth= 3.00' Flow Area= 27.0 sf, Capacity= 127.75 cfs

0.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 ' ' Top Width= 18.00'  
 Length= 1,675.4' Slope= 0.0057 ' '  
 Inlet Invert= 768.00', Outlet Invert= 758.45'



**Reach PD-1: Perimeter Ditch 1**

Hydrograph





**Summary for Reach PD-10: Perimeter Ditch 10**

Inflow Area = 9.21 ac, 4.89% Impervious, Inflow Depth = 0.36" for 2-Year, 1-Hour event  
 Inflow = 3.50 cfs @ 0.75 hrs, Volume= 0.278 af  
 Outflow = 3.46 cfs @ 0.90 hrs, Volume= 0.278 af, Atten= 1%, Lag= 9.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.32 fps, Min. Travel Time= 5.6 min  
 Avg. Velocity = 0.46 fps, Avg. Travel Time= 16.1 min

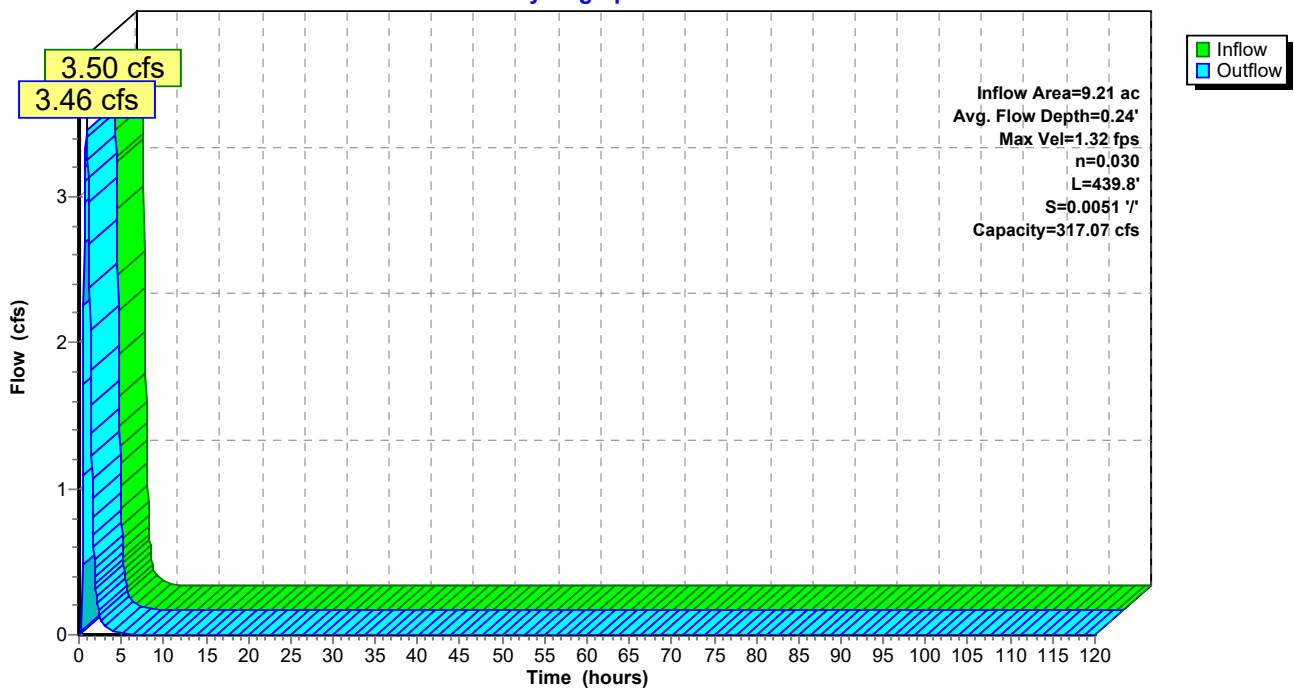
Peak Storage= 1,154 cf @ 0.80 hrs  
 Average Depth at Peak Storage= 0.24'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 317.07 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 ' / ' Top Width= 28.00'  
 Length= 439.8' Slope= 0.0051 ' / '  
 Inlet Invert= 739.43', Outlet Invert= 737.18'



**Reach PD-10: Perimeter Ditch 10**

Hydrograph



**Summary for Reach PD-11: Perimeter Ditch 11**

Inflow Area = 2.70 ac, 11.67% Impervious, Inflow Depth = 0.42" for 2-Year, 1-Hour event  
 Inflow = 2.32 cfs @ 0.33 hrs, Volume= 0.095 af  
 Outflow = 1.27 cfs @ 1.04 hrs, Volume= 0.095 af, Atten= 45%, Lag= 42.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 0.90 fps, Min. Travel Time= 20.4 min  
 Avg. Velocity = 0.39 fps, Avg. Travel Time= 46.9 min

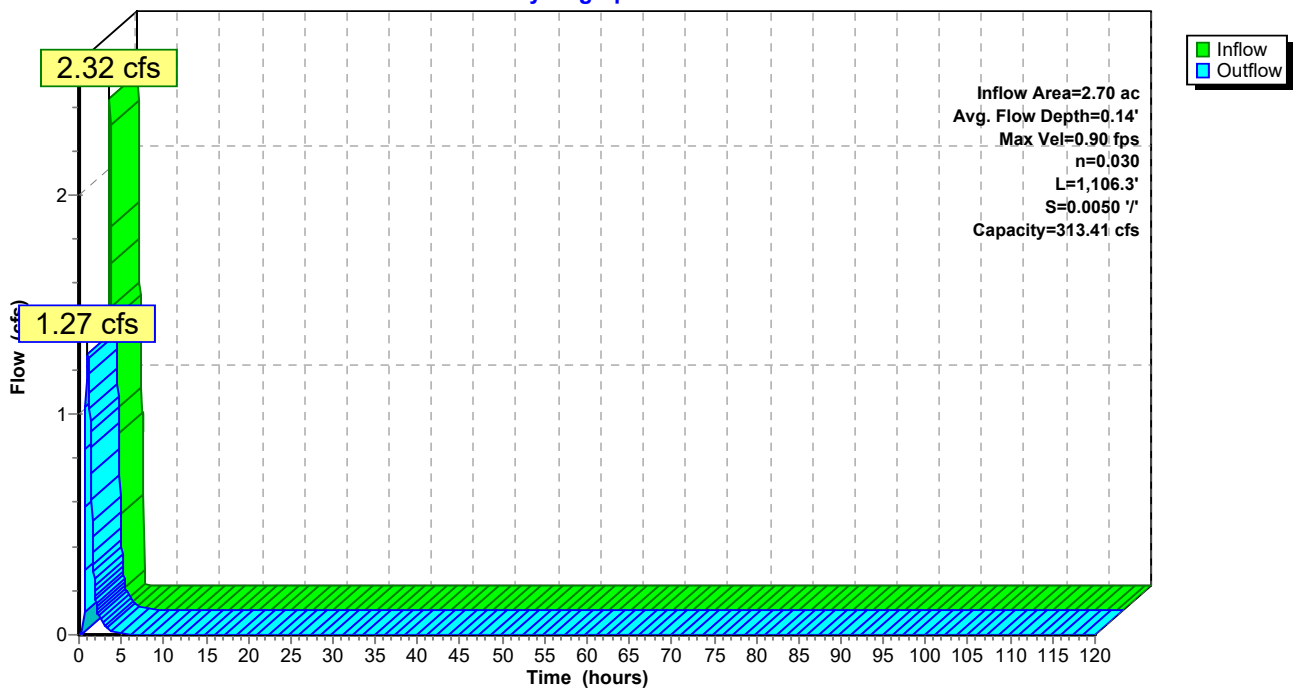
Peak Storage= 1,560 cf @ 0.70 hrs  
 Average Depth at Peak Storage= 0.14'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 313.41 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 1,106.3' Slope= 0.0050 '/'  
 Inlet Invert= 744.96', Outlet Invert= 739.43'



**Reach PD-11: Perimeter Ditch 11**

Hydrograph



**Summary for Reach PD-12: Perimeter Ditch 12**

Inflow Area = 2.74 ac, 11.45% Impervious, Inflow Depth = 0.42" for 2-Year, 1-Hour event  
 Inflow = 1.56 cfs @ 0.65 hrs, Volume= 0.096 af  
 Outflow = 1.17 cfs @ 1.24 hrs, Volume= 0.096 af, Atten= 25%, Lag= 35.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 0.87 fps, Min. Travel Time= 20.9 min  
 Avg. Velocity = 0.39 fps, Avg. Travel Time= 46.4 min

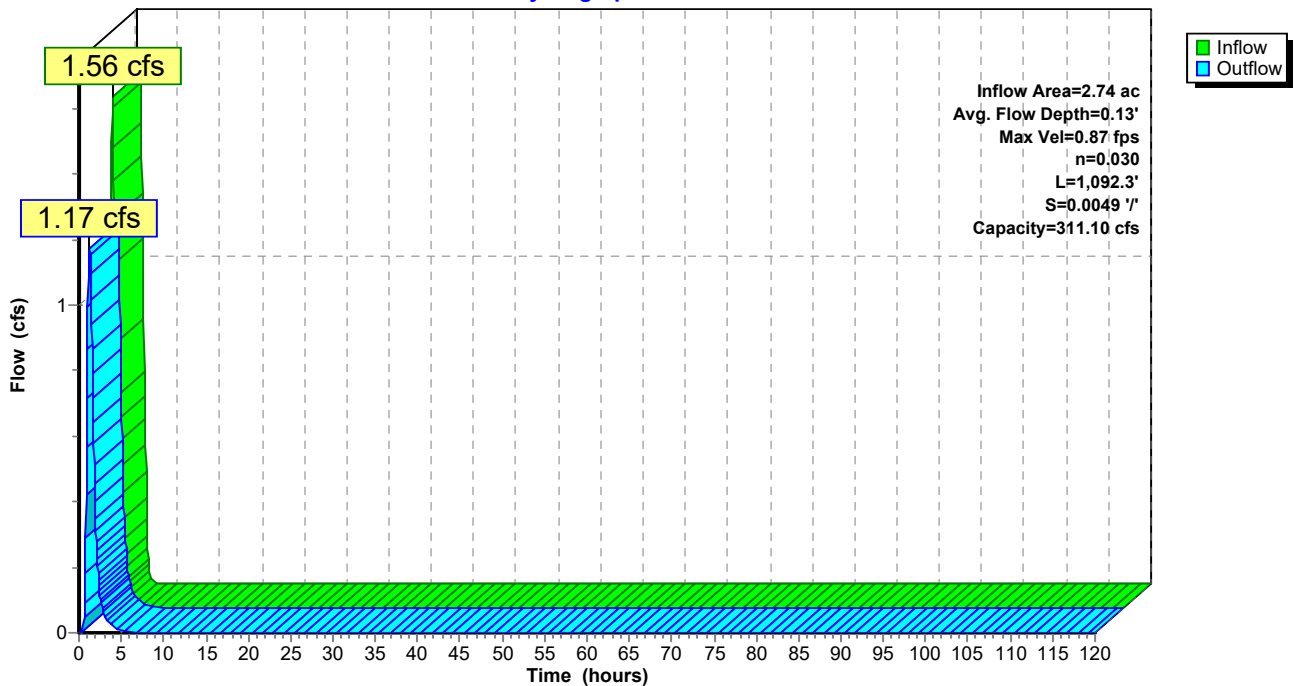
Peak Storage= 1,467 cf @ 0.89 hrs  
 Average Depth at Peak Storage= 0.13'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 311.10 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 1,092.3' Slope= 0.0049 '/'  
 Inlet Invert= 744.96', Outlet Invert= 739.58'



**Reach PD-12: Perimeter Ditch 12**

Hydrograph



**Summary for Reach PD-13: Perimeter Ditch 13**

Inflow Area = 25.73 ac, 1.49% Impervious, Inflow Depth = 0.33" for 2-Year, 1-Hour event  
 Inflow = 10.87 cfs @ 0.65 hrs, Volume= 0.717 af  
 Outflow = 10.80 cfs @ 0.72 hrs, Volume= 0.717 af, Atten= 1%, Lag= 4.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.65 fps, Min. Travel Time= 2.3 min  
 Avg. Velocity = 0.39 fps, Avg. Travel Time= 9.6 min

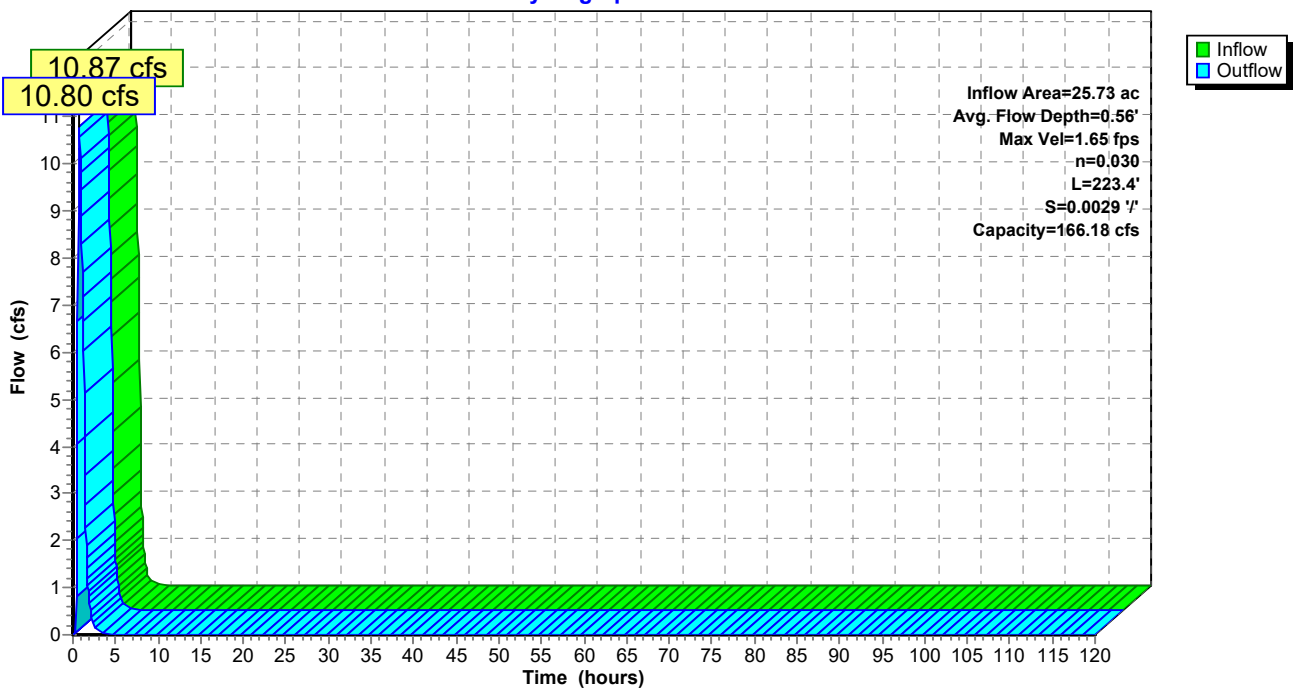
Peak Storage= 1,465 cf @ 0.68 hrs  
 Average Depth at Peak Storage= 0.56'  
 Bank-Full Depth= 2.50' Flow Area= 43.8 sf, Capacity= 166.18 cfs

10.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 25.00'  
 Length= 223.4' Slope= 0.0029 '/'  
 Inlet Invert= 739.58', Outlet Invert= 738.93'



**Reach PD-13: Perimeter Ditch 13**

Hydrograph



**Summary for Reach PD-14: Perimeter Ditch 14**

Inflow Area = 17.46 ac, 1.99% Impervious, Inflow Depth = 0.34" for 2-Year, 1-Hour event  
 Inflow = 7.18 cfs @ 0.85 hrs, Volume= 0.492 af  
 Outflow = 7.14 cfs @ 0.92 hrs, Volume= 0.492 af, Atten= 1%, Lag= 3.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.64 fps, Min. Travel Time= 2.3 min  
 Avg. Velocity = 0.43 fps, Avg. Travel Time= 8.6 min

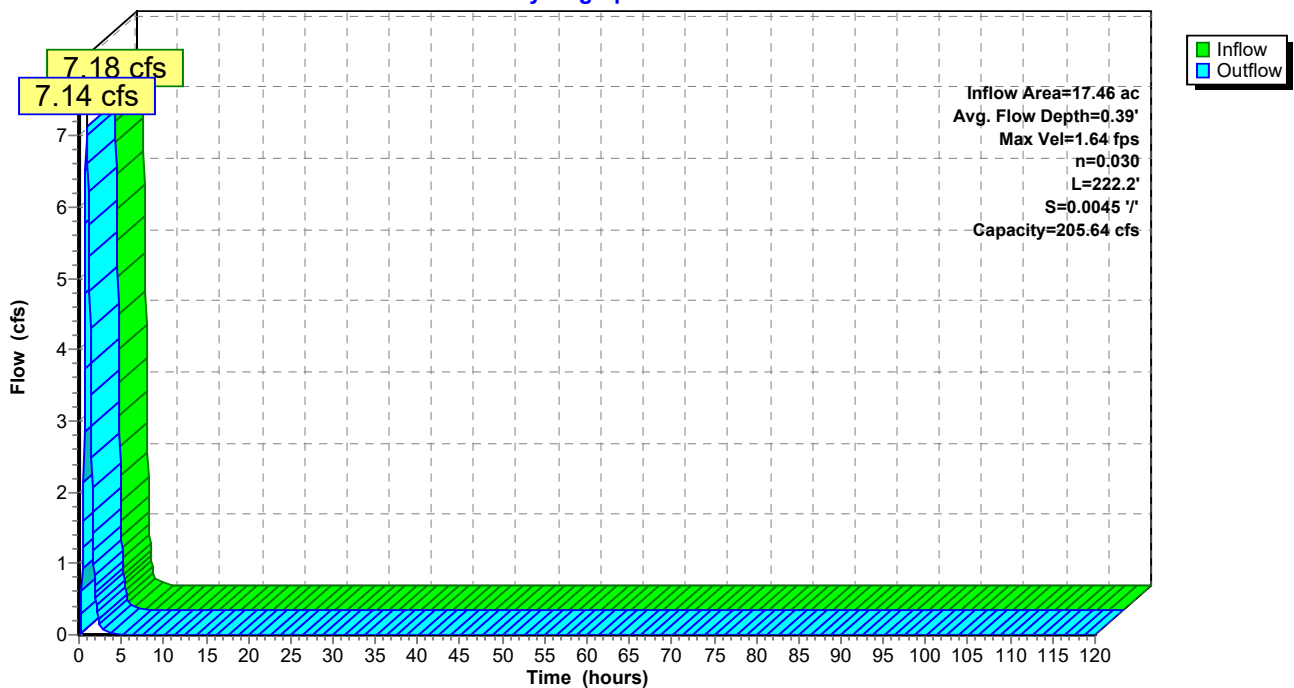
Peak Storage= 968 cf @ 0.88 hrs  
 Average Depth at Peak Storage= 0.39'  
 Bank-Full Depth= 2.50' Flow Area= 43.8 sf, Capacity= 205.64 cfs

10.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 25.00'  
 Length= 222.2' Slope= 0.0045 '/'  
 Inlet Invert= 739.92', Outlet Invert= 738.93'



**Reach PD-14: Perimeter Ditch 14**

Hydrograph



**Summary for Reach PD-15: Perimeter Ditch 15**

Inflow Area = 16.01 ac, 1.69% Impervious, Inflow Depth = 0.34" for 2-Year, 1-Hour event  
 Inflow = 7.29 cfs @ 0.63 hrs, Volume= 0.448 af  
 Outflow = 6.81 cfs @ 0.86 hrs, Volume= 0.448 af, Atten= 7%, Lag= 13.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.61 fps, Min. Travel Time= 7.8 min  
 Avg. Velocity = 0.42 fps, Avg. Travel Time= 29.9 min

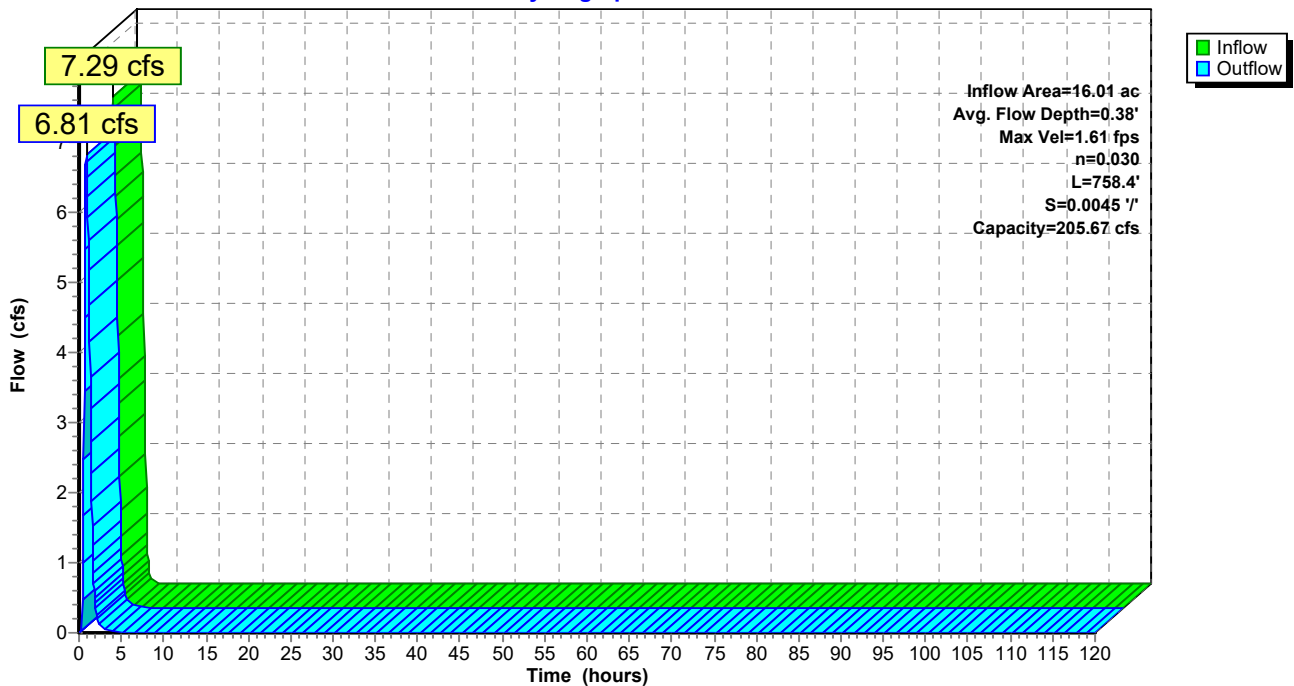
Peak Storage= 3,211 cf @ 0.72 hrs  
 Average Depth at Peak Storage= 0.38'  
 Bank-Full Depth= 2.50' Flow Area= 43.8 sf, Capacity= 205.67 cfs

10.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 25.00'  
 Length= 758.4' Slope= 0.0045 '/'  
 Inlet Invert= 743.30', Outlet Invert= 739.92'



**Reach PD-15: Perimeter Ditch 15**

Hydrograph



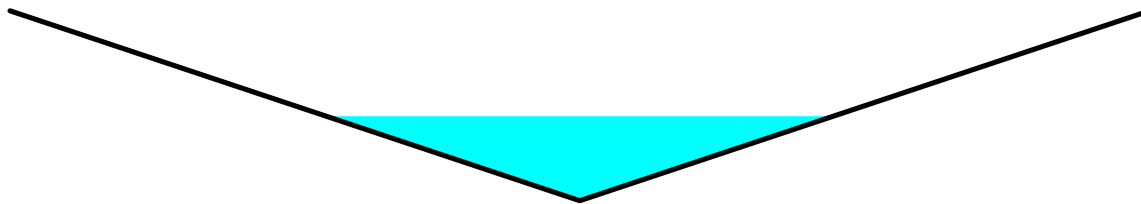
**Summary for Reach PD-2: Perimeter Ditch 2**

Inflow Area = 30.47 ac, 1.77% Impervious, Inflow Depth = 0.33" for 2-Year, 1-Hour event  
 Inflow = 12.23 cfs @ 0.95 hrs, Volume= 0.843 af  
 Outflow = 12.16 cfs @ 1.02 hrs, Volume= 0.843 af, Atten= 1%, Lag= 3.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.28 fps, Min. Travel Time= 2.3 min  
 Avg. Velocity = 0.47 fps, Avg. Travel Time= 11.3 min

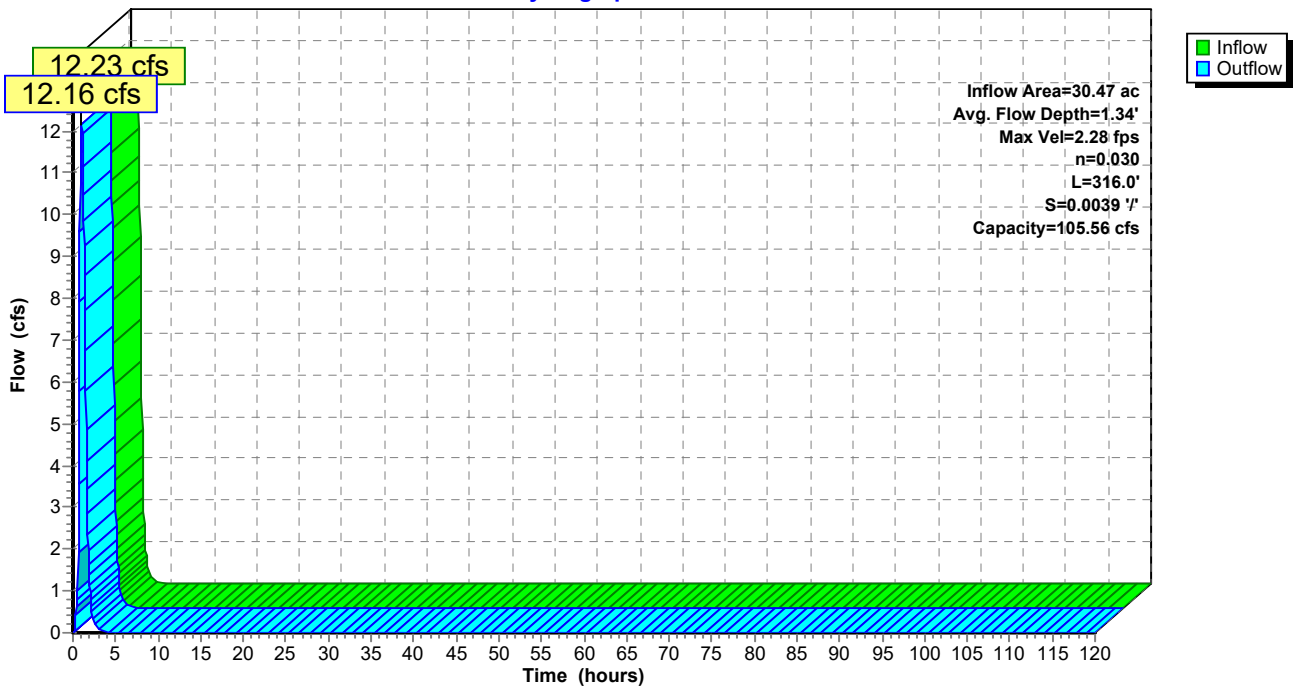
Peak Storage= 1,691 cf @ 0.98 hrs  
 Average Depth at Peak Storage= 1.34'  
 Bank-Full Depth= 3.00' Flow Area= 27.0 sf, Capacity= 105.56 cfs

0.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 ' / ' Top Width= 18.00'  
 Length= 316.0' Slope= 0.0039 ' / '  
 Inlet Invert= 758.00', Outlet Invert= 756.77'



**Reach PD-2: Perimeter Ditch 2**

Hydrograph



**Summary for Reach PD-3: Perimeter Ditch 3**

Inflow Area = 50.20 ac, 1.23% Impervious, Inflow Depth = 0.33" for 2-Year, 1-Hour event  
 Inflow = 18.38 cfs @ 0.89 hrs, Volume= 1.377 af  
 Outflow = 18.26 cfs @ 0.98 hrs, Volume= 1.377 af, Atten= 1%, Lag= 5.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.75 fps, Min. Travel Time= 3.0 min  
 Avg. Velocity = 0.65 fps, Avg. Travel Time= 12.6 min

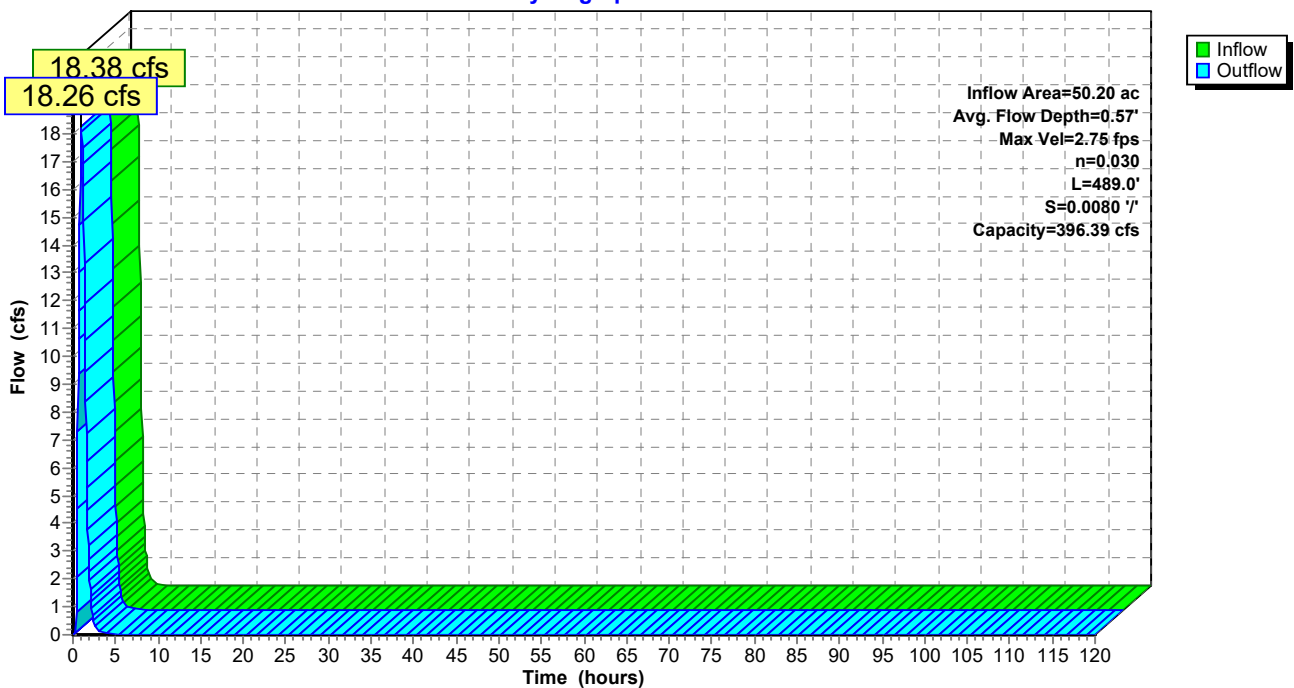
Peak Storage= 3,249 cf @ 0.93 hrs  
 Average Depth at Peak Storage= 0.57'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 396.39 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 489.0' Slope= 0.0080 '/'  
 Inlet Invert= 755.78', Outlet Invert= 751.87'



**Reach PD-3: Perimeter Ditch 3**

Hydrograph





**Summary for Reach PD-4: Perimeter Ditch 4**

Inflow Area = 53.25 ac, 1.28% Impervious, Inflow Depth = 0.33" for 2-Year, 1-Hour event  
 Inflow = 19.31 cfs @ 0.98 hrs, Volume= 1.463 af  
 Outflow = 19.21 cfs @ 1.03 hrs, Volume= 1.463 af, Atten= 1%, Lag= 2.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.55 fps, Min. Travel Time= 1.7 min  
 Avg. Velocity = 0.84 fps, Avg. Travel Time= 7.3 min

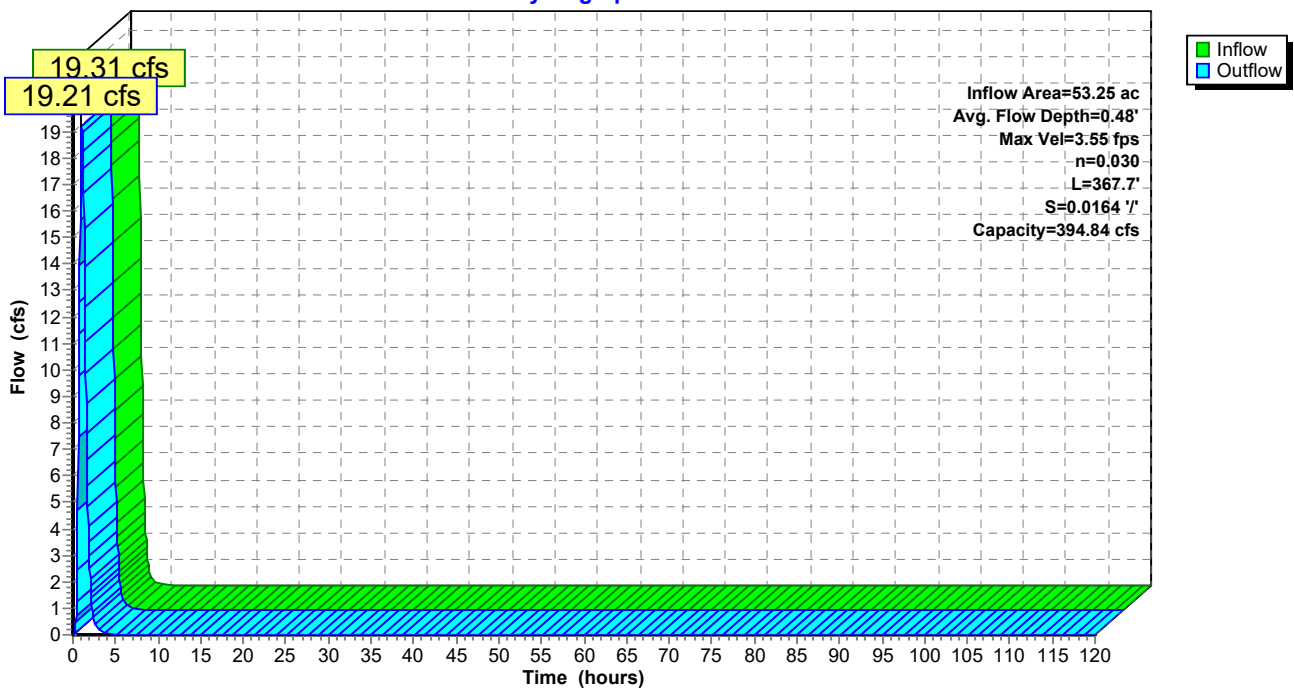
Peak Storage= 1,998 cf @ 1.00 hrs  
 Average Depth at Peak Storage= 0.48'  
 Bank-Full Depth= 2.50' Flow Area= 43.8 sf, Capacity= 394.84 cfs

10.00' x 2.50' deep channel, n= 0.030  
 Side Slope Z-value= 3.0 '/' Top Width= 25.00'  
 Length= 367.7' Slope= 0.0164 '/'  
 Inlet Invert= 751.87', Outlet Invert= 745.83'



**Reach PD-4: Perimeter Ditch 4**

Hydrograph



**Summary for Reach PD-5: Perimeter Ditch 5**

Inflow Area = 85.14 ac, 1.17% Impervious, Inflow Depth = 0.33" for 2-Year, 1-Hour event  
 Inflow = 29.24 cfs @ 0.95 hrs, Volume= 2.335 af  
 Outflow = 28.62 cfs @ 1.13 hrs, Volume= 2.335 af, Atten= 2%, Lag= 10.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.77 fps, Min. Travel Time= 6.8 min  
 Avg. Velocity = 0.58 fps, Avg. Travel Time= 32.3 min

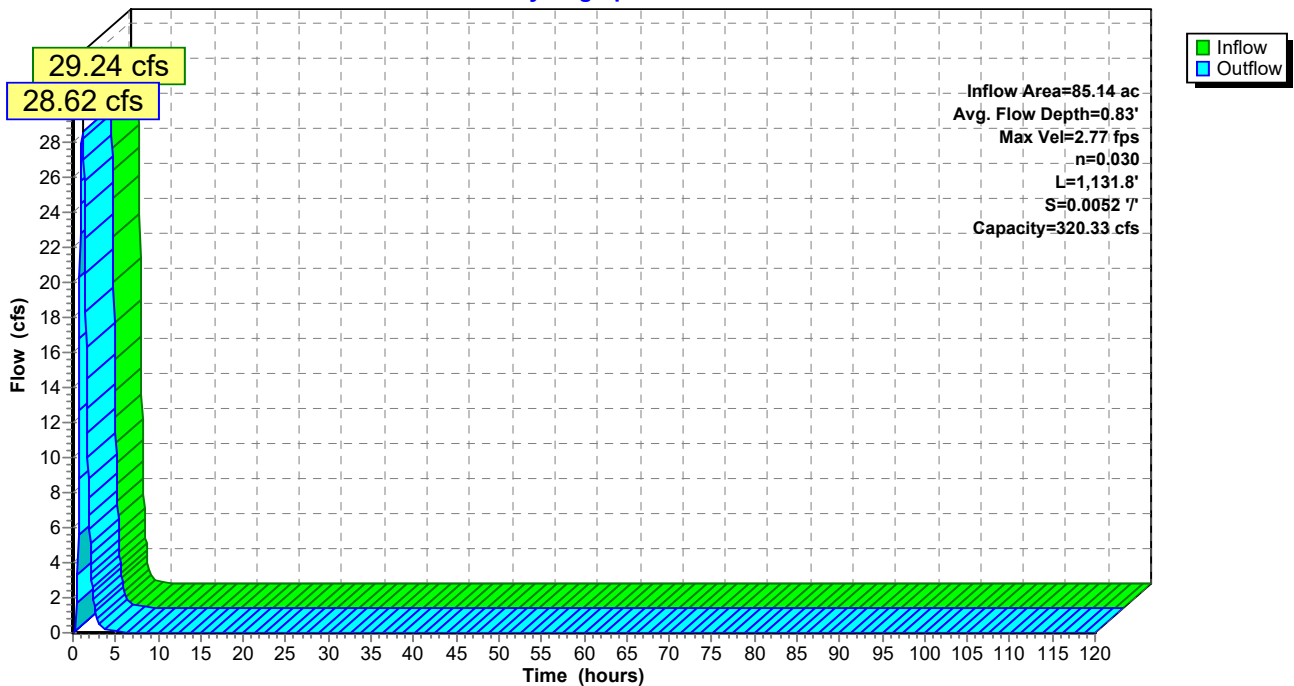
Peak Storage= 11,729 cf @ 1.01 hrs  
 Average Depth at Peak Storage= 0.83'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 320.33 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 ' / ' Top Width= 28.00'  
 Length= 1,131.8' Slope= 0.0052 ' / '  
 Inlet Invert= 745.80', Outlet Invert= 739.89'



**Reach PD-5: Perimeter Ditch 5**

Hydrograph



**Summary for Reach PD-6: Perimeter Ditch 6**

Inflow Area = 87.70 ac, 1.33% Impervious, Inflow Depth = 0.33" for 2-Year, 1-Hour event  
 Inflow = 28.63 cfs @ 1.12 hrs, Volume= 2.414 af  
 Outflow = 28.49 cfs @ 1.21 hrs, Volume= 2.414 af, Atten= 0%, Lag= 5.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.72 fps, Min. Travel Time= 3.6 min  
 Avg. Velocity = 0.58 fps, Avg. Travel Time= 16.7 min

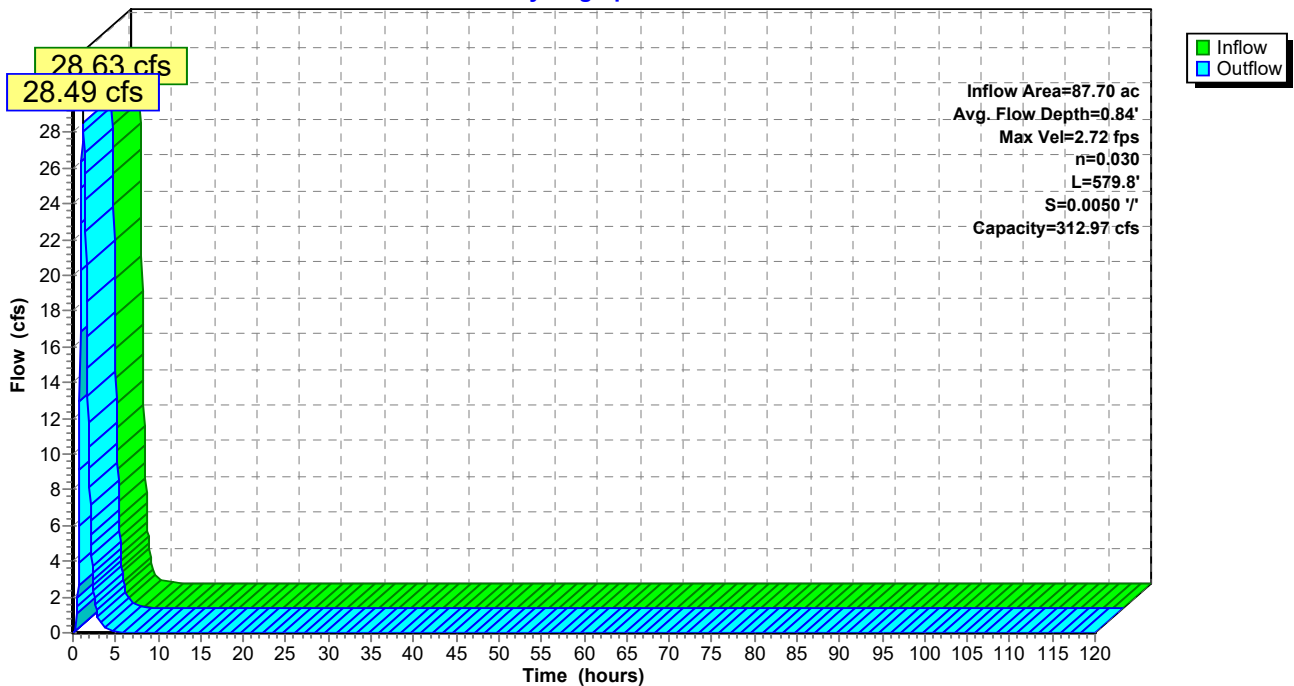
Peak Storage= 6,081 cf @ 1.15 hrs  
 Average Depth at Peak Storage= 0.84'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 312.97 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 579.8' Slope= 0.0050 '/'  
 Inlet Invert= 739.89', Outlet Invert= 737.00'



**Reach PD-6: Perimeter Ditch 6**

Hydrograph



**Summary for Reach PD-7: Perimeter Ditch 7**

Inflow Area = 3.12 ac, 32.08% Impervious, Inflow Depth = 0.68" for 2-Year, 1-Hour event  
 Inflow = 4.67 cfs @ 0.26 hrs, Volume= 0.177 af  
 Outflow = 4.55 cfs @ 0.30 hrs, Volume= 0.177 af, Atten= 2%, Lag= 1.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.45 fps, Min. Travel Time= 1.0 min  
 Avg. Velocity = 0.77 fps, Avg. Travel Time= 1.9 min

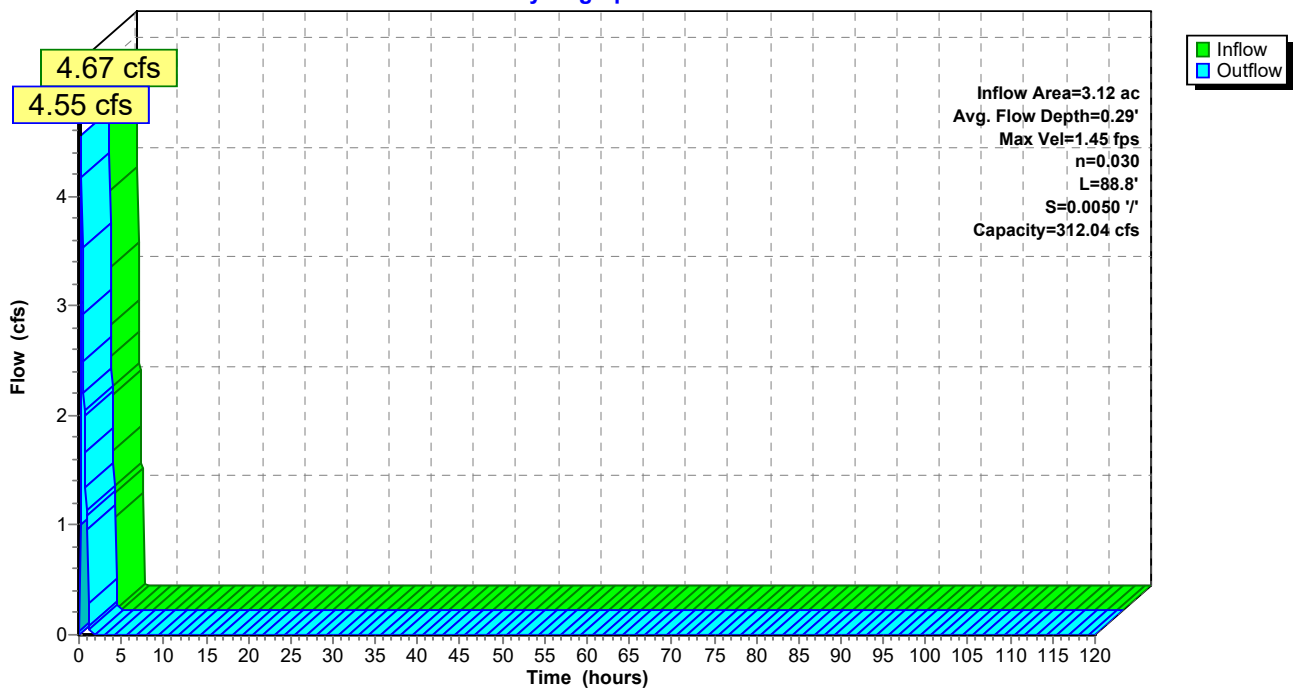
Peak Storage= 283 cf @ 0.28 hrs  
 Average Depth at Peak Storage= 0.29'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 312.04 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 88.8' Slope= 0.0050 '/'  
 Inlet Invert= 741.25', Outlet Invert= 740.81'



**Reach PD-7: Perimeter Ditch 7**

Hydrograph



**Summary for Reach PD-8: Perimeter Ditch 8**

Inflow Area = 0.14 ac, 14.29% Impervious, Inflow Depth = 0.45" for 2-Year, 1-Hour event  
 Inflow = 0.14 cfs @ 0.27 hrs, Volume= 0.005 af  
 Outflow = 0.12 cfs @ 0.42 hrs, Volume= 0.005 af, Atten= 15%, Lag= 9.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 0.36 fps, Min. Travel Time= 4.1 min  
 Avg. Velocity = 0.34 fps, Avg. Travel Time= 4.4 min

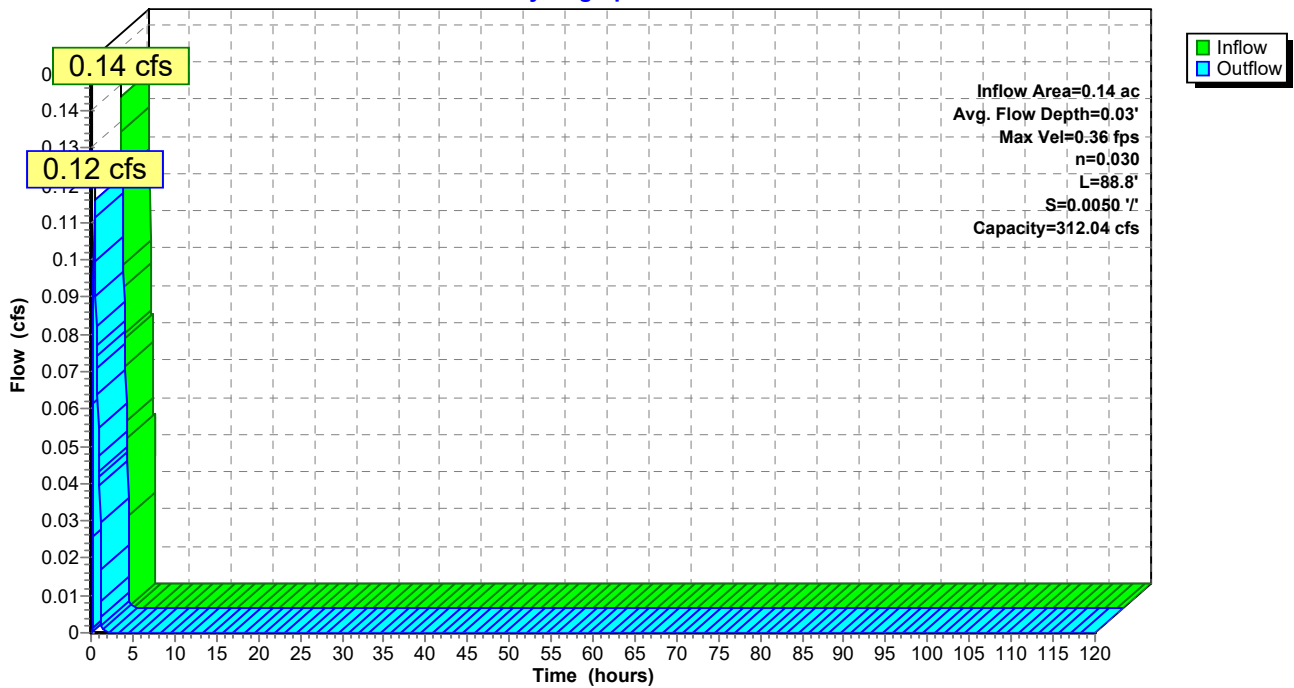
Peak Storage= 29 cf @ 0.35 hrs  
 Average Depth at Peak Storage= 0.03'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 312.04 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 88.8' Slope= 0.0050 '/'  
 Inlet Invert= 741.25', Outlet Invert= 740.81'



**Reach PD-8: Perimeter Ditch 8**

Hydrograph



**Summary for Reach PD-9: Perimeter Ditch 9**

Inflow Area = 6.78 ac, 3.10% Impervious, Inflow Depth = 0.35" for 2-Year, 1-Hour event  
 Inflow = 3.20 cfs @ 0.63 hrs, Volume= 0.197 af  
 Outflow = 2.89 cfs @ 0.85 hrs, Volume= 0.197 af, Atten= 10%, Lag= 13.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.28 fps, Min. Travel Time= 8.4 min  
 Avg. Velocity = 0.47 fps, Avg. Travel Time= 22.6 min

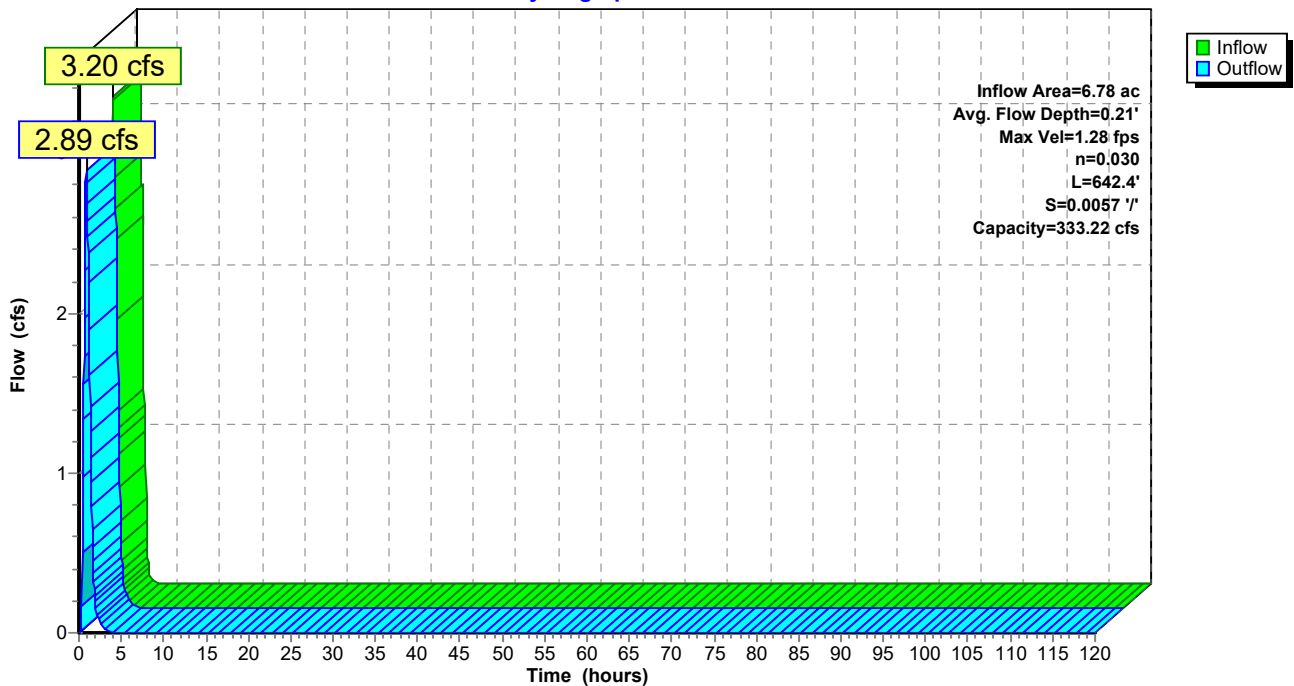
Peak Storage= 1,461 cf @ 0.71 hrs  
 Average Depth at Peak Storage= 0.21'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 333.22 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 642.4' Slope= 0.0057 '/'  
 Inlet Invert= 740.81', Outlet Invert= 737.18'



**Reach PD-9: Perimeter Ditch 9**

Hydrograph



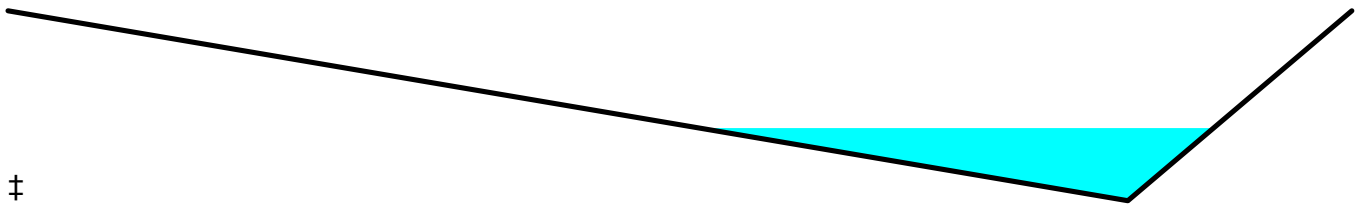
**Summary for Reach TB-A1A: Terrace Berm A1A**

Inflow Area = 6.74 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 3.47 cfs @ 0.52 hrs, Volume= 0.180 af  
 Outflow = 3.03 cfs @ 0.79 hrs, Volume= 0.180 af, Atten= 13%, Lag= 16.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.31 fps, Min. Travel Time= 7.5 min  
 Avg. Velocity = 0.58 fps, Avg. Travel Time= 29.6 min

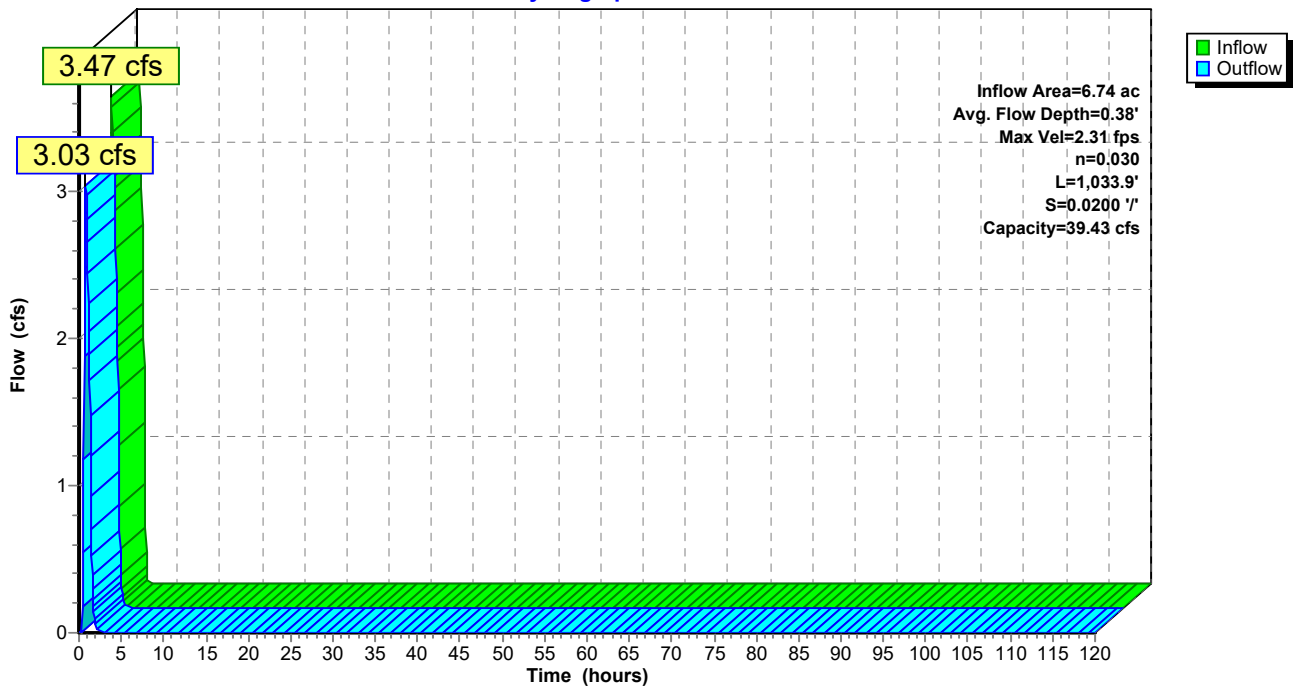
Peak Storage= 1,361 cf @ 0.66 hrs  
 Average Depth at Peak Storage= 0.38'  
 Bank-Full Depth= 1.00' Flow Area= 9.0 sf, Capacity= 39.43 cfs

0.00' x 1.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 15.0 3.0 '/' Top Width= 18.00'  
 Length= 1,033.9' Slope= 0.0200 '/'  
 Inlet Invert= 842.00', Outlet Invert= 821.32'



**Reach TB-A1A: Terrace Berm A1A**

Hydrograph



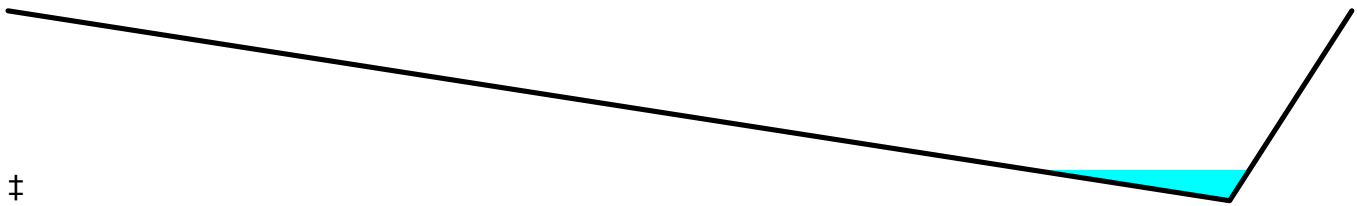
**Summary for Reach TB-A1B: Terrace Berm A1B**

Inflow Area = 5.23 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 3.27 cfs @ 0.36 hrs, Volume= 0.140 af  
 Outflow = 2.23 cfs @ 0.75 hrs, Volume= 0.140 af, Atten= 32%, Lag= 23.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.72 fps, Min. Travel Time= 11.3 min  
 Avg. Velocity = 0.50 fps, Avg. Travel Time= 38.4 min

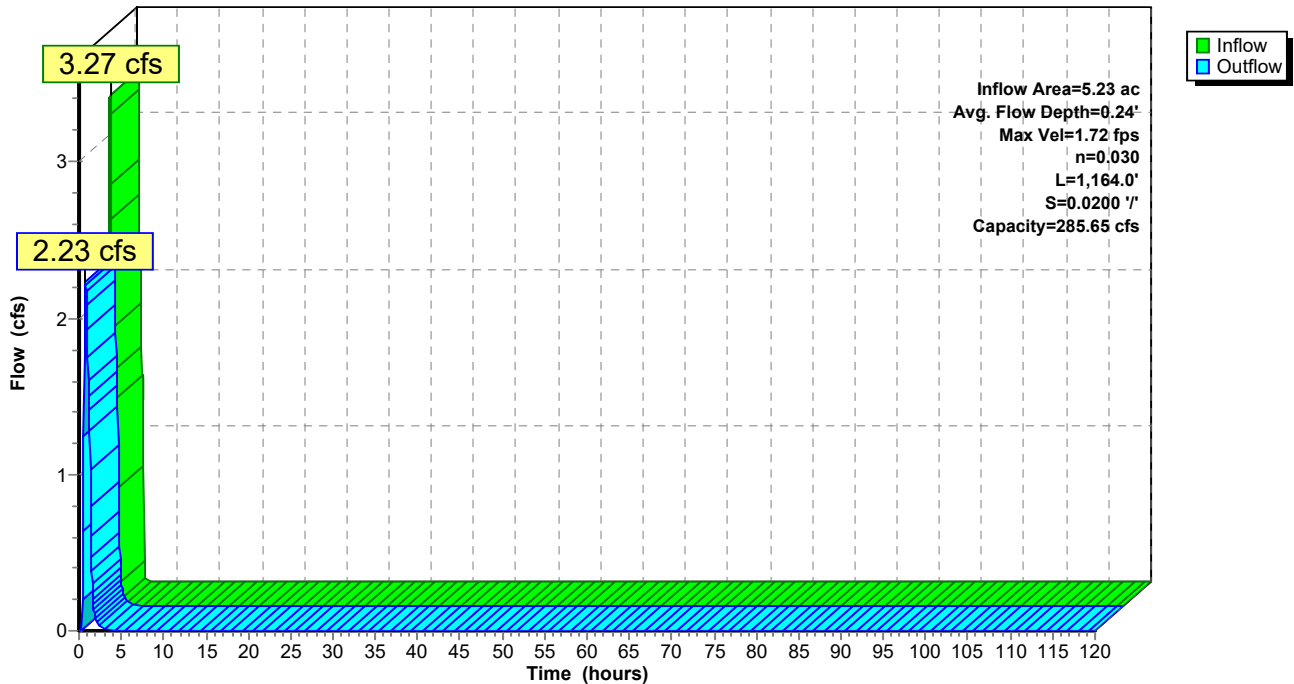
Peak Storage= 1,518 cf @ 0.56 hrs  
 Average Depth at Peak Storage= 0.24'  
 Bank-Full Depth= 1.50' Flow Area= 49.5 sf, Capacity= 285.65 cfs

0.00' x 1.50' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 40.0 4.0 '/' Top Width= 66.00'  
 Length= 1,164.0' Slope= 0.0200 '/'  
 Inlet Invert= 806.00', Outlet Invert= 782.72'



**Reach TB-A1B: Terrace Berm A1B**

Hydrograph





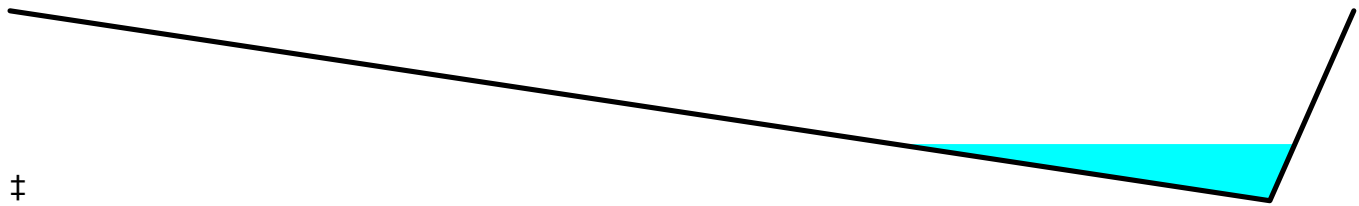
**Summary for Reach TB-A1C: Terrace Berm A1C**

Inflow Area = 9.16 ac, 1.48% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 3.96 cfs @ 0.72 hrs, Volume= 0.245 af  
 Outflow = 3.63 cfs @ 1.05 hrs, Volume= 0.245 af, Atten= 8%, Lag= 19.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.70 fps, Min. Travel Time= 9.5 min  
 Avg. Velocity = 0.43 fps, Avg. Travel Time= 37.7 min

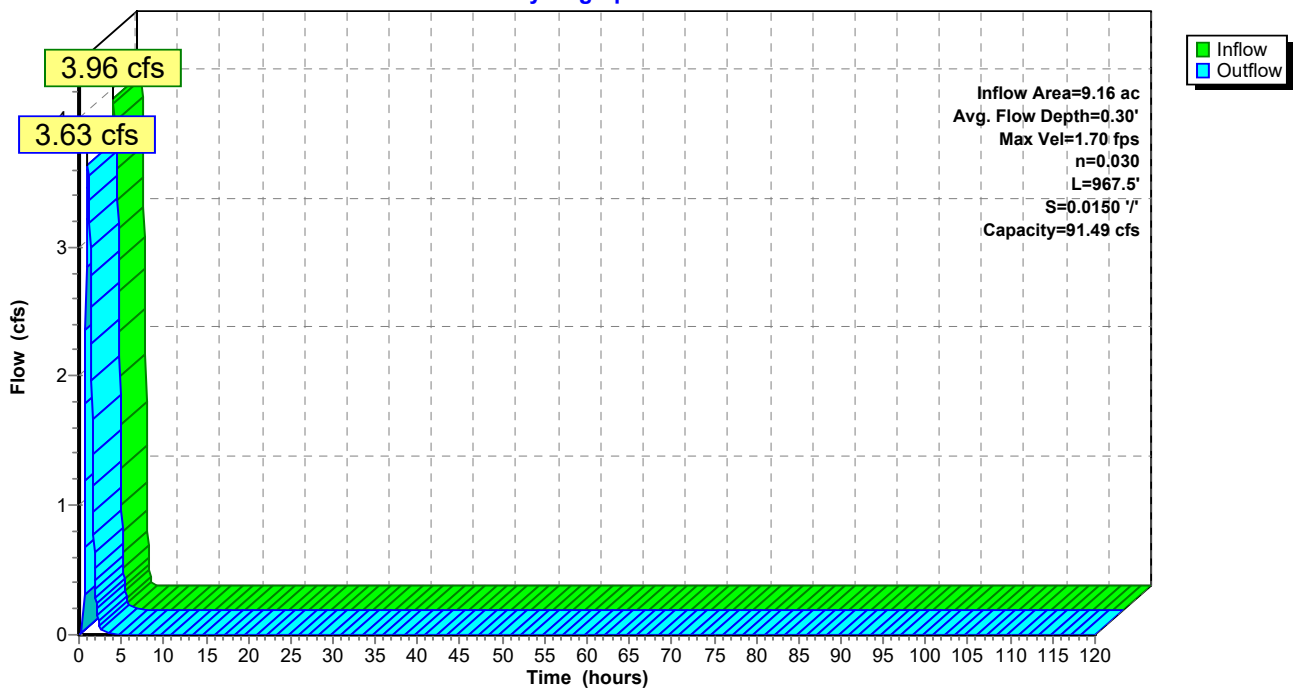
Peak Storage= 2,068 cf @ 0.90 hrs  
 Average Depth at Peak Storage= 0.30'  
 Bank-Full Depth= 1.00' Flow Area= 24.0 sf, Capacity= 91.49 cfs

0.00' x 1.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 45.0 3.0 '/' Top Width= 48.00'  
 Length= 967.5' Slope= 0.0150 '/'  
 Inlet Invert= 792.00', Outlet Invert= 777.49'



**Reach TB-A1C: Terrace Berm A1C**

Hydrograph



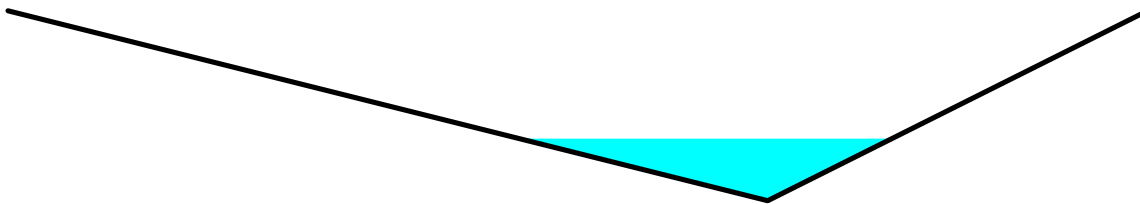
**Summary for Reach TB-B1: Terrace Berm B1**

Inflow Area = 2.04 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 1.21 cfs @ 0.41 hrs, Volume= 0.055 af  
 Outflow = 1.16 cfs @ 0.49 hrs, Volume= 0.055 af, Atten= 4%, Lag= 5.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.34 fps, Min. Travel Time= 2.4 min  
 Avg. Velocity = 0.97 fps, Avg. Travel Time= 5.9 min

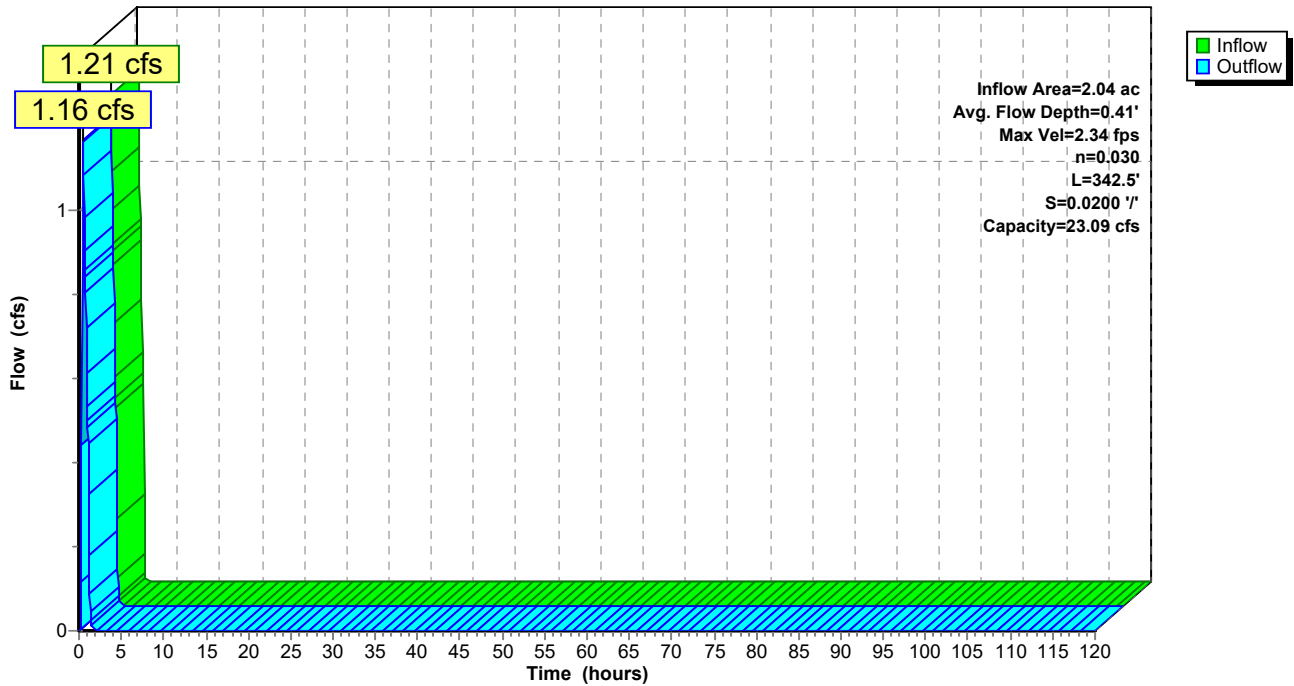
Peak Storage= 172 cf @ 0.45 hrs  
 Average Depth at Peak Storage= 0.41'  
 Bank-Full Depth= 1.25' Flow Area= 4.7 sf, Capacity= 23.09 cfs

0.00' x 1.25' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 7.50'  
 Length= 342.5' Slope= 0.0200 '/'  
 Inlet Invert= 880.00', Outlet Invert= 873.15'



**Reach TB-B1: Terrace Berm B1**

Hydrograph



**Summary for Reach TB-B10: Terrace Bench B10**

Inflow Area = 2.25 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 0.91 cfs @ 0.70 hrs, Volume= 0.060 af  
 Outflow = 0.83 cfs @ 0.91 hrs, Volume= 0.060 af, Atten= 9%, Lag= 13.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 0.83 fps, Min. Travel Time= 7.3 min  
 Avg. Velocity = 0.42 fps, Avg. Travel Time= 14.6 min

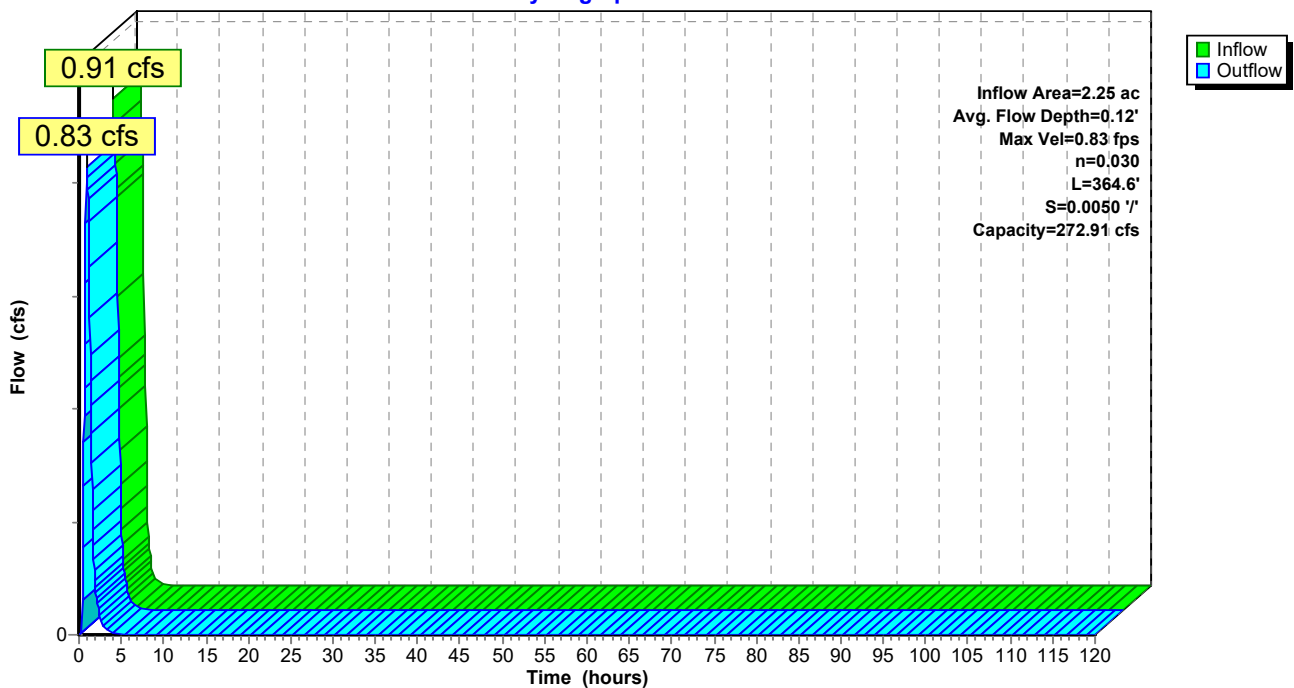
Peak Storage= 367 cf @ 0.79 hrs  
 Average Depth at Peak Storage= 0.12'  
 Bank-Full Depth= 3.00' Flow Area= 51.0 sf, Capacity= 272.91 cfs

8.00' x 3.00' deep channel, n= 0.030  
 Side Slope Z-value= 3.0 '/' Top Width= 26.00'  
 Length= 364.6' Slope= 0.0050 '/'  
 Inlet Invert= 759.18', Outlet Invert= 757.36'



**Reach TB-B10: Terrace Bench B10**

Hydrograph



**Summary for Reach TB-B10A: Terrace Bench B10A**

Inflow Area = 2.25 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 0.83 cfs @ 0.91 hrs, Volume= 0.060 af  
 Outflow = 0.83 cfs @ 0.93 hrs, Volume= 0.060 af, Atten= 1%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.43 fps, Min. Travel Time= 0.5 min  
 Avg. Velocity = 1.89 fps, Avg. Travel Time= 0.7 min

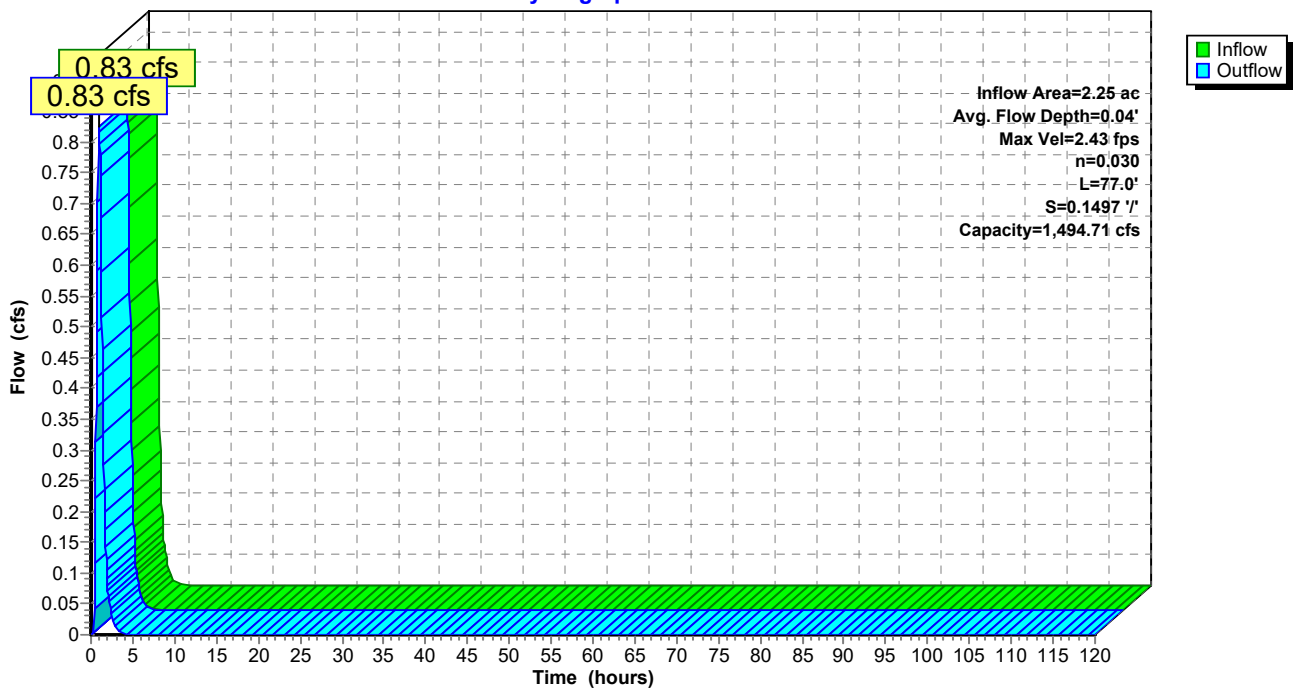
Peak Storage= 26 cf @ 0.92 hrs  
 Average Depth at Peak Storage= 0.04'  
 Bank-Full Depth= 3.00' Flow Area= 51.0 sf, Capacity= 1,494.71 cfs

8.00' x 3.00' deep channel, n= 0.030  
 Side Slope Z-value= 3.0 '/' Top Width= 26.00'  
 Length= 77.0' Slope= 0.1497 '/'  
 Inlet Invert= 757.36', Outlet Invert= 745.83'



**Reach TB-B10A: Terrace Bench B10A**

Hydrograph



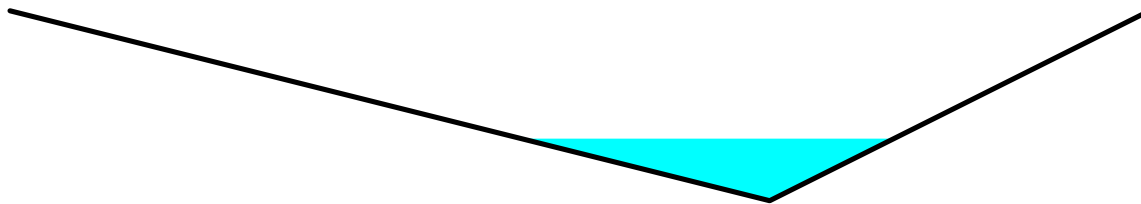
**Summary for Reach TB-B11: Terrace Berm B11**

Inflow Area = 2.27 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 1.17 cfs @ 0.52 hrs, Volume= 0.061 af  
 Outflow = 1.15 cfs @ 0.55 hrs, Volume= 0.061 af, Atten= 1%, Lag= 1.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.33 fps, Min. Travel Time= 0.7 min  
 Avg. Velocity = 1.35 fps, Avg. Travel Time= 1.3 min

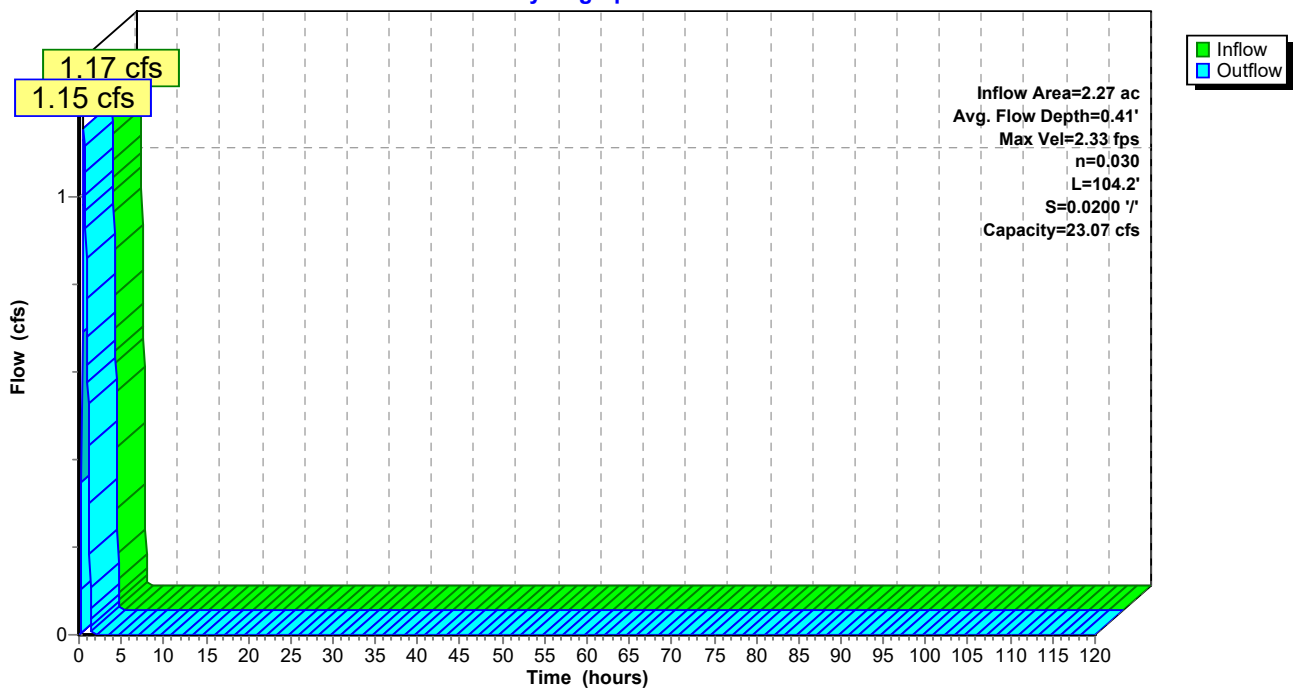
Peak Storage= 52 cf @ 0.52 hrs  
 Average Depth at Peak Storage= 0.41'  
 Bank-Full Depth= 1.25' Flow Area= 4.7 sf, Capacity= 23.07 cfs

0.00' x 1.25' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 7.50'  
 Length= 104.2' Slope= 0.0200 '/'  
 Inlet Invert= 821.00', Outlet Invert= 818.92'



**Reach TB-B11: Terrace Berm B11**

Hydrograph



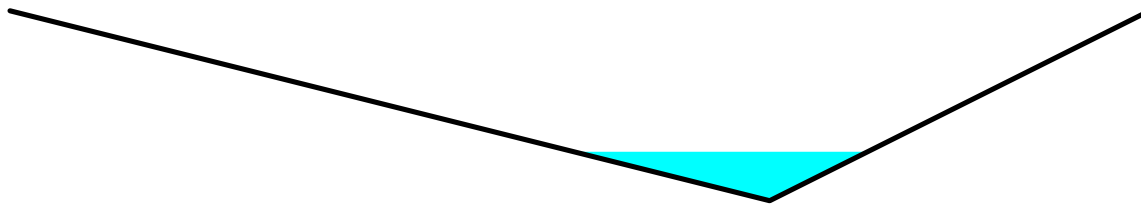
**Summary for Reach TB-B12: Terrace Berm B12**

Inflow Area = 1.20 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 0.75 cfs @ 0.36 hrs, Volume= 0.032 af  
 Outflow = 0.62 cfs @ 0.57 hrs, Volume= 0.032 af, Atten= 18%, Lag= 12.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.99 fps, Min. Travel Time= 6.2 min  
 Avg. Velocity = 0.68 fps, Avg. Travel Time= 18.2 min

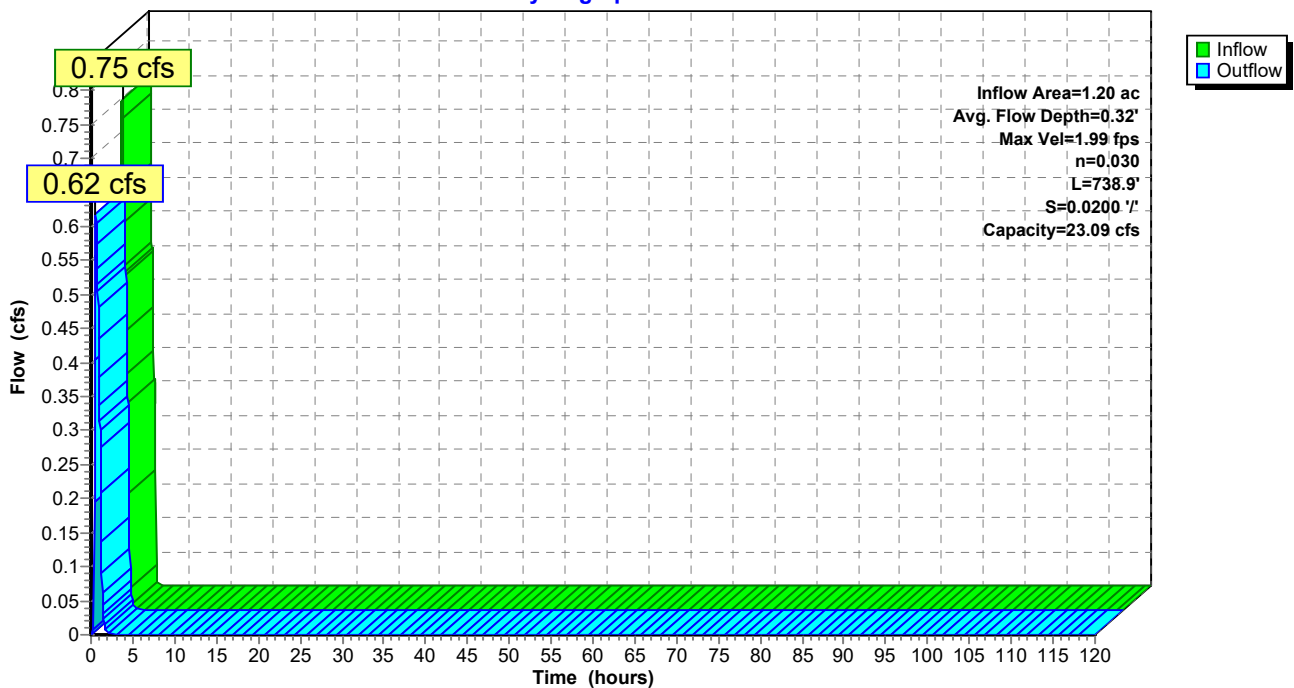
Peak Storage= 230 cf @ 0.47 hrs  
 Average Depth at Peak Storage= 0.32'  
 Bank-Full Depth= 1.25' Flow Area= 4.7 sf, Capacity= 23.09 cfs

0.00' x 1.25' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 7.50'  
 Length= 738.9' Slope= 0.0200 '/'  
 Inlet Invert= 864.00', Outlet Invert= 849.22'



**Reach TB-B12: Terrace Berm B12**

Hydrograph



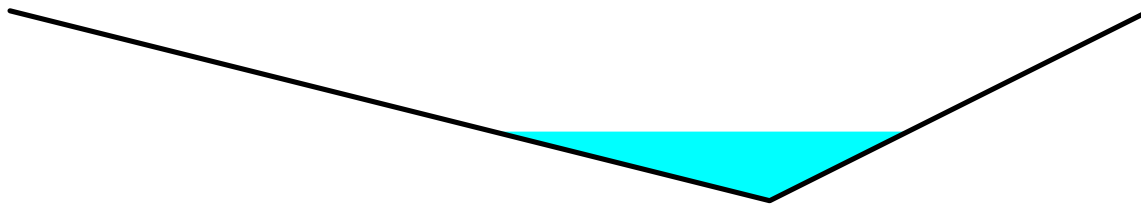
**Summary for Reach TB-B2: Terrace Berm B2**

Inflow Area = 2.74 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 1.64 cfs @ 0.40 hrs, Volume= 0.073 af  
 Outflow = 1.56 cfs @ 0.50 hrs, Volume= 0.073 af, Atten= 5%, Lag= 6.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.51 fps, Min. Travel Time= 3.0 min  
 Avg. Velocity = 0.92 fps, Avg. Travel Time= 8.3 min

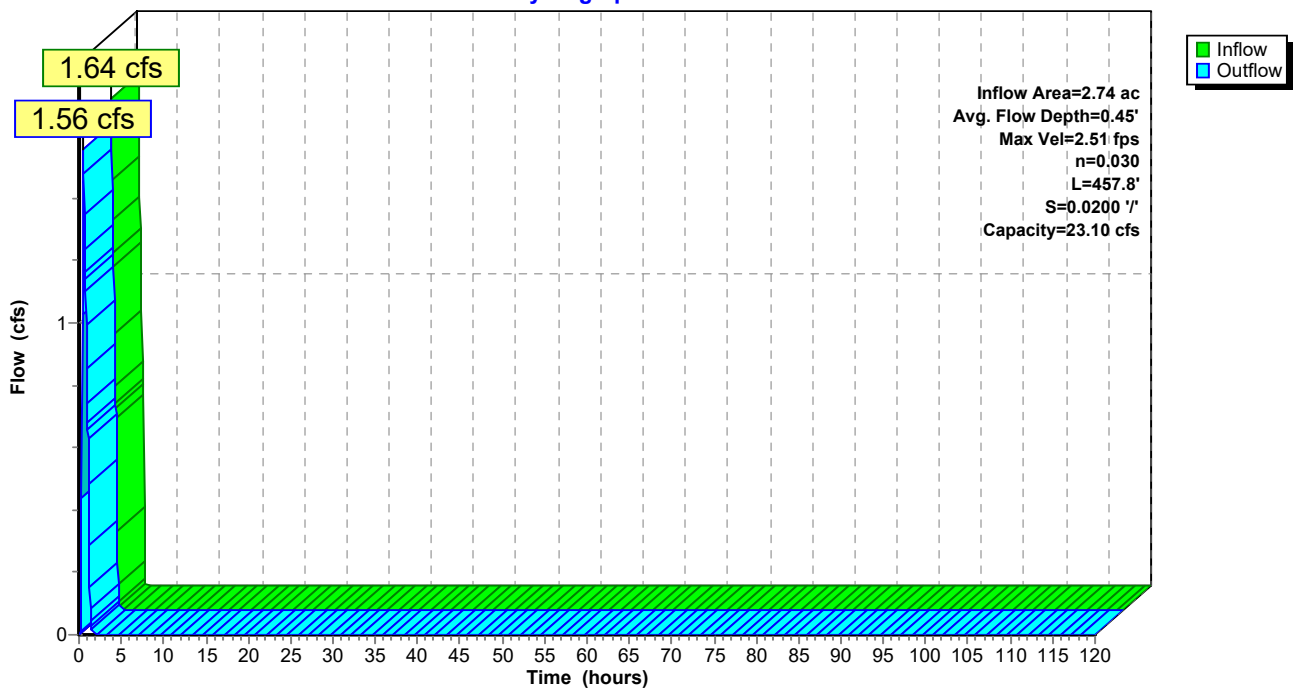
Peak Storage= 284 cf @ 0.45 hrs  
 Average Depth at Peak Storage= 0.45'  
 Bank-Full Depth= 1.25' Flow Area= 4.7 sf, Capacity= 23.10 cfs

0.00' x 1.25' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 7.50'  
 Length= 457.8' Slope= 0.0200 '/'  
 Inlet Invert= 880.00', Outlet Invert= 870.84'



**Reach TB-B2: Terrace Berm B2**

Hydrograph



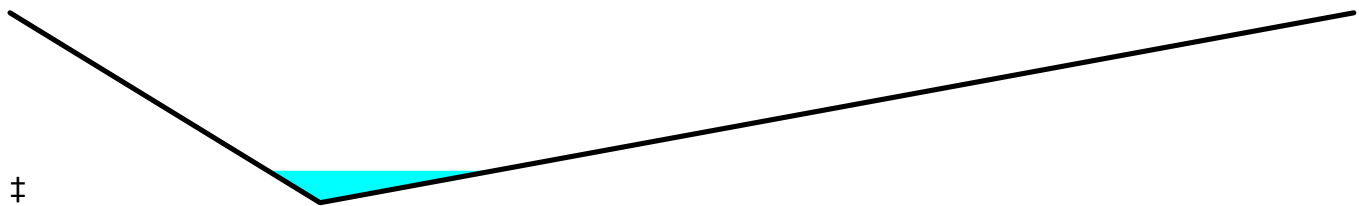
**Summary for Reach TB-B3: Terrace Bench B3**

Inflow Area = 2.21 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 1.38 cfs @ 0.37 hrs, Volume= 0.059 af  
 Outflow = 1.09 cfs @ 0.60 hrs, Volume= 0.059 af, Atten= 21%, Lag= 14.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.49 fps, Min. Travel Time= 6.9 min  
 Avg. Velocity = 0.50 fps, Avg. Travel Time= 20.5 min

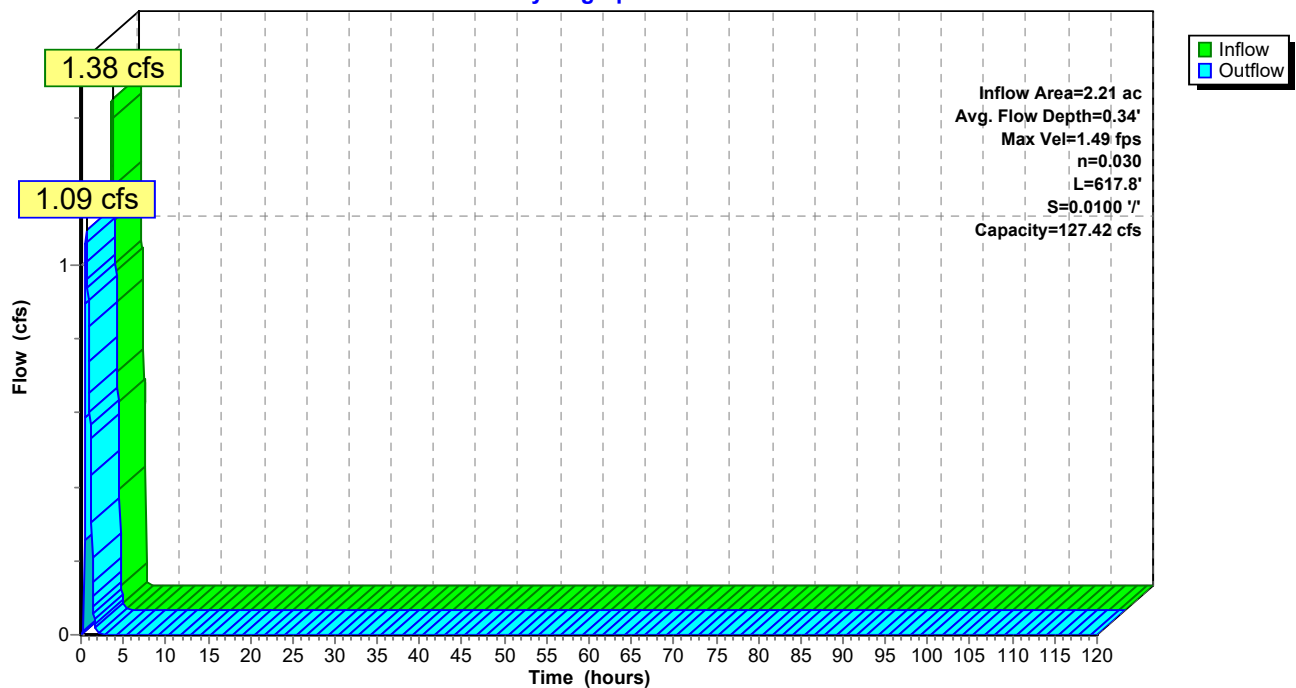
Peak Storage= 455 cf @ 0.48 hrs  
 Average Depth at Peak Storage= 0.34'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.42 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'  
 Length= 617.8' Slope= 0.0100 '/'  
 Inlet Invert= 880.00', Outlet Invert= 873.82'



**Reach TB-B3: Terrace Bench B3**

Hydrograph





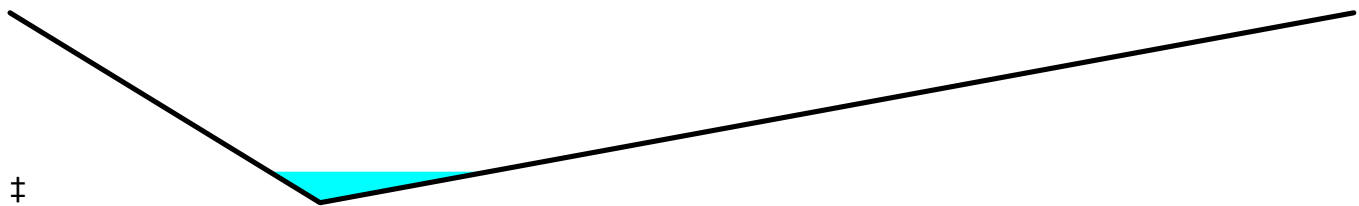
**Summary for Reach TB-B4: Terrace Bench B4**

Inflow Area = 1.87 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 1.17 cfs @ 0.37 hrs, Volume= 0.050 af  
 Outflow = 1.00 cfs @ 0.54 hrs, Volume= 0.050 af, Atten= 15%, Lag= 10.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.46 fps, Min. Travel Time= 5.0 min  
 Avg. Velocity = 0.55 fps, Avg. Travel Time= 13.3 min

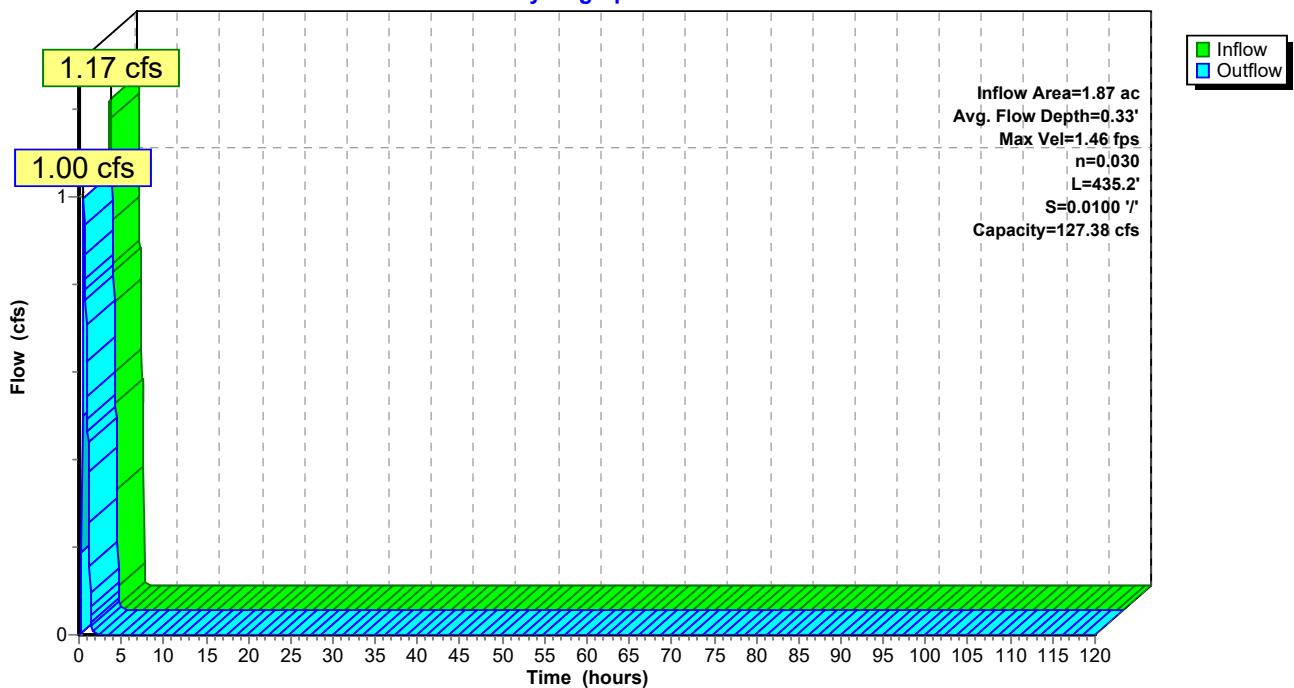
Peak Storage= 301 cf @ 0.45 hrs  
 Average Depth at Peak Storage= 0.33'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.38 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'  
 Length= 435.2' Slope= 0.0100 '/'  
 Inlet Invert= 840.00', Outlet Invert= 835.65'



**Reach TB-B4: Terrace Bench B4**

Hydrograph



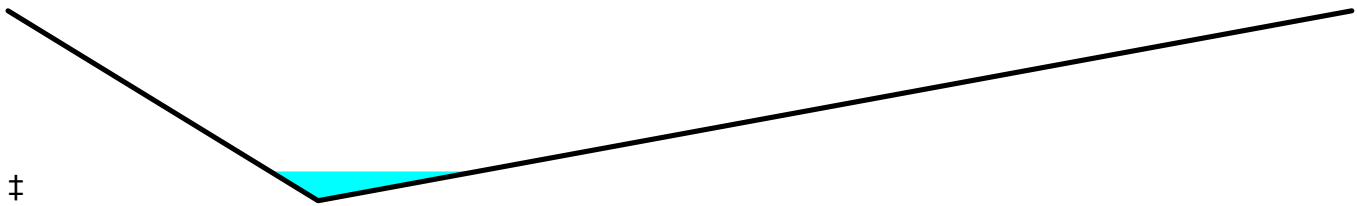
**Summary for Reach TB-B5: Terrace Bench B5**

Inflow Area = 1.93 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 1.21 cfs @ 0.35 hrs, Volume= 0.052 af  
 Outflow = 0.87 cfs @ 0.67 hrs, Volume= 0.052 af, Atten= 28%, Lag= 19.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.41 fps, Min. Travel Time= 9.5 min  
 Avg. Velocity = 0.46 fps, Avg. Travel Time= 29.3 min

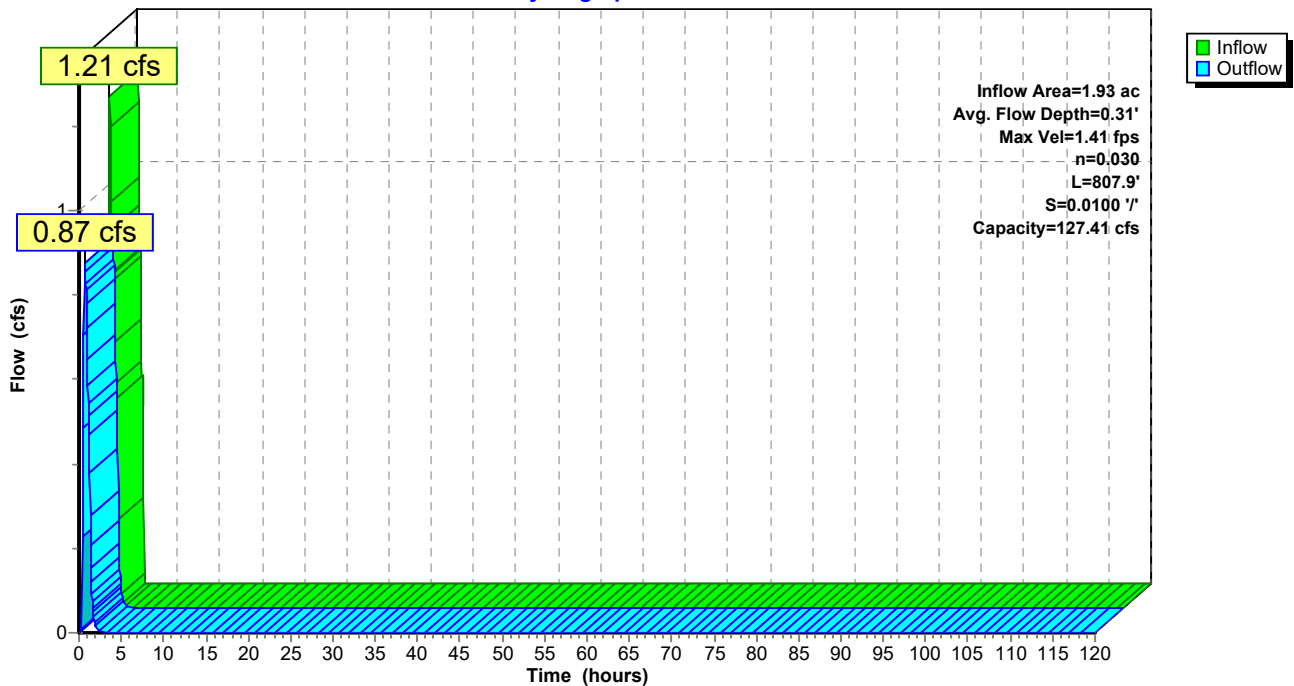
Peak Storage= 501 cf @ 0.51 hrs  
 Average Depth at Peak Storage= 0.31'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.41 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'  
 Length= 807.9' Slope= 0.0100 '/'  
 Inlet Invert= 814.00', Outlet Invert= 805.92'



**Reach TB-B5: Terrace Bench B5**

Hydrograph



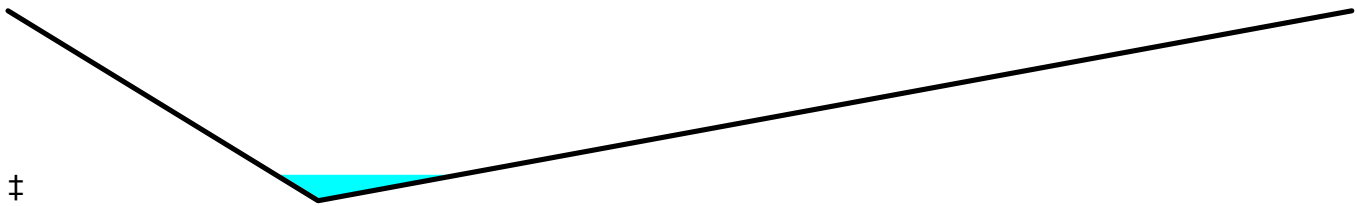
**Summary for Reach TB-B6: Terrace Bench B6**

Inflow Area = 1.18 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 0.74 cfs @ 0.36 hrs, Volume= 0.032 af  
 Outflow = 0.62 cfs @ 0.55 hrs, Volume= 0.032 af, Atten= 16%, Lag= 11.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.30 fps, Min. Travel Time= 5.5 min  
 Avg. Velocity = 0.51 fps, Avg. Travel Time= 14.0 min

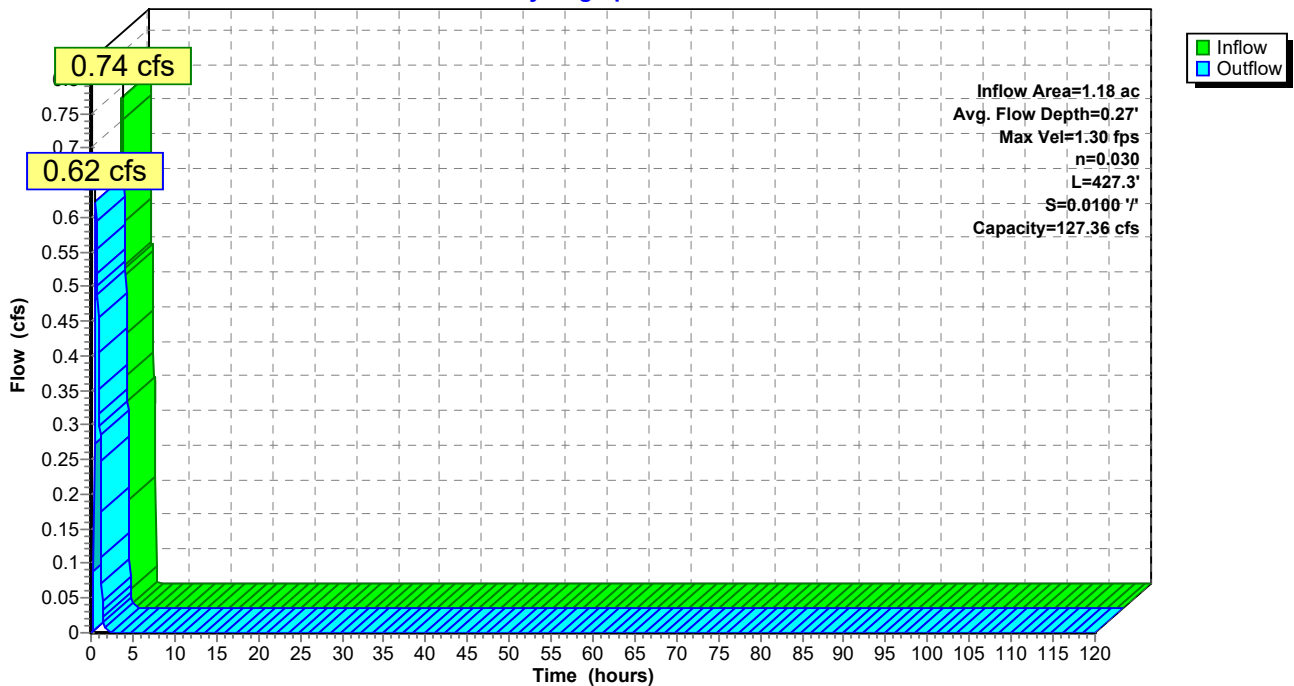
Peak Storage= 206 cf @ 0.45 hrs  
 Average Depth at Peak Storage= 0.27'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.36 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'  
 Length= 427.3' Slope= 0.0100 '/'  
 Inlet Invert= 812.00', Outlet Invert= 807.73'



**Reach TB-B6: Terrace Bench B6**

Hydrograph



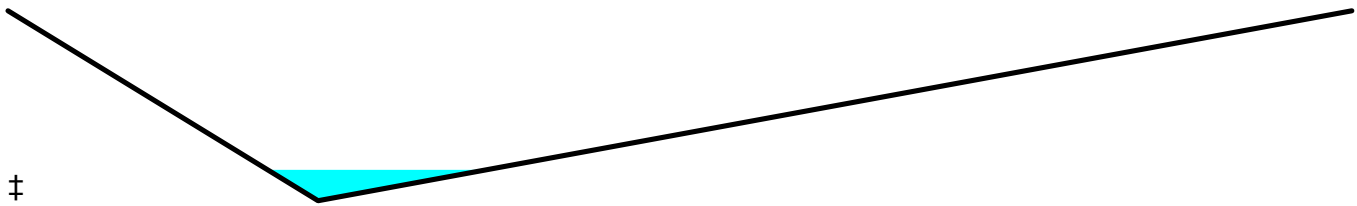
**Summary for Reach TB-B7: Terrace Bench B7**

Inflow Area = 2.19 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 1.37 cfs @ 0.35 hrs, Volume= 0.059 af  
 Outflow = 1.00 cfs @ 0.66 hrs, Volume= 0.059 af, Atten= 27%, Lag= 18.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.46 fps, Min. Travel Time= 9.3 min  
 Avg. Velocity = 0.47 fps, Avg. Travel Time= 29.0 min

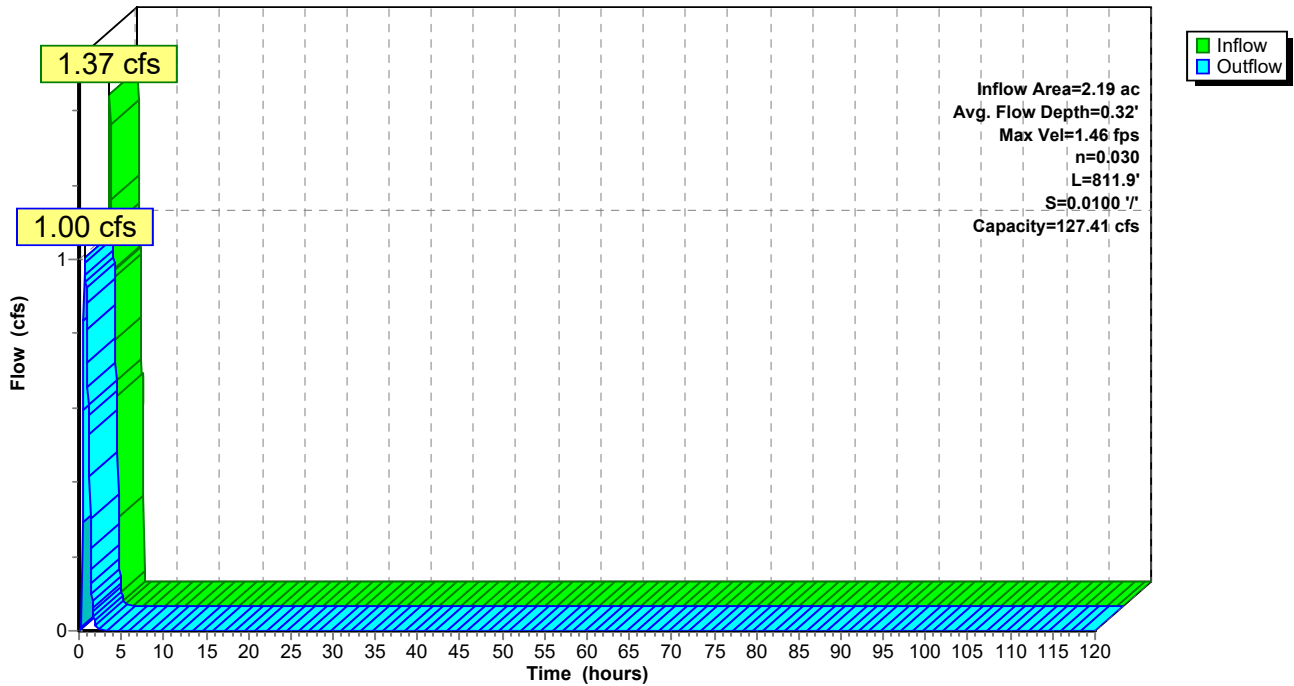
Peak Storage= 558 cf @ 0.51 hrs  
 Average Depth at Peak Storage= 0.32'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.41 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'  
 Length= 811.9' Slope= 0.0100 '/'  
 Inlet Invert= 784.00', Outlet Invert= 775.88'



**Reach TB-B7: Terrace Bench B7**

Hydrograph



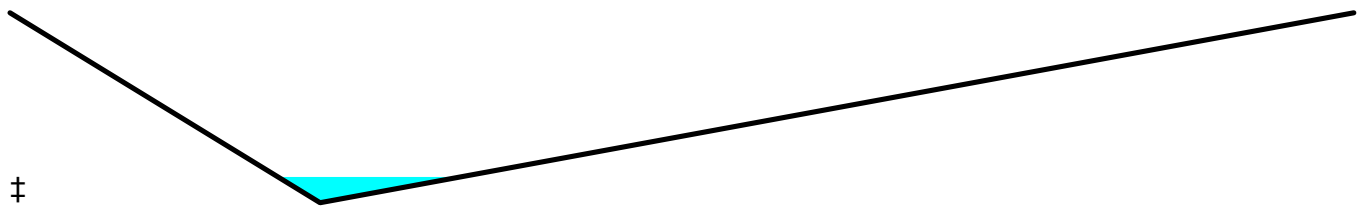
**Summary for Reach TB-B8: Terrace Bench B8**

Inflow Area = 1.17 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 0.73 cfs @ 0.36 hrs, Volume= 0.031 af  
 Outflow = 0.62 cfs @ 0.54 hrs, Volume= 0.031 af, Atten= 16%, Lag= 11.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.30 fps, Min. Travel Time= 5.5 min  
 Avg. Velocity = 0.51 fps, Avg. Travel Time= 14.0 min

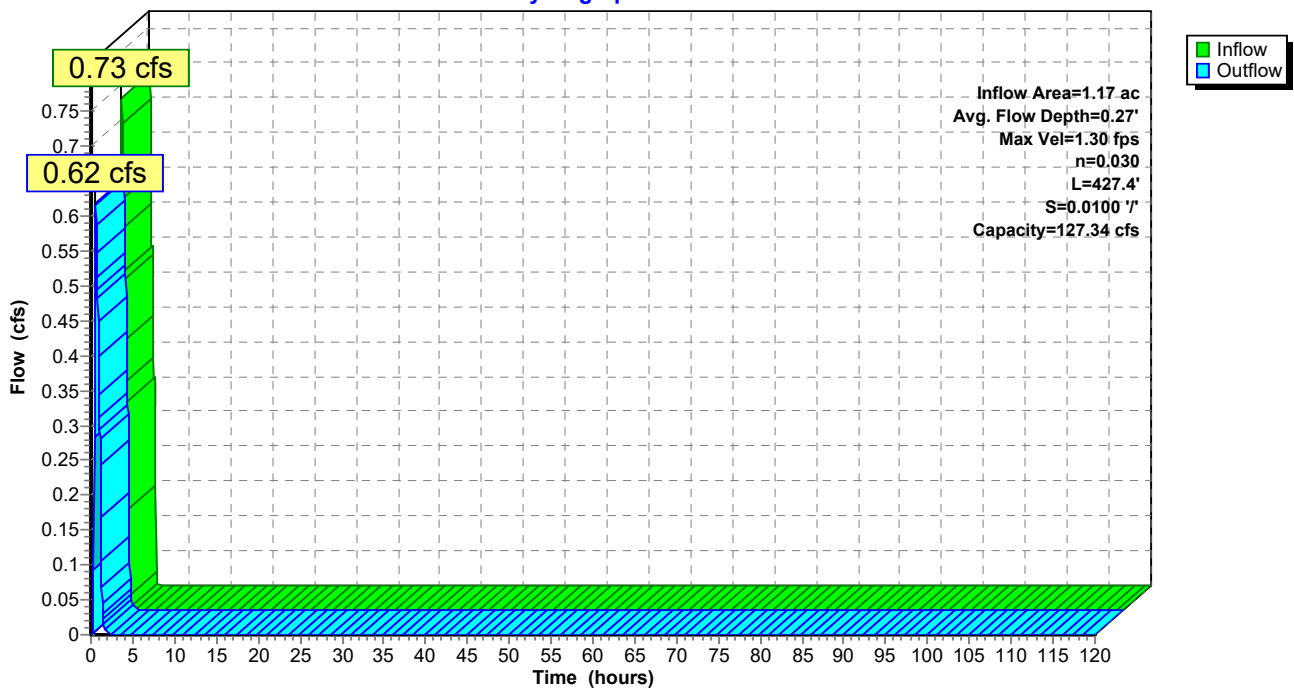
Peak Storage= 205 cf @ 0.45 hrs  
 Average Depth at Peak Storage= 0.27'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.34 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'  
 Length= 427.4' Slope= 0.0100 '/'  
 Inlet Invert= 782.00', Outlet Invert= 777.73'



**Reach TB-B8: Terrace Bench B8**

Hydrograph



**Summary for Reach TB-B9: Terrace Bench B9**

Inflow Area = 1.44 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 0.94 cfs @ 0.32 hrs, Volume= 0.038 af  
 Outflow = 0.60 cfs @ 0.77 hrs, Volume= 0.038 af, Atten= 36%, Lag= 26.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 0.74 fps, Min. Travel Time= 12.8 min  
 Avg. Velocity = 0.40 fps, Avg. Travel Time= 23.7 min

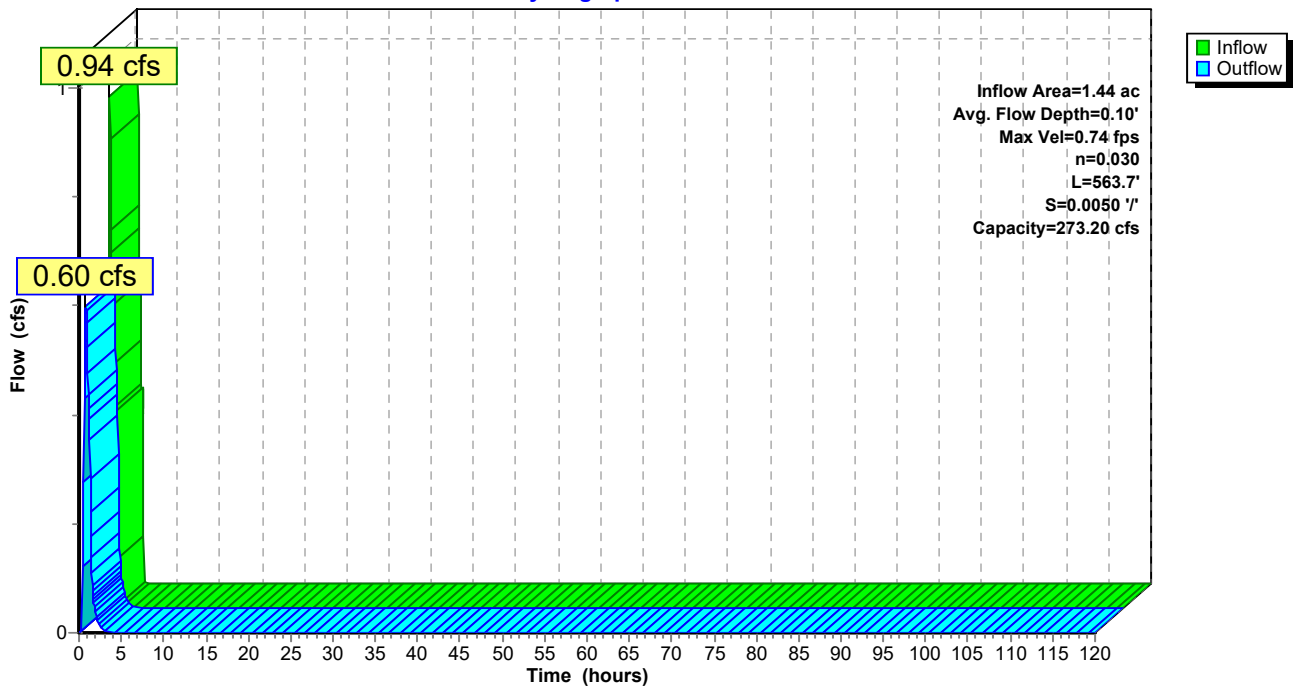
Peak Storage= 460 cf @ 0.55 hrs  
 Average Depth at Peak Storage= 0.10'  
 Bank-Full Depth= 3.00' Flow Area= 51.0 sf, Capacity= 273.20 cfs

8.00' x 3.00' deep channel, n= 0.030  
 Side Slope Z-value= 3.0 '/' Top Width= 26.00'  
 Length= 563.7' Slope= 0.0050 '/'  
 Inlet Invert= 762.00', Outlet Invert= 759.18'



**Reach TB-B9: Terrace Bench B9**

Hydrograph



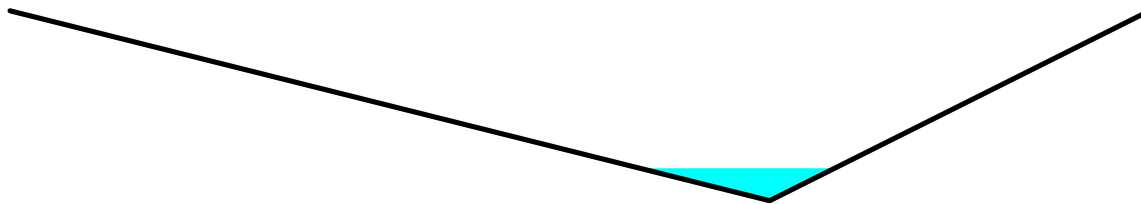
**Summary for Reach TB-D1: Terrace Berm D1**

Inflow Area = 1.26 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 0.75 cfs @ 0.41 hrs, Volume= 0.034 af  
 Outflow = 0.73 cfs @ 0.47 hrs, Volume= 0.034 af, Atten= 2%, Lag= 3.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.08 fps, Min. Travel Time= 1.9 min  
 Avg. Velocity = 1.09 fps, Avg. Travel Time= 3.5 min

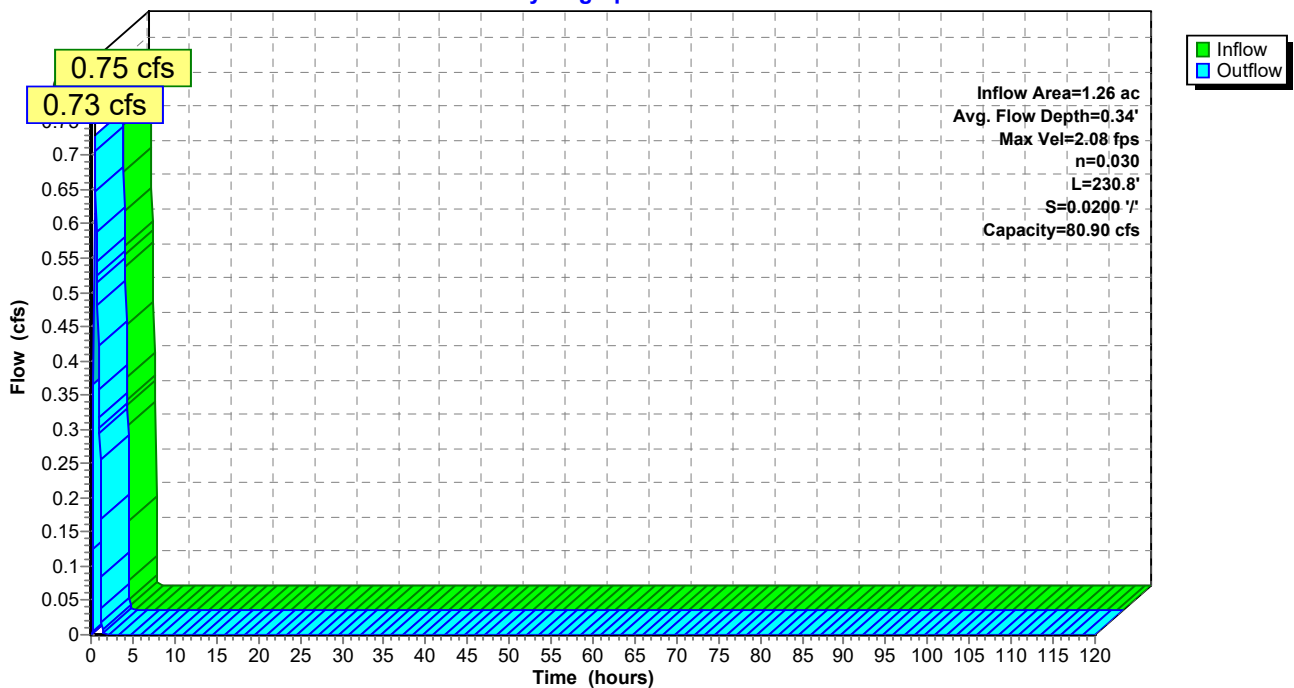
Peak Storage= 81 cf @ 0.43 hrs  
 Average Depth at Peak Storage= 0.34'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.90 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 230.8' Slope= 0.0200 '/'  
 Inlet Invert= 861.86', Outlet Invert= 857.24'



**Reach TB-D1: Terrace Berm D1**

Hydrograph



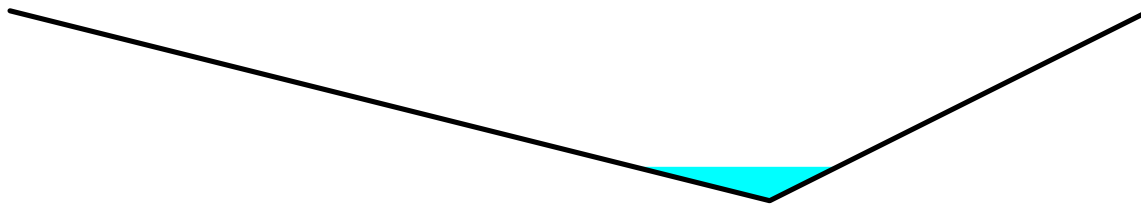
**Summary for Reach TB-D3: Terrace Berm D3**

Inflow Area = 1.33 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 0.83 cfs @ 0.37 hrs, Volume= 0.036 af  
 Outflow = 0.80 cfs @ 0.43 hrs, Volume= 0.036 af, Atten= 4%, Lag= 3.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.14 fps, Min. Travel Time= 1.8 min  
 Avg. Velocity = 1.11 fps, Avg. Travel Time= 3.5 min

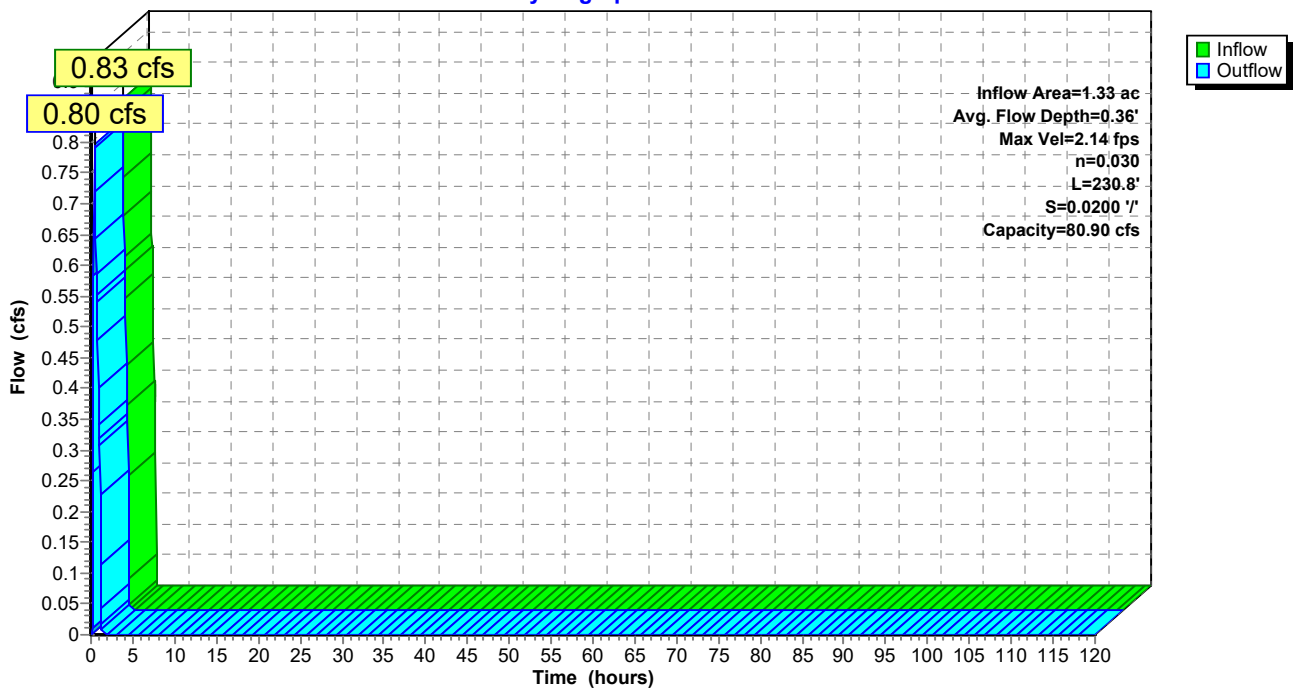
Peak Storage= 88 cf @ 0.40 hrs  
 Average Depth at Peak Storage= 0.36'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.90 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 230.8' Slope= 0.0200 '/'  
 Inlet Invert= 798.33', Outlet Invert= 793.71'



**Reach TB-D3: Terrace Berm D3**

Hydrograph





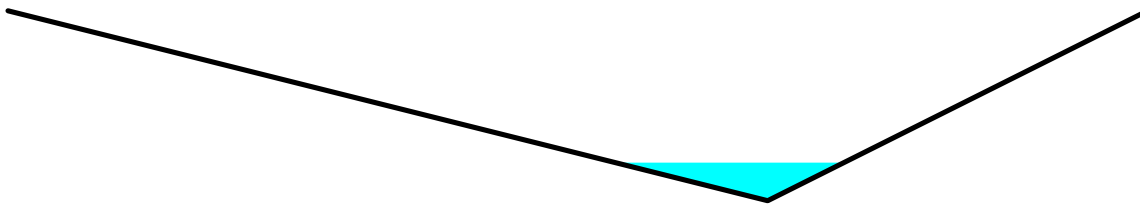
**Summary for Reach TB-E1: Terrace Berm E1**

Inflow Area = 1.42 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 0.84 cfs @ 0.41 hrs, Volume= 0.038 af  
 Outflow = 0.77 cfs @ 0.54 hrs, Volume= 0.038 af, Atten= 9%, Lag= 7.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.63 fps, Min. Travel Time= 3.7 min  
 Avg. Velocity = 0.65 fps, Avg. Travel Time= 9.2 min

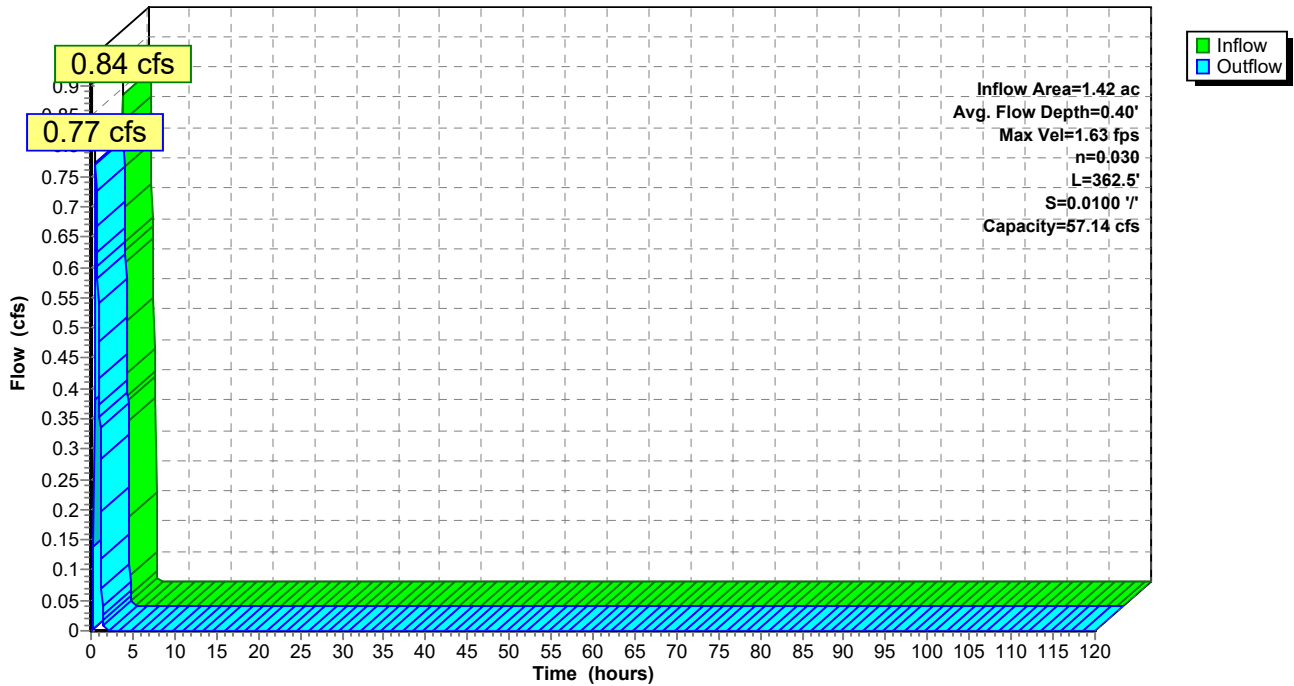
Peak Storage= 175 cf @ 0.47 hrs  
 Average Depth at Peak Storage= 0.40'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.14 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 362.5' Slope= 0.0100 '/'  
 Inlet Invert= 860.26', Outlet Invert= 856.64'



**Reach TB-E1: Terrace Berm E1**

Hydrograph



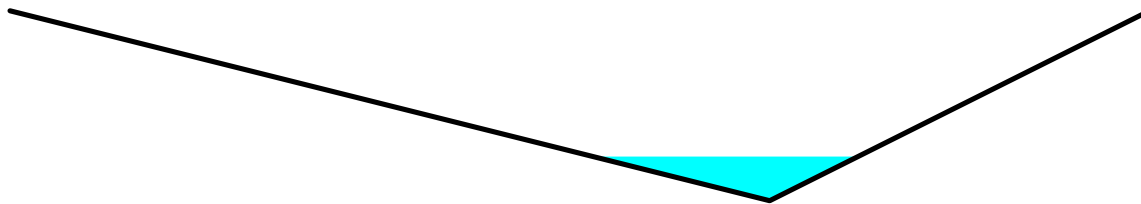
**Summary for Reach TB-E2: TB-E2**

Inflow Area = 2.82 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 1.76 cfs @ 0.37 hrs, Volume= 0.075 af  
 Outflow = 1.17 cfs @ 0.80 hrs, Volume= 0.075 af, Atten= 33%, Lag= 25.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.80 fps, Min. Travel Time= 12.2 min  
 Avg. Velocity = 0.49 fps, Avg. Travel Time= 44.8 min

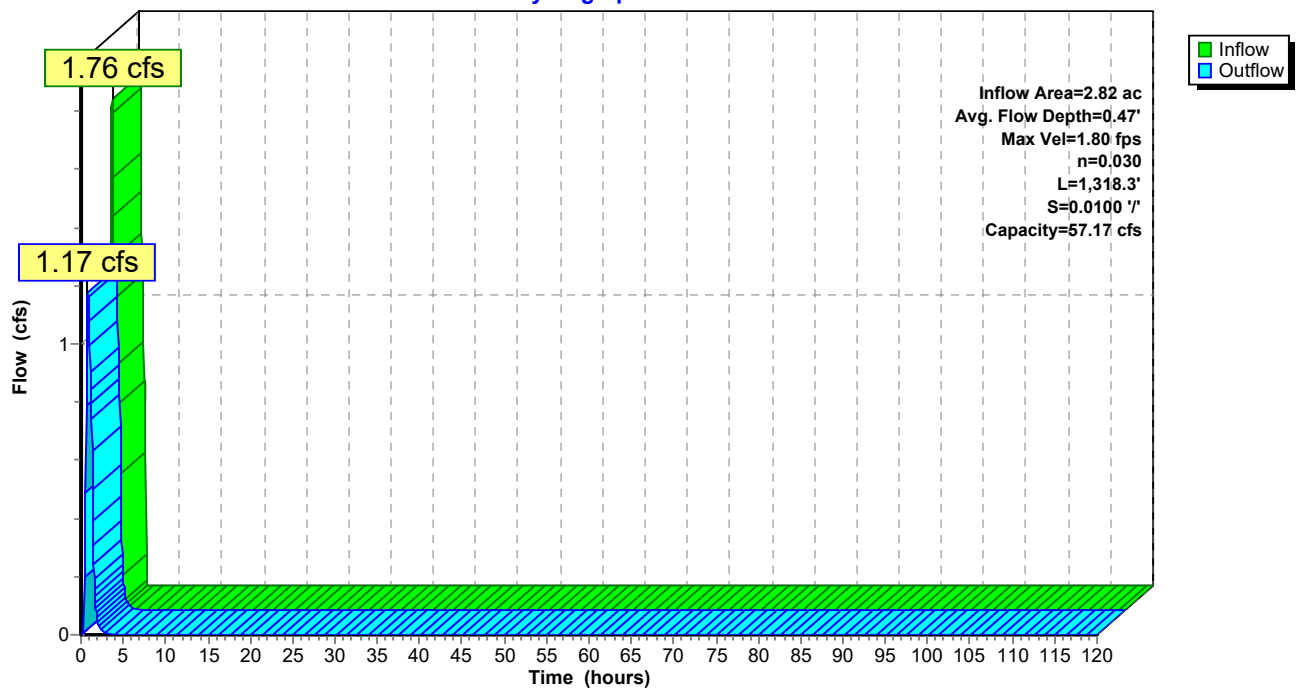
Peak Storage= 857 cf @ 0.58 hrs  
 Average Depth at Peak Storage= 0.47'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.17 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,318.3' Slope= 0.0100 '/'  
 Inlet Invert= 806.69', Outlet Invert= 793.51'



**Reach TB-E2: TB-E2**

Hydrograph



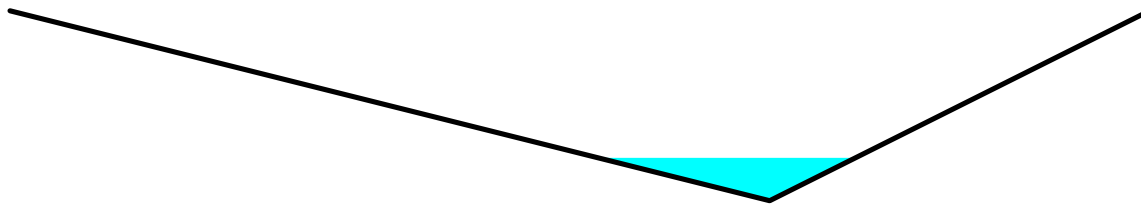
**Summary for Reach TB-H1: Terrace Berm H1**

Inflow Area = 1.98 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 1.18 cfs @ 0.40 hrs, Volume= 0.053 af  
 Outflow = 1.06 cfs @ 0.56 hrs, Volume= 0.053 af, Atten= 10%, Lag= 9.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.76 fps, Min. Travel Time= 4.3 min  
 Avg. Velocity = 0.64 fps, Avg. Travel Time= 11.9 min

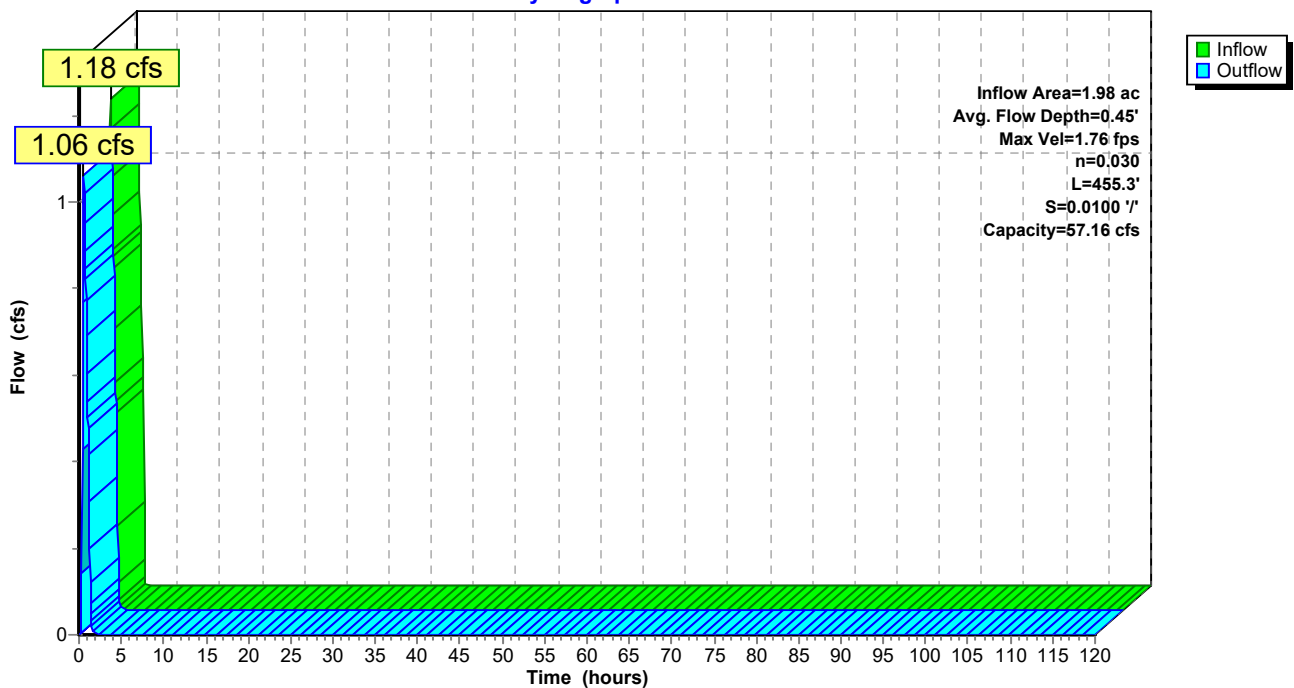
Peak Storage= 278 cf @ 0.47 hrs  
 Average Depth at Peak Storage= 0.45'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.16 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 455.3' Slope= 0.0100 '/'  
 Inlet Invert= 872.24', Outlet Invert= 867.69'



**Reach TB-H1: Terrace Berm H1**

Hydrograph



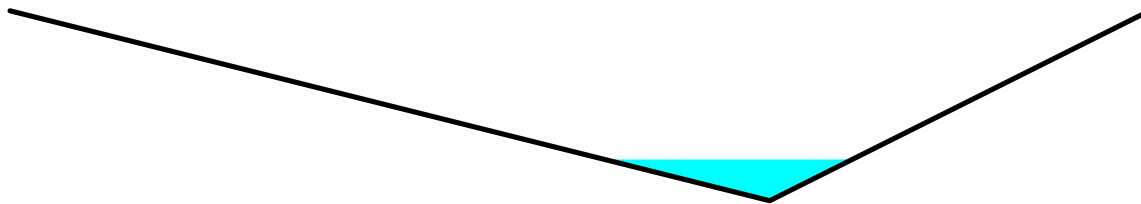
**Summary for Reach TB-H2: Terrace Berm H2**

Inflow Area = 1.86 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 1.17 cfs @ 0.36 hrs, Volume= 0.050 af  
 Outflow = 0.97 cfs @ 0.56 hrs, Volume= 0.050 af, Atten= 17%, Lag= 11.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.72 fps, Min. Travel Time= 5.9 min  
 Avg. Velocity = 0.57 fps, Avg. Travel Time= 17.7 min

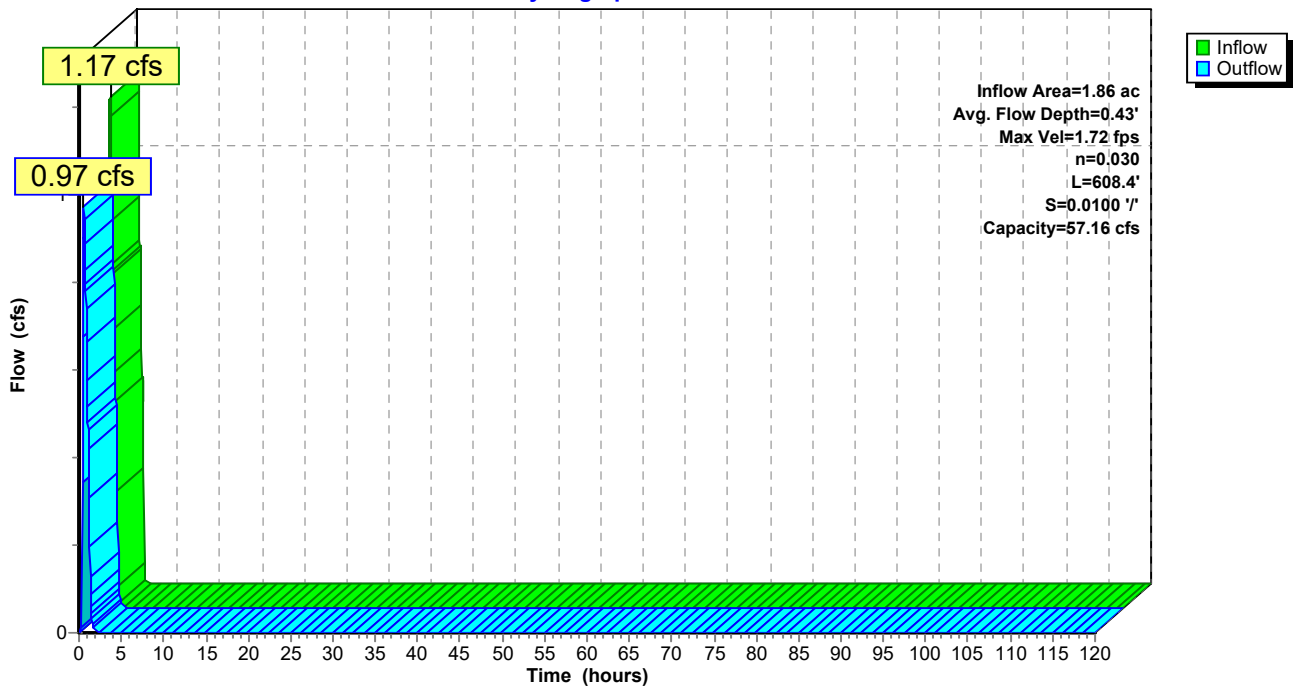
Peak Storage= 344 cf @ 0.46 hrs  
 Average Depth at Peak Storage= 0.43'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.16 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 608.4' Slope= 0.0100 '/'  
 Inlet Invert= 837.23', Outlet Invert= 831.15'



**Reach TB-H2: Terrace Berm H2**

Hydrograph



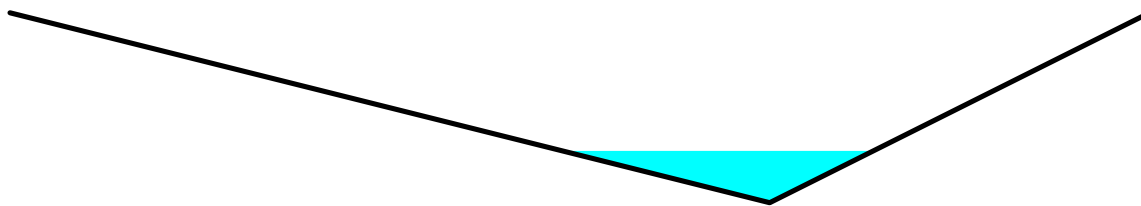
**Summary for Reach TB-H3: Terrace Berm H3**

Inflow Area = 3.57 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 2.23 cfs @ 0.37 hrs, Volume= 0.095 af  
 Outflow = 1.78 cfs @ 0.60 hrs, Volume= 0.095 af, Atten= 20%, Lag= 13.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.00 fps, Min. Travel Time= 6.7 min  
 Avg. Velocity = 0.58 fps, Avg. Travel Time= 22.9 min

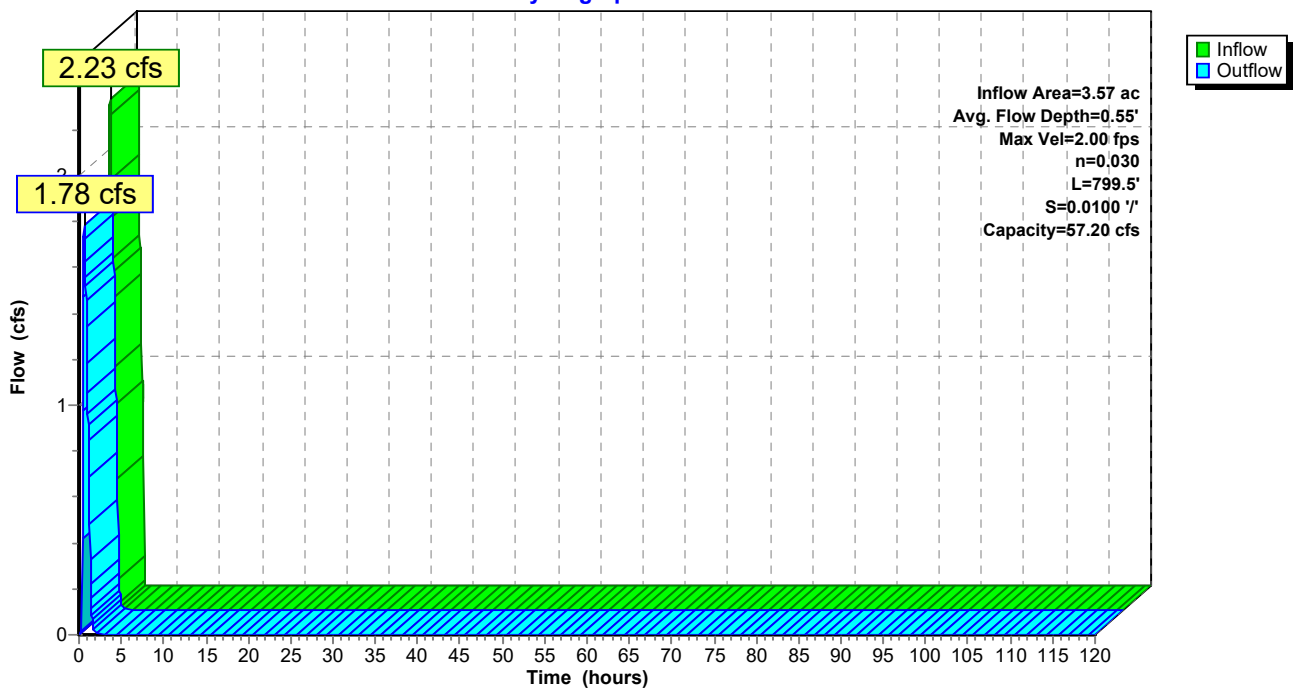
Peak Storage= 714 cf @ 0.48 hrs  
 Average Depth at Peak Storage= 0.55'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.20 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 799.5' Slope= 0.0100 '/'  
 Inlet Invert= 782.24', Outlet Invert= 774.24'



**Reach TB-H3: Terrace Berm H3**

Hydrograph



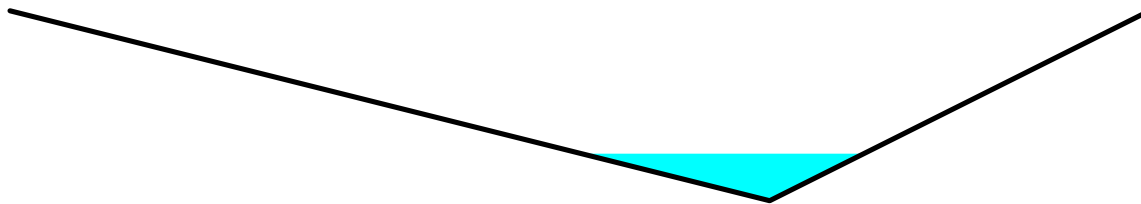
**Summary for Reach TB-N-A1: Terrace Berm N-A1**

Inflow Area = 3.60 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 2.14 cfs @ 0.41 hrs, Volume= 0.096 af  
 Outflow = 2.05 cfs @ 0.50 hrs, Volume= 0.096 af, Atten= 4%, Lag= 5.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.80 fps, Min. Travel Time= 2.6 min  
 Avg. Velocity = 1.14 fps, Avg. Travel Time= 6.4 min

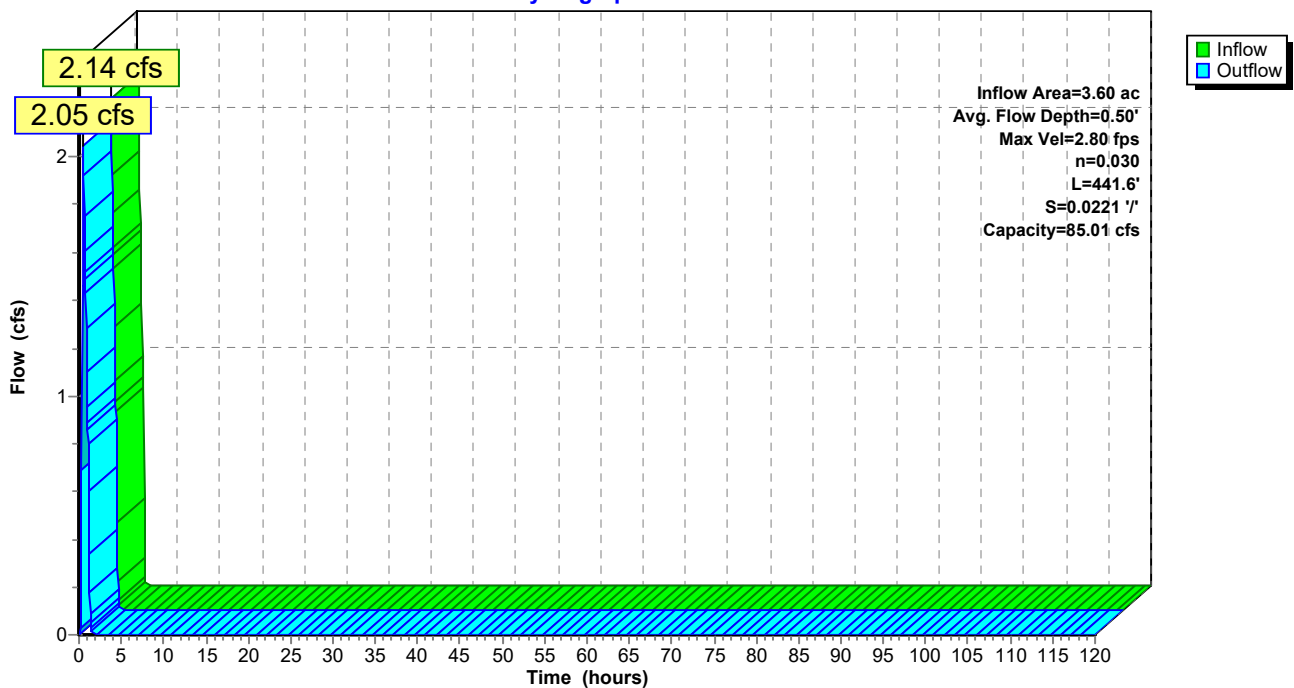
Peak Storage= 326 cf @ 0.45 hrs  
 Average Depth at Peak Storage= 0.50'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 85.01 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 441.6' Slope= 0.0221 '/'  
 Inlet Invert= 879.12', Outlet Invert= 869.36'



**Reach TB-N-A1: Terrace Berm N-A1**

Hydrograph



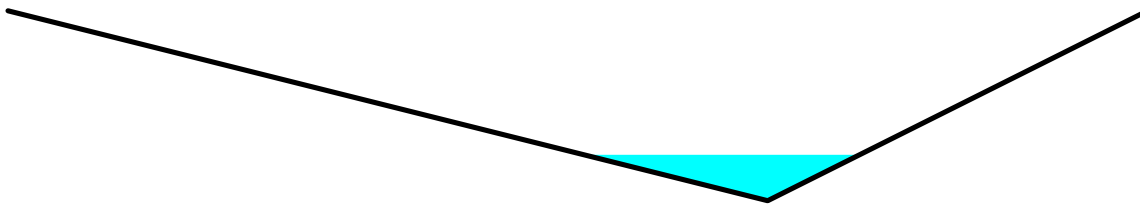
**Summary for Reach TB-N-A10: Terrace Berm N-A10**

Inflow Area = 3.77 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 2.36 cfs @ 0.36 hrs, Volume= 0.101 af  
 Outflow = 1.83 cfs @ 0.62 hrs, Volume= 0.101 af, Atten= 22%, Lag= 15.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.62 fps, Min. Travel Time= 7.5 min  
 Avg. Velocity = 0.78 fps, Avg. Travel Time= 25.1 min

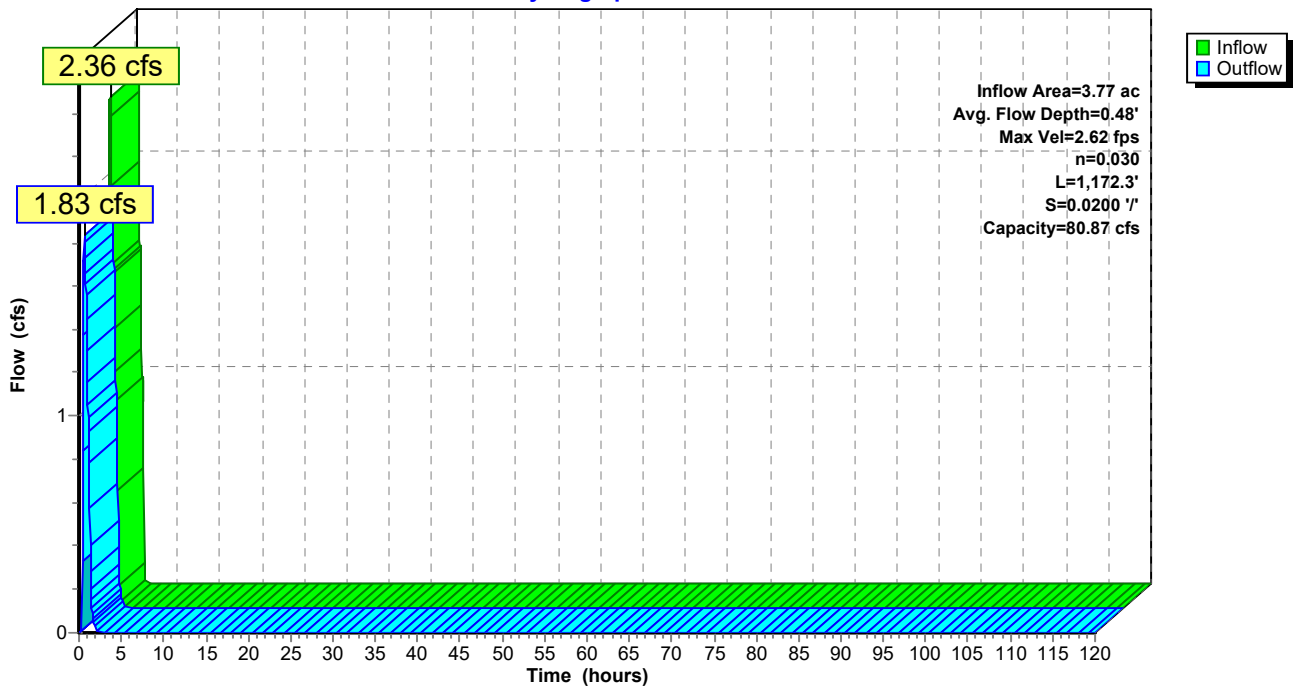
Peak Storage= 824 cf @ 0.49 hrs  
 Average Depth at Peak Storage= 0.48'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,172.3' Slope= 0.0200 '/'  
 Inlet Invert= 771.72', Outlet Invert= 748.27'



**Reach TB-N-A10: Terrace Berm N-A10**

Hydrograph



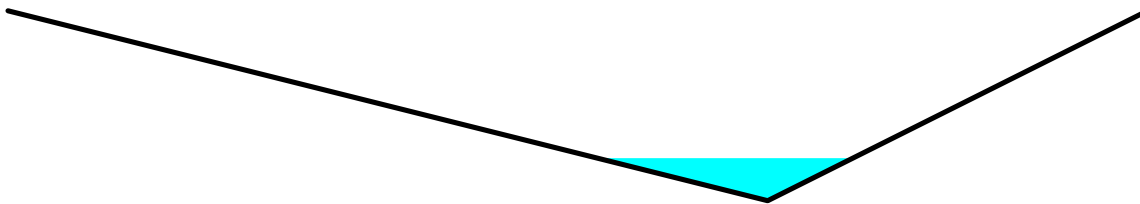
**Summary for Reach TB-N-A2: Terrace Berm N-A2**

Inflow Area = 2.82 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 1.70 cfs @ 0.40 hrs, Volume= 0.075 af  
 Outflow = 1.49 cfs @ 0.57 hrs, Volume= 0.075 af, Atten= 12%, Lag= 10.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.48 fps, Min. Travel Time= 4.9 min  
 Avg. Velocity = 0.86 fps, Avg. Travel Time= 14.2 min

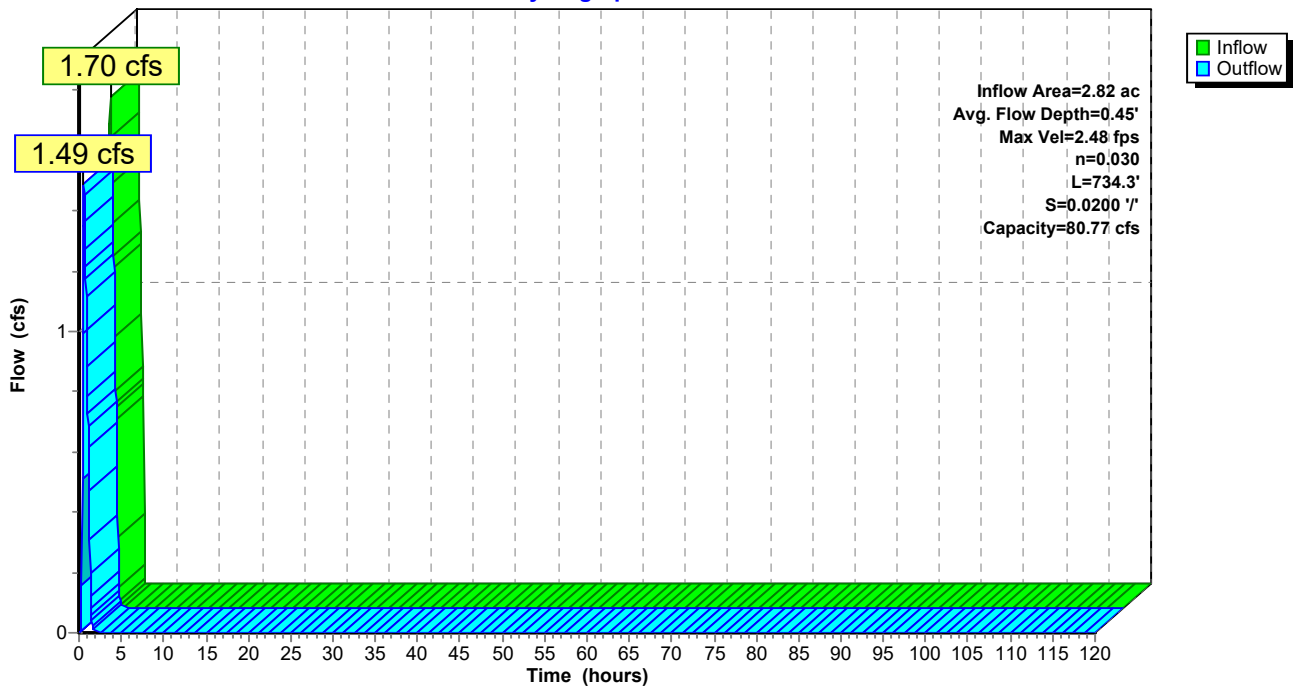
Peak Storage= 442 cf @ 0.48 hrs  
 Average Depth at Peak Storage= 0.45'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.77 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 734.3' Slope= 0.0200 '/'  
 Inlet Invert= 884.01', Outlet Invert= 869.36'



**Reach TB-N-A2: Terrace Berm N-A2**

Hydrograph





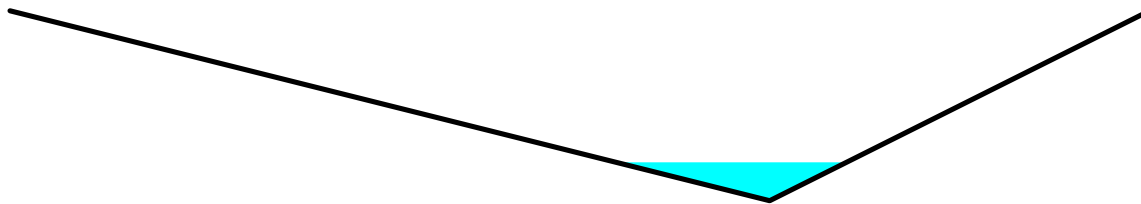
**Summary for Reach TB-N-A3: Terrace Berm N-A3**

Inflow Area = 1.31 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 0.82 cfs @ 0.37 hrs, Volume= 0.035 af  
 Outflow = 0.74 cfs @ 0.49 hrs, Volume= 0.035 af, Atten= 9%, Lag= 7.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.55 fps, Min. Travel Time= 3.5 min  
 Avg. Velocity = 0.62 fps, Avg. Travel Time= 8.9 min

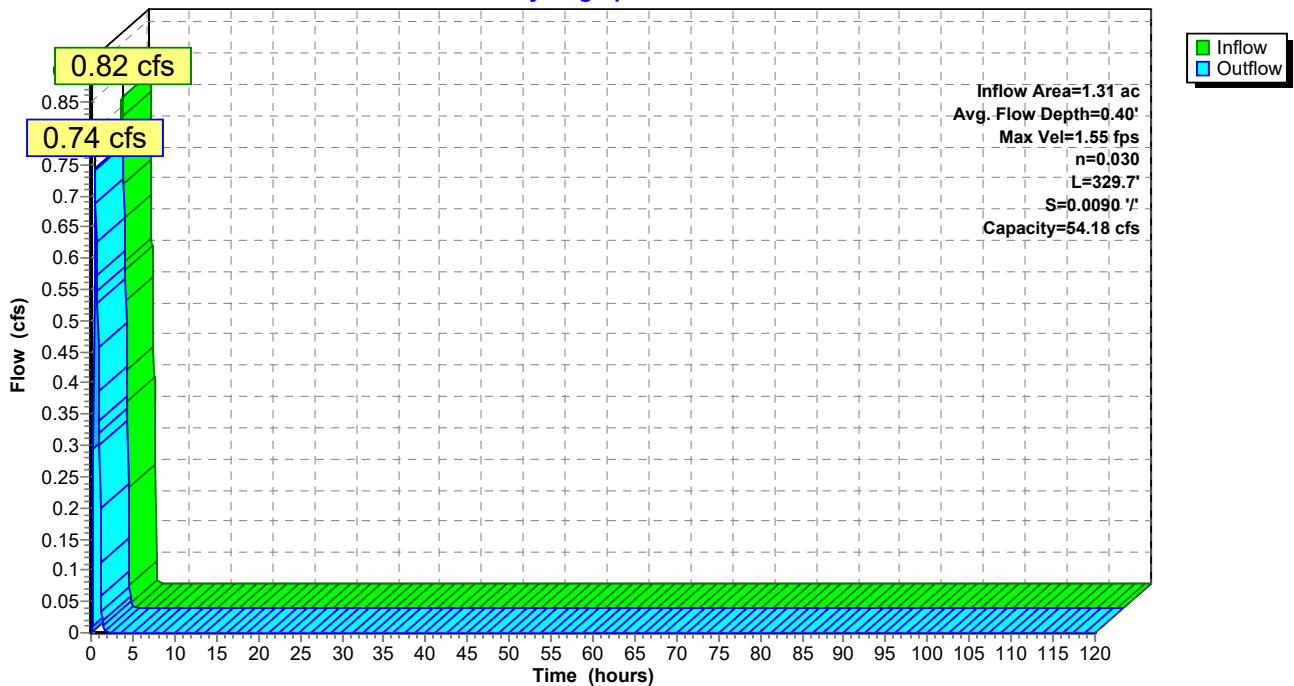
Peak Storage= 162 cf @ 0.42 hrs  
 Average Depth at Peak Storage= 0.40'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 54.18 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 329.7' Slope= 0.0090 '/'  
 Inlet Invert= 839.81', Outlet Invert= 836.85'



**Reach TB-N-A3: Terrace Berm N-A3**

Hydrograph



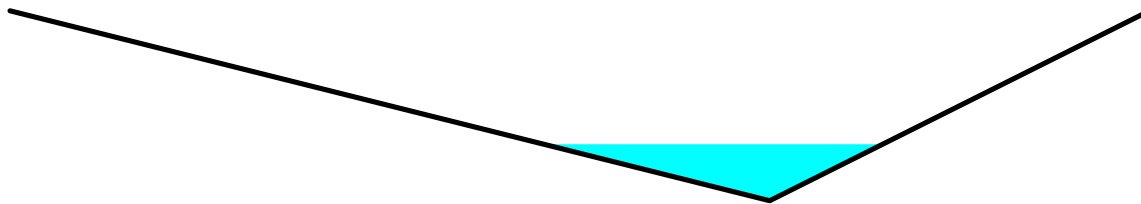
**Summary for Reach TB-N-A4: Terrace Berm N-A4**

Inflow Area = 6.88 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 4.11 cfs @ 0.40 hrs, Volume= 0.184 af  
 Outflow = 3.18 cfs @ 0.69 hrs, Volume= 0.184 af, Atten= 23%, Lag= 17.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.00 fps, Min. Travel Time= 8.4 min  
 Avg. Velocity = 0.79 fps, Avg. Travel Time= 32.3 min

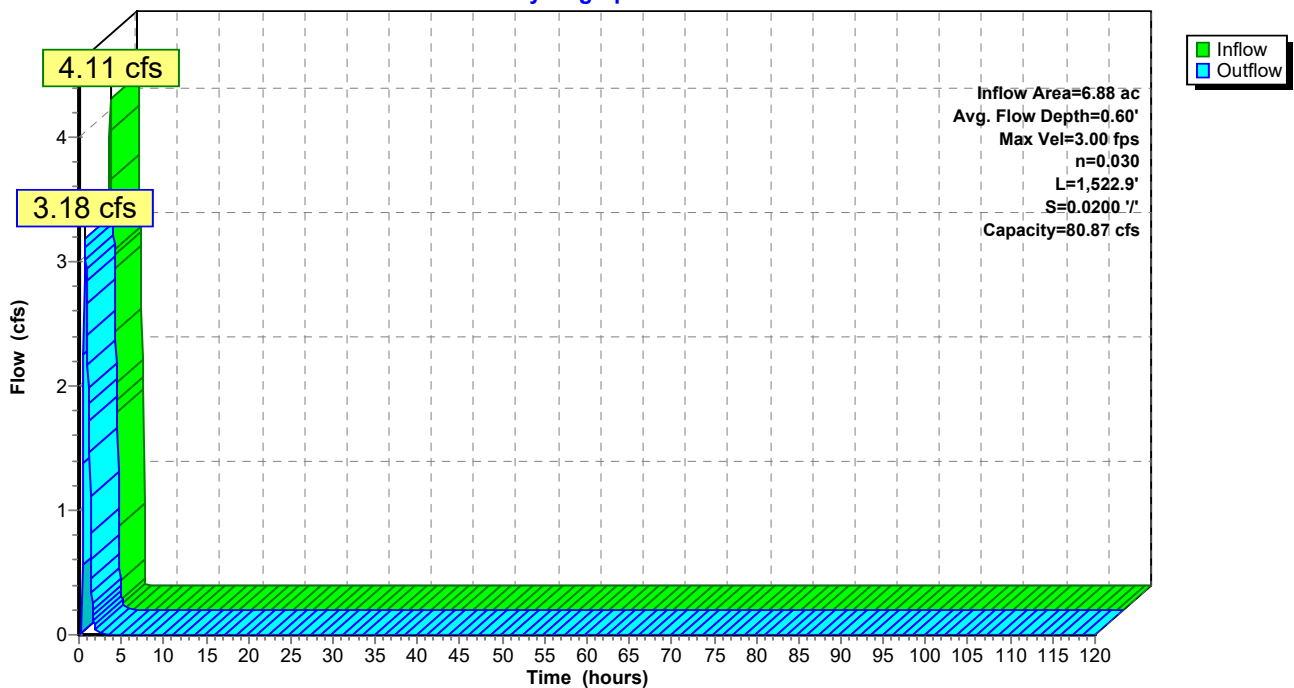
Peak Storage= 1,619 cf @ 0.55 hrs  
 Average Depth at Peak Storage= 0.60'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,522.9' Slope= 0.0200 '/'  
 Inlet Invert= 867.35', Outlet Invert= 836.89'



**Reach TB-N-A4: Terrace Berm N-A4**

Hydrograph



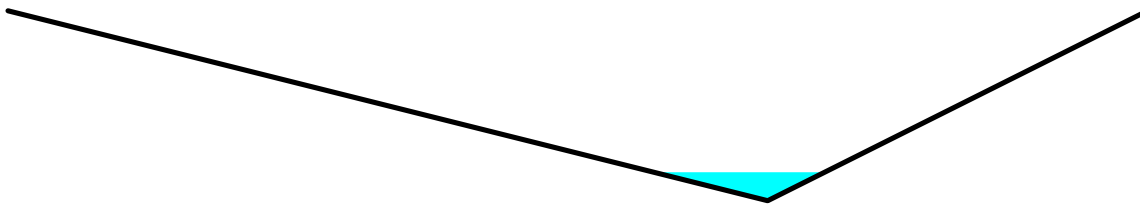
**Summary for Reach TB-N-A5: Terrace Berm N-A5**

Inflow Area = 0.73 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 0.46 cfs @ 0.36 hrs, Volume= 0.020 af  
 Outflow = 0.44 cfs @ 0.43 hrs, Volume= 0.020 af, Atten= 4%, Lag= 4.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.67 fps, Min. Travel Time= 2.2 min  
 Avg. Velocity = 0.86 fps, Avg. Travel Time= 4.2 min

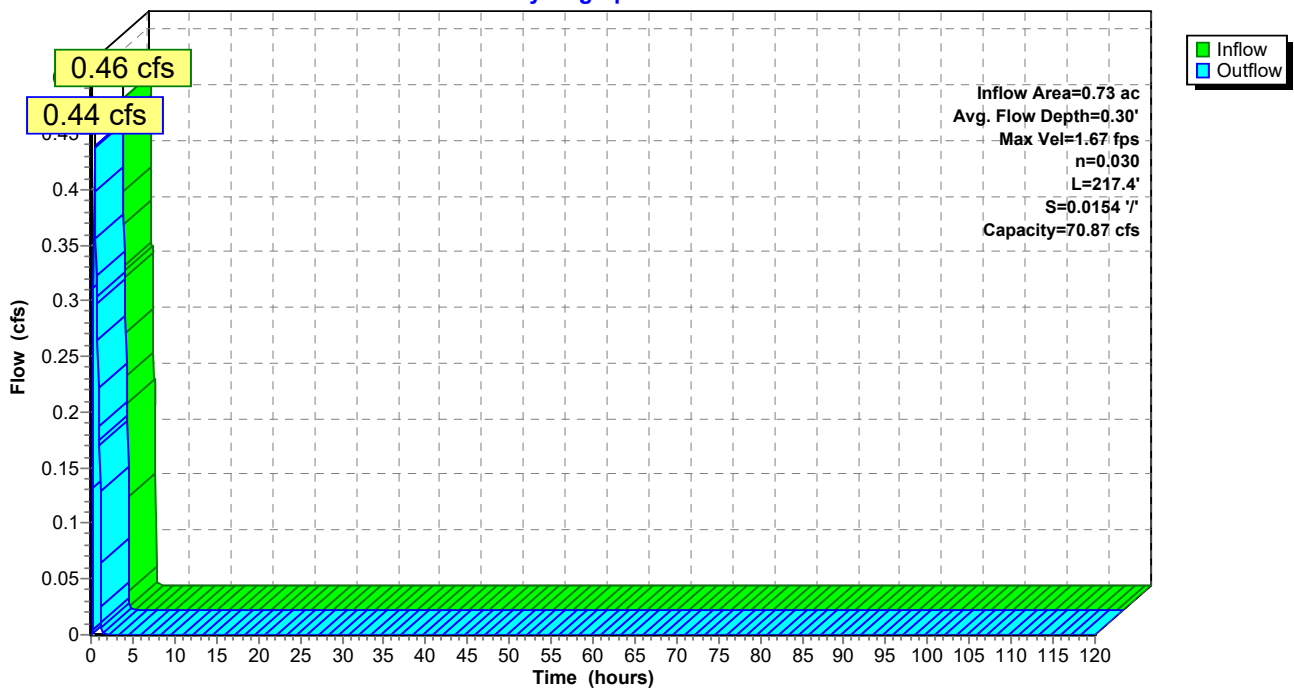
Peak Storage= 58 cf @ 0.40 hrs  
 Average Depth at Peak Storage= 0.30'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 70.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 217.4' Slope= 0.0154 '/'  
 Inlet Invert= 811.36', Outlet Invert= 808.02'



**Reach TB-N-A5: Terrace Berm N-A5**

Hydrograph



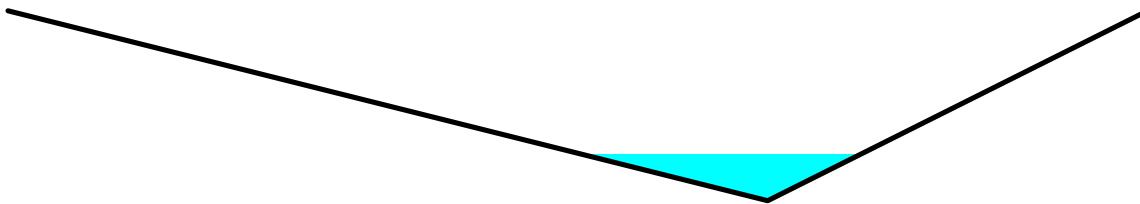
**Summary for Reach TB-N-A6: Terrace Berm N-A6**

Inflow Area = 4.13 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 2.59 cfs @ 0.36 hrs, Volume= 0.110 af  
 Outflow = 1.91 cfs @ 0.66 hrs, Volume= 0.110 af, Atten= 26%, Lag= 17.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.64 fps, Min. Travel Time= 8.9 min  
 Avg. Velocity = 0.75 fps, Avg. Travel Time= 31.3 min

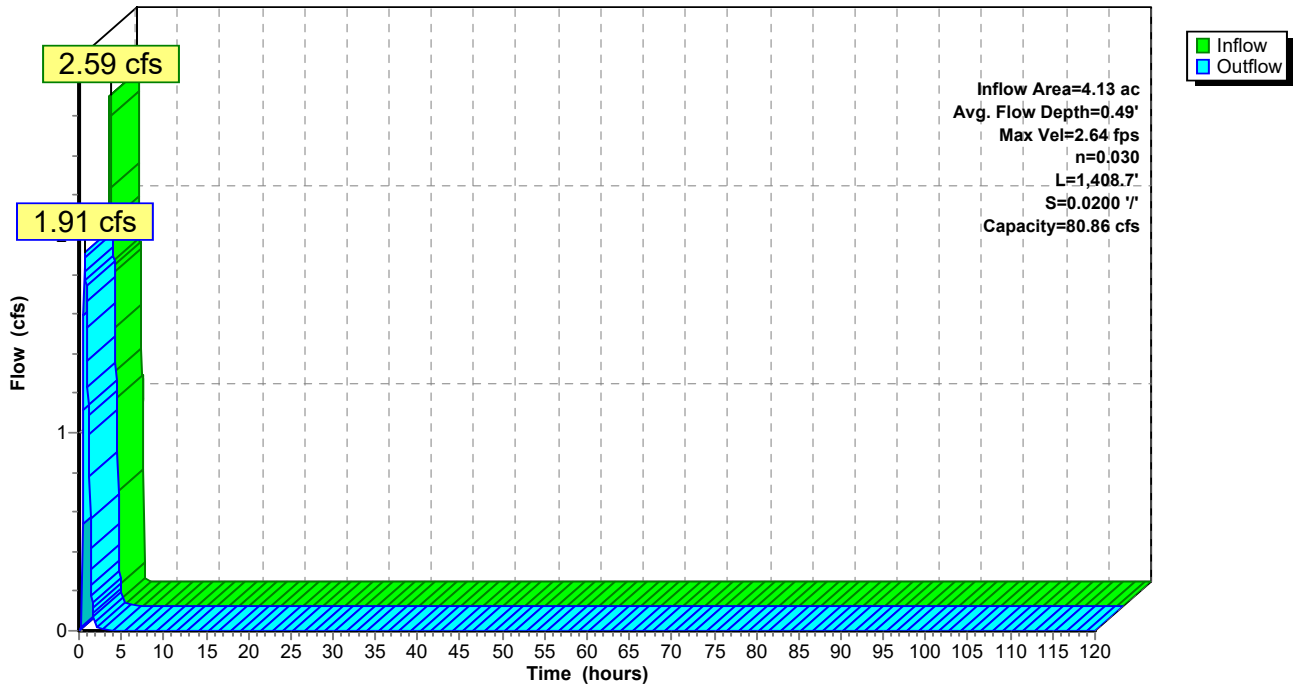
Peak Storage= 1,020 cf @ 0.51 hrs  
 Average Depth at Peak Storage= 0.49'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 ' / ' Top Width= 12.00'  
 Length= 1,408.7' Slope= 0.0200 ' / '  
 Inlet Invert= 836.37', Outlet Invert= 808.20'



**Reach TB-N-A6: Terrace Berm N-A6**

Hydrograph



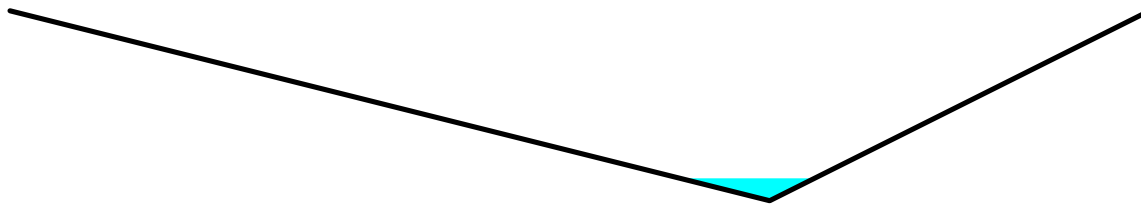
**Summary for Reach TB-N-A7: Terrace Berm N-A7**

Inflow Area = 0.44 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 0.28 cfs @ 0.37 hrs, Volume= 0.012 af  
 Outflow = 0.27 cfs @ 0.41 hrs, Volume= 0.012 af, Atten= 2%, Lag= 2.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.63 fps, Min. Travel Time= 1.1 min  
 Avg. Velocity = 1.07 fps, Avg. Travel Time= 1.6 min

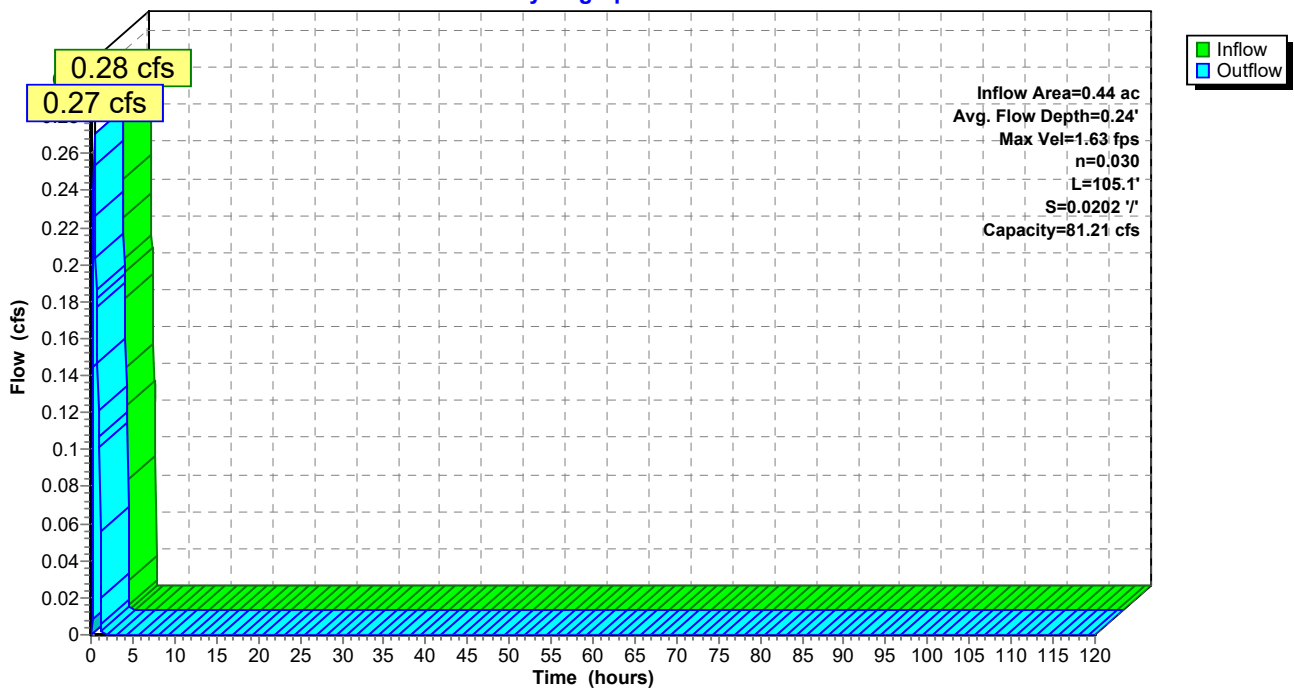
Peak Storage= 18 cf @ 0.38 hrs  
 Average Depth at Peak Storage= 0.24'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 81.21 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 105.1' Slope= 0.0202 '/'  
 Inlet Invert= 782.01', Outlet Invert= 779.89'



**Reach TB-N-A7: Terrace Berm N-A7**

Hydrograph



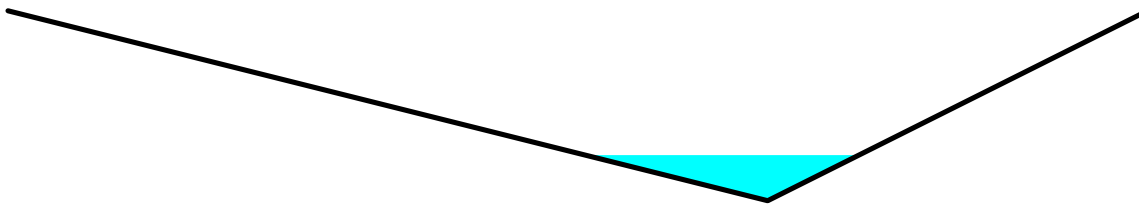
**Summary for Reach TB-N-A8: Terrace Berm N-A8**

Inflow Area = 3.80 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 2.38 cfs @ 0.36 hrs, Volume= 0.102 af  
 Outflow = 1.79 cfs @ 0.64 hrs, Volume= 0.102 af, Atten= 25%, Lag= 16.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.60 fps, Min. Travel Time= 8.3 min  
 Avg. Velocity = 0.76 fps, Avg. Travel Time= 28.5 min

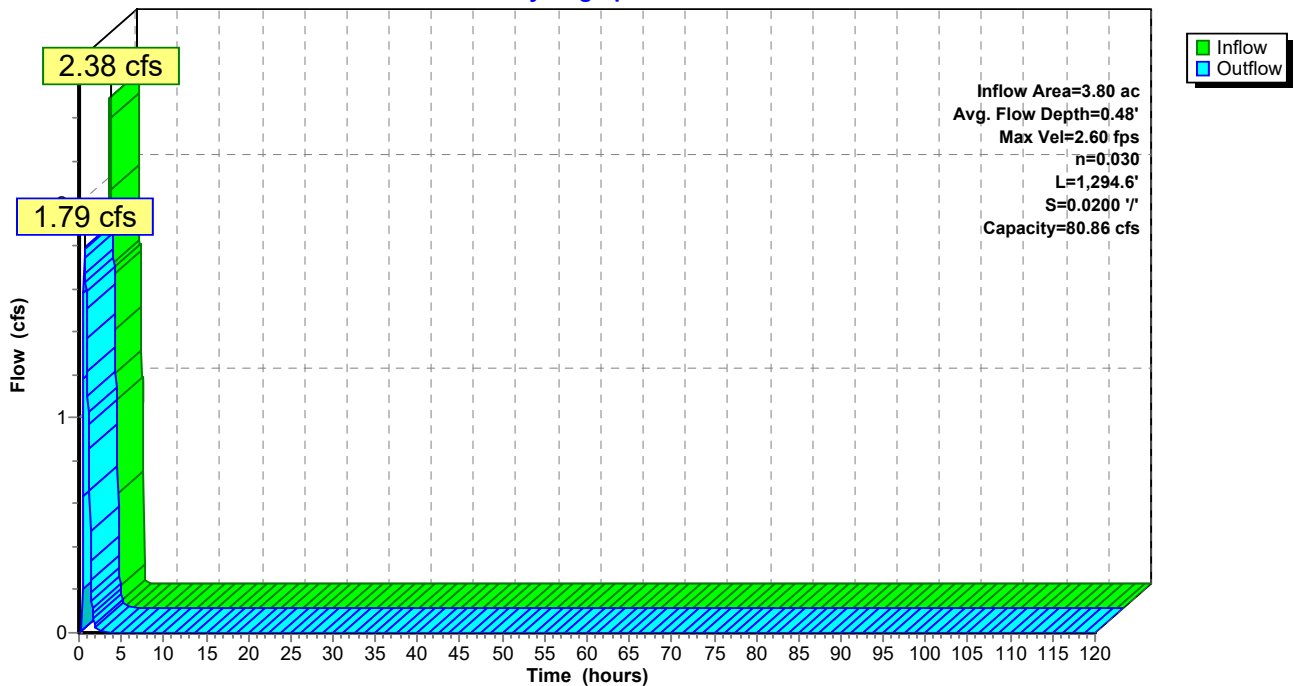
Peak Storage= 895 cf @ 0.50 hrs  
 Average Depth at Peak Storage= 0.48'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,294.6' Slope= 0.0200 '/'  
 Inlet Invert= 805.78', Outlet Invert= 779.89'



**Reach TB-N-A8: Terrace Berm N-A8**

Hydrograph



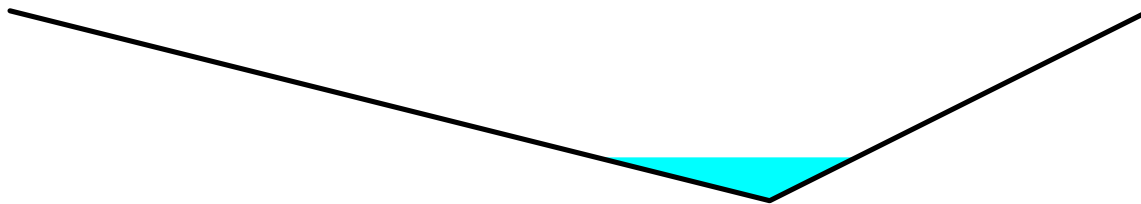
**Summary for Reach TB-N-B1: Terrace Berm N-B1**

Inflow Area = 3.15 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 1.90 cfs @ 0.40 hrs, Volume= 0.084 af  
 Outflow = 1.57 cfs @ 0.62 hrs, Volume= 0.084 af, Atten= 17%, Lag= 13.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.52 fps, Min. Travel Time= 6.5 min  
 Avg. Velocity = 0.80 fps, Avg. Travel Time= 20.2 min

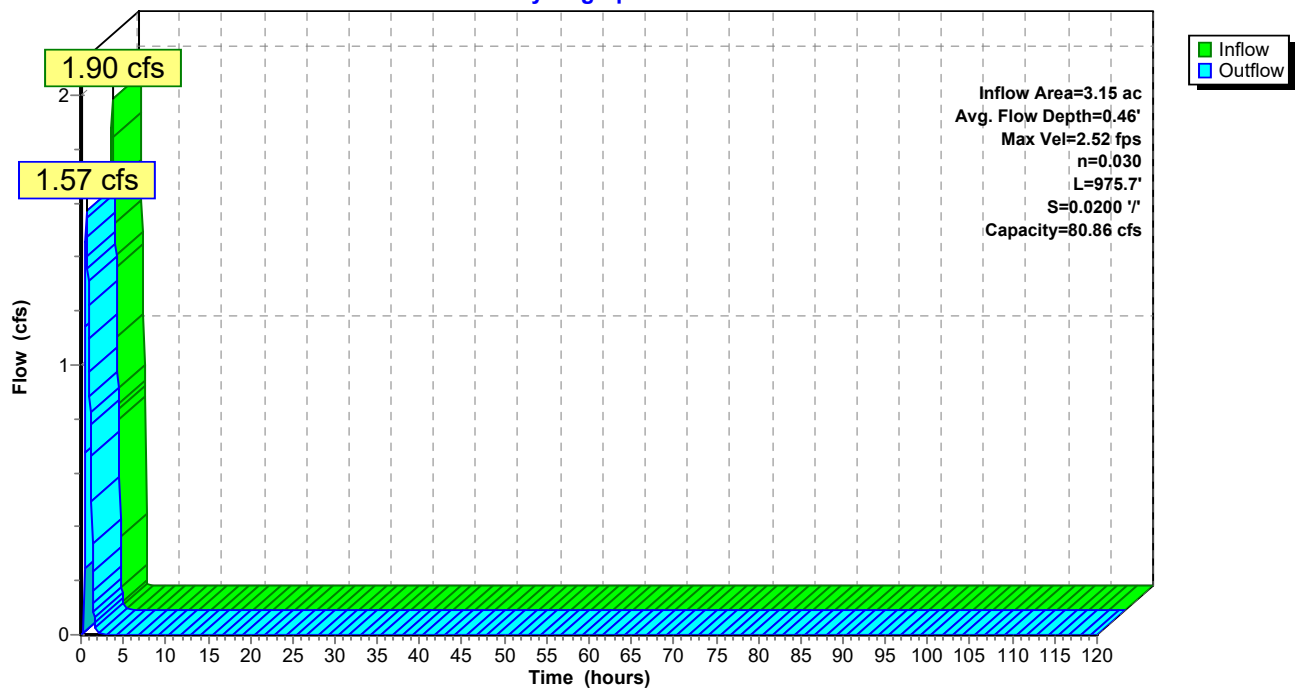
Peak Storage= 611 cf @ 0.51 hrs  
 Average Depth at Peak Storage= 0.46'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 975.7' Slope= 0.0200 '/'  
 Inlet Invert= 867.35', Outlet Invert= 847.84'



**Reach TB-N-B1: Terrace Berm N-B1**

Hydrograph



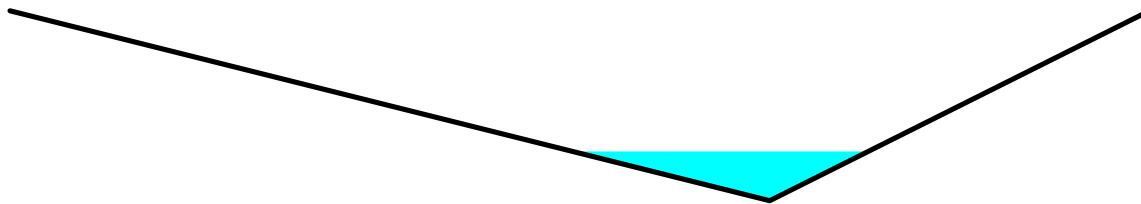
**Summary for Reach TB-N-B2: Terrace Berm N-B2**

Inflow Area = 4.49 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 2.69 cfs @ 0.40 hrs, Volume= 0.120 af  
 Outflow = 2.19 cfs @ 0.63 hrs, Volume= 0.120 af, Atten= 19%, Lag= 14.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.74 fps, Min. Travel Time= 6.8 min  
 Avg. Velocity = 0.81 fps, Avg. Travel Time= 23.0 min

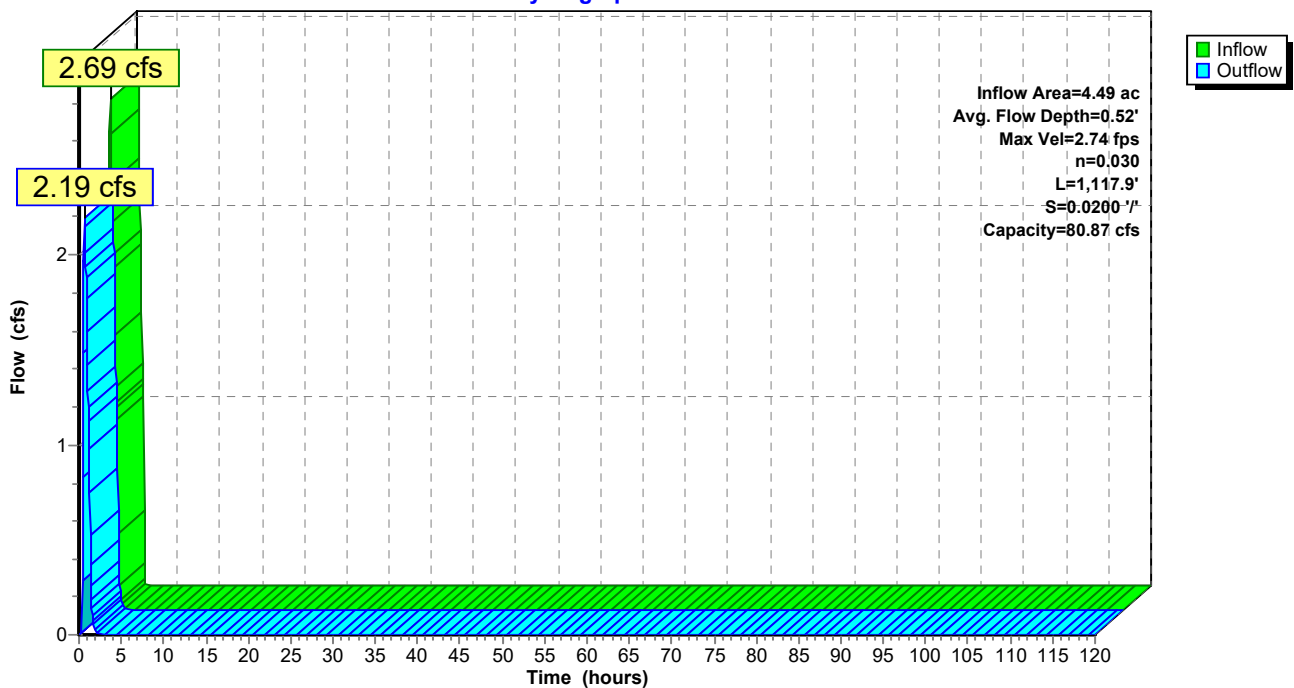
Peak Storage= 904 cf @ 0.52 hrs  
 Average Depth at Peak Storage= 0.52'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,117.9' Slope= 0.0200 '/'  
 Inlet Invert= 870.20', Outlet Invert= 847.84'



**Reach TB-N-B2: Terrace Berm N-B2**

Hydrograph





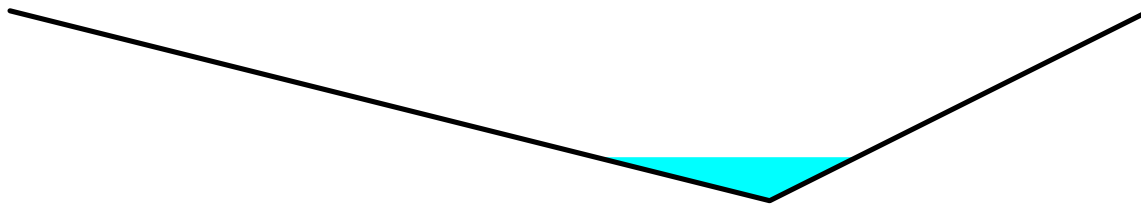
**Summary for Reach TB-N-B3: Terrace Berm N-B3**

Inflow Area = 3.43 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 2.15 cfs @ 0.36 hrs, Volume= 0.092 af  
 Outflow = 1.59 cfs @ 0.66 hrs, Volume= 0.092 af, Atten= 26%, Lag= 17.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.53 fps, Min. Travel Time= 8.7 min  
 Avg. Velocity = 0.74 fps, Avg. Travel Time= 29.7 min

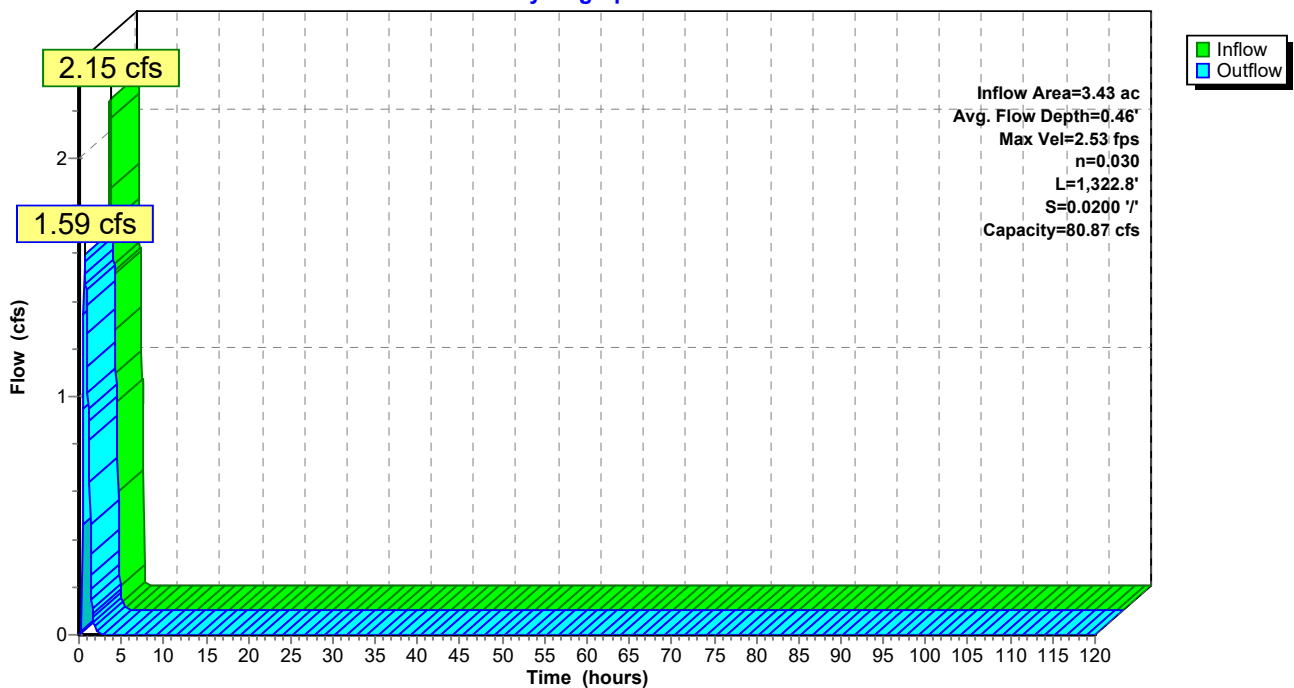
Peak Storage= 836 cf @ 0.51 hrs  
 Average Depth at Peak Storage= 0.46'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,322.8' Slope= 0.0200 '/'  
 Inlet Invert= 836.37', Outlet Invert= 809.91'



**Reach TB-N-B3: Terrace Berm N-B3**

Hydrograph



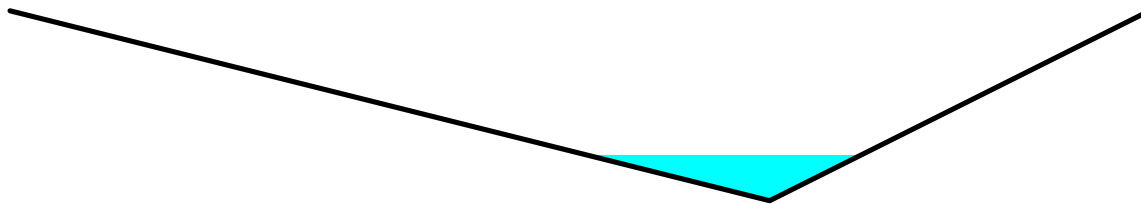
**Summary for Reach TB-N-B4: Terrace Berm N-B4**

Inflow Area = 3.80 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 2.38 cfs @ 0.36 hrs, Volume= 0.102 af  
 Outflow = 1.80 cfs @ 0.64 hrs, Volume= 0.102 af, Atten= 24%, Lag= 16.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.61 fps, Min. Travel Time= 8.1 min  
 Avg. Velocity = 0.76 fps, Avg. Travel Time= 27.6 min

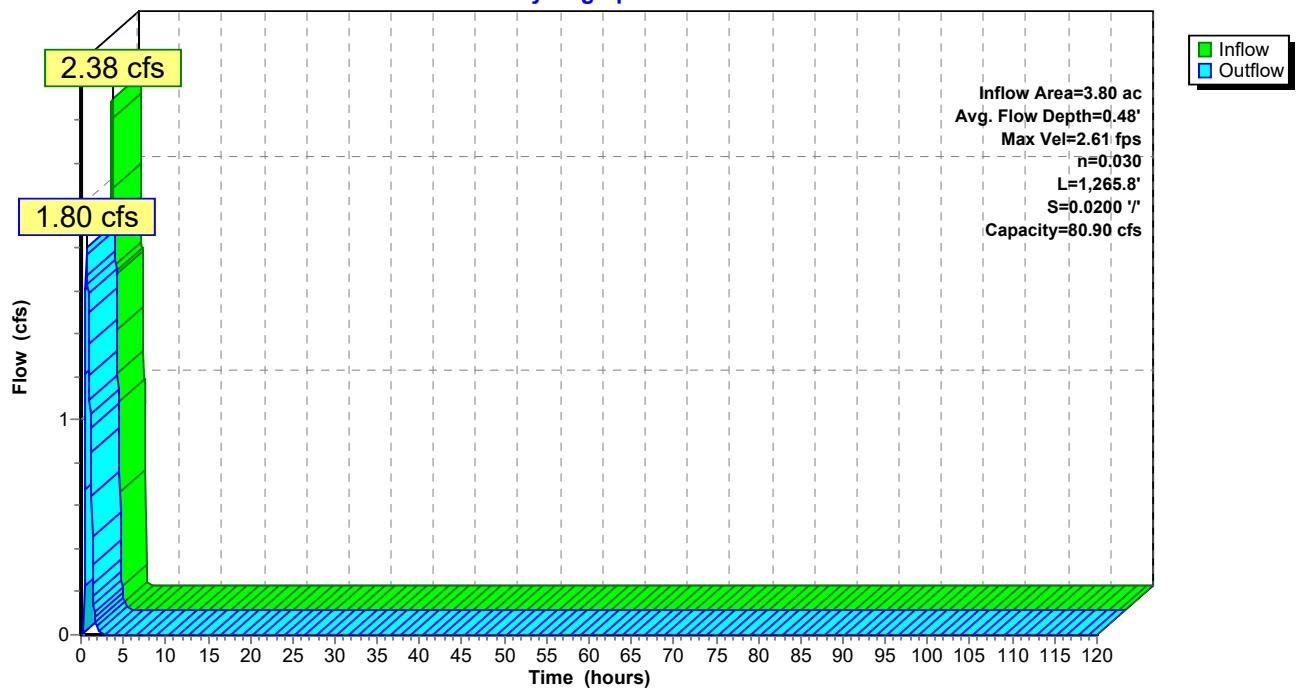
Peak Storage= 880 cf @ 0.50 hrs  
 Average Depth at Peak Storage= 0.48'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.90 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,265.8' Slope= 0.0200 '/'  
 Inlet Invert= 835.25', Outlet Invert= 809.91'



**Reach TB-N-B4: Terrace Berm N-B4**

Hydrograph



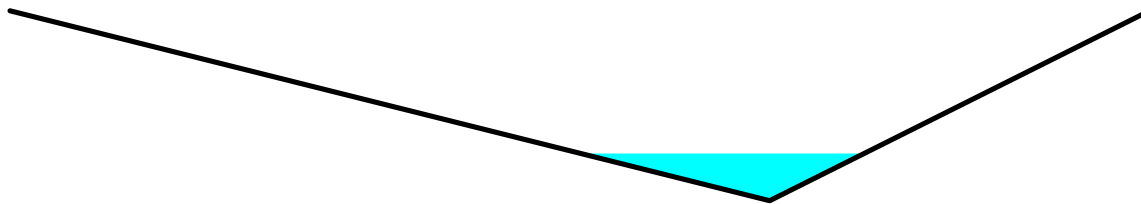
**Summary for Reach TB-N-B5: Terrace Berm N-B5**

Inflow Area = 4.50 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 2.81 cfs @ 0.36 hrs, Volume= 0.120 af  
 Outflow = 1.97 cfs @ 0.72 hrs, Volume= 0.120 af, Atten= 30%, Lag= 21.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.66 fps, Min. Travel Time= 10.4 min  
 Avg. Velocity = 0.72 fps, Avg. Travel Time= 38.5 min

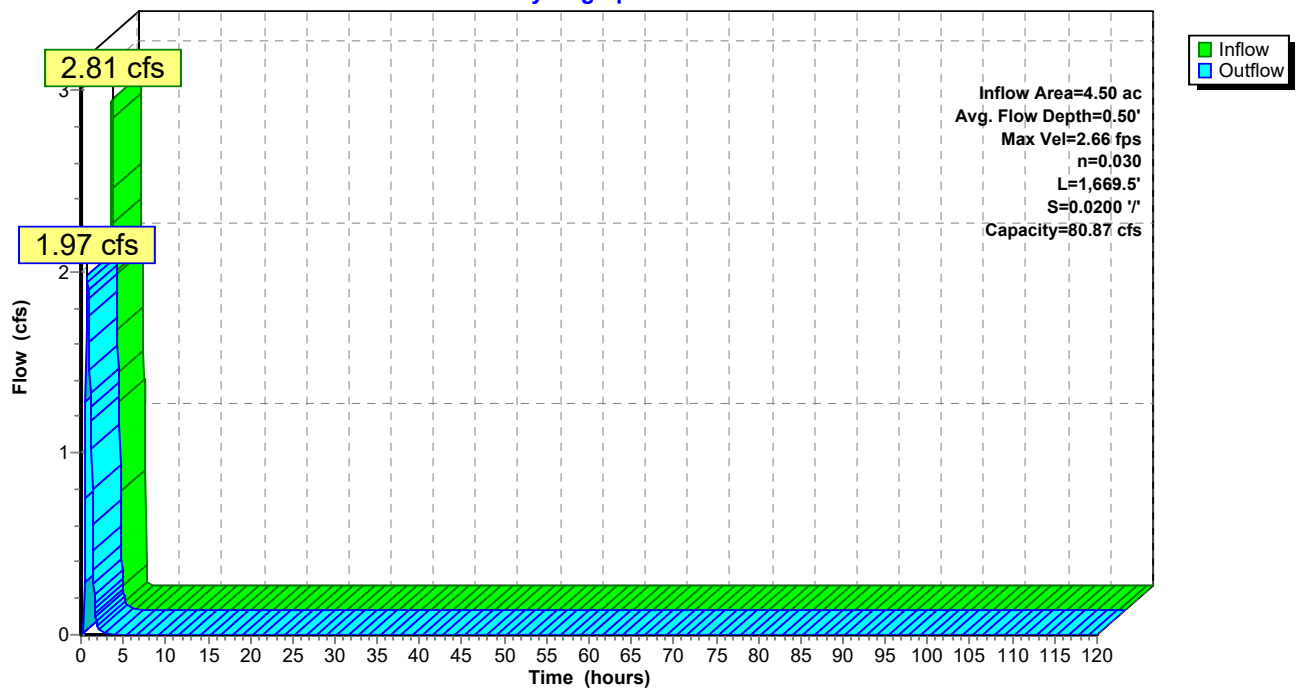
Peak Storage= 1,238 cf @ 0.54 hrs  
 Average Depth at Peak Storage= 0.50'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,669.5' Slope= 0.0200 '/'  
 Inlet Invert= 805.78', Outlet Invert= 772.39'



**Reach TB-N-B5: Terrace Berm N-B5**

Hydrograph



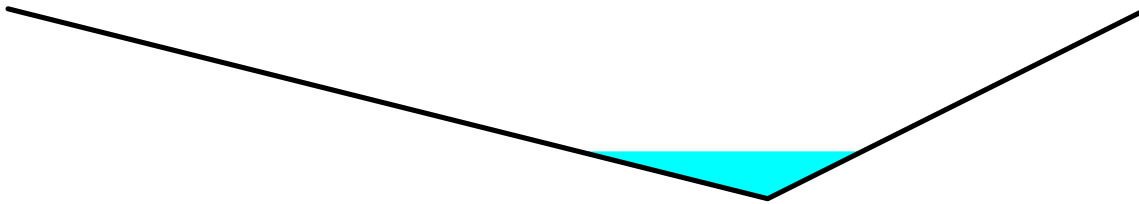
**Summary for Reach TB-N-B6: Terrace Berm N-B6**

Inflow Area = 4.29 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 2.68 cfs @ 0.36 hrs, Volume= 0.115 af  
 Outflow = 1.99 cfs @ 0.66 hrs, Volume= 0.115 af, Atten= 26%, Lag= 17.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.67 fps, Min. Travel Time= 8.8 min  
 Avg. Velocity = 0.75 fps, Avg. Travel Time= 31.3 min

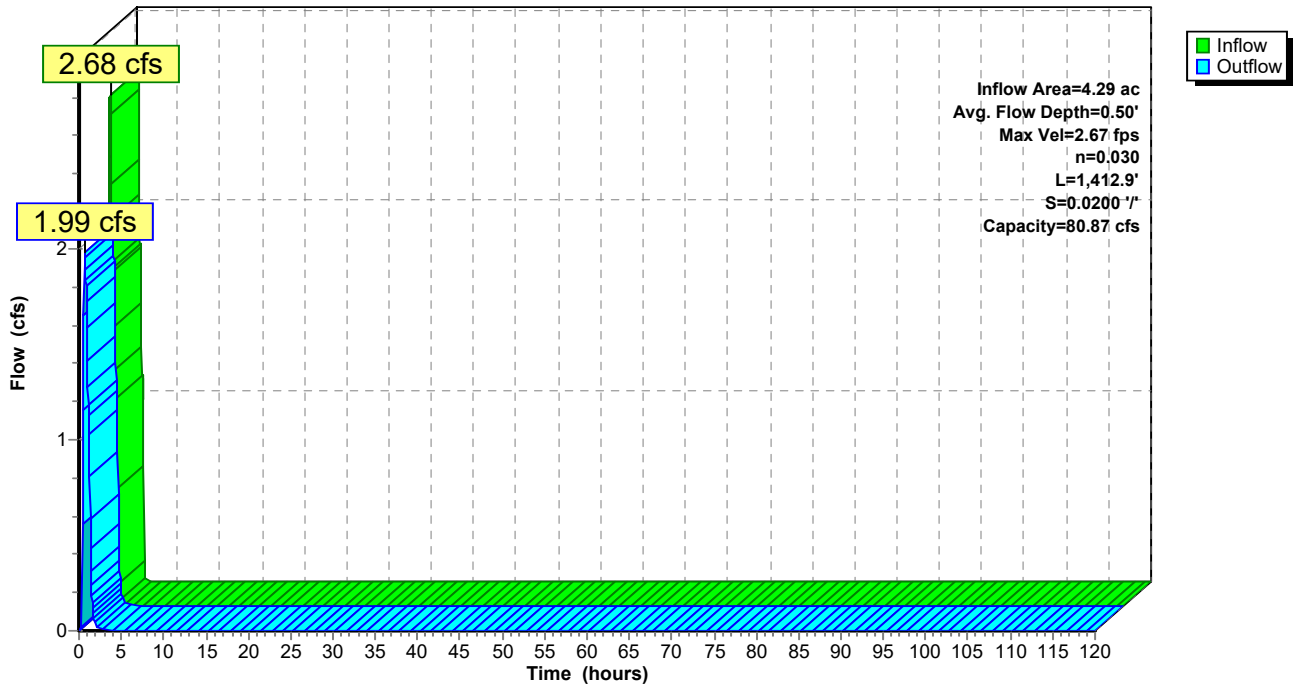
Peak Storage= 1,054 cf @ 0.51 hrs  
 Average Depth at Peak Storage= 0.50'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,412.9' Slope= 0.0200 '/'  
 Inlet Invert= 800.65', Outlet Invert= 772.39'



**Reach TB-N-B6: Terrace Berm N-B6**

Hydrograph



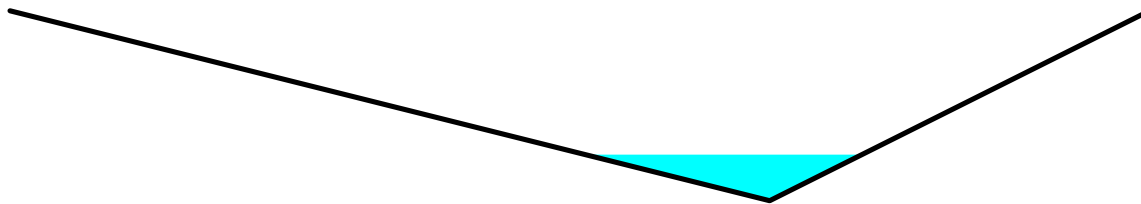
**Summary for Reach TB-N-B7: Terrace Berm N-B7**

Inflow Area = 3.96 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 2.48 cfs @ 0.36 hrs, Volume= 0.106 af  
 Outflow = 1.84 cfs @ 0.66 hrs, Volume= 0.106 af, Atten= 26%, Lag= 17.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.62 fps, Min. Travel Time= 8.7 min  
 Avg. Velocity = 0.75 fps, Avg. Travel Time= 30.5 min

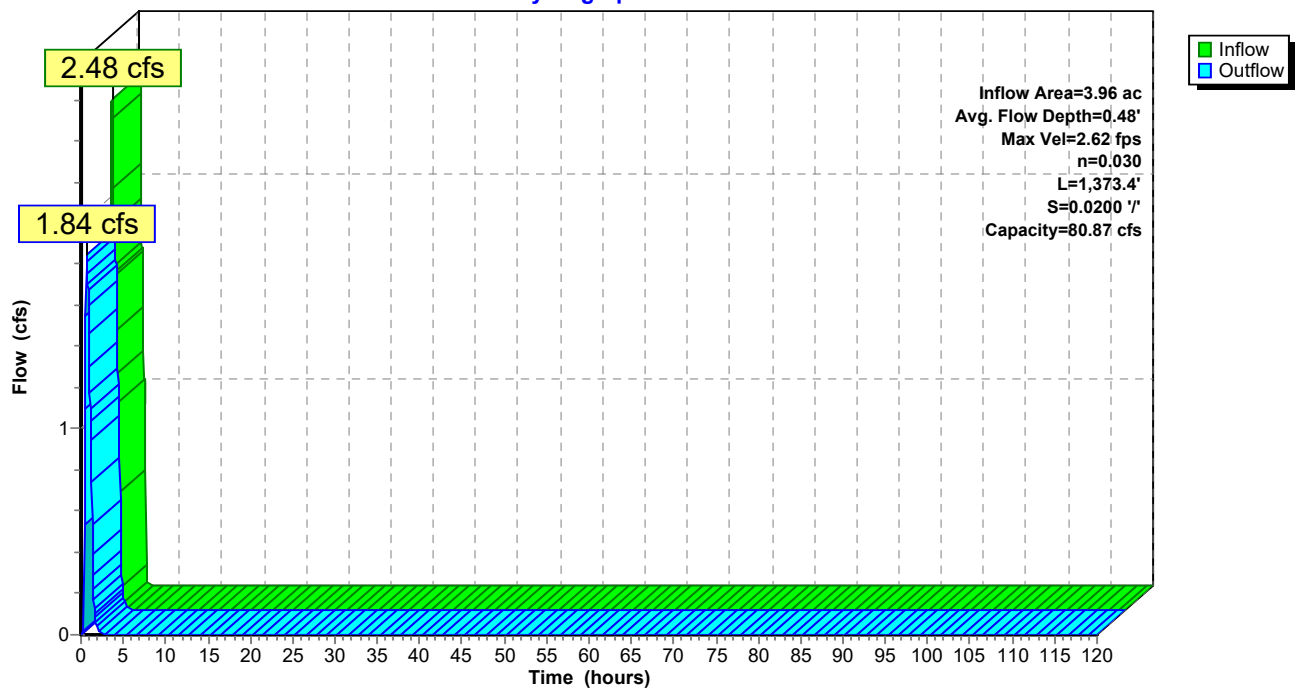
Peak Storage= 968 cf @ 0.51 hrs  
 Average Depth at Peak Storage= 0.48'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 ' / ' Top Width= 12.00'  
 Length= 1,373.4' Slope= 0.0200 ' / '  
 Inlet Invert= 771.72', Outlet Invert= 744.25'



**Reach TB-N-B7: Terrace Berm N-B7**

Hydrograph



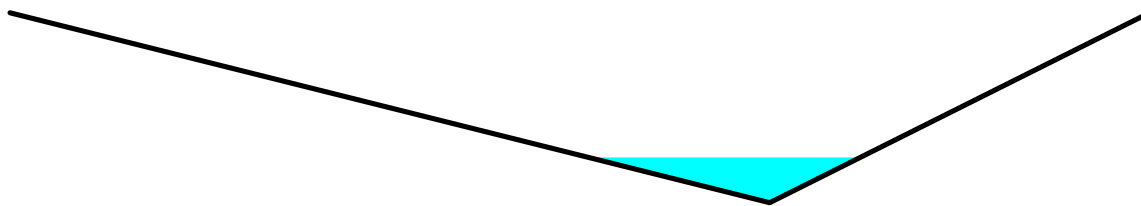
**Summary for Reach TB-N-B8: Terrace Berm N-B8**

Inflow Area = 3.52 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 2.21 cfs @ 0.36 hrs, Volume= 0.094 af  
 Outflow = 1.78 cfs @ 0.58 hrs, Volume= 0.094 af, Atten= 19%, Lag= 12.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.64 fps, Min. Travel Time= 6.4 min  
 Avg. Velocity = 0.83 fps, Avg. Travel Time= 20.5 min

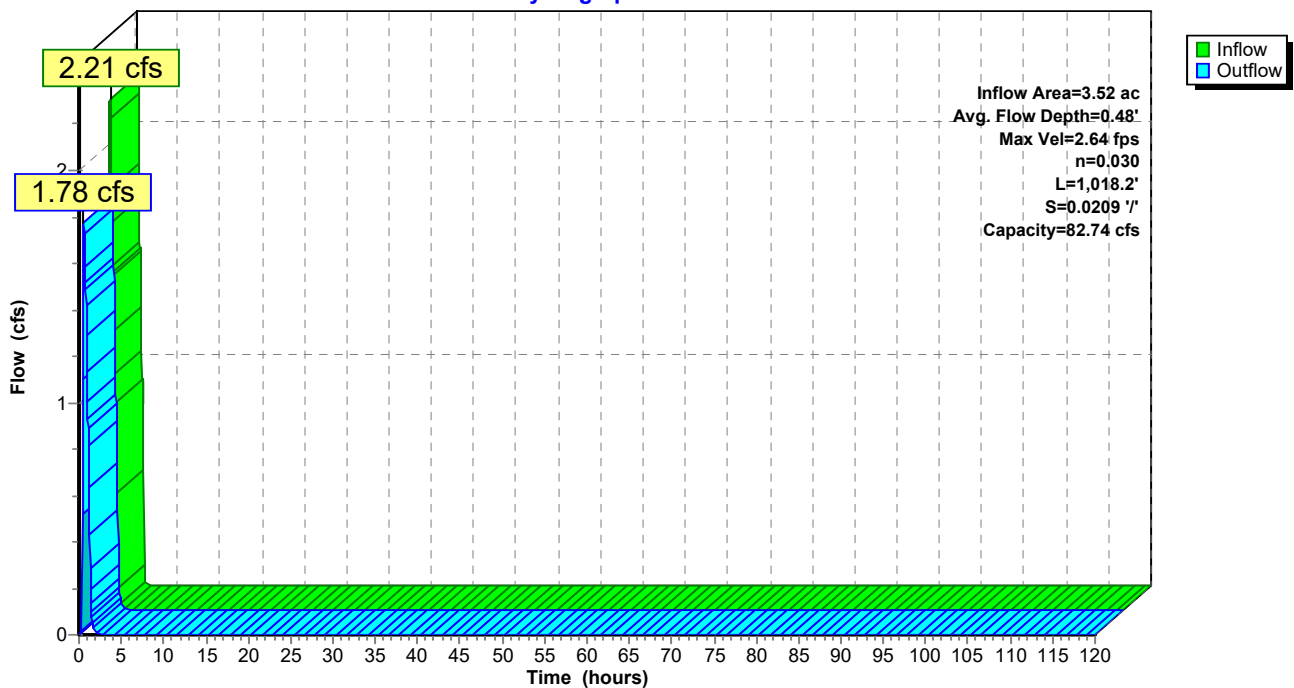
Peak Storage= 692 cf @ 0.47 hrs  
 Average Depth at Peak Storage= 0.48'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 82.74 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,018.2' Slope= 0.0209 '/'  
 Inlet Invert= 765.32', Outlet Invert= 744.00'



**Reach TB-N-B8: Terrace Berm N-B8**

Hydrograph



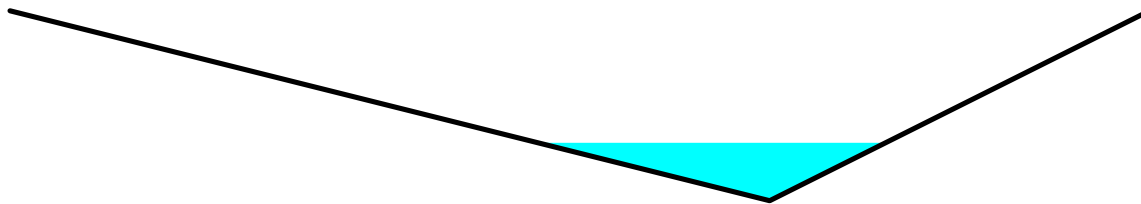
**Summary for Reach TB-N-C1: Terrace Berm N-C1**

Inflow Area = 6.98 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 4.17 cfs @ 0.40 hrs, Volume= 0.187 af  
 Outflow = 3.36 cfs @ 0.65 hrs, Volume= 0.187 af, Atten= 19%, Lag= 15.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.04 fps, Min. Travel Time= 7.2 min  
 Avg. Velocity = 0.82 fps, Avg. Travel Time= 26.7 min

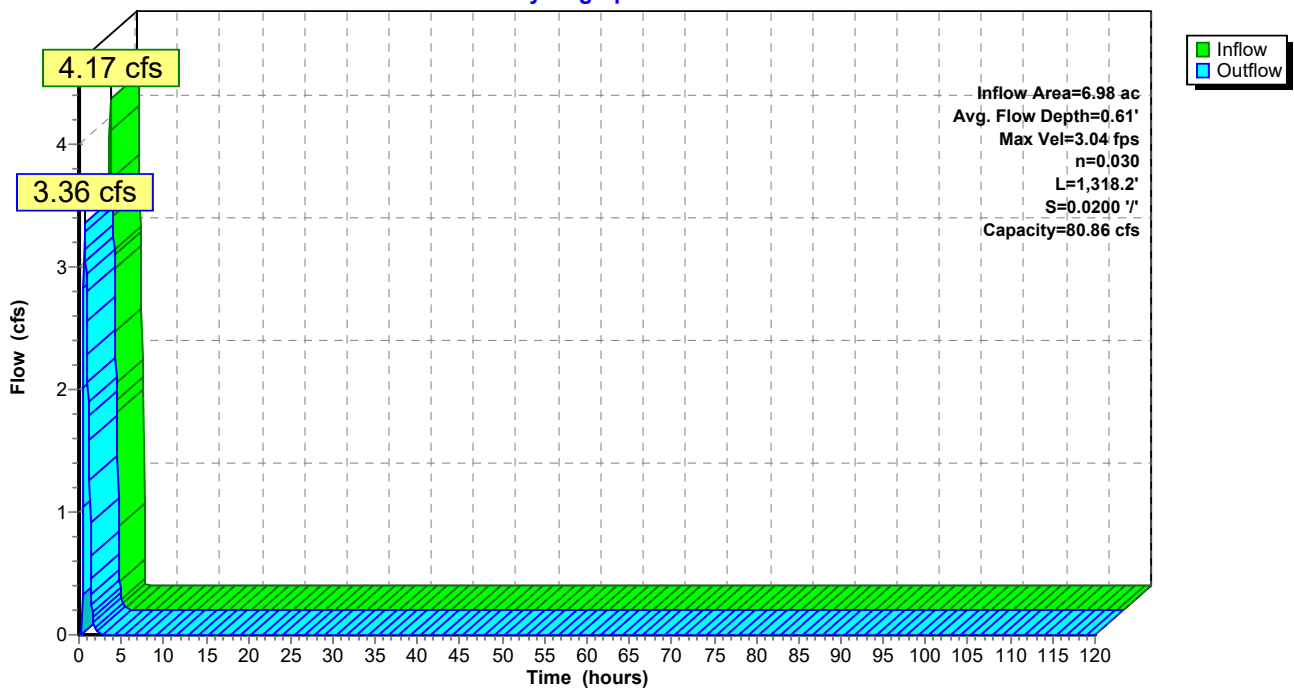
Peak Storage= 1,468 cf @ 0.52 hrs  
 Average Depth at Peak Storage= 0.61'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,318.2' Slope= 0.0200 '/'  
 Inlet Invert= 870.02', Outlet Invert= 843.66'



**Reach TB-N-C1: Terrace Berm N-C1**

Hydrograph



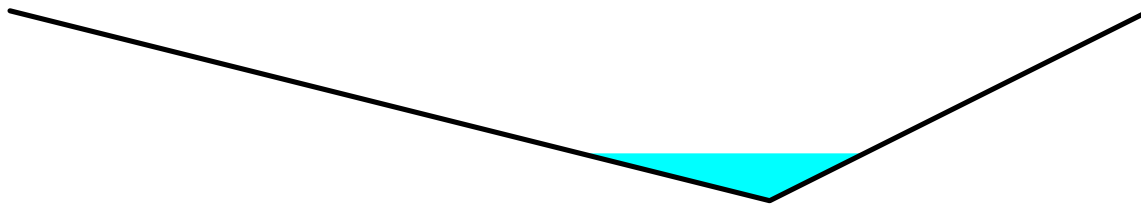
**Summary for Reach TB-N-C2: Terrace Berm N-C2**

Inflow Area = 4.20 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 2.63 cfs @ 0.36 hrs, Volume= 0.112 af  
 Outflow = 1.98 cfs @ 0.64 hrs, Volume= 0.112 af, Atten= 25%, Lag= 16.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.67 fps, Min. Travel Time= 8.2 min  
 Avg. Velocity = 0.77 fps, Avg. Travel Time= 28.7 min

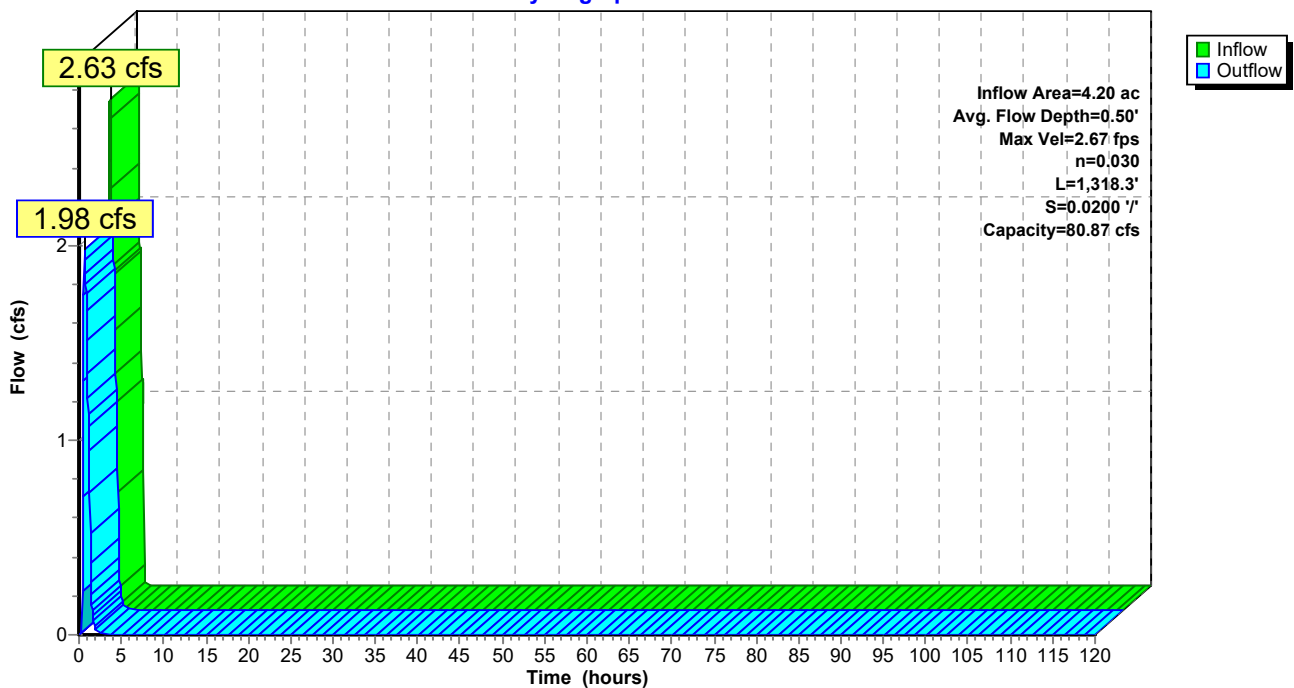
Peak Storage= 983 cf @ 0.50 hrs  
 Average Depth at Peak Storage= 0.50'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,318.3' Slope= 0.0200 '/'  
 Inlet Invert= 835.25', Outlet Invert= 808.88'



**Reach TB-N-C2: Terrace Berm N-C2**

Hydrograph





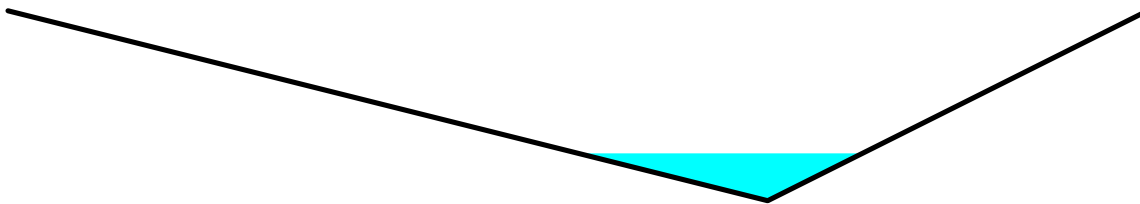
**Summary for Reach TB-N-C3: Terrace Berm N-C3**

Inflow Area = 4.22 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 2.64 cfs @ 0.36 hrs, Volume= 0.113 af  
 Outflow = 1.99 cfs @ 0.64 hrs, Volume= 0.113 af, Atten= 25%, Lag= 16.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.67 fps, Min. Travel Time= 8.2 min  
 Avg. Velocity = 0.76 fps, Avg. Travel Time= 28.8 min

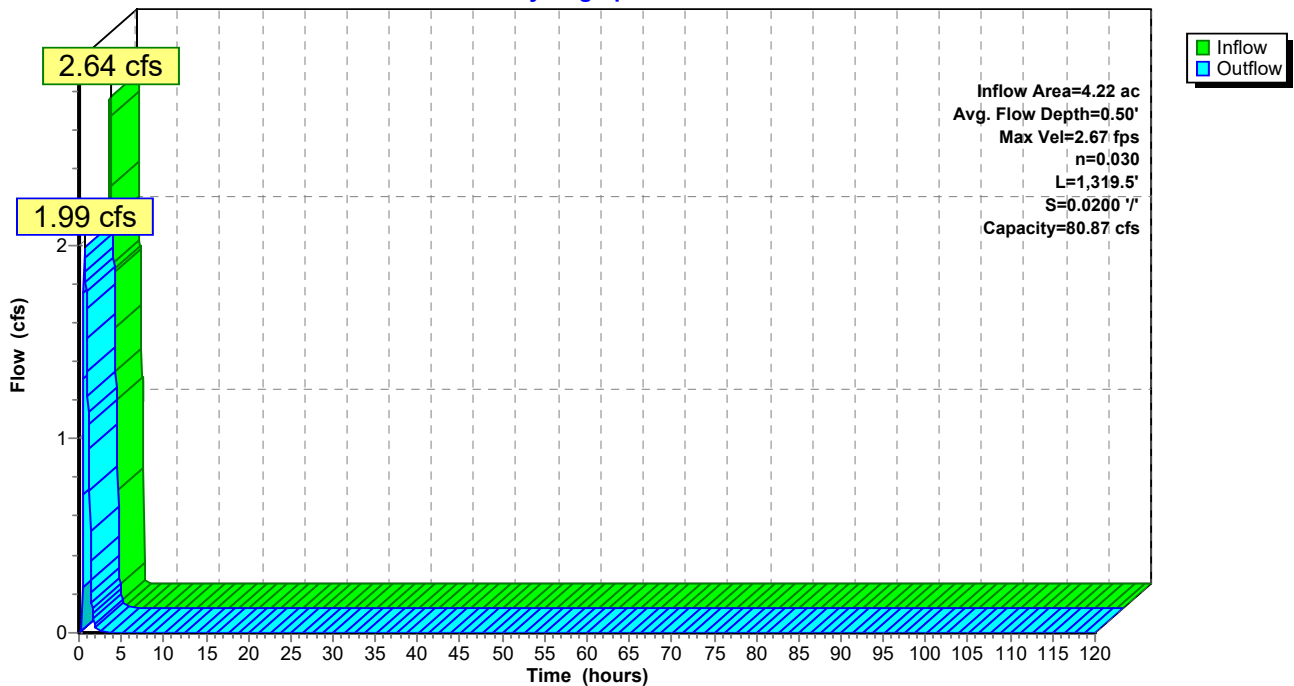
Peak Storage= 988 cf @ 0.50 hrs  
 Average Depth at Peak Storage= 0.50'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,319.5' Slope= 0.0200 '/'  
 Inlet Invert= 800.65', Outlet Invert= 774.26'



**Reach TB-N-C3: Terrace Berm N-C3**

Hydrograph



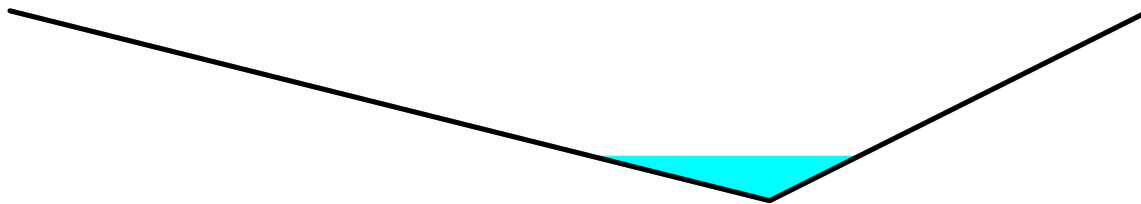
**Summary for Reach TB-N-C4: Terrace Berm N-C4**

Inflow Area = 3.52 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 2.20 cfs @ 0.36 hrs, Volume= 0.094 af  
 Outflow = 1.73 cfs @ 0.61 hrs, Volume= 0.094 af, Atten= 21%, Lag= 14.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.58 fps, Min. Travel Time= 7.1 min  
 Avg. Velocity = 0.79 fps, Avg. Travel Time= 23.2 min

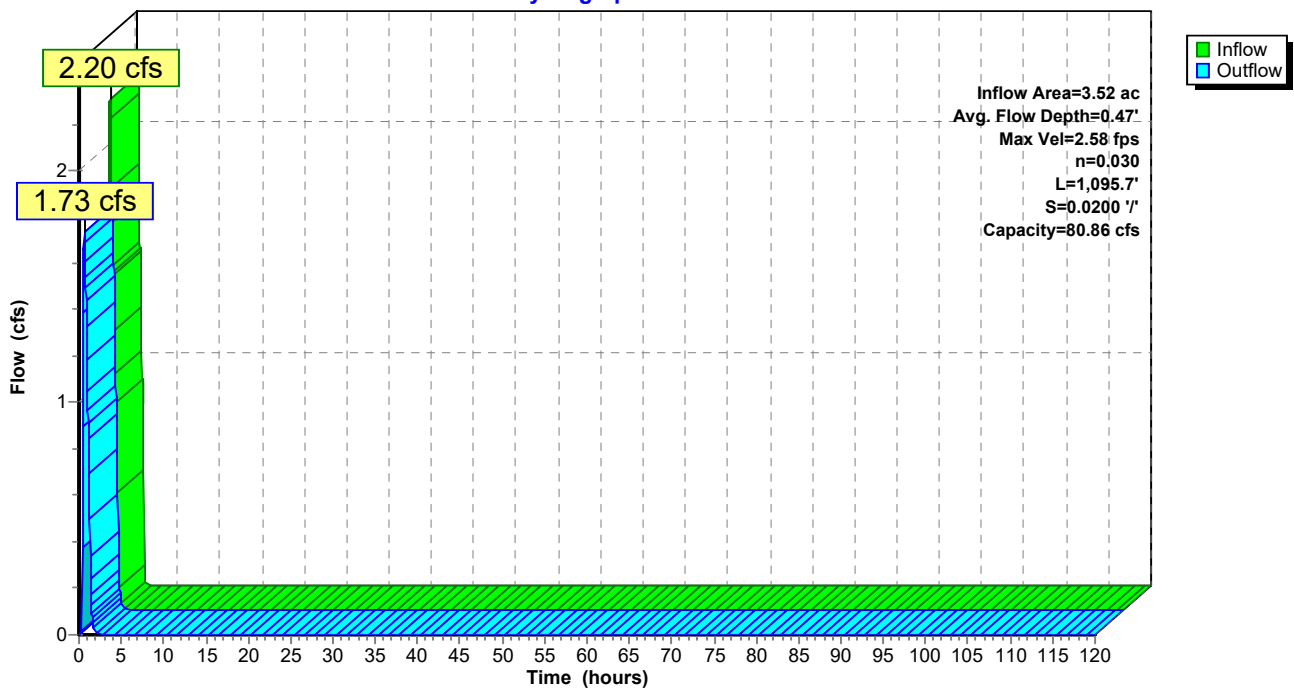
Peak Storage= 738 cf @ 0.48 hrs  
 Average Depth at Peak Storage= 0.47'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,095.7' Slope= 0.0200 '/'  
 Inlet Invert= 765.32', Outlet Invert= 743.41'



**Reach TB-N-C4: Terrace Berm N-C4**

Hydrograph



**Summary for Pond Basin 5R: Stormwater Basin 5R**

Inflow Area = 53.03 ac, 15.95% Impervious, Inflow Depth = 0.48" for 2-Year, 1-Hour event  
 Inflow = 27.85 cfs @ 0.17 hrs, Volume= 2.134 af  
 Outflow = 0.23 cfs @ 2.67 hrs, Volume= 1.088 af, Atten= 99%, Lag= 150.4 min  
 Primary = 0.23 cfs @ 2.67 hrs, Volume= 1.088 af  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Starting Elev= 733.50' Surf.Area= 318,821 sf Storage= 1,528,329 cf  
 Peak Elev= 733.80' @ 2.67 hrs Surf.Area= 279,282 sf Storage= 1,619,411 cf (91,082 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= 2,646.4 min ( 2,692.3 - 45.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	726.00'	4,158,336 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
726.00	132,640	0	0
728.00	155,297	287,937	287,937
730.00	179,100	334,397	622,334
731.00	118,479	148,790	771,124
732.00	367,080	242,780	1,013,903
733.50	318,821	514,426	1,528,329
734.00	253,912	143,183	1,671,512
735.00	270,451	262,182	1,933,694
736.00	287,631	279,041	2,212,735
738.00	311,683	599,314	2,812,049
740.00	336,524	648,207	3,460,256
742.00	361,556	698,080	4,158,336

Device	Routing	Invert	Outlet Devices
#1	Primary	733.50'	<b>30.0" Round Culvert</b> L= 100.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 733.50' / 733.20' S= 0.0030 1/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf
#2	Device 1	733.50'	<b>4.0" Vert. Lower Orifice X 4.00</b> C= 0.600
#3	Device 1	737.50'	<b>4.0" Vert. Middle Orifice X 4.00</b> C= 0.600
#4	Device 1	738.50'	<b>4.0" Vert. Upper Orifice X 4.00</b> C= 0.600
#5	Device 1	739.00'	<b>30.0" Horiz. Orifice/Grate</b> C= 0.600
#6	Secondary	740.00'	<b>Secondary Spillway, C= 3.27</b> Offset (feet) 0.00 6.00 26.00 32.00 Height (feet) 2.00 0.00 0.00 2.00

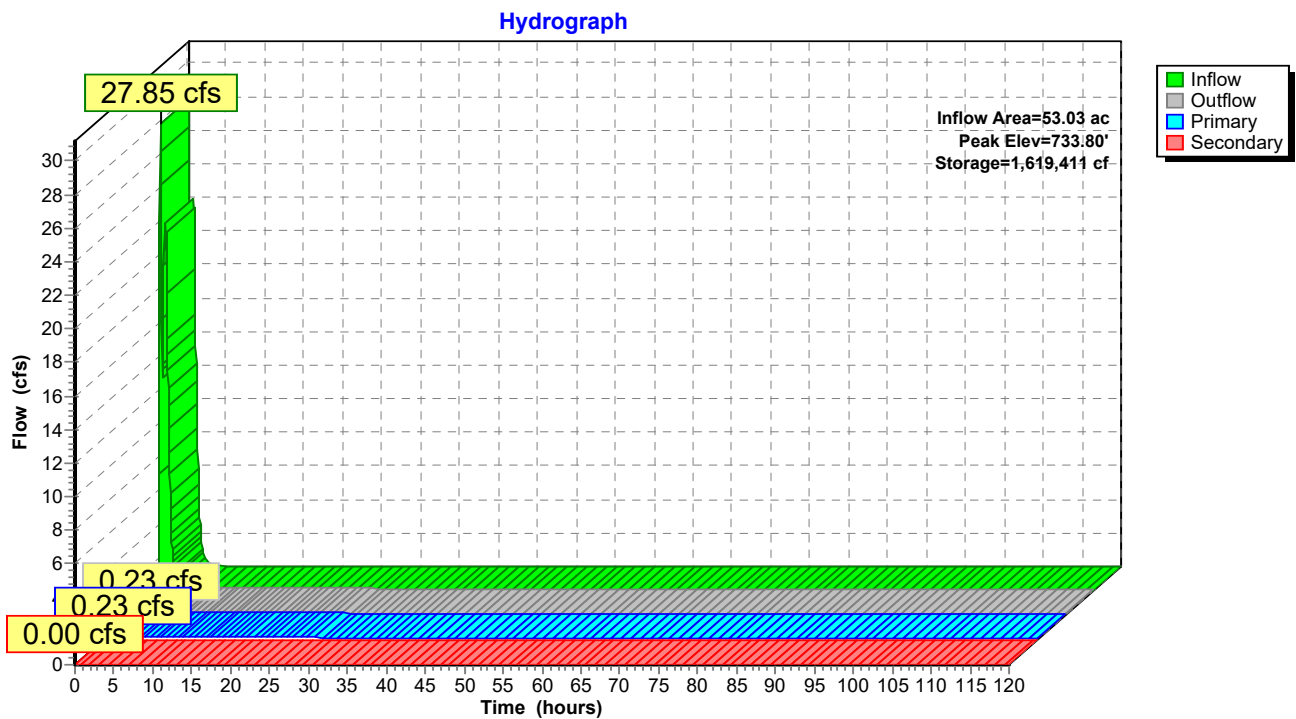
**Primary OutFlow** Max=0.22 cfs @ 2.67 hrs HW=733.80' (Free Discharge)

- 1=Culvert (Barrel Controls 0.22 cfs @ 0.98 fps)
- 2=Lower Orifice (Passes 0.22 cfs of 0.63 cfs potential flow)
- 3=Middle Orifice ( Controls 0.00 cfs)
- 4=Upper Orifice ( Controls 0.00 cfs)
- 5=Orifice/Grate ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=733.50' (Free Discharge)

- 6=Secondary Spillway ( Controls 0.00 cfs)

**Pond Basin 5R: Stormwater Basin 5R**



**Summary for Pond Basin 8: Stormwater Basin 8**

Inflow Area = 148.01 ac, 11.19% Impervious, Inflow Depth = 0.43" for 2-Year, 1-Hour event  
 Inflow = 49.12 cfs @ 0.17 hrs, Volume= 5.341 af  
 Outflow = 2.69 cfs @ 2.45 hrs, Volume= 5.069 af, Atten= 95%, Lag= 136.6 min  
 Primary = 2.69 cfs @ 2.45 hrs, Volume= 5.069 af

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Starting Elev= 730.50' Surf.Area= 410,884 sf Storage= 1,593,798 cf  
 Peak Elev= 731.01' @ 2.45 hrs Surf.Area= 423,481 sf Storage= 1,805,530 cf (211,732 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= 1,274.5 min ( 1,334.1 - 59.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	726.00'	5,355,472 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
726.00	283,562	0	0
727.50	340,318	467,910	467,910
728.00	351,709	173,007	640,917
730.00	398,761	750,470	1,391,387
730.50	410,884	202,411	1,593,798
732.00	448,114	644,249	2,238,047
733.00	473,655	460,885	2,698,931
734.00	499,775	486,715	3,185,646
736.00	542,314	1,042,089	4,227,735
736.50	553,047	273,840	4,501,575
738.00	585,482	853,897	5,355,472

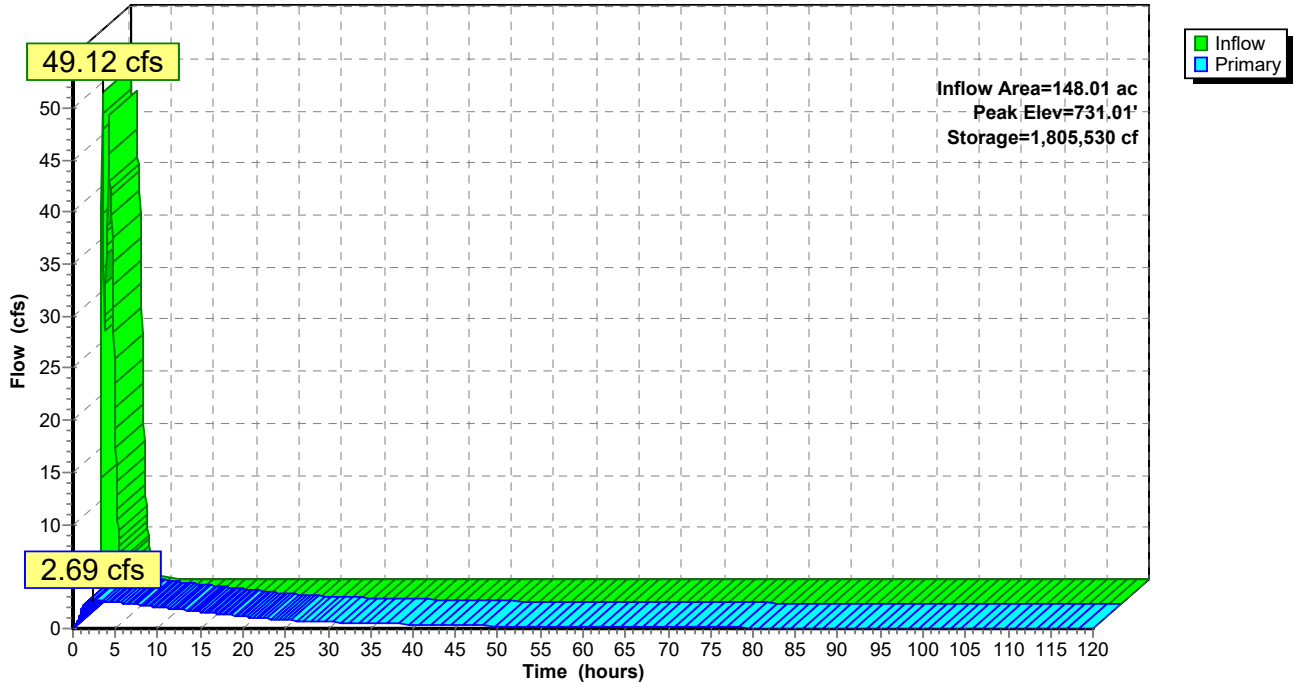
Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	<b>36.0" Round Culvert</b> L= 140.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 727.00' / 725.10' S= 0.0136 1/1' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Device 1	730.50'	<b>4.0" Vert. 2-yr Orifice X 11.00</b> C= 0.600
#3	Device 1	732.50'	<b>4.0" Vert. 100-yr Orifice X 6.00</b> C= 0.600
#4	Device 1	733.50'	<b>4.0" Vert. 100-yr Orifice X 6.00</b> C= 0.600
#5	Device 1	734.50'	<b>4.0" Vert. 100-yr Orifice X 6.00</b> C= 0.600
#6	Device 1	736.50'	<b>36.0" Horiz. Primary Spillway</b> C= 0.600

**Primary OutFlow** Max=2.70 cfs @ 2.45 hrs HW=731.01' (Free Discharge)

- 1=Culvert (Passes 2.70 cfs of 47.55 cfs potential flow)
- 2=2-yr Orifice (Orifice Controls 2.70 cfs @ 2.81 fps)
- 3=100-yr Orifice ( Controls 0.00 cfs)
- 4=100-yr Orifice ( Controls 0.00 cfs)
- 5=100-yr Orifice ( Controls 0.00 cfs)
- 6=Primary Spillway ( Controls 0.00 cfs)

### Pond Basin 8: Stormwater Basin 8

Hydrograph



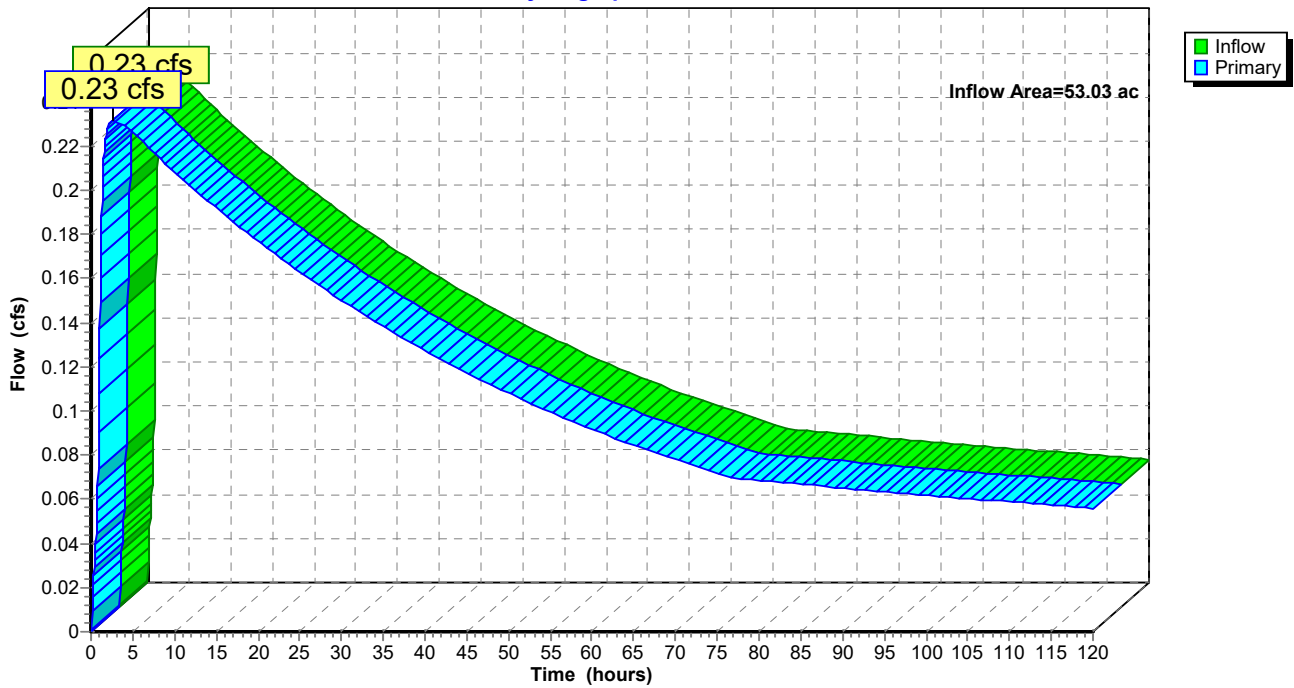
### Summary for Link BS: Bioswale

Inflow Area = 53.03 ac, 15.95% Impervious, Inflow Depth > 0.25" for 2-Year, 1-Hour event  
 Inflow = 0.23 cfs @ 2.67 hrs, Volume= 1.088 af  
 Primary = 0.23 cfs @ 2.67 hrs, Volume= 1.088 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link BS: Bioswale

Hydrograph

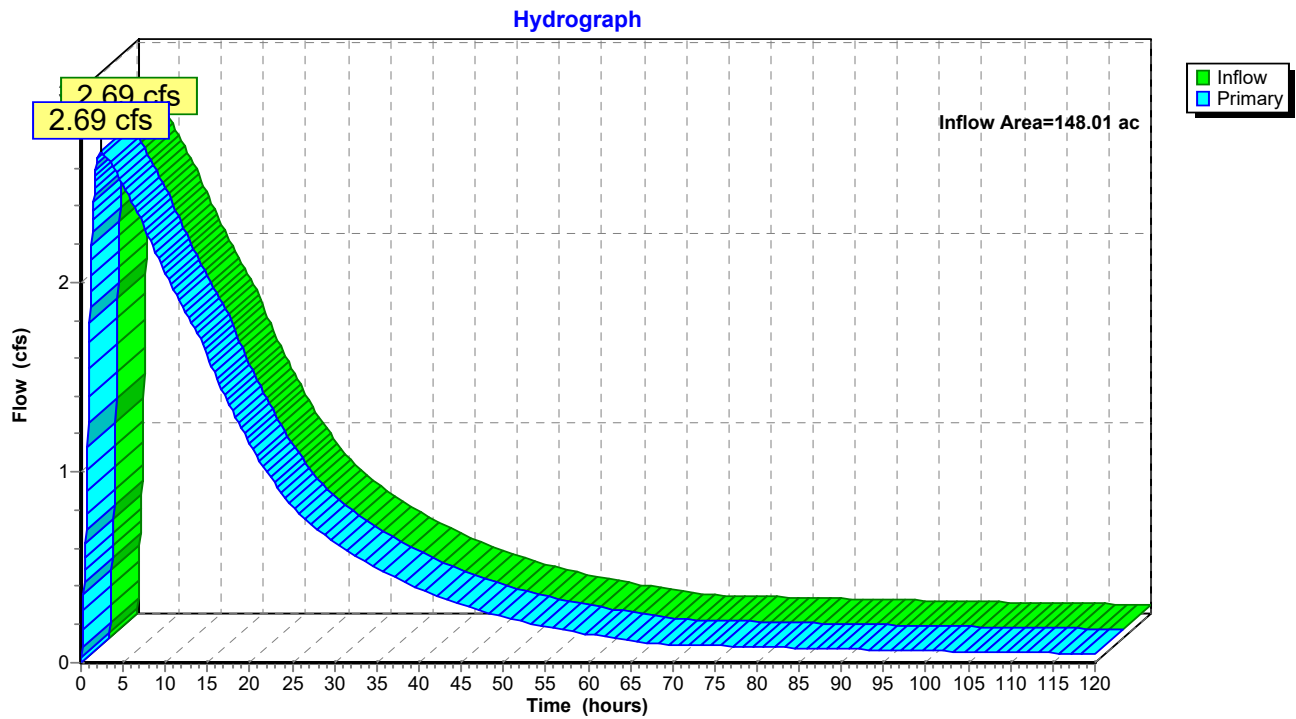


### Summary for Link DD: Offsite to Drainage Ditch

Inflow Area = 148.01 ac, 11.19% Impervious, Inflow Depth > 0.41" for 2-Year, 1-Hour event  
Inflow = 2.69 cfs @ 2.45 hrs, Volume= 5.069 af  
Primary = 2.69 cfs @ 2.45 hrs, Volume= 5.069 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link DD: Offsite to Drainage Ditch



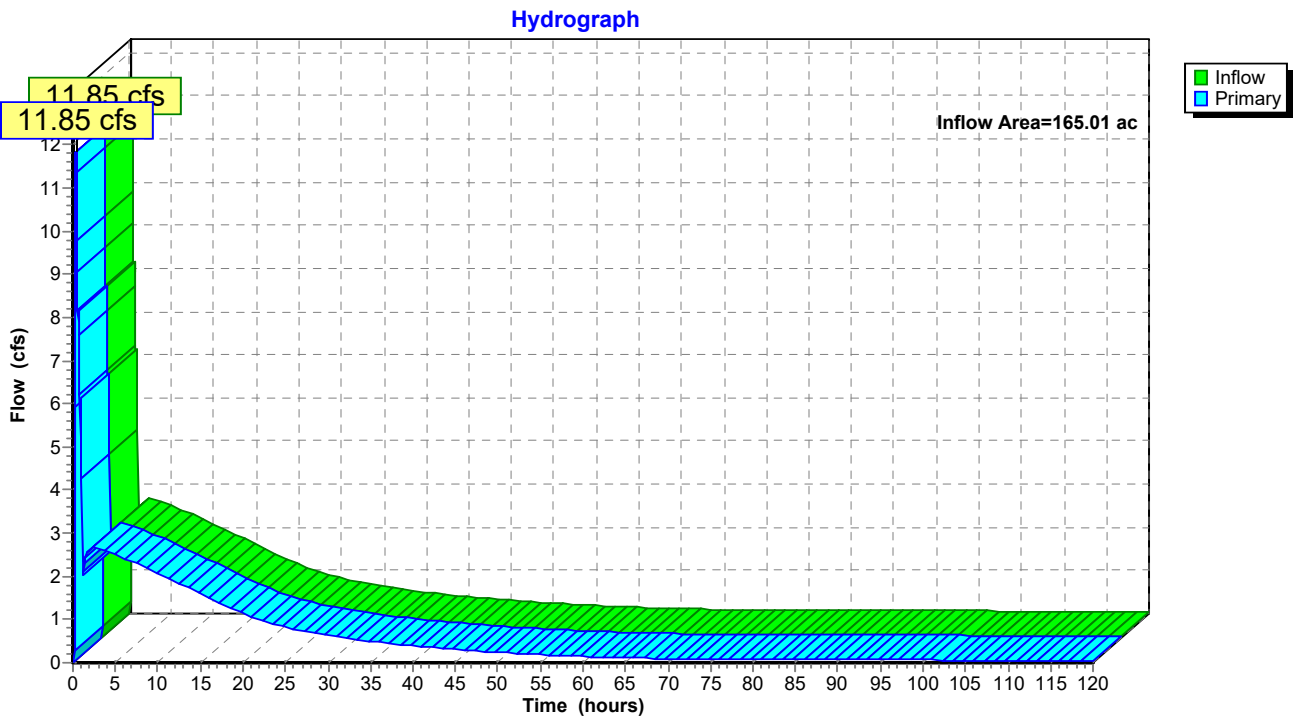


### Summary for Link DPRW: Des Plaines River Watershed

Inflow Area = 165.01 ac, 10.09% Impervious, Inflow Depth > 0.40" for 2-Year, 1-Hour event  
Inflow = 11.85 cfs @ 0.36 hrs, Volume= 5.555 af  
Primary = 11.85 cfs @ 0.36 hrs, Volume= 5.555 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link DPRW: Des Plaines River Watershed

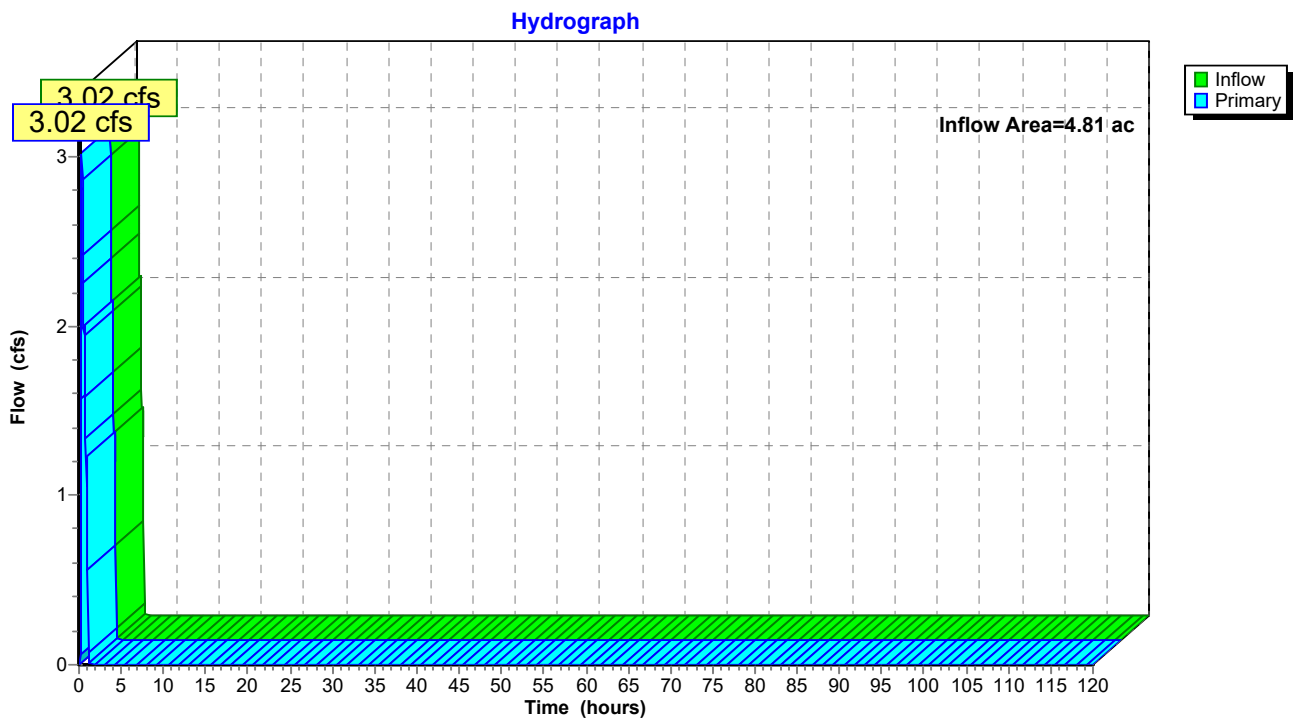


### Summary for Link DPRW-PB: Des Plaines River Watershed - Perimeter Berm

Inflow Area = 4.81 ac, 1.70% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
Inflow = 3.02 cfs @ 0.35 hrs, Volume= 0.129 af  
Primary = 3.02 cfs @ 0.35 hrs, Volume= 0.129 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link DPRW-PB: Des Plaines River Watershed - Perimeter Berm

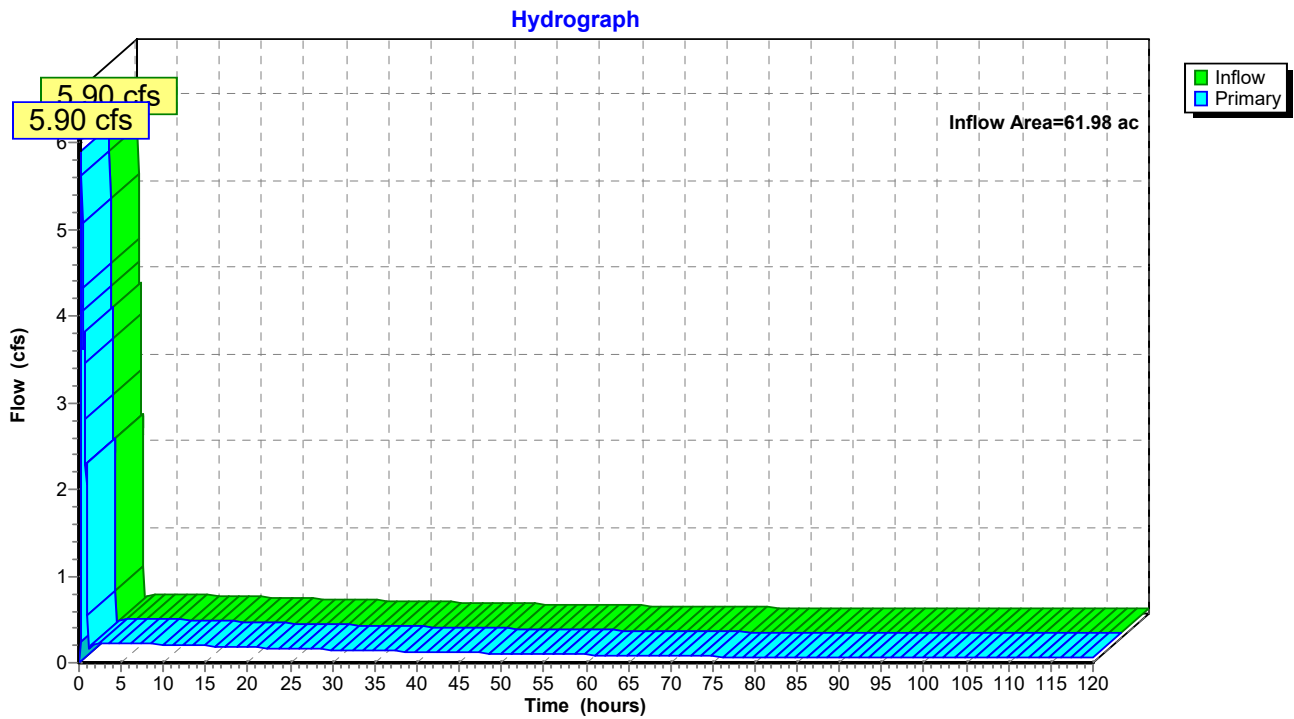


### Summary for Link LMW: Lake Michigan Watershed

Inflow Area = 61.98 ac, 13.64% Impervious, Inflow Depth > 0.26" for 2-Year, 1-Hour event  
Inflow = 5.90 cfs @ 0.32 hrs, Volume= 1.328 af  
Primary = 5.90 cfs @ 0.32 hrs, Volume= 1.328 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link LMW: Lake Michigan Watershed

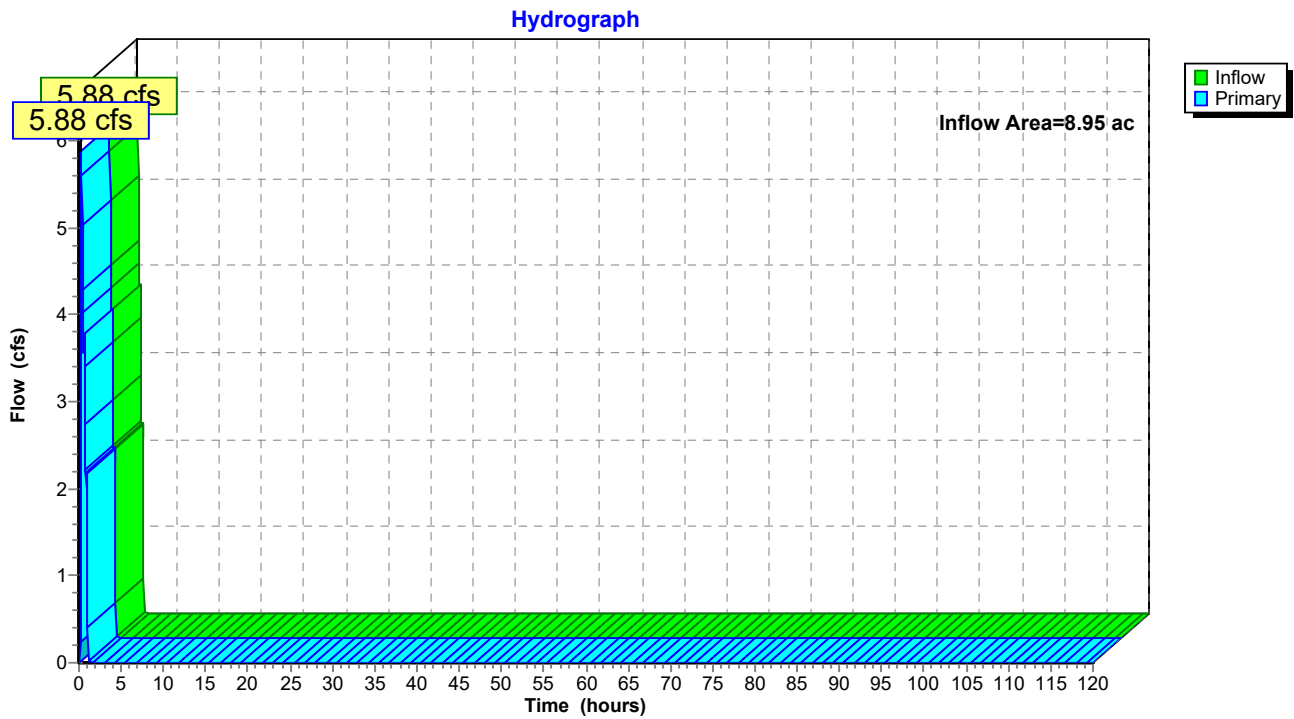


**Summary for Link LMW-PB: Lake Michigan Watershed - Perimeter Berm**

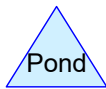
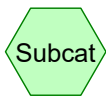
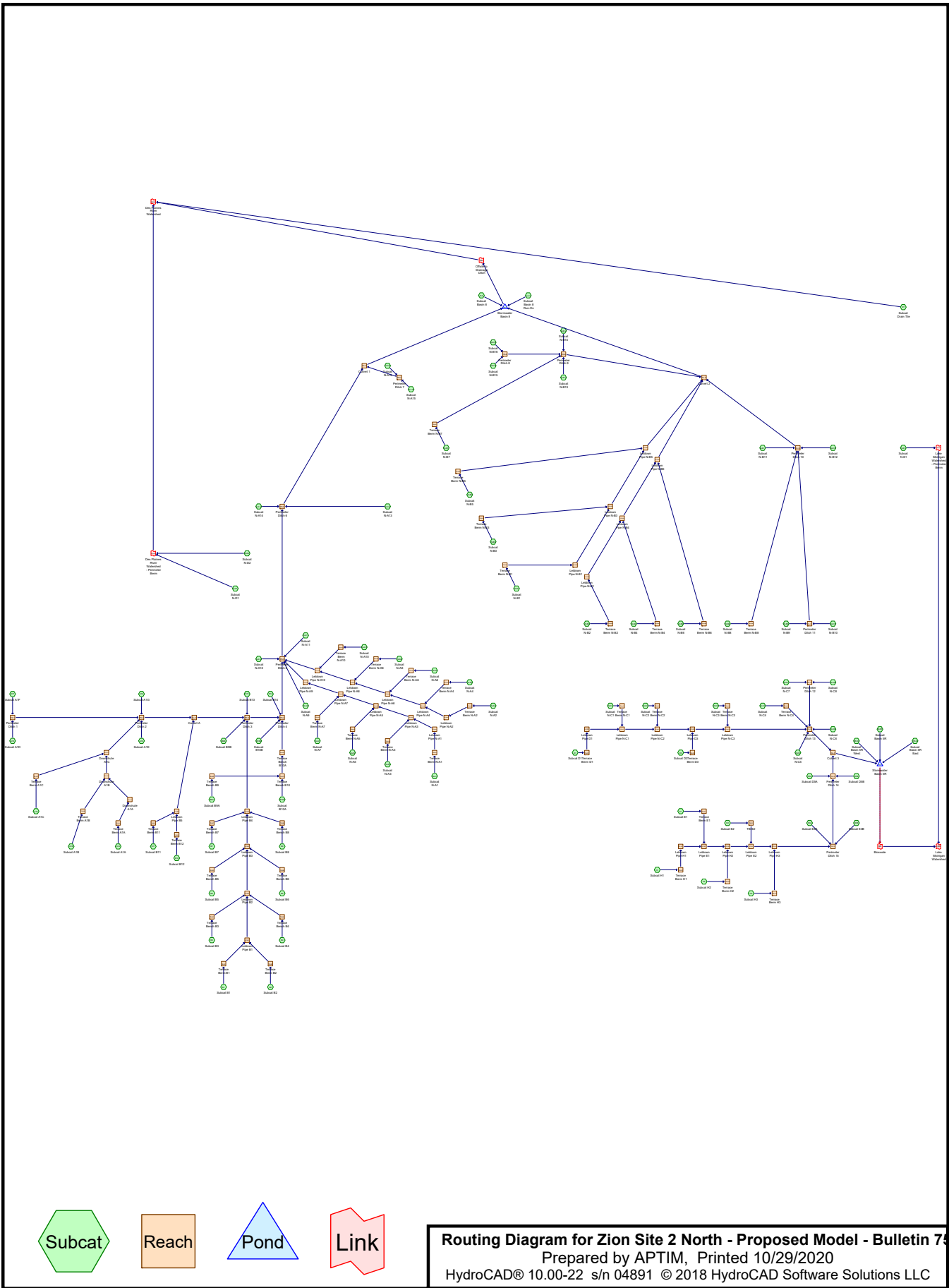
Inflow Area = 8.95 ac, 0.00% Impervious, Inflow Depth = 0.32" for 2-Year, 1-Hour event  
 Inflow = 5.88 cfs @ 0.32 hrs, Volume= 0.239 af  
 Primary = 5.88 cfs @ 0.32 hrs, Volume= 0.239 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

**Link LMW-PB: Lake Michigan Watershed - Perimeter Berm**



HydroCAD Output Files  
**Proposed Conditions – 2-year, 24-hour**



**Routing Diagram for Zion Site 2 North - Proposed Model - Bulletin 75**

Prepared by APTIM, Printed 10/29/2020

HydroCAD® 10.00-22 s/n 04891 © 2018 HydroCAD Software Solutions LLC

**Summary for Subcatchment 5R-E: Subcat Basin 5R East**

Runoff = 0.29 cfs @ 16.02 hrs, Volume= 0.190 af, Depth= 1.51"

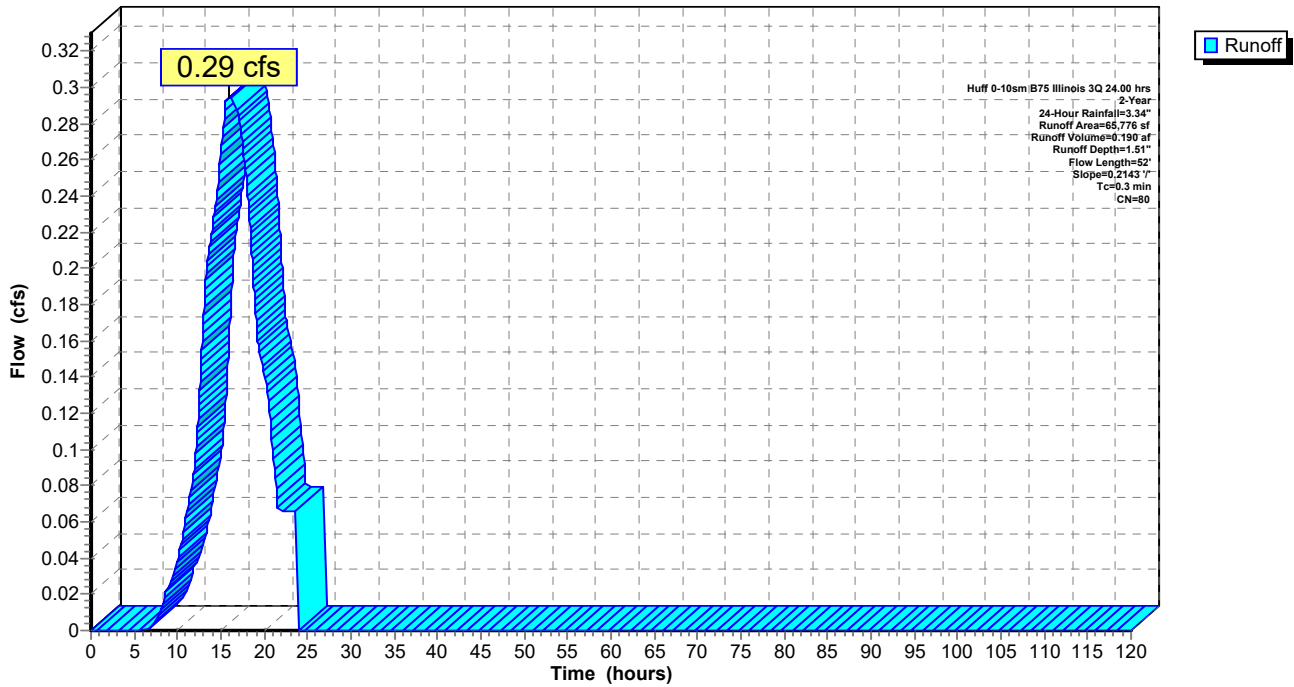
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

Area (sf)	CN	Description
65,776	80	>75% Grass cover, Good, HSG D
65,776		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	52	0.2143	2.92		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment 5R-E: Subcat Basin 5R East**

Hydrograph



**Summary for Subcatchment 5R-W: Subcat Basin 5R West**

Runoff = 0.12 cfs @ 16.02 hrs, Volume= 0.075 af, Depth= 1.51"

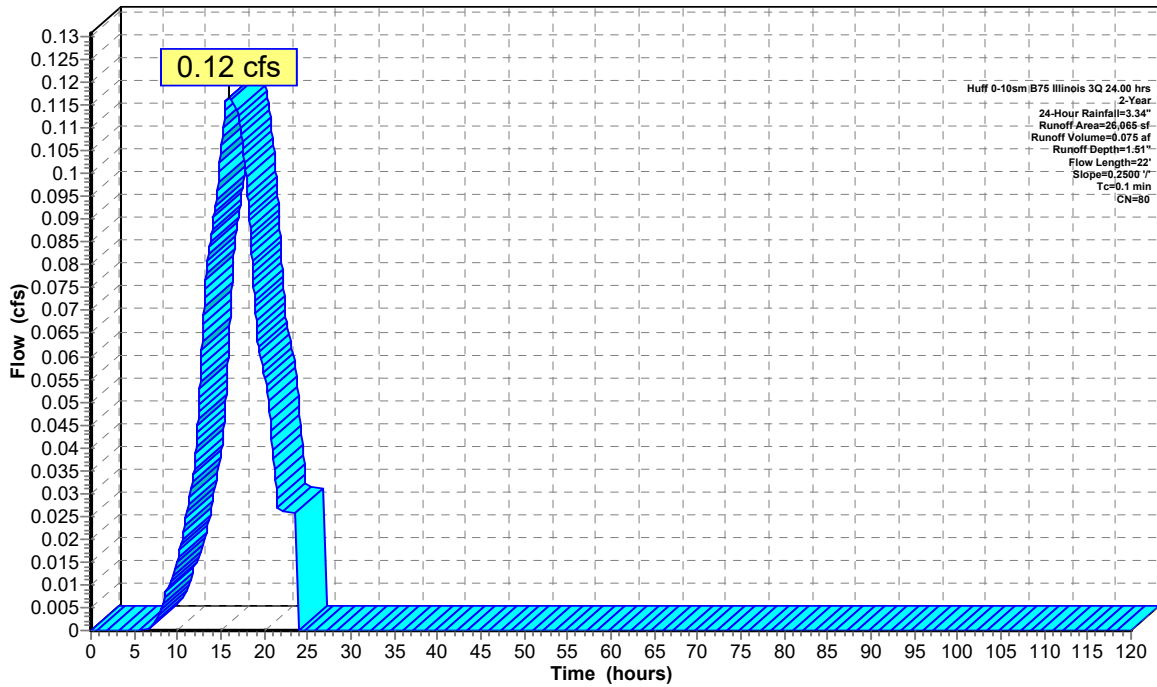
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

Area (sf)	CN	Description
26,065	80	>75% Grass cover, Good, HSG D
26,065		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	22	0.2500	2.61		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment 5R-W: Subcat Basin 5R West**

Hydrograph





**Summary for Subcatchment A1A: Subcat A1A**

Runoff = 1.31 cfs @ 16.27 hrs, Volume= 0.848 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

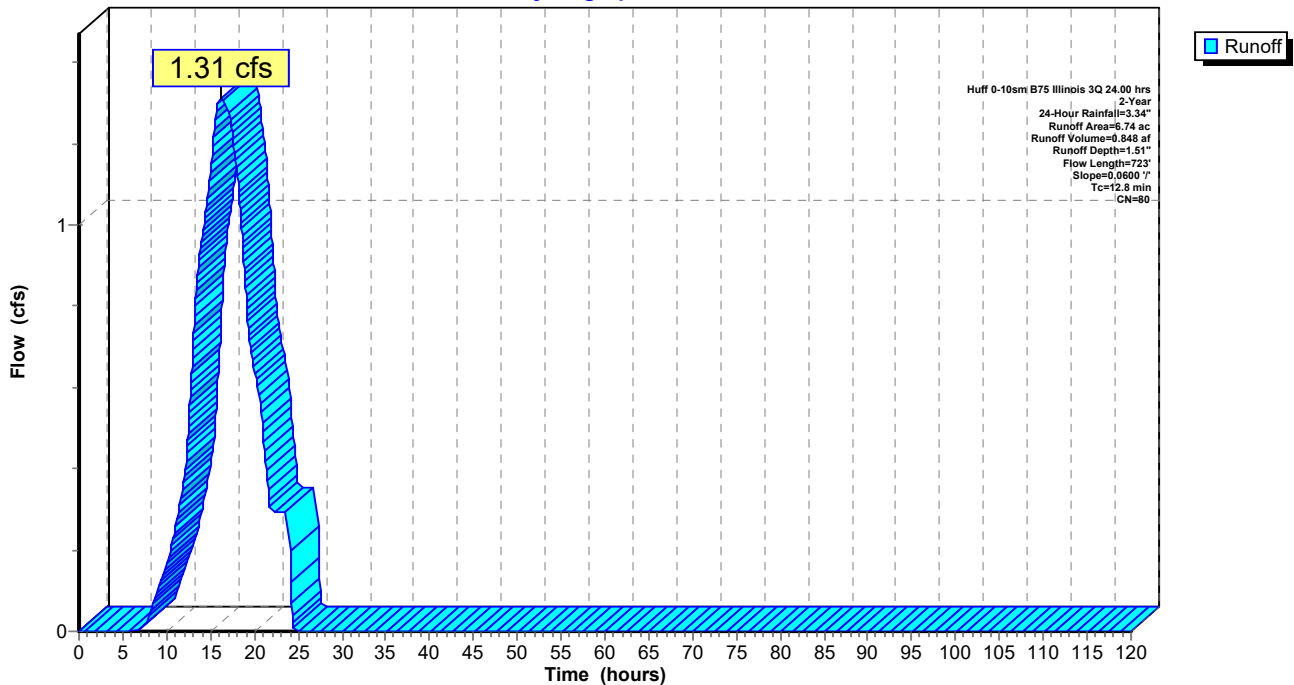
Area (ac)	CN	Description
6.74	80	>75% Grass cover, Good, HSG D
6.74		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	100	0.0600	0.25		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
6.1	623	0.0600	1.71		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
12.8	723	Total			

**Subcatchment A1A: Subcat A1A**

Hydrograph



**Summary for Subcatchment A1B: Subcat A1B**

Runoff = 1.02 cfs @ 16.09 hrs, Volume= 0.658 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

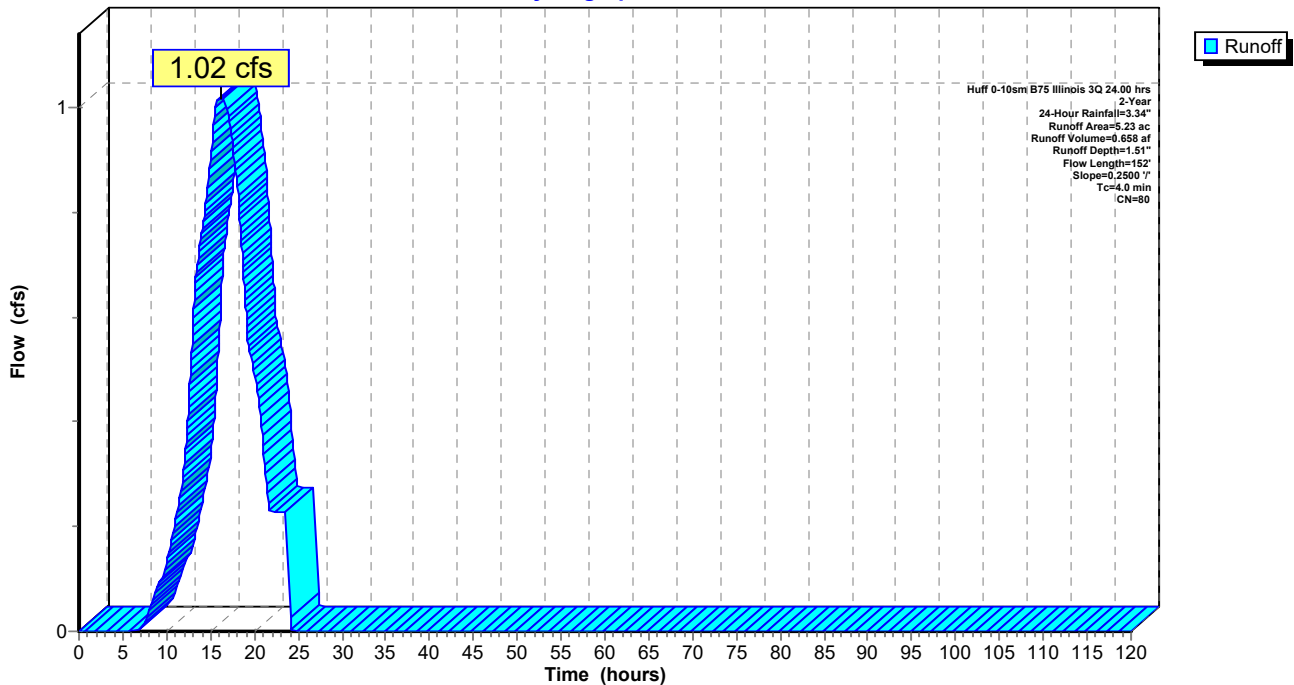
Area (ac)	CN	Description
5.23	80	>75% Grass cover, Good, HSG D
5.23		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	52	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	152	Total			

**Subcatchment A1B: Subcat A1B**

Hydrograph



### Summary for Subcatchment A1C: Subcat A1C

Runoff = 1.79 cfs @ 16.46 hrs, Volume= 1.153 af, Depth= 1.51"

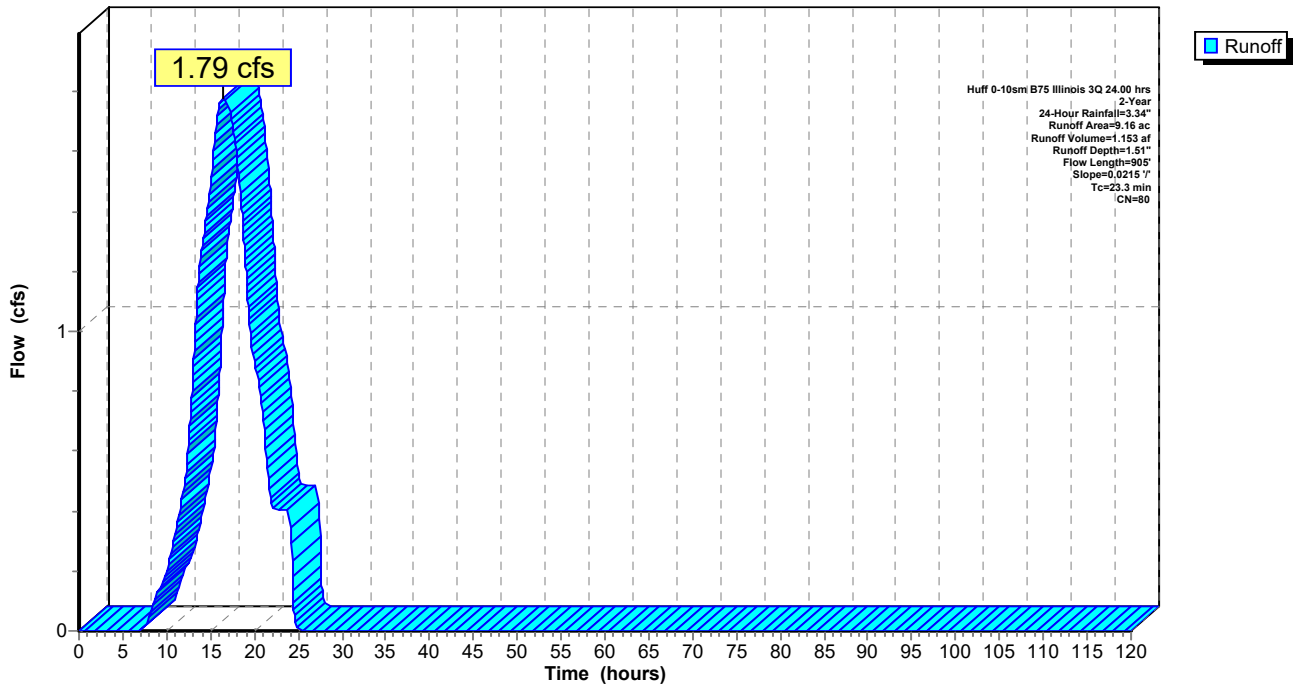
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

Area (ac)	CN	Description
8.89	80	>75% Grass cover, Good, HSG D
0.27	93	Paved roads w/open ditches, 50% imp, HSG D
9.16	80	Weighted Average
9.03		98.52% Pervious Area
0.14		1.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.0215	0.16		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
13.1	805	0.0215	1.03		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
23.3	905	Total			

### Subcatchment A1C: Subcat A1C

Hydrograph



**Summary for Subcatchment A1D: Subcat A1D**

Runoff = 1.38 cfs @ 16.10 hrs, Volume= 0.890 af, Depth= 1.51"

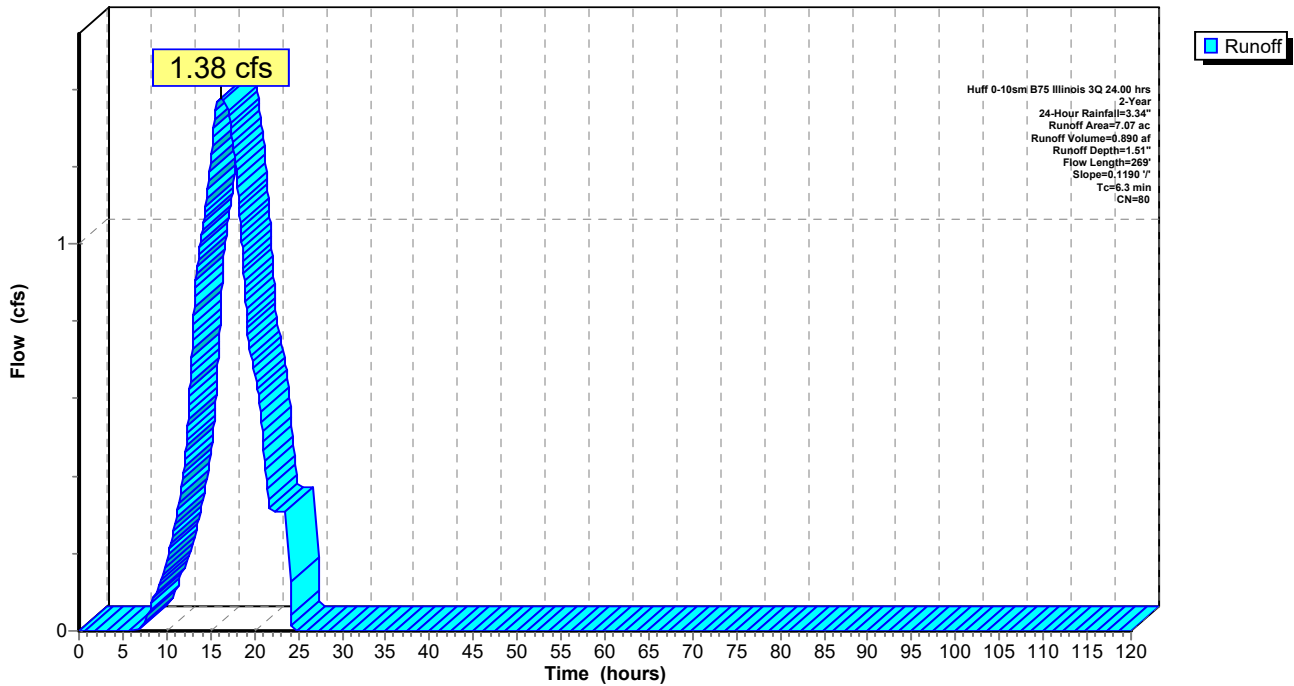
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

Area (ac)	CN	Description
6.97	80	>75% Grass cover, Good, HSG D
0.10	93	Paved roads w/open ditches, 50% imp, HSG D
7.07	80	Weighted Average
7.02		99.31% Pervious Area
0.05		0.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	100	0.1190	0.32		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.2	169	0.1190	2.41		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.3	269	Total			

**Subcatchment A1D: Subcat A1D**

Hydrograph



**Summary for Subcatchment A1E: Subcat A1E**

Runoff = 0.21 cfs @ 16.10 hrs, Volume= 0.138 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

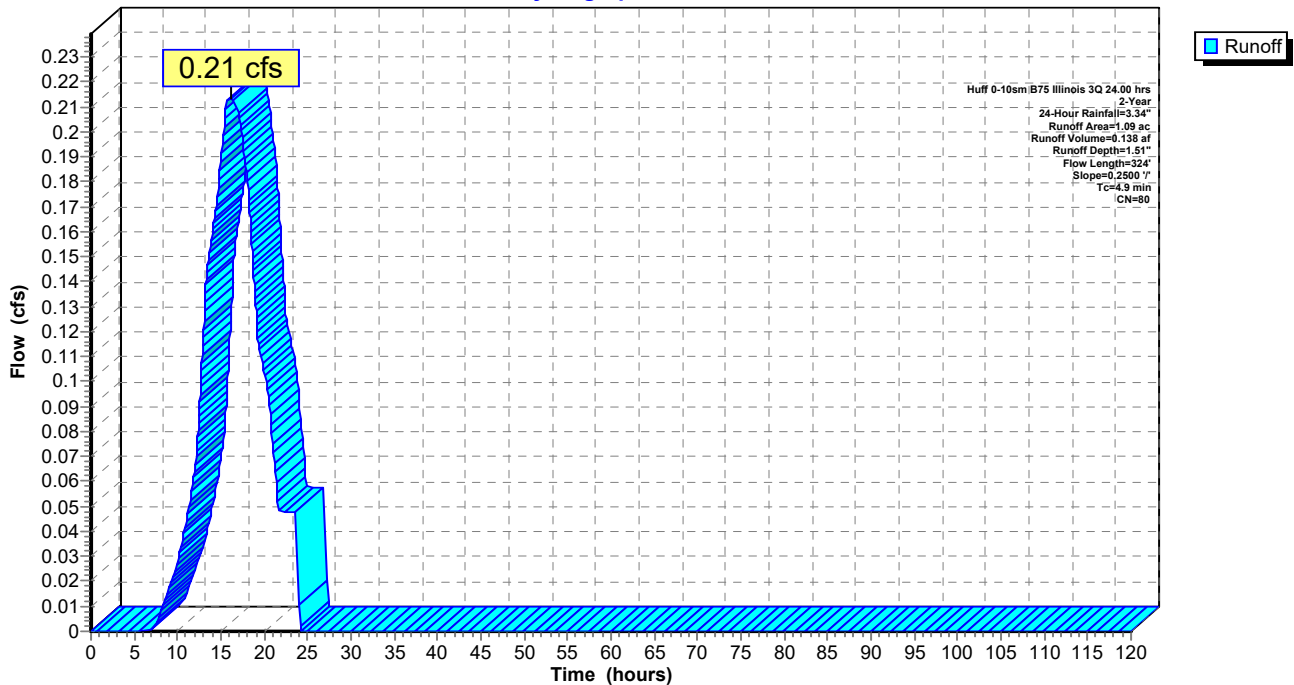
Area (ac)	CN	Description
1.09	80	>75% Grass cover, Good, HSG D
1.09		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.1	224	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.9	324	Total			

**Subcatchment A1E: Subcat A1E**

Hydrograph



**Summary for Subcatchment A1F: Subcat A1F**

Runoff = 0.25 cfs @ 15.65 hrs, Volume= 0.175 af, Depth= 2.12"

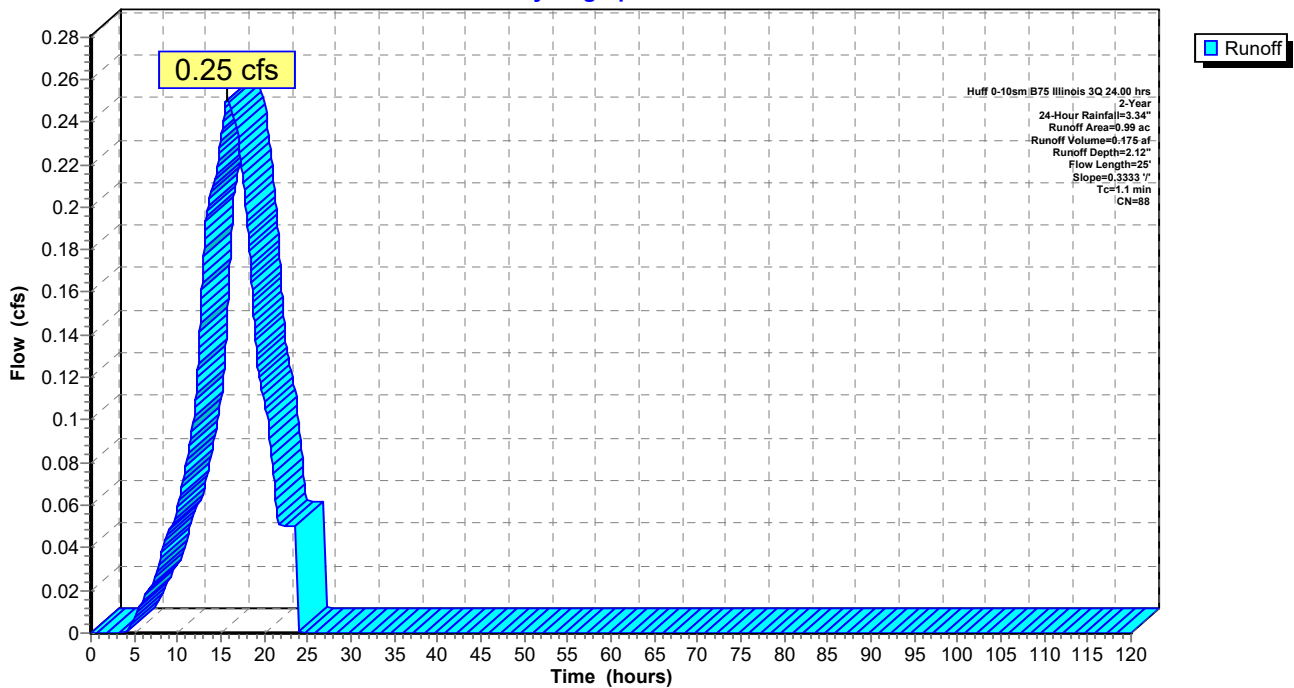
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

Area (ac)	CN	Description
0.36	80	>75% Grass cover, Good, HSG D
0.62	93	Paved roads w/open ditches, 50% imp, HSG D
0.99	88	Weighted Average
0.67		68.34% Pervious Area
0.31		31.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	25	0.3333	0.37		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment A1F: Subcat A1F**

Hydrograph



**Summary for Subcatchment A1G: Subcat A1G**

Runoff = 0.05 cfs @ 15.65 hrs, Volume= 0.031 af, Depth= 1.96"

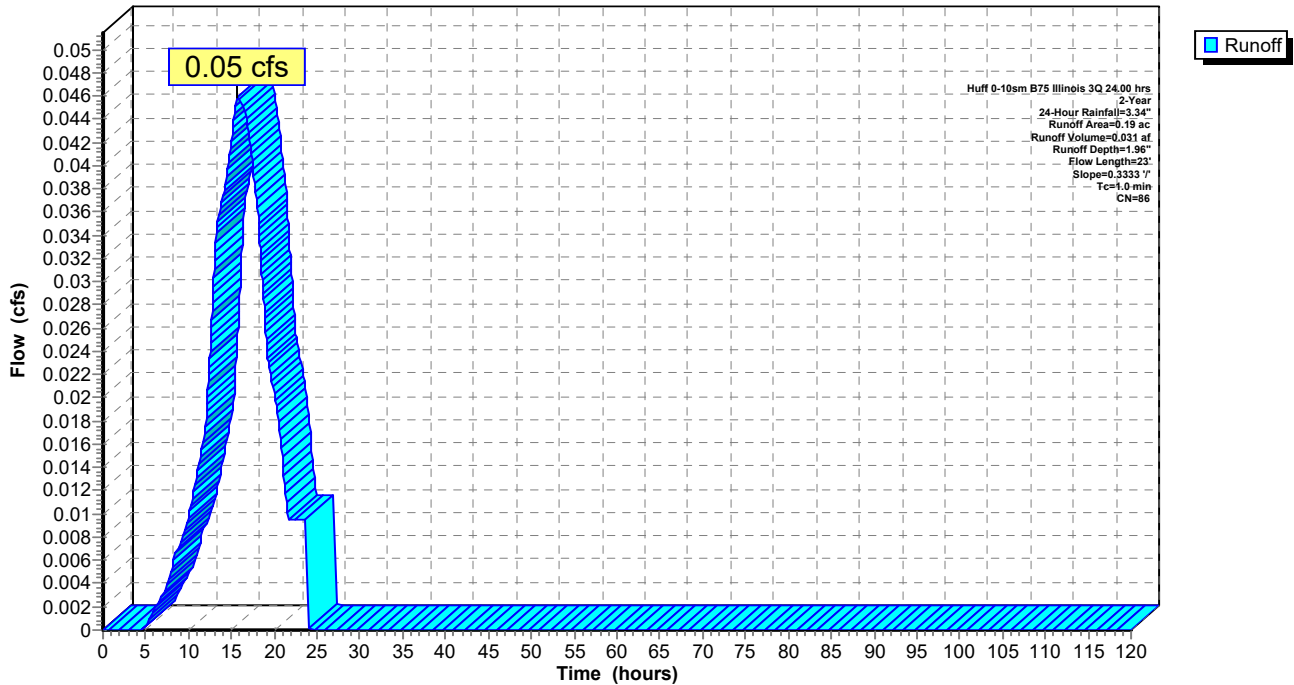
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

Area (ac)	CN	Description
0.11	80	>75% Grass cover, Good, HSG D
0.09	93	Paved roads w/open ditches, 50% imp, HSG D
0.19	86	Weighted Average
0.15		77.34% Pervious Area
0.04		22.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	23	0.3333	0.37		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment A1G: Subcat A1G**

Hydrograph



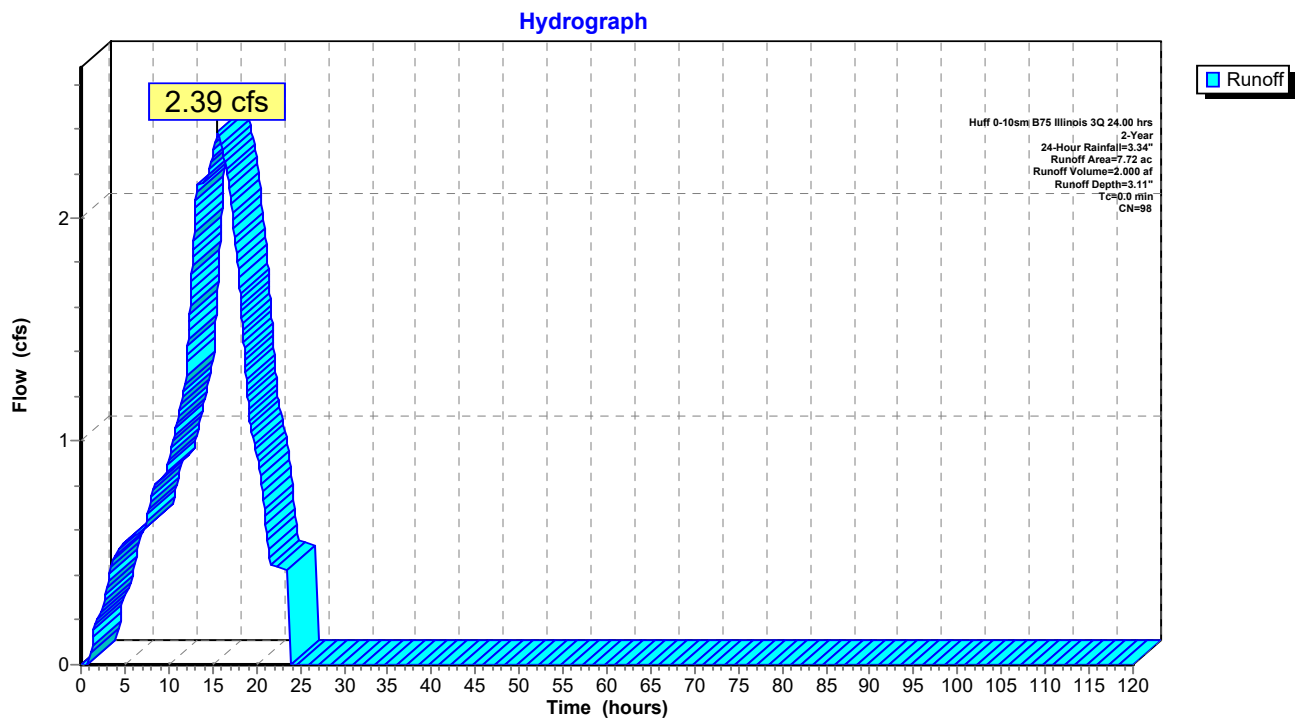
**Summary for Subcatchment B-5R: Subcat Basin 5R**

Runoff = 2.39 cfs @ 15.60 hrs, Volume= 2.000 af, Depth= 3.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

Area (ac)	CN	Description
7.72	98	Water Surface, HSG D
7.72		100.00% Impervious Area

**Subcatchment B-5R: Subcat Basin 5R**





**Summary for Subcatchment B-8: Subcat Basin 8**

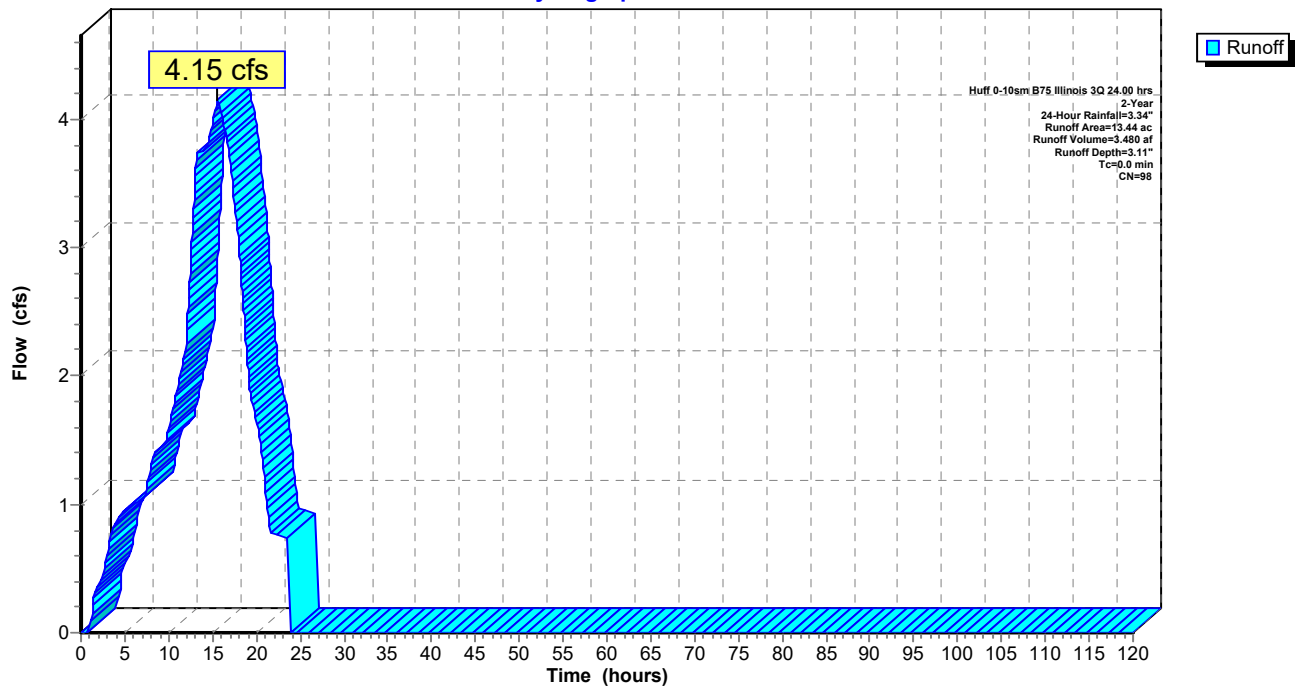
Runoff = 4.15 cfs @ 15.60 hrs, Volume= 3.480 af, Depth= 3.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

Area (ac)	CN	Description
13.44	98	Water Surface, HSG D
13.44		100.00% Impervious Area

**Subcatchment B-8: Subcat Basin 8**

Hydrograph



**Summary for Subcatchment B-8-RO: Subcat Basin 8 Run-On**

Runoff = 0.86 cfs @ 15.78 hrs, Volume= 0.564 af, Depth= 1.65"

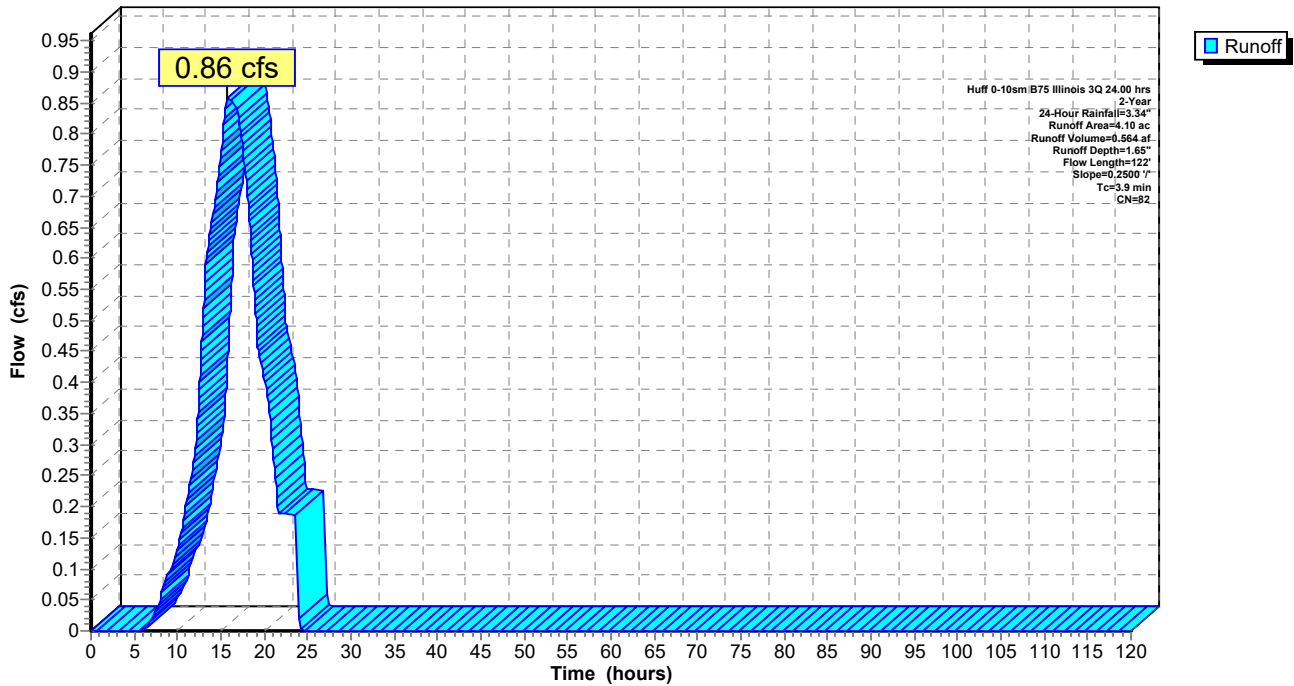
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

Area (ac)	CN	Description
3.50	80	>75% Grass cover, Good, HSG D
0.60	93	Paved roads w/open ditches, 50% imp, HSG D
4.10	82	Weighted Average
3.80		92.68% Pervious Area
0.30		7.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	22	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	122	Total			

**Subcatchment B-8-RO: Subcat Basin 8 Run-On**

Hydrograph



### Summary for Subcatchment B1: Subcat B1

Runoff = 0.40 cfs @ 16.14 hrs, Volume= 0.257 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

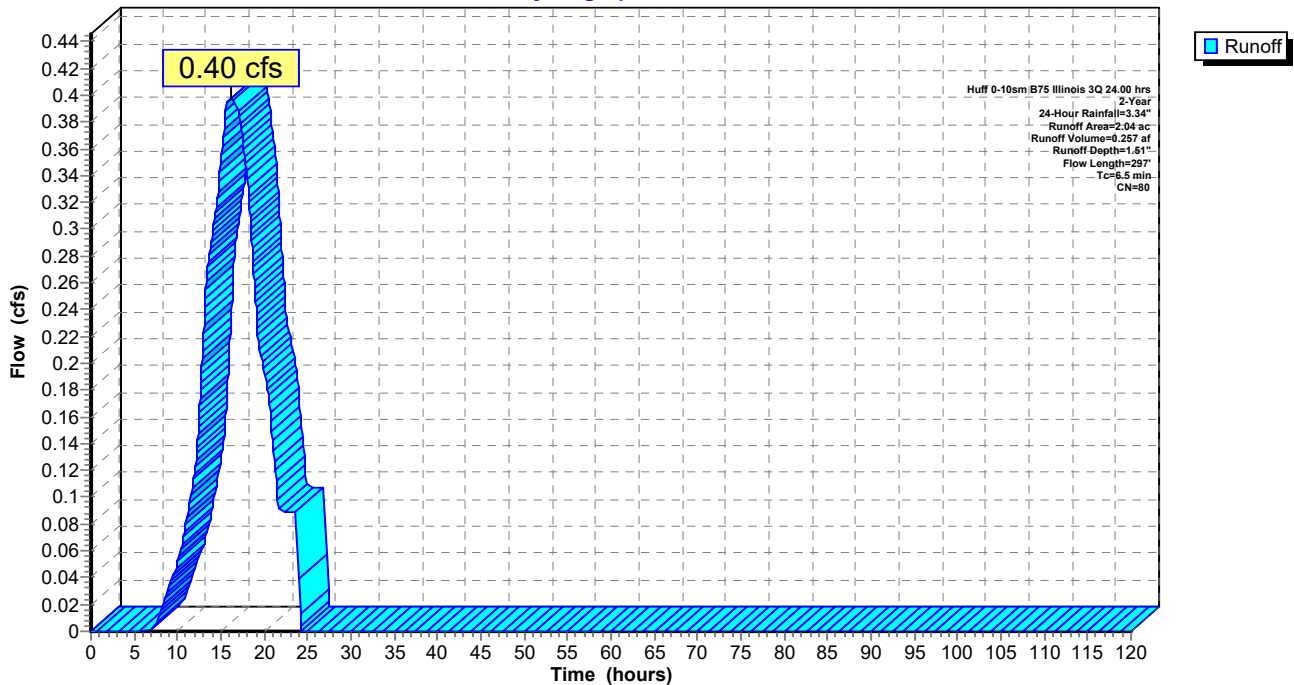
Area (ac)	CN	Description
2.04	80	>75% Grass cover, Good, HSG D
2.04		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.0	197	0.2132	3.23		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.5	297	Total			

### Subcatchment B1: Subcat B1

Hydrograph



**Summary for Subcatchment B10A: Subcat B10A**

Runoff = 0.16 cfs @ 16.07 hrs, Volume= 0.102 af, Depth= 1.51"

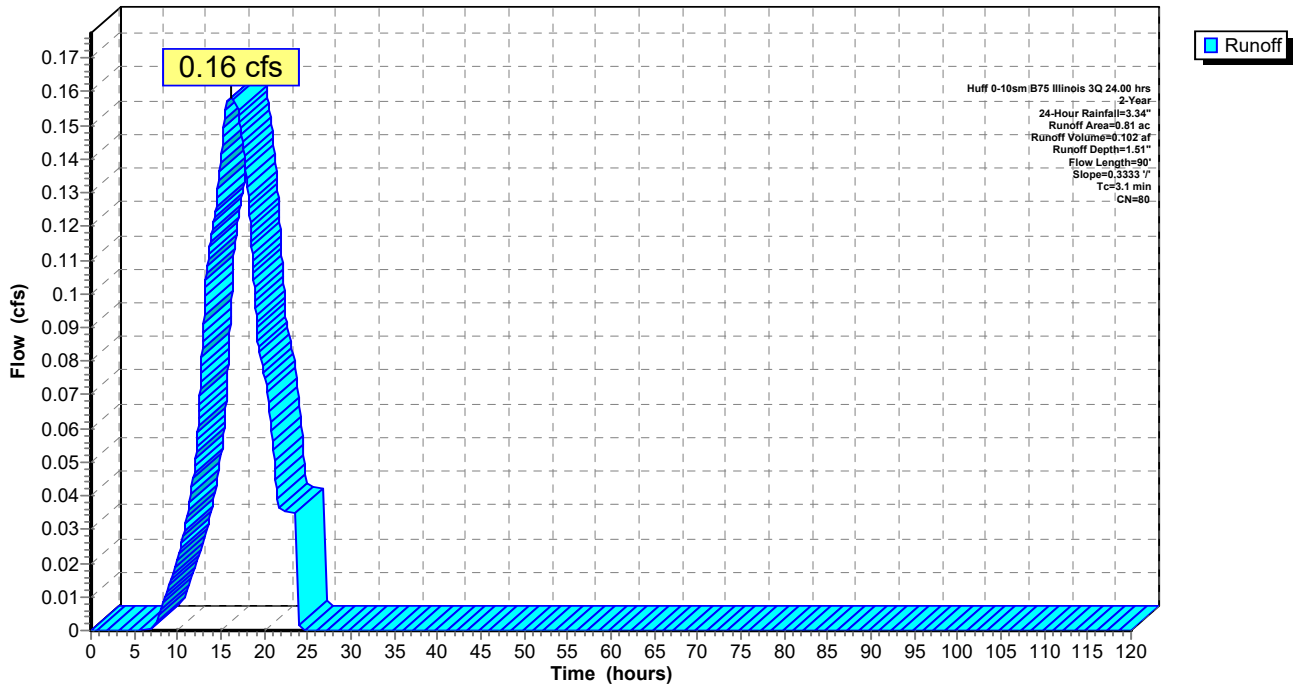
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

Area (ac)	CN	Description
0.81	80	>75% Grass cover, Good, HSG D
0.81		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	90	0.3333	0.48		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B10A: Subcat B10A**

Hydrograph



**Summary for Subcatchment B10B: Subcat B10B**

Runoff = 0.10 cfs @ 16.04 hrs, Volume= 0.067 af, Depth= 1.51"

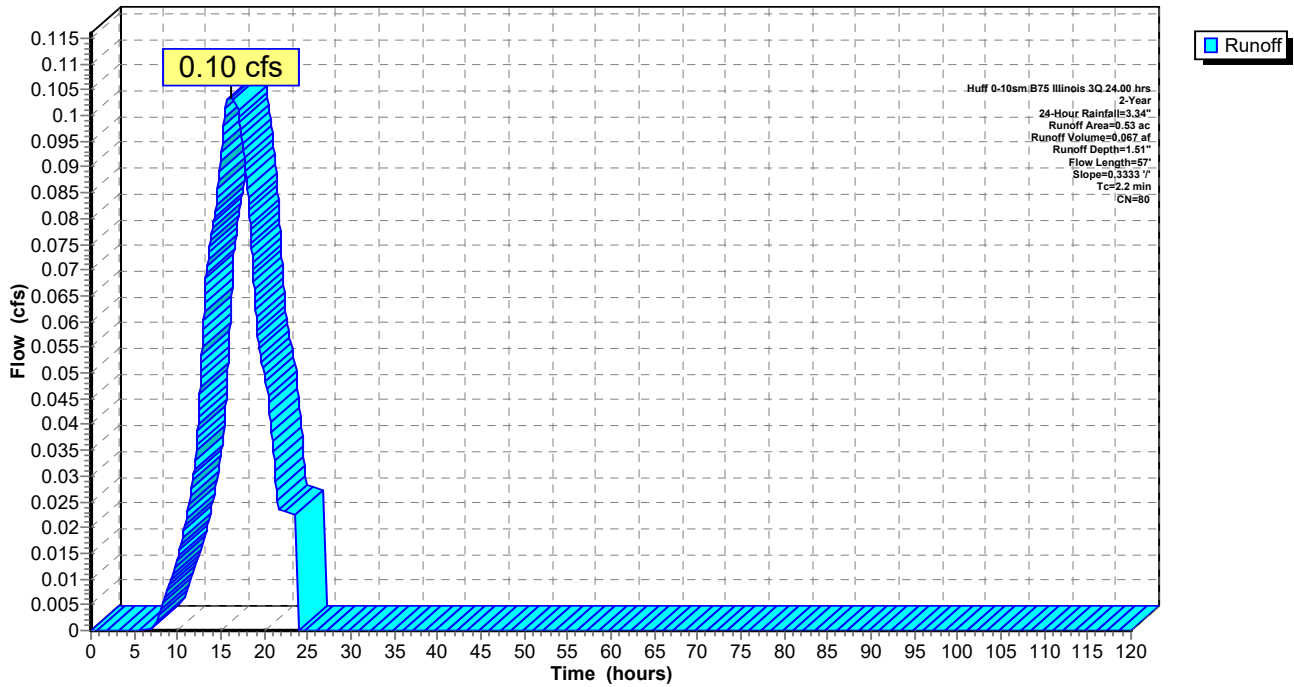
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

Area (ac)	CN	Description
0.53	80	>75% Grass cover, Good, HSG D
0.53		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	57	0.3333	0.44		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B10B: Subcat B10B**

Hydrograph



**Summary for Subcatchment B11: Subcat B11**

Runoff = 0.44 cfs @ 16.22 hrs, Volume= 0.286 af, Depth= 1.51"

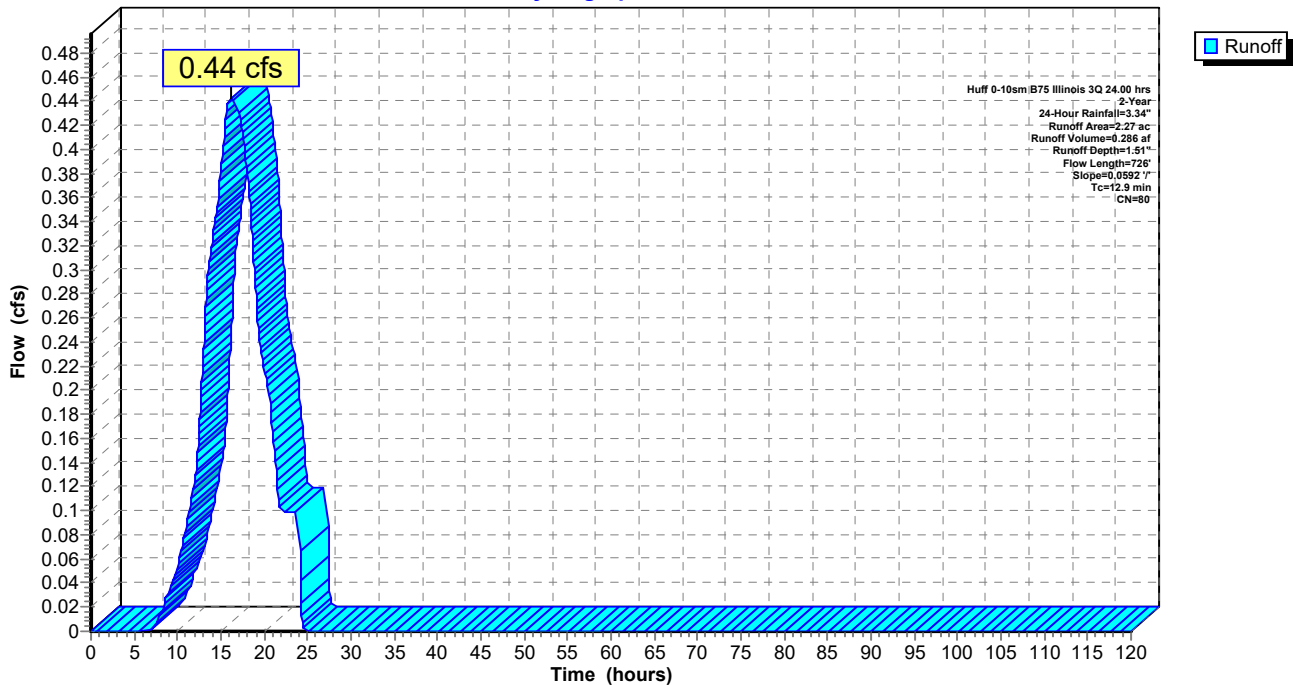
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

Area (ac)	CN	Description
2.27	80	>75% Grass cover, Good, HSG D
2.27		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	100	0.0592	0.25		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
6.1	626	0.0592	1.70		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
12.9	726	Total			

**Subcatchment B11: Subcat B11**

Hydrograph



**Summary for Subcatchment B12: Subcat B12**

Runoff = 0.23 cfs @ 16.09 hrs, Volume= 0.151 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

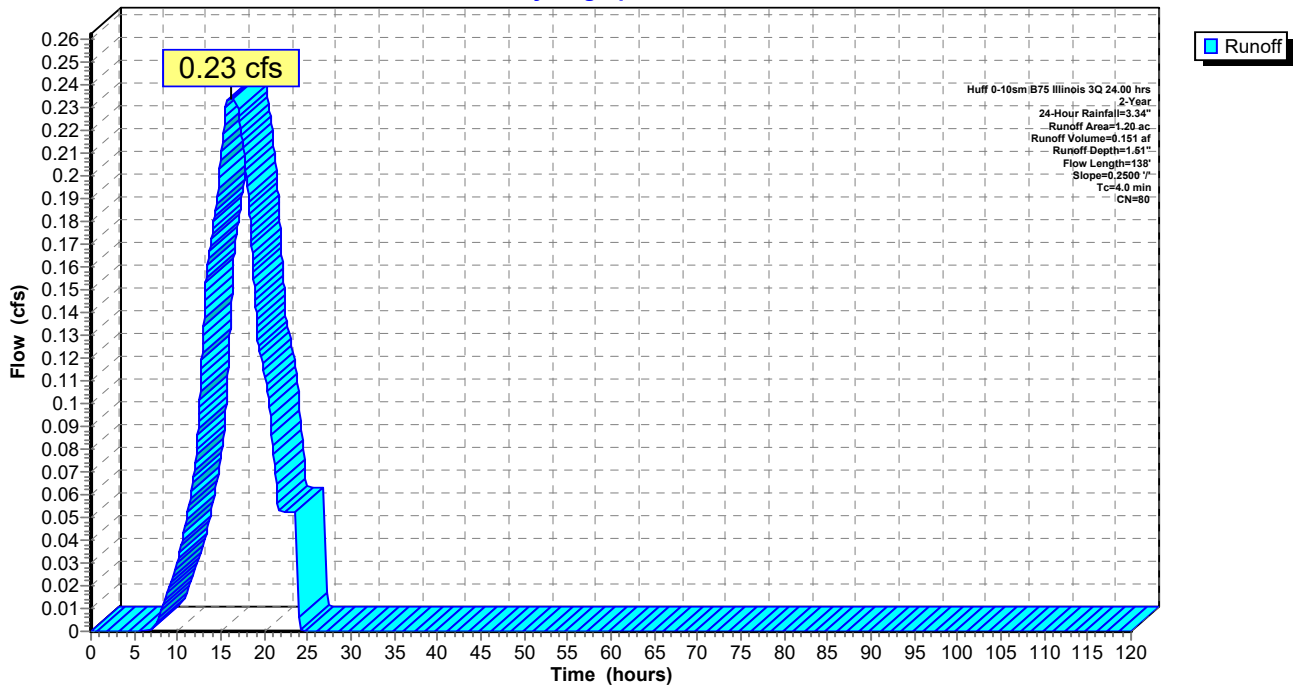
Area (ac)	CN	Description
1.20	80	>75% Grass cover, Good, HSG D
1.20		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	38	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	138	Total			

**Subcatchment B12: Subcat B12**

Hydrograph



**Summary for Subcatchment B13: Subcat B13**

Runoff = 0.08 cfs @ 15.66 hrs, Volume= 0.053 af, Depth= 1.96"

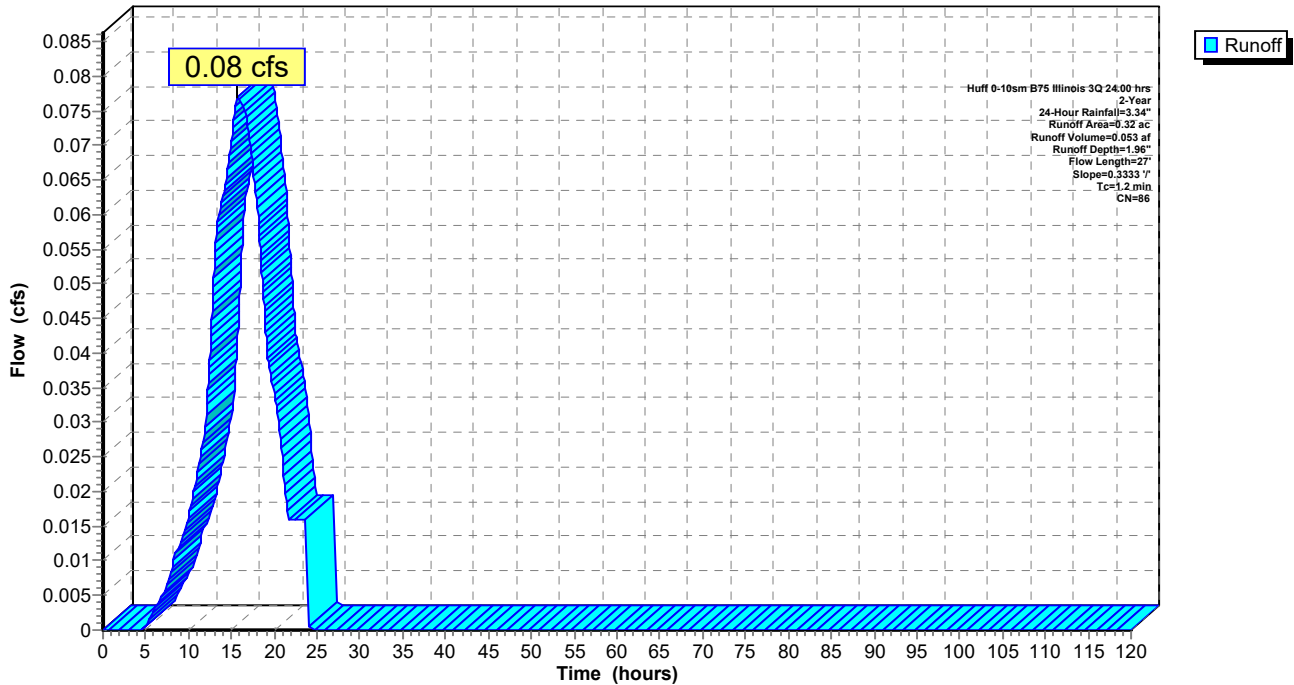
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

Area (ac)	CN	Description
0.17	80	>75% Grass cover, Good, HSG D
* 0.15	93	Paved roads w/open ditches, 50% imp, HSG D
0.32	86	Weighted Average
0.24		75.93% Pervious Area
0.08		24.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	27	0.3333	0.38		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B13: Subcat B13**

Hydrograph





**Summary for Subcatchment B14: Subcat B14**

Runoff = 0.06 cfs @ 15.69 hrs, Volume= 0.044 af, Depth= 1.96"

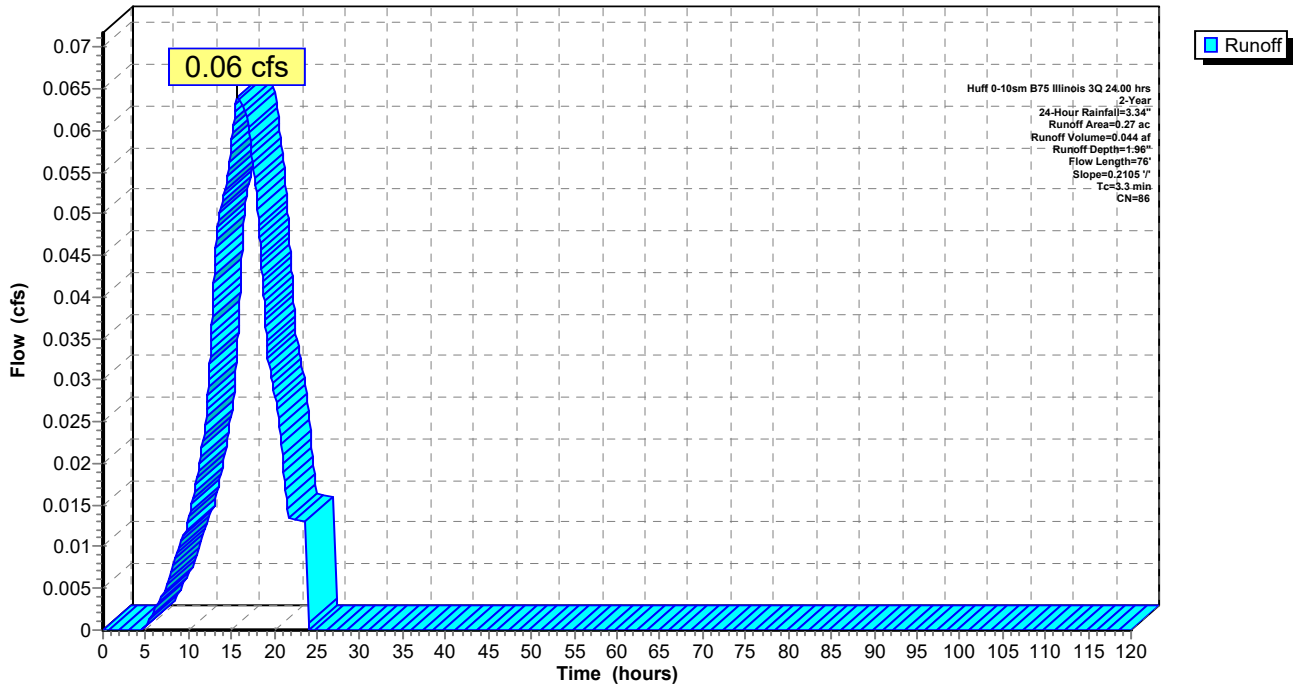
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

Area (ac)	CN	Description
0.14	80	>75% Grass cover, Good, HSG D
0.13	93	Paved roads w/open ditches, 50% imp, HSG D
0.27	86	Weighted Average
0.21		76.49% Pervious Area
0.06		23.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	76	0.2105	0.39		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B14: Subcat B14**

Hydrograph



**Summary for Subcatchment B2: Subcat B2**

Runoff = 0.53 cfs @ 16.15 hrs, Volume= 0.345 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

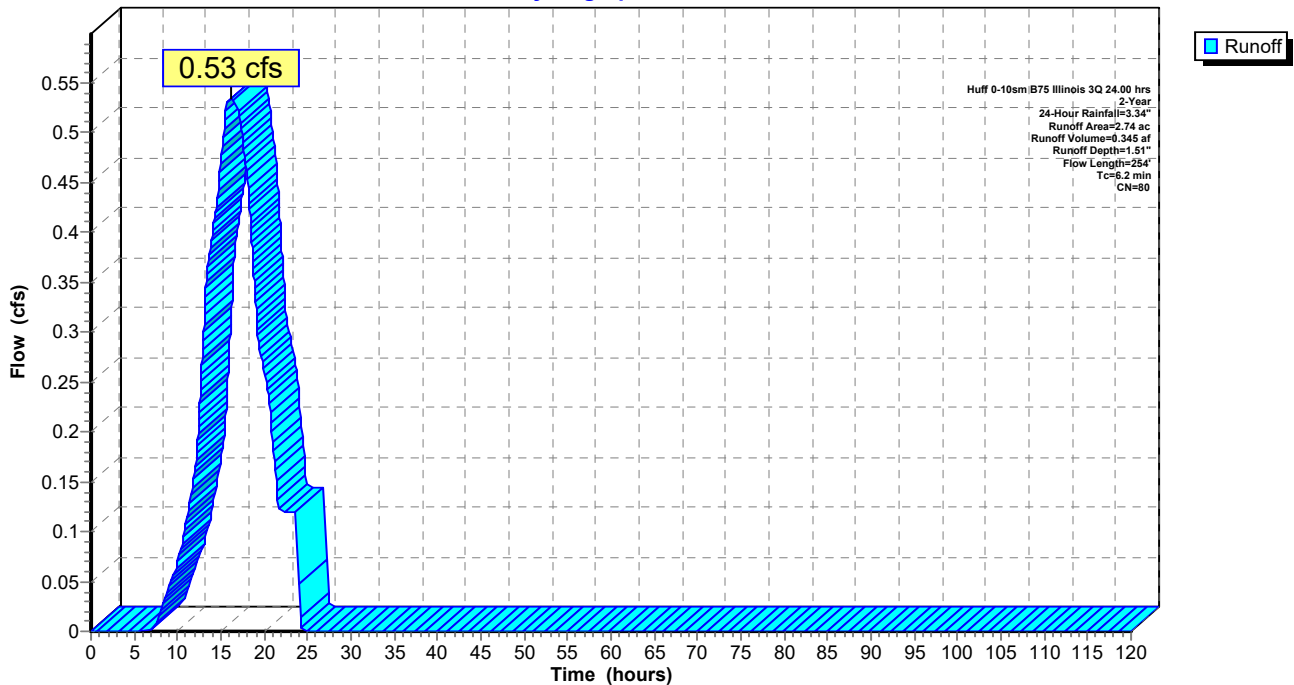
Area (ac)	CN	Description
2.74	80	>75% Grass cover, Good, HSG D
2.74		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.7	154	0.2403	3.43		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.2	254	Total			

**Subcatchment B2: Subcat B2**

Hydrograph



### Summary for Subcatchment B3: Subcat B3

Runoff = 0.43 cfs @ 16.09 hrs, Volume= 0.278 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

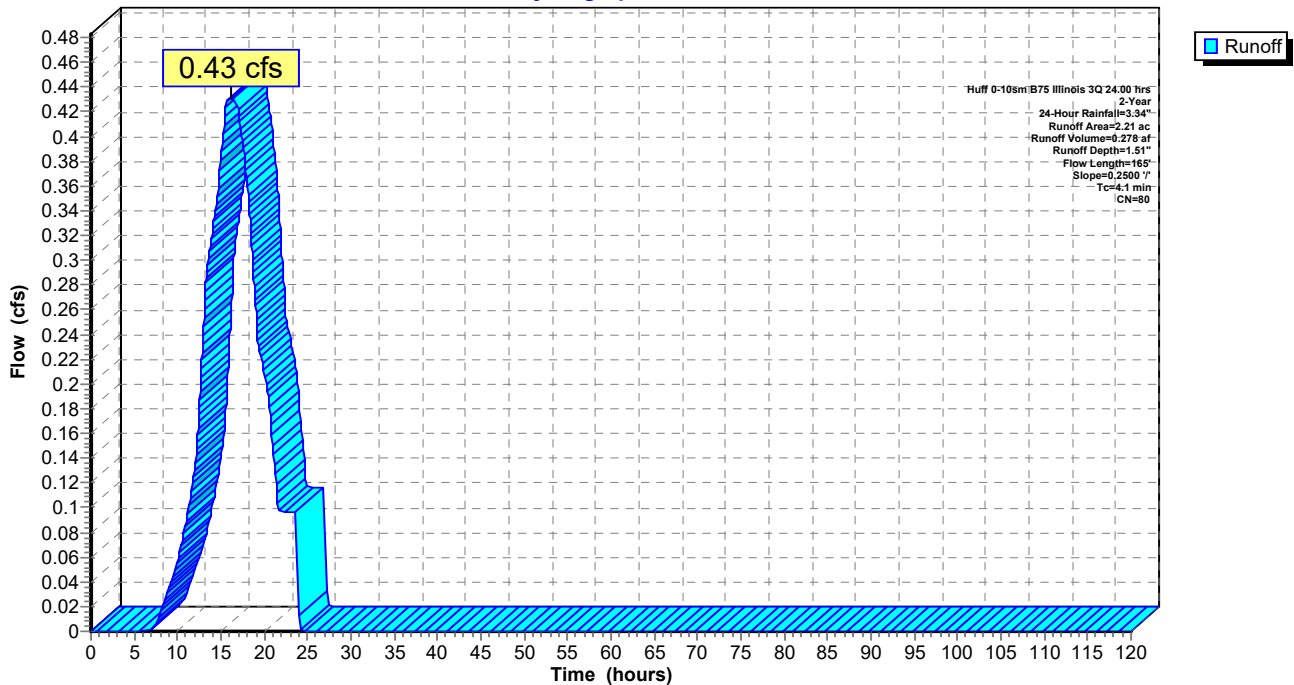
Area (ac)	CN	Description
2.21	80	>75% Grass cover, Good, HSG D
2.21		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"
0.3	65	0.2500	3.50		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
4.1	165	Total			

### Subcatchment B3: Subcat B3

Hydrograph



**Summary for Subcatchment B4: Subcat B4**

Runoff = 0.36 cfs @ 16.09 hrs, Volume= 0.235 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

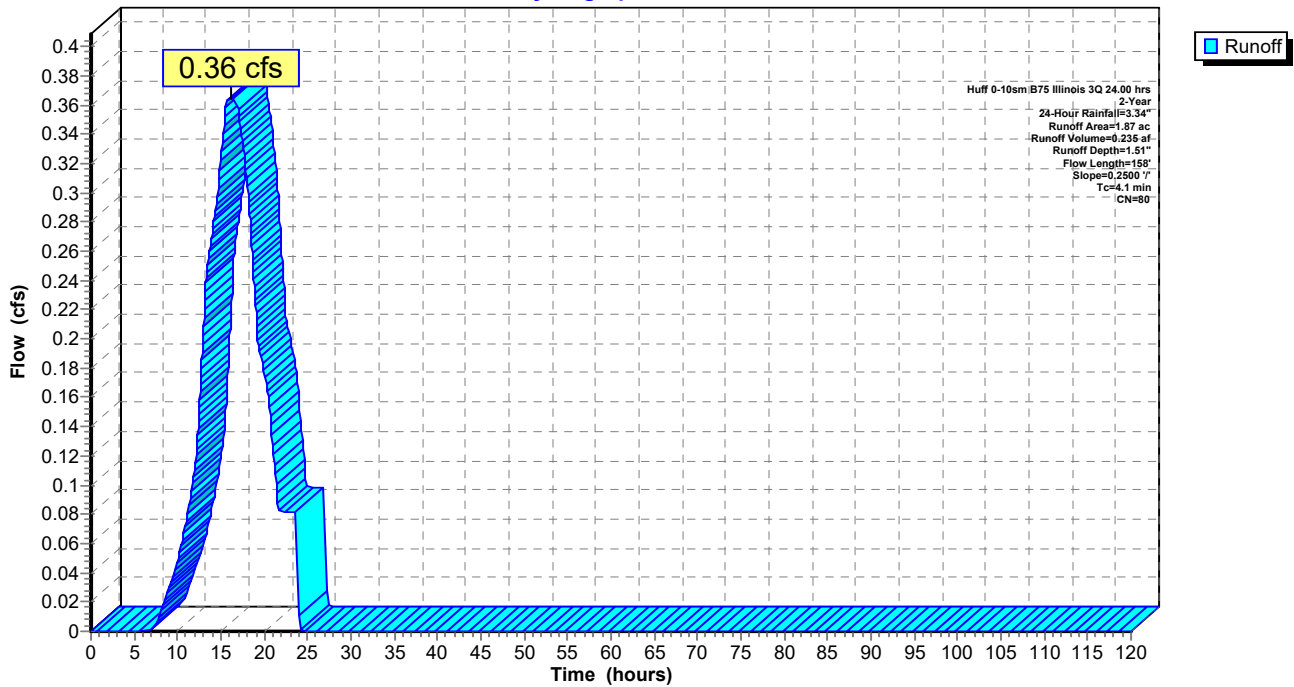
Area (ac)	CN	Description
1.87	80	>75% Grass cover, Good, HSG D
1.87		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.3	58	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	158	Total			

**Subcatchment B4: Subcat B4**

Hydrograph



**Summary for Subcatchment B5: Subcat B5**

Runoff = 0.38 cfs @ 16.07 hrs, Volume= 0.243 af, Depth= 1.51"

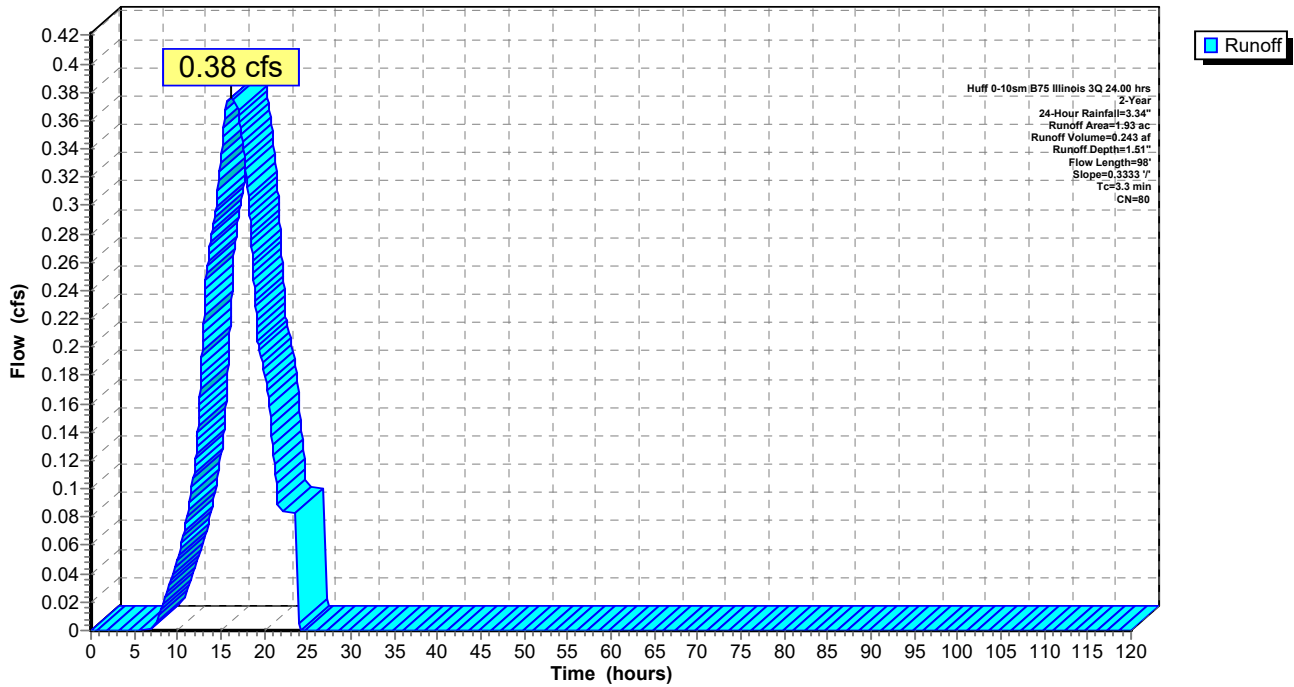
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

Area (ac)	CN	Description
1.93	80	>75% Grass cover, Good, HSG D
1.93		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	98	0.3333	0.49		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B5: Subcat B5**

Hydrograph



**Summary for Subcatchment B6: Subcat B6**

Runoff = 0.23 cfs @ 16.07 hrs, Volume= 0.149 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

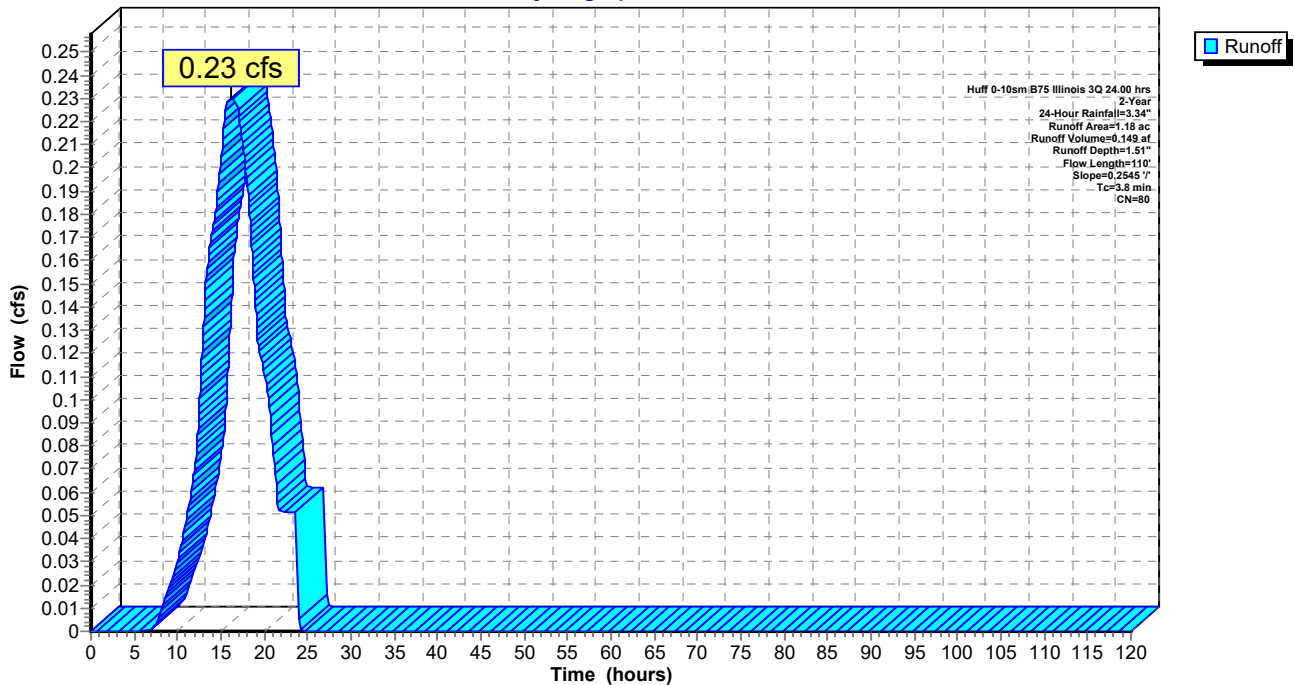
Area (ac)	CN	Description
1.18	80	>75% Grass cover, Good, HSG D
1.18		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2545	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.0	10	0.2545	3.53		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.8	110	Total			

**Subcatchment B6: Subcat B6**

Hydrograph



### Summary for Subcatchment B7: Subcat B7

Runoff = 0.43 cfs @ 16.07 hrs, Volume= 0.276 af, Depth= 1.51"

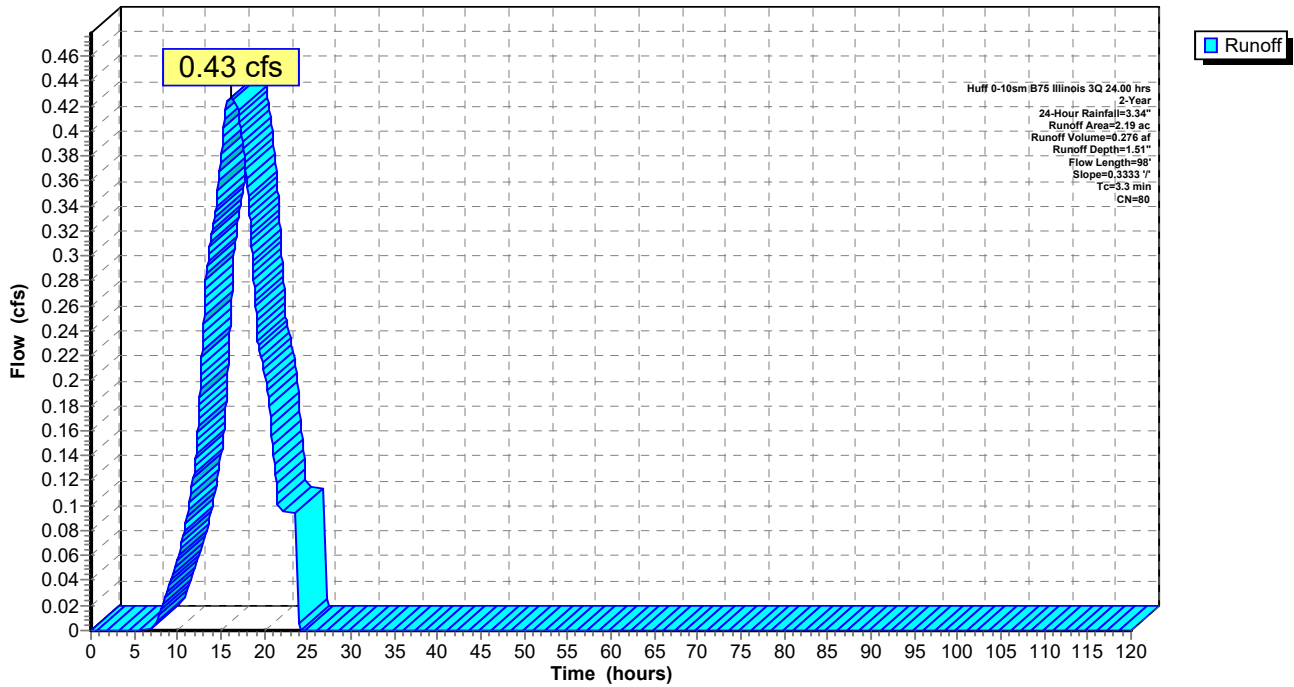
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

Area (ac)	CN	Description
2.19	80	>75% Grass cover, Good, HSG D
2.19		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	98	0.3333	0.49		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

### Subcatchment B7: Subcat B7

Hydrograph



### Summary for Subcatchment B8: Subcat B8

Runoff = 0.23 cfs @ 16.08 hrs, Volume= 0.147 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

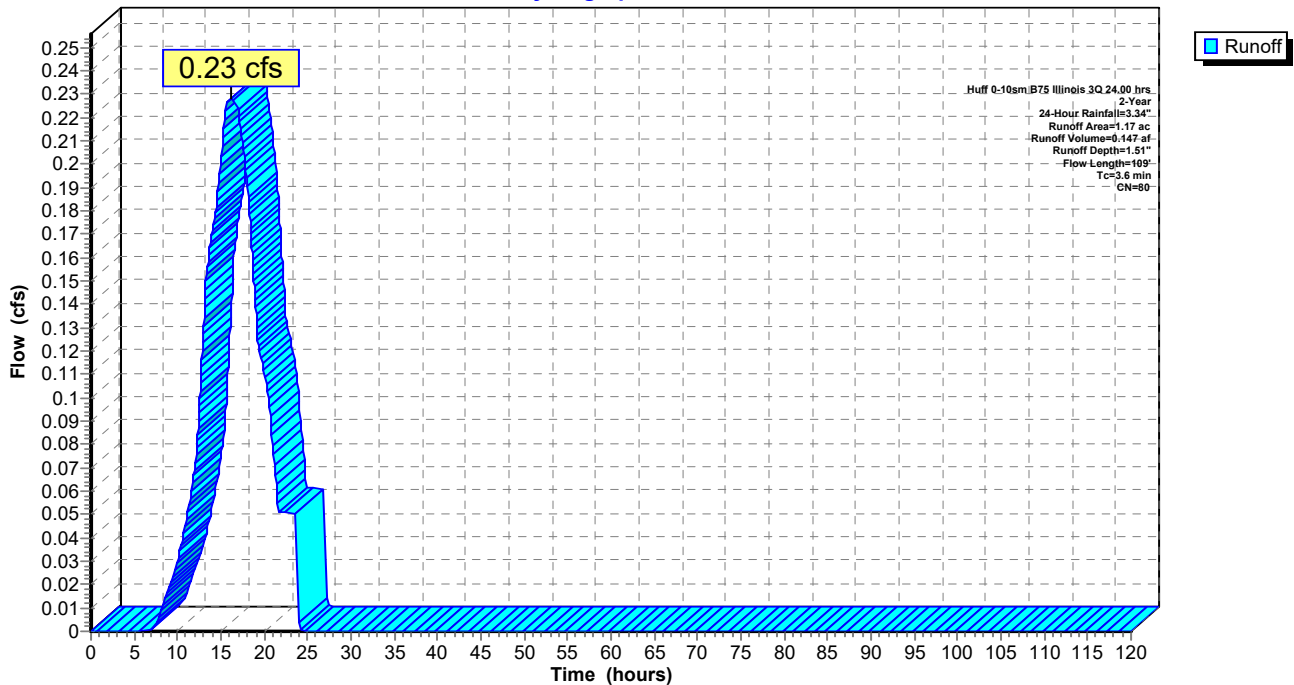
Area (ac)	CN	Description
1.17	80	>75% Grass cover, Good, HSG D
1.17		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	100	0.2873	0.46		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.0	9	0.2574	3.55		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.6	109	Total			

### Subcatchment B8: Subcat B8

Hydrograph





**Summary for Subcatchment B9A: Subcat B9A**

Runoff = 0.28 cfs @ 16.05 hrs, Volume= 0.181 af, Depth= 1.51"

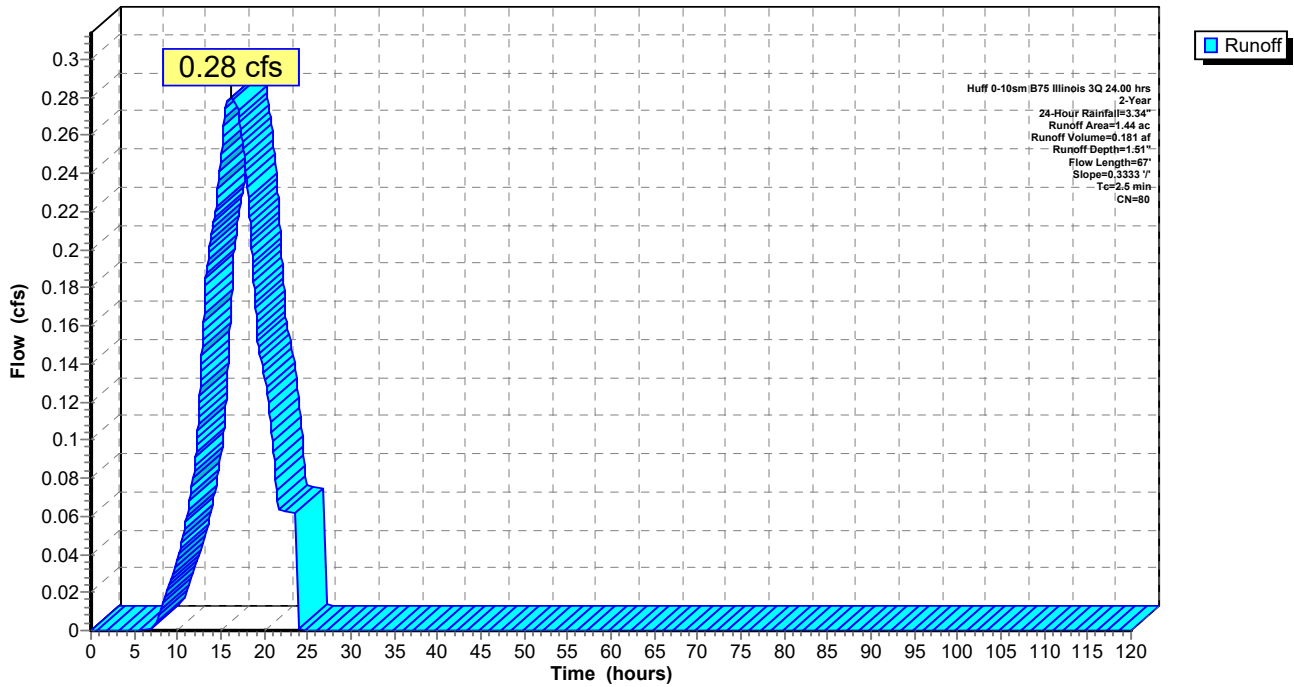
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

Area (ac)	CN	Description
1.44	80	>75% Grass cover, Good, HSG D
1.44		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	67	0.3333	0.45		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B9A: Subcat B9A**

Hydrograph



**Summary for Subcatchment B9B: Subcat B9B**

Runoff = 0.12 cfs @ 16.05 hrs, Volume= 0.077 af, Depth= 1.51"

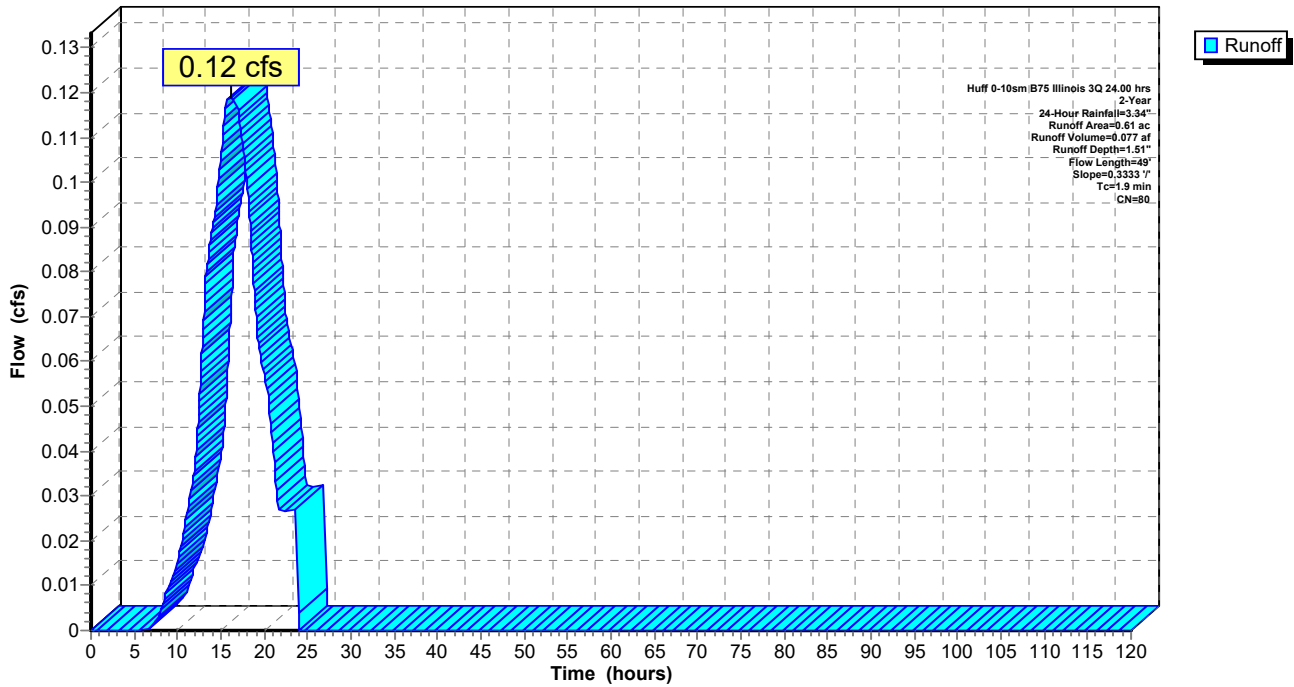
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

Area (ac)	CN	Description
0.61	80	>75% Grass cover, Good, HSG D
0.61		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	49	0.3333	0.43		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B9B: Subcat B9B**

Hydrograph



**Summary for Subcatchment D1: Subcat D1**

Runoff = 0.25 cfs @ 16.13 hrs, Volume= 0.158 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

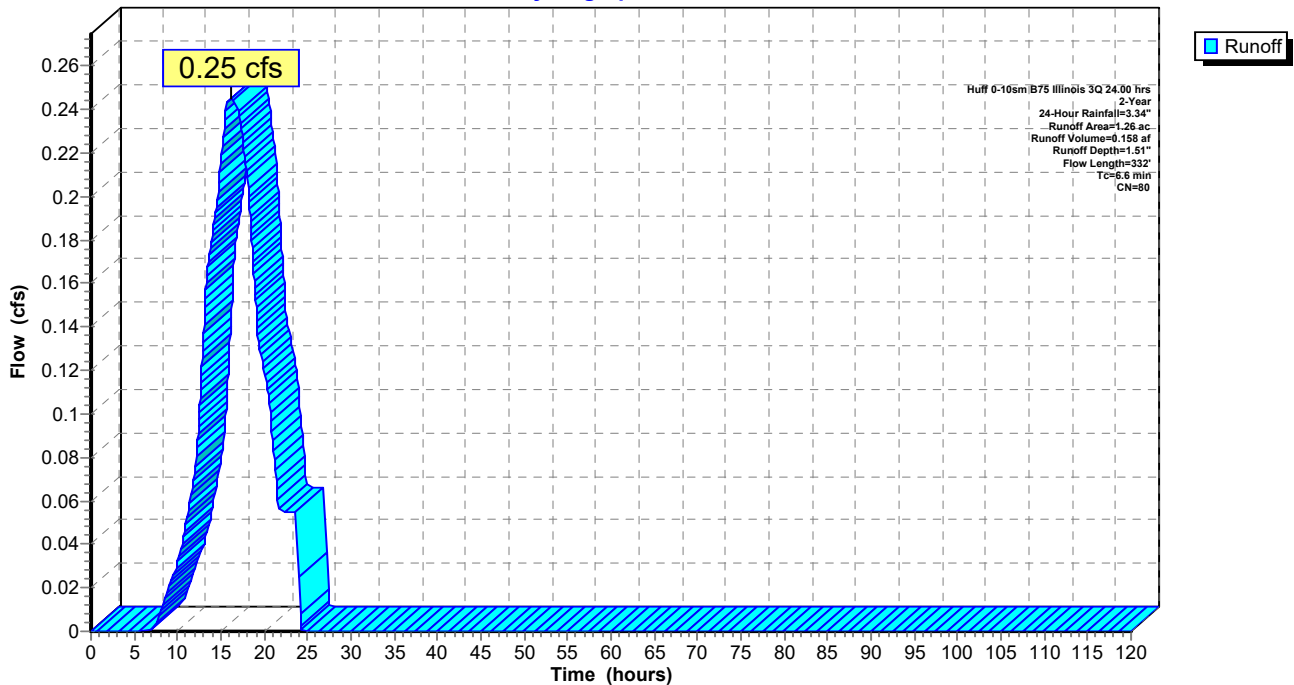
Area (ac)	CN	Description
1.26	80	>75% Grass cover, Good, HSG D
1.26		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.1	232	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.6	332	Total			

**Subcatchment D1: Subcat D1**

Hydrograph



**Summary for Subcatchment D3: Subcat D3**

Runoff = 0.26 cfs @ 16.08 hrs, Volume= 0.168 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

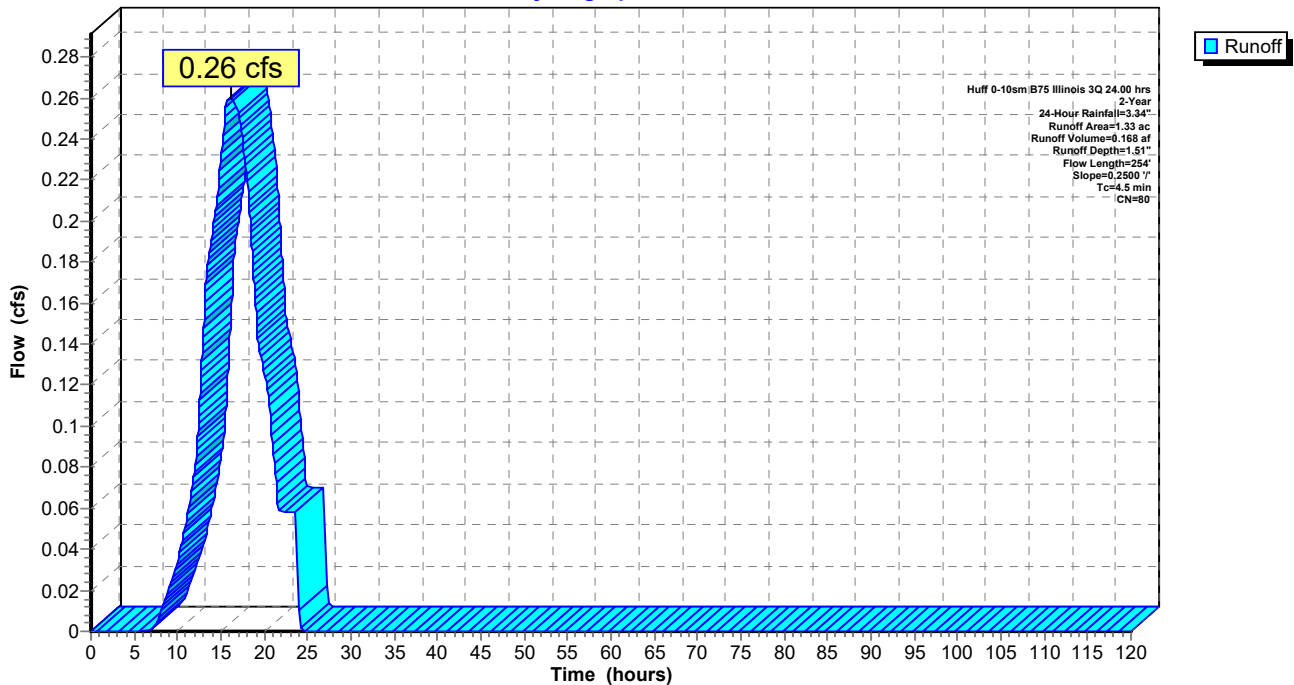
Area (ac)	CN	Description
1.33	80	>75% Grass cover, Good, HSG D
1.33		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.7	154	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.5	254	Total			

**Subcatchment D3: Subcat D3**

Hydrograph



**Summary for Subcatchment D5A: Subcat D5A**

Runoff = 0.22 cfs @ 16.09 hrs, Volume= 0.143 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

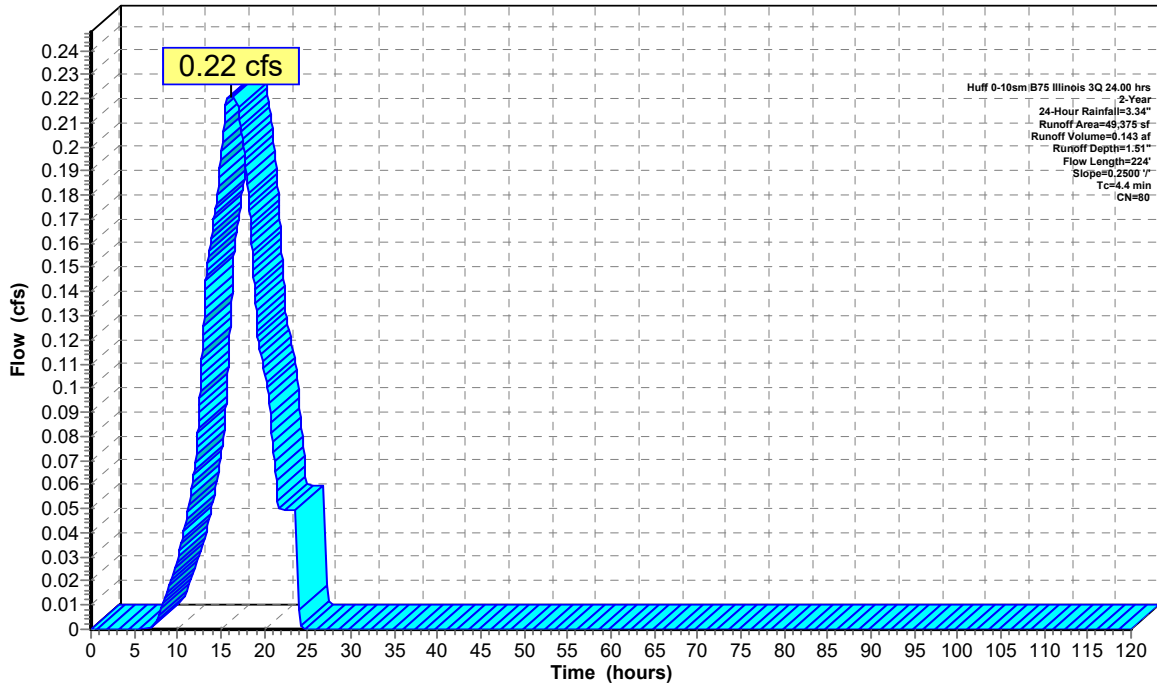
Area (sf)	CN	Description
49,375	80	>75% Grass cover, Good, HSG D
49,375		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	124	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.4	224	Total			

**Subcatchment D5A: Subcat D5A**

Hydrograph



**Summary for Subcatchment D5B: Subcat D5B**

Runoff = 0.07 cfs @ 15.65 hrs, Volume= 0.051 af, Depth= 1.96"

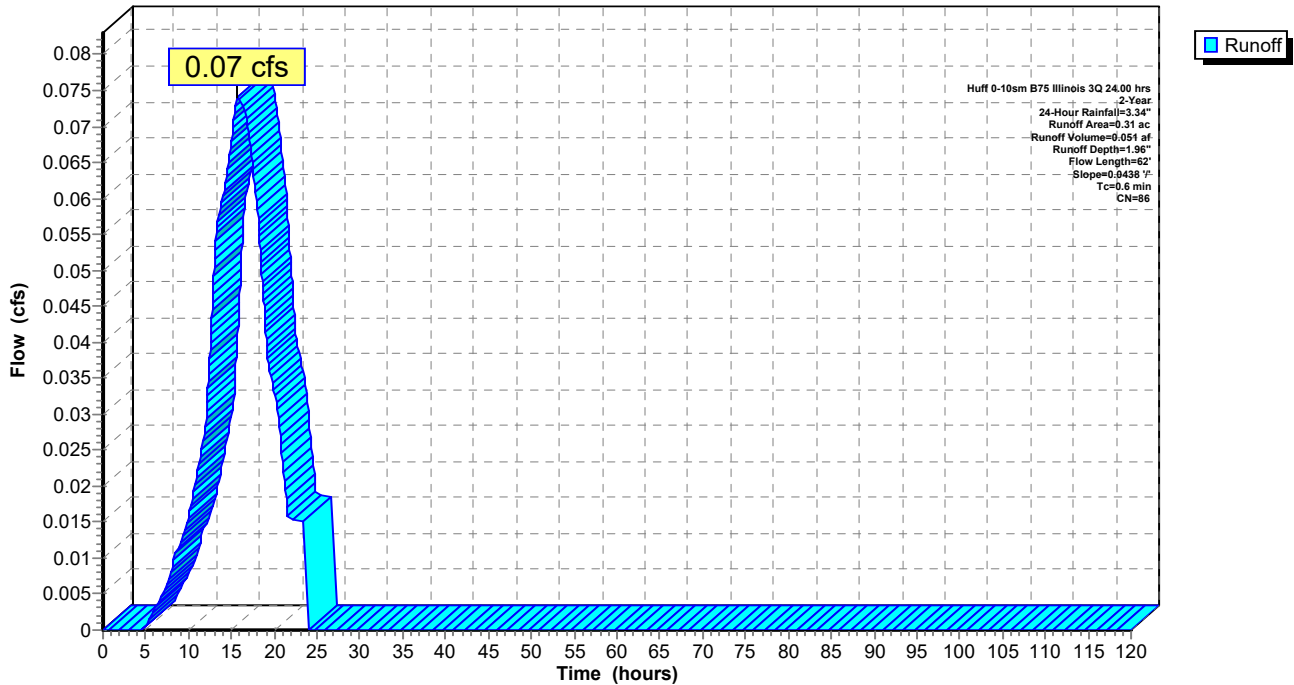
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

Area (ac)	CN	Description
0.16	80	>75% Grass cover, Good, HSG D
0.15	93	Paved roads w/open ditches, 50% imp, HSG D
0.31	86	Weighted Average
0.23		75.32% Pervious Area
0.08		24.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	62	0.0438	1.60		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment D5B: Subcat D5B**

Hydrograph



**Summary for Subcatchment DT: Subcat Drain Tile**

Runoff = 2.46 cfs @ 15.94 hrs, Volume= 1.604 af, Depth= 1.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

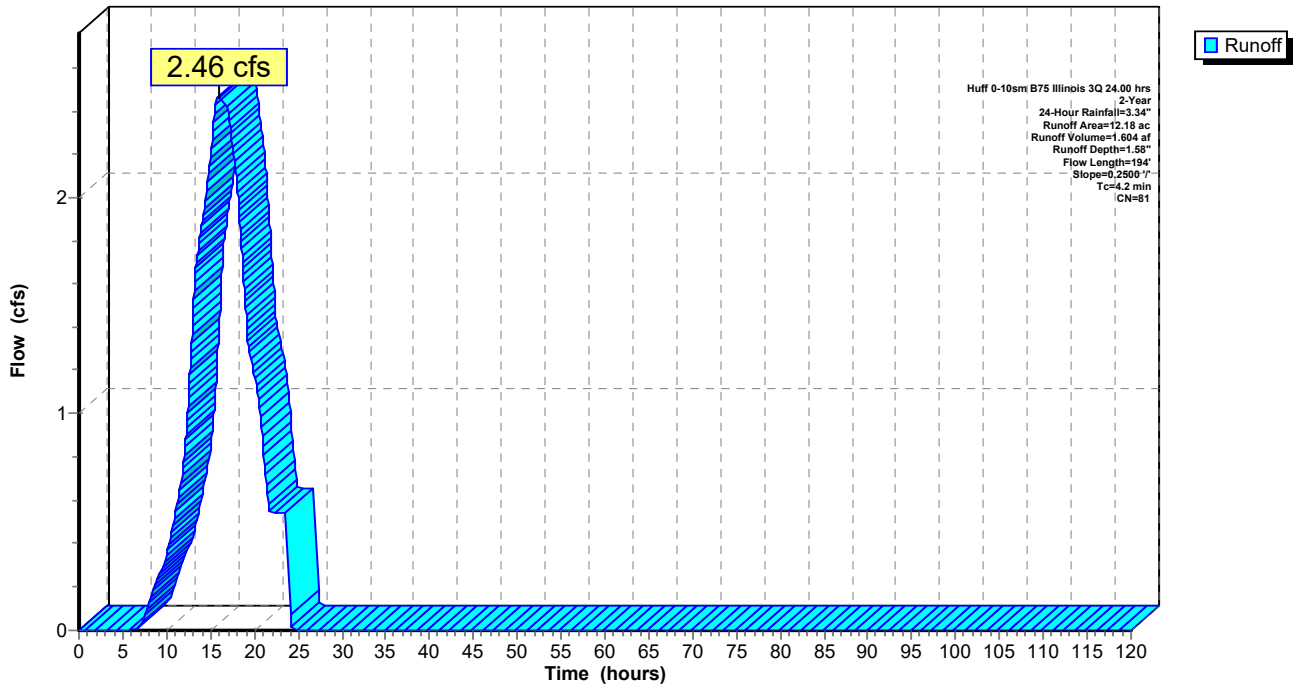
Area (ac)	CN	Description
7.38	80	>75% Grass cover, Good, HSG D
4.80	82	Woods/grass comb., Fair, HSG D
12.18	81	Weighted Average
12.18		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.4	94	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.2	194	Total			

**Subcatchment DT: Subcat Drain Tile**

Hydrograph



**Summary for Subcatchment E1: Subcat E1**

Runoff = 0.28 cfs @ 16.13 hrs, Volume= 0.179 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

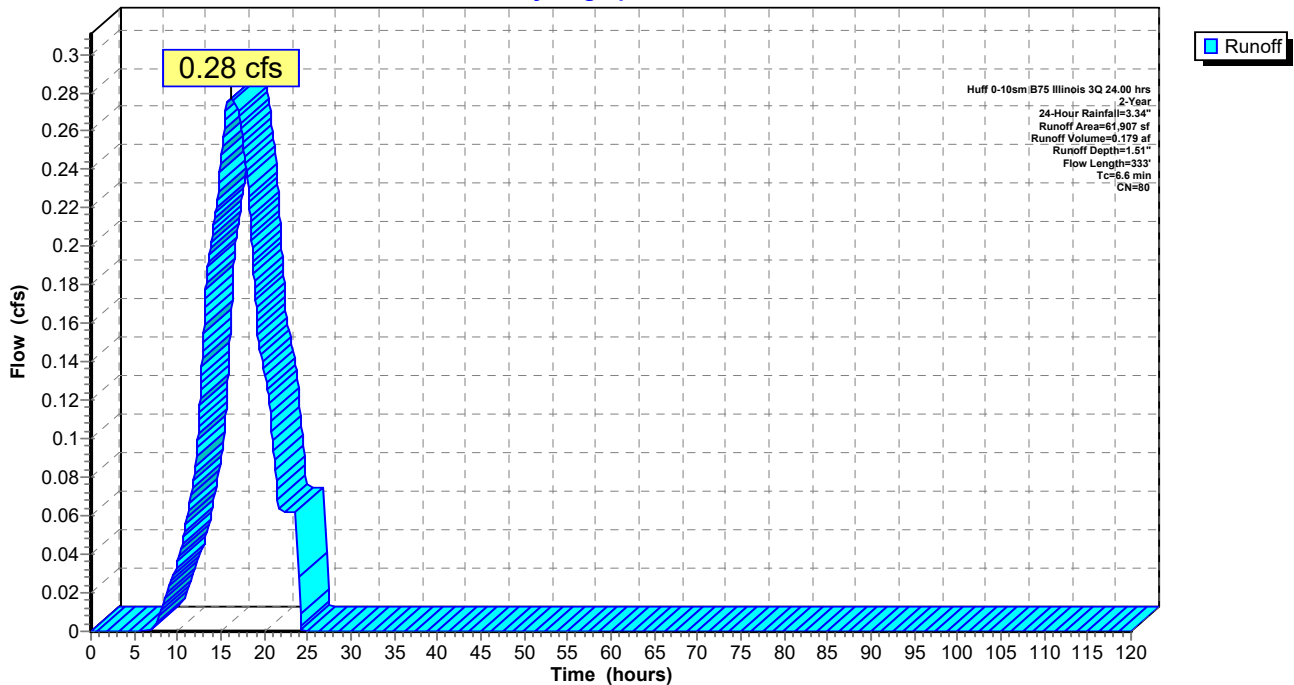
Area (sf)	CN	Description
61,907	80	>75% Grass cover, Good, HSG D
61,907		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.1	233	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.6	333	Total			

**Subcatchment E1: Subcat E1**

Hydrograph





**Summary for Subcatchment E2: Subcat E2**

Runoff = 0.55 cfs @ 16.08 hrs, Volume= 0.355 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

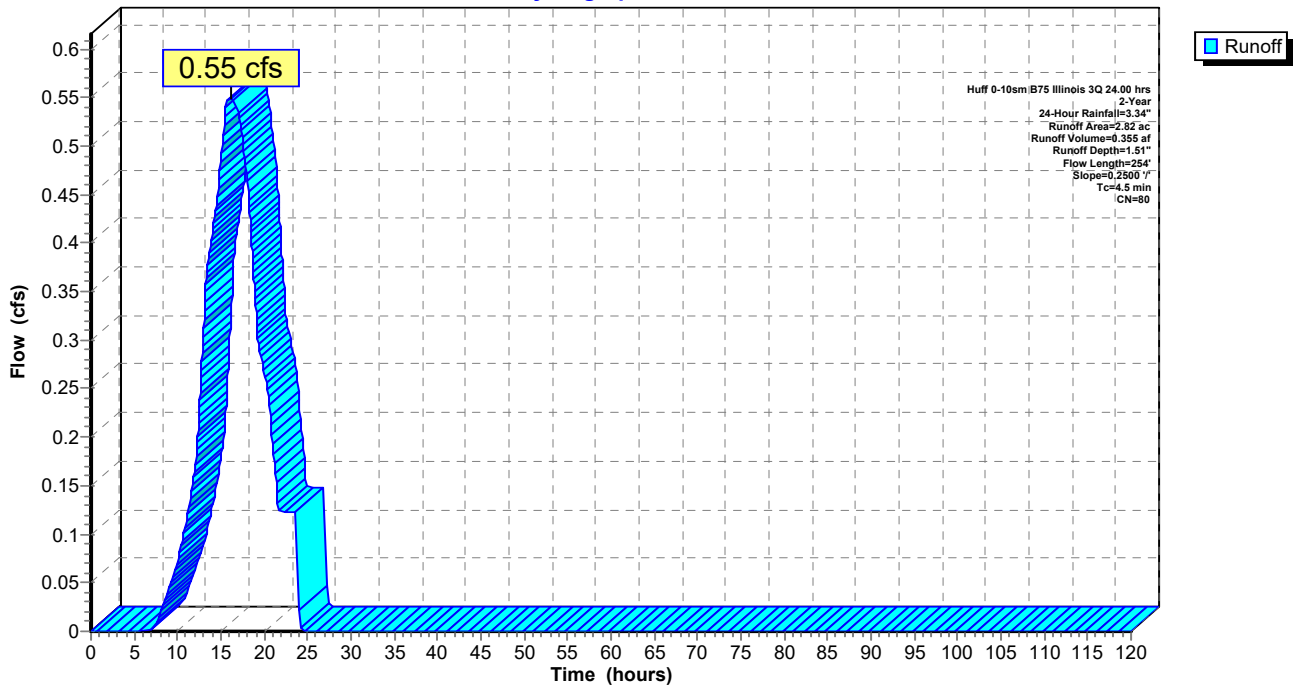
Area (ac)	CN	Description
2.82	80	>75% Grass cover, Good, HSG D
2.82		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.7	154	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.5	254	Total			

**Subcatchment E2: Subcat E2**

Hydrograph



**Summary for Subcatchment E3A: Subcat E3A**

Runoff = 0.64 cfs @ 16.09 hrs, Volume= 0.412 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

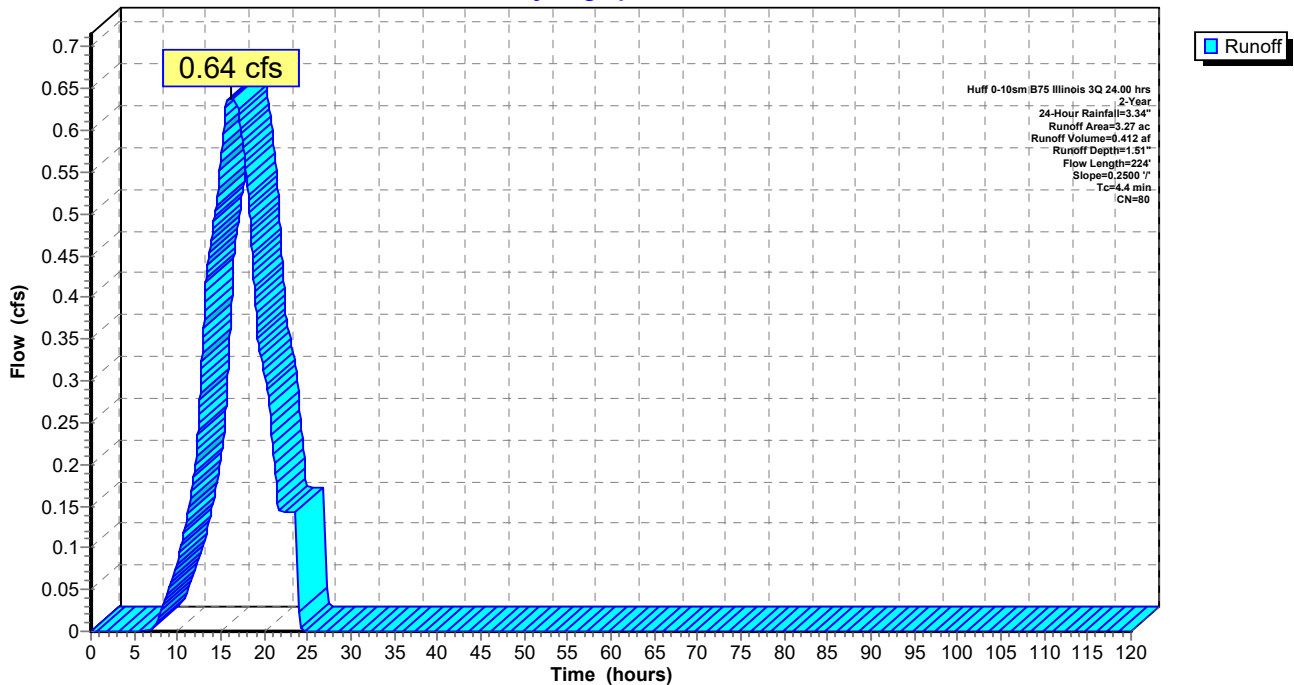
Area (ac)	CN	Description
3.27	80	>75% Grass cover, Good, HSG D
3.27		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	124	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.4	224	Total			

**Subcatchment E3A: Subcat E3A**

Hydrograph



**Summary for Subcatchment E3B: Subcat E3B**

Runoff = 0.26 cfs @ 15.65 hrs, Volume= 0.177 af, Depth= 1.96"

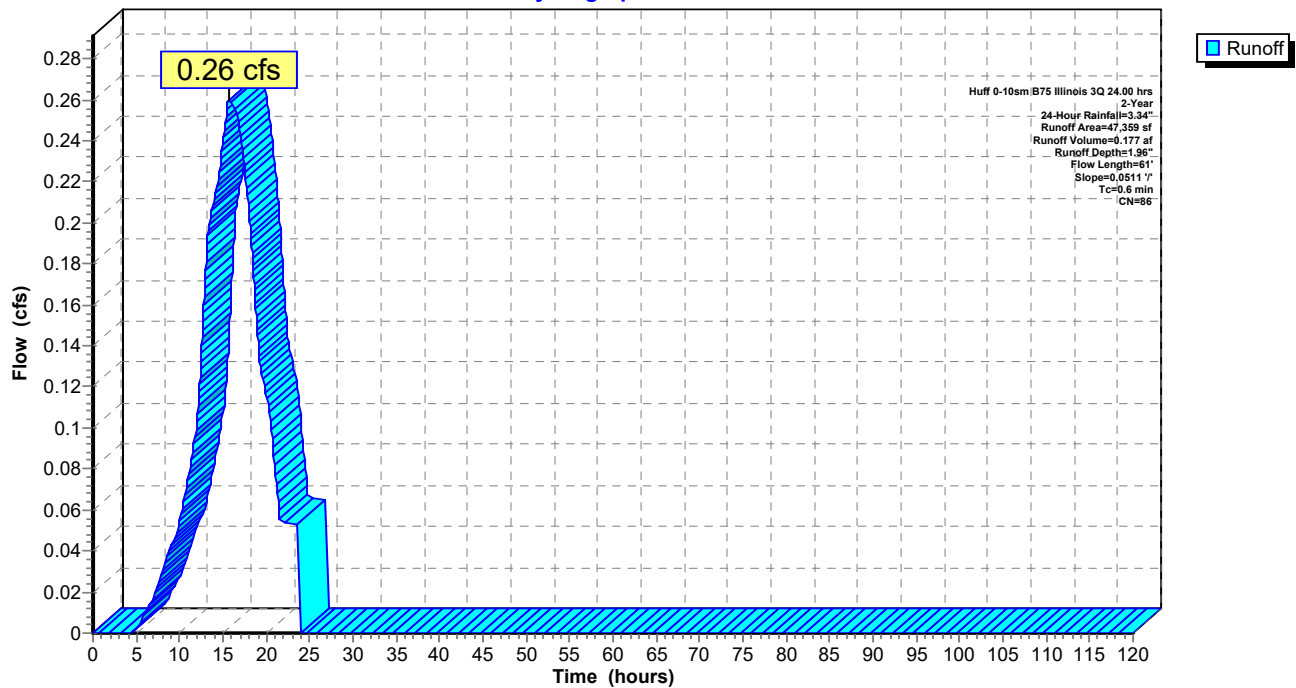
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

Area (sf)	CN	Description
23,741	80	>75% Grass cover, Good, HSG D
23,618	93	Paved roads w/open ditches, 50% imp, HSG D
47,359	86	Weighted Average
35,550		75.06% Pervious Area
11,809		24.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	61	0.0511	1.70		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment E3B: Subcat E3B**

Hydrograph



**Summary for Subcatchment H1: Subcat H1**

Runoff = 0.39 cfs @ 16.10 hrs, Volume= 0.249 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

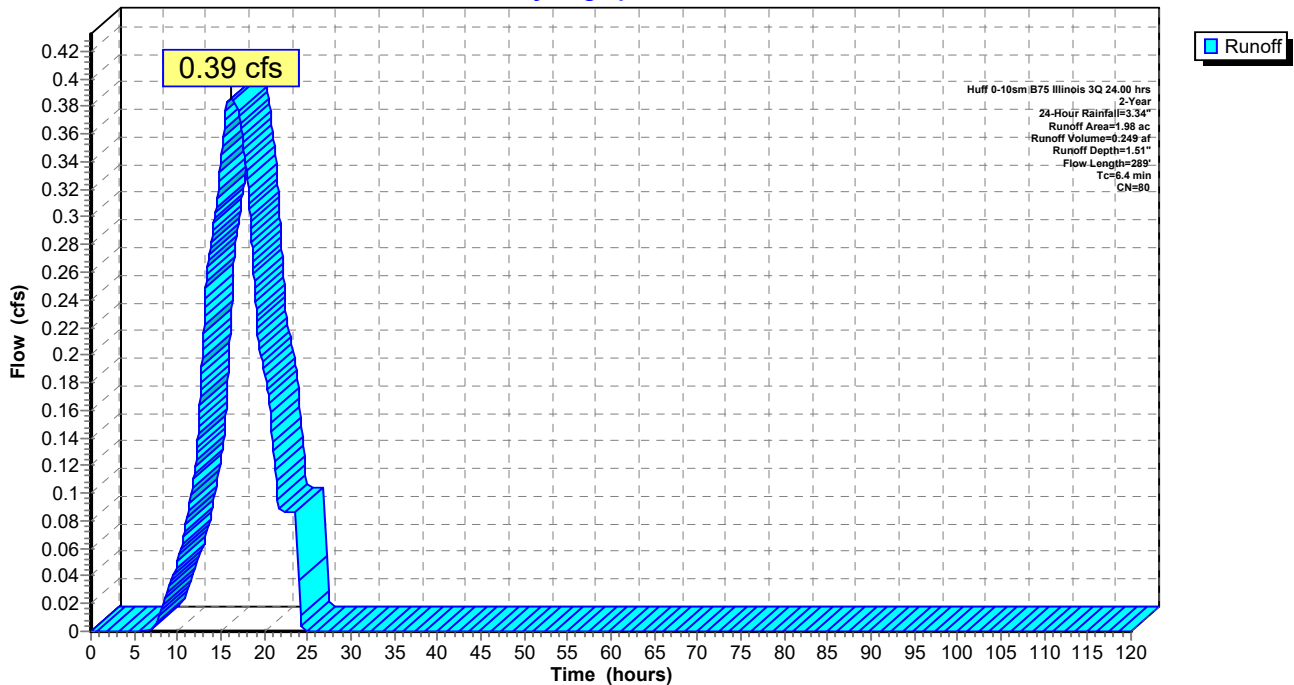
Area (ac)	CN	Description
1.98	80	>75% Grass cover, Good, HSG D
1.98		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.9	189	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.4	289	Total			

**Subcatchment H1: Subcat H1**

Hydrograph



**Summary for Subcatchment H2: Subcat H2**

Runoff = 0.36 cfs @ 16.09 hrs, Volume= 0.234 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

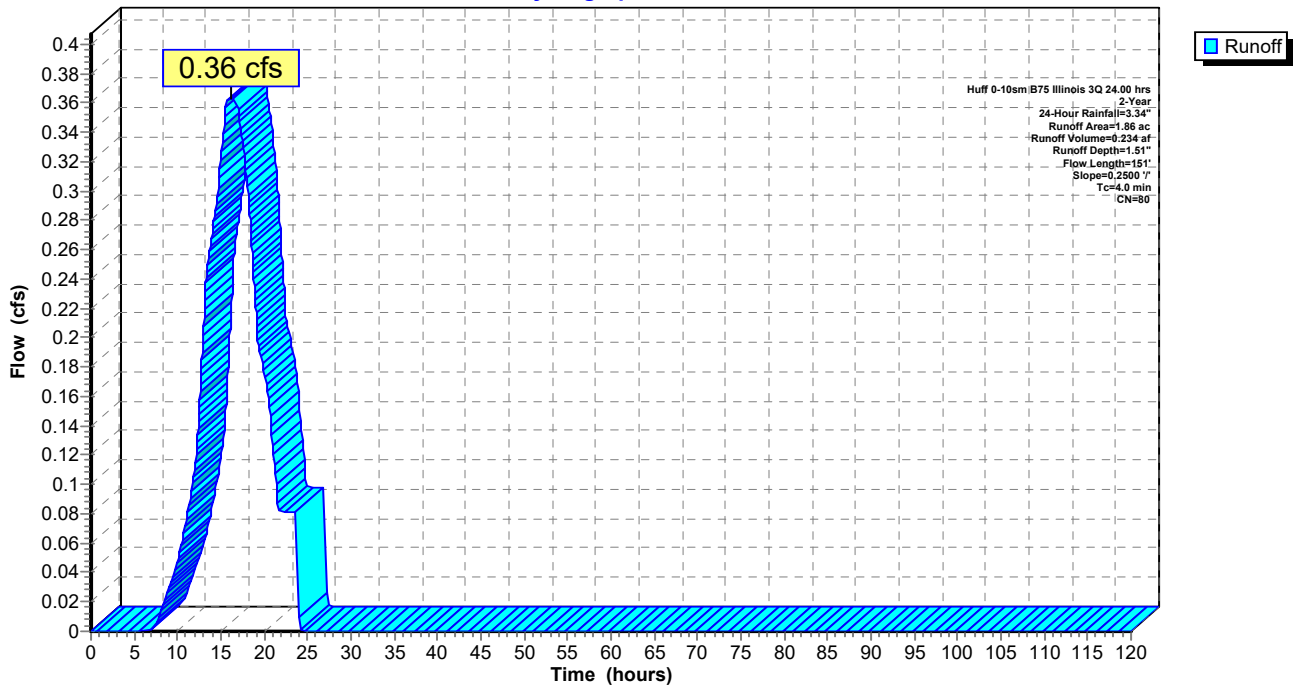
Area (ac)	CN	Description
1.86	80	>75% Grass cover, Good, HSG D
1.86		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	51	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	151	Total			

**Subcatchment H2: Subcat H2**

Hydrograph



**Summary for Subcatchment H3: Subcat H3**

Runoff = 0.70 cfs @ 16.09 hrs, Volume= 0.450 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

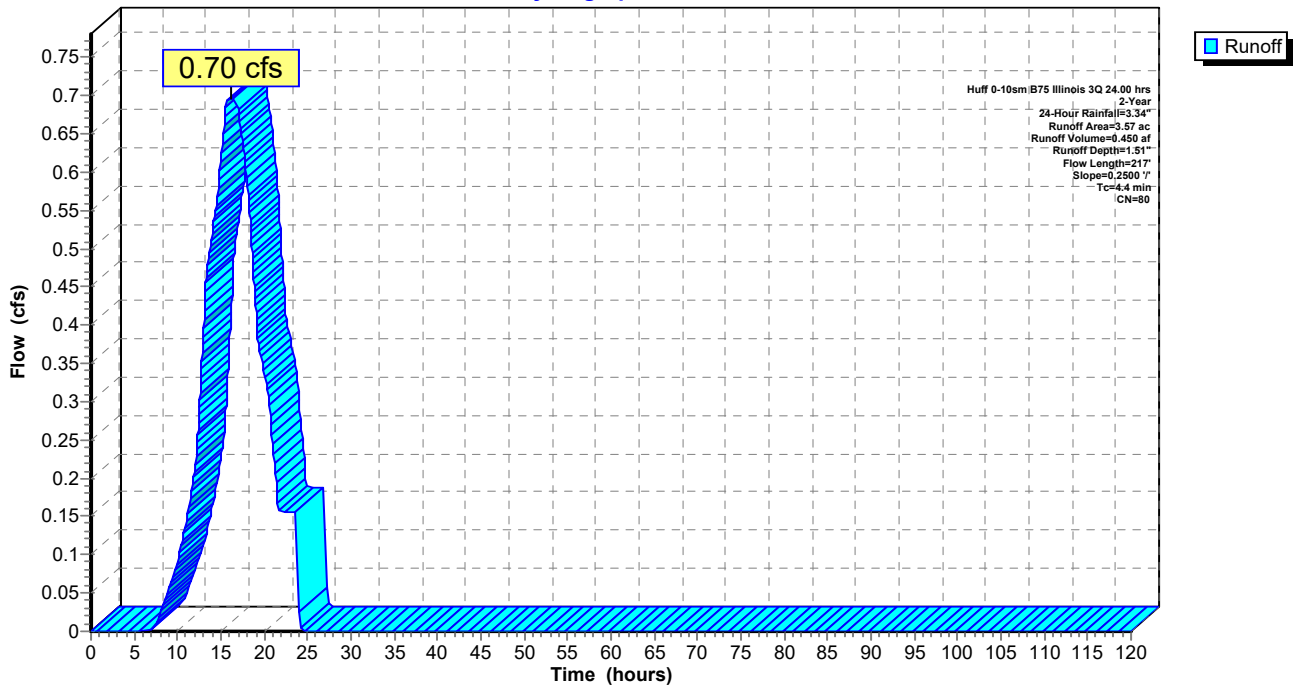
Area (ac)	CN	Description
3.57	80	>75% Grass cover, Good, HSG D
3.57		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	117	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.4	217	Total			

**Subcatchment H3: Subcat H3**

Hydrograph



**Summary for Subcatchment N-A1: Subcat N-A1**

Runoff = 0.70 cfs @ 16.14 hrs, Volume= 0.453 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

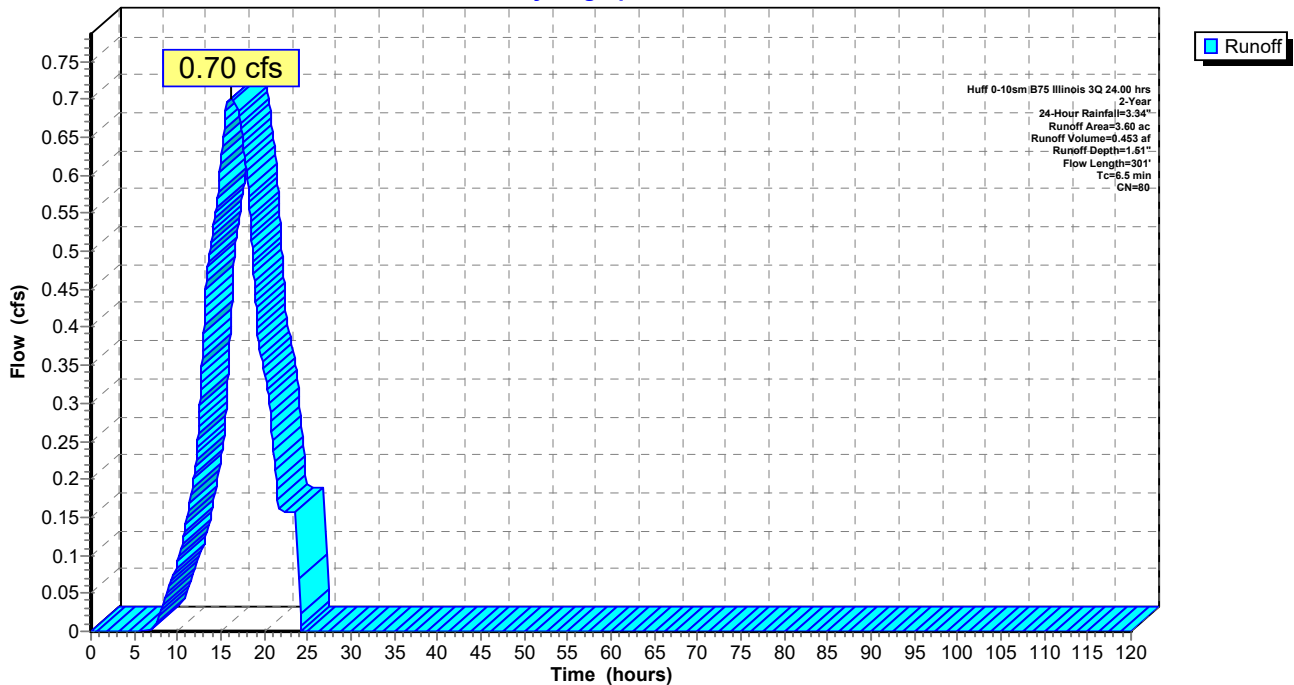
Area (ac)	CN	Description
3.60	80	>75% Grass cover, Good, HSG D
3.60		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.0	201	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.5	301	Total			

**Subcatchment N-A1: Subcat N-A1**

Hydrograph



**Summary for Subcatchment N-A10: Subcat N-A10**

Runoff = 0.74 cfs @ 16.09 hrs, Volume= 0.475 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

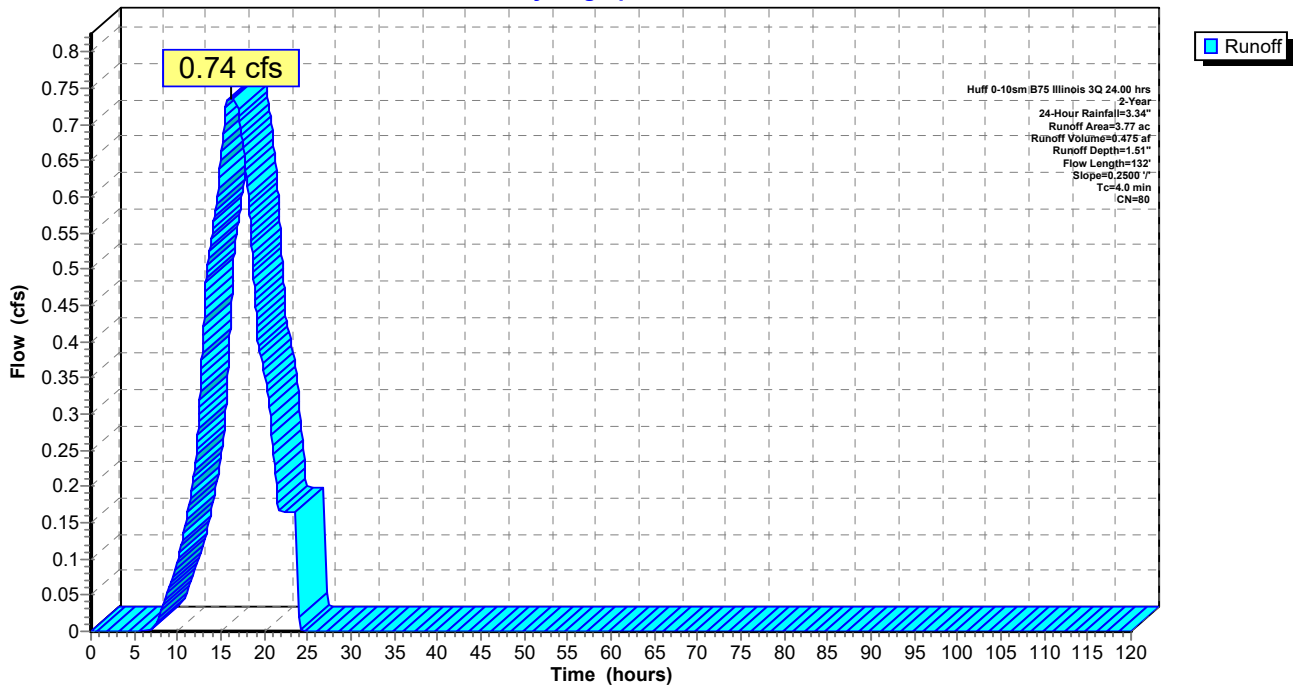
Area (ac)	CN	Description
3.77	80	>75% Grass cover, Good, HSG D
3.77		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	32	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	132	Total			

**Subcatchment N-A10: Subcat N-A10**

Hydrograph





**Summary for Subcatchment N-A11: Subcat N-A11**

Runoff = 0.36 cfs @ 16.06 hrs, Volume= 0.232 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

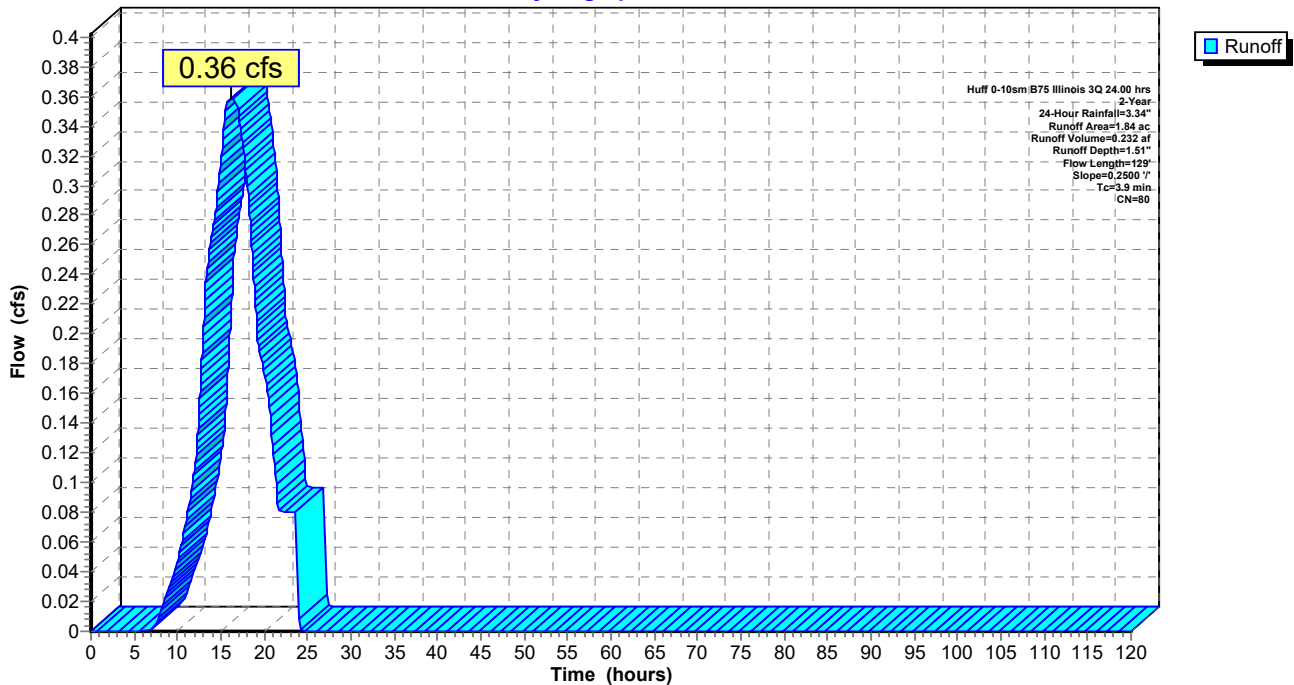
Area (ac)	CN	Description
1.84	80	>75% Grass cover, Good, HSG D
1.84		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	29	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	129	Total			

**Subcatchment N-A11: Subcat N-A11**

Hydrograph



**Summary for Subcatchment N-A12: Subcat N-A12**

Runoff = 0.51 cfs @ 15.75 hrs, Volume= 0.341 af, Depth= 1.72"

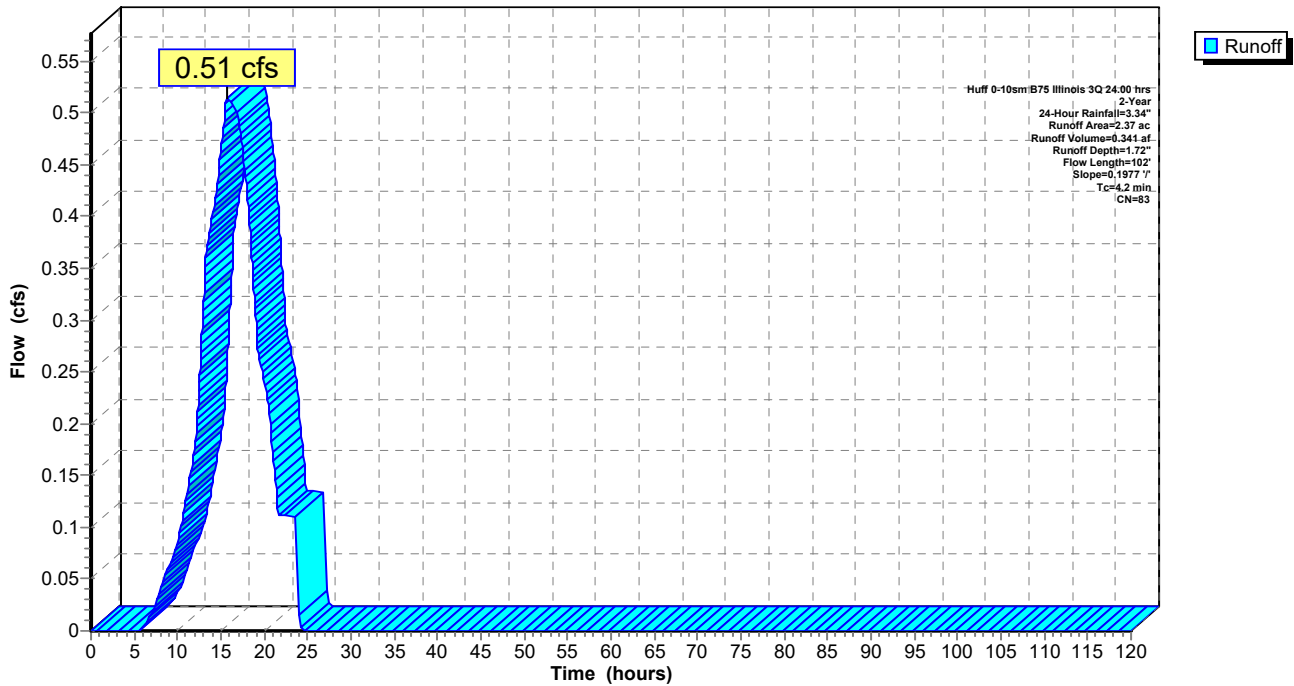
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

Area (ac)	CN	Description
1.74	80	>75% Grass cover, Good, HSG D
0.63	93	Paved roads w/open ditches, 50% imp, HSG D
2.37	83	Weighted Average
2.06		86.69% Pervious Area
0.32		13.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	100	0.1977	0.40		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.0	2	0.1977	3.11		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.2	102	Total			

**Subcatchment N-A12: Subcat N-A12**

Hydrograph



**Summary for Subcatchment N-A13: Subcat N-A13**

Runoff = 0.24 cfs @ 16.06 hrs, Volume= 0.158 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

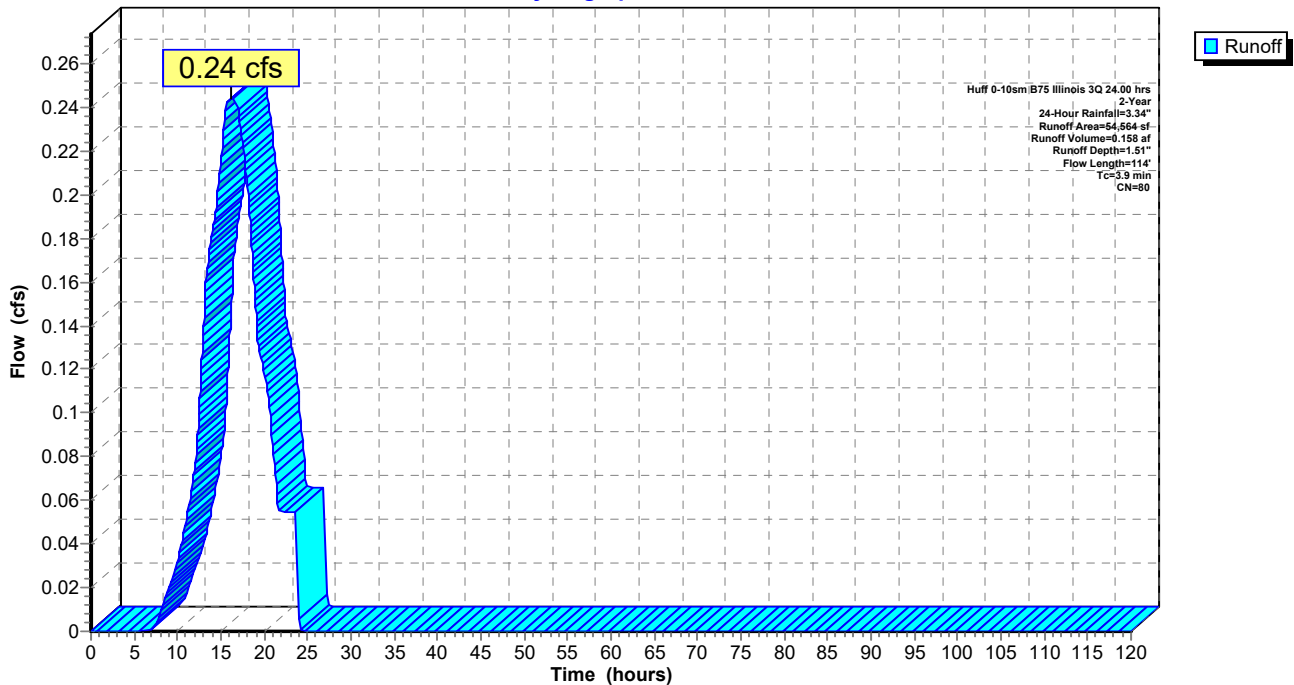
Area (sf)	CN	Description
54,564	80	>75% Grass cover, Good, HSG D
54,564		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	14	0.3210	3.97		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	114	Total			

**Subcatchment N-A13: Subcat N-A13**

Hydrograph



**Summary for Subcatchment N-A14: Subcat N-A14**

Runoff = 0.28 cfs @ 15.74 hrs, Volume= 0.188 af, Depth= 1.72"

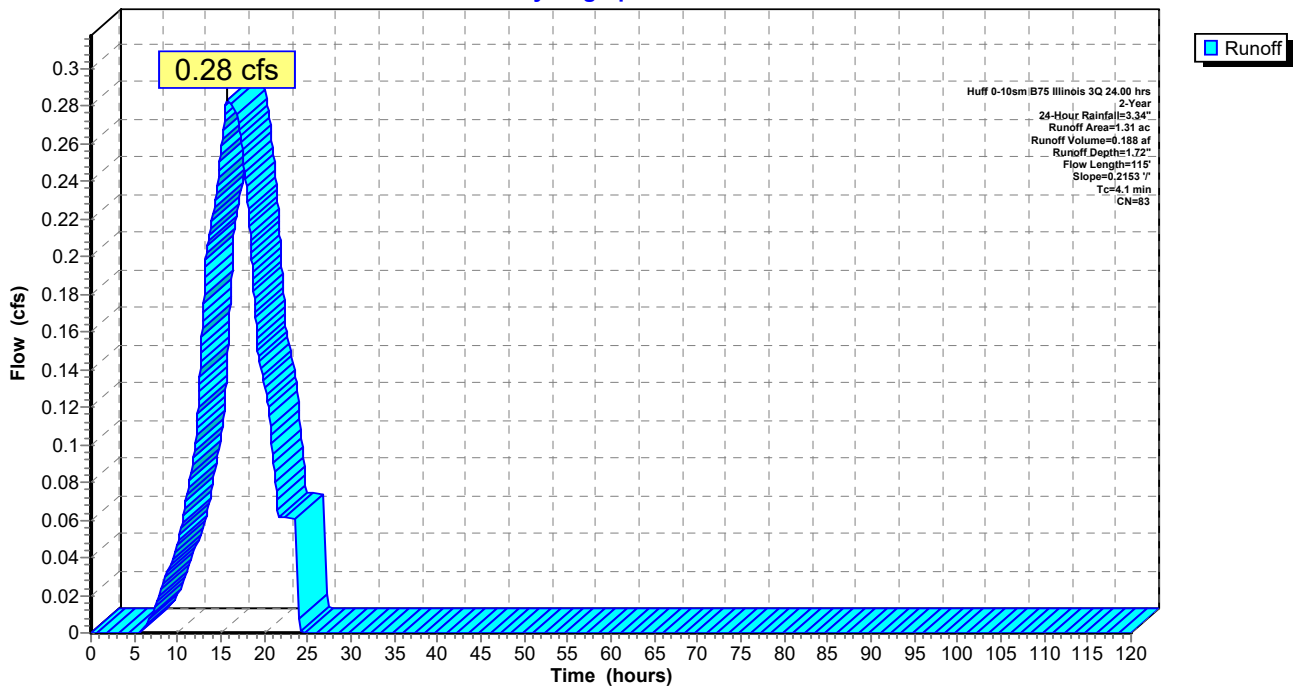
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

Area (ac)	CN	Description
0.97	80	>75% Grass cover, Good, HSG D
0.34	93	Paved roads w/open ditches, 50% imp, HSG D
1.31	83	Weighted Average
1.14		87.12% Pervious Area
0.17		12.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	100	0.2153	0.41		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	15	0.2153	3.25		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	115	Total			

**Subcatchment N-A14: Subcat N-A14**

Hydrograph



### Summary for Subcatchment N-A15: Subcat N-A15

Runoff = 0.20 cfs @ 16.07 hrs, Volume= 0.130 af, Depth= 1.51"

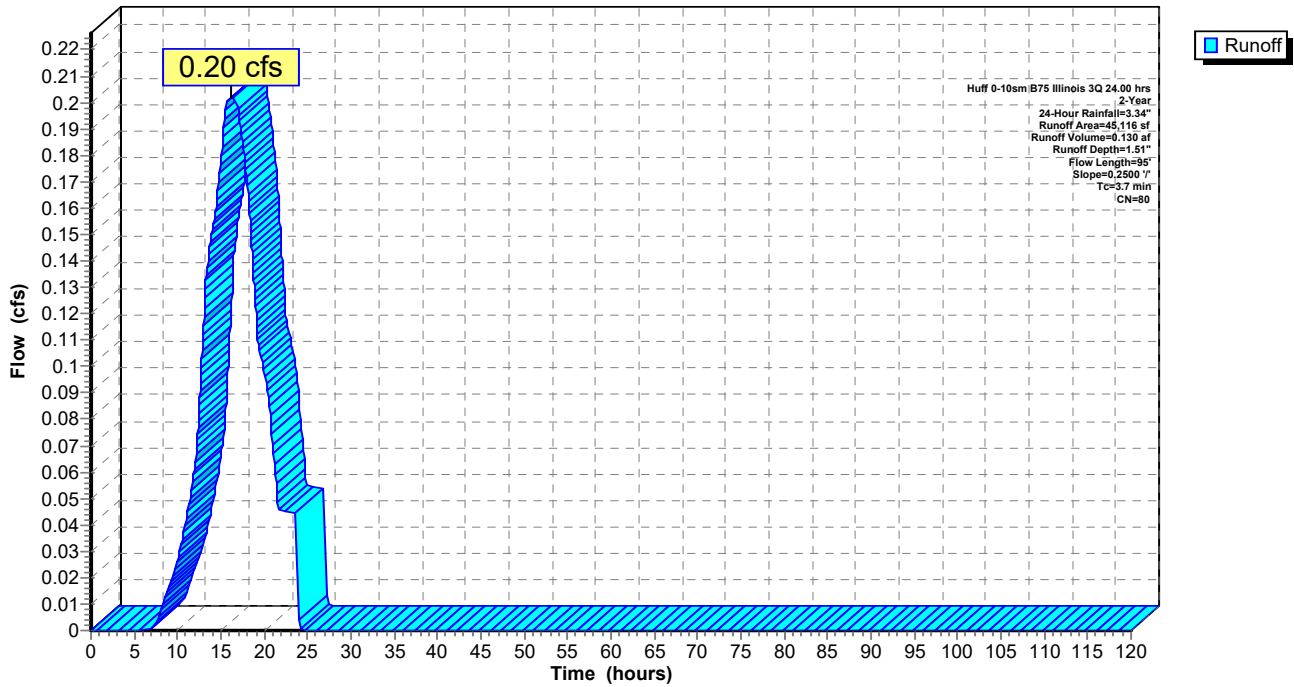
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

Area (sf)	CN	Description
45,116	80	>75% Grass cover, Good, HSG D
45,116		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	95	0.2500	0.43		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

### Subcatchment N-A15: Subcat N-A15

Hydrograph



**Summary for Subcatchment N-A16: Subcat N-A16**

Runoff = 0.59 cfs @ 15.64 hrs, Volume= 0.432 af, Depth= 2.48"

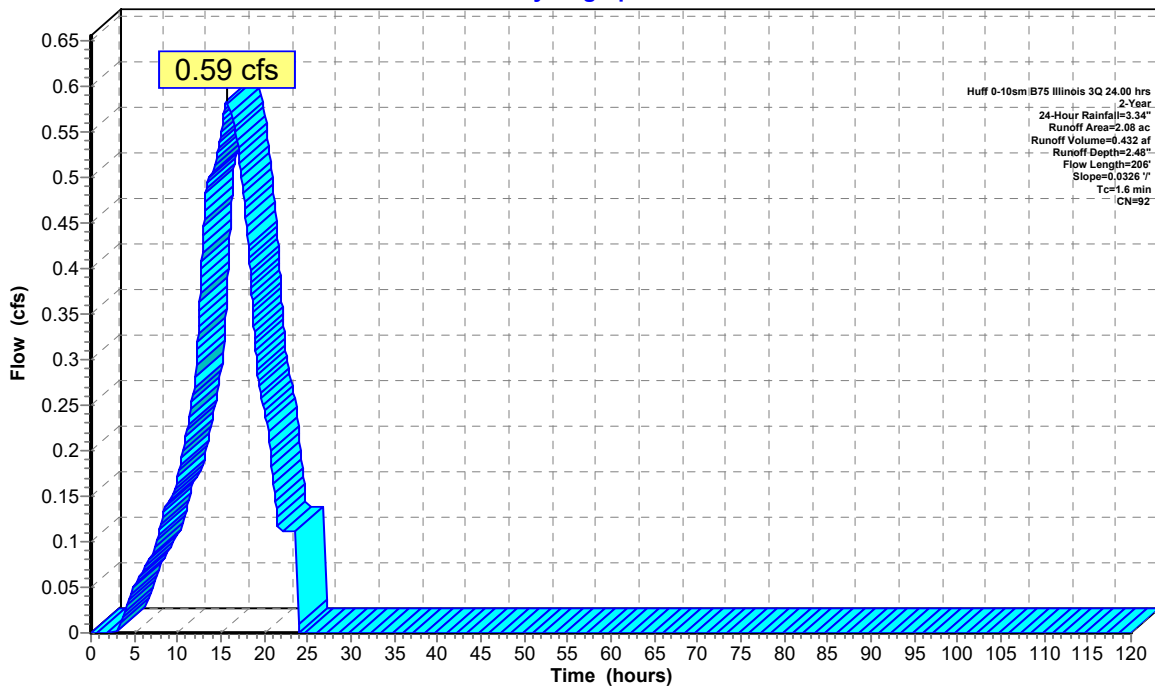
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

Area (ac)	CN	Description
0.08	80	>75% Grass cover, Good, HSG D
2.00	93	Paved roads w/open ditches, 50% imp, HSG D
2.08	92	Weighted Average
1.08		51.99% Pervious Area
1.00		48.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0326	1.56		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 2.80"
0.5	106	0.0326	3.67		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
1.6	206	Total			

**Subcatchment N-A16: Subcat N-A16**

Hydrograph



Runoff

**Summary for Subcatchment N-A2: Subcat N-A2**

Runoff = 0.55 cfs @ 16.10 hrs, Volume= 0.356 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

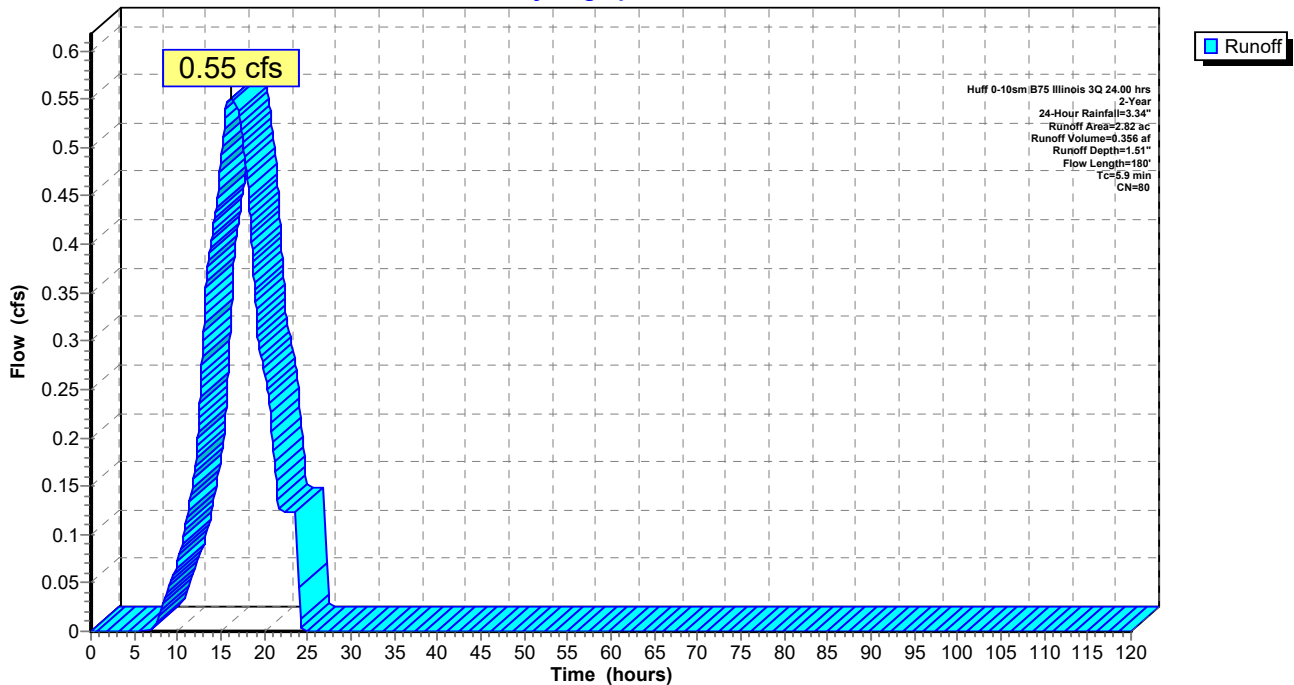
Area (ac)	CN	Description
2.82	80	>75% Grass cover, Good, HSG D
2.82		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.4	80	0.2199	3.28		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
5.9	180	Total			

**Subcatchment N-A2: Subcat N-A2**

Hydrograph



**Summary for Subcatchment N-A3: Subcat N-A3**

Runoff = 0.26 cfs @ 16.09 hrs, Volume= 0.165 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

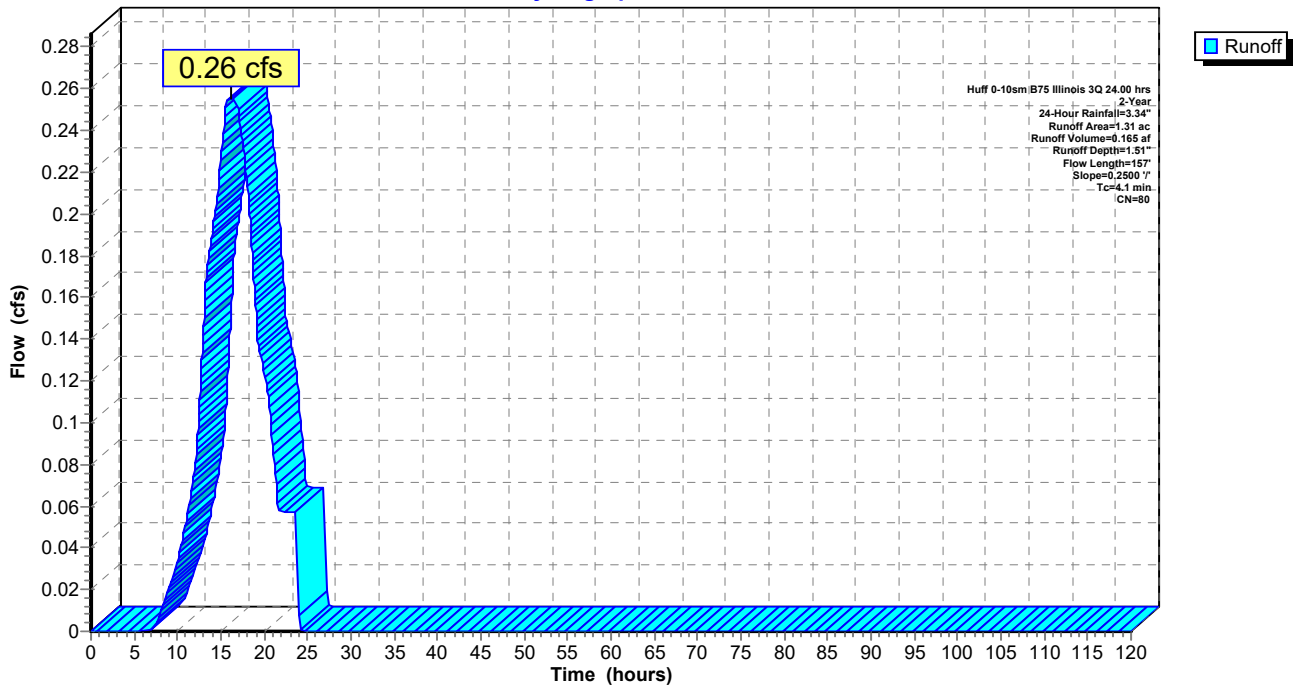
Area (ac)	CN	Description
1.31	80	>75% Grass cover, Good, HSG D
1.31		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.3	57	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	157	Total			

**Subcatchment N-A3: Subcat N-A3**

Hydrograph





**Summary for Subcatchment N-A4: Subcat N-A4**

Runoff = 1.34 cfs @ 16.10 hrs, Volume= 0.865 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

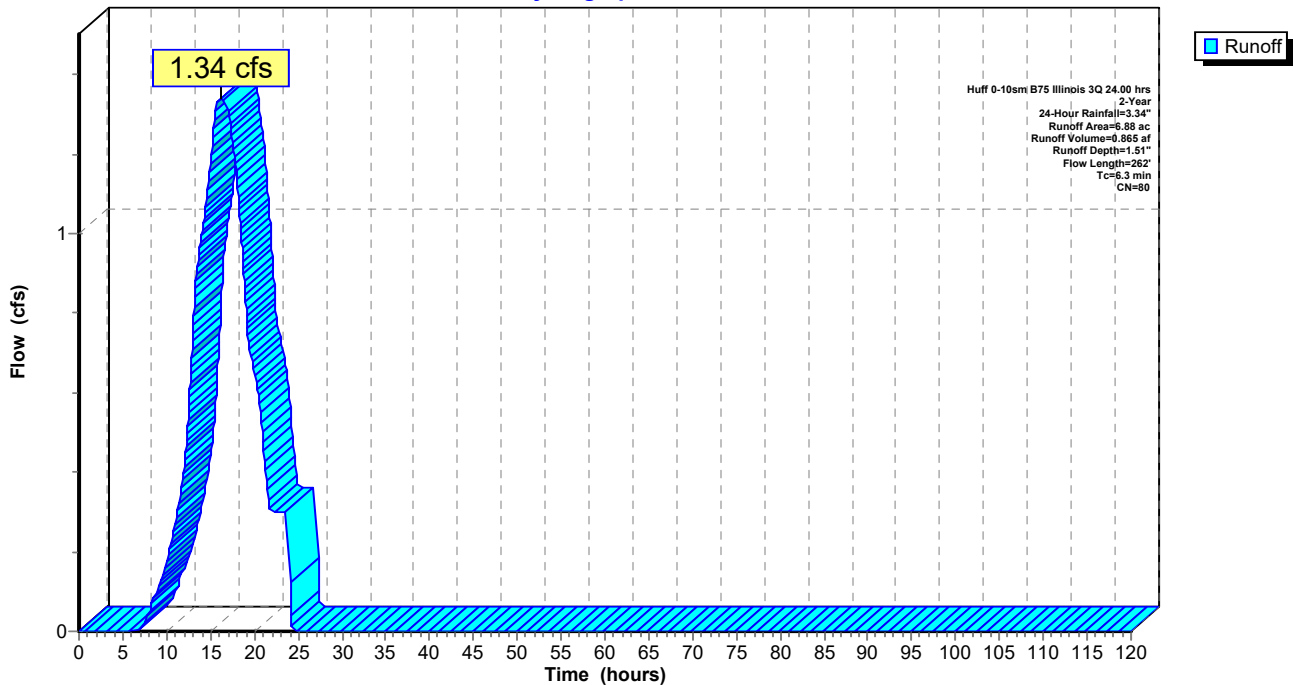
Area (ac)	CN	Description
6.88	80	>75% Grass cover, Good, HSG D
6.88		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.8	162	0.2330	3.38		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.3	262	Total			

**Subcatchment N-A4: Subcat N-A4**

Hydrograph



**Summary for Subcatchment N-A5: Subcat N-A5**

Runoff = 0.14 cfs @ 16.06 hrs, Volume= 0.092 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

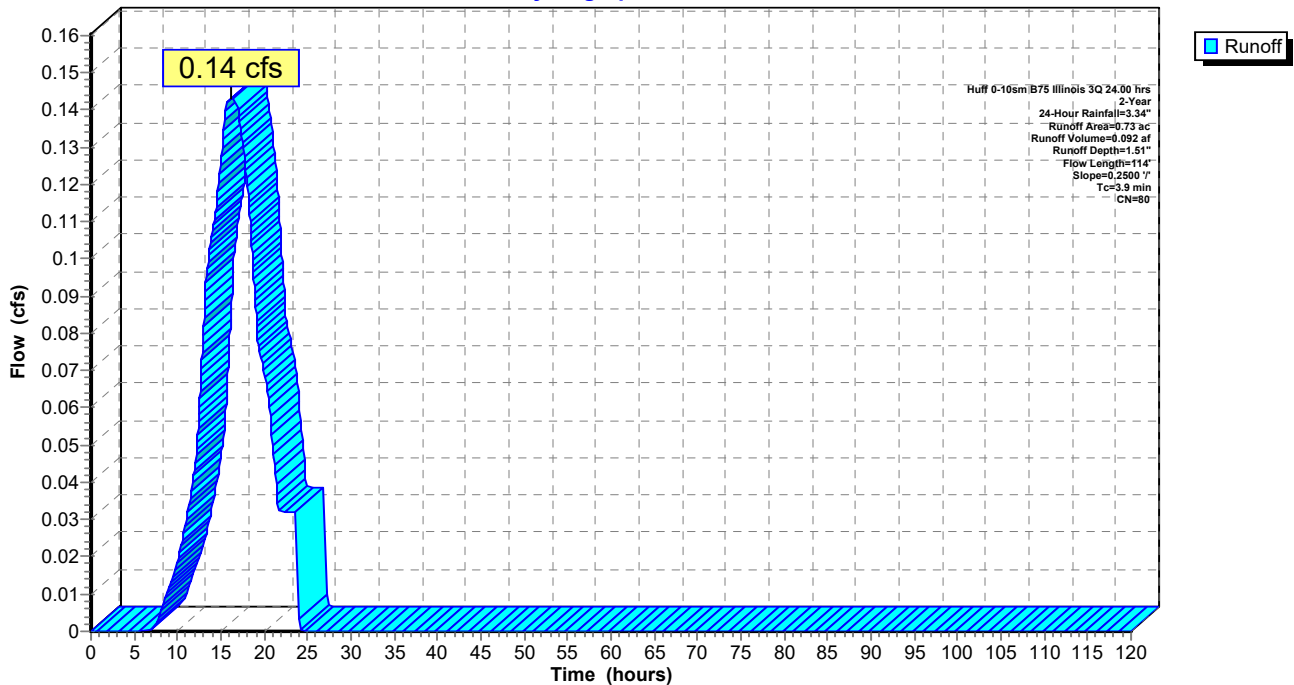
Area (ac)	CN	Description
0.73	80	>75% Grass cover, Good, HSG D
0.73		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	14	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	114	Total			

**Subcatchment N-A5: Subcat N-A5**

Hydrograph



**Summary for Subcatchment N-A6: Subcat N-A6**

Runoff = 0.81 cfs @ 16.06 hrs, Volume= 0.520 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

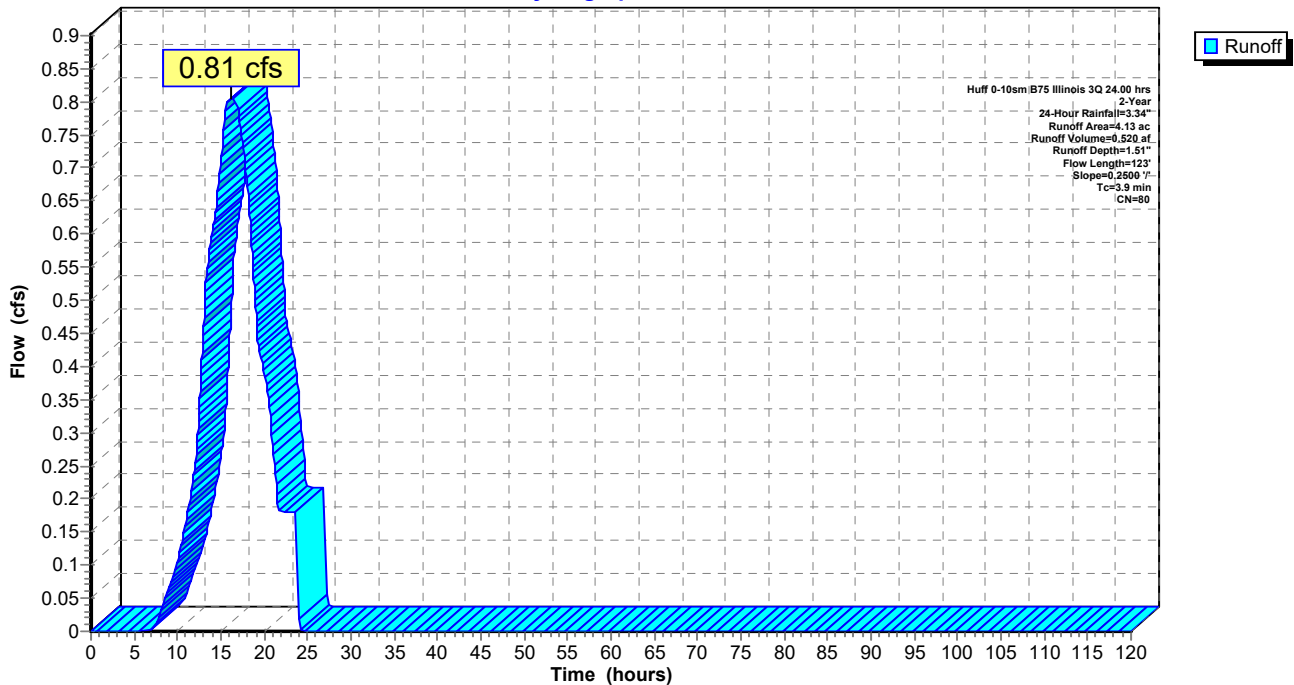
Area (ac)	CN	Description
4.13	80	>75% Grass cover, Good, HSG D
4.13		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	23	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	123	Total			

**Subcatchment N-A6: Subcat N-A6**

Hydrograph



**Summary for Subcatchment N-A7: Subcat N-A7**

Runoff = 0.09 cfs @ 16.09 hrs, Volume= 0.056 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

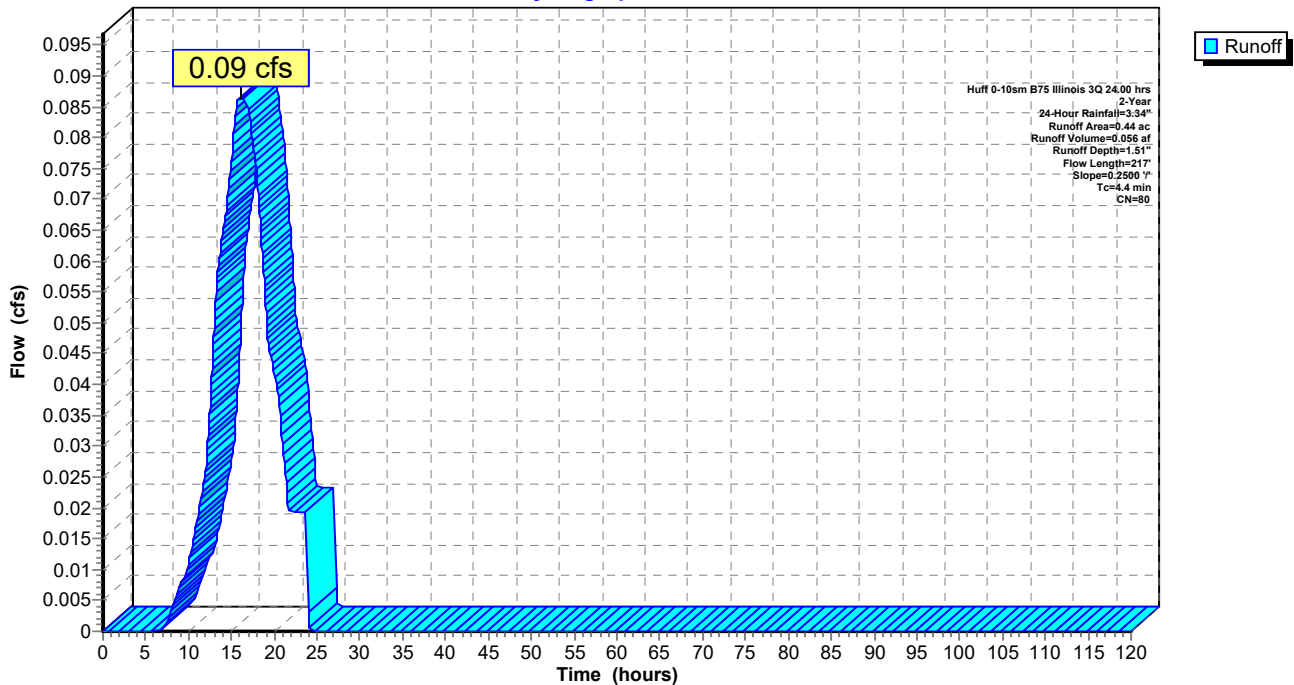
Area (ac)	CN	Description
0.44	80	>75% Grass cover, Good, HSG D
0.44		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	117	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.4	217	Total			

**Subcatchment N-A7: Subcat N-A7**

Hydrograph



**Summary for Subcatchment N-A8: Subcat N-A8**

Runoff = 0.74 cfs @ 16.06 hrs, Volume= 0.478 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

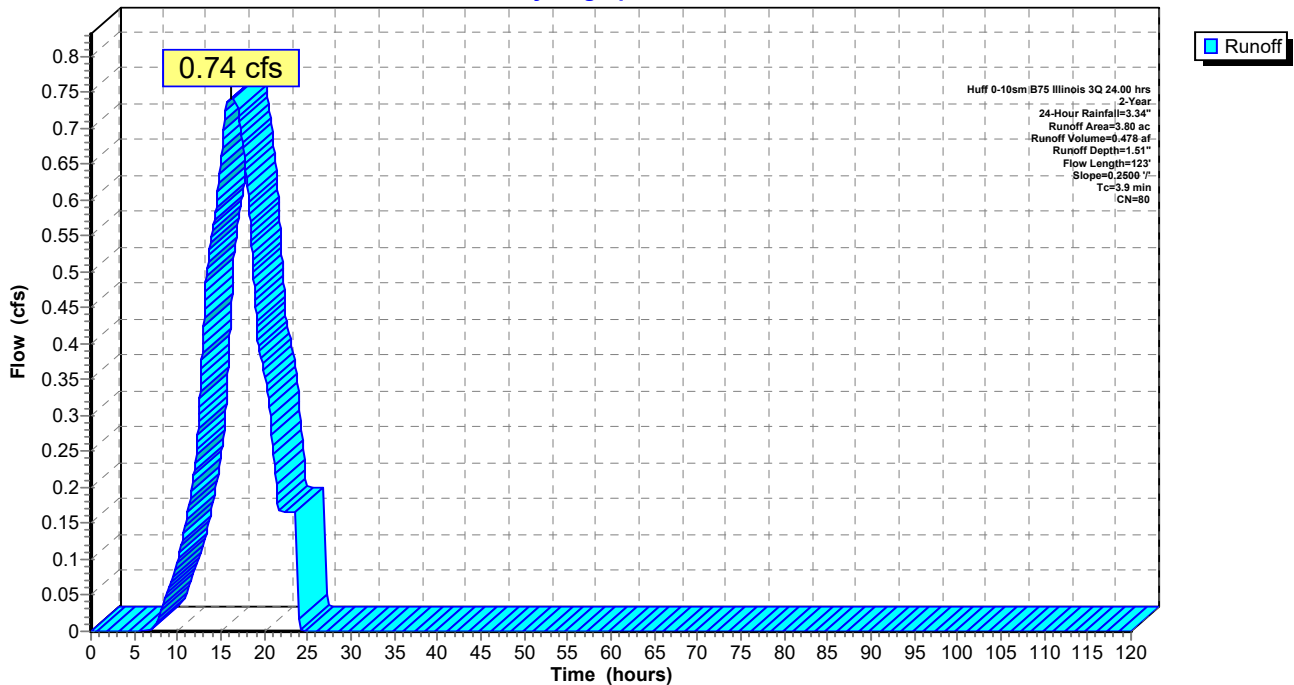
Area (ac)	CN	Description
3.80	80	>75% Grass cover, Good, HSG D
3.80		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	23	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	123	Total			

**Subcatchment N-A8: Subcat N-A8**

Hydrograph



### Summary for Subcatchment N-A9: Subcat N-A9

Runoff = 0.04 cfs @ 16.09 hrs, Volume= 0.023 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

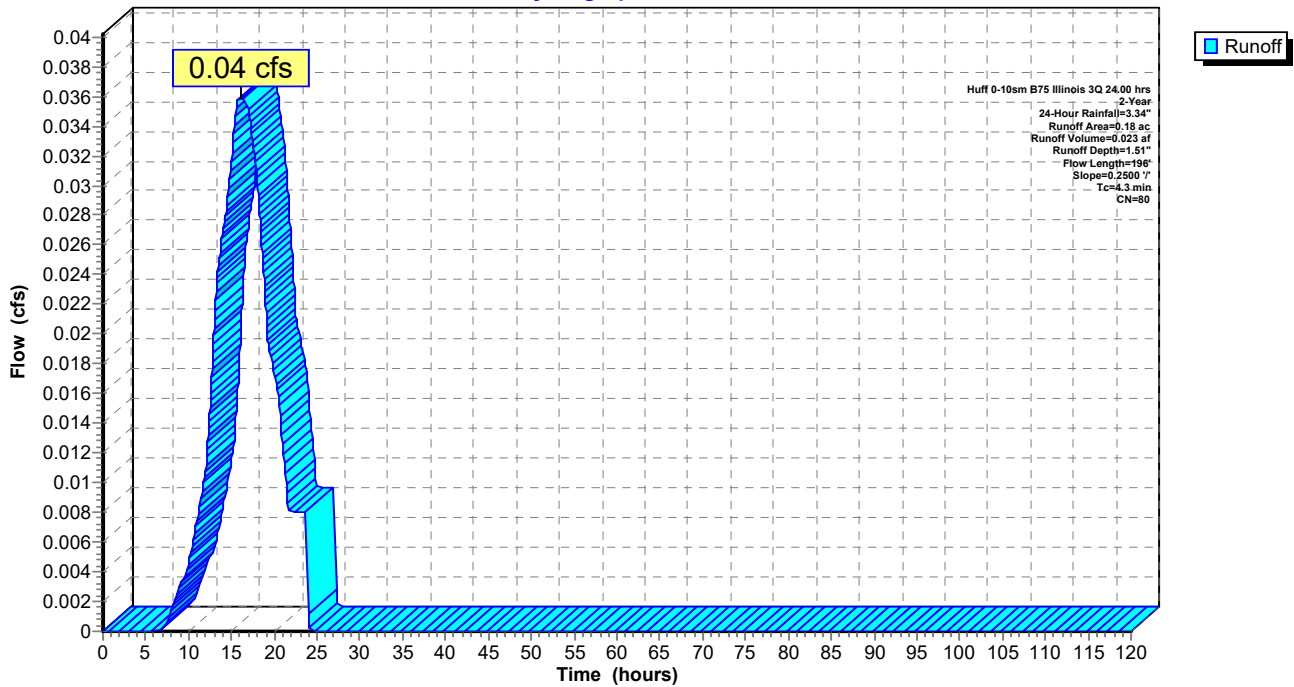
Area (ac)	CN	Description
0.18	80	>75% Grass cover, Good, HSG D
0.18		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.5	96	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.3	196	Total			

### Subcatchment N-A9: Subcat N-A9

Hydrograph



**Summary for Subcatchment N-B1: Subcat N-B1**

Runoff = 0.62 cfs @ 16.13 hrs, Volume= 0.397 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

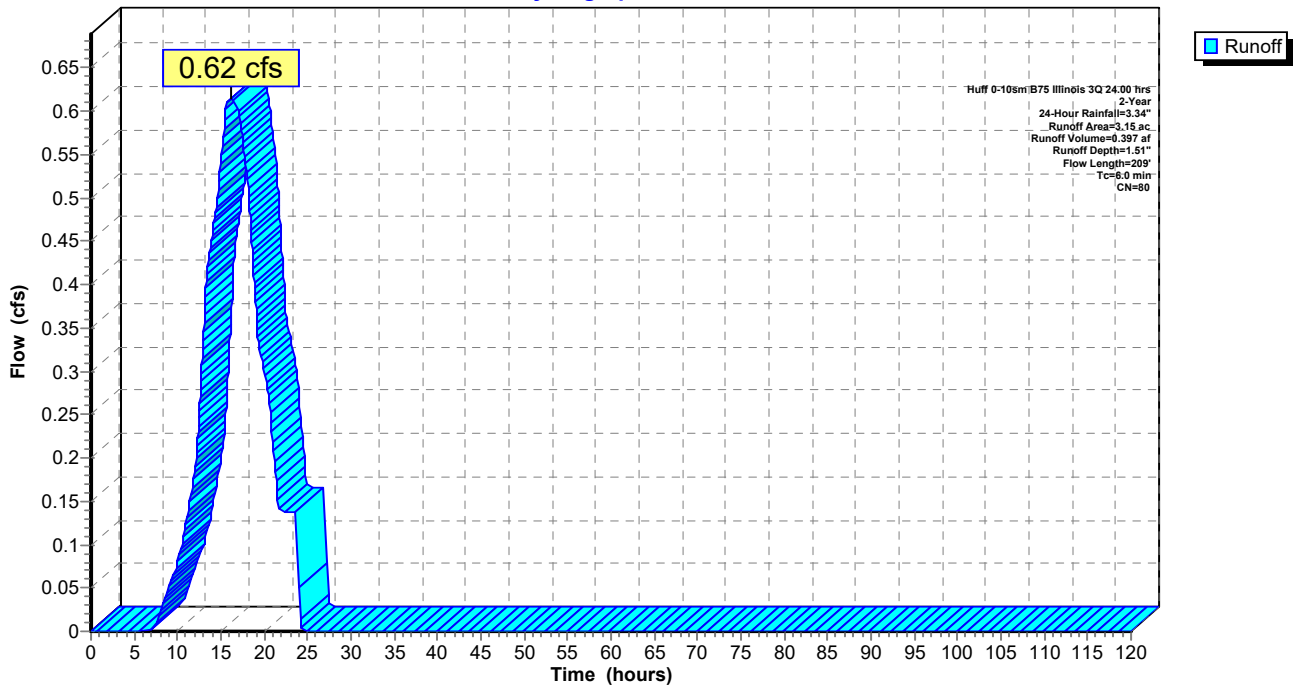
Area (ac)	CN	Description
3.15	80	>75% Grass cover, Good, HSG D
3.15		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.5	109	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.0	209	Total			

**Subcatchment N-B1: Subcat N-B1**

Hydrograph



**Summary for Subcatchment N-B10: Subcat N-B10**

Runoff = 0.36 cfs @ 15.72 hrs, Volume= 0.241 af, Depth= 1.88"

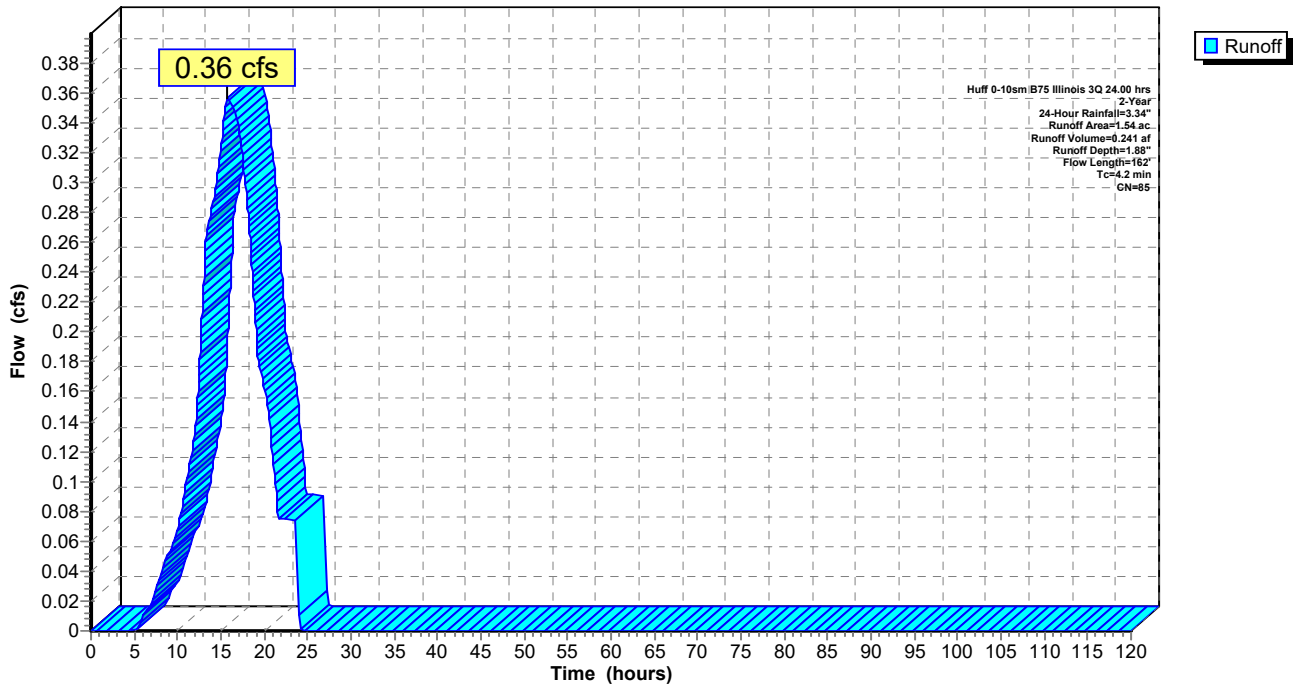
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

Area (ac)	CN	Description
0.91	80	>75% Grass cover, Good, HSG D
0.63	93	Paved roads w/open ditches, 50% imp, HSG D
1.54	85	Weighted Average
1.22		79.55% Pervious Area
0.31		20.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.4	62	0.1195	2.42		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.2	162	Total			

**Subcatchment N-B10: Subcat N-B10**

Hydrograph





**Summary for Subcatchment N-B11: Subcat N-B11**

Runoff = 0.25 cfs @ 16.09 hrs, Volume= 0.160 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

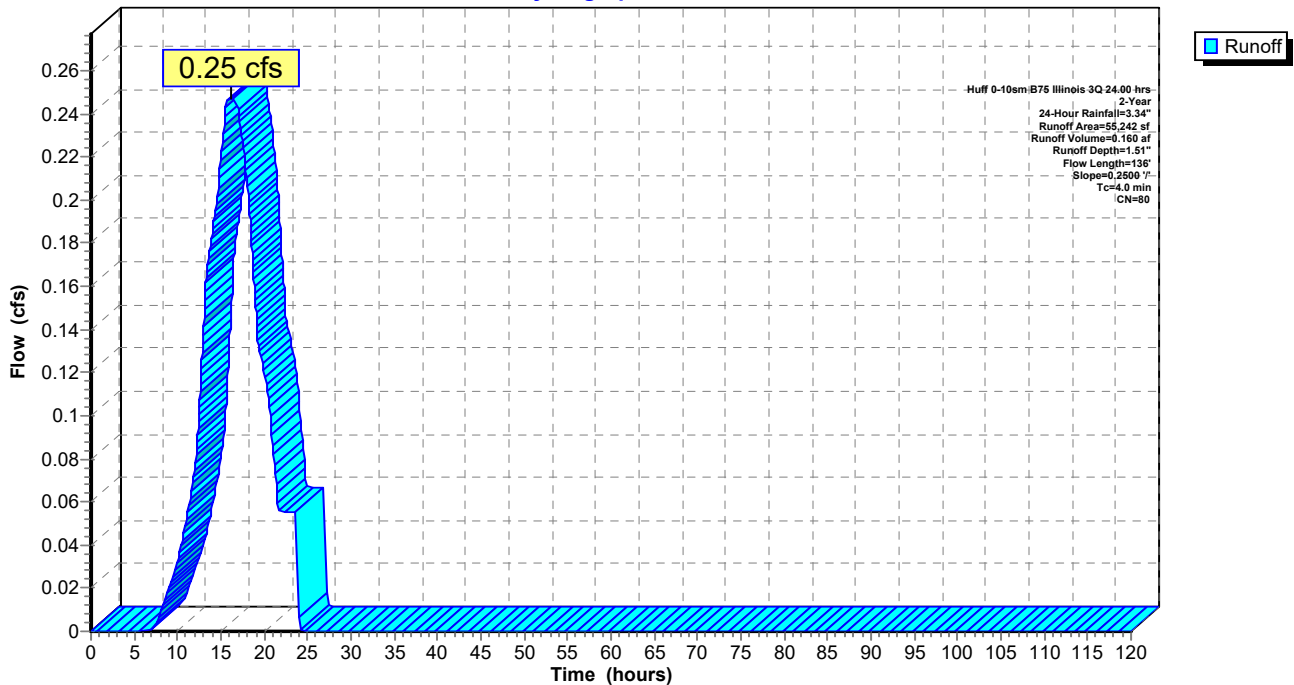
Area (sf)	CN	Description
55,242	80	>75% Grass cover, Good, HSG D
55,242		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	36	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	136	Total			

**Subcatchment N-B11: Subcat N-B11**

Hydrograph



**Summary for Subcatchment N-B12: Subcat N-B12**

Runoff = 0.36 cfs @ 15.81 hrs, Volume= 0.237 af, Depth= 1.65"

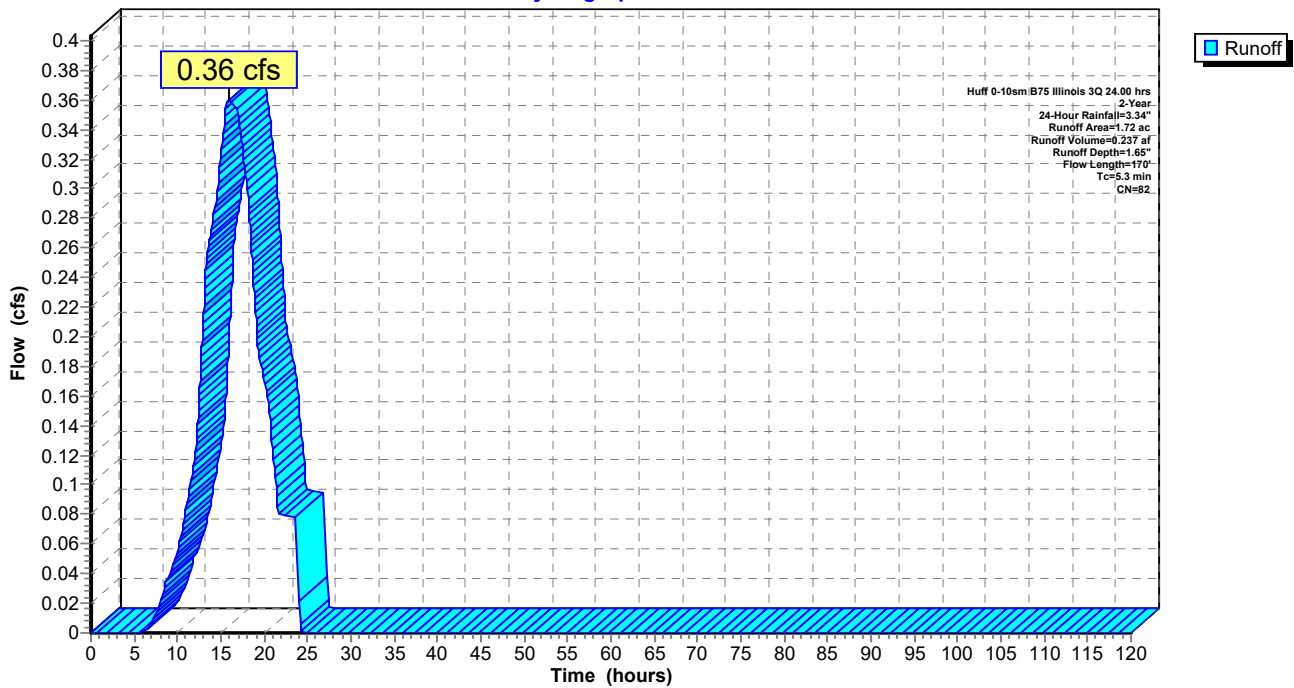
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

Area (ac)	CN	Description
1.45	80	>75% Grass cover, Good, HSG D
0.27	93	Paved roads w/open ditches, 50% imp, HSG D
1.72	82	Weighted Average
1.59		92.15% Pervious Area
0.14		7.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	100	0.1588	0.36		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.7	70	0.0608	1.73		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
5.3	170	Total			

**Subcatchment N-B12: Subcat N-B12**

Hydrograph



**Summary for Subcatchment N-B13: Subcat N-B13**

Runoff = 0.39 cfs @ 16.03 hrs, Volume= 0.253 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

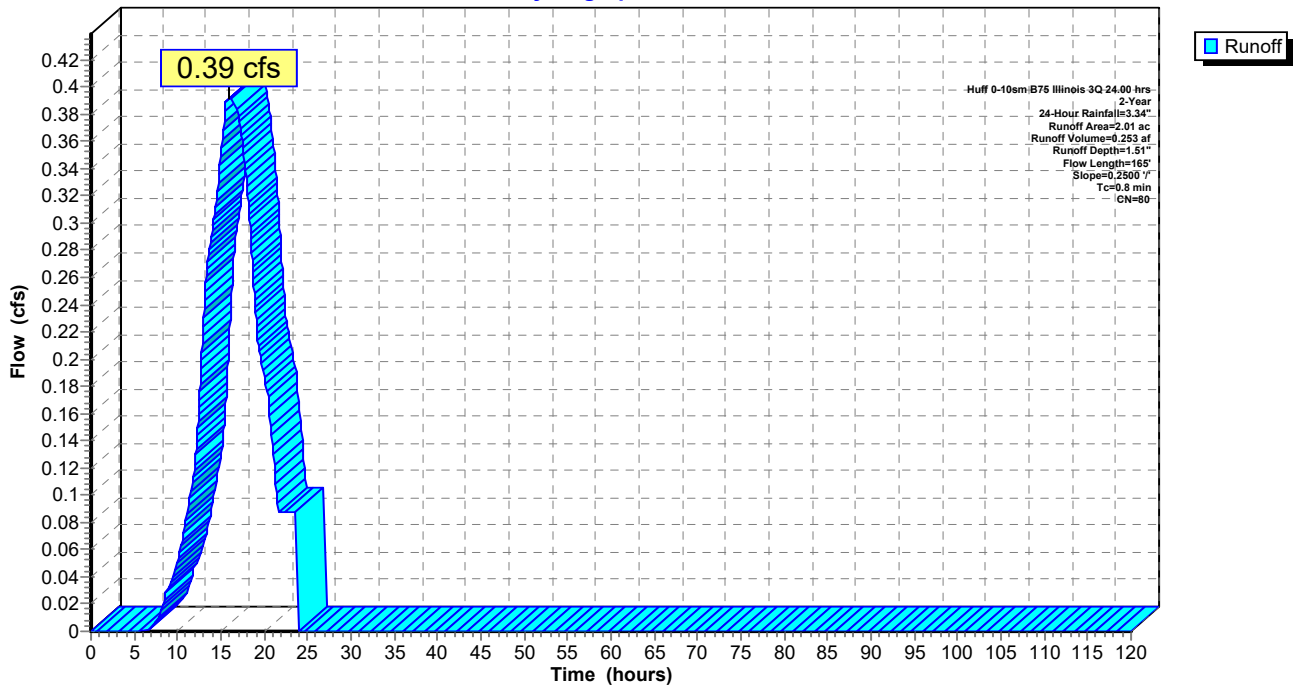
Area (ac)	CN	Description
2.01	80	>75% Grass cover, Good, HSG D
2.01		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.2500	3.53		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 2.80"
0.3	65	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.8	165	Total			

**Subcatchment N-B13: Subcat N-B13**

Hydrograph



**Summary for Subcatchment N-B14: Subcat N-B14**

Runoff = 0.17 cfs @ 15.63 hrs, Volume= 0.114 af, Depth= 2.04"

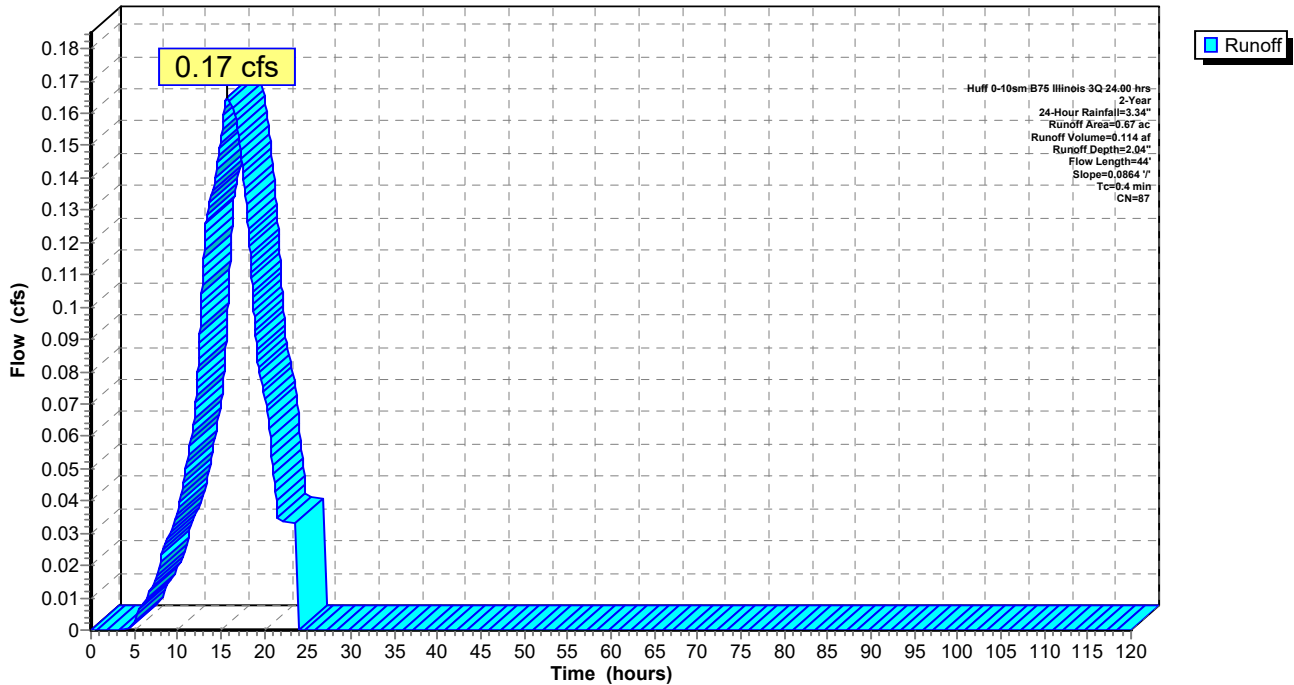
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

Area (ac)	CN	Description
0.29	80	>75% Grass cover, Good, HSG D
0.38	93	Paved roads w/open ditches, 50% imp, HSG D
0.67	87	Weighted Average
0.48		71.64% Pervious Area
0.19		28.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	44	0.0864	1.96		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment N-B14: Subcat N-B14**

Hydrograph



**Summary for Subcatchment N-B15: Subcat N-B15**

Runoff = 0.01 cfs @ 16.02 hrs, Volume= 0.005 af, Depth= 1.51"

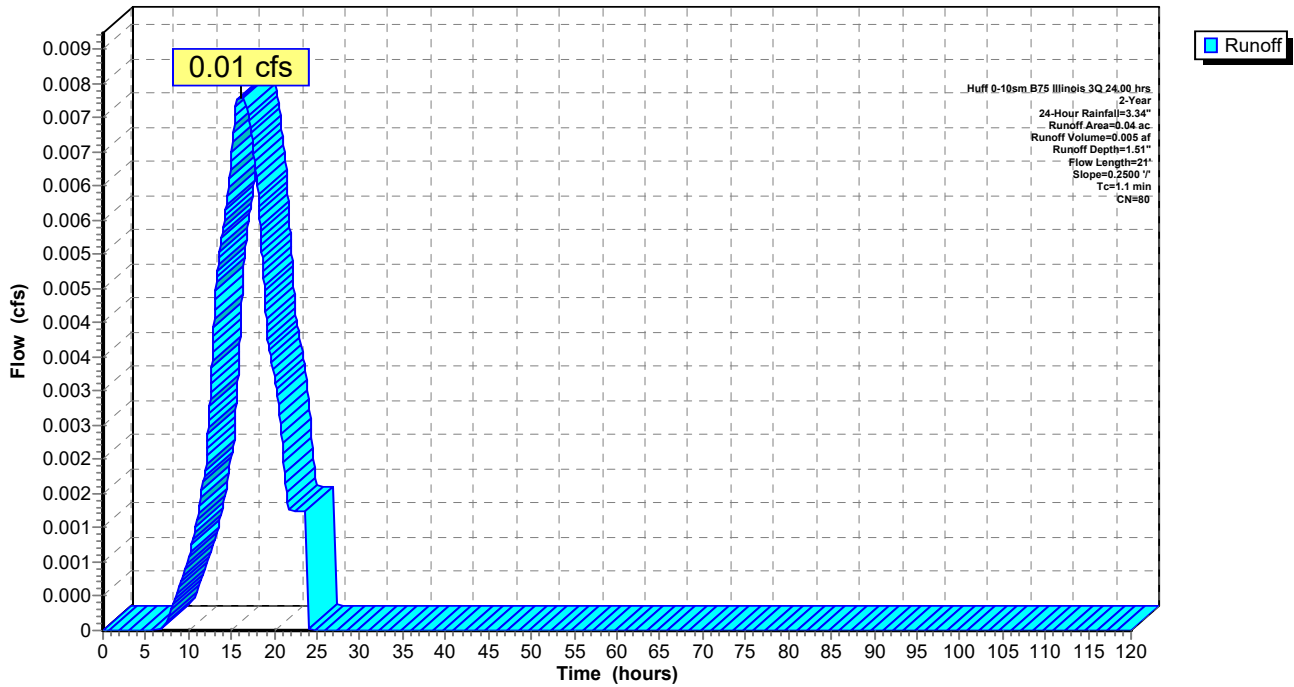
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

Area (ac)	CN	Description
0.04	80	>75% Grass cover, Good, HSG D
0.04		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	21	0.2500	0.32		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-B15: Subcat N-B15**

Hydrograph



**Summary for Subcatchment N-B16: Subcat N-B16**

Runoff = 0.02 cfs @ 15.65 hrs, Volume= 0.016 af, Depth= 1.88"

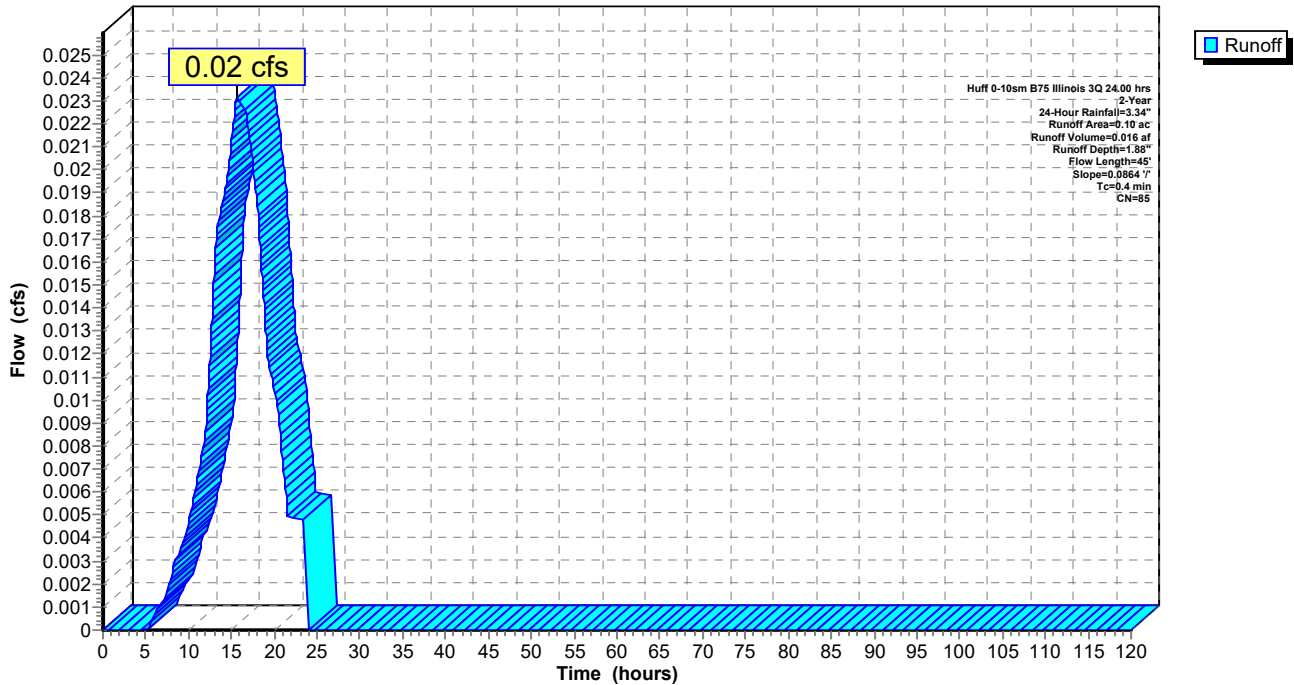
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

Area (ac)	CN	Description
0.06	80	>75% Grass cover, Good, HSG D
0.04	93	Paved roads w/open ditches, 50% imp, HSG D
0.10	85	Weighted Average
0.08		80.00% Pervious Area
0.02		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	45	0.0864	1.97		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment N-B16: Subcat N-B16**

Hydrograph



**Summary for Subcatchment N-B2: Subcat N-B2**

Runoff = 0.88 cfs @ 16.07 hrs, Volume= 0.565 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

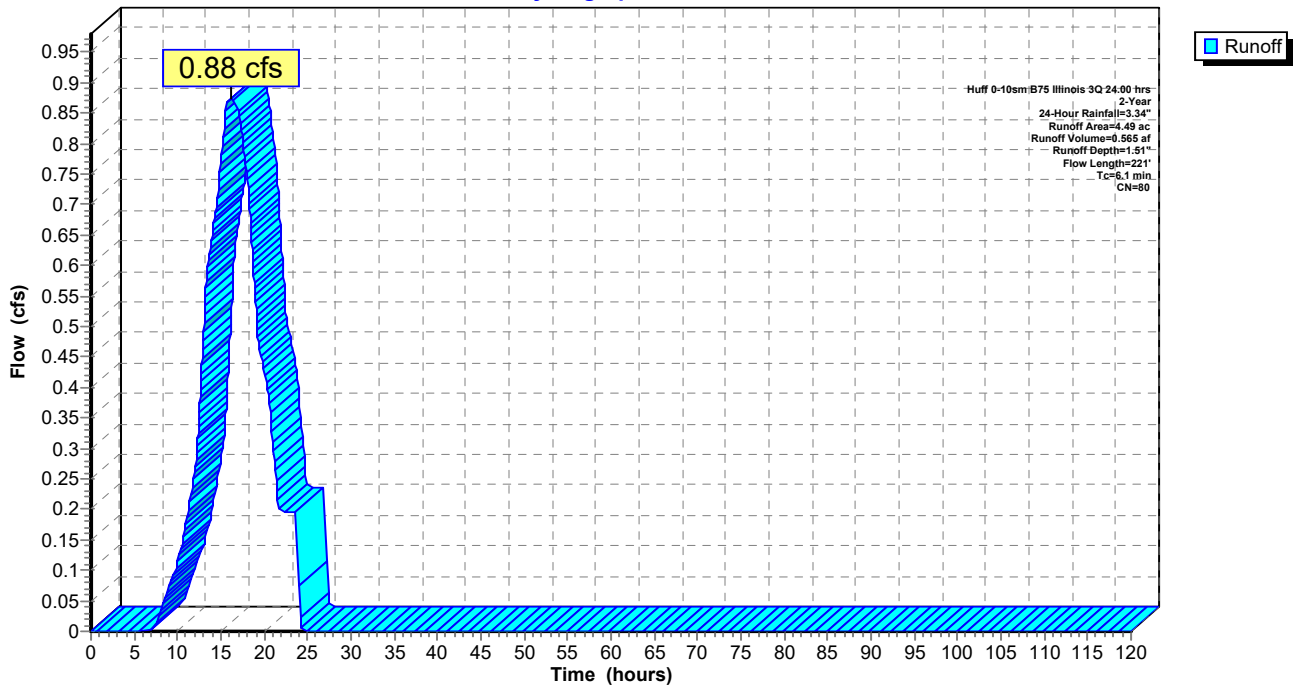
Area (ac)	CN	Description
4.49	80	>75% Grass cover, Good, HSG D
4.49		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	121	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.1	221	Total			

**Subcatchment N-B2: Subcat N-B2**

Hydrograph



**Summary for Subcatchment N-B3: Subcat N-B3**

Runoff = 0.67 cfs @ 16.09 hrs, Volume= 0.431 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

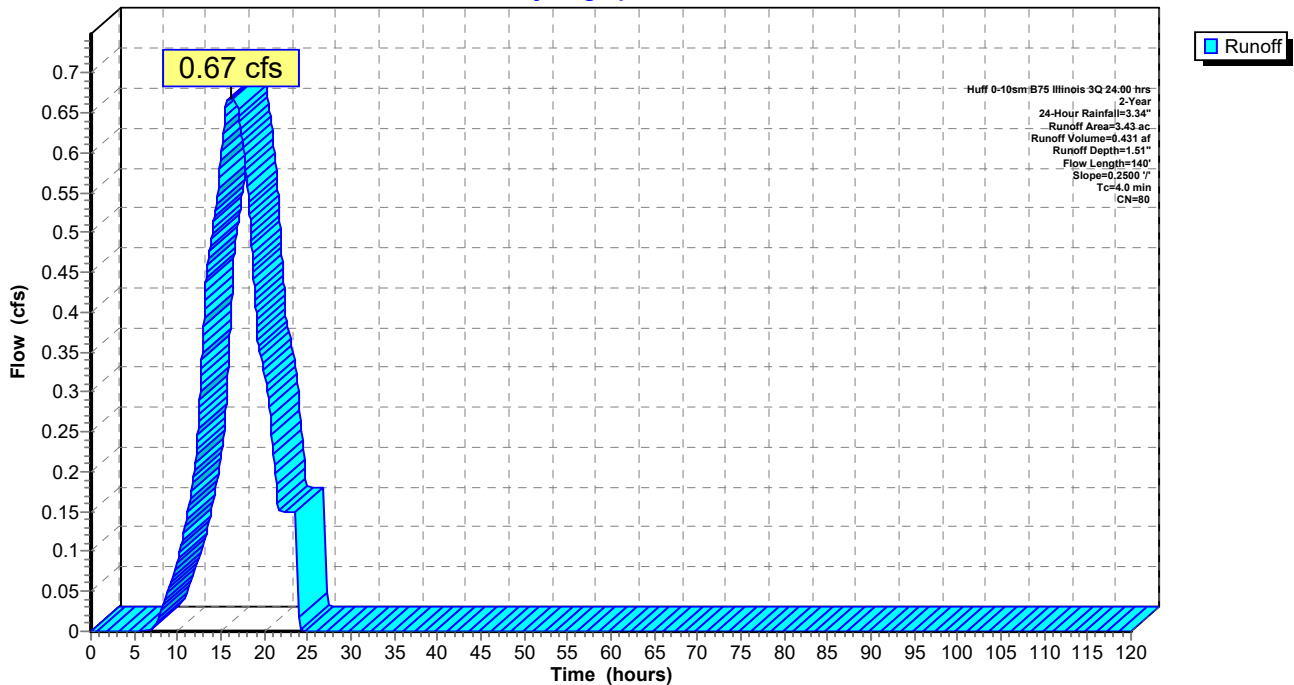
Area (ac)	CN	Description
3.43	80	>75% Grass cover, Good, HSG D
3.43		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	40	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	140	Total			

**Subcatchment N-B3: Subcat N-B3**

Hydrograph





**Summary for Subcatchment N-B4: Subcat N-B4**

Runoff = 0.74 cfs @ 16.09 hrs, Volume= 0.479 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

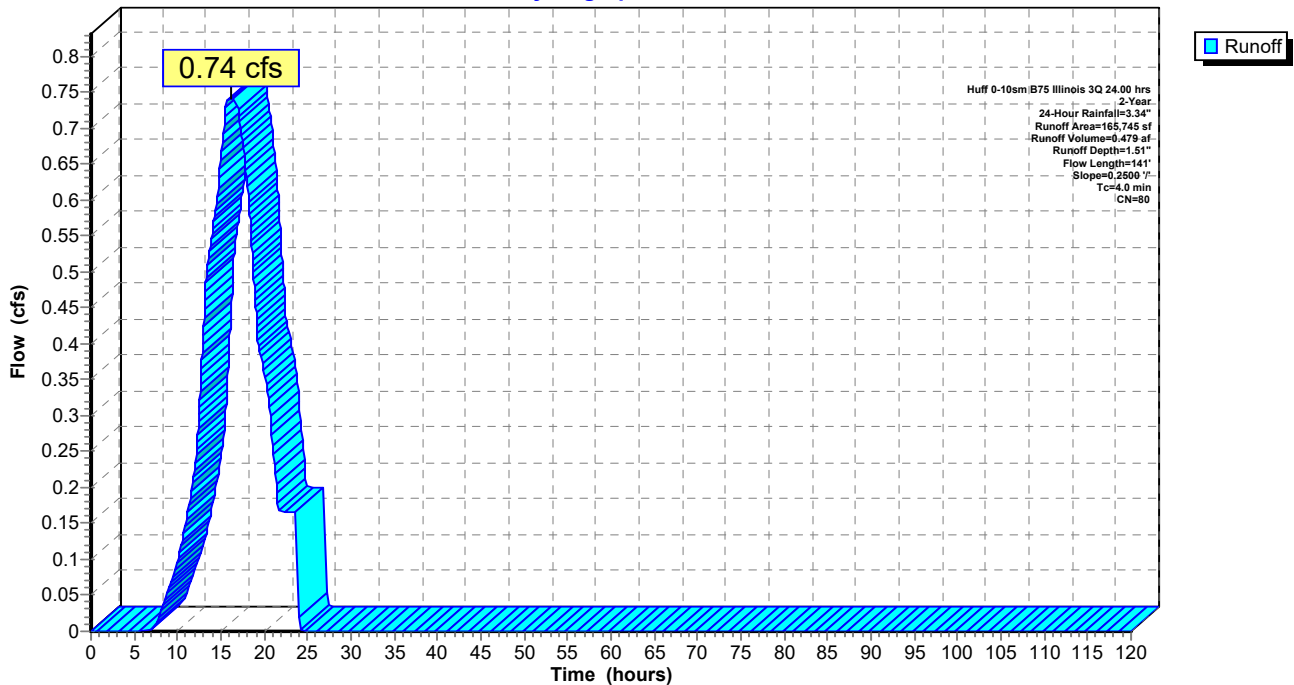
Area (sf)	CN	Description
165,745	80	>75% Grass cover, Good, HSG D
165,745		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	41	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	141	Total			

**Subcatchment N-B4: Subcat N-B4**

Hydrograph



**Summary for Subcatchment N-B5: Subcat N-B5**

Runoff = 0.88 cfs @ 16.09 hrs, Volume= 0.566 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

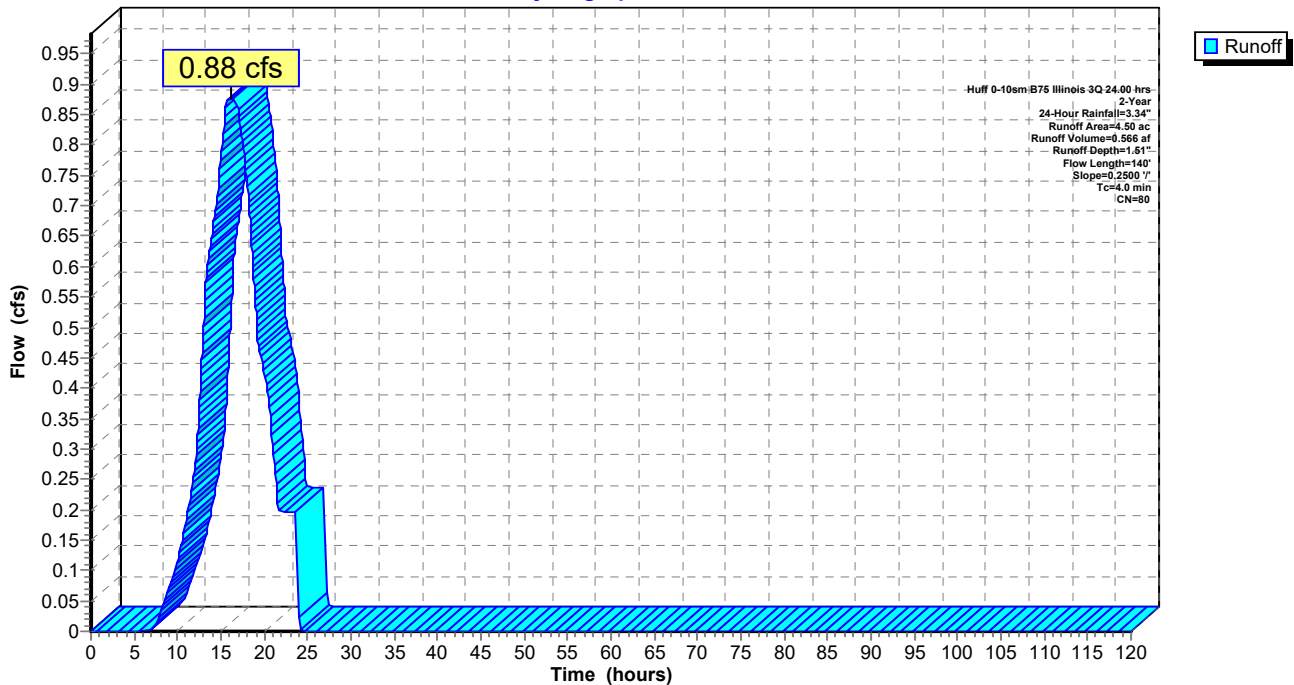
Area (ac)	CN	Description
4.50	80	>75% Grass cover, Good, HSG D
4.50		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	40	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	140	Total			

**Subcatchment N-B5: Subcat N-B5**

Hydrograph



**Summary for Subcatchment N-B6: Subcat N-B6**

Runoff = 0.84 cfs @ 16.09 hrs, Volume= 0.540 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

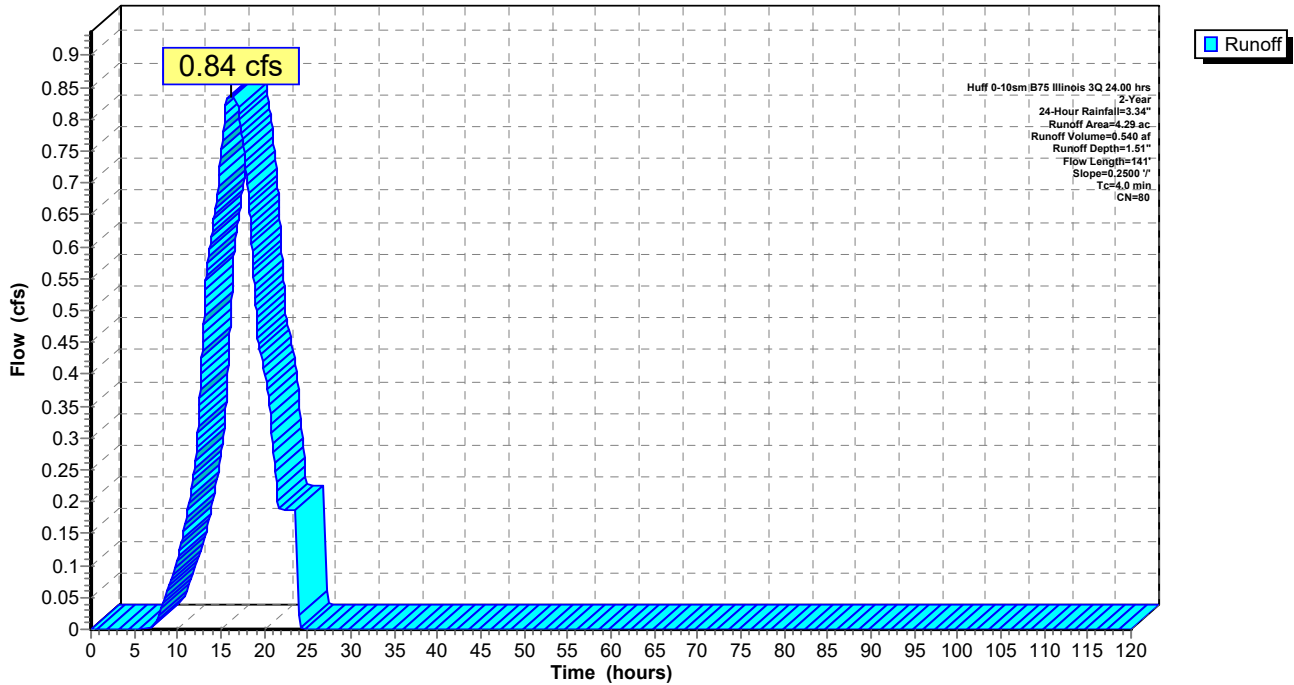
Area (ac)	CN	Description
4.29	80	>75% Grass cover, Good, HSG D
4.29		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	41	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	141	Total			

**Subcatchment N-B6: Subcat N-B6**

Hydrograph



**Summary for Subcatchment N-B7: Subcat N-B7**

Runoff = 0.77 cfs @ 16.09 hrs, Volume= 0.499 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

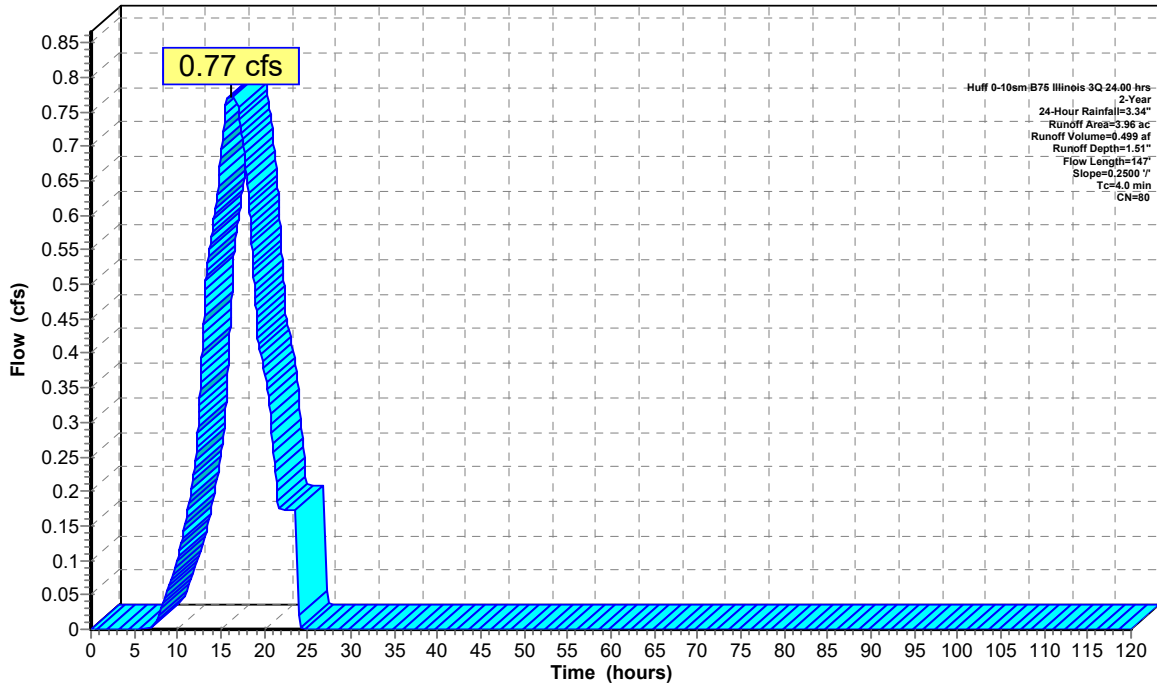
Area (ac)	CN	Description
3.96	80	>75% Grass cover, Good, HSG D
3.96		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	47	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	147	Total			

**Subcatchment N-B7: Subcat N-B7**

Hydrograph



**Summary for Subcatchment N-B8: Subcat N-B8**

Runoff = 0.69 cfs @ 16.09 hrs, Volume= 0.444 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

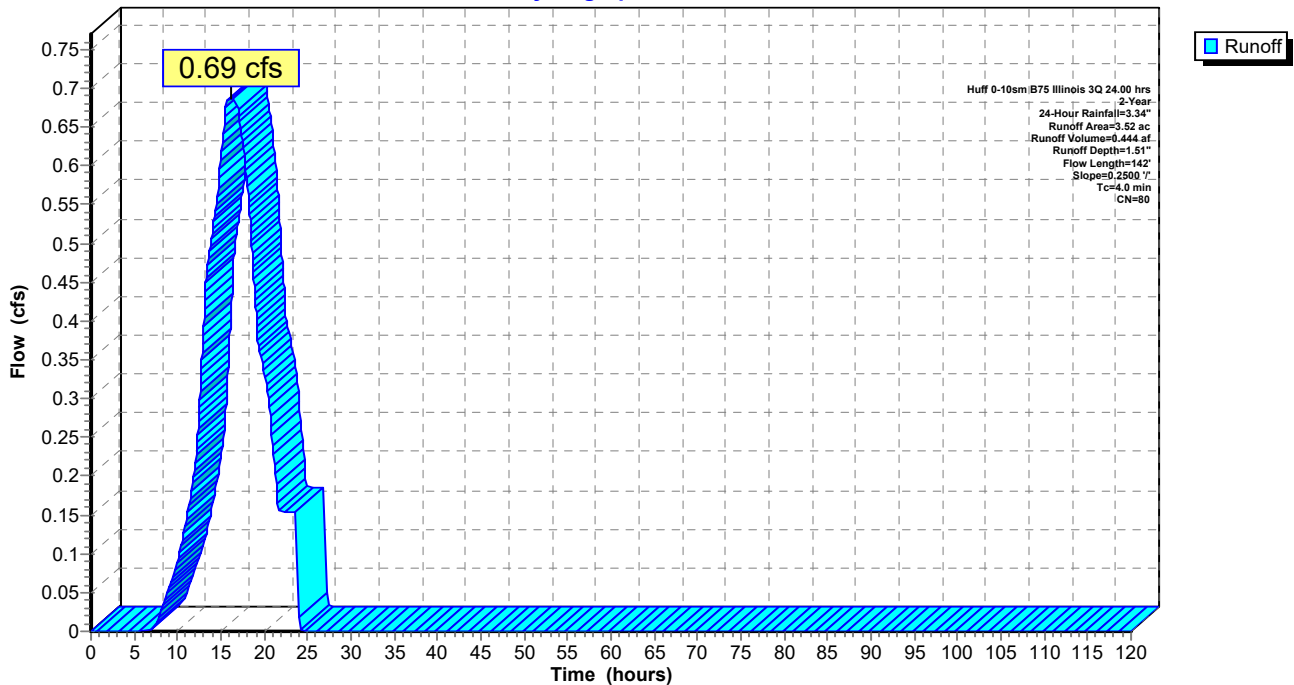
Area (ac)	CN	Description
3.52	80	>75% Grass cover, Good, HSG D
3.52		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	42	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	142	Total			

**Subcatchment N-B8: Subcat N-B8**

Hydrograph



**Summary for Subcatchment N-B9: Subcat N-B9**

Runoff = 0.23 cfs @ 16.06 hrs, Volume= 0.146 af, Depth= 1.51"

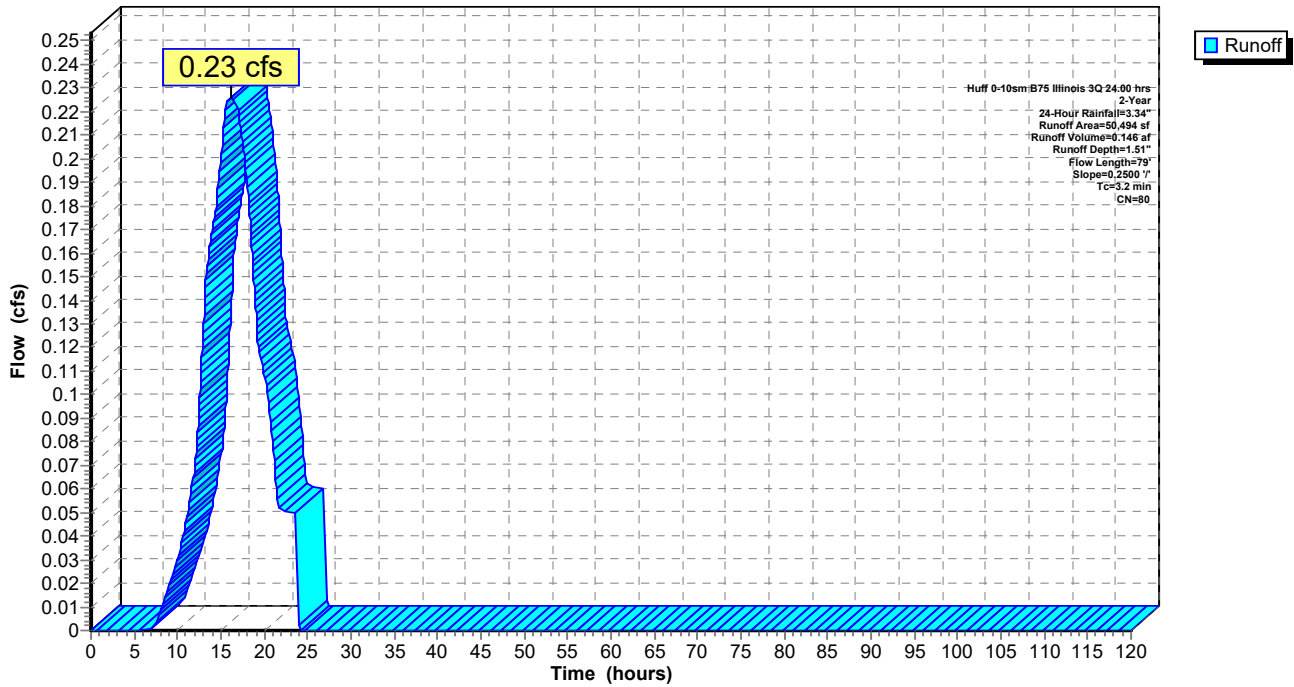
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

Area (sf)	CN	Description
50,494	80	>75% Grass cover, Good, HSG D
50,494		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	79	0.2500	0.42		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-B9: Subcat N-B9**

Hydrograph



**Summary for Subcatchment N-C1: Subcat N-C1**

Runoff = 1.36 cfs @ 16.10 hrs, Volume= 0.879 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

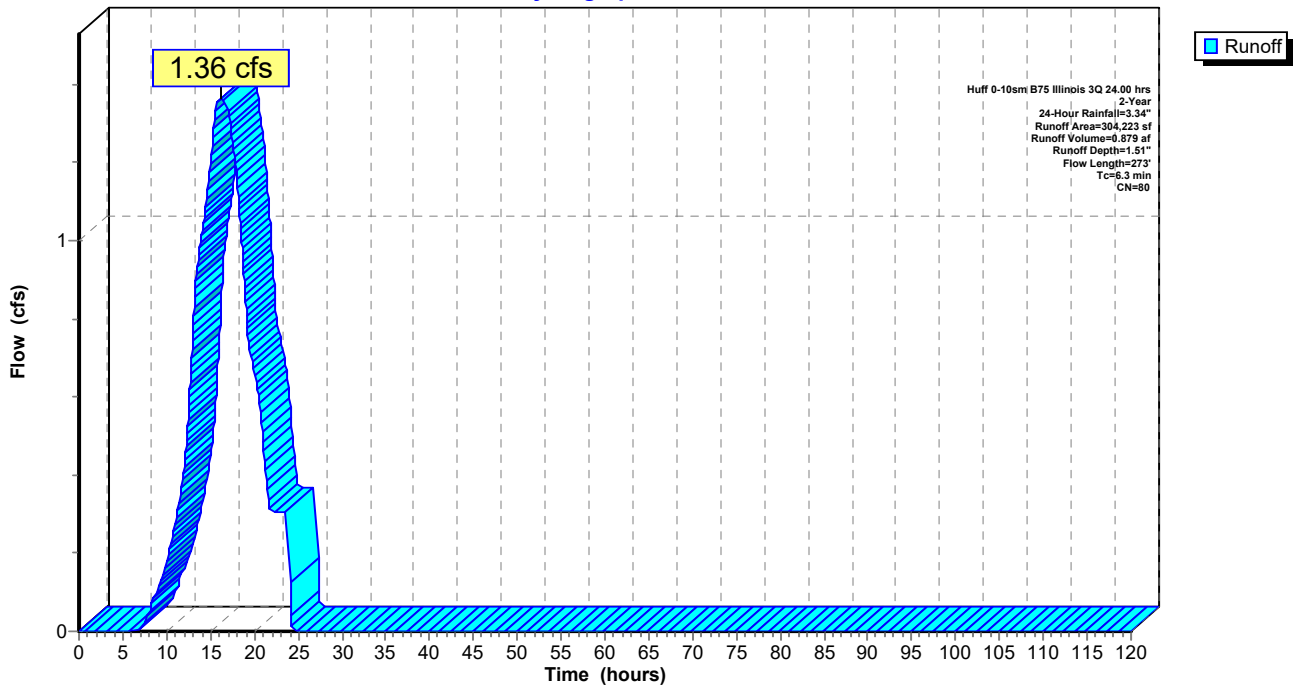
Area (sf)	CN	Description
304,223	80	>75% Grass cover, Good, HSG D
304,223		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.8	173	0.2418	3.44		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.3	273	Total			

**Subcatchment N-C1: Subcat N-C1**

Hydrograph



**Summary for Subcatchment N-C2: Subcat N-C2**

Runoff = 0.82 cfs @ 16.09 hrs, Volume= 0.529 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

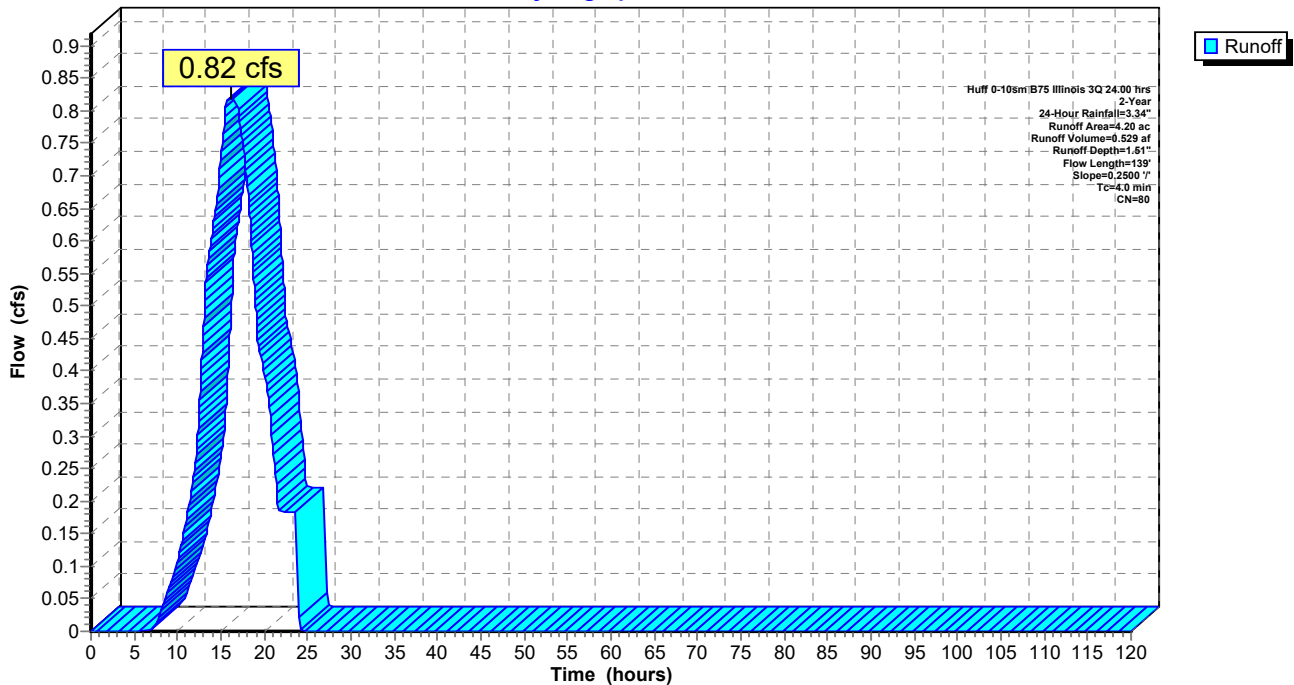
Area (ac)	CN	Description
4.20	80	>75% Grass cover, Good, HSG D
4.20		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	39	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	139	Total			

**Subcatchment N-C2: Subcat N-C2**

Hydrograph





**Summary for Subcatchment N-C3: Subcat N-C3**

Runoff = 0.82 cfs @ 16.09 hrs, Volume= 0.531 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

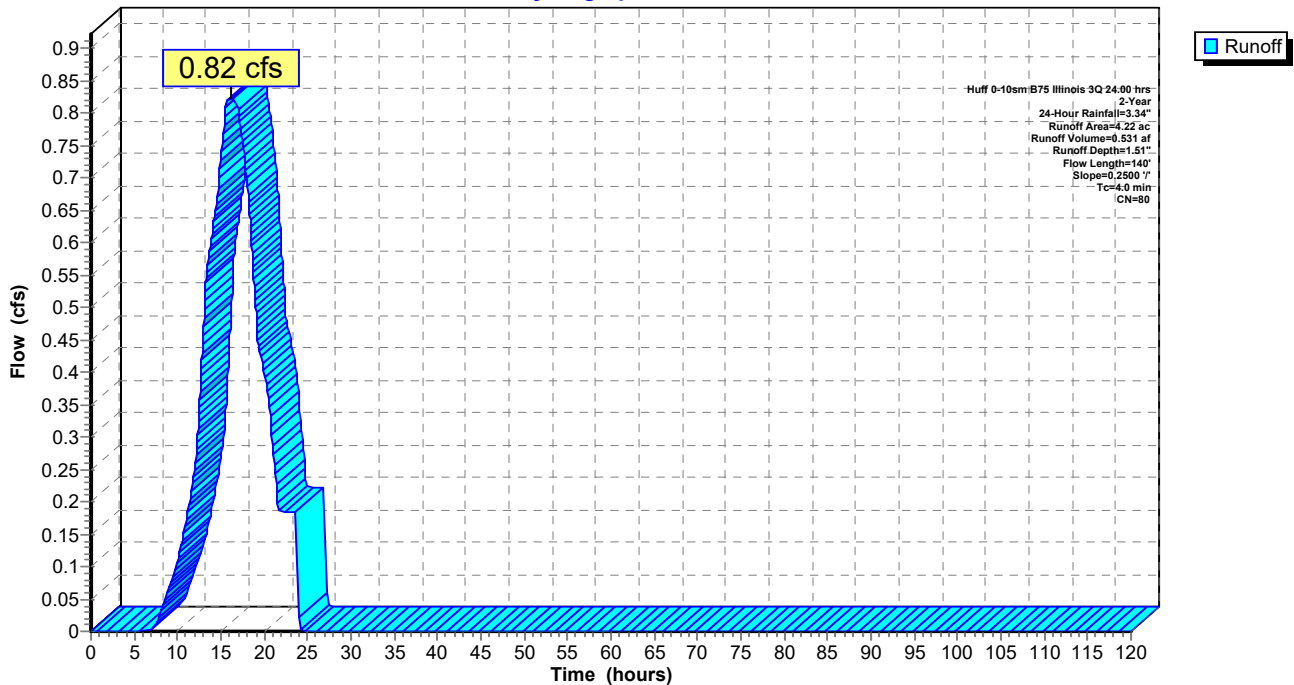
Area (ac)	CN	Description
4.22	80	>75% Grass cover, Good, HSG D
4.22		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	40	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	140	Total			

**Subcatchment N-C3: Subcat N-C3**

Hydrograph



**Summary for Subcatchment N-C4: Subcat N-C4**

Runoff = 0.69 cfs @ 16.09 hrs, Volume= 0.443 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

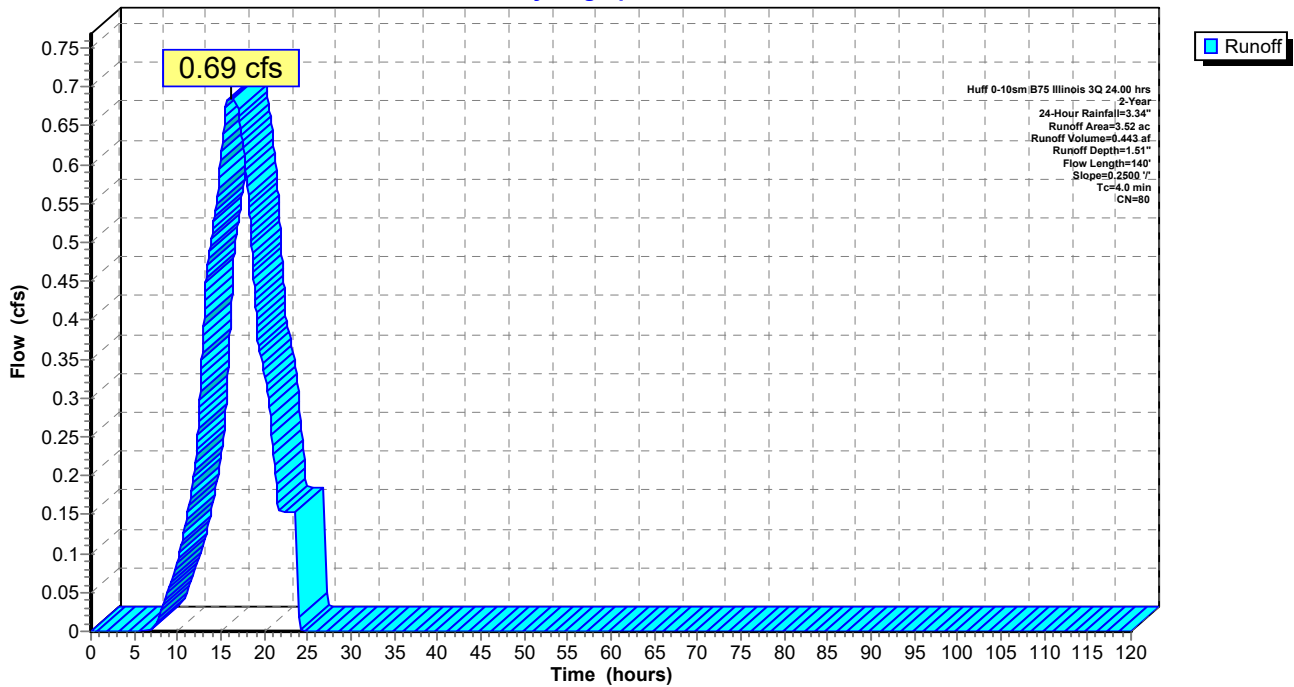
Area (ac)	CN	Description
3.52	80	>75% Grass cover, Good, HSG D
3.52		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	40	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	140	Total			

**Subcatchment N-C4: Subcat N-C4**

Hydrograph



**Summary for Subcatchment N-C5: Subcat N-C5**

Runoff = 0.15 cfs @ 16.09 hrs, Volume= 0.094 af, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

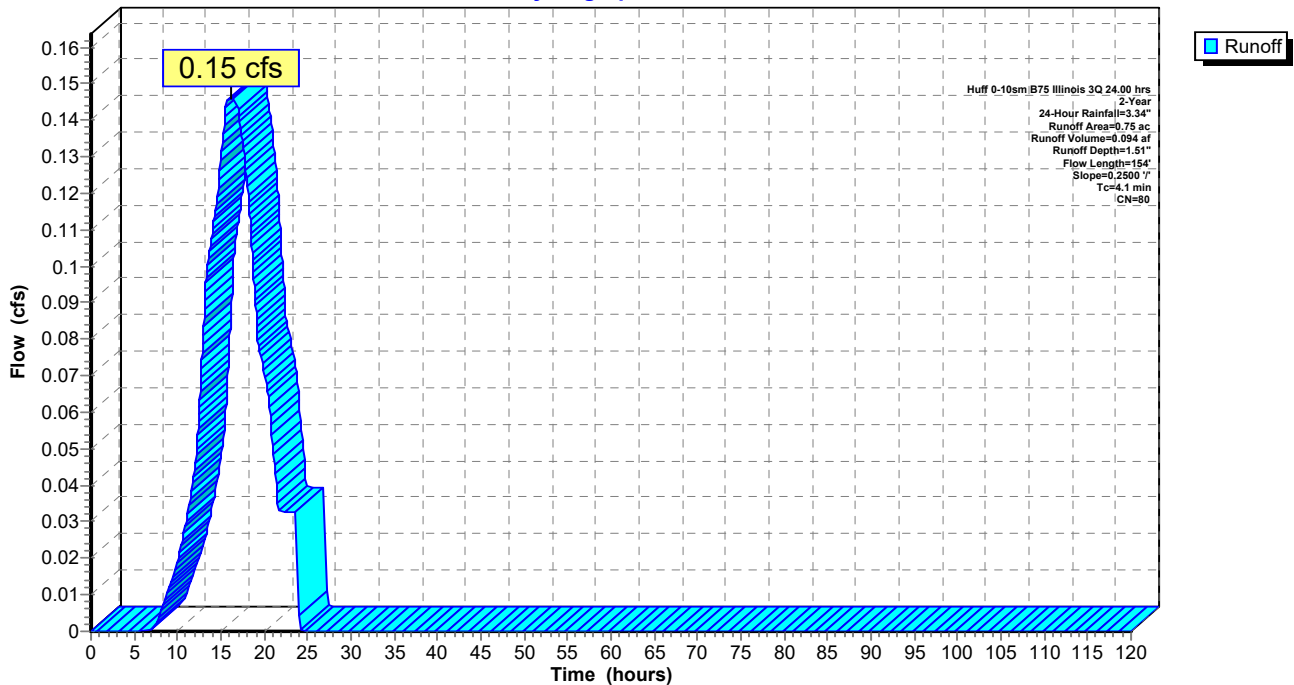
Area (ac)	CN	Description
0.75	80	>75% Grass cover, Good, HSG D
0.75		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.3	54	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	154	Total			

**Subcatchment N-C5: Subcat N-C5**

Hydrograph



**Summary for Subcatchment N-C6: Subcat N-C6**

Runoff = 0.16 cfs @ 16.29 hrs, Volume= 0.106 af, Depth= 1.72"

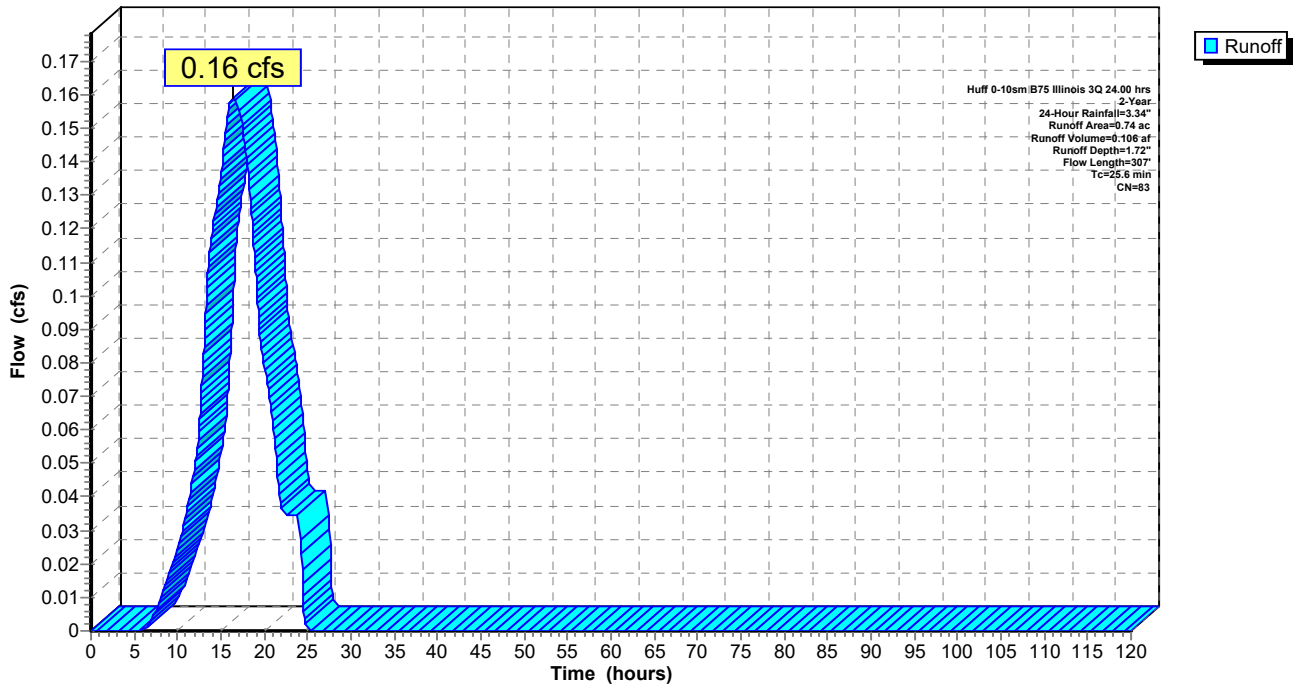
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

Area (ac)	CN	Description
0.59	80	>75% Grass cover, Good, HSG D
0.14	93	Paved roads w/open ditches, 50% imp, HSG D
0.74	83	Weighted Average
0.67		90.37% Pervious Area
0.07		9.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.0	100	0.0200	0.07		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.80"
2.6	207	0.0352	1.31		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
25.6	307	Total			

**Subcatchment N-C6: Subcat N-C6**

Hydrograph



**Summary for Subcatchment N-C7: Subcat N-C7**

Runoff = 0.23 cfs @ 16.07 hrs, Volume= 0.147 af, Depth= 1.51"

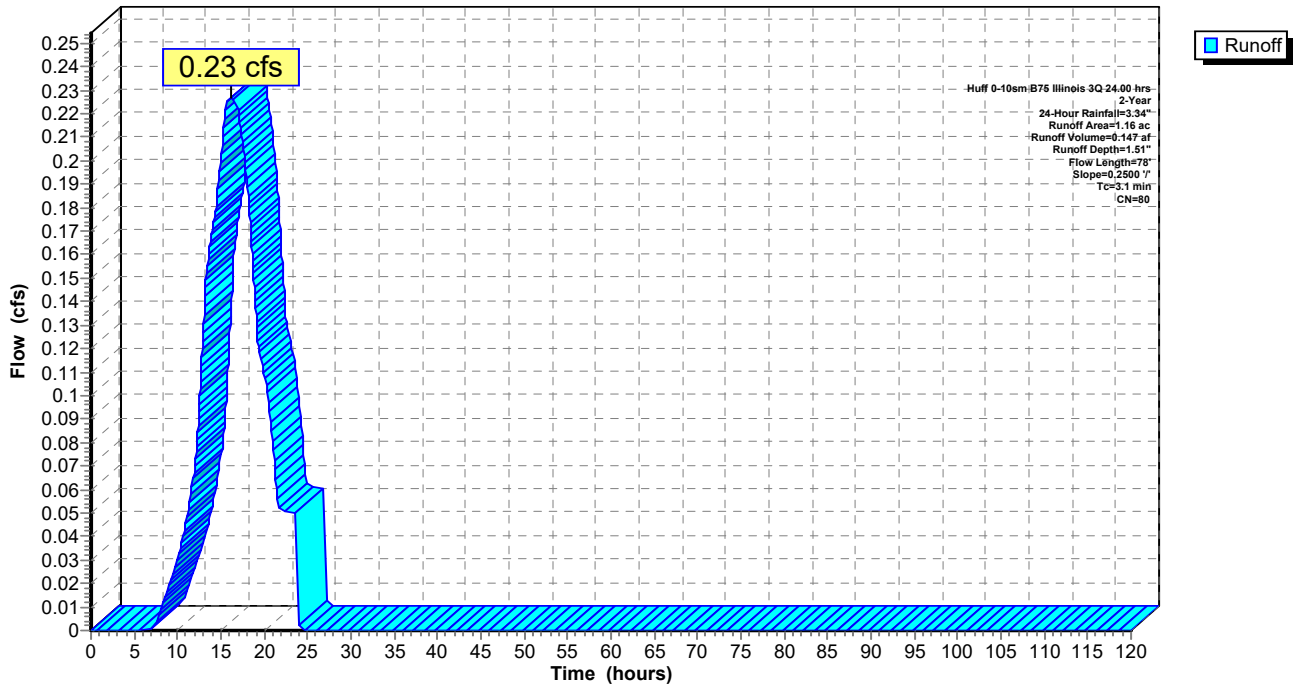
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

Area (ac)	CN	Description
1.16	80	>75% Grass cover, Good, HSG D
1.16		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	78	0.2500	0.42		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-C7: Subcat N-C7**

Hydrograph



**Summary for Subcatchment N-C8: Subcat N-C8**

Runoff = 0.36 cfs @ 16.16 hrs, Volume= 0.246 af, Depth= 1.88"

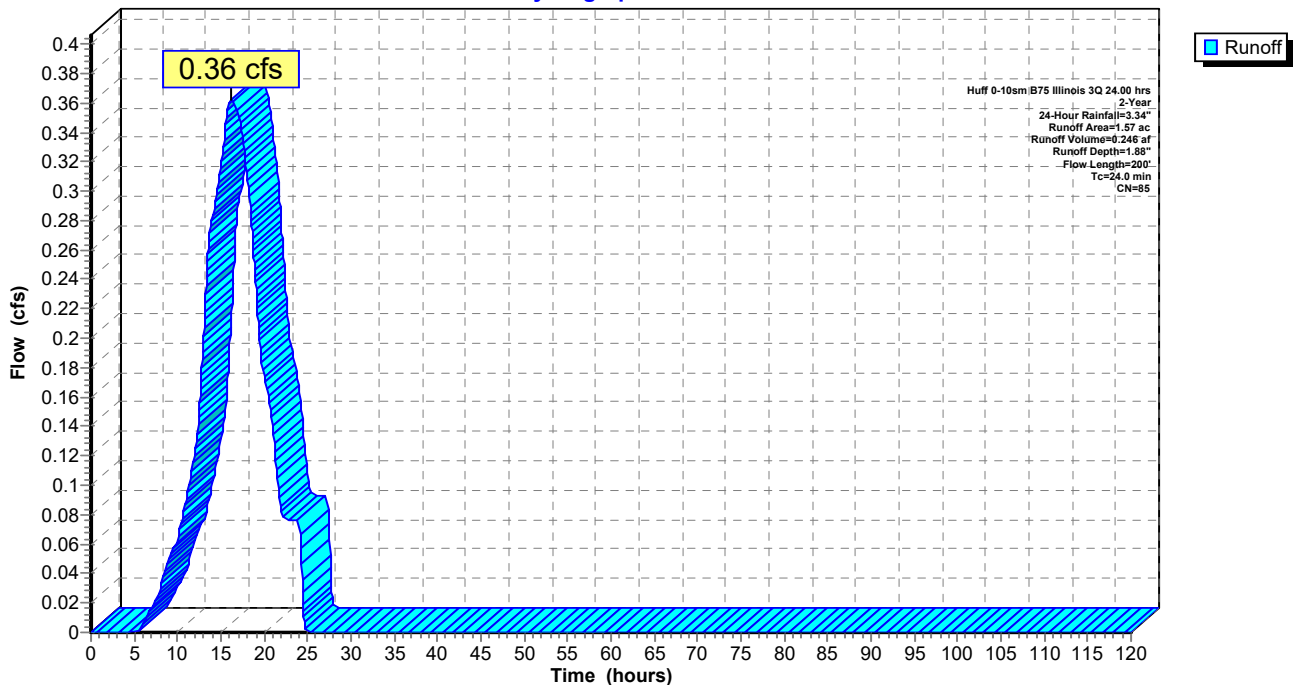
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

Area (ac)	CN	Description
0.65	80	>75% Grass cover, Good, HSG D
0.63	93	Paved roads w/open ditches, 50% imp, HSG D
0.30	79	Woods/grass comb., Good, HSG D
1.57	85	Weighted Average
1.26		80.08% Pervious Area
0.31		19.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.0	100	0.0200	0.07		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.80"
1.0	100	0.0611	1.73		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
24.0	200	Total			

**Subcatchment N-C8: Subcat N-C8**

Hydrograph



**Summary for Subcatchment N-D1: Subcat N-D1**

Runoff = 0.02 cfs @ 16.07 hrs, Volume= 0.014 af, Depth= 1.51"

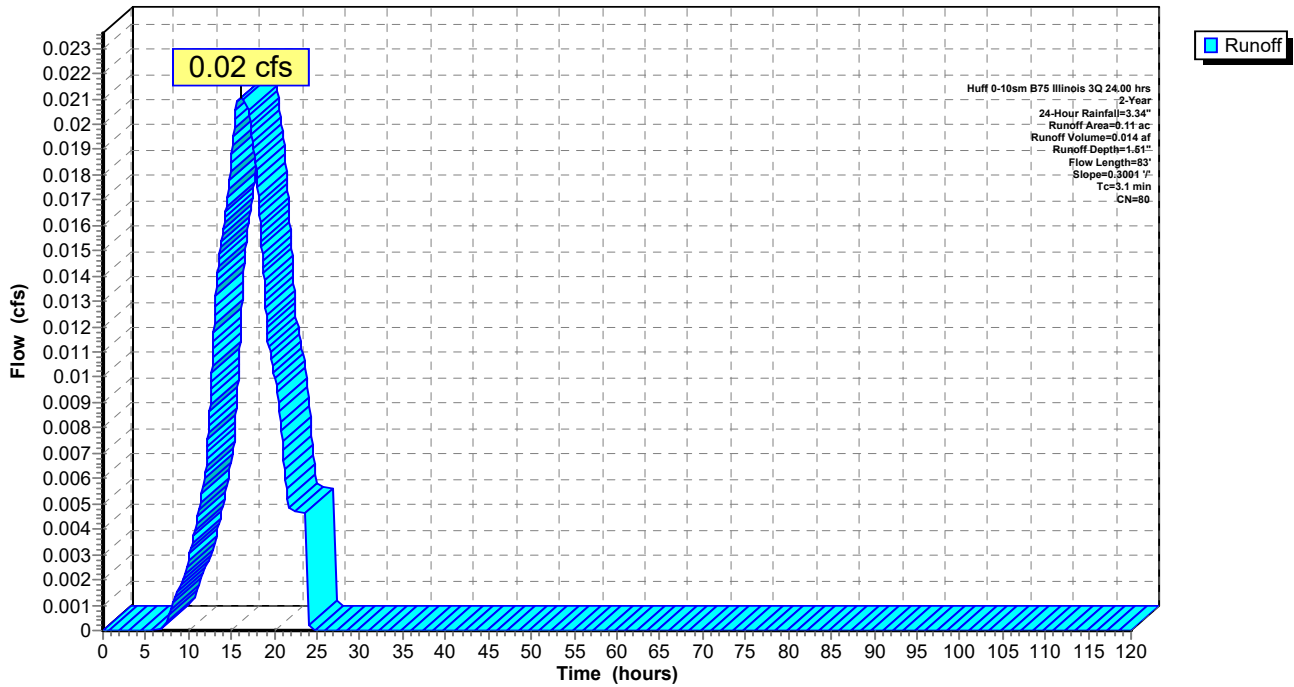
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

Area (ac)	CN	Description
0.11	80	>75% Grass cover, Good, HSG D
0.11		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	83	0.3001	0.45		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-D1: Subcat N-D1**

Hydrograph



**Summary for Subcatchment N-D2: Subcat N-D2**

Runoff = 0.92 cfs @ 16.06 hrs, Volume= 0.592 af, Depth= 1.51"

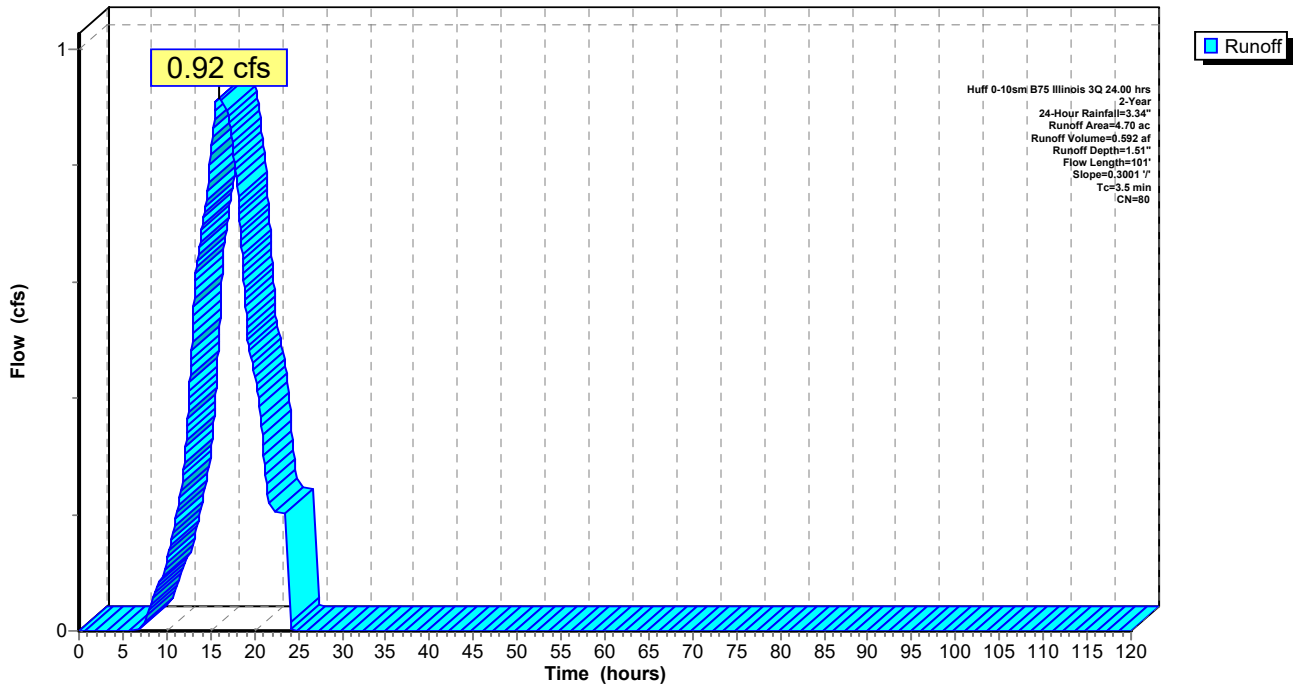
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

Area (ac)	CN	Description
4.54	80	>75% Grass cover, Good, HSG D
0.16	93	Paved roads w/open ditches, 50% imp, HSG D
4.70	80	Weighted Average
4.62		98.26% Pervious Area
0.08		1.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	100	0.3001	0.47		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.0	1	0.3001	3.83		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.5	101	Total			

**Subcatchment N-D2: Subcat N-D2**

Hydrograph





**Summary for Subcatchment N-E1: Subcat N-E1**

Runoff = 1.75 cfs @ 16.04 hrs, Volume= 1.127 af, Depth= 1.51"

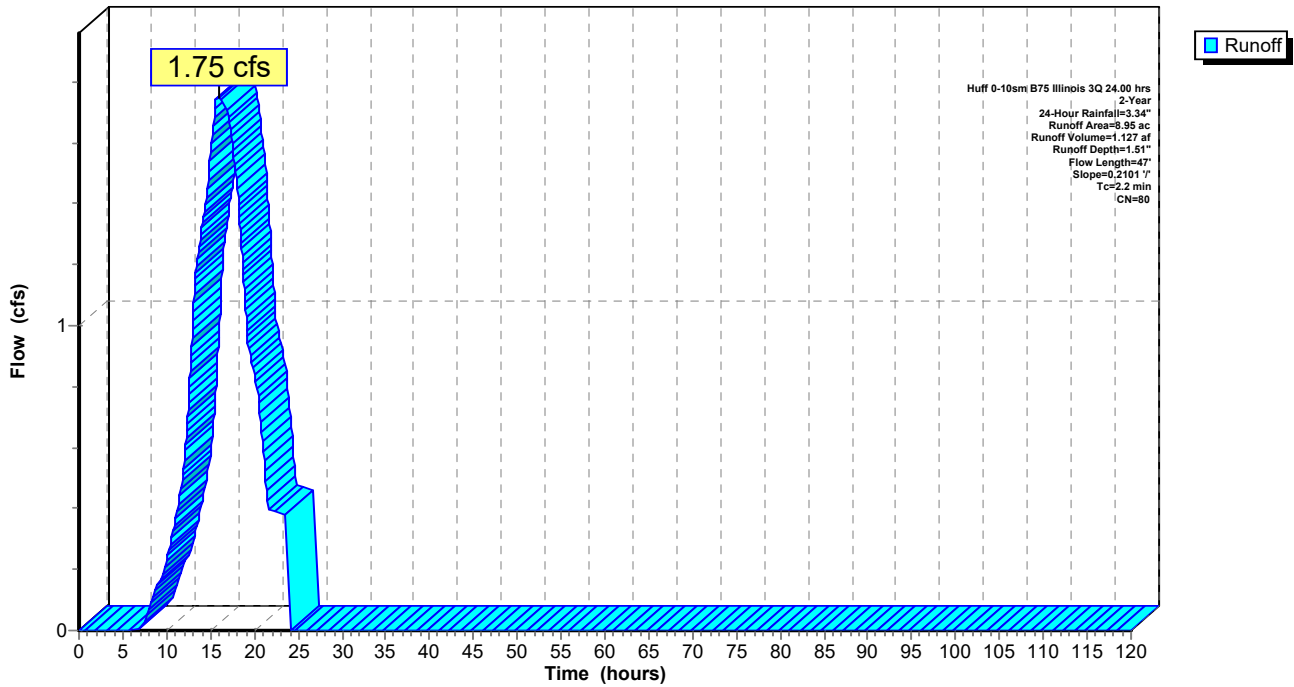
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 2-Year, 24-Hour Rainfall=3.34"

Area (ac)	CN	Description
8.95	80	>75% Grass cover, Good, HSG D
8.95		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	47	0.2101	0.35		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-E1: Subcat N-E1**

Hydrograph



**Summary for Reach Cu-1: Culvert 1**

Inflow Area = 90.82 ac, 2.38% Impervious, Inflow Depth = 1.55" for 2-Year, 24-Hour event  
 Inflow = 17.92 cfs @ 16.97 hrs, Volume= 11.746 af  
 Outflow = 17.92 cfs @ 16.98 hrs, Volume= 11.746 af, Atten= 0%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.70 fps, Min. Travel Time= 0.5 min  
 Avg. Velocity = 1.60 fps, Avg. Travel Time= 1.2 min

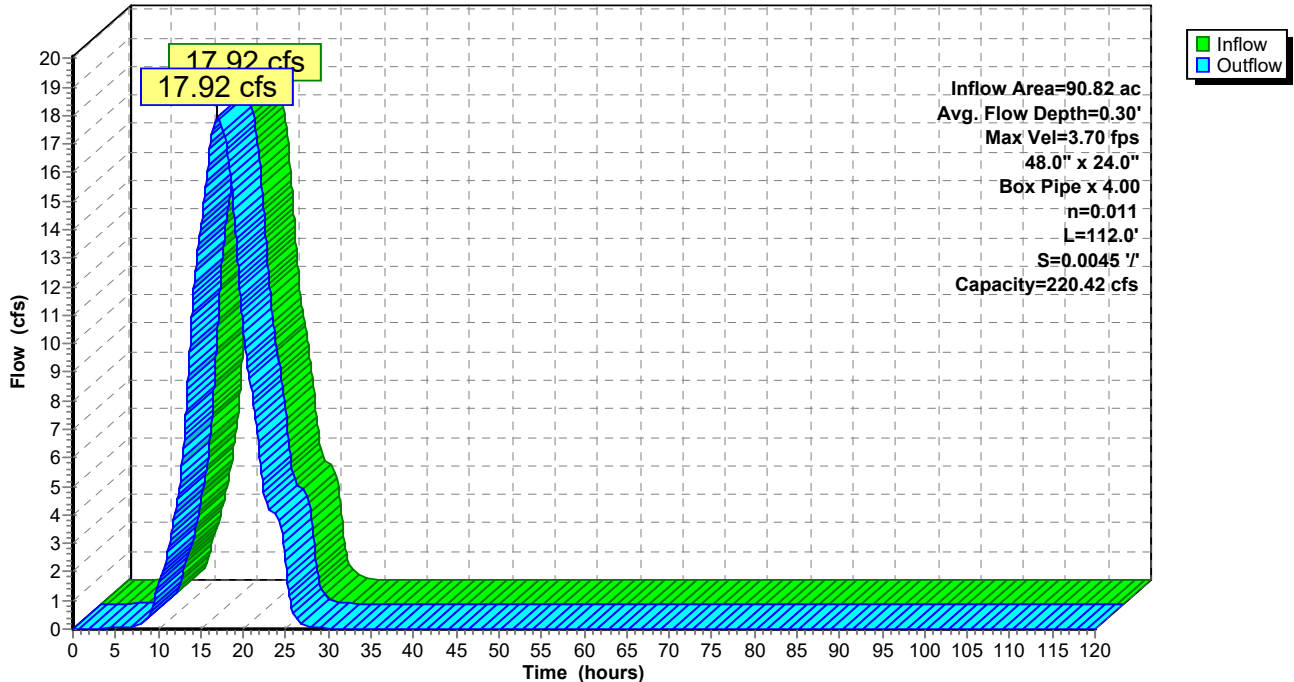
Peak Storage= 542 cf @ 16.97 hrs  
 Average Depth at Peak Storage= 0.30'  
 Bank-Full Depth= 2.00' Flow Area= 32.0 sf, Capacity= 220.42 cfs

A factor of 4.00 has been applied to the storage and discharge capacity  
 48.0" W x 24.0" H Box Pipe  
 n= 0.011 Concrete pipe, straight & clean  
 Length= 112.0' Slope= 0.0045 '/'  
 Inlet Invert= 737.00', Outlet Invert= 736.50'



**Reach Cu-1: Culvert 1**

Hydrograph



**Summary for Reach Cu-2: Culvert 2**

Inflow Area = 39.65 ac, 1.66% Impervious, Inflow Depth = 1.54" for 2-Year, 24-Hour event  
 Inflow = 7.83 cfs @ 16.58 hrs, Volume= 5.091 af  
 Outflow = 7.83 cfs @ 16.59 hrs, Volume= 5.091 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.46 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 2.28 fps, Avg. Travel Time= 0.5 min

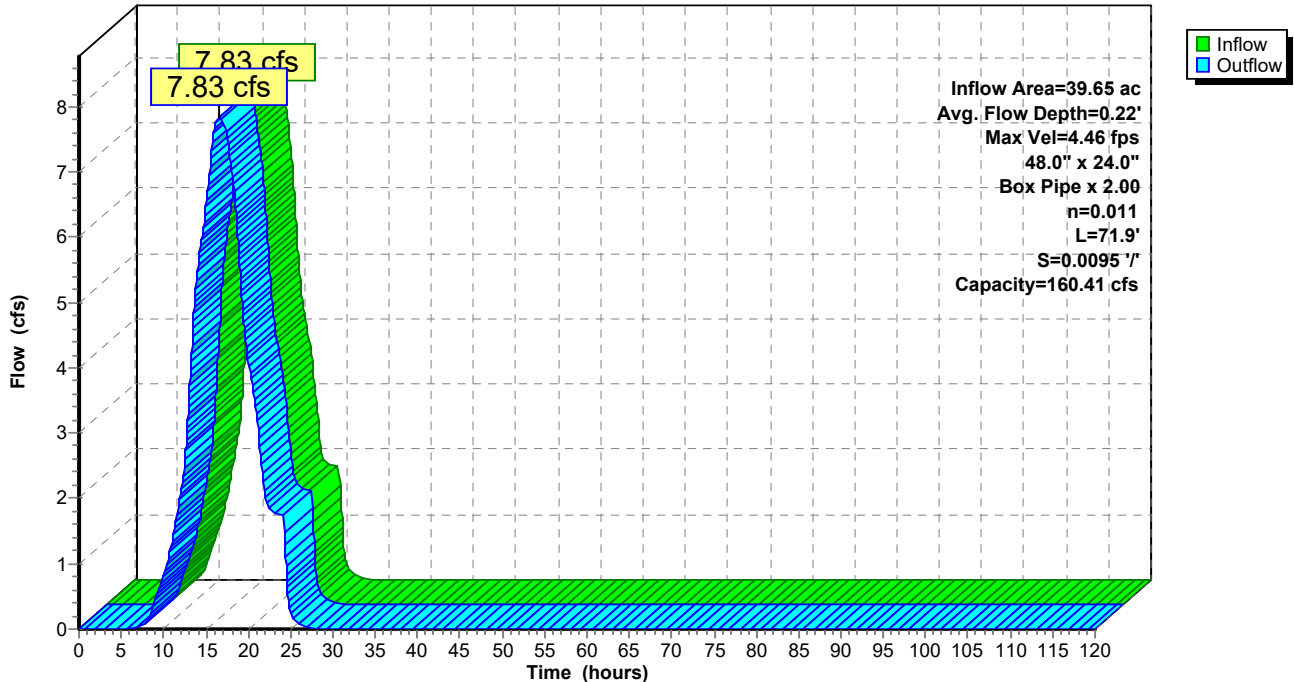
Peak Storage= 126 cf @ 16.58 hrs  
 Average Depth at Peak Storage= 0.22'  
 Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 160.41 cfs

A factor of 2.00 has been applied to the storage and discharge capacity  
 48.0" W x 24.0" H Box Pipe  
 n= 0.011 Concrete pipe, straight & clean  
 Length= 71.9' Slope= 0.0095 '/'  
 Inlet Invert= 737.18', Outlet Invert= 736.50'



**Reach Cu-2: Culvert 2**

Hydrograph



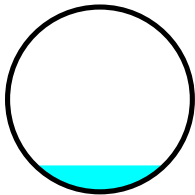
### Summary for Reach Cu-3: Culvert 3

Inflow Area = 43.19 ac, 1.69% Impervious, Inflow Depth = 1.54" for 2-Year, 24-Hour event  
 Inflow = 8.53 cfs @ 16.67 hrs, Volume= 5.550 af  
 Outflow = 8.53 cfs @ 16.68 hrs, Volume= 5.550 af, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.64 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 2.46 fps, Avg. Travel Time= 0.6 min

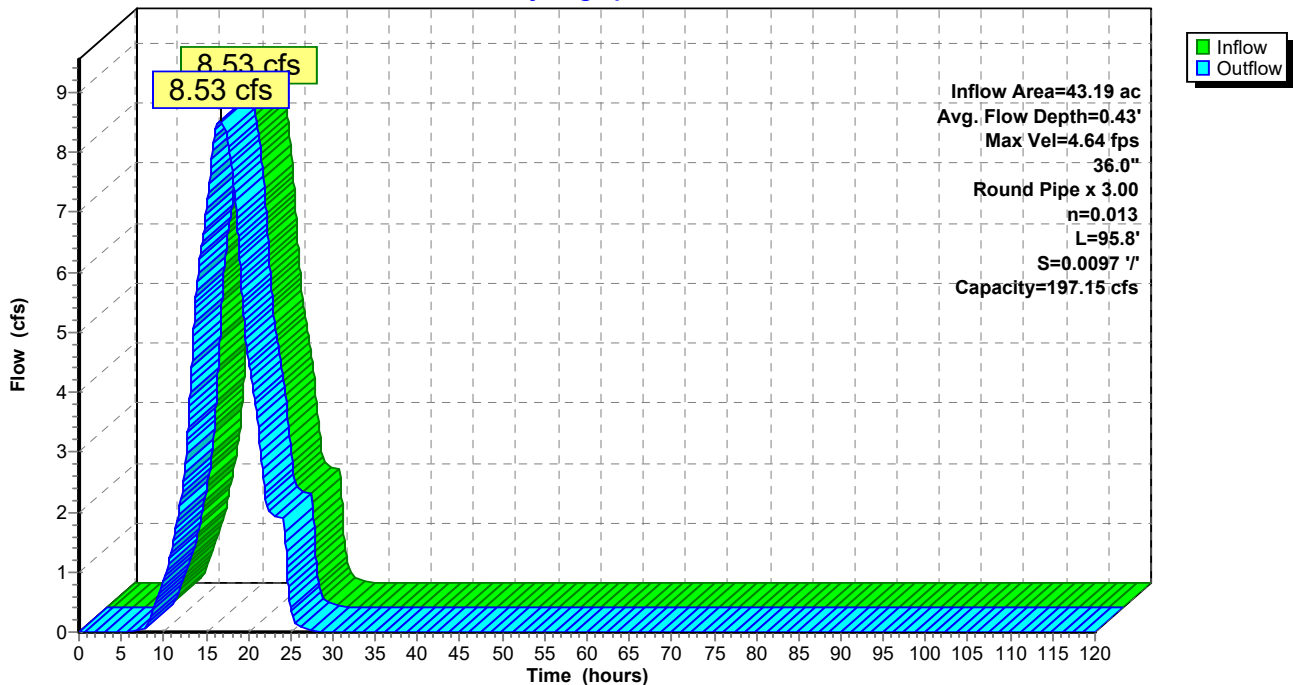
Peak Storage= 176 cf @ 16.67 hrs  
 Average Depth at Peak Storage= 0.43'  
 Bank-Full Depth= 3.00' Flow Area= 21.2 sf, Capacity= 197.15 cfs

A factor of 3.00 has been applied to the storage and discharge capacity  
 36.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 95.8' Slope= 0.0097 '/  
 Inlet Invert= 738.93', Outlet Invert= 738.00'



### Reach Cu-3: Culvert 3

Hydrograph



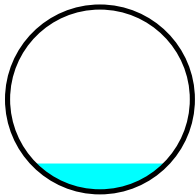
**Summary for Reach Cu-A: Culvert A**

Inflow Area = 33.94 ac, 1.59% Impervious, Inflow Depth = 1.53" for 2-Year, 24-Hour event  
 Inflow = 6.67 cfs @ 16.75 hrs, Volume= 4.330 af  
 Outflow = 6.67 cfs @ 16.76 hrs, Volume= 4.330 af, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.91 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 2.48 fps, Avg. Travel Time= 0.7 min

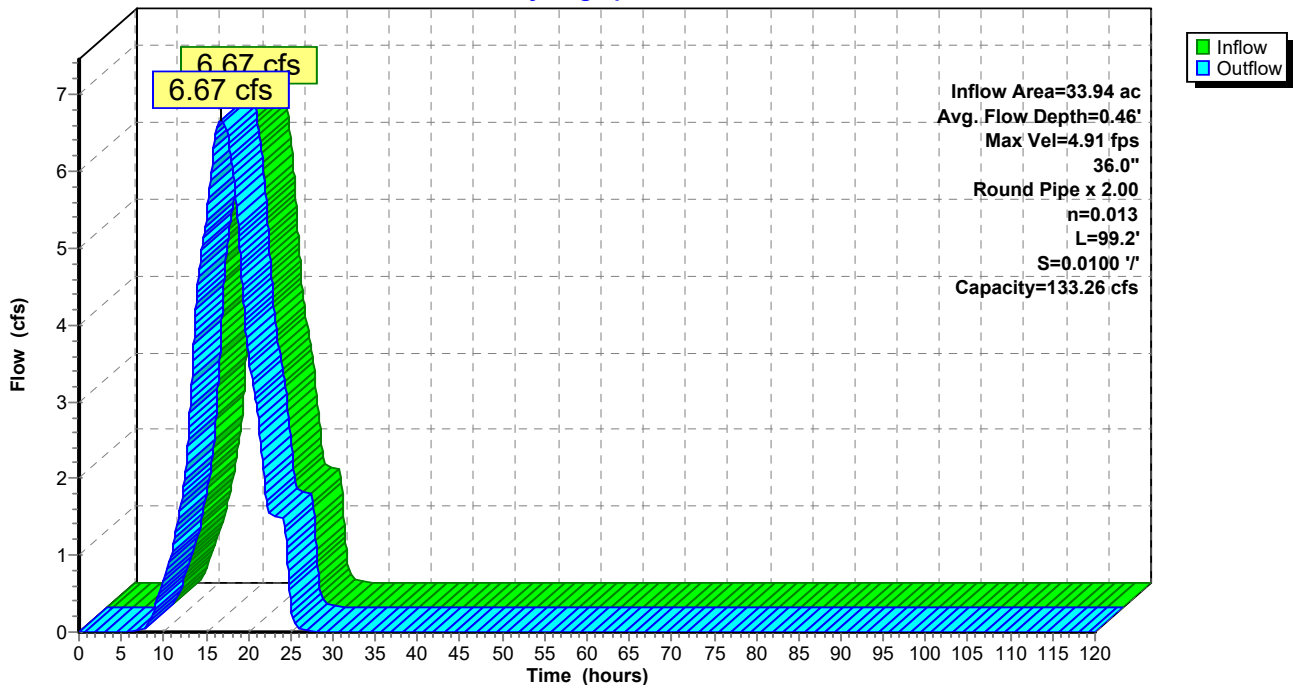
Peak Storage= 135 cf @ 16.76 hrs  
 Average Depth at Peak Storage= 0.46'  
 Bank-Full Depth= 3.00' Flow Area= 14.1 sf, Capacity= 133.26 cfs

A factor of 2.00 has been applied to the storage and discharge capacity  
 36.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 99.2' Slope= 0.0100 '/  
 Inlet Invert= 756.77', Outlet Invert= 755.78'



**Reach Cu-A: Culvert A**

Hydrograph



**Summary for Reach DC-A1A: Downchute A1A**

Inflow Area = 6.74 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 1.31 cfs @ 16.53 hrs, Volume= 0.848 af  
 Outflow = 1.31 cfs @ 16.56 hrs, Volume= 0.848 af, Atten= 0%, Lag= 1.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.24 fps, Min. Travel Time= 1.0 min  
 Avg. Velocity = 1.78 fps, Avg. Travel Time= 1.3 min

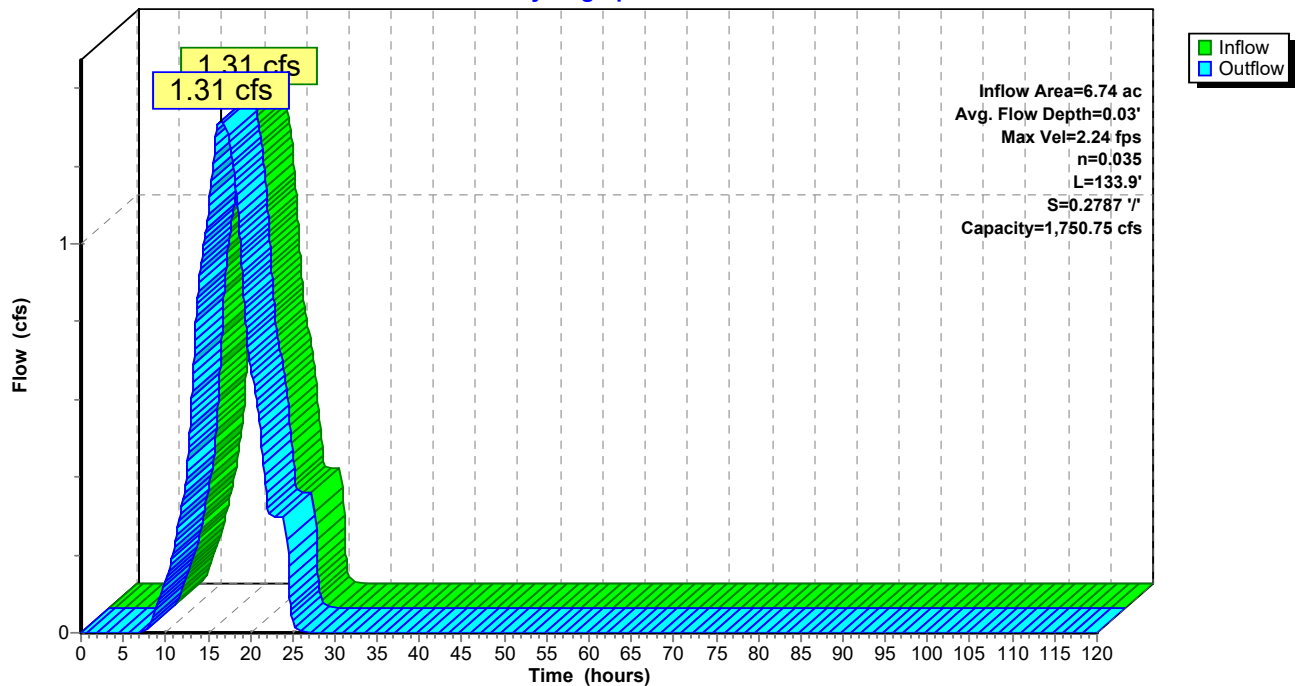
Peak Storage= 78 cf @ 16.54 hrs  
 Average Depth at Peak Storage= 0.03'  
 Bank-Full Depth= 2.00' Flow Area= 60.0 sf, Capacity= 1,750.75 cfs

20.00' x 2.00' deep channel, n= 0.035  
 Side Slope Z-value= 5.0 ' / ' Top Width= 40.00'  
 Length= 133.9' Slope= 0.2787 ' / '  
 Inlet Invert= 821.32', Outlet Invert= 784.00'



**Reach DC-A1A: Downchute A1A**

Hydrograph



**Summary for Reach DC-A1B: Downchute A1B**

Inflow Area = 11.96 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 2.33 cfs @ 16.56 hrs, Volume= 1.506 af  
 Outflow = 2.33 cfs @ 16.58 hrs, Volume= 1.506 af, Atten= 0%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.97 fps, Min. Travel Time= 0.7 min  
 Avg. Velocity= 1.29 fps, Avg. Travel Time= 1.1 min

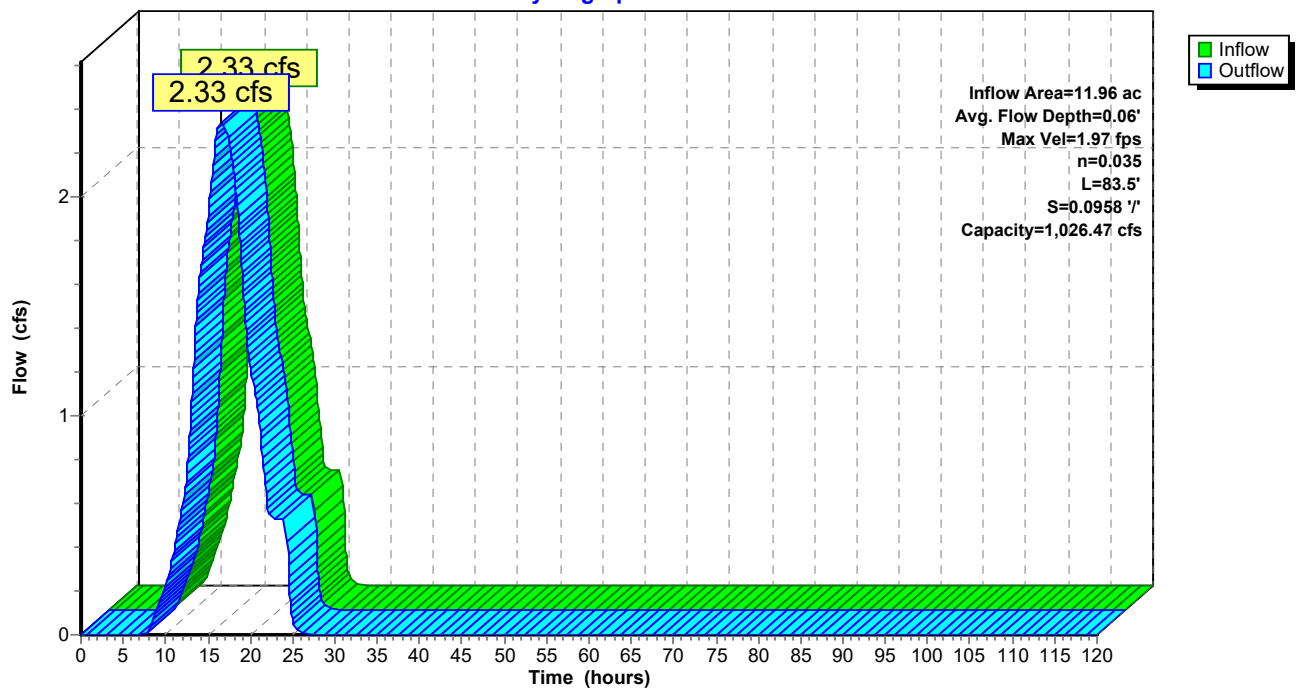
Peak Storage= 99 cf @ 16.57 hrs  
 Average Depth at Peak Storage= 0.06'  
 Bank-Full Depth= 2.00' Flow Area= 60.0 sf, Capacity= 1,026.47 cfs

20.00' x 2.00' deep channel, n= 0.035  
 Side Slope Z-value= 5.0 '/' Top Width= 40.00'  
 Length= 83.5' Slope= 0.0958 '/'  
 Inlet Invert= 784.00', Outlet Invert= 776.00'



**Reach DC-A1B: Downchute A1B**

Hydrograph



**Summary for Reach DC-A1C: Downchute A1C**

Inflow Area = 21.13 ac, 0.64% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 4.11 cfs @ 16.72 hrs, Volume= 2.659 af  
 Outflow = 4.11 cfs @ 16.74 hrs, Volume= 2.659 af, Atten= 0%, Lag= 1.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.63 fps, Min. Travel Time= 1.0 min  
 Avg. Velocity = 1.62 fps, Avg. Travel Time= 1.5 min

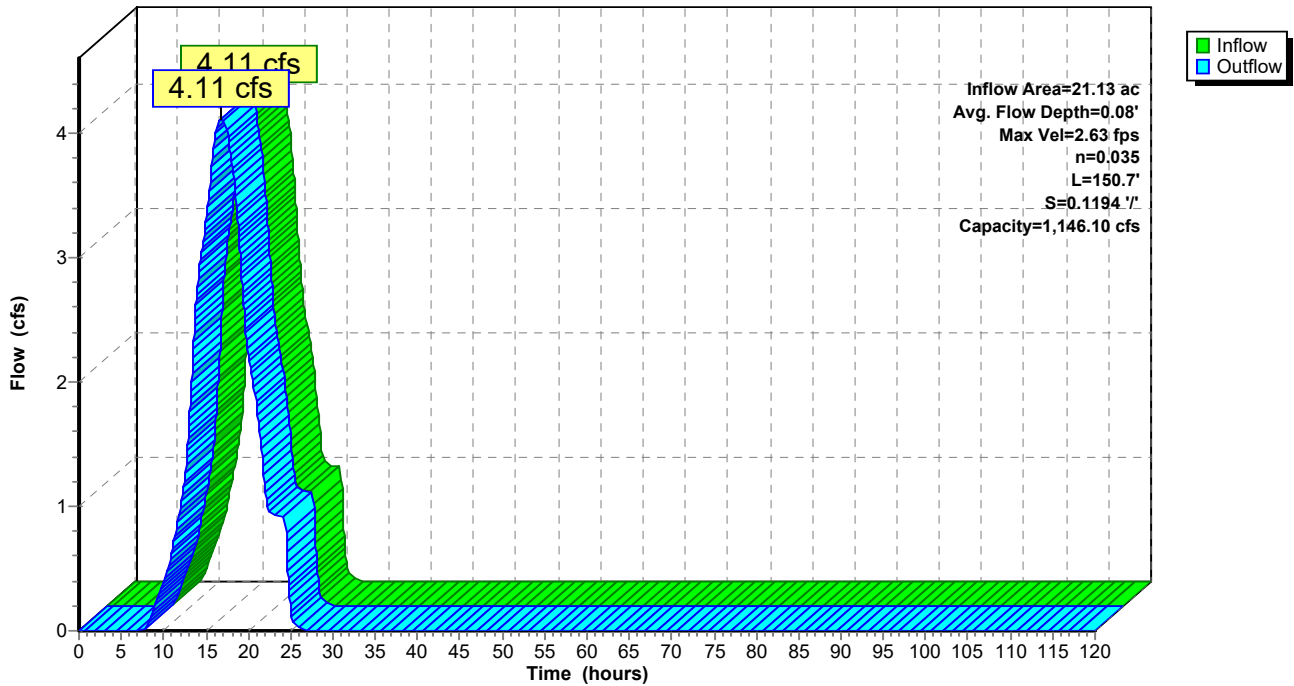
Peak Storage= 236 cf @ 16.73 hrs  
 Average Depth at Peak Storage= 0.08'  
 Bank-Full Depth= 2.00' Flow Area= 60.0 sf, Capacity= 1,146.10 cfs

20.00' x 2.00' deep channel, n= 0.035  
 Side Slope Z-value= 5.0 '/' Top Width= 40.00'  
 Length= 150.7' Slope= 0.1194 '/'  
 Inlet Invert= 776.00', Outlet Invert= 758.00'



**Reach DC-A1C: Downchute A1C**

Hydrograph





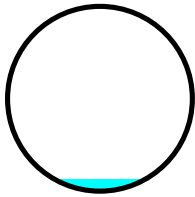
**Summary for Reach LP-B1: Letdown Pipe B1**

Inflow Area = 4.78 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.93 cfs @ 16.22 hrs, Volume= 0.602 af  
 Outflow = 0.93 cfs @ 16.23 hrs, Volume= 0.602 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 10.81 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 7.67 fps, Avg. Travel Time= 0.4 min

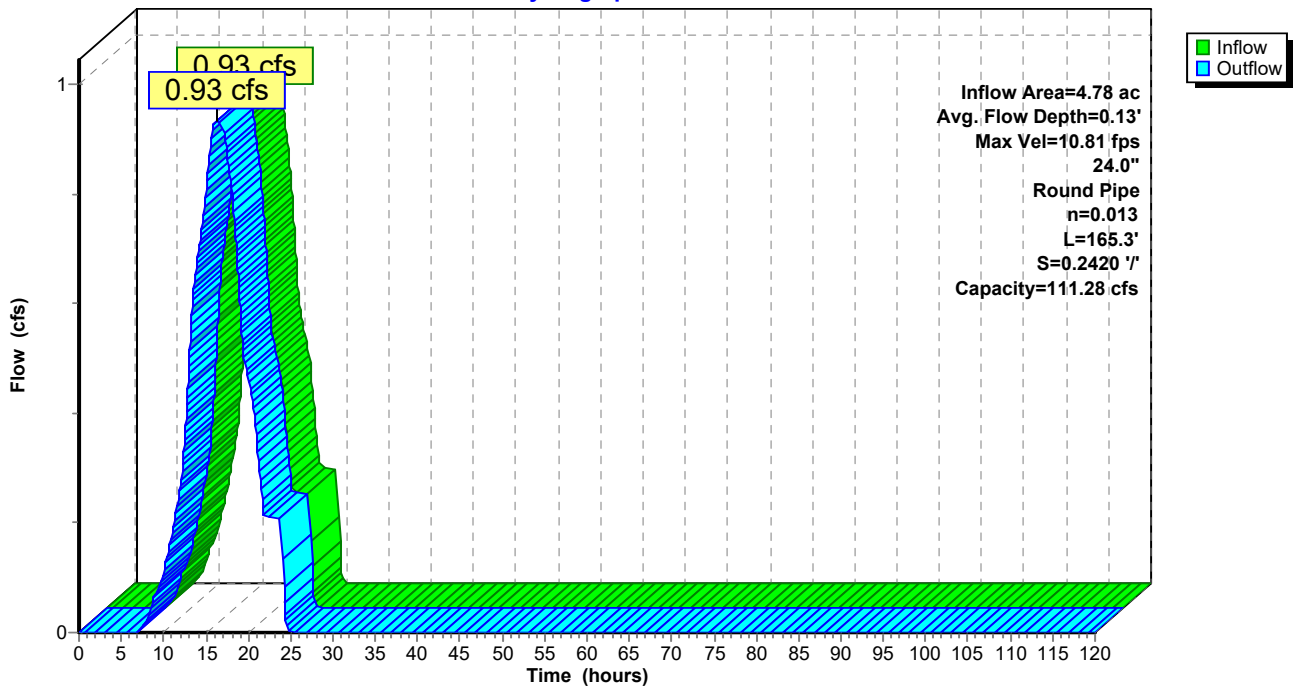
Peak Storage= 14 cf @ 16.23 hrs  
 Average Depth at Peak Storage= 0.13'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 111.28 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 165.3' Slope= 0.2420 '/'  
 Inlet Invert= 877.00', Outlet Invert= 837.00'



**Reach LP-B1: Letdown Pipe B1**

Hydrograph



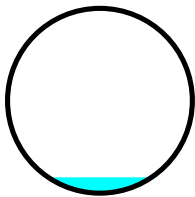
**Summary for Reach LP-B2: Letdown Pipe B2**

Inflow Area = 8.86 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 1.73 cfs @ 16.28 hrs, Volume= 1.115 af  
 Outflow = 1.73 cfs @ 16.28 hrs, Volume= 1.115 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 13.40 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 9.08 fps, Avg. Travel Time= 0.2 min

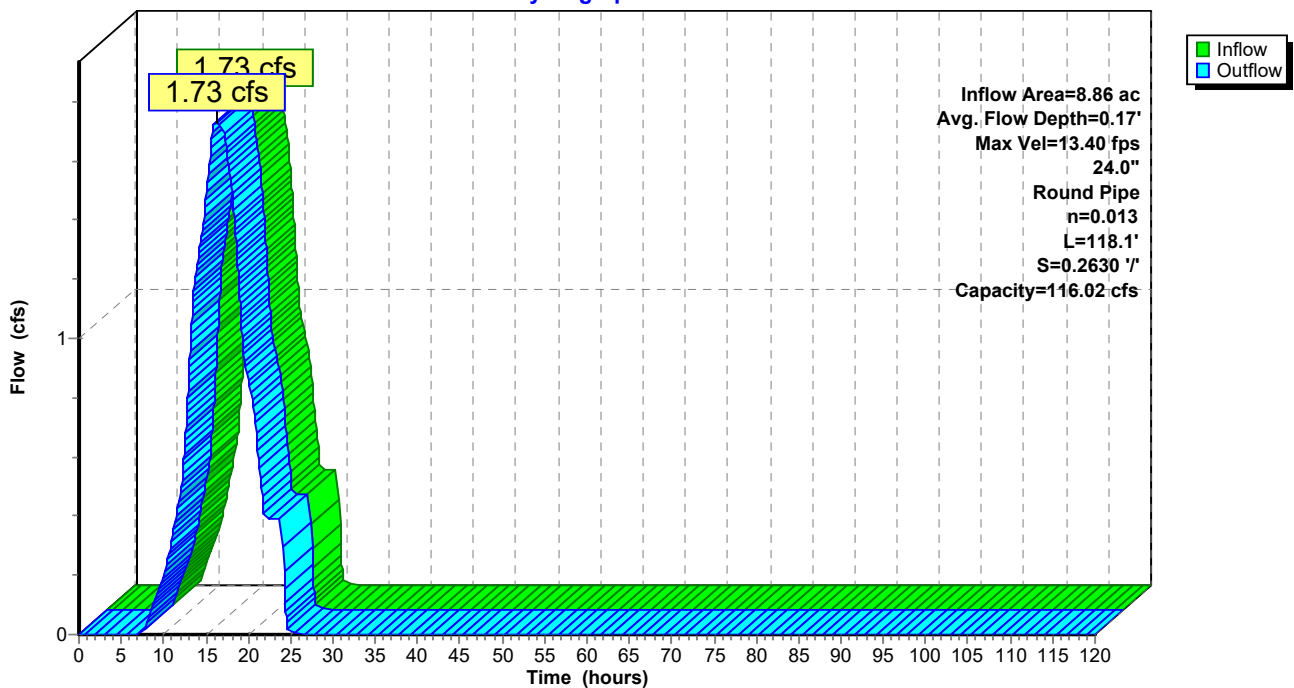
Peak Storage= 15 cf @ 16.28 hrs  
 Average Depth at Peak Storage= 0.17'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 116.02 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 118.1' Slope= 0.2630 '/'  
 Inlet Invert= 837.00', Outlet Invert= 805.94'



**Reach LP-B2: Letdown Pipe B2**

Hydrograph



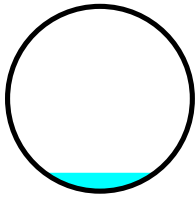
**Summary for Reach LP-B3: Letdown Pipe B3**

Inflow Area = 11.97 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 2.33 cfs @ 16.33 hrs, Volume= 1.507 af  
 Outflow = 2.33 cfs @ 16.33 hrs, Volume= 1.507 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 14.52 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 9.56 fps, Avg. Travel Time= 0.2 min

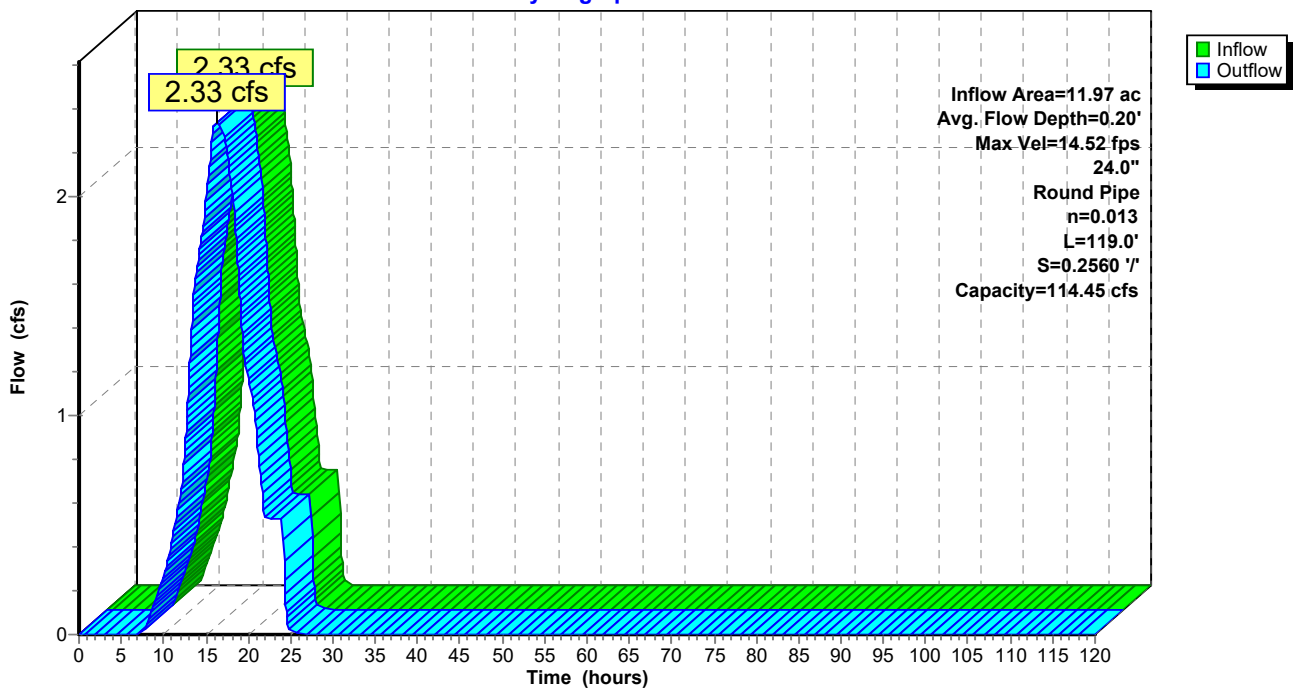
Peak Storage= 19 cf @ 16.33 hrs  
 Average Depth at Peak Storage= 0.20'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 114.45 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 119.0' Slope= 0.2560 '/'  
 Inlet Invert= 805.94', Outlet Invert= 775.48'



**Reach LP-B3: Letdown Pipe B3**

Hydrograph



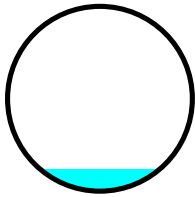
**Summary for Reach LP-B4: Letdown Pipe B4**

Inflow Area = 15.33 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 2.99 cfs @ 16.35 hrs, Volume= 1.930 af  
 Outflow = 2.99 cfs @ 16.36 hrs, Volume= 1.930 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 14.17 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 9.08 fps, Avg. Travel Time= 0.3 min

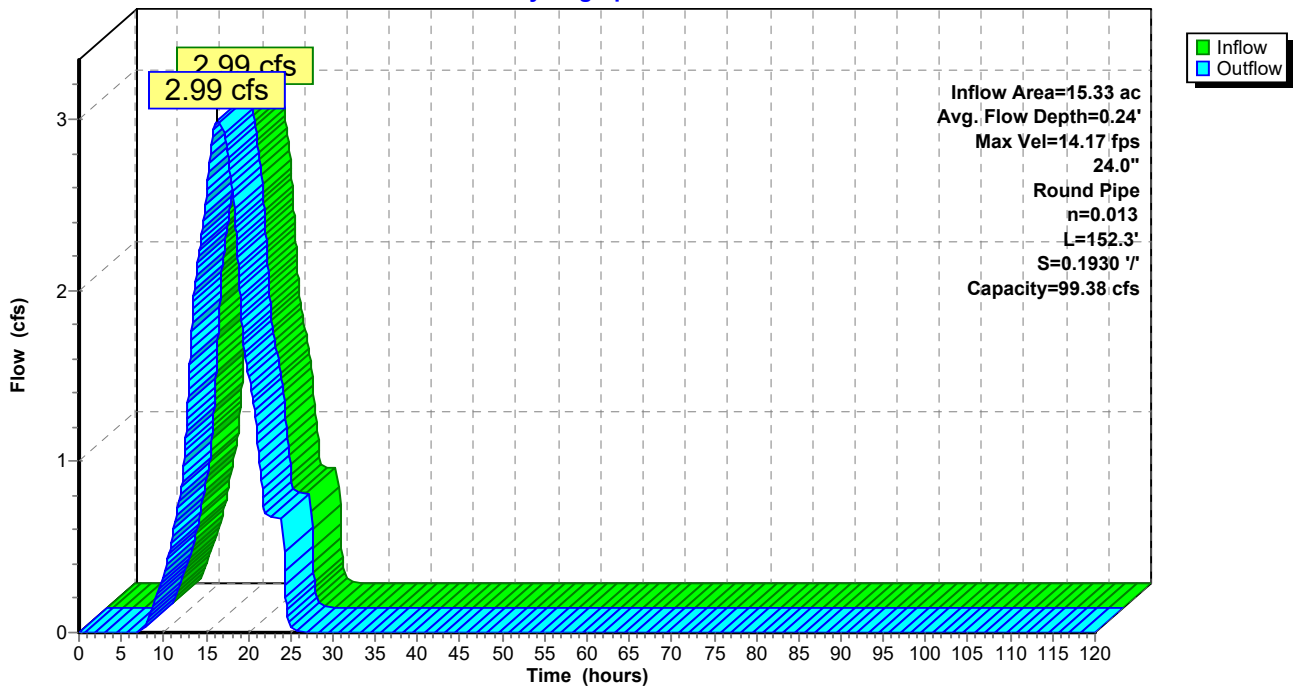
Peak Storage= 32 cf @ 16.35 hrs  
 Average Depth at Peak Storage= 0.24'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 99.38 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 152.3' Slope= 0.1930 '/'  
 Inlet Invert= 775.48', Outlet Invert= 746.09'



**Reach LP-B4: Letdown Pipe B4**

Hydrograph



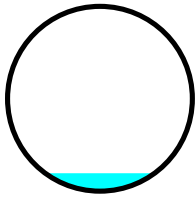
### Summary for Reach LP-B5: Letdown Pipe B5

Inflow Area = 3.47 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.68 cfs @ 16.27 hrs, Volume= 0.437 af  
 Outflow = 0.68 cfs @ 16.29 hrs, Volume= 0.437 af, Atten= 0%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 9.92 fps, Min. Travel Time= 0.5 min  
 Avg. Velocity= 6.85 fps, Avg. Travel Time= 0.7 min

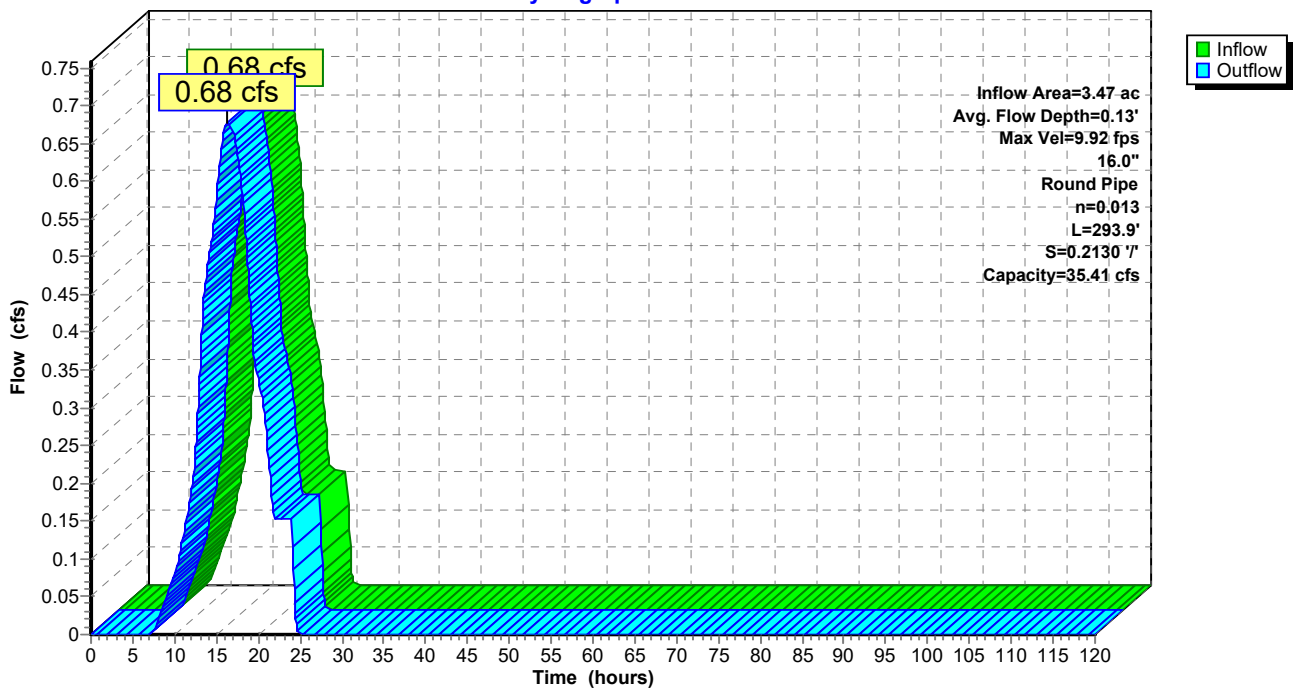
Peak Storage= 20 cf @ 16.27 hrs  
 Average Depth at Peak Storage= 0.13'  
 Bank-Full Depth= 1.33' Flow Area= 1.4 sf, Capacity= 35.41 cfs

16.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 293.9' Slope= 0.2130 '/'  
 Inlet Invert= 820.00', Outlet Invert= 757.40'



### Reach LP-B5: Letdown Pipe B5

Hydrograph



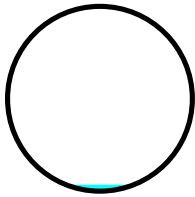
**Summary for Reach LP-D1: Letdown Pipe D1**

Inflow Area = 1.26 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.25 cfs @ 16.19 hrs, Volume= 0.158 af  
 Outflow = 0.25 cfs @ 16.19 hrs, Volume= 0.158 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 7.33 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity= 5.43 fps, Avg. Travel Time= 0.2 min

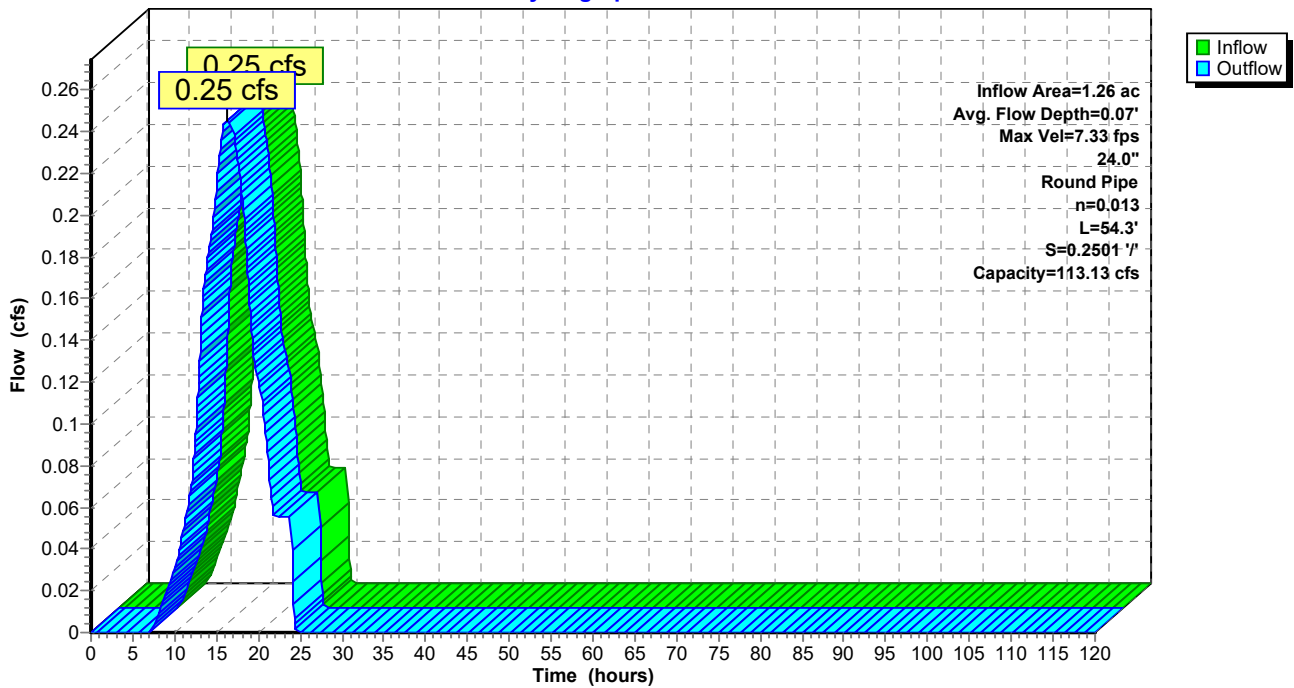
Peak Storage= 2 cf @ 16.19 hrs  
 Average Depth at Peak Storage= 0.07'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 113.13 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 54.3' Slope= 0.2501 '/  
 Inlet Invert= 857.24', Outlet Invert= 843.66'



**Reach LP-D1: Letdown Pipe D1**

Hydrograph



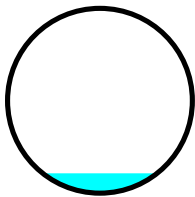
### Summary for Reach LP-D3: Letdown Pipe D3

Inflow Area = 13.77 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 2.69 cfs @ 16.39 hrs, Volume= 1.734 af  
 Outflow = 2.69 cfs @ 16.39 hrs, Volume= 1.734 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 14.95 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 9.60 fps, Avg. Travel Time= 0.1 min

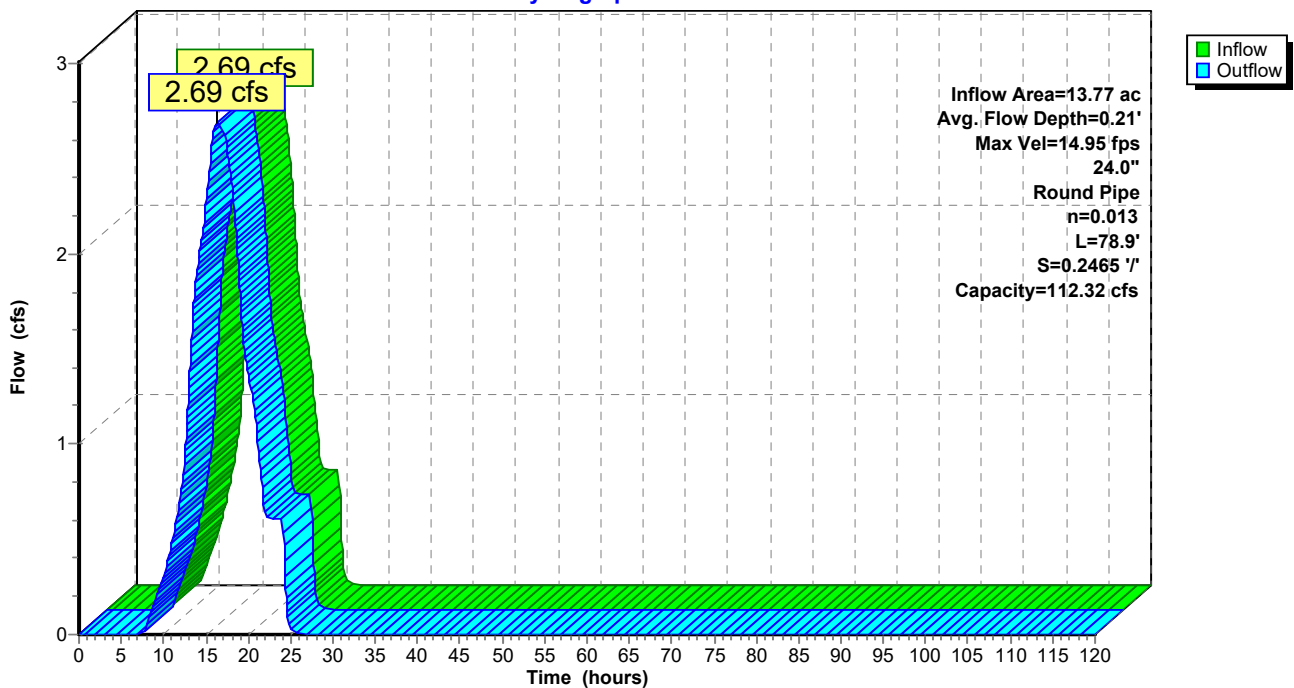
Peak Storage= 14 cf @ 16.39 hrs  
 Average Depth at Peak Storage= 0.21'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 112.32 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 78.9' Slope= 0.2465 '/'  
 Inlet Invert= 793.71', Outlet Invert= 774.26'



### Reach LP-D3: Letdown Pipe D3

Hydrograph



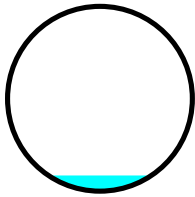
### Summary for Reach LP-E1: Letdown Pipe E1

Inflow Area = 3.40 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.66 cfs @ 16.27 hrs, Volume= 0.428 af  
 Outflow = 0.66 cfs @ 16.28 hrs, Volume= 0.428 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 9.26 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity= 6.44 fps, Avg. Travel Time= 0.4 min

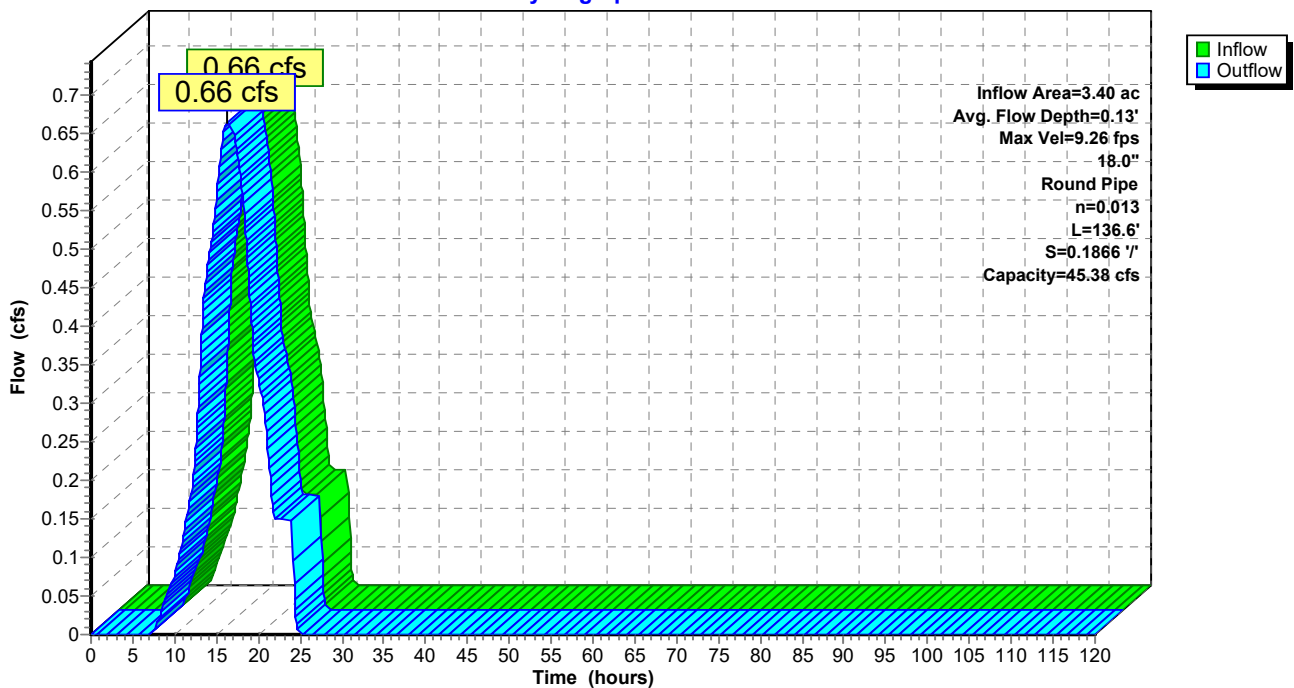
Peak Storage= 10 cf @ 16.28 hrs  
 Average Depth at Peak Storage= 0.13'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 45.38 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 136.6' Slope= 0.1866 '/'  
 Inlet Invert= 856.64', Outlet Invert= 831.15'



### Reach LP-E1: Letdown Pipe E1

Hydrograph





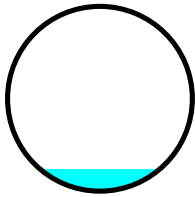
**Summary for Reach LP-E2: Letdown Pipe E2**

Inflow Area = 8.08 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 1.57 cfs @ 16.45 hrs, Volume= 1.017 af  
 Outflow = 1.57 cfs @ 16.46 hrs, Volume= 1.017 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 13.28 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 8.47 fps, Avg. Travel Time= 0.2 min

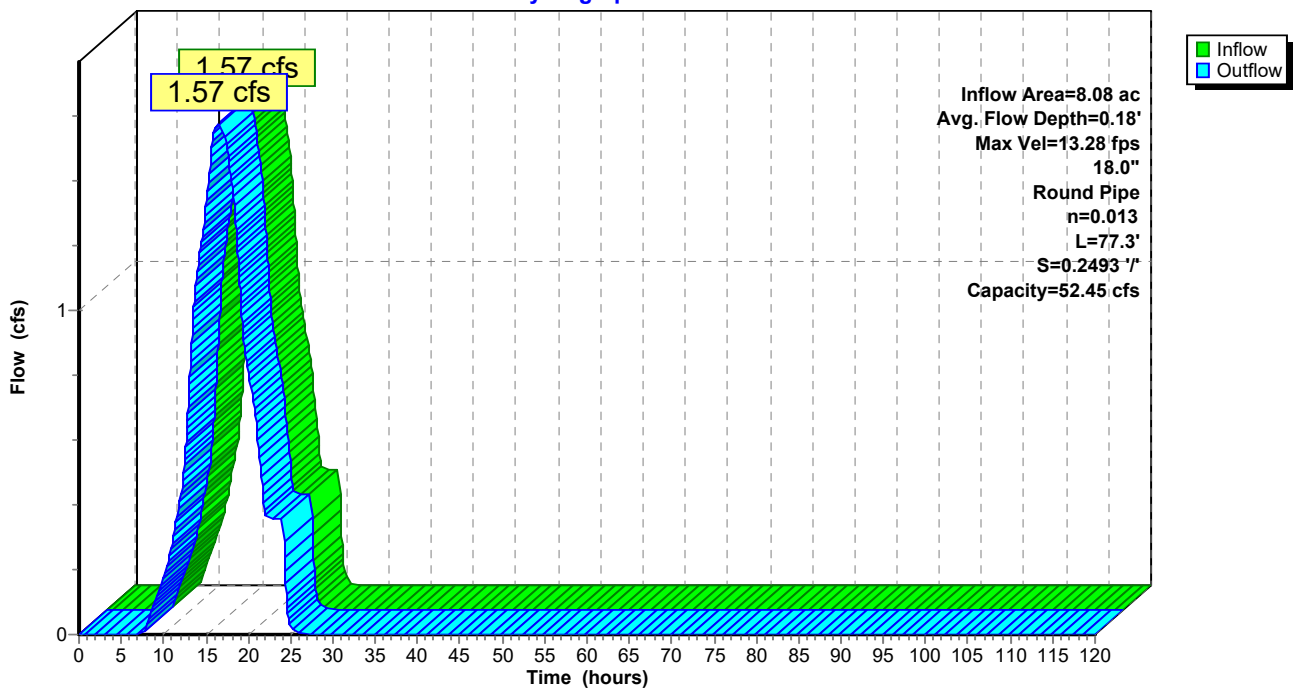
Peak Storage= 9 cf @ 16.46 hrs  
 Average Depth at Peak Storage= 0.18'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 52.45 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 77.3' Slope= 0.2493 '/  
 Inlet Invert= 793.51', Outlet Invert= 774.24'



**Reach LP-E2: Letdown Pipe E2**

Hydrograph



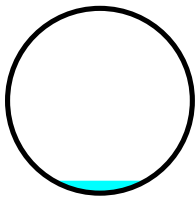
**Summary for Reach LP-H1: Letdown Pipe H1**

Inflow Area = 1.98 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.39 cfs @ 16.28 hrs, Volume= 0.249 af  
 Outflow = 0.39 cfs @ 16.28 hrs, Volume= 0.249 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 7.63 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity= 5.38 fps, Avg. Travel Time= 0.2 min

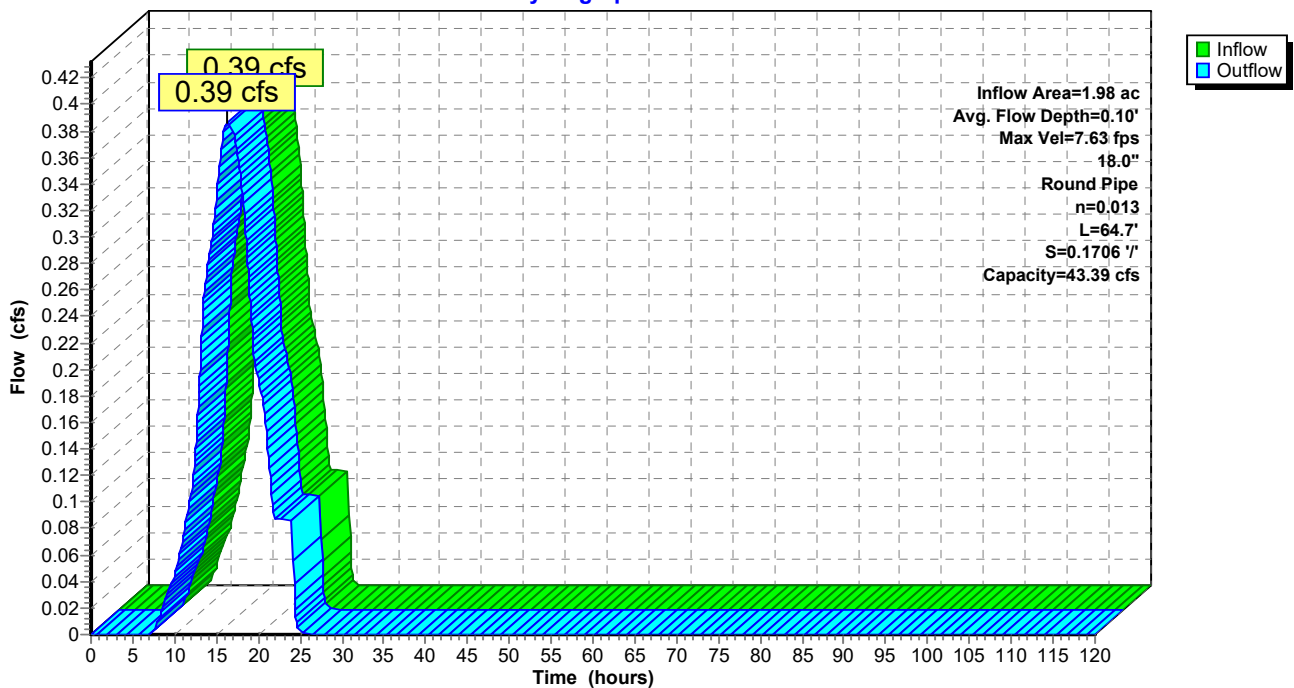
Peak Storage= 3 cf @ 16.28 hrs  
 Average Depth at Peak Storage= 0.10'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 43.39 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 64.7' Slope= 0.1706 '/  
 Inlet Invert= 867.73', Outlet Invert= 856.69'



**Reach LP-H1: Letdown Pipe H1**

Hydrograph



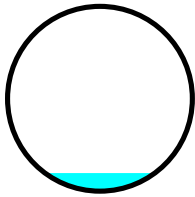
**Summary for Reach LP-H2: Letdown Pipe H2**

Inflow Area = 5.26 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 1.03 cfs @ 16.30 hrs, Volume= 0.662 af  
 Outflow = 1.03 cfs @ 16.30 hrs, Volume= 0.662 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 11.69 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 7.98 fps, Avg. Travel Time= 0.3 min

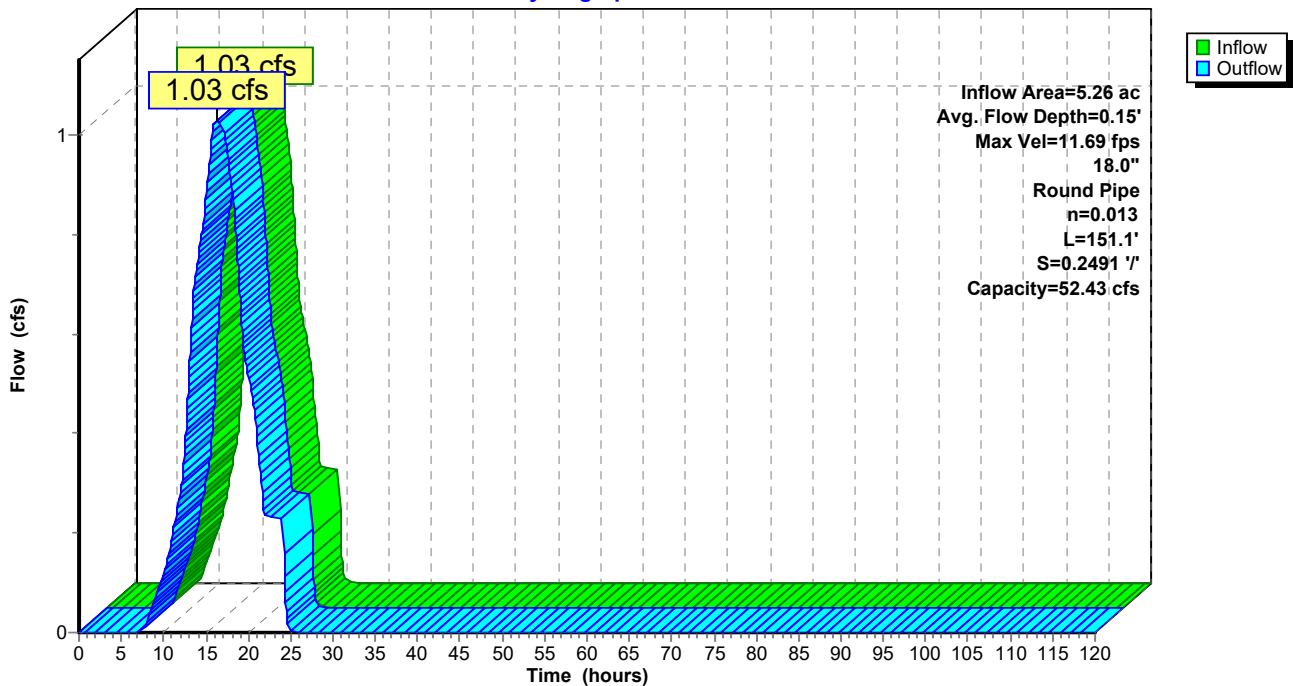
Peak Storage= 13 cf @ 16.30 hrs  
 Average Depth at Peak Storage= 0.15'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 52.43 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 151.1' Slope= 0.2491 '/'  
 Inlet Invert= 831.15', Outlet Invert= 793.51'



**Reach LP-H2: Letdown Pipe H2**

Hydrograph



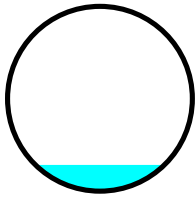
**Summary for Reach LP-H3: Letdown Pipe H3**

Inflow Area = 11.65 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 2.27 cfs @ 16.43 hrs, Volume= 1.467 af  
 Outflow = 2.27 cfs @ 16.43 hrs, Volume= 1.467 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 14.90 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 9.38 fps, Avg. Travel Time= 0.2 min

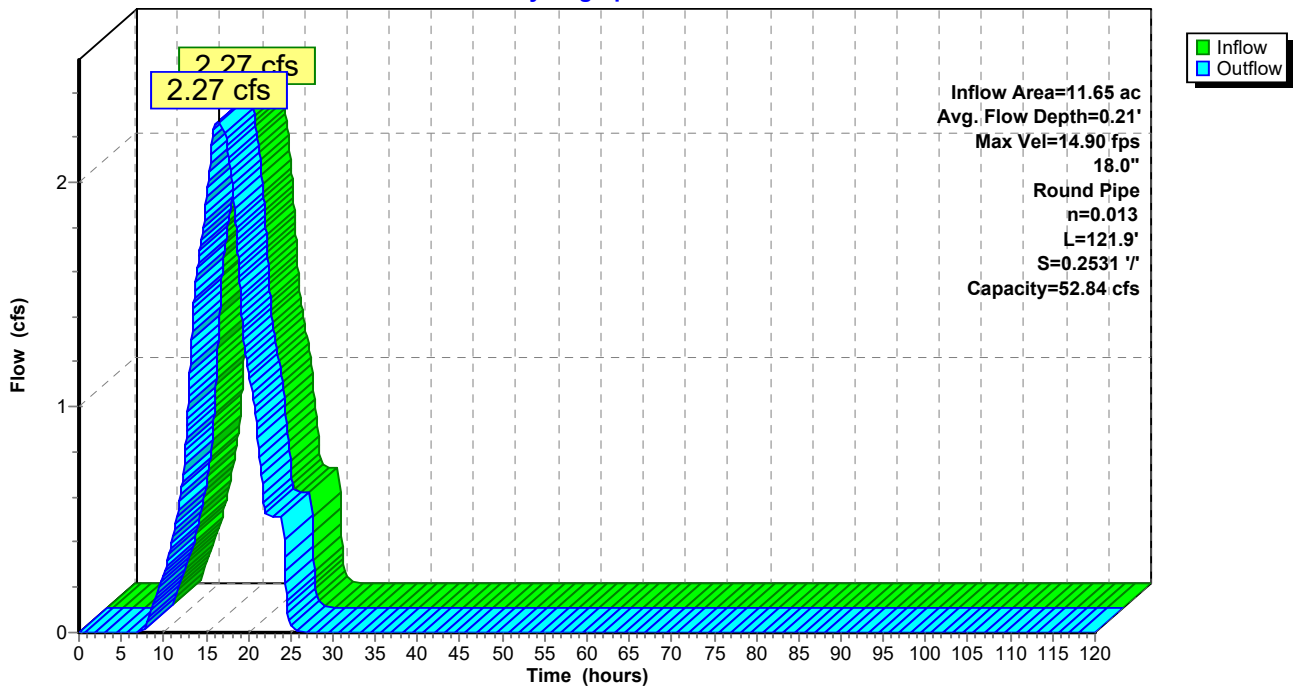
Peak Storage= 19 cf @ 16.43 hrs  
 Average Depth at Peak Storage= 0.21'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 52.84 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 121.9' Slope= 0.2531 1/100'  
 Inlet Invert= 774.24', Outlet Invert= 743.39'



**Reach LP-H3: Letdown Pipe H3**

Hydrograph



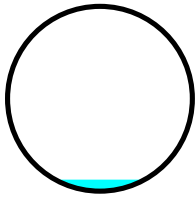
**Summary for Reach LP-N-A1: Letdown Pipe N-A1**

Inflow Area = 3.60 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.70 cfs @ 16.22 hrs, Volume= 0.453 af  
 Outflow = 0.70 cfs @ 16.23 hrs, Volume= 0.453 af, Atten= 0%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 8.88 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity= 6.34 fps, Avg. Travel Time= 0.5 min

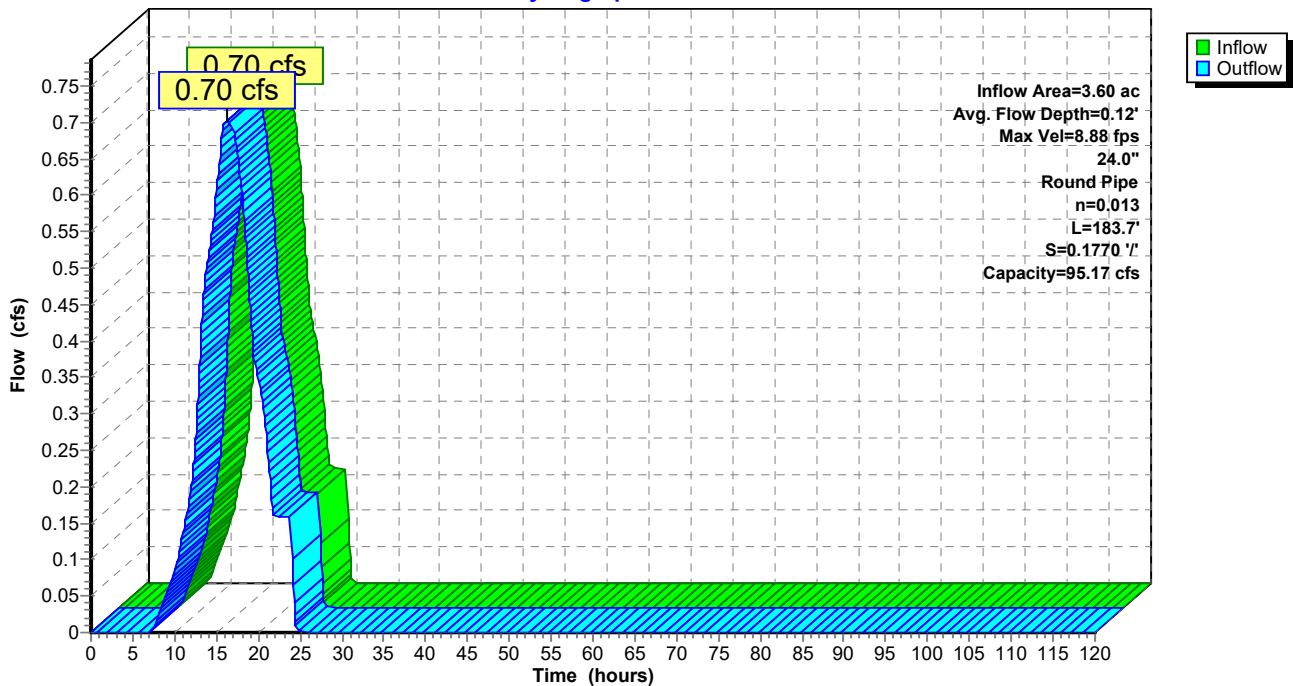
Peak Storage= 15 cf @ 16.22 hrs  
 Average Depth at Peak Storage= 0.12'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 95.17 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 183.7' Slope= 0.1770 '/'  
 Inlet Invert= 869.36', Outlet Invert= 836.85'



**Reach LP-N-A1: Letdown Pipe N-A1**

Hydrograph



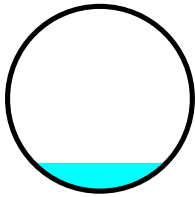
**Summary for Reach LP-N-A10: Letdown Pipe N-A10**

Inflow Area = 21.41 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 4.17 cfs @ 16.44 hrs, Volume= 2.694 af  
 Outflow = 4.17 cfs @ 16.45 hrs, Volume= 2.694 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 8.84 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity= 5.29 fps, Avg. Travel Time= 0.2 min

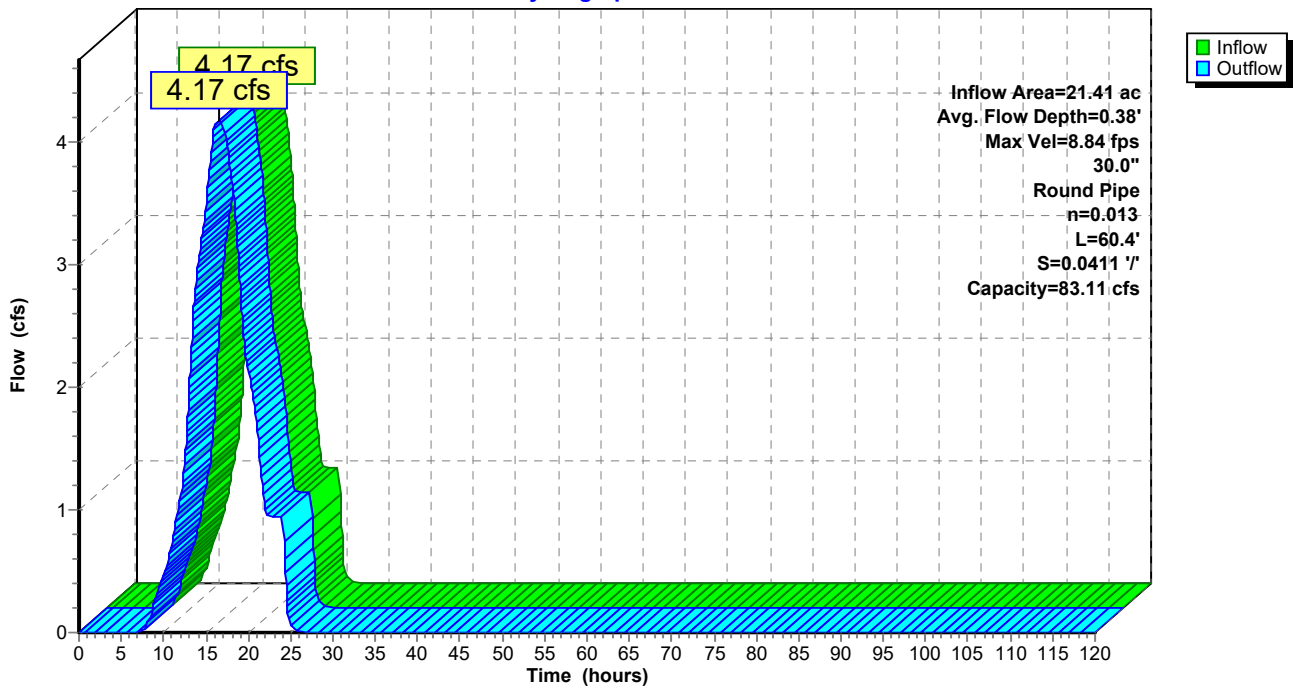
Peak Storage= 29 cf @ 16.44 hrs  
 Average Depth at Peak Storage= 0.38'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 83.11 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 60.4' Slope= 0.0411 '/  
 Inlet Invert= 748.28', Outlet Invert= 745.80'



**Reach LP-N-A10: Letdown Pipe N-A10**

Hydrograph



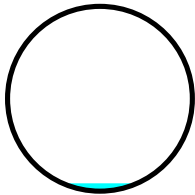
**Summary for Reach LP-N-A2: Letdown Pipe N-A2**

Inflow Area = 2.82 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.55 cfs @ 16.29 hrs, Volume= 0.356 af  
 Outflow = 0.55 cfs @ 16.31 hrs, Volume= 0.356 af, Atten= 0%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 8.00 fps, Min. Travel Time= 0.4 min  
 Avg. Velocity = 5.72 fps, Avg. Travel Time= 0.5 min

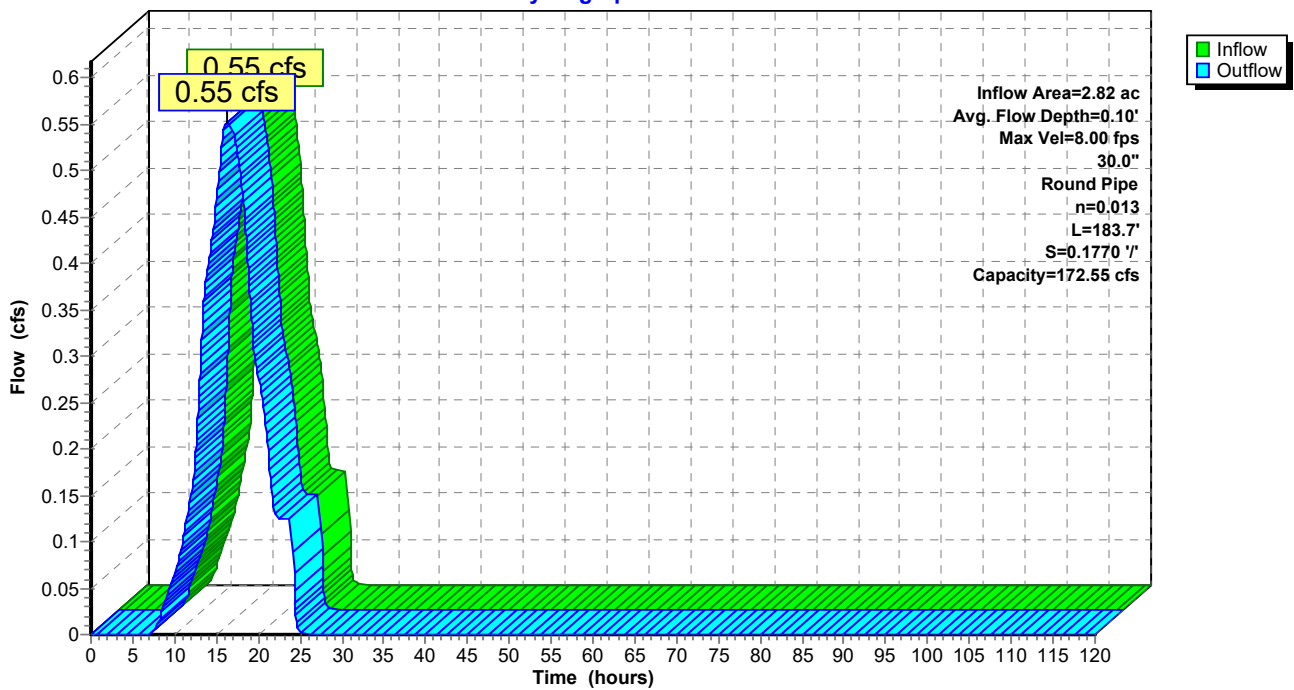
Peak Storage= 13 cf @ 16.30 hrs  
 Average Depth at Peak Storage= 0.10'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 172.55 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 183.7' Slope= 0.1770 '/'  
 Inlet Invert= 869.36', Outlet Invert= 836.85'



**Reach LP-N-A2: Letdown Pipe N-A2**

Hydrograph



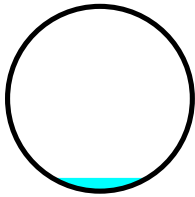
### Summary for Reach LP-N-A3: Letdown Pipe N-A3

Inflow Area = 4.91 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.96 cfs @ 16.22 hrs, Volume= 0.618 af  
 Outflow = 0.96 cfs @ 16.23 hrs, Volume= 0.618 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 9.77 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity= 6.90 fps, Avg. Travel Time= 0.4 min

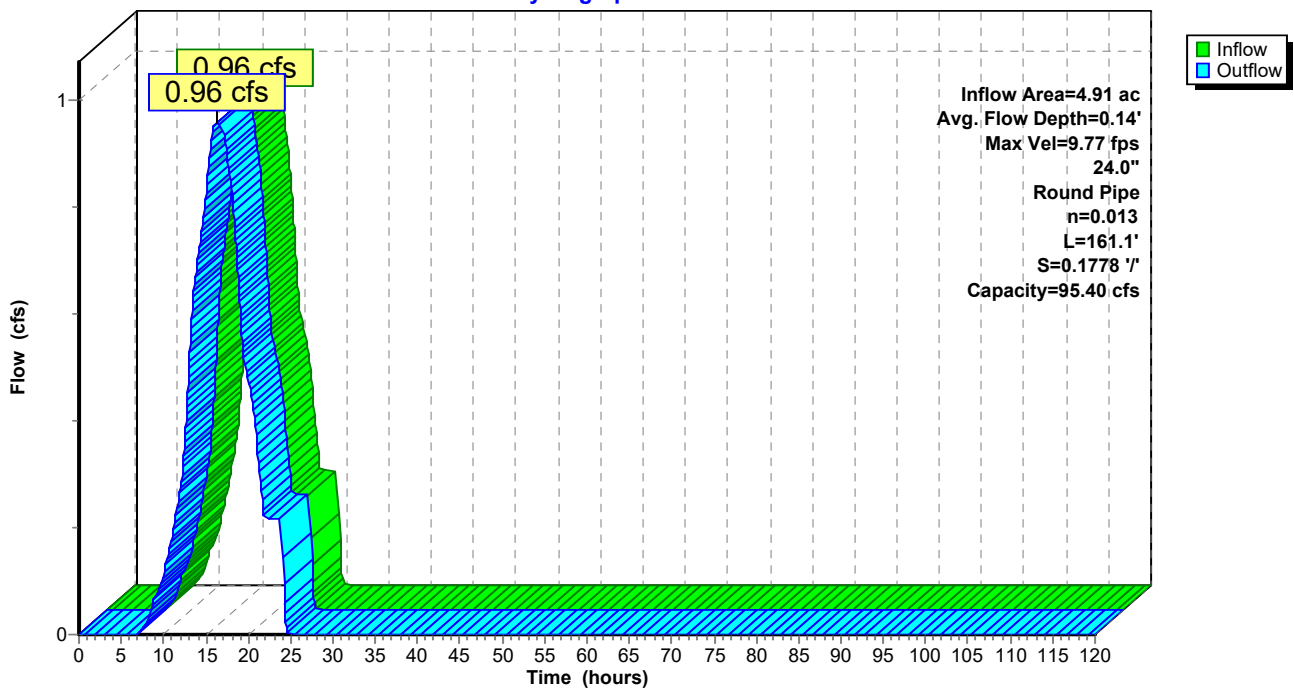
Peak Storage= 16 cf @ 16.23 hrs  
 Average Depth at Peak Storage= 0.14'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 95.40 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 161.1' Slope= 0.1778 '/  
 Inlet Invert= 836.85', Outlet Invert= 808.20'



### Reach LP-N-A3: Letdown Pipe N-A3

Hydrograph





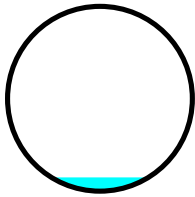
**Summary for Reach LP-N-A4: Letdown Pipe N-A4**

Inflow Area = 9.70 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 1.89 cfs @ 16.43 hrs, Volume= 1.221 af  
 Outflow = 1.89 cfs @ 16.44 hrs, Volume= 1.221 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 11.65 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity= 7.66 fps, Avg. Travel Time= 0.4 min

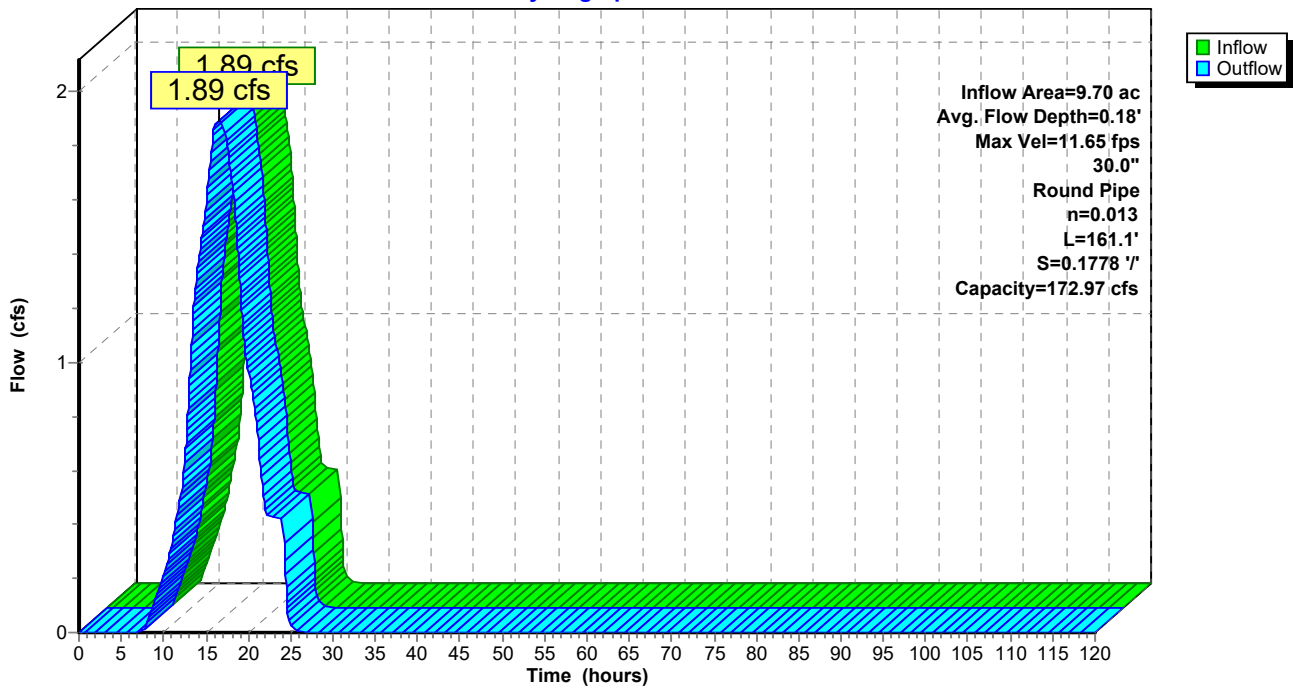
Peak Storage= 26 cf @ 16.44 hrs  
 Average Depth at Peak Storage= 0.18'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 172.97 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 161.1' Slope= 0.1778 '/  
 Inlet Invert= 836.85', Outlet Invert= 808.20'



**Reach LP-N-A4: Letdown Pipe N-A4**

Hydrograph



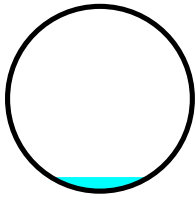
**Summary for Reach LP-N-A5: Letdown Pipe N-A5**

Inflow Area = 5.64 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 1.10 cfs @ 16.22 hrs, Volume= 0.710 af  
 Outflow = 1.10 cfs @ 16.23 hrs, Volume= 0.710 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 10.16 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 7.16 fps, Avg. Travel Time= 0.4 min

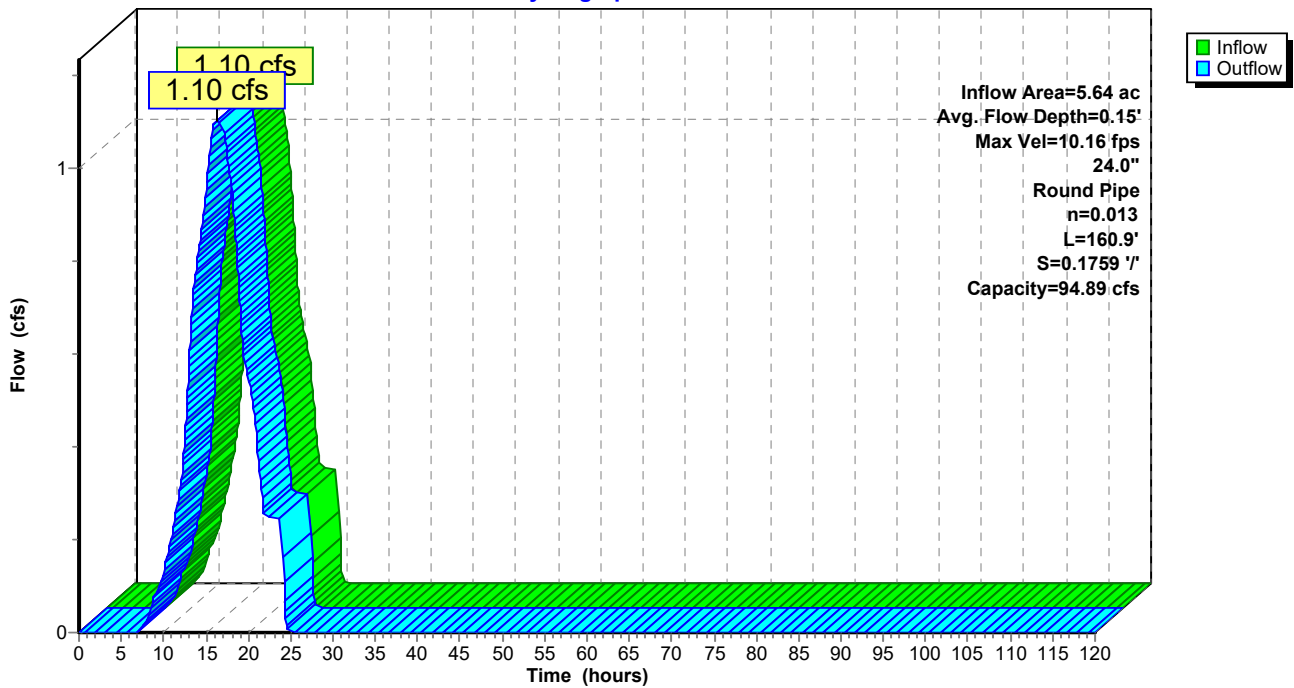
Peak Storage= 17 cf @ 16.22 hrs  
 Average Depth at Peak Storage= 0.15'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 94.89 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 160.9' Slope= 0.1759 '/'  
 Inlet Invert= 808.20', Outlet Invert= 779.89'



**Reach LP-N-A5: Letdown Pipe N-A5**

Hydrograph



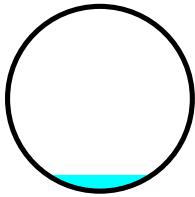
### Summary for Reach LP-N-A6: Letdown Pipe N-A6

Inflow Area = 13.83 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 2.70 cfs @ 16.45 hrs, Volume= 1.741 af  
 Outflow = 2.70 cfs @ 16.45 hrs, Volume= 1.741 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 12.91 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 8.25 fps, Avg. Travel Time= 0.3 min

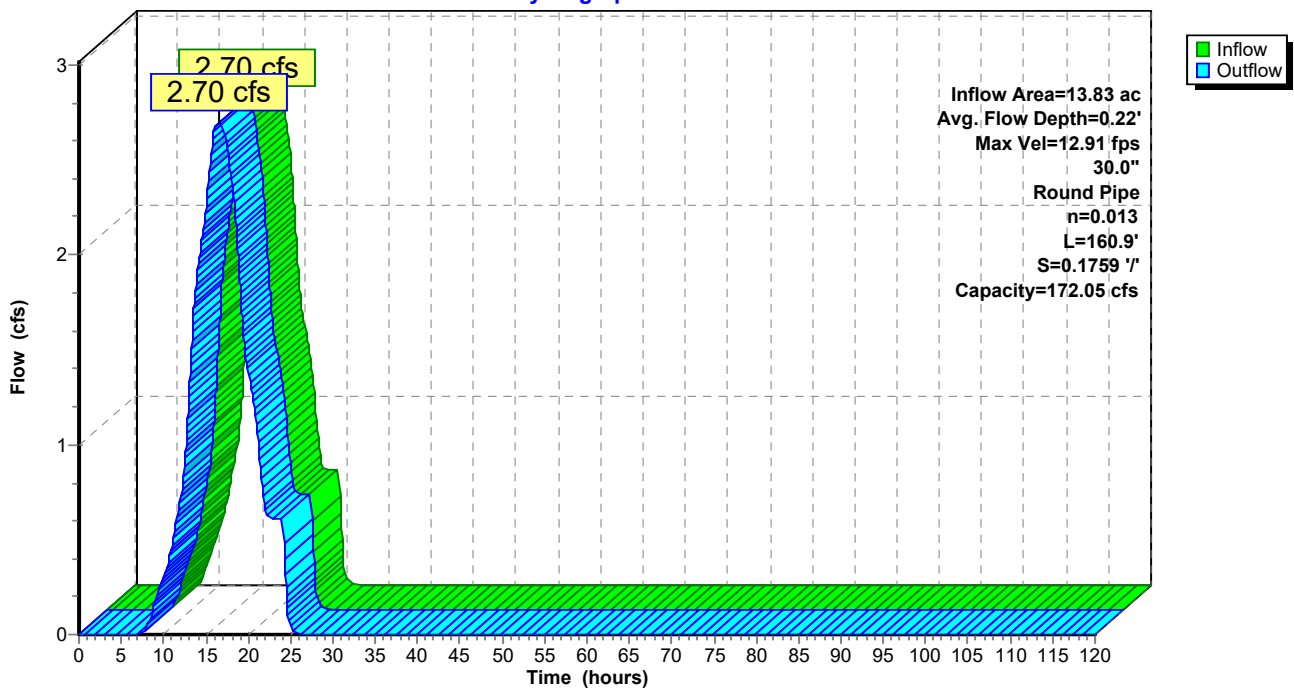
Peak Storage= 34 cf @ 16.45 hrs  
 Average Depth at Peak Storage= 0.22'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 172.05 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 160.9' Slope= 0.1759 '/'  
 Inlet Invert= 808.20', Outlet Invert= 779.89'



### Reach LP-N-A6: Letdown Pipe N-A6

Hydrograph



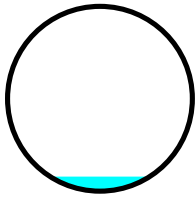
**Summary for Reach LP-N-A7: Letdown Pipe N-A7**

Inflow Area = 6.09 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 1.19 cfs @ 16.22 hrs, Volume= 0.766 af  
 Outflow = 1.19 cfs @ 16.23 hrs, Volume= 0.766 af, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 10.55 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 7.41 fps, Avg. Travel Time= 0.4 min

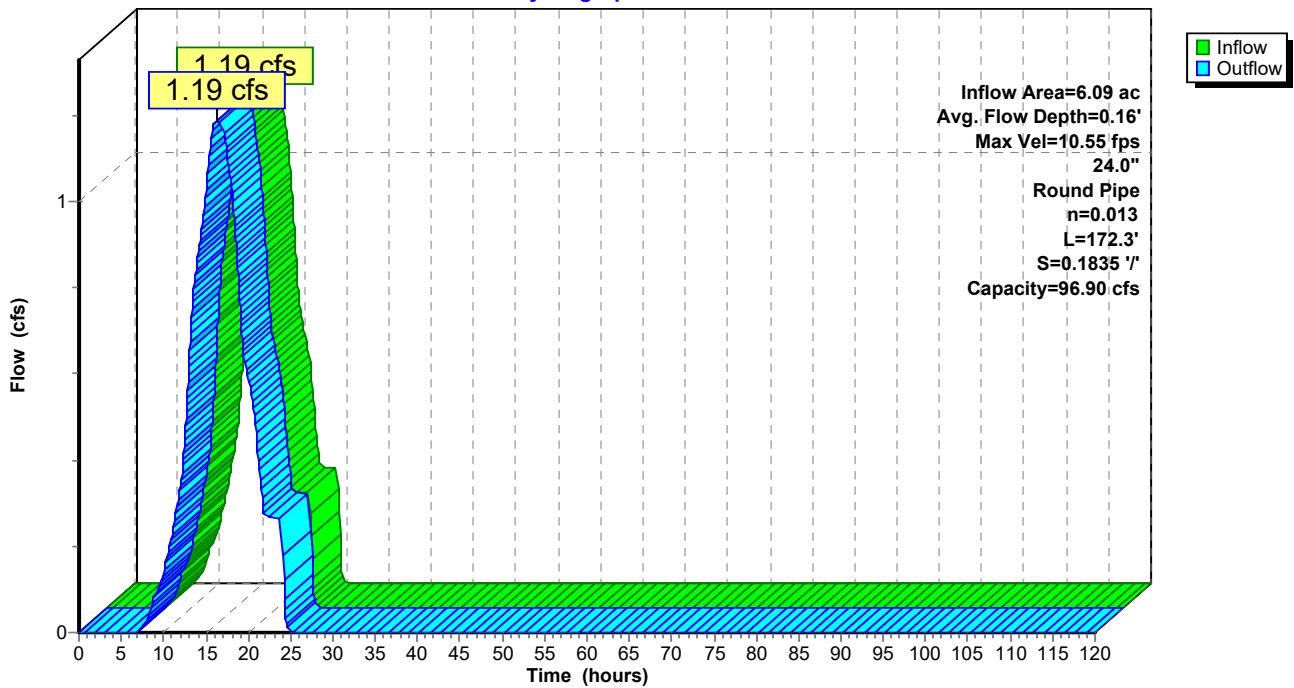
Peak Storage= 19 cf @ 16.22 hrs  
 Average Depth at Peak Storage= 0.16'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 96.90 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 172.3' Slope= 0.1835 '/'  
 Inlet Invert= 779.89', Outlet Invert= 748.28'



**Reach LP-N-A7: Letdown Pipe N-A7**

Hydrograph



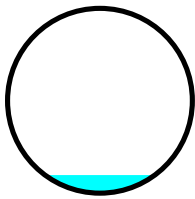
**Summary for Reach LP-N-A8: Letdown Pipe N-A8**

Inflow Area = 17.63 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 3.44 cfs @ 16.45 hrs, Volume= 2.219 af  
 Outflow = 3.44 cfs @ 16.45 hrs, Volume= 2.219 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 14.09 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 8.89 fps, Avg. Travel Time= 0.3 min

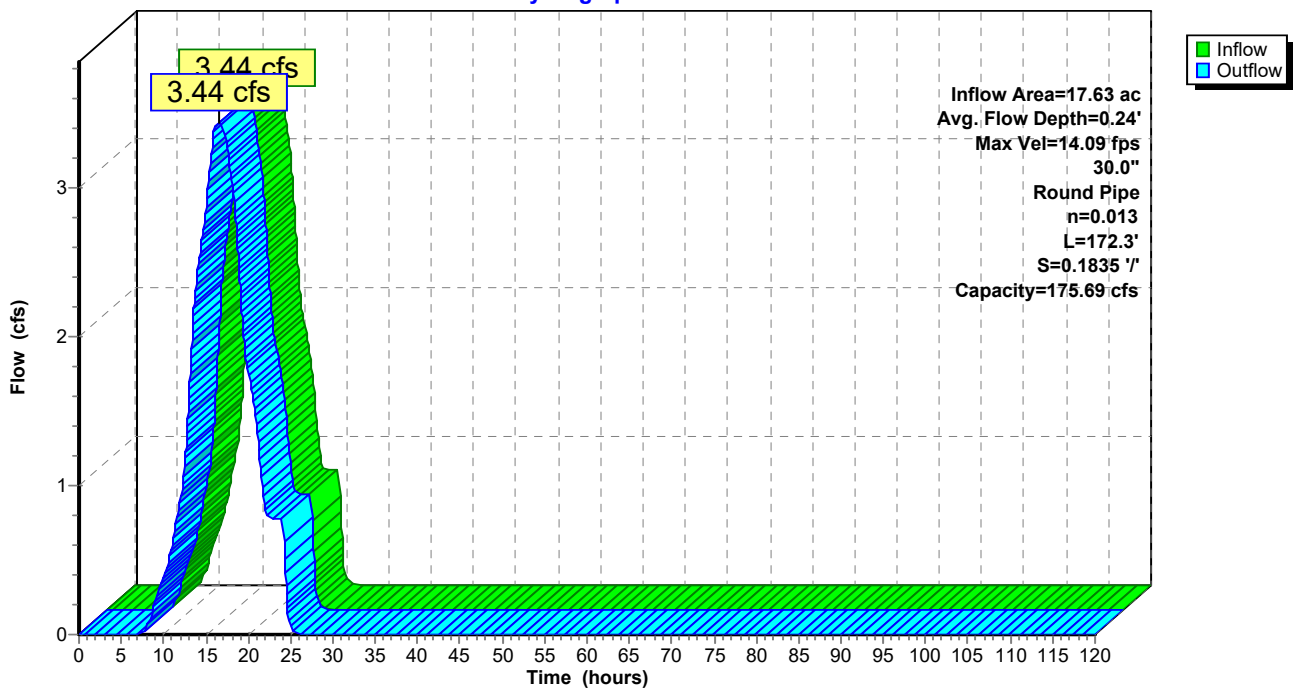
Peak Storage= 42 cf @ 16.45 hrs  
 Average Depth at Peak Storage= 0.24'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 175.69 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 172.3' Slope= 0.1835 '/'  
 Inlet Invert= 779.89', Outlet Invert= 748.28'



**Reach LP-N-A8: Letdown Pipe N-A8**

Hydrograph



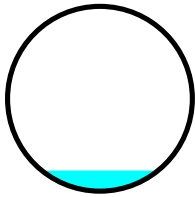
**Summary for Reach LP-N-A9: Letdown Pipe N-A9**

Inflow Area = 6.09 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 1.19 cfs @ 16.23 hrs, Volume= 0.766 af  
 Outflow = 1.19 cfs @ 16.23 hrs, Volume= 0.766 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 6.25 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity= 4.31 fps, Avg. Travel Time= 0.2 min

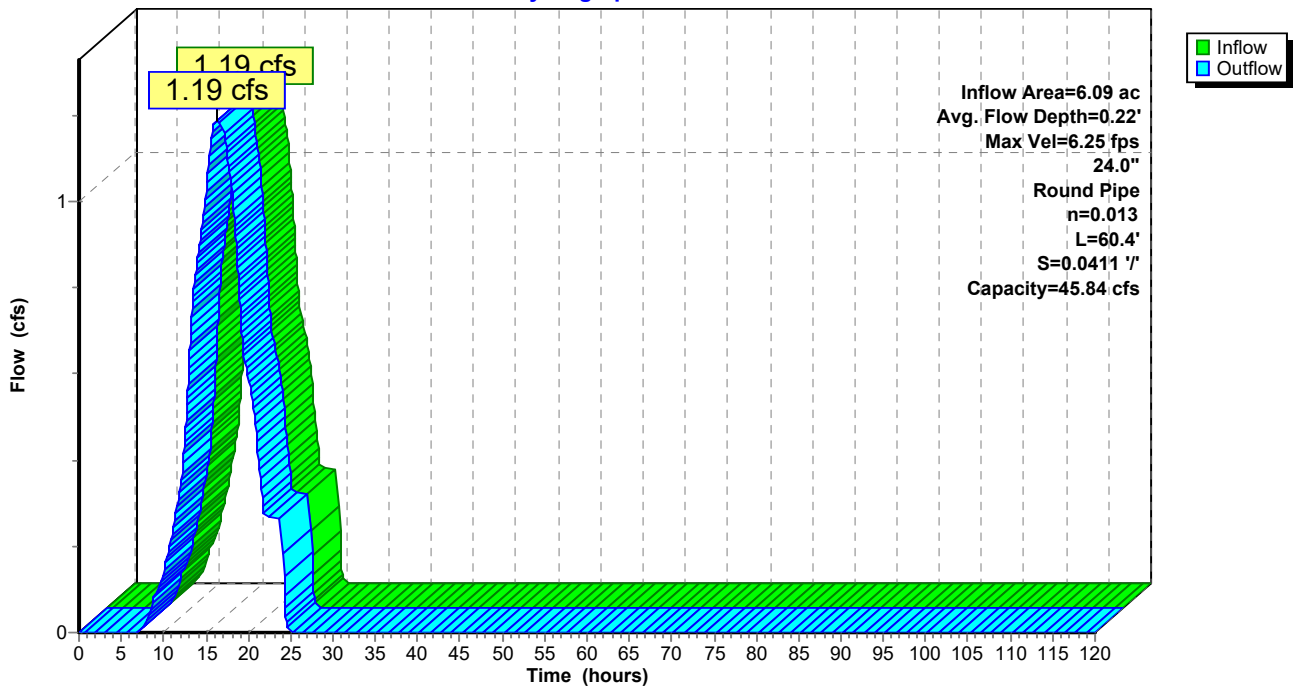
Peak Storage= 11 cf @ 16.23 hrs  
 Average Depth at Peak Storage= 0.22'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 45.84 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 60.4' Slope= 0.0411 '/  
 Inlet Invert= 748.28', Outlet Invert= 745.80'



**Reach LP-N-A9: Letdown Pipe N-A9**

Hydrograph



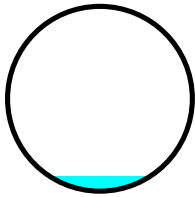
**Summary for Reach LP-N-B1: Letdown Pipe N-B1**

Inflow Area = 3.15 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.62 cfs @ 16.37 hrs, Volume= 0.397 af  
 Outflow = 0.62 cfs @ 16.38 hrs, Volume= 0.397 af, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 9.09 fps, Min. Travel Time= 0.4 min  
 Avg. Velocity= 6.17 fps, Avg. Travel Time= 0.5 min

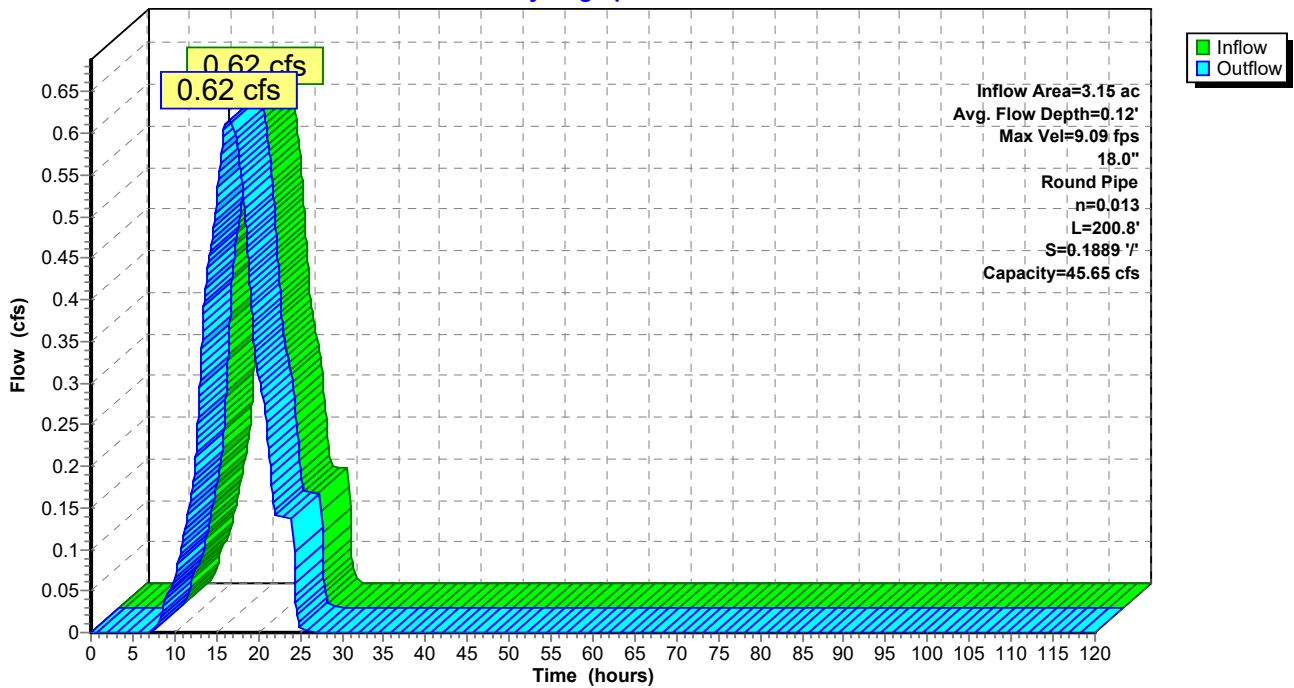
Peak Storage= 14 cf @ 16.38 hrs  
 Average Depth at Peak Storage= 0.12'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 45.65 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 200.8' Slope= 0.1889 '/'  
 Inlet Invert= 847.84', Outlet Invert= 809.91'



**Reach LP-N-B1: Letdown Pipe N-B1**

Hydrograph



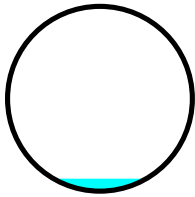
### Summary for Reach LP-N-B2: Letdown Pipe N-B2

Inflow Area = 4.49 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.87 cfs @ 16.39 hrs, Volume= 0.565 af  
 Outflow = 0.87 cfs @ 16.40 hrs, Volume= 0.565 af, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 9.72 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity= 6.61 fps, Avg. Travel Time= 0.5 min

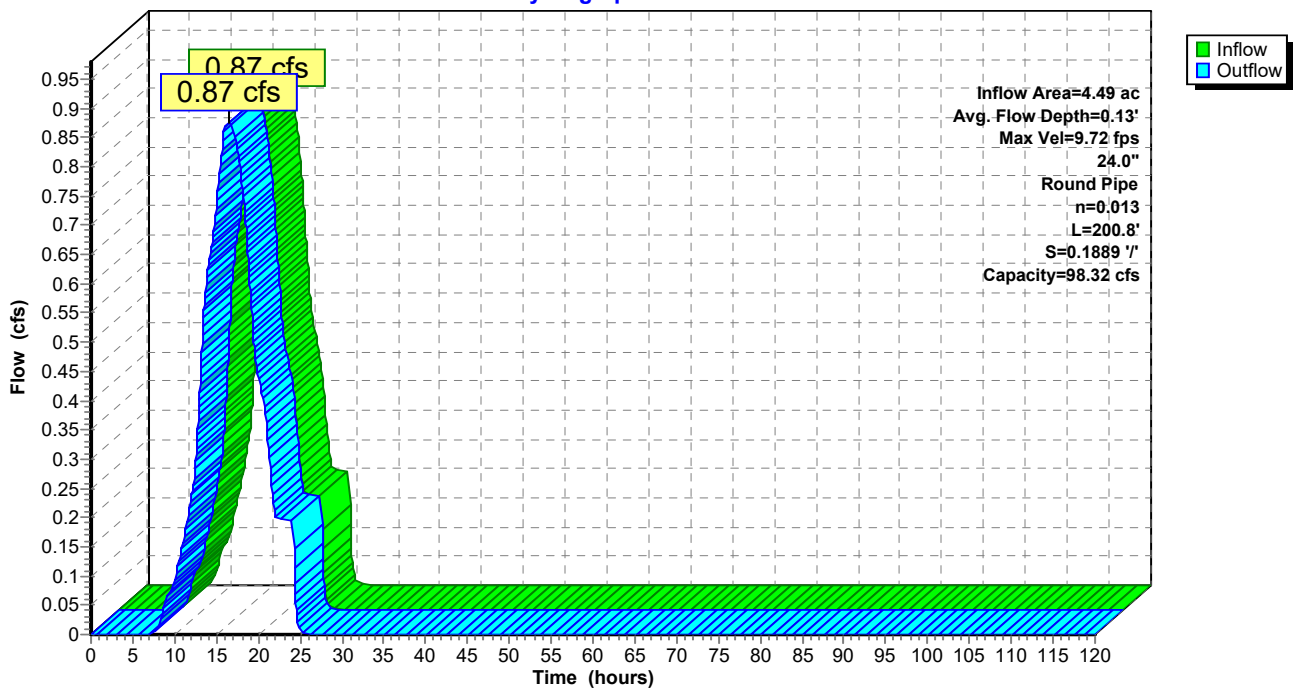
Peak Storage= 18 cf @ 16.39 hrs  
 Average Depth at Peak Storage= 0.13'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 98.32 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 200.8' Slope= 0.1889 '/'  
 Inlet Invert= 847.84', Outlet Invert= 809.91'



### Reach LP-N-B2: Letdown Pipe N-B2

Hydrograph





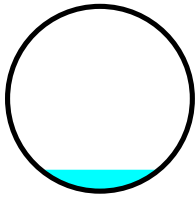
**Summary for Reach LP-N-B3: Letdown Pipe N-B3**

Inflow Area = 6.58 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 1.28 cfs @ 16.42 hrs, Volume= 0.828 af  
 Outflow = 1.28 cfs @ 16.43 hrs, Volume= 0.828 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 11.30 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 7.31 fps, Avg. Travel Time= 0.5 min

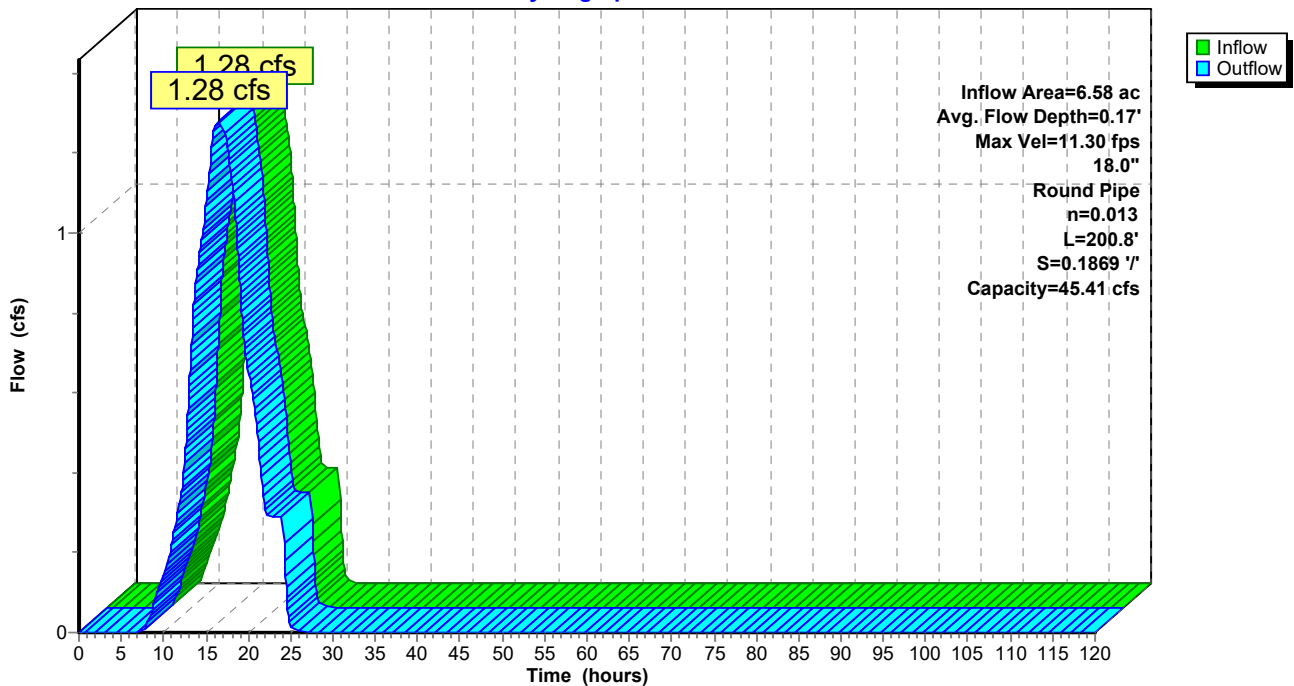
Peak Storage= 23 cf @ 16.42 hrs  
 Average Depth at Peak Storage= 0.17'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 45.41 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 200.8' Slope= 0.1869 '/'  
 Inlet Invert= 809.91', Outlet Invert= 772.39'



**Reach LP-N-B3: Letdown Pipe N-B3**

Hydrograph



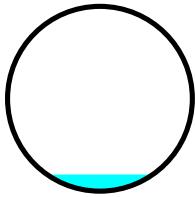
**Summary for Reach LP-N-B4: Letdown Pipe N-B4**

Inflow Area = 8.29 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 1.62 cfs @ 16.41 hrs, Volume= 1.044 af  
 Outflow = 1.62 cfs @ 16.41 hrs, Volume= 1.044 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 11.64 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 7.61 fps, Avg. Travel Time= 0.4 min

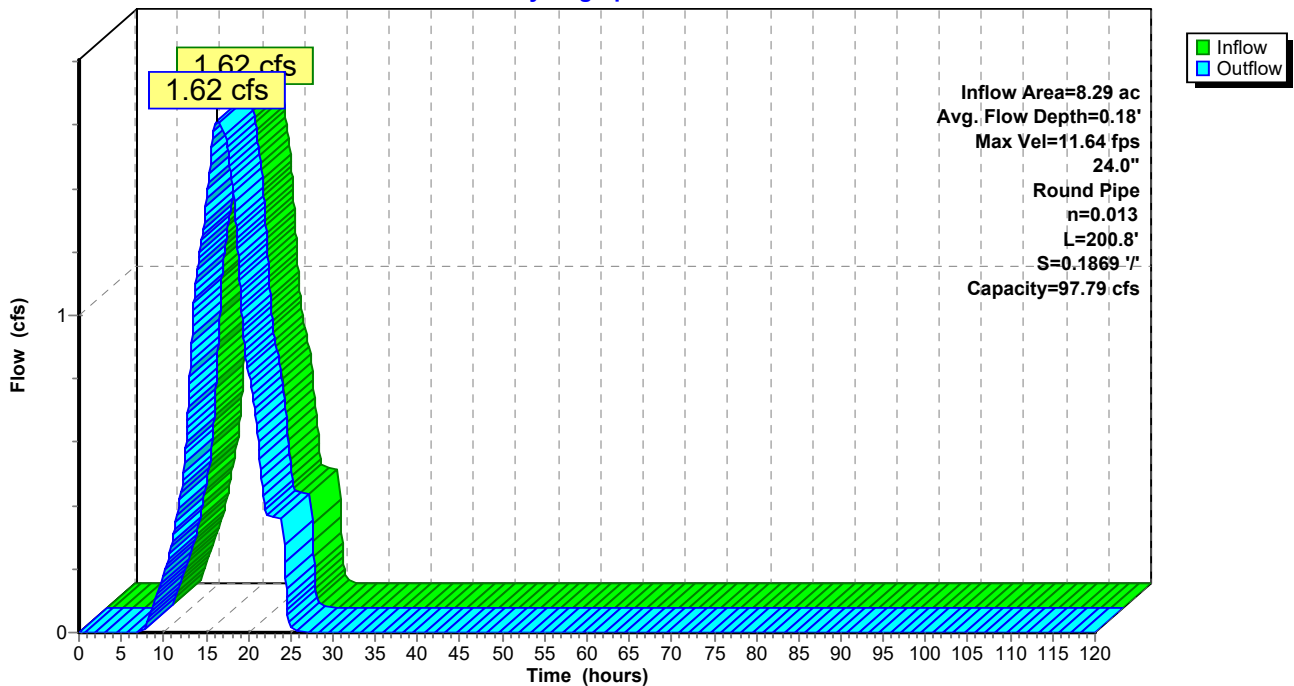
Peak Storage= 28 cf @ 16.41 hrs  
 Average Depth at Peak Storage= 0.18'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 97.79 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 200.8' Slope= 0.1869 '/'  
 Inlet Invert= 809.91', Outlet Invert= 772.39'



**Reach LP-N-B4: Letdown Pipe N-B4**

Hydrograph



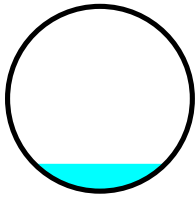
**Summary for Reach LP-N-B5: Letdown Pipe N-B5**

Inflow Area = 11.08 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 2.16 cfs @ 16.47 hrs, Volume= 1.395 af  
 Outflow = 2.16 cfs @ 16.48 hrs, Volume= 1.395 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 13.38 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 8.28 fps, Avg. Travel Time= 0.3 min

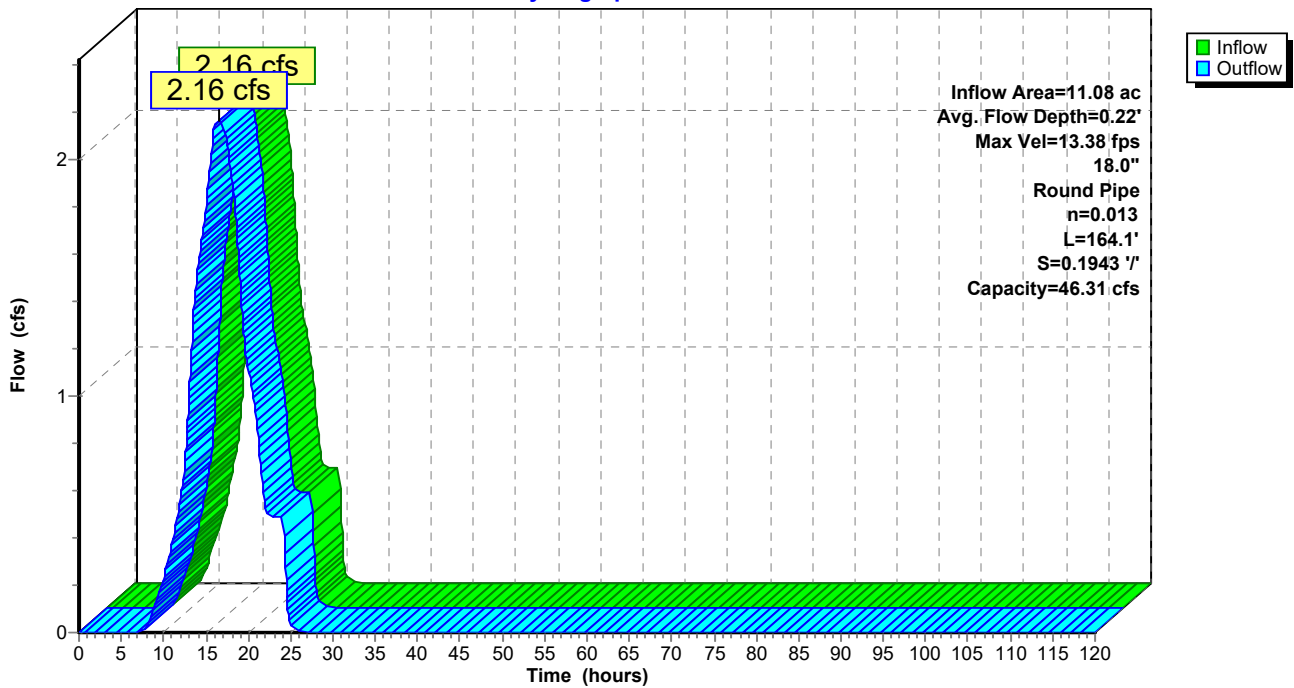
Peak Storage= 26 cf @ 16.47 hrs  
 Average Depth at Peak Storage= 0.22'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 46.31 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 164.1' Slope= 0.1943 '/'  
 Inlet Invert= 772.39', Outlet Invert= 740.50'



**Reach LP-N-B5: Letdown Pipe N-B5**

Hydrograph



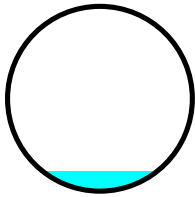
**Summary for Reach LP-N-B6: Letdown Pipe N-B6**

Inflow Area = 12.58 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 2.45 cfs @ 16.43 hrs, Volume= 1.583 af  
 Outflow = 2.45 cfs @ 16.43 hrs, Volume= 1.583 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 13.39 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 8.50 fps, Avg. Travel Time= 0.3 min

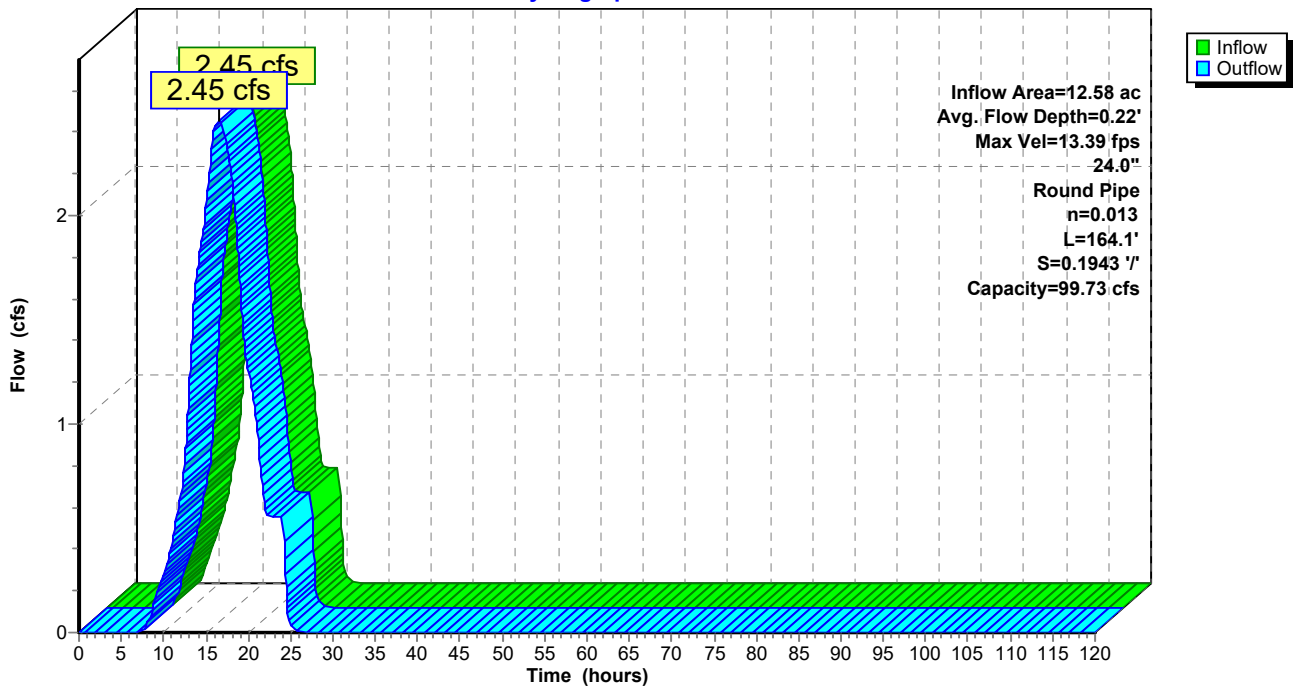
Peak Storage= 30 cf @ 16.43 hrs  
 Average Depth at Peak Storage= 0.22'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 99.73 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 164.1' Slope= 0.1943 '/'  
 Inlet Invert= 772.39', Outlet Invert= 740.50'



**Reach LP-N-B6: Letdown Pipe N-B6**

Hydrograph



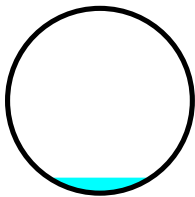
**Summary for Reach LP-N-C1: Letdown Pipe N-C1**

Inflow Area = 8.24 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 1.61 cfs @ 16.39 hrs, Volume= 1.037 af  
 Outflow = 1.61 cfs @ 16.39 hrs, Volume= 1.037 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 12.88 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 8.55 fps, Avg. Travel Time= 0.3 min

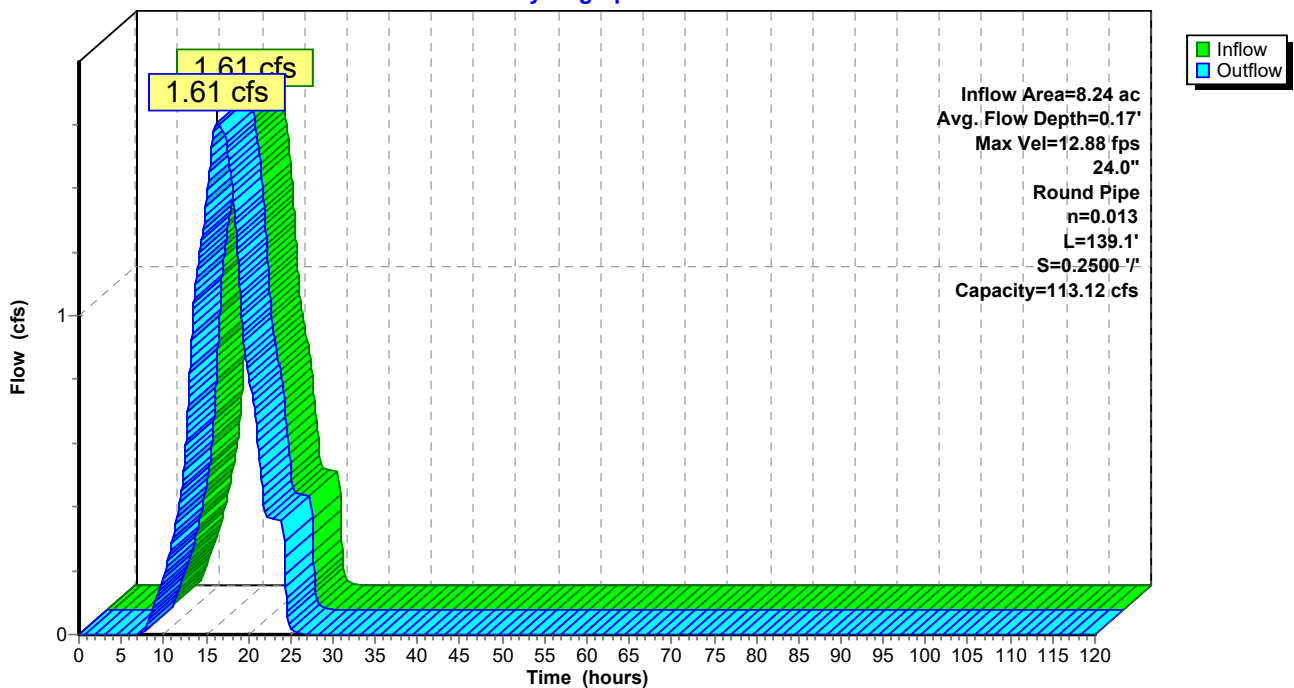
Peak Storage= 17 cf @ 16.39 hrs  
 Average Depth at Peak Storage= 0.17'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 113.12 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 139.1' Slope= 0.2500 '/'  
 Inlet Invert= 843.66', Outlet Invert= 808.88'



**Reach LP-N-C1: Letdown Pipe N-C1**

Hydrograph



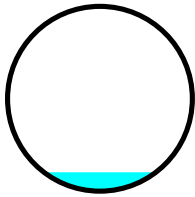
**Summary for Reach LP-N-C2: Letdown Pipe N-C2**

Inflow Area = 12.44 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 2.43 cfs @ 16.40 hrs, Volume= 1.566 af  
 Outflow = 2.43 cfs @ 16.41 hrs, Volume= 1.566 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 14.57 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 9.39 fps, Avg. Travel Time= 0.1 min

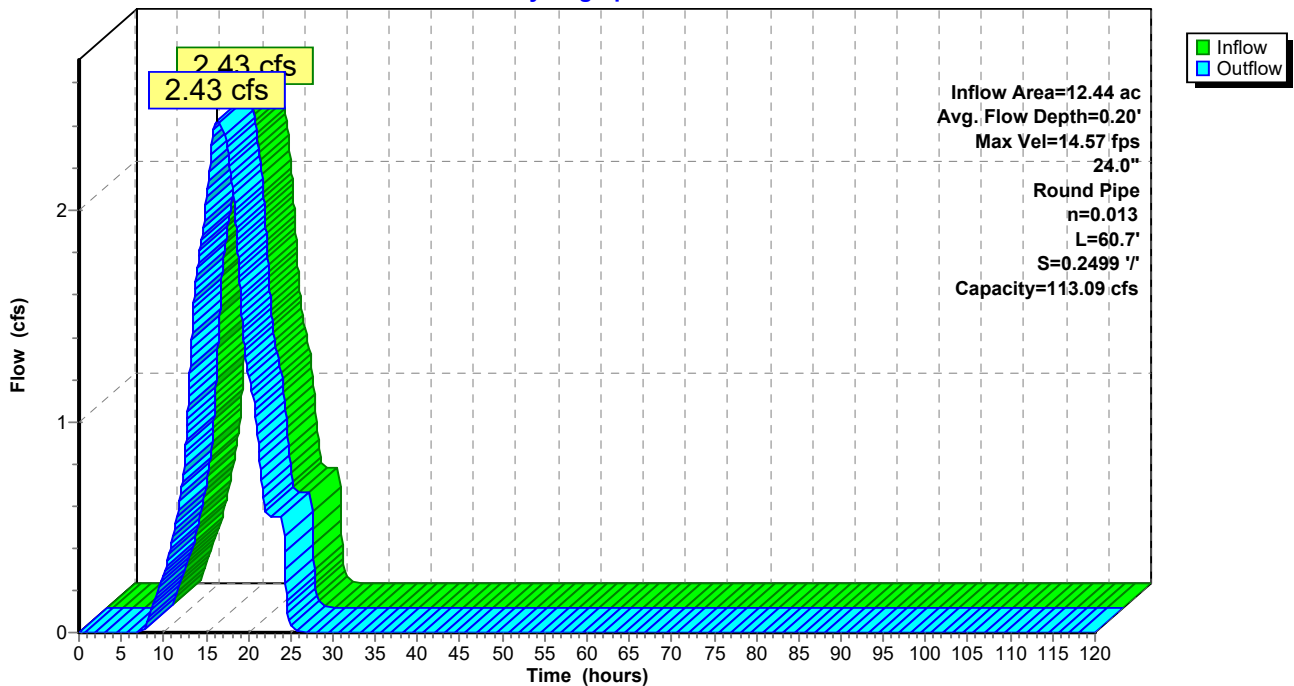
Peak Storage= 10 cf @ 16.41 hrs  
 Average Depth at Peak Storage= 0.20'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 113.09 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 60.7' Slope= 0.2499 '/  
 Inlet Invert= 808.88', Outlet Invert= 793.71'



**Reach LP-N-C2: Letdown Pipe N-C2**

Hydrograph



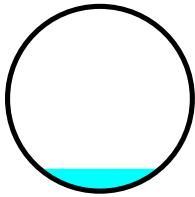
**Summary for Reach LP-N-C3: Letdown Pipe N-C3**

Inflow Area = 17.99 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 3.51 cfs @ 16.40 hrs, Volume= 2.265 af  
 Outflow = 3.51 cfs @ 16.40 hrs, Volume= 2.265 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 16.43 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 10.37 fps, Avg. Travel Time= 0.2 min

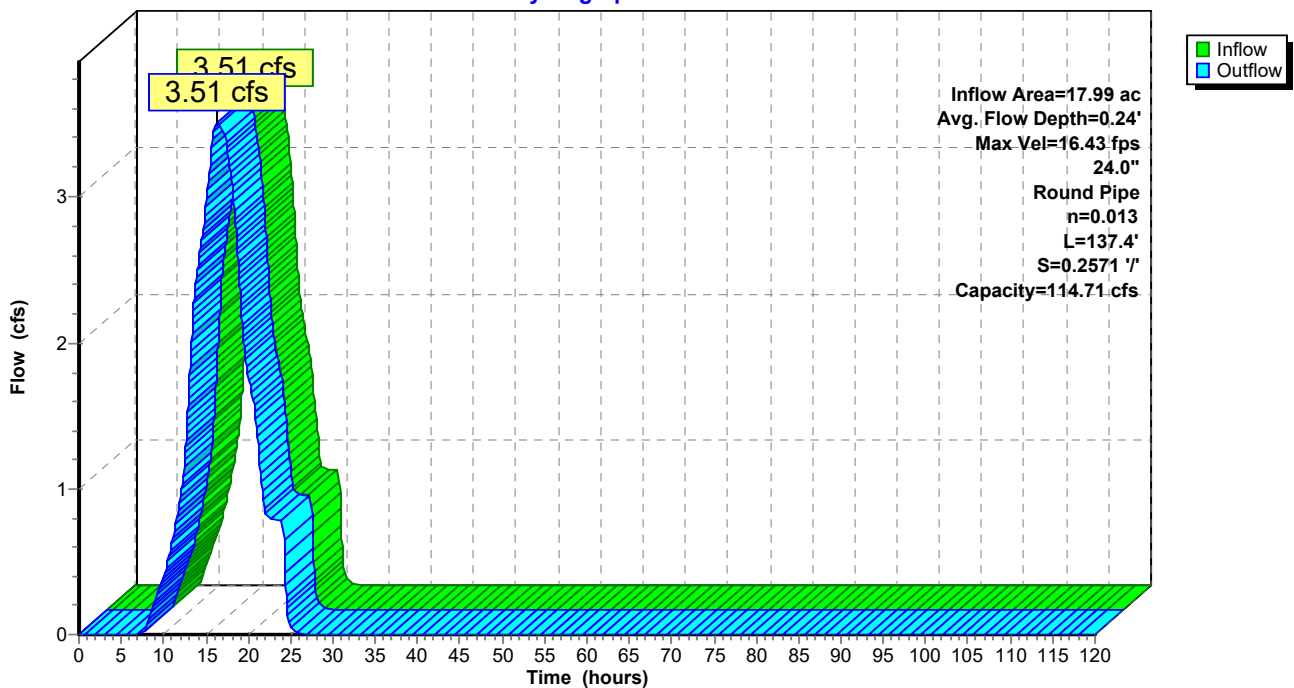
Peak Storage= 29 cf @ 16.40 hrs  
 Average Depth at Peak Storage= 0.24'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 114.71 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 137.4' Slope= 0.2571 1'  
 Inlet Invert= 774.26', Outlet Invert= 738.93'



**Reach LP-N-C3: Letdown Pipe N-C3**

Hydrograph



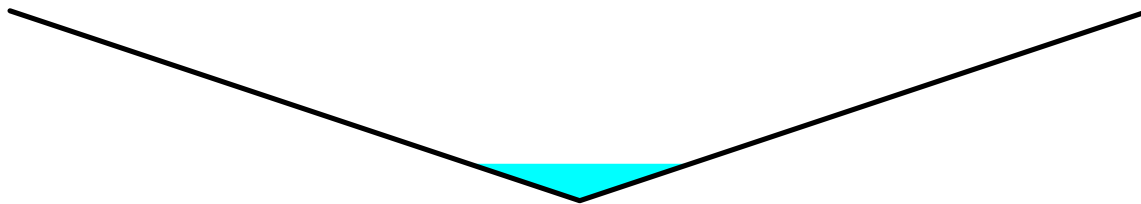
**Summary for Reach PD-1: Perimeter Ditch 1**

Inflow Area = 8.06 ac, 4.48% Impervious, Inflow Depth = 1.59" for 2-Year, 24-Hour event  
 Inflow = 1.63 cfs @ 15.93 hrs, Volume= 1.064 af  
 Outflow = 1.62 cfs @ 16.65 hrs, Volume= 1.064 af, Atten= 0%, Lag= 43.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.59 fps, Min. Travel Time= 17.6 min  
 Avg. Velocity = 0.81 fps, Avg. Travel Time= 34.4 min

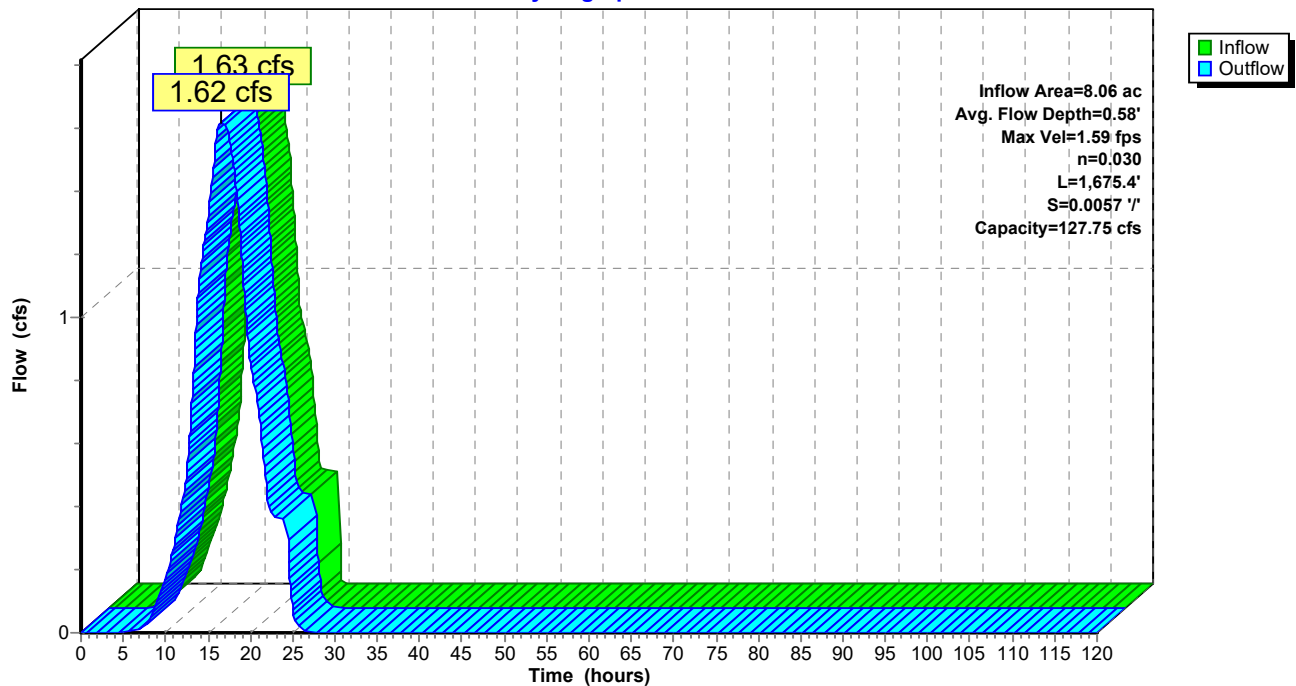
Peak Storage= 1,709 cf @ 16.36 hrs  
 Average Depth at Peak Storage= 0.58'  
 Bank-Full Depth= 3.00' Flow Area= 27.0 sf, Capacity= 127.75 cfs

0.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 ' / ' Top Width= 18.00'  
 Length= 1,675.4' Slope= 0.0057 ' / '  
 Inlet Invert= 768.00', Outlet Invert= 758.45'



**Reach PD-1: Perimeter Ditch 1**

Hydrograph





**Summary for Reach PD-10: Perimeter Ditch 10**

Inflow Area = 9.21 ac, 4.89% Impervious, Inflow Depth = 1.60" for 2-Year, 24-Hour event  
 Inflow = 1.87 cfs @ 16.54 hrs, Volume= 1.227 af  
 Outflow = 1.86 cfs @ 16.74 hrs, Volume= 1.227 af, Atten= 0%, Lag= 11.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.05 fps, Min. Travel Time= 7.0 min  
 Avg. Velocity = 0.59 fps, Avg. Travel Time= 12.4 min

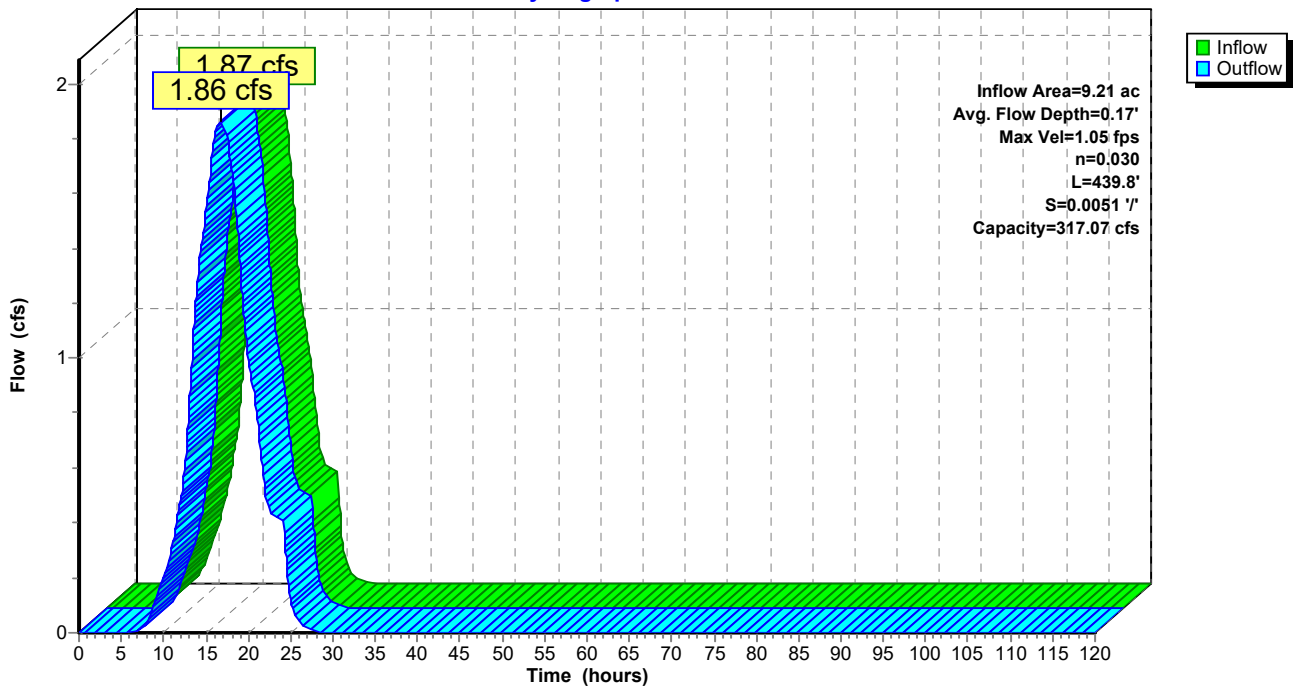
Peak Storage= 781 cf @ 16.62 hrs  
 Average Depth at Peak Storage= 0.17'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 317.07 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 ' / ' Top Width= 28.00'  
 Length= 439.8' Slope= 0.0051 ' / '  
 Inlet Invert= 739.43', Outlet Invert= 737.18'



**Reach PD-10: Perimeter Ditch 10**

Hydrograph



**Summary for Reach PD-11: Perimeter Ditch 11**

Inflow Area = 2.70 ac, 11.67% Impervious, Inflow Depth = 1.72" for 2-Year, 24-Hour event  
 Inflow = 0.58 cfs @ 15.73 hrs, Volume= 0.387 af  
 Outflow = 0.58 cfs @ 16.81 hrs, Volume= 0.387 af, Atten= 1%, Lag= 64.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 0.67 fps, Min. Travel Time= 27.6 min  
 Avg. Velocity = 0.43 fps, Avg. Travel Time= 42.7 min

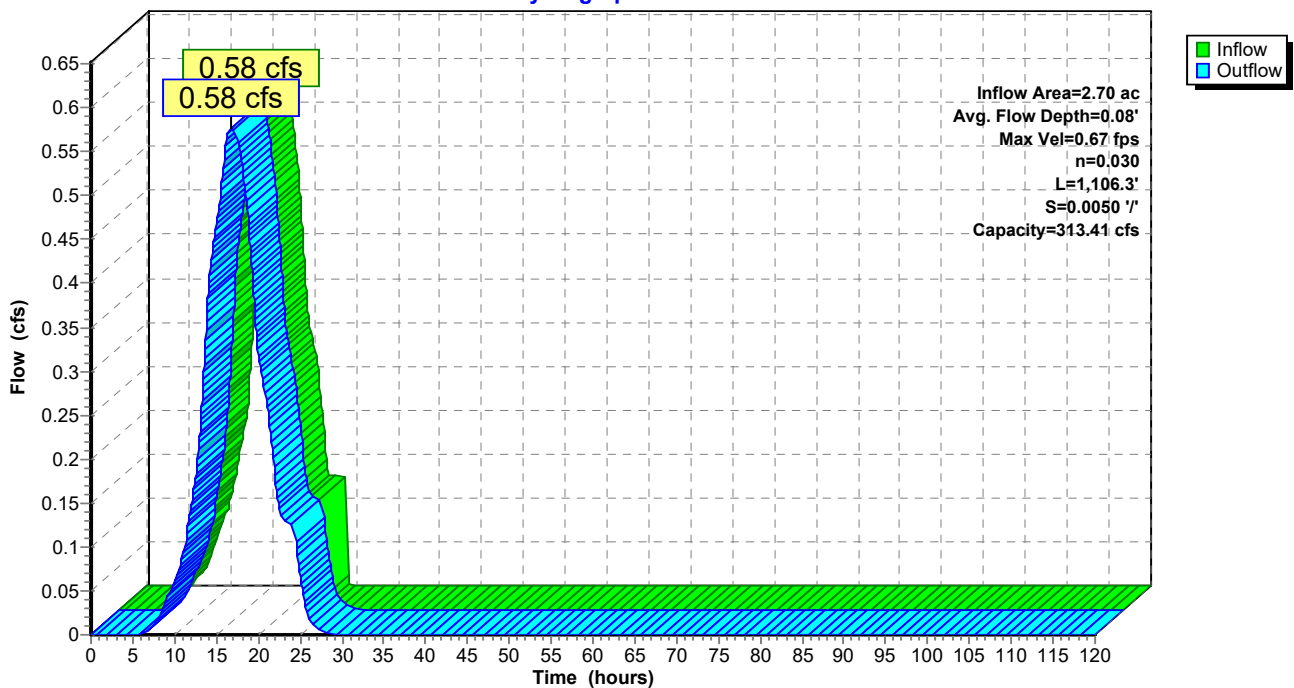
Peak Storage= 956 cf @ 16.35 hrs  
 Average Depth at Peak Storage= 0.08'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 313.41 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 1,106.3' Slope= 0.0050 '/'  
 Inlet Invert= 744.96', Outlet Invert= 739.43'



**Reach PD-11: Perimeter Ditch 11**

Hydrograph



**Summary for Reach PD-12: Perimeter Ditch 12**

Inflow Area = 2.74 ac, 11.45% Impervious, Inflow Depth = 1.72" for 2-Year, 24-Hour event  
 Inflow = 0.59 cfs @ 16.15 hrs, Volume= 0.393 af  
 Outflow = 0.59 cfs @ 17.04 hrs, Volume= 0.393 af, Atten= 1%, Lag= 53.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 0.67 fps, Min. Travel Time= 27.2 min  
 Avg. Velocity = 0.43 fps, Avg. Travel Time= 42.2 min

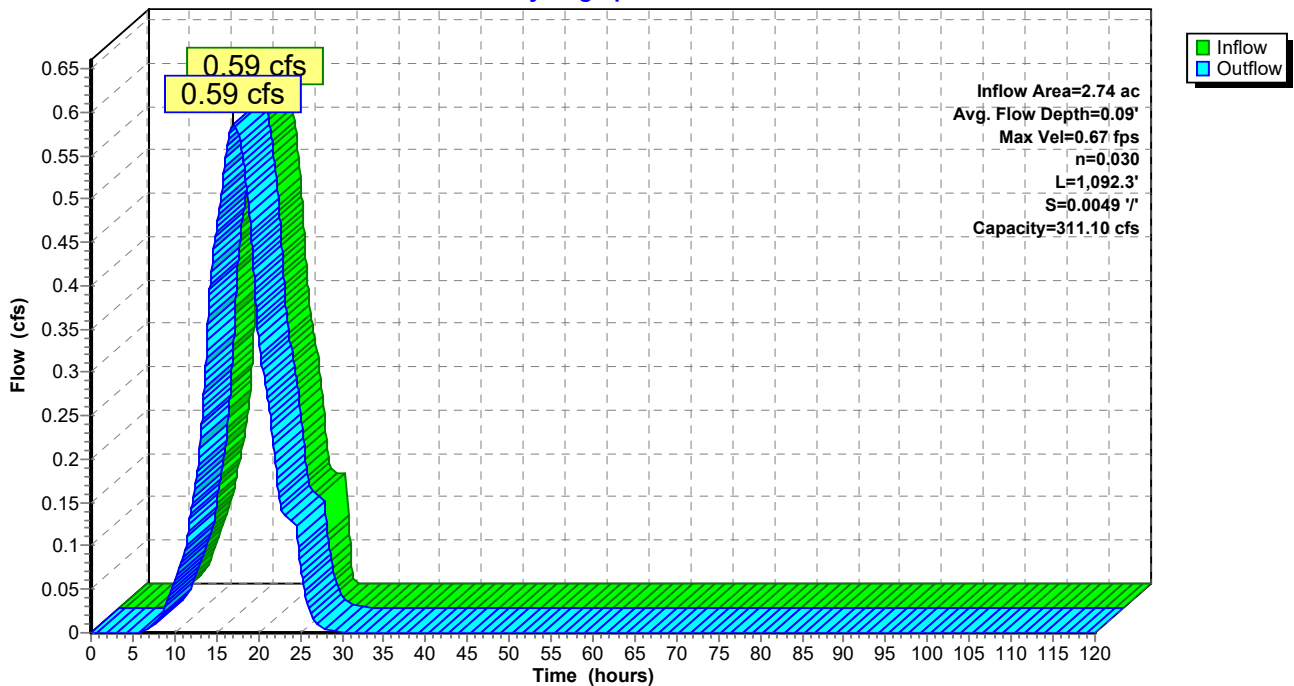
Peak Storage= 958 cf @ 16.59 hrs  
 Average Depth at Peak Storage= 0.09'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 311.10 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 1,092.3' Slope= 0.0049 '/'  
 Inlet Invert= 744.96', Outlet Invert= 739.58'



**Reach PD-12: Perimeter Ditch 12**

Hydrograph



**Summary for Reach PD-13: Perimeter Ditch 13**

Inflow Area = 25.73 ac, 1.49% Impervious, Inflow Depth = 1.54" for 2-Year, 24-Hour event  
 Inflow = 5.07 cfs @ 16.58 hrs, Volume= 3.301 af  
 Outflow = 5.07 cfs @ 16.66 hrs, Volume= 3.301 af, Atten= 0%, Lag= 4.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.27 fps, Min. Travel Time= 2.9 min  
 Avg. Velocity = 0.64 fps, Avg. Travel Time= 5.8 min

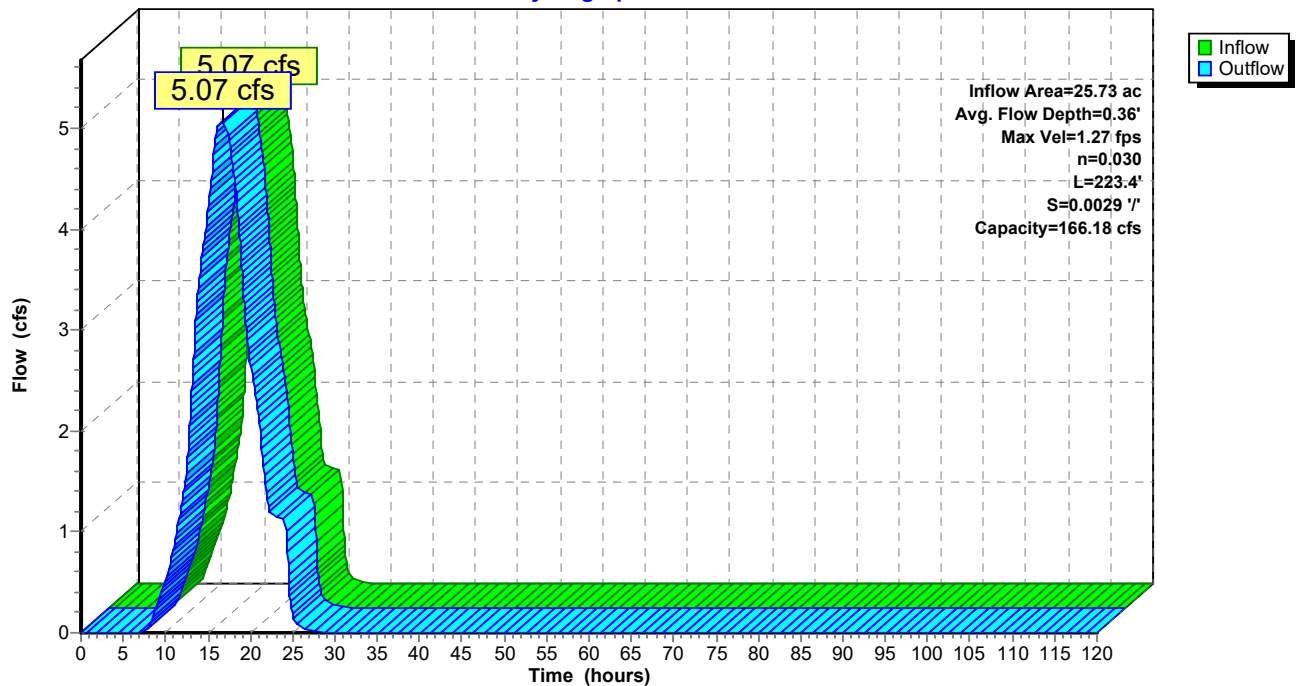
Peak Storage= 895 cf @ 16.61 hrs  
 Average Depth at Peak Storage= 0.36'  
 Bank-Full Depth= 2.50' Flow Area= 43.8 sf, Capacity= 166.18 cfs

10.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 25.00'  
 Length= 223.4' Slope= 0.0029 '/'  
 Inlet Invert= 739.58', Outlet Invert= 738.93'



**Reach PD-13: Perimeter Ditch 13**

Hydrograph



**Summary for Reach PD-14: Perimeter Ditch 14**

Inflow Area = 17.46 ac, 1.99% Impervious, Inflow Depth = 1.55" for 2-Year, 24-Hour event  
 Inflow = 3.45 cfs @ 16.60 hrs, Volume= 2.249 af  
 Outflow = 3.45 cfs @ 16.68 hrs, Volume= 2.249 af, Atten= 0%, Lag= 4.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.26 fps, Min. Travel Time= 2.9 min  
 Avg. Velocity = 0.64 fps, Avg. Travel Time= 5.8 min

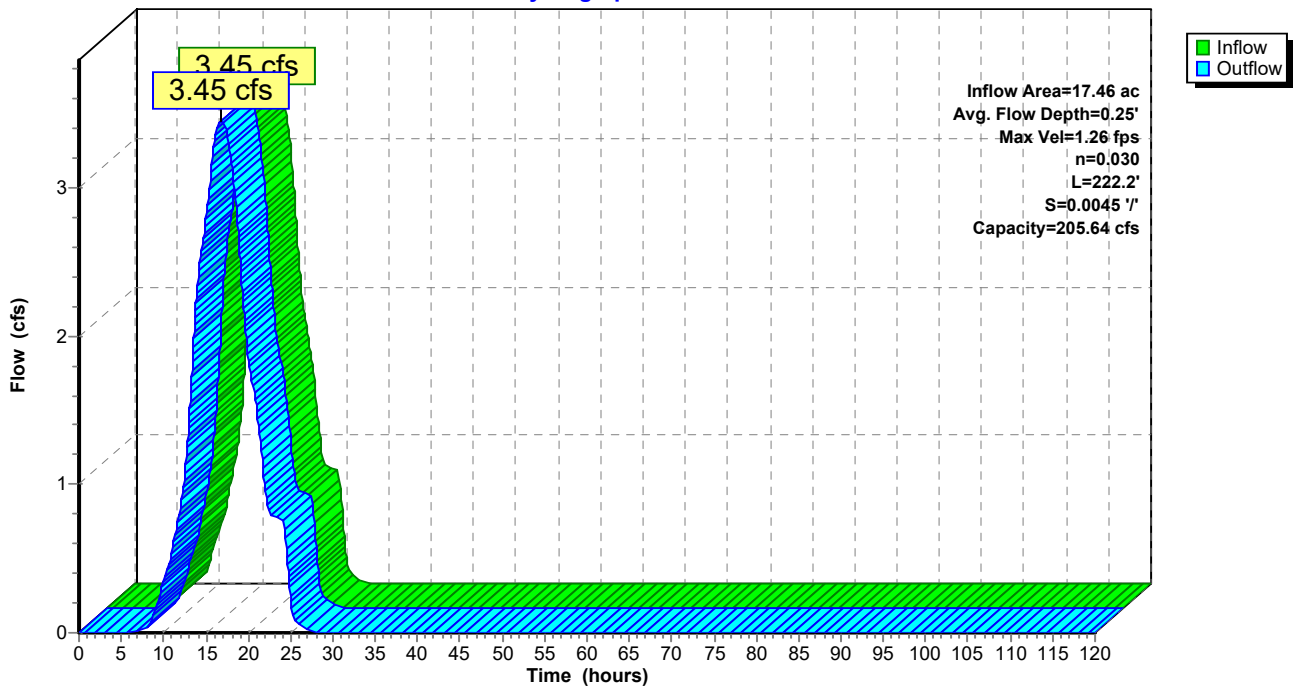
Peak Storage= 608 cf @ 16.63 hrs  
 Average Depth at Peak Storage= 0.25'  
 Bank-Full Depth= 2.50' Flow Area= 43.8 sf, Capacity= 205.64 cfs

10.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 25.00'  
 Length= 222.2' Slope= 0.0045 '/'  
 Inlet Invert= 739.92', Outlet Invert= 738.93'



**Reach PD-14: Perimeter Ditch 14**

Hydrograph



**Summary for Reach PD-15: Perimeter Ditch 15**

Inflow Area = 16.01 ac, 1.69% Impervious, Inflow Depth = 1.54" for 2-Year, 24-Hour event  
 Inflow = 3.16 cfs @ 16.32 hrs, Volume= 2.056 af  
 Outflow = 3.16 cfs @ 16.63 hrs, Volume= 2.056 af, Atten= 0%, Lag= 18.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.22 fps, Min. Travel Time= 10.3 min  
 Avg. Velocity = 0.62 fps, Avg. Travel Time= 20.3 min

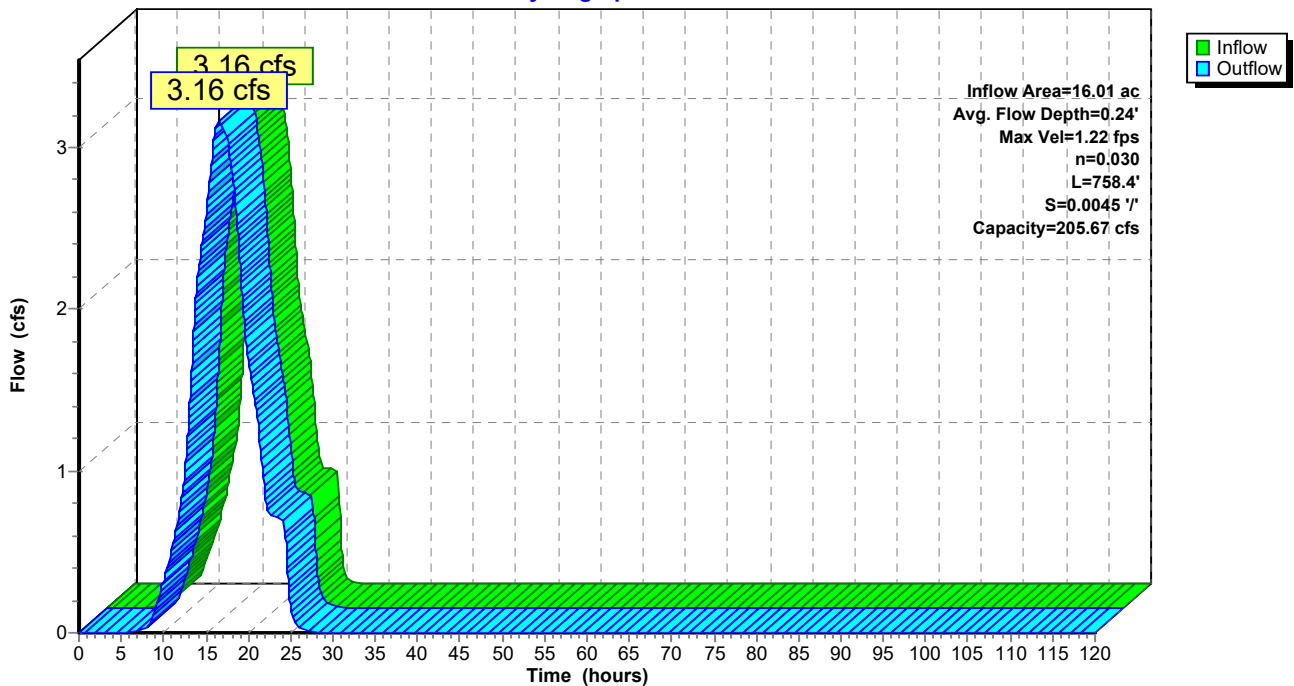
Peak Storage= 1,961 cf @ 16.46 hrs  
 Average Depth at Peak Storage= 0.24'  
 Bank-Full Depth= 2.50' Flow Area= 43.8 sf, Capacity= 205.67 cfs

10.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 25.00'  
 Length= 758.4' Slope= 0.0045 '/'  
 Inlet Invert= 743.30', Outlet Invert= 739.92'



**Reach PD-15: Perimeter Ditch 15**

Hydrograph



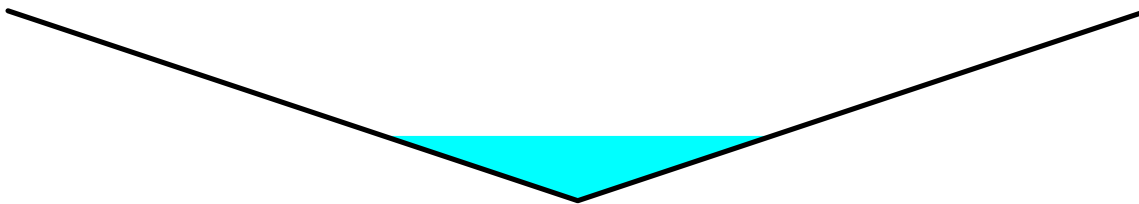
**Summary for Reach PD-2: Perimeter Ditch 2**

Inflow Area = 30.47 ac, 1.77% Impervious, Inflow Depth = 1.53" for 2-Year, 24-Hour event  
 Inflow = 5.99 cfs @ 16.70 hrs, Volume= 3.893 af  
 Outflow = 5.99 cfs @ 16.78 hrs, Volume= 3.893 af, Atten= 0%, Lag= 4.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.91 fps, Min. Travel Time= 2.8 min  
 Avg. Velocity = 0.91 fps, Avg. Travel Time= 5.8 min

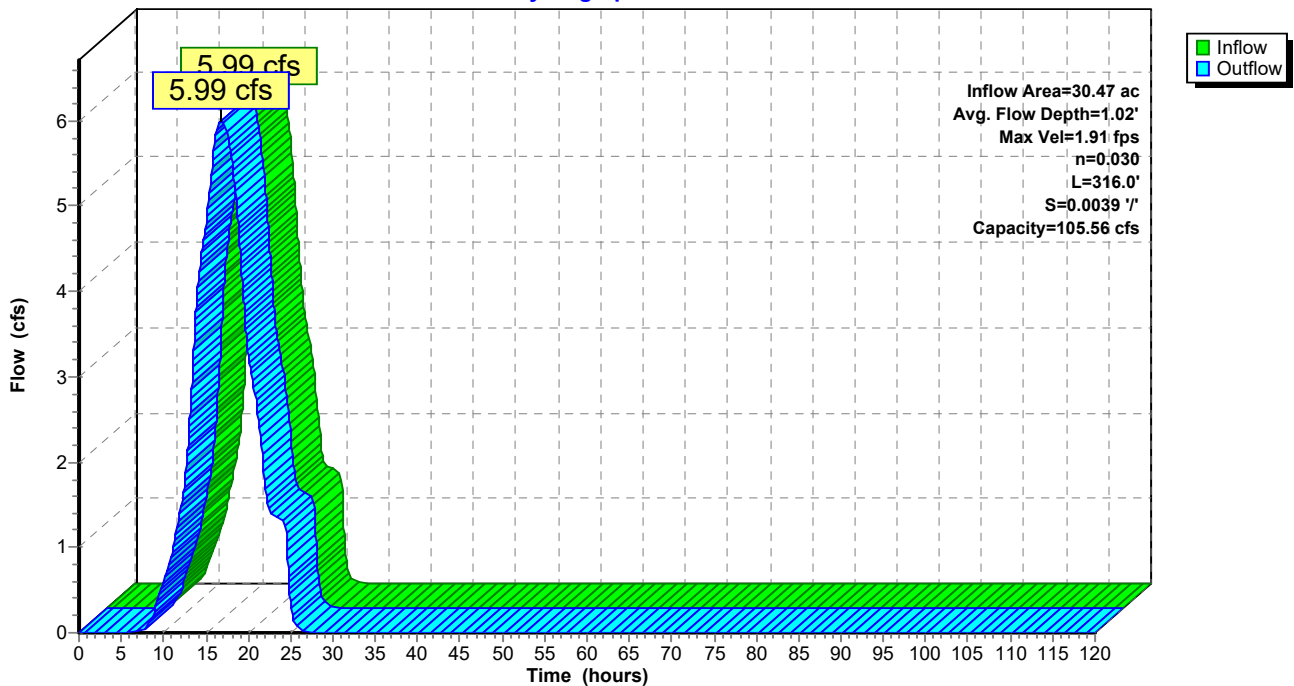
Peak Storage= 992 cf @ 16.73 hrs  
 Average Depth at Peak Storage= 1.02'  
 Bank-Full Depth= 3.00' Flow Area= 27.0 sf, Capacity= 105.56 cfs

0.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 18.00'  
 Length= 316.0' Slope= 0.0039 '/'  
 Inlet Invert= 758.00', Outlet Invert= 756.77'



**Reach PD-2: Perimeter Ditch 2**

Hydrograph



**Summary for Reach PD-3: Perimeter Ditch 3**

Inflow Area = 50.20 ac, 1.23% Impervious, Inflow Depth = 1.53" for 2-Year, 24-Hour event  
 Inflow = 9.84 cfs @ 16.67 hrs, Volume= 6.388 af  
 Outflow = 9.84 cfs @ 16.78 hrs, Volume= 6.388 af, Atten= 0%, Lag= 6.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.22 fps, Min. Travel Time= 3.7 min  
 Avg. Velocity = 1.04 fps, Avg. Travel Time= 7.8 min

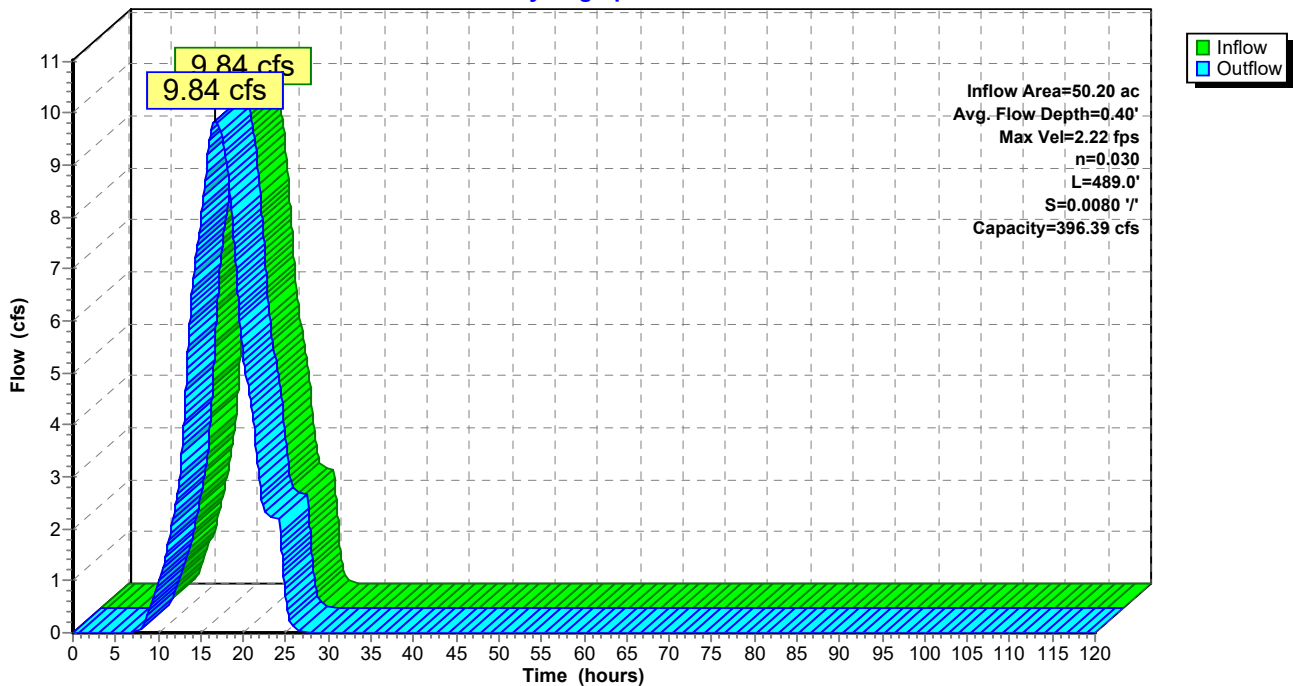
Peak Storage= 2,168 cf @ 16.71 hrs  
 Average Depth at Peak Storage= 0.40'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 396.39 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 489.0' Slope= 0.0080 '/'  
 Inlet Invert= 755.78', Outlet Invert= 751.87'



**Reach PD-3: Perimeter Ditch 3**

Hydrograph





**Summary for Reach PD-4: Perimeter Ditch 4**

Inflow Area = 53.25 ac, 1.28% Impervious, Inflow Depth = 1.53" for 2-Year, 24-Hour event  
 Inflow = 10.44 cfs @ 16.77 hrs, Volume= 6.782 af  
 Outflow = 10.44 cfs @ 16.83 hrs, Volume= 6.782 af, Atten= 0%, Lag= 3.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.86 fps, Min. Travel Time= 2.1 min  
 Avg. Velocity= 1.34 fps, Avg. Travel Time= 4.6 min

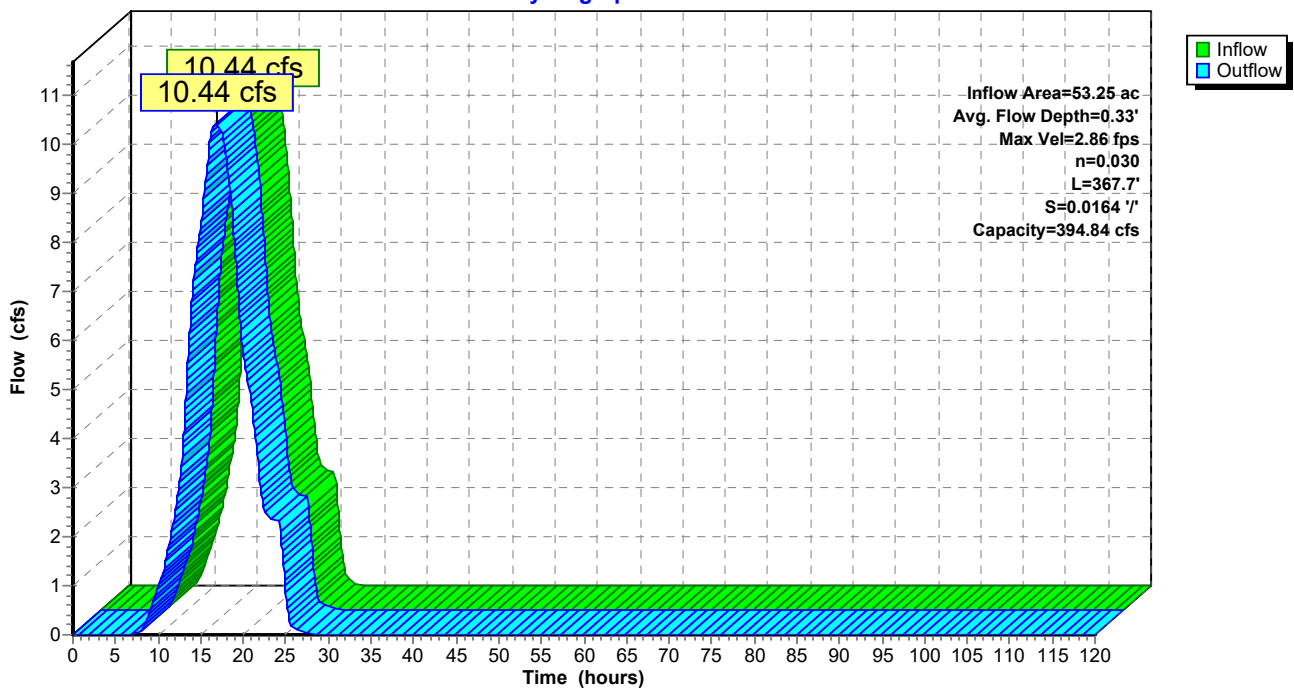
Peak Storage= 1,343 cf @ 16.79 hrs  
 Average Depth at Peak Storage= 0.33'  
 Bank-Full Depth= 2.50' Flow Area= 43.8 sf, Capacity= 394.84 cfs

10.00' x 2.50' deep channel, n= 0.030  
 Side Slope Z-value= 3.0 '/' Top Width= 25.00'  
 Length= 367.7' Slope= 0.0164 '/'  
 Inlet Invert= 751.87', Outlet Invert= 745.83'



**Reach PD-4: Perimeter Ditch 4**

Hydrograph



**Summary for Reach PD-5: Perimeter Ditch 5**

Inflow Area = 85.14 ac, 1.17% Impervious, Inflow Depth = 1.53" for 2-Year, 24-Hour event  
 Inflow = 16.68 cfs @ 16.72 hrs, Volume= 10.838 af  
 Outflow = 16.68 cfs @ 16.95 hrs, Volume= 10.838 af, Atten= 0%, Lag= 14.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.32 fps, Min. Travel Time= 8.1 min  
 Avg. Velocity = 1.02 fps, Avg. Travel Time= 18.6 min

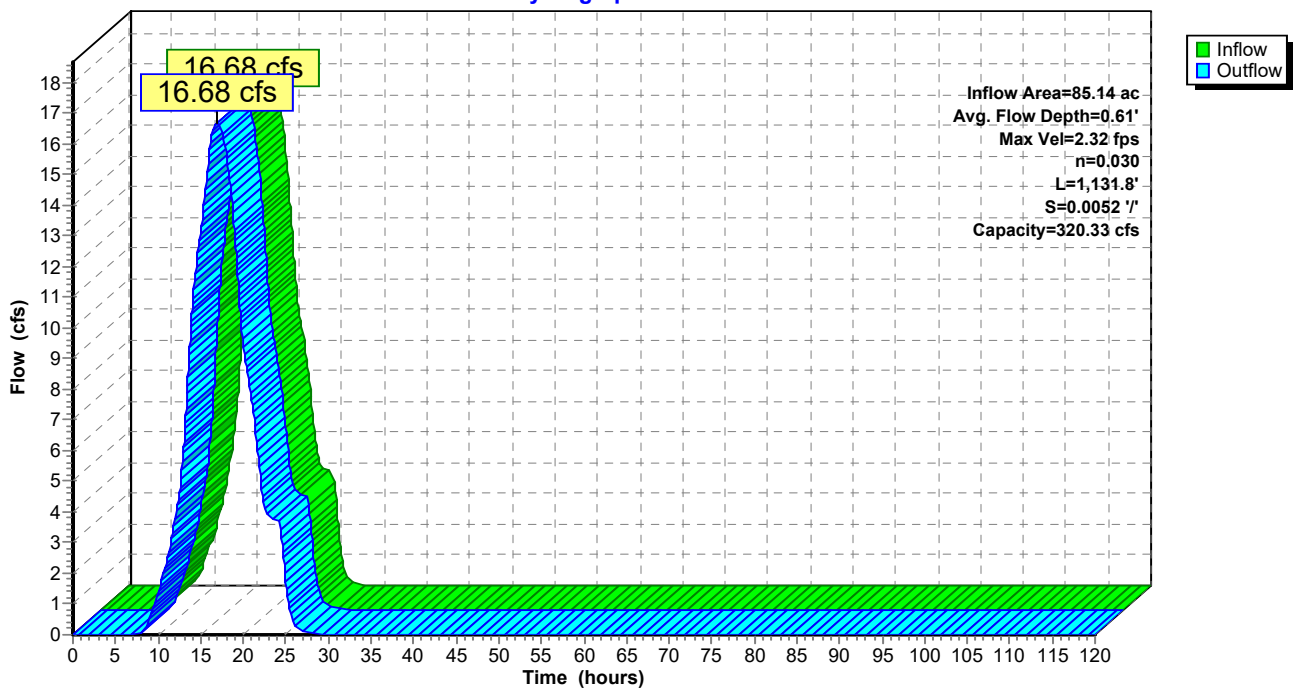
Peak Storage= 8,153 cf @ 16.82 hrs  
 Average Depth at Peak Storage= 0.61'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 320.33 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 1,131.8' Slope= 0.0052 '/'  
 Inlet Invert= 745.80', Outlet Invert= 739.89'



**Reach PD-5: Perimeter Ditch 5**

Hydrograph



**Summary for Reach PD-6: Perimeter Ditch 6**

Inflow Area = 87.70 ac, 1.33% Impervious, Inflow Depth = 1.53" for 2-Year, 24-Hour event  
 Inflow = 17.19 cfs @ 16.91 hrs, Volume= 11.184 af  
 Outflow = 17.19 cfs @ 17.03 hrs, Volume= 11.184 af, Atten= 0%, Lag= 7.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.30 fps, Min. Travel Time= 4.2 min  
 Avg. Velocity = 1.00 fps, Avg. Travel Time= 9.7 min

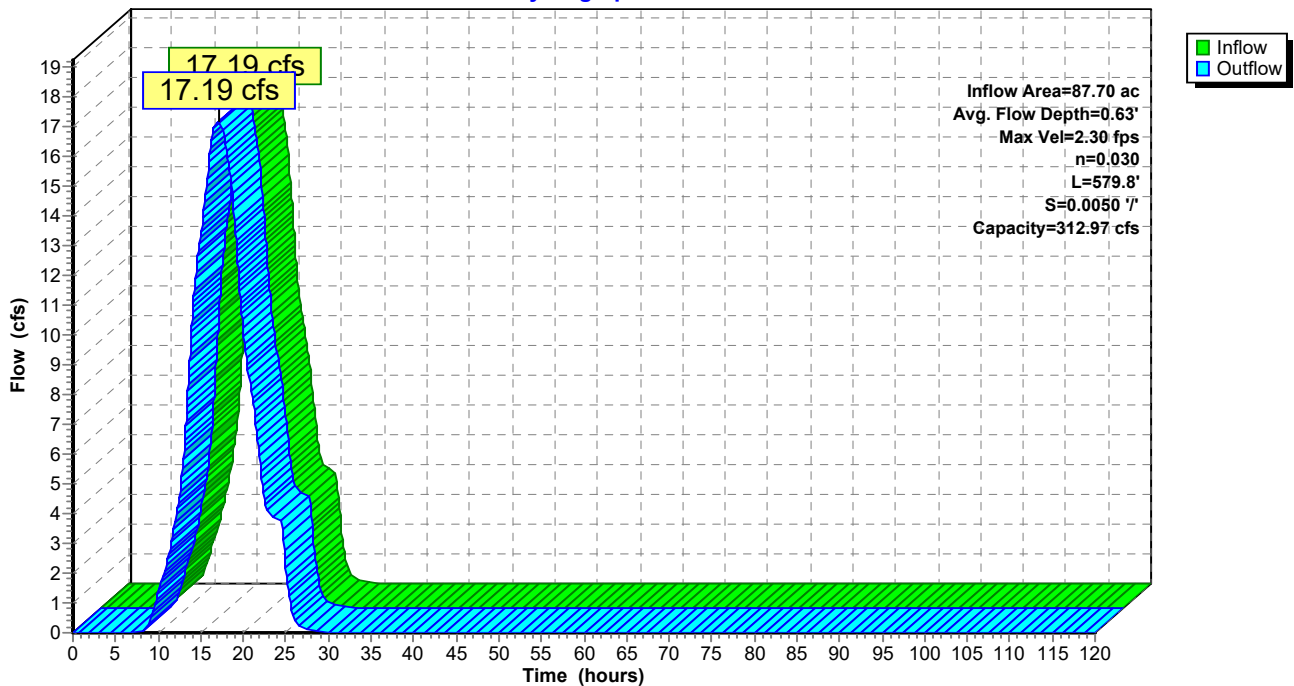
Peak Storage= 4,328 cf @ 16.96 hrs  
 Average Depth at Peak Storage= 0.63'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 312.97 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 ' / ' Top Width= 28.00'  
 Length= 579.8' Slope= 0.0050 ' / '  
 Inlet Invert= 739.89', Outlet Invert= 737.00'



**Reach PD-6: Perimeter Ditch 6**

Hydrograph



**Summary for Reach PD-7: Perimeter Ditch 7**

Inflow Area = 3.12 ac, 32.08% Impervious, Inflow Depth = 2.16" for 2-Year, 24-Hour event  
 Inflow = 0.79 cfs @ 15.66 hrs, Volume= 0.562 af  
 Outflow = 0.79 cfs @ 15.72 hrs, Volume= 0.562 af, Atten= 0%, Lag= 3.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 0.75 fps, Min. Travel Time= 2.0 min  
 Avg. Velocity = 0.50 fps, Avg. Travel Time= 2.9 min

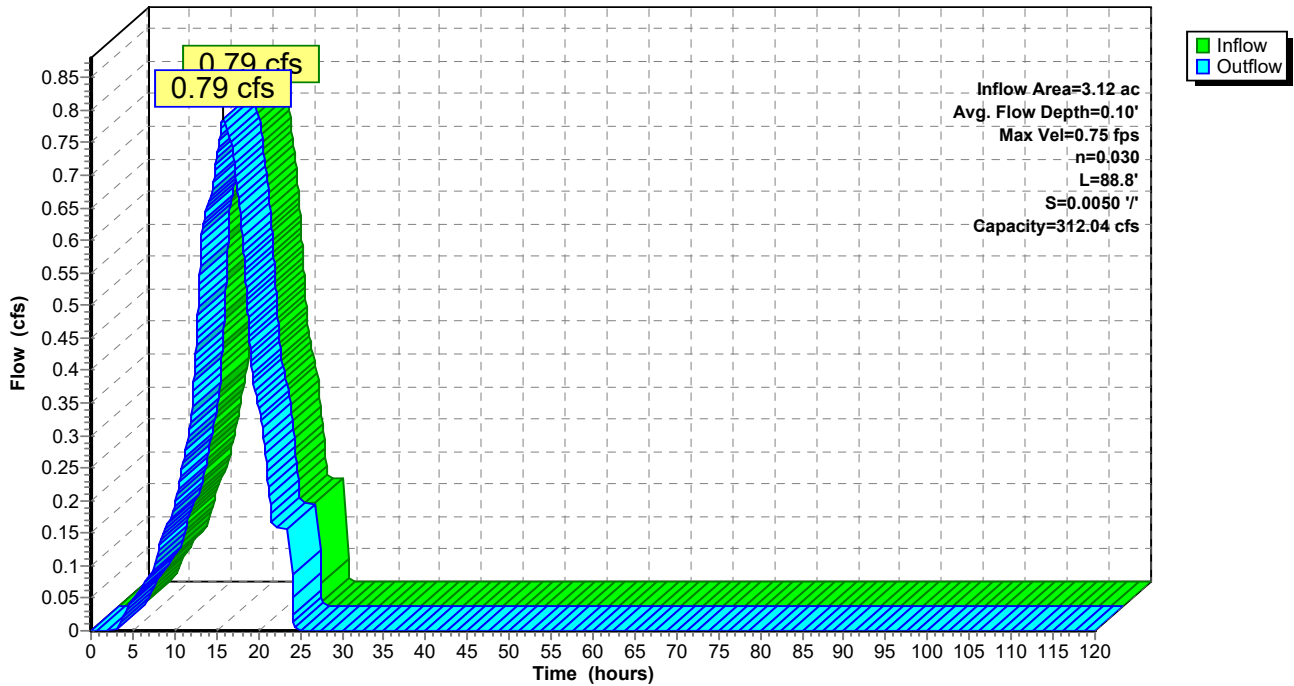
Peak Storage= 93 cf @ 15.68 hrs  
 Average Depth at Peak Storage= 0.10'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 312.04 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 88.8' Slope= 0.0050 '/'  
 Inlet Invert= 741.25', Outlet Invert= 740.81'



**Reach PD-7: Perimeter Ditch 7**

Hydrograph



**Summary for Reach PD-8: Perimeter Ditch 8**

Inflow Area = 0.14 ac, 14.29% Impervious, Inflow Depth = 1.77" for 2-Year, 24-Hour event  
 Inflow = 0.03 cfs @ 15.66 hrs, Volume= 0.021 af  
 Outflow = 0.03 cfs @ 15.88 hrs, Volume= 0.021 af, Atten= 0%, Lag= 13.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 0.33 fps, Min. Travel Time= 4.4 min  
 Avg. Velocity = 0.33 fps, Avg. Travel Time= 4.4 min

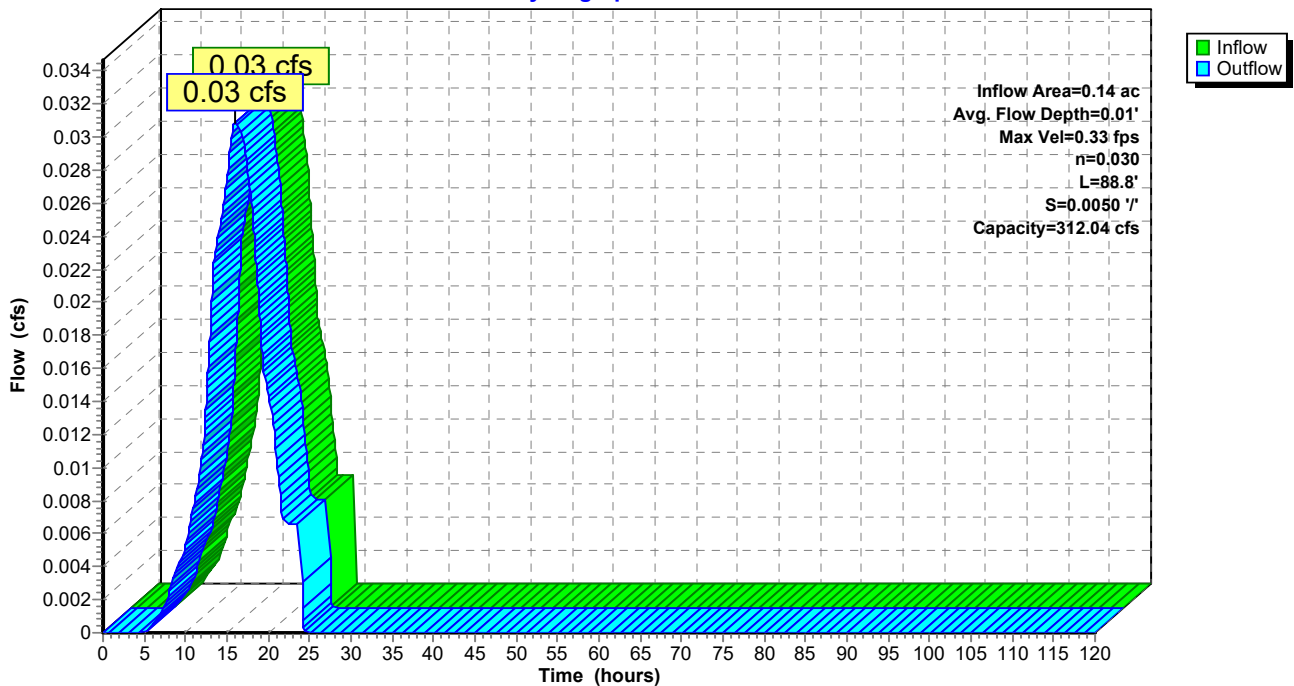
Peak Storage= 8 cf @ 15.81 hrs  
 Average Depth at Peak Storage= 0.01'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 312.04 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 88.8' Slope= 0.0050 '/'  
 Inlet Invert= 741.25', Outlet Invert= 740.81'



**Reach PD-8: Perimeter Ditch 8**

Hydrograph



**Summary for Reach PD-9: Perimeter Ditch 9**

Inflow Area = 6.78 ac, 3.10% Impervious, Inflow Depth = 1.57" for 2-Year, 24-Hour event  
 Inflow = 1.36 cfs @ 16.25 hrs, Volume= 0.886 af  
 Outflow = 1.35 cfs @ 16.59 hrs, Volume= 0.886 af, Atten= 0%, Lag= 20.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 0.96 fps, Min. Travel Time= 11.1 min  
 Avg. Velocity = 0.56 fps, Avg. Travel Time= 19.0 min

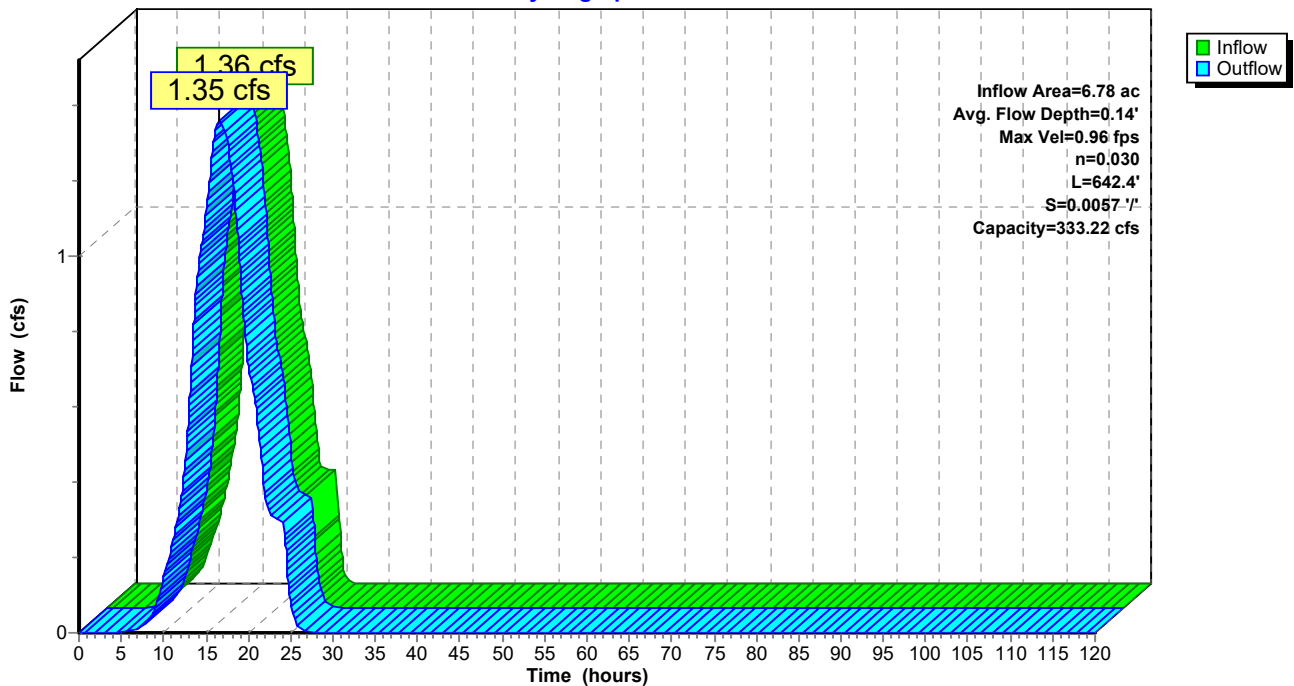
Peak Storage= 906 cf @ 16.40 hrs  
 Average Depth at Peak Storage= 0.14'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 333.22 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 642.4' Slope= 0.0057 '/'  
 Inlet Invert= 740.81', Outlet Invert= 737.18'



**Reach PD-9: Perimeter Ditch 9**

Hydrograph



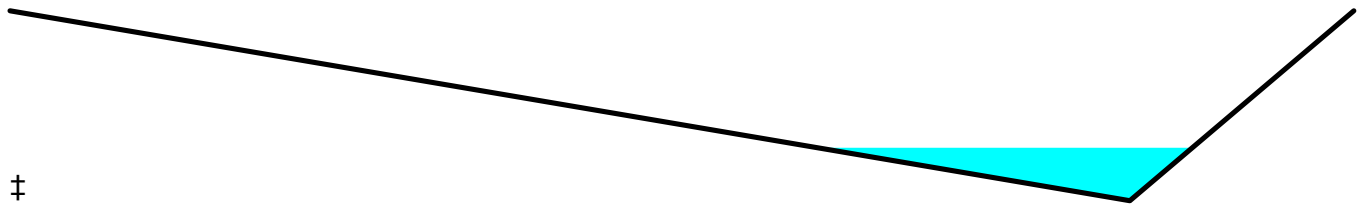
**Summary for Reach TB-A1A: Terrace Berm A1A**

Inflow Area = 6.74 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 1.31 cfs @ 16.27 hrs, Volume= 0.848 af  
 Outflow = 1.31 cfs @ 16.53 hrs, Volume= 0.848 af, Atten= 0%, Lag= 15.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.87 fps, Min. Travel Time= 9.2 min  
 Avg. Velocity = 1.12 fps, Avg. Travel Time= 15.4 min

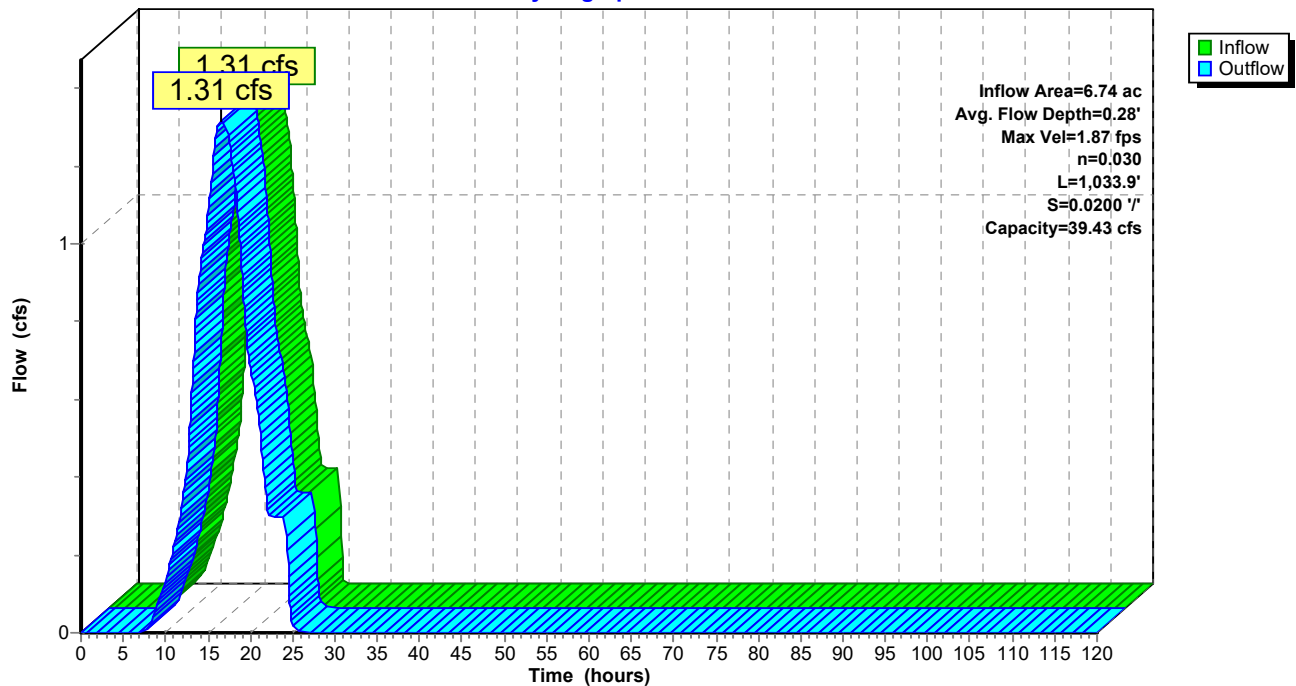
Peak Storage= 725 cf @ 16.37 hrs  
 Average Depth at Peak Storage= 0.28'  
 Bank-Full Depth= 1.00' Flow Area= 9.0 sf, Capacity= 39.43 cfs

0.00' x 1.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 15.0 3.0 '/' Top Width= 18.00'  
 Length= 1,033.9' Slope= 0.0200 '/'  
 Inlet Invert= 842.00', Outlet Invert= 821.32'



**Reach TB-A1A: Terrace Berm A1A**

Hydrograph



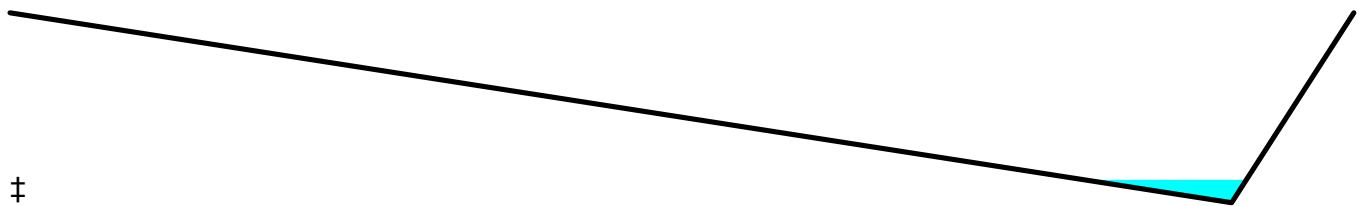
**Summary for Reach TB-A1B: Terrace Berm A1B**

Inflow Area = 5.23 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 1.02 cfs @ 16.09 hrs, Volume= 0.658 af  
 Outflow = 1.02 cfs @ 16.56 hrs, Volume= 0.658 af, Atten= 0%, Lag= 28.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.41 fps, Min. Travel Time= 13.8 min  
 Avg. Velocity = 0.86 fps, Avg. Travel Time= 22.7 min

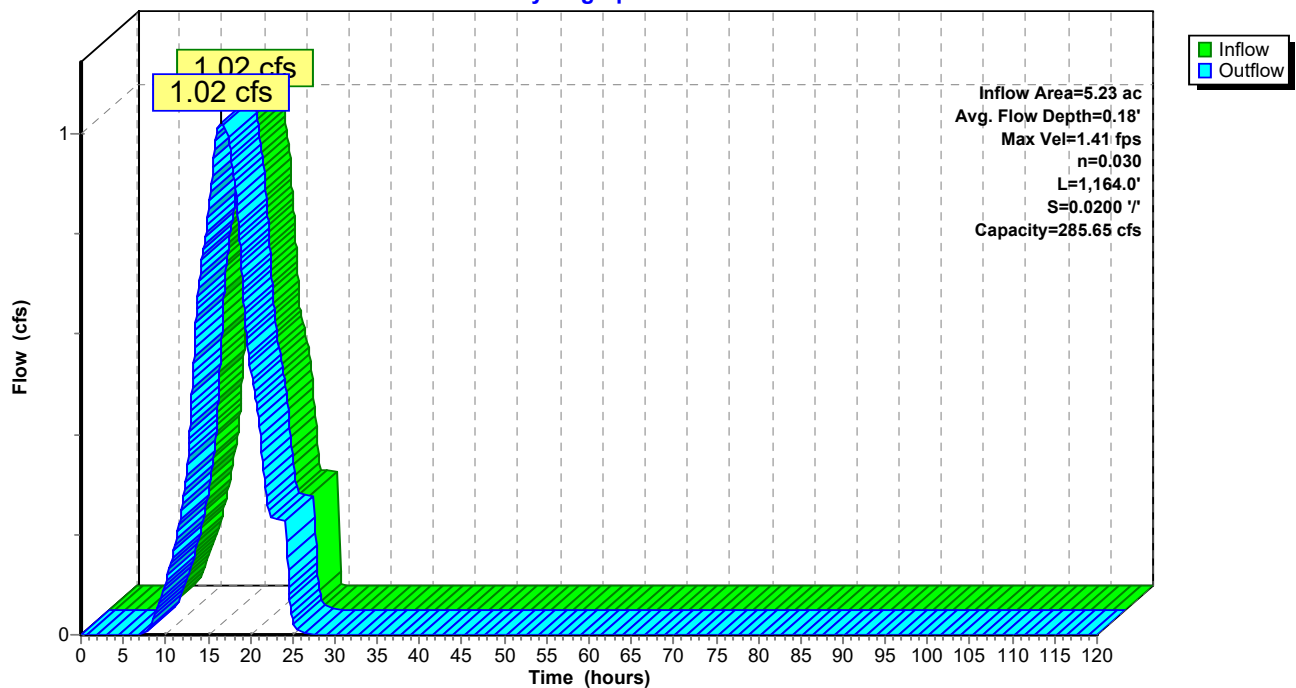
Peak Storage= 841 cf @ 16.33 hrs  
 Average Depth at Peak Storage= 0.18'  
 Bank-Full Depth= 1.50' Flow Area= 49.5 sf, Capacity= 285.65 cfs

0.00' x 1.50' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 40.0 4.0 '/' Top Width= 66.00'  
 Length= 1,164.0' Slope= 0.0200 '/'  
 Inlet Invert= 806.00', Outlet Invert= 782.72'



**Reach TB-A1B: Terrace Berm A1B**

Hydrograph





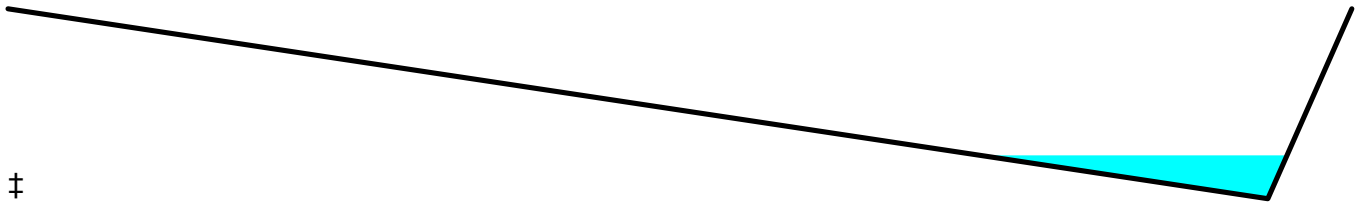
**Summary for Reach TB-A1C: Terrace Berm A1C**

Inflow Area = 9.16 ac, 1.48% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 1.79 cfs @ 16.46 hrs, Volume= 1.153 af  
 Outflow = 1.78 cfs @ 16.83 hrs, Volume= 1.153 af, Atten= 0%, Lag= 22.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.42 fps, Min. Travel Time= 11.3 min  
 Avg. Velocity = 0.81 fps, Avg. Travel Time= 19.9 min

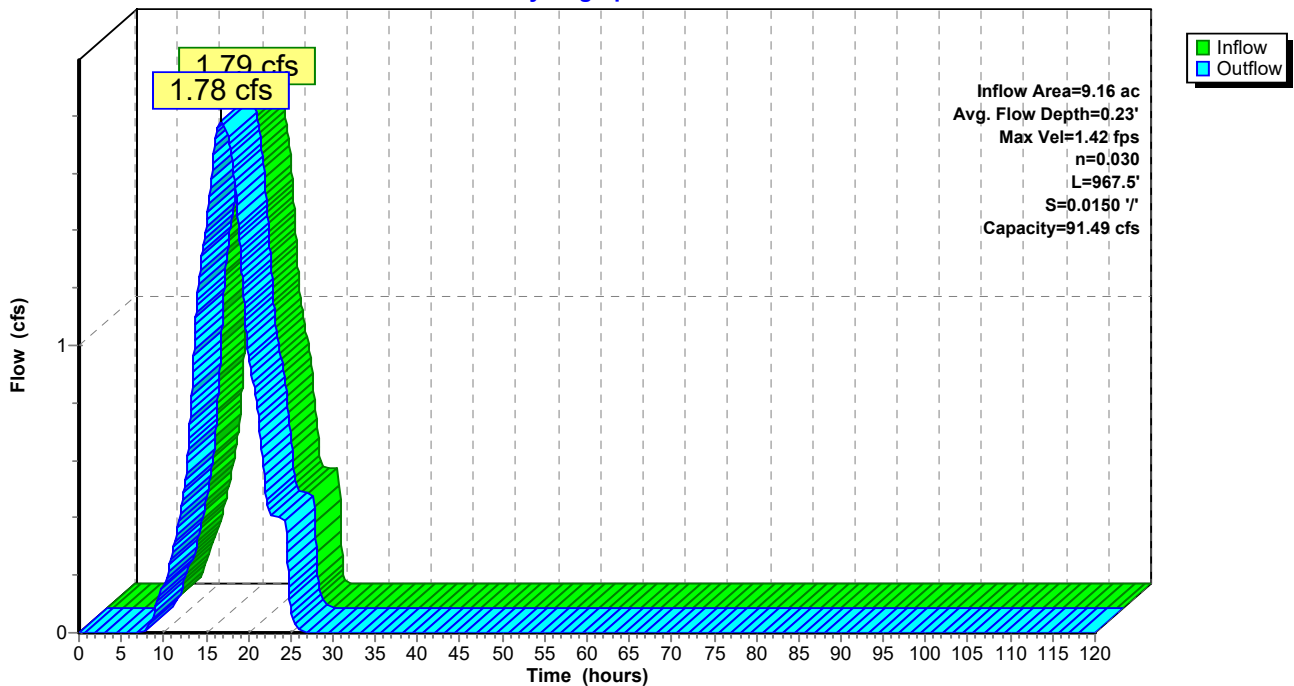
Peak Storage= 1,212 cf @ 16.64 hrs  
 Average Depth at Peak Storage= 0.23'  
 Bank-Full Depth= 1.00' Flow Area= 24.0 sf, Capacity= 91.49 cfs

0.00' x 1.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 45.0 3.0 '/' Top Width= 48.00'  
 Length= 967.5' Slope= 0.0150 '/'  
 Inlet Invert= 792.00', Outlet Invert= 777.49'



**Reach TB-A1C: Terrace Berm A1C**

Hydrograph



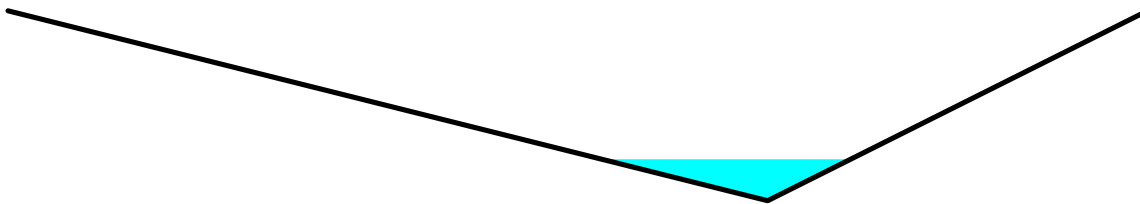
**Summary for Reach TB-B1: Terrace Berm B1**

Inflow Area = 2.04 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.40 cfs @ 16.14 hrs, Volume= 0.257 af  
 Outflow = 0.40 cfs @ 16.21 hrs, Volume= 0.257 af, Atten= 0%, Lag= 4.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.79 fps, Min. Travel Time= 3.2 min  
 Avg. Velocity = 1.28 fps, Avg. Travel Time= 4.5 min

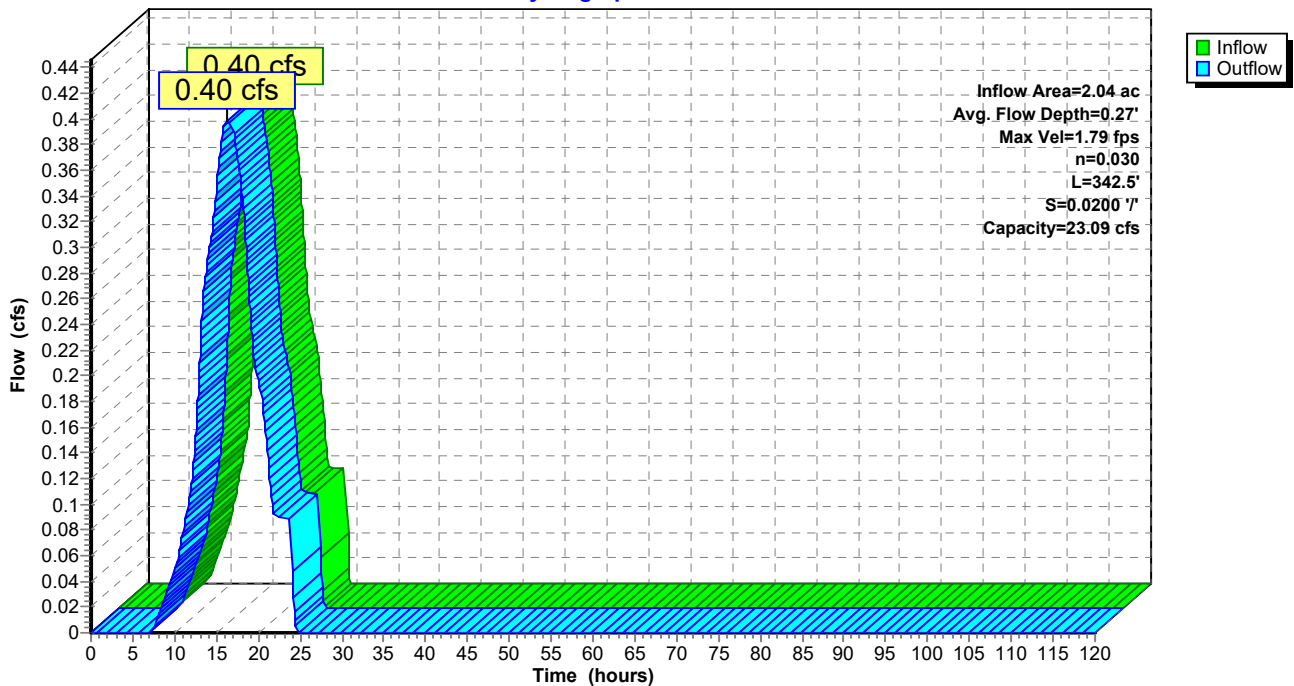
Peak Storage= 76 cf @ 16.16 hrs  
 Average Depth at Peak Storage= 0.27'  
 Bank-Full Depth= 1.25' Flow Area= 4.7 sf, Capacity= 23.09 cfs

0.00' x 1.25' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 7.50'  
 Length= 342.5' Slope= 0.0200 '/'  
 Inlet Invert= 880.00', Outlet Invert= 873.15'



**Reach TB-B1: Terrace Berm B1**

Hydrograph



**Summary for Reach TB-B10: Terrace Bench B10**

Inflow Area = 2.25 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.44 cfs @ 16.46 hrs, Volume= 0.283 af  
 Outflow = 0.44 cfs @ 16.74 hrs, Volume= 0.283 af, Atten= 0%, Lag= 16.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 0.65 fps, Min. Travel Time= 9.3 min  
 Avg. Velocity = 0.44 fps, Avg. Travel Time= 13.7 min

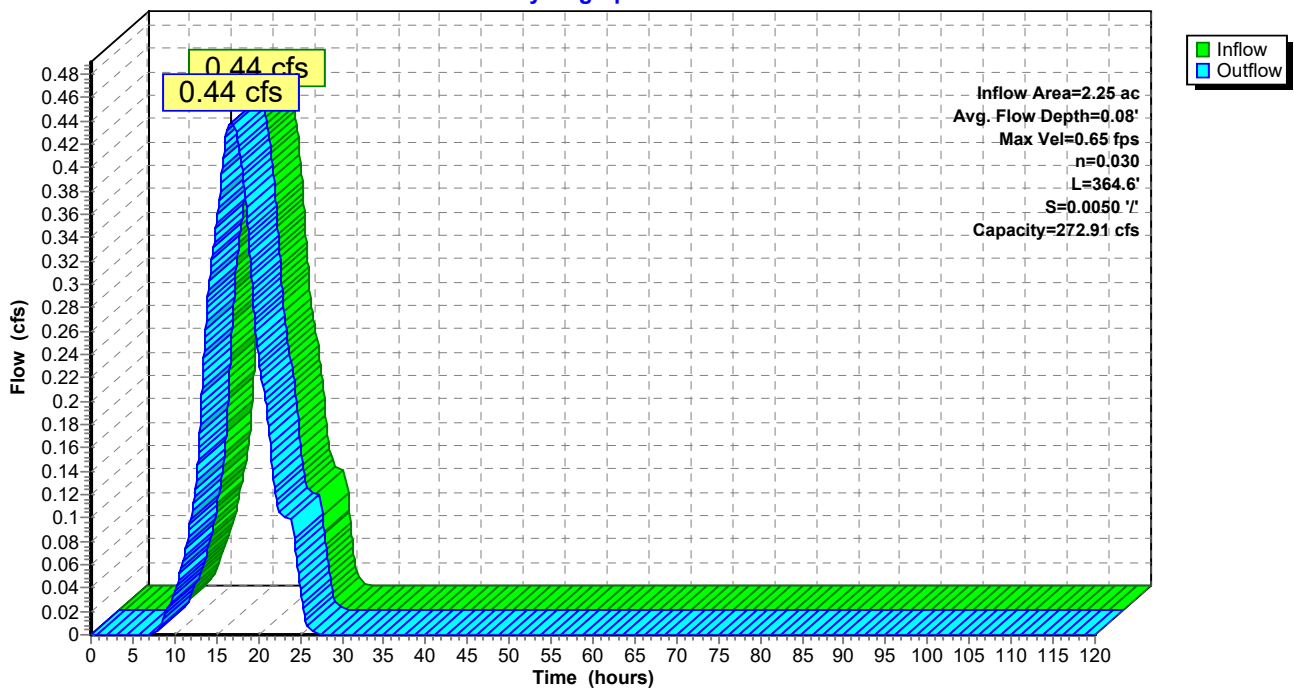
Peak Storage= 244 cf @ 16.58 hrs  
 Average Depth at Peak Storage= 0.08'  
 Bank-Full Depth= 3.00' Flow Area= 51.0 sf, Capacity= 272.91 cfs

8.00' x 3.00' deep channel, n= 0.030  
 Side Slope Z-value= 3.0 '/' Top Width= 26.00'  
 Length= 364.6' Slope= 0.0050 '/'  
 Inlet Invert= 759.18', Outlet Invert= 757.36'



**Reach TB-B10: Terrace Bench B10**

Hydrograph



**Summary for Reach TB-B10A: Terrace Bench B10A**

Inflow Area = 2.25 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.44 cfs @ 16.74 hrs, Volume= 0.283 af  
 Outflow = 0.44 cfs @ 16.76 hrs, Volume= 0.283 af, Atten= 0%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.84 fps, Min. Travel Time= 0.7 min  
 Avg. Velocity = 1.84 fps, Avg. Travel Time= 0.7 min

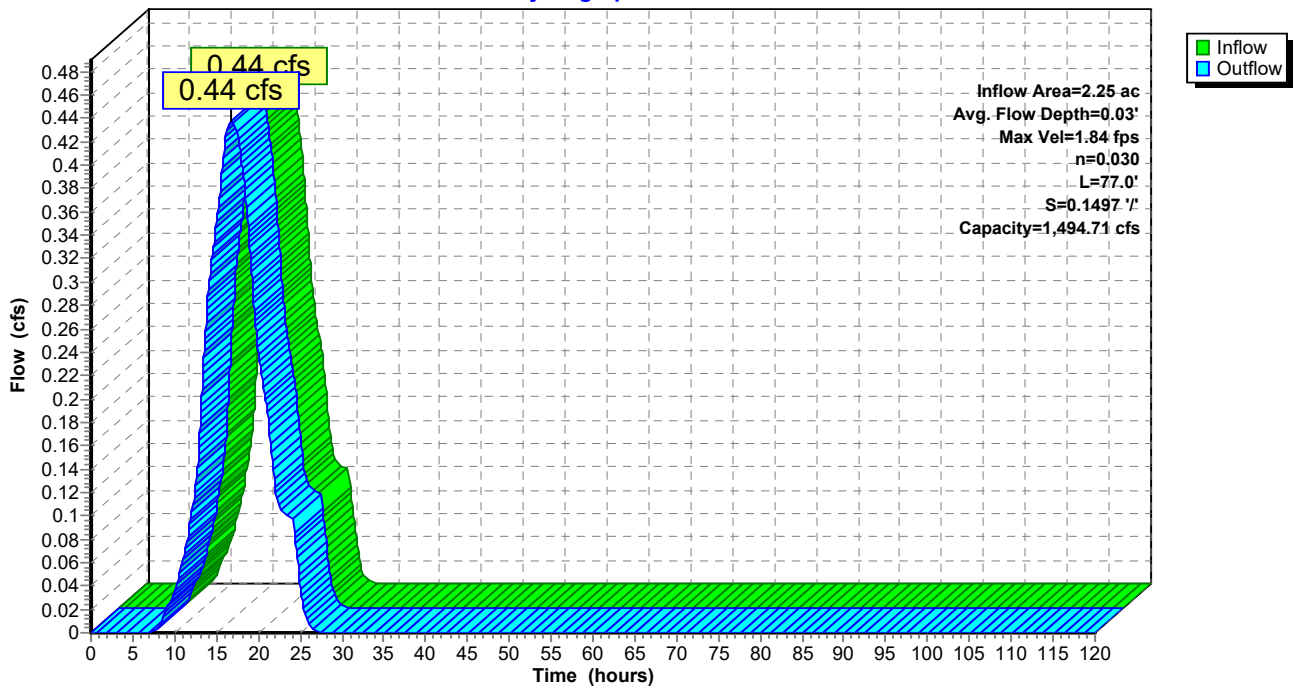
Peak Storage= 18 cf @ 16.75 hrs  
 Average Depth at Peak Storage= 0.03'  
 Bank-Full Depth= 3.00' Flow Area= 51.0 sf, Capacity= 1,494.71 cfs

8.00' x 3.00' deep channel, n= 0.030  
 Side Slope Z-value= 3.0 '/' Top Width= 26.00'  
 Length= 77.0' Slope= 0.1497 '/'  
 Inlet Invert= 757.36', Outlet Invert= 745.83'



**Reach TB-B10A: Terrace Bench B10A**

Hydrograph



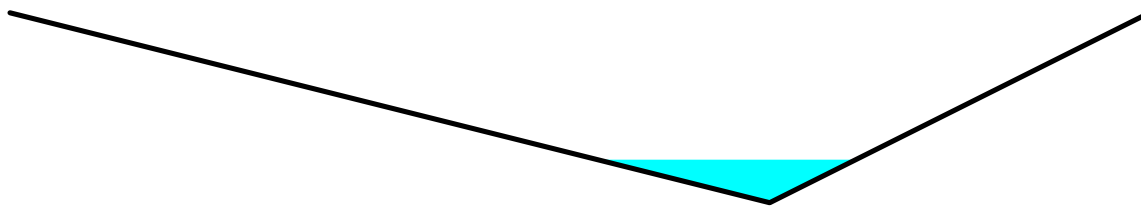
**Summary for Reach TB-B11: Terrace Berm B11**

Inflow Area = 2.27 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.44 cfs @ 16.22 hrs, Volume= 0.286 af  
 Outflow = 0.44 cfs @ 16.25 hrs, Volume= 0.286 af, Atten= 0%, Lag= 1.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.83 fps, Min. Travel Time= 0.9 min  
 Avg. Velocity = 1.36 fps, Avg. Travel Time= 1.3 min

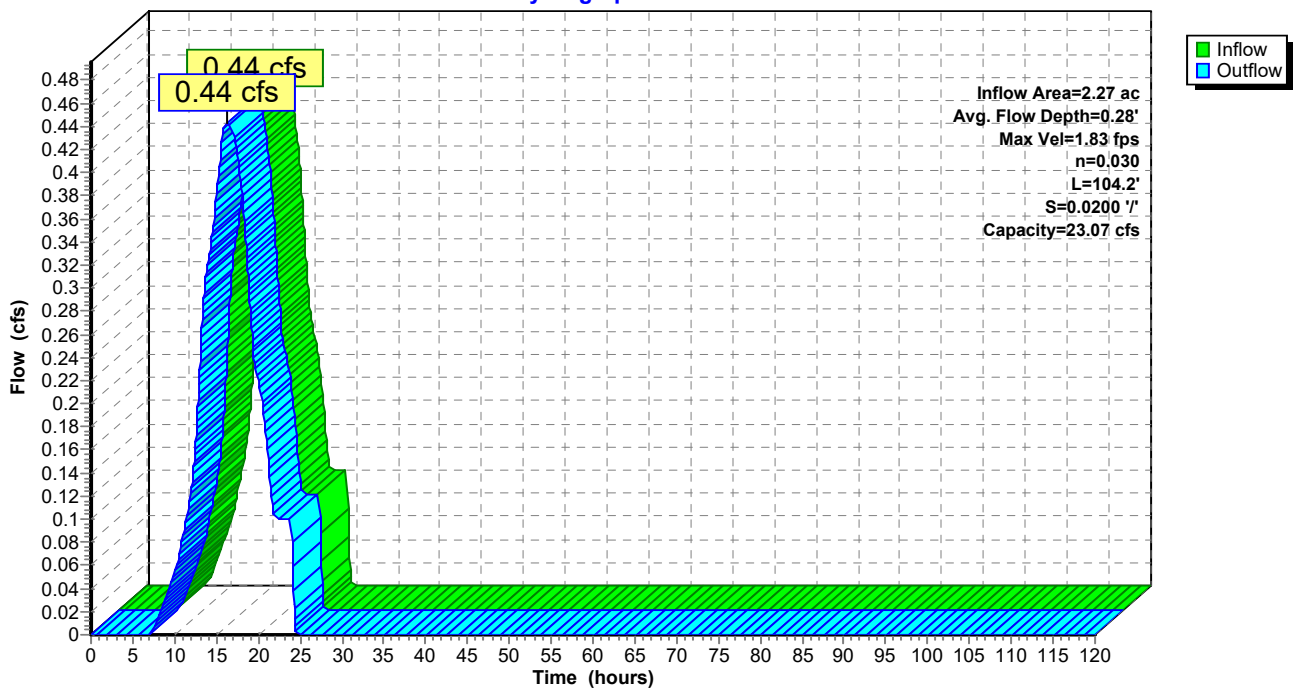
Peak Storage= 25 cf @ 16.24 hrs  
 Average Depth at Peak Storage= 0.28'  
 Bank-Full Depth= 1.25' Flow Area= 4.7 sf, Capacity= 23.07 cfs

0.00' x 1.25' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 7.50'  
 Length= 104.2' Slope= 0.0200 '/'  
 Inlet Invert= 821.00', Outlet Invert= 818.92'



**Reach TB-B11: Terrace Berm B11**

Hydrograph



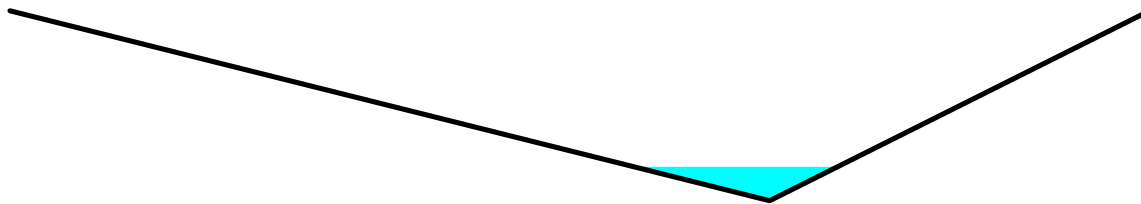
**Summary for Reach TB-B12: Terrace Berm B12**

Inflow Area = 1.20 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.23 cfs @ 16.09 hrs, Volume= 0.151 af  
 Outflow = 0.23 cfs @ 16.33 hrs, Volume= 0.151 af, Atten= 0%, Lag= 14.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.56 fps, Min. Travel Time= 7.9 min  
 Avg. Velocity = 1.06 fps, Avg. Travel Time= 11.6 min

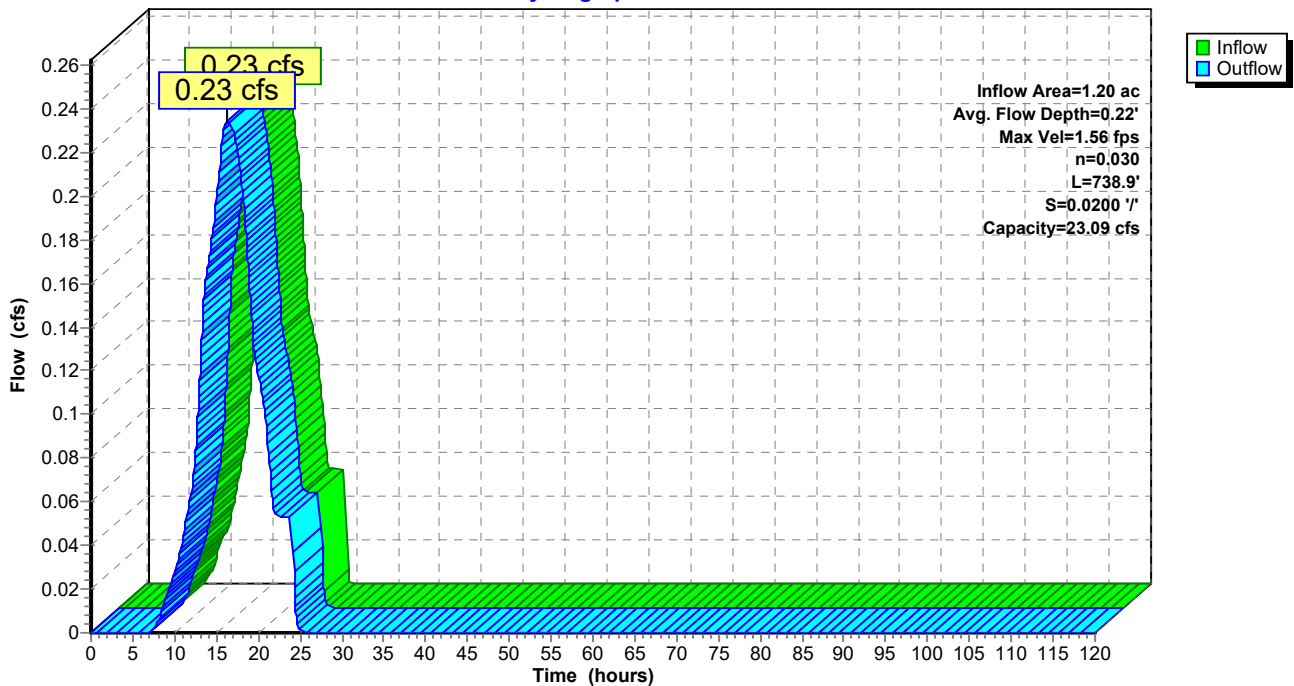
Peak Storage= 111 cf @ 16.20 hrs  
 Average Depth at Peak Storage= 0.22'  
 Bank-Full Depth= 1.25' Flow Area= 4.7 sf, Capacity= 23.09 cfs

0.00' x 1.25' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 7.50'  
 Length= 738.9' Slope= 0.0200 '/'  
 Inlet Invert= 864.00', Outlet Invert= 849.22'



**Reach TB-B12: Terrace Berm B12**

Hydrograph



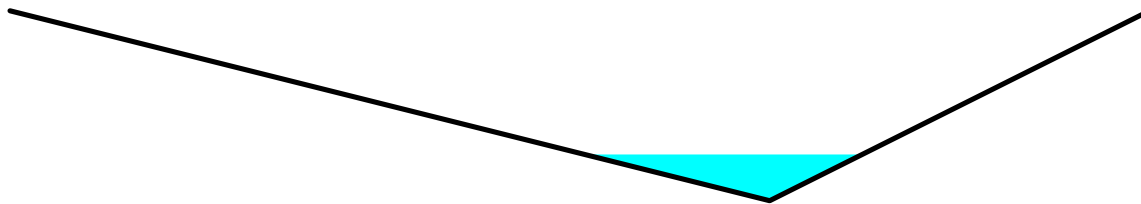
**Summary for Reach TB-B2: Terrace Berm B2**

Inflow Area = 2.74 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.53 cfs @ 16.15 hrs, Volume= 0.345 af  
 Outflow = 0.53 cfs @ 16.23 hrs, Volume= 0.345 af, Atten= 0%, Lag= 4.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.92 fps, Min. Travel Time= 4.0 min  
 Avg. Velocity = 1.35 fps, Avg. Travel Time= 5.7 min

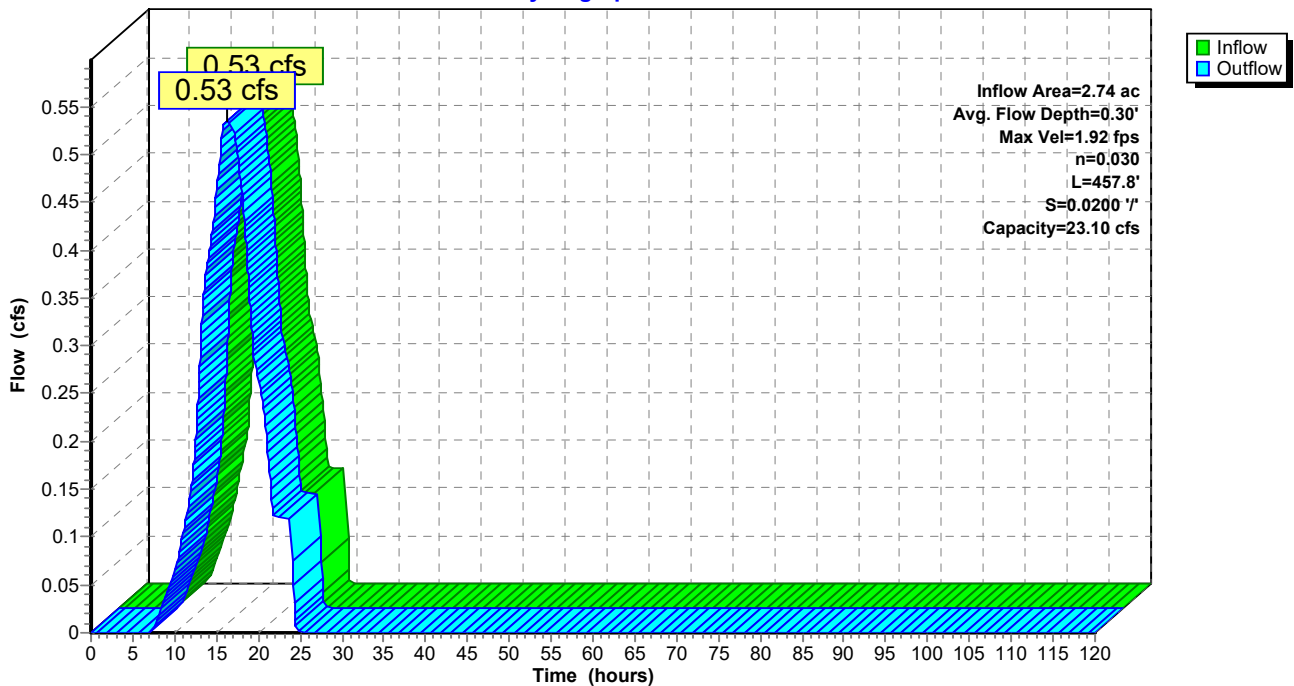
Peak Storage= 127 cf @ 16.17 hrs  
 Average Depth at Peak Storage= 0.30'  
 Bank-Full Depth= 1.25' Flow Area= 4.7 sf, Capacity= 23.10 cfs

0.00' x 1.25' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 7.50'  
 Length= 457.8' Slope= 0.0200 '/'  
 Inlet Invert= 880.00', Outlet Invert= 870.84'



**Reach TB-B2: Terrace Berm B2**

Hydrograph



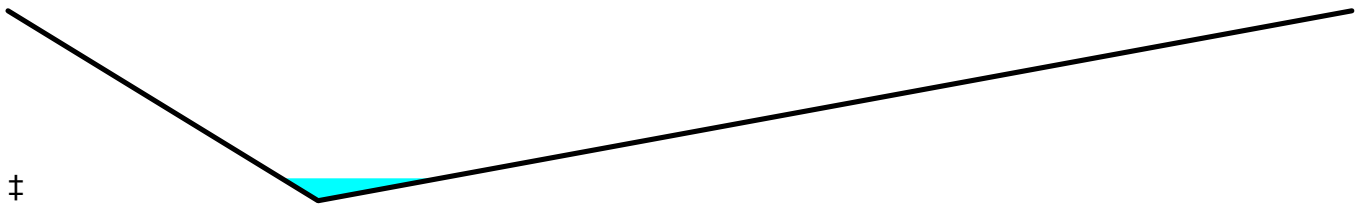
**Summary for Reach TB-B3: Terrace Bench B3**

Inflow Area = 2.21 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.43 cfs @ 16.09 hrs, Volume= 0.278 af  
 Outflow = 0.43 cfs @ 16.37 hrs, Volume= 0.278 af, Atten= 0%, Lag= 16.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.18 fps, Min. Travel Time= 8.7 min  
 Avg. Velocity = 0.79 fps, Avg. Travel Time= 13.1 min

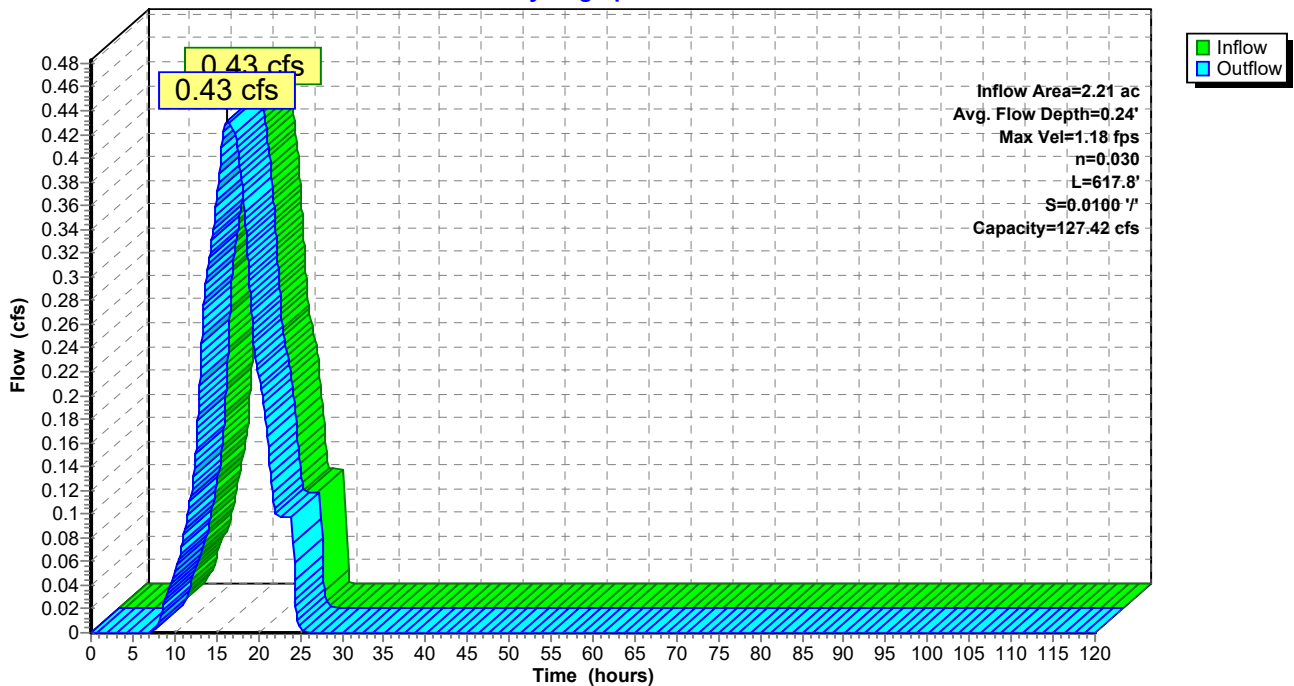
Peak Storage= 225 cf @ 16.22 hrs  
 Average Depth at Peak Storage= 0.24'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.42 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'  
 Length= 617.8' Slope= 0.0100 '/'  
 Inlet Invert= 880.00', Outlet Invert= 873.82'



**Reach TB-B3: Terrace Bench B3**

Hydrograph





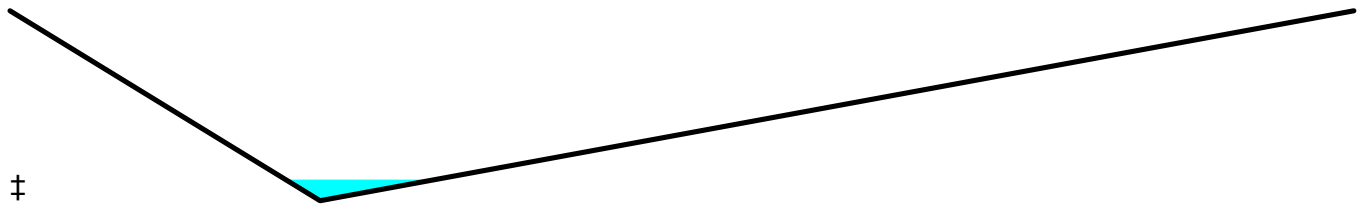
### Summary for Reach TB-B4: Terrace Bench B4

Inflow Area = 1.87 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.36 cfs @ 16.09 hrs, Volume= 0.235 af  
 Outflow = 0.36 cfs @ 16.27 hrs, Volume= 0.235 af, Atten= 0%, Lag= 10.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.13 fps, Min. Travel Time= 6.4 min  
 Avg. Velocity = 0.79 fps, Avg. Travel Time= 9.2 min

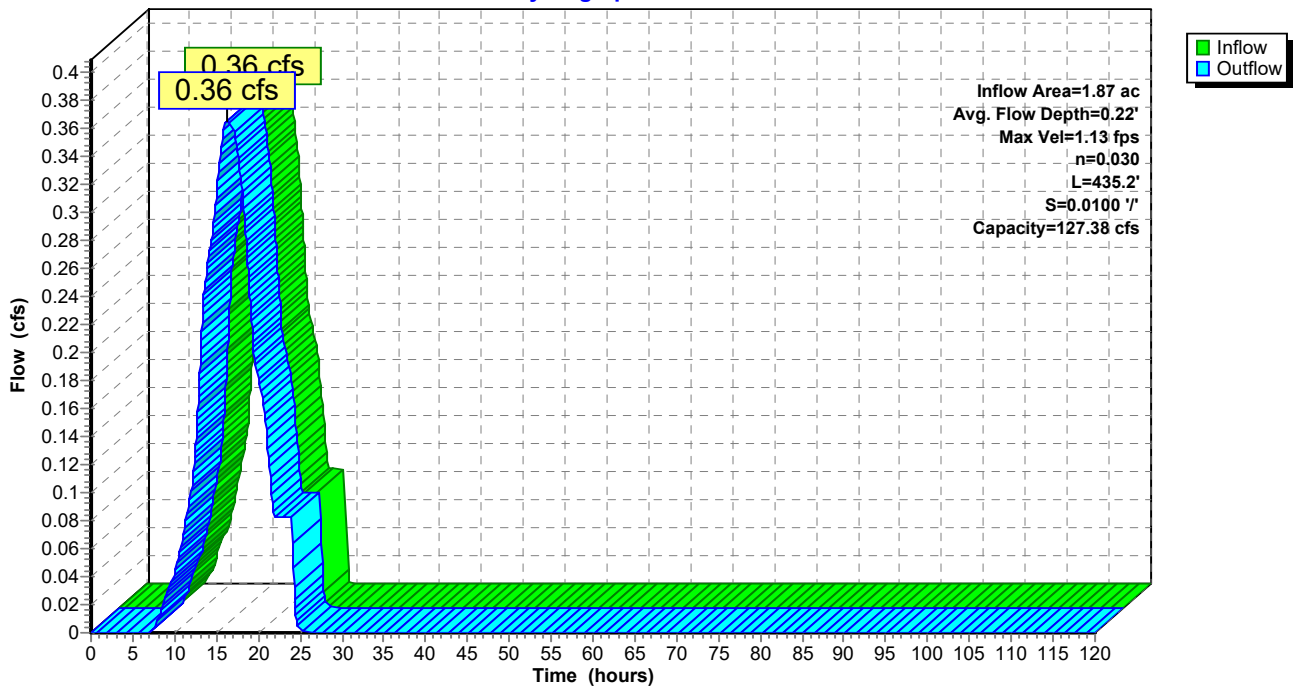
Peak Storage= 140 cf @ 16.16 hrs  
 Average Depth at Peak Storage= 0.22'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.38 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'  
 Length= 435.2' Slope= 0.0100 '/'  
 Inlet Invert= 840.00', Outlet Invert= 835.65'



### Reach TB-B4: Terrace Bench B4

Hydrograph



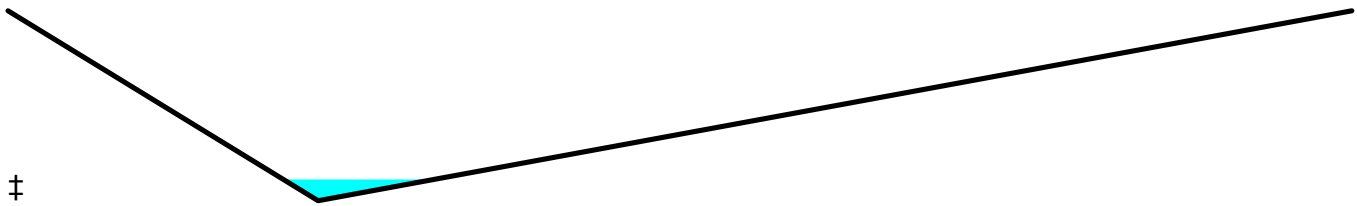
**Summary for Reach TB-B5: Terrace Bench B5**

Inflow Area = 1.93 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.38 cfs @ 16.07 hrs, Volume= 0.243 af  
 Outflow = 0.38 cfs @ 16.47 hrs, Volume= 0.243 af, Atten= 0%, Lag= 24.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.14 fps, Min. Travel Time= 11.8 min  
 Avg. Velocity = 0.74 fps, Avg. Travel Time= 18.3 min

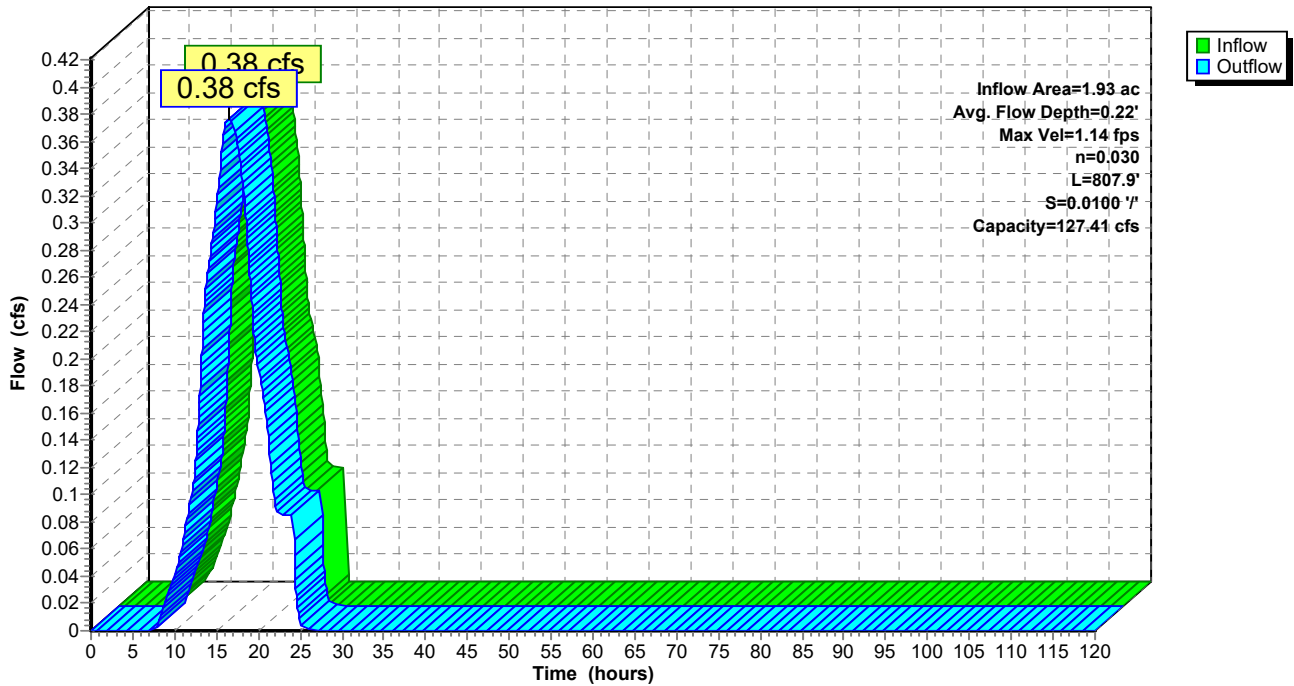
Peak Storage= 266 cf @ 16.27 hrs  
 Average Depth at Peak Storage= 0.22'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.41 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'  
 Length= 807.9' Slope= 0.0100 '/'  
 Inlet Invert= 814.00', Outlet Invert= 805.92'



**Reach TB-B5: Terrace Bench B5**

Hydrograph



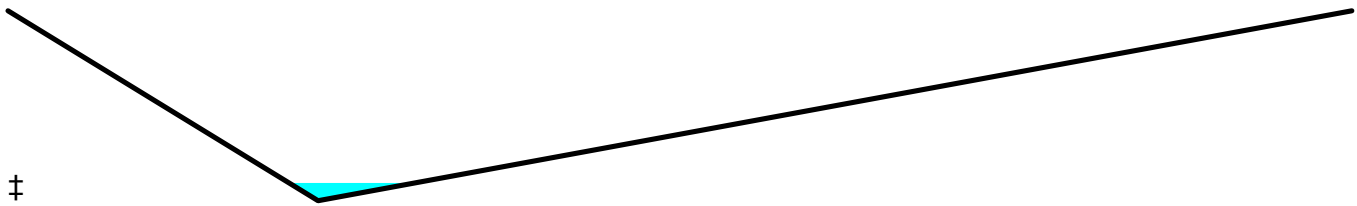
**Summary for Reach TB-B6: Terrace Bench B6**

Inflow Area = 1.18 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.23 cfs @ 16.07 hrs, Volume= 0.149 af  
 Outflow = 0.23 cfs @ 16.29 hrs, Volume= 0.149 af, Atten= 0%, Lag= 13.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.01 fps, Min. Travel Time= 7.0 min  
 Avg. Velocity = 0.71 fps, Avg. Travel Time= 10.1 min

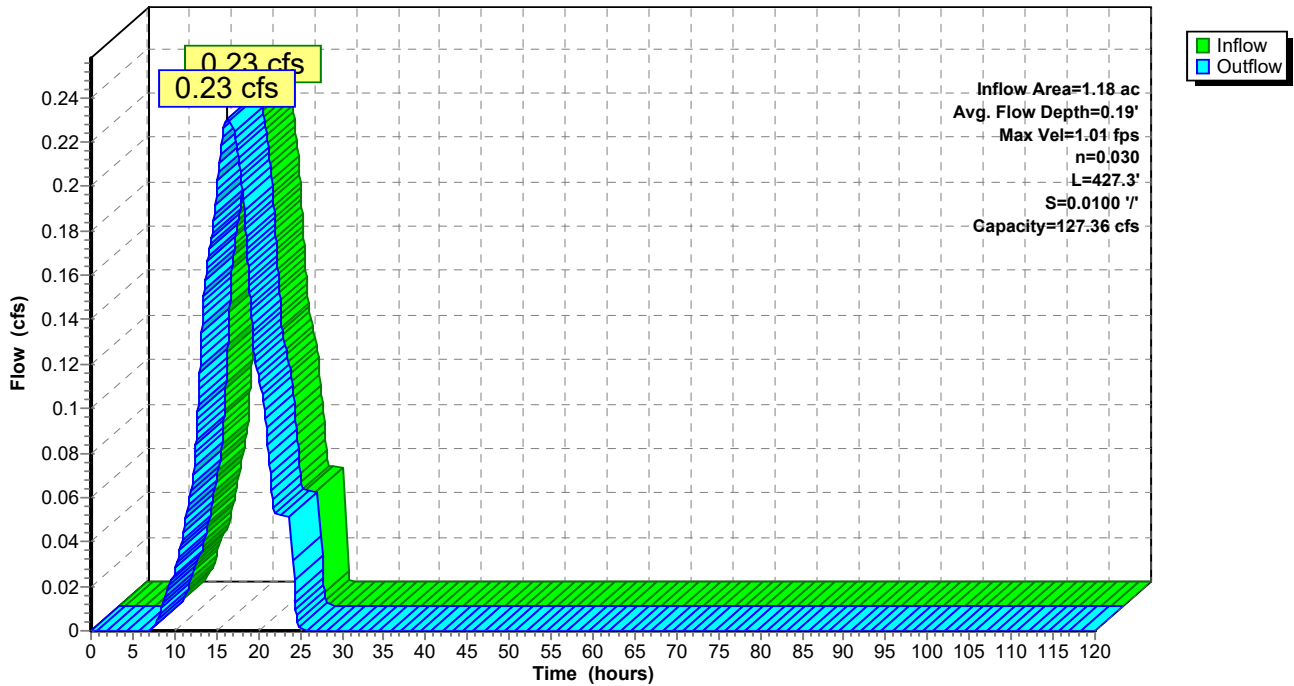
Peak Storage= 97 cf @ 16.17 hrs  
 Average Depth at Peak Storage= 0.19'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.36 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'  
 Length= 427.3' Slope= 0.0100 '/'  
 Inlet Invert= 812.00', Outlet Invert= 807.73'



**Reach TB-B6: Terrace Bench B6**

Hydrograph



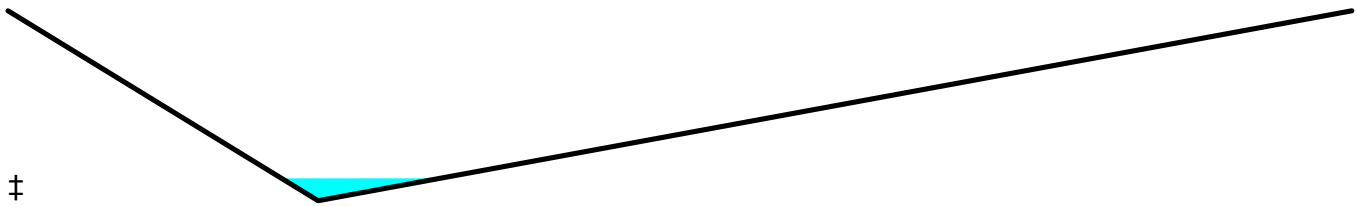
**Summary for Reach TB-B7: Terrace Bench B7**

Inflow Area = 2.19 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.43 cfs @ 16.07 hrs, Volume= 0.276 af  
 Outflow = 0.43 cfs @ 16.47 hrs, Volume= 0.276 af, Atten= 0%, Lag= 23.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.18 fps, Min. Travel Time= 11.5 min  
 Avg. Velocity = 0.76 fps, Avg. Travel Time= 17.9 min

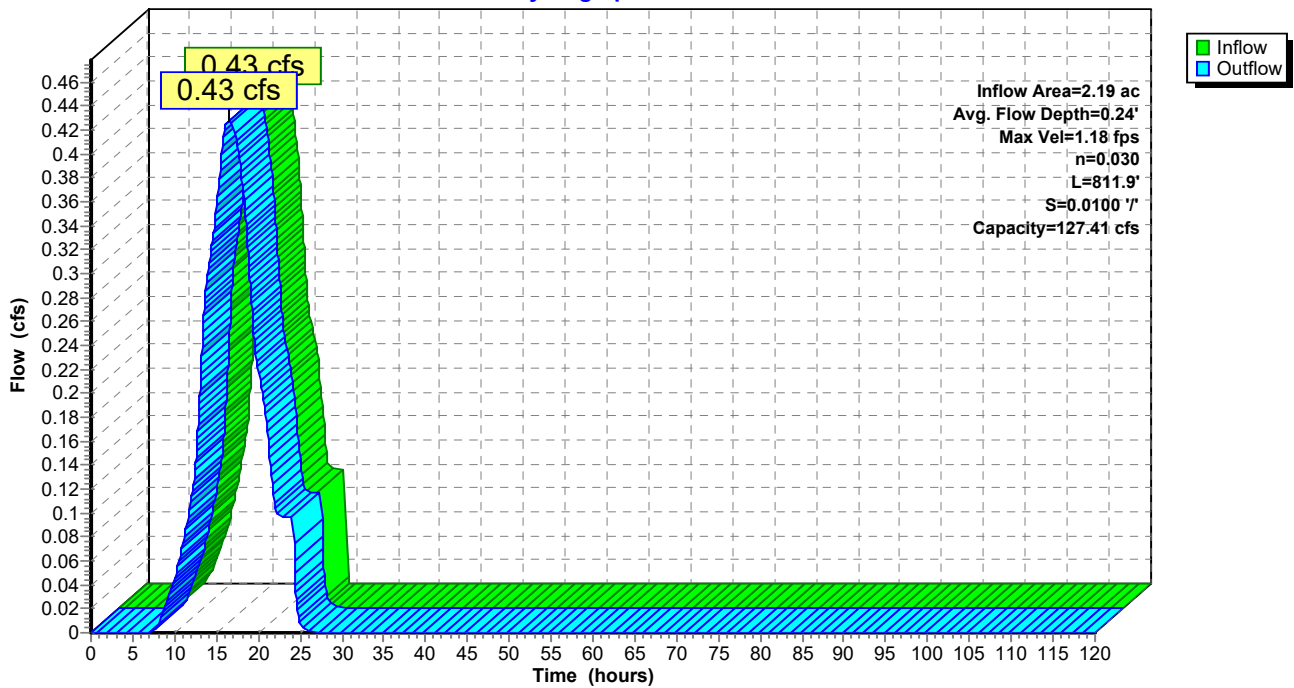
Peak Storage= 294 cf @ 16.27 hrs  
 Average Depth at Peak Storage= 0.24'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.41 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'  
 Length= 811.9' Slope= 0.0100 '/'  
 Inlet Invert= 784.00', Outlet Invert= 775.88'



**Reach TB-B7: Terrace Bench B7**

Hydrograph



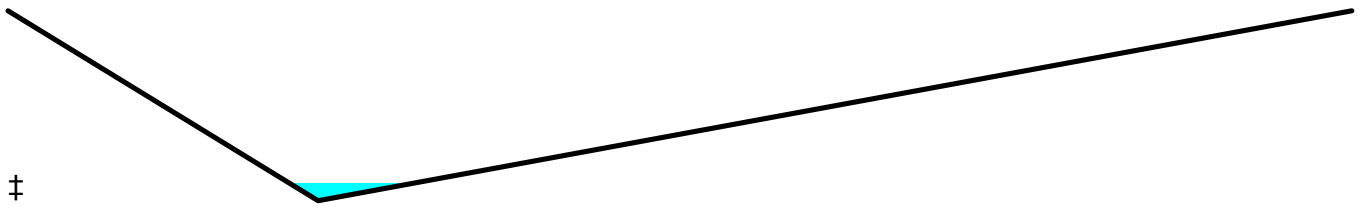
**Summary for Reach TB-B8: Terrace Bench B8**

Inflow Area = 1.17 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.23 cfs @ 16.08 hrs, Volume= 0.147 af  
 Outflow = 0.23 cfs @ 16.29 hrs, Volume= 0.147 af, Atten= 0%, Lag= 12.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.01 fps, Min. Travel Time= 7.1 min  
 Avg. Velocity = 0.71 fps, Avg. Travel Time= 10.1 min

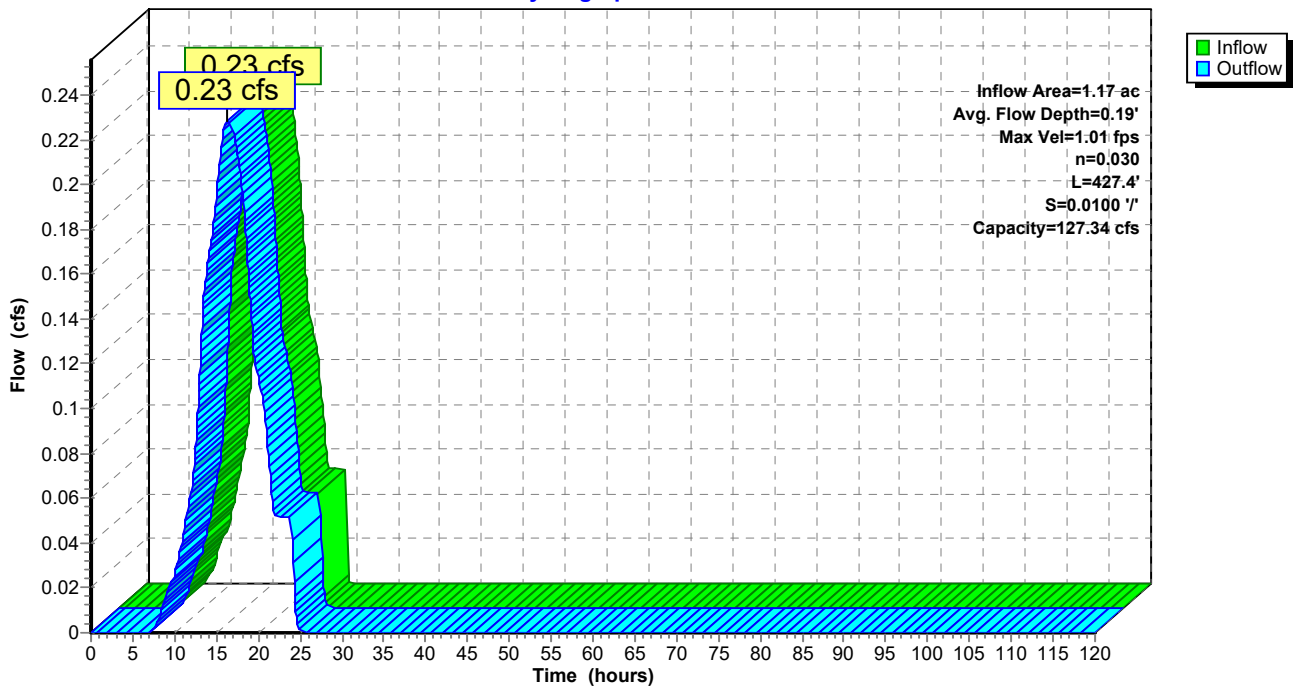
Peak Storage= 97 cf @ 16.17 hrs  
 Average Depth at Peak Storage= 0.19'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.34 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'  
 Length= 427.4' Slope= 0.0100 '/'  
 Inlet Invert= 782.00', Outlet Invert= 777.73'



**Reach TB-B8: Terrace Bench B8**

Hydrograph



**Summary for Reach TB-B9: Terrace Bench B9**

Inflow Area = 1.44 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.28 cfs @ 16.05 hrs, Volume= 0.181 af  
 Outflow = 0.28 cfs @ 16.58 hrs, Volume= 0.181 af, Atten= 0%, Lag= 31.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 0.55 fps, Min. Travel Time= 17.2 min  
 Avg. Velocity = 0.40 fps, Avg. Travel Time= 23.5 min

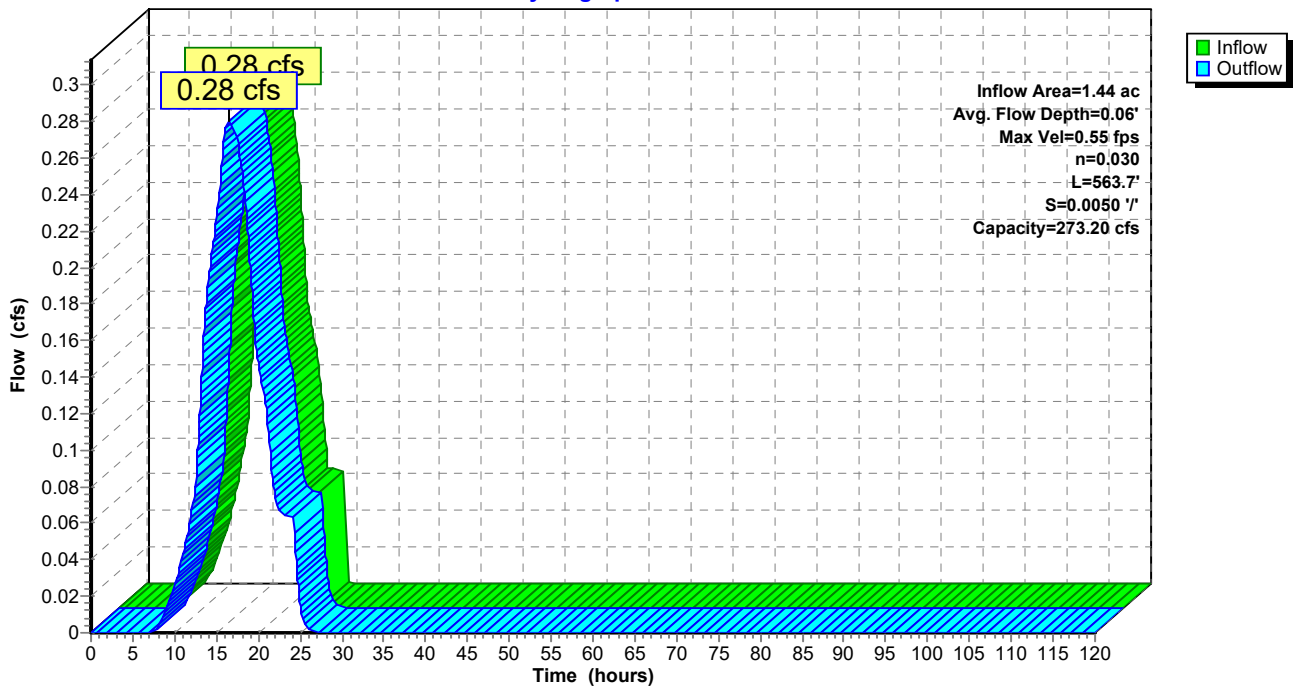
Peak Storage= 288 cf @ 16.29 hrs  
 Average Depth at Peak Storage= 0.06'  
 Bank-Full Depth= 3.00' Flow Area= 51.0 sf, Capacity= 273.20 cfs

8.00' x 3.00' deep channel, n= 0.030  
 Side Slope Z-value= 3.0 '/' Top Width= 26.00'  
 Length= 563.7' Slope= 0.0050 '/'  
 Inlet Invert= 762.00', Outlet Invert= 759.18'



**Reach TB-B9: Terrace Bench B9**

Hydrograph



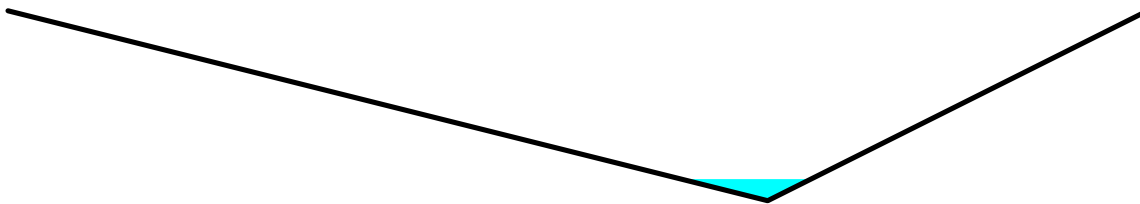
**Summary for Reach TB-D1: Terrace Berm D1**

Inflow Area = 1.26 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.25 cfs @ 16.13 hrs, Volume= 0.158 af  
 Outflow = 0.25 cfs @ 16.19 hrs, Volume= 0.158 af, Atten= 0%, Lag= 3.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.58 fps, Min. Travel Time= 2.4 min  
 Avg. Velocity = 1.17 fps, Avg. Travel Time= 3.3 min

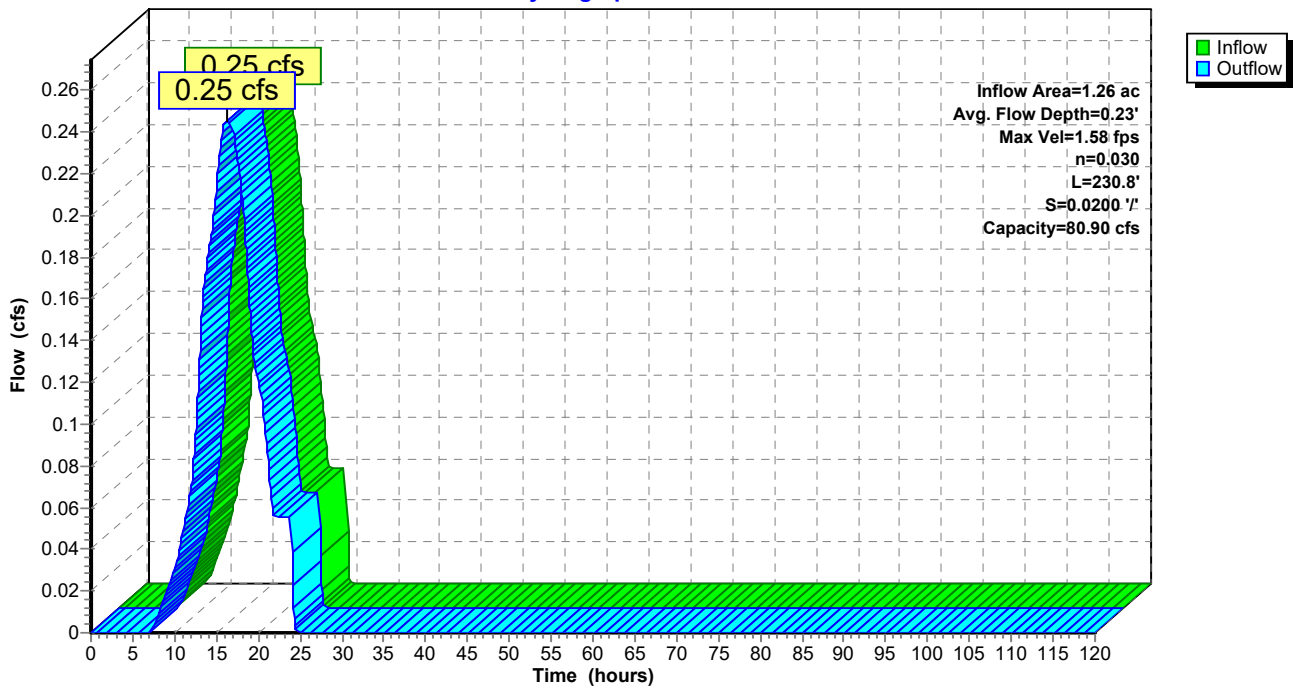
Peak Storage= 36 cf @ 16.15 hrs  
 Average Depth at Peak Storage= 0.23'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.90 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 230.8' Slope= 0.0200 '/'  
 Inlet Invert= 861.86', Outlet Invert= 857.24'



**Reach TB-D1: Terrace Berm D1**

Hydrograph



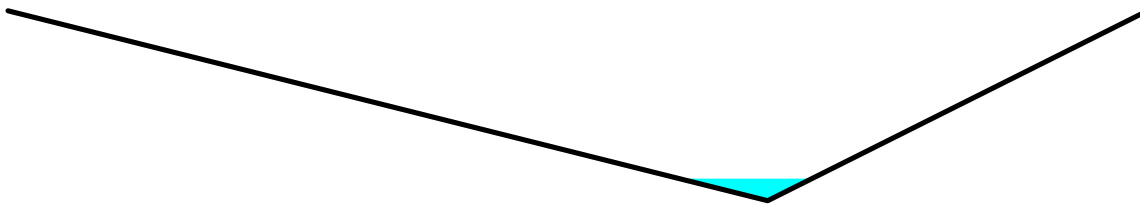
**Summary for Reach TB-D3: Terrace Berm D3**

Inflow Area = 1.33 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.26 cfs @ 16.08 hrs, Volume= 0.168 af  
 Outflow = 0.26 cfs @ 16.15 hrs, Volume= 0.168 af, Atten= 0%, Lag= 4.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.61 fps, Min. Travel Time= 2.4 min  
 Avg. Velocity = 1.19 fps, Avg. Travel Time= 3.2 min

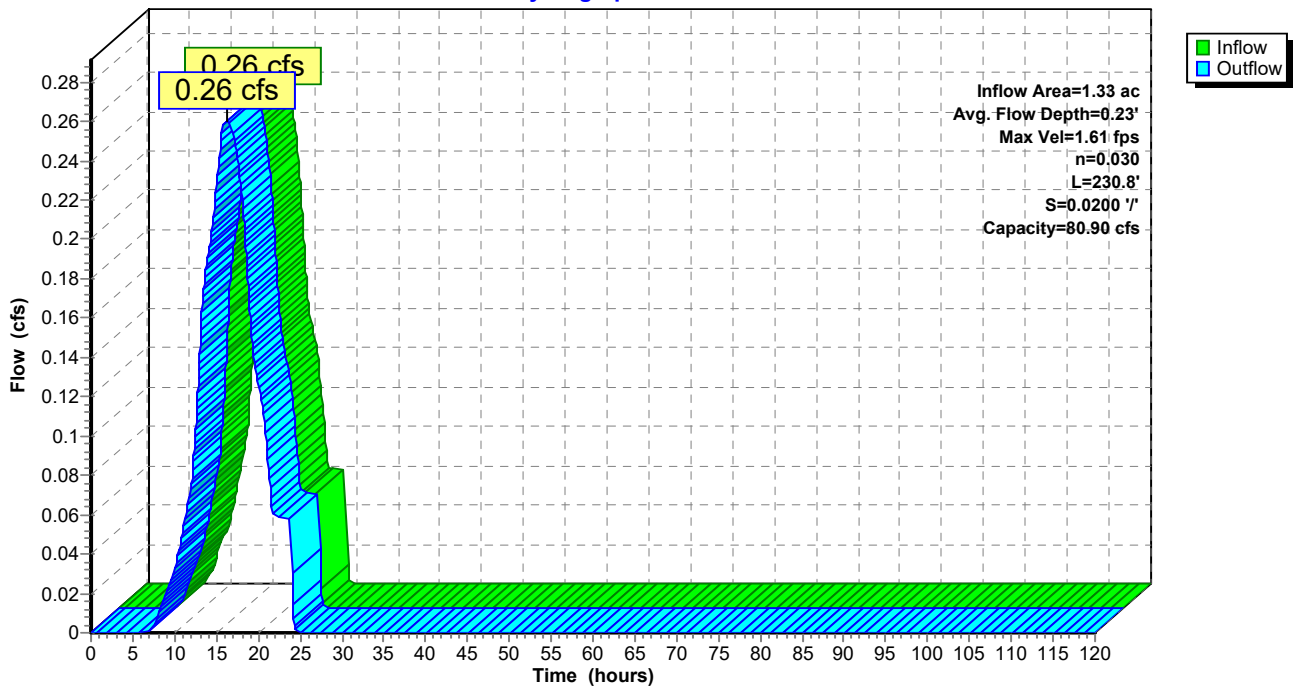
Peak Storage= 37 cf @ 16.11 hrs  
 Average Depth at Peak Storage= 0.23'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.90 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 230.8' Slope= 0.0200 '/'  
 Inlet Invert= 798.33', Outlet Invert= 793.71'



**Reach TB-D3: Terrace Berm D3**

Hydrograph





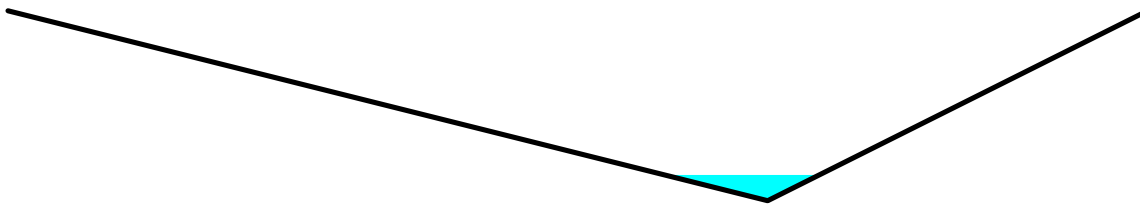
**Summary for Reach TB-E1: Terrace Berm E1**

Inflow Area = 1.42 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.28 cfs @ 16.13 hrs, Volume= 0.179 af  
 Outflow = 0.28 cfs @ 16.26 hrs, Volume= 0.179 af, Atten= 0%, Lag= 7.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.26 fps, Min. Travel Time= 4.8 min  
 Avg. Velocity = 0.89 fps, Avg. Travel Time= 6.8 min

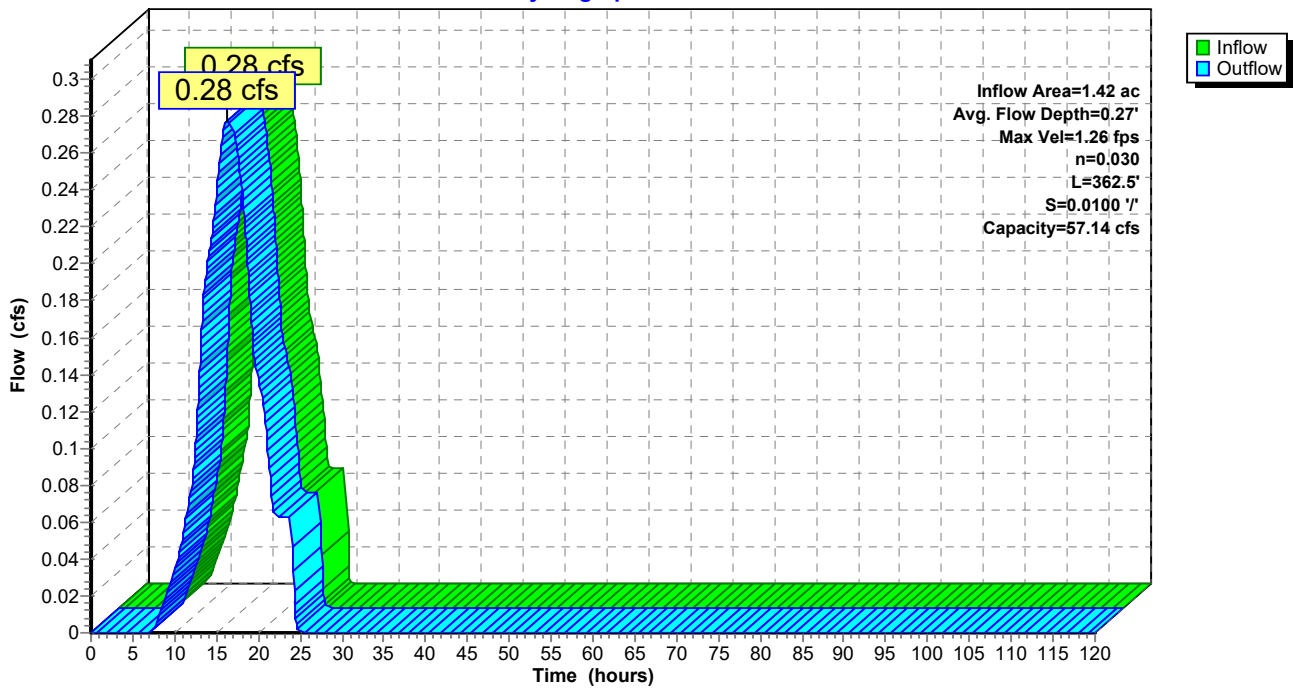
Peak Storage= 80 cf @ 16.17 hrs  
 Average Depth at Peak Storage= 0.27'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.14 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 362.5' Slope= 0.0100 '/'  
 Inlet Invert= 860.26', Outlet Invert= 856.64'



**Reach TB-E1: Terrace Berm E1**

Hydrograph



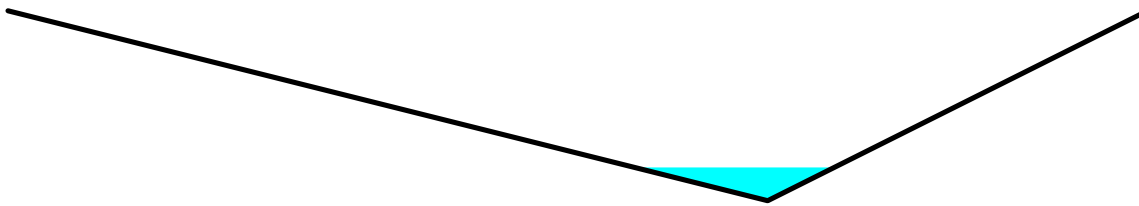
**Summary for Reach TB-E2: TB-E2**

Inflow Area = 2.82 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.55 cfs @ 16.08 hrs, Volume= 0.355 af  
 Outflow = 0.55 cfs @ 16.62 hrs, Volume= 0.355 af, Atten= 0%, Lag= 31.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.49 fps, Min. Travel Time= 14.7 min  
 Avg. Velocity = 0.88 fps, Avg. Travel Time= 25.0 min

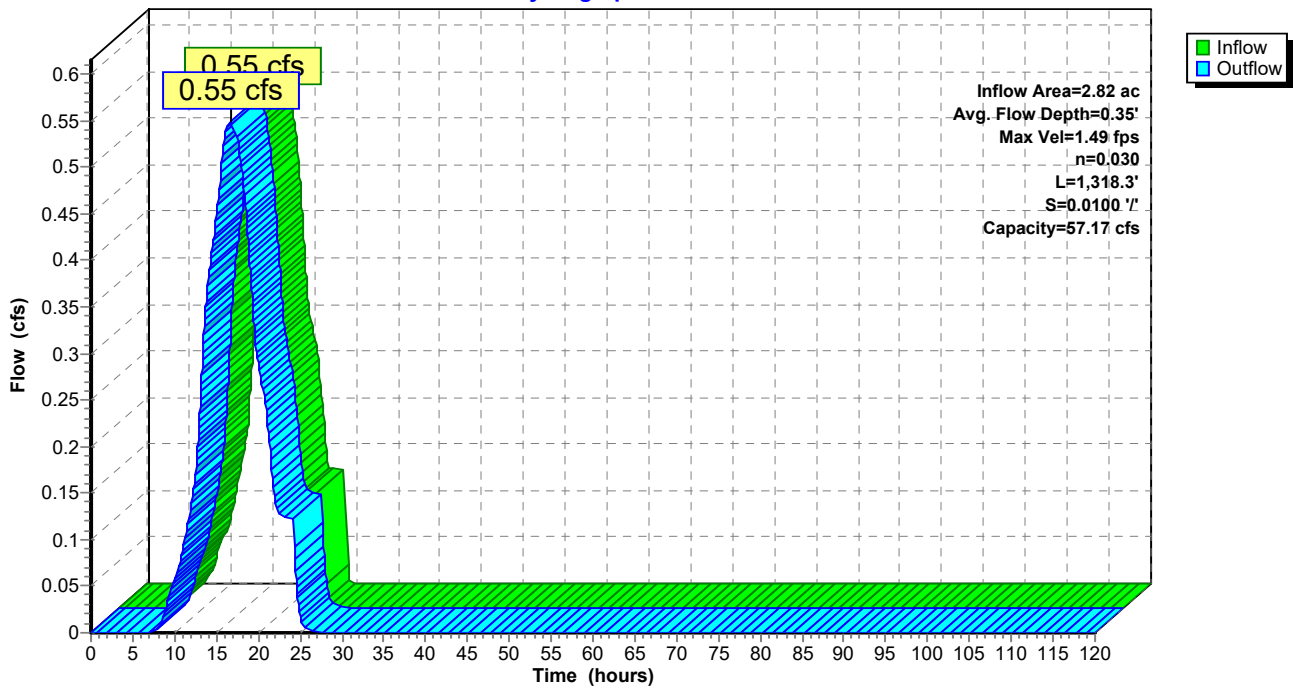
Peak Storage= 485 cf @ 16.37 hrs  
 Average Depth at Peak Storage= 0.35'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.17 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/ Top Width= 12.00'  
 Length= 1,318.3' Slope= 0.0100 '/  
 Inlet Invert= 806.69', Outlet Invert= 793.51'



**Reach TB-E2: TB-E2**

Hydrograph



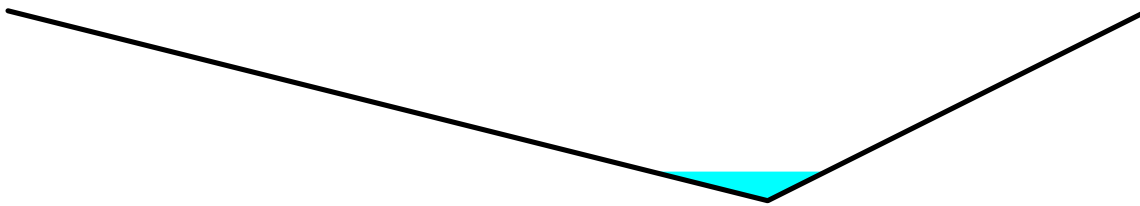
**Summary for Reach TB-H1: Terrace Berm H1**

Inflow Area = 1.98 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.39 cfs @ 16.10 hrs, Volume= 0.249 af  
 Outflow = 0.39 cfs @ 16.28 hrs, Volume= 0.249 af, Atten= 0%, Lag= 10.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.37 fps, Min. Travel Time= 5.6 min  
 Avg. Velocity = 0.95 fps, Avg. Travel Time= 8.0 min

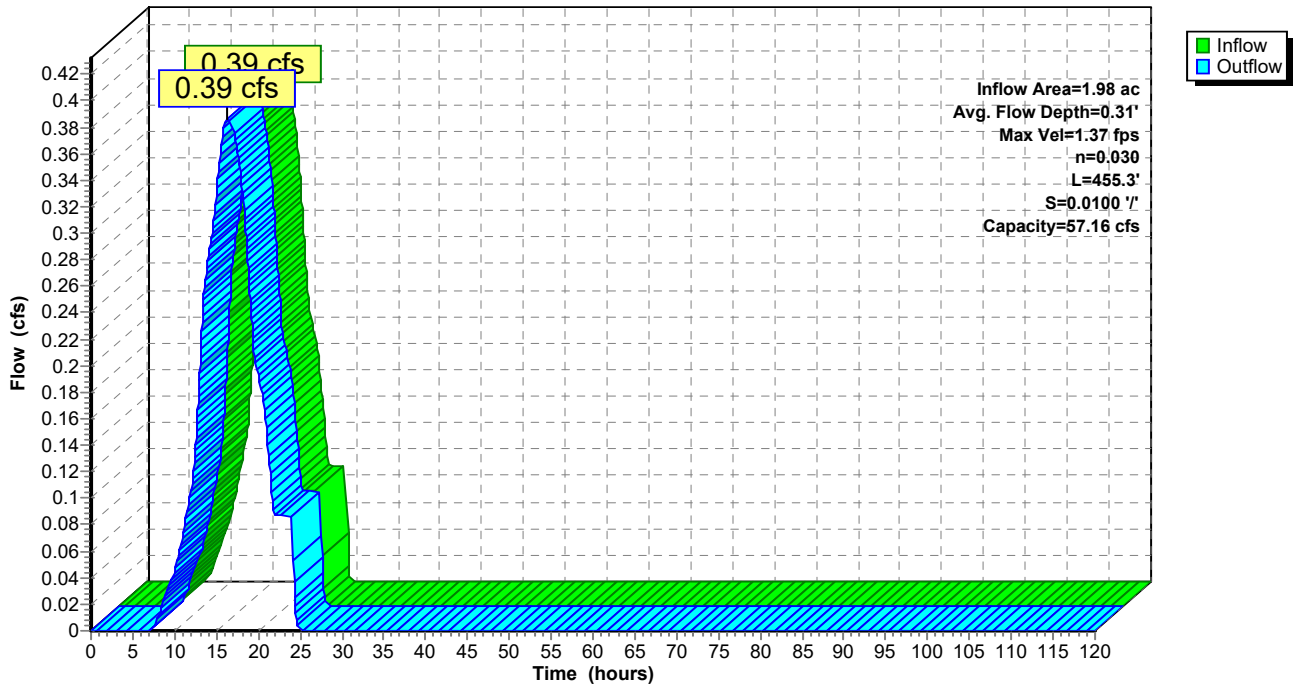
Peak Storage= 129 cf @ 16.19 hrs  
 Average Depth at Peak Storage= 0.31'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.16 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 455.3' Slope= 0.0100 '/'  
 Inlet Invert= 872.24', Outlet Invert= 867.69'



**Reach TB-H1: Terrace Berm H1**

Hydrograph



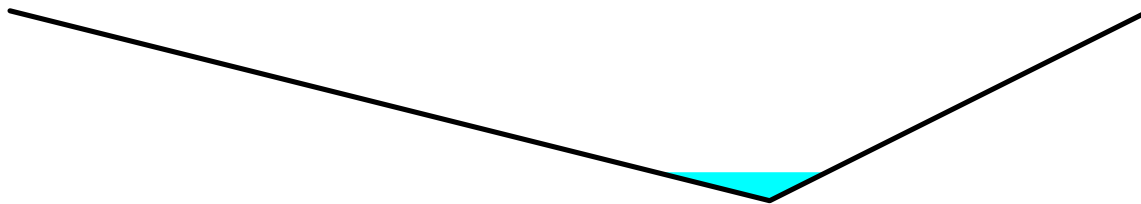
**Summary for Reach TB-H2: Terrace Berm H2**

Inflow Area = 1.86 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.36 cfs @ 16.09 hrs, Volume= 0.234 af  
 Outflow = 0.36 cfs @ 16.32 hrs, Volume= 0.234 af, Atten= 0%, Lag= 13.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.35 fps, Min. Travel Time= 7.5 min  
 Avg. Velocity = 0.90 fps, Avg. Travel Time= 11.2 min

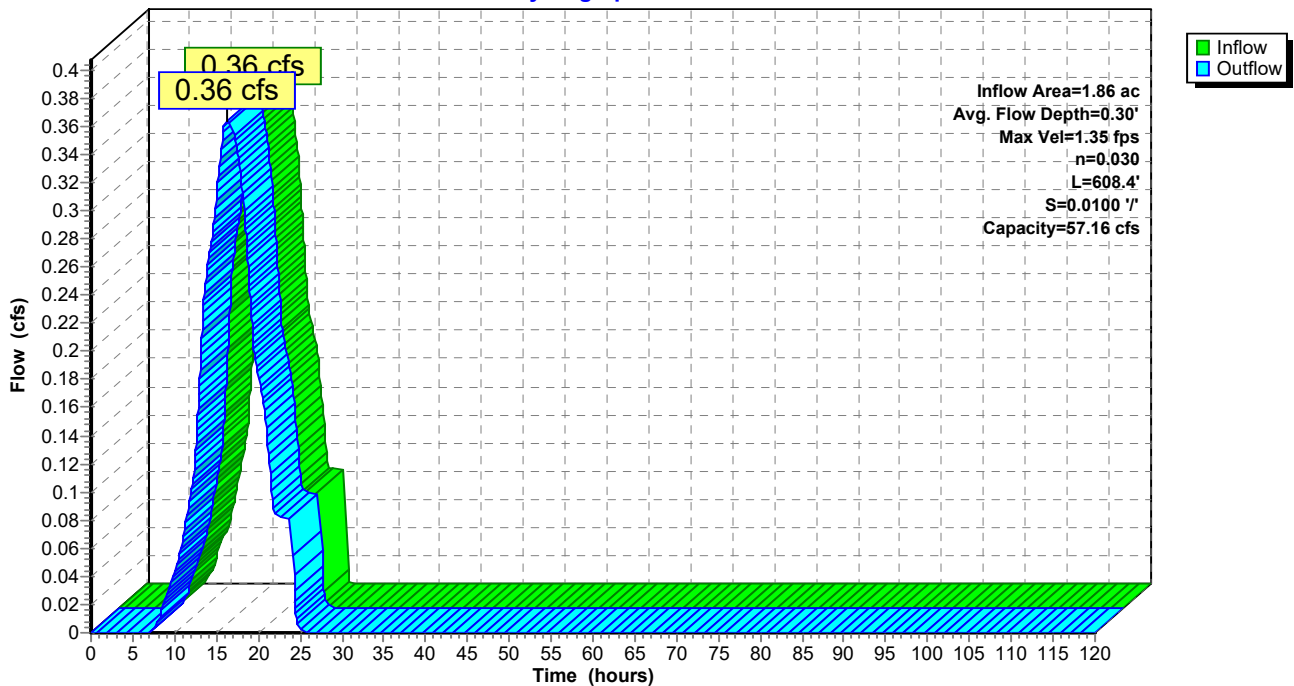
Peak Storage= 164 cf @ 16.19 hrs  
 Average Depth at Peak Storage= 0.30'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.16 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 608.4' Slope= 0.0100 '/'  
 Inlet Invert= 837.23', Outlet Invert= 831.15'



**Reach TB-H2: Terrace Berm H2**

Hydrograph



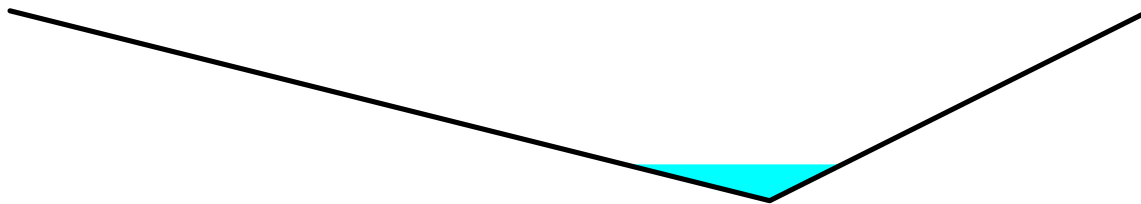
**Summary for Reach TB-H3: Terrace Berm H3**

Inflow Area = 3.57 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.70 cfs @ 16.09 hrs, Volume= 0.450 af  
 Outflow = 0.70 cfs @ 16.36 hrs, Volume= 0.450 af, Atten= 0%, Lag= 16.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.58 fps, Min. Travel Time= 8.4 min  
 Avg. Velocity = 1.01 fps, Avg. Travel Time= 13.1 min

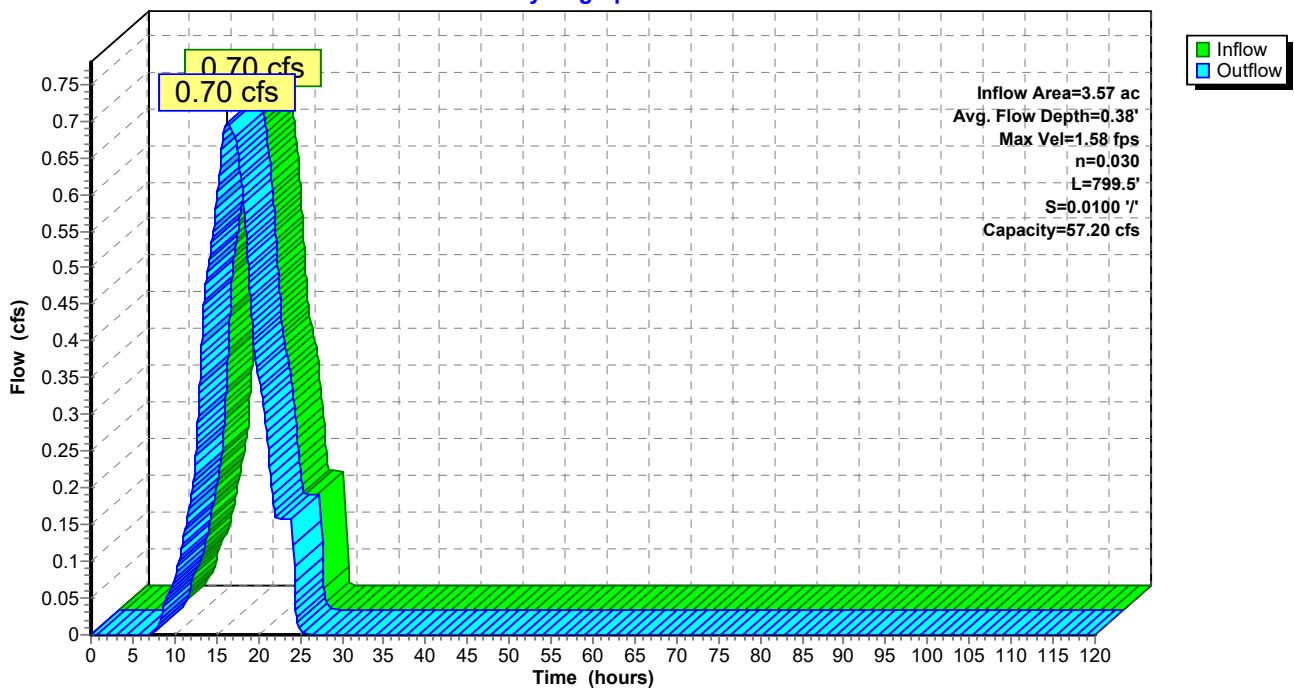
Peak Storage= 352 cf @ 16.21 hrs  
 Average Depth at Peak Storage= 0.38'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.20 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 799.5' Slope= 0.0100 '/'  
 Inlet Invert= 782.24', Outlet Invert= 774.24'



**Reach TB-H3: Terrace Berm H3**

Hydrograph



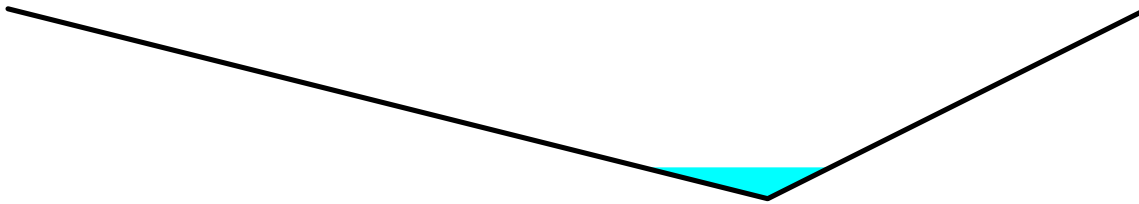
**Summary for Reach TB-N-A1: Terrace Berm N-A1**

Inflow Area = 3.60 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.70 cfs @ 16.14 hrs, Volume= 0.453 af  
 Outflow = 0.70 cfs @ 16.22 hrs, Volume= 0.453 af, Atten= 0%, Lag= 4.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.14 fps, Min. Travel Time= 3.4 min  
 Avg. Velocity = 1.53 fps, Avg. Travel Time= 4.8 min

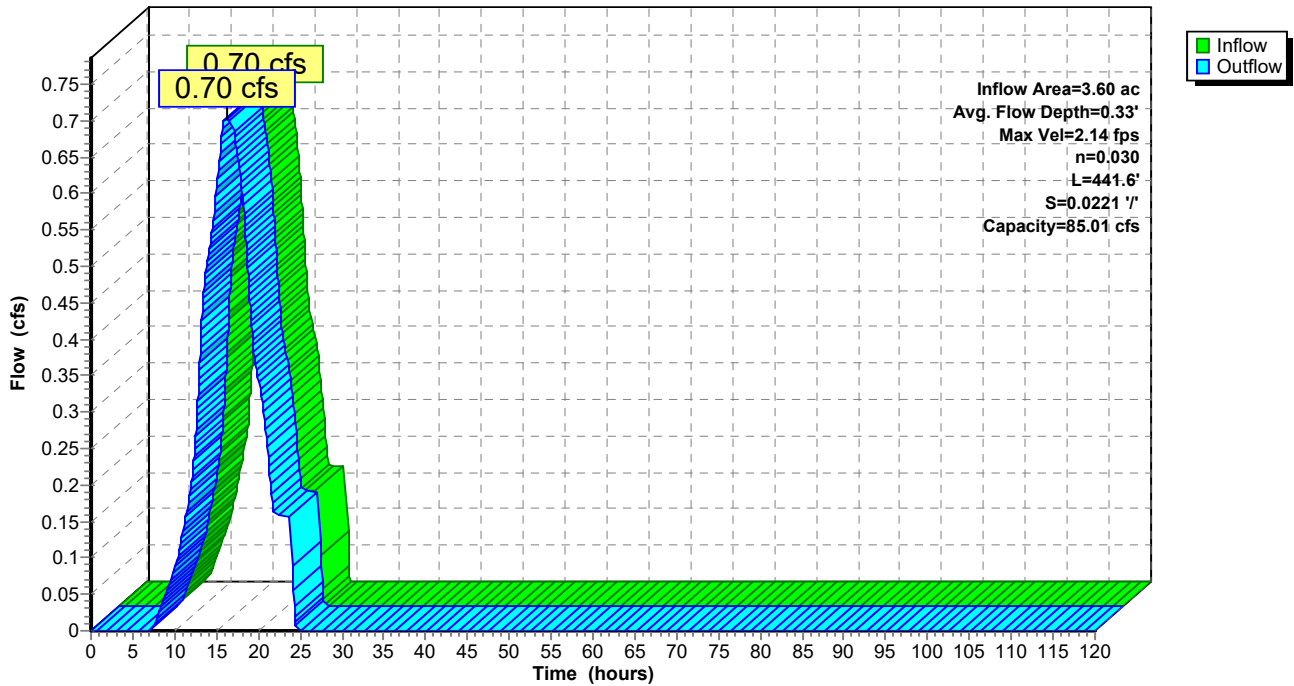
Peak Storage= 145 cf @ 16.16 hrs  
 Average Depth at Peak Storage= 0.33'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 85.01 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 441.6' Slope= 0.0221 '/'  
 Inlet Invert= 879.12', Outlet Invert= 869.36'



**Reach TB-N-A1: Terrace Berm N-A1**

Hydrograph



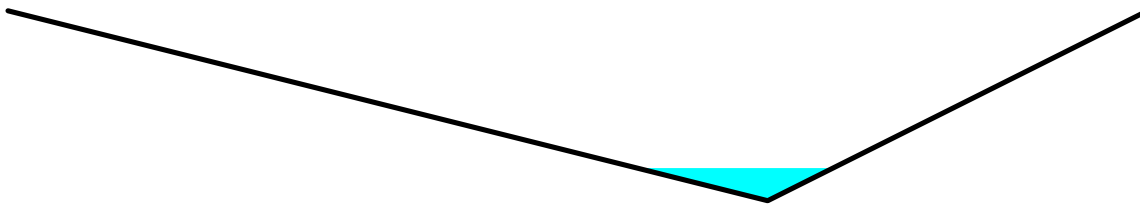
**Summary for Reach TB-N-A10: Terrace Berm N-A10**

Inflow Area = 3.77 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.74 cfs @ 16.09 hrs, Volume= 0.475 af  
 Outflow = 0.74 cfs @ 16.38 hrs, Volume= 0.475 af, Atten= 0%, Lag= 17.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.08 fps, Min. Travel Time= 9.4 min  
 Avg. Velocity = 1.33 fps, Avg. Travel Time= 14.6 min

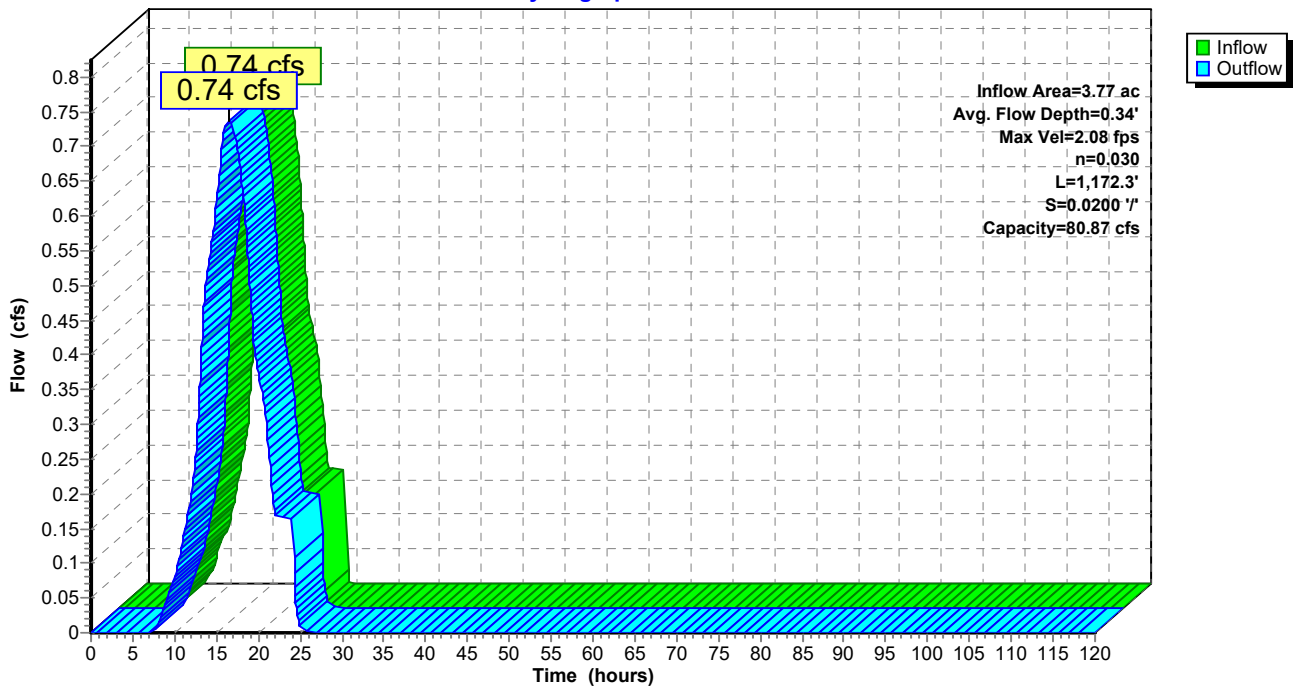
Peak Storage= 414 cf @ 16.23 hrs  
 Average Depth at Peak Storage= 0.34'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,172.3' Slope= 0.0200 '/'  
 Inlet Invert= 771.72', Outlet Invert= 748.27'



**Reach TB-N-A10: Terrace Berm N-A10**

Hydrograph



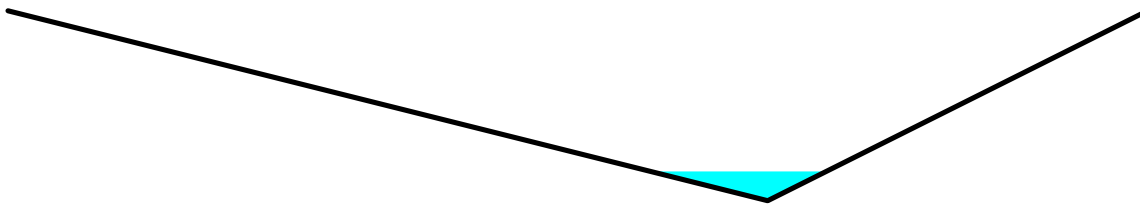
**Summary for Reach TB-N-A2: Terrace Berm N-A2**

Inflow Area = 2.82 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.55 cfs @ 16.10 hrs, Volume= 0.356 af  
 Outflow = 0.55 cfs @ 16.29 hrs, Volume= 0.356 af, Atten= 0%, Lag= 11.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.94 fps, Min. Travel Time= 6.3 min  
 Avg. Velocity = 1.32 fps, Avg. Travel Time= 9.3 min

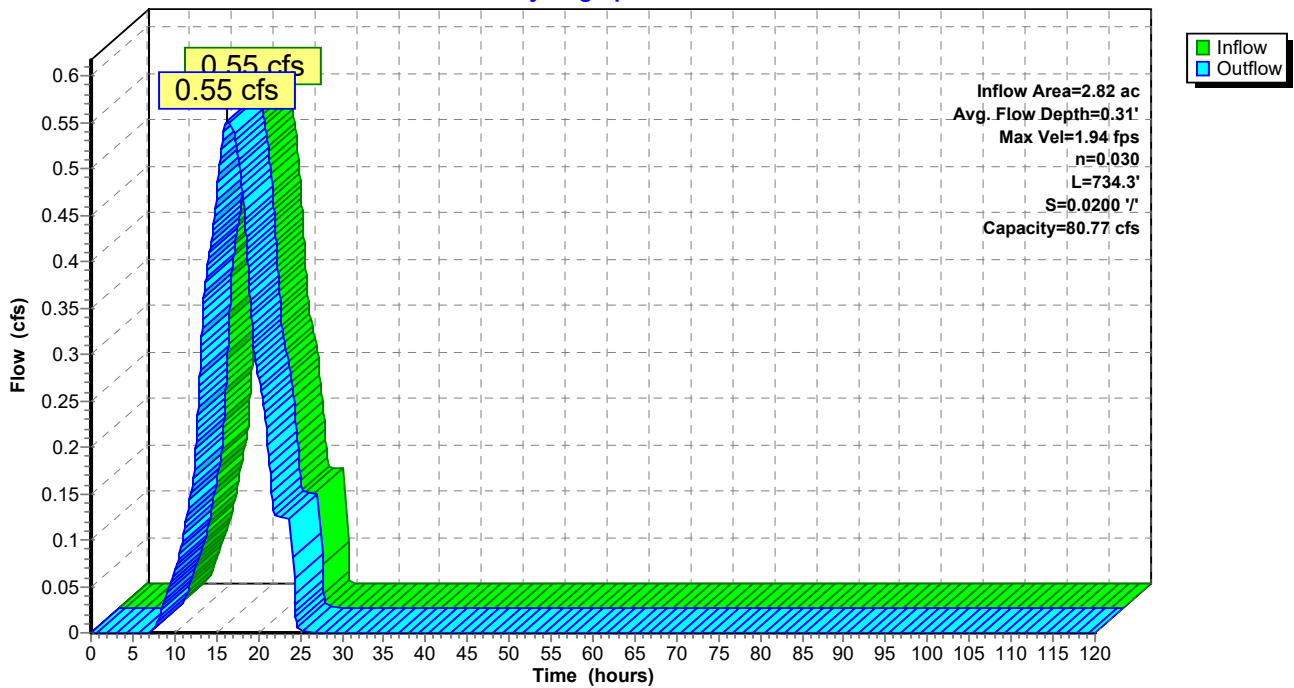
Peak Storage= 209 cf @ 16.19 hrs  
 Average Depth at Peak Storage= 0.31'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.77 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 734.3' Slope= 0.0200 '/'  
 Inlet Invert= 884.01', Outlet Invert= 869.36'



**Reach TB-N-A2: Terrace Berm N-A2**

Hydrograph





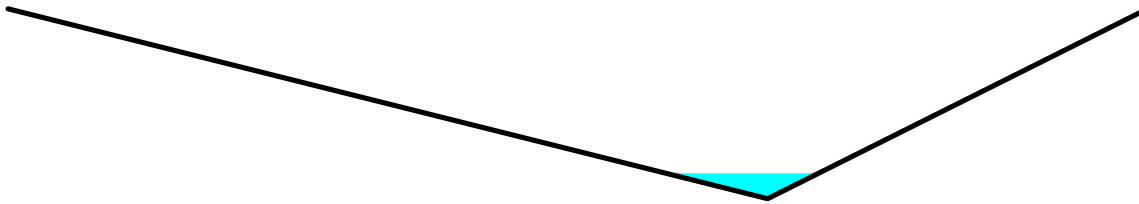
**Summary for Reach TB-N-A3: Terrace Berm N-A3**

Inflow Area = 1.31 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.26 cfs @ 16.09 hrs, Volume= 0.165 af  
 Outflow = 0.26 cfs @ 16.21 hrs, Volume= 0.165 af, Atten= 0%, Lag= 7.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.18 fps, Min. Travel Time= 4.6 min  
 Avg. Velocity = 0.84 fps, Avg. Travel Time= 6.5 min

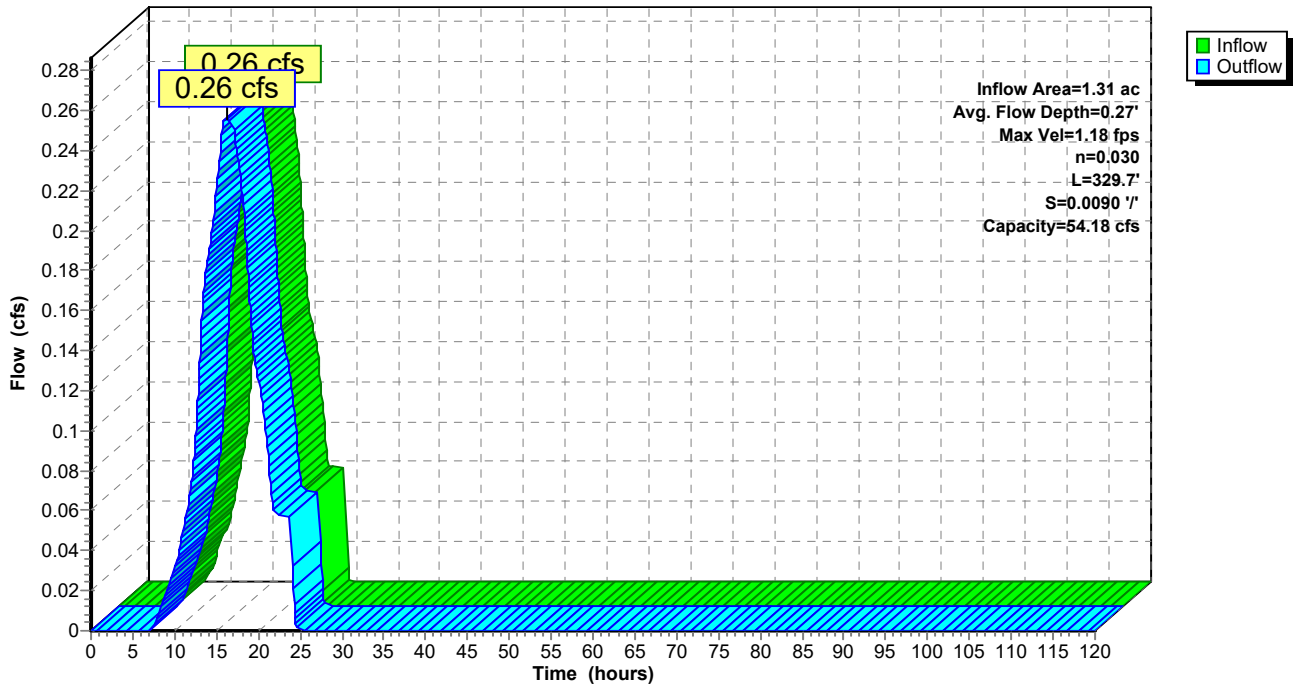
Peak Storage= 71 cf @ 16.14 hrs  
 Average Depth at Peak Storage= 0.27'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 54.18 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 329.7' Slope= 0.0090 '/'  
 Inlet Invert= 839.81', Outlet Invert= 836.85'



**Reach TB-N-A3: Terrace Berm N-A3**

Hydrograph



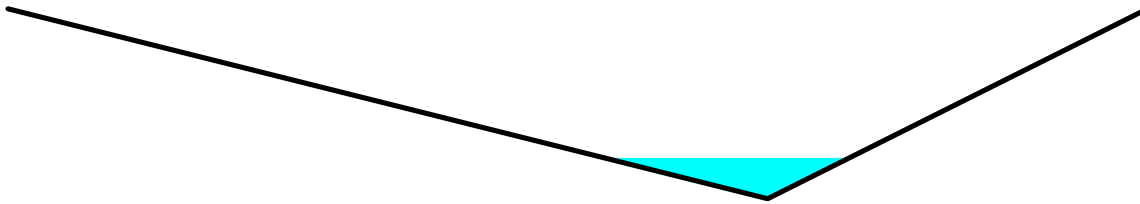
**Summary for Reach TB-N-A4: Terrace Berm N-A4**

Inflow Area = 6.88 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 1.34 cfs @ 16.10 hrs, Volume= 0.865 af  
 Outflow = 1.34 cfs @ 16.47 hrs, Volume= 0.865 af, Atten= 0%, Lag= 22.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.42 fps, Min. Travel Time= 10.5 min  
 Avg. Velocity = 1.46 fps, Avg. Travel Time= 17.4 min

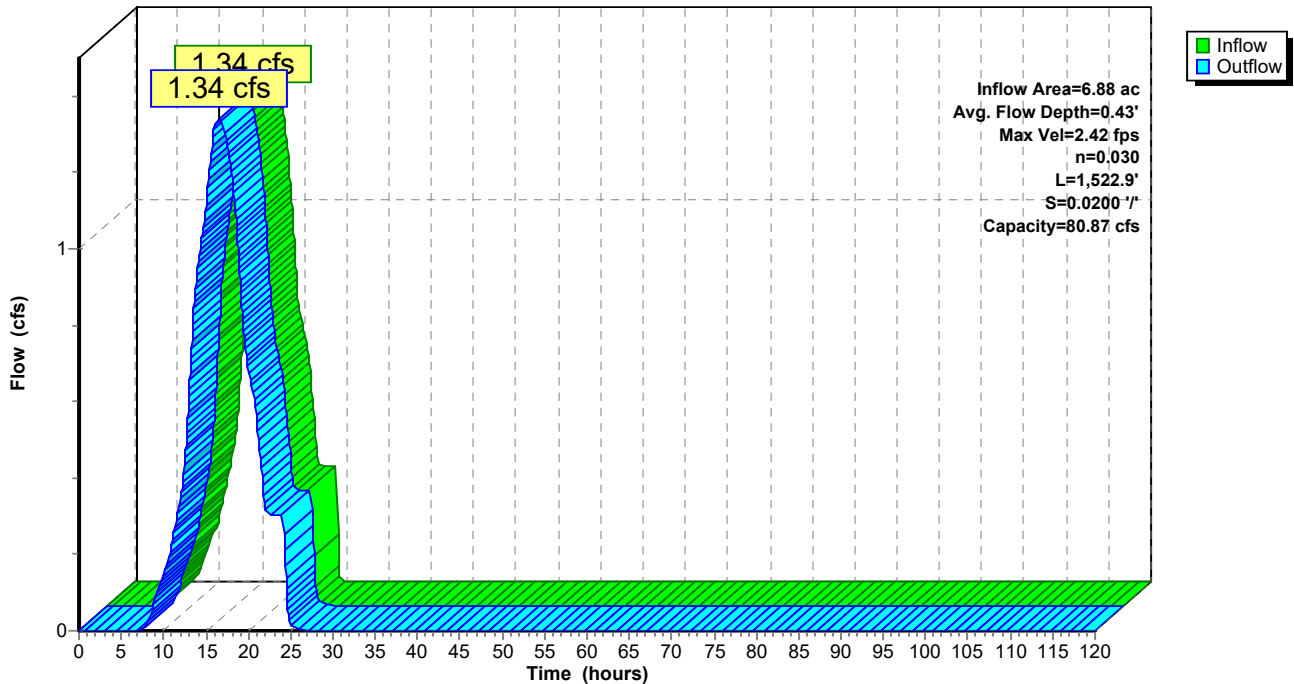
Peak Storage= 844 cf @ 16.29 hrs  
 Average Depth at Peak Storage= 0.43'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,522.9' Slope= 0.0200 '/'  
 Inlet Invert= 867.35', Outlet Invert= 836.89'



**Reach TB-N-A4: Terrace Berm N-A4**

Hydrograph



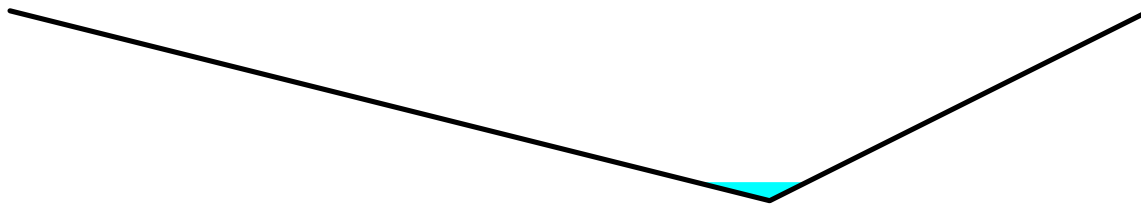
**Summary for Reach TB-N-A5: Terrace Berm N-A5**

Inflow Area = 0.73 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.14 cfs @ 16.06 hrs, Volume= 0.092 af  
 Outflow = 0.14 cfs @ 16.15 hrs, Volume= 0.092 af, Atten= 0%, Lag= 5.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.25 fps, Min. Travel Time= 2.9 min  
 Avg. Velocity = 0.93 fps, Avg. Travel Time= 3.9 min

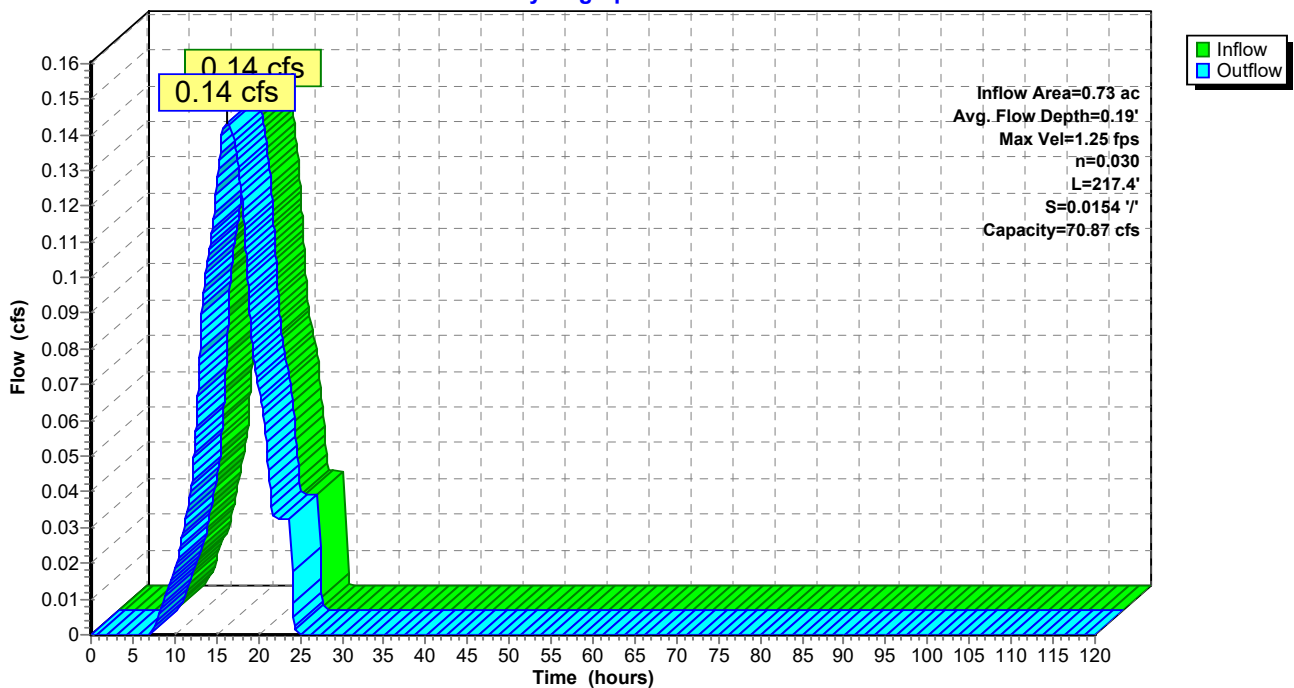
Peak Storage= 25 cf @ 16.10 hrs  
 Average Depth at Peak Storage= 0.19'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 70.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 217.4' Slope= 0.0154 '/'  
 Inlet Invert= 811.36', Outlet Invert= 808.02'



**Reach TB-N-A5: Terrace Berm N-A5**

Hydrograph



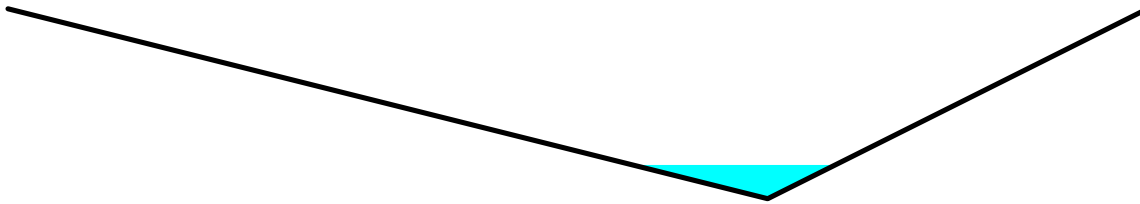
**Summary for Reach TB-N-A6: Terrace Berm N-A6**

Inflow Area = 4.13 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.81 cfs @ 16.06 hrs, Volume= 0.520 af  
 Outflow = 0.81 cfs @ 16.46 hrs, Volume= 0.520 af, Atten= 0%, Lag= 23.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.13 fps, Min. Travel Time= 11.0 min  
 Avg. Velocity = 1.32 fps, Avg. Travel Time= 17.8 min

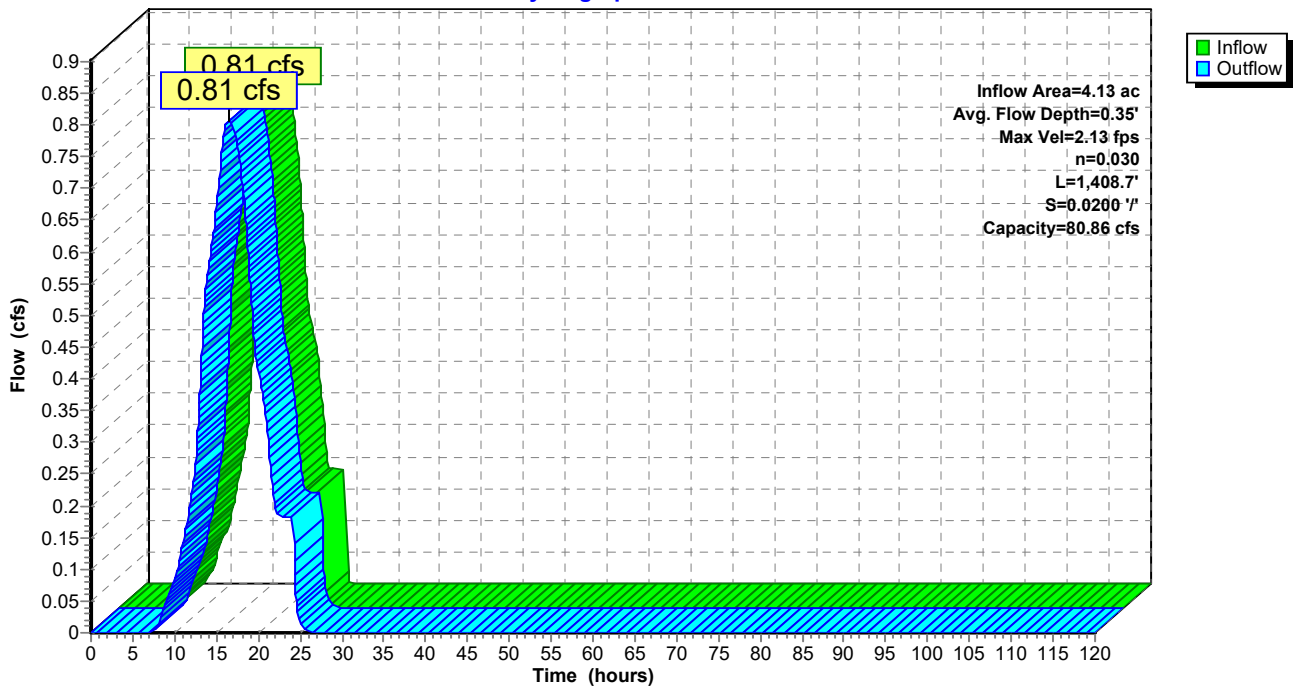
Peak Storage= 533 cf @ 16.27 hrs  
 Average Depth at Peak Storage= 0.35'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,408.7' Slope= 0.0200 '/'  
 Inlet Invert= 836.37', Outlet Invert= 808.20'



**Reach TB-N-A6: Terrace Berm N-A6**

Hydrograph



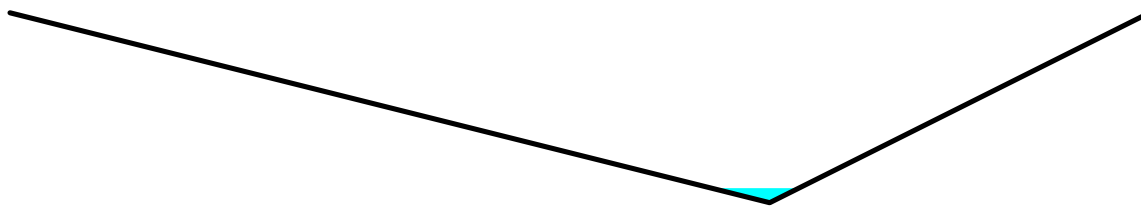
**Summary for Reach TB-N-A7: Terrace Berm N-A7**

Inflow Area = 0.44 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.09 cfs @ 16.09 hrs, Volume= 0.056 af  
 Outflow = 0.09 cfs @ 16.13 hrs, Volume= 0.056 af, Atten= 0%, Lag= 2.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.23 fps, Min. Travel Time= 1.4 min  
 Avg. Velocity = 0.93 fps, Avg. Travel Time= 1.9 min

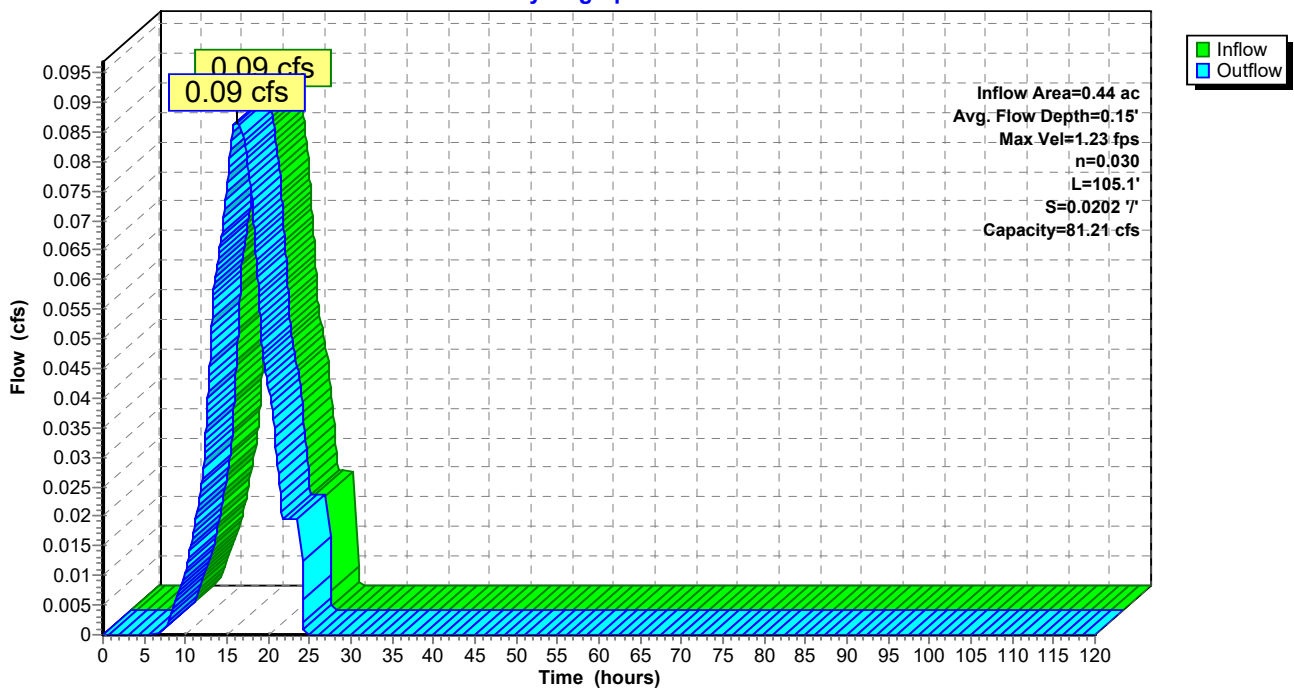
Peak Storage= 7 cf @ 16.10 hrs  
 Average Depth at Peak Storage= 0.15'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 81.21 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 105.1' Slope= 0.0202 '/'  
 Inlet Invert= 782.01', Outlet Invert= 779.89'



**Reach TB-N-A7: Terrace Berm N-A7**

Hydrograph



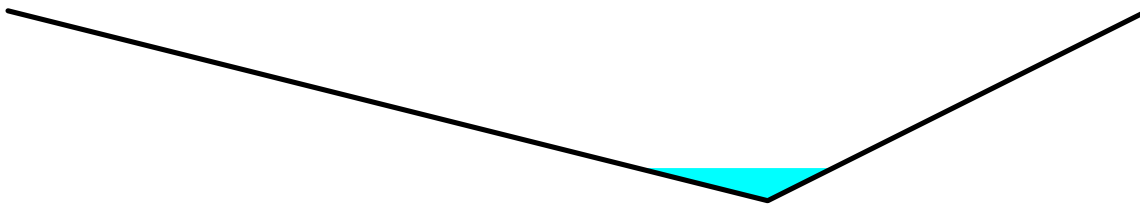
**Summary for Reach TB-N-A8: Terrace Berm N-A8**

Inflow Area = 3.80 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.74 cfs @ 16.06 hrs, Volume= 0.478 af  
 Outflow = 0.74 cfs @ 16.42 hrs, Volume= 0.478 af, Atten= 0%, Lag= 21.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.09 fps, Min. Travel Time= 10.3 min  
 Avg. Velocity = 1.31 fps, Avg. Travel Time= 16.4 min

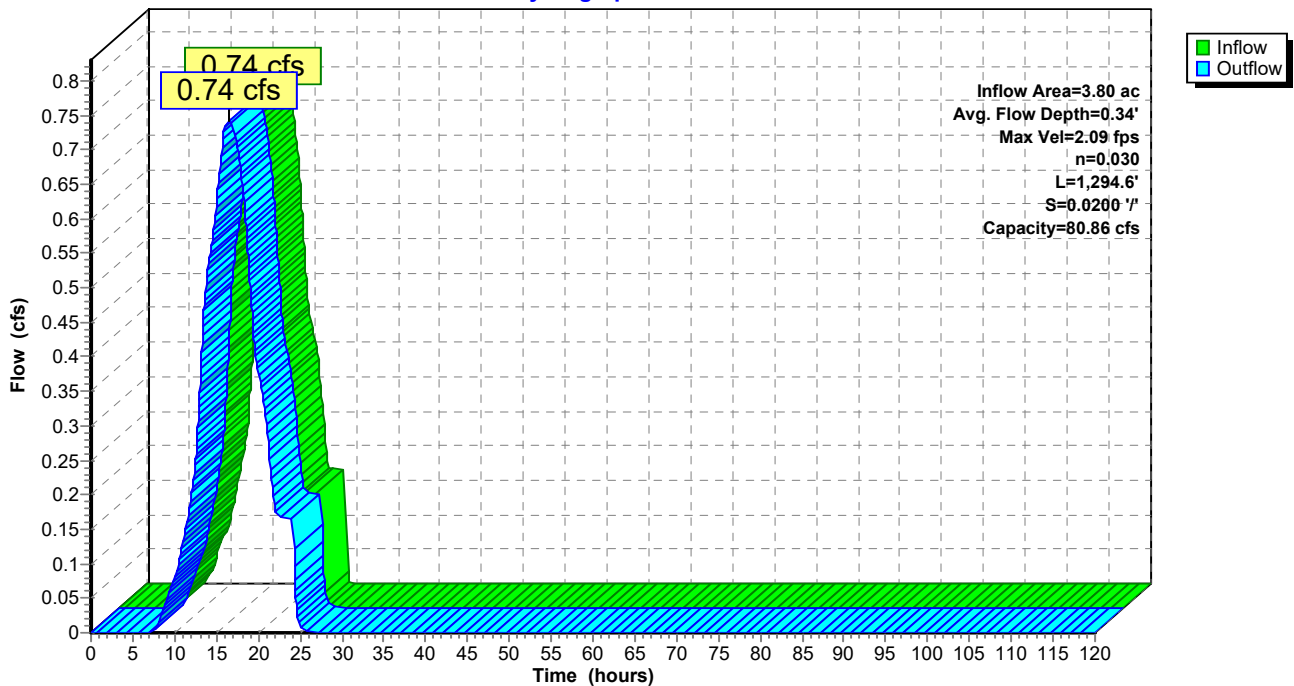
Peak Storage= 460 cf @ 16.25 hrs  
 Average Depth at Peak Storage= 0.34'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,294.6' Slope= 0.0200 '/'  
 Inlet Invert= 805.78', Outlet Invert= 779.89'



**Reach TB-N-A8: Terrace Berm N-A8**

Hydrograph



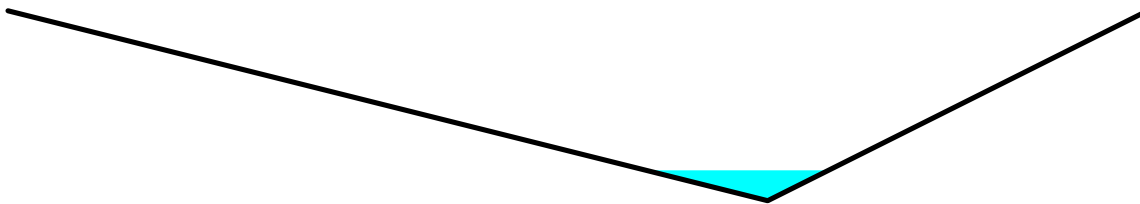
**Summary for Reach TB-N-B1: Terrace Berm N-B1**

Inflow Area = 3.15 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.62 cfs @ 16.13 hrs, Volume= 0.397 af  
 Outflow = 0.62 cfs @ 16.37 hrs, Volume= 0.397 af, Atten= 0%, Lag= 14.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.99 fps, Min. Travel Time= 8.2 min  
 Avg. Velocity = 1.31 fps, Avg. Travel Time= 12.4 min

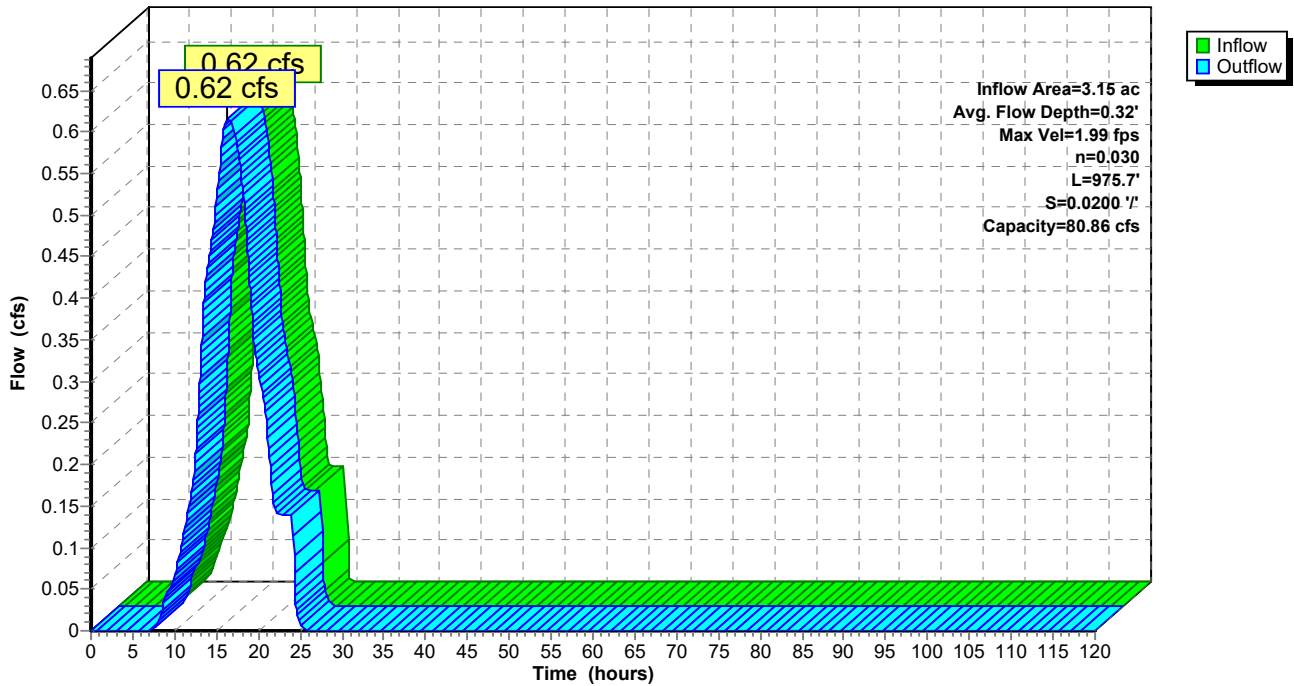
Peak Storage= 302 cf @ 16.23 hrs  
 Average Depth at Peak Storage= 0.32'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/ Top Width= 12.00'  
 Length= 975.7' Slope= 0.0200 '/  
 Inlet Invert= 867.35', Outlet Invert= 847.84'



**Reach TB-N-B1: Terrace Berm N-B1**

Hydrograph



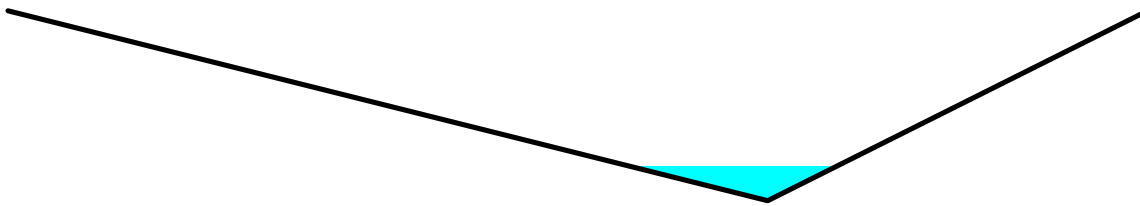
**Summary for Reach TB-N-B2: Terrace Berm N-B2**

Inflow Area = 4.49 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.88 cfs @ 16.07 hrs, Volume= 0.565 af  
 Outflow = 0.87 cfs @ 16.39 hrs, Volume= 0.565 af, Atten= 0%, Lag= 18.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.17 fps, Min. Travel Time= 8.6 min  
 Avg. Velocity = 1.40 fps, Avg. Travel Time= 13.3 min

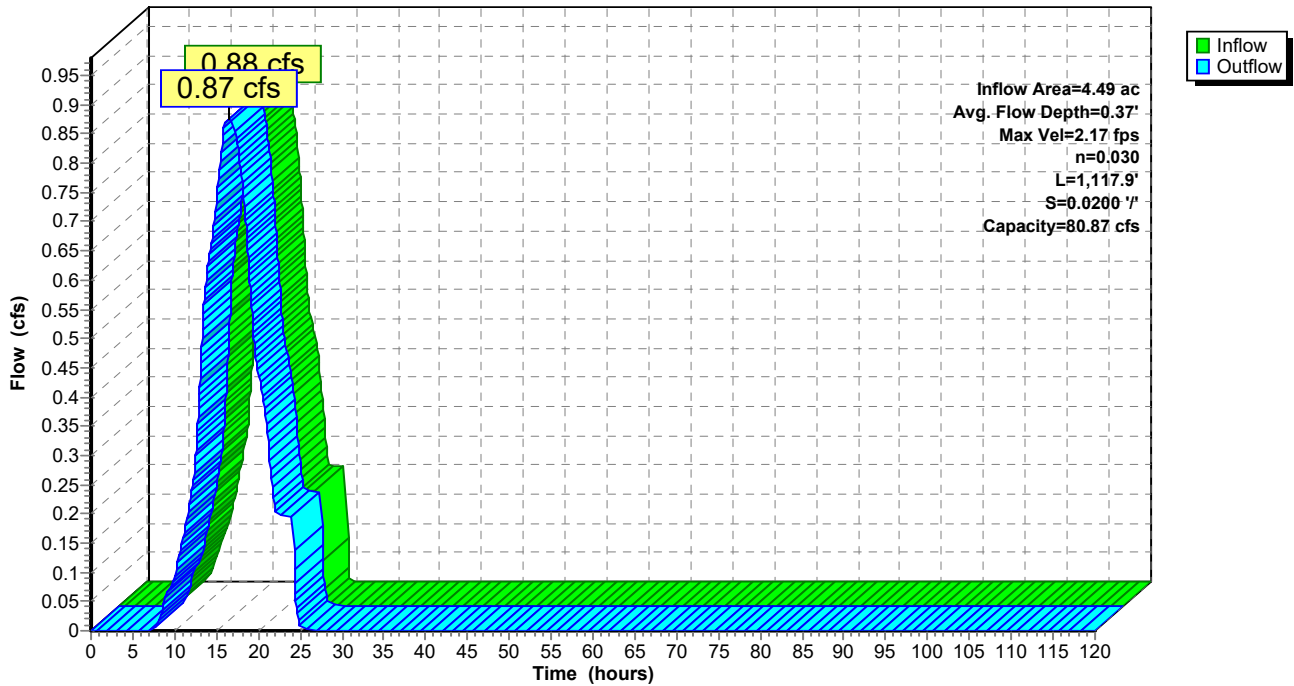
Peak Storage= 450 cf @ 16.25 hrs  
 Average Depth at Peak Storage= 0.37'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,117.9' Slope= 0.0200 '/'  
 Inlet Invert= 870.20', Outlet Invert= 847.84'



**Reach TB-N-B2: Terrace Berm N-B2**

Hydrograph





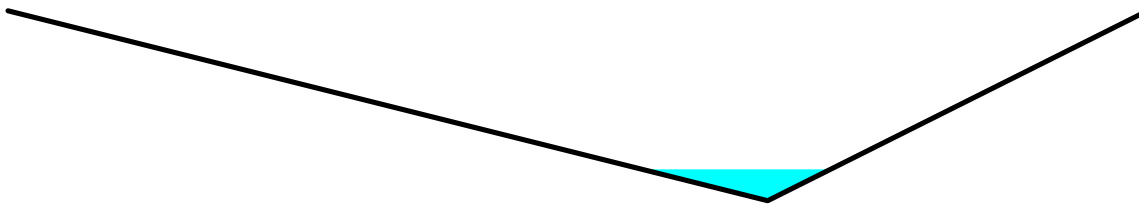
**Summary for Reach TB-N-B3: Terrace Berm N-B3**

Inflow Area = 3.43 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.67 cfs @ 16.09 hrs, Volume= 0.431 af  
 Outflow = 0.67 cfs @ 16.45 hrs, Volume= 0.431 af, Atten= 0%, Lag= 21.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.03 fps, Min. Travel Time= 10.8 min  
 Avg. Velocity = 1.28 fps, Avg. Travel Time= 17.2 min

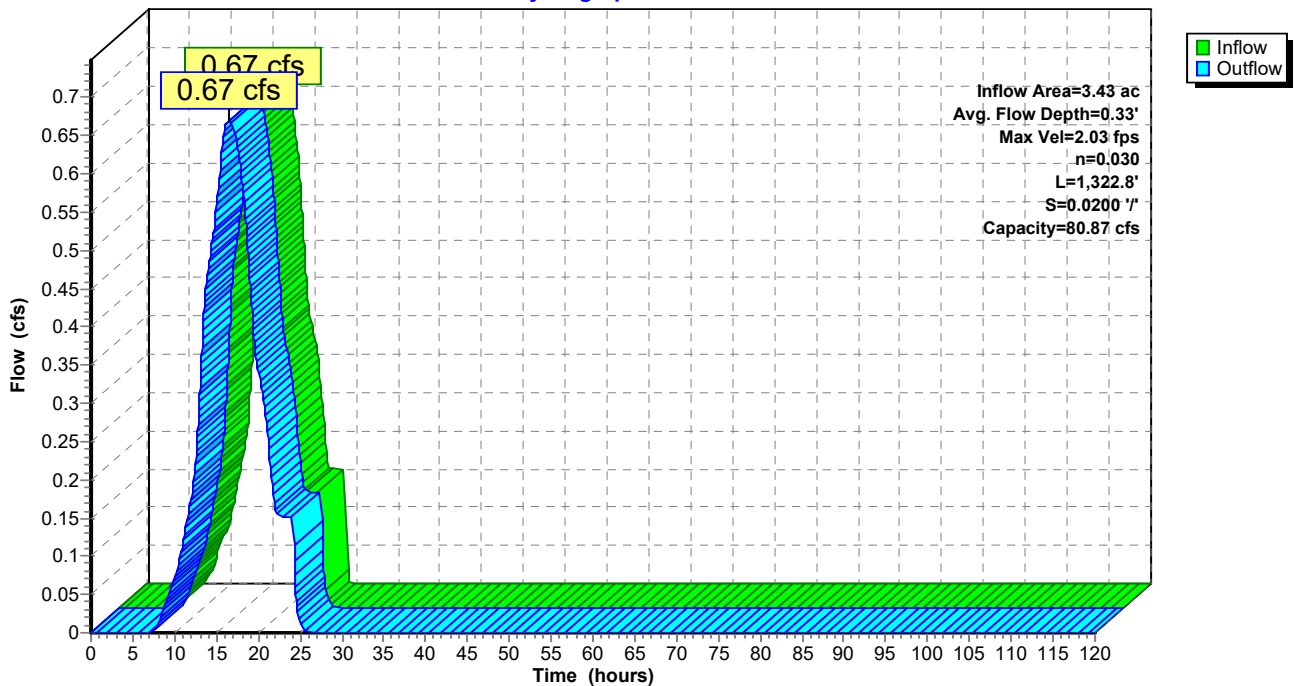
Peak Storage= 435 cf @ 16.27 hrs  
 Average Depth at Peak Storage= 0.33'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,322.8' Slope= 0.0200 '/'  
 Inlet Invert= 836.37', Outlet Invert= 809.91'



**Reach TB-N-B3: Terrace Berm N-B3**

Hydrograph



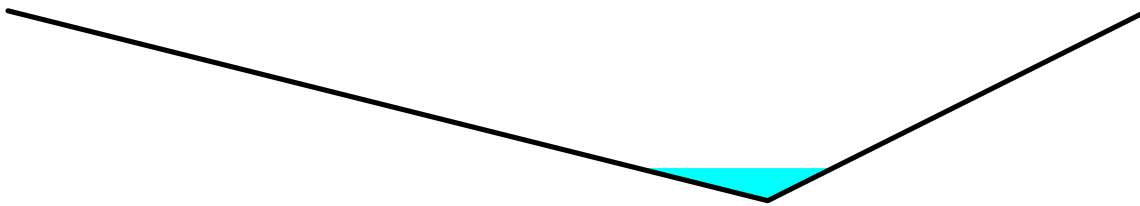
**Summary for Reach TB-N-B4: Terrace Berm N-B4**

Inflow Area = 3.80 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.74 cfs @ 16.09 hrs, Volume= 0.479 af  
 Outflow = 0.74 cfs @ 16.42 hrs, Volume= 0.479 af, Atten= 0%, Lag= 19.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.09 fps, Min. Travel Time= 10.1 min  
 Avg. Velocity = 1.32 fps, Avg. Travel Time= 16.0 min

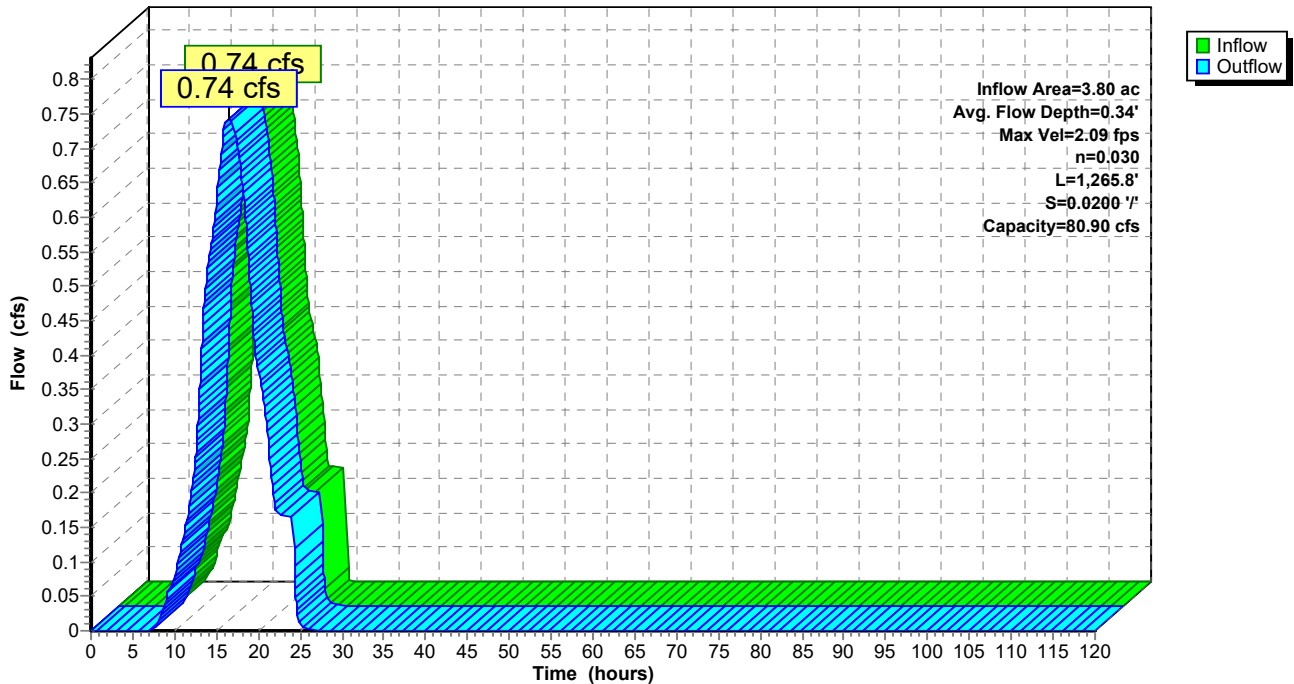
Peak Storage= 450 cf @ 16.25 hrs  
 Average Depth at Peak Storage= 0.34'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.90 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,265.8' Slope= 0.0200 '/'  
 Inlet Invert= 835.25', Outlet Invert= 809.91'



**Reach TB-N-B4: Terrace Berm N-B4**

Hydrograph



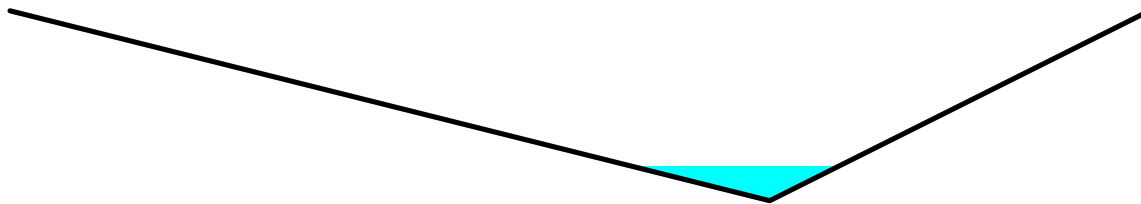
**Summary for Reach TB-N-B5: Terrace Berm N-B5**

Inflow Area = 4.50 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.88 cfs @ 16.09 hrs, Volume= 0.566 af  
 Outflow = 0.88 cfs @ 16.53 hrs, Volume= 0.566 af, Atten= 0%, Lag= 26.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.18 fps, Min. Travel Time= 12.8 min  
 Avg. Velocity = 1.31 fps, Avg. Travel Time= 21.3 min

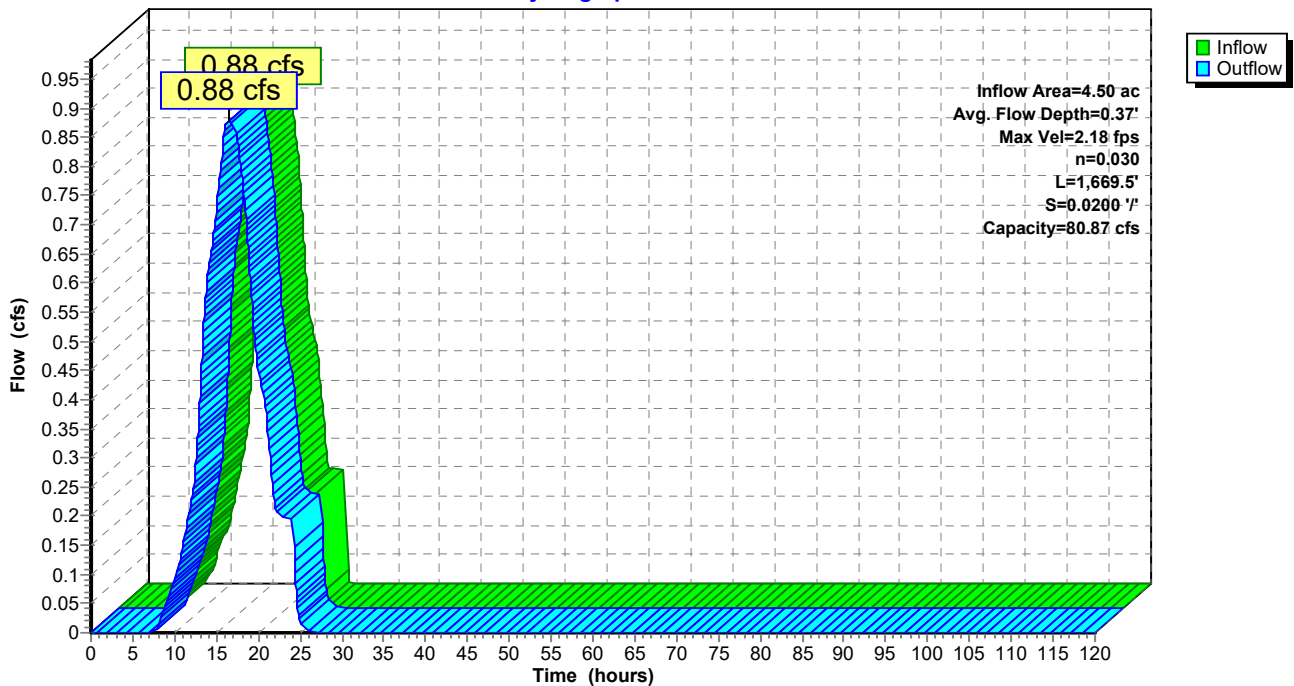
Peak Storage= 673 cf @ 16.31 hrs  
 Average Depth at Peak Storage= 0.37'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,669.5' Slope= 0.0200 '/'  
 Inlet Invert= 805.78', Outlet Invert= 772.39'



**Reach TB-N-B5: Terrace Berm N-B5**

Hydrograph



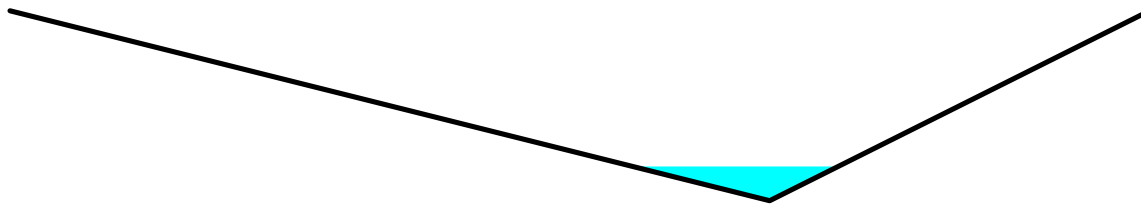
**Summary for Reach TB-N-B6: Terrace Berm N-B6**

Inflow Area = 4.29 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.84 cfs @ 16.09 hrs, Volume= 0.540 af  
 Outflow = 0.84 cfs @ 16.45 hrs, Volume= 0.540 af, Atten= 0%, Lag= 21.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.15 fps, Min. Travel Time= 11.0 min  
 Avg. Velocity = 1.33 fps, Avg. Travel Time= 17.7 min

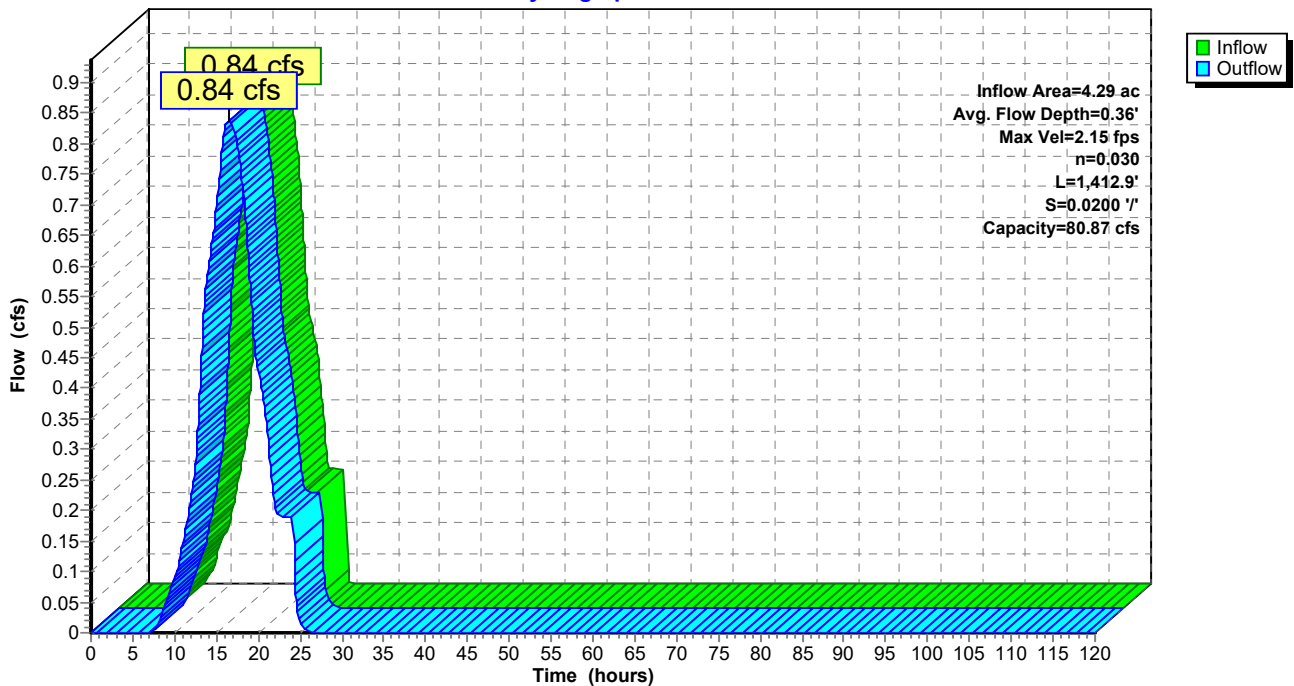
Peak Storage= 550 cf @ 16.27 hrs  
 Average Depth at Peak Storage= 0.36'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,412.9' Slope= 0.0200 '/'  
 Inlet Invert= 800.65', Outlet Invert= 772.39'



**Reach TB-N-B6: Terrace Berm N-B6**

Hydrograph



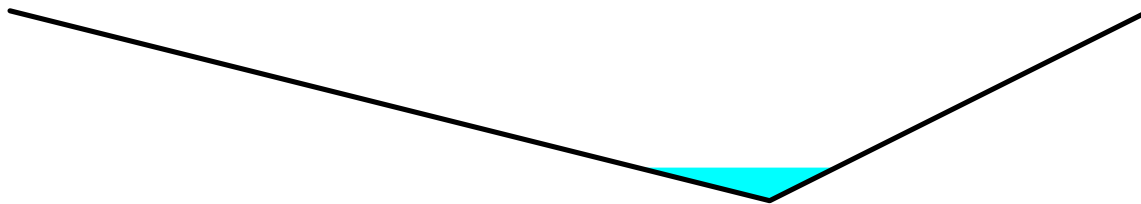
**Summary for Reach TB-N-B7: Terrace Berm N-B7**

Inflow Area = 3.96 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.77 cfs @ 16.09 hrs, Volume= 0.499 af  
 Outflow = 0.77 cfs @ 16.45 hrs, Volume= 0.499 af, Atten= 0%, Lag= 21.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.11 fps, Min. Travel Time= 10.9 min  
 Avg. Velocity = 1.31 fps, Avg. Travel Time= 17.4 min

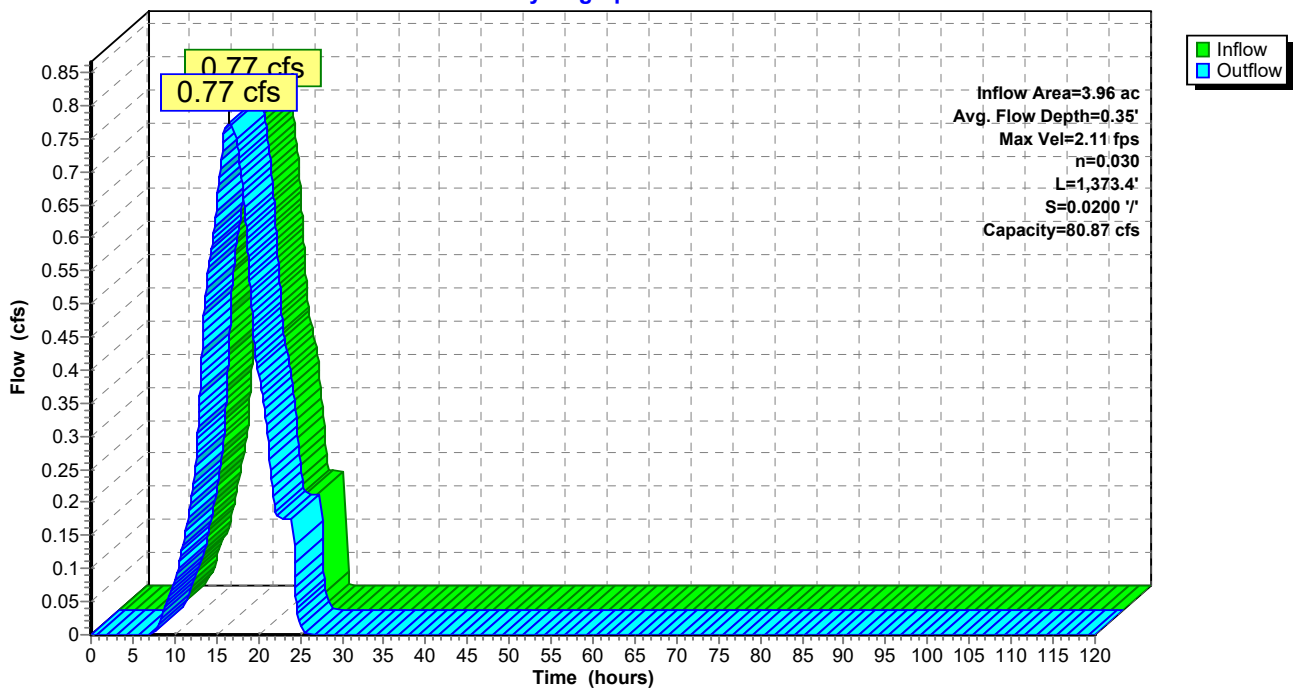
Peak Storage= 503 cf @ 16.27 hrs  
 Average Depth at Peak Storage= 0.35'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,373.4' Slope= 0.0200 '/'  
 Inlet Invert= 771.72', Outlet Invert= 744.25'



**Reach TB-N-B7: Terrace Berm N-B7**

Hydrograph



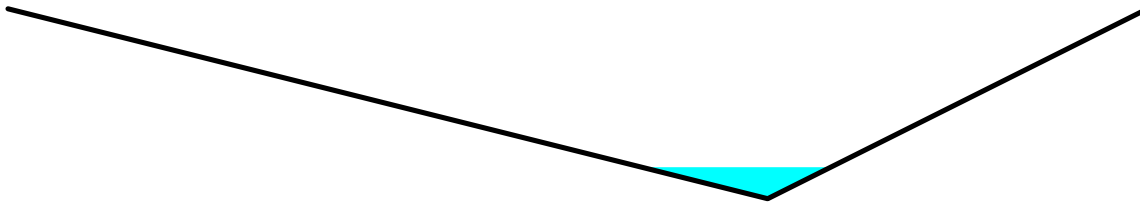
**Summary for Reach TB-N-B8: Terrace Berm N-B8**

Inflow Area = 3.52 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.69 cfs @ 16.09 hrs, Volume= 0.444 af  
 Outflow = 0.69 cfs @ 16.34 hrs, Volume= 0.444 af, Atten= 0%, Lag= 14.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.08 fps, Min. Travel Time= 8.1 min  
 Avg. Velocity = 1.37 fps, Avg. Travel Time= 12.4 min

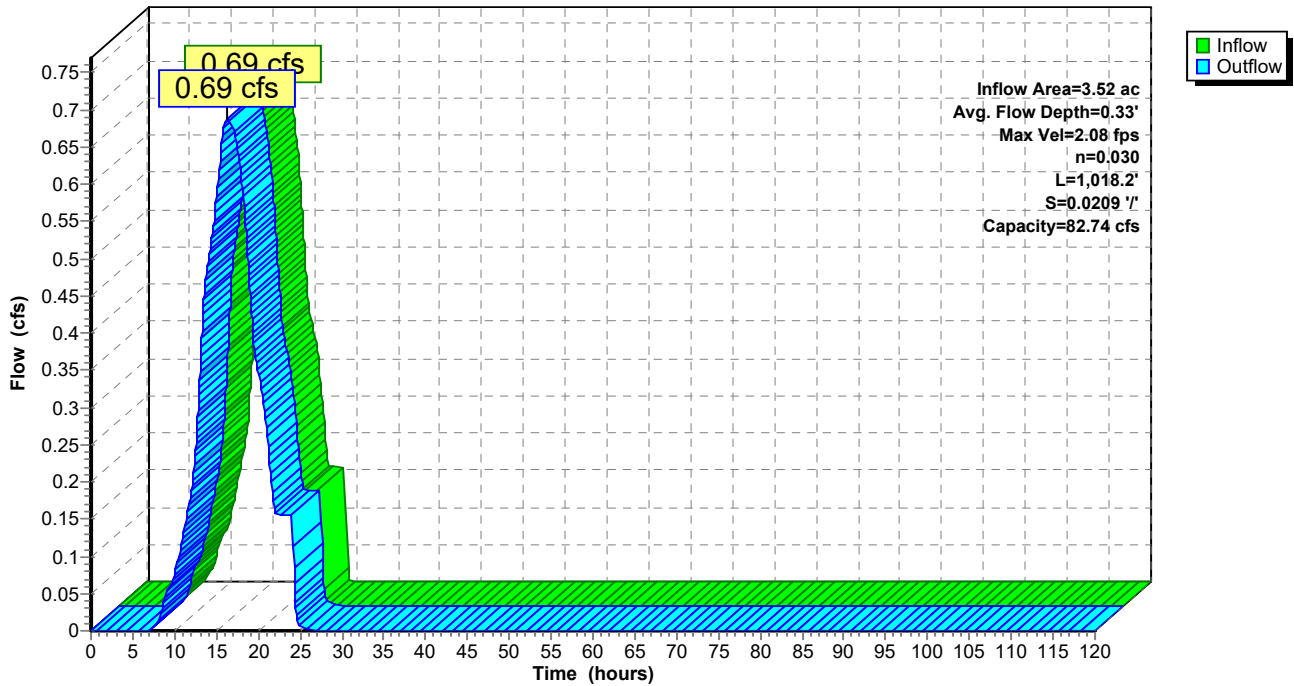
Peak Storage= 336 cf @ 16.20 hrs  
 Average Depth at Peak Storage= 0.33'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 82.74 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,018.2' Slope= 0.0209 '/'  
 Inlet Invert= 765.32', Outlet Invert= 744.00'



**Reach TB-N-B8: Terrace Berm N-B8**

Hydrograph



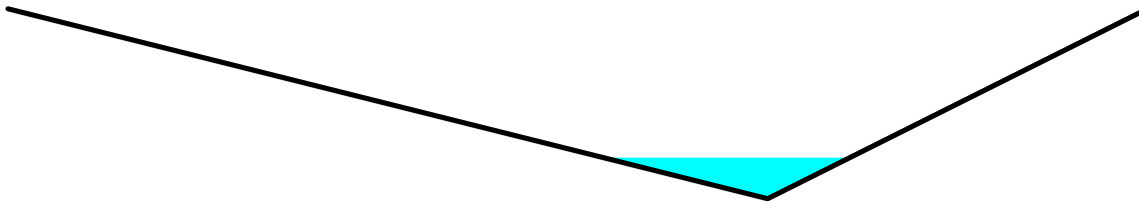
**Summary for Reach TB-N-C1: Terrace Berm N-C1**

Inflow Area = 6.98 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 1.36 cfs @ 16.10 hrs, Volume= 0.879 af  
 Outflow = 1.36 cfs @ 16.41 hrs, Volume= 0.879 af, Atten= 0%, Lag= 18.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.43 fps, Min. Travel Time= 9.0 min  
 Avg. Velocity = 1.51 fps, Avg. Travel Time= 14.6 min

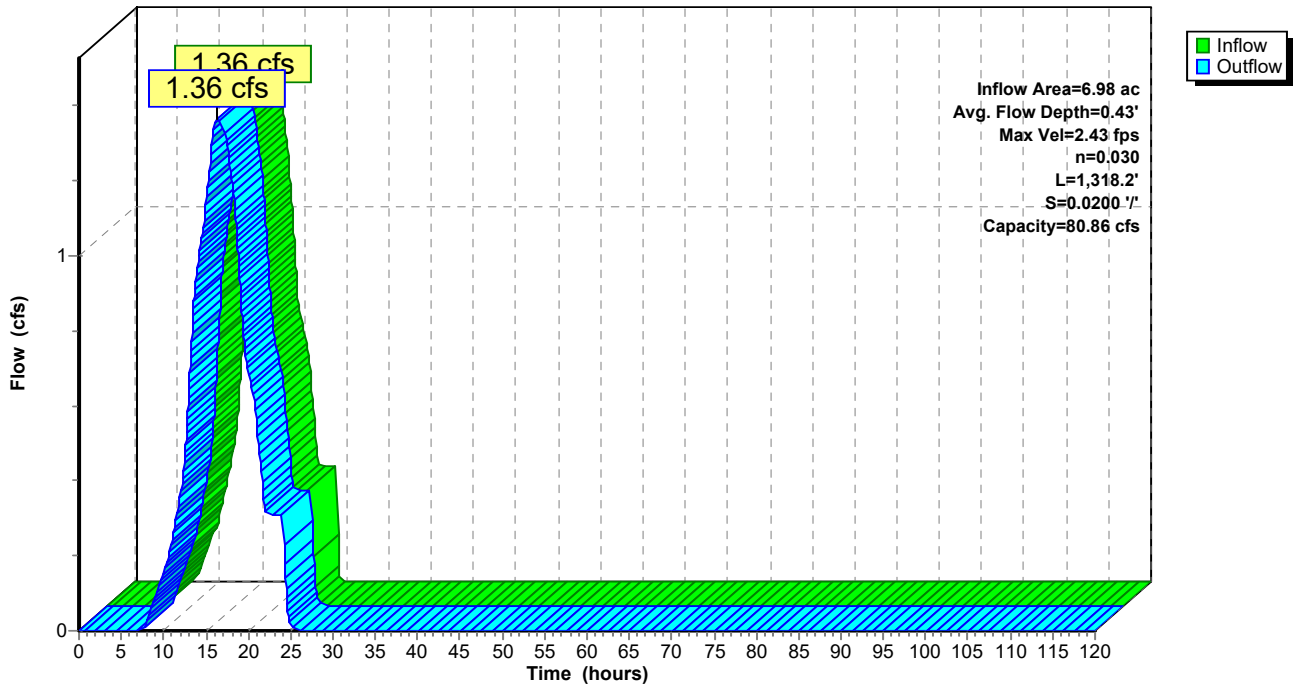
Peak Storage= 739 cf @ 16.26 hrs  
 Average Depth at Peak Storage= 0.43'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,318.2' Slope= 0.0200 '/'  
 Inlet Invert= 870.02', Outlet Invert= 843.66'



**Reach TB-N-C1: Terrace Berm N-C1**

Hydrograph



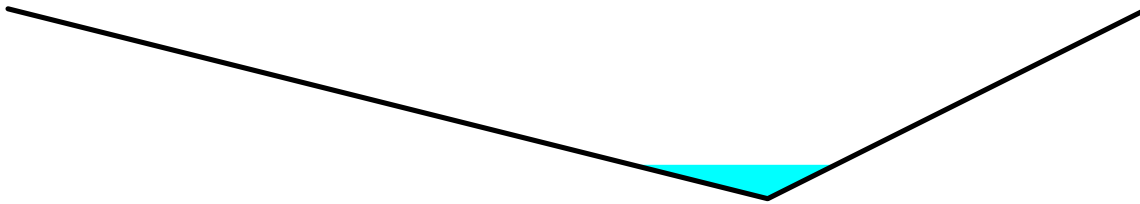
**Summary for Reach TB-N-C2: Terrace Berm N-C2**

Inflow Area = 4.20 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.82 cfs @ 16.09 hrs, Volume= 0.529 af  
 Outflow = 0.82 cfs @ 16.43 hrs, Volume= 0.529 af, Atten= 0%, Lag= 20.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.14 fps, Min. Travel Time= 10.3 min  
 Avg. Velocity = 1.34 fps, Avg. Travel Time= 16.4 min

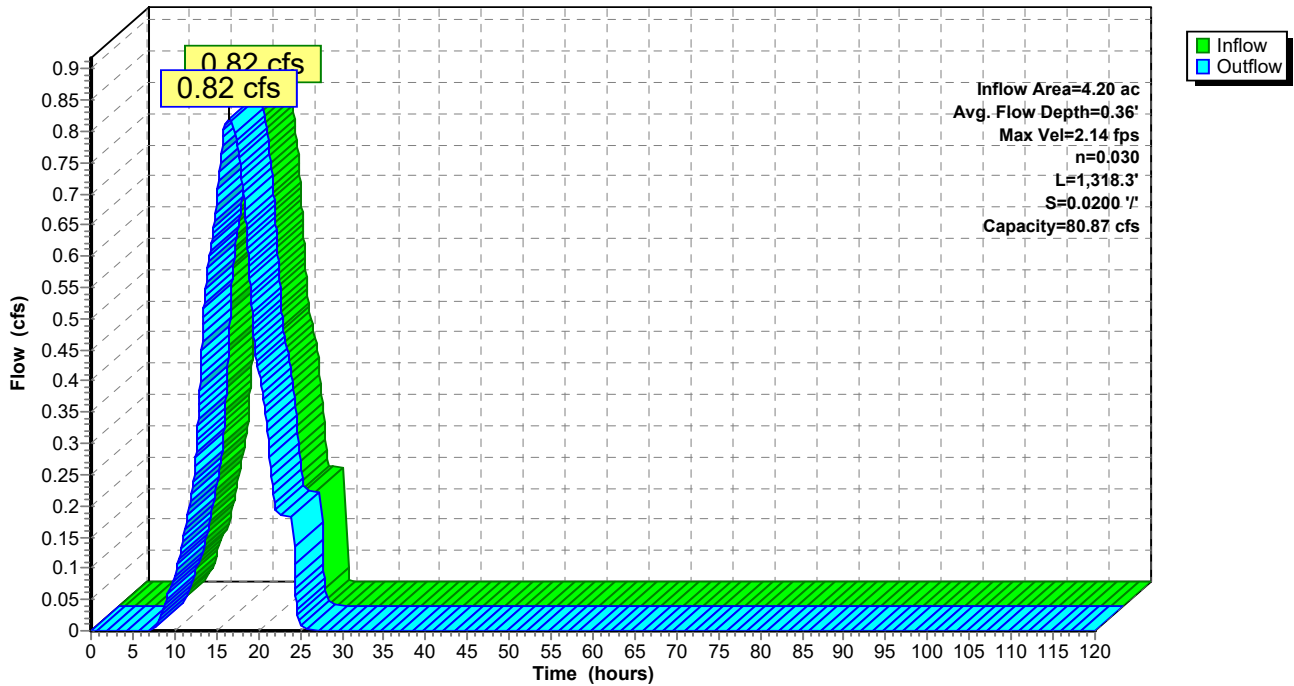
Peak Storage= 505 cf @ 16.26 hrs  
 Average Depth at Peak Storage= 0.36'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/ Top Width= 12.00'  
 Length= 1,318.3' Slope= 0.0200 '/  
 Inlet Invert= 835.25', Outlet Invert= 808.88'



**Reach TB-N-C2: Terrace Berm N-C2**

Hydrograph





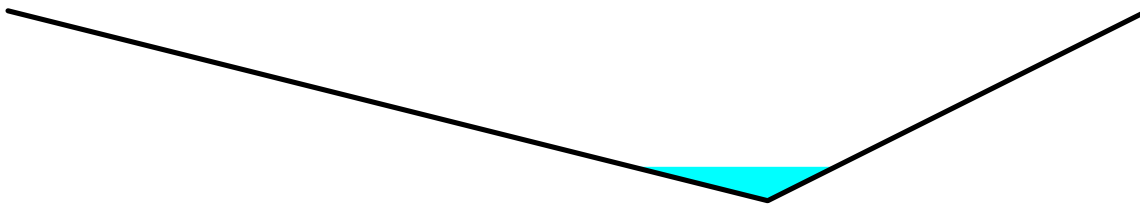
**Summary for Reach TB-N-C3: Terrace Berm N-C3**

Inflow Area = 4.22 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.82 cfs @ 16.09 hrs, Volume= 0.531 af  
 Outflow = 0.82 cfs @ 16.43 hrs, Volume= 0.531 af, Atten= 0%, Lag= 20.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.14 fps, Min. Travel Time= 10.3 min  
 Avg. Velocity = 1.34 fps, Avg. Travel Time= 16.4 min

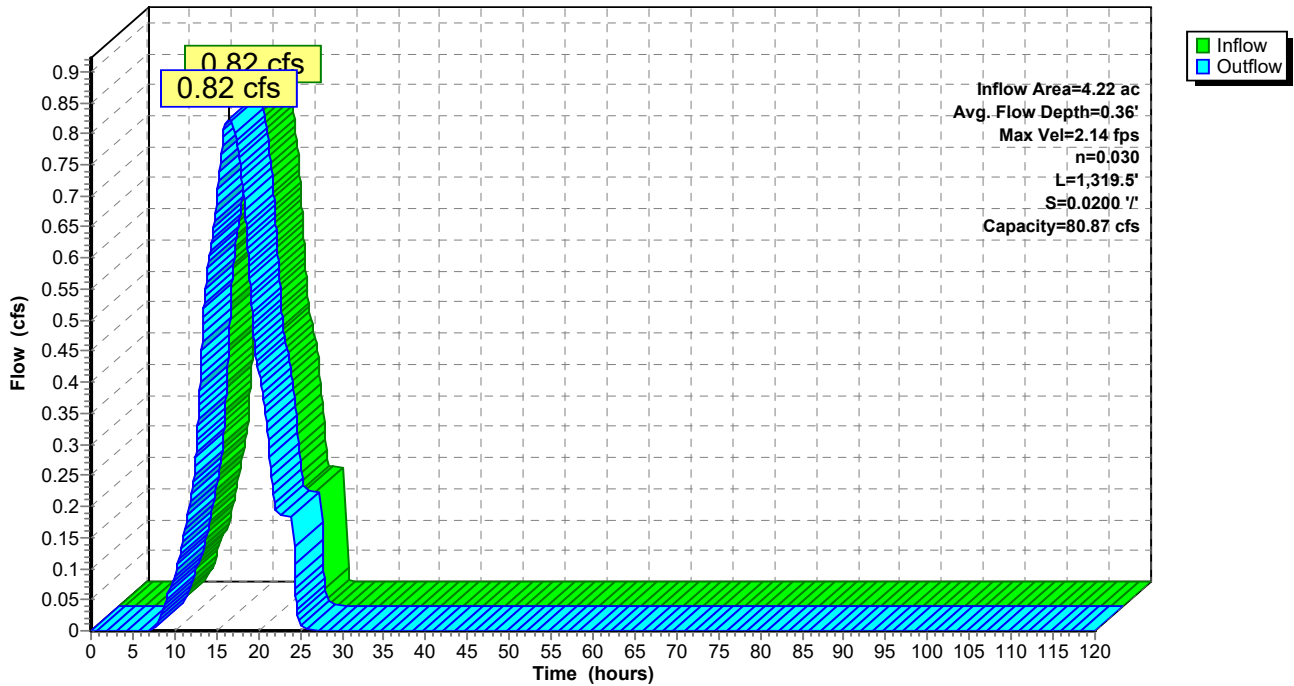
Peak Storage= 507 cf @ 16.26 hrs  
 Average Depth at Peak Storage= 0.36'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,319.5' Slope= 0.0200 '/'  
 Inlet Invert= 800.65', Outlet Invert= 774.26'



**Reach TB-N-C3: Terrace Berm N-C3**

Hydrograph



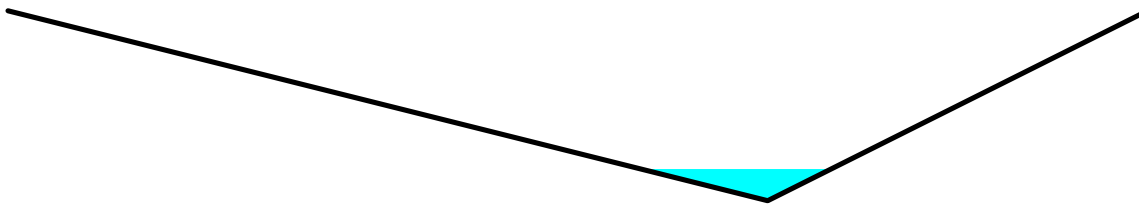
**Summary for Reach TB-N-C4: Terrace Berm N-C4**

Inflow Area = 3.52 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
 Inflow = 0.69 cfs @ 16.09 hrs, Volume= 0.443 af  
 Outflow = 0.69 cfs @ 16.37 hrs, Volume= 0.443 af, Atten= 0%, Lag= 16.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.05 fps, Min. Travel Time= 8.9 min  
 Avg. Velocity = 1.32 fps, Avg. Travel Time= 13.8 min

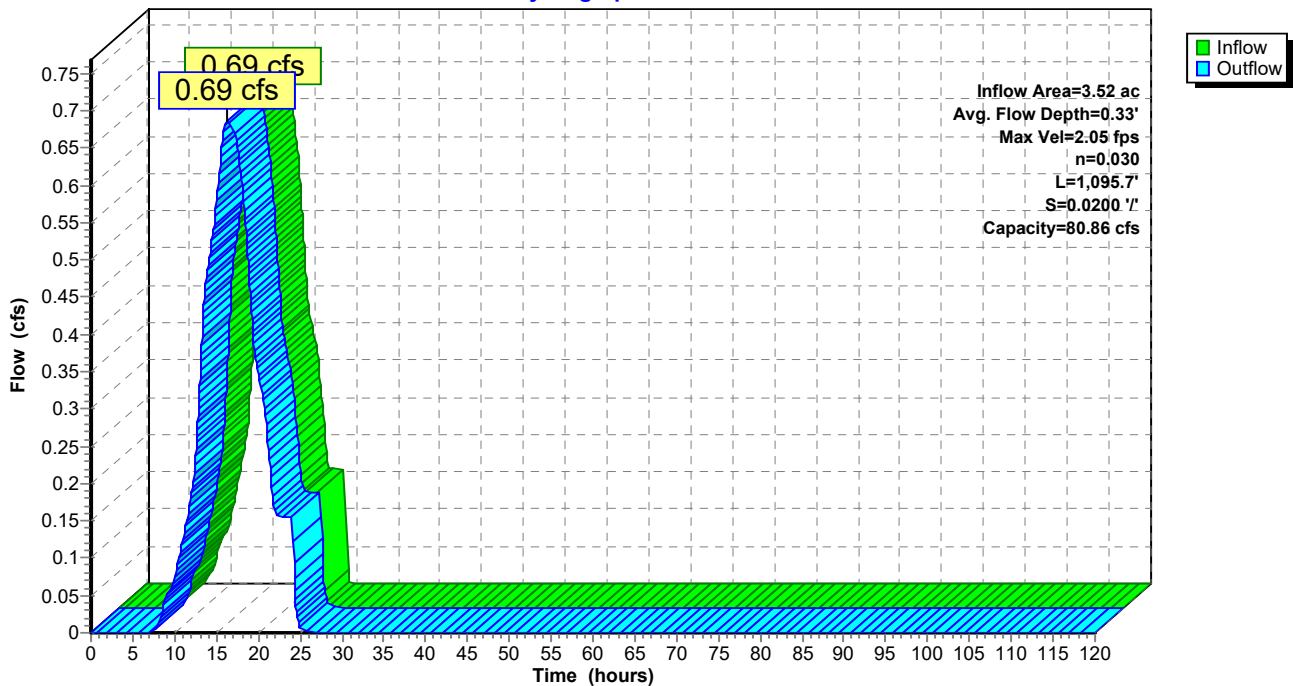
Peak Storage= 367 cf @ 16.22 hrs  
 Average Depth at Peak Storage= 0.33'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,095.7' Slope= 0.0200 '/'  
 Inlet Invert= 765.32', Outlet Invert= 743.41'



**Reach TB-N-C4: Terrace Berm N-C4**

Hydrograph



**Summary for Pond Basin 5R: Stormwater Basin 5R**

Inflow Area = 53.03 ac, 15.95% Impervious, Inflow Depth = 1.77" for 2-Year, 24-Hour event  
 Inflow = 11.16 cfs @ 16.41 hrs, Volume= 7.815 af  
 Outflow = 1.60 cfs @ 24.36 hrs, Volume= 6.091 af, Atten= 86%, Lag= 476.7 min  
 Primary = 1.60 cfs @ 24.36 hrs, Volume= 6.091 af  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Starting Elev= 733.50' Surf.Area= 318,821 sf Storage= 1,528,329 cf  
 Peak Elev= 734.57' @ 24.36 hrs Surf.Area= 263,341 sf Storage= 1,818,963 cf (290,634 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= 1,852.0 min ( 2,828.0 - 976.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	726.00'	4,158,336 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
726.00	132,640	0	0
728.00	155,297	287,937	287,937
730.00	179,100	334,397	622,334
731.00	118,479	148,790	771,124
732.00	367,080	242,780	1,013,903
733.50	318,821	514,426	1,528,329
734.00	253,912	143,183	1,671,512
735.00	270,451	262,182	1,933,694
736.00	287,631	279,041	2,212,735
738.00	311,683	599,314	2,812,049
740.00	336,524	648,207	3,460,256
742.00	361,556	698,080	4,158,336

Device	Routing	Invert	Outlet Devices
#1	Primary	733.50'	<b>30.0" Round Culvert</b> L= 100.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 733.50' / 733.20' S= 0.0030 1/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf
#2	Device 1	733.50'	<b>4.0" Vert. Lower Orifice X 4.00</b> C= 0.600
#3	Device 1	737.50'	<b>4.0" Vert. Middle Orifice X 4.00</b> C= 0.600
#4	Device 1	738.50'	<b>4.0" Vert. Upper Orifice X 4.00</b> C= 0.600
#5	Device 1	739.00'	<b>30.0" Horiz. Orifice/Grate</b> C= 0.600
#6	Secondary	740.00'	<b>Secondary Spillway, C= 3.27</b> Offset (feet) 0.00 6.00 26.00 32.00 Height (feet) 2.00 0.00 0.00 2.00

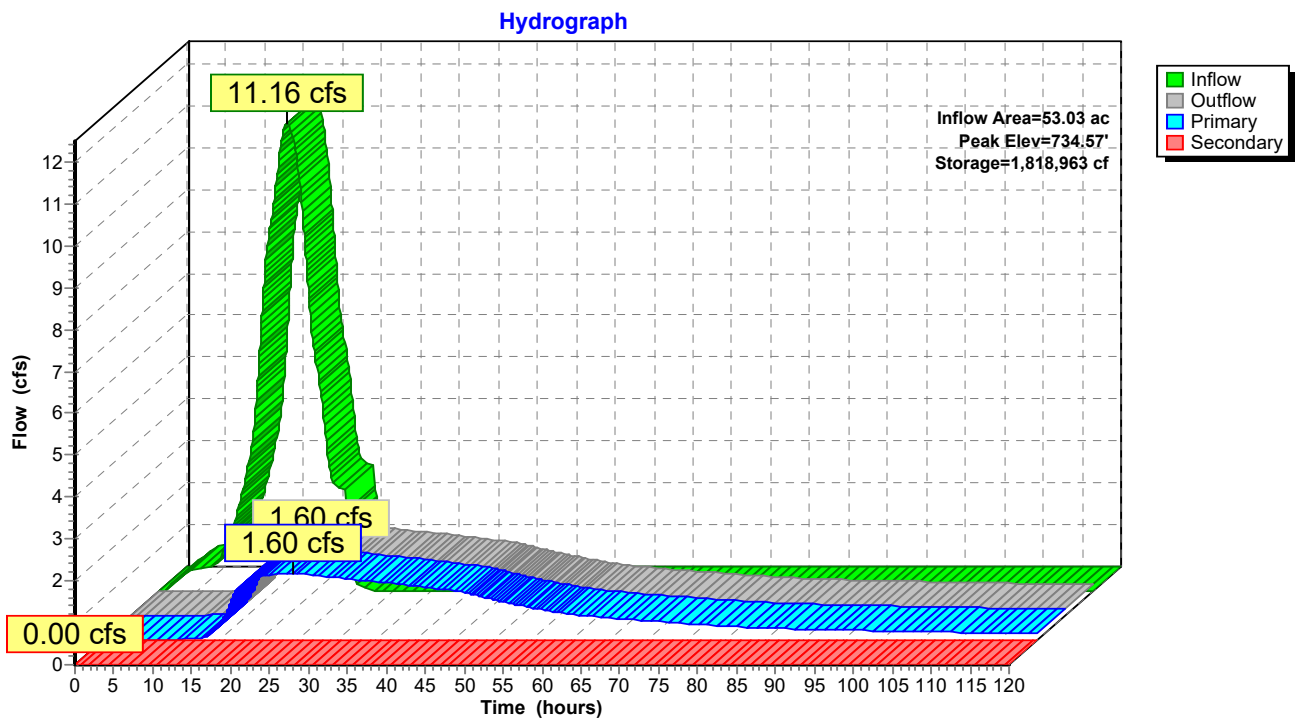
Primary OutFlow Max=1.60 cfs @ 24.36 hrs HW=734.57' (Free Discharge)

- 1=Culvert (Passes 1.60 cfs of 3.16 cfs potential flow)
- 2=Lower Orifice (Orifice Controls 1.60 cfs @ 4.58 fps)
- 3=Middle Orifice ( Controls 0.00 cfs)
- 4=Upper Orifice ( Controls 0.00 cfs)
- 5=Orifice/Grate ( Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=733.50' (Free Discharge)

- 6=Secondary Spillway ( Controls 0.00 cfs)

### Pond Basin 5R: Stormwater Basin 5R



**Summary for Pond Basin 8: Stormwater Basin 8**

Inflow Area = 148.01 ac, 11.19% Impervious, Inflow Depth = 1.69" for 2-Year, 24-Hour event  
 Inflow = 30.34 cfs @ 16.78 hrs, Volume= 20.881 af  
 Outflow = 5.59 cfs @ 24.20 hrs, Volume= 20.284 af, Atten= 82%, Lag= 445.2 min  
 Primary = 5.59 cfs @ 24.20 hrs, Volume= 20.284 af

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Starting Elev= 730.50' Surf.Area= 410,884 sf Storage= 1,593,798 cf  
 Peak Elev= 732.13' @ 24.20 hrs Surf.Area= 451,469 sf Storage= 2,297,132 cf (703,334 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= 1,529.8 min ( 2,532.6 - 1,002.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	726.00'	5,355,472 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
726.00	283,562	0	0
727.50	340,318	467,910	467,910
728.00	351,709	173,007	640,917
730.00	398,761	750,470	1,391,387
730.50	410,884	202,411	1,593,798
732.00	448,114	644,249	2,238,047
733.00	473,655	460,885	2,698,931
734.00	499,775	486,715	3,185,646
736.00	542,314	1,042,089	4,227,735
736.50	553,047	273,840	4,501,575
738.00	585,482	853,897	5,355,472

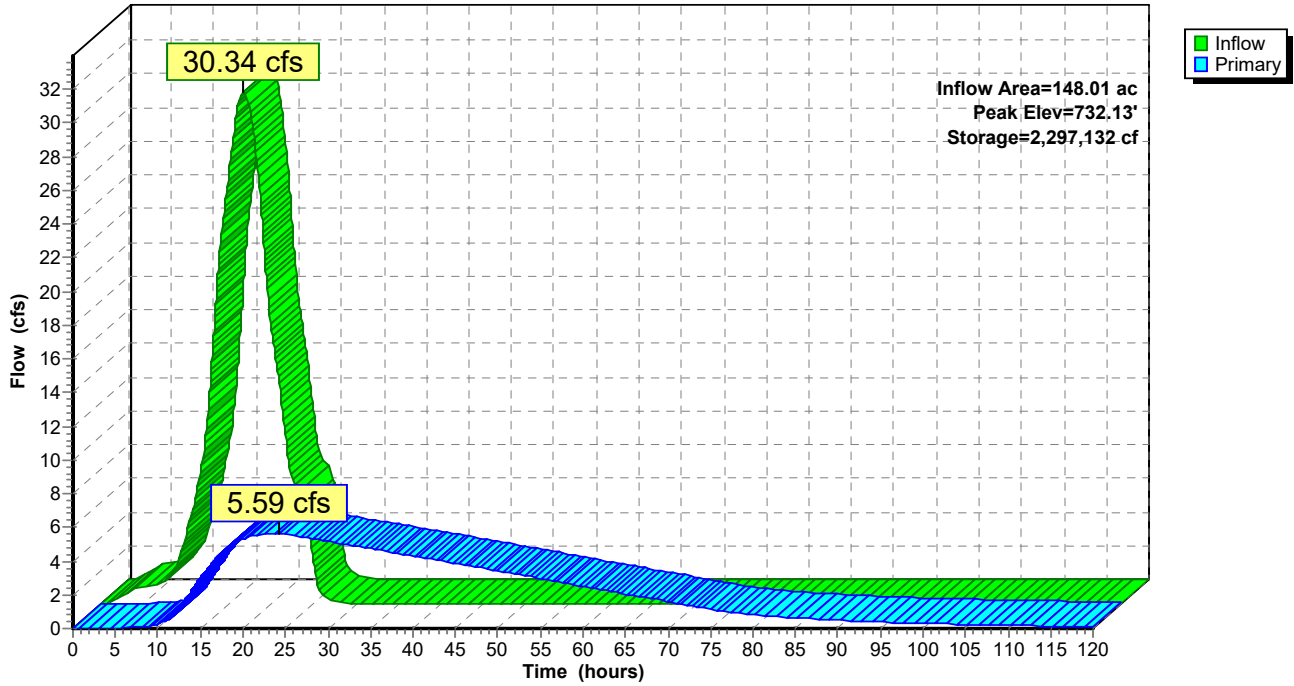
Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	<b>36.0" Round Culvert</b> L= 140.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 727.00' / 725.10' S= 0.0136 1/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Device 1	730.50'	<b>4.0" Vert. 2-yr Orifice X 11.00</b> C= 0.600
#3	Device 1	732.50'	<b>4.0" Vert. 100-yr Orifice X 6.00</b> C= 0.600
#4	Device 1	733.50'	<b>4.0" Vert. 100-yr Orifice X 6.00</b> C= 0.600
#5	Device 1	734.50'	<b>4.0" Vert. 100-yr Orifice X 6.00</b> C= 0.600
#6	Device 1	736.50'	<b>36.0" Horiz. Primary Spillway</b> C= 0.600

**Primary OutFlow** Max=5.59 cfs @ 24.20 hrs HW=732.13' (Free Discharge)

- 1=Culvert (Passes 5.59 cfs of 57.23 cfs potential flow)
- 2=2-yr Orifice (Orifice Controls 5.59 cfs @ 5.83 fps)
- 3=100-yr Orifice ( Controls 0.00 cfs)
- 4=100-yr Orifice ( Controls 0.00 cfs)
- 5=100-yr Orifice ( Controls 0.00 cfs)
- 6=Primary Spillway ( Controls 0.00 cfs)

### Pond Basin 8: Stormwater Basin 8

Hydrograph



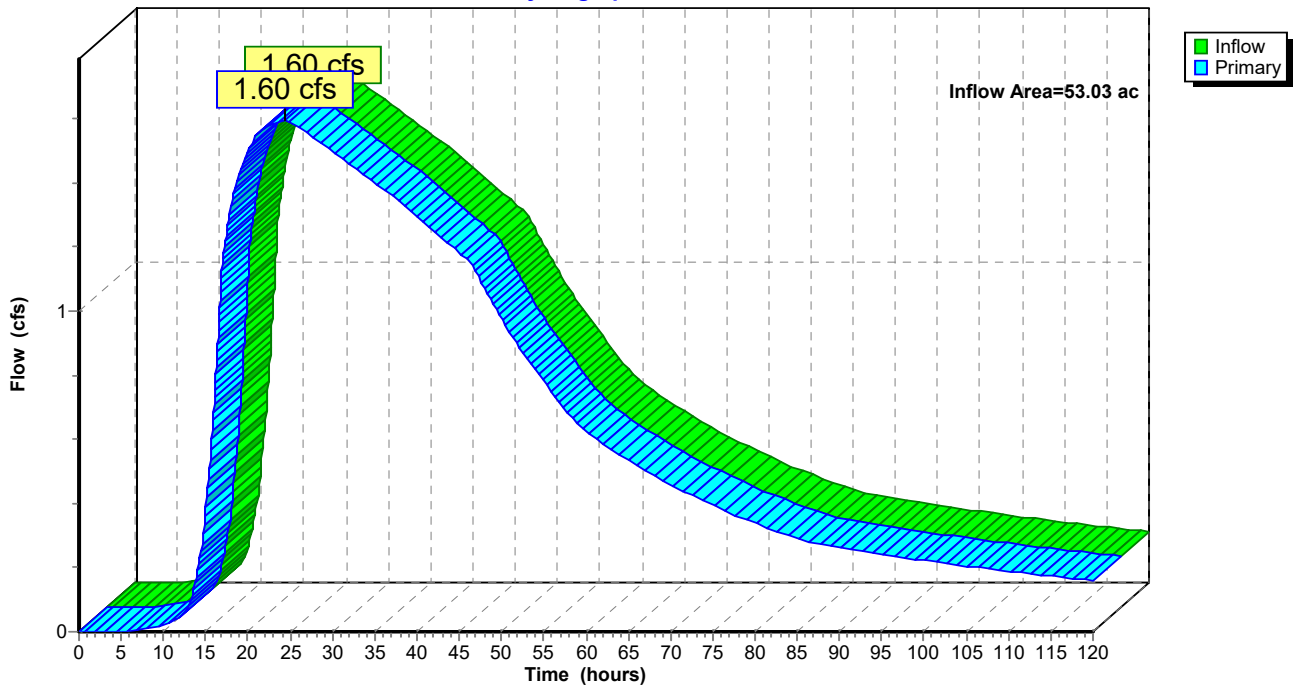
### Summary for Link BS: Bioswale

Inflow Area = 53.03 ac, 15.95% Impervious, Inflow Depth > 1.38" for 2-Year, 24-Hour event  
Inflow = 1.60 cfs @ 24.36 hrs, Volume= 6.091 af  
Primary = 1.60 cfs @ 24.36 hrs, Volume= 6.091 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link BS: Bioswale

Hydrograph

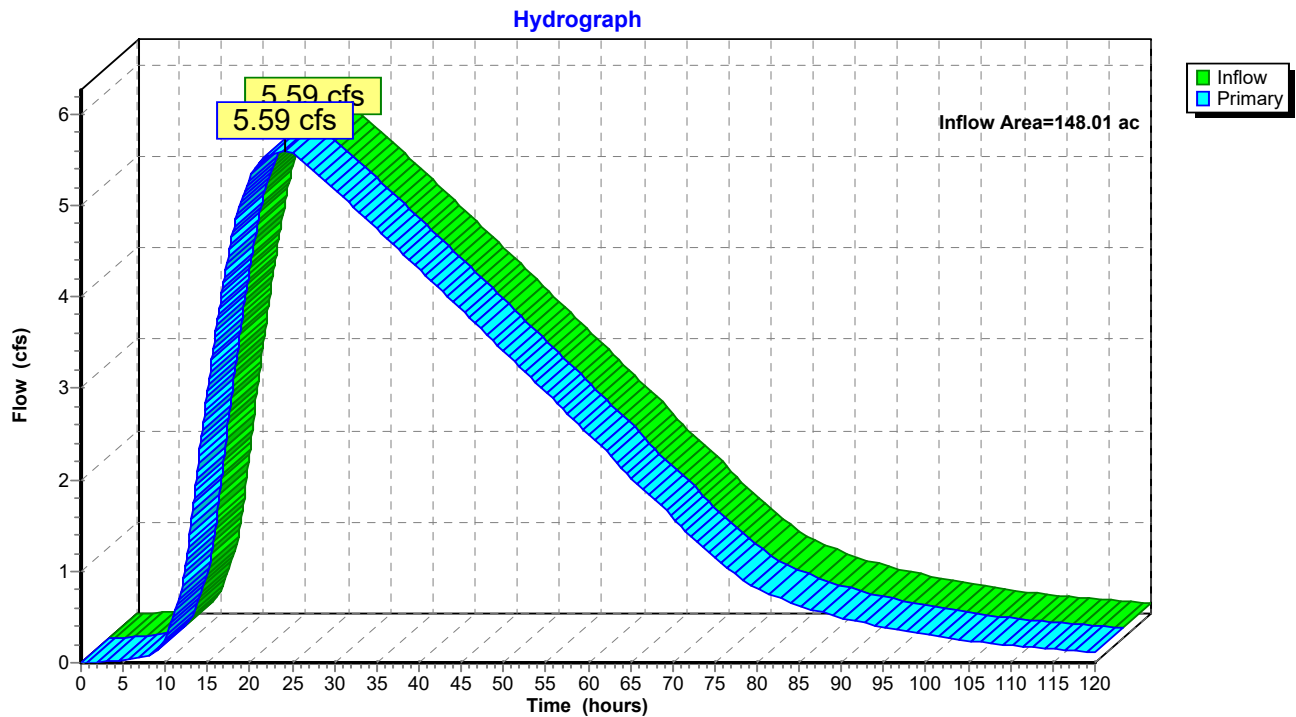


### Summary for Link DD: Offsite to Drainage Ditch

Inflow Area = 148.01 ac, 11.19% Impervious, Inflow Depth > 1.64" for 2-Year, 24-Hour event  
Inflow = 5.59 cfs @ 24.20 hrs, Volume= 20.284 af  
Primary = 5.59 cfs @ 24.20 hrs, Volume= 20.284 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link DD: Offsite to Drainage Ditch



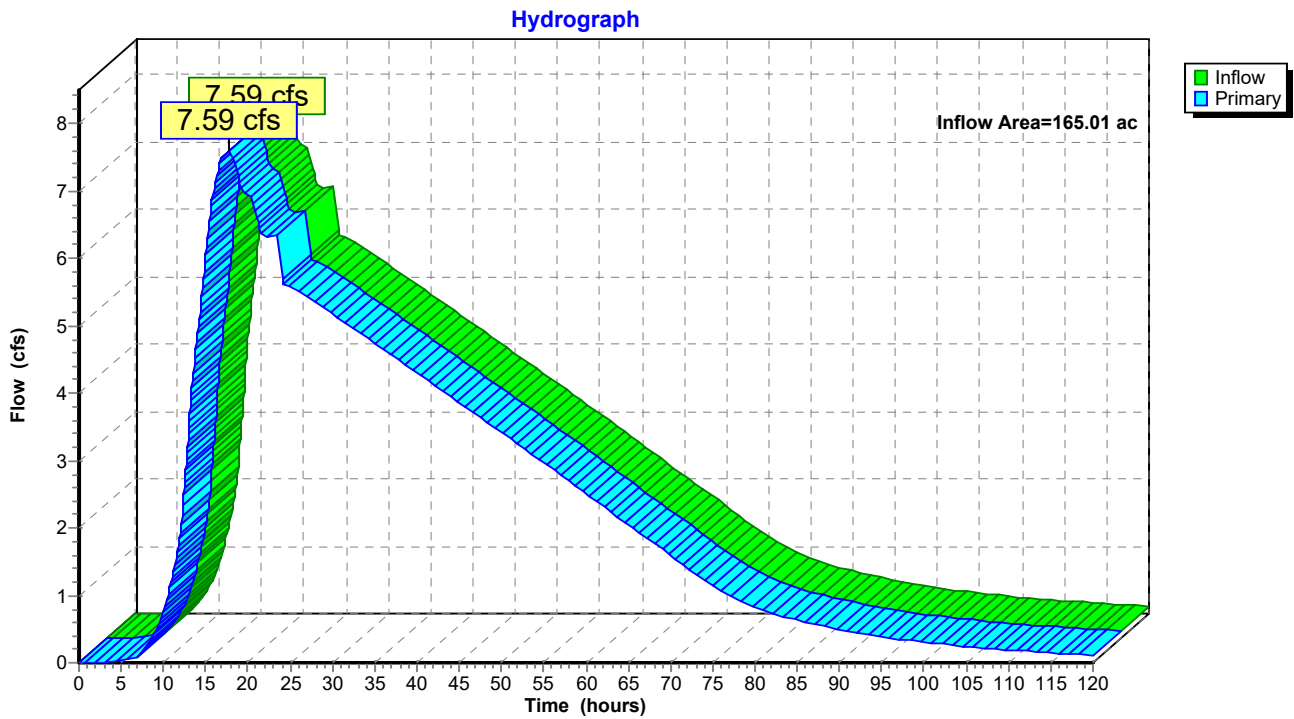


### Summary for Link DPRW: Des Plaines River Watershed

Inflow Area = 165.01 ac, 10.09% Impervious, Inflow Depth > 1.64" for 2-Year, 24-Hour event  
Inflow = 7.59 cfs @ 17.66 hrs, Volume= 22.493 af  
Primary = 7.59 cfs @ 17.66 hrs, Volume= 22.493 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link DPRW: Des Plaines River Watershed

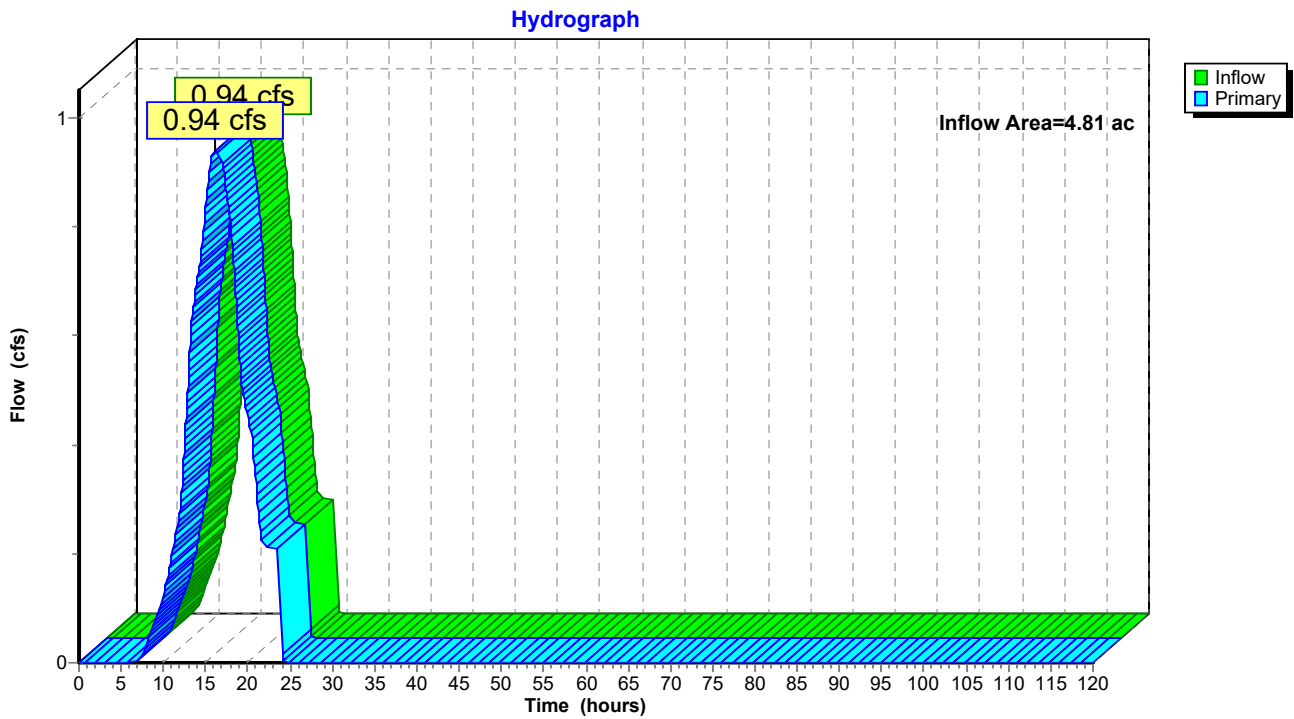


### Summary for Link DPRW-PB: Des Plaines River Watershed - Perimeter Berm

Inflow Area = 4.81 ac, 1.70% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
Inflow = 0.94 cfs @ 16.06 hrs, Volume= 0.606 af  
Primary = 0.94 cfs @ 16.06 hrs, Volume= 0.606 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link DPRW-PB: Des Plaines River Watershed - Perimeter Berm

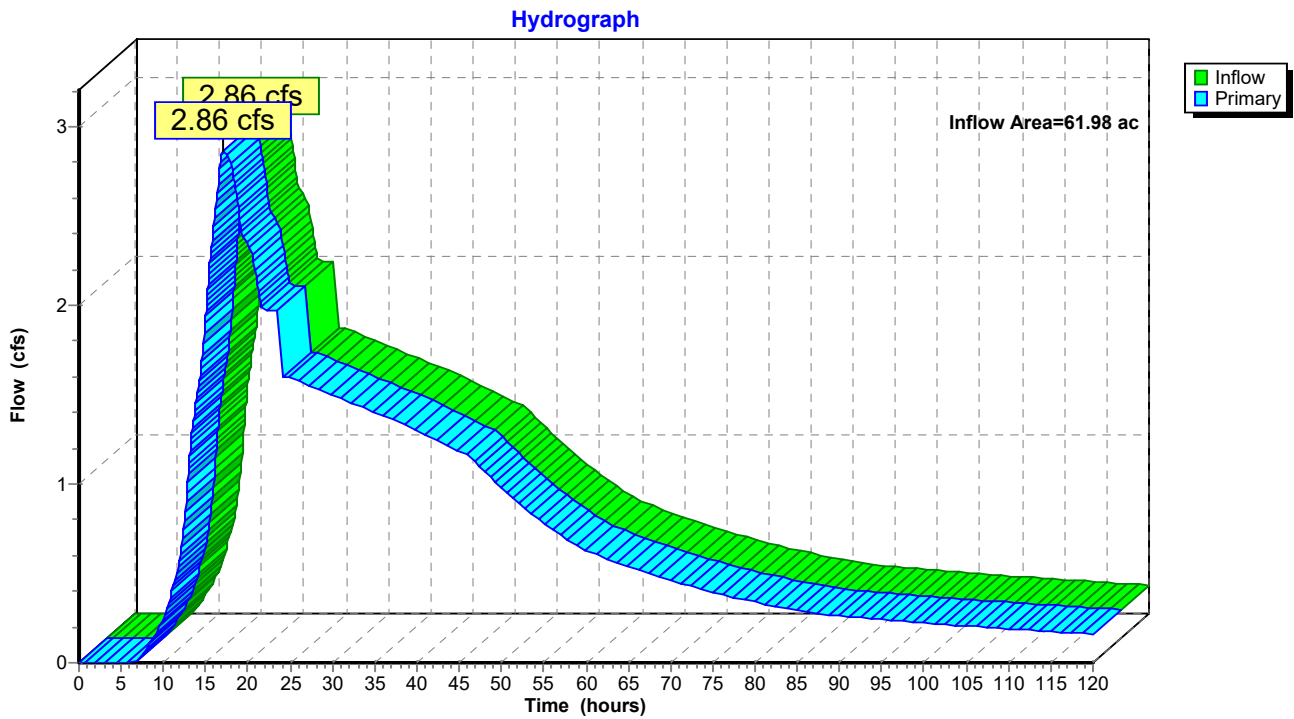


### Summary for Link LMW: Lake Michigan Watershed

Inflow Area = 61.98 ac, 13.64% Impervious, Inflow Depth > 1.40" for 2-Year, 24-Hour event  
Inflow = 2.86 cfs @ 17.01 hrs, Volume= 7.218 af  
Primary = 2.86 cfs @ 17.01 hrs, Volume= 7.218 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link LMW: Lake Michigan Watershed

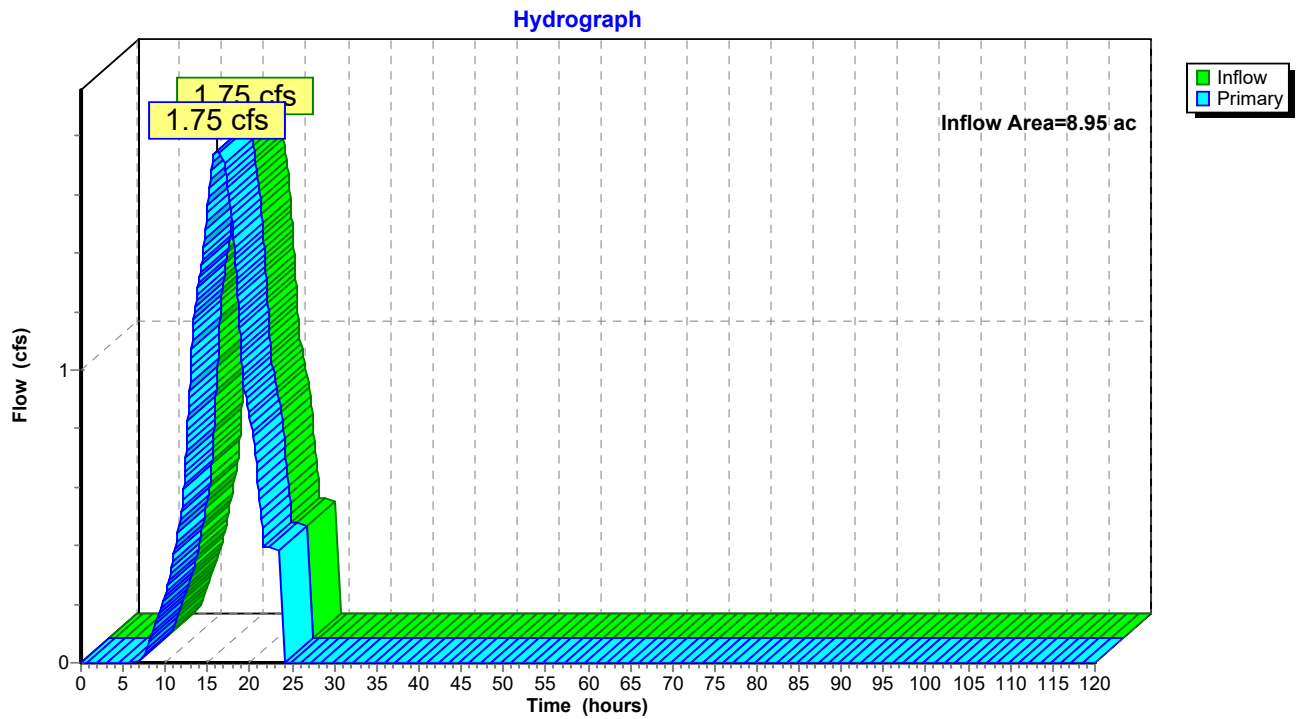


### Summary for Link LMW-PB: Lake Michigan Watershed - Perimeter Berm

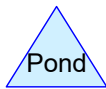
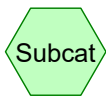
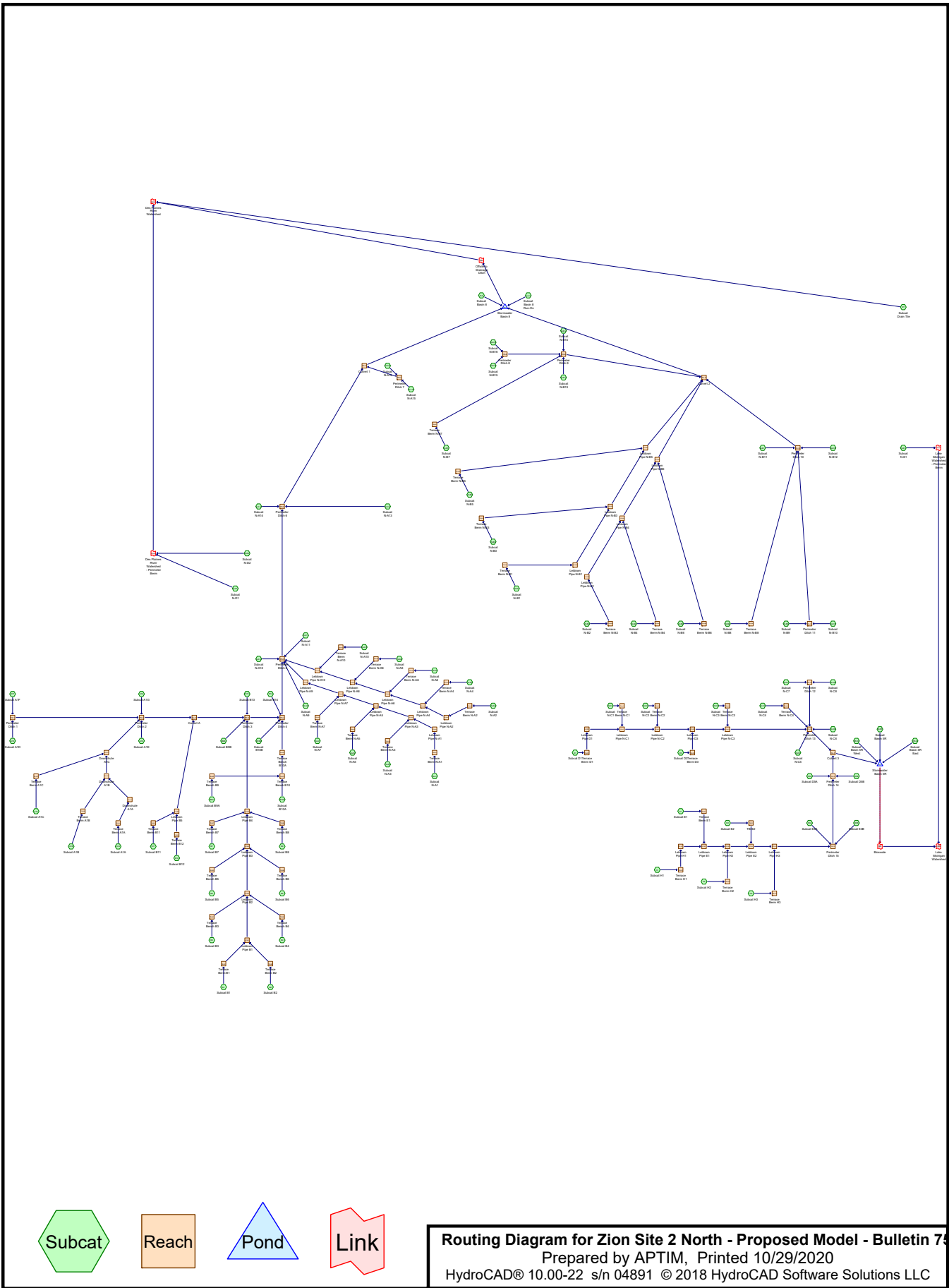
Inflow Area = 8.95 ac, 0.00% Impervious, Inflow Depth = 1.51" for 2-Year, 24-Hour event  
Inflow = 1.75 cfs @ 16.04 hrs, Volume= 1.127 af  
Primary = 1.75 cfs @ 16.04 hrs, Volume= 1.127 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link LMW-PB: Lake Michigan Watershed - Perimeter Berm



HydroCAD Output Files  
**Proposed Conditions – 10-year, 1-hour**



**Routing Diagram for Zion Site 2 North - Proposed Model - Bulletin 75**

Prepared by APTIM, Printed 10/29/2020

HydroCAD® 10.00-22 s/n 04891 © 2018 HydroCAD Software Solutions LLC

**Summary for Subcatchment 5R-E: Subcat Basin 5R East**

Runoff = 2.90 cfs @ 0.26 hrs, Volume= 0.105 af, Depth= 0.83"

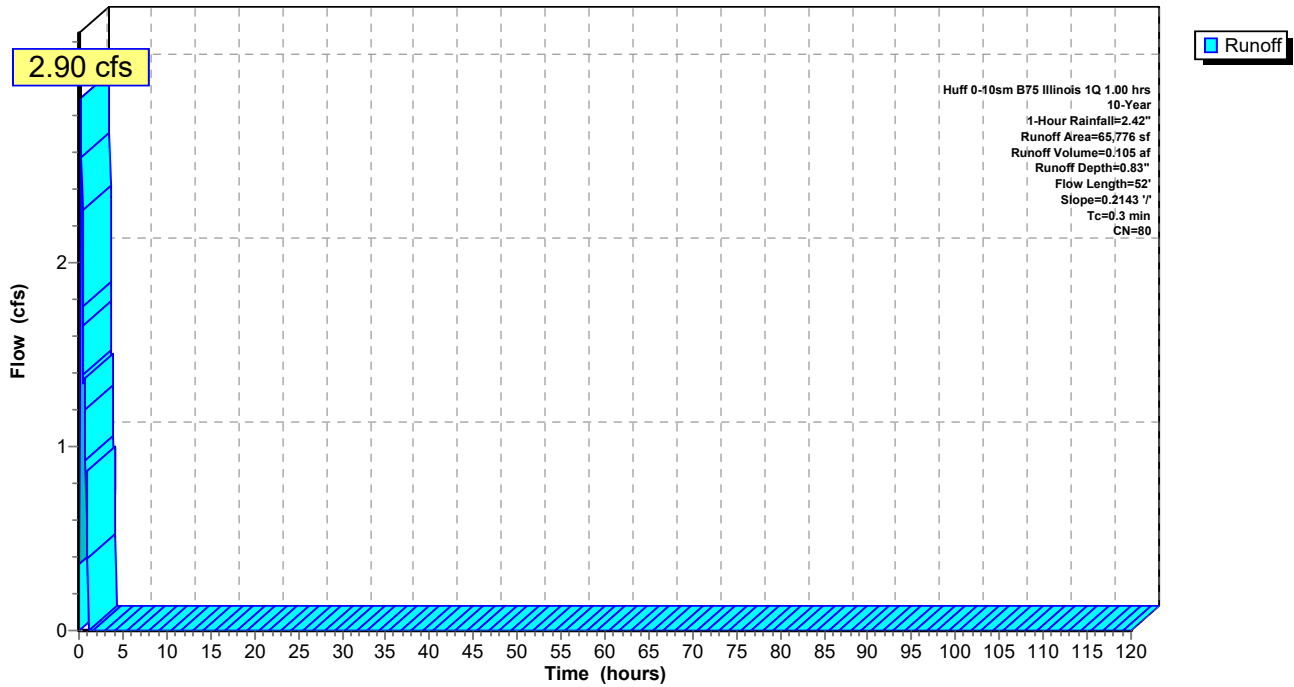
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

Area (sf)	CN	Description
65,776	80	>75% Grass cover, Good, HSG D
65,776		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	52	0.2143	2.92		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment 5R-E: Subcat Basin 5R East**

Hydrograph



**Summary for Subcatchment 5R-W: Subcat Basin 5R West**

Runoff = 1.15 cfs @ 0.25 hrs, Volume= 0.042 af, Depth= 0.83"

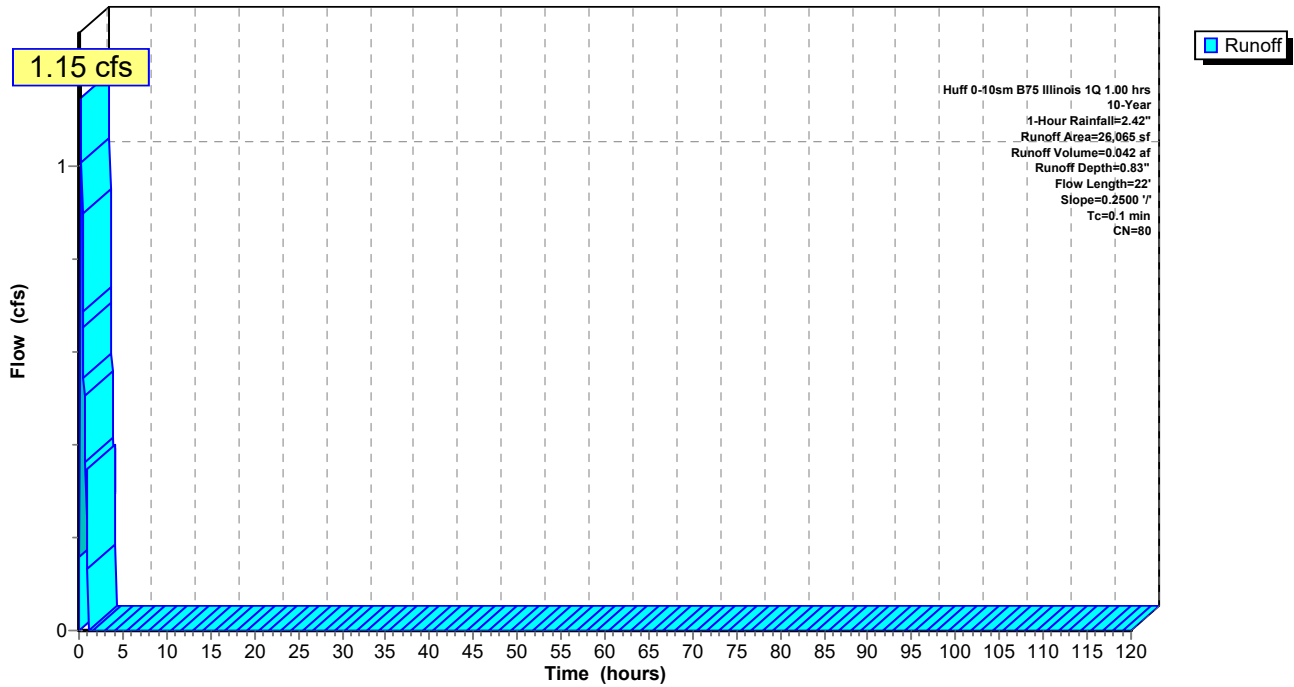
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

Area (sf)	CN	Description
26,065	80	>75% Grass cover, Good, HSG D
26,065		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	22	0.2500	2.61		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment 5R-W: Subcat Basin 5R West**

Hydrograph





**Summary for Subcatchment A1A: Subcat A1A**

Runoff = 9.82 cfs @ 0.47 hrs, Volume= 0.468 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

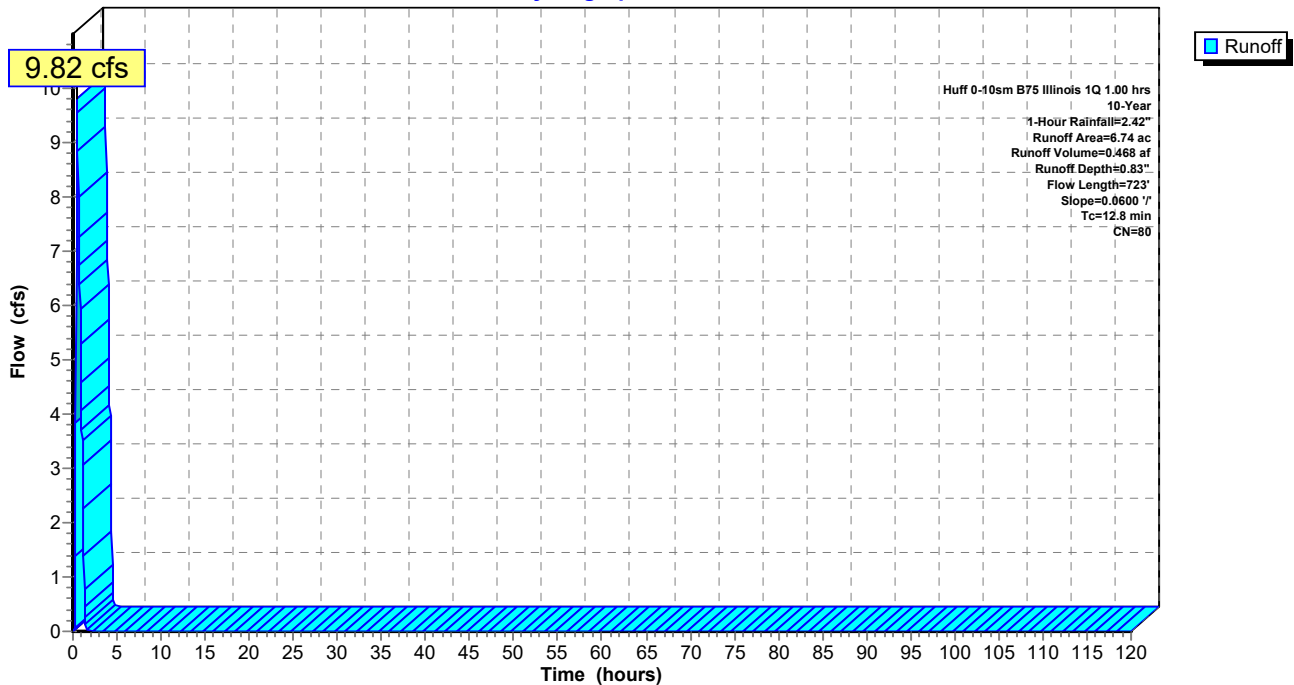
Area (ac)	CN	Description
6.74	80	>75% Grass cover, Good, HSG D
6.74		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	100	0.0600	0.25		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
6.1	623	0.0600	1.71		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
12.8	723	Total			

**Subcatchment A1A: Subcat A1A**

Hydrograph



**Summary for Subcatchment A1B: Subcat A1B**

Runoff = 9.54 cfs @ 0.32 hrs, Volume= 0.363 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

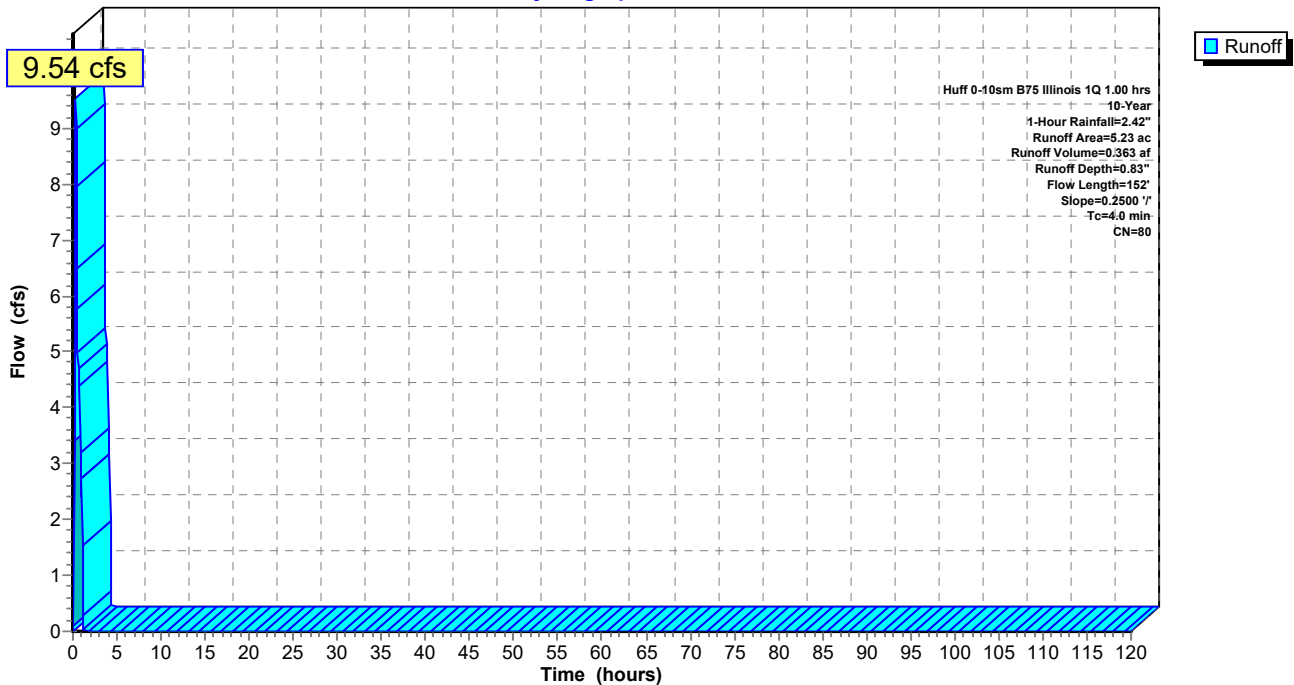
Area (ac)	CN	Description
5.23	80	>75% Grass cover, Good, HSG D
5.23		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	52	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	152	Total			

**Subcatchment A1B: Subcat A1B**

Hydrograph



**Summary for Subcatchment A1C: Subcat A1C**

Runoff = 10.71 cfs @ 0.64 hrs, Volume= 0.637 af, Depth= 0.83"

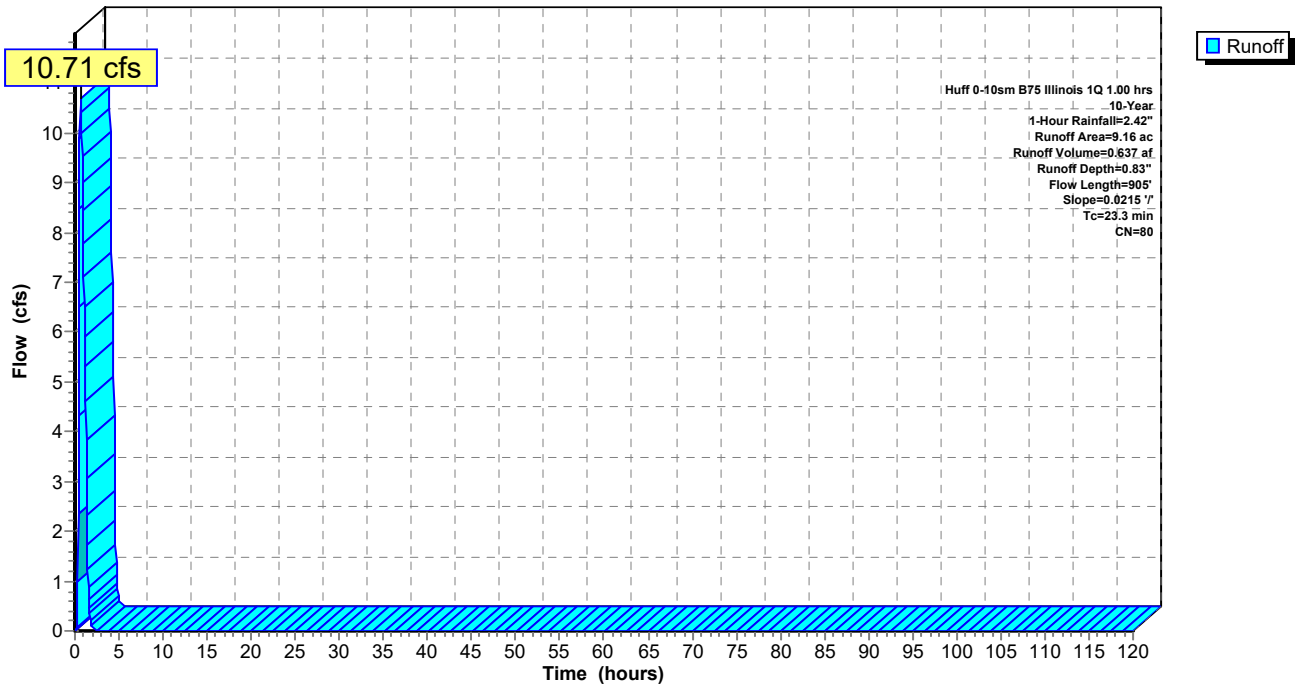
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

Area (ac)	CN	Description
8.89	80	>75% Grass cover, Good, HSG D
0.27	93	Paved roads w/open ditches, 50% imp, HSG D
9.16	80	Weighted Average
9.03		98.52% Pervious Area
0.14		1.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.0215	0.16		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
13.1	805	0.0215	1.03		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
23.3	905	Total			

**Subcatchment A1C: Subcat A1C**

Hydrograph



**Summary for Subcatchment A1D: Subcat A1D**

Runoff = 12.13 cfs @ 0.36 hrs, Volume= 0.491 af, Depth= 0.83"

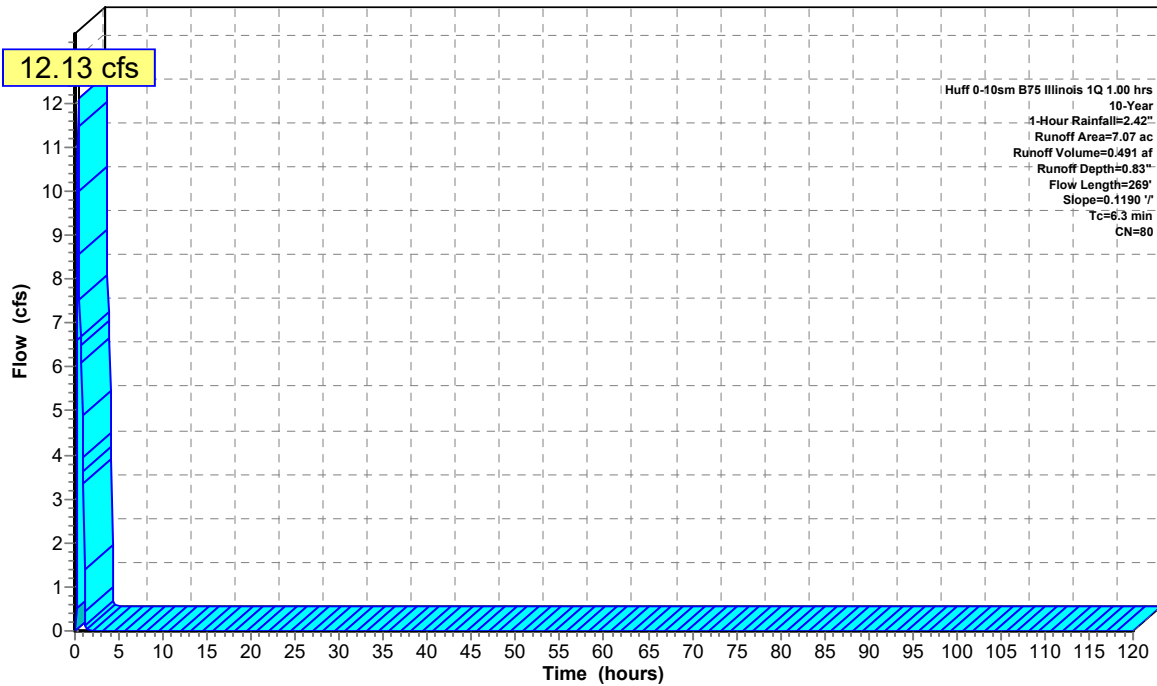
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

Area (ac)	CN	Description
6.97	80	>75% Grass cover, Good, HSG D
0.10	93	Paved roads w/open ditches, 50% imp, HSG D
7.07	80	Weighted Average
7.02		99.31% Pervious Area
0.05		0.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	100	0.1190	0.32		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.2	169	0.1190	2.41		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.3	269	Total			

**Subcatchment A1D: Subcat A1D**

Hydrograph



Runoff

Huff 0-10sm B75 Illinois 1Q 1.00 hrs  
 10-Year  
 1-Hour Rainfall=2.42"  
 Runoff Area=7.07 ac  
 Runoff Volume=0.491 af  
 Runoff Depth=0.83"  
 Flow Length=269'  
 Slope=0.1190 /'  
 Tc=6.3 min  
 CN=80

**Summary for Subcatchment A1E: Subcat A1E**

Runoff = 1.92 cfs @ 0.33 hrs, Volume= 0.076 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

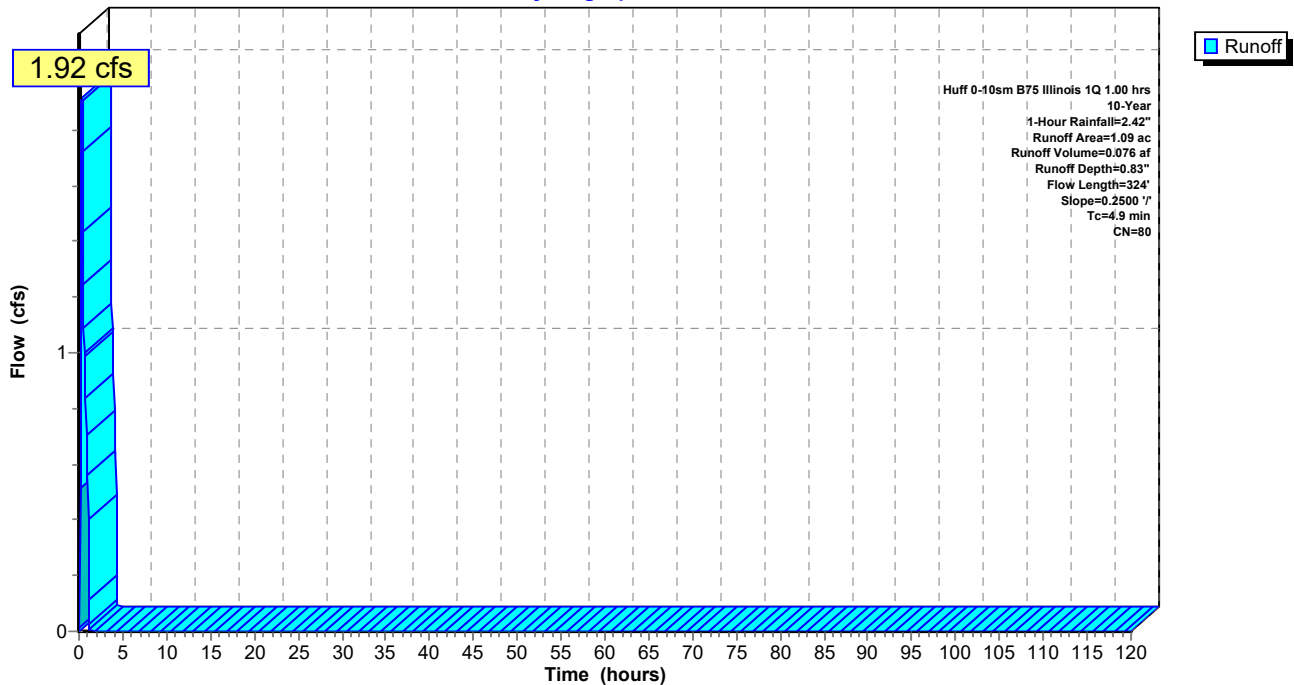
Area (ac)	CN	Description
1.09	80	>75% Grass cover, Good, HSG D
1.09		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.1	224	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.9	324	Total			

**Subcatchment A1E: Subcat A1E**

Hydrograph



**Summary for Subcatchment A1F: Subcat A1F**

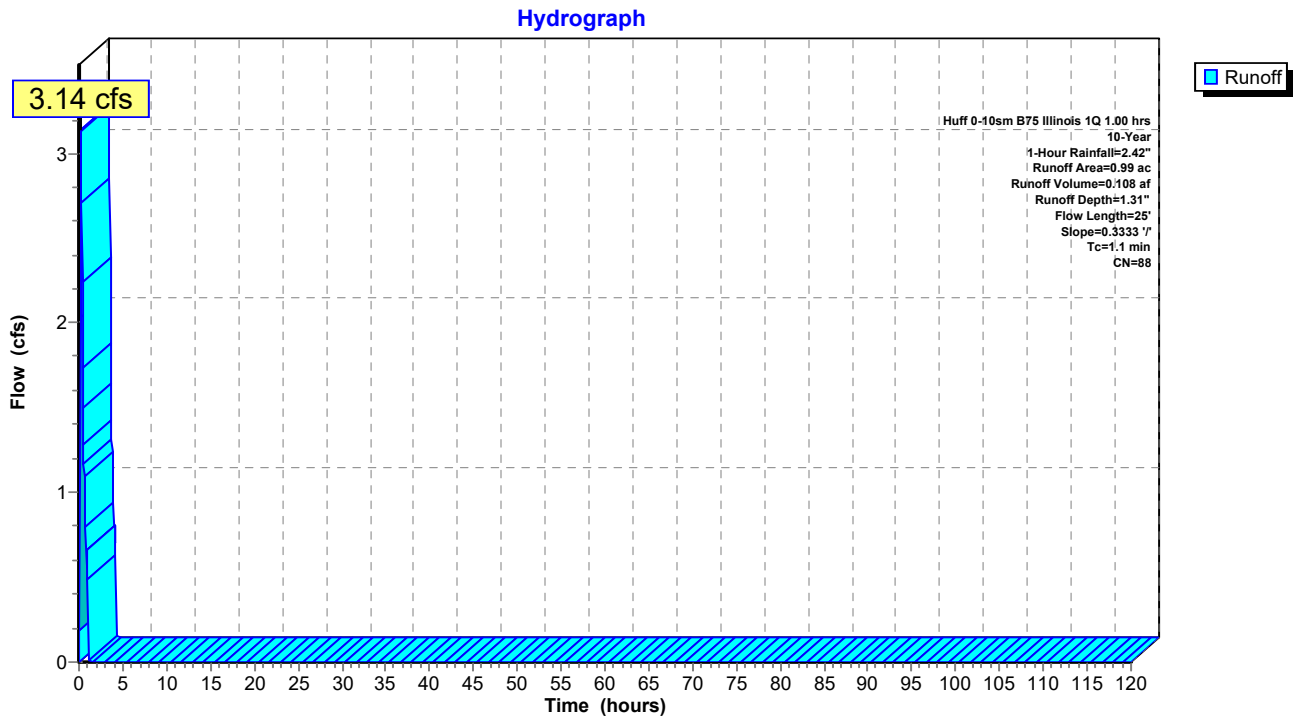
Runoff = 3.14 cfs @ 0.24 hrs, Volume= 0.108 af, Depth= 1.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

Area (ac)	CN	Description
0.36	80	>75% Grass cover, Good, HSG D
0.62	93	Paved roads w/open ditches, 50% imp, HSG D
0.99	88	Weighted Average
0.67		68.34% Pervious Area
0.31		31.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	25	0.3333	0.37		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment A1F: Subcat A1F**



**Summary for Subcatchment A1G: Subcat A1G**

Runoff = 0.54 cfs @ 0.25 hrs, Volume= 0.019 af, Depth= 1.18"

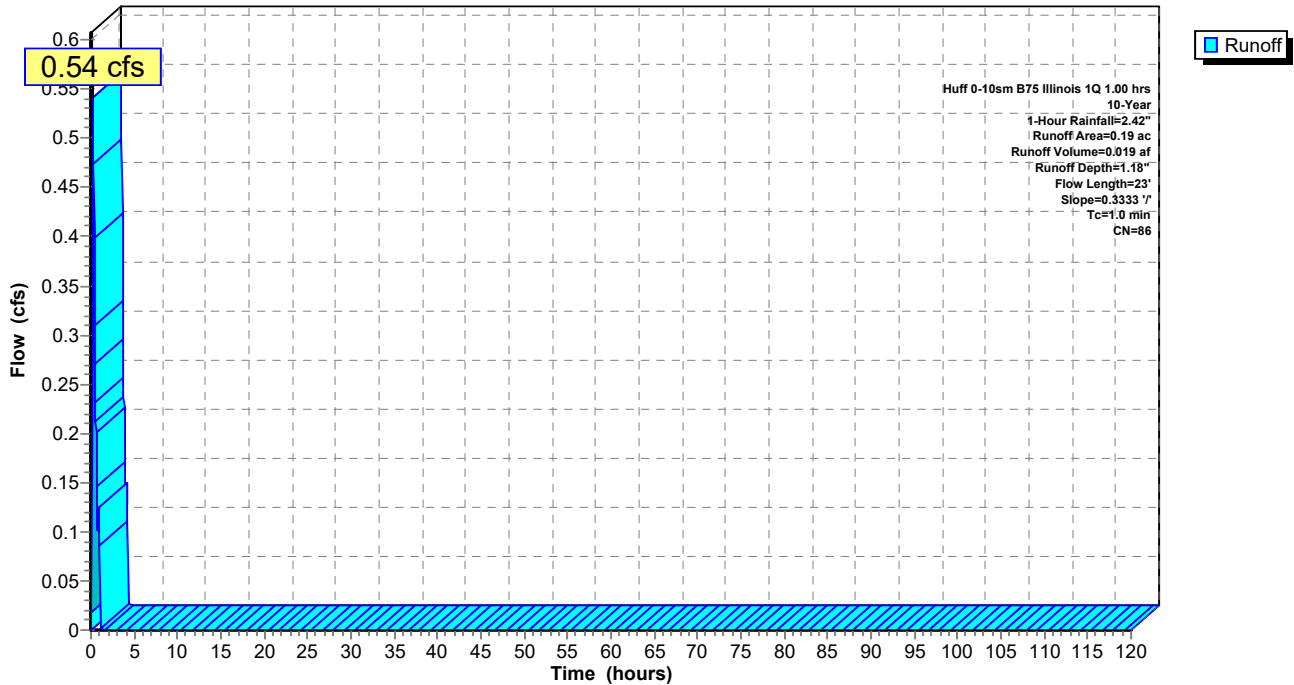
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

Area (ac)	CN	Description
0.11	80	>75% Grass cover, Good, HSG D
0.09	93	Paved roads w/open ditches, 50% imp, HSG D
0.19	86	Weighted Average
0.15		77.34% Pervious Area
0.04		22.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	23	0.3333	0.37		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment A1G: Subcat A1G**

Hydrograph



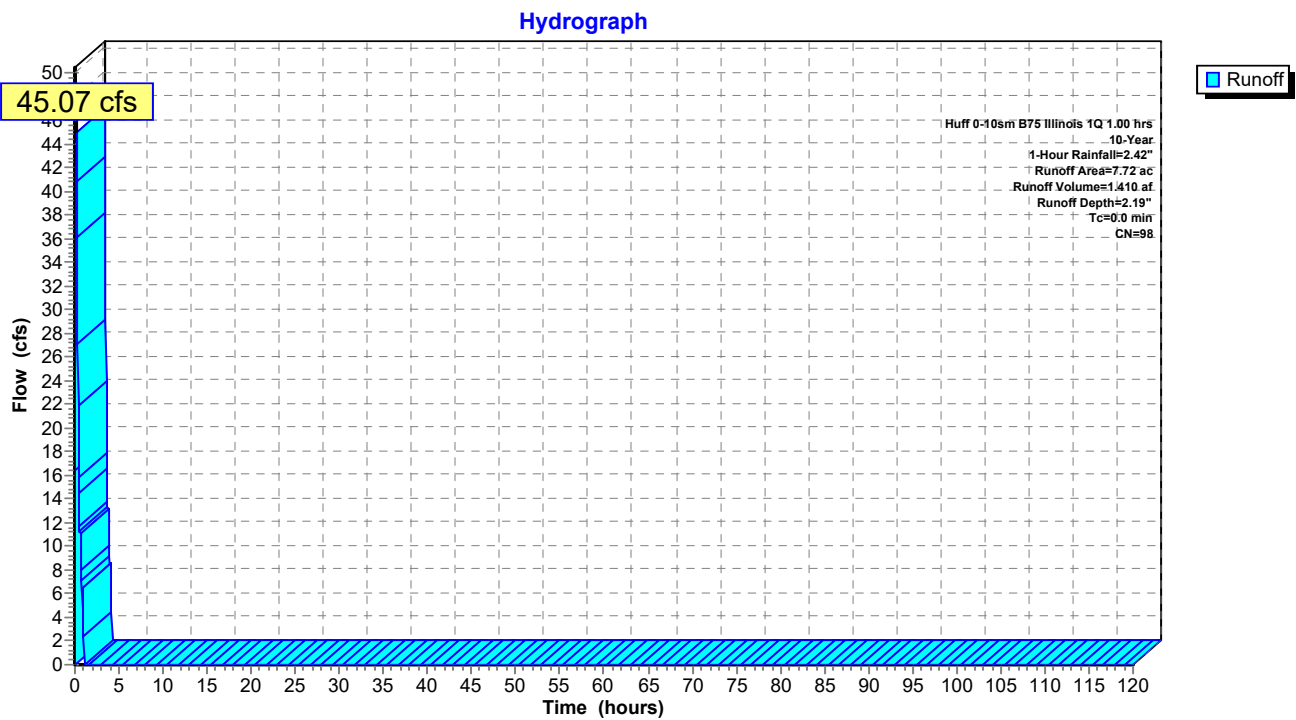
### Summary for Subcatchment B-5R: Subcat Basin 5R

Runoff = 45.07 cfs @ 0.16 hrs, Volume= 1.410 af, Depth= 2.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

Area (ac)	CN	Description
7.72	98	Water Surface, HSG D
7.72		100.00% Impervious Area

### Subcatchment B-5R: Subcat Basin 5R





### Summary for Subcatchment B-8: Subcat Basin 8

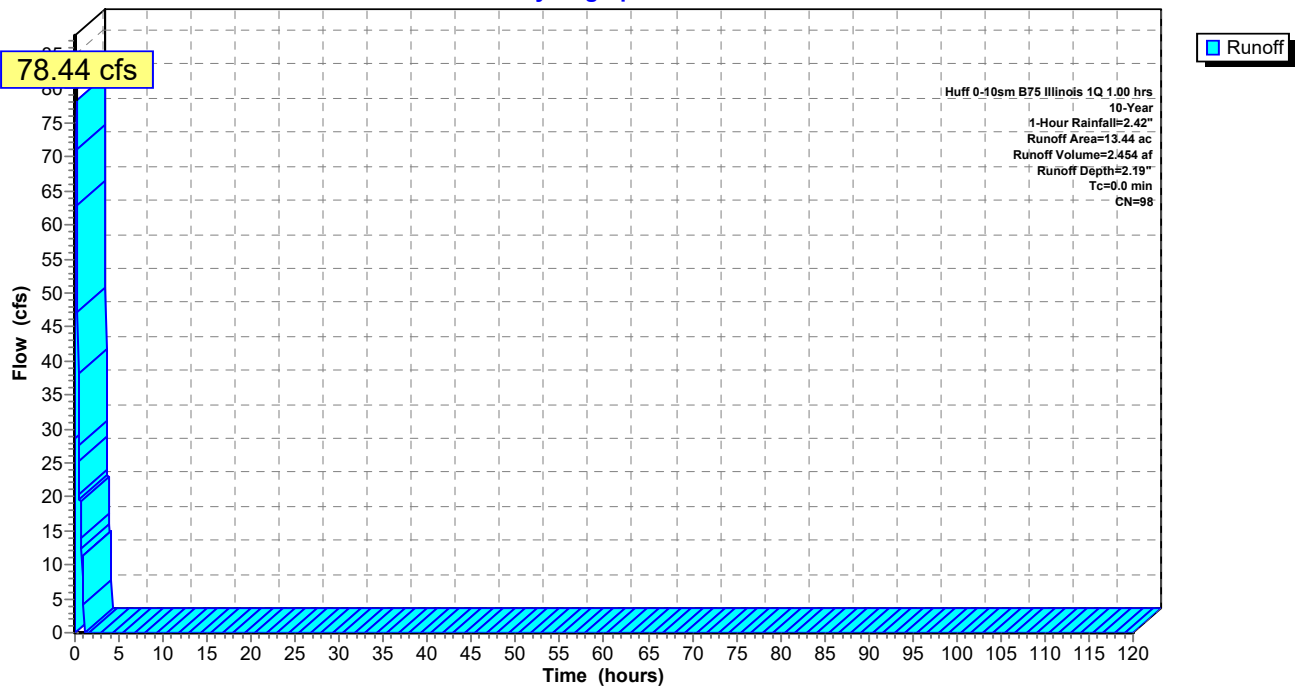
Runoff = 78.44 cfs @ 0.16 hrs, Volume= 2.454 af, Depth= 2.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

Area (ac)	CN	Description
13.44	98	Water Surface, HSG D
13.44		100.00% Impervious Area

### Subcatchment B-8: Subcat Basin 8

Hydrograph



**Summary for Subcatchment B-8-RO: Subcat Basin 8 Run-On**

Runoff = 8.61 cfs @ 0.31 hrs, Volume= 0.321 af, Depth= 0.94"

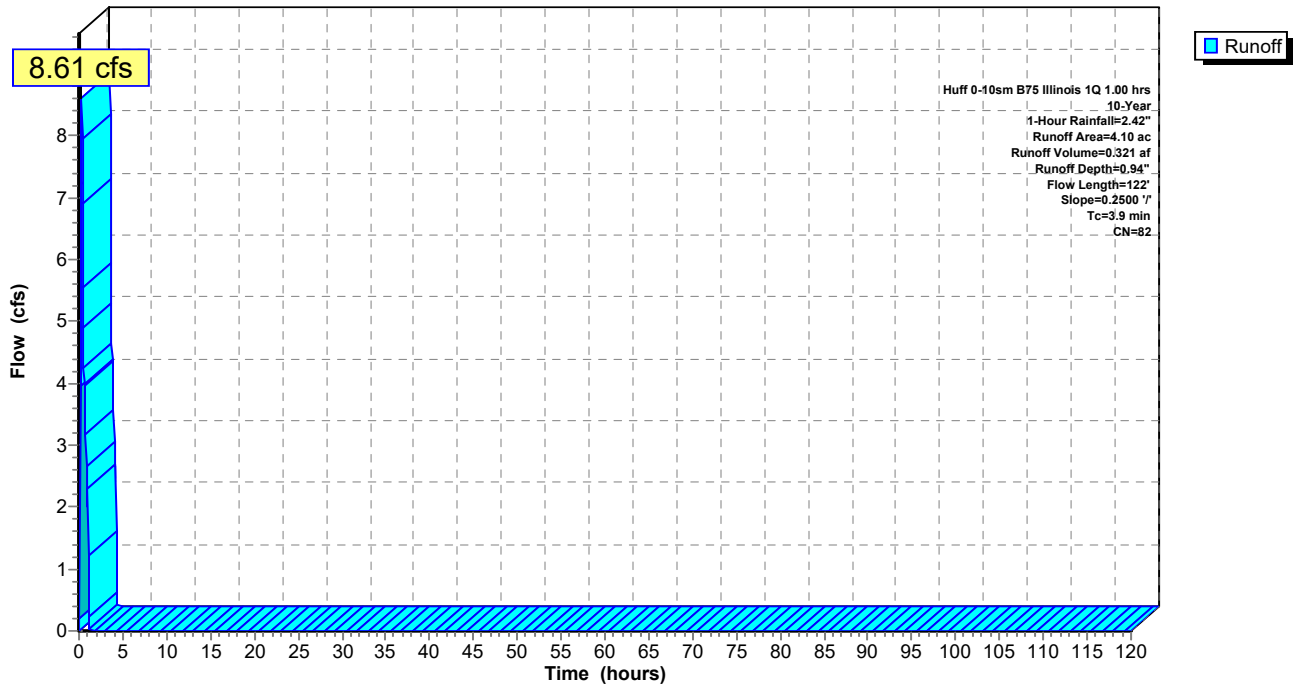
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

Area (ac)	CN	Description
3.50	80	>75% Grass cover, Good, HSG D
0.60	93	Paved roads w/open ditches, 50% imp, HSG D
4.10	82	Weighted Average
3.80		92.68% Pervious Area
0.30		7.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	22	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	122	Total			

**Subcatchment B-8-RO: Subcat Basin 8 Run-On**

Hydrograph



**Summary for Subcatchment B1: Subcat B1**

Runoff = 3.49 cfs @ 0.36 hrs, Volume= 0.142 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

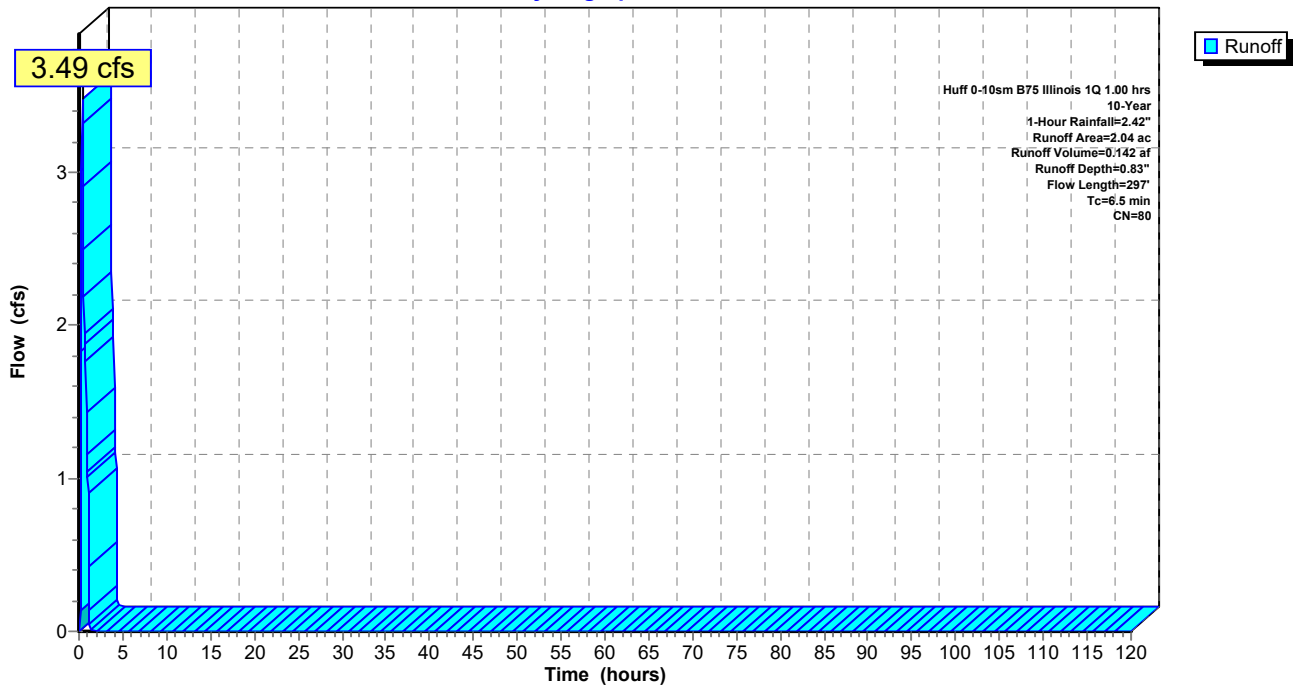
Area (ac)	CN	Description
2.04	80	>75% Grass cover, Good, HSG D
2.04		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.0	197	0.2132	3.23		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.5	297	Total			

**Subcatchment B1: Subcat B1**

Hydrograph



**Summary for Subcatchment B10A: Subcat B10A**

Runoff = 1.51 cfs @ 0.31 hrs, Volume= 0.056 af, Depth= 0.83"

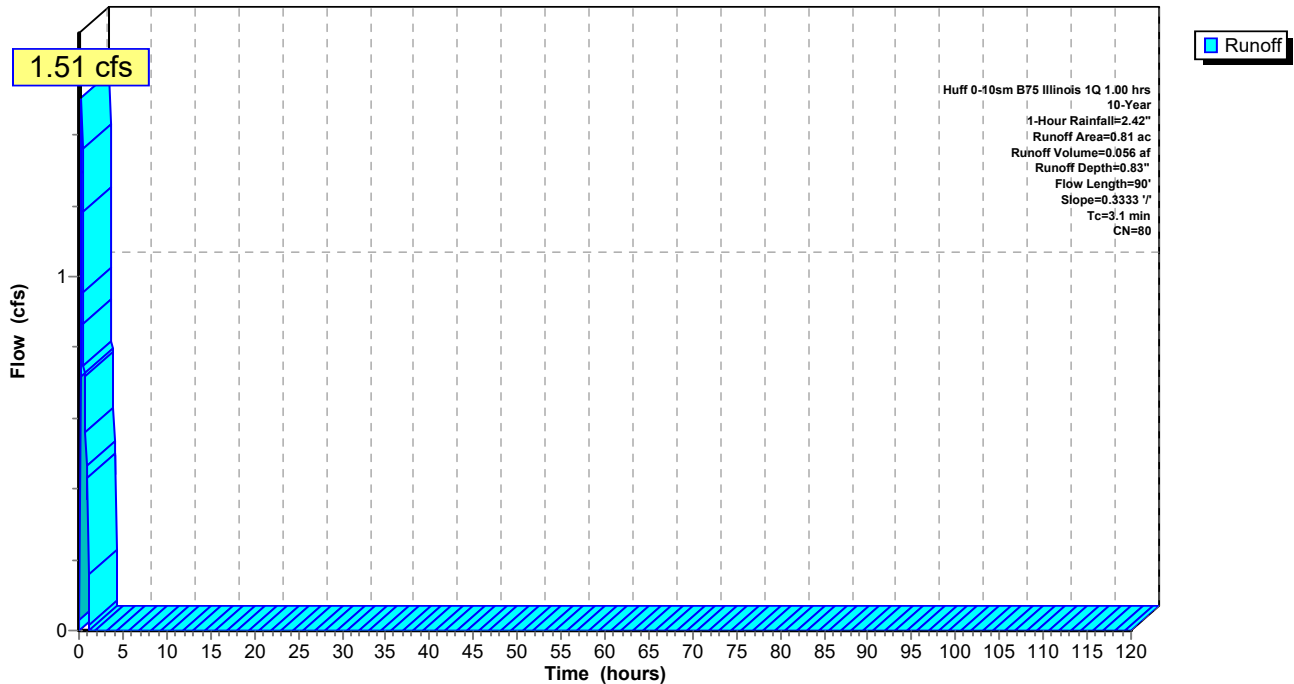
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

Area (ac)	CN	Description
0.81	80	>75% Grass cover, Good, HSG D
0.81		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	90	0.3333	0.48		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B10A: Subcat B10A**

Hydrograph



**Summary for Subcatchment B10B: Subcat B10B**

Runoff = 0.99 cfs @ 0.29 hrs, Volume= 0.037 af, Depth= 0.83"

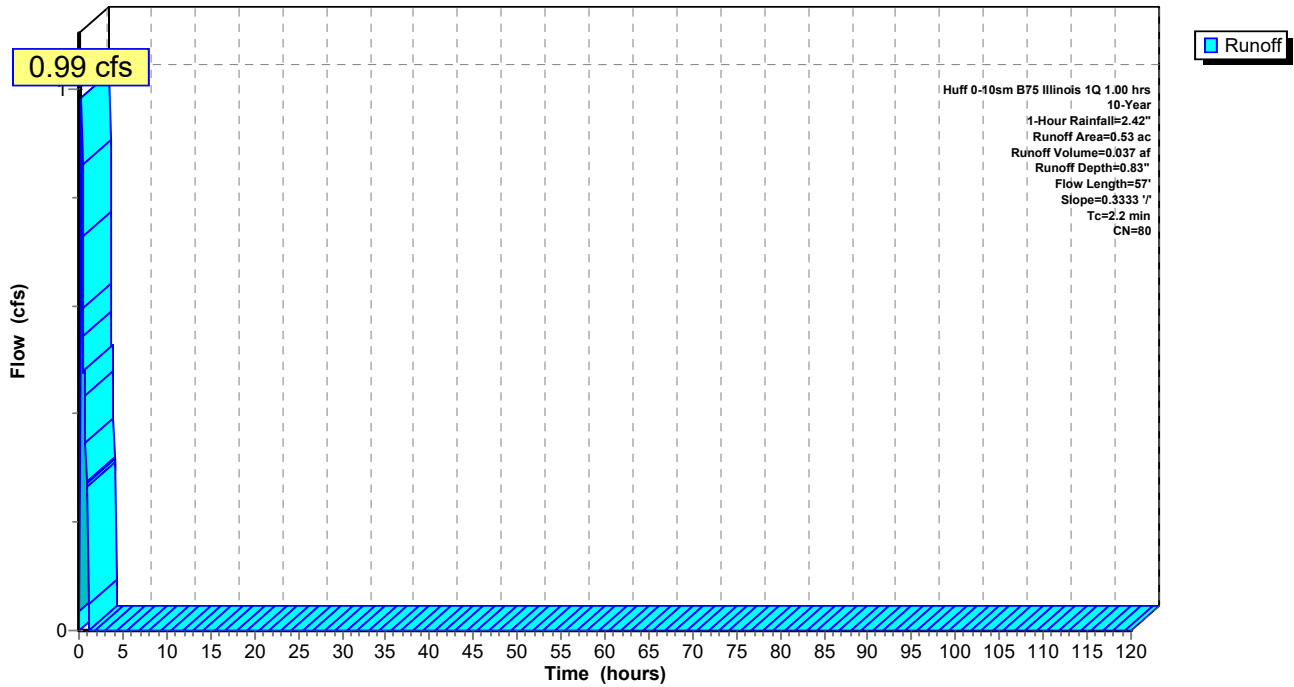
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

Area (ac)	CN	Description
0.53	80	>75% Grass cover, Good, HSG D
0.53		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	57	0.3333	0.44		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B10B: Subcat B10B**

Hydrograph



**Summary for Subcatchment B11: Subcat B11**

Runoff = 3.30 cfs @ 0.47 hrs, Volume= 0.158 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

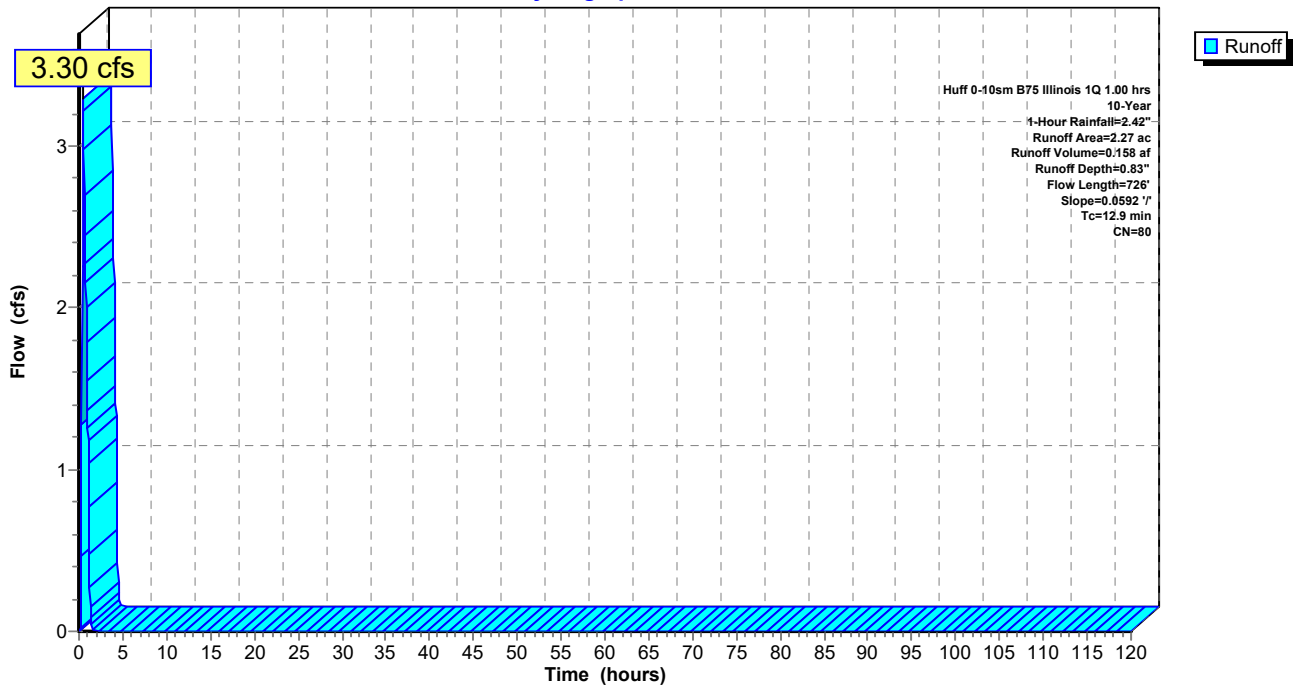
Area (ac)	CN	Description
2.27	80	>75% Grass cover, Good, HSG D
2.27		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	100	0.0592	0.25		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
6.1	626	0.0592	1.70		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
12.9	726	Total			

**Subcatchment B11: Subcat B11**

Hydrograph



**Summary for Subcatchment B12: Subcat B12**

Runoff = 2.19 cfs @ 0.32 hrs, Volume= 0.083 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

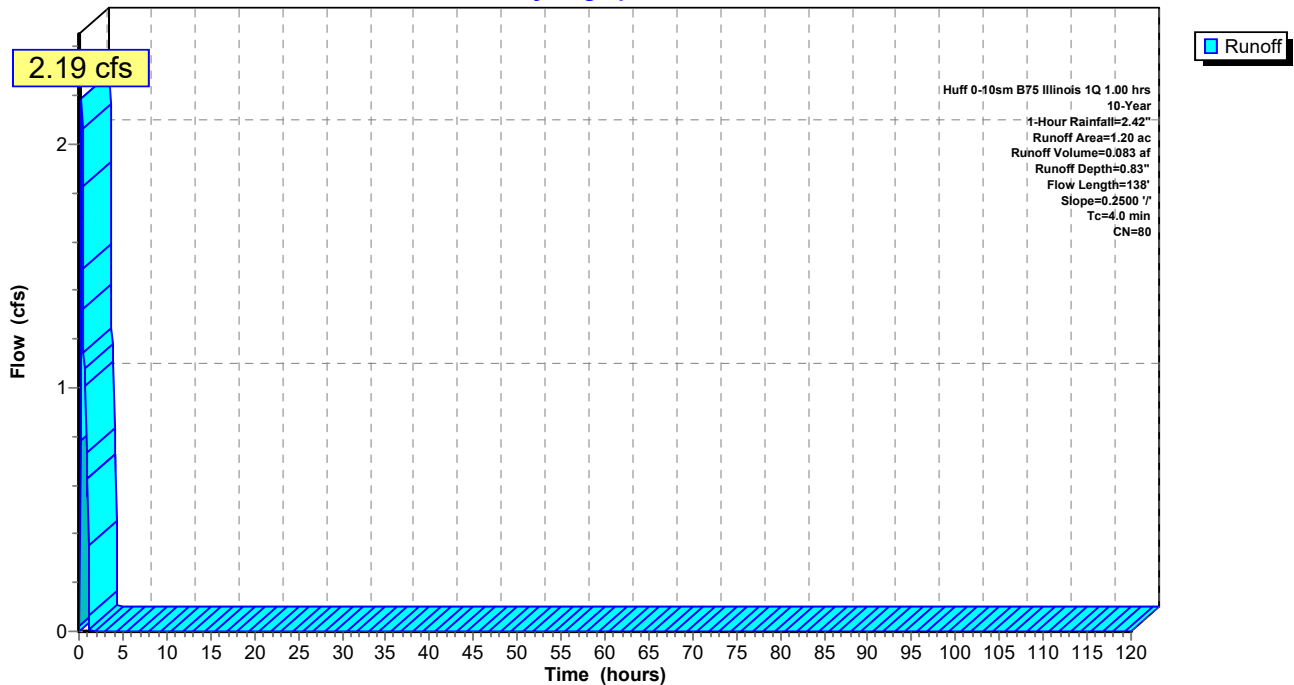
Area (ac)	CN	Description
1.20	80	>75% Grass cover, Good, HSG D
1.20		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	38	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	138	Total			

**Subcatchment B12: Subcat B12**

Hydrograph



**Summary for Subcatchment B13: Subcat B13**

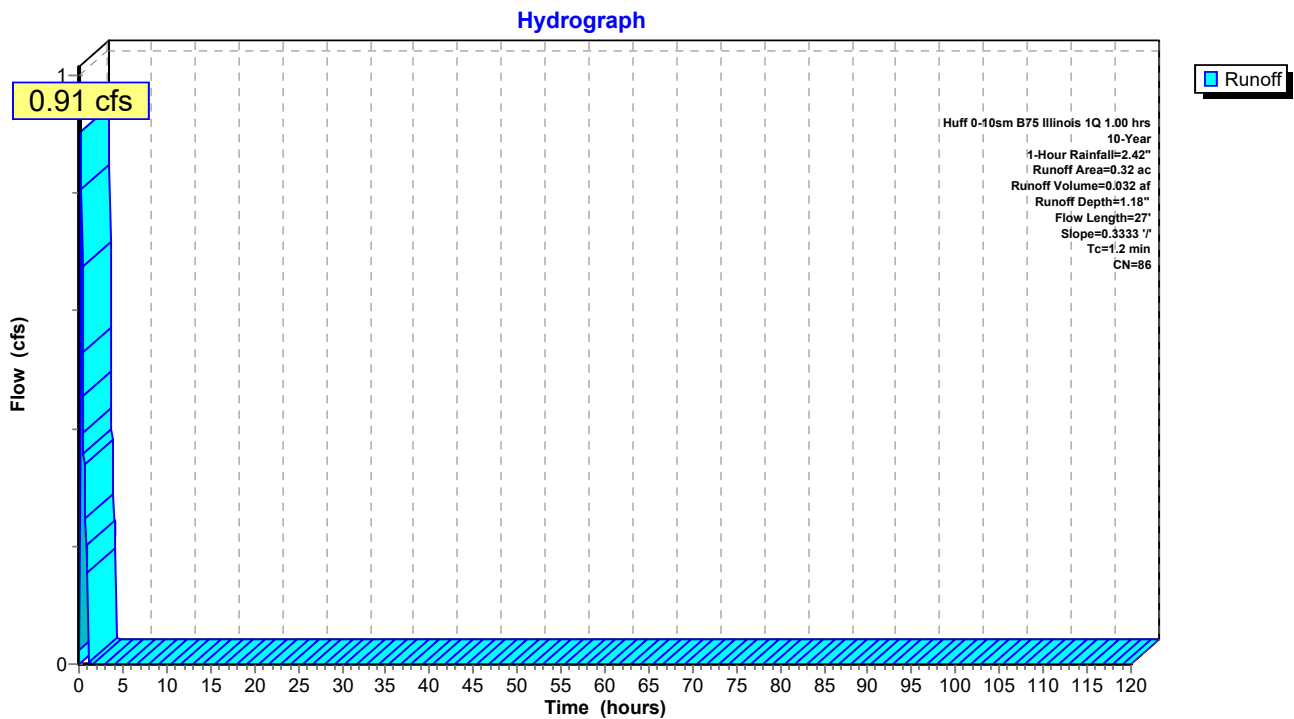
Runoff = 0.91 cfs @ 0.25 hrs, Volume= 0.032 af, Depth= 1.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

Area (ac)	CN	Description
0.17	80	>75% Grass cover, Good, HSG D
* 0.15	93	Paved roads w/open ditches, 50% imp, HSG D
0.32	86	Weighted Average
0.24		75.93% Pervious Area
0.08		24.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	27	0.3333	0.38		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B13: Subcat B13**





**Summary for Subcatchment B14: Subcat B14**

Runoff = 0.73 cfs @ 0.29 hrs, Volume= 0.026 af, Depth= 1.18"

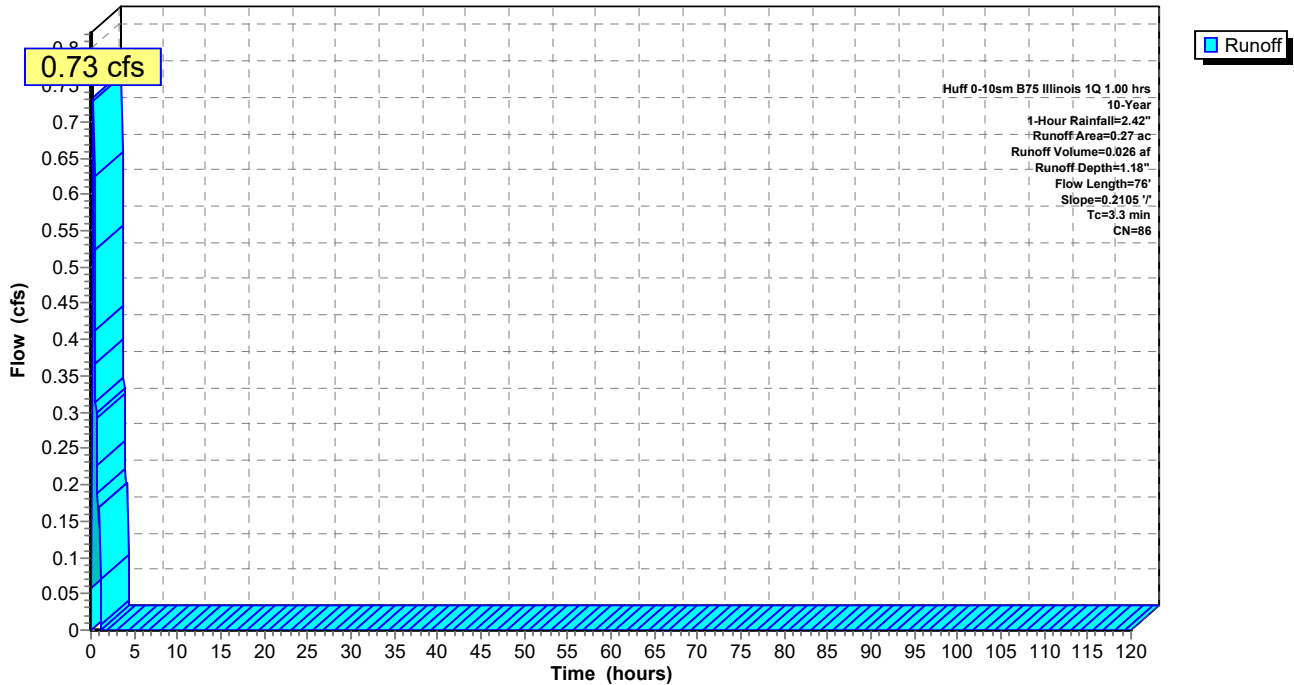
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

Area (ac)	CN	Description
0.14	80	>75% Grass cover, Good, HSG D
0.13	93	Paved roads w/open ditches, 50% imp, HSG D
0.27	86	Weighted Average
0.21		76.49% Pervious Area
0.06		23.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	76	0.2105	0.39		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B14: Subcat B14**

Hydrograph



**Summary for Subcatchment B2: Subcat B2**

Runoff = 4.71 cfs @ 0.36 hrs, Volume= 0.190 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

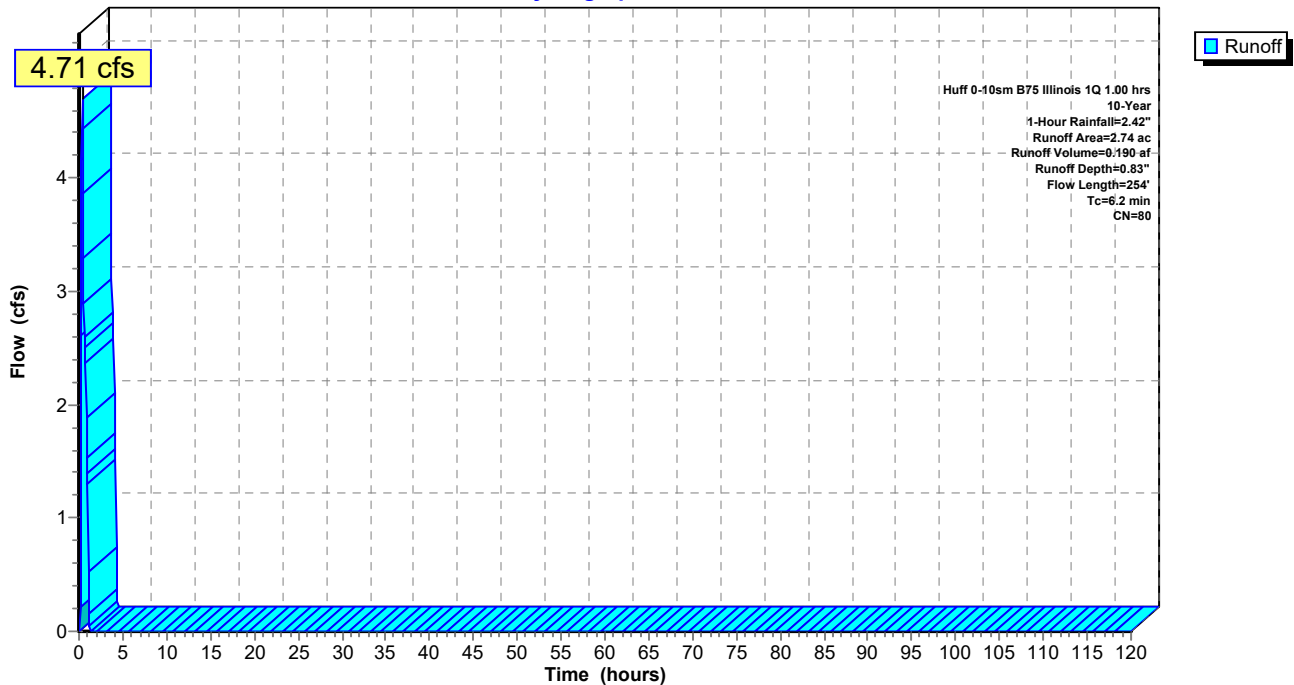
Area (ac)	CN	Description
2.74	80	>75% Grass cover, Good, HSG D
2.74		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.7	154	0.2403	3.43		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.2	254	Total			

**Subcatchment B2: Subcat B2**

Hydrograph



**Summary for Subcatchment B3: Subcat B3**

Runoff = 4.02 cfs @ 0.32 hrs, Volume= 0.154 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

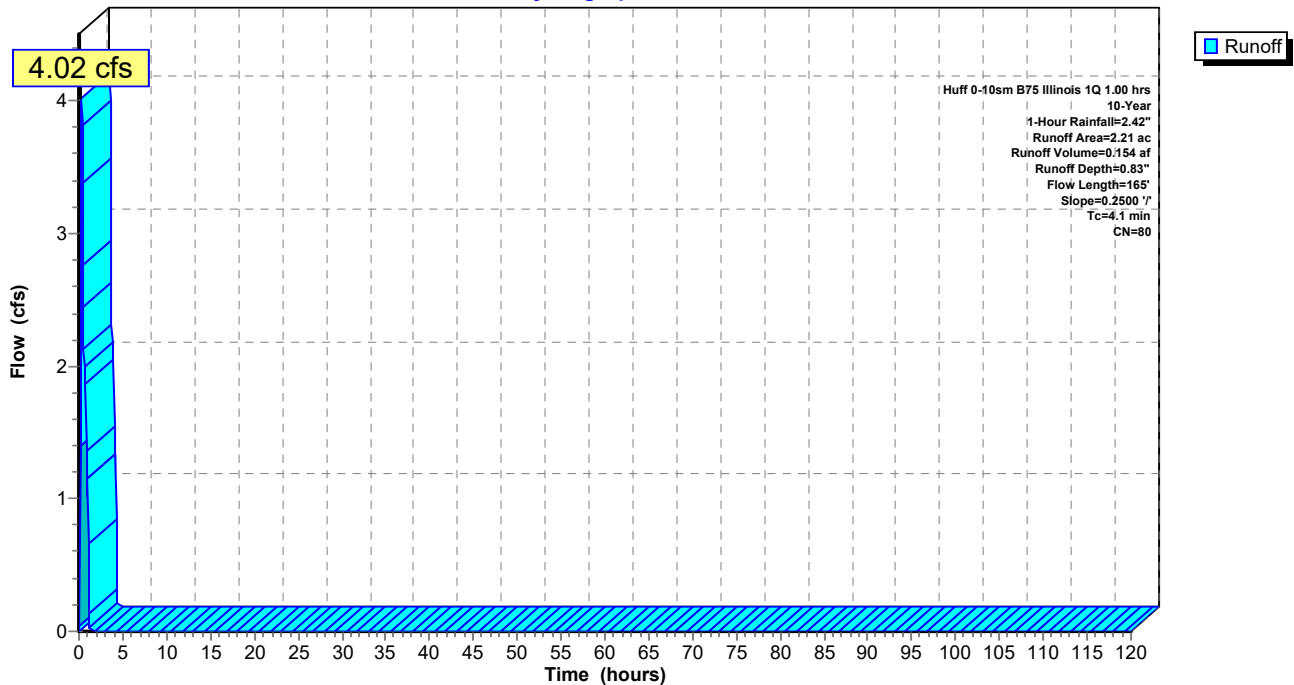
Area (ac)	CN	Description
2.21	80	>75% Grass cover, Good, HSG D
2.21		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.3	65	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	165	Total			

**Subcatchment B3: Subcat B3**

Hydrograph



**Summary for Subcatchment B4: Subcat B4**

Runoff = 3.40 cfs @ 0.32 hrs, Volume= 0.130 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

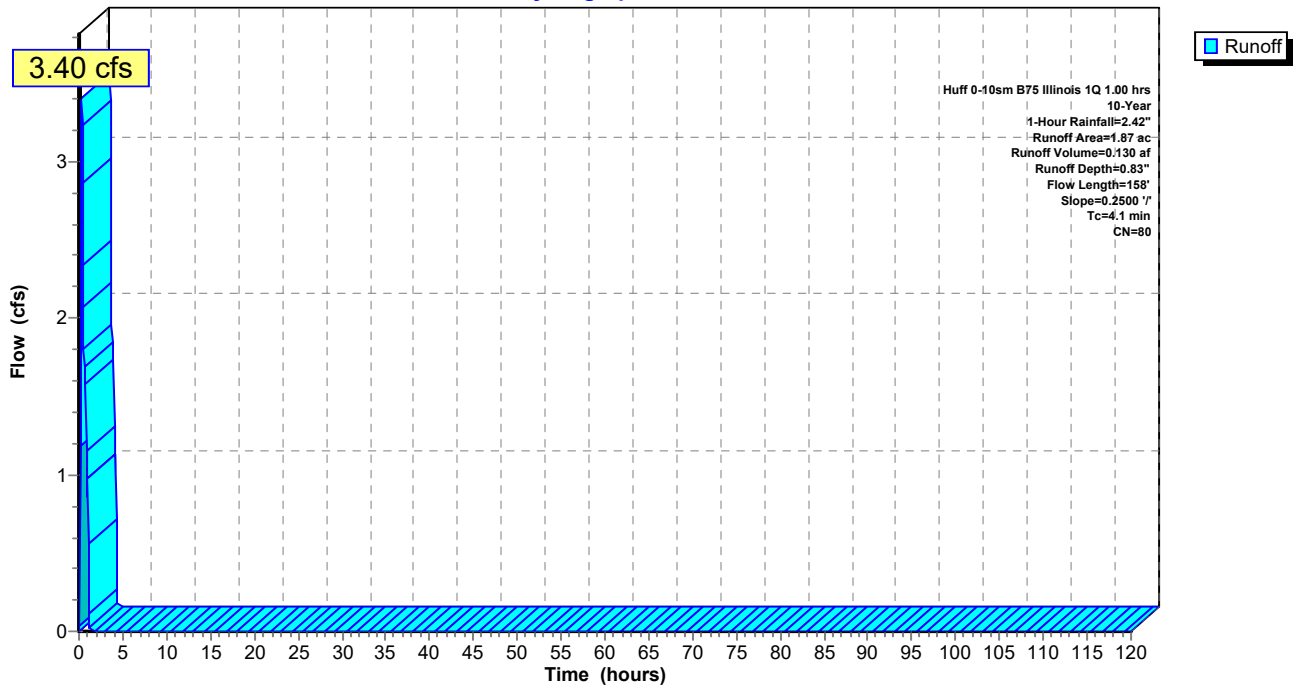
Area (ac)	CN	Description
1.87	80	>75% Grass cover, Good, HSG D
1.87		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.3	58	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	158	Total			

**Subcatchment B4: Subcat B4**

Hydrograph



**Summary for Subcatchment B5: Subcat B5**

Runoff = 3.57 cfs @ 0.31 hrs, Volume= 0.134 af, Depth= 0.83"

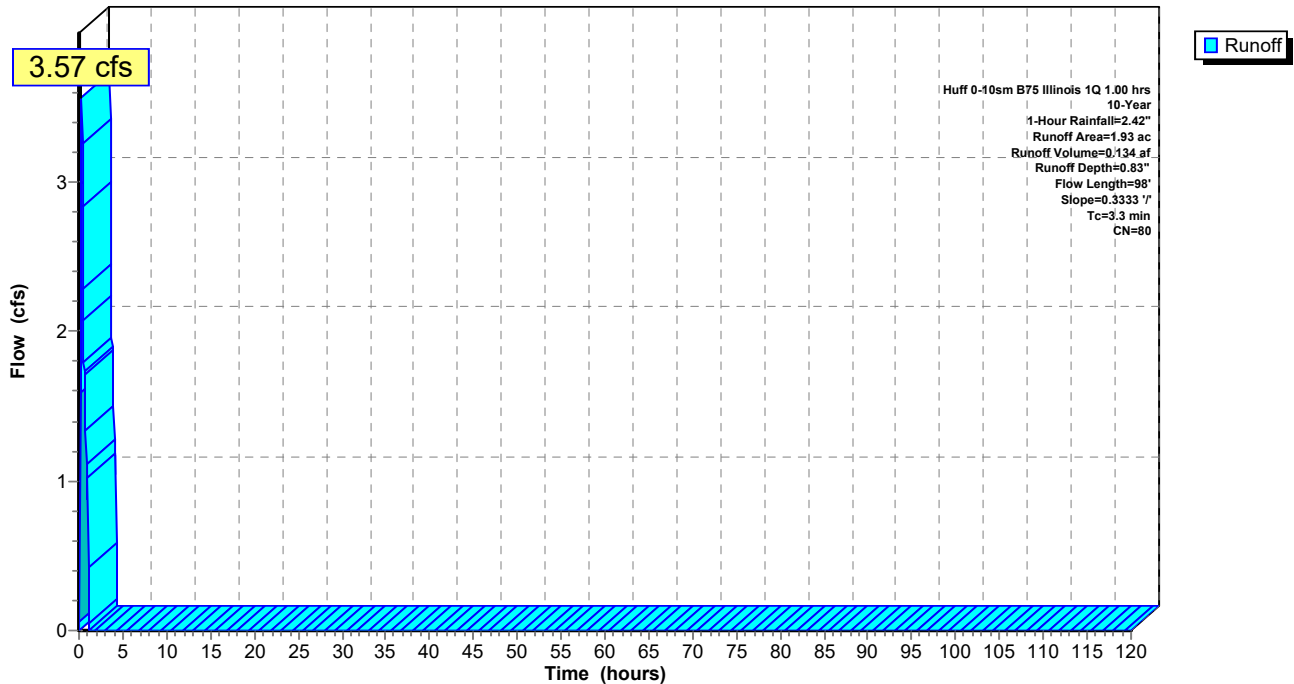
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

Area (ac)	CN	Description
1.93	80	>75% Grass cover, Good, HSG D
1.93		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	98	0.3333	0.49		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B5: Subcat B5**

Hydrograph



**Summary for Subcatchment B6: Subcat B6**

Runoff = 2.16 cfs @ 0.31 hrs, Volume= 0.082 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

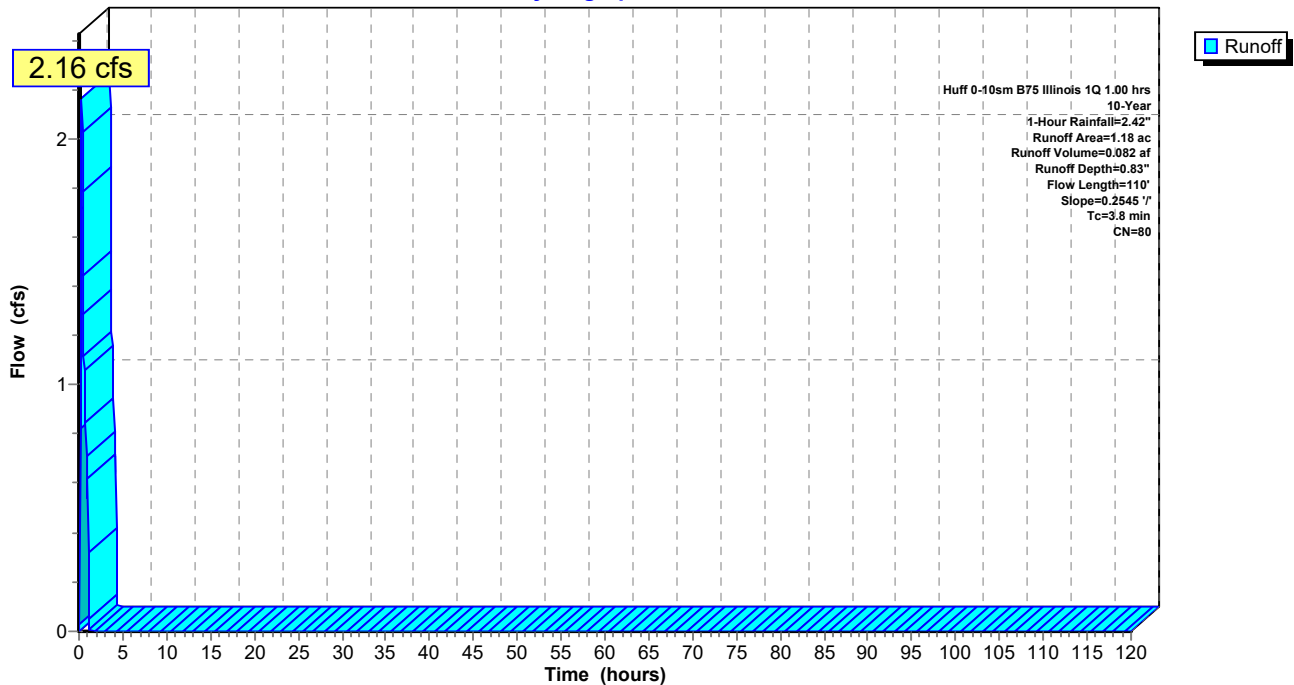
Area (ac)	CN	Description
1.18	80	>75% Grass cover, Good, HSG D
1.18		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2545	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.0	10	0.2545	3.53		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.8	110	Total			

**Subcatchment B6: Subcat B6**

Hydrograph



**Summary for Subcatchment B7: Subcat B7**

Runoff = 4.05 cfs @ 0.31 hrs, Volume= 0.152 af, Depth= 0.83"

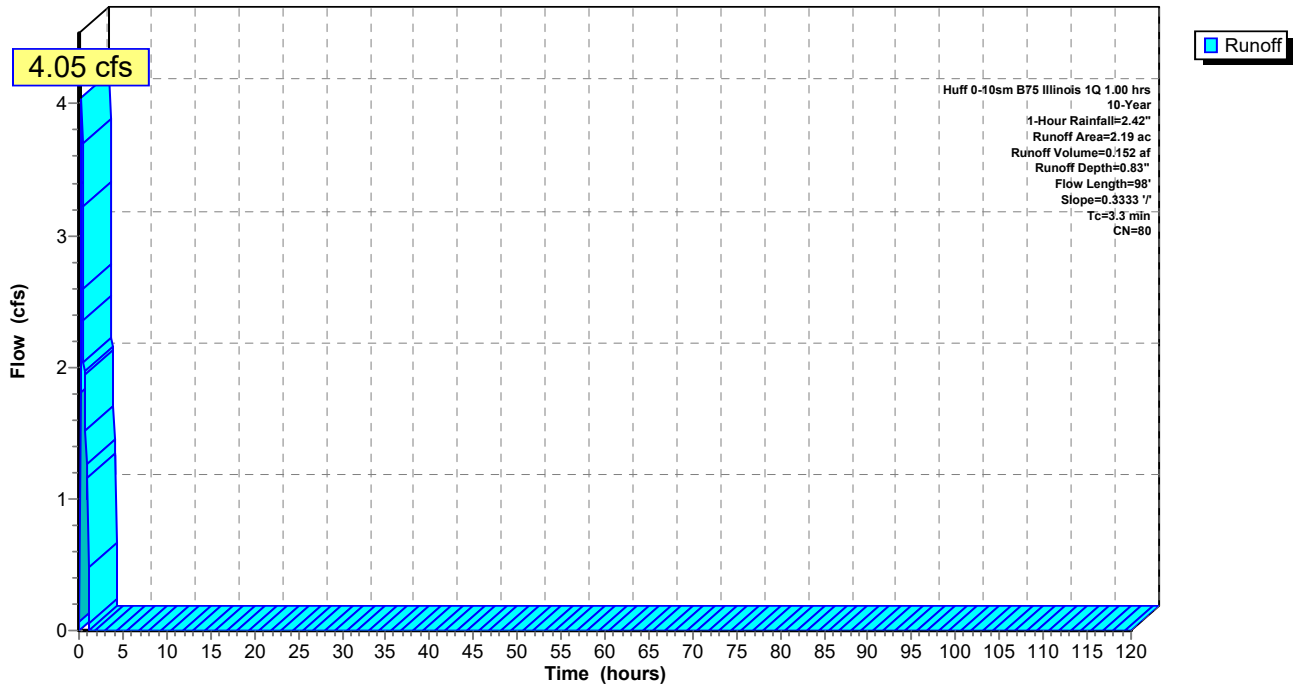
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

Area (ac)	CN	Description
2.19	80	>75% Grass cover, Good, HSG D
2.19		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	98	0.3333	0.49		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B7: Subcat B7**

Hydrograph



**Summary for Subcatchment B8: Subcat B8**

Runoff = 2.15 cfs @ 0.31 hrs, Volume= 0.081 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

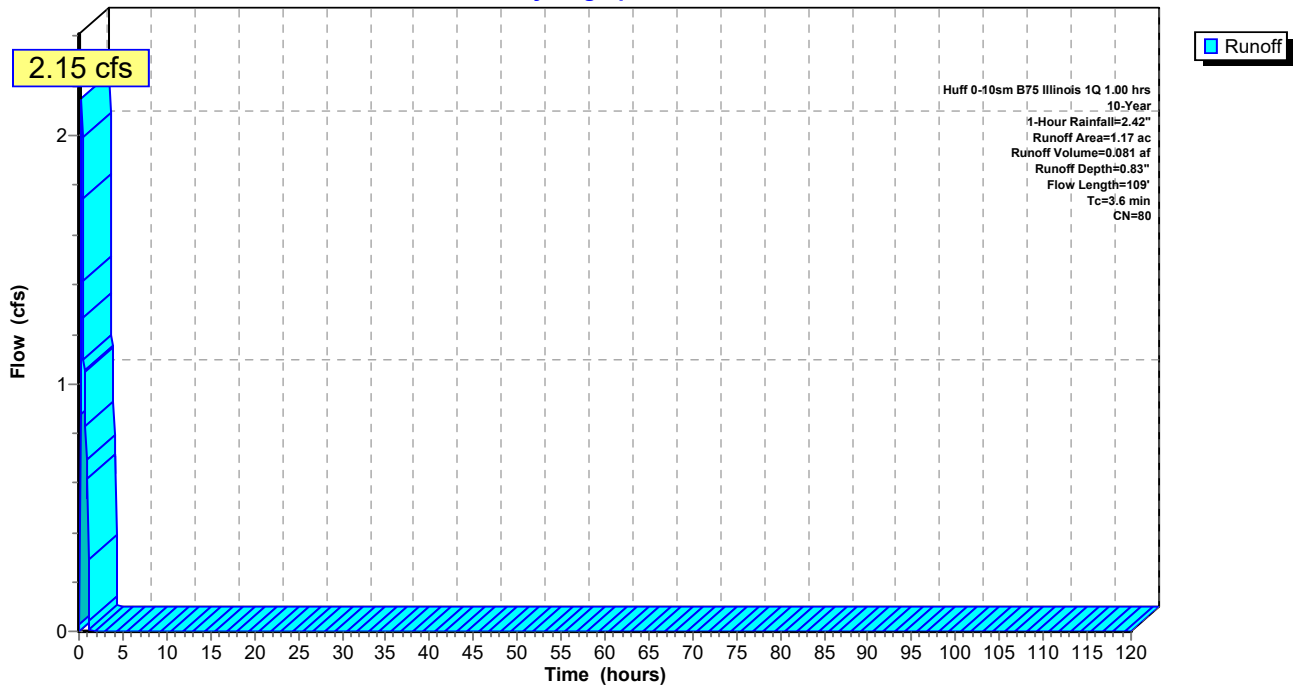
Area (ac)	CN	Description
1.17	80	>75% Grass cover, Good, HSG D
1.17		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	100	0.2873	0.46		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.0	9	0.2574	3.55		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.6	109	Total			

**Subcatchment B8: Subcat B8**

Hydrograph





**Summary for Subcatchment B9A: Subcat B9A**

Runoff = 2.67 cfs @ 0.30 hrs, Volume= 0.100 af, Depth= 0.83"

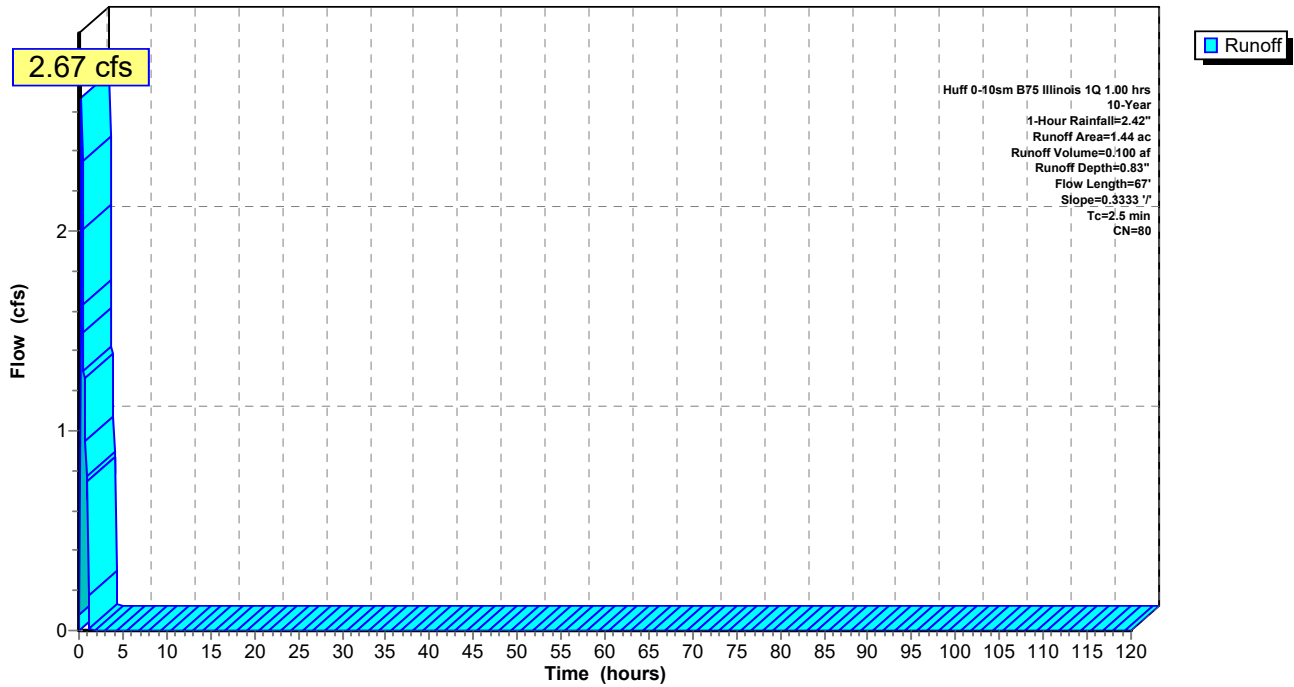
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

Area (ac)	CN	Description
1.44	80	>75% Grass cover, Good, HSG D
1.44		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	67	0.3333	0.45		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B9A: Subcat B9A**

Hydrograph



**Summary for Subcatchment B9B: Subcat B9B**

Runoff = 1.13 cfs @ 0.29 hrs, Volume= 0.042 af, Depth= 0.83"

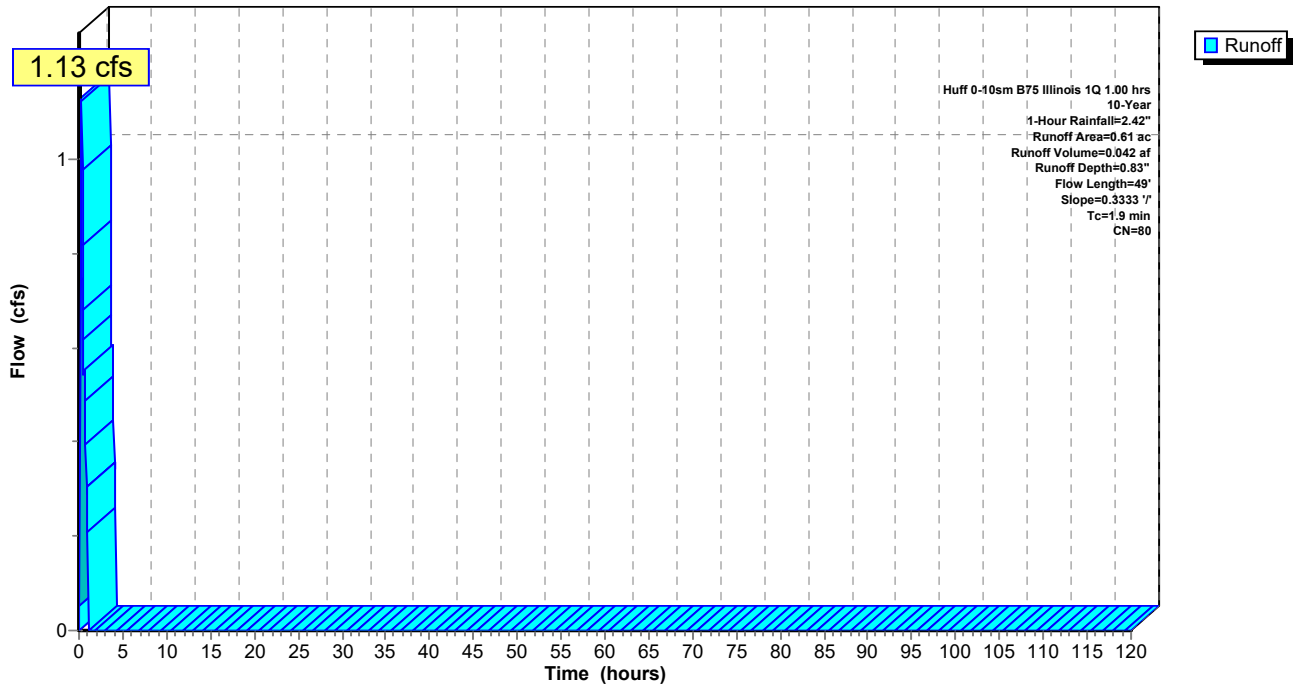
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

Area (ac)	CN	Description
0.61	80	>75% Grass cover, Good, HSG D
0.61		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	49	0.3333	0.43		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B9B: Subcat B9B**

Hydrograph



**Summary for Subcatchment D1: Subcat D1**

Runoff = 2.14 cfs @ 0.36 hrs, Volume= 0.087 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

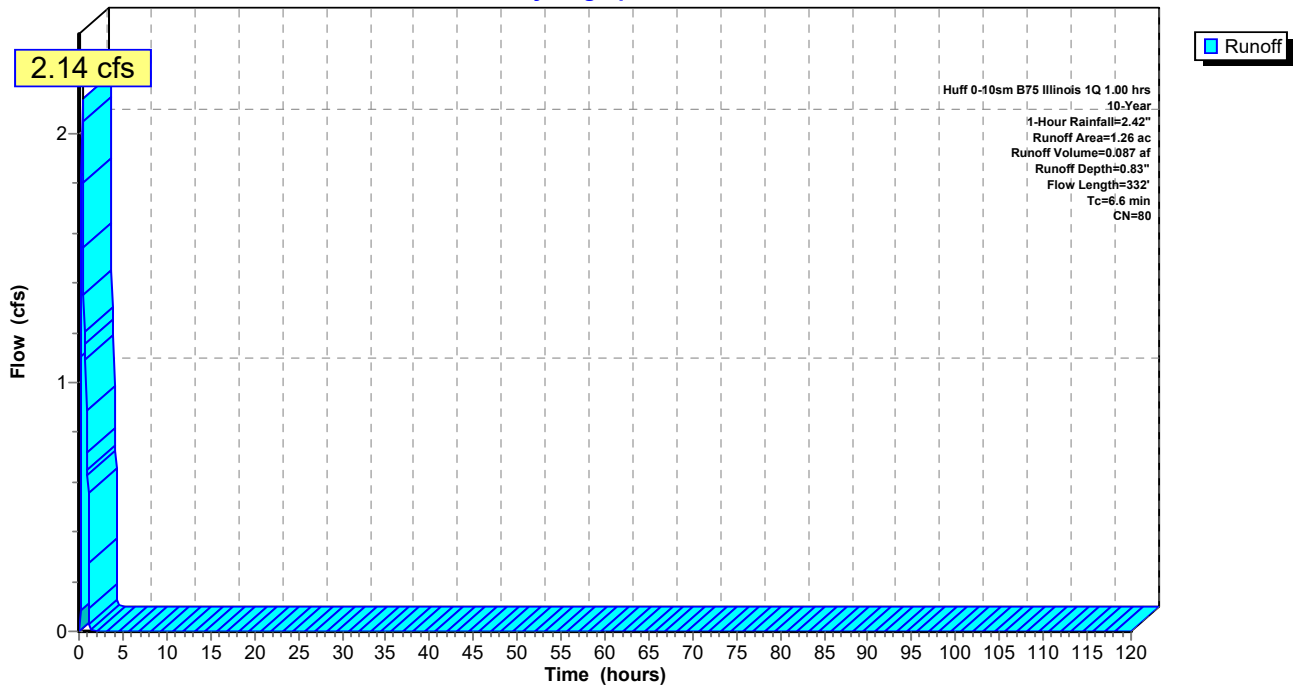
Area (ac)	CN	Description
1.26	80	>75% Grass cover, Good, HSG D
1.26		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.1	232	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.6	332	Total			

**Subcatchment D1: Subcat D1**

Hydrograph



**Summary for Subcatchment D3: Subcat D3**

Runoff = 2.40 cfs @ 0.32 hrs, Volume= 0.093 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

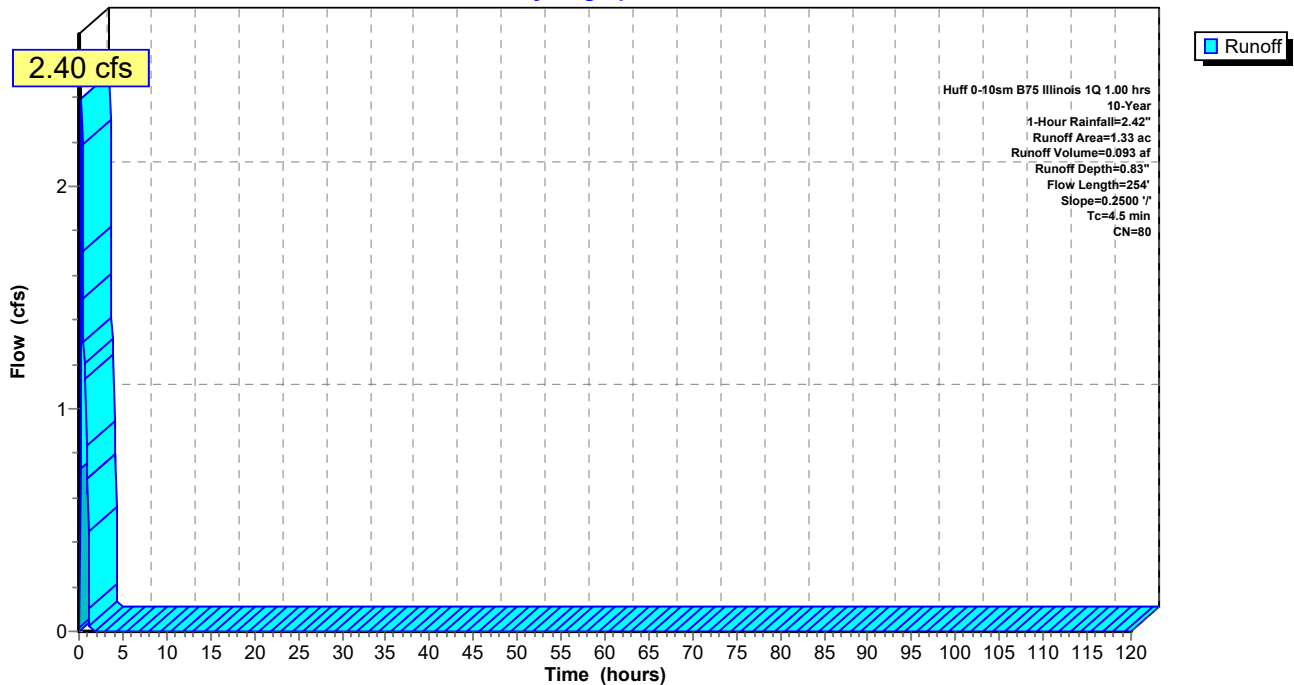
Area (ac)	CN	Description
1.33	80	>75% Grass cover, Good, HSG D
1.33		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.7	154	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.5	254	Total			

**Subcatchment D3: Subcat D3**

Hydrograph



**Summary for Subcatchment D5A: Subcat D5A**

Runoff = 2.05 cfs @ 0.32 hrs, Volume= 0.079 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

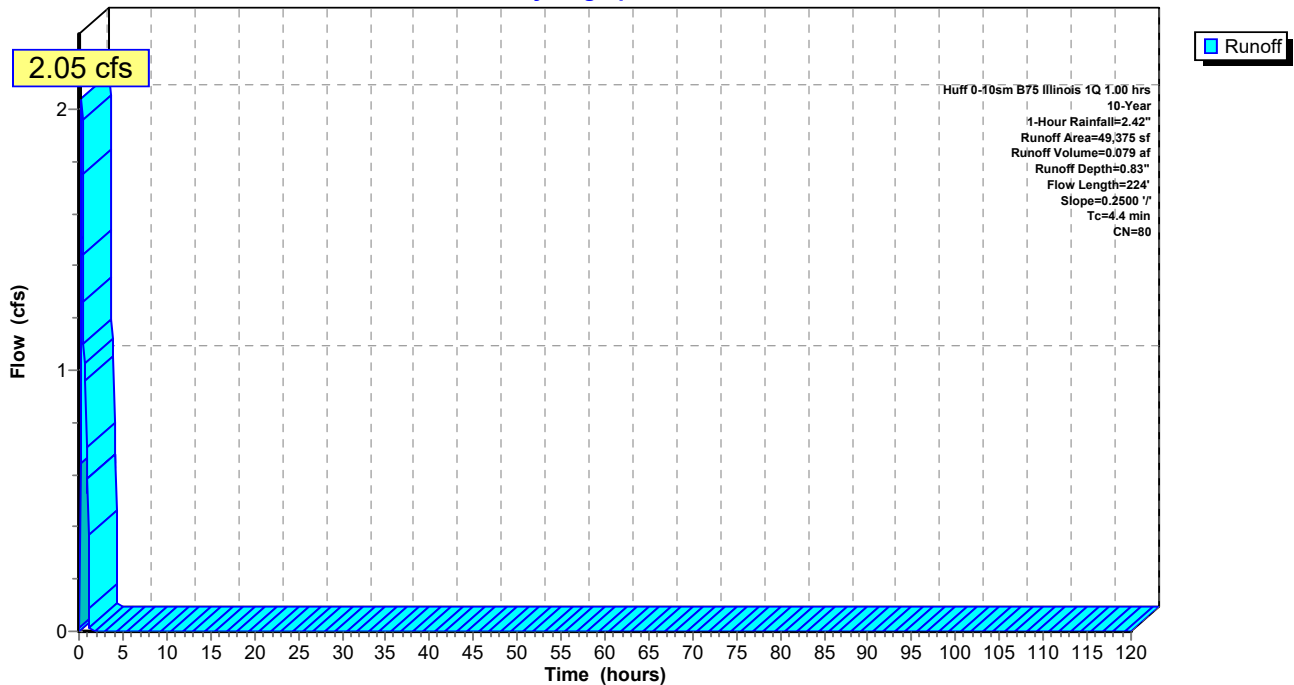
Area (sf)	CN	Description
49,375	80	>75% Grass cover, Good, HSG D
49,375		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	124	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.4	224	Total			

**Subcatchment D5A: Subcat D5A**

Hydrograph



**Summary for Subcatchment D5B: Subcat D5B**

Runoff = 0.88 cfs @ 0.24 hrs, Volume= 0.030 af, Depth= 1.18"

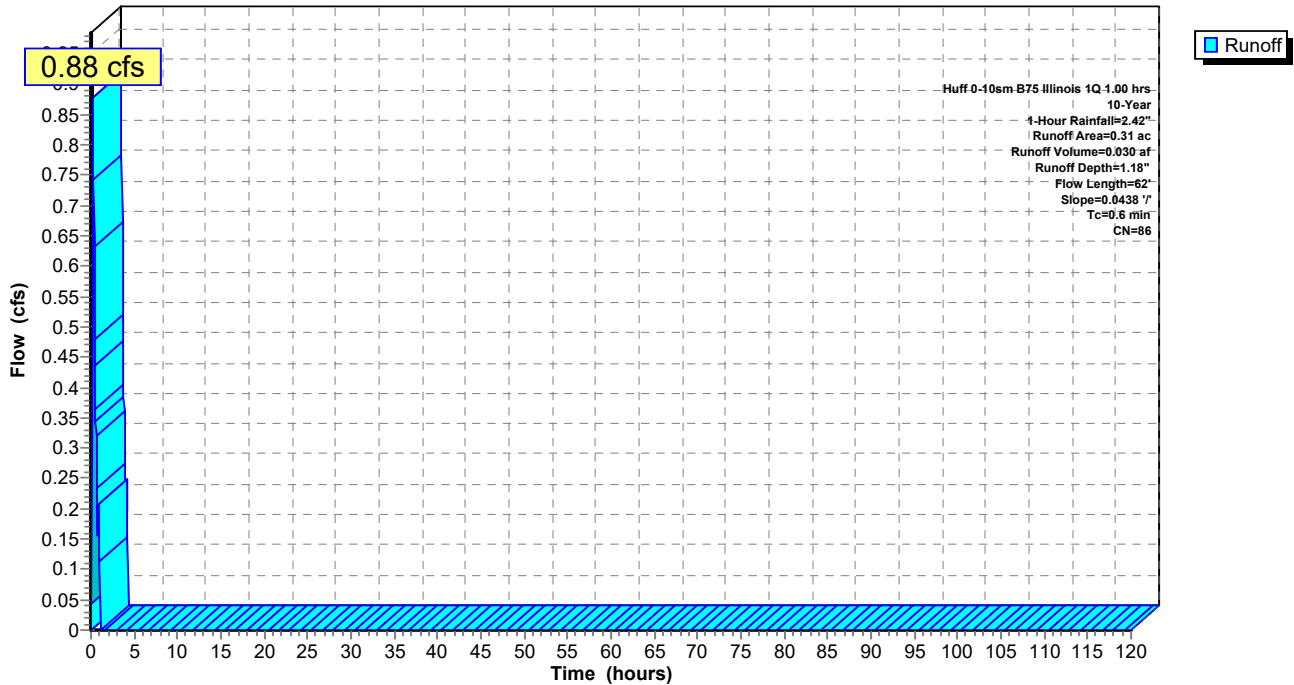
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

Area (ac)	CN	Description
0.16	80	>75% Grass cover, Good, HSG D
0.15	93	Paved roads w/open ditches, 50% imp, HSG D
0.31	86	Weighted Average
0.23		75.32% Pervious Area
0.08		24.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	62	0.0438	1.60		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment D5B: Subcat D5B**

Hydrograph



**Summary for Subcatchment DT: Subcat Drain Tile**

Runoff = 23.74 cfs @ 0.32 hrs, Volume= 0.899 af, Depth= 0.89"

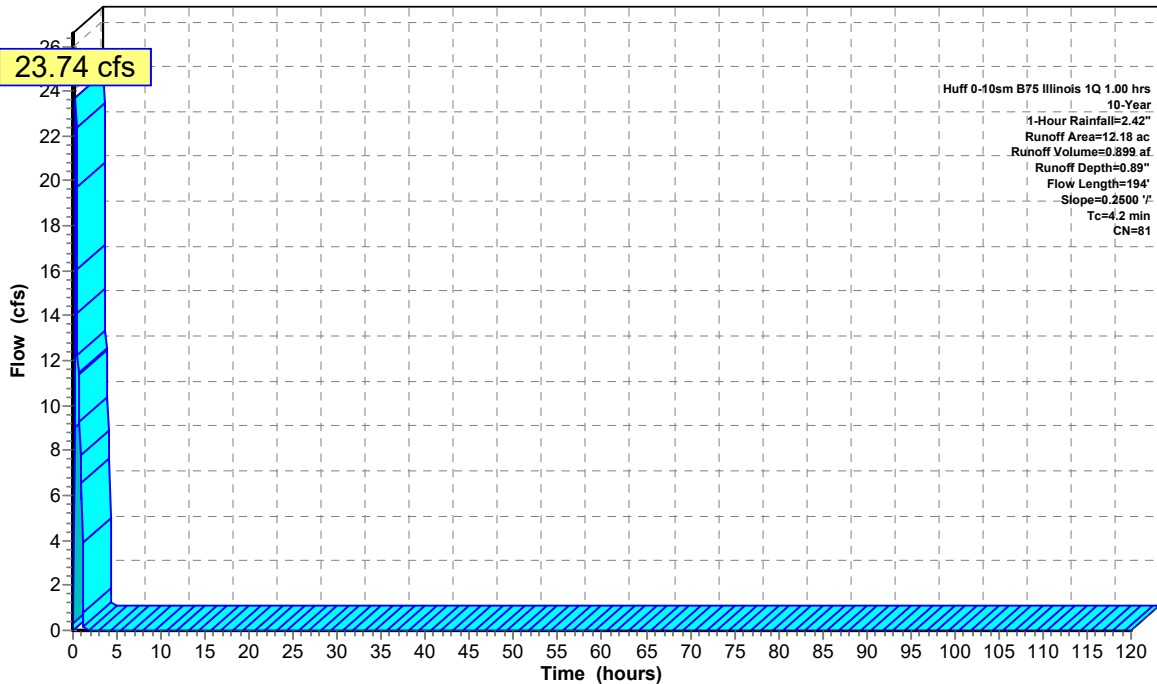
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

Area (ac)	CN	Description
7.38	80	>75% Grass cover, Good, HSG D
4.80	82	Woods/grass comb., Fair, HSG D
12.18	81	Weighted Average
12.18		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.4	94	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.2	194	Total			

**Subcatchment DT: Subcat Drain Tile**

Hydrograph



Runoff

**Summary for Subcatchment E1: Subcat E1**

Runoff = 2.42 cfs @ 0.36 hrs, Volume= 0.099 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

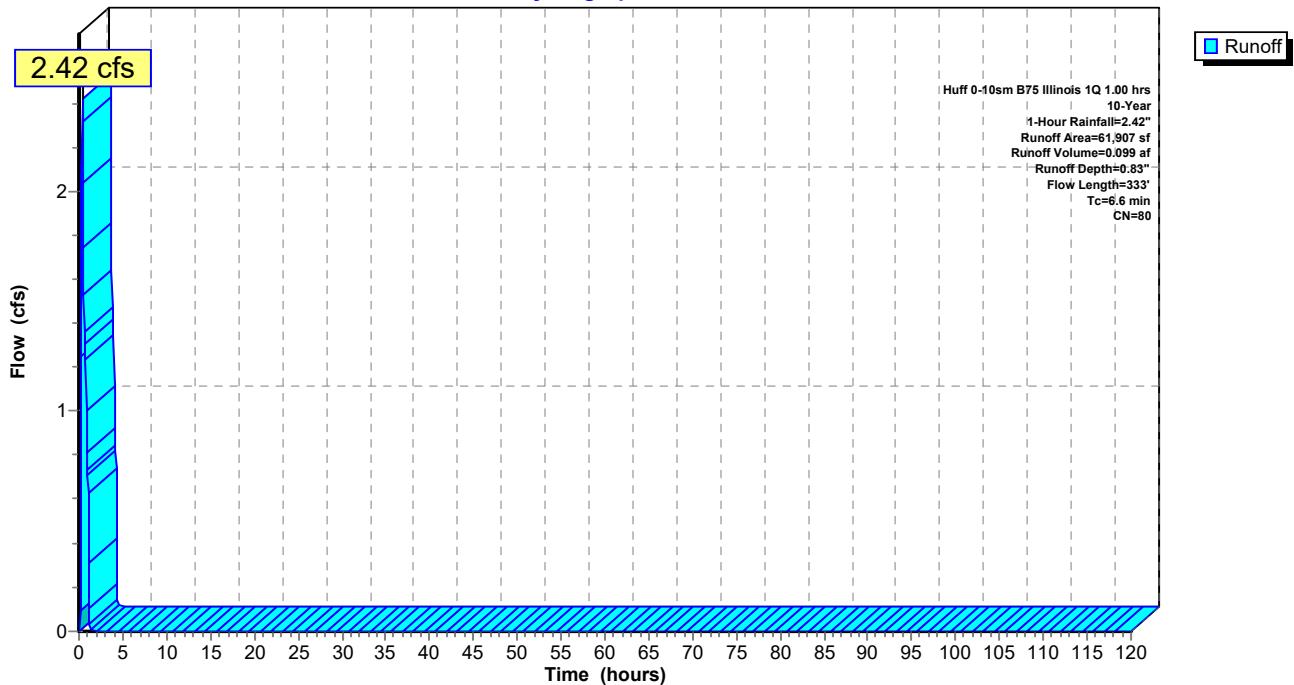
Area (sf)	CN	Description
61,907	80	>75% Grass cover, Good, HSG D
61,907		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.1	233	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.6	333	Total			

**Subcatchment E1: Subcat E1**

Hydrograph





**Summary for Subcatchment E2: Subcat E2**

Runoff = 5.07 cfs @ 0.32 hrs, Volume= 0.196 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

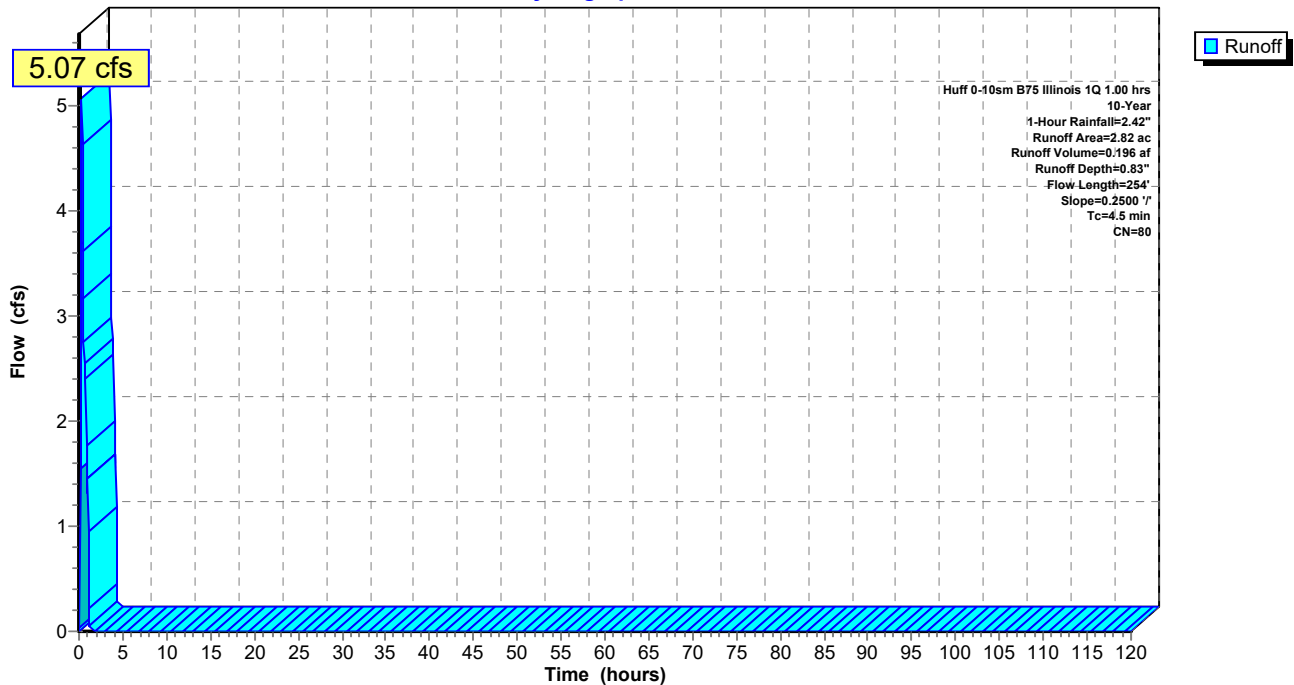
Area (ac)	CN	Description
2.82	80	>75% Grass cover, Good, HSG D
2.82		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.7	154	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.5	254	Total			

**Subcatchment E2: Subcat E2**

Hydrograph



**Summary for Subcatchment E3A: Subcat E3A**

Runoff = 5.91 cfs @ 0.32 hrs, Volume= 0.228 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

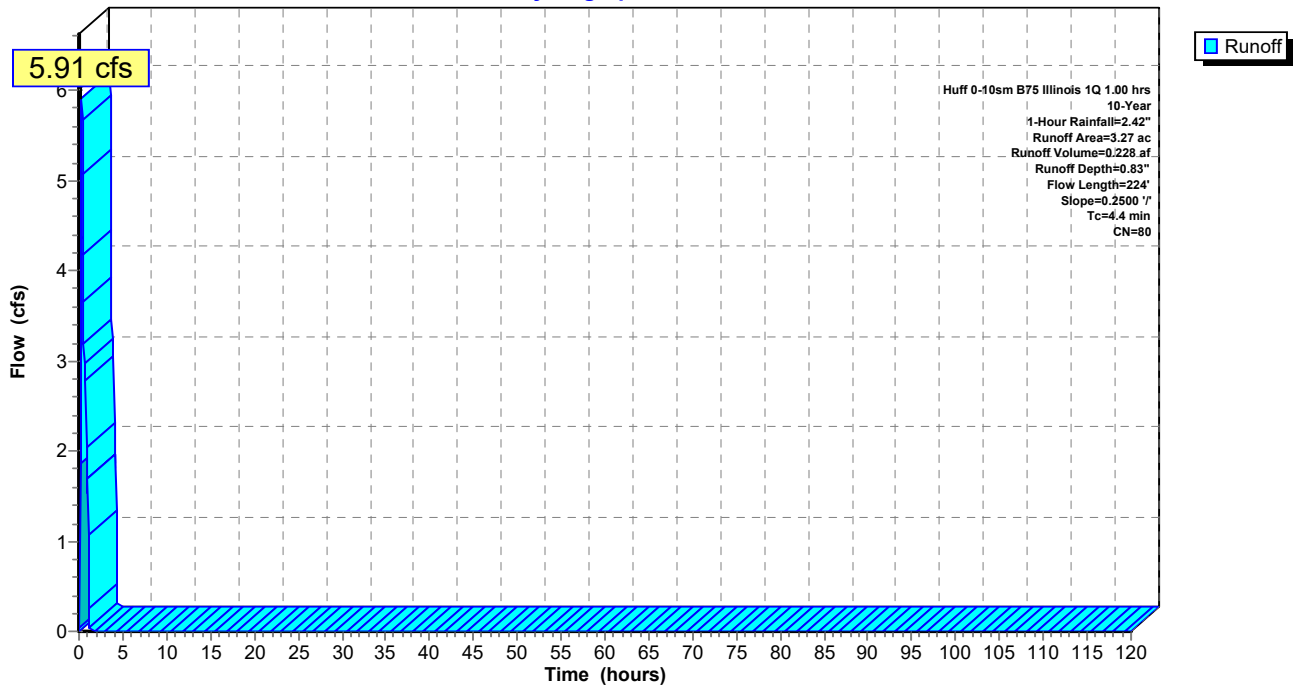
Area (ac)	CN	Description
3.27	80	>75% Grass cover, Good, HSG D
3.27		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	124	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.4	224	Total			

**Subcatchment E3A: Subcat E3A**

Hydrograph



**Summary for Subcatchment E3B: Subcat E3B**

Runoff = 3.08 cfs @ 0.24 hrs, Volume= 0.107 af, Depth= 1.18"

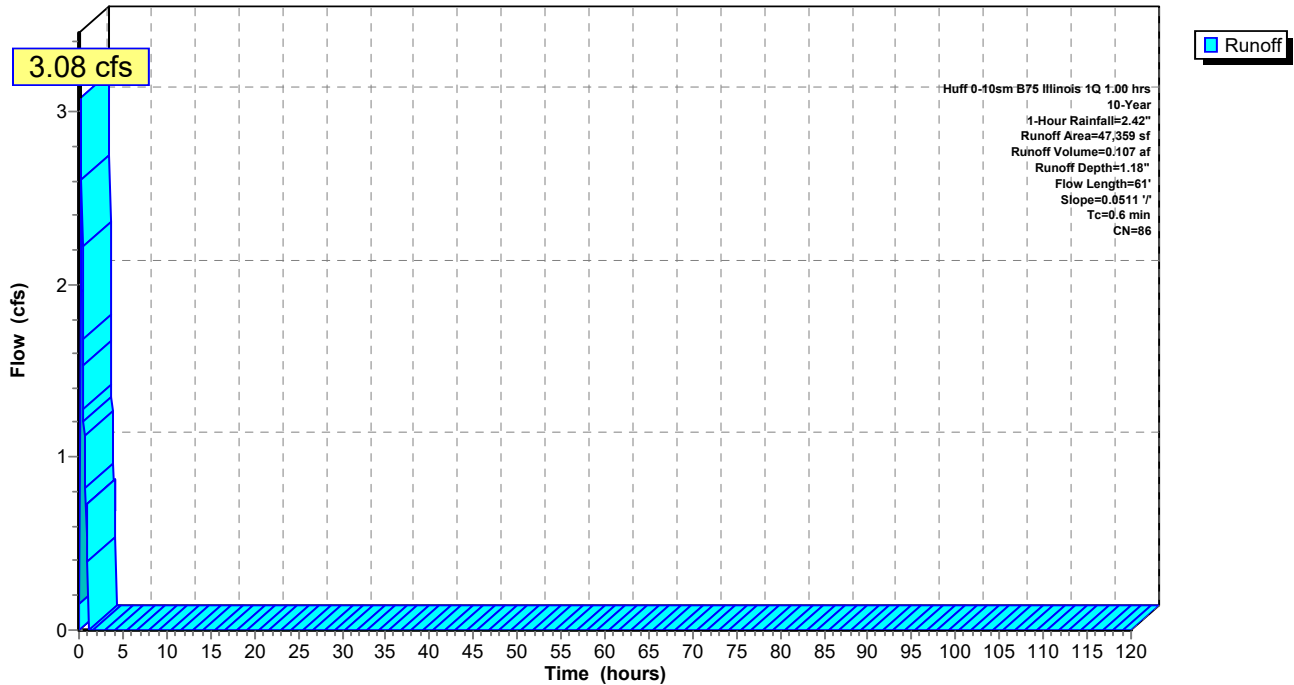
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

Area (sf)	CN	Description
23,741	80	>75% Grass cover, Good, HSG D
23,618	93	Paved roads w/open ditches, 50% imp, HSG D
47,359	86	Weighted Average
35,550		75.06% Pervious Area
11,809		24.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	61	0.0511	1.70		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment E3B: Subcat E3B**

Hydrograph



**Summary for Subcatchment H1: Subcat H1**

Runoff = 3.39 cfs @ 0.36 hrs, Volume= 0.138 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

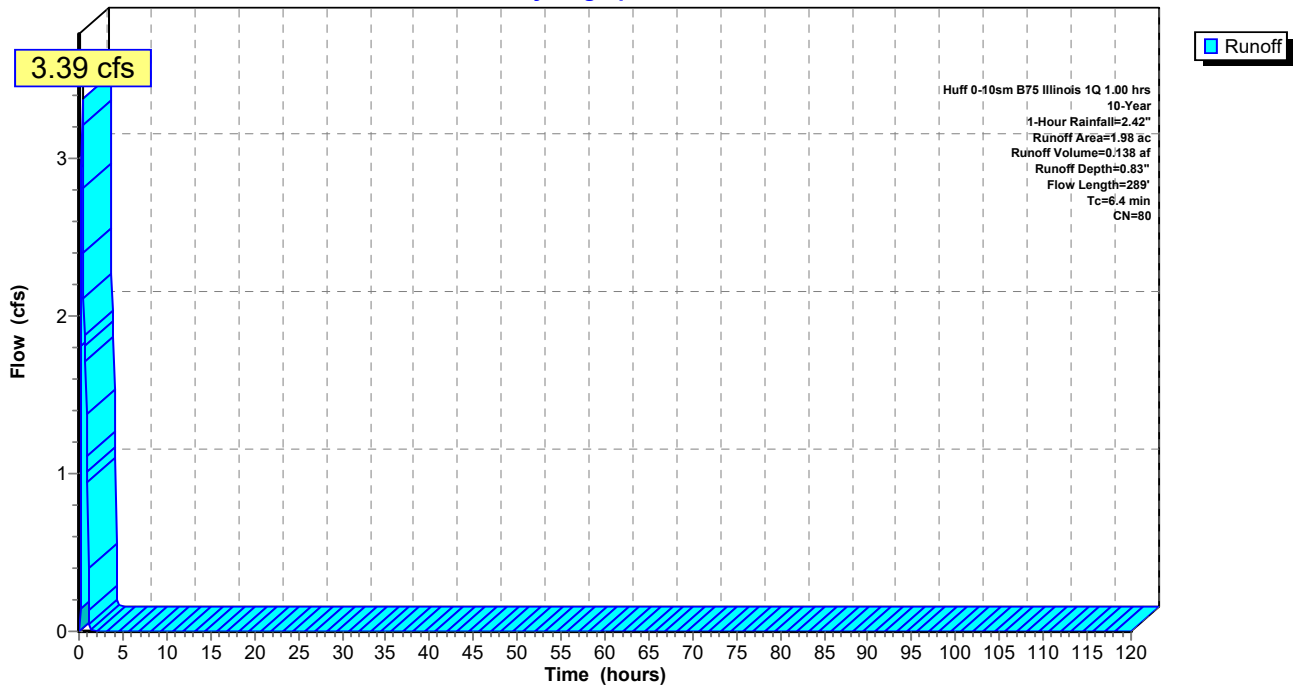
Area (ac)	CN	Description
1.98	80	>75% Grass cover, Good, HSG D
1.98		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.9	189	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.4	289	Total			

**Subcatchment H1: Subcat H1**

Hydrograph



**Summary for Subcatchment H2: Subcat H2**

Runoff = 3.40 cfs @ 0.32 hrs, Volume= 0.129 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

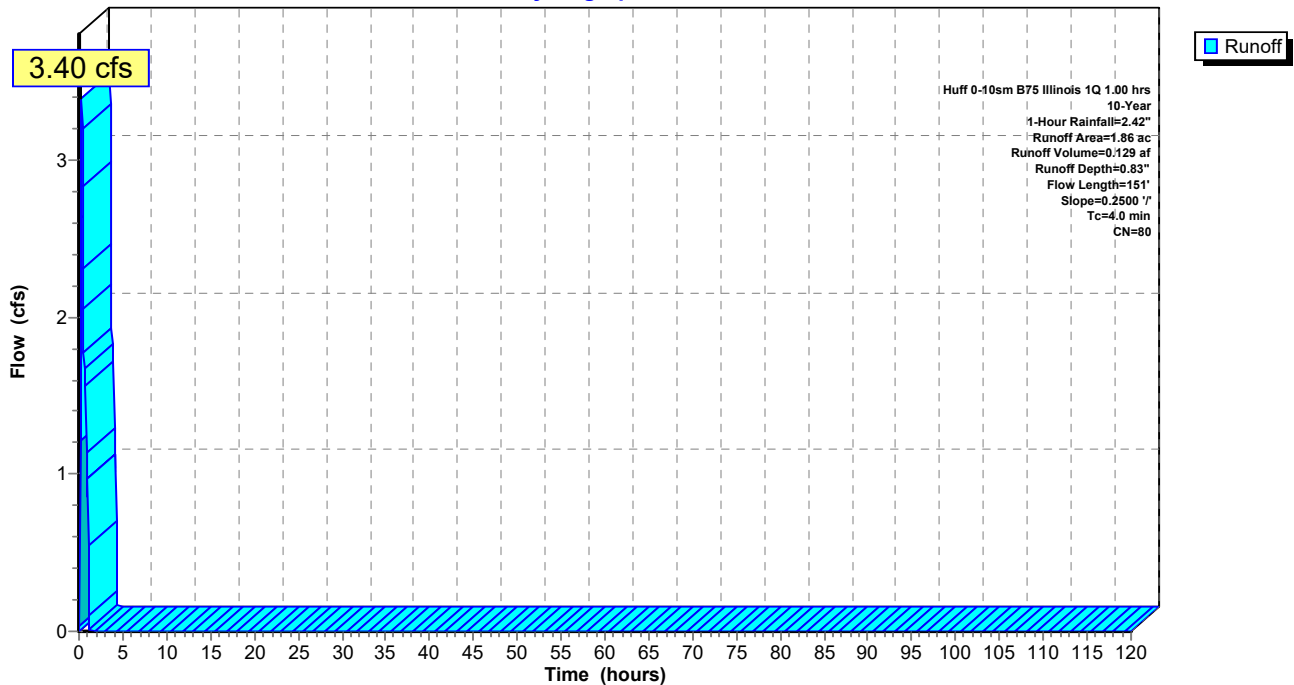
Area (ac)	CN	Description
1.86	80	>75% Grass cover, Good, HSG D
1.86		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	51	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	151	Total			

**Subcatchment H2: Subcat H2**

Hydrograph



**Summary for Subcatchment H3: Subcat H3**

Runoff = 6.45 cfs @ 0.32 hrs, Volume= 0.248 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

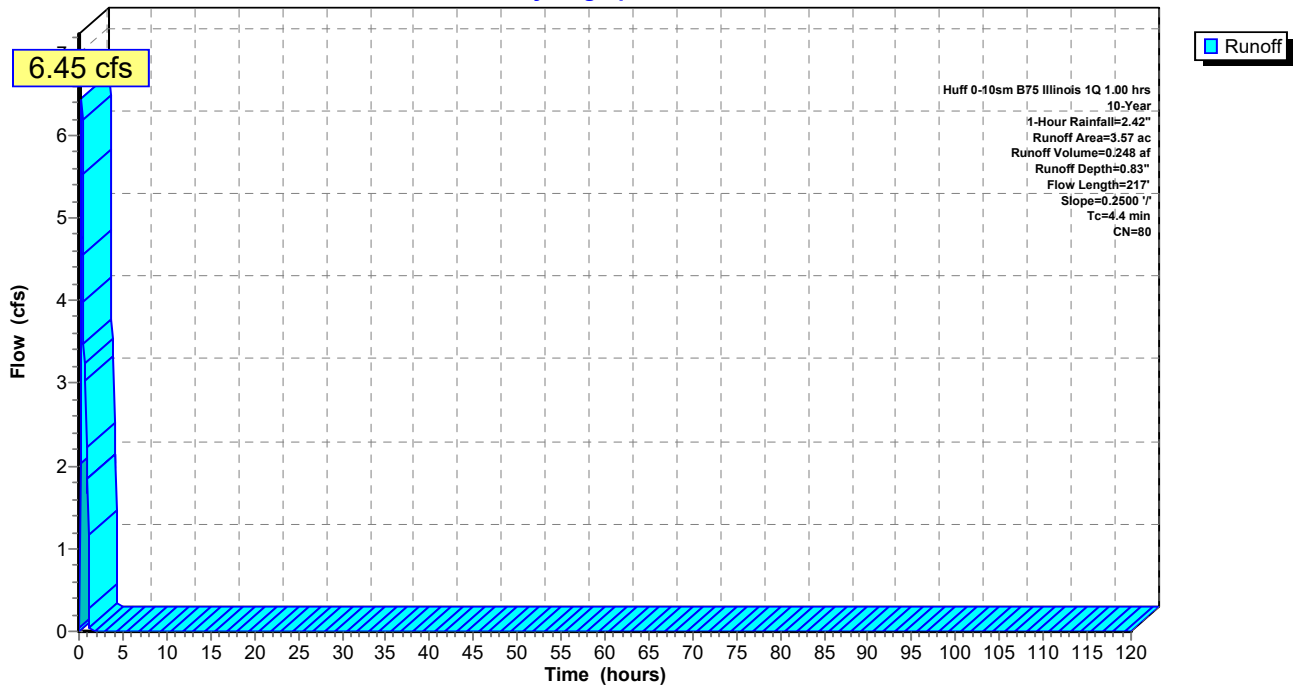
Area (ac)	CN	Description
3.57	80	>75% Grass cover, Good, HSG D
3.57		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	117	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.4	217	Total			

**Subcatchment H3: Subcat H3**

Hydrograph



**Summary for Subcatchment N-A1: Subcat N-A1**

Runoff = 6.15 cfs @ 0.36 hrs, Volume= 0.250 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

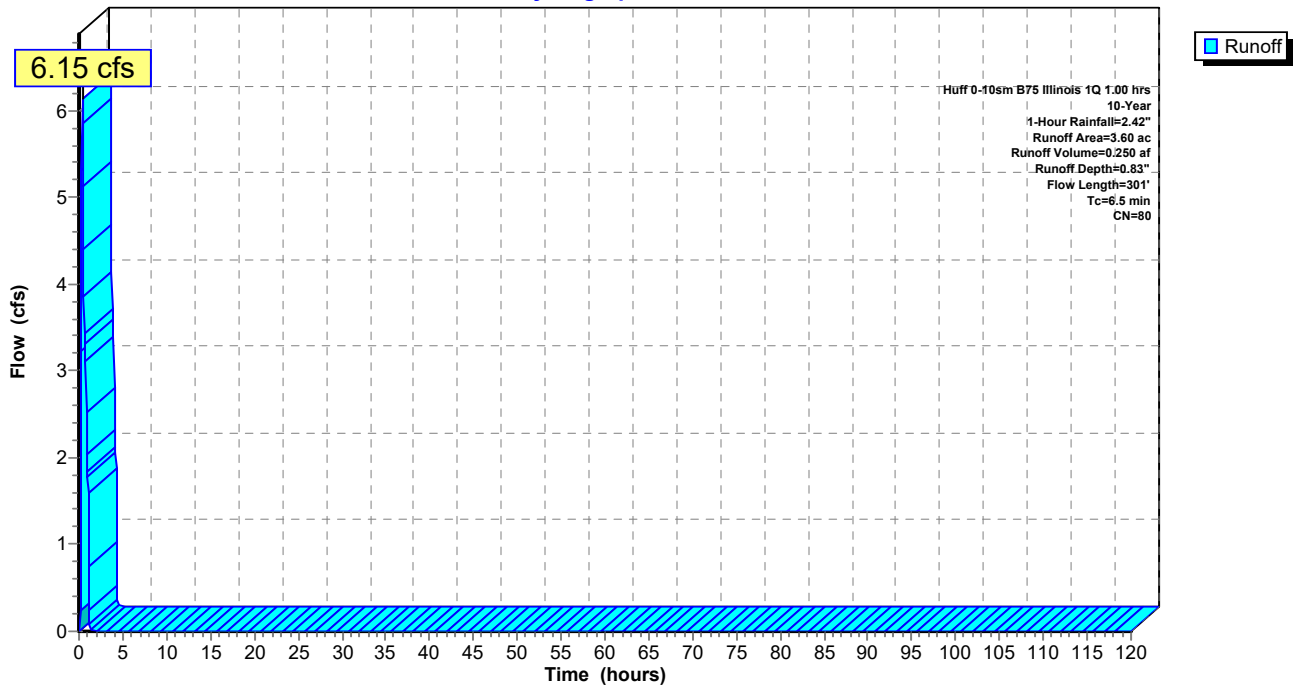
Area (ac)	CN	Description
3.60	80	>75% Grass cover, Good, HSG D
3.60		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.0	201	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.5	301	Total			

**Subcatchment N-A1: Subcat N-A1**

Hydrograph



**Summary for Subcatchment N-A10: Subcat N-A10**

Runoff = 6.89 cfs @ 0.32 hrs, Volume= 0.262 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

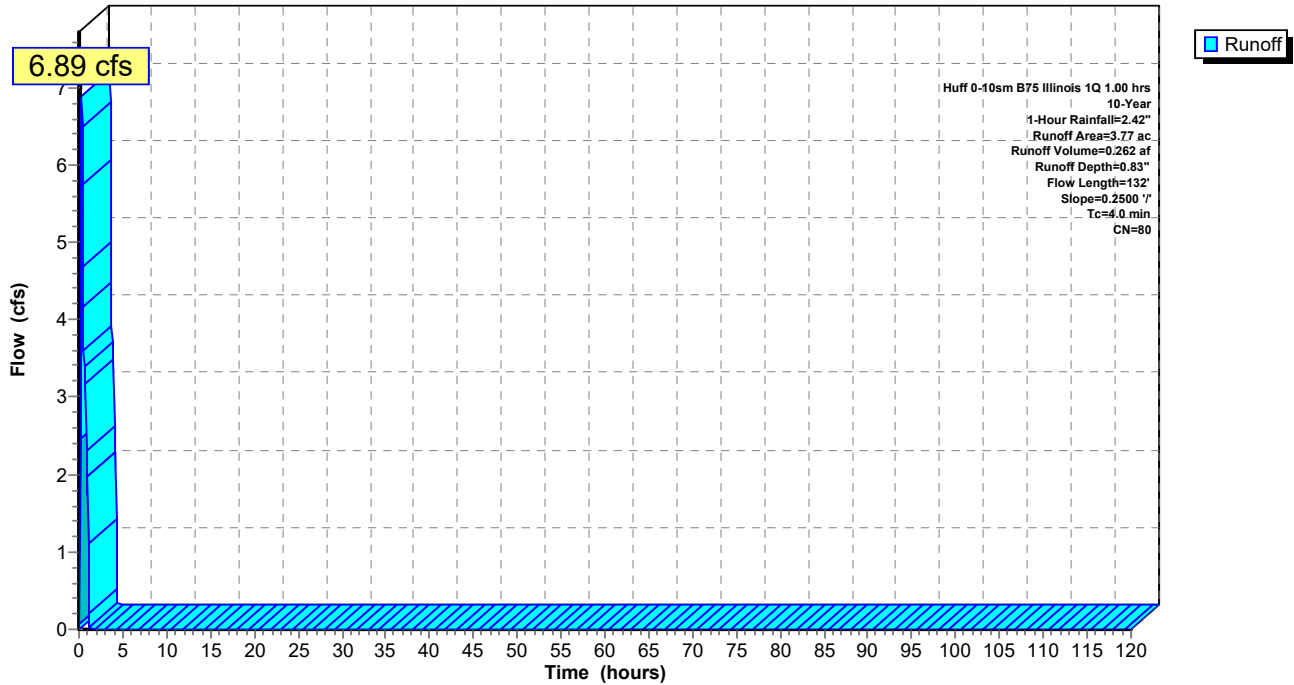
Area (ac)	CN	Description
3.77	80	>75% Grass cover, Good, HSG D
3.77		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	32	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	132	Total			

**Subcatchment N-A10: Subcat N-A10**

Hydrograph





**Summary for Subcatchment N-A11: Subcat N-A11**

Runoff = 3.37 cfs @ 0.32 hrs, Volume= 0.128 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

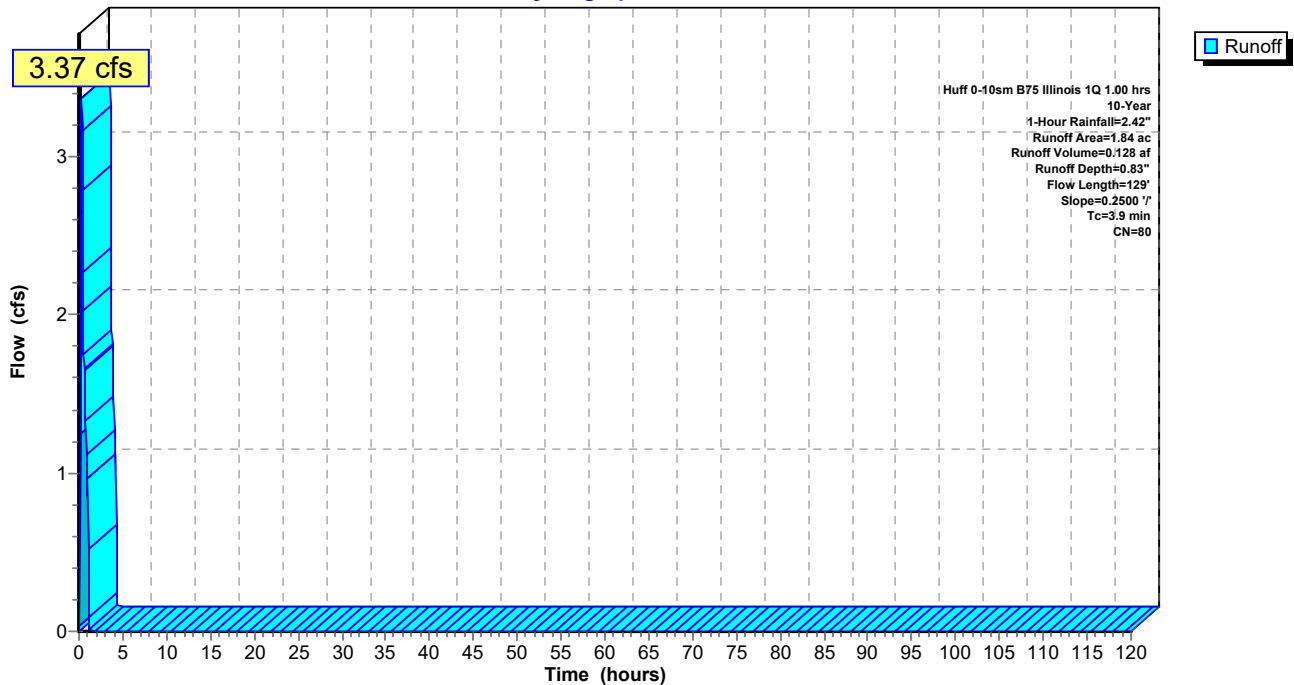
Area (ac)	CN	Description
1.84	80	>75% Grass cover, Good, HSG D
1.84		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	29	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	129	Total			

**Subcatchment N-A11: Subcat N-A11**

Hydrograph



**Summary for Subcatchment N-A12: Subcat N-A12**

Runoff = 5.30 cfs @ 0.31 hrs, Volume= 0.197 af, Depth= 1.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

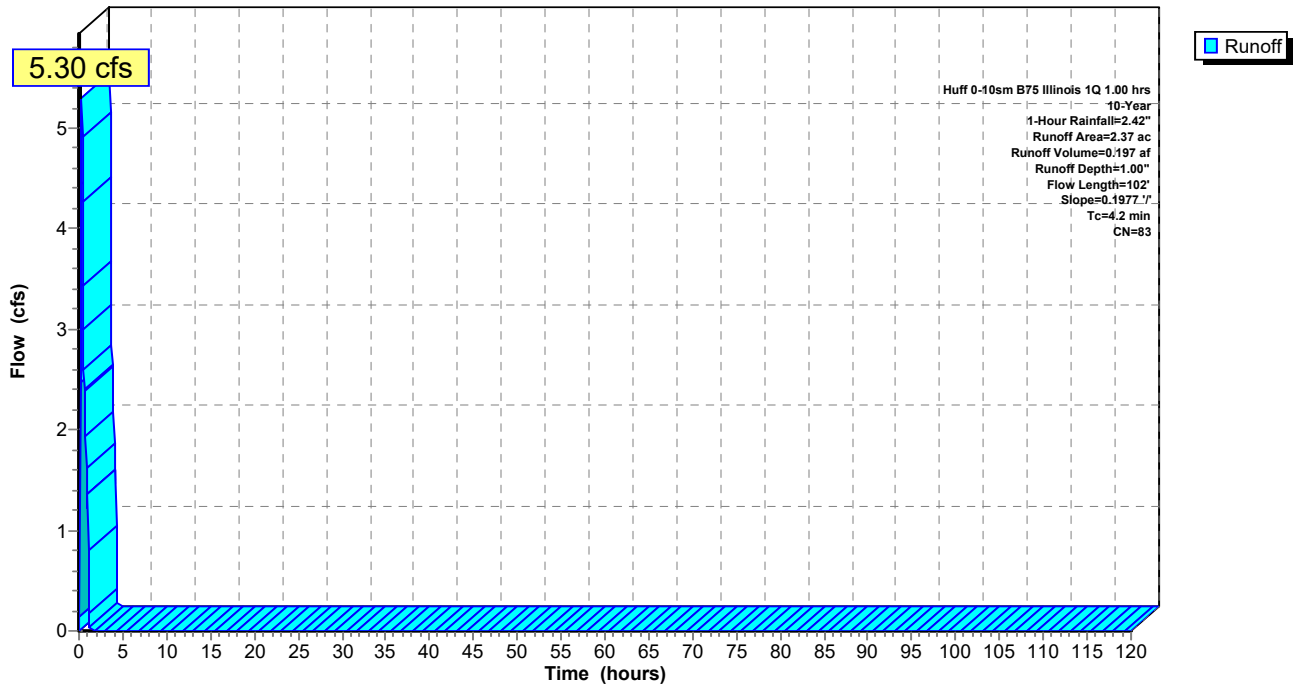
Area (ac)	CN	Description
1.74	80	>75% Grass cover, Good, HSG D
0.63	93	Paved roads w/open ditches, 50% imp, HSG D
2.37	83	Weighted Average
2.06		86.69% Pervious Area
0.32		13.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	100	0.1977	0.40		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.0	2	0.1977	3.11		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.2	102	Total			

**Subcatchment N-A12: Subcat N-A12**

Hydrograph



**Summary for Subcatchment N-A13: Subcat N-A13**

Runoff = 2.29 cfs @ 0.32 hrs, Volume= 0.087 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

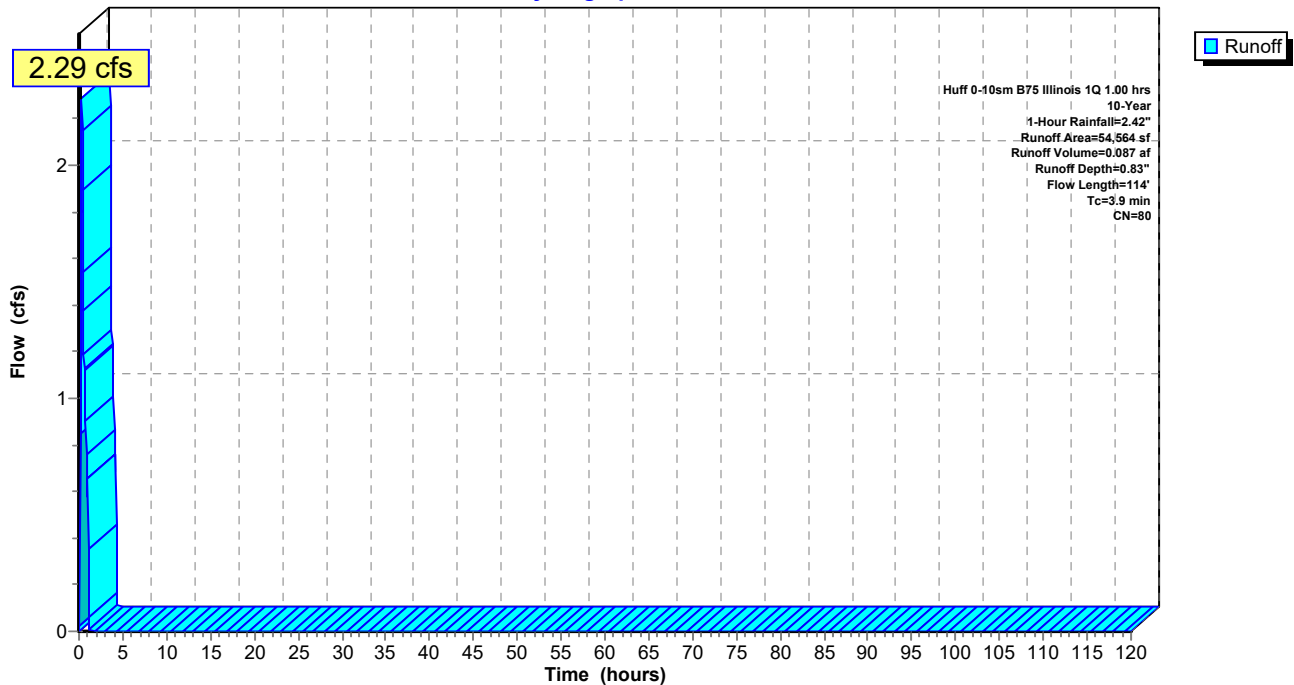
Area (sf)	CN	Description
54,564	80	>75% Grass cover, Good, HSG D
54,564		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	14	0.3210	3.97		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	114	Total			

**Subcatchment N-A13: Subcat N-A13**

Hydrograph



**Summary for Subcatchment N-A14: Subcat N-A14**

Runoff = 2.93 cfs @ 0.31 hrs, Volume= 0.109 af, Depth= 1.00"

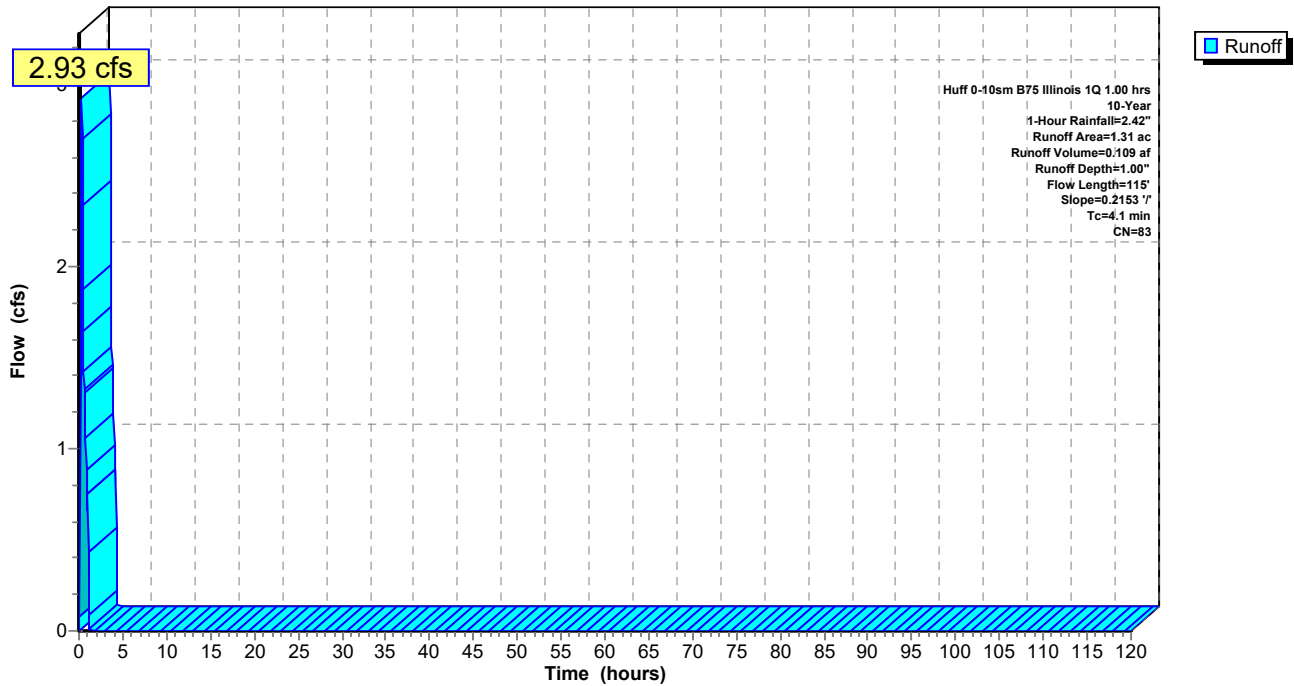
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

Area (ac)	CN	Description
0.97	80	>75% Grass cover, Good, HSG D
0.34	93	Paved roads w/open ditches, 50% imp, HSG D
1.31	83	Weighted Average
1.14		87.12% Pervious Area
0.17		12.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	100	0.2153	0.41		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	15	0.2153	3.25		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	115	Total			

**Subcatchment N-A14: Subcat N-A14**

Hydrograph



**Summary for Subcatchment N-A15: Subcat N-A15**

Runoff = 1.90 cfs @ 0.31 hrs, Volume= 0.072 af, Depth= 0.83"

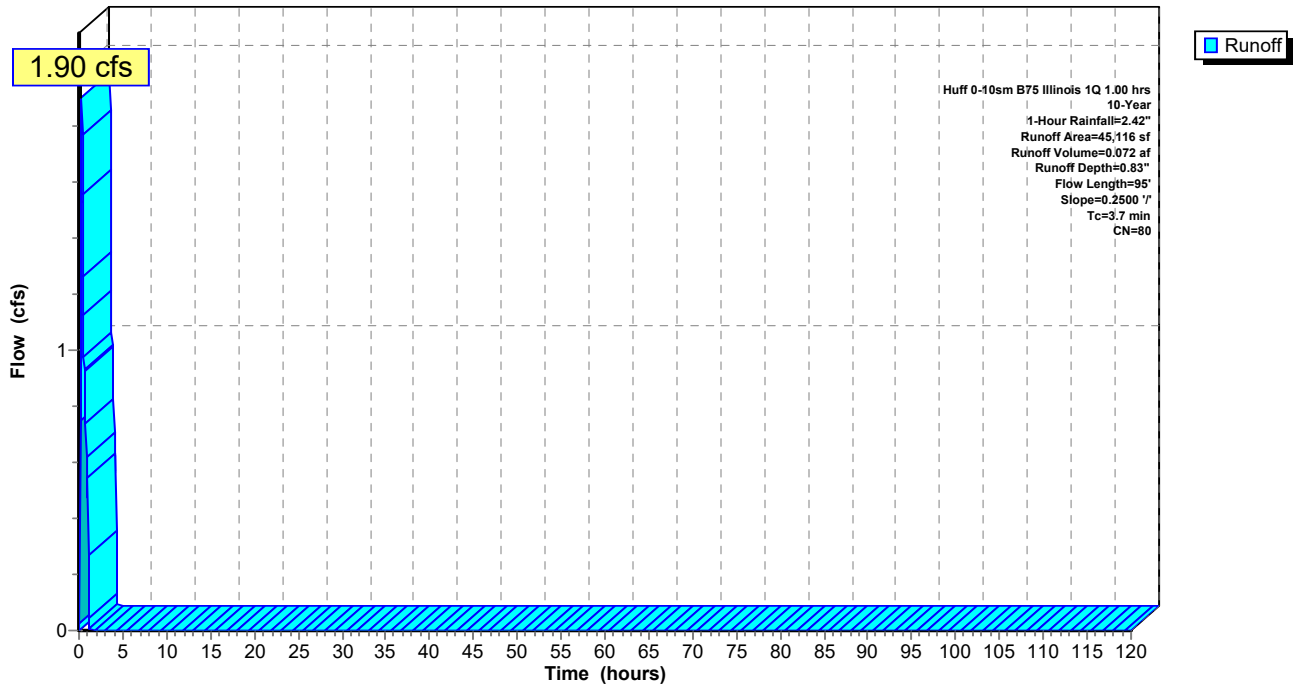
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

Area (sf)	CN	Description
45,116	80	>75% Grass cover, Good, HSG D
45,116		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	95	0.2500	0.43		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-A15: Subcat N-A15**

Hydrograph



**Summary for Subcatchment N-A16: Subcat N-A16**

Runoff = 8.46 cfs @ 0.22 hrs, Volume= 0.281 af, Depth= 1.62"

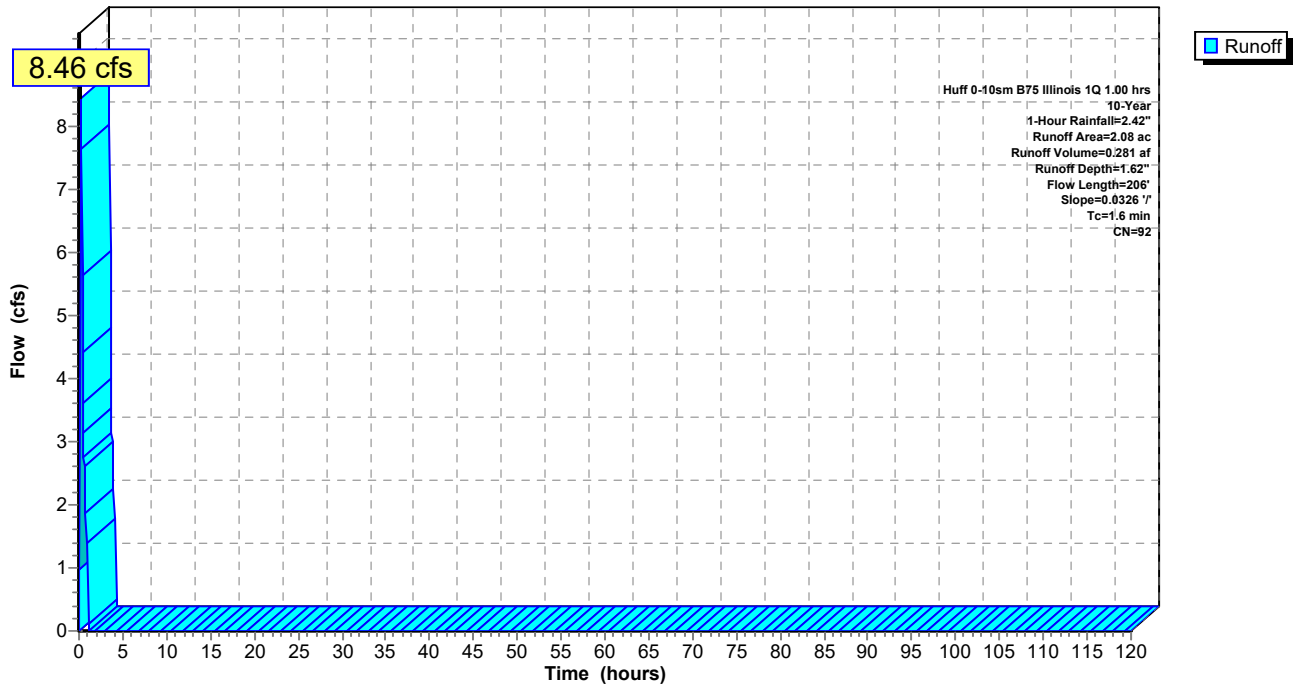
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

Area (ac)	CN	Description
0.08	80	>75% Grass cover, Good, HSG D
2.00	93	Paved roads w/open ditches, 50% imp, HSG D
2.08	92	Weighted Average
1.08		51.99% Pervious Area
1.00		48.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0326	1.56		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 2.80"
0.5	106	0.0326	3.67		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
1.6	206	Total			

**Subcatchment N-A16: Subcat N-A16**

Hydrograph



**Summary for Subcatchment N-A2: Subcat N-A2**

Runoff = 4.88 cfs @ 0.35 hrs, Volume= 0.196 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

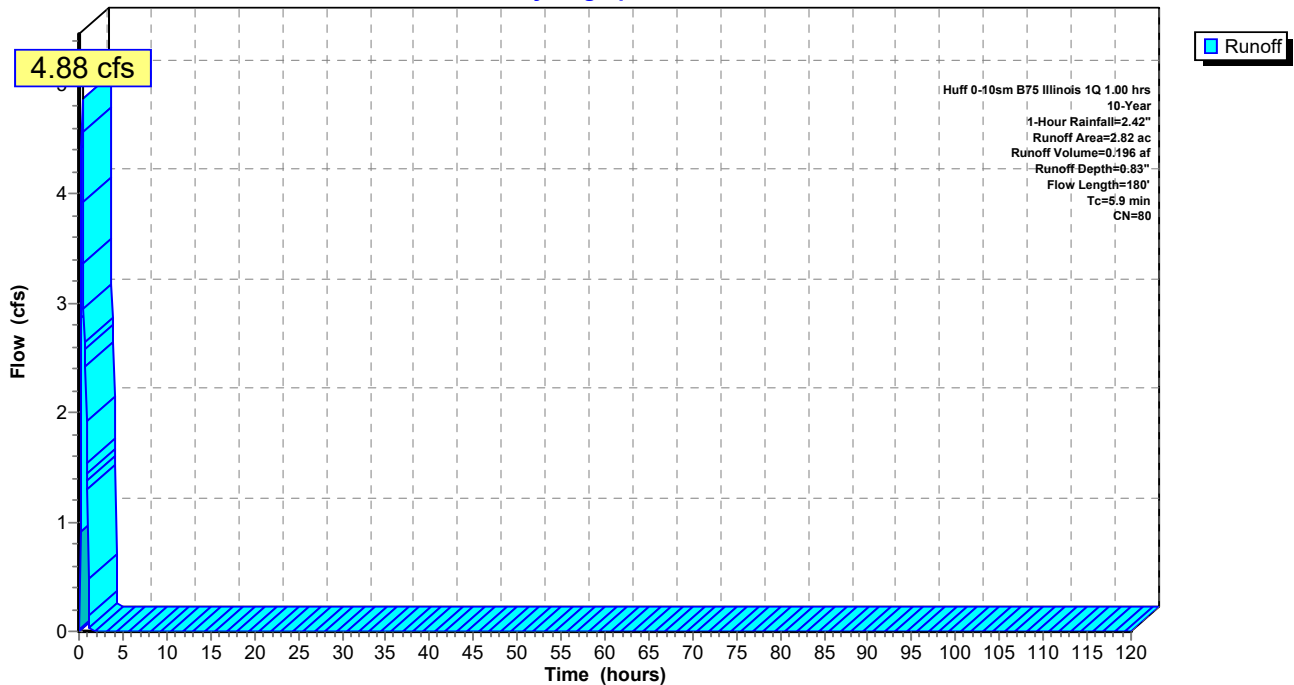
Area (ac)	CN	Description
2.82	80	>75% Grass cover, Good, HSG D
2.82		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.4	80	0.2199	3.28		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
5.9	180	Total			

**Subcatchment N-A2: Subcat N-A2**

Hydrograph



**Summary for Subcatchment N-A3: Subcat N-A3**

Runoff = 2.38 cfs @ 0.32 hrs, Volume= 0.091 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

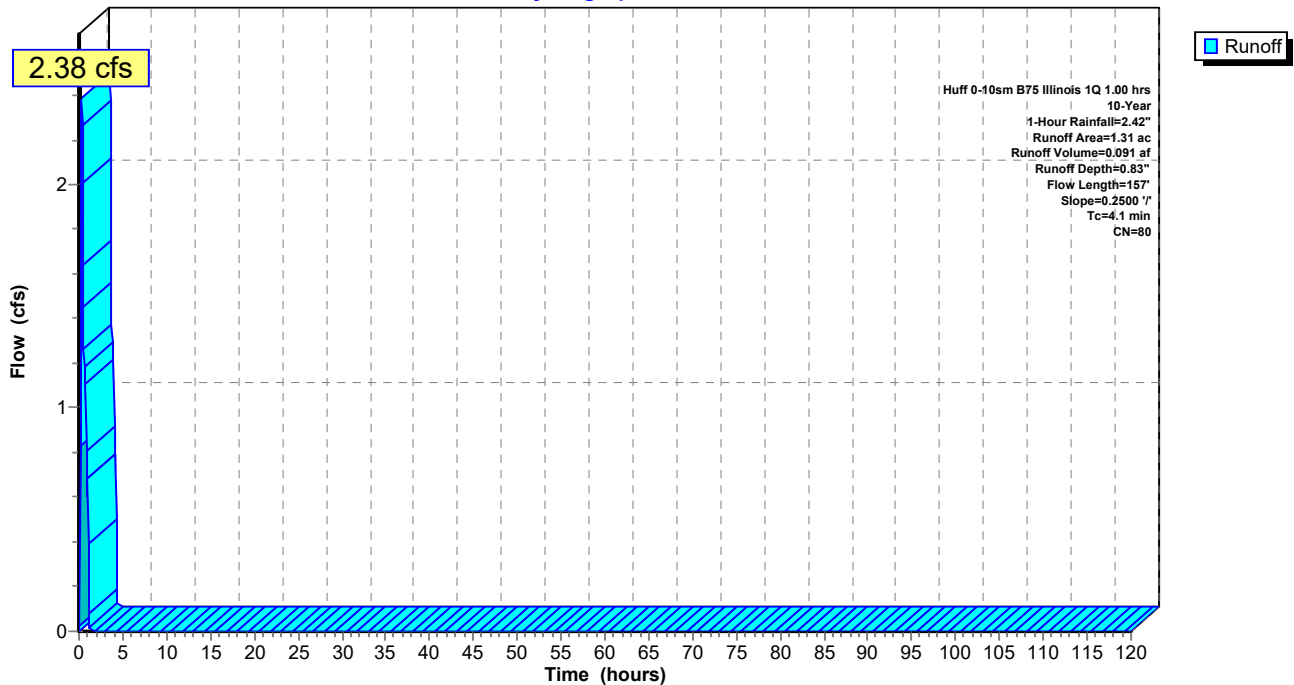
Area (ac)	CN	Description
1.31	80	>75% Grass cover, Good, HSG D
1.31		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.3	57	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	157	Total			

**Subcatchment N-A3: Subcat N-A3**

Hydrograph





**Summary for Subcatchment N-A4: Subcat N-A4**

Runoff = 11.80 cfs @ 0.36 hrs, Volume= 0.478 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

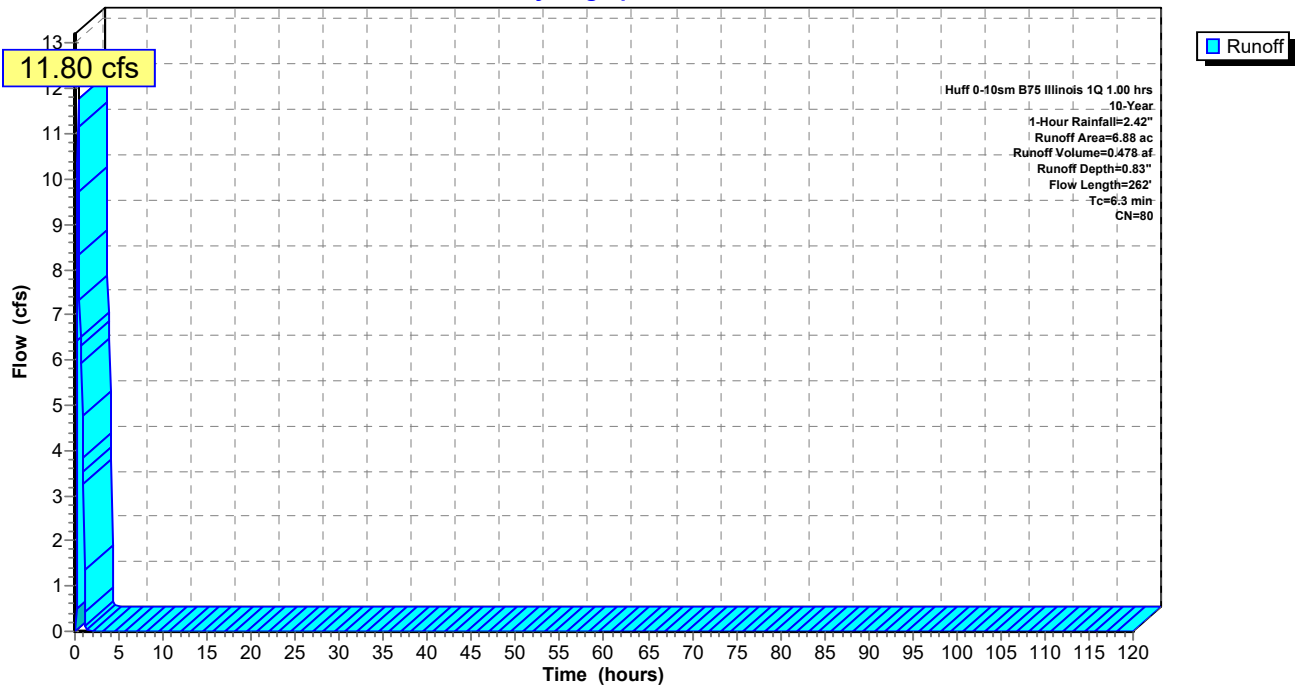
Area (ac)	CN	Description
6.88	80	>75% Grass cover, Good, HSG D
6.88		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.8	162	0.2330	3.38		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.3	262	Total			

**Subcatchment N-A4: Subcat N-A4**

Hydrograph



**Summary for Subcatchment N-A5: Subcat N-A5**

Runoff = 1.34 cfs @ 0.32 hrs, Volume= 0.051 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

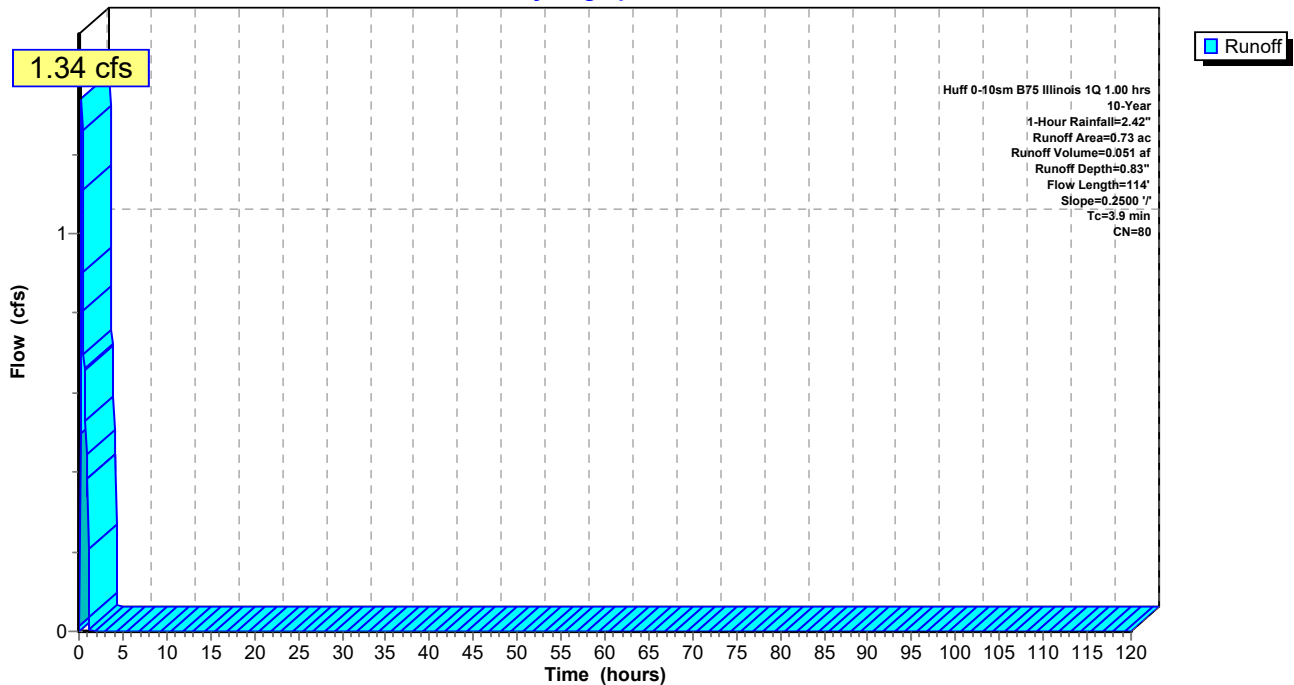
Area (ac)	CN	Description
0.73	80	>75% Grass cover, Good, HSG D
0.73		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	14	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	114	Total			

**Subcatchment N-A5: Subcat N-A5**

Hydrograph



**Summary for Subcatchment N-A6: Subcat N-A6**

Runoff = 7.55 cfs @ 0.32 hrs, Volume= 0.287 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

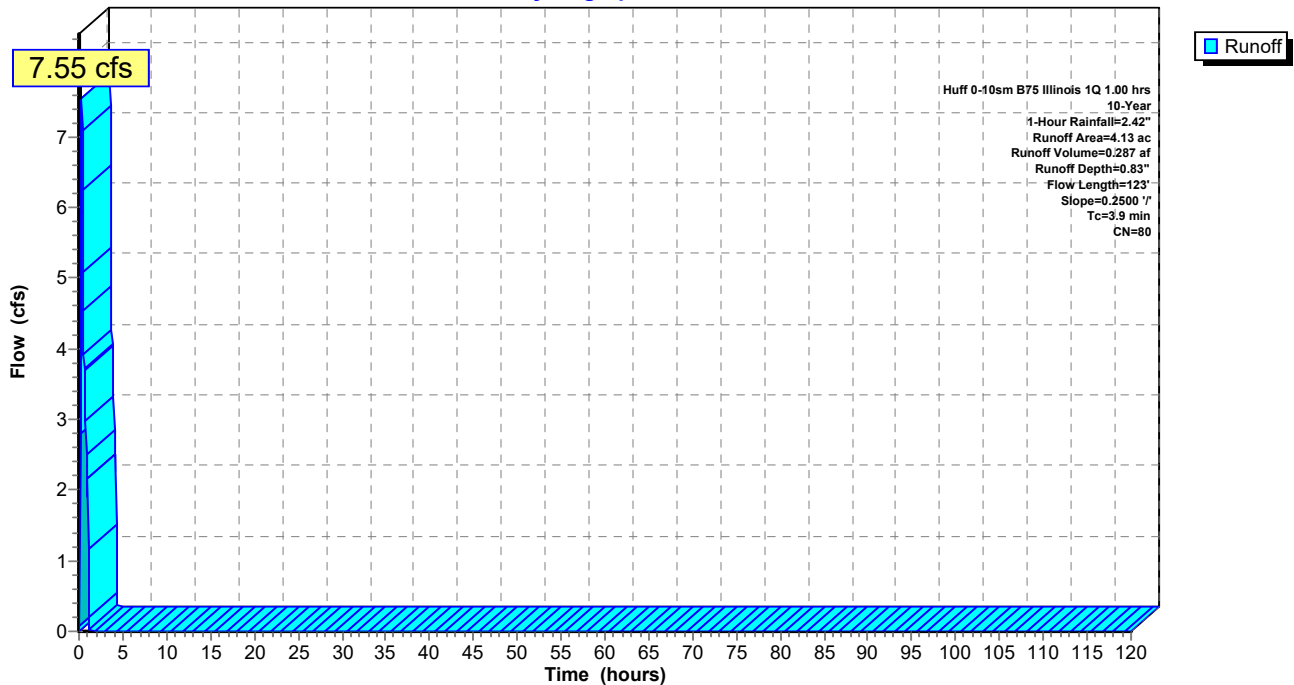
Area (ac)	CN	Description
4.13	80	>75% Grass cover, Good, HSG D
4.13		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	23	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	123	Total			

**Subcatchment N-A6: Subcat N-A6**

Hydrograph



**Summary for Subcatchment N-A7: Subcat N-A7**

Runoff = 0.80 cfs @ 0.32 hrs, Volume= 0.031 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

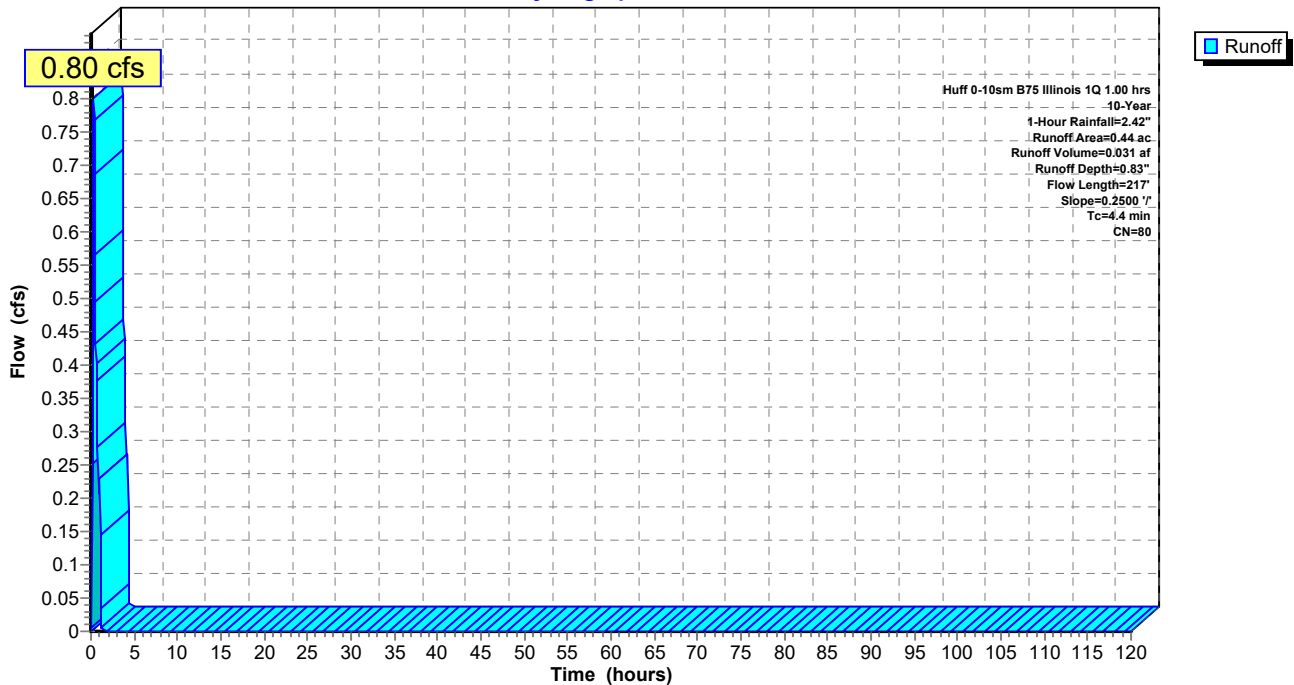
Area (ac)	CN	Description
0.44	80	>75% Grass cover, Good, HSG D
0.44		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	117	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.4	217	Total			

**Subcatchment N-A7: Subcat N-A7**

Hydrograph



**Summary for Subcatchment N-A8: Subcat N-A8**

Runoff = 6.95 cfs @ 0.32 hrs, Volume= 0.264 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

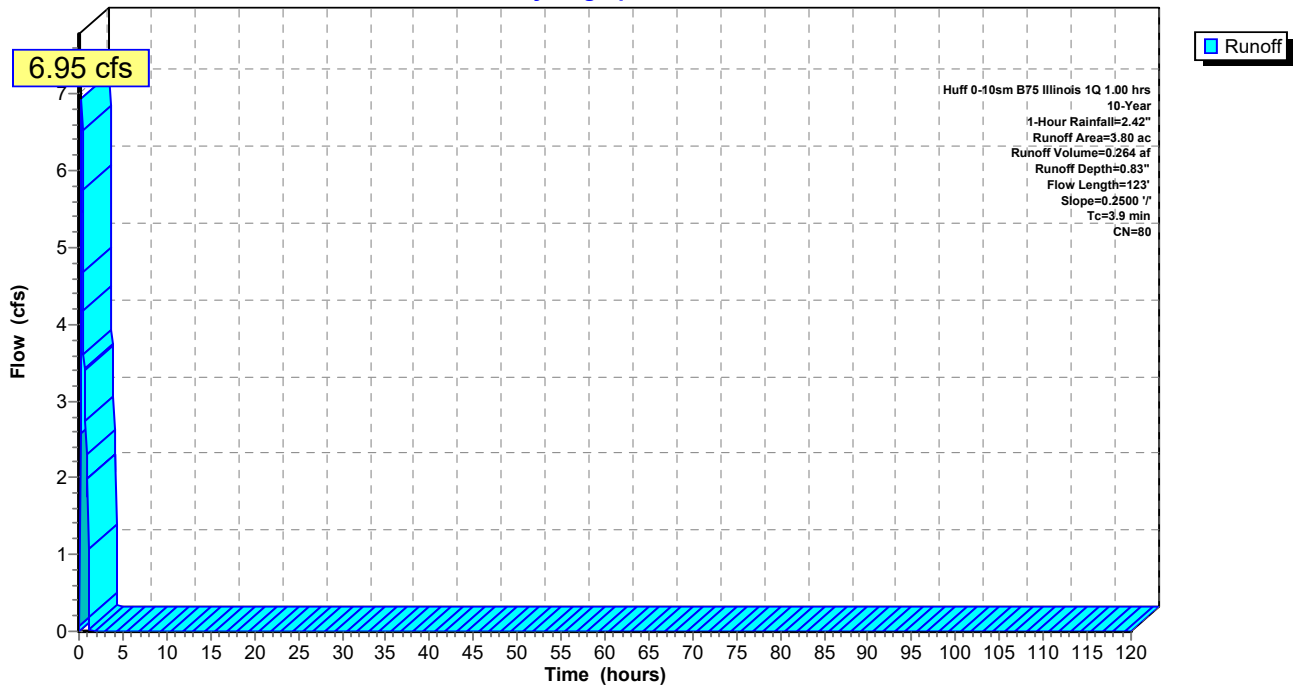
Area (ac)	CN	Description
3.80	80	>75% Grass cover, Good, HSG D
3.80		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	23	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	123	Total			

**Subcatchment N-A8: Subcat N-A8**

Hydrograph



**Summary for Subcatchment N-A9: Subcat N-A9**

Runoff = 0.33 cfs @ 0.32 hrs, Volume= 0.013 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

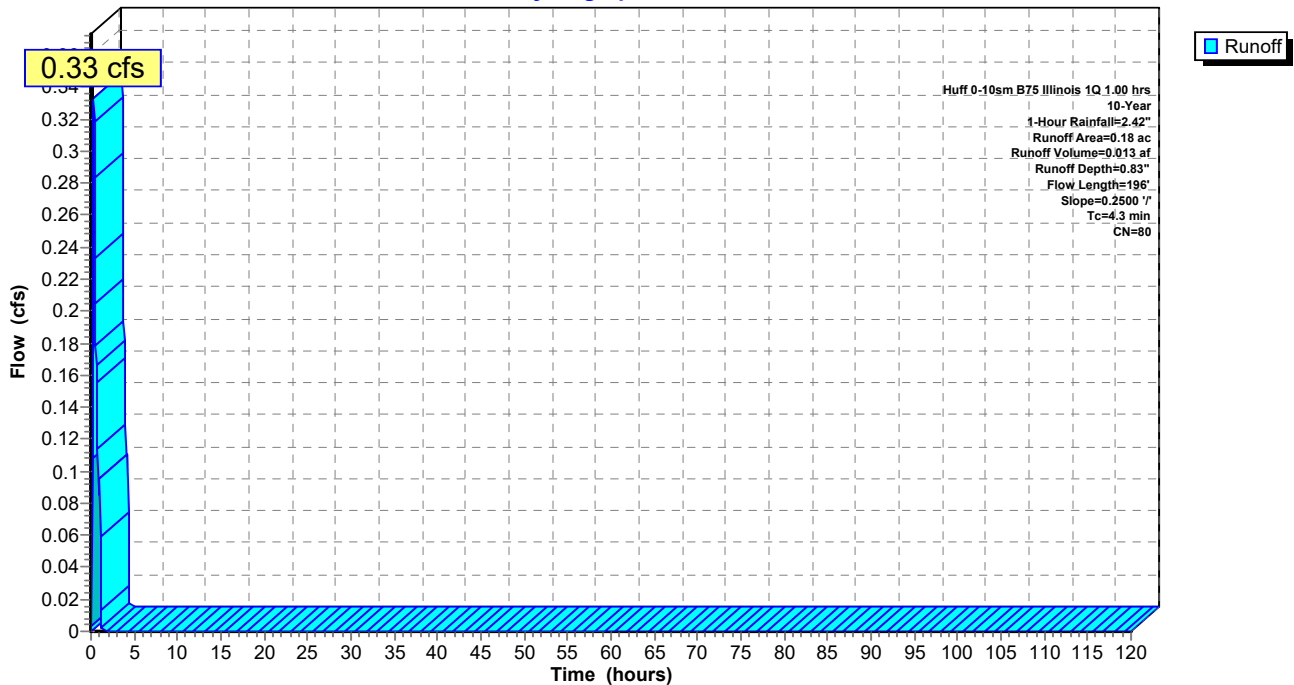
Area (ac)	CN	Description
0.18	80	>75% Grass cover, Good, HSG D
0.18		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.5	96	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.3	196	Total			

**Subcatchment N-A9: Subcat N-A9**

Hydrograph



**Summary for Subcatchment N-B1: Subcat N-B1**

Runoff = 5.44 cfs @ 0.36 hrs, Volume= 0.219 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

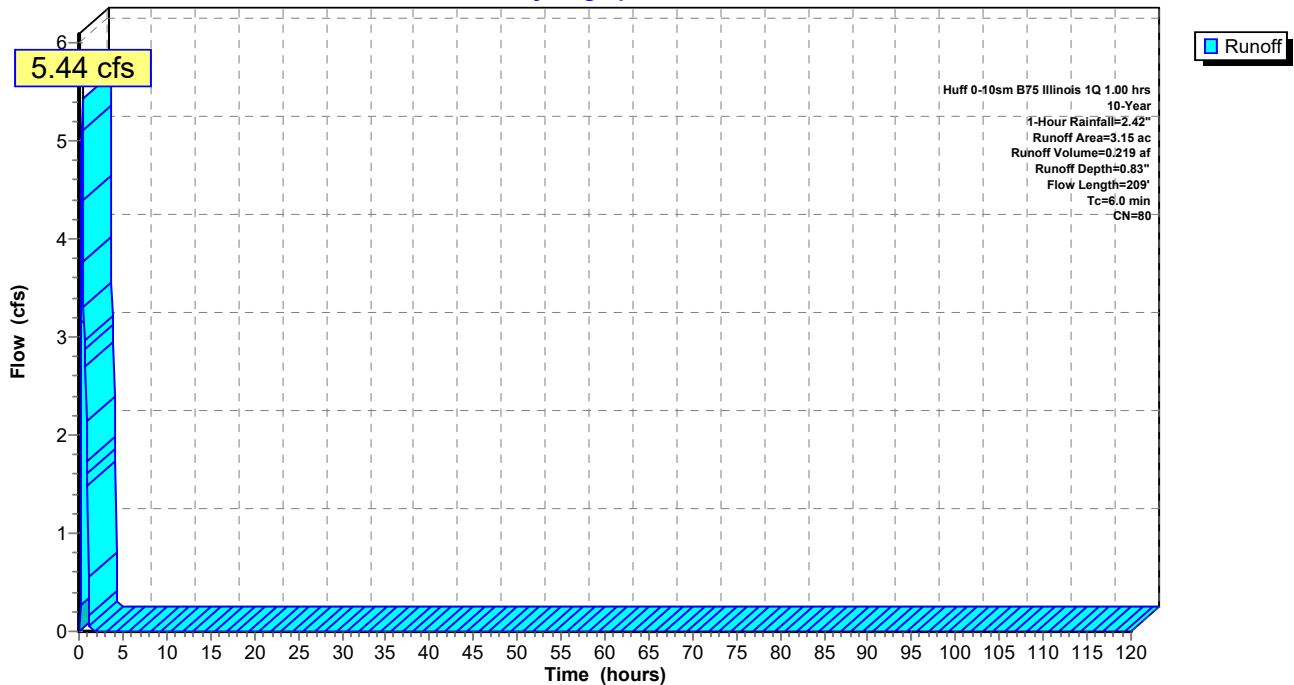
Area (ac)	CN	Description
3.15	80	>75% Grass cover, Good, HSG D
3.15		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.5	109	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.0	209	Total			

**Subcatchment N-B1: Subcat N-B1**

Hydrograph



**Summary for Subcatchment N-B10: Subcat N-B10**

Runoff = 3.92 cfs @ 0.30 hrs, Volume= 0.143 af, Depth= 1.12"

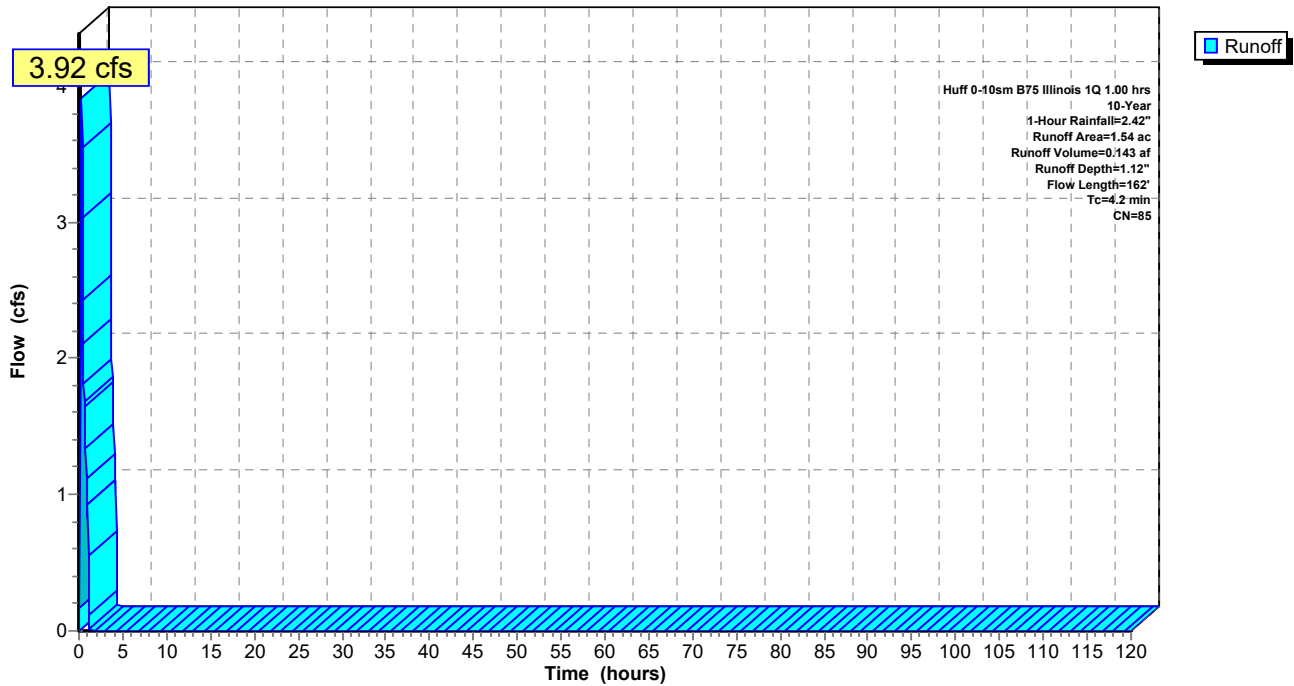
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

Area (ac)	CN	Description
0.91	80	>75% Grass cover, Good, HSG D
0.63	93	Paved roads w/open ditches, 50% imp, HSG D
1.54	85	Weighted Average
1.22		79.55% Pervious Area
0.31		20.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.4	62	0.1195	2.42		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.2	162	Total			

**Subcatchment N-B10: Subcat N-B10**

Hydrograph





**Summary for Subcatchment N-B11: Subcat N-B11**

Runoff = 2.31 cfs @ 0.32 hrs, Volume= 0.088 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

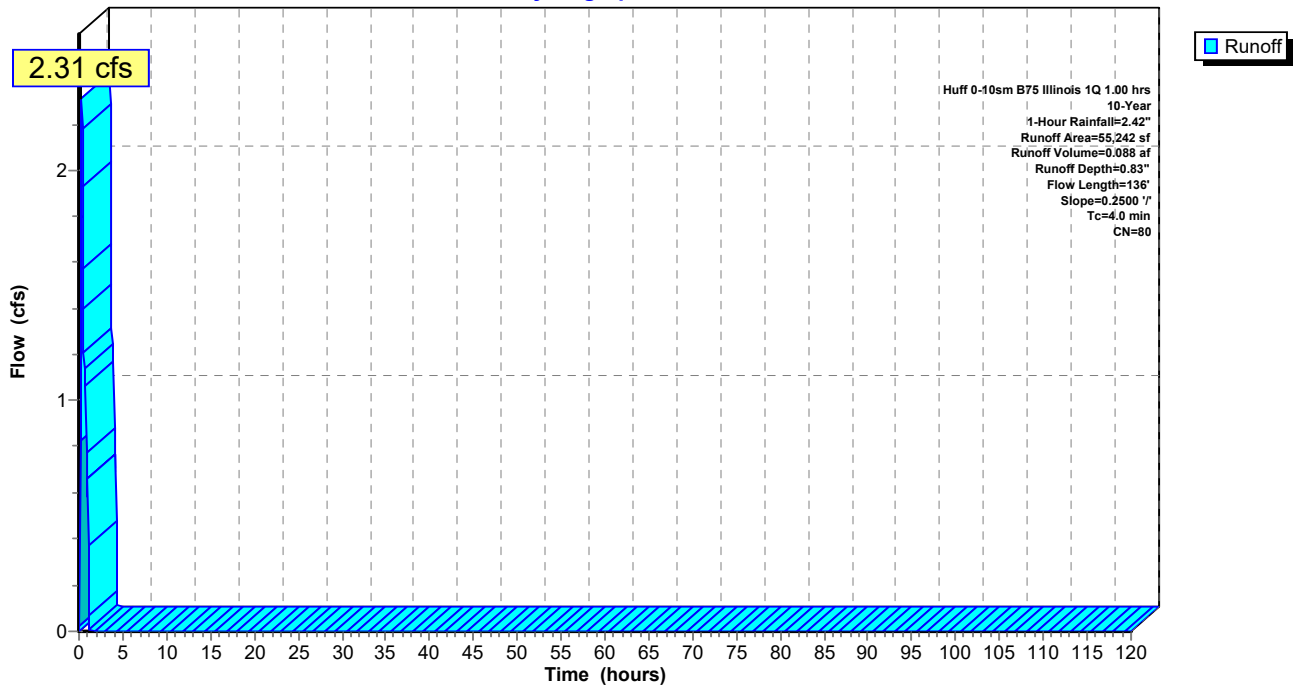
Area (sf)	CN	Description
55,242	80	>75% Grass cover, Good, HSG D
55,242		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	36	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	136	Total			

**Subcatchment N-B11: Subcat N-B11**

Hydrograph



**Summary for Subcatchment N-B12: Subcat N-B12**

Runoff = 3.44 cfs @ 0.33 hrs, Volume= 0.135 af, Depth= 0.94"

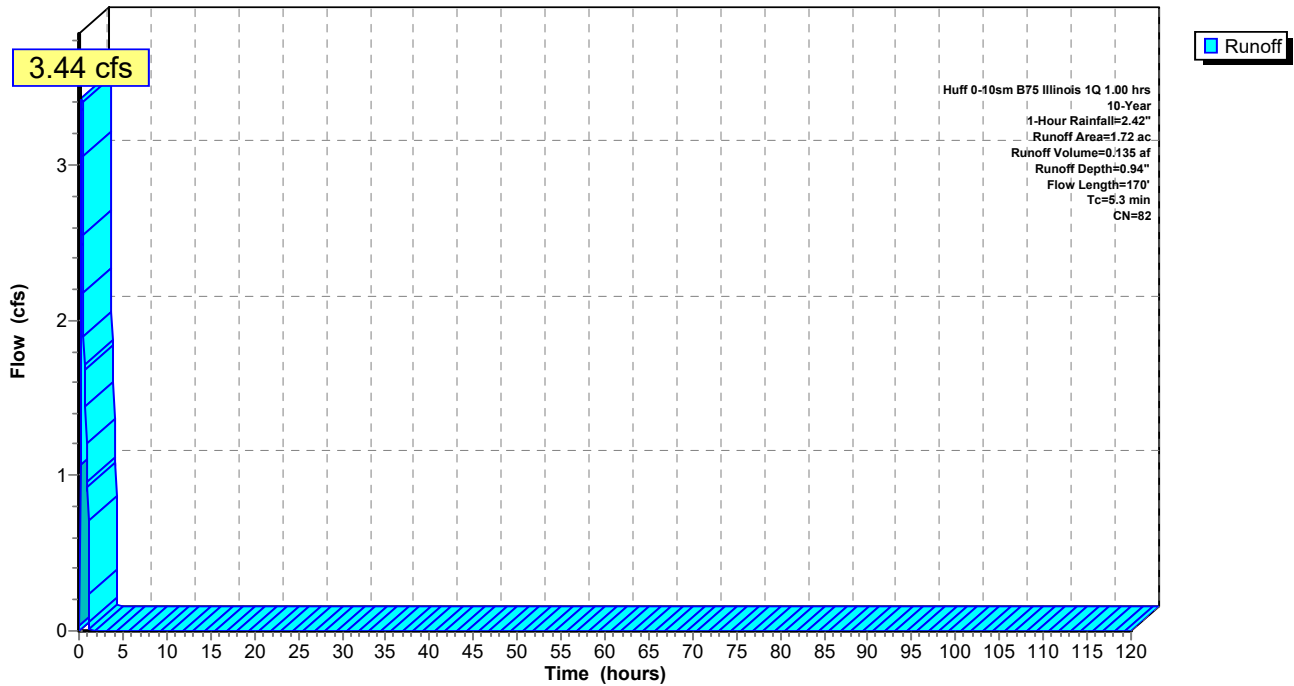
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

Area (ac)	CN	Description
1.45	80	>75% Grass cover, Good, HSG D
0.27	93	Paved roads w/open ditches, 50% imp, HSG D
1.72	82	Weighted Average
1.59		92.15% Pervious Area
0.14		7.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	100	0.1588	0.36		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.7	70	0.0608	1.73		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
5.3	170	Total			

**Subcatchment N-B12: Subcat N-B12**

Hydrograph



**Summary for Subcatchment N-B13: Subcat N-B13**

Runoff = 3.83 cfs @ 0.26 hrs, Volume= 0.140 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

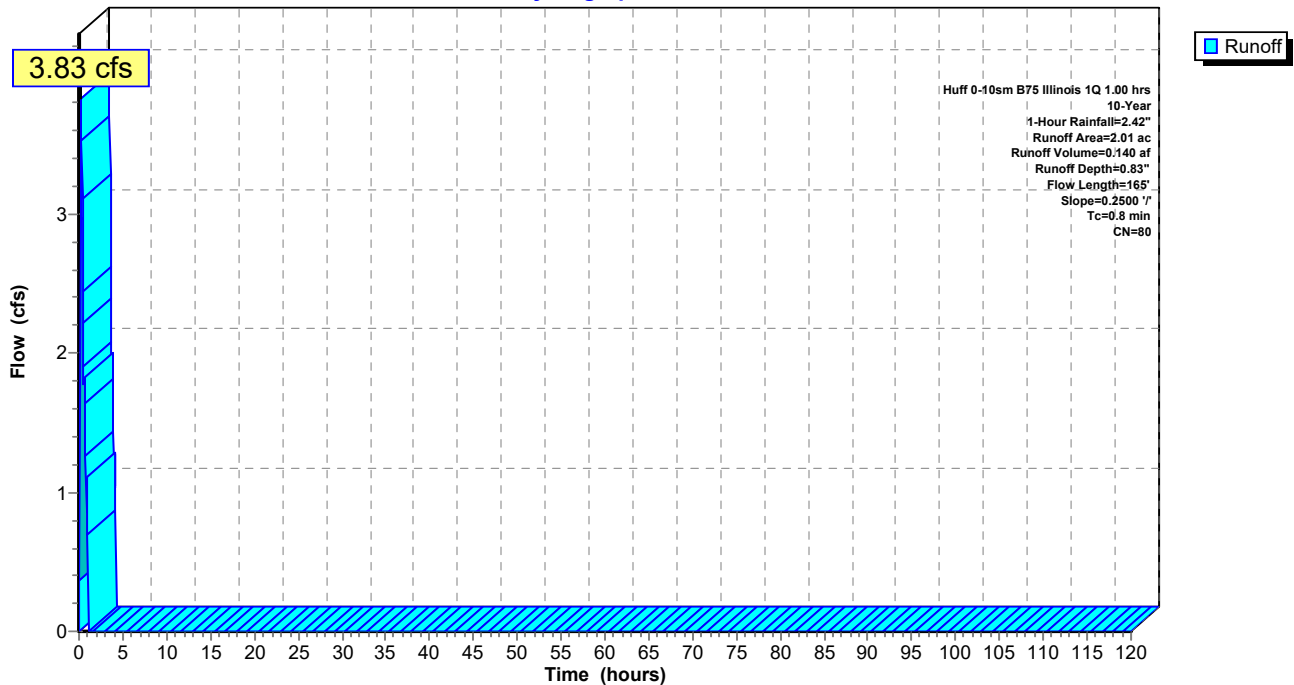
Area (ac)	CN	Description
2.01	80	>75% Grass cover, Good, HSG D
2.01		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.2500	3.53		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 2.80"
0.3	65	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.8	165	Total			

**Subcatchment N-B13: Subcat N-B13**

Hydrograph



**Summary for Subcatchment N-B14: Subcat N-B14**

Runoff = 2.02 cfs @ 0.24 hrs, Volume= 0.069 af, Depth= 1.24"

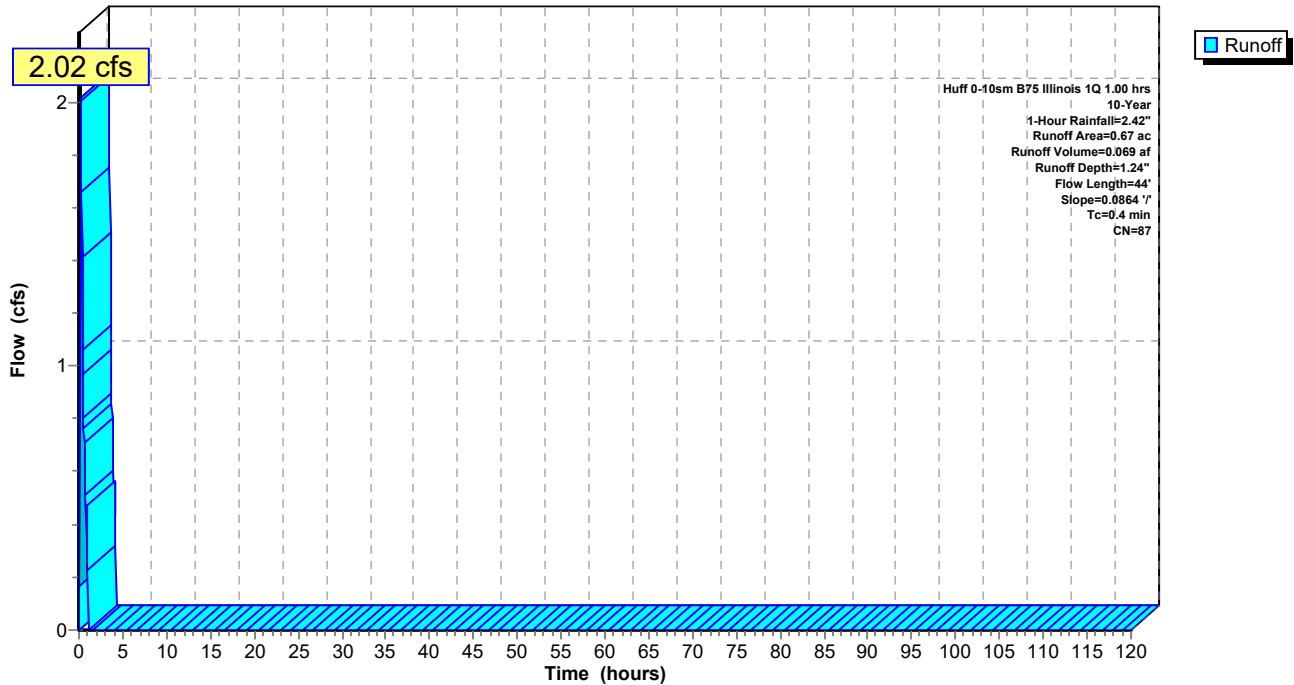
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

Area (ac)	CN	Description
0.29	80	>75% Grass cover, Good, HSG D
0.38	93	Paved roads w/open ditches, 50% imp, HSG D
0.67	87	Weighted Average
0.48		71.64% Pervious Area
0.19		28.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	44	0.0864	1.96		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment N-B14: Subcat N-B14**

Hydrograph



**Summary for Subcatchment N-B15: Subcat N-B15**

Runoff = 0.08 cfs @ 0.27 hrs, Volume= 0.003 af, Depth= 0.83"

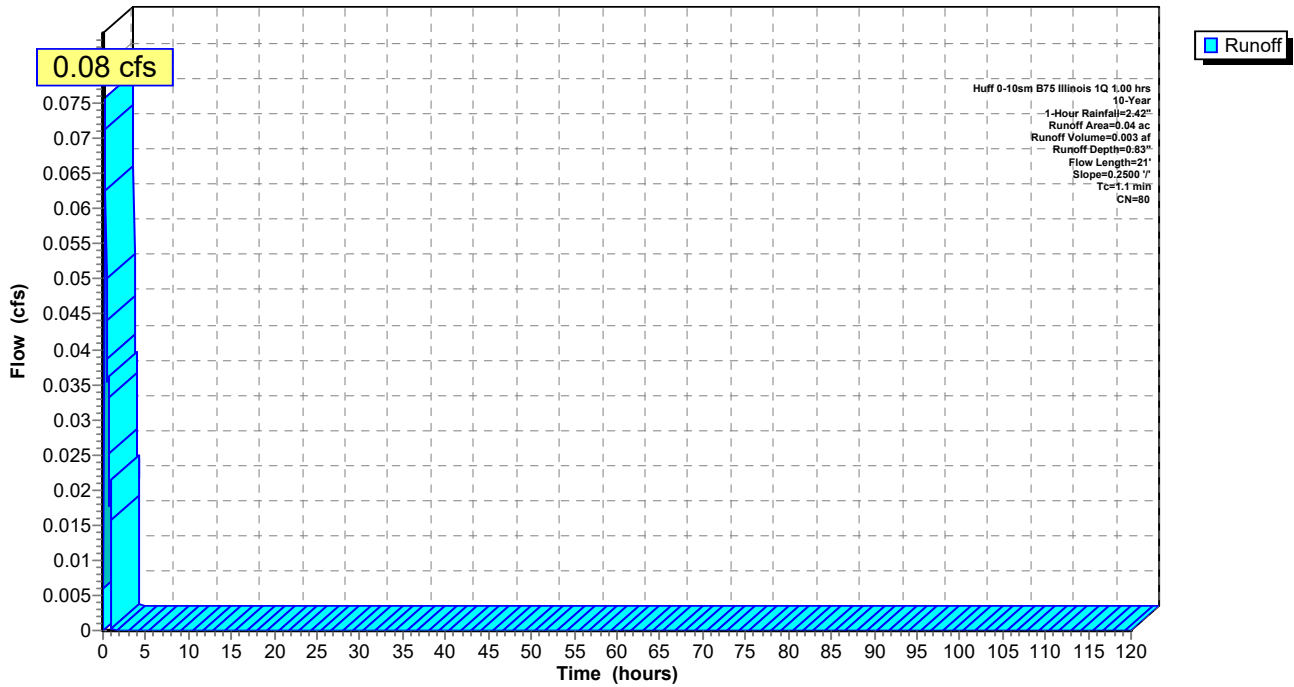
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

Area (ac)	CN	Description
0.04	80	>75% Grass cover, Good, HSG D
0.04		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	21	0.2500	0.32		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-B15: Subcat N-B15**

Hydrograph



**Summary for Subcatchment N-B16: Subcat N-B16**

Runoff = 0.27 cfs @ 0.24 hrs, Volume= 0.009 af, Depth= 1.12"

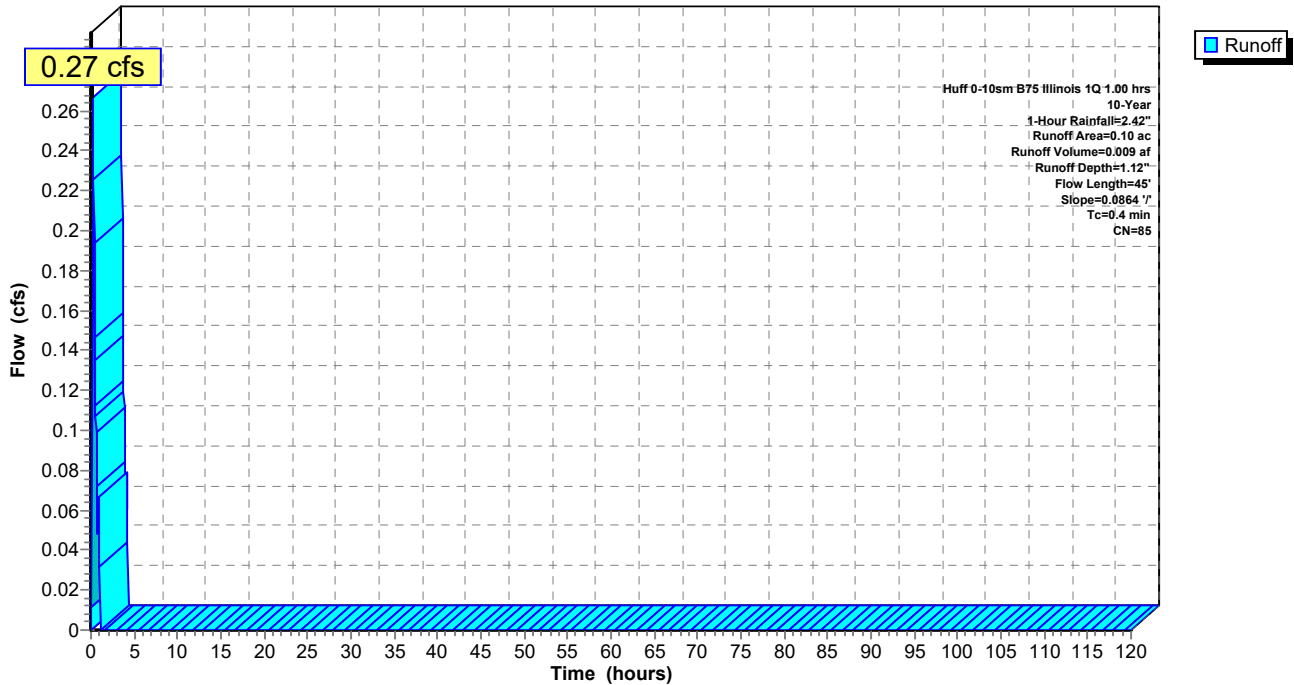
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

Area (ac)	CN	Description
0.06	80	>75% Grass cover, Good, HSG D
0.04	93	Paved roads w/open ditches, 50% imp, HSG D
0.10	85	Weighted Average
0.08		80.00% Pervious Area
0.02		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	45	0.0864	1.97		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment N-B16: Subcat N-B16**

Hydrograph



**Summary for Subcatchment N-B2: Subcat N-B2**

Runoff = 7.72 cfs @ 0.36 hrs, Volume= 0.312 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

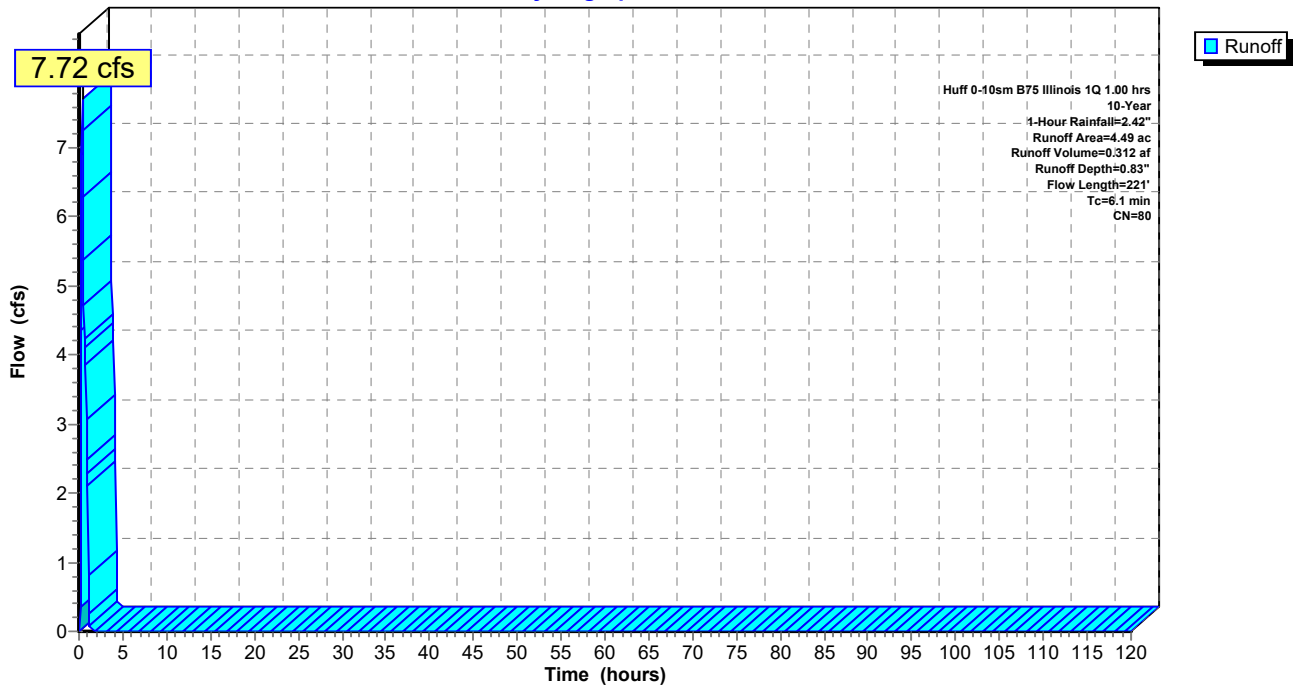
Area (ac)	CN	Description
4.49	80	>75% Grass cover, Good, HSG D
4.49		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	121	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.1	221	Total			

**Subcatchment N-B2: Subcat N-B2**

Hydrograph



**Summary for Subcatchment N-B3: Subcat N-B3**

Runoff = 6.26 cfs @ 0.32 hrs, Volume= 0.238 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

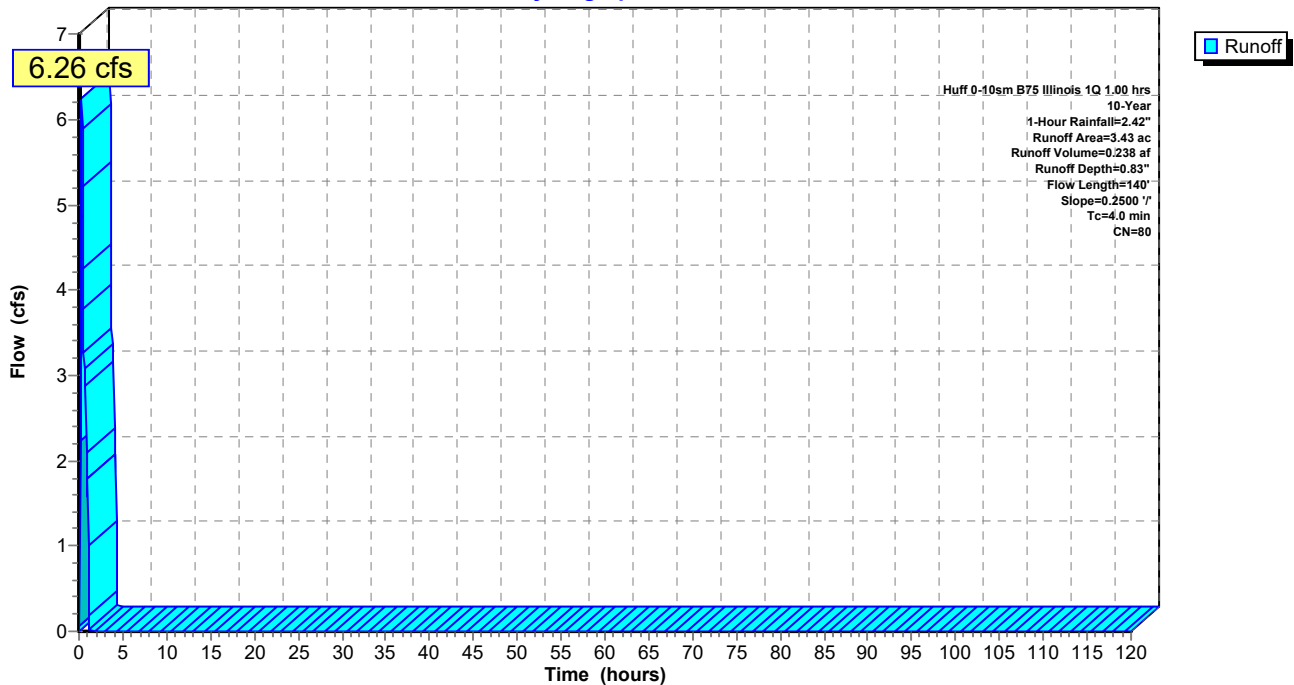
Area (ac)	CN	Description
3.43	80	>75% Grass cover, Good, HSG D
3.43		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	40	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	140	Total			

**Subcatchment N-B3: Subcat N-B3**

Hydrograph





**Summary for Subcatchment N-B4: Subcat N-B4**

Runoff = 6.94 cfs @ 0.32 hrs, Volume= 0.264 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

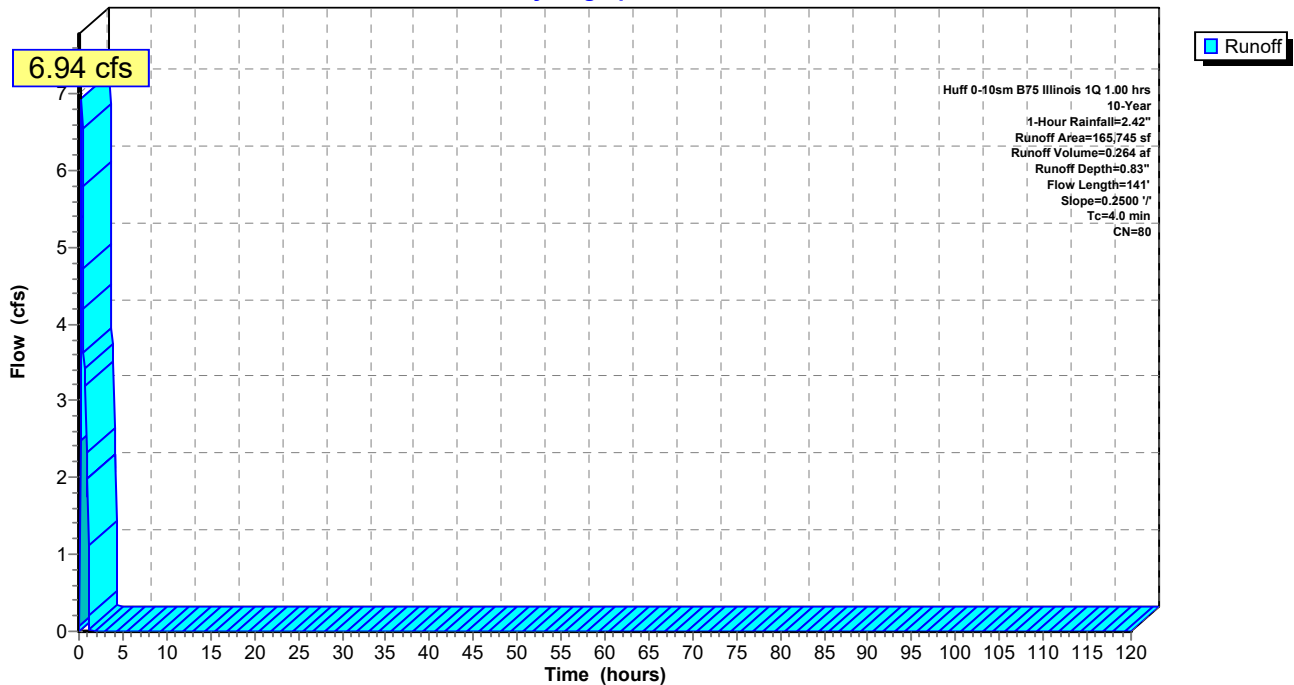
Area (sf)	CN	Description
165,745	80	>75% Grass cover, Good, HSG D
165,745		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	41	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	141	Total			

**Subcatchment N-B4: Subcat N-B4**

Hydrograph



**Summary for Subcatchment N-B5: Subcat N-B5**

Runoff = 8.21 cfs @ 0.32 hrs, Volume= 0.313 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

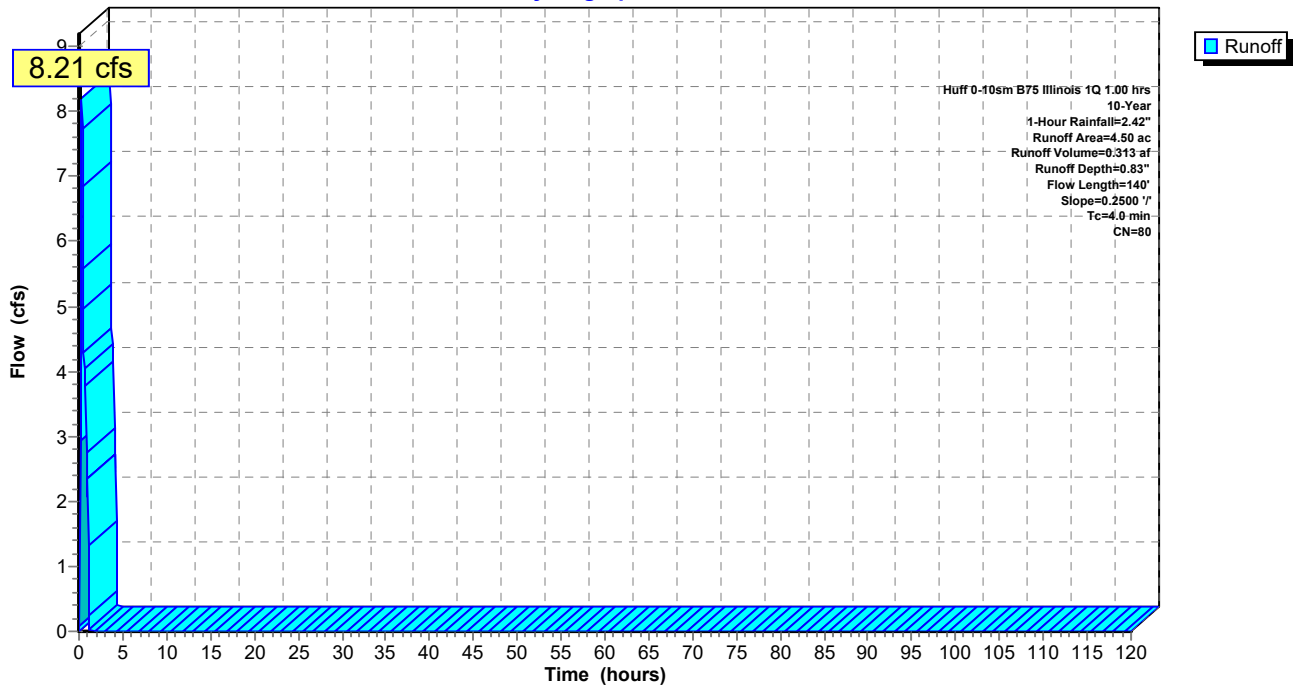
Area (ac)	CN	Description
4.50	80	>75% Grass cover, Good, HSG D
4.50		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	40	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	140	Total			

**Subcatchment N-B5: Subcat N-B5**

Hydrograph



**Summary for Subcatchment N-B6: Subcat N-B6**

Runoff = 7.83 cfs @ 0.32 hrs, Volume= 0.298 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

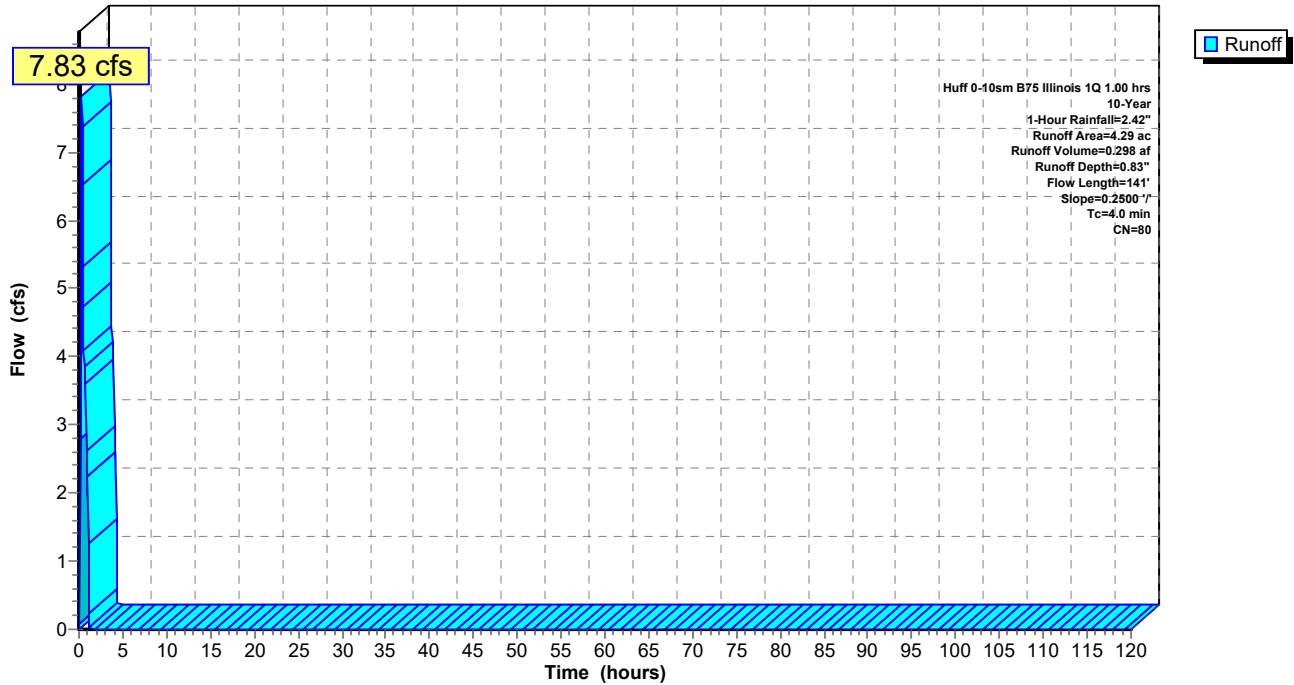
Area (ac)	CN	Description
4.29	80	>75% Grass cover, Good, HSG D
4.29		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	41	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	141	Total			

**Subcatchment N-B6: Subcat N-B6**

Hydrograph



**Summary for Subcatchment N-B7: Subcat N-B7**

Runoff = 7.23 cfs @ 0.32 hrs, Volume= 0.275 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

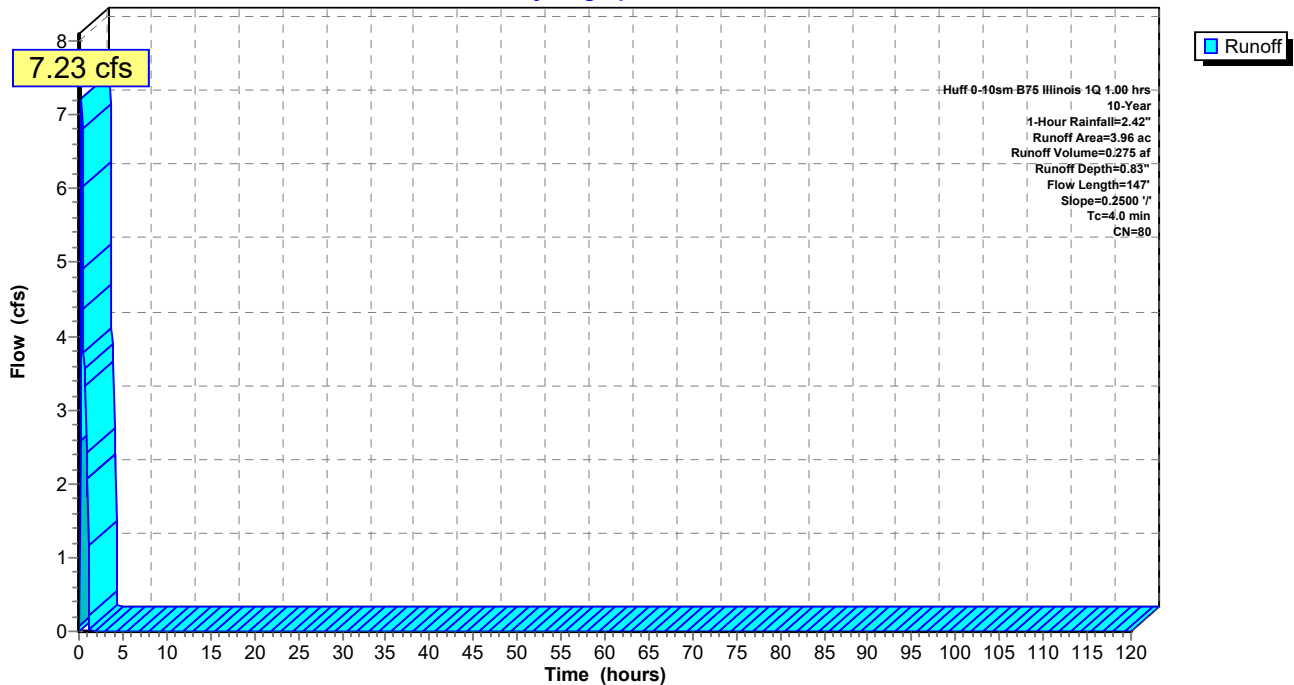
Area (ac)	CN	Description
3.96	80	>75% Grass cover, Good, HSG D
3.96		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	47	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	147	Total			

**Subcatchment N-B7: Subcat N-B7**

Hydrograph



**Summary for Subcatchment N-B8: Subcat N-B8**

Runoff = 6.43 cfs @ 0.32 hrs, Volume= 0.245 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

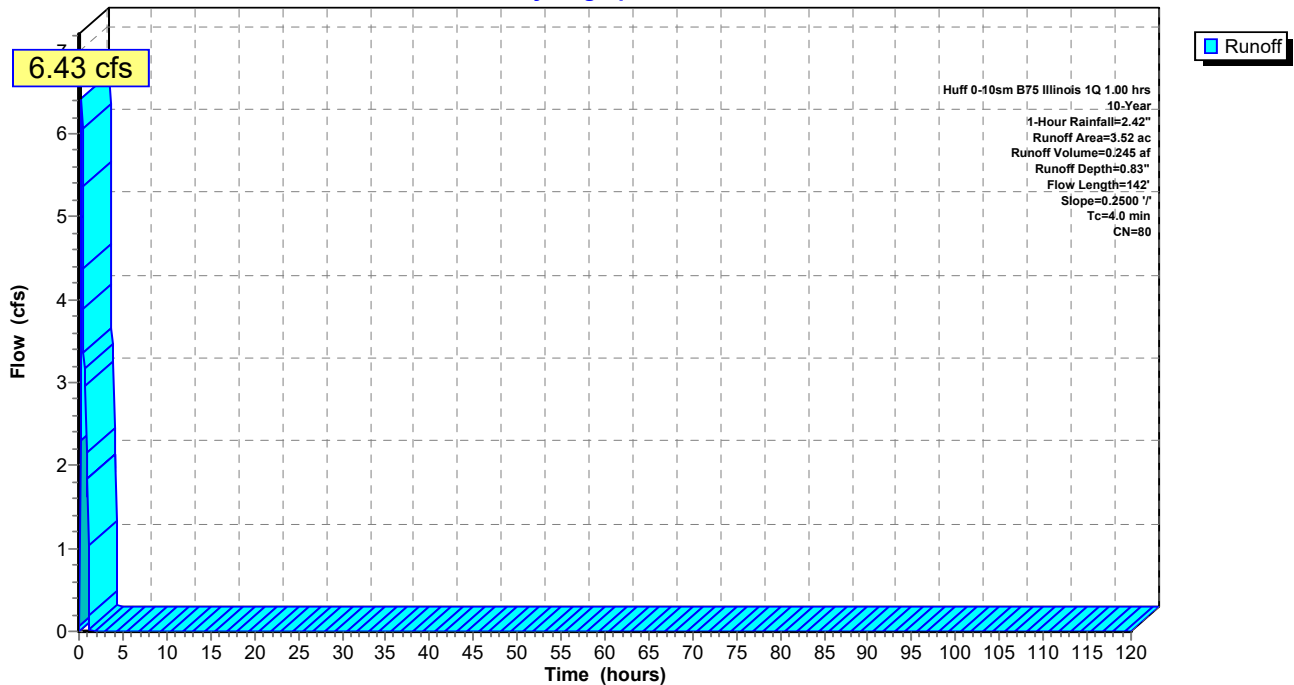
Area (ac)	CN	Description
3.52	80	>75% Grass cover, Good, HSG D
3.52		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	42	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	142	Total			

**Subcatchment N-B8: Subcat N-B8**

Hydrograph



**Summary for Subcatchment N-B9: Subcat N-B9**

Runoff = 2.15 cfs @ 0.31 hrs, Volume= 0.081 af, Depth= 0.83"

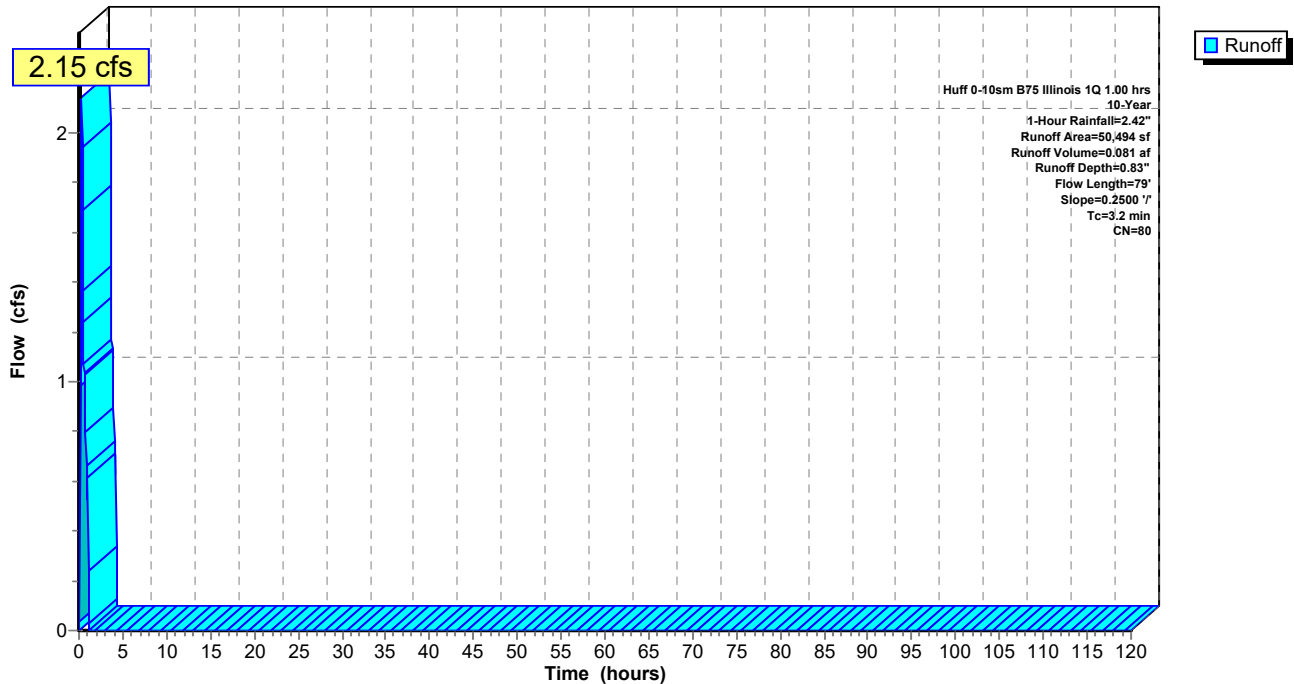
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

Area (sf)	CN	Description
50,494	80	>75% Grass cover, Good, HSG D
50,494		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	79	0.2500	0.42		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-B9: Subcat N-B9**

Hydrograph



**Summary for Subcatchment N-C1: Subcat N-C1**

Runoff = 11.98 cfs @ 0.36 hrs, Volume= 0.485 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

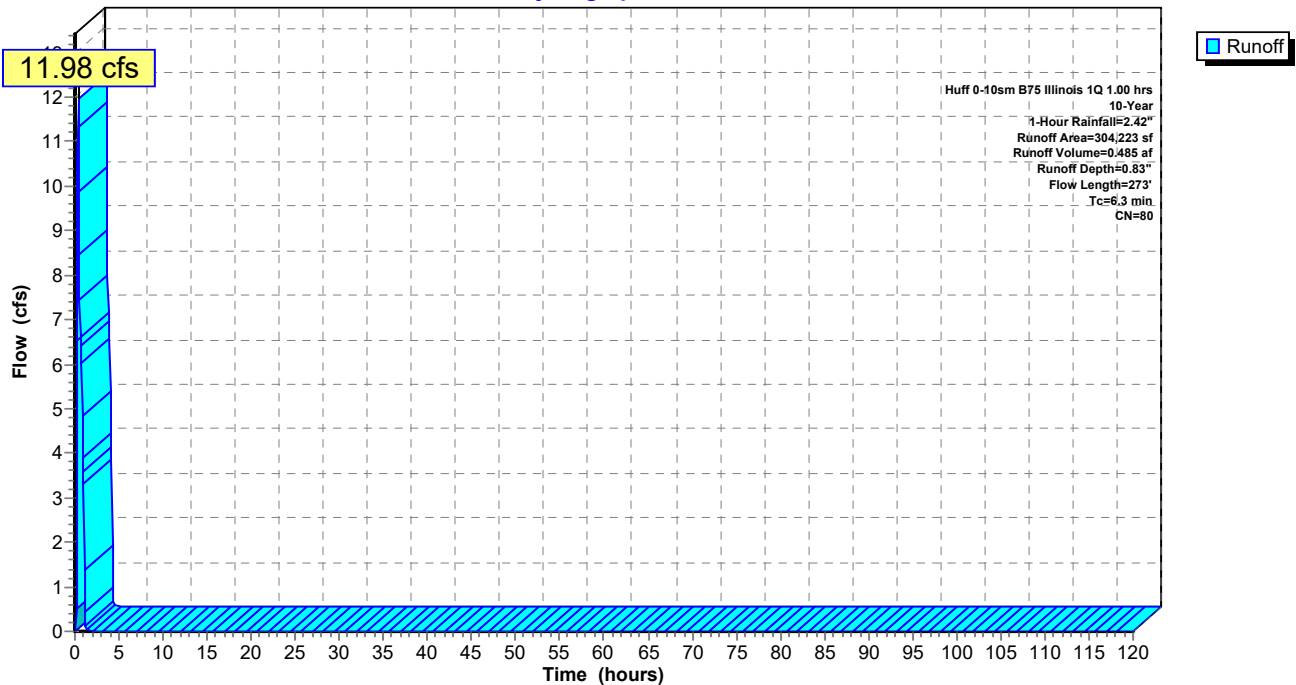
Area (sf)	CN	Description
304,223	80	>75% Grass cover, Good, HSG D
304,223		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.8	173	0.2418	3.44		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.3	273	Total			

**Subcatchment N-C1: Subcat N-C1**

Hydrograph



**Summary for Subcatchment N-C2: Subcat N-C2**

Runoff = 7.67 cfs @ 0.32 hrs, Volume= 0.292 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

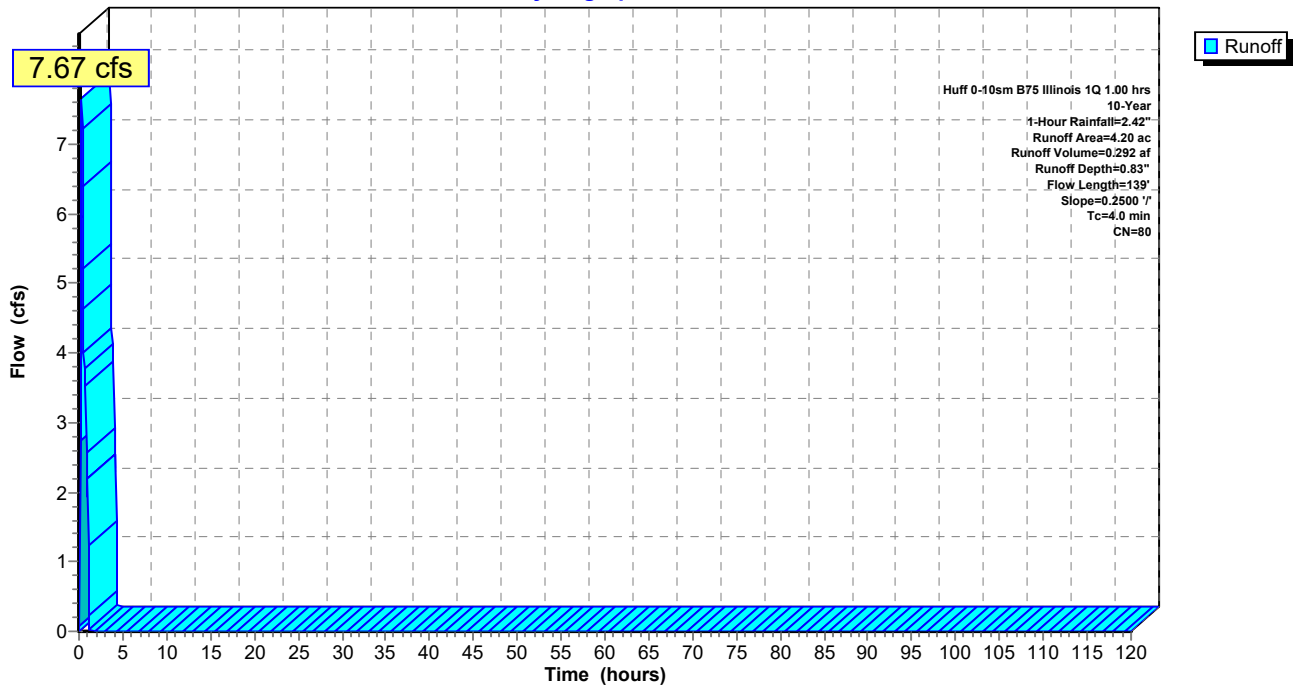
Area (ac)	CN	Description
4.20	80	>75% Grass cover, Good, HSG D
4.20		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	39	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	139	Total			

**Subcatchment N-C2: Subcat N-C2**

Hydrograph





**Summary for Subcatchment N-C3: Subcat N-C3**

Runoff = 7.70 cfs @ 0.32 hrs, Volume= 0.293 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

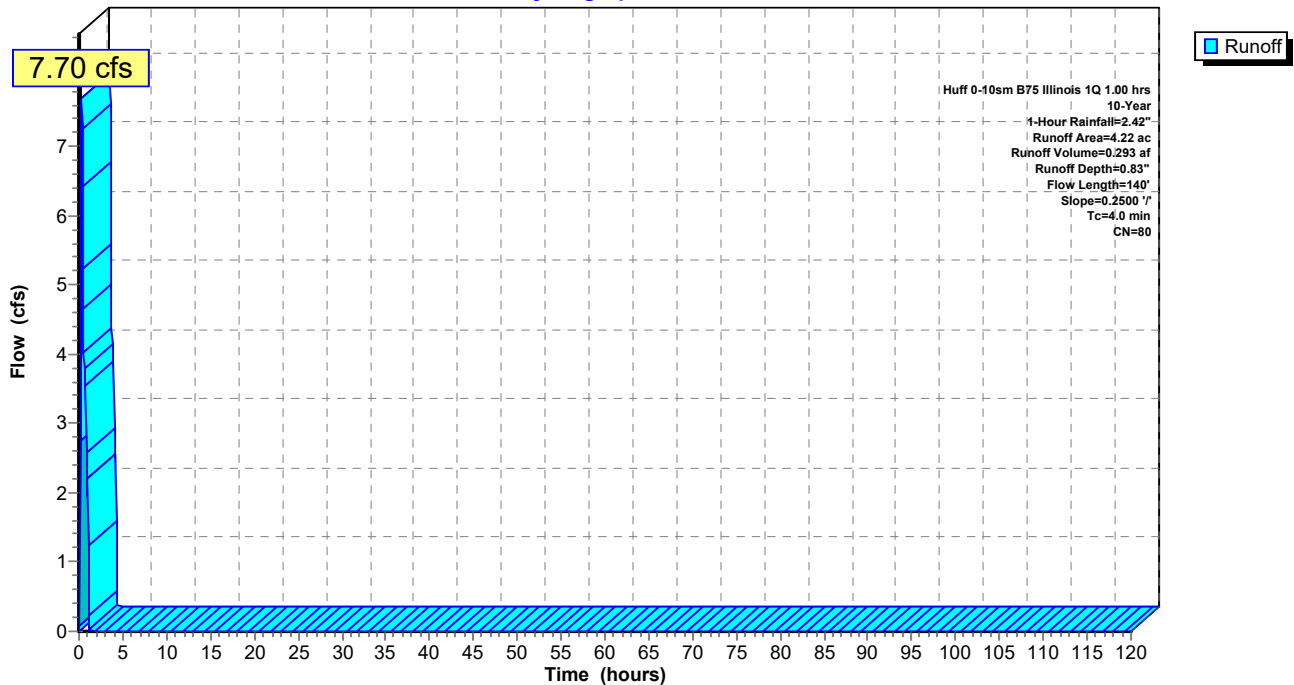
Area (ac)	CN	Description
4.22	80	>75% Grass cover, Good, HSG D
4.22		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	40	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	140	Total			

**Subcatchment N-C3: Subcat N-C3**

Hydrograph



**Summary for Subcatchment N-C4: Subcat N-C4**

Runoff = 6.42 cfs @ 0.32 hrs, Volume= 0.244 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

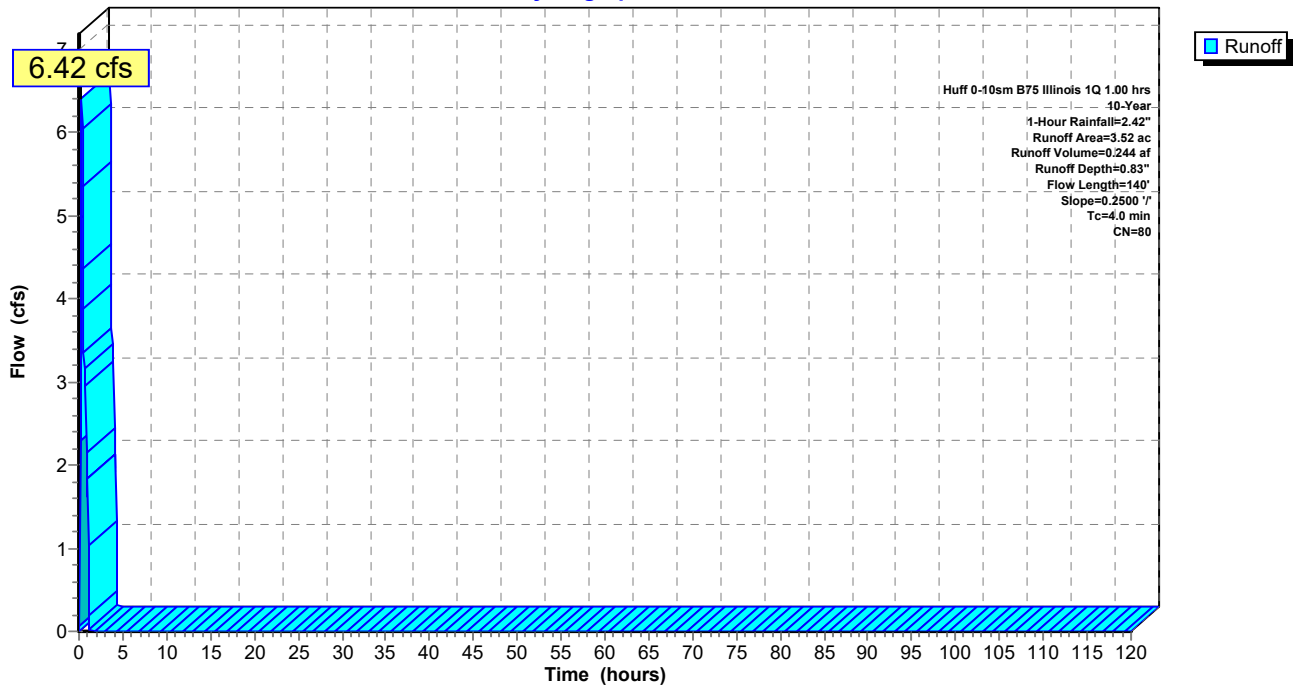
Area (ac)	CN	Description
3.52	80	>75% Grass cover, Good, HSG D
3.52		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	40	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	140	Total			

**Subcatchment N-C4: Subcat N-C4**

Hydrograph



**Summary for Subcatchment N-C5: Subcat N-C5**

Runoff = 1.36 cfs @ 0.32 hrs, Volume= 0.052 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

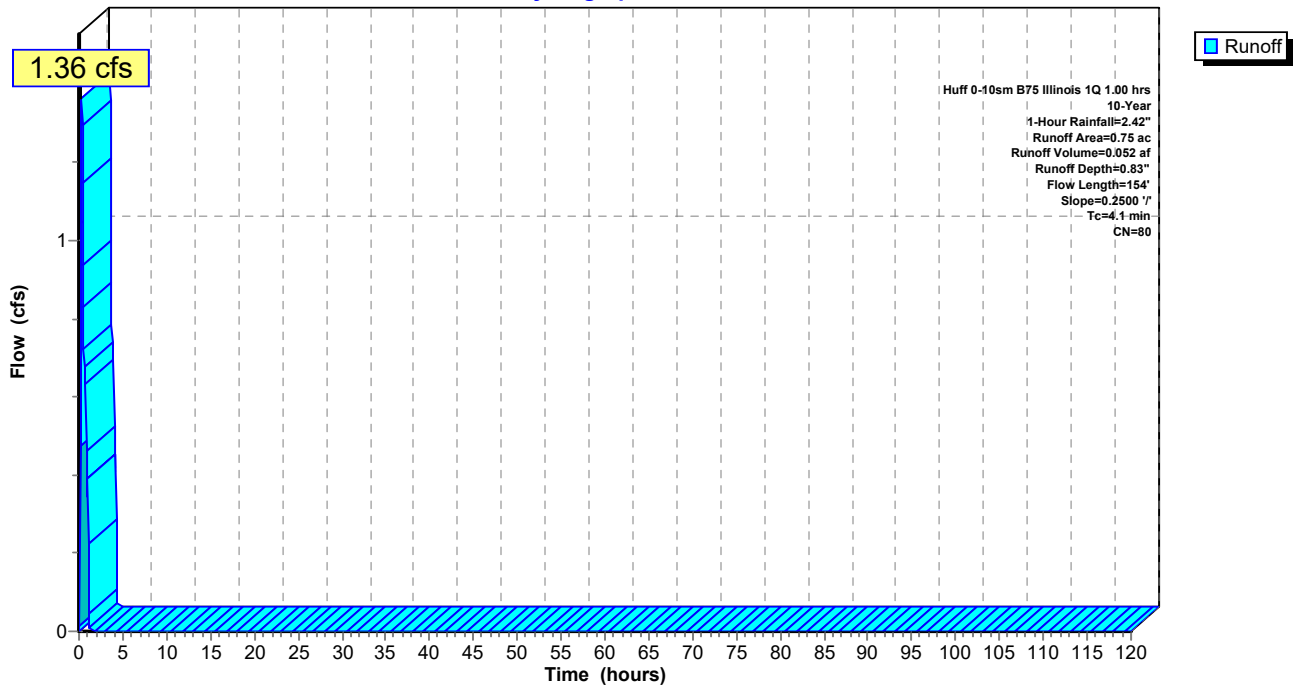
Area (ac)	CN	Description
0.75	80	>75% Grass cover, Good, HSG D
0.75		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.3	54	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	154	Total			

**Subcatchment N-C5: Subcat N-C5**

Hydrograph



**Summary for Subcatchment N-C6: Subcat N-C6**

Runoff = 1.01 cfs @ 0.66 hrs, Volume= 0.061 af, Depth= 1.00"

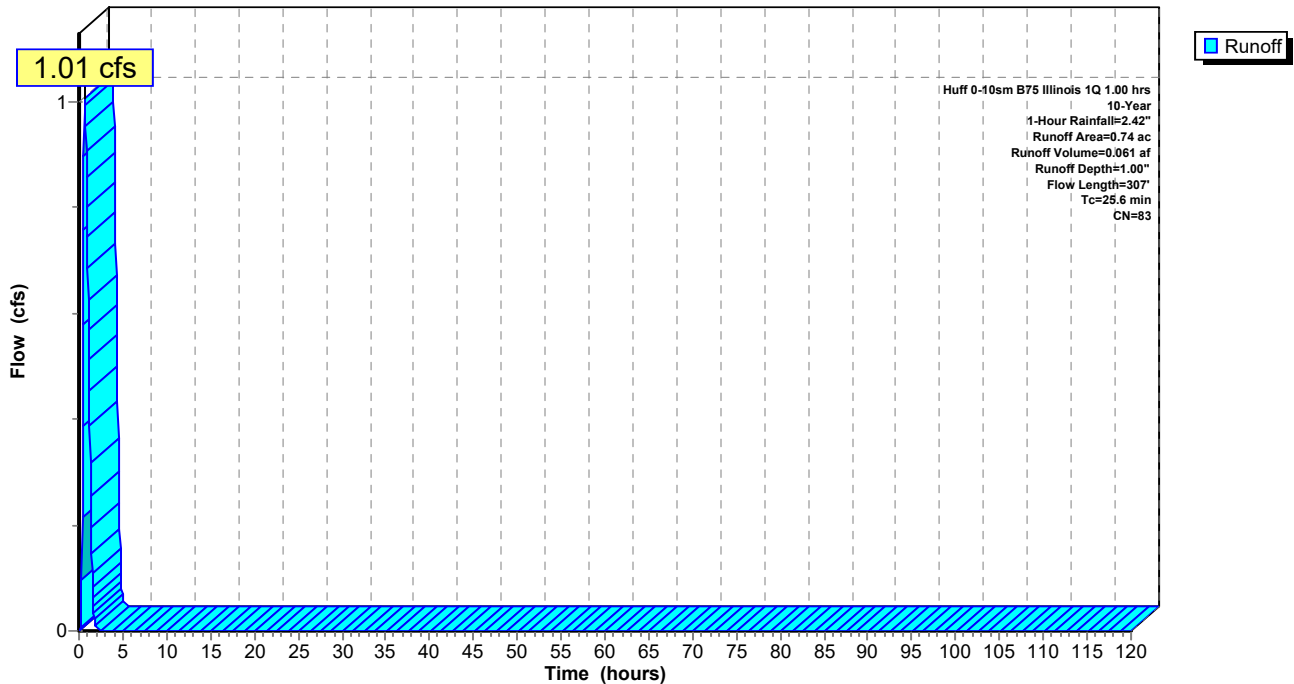
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

Area (ac)	CN	Description
0.59	80	>75% Grass cover, Good, HSG D
0.14	93	Paved roads w/open ditches, 50% imp, HSG D
0.74	83	Weighted Average
0.67		90.37% Pervious Area
0.07		9.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.0	100	0.0200	0.07		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.80"
2.6	207	0.0352	1.31		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
25.6	307	Total			

**Subcatchment N-C6: Subcat N-C6**

Hydrograph



**Summary for Subcatchment N-C7: Subcat N-C7**

Runoff = 2.16 cfs @ 0.31 hrs, Volume= 0.081 af, Depth= 0.83"

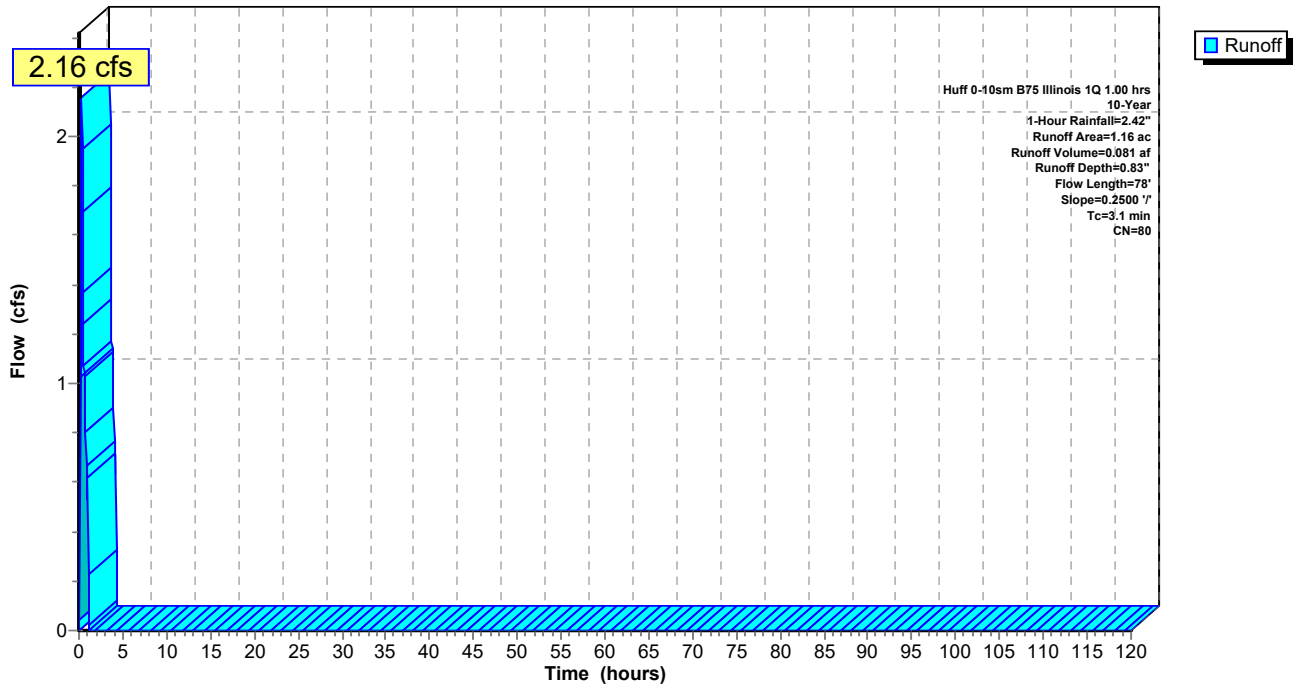
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

Area (ac)	CN	Description
1.16	80	>75% Grass cover, Good, HSG D
1.16		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	78	0.2500	0.42		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-C7: Subcat N-C7**

Hydrograph



**Summary for Subcatchment N-C8: Subcat N-C8**

Runoff = 2.52 cfs @ 0.62 hrs, Volume= 0.146 af, Depth= 1.12"

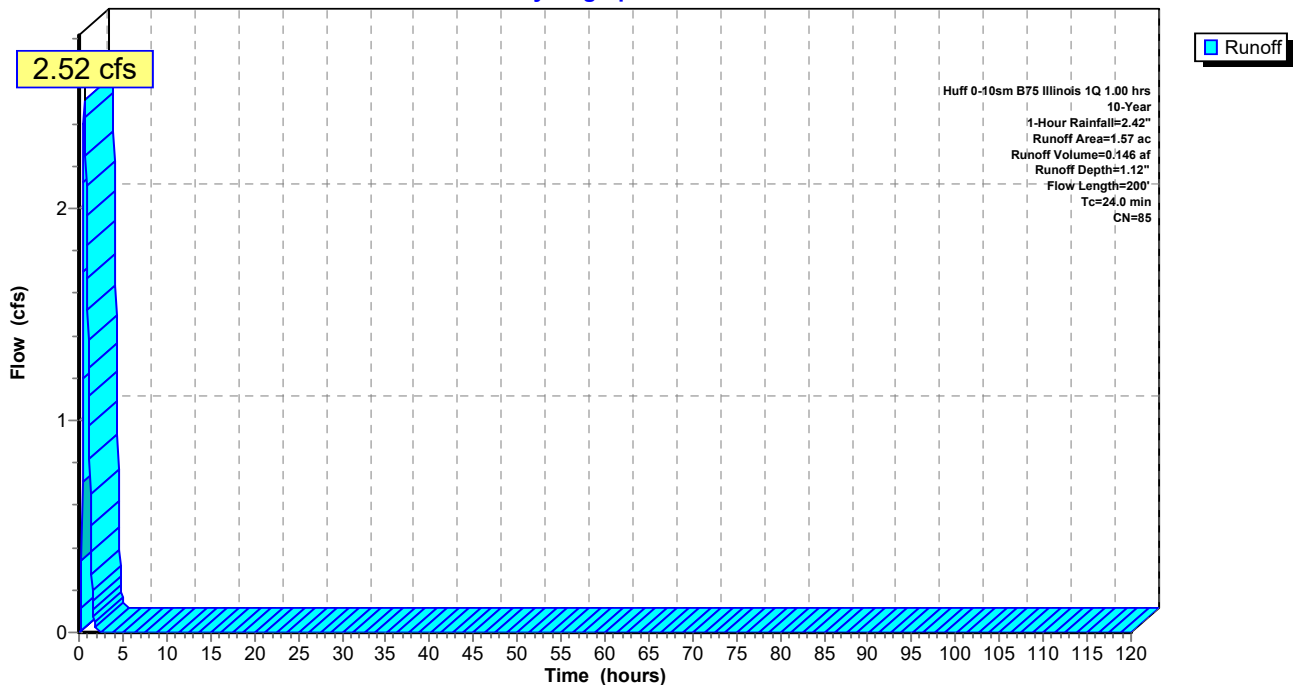
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

Area (ac)	CN	Description
0.65	80	>75% Grass cover, Good, HSG D
0.63	93	Paved roads w/open ditches, 50% imp, HSG D
0.30	79	Woods/grass comb., Good, HSG D
1.57	85	Weighted Average
1.26		80.08% Pervious Area
0.31		19.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.0	100	0.0200	0.07		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.80"
1.0	100	0.0611	1.73		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
24.0	200	Total			

**Subcatchment N-C8: Subcat N-C8**

Hydrograph



**Summary for Subcatchment N-D1: Subcat N-D1**

Runoff = 0.20 cfs @ 0.31 hrs, Volume= 0.008 af, Depth= 0.83"

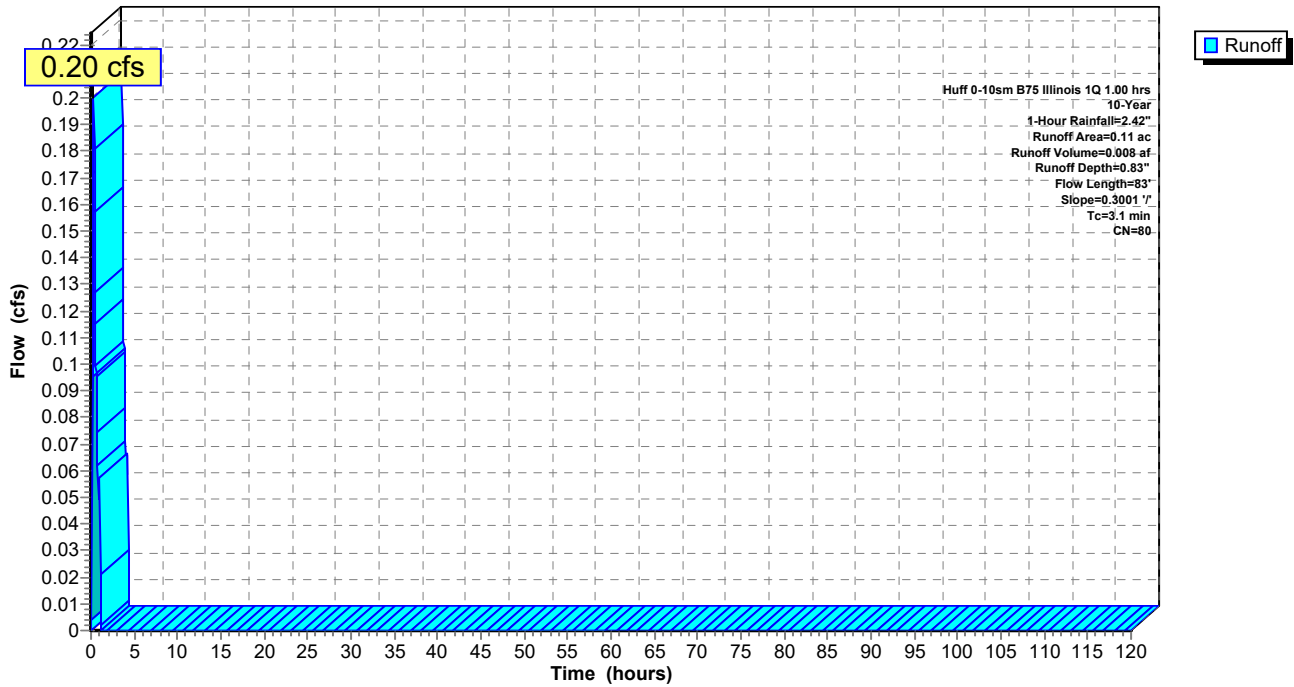
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

Area (ac)	CN	Description
0.11	80	>75% Grass cover, Good, HSG D
0.11		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	83	0.3001	0.45		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-D1: Subcat N-D1**

Hydrograph



**Summary for Subcatchment N-D2: Subcat N-D2**

Runoff = 8.68 cfs @ 0.31 hrs, Volume= 0.327 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

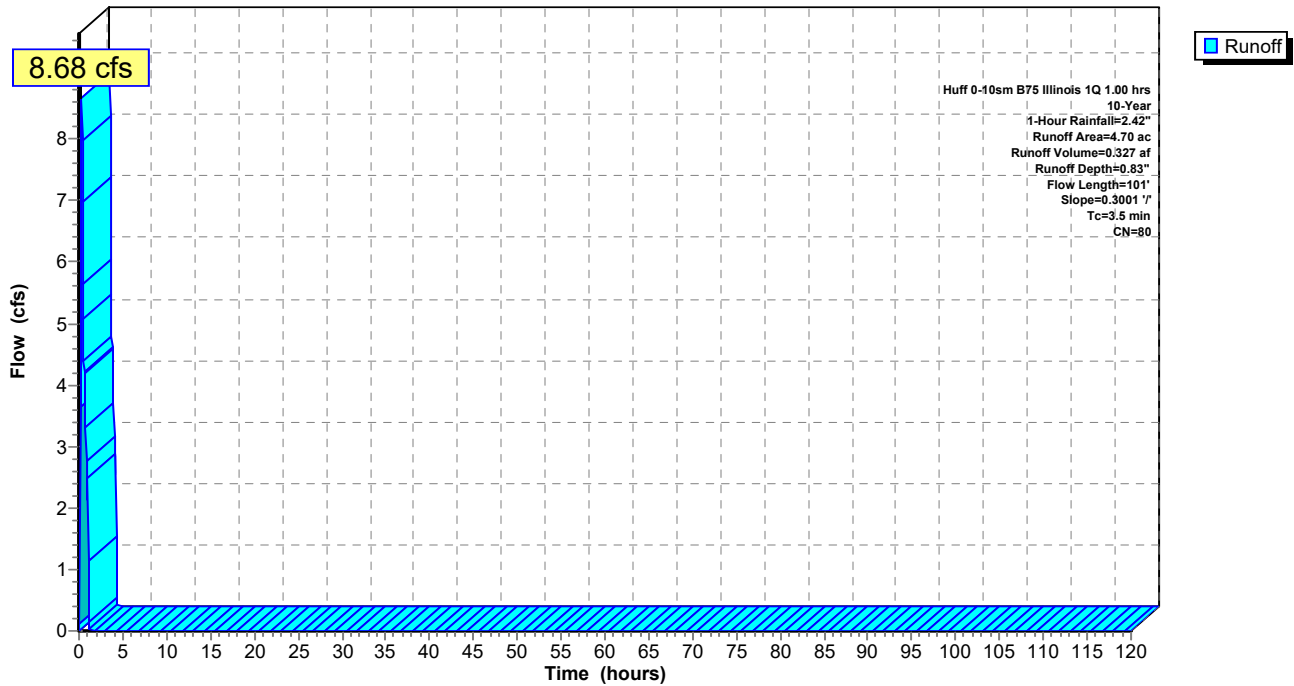
Area (ac)	CN	Description
4.54	80	>75% Grass cover, Good, HSG D
0.16	93	Paved roads w/open ditches, 50% imp, HSG D
4.70	80	Weighted Average
4.62		98.26% Pervious Area
0.08		1.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	100	0.3001	0.47		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.0	1	0.3001	3.83		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.5	101	Total			

**Subcatchment N-D2: Subcat N-D2**

Hydrograph





**Summary for Subcatchment N-E1: Subcat N-E1**

Runoff = 16.63 cfs @ 0.29 hrs, Volume= 0.622 af, Depth= 0.83"

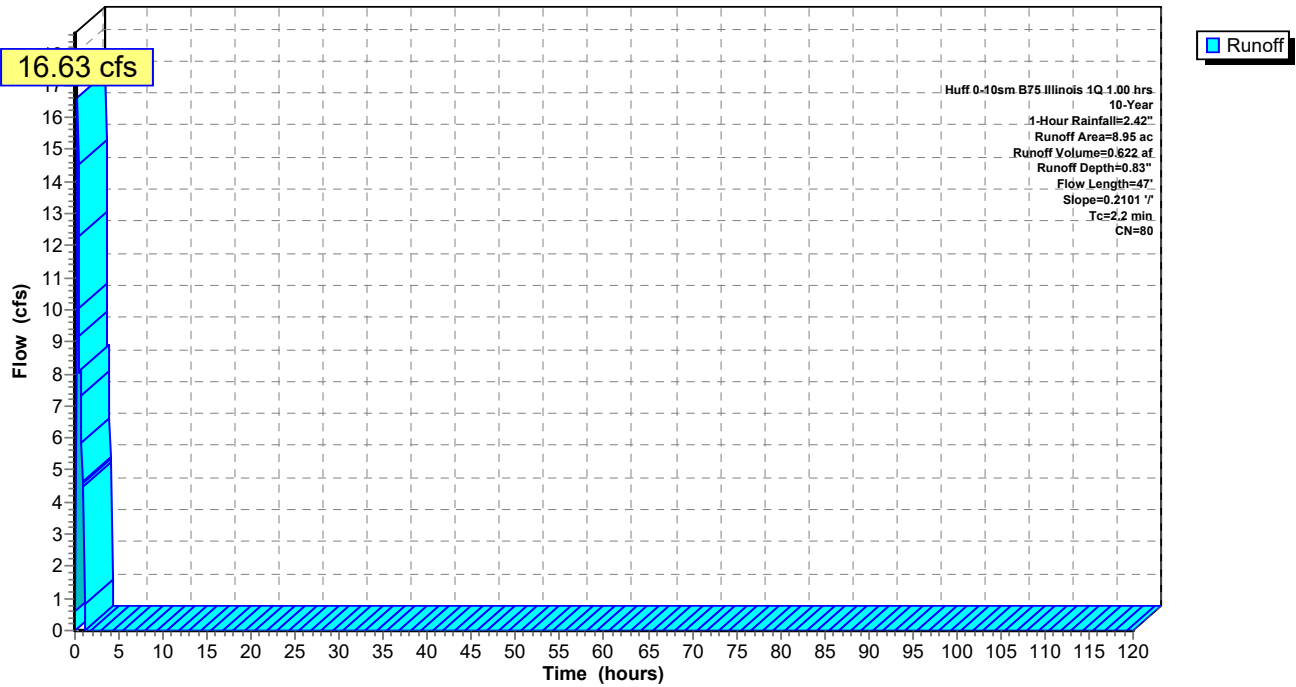
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 10-Year, 1-Hour Rainfall=2.42"

Area (ac)	CN	Description
8.95	80	>75% Grass cover, Good, HSG D
8.95		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	47	0.2101	0.35		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-E1: Subcat N-E1**

Hydrograph



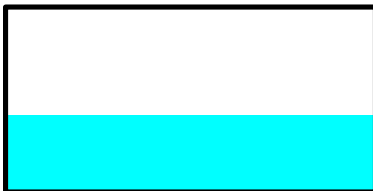
### Summary for Reach Cu-1: Culvert 1

Inflow Area = 90.82 ac, 2.38% Impervious, Inflow Depth = 0.87" for 10-Year, 1-Hour event  
 Inflow = 83.38 cfs @ 0.96 hrs, Volume= 6.560 af  
 Outflow = 83.32 cfs @ 0.97 hrs, Volume= 6.560 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 6.31 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 1.23 fps, Avg. Travel Time= 1.5 min

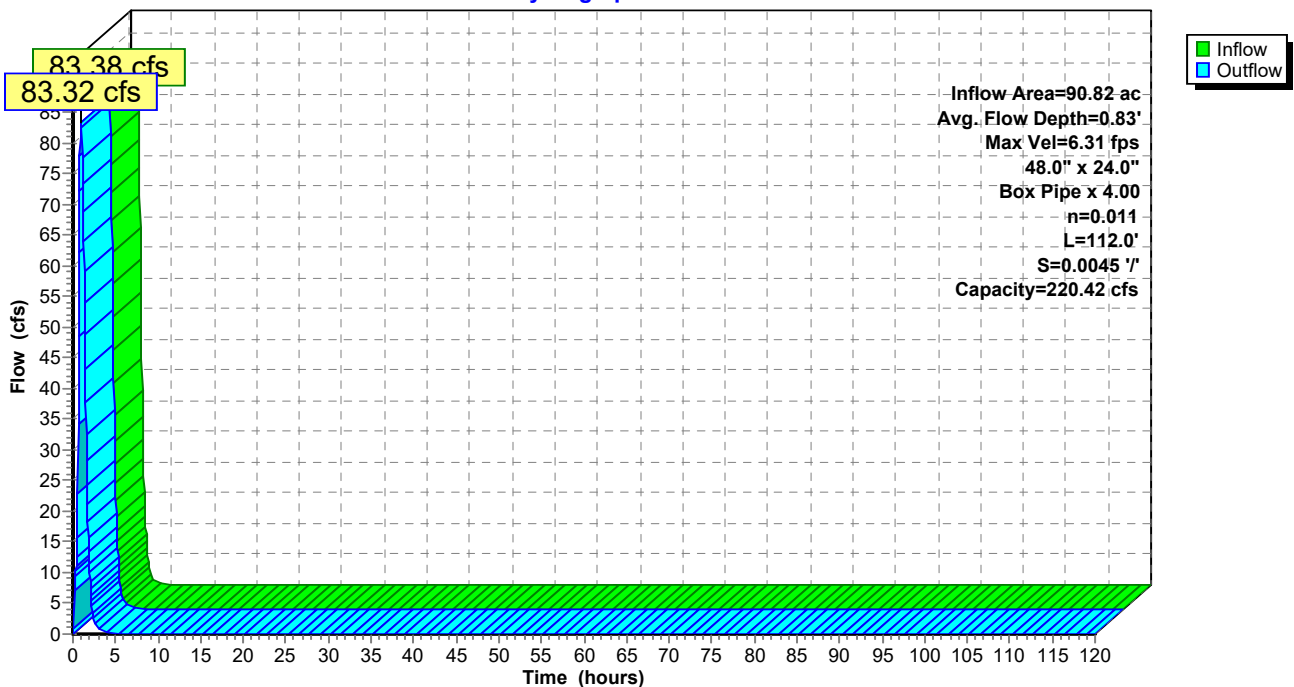
Peak Storage= 1,480 cf @ 0.96 hrs  
 Average Depth at Peak Storage= 0.83'  
 Bank-Full Depth= 2.00' Flow Area= 32.0 sf, Capacity= 220.42 cfs

A factor of 4.00 has been applied to the storage and discharge capacity  
 48.0" W x 24.0" H Box Pipe  
 n= 0.011 Concrete pipe, straight & clean  
 Length= 112.0' Slope= 0.0045 '/'  
 Inlet Invert= 737.00', Outlet Invert= 736.50'



### Reach Cu-1: Culvert 1

Hydrograph



**Summary for Reach Cu-2: Culvert 2**

Inflow Area = 39.65 ac, 1.66% Impervious, Inflow Depth = 0.86" for 10-Year, 1-Hour event  
 Inflow = 49.85 cfs @ 0.57 hrs, Volume= 2.832 af  
 Outflow = 49.80 cfs @ 0.57 hrs, Volume= 2.832 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 8.60 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 1.79 fps, Avg. Travel Time= 0.7 min

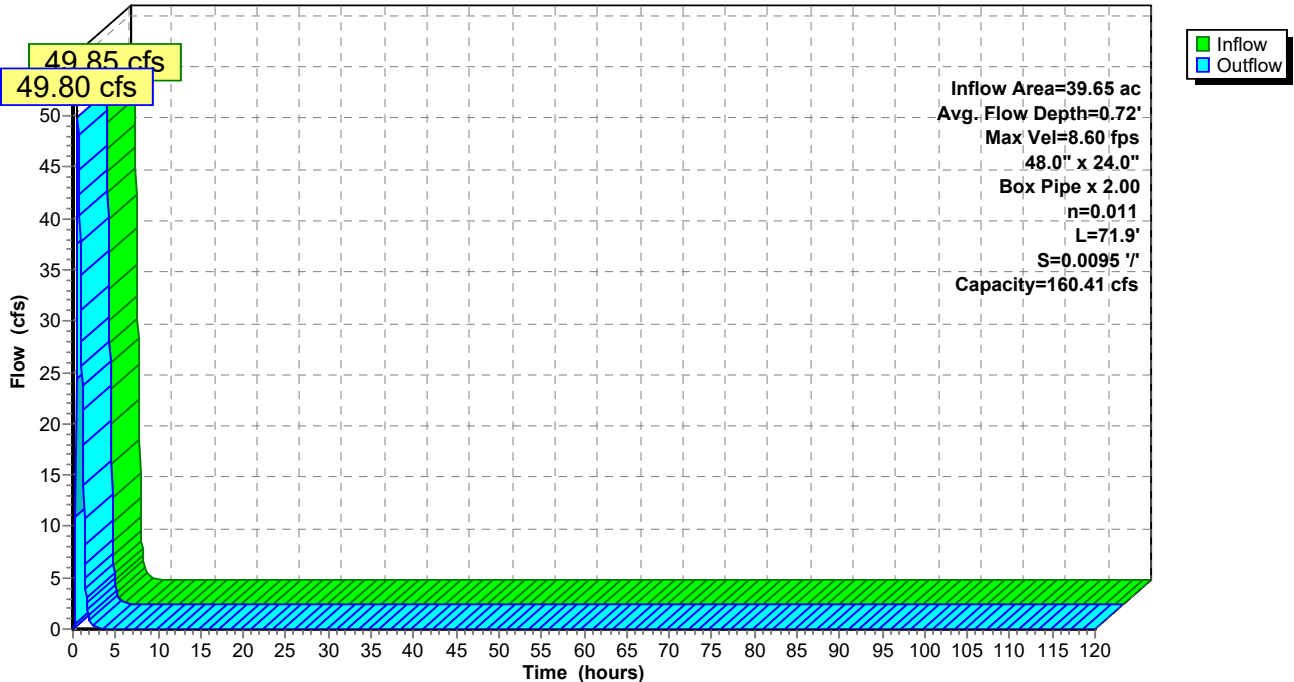
Peak Storage= 416 cf @ 0.57 hrs  
 Average Depth at Peak Storage= 0.72'  
 Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 160.41 cfs

A factor of 2.00 has been applied to the storage and discharge capacity  
 48.0" W x 24.0" H Box Pipe  
 n= 0.011 Concrete pipe, straight & clean  
 Length= 71.9' Slope= 0.0095 '/'  
 Inlet Invert= 737.18', Outlet Invert= 736.50'



**Reach Cu-2: Culvert 2**

Hydrograph



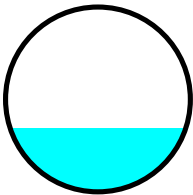
**Summary for Reach Cu-3: Culvert 3**

Inflow Area = 43.19 ac, 1.69% Impervious, Inflow Depth = 0.86" for 10-Year, 1-Hour event  
 Inflow = 50.16 cfs @ 0.64 hrs, Volume= 3.089 af  
 Outflow = 50.11 cfs @ 0.65 hrs, Volume= 3.089 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 7.77 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 1.77 fps, Avg. Travel Time= 0.9 min

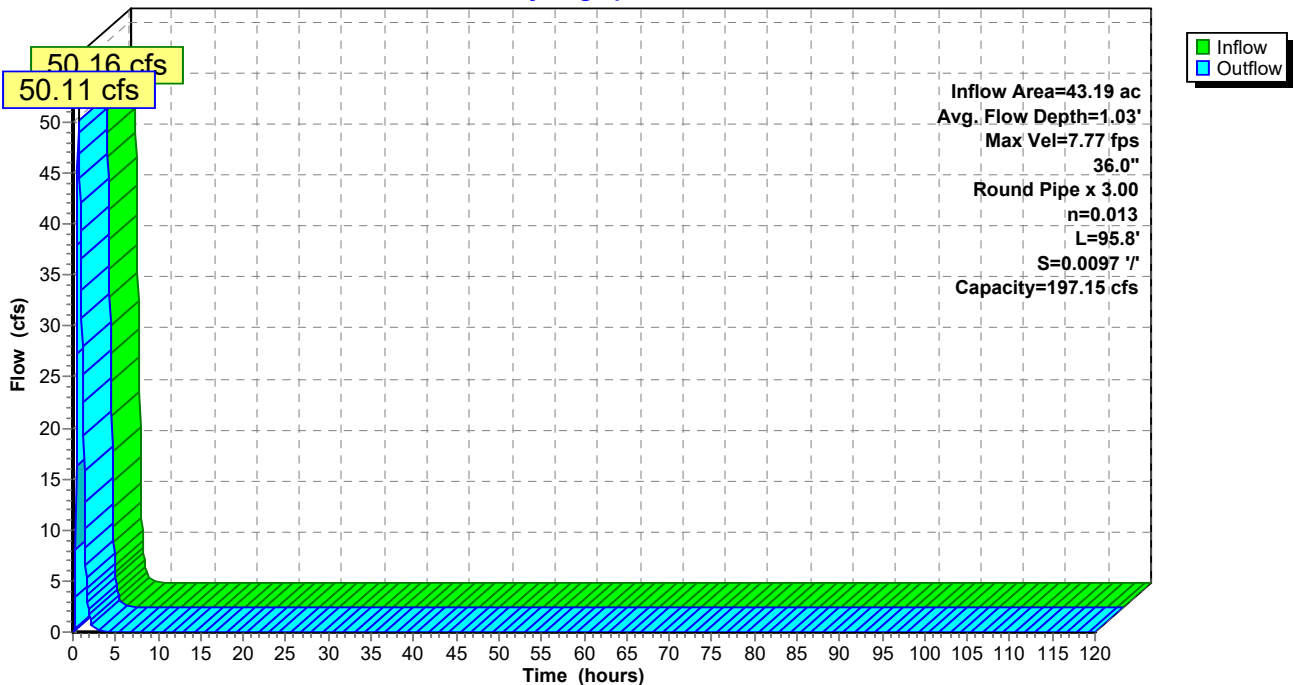
Peak Storage= 619 cf @ 0.64 hrs  
 Average Depth at Peak Storage= 1.03'  
 Bank-Full Depth= 3.00' Flow Area= 21.2 sf, Capacity= 197.15 cfs

A factor of 3.00 has been applied to the storage and discharge capacity  
 36.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 95.8' Slope= 0.0097 '/'  
 Inlet Invert= 738.93', Outlet Invert= 738.00'



**Reach Cu-3: Culvert 3**

Hydrograph



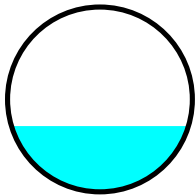
**Summary for Reach Cu-A: Culvert A**

Inflow Area = 33.94 ac, 1.59% Impervious, Inflow Depth = 0.85" for 10-Year, 1-Hour event  
 Inflow = 35.86 cfs @ 0.79 hrs, Volume= 2.404 af  
 Outflow = 35.83 cfs @ 0.80 hrs, Volume= 2.404 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 8.00 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 1.70 fps, Avg. Travel Time= 1.0 min

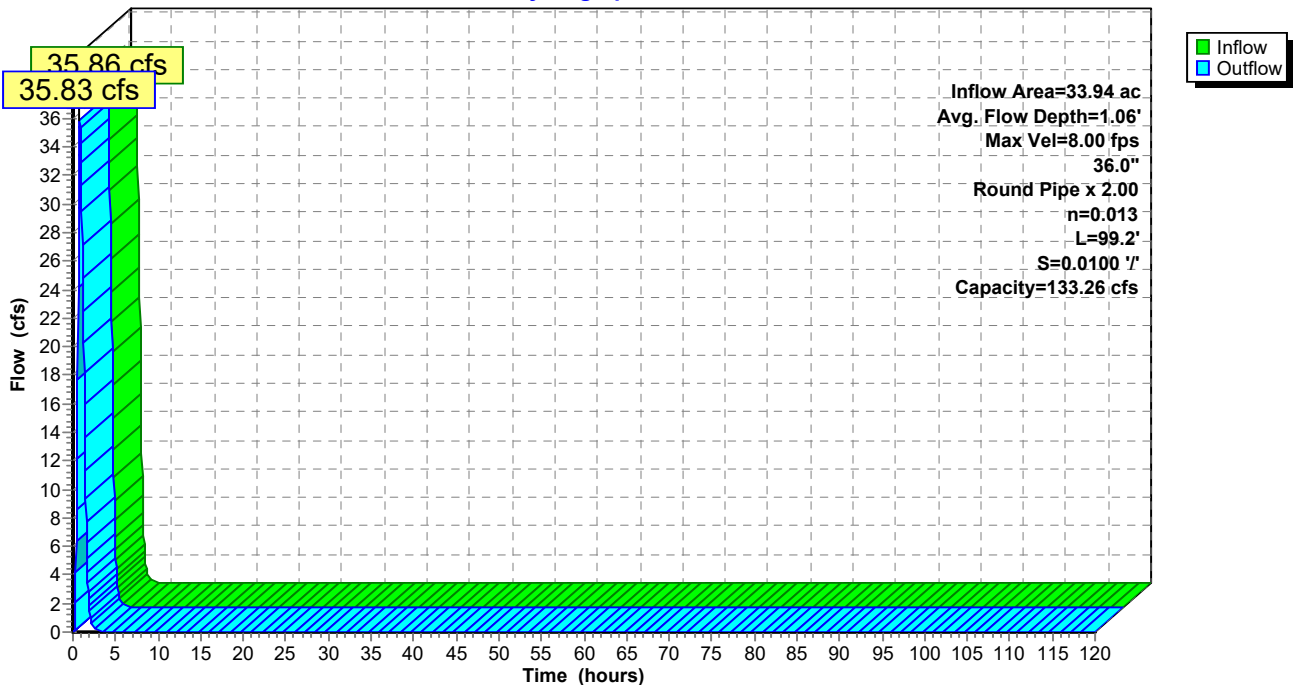
Peak Storage= 445 cf @ 0.80 hrs  
 Average Depth at Peak Storage= 1.06'  
 Bank-Full Depth= 3.00' Flow Area= 14.1 sf, Capacity= 133.26 cfs

A factor of 2.00 has been applied to the storage and discharge capacity  
 36.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 99.2' Slope= 0.0100 '/  
 Inlet Invert= 756.77', Outlet Invert= 755.78'



**Reach Cu-A: Culvert A**

Hydrograph



**Summary for Reach DC-A1A: Downchute A1A**

Inflow Area = 6.74 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 8.77 cfs @ 0.66 hrs, Volume= 0.468 af  
 Outflow = 8.74 cfs @ 0.67 hrs, Volume= 0.468 af, Atten= 0%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.57 fps, Min. Travel Time= 0.5 min  
 Avg. Velocity = 2.06 fps, Avg. Travel Time= 1.1 min

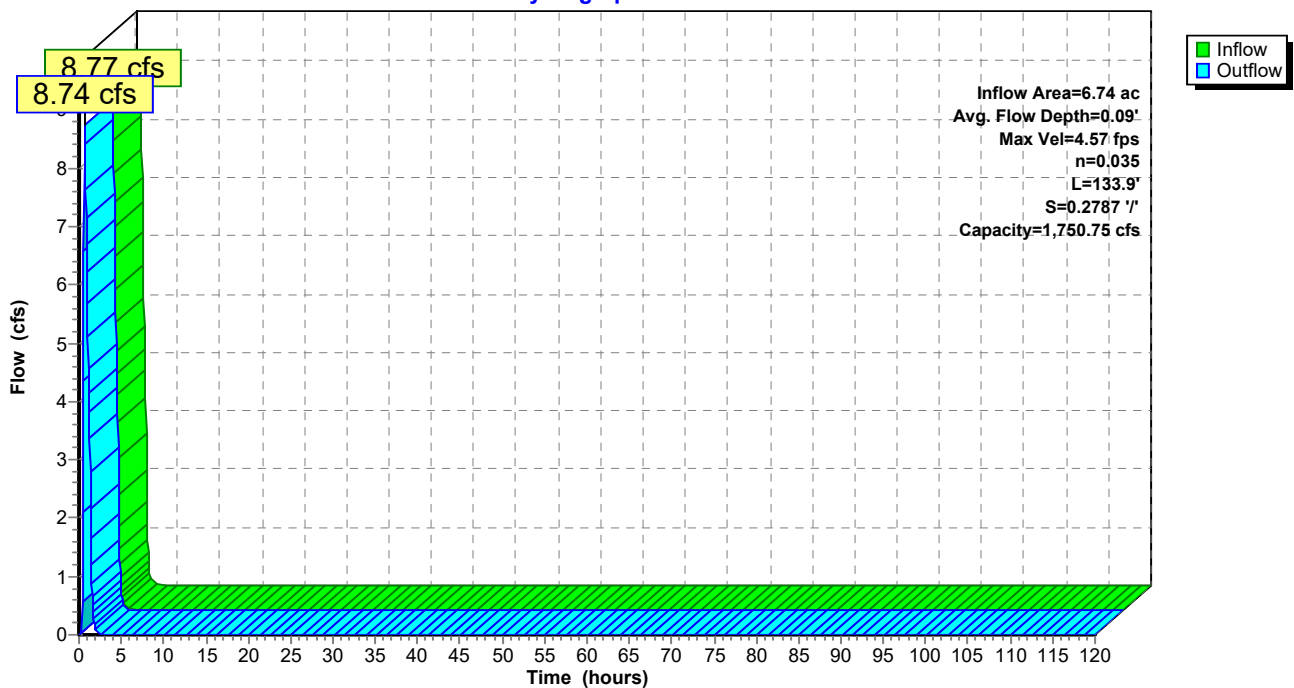
Peak Storage= 257 cf @ 0.66 hrs  
 Average Depth at Peak Storage= 0.09'  
 Bank-Full Depth= 2.00' Flow Area= 60.0 sf, Capacity= 1,750.75 cfs

20.00' x 2.00' deep channel, n= 0.035  
 Side Slope Z-value= 5.0 '/' Top Width= 40.00'  
 Length= 133.9' Slope= 0.2787 '/'  
 Inlet Invert= 821.32', Outlet Invert= 784.00'



**Reach DC-A1A: Downchute A1A**

Hydrograph



**Summary for Reach DC-A1B: Downchute A1B**

Inflow Area = 11.96 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 15.21 cfs @ 0.64 hrs, Volume= 0.832 af  
 Outflow = 15.17 cfs @ 0.65 hrs, Volume= 0.832 af, Atten= 0%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.06 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 1.30 fps, Avg. Travel Time= 1.1 min

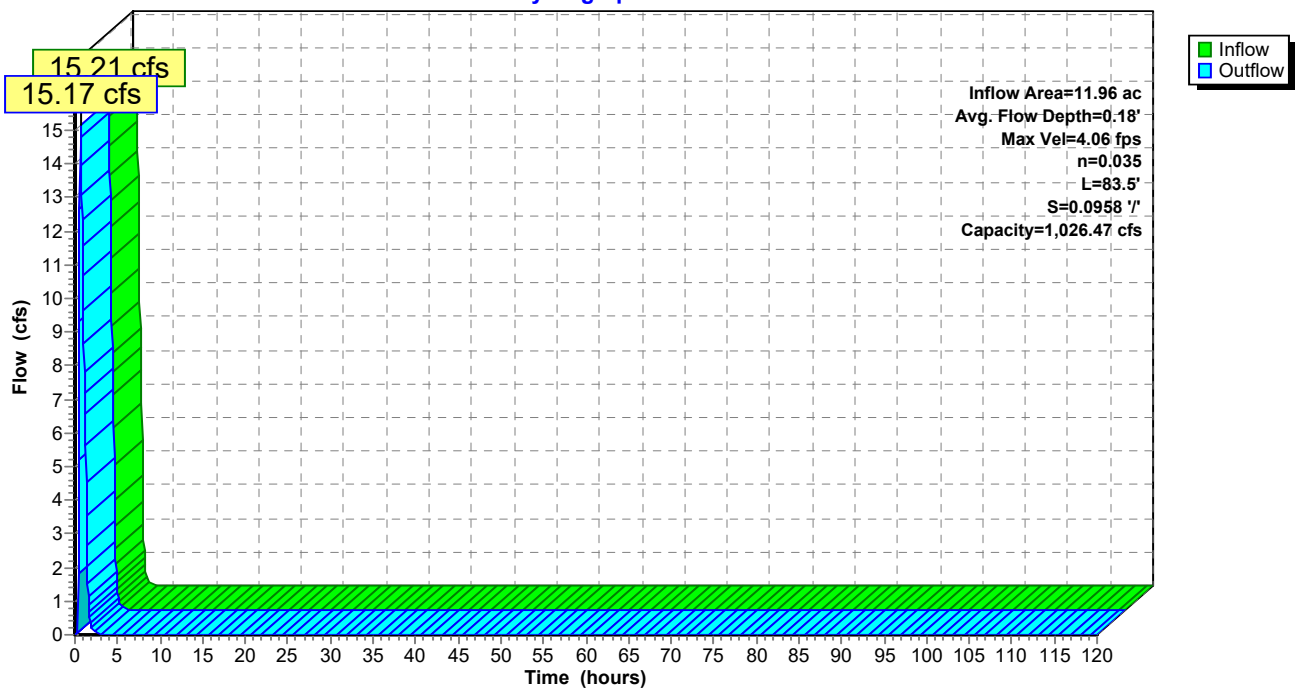
Peak Storage= 313 cf @ 0.65 hrs  
 Average Depth at Peak Storage= 0.18'  
 Bank-Full Depth= 2.00' Flow Area= 60.0 sf, Capacity= 1,026.47 cfs

20.00' x 2.00' deep channel, n= 0.035  
 Side Slope Z-value= 5.0 '/' Top Width= 40.00'  
 Length= 83.5' Slope= 0.0958 '/'  
 Inlet Invert= 784.00', Outlet Invert= 776.00'



**Reach DC-A1B: Downchute A1B**

Hydrograph



**Summary for Reach DC-A1C: Downchute A1C**

Inflow Area = 21.13 ac, 0.64% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 22.39 cfs @ 0.78 hrs, Volume= 1.468 af  
 Outflow = 22.36 cfs @ 0.80 hrs, Volume= 1.468 af, Atten= 0%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 5.03 fps, Min. Travel Time= 0.5 min  
 Avg. Velocity = 1.54 fps, Avg. Travel Time= 1.6 min

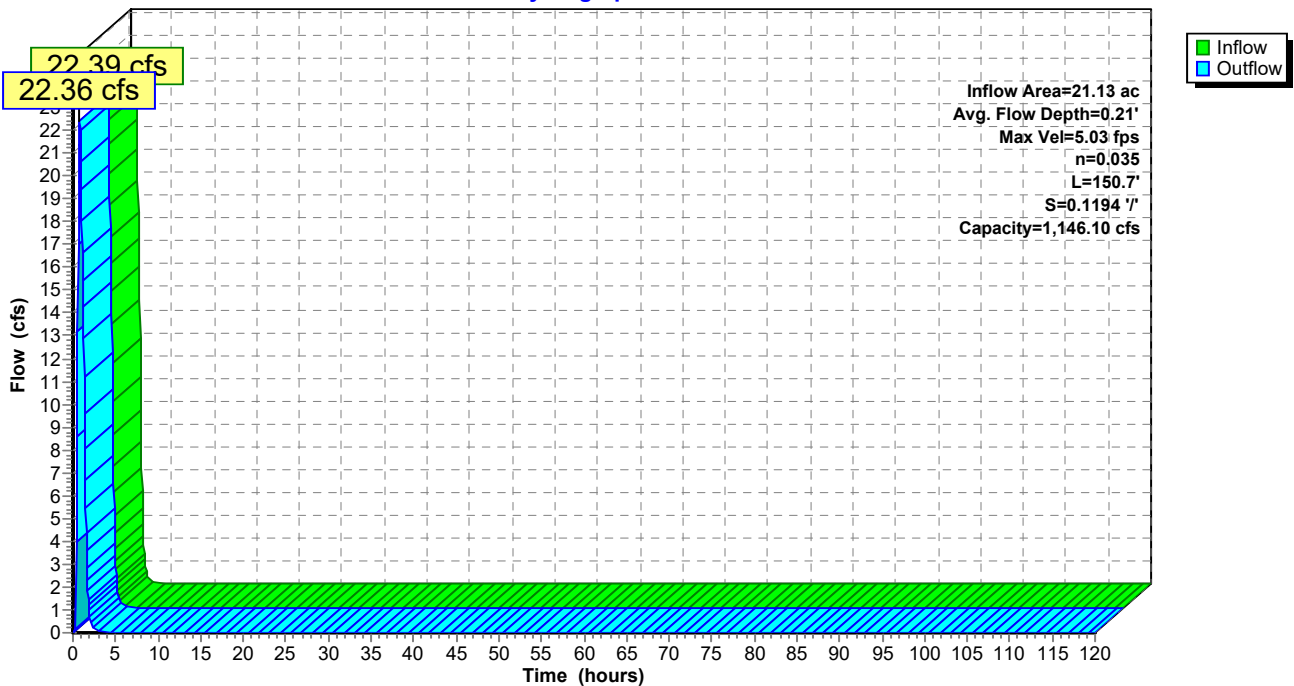
Peak Storage= 670 cf @ 0.79 hrs  
 Average Depth at Peak Storage= 0.21'  
 Bank-Full Depth= 2.00' Flow Area= 60.0 sf, Capacity= 1,146.10 cfs

20.00' x 2.00' deep channel, n= 0.035  
 Side Slope Z-value= 5.0 '/' Top Width= 40.00'  
 Length= 150.7' Slope= 0.1194 '/'  
 Inlet Invert= 776.00', Outlet Invert= 758.00'



**Reach DC-A1C: Downchute A1C**

Hydrograph





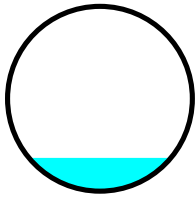
**Summary for Reach LP-B1: Letdown Pipe B1**

Inflow Area = 4.78 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 7.82 cfs @ 0.43 hrs, Volume= 0.332 af  
 Outflow = 7.79 cfs @ 0.44 hrs, Volume= 0.332 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 20.39 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 9.27 fps, Avg. Travel Time= 0.3 min

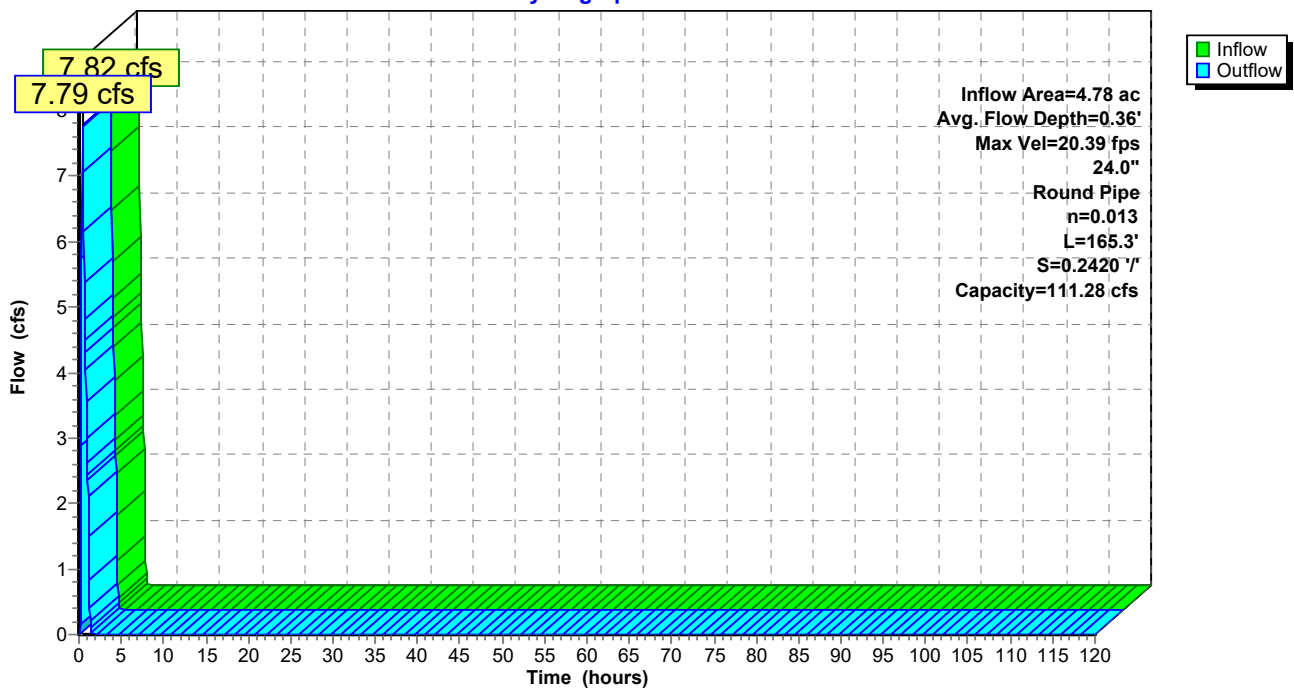
Peak Storage= 63 cf @ 0.43 hrs  
 Average Depth at Peak Storage= 0.36'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 111.28 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 165.3' Slope= 0.2420 '/'  
 Inlet Invert= 877.00', Outlet Invert= 837.00'



**Reach LP-B1: Letdown Pipe B1**

Hydrograph



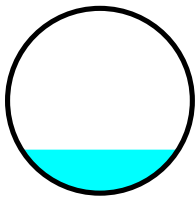
**Summary for Reach LP-B2: Letdown Pipe B2**

Inflow Area = 8.86 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 13.95 cfs @ 0.46 hrs, Volume= 0.616 af  
 Outflow = 13.93 cfs @ 0.46 hrs, Volume= 0.616 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 24.91 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 8.54 fps, Avg. Travel Time= 0.2 min

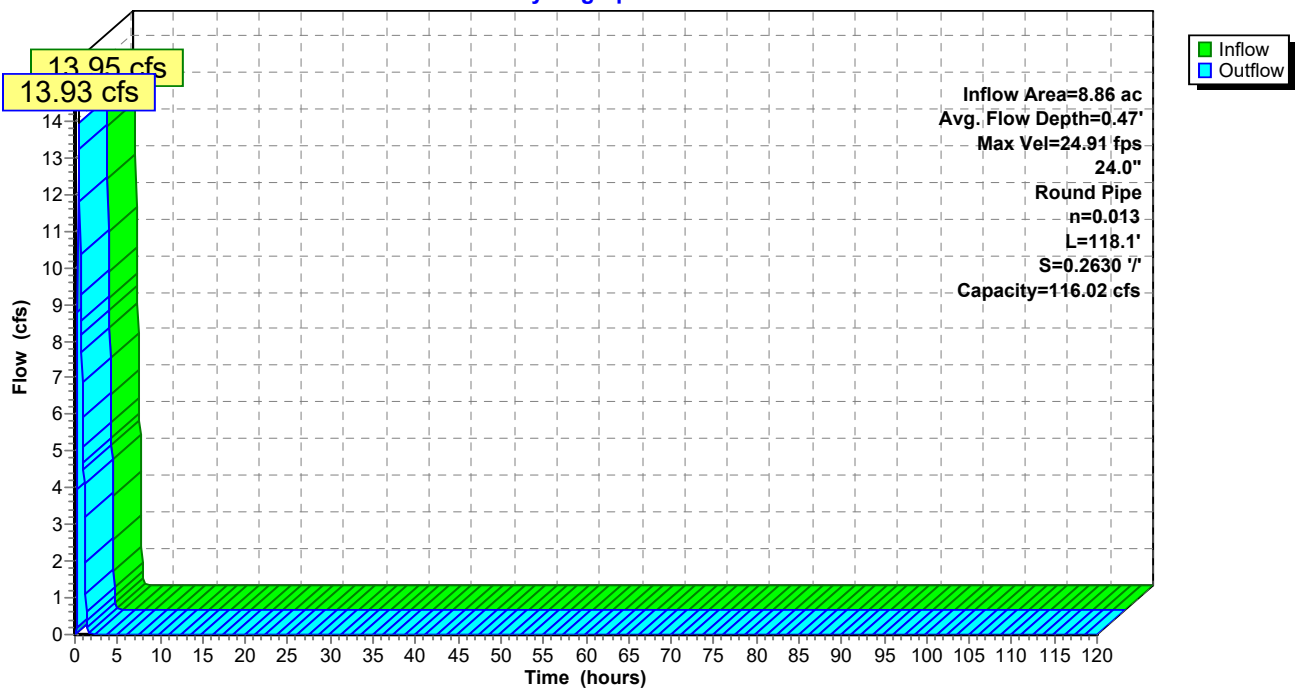
Peak Storage= 66 cf @ 0.46 hrs  
 Average Depth at Peak Storage= 0.47'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 116.02 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 118.1' Slope= 0.2630 '/'  
 Inlet Invert= 837.00', Outlet Invert= 805.94'



**Reach LP-B2: Letdown Pipe B2**

Hydrograph



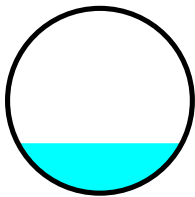
**Summary for Reach LP-B3: Letdown Pipe B3**

Inflow Area = 11.97 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 18.10 cfs @ 0.47 hrs, Volume= 0.832 af  
 Outflow = 18.08 cfs @ 0.47 hrs, Volume= 0.832 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 26.52 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 8.06 fps, Avg. Travel Time= 0.2 min

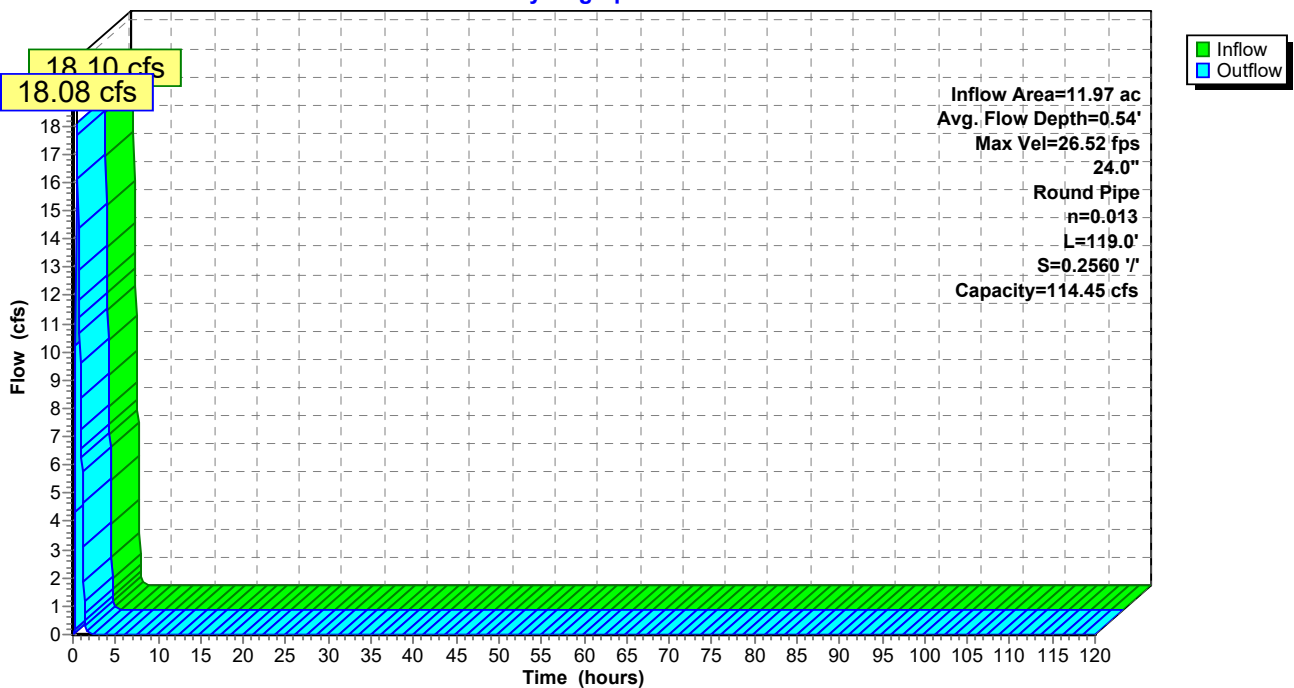
Peak Storage= 81 cf @ 0.47 hrs  
 Average Depth at Peak Storage= 0.54'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 114.45 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 119.0' Slope= 0.2560 '/'  
 Inlet Invert= 805.94', Outlet Invert= 775.48'



**Reach LP-B3: Letdown Pipe B3**

Hydrograph



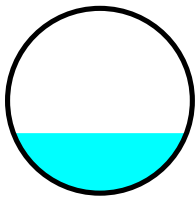
**Summary for Reach LP-B4: Letdown Pipe B4**

Inflow Area = 15.33 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 22.55 cfs @ 0.48 hrs, Volume= 1.065 af  
 Outflow = 22.52 cfs @ 0.48 hrs, Volume= 1.065 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 25.55 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 7.12 fps, Avg. Travel Time= 0.4 min

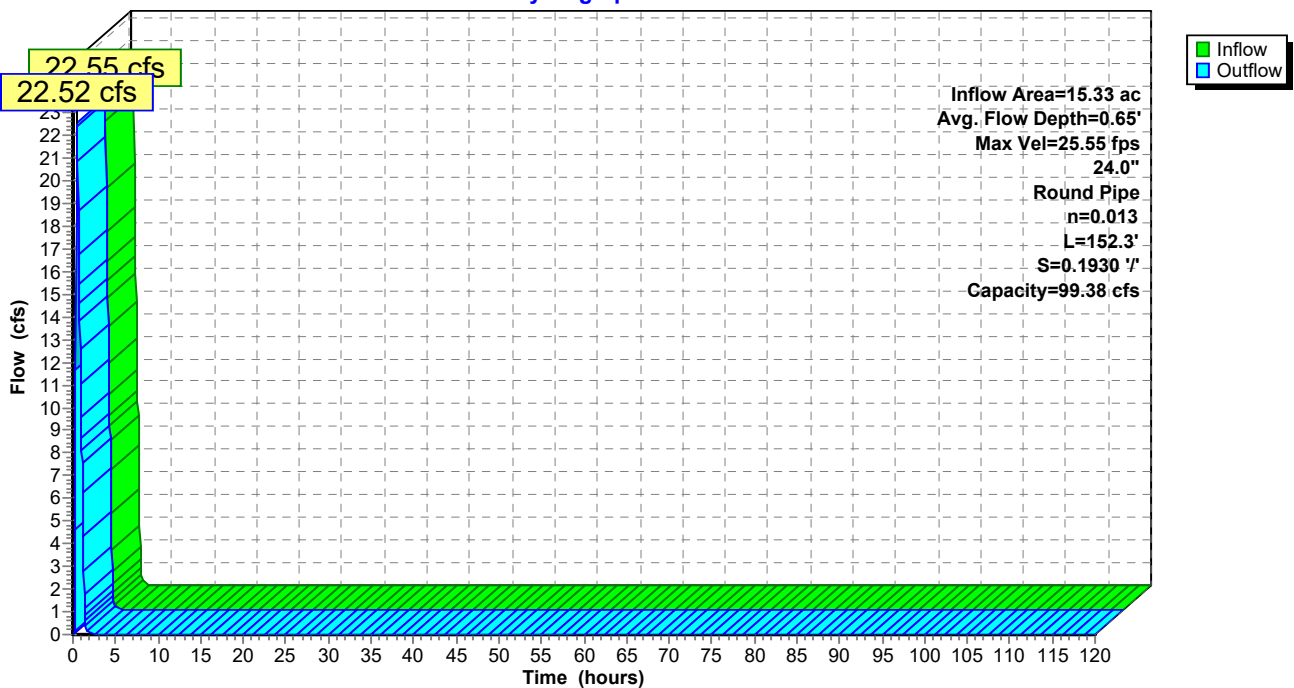
Peak Storage= 134 cf @ 0.48 hrs  
 Average Depth at Peak Storage= 0.65'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 99.38 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 152.3' Slope= 0.1930 '/'  
 Inlet Invert= 775.48', Outlet Invert= 746.09'



**Reach LP-B4: Letdown Pipe B4**

Hydrograph



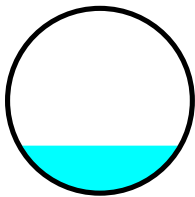
**Summary for Reach LP-B5: Letdown Pipe B5**

Inflow Area = 3.47 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 5.09 cfs @ 0.48 hrs, Volume= 0.241 af  
 Outflow = 5.08 cfs @ 0.49 hrs, Volume= 0.241 af, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 18.01 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 6.98 fps, Avg. Travel Time= 0.7 min

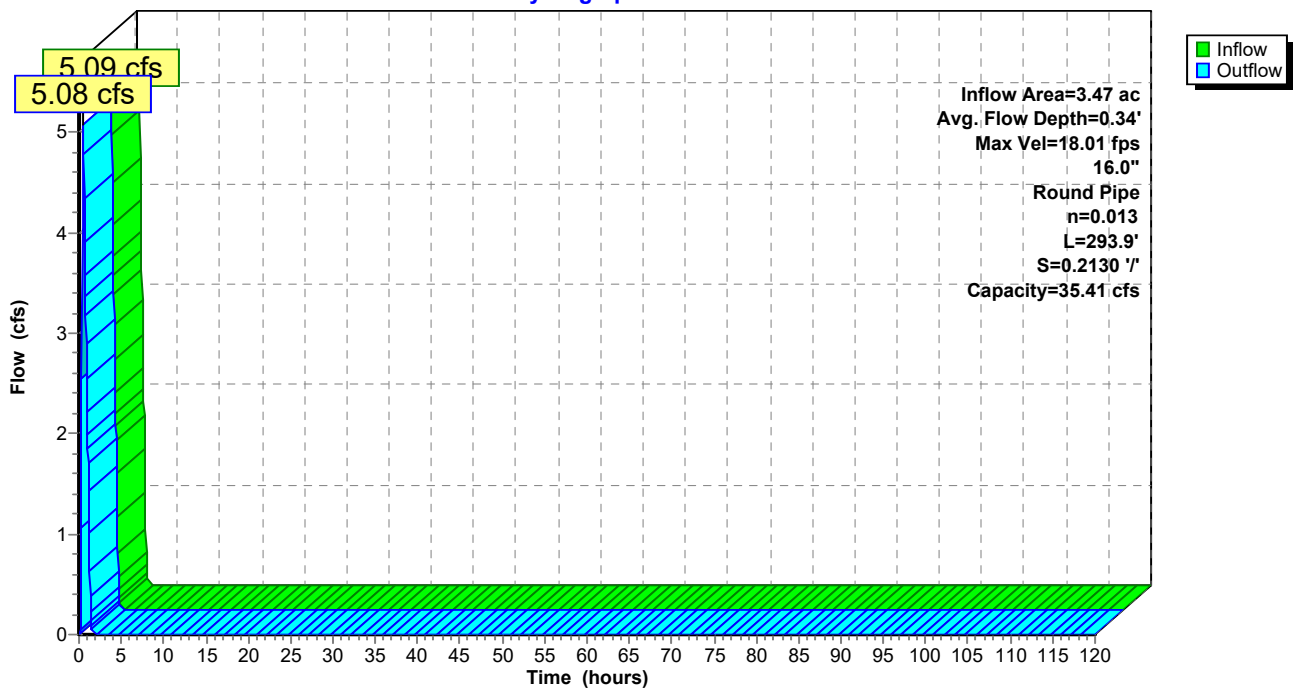
Peak Storage= 83 cf @ 0.49 hrs  
 Average Depth at Peak Storage= 0.34'  
 Bank-Full Depth= 1.33' Flow Area= 1.4 sf, Capacity= 35.41 cfs

16.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 293.9' Slope= 0.2130 '/'  
 Inlet Invert= 820.00', Outlet Invert= 757.40'



**Reach LP-B5: Letdown Pipe B5**

Hydrograph



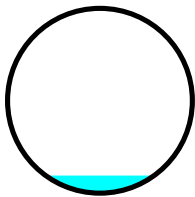
**Summary for Reach LP-D1: Letdown Pipe D1**

Inflow Area = 1.26 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 2.09 cfs @ 0.41 hrs, Volume= 0.087 af  
 Outflow = 2.08 cfs @ 0.42 hrs, Volume= 0.087 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 13.90 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 8.15 fps, Avg. Travel Time= 0.1 min

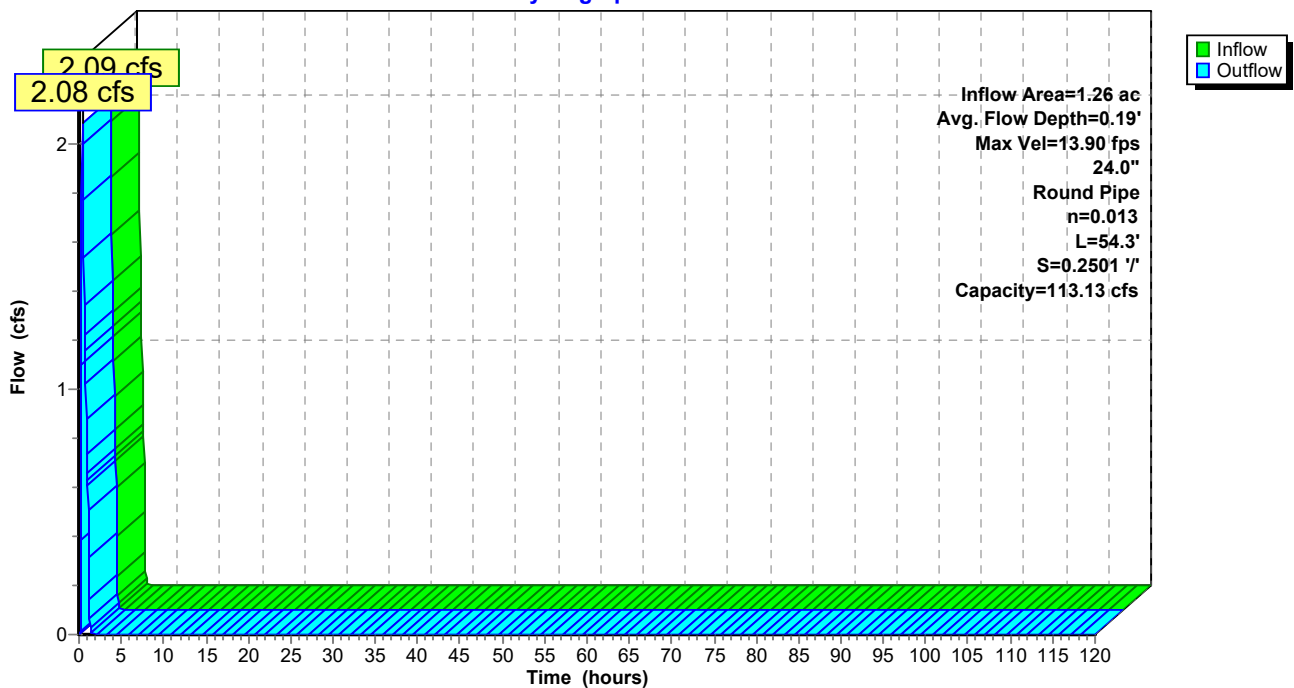
Peak Storage= 8 cf @ 0.41 hrs  
 Average Depth at Peak Storage= 0.19'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 113.13 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 54.3' Slope= 0.2501 '/  
 Inlet Invert= 857.24', Outlet Invert= 843.66'



**Reach LP-D1: Letdown Pipe D1**

Hydrograph



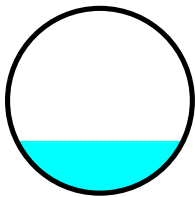
**Summary for Reach LP-D3: Letdown Pipe D3**

Inflow Area = 13.77 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 19.46 cfs @ 0.52 hrs, Volume= 0.957 af  
 Outflow = 19.45 cfs @ 0.52 hrs, Volume= 0.957 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 26.71 fps, Min. Travel Time= 0.0 min  
 Avg. Velocity = 7.80 fps, Avg. Travel Time= 0.2 min

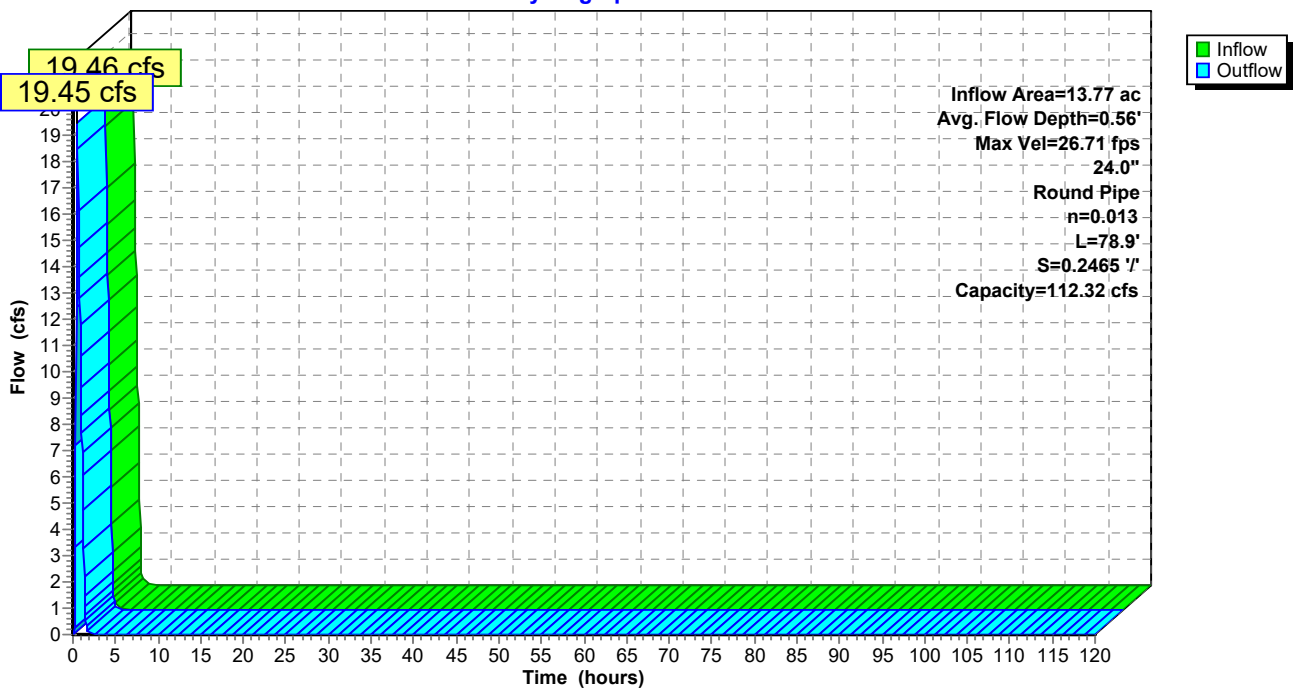
Peak Storage= 57 cf @ 0.52 hrs  
 Average Depth at Peak Storage= 0.56'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 112.32 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 78.9' Slope= 0.2465 '/'  
 Inlet Invert= 793.71', Outlet Invert= 774.26'



**Reach LP-D3: Letdown Pipe D3**

Hydrograph



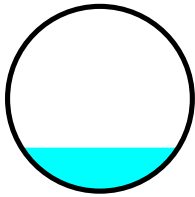
**Summary for Reach LP-E1: Letdown Pipe E1**

Inflow Area = 3.40 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 5.45 cfs @ 0.47 hrs, Volume= 0.236 af  
 Outflow = 5.44 cfs @ 0.47 hrs, Volume= 0.236 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 17.28 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 6.89 fps, Avg. Travel Time= 0.3 min

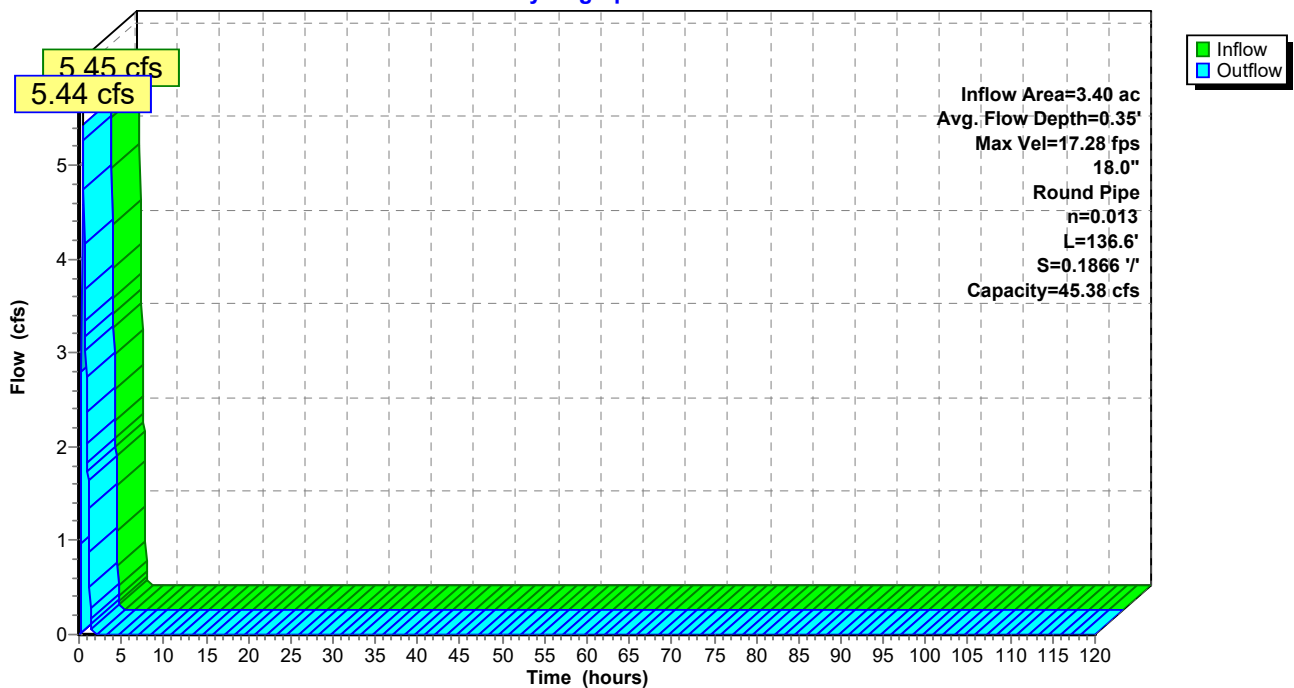
Peak Storage= 43 cf @ 0.47 hrs  
 Average Depth at Peak Storage= 0.35'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 45.38 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 136.6' Slope= 0.1866 '/'  
 Inlet Invert= 856.64', Outlet Invert= 831.15'



**Reach LP-E1: Letdown Pipe E1**

Hydrograph





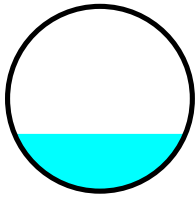
**Summary for Reach LP-E2: Letdown Pipe E2**

Inflow Area = 8.08 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 10.85 cfs @ 0.52 hrs, Volume= 0.562 af  
 Outflow = 10.84 cfs @ 0.52 hrs, Volume= 0.562 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 23.34 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 6.70 fps, Avg. Travel Time= 0.2 min

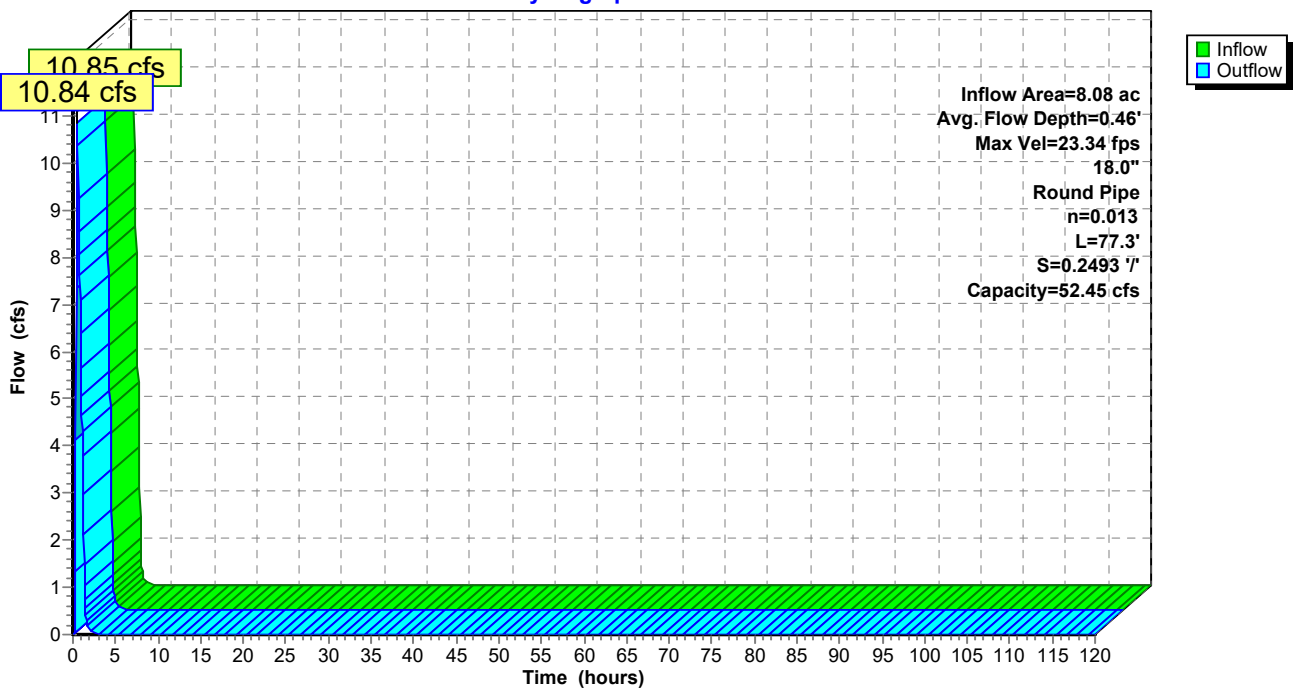
Peak Storage= 36 cf @ 0.52 hrs  
 Average Depth at Peak Storage= 0.46'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 52.45 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 77.3' Slope= 0.2493 '/'  
 Inlet Invert= 793.51', Outlet Invert= 774.24'



**Reach LP-E2: Letdown Pipe E2**

Hydrograph



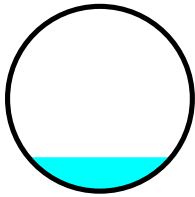
**Summary for Reach LP-H1: Letdown Pipe H1**

Inflow Area = 1.98 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 3.16 cfs @ 0.47 hrs, Volume= 0.138 af  
 Outflow = 3.16 cfs @ 0.47 hrs, Volume= 0.138 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 14.26 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 6.12 fps, Avg. Travel Time= 0.2 min

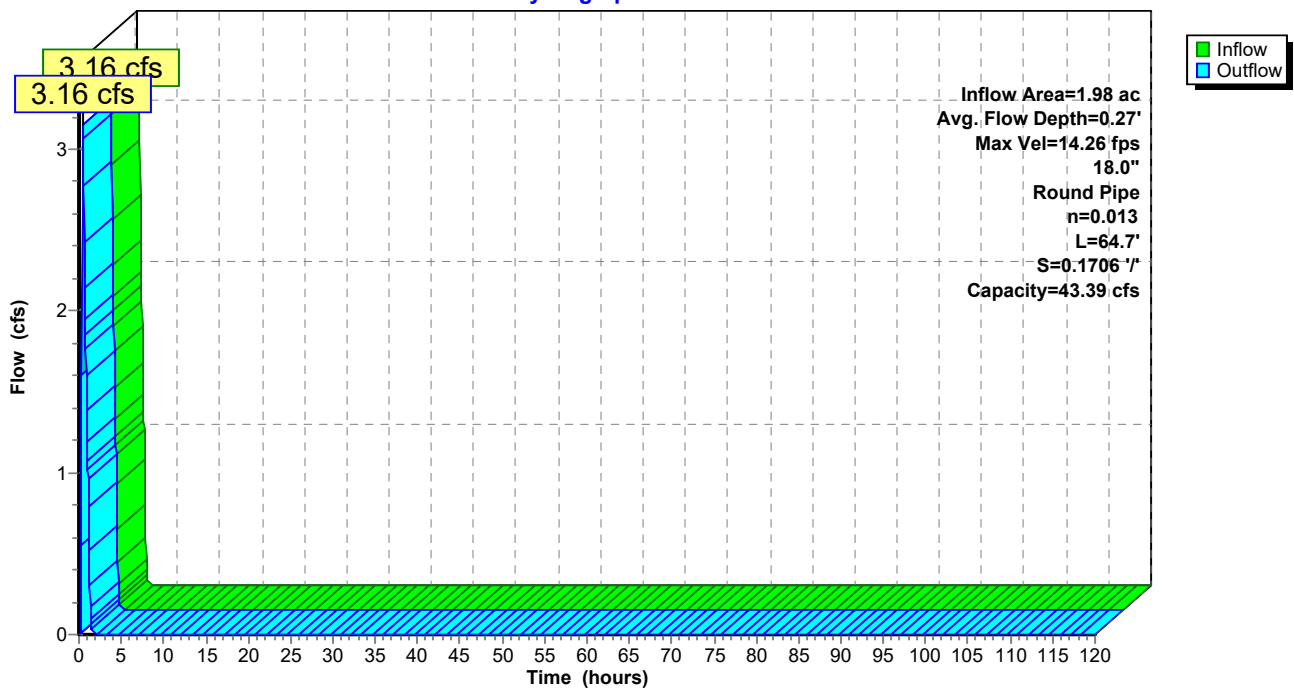
Peak Storage= 14 cf @ 0.47 hrs  
 Average Depth at Peak Storage= 0.27'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 43.39 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 64.7' Slope= 0.1706 '/  
 Inlet Invert= 867.73', Outlet Invert= 856.69'



**Reach LP-H1: Letdown Pipe H1**

Hydrograph



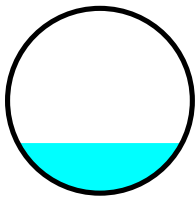
**Summary for Reach LP-H2: Letdown Pipe H2**

Inflow Area = 5.26 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 8.35 cfs @ 0.47 hrs, Volume= 0.366 af  
 Outflow = 8.32 cfs @ 0.47 hrs, Volume= 0.366 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 21.62 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 7.75 fps, Avg. Travel Time= 0.3 min

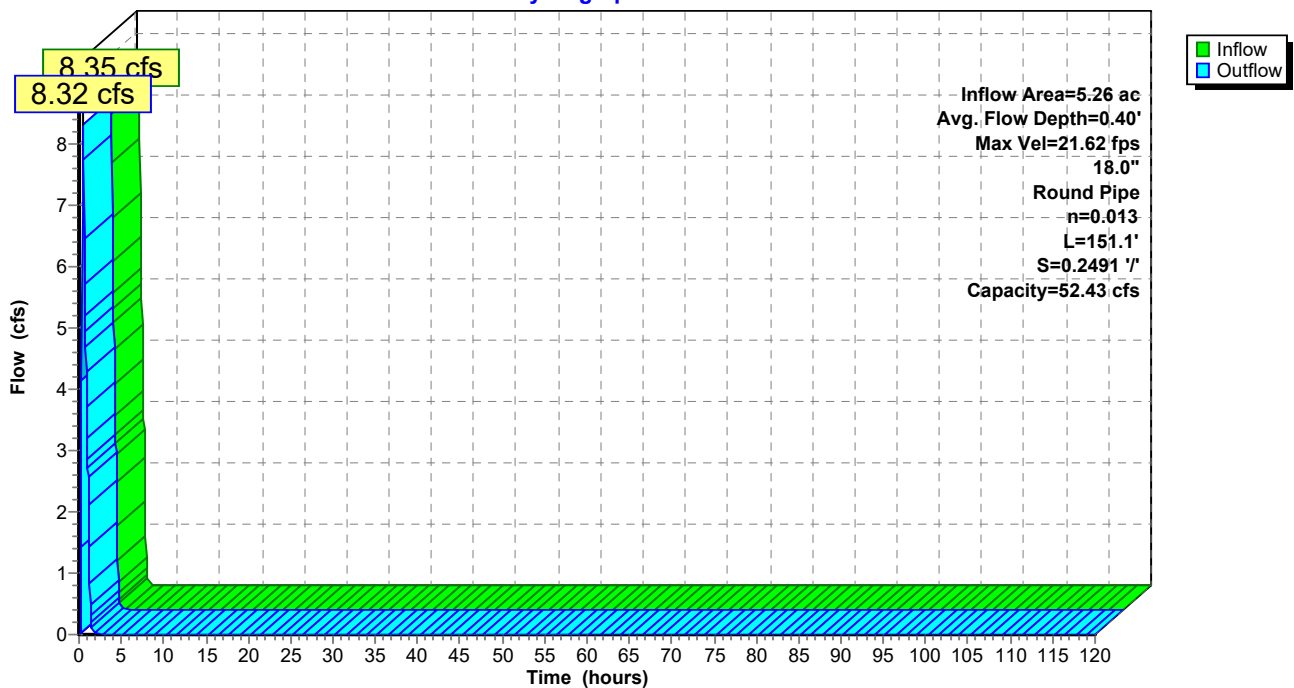
Peak Storage= 58 cf @ 0.47 hrs  
 Average Depth at Peak Storage= 0.40'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 52.43 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 151.1' Slope= 0.2491 1/100'  
 Inlet Invert= 831.15', Outlet Invert= 793.51'



**Reach LP-H2: Letdown Pipe H2**

Hydrograph



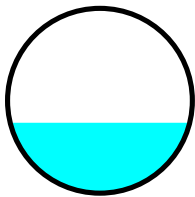
**Summary for Reach LP-H3: Letdown Pipe H3**

Inflow Area = 11.65 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 16.19 cfs @ 0.51 hrs, Volume= 0.810 af  
 Outflow = 16.17 cfs @ 0.52 hrs, Volume= 0.810 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 26.26 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 7.10 fps, Avg. Travel Time= 0.3 min

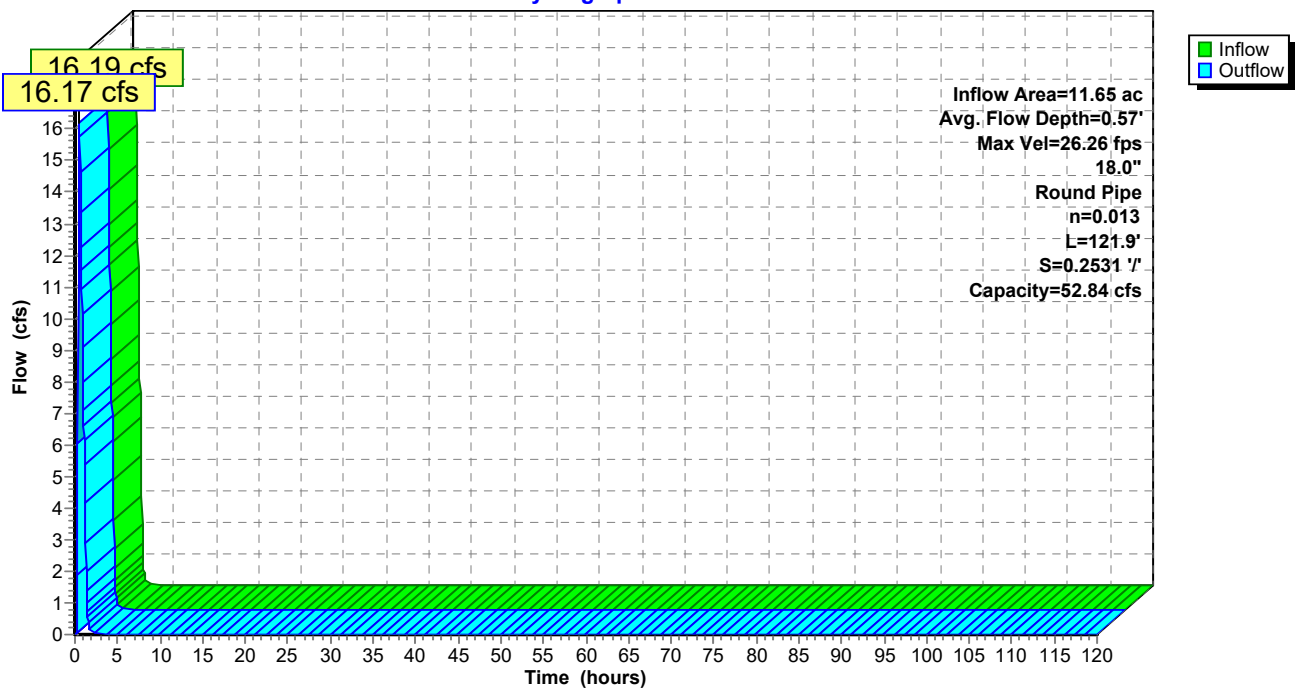
Peak Storage= 75 cf @ 0.51 hrs  
 Average Depth at Peak Storage= 0.57'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 52.84 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 121.9' Slope= 0.2531 '/'  
 Inlet Invert= 774.24', Outlet Invert= 743.39'



**Reach LP-H3: Letdown Pipe H3**

Hydrograph



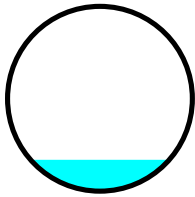
**Summary for Reach LP-N-A1: Letdown Pipe N-A1**

Inflow Area = 3.60 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 5.87 cfs @ 0.43 hrs, Volume= 0.250 af  
 Outflow = 5.85 cfs @ 0.44 hrs, Volume= 0.250 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 16.78 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 7.90 fps, Avg. Travel Time= 0.4 min

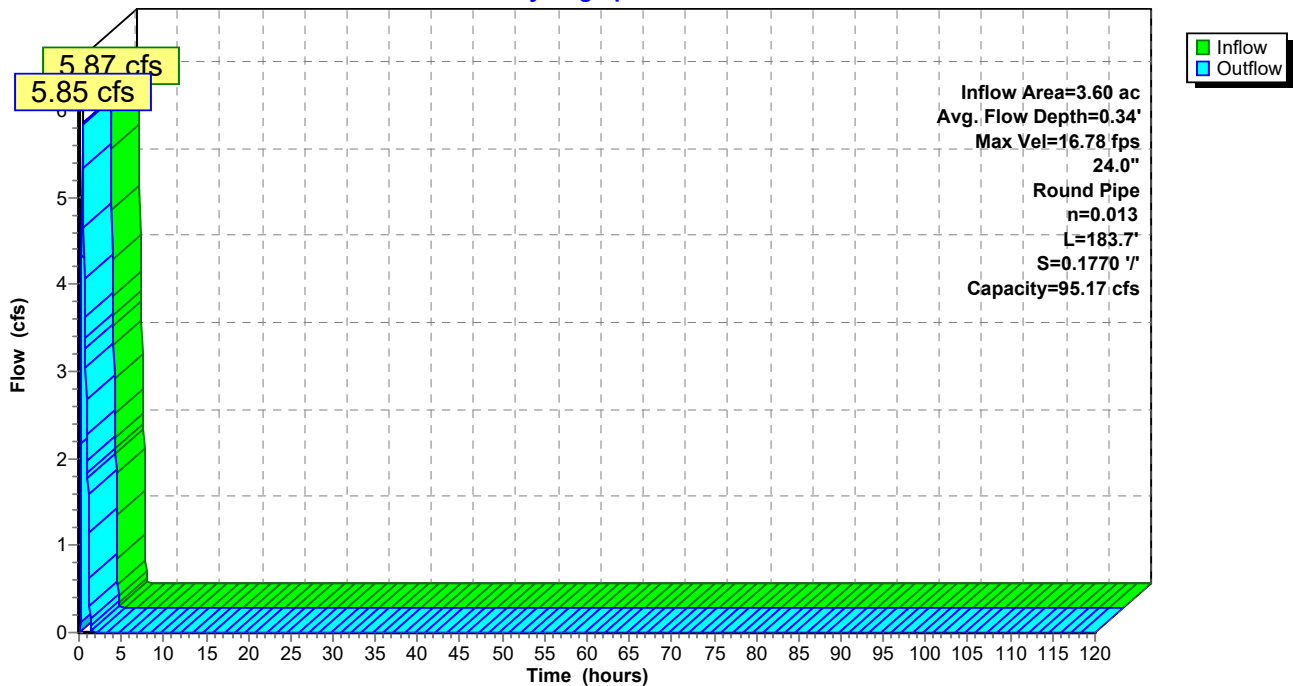
Peak Storage= 64 cf @ 0.43 hrs  
 Average Depth at Peak Storage= 0.34'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 95.17 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 183.7' Slope= 0.1770 '/'  
 Inlet Invert= 869.36', Outlet Invert= 836.85'



**Reach LP-N-A1: Letdown Pipe N-A1**

Hydrograph



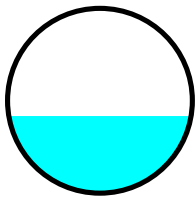
**Summary for Reach LP-N-A10: Letdown Pipe N-A10**

Inflow Area = 21.41 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 30.11 cfs @ 0.54 hrs, Volume= 1.488 af  
 Outflow = 30.08 cfs @ 0.54 hrs, Volume= 1.488 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 15.57 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 3.62 fps, Avg. Travel Time= 0.3 min

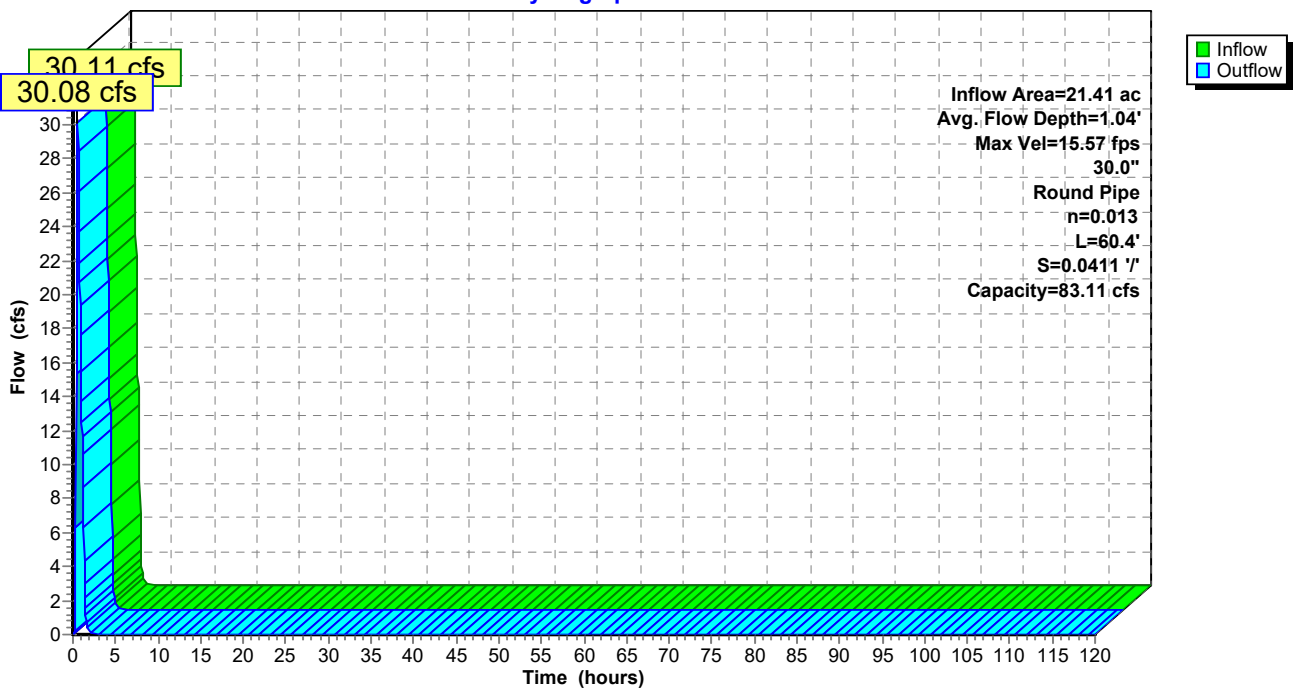
Peak Storage= 117 cf @ 0.54 hrs  
 Average Depth at Peak Storage= 1.04'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 83.11 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 60.4' Slope= 0.0411 '/  
 Inlet Invert= 748.28', Outlet Invert= 745.80'



**Reach LP-N-A10: Letdown Pipe N-A10**

Hydrograph



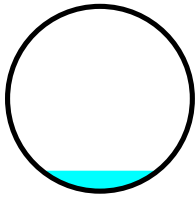
**Summary for Reach LP-N-A2: Letdown Pipe N-A2**

Inflow Area = 2.82 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 4.40 cfs @ 0.48 hrs, Volume= 0.196 af  
 Outflow = 4.38 cfs @ 0.49 hrs, Volume= 0.196 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 14.94 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 6.57 fps, Avg. Travel Time= 0.5 min

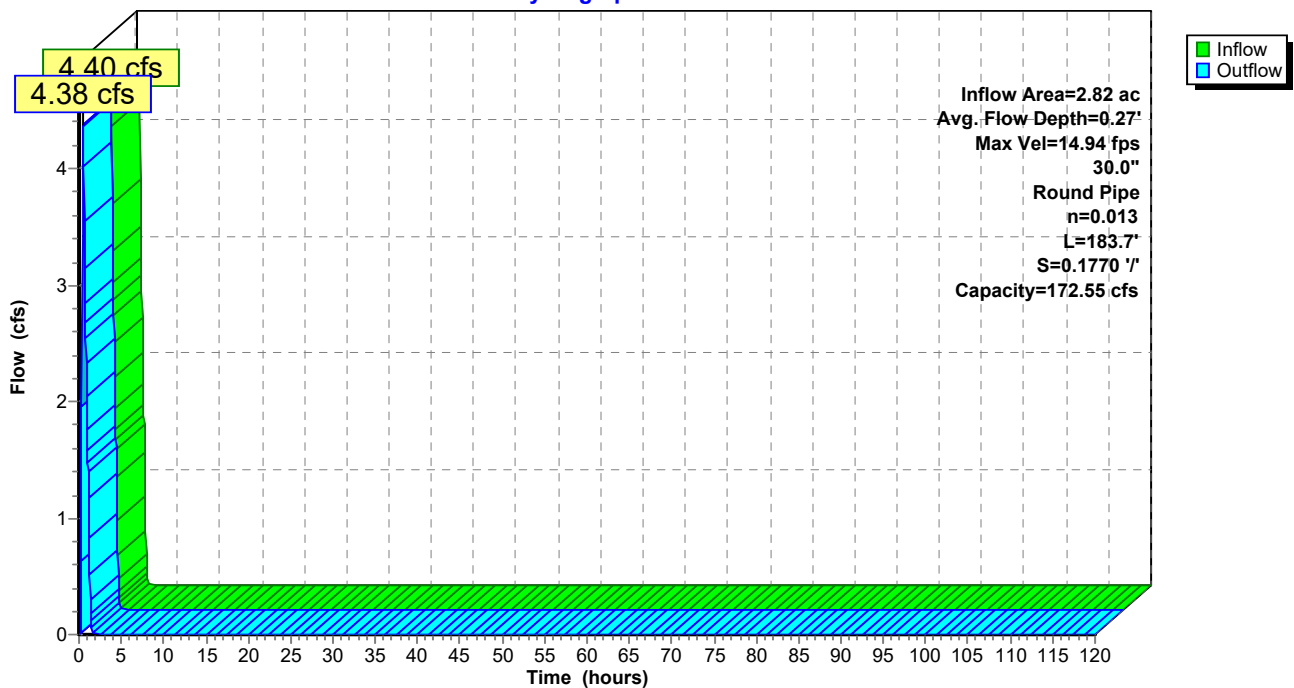
Peak Storage= 54 cf @ 0.48 hrs  
 Average Depth at Peak Storage= 0.27'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 172.55 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 183.7' Slope= 0.1770 '/'  
 Inlet Invert= 869.36', Outlet Invert= 836.85'



**Reach LP-N-A2: Letdown Pipe N-A2**

Hydrograph



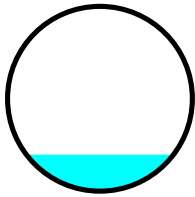
**Summary for Reach LP-N-A3: Letdown Pipe N-A3**

Inflow Area = 4.91 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 8.03 cfs @ 0.43 hrs, Volume= 0.341 af  
 Outflow = 8.00 cfs @ 0.44 hrs, Volume= 0.341 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 18.43 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 7.98 fps, Avg. Travel Time= 0.3 min

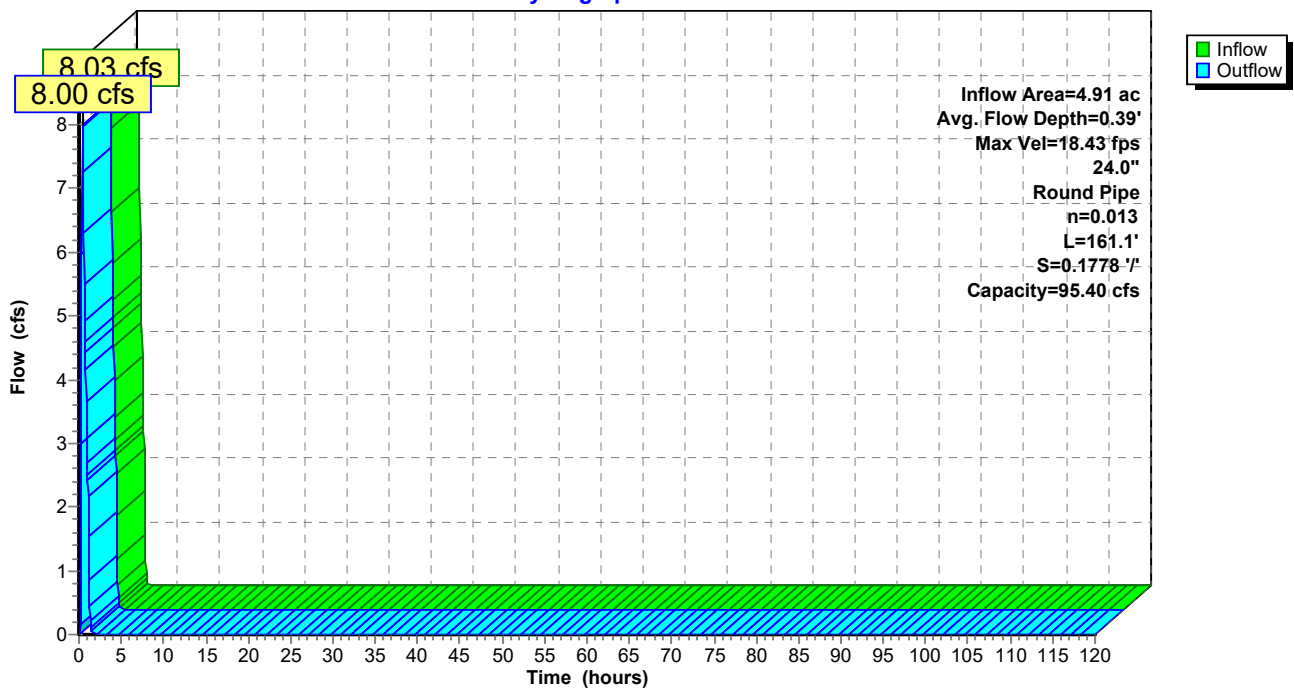
Peak Storage= 70 cf @ 0.43 hrs  
 Average Depth at Peak Storage= 0.39'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 95.40 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 161.1' Slope= 0.1778 '/'  
 Inlet Invert= 836.85', Outlet Invert= 808.20'



**Reach LP-N-A3: Letdown Pipe N-A3**

Hydrograph





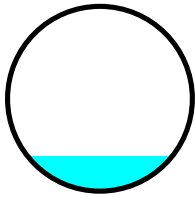
**Summary for Reach LP-N-A4: Letdown Pipe N-A4**

Inflow Area = 9.70 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 13.60 cfs @ 0.55 hrs, Volume= 0.674 af  
 Outflow = 13.58 cfs @ 0.55 hrs, Volume= 0.674 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 21.00 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 6.64 fps, Avg. Travel Time= 0.4 min

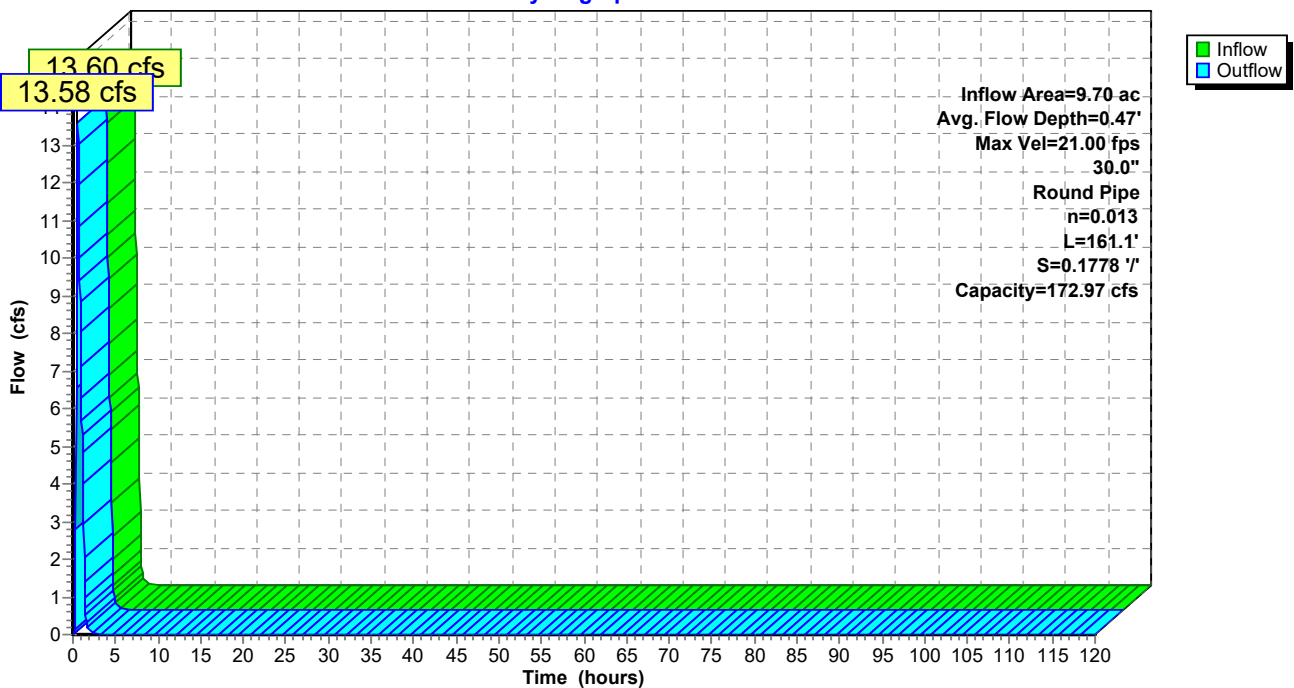
Peak Storage= 104 cf @ 0.55 hrs  
 Average Depth at Peak Storage= 0.47'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 172.97 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 161.1' Slope= 0.1778 '/'  
 Inlet Invert= 836.85', Outlet Invert= 808.20'



**Reach LP-N-A4: Letdown Pipe N-A4**

Hydrograph



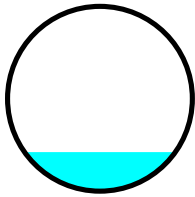
**Summary for Reach LP-N-A5: Letdown Pipe N-A5**

Inflow Area = 5.64 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 9.16 cfs @ 0.43 hrs, Volume= 0.392 af  
 Outflow = 9.13 cfs @ 0.43 hrs, Volume= 0.392 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 19.07 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 8.15 fps, Avg. Travel Time= 0.3 min

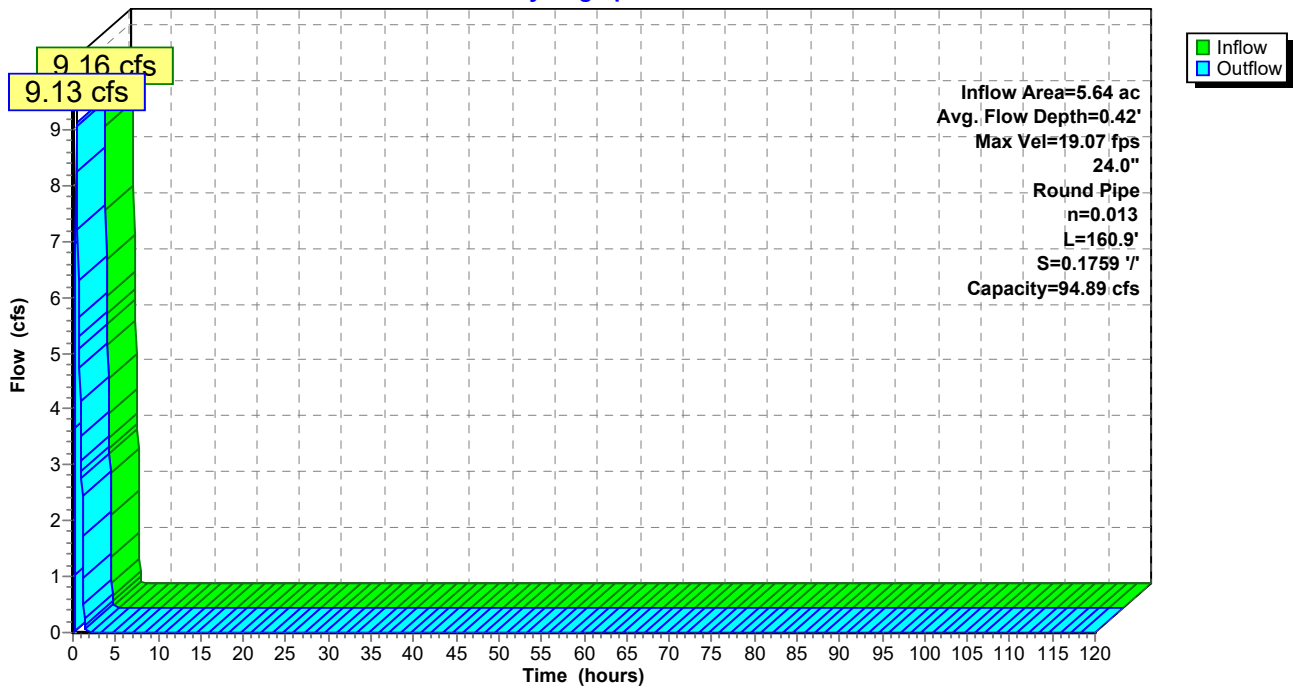
Peak Storage= 77 cf @ 0.43 hrs  
 Average Depth at Peak Storage= 0.42'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 94.89 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 160.9' Slope= 0.1759 '/'  
 Inlet Invert= 808.20', Outlet Invert= 779.89'



**Reach LP-N-A5: Letdown Pipe N-A5**

Hydrograph



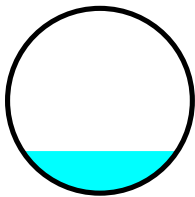
**Summary for Reach LP-N-A6: Letdown Pipe N-A6**

Inflow Area = 13.83 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 19.37 cfs @ 0.55 hrs, Volume= 0.961 af  
 Outflow = 19.35 cfs @ 0.55 hrs, Volume= 0.961 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 23.21 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 6.63 fps, Avg. Travel Time= 0.4 min

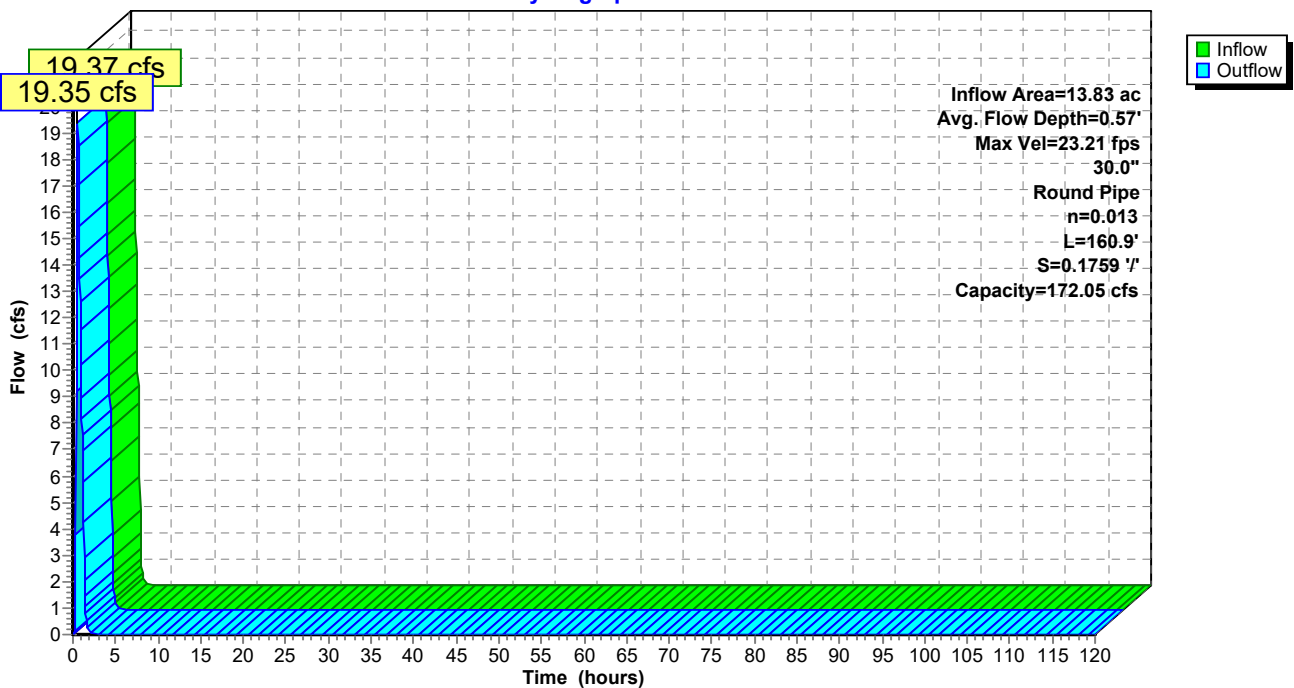
Peak Storage= 134 cf @ 0.55 hrs  
 Average Depth at Peak Storage= 0.57'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 172.05 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 160.9' Slope= 0.1759 '/'  
 Inlet Invert= 808.20', Outlet Invert= 779.89'



**Reach LP-N-A6: Letdown Pipe N-A6**

Hydrograph



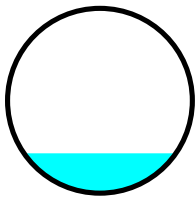
**Summary for Reach LP-N-A7: Letdown Pipe N-A7**

Inflow Area = 6.09 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 9.79 cfs @ 0.43 hrs, Volume= 0.423 af  
 Outflow = 9.76 cfs @ 0.44 hrs, Volume= 0.423 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 19.75 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 8.46 fps, Avg. Travel Time= 0.3 min

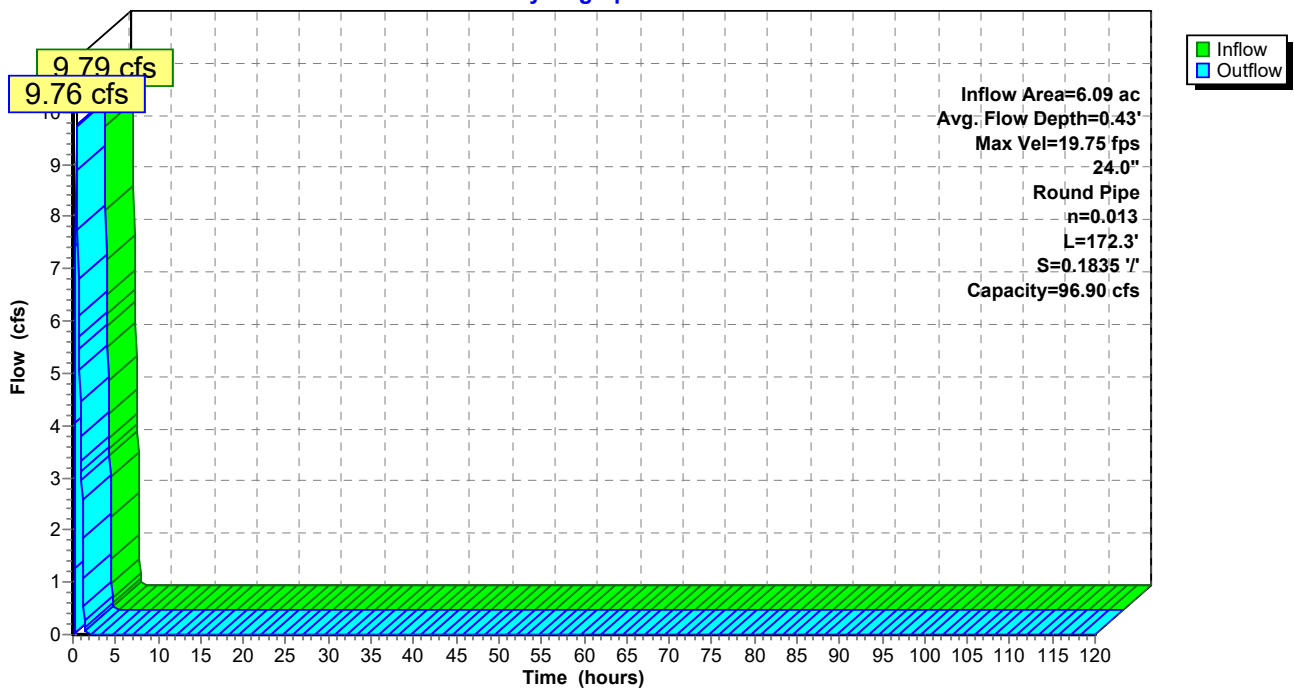
Peak Storage= 85 cf @ 0.43 hrs  
 Average Depth at Peak Storage= 0.43'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 96.90 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 172.3' Slope= 0.1835 '/'  
 Inlet Invert= 779.89', Outlet Invert= 748.28'



**Reach LP-N-A7: Letdown Pipe N-A7**

Hydrograph



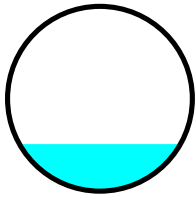
**Summary for Reach LP-N-A8: Letdown Pipe N-A8**

Inflow Area = 17.63 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 24.74 cfs @ 0.55 hrs, Volume= 1.225 af  
 Outflow = 24.71 cfs @ 0.55 hrs, Volume= 1.225 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 25.28 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 6.93 fps, Avg. Travel Time= 0.4 min

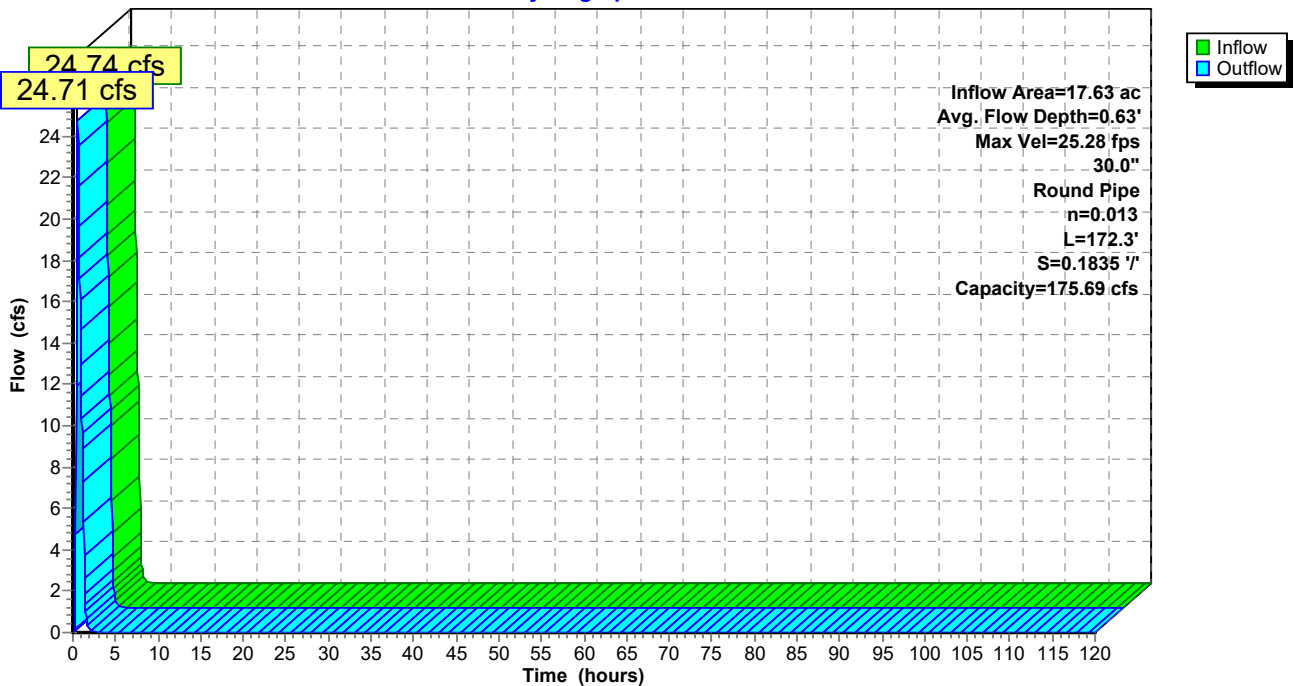
Peak Storage= 169 cf @ 0.55 hrs  
 Average Depth at Peak Storage= 0.63'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 175.69 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 172.3' Slope= 0.1835 '/'  
 Inlet Invert= 779.89', Outlet Invert= 748.28'



**Reach LP-N-A8: Letdown Pipe N-A8**

Hydrograph



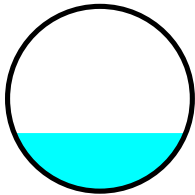
**Summary for Reach LP-N-A9: Letdown Pipe N-A9**

Inflow Area = 6.09 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 9.76 cfs @ 0.44 hrs, Volume= 0.423 af  
 Outflow = 9.75 cfs @ 0.44 hrs, Volume= 0.423 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 11.59 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity= 4.49 fps, Avg. Travel Time= 0.2 min

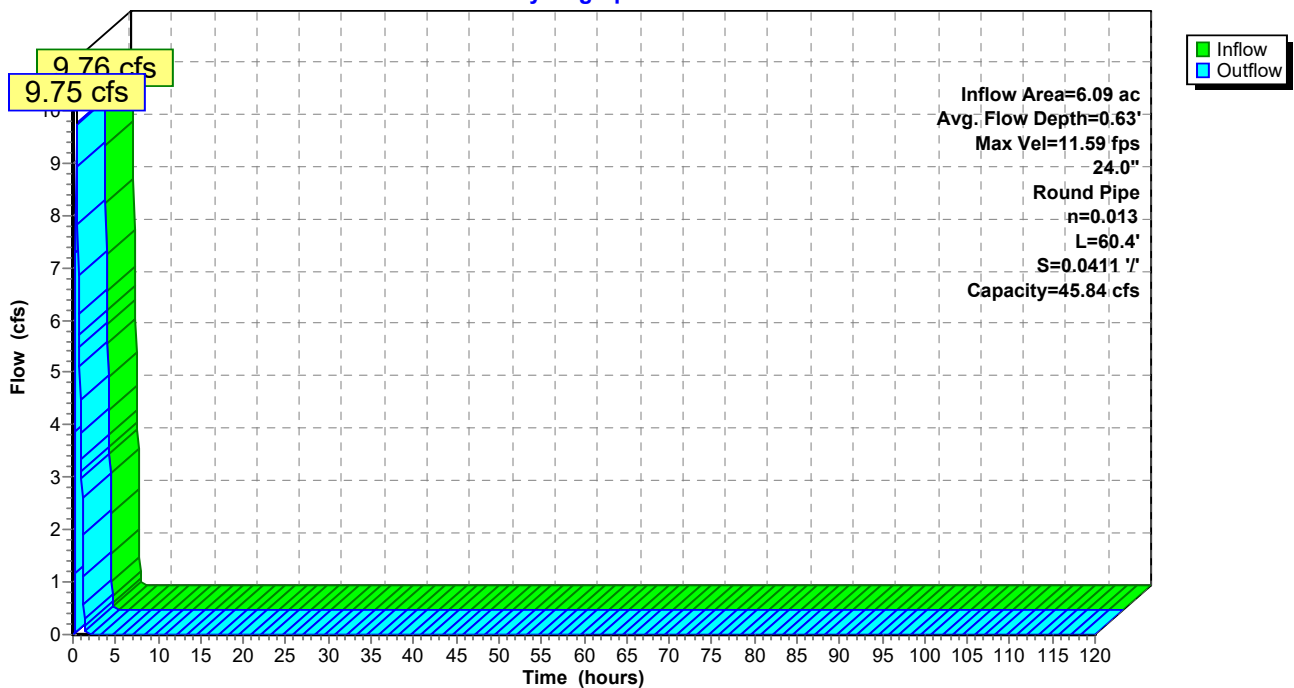
Peak Storage= 51 cf @ 0.44 hrs  
 Average Depth at Peak Storage= 0.63'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 45.84 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 60.4' Slope= 0.0411 '/'  
 Inlet Invert= 748.28', Outlet Invert= 745.80'



**Reach LP-N-A9: Letdown Pipe N-A9**

Hydrograph



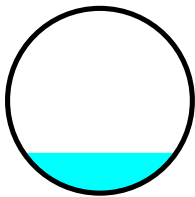
**Summary for Reach LP-N-B1: Letdown Pipe N-B1**

Inflow Area = 3.15 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 4.71 cfs @ 0.52 hrs, Volume= 0.219 af  
 Outflow = 4.69 cfs @ 0.52 hrs, Volume= 0.219 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 16.63 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 5.89 fps, Avg. Travel Time= 0.6 min

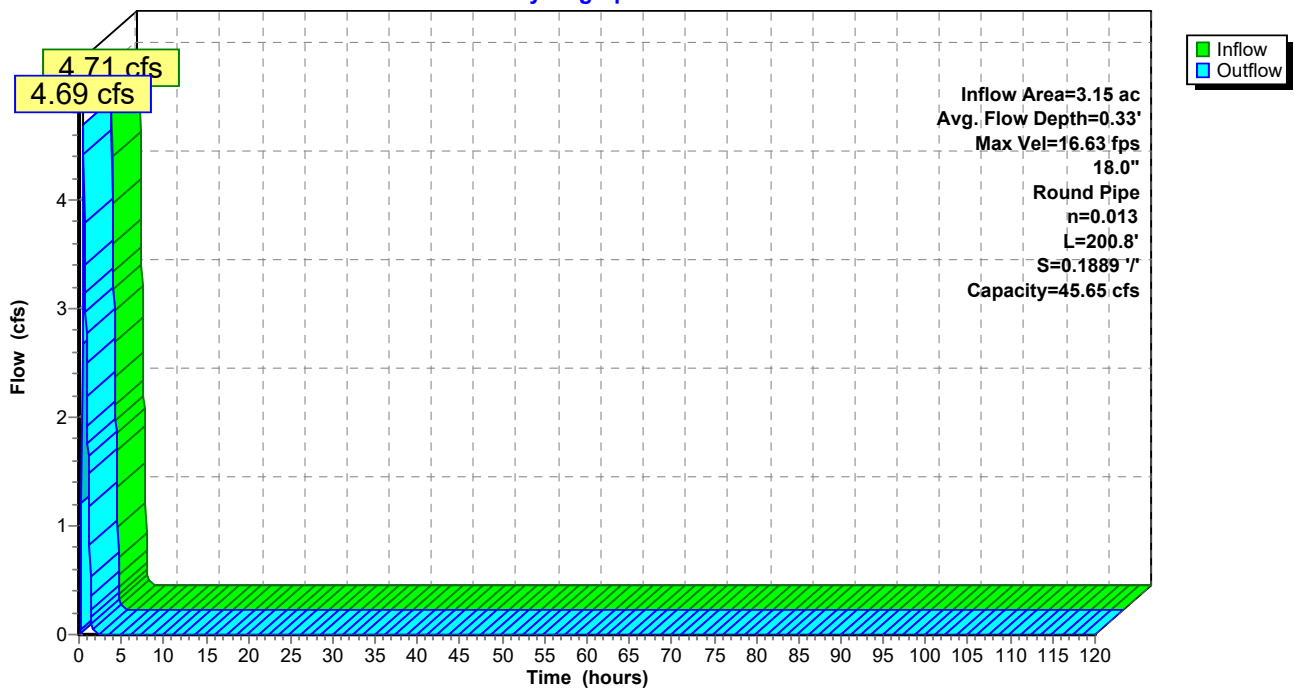
Peak Storage= 57 cf @ 0.52 hrs  
 Average Depth at Peak Storage= 0.33'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 45.65 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 200.8' Slope= 0.1889 '/'  
 Inlet Invert= 847.84', Outlet Invert= 809.91'



**Reach LP-N-B1: Letdown Pipe N-B1**

Hydrograph



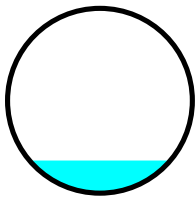
**Summary for Reach LP-N-B2: Letdown Pipe N-B2**

Inflow Area = 4.49 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 6.64 cfs @ 0.52 hrs, Volume= 0.312 af  
 Outflow = 6.56 cfs @ 0.53 hrs, Volume= 0.312 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 17.75 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 6.25 fps, Avg. Travel Time= 0.5 min

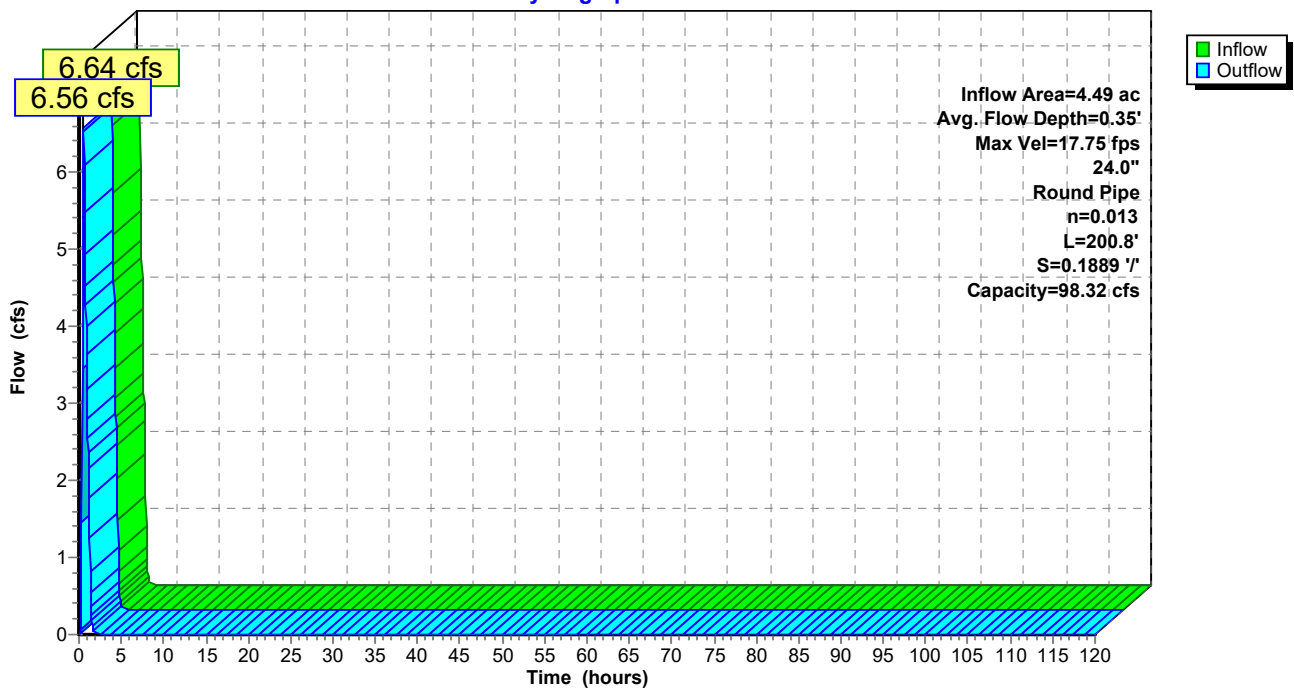
Peak Storage= 74 cf @ 0.53 hrs  
 Average Depth at Peak Storage= 0.35'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 98.32 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 200.8' Slope= 0.1889 '/'  
 Inlet Invert= 847.84', Outlet Invert= 809.91'



**Reach LP-N-B2: Letdown Pipe N-B2**

Hydrograph





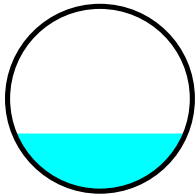
**Summary for Reach LP-N-B3: Letdown Pipe N-B3**

Inflow Area = 6.58 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 9.49 cfs @ 0.53 hrs, Volume= 0.457 af  
 Outflow = 9.47 cfs @ 0.54 hrs, Volume= 0.457 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 20.28 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 5.97 fps, Avg. Travel Time= 0.6 min

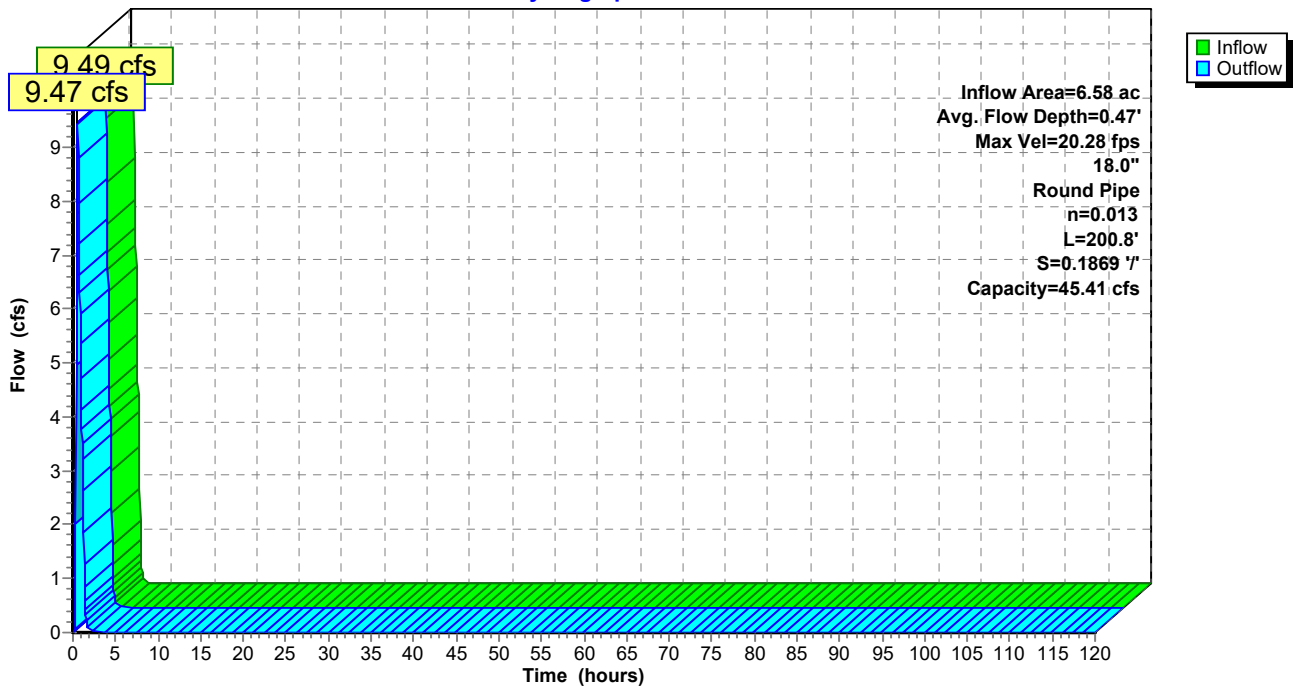
Peak Storage= 94 cf @ 0.53 hrs  
 Average Depth at Peak Storage= 0.47'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 45.41 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 200.8' Slope= 0.1869 '/'  
 Inlet Invert= 809.91', Outlet Invert= 772.39'



**Reach LP-N-B3: Letdown Pipe N-B3**

Hydrograph



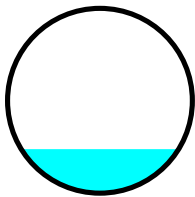
**Summary for Reach LP-N-B4: Letdown Pipe N-B4**

Inflow Area = 8.29 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 12.17 cfs @ 0.52 hrs, Volume= 0.576 af  
 Outflow = 12.04 cfs @ 0.53 hrs, Volume= 0.576 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 21.11 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 6.44 fps, Avg. Travel Time= 0.5 min

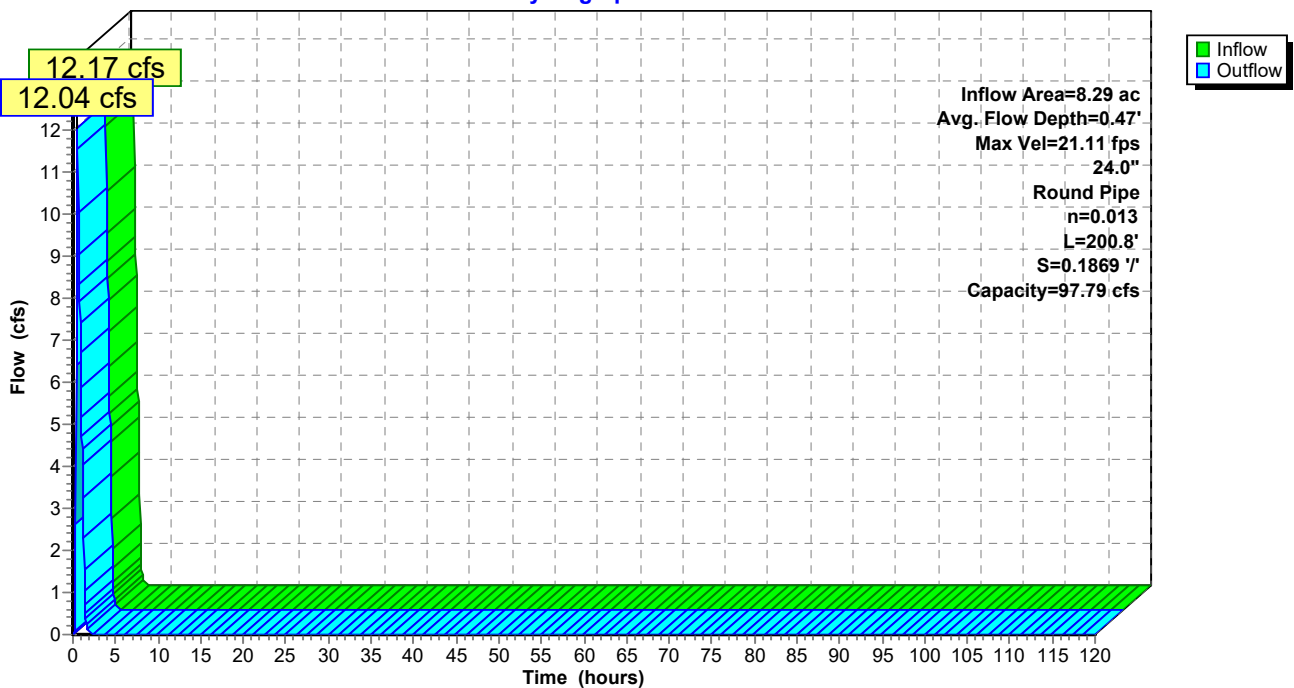
Peak Storage= 115 cf @ 0.53 hrs  
 Average Depth at Peak Storage= 0.47'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 97.79 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 200.8' Slope= 0.1869 '/'  
 Inlet Invert= 809.91', Outlet Invert= 772.39'



**Reach LP-N-B4: Letdown Pipe N-B4**

Hydrograph



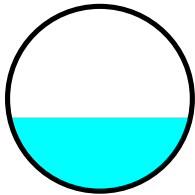
**Summary for Reach LP-N-B5: Letdown Pipe N-B5**

Inflow Area = 11.08 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 15.42 cfs @ 0.55 hrs, Volume= 0.770 af  
 Outflow = 15.40 cfs @ 0.56 hrs, Volume= 0.770 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 23.57 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 6.07 fps, Avg. Travel Time= 0.5 min

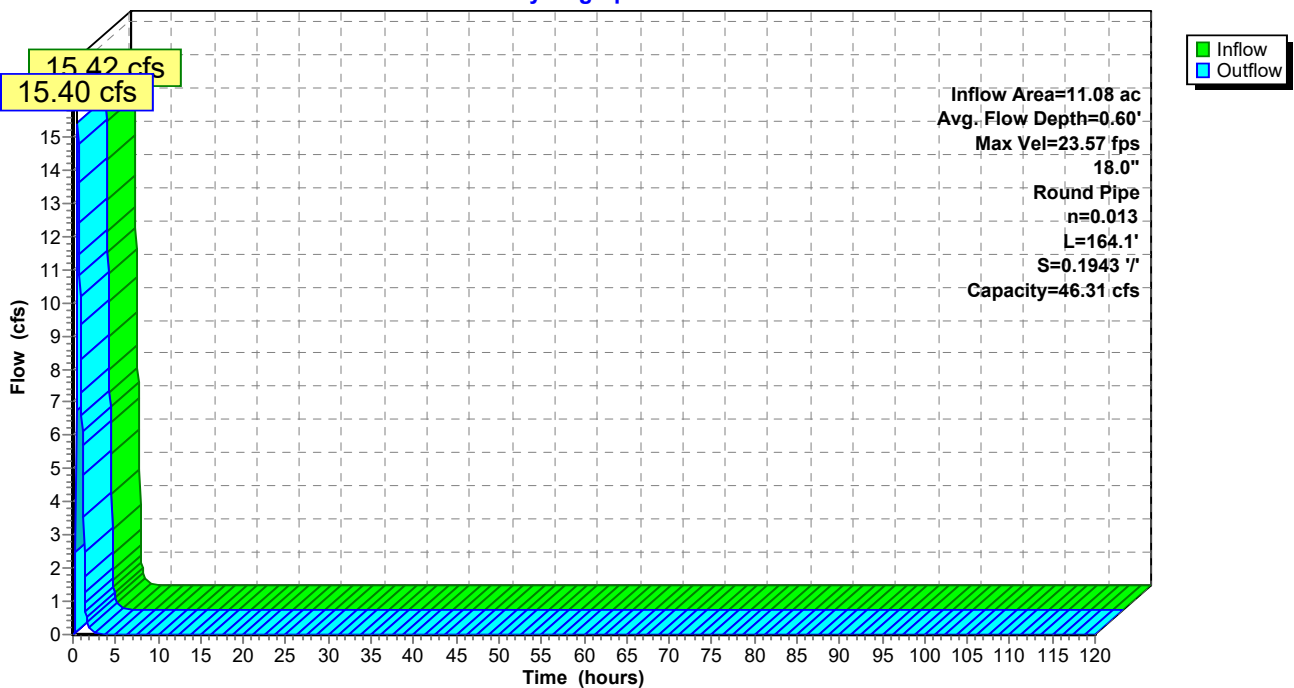
Peak Storage= 107 cf @ 0.55 hrs  
 Average Depth at Peak Storage= 0.60'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 46.31 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 164.1' Slope= 0.1943 '/'  
 Inlet Invert= 772.39', Outlet Invert= 740.50'



**Reach LP-N-B5: Letdown Pipe N-B5**

Hydrograph



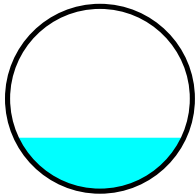
**Summary for Reach LP-N-B6: Letdown Pipe N-B6**

Inflow Area = 12.58 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 18.08 cfs @ 0.53 hrs, Volume= 0.874 af  
 Outflow = 18.05 cfs @ 0.54 hrs, Volume= 0.874 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 24.08 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 6.68 fps, Avg. Travel Time= 0.4 min

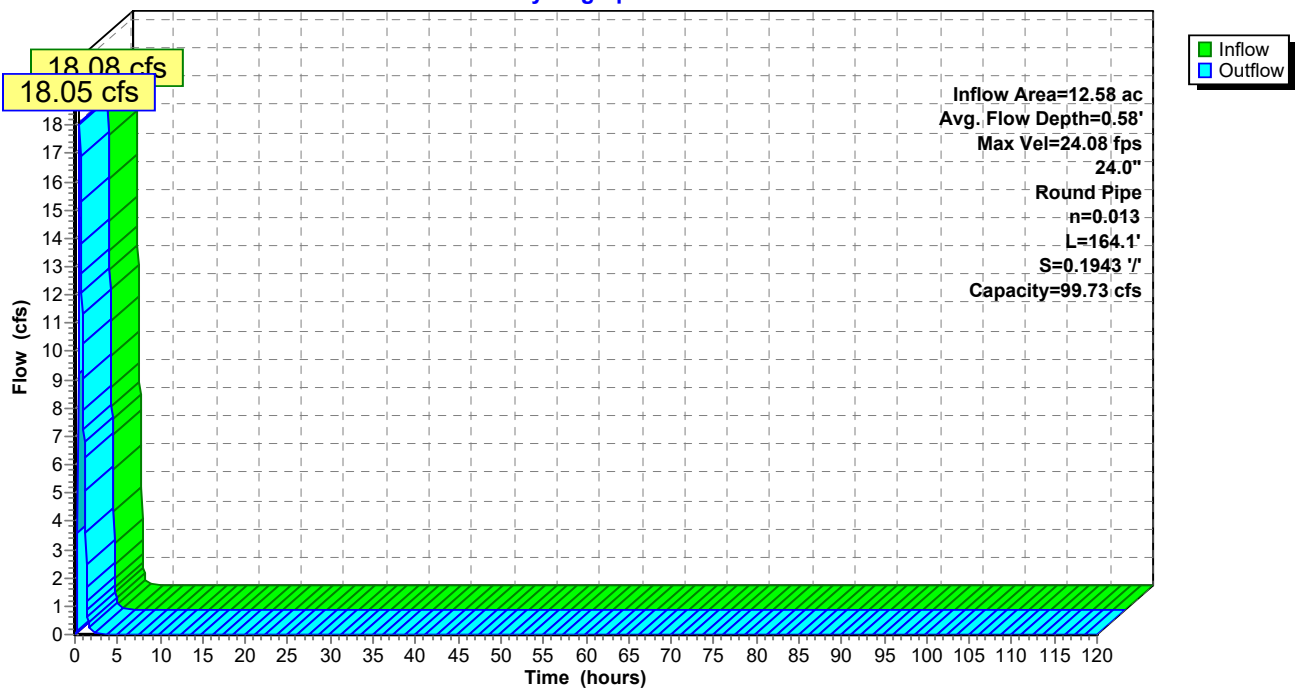
Peak Storage= 123 cf @ 0.53 hrs  
 Average Depth at Peak Storage= 0.58'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 99.73 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 164.1' Slope= 0.1943 '/'  
 Inlet Invert= 772.39', Outlet Invert= 740.50'



**Reach LP-N-B6: Letdown Pipe N-B6**

Hydrograph



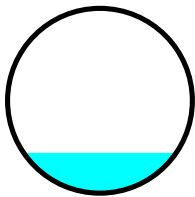
**Summary for Reach LP-N-C1: Letdown Pipe N-C1**

Inflow Area = 8.24 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 11.74 cfs @ 0.53 hrs, Volume= 0.573 af  
 Outflow = 11.72 cfs @ 0.53 hrs, Volume= 0.573 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 23.24 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 7.66 fps, Avg. Travel Time= 0.3 min

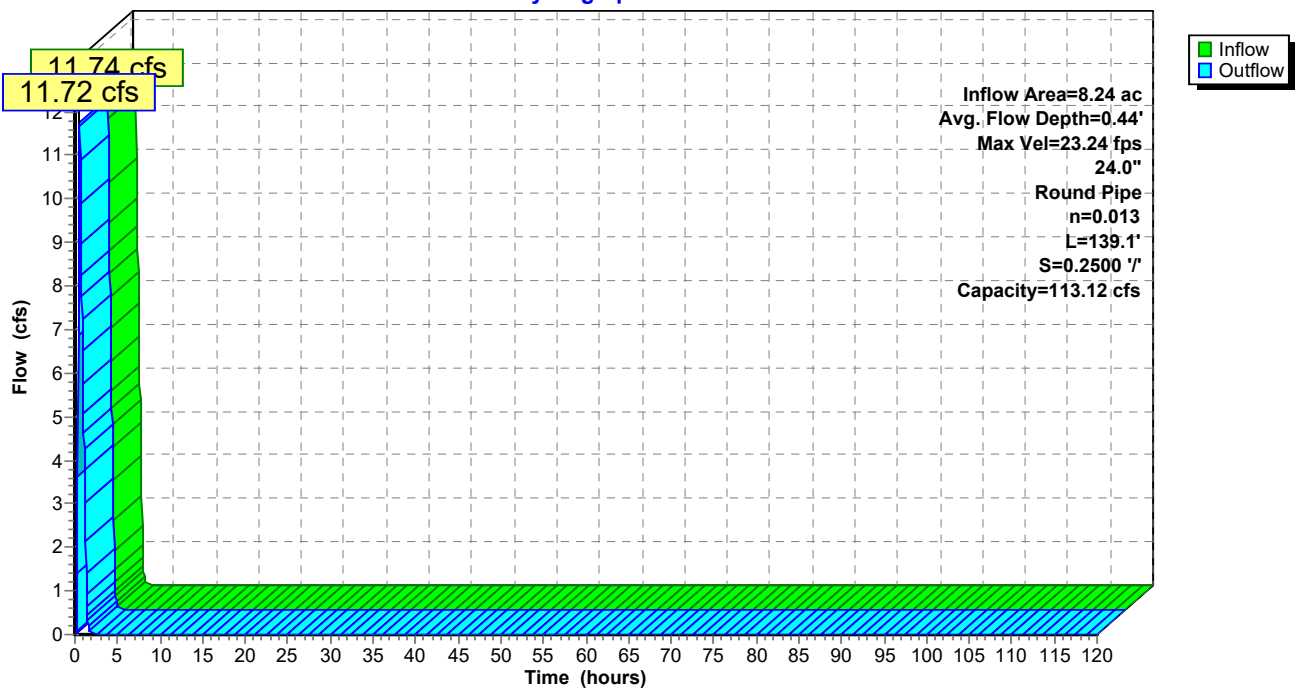
Peak Storage= 70 cf @ 0.53 hrs  
 Average Depth at Peak Storage= 0.44'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 113.12 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 139.1' Slope= 0.2500 '/  
 Inlet Invert= 843.66', Outlet Invert= 808.88'



**Reach LP-N-C1: Letdown Pipe N-C1**

Hydrograph



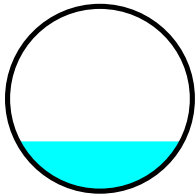
**Summary for Reach LP-N-C2: Letdown Pipe N-C2**

Inflow Area = 12.44 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 17.77 cfs @ 0.53 hrs, Volume= 0.865 af  
 Outflow = 17.76 cfs @ 0.53 hrs, Volume= 0.865 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 26.18 fps, Min. Travel Time= 0.0 min  
 Avg. Velocity = 7.63 fps, Avg. Travel Time= 0.1 min

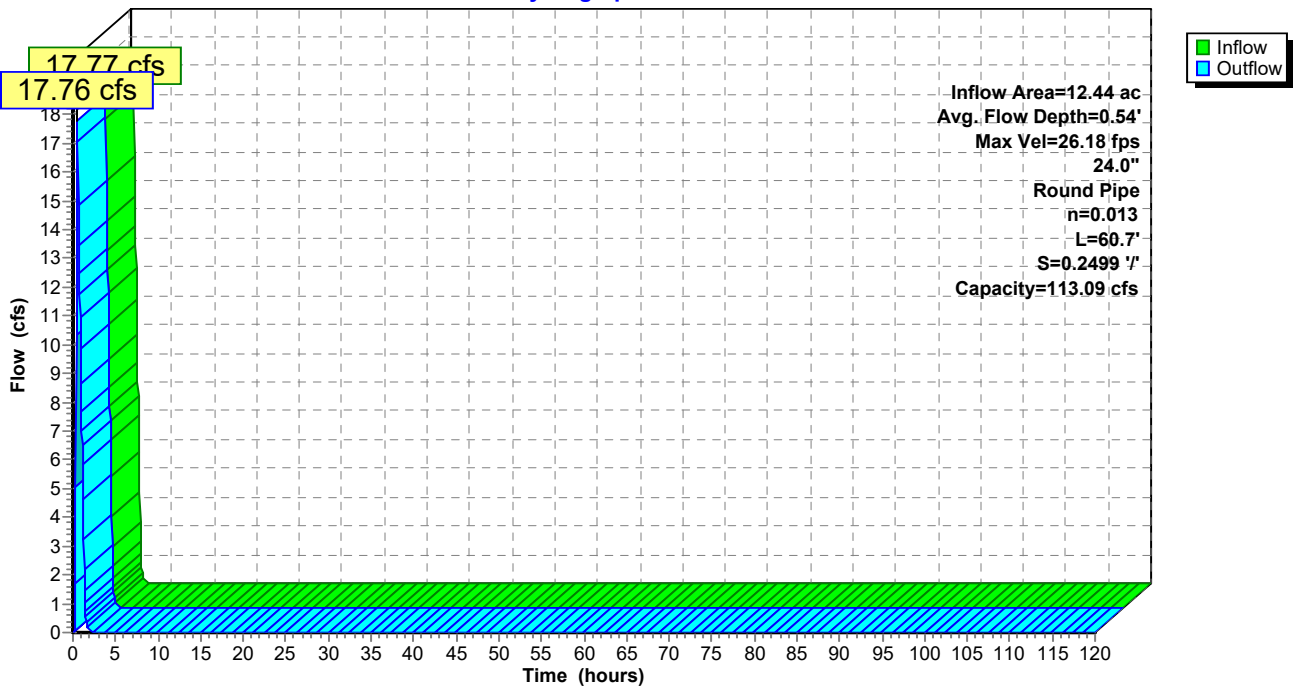
Peak Storage= 41 cf @ 0.53 hrs  
 Average Depth at Peak Storage= 0.54'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 113.09 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 60.7' Slope= 0.2499 '/'  
 Inlet Invert= 808.88', Outlet Invert= 793.71'



**Reach LP-N-C2: Letdown Pipe N-C2**

Hydrograph



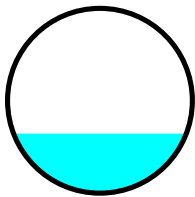
**Summary for Reach LP-N-C3: Letdown Pipe N-C3**

Inflow Area = 17.99 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 25.59 cfs @ 0.52 hrs, Volume= 1.251 af  
 Outflow = 25.55 cfs @ 0.52 hrs, Volume= 1.251 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 29.29 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 8.03 fps, Avg. Travel Time= 0.3 min

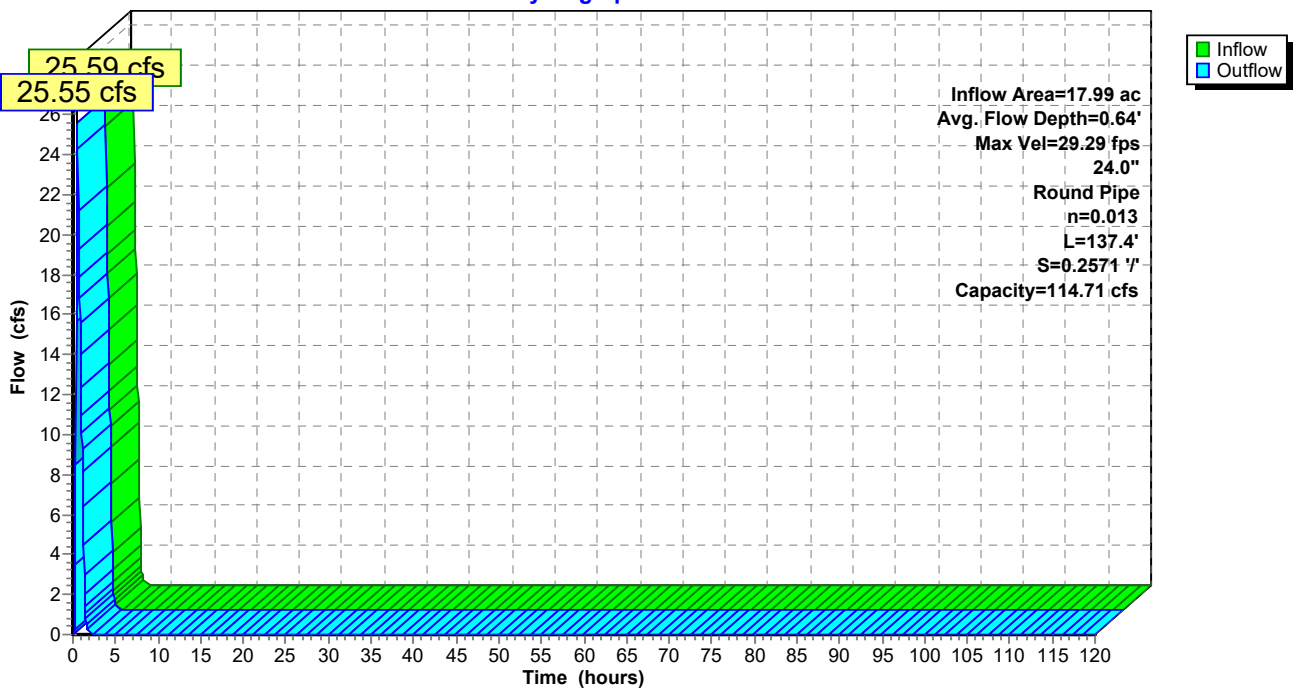
Peak Storage= 120 cf @ 0.52 hrs  
 Average Depth at Peak Storage= 0.64'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 114.71 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 137.4' Slope= 0.2571 1/100'  
 Inlet Invert= 774.26', Outlet Invert= 738.93'



**Reach LP-N-C3: Letdown Pipe N-C3**

Hydrograph



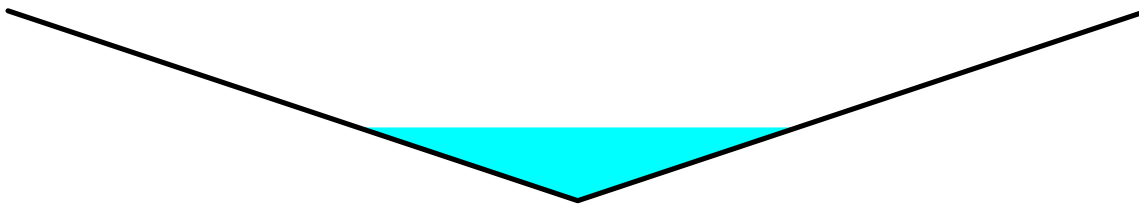
**Summary for Reach PD-1: Perimeter Ditch 1**

Inflow Area = 8.06 ac, 4.48% Impervious, Inflow Depth = 0.89" for 10-Year, 1-Hour event  
 Inflow = 14.33 cfs @ 0.35 hrs, Volume= 0.599 af  
 Outflow = 10.02 cfs @ 0.69 hrs, Volume= 0.599 af, Atten= 30%, Lag= 20.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.51 fps, Min. Travel Time= 11.1 min  
 Avg. Velocity = 0.50 fps, Avg. Travel Time= 55.7 min

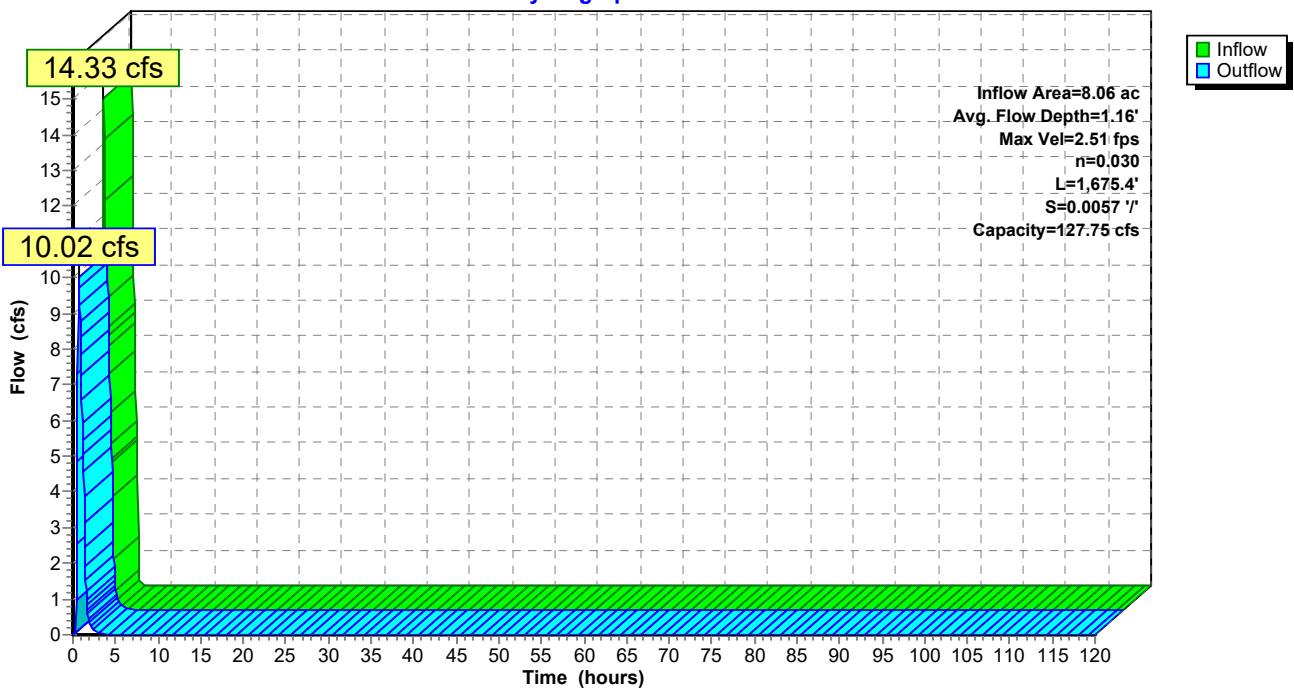
Peak Storage= 6,734 cf @ 0.50 hrs  
 Average Depth at Peak Storage= 1.16'  
 Bank-Full Depth= 3.00' Flow Area= 27.0 sf, Capacity= 127.75 cfs

0.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 ' / ' Top Width= 18.00'  
 Length= 1,675.4' Slope= 0.0057 ' / '  
 Inlet Invert= 768.00', Outlet Invert= 758.45'



**Reach PD-1: Perimeter Ditch 1**

Hydrograph





**Summary for Reach PD-10: Perimeter Ditch 10**

Inflow Area = 9.21 ac, 4.89% Impervious, Inflow Depth = 0.90" for 10-Year, 1-Hour event  
 Inflow = 10.23 cfs @ 0.63 hrs, Volume= 0.691 af  
 Outflow = 10.17 cfs @ 0.71 hrs, Volume= 0.691 af, Atten= 1%, Lag= 5.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.94 fps, Min. Travel Time= 3.8 min  
 Avg. Velocity = 0.52 fps, Avg. Travel Time= 14.2 min

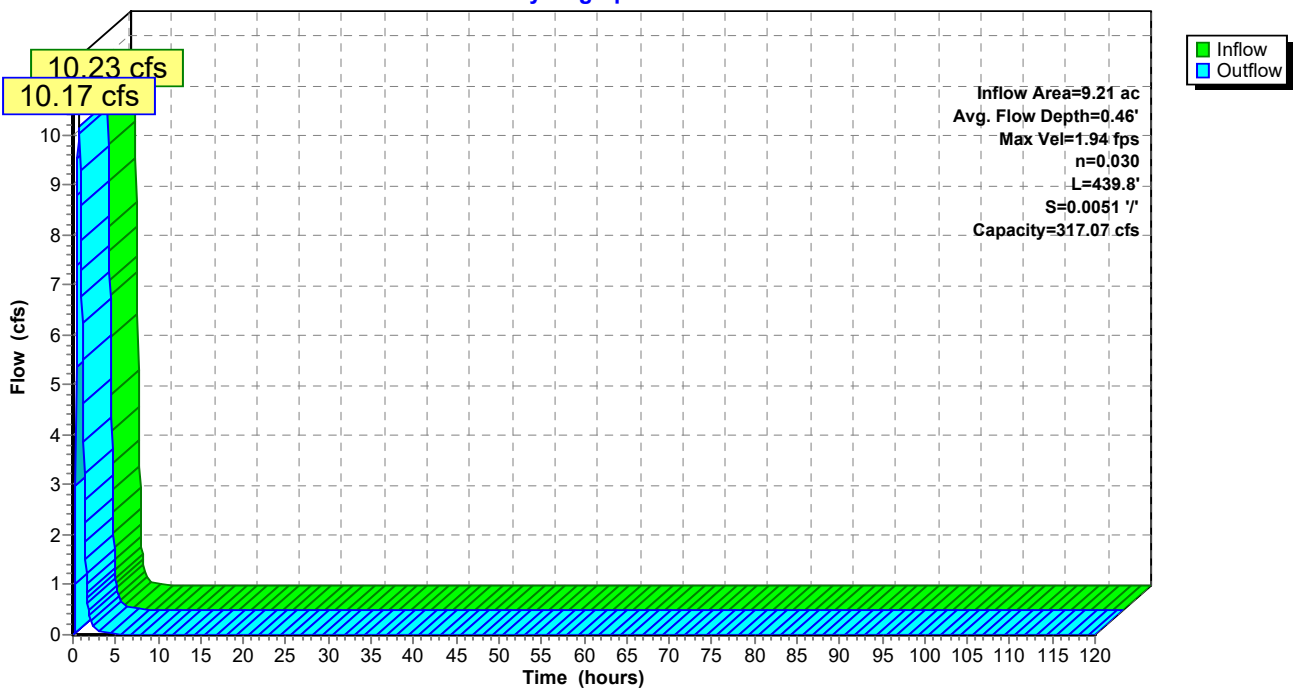
Peak Storage= 2,305 cf @ 0.65 hrs  
 Average Depth at Peak Storage= 0.46'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 317.07 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 ' / ' Top Width= 28.00'  
 Length= 439.8' Slope= 0.0051 ' / '  
 Inlet Invert= 739.43', Outlet Invert= 737.18'



**Reach PD-10: Perimeter Ditch 10**

Hydrograph



**Summary for Reach PD-11: Perimeter Ditch 11**

Inflow Area = 2.70 ac, 11.67% Impervious, Inflow Depth = 0.99" for 10-Year, 1-Hour event  
 Inflow = 6.06 cfs @ 0.30 hrs, Volume= 0.224 af  
 Outflow = 3.64 cfs @ 0.71 hrs, Volume= 0.224 af, Atten= 40%, Lag= 24.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.34 fps, Min. Travel Time= 13.8 min  
 Avg. Velocity = 0.43 fps, Avg. Travel Time= 42.4 min

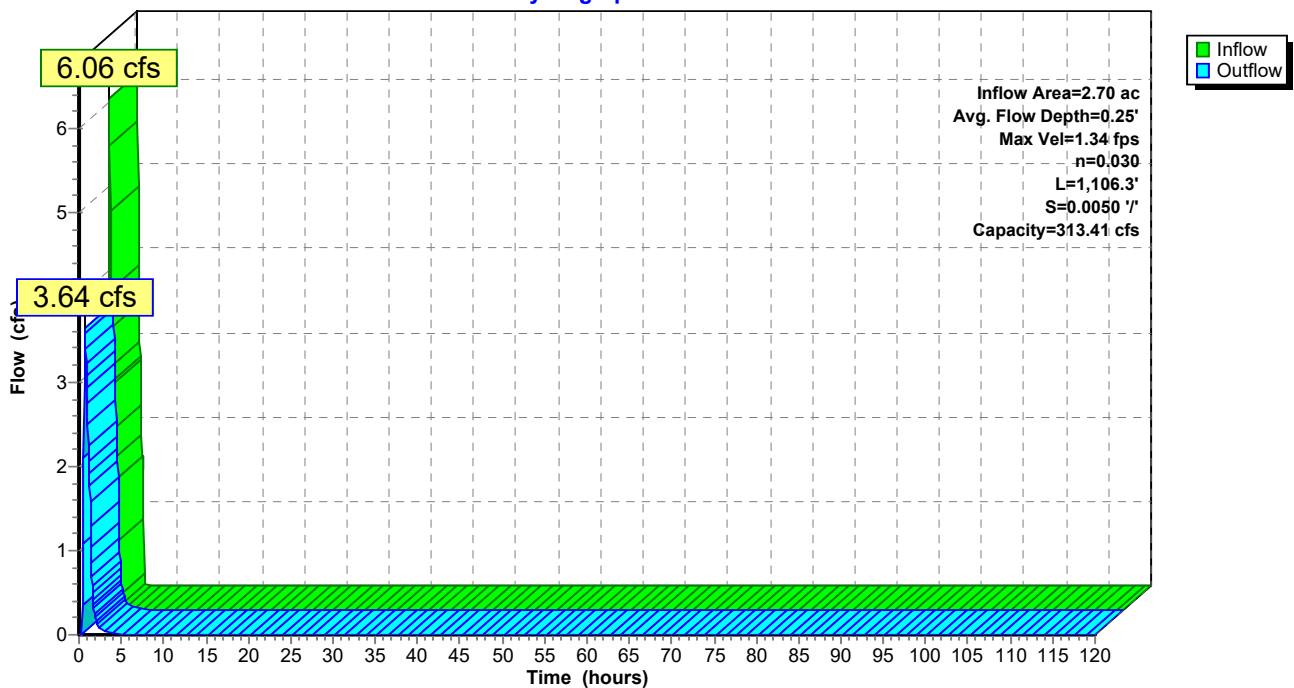
Peak Storage= 3,030 cf @ 0.47 hrs  
 Average Depth at Peak Storage= 0.25'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 313.41 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 1,106.3' Slope= 0.0050 '/'  
 Inlet Invert= 744.96', Outlet Invert= 739.43'



**Reach PD-11: Perimeter Ditch 11**

Hydrograph



**Summary for Reach PD-12: Perimeter Ditch 12**

Inflow Area = 2.74 ac, 11.45% Impervious, Inflow Depth = 1.00" for 10-Year, 1-Hour event  
 Inflow = 3.56 cfs @ 0.62 hrs, Volume= 0.227 af  
 Outflow = 3.07 cfs @ 0.99 hrs, Volume= 0.227 af, Atten= 14%, Lag= 22.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.25 fps, Min. Travel Time= 14.6 min  
 Avg. Velocity = 0.44 fps, Avg. Travel Time= 41.5 min

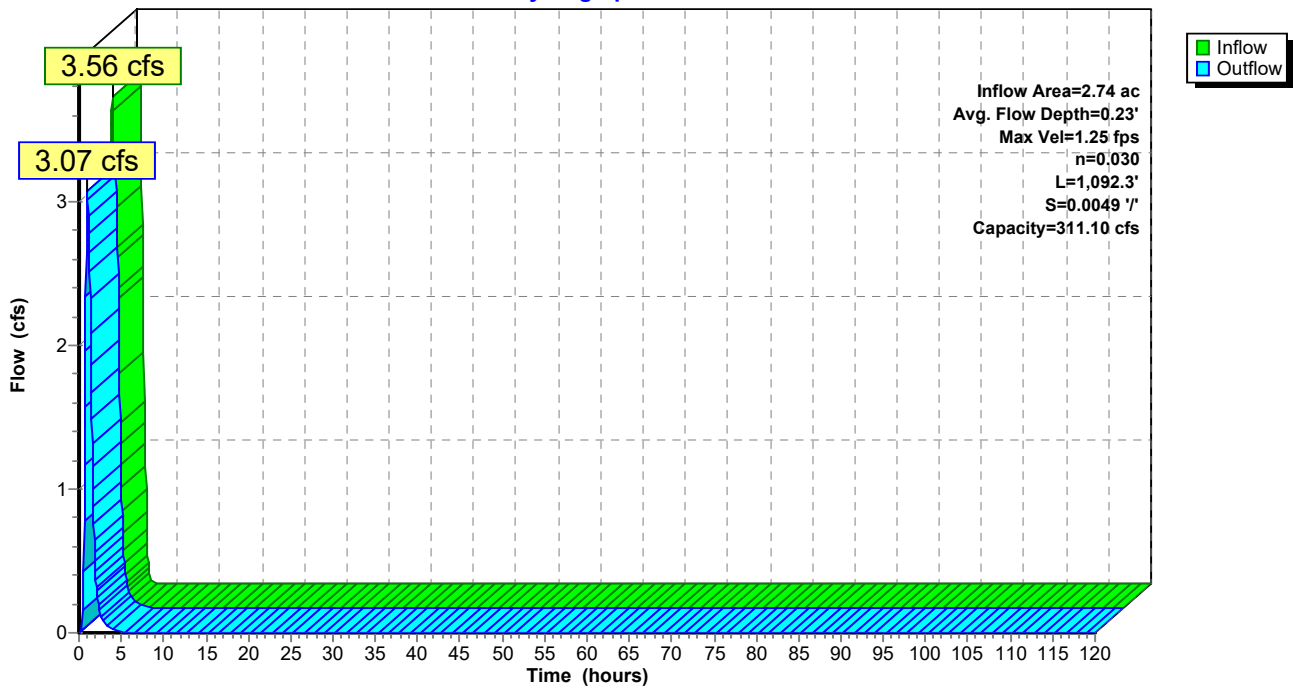
Peak Storage= 2,692 cf @ 0.75 hrs  
 Average Depth at Peak Storage= 0.23'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 311.10 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 1,092.3' Slope= 0.0049 '/'  
 Inlet Invert= 744.96', Outlet Invert= 739.58'



**Reach PD-12: Perimeter Ditch 12**

Hydrograph



**Summary for Reach PD-13: Perimeter Ditch 13**

Inflow Area = 25.73 ac, 1.49% Impervious, Inflow Depth = 0.86" for 10-Year, 1-Hour event  
 Inflow = 32.63 cfs @ 0.52 hrs, Volume= 1.835 af  
 Outflow = 31.92 cfs @ 0.58 hrs, Volume= 1.835 af, Atten= 2%, Lag= 3.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.35 fps, Min. Travel Time= 1.6 min  
 Avg. Velocity = 0.45 fps, Avg. Travel Time= 8.2 min

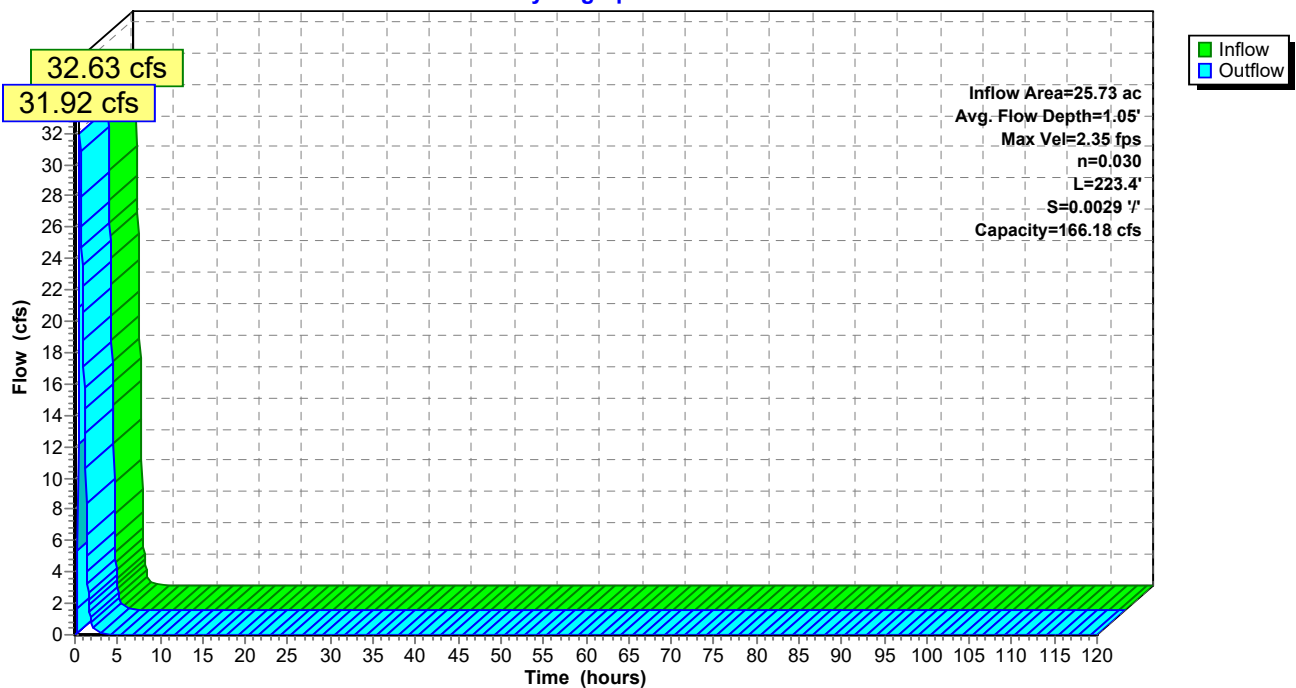
Peak Storage= 3,070 cf @ 0.55 hrs  
 Average Depth at Peak Storage= 1.05'  
 Bank-Full Depth= 2.50' Flow Area= 43.8 sf, Capacity= 166.18 cfs

10.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 25.00'  
 Length= 223.4' Slope= 0.0029 '/'  
 Inlet Invert= 739.58', Outlet Invert= 738.93'



**Reach PD-13: Perimeter Ditch 13**

Hydrograph



**Summary for Reach PD-14: Perimeter Ditch 14**

Inflow Area = 17.46 ac, 1.99% Impervious, Inflow Depth = 0.86" for 10-Year, 1-Hour event  
 Inflow = 21.13 cfs @ 0.66 hrs, Volume= 1.253 af  
 Outflow = 20.91 cfs @ 0.71 hrs, Volume= 1.253 af, Atten= 1%, Lag= 2.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.37 fps, Min. Travel Time= 1.6 min  
 Avg. Velocity = 0.50 fps, Avg. Travel Time= 7.4 min

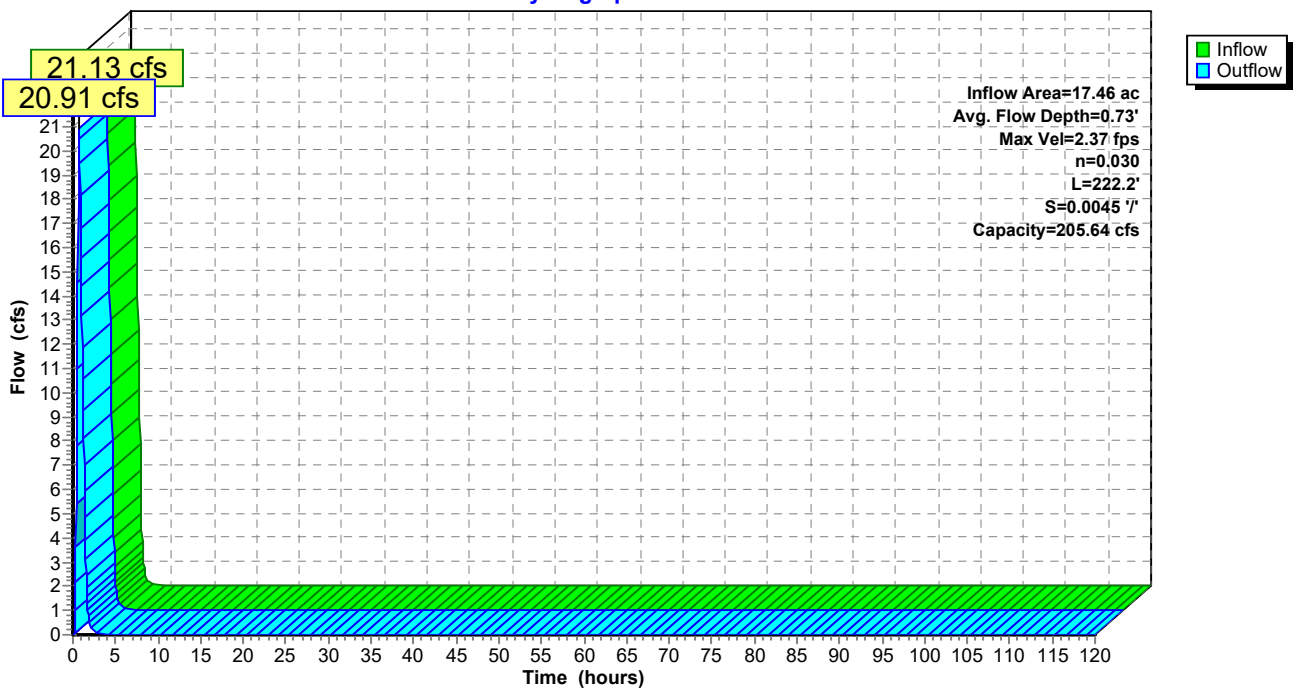
Peak Storage= 1,970 cf @ 0.68 hrs  
 Average Depth at Peak Storage= 0.73'  
 Bank-Full Depth= 2.50' Flow Area= 43.8 sf, Capacity= 205.64 cfs

10.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 25.00'  
 Length= 222.2' Slope= 0.0045 '/'  
 Inlet Invert= 739.92', Outlet Invert= 738.93'



**Reach PD-14: Perimeter Ditch 14**

Hydrograph



**Summary for Reach PD-15: Perimeter Ditch 15**

Inflow Area = 16.01 ac, 1.69% Impervious, Inflow Depth = 0.86" for 10-Year, 1-Hour event  
 Inflow = 21.03 cfs @ 0.50 hrs, Volume= 1.144 af  
 Outflow = 19.77 cfs @ 0.66 hrs, Volume= 1.144 af, Atten= 6%, Lag= 10.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.32 fps, Min. Travel Time= 5.4 min  
 Avg. Velocity = 0.49 fps, Avg. Travel Time= 25.8 min

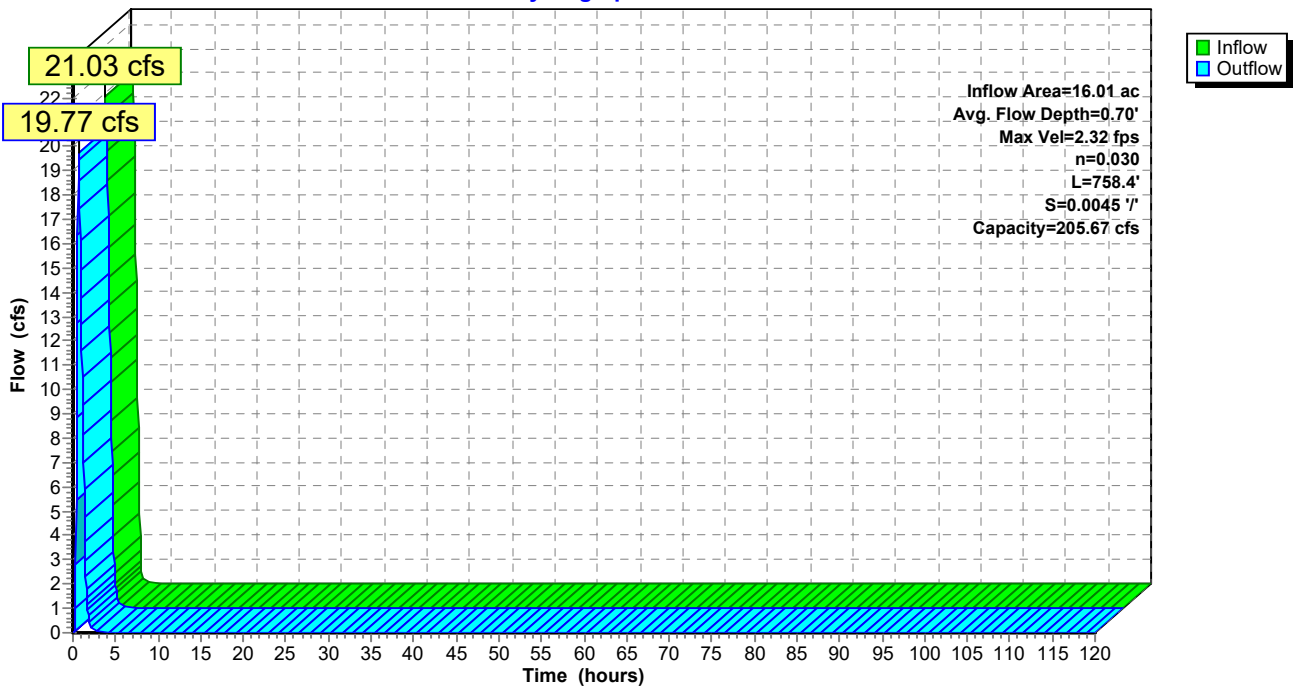
Peak Storage= 6,471 cf @ 0.57 hrs  
 Average Depth at Peak Storage= 0.70'  
 Bank-Full Depth= 2.50' Flow Area= 43.8 sf, Capacity= 205.67 cfs

10.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 25.00'  
 Length= 758.4' Slope= 0.0045 '/'  
 Inlet Invert= 743.30', Outlet Invert= 739.92'



**Reach PD-15: Perimeter Ditch 15**

Hydrograph



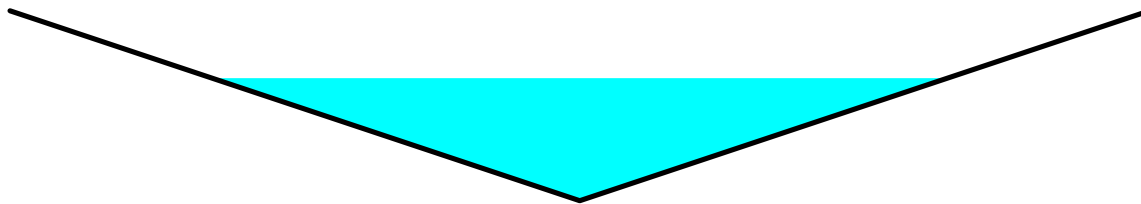
**Summary for Reach PD-2: Perimeter Ditch 2**

Inflow Area = 30.47 ac, 1.77% Impervious, Inflow Depth = 0.85" for 10-Year, 1-Hour event  
 Inflow = 32.84 cfs @ 0.75 hrs, Volume= 2.163 af  
 Outflow = 32.68 cfs @ 0.81 hrs, Volume= 2.163 af, Atten= 0%, Lag= 3.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.92 fps, Min. Travel Time= 1.8 min  
 Avg. Velocity = 0.53 fps, Avg. Travel Time= 10.0 min

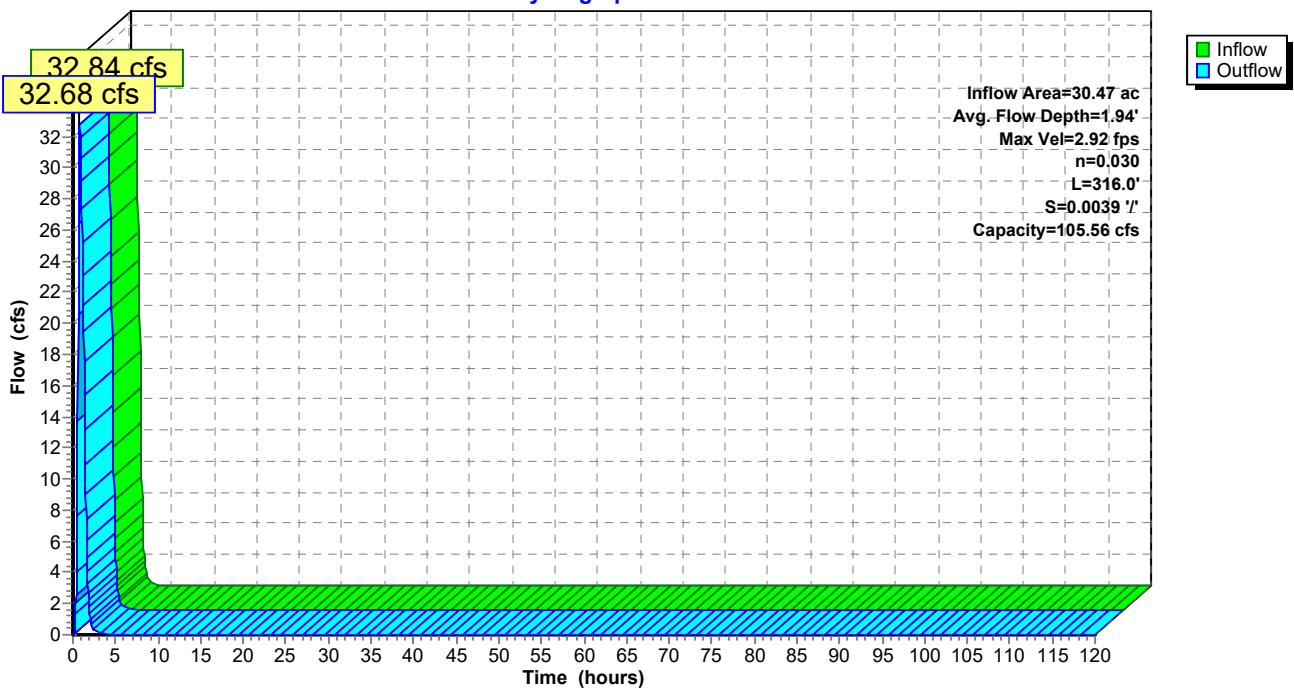
Peak Storage= 3,551 cf @ 0.77 hrs  
 Average Depth at Peak Storage= 1.94'  
 Bank-Full Depth= 3.00' Flow Area= 27.0 sf, Capacity= 105.56 cfs

0.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 ' / ' Top Width= 18.00'  
 Length= 316.0' Slope= 0.0039 ' / '  
 Inlet Invert= 758.00', Outlet Invert= 756.77'



**Reach PD-2: Perimeter Ditch 2**

Hydrograph



**Summary for Reach PD-3: Perimeter Ditch 3**

Inflow Area = 50.20 ac, 1.23% Impervious, Inflow Depth = 0.85" for 10-Year, 1-Hour event  
 Inflow = 50.59 cfs @ 0.76 hrs, Volume= 3.543 af  
 Outflow = 50.27 cfs @ 0.82 hrs, Volume= 3.543 af, Atten= 1%, Lag= 3.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.83 fps, Min. Travel Time= 2.1 min  
 Avg. Velocity = 0.75 fps, Avg. Travel Time= 10.9 min

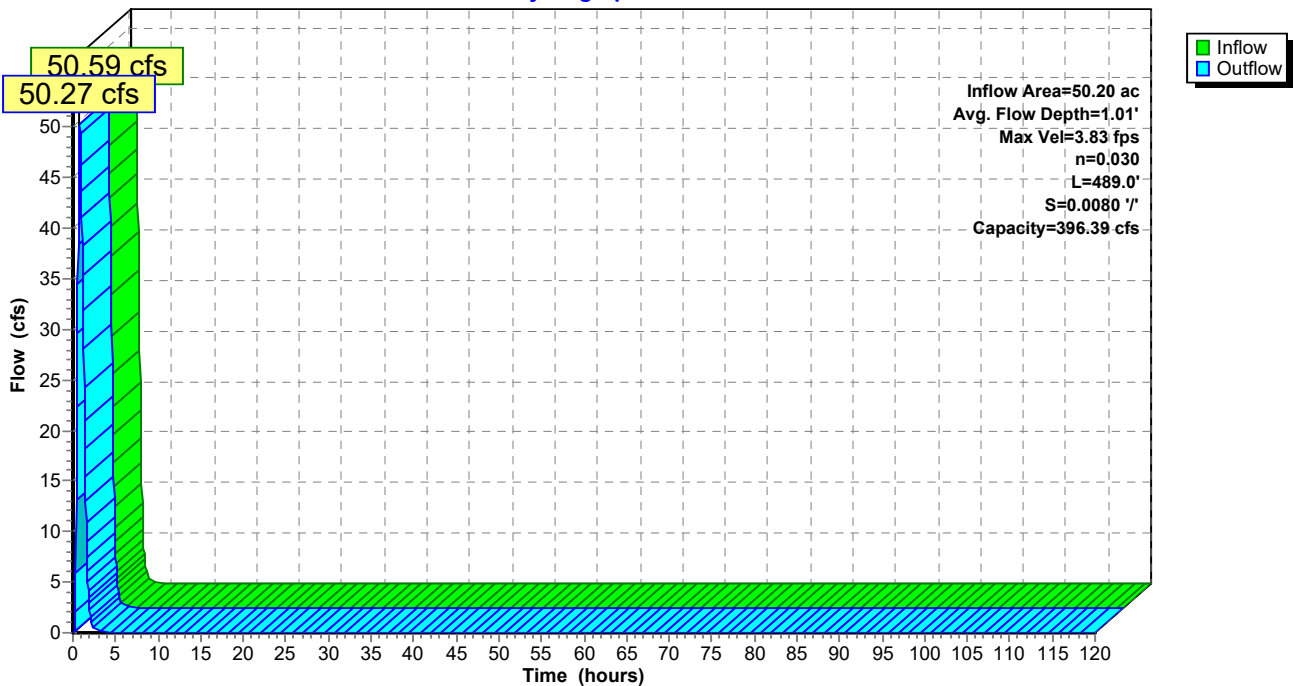
Peak Storage= 6,439 cf @ 0.78 hrs  
 Average Depth at Peak Storage= 1.01'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 396.39 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 ' / ' Top Width= 28.00'  
 Length= 489.0' Slope= 0.0080 ' / '  
 Inlet Invert= 755.78', Outlet Invert= 751.87'



**Reach PD-3: Perimeter Ditch 3**

Hydrograph





**Summary for Reach PD-4: Perimeter Ditch 4**

Inflow Area = 53.25 ac, 1.28% Impervious, Inflow Depth = 0.85" for 10-Year, 1-Hour event  
 Inflow = 53.05 cfs @ 0.81 hrs, Volume= 3.763 af  
 Outflow = 52.83 cfs @ 0.85 hrs, Volume= 3.763 af, Atten= 0%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.97 fps, Min. Travel Time= 1.2 min  
 Avg. Velocity = 0.98 fps, Avg. Travel Time= 6.3 min

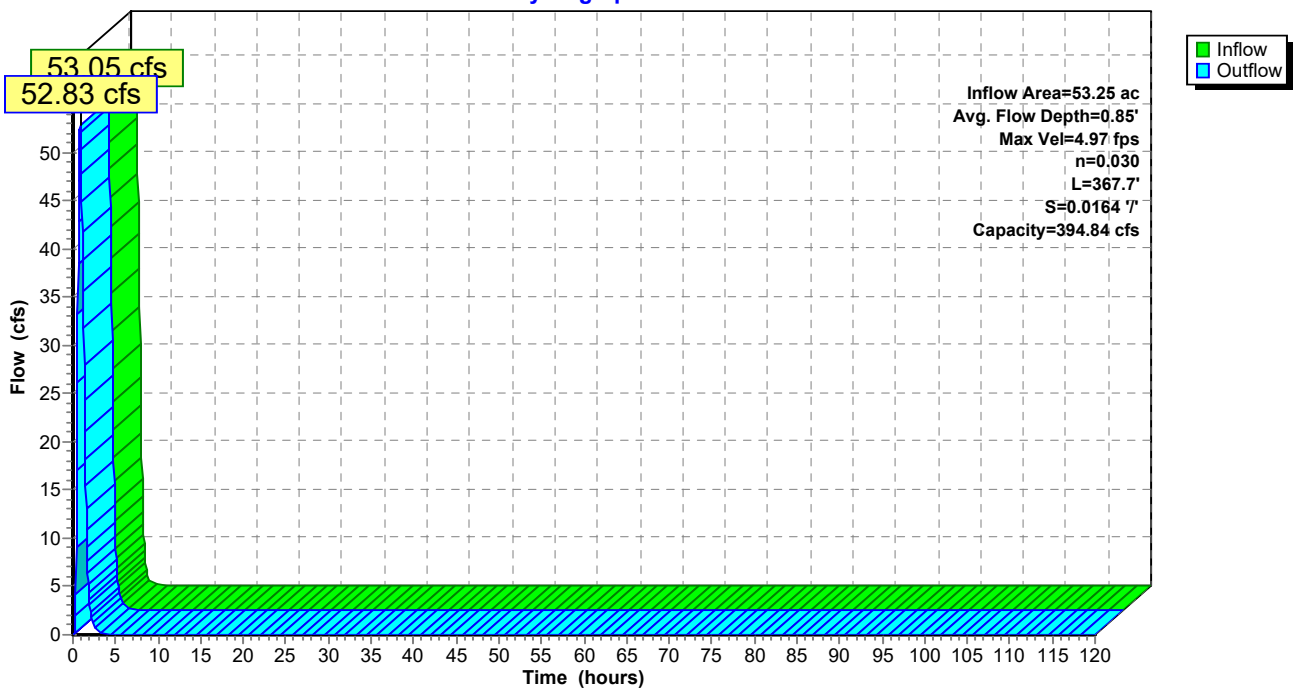
Peak Storage= 3,919 cf @ 0.82 hrs  
 Average Depth at Peak Storage= 0.85'  
 Bank-Full Depth= 2.50' Flow Area= 43.8 sf, Capacity= 394.84 cfs

10.00' x 2.50' deep channel, n= 0.030  
 Side Slope Z-value= 3.0 '/' Top Width= 25.00'  
 Length= 367.7' Slope= 0.0164 '/'  
 Inlet Invert= 751.87', Outlet Invert= 745.83'



**Reach PD-4: Perimeter Ditch 4**

Hydrograph



**Summary for Reach PD-5: Perimeter Ditch 5**

Inflow Area = 85.14 ac, 1.17% Impervious, Inflow Depth = 0.85" for 10-Year, 1-Hour event  
 Inflow = 81.13 cfs @ 0.76 hrs, Volume= 6.011 af  
 Outflow = 80.42 cfs @ 0.89 hrs, Volume= 6.011 af, Atten= 1%, Lag= 7.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.81 fps, Min. Travel Time= 5.0 min  
 Avg. Velocity = 0.67 fps, Avg. Travel Time= 28.0 min

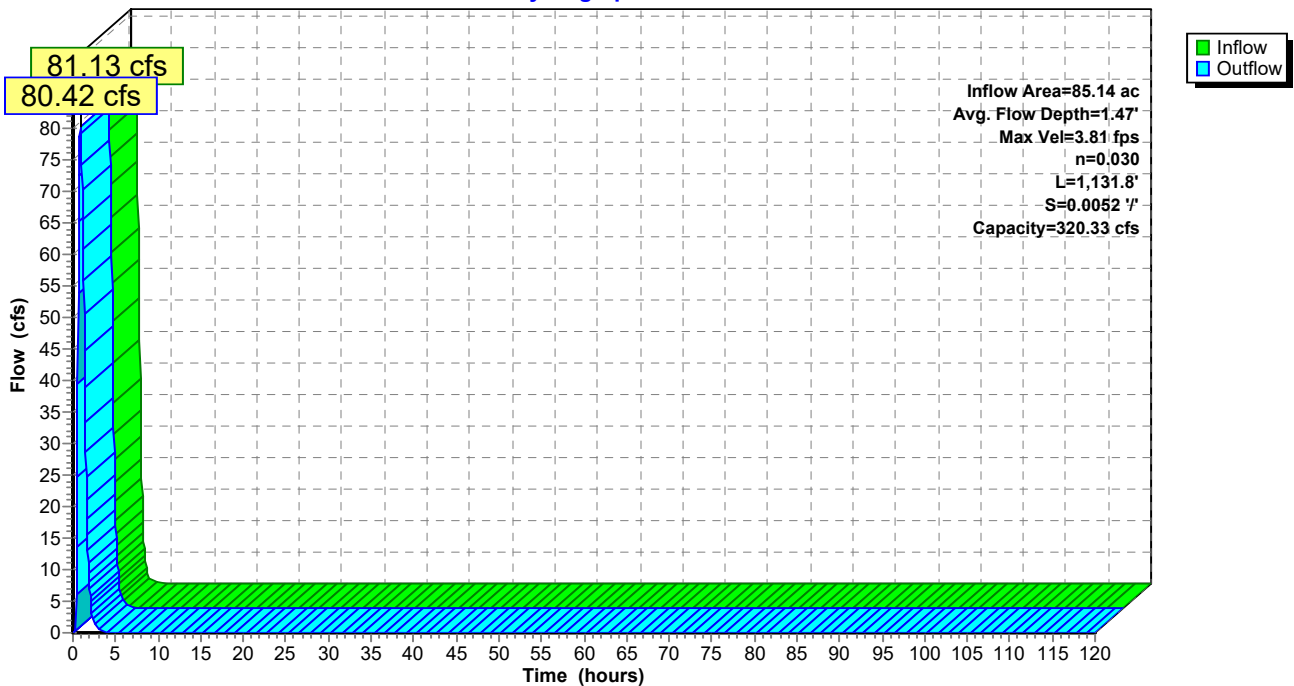
Peak Storage= 23,944 cf @ 0.81 hrs  
 Average Depth at Peak Storage= 1.47'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 320.33 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 1,131.8' Slope= 0.0052 '/'  
 Inlet Invert= 745.80', Outlet Invert= 739.89'



**Reach PD-5: Perimeter Ditch 5**

Hydrograph



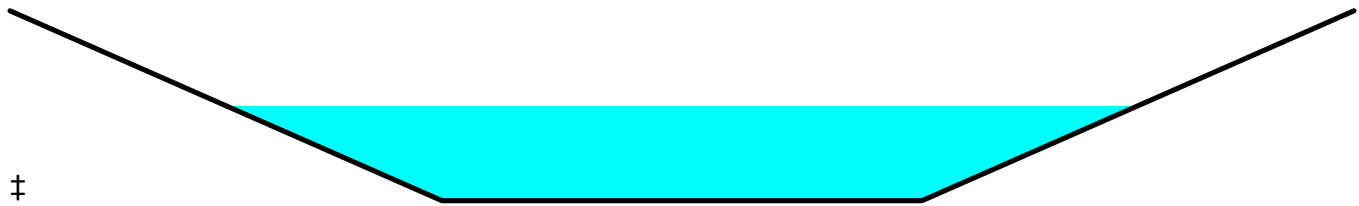
**Summary for Reach PD-6: Perimeter Ditch 6**

Inflow Area = 87.70 ac, 1.33% Impervious, Inflow Depth = 0.85" for 10-Year, 1-Hour event  
 Inflow = 81.81 cfs @ 0.89 hrs, Volume= 6.207 af  
 Outflow = 81.46 cfs @ 0.96 hrs, Volume= 6.207 af, Atten= 0%, Lag= 4.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.76 fps, Min. Travel Time= 2.6 min  
 Avg. Velocity = 0.67 fps, Avg. Travel Time= 14.5 min

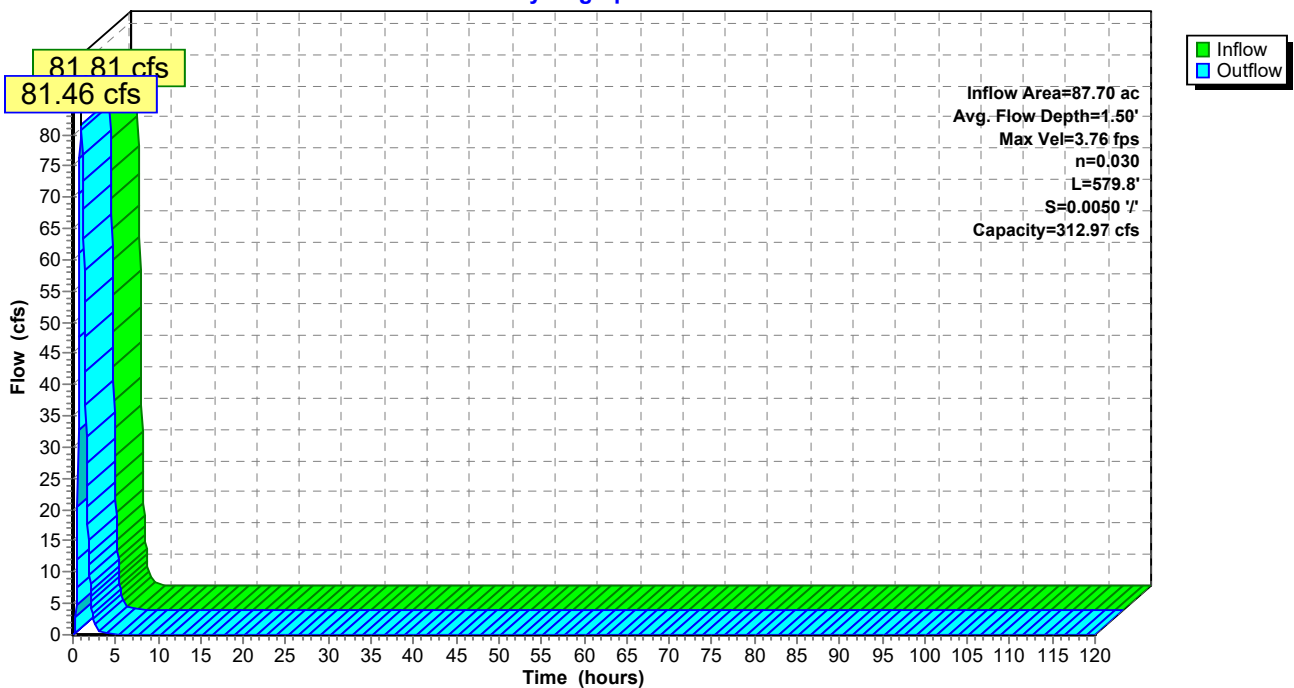
Peak Storage= 12,576 cf @ 0.92 hrs  
 Average Depth at Peak Storage= 1.50'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 312.97 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 ' / ' Top Width= 28.00'  
 Length= 579.8' Slope= 0.0050 ' / '  
 Inlet Invert= 739.89', Outlet Invert= 737.00'



**Reach PD-6: Perimeter Ditch 6**

Hydrograph



**Summary for Reach PD-7: Perimeter Ditch 7**

Inflow Area = 3.12 ac, 32.08% Impervious, Inflow Depth = 1.36" for 10-Year, 1-Hour event  
 Inflow = 9.75 cfs @ 0.25 hrs, Volume= 0.353 af  
 Outflow = 9.58 cfs @ 0.27 hrs, Volume= 0.353 af, Atten= 2%, Lag= 1.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.89 fps, Min. Travel Time= 0.8 min  
 Avg. Velocity = 0.95 fps, Avg. Travel Time= 1.6 min

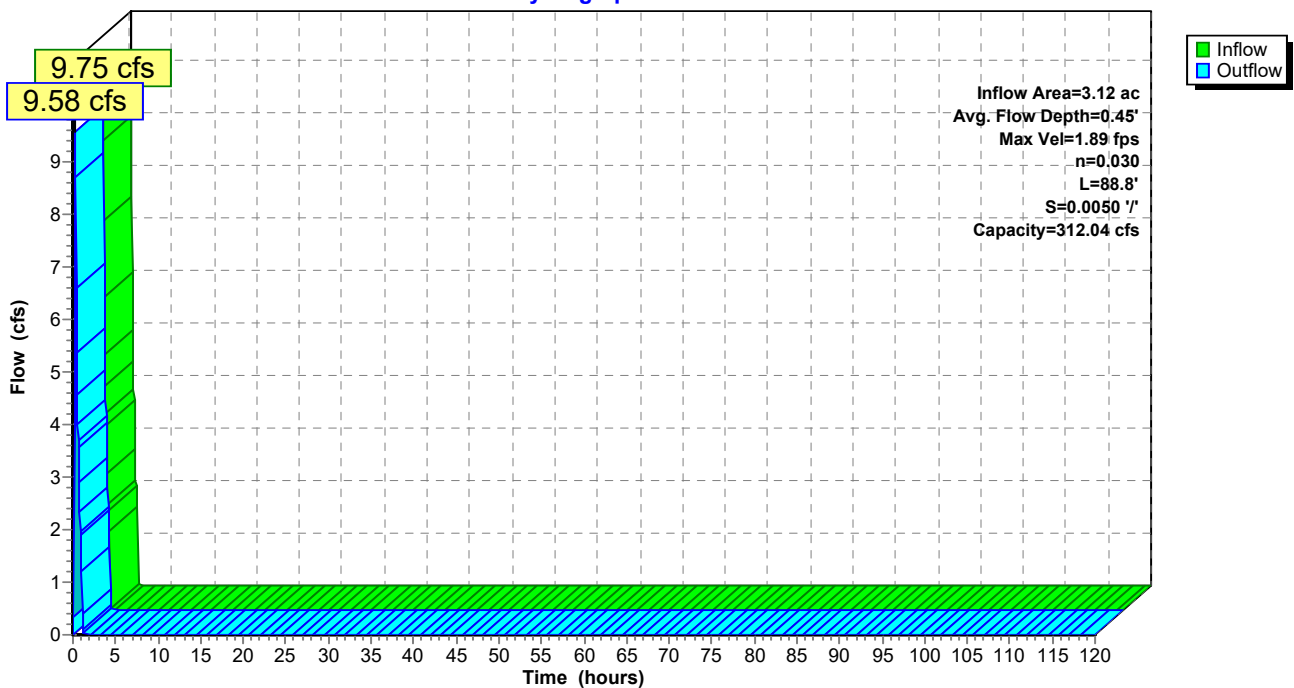
Peak Storage= 454 cf @ 0.26 hrs  
 Average Depth at Peak Storage= 0.45'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 312.04 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 ' / ' Top Width= 28.00'  
 Length= 88.8' Slope= 0.0050 ' / '  
 Inlet Invert= 741.25', Outlet Invert= 740.81'



**Reach PD-7: Perimeter Ditch 7**

Hydrograph



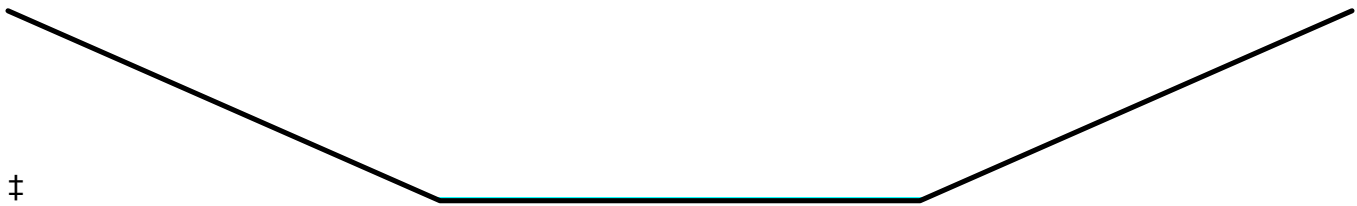
**Summary for Reach PD-8: Perimeter Ditch 8**

Inflow Area = 0.14 ac, 14.29% Impervious, Inflow Depth = 1.03" for 10-Year, 1-Hour event  
 Inflow = 0.34 cfs @ 0.25 hrs, Volume= 0.012 af  
 Outflow = 0.31 cfs @ 0.34 hrs, Volume= 0.012 af, Atten= 8%, Lag= 5.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 0.52 fps, Min. Travel Time= 2.8 min  
 Avg. Velocity = 0.38 fps, Avg. Travel Time= 3.9 min

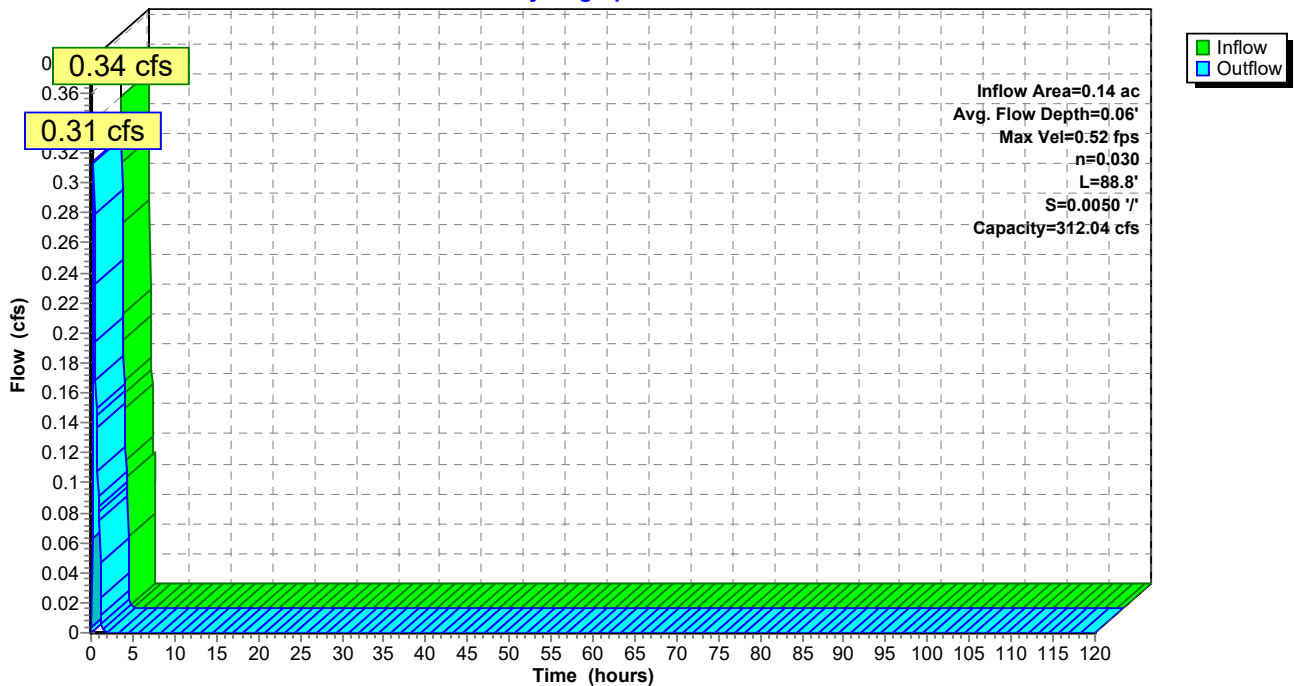
Peak Storage= 53 cf @ 0.29 hrs  
 Average Depth at Peak Storage= 0.06'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 312.04 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 88.8' Slope= 0.0050 '/'  
 Inlet Invert= 741.25', Outlet Invert= 740.81'



**Reach PD-8: Perimeter Ditch 8**

Hydrograph



**Summary for Reach PD-9: Perimeter Ditch 9**

Inflow Area = 6.78 ac, 3.10% Impervious, Inflow Depth = 0.88" for 10-Year, 1-Hour event  
 Inflow = 8.41 cfs @ 0.51 hrs, Volume= 0.497 af  
 Outflow = 8.07 cfs @ 0.69 hrs, Volume= 0.497 af, Atten= 4%, Lag= 10.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.85 fps, Min. Travel Time= 5.8 min  
 Avg. Velocity = 0.55 fps, Avg. Travel Time= 19.6 min

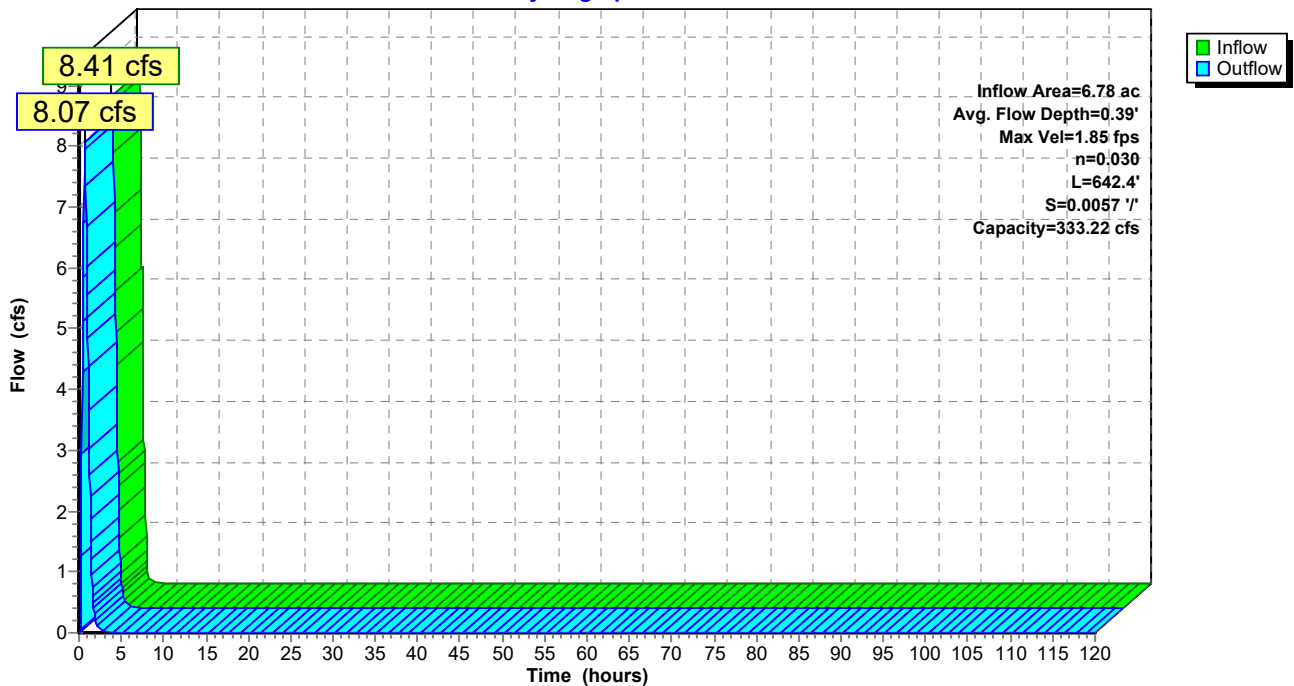
Peak Storage= 2,805 cf @ 0.59 hrs  
 Average Depth at Peak Storage= 0.39'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 333.22 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 642.4' Slope= 0.0057 '/'  
 Inlet Invert= 740.81', Outlet Invert= 737.18'



**Reach PD-9: Perimeter Ditch 9**

Hydrograph



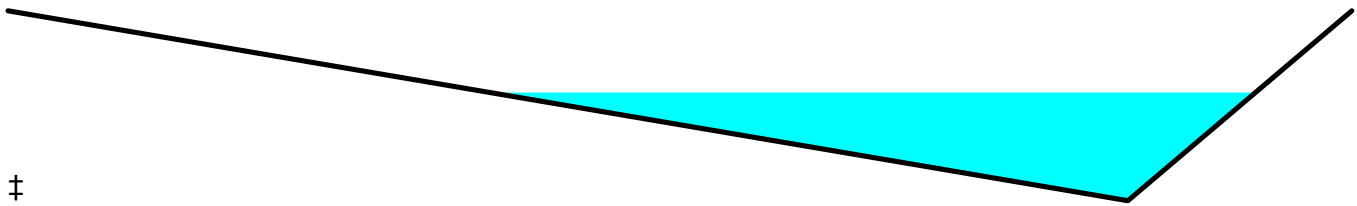
**Summary for Reach TB-A1A: Terrace Berm A1A**

Inflow Area = 6.74 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 9.82 cfs @ 0.47 hrs, Volume= 0.468 af  
 Outflow = 8.77 cfs @ 0.66 hrs, Volume= 0.468 af, Atten= 11%, Lag= 11.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.01 fps, Min. Travel Time= 5.7 min  
 Avg. Velocity = 0.67 fps, Avg. Travel Time= 25.6 min

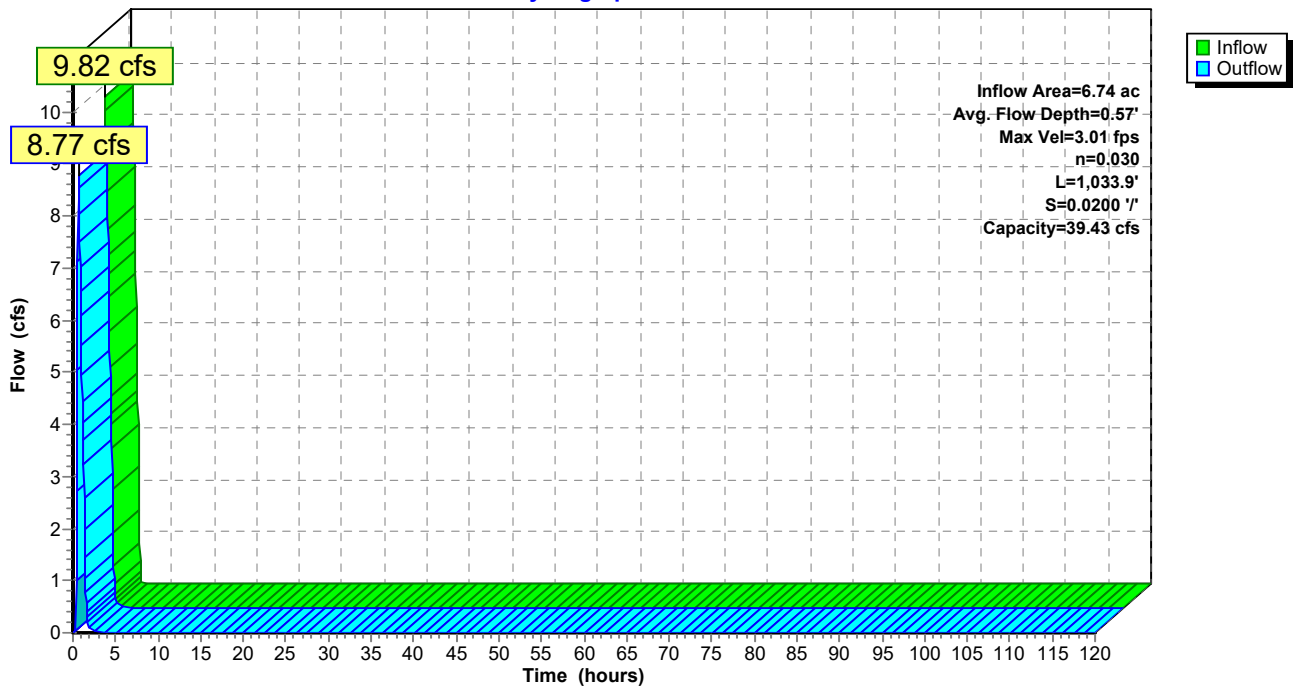
Peak Storage= 3,021 cf @ 0.56 hrs  
 Average Depth at Peak Storage= 0.57'  
 Bank-Full Depth= 1.00' Flow Area= 9.0 sf, Capacity= 39.43 cfs

0.00' x 1.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 15.0 3.0 '/' Top Width= 18.00'  
 Length= 1,033.9' Slope= 0.0200 '/'  
 Inlet Invert= 842.00', Outlet Invert= 821.32'



**Reach TB-A1A: Terrace Berm A1A**

Hydrograph



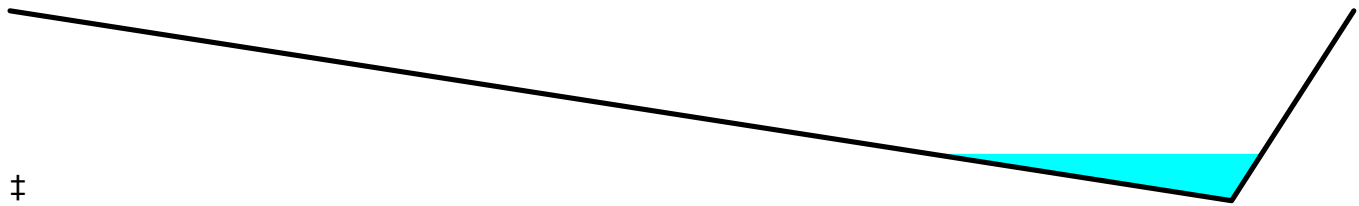
**Summary for Reach TB-A1B: Terrace Berm A1B**

Inflow Area = 5.23 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 9.54 cfs @ 0.32 hrs, Volume= 0.363 af  
 Outflow = 6.84 cfs @ 0.59 hrs, Volume= 0.363 af, Atten= 28%, Lag= 16.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.27 fps, Min. Travel Time= 8.5 min  
 Avg. Velocity = 0.57 fps, Avg. Travel Time= 34.2 min

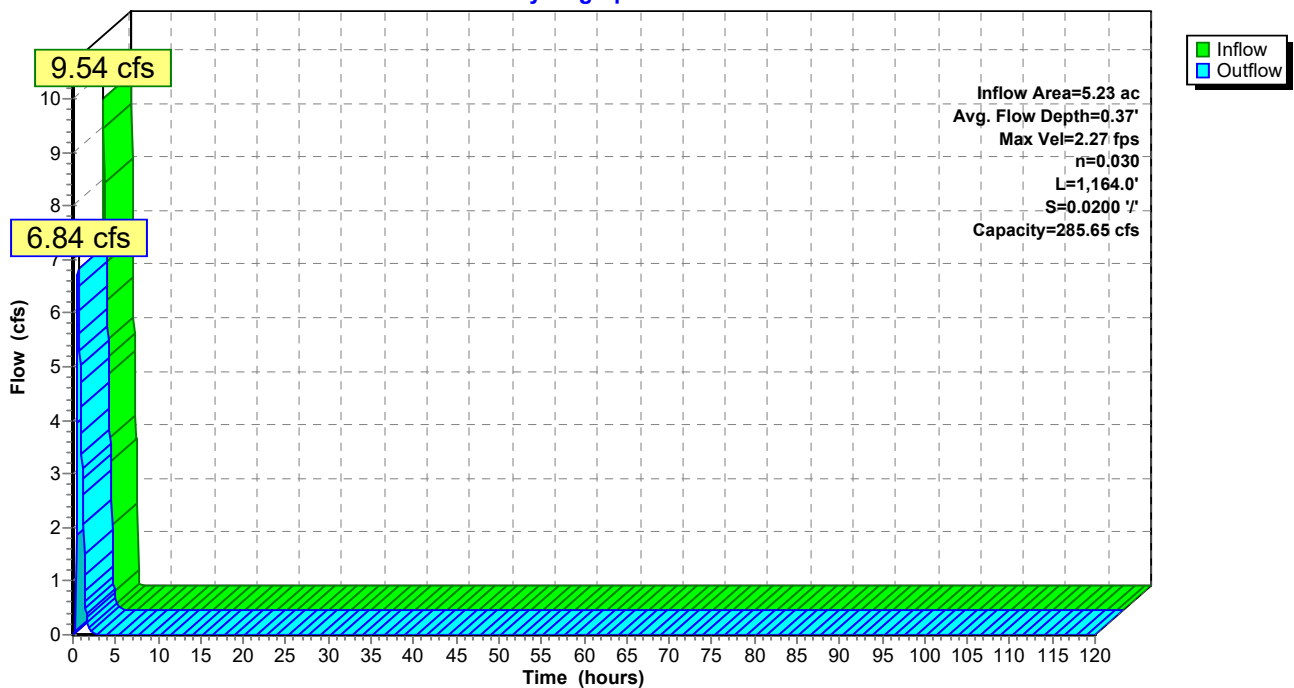
Peak Storage= 3,519 cf @ 0.45 hrs  
 Average Depth at Peak Storage= 0.37'  
 Bank-Full Depth= 1.50' Flow Area= 49.5 sf, Capacity= 285.65 cfs

0.00' x 1.50' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 40.0 4.0 '/' Top Width= 66.00'  
 Length= 1,164.0' Slope= 0.0200 '/'  
 Inlet Invert= 806.00', Outlet Invert= 782.72'



**Reach TB-A1B: Terrace Berm A1B**

Hydrograph





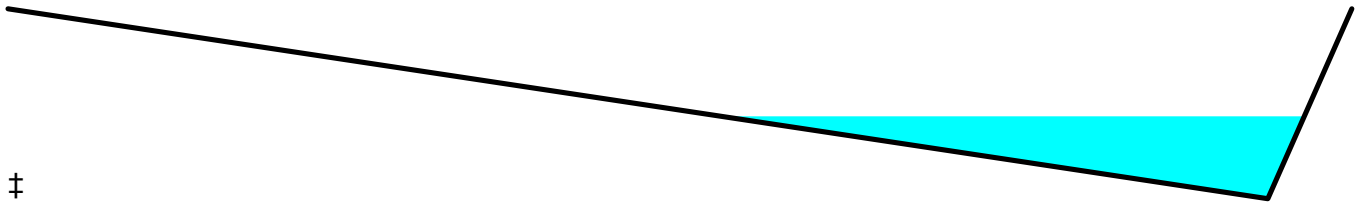
**Summary for Reach TB-A1C: Terrace Berm A1C**

Inflow Area = 9.16 ac, 1.48% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 10.71 cfs @ 0.64 hrs, Volume= 0.637 af  
 Outflow = 9.84 cfs @ 0.89 hrs, Volume= 0.637 af, Atten= 8%, Lag= 15.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.18 fps, Min. Travel Time= 7.4 min  
 Avg. Velocity = 0.49 fps, Avg. Travel Time= 32.8 min

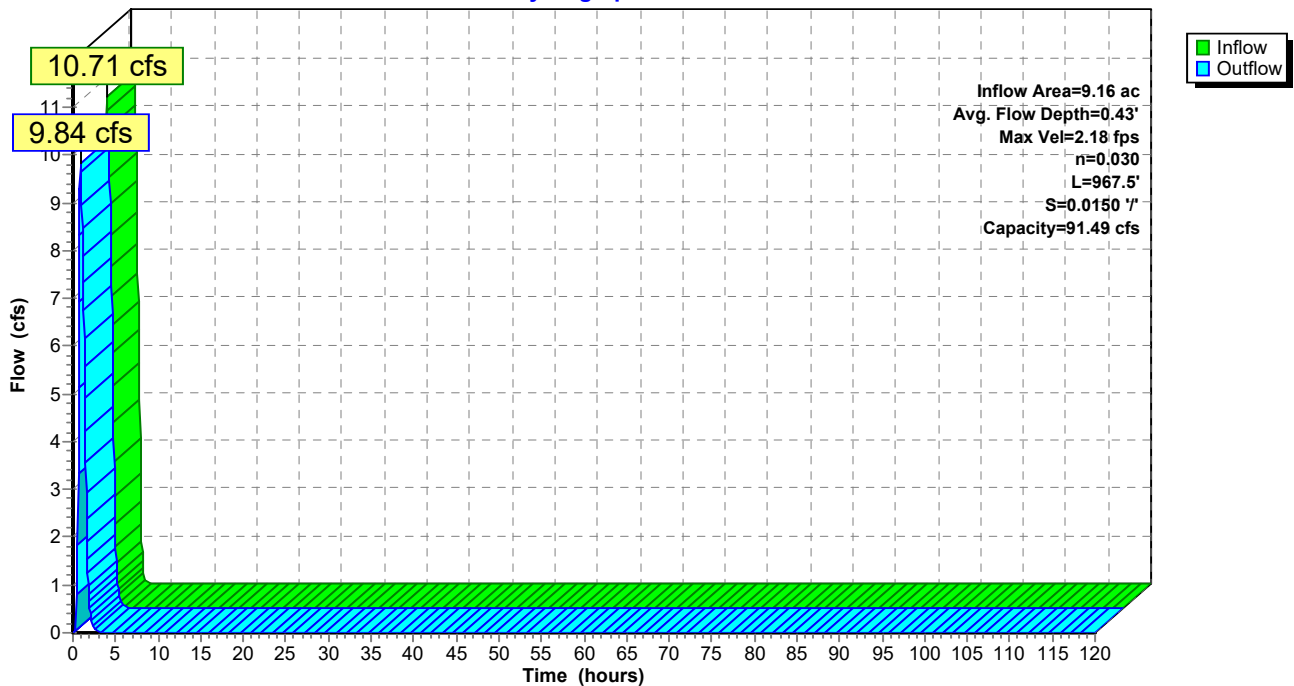
Peak Storage= 4,374 cf @ 0.77 hrs  
 Average Depth at Peak Storage= 0.43'  
 Bank-Full Depth= 1.00' Flow Area= 24.0 sf, Capacity= 91.49 cfs

0.00' x 1.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 45.0 3.0 '/' Top Width= 48.00'  
 Length= 967.5' Slope= 0.0150 '/'  
 Inlet Invert= 792.00', Outlet Invert= 777.49'



**Reach TB-A1C: Terrace Berm A1C**

Hydrograph



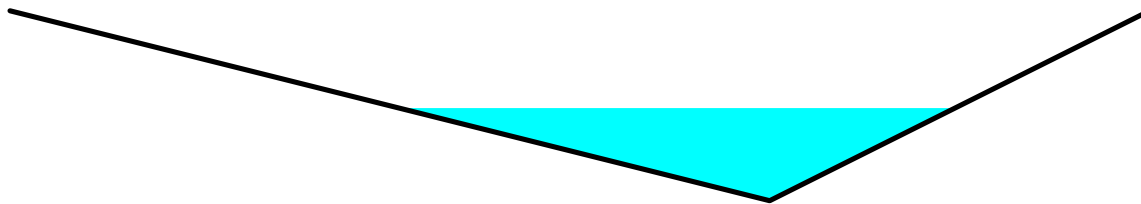
**Summary for Reach TB-B1: Terrace Berm B1**

Inflow Area = 2.04 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 3.49 cfs @ 0.36 hrs, Volume= 0.142 af  
 Outflow = 3.38 cfs @ 0.42 hrs, Volume= 0.142 af, Atten= 3%, Lag= 3.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.05 fps, Min. Travel Time= 1.9 min  
 Avg. Velocity = 1.17 fps, Avg. Travel Time= 4.9 min

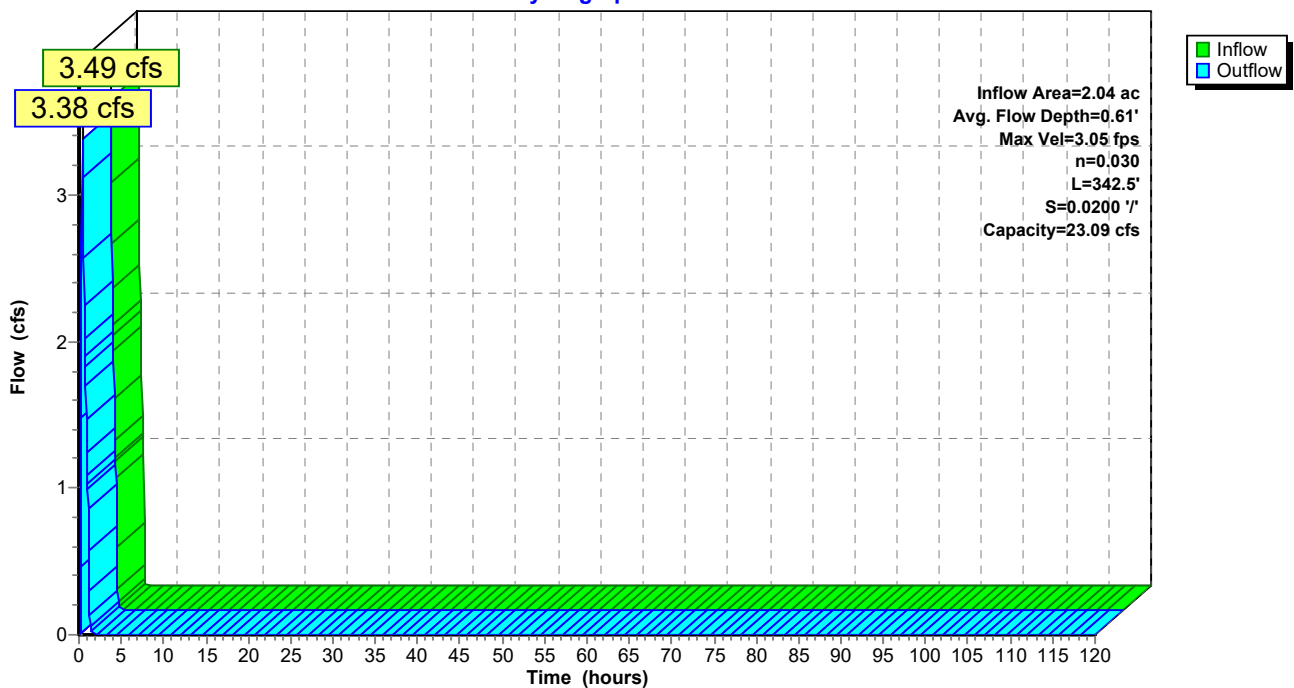
Peak Storage= 382 cf @ 0.39 hrs  
 Average Depth at Peak Storage= 0.61'  
 Bank-Full Depth= 1.25' Flow Area= 4.7 sf, Capacity= 23.09 cfs

0.00' x 1.25' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 7.50'  
 Length= 342.5' Slope= 0.0200 '/'  
 Inlet Invert= 880.00', Outlet Invert= 873.15'



**Reach TB-B1: Terrace Berm B1**

Hydrograph



**Summary for Reach TB-B10: Terrace Bench B10**

Inflow Area = 2.25 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 2.75 cfs @ 0.52 hrs, Volume= 0.156 af  
 Outflow = 2.60 cfs @ 0.68 hrs, Volume= 0.156 af, Atten= 5%, Lag= 9.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.27 fps, Min. Travel Time= 4.8 min  
 Avg. Velocity = 0.48 fps, Avg. Travel Time= 12.6 min

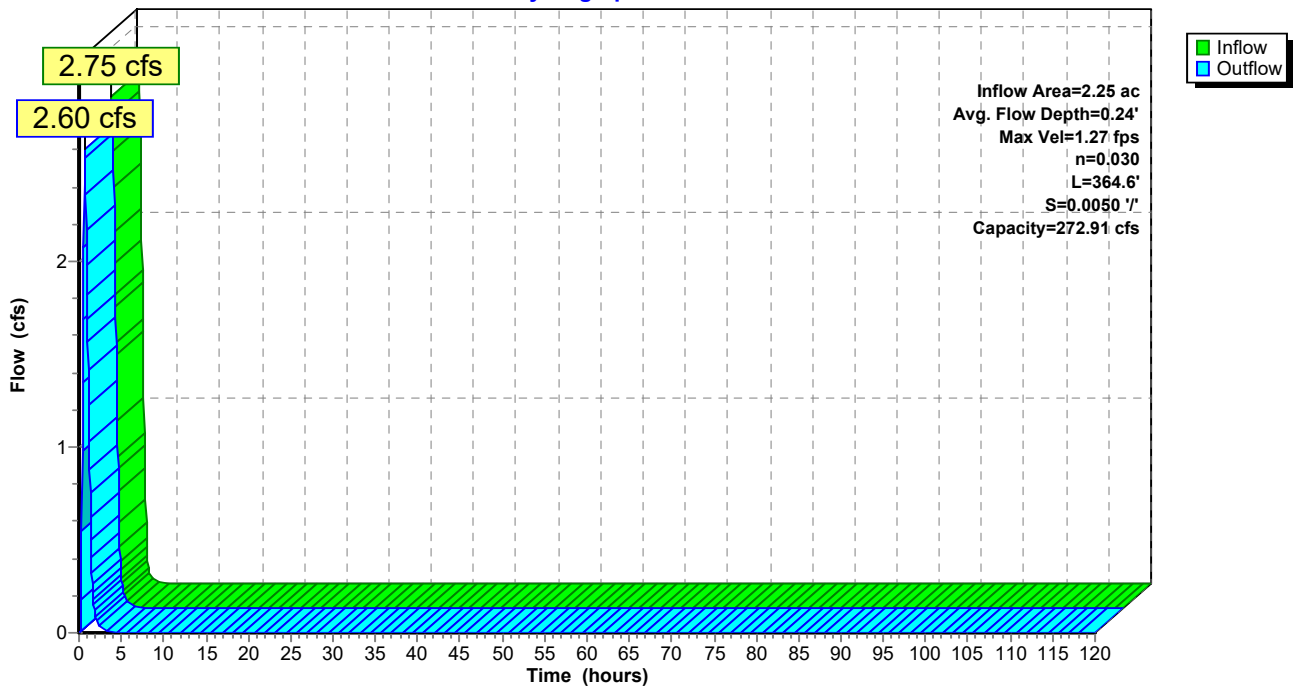
Peak Storage= 754 cf @ 0.60 hrs  
 Average Depth at Peak Storage= 0.24'  
 Bank-Full Depth= 3.00' Flow Area= 51.0 sf, Capacity= 272.91 cfs

8.00' x 3.00' deep channel, n= 0.030  
 Side Slope Z-value= 3.0 '/' Top Width= 26.00'  
 Length= 364.6' Slope= 0.0050 '/'  
 Inlet Invert= 759.18', Outlet Invert= 757.36'



**Reach TB-B10: Terrace Bench B10**

Hydrograph



**Summary for Reach TB-B10A: Terrace Bench B10A**

Inflow Area = 2.25 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 2.60 cfs @ 0.68 hrs, Volume= 0.156 af  
 Outflow = 2.60 cfs @ 0.69 hrs, Volume= 0.156 af, Atten= 0%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.67 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 2.09 fps, Avg. Travel Time= 0.6 min

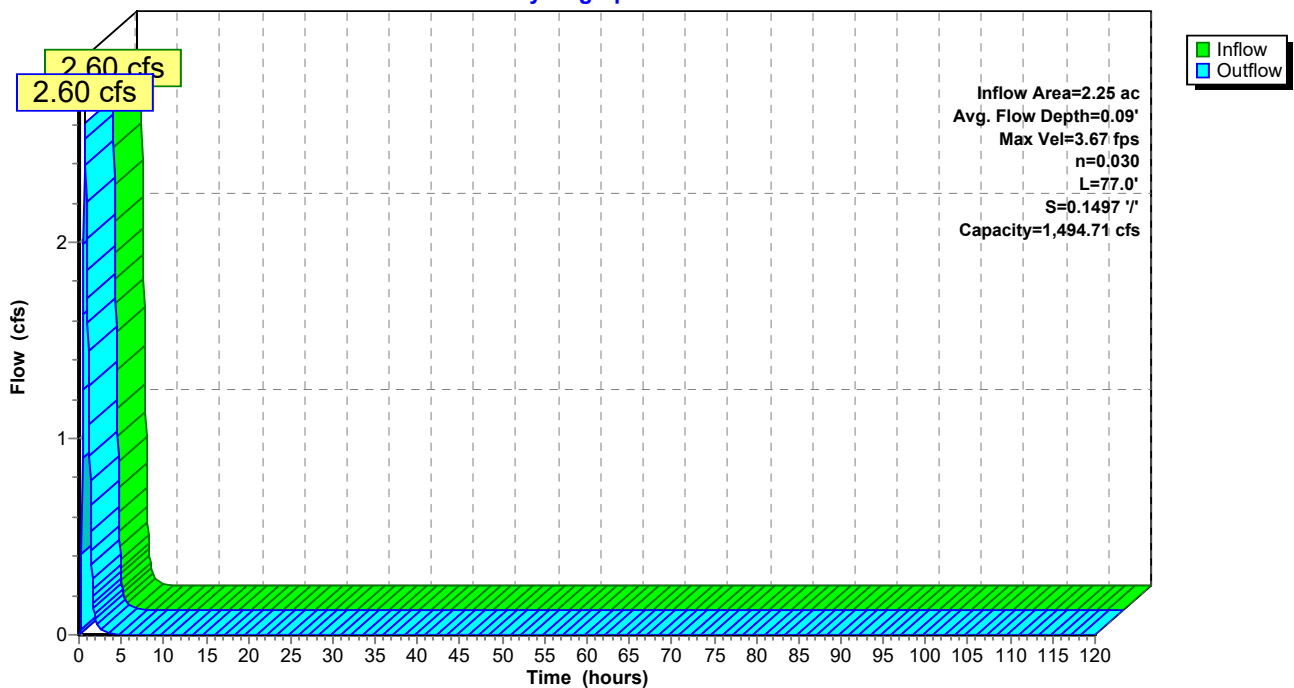
Peak Storage= 55 cf @ 0.69 hrs  
 Average Depth at Peak Storage= 0.09'  
 Bank-Full Depth= 3.00' Flow Area= 51.0 sf, Capacity= 1,494.71 cfs

8.00' x 3.00' deep channel, n= 0.030  
 Side Slope Z-value= 3.0 '/' Top Width= 26.00'  
 Length= 77.0' Slope= 0.1497 '/'  
 Inlet Invert= 757.36', Outlet Invert= 745.83'



**Reach TB-B10A: Terrace Bench B10A**

Hydrograph



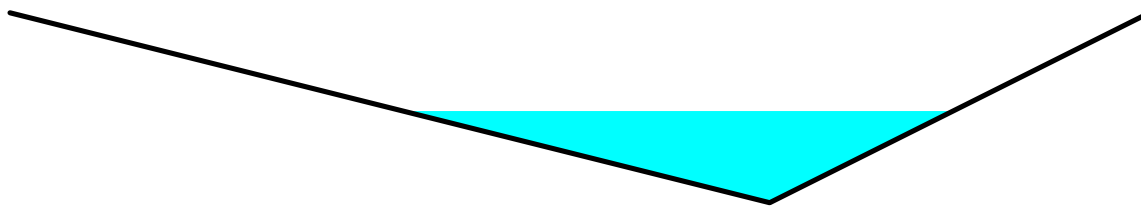
**Summary for Reach TB-B11: Terrace Berm B11**

Inflow Area = 2.27 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 3.30 cfs @ 0.47 hrs, Volume= 0.158 af  
 Outflow = 3.26 cfs @ 0.49 hrs, Volume= 0.158 af, Atten= 1%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.02 fps, Min. Travel Time= 0.6 min  
 Avg. Velocity = 1.64 fps, Avg. Travel Time= 1.1 min

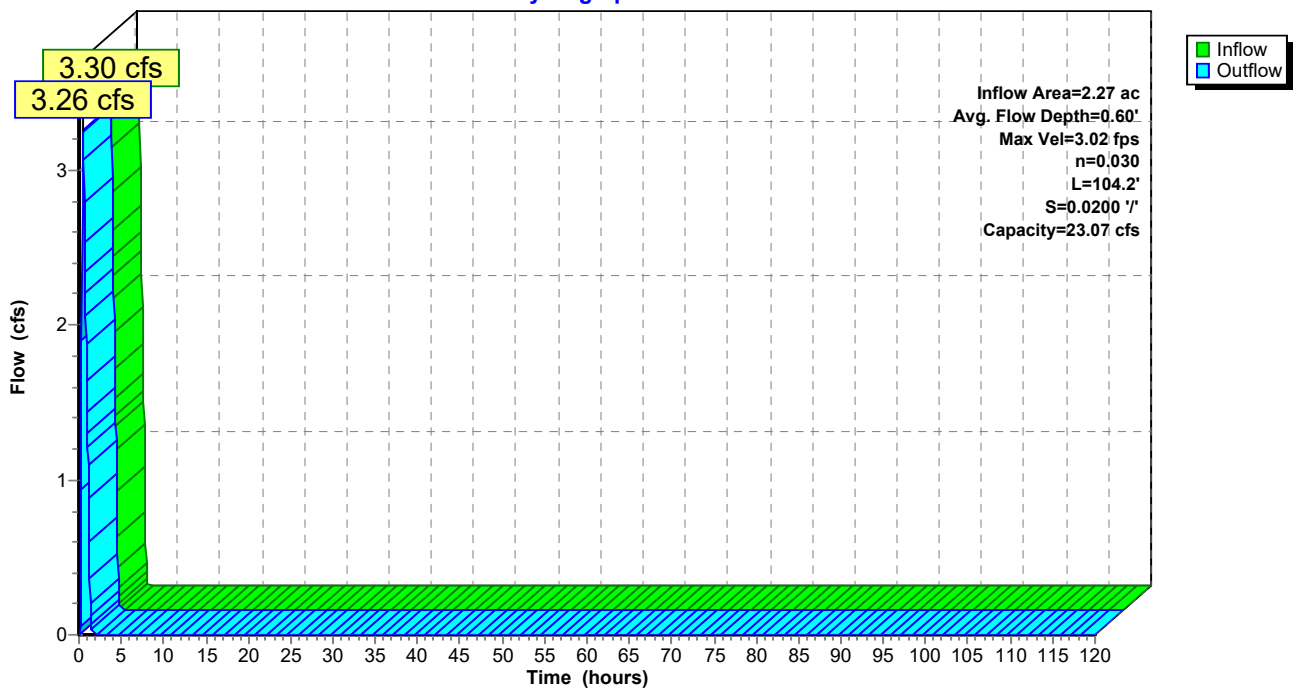
Peak Storage= 114 cf @ 0.47 hrs  
 Average Depth at Peak Storage= 0.60'  
 Bank-Full Depth= 1.25' Flow Area= 4.7 sf, Capacity= 23.07 cfs

0.00' x 1.25' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 7.50'  
 Length= 104.2' Slope= 0.0200 '/'  
 Inlet Invert= 821.00', Outlet Invert= 818.92'



**Reach TB-B11: Terrace Berm B11**

Hydrograph



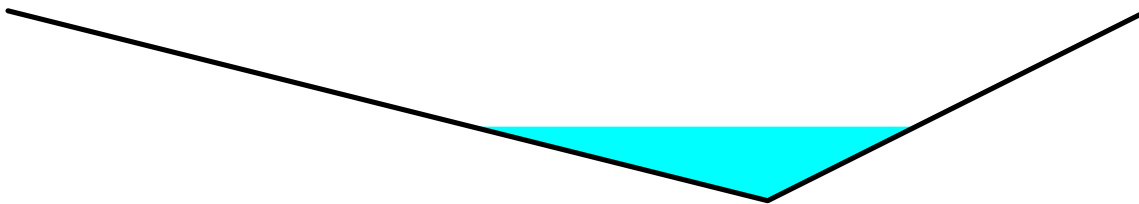
**Summary for Reach TB-B12: Terrace Berm B12**

Inflow Area = 1.20 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 2.19 cfs @ 0.32 hrs, Volume= 0.083 af  
 Outflow = 1.84 cfs @ 0.48 hrs, Volume= 0.083 af, Atten= 16%, Lag= 9.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.63 fps, Min. Travel Time= 4.7 min  
 Avg. Velocity = 0.79 fps, Avg. Travel Time= 15.5 min

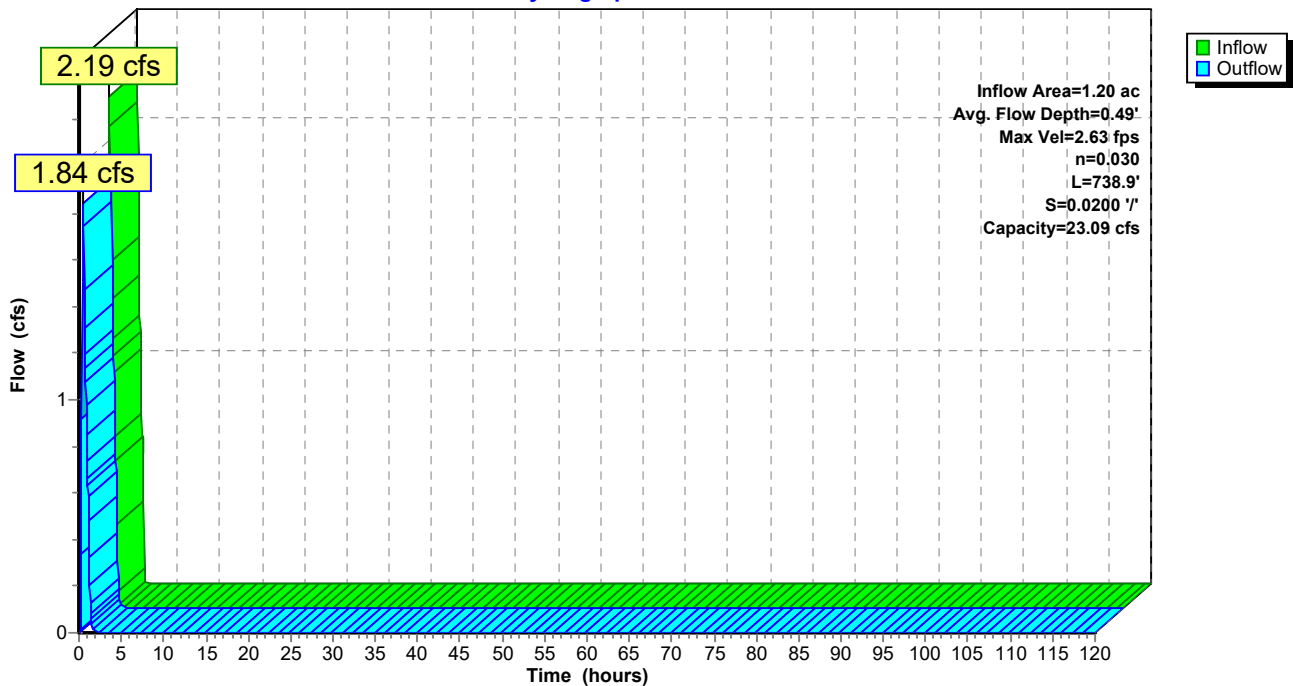
Peak Storage= 527 cf @ 0.40 hrs  
 Average Depth at Peak Storage= 0.49'  
 Bank-Full Depth= 1.25' Flow Area= 4.7 sf, Capacity= 23.09 cfs

0.00' x 1.25' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 7.50'  
 Length= 738.9' Slope= 0.0200 '/'  
 Inlet Invert= 864.00', Outlet Invert= 849.22'



**Reach TB-B12: Terrace Berm B12**

Hydrograph



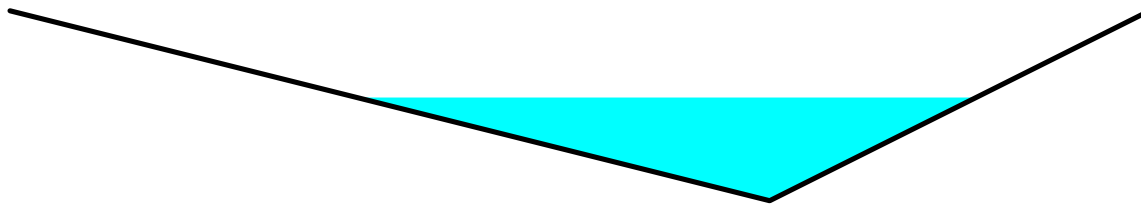
**Summary for Reach TB-B2: Terrace Berm B2**

Inflow Area = 2.74 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 4.71 cfs @ 0.36 hrs, Volume= 0.190 af  
 Outflow = 4.49 cfs @ 0.44 hrs, Volume= 0.190 af, Atten= 5%, Lag= 4.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.28 fps, Min. Travel Time= 2.3 min  
 Avg. Velocity = 1.11 fps, Avg. Travel Time= 6.9 min

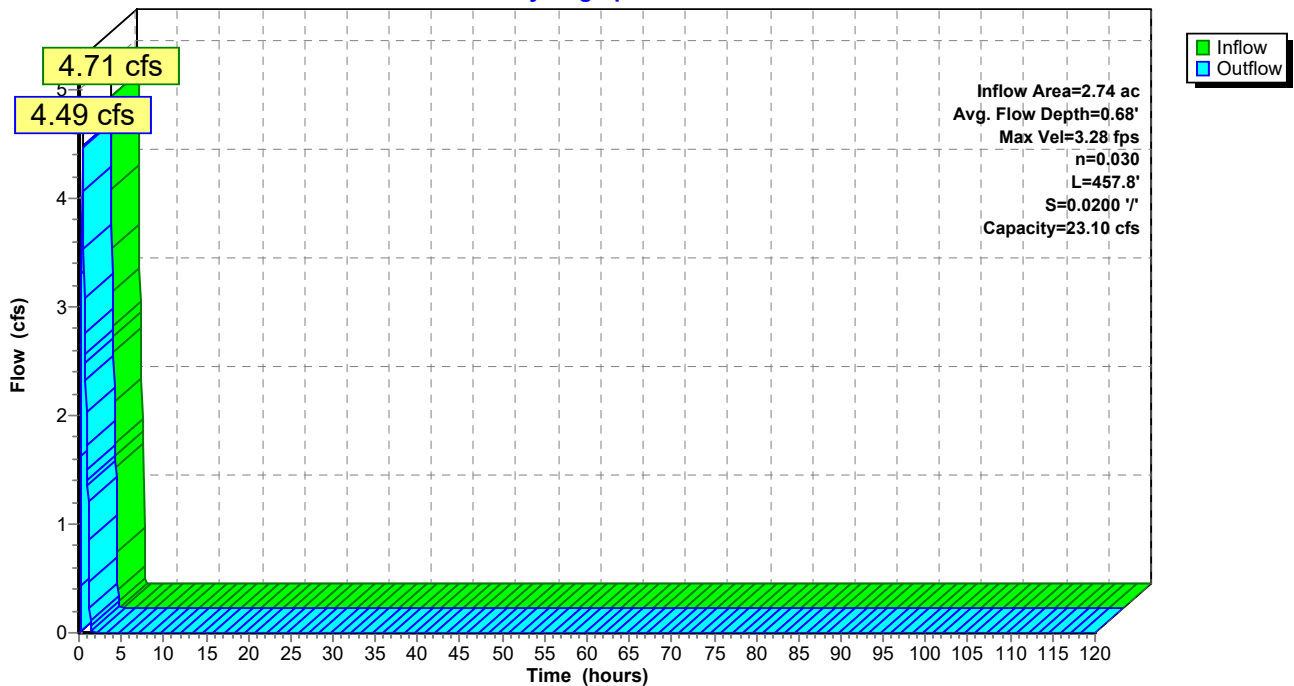
Peak Storage= 635 cf @ 0.40 hrs  
 Average Depth at Peak Storage= 0.68'  
 Bank-Full Depth= 1.25' Flow Area= 4.7 sf, Capacity= 23.10 cfs

0.00' x 1.25' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 7.50'  
 Length= 457.8' Slope= 0.0200 '/'  
 Inlet Invert= 880.00', Outlet Invert= 870.84'



**Reach TB-B2: Terrace Berm B2**

Hydrograph



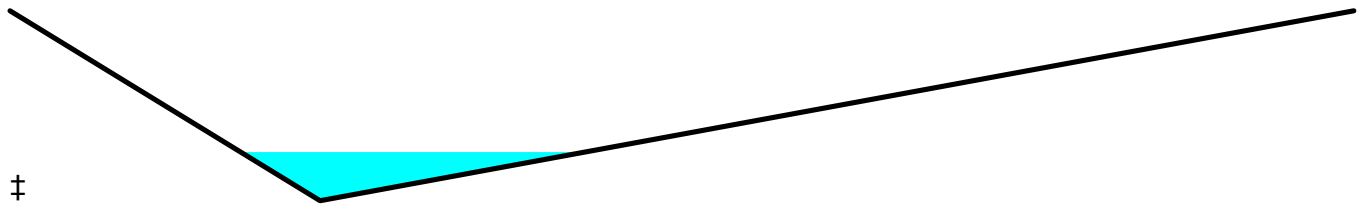
**Summary for Reach TB-B3: Terrace Bench B3**

Inflow Area = 2.21 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 4.02 cfs @ 0.32 hrs, Volume= 0.154 af  
 Outflow = 3.33 cfs @ 0.50 hrs, Volume= 0.154 af, Atten= 17%, Lag= 10.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.98 fps, Min. Travel Time= 5.2 min  
 Avg. Velocity = 0.58 fps, Avg. Travel Time= 17.7 min

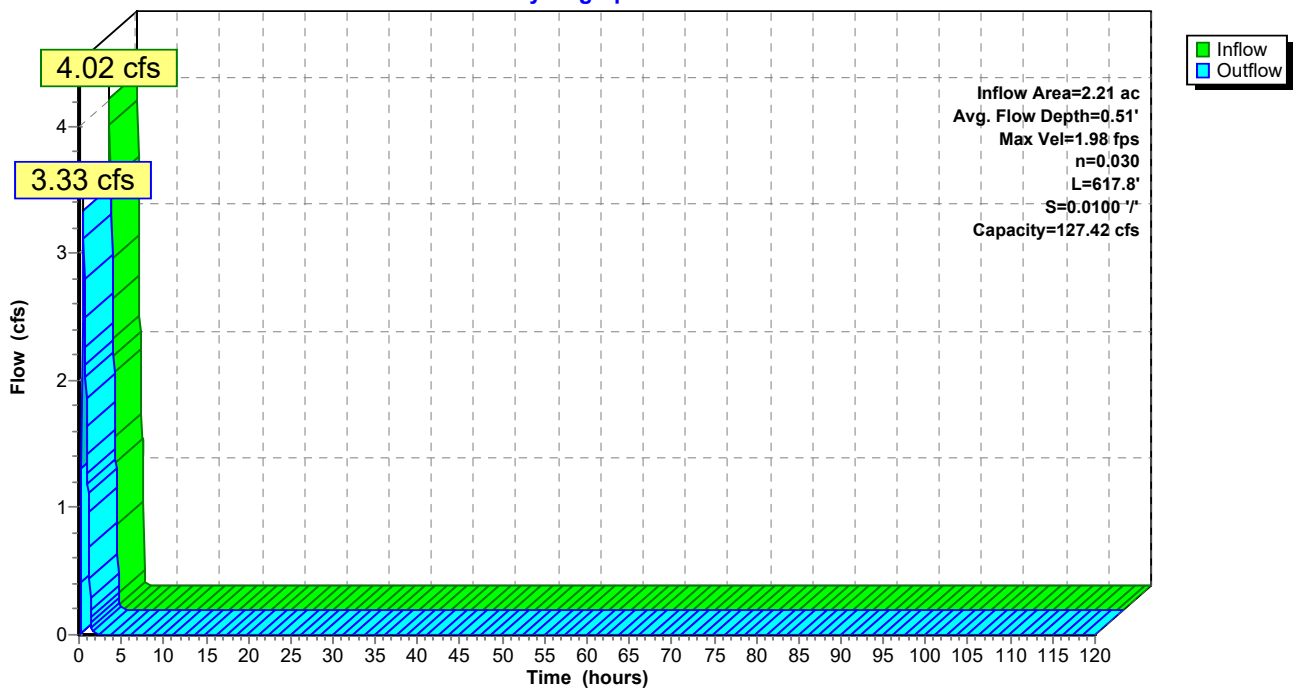
Peak Storage= 1,054 cf @ 0.41 hrs  
 Average Depth at Peak Storage= 0.51'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.42 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'  
 Length= 617.8' Slope= 0.0100 '/'  
 Inlet Invert= 880.00', Outlet Invert= 873.82'



**Reach TB-B3: Terrace Bench B3**

Hydrograph





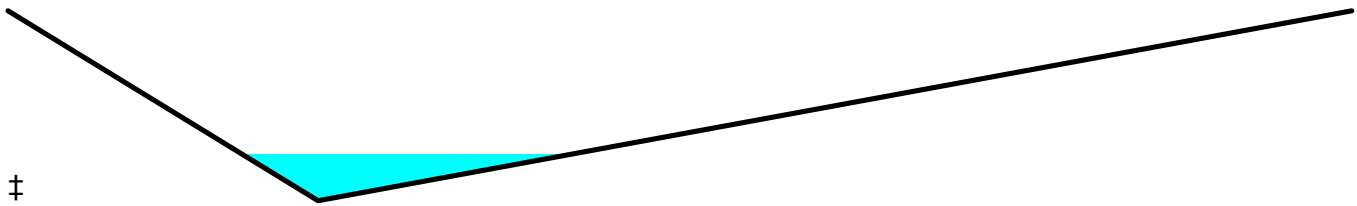
**Summary for Reach TB-B4: Terrace Bench B4**

Inflow Area = 1.87 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 3.40 cfs @ 0.32 hrs, Volume= 0.130 af  
 Outflow = 3.00 cfs @ 0.45 hrs, Volume= 0.130 af, Atten= 12%, Lag= 8.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.92 fps, Min. Travel Time= 3.8 min  
 Avg. Velocity = 0.64 fps, Avg. Travel Time= 11.3 min

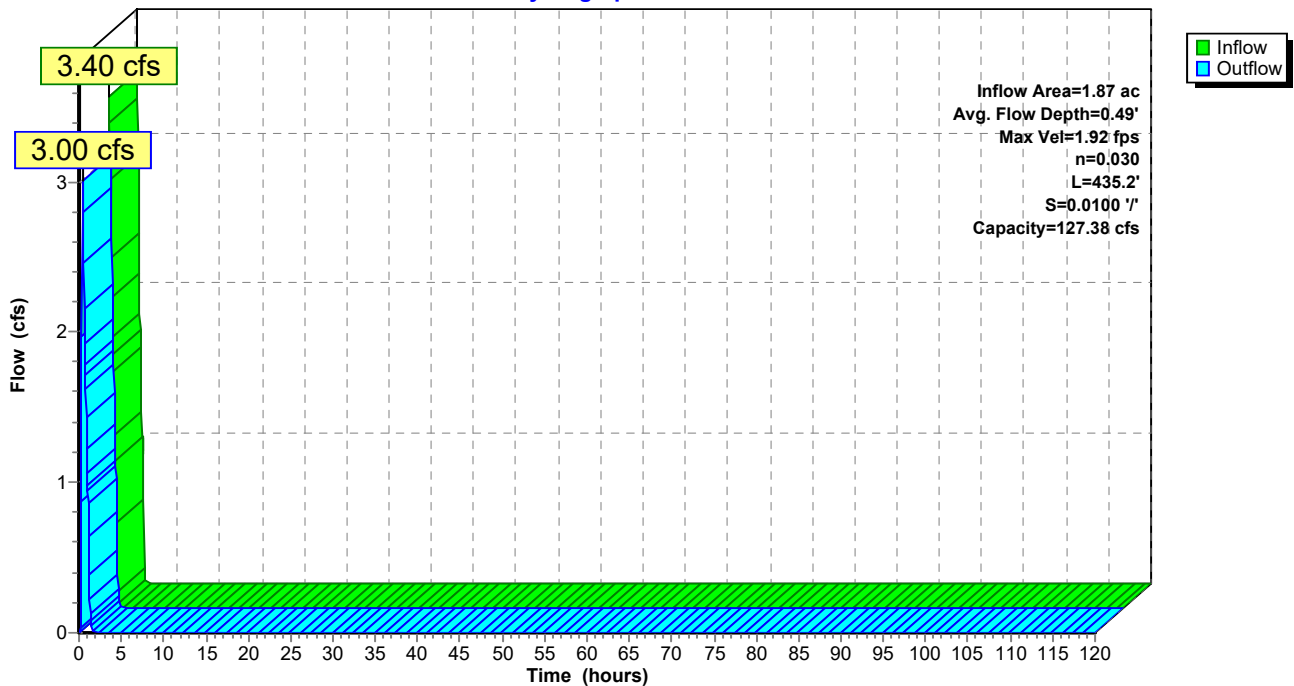
Peak Storage= 686 cf @ 0.38 hrs  
 Average Depth at Peak Storage= 0.49'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.38 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/ Top Width= 26.00'  
 Length= 435.2' Slope= 0.0100 '/  
 Inlet Invert= 840.00', Outlet Invert= 835.65'



**Reach TB-B4: Terrace Bench B4**

Hydrograph



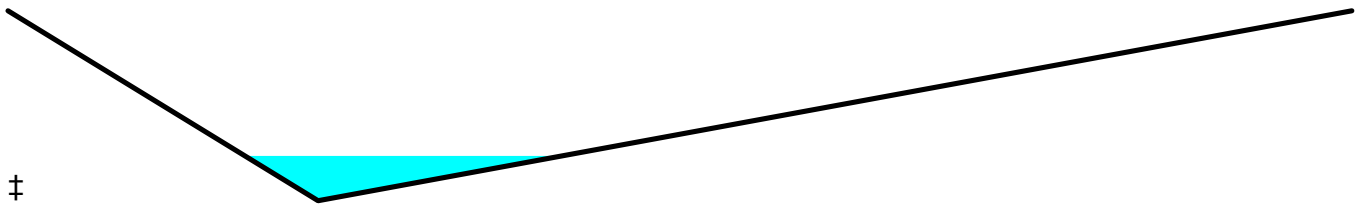
**Summary for Reach TB-B5: Terrace Bench B5**

Inflow Area = 1.93 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 3.57 cfs @ 0.31 hrs, Volume= 0.134 af  
 Outflow = 2.66 cfs @ 0.54 hrs, Volume= 0.134 af, Atten= 25%, Lag= 14.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.87 fps, Min. Travel Time= 7.2 min  
 Avg. Velocity = 0.52 fps, Avg. Travel Time= 25.7 min

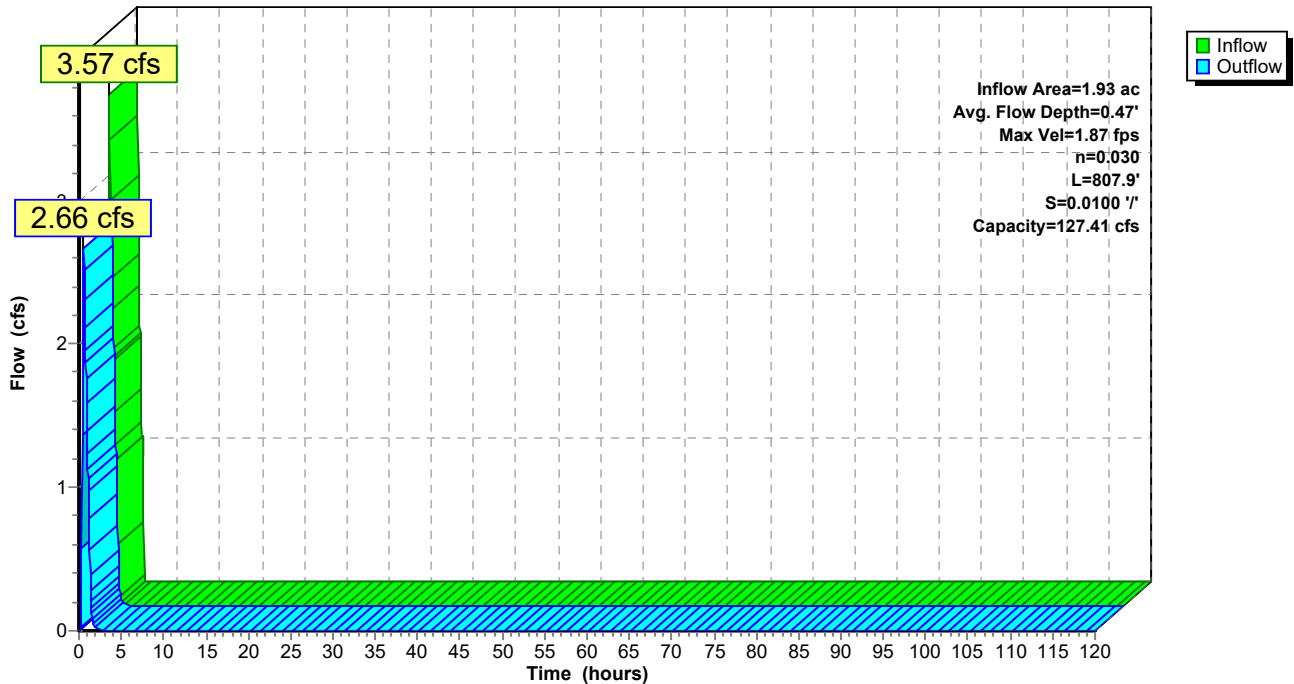
Peak Storage= 1,170 cf @ 0.42 hrs  
 Average Depth at Peak Storage= 0.47'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.41 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'  
 Length= 807.9' Slope= 0.0100 '/'  
 Inlet Invert= 814.00', Outlet Invert= 805.92'



**Reach TB-B5: Terrace Bench B5**

Hydrograph



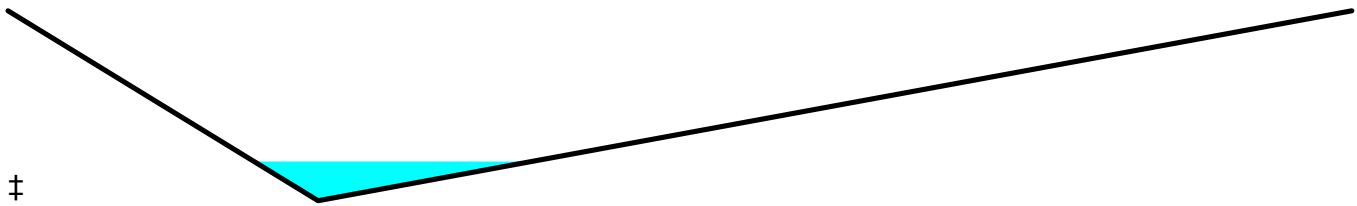
**Summary for Reach TB-B6: Terrace Bench B6**

Inflow Area = 1.18 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 2.16 cfs @ 0.31 hrs, Volume= 0.082 af  
 Outflow = 1.87 cfs @ 0.46 hrs, Volume= 0.082 af, Atten= 14%, Lag= 8.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.71 fps, Min. Travel Time= 4.2 min  
 Avg. Velocity = 0.60 fps, Avg. Travel Time= 11.9 min

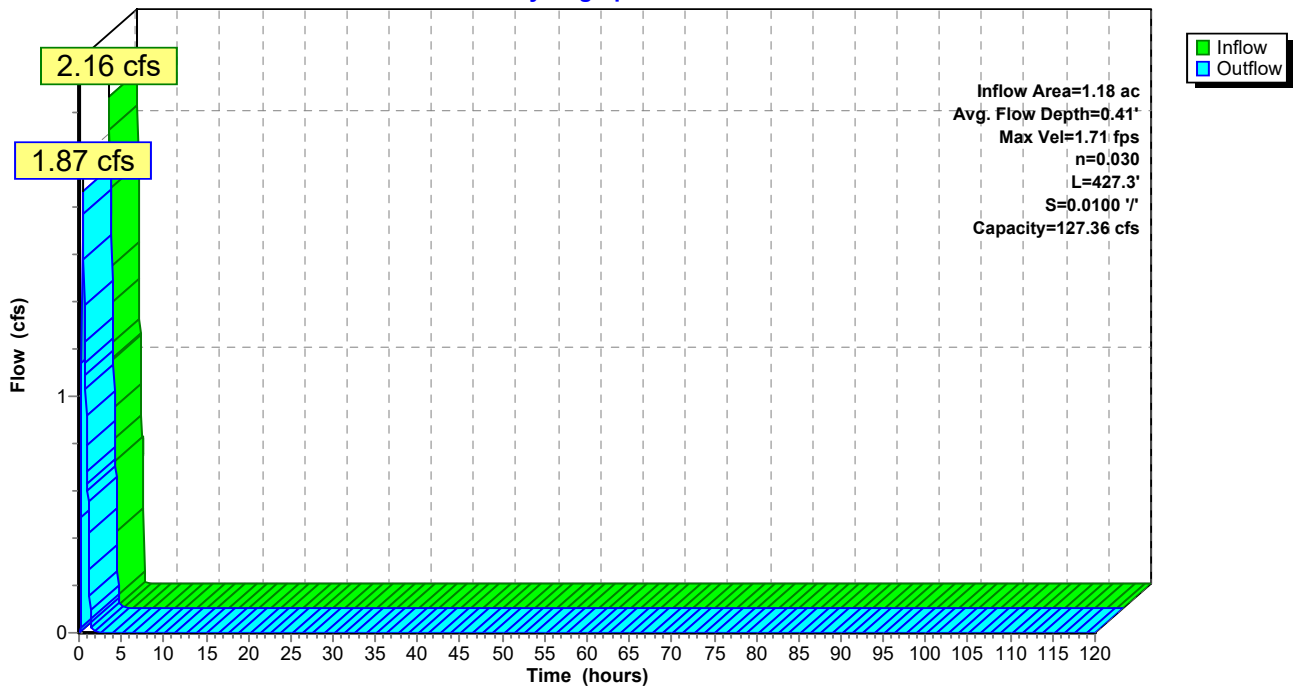
Peak Storage= 472 cf @ 0.38 hrs  
 Average Depth at Peak Storage= 0.41'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.36 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/ Top Width= 26.00'  
 Length= 427.3' Slope= 0.0100 '/  
 Inlet Invert= 812.00', Outlet Invert= 807.73'



**Reach TB-B6: Terrace Bench B6**

Hydrograph



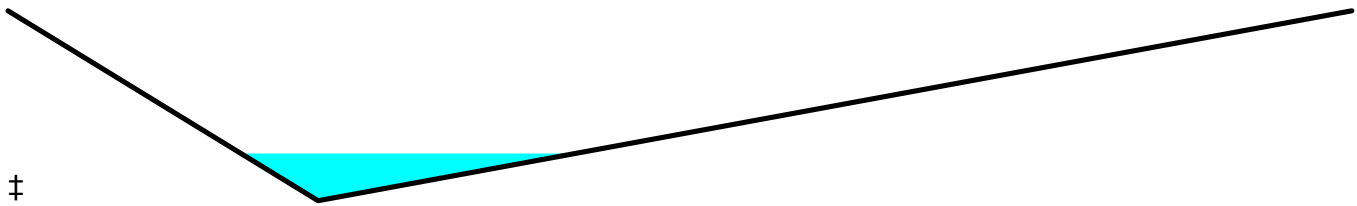
**Summary for Reach TB-B7: Terrace Bench B7**

Inflow Area = 2.19 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 4.05 cfs @ 0.31 hrs, Volume= 0.152 af  
 Outflow = 3.05 cfs @ 0.53 hrs, Volume= 0.152 af, Atten= 25%, Lag= 13.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.93 fps, Min. Travel Time= 7.0 min  
 Avg. Velocity = 0.53 fps, Avg. Travel Time= 25.4 min

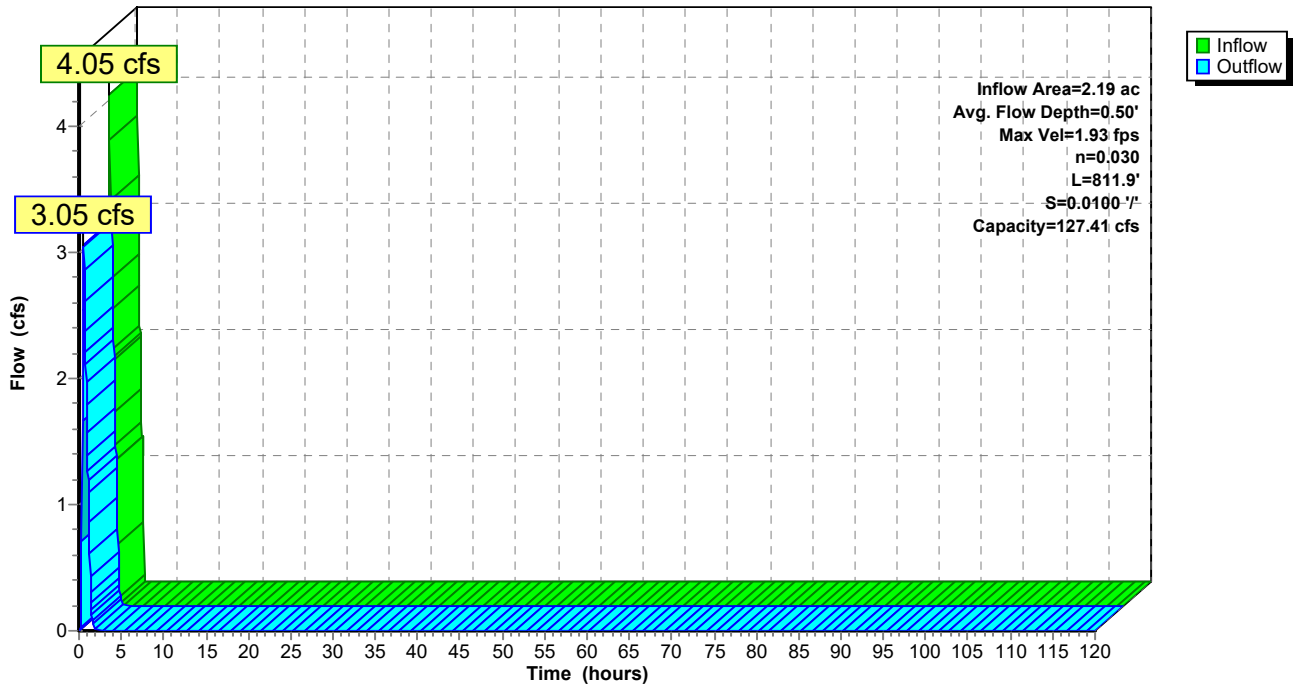
Peak Storage= 1,302 cf @ 0.41 hrs  
 Average Depth at Peak Storage= 0.50'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.41 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'  
 Length= 811.9' Slope= 0.0100 '/'  
 Inlet Invert= 784.00', Outlet Invert= 775.88'



**Reach TB-B7: Terrace Bench B7**

Hydrograph



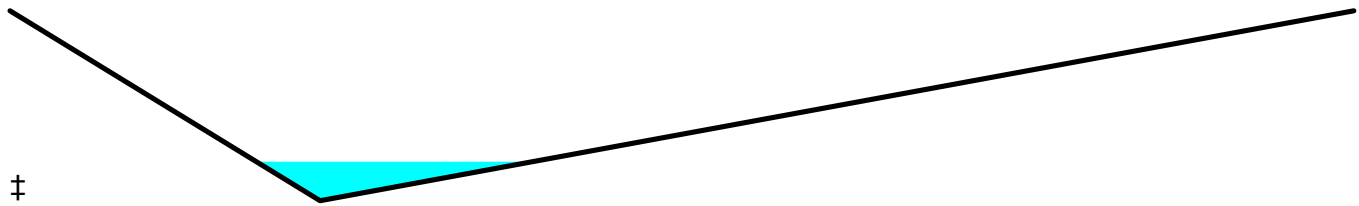
**Summary for Reach TB-B8: Terrace Bench B8**

Inflow Area = 1.17 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 2.15 cfs @ 0.31 hrs, Volume= 0.081 af  
 Outflow = 1.85 cfs @ 0.46 hrs, Volume= 0.081 af, Atten= 14%, Lag= 8.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.70 fps, Min. Travel Time= 4.2 min  
 Avg. Velocity = 0.60 fps, Avg. Travel Time= 12.0 min

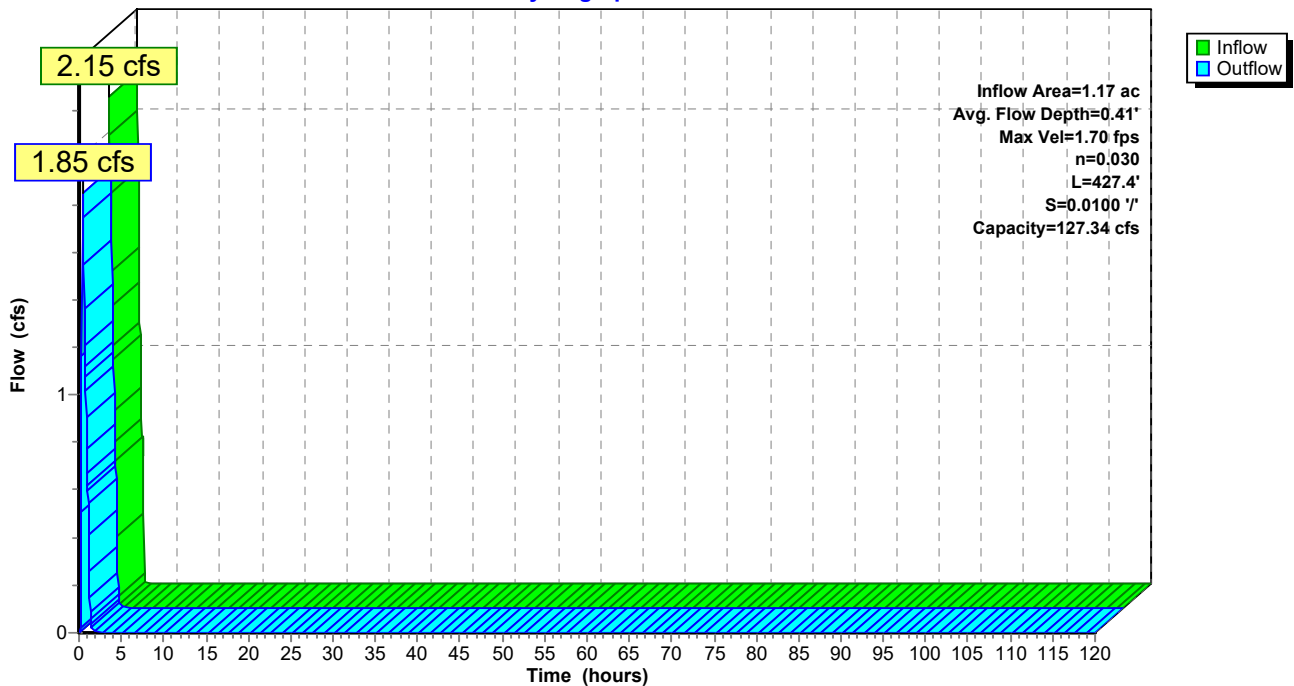
Peak Storage= 470 cf @ 0.38 hrs  
 Average Depth at Peak Storage= 0.41'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.34 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'  
 Length= 427.4' Slope= 0.0100 '/'  
 Inlet Invert= 782.00', Outlet Invert= 777.73'



**Reach TB-B8: Terrace Bench B8**

Hydrograph



**Summary for Reach TB-B9: Terrace Bench B9**

Inflow Area = 1.44 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 2.67 cfs @ 0.30 hrs, Volume= 0.100 af  
 Outflow = 1.95 cfs @ 0.55 hrs, Volume= 0.100 af, Atten= 27%, Lag= 15.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.14 fps, Min. Travel Time= 8.2 min  
 Avg. Velocity = 0.45 fps, Avg. Travel Time= 20.6 min

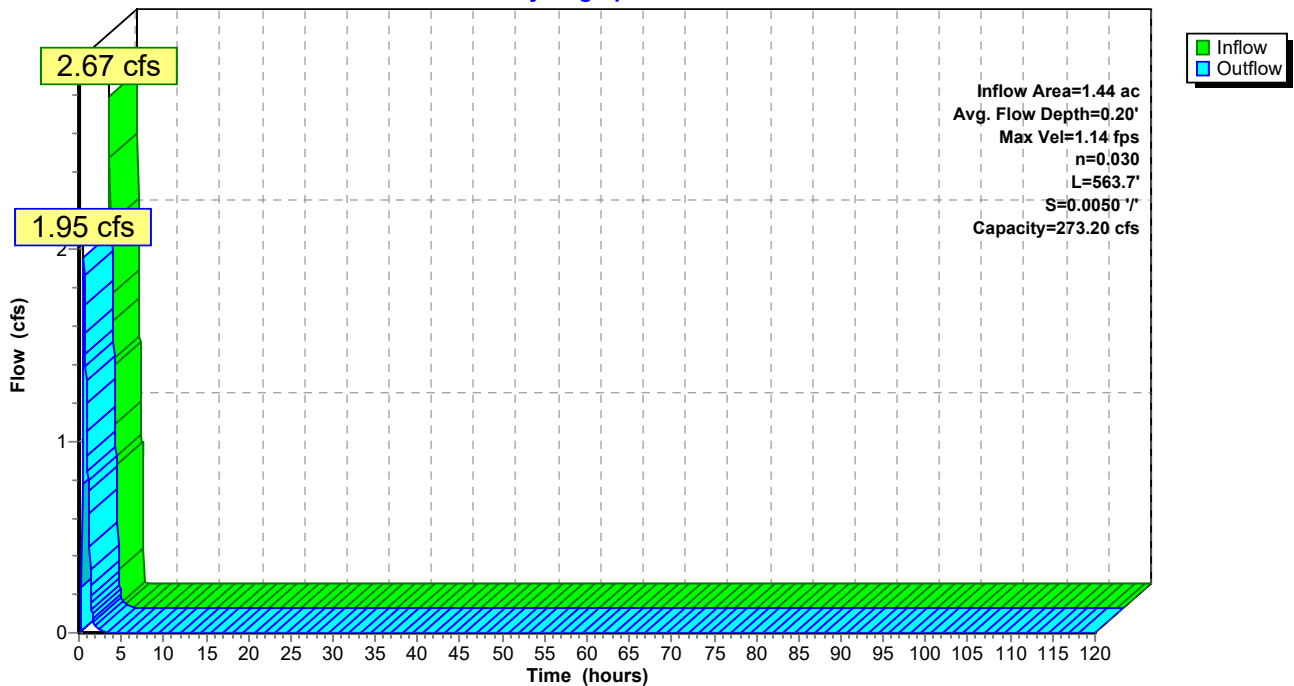
Peak Storage= 973 cf @ 0.41 hrs  
 Average Depth at Peak Storage= 0.20'  
 Bank-Full Depth= 3.00' Flow Area= 51.0 sf, Capacity= 273.20 cfs

8.00' x 3.00' deep channel, n= 0.030  
 Side Slope Z-value= 3.0 '/' Top Width= 26.00'  
 Length= 563.7' Slope= 0.0050 '/'  
 Inlet Invert= 762.00', Outlet Invert= 759.18'



**Reach TB-B9: Terrace Bench B9**

Hydrograph



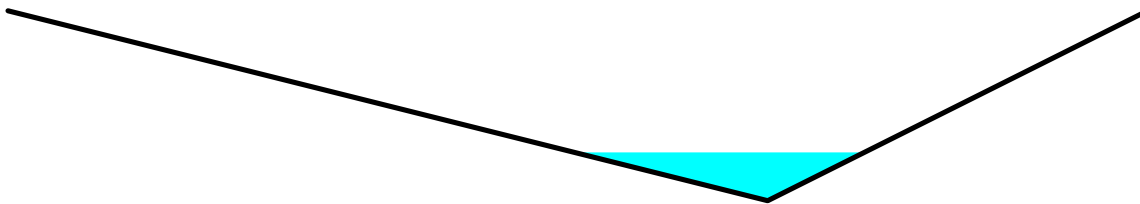
**Summary for Reach TB-D1: Terrace Berm D1**

Inflow Area = 1.26 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 2.14 cfs @ 0.36 hrs, Volume= 0.087 af  
 Outflow = 2.09 cfs @ 0.41 hrs, Volume= 0.087 af, Atten= 3%, Lag= 2.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.71 fps, Min. Travel Time= 1.4 min  
 Avg. Velocity = 1.31 fps, Avg. Travel Time= 2.9 min

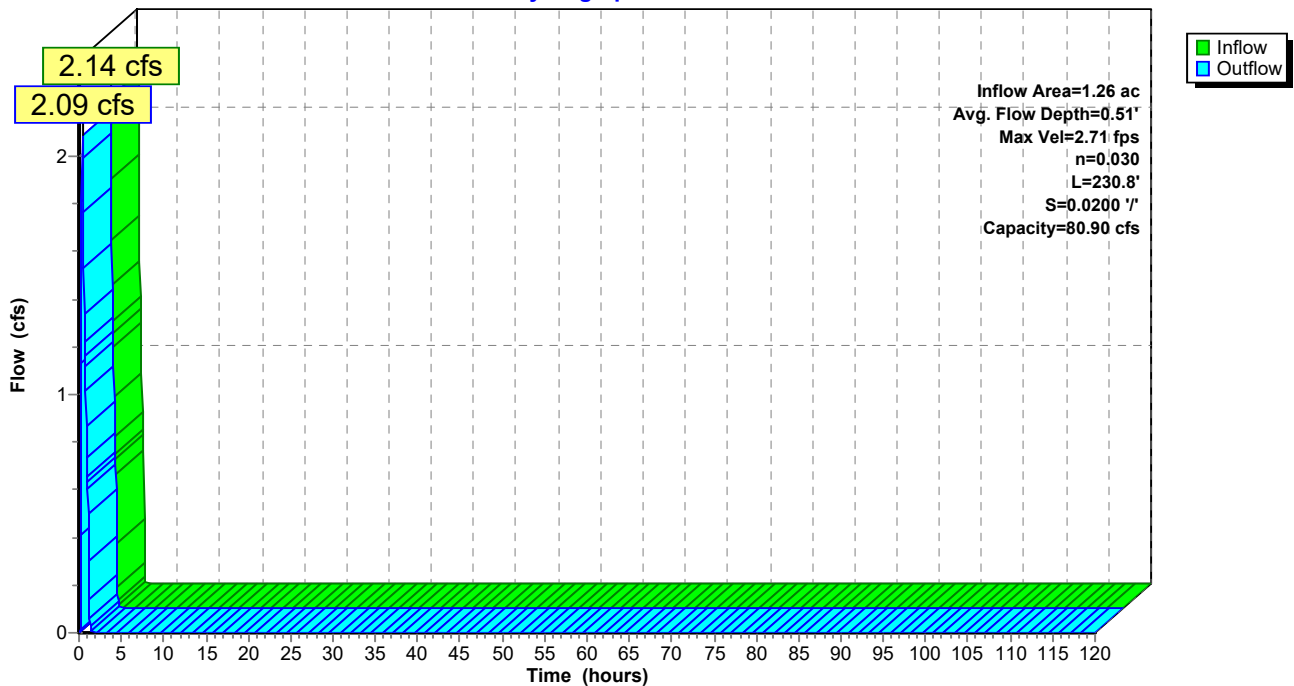
Peak Storage= 180 cf @ 0.38 hrs  
 Average Depth at Peak Storage= 0.51'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.90 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 230.8' Slope= 0.0200 '/'  
 Inlet Invert= 861.86', Outlet Invert= 857.24'



**Reach TB-D1: Terrace Berm D1**

Hydrograph



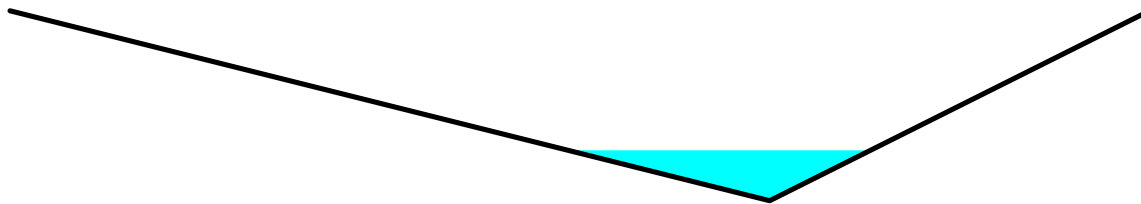
**Summary for Reach TB-D3: Terrace Berm D3**

Inflow Area = 1.33 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 2.40 cfs @ 0.32 hrs, Volume= 0.093 af  
 Outflow = 2.32 cfs @ 0.37 hrs, Volume= 0.093 af, Atten= 3%, Lag= 3.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.79 fps, Min. Travel Time= 1.4 min  
 Avg. Velocity = 1.36 fps, Avg. Travel Time= 2.8 min

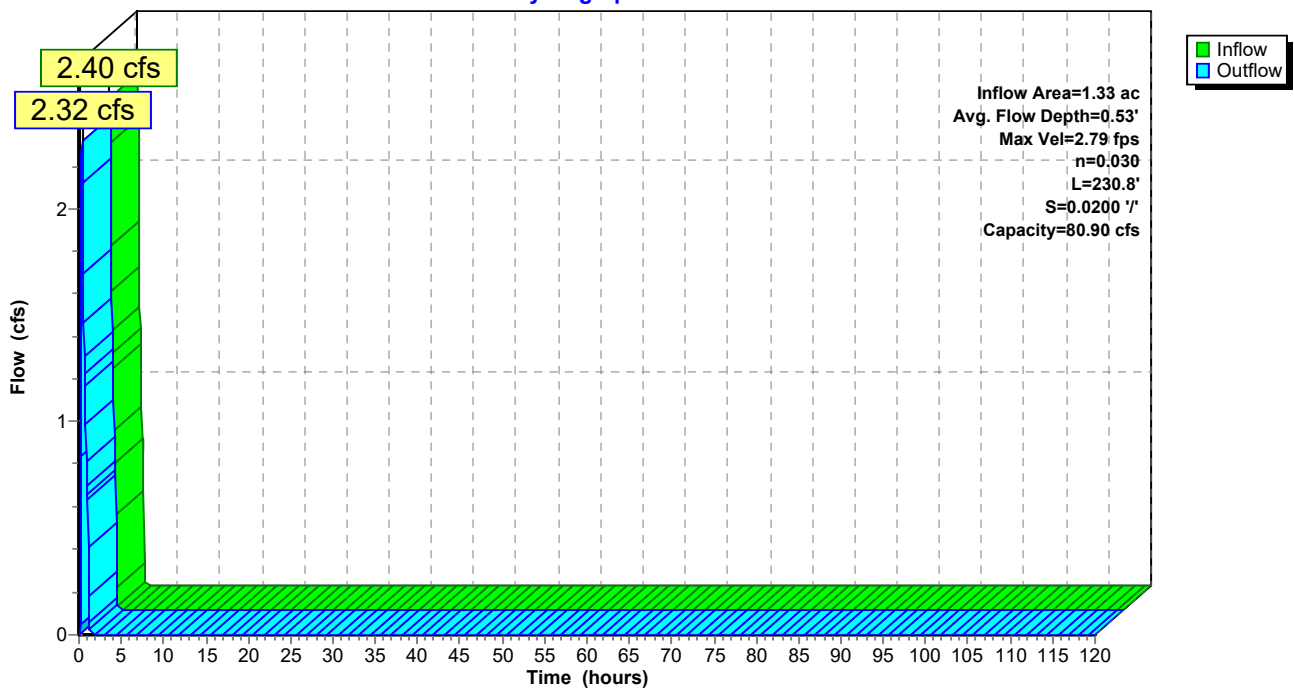
Peak Storage= 195 cf @ 0.35 hrs  
 Average Depth at Peak Storage= 0.53'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.90 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 230.8' Slope= 0.0200 '/'  
 Inlet Invert= 798.33', Outlet Invert= 793.71'



**Reach TB-D3: Terrace Berm D3**

Hydrograph





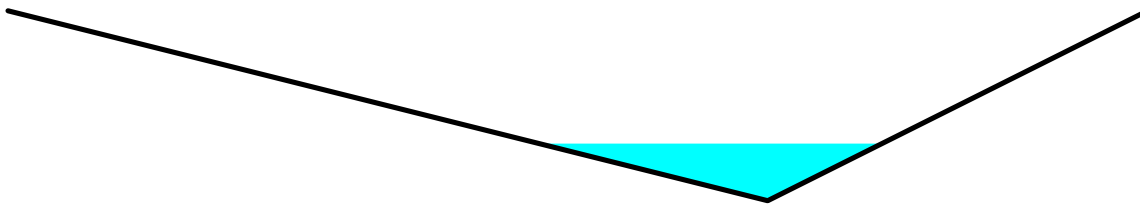
**Summary for Reach TB-E1: Terrace Berm E1**

Inflow Area = 1.42 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 2.42 cfs @ 0.36 hrs, Volume= 0.099 af  
 Outflow = 2.30 cfs @ 0.46 hrs, Volume= 0.099 af, Atten= 5%, Lag= 5.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.13 fps, Min. Travel Time= 2.8 min  
 Avg. Velocity = 0.78 fps, Avg. Travel Time= 7.8 min

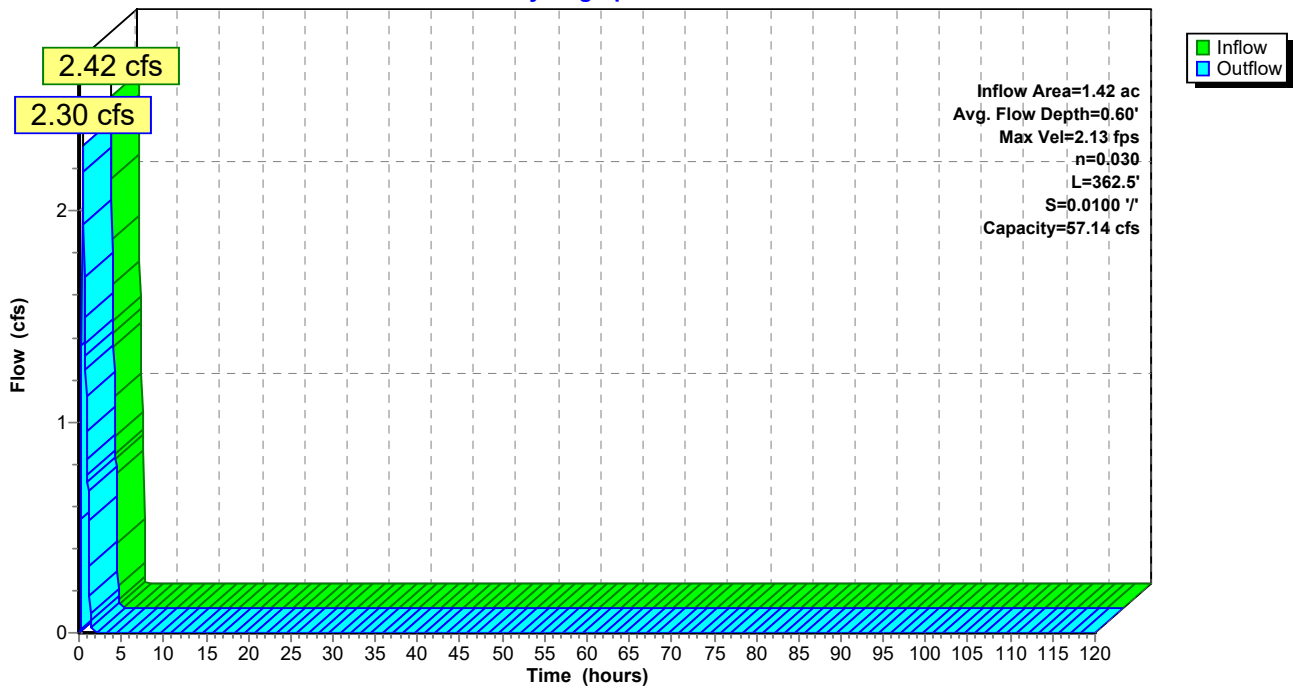
Peak Storage= 393 cf @ 0.41 hrs  
 Average Depth at Peak Storage= 0.60'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.14 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 362.5' Slope= 0.0100 '/'  
 Inlet Invert= 860.26', Outlet Invert= 856.64'



**Reach TB-E1: Terrace Berm E1**

Hydrograph



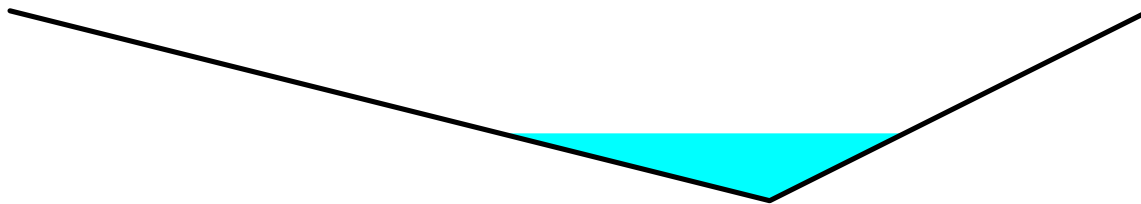
**Summary for Reach TB-E2: TB-E2**

Inflow Area = 2.82 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 5.07 cfs @ 0.32 hrs, Volume= 0.196 af  
 Outflow = 3.59 cfs @ 0.62 hrs, Volume= 0.196 af, Atten= 29%, Lag= 17.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.39 fps, Min. Travel Time= 9.2 min  
 Avg. Velocity = 0.56 fps, Avg. Travel Time= 39.5 min

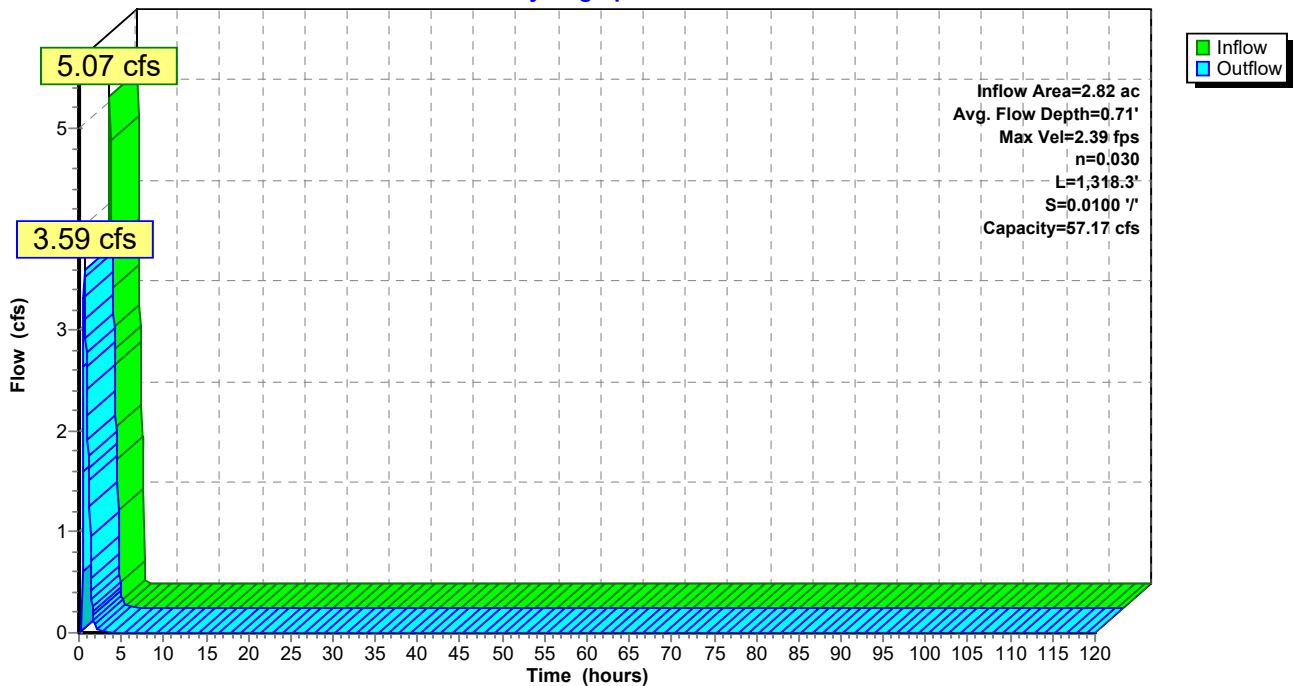
Peak Storage= 1,989 cf @ 0.46 hrs  
 Average Depth at Peak Storage= 0.71'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.17 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,318.3' Slope= 0.0100 '/'  
 Inlet Invert= 806.69', Outlet Invert= 793.51'



**Reach TB-E2: TB-E2**

Hydrograph



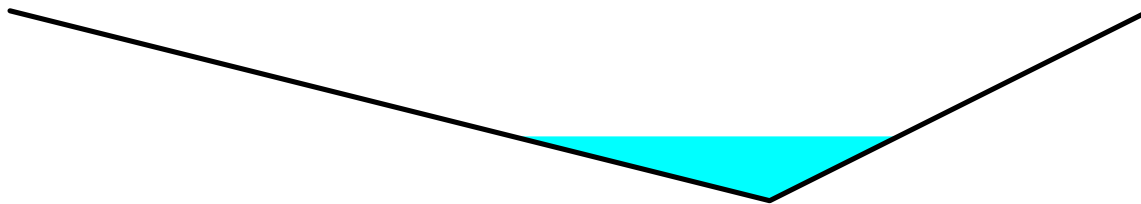
**Summary for Reach TB-H1: Terrace Berm H1**

Inflow Area = 1.98 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 3.39 cfs @ 0.36 hrs, Volume= 0.138 af  
 Outflow = 3.16 cfs @ 0.47 hrs, Volume= 0.138 af, Atten= 7%, Lag= 6.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.31 fps, Min. Travel Time= 3.3 min  
 Avg. Velocity = 0.76 fps, Avg. Travel Time= 10.0 min

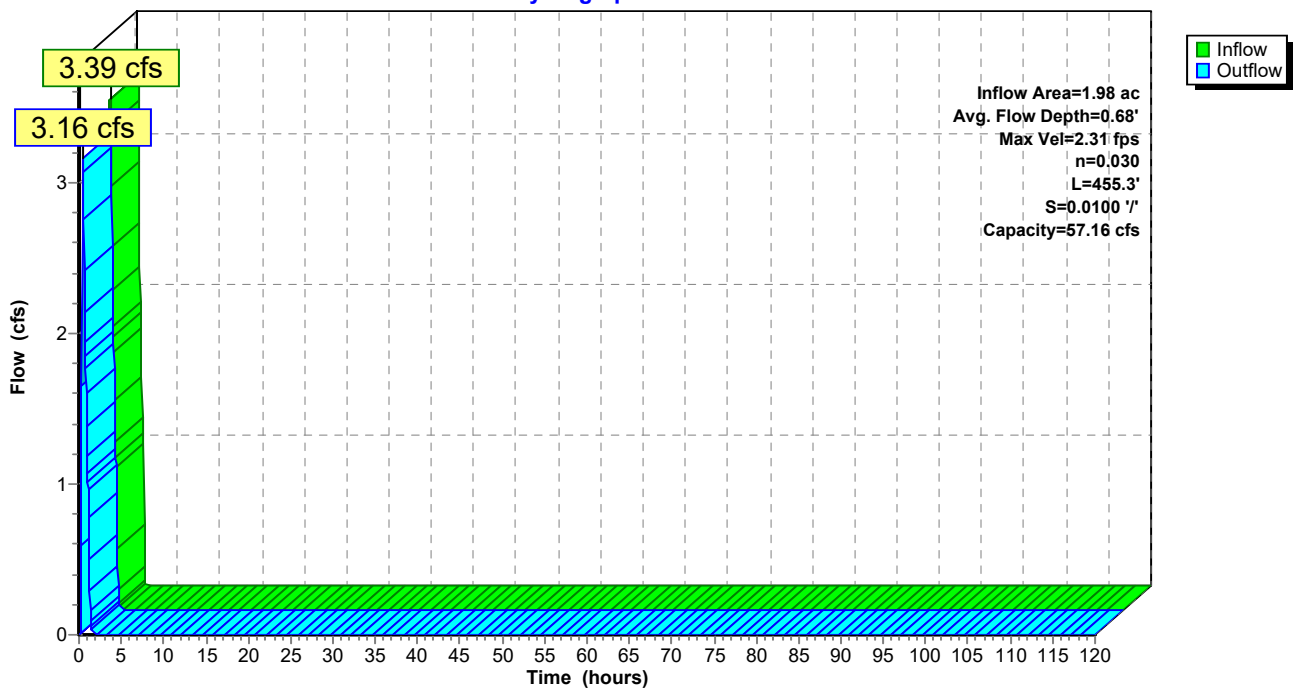
Peak Storage= 626 cf @ 0.41 hrs  
 Average Depth at Peak Storage= 0.68'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.16 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 455.3' Slope= 0.0100 '/'  
 Inlet Invert= 872.24', Outlet Invert= 867.69'



**Reach TB-H1: Terrace Berm H1**

Hydrograph



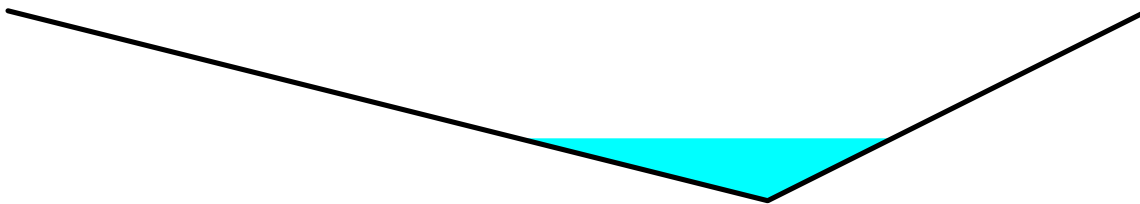
**Summary for Reach TB-H2: Terrace Berm H2**

Inflow Area = 1.86 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 3.40 cfs @ 0.32 hrs, Volume= 0.129 af  
 Outflow = 2.91 cfs @ 0.47 hrs, Volume= 0.129 af, Atten= 14%, Lag= 9.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.27 fps, Min. Travel Time= 4.5 min  
 Avg. Velocity = 0.67 fps, Avg. Travel Time= 15.1 min

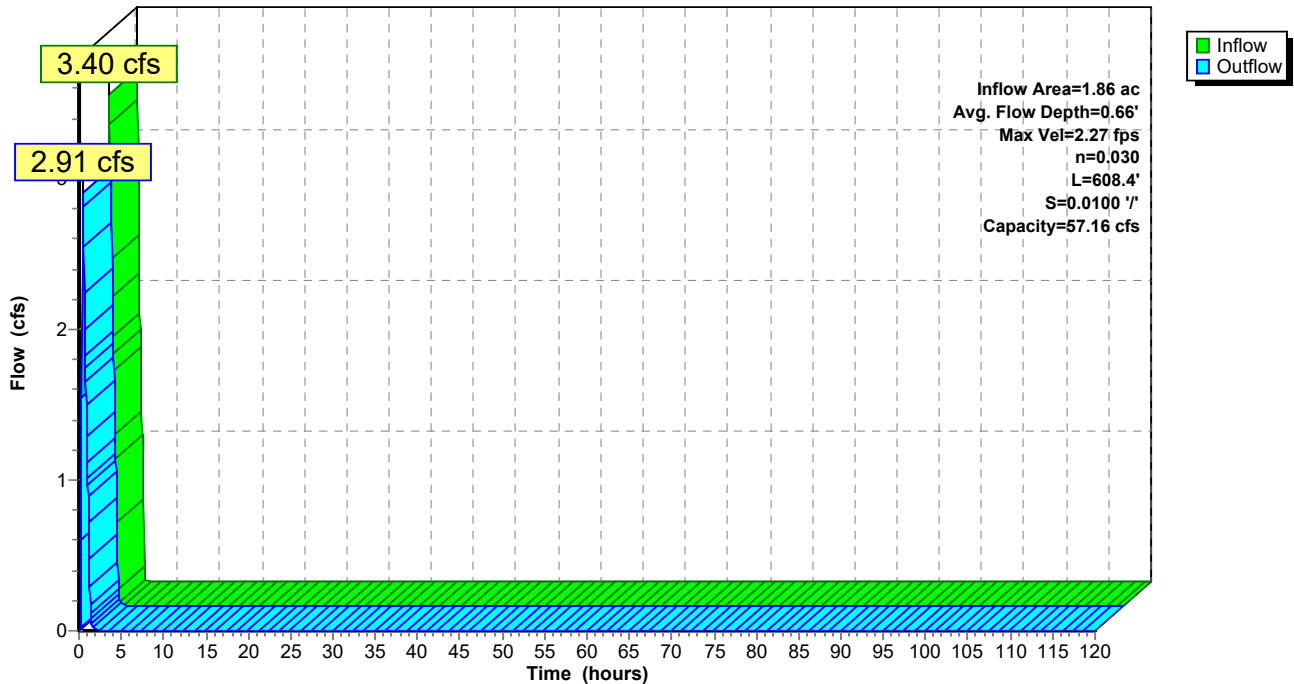
Peak Storage= 788 cf @ 0.39 hrs  
 Average Depth at Peak Storage= 0.66'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.16 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 608.4' Slope= 0.0100 '/'  
 Inlet Invert= 837.23', Outlet Invert= 831.15'



**Reach TB-H2: Terrace Berm H2**

Hydrograph



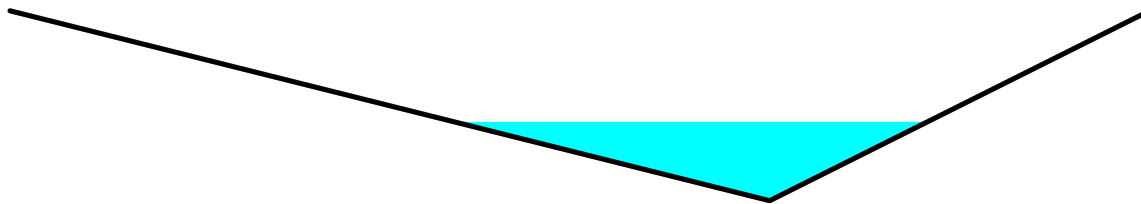
**Summary for Reach TB-H3: Terrace Berm H3**

Inflow Area = 3.57 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 6.45 cfs @ 0.32 hrs, Volume= 0.248 af  
 Outflow = 5.40 cfs @ 0.50 hrs, Volume= 0.248 af, Atten= 16%, Lag= 10.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.65 fps, Min. Travel Time= 5.0 min  
 Avg. Velocity = 0.67 fps, Avg. Travel Time= 19.8 min

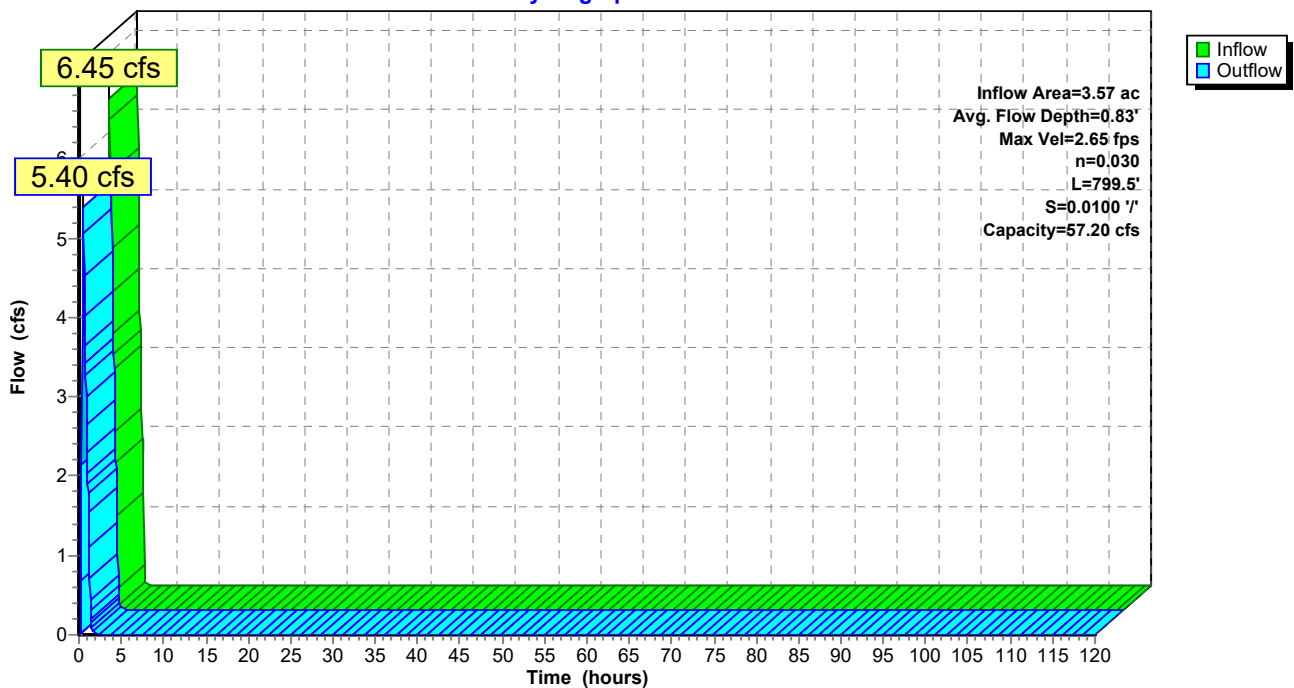
Peak Storage= 1,654 cf @ 0.41 hrs  
 Average Depth at Peak Storage= 0.83'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.20 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 799.5' Slope= 0.0100 '/'  
 Inlet Invert= 782.24', Outlet Invert= 774.24'



**Reach TB-H3: Terrace Berm H3**

Hydrograph



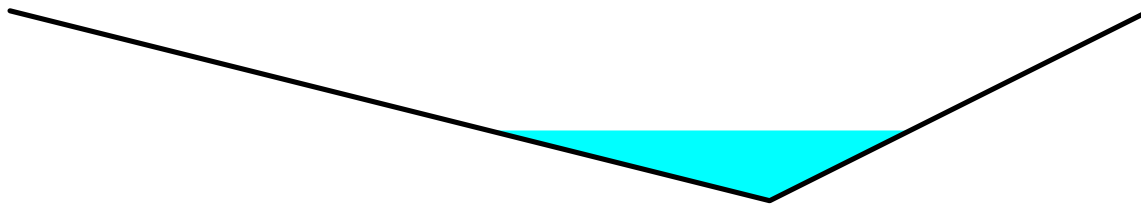
**Summary for Reach TB-N-A1: Terrace Berm N-A1**

Inflow Area = 3.60 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 6.15 cfs @ 0.36 hrs, Volume= 0.250 af  
 Outflow = 5.87 cfs @ 0.43 hrs, Volume= 0.250 af, Atten= 4%, Lag= 4.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.65 fps, Min. Travel Time= 2.0 min  
 Avg. Velocity = 1.37 fps, Avg. Travel Time= 5.4 min

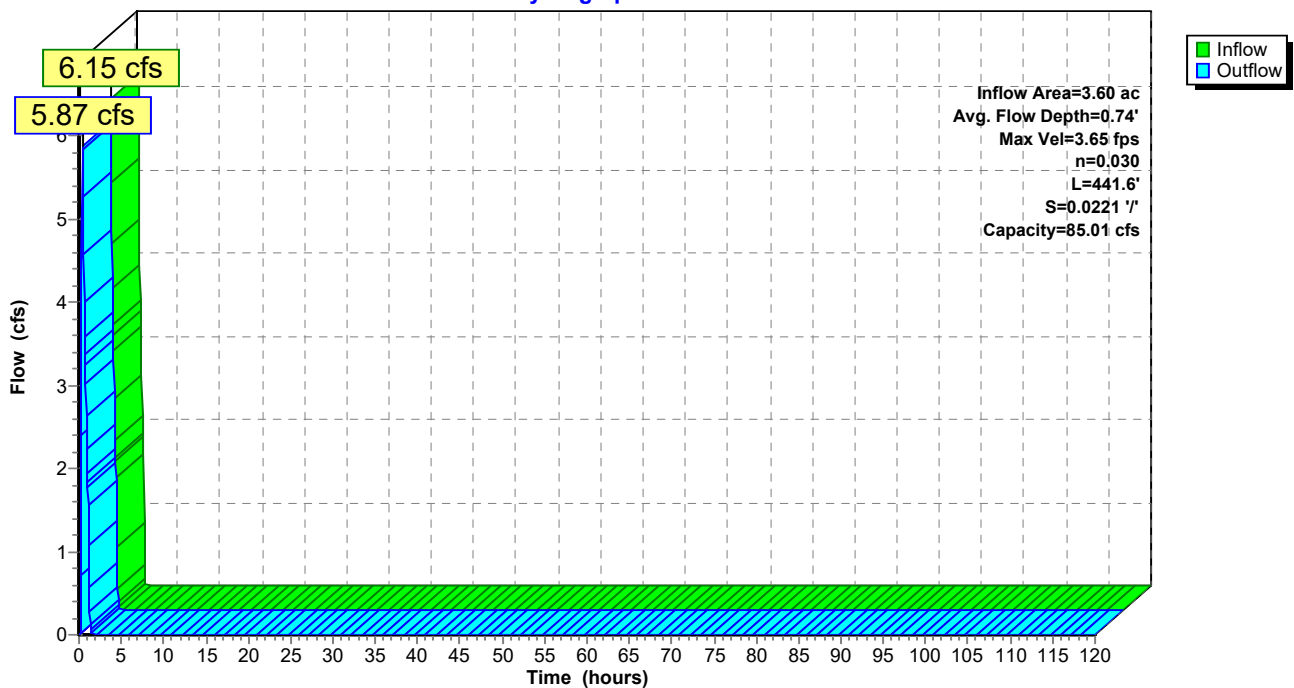
Peak Storage= 724 cf @ 0.40 hrs  
 Average Depth at Peak Storage= 0.74'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 85.01 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 441.6' Slope= 0.0221 '/'  
 Inlet Invert= 879.12', Outlet Invert= 869.36'



**Reach TB-N-A1: Terrace Berm N-A1**

Hydrograph



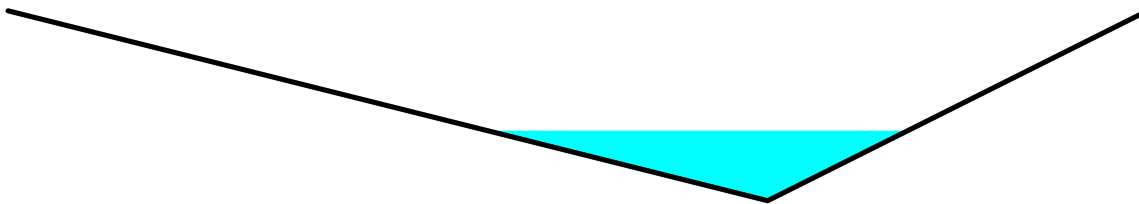
**Summary for Reach TB-N-A10: Terrace Berm N-A10**

Inflow Area = 3.77 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 6.89 cfs @ 0.32 hrs, Volume= 0.262 af  
 Outflow = 5.62 cfs @ 0.51 hrs, Volume= 0.262 af, Atten= 18%, Lag= 11.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.46 fps, Min. Travel Time= 5.6 min  
 Avg. Velocity = 0.90 fps, Avg. Travel Time= 21.8 min

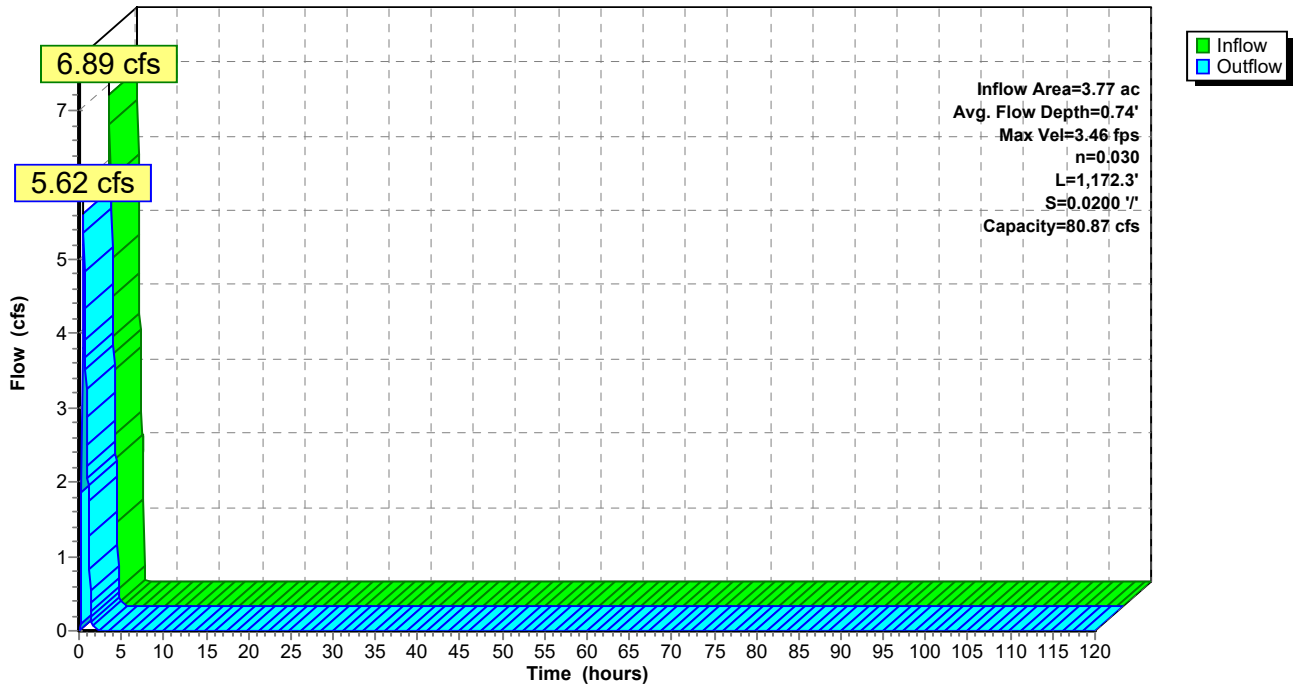
Peak Storage= 1,914 cf @ 0.41 hrs  
 Average Depth at Peak Storage= 0.74'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,172.3' Slope= 0.0200 '/'  
 Inlet Invert= 771.72', Outlet Invert= 748.27'



**Reach TB-N-A10: Terrace Berm N-A10**

Hydrograph



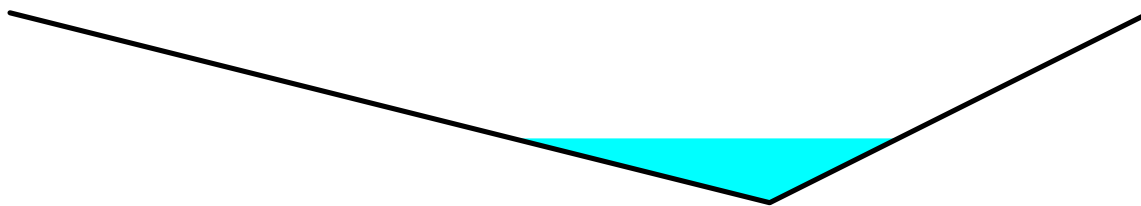
**Summary for Reach TB-N-A2: Terrace Berm N-A2**

Inflow Area = 2.82 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 4.88 cfs @ 0.35 hrs, Volume= 0.196 af  
 Outflow = 4.40 cfs @ 0.48 hrs, Volume= 0.196 af, Atten= 10%, Lag= 7.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.27 fps, Min. Travel Time= 3.7 min  
 Avg. Velocity = 1.02 fps, Avg. Travel Time= 12.1 min

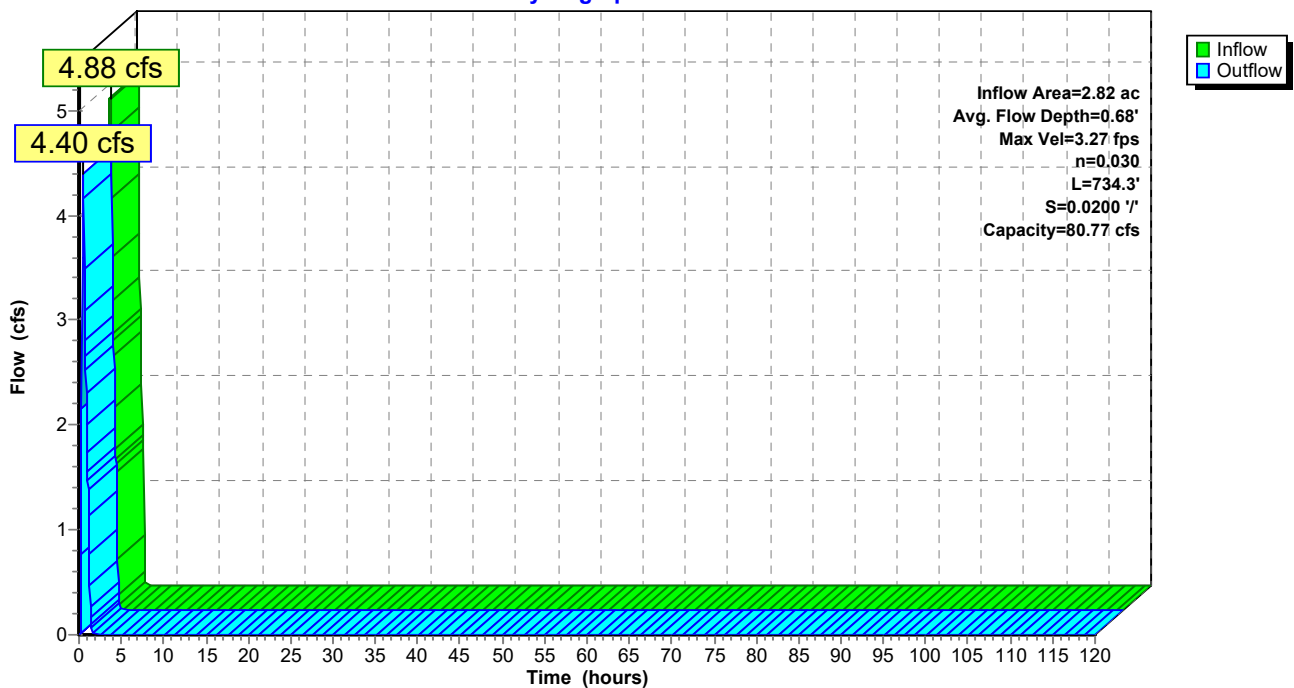
Peak Storage= 1,011 cf @ 0.41 hrs  
 Average Depth at Peak Storage= 0.68'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.77 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 734.3' Slope= 0.0200 '/'  
 Inlet Invert= 884.01', Outlet Invert= 869.36'



**Reach TB-N-A2: Terrace Berm N-A2**

Hydrograph





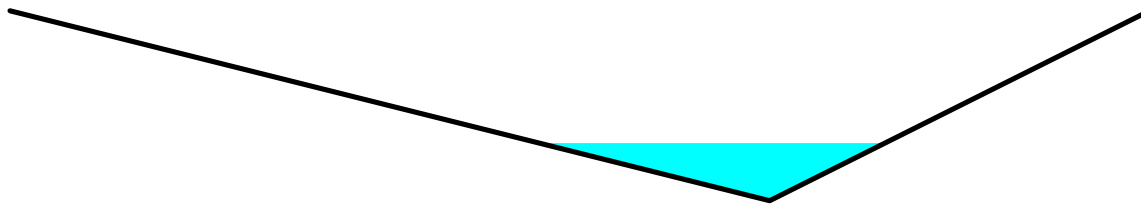
**Summary for Reach TB-N-A3: Terrace Berm N-A3**

Inflow Area = 1.31 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 2.38 cfs @ 0.32 hrs, Volume= 0.091 af  
 Outflow = 2.24 cfs @ 0.41 hrs, Volume= 0.091 af, Atten= 6%, Lag= 5.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.03 fps, Min. Travel Time= 2.7 min  
 Avg. Velocity = 0.74 fps, Avg. Travel Time= 7.4 min

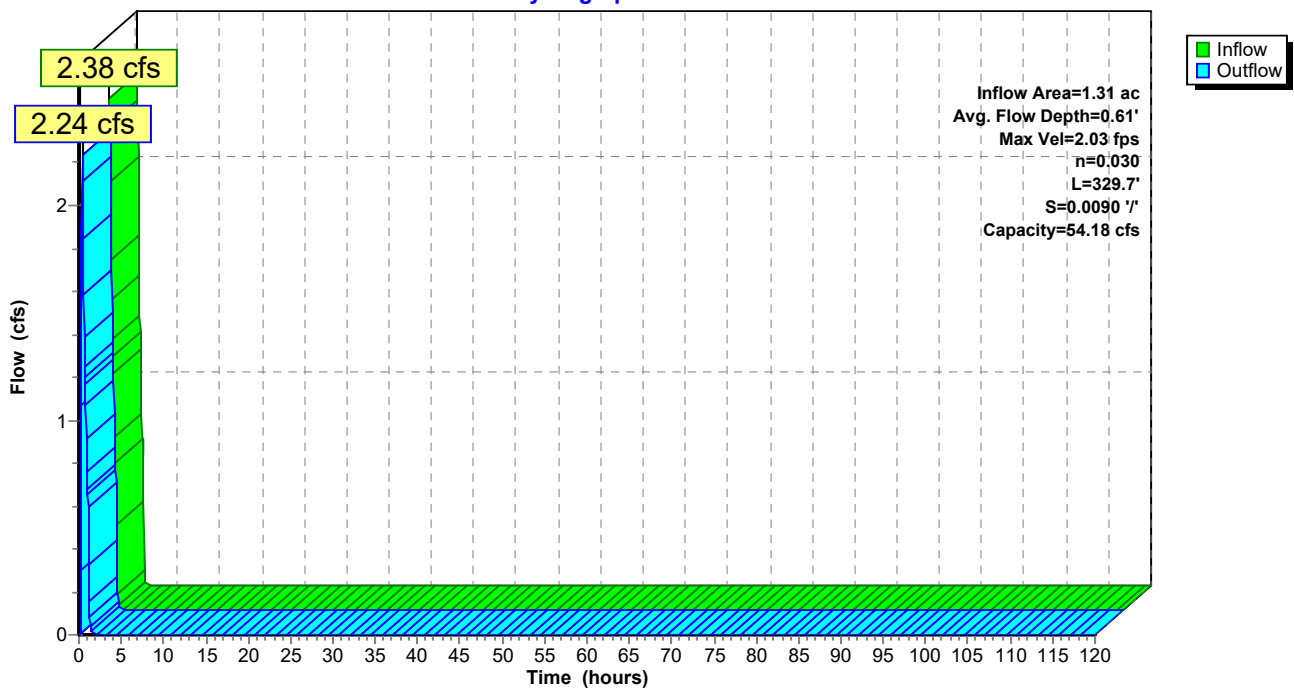
Peak Storage= 365 cf @ 0.37 hrs  
 Average Depth at Peak Storage= 0.61'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 54.18 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 329.7' Slope= 0.0090 '/'  
 Inlet Invert= 839.81', Outlet Invert= 836.85'



**Reach TB-N-A3: Terrace Berm N-A3**

Hydrograph



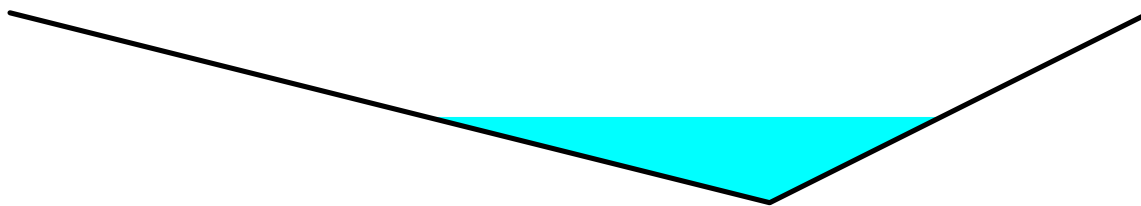
**Summary for Reach TB-N-A4: Terrace Berm N-A4**

Inflow Area = 6.88 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 11.80 cfs @ 0.36 hrs, Volume= 0.478 af  
 Outflow = 9.64 cfs @ 0.57 hrs, Volume= 0.478 af, Atten= 18%, Lag= 12.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.96 fps, Min. Travel Time= 6.4 min  
 Avg. Velocity = 0.90 fps, Avg. Travel Time= 28.1 min

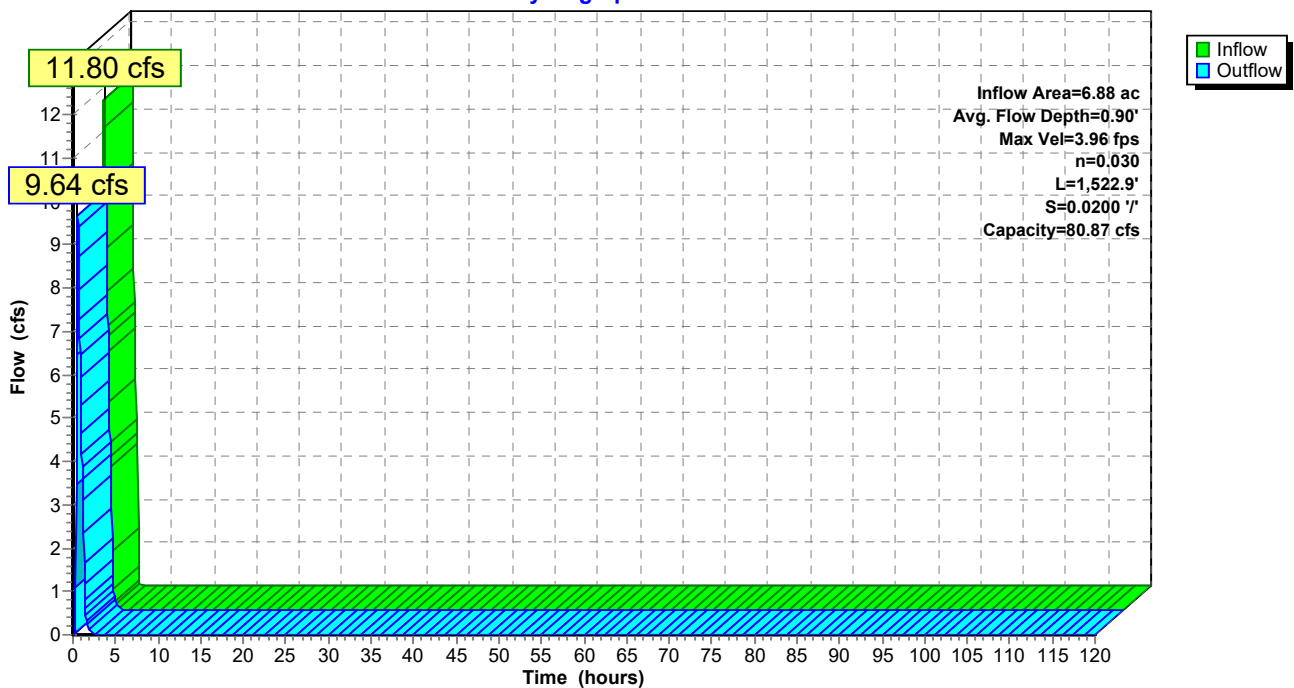
Peak Storage= 3,723 cf @ 0.46 hrs  
 Average Depth at Peak Storage= 0.90'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,522.9' Slope= 0.0200 '/'  
 Inlet Invert= 867.35', Outlet Invert= 836.89'



**Reach TB-N-A4: Terrace Berm N-A4**

Hydrograph



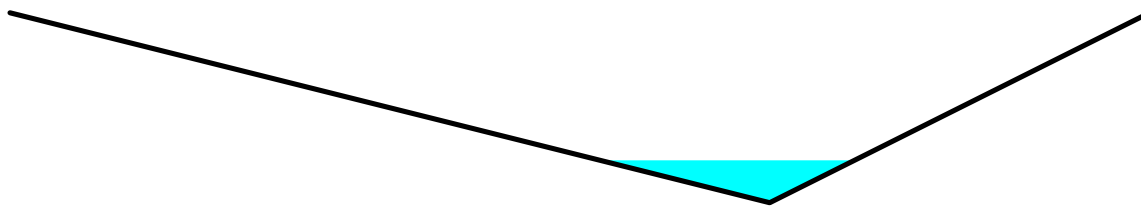
**Summary for Reach TB-N-A5: Terrace Berm N-A5**

Inflow Area = 0.73 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 1.34 cfs @ 0.32 hrs, Volume= 0.051 af  
 Outflow = 1.29 cfs @ 0.37 hrs, Volume= 0.051 af, Atten= 4%, Lag= 3.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.17 fps, Min. Travel Time= 1.7 min  
 Avg. Velocity = 1.06 fps, Avg. Travel Time= 3.4 min

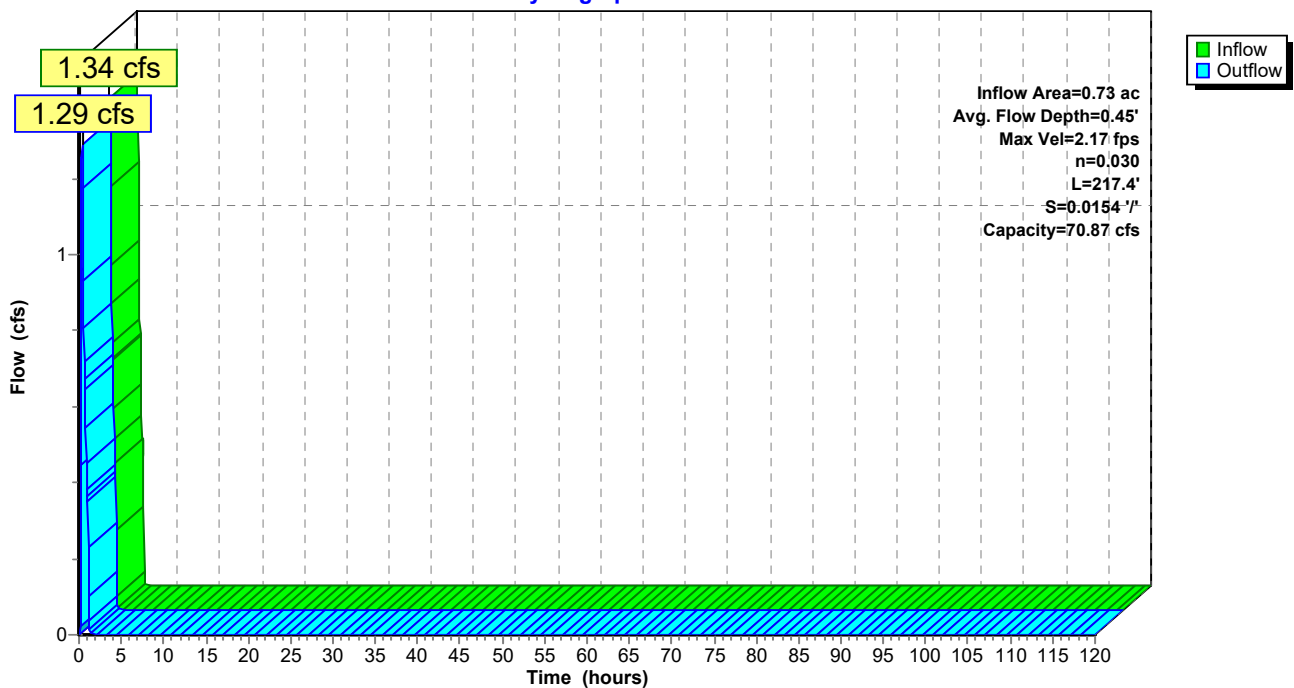
Peak Storage= 130 cf @ 0.35 hrs  
 Average Depth at Peak Storage= 0.45'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 70.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 217.4' Slope= 0.0154 '/'  
 Inlet Invert= 811.36', Outlet Invert= 808.02'



**Reach TB-N-A5: Terrace Berm N-A5**

Hydrograph



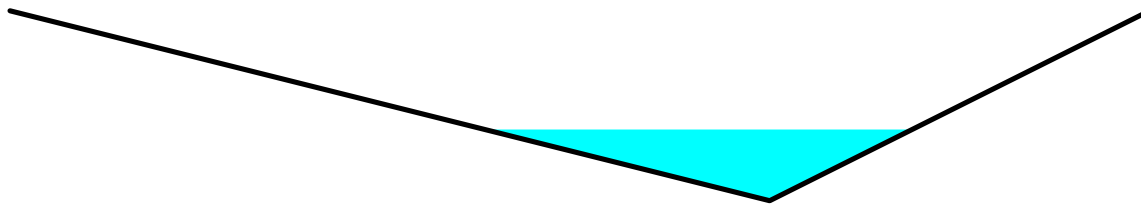
**Summary for Reach TB-N-A6: Terrace Berm N-A6**

Inflow Area = 4.13 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 7.55 cfs @ 0.32 hrs, Volume= 0.287 af  
 Outflow = 5.81 cfs @ 0.54 hrs, Volume= 0.287 af, Atten= 23%, Lag= 13.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.50 fps, Min. Travel Time= 6.7 min  
 Avg. Velocity = 0.86 fps, Avg. Travel Time= 27.4 min

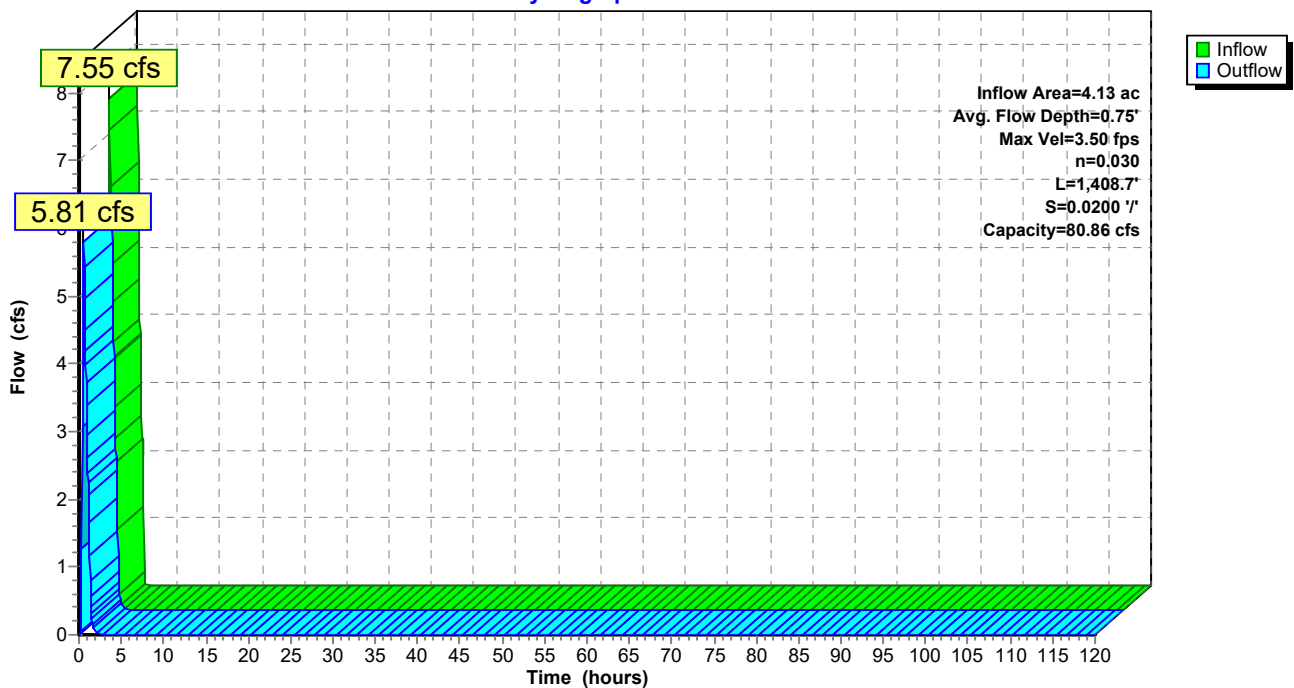
Peak Storage= 2,377 cf @ 0.42 hrs  
 Average Depth at Peak Storage= 0.75'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,408.7' Slope= 0.0200 '/'  
 Inlet Invert= 836.37', Outlet Invert= 808.20'



**Reach TB-N-A6: Terrace Berm N-A6**

Hydrograph



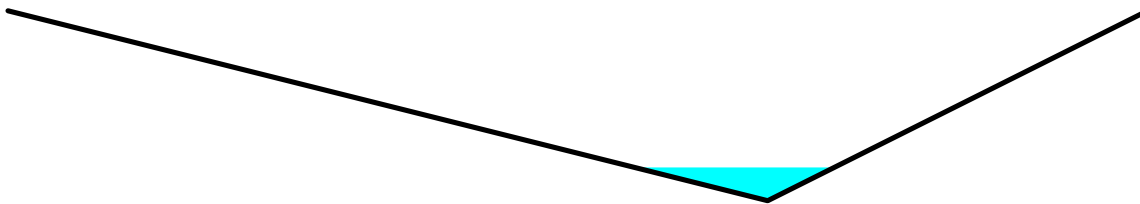
**Summary for Reach TB-N-A7: Terrace Berm N-A7**

Inflow Area = 0.44 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 0.80 cfs @ 0.32 hrs, Volume= 0.031 af  
 Outflow = 0.78 cfs @ 0.36 hrs, Volume= 0.031 af, Atten= 3%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.12 fps, Min. Travel Time= 0.8 min  
 Avg. Velocity = 1.32 fps, Avg. Travel Time= 1.3 min

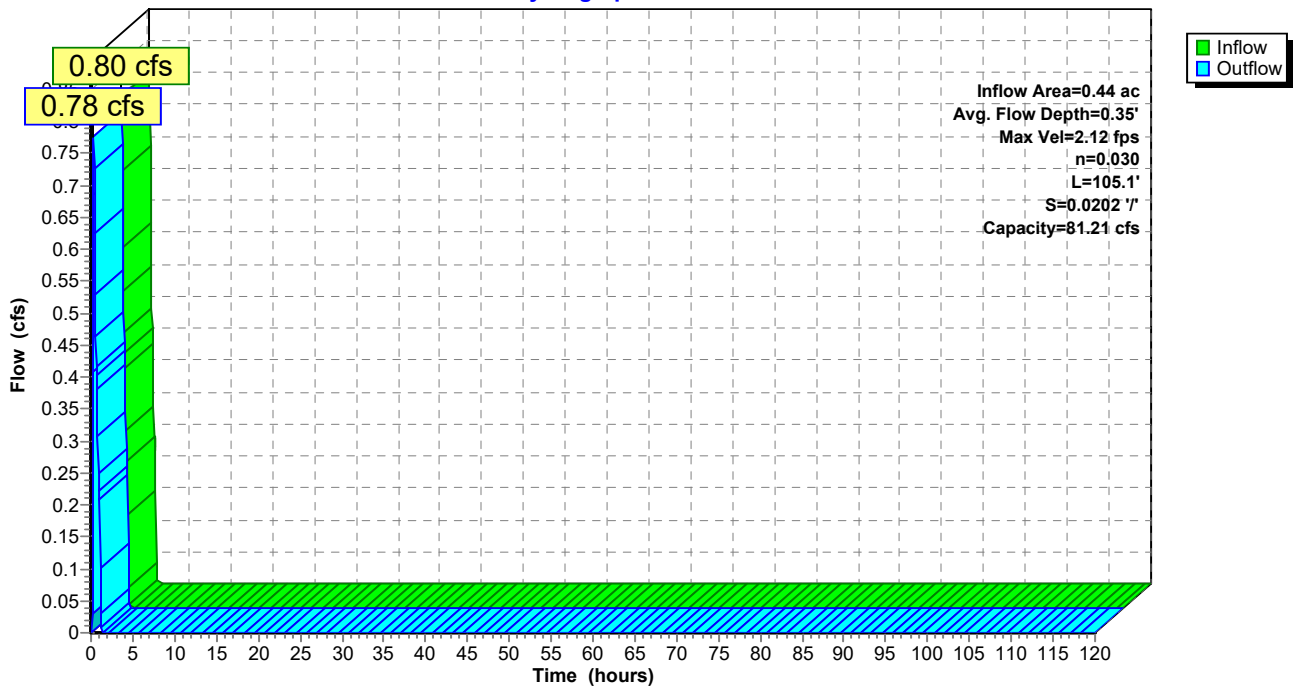
Peak Storage= 39 cf @ 0.34 hrs  
 Average Depth at Peak Storage= 0.35'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 81.21 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 105.1' Slope= 0.0202 '/'  
 Inlet Invert= 782.01', Outlet Invert= 779.89'



**Reach TB-N-A7: Terrace Berm N-A7**

Hydrograph



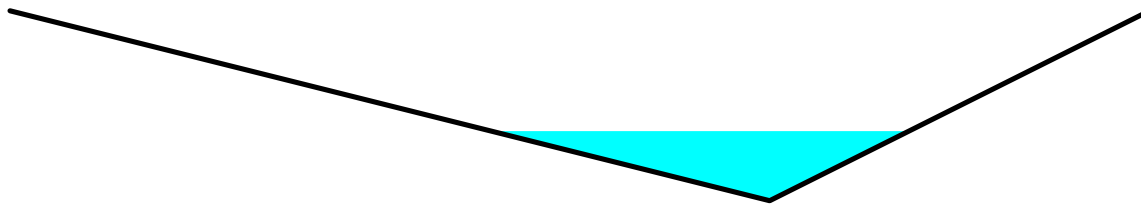
**Summary for Reach TB-N-A8: Terrace Berm N-A8**

Inflow Area = 3.80 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 6.95 cfs @ 0.32 hrs, Volume= 0.264 af  
 Outflow = 5.52 cfs @ 0.52 hrs, Volume= 0.264 af, Atten= 21%, Lag= 12.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.44 fps, Min. Travel Time= 6.3 min  
 Avg. Velocity = 0.87 fps, Avg. Travel Time= 24.8 min

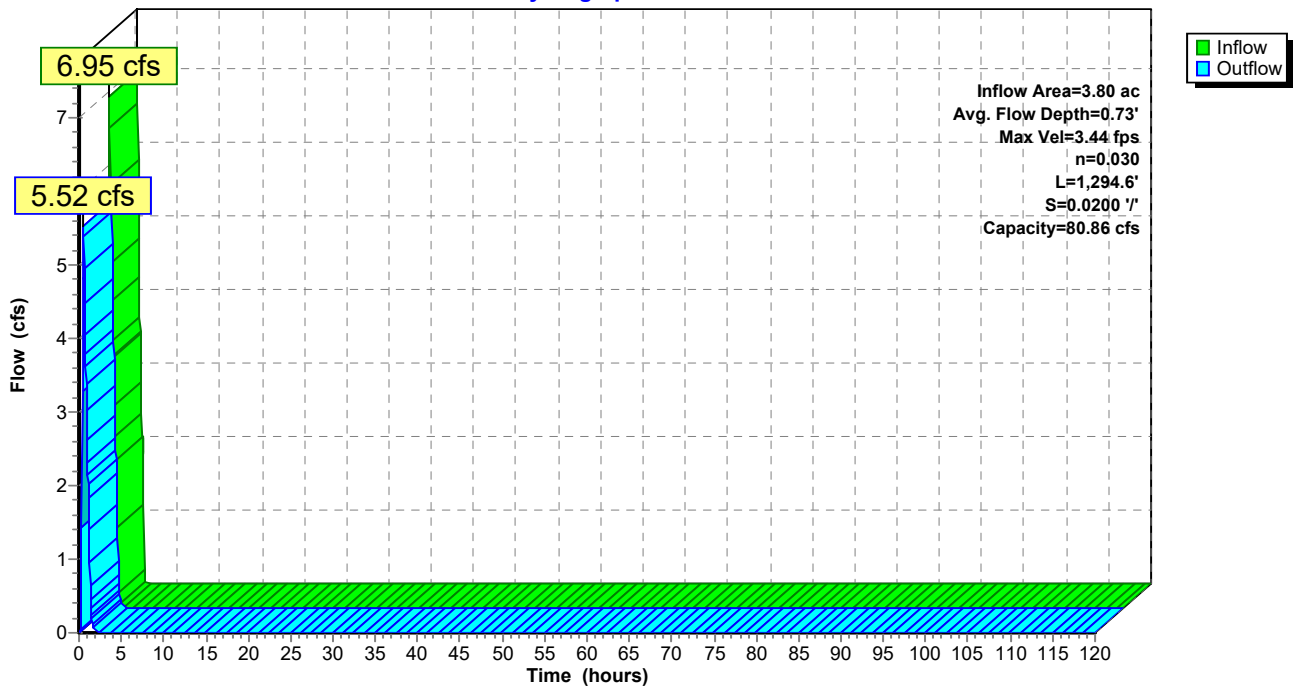
Peak Storage= 2,083 cf @ 0.42 hrs  
 Average Depth at Peak Storage= 0.73'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,294.6' Slope= 0.0200 '/'  
 Inlet Invert= 805.78', Outlet Invert= 779.89'



**Reach TB-N-A8: Terrace Berm N-A8**

Hydrograph



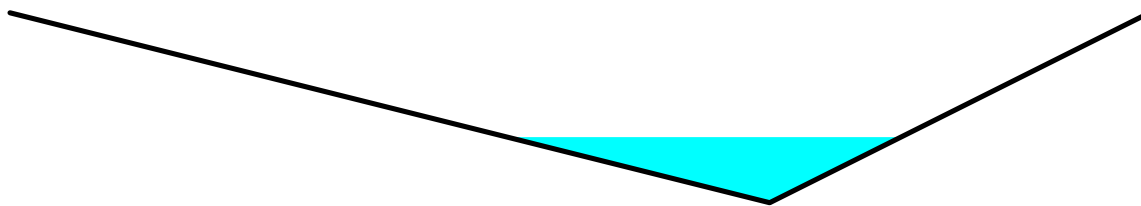
**Summary for Reach TB-N-B1: Terrace Berm N-B1**

Inflow Area = 3.15 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 5.44 cfs @ 0.36 hrs, Volume= 0.219 af  
 Outflow = 4.71 cfs @ 0.52 hrs, Volume= 0.219 af, Atten= 13%, Lag= 9.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.31 fps, Min. Travel Time= 4.9 min  
 Avg. Velocity = 0.93 fps, Avg. Travel Time= 17.5 min

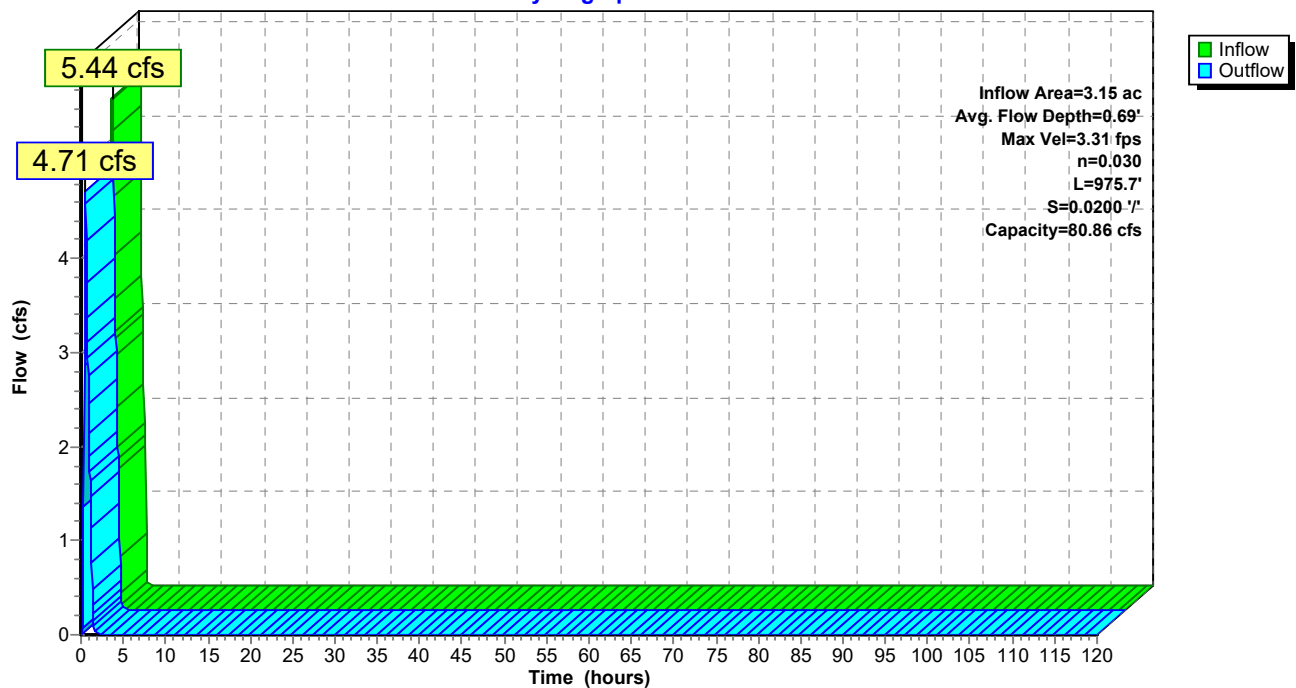
Peak Storage= 1,394 cf @ 0.43 hrs  
 Average Depth at Peak Storage= 0.69'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 975.7' Slope= 0.0200 '/'  
 Inlet Invert= 867.35', Outlet Invert= 847.84'



**Reach TB-N-B1: Terrace Berm N-B1**

Hydrograph



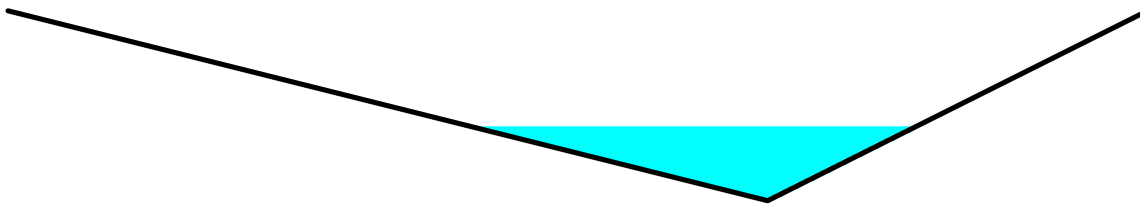
**Summary for Reach TB-N-B2: Terrace Berm N-B2**

Inflow Area = 4.49 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 7.72 cfs @ 0.36 hrs, Volume= 0.312 af  
 Outflow = 6.64 cfs @ 0.52 hrs, Volume= 0.312 af, Atten= 14%, Lag= 10.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.61 fps, Min. Travel Time= 5.2 min  
 Avg. Velocity = 0.94 fps, Avg. Travel Time= 19.8 min

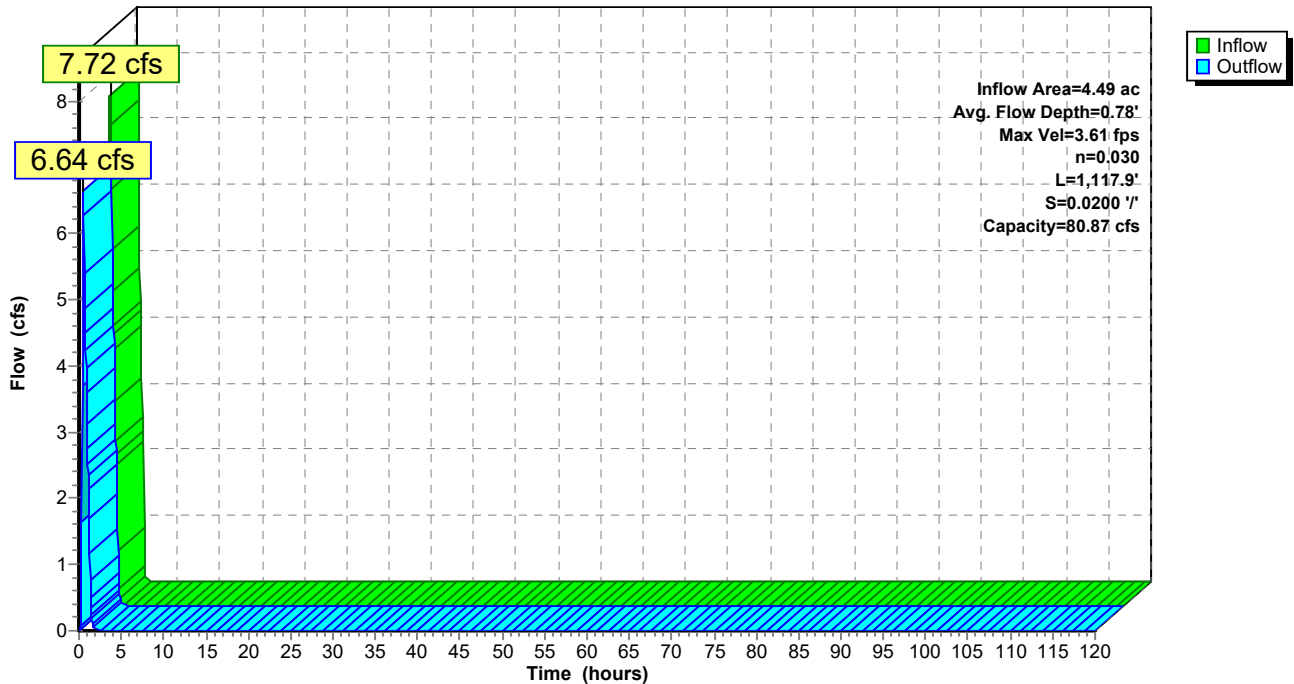
Peak Storage= 2,062 cf @ 0.44 hrs  
 Average Depth at Peak Storage= 0.78'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,117.9' Slope= 0.0200 '/'  
 Inlet Invert= 870.20', Outlet Invert= 847.84'



**Reach TB-N-B2: Terrace Berm N-B2**

Hydrograph





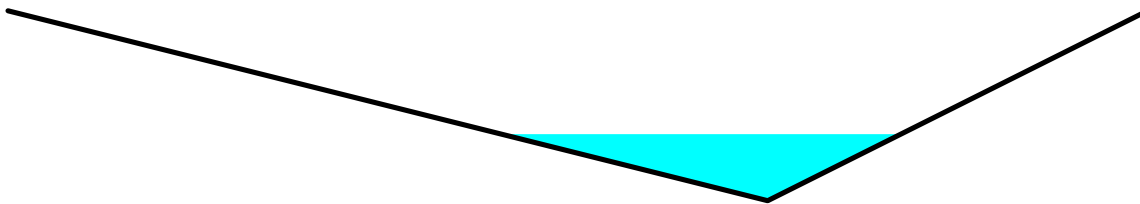
**Summary for Reach TB-N-B3: Terrace Berm N-B3**

Inflow Area = 3.43 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 6.26 cfs @ 0.32 hrs, Volume= 0.238 af  
 Outflow = 4.84 cfs @ 0.53 hrs, Volume= 0.238 af, Atten= 23%, Lag= 13.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.34 fps, Min. Travel Time= 6.6 min  
 Avg. Velocity = 0.85 fps, Avg. Travel Time= 25.9 min

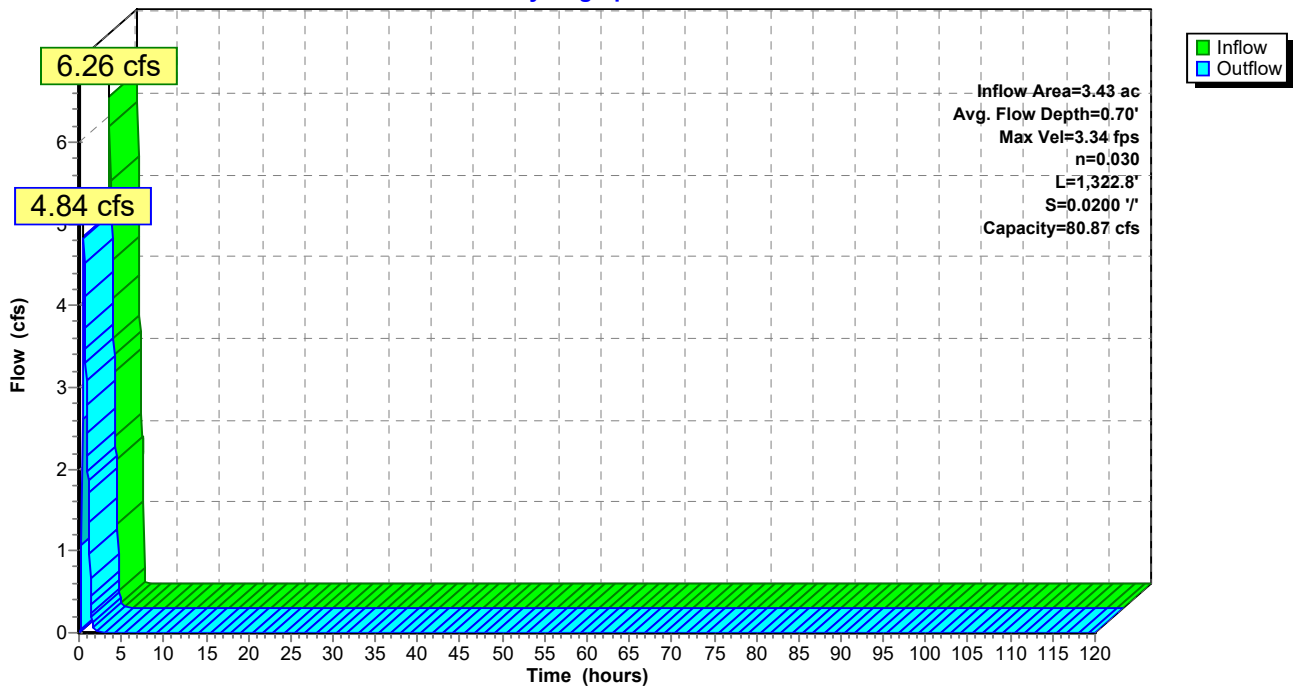
Peak Storage= 1,947 cf @ 0.42 hrs  
 Average Depth at Peak Storage= 0.70'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,322.8' Slope= 0.0200 '/'  
 Inlet Invert= 836.37', Outlet Invert= 809.91'



**Reach TB-N-B3: Terrace Berm N-B3**

Hydrograph



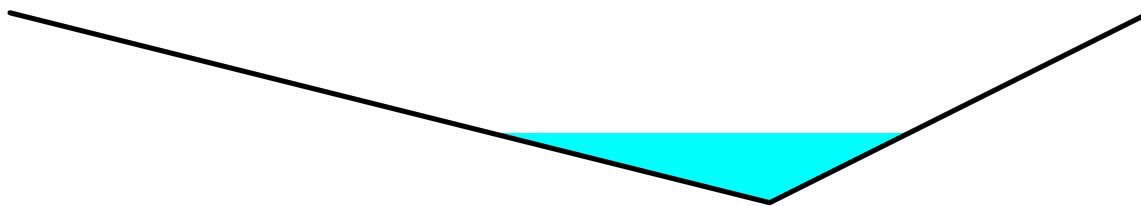
**Summary for Reach TB-N-B4: Terrace Berm N-B4**

Inflow Area = 3.80 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 6.94 cfs @ 0.32 hrs, Volume= 0.264 af  
 Outflow = 5.58 cfs @ 0.52 hrs, Volume= 0.264 af, Atten= 20%, Lag= 12.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.45 fps, Min. Travel Time= 6.1 min  
 Avg. Velocity = 0.88 fps, Avg. Travel Time= 24.0 min

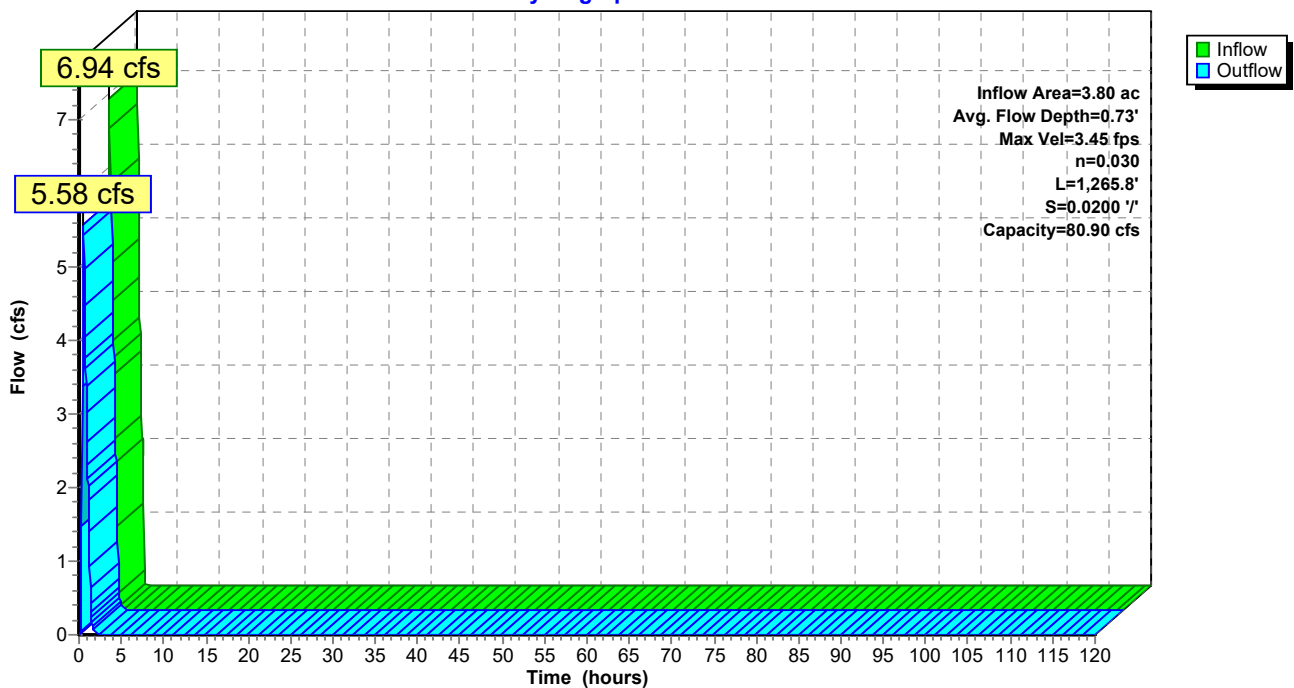
Peak Storage= 2,047 cf @ 0.42 hrs  
 Average Depth at Peak Storage= 0.73'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.90 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,265.8' Slope= 0.0200 '/'  
 Inlet Invert= 835.25', Outlet Invert= 809.91'



**Reach TB-N-B4: Terrace Berm N-B4**

Hydrograph



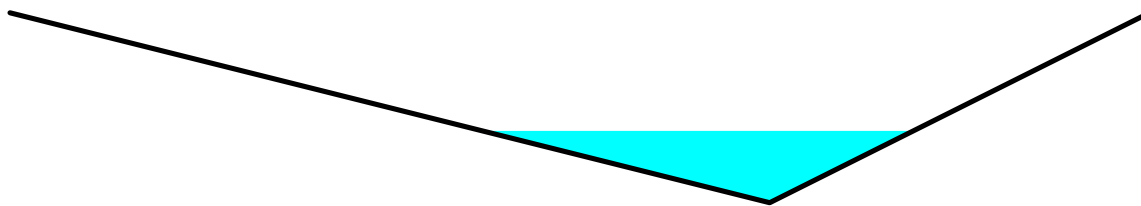
**Summary for Reach TB-N-B5: Terrace Berm N-B5**

Inflow Area = 4.50 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 8.21 cfs @ 0.32 hrs, Volume= 0.313 af  
 Outflow = 6.04 cfs @ 0.57 hrs, Volume= 0.313 af, Atten= 26%, Lag= 15.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.53 fps, Min. Travel Time= 7.9 min  
 Avg. Velocity = 0.82 fps, Avg. Travel Time= 33.8 min

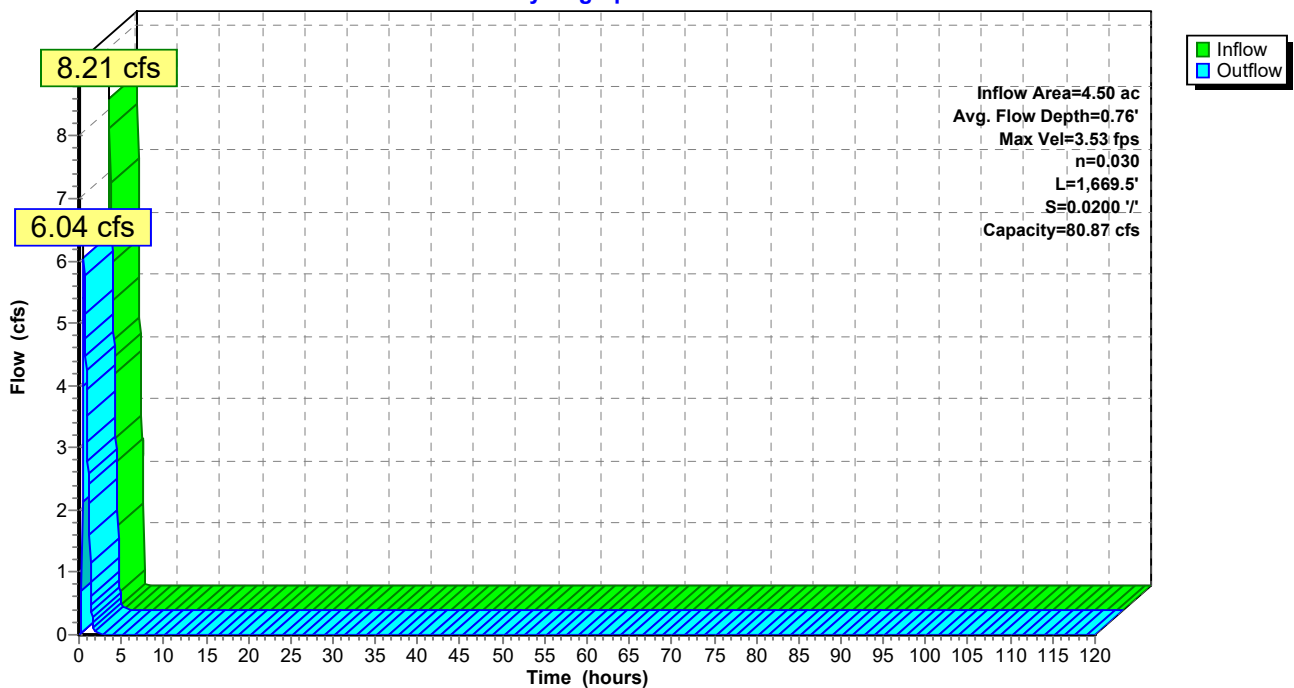
Peak Storage= 2,872 cf @ 0.44 hrs  
 Average Depth at Peak Storage= 0.76'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,669.5' Slope= 0.0200 '/'  
 Inlet Invert= 805.78', Outlet Invert= 772.39'



**Reach TB-N-B5: Terrace Berm N-B5**

Hydrograph



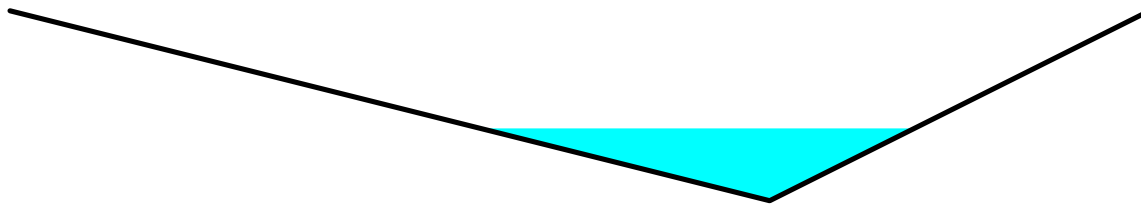
**Summary for Reach TB-N-B6: Terrace Berm N-B6**

Inflow Area = 4.29 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 7.83 cfs @ 0.32 hrs, Volume= 0.298 af  
 Outflow = 6.04 cfs @ 0.54 hrs, Volume= 0.298 af, Atten= 23%, Lag= 13.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.53 fps, Min. Travel Time= 6.7 min  
 Avg. Velocity = 0.86 fps, Avg. Travel Time= 27.4 min

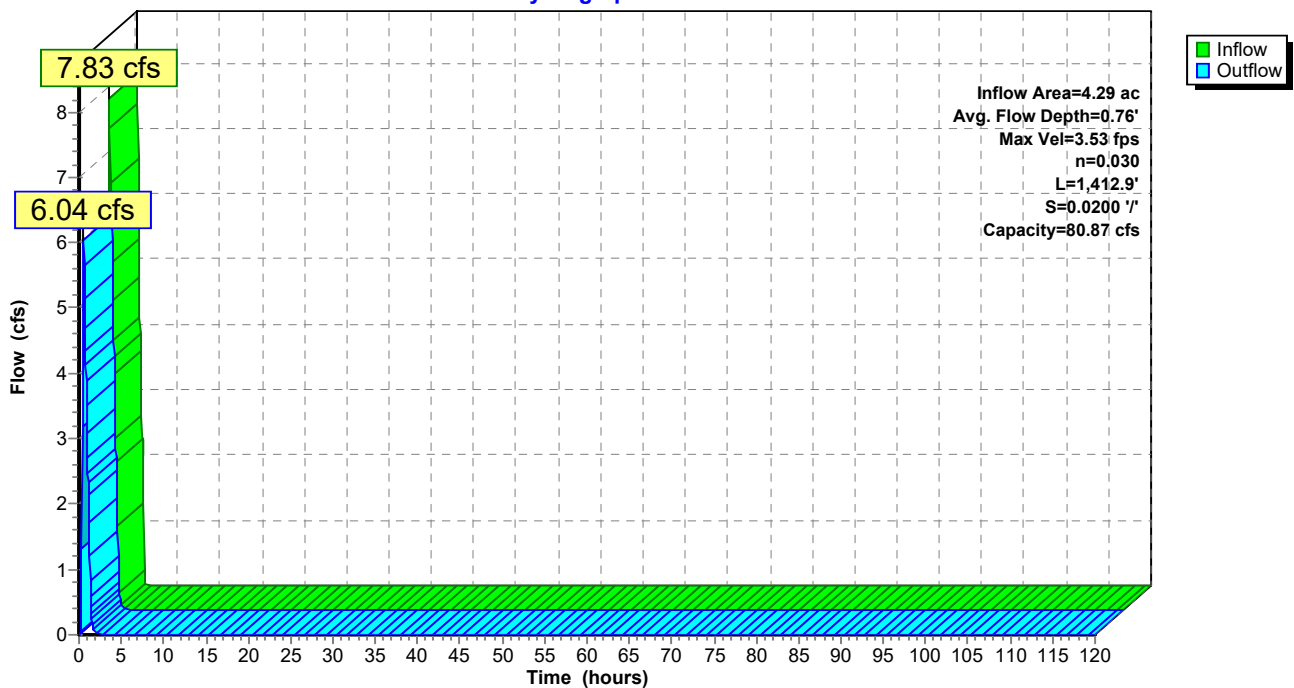
Peak Storage= 2,455 cf @ 0.42 hrs  
 Average Depth at Peak Storage= 0.76'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/ Top Width= 12.00'  
 Length= 1,412.9' Slope= 0.0200 '/  
 Inlet Invert= 800.65', Outlet Invert= 772.39'



**Reach TB-N-B6: Terrace Berm N-B6**

Hydrograph



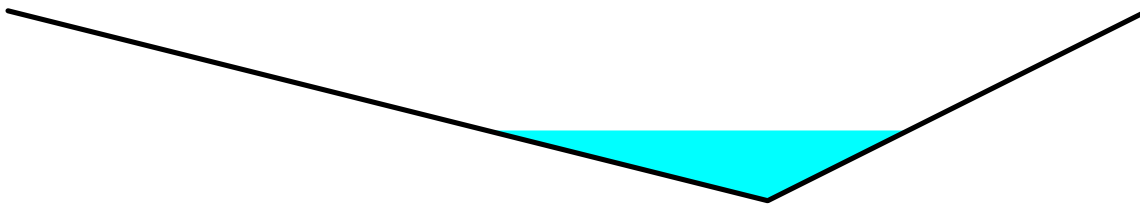
**Summary for Reach TB-N-B7: Terrace Berm N-B7**

Inflow Area = 3.96 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 7.23 cfs @ 0.32 hrs, Volume= 0.275 af  
 Outflow = 5.60 cfs @ 0.53 hrs, Volume= 0.275 af, Atten= 23%, Lag= 13.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.46 fps, Min. Travel Time= 6.6 min  
 Avg. Velocity = 0.86 fps, Avg. Travel Time= 26.6 min

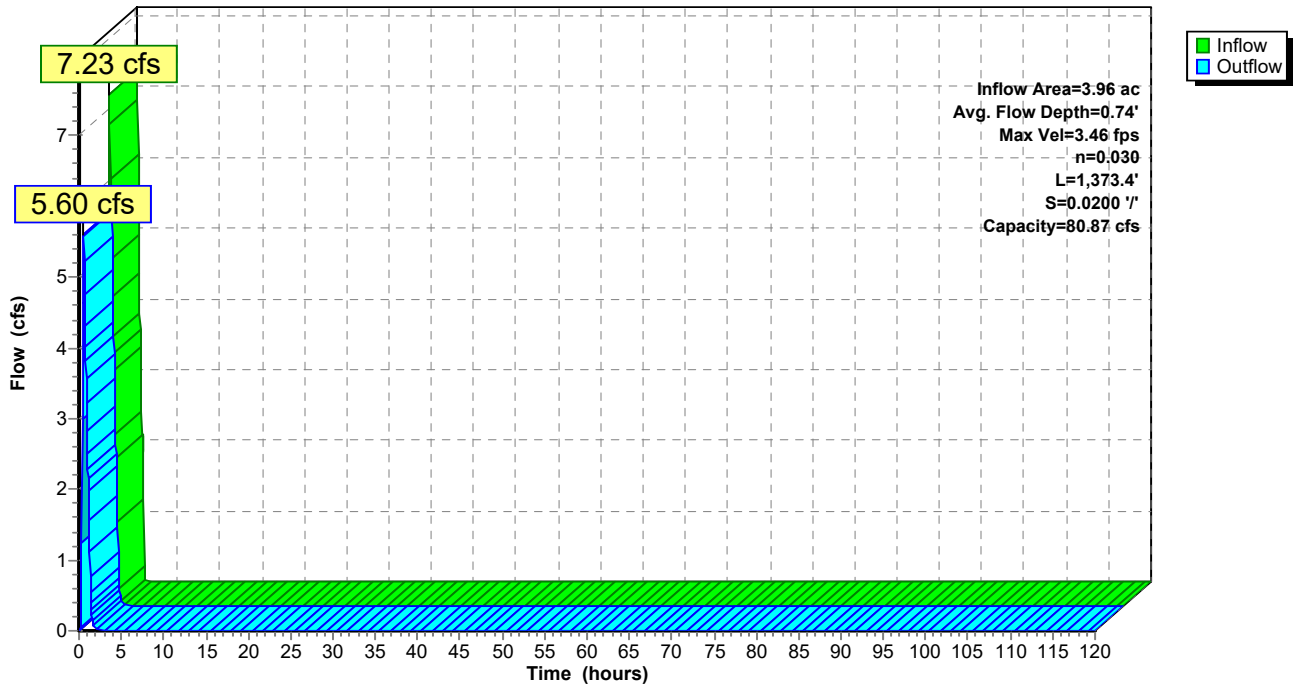
Peak Storage= 2,253 cf @ 0.42 hrs  
 Average Depth at Peak Storage= 0.74'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,373.4' Slope= 0.0200 '/'  
 Inlet Invert= 771.72', Outlet Invert= 744.25'



**Reach TB-N-B7: Terrace Berm N-B7**

Hydrograph



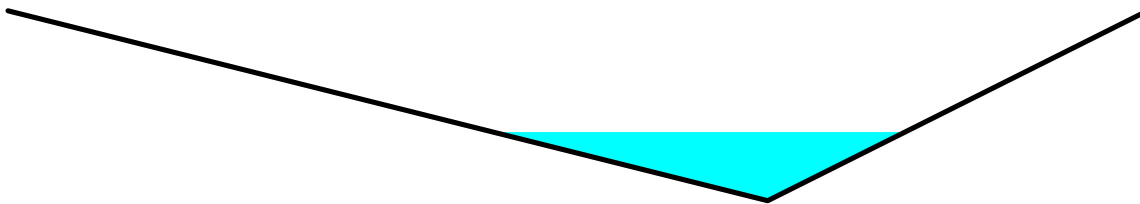
**Summary for Reach TB-N-B8: Terrace Berm N-B8**

Inflow Area = 3.52 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 6.43 cfs @ 0.32 hrs, Volume= 0.245 af  
 Outflow = 5.37 cfs @ 0.48 hrs, Volume= 0.245 af, Atten= 17%, Lag= 10.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.50 fps, Min. Travel Time= 4.9 min  
 Avg. Velocity = 0.96 fps, Avg. Travel Time= 17.7 min

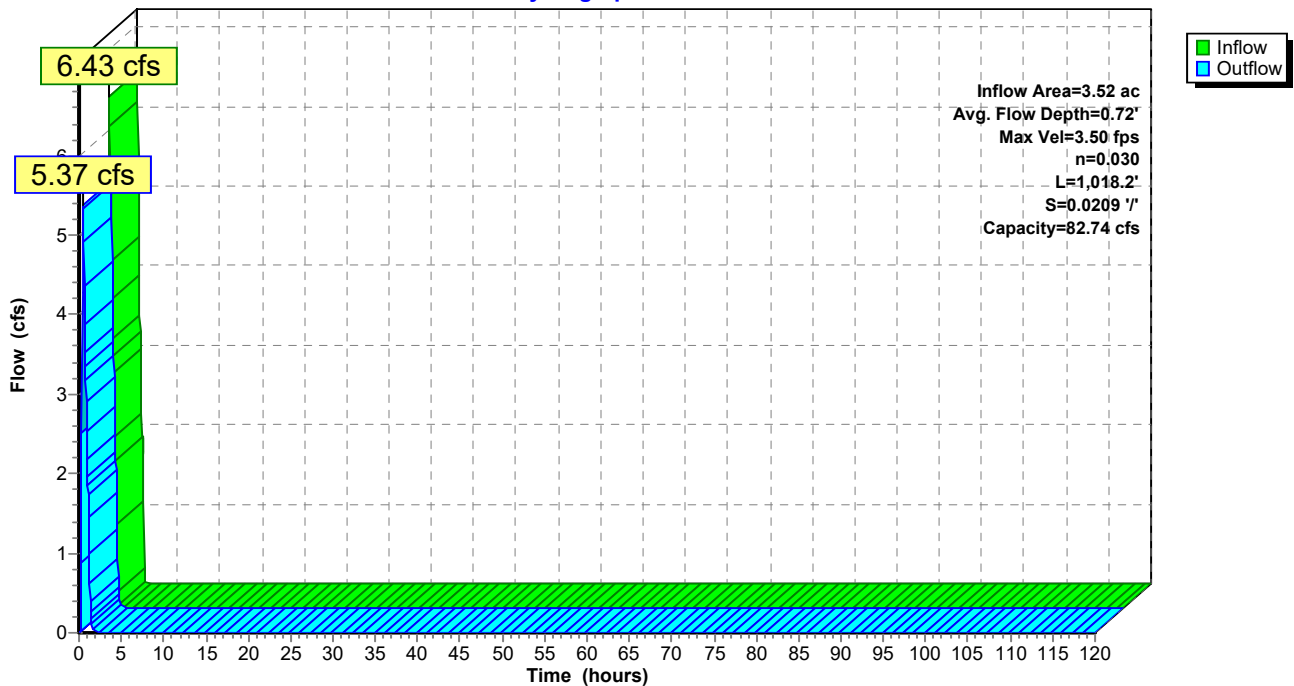
Peak Storage= 1,593 cf @ 0.40 hrs  
 Average Depth at Peak Storage= 0.72'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 82.74 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,018.2' Slope= 0.0209 '/'  
 Inlet Invert= 765.32', Outlet Invert= 744.00'



**Reach TB-N-B8: Terrace Berm N-B8**

Hydrograph



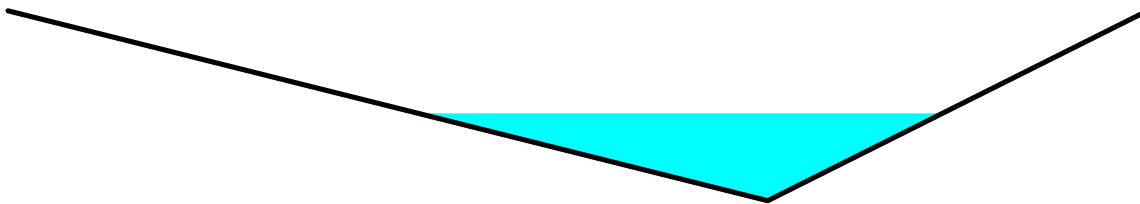
**Summary for Reach TB-N-C1: Terrace Berm N-C1**

Inflow Area = 6.98 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 11.98 cfs @ 0.36 hrs, Volume= 0.485 af  
 Outflow = 10.13 cfs @ 0.54 hrs, Volume= 0.485 af, Atten= 15%, Lag= 10.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.02 fps, Min. Travel Time= 5.5 min  
 Avg. Velocity = 0.95 fps, Avg. Travel Time= 23.1 min

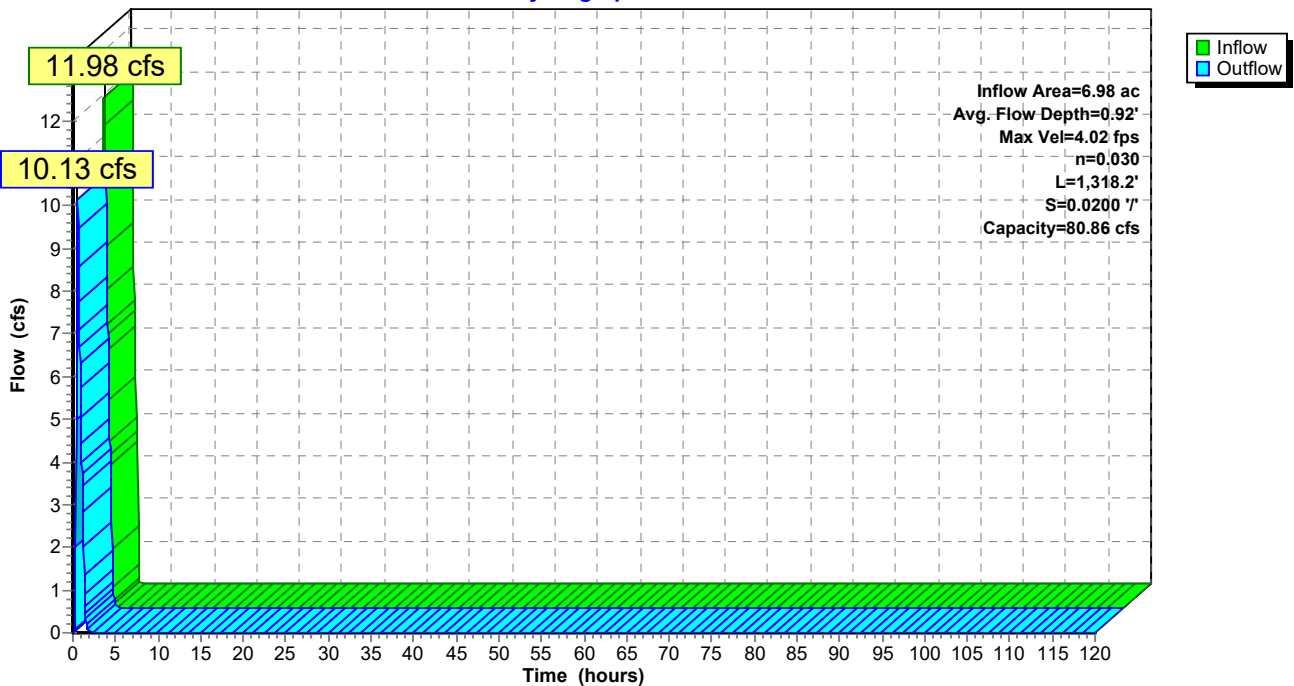
Peak Storage= 3,352 cf @ 0.45 hrs  
 Average Depth at Peak Storage= 0.92'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,318.2' Slope= 0.0200 '/'  
 Inlet Invert= 870.02', Outlet Invert= 843.66'



**Reach TB-N-C1: Terrace Berm N-C1**

Hydrograph



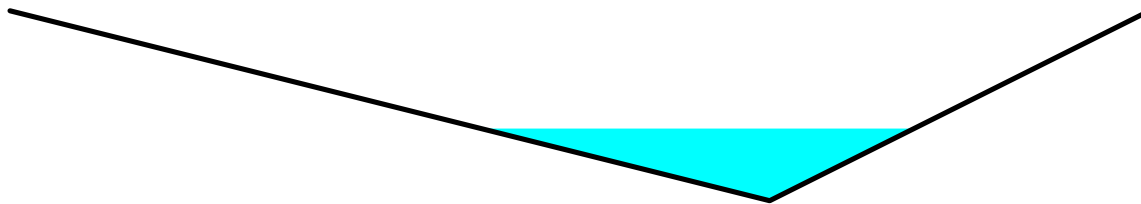
**Summary for Reach TB-N-C2: Terrace Berm N-C2**

Inflow Area = 4.20 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 7.67 cfs @ 0.32 hrs, Volume= 0.292 af  
 Outflow = 6.11 cfs @ 0.52 hrs, Volume= 0.292 af, Atten= 20%, Lag= 12.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.53 fps, Min. Travel Time= 6.2 min  
 Avg. Velocity = 0.88 fps, Avg. Travel Time= 25.0 min

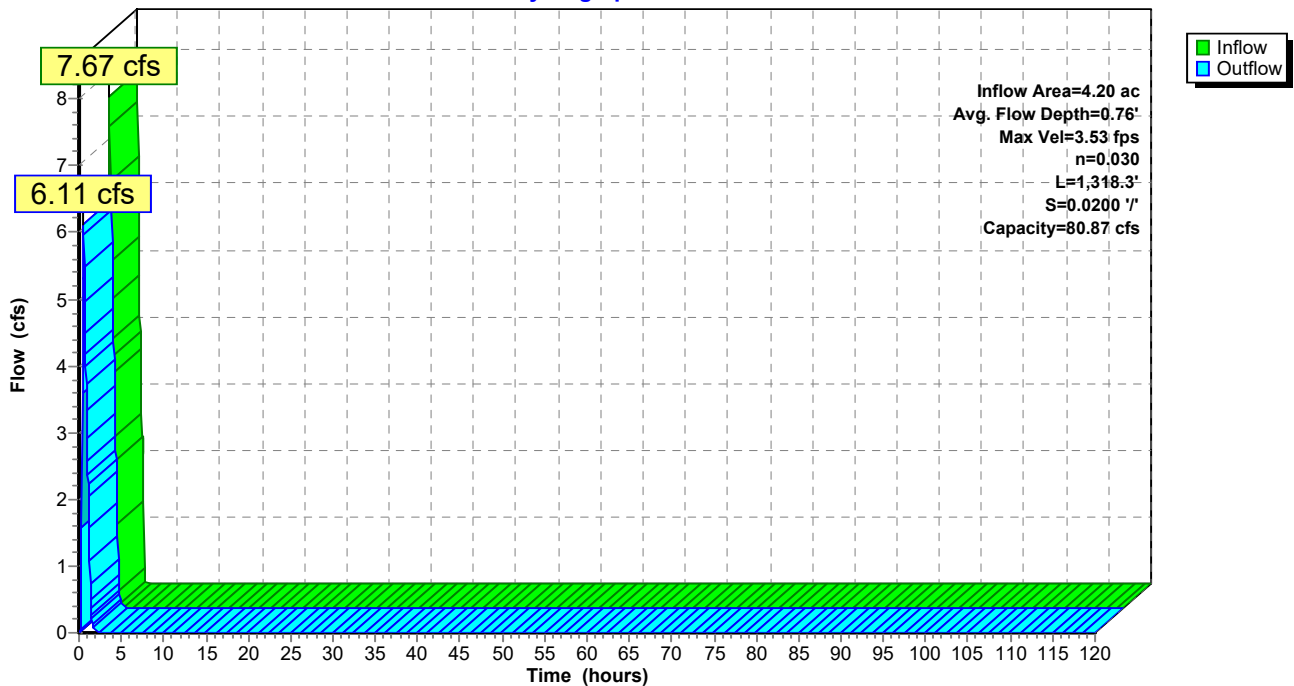
Peak Storage= 2,288 cf @ 0.42 hrs  
 Average Depth at Peak Storage= 0.76'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,318.3' Slope= 0.0200 '/'  
 Inlet Invert= 835.25', Outlet Invert= 808.88'



**Reach TB-N-C2: Terrace Berm N-C2**

Hydrograph





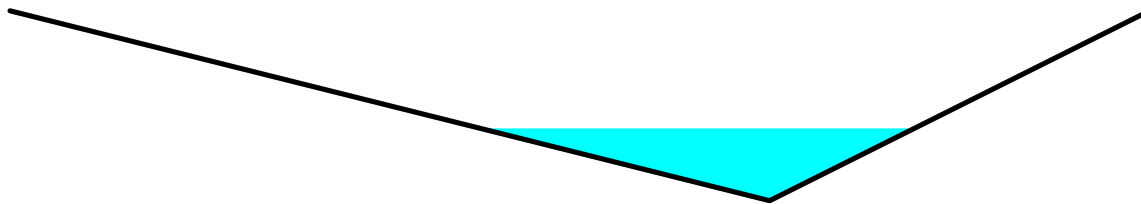
**Summary for Reach TB-N-C3: Terrace Berm N-C3**

Inflow Area = 4.22 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 7.70 cfs @ 0.32 hrs, Volume= 0.293 af  
 Outflow = 6.14 cfs @ 0.52 hrs, Volume= 0.293 af, Atten= 20%, Lag= 12.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.54 fps, Min. Travel Time= 6.2 min  
 Avg. Velocity = 0.88 fps, Avg. Travel Time= 25.0 min

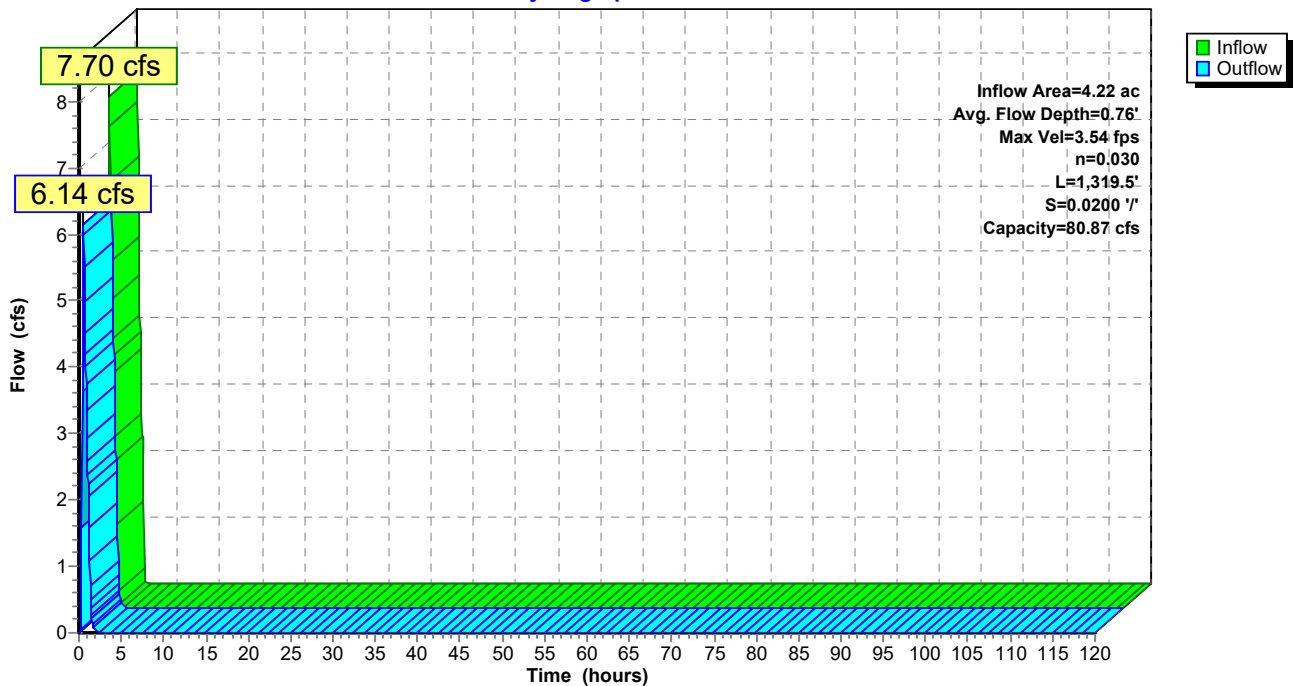
Peak Storage= 2,299 cf @ 0.42 hrs  
 Average Depth at Peak Storage= 0.76'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,319.5' Slope= 0.0200 '/'  
 Inlet Invert= 800.65', Outlet Invert= 774.26'



**Reach TB-N-C3: Terrace Berm N-C3**

Hydrograph



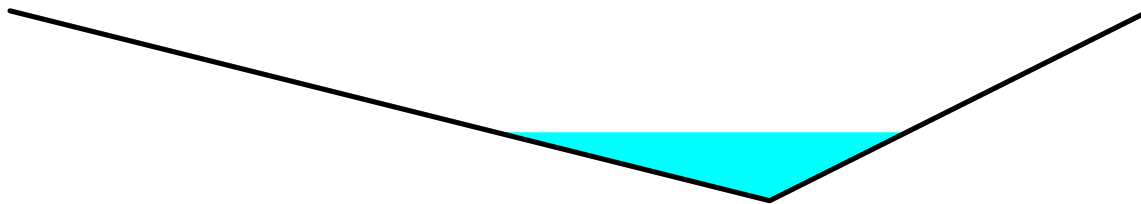
**Summary for Reach TB-N-C4: Terrace Berm N-C4**

Inflow Area = 3.52 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
 Inflow = 6.42 cfs @ 0.32 hrs, Volume= 0.244 af  
 Outflow = 5.28 cfs @ 0.50 hrs, Volume= 0.244 af, Atten= 18%, Lag= 10.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.42 fps, Min. Travel Time= 5.3 min  
 Avg. Velocity = 0.91 fps, Avg. Travel Time= 20.1 min

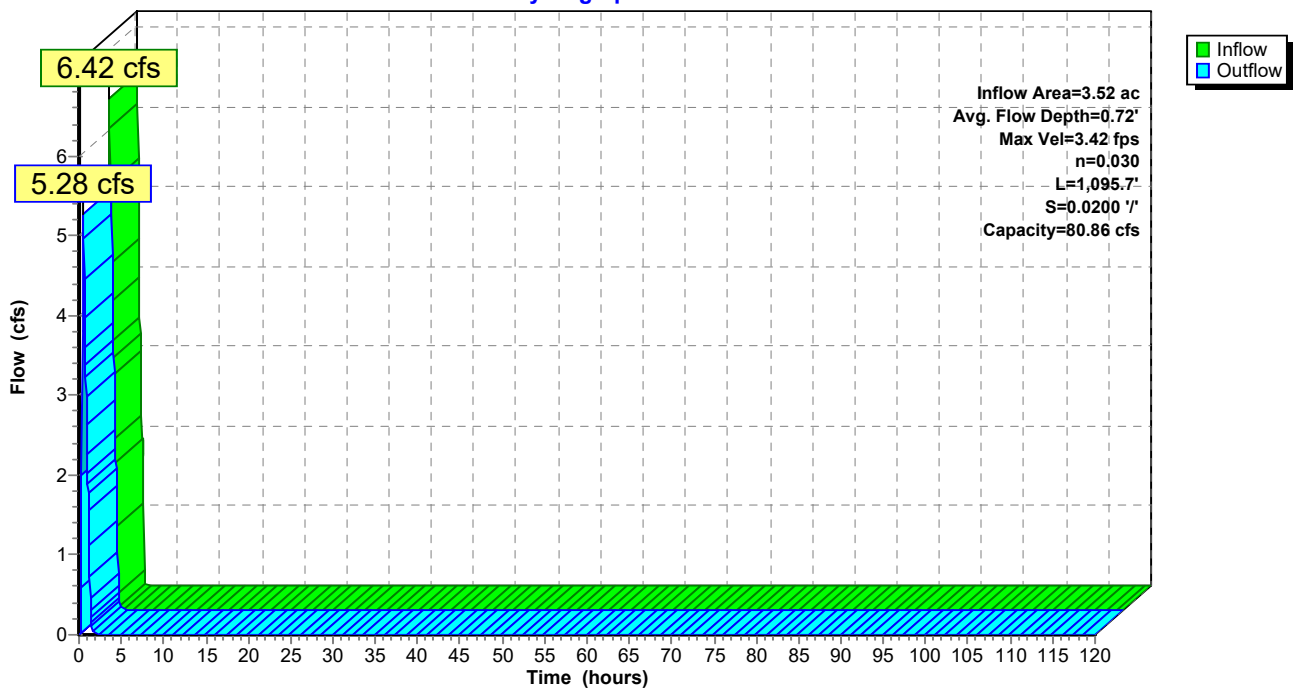
Peak Storage= 1,713 cf @ 0.41 hrs  
 Average Depth at Peak Storage= 0.72'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,095.7' Slope= 0.0200 '/'  
 Inlet Invert= 765.32', Outlet Invert= 743.41'



**Reach TB-N-C4: Terrace Berm N-C4**

Hydrograph



**Summary for Pond Basin 5R: Stormwater Basin 5R**

Inflow Area = 53.03 ac, 15.95% Impervious, Inflow Depth = 1.05" for 10-Year, 1-Hour event  
 Inflow = 63.24 cfs @ 0.63 hrs, Volume= 4.646 af  
 Outflow = 1.21 cfs @ 1.98 hrs, Volume= 3.318 af, Atten= 98%, Lag= 80.8 min  
 Primary = 1.21 cfs @ 1.98 hrs, Volume= 3.318 af  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Starting Elev= 733.50' Surf.Area= 318,821 sf Storage= 1,528,329 cf  
 Peak Elev= 734.20' @ 1.98 hrs Surf.Area= 257,284 sf Storage= 1,723,624 cf (195,295 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= 2,034.2 min ( 2,076.8 - 42.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	726.00'	4,158,336 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
726.00	132,640	0	0
728.00	155,297	287,937	287,937
730.00	179,100	334,397	622,334
731.00	118,479	148,790	771,124
732.00	367,080	242,780	1,013,903
733.50	318,821	514,426	1,528,329
734.00	253,912	143,183	1,671,512
735.00	270,451	262,182	1,933,694
736.00	287,631	279,041	2,212,735
738.00	311,683	599,314	2,812,049
740.00	336,524	648,207	3,460,256
742.00	361,556	698,080	4,158,336

Device	Routing	Invert	Outlet Devices
#1	Primary	733.50'	<b>30.0" Round Culvert</b> L= 100.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 733.50' / 733.20' S= 0.0030 1/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf
#2	Device 1	733.50'	<b>4.0" Vert. Lower Orifice X 4.00</b> C= 0.600
#3	Device 1	737.50'	<b>4.0" Vert. Middle Orifice X 4.00</b> C= 0.600
#4	Device 1	738.50'	<b>4.0" Vert. Upper Orifice X 4.00</b> C= 0.600
#5	Device 1	739.00'	<b>30.0" Horiz. Orifice/Grate</b> C= 0.600
#6	Secondary	740.00'	<b>Secondary Spillway, C= 3.27</b> Offset (feet) 0.00 6.00 26.00 32.00 Height (feet) 2.00 0.00 0.00 2.00

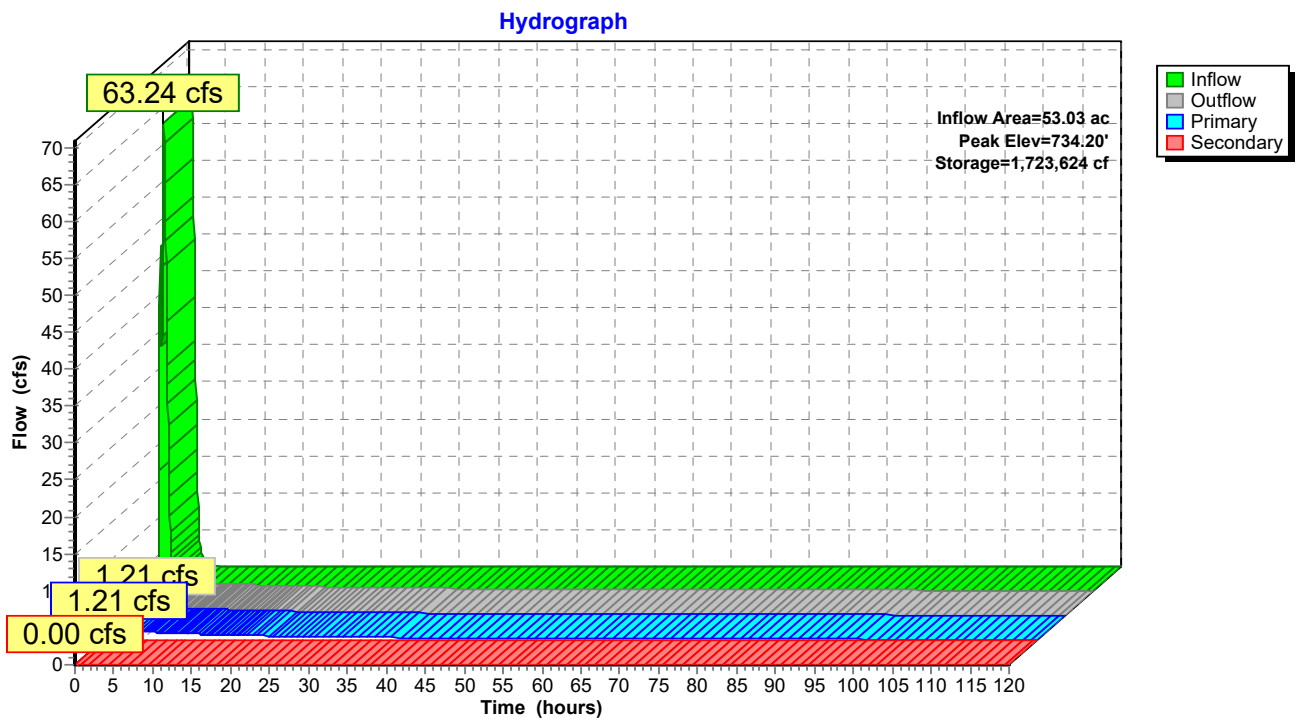
**Primary OutFlow** Max=1.23 cfs @ 1.98 hrs HW=734.20' (Free Discharge)

- 1=Culvert (Passes 1.23 cfs of 1.32 cfs potential flow)
- 2=Lower Orifice (Orifice Controls 1.23 cfs @ 3.53 fps)
- 3=Middle Orifice ( Controls 0.00 cfs)
- 4=Upper Orifice ( Controls 0.00 cfs)
- 5=Orifice/Grate ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=733.50' (Free Discharge)

- 6=Secondary Spillway ( Controls 0.00 cfs)

**Pond Basin 5R: Stormwater Basin 5R**



**Summary for Pond Basin 8: Stormwater Basin 8**

Inflow Area = 148.01 ac, 11.19% Impervious, Inflow Depth = 0.99" for 10-Year, 1-Hour event  
 Inflow = 132.13 cfs @ 0.85 hrs, Volume= 12.168 af  
 Outflow = 4.62 cfs @ 2.24 hrs, Volume= 11.799 af, Atten= 97%, Lag= 83.9 min  
 Primary = 4.62 cfs @ 2.24 hrs, Volume= 11.799 af

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Starting Elev= 730.50' Surf.Area= 410,884 sf Storage= 1,593,798 cf  
 Peak Elev= 731.67' @ 2.24 hrs Surf.Area= 439,821 sf Storage= 2,089,702 cf (495,904 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= 1,371.7 min ( 1,425.0 - 53.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	726.00'	5,355,472 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
726.00	283,562	0	0
727.50	340,318	467,910	467,910
728.00	351,709	173,007	640,917
730.00	398,761	750,470	1,391,387
730.50	410,884	202,411	1,593,798
732.00	448,114	644,249	2,238,047
733.00	473,655	460,885	2,698,931
734.00	499,775	486,715	3,185,646
736.00	542,314	1,042,089	4,227,735
736.50	553,047	273,840	4,501,575
738.00	585,482	853,897	5,355,472

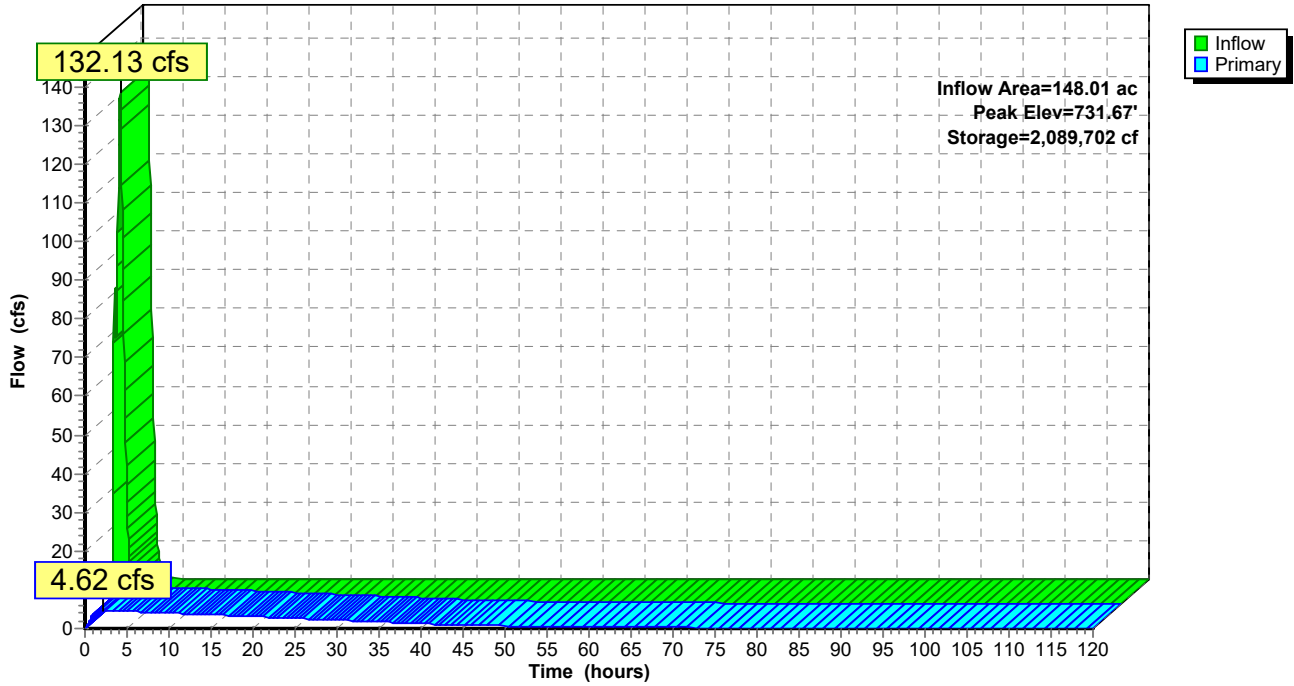
Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	<b>36.0" Round Culvert</b> L= 140.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 727.00' / 725.10' S= 0.0136 1/ S= 0.0136 1/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Device 1	730.50'	<b>4.0" Vert. 2-yr Orifice X 11.00</b> C= 0.600
#3	Device 1	732.50'	<b>4.0" Vert. 100-yr Orifice X 6.00</b> C= 0.600
#4	Device 1	733.50'	<b>4.0" Vert. 100-yr Orifice X 6.00</b> C= 0.600
#5	Device 1	734.50'	<b>4.0" Vert. 100-yr Orifice X 6.00</b> C= 0.600
#6	Device 1	736.50'	<b>36.0" Horiz. Primary Spillway</b> C= 0.600

**Primary OutFlow** Max=4.62 cfs @ 2.24 hrs HW=731.67' (Free Discharge)

- 1=Culvert (Passes 4.62 cfs of 53.43 cfs potential flow)
- 2=2-yr Orifice (Orifice Controls 4.62 cfs @ 4.81 fps)
- 3=100-yr Orifice ( Controls 0.00 cfs)
- 4=100-yr Orifice ( Controls 0.00 cfs)
- 5=100-yr Orifice ( Controls 0.00 cfs)
- 6=Primary Spillway ( Controls 0.00 cfs)

### Pond Basin 8: Stormwater Basin 8

Hydrograph



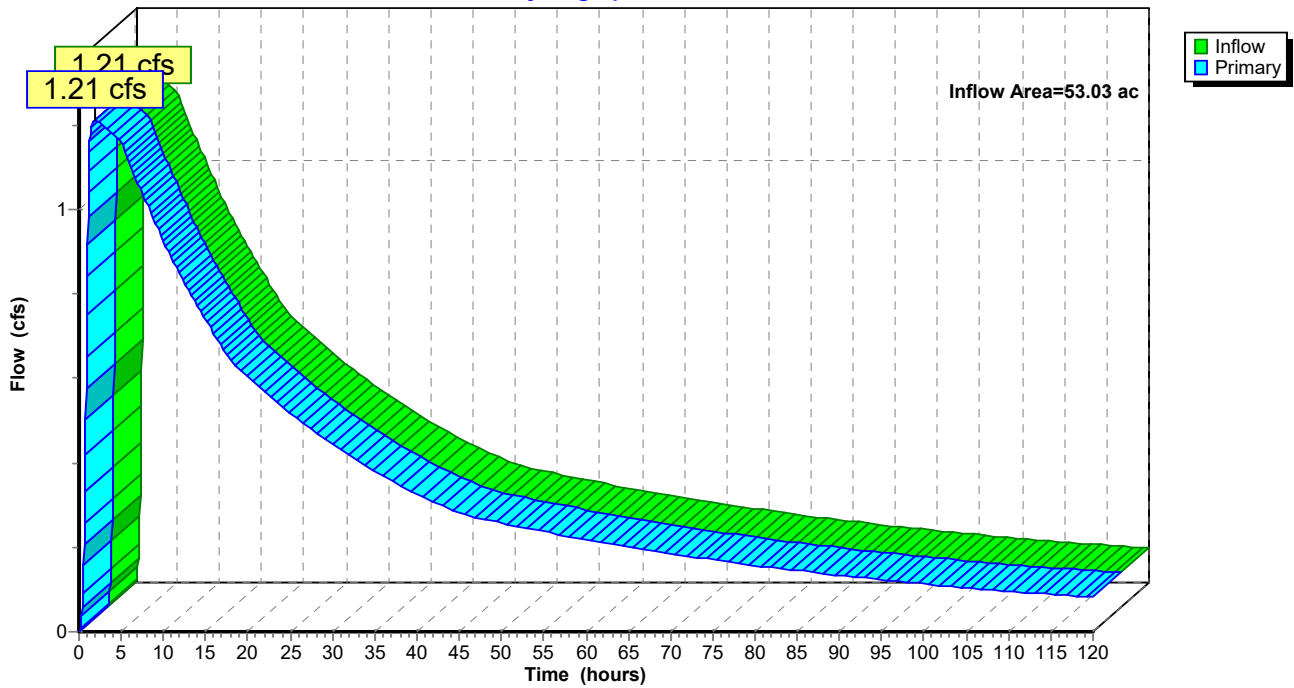
### Summary for Link BS: Bioswale

Inflow Area = 53.03 ac, 15.95% Impervious, Inflow Depth > 0.75" for 10-Year, 1-Hour event  
Inflow = 1.21 cfs @ 1.98 hrs, Volume= 3.318 af  
Primary = 1.21 cfs @ 1.98 hrs, Volume= 3.318 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link BS: Bioswale

Hydrograph

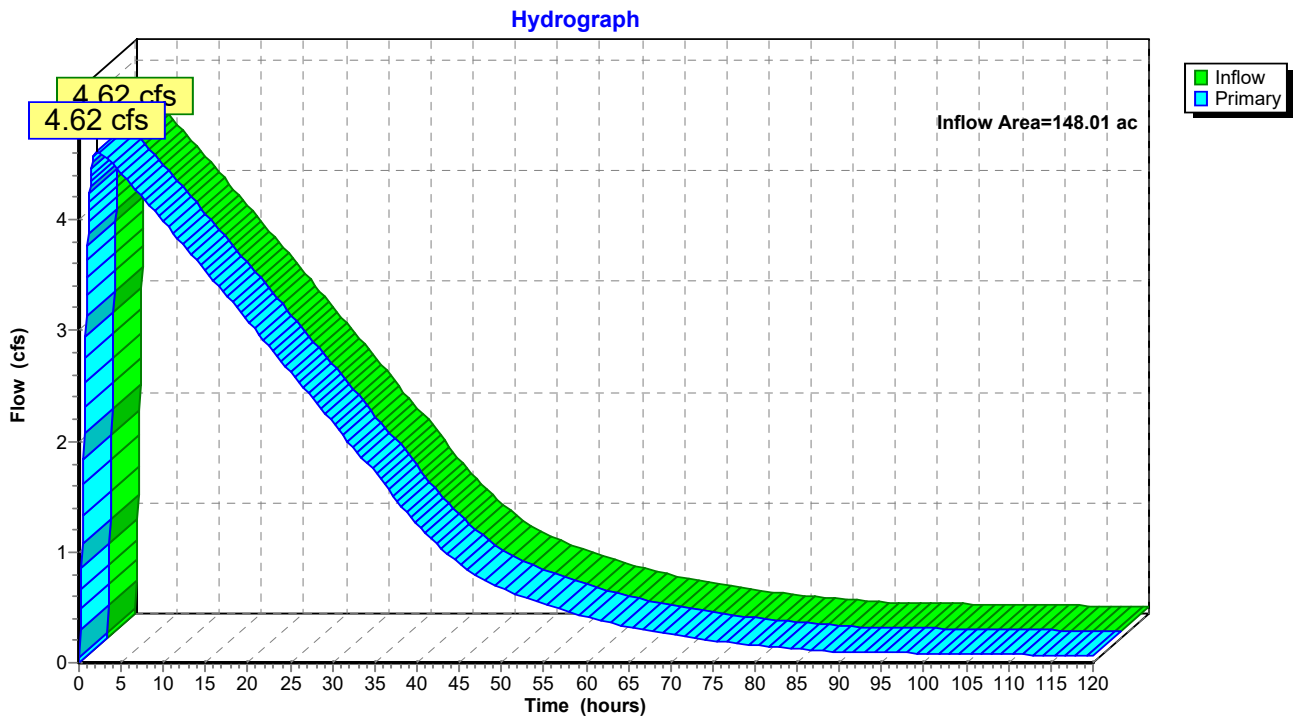


**Summary for Link DD: Offsite to Drainage Ditch**

Inflow Area = 148.01 ac, 11.19% Impervious, Inflow Depth > 0.96" for 10-Year, 1-Hour event  
 Inflow = 4.62 cfs @ 2.24 hrs, Volume= 11.799 af  
 Primary = 4.62 cfs @ 2.24 hrs, Volume= 11.799 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

**Link DD: Offsite to Drainage Ditch**



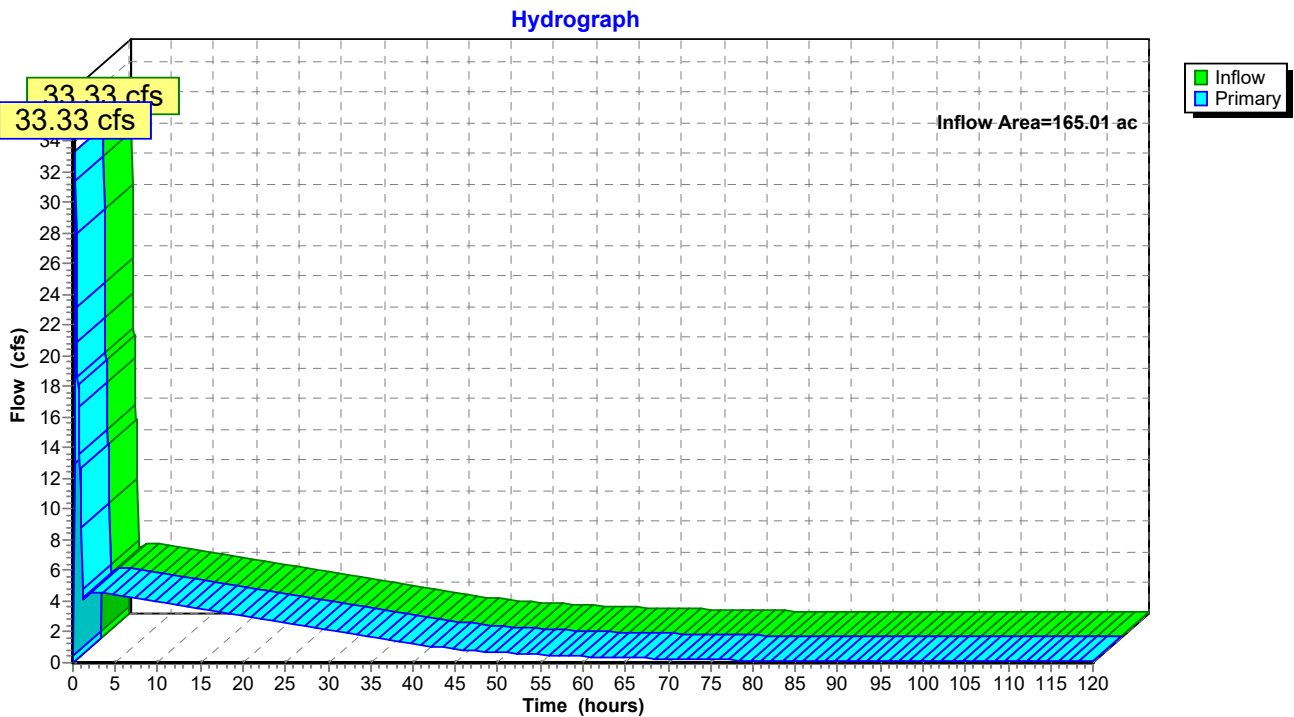


### Summary for Link DPRW: Des Plaines River Watershed

Inflow Area = 165.01 ac, 10.09% Impervious, Inflow Depth > 0.95" for 10-Year, 1-Hour event  
Inflow = 33.33 cfs @ 0.32 hrs, Volume= 13.033 af  
Primary = 33.33 cfs @ 0.32 hrs, Volume= 13.033 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link DPRW: Des Plaines River Watershed

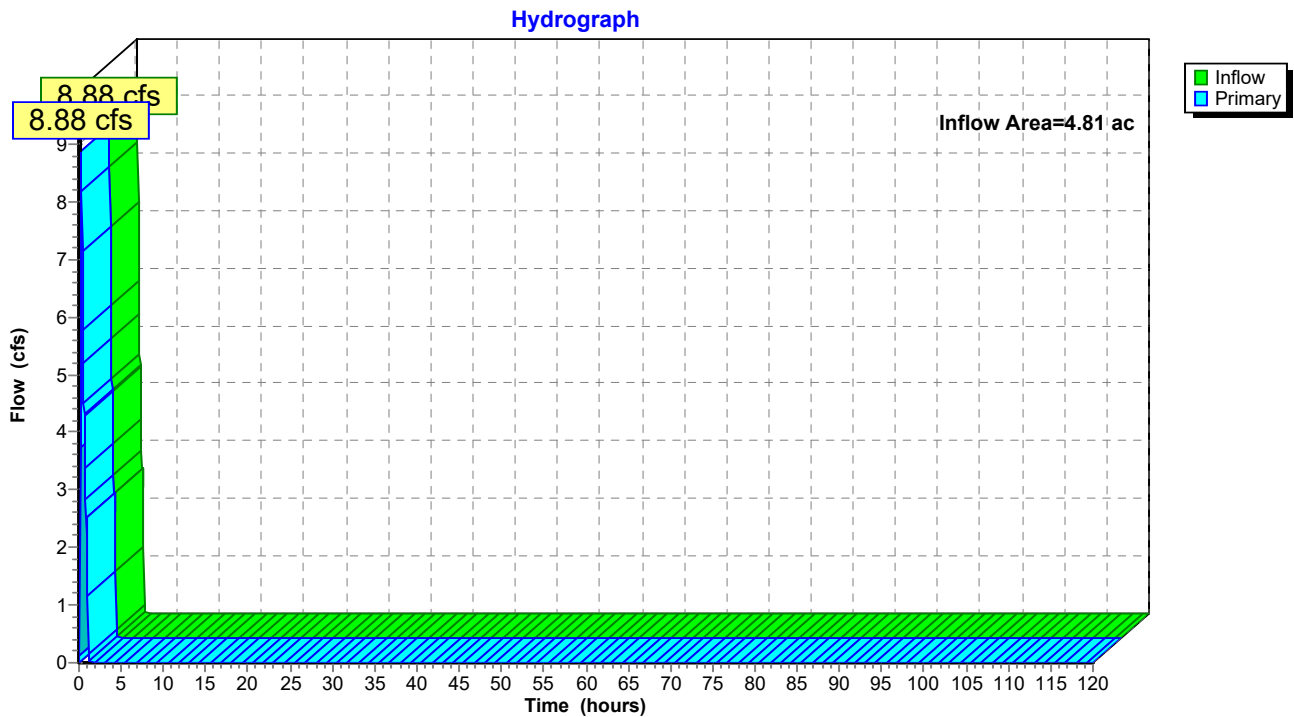


### Summary for Link DPRW-PB: Des Plaines River Watershed - Perimeter Berm

Inflow Area = 4.81 ac, 1.70% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
Inflow = 8.88 cfs @ 0.31 hrs, Volume= 0.335 af  
Primary = 8.88 cfs @ 0.31 hrs, Volume= 0.335 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link DPRW-PB: Des Plaines River Watershed - Perimeter Berm

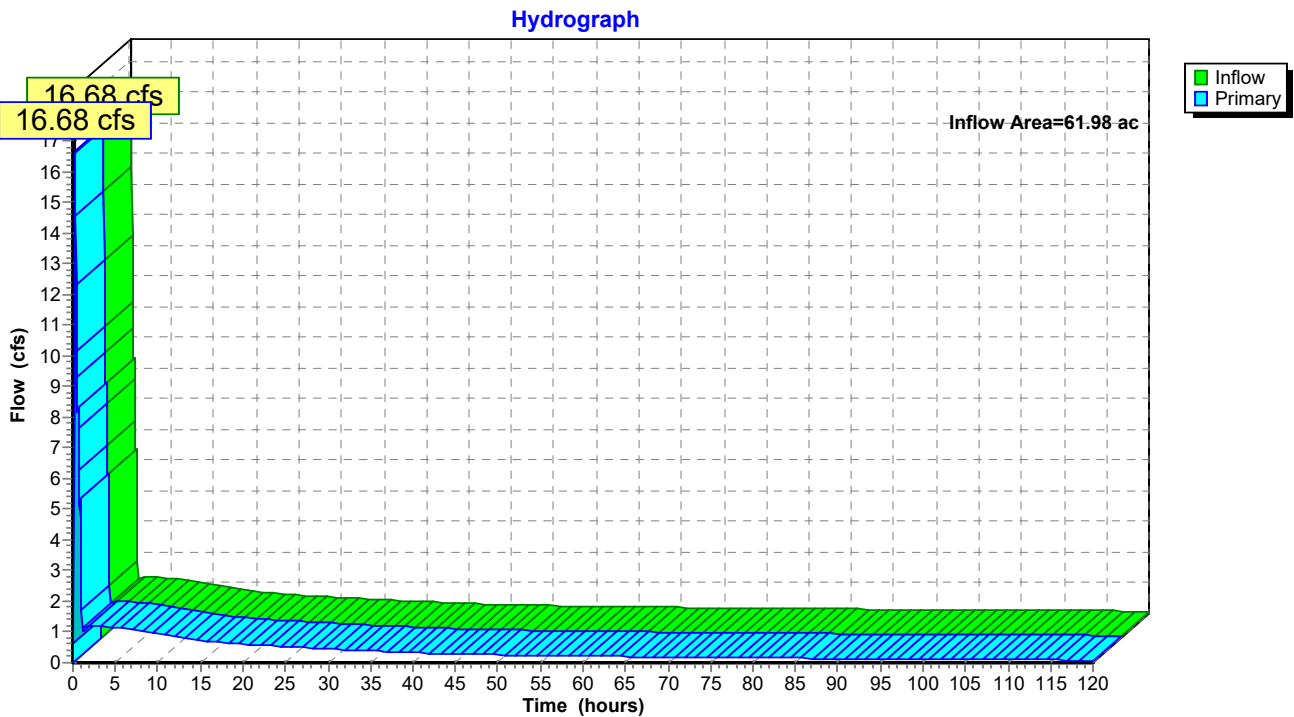


### Summary for Link LMW: Lake Michigan Watershed

Inflow Area = 61.98 ac, 13.64% Impervious, Inflow Depth > 0.76" for 10-Year, 1-Hour event  
Inflow = 16.68 cfs @ 0.29 hrs, Volume= 3.940 af  
Primary = 16.68 cfs @ 0.29 hrs, Volume= 3.940 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link LMW: Lake Michigan Watershed

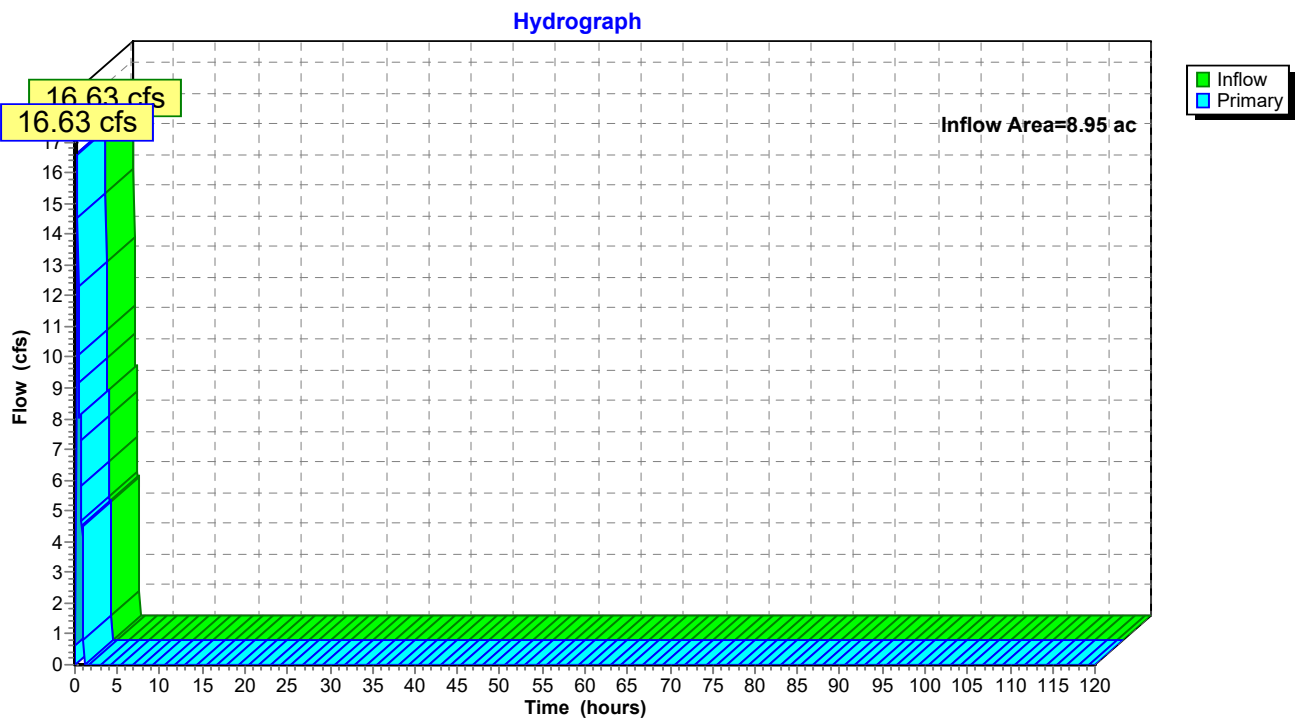


### Summary for Link LMW-PB: Lake Michigan Watershed - Perimeter Berm

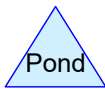
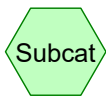
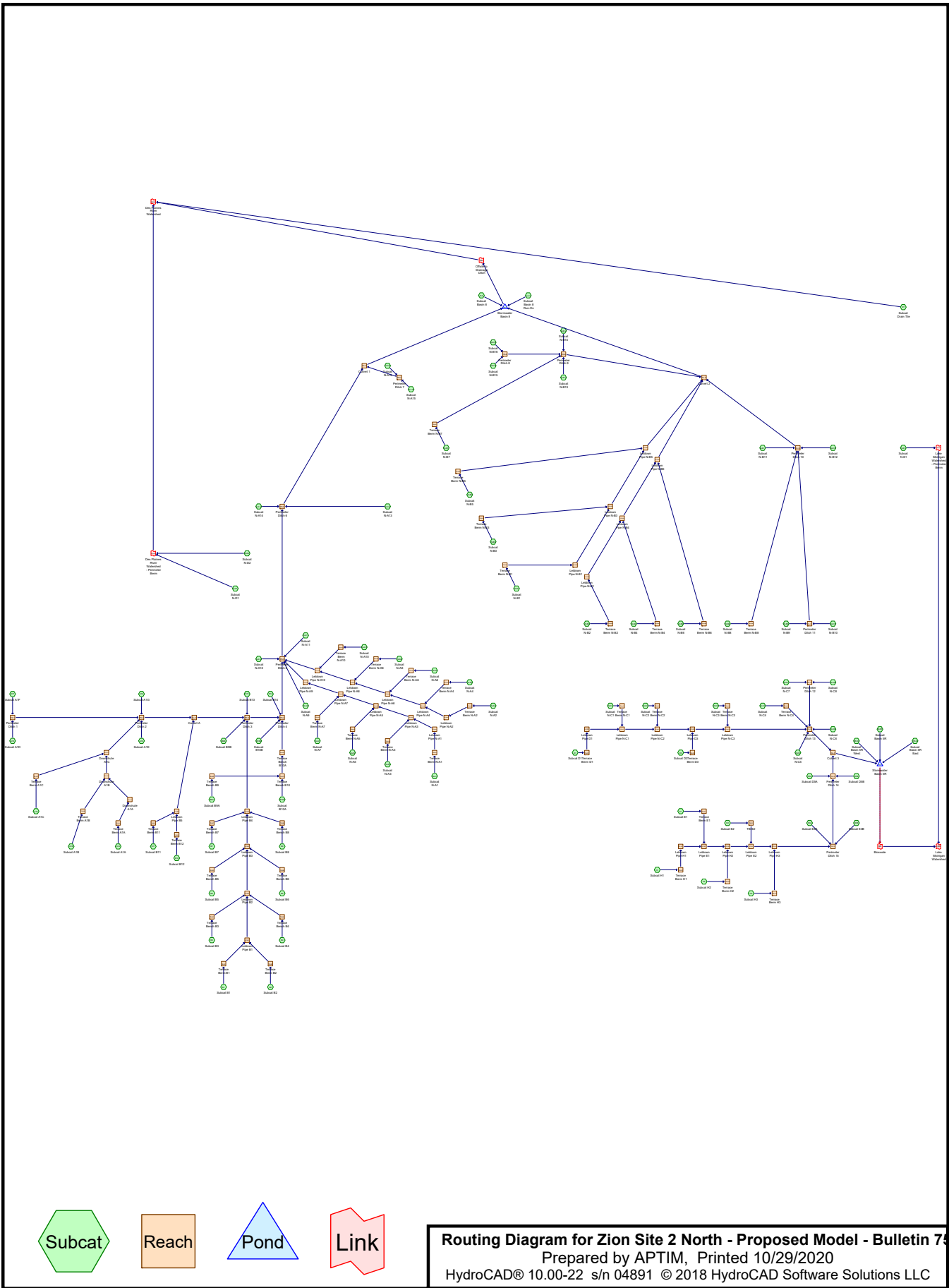
Inflow Area = 8.95 ac, 0.00% Impervious, Inflow Depth = 0.83" for 10-Year, 1-Hour event  
Inflow = 16.63 cfs @ 0.29 hrs, Volume= 0.622 af  
Primary = 16.63 cfs @ 0.29 hrs, Volume= 0.622 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link LMW-PB: Lake Michigan Watershed - Perimeter Berm



HydroCAD Output Files  
**Proposed Conditions – 10-year, 24-hour**



**Routing Diagram for Zion Site 2 North - Proposed Model - Bulletin 75**  
 Prepared by APTIM, Printed 10/29/2020  
 HydroCAD® 10.00-22 s/n 04891 © 2018 HydroCAD Software Solutions LLC

**Summary for Subcatchment 5R-E: Subcat Basin 5R East**

Runoff = 0.56 cfs @ 15.63 hrs, Volume= 0.381 af, Depth= 3.02"

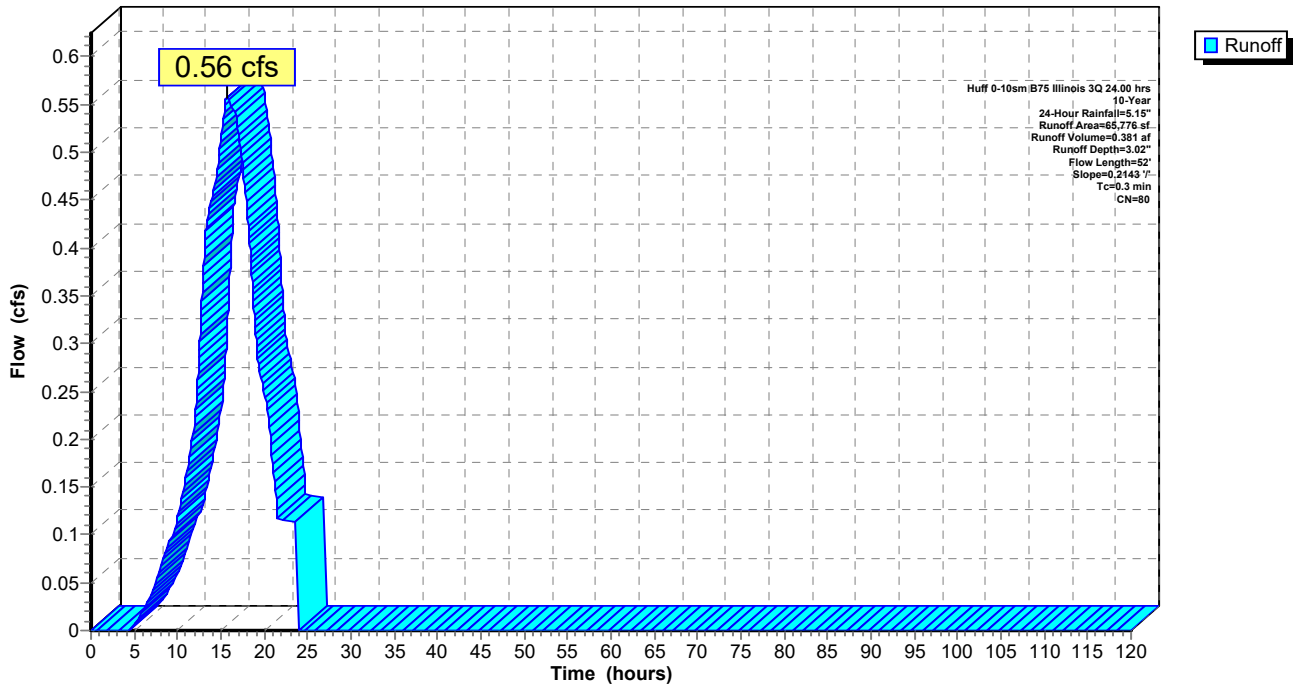
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (sf)	CN	Description
65,776	80	>75% Grass cover, Good, HSG D
65,776		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	52	0.2143	2.92		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment 5R-E: Subcat Basin 5R East**

Hydrograph



### Summary for Subcatchment 5R-W: Subcat Basin 5R West

Runoff = 0.22 cfs @ 15.63 hrs, Volume= 0.151 af, Depth= 3.02"

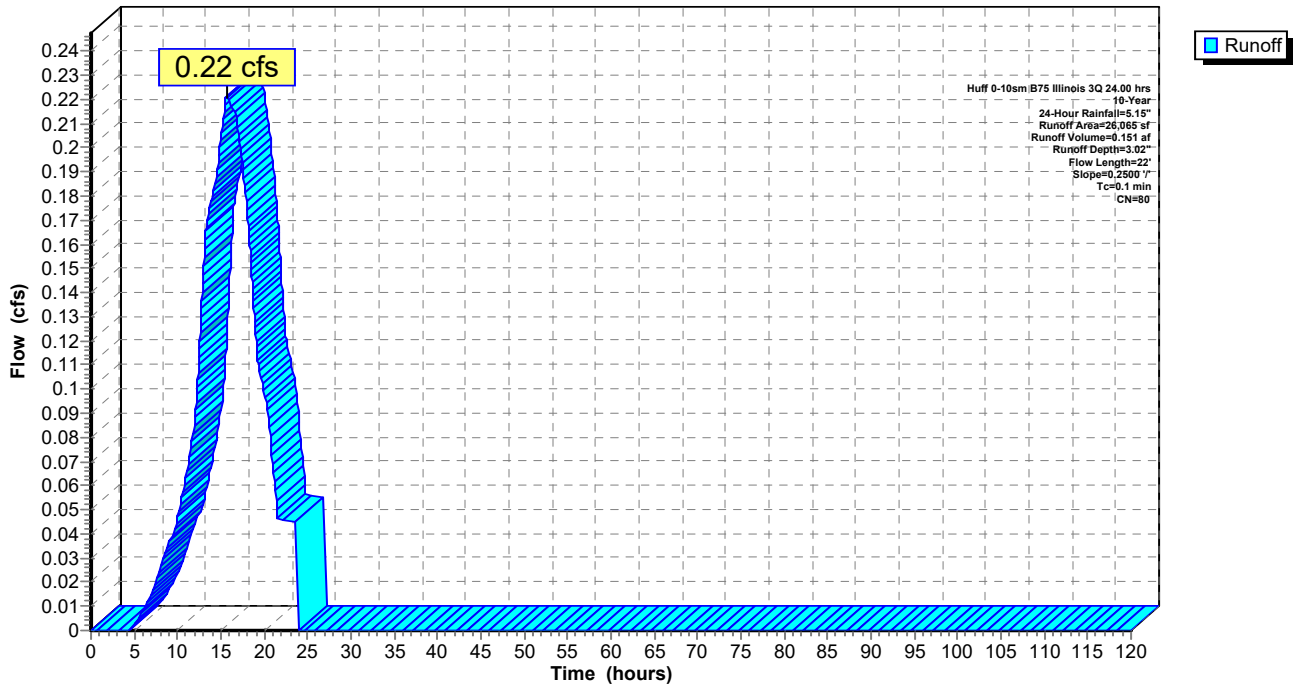
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (sf)	CN	Description
26,065	80	>75% Grass cover, Good, HSG D
26,065		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	22	0.2500	2.61		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

### Subcatchment 5R-W: Subcat Basin 5R West

Hydrograph





**Summary for Subcatchment A1A: Subcat A1A**

Runoff = 2.48 cfs @ 15.89 hrs, Volume= 1.698 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

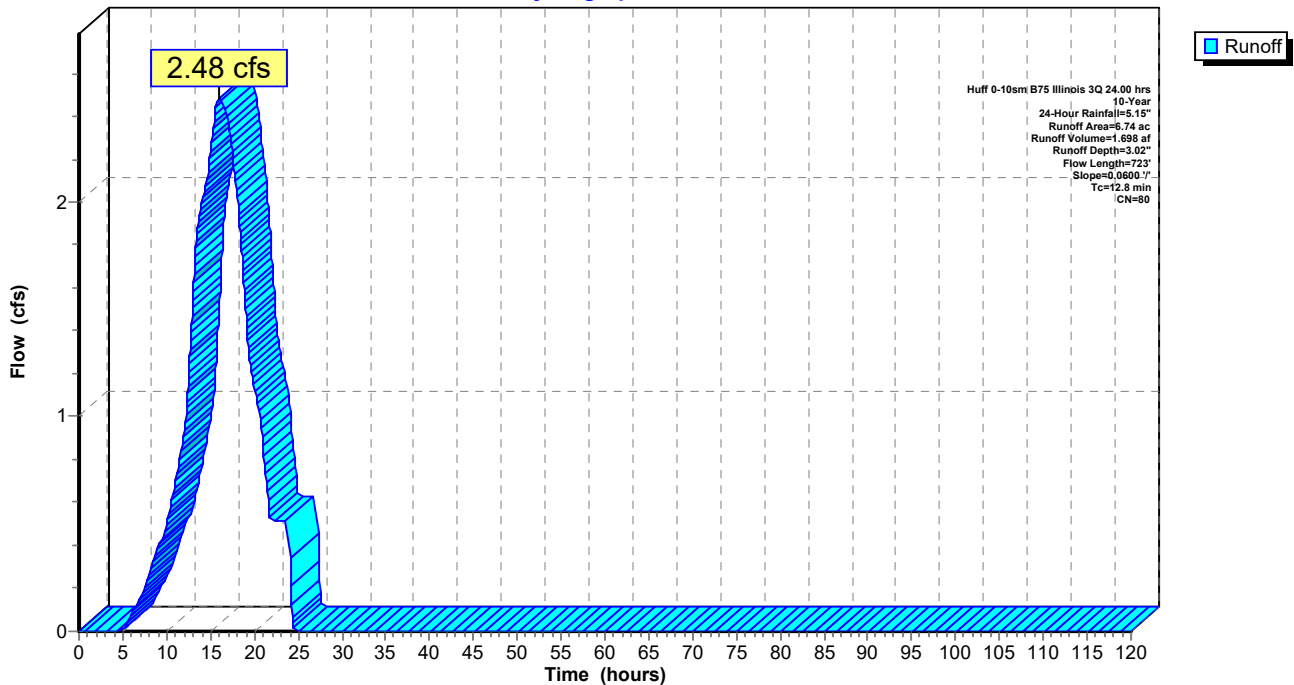
Area (ac)	CN	Description
6.74	80	>75% Grass cover, Good, HSG D
6.74		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	100	0.0600	0.25		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
6.1	623	0.0600	1.71		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
12.8	723	Total			

**Subcatchment A1A: Subcat A1A**

Hydrograph



**Summary for Subcatchment A1B: Subcat A1B**

Runoff = 1.93 cfs @ 15.71 hrs, Volume= 1.318 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

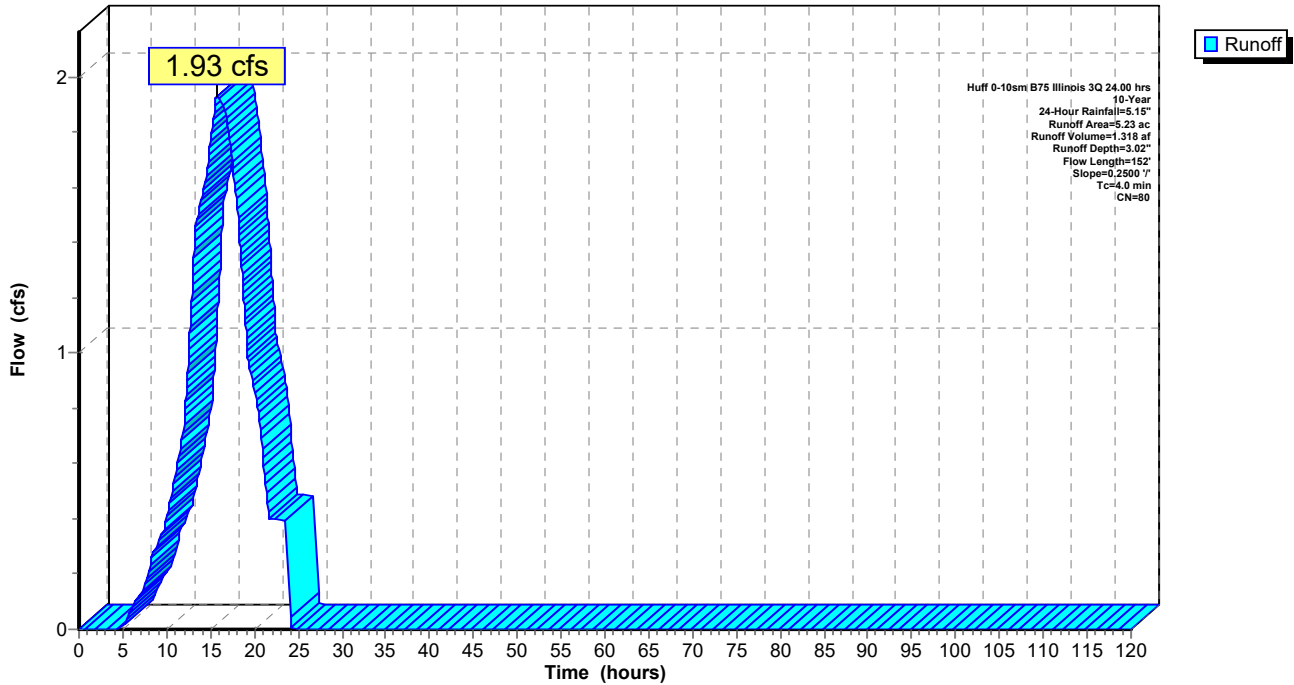
Area (ac)	CN	Description
5.23	80	>75% Grass cover, Good, HSG D
5.23		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	52	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	152	Total			

**Subcatchment A1B: Subcat A1B**

Hydrograph



**Summary for Subcatchment A1C: Subcat A1C**

Runoff = 3.36 cfs @ 16.11 hrs, Volume= 2.309 af, Depth= 3.02"

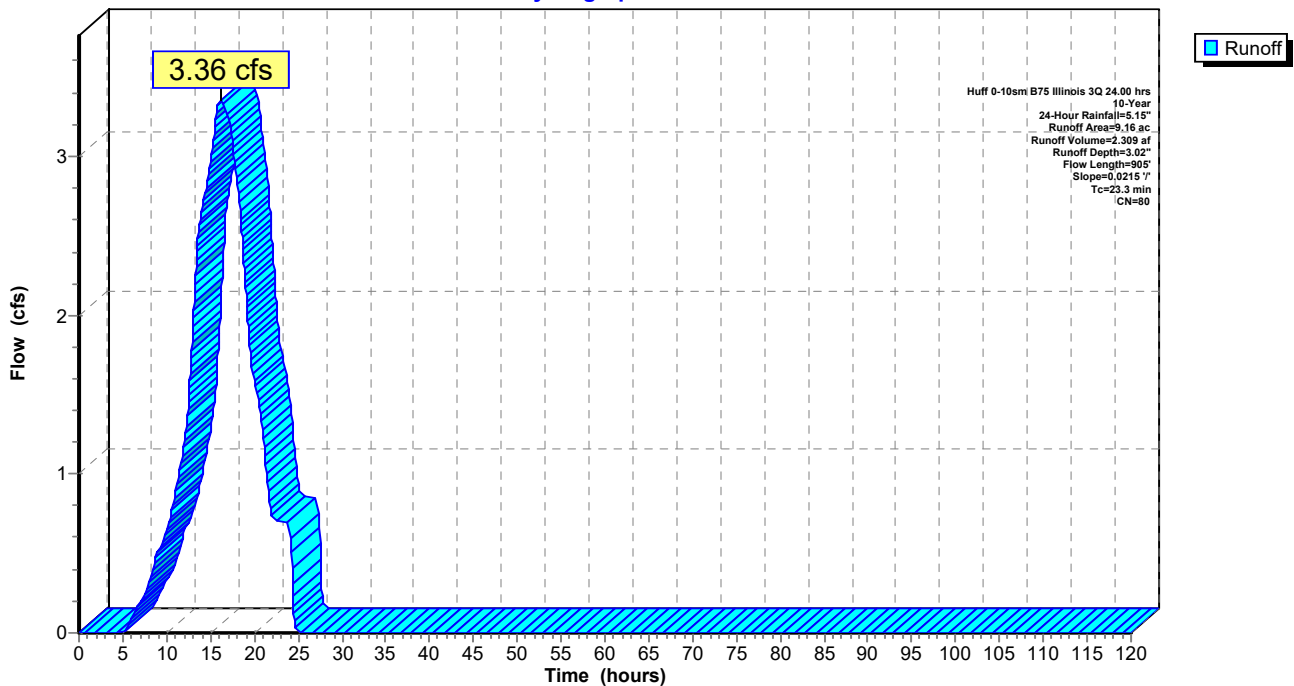
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (ac)	CN	Description
8.89	80	>75% Grass cover, Good, HSG D
0.27	93	Paved roads w/open ditches, 50% imp, HSG D
9.16	80	Weighted Average
9.03		98.52% Pervious Area
0.14		1.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.0215	0.16		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
13.1	805	0.0215	1.03		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
23.3	905	Total			

**Subcatchment A1C: Subcat A1C**

Hydrograph



**Summary for Subcatchment A1D: Subcat A1D**

Runoff = 2.61 cfs @ 15.75 hrs, Volume= 1.781 af, Depth= 3.02"

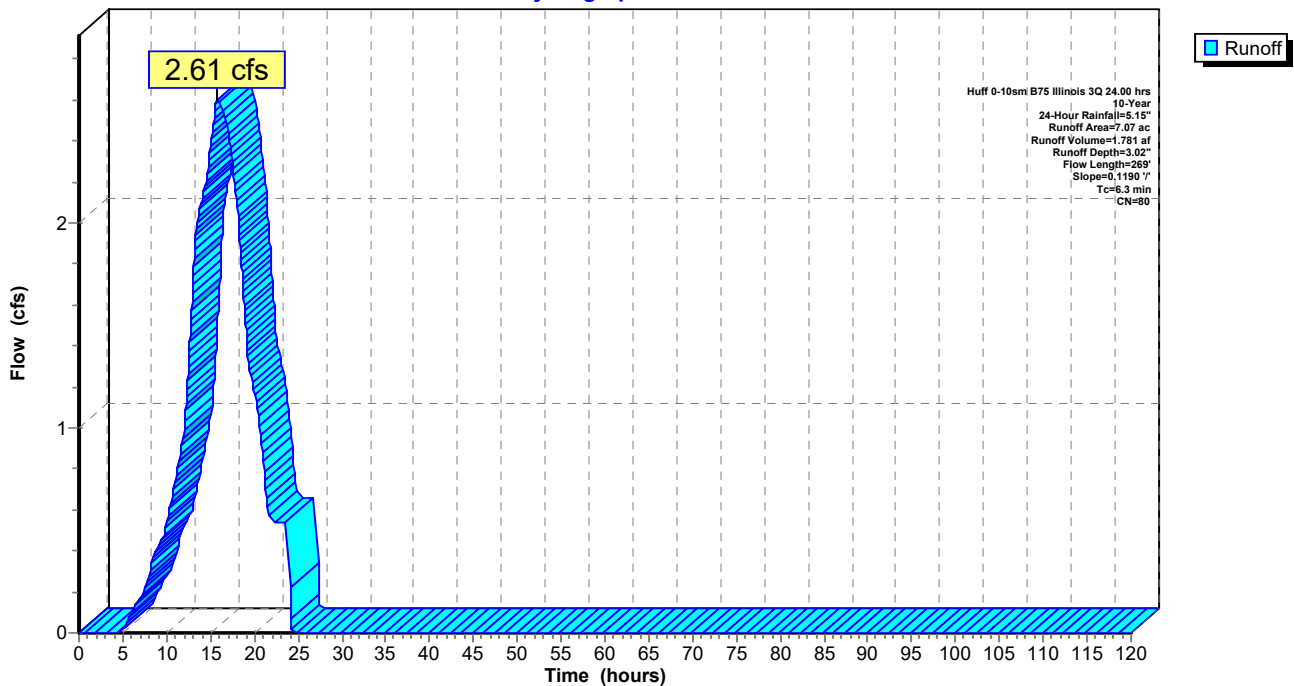
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (ac)	CN	Description
6.97	80	>75% Grass cover, Good, HSG D
0.10	93	Paved roads w/open ditches, 50% imp, HSG D
7.07	80	Weighted Average
7.02		99.31% Pervious Area
0.05		0.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	100	0.1190	0.32		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.2	169	0.1190	2.41		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.3	269	Total			

**Subcatchment A1D: Subcat A1D**

Hydrograph



**Summary for Subcatchment A1E: Subcat A1E**

Runoff = 0.40 cfs @ 15.72 hrs, Volume= 0.276 af, Depth= 3.02"

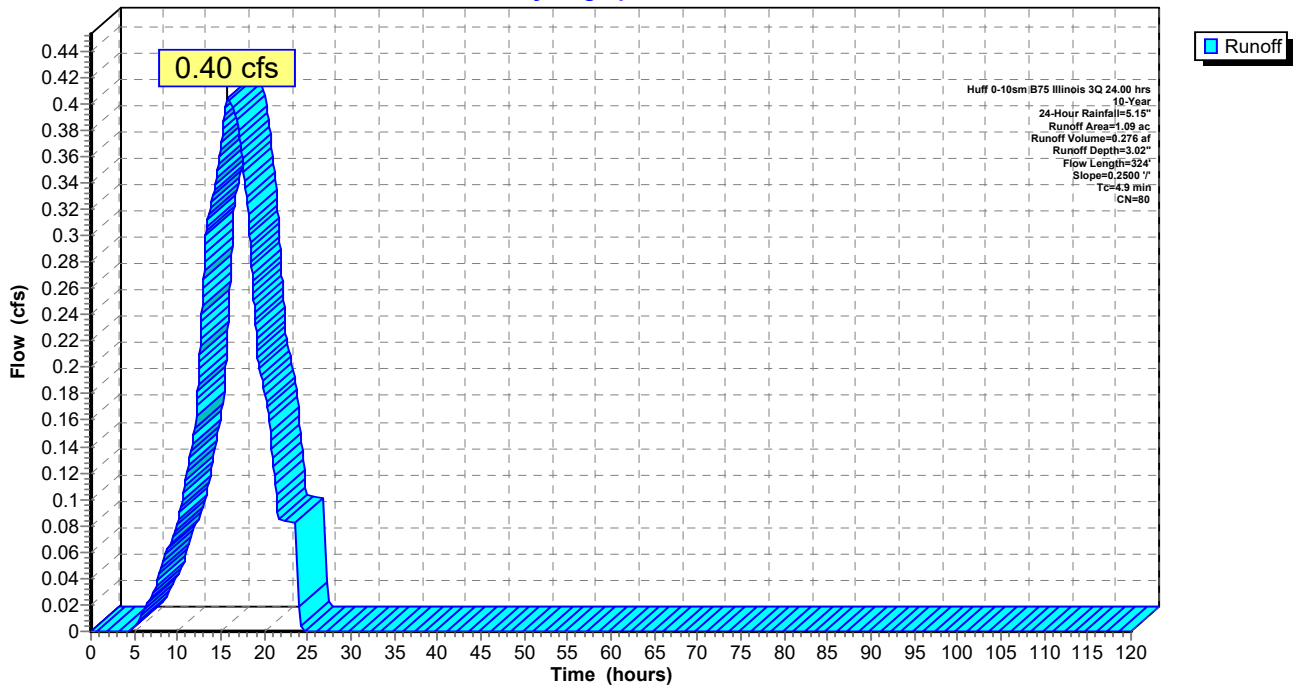
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (ac)	CN	Description
1.09	80	>75% Grass cover, Good, HSG D
1.09		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.1	224	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.9	324	Total			

**Subcatchment A1E: Subcat A1E**

Hydrograph



**Summary for Subcatchment A1F: Subcat A1F**

Runoff = 0.43 cfs @ 15.63 hrs, Volume= 0.314 af, Depth= 3.81"

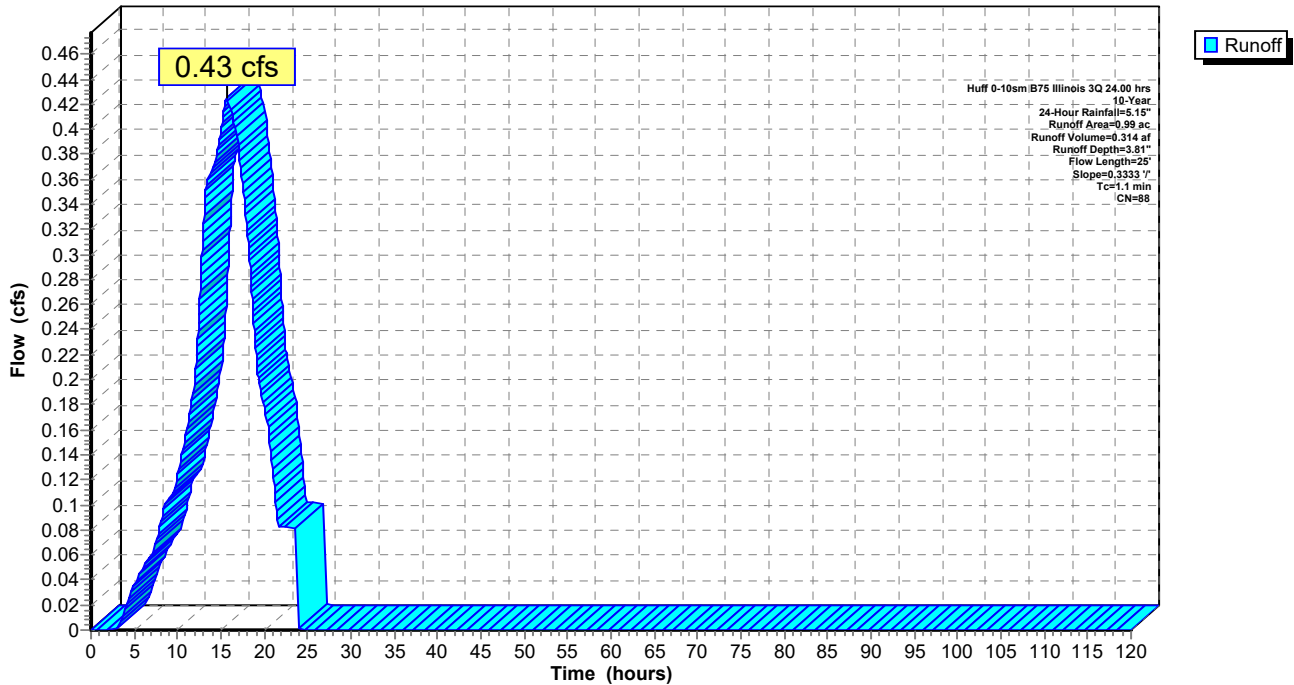
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (ac)	CN	Description
0.36	80	>75% Grass cover, Good, HSG D
0.62	93	Paved roads w/open ditches, 50% imp, HSG D
0.99	88	Weighted Average
0.67		68.34% Pervious Area
0.31		31.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	25	0.3333	0.37		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment A1F: Subcat A1F**

Hydrograph



**Summary for Subcatchment A1G: Subcat A1G**

Runoff = 0.08 cfs @ 15.63 hrs, Volume= 0.058 af, Depth= 3.61"

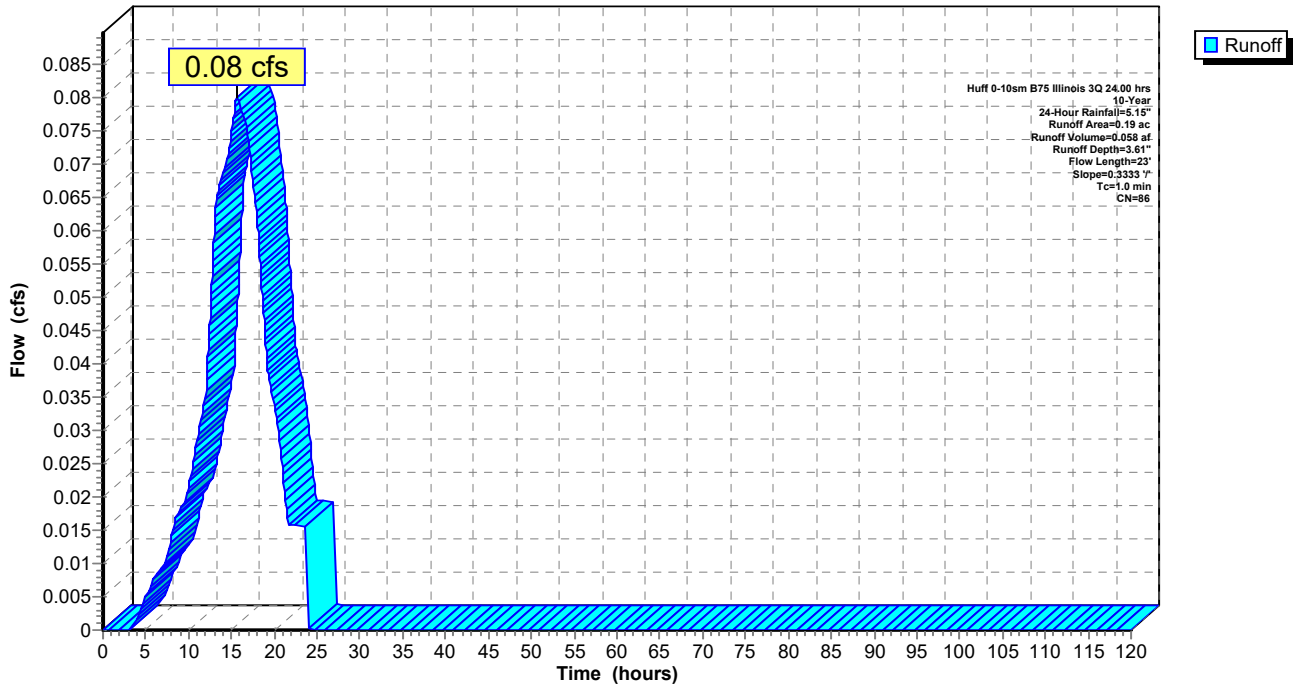
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (ac)	CN	Description
0.11	80	>75% Grass cover, Good, HSG D
0.09	93	Paved roads w/open ditches, 50% imp, HSG D
0.19	86	Weighted Average
0.15		77.34% Pervious Area
0.04		22.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	23	0.3333	0.37		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment A1G: Subcat A1G**

Hydrograph



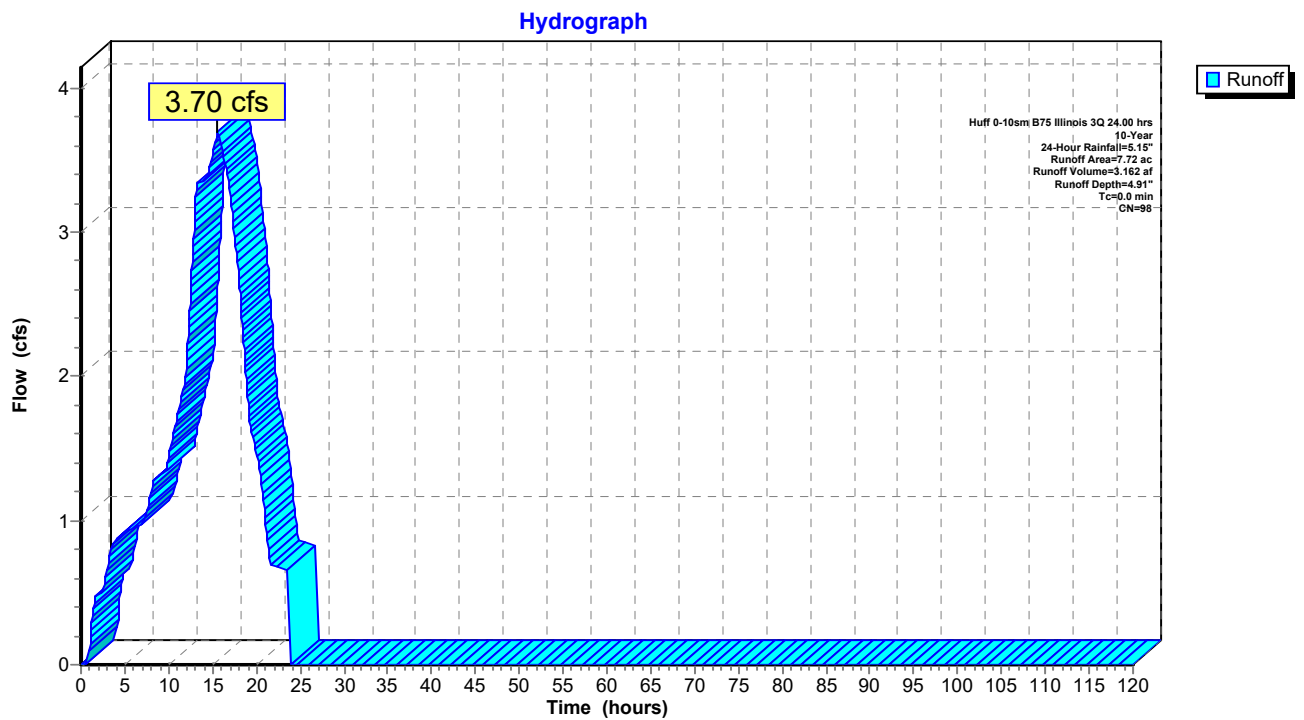
### Summary for Subcatchment B-5R: Subcat Basin 5R

Runoff = 3.70 cfs @ 15.60 hrs, Volume= 3.162 af, Depth= 4.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (ac)	CN	Description
7.72	98	Water Surface, HSG D
7.72		100.00% Impervious Area

### Subcatchment B-5R: Subcat Basin 5R





### Summary for Subcatchment B-8: Subcat Basin 8

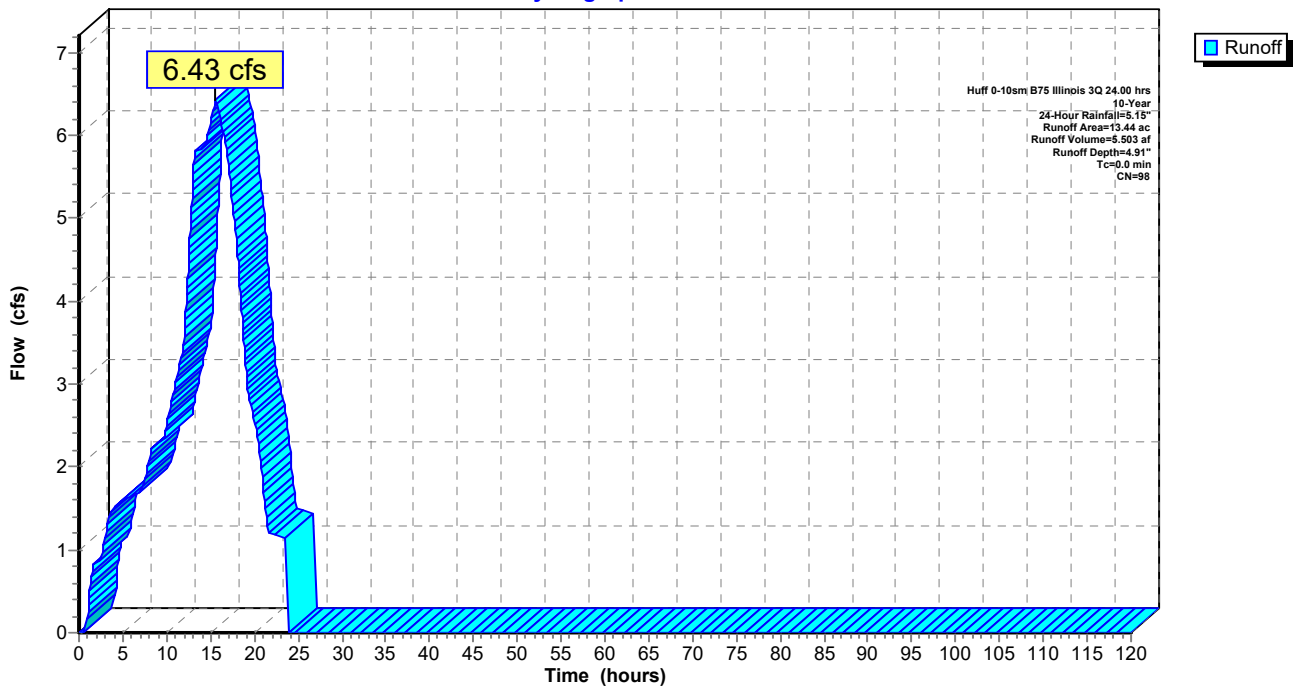
Runoff = 6.43 cfs @ 15.60 hrs, Volume= 5.503 af, Depth= 4.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (ac)	CN	Description
13.44	98	Water Surface, HSG D
13.44		100.00% Impervious Area

### Subcatchment B-8: Subcat Basin 8

Hydrograph



### Summary for Subcatchment B-8-RO: Subcat Basin 8 Run-On

Runoff = 1.58 cfs @ 15.70 hrs, Volume= 1.098 af, Depth= 3.21"

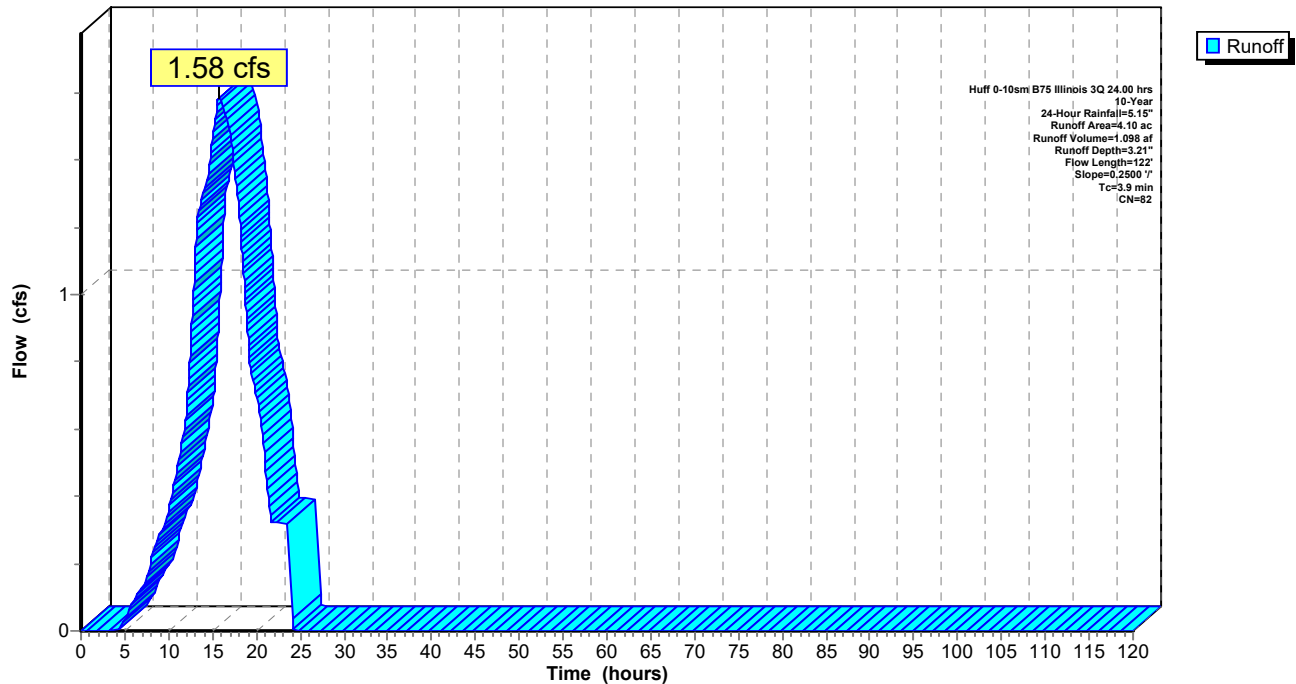
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (ac)	CN	Description
3.50	80	>75% Grass cover, Good, HSG D
0.60	93	Paved roads w/open ditches, 50% imp, HSG D
4.10	82	Weighted Average
3.80		92.68% Pervious Area
0.30		7.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	22	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	122	Total			

### Subcatchment B-8-RO: Subcat Basin 8 Run-On

Hydrograph



**Summary for Subcatchment B1: Subcat B1**

Runoff = 0.75 cfs @ 15.76 hrs, Volume= 0.514 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

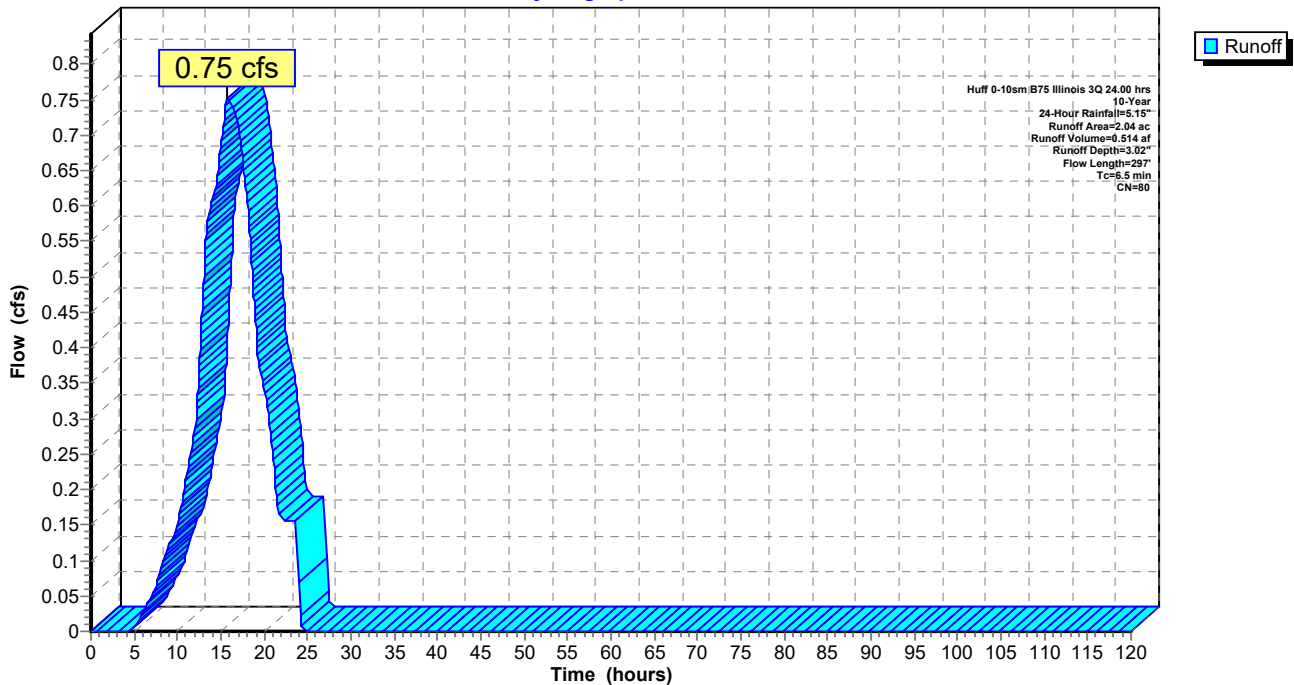
Area (ac)	CN	Description
2.04	80	>75% Grass cover, Good, HSG D
2.04		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.0	197	0.2132	3.23		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.5	297	Total			

**Subcatchment B1: Subcat B1**

Hydrograph



**Summary for Subcatchment B10A: Subcat B10A**

Runoff = 0.30 cfs @ 15.69 hrs, Volume= 0.205 af, Depth= 3.02"

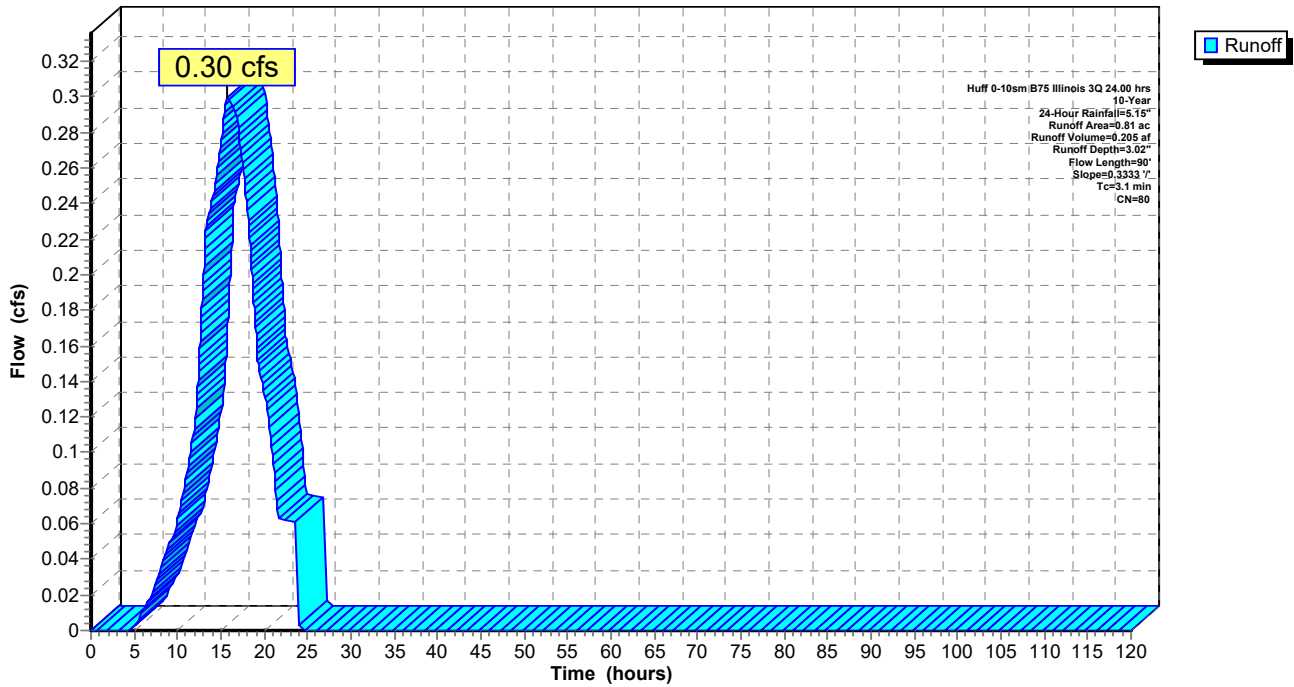
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (ac)	CN	Description
0.81	80	>75% Grass cover, Good, HSG D
0.81		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	90	0.3333	0.48		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B10A: Subcat B10A**

Hydrograph



**Summary for Subcatchment B10B: Subcat B10B**

Runoff = 0.20 cfs @ 15.67 hrs, Volume= 0.134 af, Depth= 3.02"

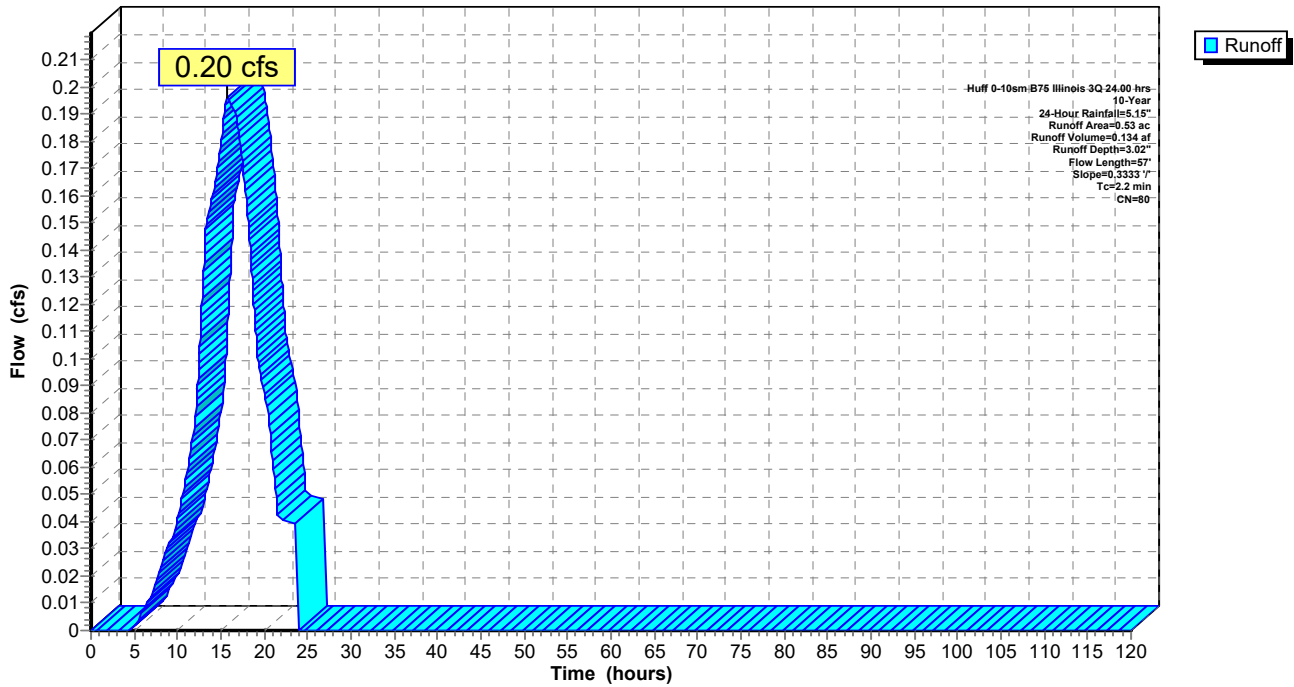
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (ac)	CN	Description
0.53	80	>75% Grass cover, Good, HSG D
0.53		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	57	0.3333	0.44		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B10B: Subcat B10B**

Hydrograph



**Summary for Subcatchment B11: Subcat B11**

Runoff = 0.84 cfs @ 15.88 hrs, Volume= 0.572 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

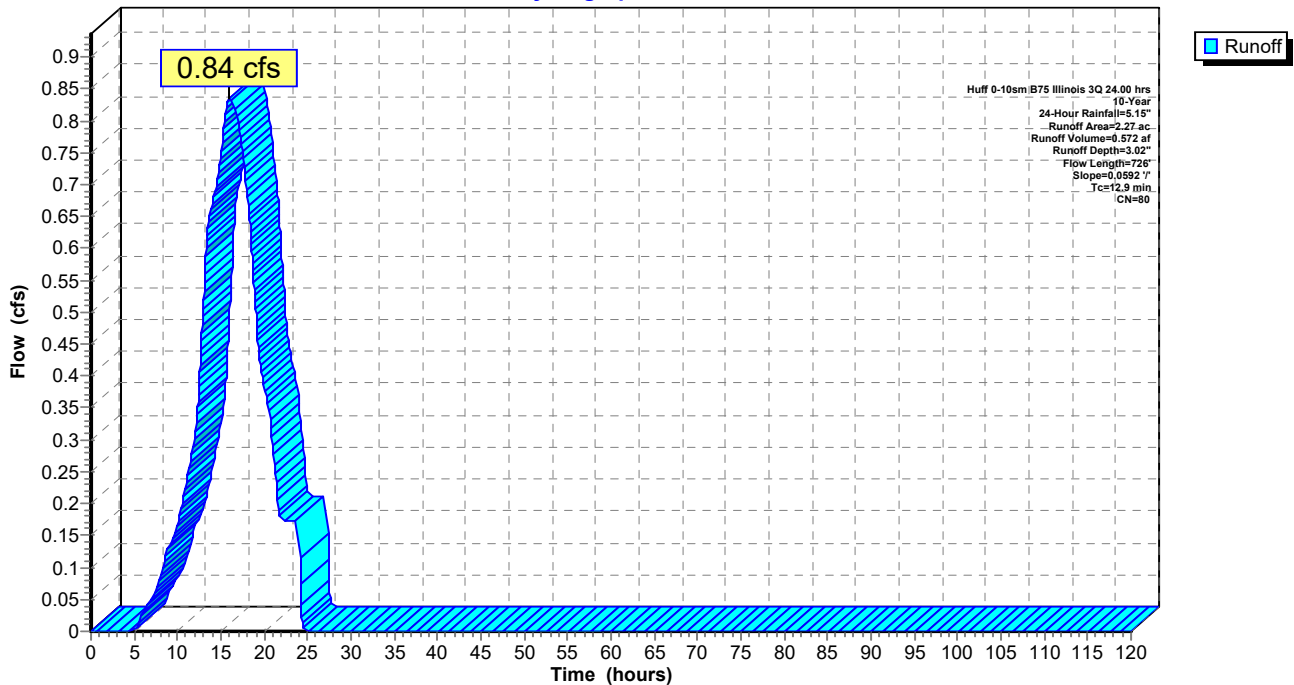
Area (ac)	CN	Description
2.27	80	>75% Grass cover, Good, HSG D
2.27		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	100	0.0592	0.25		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
6.1	626	0.0592	1.70		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
12.9	726	Total			

**Subcatchment B11: Subcat B11**

Hydrograph



### Summary for Subcatchment B12: Subcat B12

Runoff = 0.44 cfs @ 15.71 hrs, Volume= 0.303 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

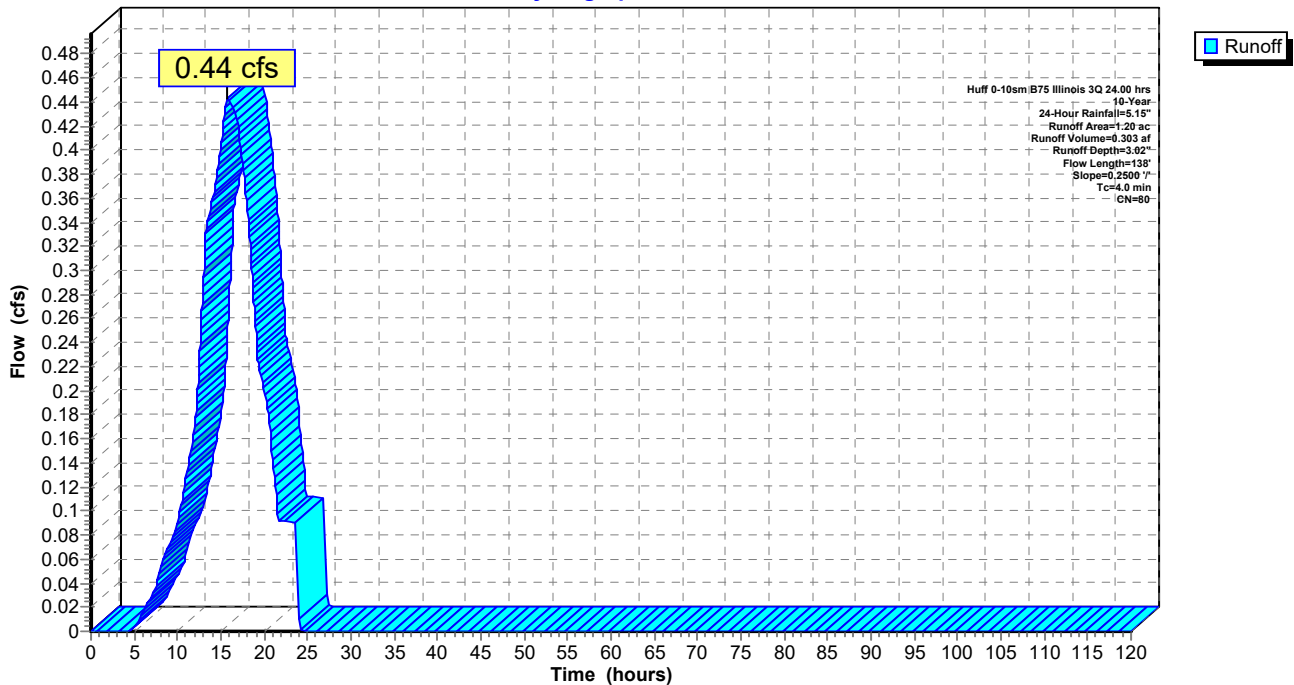
Area (ac)	CN	Description
1.20	80	>75% Grass cover, Good, HSG D
1.20		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"
0.2	38	0.2500	3.50		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
4.0	138	Total			

### Subcatchment B12: Subcat B12

Hydrograph



### Summary for Subcatchment B13: Subcat B13

Runoff = 0.13 cfs @ 15.64 hrs, Volume= 0.097 af, Depth= 3.61"

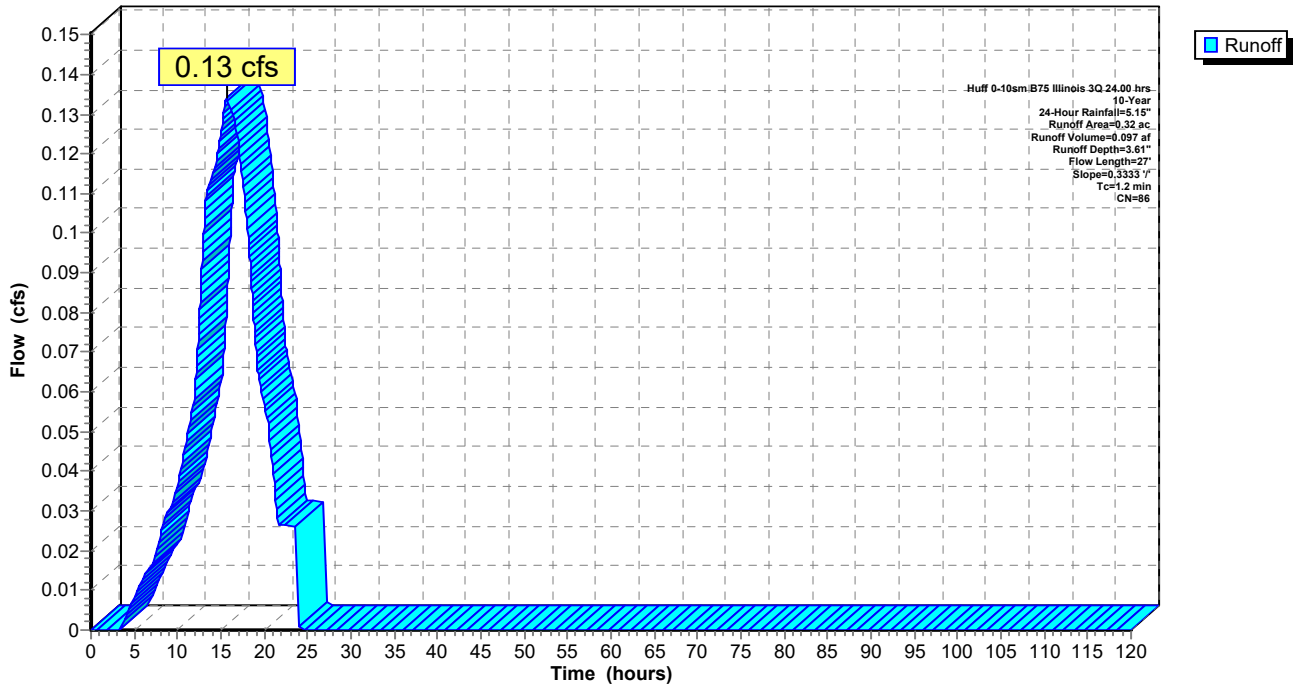
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (ac)	CN	Description
0.17	80	>75% Grass cover, Good, HSG D
* 0.15	93	Paved roads w/open ditches, 50% imp, HSG D
0.32	86	Weighted Average
0.24		75.93% Pervious Area
0.08		24.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	27	0.3333	0.38		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

### Subcatchment B13: Subcat B13

Hydrograph





**Summary for Subcatchment B14: Subcat B14**

Runoff = 0.11 cfs @ 15.67 hrs, Volume= 0.081 af, Depth= 3.61"

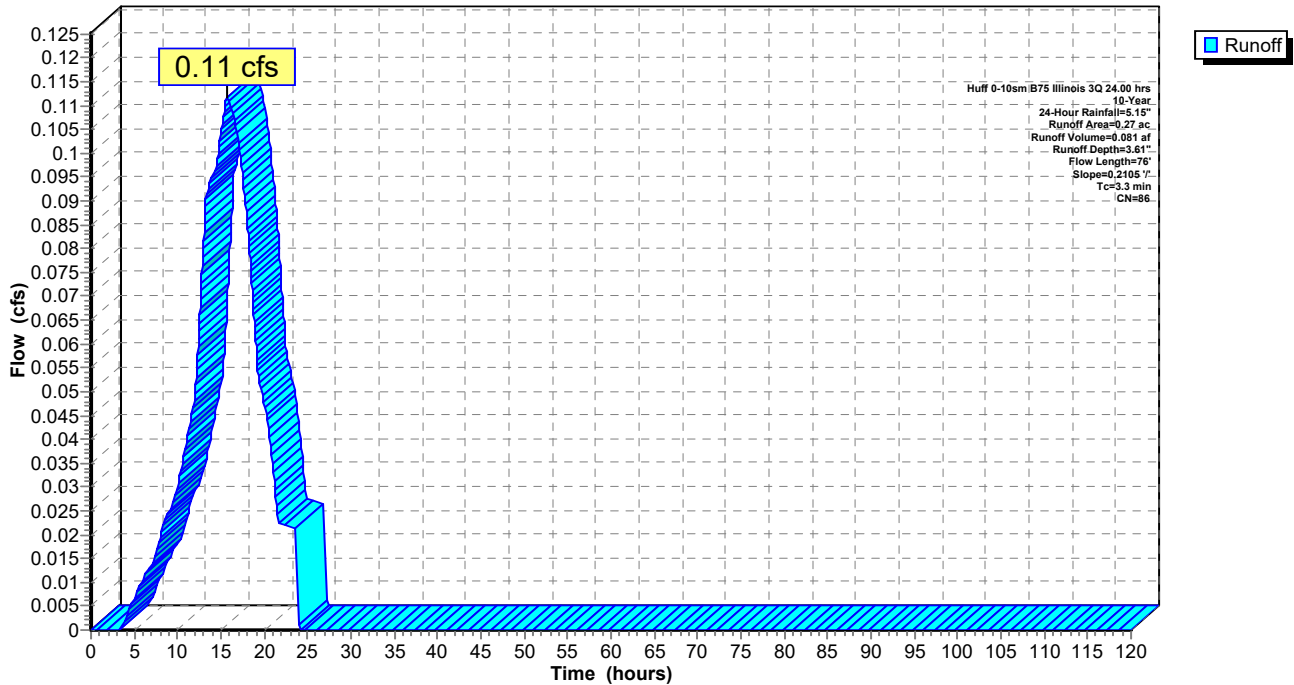
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (ac)	CN	Description
0.14	80	>75% Grass cover, Good, HSG D
0.13	93	Paved roads w/open ditches, 50% imp, HSG D
0.27	86	Weighted Average
0.21		76.49% Pervious Area
0.06		23.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	76	0.2105	0.39		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B14: Subcat B14**

Hydrograph



**Summary for Subcatchment B2: Subcat B2**

Runoff = 1.01 cfs @ 15.75 hrs, Volume= 0.691 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

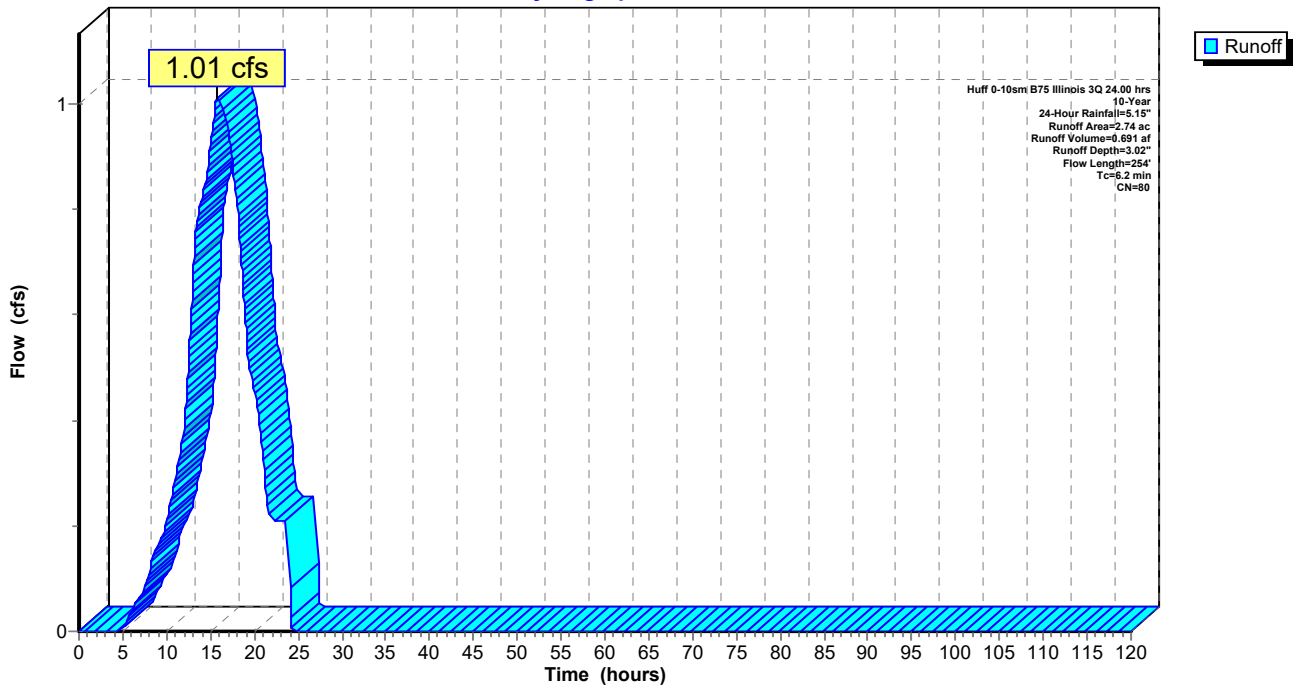
Area (ac)	CN	Description
2.74	80	>75% Grass cover, Good, HSG D
2.74		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.7	154	0.2403	3.43		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.2	254	Total			

**Subcatchment B2: Subcat B2**

Hydrograph



**Summary for Subcatchment B3: Subcat B3**

Runoff = 0.82 cfs @ 15.71 hrs, Volume= 0.557 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

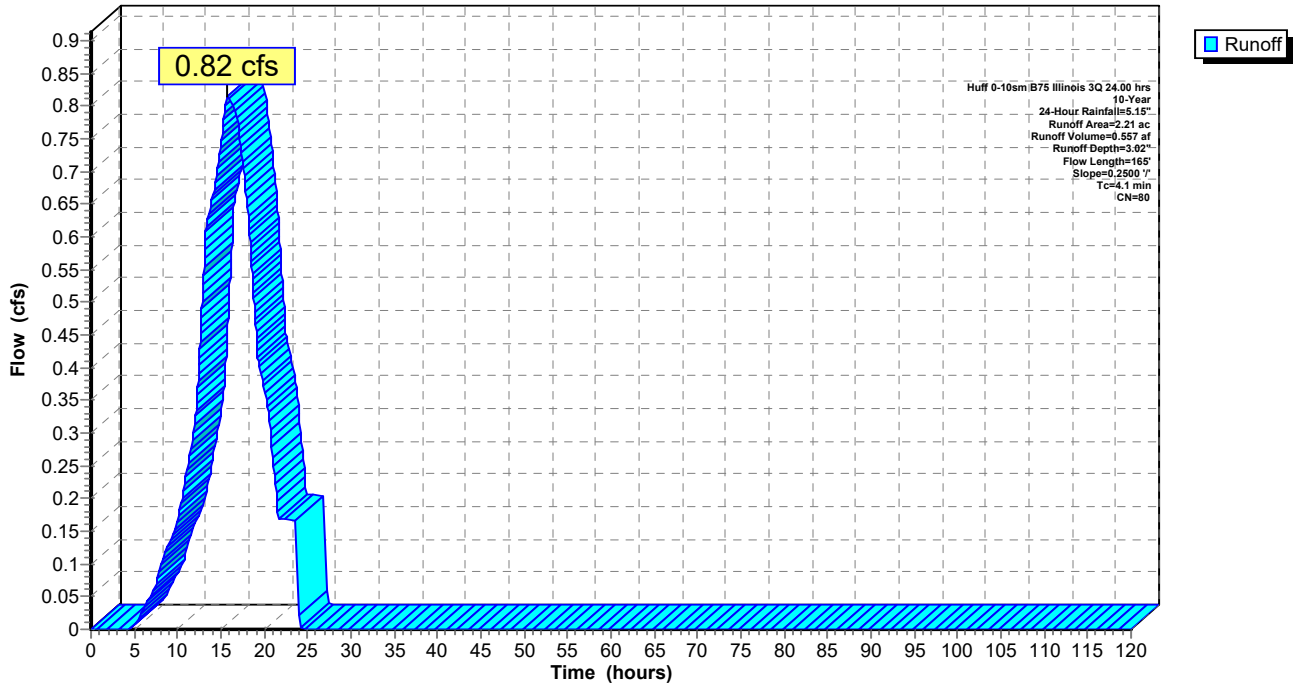
Area (ac)	CN	Description
2.21	80	>75% Grass cover, Good, HSG D
2.21		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.3	65	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	165	Total			

**Subcatchment B3: Subcat B3**

Hydrograph



### Summary for Subcatchment B4: Subcat B4

Runoff = 0.69 cfs @ 15.71 hrs, Volume= 0.471 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

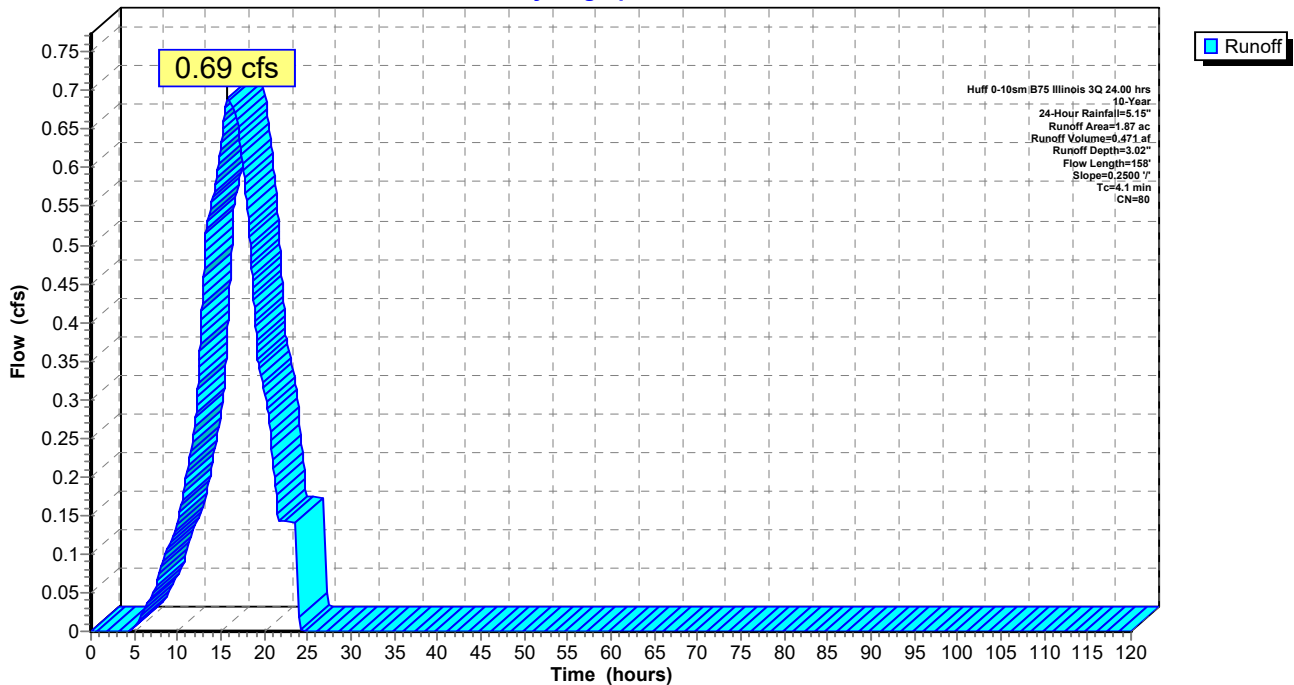
Area (ac)	CN	Description
1.87	80	>75% Grass cover, Good, HSG D
1.87		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.3	58	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	158	Total			

### Subcatchment B4: Subcat B4

Hydrograph



### Summary for Subcatchment B5: Subcat B5

Runoff = 0.71 cfs @ 15.69 hrs, Volume= 0.486 af, Depth= 3.02"

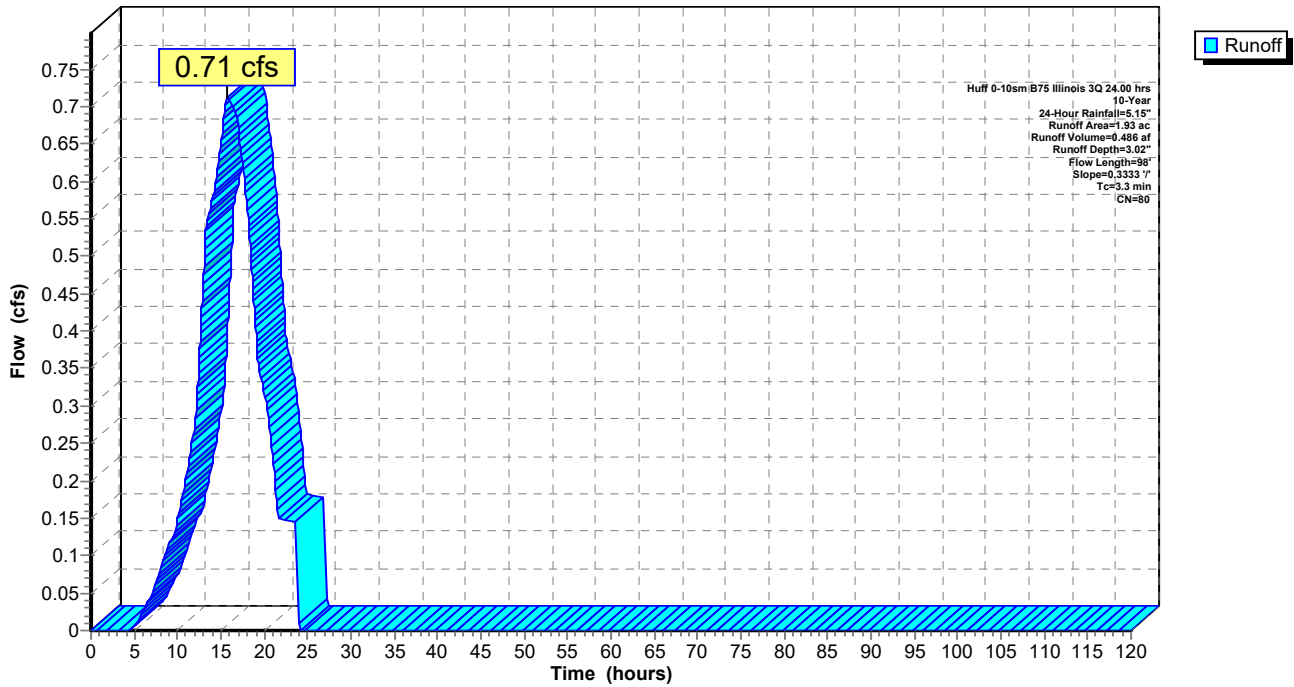
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (ac)	CN	Description
1.93	80	>75% Grass cover, Good, HSG D
1.93		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	98	0.3333	0.49		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

### Subcatchment B5: Subcat B5

Hydrograph



### Summary for Subcatchment B6: Subcat B6

Runoff = 0.44 cfs @ 15.70 hrs, Volume= 0.297 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

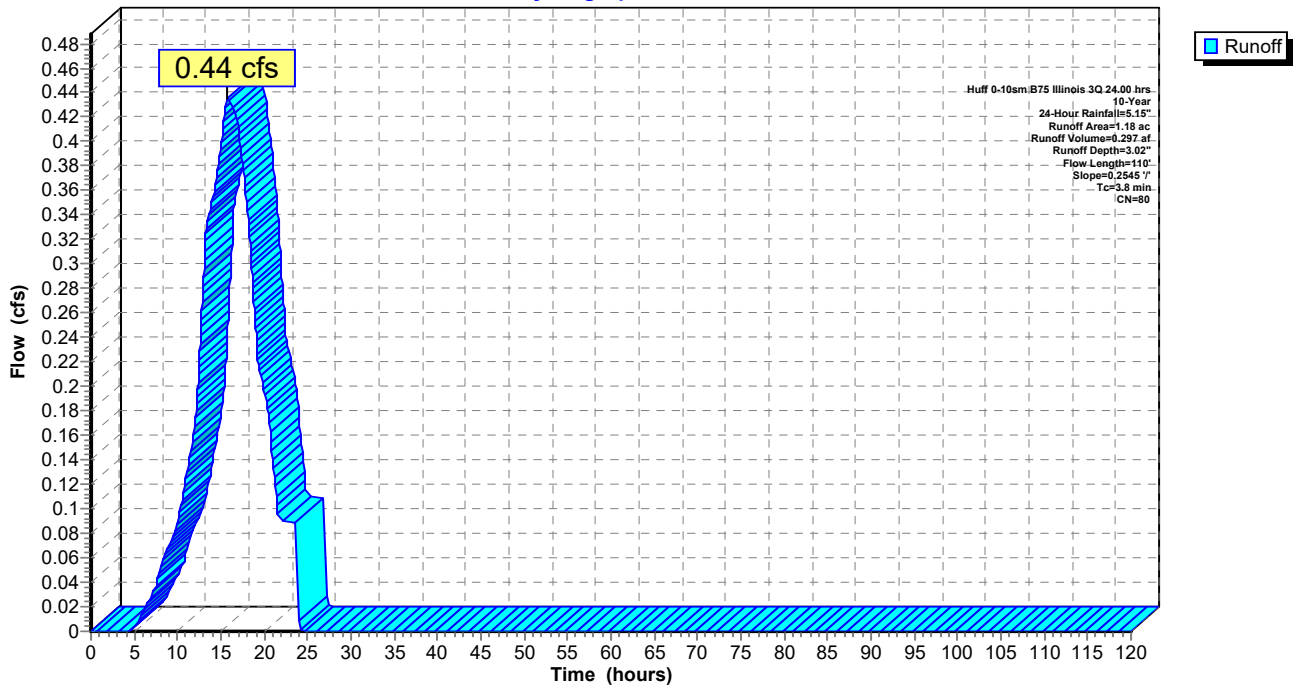
Area (ac)	CN	Description
1.18	80	>75% Grass cover, Good, HSG D
1.18		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2545	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.0	10	0.2545	3.53		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.8	110	Total			

### Subcatchment B6: Subcat B6

Hydrograph



**Summary for Subcatchment B7: Subcat B7**

Runoff = 0.81 cfs @ 15.69 hrs, Volume= 0.552 af, Depth= 3.02"

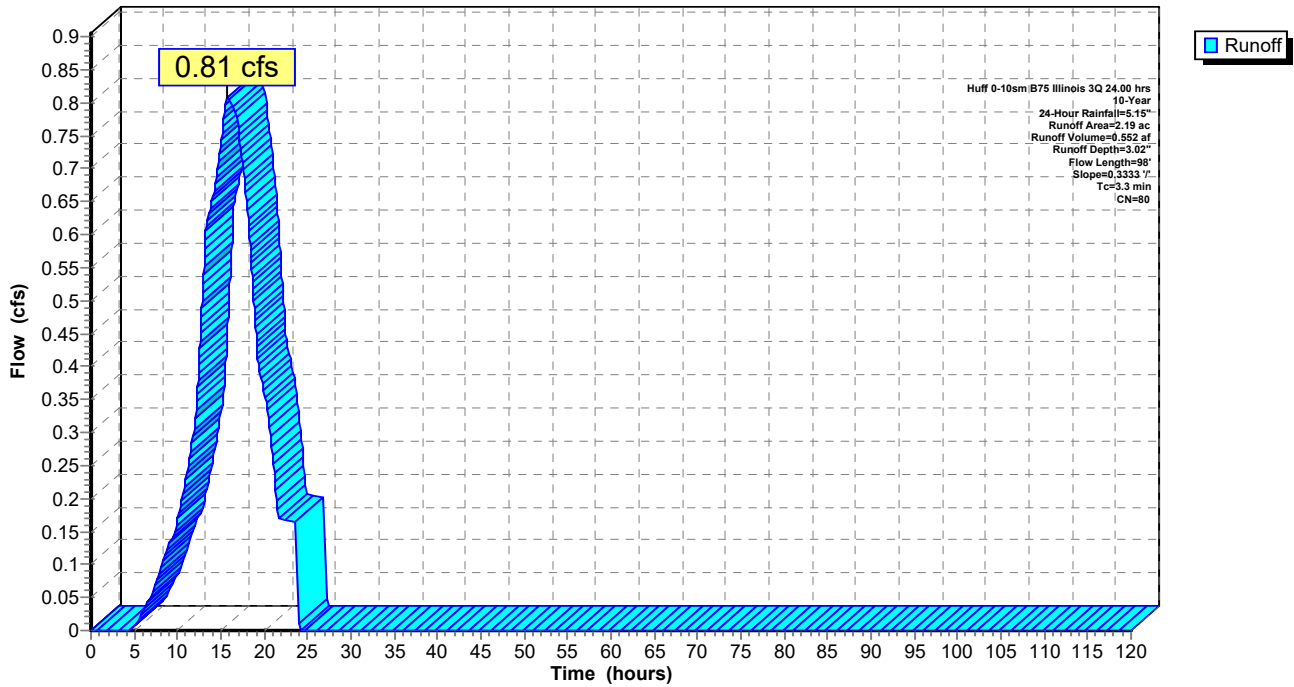
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (ac)	CN	Description
2.19	80	>75% Grass cover, Good, HSG D
2.19		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	98	0.3333	0.49		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B7: Subcat B7**

Hydrograph



**Summary for Subcatchment B8: Subcat B8**

Runoff = 0.43 cfs @ 15.70 hrs, Volume= 0.295 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

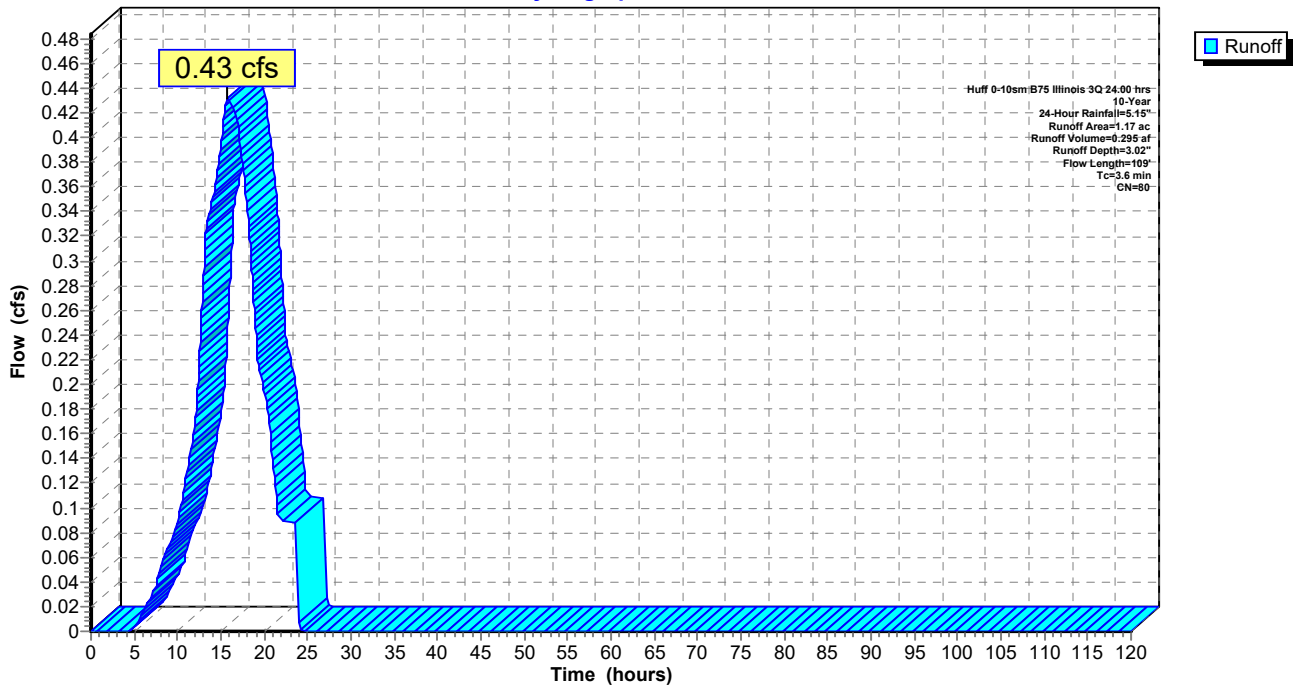
Area (ac)	CN	Description
1.17	80	>75% Grass cover, Good, HSG D
1.17		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	100	0.2873	0.46		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.0	9	0.2574	3.55		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.6	109	Total			

**Subcatchment B8: Subcat B8**

Hydrograph





### Summary for Subcatchment B9A: Subcat B9A

Runoff = 0.53 cfs @ 15.67 hrs, Volume= 0.362 af, Depth= 3.02"

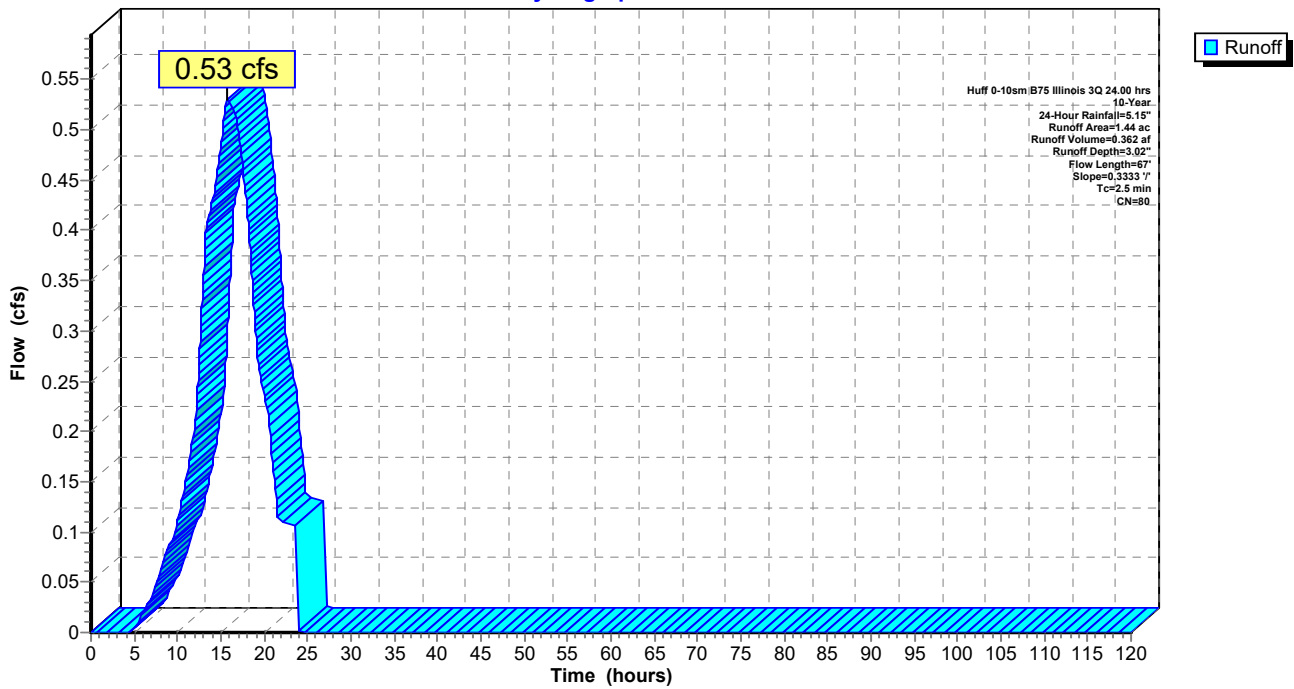
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (ac)	CN	Description
1.44	80	>75% Grass cover, Good, HSG D
1.44		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	67	0.3333	0.45		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

### Subcatchment B9A: Subcat B9A

Hydrograph



**Summary for Subcatchment B9B: Subcat B9B**

Runoff = 0.23 cfs @ 15.66 hrs, Volume= 0.154 af, Depth= 3.02"

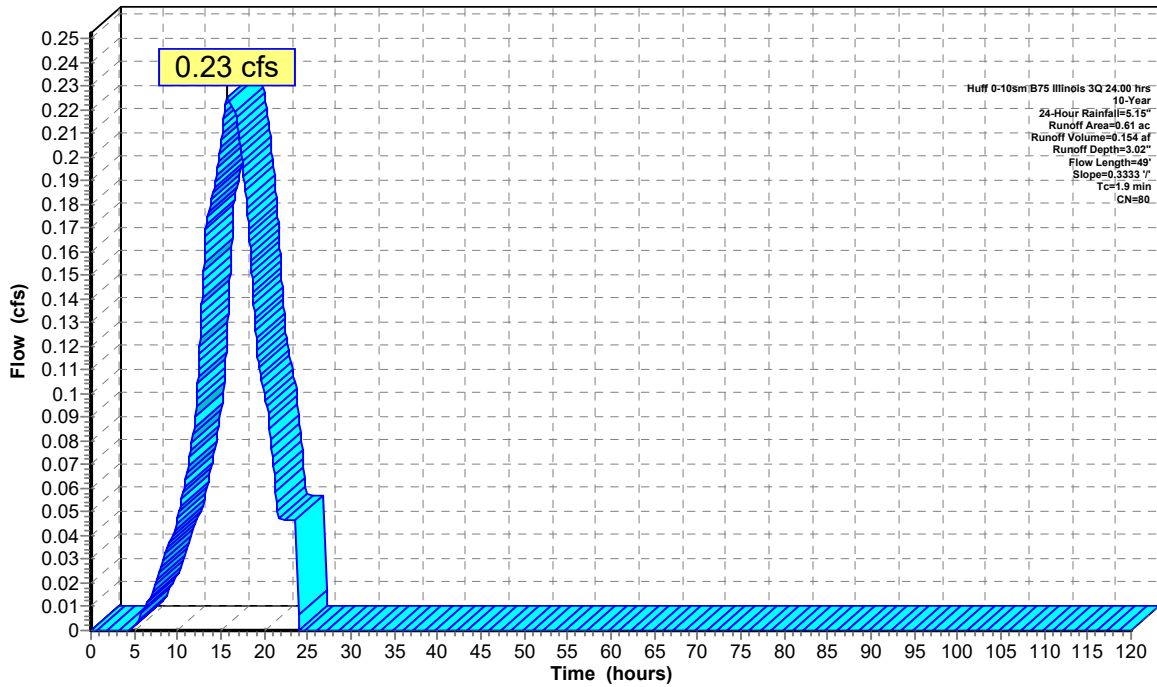
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (ac)	CN	Description
0.61	80	>75% Grass cover, Good, HSG D
0.61		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	49	0.3333	0.43		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B9B: Subcat B9B**

Hydrograph



**Summary for Subcatchment D1: Subcat D1**

Runoff = 0.46 cfs @ 15.76 hrs, Volume= 0.317 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

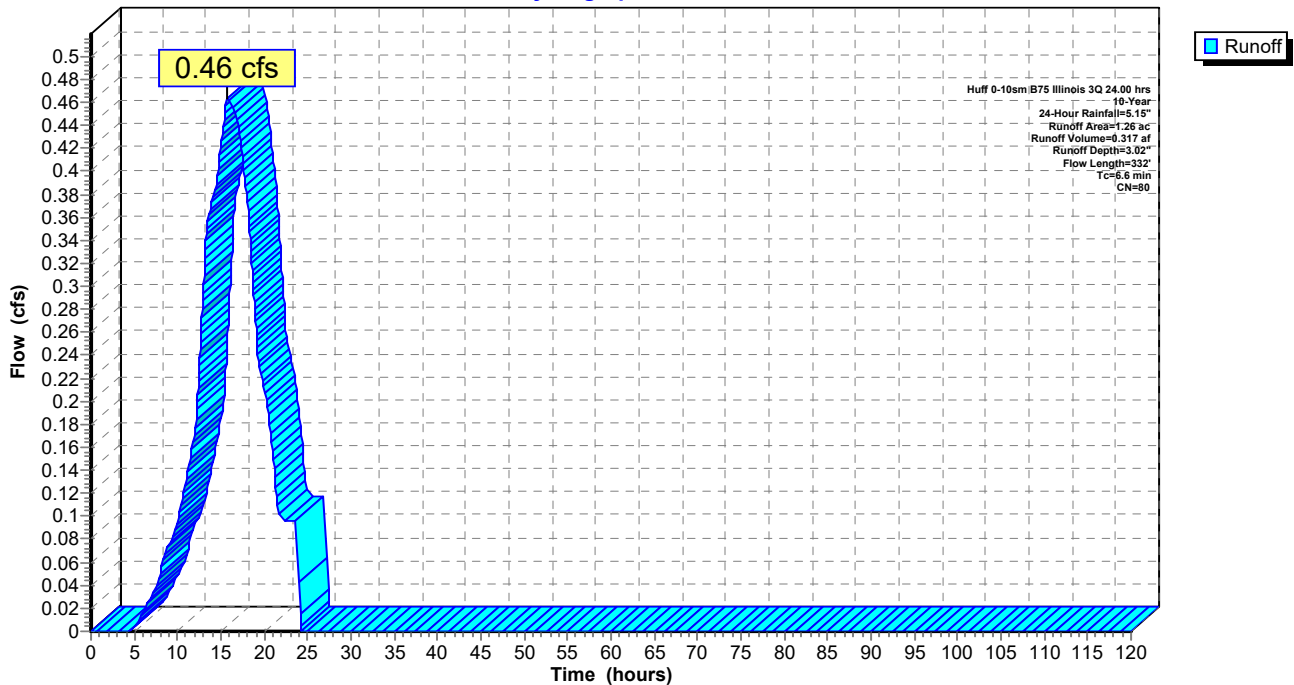
Area (ac)	CN	Description
1.26	80	>75% Grass cover, Good, HSG D
1.26		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.1	232	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.6	332	Total			

**Subcatchment D1: Subcat D1**

Hydrograph



### Summary for Subcatchment D3: Subcat D3

Runoff = 0.49 cfs @ 15.72 hrs, Volume= 0.336 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

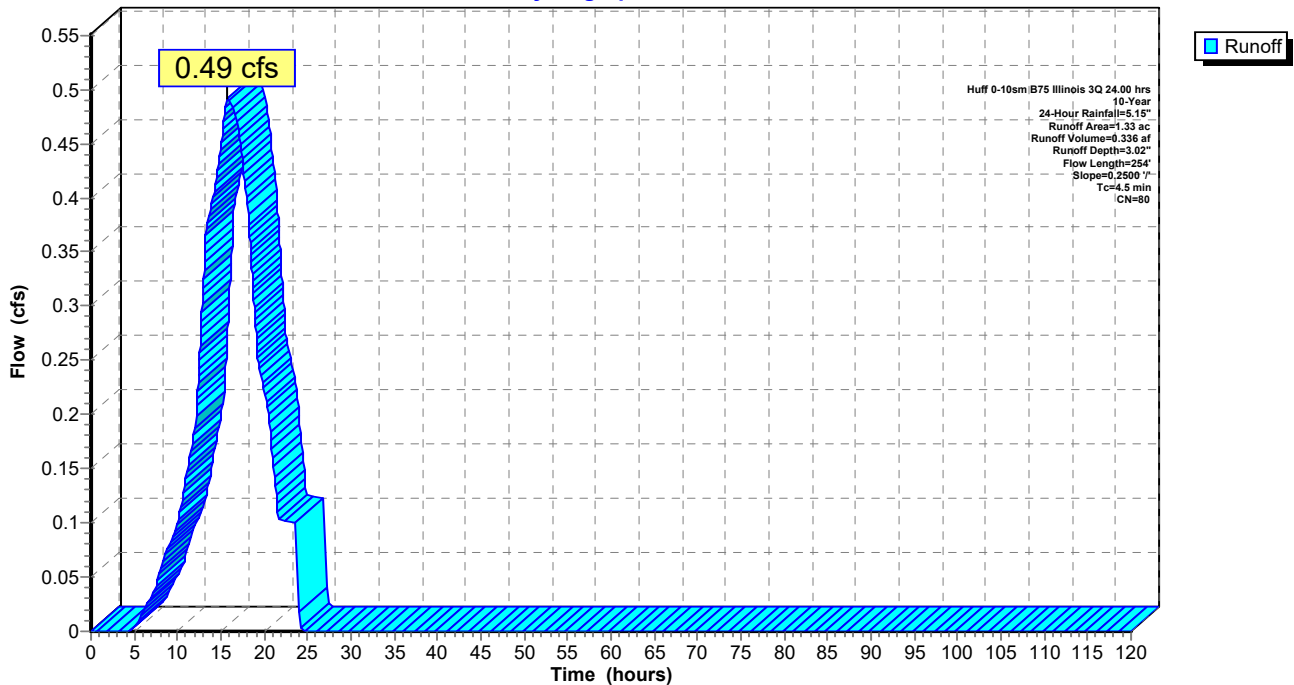
Area (ac)	CN	Description
1.33	80	>75% Grass cover, Good, HSG D
1.33		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.7	154	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.5	254	Total			

### Subcatchment D3: Subcat D3

Hydrograph



### Summary for Subcatchment D5A: Subcat D5A

Runoff = 0.42 cfs @ 15.71 hrs, Volume= 0.286 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

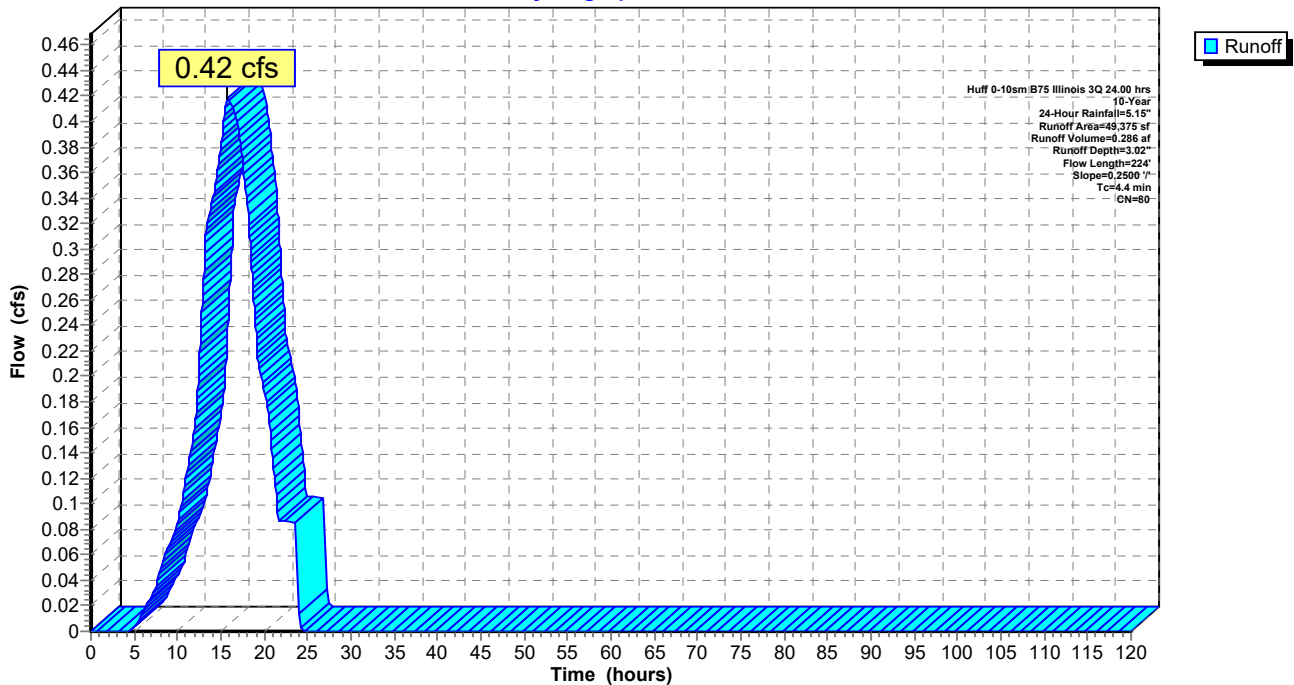
Area (sf)	CN	Description
49,375	80	>75% Grass cover, Good, HSG D
49,375		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	124	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.4	224	Total			

### Subcatchment D5A: Subcat D5A

Hydrograph



### Summary for Subcatchment D5B: Subcat D5B

Runoff = 0.13 cfs @ 15.62 hrs, Volume= 0.093 af, Depth= 3.61"

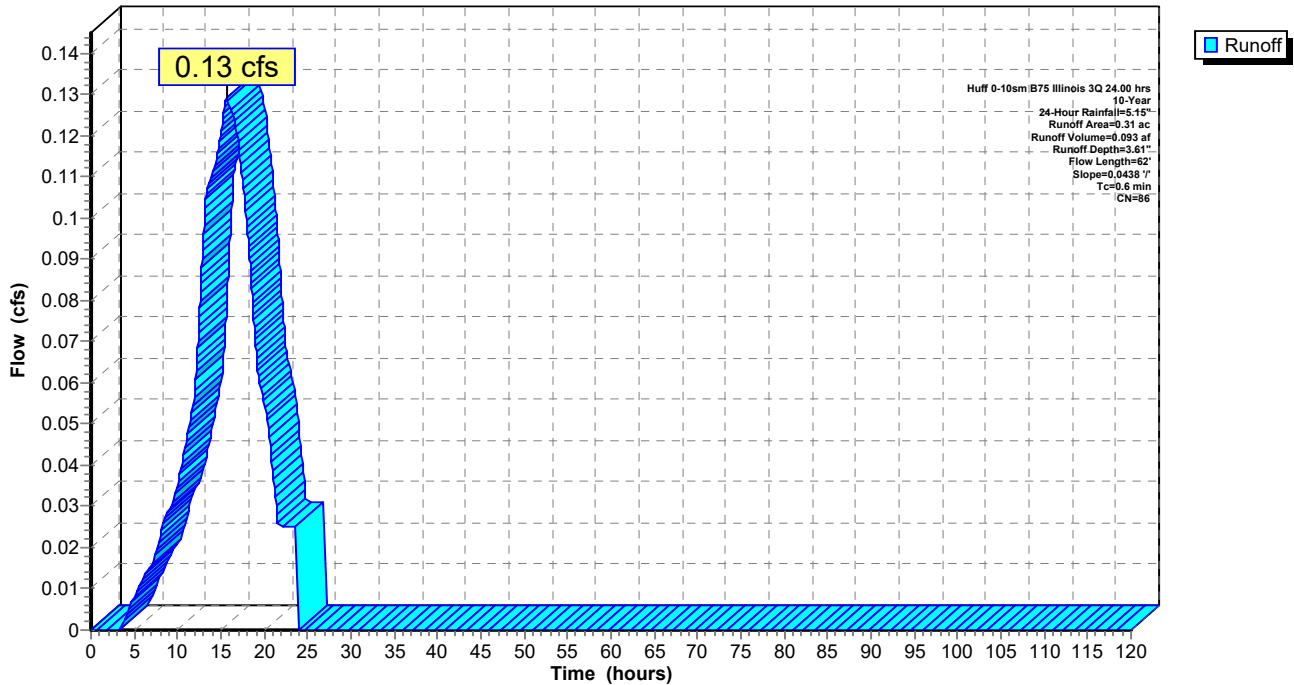
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (ac)	CN	Description
0.16	80	>75% Grass cover, Good, HSG D
0.15	93	Paved roads w/open ditches, 50% imp, HSG D
0.31	86	Weighted Average
0.23		75.32% Pervious Area
0.08		24.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	62	0.0438	1.60		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

### Subcatchment D5B: Subcat D5B

Hydrograph



**Summary for Subcatchment DT: Subcat Drain Tile**

Runoff = 4.60 cfs @ 15.71 hrs, Volume= 3.166 af, Depth= 3.12"

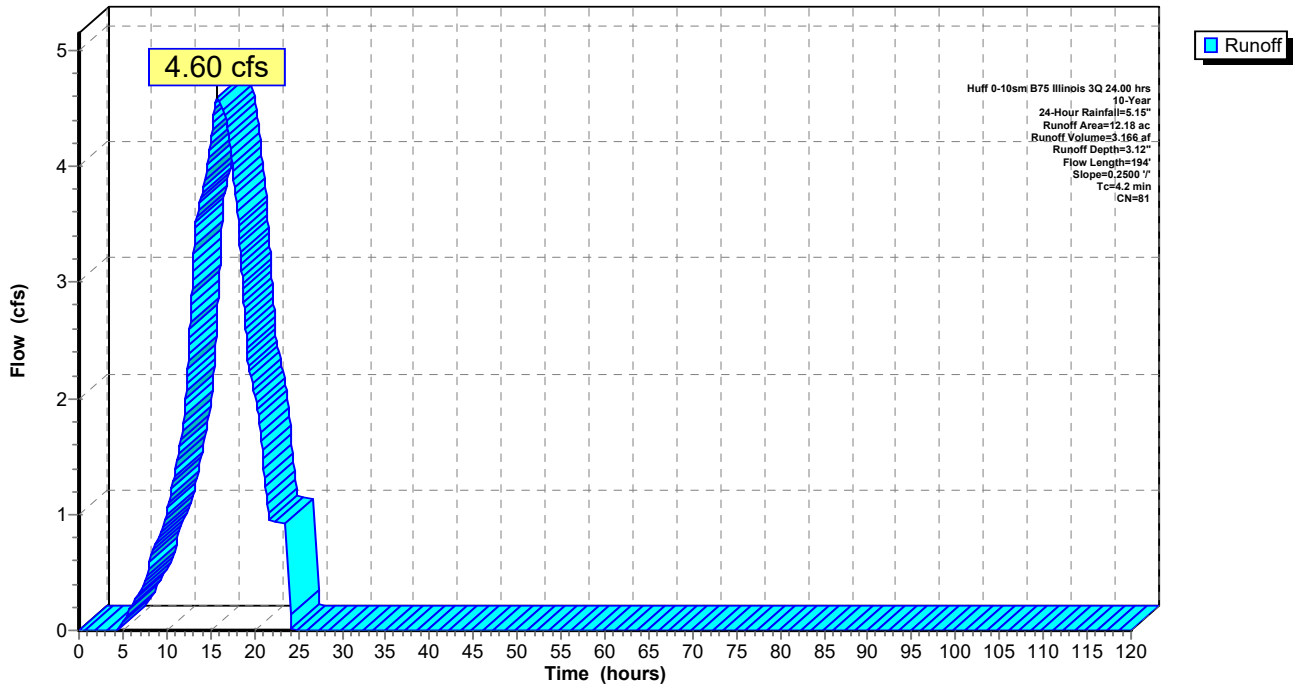
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (ac)	CN	Description
7.38	80	>75% Grass cover, Good, HSG D
4.80	82	Woods/grass comb., Fair, HSG D
12.18	81	Weighted Average
12.18		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.4	94	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.2	194	Total			

**Subcatchment DT: Subcat Drain Tile**

Hydrograph



**Summary for Subcatchment E1: Subcat E1**

Runoff = 0.52 cfs @ 15.76 hrs, Volume= 0.358 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

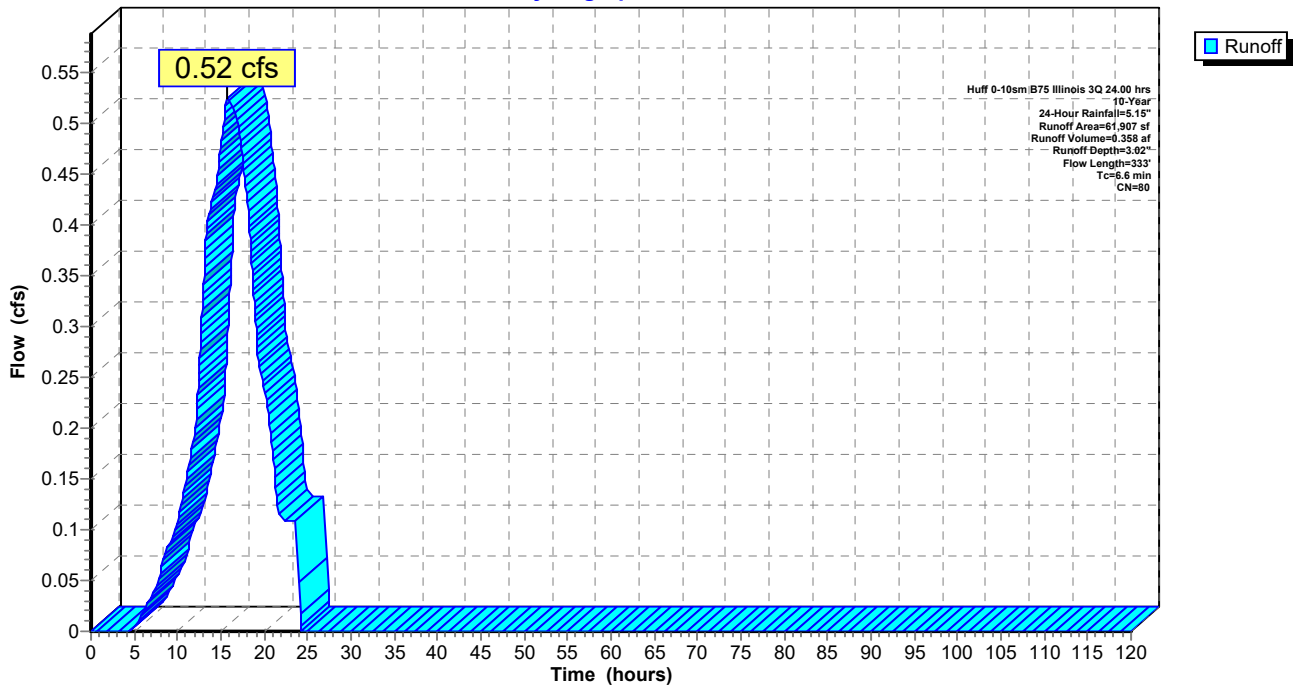
Area (sf)	CN	Description
61,907	80	>75% Grass cover, Good, HSG D
61,907		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.1	233	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.6	333	Total			

**Subcatchment E1: Subcat E1**

Hydrograph





**Summary for Subcatchment E2: Subcat E2**

Runoff = 1.04 cfs @ 15.72 hrs, Volume= 0.710 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

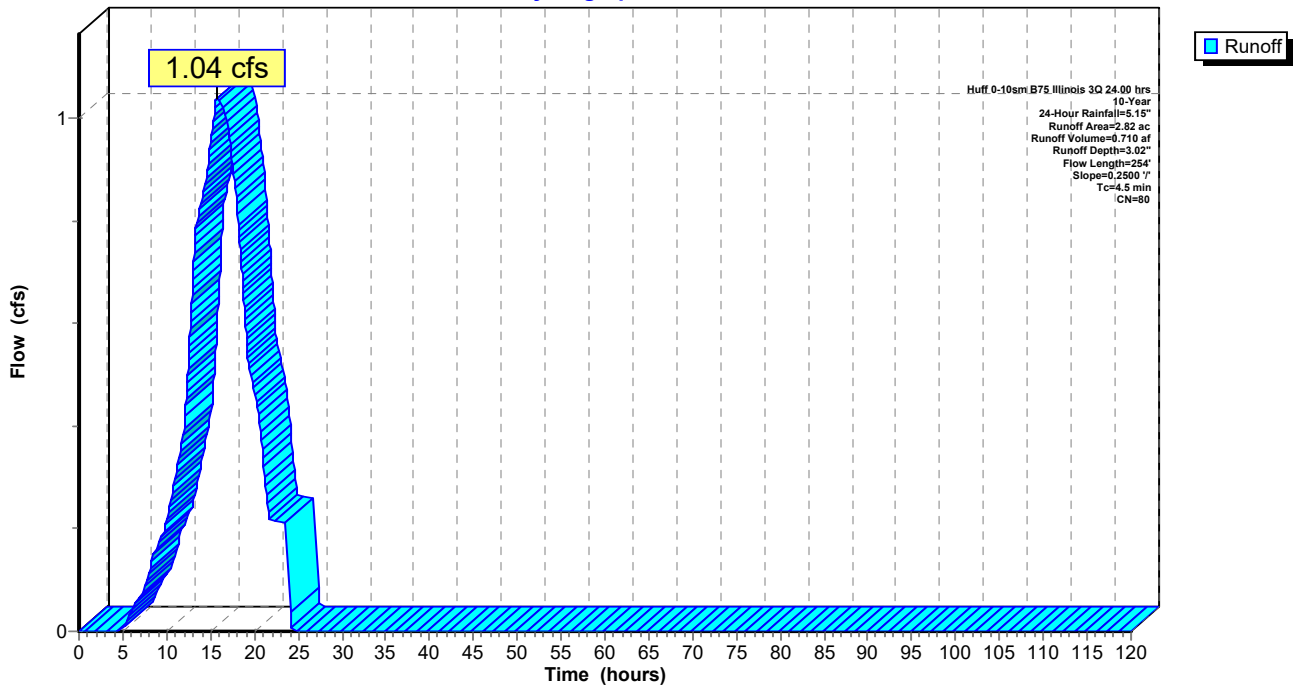
Area (ac)	CN	Description
2.82	80	>75% Grass cover, Good, HSG D
2.82		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.7	154	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.5	254	Total			

**Subcatchment E2: Subcat E2**

Hydrograph



**Summary for Subcatchment E3A: Subcat E3A**

Runoff = 1.21 cfs @ 15.71 hrs, Volume= 0.825 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

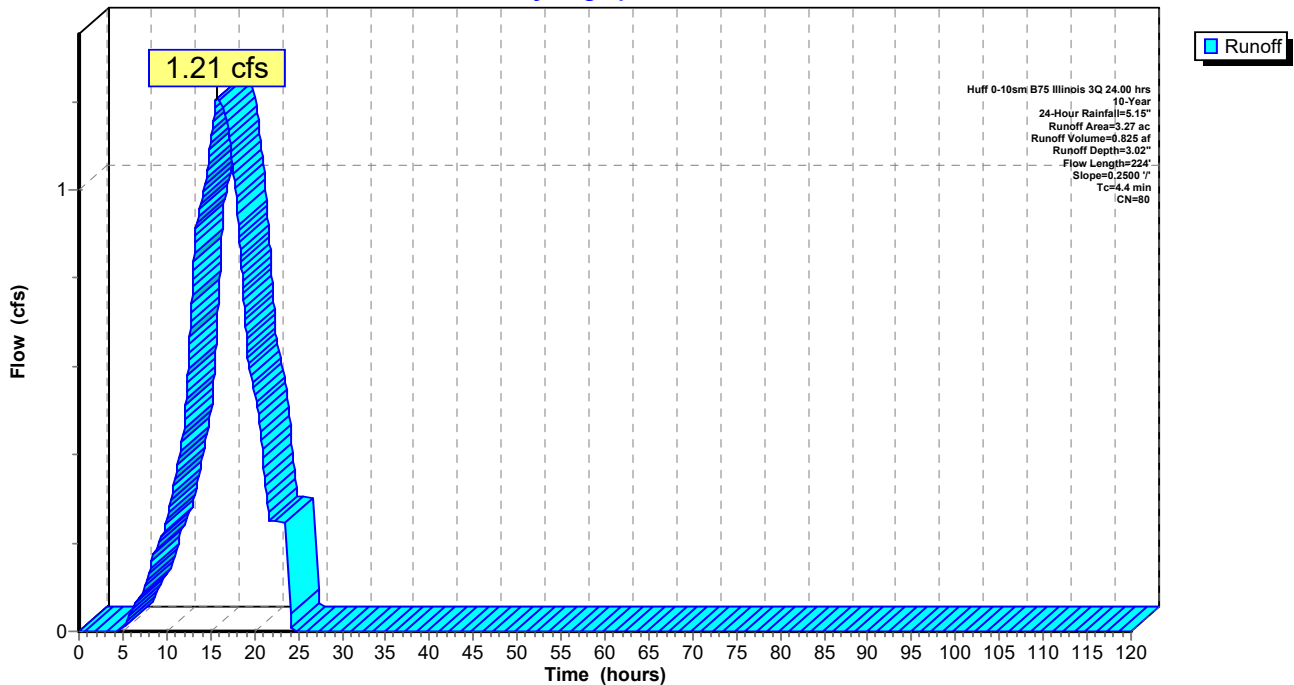
Area (ac)	CN	Description
3.27	80	>75% Grass cover, Good, HSG D
3.27		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	124	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.4	224	Total			

**Subcatchment E3A: Subcat E3A**

Hydrograph



**Summary for Subcatchment E3B: Subcat E3B**

Runoff = 0.45 cfs @ 15.62 hrs, Volume= 0.327 af, Depth= 3.61"

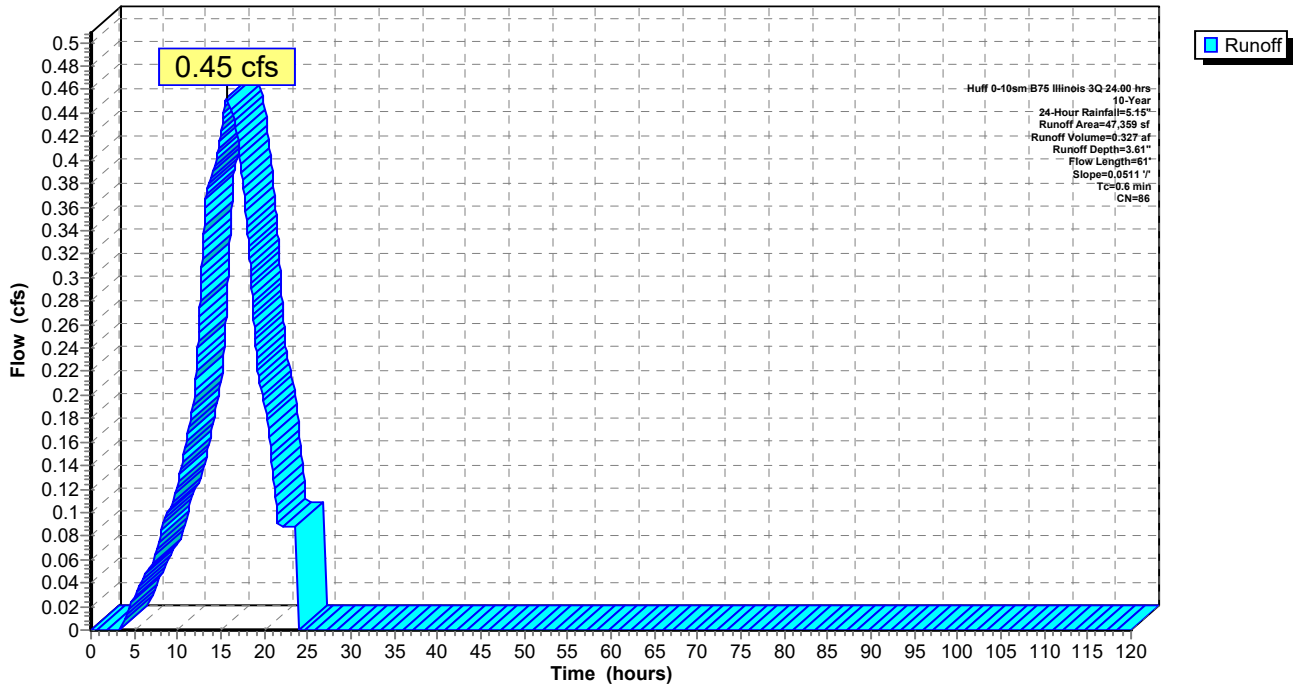
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (sf)	CN	Description
23,741	80	>75% Grass cover, Good, HSG D
23,618	93	Paved roads w/open ditches, 50% imp, HSG D
47,359	86	Weighted Average
35,550		75.06% Pervious Area
11,809		24.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	61	0.0511	1.70		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment E3B: Subcat E3B**

Hydrograph



**Summary for Subcatchment H1: Subcat H1**

Runoff = 0.73 cfs @ 15.76 hrs, Volume= 0.499 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

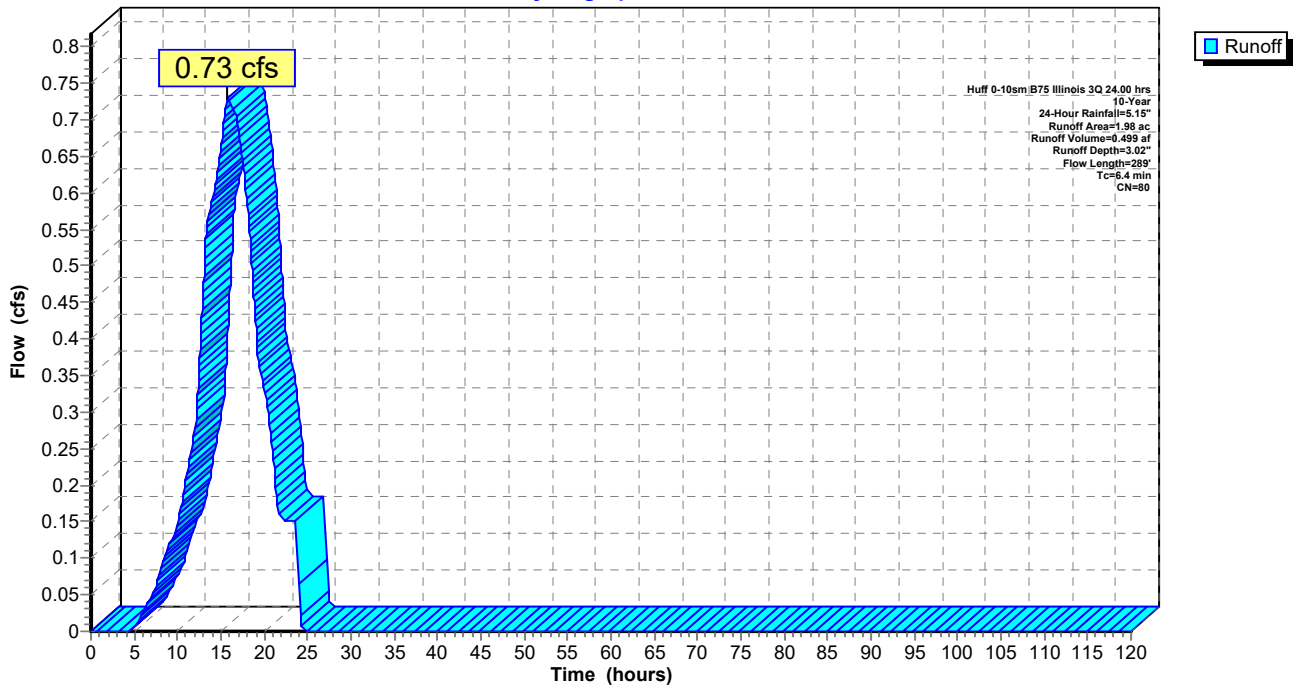
Area (ac)	CN	Description
1.98	80	>75% Grass cover, Good, HSG D
1.98		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.9	189	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.4	289	Total			

**Subcatchment H1: Subcat H1**

Hydrograph



### Summary for Subcatchment H2: Subcat H2

Runoff = 0.69 cfs @ 15.71 hrs, Volume= 0.469 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

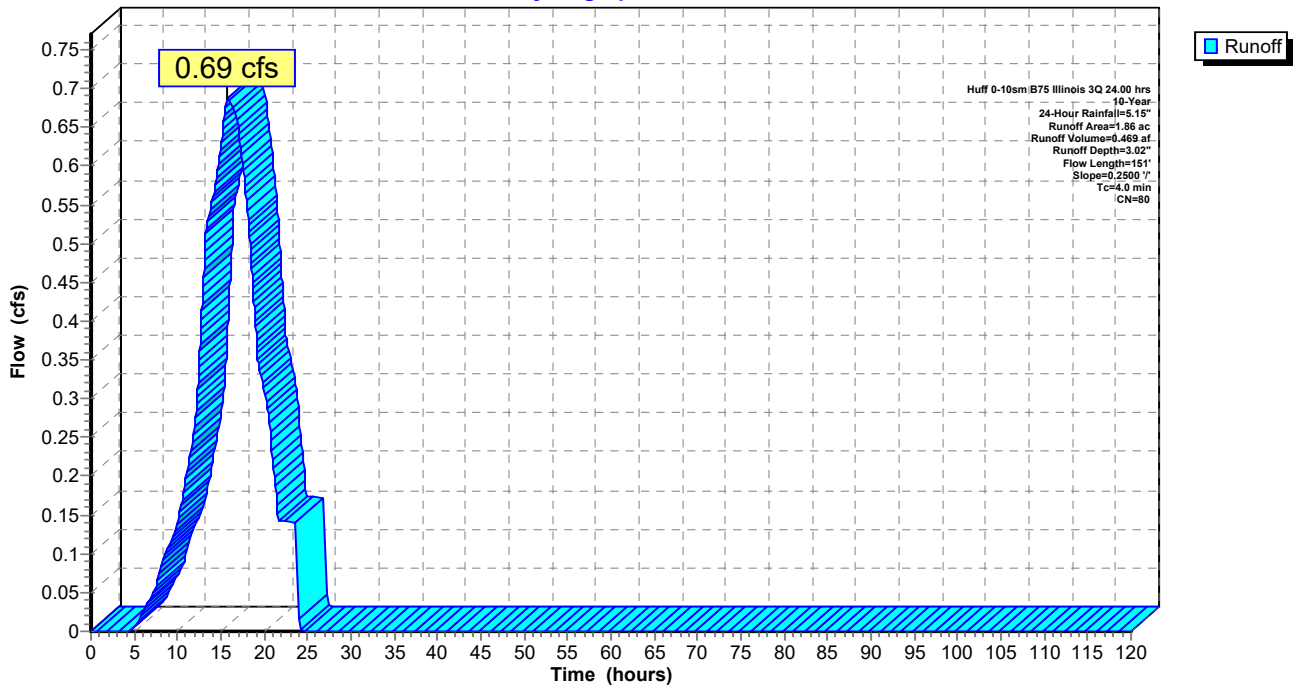
Area (ac)	CN	Description
1.86	80	>75% Grass cover, Good, HSG D
1.86		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	51	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	151	Total			

### Subcatchment H2: Subcat H2

Hydrograph



**Summary for Subcatchment H3: Subcat H3**

Runoff = 1.32 cfs @ 15.71 hrs, Volume= 0.900 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

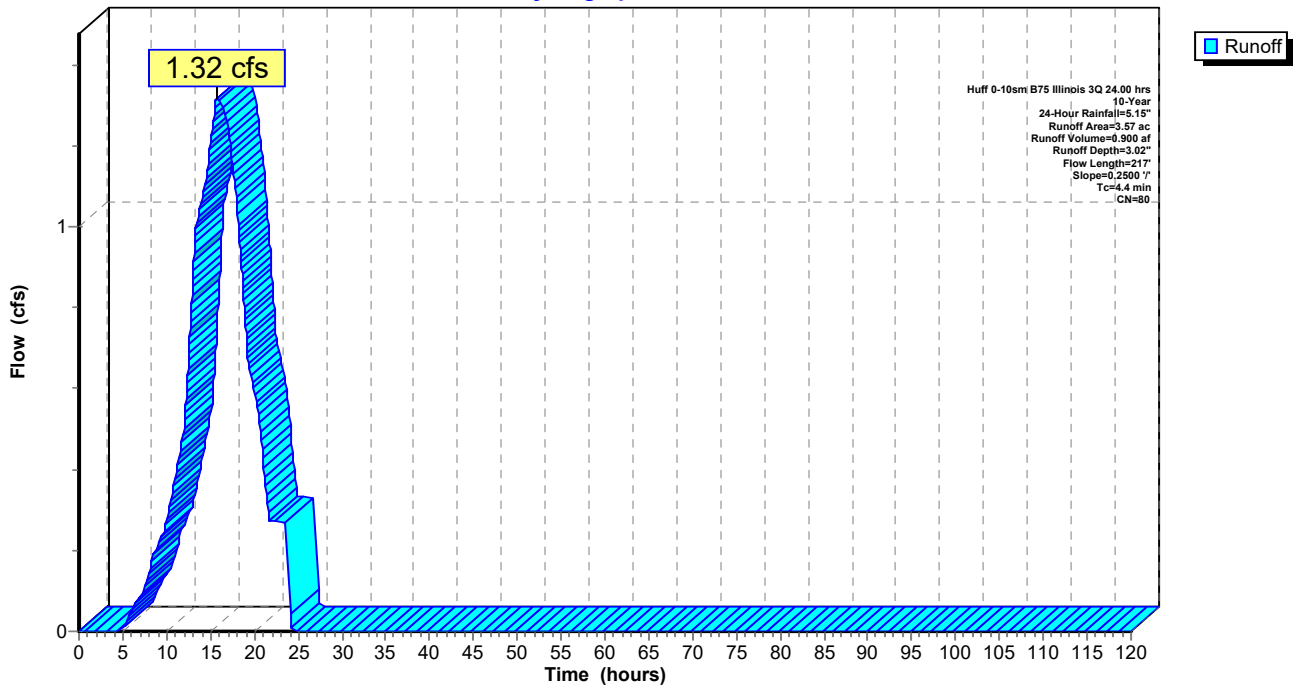
Area (ac)	CN	Description
3.57	80	>75% Grass cover, Good, HSG D
3.57		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	117	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.4	217	Total			

**Subcatchment H3: Subcat H3**

Hydrograph



### Summary for Subcatchment N-A1: Subcat N-A1

Runoff = 1.33 cfs @ 15.76 hrs, Volume= 0.907 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

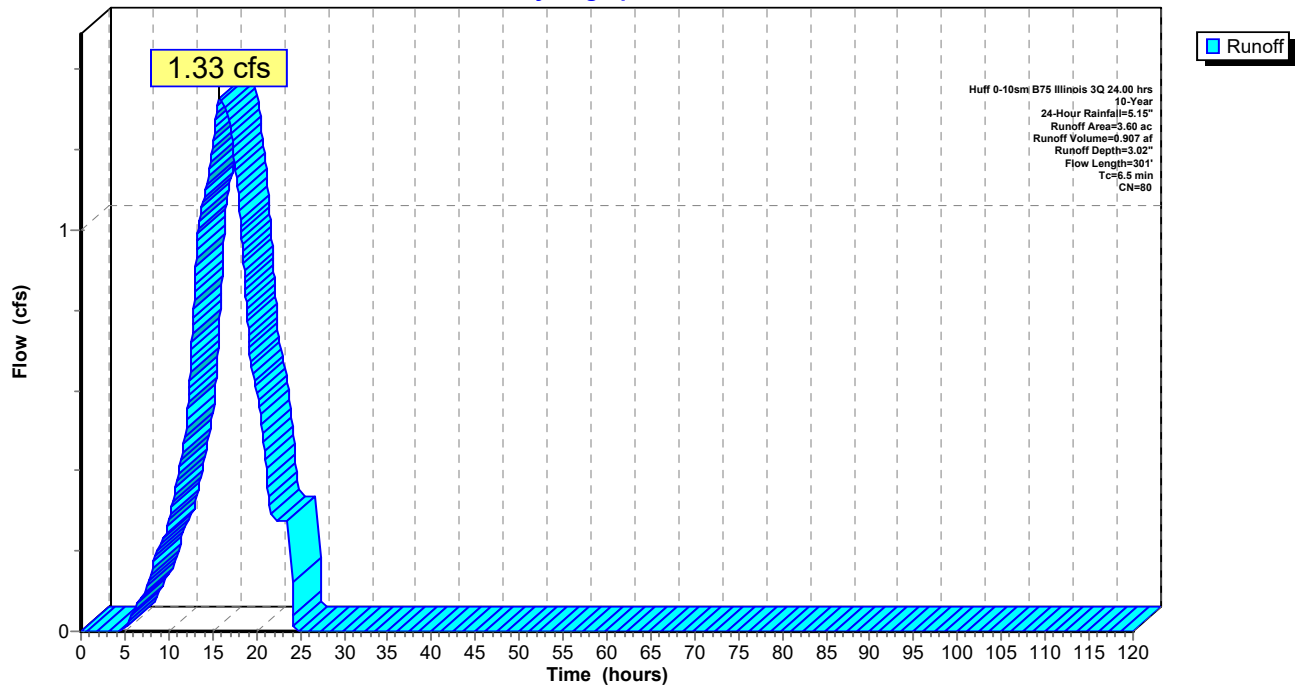
Area (ac)	CN	Description
3.60	80	>75% Grass cover, Good, HSG D
3.60		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.0	201	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.5	301	Total			

### Subcatchment N-A1: Subcat N-A1

Hydrograph



**Summary for Subcatchment N-A10: Subcat N-A10**

Runoff = 1.39 cfs @ 15.71 hrs, Volume= 0.951 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

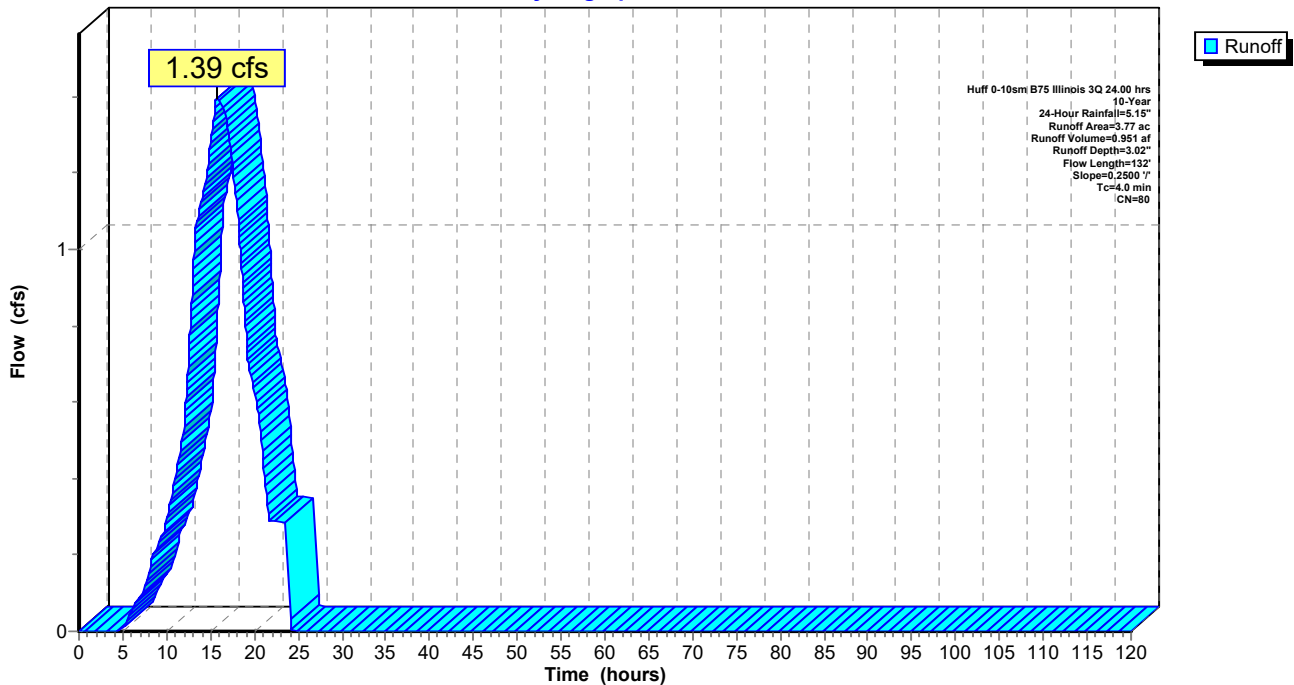
Area (ac)	CN	Description
3.77	80	>75% Grass cover, Good, HSG D
3.77		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	32	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	132	Total			

**Subcatchment N-A10: Subcat N-A10**

Hydrograph





**Summary for Subcatchment N-A11: Subcat N-A11**

Runoff = 0.68 cfs @ 15.71 hrs, Volume= 0.464 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

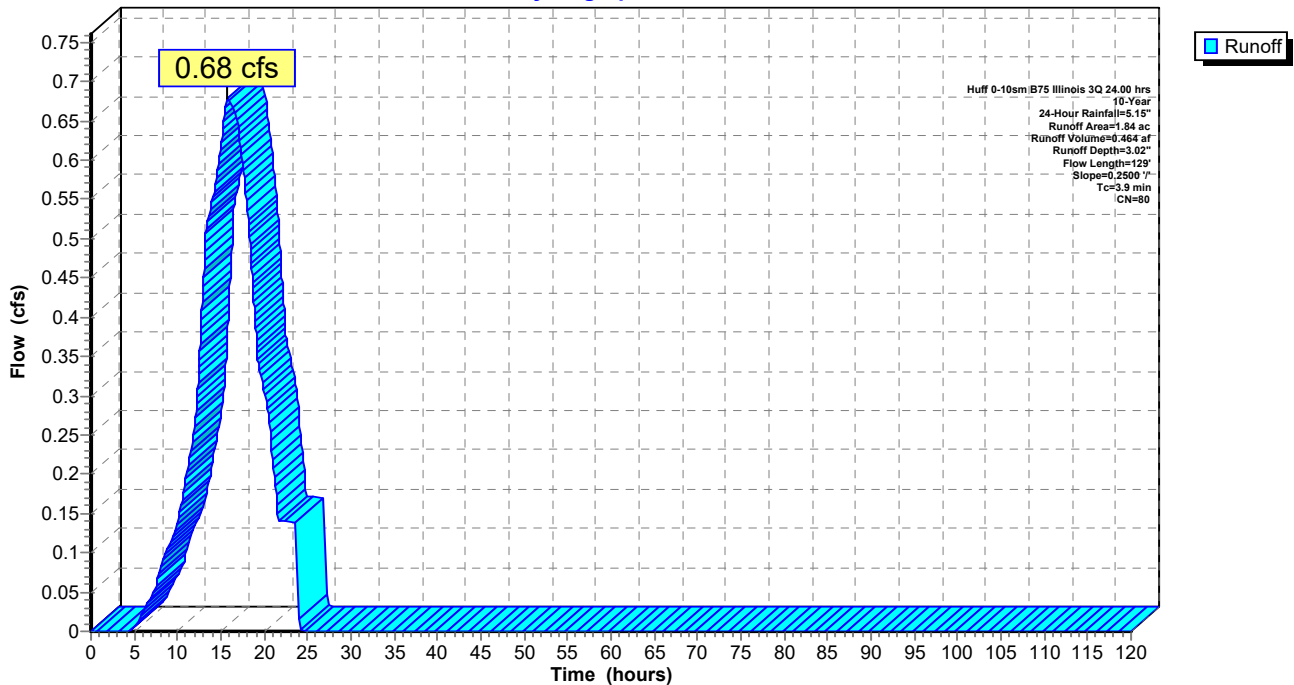
Area (ac)	CN	Description
1.84	80	>75% Grass cover, Good, HSG D
1.84		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	29	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	129	Total			

**Subcatchment N-A11: Subcat N-A11**

Hydrograph



**Summary for Subcatchment N-A12: Subcat N-A12**

Runoff = 0.94 cfs @ 15.70 hrs, Volume= 0.655 af, Depth= 3.31"

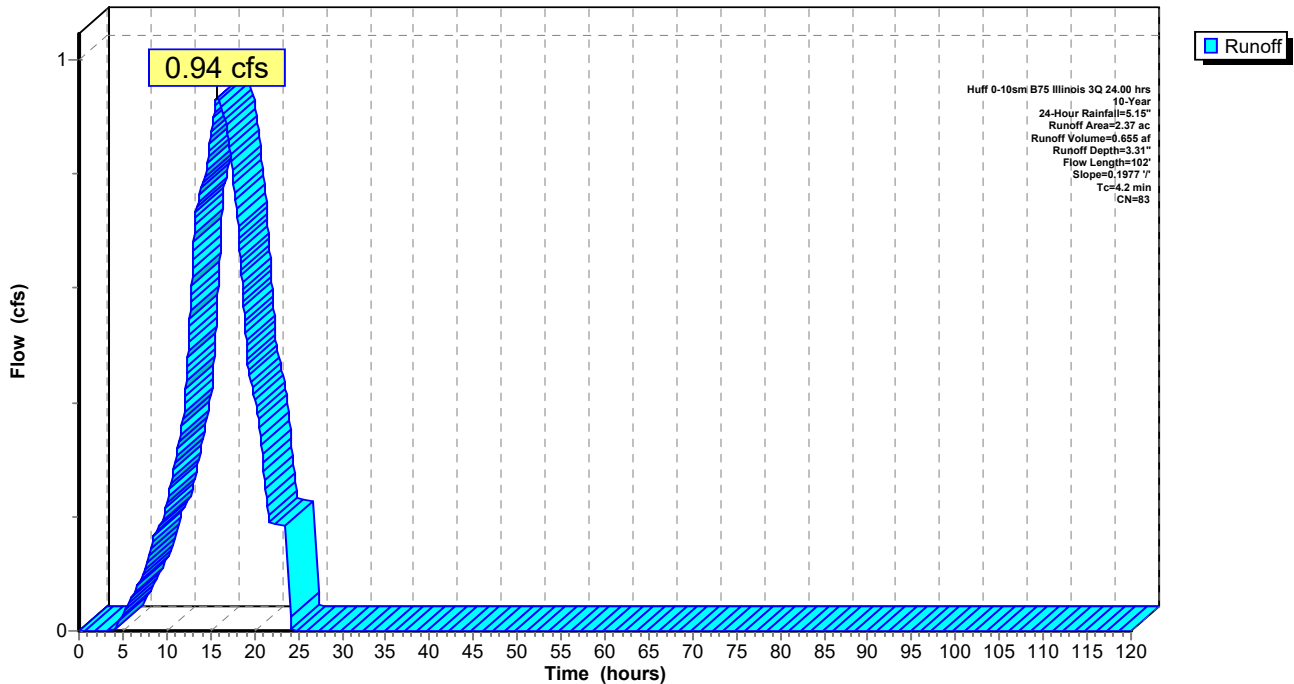
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (ac)	CN	Description
1.74	80	>75% Grass cover, Good, HSG D
0.63	93	Paved roads w/open ditches, 50% imp, HSG D
2.37	83	Weighted Average
2.06		86.69% Pervious Area
0.32		13.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	100	0.1977	0.40		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.0	2	0.1977	3.11		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.2	102	Total			

**Subcatchment N-A12: Subcat N-A12**

Hydrograph



**Summary for Subcatchment N-A13: Subcat N-A13**

Runoff = 0.46 cfs @ 15.71 hrs, Volume= 0.316 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

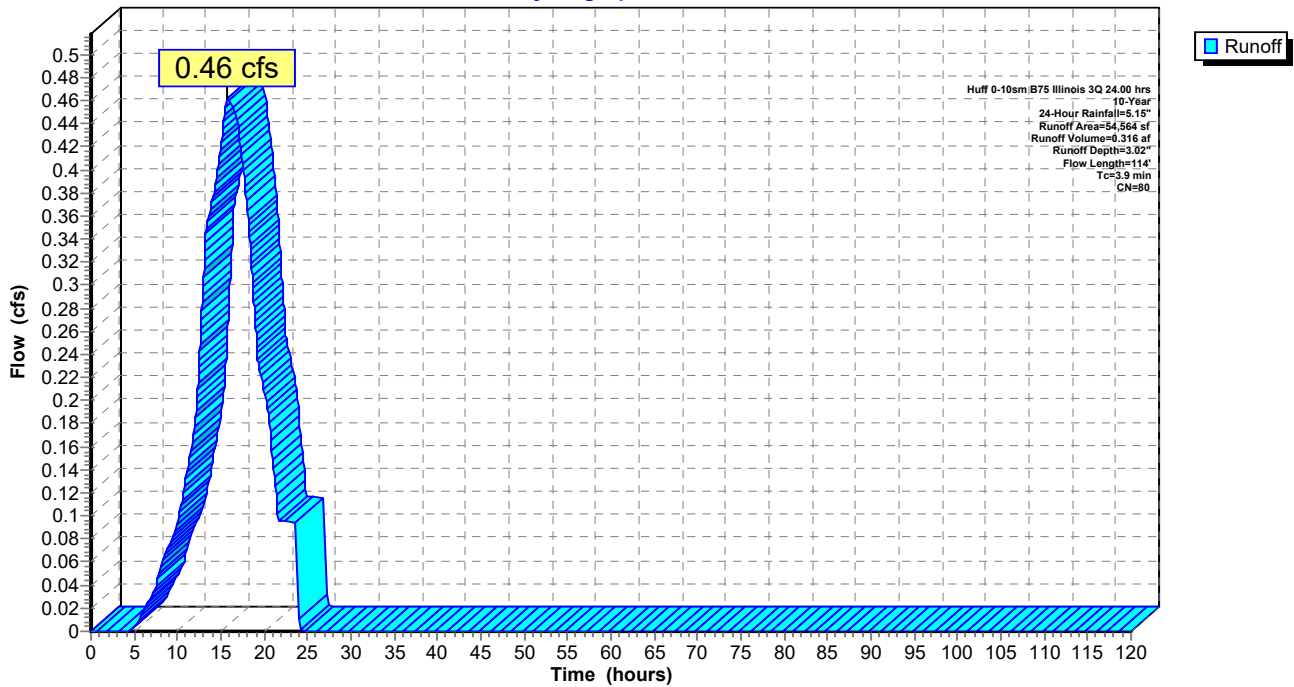
Area (sf)	CN	Description
54,564	80	>75% Grass cover, Good, HSG D
54,564		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	14	0.3210	3.97		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	114	Total			

**Subcatchment N-A13: Subcat N-A13**

Hydrograph



**Summary for Subcatchment N-A14: Subcat N-A14**

Runoff = 0.52 cfs @ 15.70 hrs, Volume= 0.361 af, Depth= 3.31"

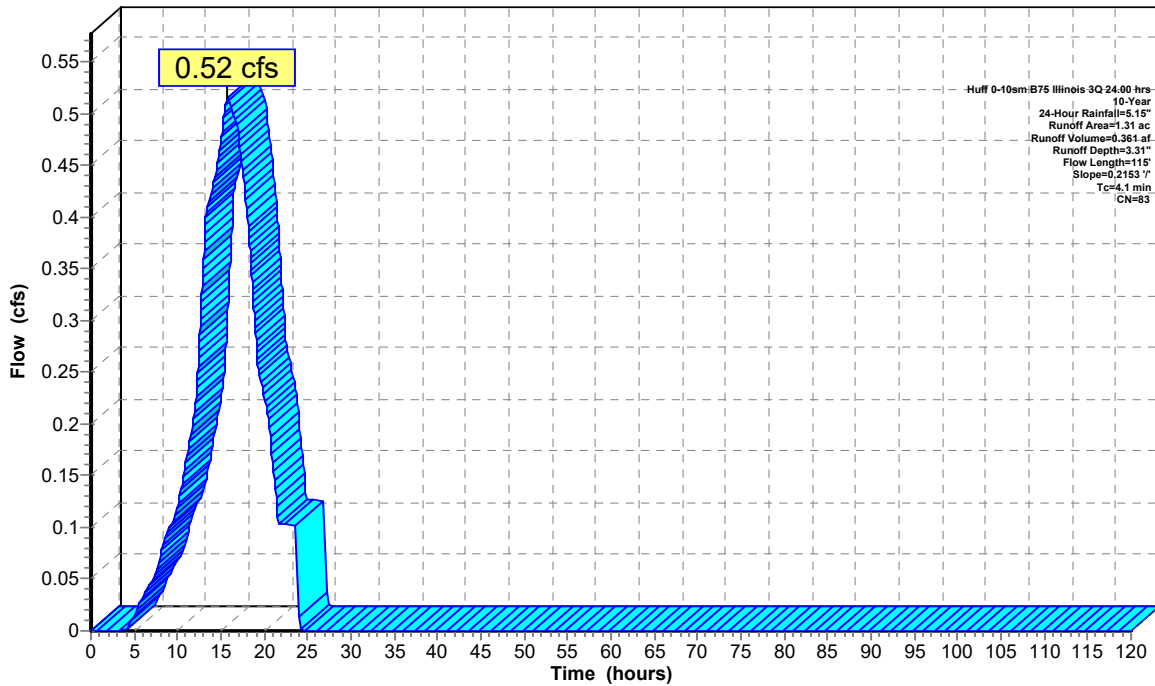
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (ac)	CN	Description
0.97	80	>75% Grass cover, Good, HSG D
0.34	93	Paved roads w/open ditches, 50% imp, HSG D
1.31	83	Weighted Average
1.14		87.12% Pervious Area
0.17		12.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	100	0.2153	0.41		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	15	0.2153	3.25		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	115	Total			

**Subcatchment N-A14: Subcat N-A14**

Hydrograph



Runoff

### Summary for Subcatchment N-A15: Subcat N-A15

Runoff = 0.38 cfs @ 15.70 hrs, Volume= 0.261 af, Depth= 3.02"

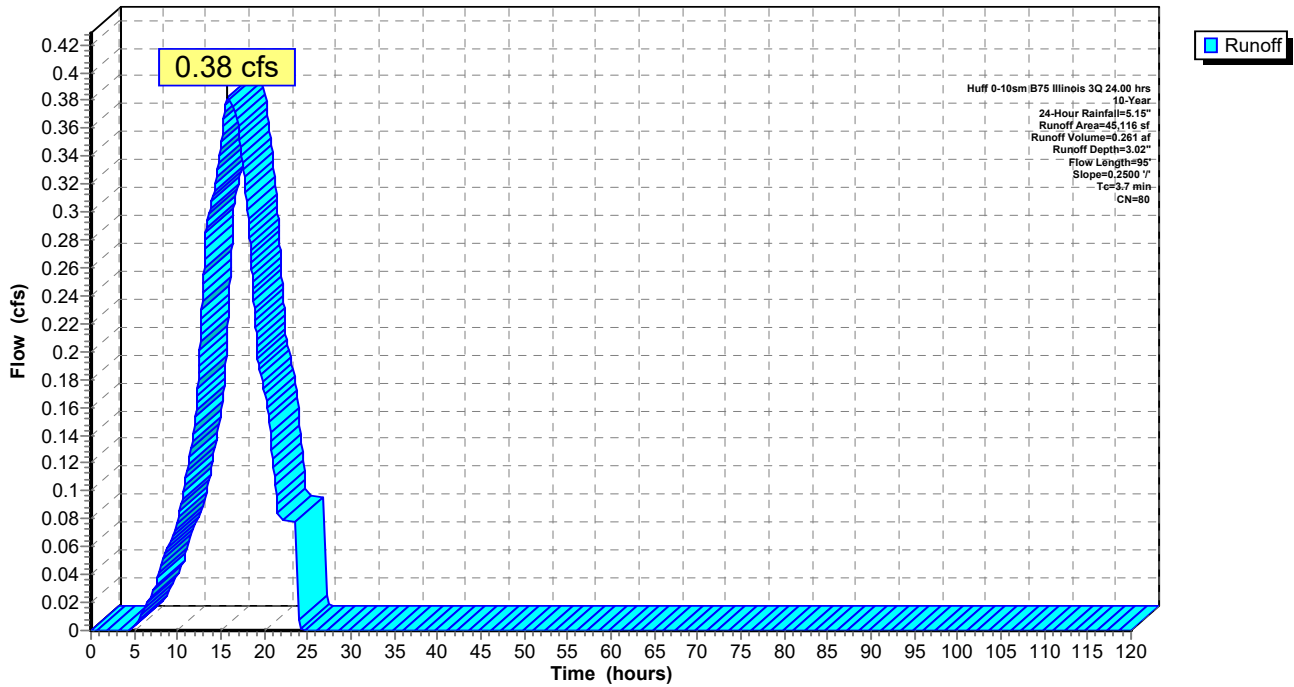
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (sf)	CN	Description
45,116	80	>75% Grass cover, Good, HSG D
45,116		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	95	0.2500	0.43		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

### Subcatchment N-A15: Subcat N-A15

Hydrograph



### Summary for Subcatchment N-A16: Subcat N-A16

Runoff = 0.95 cfs @ 15.63 hrs, Volume= 0.736 af, Depth= 4.24"

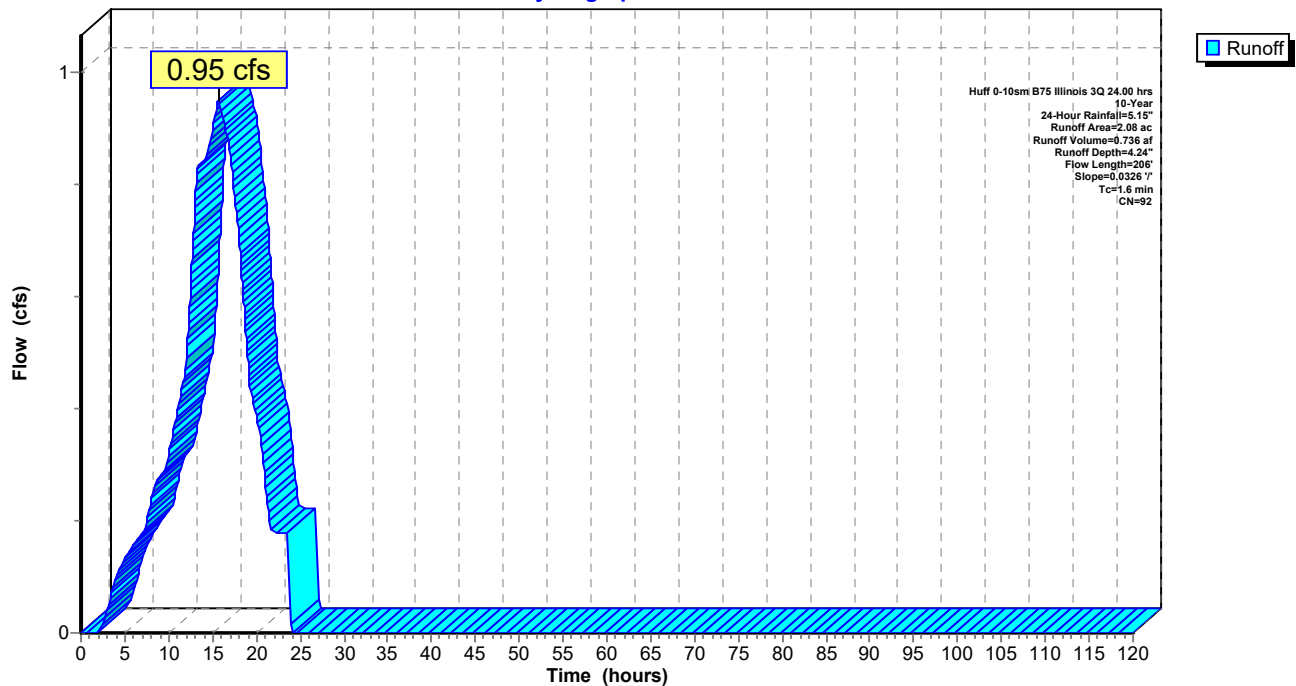
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (ac)	CN	Description
0.08	80	>75% Grass cover, Good, HSG D
2.00	93	Paved roads w/open ditches, 50% imp, HSG D
2.08	92	Weighted Average
1.08		51.99% Pervious Area
1.00		48.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0326	1.56		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 2.80"
0.5	106	0.0326	3.67		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
1.6	206	Total			

### Subcatchment N-A16: Subcat N-A16

Hydrograph



**Summary for Subcatchment N-A2: Subcat N-A2**

Runoff = 1.04 cfs @ 15.75 hrs, Volume= 0.712 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

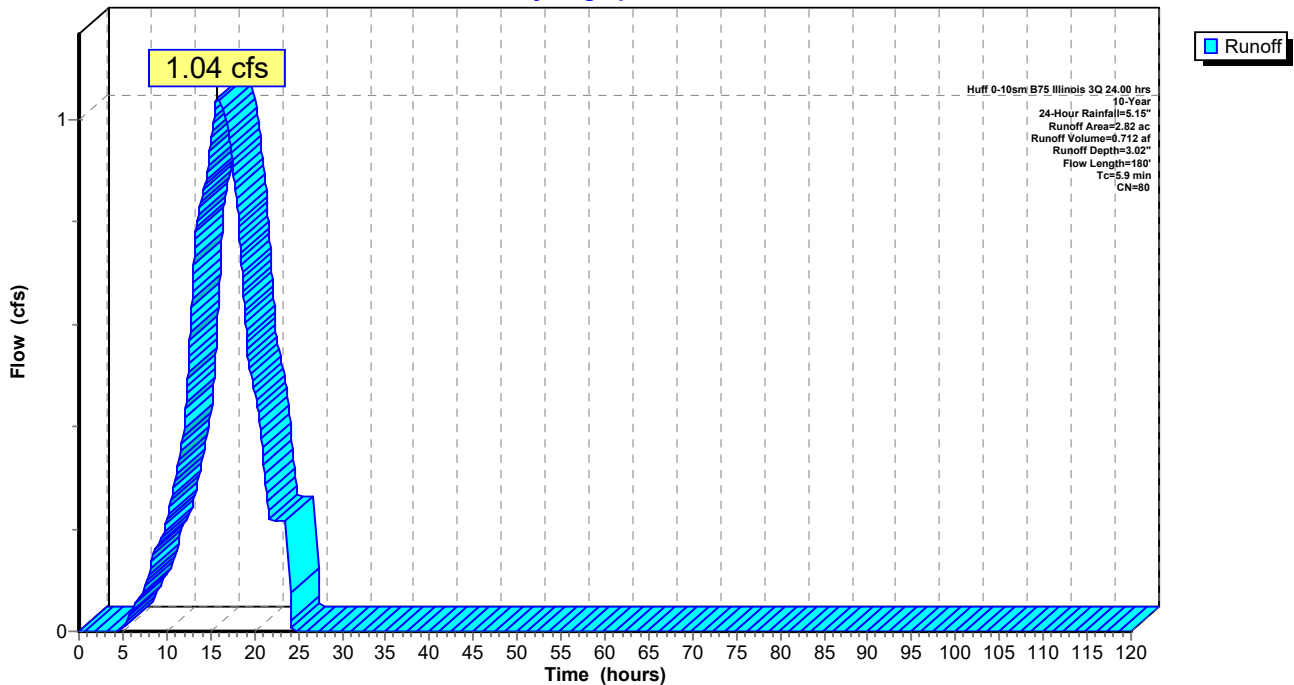
Area (ac)	CN	Description
2.82	80	>75% Grass cover, Good, HSG D
2.82		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.4	80	0.2199	3.28		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
5.9	180	Total			

**Subcatchment N-A2: Subcat N-A2**

Hydrograph



**Summary for Subcatchment N-A3: Subcat N-A3**

Runoff = 0.48 cfs @ 15.71 hrs, Volume= 0.330 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

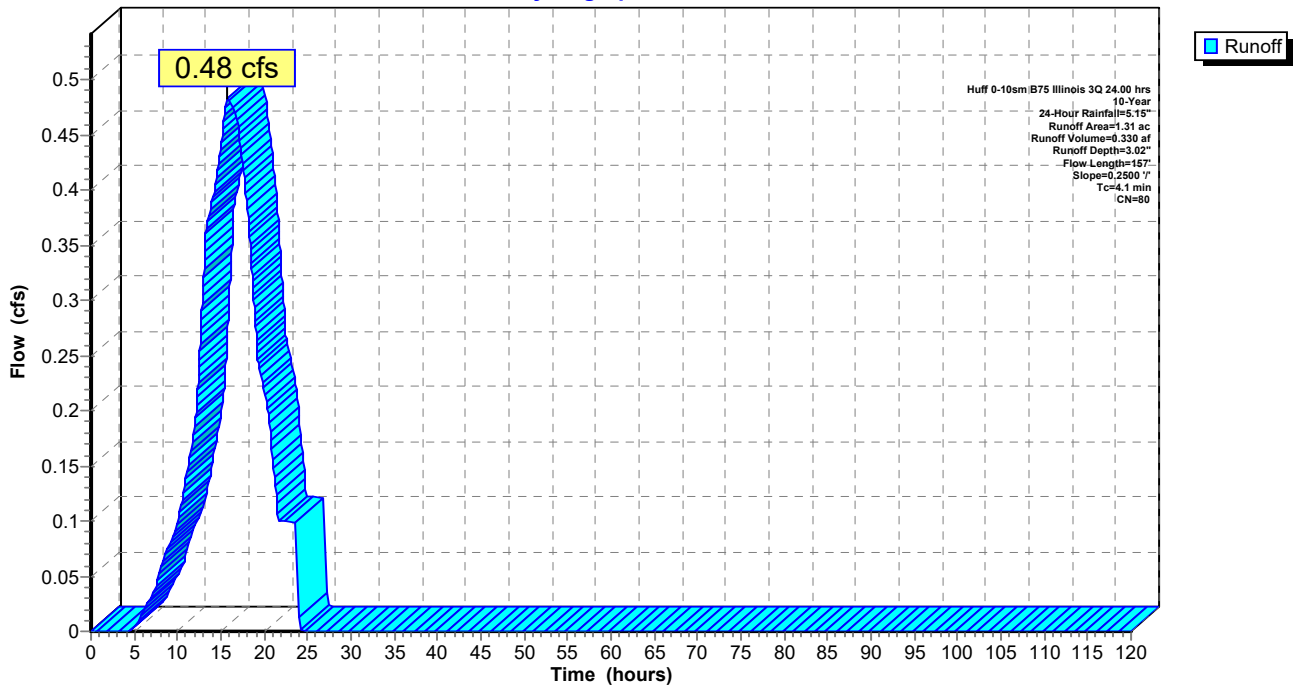
Area (ac)	CN	Description
1.31	80	>75% Grass cover, Good, HSG D
1.31		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.3	57	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	157	Total			

**Subcatchment N-A3: Subcat N-A3**

Hydrograph





**Summary for Subcatchment N-A4: Subcat N-A4**

Runoff = 2.54 cfs @ 15.75 hrs, Volume= 1.733 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

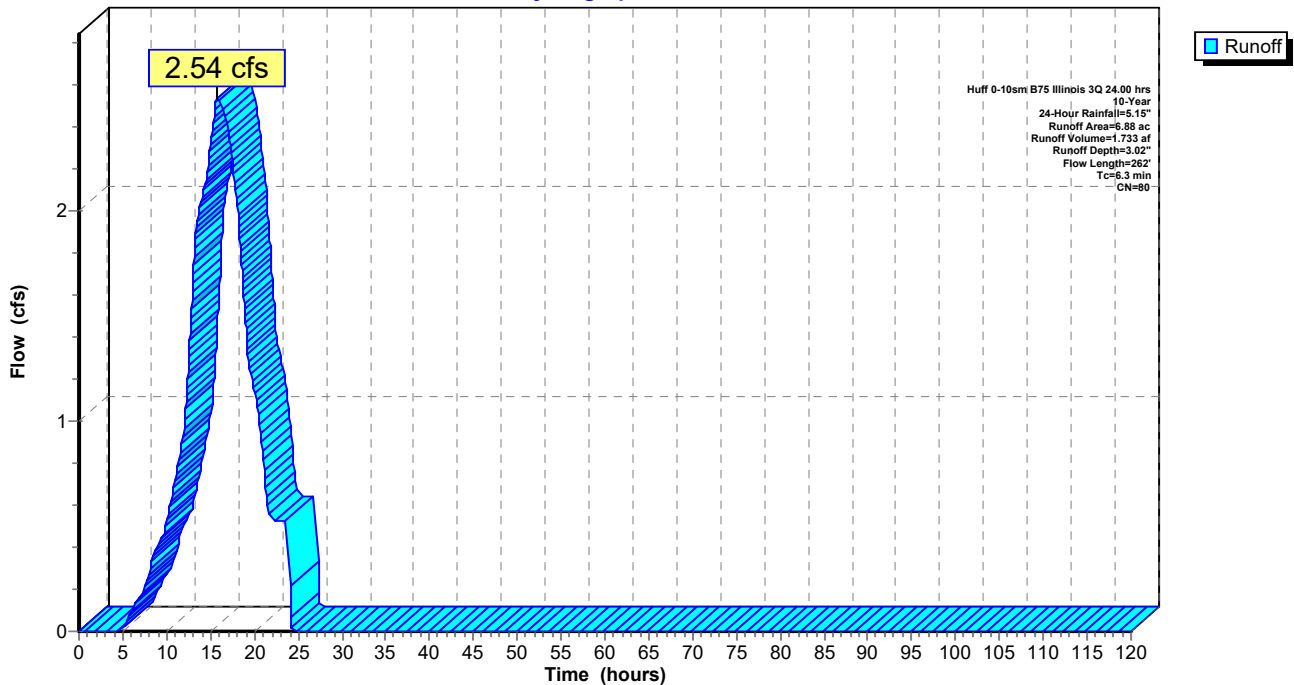
Area (ac)	CN	Description
6.88	80	>75% Grass cover, Good, HSG D
6.88		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.8	162	0.2330	3.38		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.3	262	Total			

**Subcatchment N-A4: Subcat N-A4**

Hydrograph



**Summary for Subcatchment N-A5: Subcat N-A5**

Runoff = 0.27 cfs @ 15.71 hrs, Volume= 0.185 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

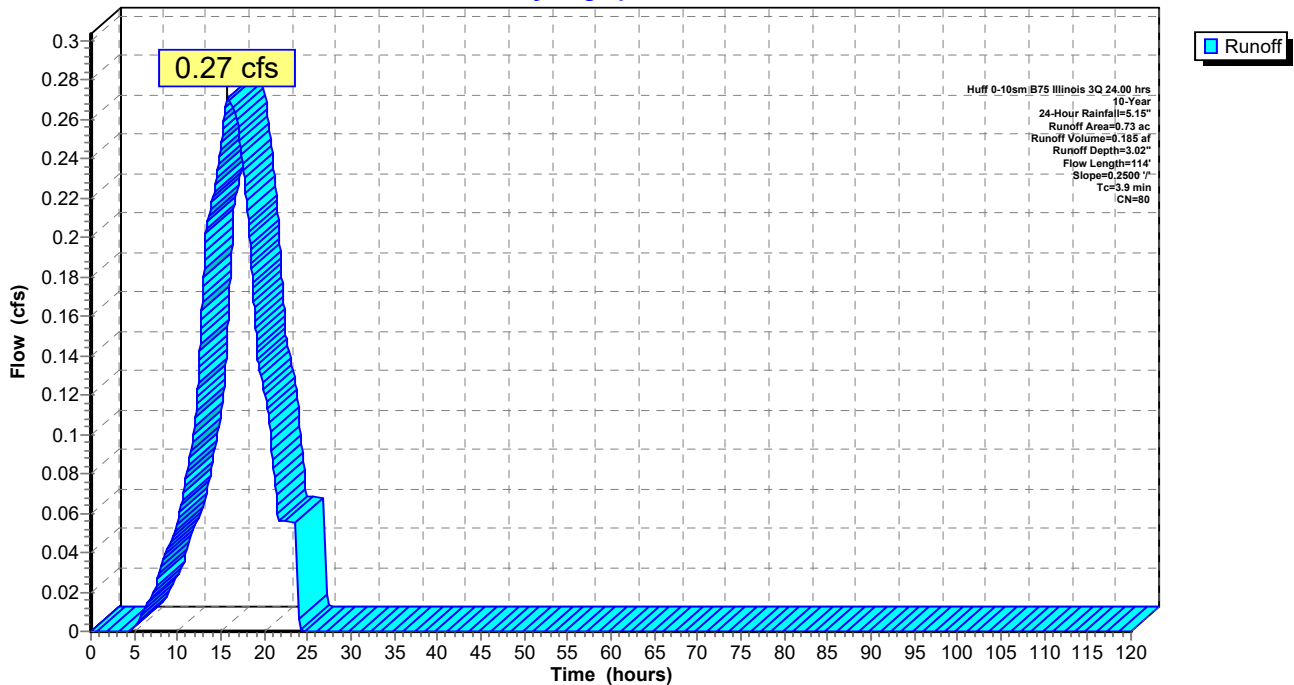
Area (ac)	CN	Description
0.73	80	>75% Grass cover, Good, HSG D
0.73		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	14	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	114	Total			

**Subcatchment N-A5: Subcat N-A5**

Hydrograph



**Summary for Subcatchment N-A6: Subcat N-A6**

Runoff = 1.52 cfs @ 15.71 hrs, Volume= 1.041 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

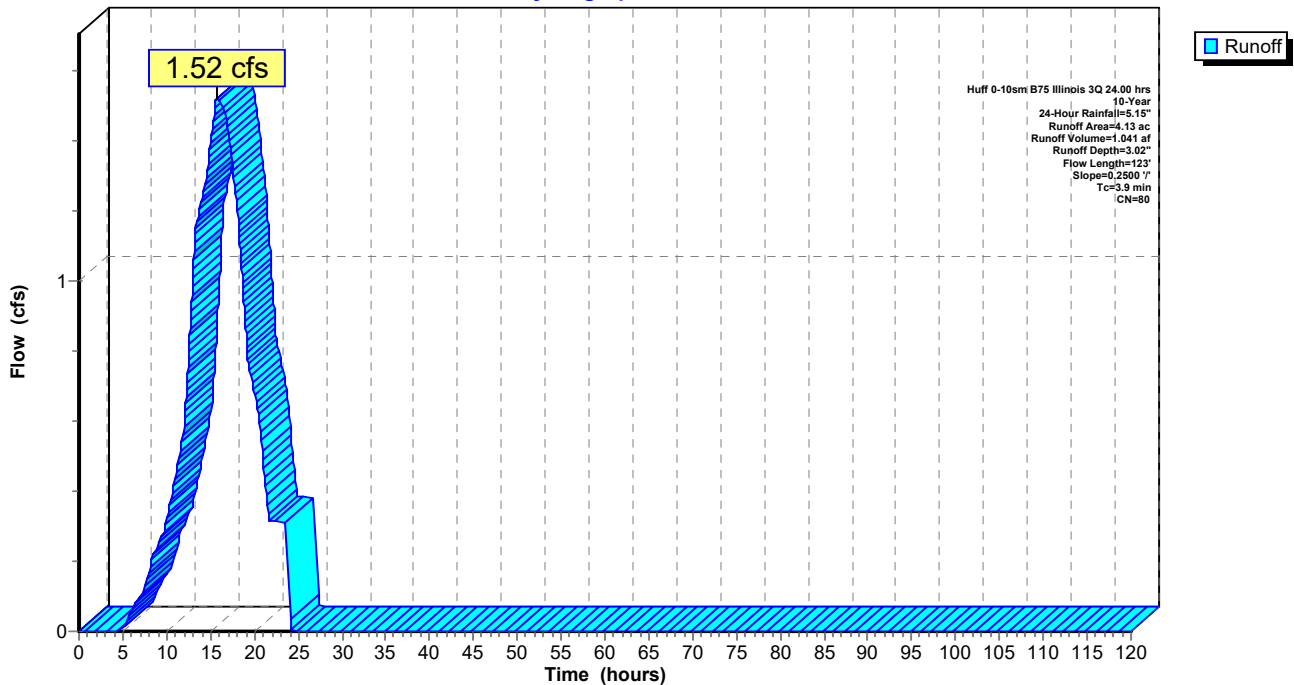
Area (ac)	CN	Description
4.13	80	>75% Grass cover, Good, HSG D
4.13		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	23	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	123	Total			

**Subcatchment N-A6: Subcat N-A6**

Hydrograph



**Summary for Subcatchment N-A7: Subcat N-A7**

Runoff = 0.16 cfs @ 15.71 hrs, Volume= 0.112 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

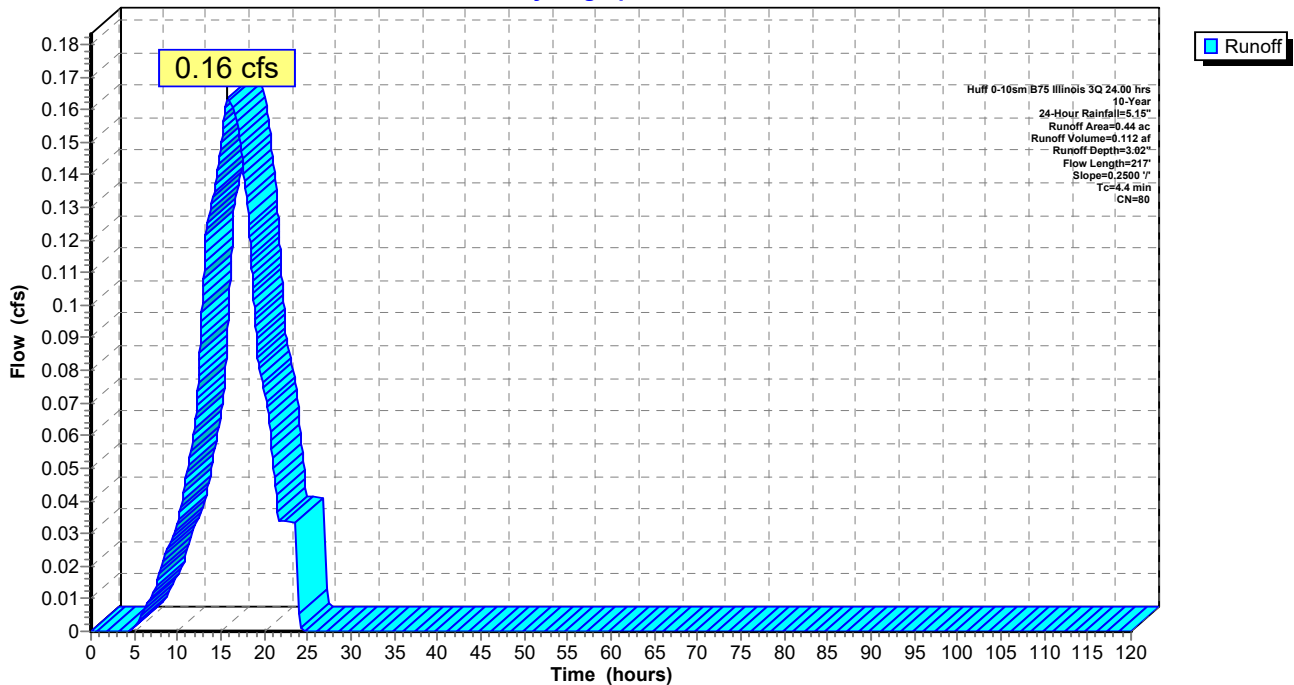
Area (ac)	CN	Description
0.44	80	>75% Grass cover, Good, HSG D
0.44		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	117	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.4	217	Total			

**Subcatchment N-A7: Subcat N-A7**

Hydrograph



**Summary for Subcatchment N-A8: Subcat N-A8**

Runoff = 1.40 cfs @ 15.71 hrs, Volume= 0.958 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

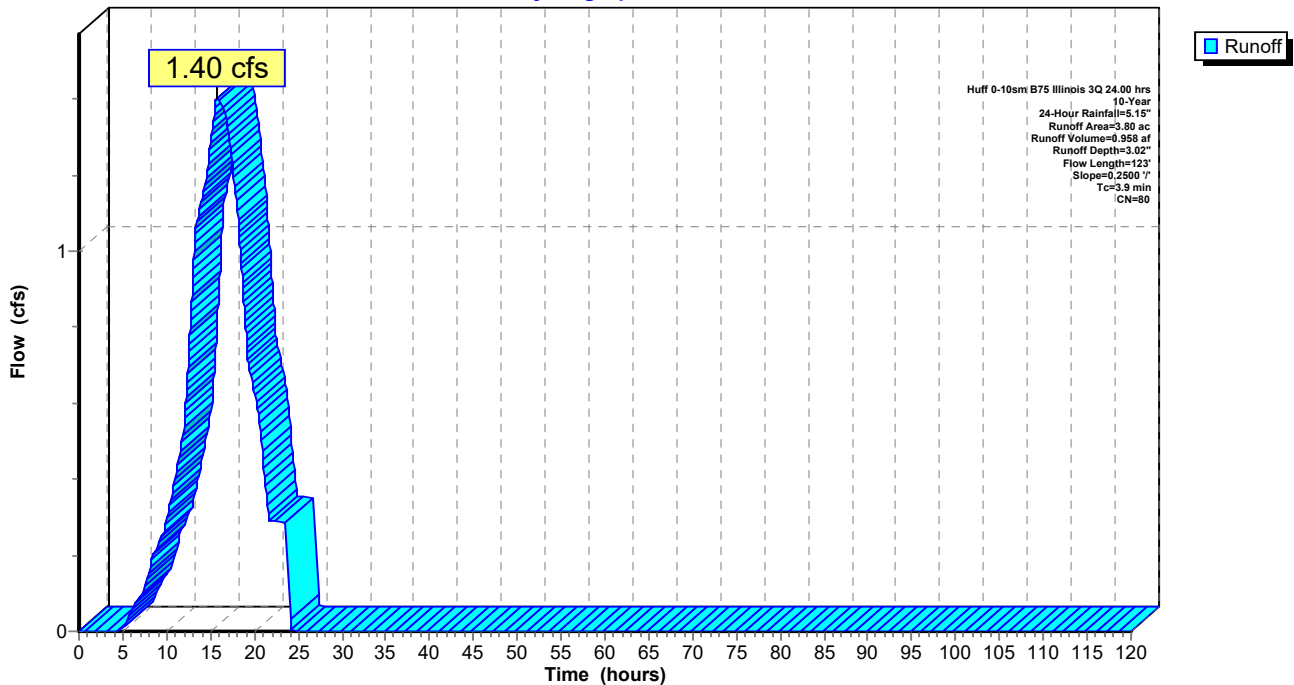
Area (ac)	CN	Description
3.80	80	>75% Grass cover, Good, HSG D
3.80		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	23	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	123	Total			

**Subcatchment N-A8: Subcat N-A8**

Hydrograph



**Summary for Subcatchment N-A9: Subcat N-A9**

Runoff = 0.07 cfs @ 15.71 hrs, Volume= 0.046 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

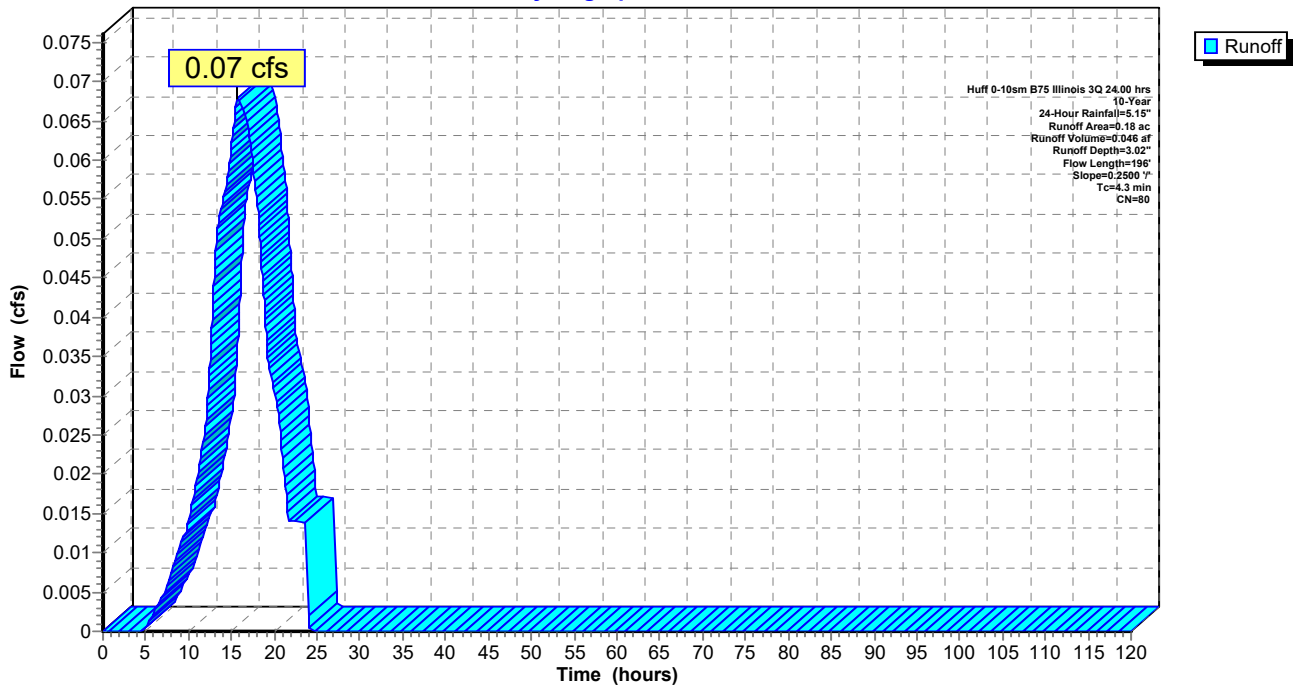
Area (ac)	CN	Description
0.18	80	>75% Grass cover, Good, HSG D
0.18		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.5	96	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.3	196	Total			

**Subcatchment N-A9: Subcat N-A9**

Hydrograph



**Summary for Subcatchment N-B1: Subcat N-B1**

Runoff = 1.16 cfs @ 15.75 hrs, Volume= 0.795 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

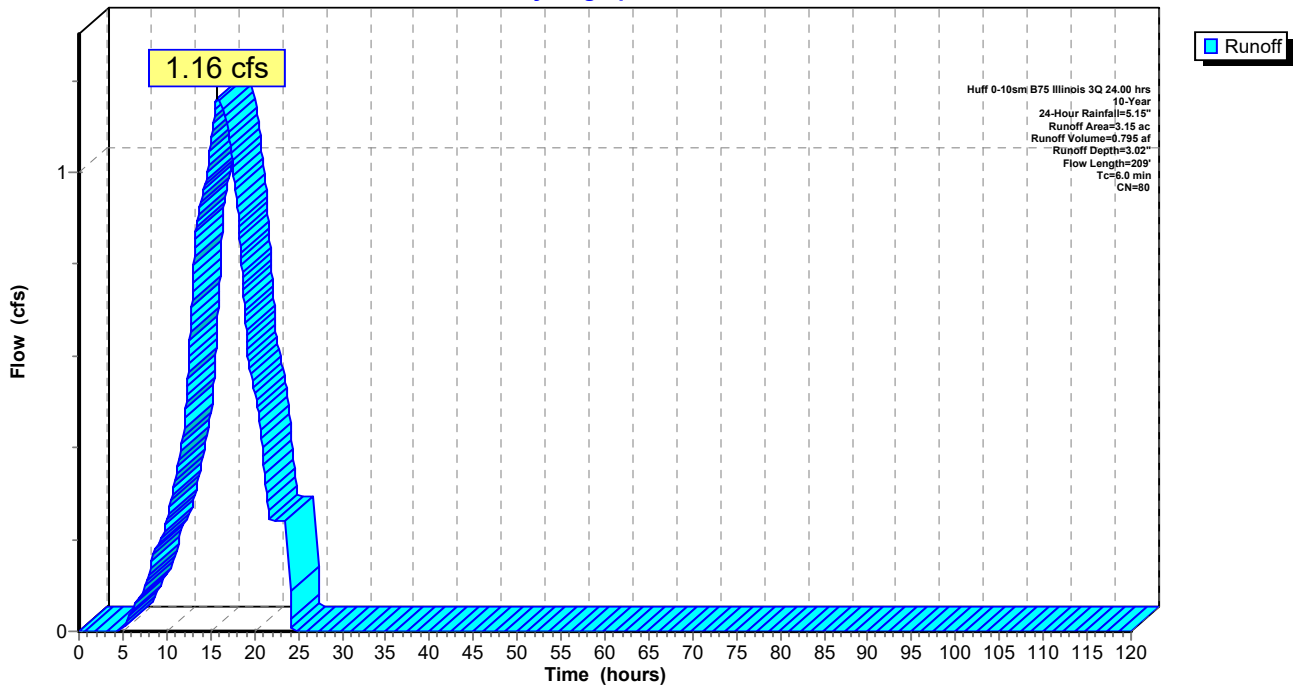
Area (ac)	CN	Description
3.15	80	>75% Grass cover, Good, HSG D
3.15		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.5	109	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.0	209	Total			

**Subcatchment N-B1: Subcat N-B1**

Hydrograph



**Summary for Subcatchment N-B10: Subcat N-B10**

Runoff = 0.63 cfs @ 15.69 hrs, Volume= 0.450 af, Depth= 3.51"

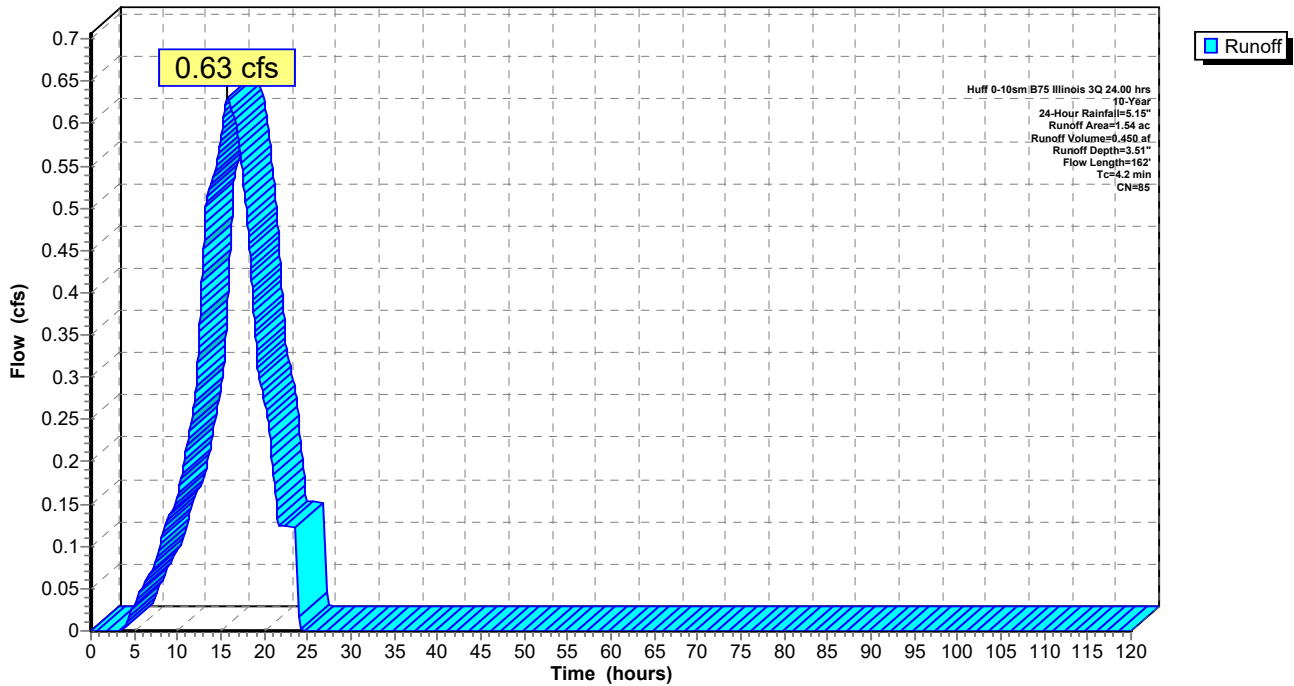
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (ac)	CN	Description
0.91	80	>75% Grass cover, Good, HSG D
0.63	93	Paved roads w/open ditches, 50% imp, HSG D
1.54	85	Weighted Average
1.22		79.55% Pervious Area
0.31		20.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.4	62	0.1195	2.42		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.2	162	Total			

**Subcatchment N-B10: Subcat N-B10**

Hydrograph





### Summary for Subcatchment N-B11: Subcat N-B11

Runoff = 0.47 cfs @ 15.71 hrs, Volume= 0.320 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

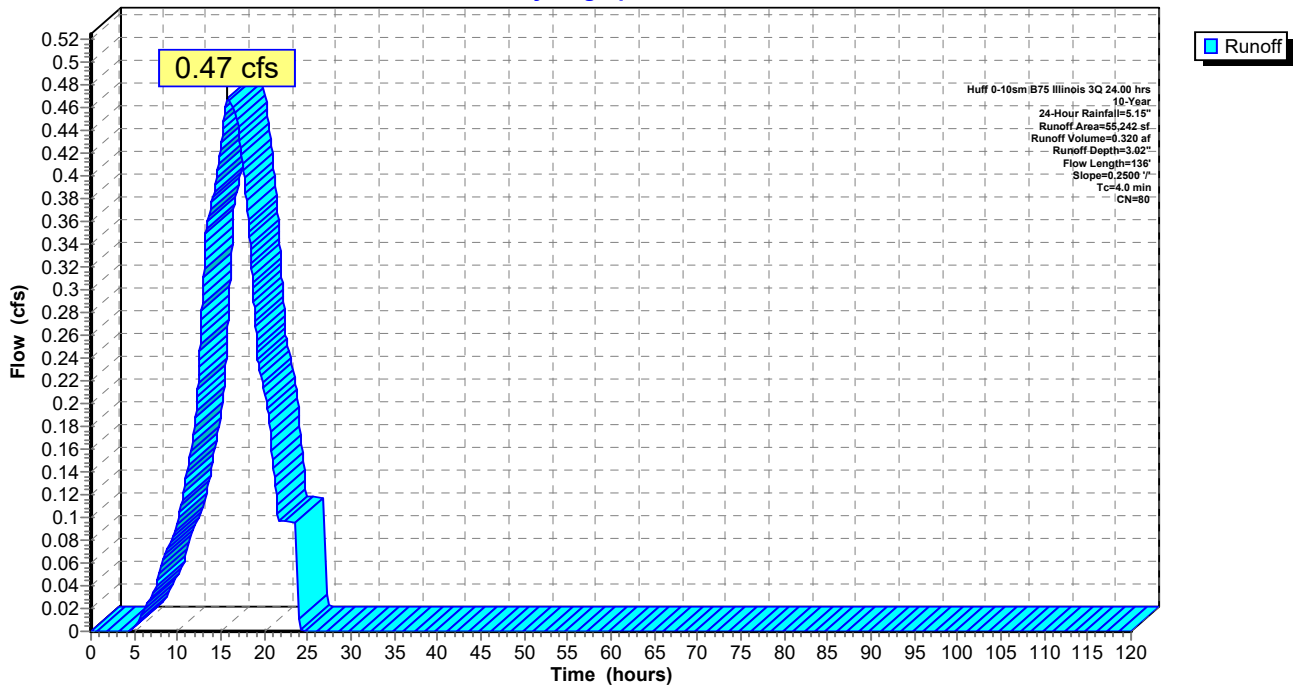
Area (sf)	CN	Description
55,242	80	>75% Grass cover, Good, HSG D
55,242		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	36	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	136	Total			

### Subcatchment N-B11: Subcat N-B11

Hydrograph



**Summary for Subcatchment N-B12: Subcat N-B12**

Runoff = 0.66 cfs @ 15.72 hrs, Volume= 0.461 af, Depth= 3.21"

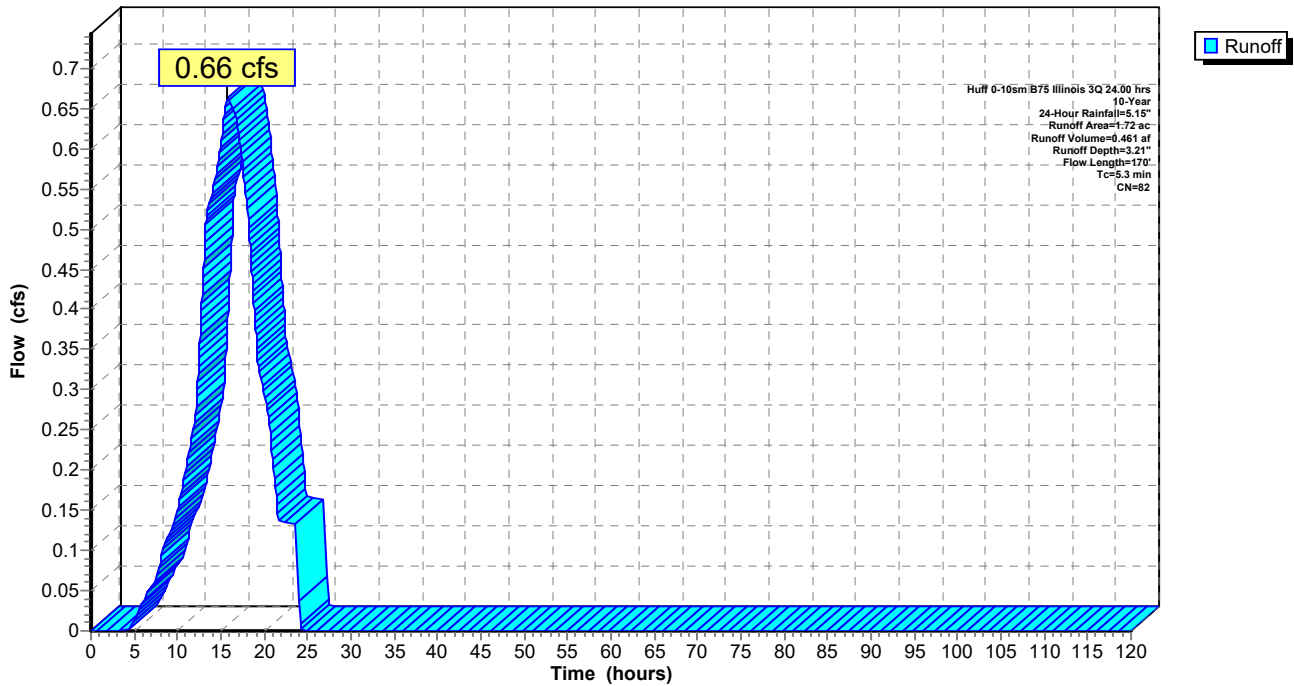
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (ac)	CN	Description
1.45	80	>75% Grass cover, Good, HSG D
0.27	93	Paved roads w/open ditches, 50% imp, HSG D
1.72	82	Weighted Average
1.59		92.15% Pervious Area
0.14		7.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	100	0.1588	0.36		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.7	70	0.0608	1.73		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
5.3	170	Total			

**Subcatchment N-B12: Subcat N-B12**

Hydrograph



### Summary for Subcatchment N-B13: Subcat N-B13

Runoff = 0.74 cfs @ 15.65 hrs, Volume= 0.506 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

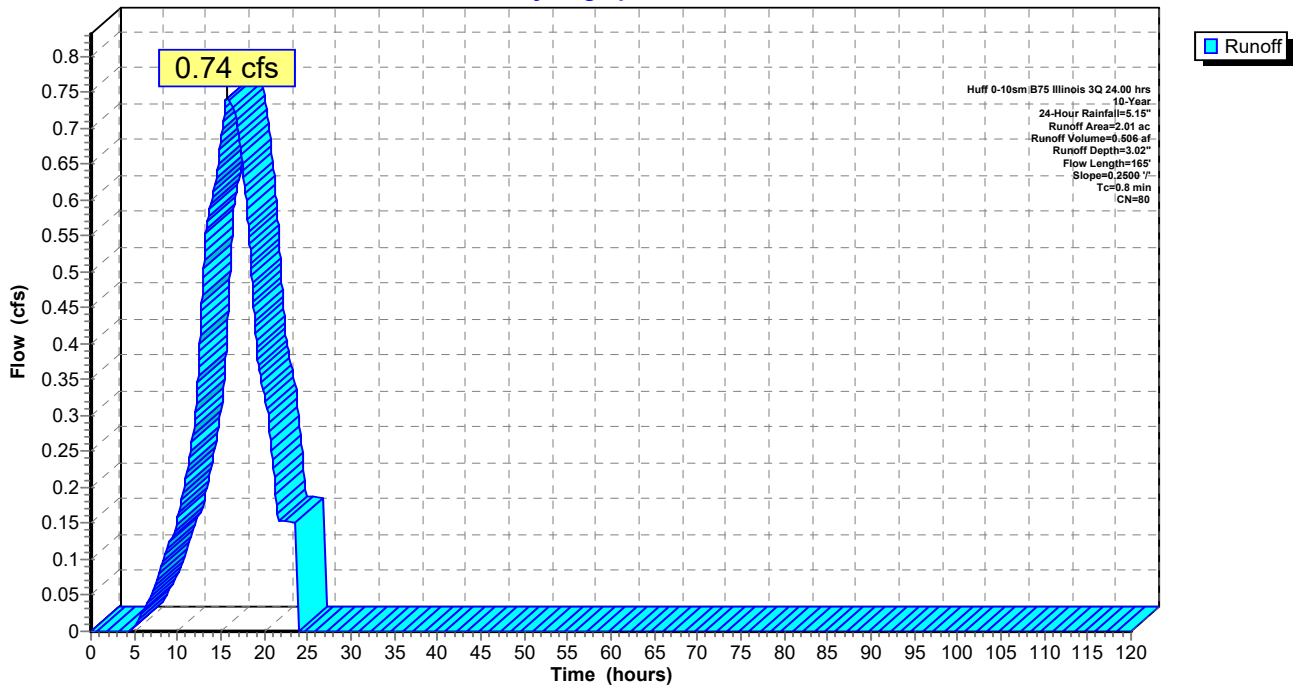
Area (ac)	CN	Description
2.01	80	>75% Grass cover, Good, HSG D
2.01		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.2500	3.53		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 2.80"
0.3	65	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.8	165	Total			

### Subcatchment N-B13: Subcat N-B13

Hydrograph



**Summary for Subcatchment N-B14: Subcat N-B14**

Runoff = 0.28 cfs @ 15.62 hrs, Volume= 0.207 af, Depth= 3.71"

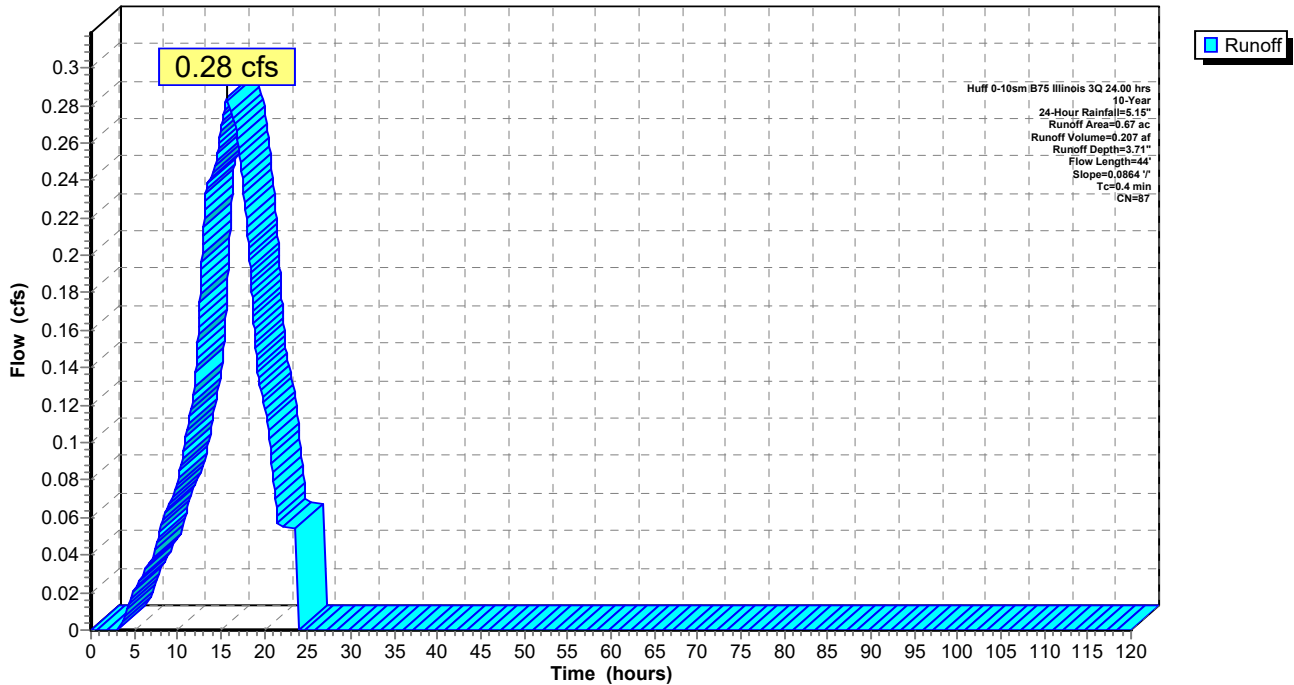
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (ac)	CN	Description
0.29	80	>75% Grass cover, Good, HSG D
0.38	93	Paved roads w/open ditches, 50% imp, HSG D
0.67	87	Weighted Average
0.48		71.64% Pervious Area
0.19		28.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	44	0.0864	1.96		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment N-B14: Subcat N-B14**

Hydrograph



**Summary for Subcatchment N-B15: Subcat N-B15**

Runoff = 0.01 cfs @ 15.66 hrs, Volume= 0.010 af, Depth= 3.02"

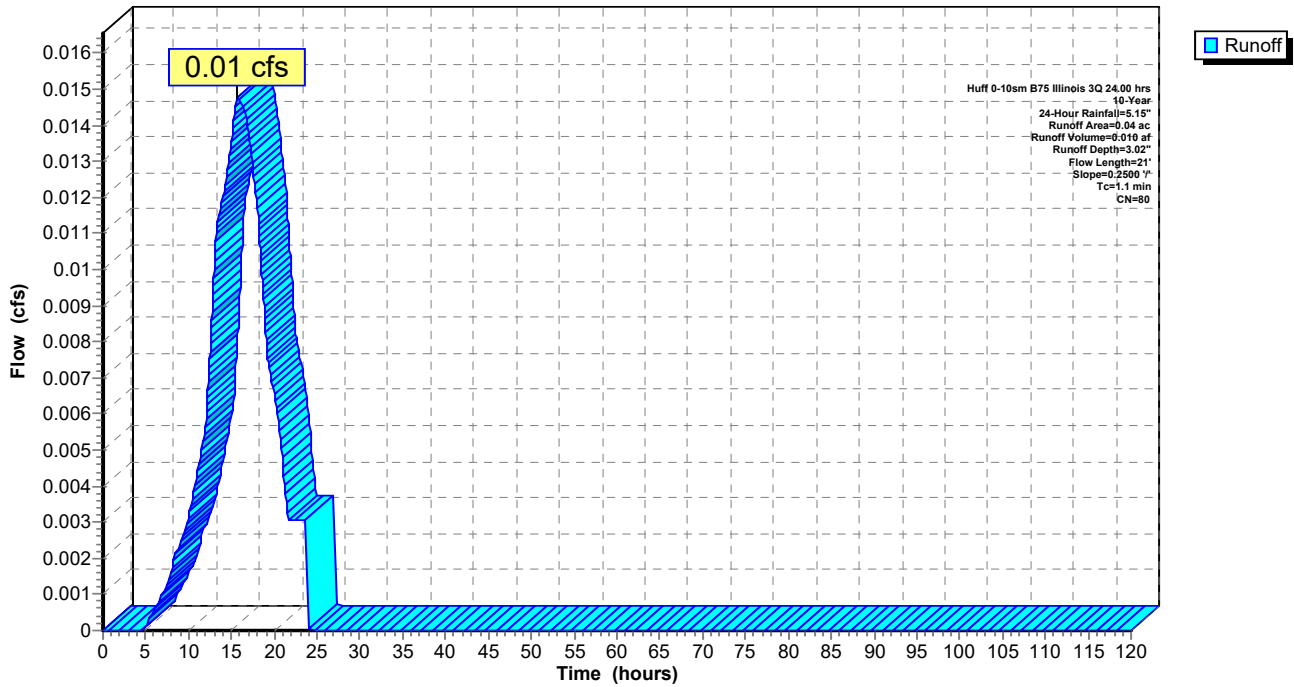
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (ac)	CN	Description
0.04	80	>75% Grass cover, Good, HSG D
0.04		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	21	0.2500	0.32		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-B15: Subcat N-B15**

Hydrograph



**Summary for Subcatchment N-B16: Subcat N-B16**

Runoff = 0.04 cfs @ 15.62 hrs, Volume= 0.029 af, Depth= 3.51"

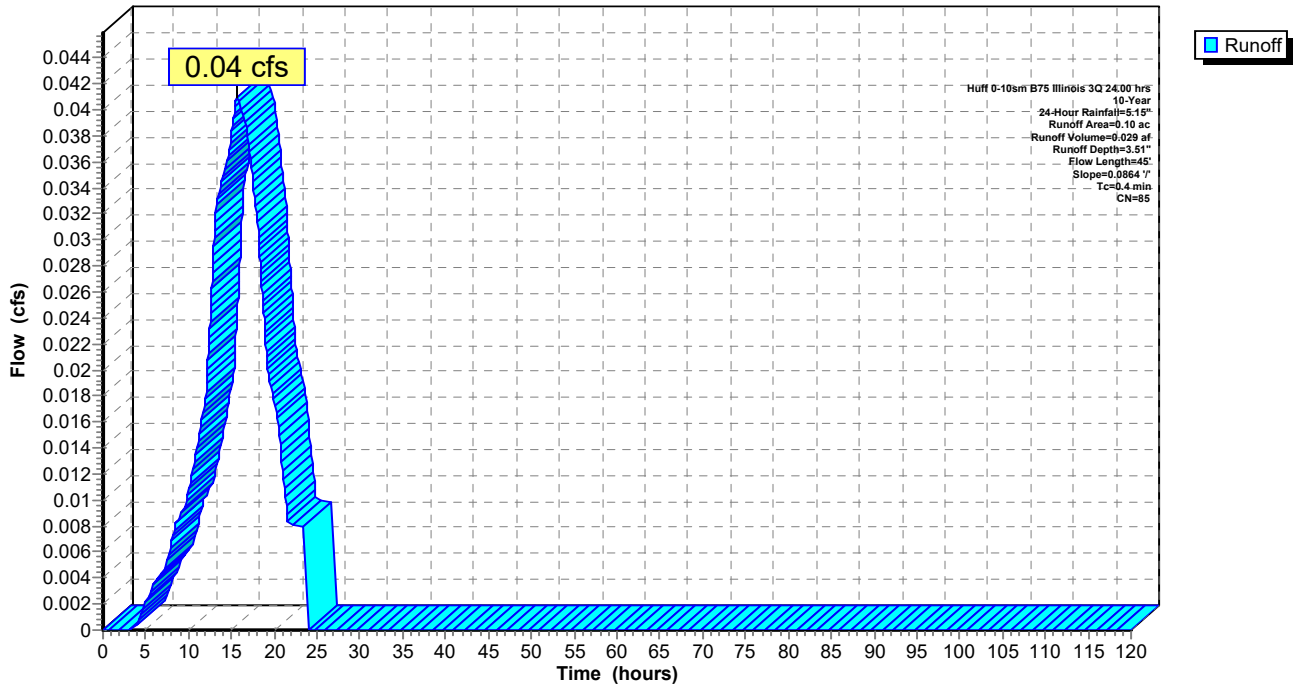
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (ac)	CN	Description
0.06	80	>75% Grass cover, Good, HSG D
0.04	93	Paved roads w/open ditches, 50% imp, HSG D
0.10	85	Weighted Average
0.08		80.00% Pervious Area
0.02		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	45	0.0864	1.97		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment N-B16: Subcat N-B16**

Hydrograph



**Summary for Subcatchment N-B2: Subcat N-B2**

Runoff = 1.66 cfs @ 15.75 hrs, Volume= 1.131 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

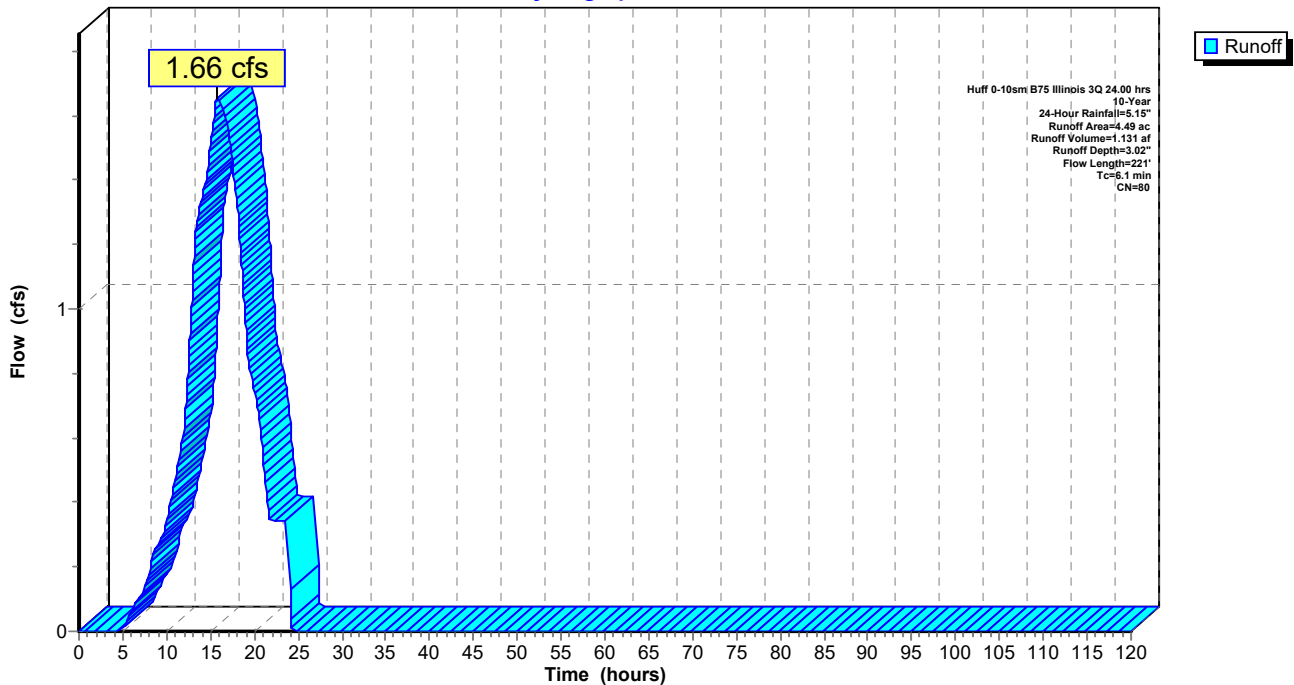
Area (ac)	CN	Description
4.49	80	>75% Grass cover, Good, HSG D
4.49		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	121	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.1	221	Total			

**Subcatchment N-B2: Subcat N-B2**

Hydrograph



**Summary for Subcatchment N-B3: Subcat N-B3**

Runoff = 1.27 cfs @ 15.71 hrs, Volume= 0.864 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

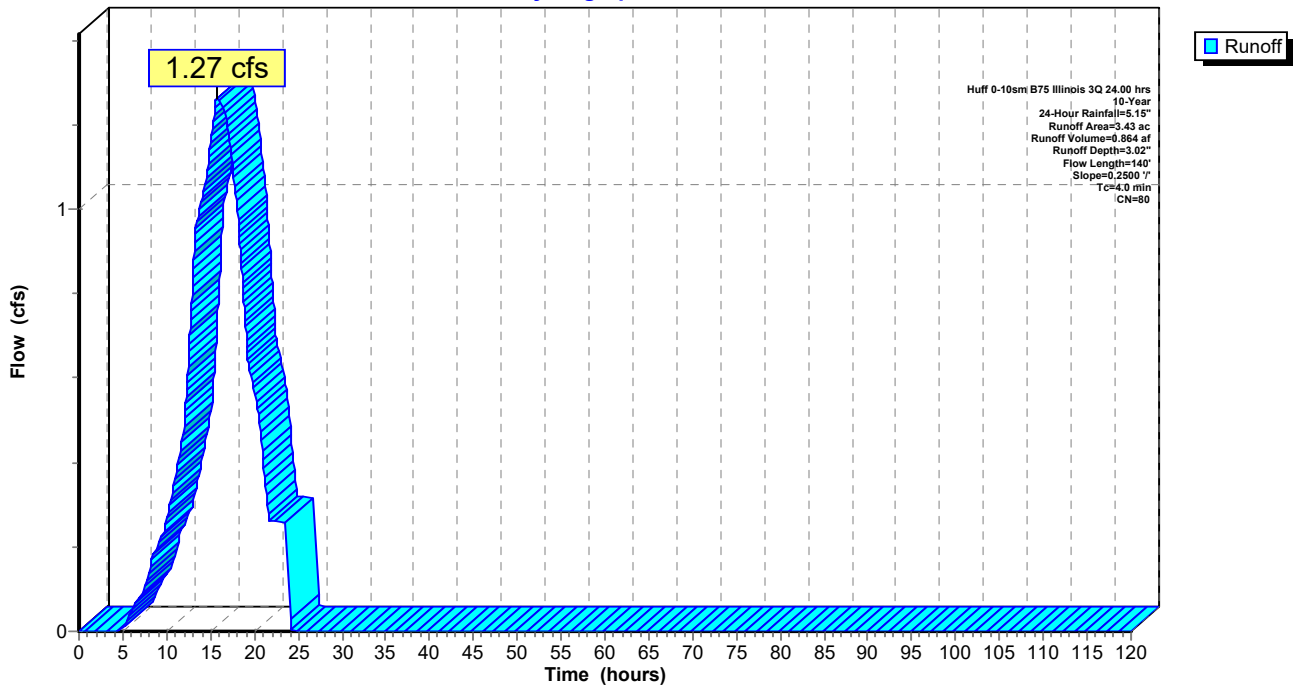
Area (ac)	CN	Description
3.43	80	>75% Grass cover, Good, HSG D
3.43		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	40	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	140	Total			

**Subcatchment N-B3: Subcat N-B3**

Hydrograph





**Summary for Subcatchment N-B4: Subcat N-B4**

Runoff = 1.40 cfs @ 15.71 hrs, Volume= 0.959 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

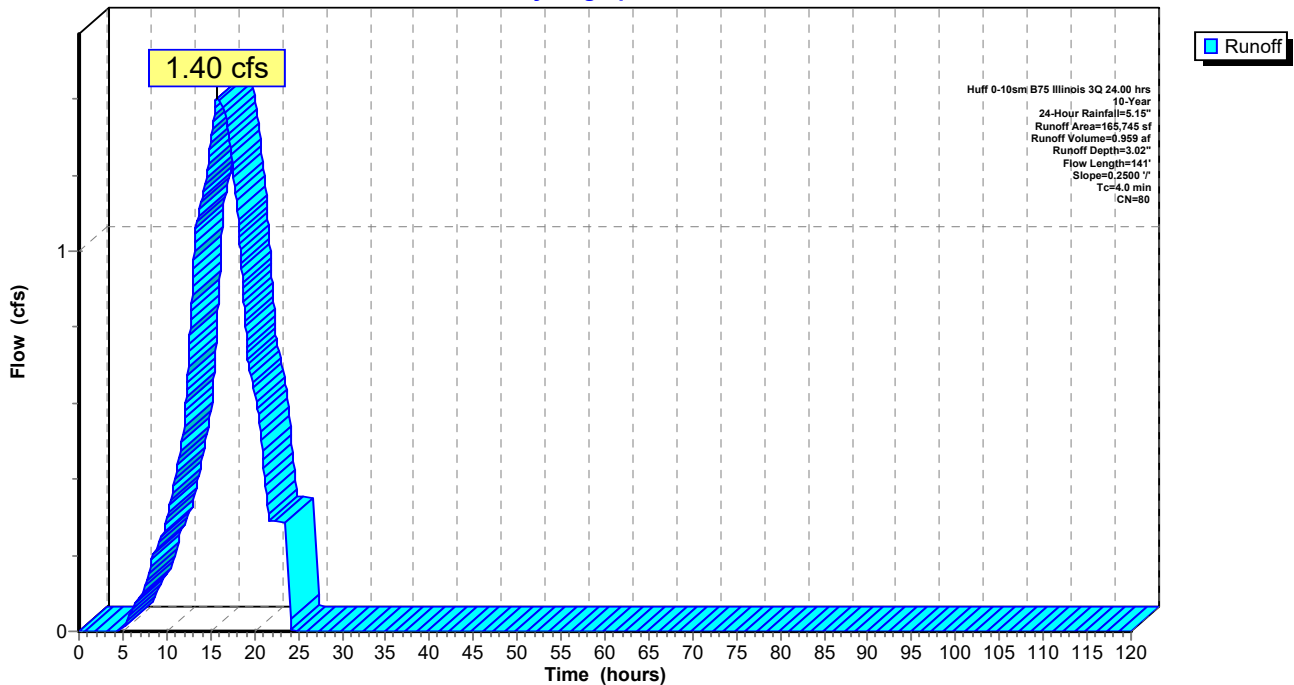
Area (sf)	CN	Description
165,745	80	>75% Grass cover, Good, HSG D
165,745		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	41	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	141	Total			

**Subcatchment N-B4: Subcat N-B4**

Hydrograph



**Summary for Subcatchment N-B5: Subcat N-B5**

Runoff = 1.66 cfs @ 15.71 hrs, Volume= 1.134 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

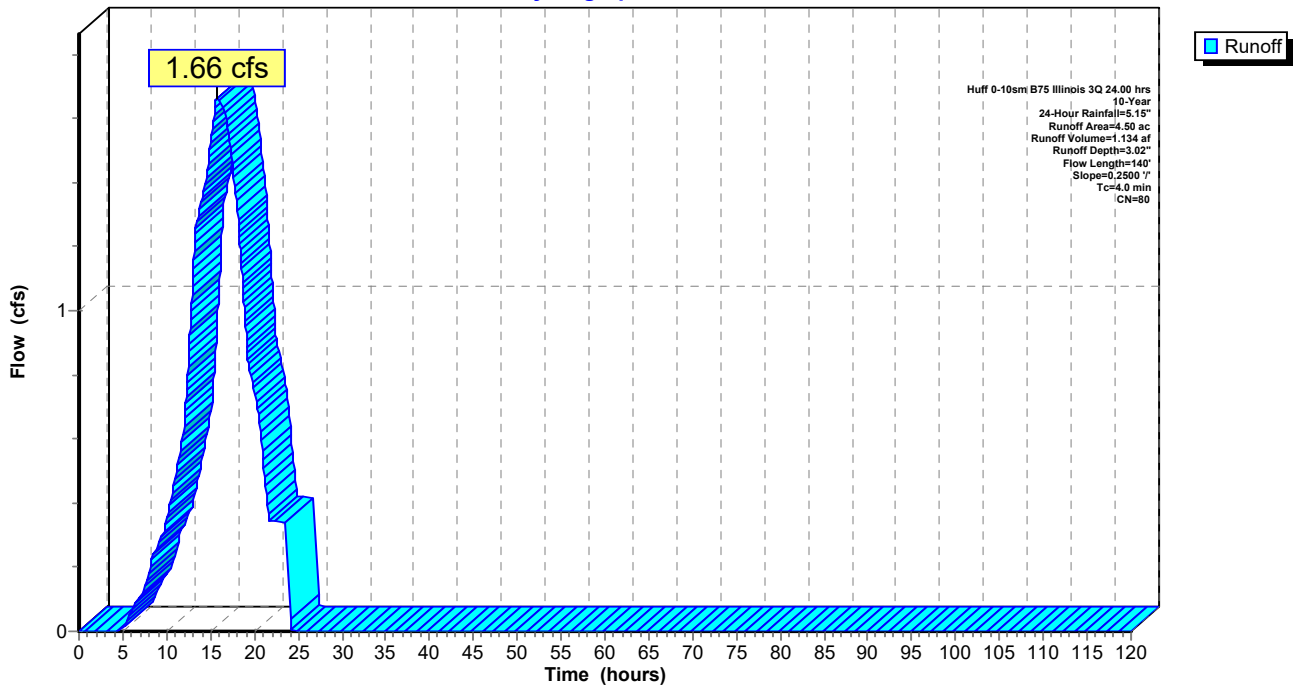
Area (ac)	CN	Description
4.50	80	>75% Grass cover, Good, HSG D
4.50		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	40	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	140	Total			

**Subcatchment N-B5: Subcat N-B5**

Hydrograph



**Summary for Subcatchment N-B6: Subcat N-B6**

Runoff = 1.58 cfs @ 15.71 hrs, Volume= 1.081 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

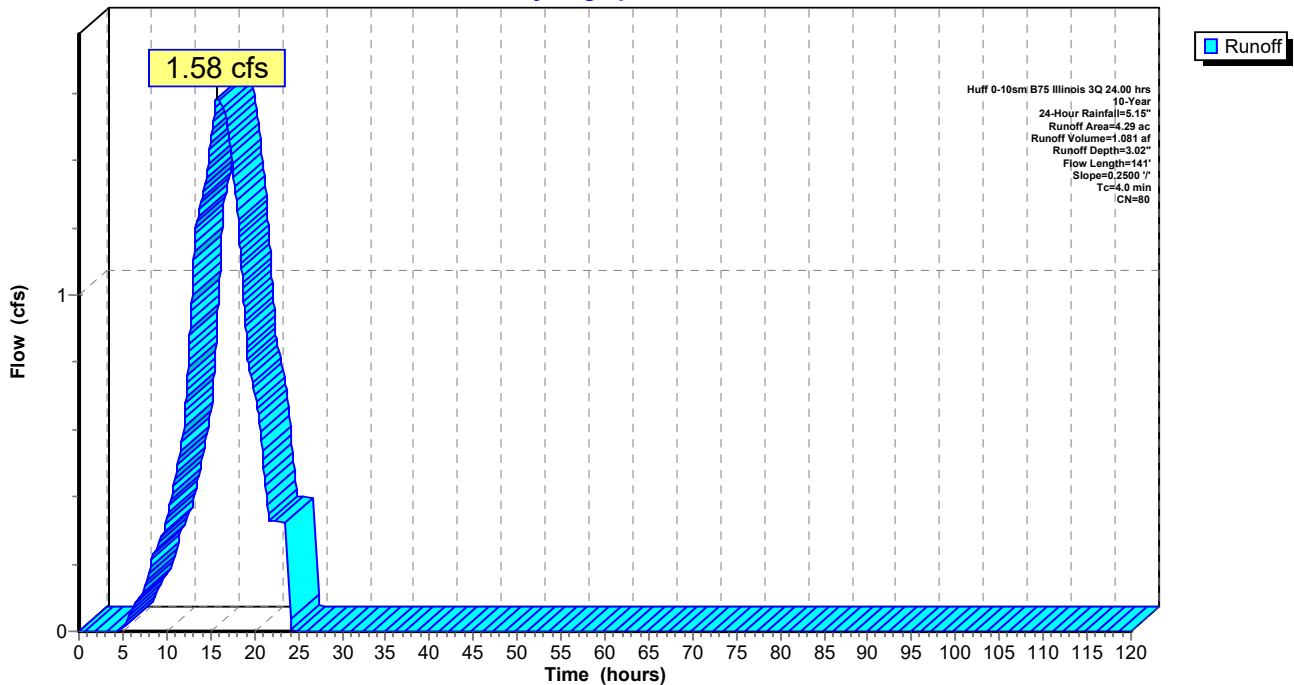
Area (ac)	CN	Description
4.29	80	>75% Grass cover, Good, HSG D
4.29		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	41	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	141	Total			

**Subcatchment N-B6: Subcat N-B6**

Hydrograph



**Summary for Subcatchment N-B7: Subcat N-B7**

Runoff = 1.46 cfs @ 15.71 hrs, Volume= 0.999 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

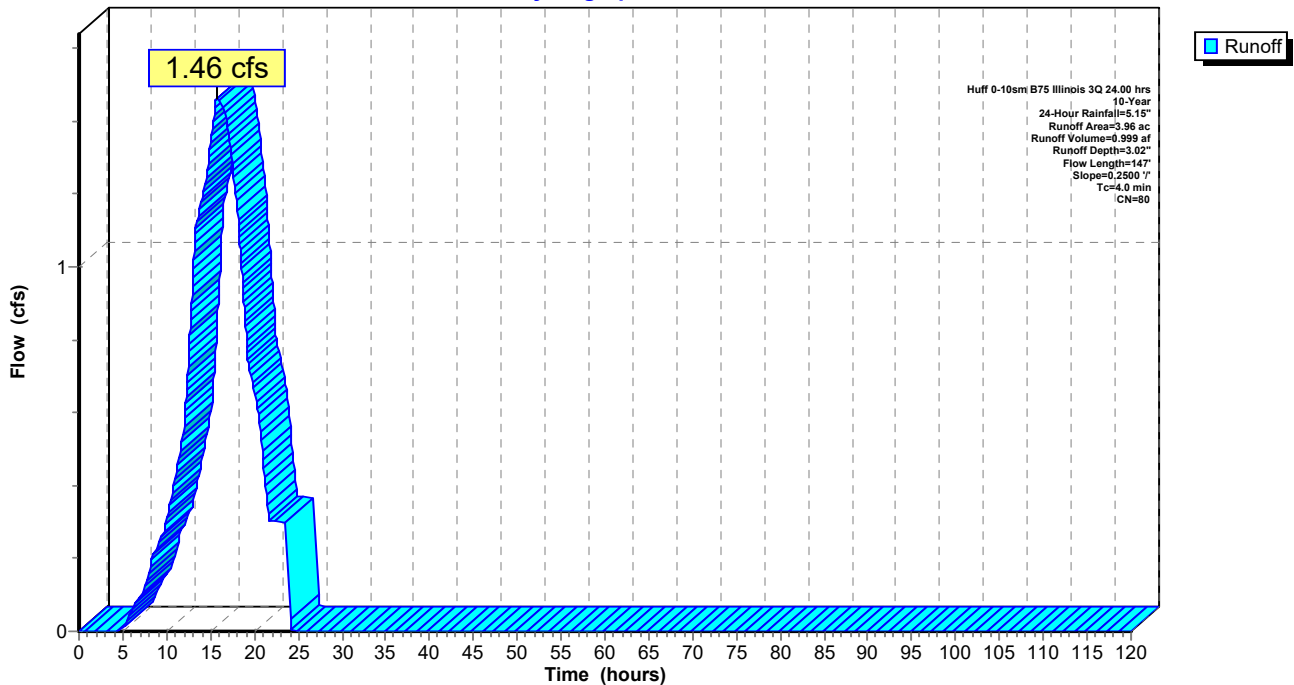
Area (ac)	CN	Description
3.96	80	>75% Grass cover, Good, HSG D
3.96		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	47	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	147	Total			

**Subcatchment N-B7: Subcat N-B7**

Hydrograph



**Summary for Subcatchment N-B8: Subcat N-B8**

Runoff = 1.30 cfs @ 15.71 hrs, Volume= 0.888 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

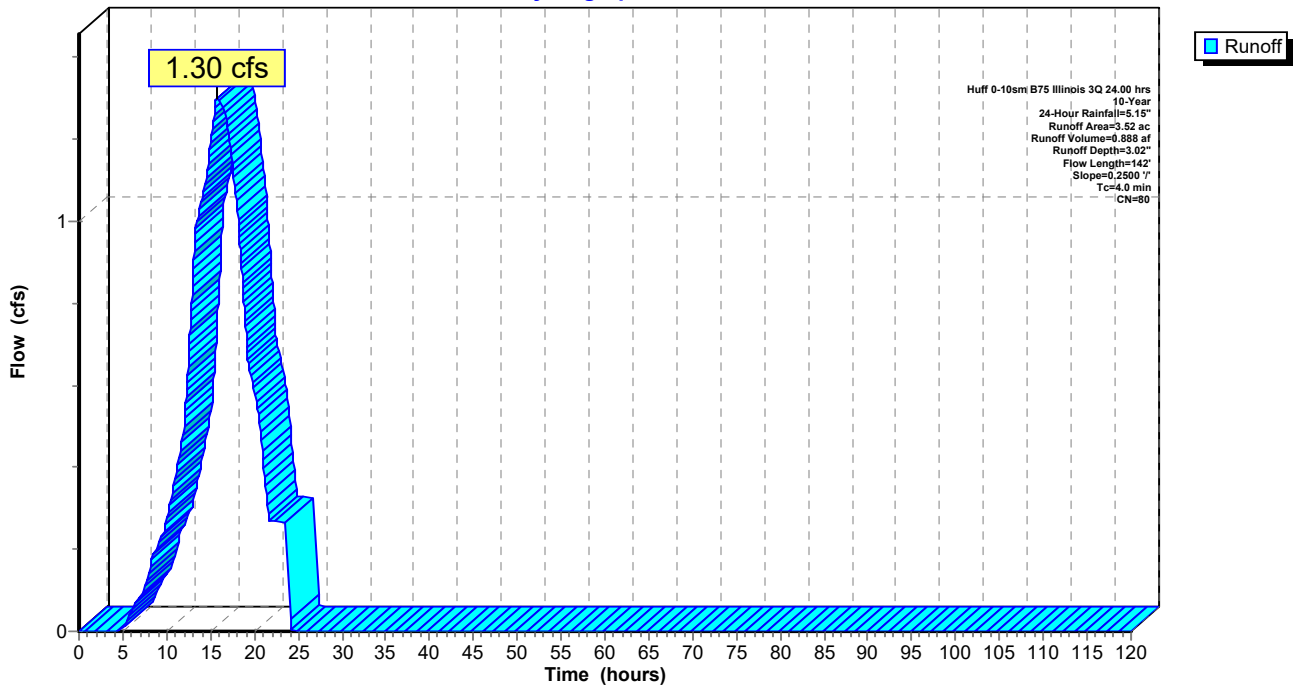
Area (ac)	CN	Description
3.52	80	>75% Grass cover, Good, HSG D
3.52		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	42	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	142	Total			

**Subcatchment N-B8: Subcat N-B8**

Hydrograph



**Summary for Subcatchment N-B9: Subcat N-B9**

Runoff = 0.43 cfs @ 15.69 hrs, Volume= 0.292 af, Depth= 3.02"

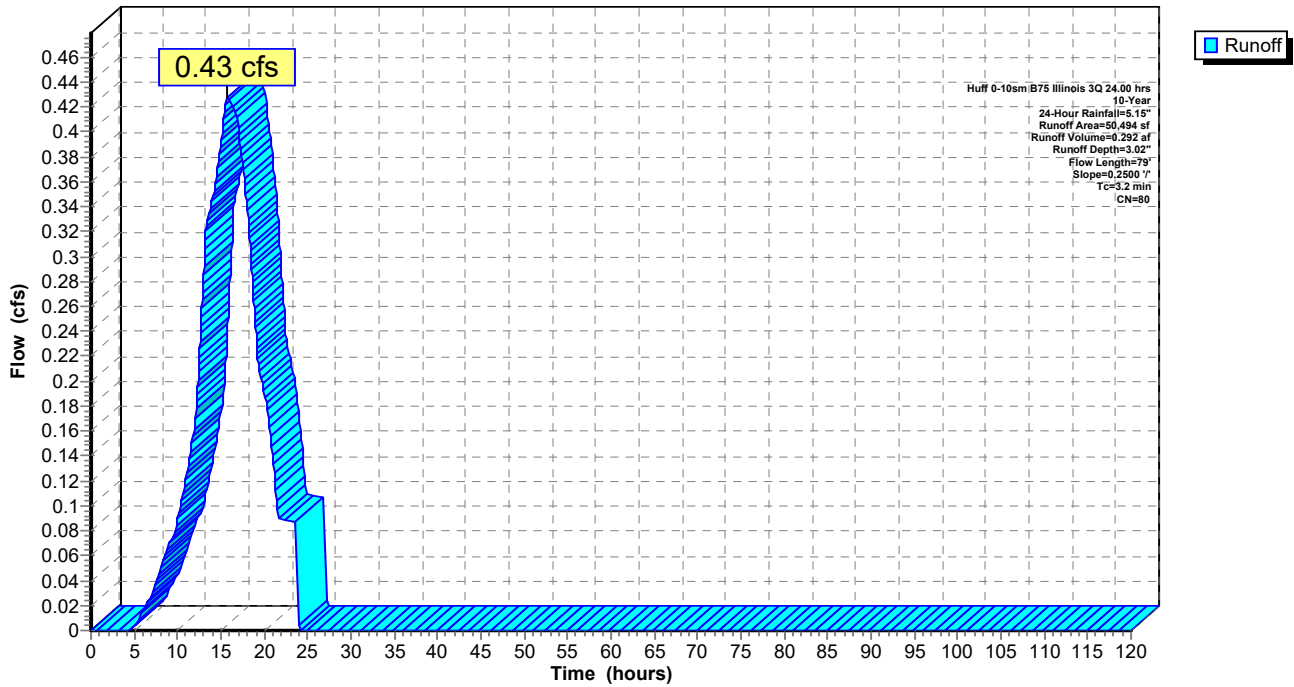
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (sf)	CN	Description
50,494	80	>75% Grass cover, Good, HSG D
50,494		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	79	0.2500	0.42		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-B9: Subcat N-B9**

Hydrograph



### Summary for Subcatchment N-C1: Subcat N-C1

Runoff = 2.58 cfs @ 15.75 hrs, Volume= 1.760 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

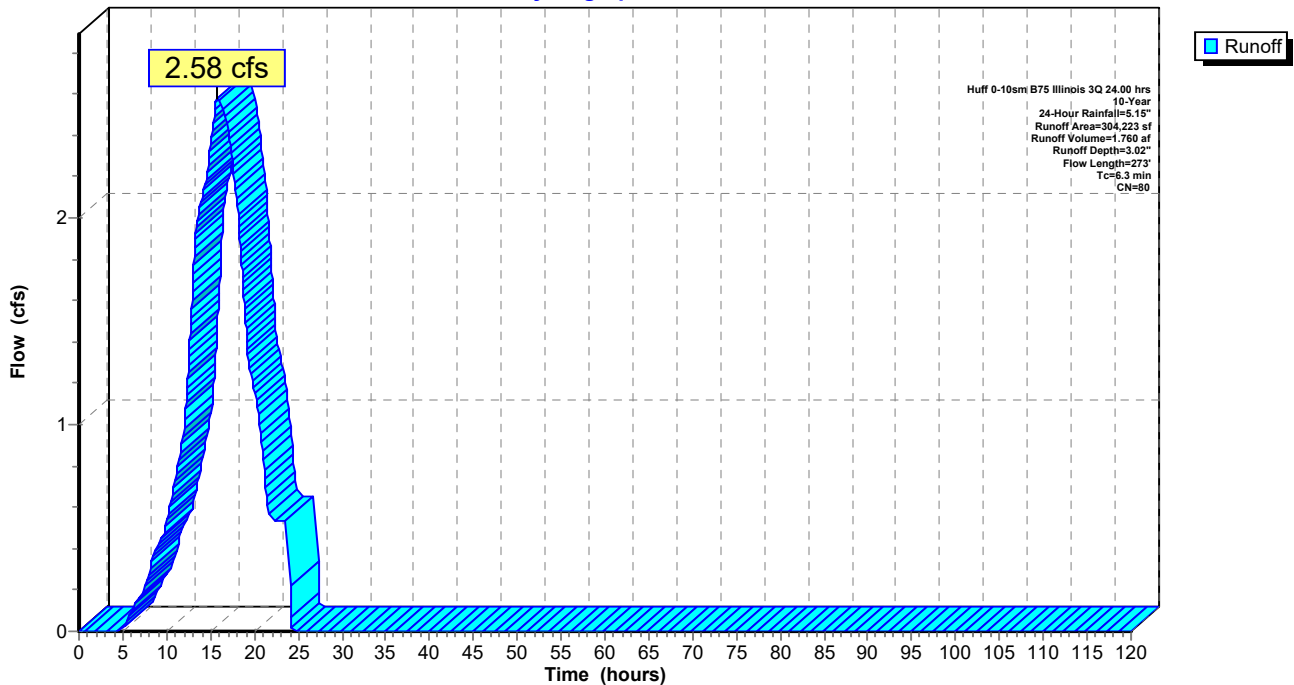
Area (sf)	CN	Description
304,223	80	>75% Grass cover, Good, HSG D
304,223		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.8	173	0.2418	3.44		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.3	273	Total			

### Subcatchment N-C1: Subcat N-C1

Hydrograph



**Summary for Subcatchment N-C2: Subcat N-C2**

Runoff = 1.55 cfs @ 15.71 hrs, Volume= 1.059 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

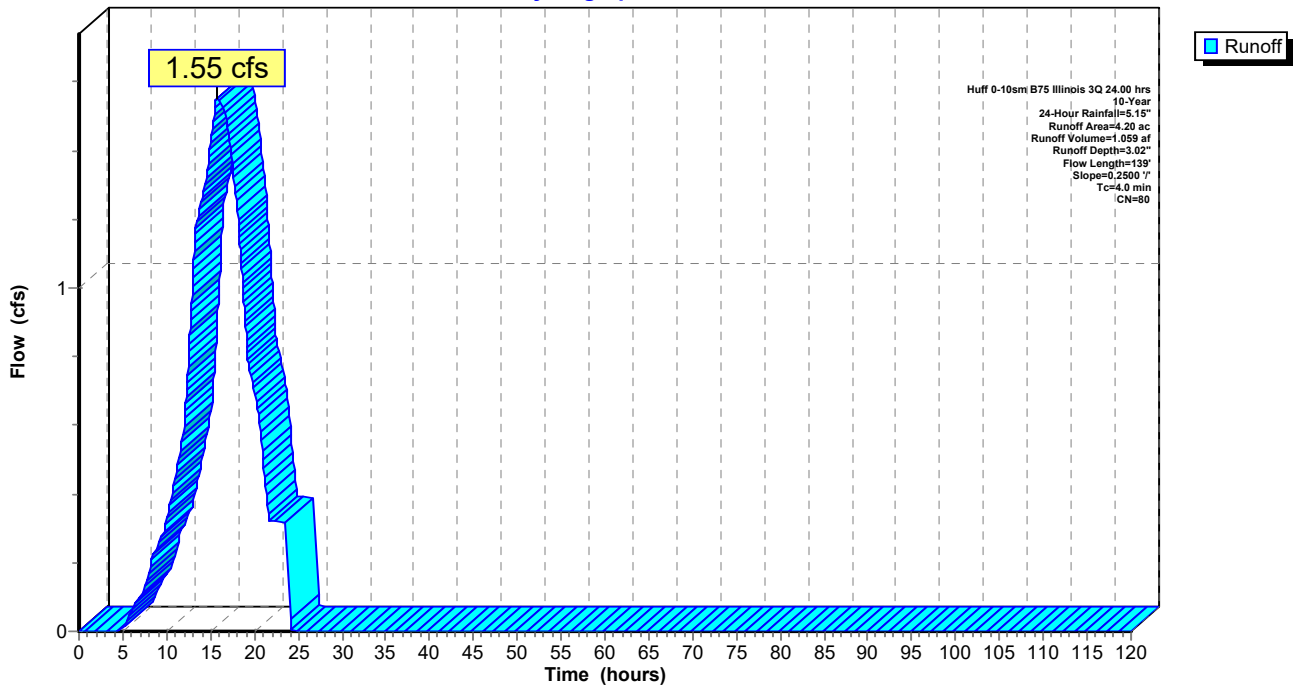
Area (ac)	CN	Description
4.20	80	>75% Grass cover, Good, HSG D
4.20		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	39	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	139	Total			

**Subcatchment N-C2: Subcat N-C2**

Hydrograph





**Summary for Subcatchment N-C3: Subcat N-C3**

Runoff = 1.56 cfs @ 15.71 hrs, Volume= 1.063 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

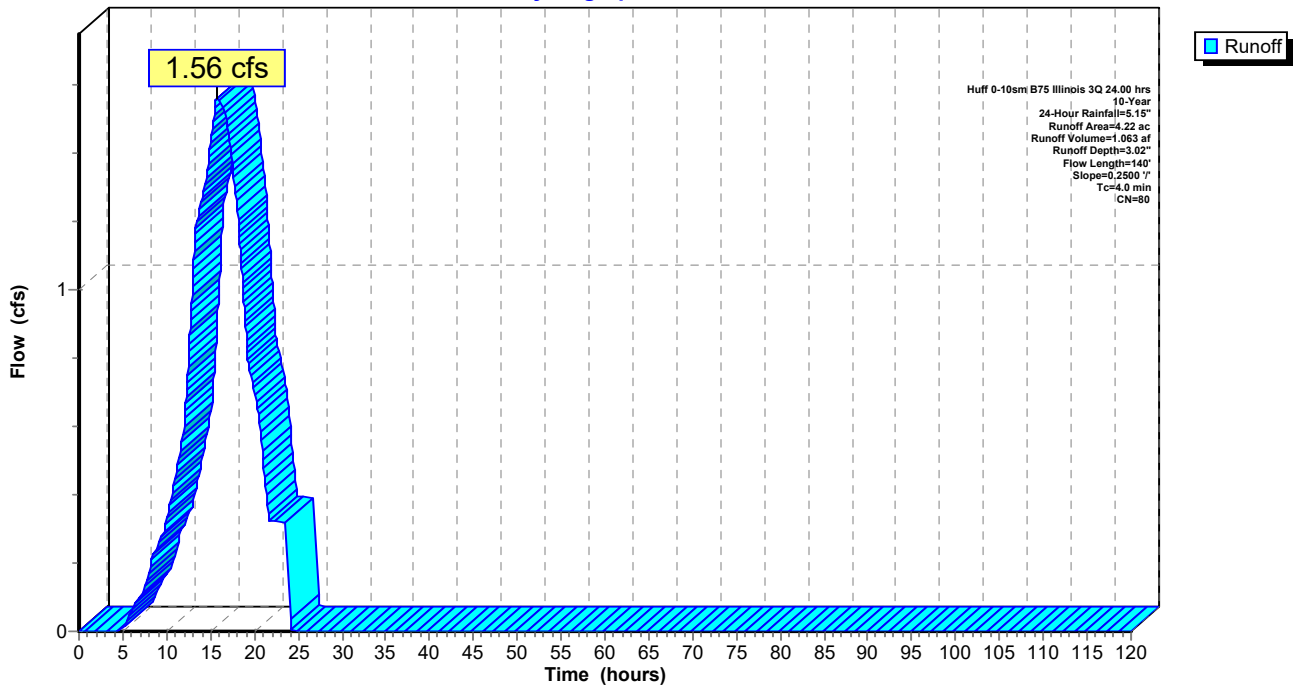
Area (ac)	CN	Description
4.22	80	>75% Grass cover, Good, HSG D
4.22		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	40	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	140	Total			

**Subcatchment N-C3: Subcat N-C3**

Hydrograph



**Summary for Subcatchment N-C4: Subcat N-C4**

Runoff = 1.30 cfs @ 15.71 hrs, Volume= 0.886 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

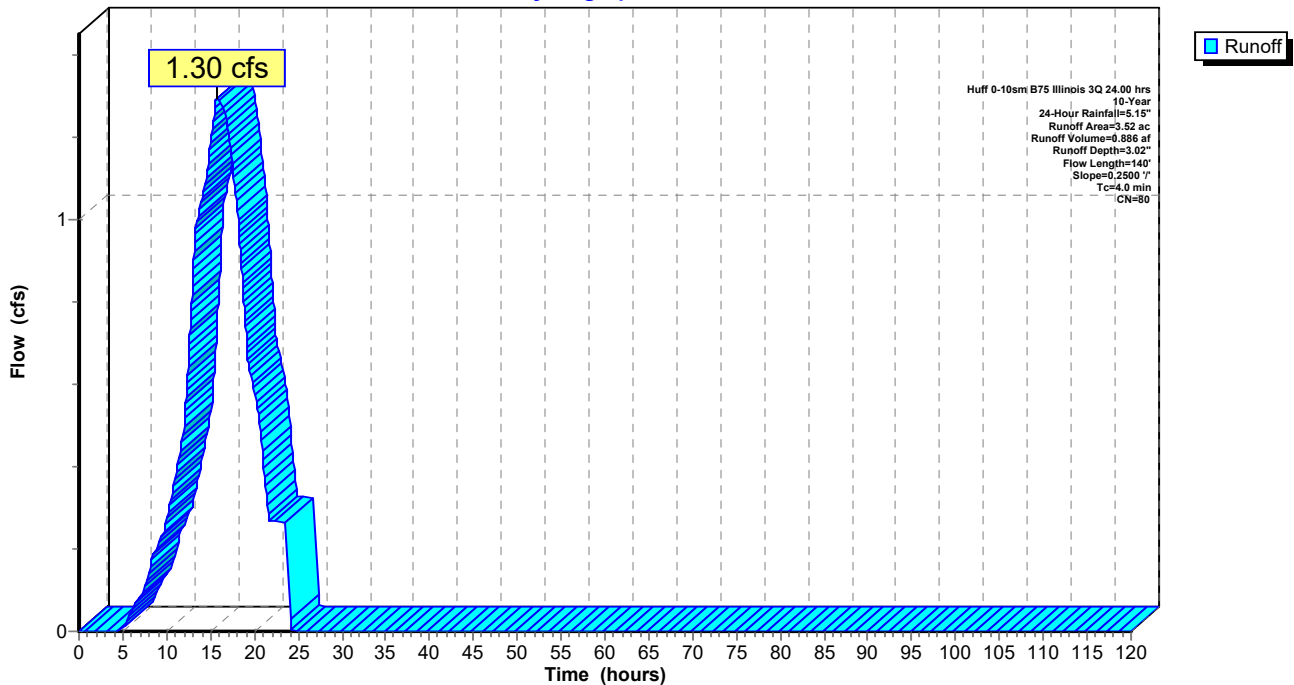
Area (ac)	CN	Description
3.52	80	>75% Grass cover, Good, HSG D
3.52		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	40	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	140	Total			

**Subcatchment N-C4: Subcat N-C4**

Hydrograph



**Summary for Subcatchment N-C5: Subcat N-C5**

Runoff = 0.28 cfs @ 15.71 hrs, Volume= 0.189 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

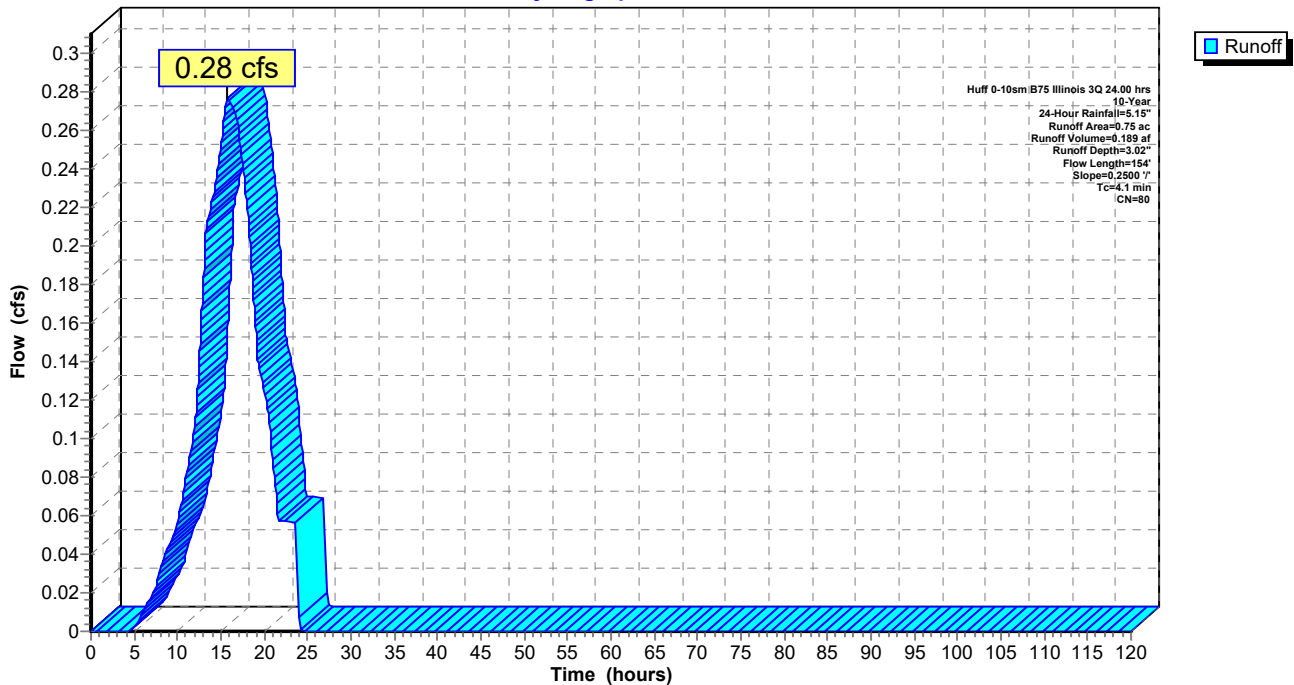
Area (ac)	CN	Description
0.75	80	>75% Grass cover, Good, HSG D
0.75		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.3	54	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	154	Total			

**Subcatchment N-C5: Subcat N-C5**

Hydrograph



**Summary for Subcatchment N-C6: Subcat N-C6**

Runoff = 0.29 cfs @ 16.10 hrs, Volume= 0.203 af, Depth= 3.31"

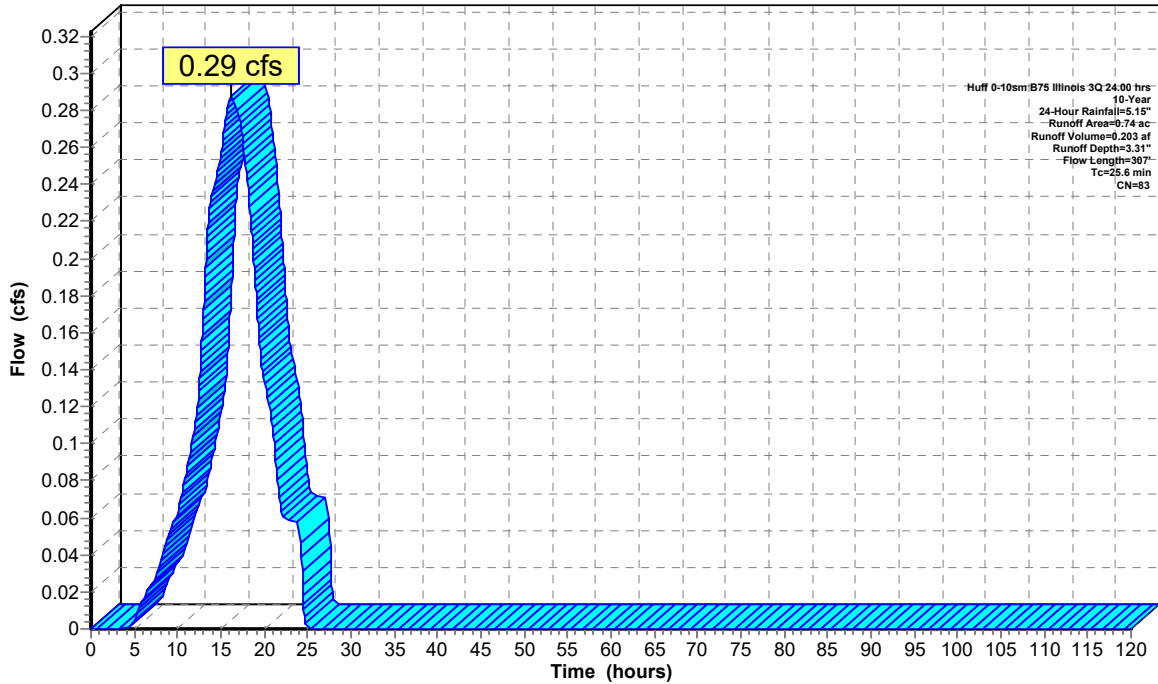
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (ac)	CN	Description
0.59	80	>75% Grass cover, Good, HSG D
0.14	93	Paved roads w/open ditches, 50% imp, HSG D
0.74	83	Weighted Average
0.67		90.37% Pervious Area
0.07		9.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.0	100	0.0200	0.07		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.80"
2.6	207	0.0352	1.31		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
25.6	307	Total			

**Subcatchment N-C6: Subcat N-C6**

Hydrograph



**Summary for Subcatchment N-C7: Subcat N-C7**

Runoff = 0.43 cfs @ 15.69 hrs, Volume= 0.293 af, Depth= 3.02"

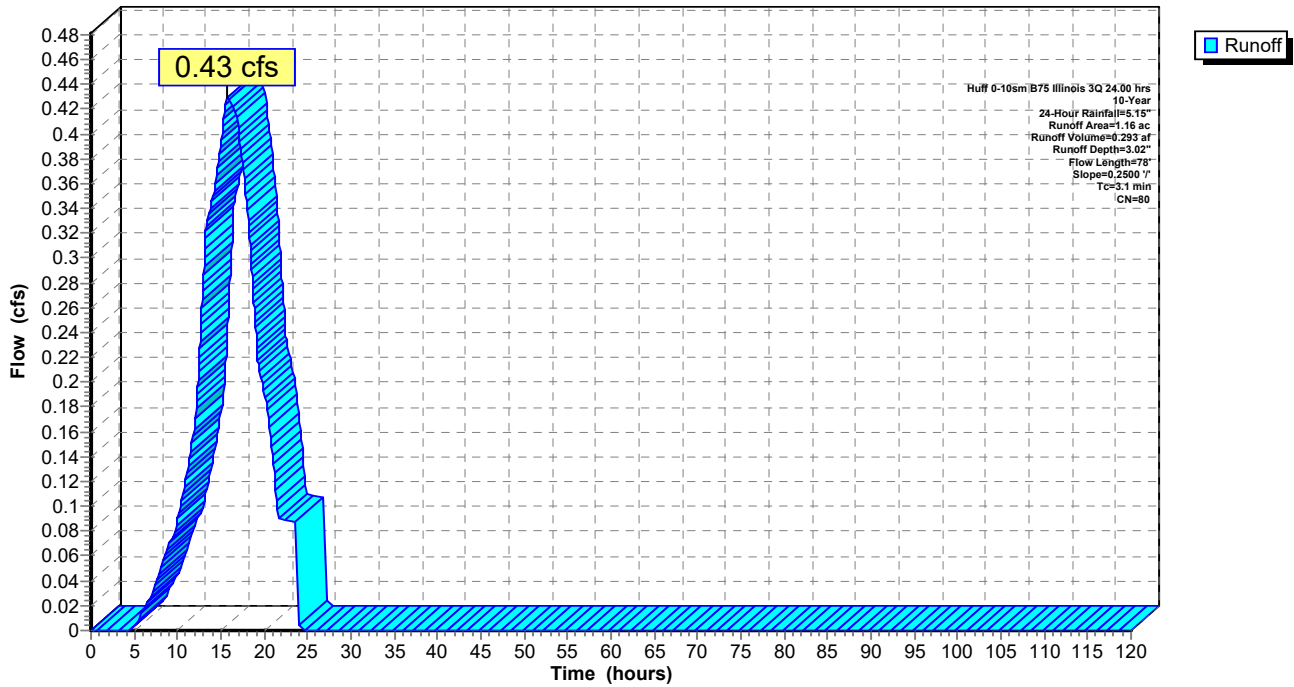
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (ac)	CN	Description
1.16	80	>75% Grass cover, Good, HSG D
1.16		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	78	0.2500	0.42		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-C7: Subcat N-C7**

Hydrograph



**Summary for Subcatchment N-C8: Subcat N-C8**

Runoff = 0.64 cfs @ 16.04 hrs, Volume= 0.460 af, Depth= 3.51"

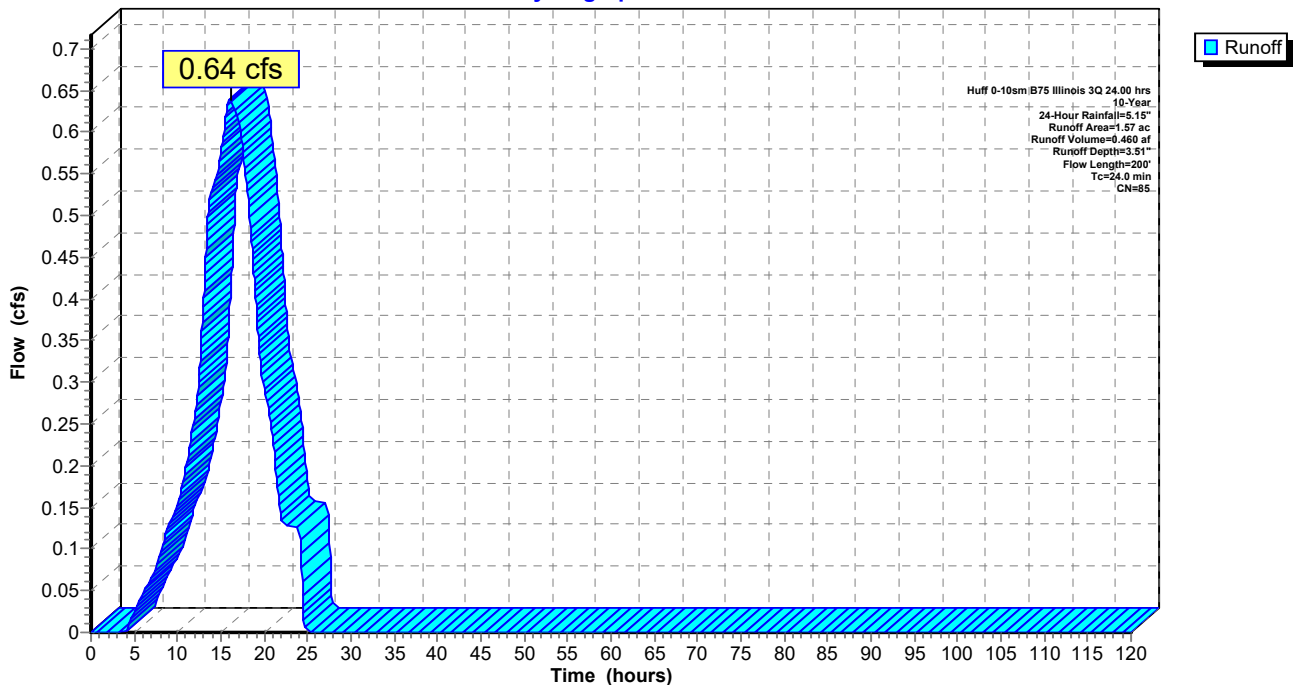
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (ac)	CN	Description
0.65	80	>75% Grass cover, Good, HSG D
0.63	93	Paved roads w/open ditches, 50% imp, HSG D
0.30	79	Woods/grass comb., Good, HSG D
1.57	85	Weighted Average
1.26		80.08% Pervious Area
0.31		19.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.0	100	0.0200	0.07		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.80"
1.0	100	0.0611	1.73		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
24.0	200	Total			

**Subcatchment N-C8: Subcat N-C8**

Hydrograph



**Summary for Subcatchment N-D1: Subcat N-D1**

Runoff = 0.04 cfs @ 15.69 hrs, Volume= 0.027 af, Depth= 3.02"

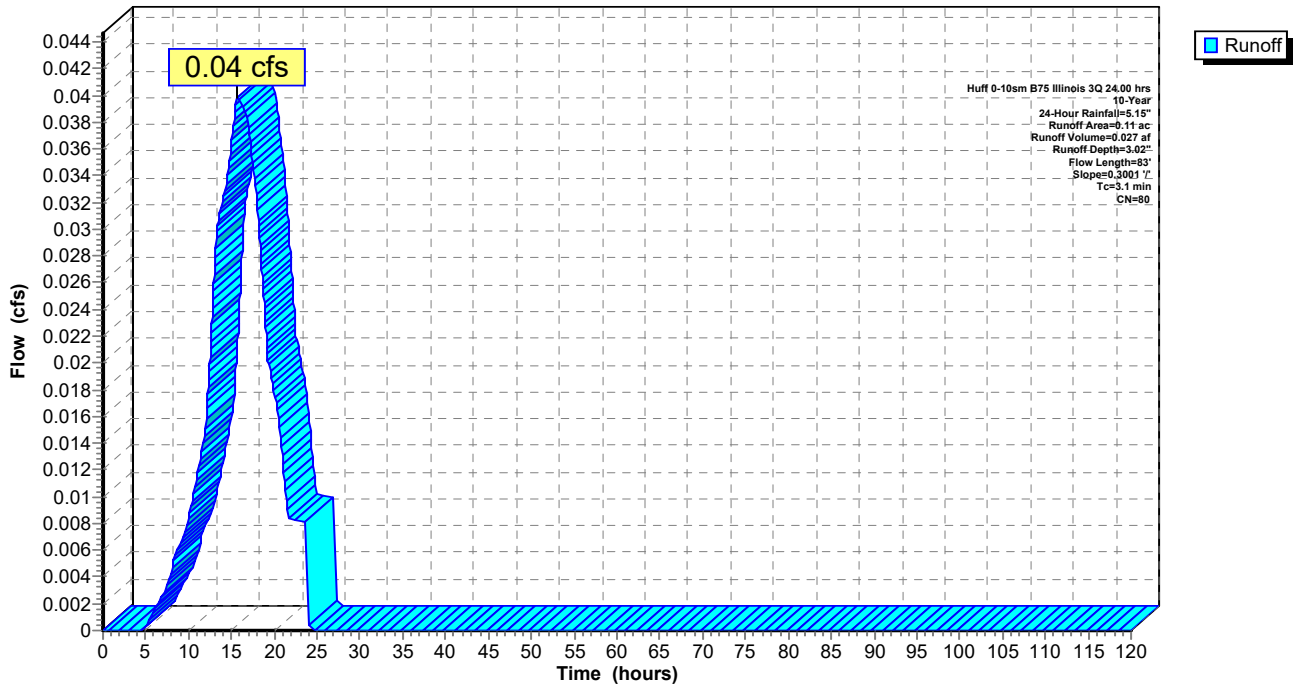
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (ac)	CN	Description
0.11	80	>75% Grass cover, Good, HSG D
0.11		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	83	0.3001	0.45		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-D1: Subcat N-D1**

Hydrograph



**Summary for Subcatchment N-D2: Subcat N-D2**

Runoff = 1.74 cfs @ 15.70 hrs, Volume= 1.186 af, Depth= 3.02"

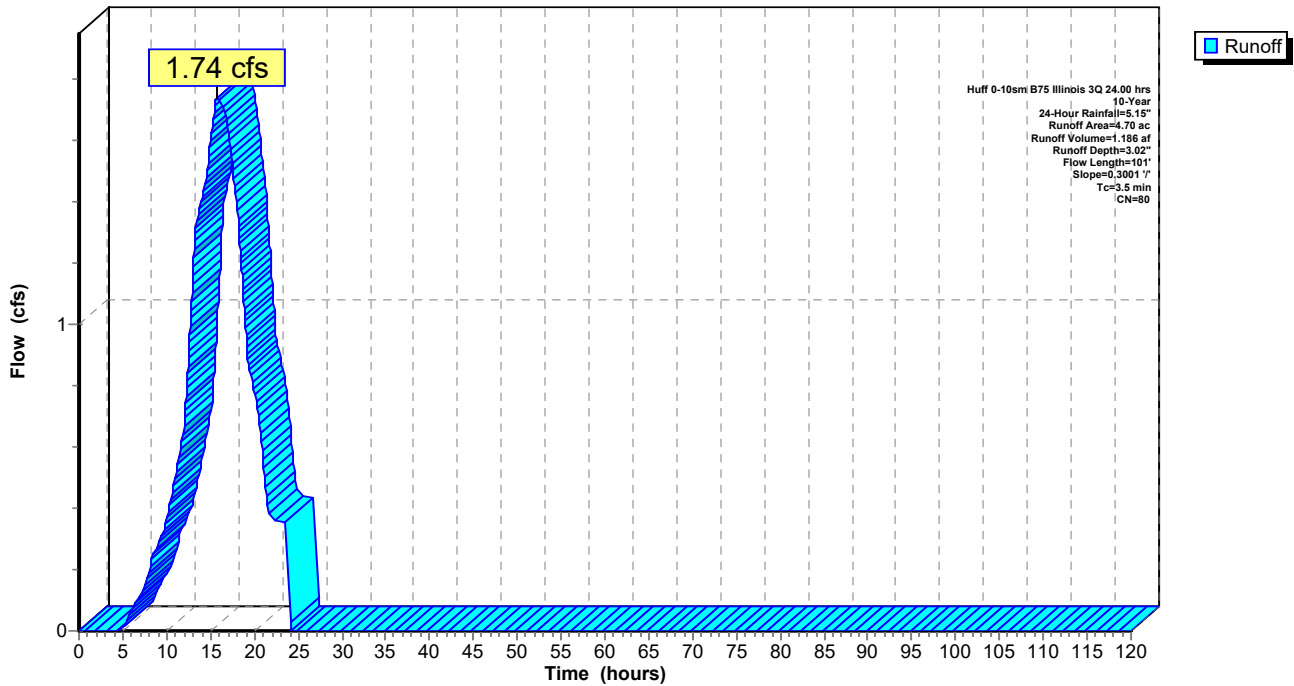
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (ac)	CN	Description
4.54	80	>75% Grass cover, Good, HSG D
0.16	93	Paved roads w/open ditches, 50% imp, HSG D
4.70	80	Weighted Average
4.62		98.26% Pervious Area
0.08		1.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	100	0.3001	0.47		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.0	1	0.3001	3.83		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.5	101	Total			

**Subcatchment N-D2: Subcat N-D2**

Hydrograph





### Summary for Subcatchment N-E1: Subcat N-E1

Runoff = 3.31 cfs @ 15.67 hrs, Volume= 2.256 af, Depth= 3.02"

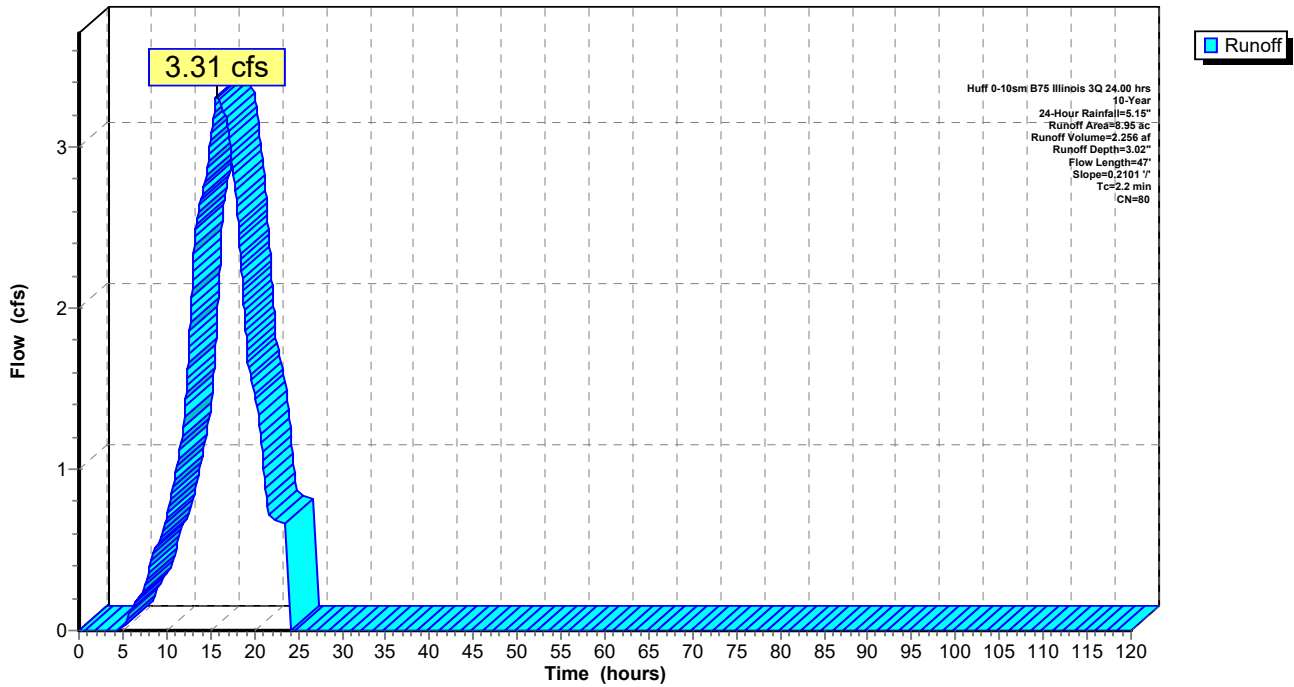
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 10-Year, 24-Hour Rainfall=5.15"

Area (ac)	CN	Description
8.95	80	>75% Grass cover, Good, HSG D
8.95		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	47	0.2101	0.35		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

### Subcatchment N-E1: Subcat N-E1

Hydrograph



**Summary for Reach Cu-1: Culvert 1**

Inflow Area = 90.82 ac, 2.38% Impervious, Inflow Depth = 3.08" for 10-Year, 24-Hour event  
 Inflow = 33.44 cfs @ 16.57 hrs, Volume= 23.289 af  
 Outflow = 33.44 cfs @ 16.58 hrs, Volume= 23.289 af, Atten= 0%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.64 fps, Min. Travel Time= 0.4 min  
 Avg. Velocity = 2.01 fps, Avg. Travel Time= 0.9 min

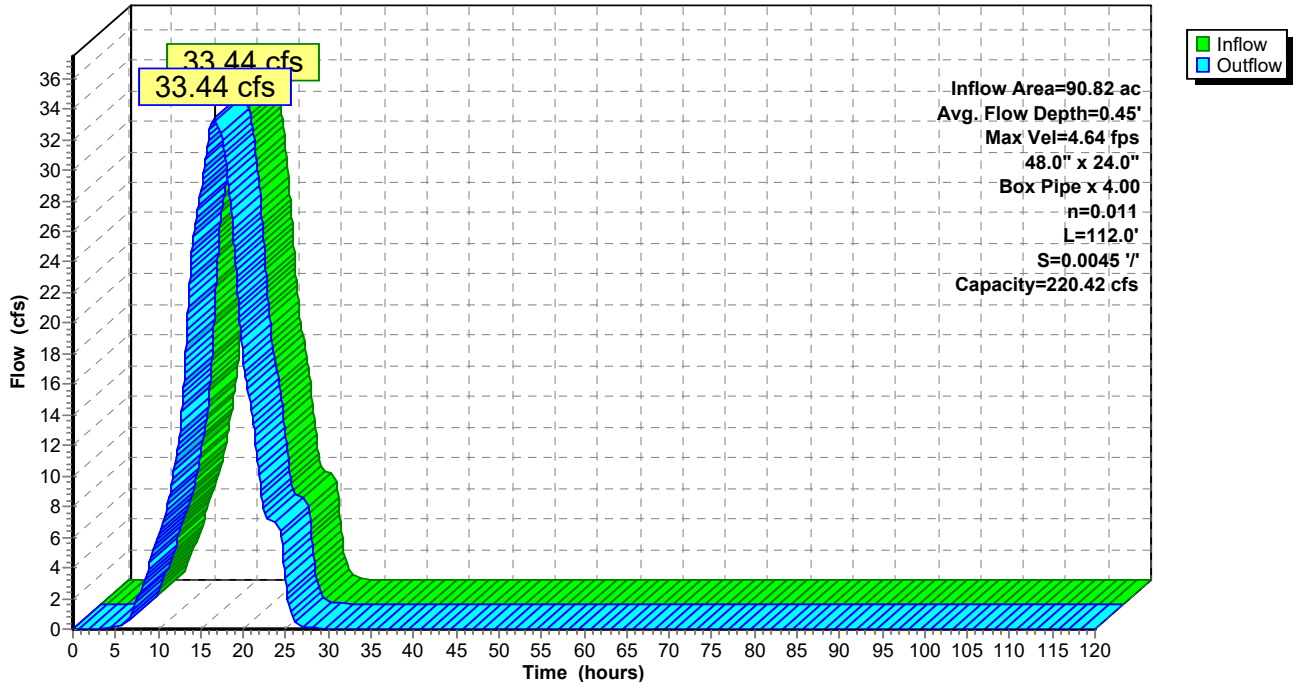
Peak Storage= 808 cf @ 16.58 hrs  
 Average Depth at Peak Storage= 0.45'  
 Bank-Full Depth= 2.00' Flow Area= 32.0 sf, Capacity= 220.42 cfs

A factor of 4.00 has been applied to the storage and discharge capacity  
 48.0" W x 24.0" H Box Pipe  
 n= 0.011 Concrete pipe, straight & clean  
 Length= 112.0' Slope= 0.0045 '/'  
 Inlet Invert= 737.00', Outlet Invert= 736.50'



**Reach Cu-1: Culvert 1**

Hydrograph



### Summary for Reach Cu-2: Culvert 2

Inflow Area = 39.65 ac, 1.66% Impervious, Inflow Depth = 3.06" for 10-Year, 24-Hour event  
 Inflow = 14.66 cfs @ 16.14 hrs, Volume= 10.124 af  
 Outflow = 14.66 cfs @ 16.14 hrs, Volume= 10.124 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 5.63 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 2.86 fps, Avg. Travel Time= 0.4 min

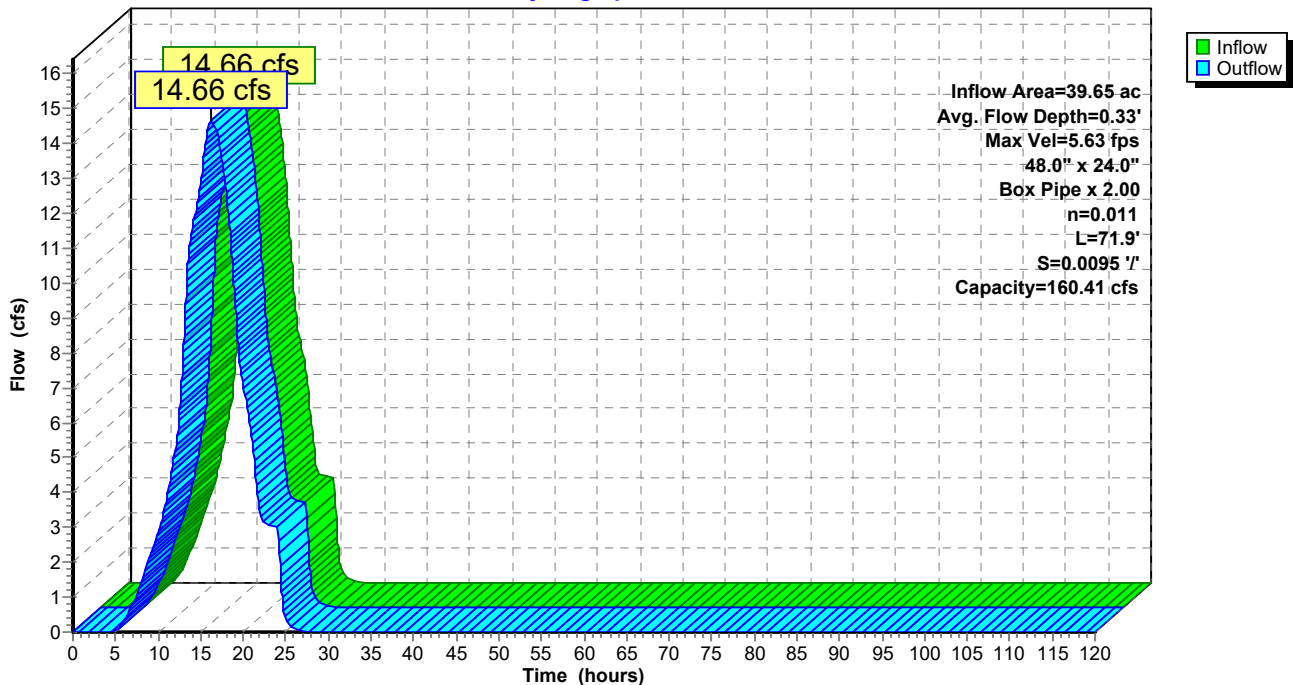
Peak Storage= 187 cf @ 16.14 hrs  
 Average Depth at Peak Storage= 0.33'  
 Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 160.41 cfs

A factor of 2.00 has been applied to the storage and discharge capacity  
 48.0" W x 24.0" H Box Pipe  
 n= 0.011 Concrete pipe, straight & clean  
 Length= 71.9' Slope= 0.0095 '/  
 Inlet Invert= 737.18', Outlet Invert= 736.50'



### Reach Cu-2: Culvert 2

Hydrograph



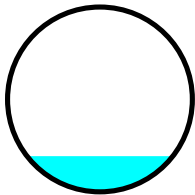
### Summary for Reach Cu-3: Culvert 3

Inflow Area = 43.19 ac, 1.69% Impervious, Inflow Depth = 3.07" for 10-Year, 24-Hour event  
 Inflow = 15.96 cfs @ 16.22 hrs, Volume= 11.034 af  
 Outflow = 15.95 cfs @ 16.23 hrs, Volume= 11.034 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 5.59 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 2.98 fps, Avg. Travel Time= 0.5 min

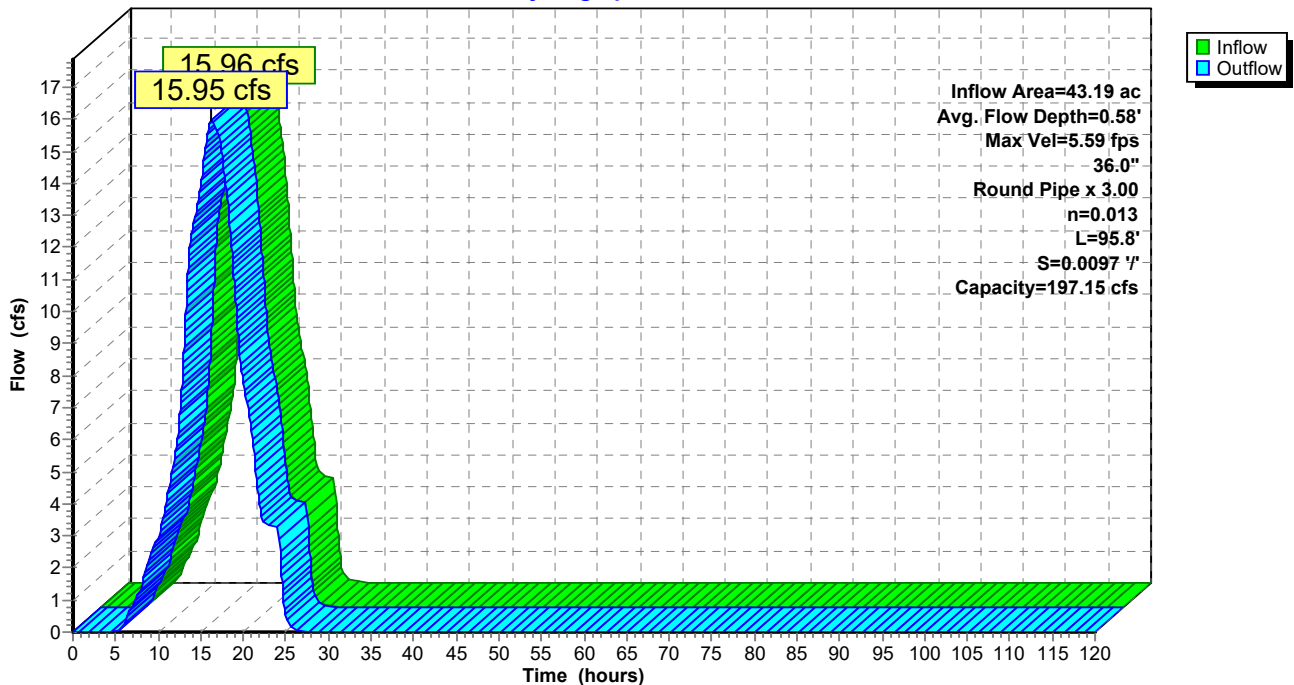
Peak Storage= 274 cf @ 16.22 hrs  
 Average Depth at Peak Storage= 0.58'  
 Bank-Full Depth= 3.00' Flow Area= 21.2 sf, Capacity= 197.15 cfs

A factor of 3.00 has been applied to the storage and discharge capacity  
 36.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 95.8' Slope= 0.0097 '/  
 Inlet Invert= 738.93', Outlet Invert= 738.00'



### Reach Cu-3: Culvert 3

Hydrograph



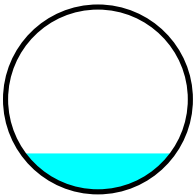
**Summary for Reach Cu-A: Culvert A**

Inflow Area = 33.94 ac, 1.59% Impervious, Inflow Depth = 3.05" for 10-Year, 24-Hour event  
 Inflow = 12.49 cfs @ 16.35 hrs, Volume= 8.627 af  
 Outflow = 12.49 cfs @ 16.36 hrs, Volume= 8.627 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 5.92 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 3.01 fps, Avg. Travel Time= 0.5 min

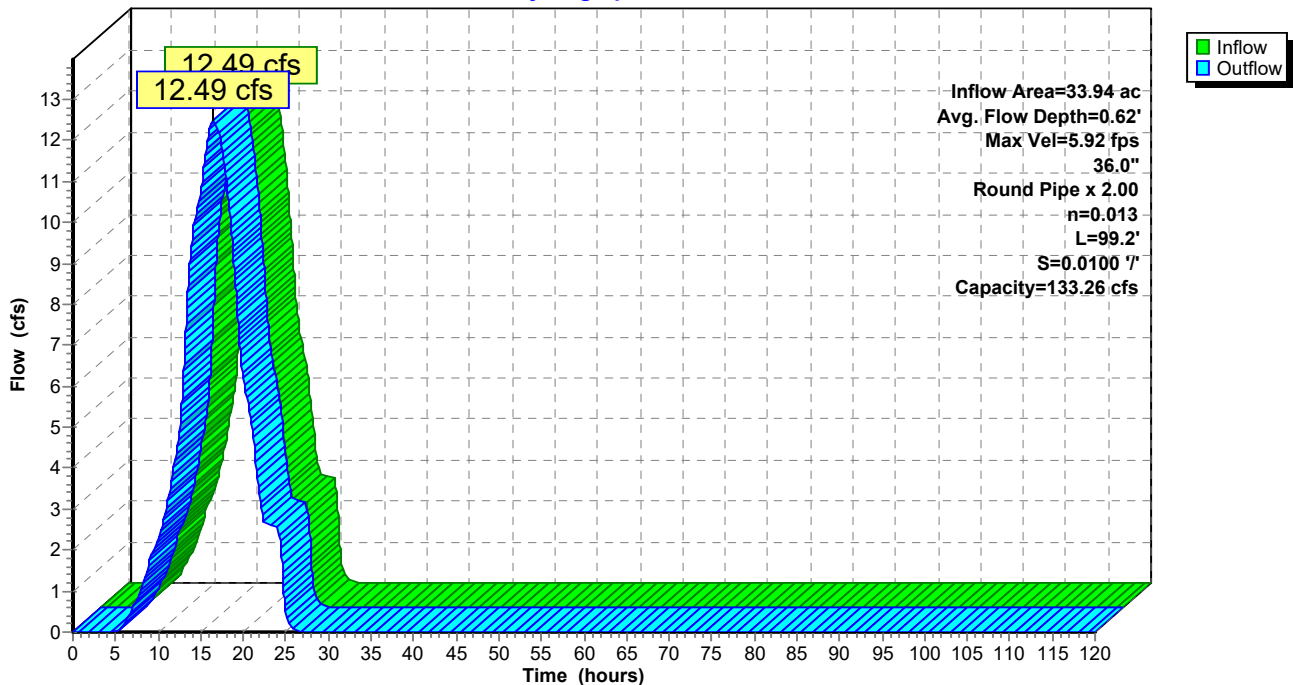
Peak Storage= 209 cf @ 16.35 hrs  
 Average Depth at Peak Storage= 0.62'  
 Bank-Full Depth= 3.00' Flow Area= 14.1 sf, Capacity= 133.26 cfs

A factor of 2.00 has been applied to the storage and discharge capacity  
 36.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 99.2' Slope= 0.0100 '/  
 Inlet Invert= 756.77', Outlet Invert= 755.78'



**Reach Cu-A: Culvert A**

Hydrograph



**Summary for Reach DC-A1A: Downchute A1A**

Inflow Area = 6.74 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 2.48 cfs @ 16.16 hrs, Volume= 1.698 af  
 Outflow = 2.48 cfs @ 16.18 hrs, Volume= 1.698 af, Atten= 0%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.80 fps, Min. Travel Time= 0.8 min  
 Avg. Velocity= 1.98 fps, Avg. Travel Time= 1.1 min

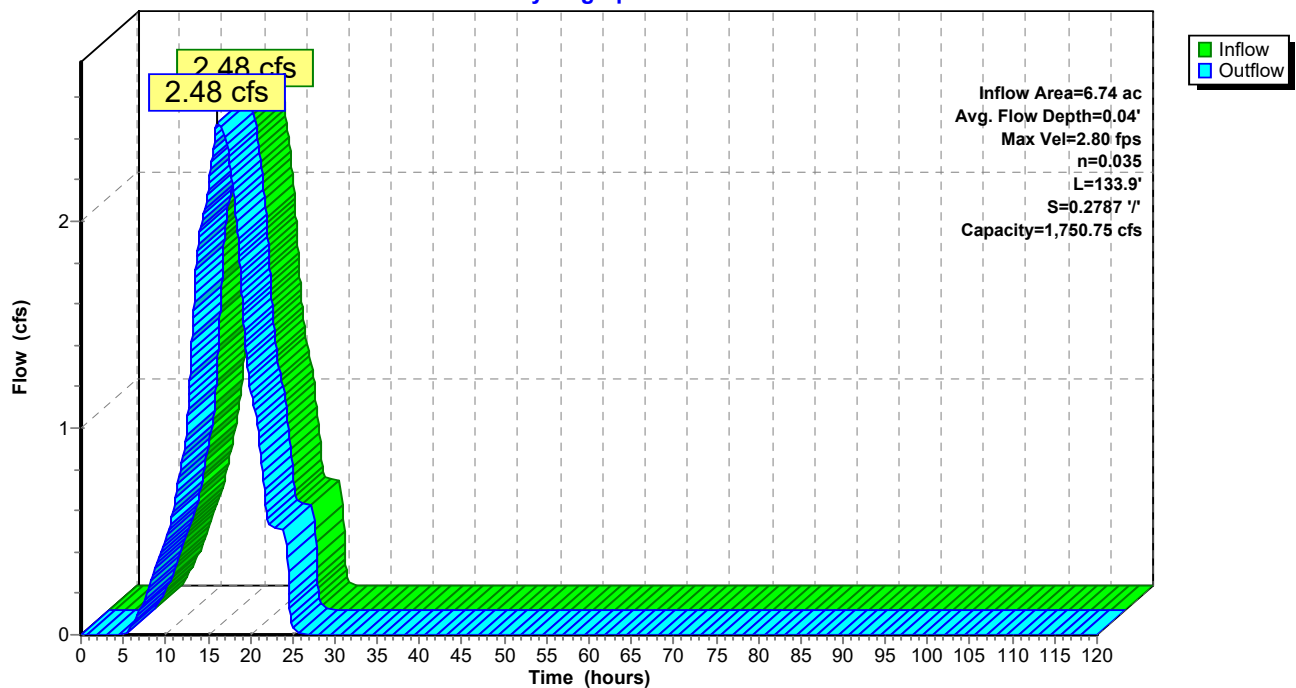
Peak Storage= 118 cf @ 16.16 hrs  
 Average Depth at Peak Storage= 0.04'  
 Bank-Full Depth= 2.00' Flow Area= 60.0 sf, Capacity= 1,750.75 cfs

20.00' x 2.00' deep channel, n= 0.035  
 Side Slope Z-value= 5.0 ' / ' Top Width= 40.00'  
 Length= 133.9' Slope= 0.2787 ' / '  
 Inlet Invert= 821.32', Outlet Invert= 784.00'



**Reach DC-A1A: Downchute A1A**

Hydrograph



**Summary for Reach DC-A1B: Downchute A1B**

Inflow Area = 11.96 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 4.40 cfs @ 16.16 hrs, Volume= 3.015 af  
 Outflow = 4.40 cfs @ 16.18 hrs, Volume= 3.015 af, Atten= 0%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.52 fps, Min. Travel Time= 0.6 min  
 Avg. Velocity = 1.53 fps, Avg. Travel Time= 0.9 min

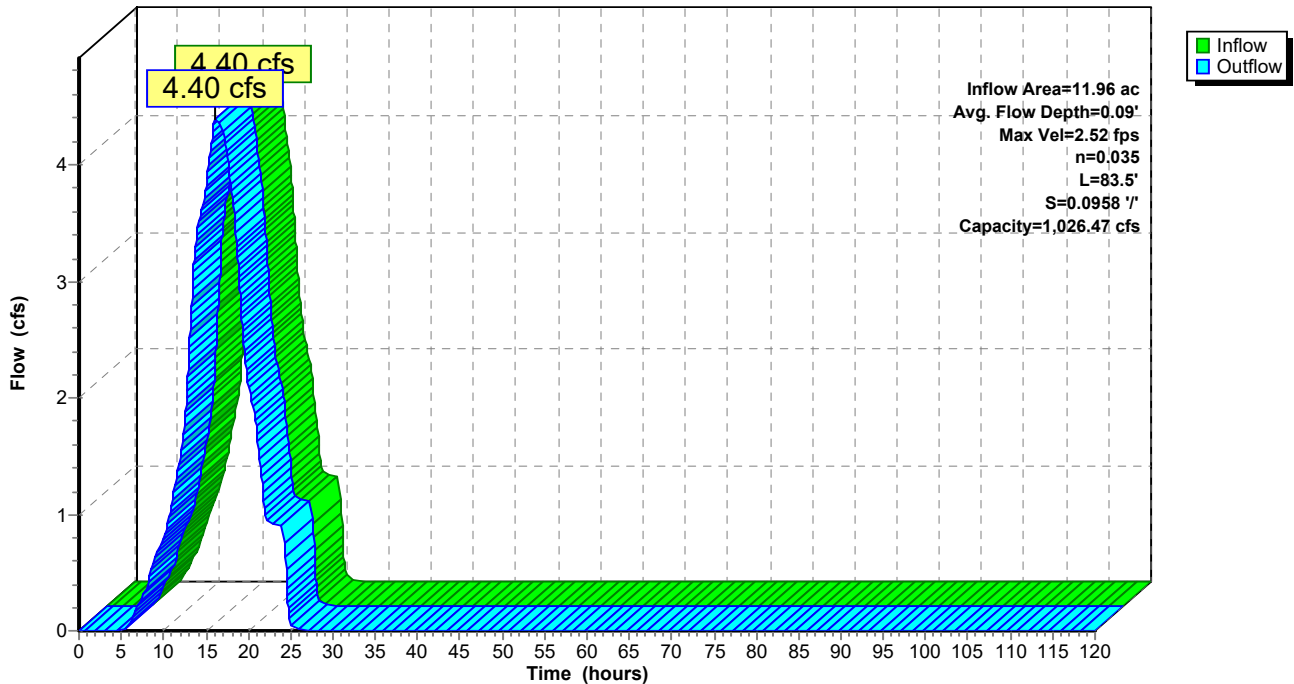
Peak Storage= 145 cf @ 16.17 hrs  
 Average Depth at Peak Storage= 0.09'  
 Bank-Full Depth= 2.00' Flow Area= 60.0 sf, Capacity= 1,026.47 cfs

20.00' x 2.00' deep channel, n= 0.035  
 Side Slope Z-value= 5.0 ' / ' Top Width= 40.00'  
 Length= 83.5' Slope= 0.0958 ' / '  
 Inlet Invert= 784.00', Outlet Invert= 776.00'



**Reach DC-A1B: Downchute A1B**

Hydrograph



**Summary for Reach DC-A1C: Downchute A1C**

Inflow Area = 21.13 ac, 0.64% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 7.74 cfs @ 16.31 hrs, Volume= 5.324 af  
 Outflow = 7.74 cfs @ 16.33 hrs, Volume= 5.324 af, Atten= 0%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.36 fps, Min. Travel Time= 0.7 min  
 Avg. Velocity = 1.94 fps, Avg. Travel Time= 1.3 min

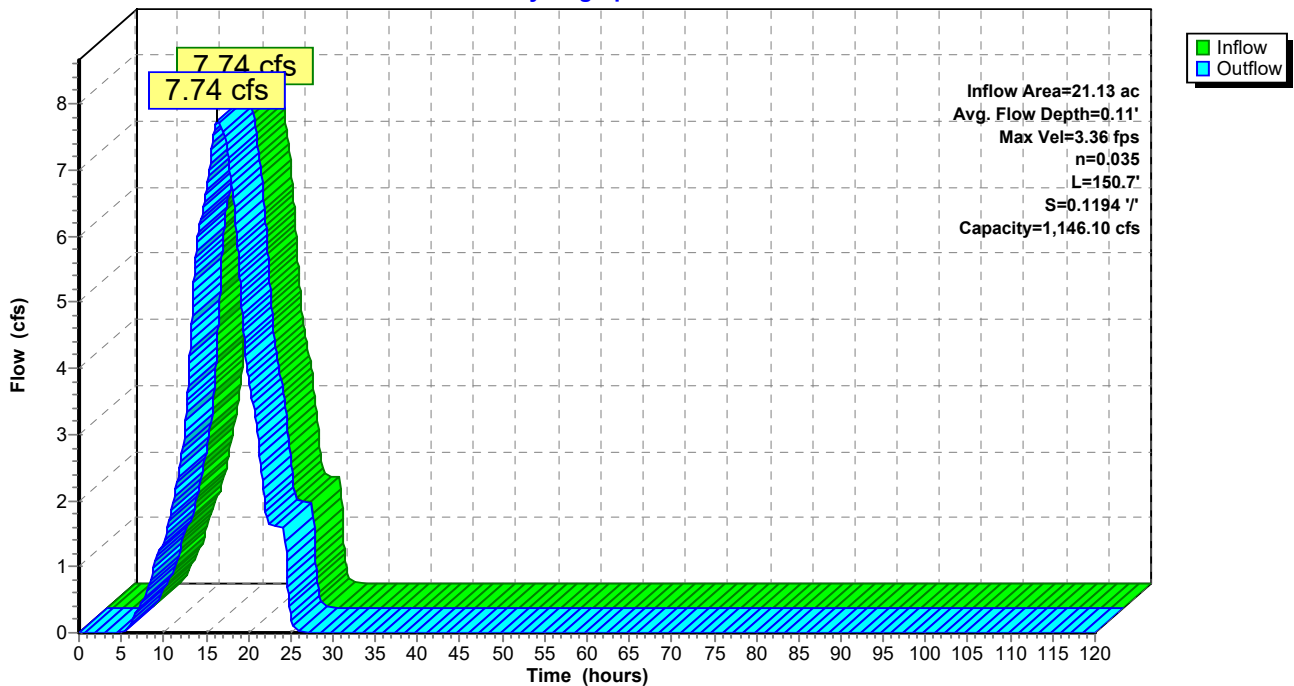
Peak Storage= 347 cf @ 16.32 hrs  
 Average Depth at Peak Storage= 0.11'  
 Bank-Full Depth= 2.00' Flow Area= 60.0 sf, Capacity= 1,146.10 cfs

20.00' x 2.00' deep channel, n= 0.035  
 Side Slope Z-value= 5.0 '/' Top Width= 40.00'  
 Length= 150.7' Slope= 0.1194 '/'  
 Inlet Invert= 776.00', Outlet Invert= 758.00'



**Reach DC-A1C: Downchute A1C**

Hydrograph





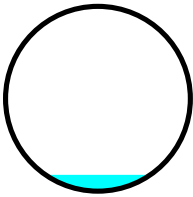
**Summary for Reach LP-B1: Letdown Pipe B1**

Inflow Area = 4.78 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 1.76 cfs @ 15.86 hrs, Volume= 1.205 af  
 Outflow = 1.76 cfs @ 15.87 hrs, Volume= 1.205 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 13.09 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 9.06 fps, Avg. Travel Time= 0.3 min

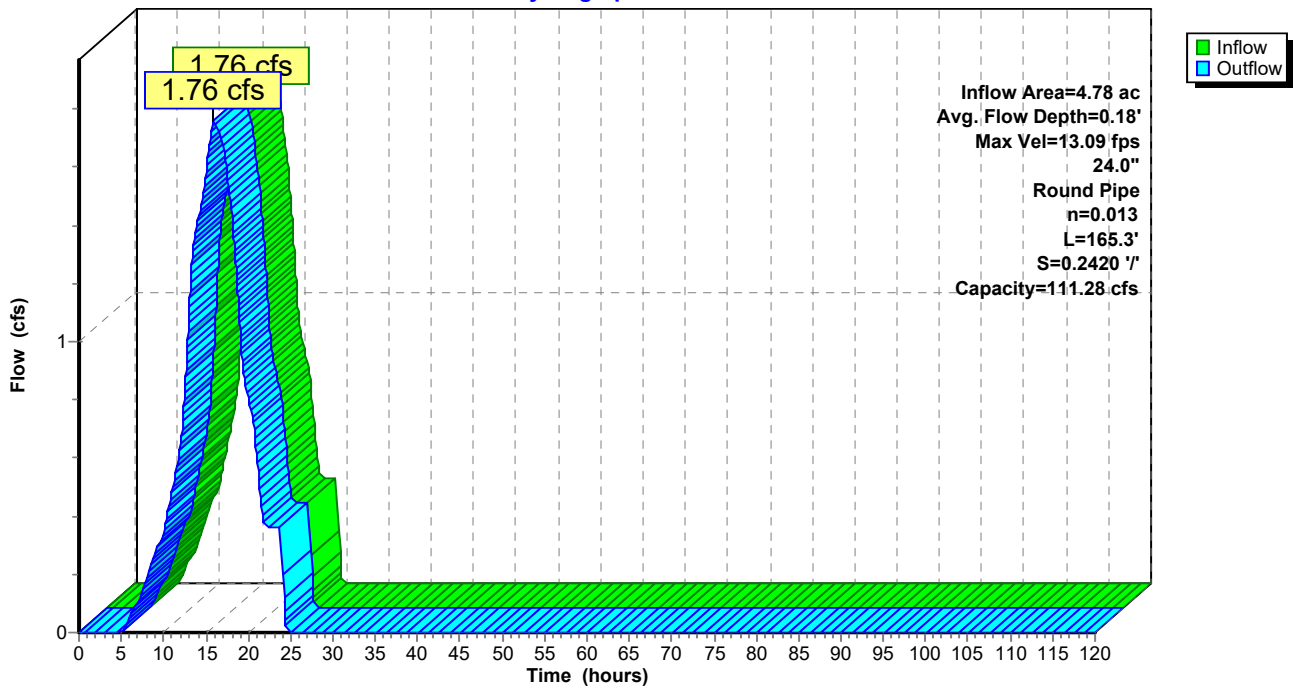
Peak Storage= 22 cf @ 15.86 hrs  
 Average Depth at Peak Storage= 0.18'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 111.28 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 165.3' Slope= 0.2420 '/'  
 Inlet Invert= 877.00', Outlet Invert= 837.00'



**Reach LP-B1: Letdown Pipe B1**

Hydrograph



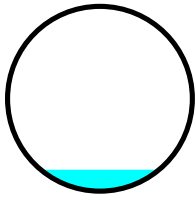
**Summary for Reach LP-B2: Letdown Pipe B2**

Inflow Area = 8.86 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 3.26 cfs @ 15.91 hrs, Volume= 2.233 af  
 Outflow = 3.26 cfs @ 15.91 hrs, Volume= 2.233 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 16.22 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 10.77 fps, Avg. Travel Time= 0.2 min

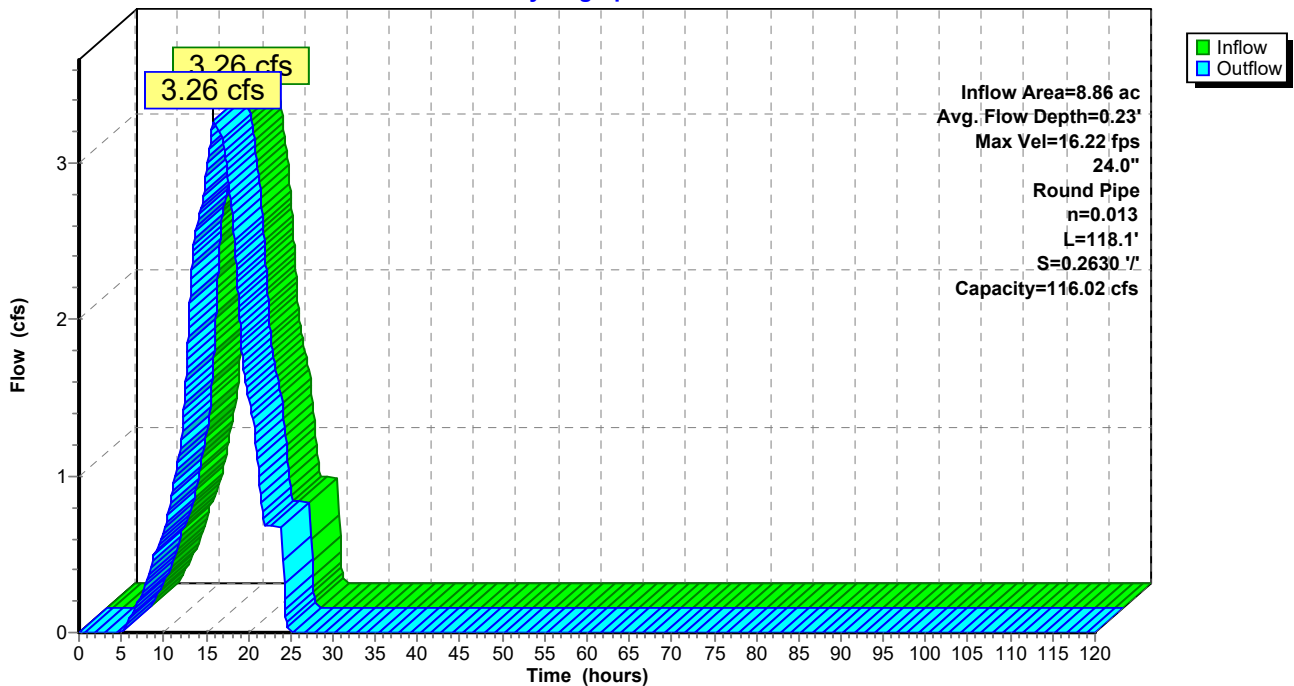
Peak Storage= 24 cf @ 15.91 hrs  
 Average Depth at Peak Storage= 0.23'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 116.02 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 118.1' Slope= 0.2630 '/'  
 Inlet Invert= 837.00', Outlet Invert= 805.94'



**Reach LP-B2: Letdown Pipe B2**

Hydrograph



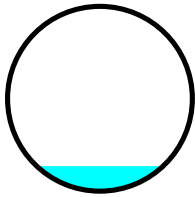
**Summary for Reach LP-B3: Letdown Pipe B3**

Inflow Area = 11.97 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 4.41 cfs @ 15.94 hrs, Volume= 3.017 af  
 Outflow = 4.41 cfs @ 15.94 hrs, Volume= 3.017 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 17.57 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 11.35 fps, Avg. Travel Time= 0.2 min

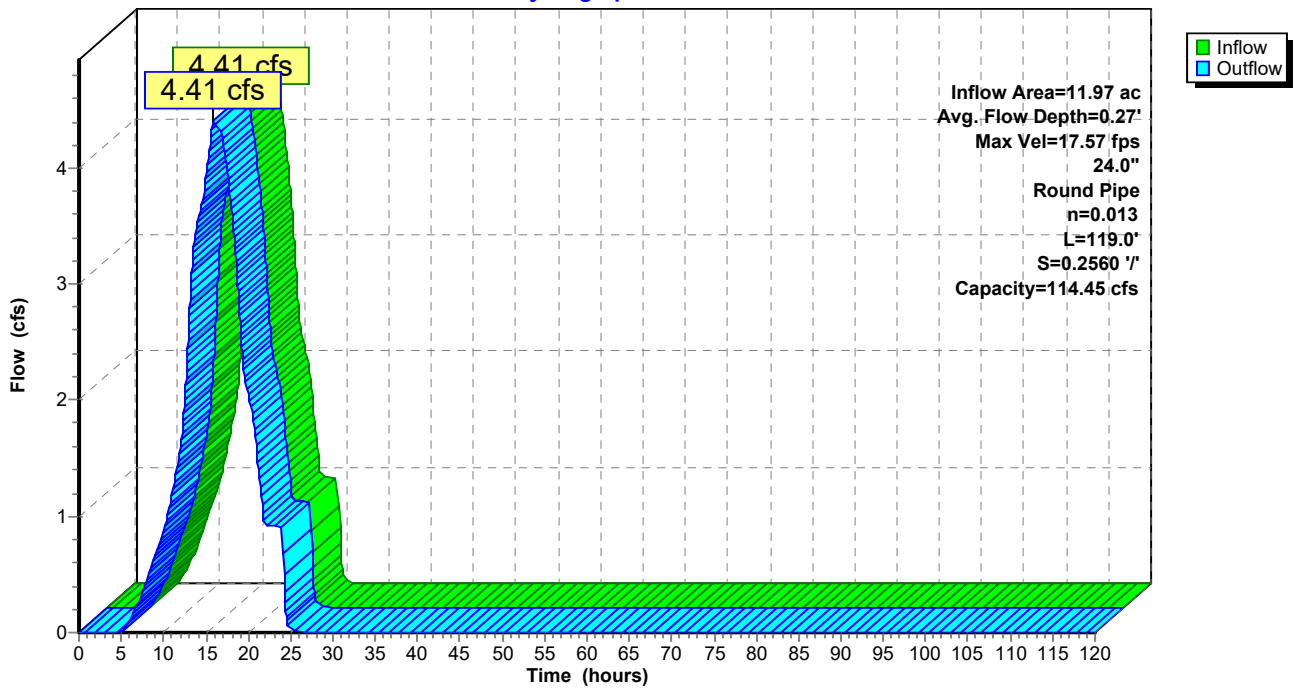
Peak Storage= 30 cf @ 15.94 hrs  
 Average Depth at Peak Storage= 0.27'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 114.45 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 119.0' Slope= 0.2560 '/'  
 Inlet Invert= 805.94', Outlet Invert= 775.48'



**Reach LP-B3: Letdown Pipe B3**

Hydrograph



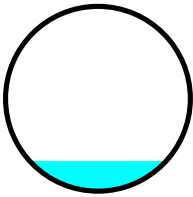
**Summary for Reach LP-B4: Letdown Pipe B4**

Inflow Area = 15.33 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 5.64 cfs @ 15.96 hrs, Volume= 3.863 af  
 Outflow = 5.64 cfs @ 15.96 hrs, Volume= 3.863 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 17.12 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 10.82 fps, Avg. Travel Time= 0.2 min

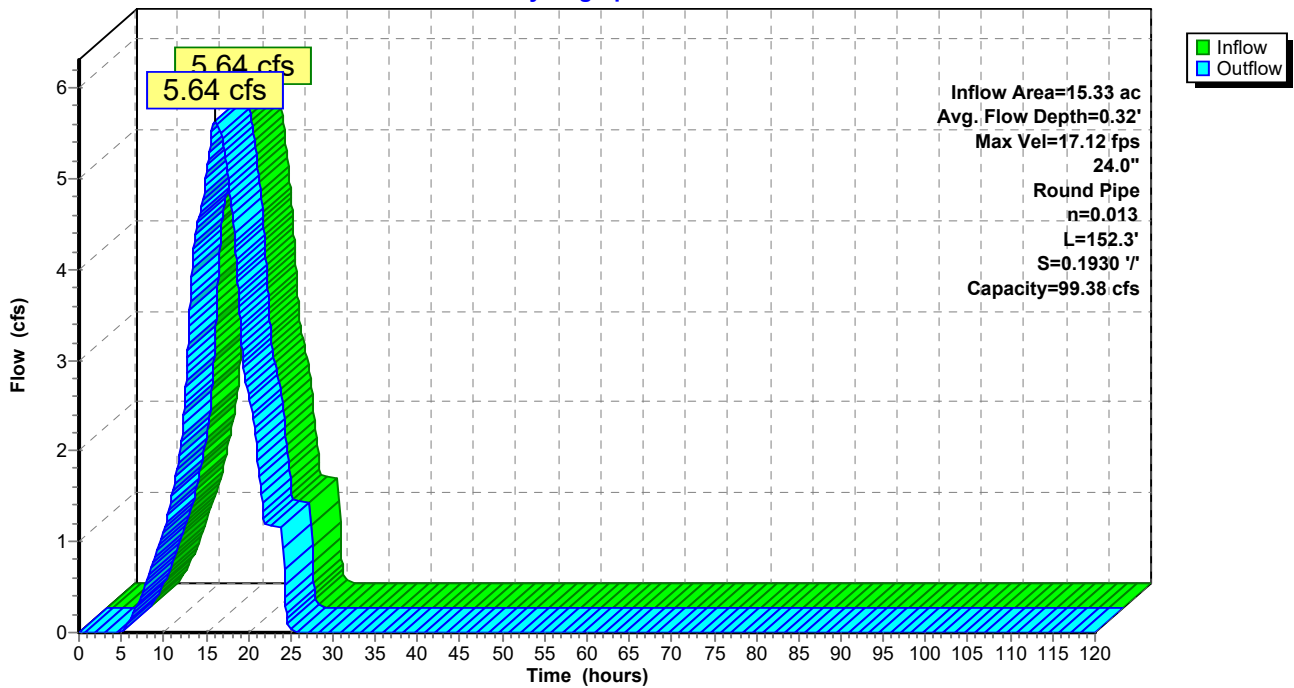
Peak Storage= 50 cf @ 15.96 hrs  
 Average Depth at Peak Storage= 0.32'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 99.38 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 152.3' Slope= 0.1930 '/'  
 Inlet Invert= 775.48', Outlet Invert= 746.09'



**Reach LP-B4: Letdown Pipe B4**

Hydrograph



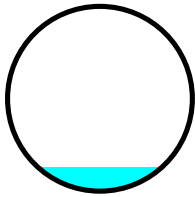
**Summary for Reach LP-B5: Letdown Pipe B5**

Inflow Area = 3.47 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 1.28 cfs @ 15.92 hrs, Volume= 0.875 af  
 Outflow = 1.28 cfs @ 15.94 hrs, Volume= 0.875 af, Atten= 0%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 11.99 fps, Min. Travel Time= 0.4 min  
 Avg. Velocity = 8.12 fps, Avg. Travel Time= 0.6 min

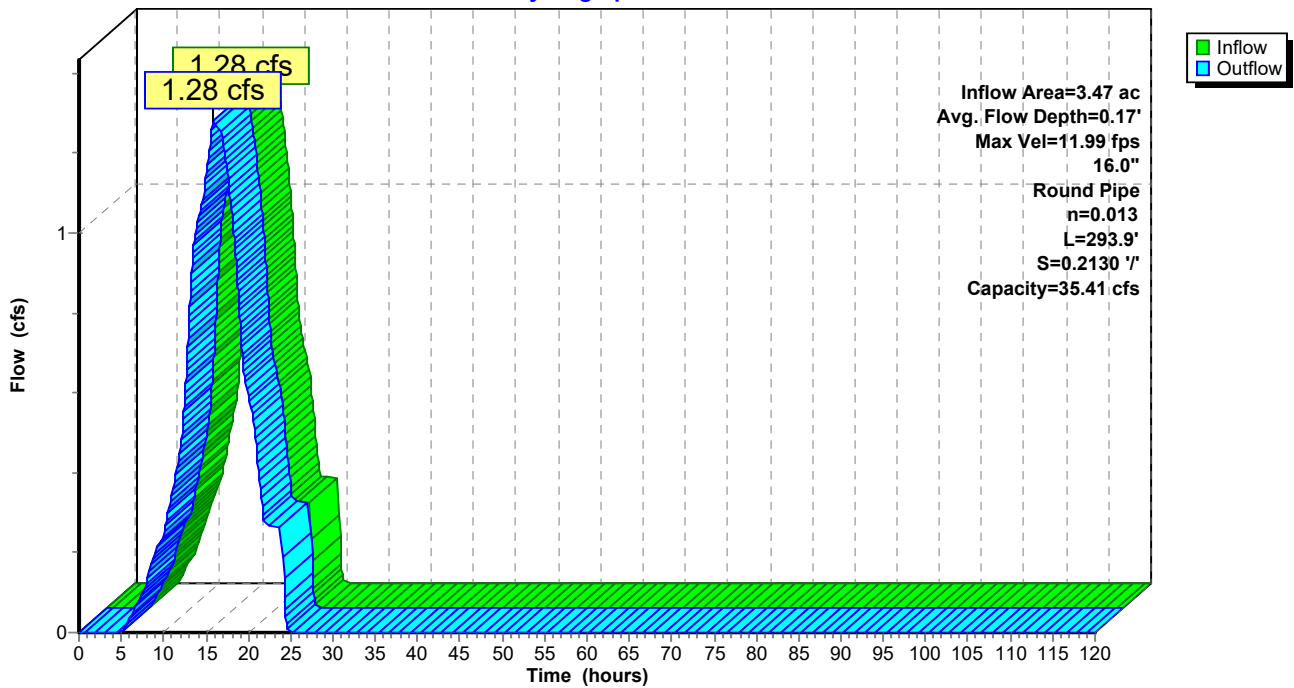
Peak Storage= 31 cf @ 15.93 hrs  
 Average Depth at Peak Storage= 0.17'  
 Bank-Full Depth= 1.33' Flow Area= 1.4 sf, Capacity= 35.41 cfs

16.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 293.9' Slope= 0.2130 '/'  
 Inlet Invert= 820.00', Outlet Invert= 757.40'



**Reach LP-B5: Letdown Pipe B5**

Hydrograph



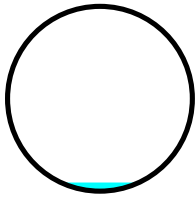
### Summary for Reach LP-D1: Letdown Pipe D1

Inflow Area = 1.26 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 0.46 cfs @ 15.83 hrs, Volume= 0.317 af  
 Outflow = 0.46 cfs @ 15.83 hrs, Volume= 0.317 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 8.86 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity= 6.35 fps, Avg. Travel Time= 0.1 min

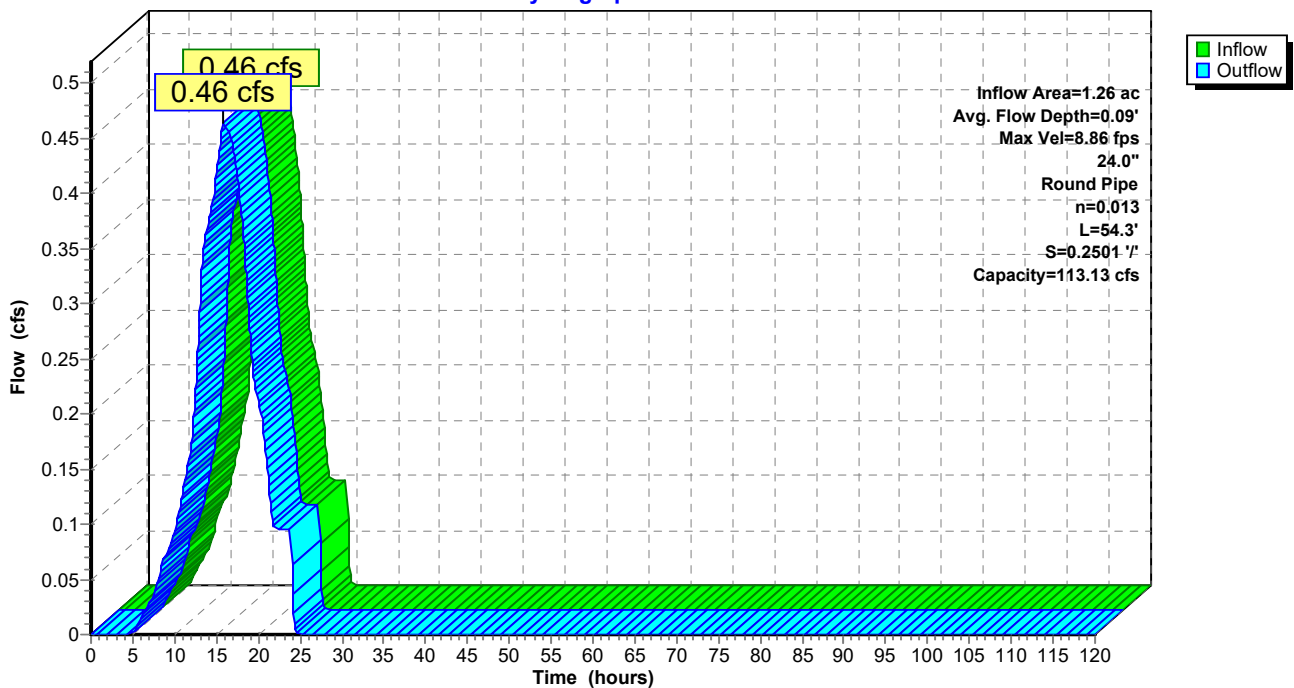
Peak Storage= 3 cf @ 15.83 hrs  
 Average Depth at Peak Storage= 0.09'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 113.13 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 54.3' Slope= 0.2501 '/'  
 Inlet Invert= 857.24', Outlet Invert= 843.66'



### Reach LP-D1: Letdown Pipe D1

Hydrograph



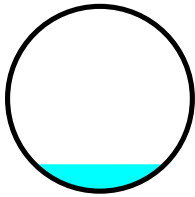
**Summary for Reach LP-D3: Letdown Pipe D3**

Inflow Area = 13.77 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 5.07 cfs @ 16.01 hrs, Volume= 3.471 af  
 Outflow = 5.07 cfs @ 16.01 hrs, Volume= 3.471 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 18.08 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 11.41 fps, Avg. Travel Time= 0.1 min

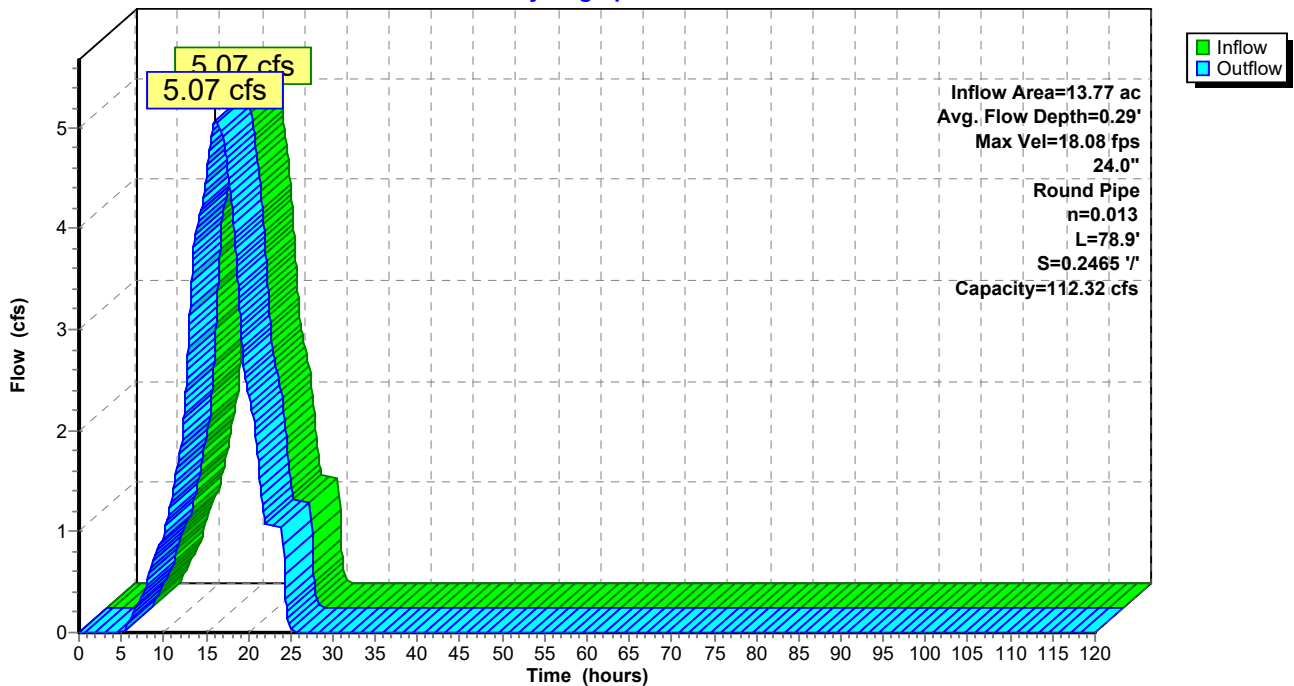
Peak Storage= 22 cf @ 16.01 hrs  
 Average Depth at Peak Storage= 0.29'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 112.32 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 78.9' Slope= 0.2465 '/  
 Inlet Invert= 793.71', Outlet Invert= 774.26'



**Reach LP-D3: Letdown Pipe D3**

Hydrograph



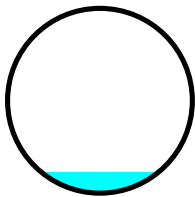
**Summary for Reach LP-E1: Letdown Pipe E1**

Inflow Area = 3.40 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 1.25 cfs @ 15.91 hrs, Volume= 0.857 af  
 Outflow = 1.25 cfs @ 15.92 hrs, Volume= 0.857 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 11.21 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 7.63 fps, Avg. Travel Time= 0.3 min

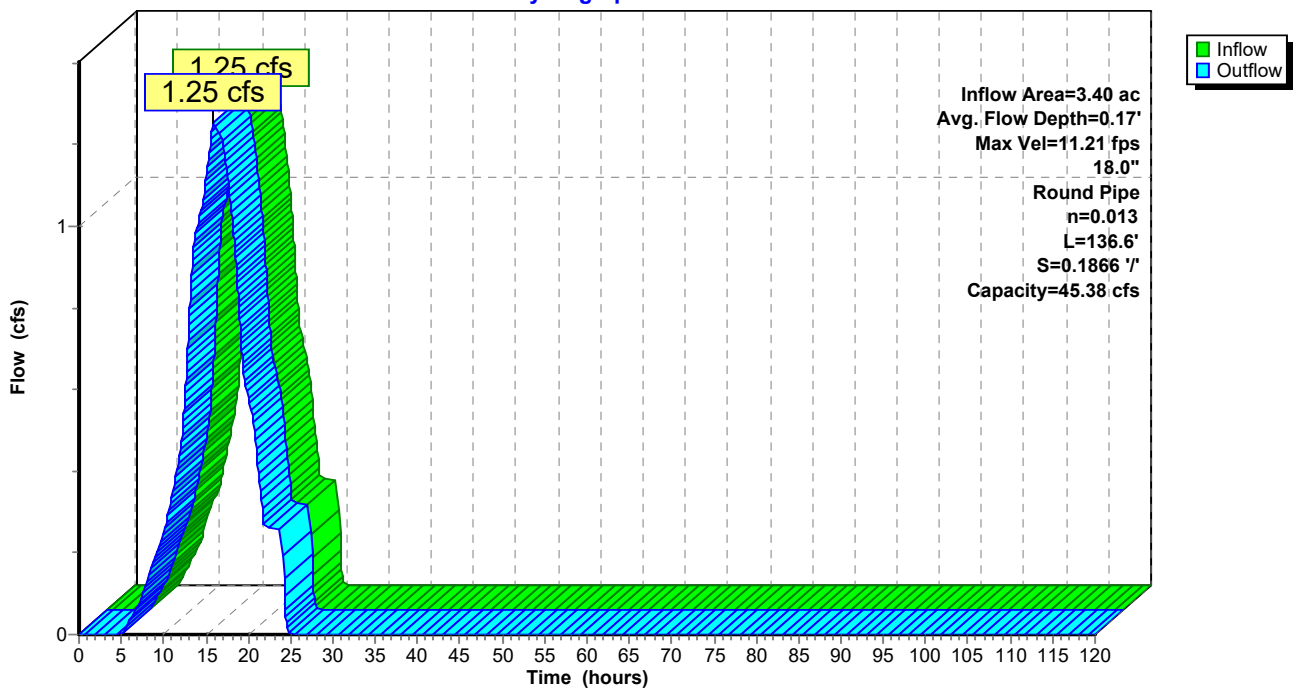
Peak Storage= 15 cf @ 15.92 hrs  
 Average Depth at Peak Storage= 0.17'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 45.38 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 136.6' Slope= 0.1866 '/'  
 Inlet Invert= 856.64', Outlet Invert= 831.15'



**Reach LP-E1: Letdown Pipe E1**

Hydrograph





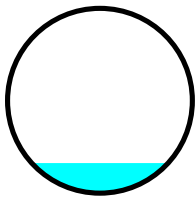
**Summary for Reach LP-E2: Letdown Pipe E2**

Inflow Area = 8.08 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 2.97 cfs @ 16.03 hrs, Volume= 2.036 af  
 Outflow = 2.97 cfs @ 16.04 hrs, Volume= 2.036 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 16.05 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 10.08 fps, Avg. Travel Time= 0.1 min

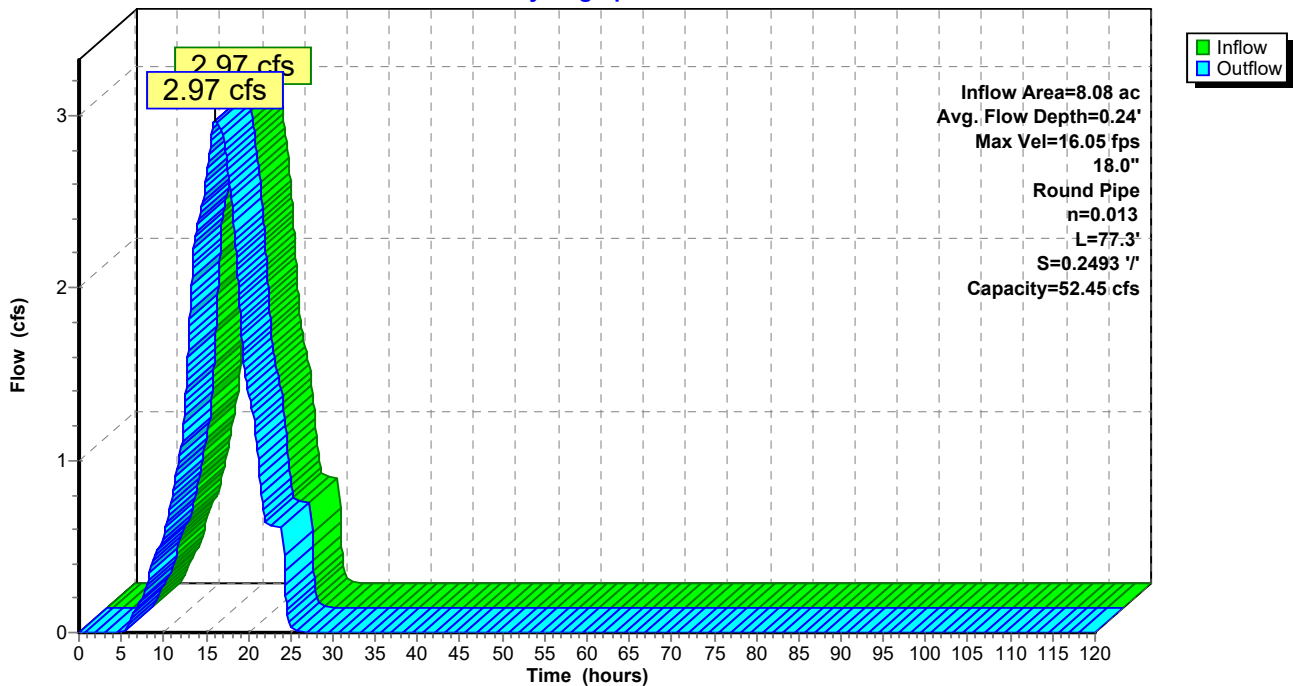
Peak Storage= 14 cf @ 16.03 hrs  
 Average Depth at Peak Storage= 0.24'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 52.45 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 77.3' Slope= 0.2493 '/  
 Inlet Invert= 793.51', Outlet Invert= 774.24'



**Reach LP-E2: Letdown Pipe E2**

Hydrograph



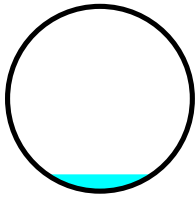
### Summary for Reach LP-H1: Letdown Pipe H1

Inflow Area = 1.98 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 0.73 cfs @ 15.92 hrs, Volume= 0.499 af  
 Outflow = 0.73 cfs @ 15.92 hrs, Volume= 0.499 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 9.23 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity= 6.36 fps, Avg. Travel Time= 0.2 min

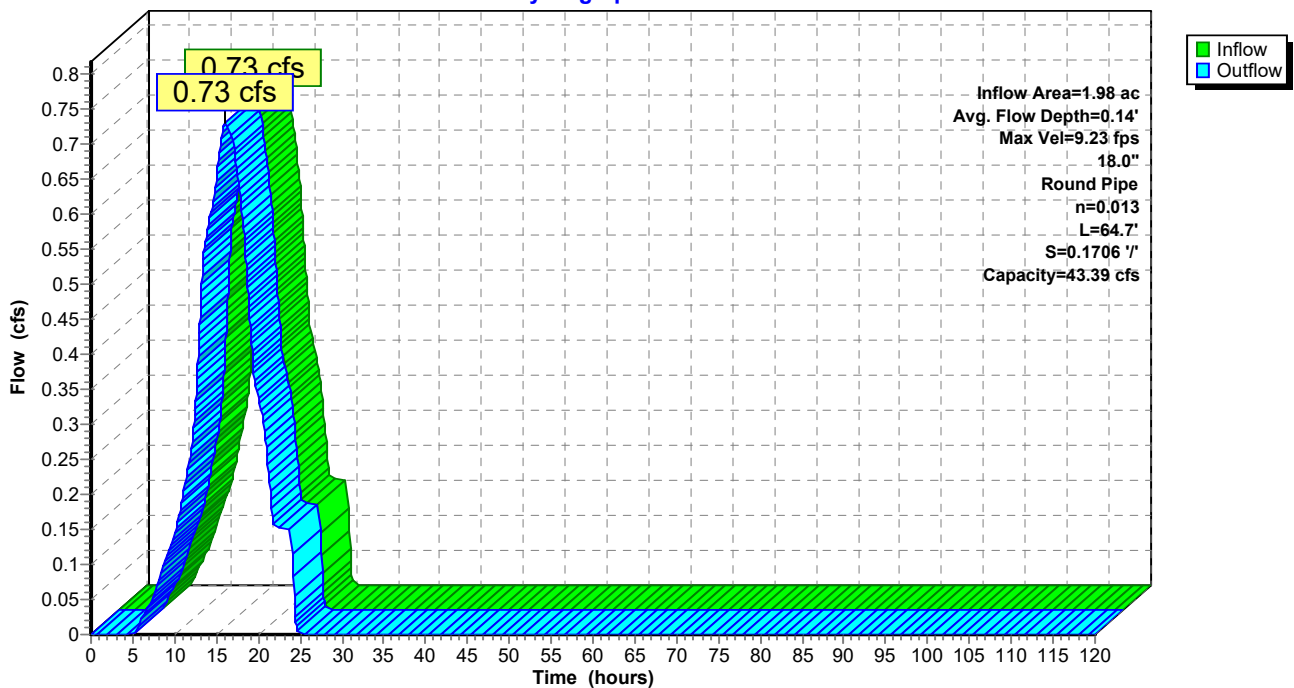
Peak Storage= 5 cf @ 15.92 hrs  
 Average Depth at Peak Storage= 0.14'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 43.39 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 64.7' Slope= 0.1706 '/  
 Inlet Invert= 867.73', Outlet Invert= 856.69'



### Reach LP-H1: Letdown Pipe H1

Hydrograph



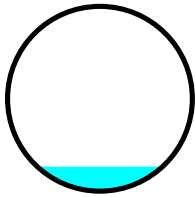
**Summary for Reach LP-H2: Letdown Pipe H2**

Inflow Area = 5.26 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 1.94 cfs @ 15.92 hrs, Volume= 1.326 af  
 Outflow = 1.94 cfs @ 15.93 hrs, Volume= 1.326 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 14.14 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 9.46 fps, Avg. Travel Time= 0.3 min

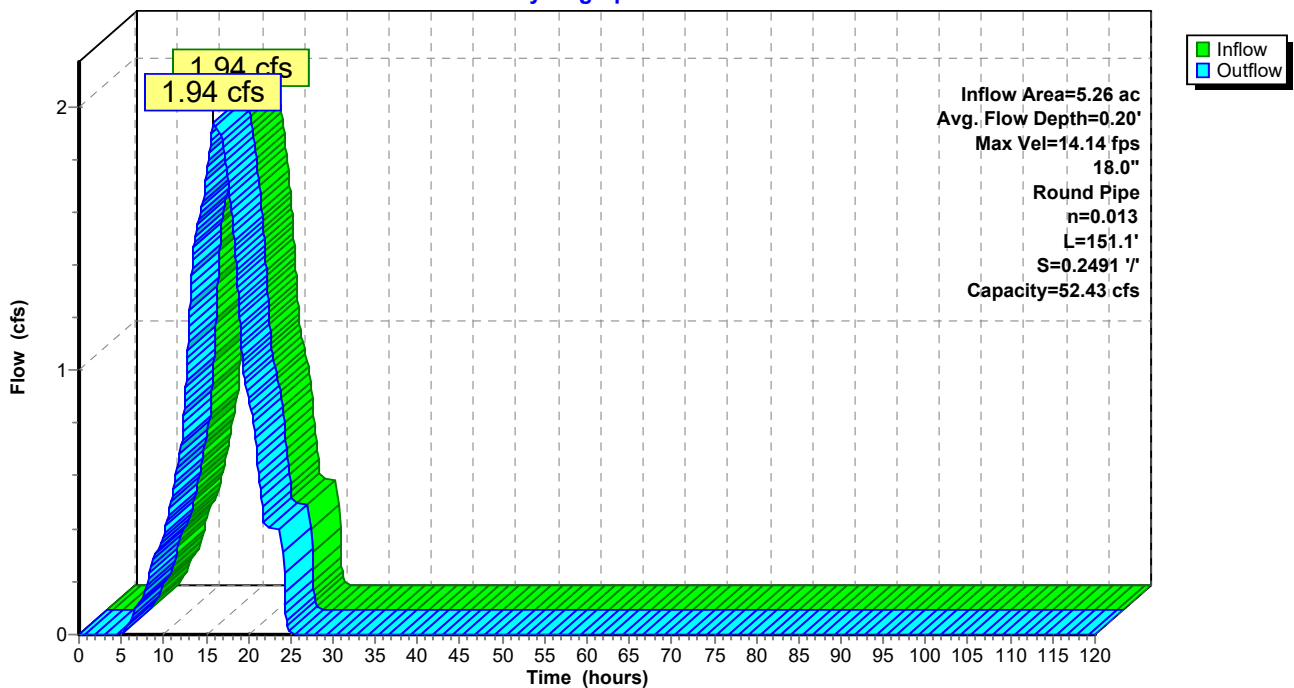
Peak Storage= 21 cf @ 15.92 hrs  
 Average Depth at Peak Storage= 0.20'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 52.43 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 151.1' Slope= 0.2491 '/'  
 Inlet Invert= 831.15', Outlet Invert= 793.51'



**Reach LP-H2: Letdown Pipe H2**

Hydrograph



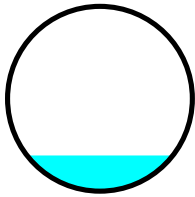
### Summary for Reach LP-H3: Letdown Pipe H3

Inflow Area = 11.65 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 4.28 cfs @ 16.02 hrs, Volume= 2.936 af  
 Outflow = 4.28 cfs @ 16.02 hrs, Volume= 2.936 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 17.98 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 11.15 fps, Avg. Travel Time= 0.2 min

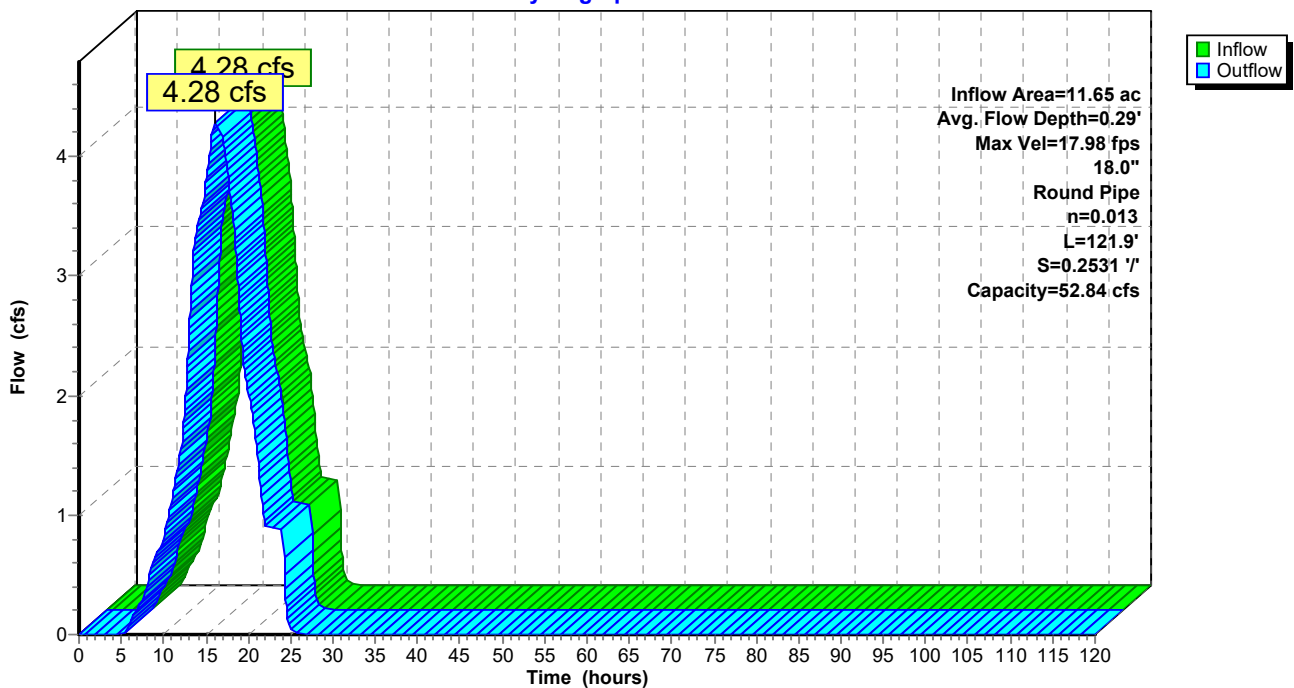
Peak Storage= 29 cf @ 16.02 hrs  
 Average Depth at Peak Storage= 0.29'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 52.84 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 121.9' Slope= 0.2531 '/'  
 Inlet Invert= 774.24', Outlet Invert= 743.39'



### Reach LP-H3: Letdown Pipe H3

Hydrograph



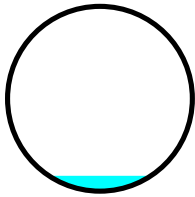
**Summary for Reach LP-N-A1: Letdown Pipe N-A1**

Inflow Area = 3.60 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 1.33 cfs @ 15.86 hrs, Volume= 0.907 af  
 Outflow = 1.33 cfs @ 15.86 hrs, Volume= 0.907 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 10.77 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 7.51 fps, Avg. Travel Time= 0.4 min

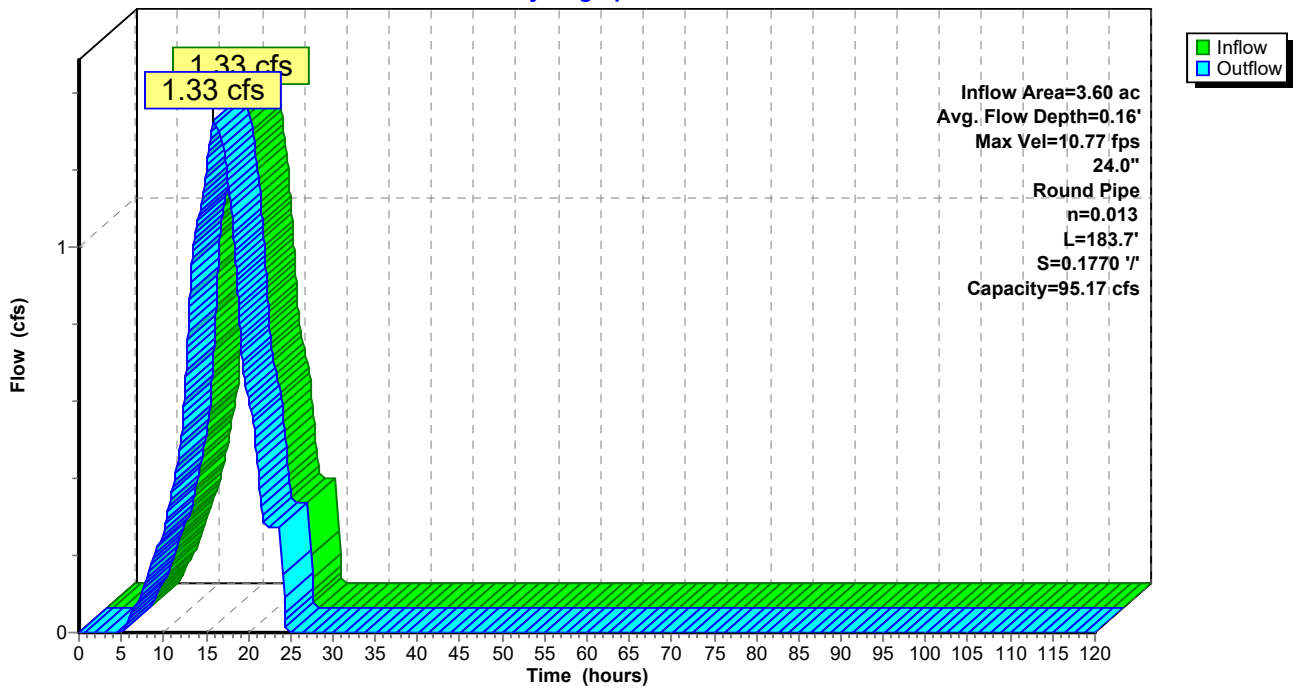
Peak Storage= 23 cf @ 15.86 hrs  
 Average Depth at Peak Storage= 0.16'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 95.17 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 183.7' Slope= 0.1770 '/'  
 Inlet Invert= 869.36', Outlet Invert= 836.85'



**Reach LP-N-A1: Letdown Pipe N-A1**

Hydrograph



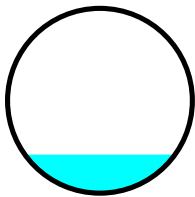
### Summary for Reach LP-N-A10: Letdown Pipe N-A10

Inflow Area = 21.41 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 7.87 cfs @ 16.04 hrs, Volume= 5.395 af  
 Outflow = 7.87 cfs @ 16.04 hrs, Volume= 5.395 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 10.66 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 6.31 fps, Avg. Travel Time= 0.2 min

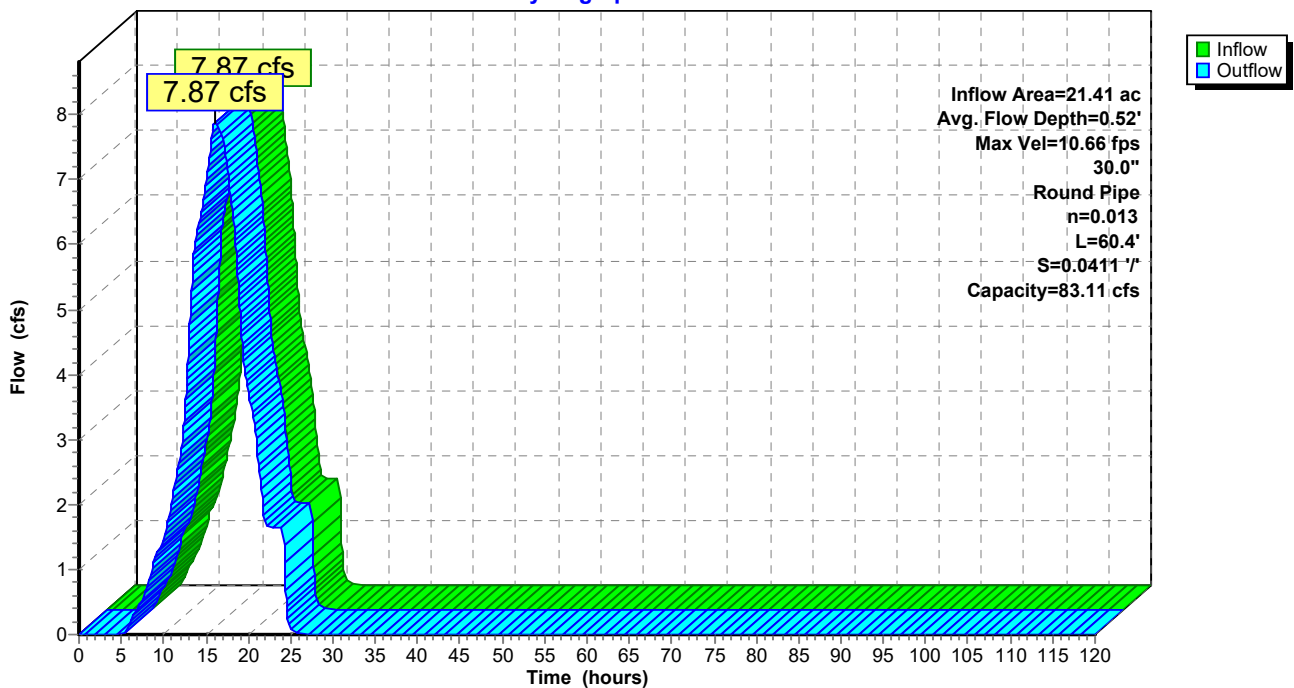
Peak Storage= 45 cf @ 16.04 hrs  
 Average Depth at Peak Storage= 0.52'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 83.11 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 60.4' Slope= 0.0411 '/'  
 Inlet Invert= 748.28', Outlet Invert= 745.80'



### Reach LP-N-A10: Letdown Pipe N-A10

Hydrograph



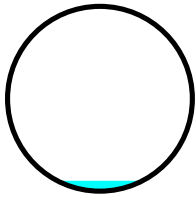
**Summary for Reach LP-N-A2: Letdown Pipe N-A2**

Inflow Area = 2.82 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 1.04 cfs @ 15.93 hrs, Volume= 0.712 af  
 Outflow = 1.04 cfs @ 15.94 hrs, Volume= 0.712 af, Atten= 0%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 9.72 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity= 6.73 fps, Avg. Travel Time= 0.5 min

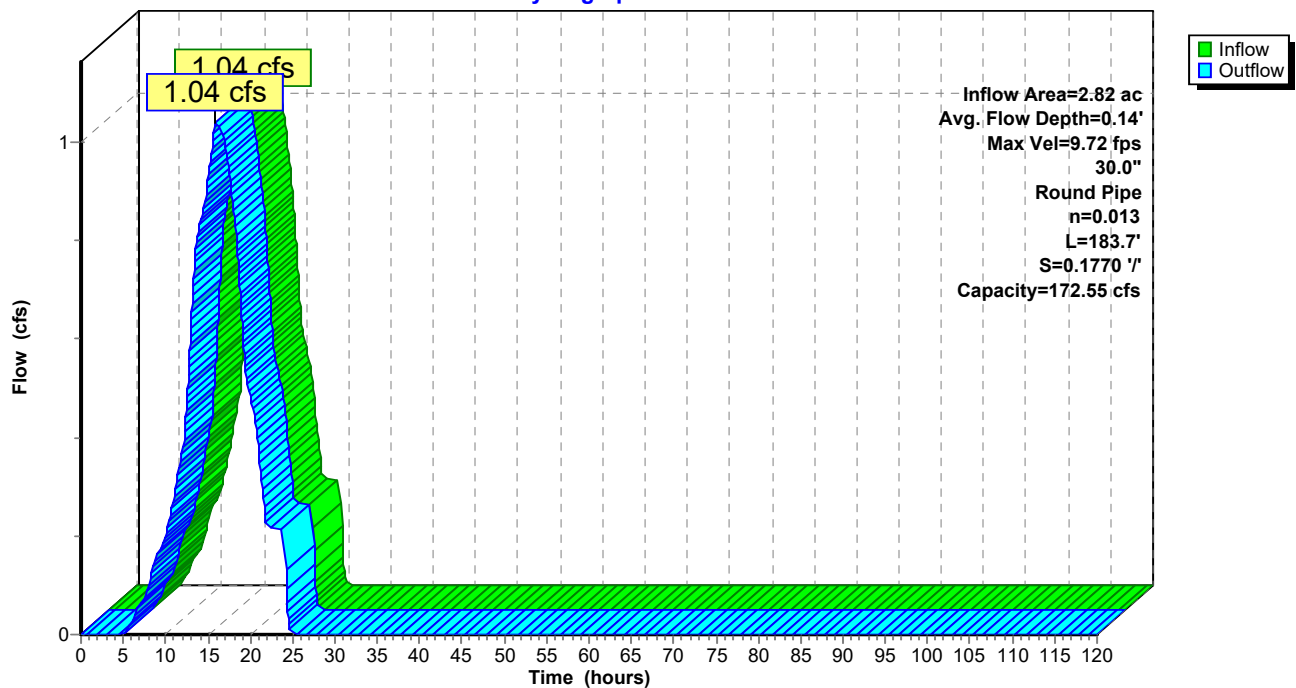
Peak Storage= 20 cf @ 15.94 hrs  
 Average Depth at Peak Storage= 0.14'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 172.55 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 183.7' Slope= 0.1770 '/'  
 Inlet Invert= 869.36', Outlet Invert= 836.85'



**Reach LP-N-A2: Letdown Pipe N-A2**

Hydrograph



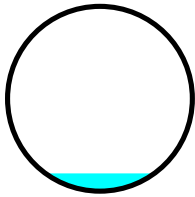
**Summary for Reach LP-N-A3: Letdown Pipe N-A3**

Inflow Area = 4.91 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 1.81 cfs @ 15.86 hrs, Volume= 1.237 af  
 Outflow = 1.81 cfs @ 15.87 hrs, Volume= 1.237 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 11.85 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 8.18 fps, Avg. Travel Time= 0.3 min

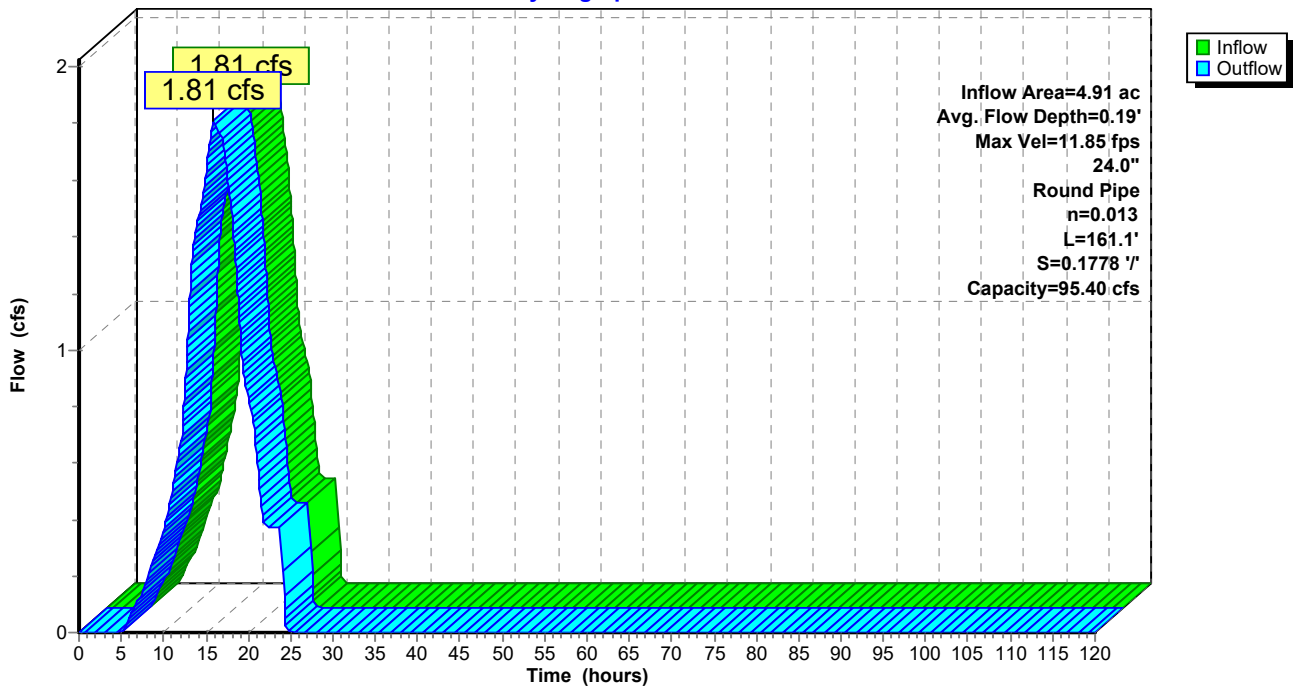
Peak Storage= 25 cf @ 15.86 hrs  
 Average Depth at Peak Storage= 0.19'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 95.40 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 161.1' Slope= 0.1778 '/'  
 Inlet Invert= 836.85', Outlet Invert= 808.20'



**Reach LP-N-A3: Letdown Pipe N-A3**

Hydrograph





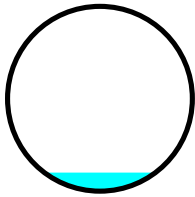
**Summary for Reach LP-N-A4: Letdown Pipe N-A4**

Inflow Area = 9.70 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 3.57 cfs @ 16.04 hrs, Volume= 2.445 af  
 Outflow = 3.57 cfs @ 16.05 hrs, Volume= 2.445 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 14.09 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 9.06 fps, Avg. Travel Time= 0.3 min

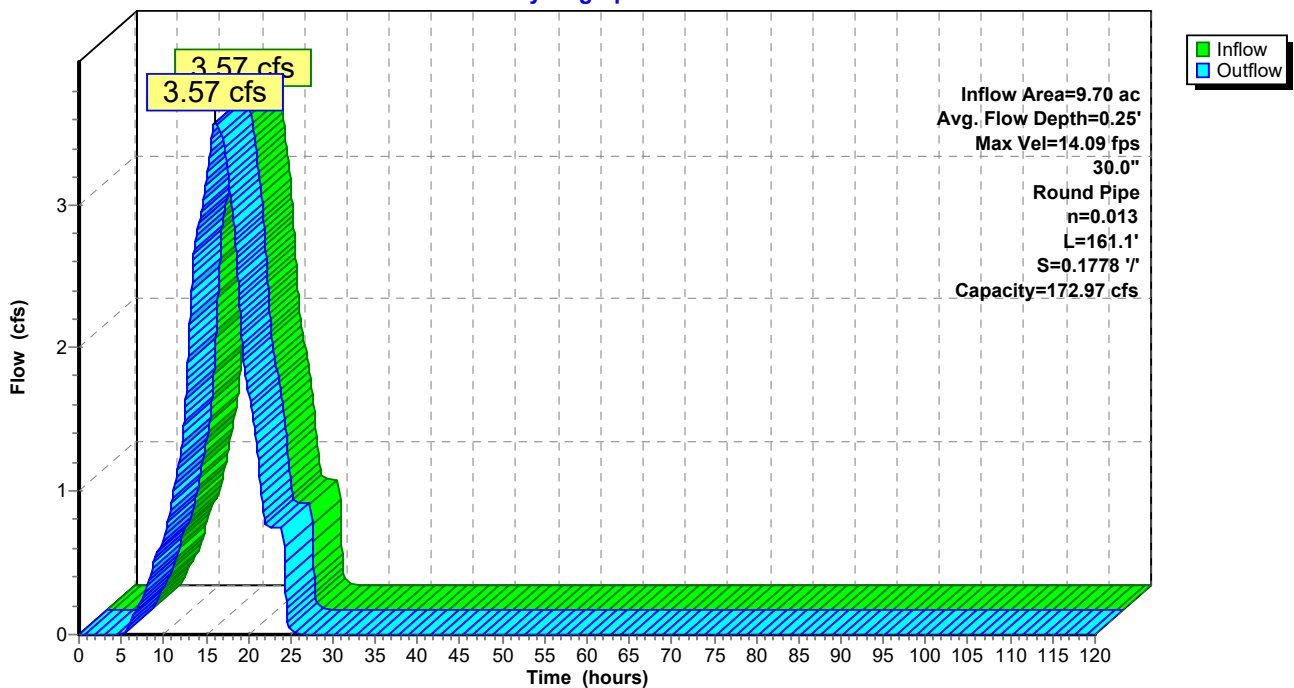
Peak Storage= 41 cf @ 16.04 hrs  
 Average Depth at Peak Storage= 0.25'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 172.97 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 161.1' Slope= 0.1778 '/'  
 Inlet Invert= 836.85', Outlet Invert= 808.20'



**Reach LP-N-A4: Letdown Pipe N-A4**

Hydrograph



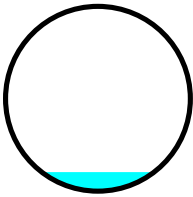
**Summary for Reach LP-N-A5: Letdown Pipe N-A5**

Inflow Area = 5.64 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 2.08 cfs @ 15.86 hrs, Volume= 1.422 af  
 Outflow = 2.08 cfs @ 15.87 hrs, Volume= 1.422 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 12.31 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 8.46 fps, Avg. Travel Time= 0.3 min

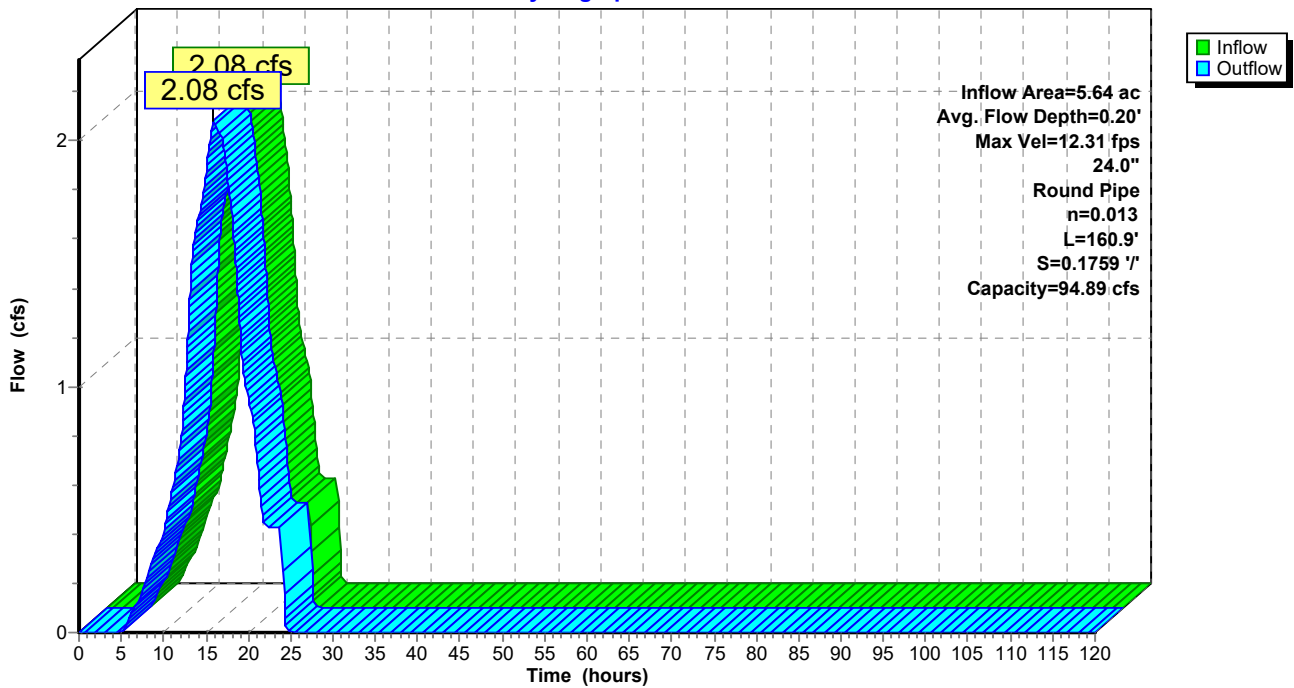
Peak Storage= 27 cf @ 15.86 hrs  
 Average Depth at Peak Storage= 0.20'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 94.89 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 160.9' Slope= 0.1759 '/'  
 Inlet Invert= 808.20', Outlet Invert= 779.89'



**Reach LP-N-A5: Letdown Pipe N-A5**

Hydrograph



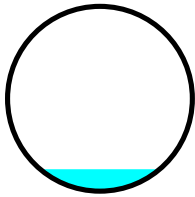
**Summary for Reach LP-N-A6: Letdown Pipe N-A6**

Inflow Area = 13.83 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 5.09 cfs @ 16.04 hrs, Volume= 3.486 af  
 Outflow = 5.09 cfs @ 16.05 hrs, Volume= 3.486 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 15.62 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 9.79 fps, Avg. Travel Time= 0.3 min

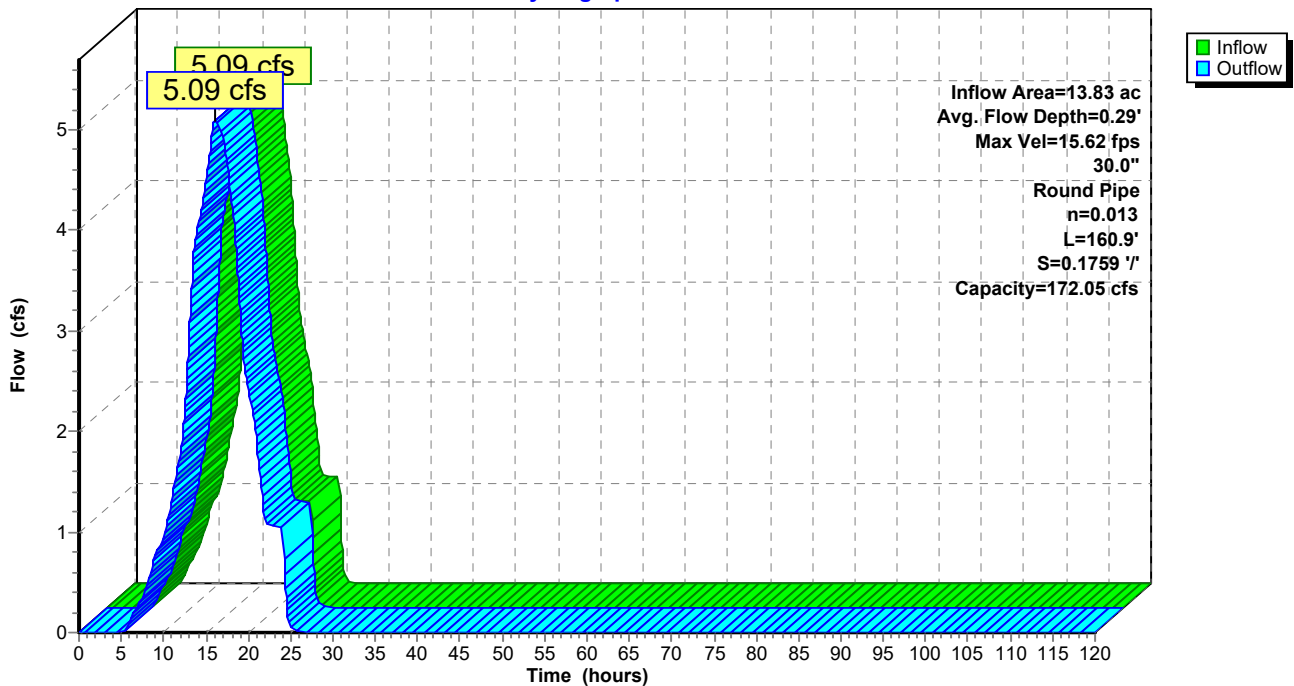
Peak Storage= 52 cf @ 16.05 hrs  
 Average Depth at Peak Storage= 0.29'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 172.05 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 160.9' Slope= 0.1759 '/'  
 Inlet Invert= 808.20', Outlet Invert= 779.89'



**Reach LP-N-A6: Letdown Pipe N-A6**

Hydrograph



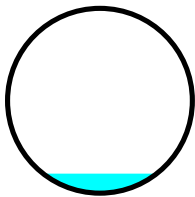
**Summary for Reach LP-N-A7: Letdown Pipe N-A7**

Inflow Area = 6.09 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 2.24 cfs @ 15.86 hrs, Volume= 1.533 af  
 Outflow = 2.24 cfs @ 15.87 hrs, Volume= 1.533 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 12.78 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 8.78 fps, Avg. Travel Time= 0.3 min

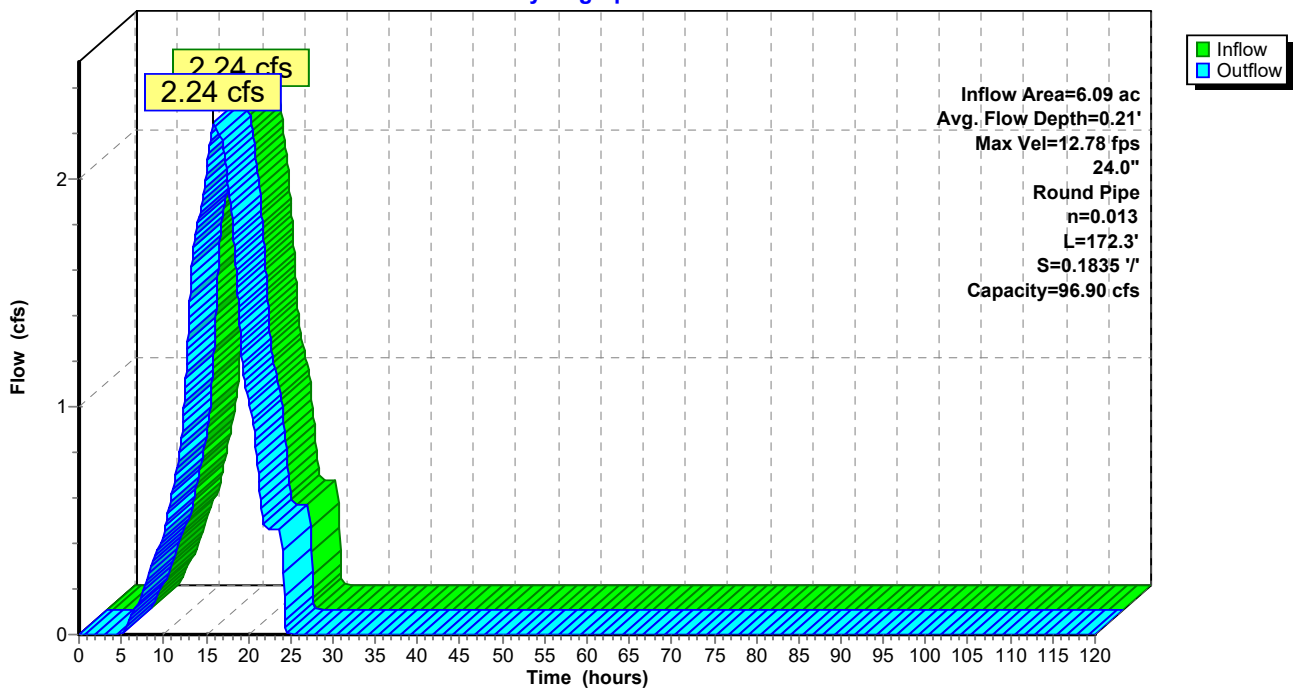
Peak Storage= 30 cf @ 15.87 hrs  
 Average Depth at Peak Storage= 0.21'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 96.90 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 172.3' Slope= 0.1835 '/'  
 Inlet Invert= 779.89', Outlet Invert= 748.28'



**Reach LP-N-A7: Letdown Pipe N-A7**

Hydrograph



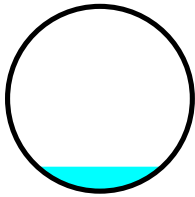
**Summary for Reach LP-N-A8: Letdown Pipe N-A8**

Inflow Area = 17.63 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 6.48 cfs @ 16.04 hrs, Volume= 4.443 af  
 Outflow = 6.48 cfs @ 16.05 hrs, Volume= 4.443 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 17.04 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 10.55 fps, Avg. Travel Time= 0.3 min

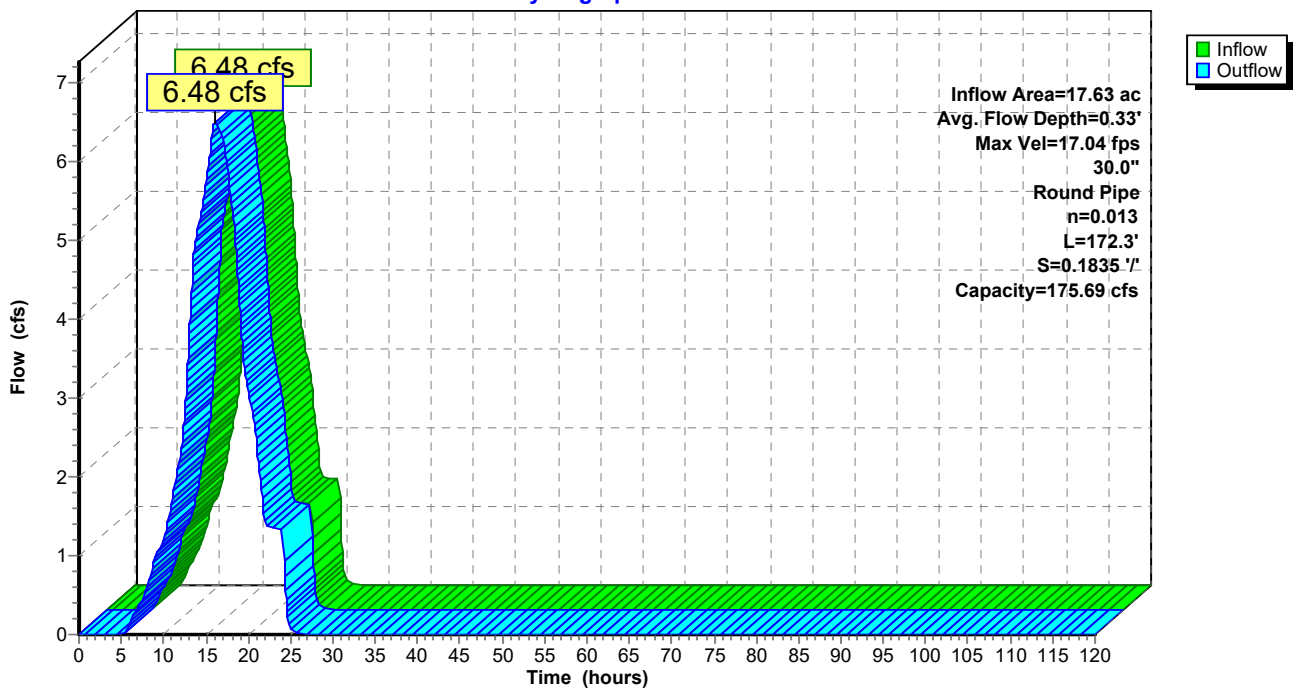
Peak Storage= 66 cf @ 16.05 hrs  
 Average Depth at Peak Storage= 0.33'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 175.69 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 172.3' Slope= 0.1835 '/'  
 Inlet Invert= 779.89', Outlet Invert= 748.28'



**Reach LP-N-A8: Letdown Pipe N-A8**

Hydrograph



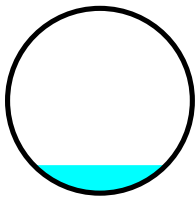
### Summary for Reach LP-N-A9: Letdown Pipe N-A9

Inflow Area = 6.09 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 2.24 cfs @ 15.87 hrs, Volume= 1.533 af  
 Outflow = 2.24 cfs @ 15.87 hrs, Volume= 1.533 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 7.56 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity= 5.12 fps, Avg. Travel Time= 0.2 min

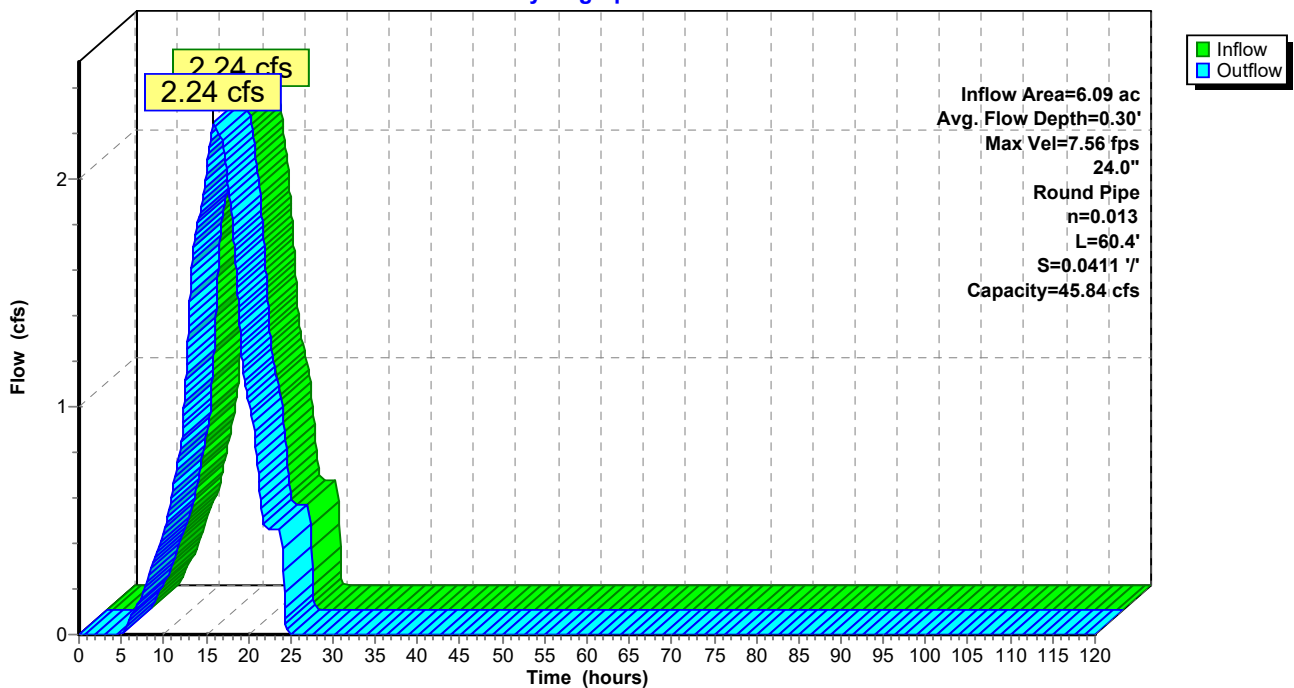
Peak Storage= 18 cf @ 15.87 hrs  
 Average Depth at Peak Storage= 0.30'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 45.84 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 60.4' Slope= 0.0411 '/  
 Inlet Invert= 748.28', Outlet Invert= 745.80'



### Reach LP-N-A9: Letdown Pipe N-A9

Hydrograph



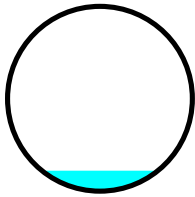
**Summary for Reach LP-N-B1: Letdown Pipe N-B1**

Inflow Area = 3.15 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 1.16 cfs @ 15.99 hrs, Volume= 0.795 af  
 Outflow = 1.16 cfs @ 16.00 hrs, Volume= 0.795 af, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 11.00 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 7.32 fps, Avg. Travel Time= 0.5 min

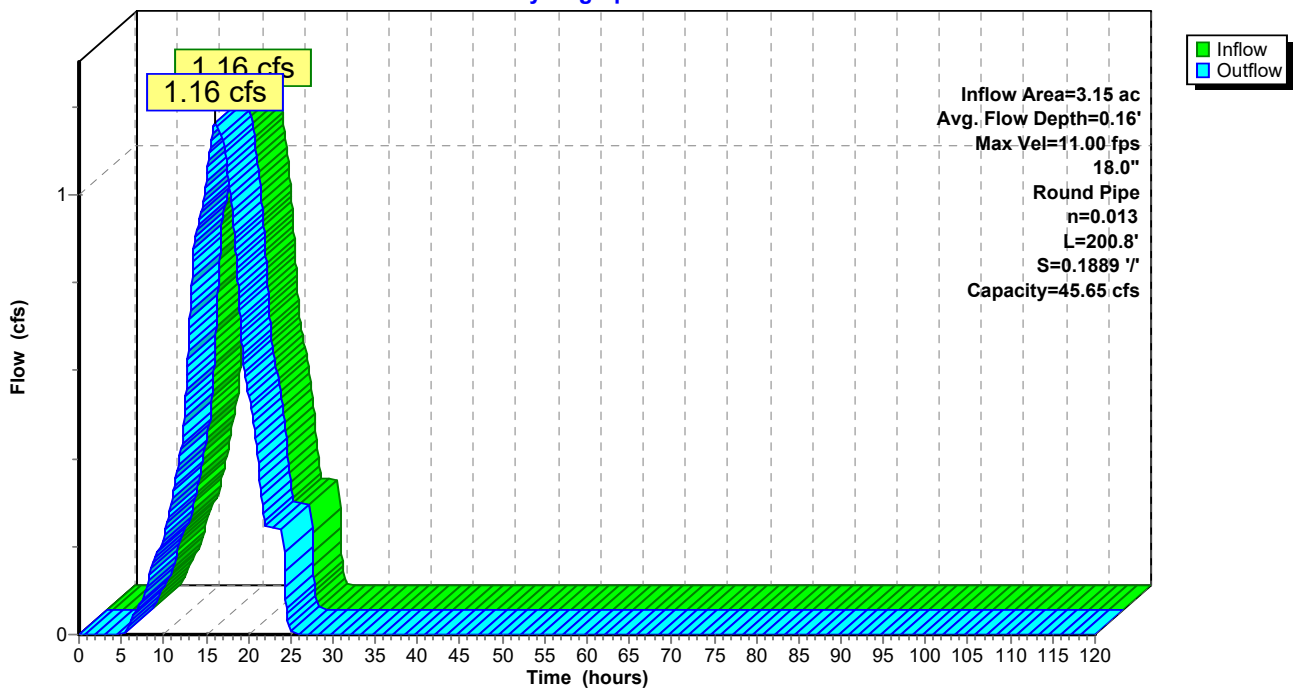
Peak Storage= 21 cf @ 16.00 hrs  
 Average Depth at Peak Storage= 0.16'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 45.65 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 200.8' Slope= 0.1889 '/'  
 Inlet Invert= 847.84', Outlet Invert= 809.91'



**Reach LP-N-B1: Letdown Pipe N-B1**

Hydrograph



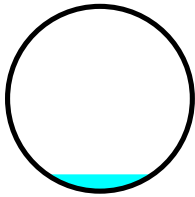
**Summary for Reach LP-N-B2: Letdown Pipe N-B2**

Inflow Area = 4.49 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 1.65 cfs @ 16.01 hrs, Volume= 1.131 af  
 Outflow = 1.65 cfs @ 16.02 hrs, Volume= 1.131 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 11.76 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 7.81 fps, Avg. Travel Time= 0.4 min

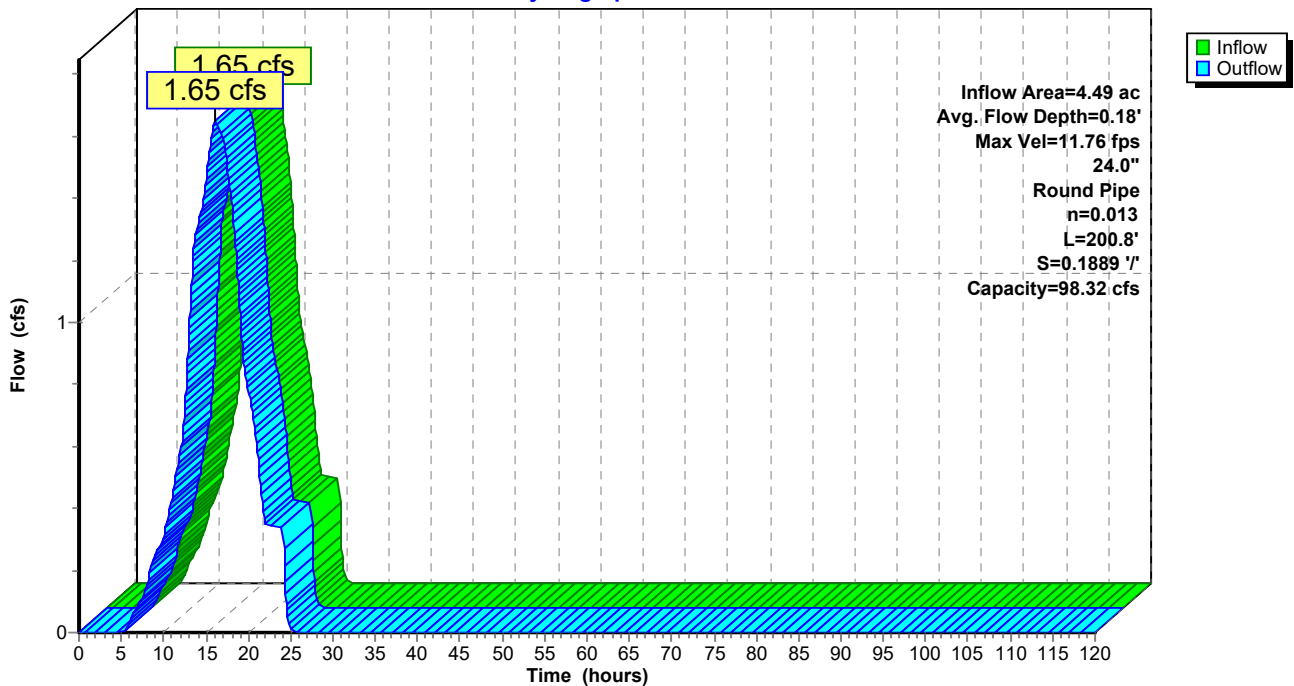
Peak Storage= 28 cf @ 16.01 hrs  
 Average Depth at Peak Storage= 0.18'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 98.32 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 200.8' Slope= 0.1889 '/'  
 Inlet Invert= 847.84', Outlet Invert= 809.91'



**Reach LP-N-B2: Letdown Pipe N-B2**

Hydrograph





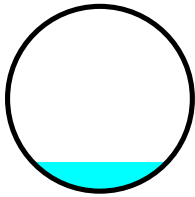
**Summary for Reach LP-N-B3: Letdown Pipe N-B3**

Inflow Area = 6.58 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 2.42 cfs @ 16.02 hrs, Volume= 1.659 af  
 Outflow = 2.42 cfs @ 16.03 hrs, Volume= 1.659 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 13.65 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 8.68 fps, Avg. Travel Time= 0.4 min

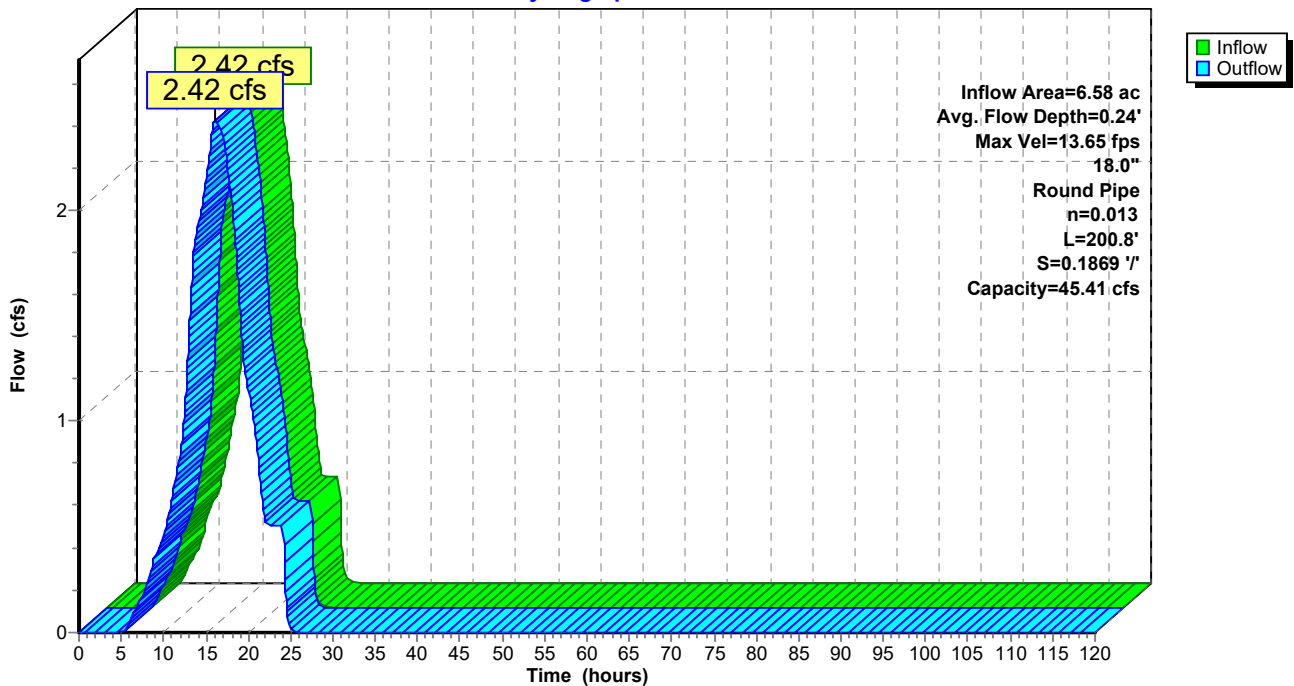
Peak Storage= 36 cf @ 16.02 hrs  
 Average Depth at Peak Storage= 0.24'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 45.41 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 200.8' Slope= 0.1869 '/'  
 Inlet Invert= 809.91', Outlet Invert= 772.39'



**Reach LP-N-B3: Letdown Pipe N-B3**

Hydrograph



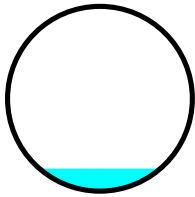
**Summary for Reach LP-N-B4: Letdown Pipe N-B4**

Inflow Area = 8.29 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 3.05 cfs @ 16.02 hrs, Volume= 2.089 af  
 Outflow = 3.05 cfs @ 16.02 hrs, Volume= 2.089 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 14.09 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 9.03 fps, Avg. Travel Time= 0.4 min

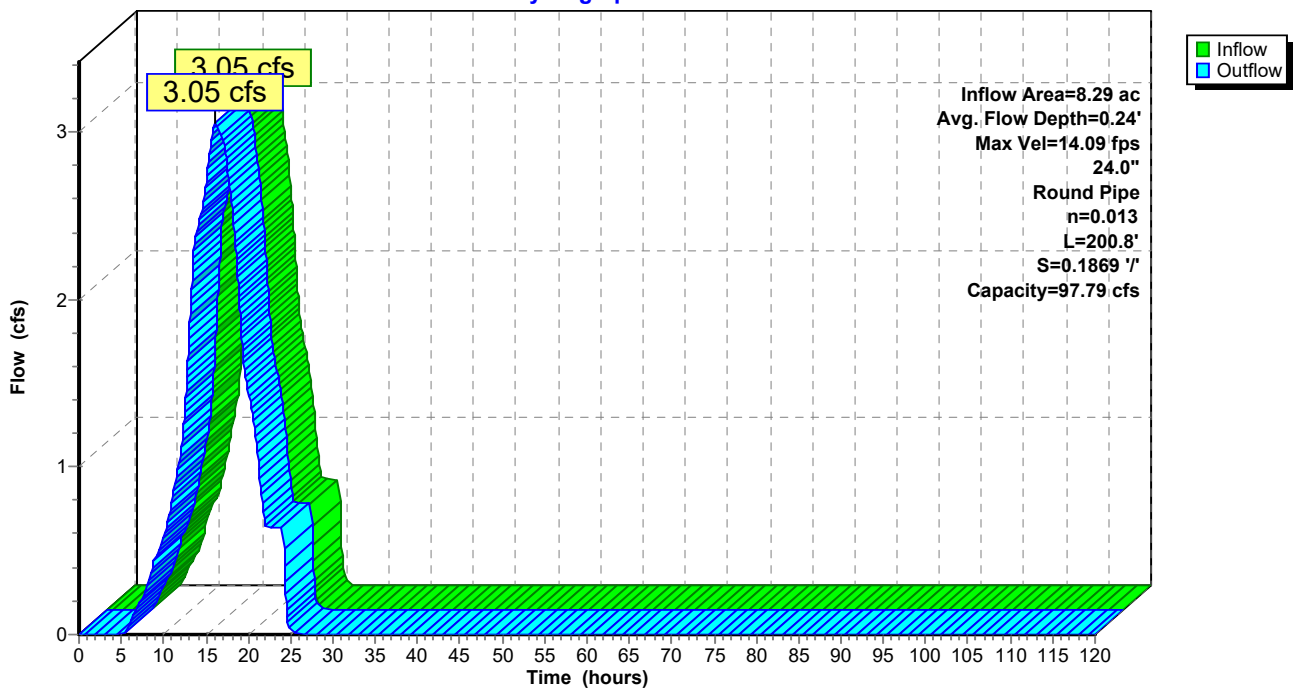
Peak Storage= 43 cf @ 16.02 hrs  
 Average Depth at Peak Storage= 0.24'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 97.79 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 200.8' Slope= 0.1869 '/'  
 Inlet Invert= 809.91', Outlet Invert= 772.39'



**Reach LP-N-B4: Letdown Pipe N-B4**

Hydrograph



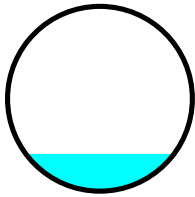
**Summary for Reach LP-N-B5: Letdown Pipe N-B5**

Inflow Area = 11.08 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 4.07 cfs @ 16.06 hrs, Volume= 2.792 af  
 Outflow = 4.07 cfs @ 16.07 hrs, Volume= 2.792 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 16.14 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 9.85 fps, Avg. Travel Time= 0.3 min

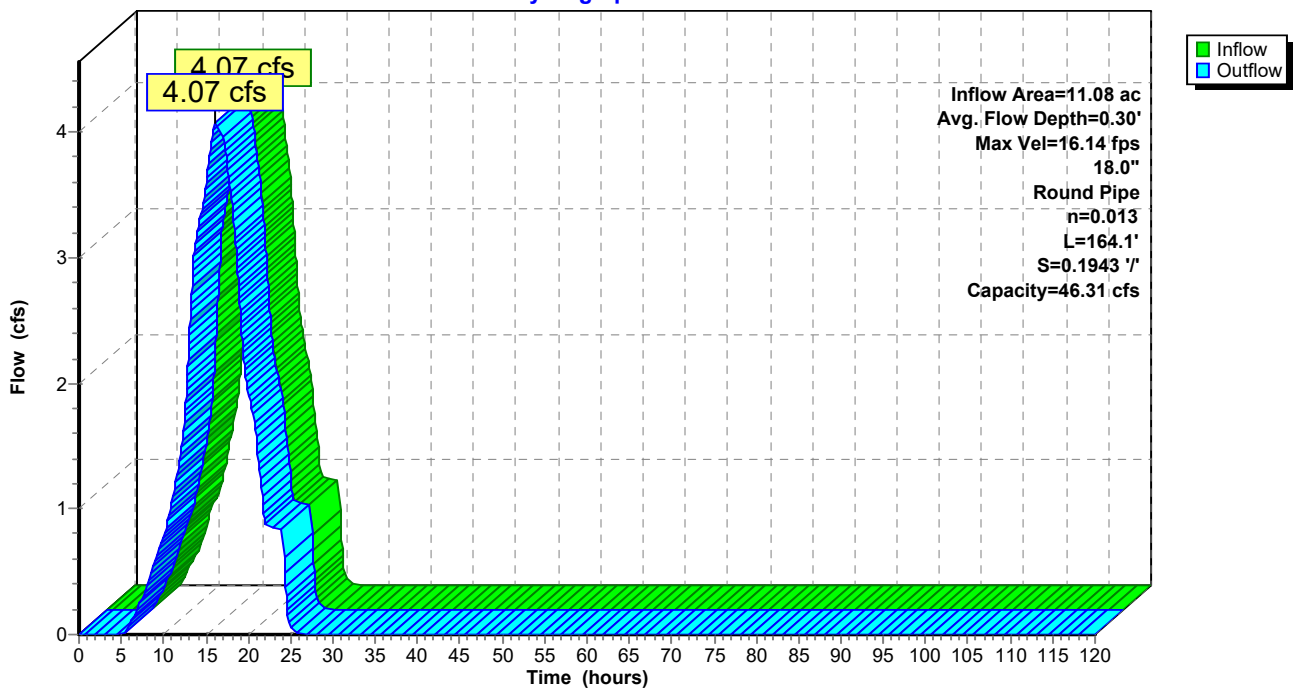
Peak Storage= 41 cf @ 16.06 hrs  
 Average Depth at Peak Storage= 0.30'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 46.31 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 164.1' Slope= 0.1943 '/'  
 Inlet Invert= 772.39', Outlet Invert= 740.50'



**Reach LP-N-B5: Letdown Pipe N-B5**

Hydrograph



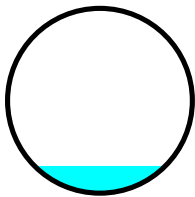
**Summary for Reach LP-N-B6: Letdown Pipe N-B6**

Inflow Area = 12.58 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 4.63 cfs @ 16.03 hrs, Volume= 3.170 af  
 Outflow = 4.63 cfs @ 16.04 hrs, Volume= 3.170 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 16.19 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 10.11 fps, Avg. Travel Time= 0.3 min

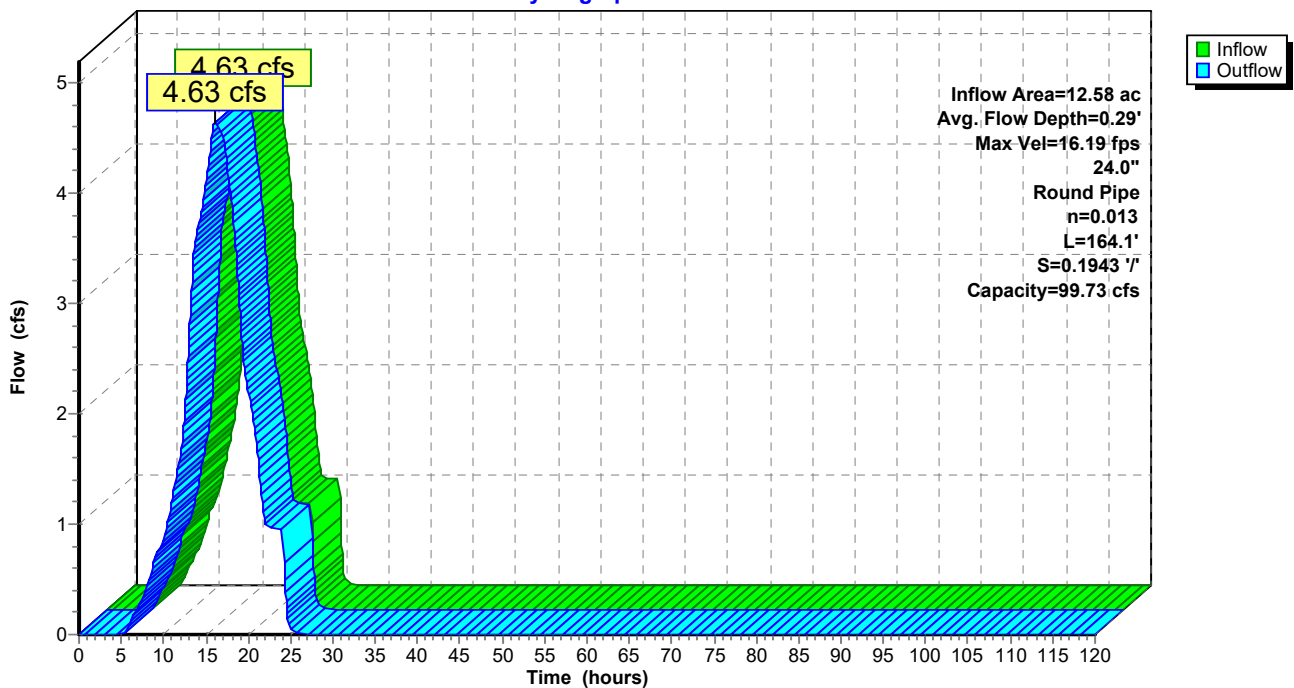
Peak Storage= 47 cf @ 16.03 hrs  
 Average Depth at Peak Storage= 0.29'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 99.73 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 164.1' Slope= 0.1943 '/'  
 Inlet Invert= 772.39', Outlet Invert= 740.50'



**Reach LP-N-B6: Letdown Pipe N-B6**

Hydrograph



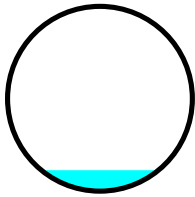
**Summary for Reach LP-N-C1: Letdown Pipe N-C1**

Inflow Area = 8.24 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 3.03 cfs @ 16.01 hrs, Volume= 2.077 af  
 Outflow = 3.03 cfs @ 16.01 hrs, Volume= 2.077 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 15.58 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 10.14 fps, Avg. Travel Time= 0.2 min

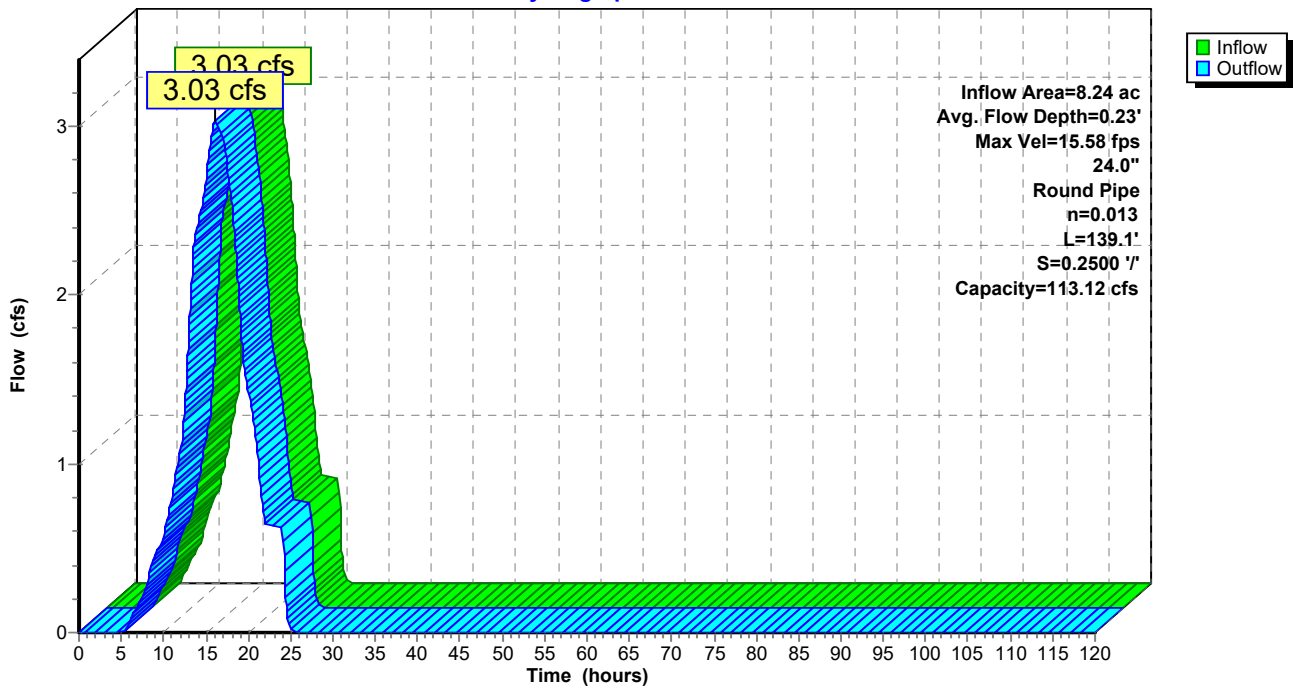
Peak Storage= 27 cf @ 16.01 hrs  
 Average Depth at Peak Storage= 0.23'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 113.12 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 139.1' Slope= 0.2500 '/'  
 Inlet Invert= 843.66', Outlet Invert= 808.88'



**Reach LP-N-C1: Letdown Pipe N-C1**

Hydrograph



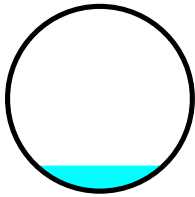
**Summary for Reach LP-N-C2: Letdown Pipe N-C2**

Inflow Area = 12.44 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 4.58 cfs @ 16.02 hrs, Volume= 3.136 af  
 Outflow = 4.58 cfs @ 16.02 hrs, Volume= 3.136 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 17.62 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 11.16 fps, Avg. Travel Time= 0.1 min

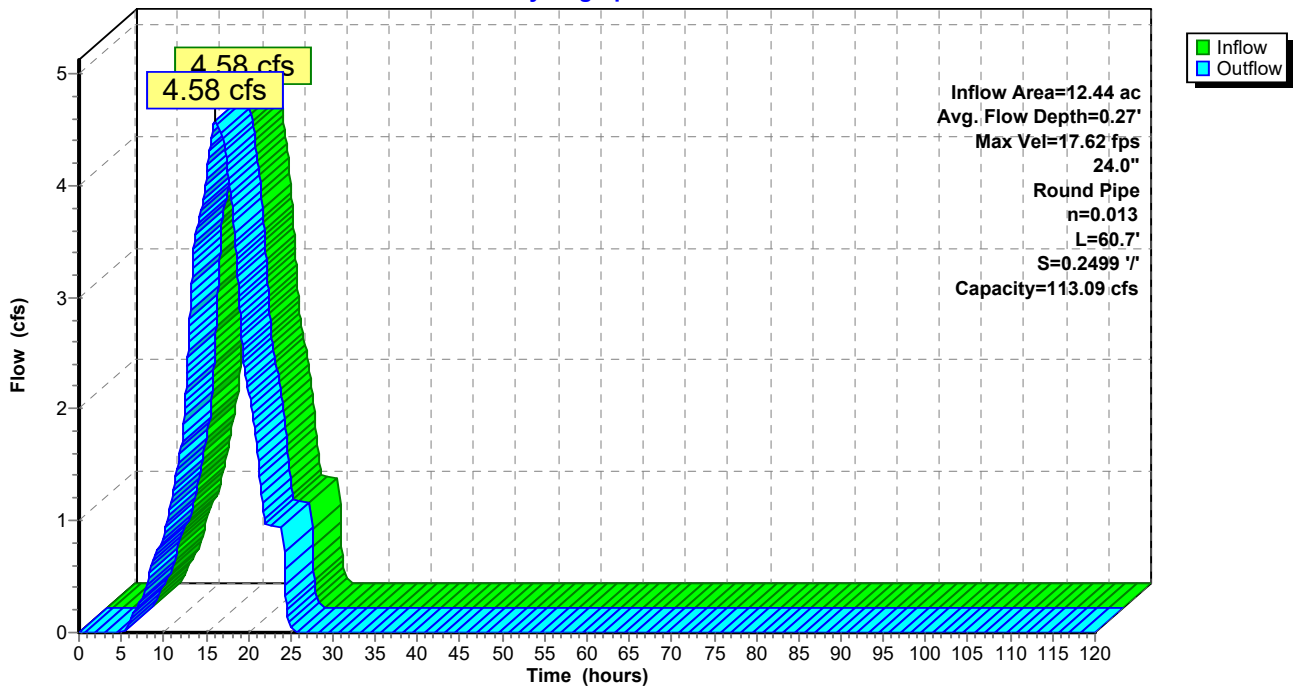
Peak Storage= 16 cf @ 16.02 hrs  
 Average Depth at Peak Storage= 0.27'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 113.09 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 60.7' Slope= 0.2499 '/  
 Inlet Invert= 808.88', Outlet Invert= 793.71'



**Reach LP-N-C2: Letdown Pipe N-C2**

Hydrograph



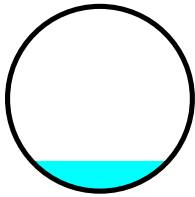
**Summary for Reach LP-N-C3: Letdown Pipe N-C3**

Inflow Area = 17.99 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 6.62 cfs @ 16.01 hrs, Volume= 4.535 af  
 Outflow = 6.62 cfs @ 16.02 hrs, Volume= 4.535 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 19.86 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 12.34 fps, Avg. Travel Time= 0.2 min

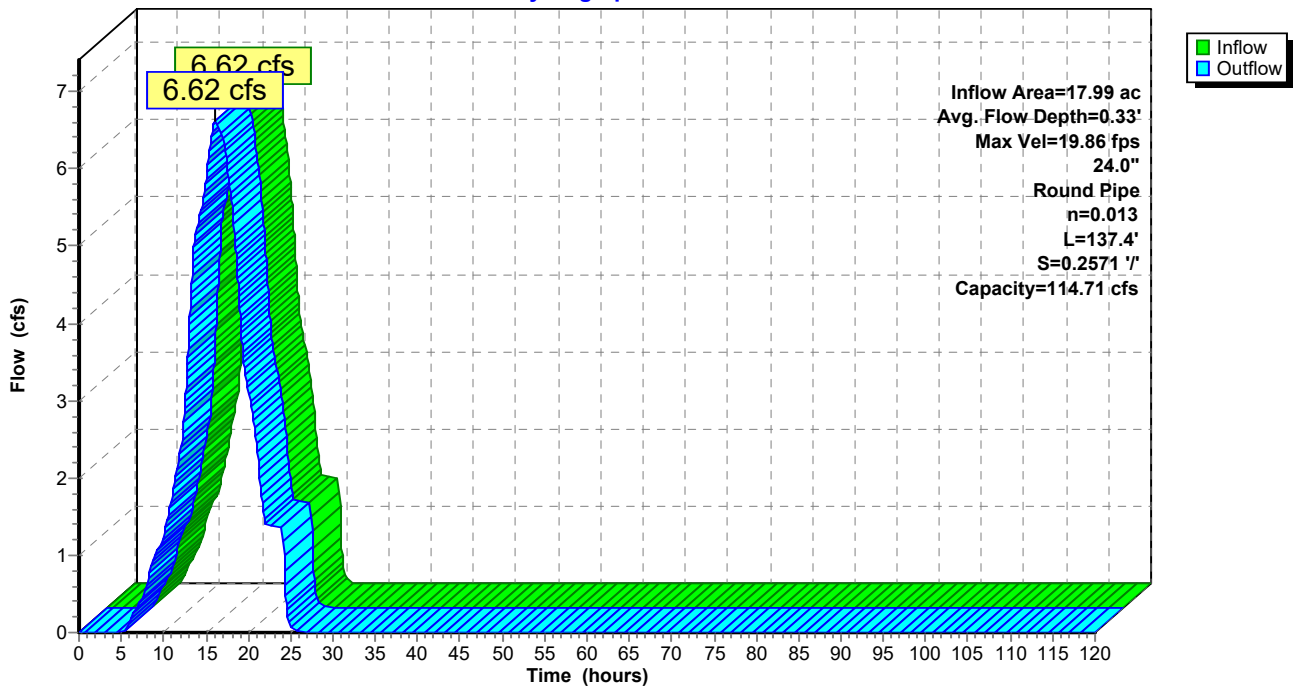
Peak Storage= 46 cf @ 16.01 hrs  
 Average Depth at Peak Storage= 0.33'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 114.71 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 137.4' Slope= 0.2571 1'  
 Inlet Invert= 774.26', Outlet Invert= 738.93'



**Reach LP-N-C3: Letdown Pipe N-C3**

Hydrograph



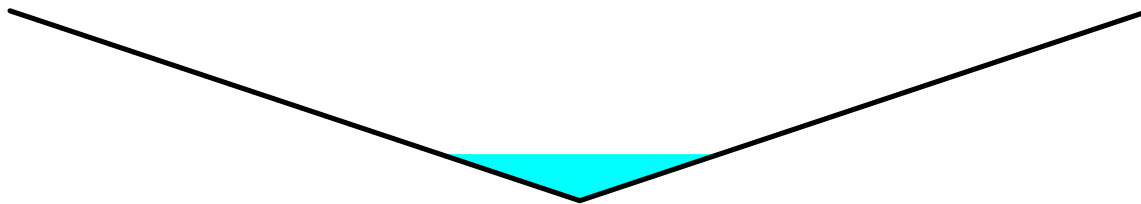
**Summary for Reach PD-1: Perimeter Ditch 1**

Inflow Area = 8.06 ac, 4.48% Impervious, Inflow Depth = 3.12" for 10-Year, 24-Hour event  
 Inflow = 3.03 cfs @ 15.74 hrs, Volume= 2.095 af  
 Outflow = 3.01 cfs @ 16.26 hrs, Volume= 2.095 af, Atten= 1%, Lag= 31.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.85 fps, Min. Travel Time= 15.1 min  
 Avg. Velocity = 0.96 fps, Avg. Travel Time= 29.2 min

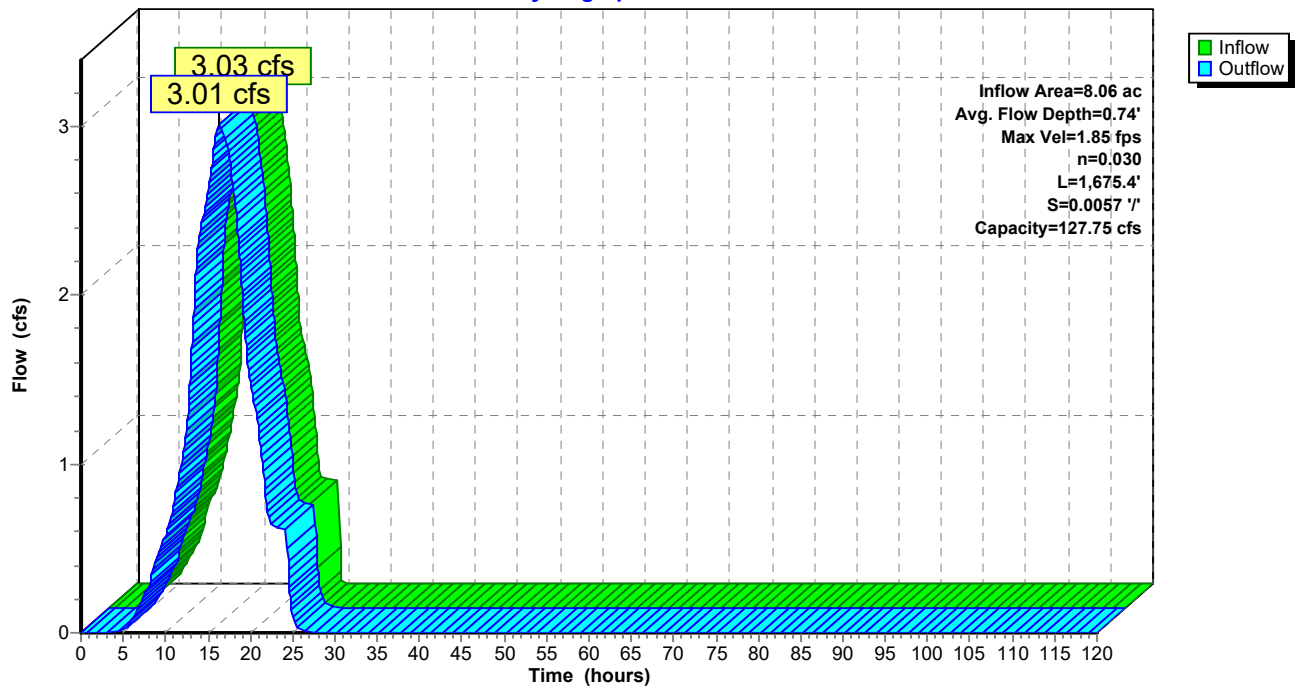
Peak Storage= 2,720 cf @ 16.01 hrs  
 Average Depth at Peak Storage= 0.74'  
 Bank-Full Depth= 3.00' Flow Area= 27.0 sf, Capacity= 127.75 cfs

0.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 18.00'  
 Length= 1,675.4' Slope= 0.0057 '/'  
 Inlet Invert= 768.00', Outlet Invert= 758.45'



**Reach PD-1: Perimeter Ditch 1**

Hydrograph





**Summary for Reach PD-10: Perimeter Ditch 10**

Inflow Area = 9.21 ac, 4.89% Impervious, Inflow Depth = 3.14" for 10-Year, 24-Hour event  
 Inflow = 3.45 cfs @ 16.15 hrs, Volume= 2.410 af  
 Outflow = 3.45 cfs @ 16.29 hrs, Volume= 2.410 af, Atten= 0%, Lag= 9.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.32 fps, Min. Travel Time= 5.6 min  
 Avg. Velocity = 0.72 fps, Avg. Travel Time= 10.2 min

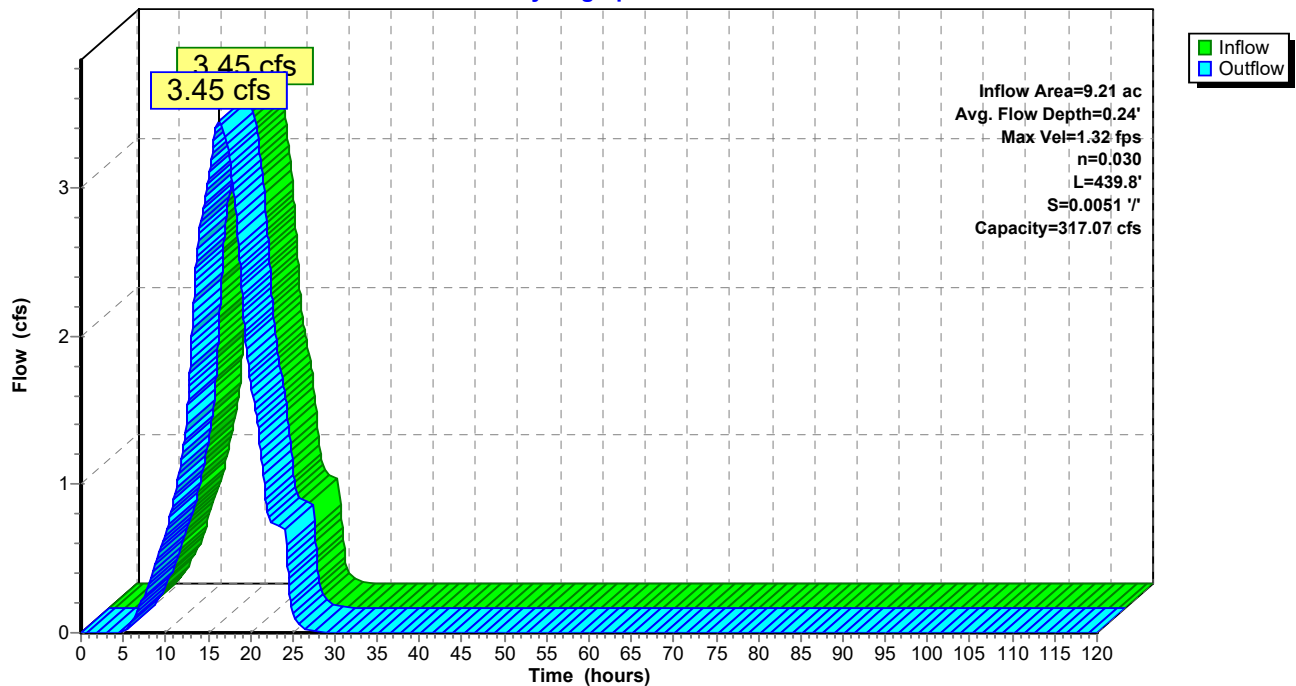
Peak Storage= 1,151 cf @ 16.20 hrs  
 Average Depth at Peak Storage= 0.24'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 317.07 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 ' / ' Top Width= 28.00'  
 Length= 439.8' Slope= 0.0051 ' / '  
 Inlet Invert= 739.43', Outlet Invert= 737.18'



**Reach PD-10: Perimeter Ditch 10**

Hydrograph



**Summary for Reach PD-11: Perimeter Ditch 11**

Inflow Area = 2.70 ac, 11.67% Impervious, Inflow Depth = 3.30" for 10-Year, 24-Hour event  
 Inflow = 1.06 cfs @ 15.69 hrs, Volume= 0.742 af  
 Outflow = 1.05 cfs @ 16.37 hrs, Volume= 0.742 af, Atten= 1%, Lag= 40.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 0.84 fps, Min. Travel Time= 22.1 min  
 Avg. Velocity = 0.50 fps, Avg. Travel Time= 36.6 min

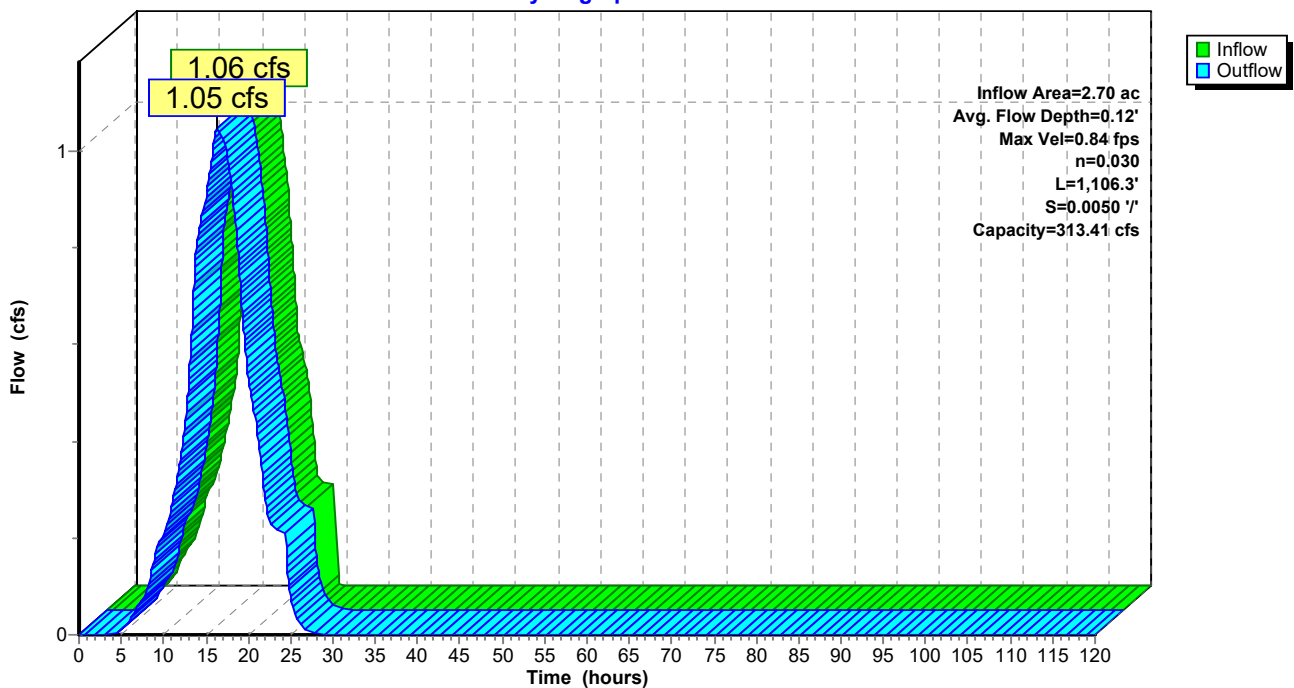
Peak Storage= 1,387 cf @ 16.00 hrs  
 Average Depth at Peak Storage= 0.12'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 313.41 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 1,106.3' Slope= 0.0050 '/'  
 Inlet Invert= 744.96', Outlet Invert= 739.43'



**Reach PD-11: Perimeter Ditch 11**

Hydrograph



**Summary for Reach PD-12: Perimeter Ditch 12**

Inflow Area = 2.74 ac, 11.45% Impervious, Inflow Depth = 3.30" for 10-Year, 24-Hour event  
 Inflow = 1.07 cfs @ 15.98 hrs, Volume= 0.753 af  
 Outflow = 1.06 cfs @ 16.59 hrs, Volume= 0.753 af, Atten= 1%, Lag= 36.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 0.84 fps, Min. Travel Time= 21.8 min  
 Avg. Velocity = 0.50 fps, Avg. Travel Time= 36.2 min

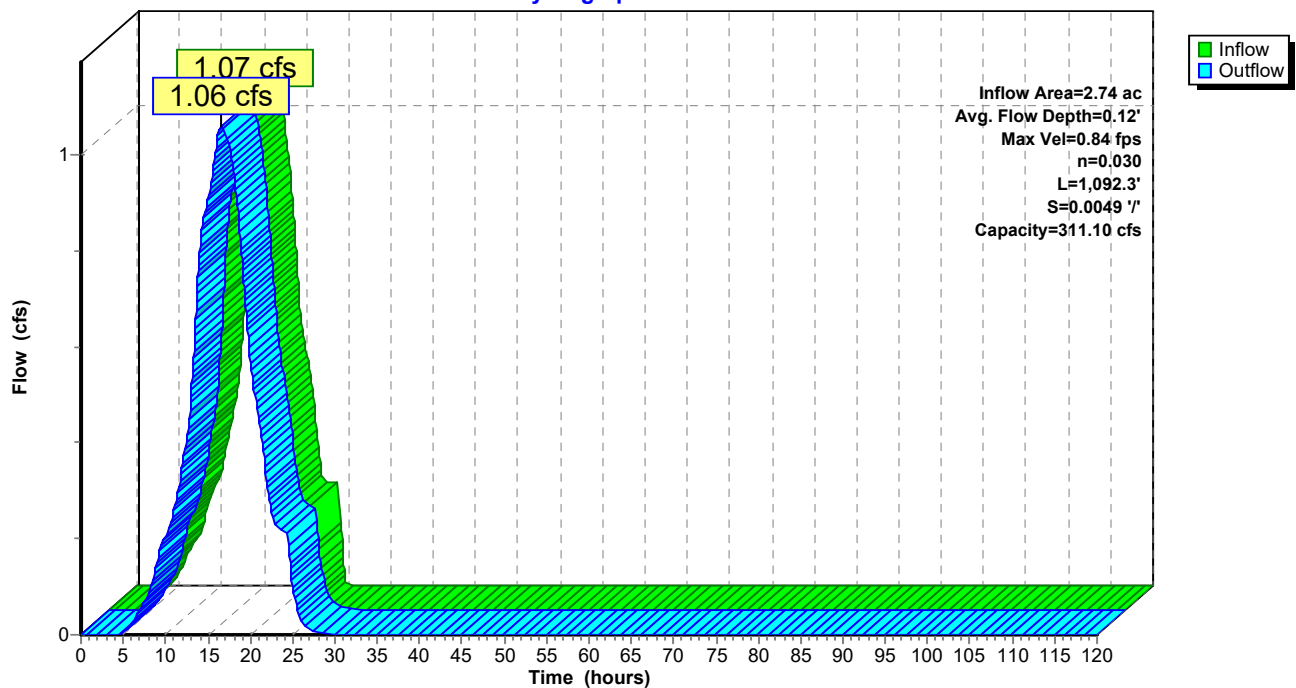
Peak Storage= 1,385 cf @ 16.23 hrs  
 Average Depth at Peak Storage= 0.12'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 311.10 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 ' / ' Top Width= 28.00'  
 Length= 1,092.3' Slope= 0.0049 ' / '  
 Inlet Invert= 744.96', Outlet Invert= 739.58'



**Reach PD-12: Perimeter Ditch 12**

Hydrograph



**Summary for Reach PD-13: Perimeter Ditch 13**

Inflow Area = 25.73 ac, 1.49% Impervious, Inflow Depth = 3.06" for 10-Year, 24-Hour event  
 Inflow = 9.50 cfs @ 16.09 hrs, Volume= 6.566 af  
 Outflow = 9.50 cfs @ 16.16 hrs, Volume= 6.566 af, Atten= 0%, Lag= 4.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.58 fps, Min. Travel Time= 2.4 min  
 Avg. Velocity = 0.79 fps, Avg. Travel Time= 4.7 min

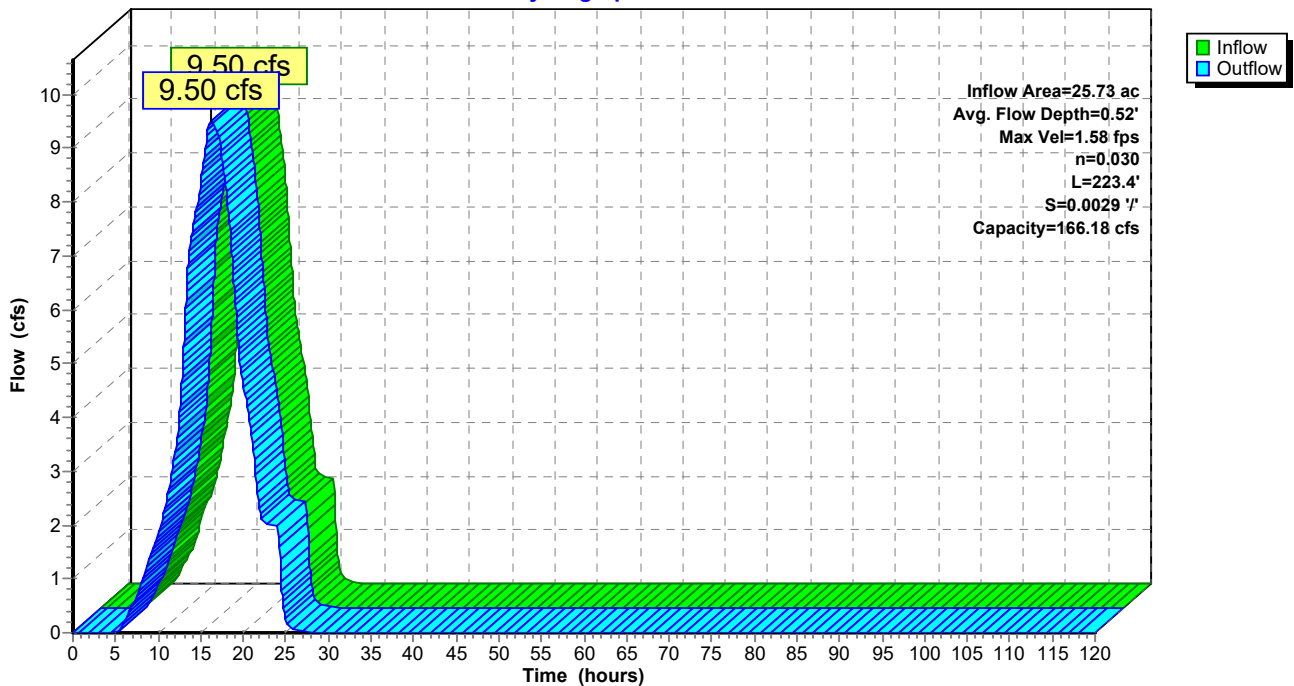
Peak Storage= 1,346 cf @ 16.11 hrs  
 Average Depth at Peak Storage= 0.52'  
 Bank-Full Depth= 2.50' Flow Area= 43.8 sf, Capacity= 166.18 cfs

10.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 25.00'  
 Length= 223.4' Slope= 0.0029 '/'  
 Inlet Invert= 739.58', Outlet Invert= 738.93'



**Reach PD-13: Perimeter Ditch 13**

Hydrograph



**Summary for Reach PD-14: Perimeter Ditch 14**

Inflow Area = 17.46 ac, 1.99% Impervious, Inflow Depth = 3.07" for 10-Year, 24-Hour event  
 Inflow = 6.46 cfs @ 16.21 hrs, Volume= 4.467 af  
 Outflow = 6.46 cfs @ 16.27 hrs, Volume= 4.467 af, Atten= 0%, Lag= 4.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.58 fps, Min. Travel Time= 2.3 min  
 Avg. Velocity = 0.79 fps, Avg. Travel Time= 4.7 min

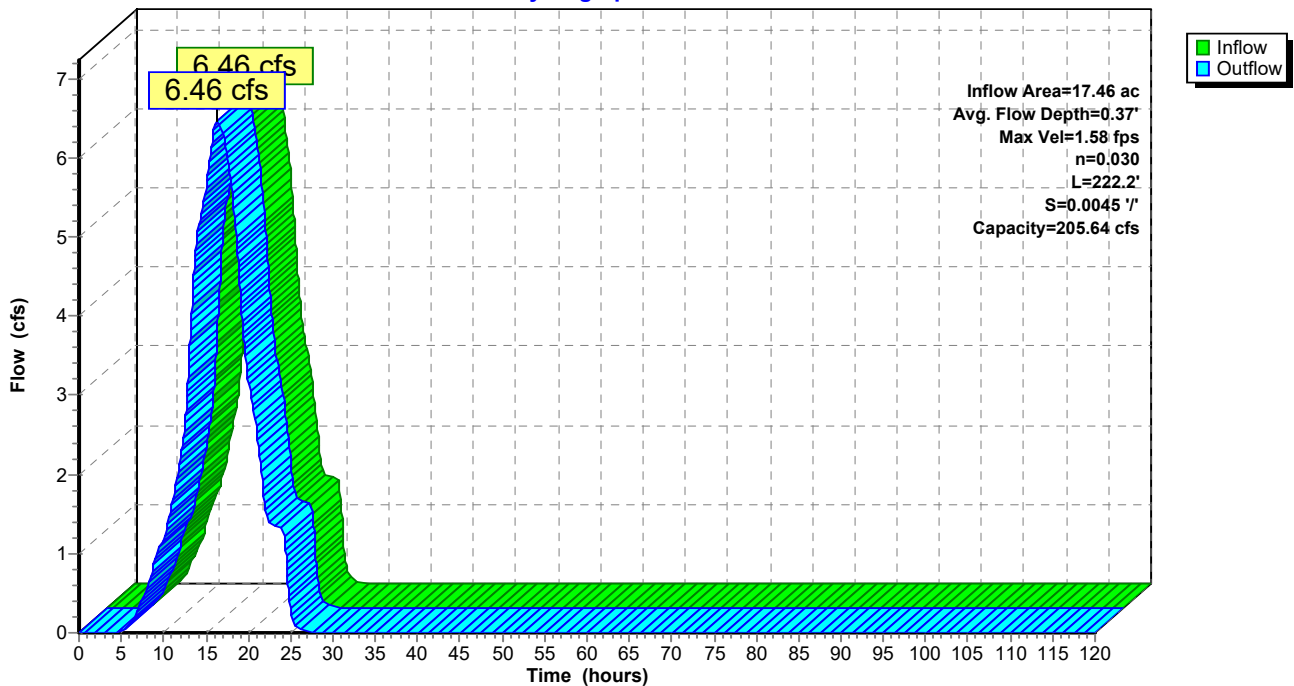
Peak Storage= 907 cf @ 16.23 hrs  
 Average Depth at Peak Storage= 0.37'  
 Bank-Full Depth= 2.50' Flow Area= 43.8 sf, Capacity= 205.64 cfs

10.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 ' / ' Top Width= 25.00'  
 Length= 222.2' Slope= 0.0045 ' / '  
 Inlet Invert= 739.92', Outlet Invert= 738.93'



**Reach PD-14: Perimeter Ditch 14**

Hydrograph



**Summary for Reach PD-15: Perimeter Ditch 15**

Inflow Area = 16.01 ac, 1.69% Impervious, Inflow Depth = 3.06" for 10-Year, 24-Hour event  
 Inflow = 5.93 cfs @ 15.97 hrs, Volume= 4.089 af  
 Outflow = 5.92 cfs @ 16.22 hrs, Volume= 4.089 af, Atten= 0%, Lag= 15.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.53 fps, Min. Travel Time= 8.2 min  
 Avg. Velocity = 0.77 fps, Avg. Travel Time= 16.3 min

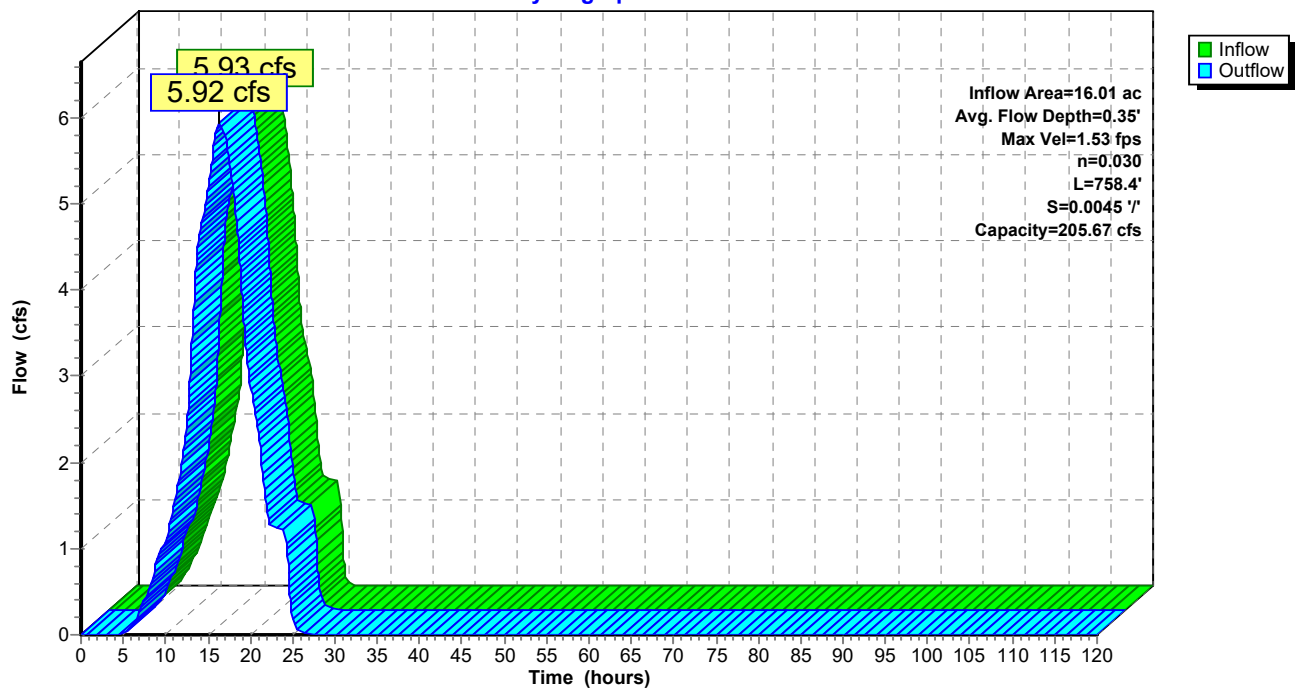
Peak Storage= 2,927 cf @ 16.08 hrs  
 Average Depth at Peak Storage= 0.35'  
 Bank-Full Depth= 2.50' Flow Area= 43.8 sf, Capacity= 205.67 cfs

10.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 ' / ' Top Width= 25.00'  
 Length= 758.4' Slope= 0.0045 ' / '  
 Inlet Invert= 743.30', Outlet Invert= 739.92'



**Reach PD-15: Perimeter Ditch 15**

Hydrograph



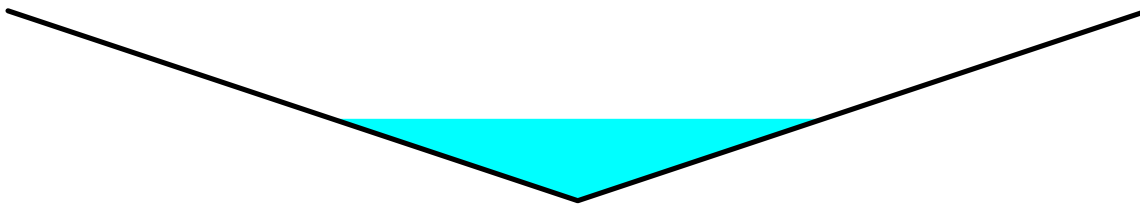
**Summary for Reach PD-2: Perimeter Ditch 2**

Inflow Area = 30.47 ac, 1.77% Impervious, Inflow Depth = 3.05" for 10-Year, 24-Hour event  
 Inflow = 11.22 cfs @ 16.30 hrs, Volume= 7.753 af  
 Outflow = 11.22 cfs @ 16.37 hrs, Volume= 7.753 af, Atten= 0%, Lag= 4.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.23 fps, Min. Travel Time= 2.4 min  
 Avg. Velocity = 1.08 fps, Avg. Travel Time= 4.9 min

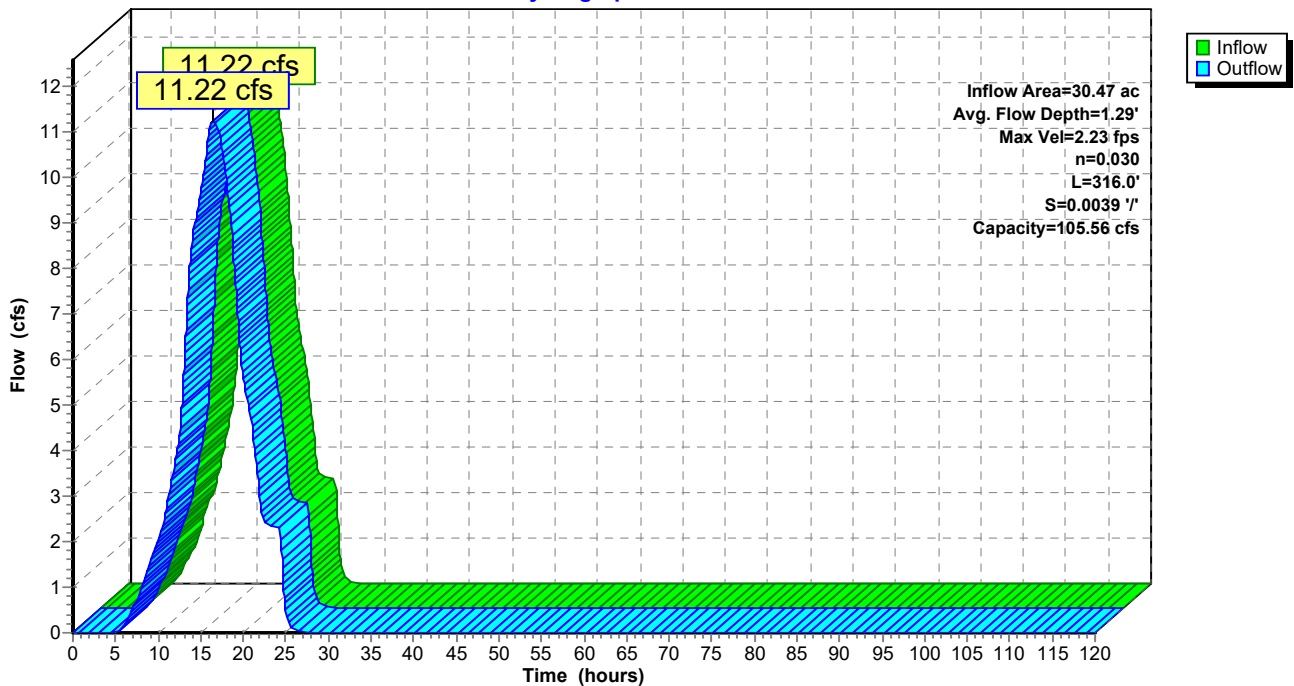
Peak Storage= 1,588 cf @ 16.33 hrs  
 Average Depth at Peak Storage= 1.29'  
 Bank-Full Depth= 3.00' Flow Area= 27.0 sf, Capacity= 105.56 cfs

0.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 18.00'  
 Length= 316.0' Slope= 0.0039 '/'  
 Inlet Invert= 758.00', Outlet Invert= 756.77'



**Reach PD-2: Perimeter Ditch 2**

Hydrograph



**Summary for Reach PD-3: Perimeter Ditch 3**

Inflow Area = 50.20 ac, 1.23% Impervious, Inflow Depth = 3.05" for 10-Year, 24-Hour event  
 Inflow = 18.44 cfs @ 16.28 hrs, Volume= 12.741 af  
 Outflow = 18.43 cfs @ 16.37 hrs, Volume= 12.741 af, Atten= 0%, Lag= 5.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.76 fps, Min. Travel Time= 3.0 min  
 Avg. Velocity = 1.29 fps, Avg. Travel Time= 6.3 min

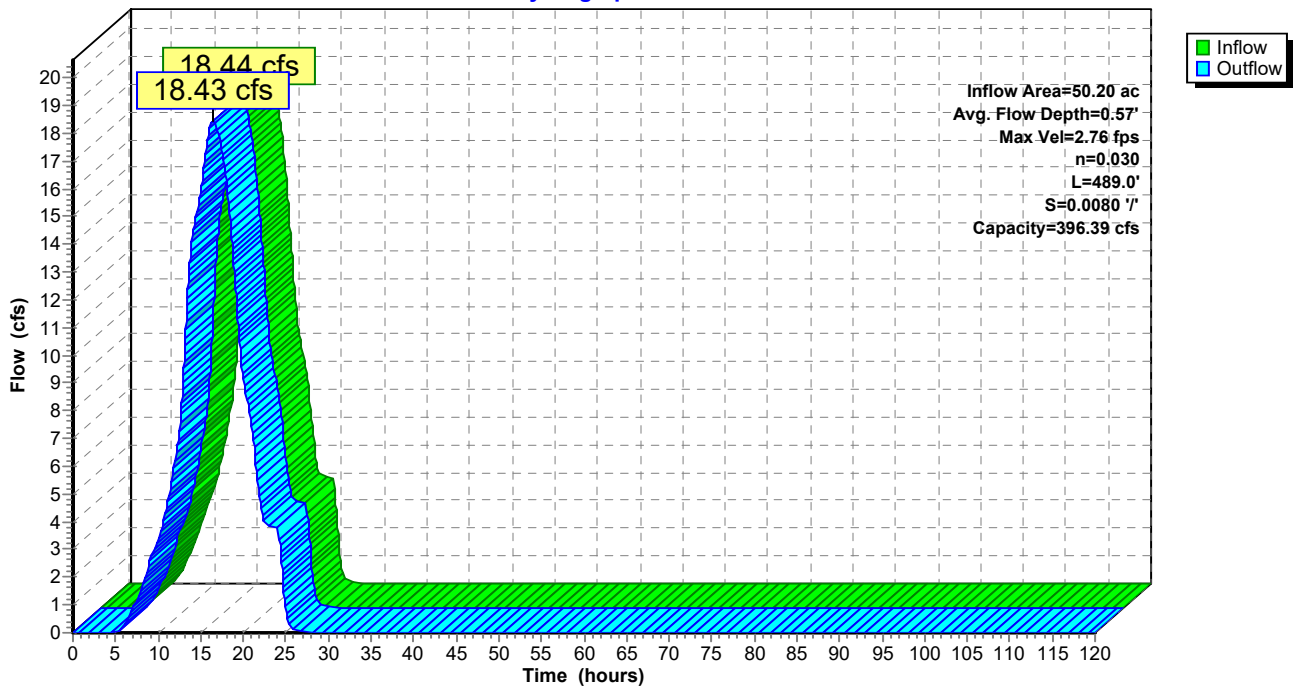
Peak Storage= 3,269 cf @ 16.32 hrs  
 Average Depth at Peak Storage= 0.57'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 396.39 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 ' / ' Top Width= 28.00'  
 Length= 489.0' Slope= 0.0080 ' / '  
 Inlet Invert= 755.78', Outlet Invert= 751.87'



**Reach PD-3: Perimeter Ditch 3**

Hydrograph





**Summary for Reach PD-4: Perimeter Ditch 4**

Inflow Area = 53.25 ac, 1.28% Impervious, Inflow Depth = 3.05" for 10-Year, 24-Hour event  
 Inflow = 19.56 cfs @ 16.36 hrs, Volume= 13.522 af  
 Outflow = 19.56 cfs @ 16.41 hrs, Volume= 13.522 af, Atten= 0%, Lag= 2.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.57 fps, Min. Travel Time= 1.7 min  
 Avg. Velocity = 1.66 fps, Avg. Travel Time= 3.7 min

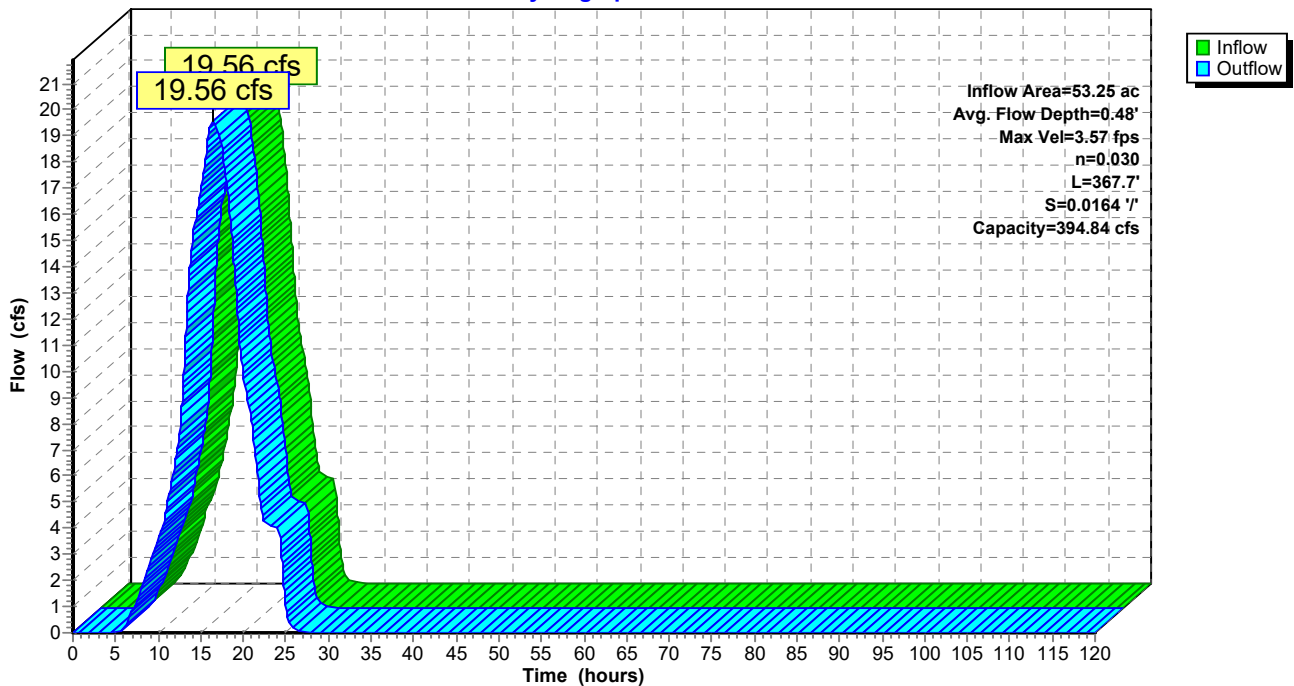
Peak Storage= 2,017 cf @ 16.38 hrs  
 Average Depth at Peak Storage= 0.48'  
 Bank-Full Depth= 2.50' Flow Area= 43.8 sf, Capacity= 394.84 cfs

10.00' x 2.50' deep channel, n= 0.030  
 Side Slope Z-value= 3.0 '/' Top Width= 25.00'  
 Length= 367.7' Slope= 0.0164 '/'  
 Inlet Invert= 751.87', Outlet Invert= 745.83'



**Reach PD-4: Perimeter Ditch 4**

Hydrograph



**Summary for Reach PD-5: Perimeter Ditch 5**

Inflow Area = 85.14 ac, 1.17% Impervious, Inflow Depth = 3.05" for 10-Year, 24-Hour event  
 Inflow = 31.24 cfs @ 16.31 hrs, Volume= 21.615 af  
 Outflow = 31.22 cfs @ 16.50 hrs, Volume= 21.615 af, Atten= 0%, Lag= 11.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.84 fps, Min. Travel Time= 6.6 min  
 Avg. Velocity = 1.26 fps, Avg. Travel Time= 14.9 min

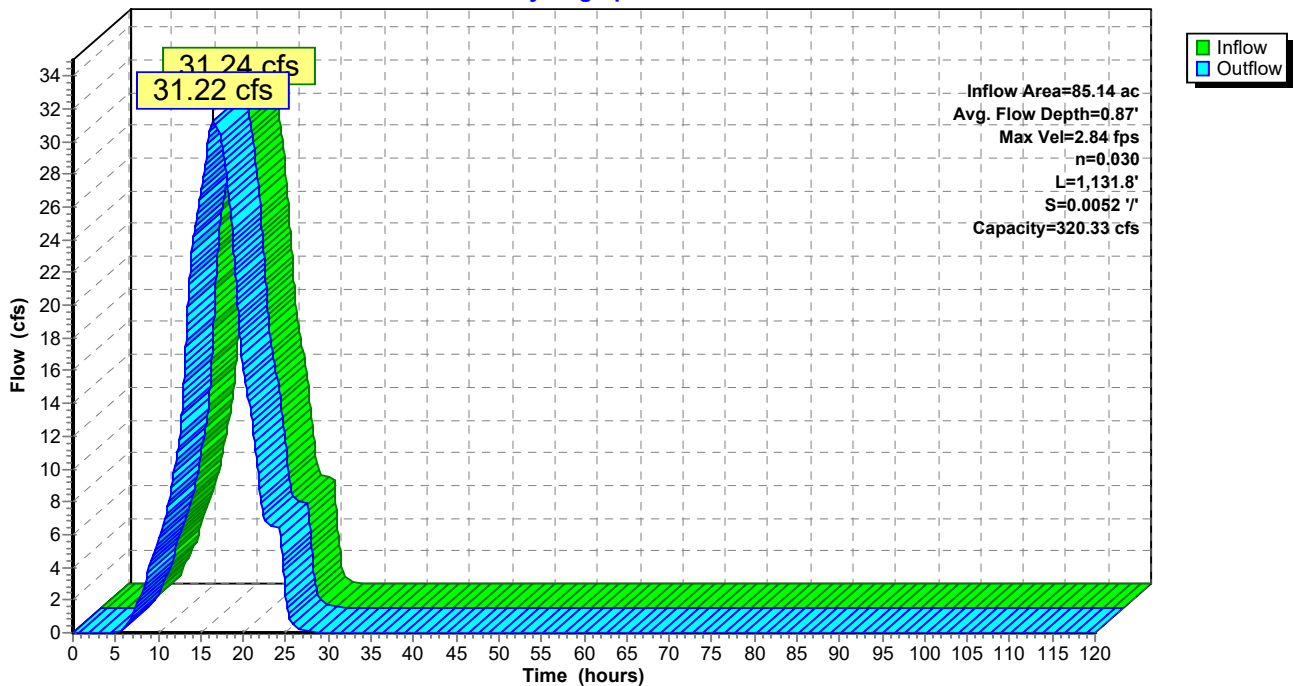
Peak Storage= 12,428 cf @ 16.39 hrs  
 Average Depth at Peak Storage= 0.87'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 320.33 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 1,131.8' Slope= 0.0052 '/'  
 Inlet Invert= 745.80', Outlet Invert= 739.89'



**Reach PD-5: Perimeter Ditch 5**

Hydrograph



**Summary for Reach PD-6: Perimeter Ditch 6**

Inflow Area = 87.70 ac, 1.33% Impervious, Inflow Depth = 3.05" for 10-Year, 24-Hour event  
 Inflow = 32.17 cfs @ 16.49 hrs, Volume= 22.292 af  
 Outflow = 32.17 cfs @ 16.59 hrs, Volume= 22.292 af, Atten= 0%, Lag= 5.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.83 fps, Min. Travel Time= 3.4 min  
 Avg. Velocity= 1.24 fps, Avg. Travel Time= 7.8 min

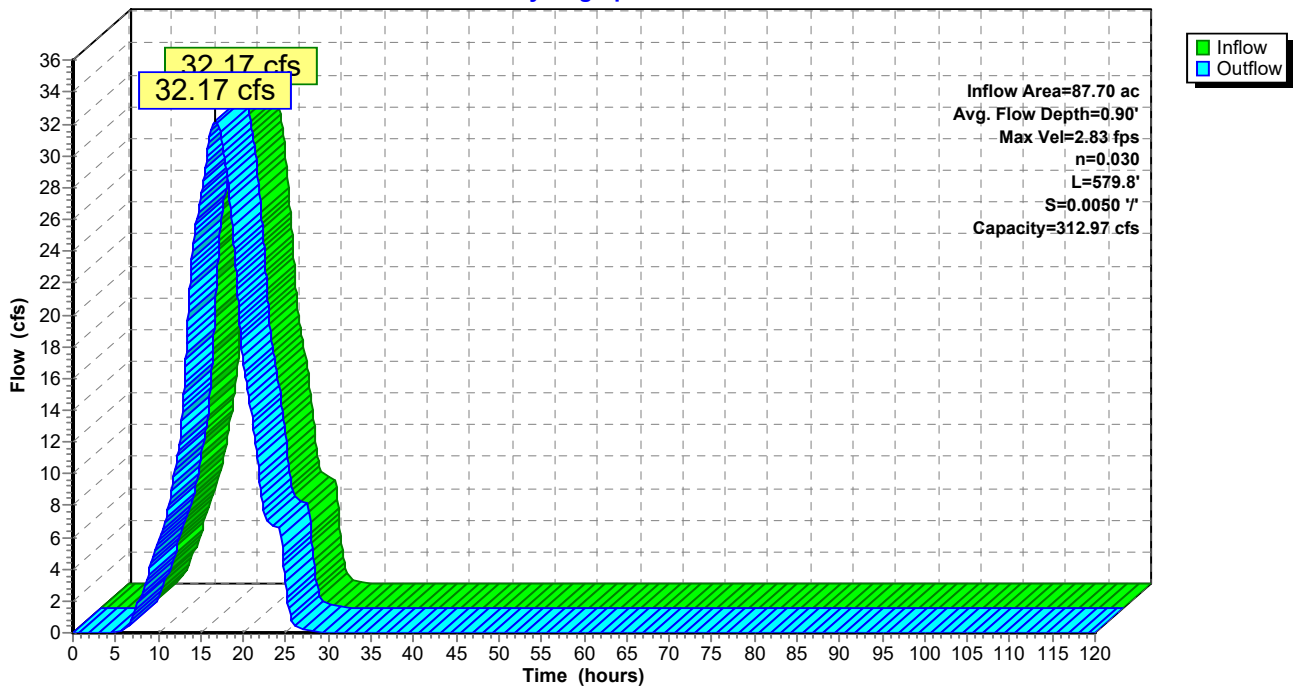
Peak Storage= 6,601 cf @ 16.53 hrs  
 Average Depth at Peak Storage= 0.90'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 312.97 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 579.8' Slope= 0.0050 '/'  
 Inlet Invert= 739.89', Outlet Invert= 737.00'



**Reach PD-6: Perimeter Ditch 6**

Hydrograph



**Summary for Reach PD-7: Perimeter Ditch 7**

Inflow Area = 3.12 ac, 32.08% Impervious, Inflow Depth = 3.83" for 10-Year, 24-Hour event  
 Inflow = 1.33 cfs @ 15.65 hrs, Volume= 0.997 af  
 Outflow = 1.33 cfs @ 15.70 hrs, Volume= 0.997 af, Atten= 0%, Lag= 3.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 0.92 fps, Min. Travel Time= 1.6 min  
 Avg. Velocity = 0.60 fps, Avg. Travel Time= 2.4 min

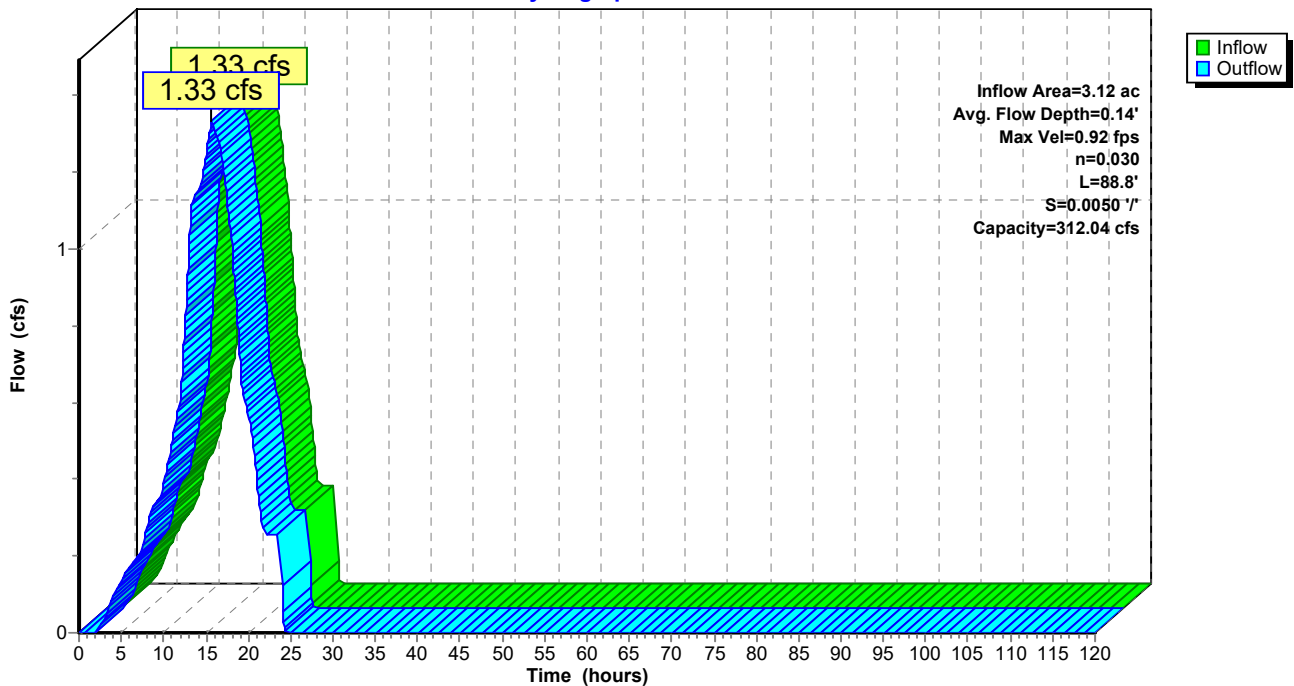
Peak Storage= 129 cf @ 15.67 hrs  
 Average Depth at Peak Storage= 0.14'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 312.04 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 88.8' Slope= 0.0050 '/'  
 Inlet Invert= 741.25', Outlet Invert= 740.81'



**Reach PD-7: Perimeter Ditch 7**

Hydrograph



**Summary for Reach PD-8: Perimeter Ditch 8**

Inflow Area = 0.14 ac, 14.29% Impervious, Inflow Depth = 3.37" for 10-Year, 24-Hour event  
 Inflow = 0.06 cfs @ 15.63 hrs, Volume= 0.039 af  
 Outflow = 0.06 cfs @ 15.80 hrs, Volume= 0.039 af, Atten= 0%, Lag= 10.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 0.33 fps, Min. Travel Time= 4.4 min  
 Avg. Velocity = 0.33 fps, Avg. Travel Time= 4.4 min

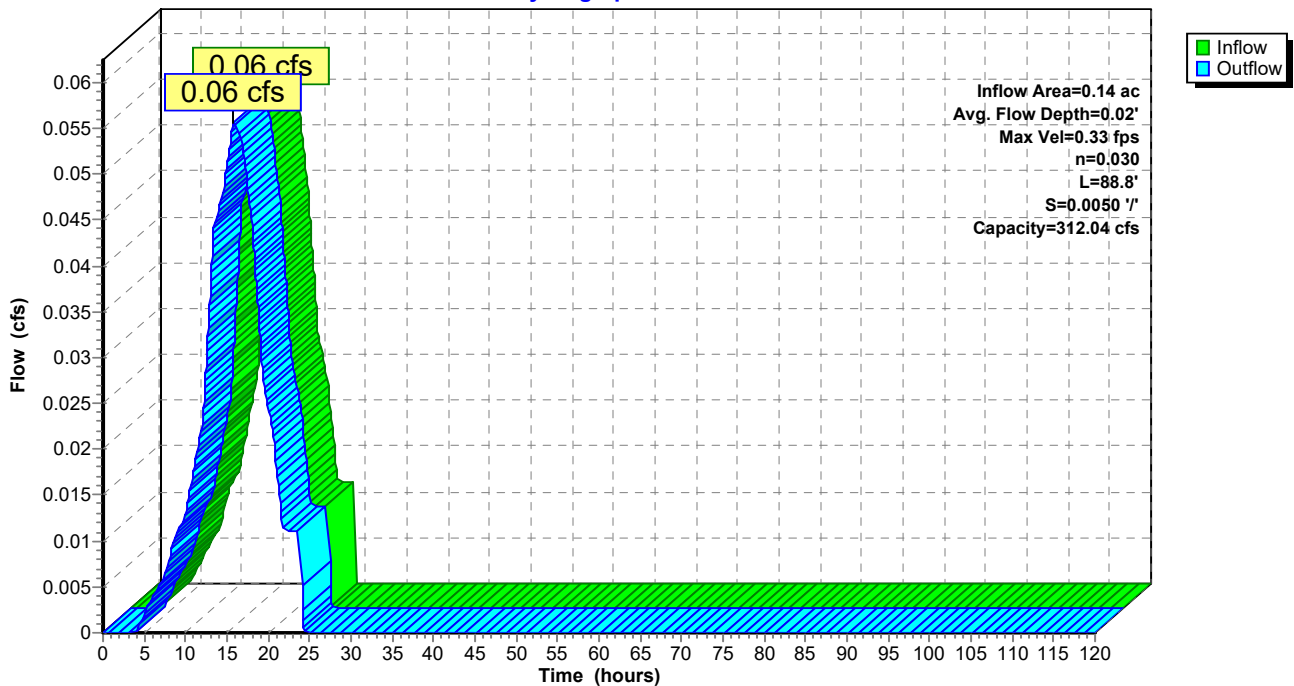
Peak Storage= 15 cf @ 15.72 hrs  
 Average Depth at Peak Storage= 0.02'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 312.04 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 88.8' Slope= 0.0050 '/'  
 Inlet Invert= 741.25', Outlet Invert= 740.81'



**Reach PD-8: Perimeter Ditch 8**

Hydrograph



**Summary for Reach PD-9: Perimeter Ditch 9**

Inflow Area = 6.78 ac, 3.10% Impervious, Inflow Depth = 3.10" for 10-Year, 24-Hour event  
 Inflow = 2.53 cfs @ 15.96 hrs, Volume= 1.751 af  
 Outflow = 2.52 cfs @ 16.22 hrs, Volume= 1.751 af, Atten= 0%, Lag= 15.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.21 fps, Min. Travel Time= 8.8 min  
 Avg. Velocity = 0.68 fps, Avg. Travel Time= 15.7 min

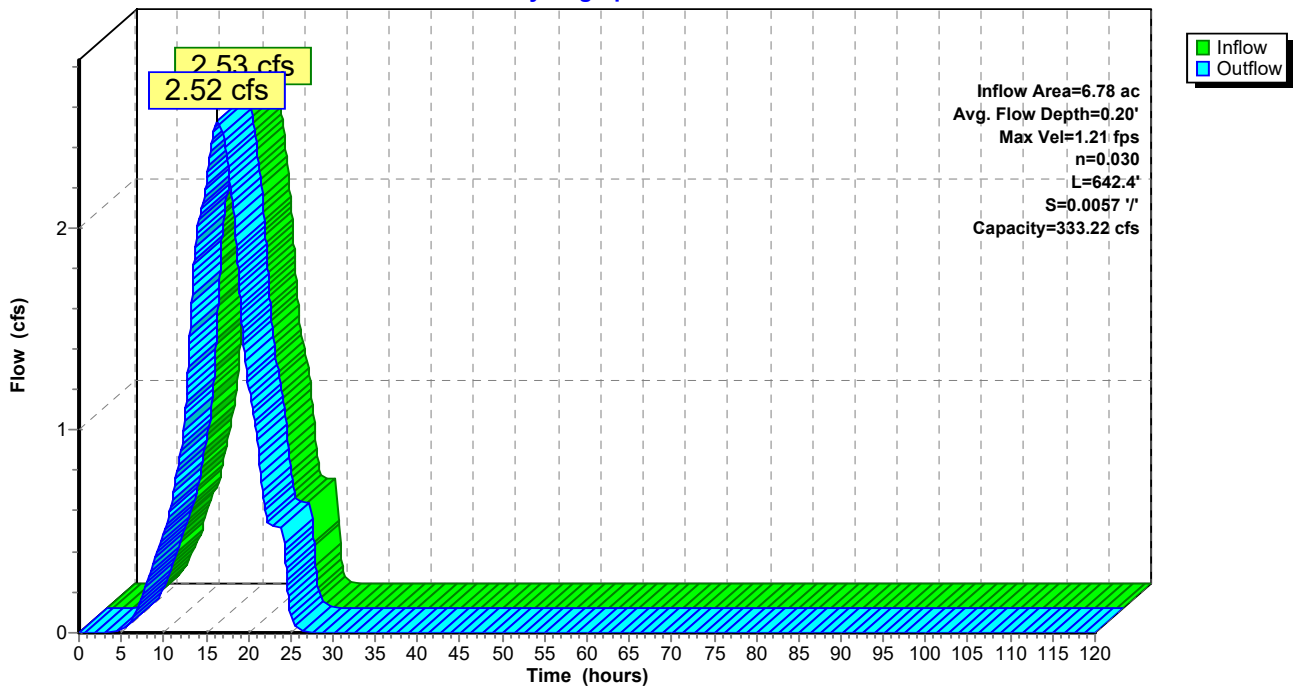
Peak Storage= 1,337 cf @ 16.07 hrs  
 Average Depth at Peak Storage= 0.20'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 333.22 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/ Top Width= 28.00'  
 Length= 642.4' Slope= 0.0057 '/  
 Inlet Invert= 740.81', Outlet Invert= 737.18'



**Reach PD-9: Perimeter Ditch 9**

Hydrograph



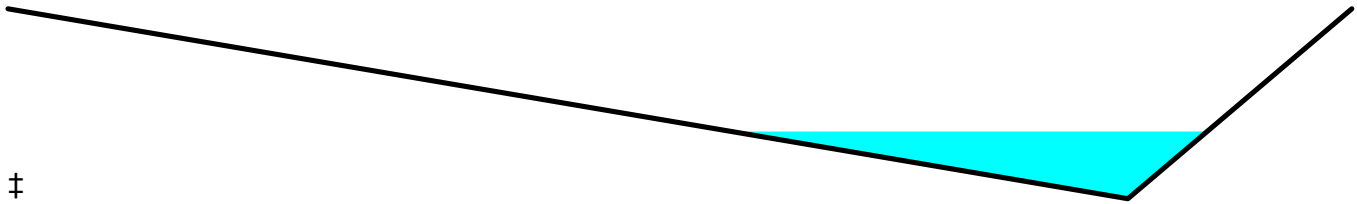
**Summary for Reach TB-A1A: Terrace Berm A1A**

Inflow Area = 6.74 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 2.48 cfs @ 15.89 hrs, Volume= 1.698 af  
 Outflow = 2.48 cfs @ 16.16 hrs, Volume= 1.698 af, Atten= 0%, Lag= 16.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.19 fps, Min. Travel Time= 7.9 min  
 Avg. Velocity = 1.31 fps, Avg. Travel Time= 13.2 min

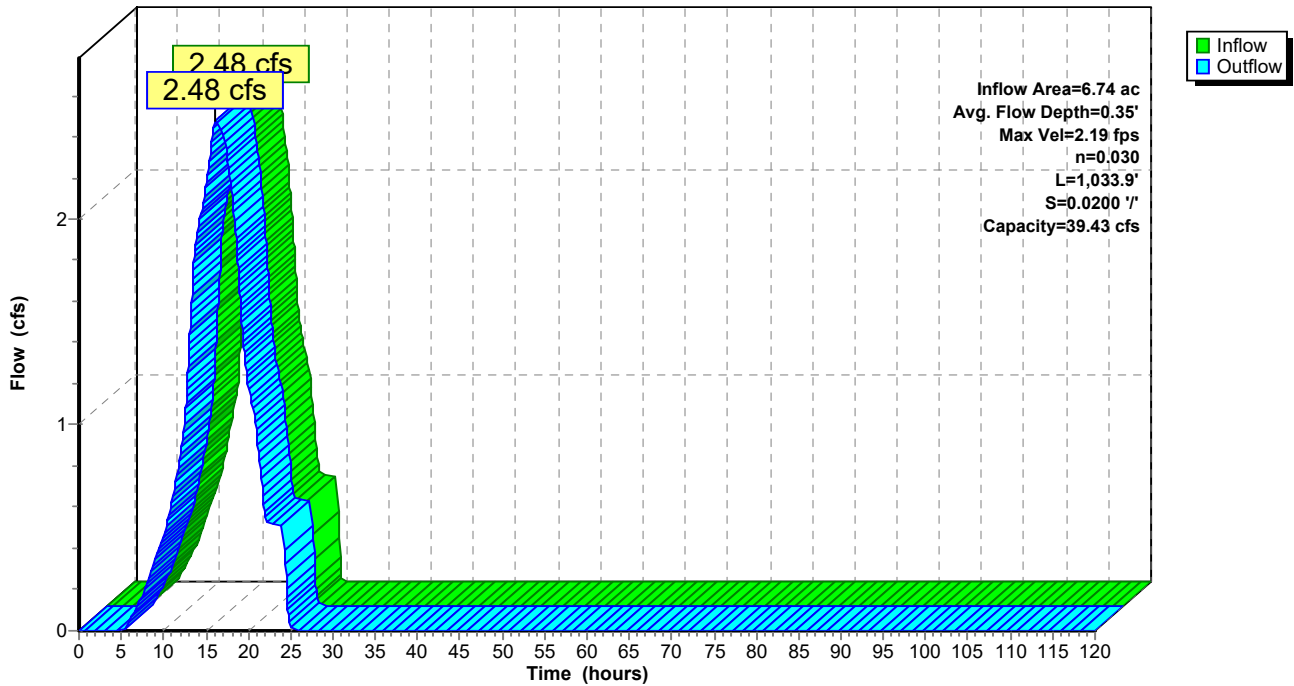
Peak Storage= 1,167 cf @ 16.02 hrs  
 Average Depth at Peak Storage= 0.35'  
 Bank-Full Depth= 1.00' Flow Area= 9.0 sf, Capacity= 39.43 cfs

0.00' x 1.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 15.0 3.0 '/' Top Width= 18.00'  
 Length= 1,033.9' Slope= 0.0200 '/'  
 Inlet Invert= 842.00', Outlet Invert= 821.32'



**Reach TB-A1A: Terrace Berm A1A**

Hydrograph



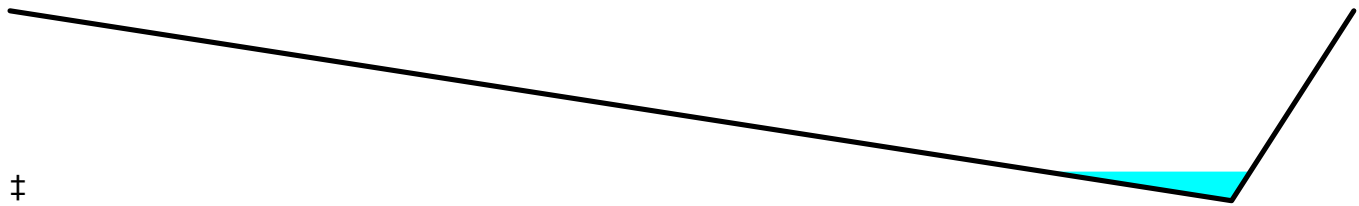
**Summary for Reach TB-A1B: Terrace Berm A1B**

Inflow Area = 5.23 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 1.93 cfs @ 15.71 hrs, Volume= 1.318 af  
 Outflow = 1.92 cfs @ 16.13 hrs, Volume= 1.318 af, Atten= 1%, Lag= 25.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.65 fps, Min. Travel Time= 11.7 min  
 Avg. Velocity = 0.99 fps, Avg. Travel Time= 19.5 min

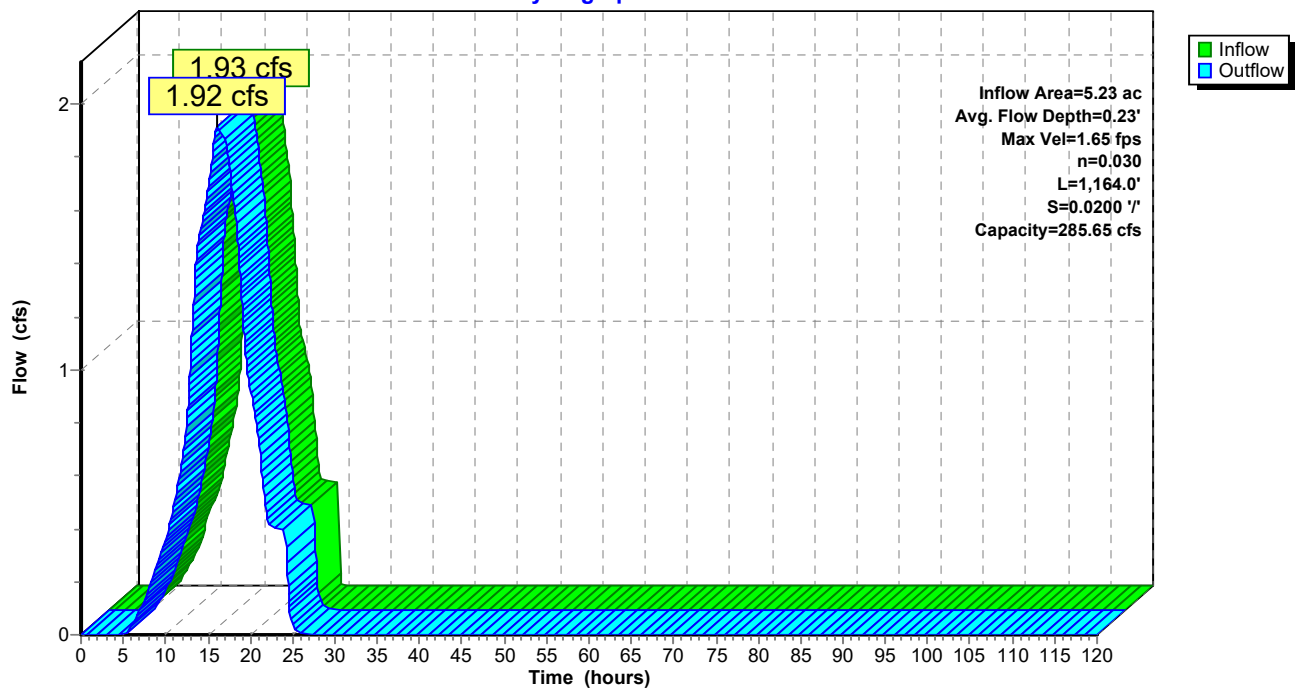
Peak Storage= 1,352 cf @ 15.93 hrs  
 Average Depth at Peak Storage= 0.23'  
 Bank-Full Depth= 1.50' Flow Area= 49.5 sf, Capacity= 285.65 cfs

0.00' x 1.50' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 40.0 4.0 '/' Top Width= 66.00'  
 Length= 1,164.0' Slope= 0.0200 '/'  
 Inlet Invert= 806.00', Outlet Invert= 782.72'



**Reach TB-A1B: Terrace Berm A1B**

Hydrograph





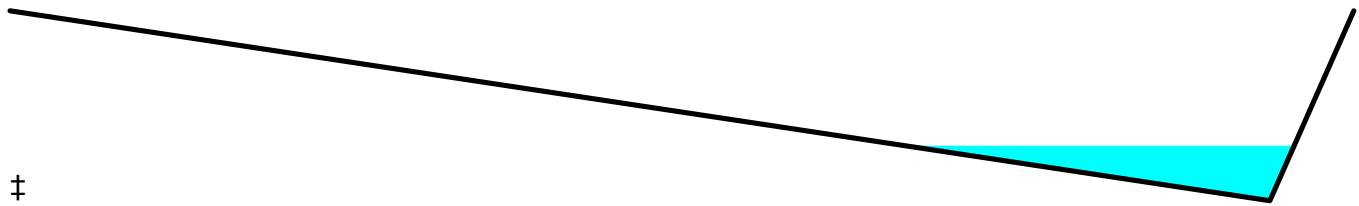
**Summary for Reach TB-A1C: Terrace Berm A1C**

Inflow Area = 9.16 ac, 1.48% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 3.36 cfs @ 16.11 hrs, Volume= 2.309 af  
 Outflow = 3.36 cfs @ 16.43 hrs, Volume= 2.309 af, Atten= 0%, Lag= 19.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.67 fps, Min. Travel Time= 9.7 min  
 Avg. Velocity = 0.94 fps, Avg. Travel Time= 17.1 min

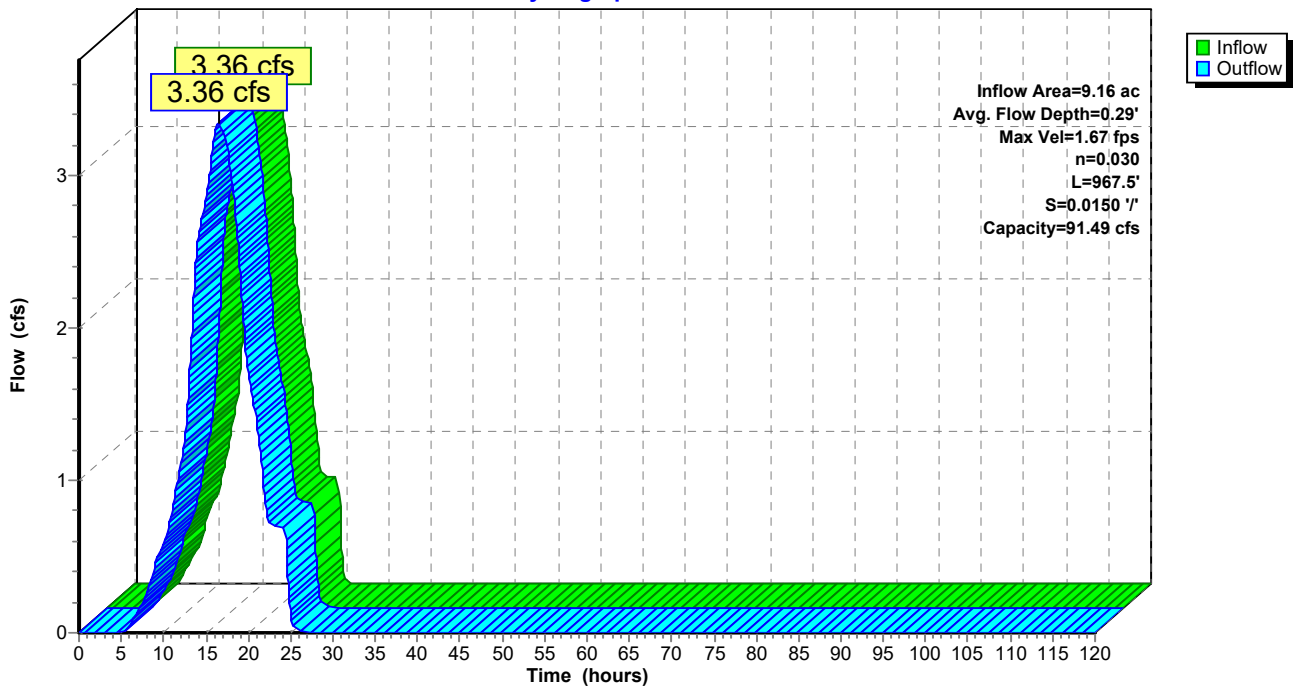
Peak Storage= 1,946 cf @ 16.27 hrs  
 Average Depth at Peak Storage= 0.29'  
 Bank-Full Depth= 1.00' Flow Area= 24.0 sf, Capacity= 91.49 cfs

0.00' x 1.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 45.0 3.0 '/' Top Width= 48.00'  
 Length= 967.5' Slope= 0.0150 '/'  
 Inlet Invert= 792.00', Outlet Invert= 777.49'



**Reach TB-A1C: Terrace Berm A1C**

Hydrograph



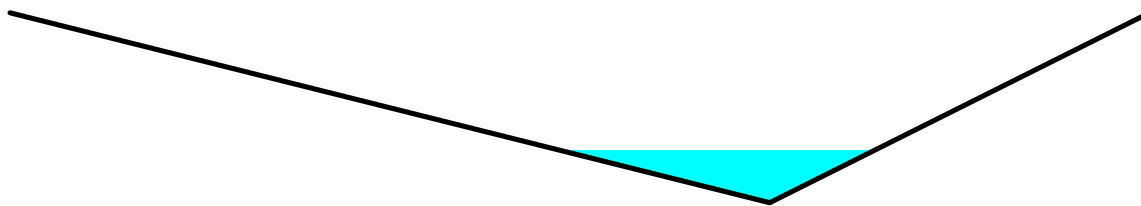
### Summary for Reach TB-B1: Terrace Berm B1

Inflow Area = 2.04 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 0.75 cfs @ 15.76 hrs, Volume= 0.514 af  
 Outflow = 0.75 cfs @ 15.85 hrs, Volume= 0.514 af, Atten= 0%, Lag= 5.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.09 fps, Min. Travel Time= 2.7 min  
 Avg. Velocity = 1.48 fps, Avg. Travel Time= 3.9 min

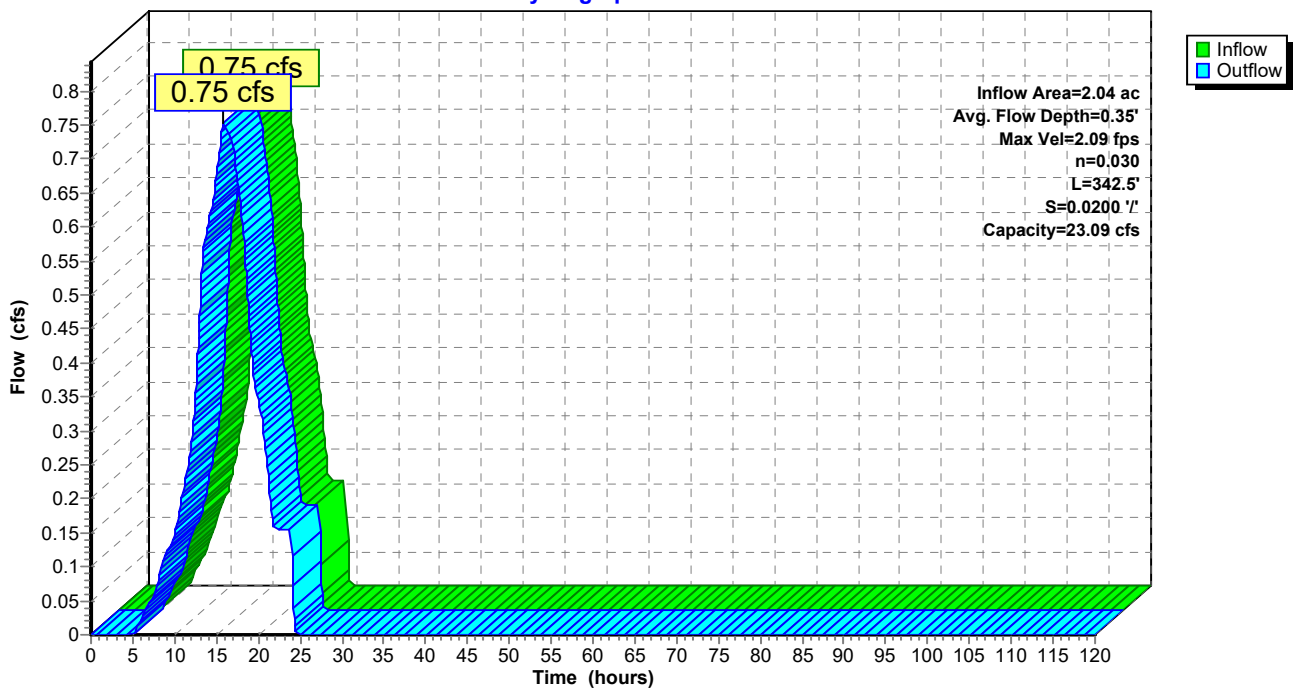
Peak Storage= 123 cf @ 15.80 hrs  
 Average Depth at Peak Storage= 0.35'  
 Bank-Full Depth= 1.25' Flow Area= 4.7 sf, Capacity= 23.09 cfs

0.00' x 1.25' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 7.50'  
 Length= 342.5' Slope= 0.0200 '/'  
 Inlet Invert= 880.00', Outlet Invert= 873.15'



### Reach TB-B1: Terrace Berm B1

Hydrograph



**Summary for Reach TB-B10: Terrace Bench B10**

Inflow Area = 2.25 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 0.82 cfs @ 16.05 hrs, Volume= 0.567 af  
 Outflow = 0.82 cfs @ 16.28 hrs, Volume= 0.567 af, Atten= 0%, Lag= 13.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 0.82 fps, Min. Travel Time= 7.4 min  
 Avg. Velocity = 0.52 fps, Avg. Travel Time= 11.6 min

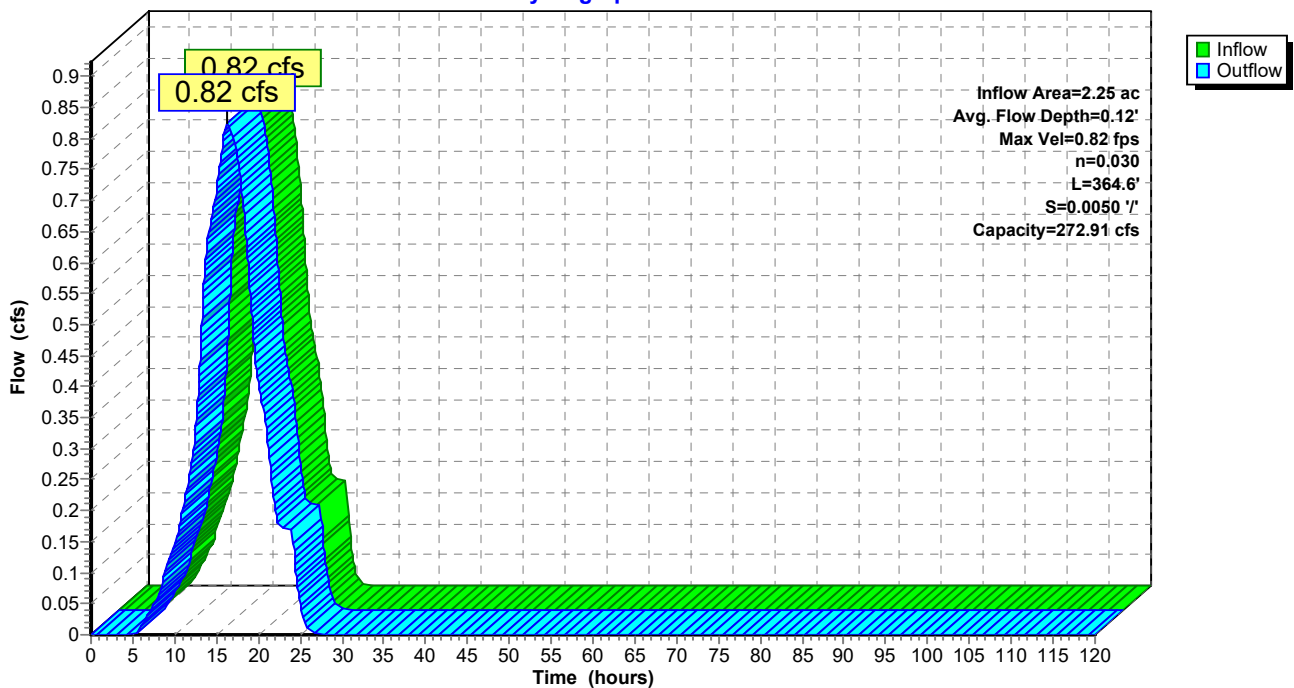
Peak Storage= 364 cf @ 16.15 hrs  
 Average Depth at Peak Storage= 0.12'  
 Bank-Full Depth= 3.00' Flow Area= 51.0 sf, Capacity= 272.91 cfs

8.00' x 3.00' deep channel, n= 0.030  
 Side Slope Z-value= 3.0 '/' Top Width= 26.00'  
 Length= 364.6' Slope= 0.0050 '/'  
 Inlet Invert= 759.18', Outlet Invert= 757.36'



**Reach TB-B10: Terrace Bench B10**

Hydrograph



**Summary for Reach TB-B10A: Terrace Bench B10A**

Inflow Area = 2.25 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 0.82 cfs @ 16.28 hrs, Volume= 0.567 af  
 Outflow = 0.82 cfs @ 16.29 hrs, Volume= 0.567 af, Atten= 0%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.43 fps, Min. Travel Time= 0.5 min  
 Avg. Velocity = 1.95 fps, Avg. Travel Time= 0.7 min

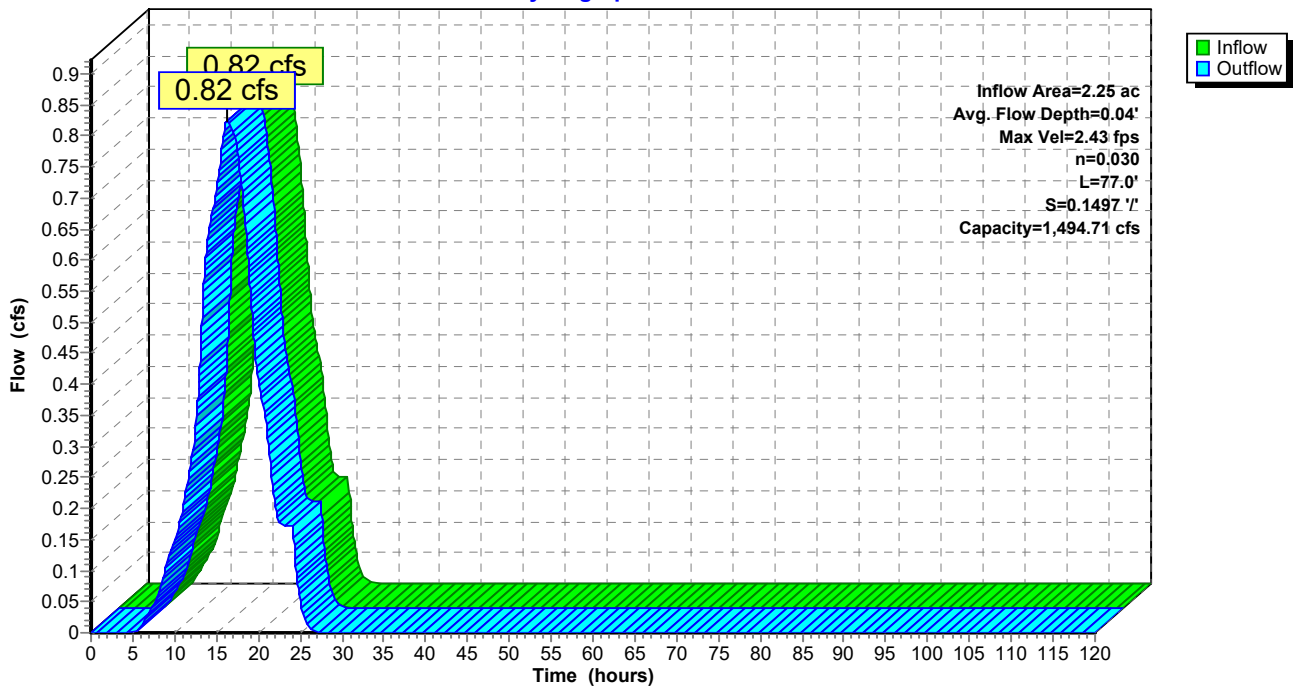
Peak Storage= 26 cf @ 16.28 hrs  
 Average Depth at Peak Storage= 0.04'  
 Bank-Full Depth= 3.00' Flow Area= 51.0 sf, Capacity= 1,494.71 cfs

8.00' x 3.00' deep channel, n= 0.030  
 Side Slope Z-value= 3.0 ' / ' Top Width= 26.00'  
 Length= 77.0' Slope= 0.1497 ' / '  
 Inlet Invert= 757.36', Outlet Invert= 745.83'



**Reach TB-B10A: Terrace Bench B10A**

Hydrograph



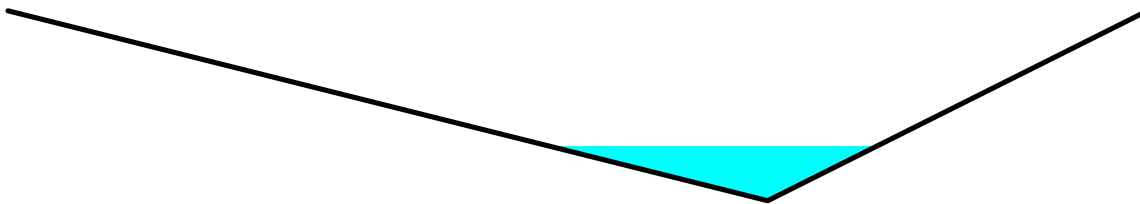
**Summary for Reach TB-B11: Terrace Berm B11**

Inflow Area = 2.27 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 0.84 cfs @ 15.88 hrs, Volume= 0.572 af  
 Outflow = 0.84 cfs @ 15.91 hrs, Volume= 0.572 af, Atten= 0%, Lag= 1.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.15 fps, Min. Travel Time= 0.8 min  
 Avg. Velocity = 1.57 fps, Avg. Travel Time= 1.1 min

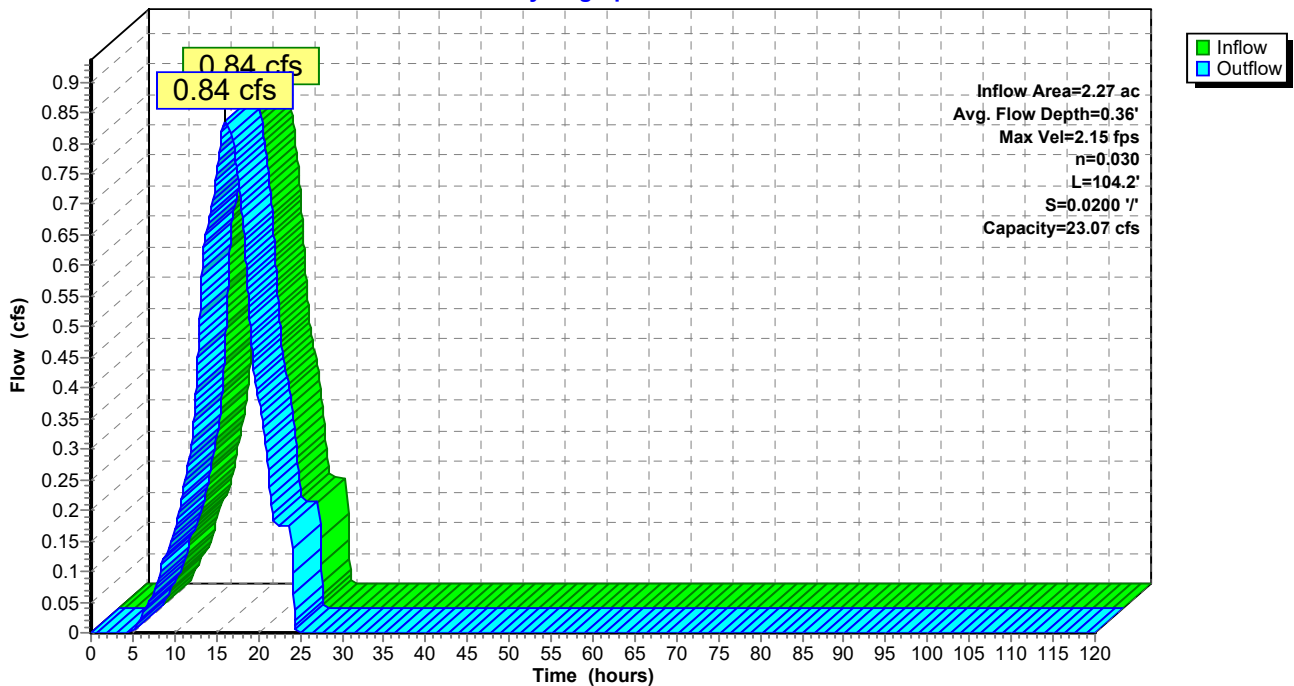
Peak Storage= 41 cf @ 15.90 hrs  
 Average Depth at Peak Storage= 0.36'  
 Bank-Full Depth= 1.25' Flow Area= 4.7 sf, Capacity= 23.07 cfs

0.00' x 1.25' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 7.50'  
 Length= 104.2' Slope= 0.0200 '/'  
 Inlet Invert= 821.00', Outlet Invert= 818.92'



**Reach TB-B11: Terrace Berm B11**

Hydrograph



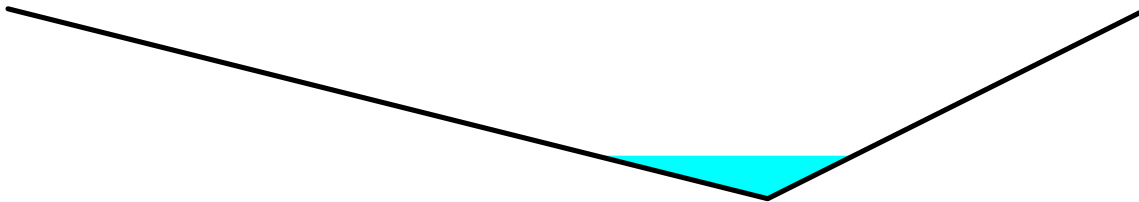
**Summary for Reach TB-B12: Terrace Berm B12**

Inflow Area = 1.20 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 0.44 cfs @ 15.71 hrs, Volume= 0.303 af  
 Outflow = 0.44 cfs @ 15.95 hrs, Volume= 0.303 af, Atten= 0%, Lag= 14.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.83 fps, Min. Travel Time= 6.7 min  
 Avg. Velocity = 1.22 fps, Avg. Travel Time= 10.1 min

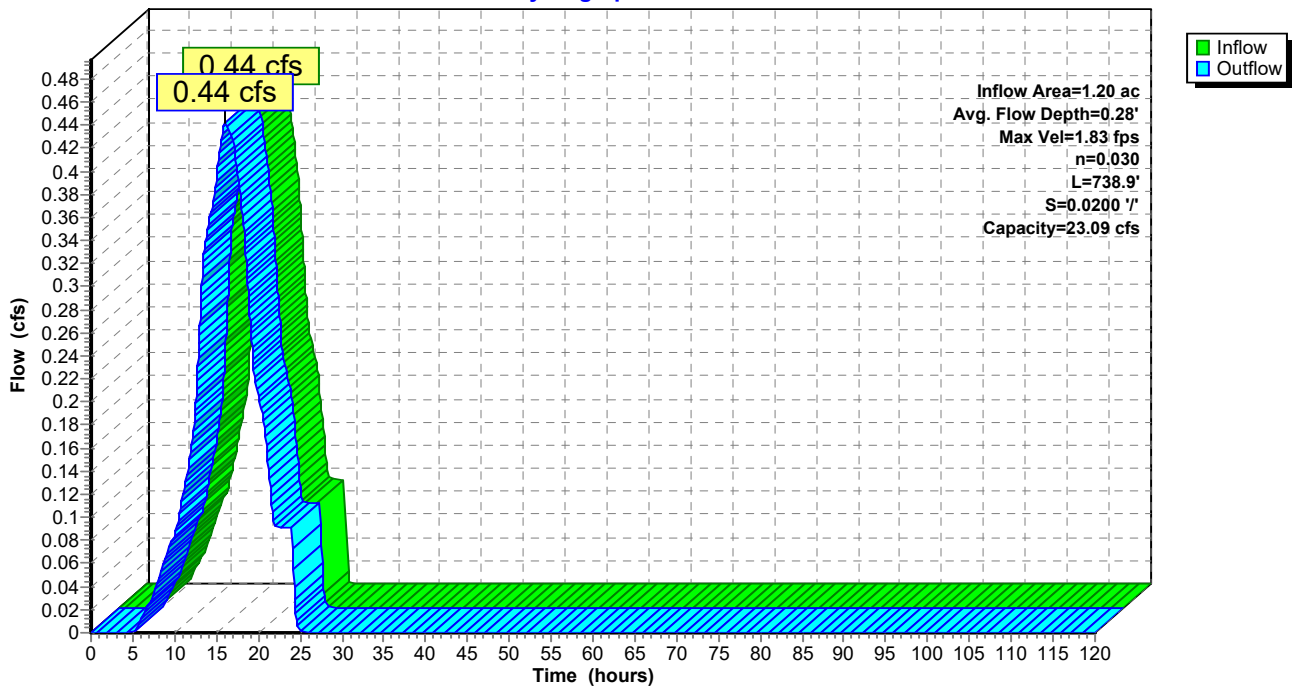
Peak Storage= 178 cf @ 15.83 hrs  
 Average Depth at Peak Storage= 0.28'  
 Bank-Full Depth= 1.25' Flow Area= 4.7 sf, Capacity= 23.09 cfs

0.00' x 1.25' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 7.50'  
 Length= 738.9' Slope= 0.0200 '/'  
 Inlet Invert= 864.00', Outlet Invert= 849.22'



**Reach TB-B12: Terrace Berm B12**

Hydrograph



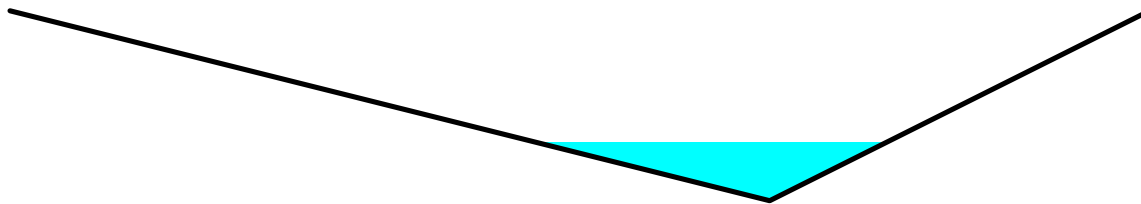
**Summary for Reach TB-B2: Terrace Berm B2**

Inflow Area = 2.74 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 1.01 cfs @ 15.75 hrs, Volume= 0.691 af  
 Outflow = 1.01 cfs @ 15.87 hrs, Volume= 0.691 af, Atten= 0%, Lag= 6.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.25 fps, Min. Travel Time= 3.4 min  
 Avg. Velocity = 1.56 fps, Avg. Travel Time= 4.9 min

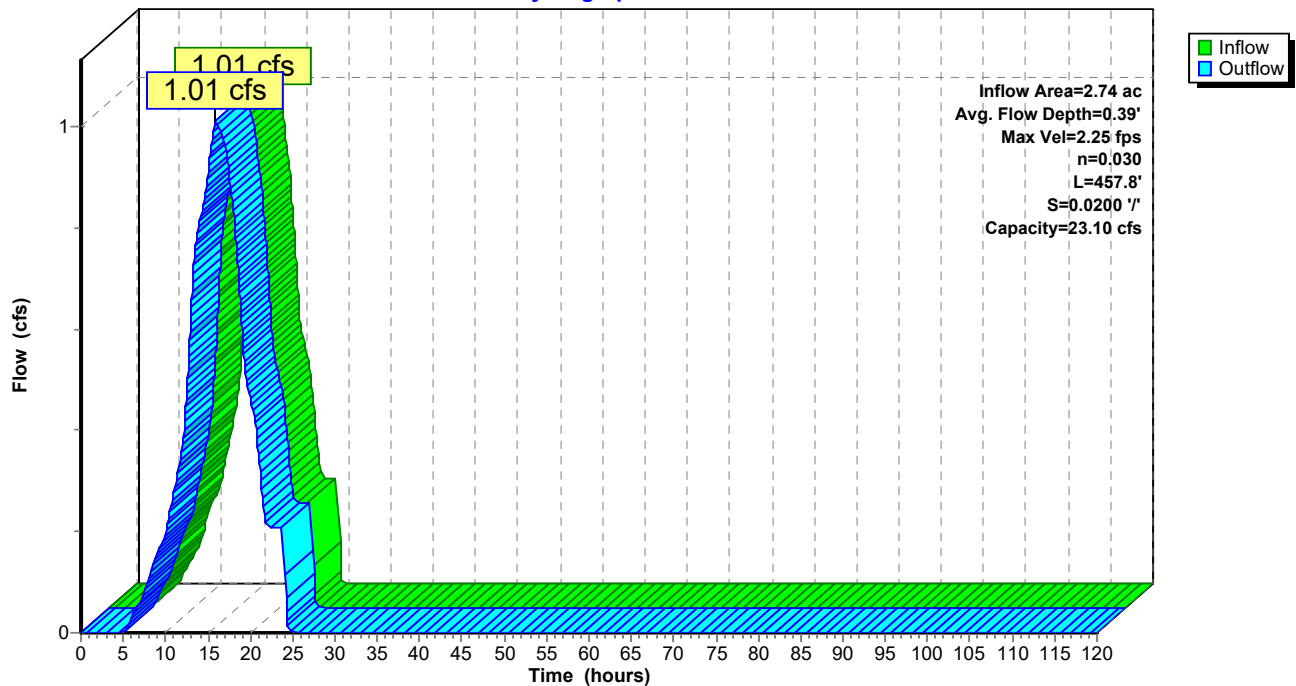
Peak Storage= 205 cf @ 15.81 hrs  
 Average Depth at Peak Storage= 0.39'  
 Bank-Full Depth= 1.25' Flow Area= 4.7 sf, Capacity= 23.10 cfs

0.00' x 1.25' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 7.50'  
 Length= 457.8' Slope= 0.0200 '/'  
 Inlet Invert= 880.00', Outlet Invert= 870.84'



**Reach TB-B2: Terrace Berm B2**

Hydrograph



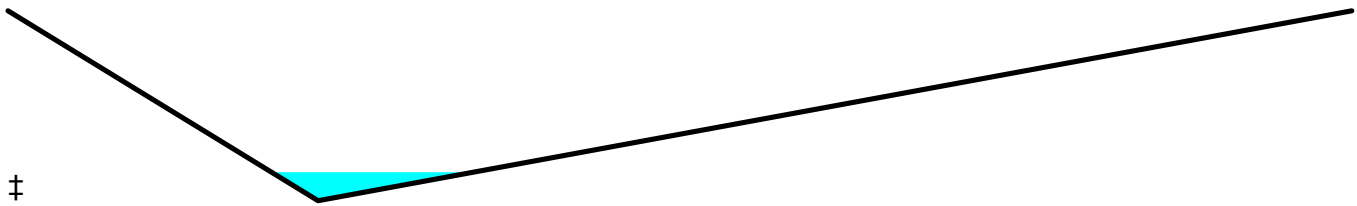
**Summary for Reach TB-B3: Terrace Bench B3**

Inflow Area = 2.21 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 0.82 cfs @ 15.71 hrs, Volume= 0.557 af  
 Outflow = 0.81 cfs @ 15.97 hrs, Volume= 0.557 af, Atten= 0%, Lag= 15.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.39 fps, Min. Travel Time= 7.4 min  
 Avg. Velocity = 0.91 fps, Avg. Travel Time= 11.3 min

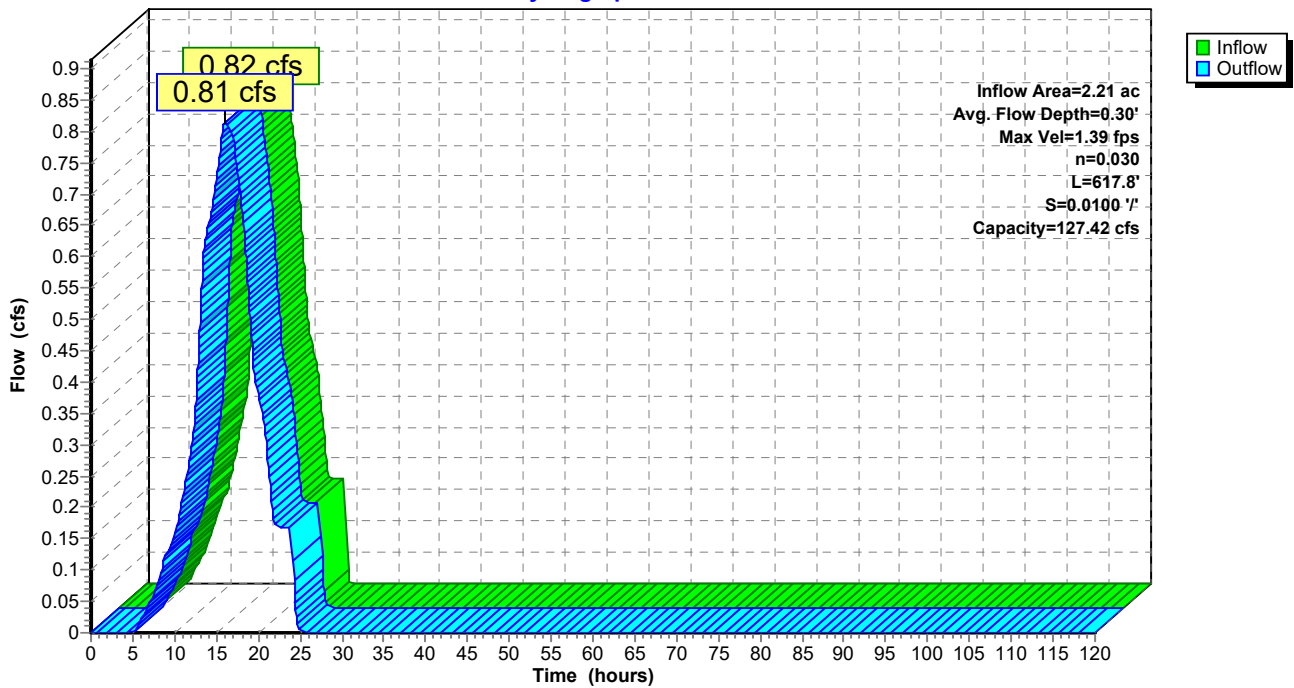
Peak Storage= 363 cf @ 15.85 hrs  
 Average Depth at Peak Storage= 0.30'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.42 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/ Top Width= 26.00'  
 Length= 617.8' Slope= 0.0100 '/  
 Inlet Invert= 880.00', Outlet Invert= 873.82'



**Reach TB-B3: Terrace Bench B3**

Hydrograph





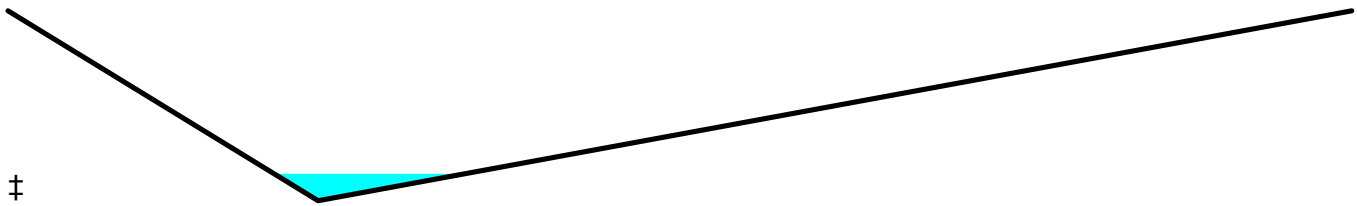
**Summary for Reach TB-B4: Terrace Bench B4**

Inflow Area = 1.87 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 0.69 cfs @ 15.71 hrs, Volume= 0.471 af  
 Outflow = 0.69 cfs @ 15.90 hrs, Volume= 0.471 af, Atten= 0%, Lag= 11.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.33 fps, Min. Travel Time= 5.5 min  
 Avg. Velocity = 0.91 fps, Avg. Travel Time= 8.0 min

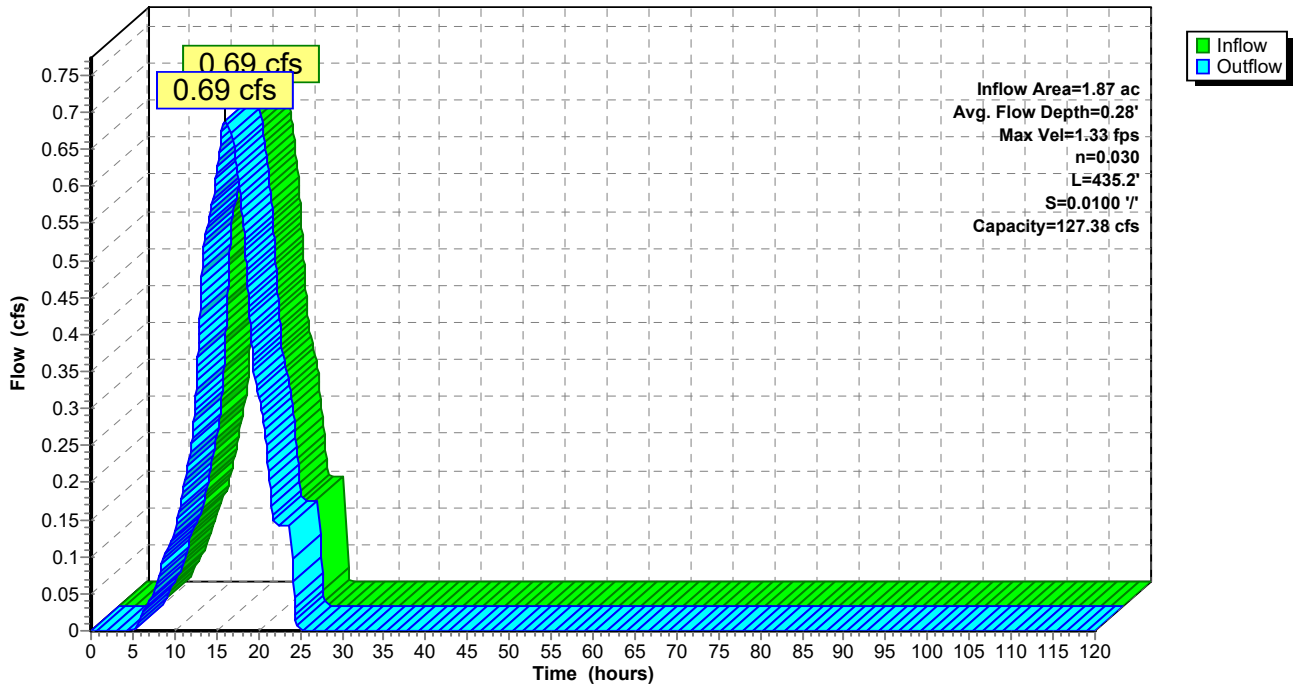
Peak Storage= 226 cf @ 15.81 hrs  
 Average Depth at Peak Storage= 0.28'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.38 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'  
 Length= 435.2' Slope= 0.0100 '/'  
 Inlet Invert= 840.00', Outlet Invert= 835.65'



**Reach TB-B4: Terrace Bench B4**

Hydrograph



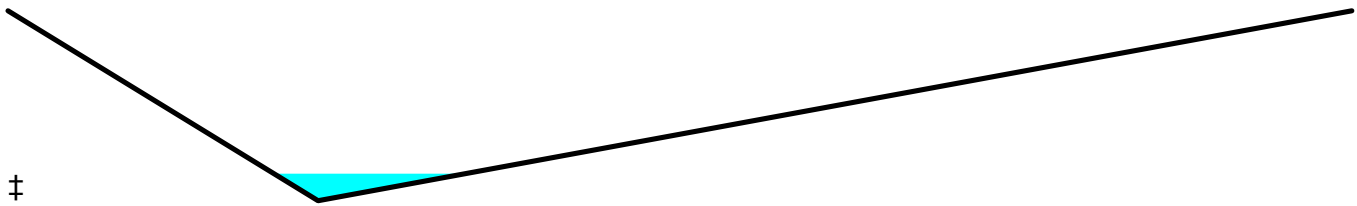
**Summary for Reach TB-B5: Terrace Bench B5**

Inflow Area = 1.93 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 0.71 cfs @ 15.69 hrs, Volume= 0.486 af  
 Outflow = 0.71 cfs @ 16.06 hrs, Volume= 0.486 af, Atten= 0%, Lag= 21.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.34 fps, Min. Travel Time= 10.1 min  
 Avg. Velocity = 0.85 fps, Avg. Travel Time= 15.8 min

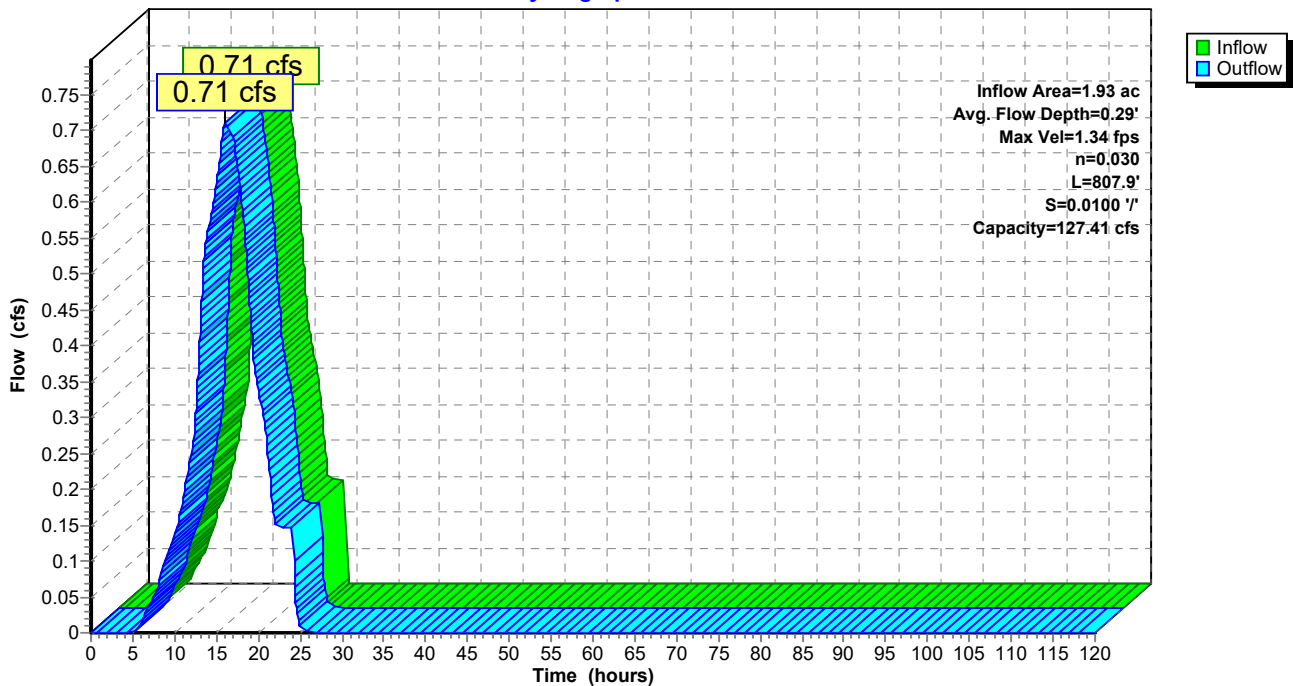
Peak Storage= 428 cf @ 15.89 hrs  
 Average Depth at Peak Storage= 0.29'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.41 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'  
 Length= 807.9' Slope= 0.0100 '/'  
 Inlet Invert= 814.00', Outlet Invert= 805.92'



**Reach TB-B5: Terrace Bench B5**

Hydrograph



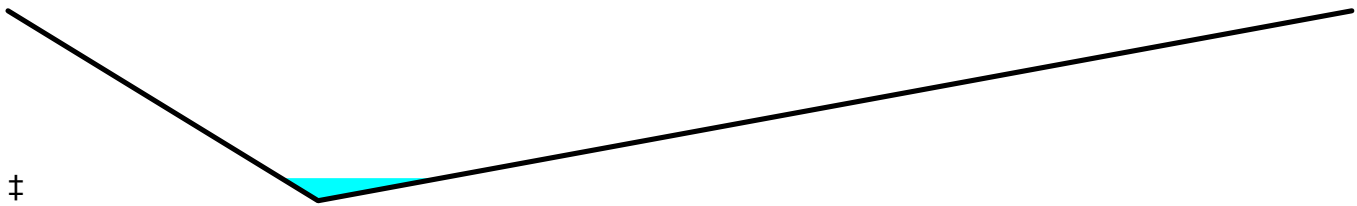
**Summary for Reach TB-B6: Terrace Bench B6**

Inflow Area = 1.18 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 0.44 cfs @ 15.70 hrs, Volume= 0.297 af  
 Outflow = 0.43 cfs @ 15.92 hrs, Volume= 0.297 af, Atten= 0%, Lag= 12.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.18 fps, Min. Travel Time= 6.0 min  
 Avg. Velocity = 0.82 fps, Avg. Travel Time= 8.7 min

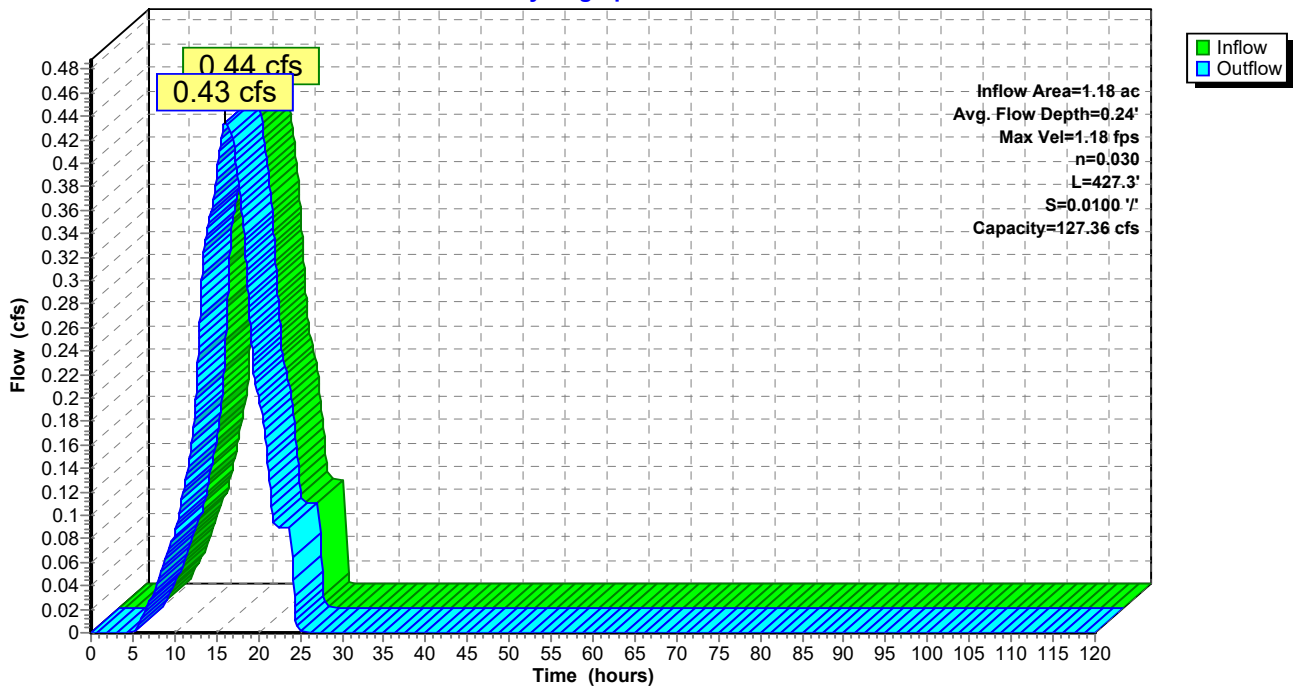
Peak Storage= 157 cf @ 15.82 hrs  
 Average Depth at Peak Storage= 0.24'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.36 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/ Top Width= 26.00'  
 Length= 427.3' Slope= 0.0100 '/  
 Inlet Invert= 812.00', Outlet Invert= 807.73'



**Reach TB-B6: Terrace Bench B6**

Hydrograph



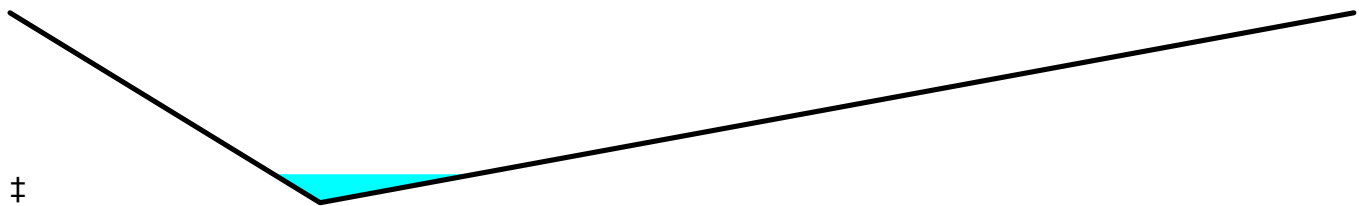
**Summary for Reach TB-B7: Terrace Bench B7**

Inflow Area = 2.19 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 0.81 cfs @ 15.69 hrs, Volume= 0.552 af  
 Outflow = 0.81 cfs @ 16.05 hrs, Volume= 0.552 af, Atten= 0%, Lag= 21.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.38 fps, Min. Travel Time= 9.8 min  
 Avg. Velocity = 0.88 fps, Avg. Travel Time= 15.4 min

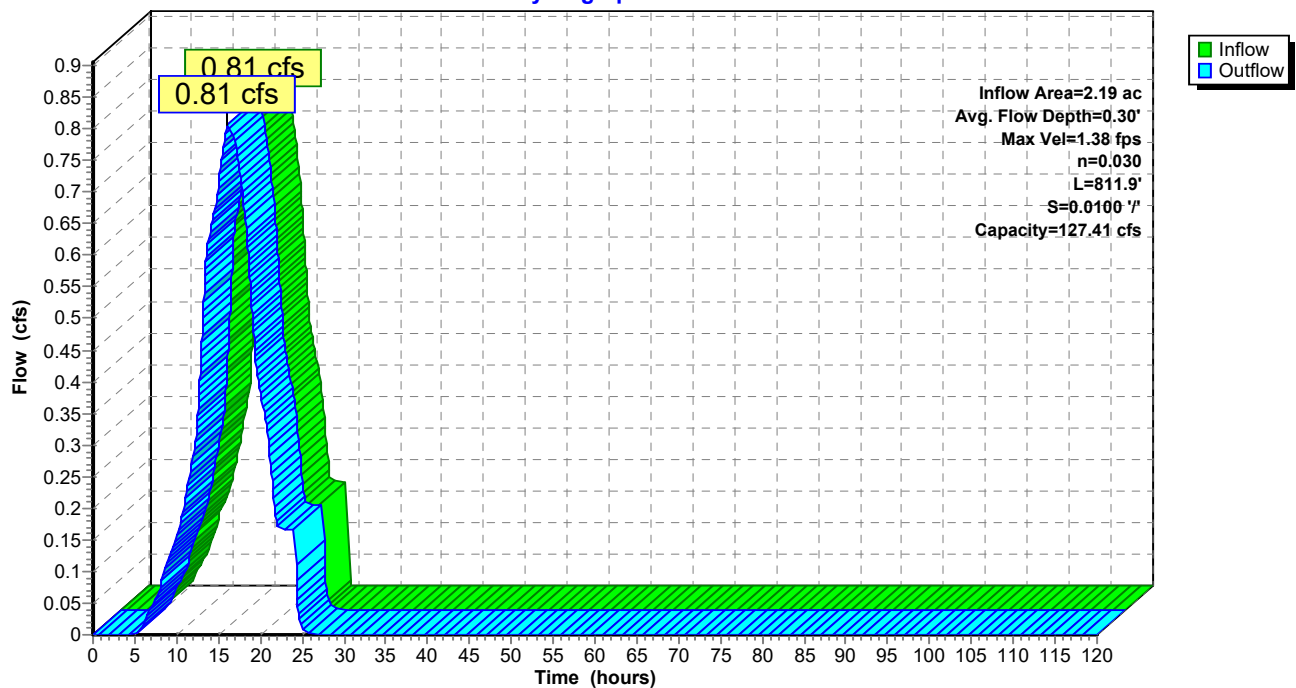
Peak Storage= 473 cf @ 15.89 hrs  
 Average Depth at Peak Storage= 0.30'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.41 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'  
 Length= 811.9' Slope= 0.0100 '/'  
 Inlet Invert= 784.00', Outlet Invert= 775.88'



**Reach TB-B7: Terrace Bench B7**

Hydrograph



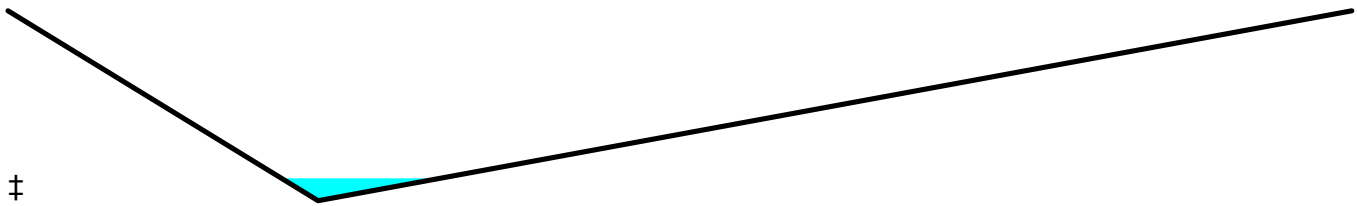
**Summary for Reach TB-B8: Terrace Bench B8**

Inflow Area = 1.17 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 0.43 cfs @ 15.70 hrs, Volume= 0.295 af  
 Outflow = 0.43 cfs @ 15.91 hrs, Volume= 0.295 af, Atten= 0%, Lag= 12.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.18 fps, Min. Travel Time= 6.0 min  
 Avg. Velocity = 0.82 fps, Avg. Travel Time= 8.7 min

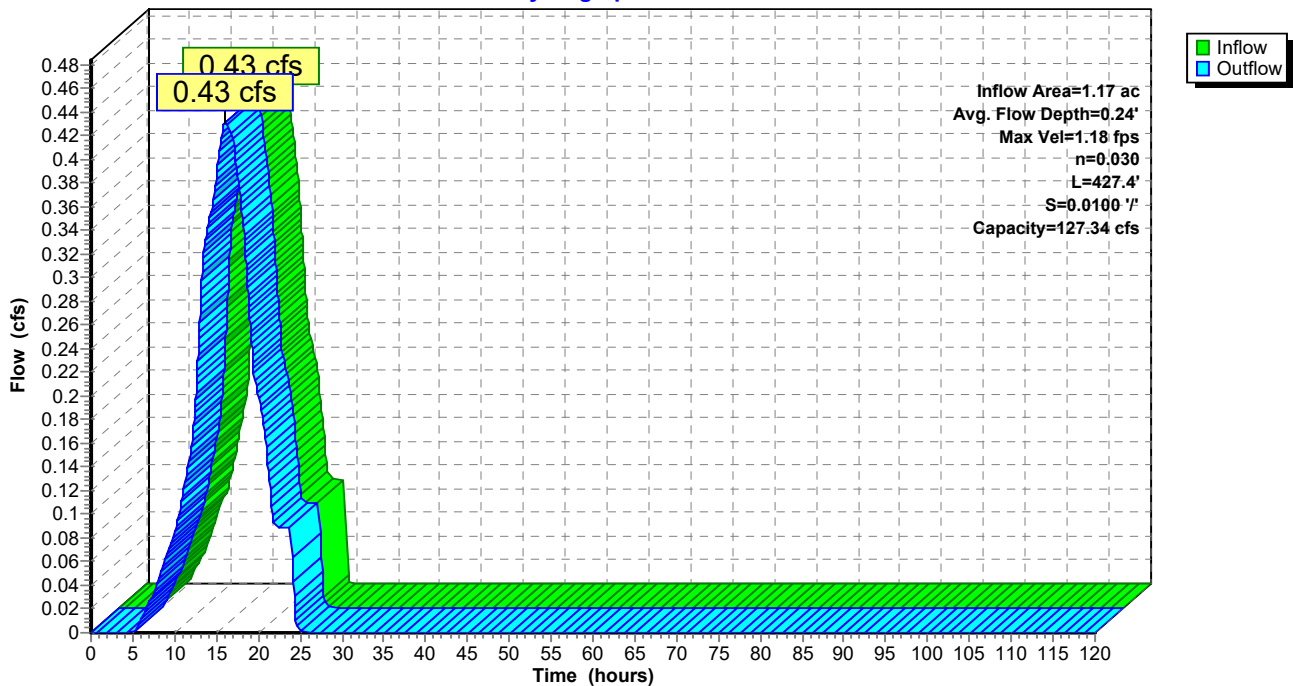
Peak Storage= 156 cf @ 15.81 hrs  
 Average Depth at Peak Storage= 0.24'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.34 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'  
 Length= 427.4' Slope= 0.0100 '/'  
 Inlet Invert= 782.00', Outlet Invert= 777.73'



**Reach TB-B8: Terrace Bench B8**

Hydrograph



**Summary for Reach TB-B9: Terrace Bench B9**

Inflow Area = 1.44 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 0.53 cfs @ 15.67 hrs, Volume= 0.362 af  
 Outflow = 0.53 cfs @ 16.11 hrs, Volume= 0.362 af, Atten= 1%, Lag= 26.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 0.70 fps, Min. Travel Time= 13.5 min  
 Avg. Velocity = 0.46 fps, Avg. Travel Time= 20.2 min

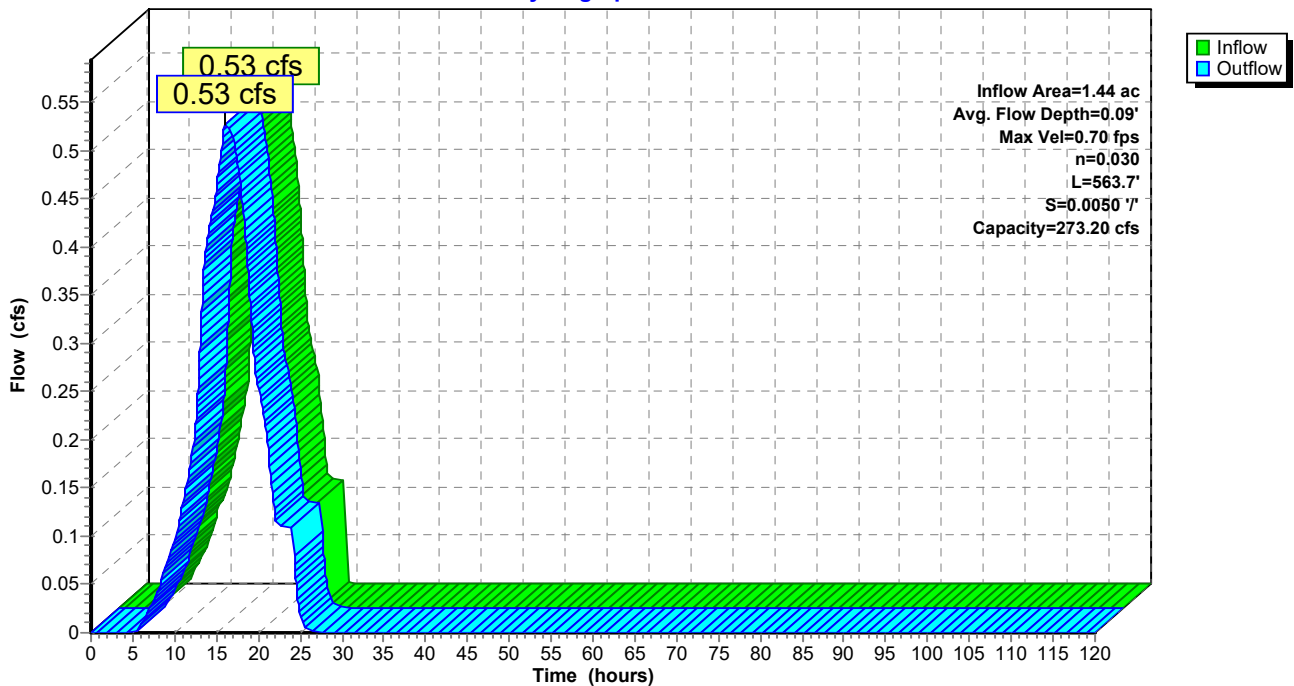
Peak Storage= 427 cf @ 15.89 hrs  
 Average Depth at Peak Storage= 0.09'  
 Bank-Full Depth= 3.00' Flow Area= 51.0 sf, Capacity= 273.20 cfs

8.00' x 3.00' deep channel, n= 0.030  
 Side Slope Z-value= 3.0 '/ Top Width= 26.00'  
 Length= 563.7' Slope= 0.0050 '/  
 Inlet Invert= 762.00', Outlet Invert= 759.18'



**Reach TB-B9: Terrace Bench B9**

Hydrograph



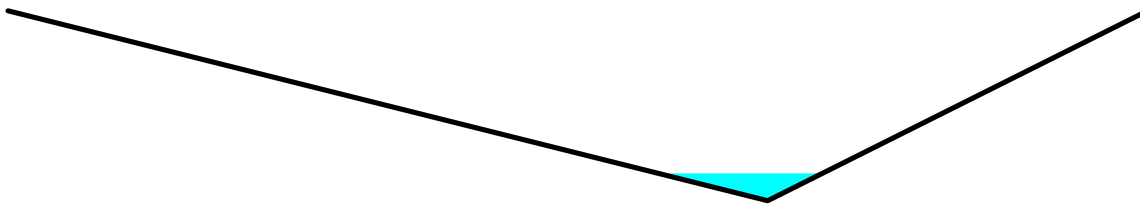
**Summary for Reach TB-D1: Terrace Berm D1**

Inflow Area = 1.26 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 0.46 cfs @ 15.76 hrs, Volume= 0.317 af  
 Outflow = 0.46 cfs @ 15.83 hrs, Volume= 0.317 af, Atten= 0%, Lag= 4.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.86 fps, Min. Travel Time= 2.1 min  
 Avg. Velocity = 1.35 fps, Avg. Travel Time= 2.8 min

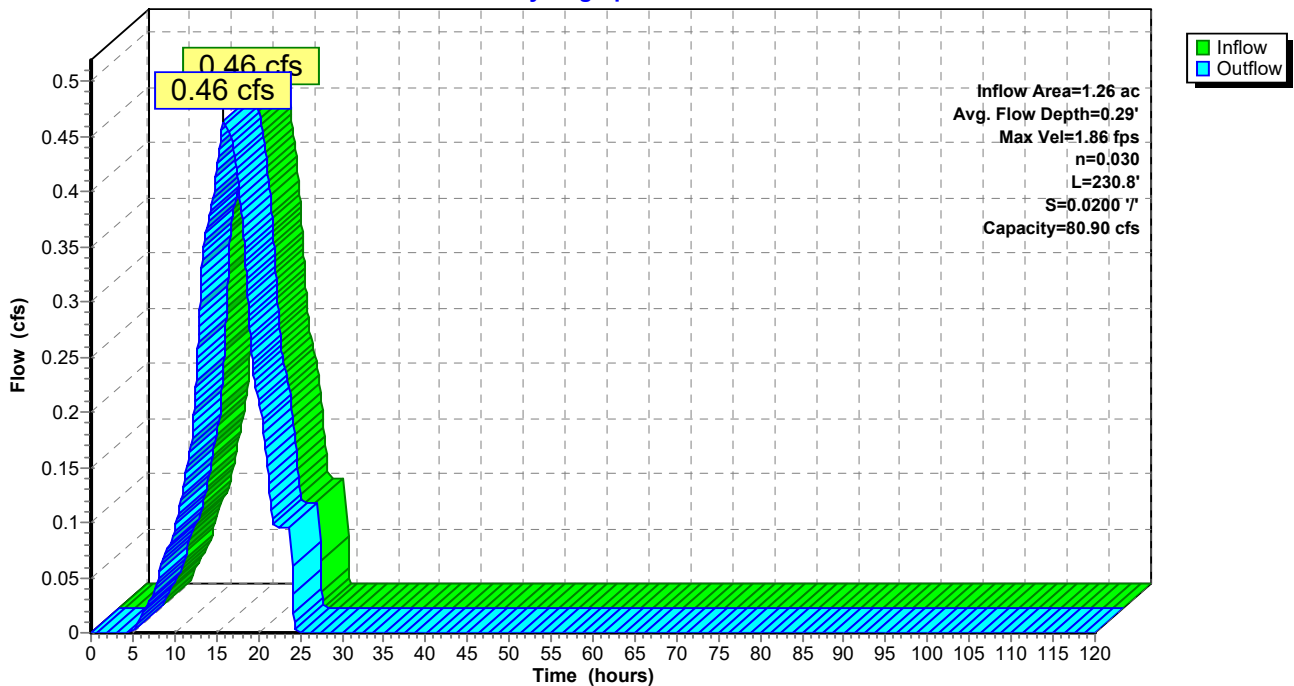
Peak Storage= 58 cf @ 15.79 hrs  
 Average Depth at Peak Storage= 0.29'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.90 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 230.8' Slope= 0.0200 '/'  
 Inlet Invert= 861.86', Outlet Invert= 857.24'



**Reach TB-D1: Terrace Berm D1**

Hydrograph



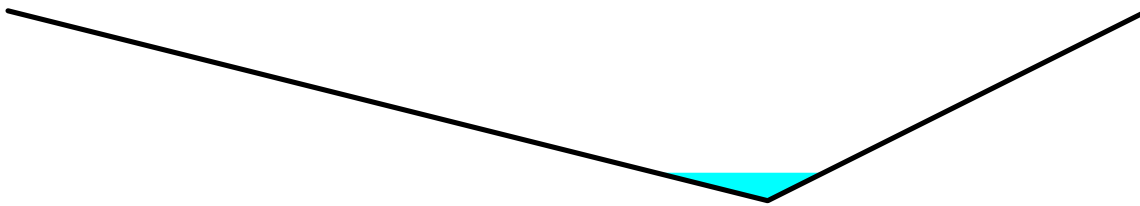
**Summary for Reach TB-D3: Terrace Berm D3**

Inflow Area = 1.33 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 0.49 cfs @ 15.72 hrs, Volume= 0.336 af  
 Outflow = 0.49 cfs @ 15.79 hrs, Volume= 0.336 af, Atten= 0%, Lag= 4.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.88 fps, Min. Travel Time= 2.0 min  
 Avg. Velocity = 1.37 fps, Avg. Travel Time= 2.8 min

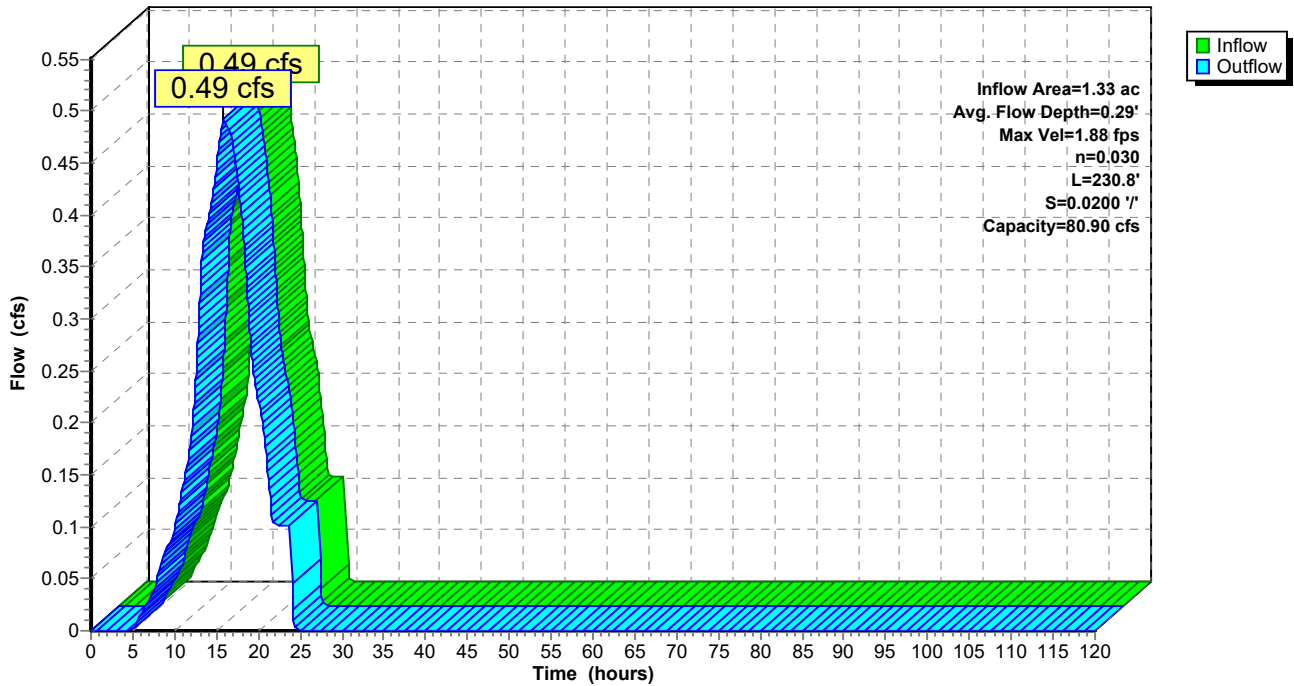
Peak Storage= 60 cf @ 15.75 hrs  
 Average Depth at Peak Storage= 0.29'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.90 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 230.8' Slope= 0.0200 '/'  
 Inlet Invert= 798.33', Outlet Invert= 793.71'



**Reach TB-D3: Terrace Berm D3**

Hydrograph





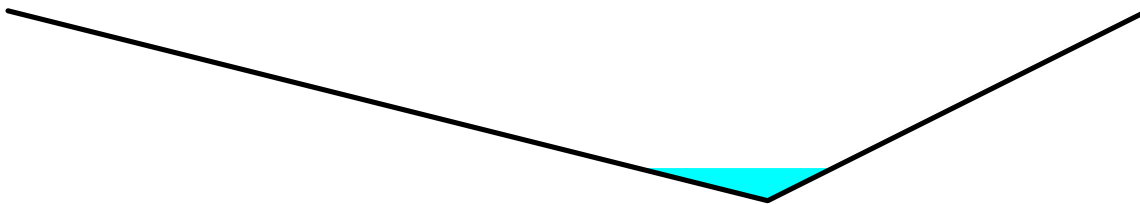
**Summary for Reach TB-E1: Terrace Berm E1**

Inflow Area = 1.42 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 0.52 cfs @ 15.76 hrs, Volume= 0.358 af  
 Outflow = 0.52 cfs @ 15.90 hrs, Volume= 0.358 af, Atten= 0%, Lag= 8.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.47 fps, Min. Travel Time= 4.1 min  
 Avg. Velocity = 1.03 fps, Avg. Travel Time= 5.9 min

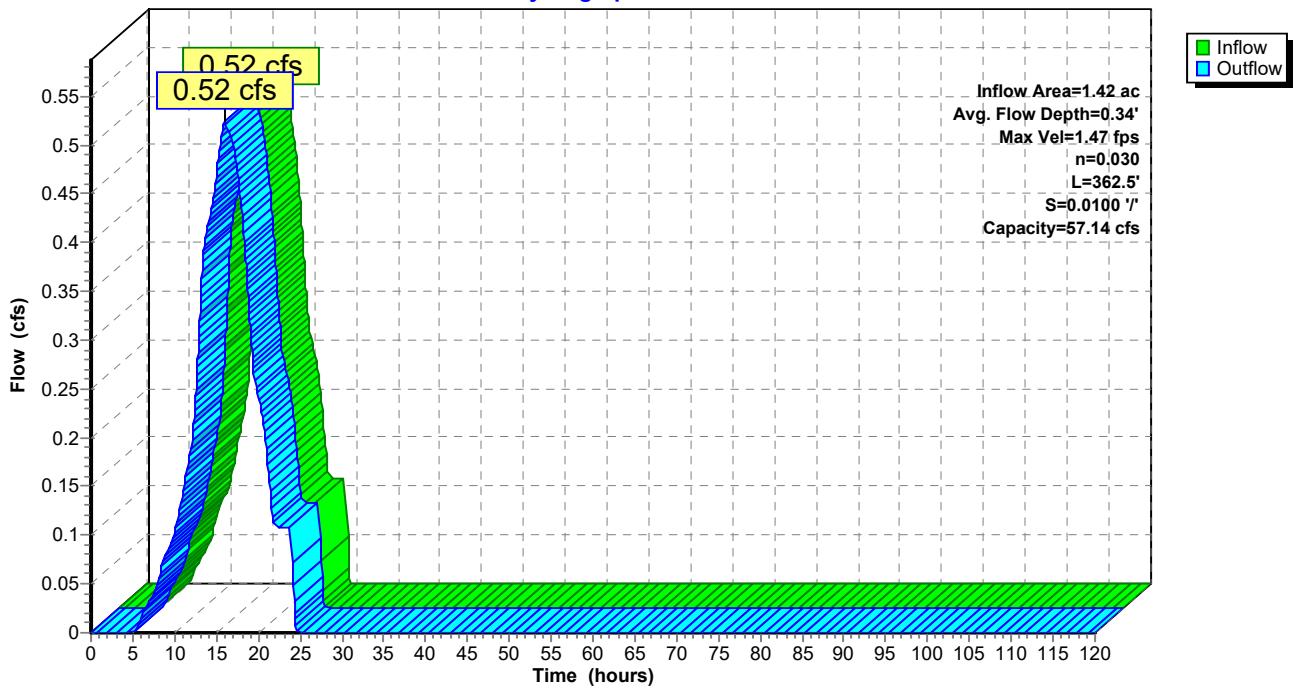
Peak Storage= 129 cf @ 15.82 hrs  
 Average Depth at Peak Storage= 0.34'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.14 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 362.5' Slope= 0.0100 '/'  
 Inlet Invert= 860.26', Outlet Invert= 856.64'



**Reach TB-E1: Terrace Berm E1**

Hydrograph



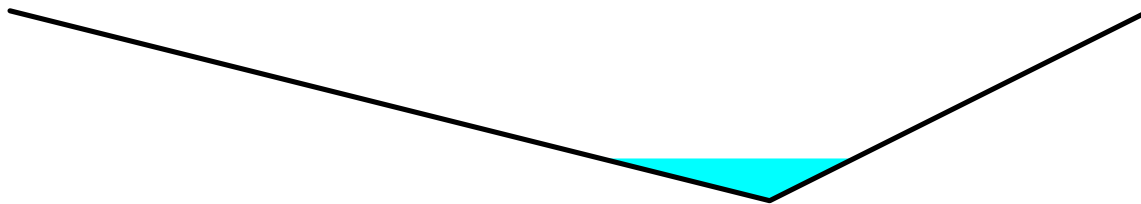
**Summary for Reach TB-E2: TB-E2**

Inflow Area = 2.82 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 1.04 cfs @ 15.72 hrs, Volume= 0.710 af  
 Outflow = 1.03 cfs @ 16.17 hrs, Volume= 0.710 af, Atten= 1%, Lag= 27.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.75 fps, Min. Travel Time= 12.6 min  
 Avg. Velocity = 1.02 fps, Avg. Travel Time= 21.5 min

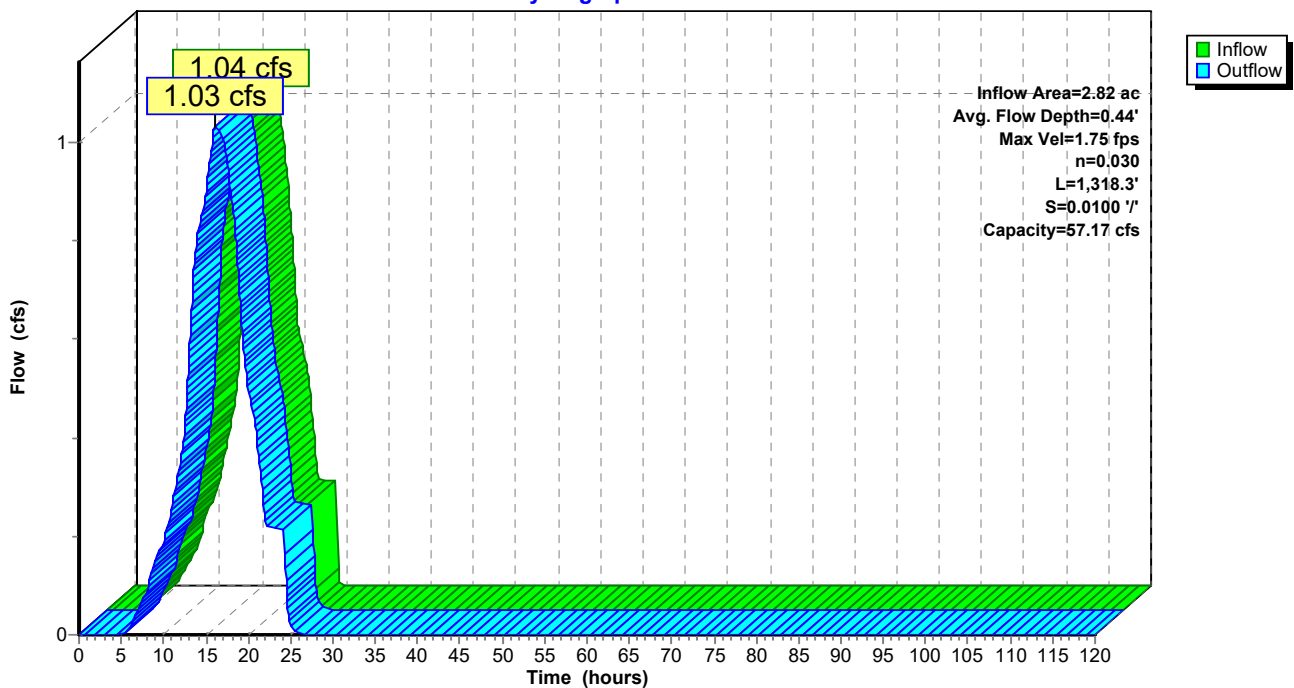
Peak Storage= 780 cf @ 15.96 hrs  
 Average Depth at Peak Storage= 0.44'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.17 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,318.3' Slope= 0.0100 '/'  
 Inlet Invert= 806.69', Outlet Invert= 793.51'



**Reach TB-E2: TB-E2**

Hydrograph



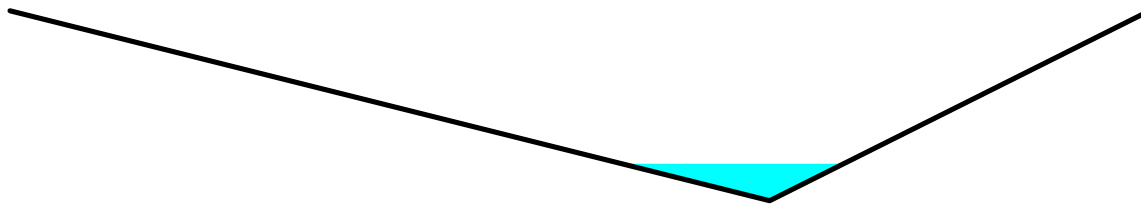
**Summary for Reach TB-H1: Terrace Berm H1**

Inflow Area = 1.98 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 0.73 cfs @ 15.76 hrs, Volume= 0.499 af  
 Outflow = 0.73 cfs @ 15.92 hrs, Volume= 0.499 af, Atten= 0%, Lag= 9.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.60 fps, Min. Travel Time= 4.7 min  
 Avg. Velocity = 1.10 fps, Avg. Travel Time= 6.9 min

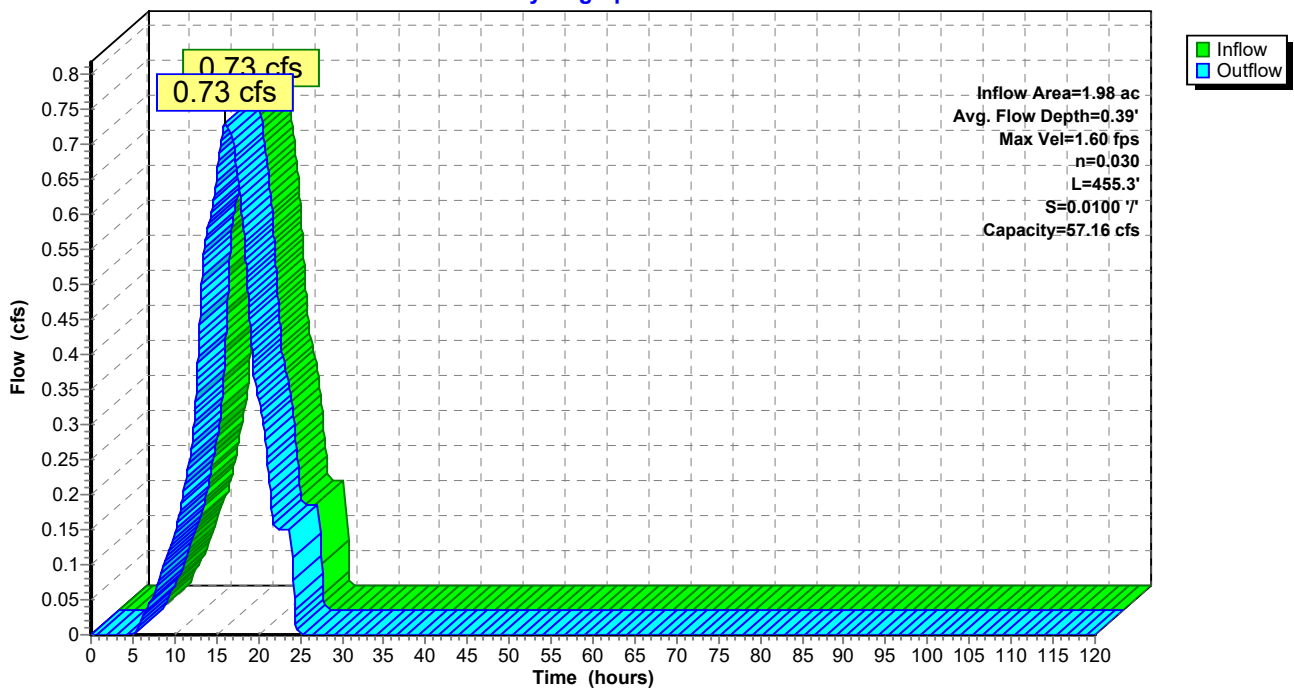
Peak Storage= 207 cf @ 15.84 hrs  
 Average Depth at Peak Storage= 0.39'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.16 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 455.3' Slope= 0.0100 '/'  
 Inlet Invert= 872.24', Outlet Invert= 867.69'



**Reach TB-H1: Terrace Berm H1**

Hydrograph



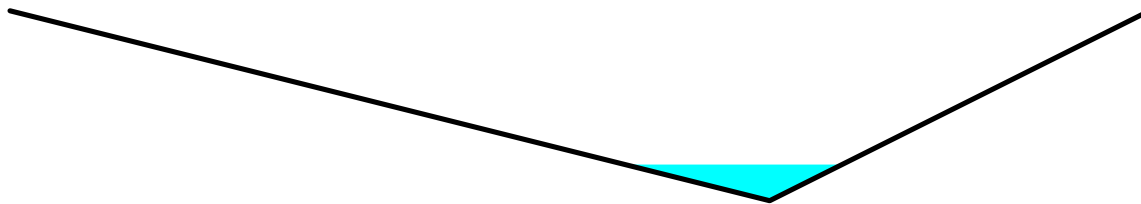
**Summary for Reach TB-H2: Terrace Berm H2**

Inflow Area = 1.86 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 0.69 cfs @ 15.71 hrs, Volume= 0.469 af  
 Outflow = 0.69 cfs @ 15.93 hrs, Volume= 0.469 af, Atten= 0%, Lag= 13.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.58 fps, Min. Travel Time= 6.4 min  
 Avg. Velocity = 1.05 fps, Avg. Travel Time= 9.7 min

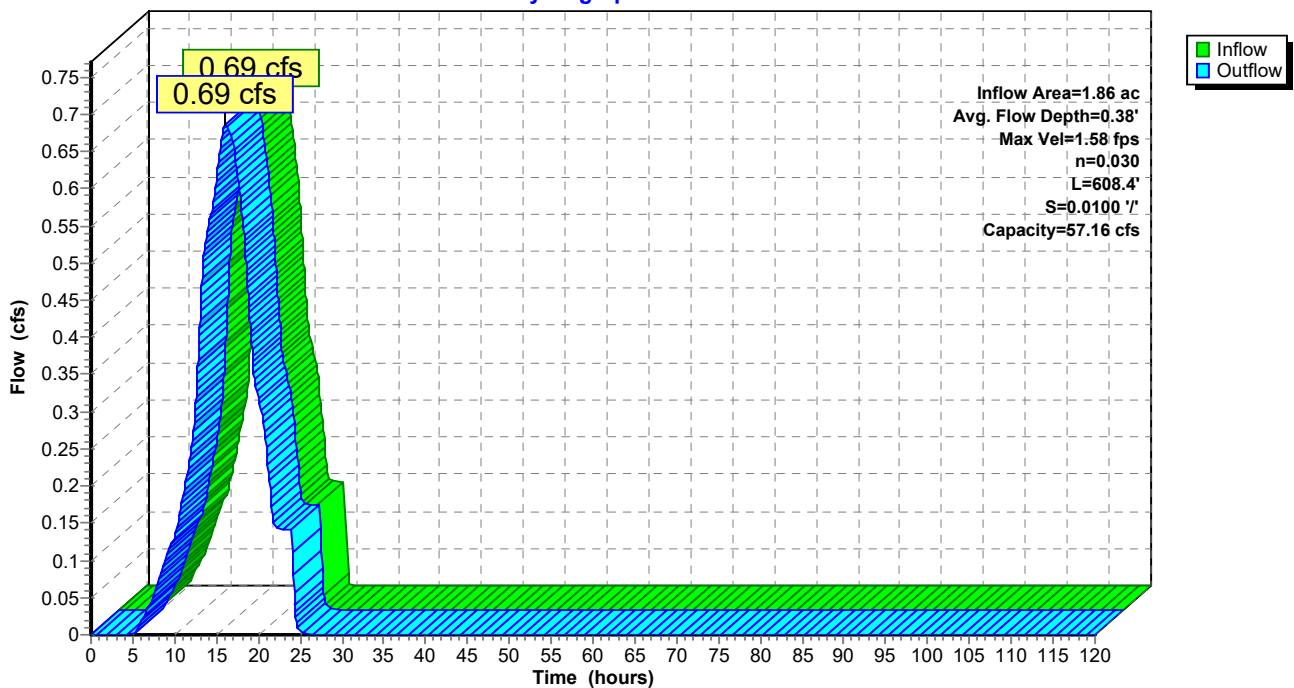
Peak Storage= 265 cf @ 15.82 hrs  
 Average Depth at Peak Storage= 0.38'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.16 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 608.4' Slope= 0.0100 '/'  
 Inlet Invert= 837.23', Outlet Invert= 831.15'



**Reach TB-H2: Terrace Berm H2**

Hydrograph



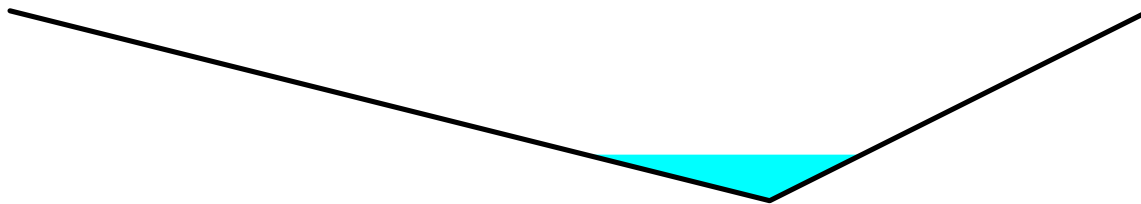
**Summary for Reach TB-H3: Terrace Berm H3**

Inflow Area = 3.57 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 1.32 cfs @ 15.71 hrs, Volume= 0.900 af  
 Outflow = 1.32 cfs @ 15.97 hrs, Volume= 0.900 af, Atten= 0%, Lag= 15.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.86 fps, Min. Travel Time= 7.2 min  
 Avg. Velocity = 1.18 fps, Avg. Travel Time= 11.3 min

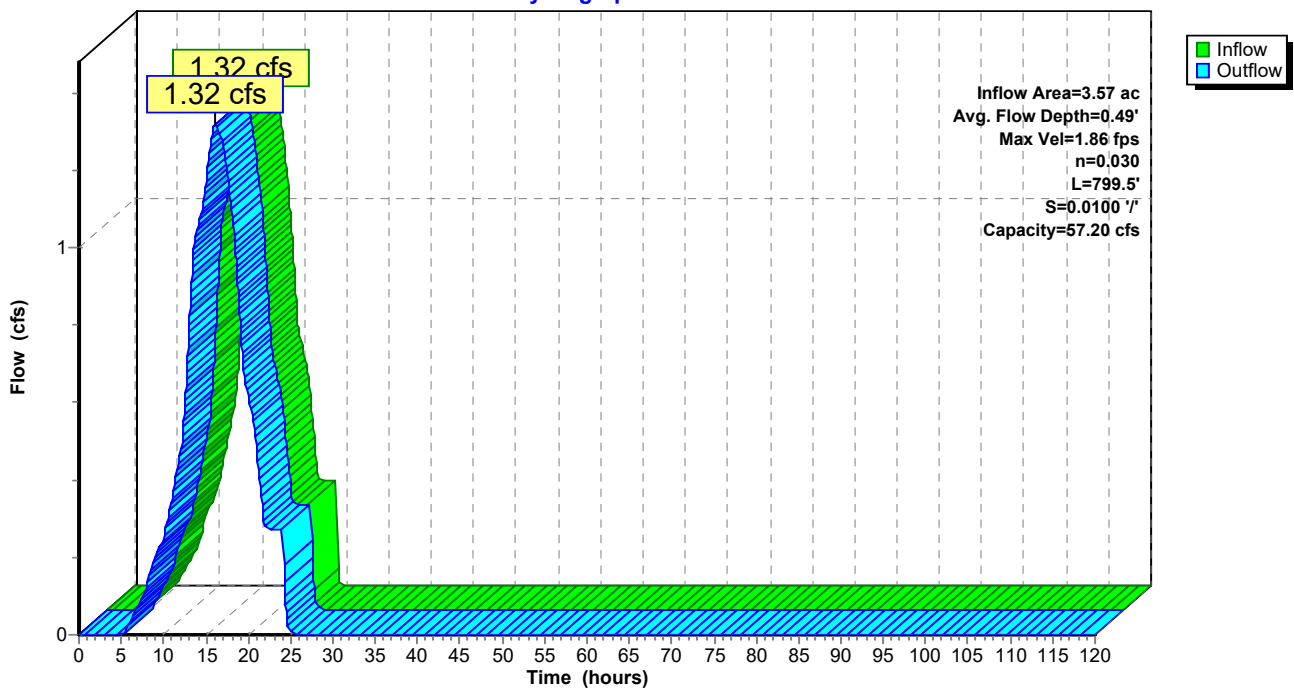
Peak Storage= 566 cf @ 15.85 hrs  
 Average Depth at Peak Storage= 0.49'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.20 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 799.5' Slope= 0.0100 '/'  
 Inlet Invert= 782.24', Outlet Invert= 774.24'



**Reach TB-H3: Terrace Berm H3**

Hydrograph



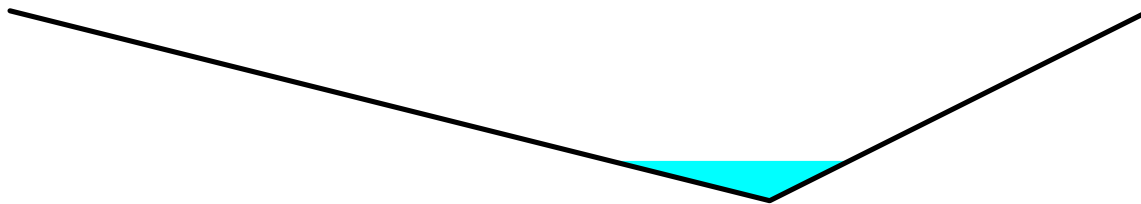
**Summary for Reach TB-N-A1: Terrace Berm N-A1**

Inflow Area = 3.60 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 1.33 cfs @ 15.76 hrs, Volume= 0.907 af  
 Outflow = 1.33 cfs @ 15.86 hrs, Volume= 0.907 af, Atten= 0%, Lag= 5.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.50 fps, Min. Travel Time= 2.9 min  
 Avg. Velocity = 1.76 fps, Avg. Travel Time= 4.2 min

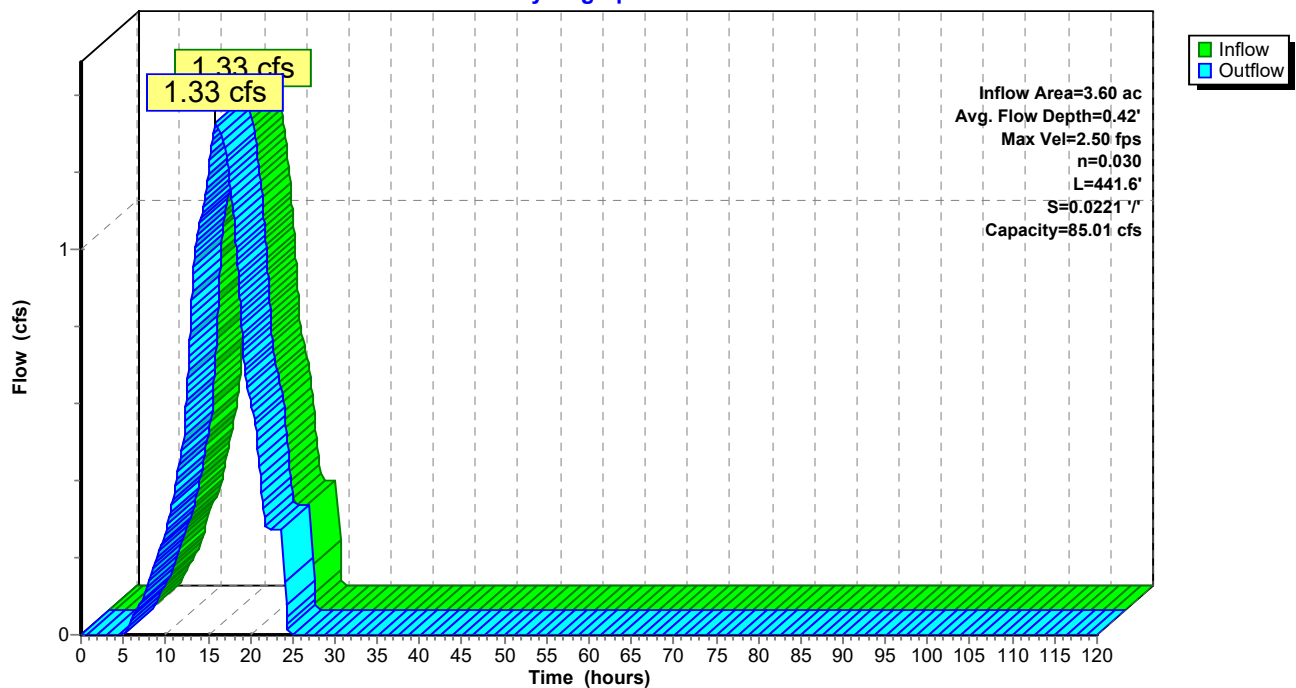
Peak Storage= 234 cf @ 15.81 hrs  
 Average Depth at Peak Storage= 0.42'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 85.01 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 441.6' Slope= 0.0221 '/'  
 Inlet Invert= 879.12', Outlet Invert= 869.36'



**Reach TB-N-A1: Terrace Berm N-A1**

Hydrograph



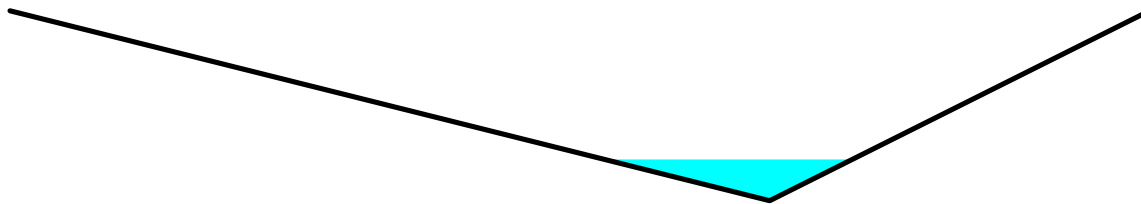
**Summary for Reach TB-N-A10: Terrace Berm N-A10**

Inflow Area = 3.77 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 1.39 cfs @ 15.71 hrs, Volume= 0.951 af  
 Outflow = 1.39 cfs @ 16.00 hrs, Volume= 0.951 af, Atten= 0%, Lag= 17.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.44 fps, Min. Travel Time= 8.0 min  
 Avg. Velocity = 1.55 fps, Avg. Travel Time= 12.6 min

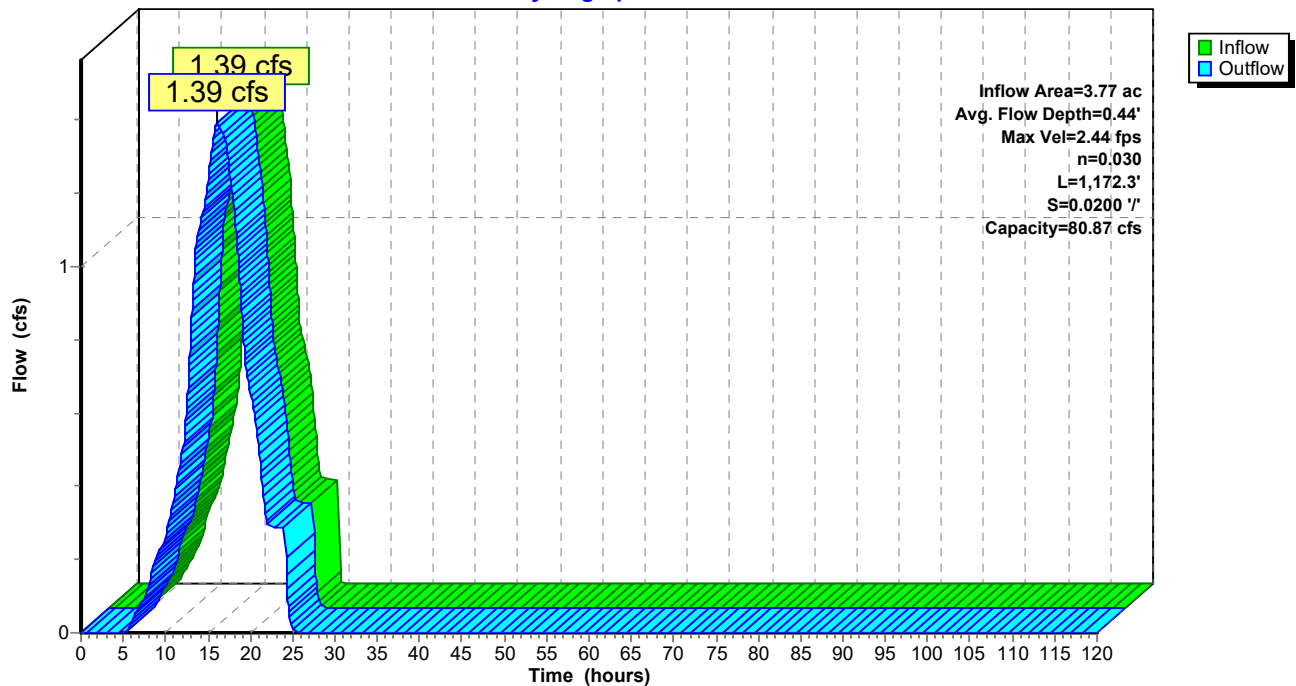
Peak Storage= 667 cf @ 15.86 hrs  
 Average Depth at Peak Storage= 0.44'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,172.3' Slope= 0.0200 '/'  
 Inlet Invert= 771.72', Outlet Invert= 748.27'



**Reach TB-N-A10: Terrace Berm N-A10**

Hydrograph



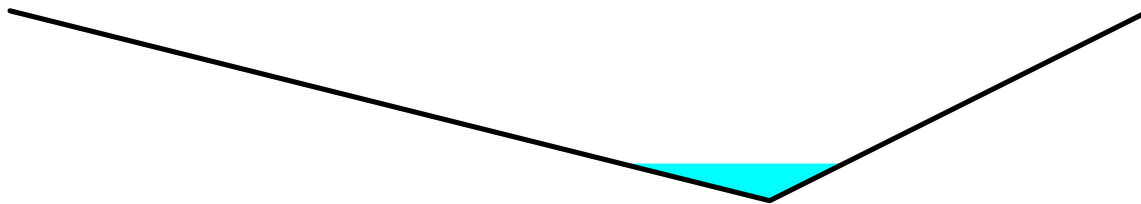
**Summary for Reach TB-N-A2: Terrace Berm N-A2**

Inflow Area = 2.82 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 1.04 cfs @ 15.75 hrs, Volume= 0.712 af  
 Outflow = 1.04 cfs @ 15.93 hrs, Volume= 0.712 af, Atten= 0%, Lag= 11.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.27 fps, Min. Travel Time= 5.4 min  
 Avg. Velocity = 1.53 fps, Avg. Travel Time= 8.0 min

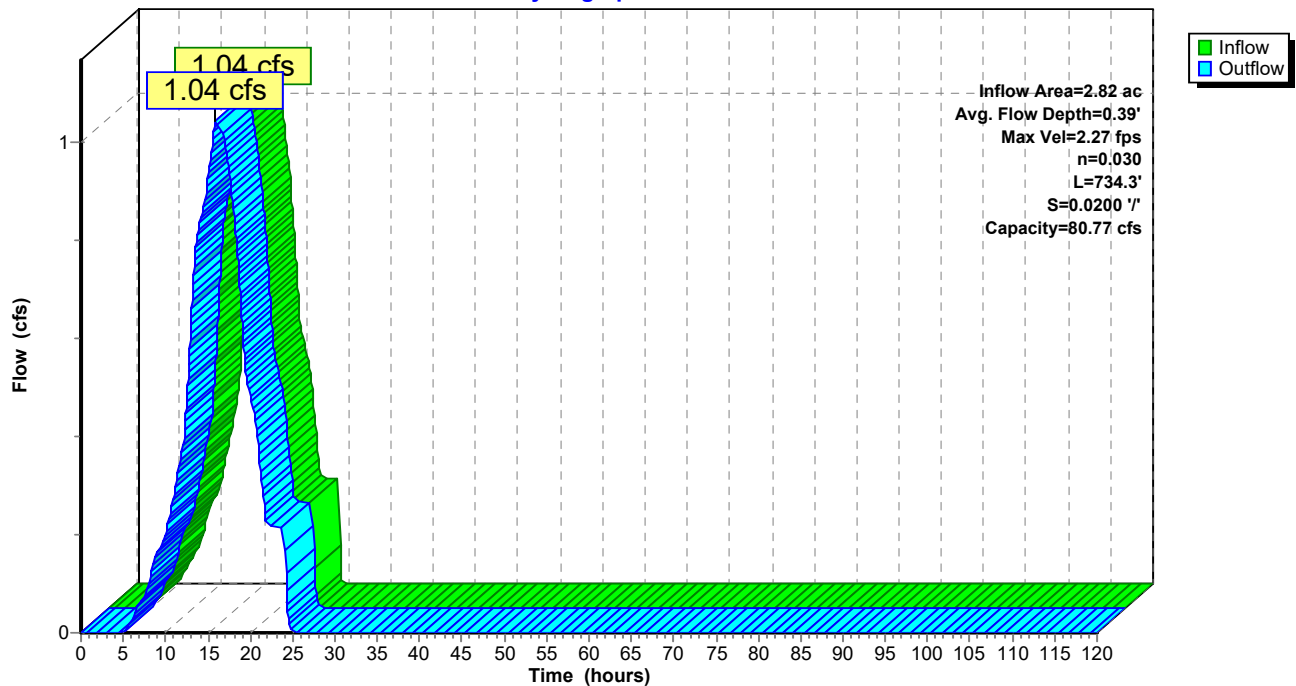
Peak Storage= 337 cf @ 15.84 hrs  
 Average Depth at Peak Storage= 0.39'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.77 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 734.3' Slope= 0.0200 '/'  
 Inlet Invert= 884.01', Outlet Invert= 869.36'



**Reach TB-N-A2: Terrace Berm N-A2**

Hydrograph





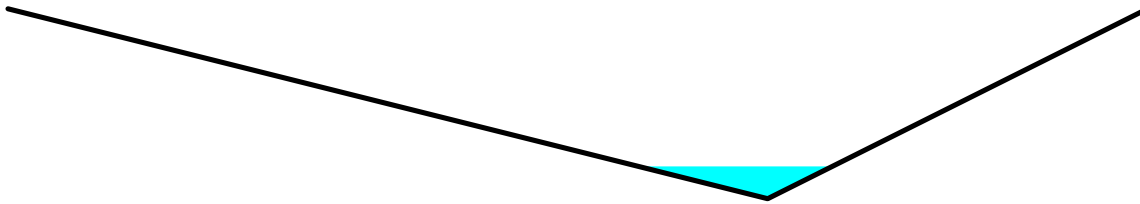
**Summary for Reach TB-N-A3: Terrace Berm N-A3**

Inflow Area = 1.31 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 0.48 cfs @ 15.71 hrs, Volume= 0.330 af  
 Outflow = 0.48 cfs @ 15.85 hrs, Volume= 0.330 af, Atten= 0%, Lag= 8.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.39 fps, Min. Travel Time= 4.0 min  
 Avg. Velocity = 0.97 fps, Avg. Travel Time= 5.6 min

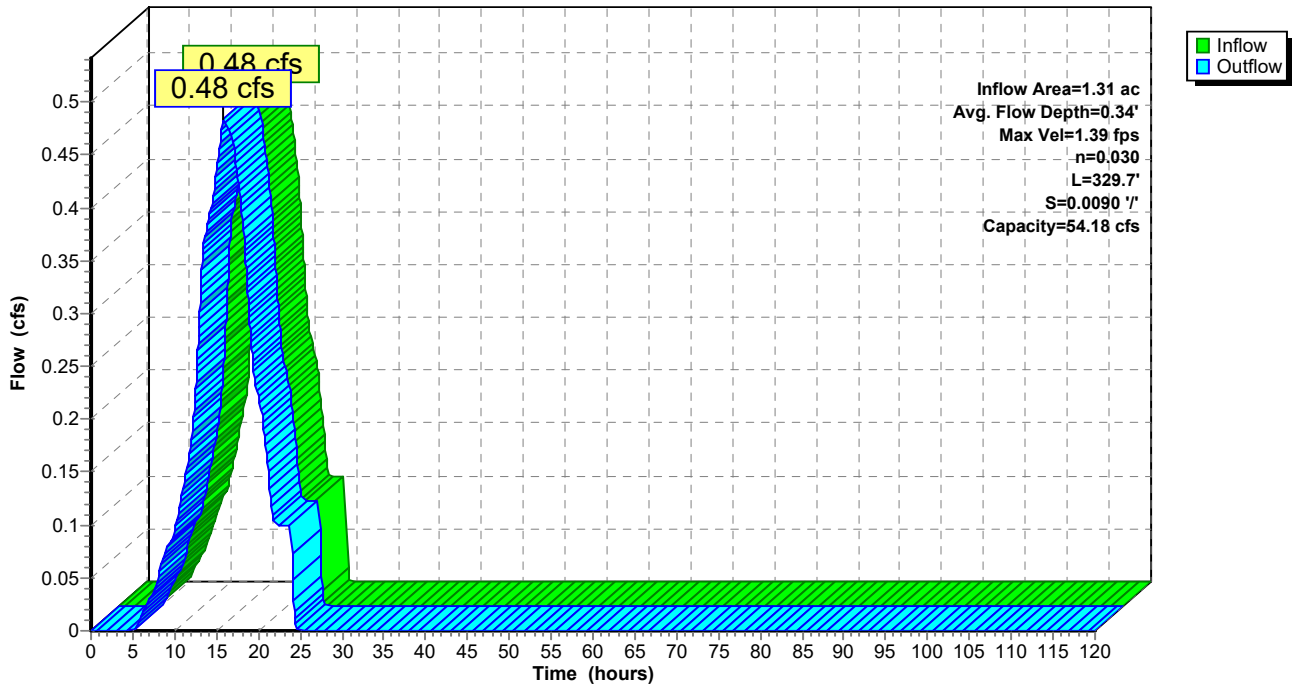
Peak Storage= 115 cf @ 15.77 hrs  
 Average Depth at Peak Storage= 0.34'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 54.18 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 329.7' Slope= 0.0090 '/'  
 Inlet Invert= 839.81', Outlet Invert= 836.85'



**Reach TB-N-A3: Terrace Berm N-A3**

Hydrograph



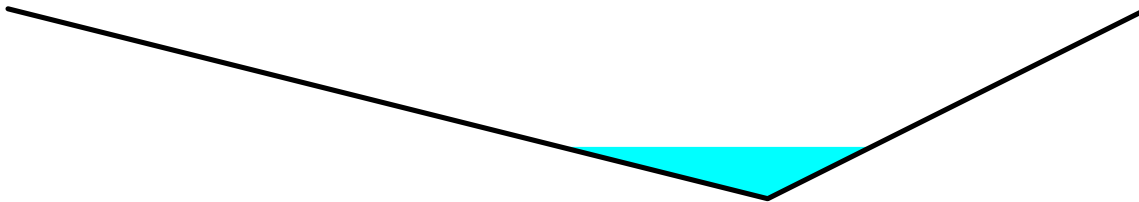
**Summary for Reach TB-N-A4: Terrace Berm N-A4**

Inflow Area = 6.88 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 2.54 cfs @ 15.75 hrs, Volume= 1.733 af  
 Outflow = 2.53 cfs @ 16.07 hrs, Volume= 1.733 af, Atten= 0%, Lag= 18.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.83 fps, Min. Travel Time= 9.0 min  
 Avg. Velocity = 1.71 fps, Avg. Travel Time= 14.9 min

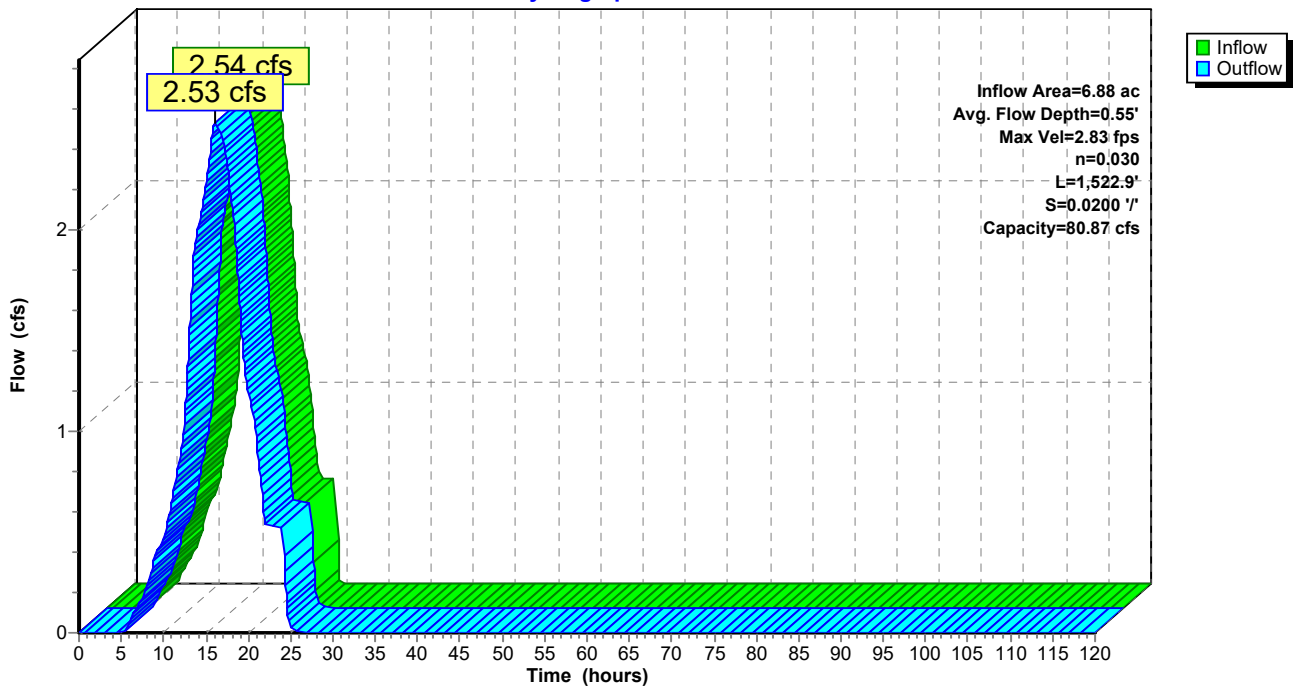
Peak Storage= 1,359 cf @ 15.92 hrs  
 Average Depth at Peak Storage= 0.55'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,522.9' Slope= 0.0200 '/'  
 Inlet Invert= 867.35', Outlet Invert= 836.89'



**Reach TB-N-A4: Terrace Berm N-A4**

Hydrograph



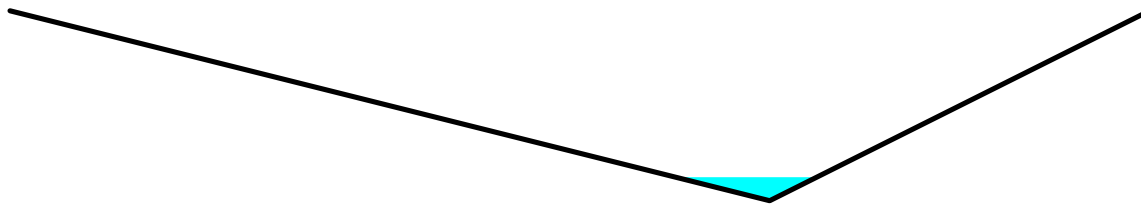
**Summary for Reach TB-N-A5: Terrace Berm N-A5**

Inflow Area = 0.73 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 0.27 cfs @ 15.71 hrs, Volume= 0.185 af  
 Outflow = 0.27 cfs @ 15.79 hrs, Volume= 0.185 af, Atten= 0%, Lag= 5.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.47 fps, Min. Travel Time= 2.5 min  
 Avg. Velocity = 1.07 fps, Avg. Travel Time= 3.4 min

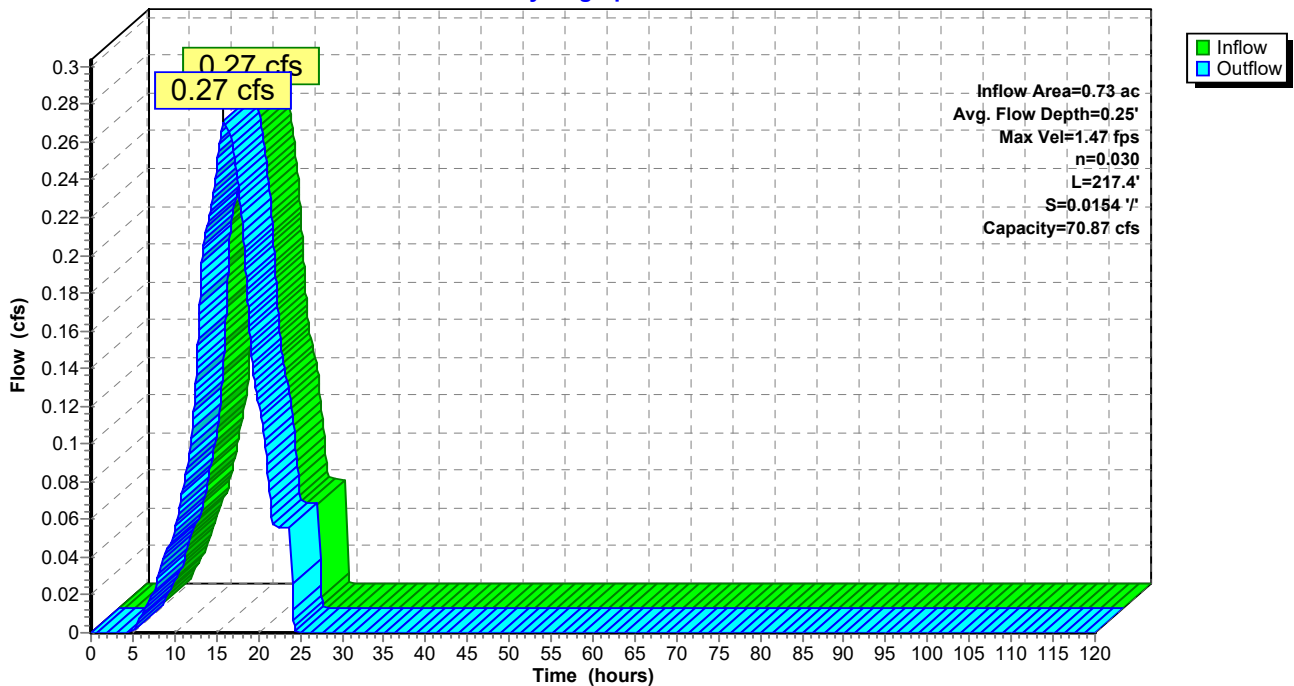
Peak Storage= 40 cf @ 15.75 hrs  
 Average Depth at Peak Storage= 0.25'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 70.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 217.4' Slope= 0.0154 '/'  
 Inlet Invert= 811.36', Outlet Invert= 808.02'



**Reach TB-N-A5: Terrace Berm N-A5**

Hydrograph



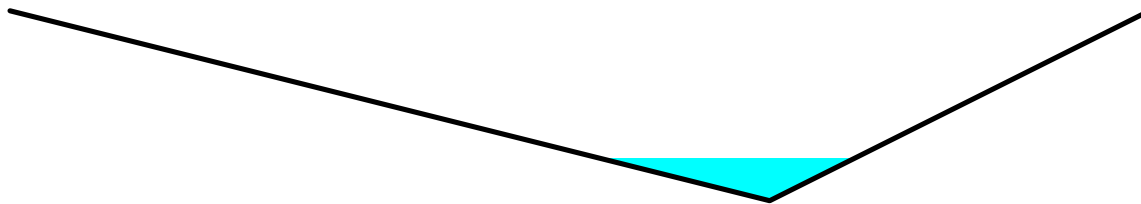
**Summary for Reach TB-N-A6: Terrace Berm N-A6**

Inflow Area = 4.13 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 1.52 cfs @ 15.71 hrs, Volume= 1.041 af  
 Outflow = 1.52 cfs @ 16.04 hrs, Volume= 1.041 af, Atten= 0%, Lag= 20.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.50 fps, Min. Travel Time= 9.4 min  
 Avg. Velocity = 1.54 fps, Avg. Travel Time= 15.3 min

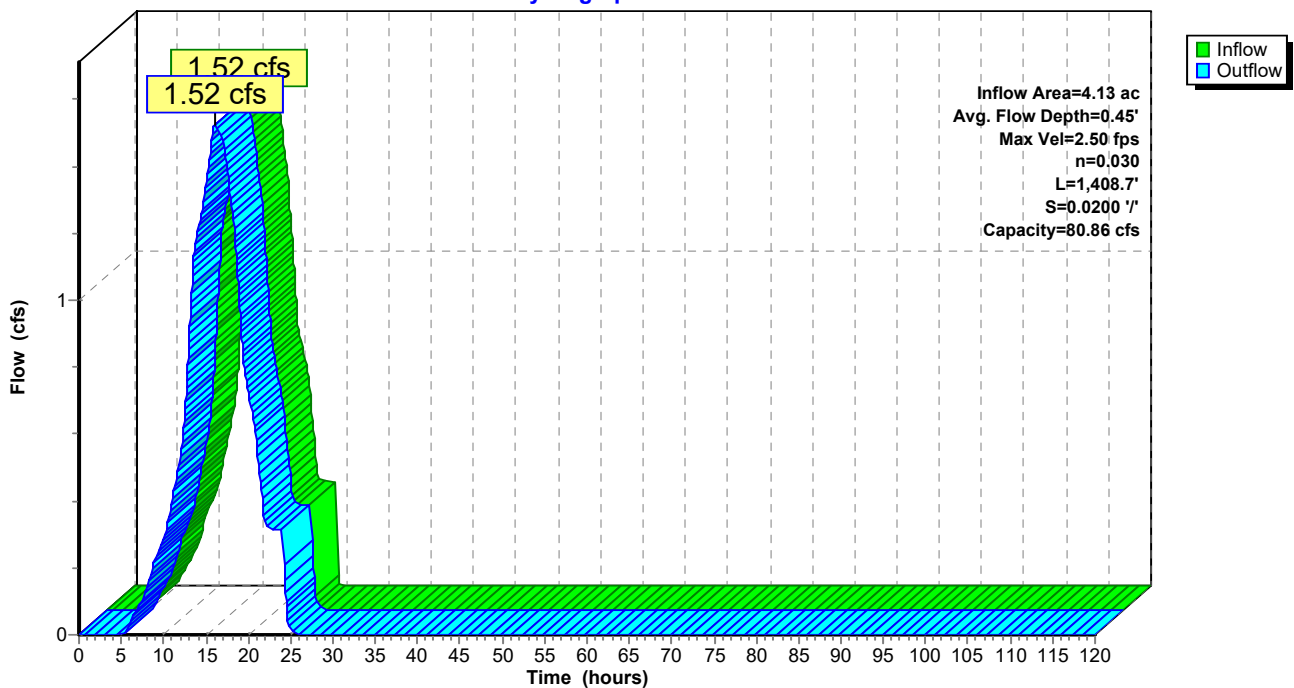
Peak Storage= 857 cf @ 15.89 hrs  
 Average Depth at Peak Storage= 0.45'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,408.7' Slope= 0.0200 '/'  
 Inlet Invert= 836.37', Outlet Invert= 808.20'



**Reach TB-N-A6: Terrace Berm N-A6**

Hydrograph



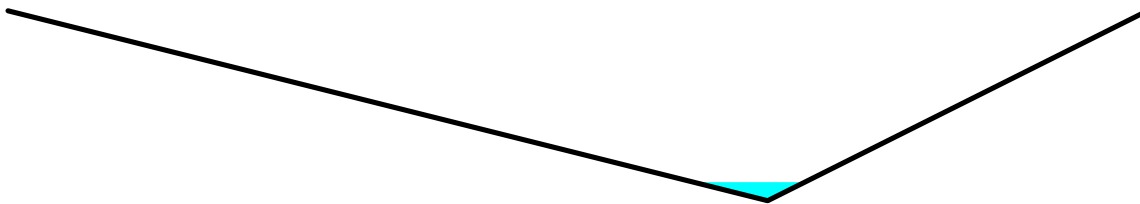
**Summary for Reach TB-N-A7: Terrace Berm N-A7**

Inflow Area = 0.44 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 0.16 cfs @ 15.71 hrs, Volume= 0.112 af  
 Outflow = 0.16 cfs @ 15.76 hrs, Volume= 0.112 af, Atten= 0%, Lag= 2.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.44 fps, Min. Travel Time= 1.2 min  
 Avg. Velocity = 1.07 fps, Avg. Travel Time= 1.6 min

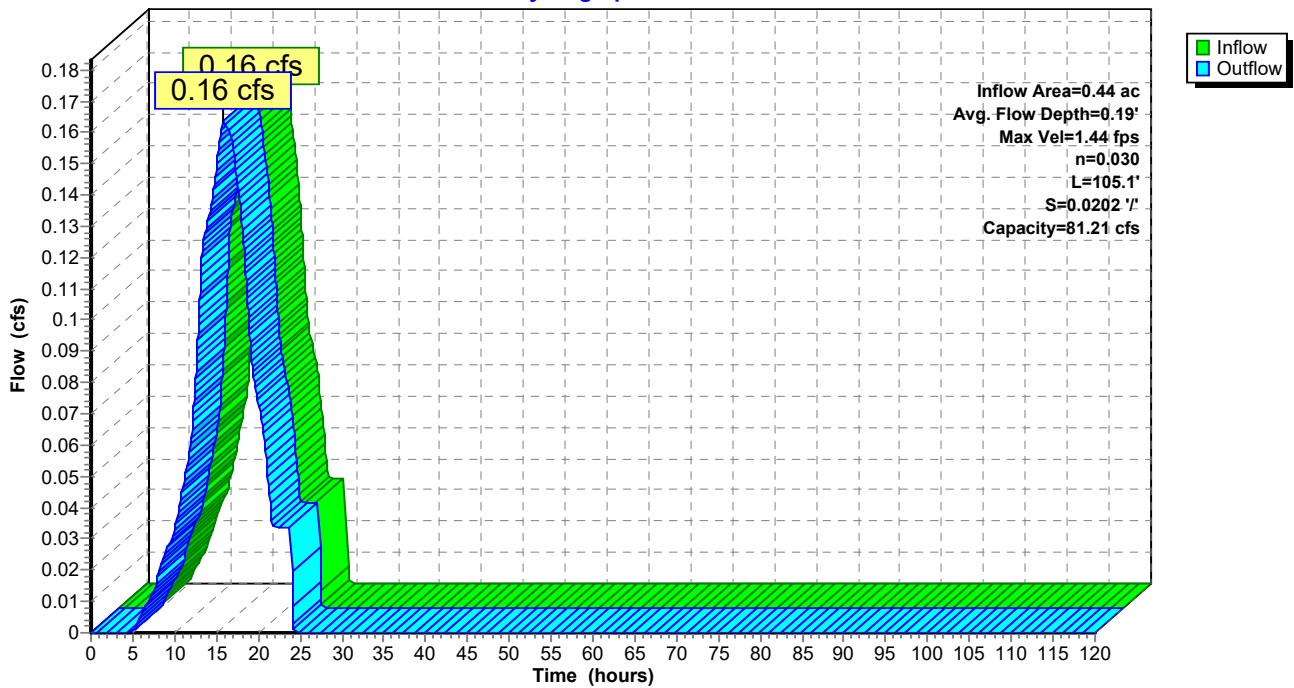
Peak Storage= 12 cf @ 15.73 hrs  
 Average Depth at Peak Storage= 0.19'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 81.21 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 105.1' Slope= 0.0202 '/'  
 Inlet Invert= 782.01', Outlet Invert= 779.89'



**Reach TB-N-A7: Terrace Berm N-A7**

Hydrograph



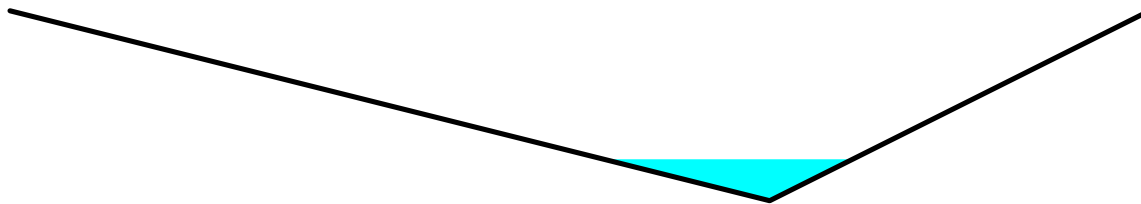
**Summary for Reach TB-N-A8: Terrace Berm N-A8**

Inflow Area = 3.80 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 1.40 cfs @ 15.71 hrs, Volume= 0.958 af  
 Outflow = 1.40 cfs @ 16.02 hrs, Volume= 0.958 af, Atten= 0%, Lag= 19.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.44 fps, Min. Travel Time= 8.8 min  
 Avg. Velocity = 1.53 fps, Avg. Travel Time= 14.1 min

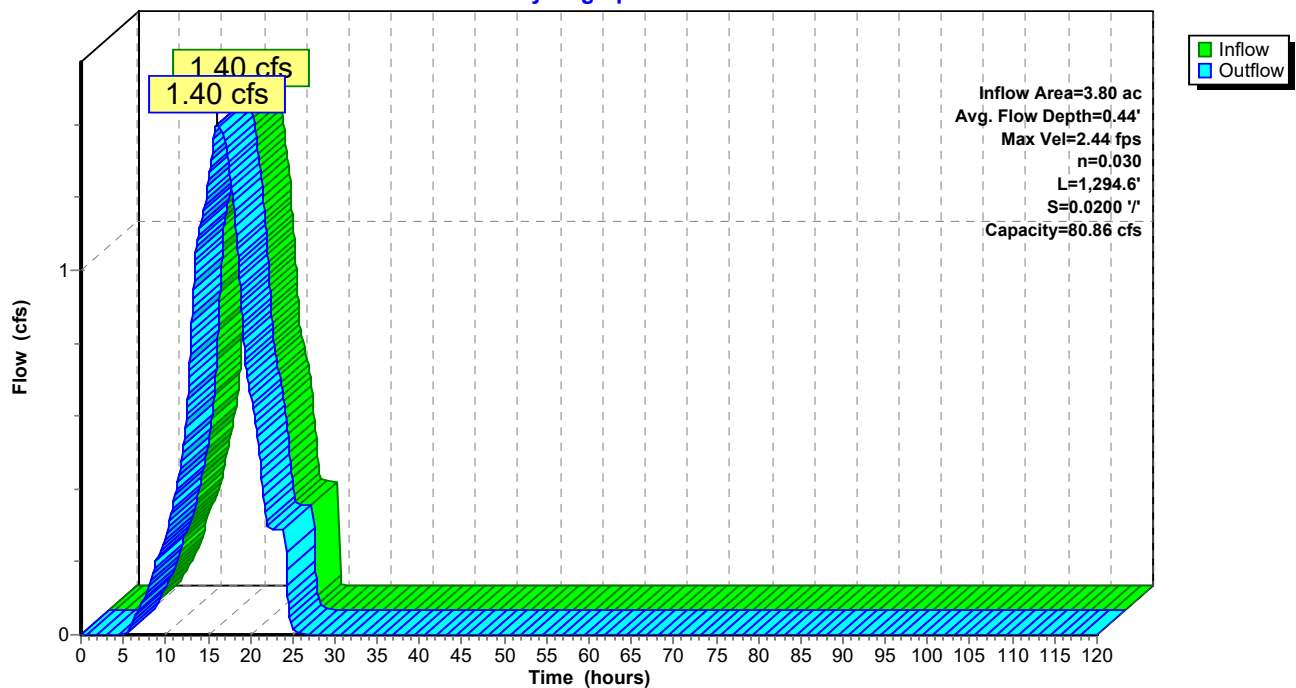
Peak Storage= 741 cf @ 15.87 hrs  
 Average Depth at Peak Storage= 0.44'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,294.6' Slope= 0.0200 '/'  
 Inlet Invert= 805.78', Outlet Invert= 779.89'



**Reach TB-N-A8: Terrace Berm N-A8**

Hydrograph



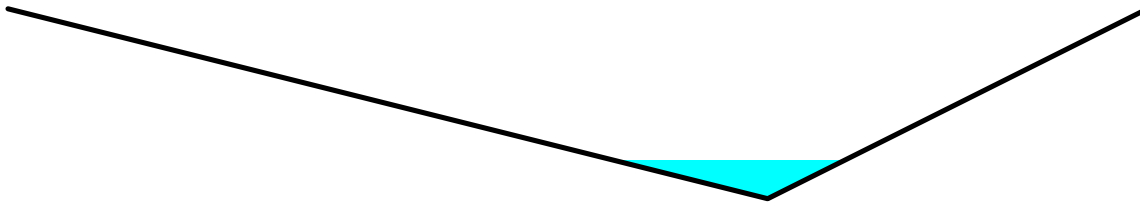
**Summary for Reach TB-N-B1: Terrace Berm N-B1**

Inflow Area = 3.15 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 1.16 cfs @ 15.75 hrs, Volume= 0.795 af  
 Outflow = 1.16 cfs @ 15.99 hrs, Volume= 0.795 af, Atten= 0%, Lag= 14.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.33 fps, Min. Travel Time= 7.0 min  
 Avg. Velocity = 1.52 fps, Avg. Travel Time= 10.7 min

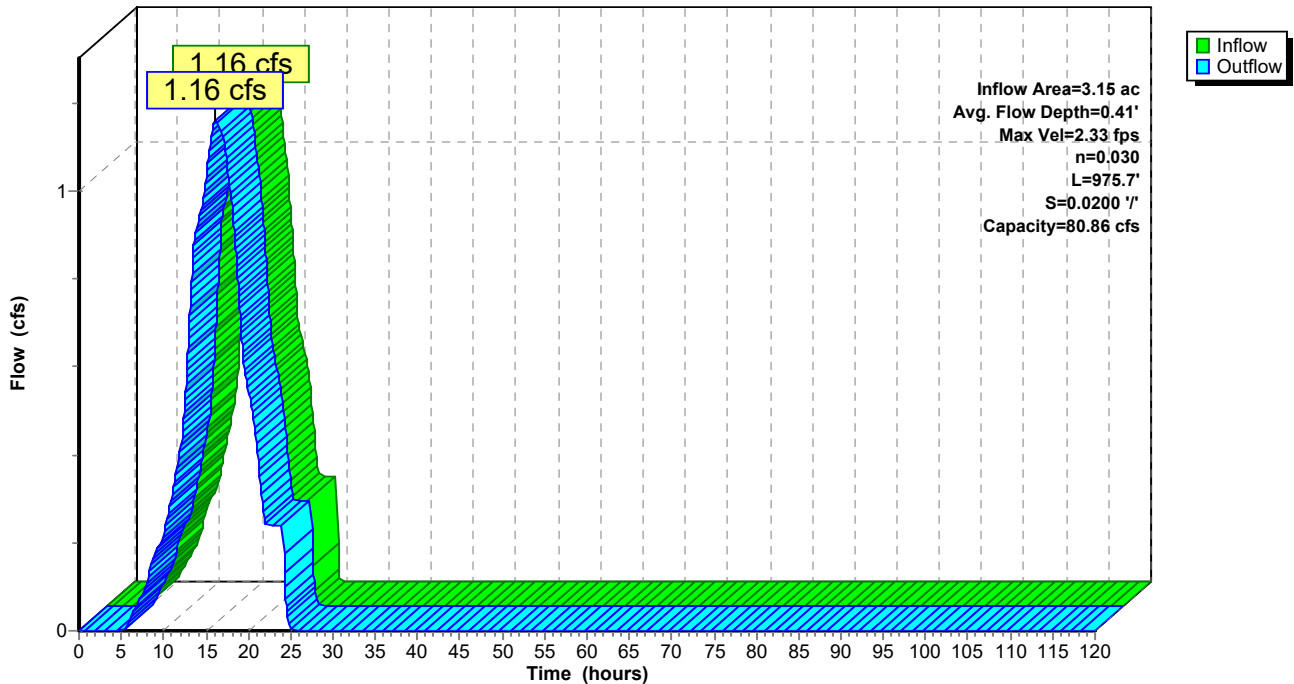
Peak Storage= 486 cf @ 15.87 hrs  
 Average Depth at Peak Storage= 0.41'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 975.7' Slope= 0.0200 '/'  
 Inlet Invert= 867.35', Outlet Invert= 847.84'



**Reach TB-N-B1: Terrace Berm N-B1**

Hydrograph



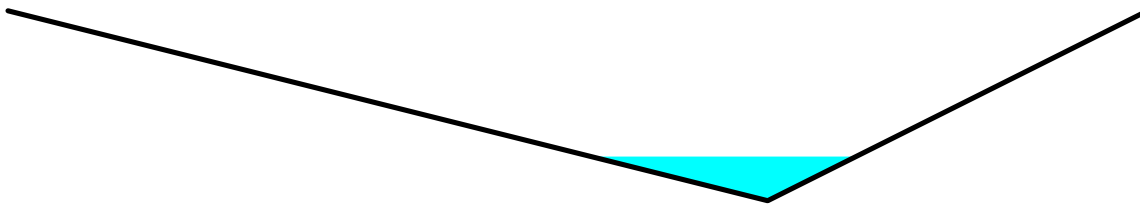
**Summary for Reach TB-N-B2: Terrace Berm N-B2**

Inflow Area = 4.49 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 1.66 cfs @ 15.75 hrs, Volume= 1.131 af  
 Outflow = 1.65 cfs @ 16.01 hrs, Volume= 1.131 af, Atten= 0%, Lag= 15.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.55 fps, Min. Travel Time= 7.3 min  
 Avg. Velocity = 1.62 fps, Avg. Travel Time= 11.5 min

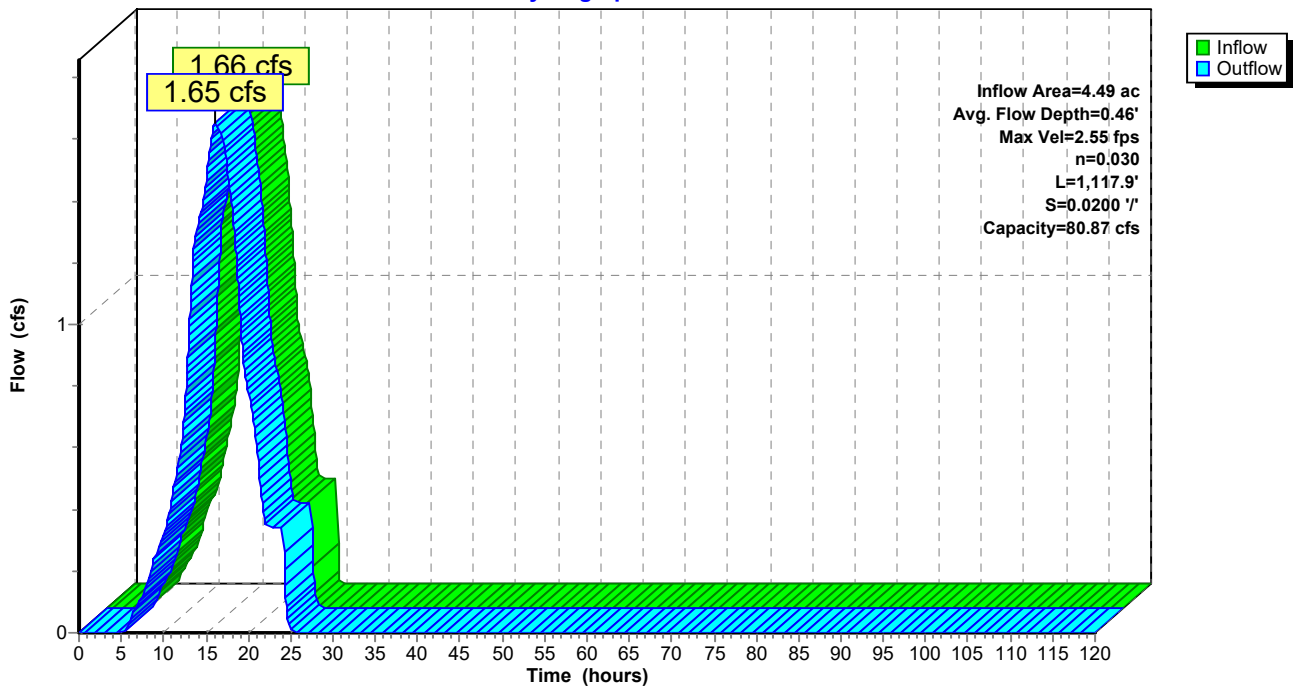
Peak Storage= 724 cf @ 15.88 hrs  
 Average Depth at Peak Storage= 0.46'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,117.9' Slope= 0.0200 '/'  
 Inlet Invert= 870.20', Outlet Invert= 847.84'



**Reach TB-N-B2: Terrace Berm N-B2**

Hydrograph





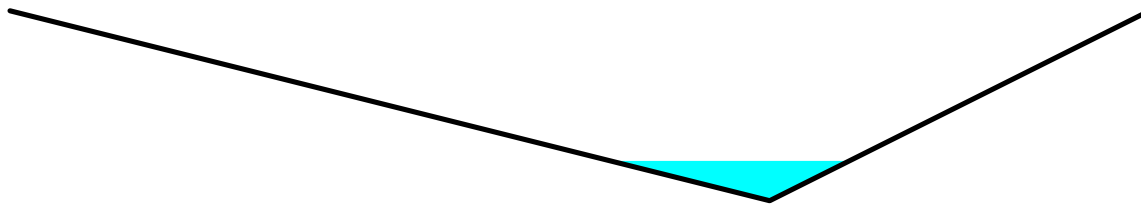
**Summary for Reach TB-N-B3: Terrace Berm N-B3**

Inflow Area = 3.43 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 1.27 cfs @ 15.71 hrs, Volume= 0.864 af  
 Outflow = 1.26 cfs @ 16.04 hrs, Volume= 0.864 af, Atten= 0%, Lag= 20.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.38 fps, Min. Travel Time= 9.3 min  
 Avg. Velocity = 1.49 fps, Avg. Travel Time= 14.8 min

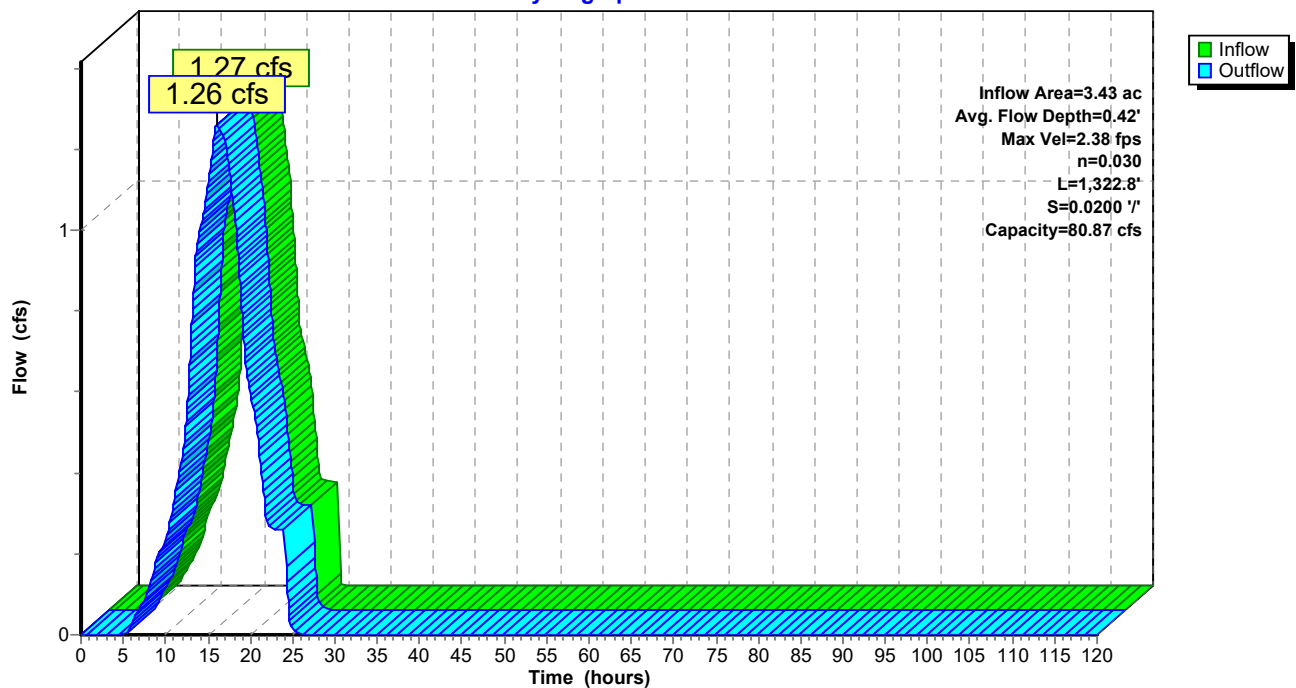
Peak Storage= 700 cf @ 15.89 hrs  
 Average Depth at Peak Storage= 0.42'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,322.8' Slope= 0.0200 '/'  
 Inlet Invert= 836.37', Outlet Invert= 809.91'



**Reach TB-N-B3: Terrace Berm N-B3**

Hydrograph



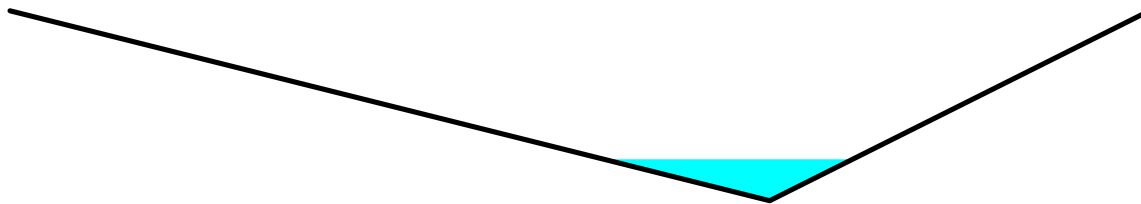
**Summary for Reach TB-N-B4: Terrace Berm N-B4**

Inflow Area = 3.80 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 1.40 cfs @ 15.71 hrs, Volume= 0.959 af  
 Outflow = 1.40 cfs @ 16.02 hrs, Volume= 0.959 af, Atten= 0%, Lag= 18.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.45 fps, Min. Travel Time= 8.6 min  
 Avg. Velocity = 1.54 fps, Avg. Travel Time= 13.7 min

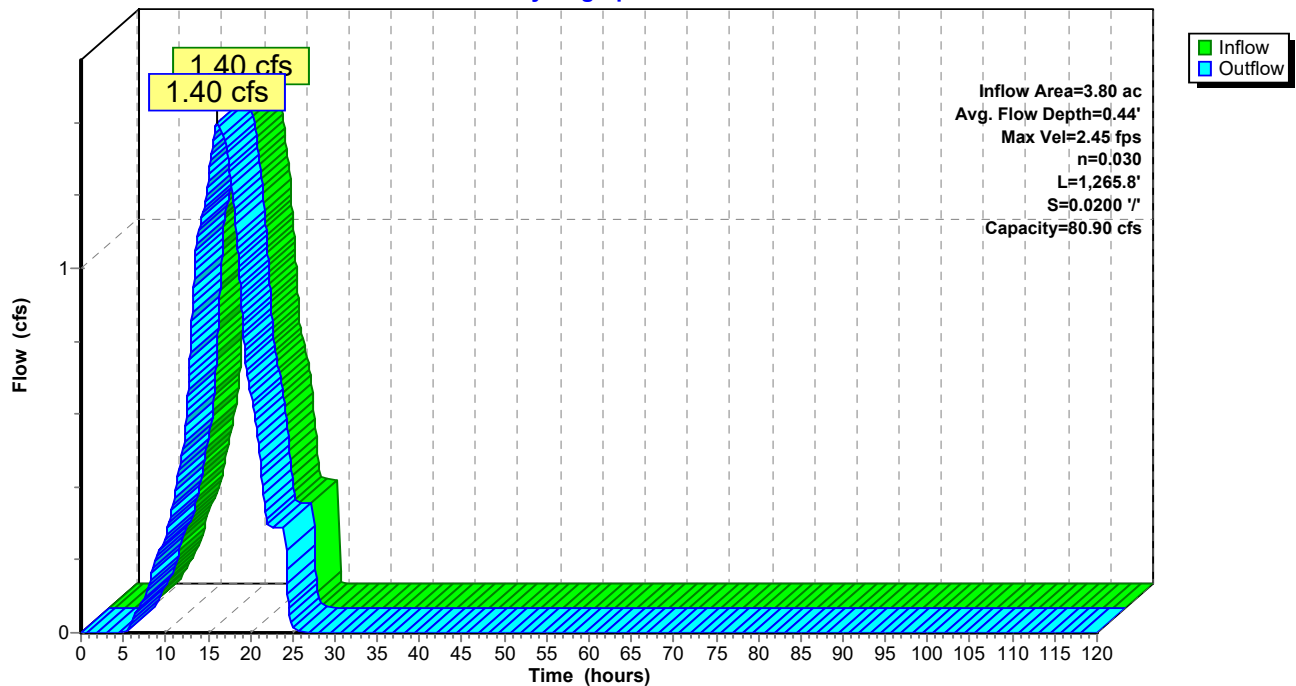
Peak Storage= 724 cf @ 15.87 hrs  
 Average Depth at Peak Storage= 0.44'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.90 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,265.8' Slope= 0.0200 '/'  
 Inlet Invert= 835.25', Outlet Invert= 809.91'



**Reach TB-N-B4: Terrace Berm N-B4**

Hydrograph



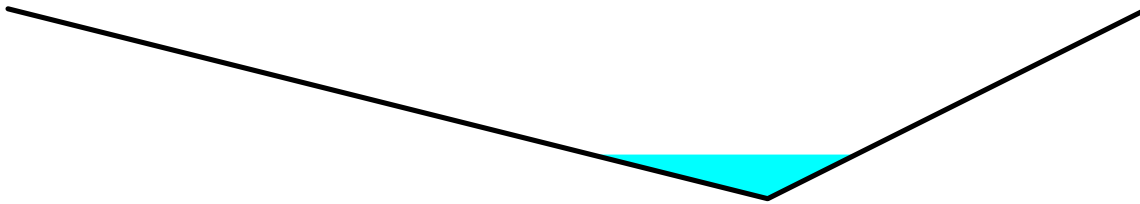
**Summary for Reach TB-N-B5: Terrace Berm N-B5**

Inflow Area = 4.50 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 1.66 cfs @ 15.71 hrs, Volume= 1.134 af  
 Outflow = 1.65 cfs @ 16.10 hrs, Volume= 1.134 af, Atten= 0%, Lag= 23.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.55 fps, Min. Travel Time= 10.9 min  
 Avg. Velocity = 1.52 fps, Avg. Travel Time= 18.3 min

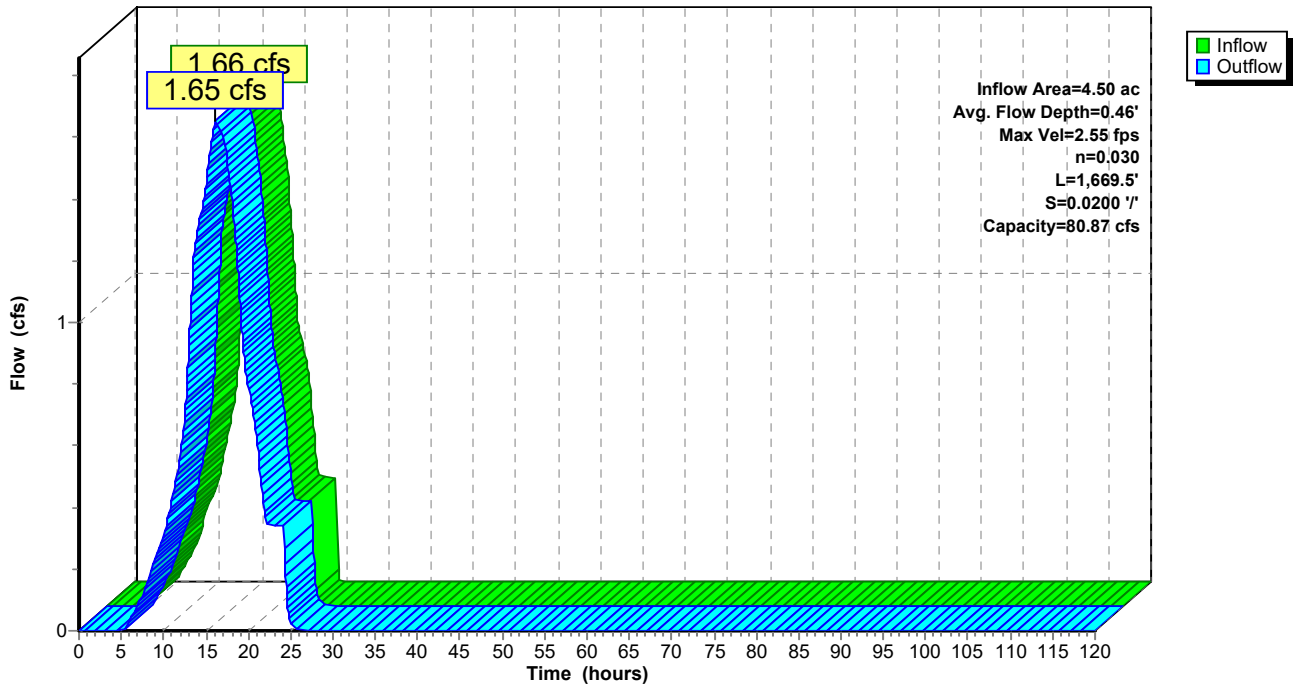
Peak Storage= 1,083 cf @ 15.92 hrs  
 Average Depth at Peak Storage= 0.46'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,669.5' Slope= 0.0200 '/'  
 Inlet Invert= 805.78', Outlet Invert= 772.39'



**Reach TB-N-B5: Terrace Berm N-B5**

Hydrograph



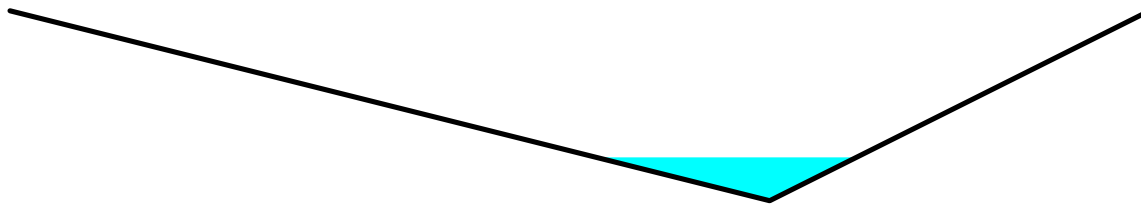
**Summary for Reach TB-N-B6: Terrace Berm N-B6**

Inflow Area = 4.29 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 1.58 cfs @ 15.71 hrs, Volume= 1.081 af  
 Outflow = 1.58 cfs @ 16.05 hrs, Volume= 1.081 af, Atten= 0%, Lag= 20.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.52 fps, Min. Travel Time= 9.3 min  
 Avg. Velocity = 1.55 fps, Avg. Travel Time= 15.2 min

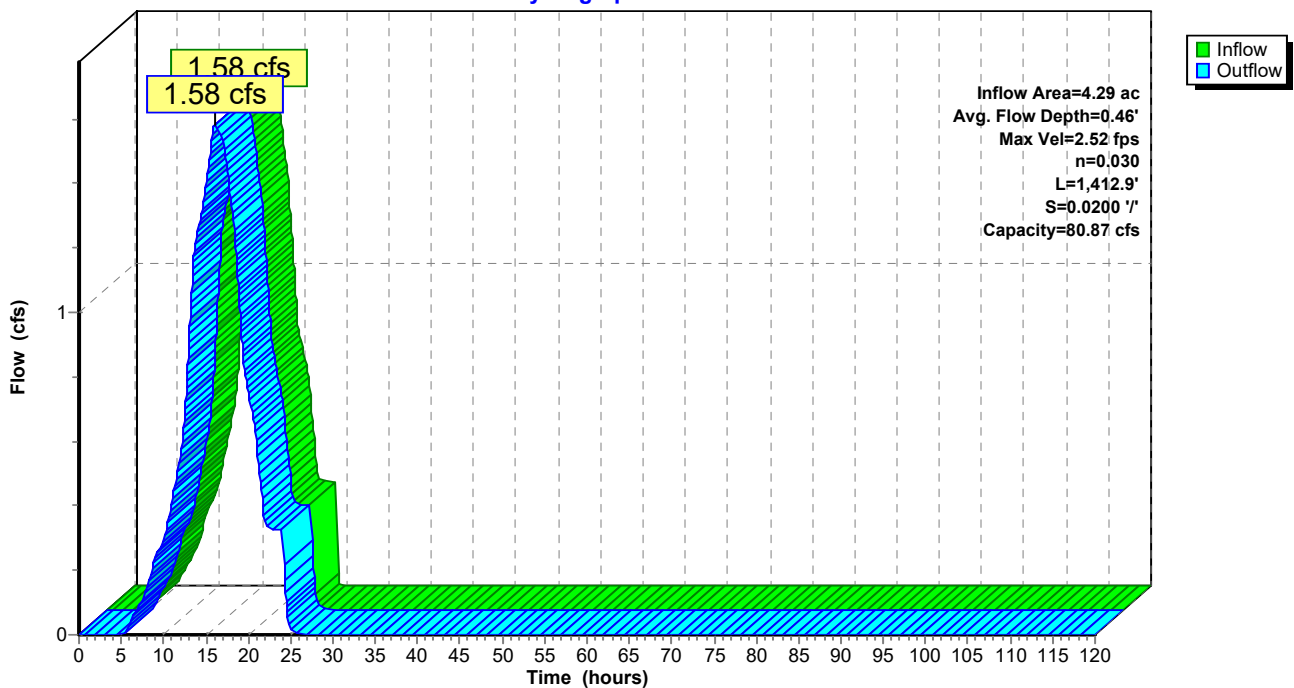
Peak Storage= 885 cf @ 15.89 hrs  
 Average Depth at Peak Storage= 0.46'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,412.9' Slope= 0.0200 '/'  
 Inlet Invert= 800.65', Outlet Invert= 772.39'



**Reach TB-N-B6: Terrace Berm N-B6**

Hydrograph



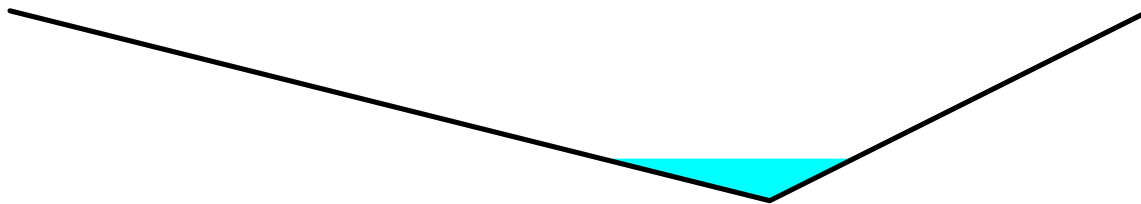
**Summary for Reach TB-N-B7: Terrace Berm N-B7**

Inflow Area = 3.96 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 1.46 cfs @ 15.71 hrs, Volume= 0.999 af  
 Outflow = 1.46 cfs @ 16.04 hrs, Volume= 0.999 af, Atten= 0%, Lag= 19.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.47 fps, Min. Travel Time= 9.3 min  
 Avg. Velocity = 1.53 fps, Avg. Travel Time= 15.0 min

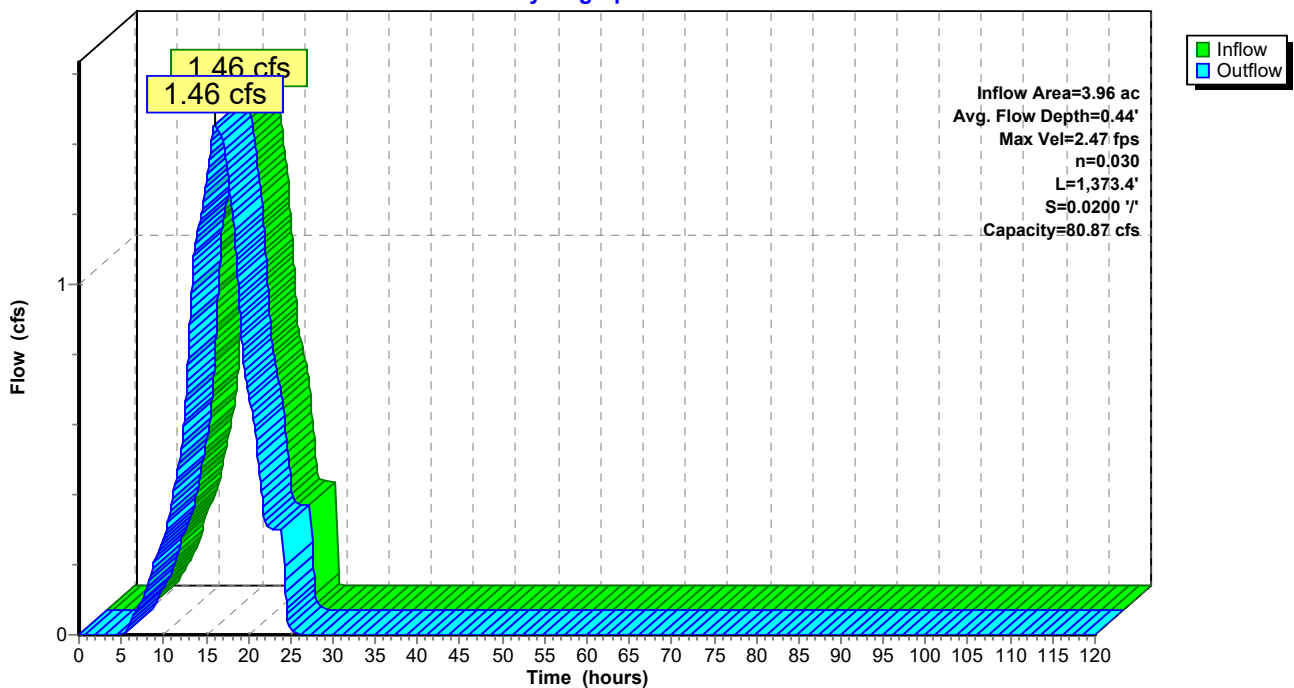
Peak Storage= 810 cf @ 15.88 hrs  
 Average Depth at Peak Storage= 0.44'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,373.4' Slope= 0.0200 '/'  
 Inlet Invert= 771.72', Outlet Invert= 744.25'



**Reach TB-N-B7: Terrace Berm N-B7**

Hydrograph



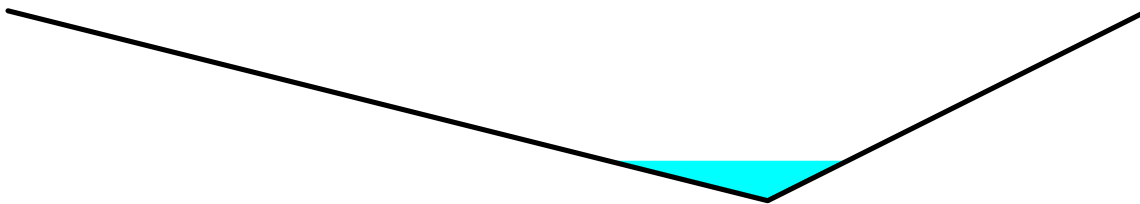
**Summary for Reach TB-N-B8: Terrace Berm N-B8**

Inflow Area = 3.52 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 1.30 cfs @ 15.71 hrs, Volume= 0.888 af  
 Outflow = 1.30 cfs @ 15.96 hrs, Volume= 0.888 af, Atten= 0%, Lag= 14.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.44 fps, Min. Travel Time= 7.0 min  
 Avg. Velocity = 1.59 fps, Avg. Travel Time= 10.7 min

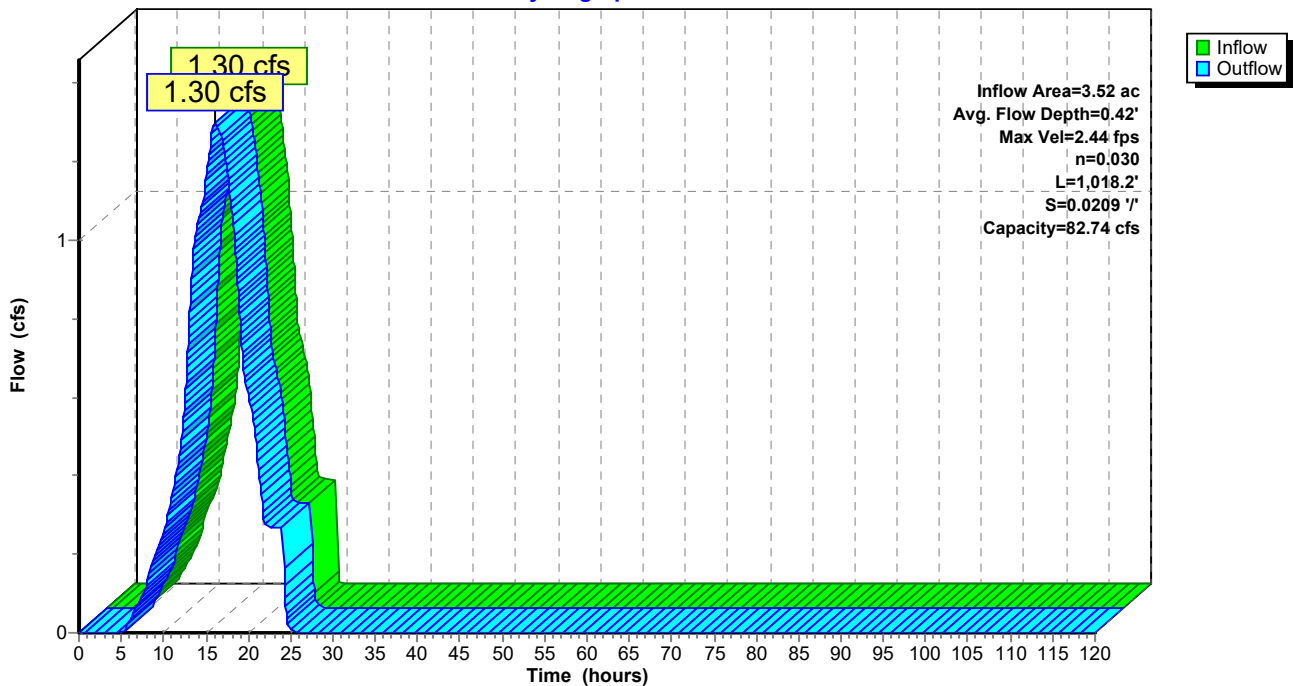
Peak Storage= 541 cf @ 15.84 hrs  
 Average Depth at Peak Storage= 0.42'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 82.74 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,018.2' Slope= 0.0209 '/'  
 Inlet Invert= 765.32', Outlet Invert= 744.00'



**Reach TB-N-B8: Terrace Berm N-B8**

Hydrograph



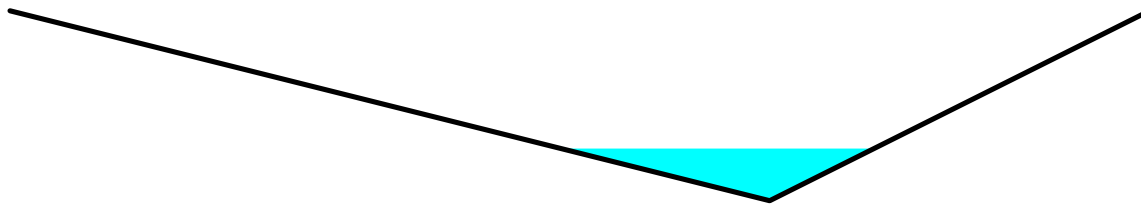
### Summary for Reach TB-N-C1: Terrace Berm N-C1

Inflow Area = 6.98 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 2.58 cfs @ 15.75 hrs, Volume= 1.760 af  
 Outflow = 2.57 cfs @ 16.02 hrs, Volume= 1.760 af, Atten= 0%, Lag= 16.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.85 fps, Min. Travel Time= 7.7 min  
 Avg. Velocity = 1.76 fps, Avg. Travel Time= 12.5 min

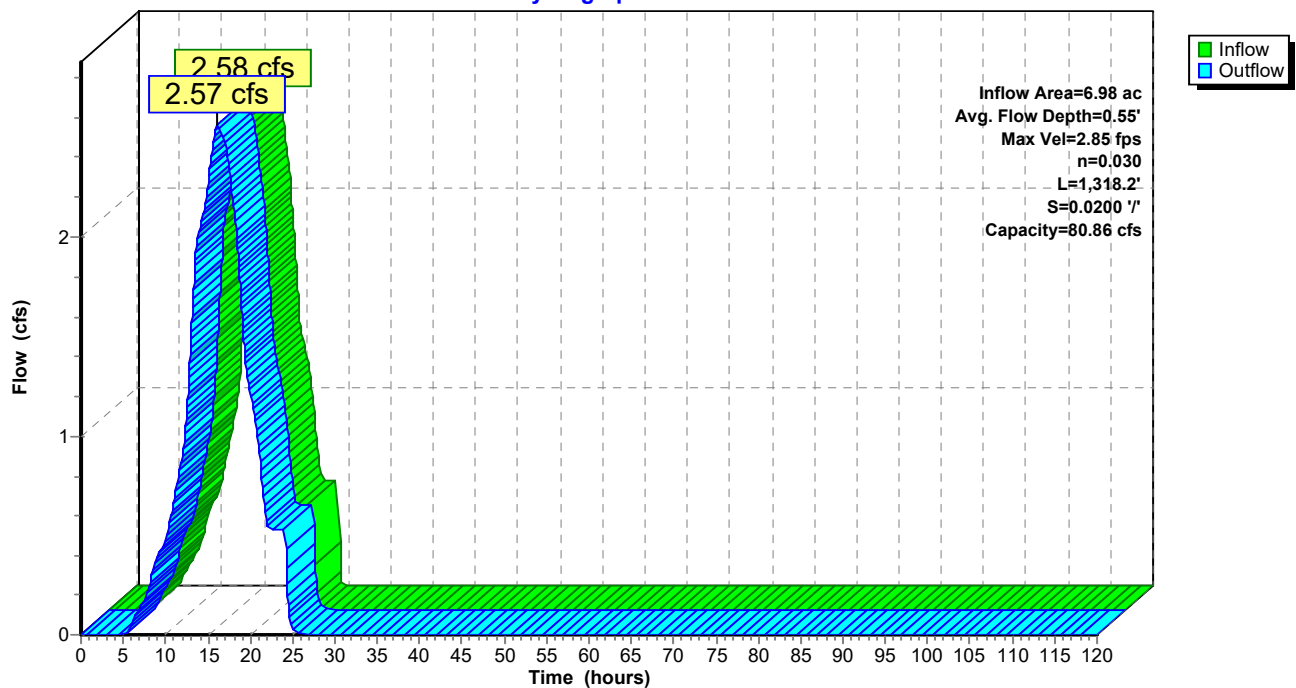
Peak Storage= 1,190 cf @ 15.90 hrs  
 Average Depth at Peak Storage= 0.55'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,318.2' Slope= 0.0200 '/'  
 Inlet Invert= 870.02', Outlet Invert= 843.66'



### Reach TB-N-C1: Terrace Berm N-C1

Hydrograph



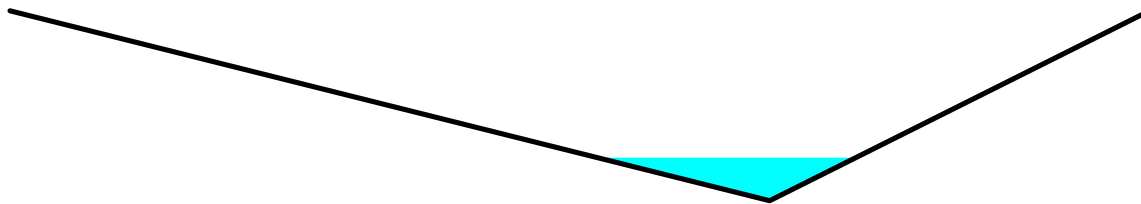
**Summary for Reach TB-N-C2: Terrace Berm N-C2**

Inflow Area = 4.20 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 1.55 cfs @ 15.71 hrs, Volume= 1.059 af  
 Outflow = 1.55 cfs @ 16.02 hrs, Volume= 1.059 af, Atten= 0%, Lag= 18.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.51 fps, Min. Travel Time= 8.8 min  
 Avg. Velocity = 1.56 fps, Avg. Travel Time= 14.1 min

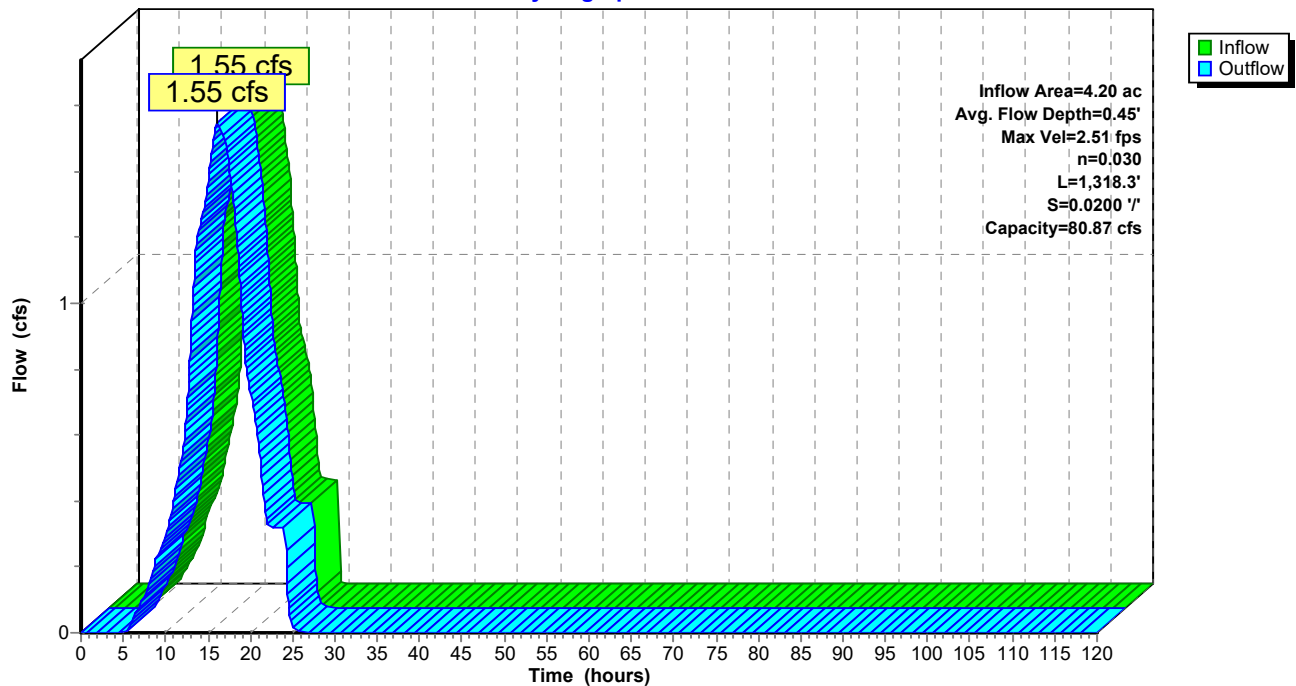
Peak Storage= 813 cf @ 15.87 hrs  
 Average Depth at Peak Storage= 0.45'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,318.3' Slope= 0.0200 '/'  
 Inlet Invert= 835.25', Outlet Invert= 808.88'



**Reach TB-N-C2: Terrace Berm N-C2**

Hydrograph





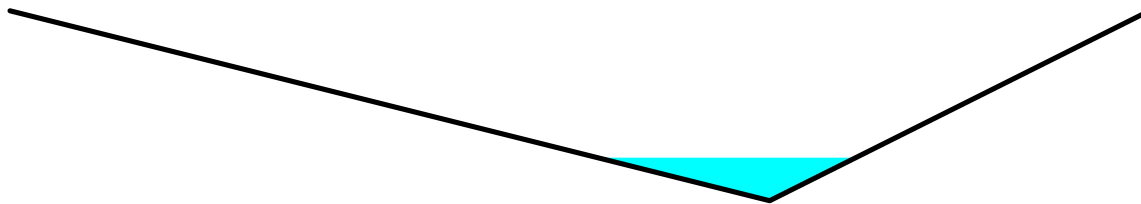
**Summary for Reach TB-N-C3: Terrace Berm N-C3**

Inflow Area = 4.22 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 1.56 cfs @ 15.71 hrs, Volume= 1.063 af  
 Outflow = 1.55 cfs @ 16.02 hrs, Volume= 1.063 af, Atten= 0%, Lag= 18.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.51 fps, Min. Travel Time= 8.8 min  
 Avg. Velocity = 1.56 fps, Avg. Travel Time= 14.1 min

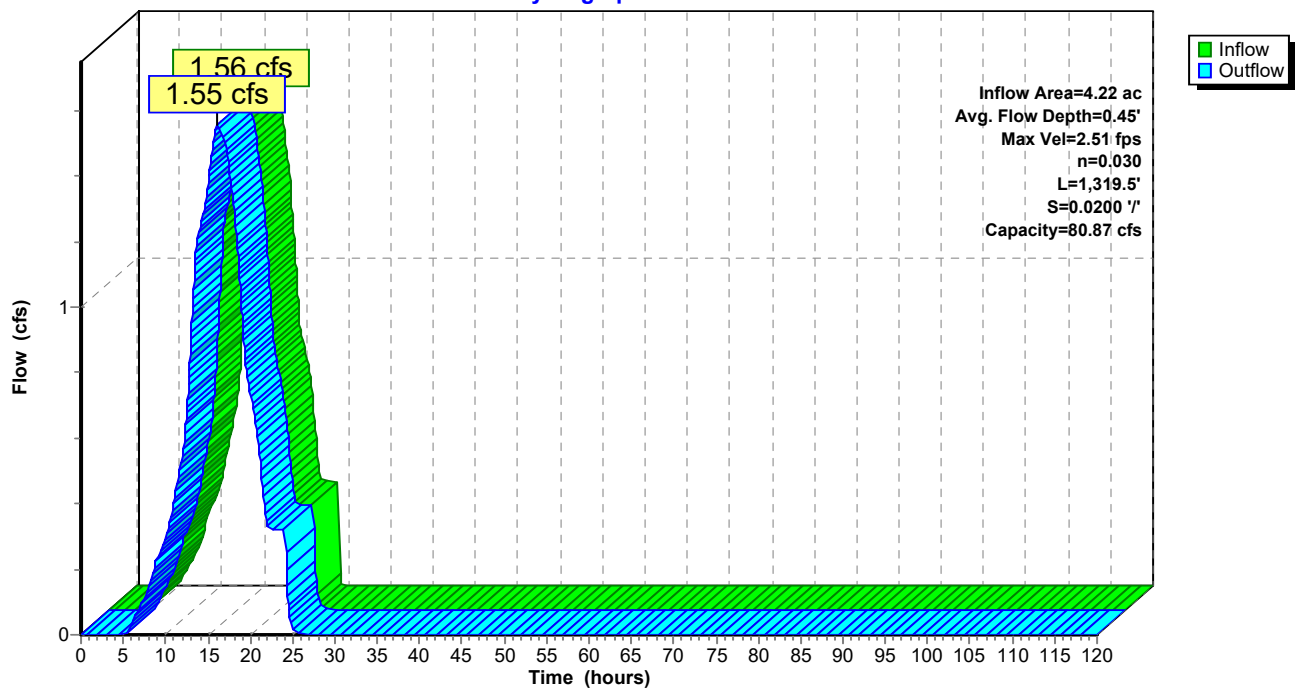
Peak Storage= 816 cf @ 15.87 hrs  
 Average Depth at Peak Storage= 0.45'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,319.5' Slope= 0.0200 '/'  
 Inlet Invert= 800.65', Outlet Invert= 774.26'



**Reach TB-N-C3: Terrace Berm N-C3**

Hydrograph



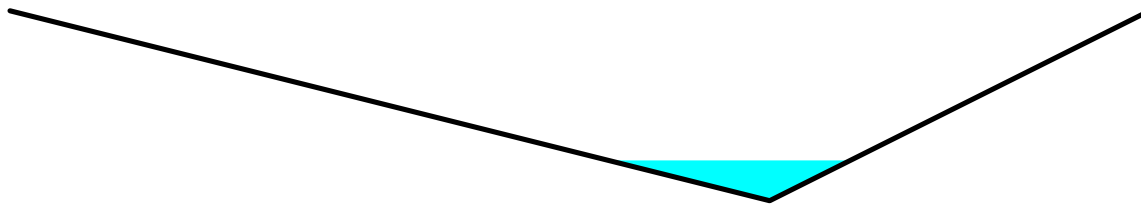
**Summary for Reach TB-N-C4: Terrace Berm N-C4**

Inflow Area = 3.52 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
 Inflow = 1.30 cfs @ 15.71 hrs, Volume= 0.886 af  
 Outflow = 1.29 cfs @ 15.98 hrs, Volume= 0.886 af, Atten= 0%, Lag= 16.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.40 fps, Min. Travel Time= 7.6 min  
 Avg. Velocity = 1.54 fps, Avg. Travel Time= 11.9 min

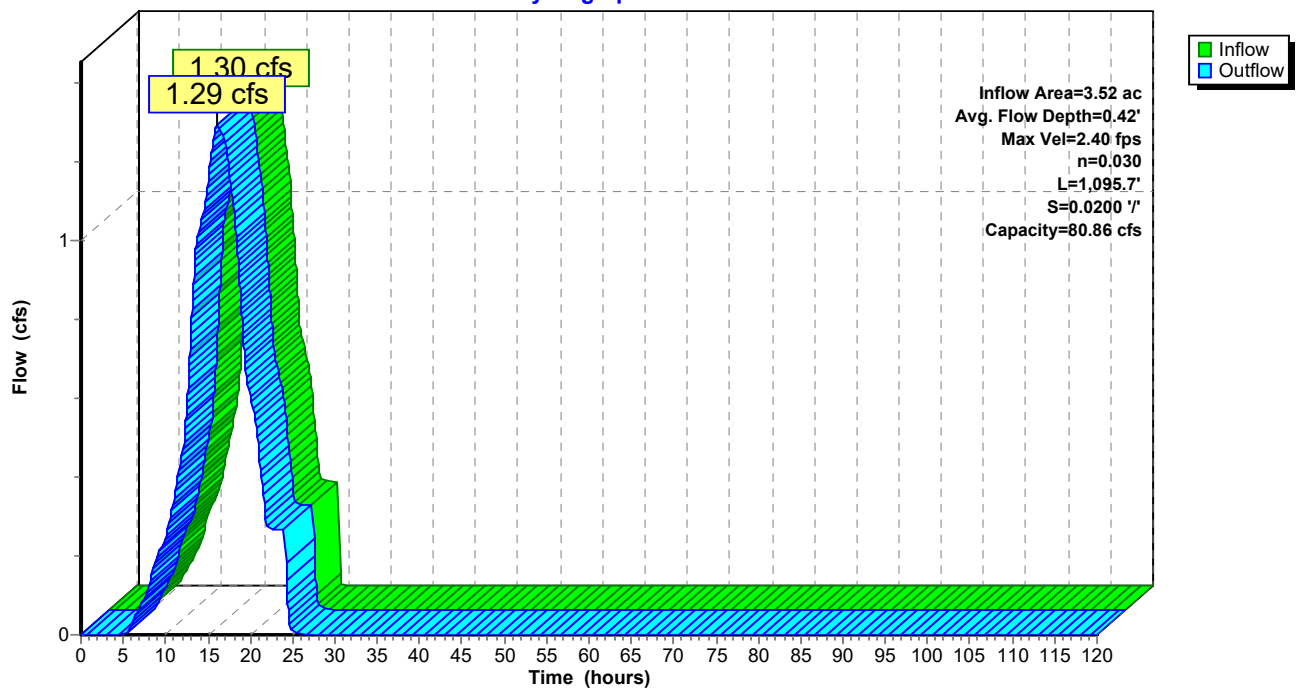
Peak Storage= 592 cf @ 15.85 hrs  
 Average Depth at Peak Storage= 0.42'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,095.7' Slope= 0.0200 '/'  
 Inlet Invert= 765.32', Outlet Invert= 743.41'



**Reach TB-N-C4: Terrace Berm N-C4**

Hydrograph



**Summary for Pond Basin 5R: Stormwater Basin 5R**

Inflow Area = 53.03 ac, 15.95% Impervious, Inflow Depth = 3.33" for 10-Year, 24-Hour event  
 Inflow = 20.26 cfs @ 16.14 hrs, Volume= 14.727 af  
 Outflow = 2.31 cfs @ 24.39 hrs, Volume= 12.306 af, Atten= 89%, Lag= 495.2 min  
 Primary = 2.31 cfs @ 24.39 hrs, Volume= 12.306 af  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Starting Elev= 733.50' Surf.Area= 318,821 sf Storage= 1,528,329 cf  
 Peak Elev= 735.55' @ 24.39 hrs Surf.Area= 279,965 sf Storage= 2,086,104 cf (557,775 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= 2,242.8 min ( 3,191.9 - 949.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	726.00'	4,158,336 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
726.00	132,640	0	0
728.00	155,297	287,937	287,937
730.00	179,100	334,397	622,334
731.00	118,479	148,790	771,124
732.00	367,080	242,780	1,013,903
733.50	318,821	514,426	1,528,329
734.00	253,912	143,183	1,671,512
735.00	270,451	262,182	1,933,694
736.00	287,631	279,041	2,212,735
738.00	311,683	599,314	2,812,049
740.00	336,524	648,207	3,460,256
742.00	361,556	698,080	4,158,336

Device	Routing	Invert	Outlet Devices
#1	Primary	733.50'	<b>30.0" Round Culvert</b> L= 100.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 733.50' / 733.20' S= 0.0030 1/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf
#2	Device 1	733.50'	<b>4.0" Vert. Lower Orifice X 4.00</b> C= 0.600
#3	Device 1	737.50'	<b>4.0" Vert. Middle Orifice X 4.00</b> C= 0.600
#4	Device 1	738.50'	<b>4.0" Vert. Upper Orifice X 4.00</b> C= 0.600
#5	Device 1	739.00'	<b>30.0" Horiz. Orifice/Grate</b> C= 0.600
#6	Secondary	740.00'	<b>Secondary Spillway, C= 3.27</b> Offset (feet) 0.00 6.00 26.00 32.00 Height (feet) 2.00 0.00 0.00 2.00

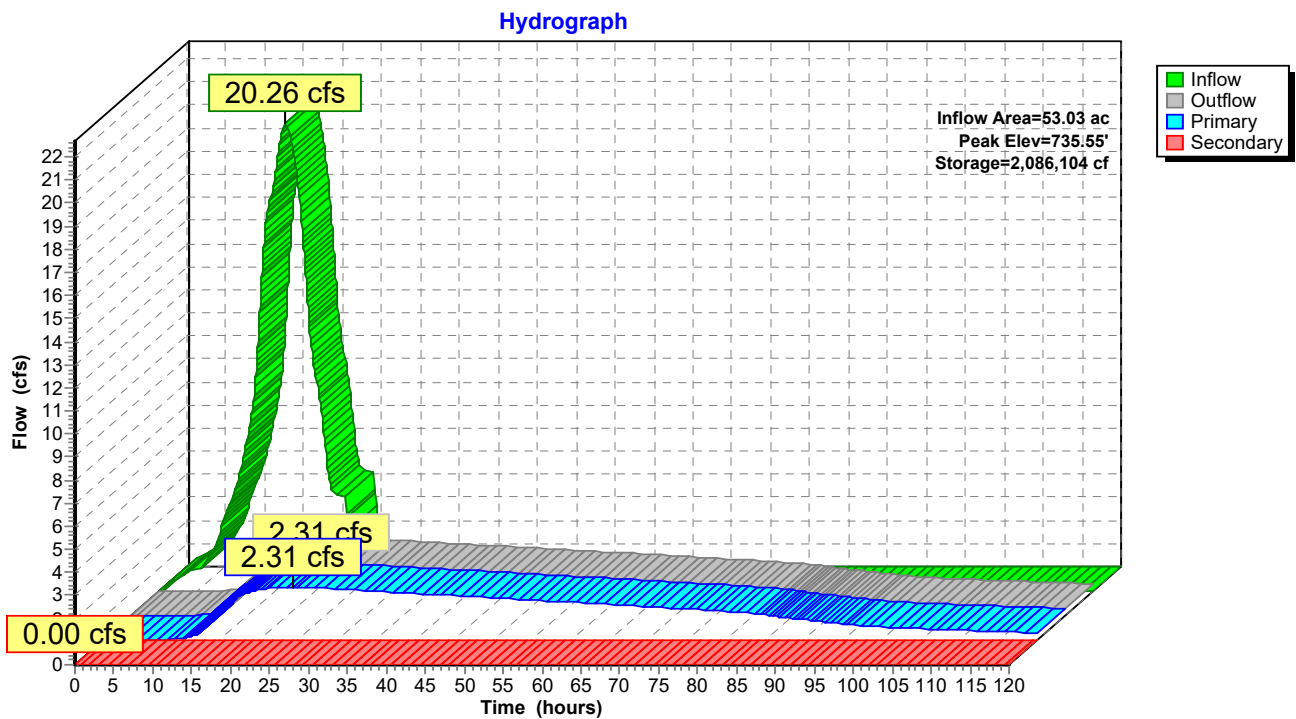
Primary OutFlow Max=2.31 cfs @ 24.39 hrs HW=735.55' (Free Discharge)

- 1=Culvert (Passes 2.31 cfs of 10.92 cfs potential flow)
- 2=Lower Orifice (Orifice Controls 2.31 cfs @ 6.61 fps)
- 3=Middle Orifice ( Controls 0.00 cfs)
- 4=Upper Orifice ( Controls 0.00 cfs)
- 5=Orifice/Grate ( Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=733.50' (Free Discharge)

- 6=Secondary Spillway ( Controls 0.00 cfs)

### Pond Basin 5R: Stormwater Basin 5R



**Summary for Pond Basin 8: Stormwater Basin 8**

Inflow Area = 148.01 ac, 11.19% Impervious, Inflow Depth = 3.24" for 10-Year, 24-Hour event  
 Inflow = 55.55 cfs @ 16.41 hrs, Volume= 40.014 af  
 Outflow = 10.26 cfs @ 24.06 hrs, Volume= 38.972 af, Atten= 82%, Lag= 458.9 min  
 Primary = 10.26 cfs @ 24.06 hrs, Volume= 38.972 af

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Starting Elev= 730.50' Surf.Area= 410,884 sf Storage= 1,593,798 cf  
 Peak Elev= 733.55' @ 24.06 hrs Surf.Area= 488,004 sf Storage= 2,963,069 cf (1,369,271 cf above start)

Plug-Flow detention time= 5,597.4 min calculated for 2.382 af (6% of inflow)  
 Center-of-Mass det. time= 1,794.8 min ( 2,765.4 - 970.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	726.00'	5,355,472 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

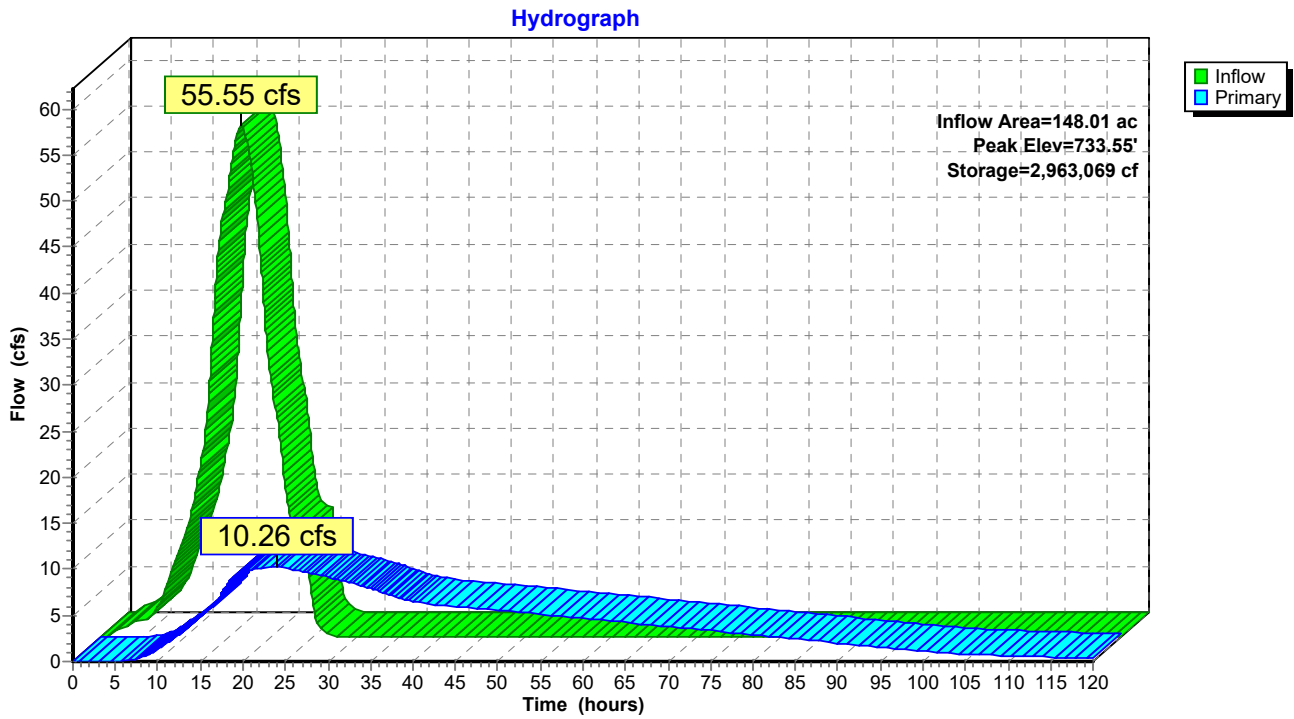
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
726.00	283,562	0	0
727.50	340,318	467,910	467,910
728.00	351,709	173,007	640,917
730.00	398,761	750,470	1,391,387
730.50	410,884	202,411	1,593,798
732.00	448,114	644,249	2,238,047
733.00	473,655	460,885	2,698,931
734.00	499,775	486,715	3,185,646
736.00	542,314	1,042,089	4,227,735
736.50	553,047	273,840	4,501,575
738.00	585,482	853,897	5,355,472

Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	<b>36.0" Round Culvert</b> L= 140.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 727.00' / 725.10' S= 0.0136 1/1' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Device 1	730.50'	<b>4.0" Vert. 2-yr Orifice X 11.00</b> C= 0.600
#3	Device 1	732.50'	<b>4.0" Vert. 100-yr Orifice X 6.00</b> C= 0.600
#4	Device 1	733.50'	<b>4.0" Vert. 100-yr Orifice X 6.00</b> C= 0.600
#5	Device 1	734.50'	<b>4.0" Vert. 100-yr Orifice X 6.00</b> C= 0.600
#6	Device 1	736.50'	<b>36.0" Horiz. Primary Spillway</b> C= 0.600

**Primary OutFlow** Max=10.25 cfs @ 24.06 hrs HW=733.55' (Free Discharge)

- 1=Culvert (Passes 10.25 cfs of 67.48 cfs potential flow)
- 2=2-yr Orifice (Orifice Controls 7.85 cfs @ 8.18 fps)
- 3=100-yr Orifice (Orifice Controls 2.37 cfs @ 4.52 fps)
- 4=100-yr Orifice (Orifice Controls 0.04 cfs @ 0.76 fps)
- 5=100-yr Orifice ( Controls 0.00 cfs)
- 6=Primary Spillway ( Controls 0.00 cfs)

### Pond Basin 8: Stormwater Basin 8



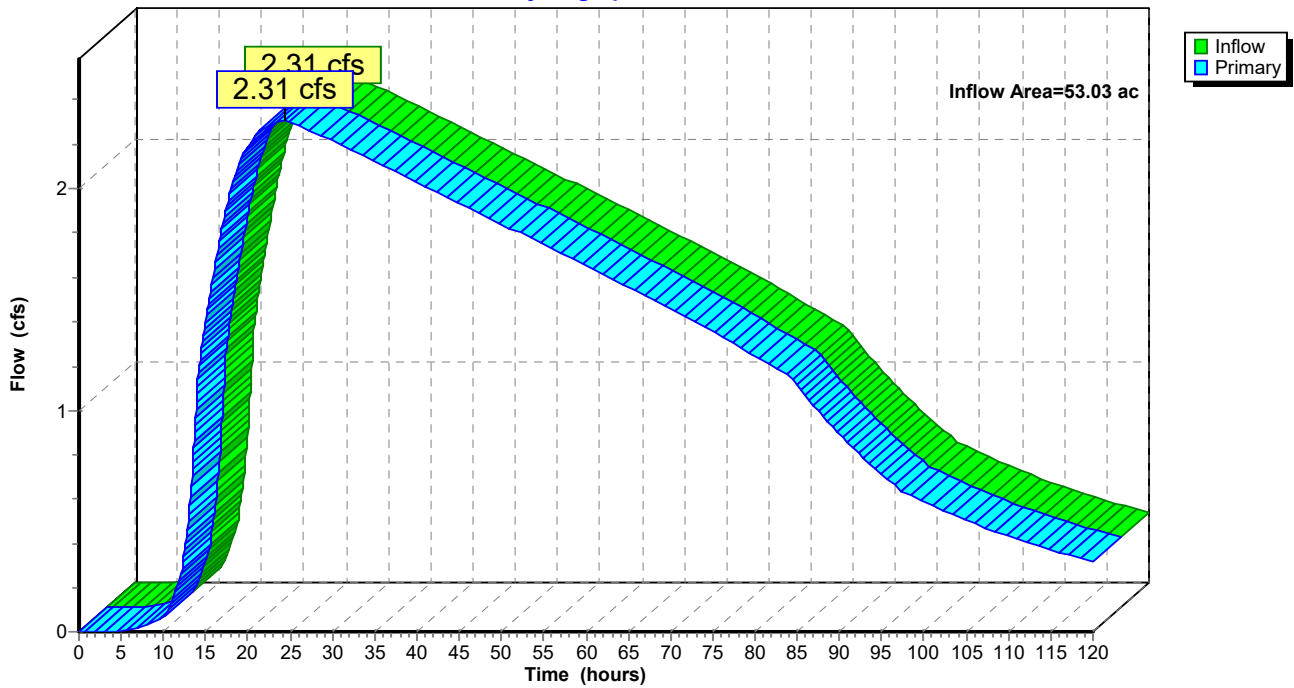
### Summary for Link BS: Bioswale

Inflow Area = 53.03 ac, 15.95% Impervious, Inflow Depth > 2.78" for 10-Year, 24-Hour event  
Inflow = 2.31 cfs @ 24.39 hrs, Volume= 12.306 af  
Primary = 2.31 cfs @ 24.39 hrs, Volume= 12.306 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link BS: Bioswale

Hydrograph

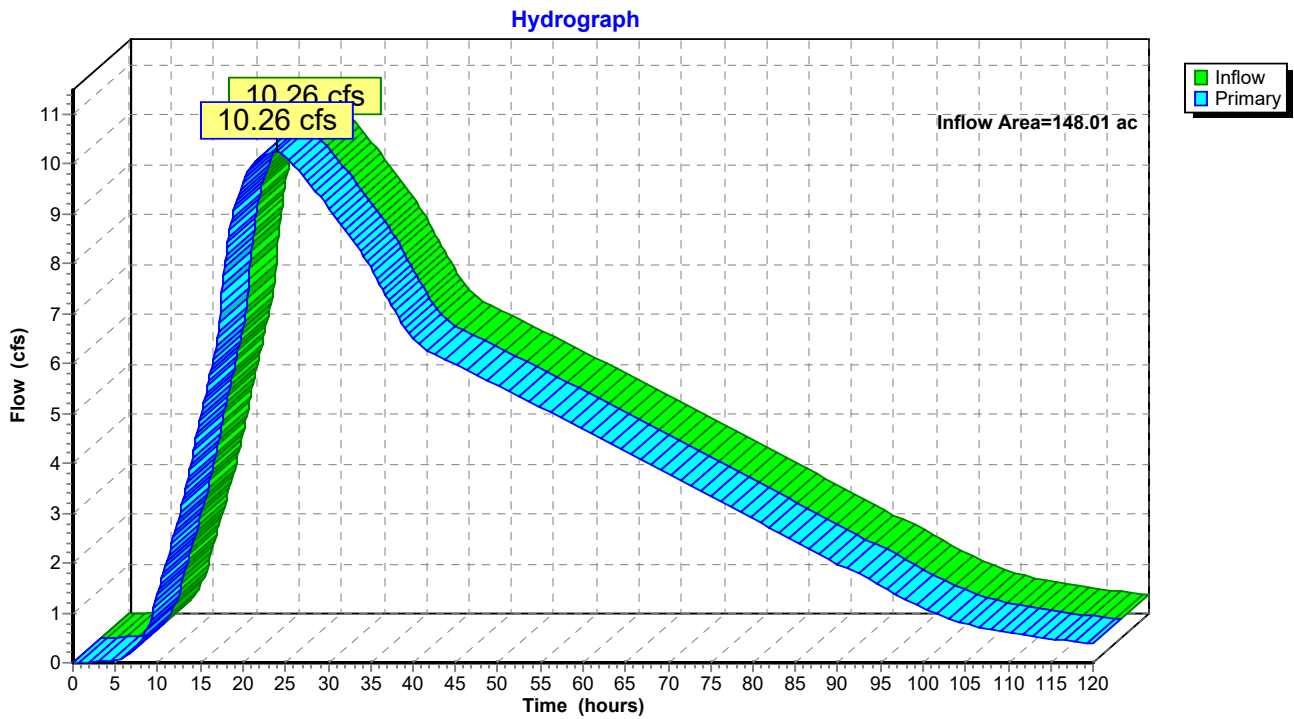


### Summary for Link DD: Offsite to Drainage Ditch

Inflow Area = 148.01 ac, 11.19% Impervious, Inflow Depth > 3.16" for 10-Year, 24-Hour event  
Inflow = 10.26 cfs @ 24.06 hrs, Volume= 38.972 af  
Primary = 10.26 cfs @ 24.06 hrs, Volume= 38.972 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link DD: Offsite to Drainage Ditch





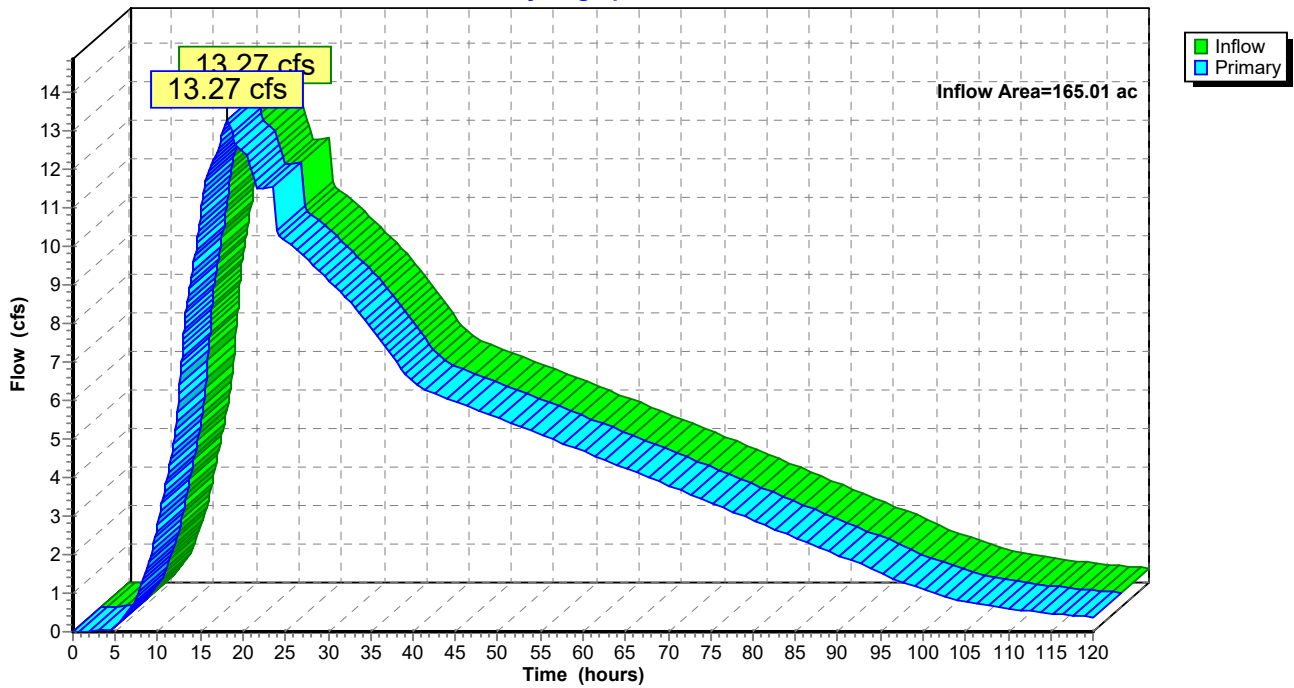
### Summary for Link DPRW: Des Plaines River Watershed

Inflow Area = 165.01 ac, 10.09% Impervious, Inflow Depth > 3.15" for 10-Year, 24-Hour event  
Inflow = 13.27 cfs @ 18.07 hrs, Volume= 43.350 af  
Primary = 13.27 cfs @ 18.07 hrs, Volume= 43.350 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link DPRW: Des Plaines River Watershed

Hydrograph

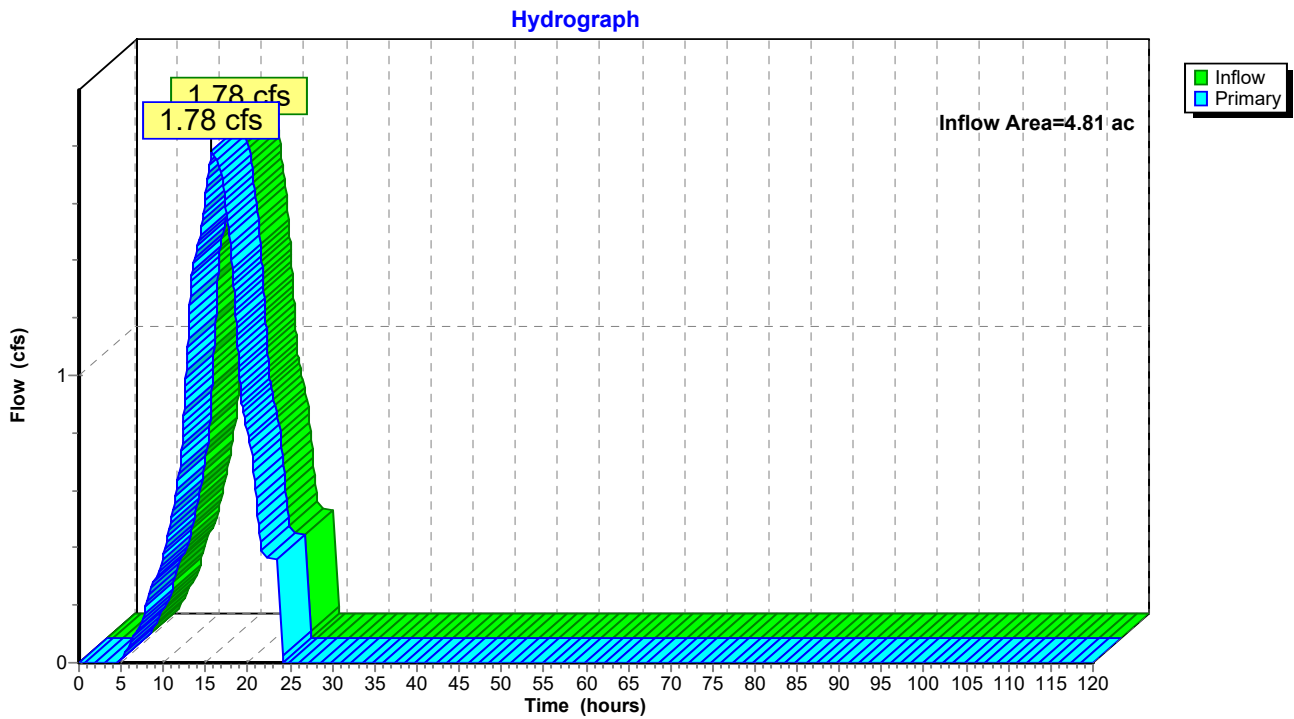


### Summary for Link DPRW-PB: Des Plaines River Watershed - Perimeter Berm

Inflow Area = 4.81 ac, 1.70% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
Inflow = 1.78 cfs @ 15.70 hrs, Volume= 1.213 af  
Primary = 1.78 cfs @ 15.70 hrs, Volume= 1.213 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link DPRW-PB: Des Plaines River Watershed - Perimeter Berm

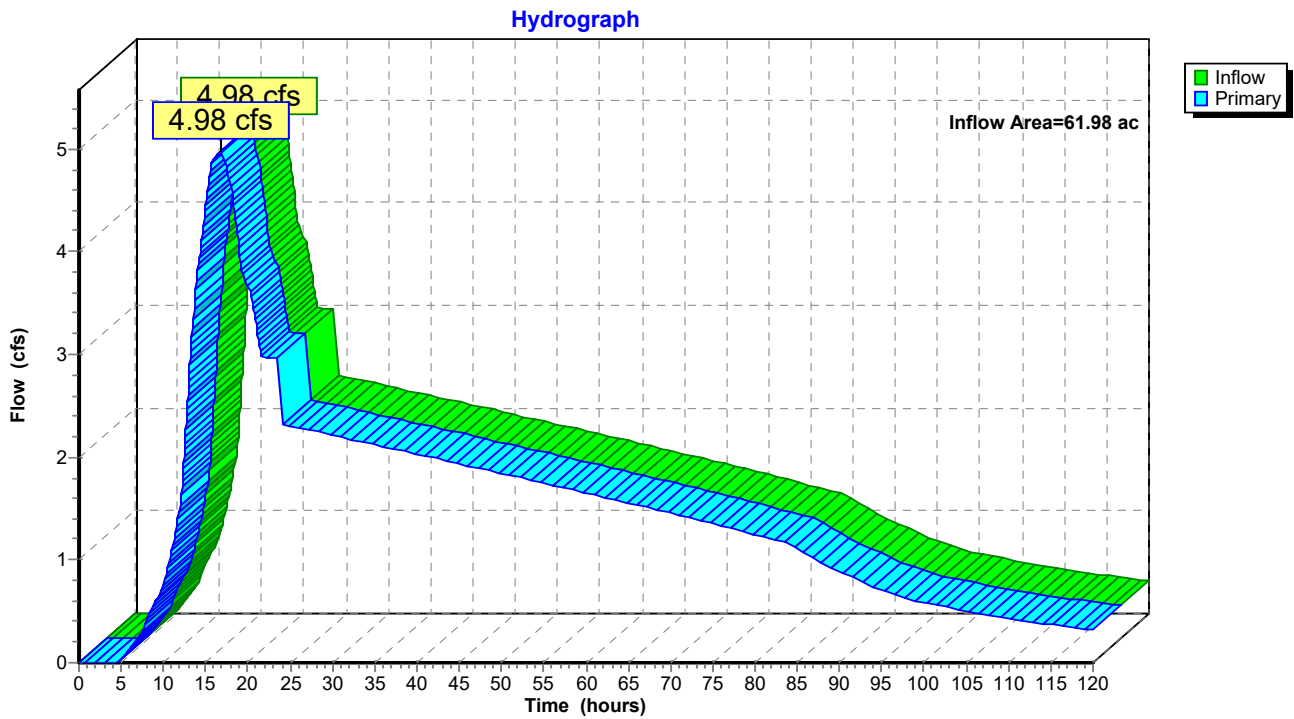


### Summary for Link LMW: Lake Michigan Watershed

Inflow Area = 61.98 ac, 13.64% Impervious, Inflow Depth > 2.82" for 10-Year, 24-Hour event  
Inflow = 4.98 cfs @ 16.79 hrs, Volume= 14.562 af  
Primary = 4.98 cfs @ 16.79 hrs, Volume= 14.562 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link LMW: Lake Michigan Watershed

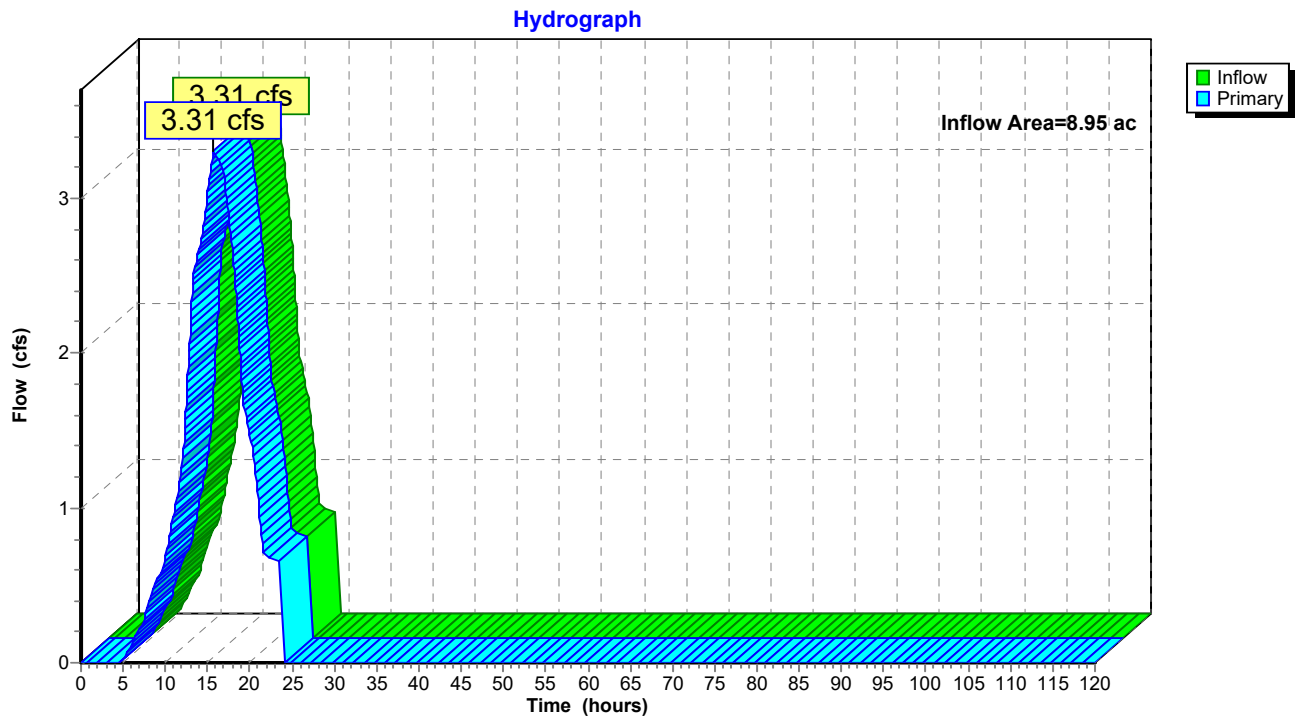


### Summary for Link LMW-PB: Lake Michigan Watershed - Perimeter Berm

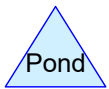
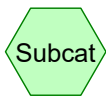
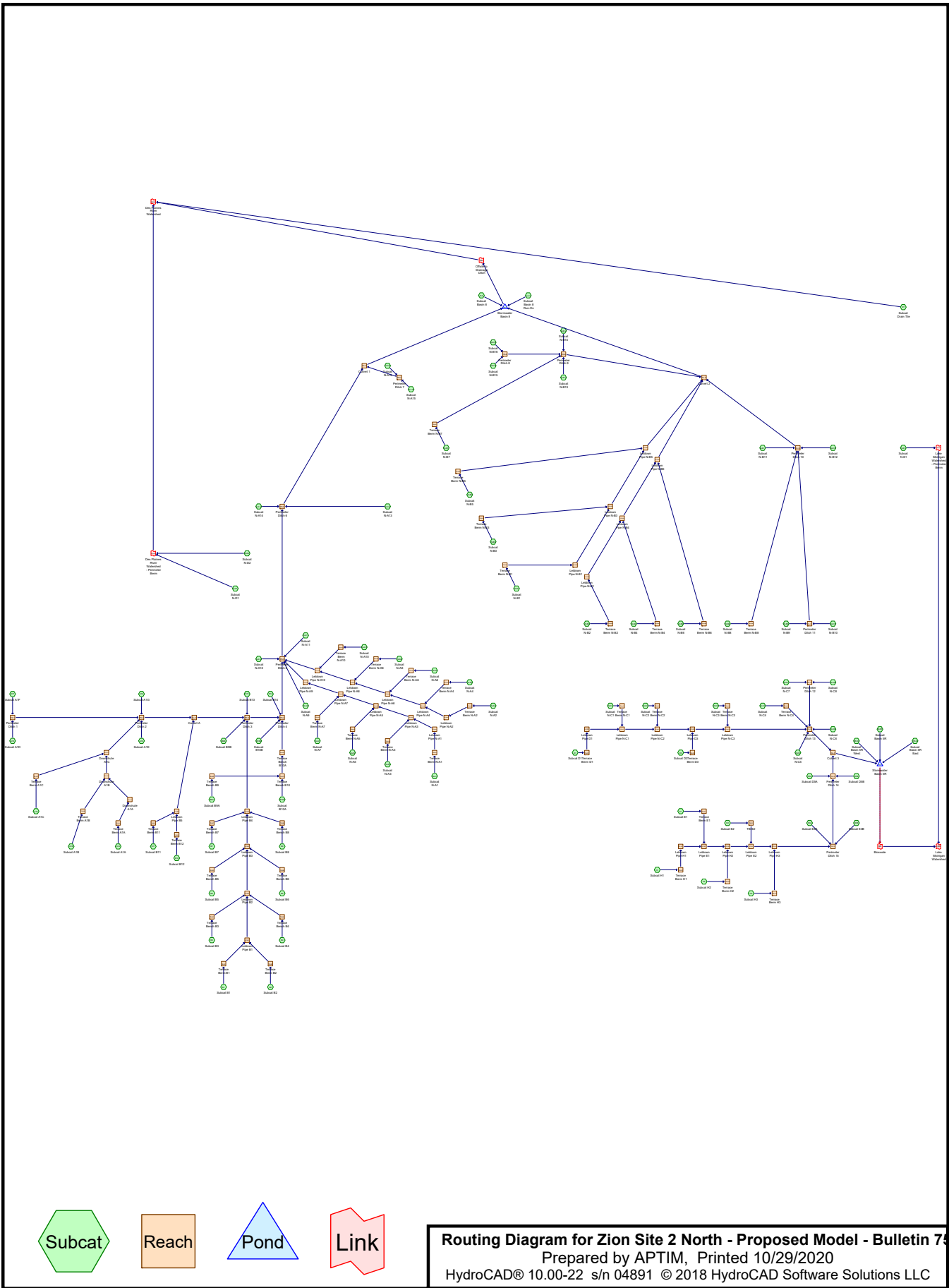
Inflow Area = 8.95 ac, 0.00% Impervious, Inflow Depth = 3.02" for 10-Year, 24-Hour event  
Inflow = 3.31 cfs @ 15.67 hrs, Volume= 2.256 af  
Primary = 3.31 cfs @ 15.67 hrs, Volume= 2.256 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link LMW-PB: Lake Michigan Watershed - Perimeter Berm



HydroCAD Output Files  
**Proposed Conditions – 25-year, 1-hour**



**Routing Diagram for Zion Site 2 North - Proposed Model - Bulletin 75**  
 Prepared by APTIM, Printed 10/29/2020  
 HydroCAD® 10.00-22 s/n 04891 © 2018 HydroCAD Software Solutions LLC

**Summary for Subcatchment 5R-E: Subcat Basin 5R East**

Runoff = 4.55 cfs @ 0.25 hrs, Volume= 0.160 af, Depth= 1.27"

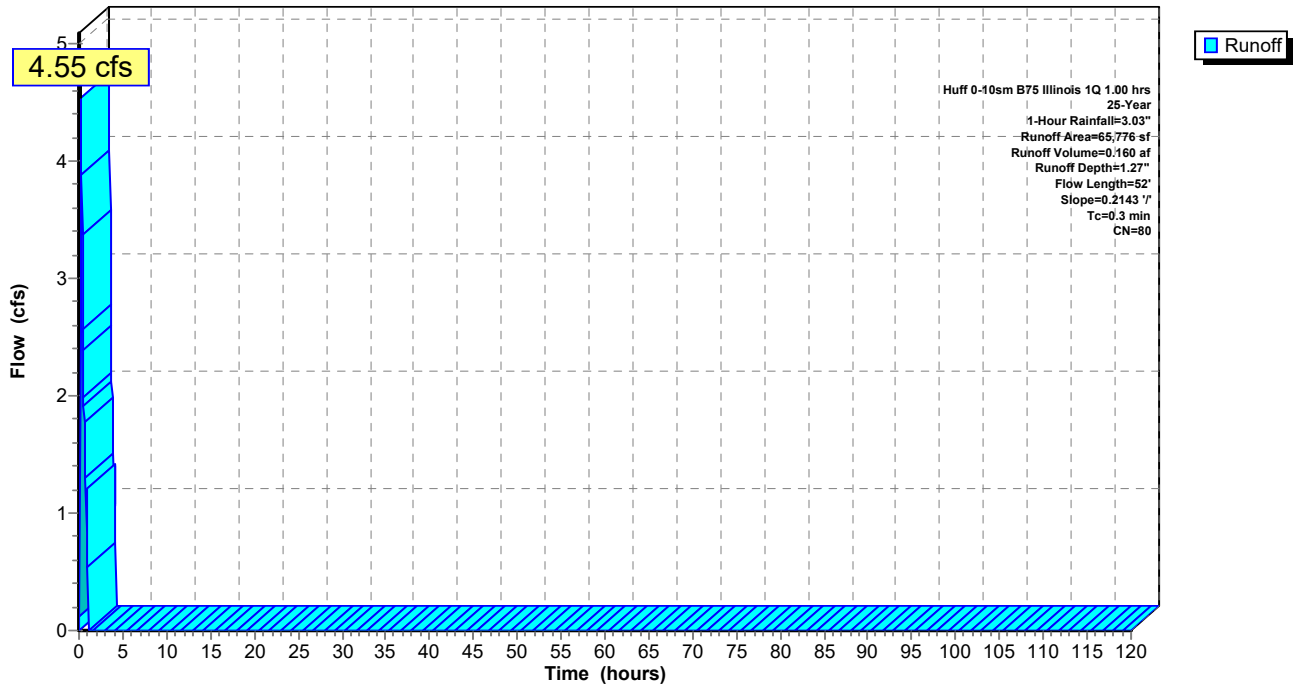
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

Area (sf)	CN	Description
65,776	80	>75% Grass cover, Good, HSG D
65,776		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	52	0.2143	2.92		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment 5R-E: Subcat Basin 5R East**

Hydrograph



**Summary for Subcatchment 5R-W: Subcat Basin 5R West**

Runoff = 1.80 cfs @ 0.24 hrs, Volume= 0.063 af, Depth= 1.27"

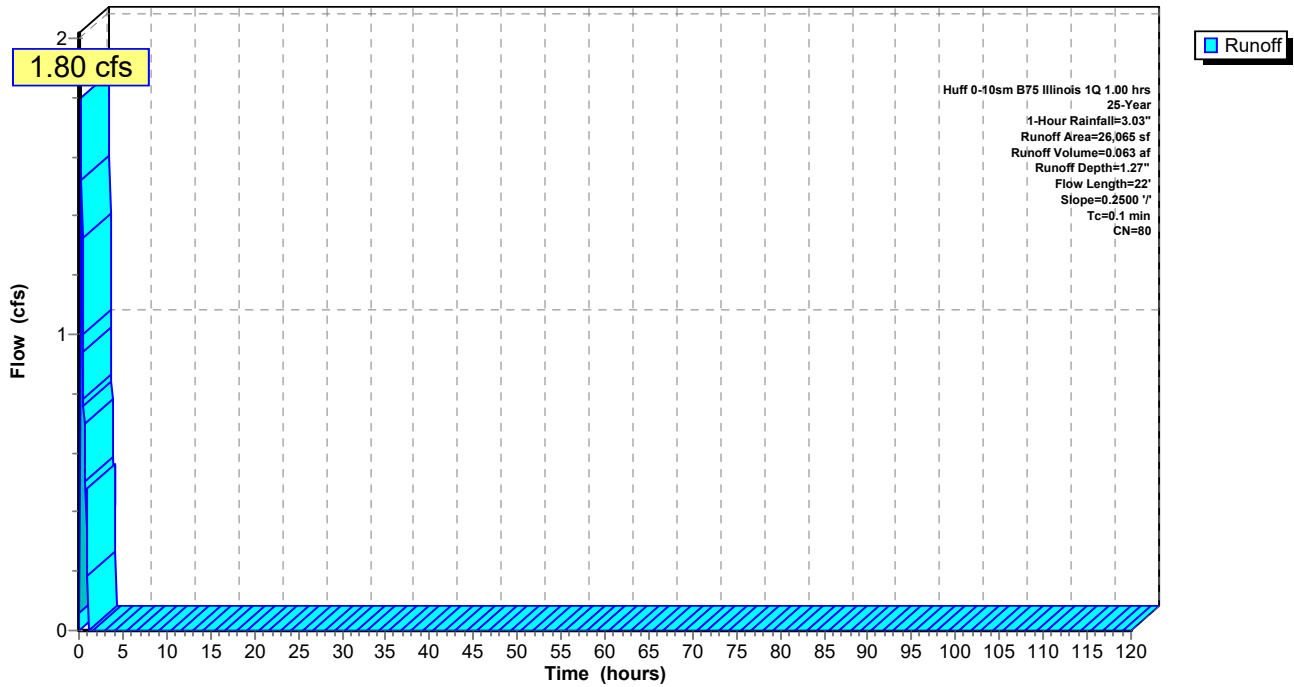
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

Area (sf)	CN	Description
26,065	80	>75% Grass cover, Good, HSG D
26,065		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	22	0.2500	2.61		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment 5R-W: Subcat Basin 5R West**

Hydrograph





**Summary for Subcatchment A1A: Subcat A1A**

Runoff = 15.43 cfs @ 0.45 hrs, Volume= 0.714 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

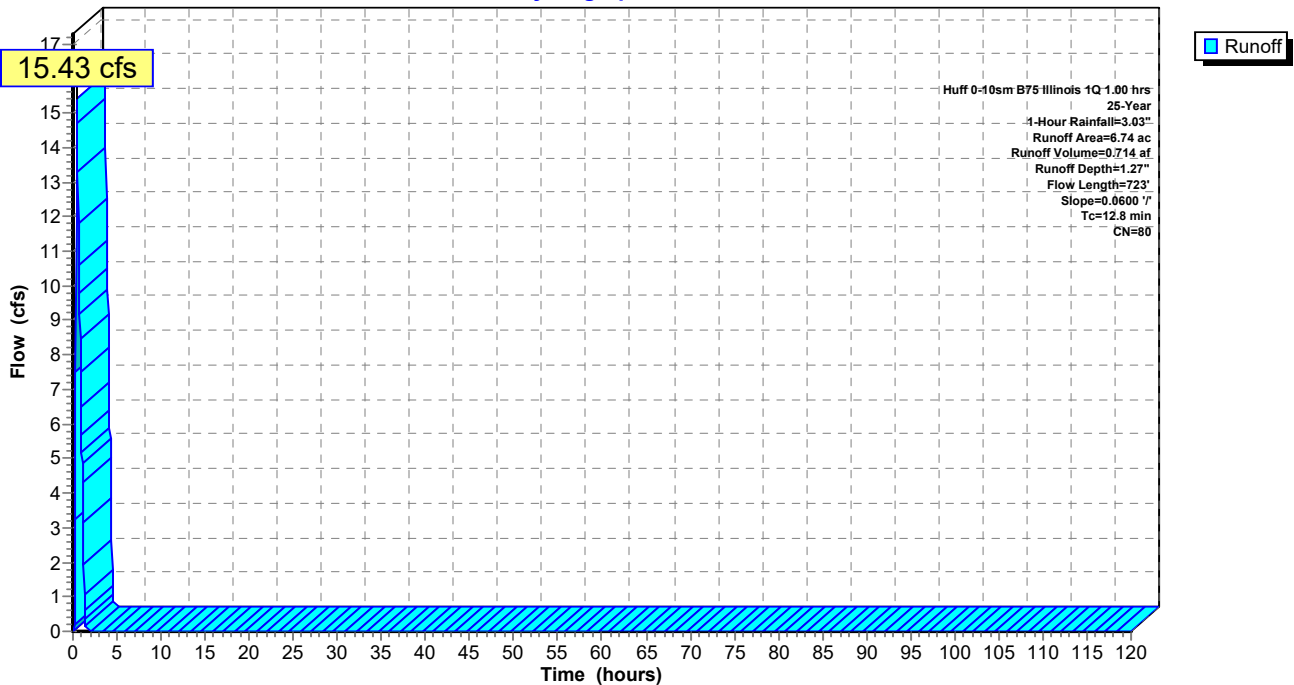
Area (ac)	CN	Description
6.74	80	>75% Grass cover, Good, HSG D
6.74		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	100	0.0600	0.25		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
6.1	623	0.0600	1.71		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
12.8	723	Total			

**Subcatchment A1A: Subcat A1A**

Hydrograph



**Summary for Subcatchment A1B: Subcat A1B**

Runoff = 15.02 cfs @ 0.31 hrs, Volume= 0.554 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

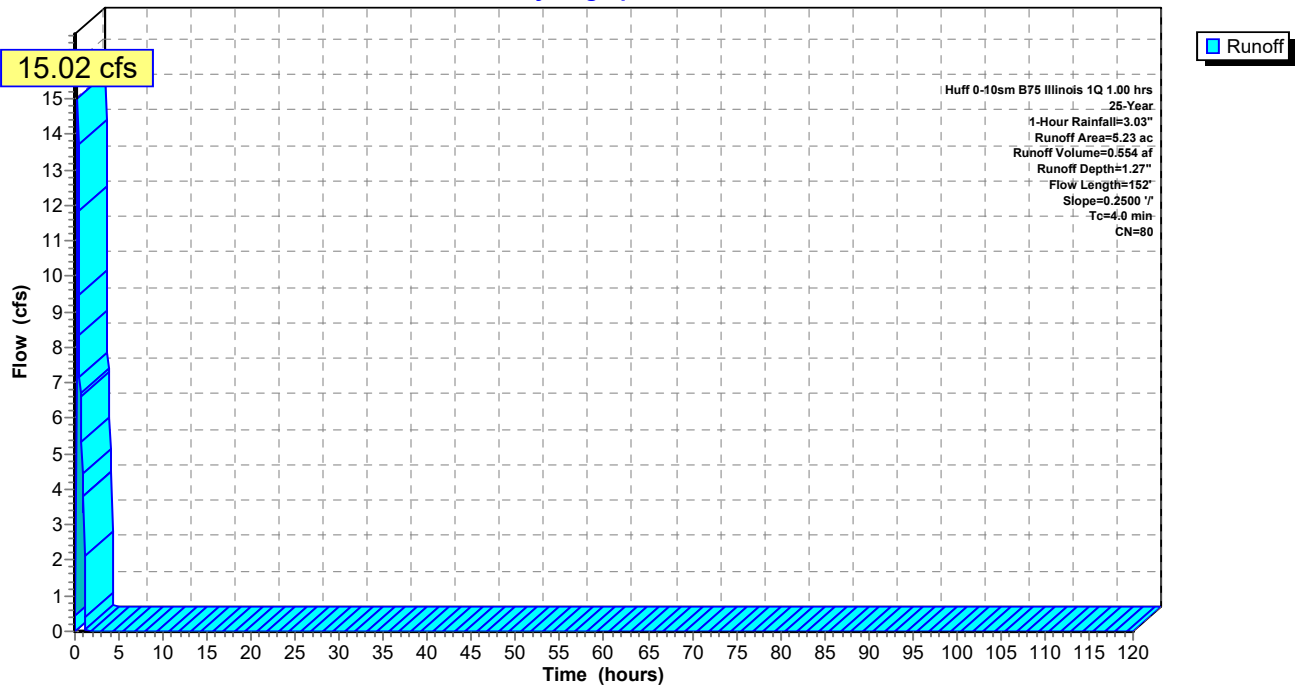
Area (ac)	CN	Description
5.23	80	>75% Grass cover, Good, HSG D
5.23		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	52	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	152	Total			

**Subcatchment A1B: Subcat A1B**

Hydrograph



**Summary for Subcatchment A1C: Subcat A1C**

Runoff = 16.74 cfs @ 0.62 hrs, Volume= 0.972 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

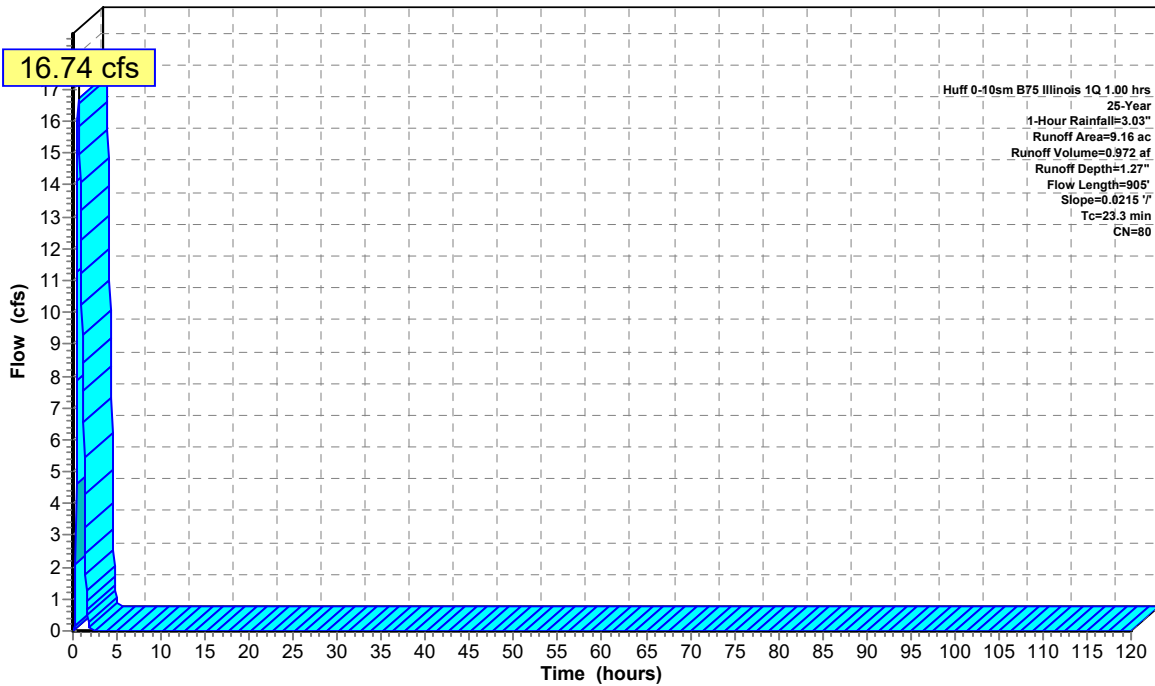
Area (ac)	CN	Description
8.89	80	>75% Grass cover, Good, HSG D
0.27	93	Paved roads w/open ditches, 50% imp, HSG D
9.16	80	Weighted Average
9.03		98.52% Pervious Area
0.14		1.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.0215	0.16		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
13.1	805	0.0215	1.03		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
23.3	905	Total			

**Subcatchment A1C: Subcat A1C**

Hydrograph



Runoff

Huff 0-10sm B75 Illinois 1Q 1.00 hrs  
 25-Year  
 1-Hour Rainfall=3.03"  
 Runoff Area=9.16 ac  
 Runoff Volume=0.972 af  
 Runoff Depth=1.27"  
 Flow Length=905'  
 Slope=0.0215 f'  
 Tc=23.3 min  
 CN=80

**Summary for Subcatchment A1D: Subcat A1D**

Runoff = 19.06 cfs @ 0.35 hrs, Volume= 0.750 af, Depth= 1.27"

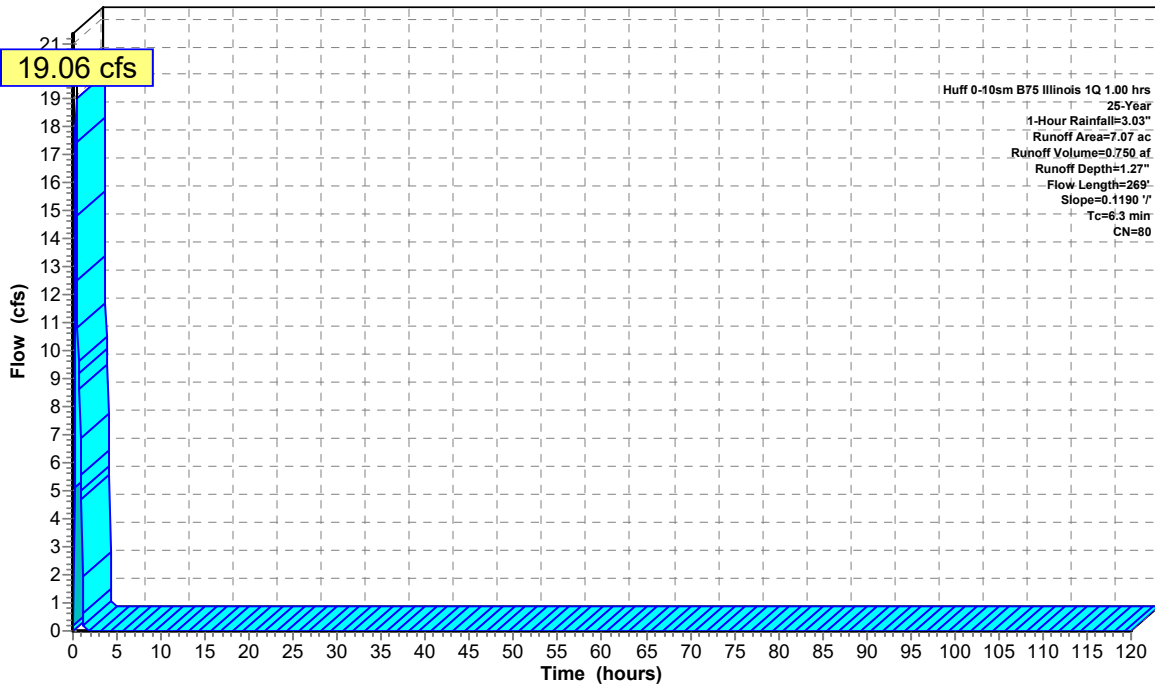
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

Area (ac)	CN	Description
6.97	80	>75% Grass cover, Good, HSG D
0.10	93	Paved roads w/open ditches, 50% imp, HSG D
7.07	80	Weighted Average
7.02		99.31% Pervious Area
0.05		0.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	100	0.1190	0.32		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.2	169	0.1190	2.41		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.3	269	Total			

**Subcatchment A1D: Subcat A1D**

Hydrograph



**Summary for Subcatchment A1E: Subcat A1E**

Runoff = 3.08 cfs @ 0.32 hrs, Volume= 0.116 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

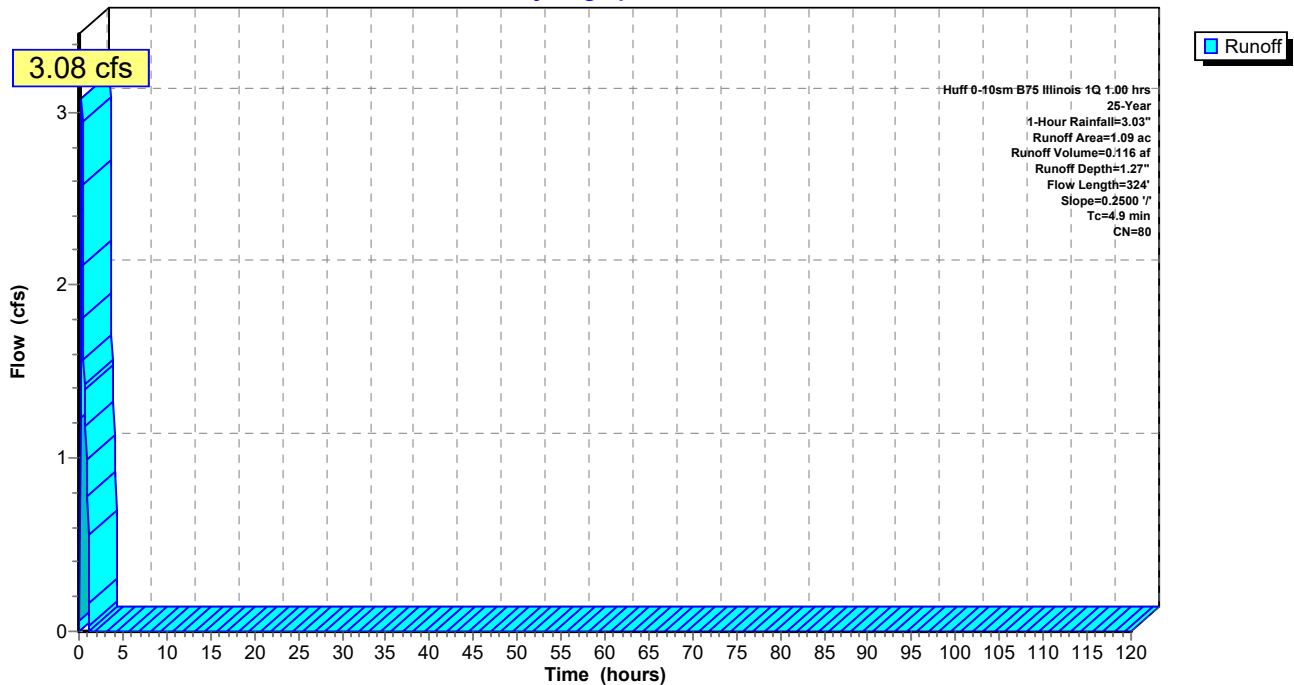
Area (ac)	CN	Description
1.09	80	>75% Grass cover, Good, HSG D
1.09		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.1	224	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.9	324	Total			

**Subcatchment A1E: Subcat A1E**

Hydrograph



**Summary for Subcatchment A1F: Subcat A1F**

Runoff = 4.48 cfs @ 0.23 hrs, Volume= 0.152 af, Depth= 1.84"

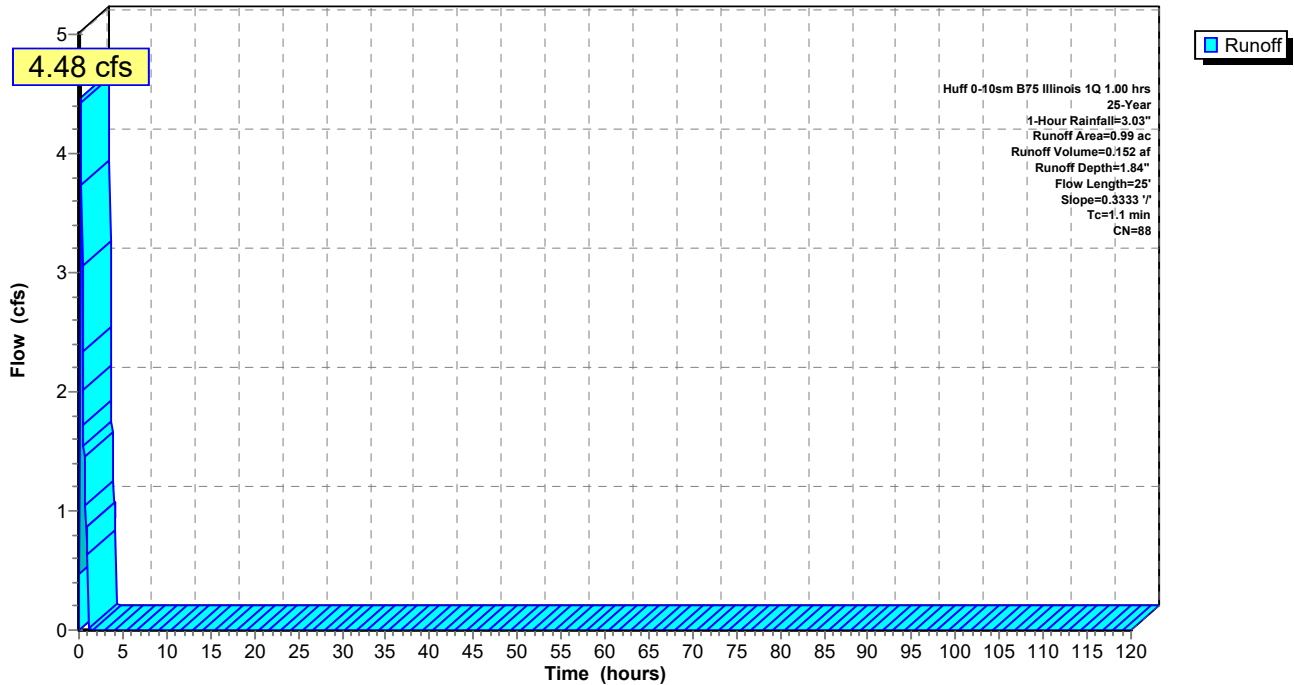
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

Area (ac)	CN	Description
0.36	80	>75% Grass cover, Good, HSG D
0.62	93	Paved roads w/open ditches, 50% imp, HSG D
0.99	88	Weighted Average
0.67		68.34% Pervious Area
0.31		31.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	25	0.3333	0.37		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment A1F: Subcat A1F**

Hydrograph



**Summary for Subcatchment A1G: Subcat A1G**

Runoff = 0.79 cfs @ 0.24 hrs, Volume= 0.027 af, Depth= 1.69"

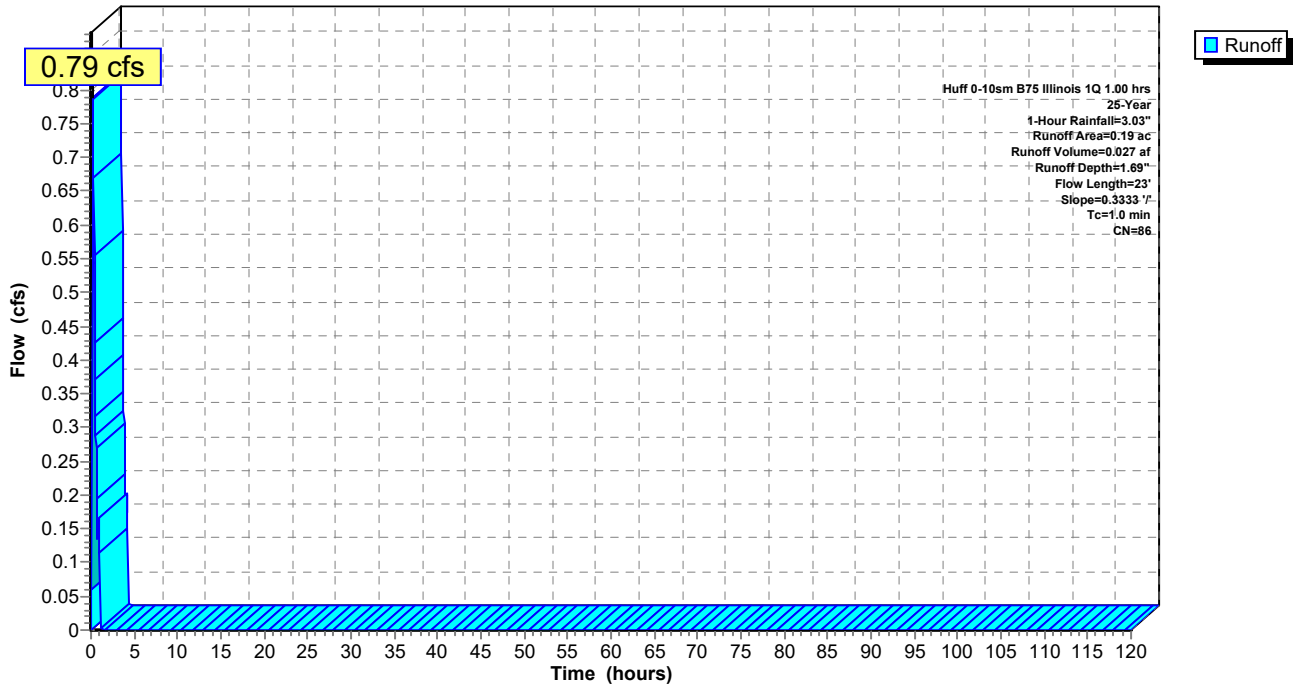
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

Area (ac)	CN	Description
0.11	80	>75% Grass cover, Good, HSG D
0.09	93	Paved roads w/open ditches, 50% imp, HSG D
0.19	86	Weighted Average
0.15		77.34% Pervious Area
0.04		22.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	23	0.3333	0.37		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment A1G: Subcat A1G**

Hydrograph



**Summary for Subcatchment B-5R: Subcat Basin 5R**

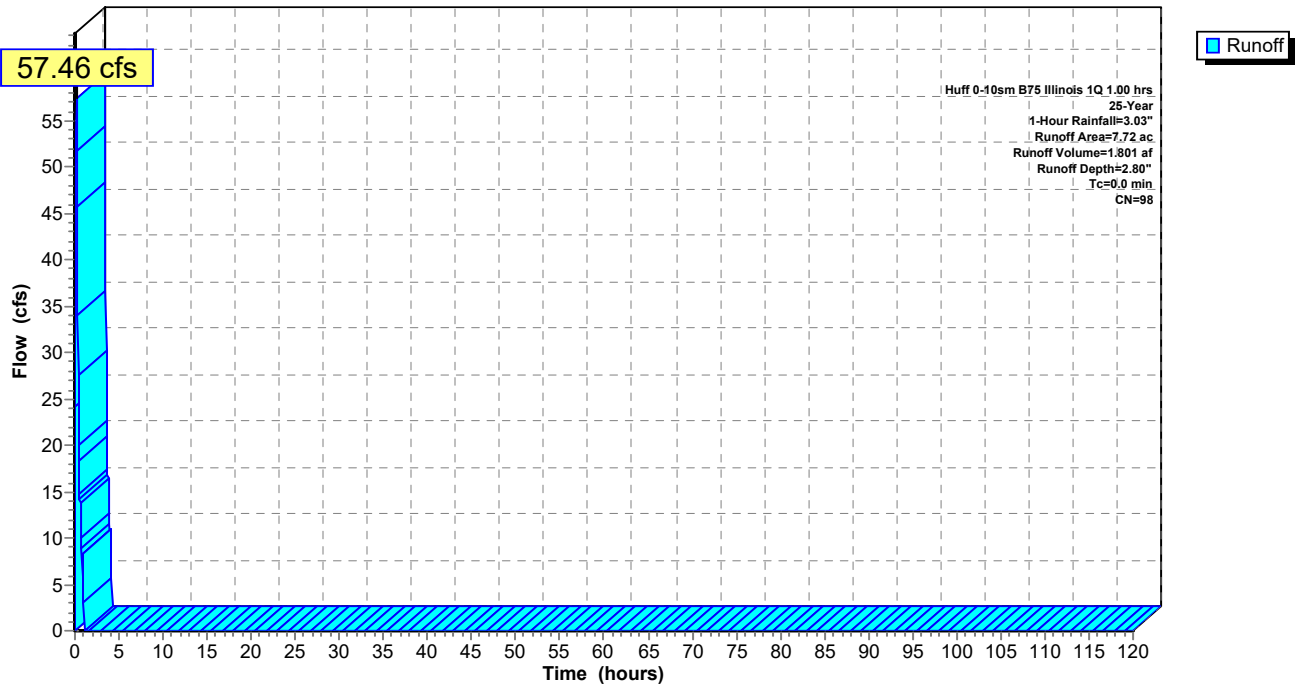
Runoff = 57.46 cfs @ 0.15 hrs, Volume= 1.801 af, Depth= 2.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

Area (ac)	CN	Description
7.72	98	Water Surface, HSG D
7.72		100.00% Impervious Area

**Subcatchment B-5R: Subcat Basin 5R**

Hydrograph





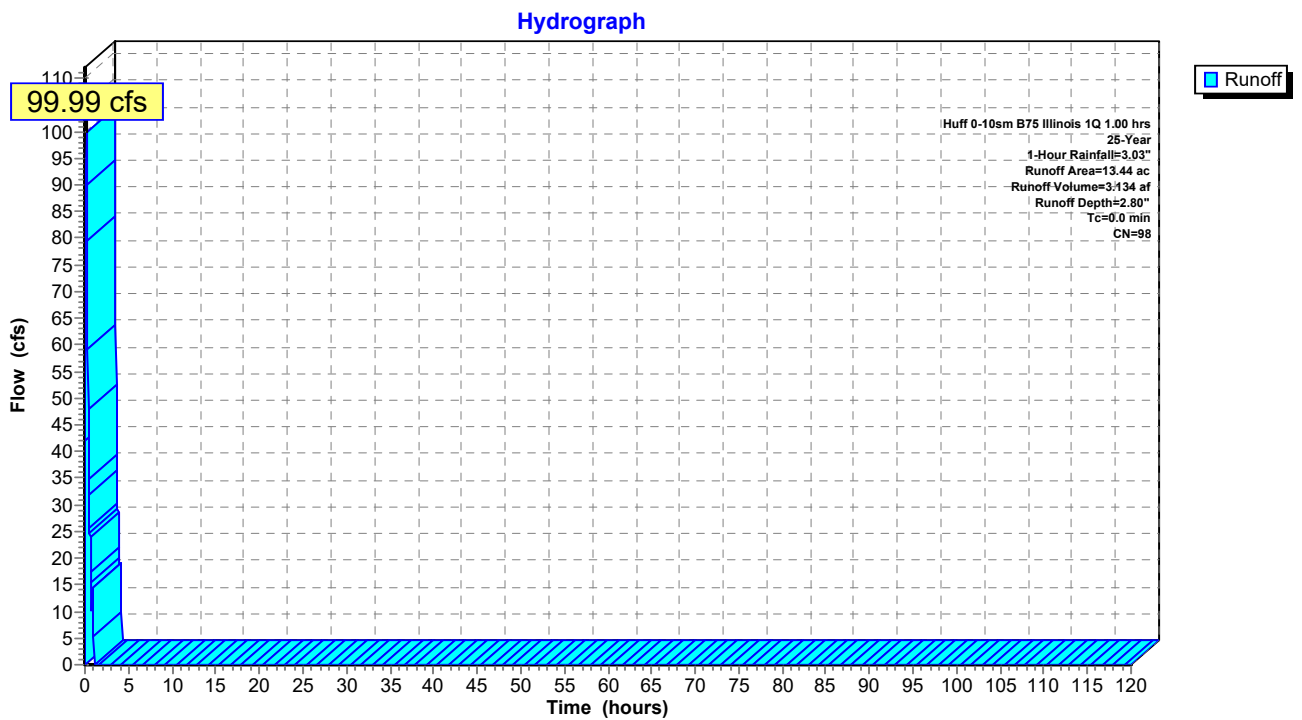
**Summary for Subcatchment B-8: Subcat Basin 8**

Runoff = 99.99 cfs @ 0.15 hrs, Volume= 3.134 af, Depth= 2.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

Area (ac)	CN	Description
13.44	98	Water Surface, HSG D
13.44		100.00% Impervious Area

**Subcatchment B-8: Subcat Basin 8**



**Summary for Subcatchment B-8-RO: Subcat Basin 8 Run-On**

Runoff = 13.19 cfs @ 0.30 hrs, Volume= 0.479 af, Depth= 1.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

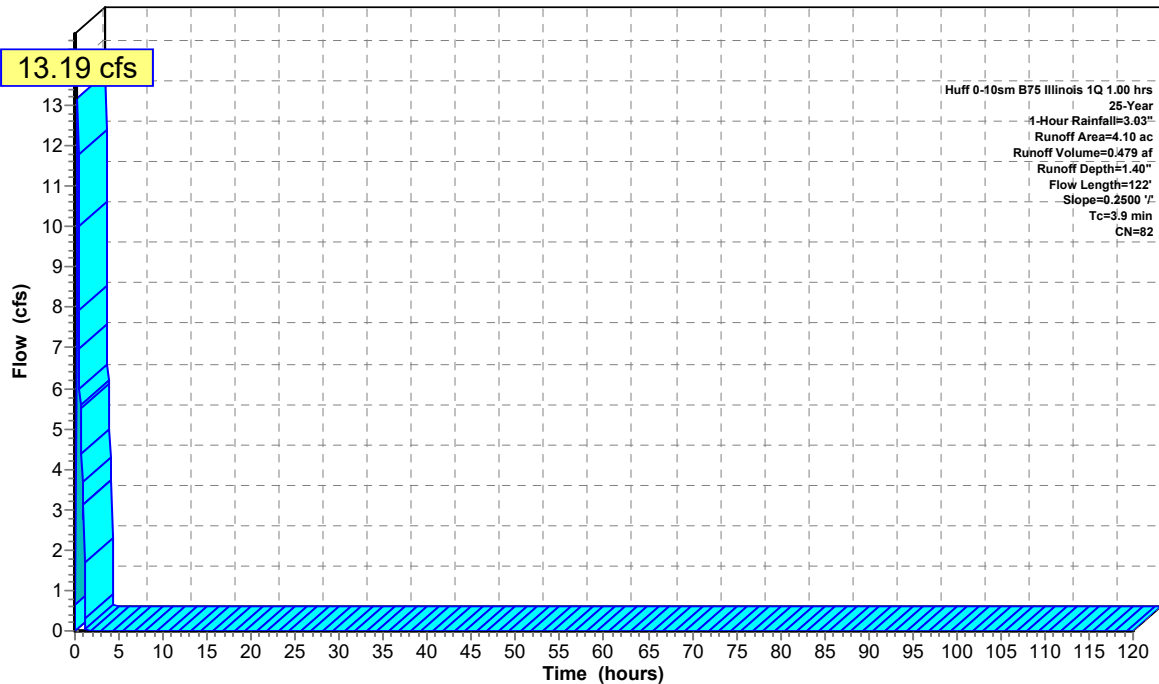
Area (ac)	CN	Description
3.50	80	>75% Grass cover, Good, HSG D
0.60	93	Paved roads w/open ditches, 50% imp, HSG D
4.10	82	Weighted Average
3.80		92.68% Pervious Area
0.30		7.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	22	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	122	Total			

**Subcatchment B-8-RO: Subcat Basin 8 Run-On**

Hydrograph



Runoff

**Summary for Subcatchment B1: Subcat B1**

Runoff = 5.48 cfs @ 0.35 hrs, Volume= 0.216 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

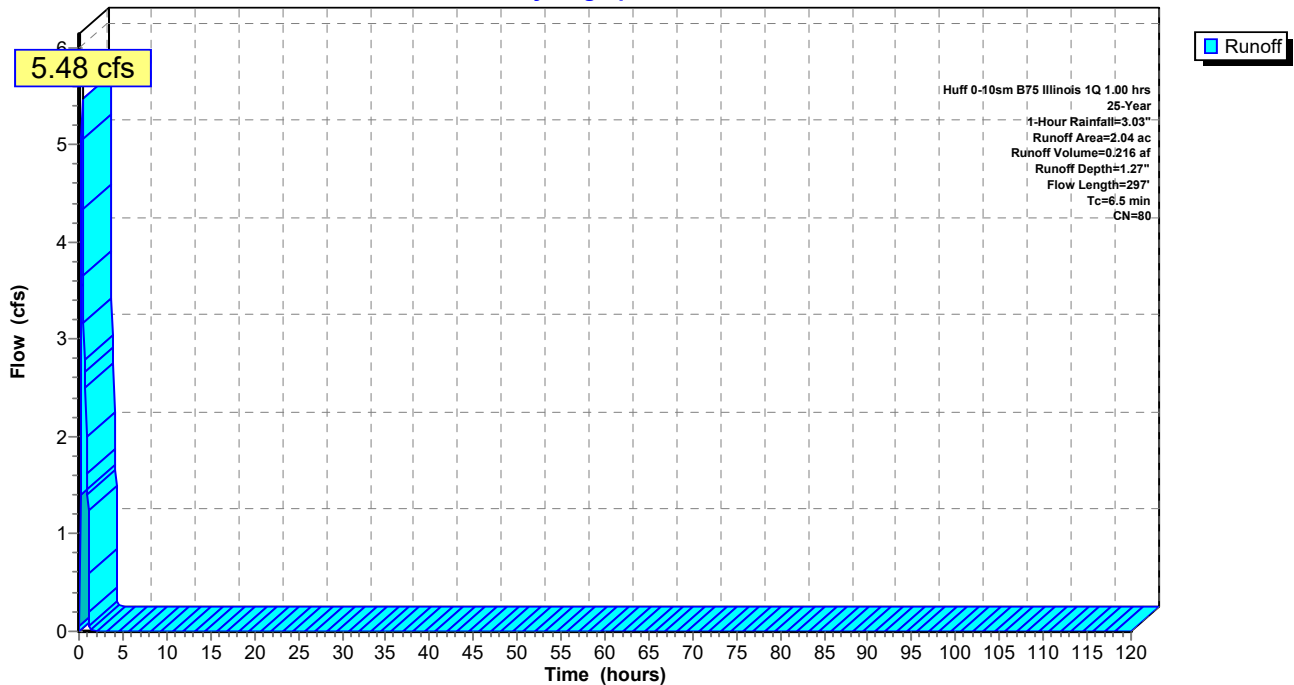
Area (ac)	CN	Description
2.04	80	>75% Grass cover, Good, HSG D
2.04		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.0	197	0.2132	3.23		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.5	297	Total			

**Subcatchment B1: Subcat B1**

Hydrograph



**Summary for Subcatchment B10A: Subcat B10A**

Runoff = 2.36 cfs @ 0.29 hrs, Volume= 0.086 af, Depth= 1.27"

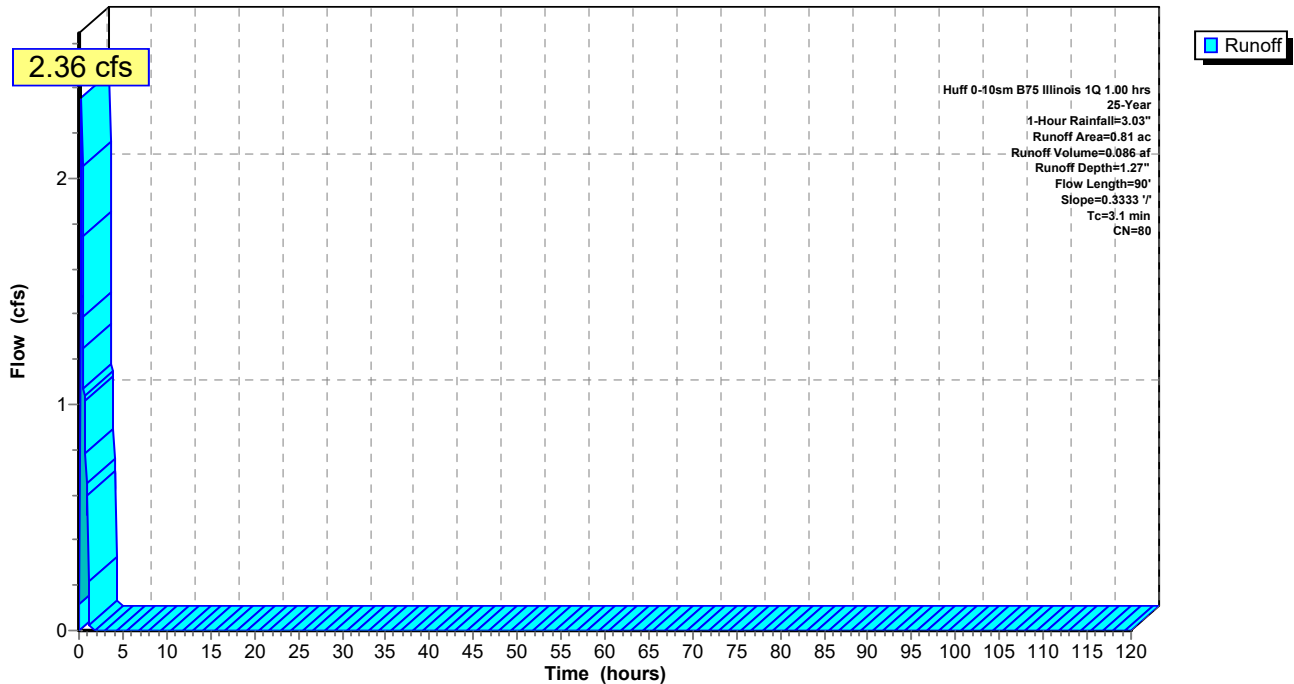
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

Area (ac)	CN	Description
0.81	80	>75% Grass cover, Good, HSG D
0.81		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	90	0.3333	0.48		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B10A: Subcat B10A**

Hydrograph



**Summary for Subcatchment B10B: Subcat B10B**

Runoff = 1.55 cfs @ 0.28 hrs, Volume= 0.056 af, Depth= 1.27"

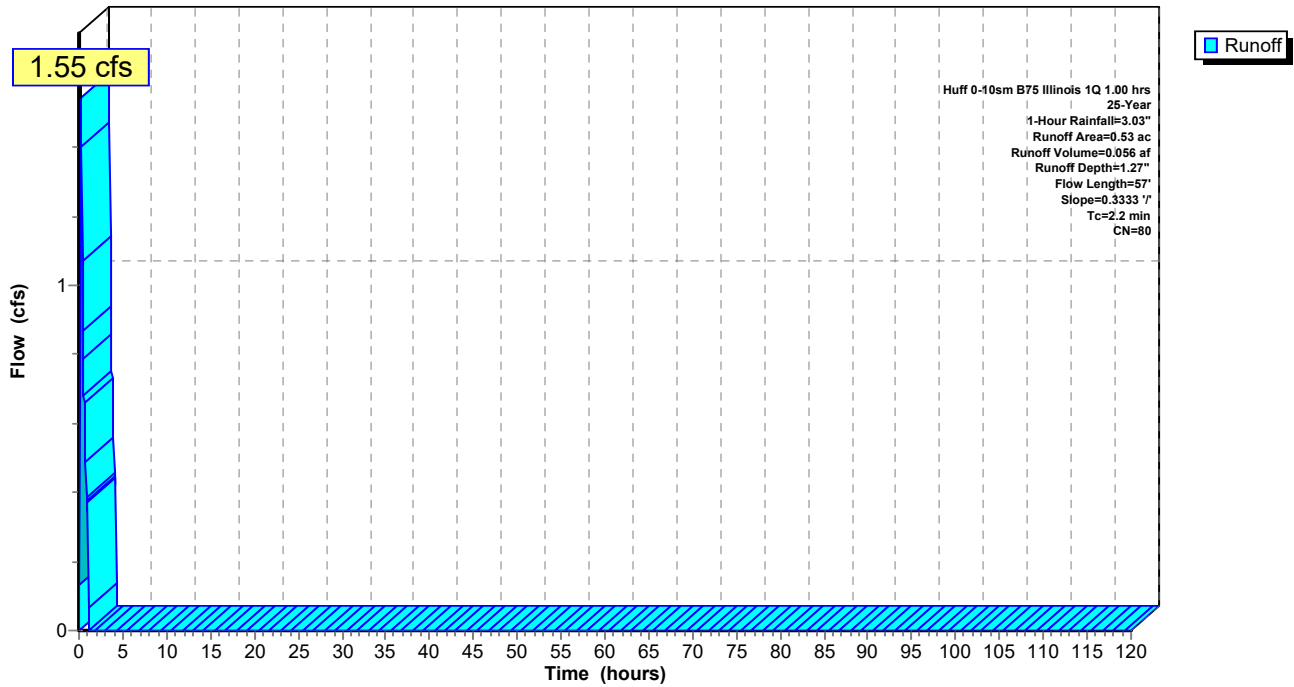
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

Area (ac)	CN	Description
0.53	80	>75% Grass cover, Good, HSG D
0.53		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	57	0.3333	0.44		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B10B: Subcat B10B**

Hydrograph



**Summary for Subcatchment B11: Subcat B11**

Runoff = 5.19 cfs @ 0.45 hrs, Volume= 0.241 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

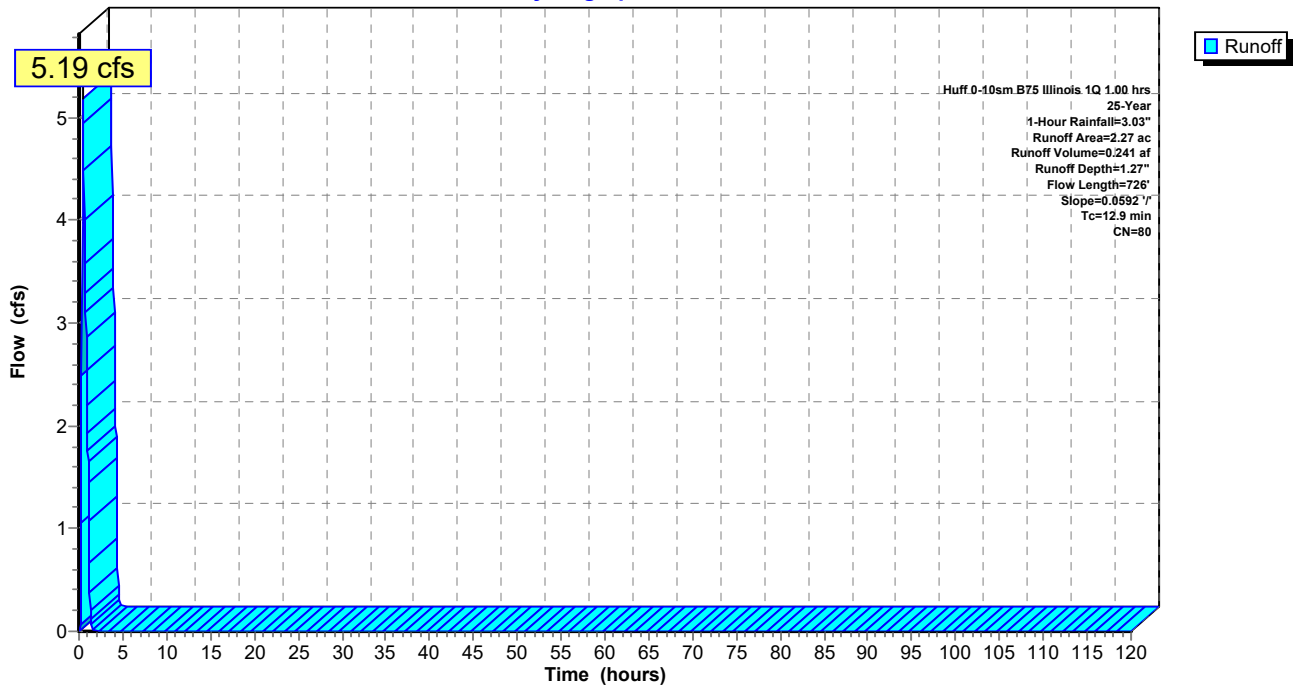
Area (ac)	CN	Description
2.27	80	>75% Grass cover, Good, HSG D
2.27		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	100	0.0592	0.25		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
6.1	626	0.0592	1.70		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
12.9	726	Total			

**Subcatchment B11: Subcat B11**

Hydrograph



**Summary for Subcatchment B12: Subcat B12**

Runoff = 3.45 cfs @ 0.31 hrs, Volume= 0.127 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

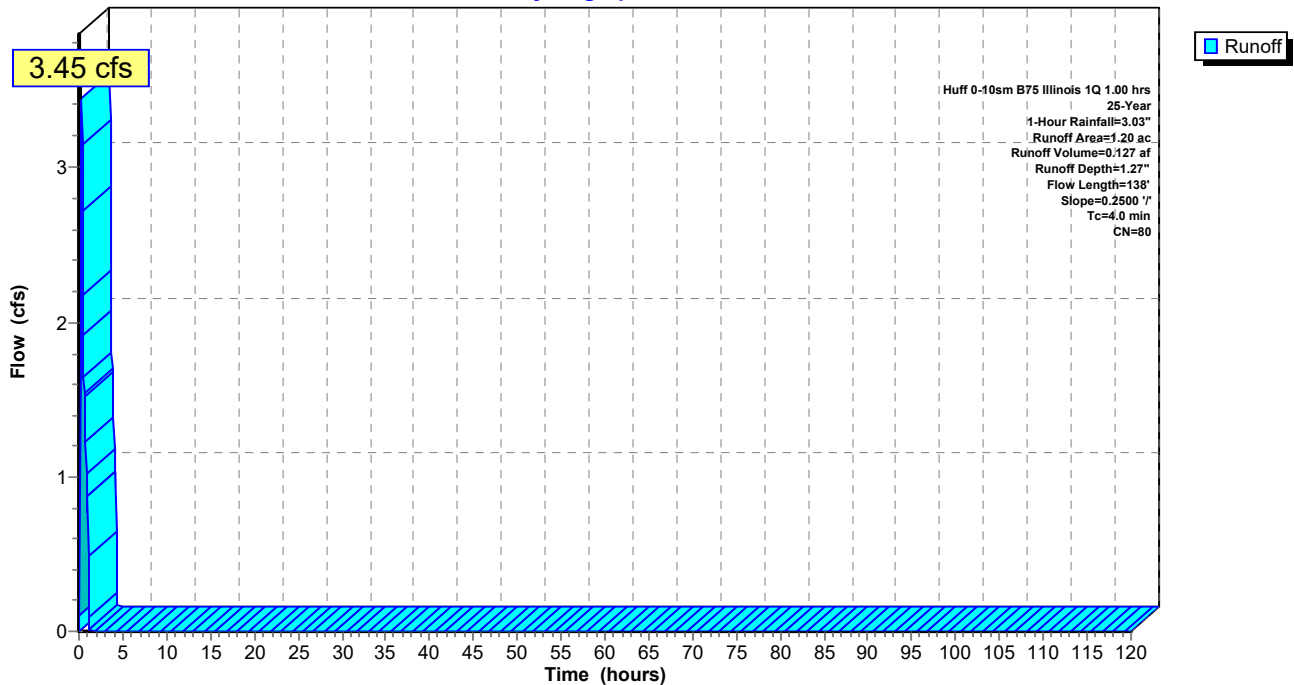
Area (ac)	CN	Description
1.20	80	>75% Grass cover, Good, HSG D
1.20		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	38	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	138	Total			

**Subcatchment B12: Subcat B12**

Hydrograph



**Summary for Subcatchment B13: Subcat B13**

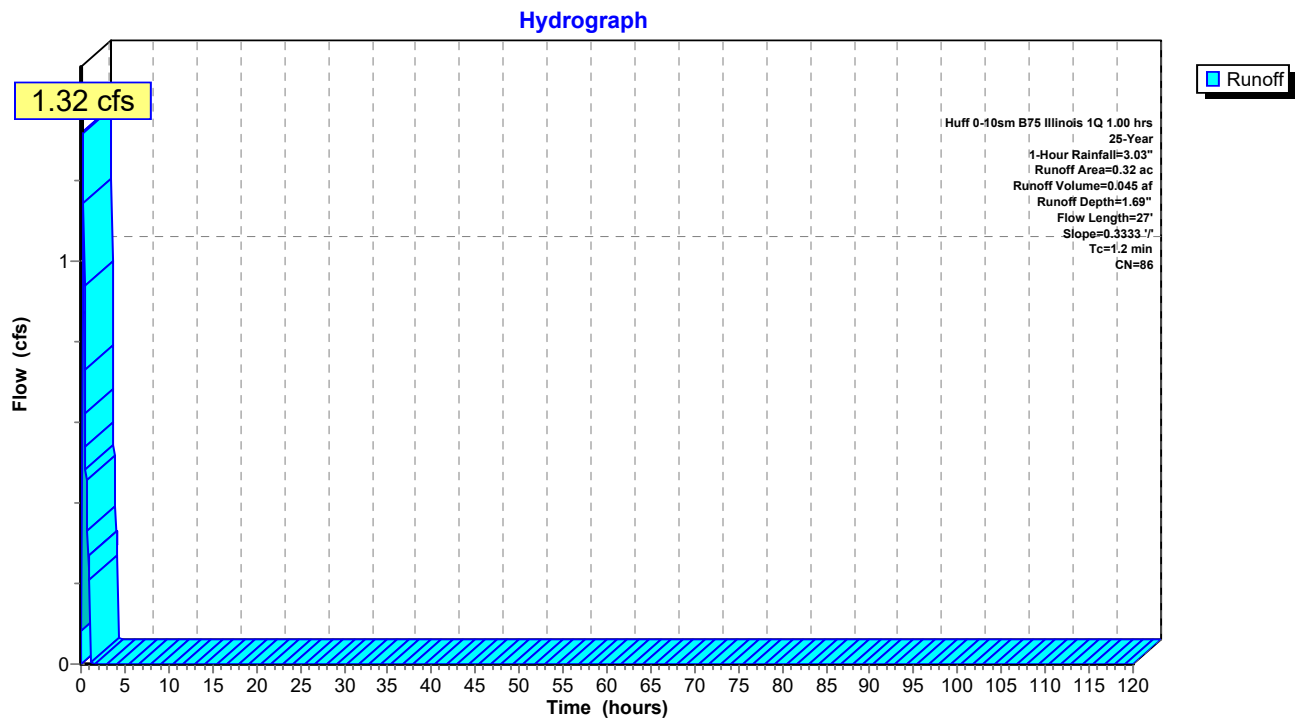
Runoff = 1.32 cfs @ 0.24 hrs, Volume= 0.045 af, Depth= 1.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

Area (ac)	CN	Description
0.17	80	>75% Grass cover, Good, HSG D
* 0.15	93	Paved roads w/open ditches, 50% imp, HSG D
0.32	86	Weighted Average
0.24		75.93% Pervious Area
0.08		24.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	27	0.3333	0.38		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B13: Subcat B13**





**Summary for Subcatchment B14: Subcat B14**

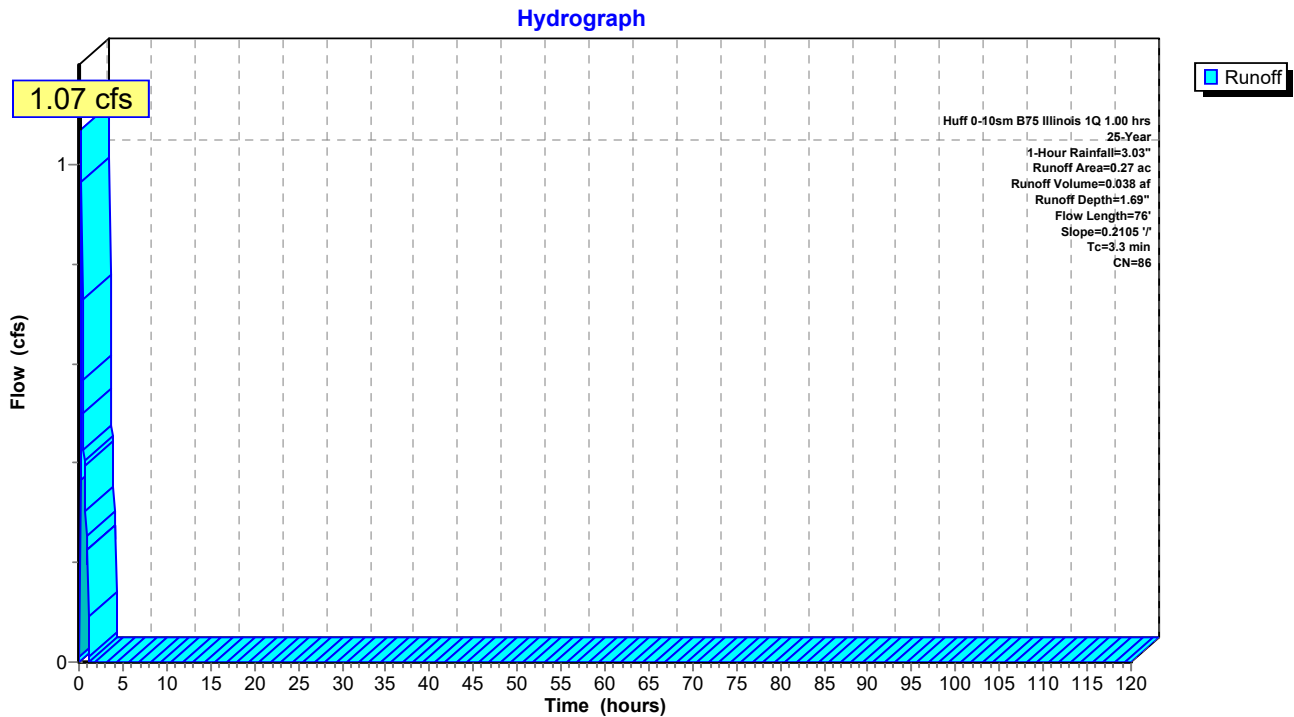
Runoff = 1.07 cfs @ 0.28 hrs, Volume= 0.038 af, Depth= 1.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

Area (ac)	CN	Description
0.14	80	>75% Grass cover, Good, HSG D
0.13	93	Paved roads w/open ditches, 50% imp, HSG D
0.27	86	Weighted Average
0.21		76.49% Pervious Area
0.06		23.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	76	0.2105	0.39		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B14: Subcat B14**



**Summary for Subcatchment B2: Subcat B2**

Runoff = 7.40 cfs @ 0.34 hrs, Volume= 0.291 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

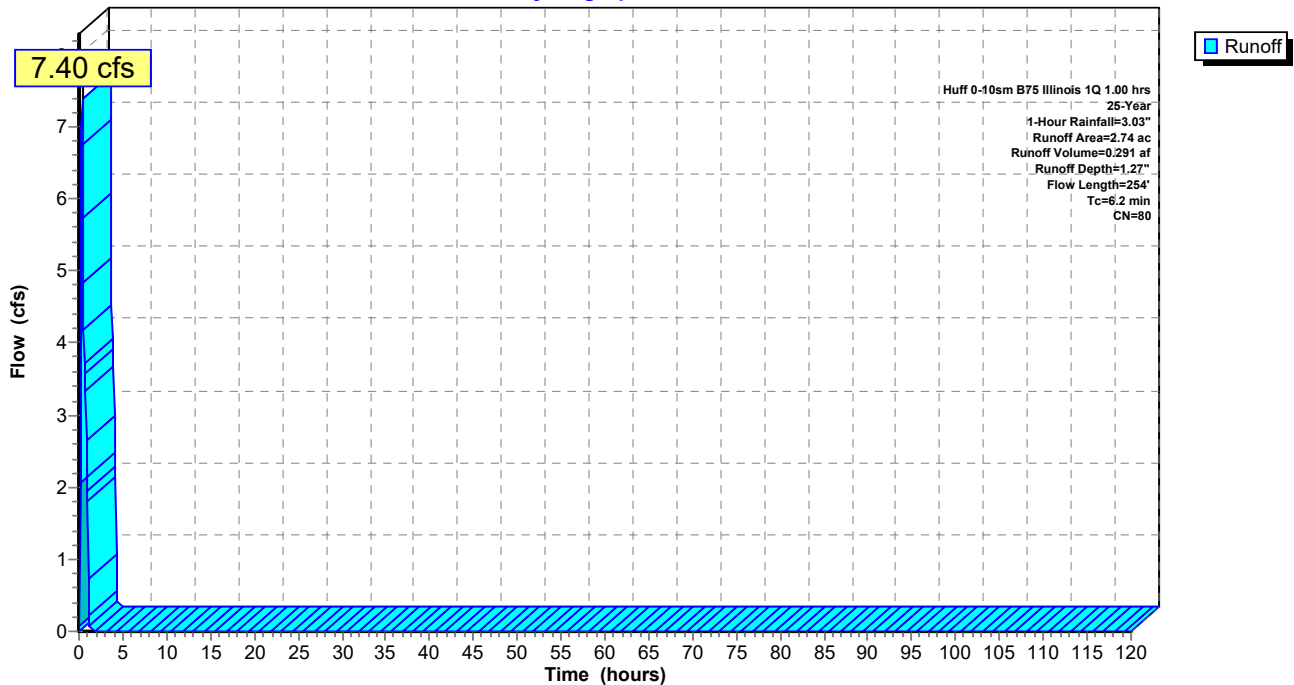
Area (ac)	CN	Description
2.74	80	>75% Grass cover, Good, HSG D
2.74		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.7	154	0.2403	3.43		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.2	254	Total			

**Subcatchment B2: Subcat B2**

Hydrograph



**Summary for Subcatchment B3: Subcat B3**

Runoff = 6.34 cfs @ 0.31 hrs, Volume= 0.234 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

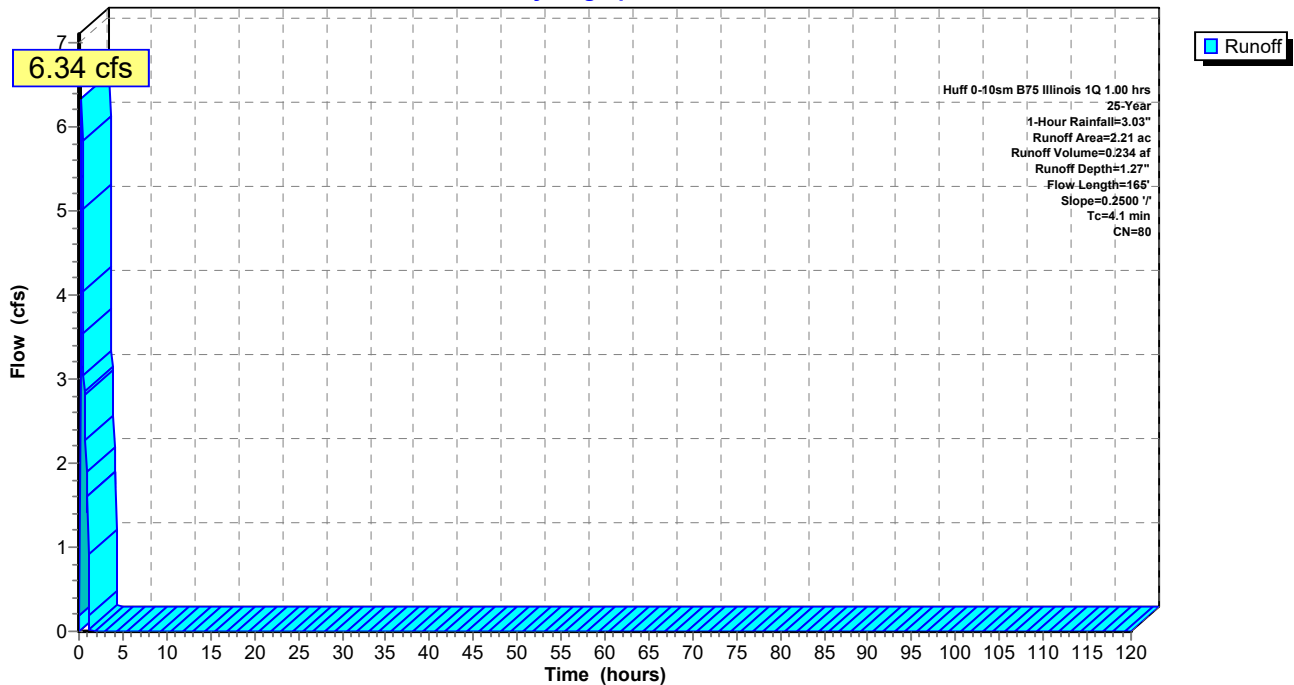
Area (ac)	CN	Description
2.21	80	>75% Grass cover, Good, HSG D
2.21		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.3	65	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	165	Total			

**Subcatchment B3: Subcat B3**

Hydrograph



**Summary for Subcatchment B4: Subcat B4**

Runoff = 5.36 cfs @ 0.31 hrs, Volume= 0.198 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

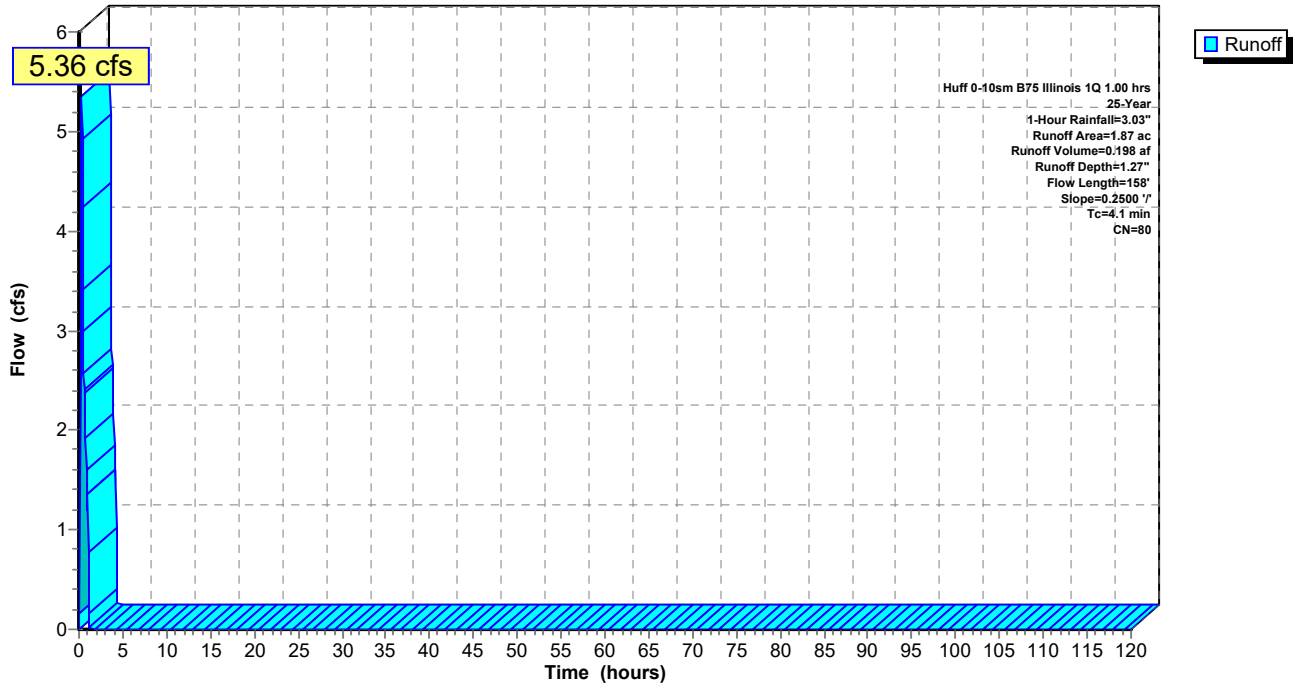
Area (ac)	CN	Description
1.87	80	>75% Grass cover, Good, HSG D
1.87		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.3	58	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	158	Total			

**Subcatchment B4: Subcat B4**

Hydrograph



**Summary for Subcatchment B5: Subcat B5**

Runoff = 5.60 cfs @ 0.30 hrs, Volume= 0.205 af, Depth= 1.27"

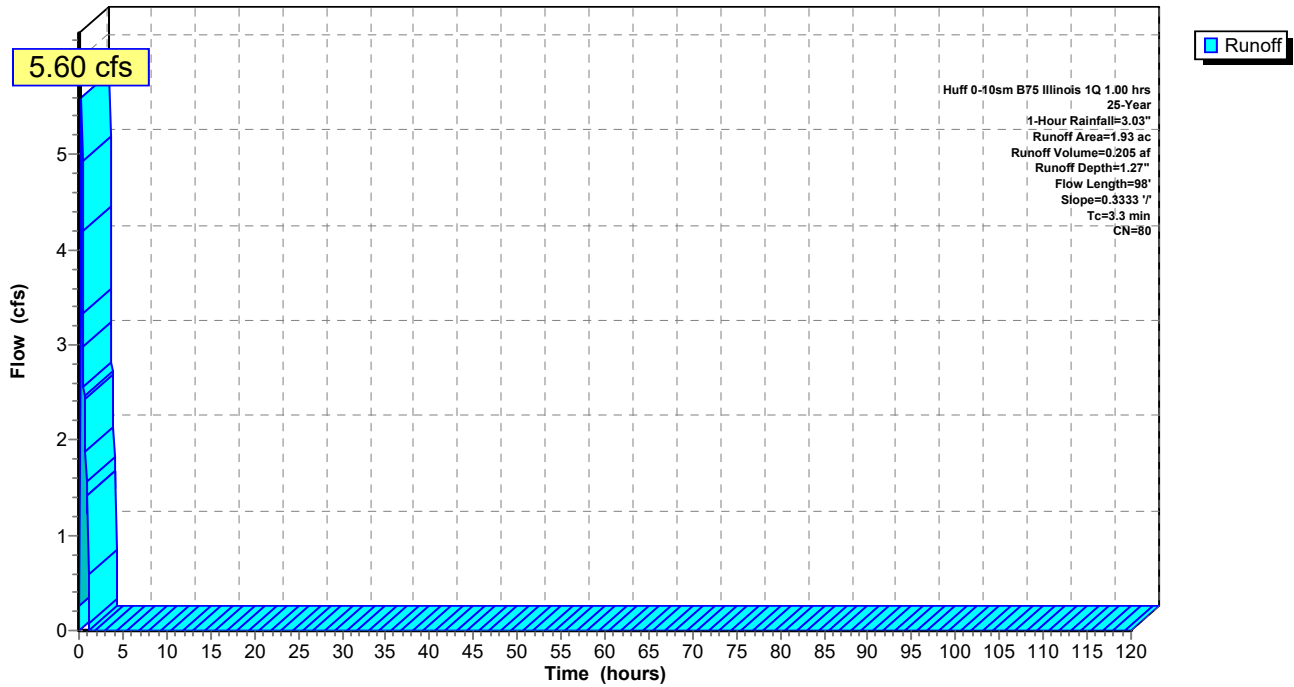
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

Area (ac)	CN	Description
1.93	80	>75% Grass cover, Good, HSG D
1.93		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	98	0.3333	0.49		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B5: Subcat B5**

Hydrograph



**Summary for Subcatchment B6: Subcat B6**

Runoff = 3.40 cfs @ 0.30 hrs, Volume= 0.125 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

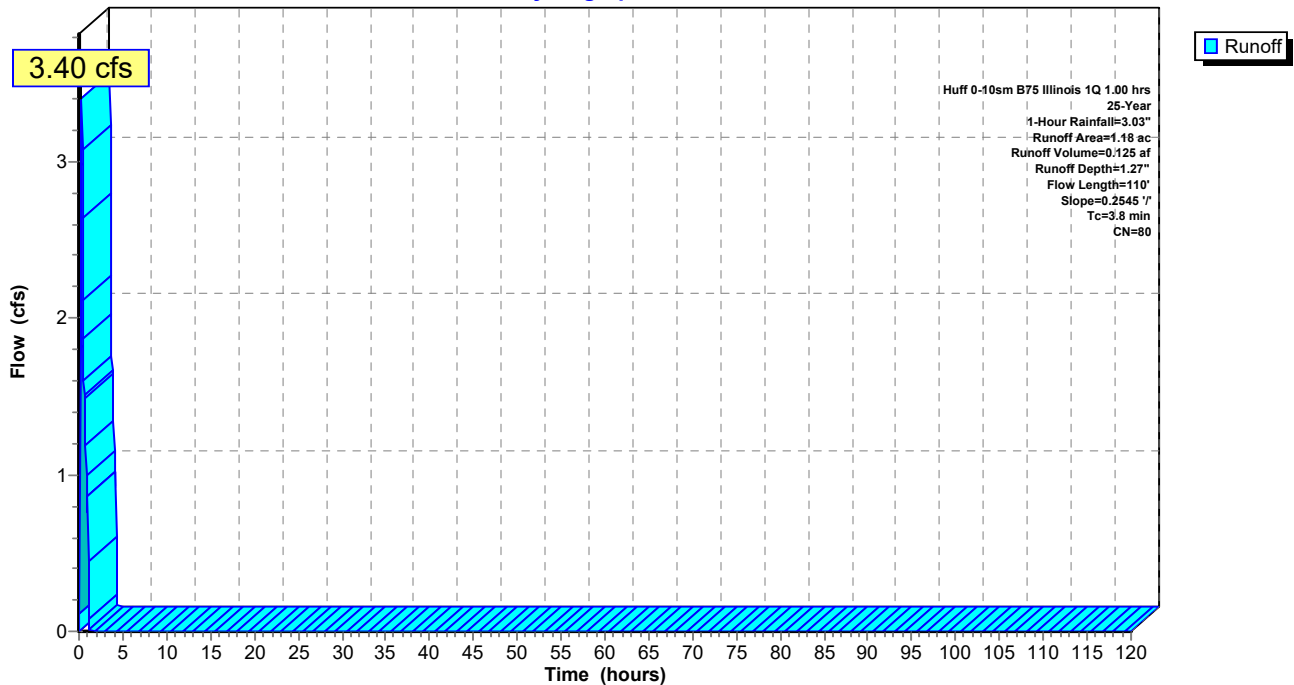
Area (ac)	CN	Description
1.18	80	>75% Grass cover, Good, HSG D
1.18		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2545	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.0	10	0.2545	3.53		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.8	110	Total			

**Subcatchment B6: Subcat B6**

Hydrograph



**Summary for Subcatchment B7: Subcat B7**

Runoff = 6.36 cfs @ 0.30 hrs, Volume= 0.232 af, Depth= 1.27"

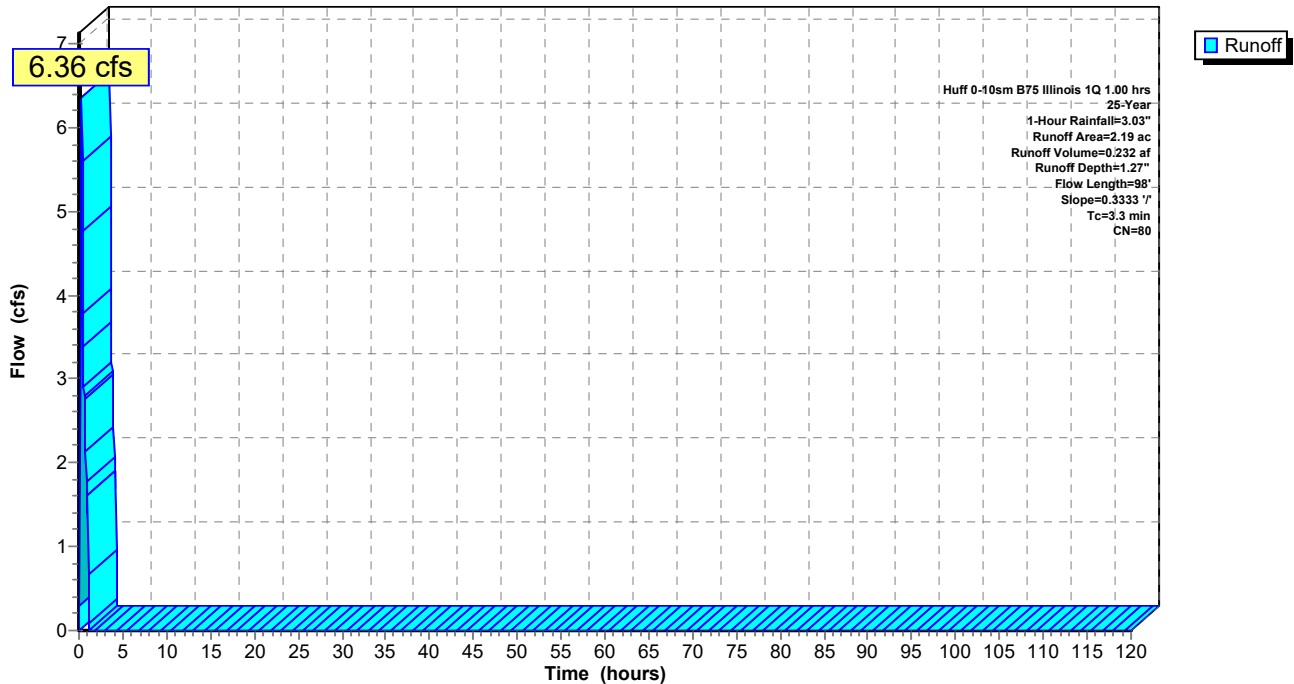
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

Area (ac)	CN	Description
2.19	80	>75% Grass cover, Good, HSG D
2.19		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	98	0.3333	0.49		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B7: Subcat B7**

Hydrograph



**Summary for Subcatchment B8: Subcat B8**

Runoff = 3.39 cfs @ 0.30 hrs, Volume= 0.124 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

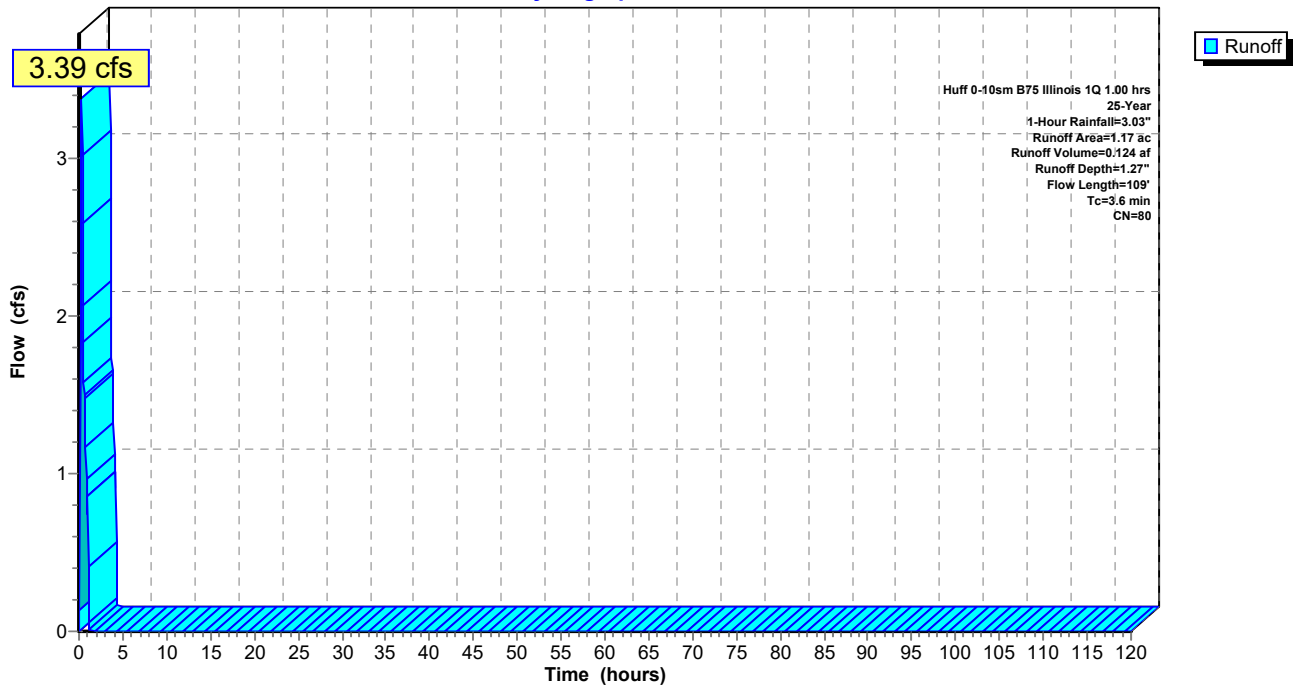
Area (ac)	CN	Description
1.17	80	>75% Grass cover, Good, HSG D
1.17		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	100	0.2873	0.46		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.0	9	0.2574	3.55		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.6	109	Total			

**Subcatchment B8: Subcat B8**

Hydrograph





**Summary for Subcatchment B9A: Subcat B9A**

Runoff = 4.18 cfs @ 0.28 hrs, Volume= 0.152 af, Depth= 1.27"

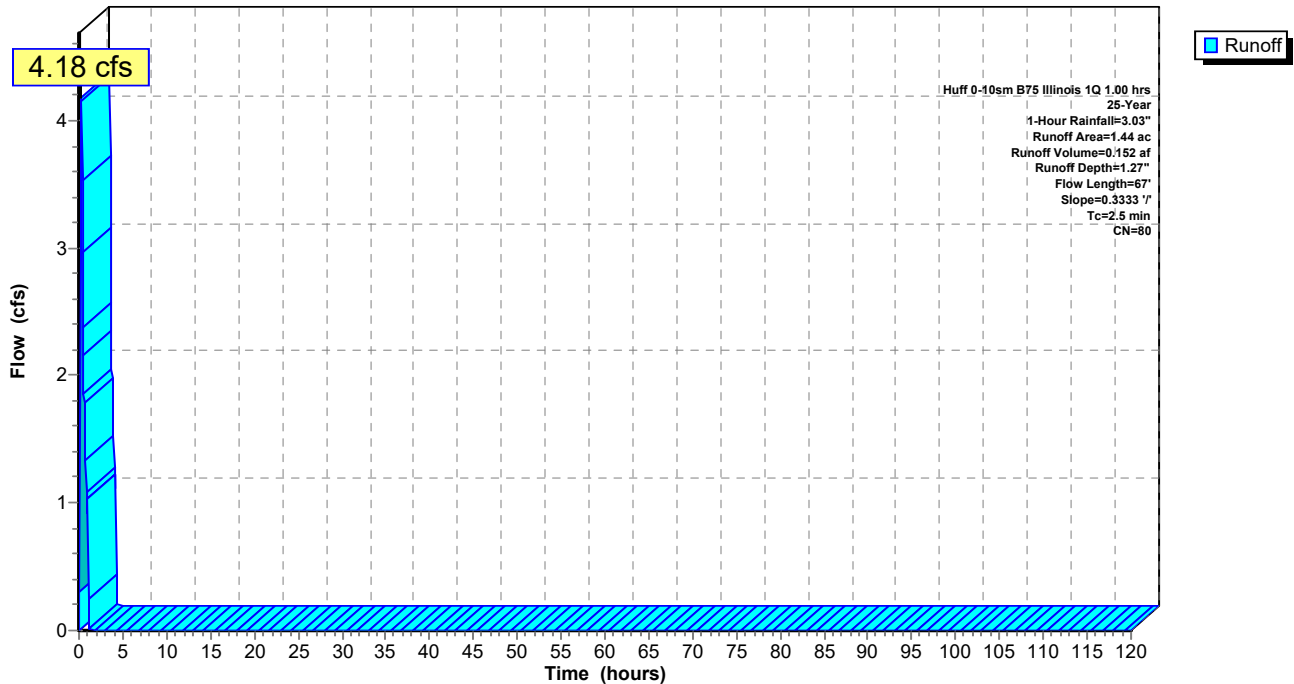
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

Area (ac)	CN	Description
1.44	80	>75% Grass cover, Good, HSG D
1.44		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	67	0.3333	0.45		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B9A: Subcat B9A**

Hydrograph



**Summary for Subcatchment B9B: Subcat B9B**

Runoff = 1.80 cfs @ 0.27 hrs, Volume= 0.065 af, Depth= 1.27"

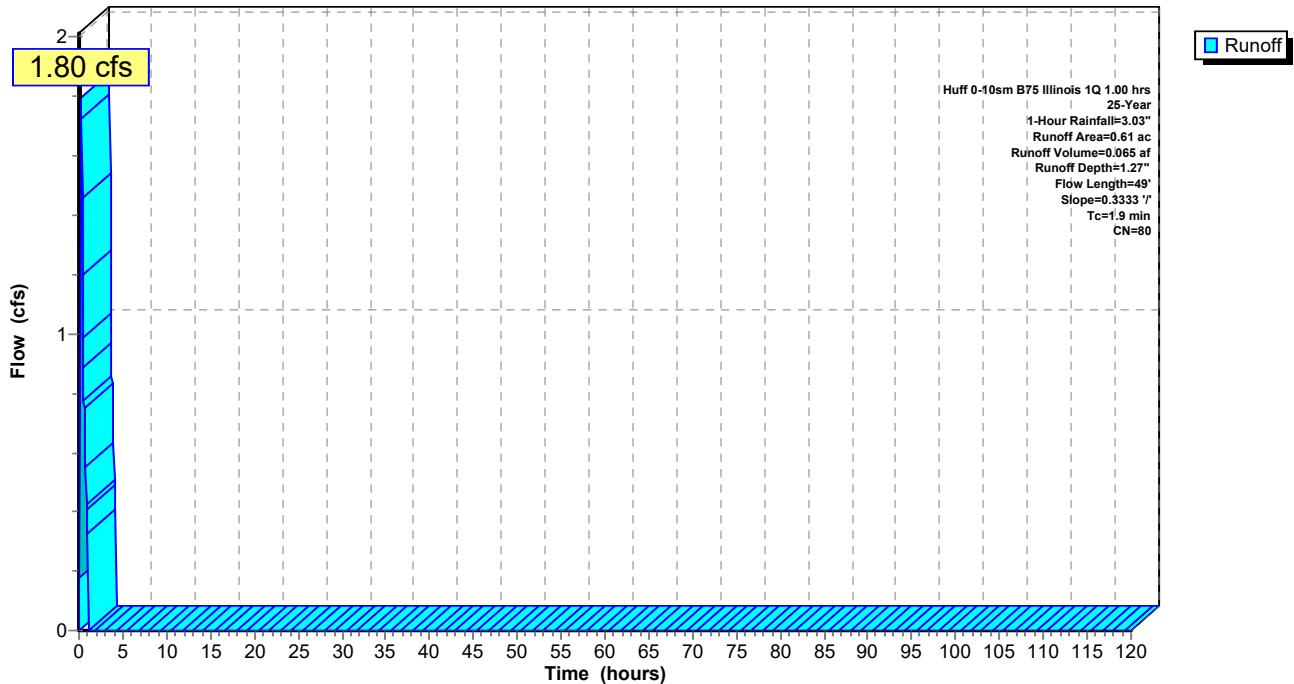
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

Area (ac)	CN	Description
0.61	80	>75% Grass cover, Good, HSG D
0.61		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	49	0.3333	0.43		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B9B: Subcat B9B**

Hydrograph



**Summary for Subcatchment D1: Subcat D1**

Runoff = 3.37 cfs @ 0.35 hrs, Volume= 0.133 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

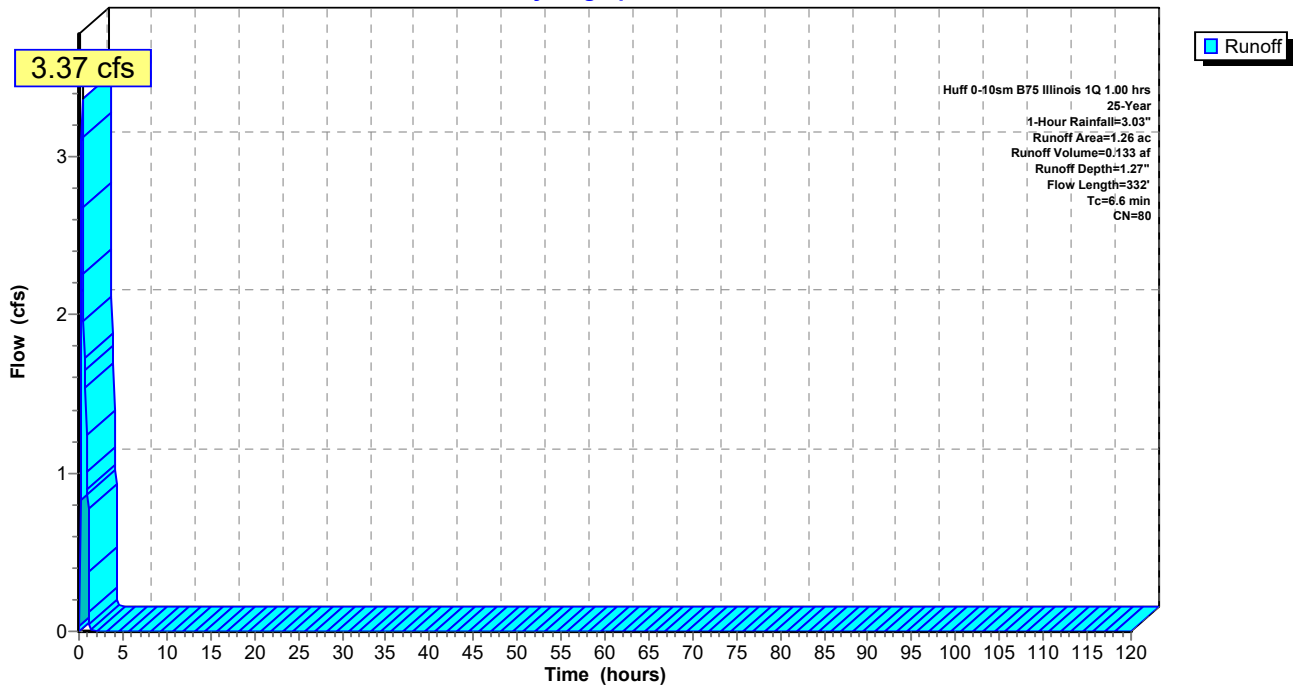
Area (ac)	CN	Description
1.26	80	>75% Grass cover, Good, HSG D
1.26		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.1	232	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.6	332	Total			

**Subcatchment D1: Subcat D1**

Hydrograph



**Summary for Subcatchment D3: Subcat D3**

Runoff = 3.79 cfs @ 0.31 hrs, Volume= 0.141 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

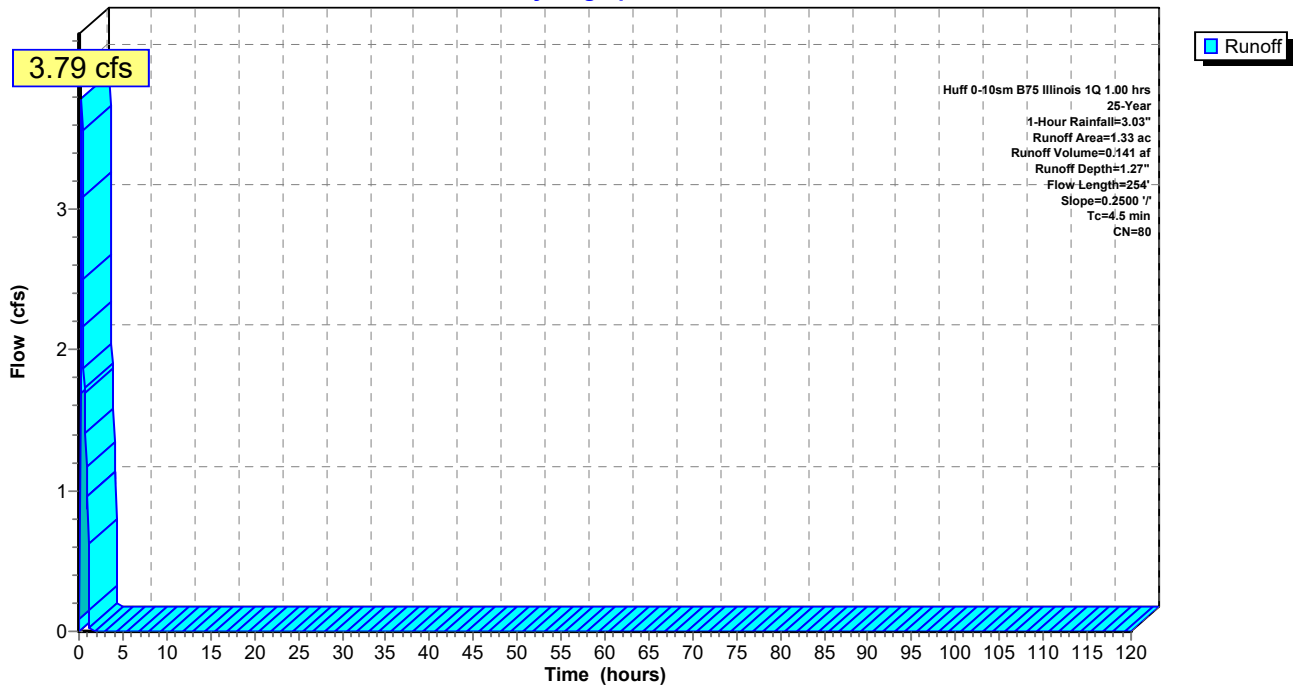
Area (ac)	CN	Description
1.33	80	>75% Grass cover, Good, HSG D
1.33		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.7	154	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.5	254	Total			

**Subcatchment D3: Subcat D3**

Hydrograph



**Summary for Subcatchment D5A: Subcat D5A**

Runoff = 3.23 cfs @ 0.31 hrs, Volume= 0.120 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

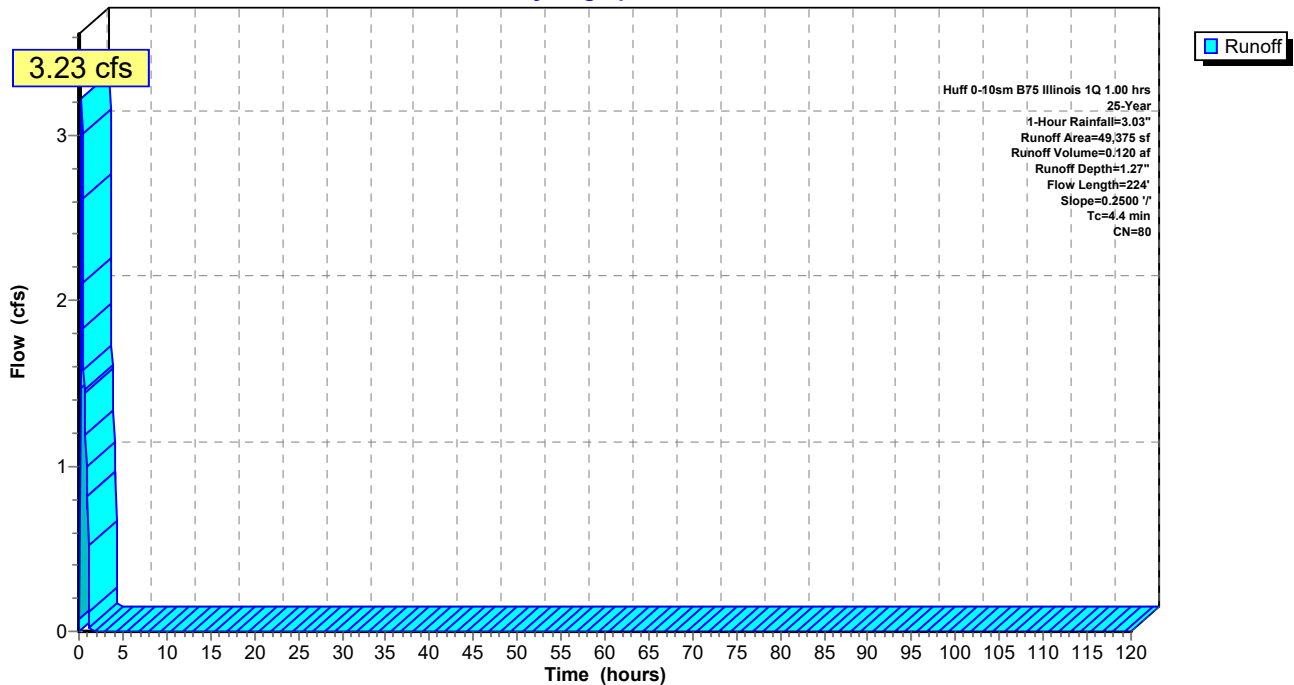
Area (sf)	CN	Description
49,375	80	>75% Grass cover, Good, HSG D
49,375		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	124	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.4	224	Total			

**Subcatchment D5A: Subcat D5A**

Hydrograph



**Summary for Subcatchment D5B: Subcat D5B**

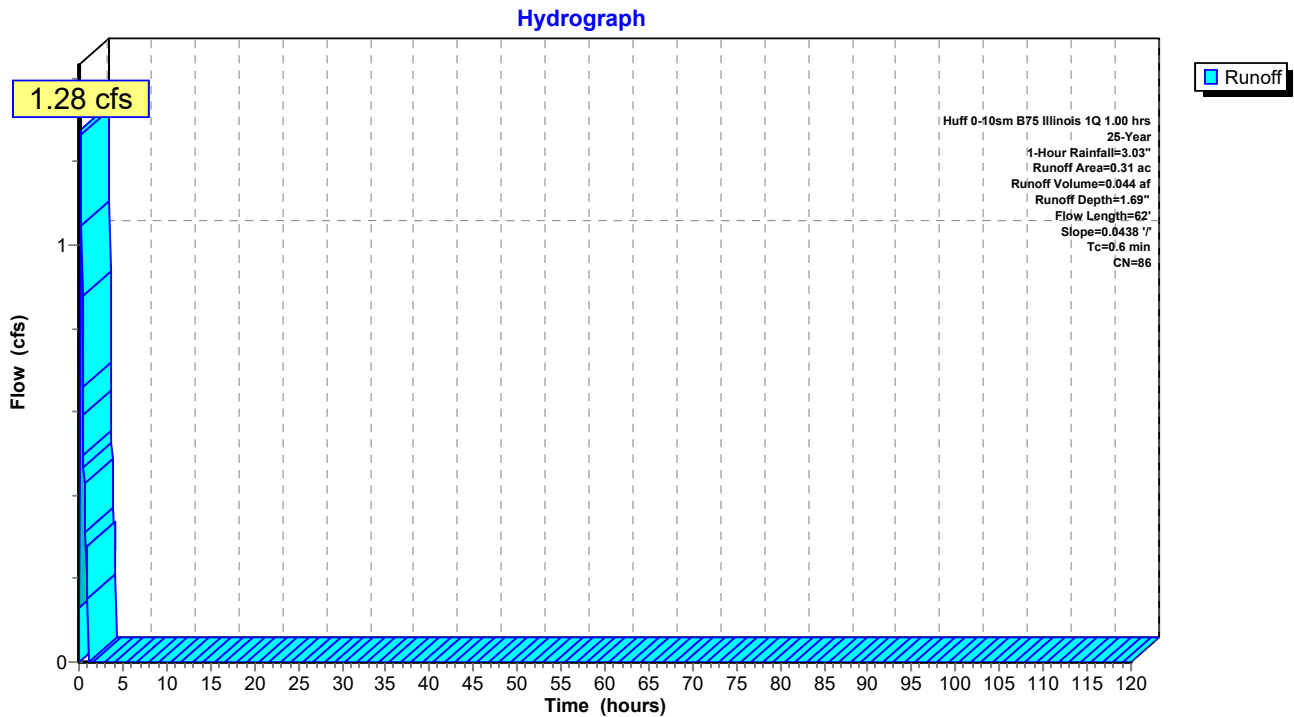
Runoff = 1.28 cfs @ 0.23 hrs, Volume= 0.044 af, Depth= 1.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

Area (ac)	CN	Description
0.16	80	>75% Grass cover, Good, HSG D
0.15	93	Paved roads w/open ditches, 50% imp, HSG D
0.31	86	Weighted Average
0.23		75.32% Pervious Area
0.08		24.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	62	0.0438	1.60		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment D5B: Subcat D5B**



**Summary for Subcatchment DT: Subcat Drain Tile**

Runoff = 36.89 cfs @ 0.31 hrs, Volume= 1.357 af, Depth= 1.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

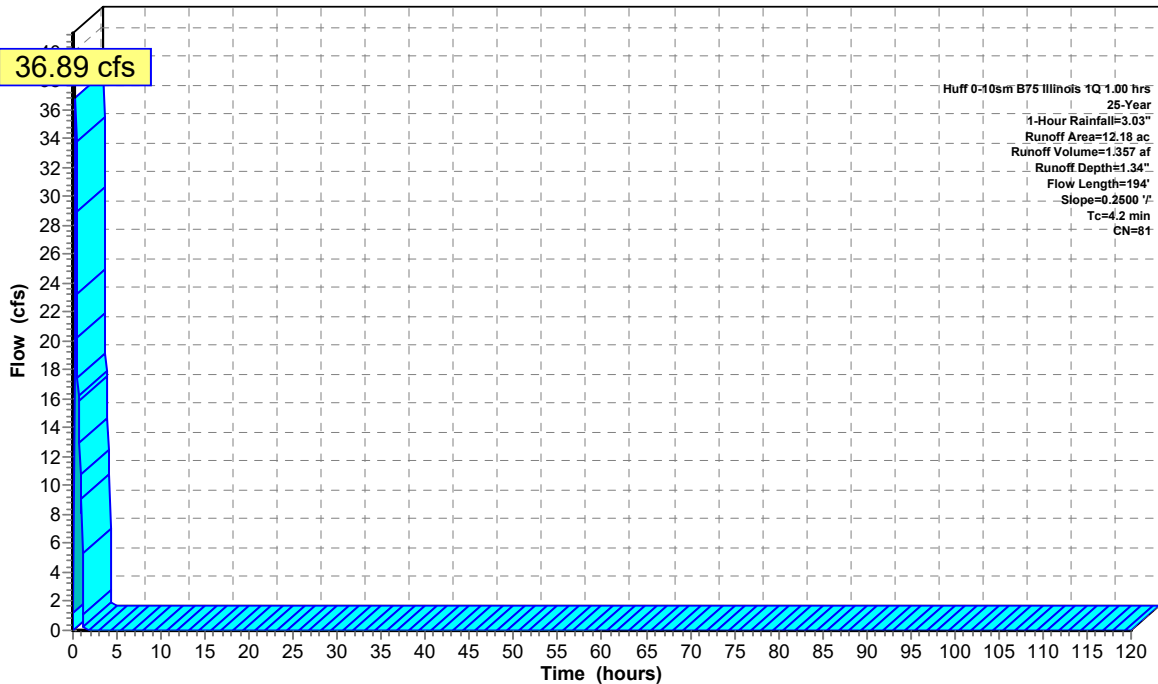
Area (ac)	CN	Description
7.38	80	>75% Grass cover, Good, HSG D
4.80	82	Woods/grass comb., Fair, HSG D
12.18	81	Weighted Average
12.18		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.4	94	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.2	194	Total			

**Subcatchment DT: Subcat Drain Tile**

Hydrograph



**Summary for Subcatchment E1: Subcat E1**

Runoff = 3.81 cfs @ 0.35 hrs, Volume= 0.151 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

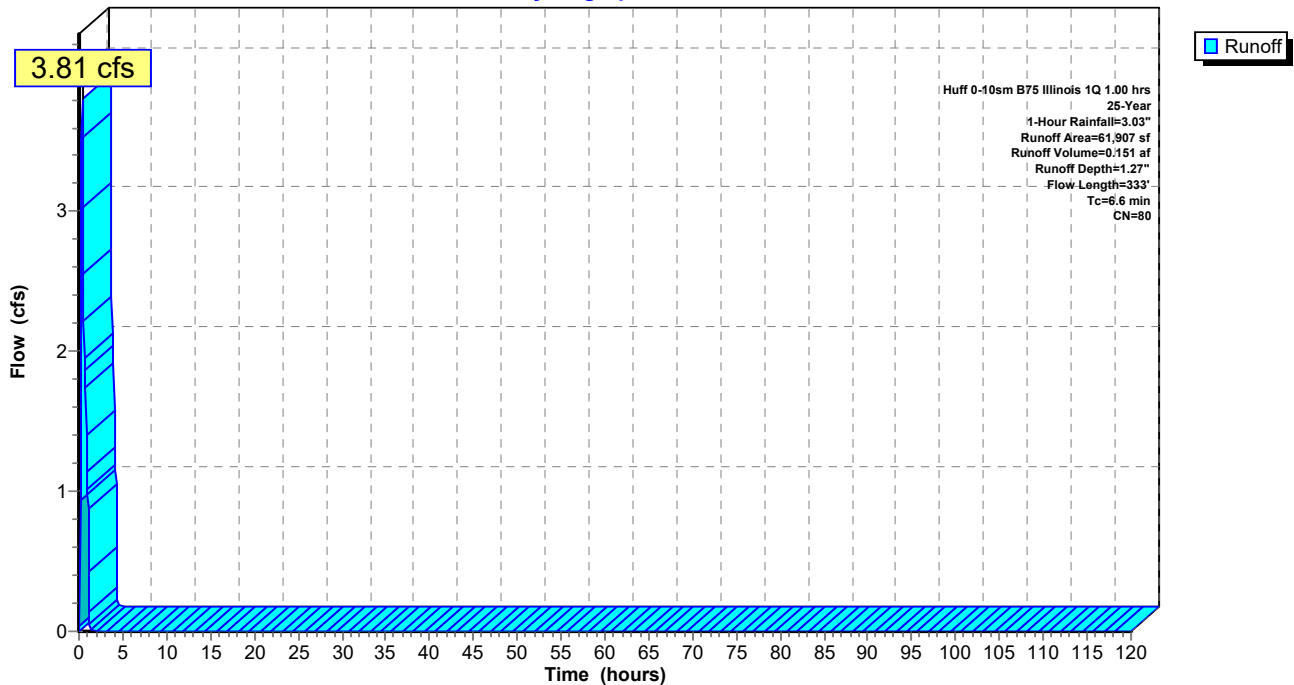
Area (sf)	CN	Description
61,907	80	>75% Grass cover, Good, HSG D
61,907		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.1	233	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.6	333	Total			

**Subcatchment E1: Subcat E1**

Hydrograph





**Summary for Subcatchment E2: Subcat E2**

Runoff = 8.01 cfs @ 0.31 hrs, Volume= 0.299 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

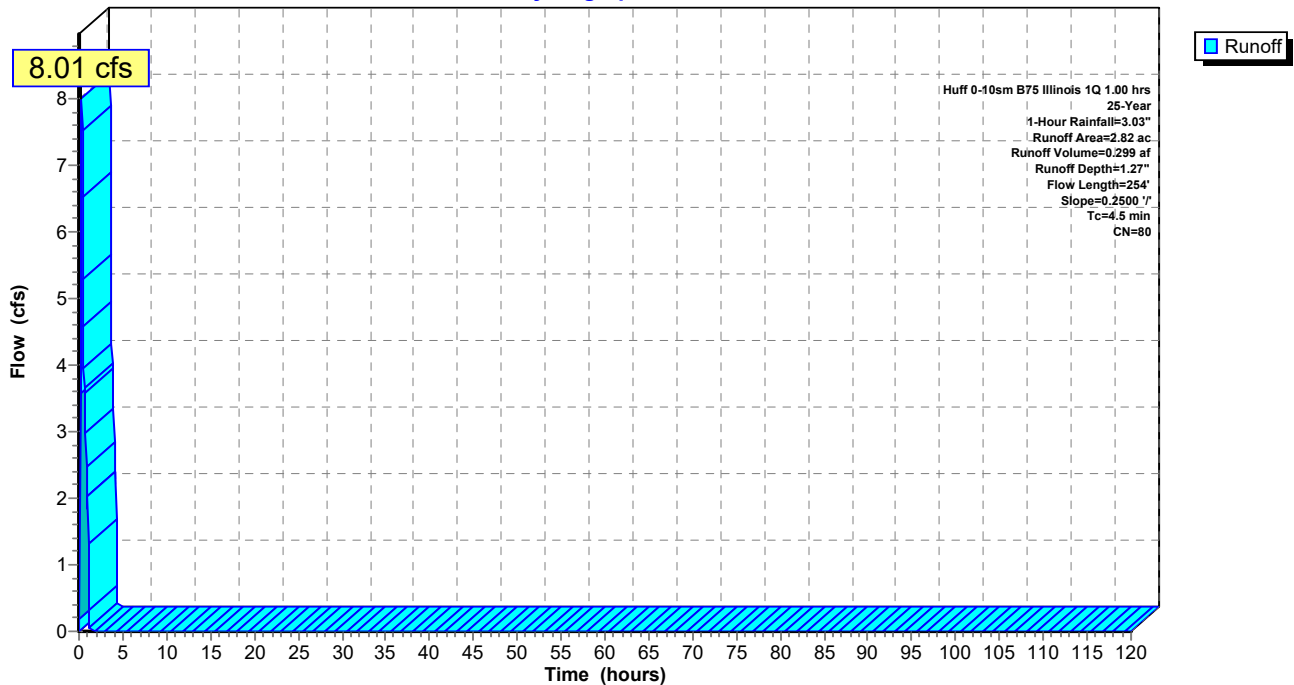
Area (ac)	CN	Description
2.82	80	>75% Grass cover, Good, HSG D
2.82		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.7	154	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.5	254	Total			

**Subcatchment E2: Subcat E2**

Hydrograph



**Summary for Subcatchment E3A: Subcat E3A**

Runoff = 9.33 cfs @ 0.31 hrs, Volume= 0.347 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

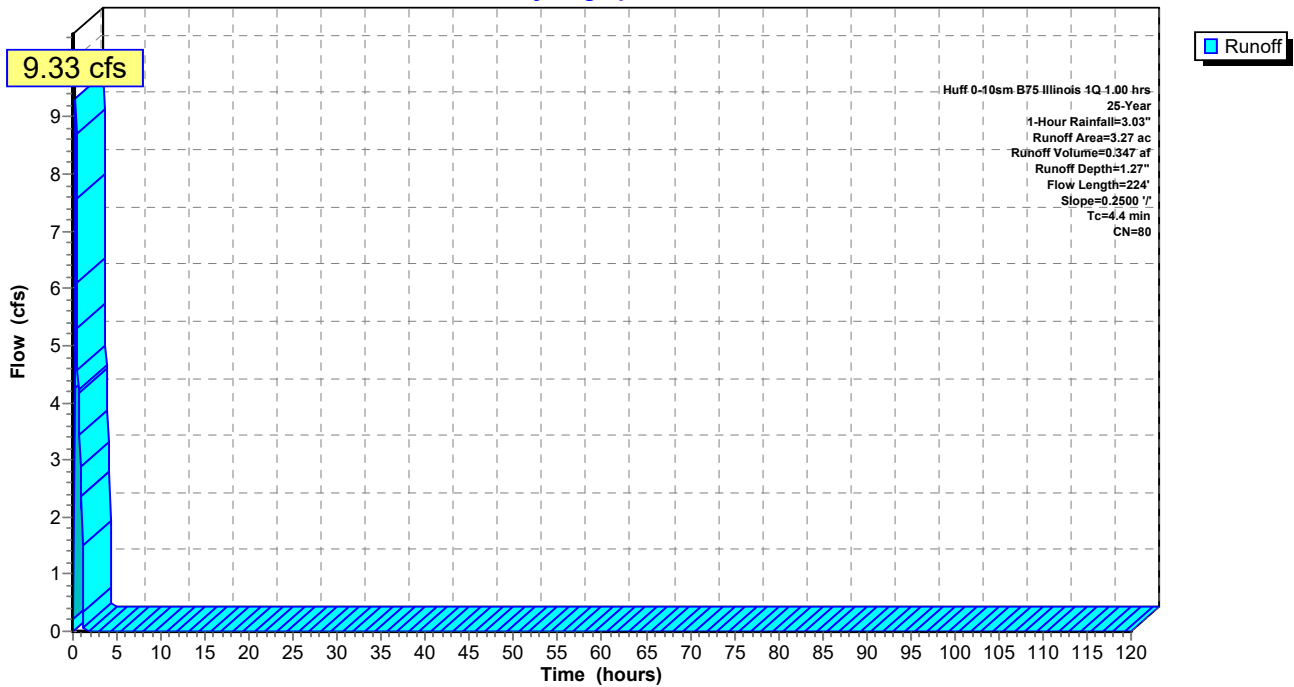
Area (ac)	CN	Description
3.27	80	>75% Grass cover, Good, HSG D
3.27		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	124	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.4	224	Total			

**Subcatchment E3A: Subcat E3A**

Hydrograph



**Summary for Subcatchment E3B: Subcat E3B**

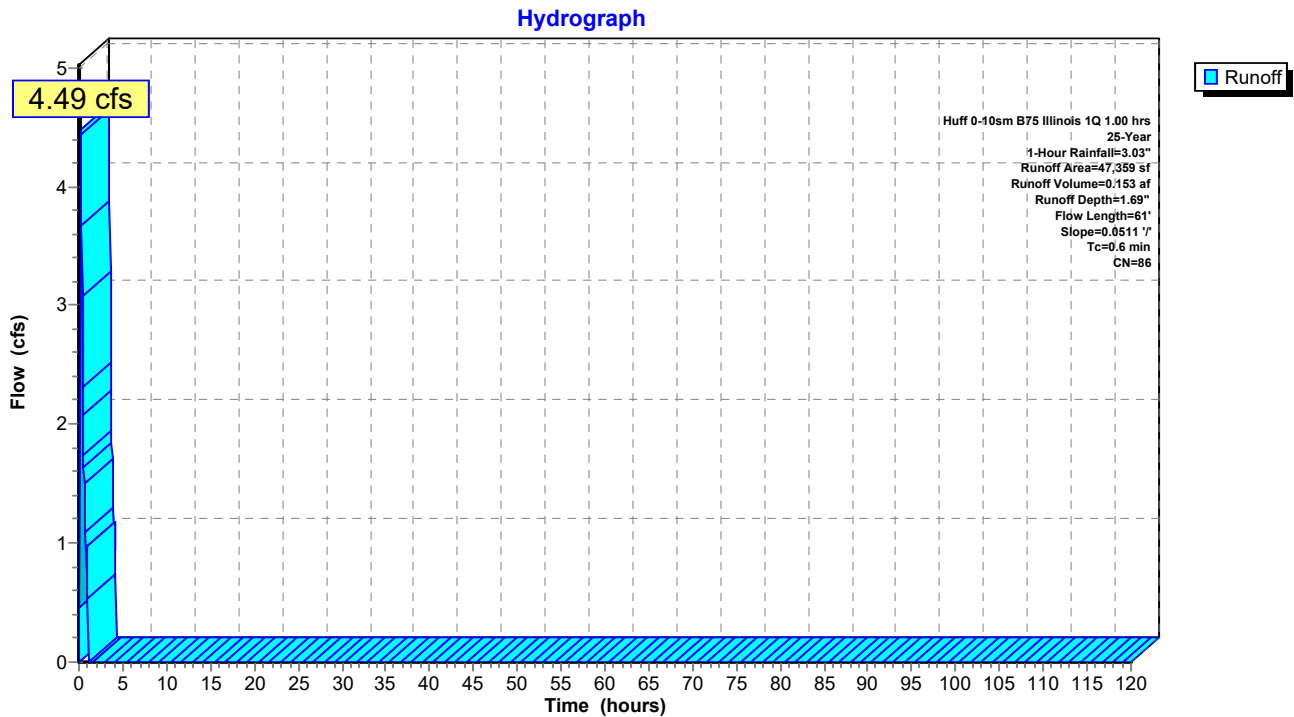
Runoff = 4.49 cfs @ 0.23 hrs, Volume= 0.153 af, Depth= 1.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

Area (sf)	CN	Description
23,741	80	>75% Grass cover, Good, HSG D
23,618	93	Paved roads w/open ditches, 50% imp, HSG D
47,359	86	Weighted Average
35,550		75.06% Pervious Area
11,809		24.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	61	0.0511	1.70		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment E3B: Subcat E3B**



**Summary for Subcatchment H1: Subcat H1**

Runoff = 5.33 cfs @ 0.35 hrs, Volume= 0.210 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

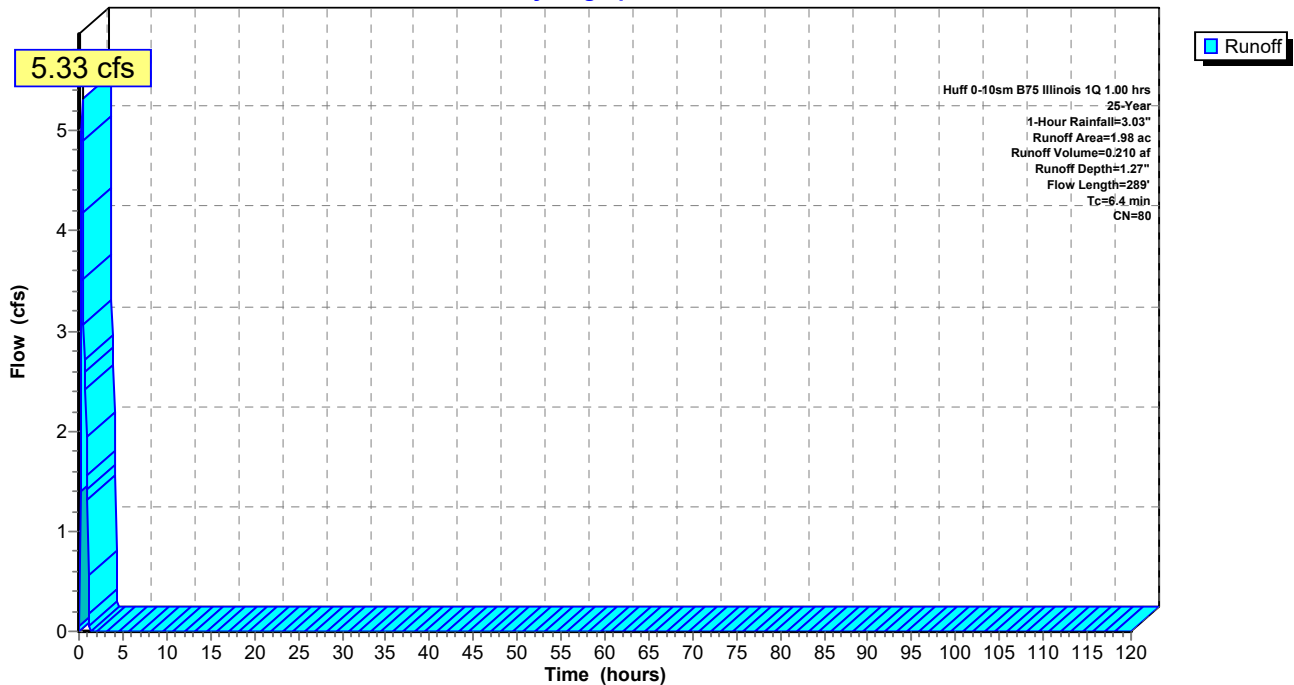
Area (ac)	CN	Description
1.98	80	>75% Grass cover, Good, HSG D
1.98		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.9	189	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.4	289	Total			

**Subcatchment H1: Subcat H1**

Hydrograph



**Summary for Subcatchment H2: Subcat H2**

Runoff = 5.35 cfs @ 0.31 hrs, Volume= 0.198 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

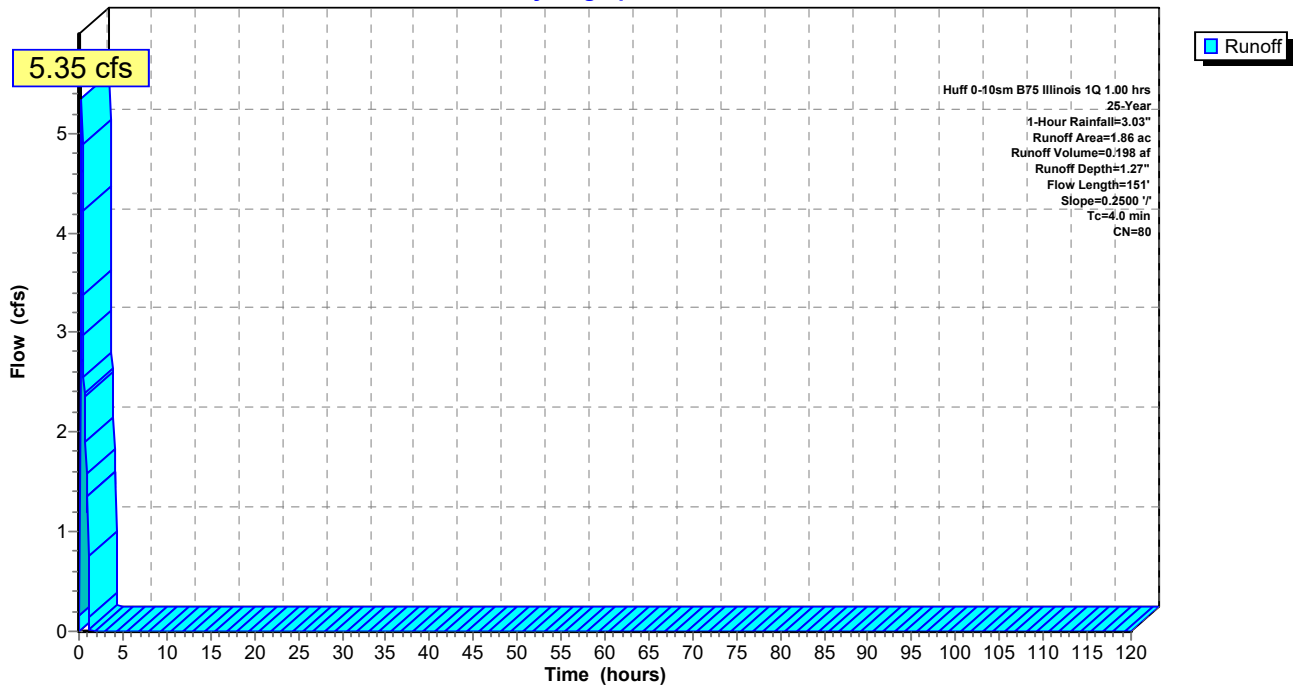
Area (ac)	CN	Description
1.86	80	>75% Grass cover, Good, HSG D
1.86		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	51	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	151	Total			

**Subcatchment H2: Subcat H2**

Hydrograph



**Summary for Subcatchment H3: Subcat H3**

Runoff = 10.18 cfs @ 0.31 hrs, Volume= 0.379 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

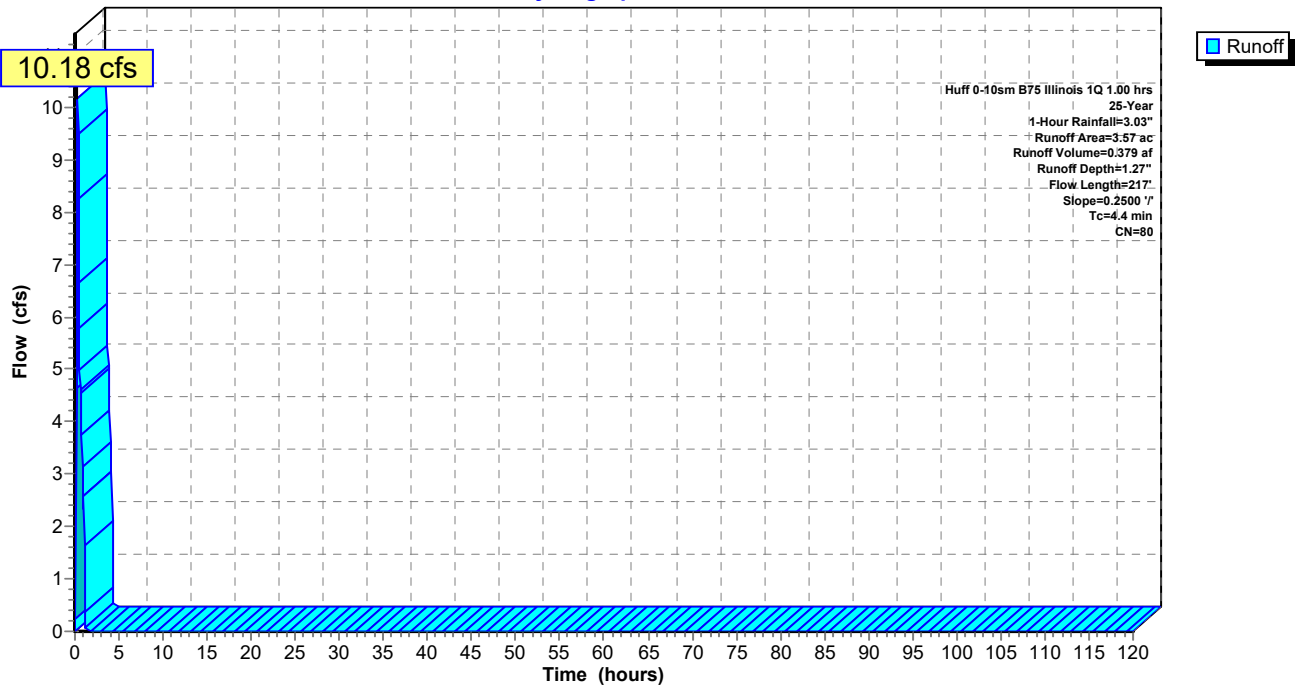
Area (ac)	CN	Description
3.57	80	>75% Grass cover, Good, HSG D
3.57		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	117	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.4	217	Total			

**Subcatchment H3: Subcat H3**

Hydrograph



**Summary for Subcatchment N-A1: Subcat N-A1**

Runoff = 9.67 cfs @ 0.35 hrs, Volume= 0.382 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

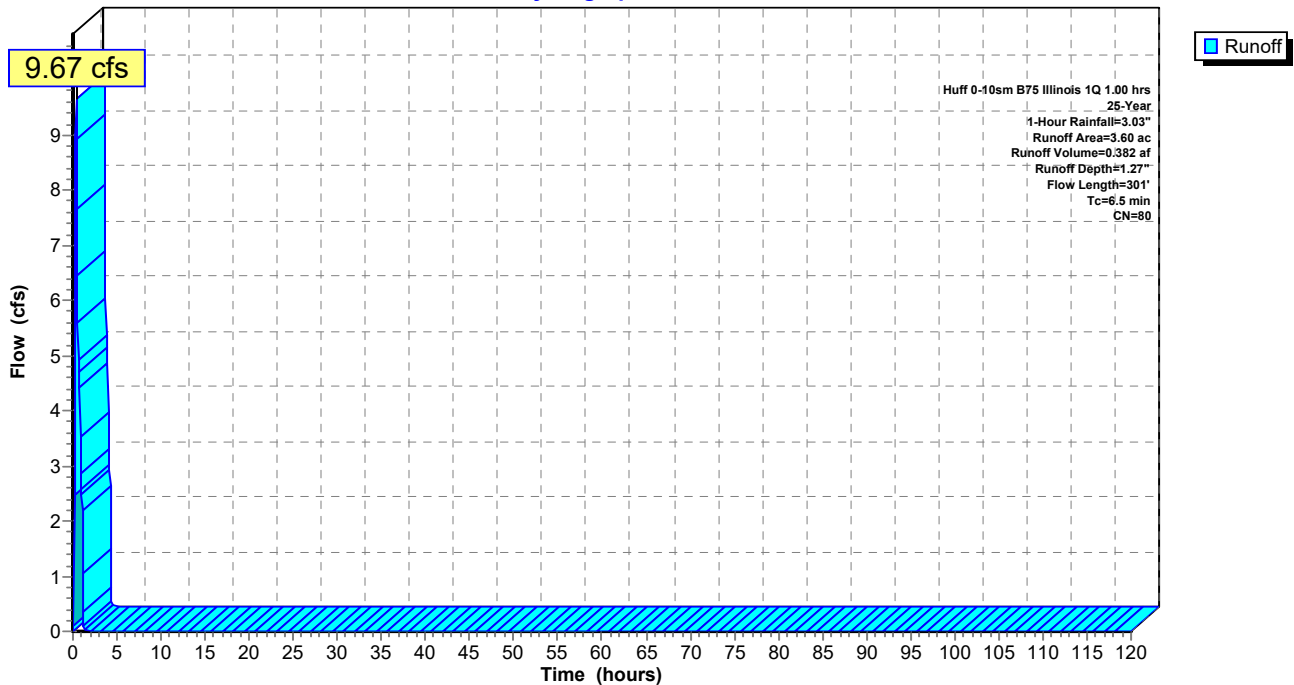
Area (ac)	CN	Description
3.60	80	>75% Grass cover, Good, HSG D
3.60		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.0	201	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.5	301	Total			

**Subcatchment N-A1: Subcat N-A1**

Hydrograph



**Summary for Subcatchment N-A10: Subcat N-A10**

Runoff = 10.85 cfs @ 0.31 hrs, Volume= 0.400 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

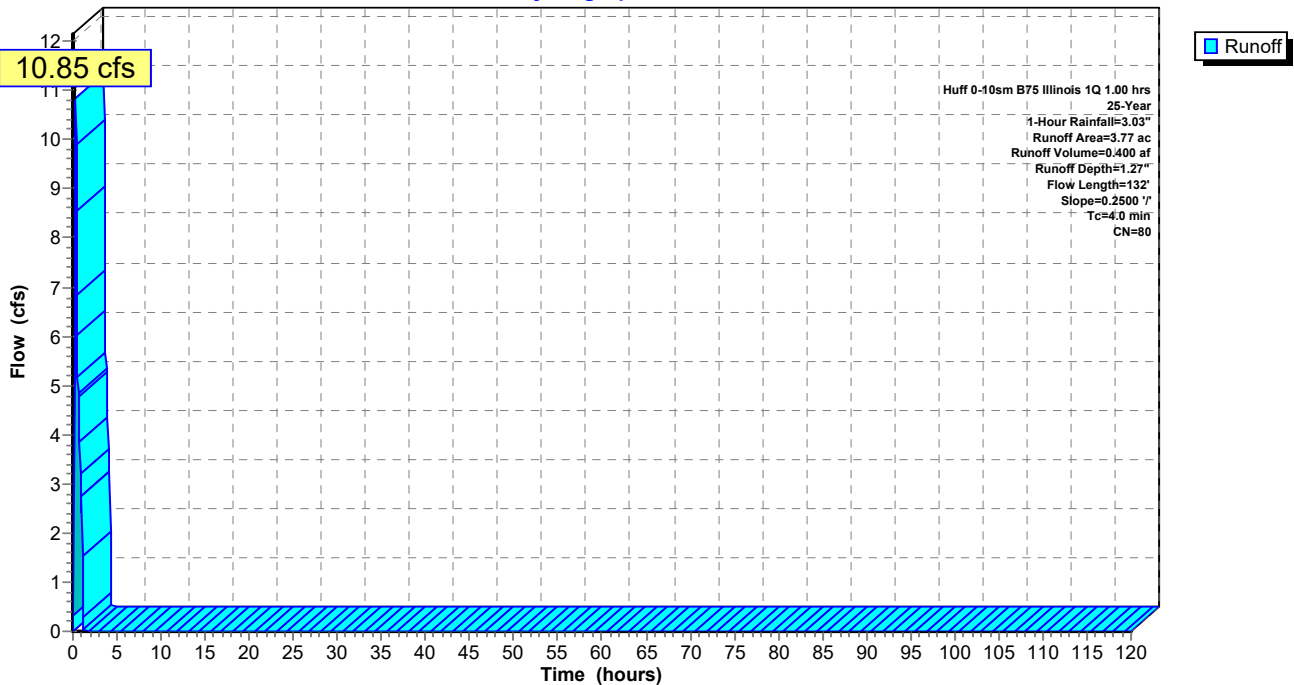
Area (ac)	CN	Description
3.77	80	>75% Grass cover, Good, HSG D
3.77		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	32	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	132	Total			

**Subcatchment N-A10: Subcat N-A10**

Hydrograph





**Summary for Subcatchment N-A11: Subcat N-A11**

Runoff = 5.30 cfs @ 0.30 hrs, Volume= 0.195 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

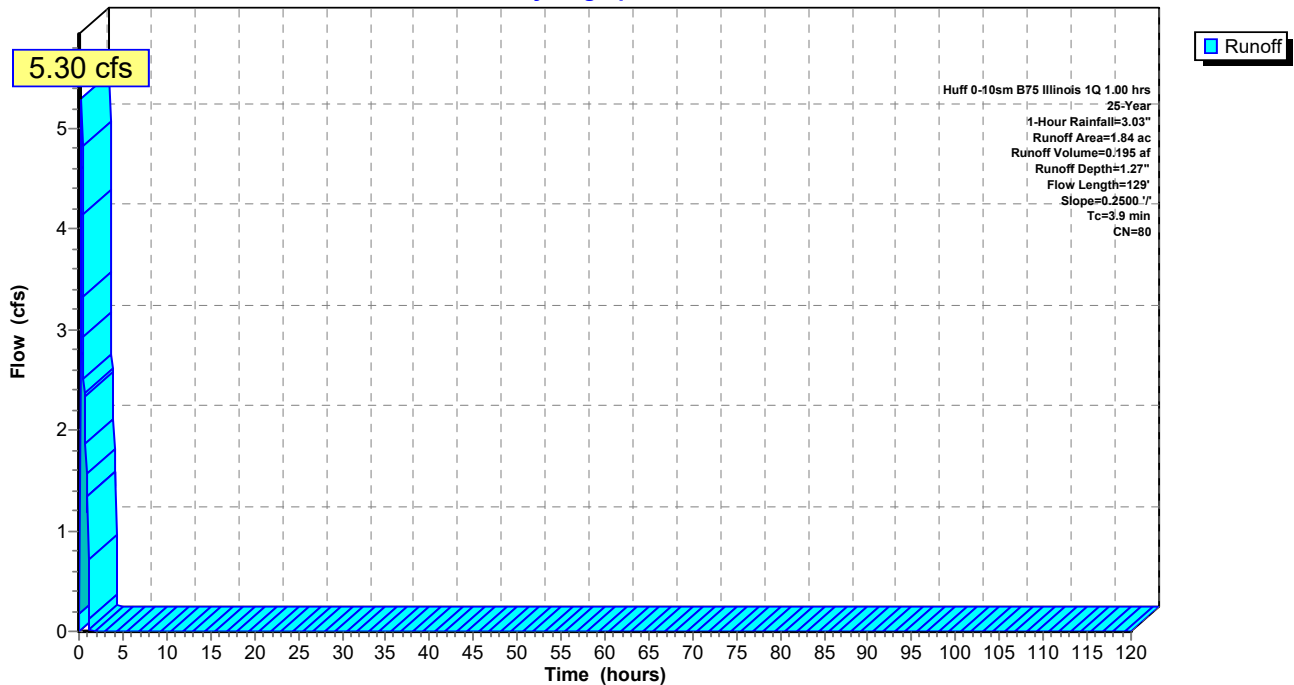
Area (ac)	CN	Description
1.84	80	>75% Grass cover, Good, HSG D
1.84		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	29	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	129	Total			

**Subcatchment N-A11: Subcat N-A11**

Hydrograph



**Summary for Subcatchment N-A12: Subcat N-A12**

Runoff = 8.02 cfs @ 0.30 hrs, Volume= 0.291 af, Depth= 1.47"

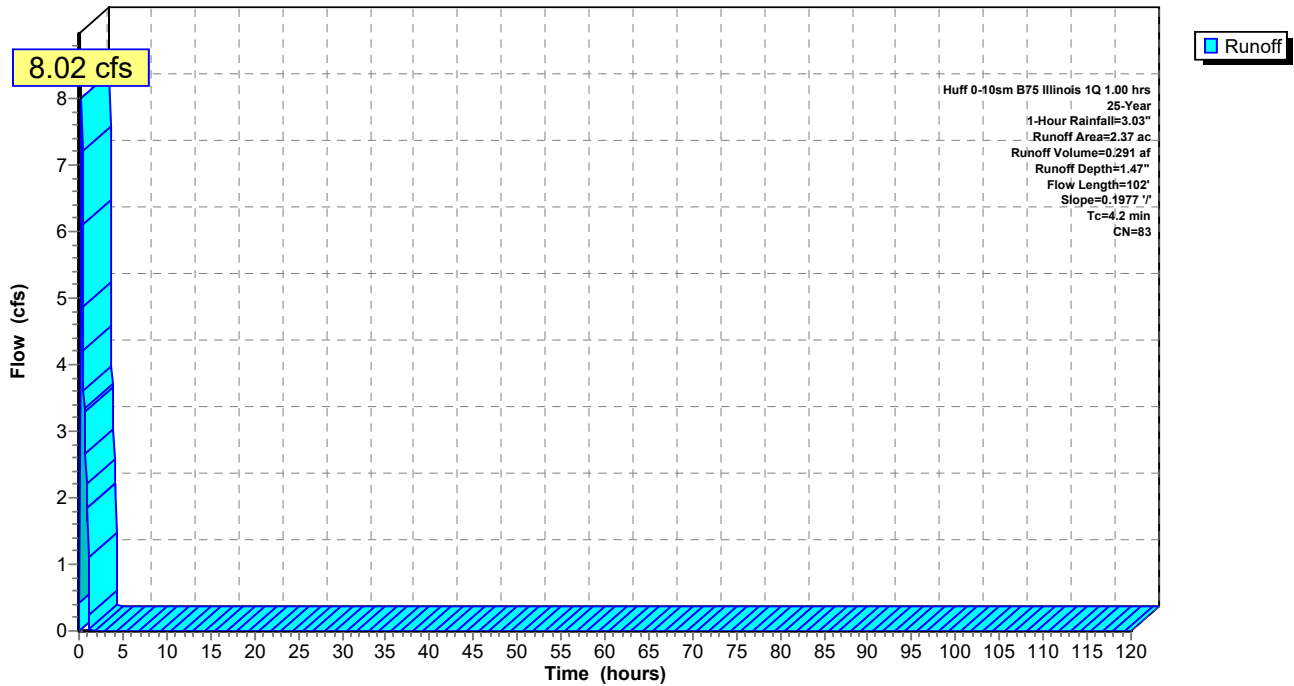
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

Area (ac)	CN	Description
1.74	80	>75% Grass cover, Good, HSG D
0.63	93	Paved roads w/open ditches, 50% imp, HSG D
2.37	83	Weighted Average
2.06		86.69% Pervious Area
0.32		13.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	100	0.1977	0.40		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.0	2	0.1977	3.11		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.2	102	Total			

**Subcatchment N-A12: Subcat N-A12**

Hydrograph



**Summary for Subcatchment N-A13: Subcat N-A13**

Runoff = 3.61 cfs @ 0.30 hrs, Volume= 0.133 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

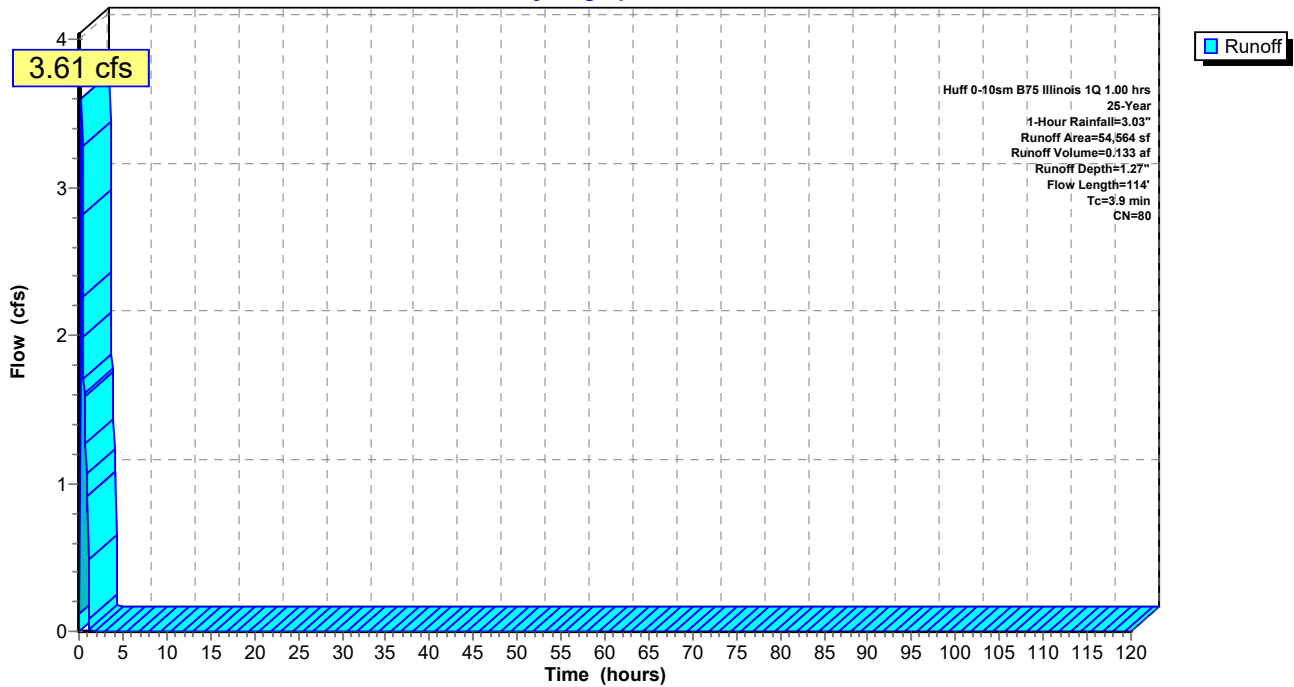
Area (sf)	CN	Description
54,564	80	>75% Grass cover, Good, HSG D
54,564		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	14	0.3210	3.97		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	114	Total			

**Subcatchment N-A13: Subcat N-A13**

Hydrograph



**Summary for Subcatchment N-A14: Subcat N-A14**

Runoff = 4.43 cfs @ 0.30 hrs, Volume= 0.160 af, Depth= 1.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

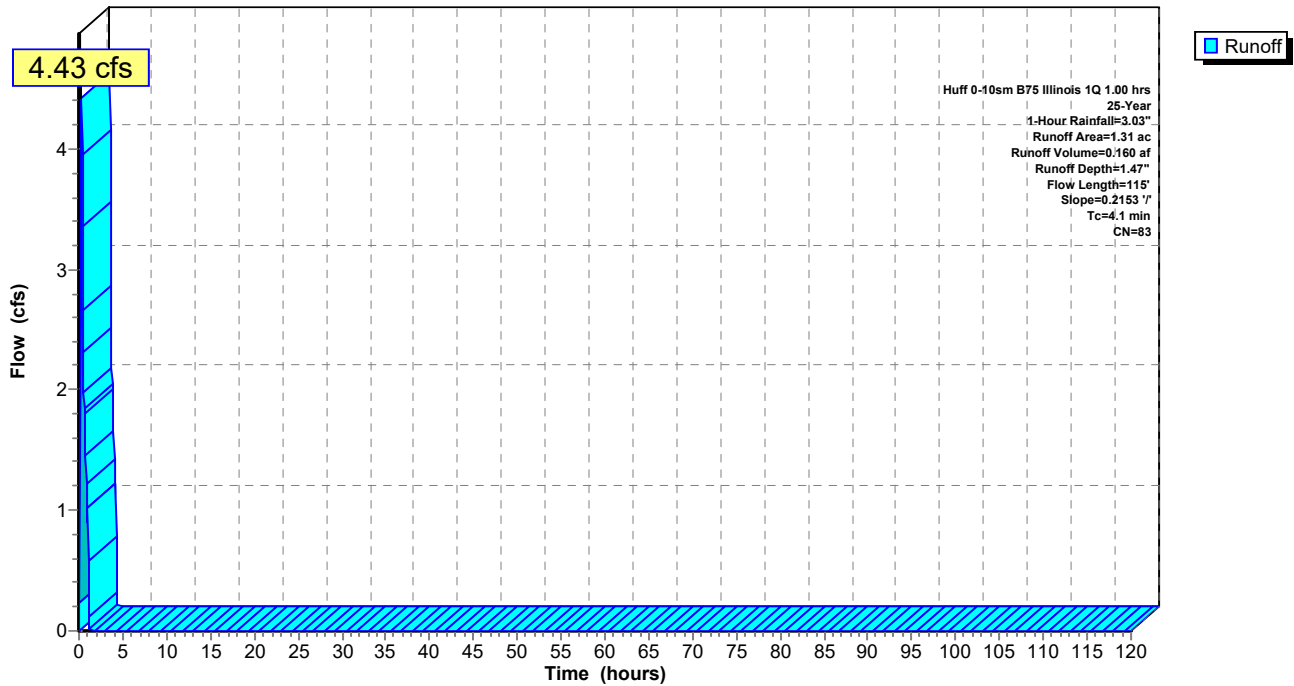
Area (ac)	CN	Description
0.97	80	>75% Grass cover, Good, HSG D
0.34	93	Paved roads w/open ditches, 50% imp, HSG D
1.31	83	Weighted Average
1.14		87.12% Pervious Area
0.17		12.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	100	0.2153	0.41		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	15	0.2153	3.25		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	115	Total			

**Subcatchment N-A14: Subcat N-A14**

Hydrograph



**Summary for Subcatchment N-A15: Subcat N-A15**

Runoff = 2.99 cfs @ 0.30 hrs, Volume= 0.110 af, Depth= 1.27"

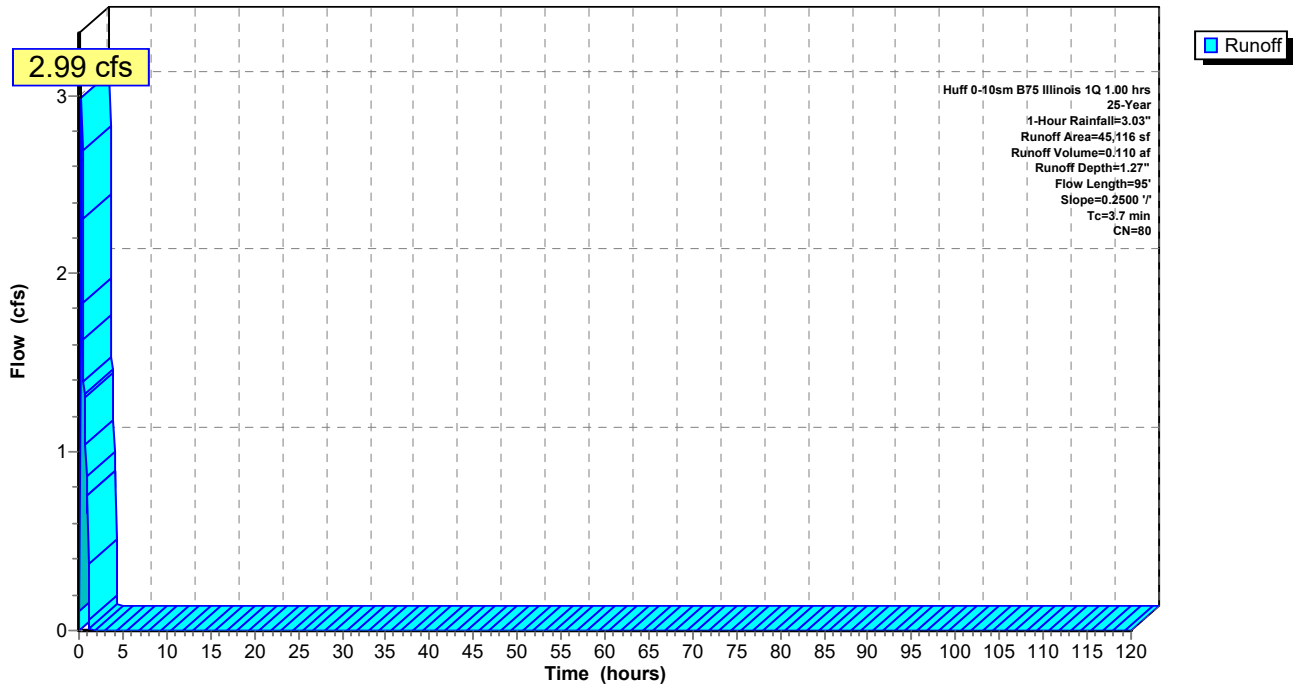
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

Area (sf)	CN	Description
45,116	80	>75% Grass cover, Good, HSG D
45,116		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	95	0.2500	0.43		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-A15: Subcat N-A15**

Hydrograph



**Summary for Subcatchment N-A16: Subcat N-A16**

Runoff = 11.57 cfs @ 0.22 hrs, Volume= 0.380 af, Depth= 2.19"

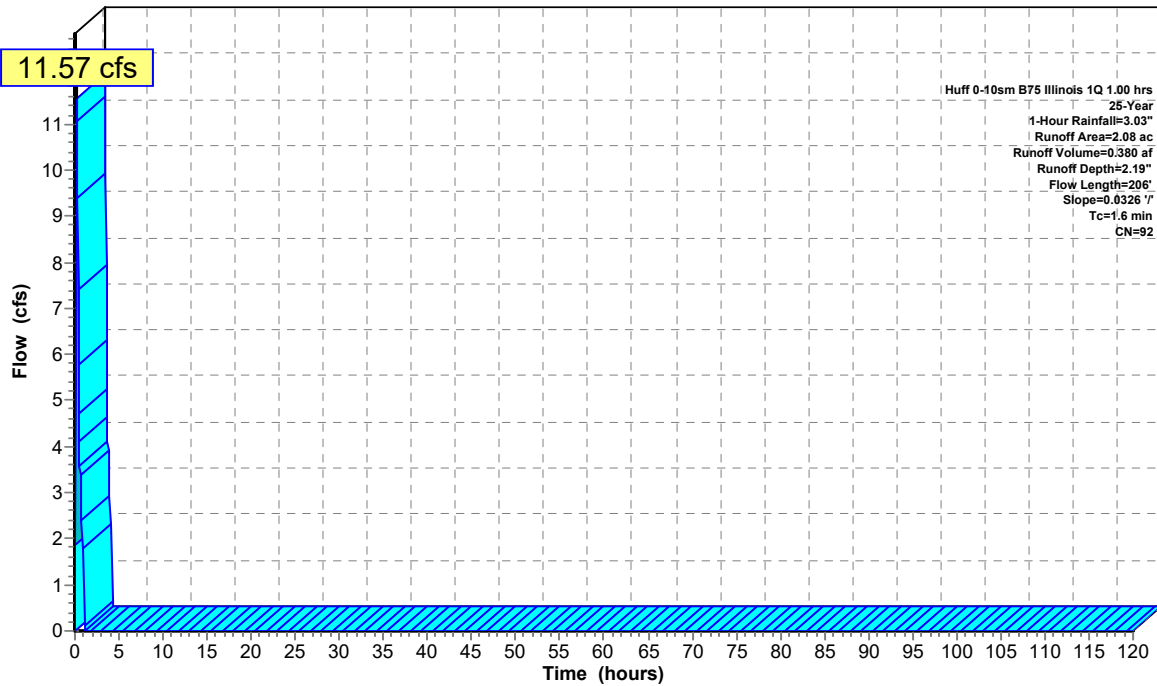
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

Area (ac)	CN	Description
0.08	80	>75% Grass cover, Good, HSG D
2.00	93	Paved roads w/open ditches, 50% imp, HSG D
2.08	92	Weighted Average
1.08		51.99% Pervious Area
1.00		48.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0326	1.56		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 2.80"
0.5	106	0.0326	3.67		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
1.6	206	Total			

**Subcatchment N-A16: Subcat N-A16**

Hydrograph



Runoff

**Summary for Subcatchment N-A2: Subcat N-A2**

Runoff = 7.67 cfs @ 0.34 hrs, Volume= 0.300 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

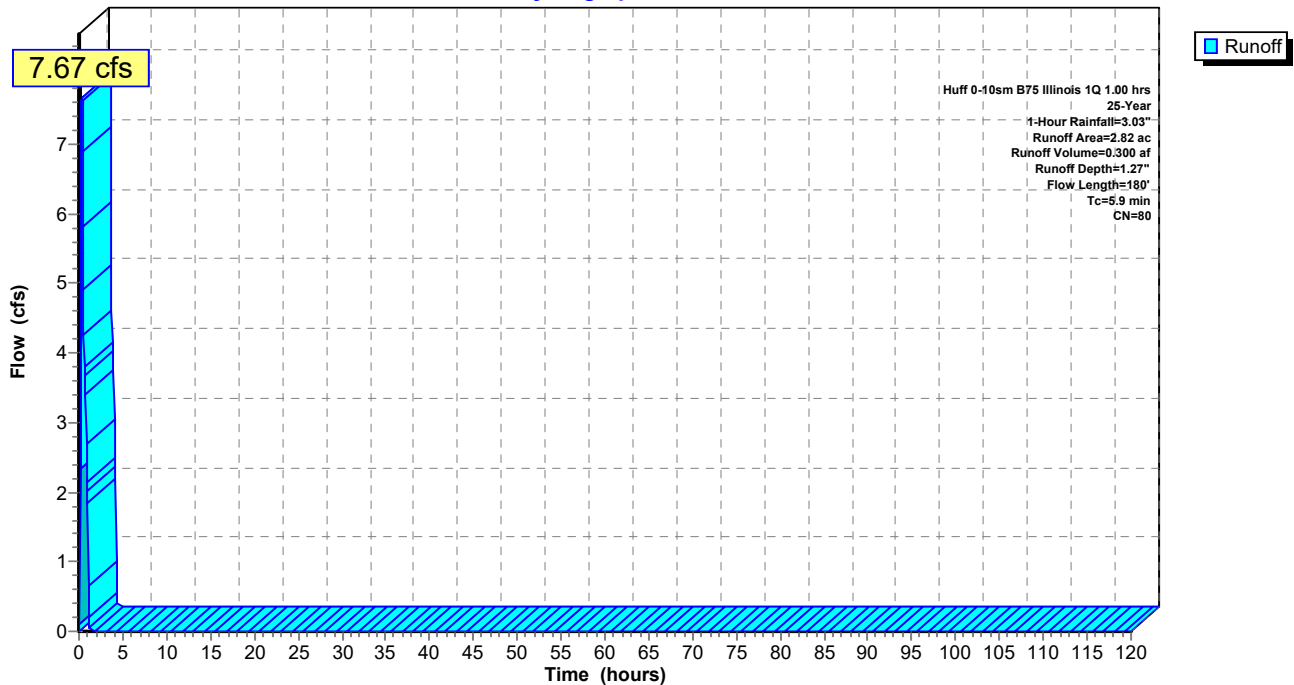
Area (ac)	CN	Description
2.82	80	>75% Grass cover, Good, HSG D
2.82		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.4	80	0.2199	3.28		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
5.9	180	Total			

**Subcatchment N-A2: Subcat N-A2**

Hydrograph



**Summary for Subcatchment N-A3: Subcat N-A3**

Runoff = 3.76 cfs @ 0.31 hrs, Volume= 0.139 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

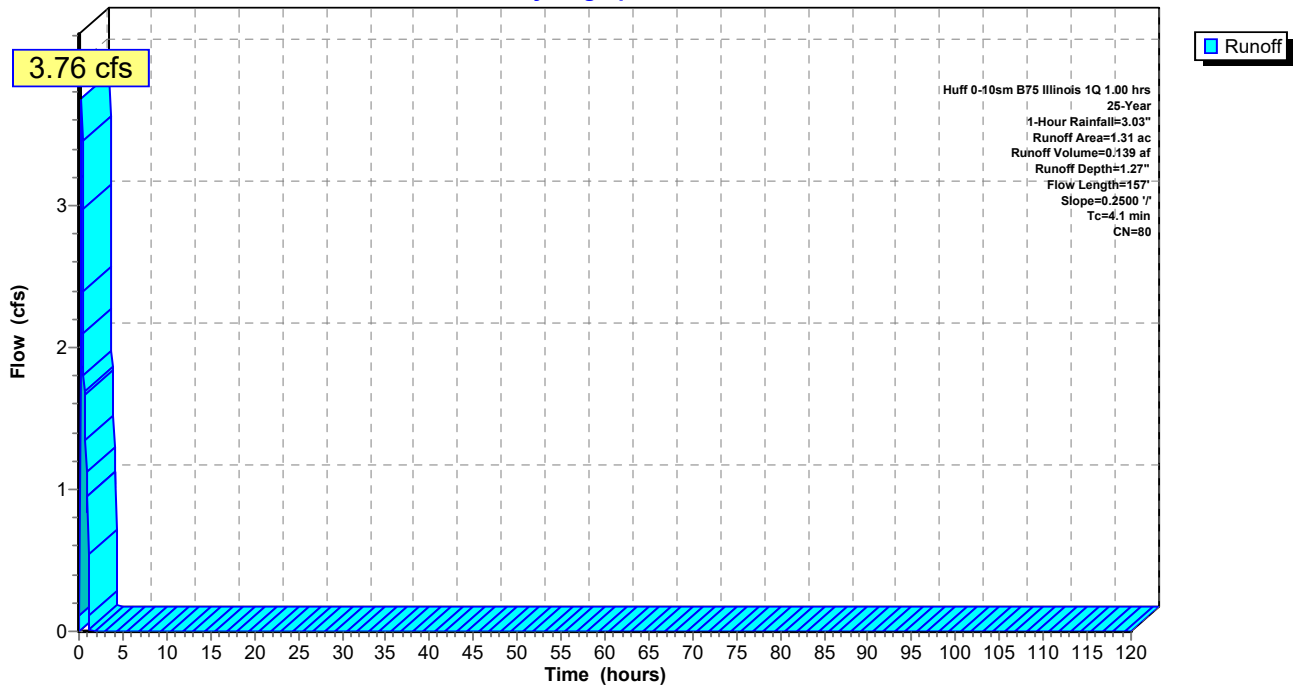
Area (ac)	CN	Description
1.31	80	>75% Grass cover, Good, HSG D
1.31		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.3	57	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	157	Total			

**Subcatchment N-A3: Subcat N-A3**

Hydrograph





**Summary for Subcatchment N-A4: Subcat N-A4**

Runoff = 18.54 cfs @ 0.35 hrs, Volume= 0.729 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

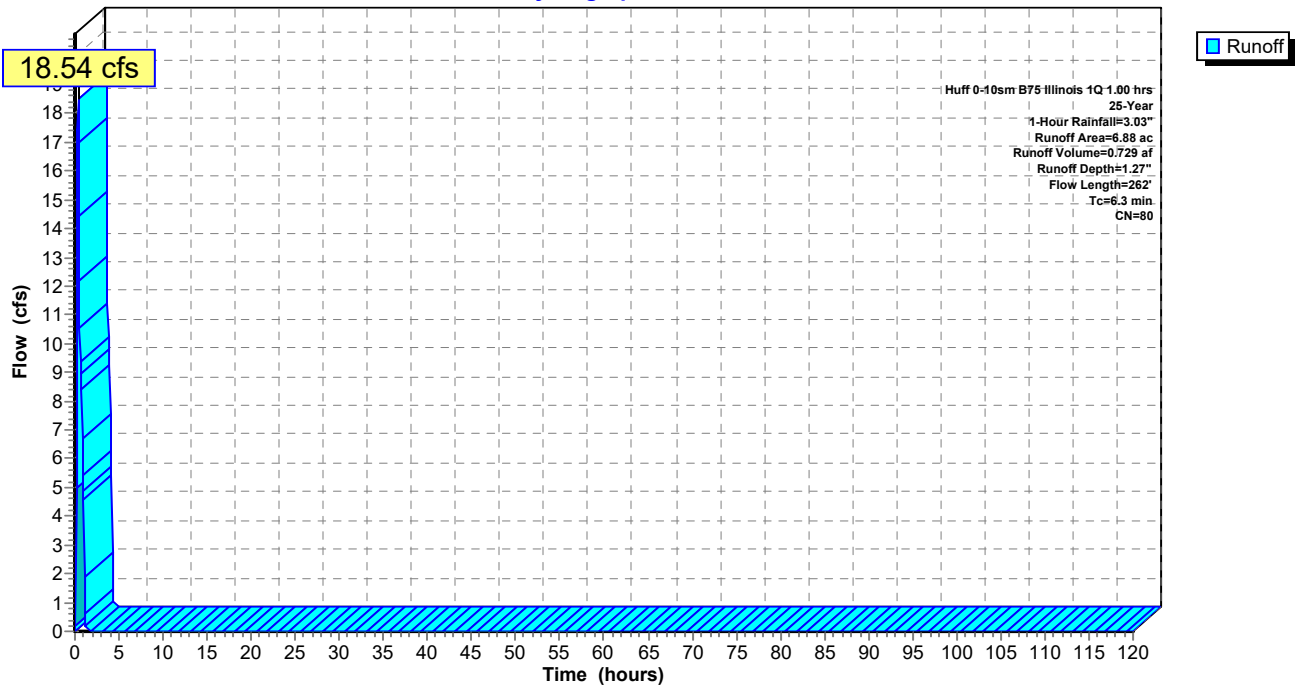
Area (ac)	CN	Description
6.88	80	>75% Grass cover, Good, HSG D
6.88		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.8	162	0.2330	3.38		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.3	262	Total			

**Subcatchment N-A4: Subcat N-A4**

Hydrograph



**Summary for Subcatchment N-A5: Subcat N-A5**

Runoff = 2.11 cfs @ 0.30 hrs, Volume= 0.078 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

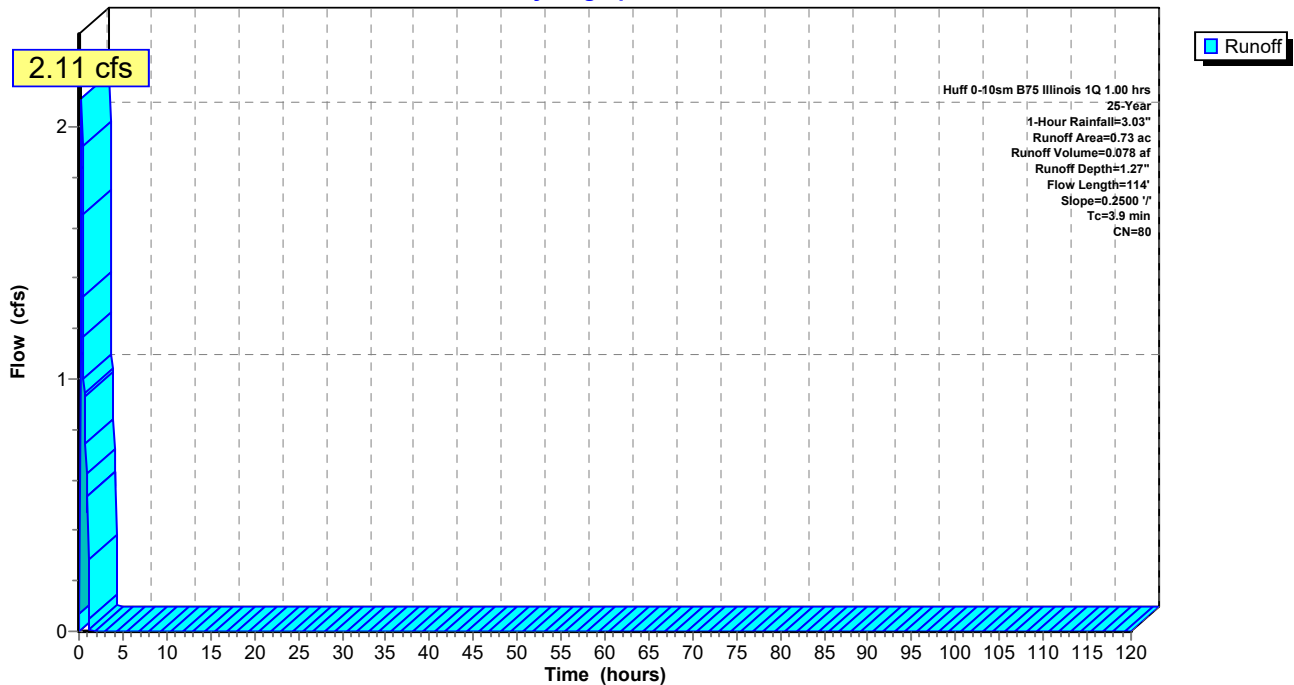
Area (ac)	CN	Description
0.73	80	>75% Grass cover, Good, HSG D
0.73		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	14	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	114	Total			

**Subcatchment N-A5: Subcat N-A5**

Hydrograph



**Summary for Subcatchment N-A6: Subcat N-A6**

Runoff = 11.89 cfs @ 0.30 hrs, Volume= 0.438 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

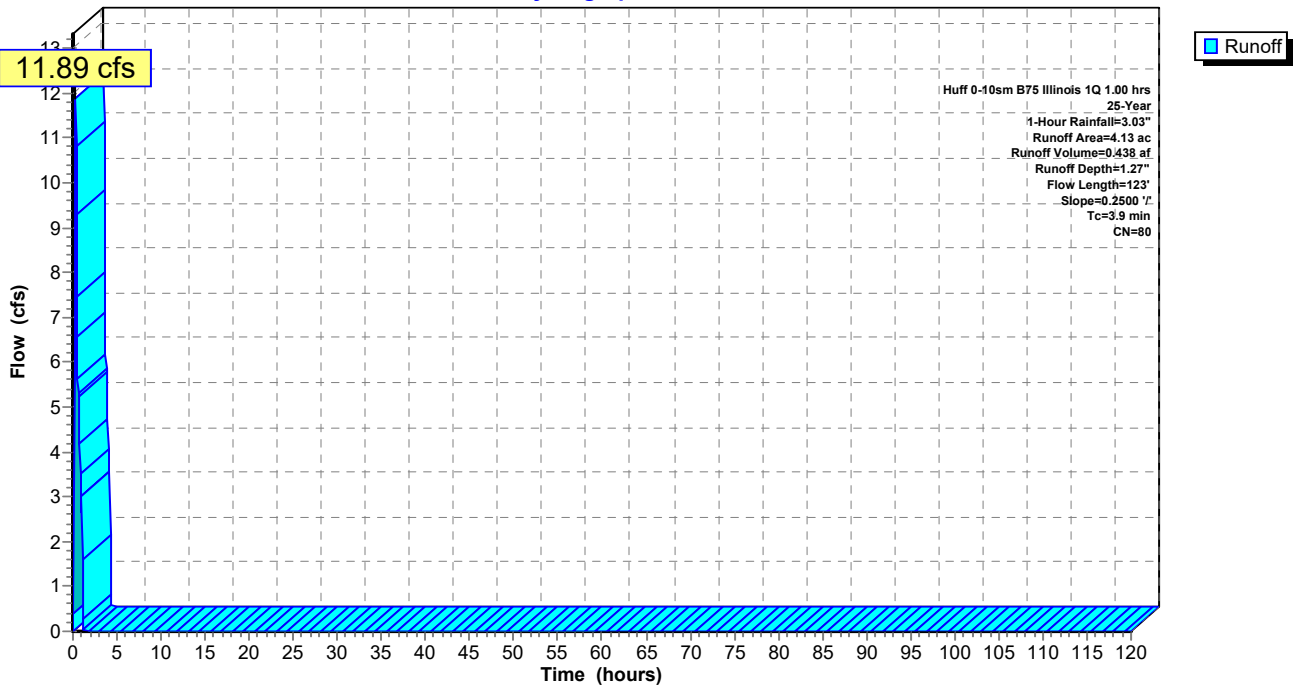
Area (ac)	CN	Description
4.13	80	>75% Grass cover, Good, HSG D
4.13		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	23	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	123	Total			

**Subcatchment N-A6: Subcat N-A6**

Hydrograph



**Summary for Subcatchment N-A7: Subcat N-A7**

Runoff = 1.26 cfs @ 0.31 hrs, Volume= 0.047 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

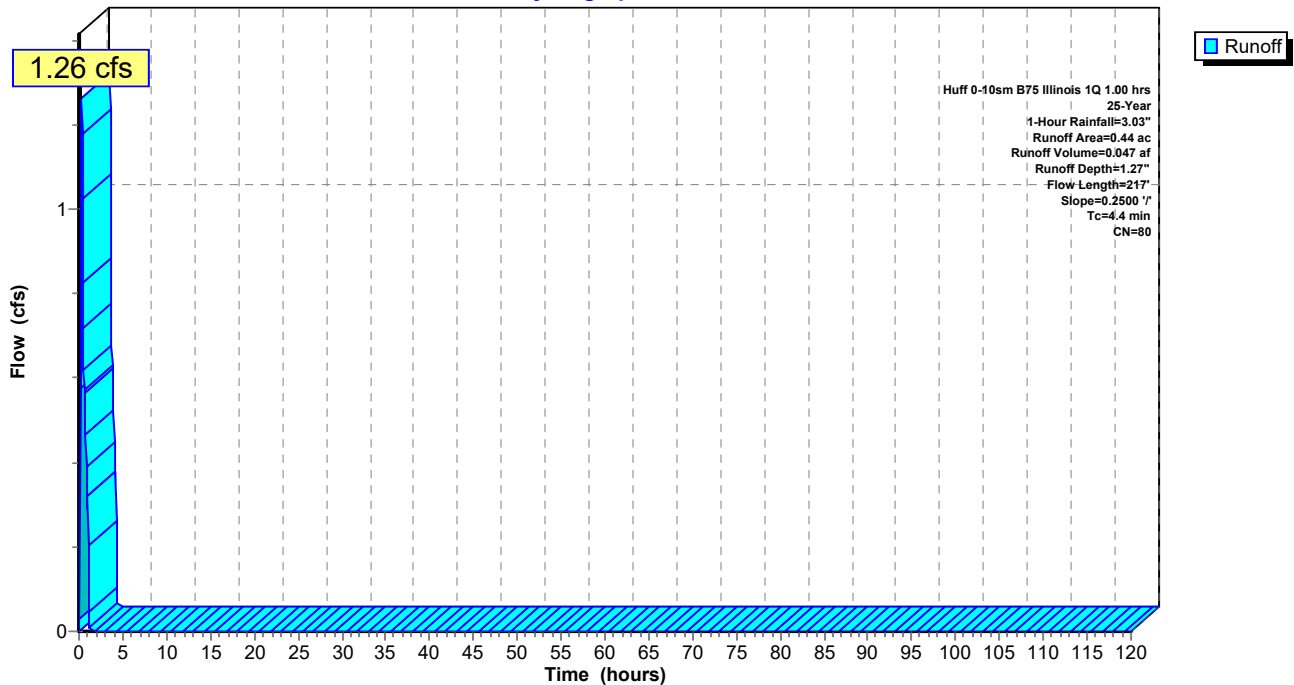
Area (ac)	CN	Description
0.44	80	>75% Grass cover, Good, HSG D
0.44		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	117	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.4	217	Total			

**Subcatchment N-A7: Subcat N-A7**

Hydrograph



**Summary for Subcatchment N-A8: Subcat N-A8**

Runoff = 10.94 cfs @ 0.30 hrs, Volume= 0.403 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

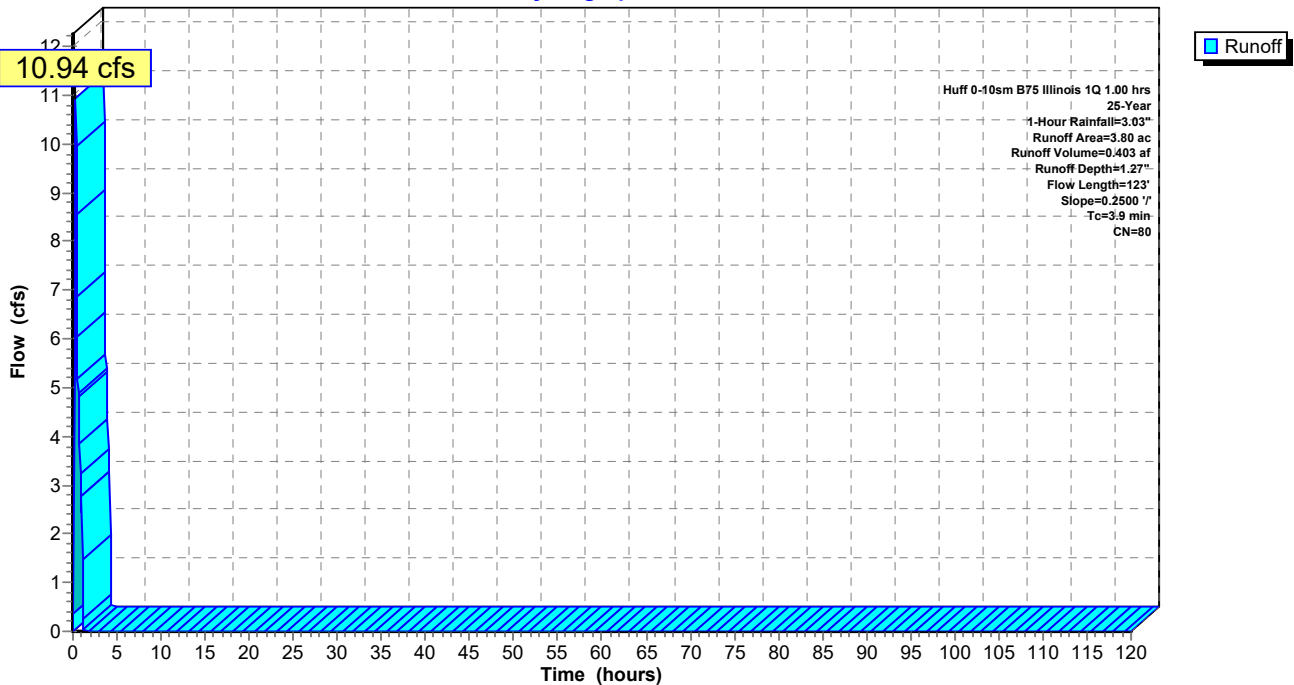
Area (ac)	CN	Description
3.80	80	>75% Grass cover, Good, HSG D
3.80		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	23	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	123	Total			

**Subcatchment N-A8: Subcat N-A8**

Hydrograph



**Summary for Subcatchment N-A9: Subcat N-A9**

Runoff = 0.53 cfs @ 0.31 hrs, Volume= 0.020 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

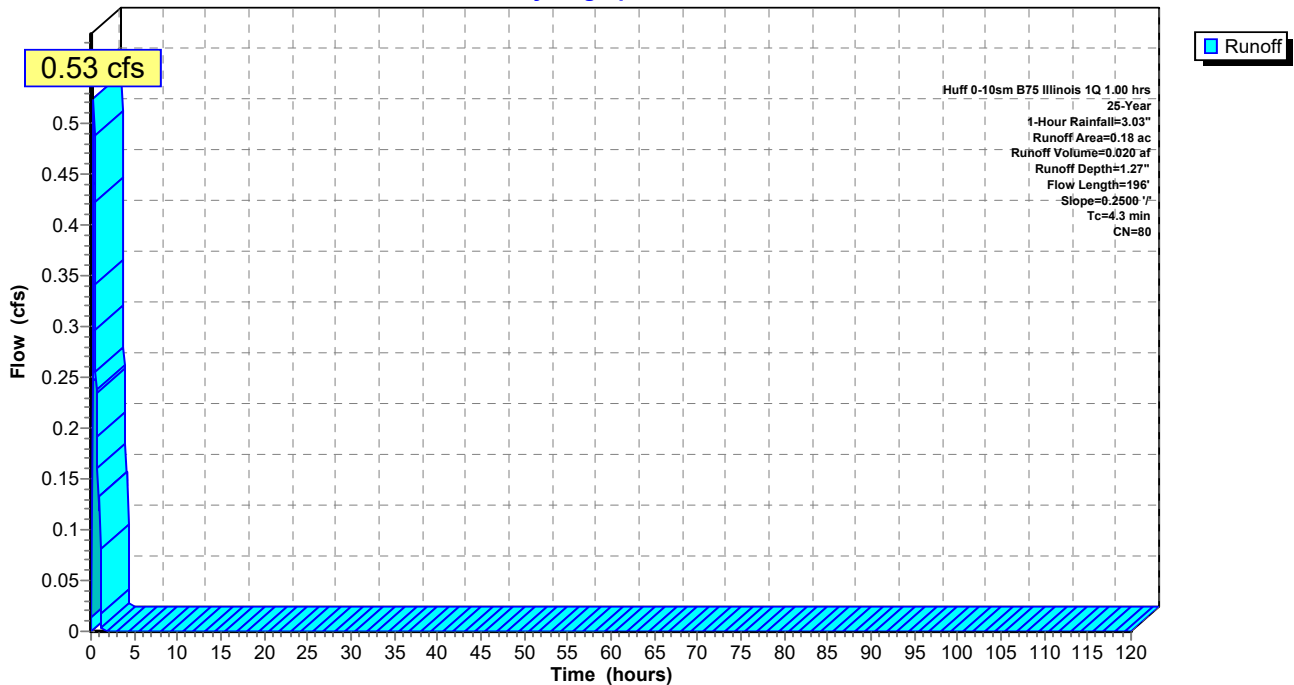
Area (ac)	CN	Description
0.18	80	>75% Grass cover, Good, HSG D
0.18		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.5	96	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.3	196	Total			

**Subcatchment N-A9: Subcat N-A9**

Hydrograph



**Summary for Subcatchment N-B1: Subcat N-B1**

Runoff = 8.55 cfs @ 0.34 hrs, Volume= 0.334 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

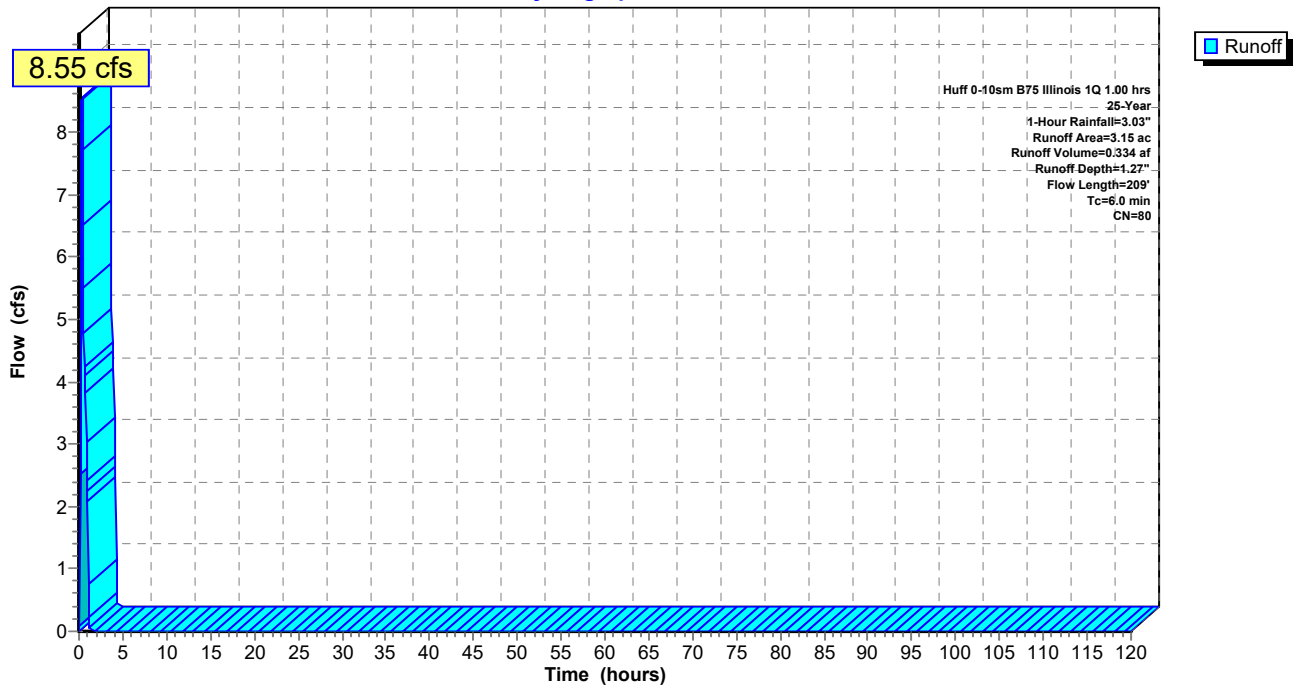
Area (ac)	CN	Description
3.15	80	>75% Grass cover, Good, HSG D
3.15		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.5	109	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.0	209	Total			

**Subcatchment N-B1: Subcat N-B1**

Hydrograph



**Summary for Subcatchment N-B10: Subcat N-B10**

Runoff = 5.78 cfs @ 0.29 hrs, Volume= 0.207 af, Depth= 1.61"

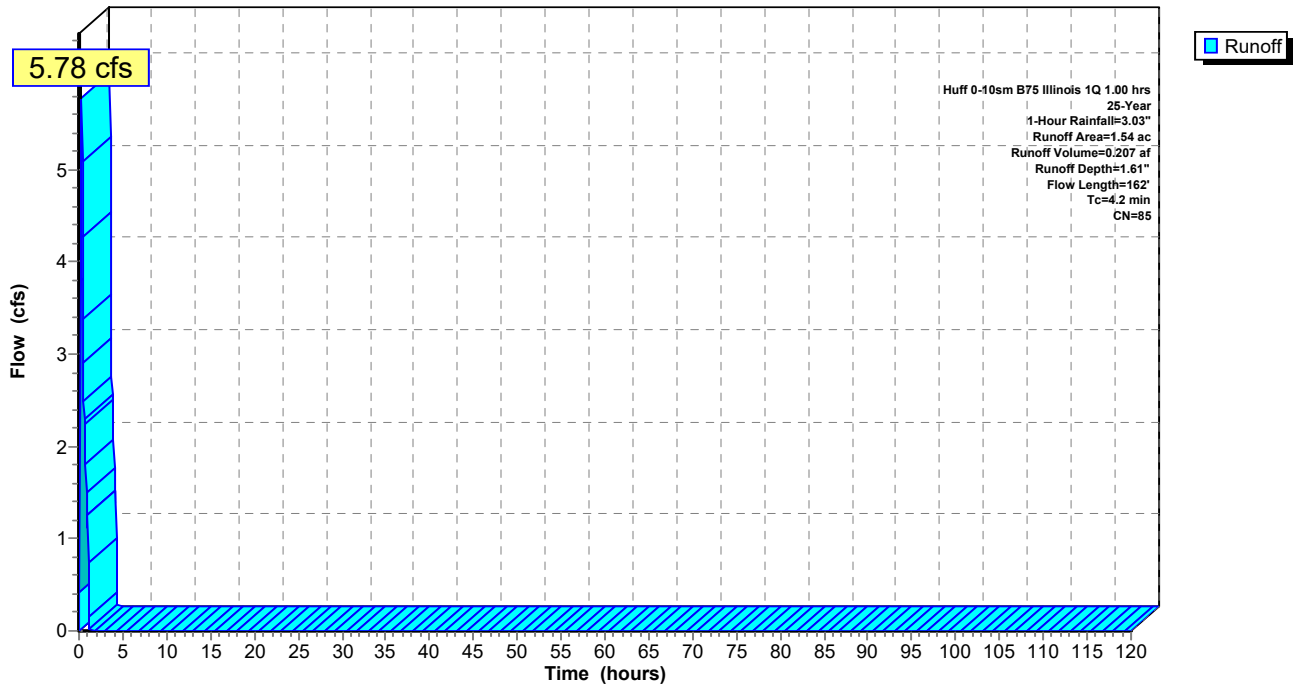
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

Area (ac)	CN	Description
0.91	80	>75% Grass cover, Good, HSG D
0.63	93	Paved roads w/open ditches, 50% imp, HSG D
1.54	85	Weighted Average
1.22		79.55% Pervious Area
0.31		20.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.4	62	0.1195	2.42		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.2	162	Total			

**Subcatchment N-B10: Subcat N-B10**

Hydrograph





**Summary for Subcatchment N-B11: Subcat N-B11**

Runoff = 3.64 cfs @ 0.31 hrs, Volume= 0.134 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

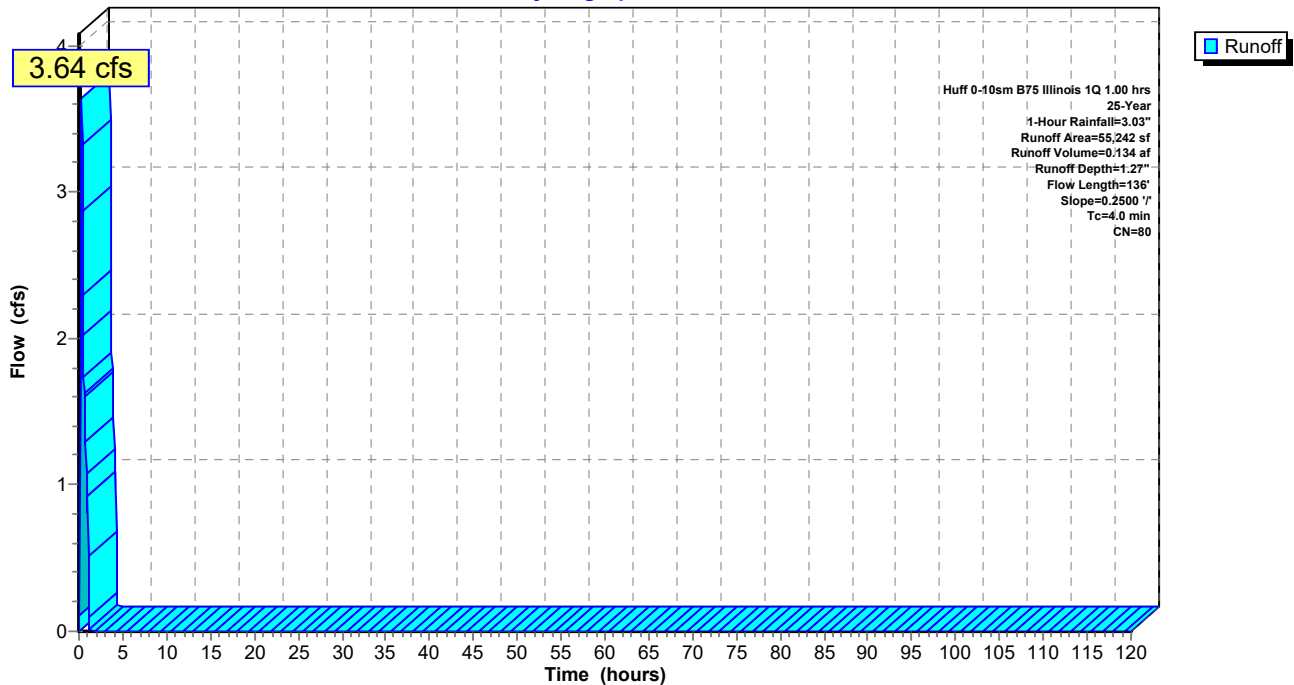
Area (sf)	CN	Description
55,242	80	>75% Grass cover, Good, HSG D
55,242		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	36	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	136	Total			

**Subcatchment N-B11: Subcat N-B11**

Hydrograph



**Summary for Subcatchment N-B12: Subcat N-B12**

Runoff = 5.37 cfs @ 0.32 hrs, Volume= 0.201 af, Depth= 1.40"

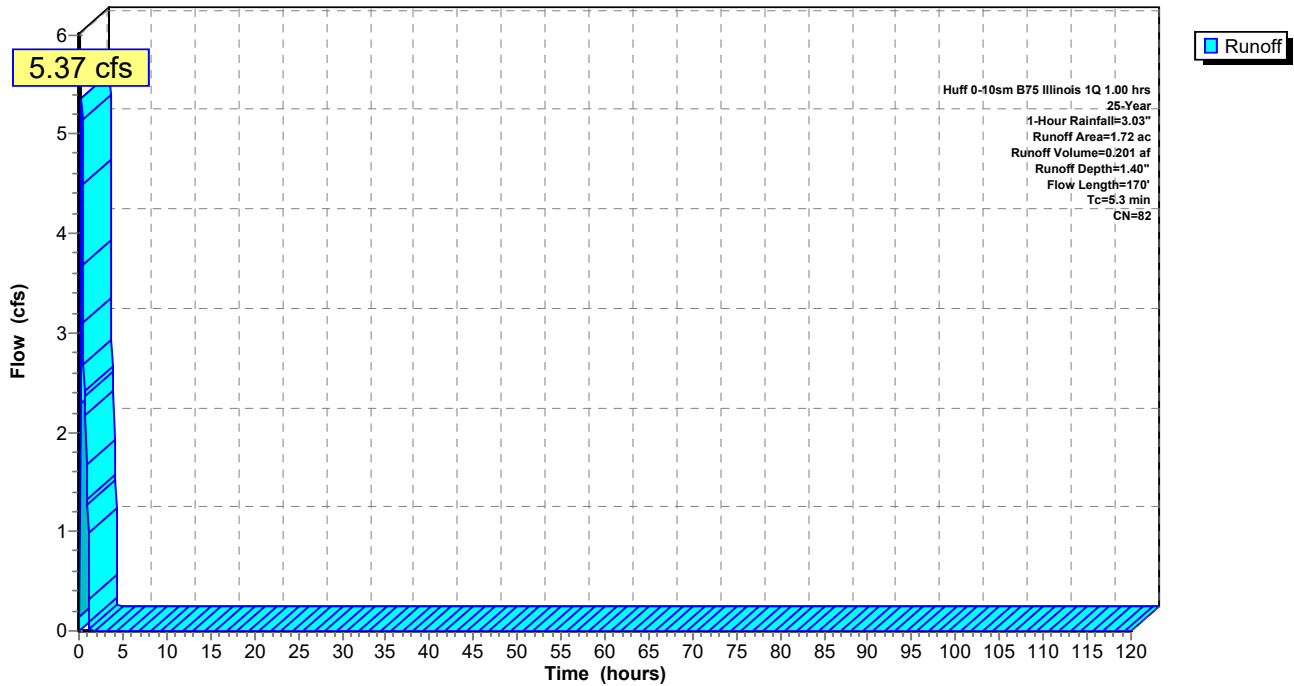
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

Area (ac)	CN	Description
1.45	80	>75% Grass cover, Good, HSG D
0.27	93	Paved roads w/open ditches, 50% imp, HSG D
1.72	82	Weighted Average
1.59		92.15% Pervious Area
0.14		7.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	100	0.1588	0.36		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.7	70	0.0608	1.73		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
5.3	170	Total			

**Subcatchment N-B12: Subcat N-B12**

Hydrograph



**Summary for Subcatchment N-B13: Subcat N-B13**

Runoff = 6.03 cfs @ 0.25 hrs, Volume= 0.213 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

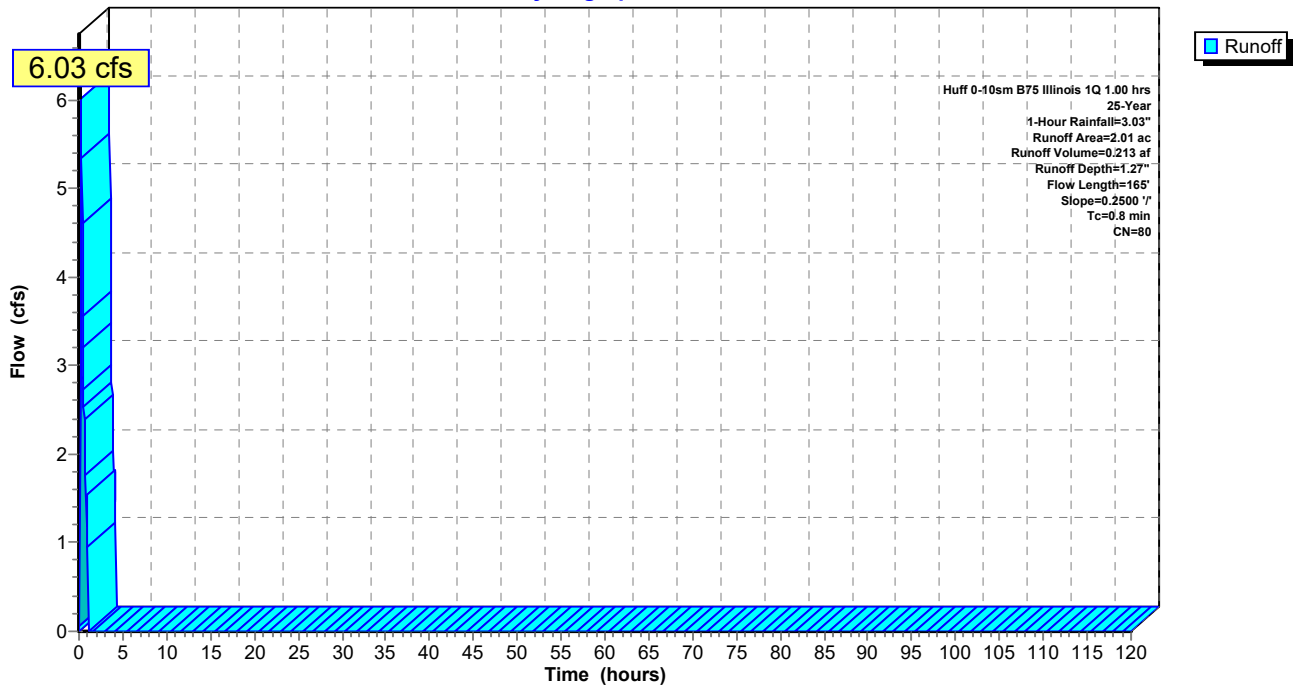
Area (ac)	CN	Description
2.01	80	>75% Grass cover, Good, HSG D
2.01		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.2500	3.53		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 2.80"
0.3	65	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.8	165	Total			

**Subcatchment N-B13: Subcat N-B13**

Hydrograph



**Summary for Subcatchment N-B14: Subcat N-B14**

Runoff = 2.90 cfs @ 0.23 hrs, Volume= 0.099 af, Depth= 1.77"

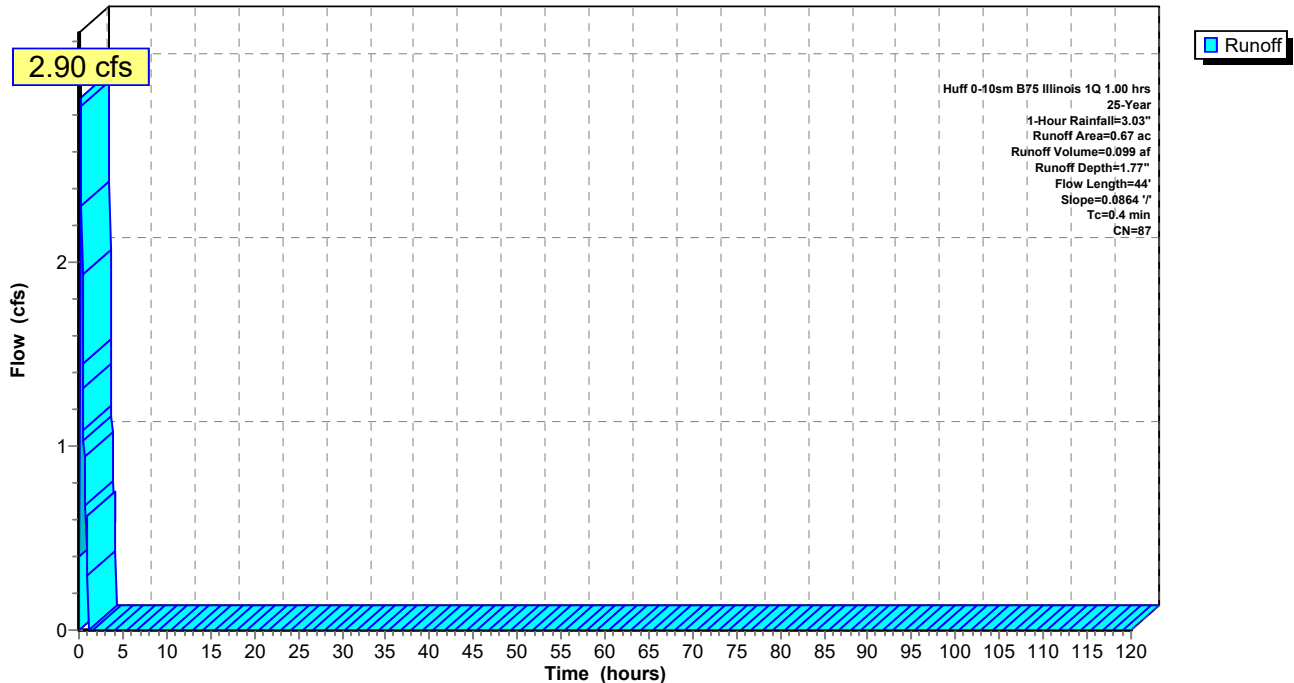
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

Area (ac)	CN	Description
0.29	80	>75% Grass cover, Good, HSG D
0.38	93	Paved roads w/open ditches, 50% imp, HSG D
0.67	87	Weighted Average
0.48		71.64% Pervious Area
0.19		28.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	44	0.0864	1.96		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment N-B14: Subcat N-B14**

Hydrograph



**Summary for Subcatchment N-B15: Subcat N-B15**

Runoff = 0.12 cfs @ 0.26 hrs, Volume= 0.004 af, Depth= 1.27"

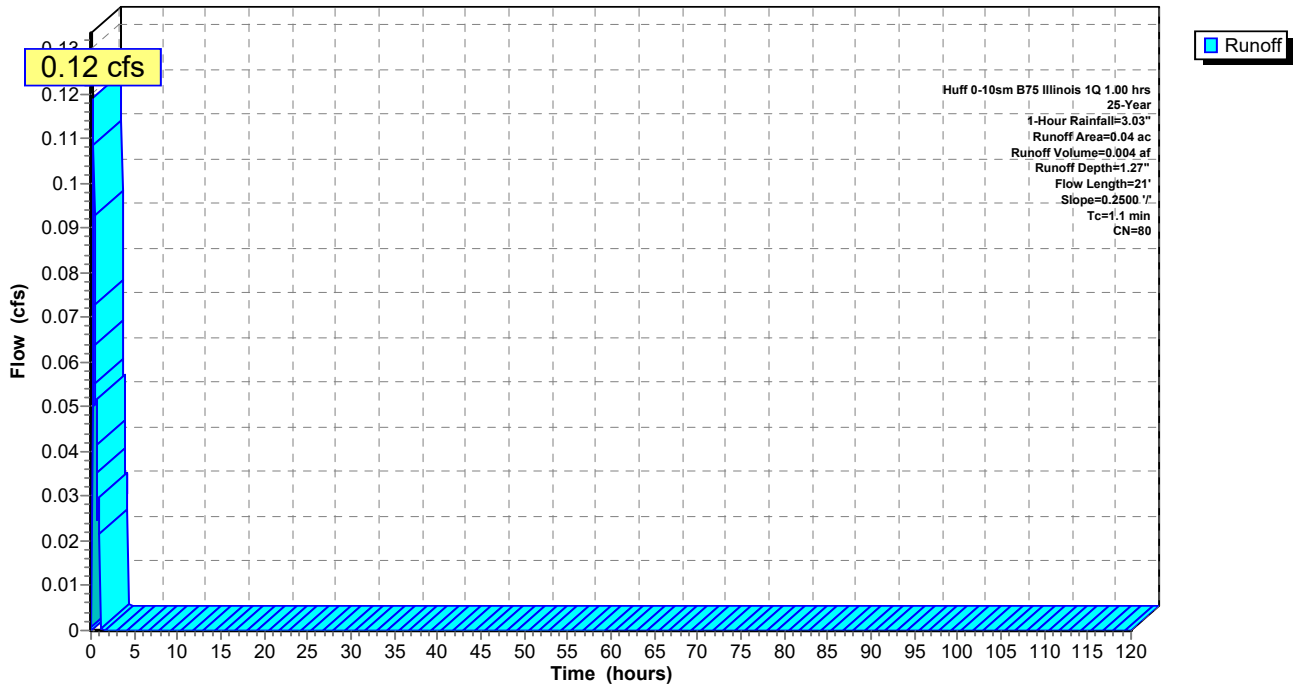
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

Area (ac)	CN	Description
0.04	80	>75% Grass cover, Good, HSG D
0.04		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	21	0.2500	0.32		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-B15: Subcat N-B15**

Hydrograph



**Summary for Subcatchment N-B16: Subcat N-B16**

Runoff = 0.39 cfs @ 0.23 hrs, Volume= 0.013 af, Depth= 1.61"

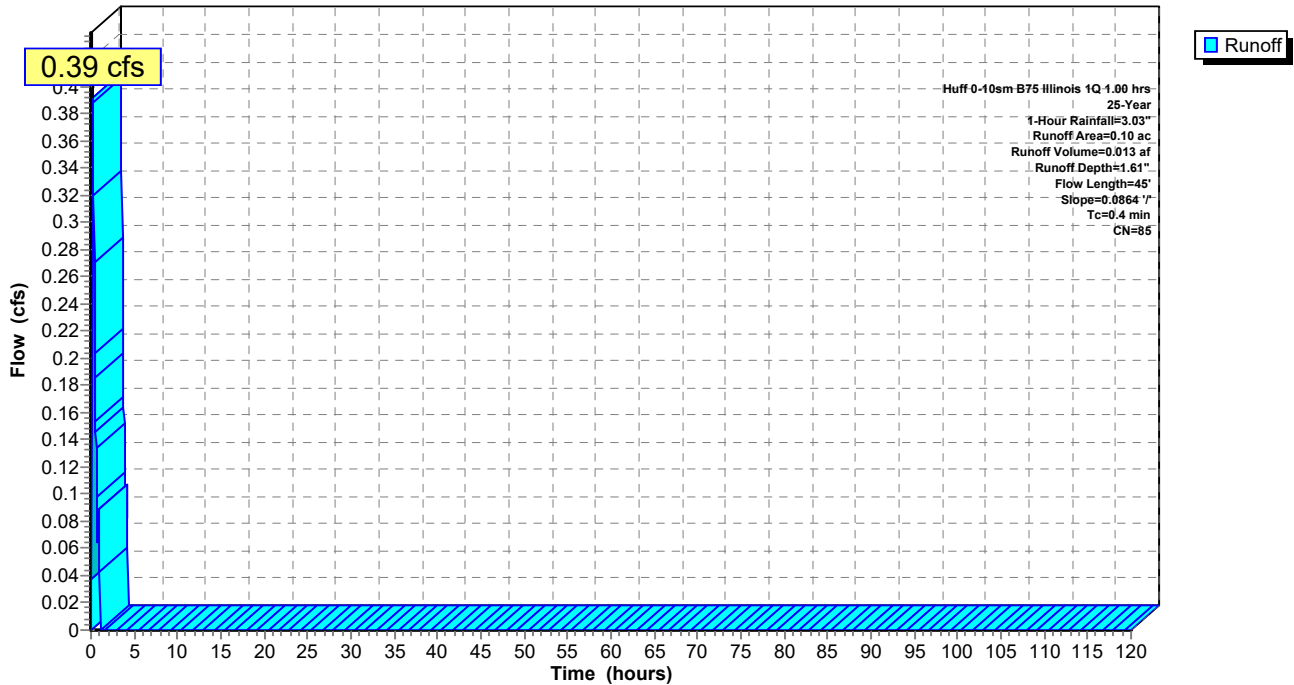
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

Area (ac)	CN	Description
0.06	80	>75% Grass cover, Good, HSG D
0.04	93	Paved roads w/open ditches, 50% imp, HSG D
0.10	85	Weighted Average
0.08		80.00% Pervious Area
0.02		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	45	0.0864	1.97		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment N-B16: Subcat N-B16**

Hydrograph



**Summary for Subcatchment N-B2: Subcat N-B2**

Runoff = 12.14 cfs @ 0.34 hrs, Volume= 0.476 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

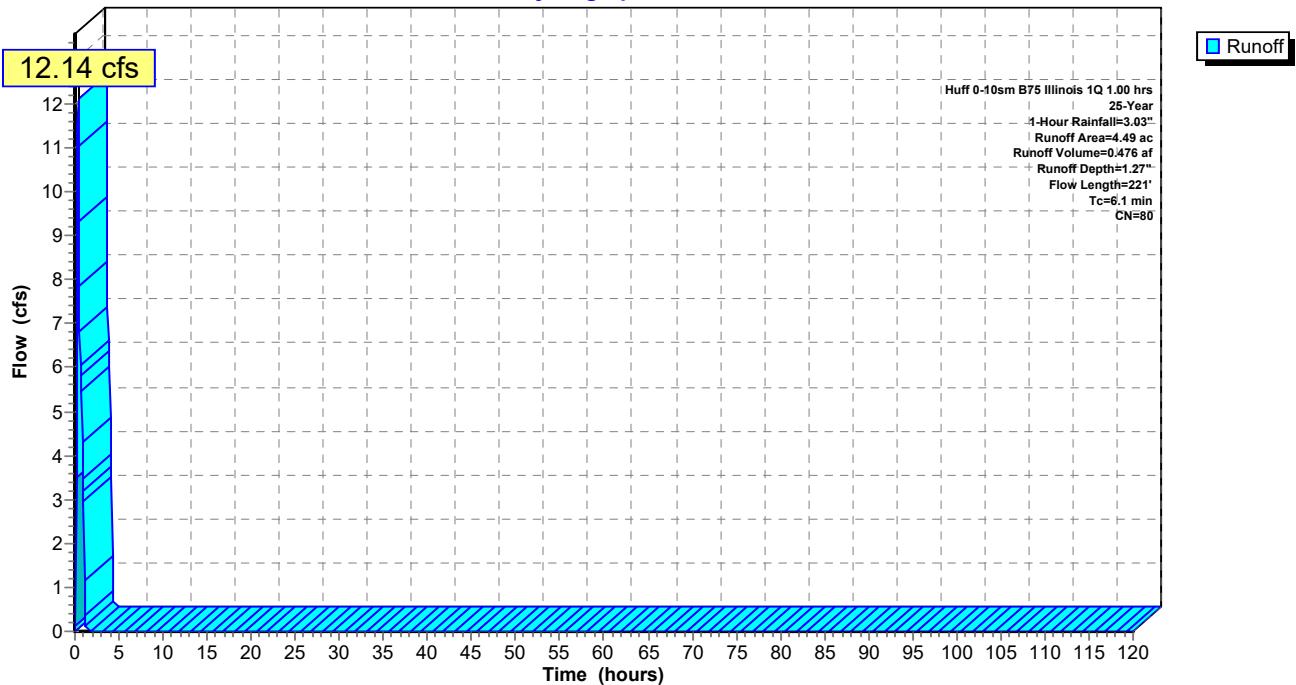
Area (ac)	CN	Description
4.49	80	>75% Grass cover, Good, HSG D
4.49		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	121	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.1	221	Total			

**Subcatchment N-B2: Subcat N-B2**

Hydrograph



**Summary for Subcatchment N-B3: Subcat N-B3**

Runoff = 9.85 cfs @ 0.31 hrs, Volume= 0.364 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

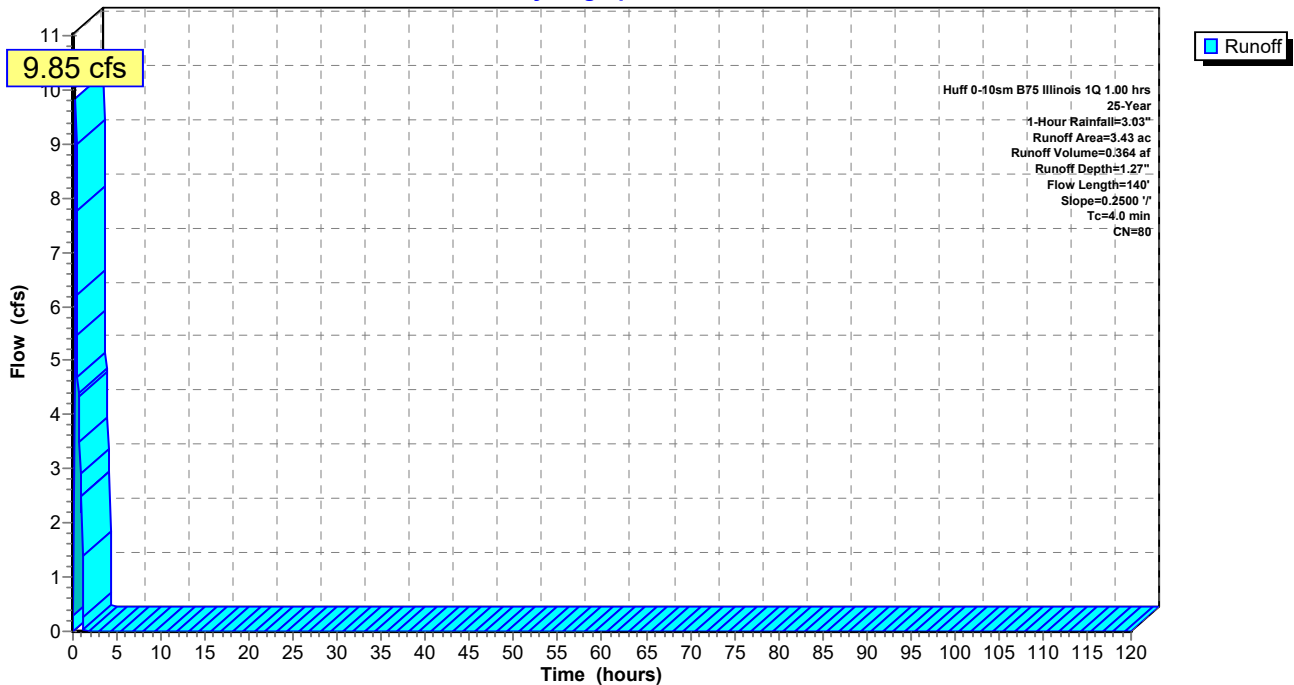
Area (ac)	CN	Description
3.43	80	>75% Grass cover, Good, HSG D
3.43		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	40	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	140	Total			

**Subcatchment N-B3: Subcat N-B3**

Hydrograph





**Summary for Subcatchment N-B4: Subcat N-B4**

Runoff = 10.93 cfs @ 0.31 hrs, Volume= 0.404 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

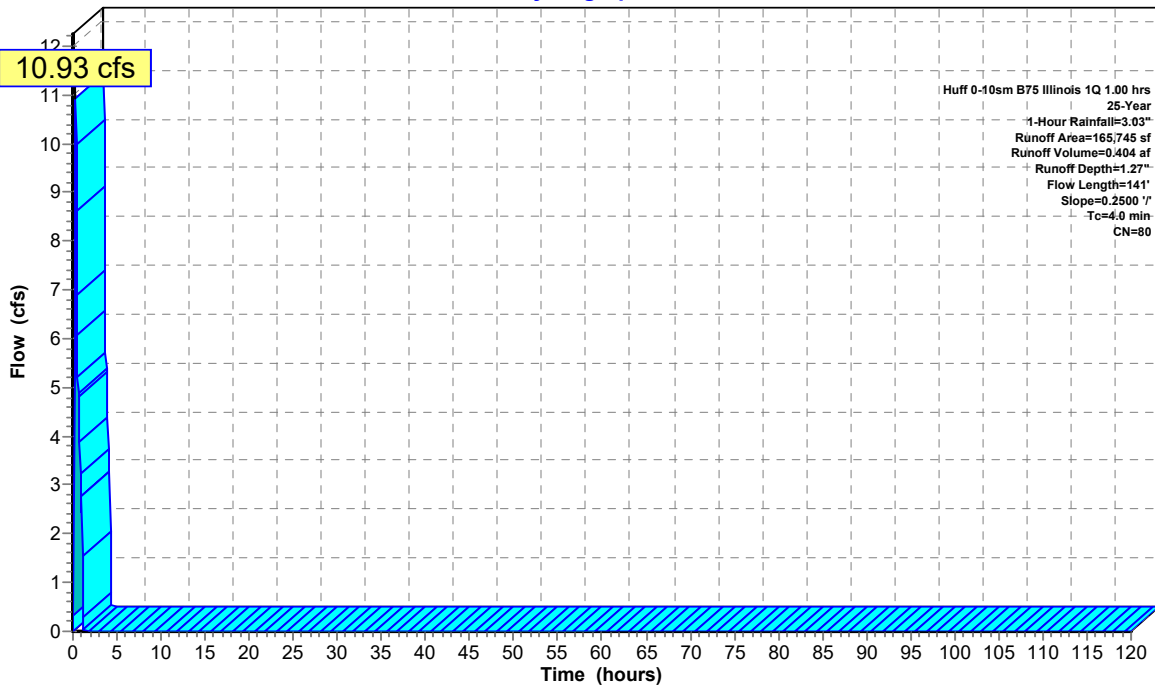
Area (sf)	CN	Description
165,745	80	>75% Grass cover, Good, HSG D
165,745		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	41	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	141	Total			

**Subcatchment N-B4: Subcat N-B4**

Hydrograph



Runoff

Huff 0-10sm B75 Illinois 1Q 1.00 hrs  
 25-Year  
 1-Hour Rainfall=3.03"  
 Runoff Area=165,745 sf  
 Runoff Volume=0.404 af  
 Runoff Depth=1.27"  
 Flow Length=141'  
 Slope=0.2500 f'  
 Tc=4.0 min  
 CN=80

**Summary for Subcatchment N-B5: Subcat N-B5**

Runoff = 12.93 cfs @ 0.31 hrs, Volume= 0.477 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

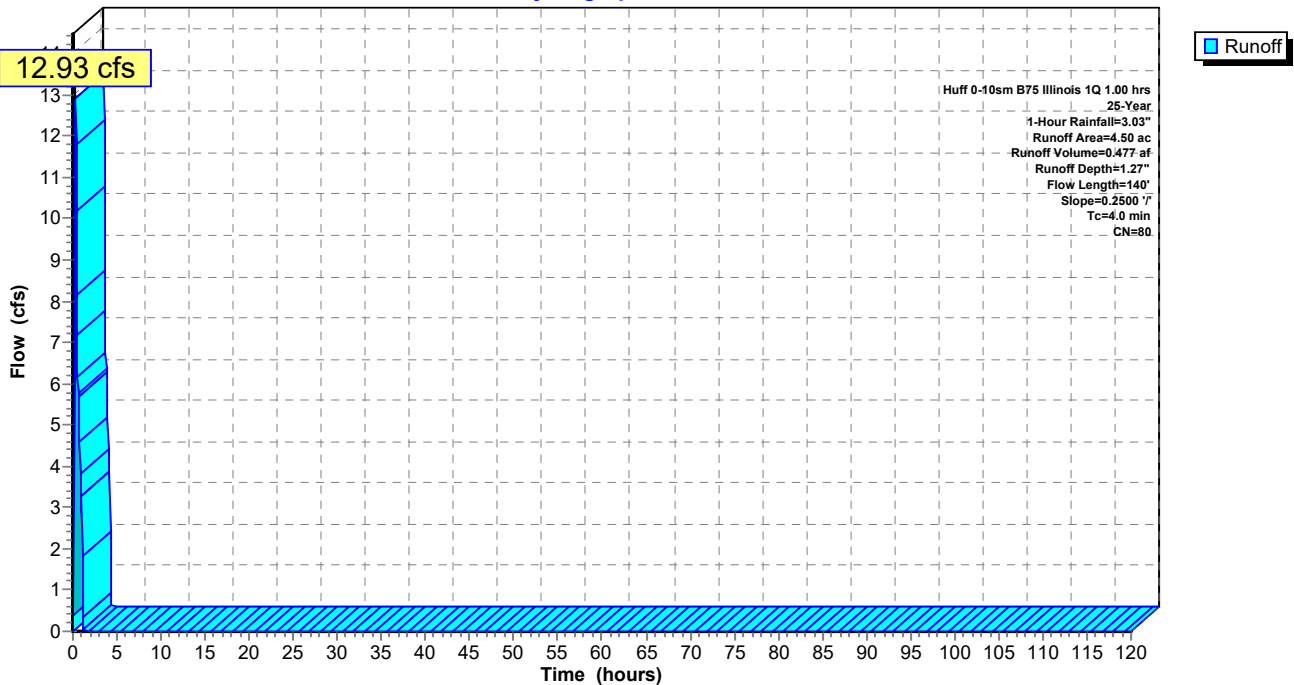
Area (ac)	CN	Description
4.50	80	>75% Grass cover, Good, HSG D
4.50		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	40	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	140	Total			

**Subcatchment N-B5: Subcat N-B5**

Hydrograph



**Summary for Subcatchment N-B6: Subcat N-B6**

Runoff = 12.33 cfs @ 0.31 hrs, Volume= 0.455 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

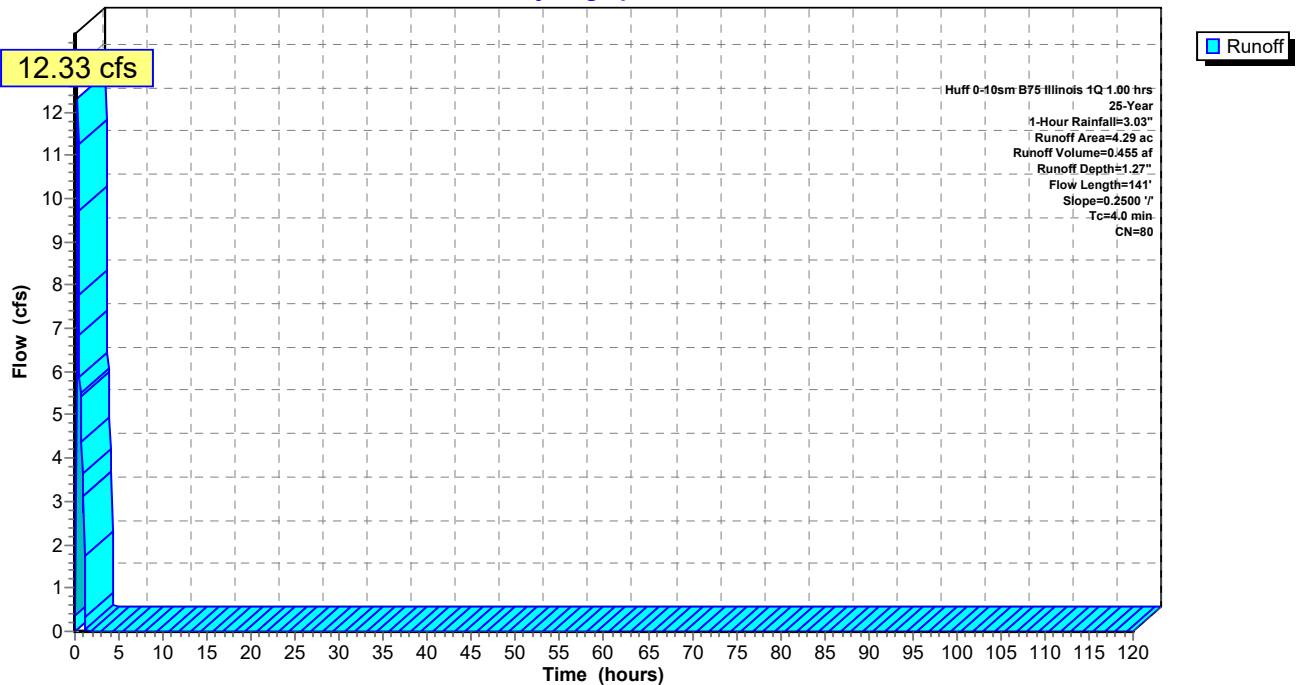
Area (ac)	CN	Description
4.29	80	>75% Grass cover, Good, HSG D
4.29		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	41	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	141	Total			

**Subcatchment N-B6: Subcat N-B6**

Hydrograph



**Summary for Subcatchment N-B7: Subcat N-B7**

Runoff = 11.39 cfs @ 0.31 hrs, Volume= 0.420 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

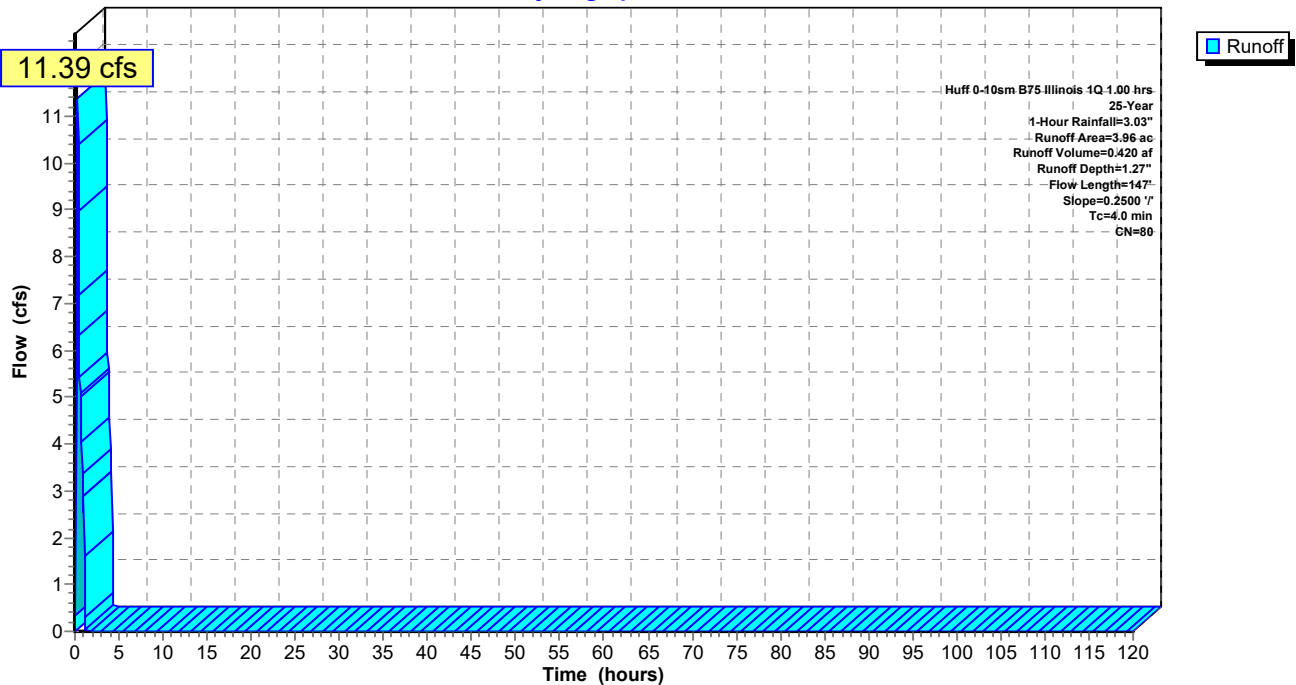
Area (ac)	CN	Description
3.96	80	>75% Grass cover, Good, HSG D
3.96		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	47	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	147	Total			

**Subcatchment N-B7: Subcat N-B7**

Hydrograph



**Summary for Subcatchment N-B8: Subcat N-B8**

Runoff = 10.13 cfs @ 0.31 hrs, Volume= 0.374 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

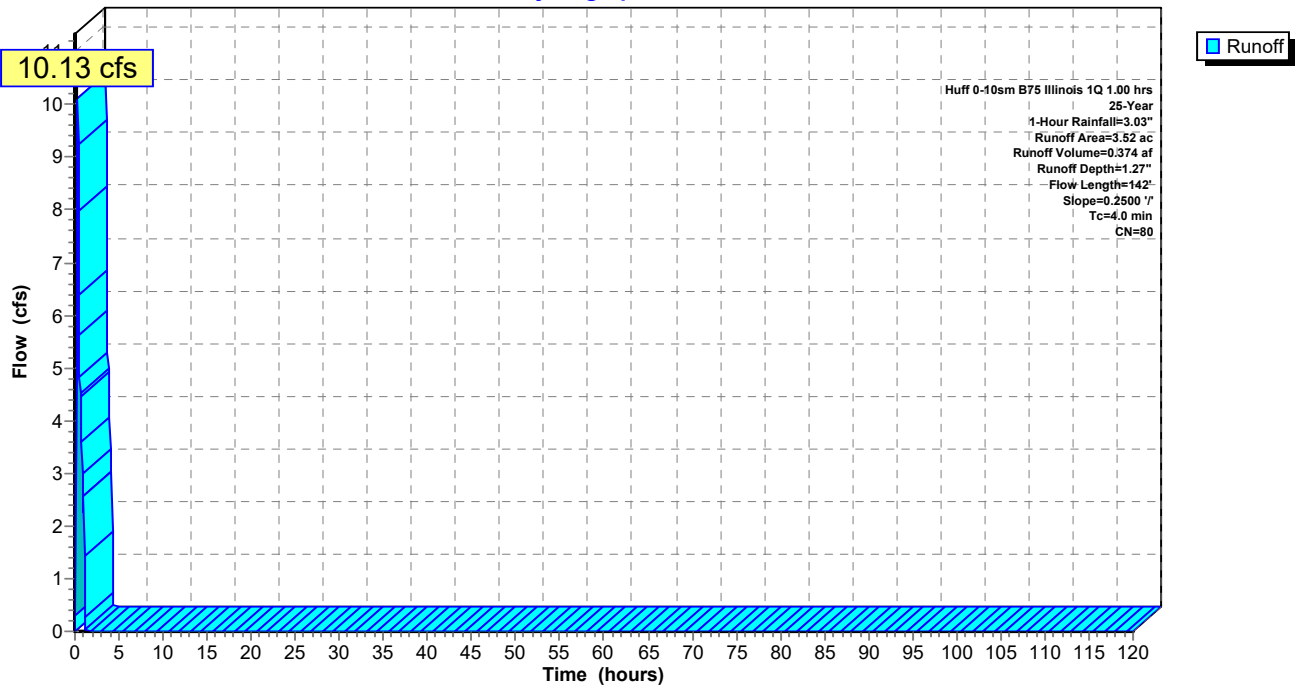
Area (ac)	CN	Description
3.52	80	>75% Grass cover, Good, HSG D
3.52		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	42	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	142	Total			

**Subcatchment N-B8: Subcat N-B8**

Hydrograph



**Summary for Subcatchment N-B9: Subcat N-B9**

Runoff = 3.37 cfs @ 0.29 hrs, Volume= 0.123 af, Depth= 1.27"

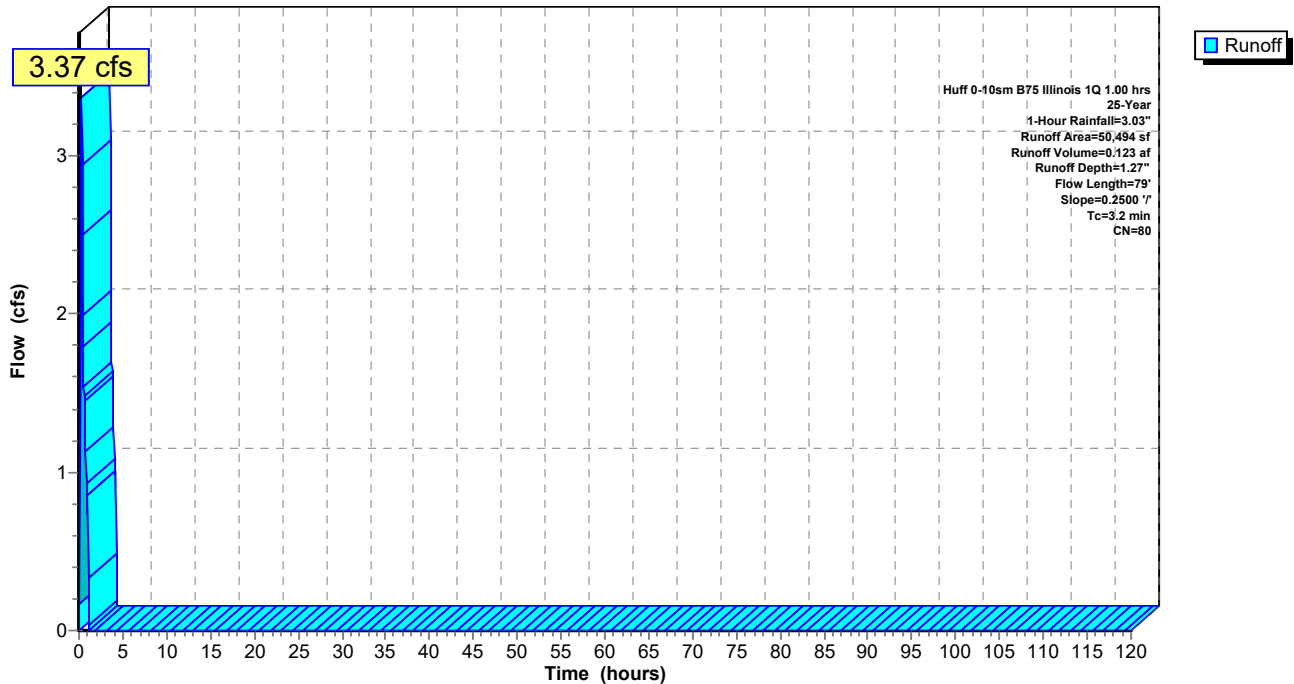
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

Area (sf)	CN	Description
50,494	80	>75% Grass cover, Good, HSG D
50,494		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	79	0.2500	0.42		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-B9: Subcat N-B9**

Hydrograph



**Summary for Subcatchment N-C1: Subcat N-C1**

Runoff = 18.83 cfs @ 0.35 hrs, Volume= 0.741 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

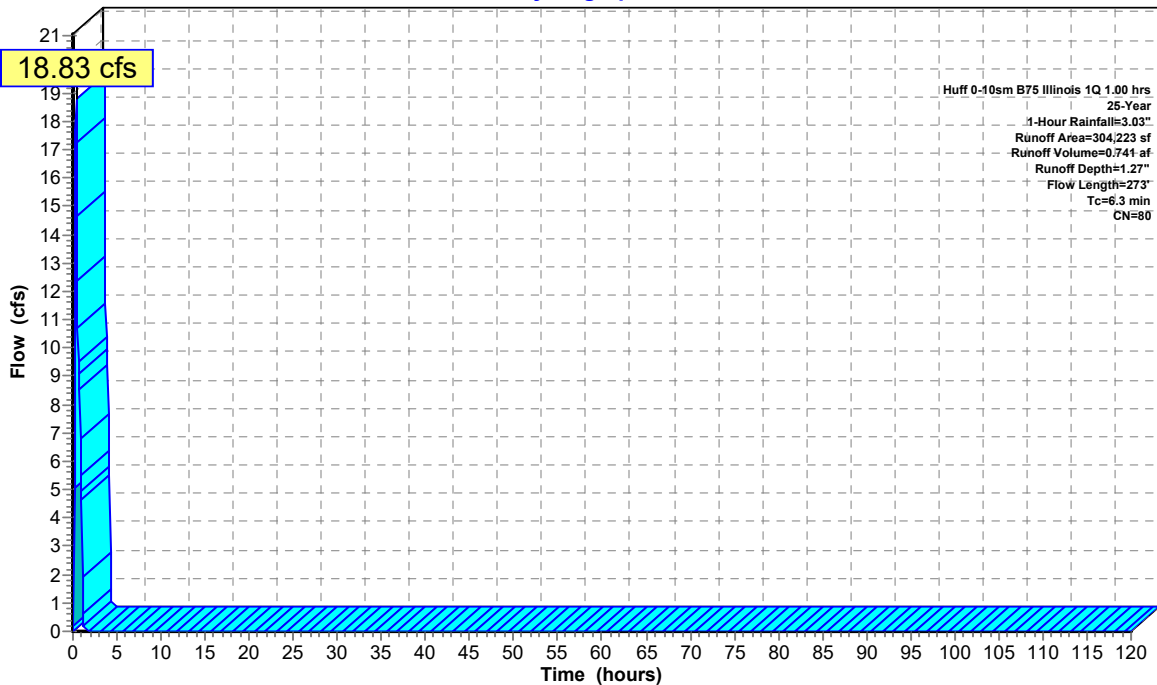
Area (sf)	CN	Description
304,223	80	>75% Grass cover, Good, HSG D
304,223		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.8	173	0.2418	3.44		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.3	273	Total			

**Subcatchment N-C1: Subcat N-C1**

Hydrograph



**Summary for Subcatchment N-C2: Subcat N-C2**

Runoff = 12.07 cfs @ 0.31 hrs, Volume= 0.445 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

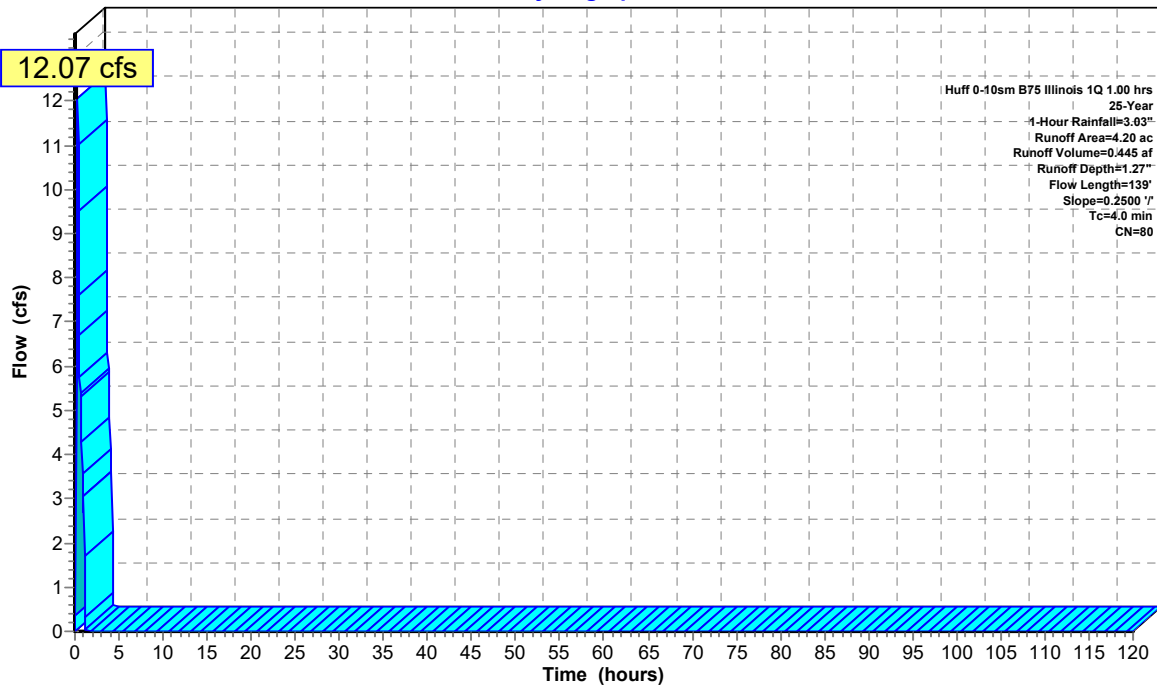
Area (ac)	CN	Description
4.20	80	>75% Grass cover, Good, HSG D
4.20		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	39	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	139	Total			

**Subcatchment N-C2: Subcat N-C2**

Hydrograph





**Summary for Subcatchment N-C3: Subcat N-C3**

Runoff = 12.13 cfs @ 0.31 hrs, Volume= 0.448 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

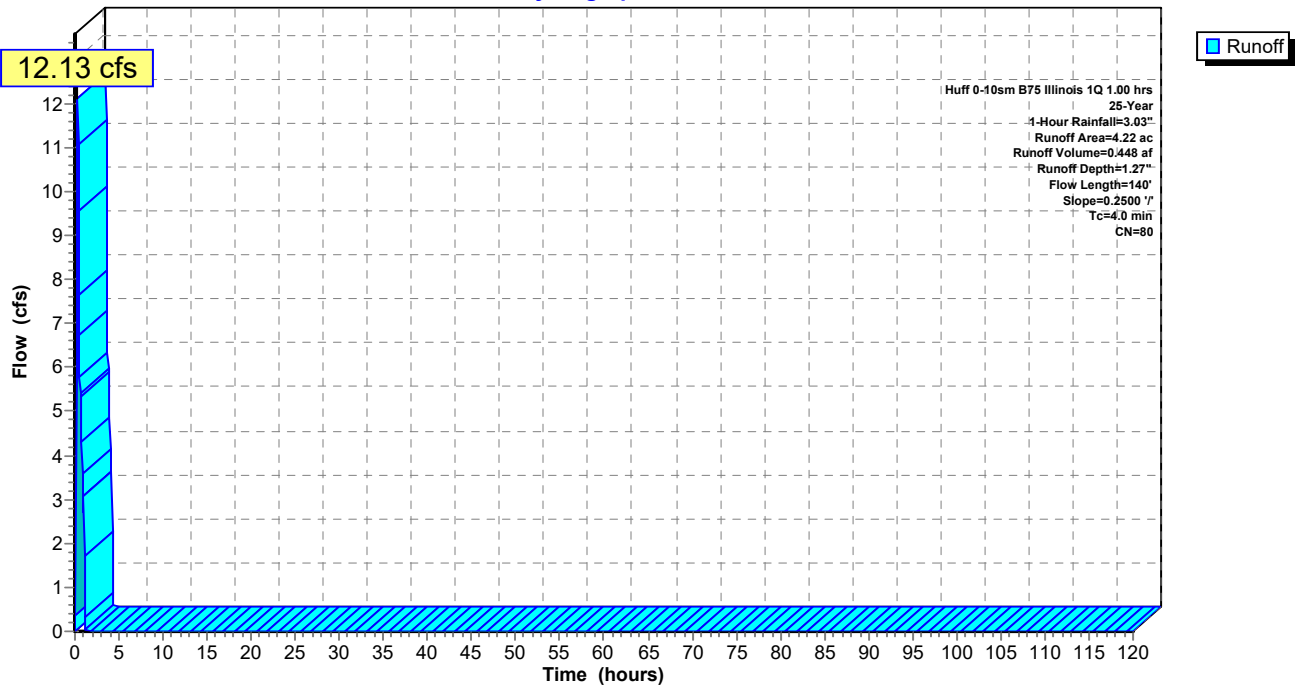
Area (ac)	CN	Description
4.22	80	>75% Grass cover, Good, HSG D
4.22		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	40	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	140	Total			

**Subcatchment N-C3: Subcat N-C3**

Hydrograph



**Summary for Subcatchment N-C4: Subcat N-C4**

Runoff = 10.10 cfs @ 0.31 hrs, Volume= 0.373 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

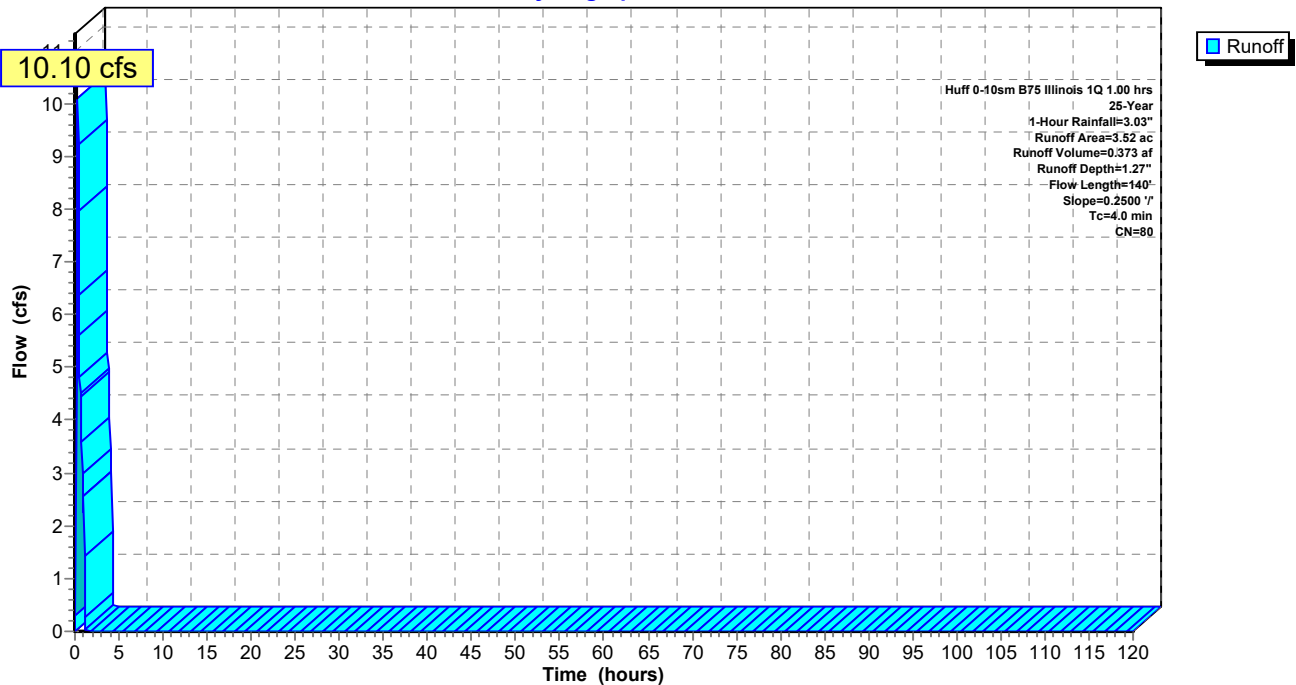
Area (ac)	CN	Description
3.52	80	>75% Grass cover, Good, HSG D
3.52		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	40	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	140	Total			

**Subcatchment N-C4: Subcat N-C4**

Hydrograph



**Summary for Subcatchment N-C5: Subcat N-C5**

Runoff = 2.15 cfs @ 0.31 hrs, Volume= 0.079 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

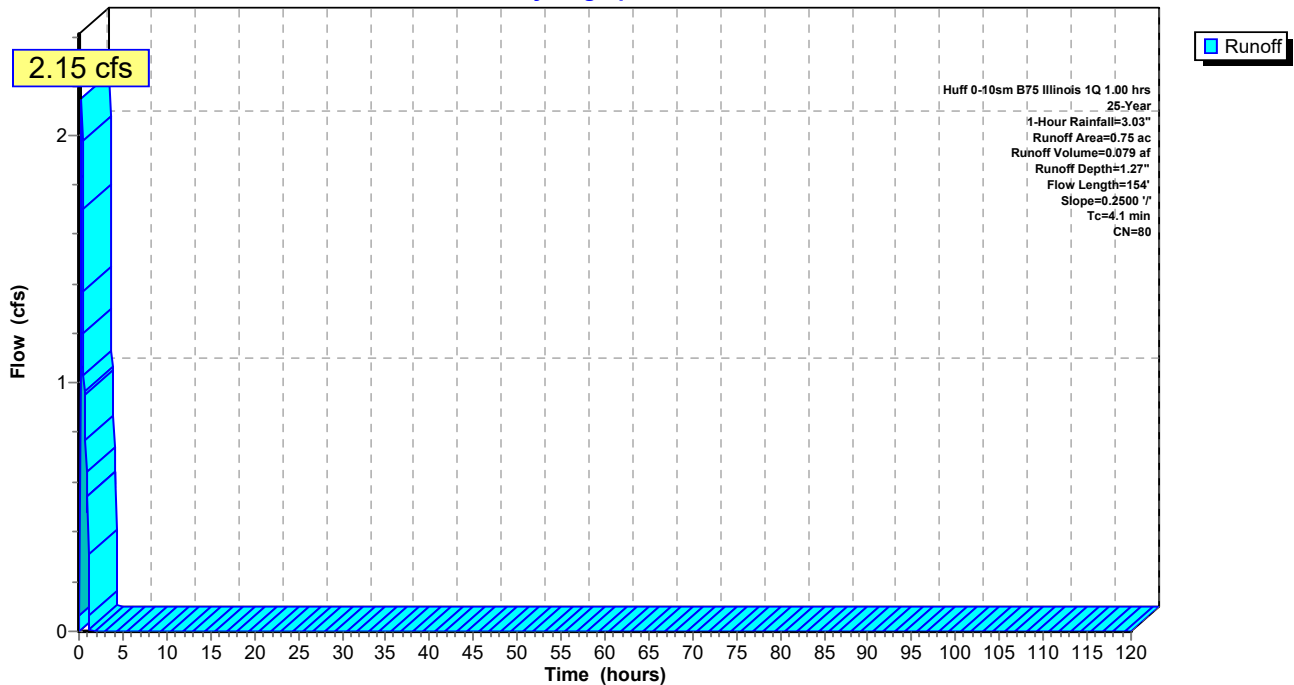
Area (ac)	CN	Description
0.75	80	>75% Grass cover, Good, HSG D
0.75		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.3	54	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	154	Total			

**Subcatchment N-C5: Subcat N-C5**

Hydrograph



**Summary for Subcatchment N-C6: Subcat N-C6**

Runoff = 1.52 cfs @ 0.64 hrs, Volume= 0.090 af, Depth= 1.47"

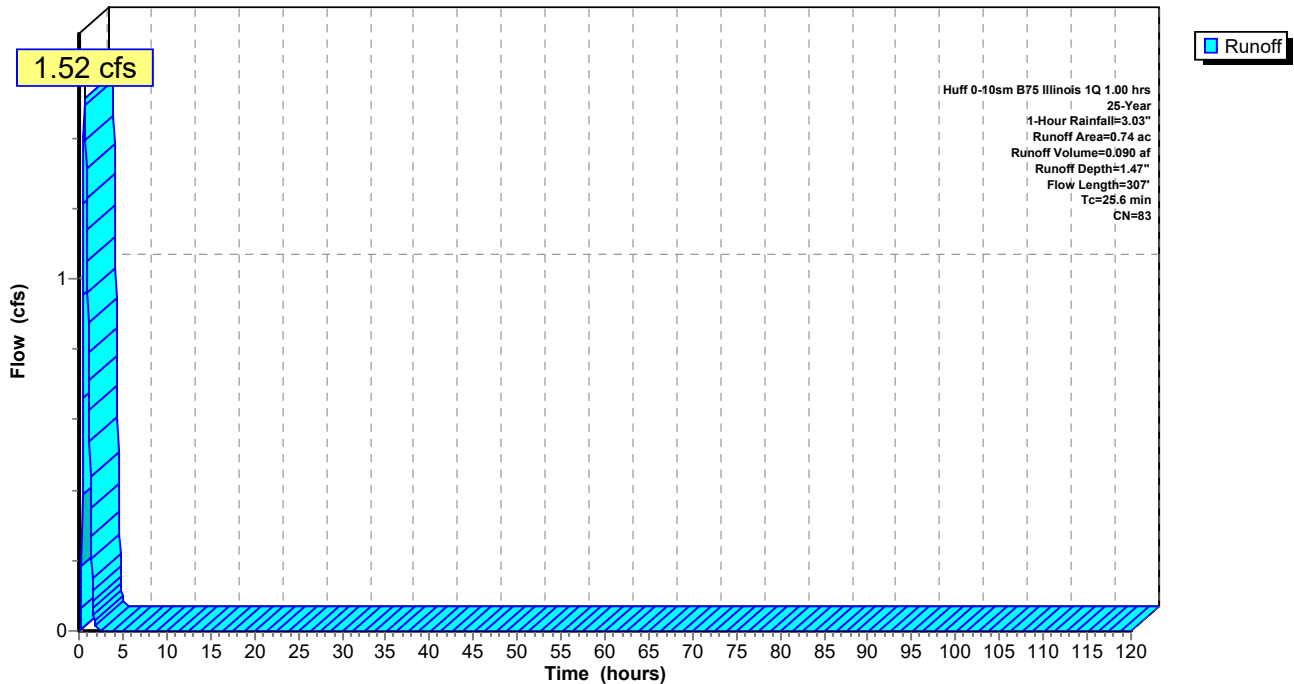
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

Area (ac)	CN	Description
0.59	80	>75% Grass cover, Good, HSG D
0.14	93	Paved roads w/open ditches, 50% imp, HSG D
0.74	83	Weighted Average
0.67		90.37% Pervious Area
0.07		9.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.0	100	0.0200	0.07		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.80"
2.6	207	0.0352	1.31		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
25.6	307	Total			

**Subcatchment N-C6: Subcat N-C6**

Hydrograph



**Summary for Subcatchment N-C7: Subcat N-C7**

Runoff = 3.39 cfs @ 0.29 hrs, Volume= 0.123 af, Depth= 1.27"

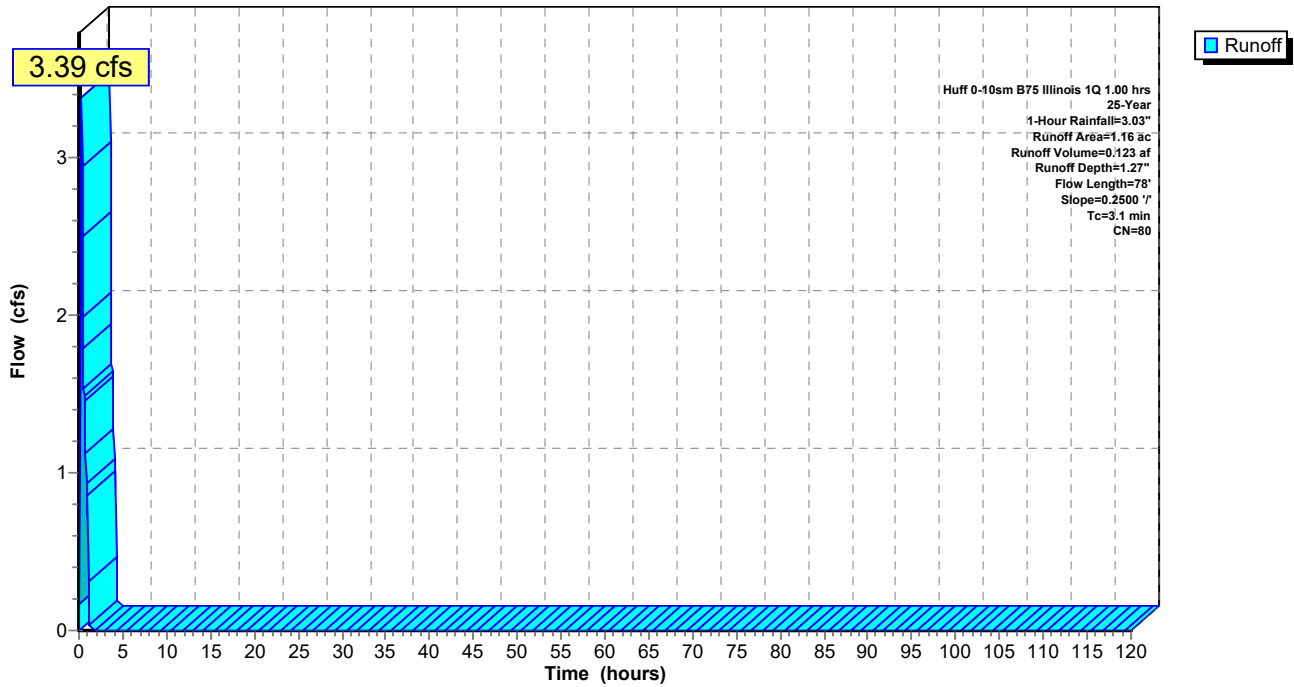
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

Area (ac)	CN	Description
1.16	80	>75% Grass cover, Good, HSG D
1.16		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	78	0.2500	0.42		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-C7: Subcat N-C7**

Hydrograph



**Summary for Subcatchment N-C8: Subcat N-C8**

Runoff = 3.70 cfs @ 0.60 hrs, Volume= 0.212 af, Depth= 1.61"

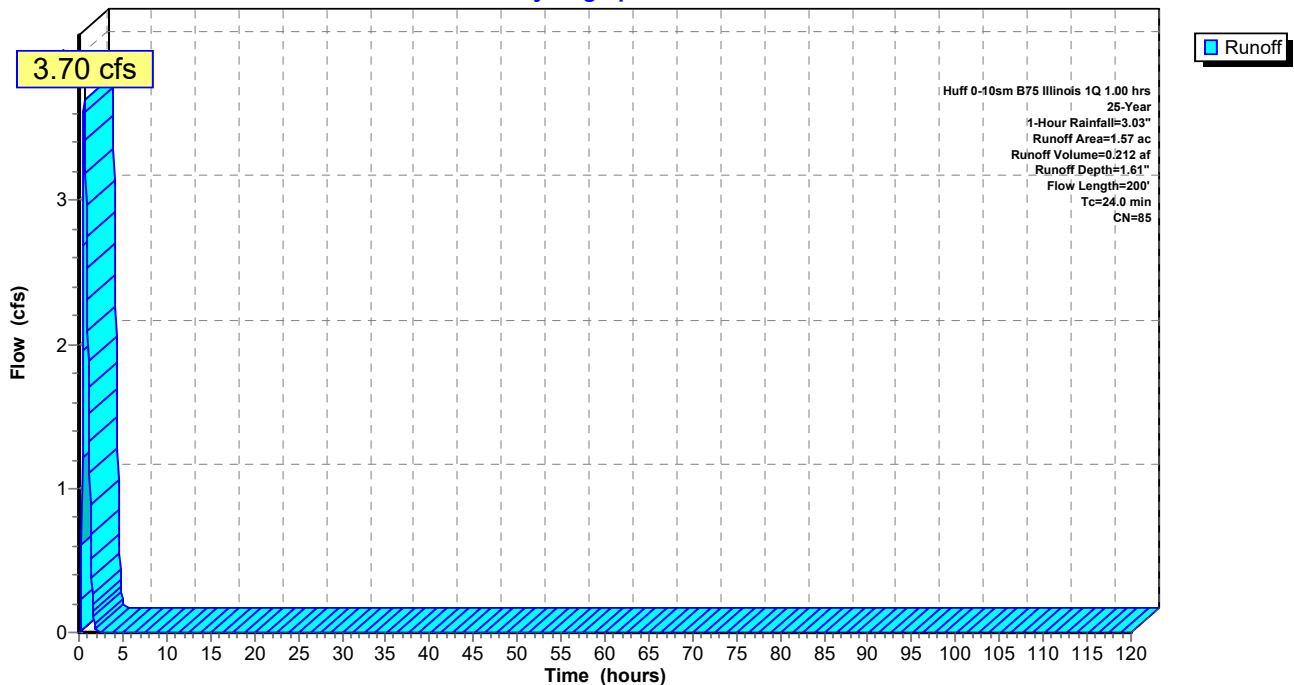
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

Area (ac)	CN	Description
0.65	80	>75% Grass cover, Good, HSG D
0.63	93	Paved roads w/open ditches, 50% imp, HSG D
0.30	79	Woods/grass comb., Good, HSG D
1.57	85	Weighted Average
1.26		80.08% Pervious Area
0.31		19.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.0	100	0.0200	0.07		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.80"
1.0	100	0.0611	1.73		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
24.0	200	Total			

**Subcatchment N-C8: Subcat N-C8**

Hydrograph



**Summary for Subcatchment N-D1: Subcat N-D1**

Runoff = 0.31 cfs @ 0.29 hrs, Volume= 0.011 af, Depth= 1.27"

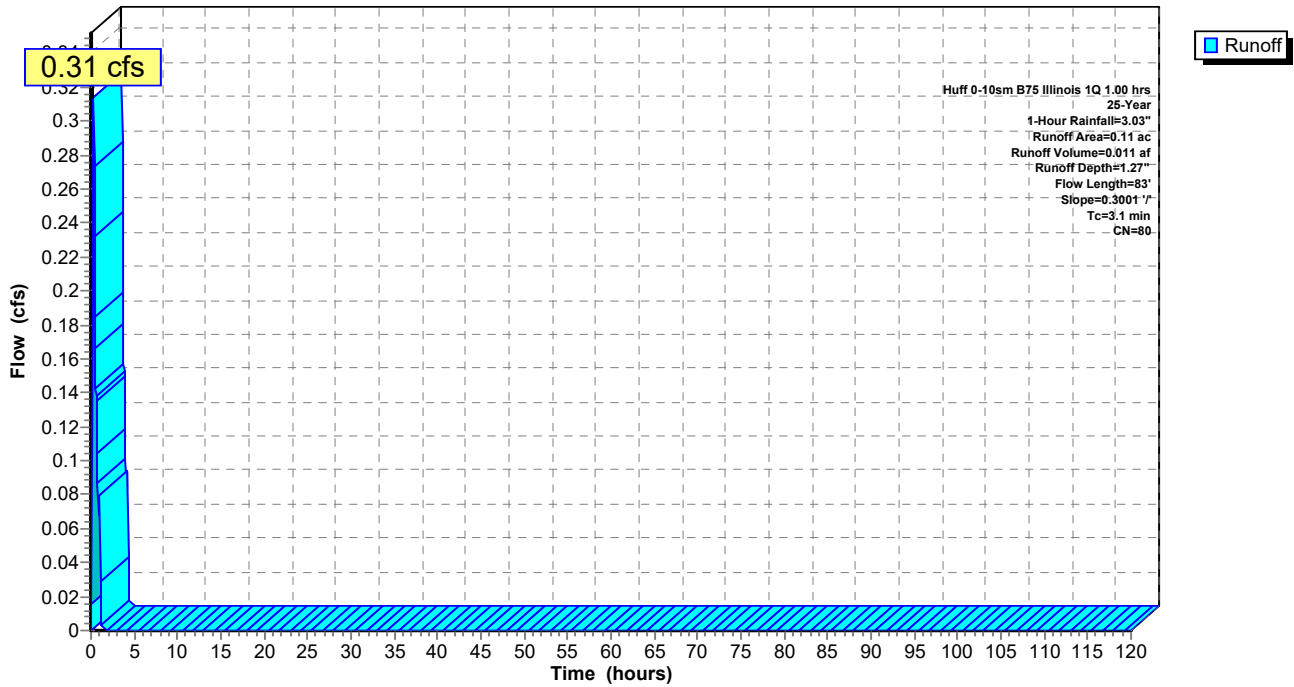
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

Area (ac)	CN	Description
0.11	80	>75% Grass cover, Good, HSG D
0.11		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	83	0.3001	0.45		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-D1: Subcat N-D1**

Hydrograph



**Summary for Subcatchment N-D2: Subcat N-D2**

Runoff = 13.63 cfs @ 0.30 hrs, Volume= 0.499 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

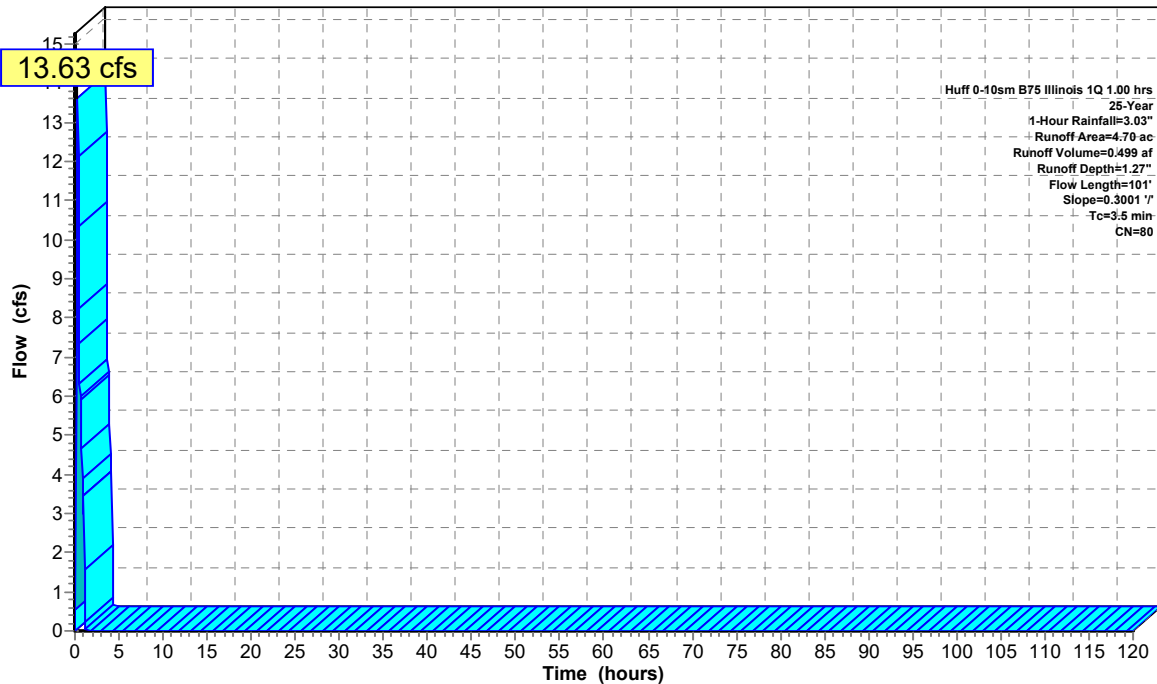
Area (ac)	CN	Description
4.54	80	>75% Grass cover, Good, HSG D
0.16	93	Paved roads w/open ditches, 50% imp, HSG D
4.70	80	Weighted Average
4.62		98.26% Pervious Area
0.08		1.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	100	0.3001	0.47		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.0	1	0.3001	3.83		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.5	101	Total			

**Subcatchment N-D2: Subcat N-D2**

Hydrograph



Runoff

Huff 0-10sm B75 Illinois 1Q 1.00 hrs  
 25-Year  
 1-Hour Rainfall=3.03"  
 Runoff Area=4.70 ac  
 Runoff Volume=0.499 af  
 Runoff Depth=1.27"  
 Flow Length=101'  
 Slope=0.3001 /'  
 Tc=3.5 min  
 CN=80



**Summary for Subcatchment N-E1: Subcat N-E1**

Runoff = 26.07 cfs @ 0.28 hrs, Volume= 0.949 af, Depth= 1.27"

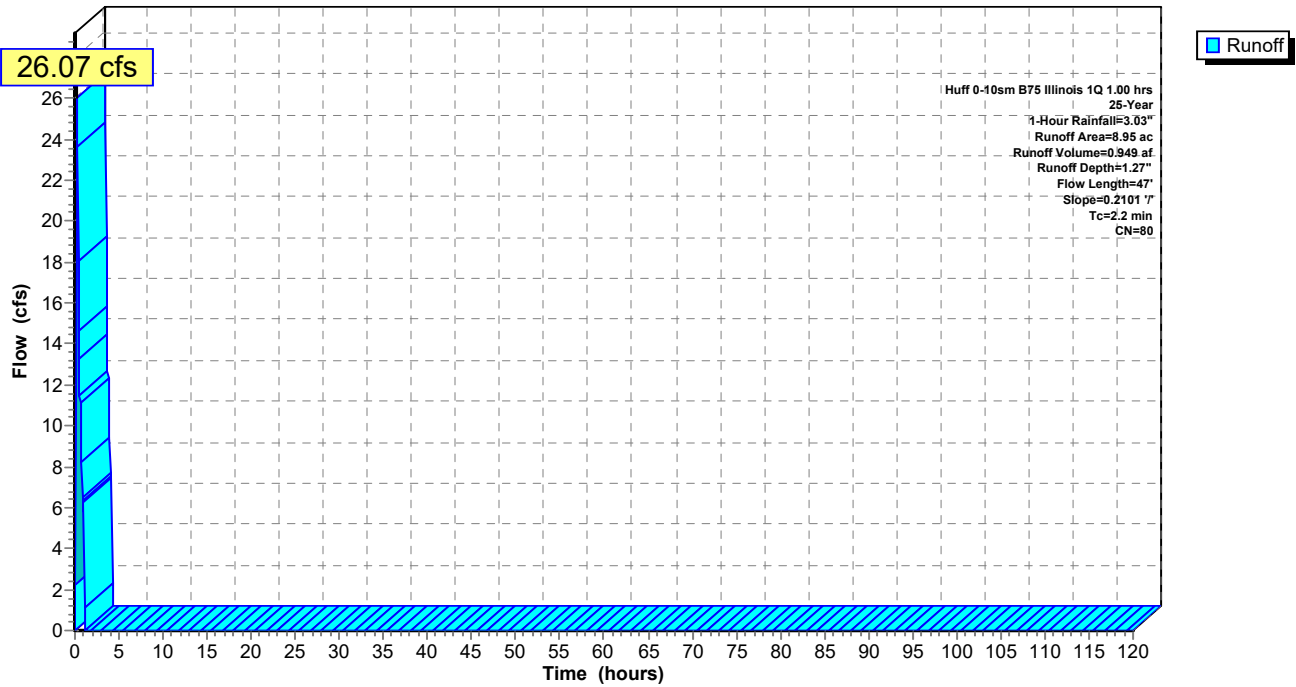
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 25-Year, 1-Hour Rainfall=3.03"

Area (ac)	CN	Description
8.95	80	>75% Grass cover, Good, HSG D
8.95		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	47	0.2101	0.35		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-E1: Subcat N-E1**

Hydrograph



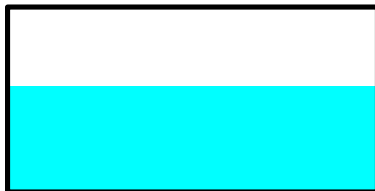
### Summary for Reach Cu-1: Culvert 1

Inflow Area = 90.82 ac, 2.38% Impervious, Inflow Depth = 1.31" for 25-Year, 1-Hour event  
 Inflow = 133.24 cfs @ 0.81 hrs, Volume= 9.925 af  
 Outflow = 133.20 cfs @ 0.82 hrs, Volume= 9.925 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 7.29 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 1.32 fps, Avg. Travel Time= 1.4 min

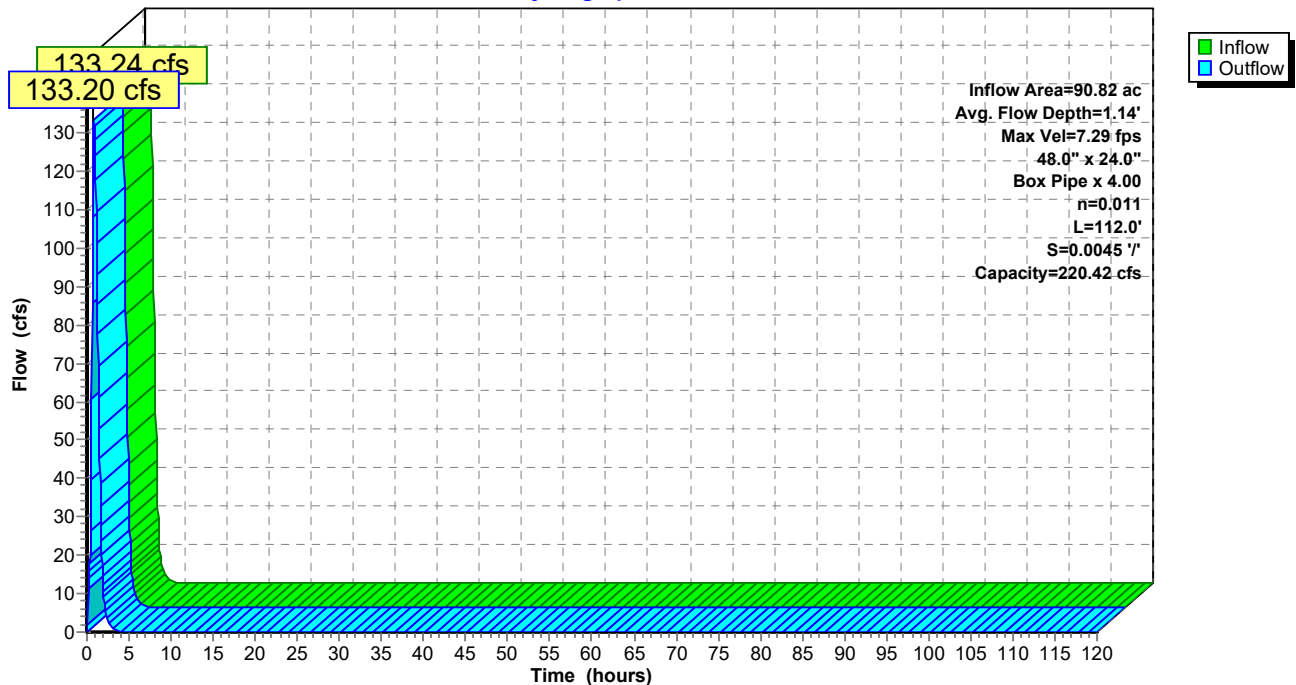
Peak Storage= 2,046 cf @ 0.81 hrs  
 Average Depth at Peak Storage= 1.14'  
 Bank-Full Depth= 2.00' Flow Area= 32.0 sf, Capacity= 220.42 cfs

A factor of 4.00 has been applied to the storage and discharge capacity  
 48.0" W x 24.0" H Box Pipe  
 n= 0.011 Concrete pipe, straight & clean  
 Length= 112.0' Slope= 0.0045 '/'  
 Inlet Invert= 737.00', Outlet Invert= 736.50'



### Reach Cu-1: Culvert 1

Hydrograph



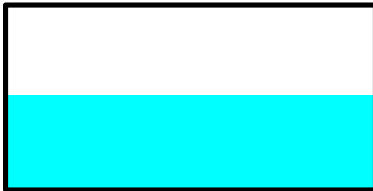
### Summary for Reach Cu-2: Culvert 2

Inflow Area = 39.65 ac, 1.66% Impervious, Inflow Depth = 1.30" for 25-Year, 1-Hour event  
 Inflow = 82.24 cfs @ 0.52 hrs, Volume= 4.298 af  
 Outflow = 81.69 cfs @ 0.53 hrs, Volume= 4.298 af, Atten= 1%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 10.07 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 1.93 fps, Avg. Travel Time= 0.6 min

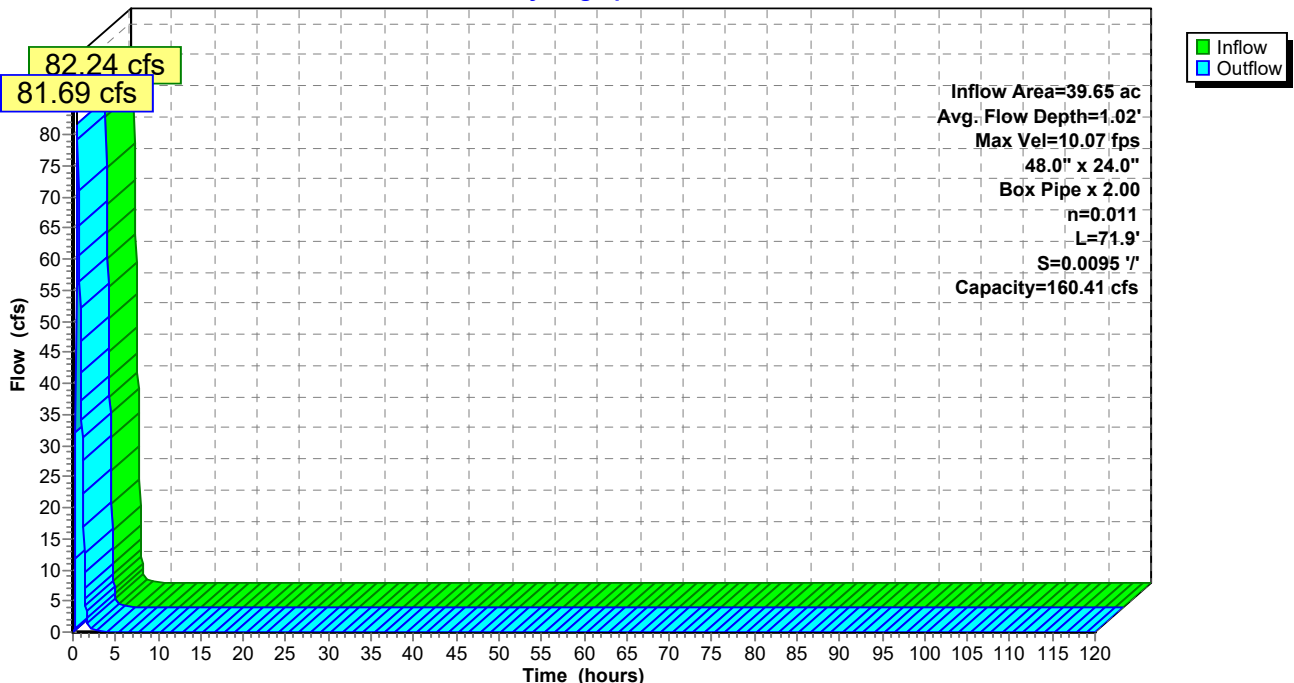
Peak Storage= 585 cf @ 0.52 hrs  
 Average Depth at Peak Storage= 1.02'  
 Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 160.41 cfs

A factor of 2.00 has been applied to the storage and discharge capacity  
 48.0" W x 24.0" H Box Pipe  
 n= 0.011 Concrete pipe, straight & clean  
 Length= 71.9' Slope= 0.0095 '/'  
 Inlet Invert= 737.18', Outlet Invert= 736.50'



### Reach Cu-2: Culvert 2

Hydrograph



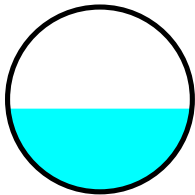
### Summary for Reach Cu-3: Culvert 3

Inflow Area = 43.19 ac, 1.69% Impervious, Inflow Depth = 1.30" for 25-Year, 1-Hour event  
 Inflow = 81.72 cfs @ 0.58 hrs, Volume= 4.686 af  
 Outflow = 81.60 cfs @ 0.58 hrs, Volume= 4.686 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 8.85 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 1.88 fps, Avg. Travel Time= 0.8 min

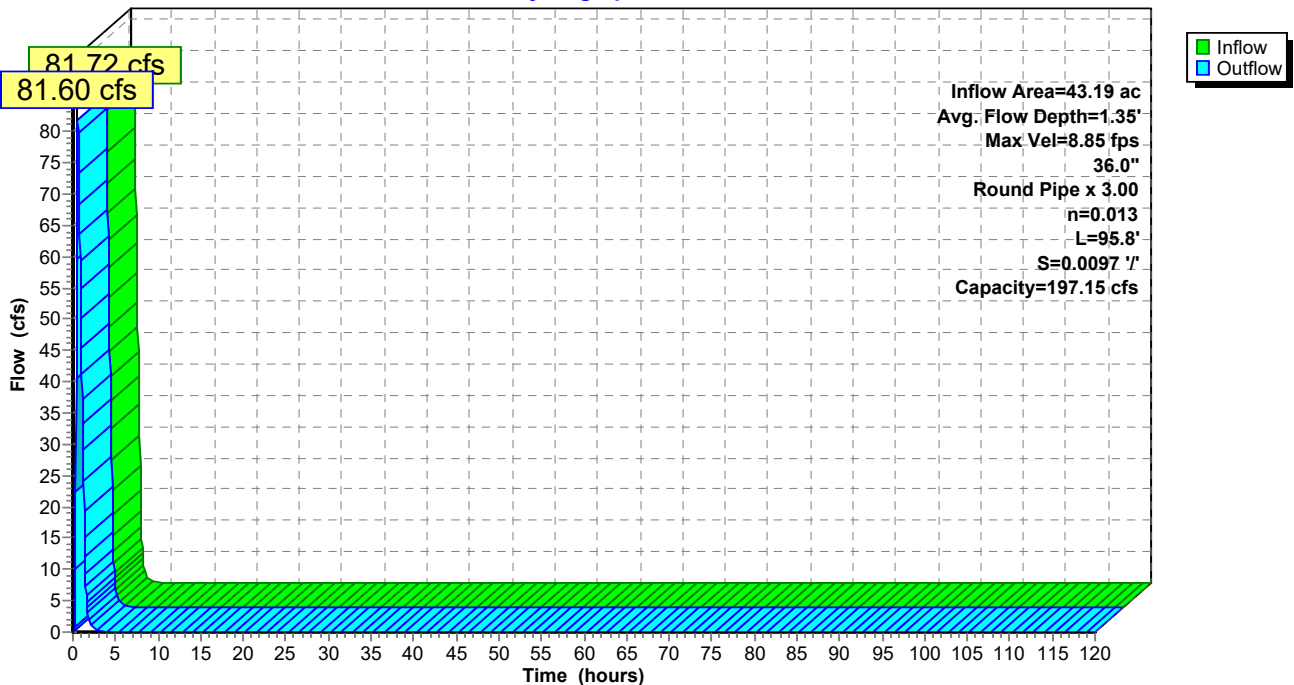
Peak Storage= 884 cf @ 0.58 hrs  
 Average Depth at Peak Storage= 1.35'  
 Bank-Full Depth= 3.00' Flow Area= 21.2 sf, Capacity= 197.15 cfs

A factor of 3.00 has been applied to the storage and discharge capacity  
 36.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 95.8' Slope= 0.0097 '/'  
 Inlet Invert= 738.93', Outlet Invert= 738.00'



### Reach Cu-3: Culvert 3

Hydrograph



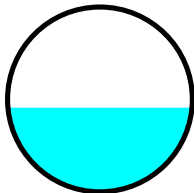
**Summary for Reach Cu-A: Culvert A**

Inflow Area = 33.94 ac, 1.59% Impervious, Inflow Depth = 1.29" for 25-Year, 1-Hour event  
 Inflow = 56.34 cfs @ 0.73 hrs, Volume= 3.653 af  
 Outflow = 56.29 cfs @ 0.74 hrs, Volume= 3.653 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 9.03 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 1.81 fps, Avg. Travel Time= 0.9 min

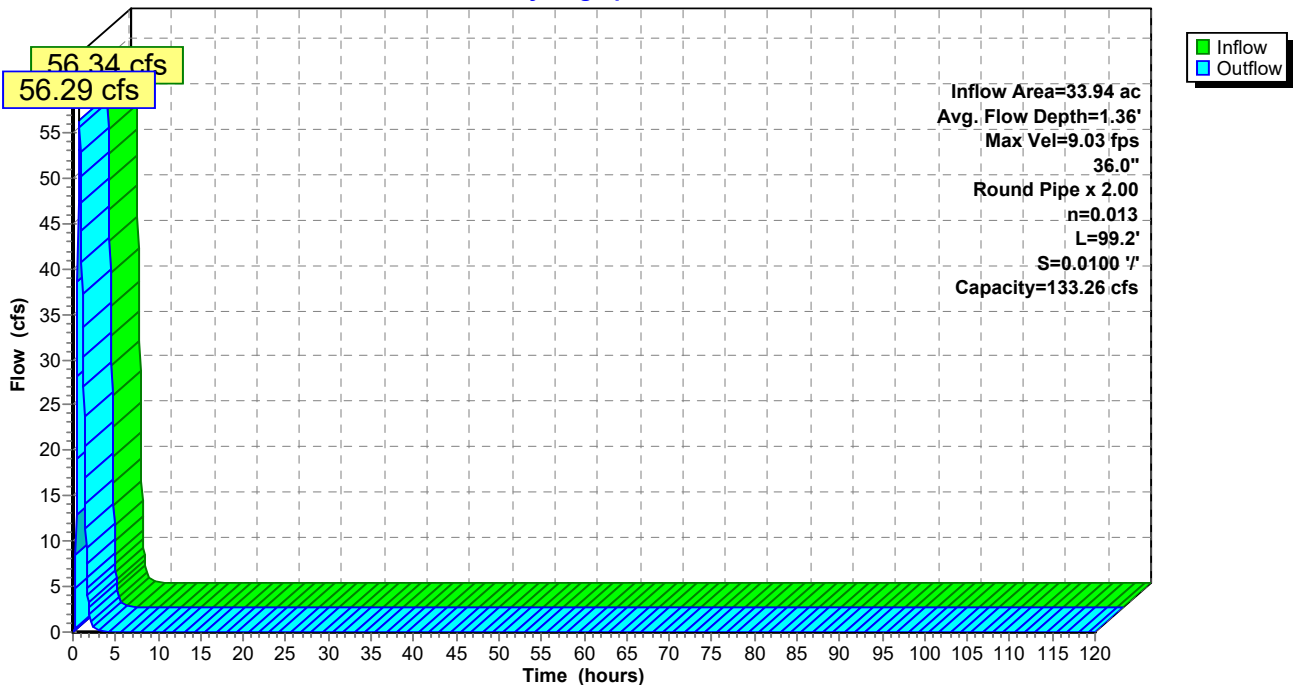
Peak Storage= 619 cf @ 0.73 hrs  
 Average Depth at Peak Storage= 1.36'  
 Bank-Full Depth= 3.00' Flow Area= 14.1 sf, Capacity= 133.26 cfs

A factor of 2.00 has been applied to the storage and discharge capacity  
 36.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 99.2' Slope= 0.0100 '/'  
 Inlet Invert= 756.77', Outlet Invert= 755.78'



**Reach Cu-A: Culvert A**

Hydrograph



**Summary for Reach DC-A1A: Downchute A1A**

Inflow Area = 6.74 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 13.99 cfs @ 0.62 hrs, Volume= 0.714 af  
 Outflow = 13.86 cfs @ 0.63 hrs, Volume= 0.714 af, Atten= 1%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 5.46 fps, Min. Travel Time= 0.4 min  
 Avg. Velocity = 2.19 fps, Avg. Travel Time= 1.0 min

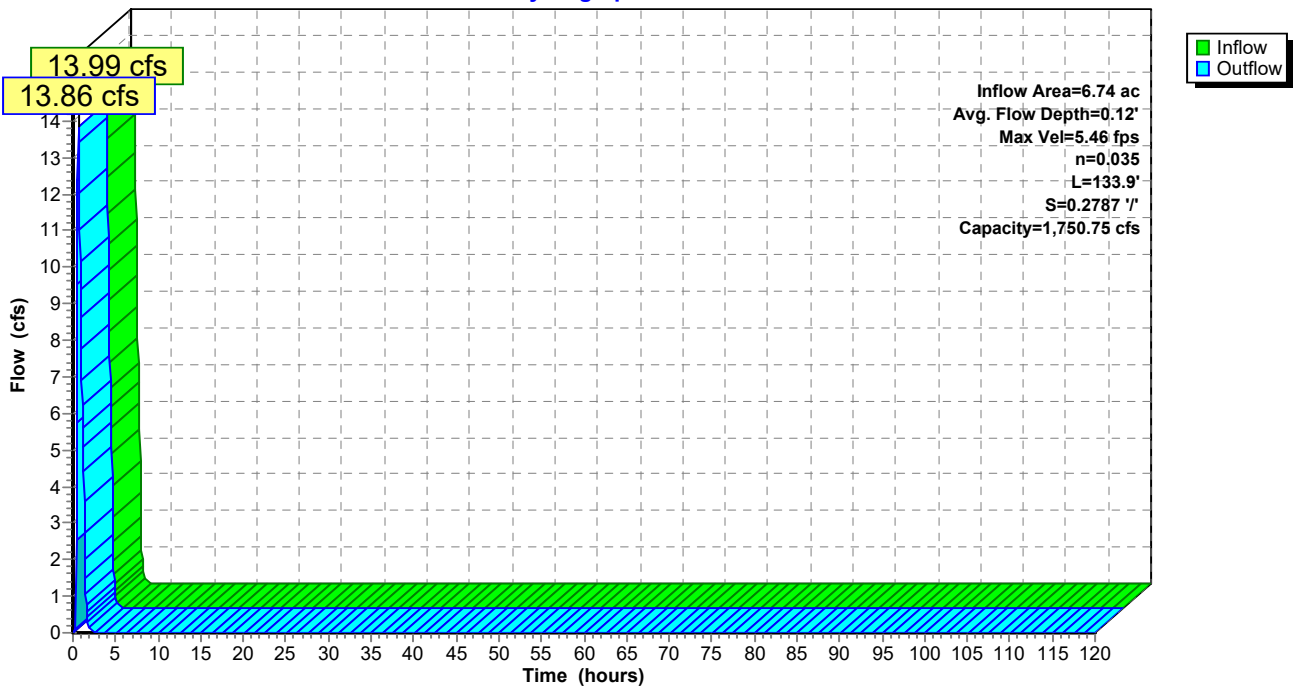
Peak Storage= 343 cf @ 0.62 hrs  
 Average Depth at Peak Storage= 0.12'  
 Bank-Full Depth= 2.00' Flow Area= 60.0 sf, Capacity= 1,750.75 cfs

20.00' x 2.00' deep channel, n= 0.035  
 Side Slope Z-value= 5.0 '/' Top Width= 40.00'  
 Length= 133.9' Slope= 0.2787 '/'  
 Inlet Invert= 821.32', Outlet Invert= 784.00'



**Reach DC-A1A: Downchute A1A**

Hydrograph



**Summary for Reach DC-A1B: Downchute A1B**

Inflow Area = 11.96 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 24.33 cfs @ 0.60 hrs, Volume= 1.269 af  
 Outflow = 24.26 cfs @ 0.61 hrs, Volume= 1.269 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.85 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 1.38 fps, Avg. Travel Time= 1.0 min

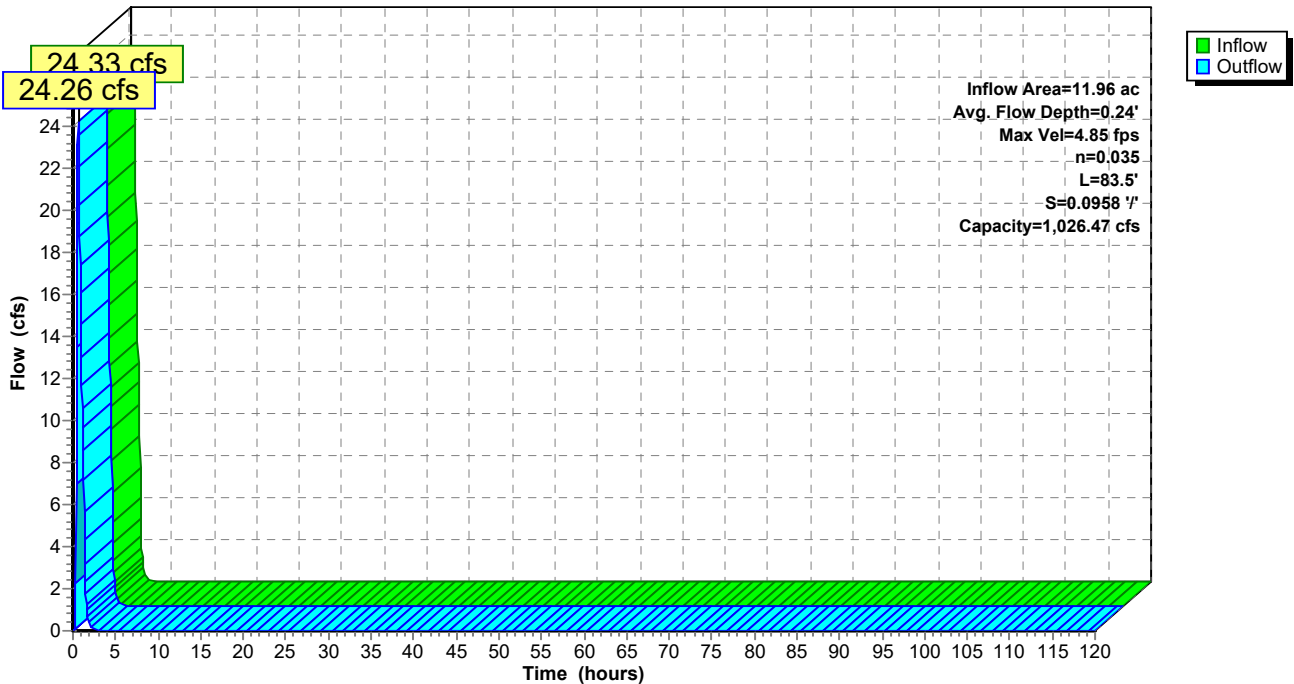
Peak Storage= 419 cf @ 0.60 hrs  
 Average Depth at Peak Storage= 0.24'  
 Bank-Full Depth= 2.00' Flow Area= 60.0 sf, Capacity= 1,026.47 cfs

20.00' x 2.00' deep channel, n= 0.035  
 Side Slope Z-value= 5.0 '/' Top Width= 40.00'  
 Length= 83.5' Slope= 0.0958 '/'  
 Inlet Invert= 784.00', Outlet Invert= 776.00'



**Reach DC-A1B: Downchute A1B**

Hydrograph



**Summary for Reach DC-A1C: Downchute A1C**

Inflow Area = 21.13 ac, 0.64% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 35.04 cfs @ 0.72 hrs, Volume= 2.240 af  
 Outflow = 34.94 cfs @ 0.73 hrs, Volume= 2.240 af, Atten= 0%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 5.94 fps, Min. Travel Time= 0.4 min  
 Avg. Velocity = 1.65 fps, Avg. Travel Time= 1.5 min

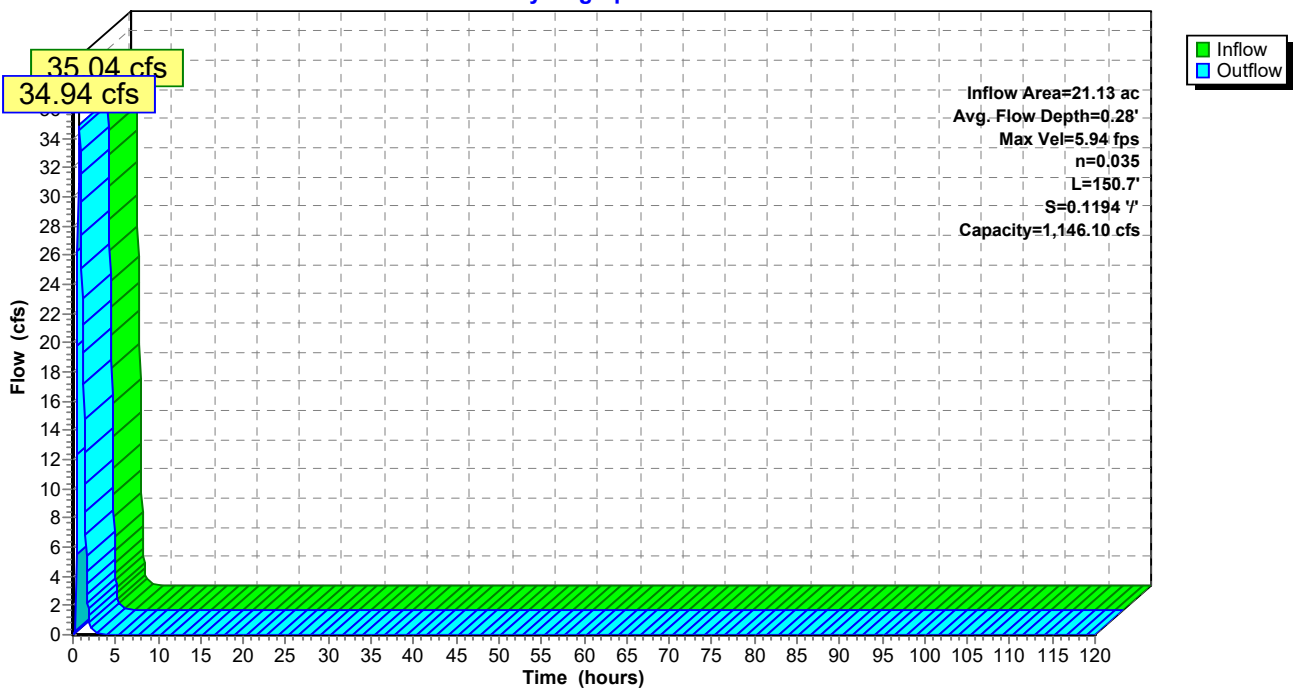
Peak Storage= 887 cf @ 0.72 hrs  
 Average Depth at Peak Storage= 0.28'  
 Bank-Full Depth= 2.00' Flow Area= 60.0 sf, Capacity= 1,146.10 cfs

20.00' x 2.00' deep channel, n= 0.035  
 Side Slope Z-value= 5.0 '/' Top Width= 40.00'  
 Length= 150.7' Slope= 0.1194 '/'  
 Inlet Invert= 776.00', Outlet Invert= 758.00'



**Reach DC-A1C: Downchute A1C**

Hydrograph





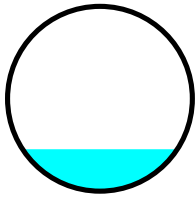
**Summary for Reach LP-B1: Letdown Pipe B1**

Inflow Area = 4.78 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 12.48 cfs @ 0.41 hrs, Volume= 0.507 af  
 Outflow = 12.45 cfs @ 0.41 hrs, Volume= 0.507 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 23.40 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 10.34 fps, Avg. Travel Time= 0.3 min

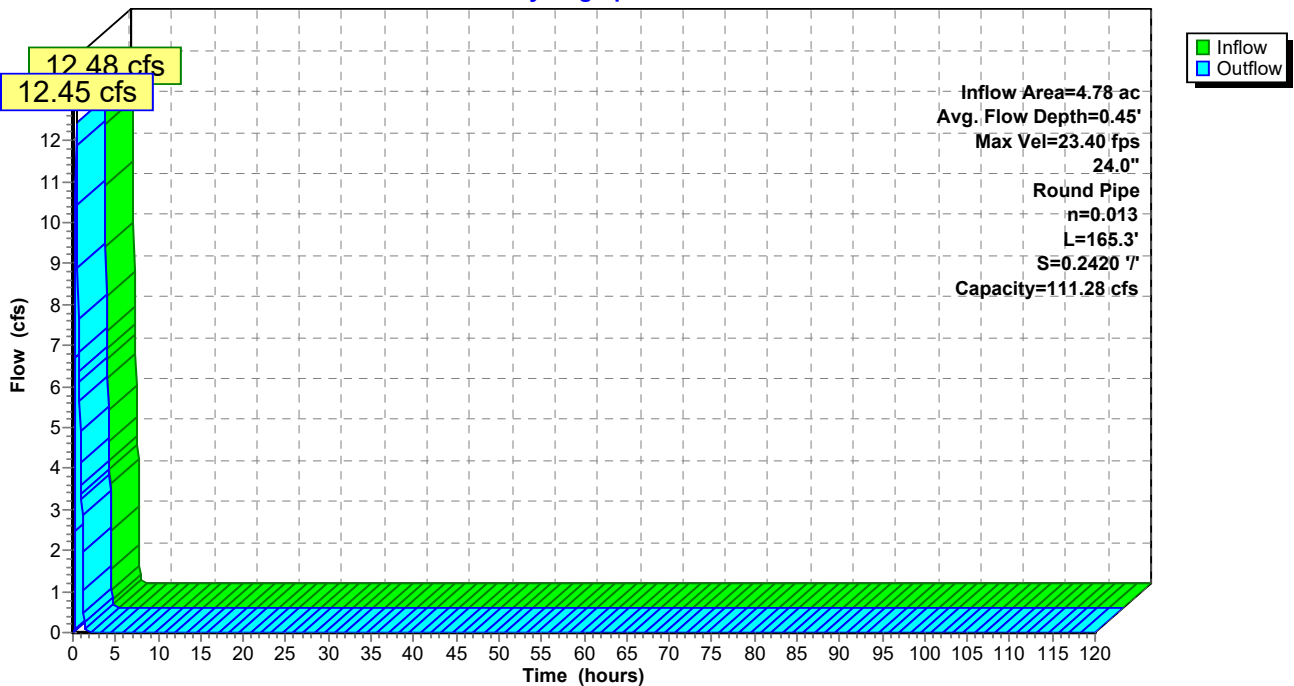
Peak Storage= 88 cf @ 0.41 hrs  
 Average Depth at Peak Storage= 0.45'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 111.28 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 165.3' Slope= 0.2420 '/'  
 Inlet Invert= 877.00', Outlet Invert= 837.00'



**Reach LP-B1: Letdown Pipe B1**

Hydrograph



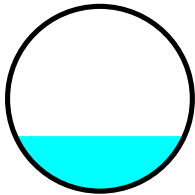
**Summary for Reach LP-B2: Letdown Pipe B2**

Inflow Area = 8.86 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 22.45 cfs @ 0.42 hrs, Volume= 0.940 af  
 Outflow = 22.20 cfs @ 0.43 hrs, Volume= 0.940 af, Atten= 1%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 28.39 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 9.38 fps, Avg. Travel Time= 0.2 min

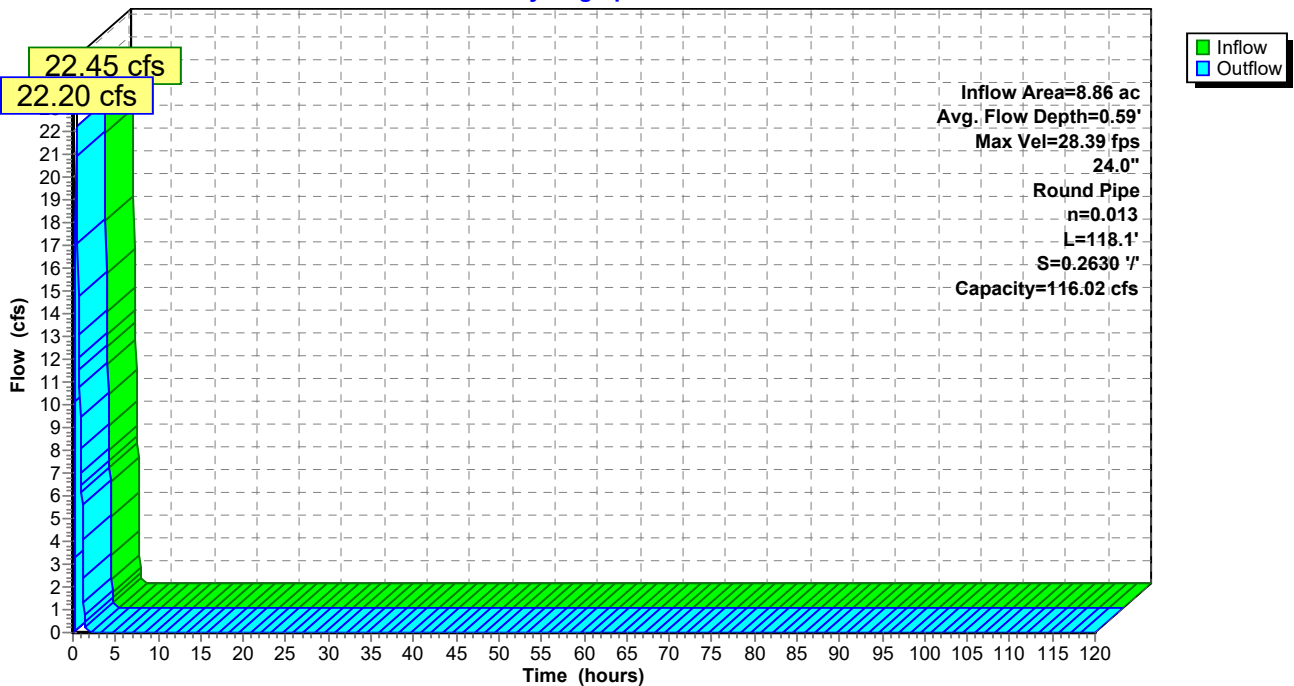
Peak Storage= 92 cf @ 0.43 hrs  
 Average Depth at Peak Storage= 0.59'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 116.02 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 118.1' Slope= 0.2630 '/'  
 Inlet Invert= 837.00', Outlet Invert= 805.94'



**Reach LP-B2: Letdown Pipe B2**

Hydrograph



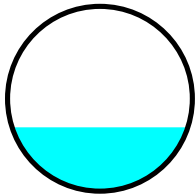
**Summary for Reach LP-B3: Letdown Pipe B3**

Inflow Area = 11.97 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 29.14 cfs @ 0.44 hrs, Volume= 1.269 af  
 Outflow = 29.11 cfs @ 0.44 hrs, Volume= 1.269 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 30.43 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 8.80 fps, Avg. Travel Time= 0.2 min

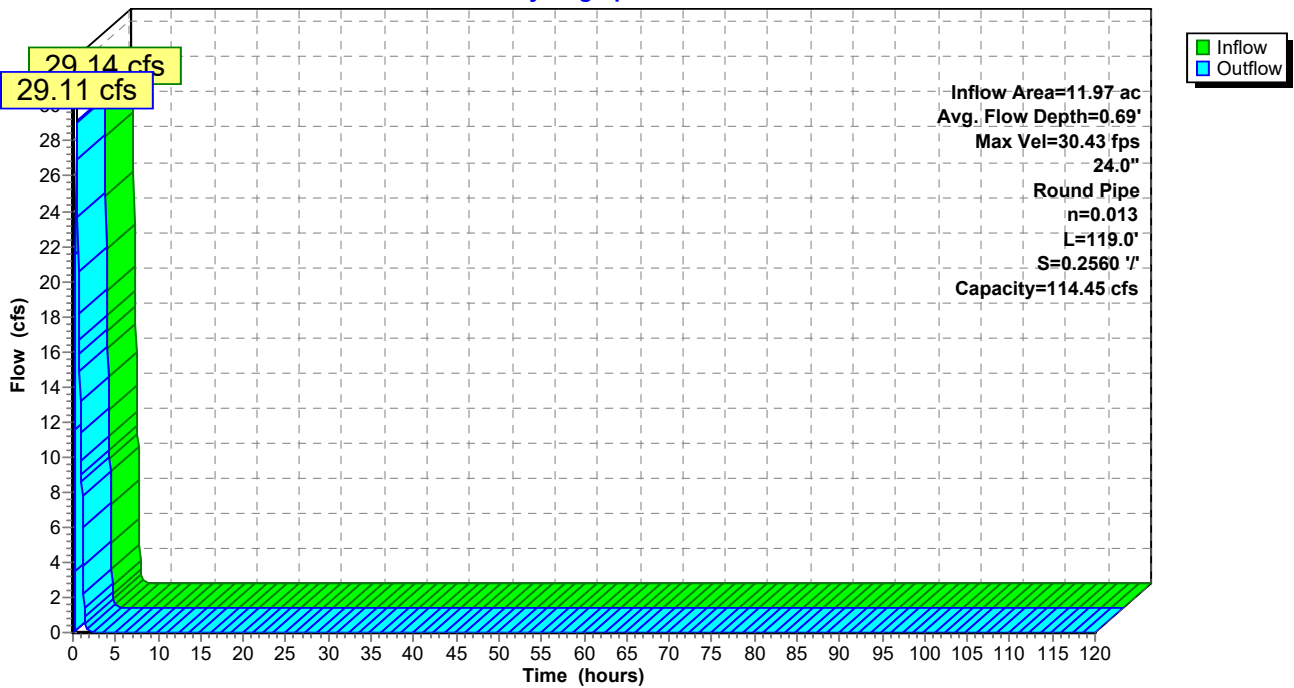
Peak Storage= 114 cf @ 0.44 hrs  
 Average Depth at Peak Storage= 0.69'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 114.45 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 119.0' Slope= 0.2560 '/'  
 Inlet Invert= 805.94', Outlet Invert= 775.48'



**Reach LP-B3: Letdown Pipe B3**

Hydrograph



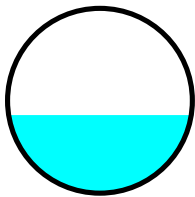
**Summary for Reach LP-B4: Letdown Pipe B4**

Inflow Area = 15.33 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 36.84 cfs @ 0.45 hrs, Volume= 1.626 af  
 Outflow = 36.79 cfs @ 0.45 hrs, Volume= 1.626 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 29.28 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 7.75 fps, Avg. Travel Time= 0.3 min

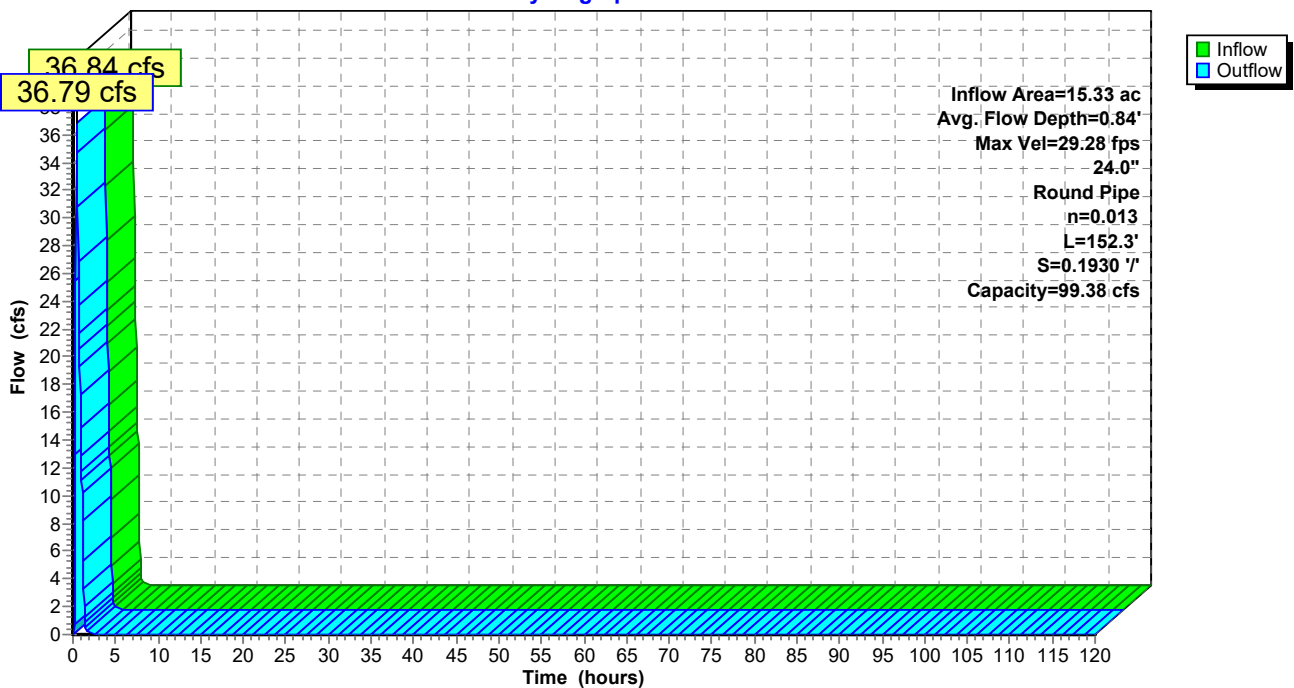
Peak Storage= 192 cf @ 0.45 hrs  
 Average Depth at Peak Storage= 0.84'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 99.38 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 152.3' Slope= 0.1930 '/'  
 Inlet Invert= 775.48', Outlet Invert= 746.09'



**Reach LP-B4: Letdown Pipe B4**

Hydrograph



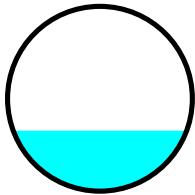
**Summary for Reach LP-B5: Letdown Pipe B5**

Inflow Area = 3.47 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 8.12 cfs @ 0.46 hrs, Volume= 0.368 af  
 Outflow = 8.09 cfs @ 0.47 hrs, Volume= 0.368 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 20.57 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 7.74 fps, Avg. Travel Time= 0.6 min

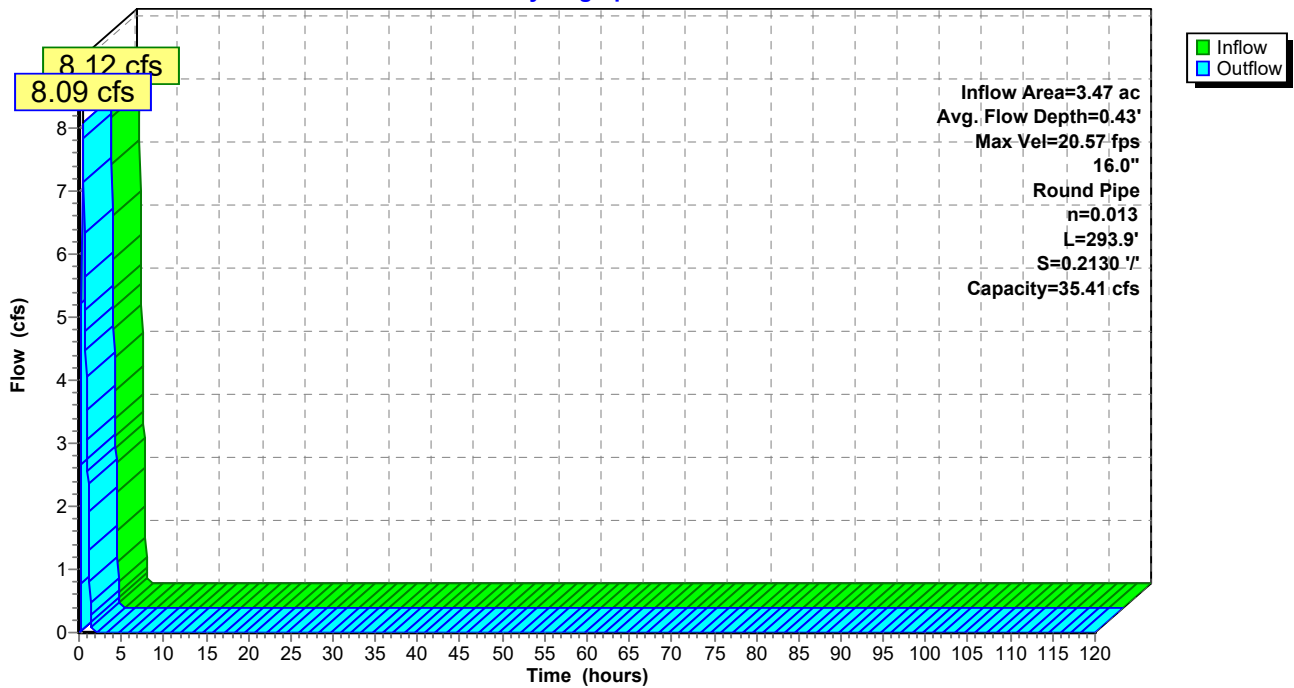
Peak Storage= 116 cf @ 0.46 hrs  
 Average Depth at Peak Storage= 0.43'  
 Bank-Full Depth= 1.33' Flow Area= 1.4 sf, Capacity= 35.41 cfs

16.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 293.9' Slope= 0.2130 '/'  
 Inlet Invert= 820.00', Outlet Invert= 757.40'



**Reach LP-B5: Letdown Pipe B5**

Hydrograph



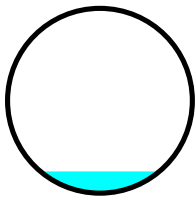
**Summary for Reach LP-D1: Letdown Pipe D1**

Inflow Area = 1.26 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 3.28 cfs @ 0.39 hrs, Volume= 0.133 af  
 Outflow = 3.27 cfs @ 0.40 hrs, Volume= 0.133 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 15.95 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 9.13 fps, Avg. Travel Time= 0.1 min

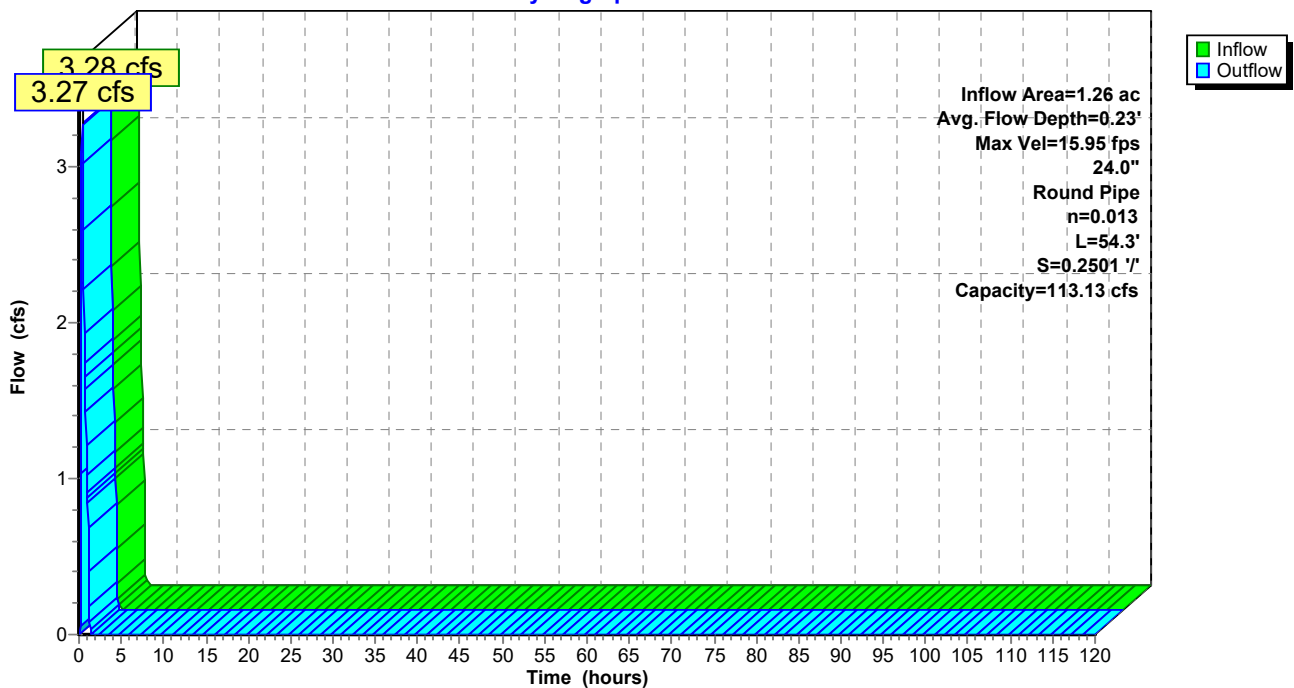
Peak Storage= 11 cf @ 0.39 hrs  
 Average Depth at Peak Storage= 0.23'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 113.13 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 54.3' Slope= 0.2501 '/  
 Inlet Invert= 857.24', Outlet Invert= 843.66'



**Reach LP-D1: Letdown Pipe D1**

Hydrograph



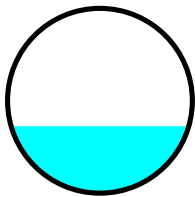
**Summary for Reach LP-D3: Letdown Pipe D3**

Inflow Area = 13.77 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 31.26 cfs @ 0.49 hrs, Volume= 1.461 af  
 Outflow = 31.25 cfs @ 0.49 hrs, Volume= 1.461 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 30.60 fps, Min. Travel Time= 0.0 min  
 Avg. Velocity = 8.44 fps, Avg. Travel Time= 0.2 min

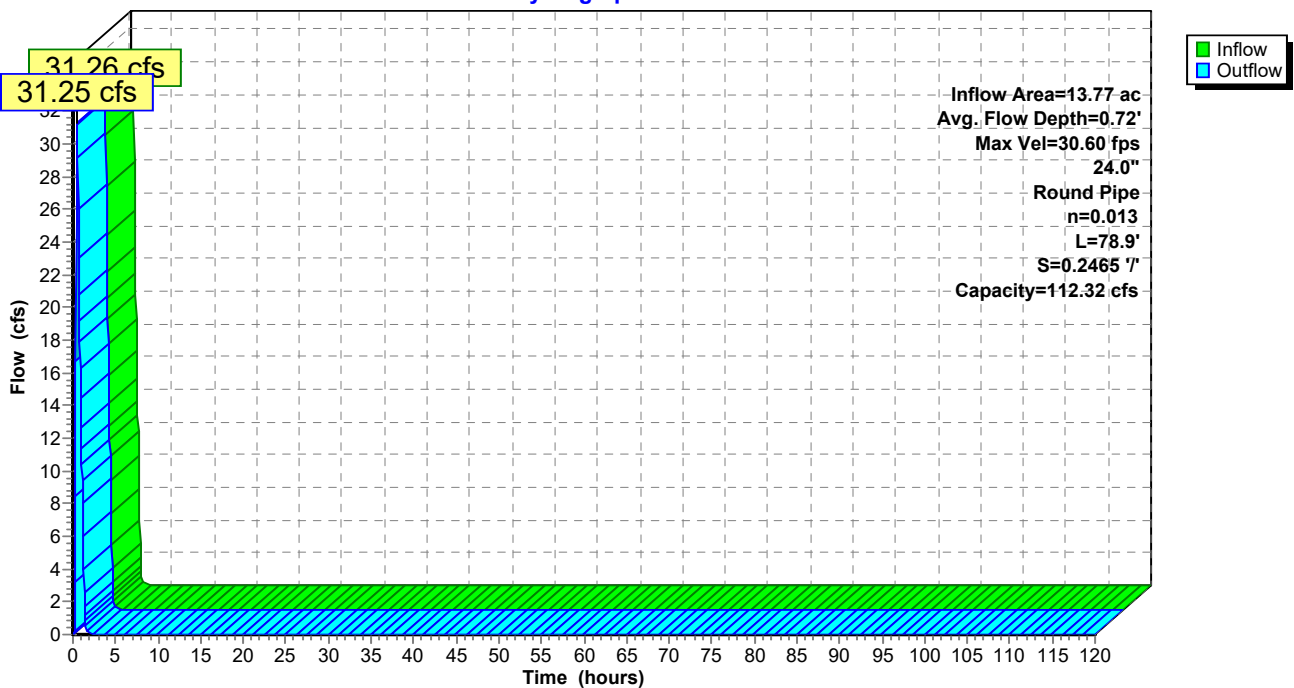
Peak Storage= 81 cf @ 0.49 hrs  
 Average Depth at Peak Storage= 0.72'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 112.32 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 78.9' Slope= 0.2465 '/'  
 Inlet Invert= 793.71', Outlet Invert= 774.26'



**Reach LP-D3: Letdown Pipe D3**

Hydrograph



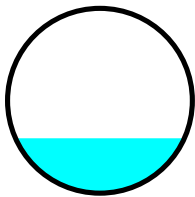
**Summary for Reach LP-E1: Letdown Pipe E1**

Inflow Area = 3.40 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 8.66 cfs @ 0.44 hrs, Volume= 0.361 af  
 Outflow = 8.65 cfs @ 0.44 hrs, Volume= 0.361 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 19.78 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 7.56 fps, Avg. Travel Time= 0.3 min

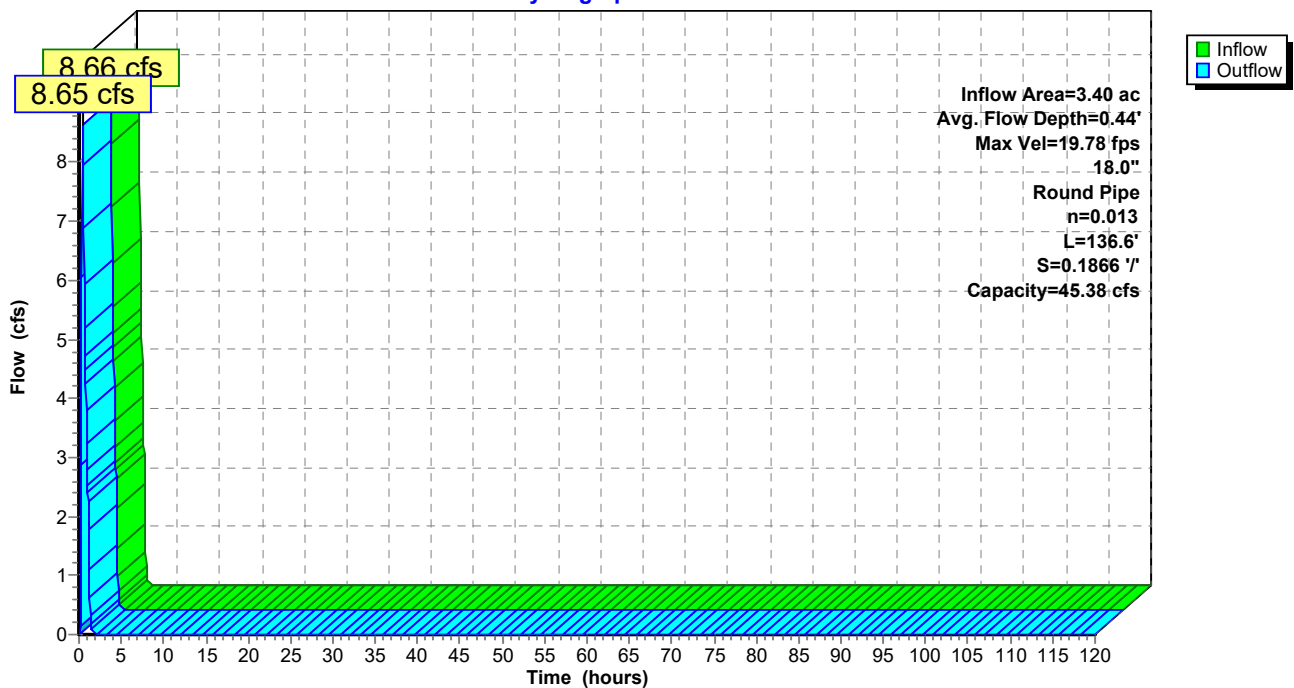
Peak Storage= 60 cf @ 0.44 hrs  
 Average Depth at Peak Storage= 0.44'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 45.38 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 136.6' Slope= 0.1866 '/'  
 Inlet Invert= 856.64', Outlet Invert= 831.15'



**Reach LP-E1: Letdown Pipe E1**

Hydrograph





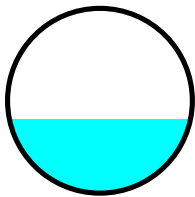
**Summary for Reach LP-E2: Letdown Pipe E2**

Inflow Area = 8.08 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 17.61 cfs @ 0.49 hrs, Volume= 0.857 af  
 Outflow = 17.60 cfs @ 0.49 hrs, Volume= 0.857 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 26.73 fps, Min. Travel Time= 0.0 min  
 Avg. Velocity = 7.25 fps, Avg. Travel Time= 0.2 min

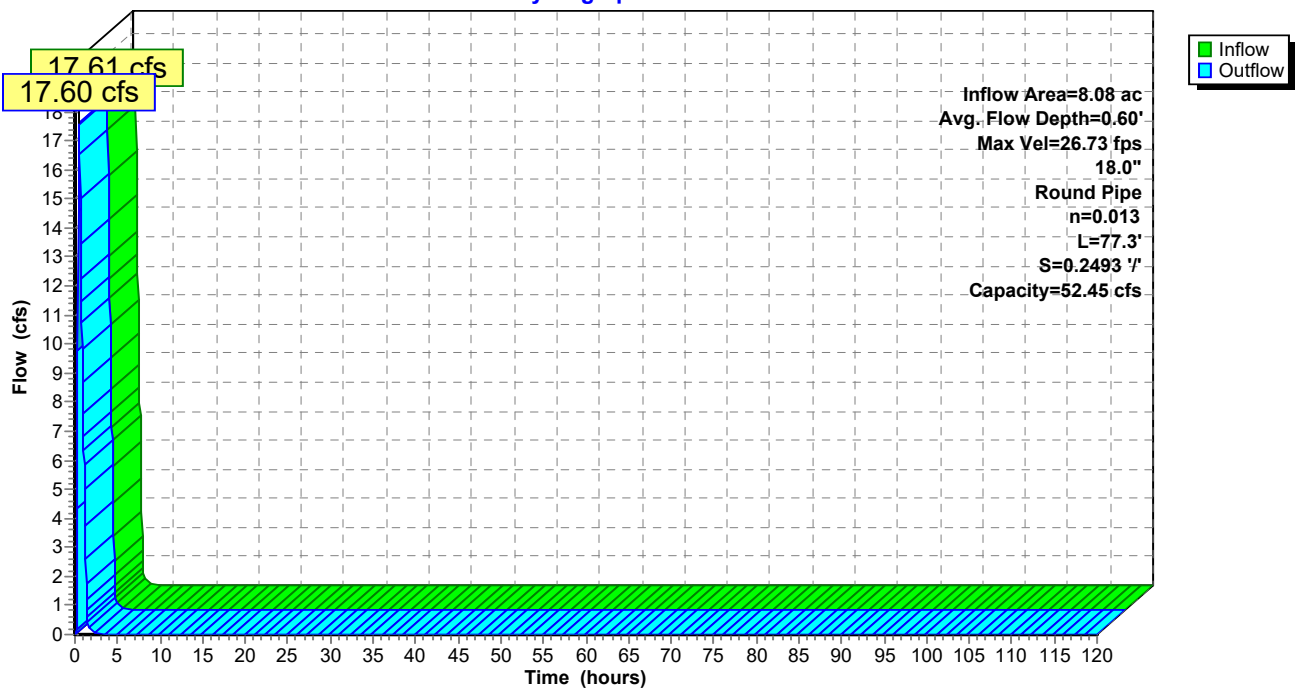
Peak Storage= 51 cf @ 0.49 hrs  
 Average Depth at Peak Storage= 0.60'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 52.45 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 77.3' Slope= 0.2493 '/'  
 Inlet Invert= 793.51', Outlet Invert= 774.24'



**Reach LP-E2: Letdown Pipe E2**

Hydrograph



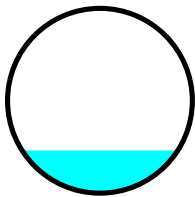
**Summary for Reach LP-H1: Letdown Pipe H1**

Inflow Area = 1.98 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 5.05 cfs @ 0.44 hrs, Volume= 0.210 af  
 Outflow = 5.04 cfs @ 0.45 hrs, Volume= 0.210 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 16.41 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 6.70 fps, Avg. Travel Time= 0.2 min

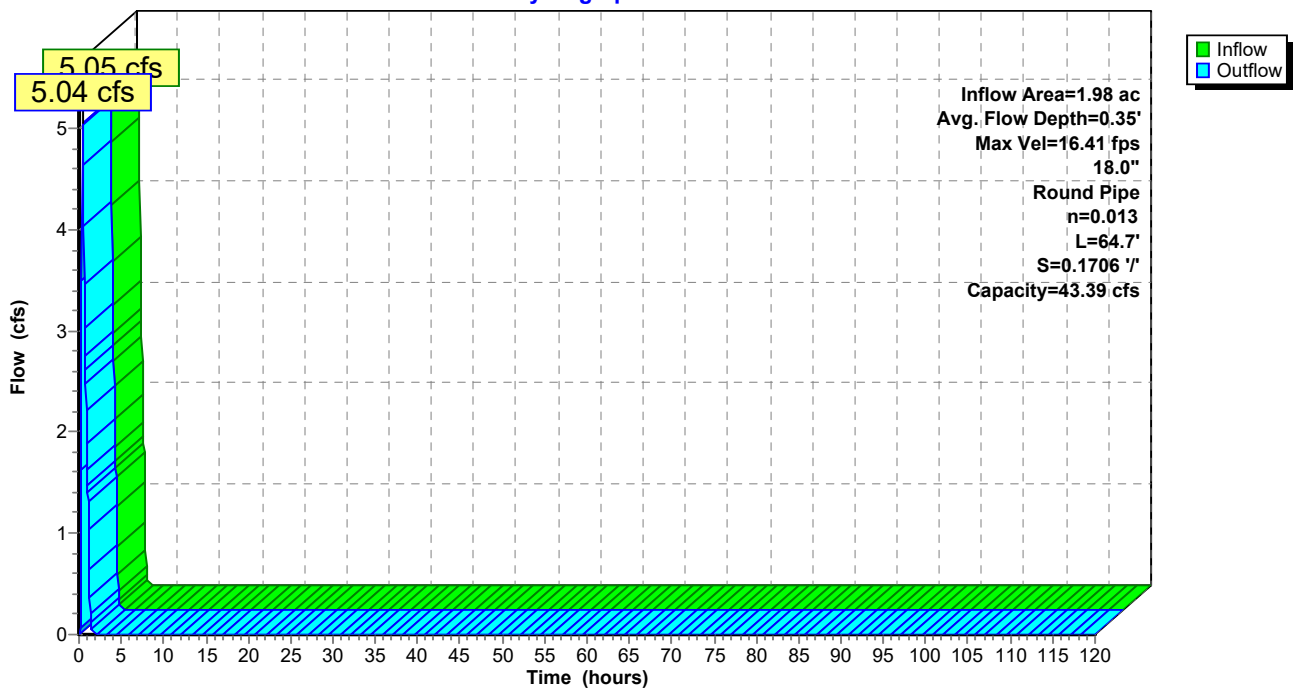
Peak Storage= 20 cf @ 0.44 hrs  
 Average Depth at Peak Storage= 0.35'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 43.39 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 64.7' Slope= 0.1706 '/  
 Inlet Invert= 867.73', Outlet Invert= 856.69'



**Reach LP-H1: Letdown Pipe H1**

Hydrograph



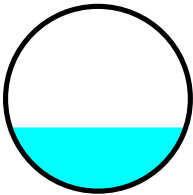
**Summary for Reach LP-H2: Letdown Pipe H2**

Inflow Area = 5.26 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 13.31 cfs @ 0.44 hrs, Volume= 0.558 af  
 Outflow = 13.28 cfs @ 0.45 hrs, Volume= 0.558 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 24.76 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 8.48 fps, Avg. Travel Time= 0.3 min

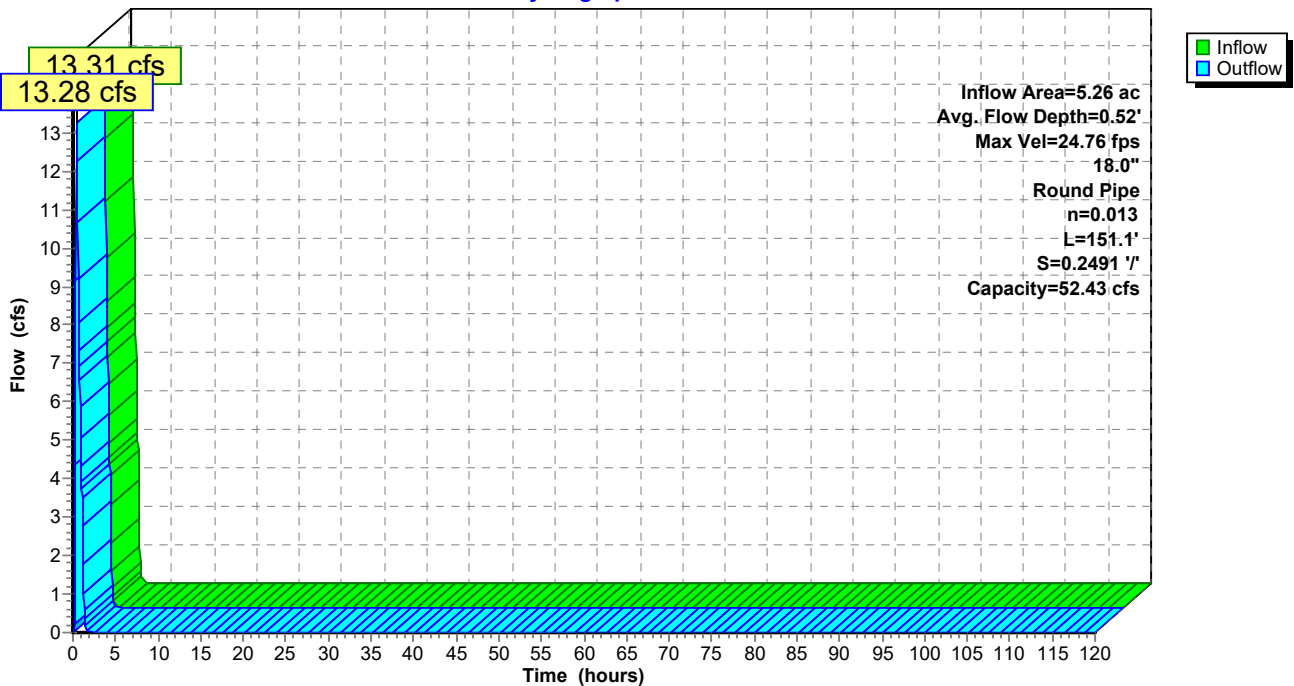
Peak Storage= 81 cf @ 0.44 hrs  
 Average Depth at Peak Storage= 0.52'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 52.43 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 151.1' Slope= 0.2491 1/100'  
 Inlet Invert= 831.15', Outlet Invert= 793.51'



**Reach LP-H2: Letdown Pipe H2**

Hydrograph



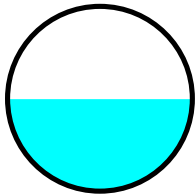
**Summary for Reach LP-H3: Letdown Pipe H3**

Inflow Area = 11.65 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 26.15 cfs @ 0.48 hrs, Volume= 1.236 af  
 Outflow = 26.12 cfs @ 0.48 hrs, Volume= 1.236 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 29.77 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 7.63 fps, Avg. Travel Time= 0.3 min

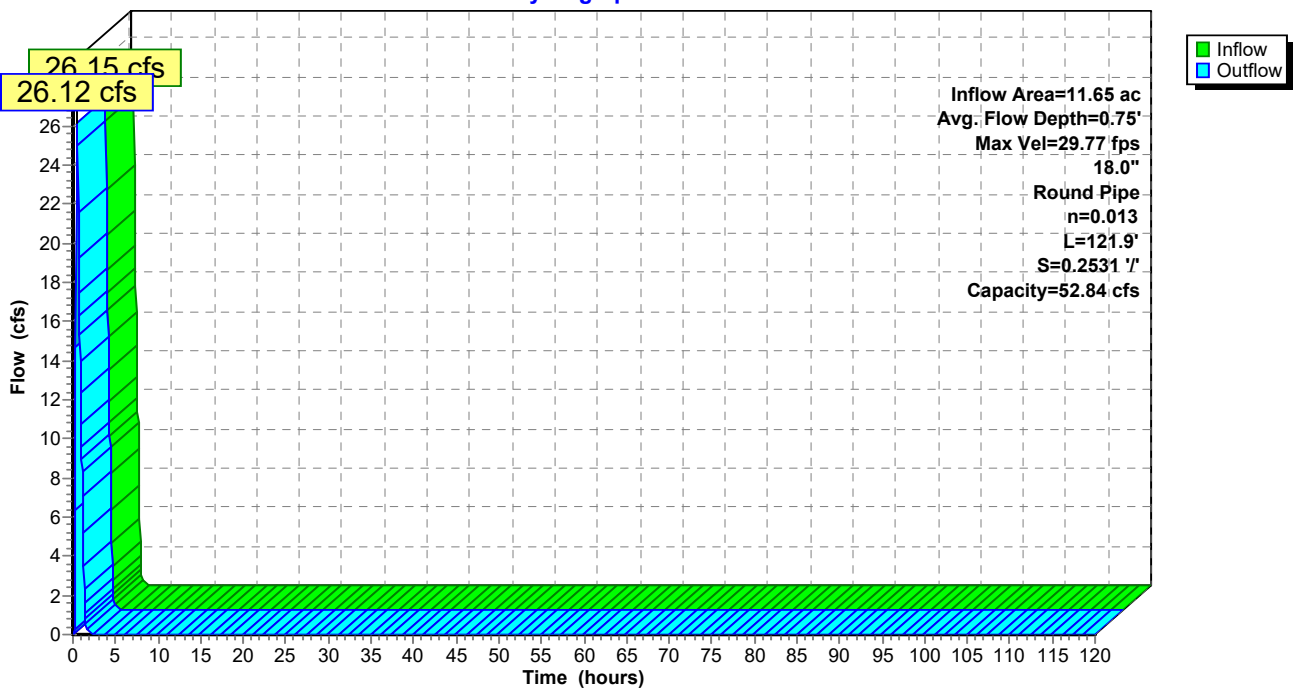
Peak Storage= 107 cf @ 0.48 hrs  
 Average Depth at Peak Storage= 0.75'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 52.84 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 121.9' Slope= 0.2531 '/'  
 Inlet Invert= 774.24', Outlet Invert= 743.39'



**Reach LP-H3: Letdown Pipe H3**

Hydrograph



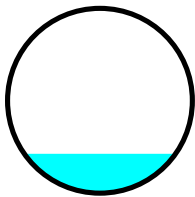
**Summary for Reach LP-N-A1: Letdown Pipe N-A1**

Inflow Area = 3.60 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 9.37 cfs @ 0.41 hrs, Volume= 0.382 af  
 Outflow = 9.34 cfs @ 0.41 hrs, Volume= 0.382 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 19.27 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 8.81 fps, Avg. Travel Time= 0.3 min

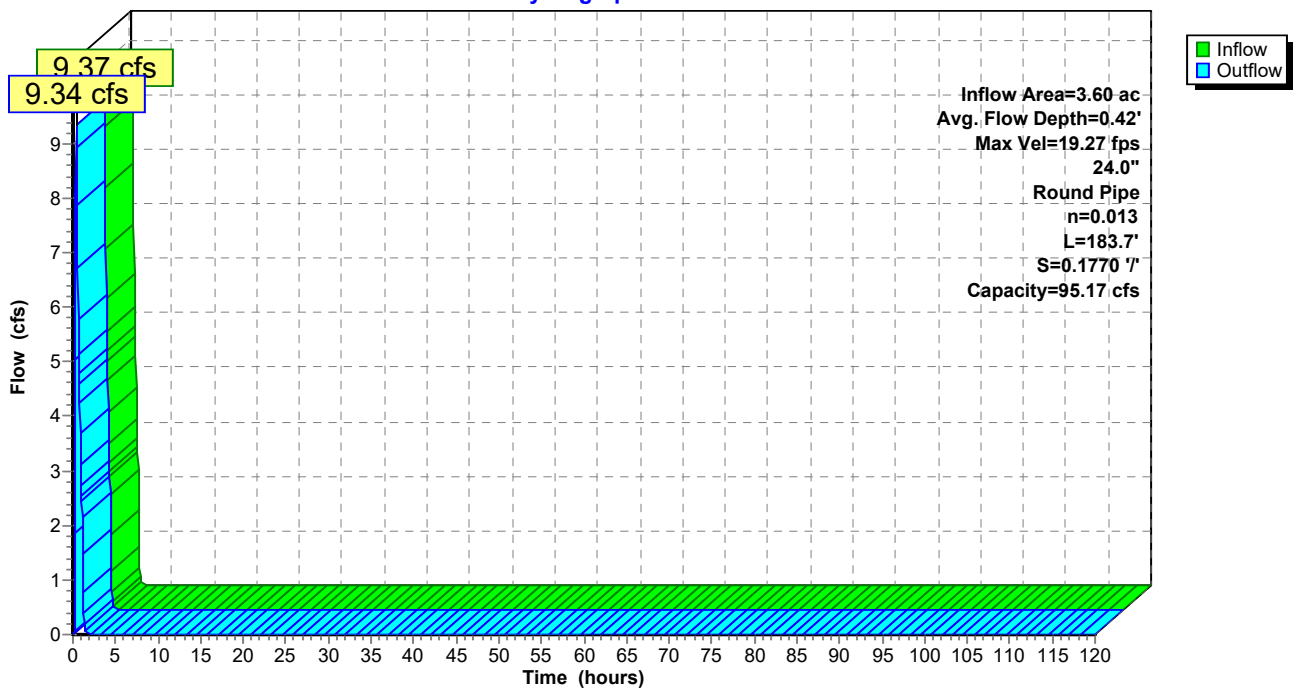
Peak Storage= 89 cf @ 0.41 hrs  
 Average Depth at Peak Storage= 0.42'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 95.17 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 183.7' Slope= 0.1770 '/'  
 Inlet Invert= 869.36', Outlet Invert= 836.85'



**Reach LP-N-A1: Letdown Pipe N-A1**

Hydrograph



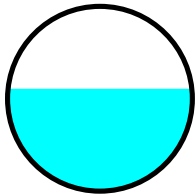
**Summary for Reach LP-N-A10: Letdown Pipe N-A10**

Inflow Area = 21.41 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 49.18 cfs @ 0.50 hrs, Volume= 2.270 af  
 Outflow = 49.14 cfs @ 0.50 hrs, Volume= 2.270 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 17.64 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 3.91 fps, Avg. Travel Time= 0.3 min

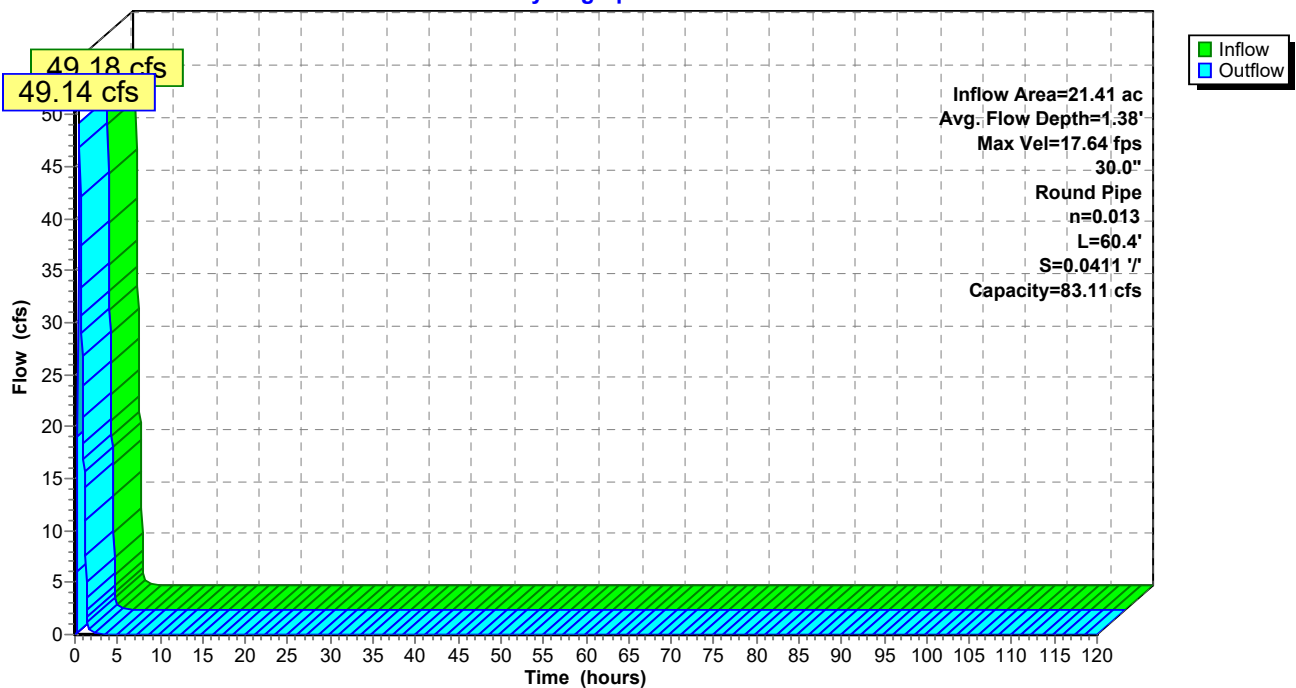
Peak Storage= 168 cf @ 0.50 hrs  
 Average Depth at Peak Storage= 1.38'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 83.11 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 60.4' Slope= 0.0411 '/  
 Inlet Invert= 748.28', Outlet Invert= 745.80'



**Reach LP-N-A10: Letdown Pipe N-A10**

Hydrograph



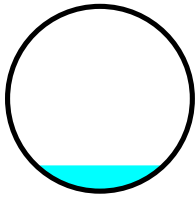
**Summary for Reach LP-N-A2: Letdown Pipe N-A2**

Inflow Area = 2.82 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 7.13 cfs @ 0.45 hrs, Volume= 0.300 af  
 Outflow = 7.11 cfs @ 0.45 hrs, Volume= 0.300 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 17.32 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 7.15 fps, Avg. Travel Time= 0.4 min

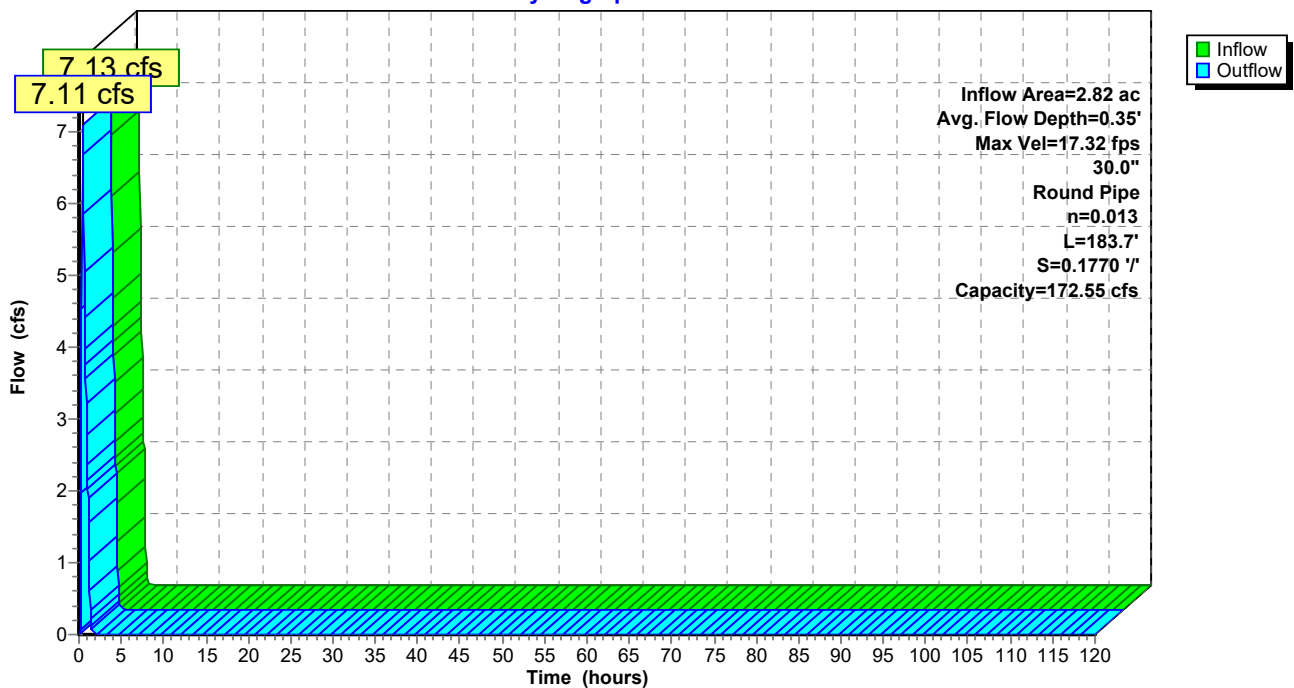
Peak Storage= 76 cf @ 0.45 hrs  
 Average Depth at Peak Storage= 0.35'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 172.55 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 183.7' Slope= 0.1770 '/'  
 Inlet Invert= 869.36', Outlet Invert= 836.85'



**Reach LP-N-A2: Letdown Pipe N-A2**

Hydrograph



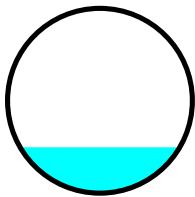
**Summary for Reach LP-N-A3: Letdown Pipe N-A3**

Inflow Area = 4.91 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 12.82 cfs @ 0.41 hrs, Volume= 0.520 af  
 Outflow = 12.78 cfs @ 0.41 hrs, Volume= 0.520 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 21.15 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 8.89 fps, Avg. Travel Time= 0.3 min

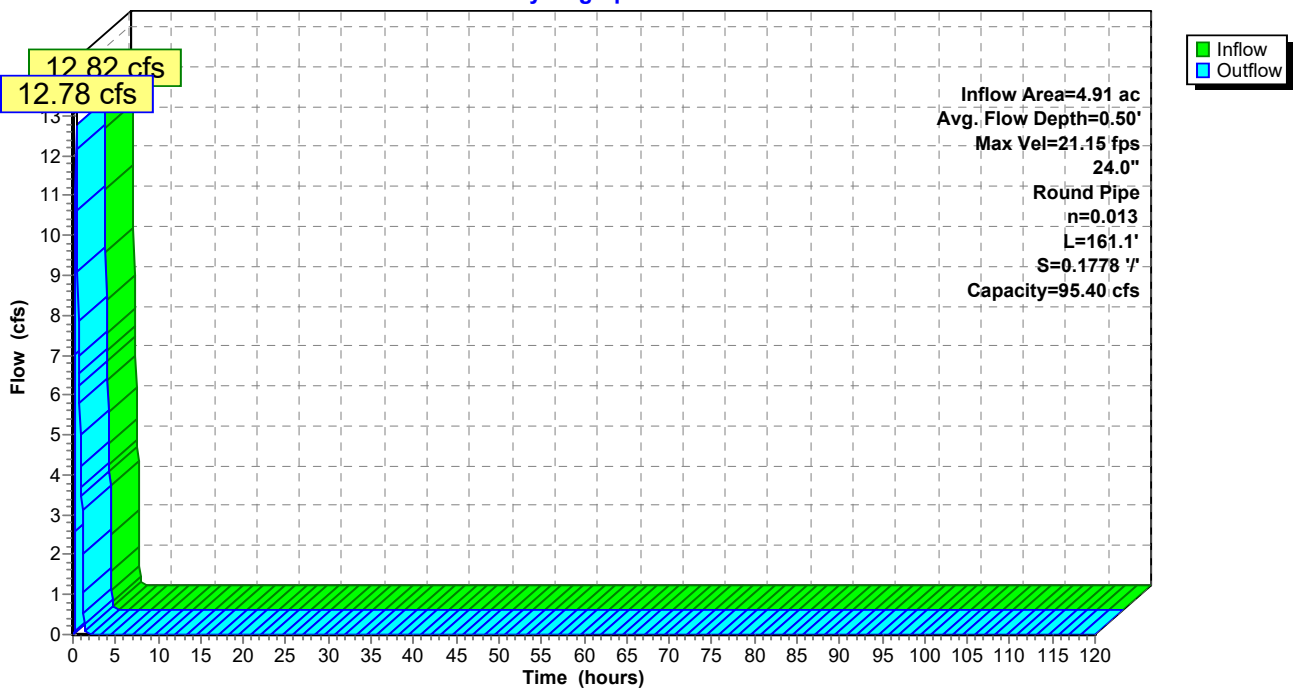
Peak Storage= 98 cf @ 0.41 hrs  
 Average Depth at Peak Storage= 0.50'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 95.40 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 161.1' Slope= 0.1778 '/'  
 Inlet Invert= 836.85', Outlet Invert= 808.20'



**Reach LP-N-A3: Letdown Pipe N-A3**

Hydrograph





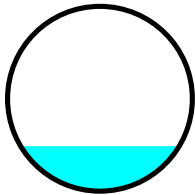
**Summary for Reach LP-N-A4: Letdown Pipe N-A4**

Inflow Area = 9.70 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 22.18 cfs @ 0.51 hrs, Volume= 1.029 af  
 Outflow = 22.14 cfs @ 0.51 hrs, Volume= 1.029 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 24.21 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 7.17 fps, Avg. Travel Time= 0.4 min

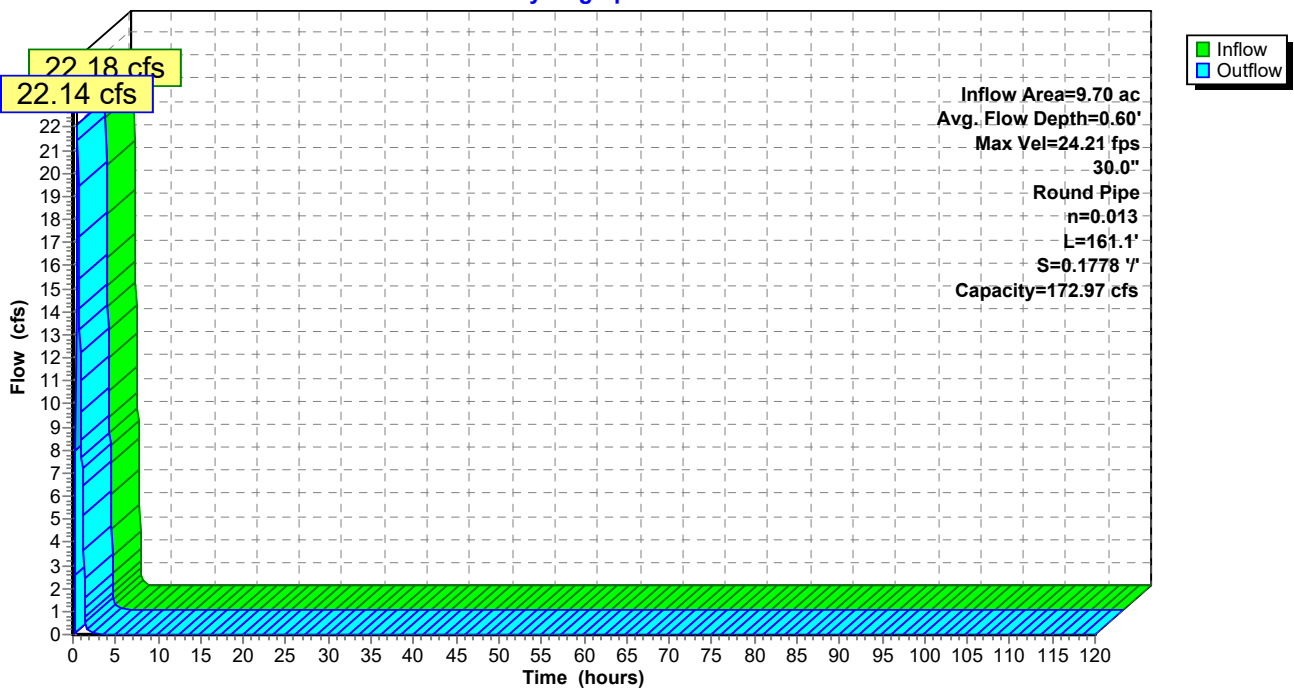
Peak Storage= 148 cf @ 0.51 hrs  
 Average Depth at Peak Storage= 0.60'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 172.97 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 161.1' Slope= 0.1778 '/'  
 Inlet Invert= 836.85', Outlet Invert= 808.20'



**Reach LP-N-A4: Letdown Pipe N-A4**

Hydrograph



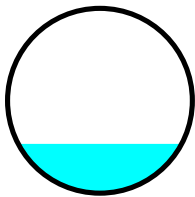
**Summary for Reach LP-N-A5: Letdown Pipe N-A5**

Inflow Area = 5.64 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 14.63 cfs @ 0.41 hrs, Volume= 0.598 af  
 Outflow = 14.59 cfs @ 0.41 hrs, Volume= 0.598 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 21.89 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 9.07 fps, Avg. Travel Time= 0.3 min

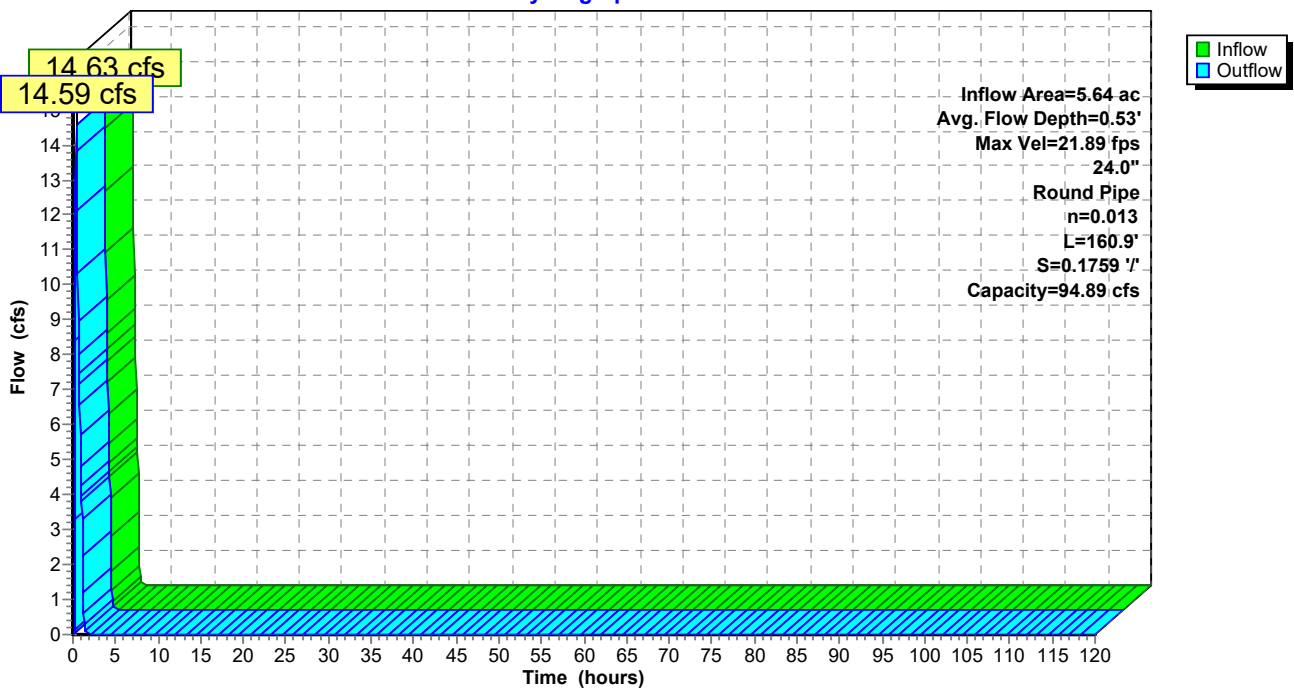
Peak Storage= 108 cf @ 0.41 hrs  
 Average Depth at Peak Storage= 0.53'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 94.89 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 160.9' Slope= 0.1759 '/'  
 Inlet Invert= 808.20', Outlet Invert= 779.89'



**Reach LP-N-A5: Letdown Pipe N-A5**

Hydrograph



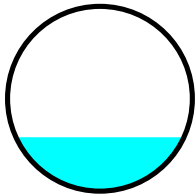
**Summary for Reach LP-N-A6: Letdown Pipe N-A6**

Inflow Area = 13.83 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 31.69 cfs @ 0.51 hrs, Volume= 1.467 af  
 Outflow = 31.64 cfs @ 0.51 hrs, Volume= 1.467 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 26.72 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 7.17 fps, Avg. Travel Time= 0.4 min

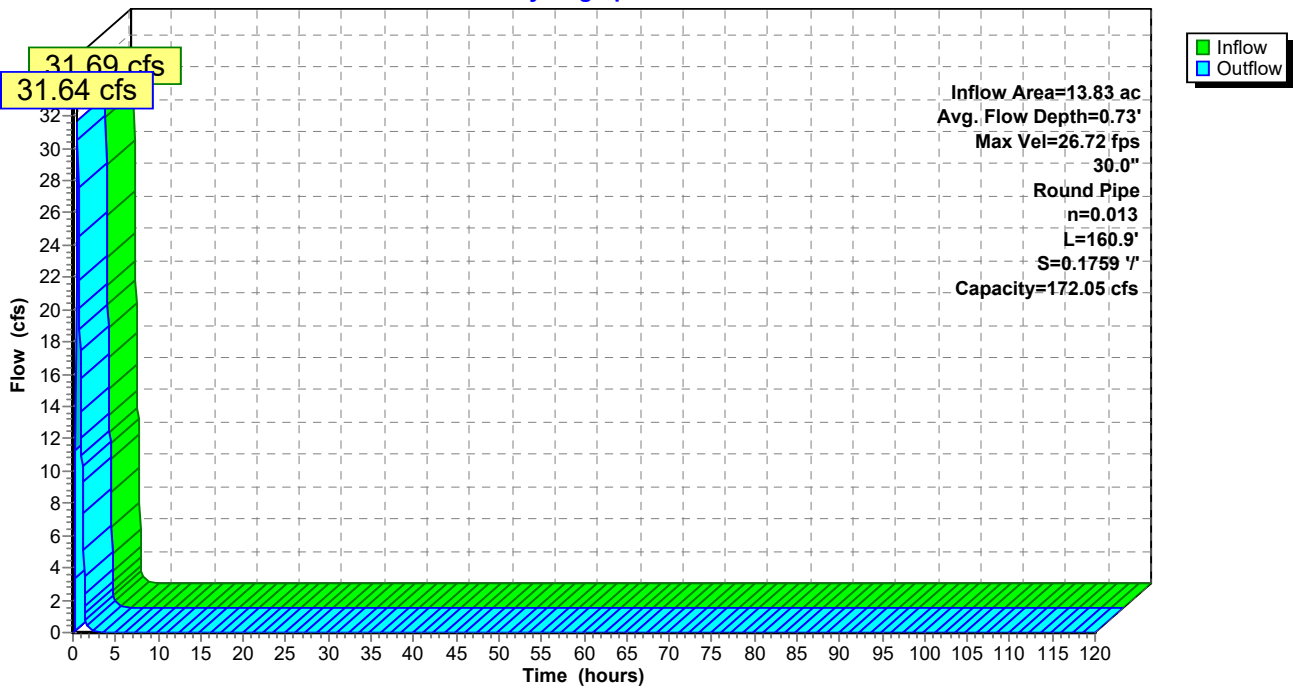
Peak Storage= 191 cf @ 0.51 hrs  
 Average Depth at Peak Storage= 0.73'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 172.05 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 160.9' Slope= 0.1759 '/'  
 Inlet Invert= 808.20', Outlet Invert= 779.89'



**Reach LP-N-A6: Letdown Pipe N-A6**

Hydrograph



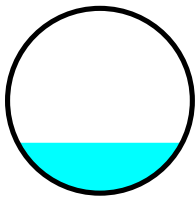
**Summary for Reach LP-N-A7: Letdown Pipe N-A7**

Inflow Area = 6.09 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 15.66 cfs @ 0.41 hrs, Volume= 0.645 af  
 Outflow = 15.62 cfs @ 0.41 hrs, Volume= 0.645 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 22.65 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 9.42 fps, Avg. Travel Time= 0.3 min

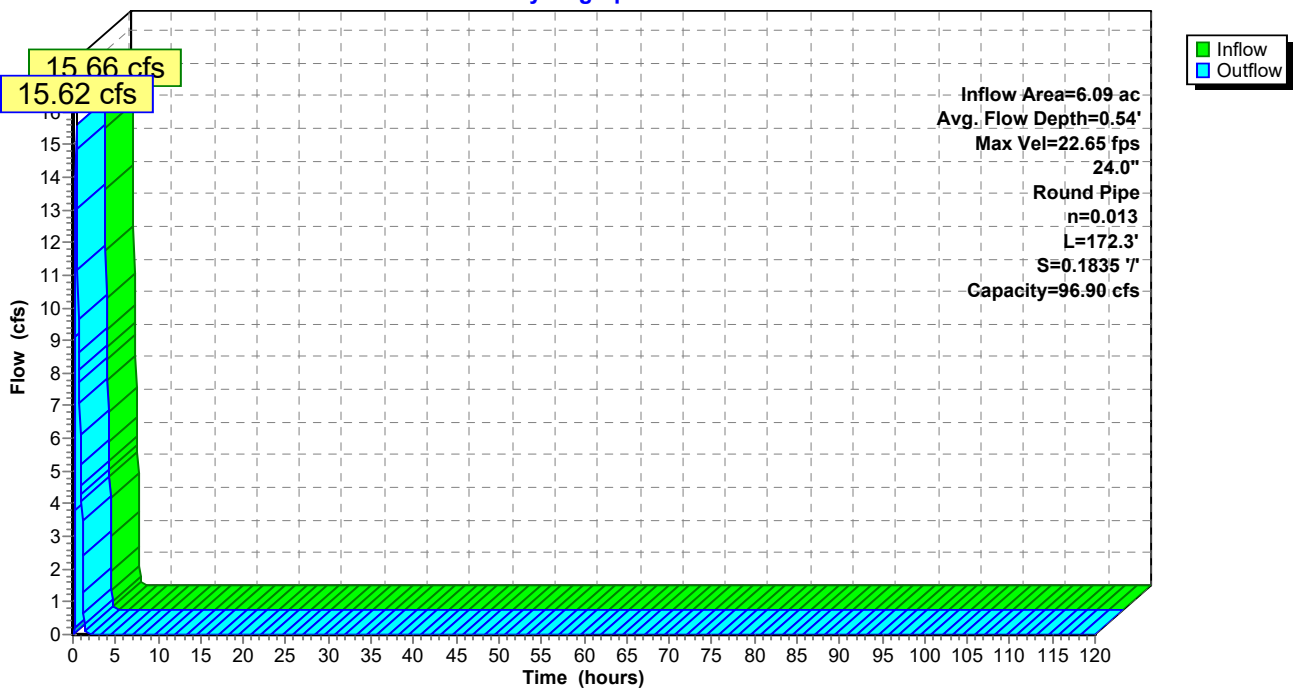
Peak Storage= 119 cf @ 0.41 hrs  
 Average Depth at Peak Storage= 0.54'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 96.90 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 172.3' Slope= 0.1835 1'  
 Inlet Invert= 779.89', Outlet Invert= 748.28'



**Reach LP-N-A7: Letdown Pipe N-A7**

Hydrograph



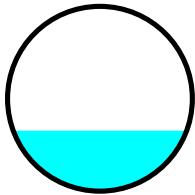
**Summary for Reach LP-N-A8: Letdown Pipe N-A8**

Inflow Area = 17.63 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 40.46 cfs @ 0.51 hrs, Volume= 1.870 af  
 Outflow = 40.40 cfs @ 0.51 hrs, Volume= 1.870 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 29.07 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 7.46 fps, Avg. Travel Time= 0.4 min

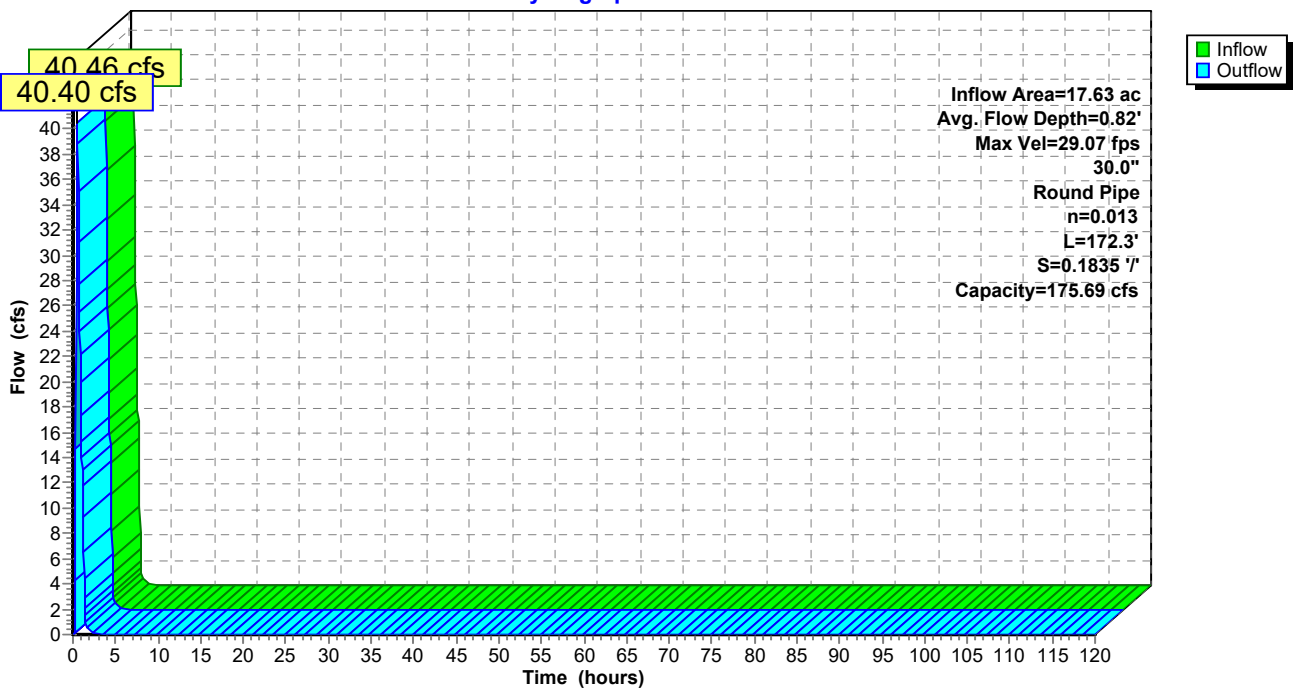
Peak Storage= 240 cf @ 0.51 hrs  
 Average Depth at Peak Storage= 0.82'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 175.69 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 172.3' Slope= 0.1835 '/'  
 Inlet Invert= 779.89', Outlet Invert= 748.28'



**Reach LP-N-A8: Letdown Pipe N-A8**

Hydrograph



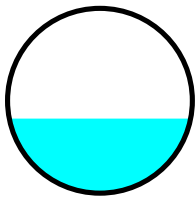
**Summary for Reach LP-N-A9: Letdown Pipe N-A9**

Inflow Area = 6.09 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 15.62 cfs @ 0.41 hrs, Volume= 0.645 af  
 Outflow = 15.59 cfs @ 0.41 hrs, Volume= 0.645 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 13.19 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 4.98 fps, Avg. Travel Time= 0.2 min

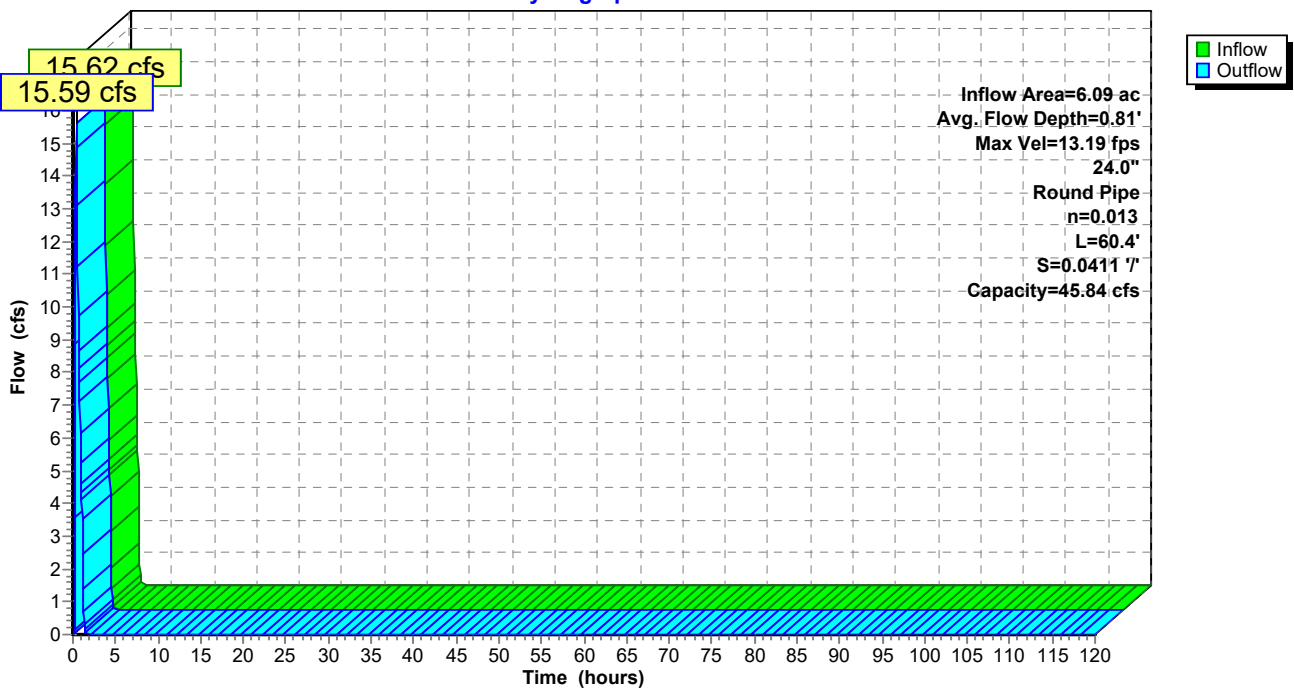
Peak Storage= 71 cf @ 0.41 hrs  
 Average Depth at Peak Storage= 0.81'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 45.84 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 60.4' Slope= 0.0411 '/  
 Inlet Invert= 748.28', Outlet Invert= 745.80'



**Reach LP-N-A9: Letdown Pipe N-A9**

Hydrograph



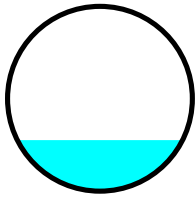
**Summary for Reach LP-N-B1: Letdown Pipe N-B1**

Inflow Area = 3.15 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 7.53 cfs @ 0.48 hrs, Volume= 0.334 af  
 Outflow = 7.51 cfs @ 0.49 hrs, Volume= 0.334 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 19.08 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 6.47 fps, Avg. Travel Time= 0.5 min

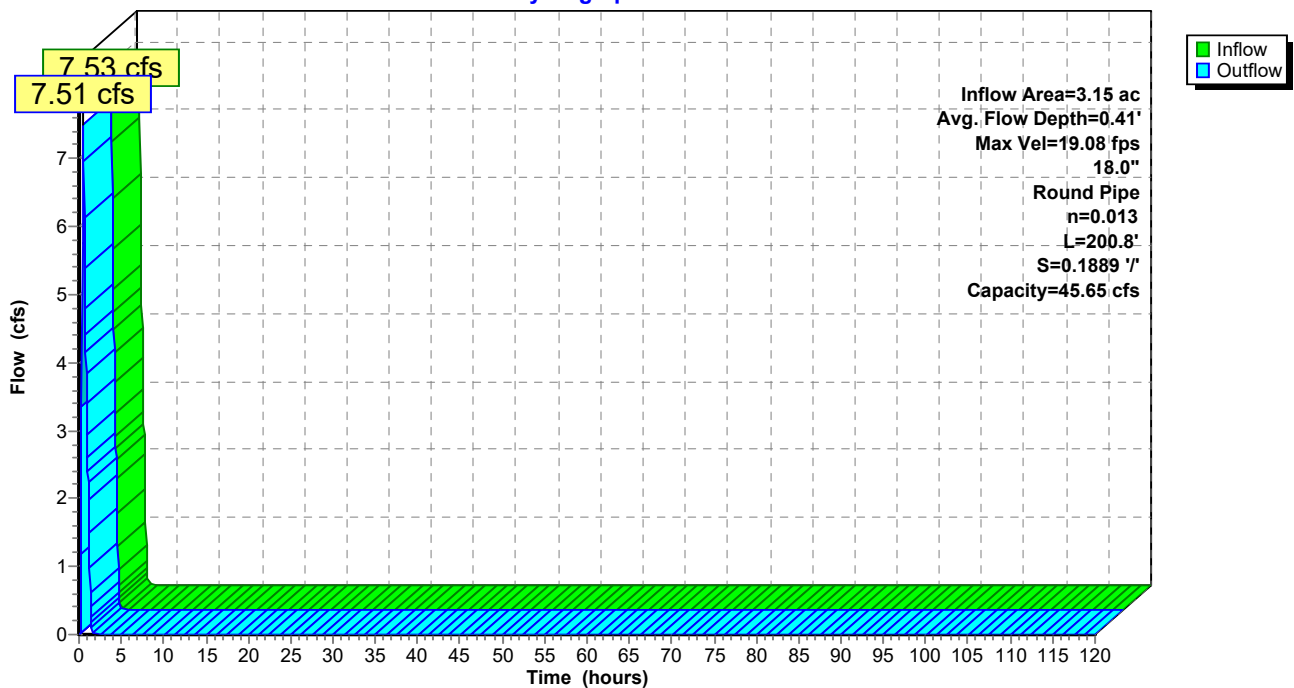
Peak Storage= 79 cf @ 0.49 hrs  
 Average Depth at Peak Storage= 0.41'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 45.65 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 200.8' Slope= 0.1889 '/'  
 Inlet Invert= 847.84', Outlet Invert= 809.91'



**Reach LP-N-B1: Letdown Pipe N-B1**

Hydrograph



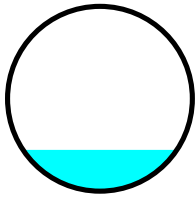
**Summary for Reach LP-N-B2: Letdown Pipe N-B2**

Inflow Area = 4.49 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 10.61 cfs @ 0.49 hrs, Volume= 0.476 af  
 Outflow = 10.59 cfs @ 0.50 hrs, Volume= 0.476 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 20.47 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 6.84 fps, Avg. Travel Time= 0.5 min

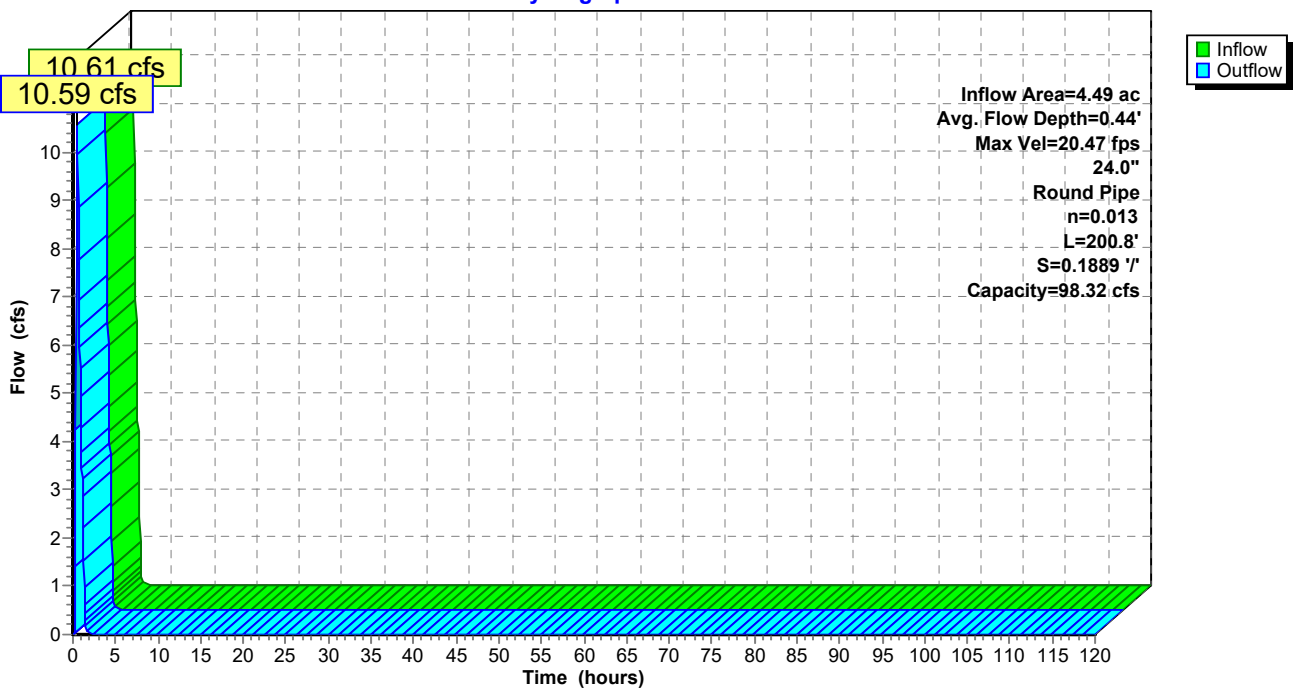
Peak Storage= 104 cf @ 0.50 hrs  
 Average Depth at Peak Storage= 0.44'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 98.32 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 200.8' Slope= 0.1889 '/'  
 Inlet Invert= 847.84', Outlet Invert= 809.91'



**Reach LP-N-B2: Letdown Pipe N-B2**

Hydrograph





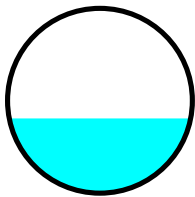
**Summary for Reach LP-N-B3: Letdown Pipe N-B3**

Inflow Area = 6.58 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 15.49 cfs @ 0.49 hrs, Volume= 0.698 af  
 Outflow = 15.46 cfs @ 0.50 hrs, Volume= 0.698 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 23.26 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 6.43 fps, Avg. Travel Time= 0.5 min

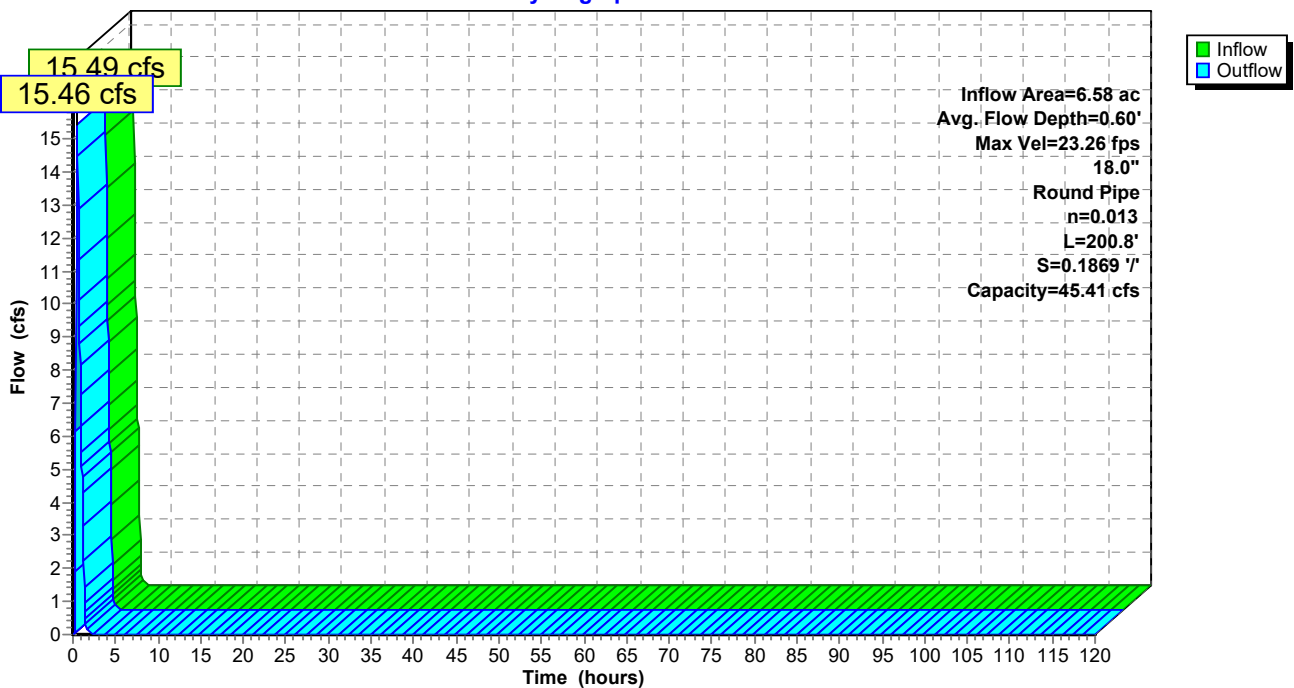
Peak Storage= 134 cf @ 0.49 hrs  
 Average Depth at Peak Storage= 0.60'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 45.41 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 200.8' Slope= 0.1869 '/'  
 Inlet Invert= 809.91', Outlet Invert= 772.39'



**Reach LP-N-B3: Letdown Pipe N-B3**

Hydrograph



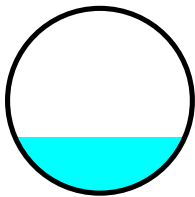
**Summary for Reach LP-N-B4: Letdown Pipe N-B4**

Inflow Area = 8.29 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 19.51 cfs @ 0.49 hrs, Volume= 0.879 af  
 Outflow = 19.48 cfs @ 0.50 hrs, Volume= 0.879 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 24.29 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 6.94 fps, Avg. Travel Time= 0.5 min

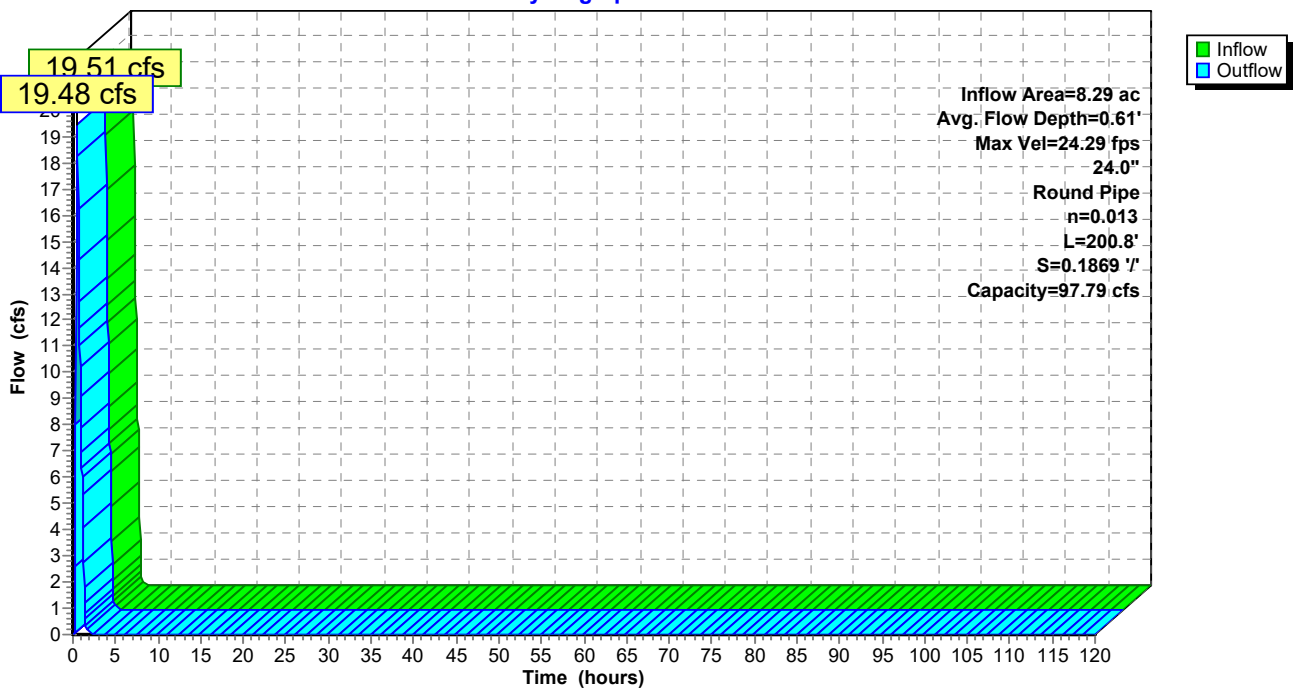
Peak Storage= 161 cf @ 0.49 hrs  
 Average Depth at Peak Storage= 0.61'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 97.79 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 200.8' Slope= 0.1869 '/'  
 Inlet Invert= 809.91', Outlet Invert= 772.39'



**Reach LP-N-B4: Letdown Pipe N-B4**

Hydrograph



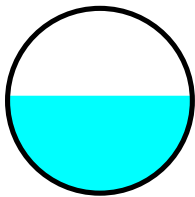
**Summary for Reach LP-N-B5: Letdown Pipe N-B5**

Inflow Area = 11.08 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 25.23 cfs @ 0.51 hrs, Volume= 1.175 af  
 Outflow = 25.19 cfs @ 0.51 hrs, Volume= 1.175 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 26.75 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 6.54 fps, Avg. Travel Time= 0.4 min

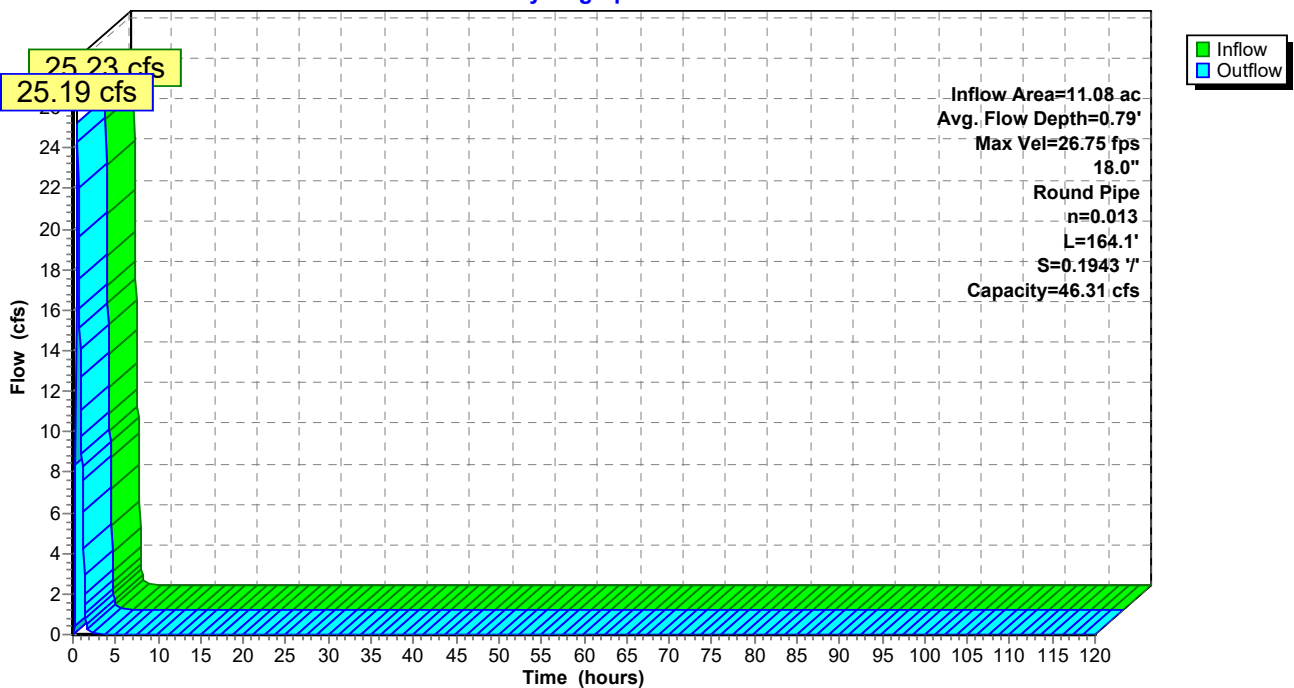
Peak Storage= 155 cf @ 0.51 hrs  
 Average Depth at Peak Storage= 0.79'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 46.31 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 164.1' Slope= 0.1943 '/'  
 Inlet Invert= 772.39', Outlet Invert= 740.50'



**Reach LP-N-B5: Letdown Pipe N-B5**

Hydrograph



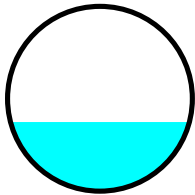
**Summary for Reach LP-N-B6: Letdown Pipe N-B6**

Inflow Area = 12.58 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 29.45 cfs @ 0.50 hrs, Volume= 1.334 af  
 Outflow = 29.41 cfs @ 0.50 hrs, Volume= 1.334 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 27.63 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 7.18 fps, Avg. Travel Time= 0.4 min

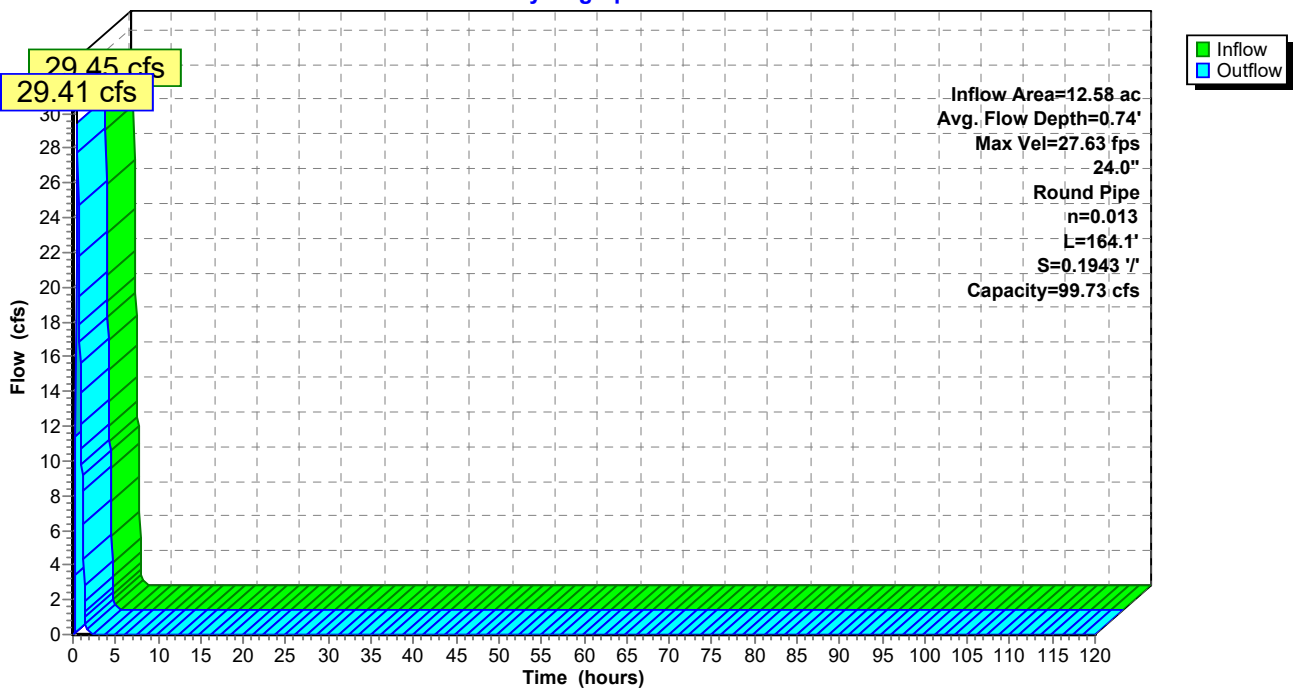
Peak Storage= 175 cf @ 0.50 hrs  
 Average Depth at Peak Storage= 0.74'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 99.73 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 164.1' Slope= 0.1943 '/'  
 Inlet Invert= 772.39', Outlet Invert= 740.50'



**Reach LP-N-B6: Letdown Pipe N-B6**

Hydrograph



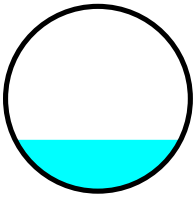
**Summary for Reach LP-N-C1: Letdown Pipe N-C1**

Inflow Area = 8.24 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 18.94 cfs @ 0.50 hrs, Volume= 0.874 af  
 Outflow = 18.92 cfs @ 0.50 hrs, Volume= 0.874 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 26.73 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 8.31 fps, Avg. Travel Time= 0.3 min

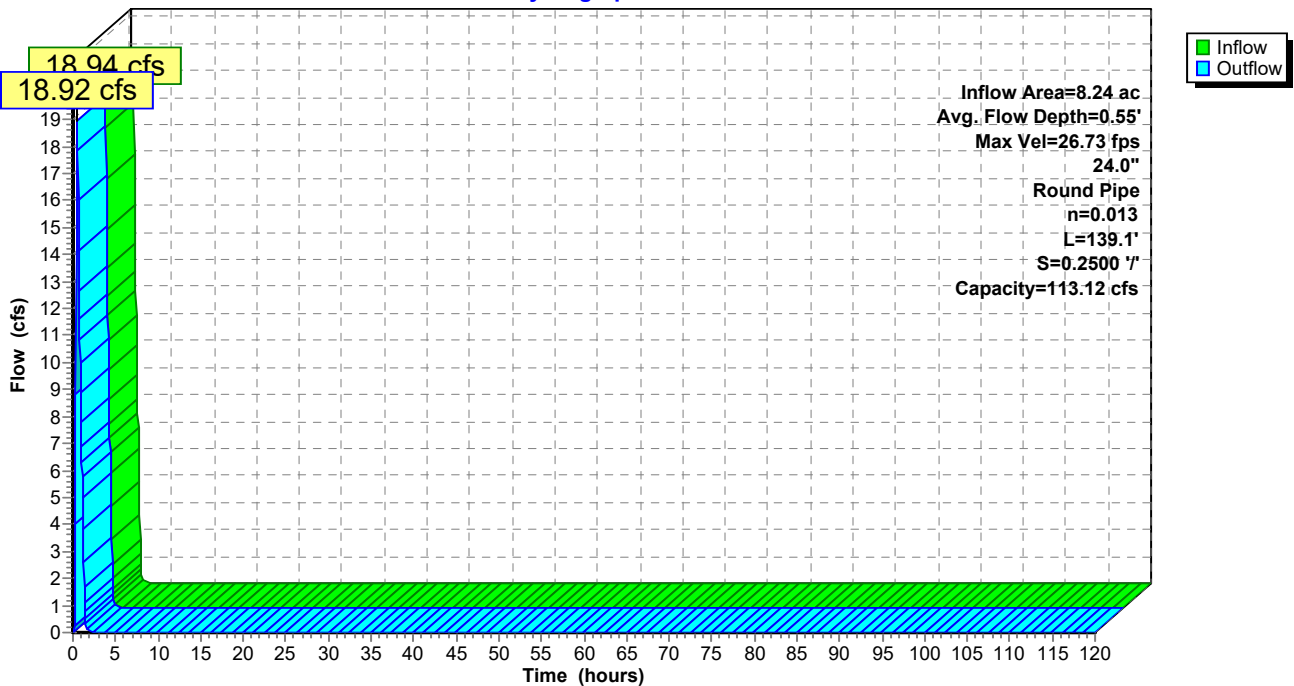
Peak Storage= 99 cf @ 0.50 hrs  
 Average Depth at Peak Storage= 0.55'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 113.12 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 139.1' Slope= 0.2500 '/'  
 Inlet Invert= 843.66', Outlet Invert= 808.88'



**Reach LP-N-C1: Letdown Pipe N-C1**

Hydrograph



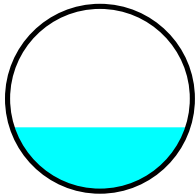
**Summary for Reach LP-N-C2: Letdown Pipe N-C2**

Inflow Area = 12.44 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 28.76 cfs @ 0.49 hrs, Volume= 1.319 af  
 Outflow = 28.75 cfs @ 0.50 hrs, Volume= 1.319 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 30.06 fps, Min. Travel Time= 0.0 min  
 Avg. Velocity = 8.31 fps, Avg. Travel Time= 0.1 min

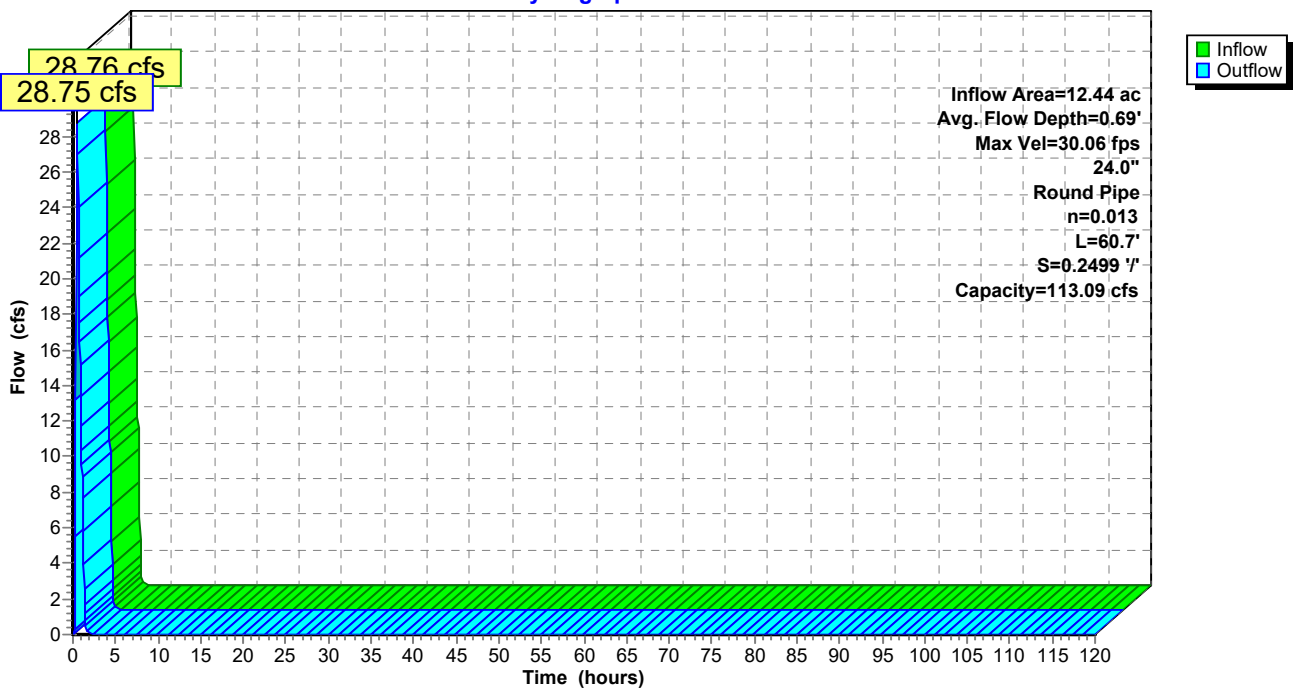
Peak Storage= 58 cf @ 0.49 hrs  
 Average Depth at Peak Storage= 0.69'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 113.09 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 60.7' Slope= 0.2499 '/  
 Inlet Invert= 808.88', Outlet Invert= 793.71'



**Reach LP-N-C2: Letdown Pipe N-C2**

Hydrograph



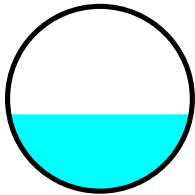
**Summary for Reach LP-N-C3: Letdown Pipe N-C3**

Inflow Area = 17.99 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 41.15 cfs @ 0.49 hrs, Volume= 1.908 af  
 Outflow = 41.12 cfs @ 0.49 hrs, Volume= 1.908 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 33.48 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 8.72 fps, Avg. Travel Time= 0.3 min

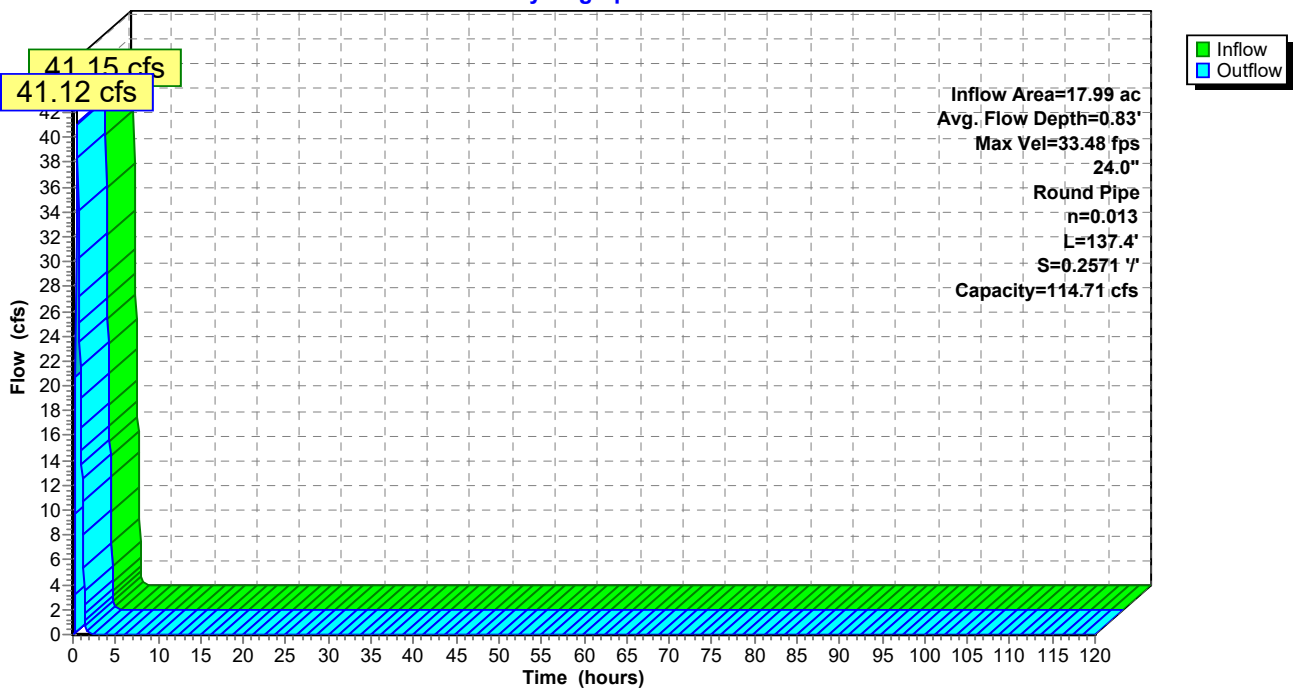
Peak Storage= 169 cf @ 0.49 hrs  
 Average Depth at Peak Storage= 0.83'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 114.71 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 137.4' Slope= 0.2571 1'  
 Inlet Invert= 774.26', Outlet Invert= 738.93'



**Reach LP-N-C3: Letdown Pipe N-C3**

Hydrograph



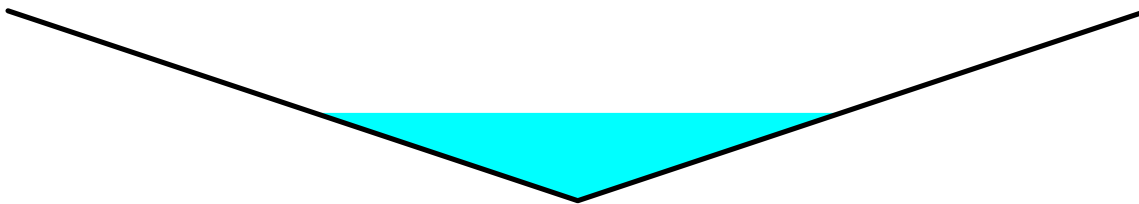
**Summary for Reach PD-1: Perimeter Ditch 1**

Inflow Area = 8.06 ac, 4.48% Impervious, Inflow Depth = 1.34" for 25-Year, 1-Hour event  
 Inflow = 22.25 cfs @ 0.33 hrs, Volume= 0.901 af  
 Outflow = 16.13 cfs @ 0.63 hrs, Volume= 0.901 af, Atten= 28%, Lag= 18.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.83 fps, Min. Travel Time= 9.9 min  
 Avg. Velocity = 0.53 fps, Avg. Travel Time= 53.1 min

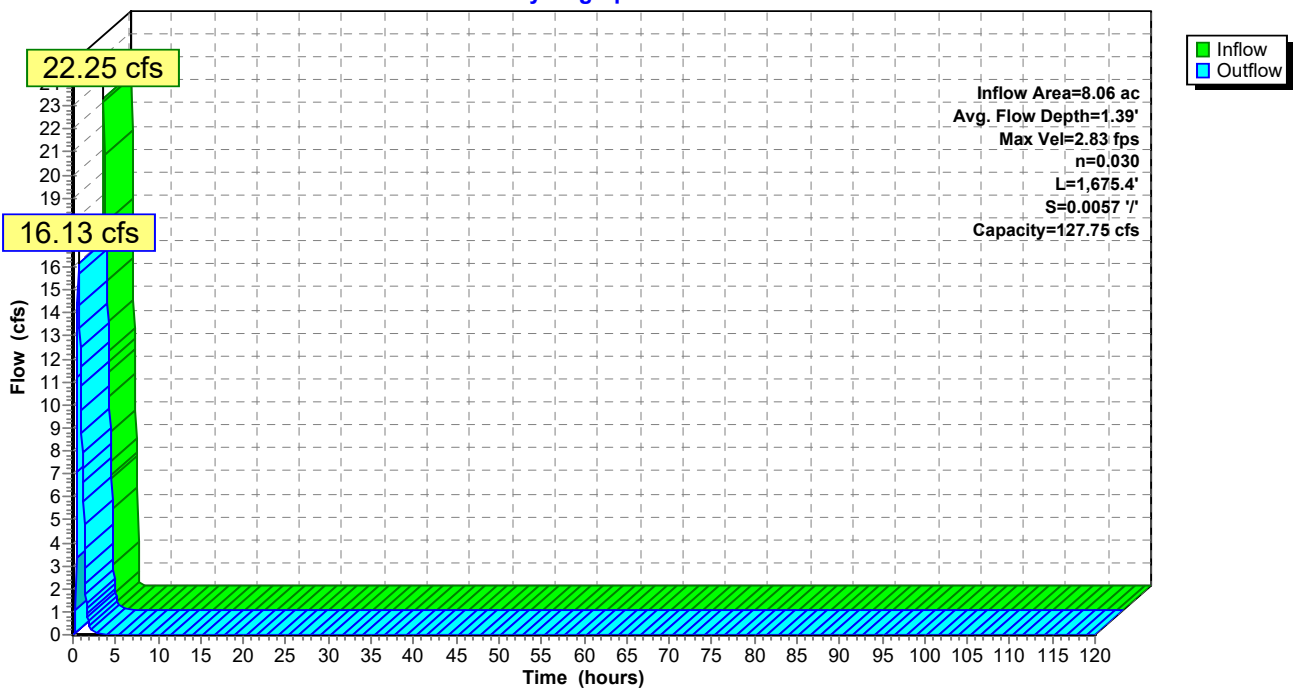
Peak Storage= 9,663 cf @ 0.47 hrs  
 Average Depth at Peak Storage= 1.39'  
 Bank-Full Depth= 3.00' Flow Area= 27.0 sf, Capacity= 127.75 cfs

0.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 ' / ' Top Width= 18.00'  
 Length= 1,675.4' Slope= 0.0057 ' / '  
 Inlet Invert= 768.00', Outlet Invert= 758.45'



**Reach PD-1: Perimeter Ditch 1**

Hydrograph





**Summary for Reach PD-10: Perimeter Ditch 10**

Inflow Area = 9.21 ac, 4.89% Impervious, Inflow Depth = 1.35" for 25-Year, 1-Hour event  
 Inflow = 17.09 cfs @ 0.50 hrs, Volume= 1.039 af  
 Outflow = 16.90 cfs @ 0.59 hrs, Volume= 1.039 af, Atten= 1%, Lag= 5.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.31 fps, Min. Travel Time= 3.2 min  
 Avg. Velocity = 0.55 fps, Avg. Travel Time= 13.3 min

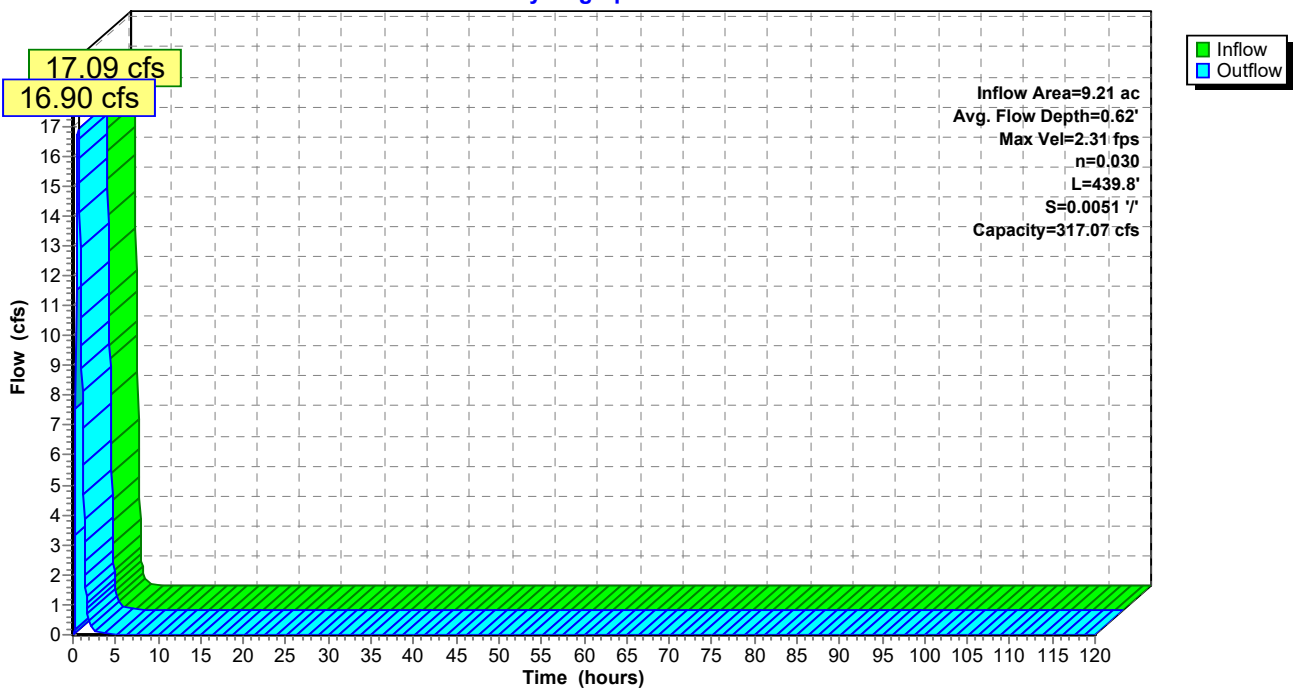
Peak Storage= 3,220 cf @ 0.54 hrs  
 Average Depth at Peak Storage= 0.62'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 317.07 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 439.8' Slope= 0.0051 '/'  
 Inlet Invert= 739.43', Outlet Invert= 737.18'



**Reach PD-10: Perimeter Ditch 10**

Hydrograph



**Summary for Reach PD-11: Perimeter Ditch 11**

Inflow Area = 2.70 ac, 11.67% Impervious, Inflow Depth = 1.47" for 25-Year, 1-Hour event  
 Inflow = 9.15 cfs @ 0.29 hrs, Volume= 0.330 af  
 Outflow = 5.94 cfs @ 0.63 hrs, Volume= 0.330 af, Atten= 35%, Lag= 20.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.59 fps, Min. Travel Time= 11.6 min  
 Avg. Velocity = 0.46 fps, Avg. Travel Time= 40.3 min

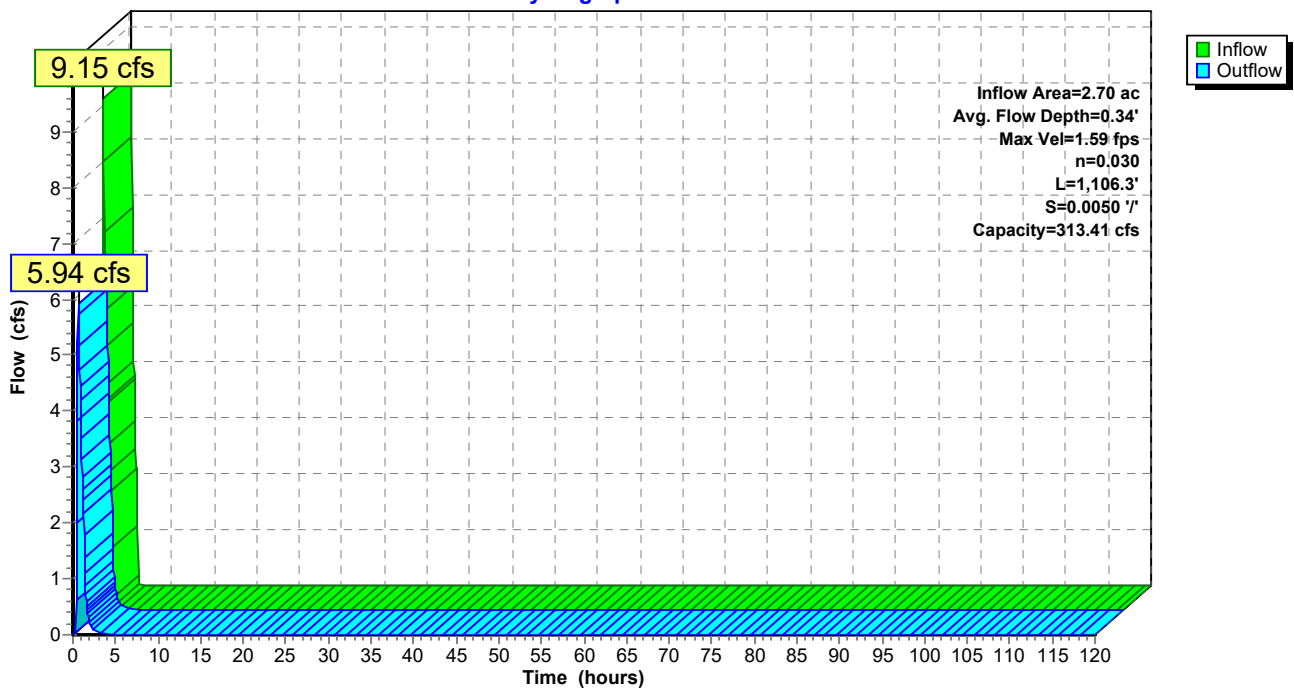
Peak Storage= 4,132 cf @ 0.43 hrs  
 Average Depth at Peak Storage= 0.34'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 313.41 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 1,106.3' Slope= 0.0050 '/'  
 Inlet Invert= 744.96', Outlet Invert= 739.43'



**Reach PD-11: Perimeter Ditch 11**

Hydrograph



**Summary for Reach PD-12: Perimeter Ditch 12**

Inflow Area = 2.74 ac, 11.45% Impervious, Inflow Depth = 1.47" for 25-Year, 1-Hour event  
 Inflow = 5.19 cfs @ 0.60 hrs, Volume= 0.335 af  
 Outflow = 4.69 cfs @ 0.92 hrs, Volume= 0.335 af, Atten= 10%, Lag= 19.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.46 fps, Min. Travel Time= 12.5 min  
 Avg. Velocity = 0.46 fps, Avg. Travel Time= 39.3 min

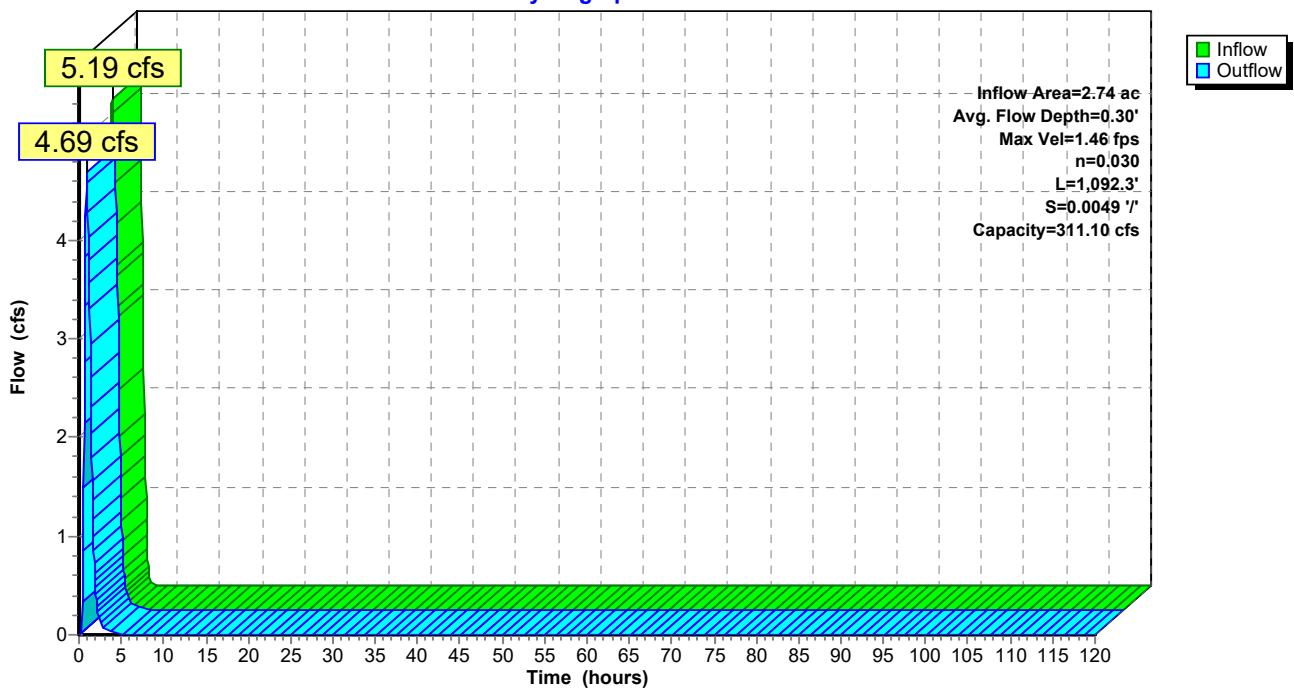
Peak Storage= 3,521 cf @ 0.71 hrs  
 Average Depth at Peak Storage= 0.30'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 311.10 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 1,092.3' Slope= 0.0049 '/'  
 Inlet Invert= 744.96', Outlet Invert= 739.58'



**Reach PD-12: Perimeter Ditch 12**

Hydrograph



**Summary for Reach PD-13: Perimeter Ditch 13**

Inflow Area = 25.73 ac, 1.49% Impervious, Inflow Depth = 1.30" for 25-Year, 1-Hour event  
 Inflow = 52.57 cfs @ 0.49 hrs, Volume= 2.786 af  
 Outflow = 51.65 cfs @ 0.54 hrs, Volume= 2.786 af, Atten= 2%, Lag= 2.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.73 fps, Min. Travel Time= 1.4 min  
 Avg. Velocity = 0.49 fps, Avg. Travel Time= 7.6 min

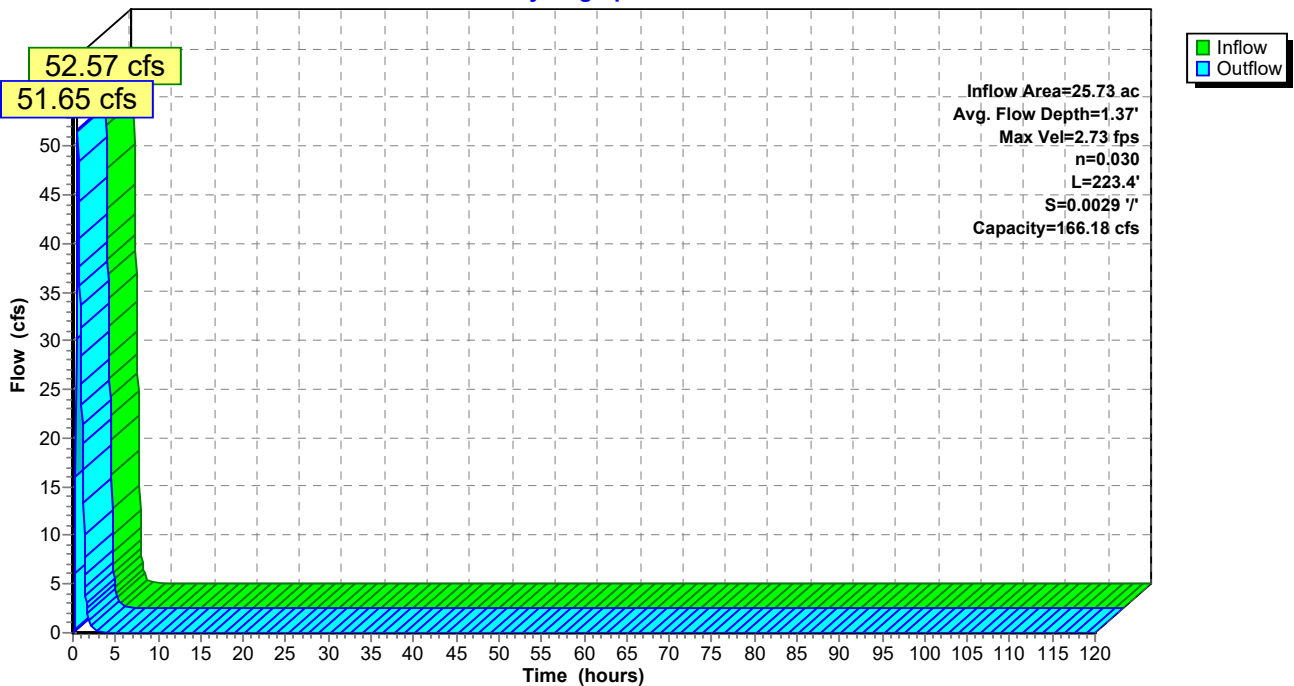
Peak Storage= 4,299 cf @ 0.51 hrs  
 Average Depth at Peak Storage= 1.37'  
 Bank-Full Depth= 2.50' Flow Area= 43.8 sf, Capacity= 166.18 cfs

10.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 25.00'  
 Length= 223.4' Slope= 0.0029 '/'  
 Inlet Invert= 739.58', Outlet Invert= 738.93'



**Reach PD-13: Perimeter Ditch 13**

Hydrograph



**Summary for Reach PD-14: Perimeter Ditch 14**

Inflow Area = 17.46 ac, 1.99% Impervious, Inflow Depth = 1.31" for 25-Year, 1-Hour event  
 Inflow = 33.89 cfs @ 0.60 hrs, Volume= 1.900 af  
 Outflow = 33.51 cfs @ 0.64 hrs, Volume= 1.900 af, Atten= 1%, Lag= 2.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.76 fps, Min. Travel Time= 1.3 min  
 Avg. Velocity = 0.54 fps, Avg. Travel Time= 6.9 min

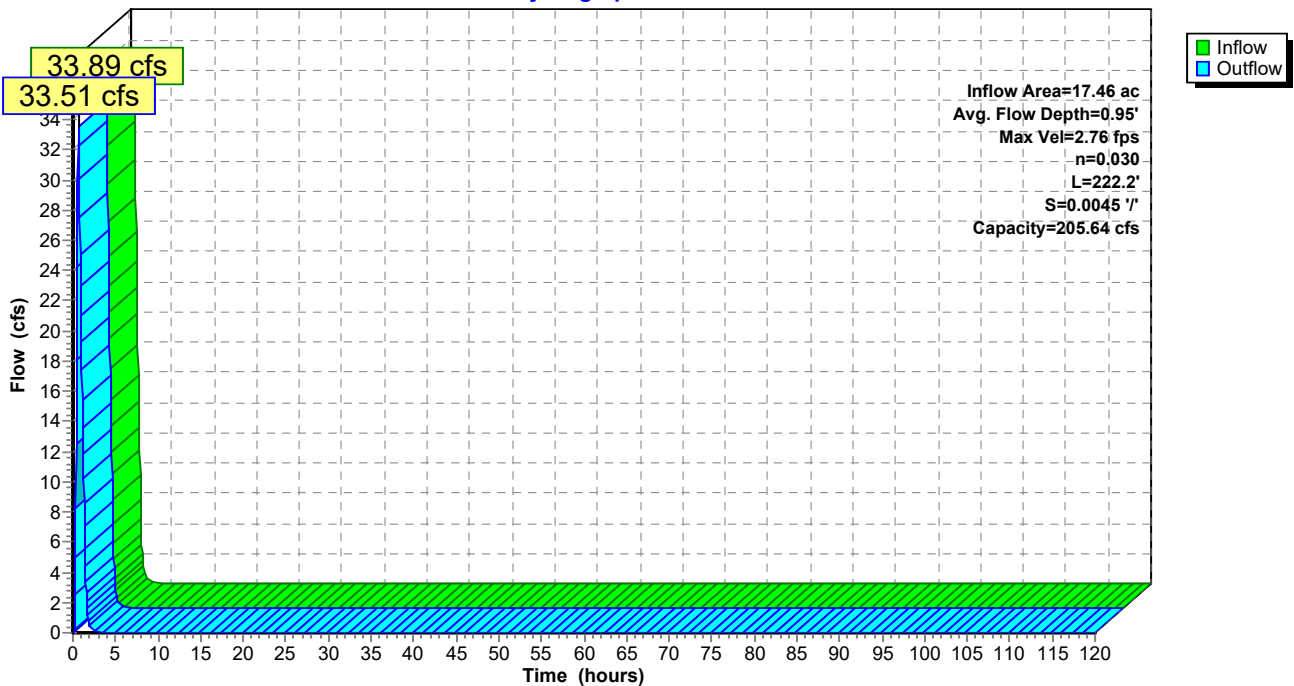
Peak Storage= 2,721 cf @ 0.62 hrs  
 Average Depth at Peak Storage= 0.95'  
 Bank-Full Depth= 2.50' Flow Area= 43.8 sf, Capacity= 205.64 cfs

10.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 25.00'  
 Length= 222.2' Slope= 0.0045 '/'  
 Inlet Invert= 739.92', Outlet Invert= 738.93'



**Reach PD-14: Perimeter Ditch 14**

Hydrograph



**Summary for Reach PD-15: Perimeter Ditch 15**

Inflow Area = 16.01 ac, 1.69% Impervious, Inflow Depth = 1.30" for 25-Year, 1-Hour event  
 Inflow = 34.01 cfs @ 0.46 hrs, Volume= 1.736 af  
 Outflow = 31.96 cfs @ 0.60 hrs, Volume= 1.736 af, Atten= 6%, Lag= 8.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.72 fps, Min. Travel Time= 4.7 min  
 Avg. Velocity = 0.53 fps, Avg. Travel Time= 24.0 min

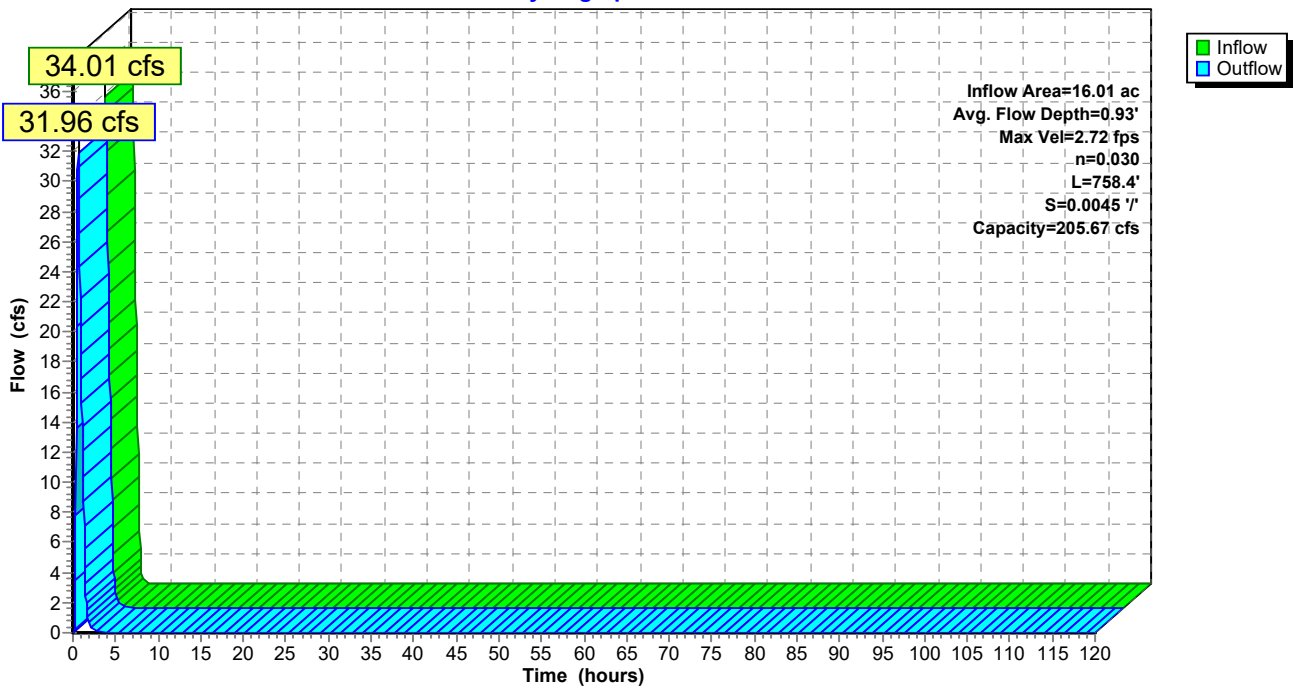
Peak Storage= 8,994 cf @ 0.52 hrs  
 Average Depth at Peak Storage= 0.93'  
 Bank-Full Depth= 2.50' Flow Area= 43.8 sf, Capacity= 205.67 cfs

10.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 25.00'  
 Length= 758.4' Slope= 0.0045 '/'  
 Inlet Invert= 743.30', Outlet Invert= 739.92'



**Reach PD-15: Perimeter Ditch 15**

Hydrograph



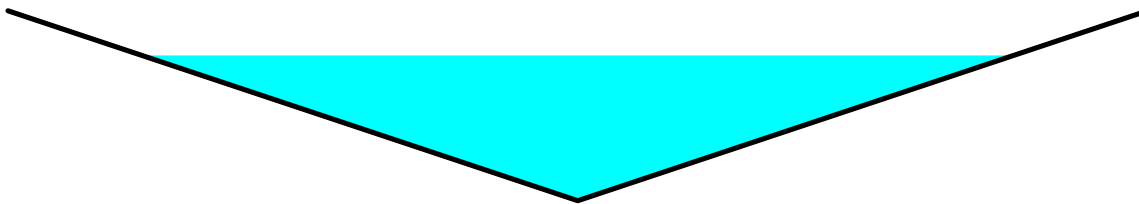
**Summary for Reach PD-2: Perimeter Ditch 2**

Inflow Area = 30.47 ac, 1.77% Impervious, Inflow Depth = 1.29" for 25-Year, 1-Hour event  
 Inflow = 51.81 cfs @ 0.69 hrs, Volume= 3.285 af  
 Outflow = 51.46 cfs @ 0.74 hrs, Volume= 3.285 af, Atten= 1%, Lag= 3.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.27 fps, Min. Travel Time= 1.6 min  
 Avg. Velocity = 0.56 fps, Avg. Travel Time= 9.5 min

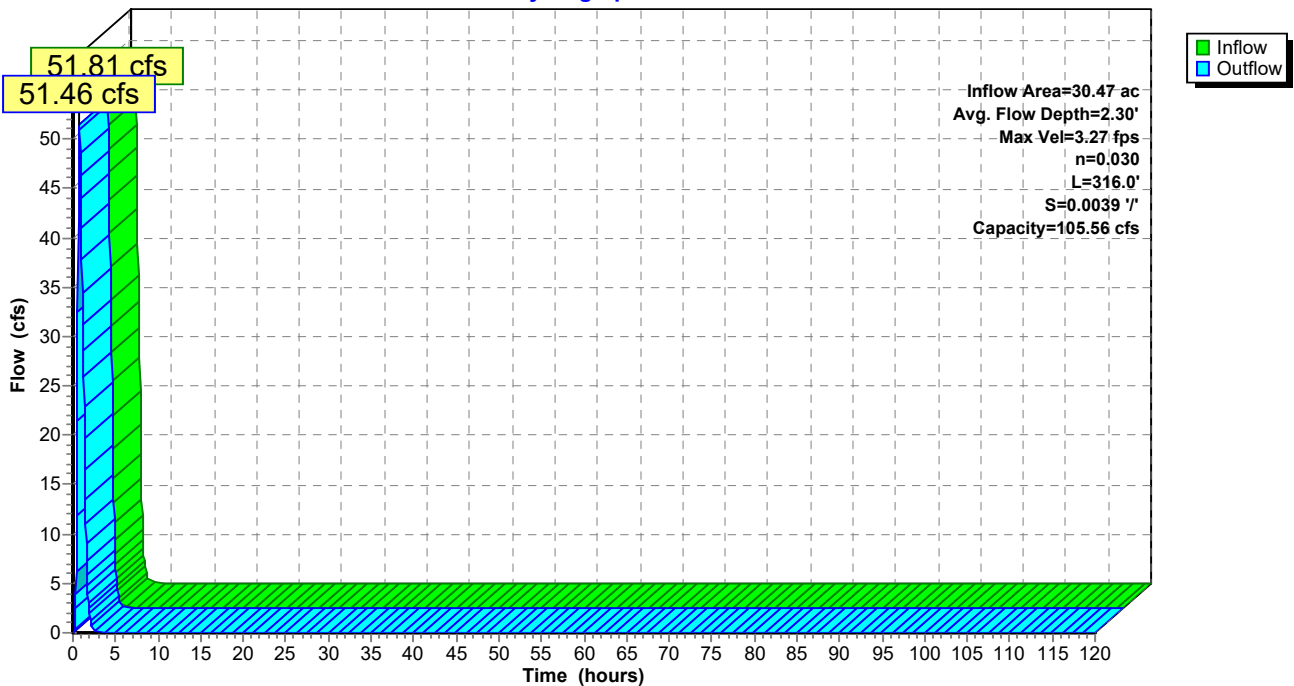
Peak Storage= 4,997 cf @ 0.71 hrs  
 Average Depth at Peak Storage= 2.30'  
 Bank-Full Depth= 3.00' Flow Area= 27.0 sf, Capacity= 105.56 cfs

0.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 18.00'  
 Length= 316.0' Slope= 0.0039 '/'  
 Inlet Invert= 758.00', Outlet Invert= 756.77'



**Reach PD-2: Perimeter Ditch 2**

Hydrograph



**Summary for Reach PD-3: Perimeter Ditch 3**

Inflow Area = 50.20 ac, 1.23% Impervious, Inflow Depth = 1.29" for 25-Year, 1-Hour event  
 Inflow = 78.63 cfs @ 0.69 hrs, Volume= 5.389 af  
 Outflow = 78.33 cfs @ 0.75 hrs, Volume= 5.389 af, Atten= 0%, Lag= 3.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.39 fps, Min. Travel Time= 1.9 min  
 Avg. Velocity = 0.80 fps, Avg. Travel Time= 10.2 min

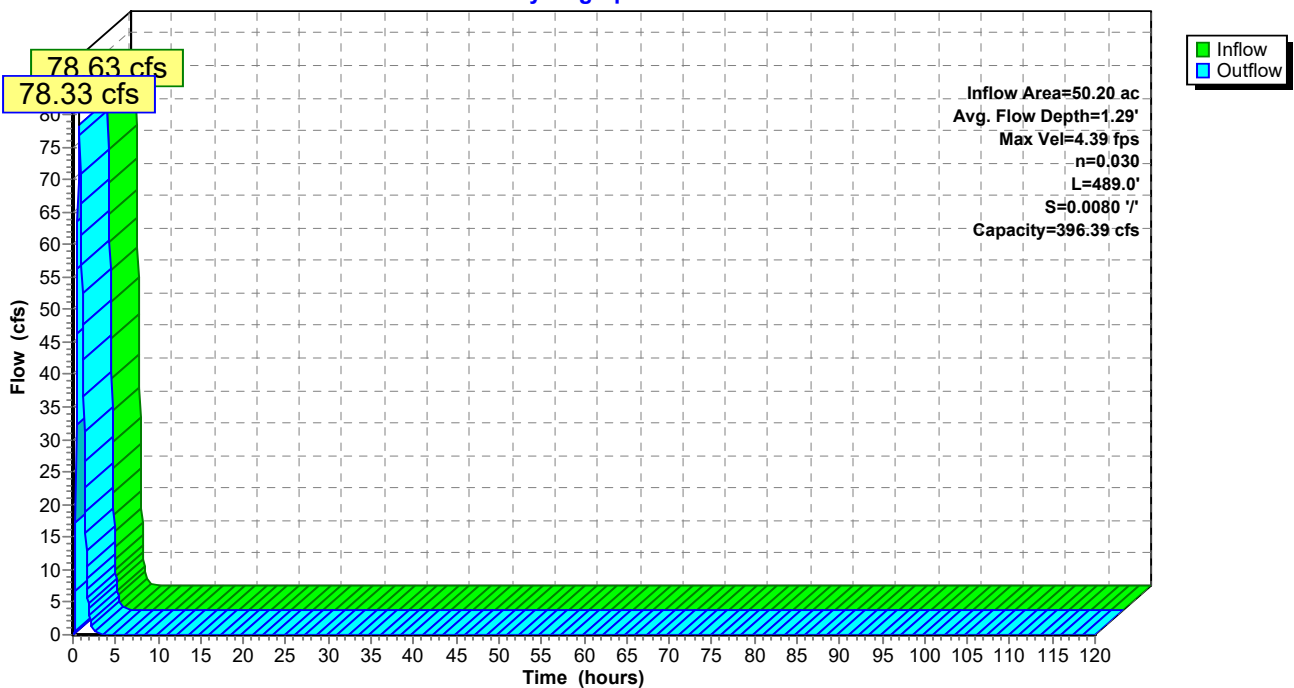
Peak Storage= 8,755 cf @ 0.71 hrs  
 Average Depth at Peak Storage= 1.29'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 396.39 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 489.0' Slope= 0.0080 '/'  
 Inlet Invert= 755.78', Outlet Invert= 751.87'



**Reach PD-3: Perimeter Ditch 3**

Hydrograph





**Summary for Reach PD-4: Perimeter Ditch 4**

Inflow Area = 53.25 ac, 1.28% Impervious, Inflow Depth = 1.29" for 25-Year, 1-Hour event  
 Inflow = 82.80 cfs @ 0.73 hrs, Volume= 5.721 af  
 Outflow = 82.59 cfs @ 0.76 hrs, Volume= 5.721 af, Atten= 0%, Lag= 2.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 5.72 fps, Min. Travel Time= 1.1 min  
 Avg. Velocity = 1.05 fps, Avg. Travel Time= 5.9 min

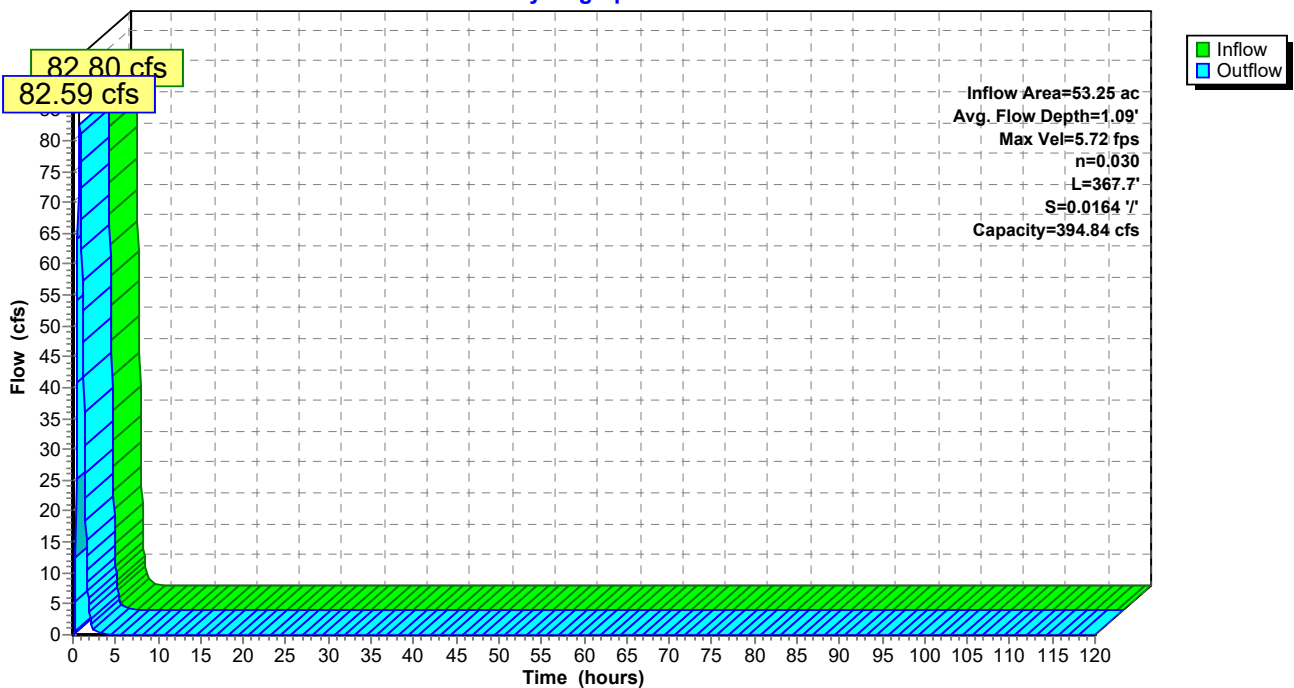
Peak Storage= 5,318 cf @ 0.75 hrs  
 Average Depth at Peak Storage= 1.09'  
 Bank-Full Depth= 2.50' Flow Area= 43.8 sf, Capacity= 394.84 cfs

10.00' x 2.50' deep channel, n= 0.030  
 Side Slope Z-value= 3.0 '/' Top Width= 25.00'  
 Length= 367.7' Slope= 0.0164 '/'  
 Inlet Invert= 751.87', Outlet Invert= 745.83'



**Reach PD-4: Perimeter Ditch 4**

Hydrograph



**Summary for Reach PD-5: Perimeter Ditch 5**

Inflow Area = 85.14 ac, 1.17% Impervious, Inflow Depth = 1.29" for 25-Year, 1-Hour event  
 Inflow = 129.20 cfs @ 0.62 hrs, Volume= 9.142 af  
 Outflow = 128.11 cfs @ 0.77 hrs, Volume= 9.142 af, Atten= 1%, Lag= 8.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.36 fps, Min. Travel Time= 4.3 min  
 Avg. Velocity = 0.72 fps, Avg. Travel Time= 26.2 min

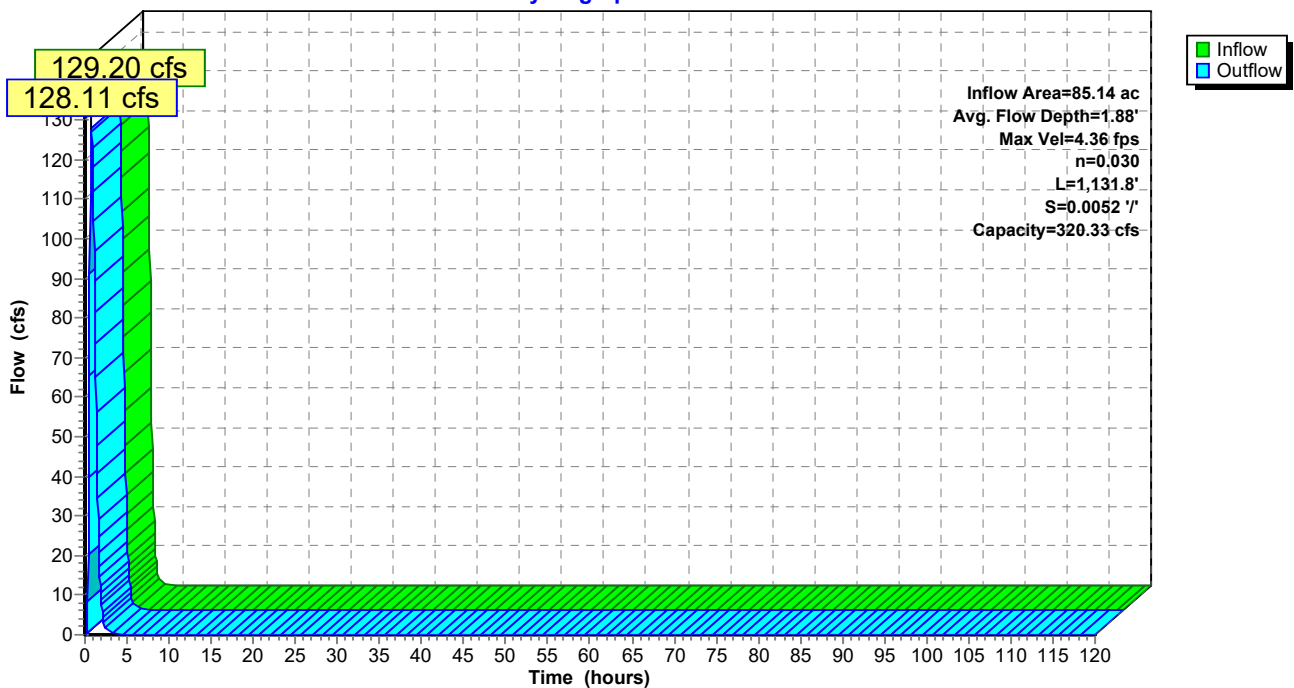
Peak Storage= 33,304 cf @ 0.70 hrs  
 Average Depth at Peak Storage= 1.88'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 320.33 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 1,131.8' Slope= 0.0052 '/'  
 Inlet Invert= 745.80', Outlet Invert= 739.89'



**Reach PD-5: Perimeter Ditch 5**

Hydrograph



**Summary for Reach PD-6: Perimeter Ditch 6**

Inflow Area = 87.70 ac, 1.33% Impervious, Inflow Depth = 1.29" for 25-Year, 1-Hour event  
 Inflow = 130.71 cfs @ 0.76 hrs, Volume= 9.435 af  
 Outflow = 130.40 cfs @ 0.82 hrs, Volume= 9.435 af, Atten= 0%, Lag= 4.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.31 fps, Min. Travel Time= 2.2 min  
 Avg. Velocity = 0.71 fps, Avg. Travel Time= 13.6 min

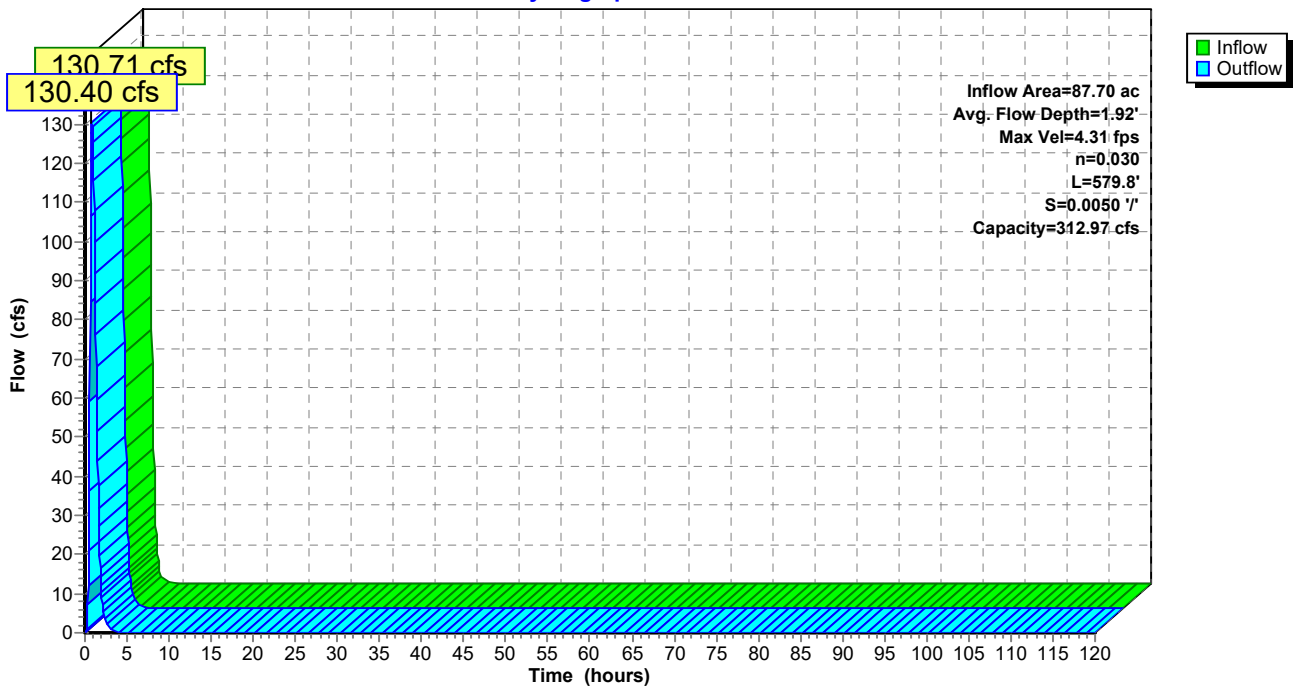
Peak Storage= 17,557 cf @ 0.78 hrs  
 Average Depth at Peak Storage= 1.92'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 312.97 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 579.8' Slope= 0.0050 '/'  
 Inlet Invert= 739.89', Outlet Invert= 737.00'



**Reach PD-6: Perimeter Ditch 6**

Hydrograph



**Summary for Reach PD-7: Perimeter Ditch 7**

Inflow Area = 3.12 ac, 32.08% Impervious, Inflow Depth = 1.89" for 25-Year, 1-Hour event  
 Inflow = 13.74 cfs @ 0.24 hrs, Volume= 0.490 af  
 Outflow = 13.56 cfs @ 0.26 hrs, Volume= 0.490 af, Atten= 1%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.13 fps, Min. Travel Time= 0.7 min  
 Avg. Velocity = 1.03 fps, Avg. Travel Time= 1.4 min

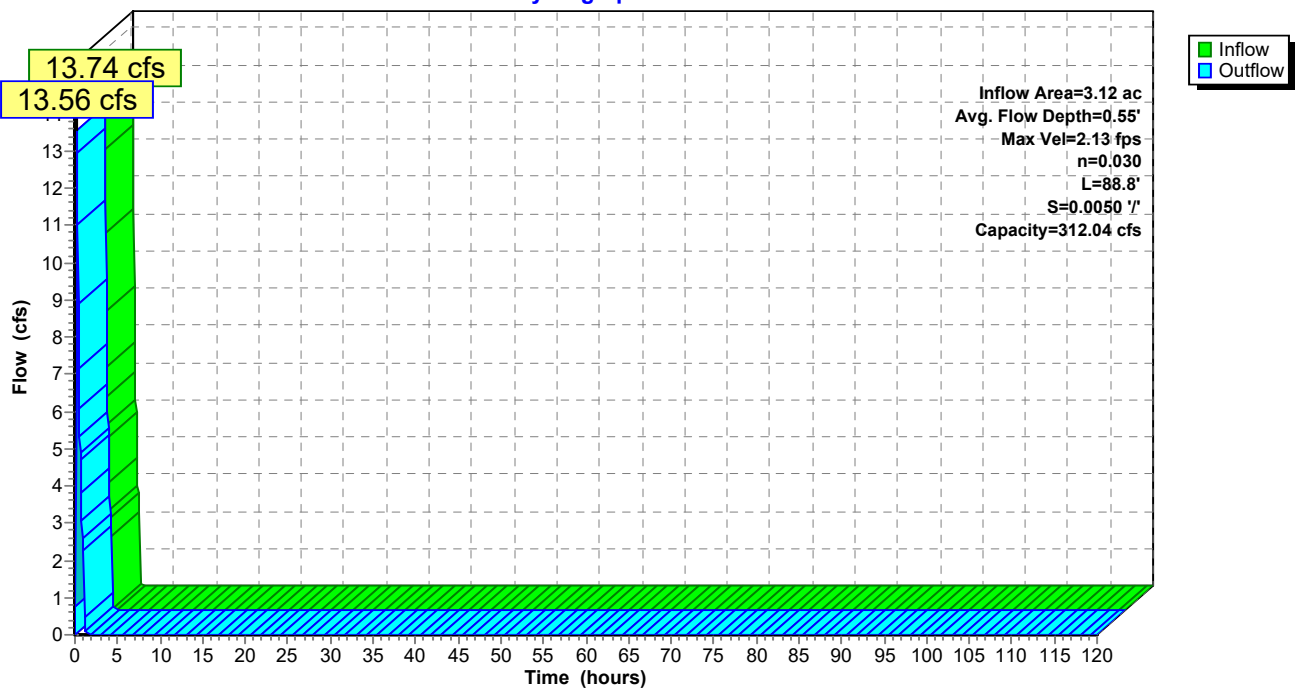
Peak Storage= 571 cf @ 0.25 hrs  
 Average Depth at Peak Storage= 0.55'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 312.04 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 ' / ' Top Width= 28.00'  
 Length= 88.8' Slope= 0.0050 ' / '  
 Inlet Invert= 741.25', Outlet Invert= 740.81'



**Reach PD-7: Perimeter Ditch 7**

Hydrograph



**Summary for Reach PD-8: Perimeter Ditch 8**

Inflow Area = 0.14 ac, 14.29% Impervious, Inflow Depth = 1.52" for 25-Year, 1-Hour event  
 Inflow = 0.51 cfs @ 0.24 hrs, Volume= 0.018 af  
 Outflow = 0.49 cfs @ 0.31 hrs, Volume= 0.018 af, Atten= 4%, Lag= 4.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 0.63 fps, Min. Travel Time= 2.4 min  
 Avg. Velocity = 0.41 fps, Avg. Travel Time= 3.6 min

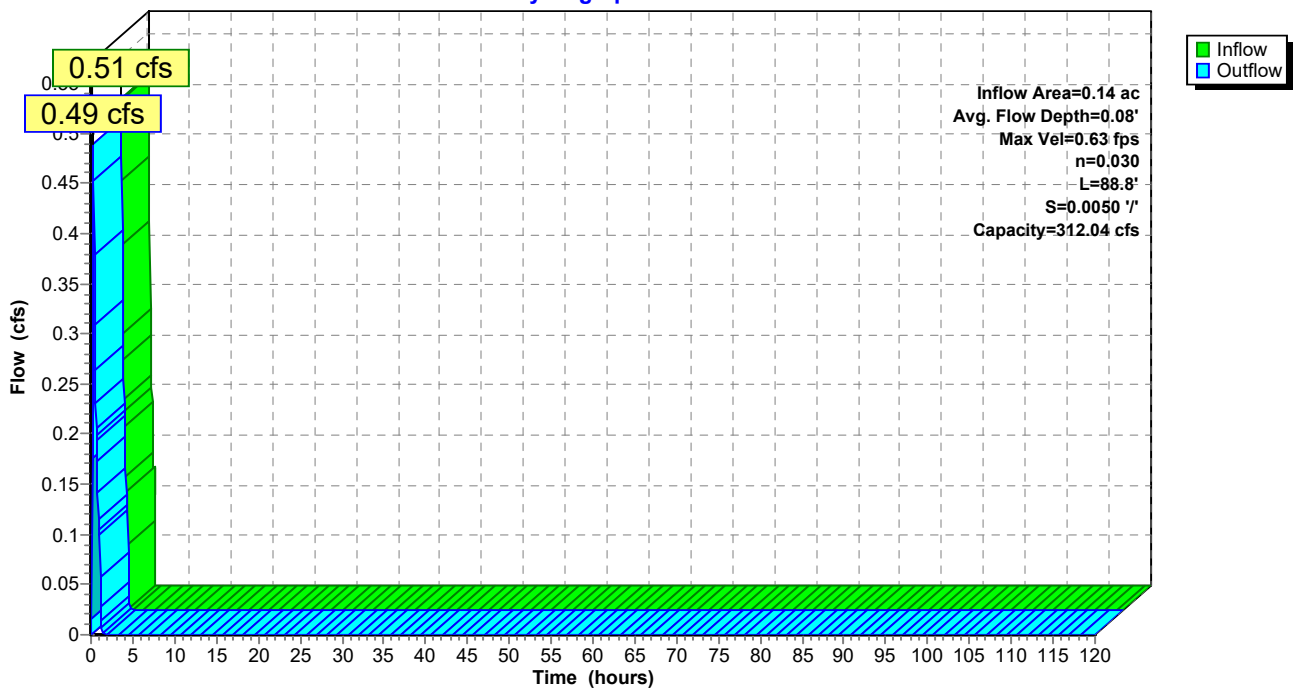
Peak Storage= 70 cf @ 0.27 hrs  
 Average Depth at Peak Storage= 0.08'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 312.04 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 88.8' Slope= 0.0050 '/'  
 Inlet Invert= 741.25', Outlet Invert= 740.81'



**Reach PD-8: Perimeter Ditch 8**

Hydrograph



**Summary for Reach PD-9: Perimeter Ditch 9**

Inflow Area = 6.78 ac, 3.10% Impervious, Inflow Depth = 1.33" for 25-Year, 1-Hour event  
 Inflow = 13.73 cfs @ 0.46 hrs, Volume= 0.750 af  
 Outflow = 12.93 cfs @ 0.61 hrs, Volume= 0.750 af, Atten= 6%, Lag= 8.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.18 fps, Min. Travel Time= 4.9 min  
 Avg. Velocity = 0.59 fps, Avg. Travel Time= 18.2 min

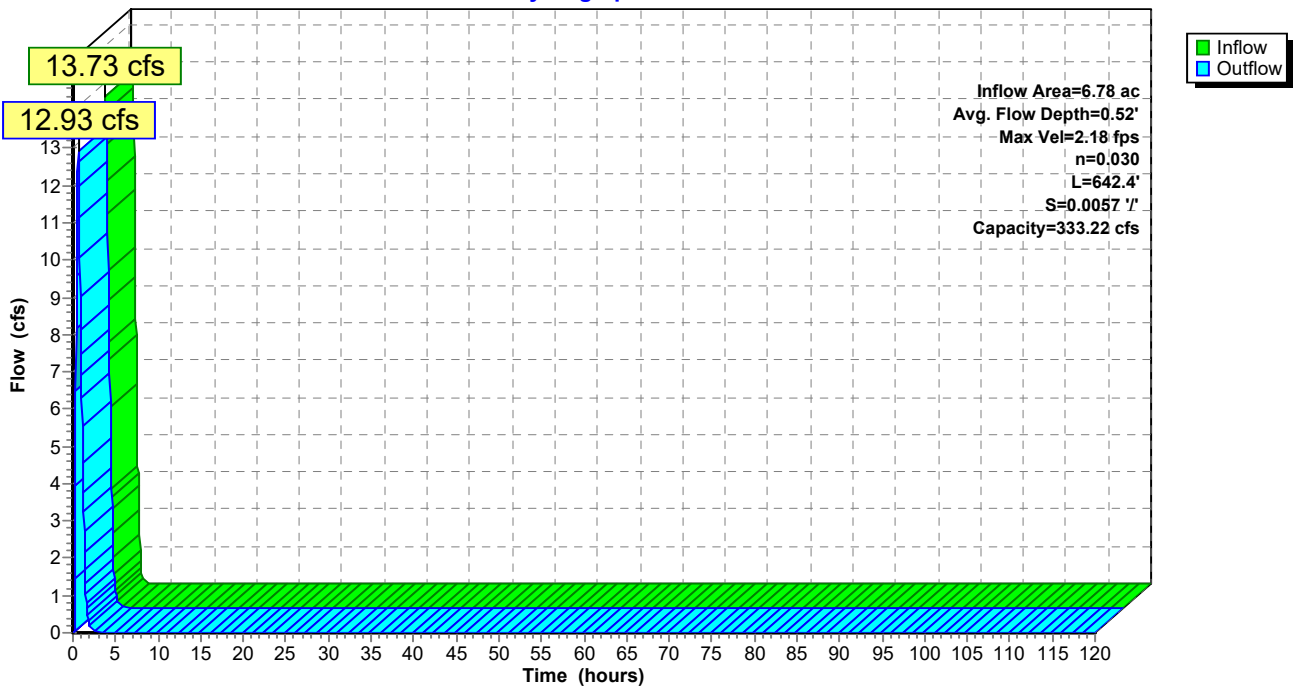
Peak Storage= 3,831 cf @ 0.52 hrs  
 Average Depth at Peak Storage= 0.52'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 333.22 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 ' / ' Top Width= 28.00'  
 Length= 642.4' Slope= 0.0057 ' / '  
 Inlet Invert= 740.81', Outlet Invert= 737.18'



**Reach PD-9: Perimeter Ditch 9**

Hydrograph



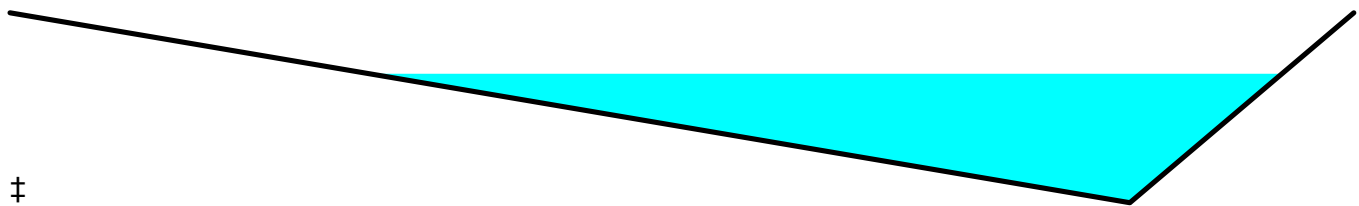
**Summary for Reach TB-A1A: Terrace Berm A1A**

Inflow Area = 6.74 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 15.43 cfs @ 0.45 hrs, Volume= 0.714 af  
 Outflow = 13.99 cfs @ 0.62 hrs, Volume= 0.714 af, Atten= 9%, Lag= 10.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.38 fps, Min. Travel Time= 5.1 min  
 Avg. Velocity = 0.72 fps, Avg. Travel Time= 23.8 min

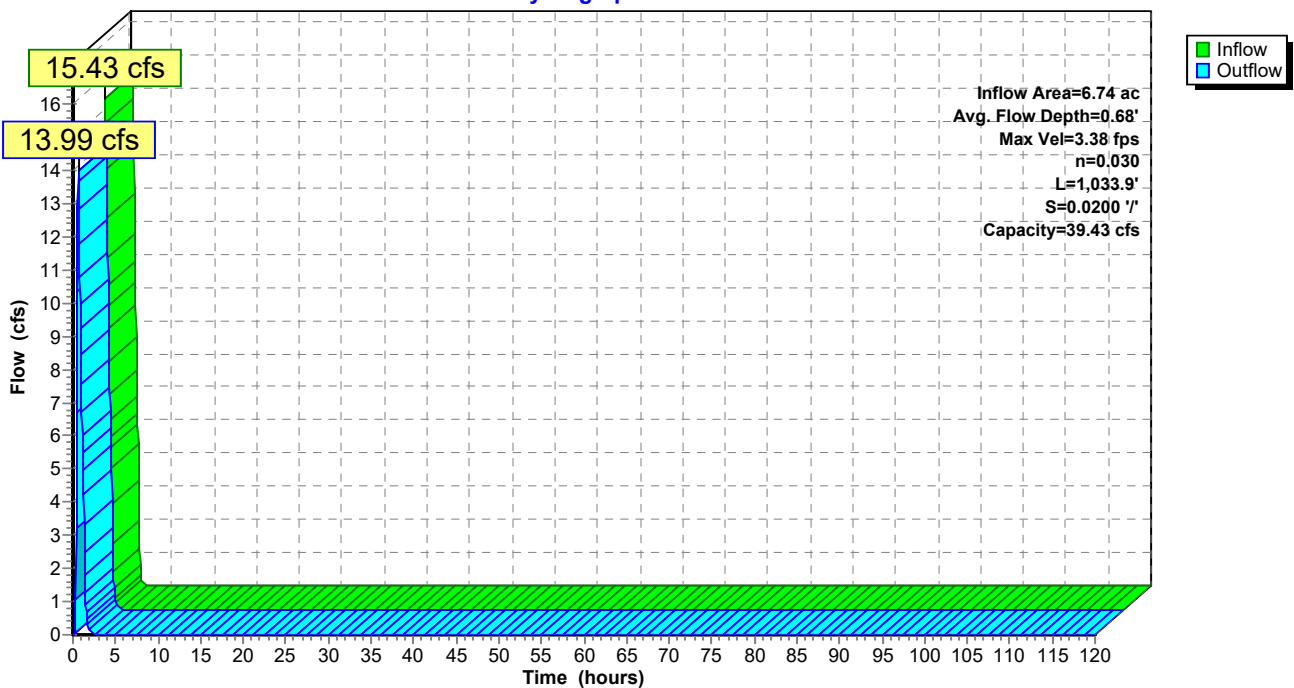
Peak Storage= 4,288 cf @ 0.53 hrs  
 Average Depth at Peak Storage= 0.68'  
 Bank-Full Depth= 1.00' Flow Area= 9.0 sf, Capacity= 39.43 cfs

0.00' x 1.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 15.0 3.0 '/' Top Width= 18.00'  
 Length= 1,033.9' Slope= 0.0200 '/'  
 Inlet Invert= 842.00', Outlet Invert= 821.32'



**Reach TB-A1A: Terrace Berm A1A**

Hydrograph



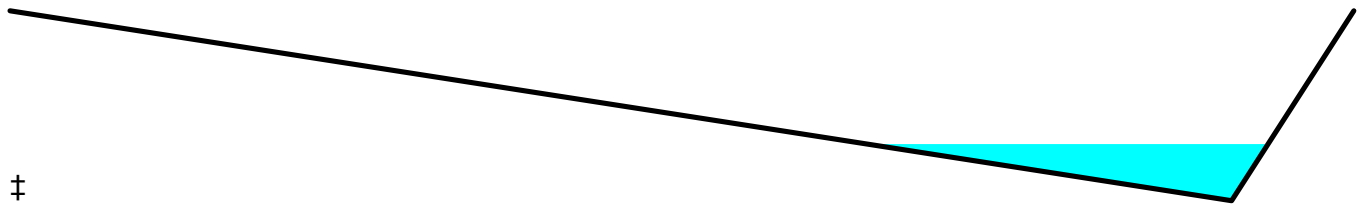
**Summary for Reach TB-A1B: Terrace Berm A1B**

Inflow Area = 5.23 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 15.02 cfs @ 0.31 hrs, Volume= 0.554 af  
 Outflow = 11.16 cfs @ 0.55 hrs, Volume= 0.554 af, Atten= 26%, Lag= 14.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.57 fps, Min. Travel Time= 7.5 min  
 Avg. Velocity = 0.60 fps, Avg. Travel Time= 32.4 min

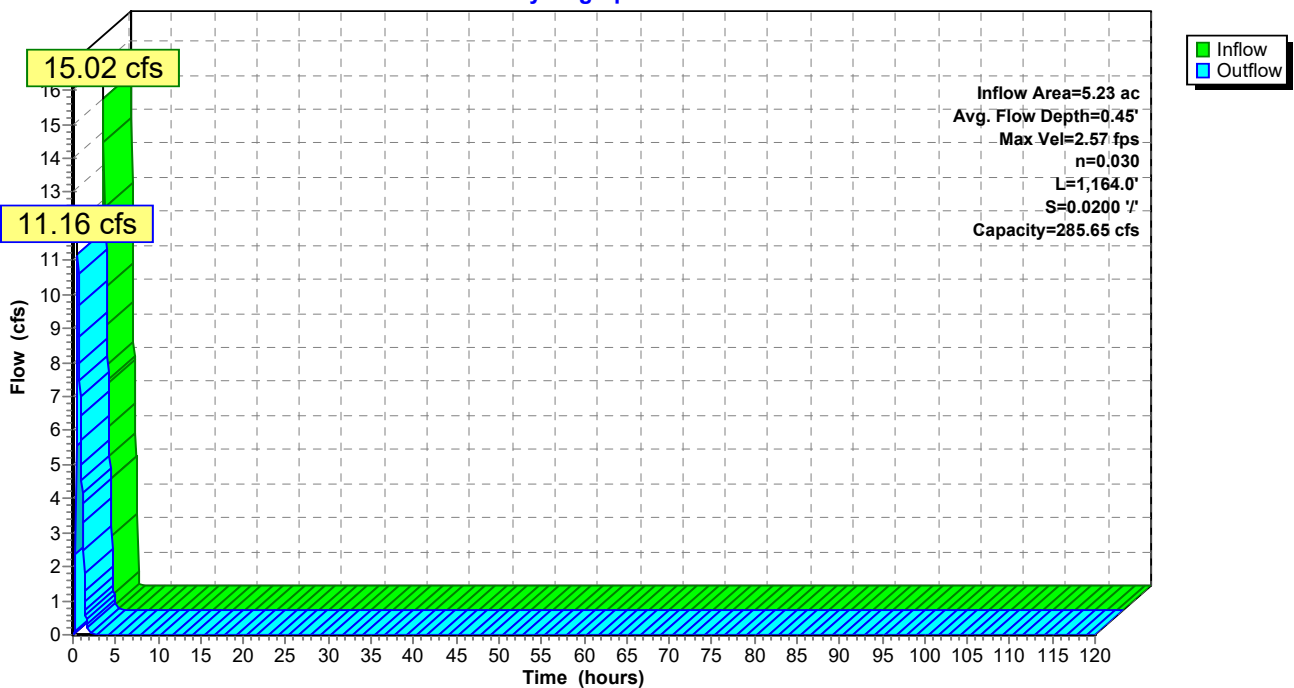
Peak Storage= 5,125 cf @ 0.42 hrs  
 Average Depth at Peak Storage= 0.45'  
 Bank-Full Depth= 1.50' Flow Area= 49.5 sf, Capacity= 285.65 cfs

0.00' x 1.50' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 40.0 4.0 '/' Top Width= 66.00'  
 Length= 1,164.0' Slope= 0.0200 '/'  
 Inlet Invert= 806.00', Outlet Invert= 782.72'



**Reach TB-A1B: Terrace Berm A1B**

Hydrograph





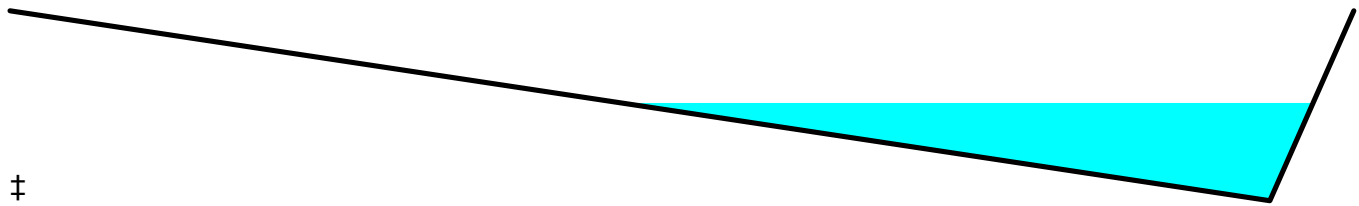
**Summary for Reach TB-A1C: Terrace Berm A1C**

Inflow Area = 9.16 ac, 1.48% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 16.74 cfs @ 0.62 hrs, Volume= 0.972 af  
 Outflow = 15.47 cfs @ 0.84 hrs, Volume= 0.972 af, Atten= 8%, Lag= 13.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.44 fps, Min. Travel Time= 6.6 min  
 Avg. Velocity = 0.52 fps, Avg. Travel Time= 30.7 min

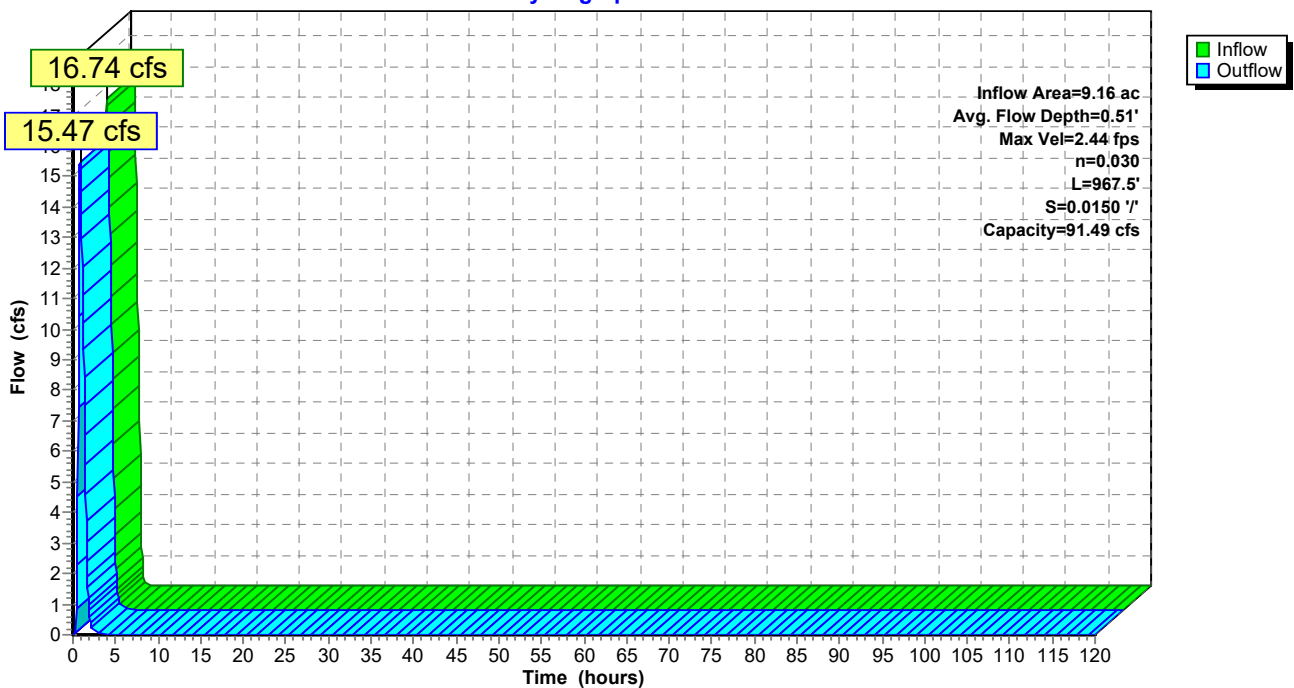
Peak Storage= 6,143 cf @ 0.72 hrs  
 Average Depth at Peak Storage= 0.51'  
 Bank-Full Depth= 1.00' Flow Area= 24.0 sf, Capacity= 91.49 cfs

0.00' x 1.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 45.0 3.0 '/' Top Width= 48.00'  
 Length= 967.5' Slope= 0.0150 '/'  
 Inlet Invert= 792.00', Outlet Invert= 777.49'



**Reach TB-A1C: Terrace Berm A1C**

Hydrograph



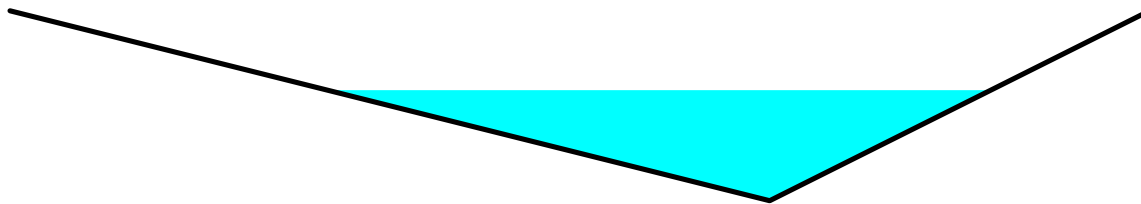
**Summary for Reach TB-B1: Terrace Berm B1**

Inflow Area = 2.04 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 5.48 cfs @ 0.35 hrs, Volume= 0.216 af  
 Outflow = 5.32 cfs @ 0.41 hrs, Volume= 0.216 af, Atten= 3%, Lag= 3.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.42 fps, Min. Travel Time= 1.7 min  
 Avg. Velocity = 1.29 fps, Avg. Travel Time= 4.4 min

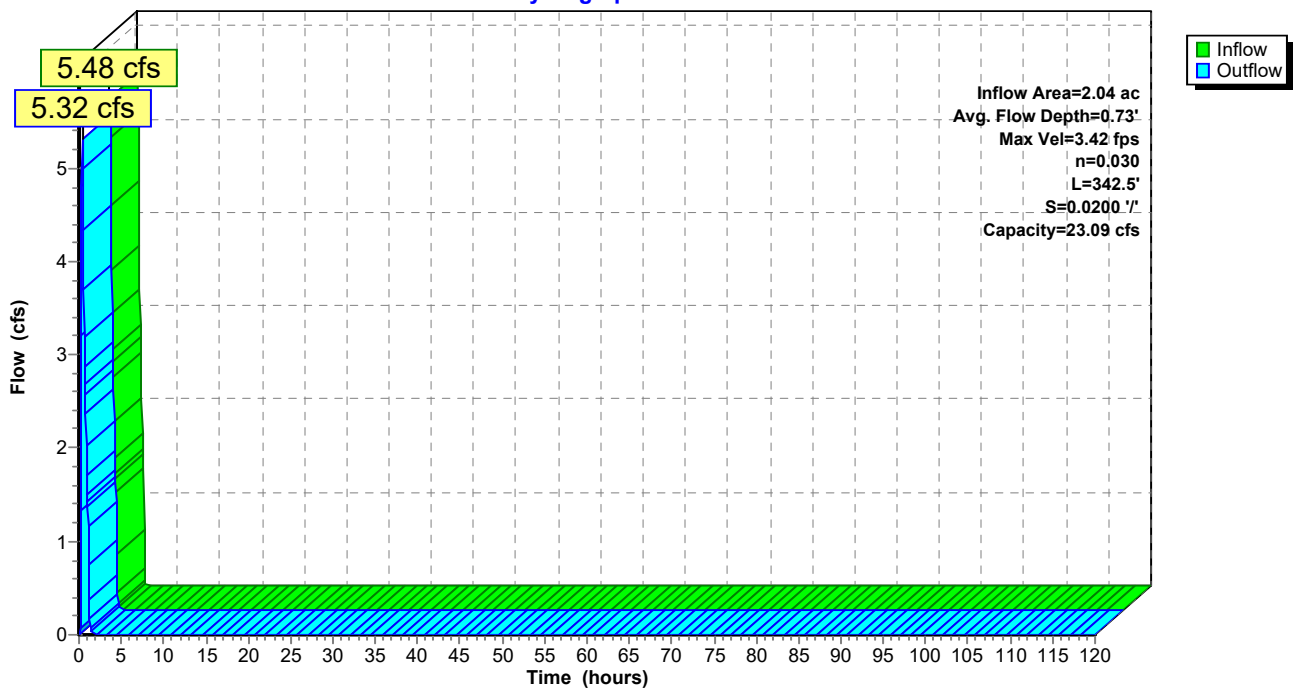
Peak Storage= 543 cf @ 0.37 hrs  
 Average Depth at Peak Storage= 0.73'  
 Bank-Full Depth= 1.25' Flow Area= 4.7 sf, Capacity= 23.09 cfs

0.00' x 1.25' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 7.50'  
 Length= 342.5' Slope= 0.0200 '/'  
 Inlet Invert= 880.00', Outlet Invert= 873.15'



**Reach TB-B1: Terrace Berm B1**

Hydrograph



**Summary for Reach TB-B10: Terrace Bench B10**

Inflow Area = 2.25 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 4.54 cfs @ 0.48 hrs, Volume= 0.238 af  
 Outflow = 4.34 cfs @ 0.59 hrs, Volume= 0.238 af, Atten= 4%, Lag= 6.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.52 fps, Min. Travel Time= 4.0 min  
 Avg. Velocity = 0.52 fps, Avg. Travel Time= 11.7 min

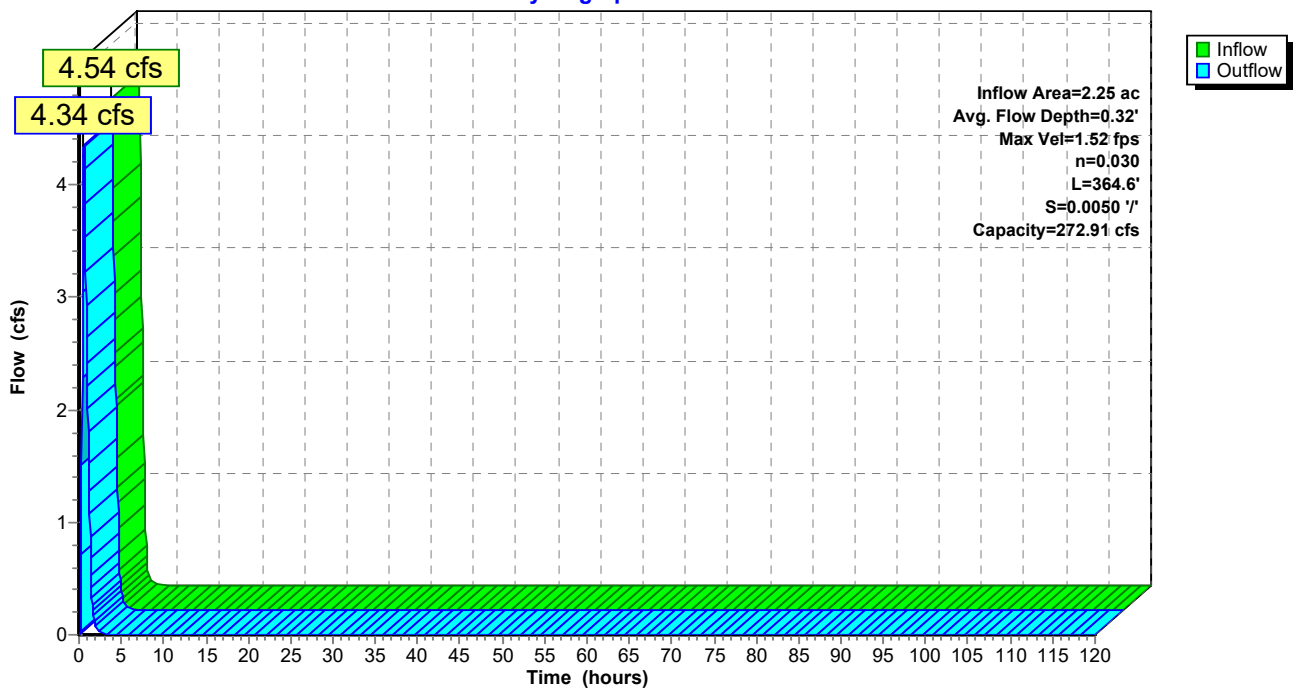
Peak Storage= 1,051 cf @ 0.52 hrs  
 Average Depth at Peak Storage= 0.32'  
 Bank-Full Depth= 3.00' Flow Area= 51.0 sf, Capacity= 272.91 cfs

8.00' x 3.00' deep channel, n= 0.030  
 Side Slope Z-value= 3.0 '/' Top Width= 26.00'  
 Length= 364.6' Slope= 0.0050 '/'  
 Inlet Invert= 759.18', Outlet Invert= 757.36'



**Reach TB-B10: Terrace Bench B10**

Hydrograph



**Summary for Reach TB-B10A: Terrace Bench B10A**

Inflow Area = 2.25 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 4.34 cfs @ 0.59 hrs, Volume= 0.238 af  
 Outflow = 4.33 cfs @ 0.60 hrs, Volume= 0.238 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.46 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 2.21 fps, Avg. Travel Time= 0.6 min

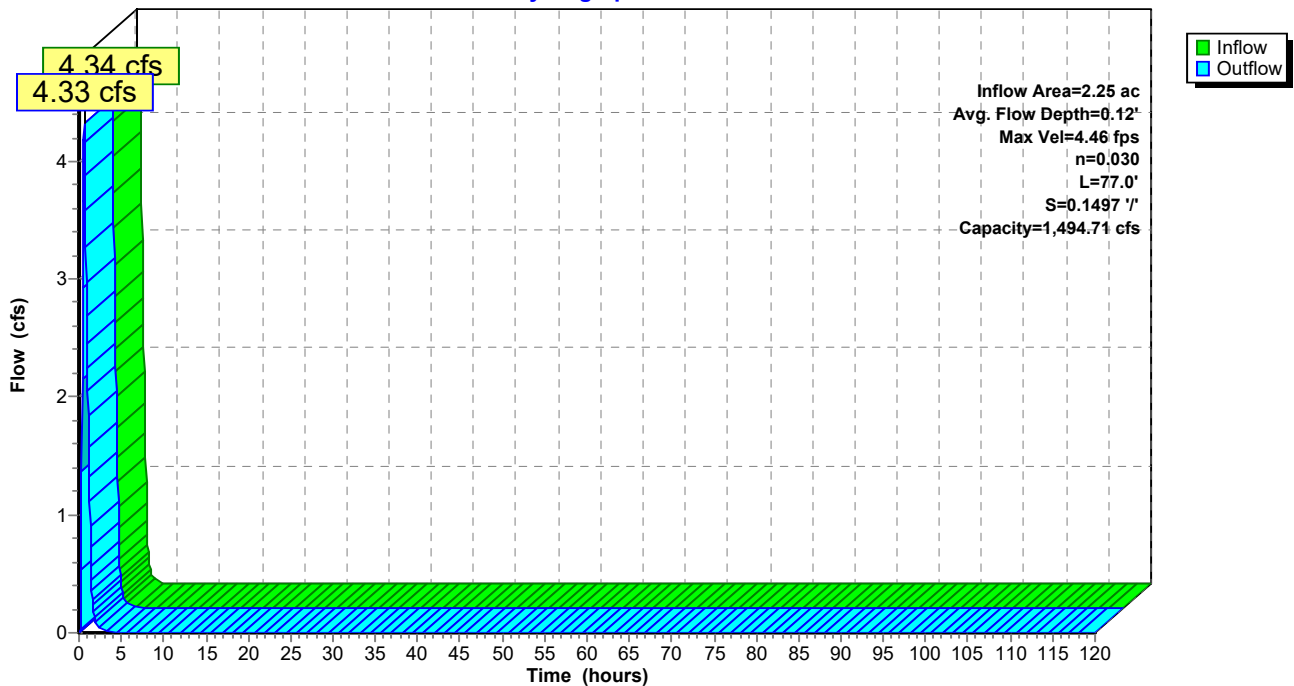
Peak Storage= 75 cf @ 0.59 hrs  
 Average Depth at Peak Storage= 0.12'  
 Bank-Full Depth= 3.00' Flow Area= 51.0 sf, Capacity= 1,494.71 cfs

8.00' x 3.00' deep channel, n= 0.030  
 Side Slope Z-value= 3.0 '/' Top Width= 26.00'  
 Length= 77.0' Slope= 0.1497 '/'  
 Inlet Invert= 757.36', Outlet Invert= 745.83'



**Reach TB-B10A: Terrace Bench B10A**

Hydrograph



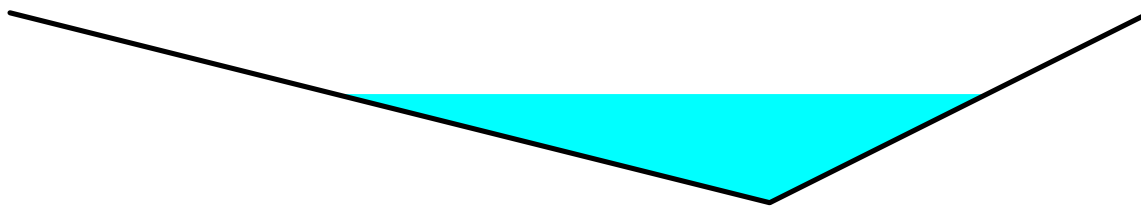
**Summary for Reach TB-B11: Terrace Berm B11**

Inflow Area = 2.27 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 5.19 cfs @ 0.45 hrs, Volume= 0.241 af  
 Outflow = 5.16 cfs @ 0.47 hrs, Volume= 0.241 af, Atten= 1%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.39 fps, Min. Travel Time= 0.5 min  
 Avg. Velocity = 1.83 fps, Avg. Travel Time= 1.0 min

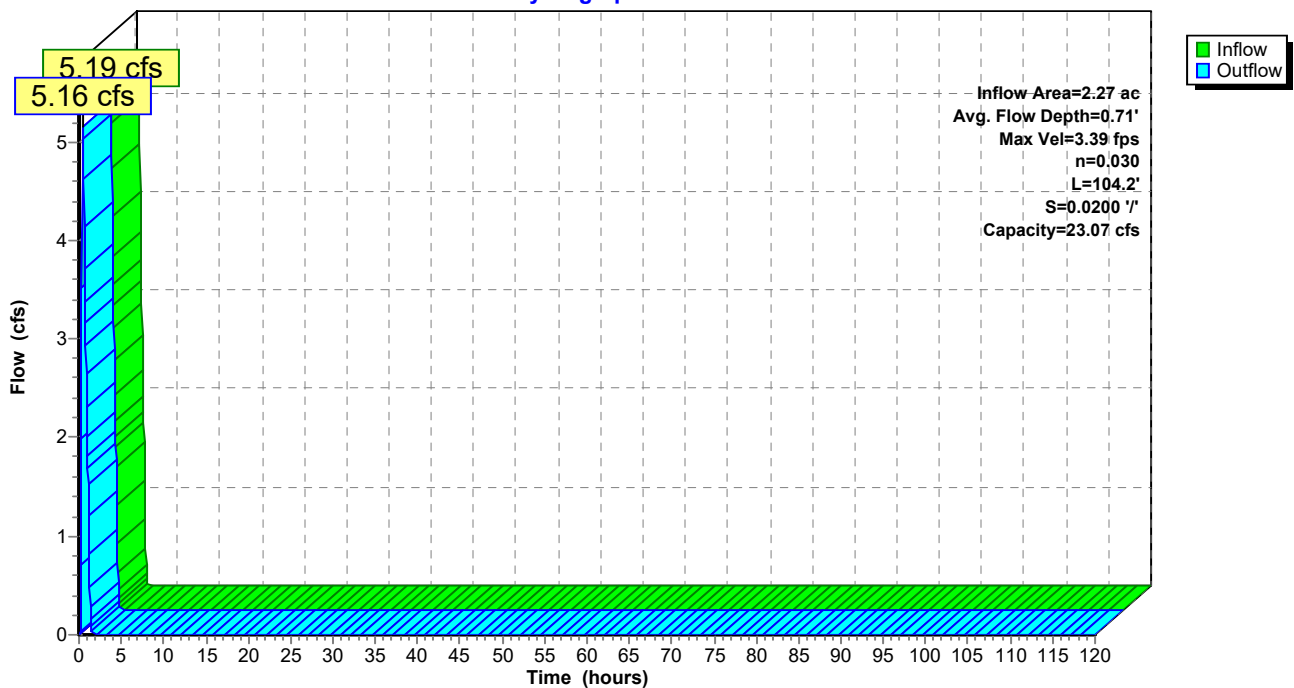
Peak Storage= 160 cf @ 0.46 hrs  
 Average Depth at Peak Storage= 0.71'  
 Bank-Full Depth= 1.25' Flow Area= 4.7 sf, Capacity= 23.07 cfs

0.00' x 1.25' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 7.50'  
 Length= 104.2' Slope= 0.0200 '/'  
 Inlet Invert= 821.00', Outlet Invert= 818.92'



**Reach TB-B11: Terrace Berm B11**

Hydrograph



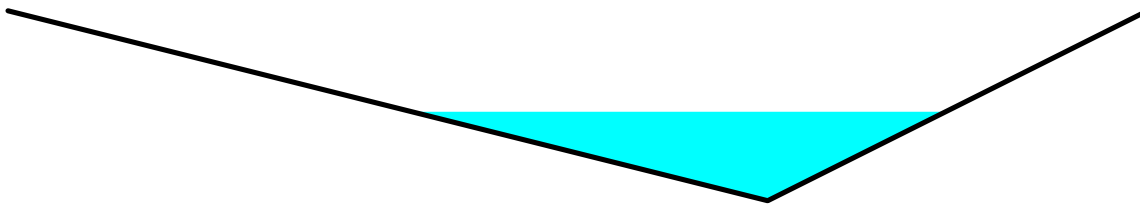
**Summary for Reach TB-B12: Terrace Berm B12**

Inflow Area = 1.20 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 3.45 cfs @ 0.31 hrs, Volume= 0.127 af  
 Outflow = 2.98 cfs @ 0.45 hrs, Volume= 0.127 af, Atten= 14%, Lag= 8.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.96 fps, Min. Travel Time= 4.2 min  
 Avg. Velocity = 0.85 fps, Avg. Travel Time= 14.6 min

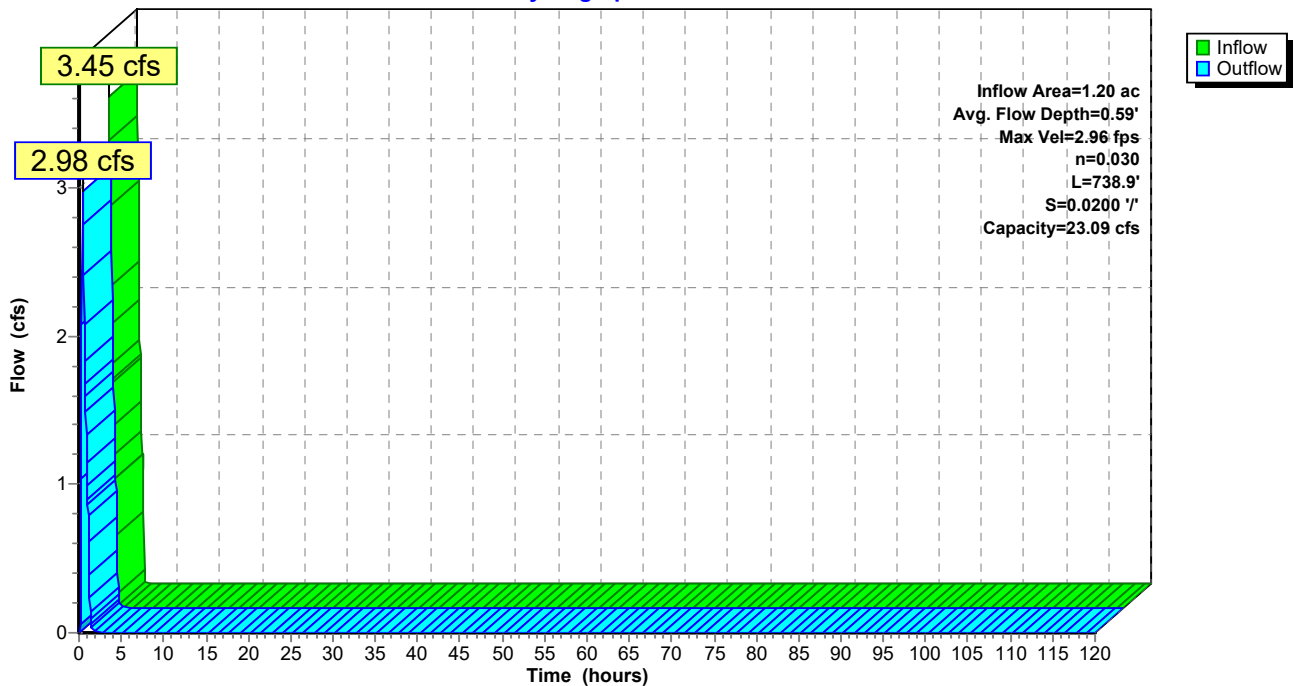
Peak Storage= 761 cf @ 0.37 hrs  
 Average Depth at Peak Storage= 0.59'  
 Bank-Full Depth= 1.25' Flow Area= 4.7 sf, Capacity= 23.09 cfs

0.00' x 1.25' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 7.50'  
 Length= 738.9' Slope= 0.0200 '/'  
 Inlet Invert= 864.00', Outlet Invert= 849.22'



**Reach TB-B12: Terrace Berm B12**

Hydrograph



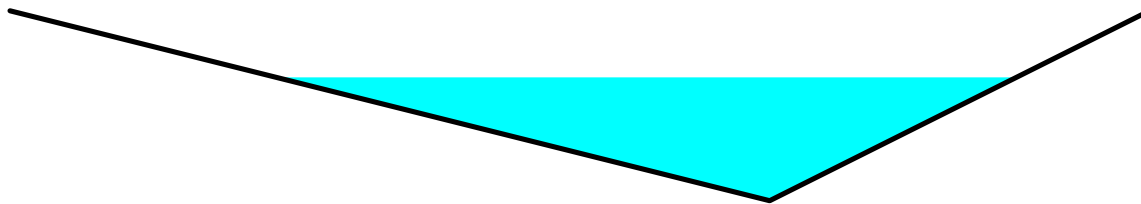
**Summary for Reach TB-B2: Terrace Berm B2**

Inflow Area = 2.74 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 7.40 cfs @ 0.34 hrs, Volume= 0.291 af  
 Outflow = 7.16 cfs @ 0.41 hrs, Volume= 0.291 af, Atten= 3%, Lag= 4.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.67 fps, Min. Travel Time= 2.1 min  
 Avg. Velocity = 1.19 fps, Avg. Travel Time= 6.4 min

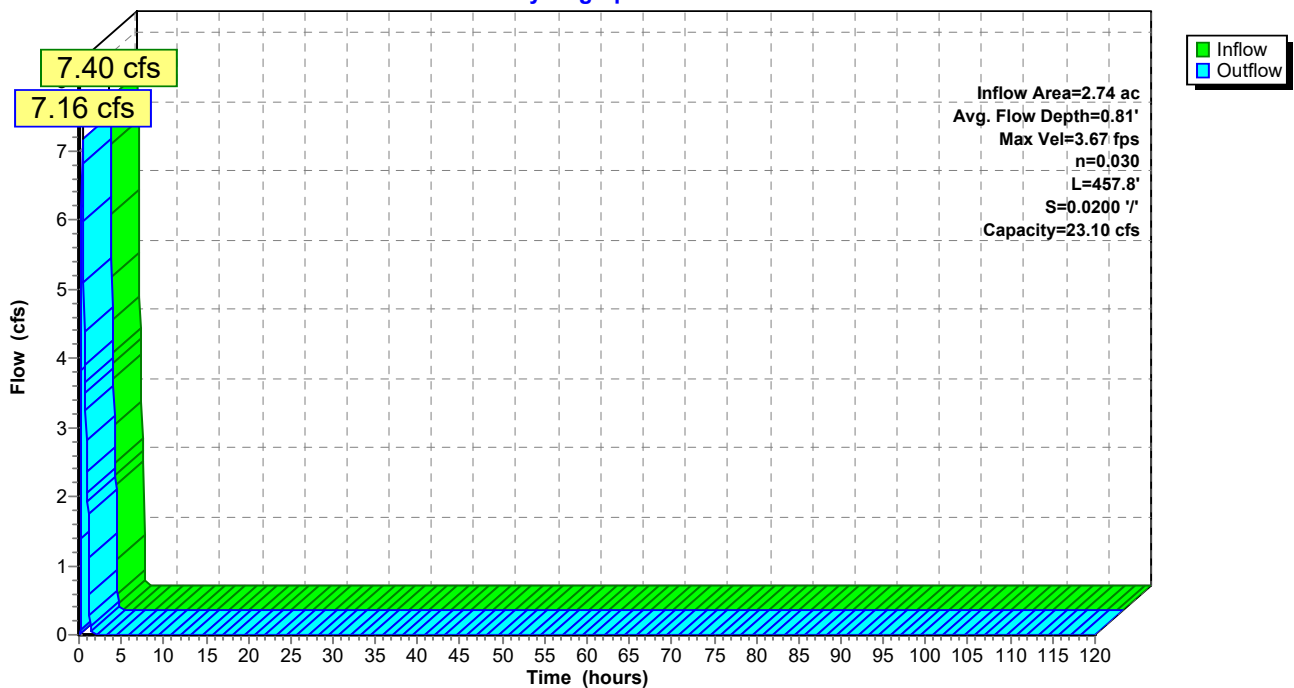
Peak Storage= 905 cf @ 0.37 hrs  
 Average Depth at Peak Storage= 0.81'  
 Bank-Full Depth= 1.25' Flow Area= 4.7 sf, Capacity= 23.10 cfs

0.00' x 1.25' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 7.50'  
 Length= 457.8' Slope= 0.0200 '/'  
 Inlet Invert= 880.00', Outlet Invert= 870.84'



**Reach TB-B2: Terrace Berm B2**

Hydrograph



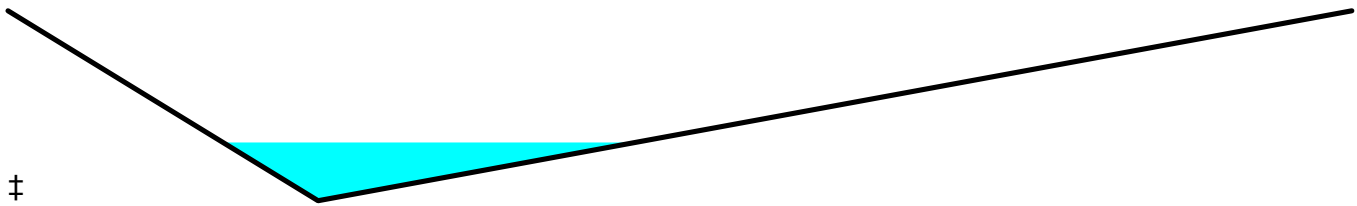
**Summary for Reach TB-B3: Terrace Bench B3**

Inflow Area = 2.21 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 6.34 cfs @ 0.31 hrs, Volume= 0.234 af  
 Outflow = 5.39 cfs @ 0.46 hrs, Volume= 0.234 af, Atten= 15%, Lag= 9.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.22 fps, Min. Travel Time= 4.6 min  
 Avg. Velocity = 0.62 fps, Avg. Travel Time= 16.6 min

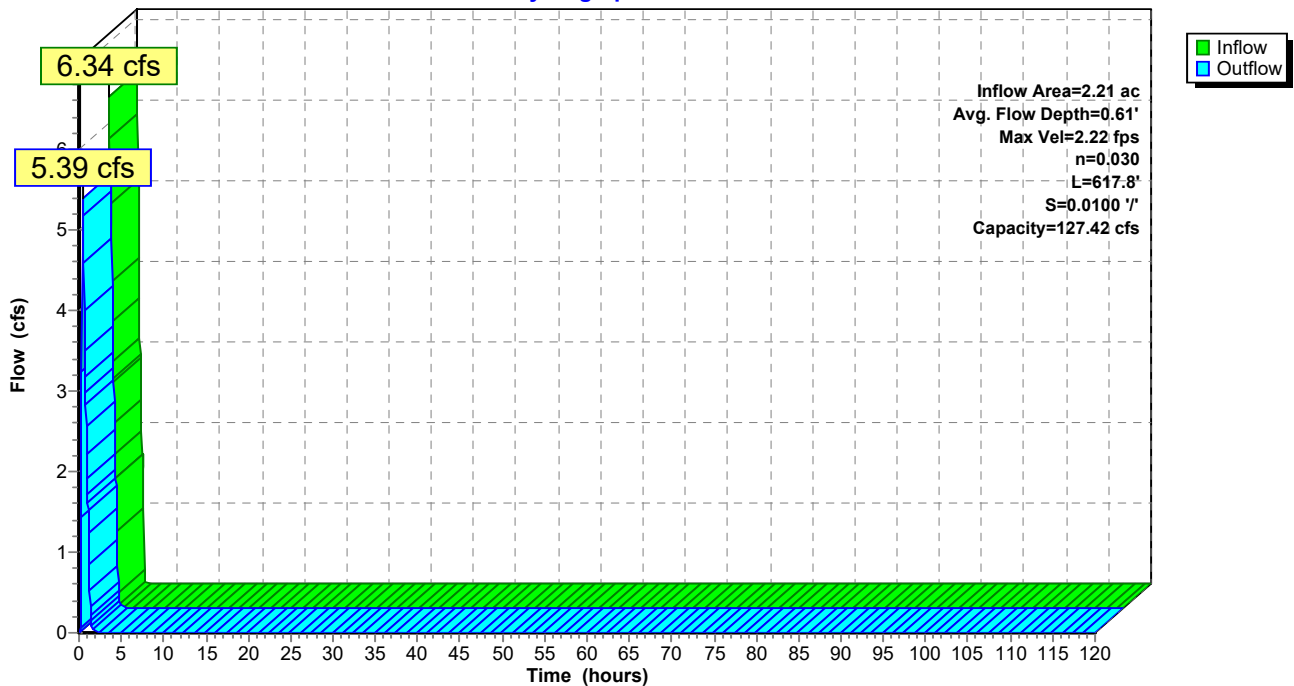
Peak Storage= 1,509 cf @ 0.38 hrs  
 Average Depth at Peak Storage= 0.61'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.42 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'  
 Length= 617.8' Slope= 0.0100 '/'  
 Inlet Invert= 880.00', Outlet Invert= 873.82'



**Reach TB-B3: Terrace Bench B3**

Hydrograph





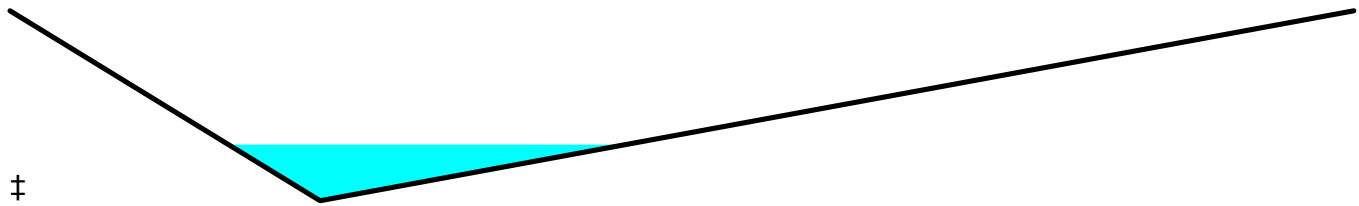
**Summary for Reach TB-B4: Terrace Bench B4**

Inflow Area = 1.87 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 5.36 cfs @ 0.31 hrs, Volume= 0.198 af  
 Outflow = 4.89 cfs @ 0.42 hrs, Volume= 0.198 af, Atten= 9%, Lag= 6.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.17 fps, Min. Travel Time= 3.3 min  
 Avg. Velocity = 0.68 fps, Avg. Travel Time= 10.7 min

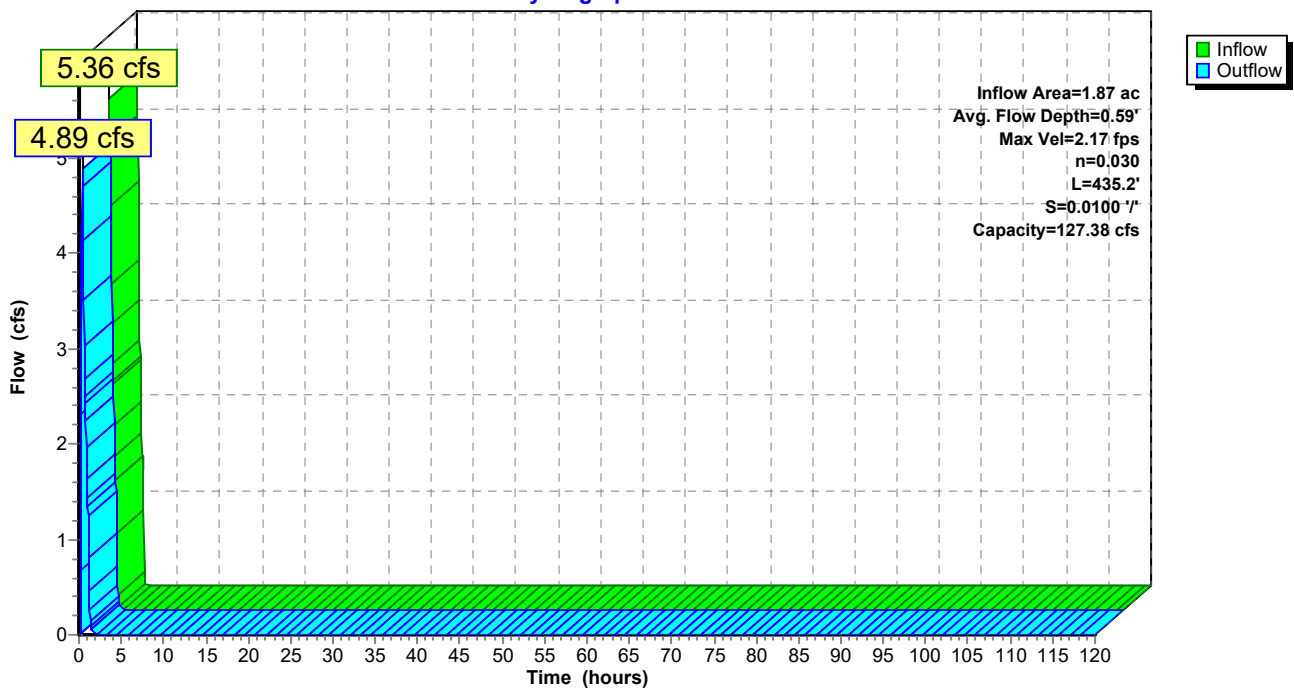
Peak Storage= 988 cf @ 0.36 hrs  
 Average Depth at Peak Storage= 0.59'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.38 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'  
 Length= 435.2' Slope= 0.0100 '/'  
 Inlet Invert= 840.00', Outlet Invert= 835.65'



**Reach TB-B4: Terrace Bench B4**

Hydrograph



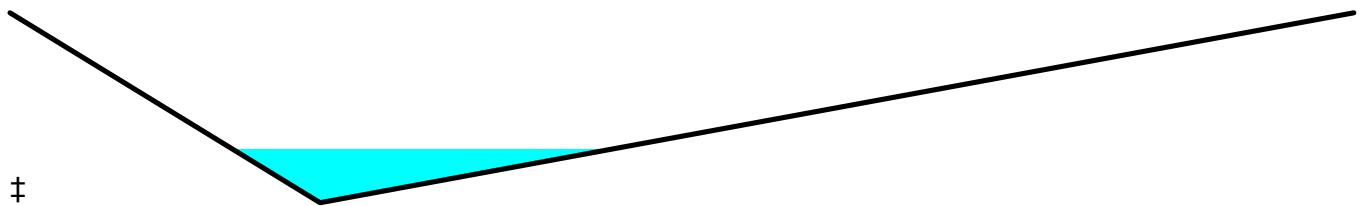
**Summary for Reach TB-B5: Terrace Bench B5**

Inflow Area = 1.93 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 5.60 cfs @ 0.30 hrs, Volume= 0.205 af  
 Outflow = 4.39 cfs @ 0.50 hrs, Volume= 0.205 af, Atten= 22%, Lag= 12.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.11 fps, Min. Travel Time= 6.4 min  
 Avg. Velocity = 0.55 fps, Avg. Travel Time= 24.3 min

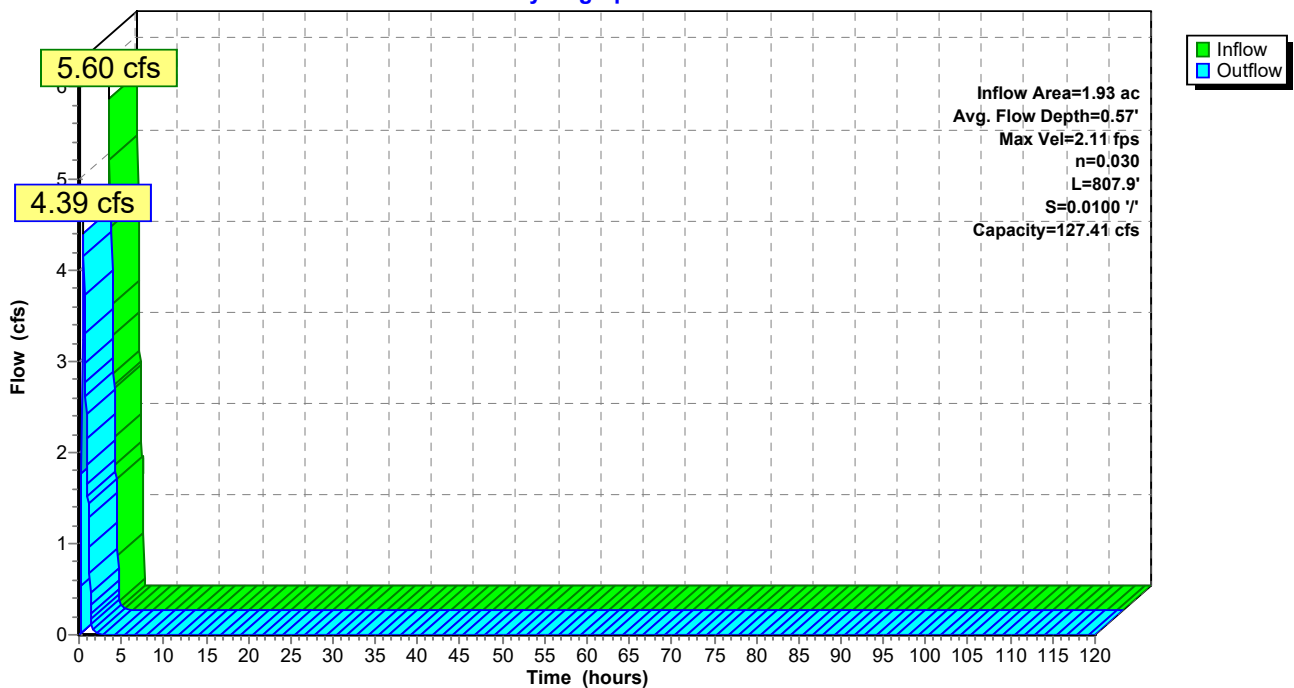
Peak Storage= 1,688 cf @ 0.39 hrs  
 Average Depth at Peak Storage= 0.57'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.41 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'  
 Length= 807.9' Slope= 0.0100 '/'  
 Inlet Invert= 814.00', Outlet Invert= 805.92'



**Reach TB-B5: Terrace Bench B5**

Hydrograph



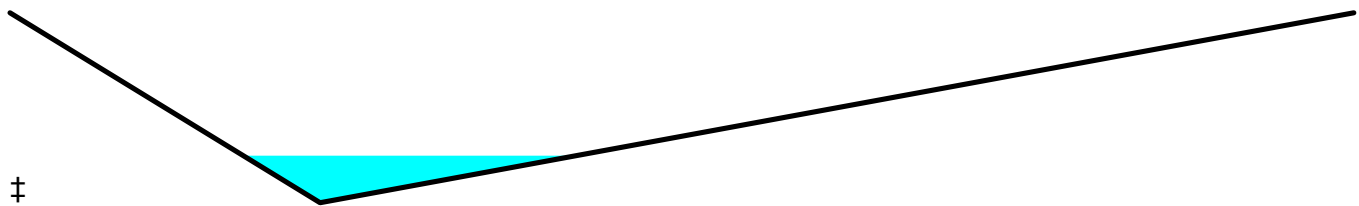
**Summary for Reach TB-B6: Terrace Bench B6**

Inflow Area = 1.18 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 3.40 cfs @ 0.30 hrs, Volume= 0.125 af  
 Outflow = 3.03 cfs @ 0.42 hrs, Volume= 0.125 af, Atten= 11%, Lag= 7.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.93 fps, Min. Travel Time= 3.7 min  
 Avg. Velocity = 0.63 fps, Avg. Travel Time= 11.2 min

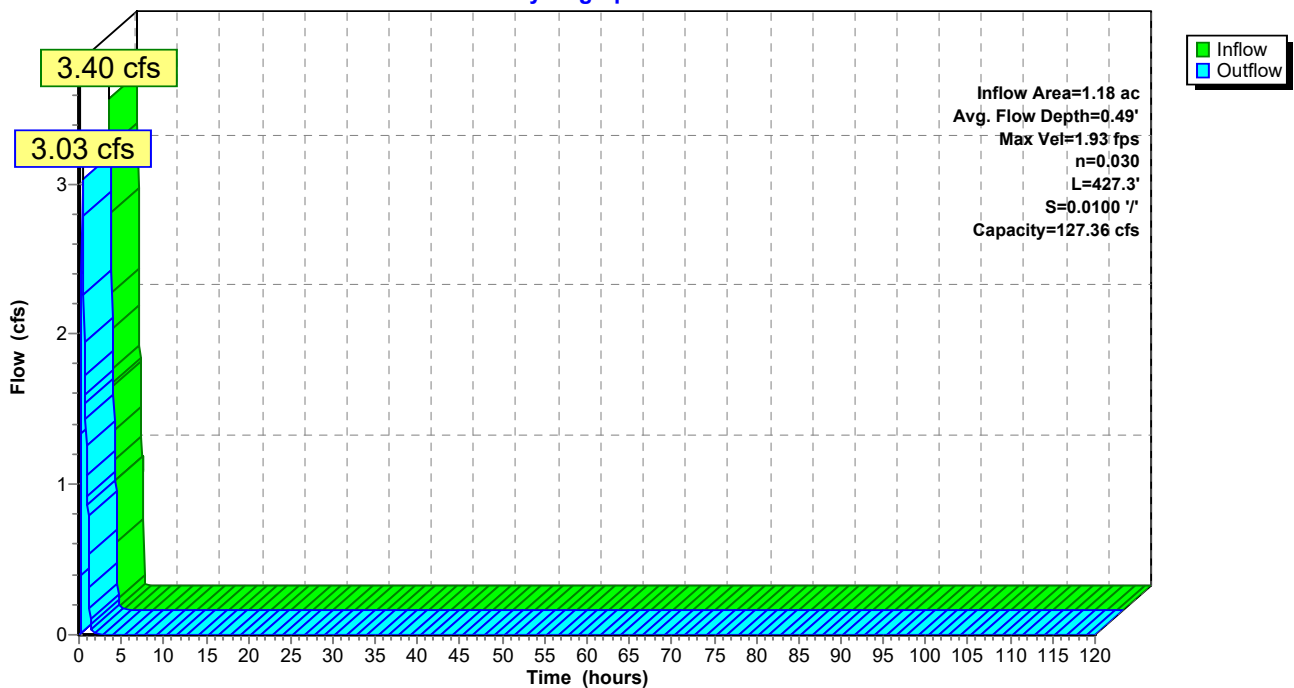
Peak Storage= 680 cf @ 0.36 hrs  
 Average Depth at Peak Storage= 0.49'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.36 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'  
 Length= 427.3' Slope= 0.0100 '/'  
 Inlet Invert= 812.00', Outlet Invert= 807.73'



**Reach TB-B6: Terrace Bench B6**

Hydrograph



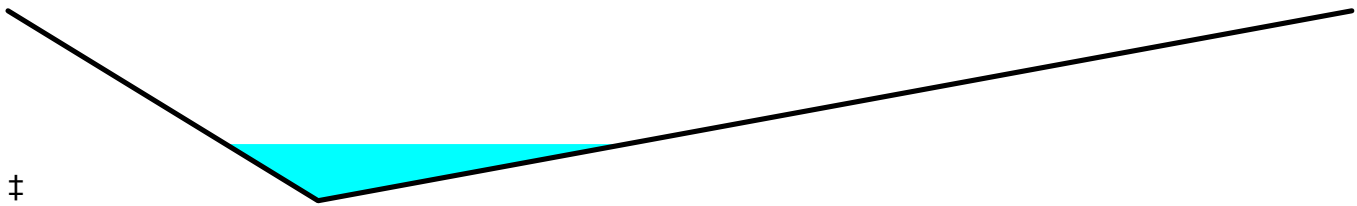
**Summary for Reach TB-B7: Terrace Bench B7**

Inflow Area = 2.19 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 6.36 cfs @ 0.30 hrs, Volume= 0.232 af  
 Outflow = 5.04 cfs @ 0.49 hrs, Volume= 0.232 af, Atten= 21%, Lag= 11.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.19 fps, Min. Travel Time= 6.2 min  
 Avg. Velocity = 0.56 fps, Avg. Travel Time= 24.1 min

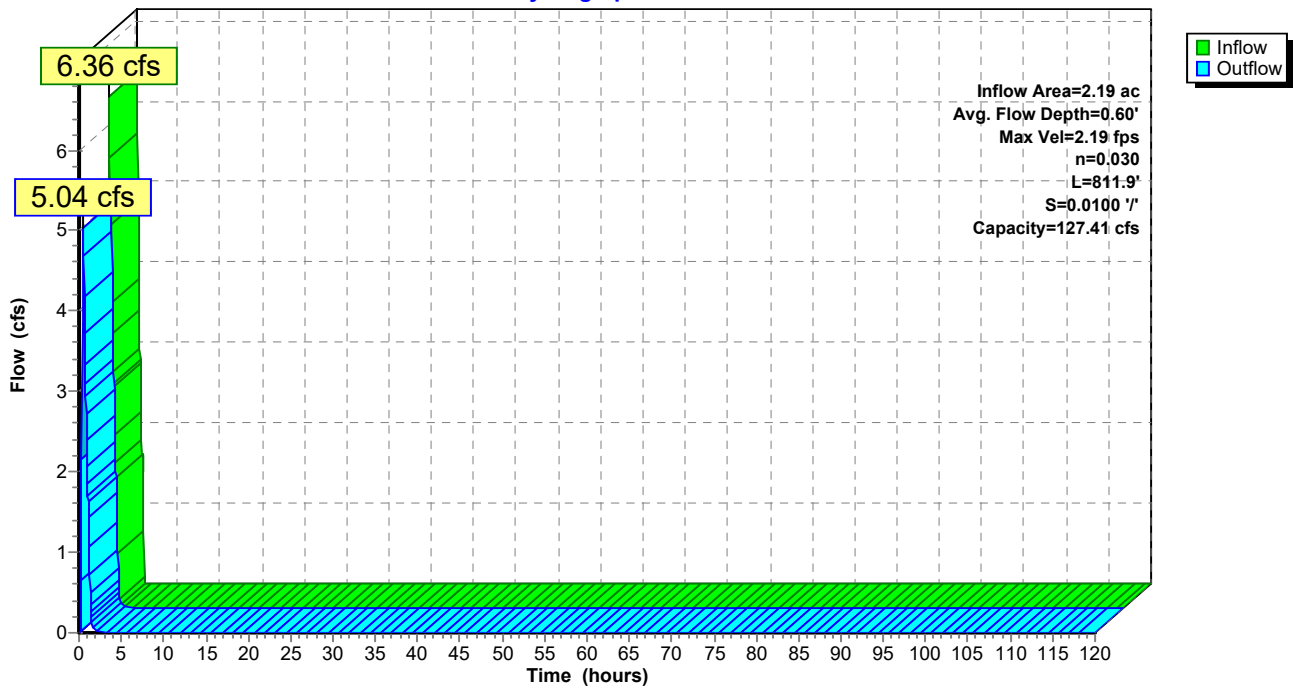
Peak Storage= 1,876 cf @ 0.39 hrs  
 Average Depth at Peak Storage= 0.60'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.41 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'  
 Length= 811.9' Slope= 0.0100 '/'  
 Inlet Invert= 784.00', Outlet Invert= 775.88'



**Reach TB-B7: Terrace Bench B7**

Hydrograph



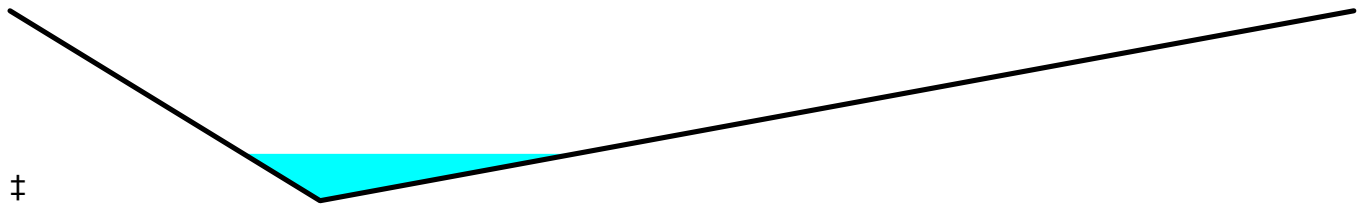
**Summary for Reach TB-B8: Terrace Bench B8**

Inflow Area = 1.17 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 3.39 cfs @ 0.30 hrs, Volume= 0.124 af  
 Outflow = 3.01 cfs @ 0.42 hrs, Volume= 0.124 af, Atten= 11%, Lag= 7.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.93 fps, Min. Travel Time= 3.7 min  
 Avg. Velocity = 0.63 fps, Avg. Travel Time= 11.3 min

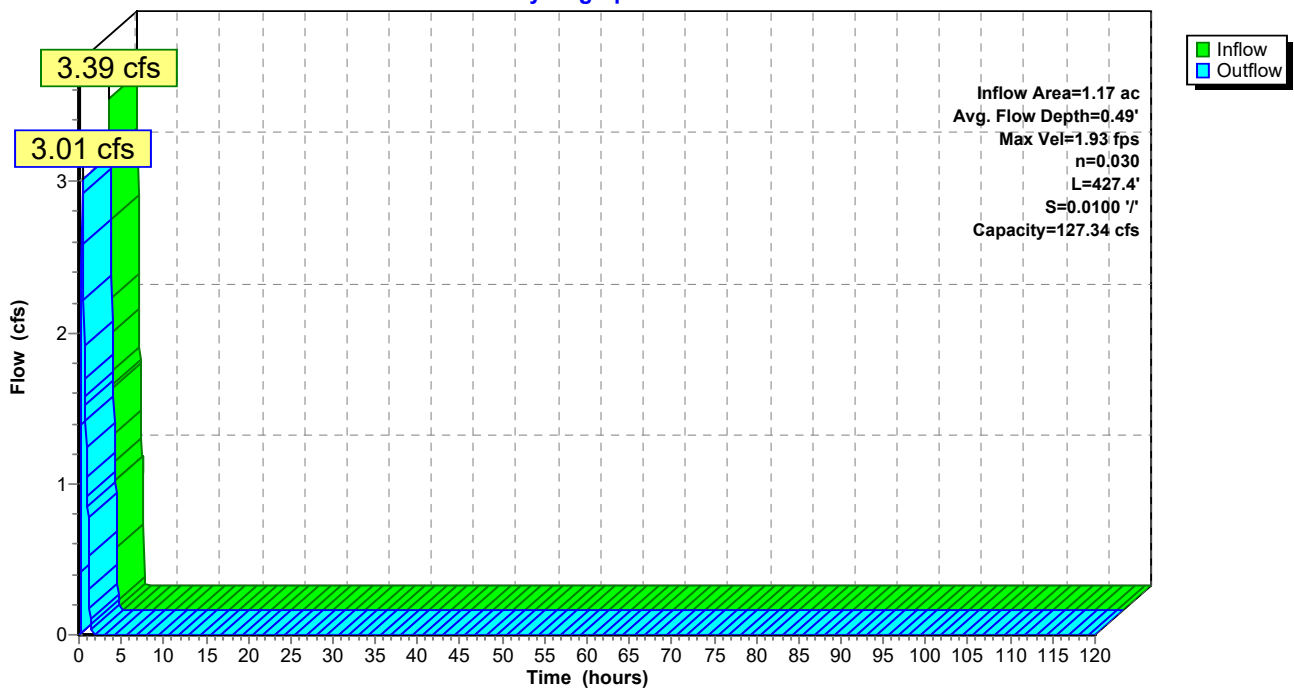
Peak Storage= 677 cf @ 0.36 hrs  
 Average Depth at Peak Storage= 0.49'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.34 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'  
 Length= 427.4' Slope= 0.0100 '/'  
 Inlet Invert= 782.00', Outlet Invert= 777.73'



**Reach TB-B8: Terrace Bench B8**

Hydrograph



**Summary for Reach TB-B9: Terrace Bench B9**

Inflow Area = 1.44 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 4.18 cfs @ 0.28 hrs, Volume= 0.152 af  
 Outflow = 3.26 cfs @ 0.50 hrs, Volume= 0.152 af, Atten= 22%, Lag= 12.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.37 fps, Min. Travel Time= 6.9 min  
 Avg. Velocity = 0.49 fps, Avg. Travel Time= 19.3 min

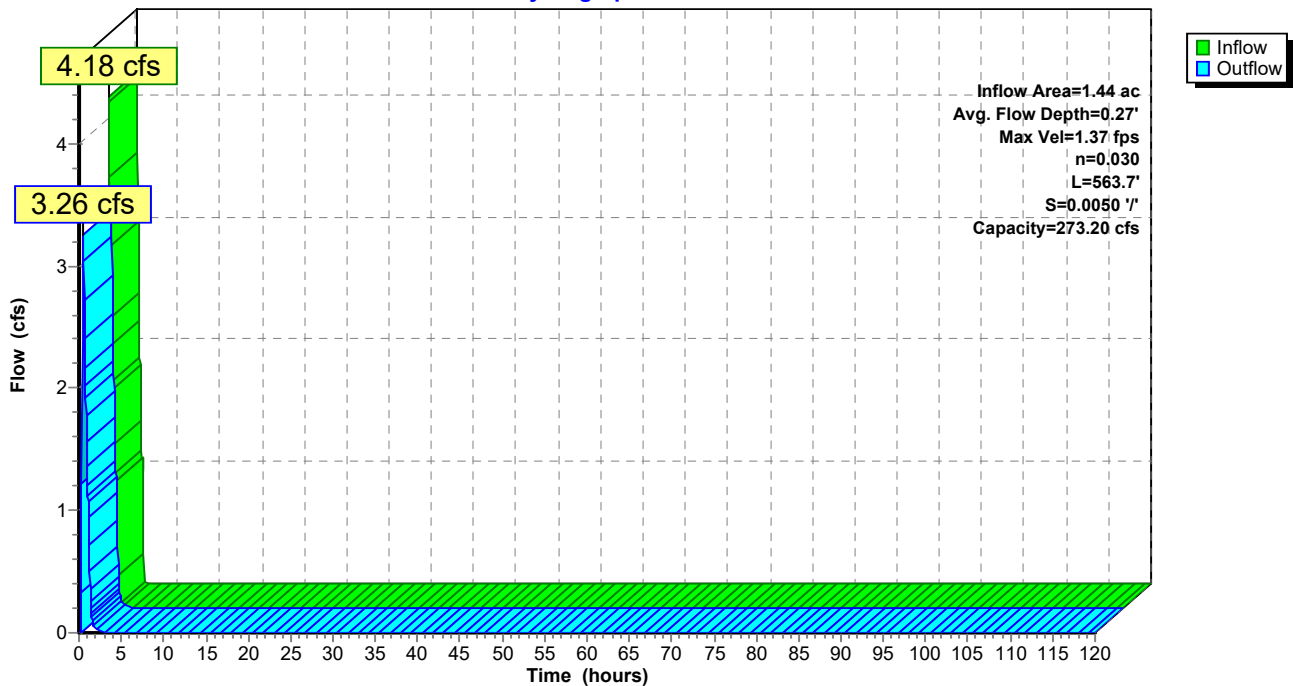
Peak Storage= 1,358 cf @ 0.37 hrs  
 Average Depth at Peak Storage= 0.27'  
 Bank-Full Depth= 3.00' Flow Area= 51.0 sf, Capacity= 273.20 cfs

8.00' x 3.00' deep channel, n= 0.030  
 Side Slope Z-value= 3.0 '/' Top Width= 26.00'  
 Length= 563.7' Slope= 0.0050 '/'  
 Inlet Invert= 762.00', Outlet Invert= 759.18'



**Reach TB-B9: Terrace Bench B9**

Hydrograph



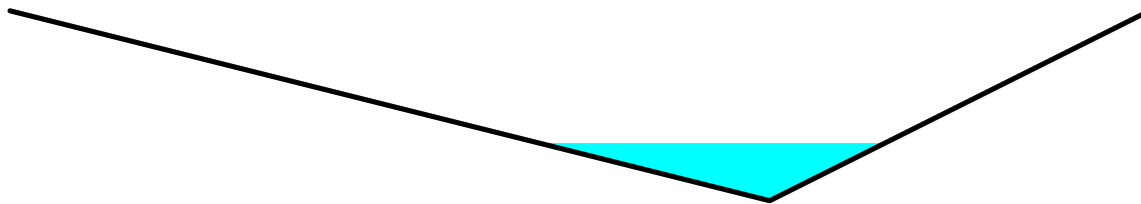
**Summary for Reach TB-D1: Terrace Berm D1**

Inflow Area = 1.26 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 3.37 cfs @ 0.35 hrs, Volume= 0.133 af  
 Outflow = 3.28 cfs @ 0.39 hrs, Volume= 0.133 af, Atten= 3%, Lag= 2.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.04 fps, Min. Travel Time= 1.3 min  
 Avg. Velocity = 1.45 fps, Avg. Travel Time= 2.6 min

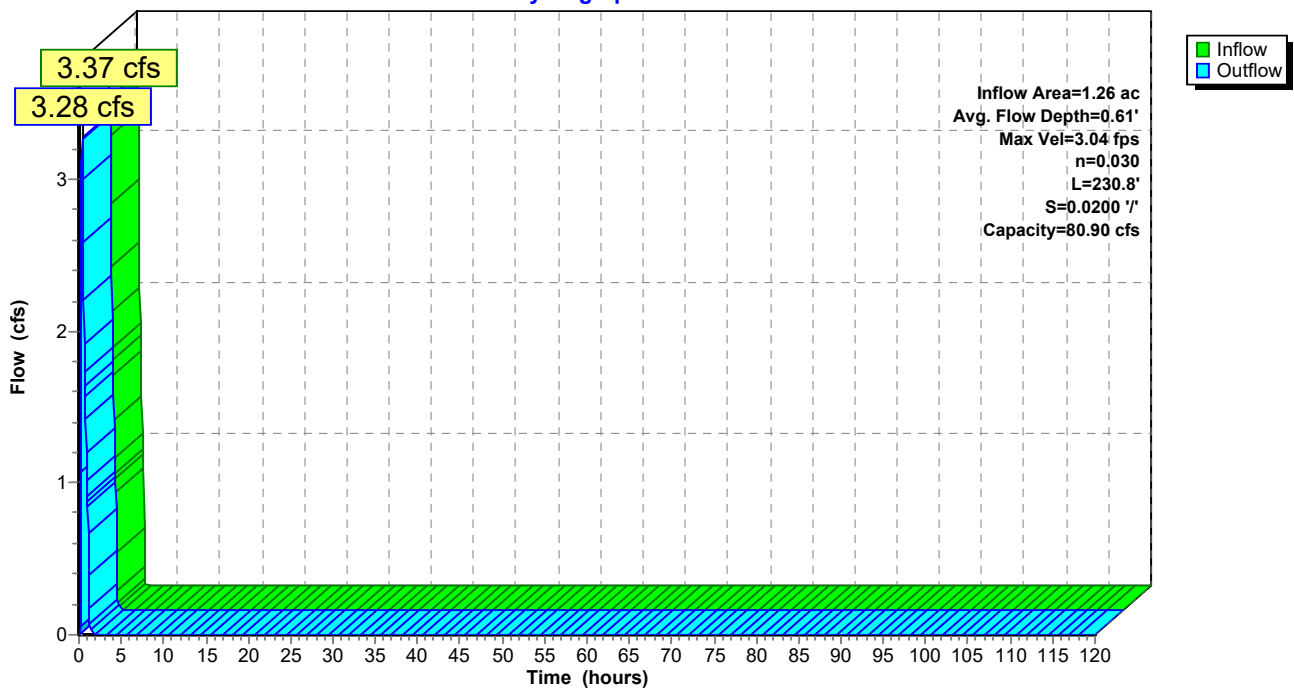
Peak Storage= 255 cf @ 0.37 hrs  
 Average Depth at Peak Storage= 0.61'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.90 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 230.8' Slope= 0.0200 '/'  
 Inlet Invert= 861.86', Outlet Invert= 857.24'



**Reach TB-D1: Terrace Berm D1**

Hydrograph



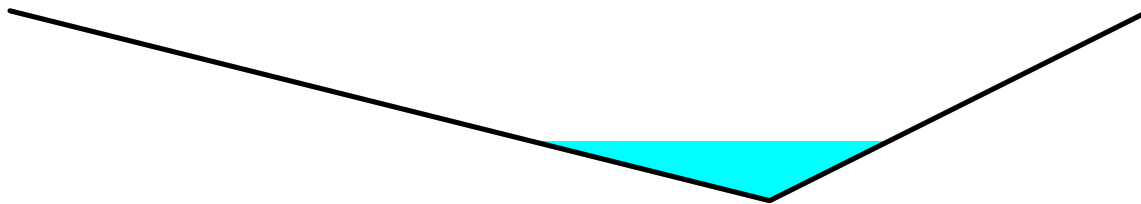
**Summary for Reach TB-D3: Terrace Berm D3**

Inflow Area = 1.33 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 3.79 cfs @ 0.31 hrs, Volume= 0.141 af  
 Outflow = 3.65 cfs @ 0.36 hrs, Volume= 0.141 af, Atten= 4%, Lag= 2.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.11 fps, Min. Travel Time= 1.2 min  
 Avg. Velocity = 1.44 fps, Avg. Travel Time= 2.7 min

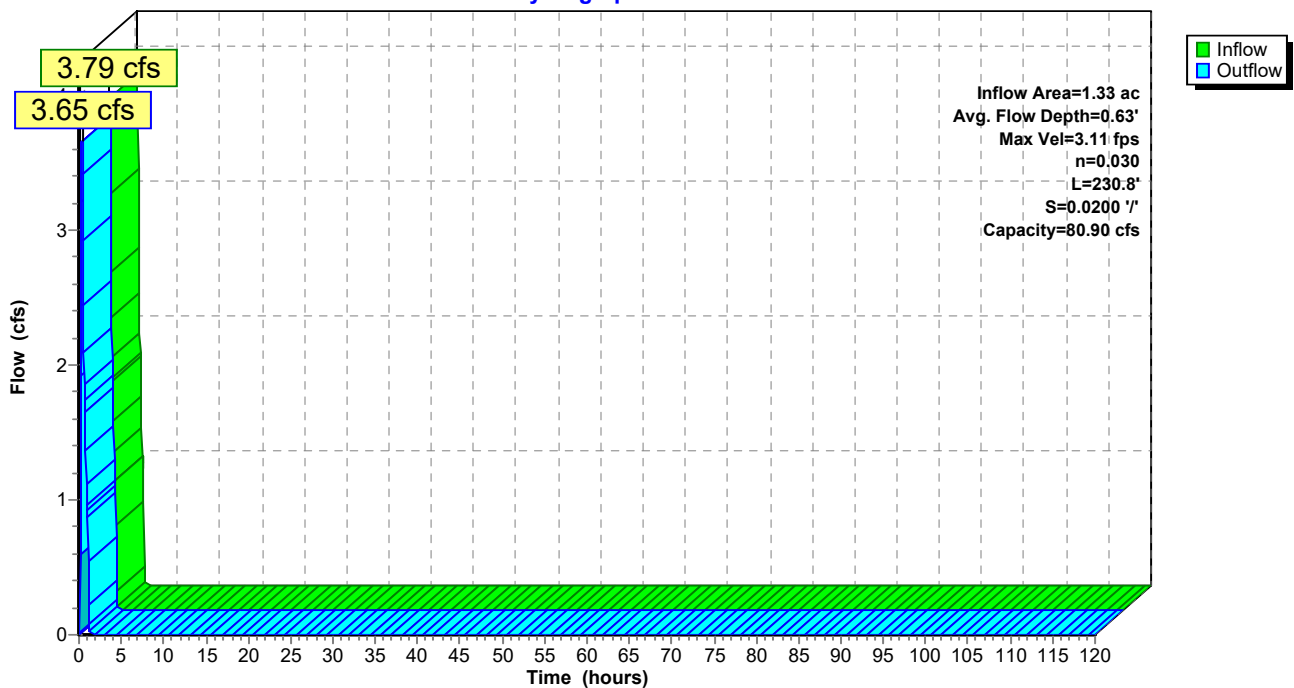
Peak Storage= 274 cf @ 0.33 hrs  
 Average Depth at Peak Storage= 0.63'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.90 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 230.8' Slope= 0.0200 '/'  
 Inlet Invert= 798.33', Outlet Invert= 793.71'



**Reach TB-D3: Terrace Berm D3**

Hydrograph





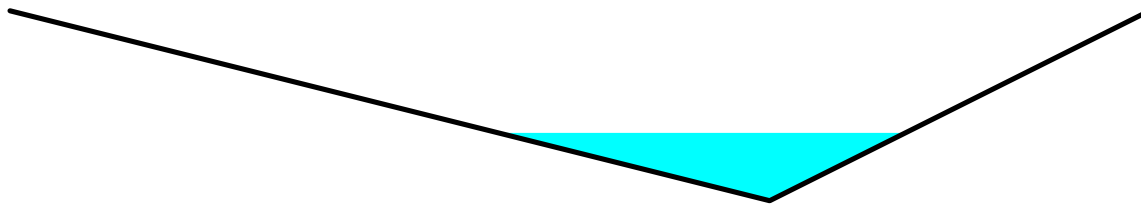
**Summary for Reach TB-E1: Terrace Berm E1**

Inflow Area = 1.42 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 3.81 cfs @ 0.35 hrs, Volume= 0.151 af  
 Outflow = 3.63 cfs @ 0.43 hrs, Volume= 0.151 af, Atten= 5%, Lag= 4.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.39 fps, Min. Travel Time= 2.5 min  
 Avg. Velocity = 0.84 fps, Avg. Travel Time= 7.2 min

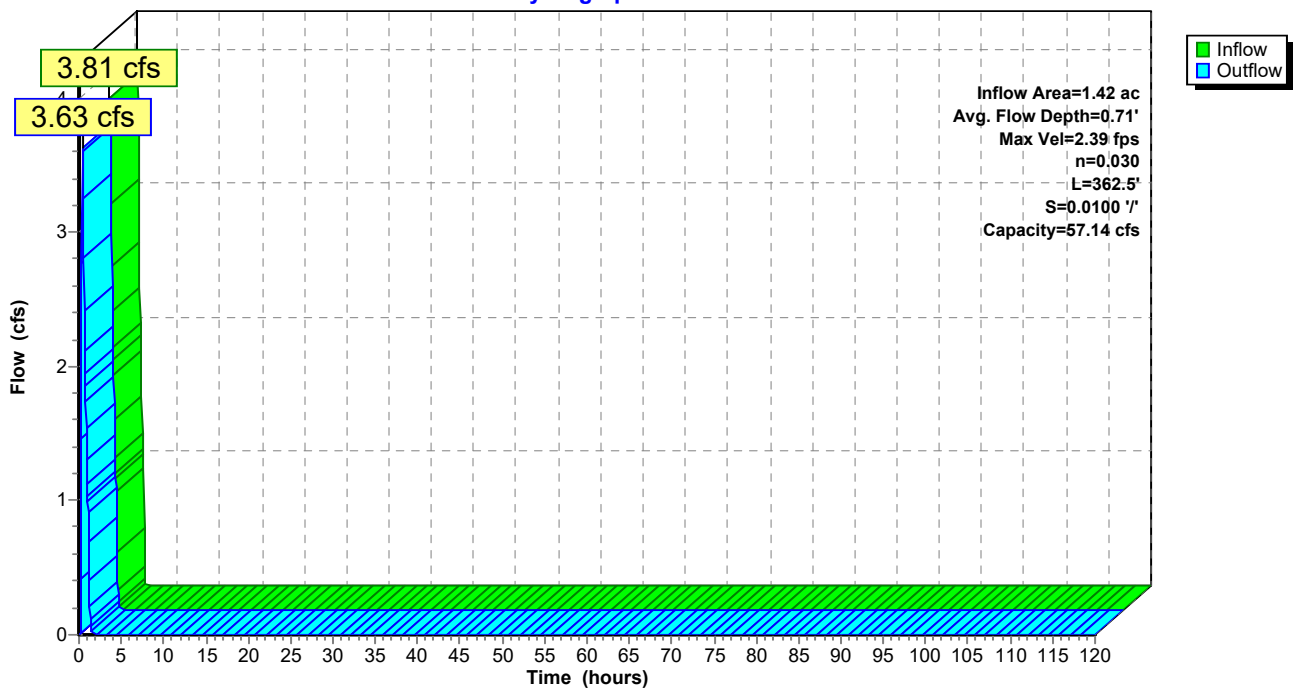
Peak Storage= 554 cf @ 0.39 hrs  
 Average Depth at Peak Storage= 0.71'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.14 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 362.5' Slope= 0.0100 '/'  
 Inlet Invert= 860.26', Outlet Invert= 856.64'



**Reach TB-E1: Terrace Berm E1**

Hydrograph



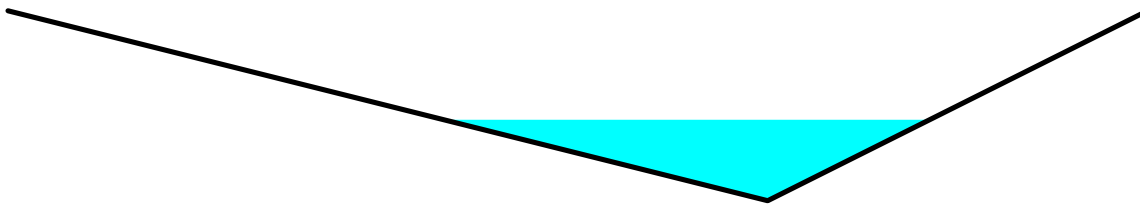
**Summary for Reach TB-E2: TB-E2**

Inflow Area = 2.82 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 8.01 cfs @ 0.31 hrs, Volume= 0.299 af  
 Outflow = 5.88 cfs @ 0.57 hrs, Volume= 0.299 af, Atten= 27%, Lag= 15.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.70 fps, Min. Travel Time= 8.1 min  
 Avg. Velocity = 0.59 fps, Avg. Travel Time= 37.4 min

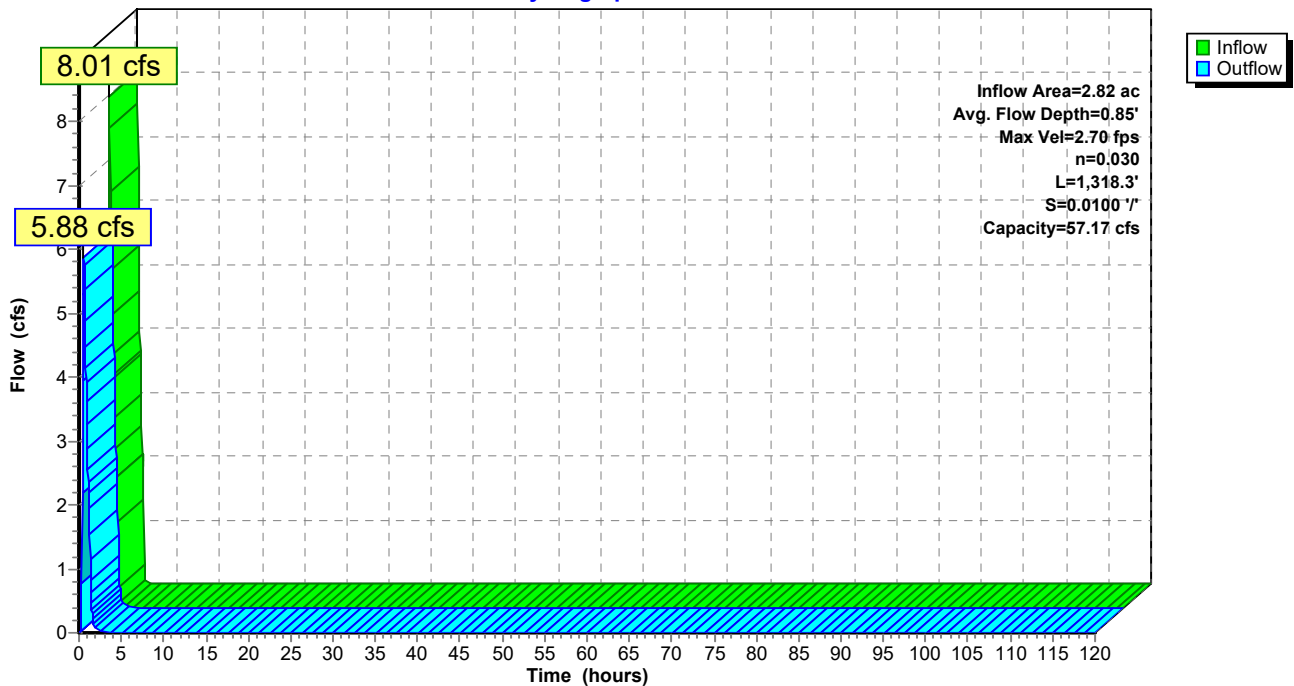
Peak Storage= 2,878 cf @ 0.43 hrs  
 Average Depth at Peak Storage= 0.85'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.17 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,318.3' Slope= 0.0100 '/'  
 Inlet Invert= 806.69', Outlet Invert= 793.51'



**Reach TB-E2: TB-E2**

Hydrograph



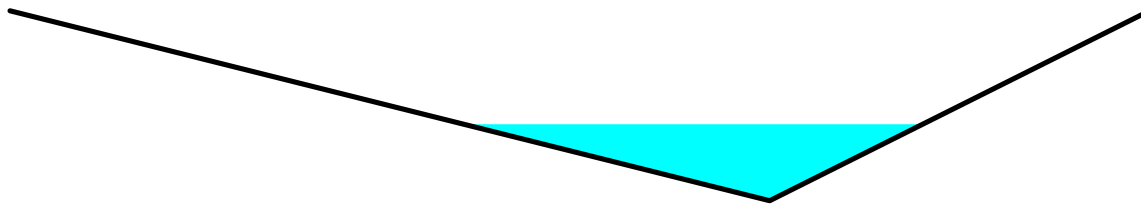
**Summary for Reach TB-H1: Terrace Berm H1**

Inflow Area = 1.98 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 5.33 cfs @ 0.35 hrs, Volume= 0.210 af  
 Outflow = 5.05 cfs @ 0.44 hrs, Volume= 0.210 af, Atten= 5%, Lag= 5.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.60 fps, Min. Travel Time= 2.9 min  
 Avg. Velocity = 0.82 fps, Avg. Travel Time= 9.2 min

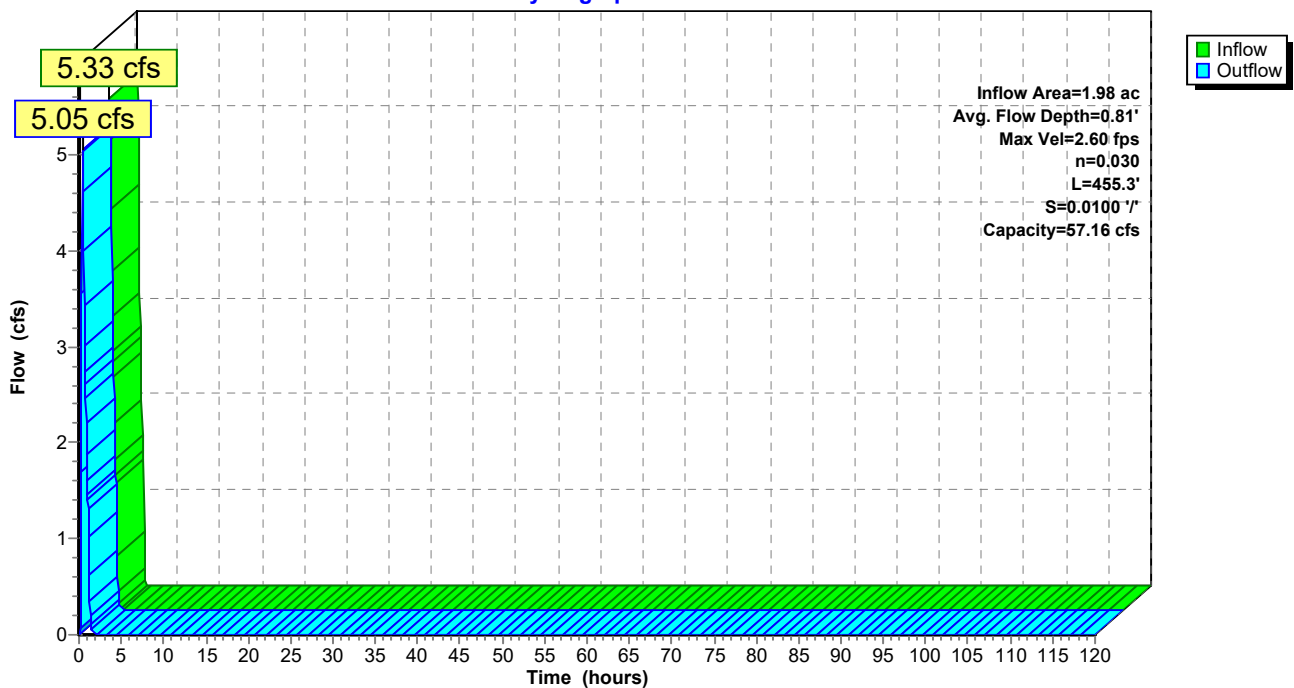
Peak Storage= 887 cf @ 0.39 hrs  
 Average Depth at Peak Storage= 0.81'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.16 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 455.3' Slope= 0.0100 '/'  
 Inlet Invert= 872.24', Outlet Invert= 867.69'



**Reach TB-H1: Terrace Berm H1**

Hydrograph



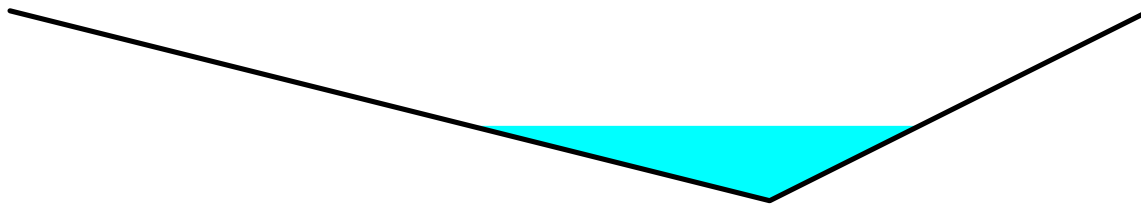
**Summary for Reach TB-H2: Terrace Berm H2**

Inflow Area = 1.86 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 5.35 cfs @ 0.31 hrs, Volume= 0.198 af  
 Outflow = 4.66 cfs @ 0.44 hrs, Volume= 0.198 af, Atten= 13%, Lag= 8.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.55 fps, Min. Travel Time= 4.0 min  
 Avg. Velocity = 0.71 fps, Avg. Travel Time= 14.2 min

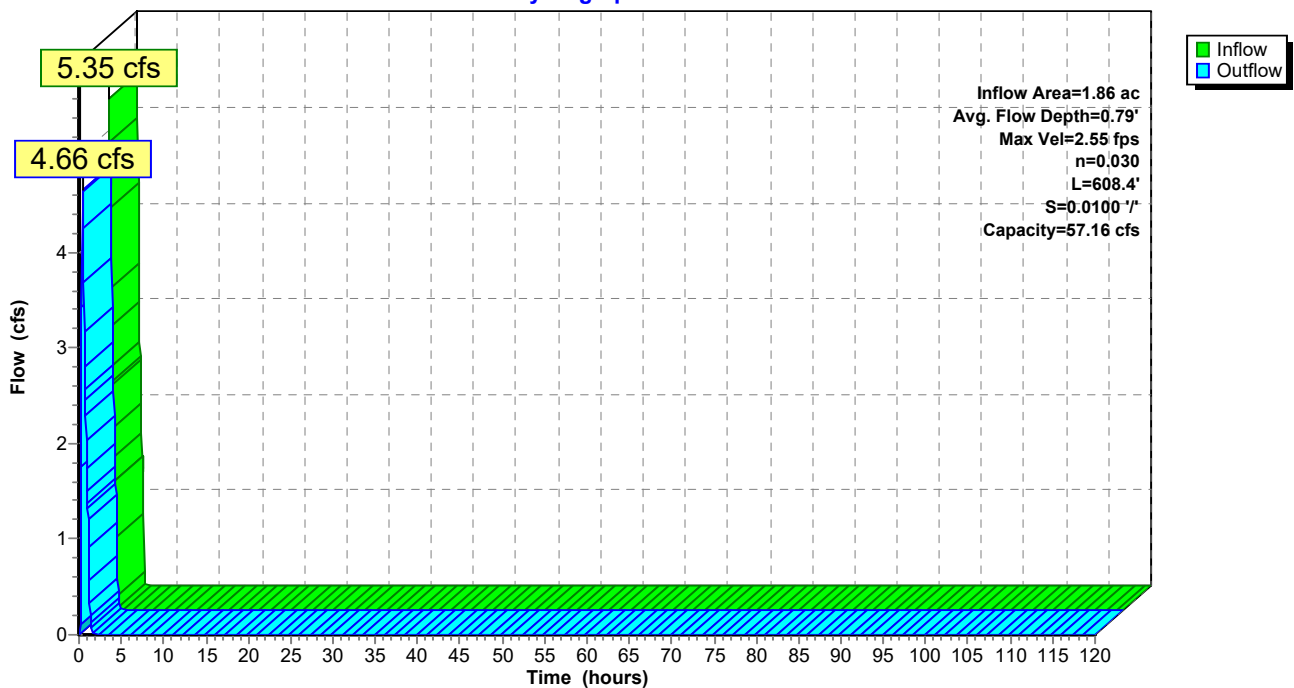
Peak Storage= 1,137 cf @ 0.37 hrs  
 Average Depth at Peak Storage= 0.79'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.16 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 608.4' Slope= 0.0100 '/'  
 Inlet Invert= 837.23', Outlet Invert= 831.15'



**Reach TB-H2: Terrace Berm H2**

Hydrograph



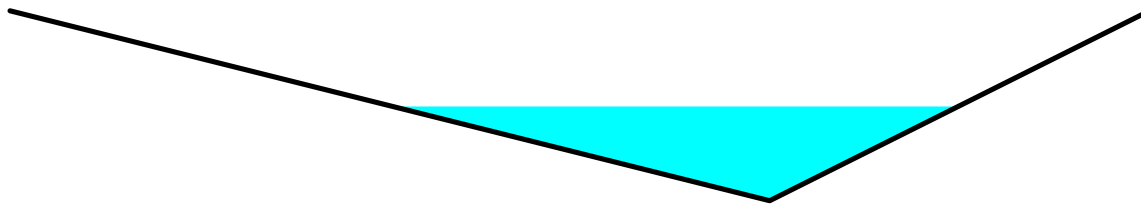
**Summary for Reach TB-H3: Terrace Berm H3**

Inflow Area = 3.57 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 10.18 cfs @ 0.31 hrs, Volume= 0.379 af  
 Outflow = 8.74 cfs @ 0.46 hrs, Volume= 0.379 af, Atten= 14%, Lag= 9.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.98 fps, Min. Travel Time= 4.5 min  
 Avg. Velocity = 0.72 fps, Avg. Travel Time= 18.5 min

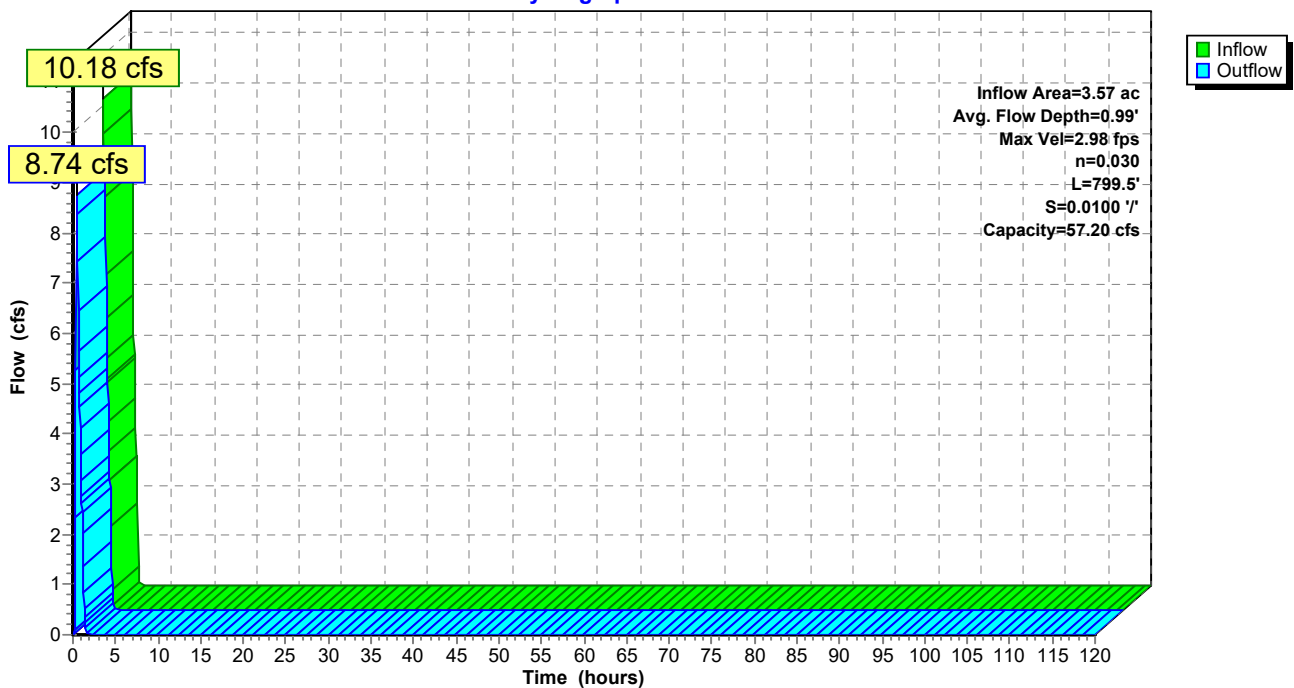
Peak Storage= 2,363 cf @ 0.38 hrs  
 Average Depth at Peak Storage= 0.99'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.20 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 799.5' Slope= 0.0100 '/'  
 Inlet Invert= 782.24', Outlet Invert= 774.24'



**Reach TB-H3: Terrace Berm H3**

Hydrograph



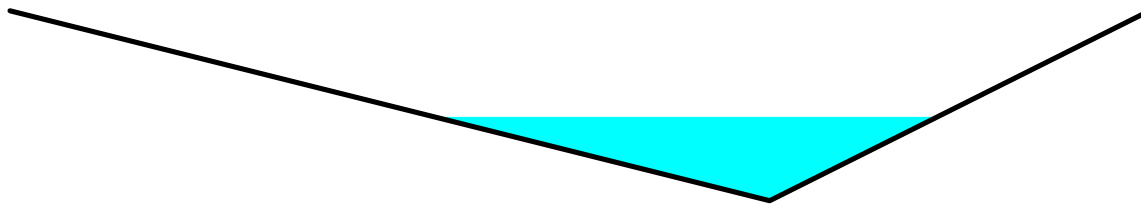
**Summary for Reach TB-N-A1: Terrace Berm N-A1**

Inflow Area = 3.60 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 9.67 cfs @ 0.35 hrs, Volume= 0.382 af  
 Outflow = 9.37 cfs @ 0.41 hrs, Volume= 0.382 af, Atten= 3%, Lag= 3.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.08 fps, Min. Travel Time= 1.8 min  
 Avg. Velocity = 1.48 fps, Avg. Travel Time= 5.0 min

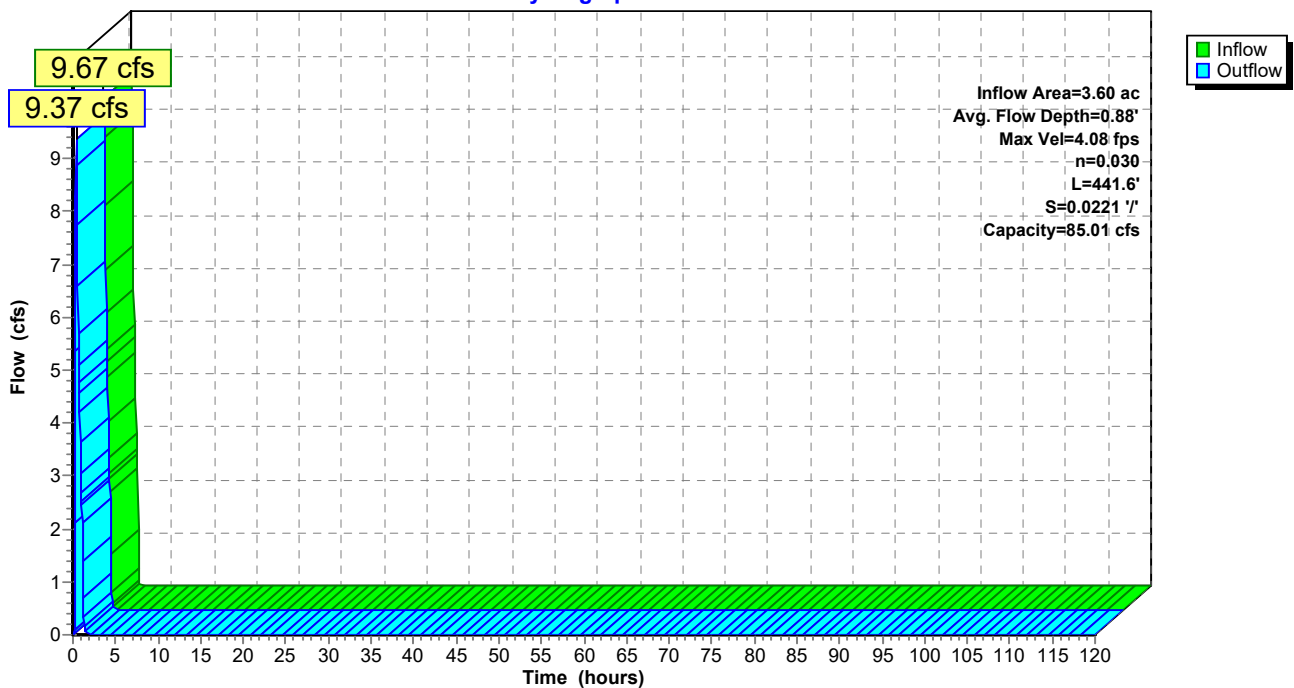
Peak Storage= 1,031 cf @ 0.37 hrs  
 Average Depth at Peak Storage= 0.88'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 85.01 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 441.6' Slope= 0.0221 '/'  
 Inlet Invert= 879.12', Outlet Invert= 869.36'



**Reach TB-N-A1: Terrace Berm N-A1**

Hydrograph



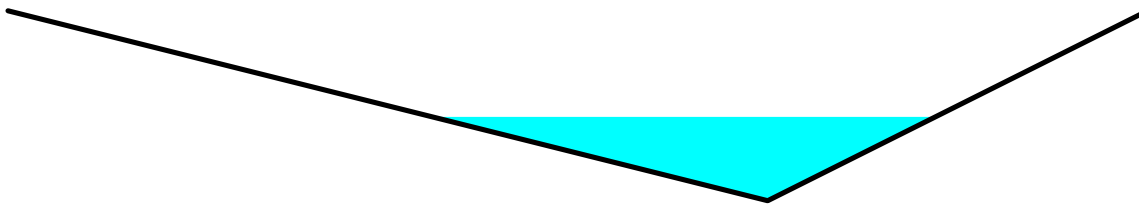
**Summary for Reach TB-N-A10: Terrace Berm N-A10**

Inflow Area = 3.77 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 10.85 cfs @ 0.31 hrs, Volume= 0.400 af  
 Outflow = 9.09 cfs @ 0.47 hrs, Volume= 0.400 af, Atten= 16%, Lag= 9.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.90 fps, Min. Travel Time= 5.0 min  
 Avg. Velocity = 0.96 fps, Avg. Travel Time= 20.4 min

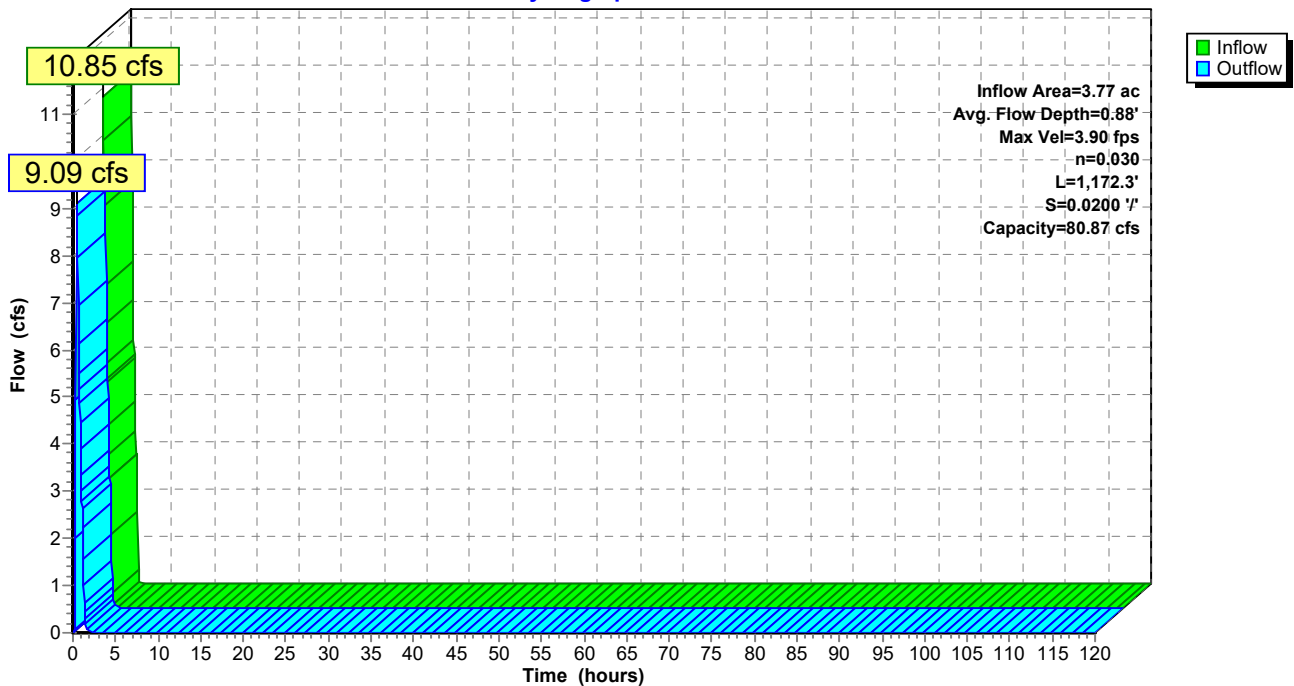
Peak Storage= 2,744 cf @ 0.38 hrs  
 Average Depth at Peak Storage= 0.88'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,172.3' Slope= 0.0200 '/'  
 Inlet Invert= 771.72', Outlet Invert= 748.27'



**Reach TB-N-A10: Terrace Berm N-A10**

Hydrograph



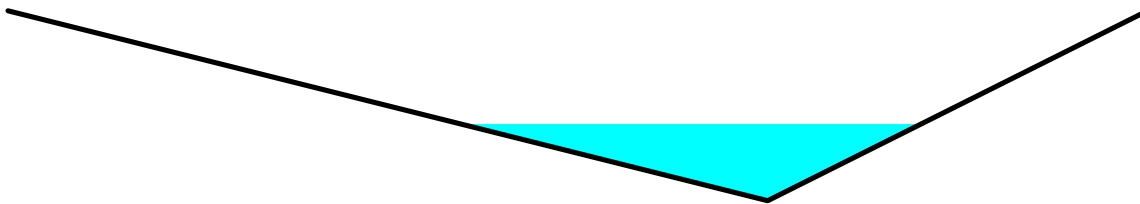
**Summary for Reach TB-N-A2: Terrace Berm N-A2**

Inflow Area = 2.82 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 7.67 cfs @ 0.34 hrs, Volume= 0.300 af  
 Outflow = 7.13 cfs @ 0.45 hrs, Volume= 0.300 af, Atten= 7%, Lag= 6.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.67 fps, Min. Travel Time= 3.3 min  
 Avg. Velocity = 1.10 fps, Avg. Travel Time= 11.1 min

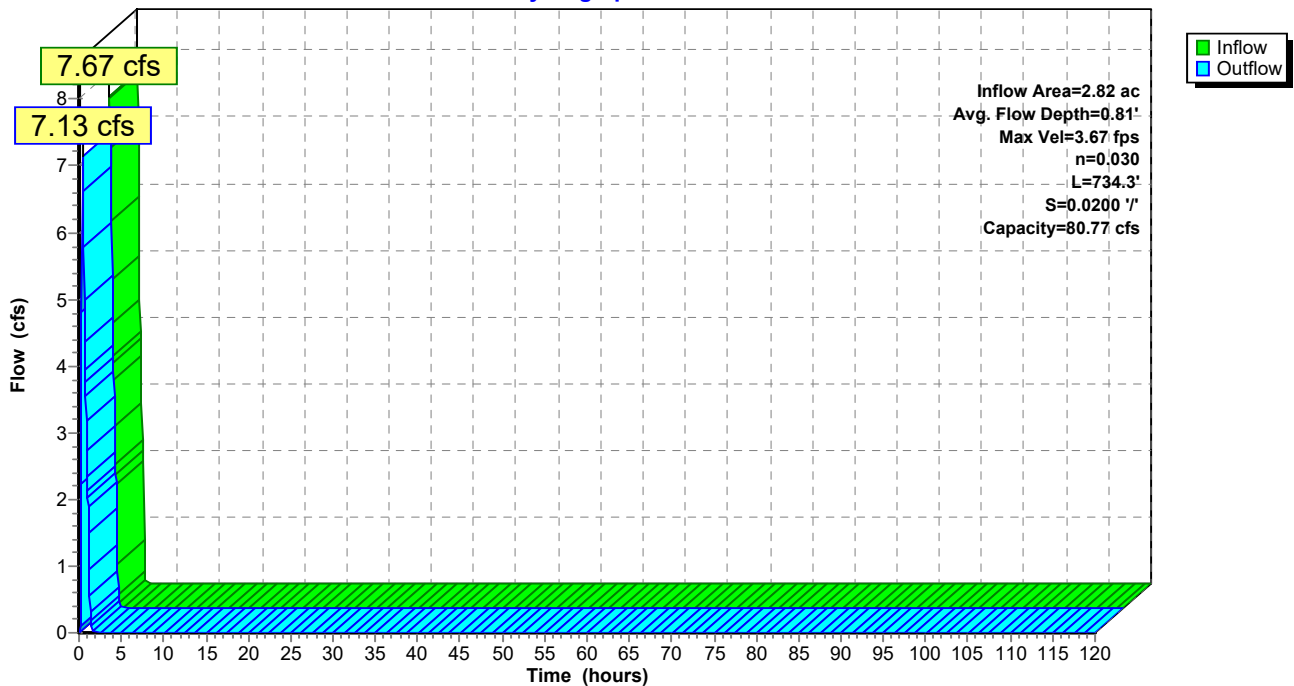
Peak Storage= 1,434 cf @ 0.39 hrs  
 Average Depth at Peak Storage= 0.81'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.77 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 734.3' Slope= 0.0200 '/'  
 Inlet Invert= 884.01', Outlet Invert= 869.36'



**Reach TB-N-A2: Terrace Berm N-A2**

Hydrograph





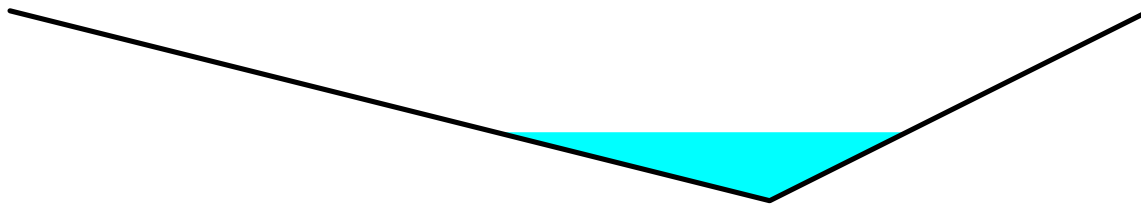
**Summary for Reach TB-N-A3: Terrace Berm N-A3**

Inflow Area = 1.31 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 3.76 cfs @ 0.31 hrs, Volume= 0.139 af  
 Outflow = 3.52 cfs @ 0.39 hrs, Volume= 0.139 af, Atten= 6%, Lag= 4.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.29 fps, Min. Travel Time= 2.4 min  
 Avg. Velocity = 0.79 fps, Avg. Travel Time= 6.9 min

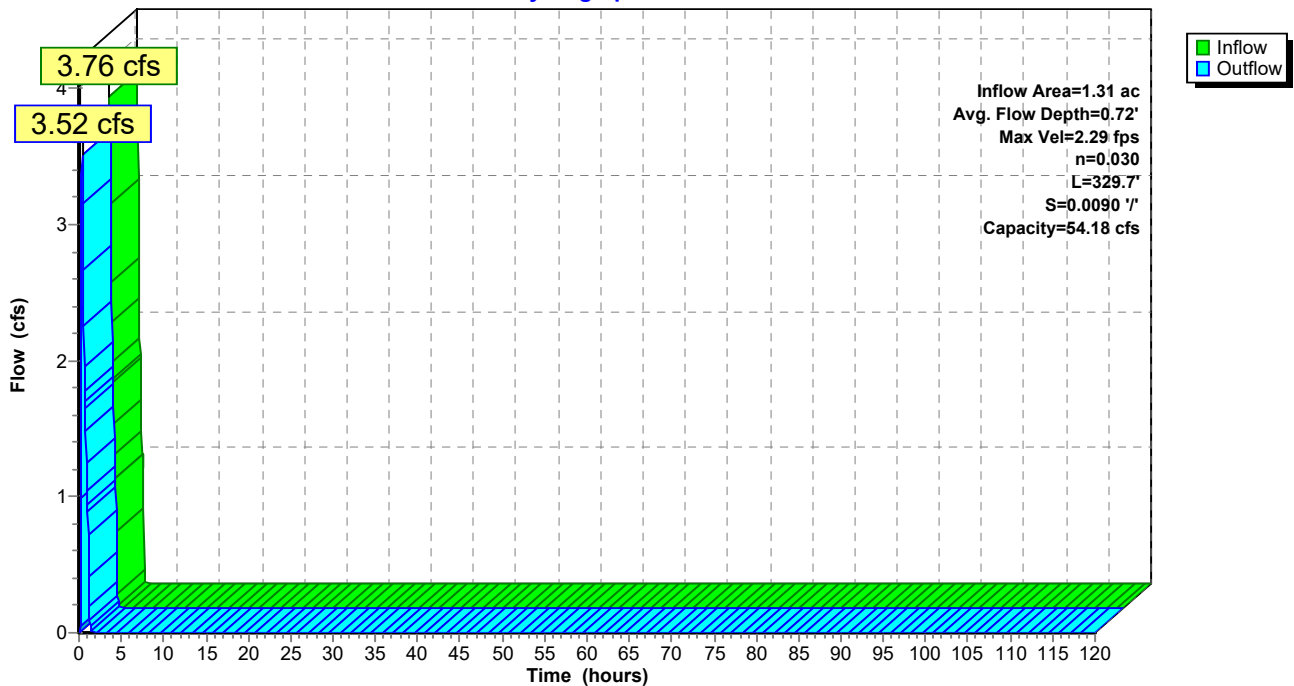
Peak Storage= 515 cf @ 0.35 hrs  
 Average Depth at Peak Storage= 0.72'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 54.18 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 329.7' Slope= 0.0090 '/'  
 Inlet Invert= 839.81', Outlet Invert= 836.85'



**Reach TB-N-A3: Terrace Berm N-A3**

Hydrograph



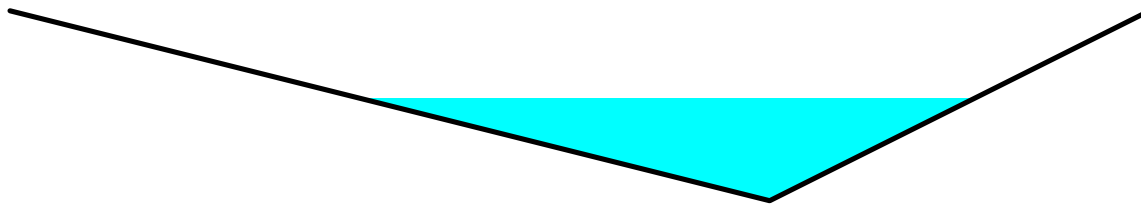
**Summary for Reach TB-N-A4: Terrace Berm N-A4**

Inflow Area = 6.88 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 18.54 cfs @ 0.35 hrs, Volume= 0.729 af  
 Outflow = 15.60 cfs @ 0.53 hrs, Volume= 0.729 af, Atten= 16%, Lag= 10.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.46 fps, Min. Travel Time= 5.7 min  
 Avg. Velocity = 0.96 fps, Avg. Travel Time= 26.4 min

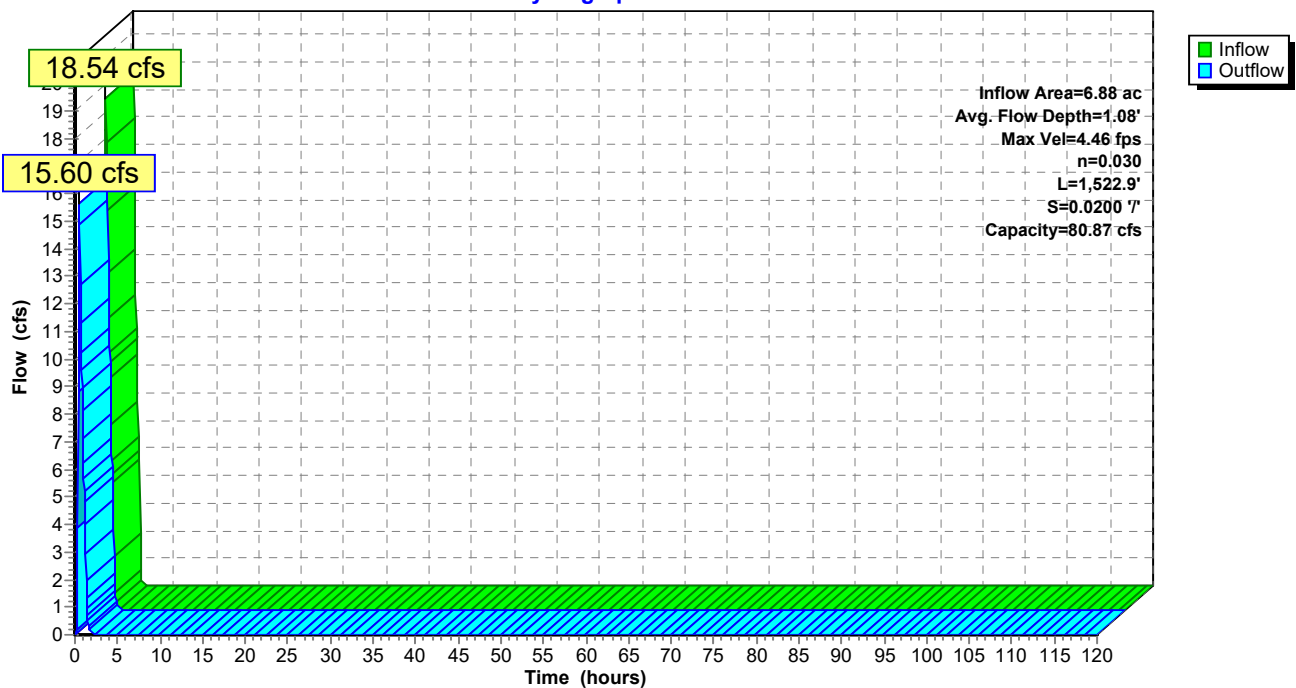
Peak Storage= 5,338 cf @ 0.43 hrs  
 Average Depth at Peak Storage= 1.08'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,522.9' Slope= 0.0200 '/'  
 Inlet Invert= 867.35', Outlet Invert= 836.89'



**Reach TB-N-A4: Terrace Berm N-A4**

Hydrograph



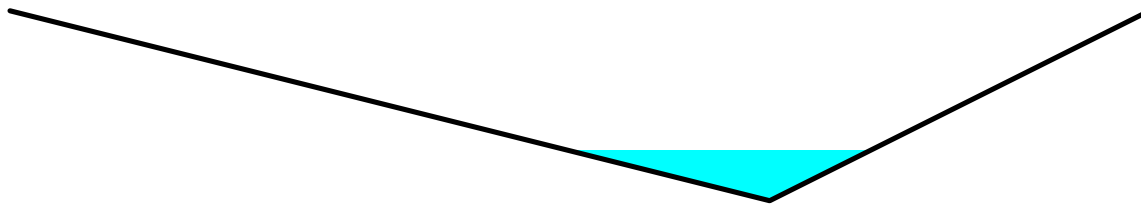
**Summary for Reach TB-N-A5: Terrace Berm N-A5**

Inflow Area = 0.73 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 2.11 cfs @ 0.30 hrs, Volume= 0.078 af  
 Outflow = 2.03 cfs @ 0.36 hrs, Volume= 0.078 af, Atten= 4%, Lag= 3.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.43 fps, Min. Travel Time= 1.5 min  
 Avg. Velocity = 1.14 fps, Avg. Travel Time= 3.2 min

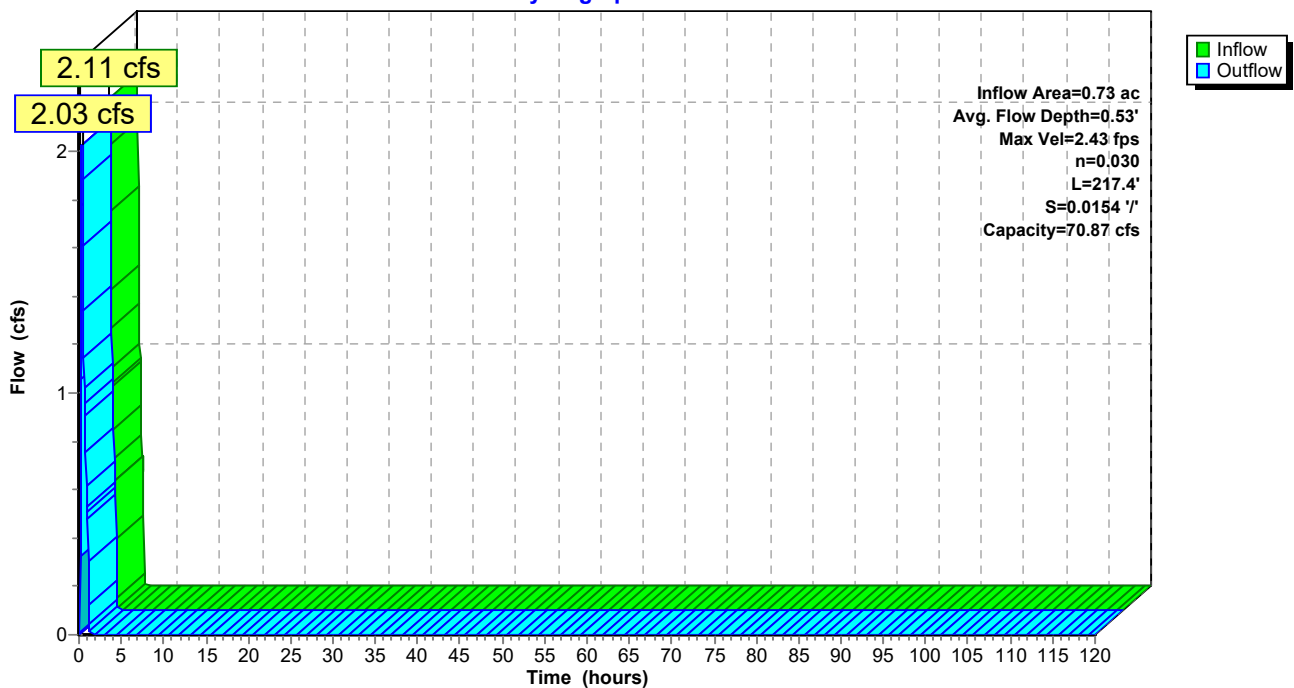
Peak Storage= 186 cf @ 0.32 hrs  
 Average Depth at Peak Storage= 0.53'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 70.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 217.4' Slope= 0.0154 '/'  
 Inlet Invert= 811.36', Outlet Invert= 808.02'



**Reach TB-N-A5: Terrace Berm N-A5**

Hydrograph



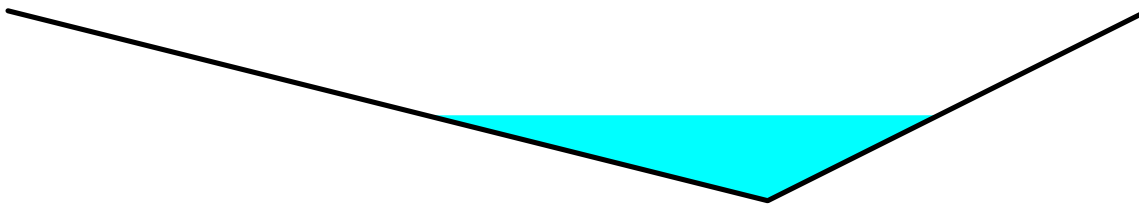
**Summary for Reach TB-N-A6: Terrace Berm N-A6**

Inflow Area = 4.13 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 11.89 cfs @ 0.30 hrs, Volume= 0.438 af  
 Outflow = 9.60 cfs @ 0.50 hrs, Volume= 0.438 af, Atten= 19%, Lag= 11.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.96 fps, Min. Travel Time= 5.9 min  
 Avg. Velocity = 0.91 fps, Avg. Travel Time= 25.8 min

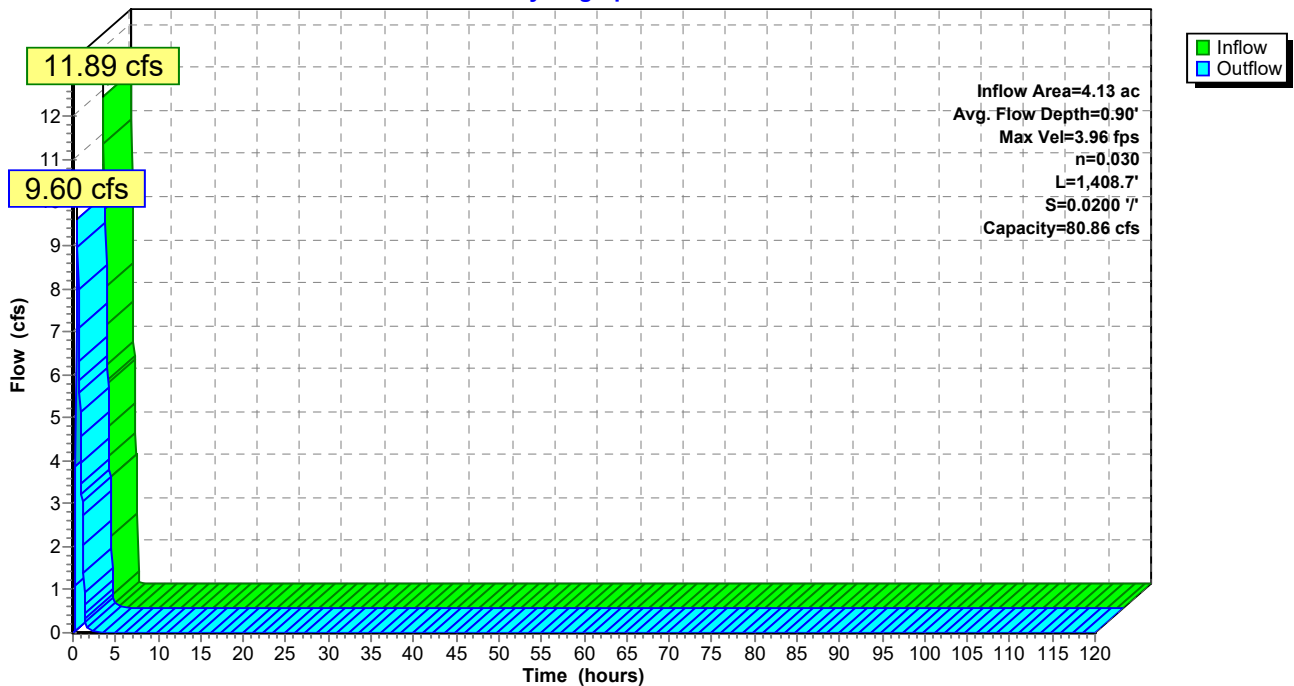
Peak Storage= 3,422 cf @ 0.40 hrs  
 Average Depth at Peak Storage= 0.90'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,408.7' Slope= 0.0200 '/'  
 Inlet Invert= 836.37', Outlet Invert= 808.20'



**Reach TB-N-A6: Terrace Berm N-A6**

Hydrograph



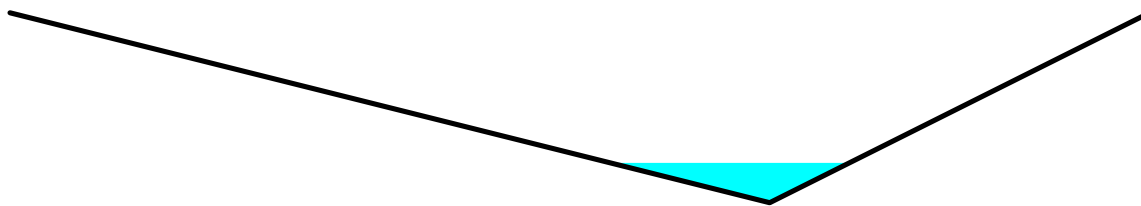
**Summary for Reach TB-N-A7: Terrace Berm N-A7**

Inflow Area = 0.44 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 1.26 cfs @ 0.31 hrs, Volume= 0.047 af  
 Outflow = 1.22 cfs @ 0.34 hrs, Volume= 0.047 af, Atten= 3%, Lag= 1.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.38 fps, Min. Travel Time= 0.7 min  
 Avg. Velocity = 1.43 fps, Avg. Travel Time= 1.2 min

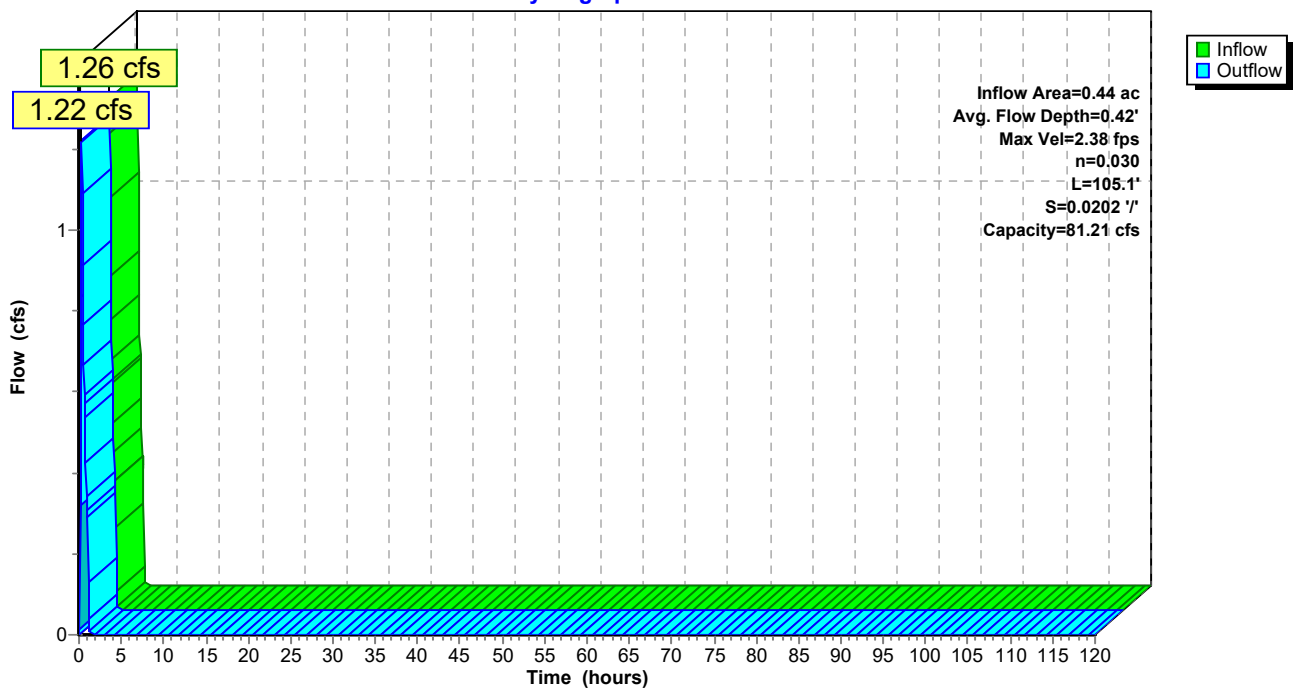
Peak Storage= 55 cf @ 0.32 hrs  
 Average Depth at Peak Storage= 0.42'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 81.21 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 105.1' Slope= 0.0202 '/'  
 Inlet Invert= 782.01', Outlet Invert= 779.89'



**Reach TB-N-A7: Terrace Berm N-A7**

Hydrograph



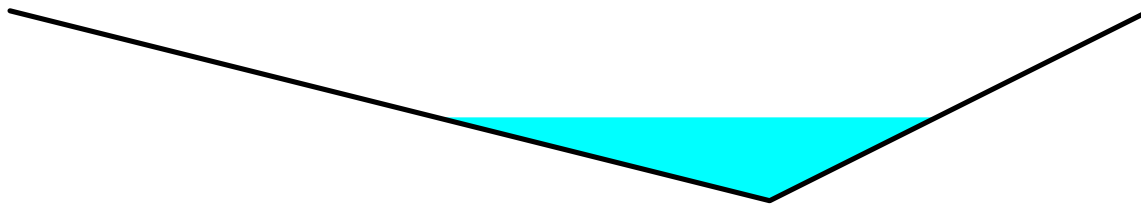
**Summary for Reach TB-N-A8: Terrace Berm N-A8**

Inflow Area = 3.80 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 10.94 cfs @ 0.30 hrs, Volume= 0.403 af  
 Outflow = 8.92 cfs @ 0.48 hrs, Volume= 0.403 af, Atten= 18%, Lag= 10.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.89 fps, Min. Travel Time= 5.5 min  
 Avg. Velocity = 0.93 fps, Avg. Travel Time= 23.3 min

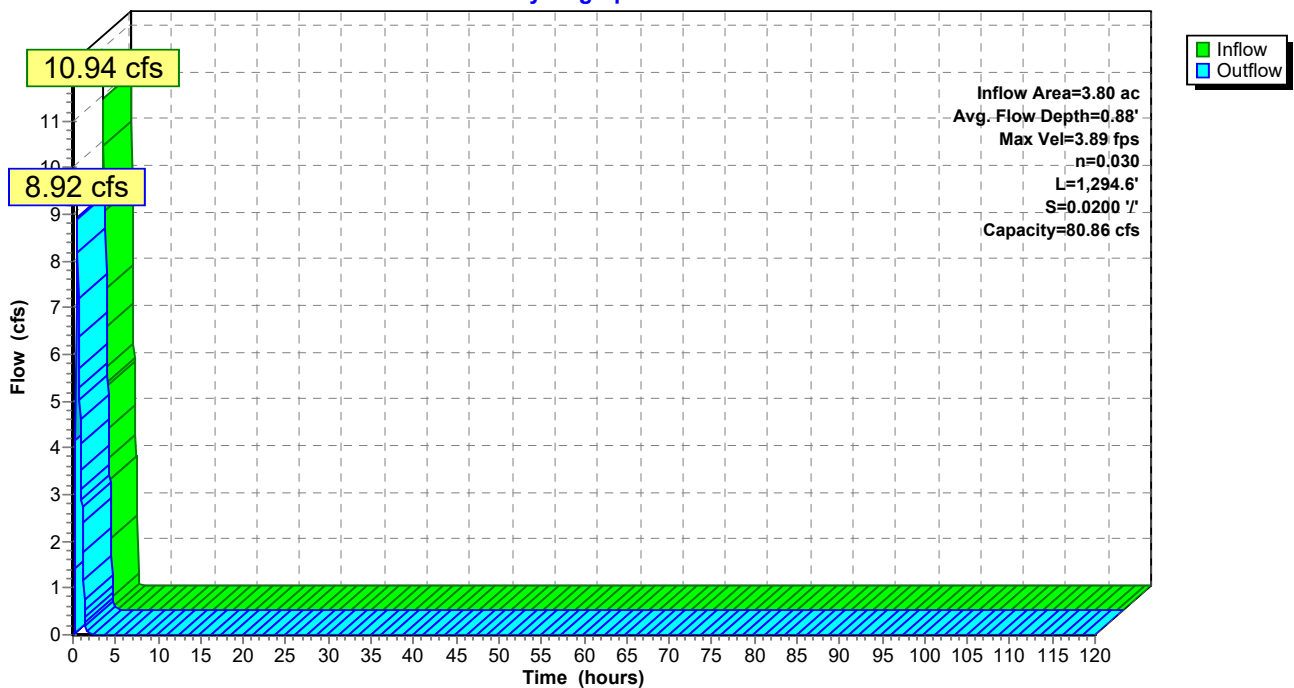
Peak Storage= 2,993 cf @ 0.39 hrs  
 Average Depth at Peak Storage= 0.88'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,294.6' Slope= 0.0200 '/'  
 Inlet Invert= 805.78', Outlet Invert= 779.89'



**Reach TB-N-A8: Terrace Berm N-A8**

Hydrograph



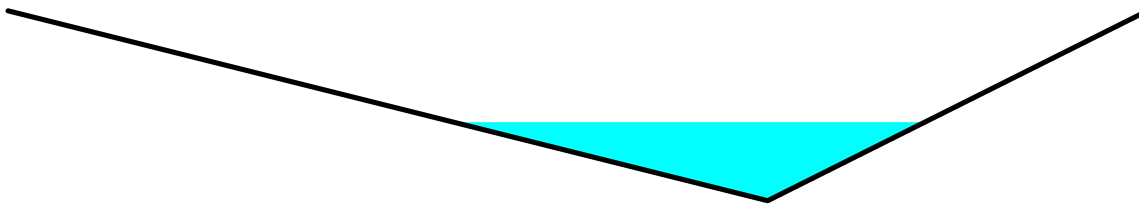
**Summary for Reach TB-N-B1: Terrace Berm N-B1**

Inflow Area = 3.15 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 8.55 cfs @ 0.34 hrs, Volume= 0.334 af  
 Outflow = 7.53 cfs @ 0.48 hrs, Volume= 0.334 af, Atten= 12%, Lag= 8.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.74 fps, Min. Travel Time= 4.3 min  
 Avg. Velocity = 1.00 fps, Avg. Travel Time= 16.2 min

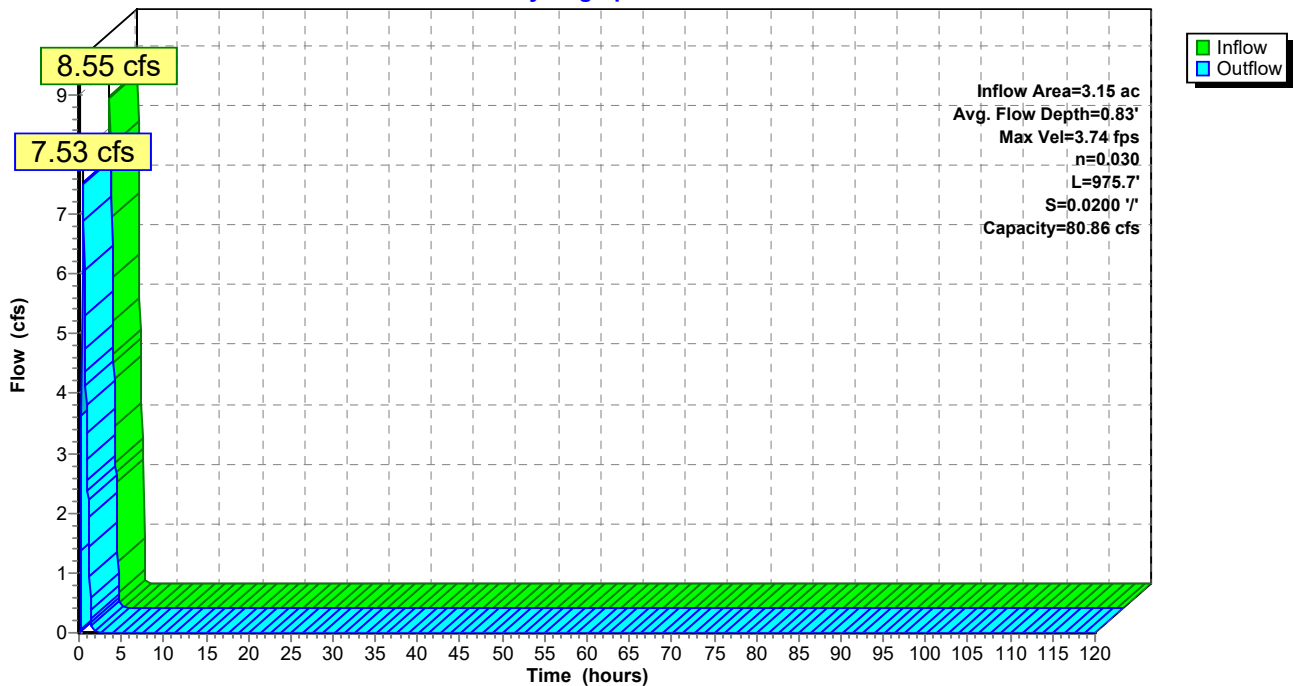
Peak Storage= 2,007 cf @ 0.41 hrs  
 Average Depth at Peak Storage= 0.83'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 ' / ' Top Width= 12.00'  
 Length= 975.7' Slope= 0.0200 ' / '  
 Inlet Invert= 867.35', Outlet Invert= 847.84'



**Reach TB-N-B1: Terrace Berm N-B1**

Hydrograph



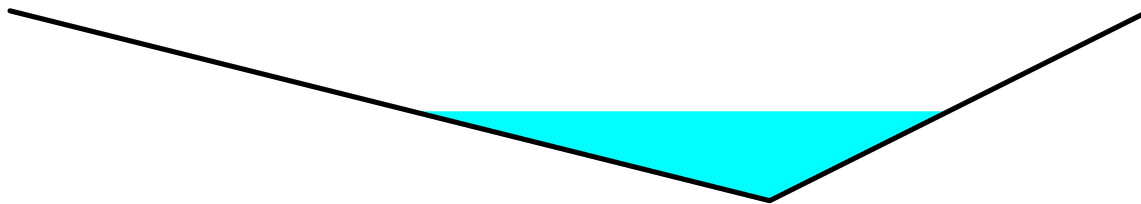
**Summary for Reach TB-N-B2: Terrace Berm N-B2**

Inflow Area = 4.49 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 12.14 cfs @ 0.34 hrs, Volume= 0.476 af  
 Outflow = 10.61 cfs @ 0.49 hrs, Volume= 0.476 af, Atten= 13%, Lag= 9.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.07 fps, Min. Travel Time= 4.6 min  
 Avg. Velocity = 1.01 fps, Avg. Travel Time= 18.4 min

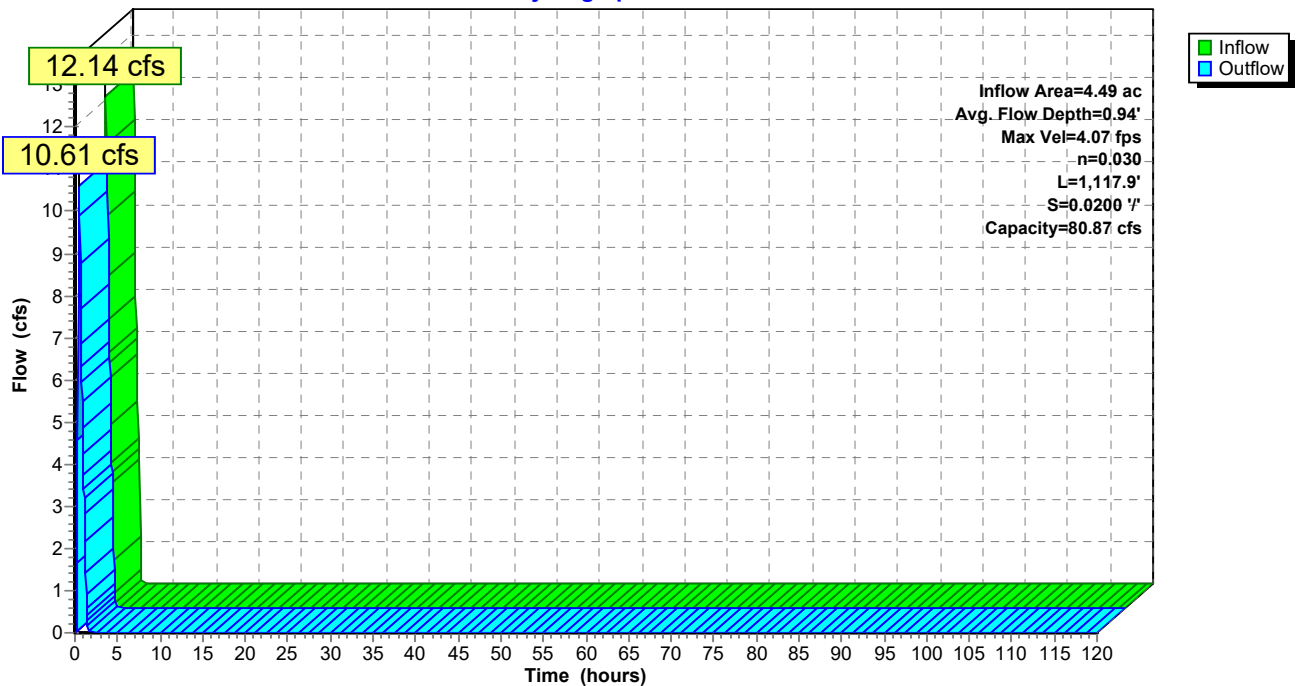
Peak Storage= 2,971 cf @ 0.41 hrs  
 Average Depth at Peak Storage= 0.94'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,117.9' Slope= 0.0200 '/'  
 Inlet Invert= 870.20', Outlet Invert= 847.84'



**Reach TB-N-B2: Terrace Berm N-B2**

Hydrograph





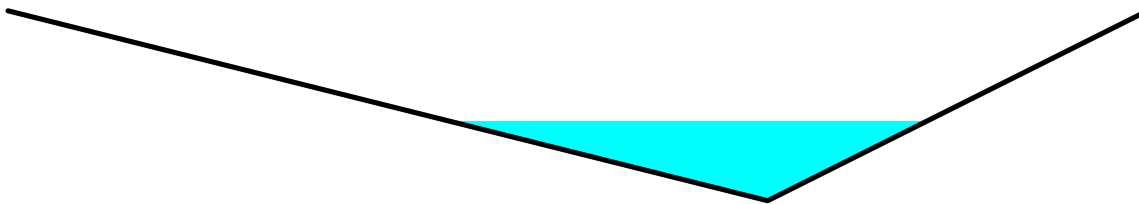
**Summary for Reach TB-N-B3: Terrace Berm N-B3**

Inflow Area = 3.43 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 9.85 cfs @ 0.31 hrs, Volume= 0.364 af  
 Outflow = 7.98 cfs @ 0.49 hrs, Volume= 0.364 af, Atten= 19%, Lag= 11.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.78 fps, Min. Travel Time= 5.8 min  
 Avg. Velocity = 0.90 fps, Avg. Travel Time= 24.4 min

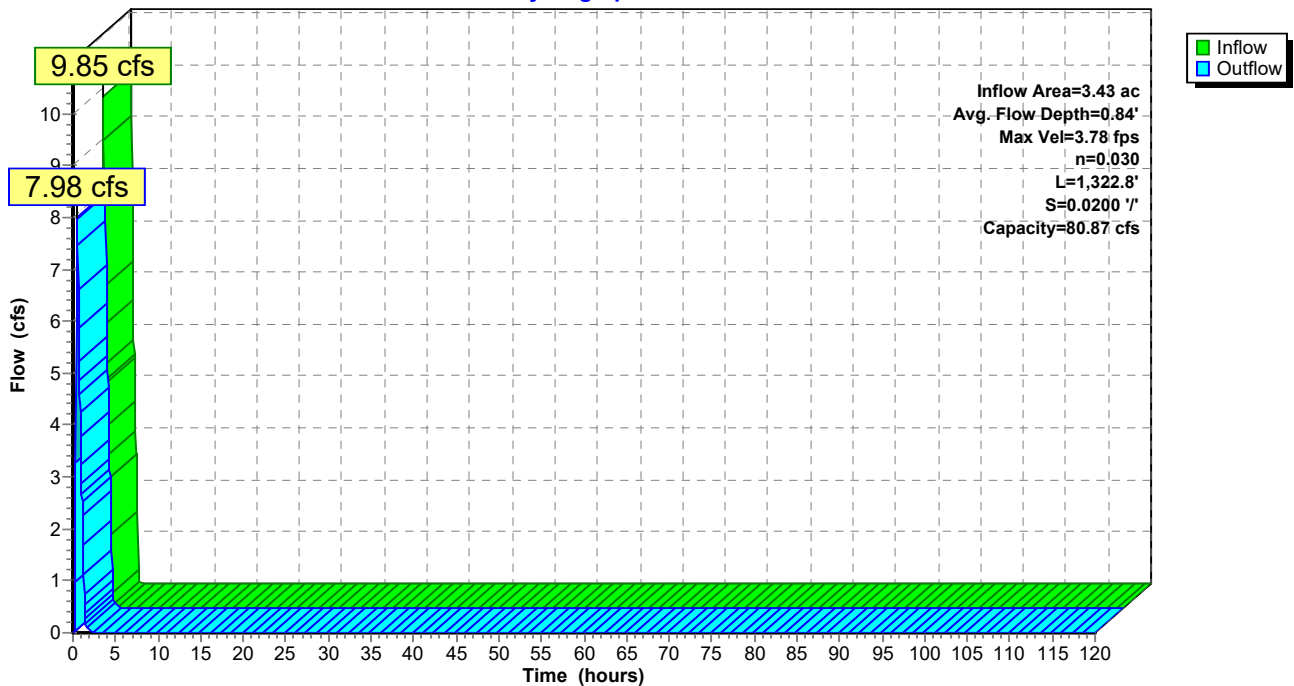
Peak Storage= 2,802 cf @ 0.40 hrs  
 Average Depth at Peak Storage= 0.84'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,322.8' Slope= 0.0200 '/'  
 Inlet Invert= 836.37', Outlet Invert= 809.91'



**Reach TB-N-B3: Terrace Berm N-B3**

Hydrograph



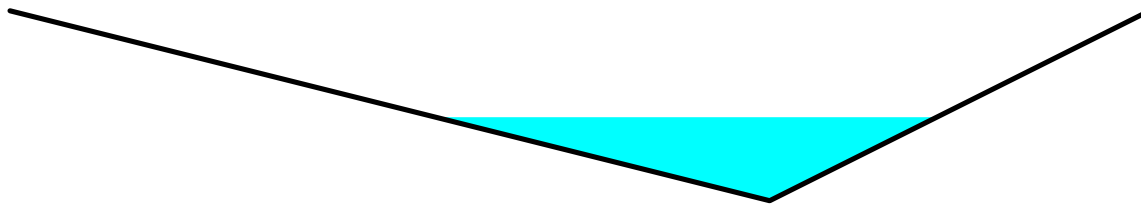
**Summary for Reach TB-N-B4: Terrace Berm N-B4**

Inflow Area = 3.80 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 10.93 cfs @ 0.31 hrs, Volume= 0.404 af  
 Outflow = 8.96 cfs @ 0.48 hrs, Volume= 0.404 af, Atten= 18%, Lag= 10.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.90 fps, Min. Travel Time= 5.4 min  
 Avg. Velocity = 0.93 fps, Avg. Travel Time= 22.7 min

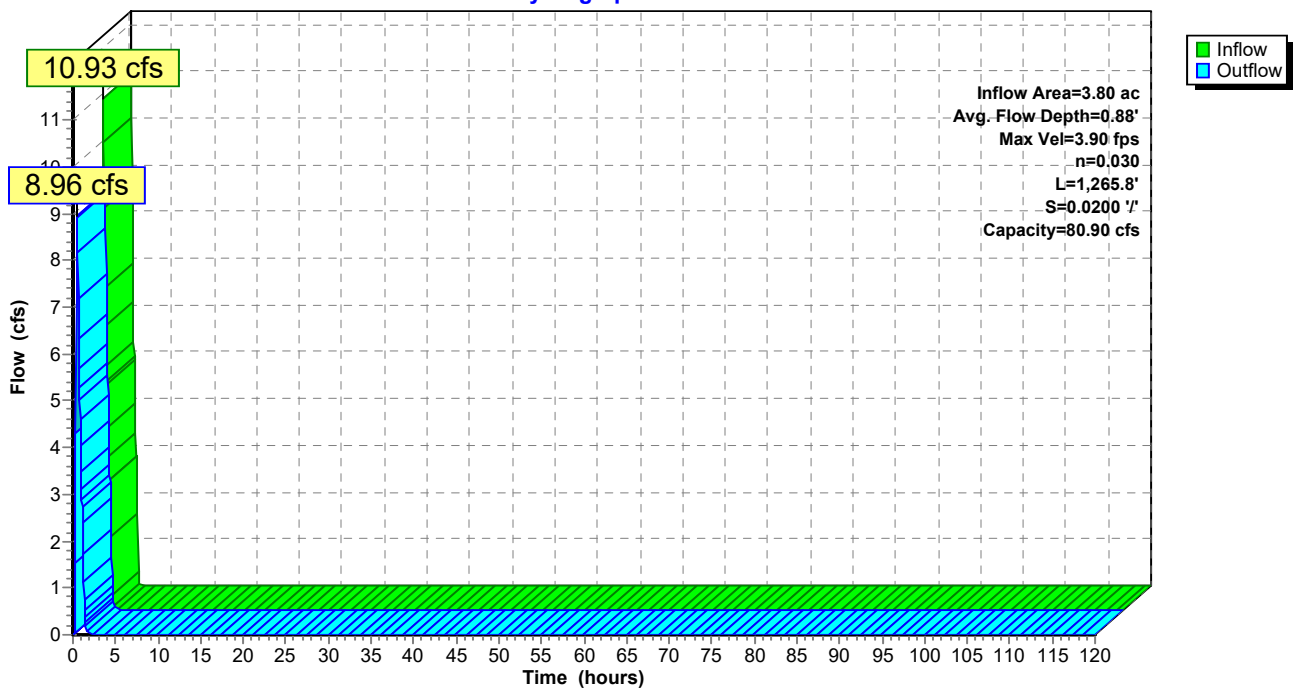
Peak Storage= 2,939 cf @ 0.39 hrs  
 Average Depth at Peak Storage= 0.88'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.90 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,265.8' Slope= 0.0200 '/'  
 Inlet Invert= 835.25', Outlet Invert= 809.91'



**Reach TB-N-B4: Terrace Berm N-B4**

Hydrograph



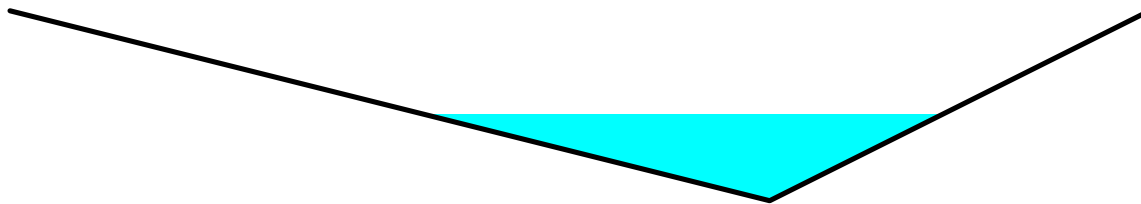
**Summary for Reach TB-N-B5: Terrace Berm N-B5**

Inflow Area = 4.50 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 12.93 cfs @ 0.31 hrs, Volume= 0.477 af  
 Outflow = 9.82 cfs @ 0.53 hrs, Volume= 0.477 af, Atten= 24%, Lag= 13.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.99 fps, Min. Travel Time= 7.0 min  
 Avg. Velocity = 0.87 fps, Avg. Travel Time= 31.8 min

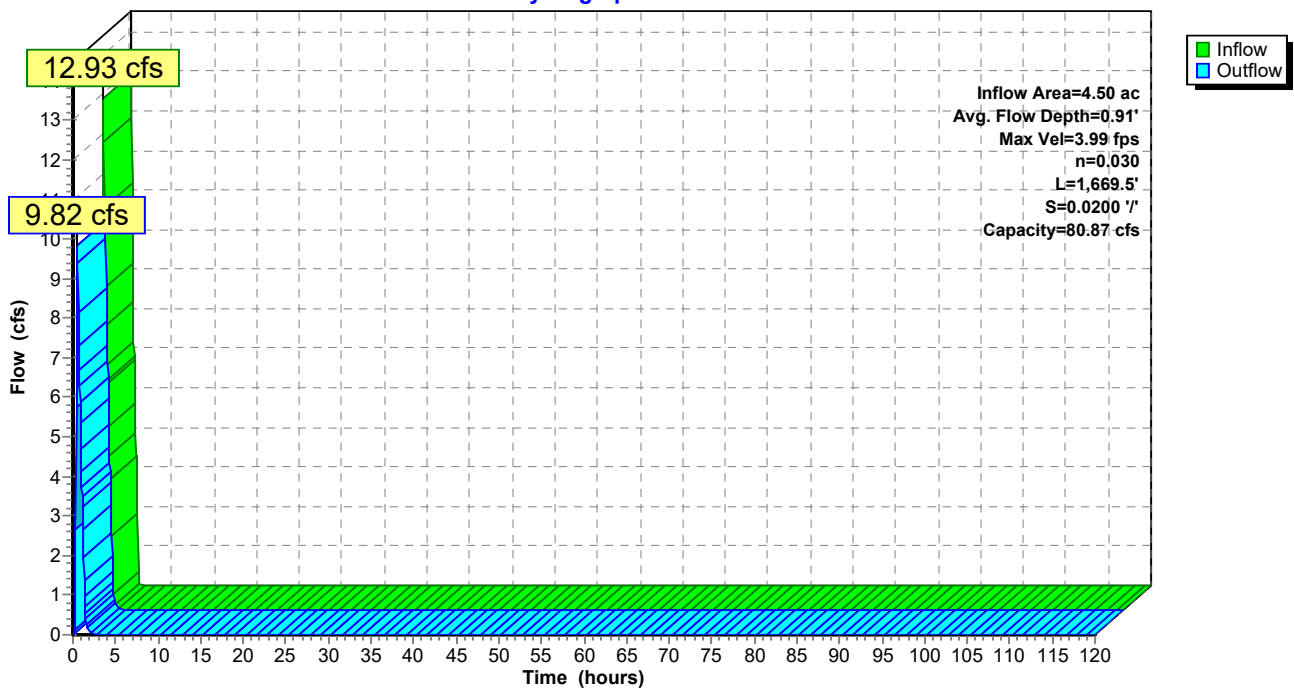
Peak Storage= 4,178 cf @ 0.41 hrs  
 Average Depth at Peak Storage= 0.91'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,669.5' Slope= 0.0200 '/'  
 Inlet Invert= 805.78', Outlet Invert= 772.39'



**Reach TB-N-B5: Terrace Berm N-B5**

Hydrograph



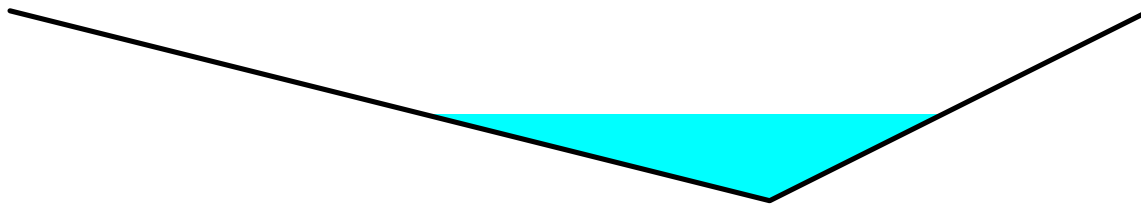
**Summary for Reach TB-N-B6: Terrace Berm N-B6**

Inflow Area = 4.29 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 12.33 cfs @ 0.31 hrs, Volume= 0.455 af  
 Outflow = 9.97 cfs @ 0.50 hrs, Volume= 0.455 af, Atten= 19%, Lag= 11.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.00 fps, Min. Travel Time= 5.9 min  
 Avg. Velocity = 0.92 fps, Avg. Travel Time= 25.7 min

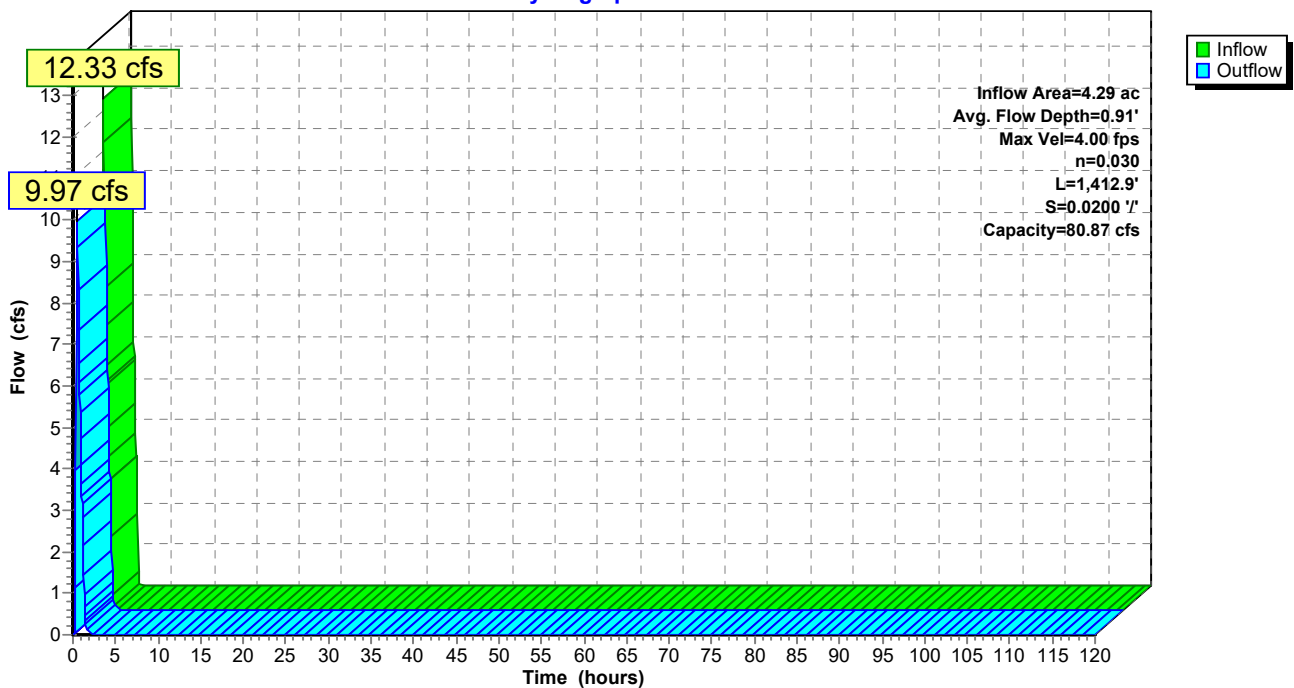
Peak Storage= 3,533 cf @ 0.40 hrs  
 Average Depth at Peak Storage= 0.91'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,412.9' Slope= 0.0200 '/'  
 Inlet Invert= 800.65', Outlet Invert= 772.39'



**Reach TB-N-B6: Terrace Berm N-B6**

Hydrograph



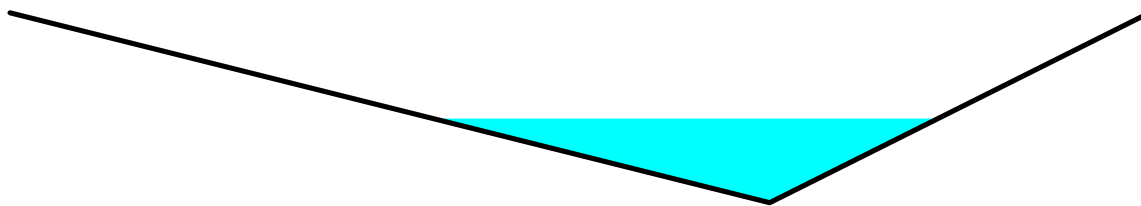
**Summary for Reach TB-N-B7: Terrace Berm N-B7**

Inflow Area = 3.96 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 11.39 cfs @ 0.31 hrs, Volume= 0.420 af  
 Outflow = 9.23 cfs @ 0.49 hrs, Volume= 0.420 af, Atten= 19%, Lag= 11.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.92 fps, Min. Travel Time= 5.8 min  
 Avg. Velocity = 0.91 fps, Avg. Travel Time= 25.0 min

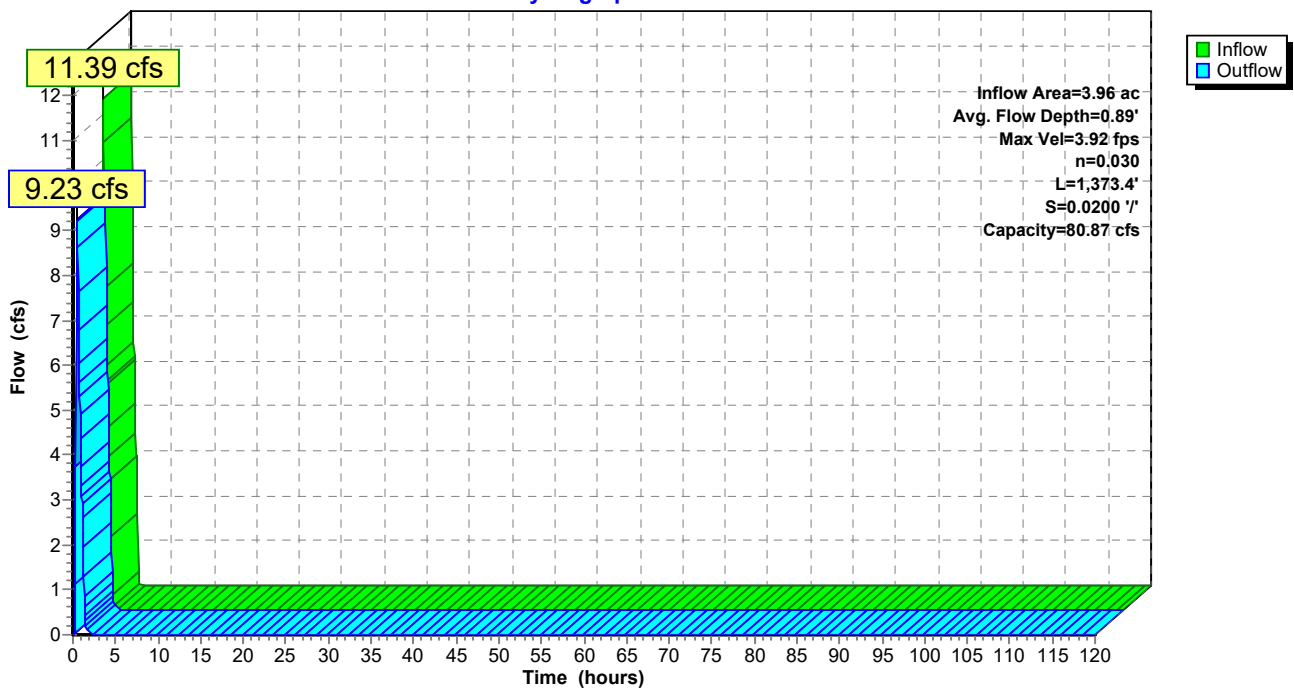
Peak Storage= 3,243 cf @ 0.40 hrs  
 Average Depth at Peak Storage= 0.89'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,373.4' Slope= 0.0200 '/'  
 Inlet Invert= 771.72', Outlet Invert= 744.25'



**Reach TB-N-B7: Terrace Berm N-B7**

Hydrograph



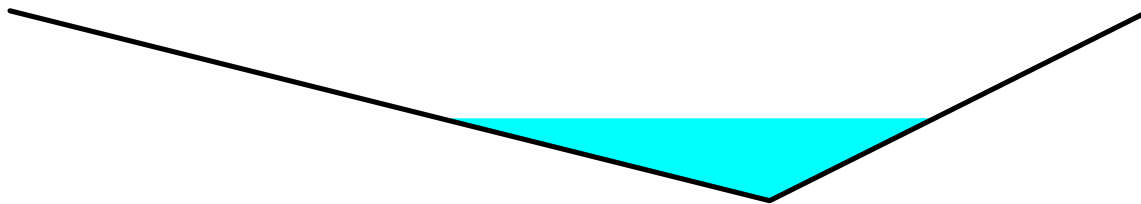
**Summary for Reach TB-N-B8: Terrace Berm N-B8**

Inflow Area = 3.52 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 10.13 cfs @ 0.31 hrs, Volume= 0.374 af  
 Outflow = 8.70 cfs @ 0.45 hrs, Volume= 0.374 af, Atten= 14%, Lag= 8.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.93 fps, Min. Travel Time= 4.3 min  
 Avg. Velocity = 1.03 fps, Avg. Travel Time= 16.6 min

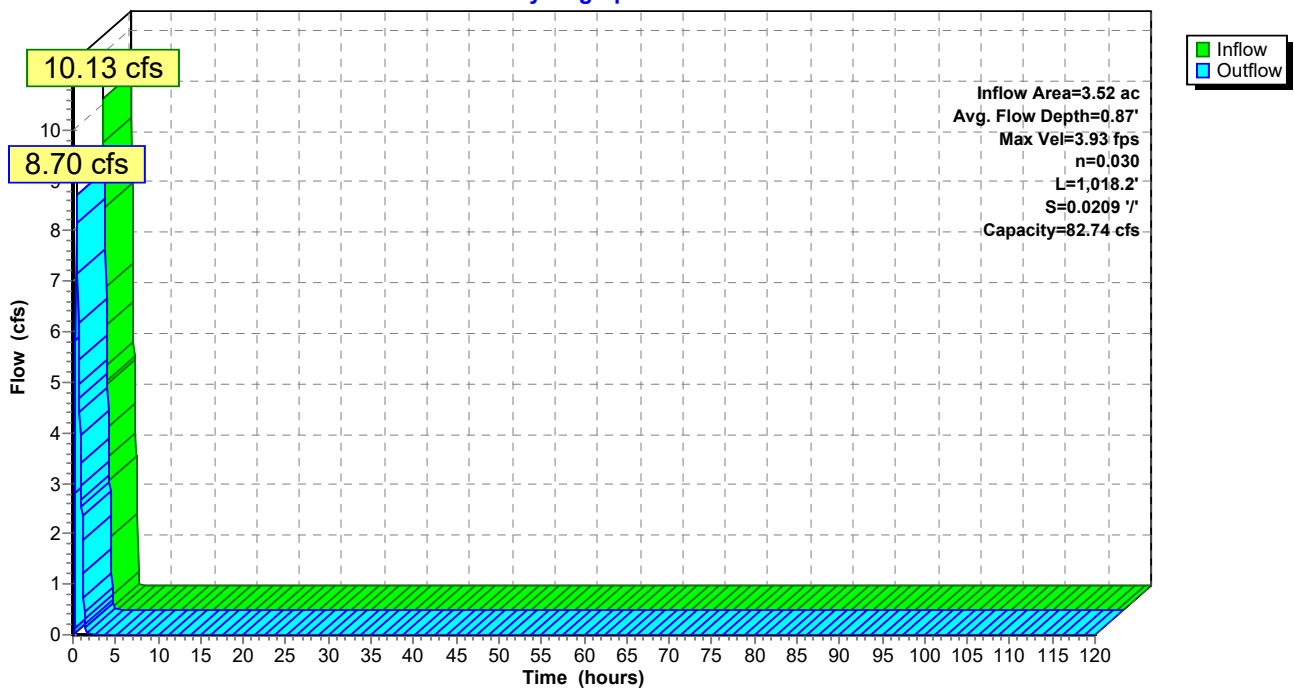
Peak Storage= 2,298 cf @ 0.37 hrs  
 Average Depth at Peak Storage= 0.87'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 82.74 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,018.2' Slope= 0.0209 '/'  
 Inlet Invert= 765.32', Outlet Invert= 744.00'



**Reach TB-N-B8: Terrace Berm N-B8**

Hydrograph



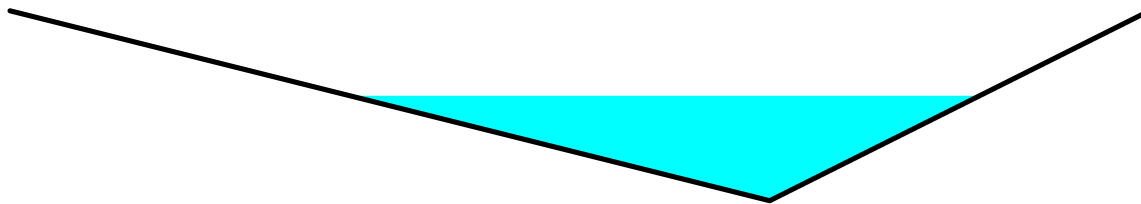
**Summary for Reach TB-N-C1: Terrace Berm N-C1**

Inflow Area = 6.98 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 18.83 cfs @ 0.35 hrs, Volume= 0.741 af  
 Outflow = 16.35 cfs @ 0.51 hrs, Volume= 0.741 af, Atten= 13%, Lag= 9.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.53 fps, Min. Travel Time= 4.9 min  
 Avg. Velocity = 1.01 fps, Avg. Travel Time= 21.7 min

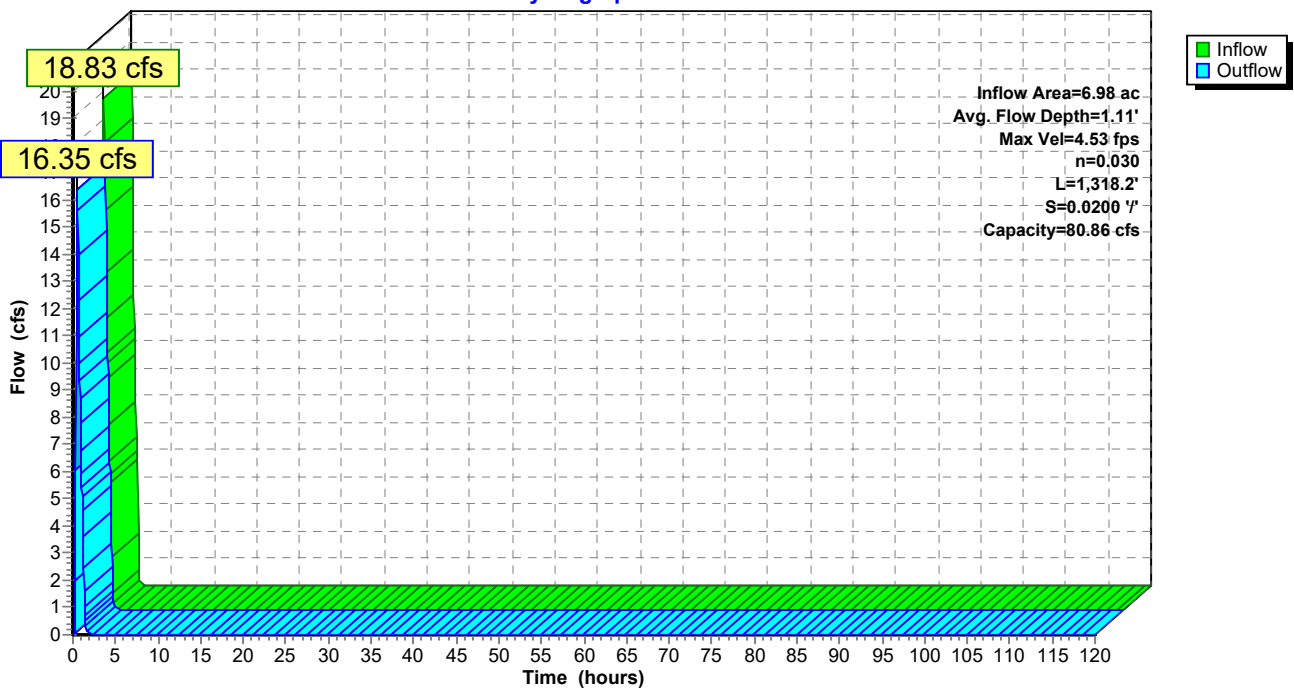
Peak Storage= 4,831 cf @ 0.42 hrs  
 Average Depth at Peak Storage= 1.11'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,318.2' Slope= 0.0200 '/'  
 Inlet Invert= 870.02', Outlet Invert= 843.66'



**Reach TB-N-C1: Terrace Berm N-C1**

Hydrograph



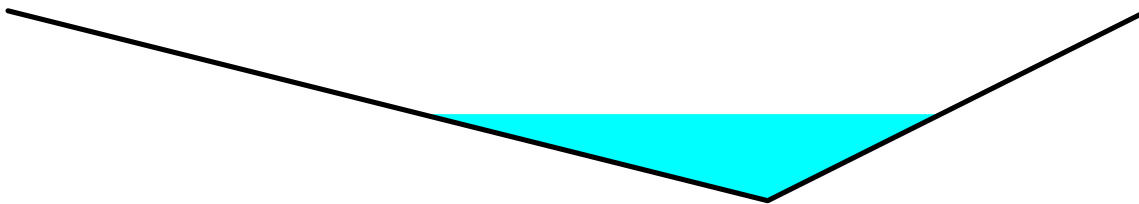
**Summary for Reach TB-N-C2: Terrace Berm N-C2**

Inflow Area = 4.20 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 12.07 cfs @ 0.31 hrs, Volume= 0.445 af  
 Outflow = 9.87 cfs @ 0.48 hrs, Volume= 0.445 af, Atten= 18%, Lag= 10.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.99 fps, Min. Travel Time= 5.5 min  
 Avg. Velocity = 0.93 fps, Avg. Travel Time= 23.6 min

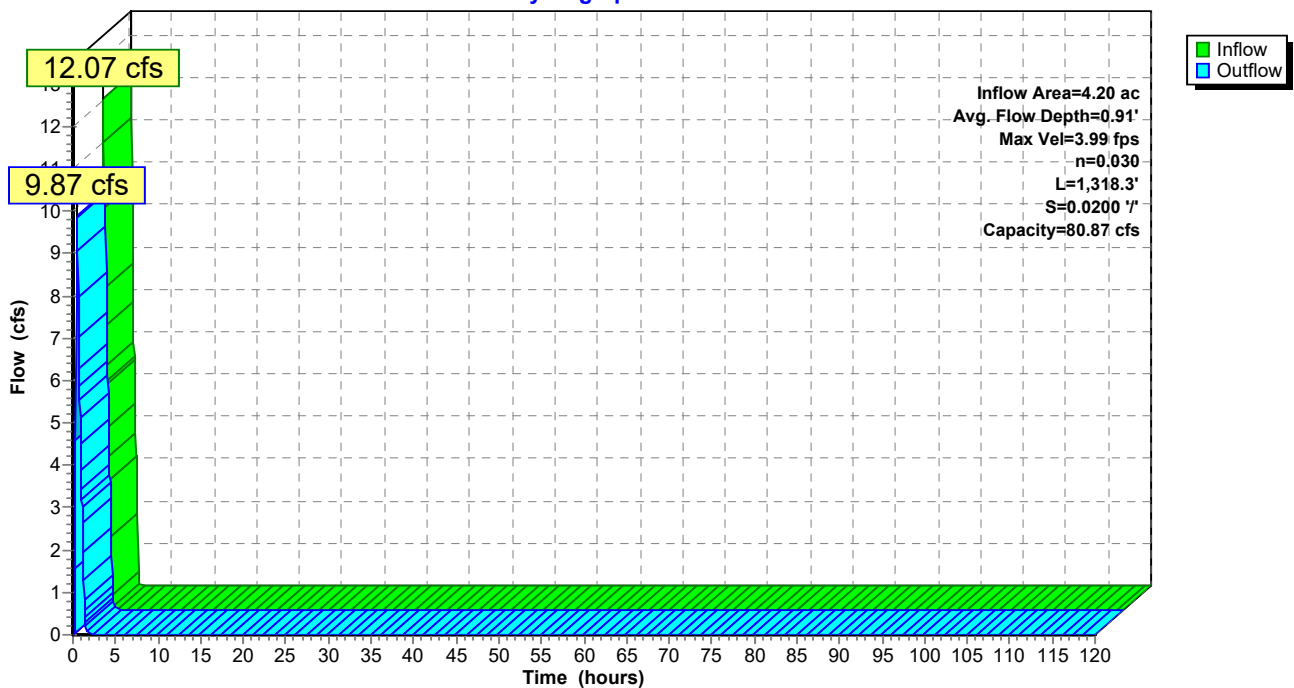
Peak Storage= 3,288 cf @ 0.39 hrs  
 Average Depth at Peak Storage= 0.91'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,318.3' Slope= 0.0200 '/'  
 Inlet Invert= 835.25', Outlet Invert= 808.88'



**Reach TB-N-C2: Terrace Berm N-C2**

Hydrograph





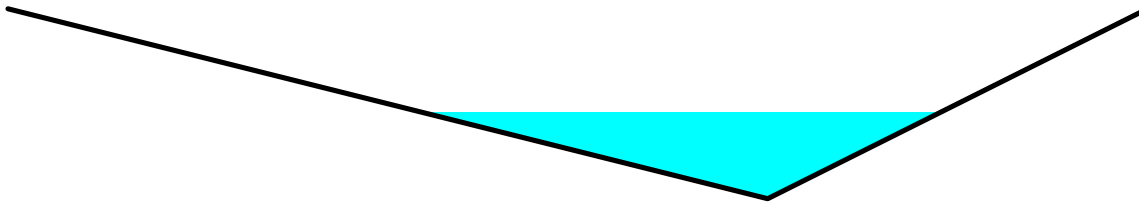
**Summary for Reach TB-N-C3: Terrace Berm N-C3**

Inflow Area = 4.22 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 12.13 cfs @ 0.31 hrs, Volume= 0.448 af  
 Outflow = 9.91 cfs @ 0.48 hrs, Volume= 0.448 af, Atten= 18%, Lag= 10.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.00 fps, Min. Travel Time= 5.5 min  
 Avg. Velocity = 0.93 fps, Avg. Travel Time= 23.6 min

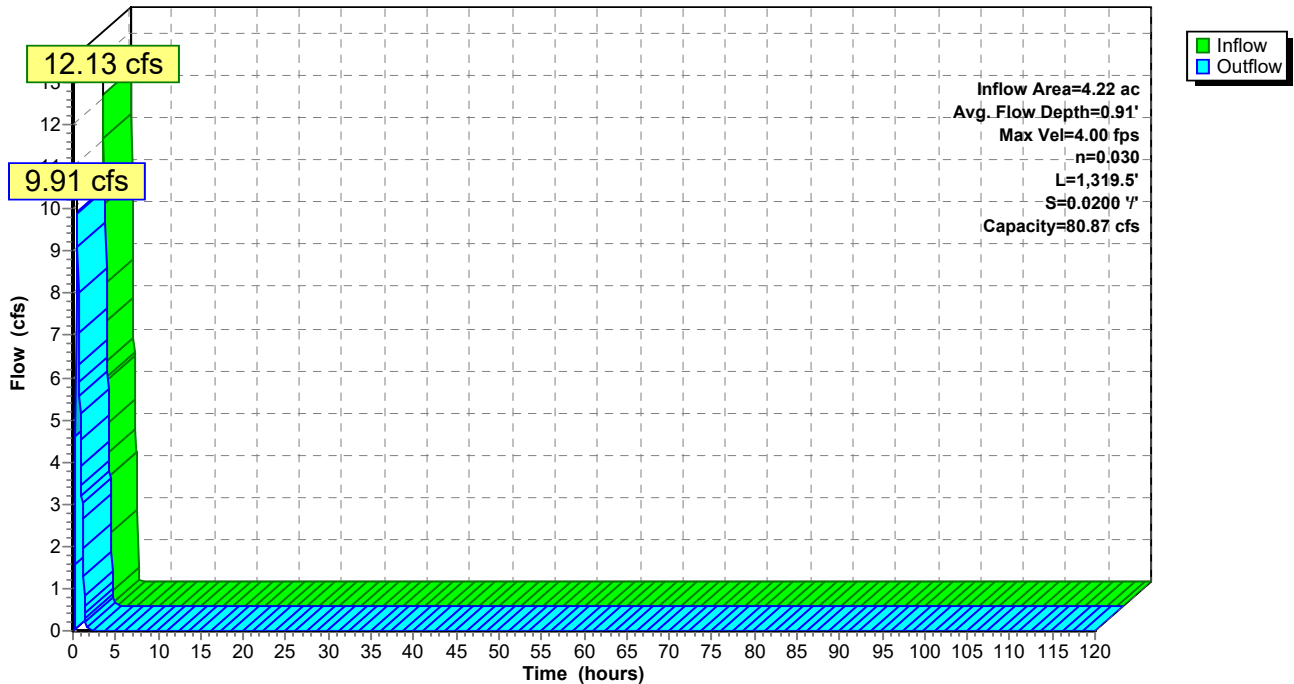
Peak Storage= 3,302 cf @ 0.39 hrs  
 Average Depth at Peak Storage= 0.91'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,319.5' Slope= 0.0200 '/'  
 Inlet Invert= 800.65', Outlet Invert= 774.26'



**Reach TB-N-C3: Terrace Berm N-C3**

Hydrograph



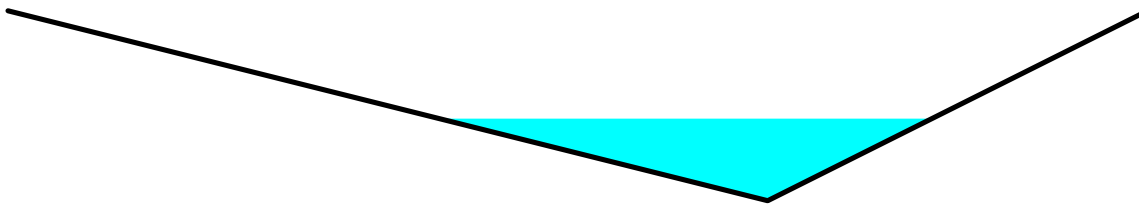
**Summary for Reach TB-N-C4: Terrace Berm N-C4**

Inflow Area = 3.52 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 10.10 cfs @ 0.31 hrs, Volume= 0.373 af  
 Outflow = 8.55 cfs @ 0.46 hrs, Volume= 0.373 af, Atten= 15%, Lag= 9.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.84 fps, Min. Travel Time= 4.8 min  
 Avg. Velocity = 0.97 fps, Avg. Travel Time= 18.8 min

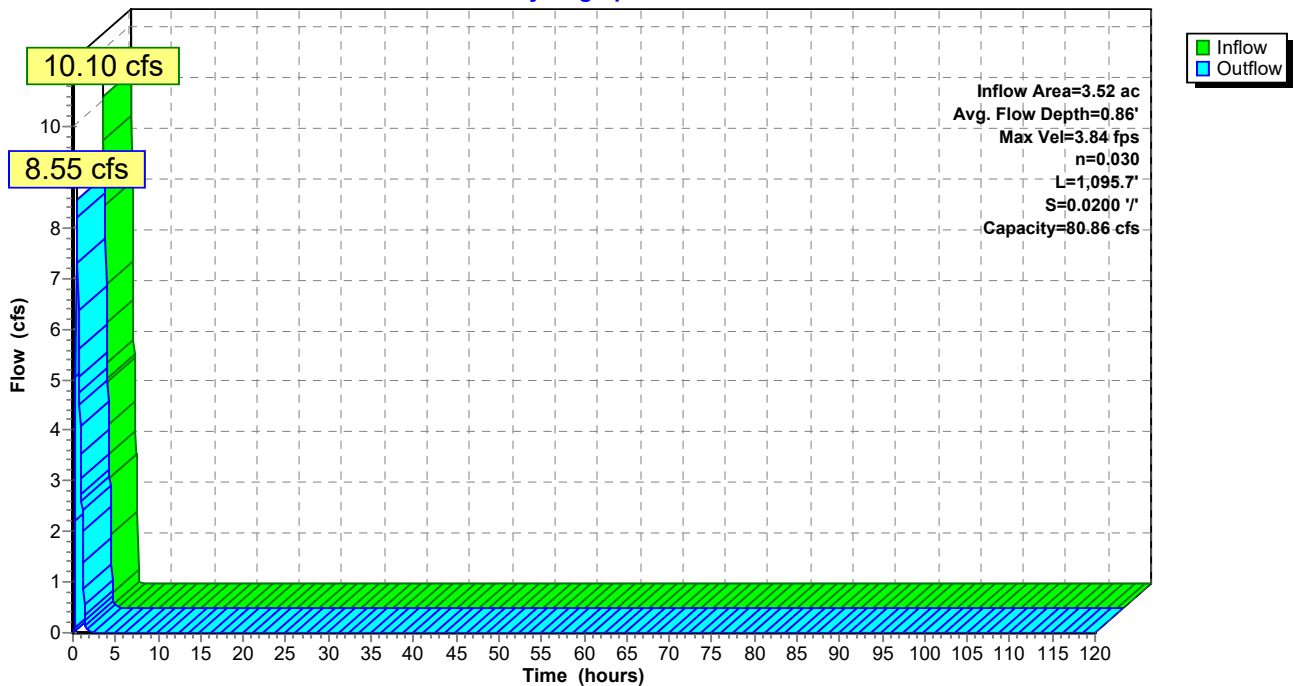
Peak Storage= 2,453 cf @ 0.38 hrs  
 Average Depth at Peak Storage= 0.86'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,095.7' Slope= 0.0200 '/'  
 Inlet Invert= 765.32', Outlet Invert= 743.41'



**Reach TB-N-C4: Terrace Berm N-C4**

Hydrograph



**Summary for Pond Basin 5R: Stormwater Basin 5R**

Inflow Area = 53.03 ac, 15.95% Impervious, Inflow Depth = 1.52" for 25-Year, 1-Hour event  
 Inflow = 98.52 cfs @ 0.58 hrs, Volume= 6.710 af  
 Outflow = 1.57 cfs @ 1.91 hrs, Volume= 5.248 af, Atten= 98%, Lag= 79.6 min  
 Primary = 1.57 cfs @ 1.91 hrs, Volume= 5.248 af  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Starting Elev= 733.50' Surf.Area= 318,821 sf Storage= 1,528,329 cf  
 Peak Elev= 734.54' @ 1.91 hrs Surf.Area= 262,848 sf Storage= 1,811,107 cf (282,778 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= 1,945.4 min ( 1,986.4 - 40.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	726.00'	4,158,336 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
726.00	132,640	0	0
728.00	155,297	287,937	287,937
730.00	179,100	334,397	622,334
731.00	118,479	148,790	771,124
732.00	367,080	242,780	1,013,903
733.50	318,821	514,426	1,528,329
734.00	253,912	143,183	1,671,512
735.00	270,451	262,182	1,933,694
736.00	287,631	279,041	2,212,735
738.00	311,683	599,314	2,812,049
740.00	336,524	648,207	3,460,256
742.00	361,556	698,080	4,158,336

Device	Routing	Invert	Outlet Devices
#1	Primary	733.50'	<b>30.0" Round Culvert</b> L= 100.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 733.50' / 733.20' S= 0.0030 1/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf
#2	Device 1	733.50'	<b>4.0" Vert. Lower Orifice X 4.00</b> C= 0.600
#3	Device 1	737.50'	<b>4.0" Vert. Middle Orifice X 4.00</b> C= 0.600
#4	Device 1	738.50'	<b>4.0" Vert. Upper Orifice X 4.00</b> C= 0.600
#5	Device 1	739.00'	<b>30.0" Horiz. Orifice/Grate</b> C= 0.600
#6	Secondary	740.00'	<b>Secondary Spillway, C= 3.27</b> Offset (feet) 0.00 6.00 26.00 32.00 Height (feet) 2.00 0.00 0.00 2.00

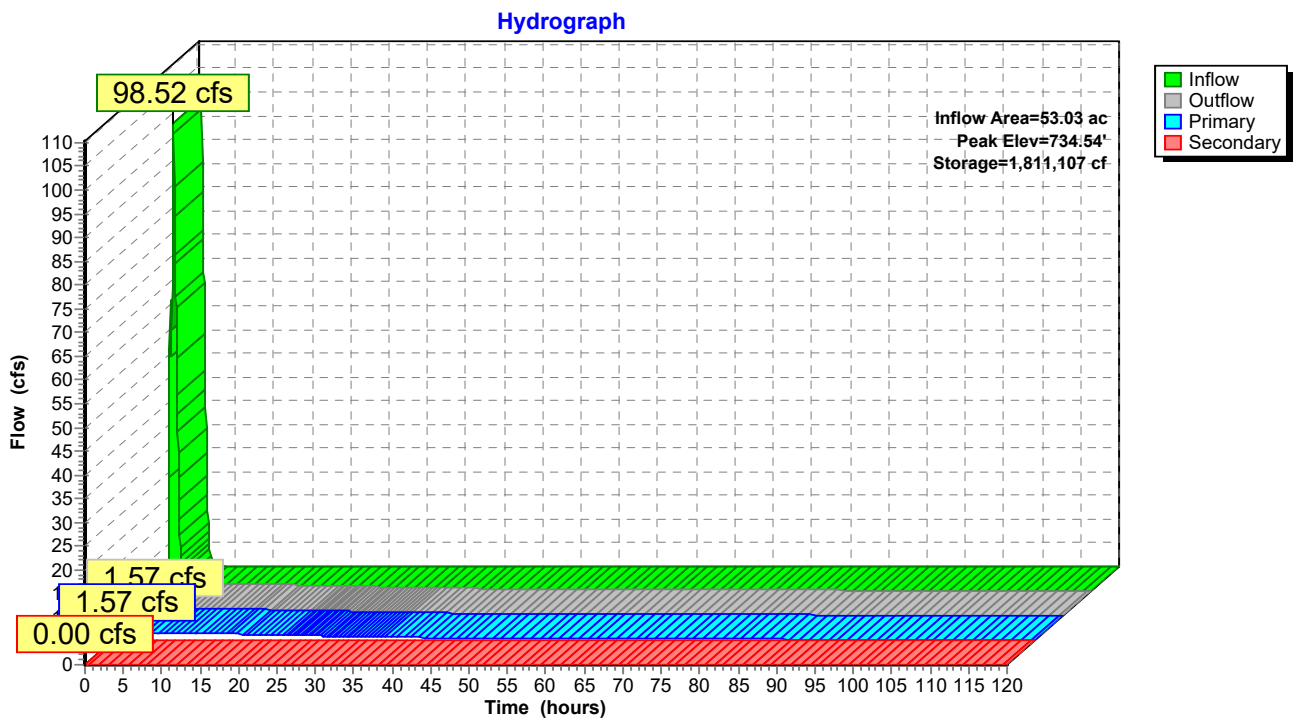
Primary OutFlow Max=1.57 cfs @ 1.91 hrs HW=734.54' (Free Discharge)

- 1=Culvert (Passes 1.57 cfs of 2.98 cfs potential flow)
- 2=Lower Orifice (Orifice Controls 1.57 cfs @ 4.50 fps)
- 3=Middle Orifice ( Controls 0.00 cfs)
- 4=Upper Orifice ( Controls 0.00 cfs)
- 5=Orifice/Grate ( Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=733.50' (Free Discharge)

- 6=Secondary Spillway ( Controls 0.00 cfs)

### Pond Basin 5R: Stormwater Basin 5R



**Summary for Pond Basin 8: Stormwater Basin 8**

Inflow Area = 148.01 ac, 11.19% Impervious, Inflow Depth = 1.45" for 25-Year, 1-Hour event  
 Inflow = 211.70 cfs @ 0.72 hrs, Volume= 17.837 af  
 Outflow = 5.73 cfs @ 2.18 hrs, Volume= 17.394 af, Atten= 97%, Lag= 87.6 min  
 Primary = 5.73 cfs @ 2.18 hrs, Volume= 17.394 af

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Starting Elev= 730.50' Surf.Area= 410,884 sf Storage= 1,593,798 cf  
 Peak Elev= 732.20' @ 2.18 hrs Surf.Area= 453,277 sf Storage= 2,329,154 cf (735,356 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= 1,537.5 min ( 1,588.0 - 50.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	726.00'	5,355,472 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
726.00	283,562	0	0
727.50	340,318	467,910	467,910
728.00	351,709	173,007	640,917
730.00	398,761	750,470	1,391,387
730.50	410,884	202,411	1,593,798
732.00	448,114	644,249	2,238,047
733.00	473,655	460,885	2,698,931
734.00	499,775	486,715	3,185,646
736.00	542,314	1,042,089	4,227,735
736.50	553,047	273,840	4,501,575
738.00	585,482	853,897	5,355,472

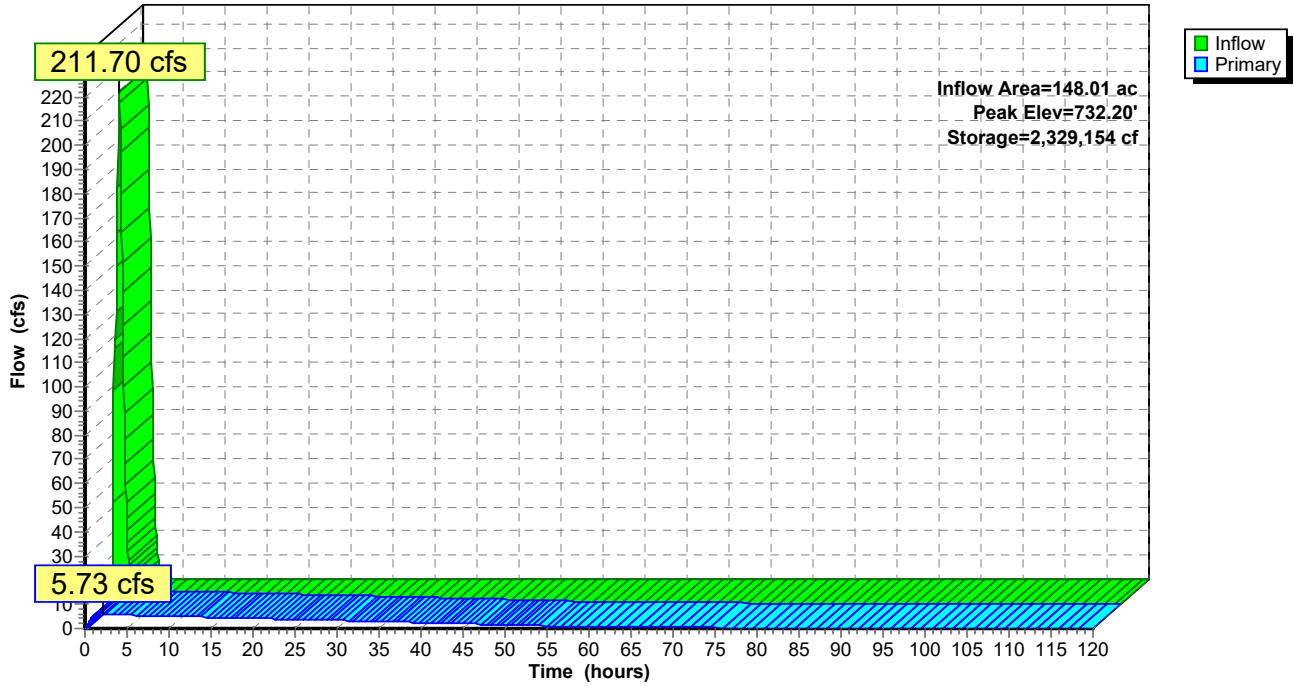
Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	<b>36.0" Round Culvert</b> L= 140.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 727.00' / 725.10' S= 0.0136 1/1' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Device 1	730.50'	<b>4.0" Vert. 2-yr Orifice X 11.00</b> C= 0.600
#3	Device 1	732.50'	<b>4.0" Vert. 100-yr Orifice X 6.00</b> C= 0.600
#4	Device 1	733.50'	<b>4.0" Vert. 100-yr Orifice X 6.00</b> C= 0.600
#5	Device 1	734.50'	<b>4.0" Vert. 100-yr Orifice X 6.00</b> C= 0.600
#6	Device 1	736.50'	<b>36.0" Horiz. Primary Spillway</b> C= 0.600

**Primary OutFlow** Max=5.73 cfs @ 2.18 hrs HW=732.20' (Free Discharge)

- 1=Culvert (Passes 5.73 cfs of 57.78 cfs potential flow)
- 2=2-yr Orifice (Orifice Controls 5.73 cfs @ 5.97 fps)
- 3=100-yr Orifice ( Controls 0.00 cfs)
- 4=100-yr Orifice ( Controls 0.00 cfs)
- 5=100-yr Orifice ( Controls 0.00 cfs)
- 6=Primary Spillway ( Controls 0.00 cfs)

### Pond Basin 8: Stormwater Basin 8

Hydrograph



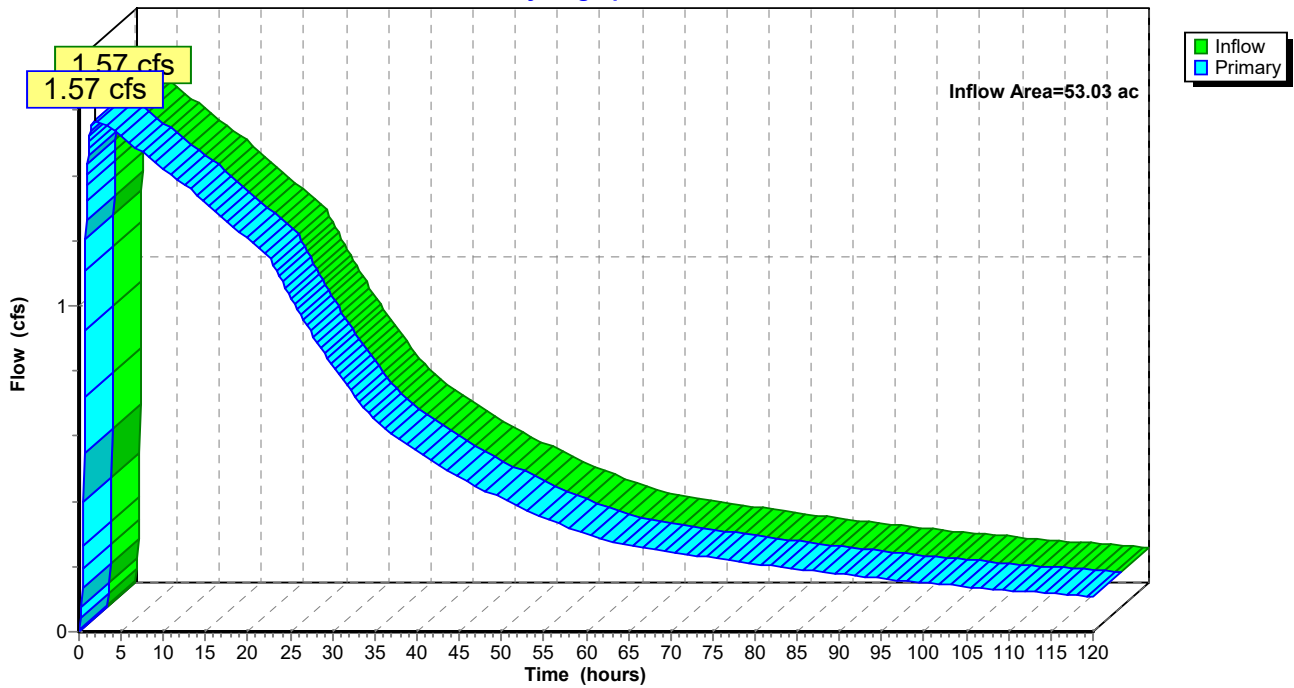
### Summary for Link BS: Bioswale

Inflow Area = 53.03 ac, 15.95% Impervious, Inflow Depth > 1.19" for 25-Year, 1-Hour event  
Inflow = 1.57 cfs @ 1.91 hrs, Volume= 5.248 af  
Primary = 1.57 cfs @ 1.91 hrs, Volume= 5.248 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link BS: Bioswale

Hydrograph

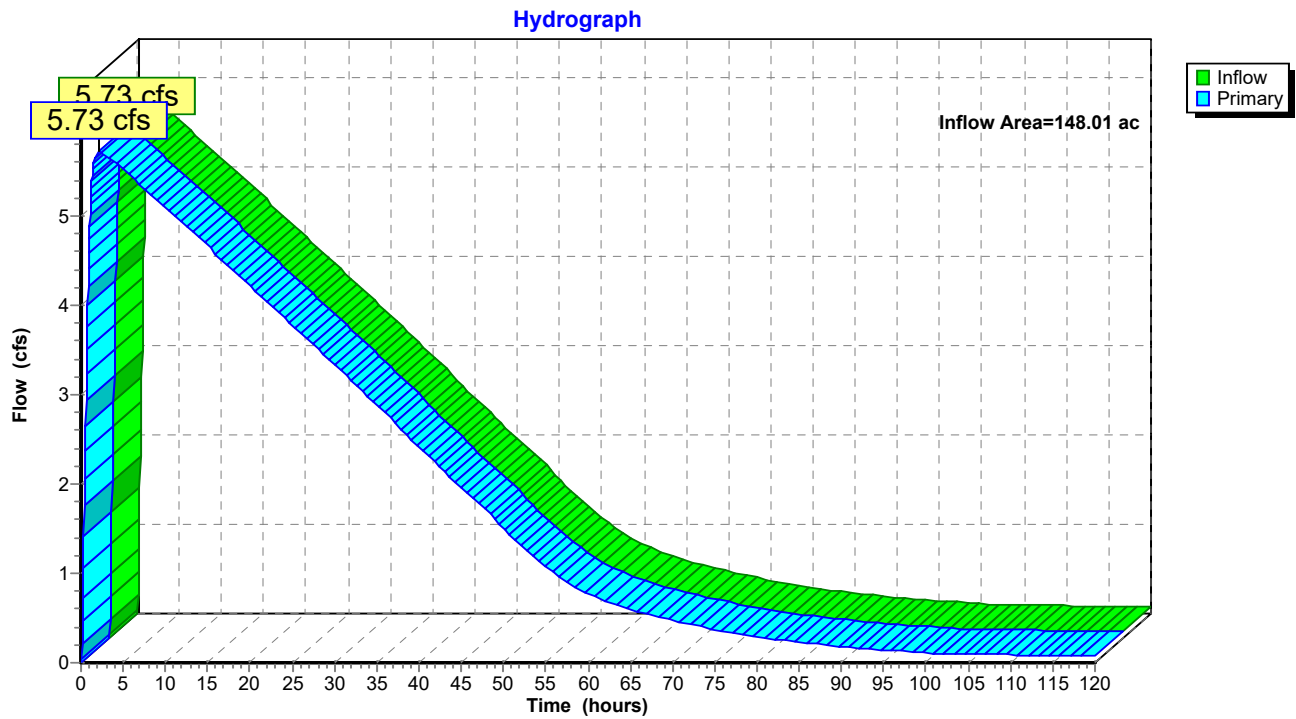


### Summary for Link DD: Offsite to Drainage Ditch

Inflow Area = 148.01 ac, 11.19% Impervious, Inflow Depth > 1.41" for 25-Year, 1-Hour event  
Inflow = 5.73 cfs @ 2.18 hrs, Volume= 17.394 af  
Primary = 5.73 cfs @ 2.18 hrs, Volume= 17.394 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link DD: Offsite to Drainage Ditch





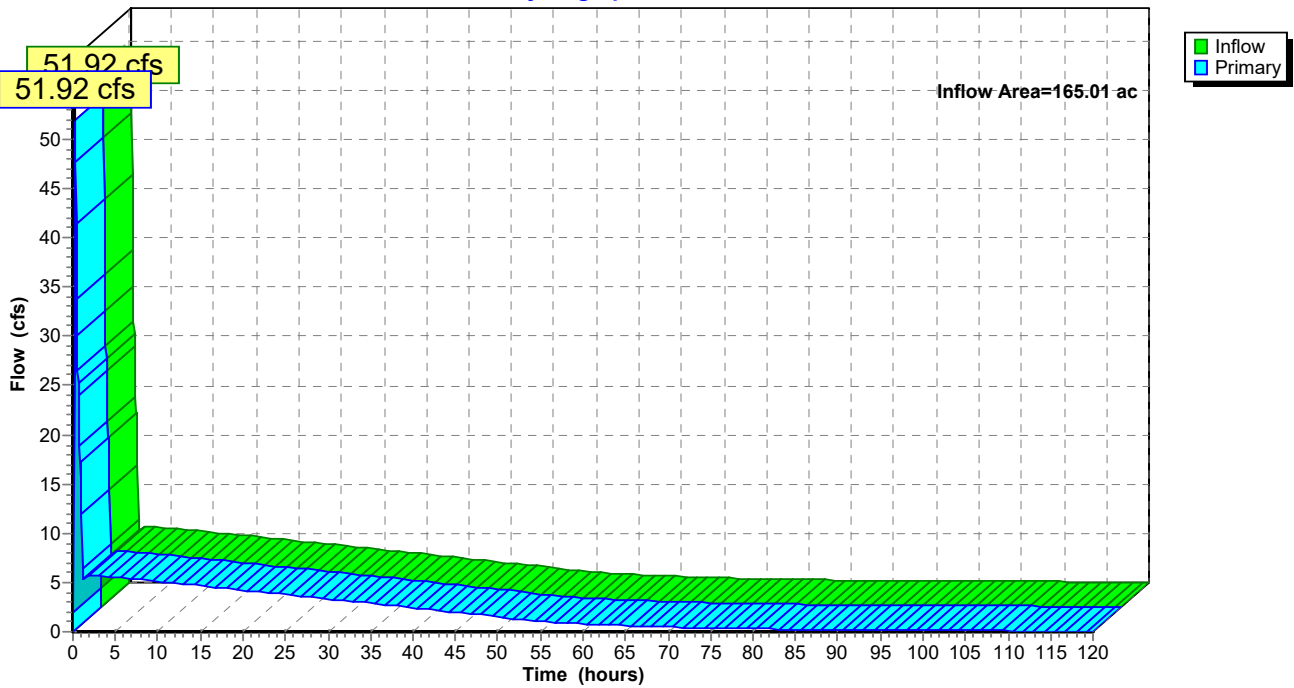
### Summary for Link DPRW: Des Plaines River Watershed

Inflow Area = 165.01 ac, 10.09% Impervious, Inflow Depth > 1.40" for 25-Year, 1-Hour event  
 Inflow = 51.92 cfs @ 0.31 hrs, Volume= 19.262 af  
 Primary = 51.92 cfs @ 0.31 hrs, Volume= 19.262 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link DPRW: Des Plaines River Watershed

Hydrograph

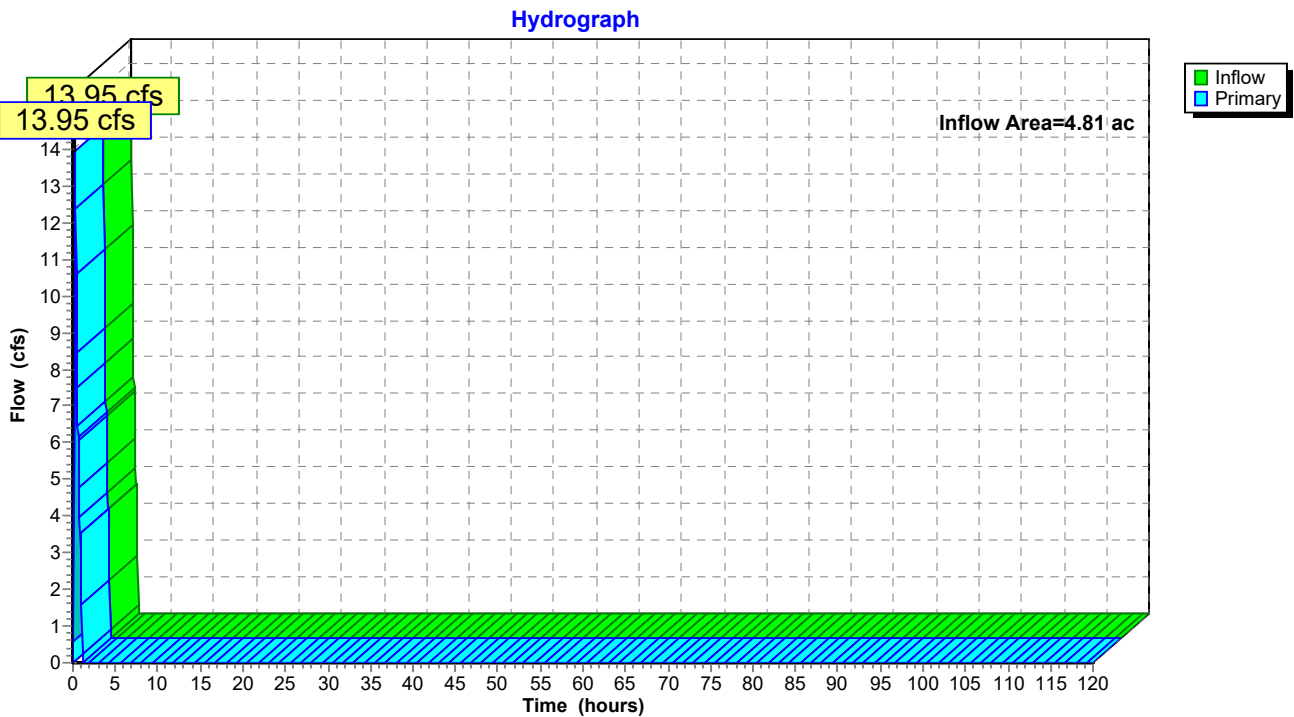


**Summary for Link DPRW-PB: Des Plaines River Watershed - Perimeter Berm**

Inflow Area = 4.81 ac, 1.70% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 13.95 cfs @ 0.30 hrs, Volume= 0.510 af  
 Primary = 13.95 cfs @ 0.30 hrs, Volume= 0.510 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

**Link DPRW-PB: Des Plaines River Watershed - Perimeter Berm**

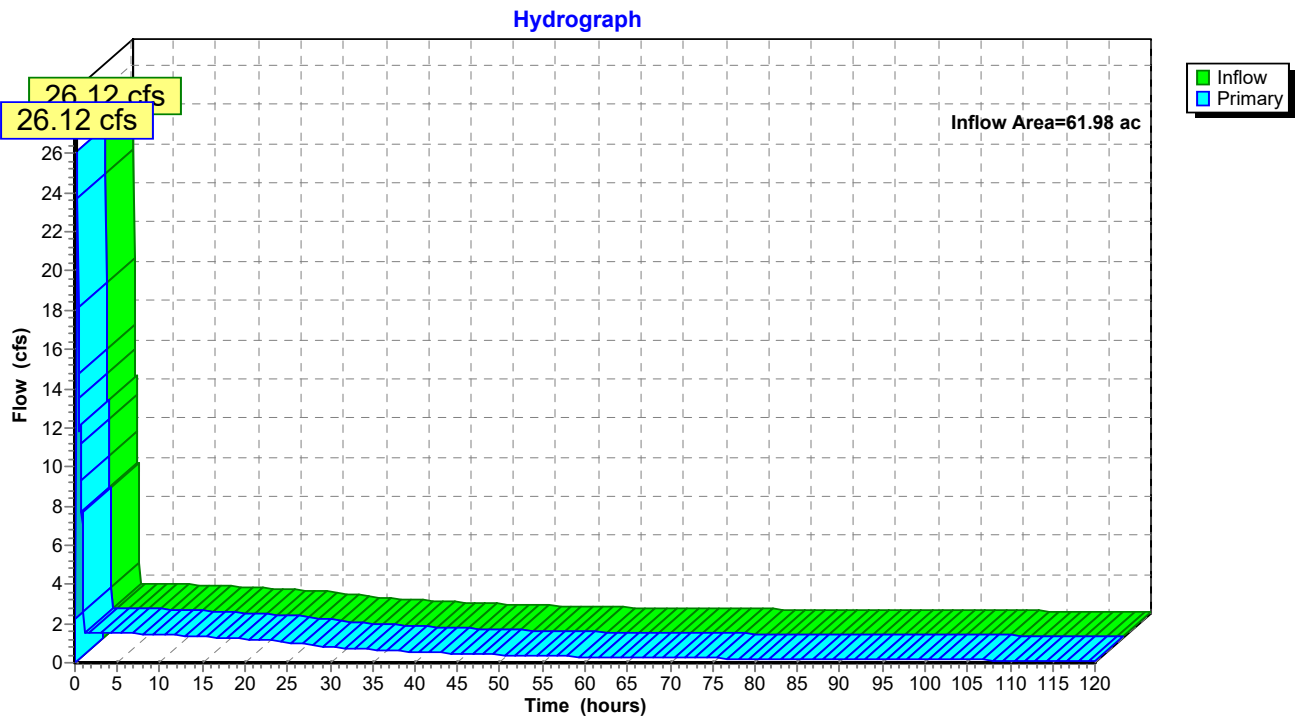


### Summary for Link LMW: Lake Michigan Watershed

Inflow Area = 61.98 ac, 13.64% Impervious, Inflow Depth > 1.20" for 25-Year, 1-Hour event  
Inflow = 26.12 cfs @ 0.28 hrs, Volume= 6.197 af  
Primary = 26.12 cfs @ 0.28 hrs, Volume= 6.197 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link LMW: Lake Michigan Watershed

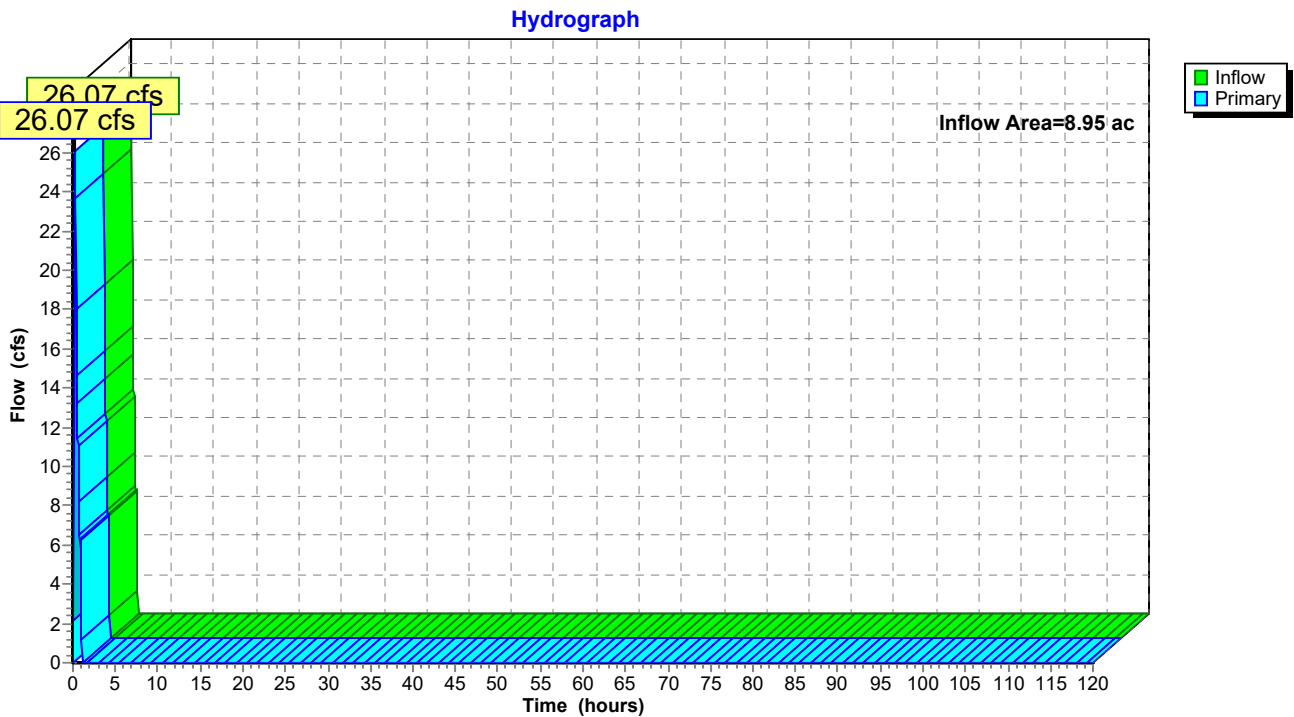


**Summary for Link LMW-PB: Lake Michigan Watershed - Perimeter Berm**

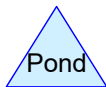
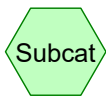
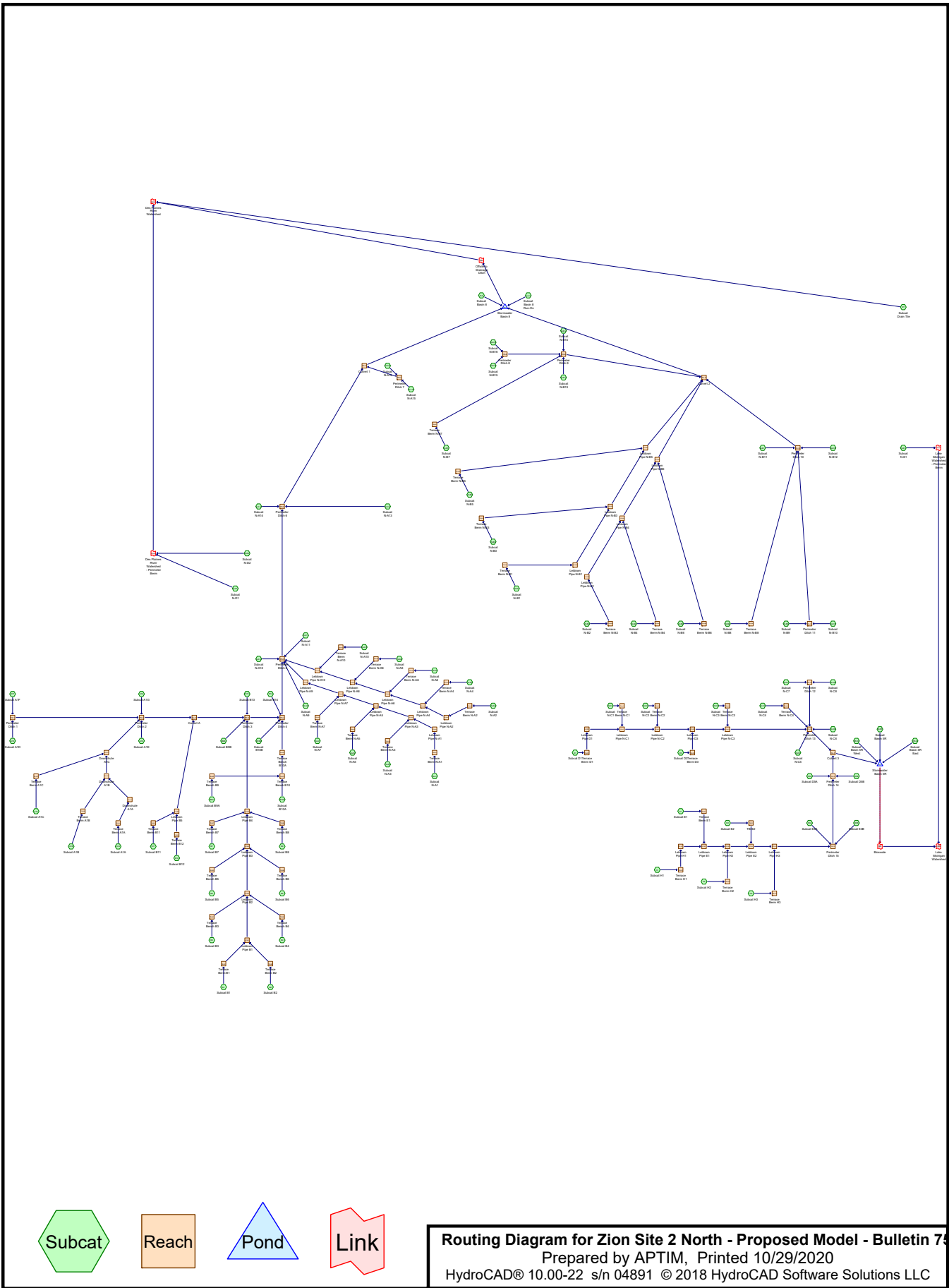
Inflow Area = 8.95 ac, 0.00% Impervious, Inflow Depth = 1.27" for 25-Year, 1-Hour event  
 Inflow = 26.07 cfs @ 0.28 hrs, Volume= 0.949 af  
 Primary = 26.07 cfs @ 0.28 hrs, Volume= 0.949 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

**Link LMW-PB: Lake Michigan Watershed - Perimeter Berm**



HydroCAD Output Files  
**Proposed Conditions – 25-year, 24-hour**



**Routing Diagram for Zion Site 2 North - Proposed Model - Bulletin 75**

Prepared by APTIM, Printed 10/29/2020

HydroCAD® 10.00-22 s/n 04891 © 2018 HydroCAD Software Solutions LLC

**Summary for Subcatchment 5R-E: Subcat Basin 5R East**

Runoff = 0.75 cfs @ 15.62 hrs, Volume= 0.527 af, Depth= 4.19"

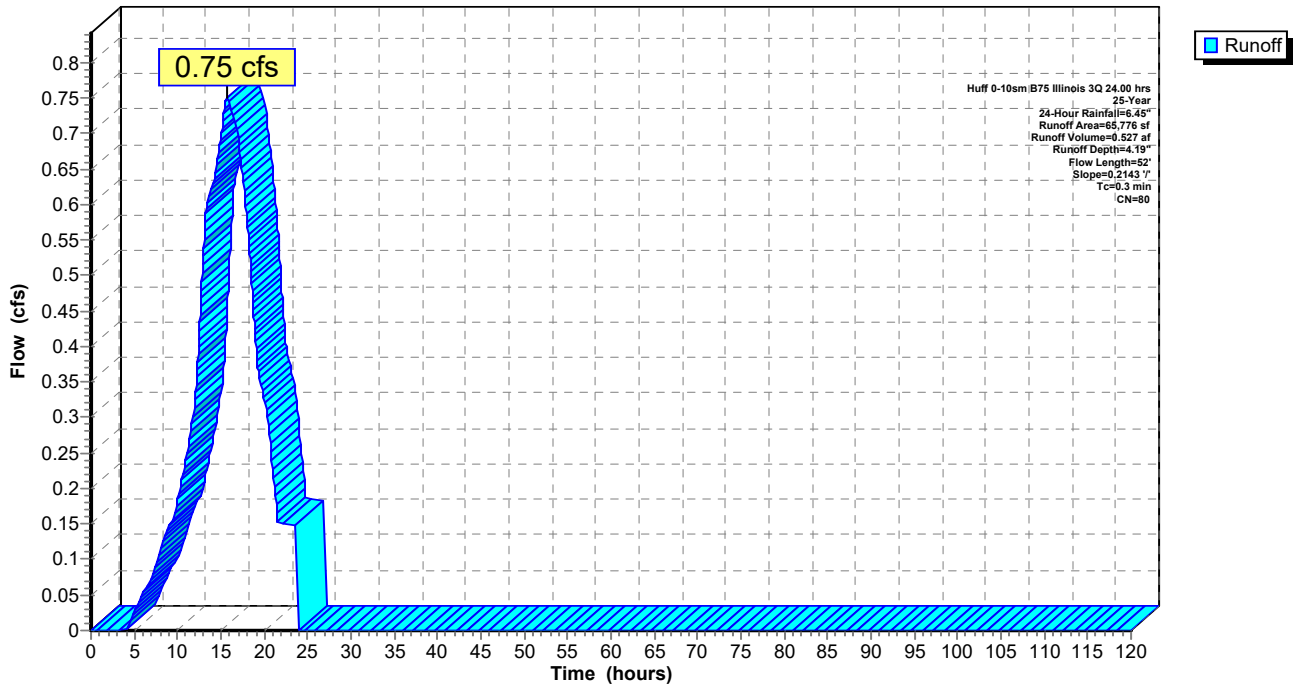
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (sf)	CN	Description
65,776	80	>75% Grass cover, Good, HSG D
65,776		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	52	0.2143	2.92		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment 5R-E: Subcat Basin 5R East**

Hydrograph



**Summary for Subcatchment 5R-W: Subcat Basin 5R West**

Runoff = 0.30 cfs @ 15.62 hrs, Volume= 0.209 af, Depth= 4.19"

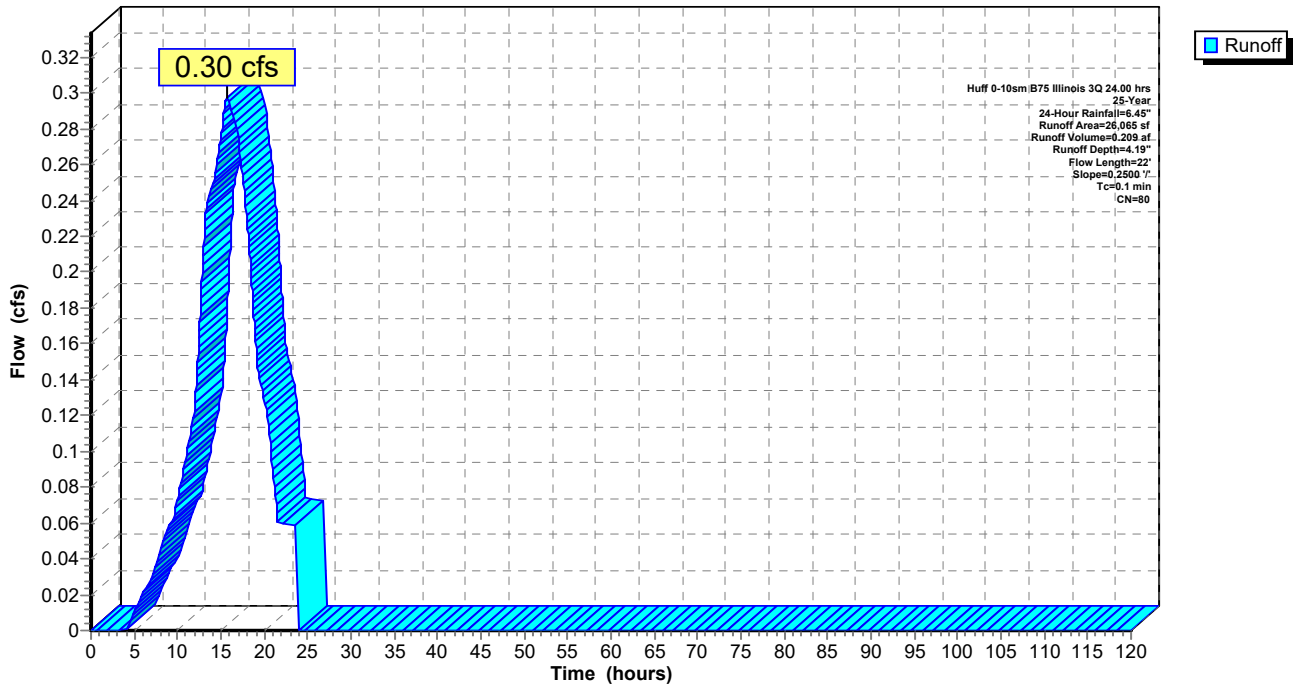
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (sf)	CN	Description
26,065	80	>75% Grass cover, Good, HSG D
26,065		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	22	0.2500	2.61		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment 5R-W: Subcat Basin 5R West**

Hydrograph





**Summary for Subcatchment A1A: Subcat A1A**

Runoff = 3.34 cfs @ 15.86 hrs, Volume= 2.352 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

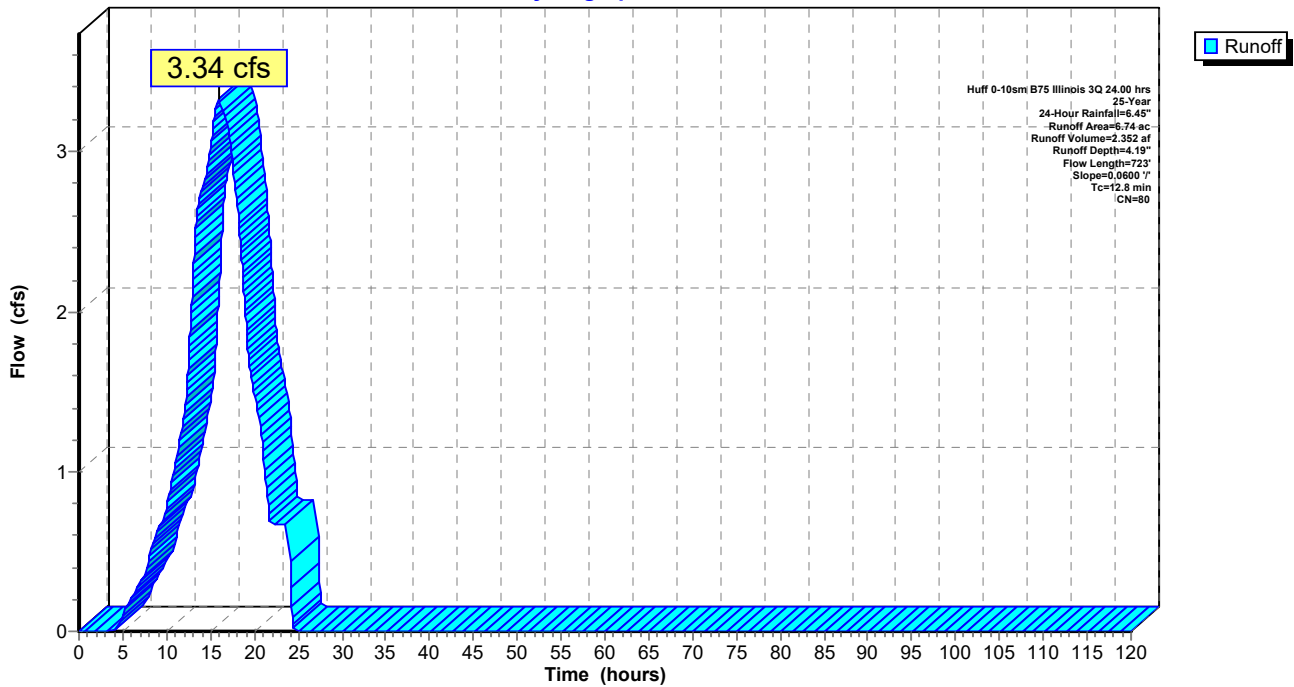
Area (ac)	CN	Description
6.74	80	>75% Grass cover, Good, HSG D
6.74		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	100	0.0600	0.25		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
6.1	623	0.0600	1.71		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
12.8	723	Total			

**Subcatchment A1A: Subcat A1A**

Hydrograph



**Summary for Subcatchment A1B: Subcat A1B**

Runoff = 2.60 cfs @ 15.69 hrs, Volume= 1.825 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

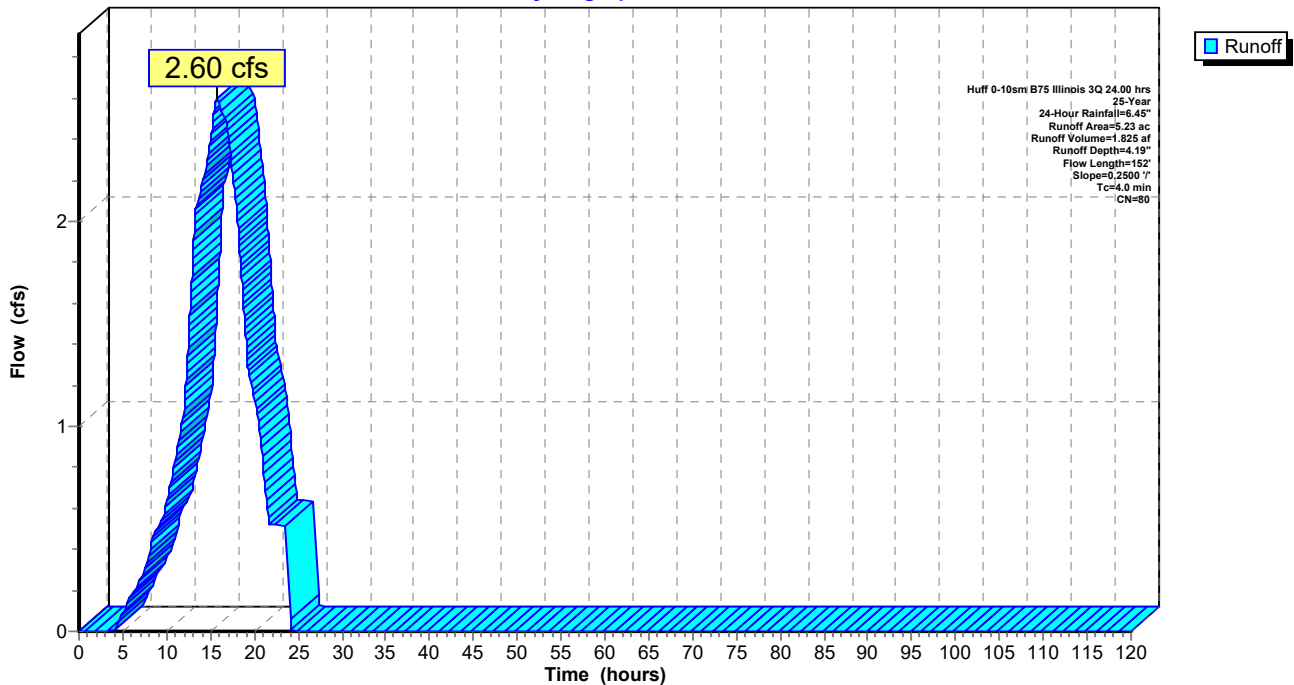
Area (ac)	CN	Description
5.23	80	>75% Grass cover, Good, HSG D
5.23		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	52	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	152	Total			

**Subcatchment A1B: Subcat A1B**

Hydrograph



**Summary for Subcatchment A1C: Subcat A1C**

Runoff = 4.52 cfs @ 16.05 hrs, Volume= 3.199 af, Depth= 4.19"

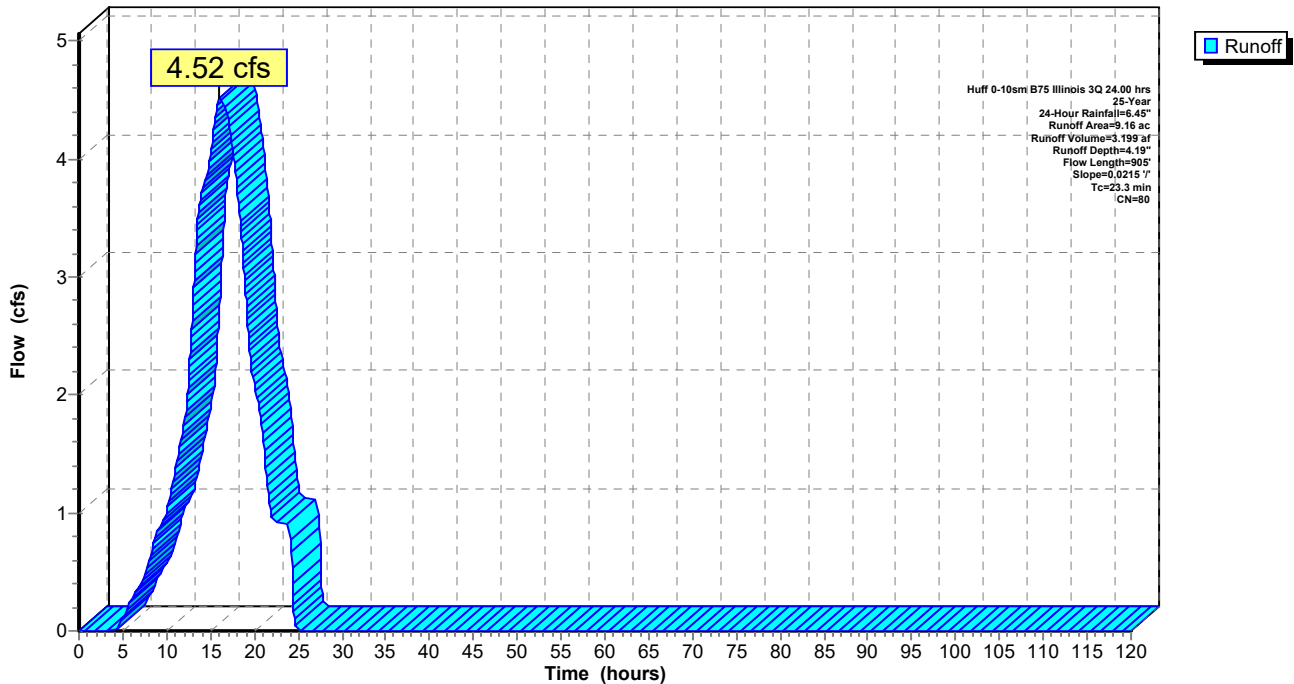
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (ac)	CN	Description
8.89	80	>75% Grass cover, Good, HSG D
0.27	93	Paved roads w/open ditches, 50% imp, HSG D
9.16	80	Weighted Average
9.03		98.52% Pervious Area
0.14		1.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.0215	0.16		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
13.1	805	0.0215	1.03		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
23.3	905	Total			

**Subcatchment A1C: Subcat A1C**

Hydrograph



**Summary for Subcatchment A1D: Subcat A1D**

Runoff = 3.51 cfs @ 15.73 hrs, Volume= 2.468 af, Depth= 4.19"

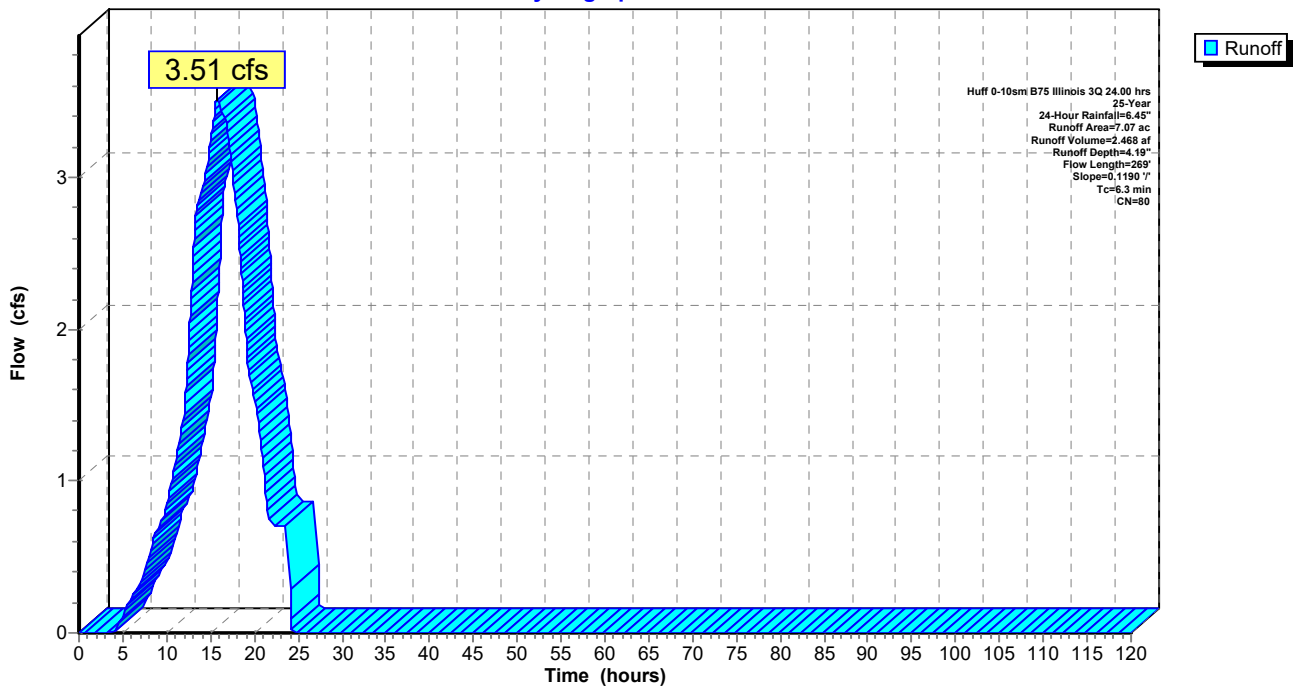
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (ac)	CN	Description
6.97	80	>75% Grass cover, Good, HSG D
0.10	93	Paved roads w/open ditches, 50% imp, HSG D
7.07	80	Weighted Average
7.02		99.31% Pervious Area
0.05		0.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	100	0.1190	0.32		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.2	169	0.1190	2.41		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.3	269	Total			

**Subcatchment A1D: Subcat A1D**

Hydrograph



**Summary for Subcatchment A1E: Subcat A1E**

Runoff = 0.54 cfs @ 15.71 hrs, Volume= 0.382 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

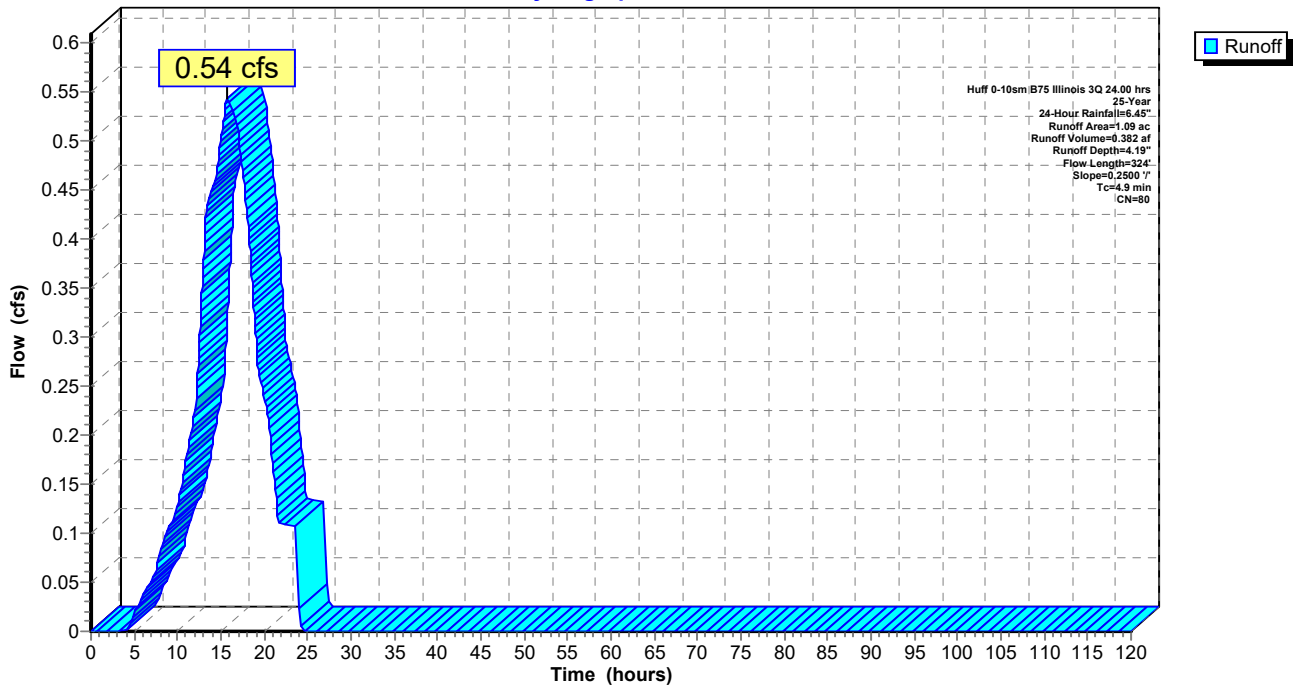
Area (ac)	CN	Description
1.09	80	>75% Grass cover, Good, HSG D
1.09		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.1	224	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.9	324	Total			

**Subcatchment A1E: Subcat A1E**

Hydrograph



**Summary for Subcatchment A1F: Subcat A1F**

Runoff = 0.55 cfs @ 15.62 hrs, Volume= 0.416 af, Depth= 5.06"

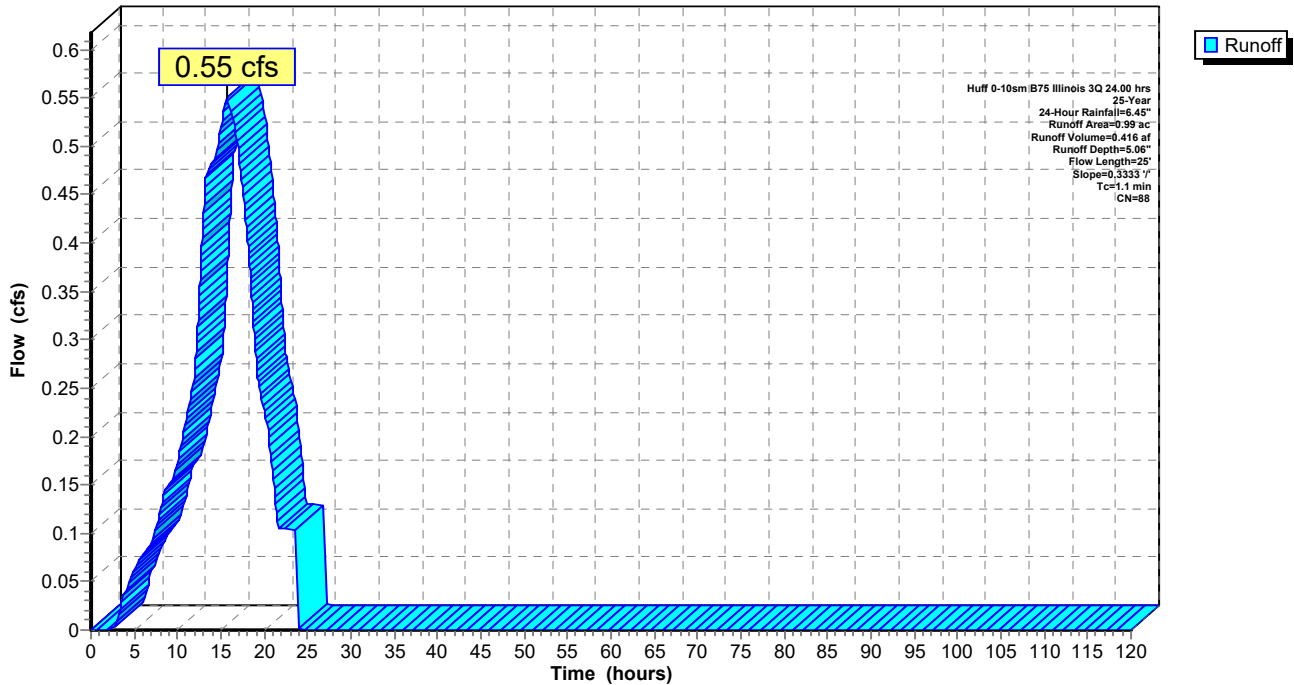
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (ac)	CN	Description
0.36	80	>75% Grass cover, Good, HSG D
0.62	93	Paved roads w/open ditches, 50% imp, HSG D
0.99	88	Weighted Average
0.67		68.34% Pervious Area
0.31		31.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	25	0.3333	0.37		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment A1F: Subcat A1F**

Hydrograph



**Summary for Subcatchment A1G: Subcat A1G**

Runoff = 0.10 cfs @ 15.62 hrs, Volume= 0.077 af, Depth= 4.84"

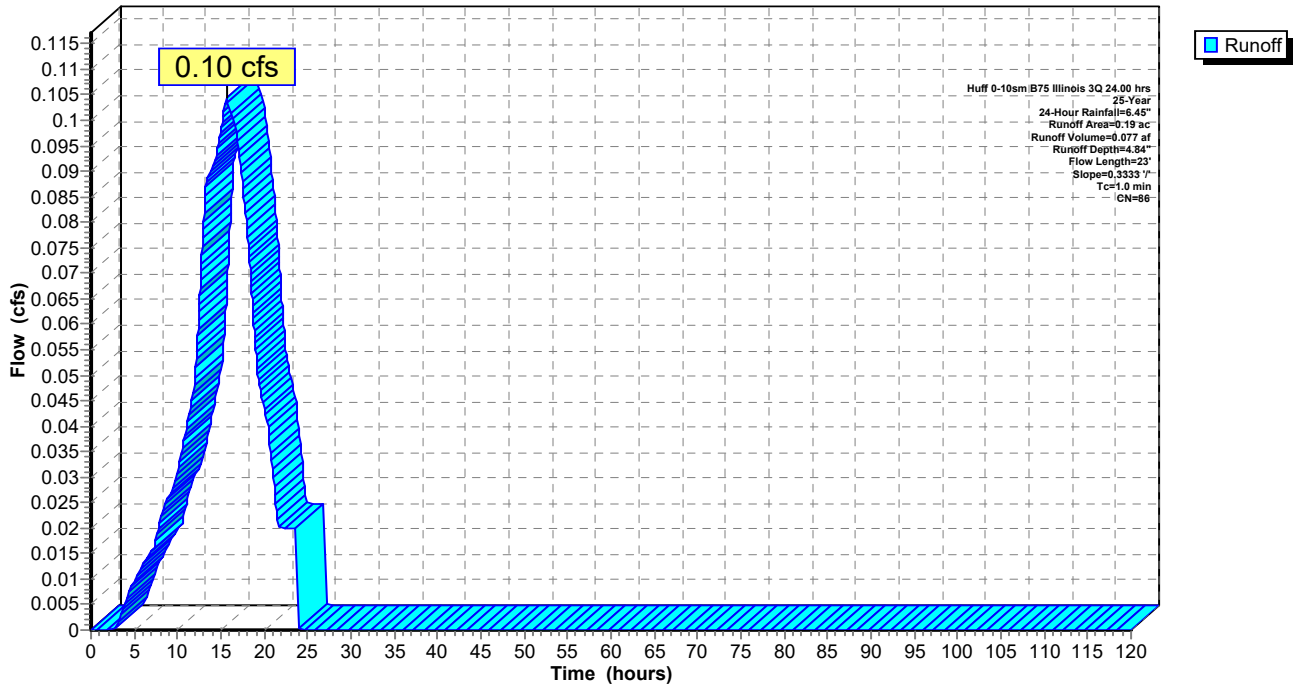
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (ac)	CN	Description
0.11	80	>75% Grass cover, Good, HSG D
0.09	93	Paved roads w/open ditches, 50% imp, HSG D
0.19	86	Weighted Average
0.15		77.34% Pervious Area
0.04		22.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	23	0.3333	0.37		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment A1G: Subcat A1G**

Hydrograph



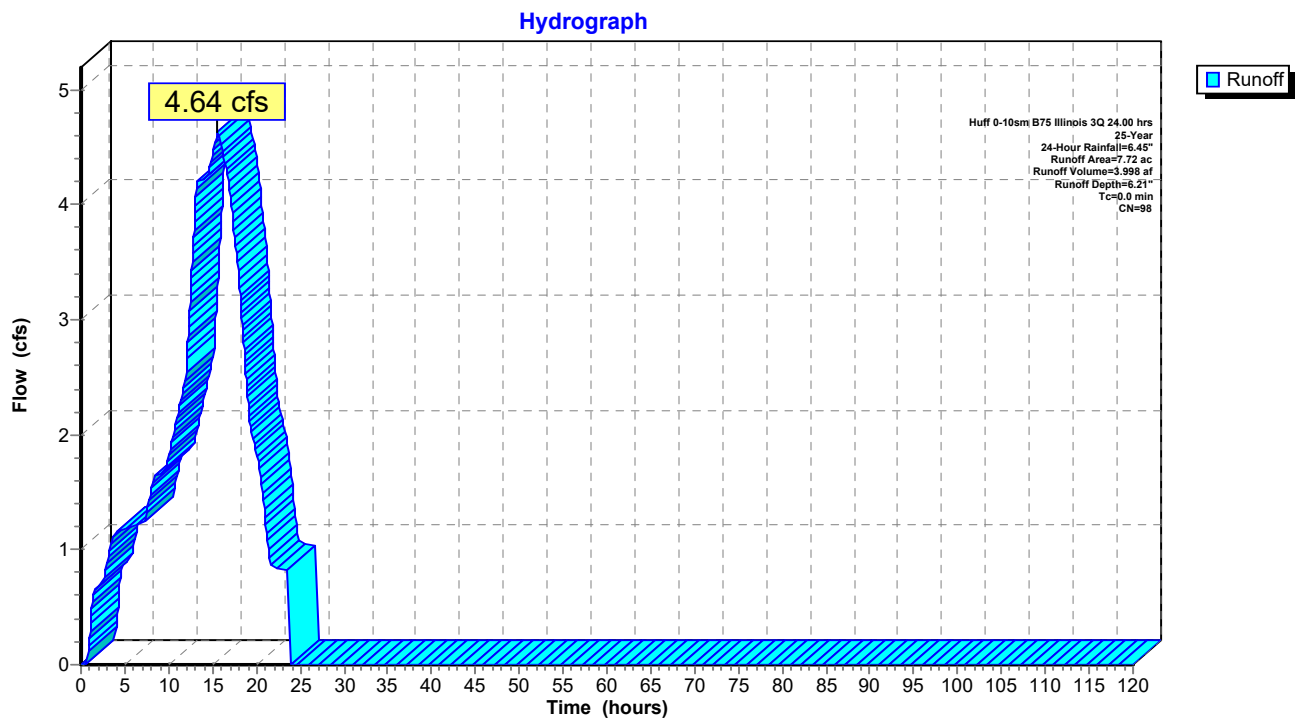
**Summary for Subcatchment B-5R: Subcat Basin 5R**

Runoff = 4.64 cfs @ 15.60 hrs, Volume= 3.998 af, Depth= 6.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (ac)	CN	Description
7.72	98	Water Surface, HSG D
7.72		100.00% Impervious Area

**Subcatchment B-5R: Subcat Basin 5R**





**Summary for Subcatchment B-8: Subcat Basin 8**

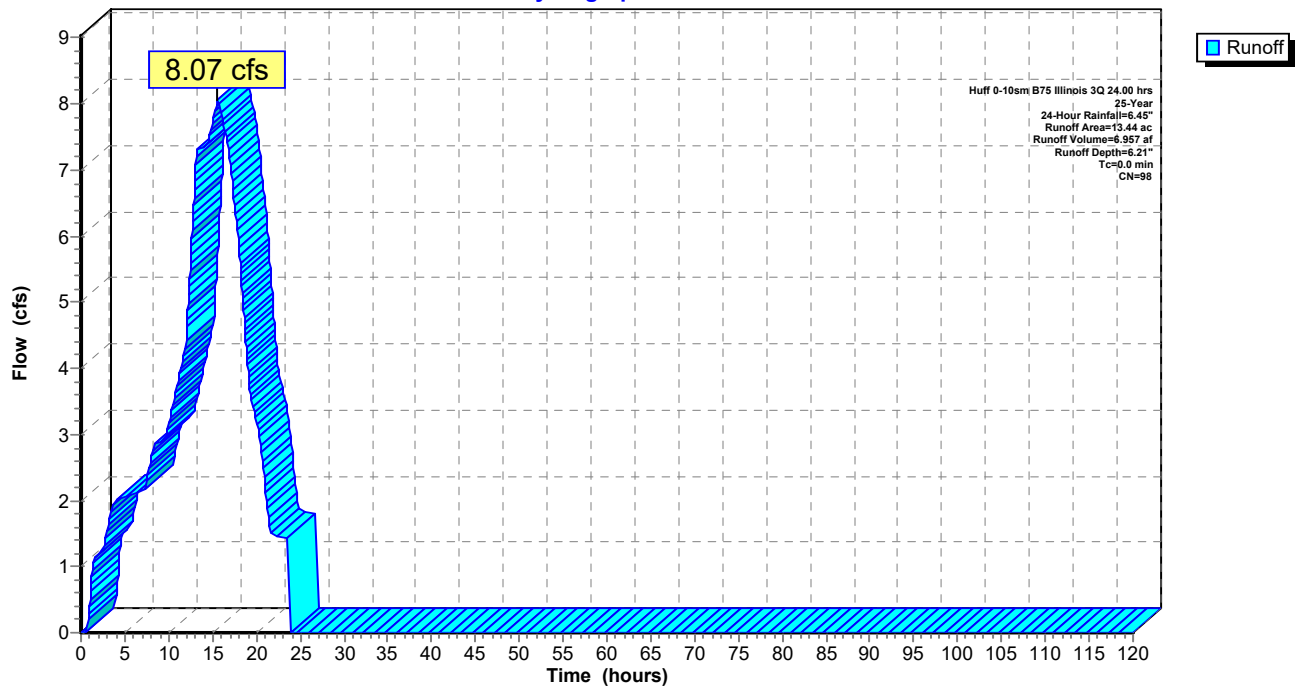
Runoff = 8.07 cfs @ 15.60 hrs, Volume= 6.957 af, Depth= 6.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (ac)	CN	Description
13.44	98	Water Surface, HSG D
13.44		100.00% Impervious Area

**Subcatchment B-8: Subcat Basin 8**

Hydrograph



**Summary for Subcatchment B-8-RO: Subcat Basin 8 Run-On**

Runoff = 2.11 cfs @ 15.68 hrs, Volume= 1.504 af, Depth= 4.40"

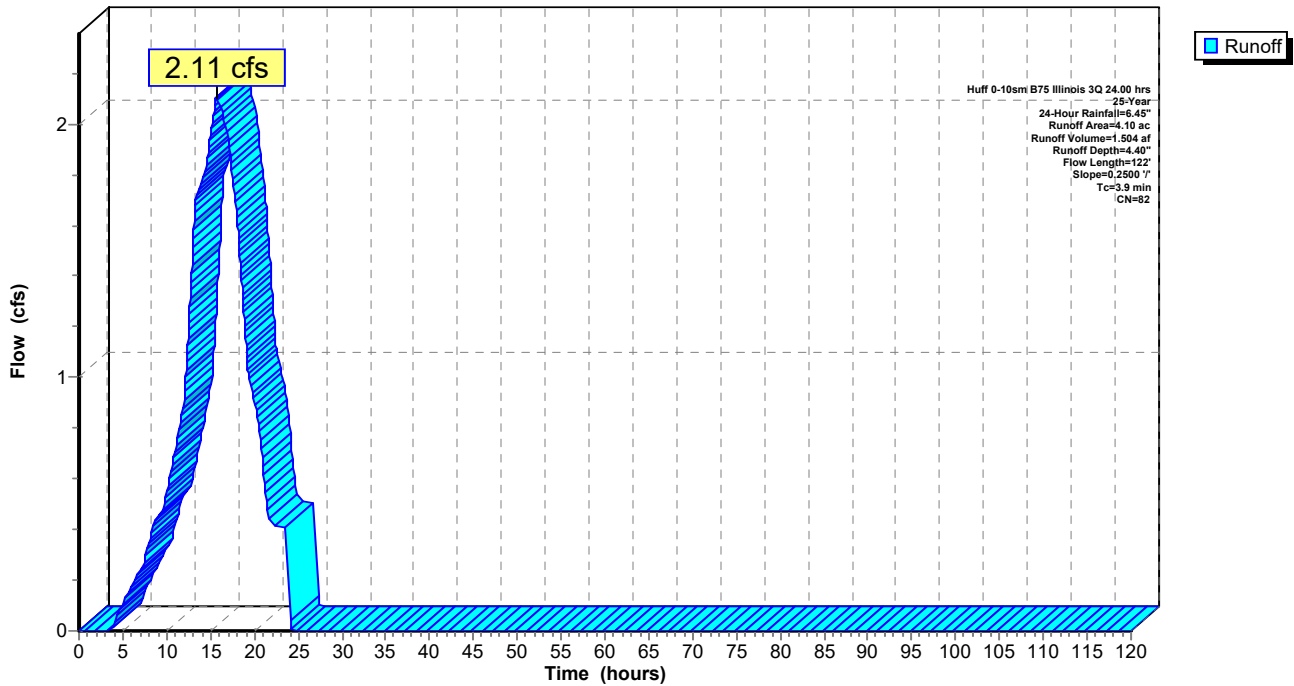
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (ac)	CN	Description
3.50	80	>75% Grass cover, Good, HSG D
0.60	93	Paved roads w/open ditches, 50% imp, HSG D
4.10	82	Weighted Average
3.80		92.68% Pervious Area
0.30		7.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	22	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	122	Total			

**Subcatchment B-8-RO: Subcat Basin 8 Run-On**

Hydrograph



**Summary for Subcatchment B1: Subcat B1**

Runoff = 1.01 cfs @ 15.73 hrs, Volume= 0.712 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

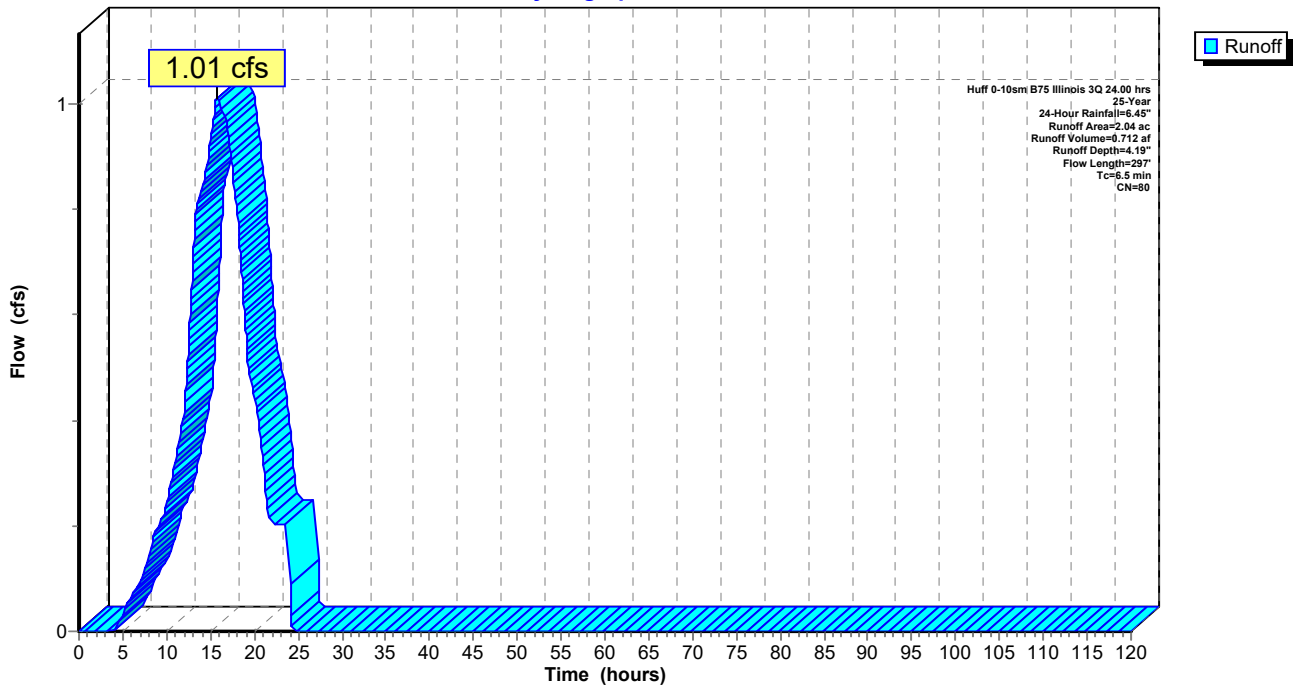
Area (ac)	CN	Description
2.04	80	>75% Grass cover, Good, HSG D
2.04		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.0	197	0.2132	3.23		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.5	297	Total			

**Subcatchment B1: Subcat B1**

Hydrograph



**Summary for Subcatchment B10A: Subcat B10A**

Runoff = 0.40 cfs @ 15.67 hrs, Volume= 0.283 af, Depth= 4.19"

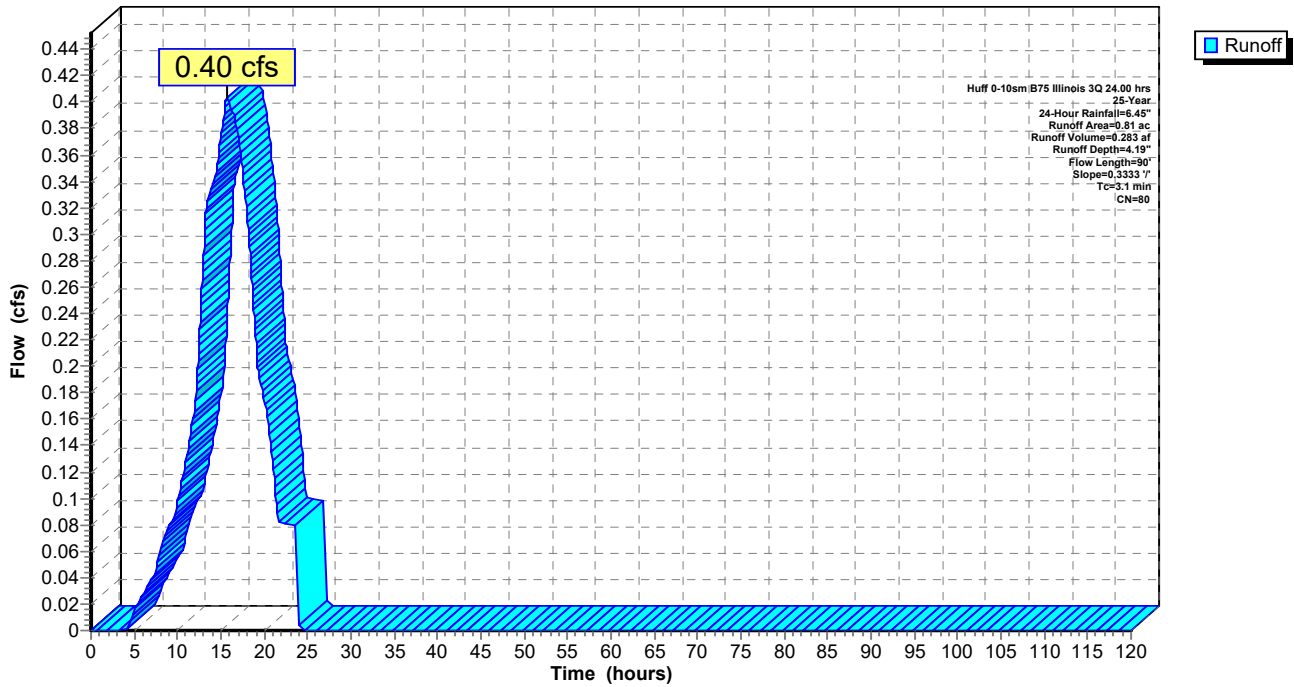
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (ac)	CN	Description
0.81	80	>75% Grass cover, Good, HSG D
0.81		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	90	0.3333	0.48		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B10A: Subcat B10A**

Hydrograph



**Summary for Subcatchment B10B: Subcat B10B**

Runoff = 0.26 cfs @ 15.66 hrs, Volume= 0.185 af, Depth= 4.19"

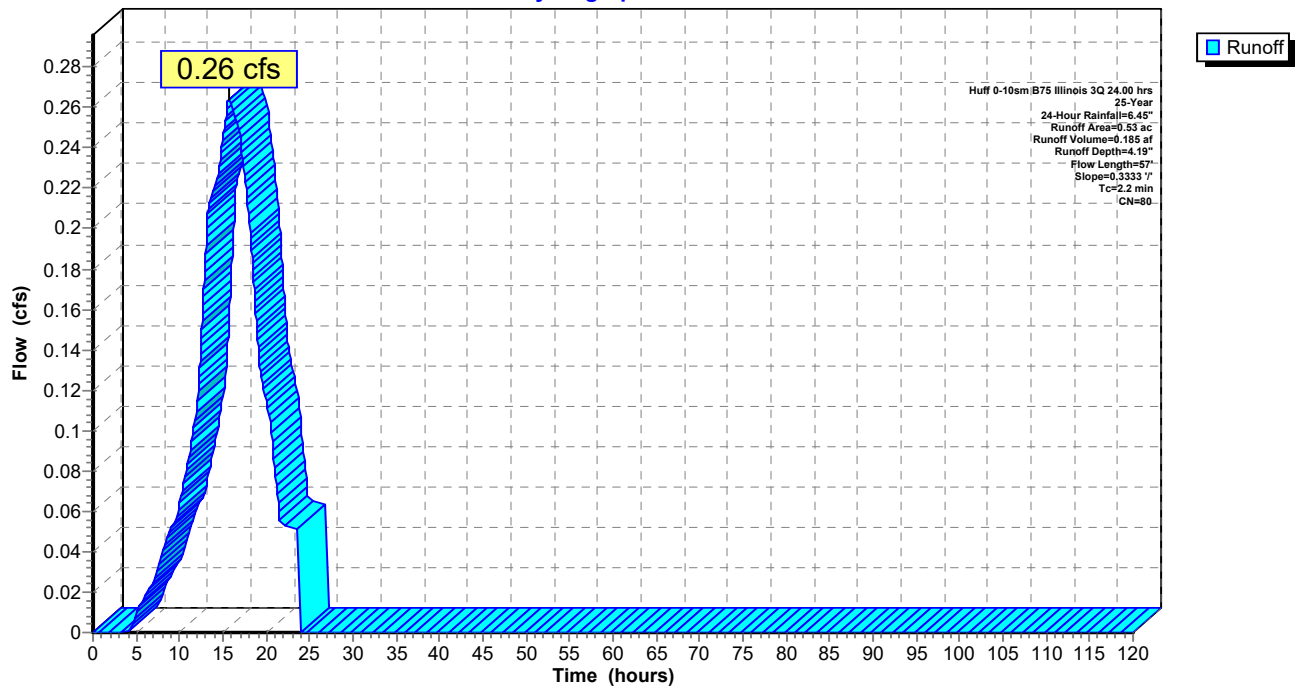
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (ac)	CN	Description
0.53	80	>75% Grass cover, Good, HSG D
0.53		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	57	0.3333	0.44		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B10B: Subcat B10B**

Hydrograph



**Summary for Subcatchment B11: Subcat B11**

Runoff = 1.12 cfs @ 15.85 hrs, Volume= 0.793 af, Depth= 4.19"

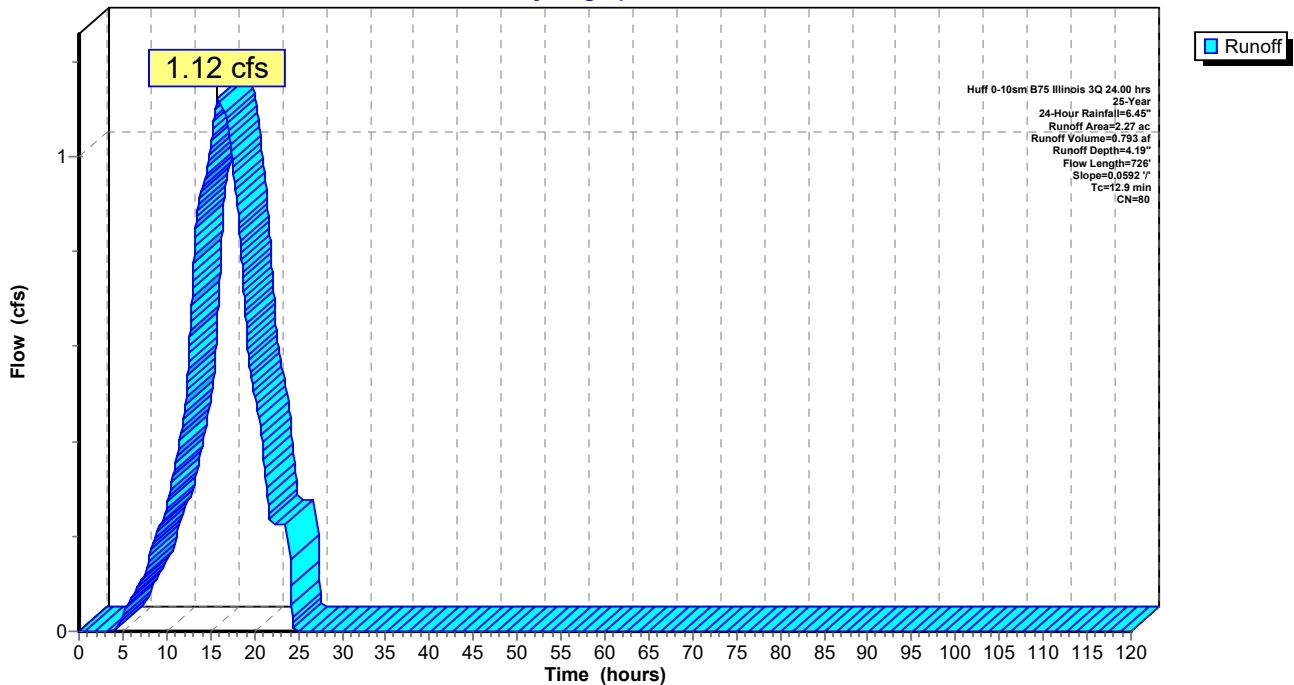
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (ac)	CN	Description
2.27	80	>75% Grass cover, Good, HSG D
2.27		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	100	0.0592	0.25		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
6.1	626	0.0592	1.70		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
12.9	726	Total			

**Subcatchment B11: Subcat B11**

Hydrograph



**Summary for Subcatchment B12: Subcat B12**

Runoff = 0.60 cfs @ 15.69 hrs, Volume= 0.419 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

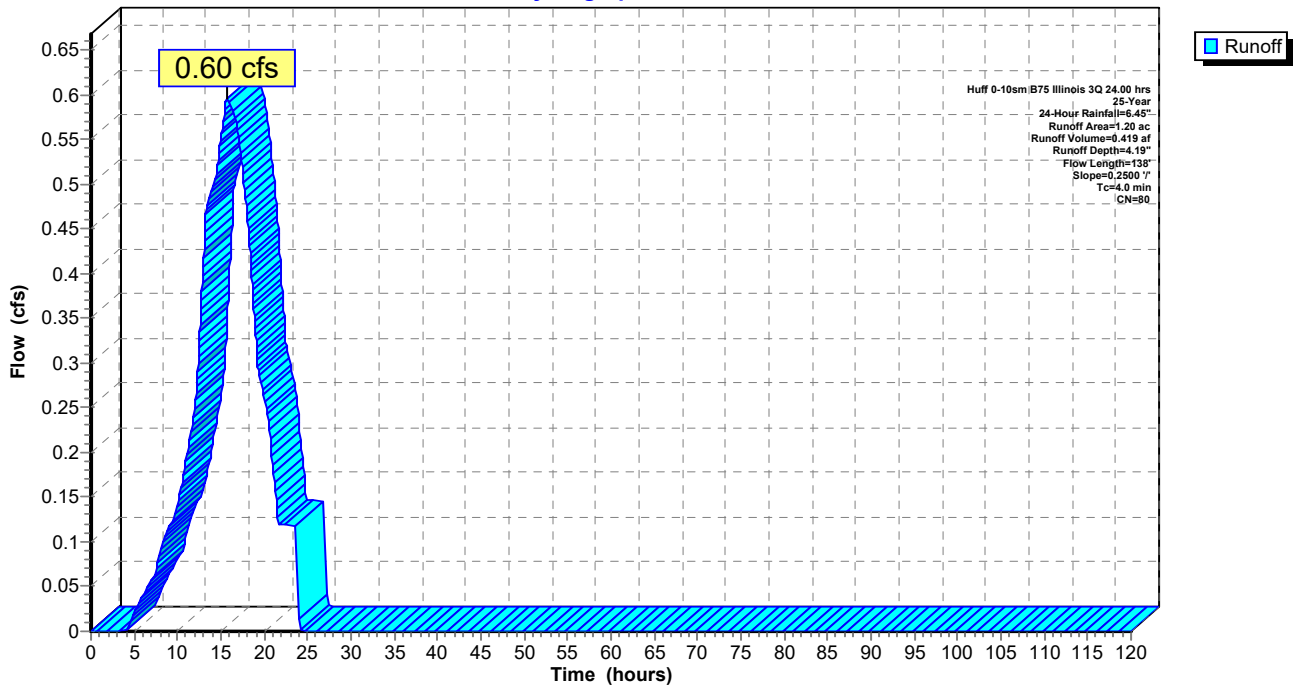
Area (ac)	CN	Description
1.20	80	>75% Grass cover, Good, HSG D
1.20		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	38	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	138	Total			

**Subcatchment B12: Subcat B12**

Hydrograph



**Summary for Subcatchment B13: Subcat B13**

Runoff = 0.18 cfs @ 15.63 hrs, Volume= 0.130 af, Depth= 4.84"

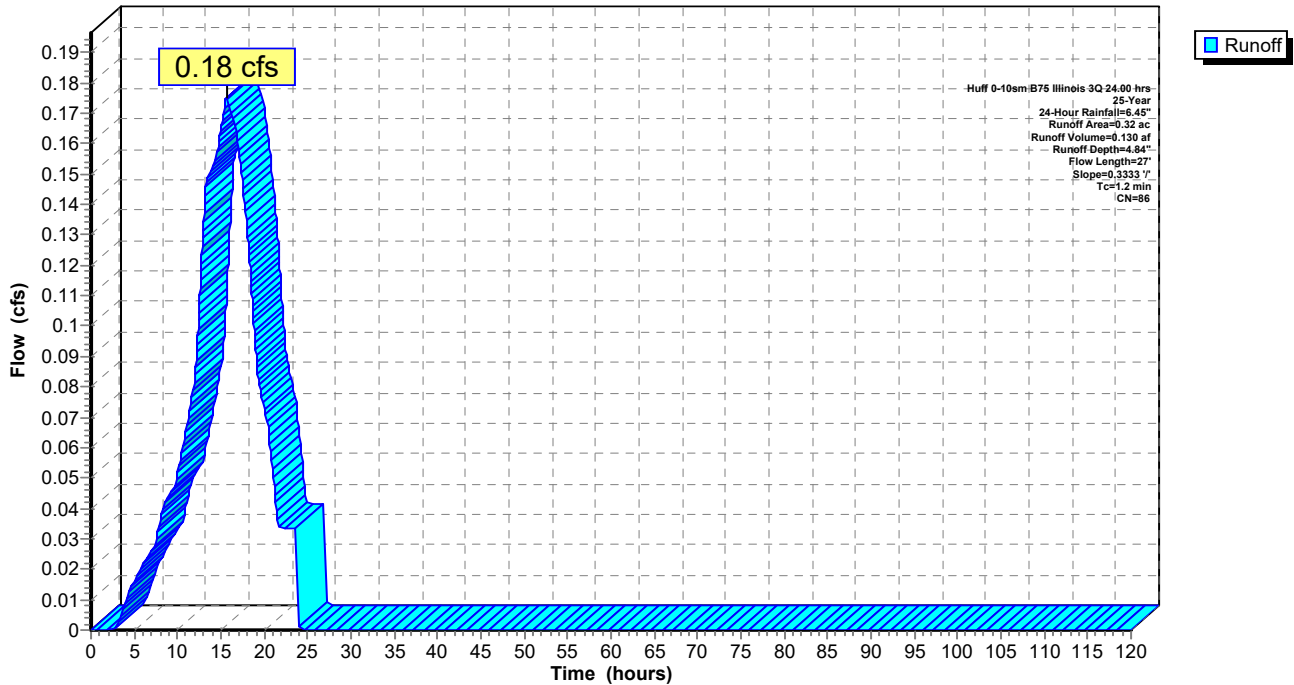
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (ac)	CN	Description
0.17	80	>75% Grass cover, Good, HSG D
* 0.15	93	Paved roads w/open ditches, 50% imp, HSG D
0.32	86	Weighted Average
0.24		75.93% Pervious Area
0.08		24.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	27	0.3333	0.38		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B13: Subcat B13**

Hydrograph





**Summary for Subcatchment B14: Subcat B14**

Runoff = 0.15 cfs @ 15.66 hrs, Volume= 0.108 af, Depth= 4.84"

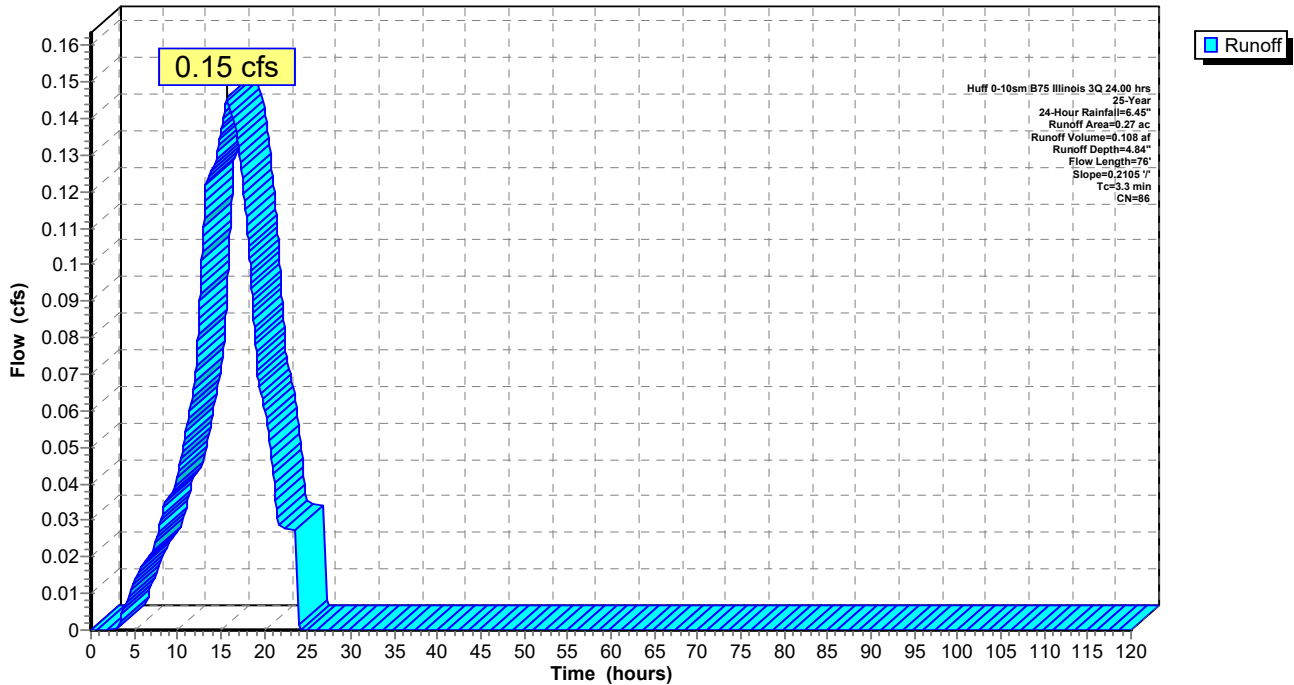
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (ac)	CN	Description
0.14	80	>75% Grass cover, Good, HSG D
0.13	93	Paved roads w/open ditches, 50% imp, HSG D
0.27	86	Weighted Average
0.21		76.49% Pervious Area
0.06		23.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	76	0.2105	0.39		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B14: Subcat B14**

Hydrograph



**Summary for Subcatchment B2: Subcat B2**

Runoff = 1.36 cfs @ 15.73 hrs, Volume= 0.957 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

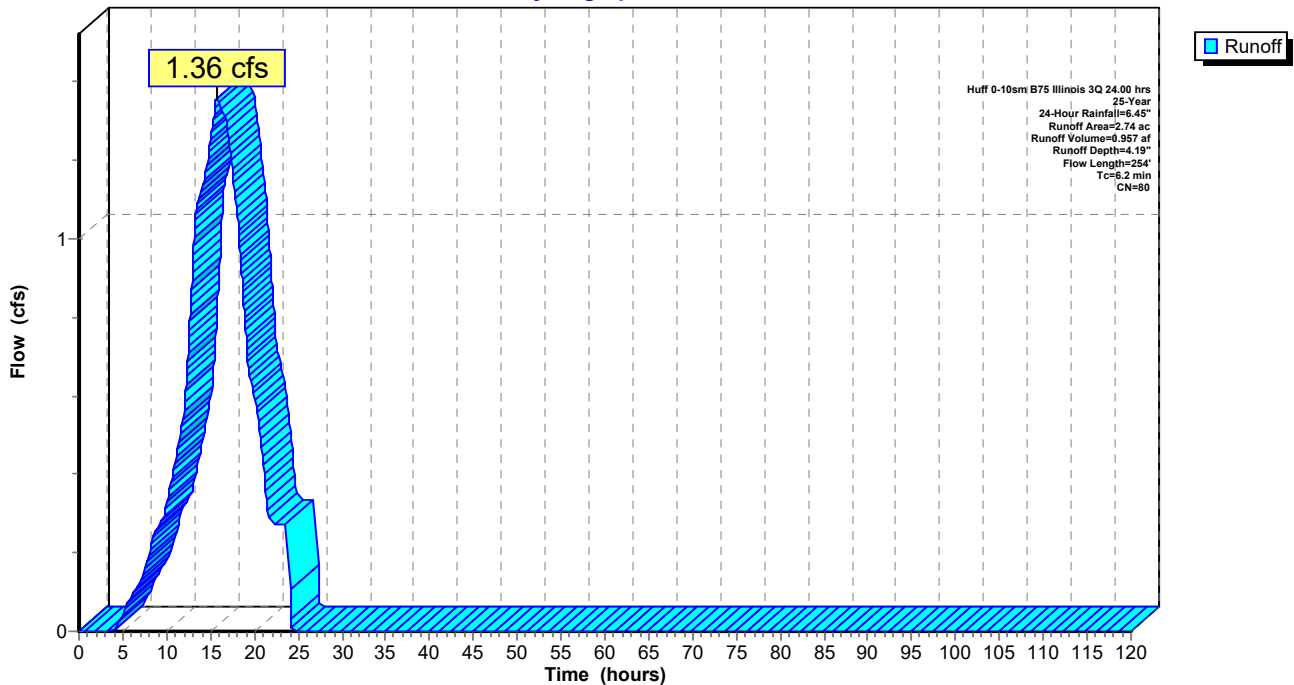
Area (ac)	CN	Description
2.74	80	>75% Grass cover, Good, HSG D
2.74		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.7	154	0.2403	3.43		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.2	254	Total			

**Subcatchment B2: Subcat B2**

Hydrograph



**Summary for Subcatchment B3: Subcat B3**

Runoff = 1.10 cfs @ 15.69 hrs, Volume= 0.772 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

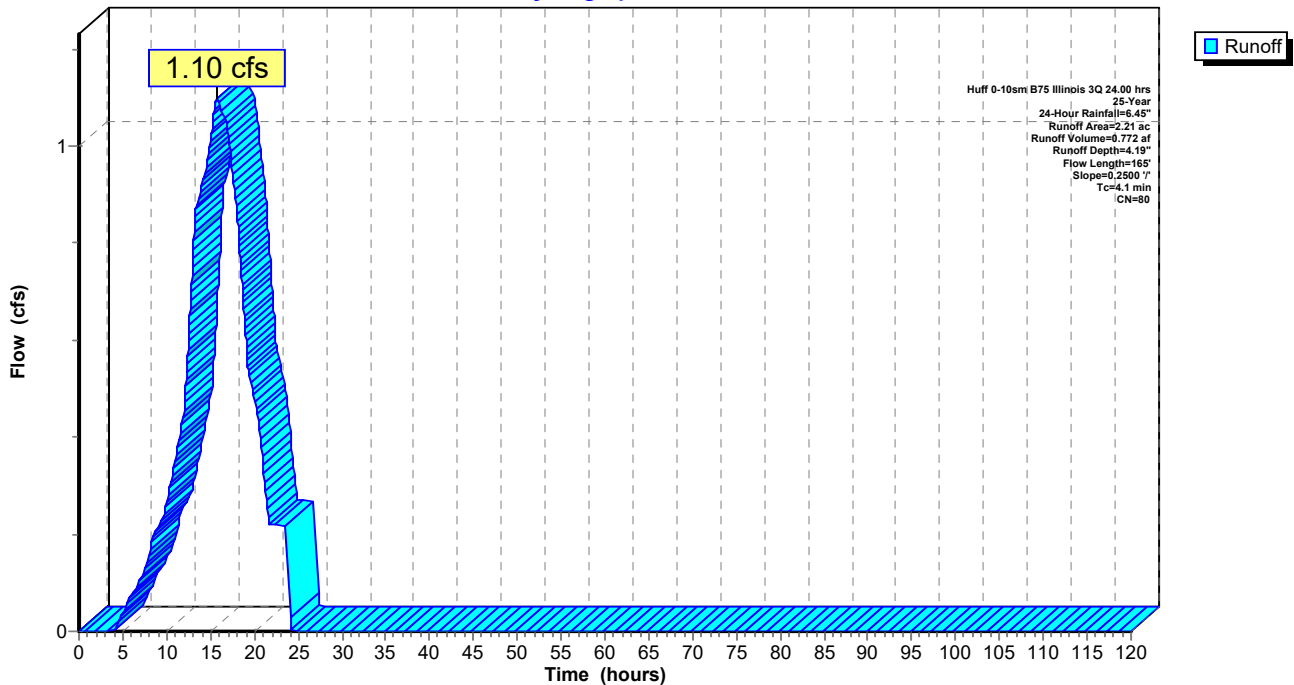
Area (ac)	CN	Description
2.21	80	>75% Grass cover, Good, HSG D
2.21		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.3	65	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	165	Total			

**Subcatchment B3: Subcat B3**

Hydrograph



### Summary for Subcatchment B4: Subcat B4

Runoff = 0.93 cfs @ 15.69 hrs, Volume= 0.653 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

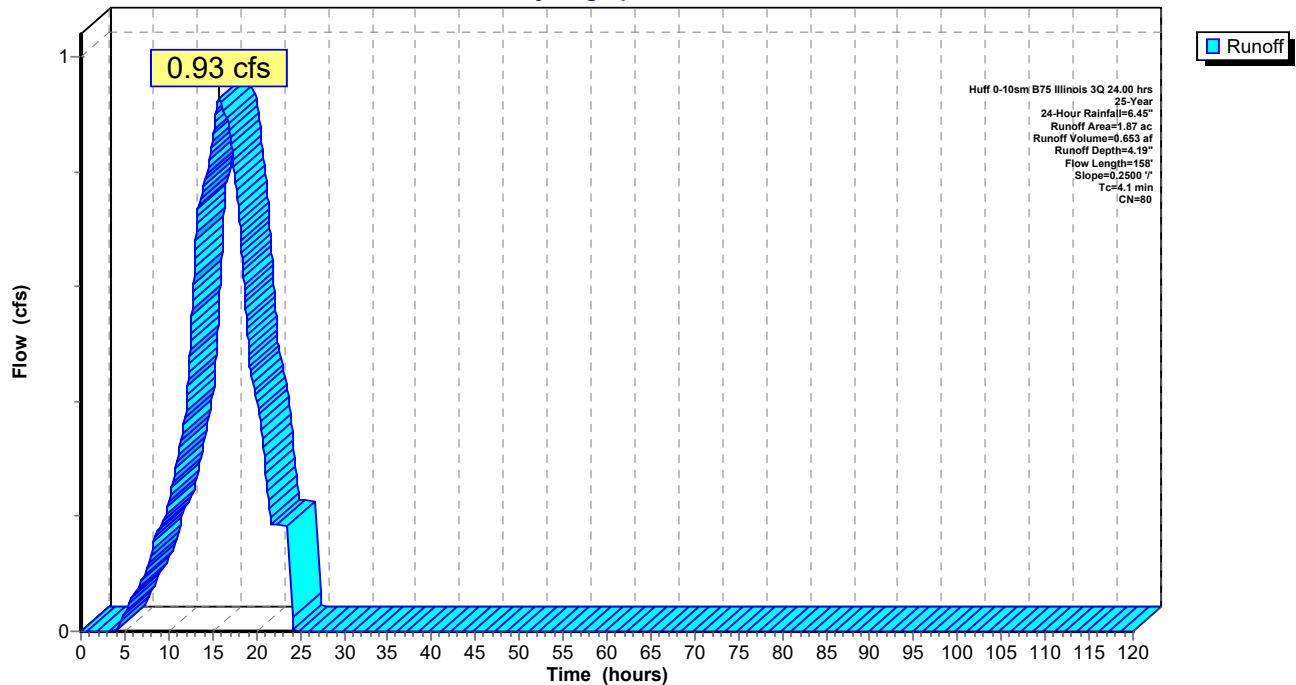
Area (ac)	CN	Description
1.87	80	>75% Grass cover, Good, HSG D
1.87		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.3	58	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	158	Total			

### Subcatchment B4: Subcat B4

Hydrograph



**Summary for Subcatchment B5: Subcat B5**

Runoff = 0.96 cfs @ 15.67 hrs, Volume= 0.674 af, Depth= 4.19"

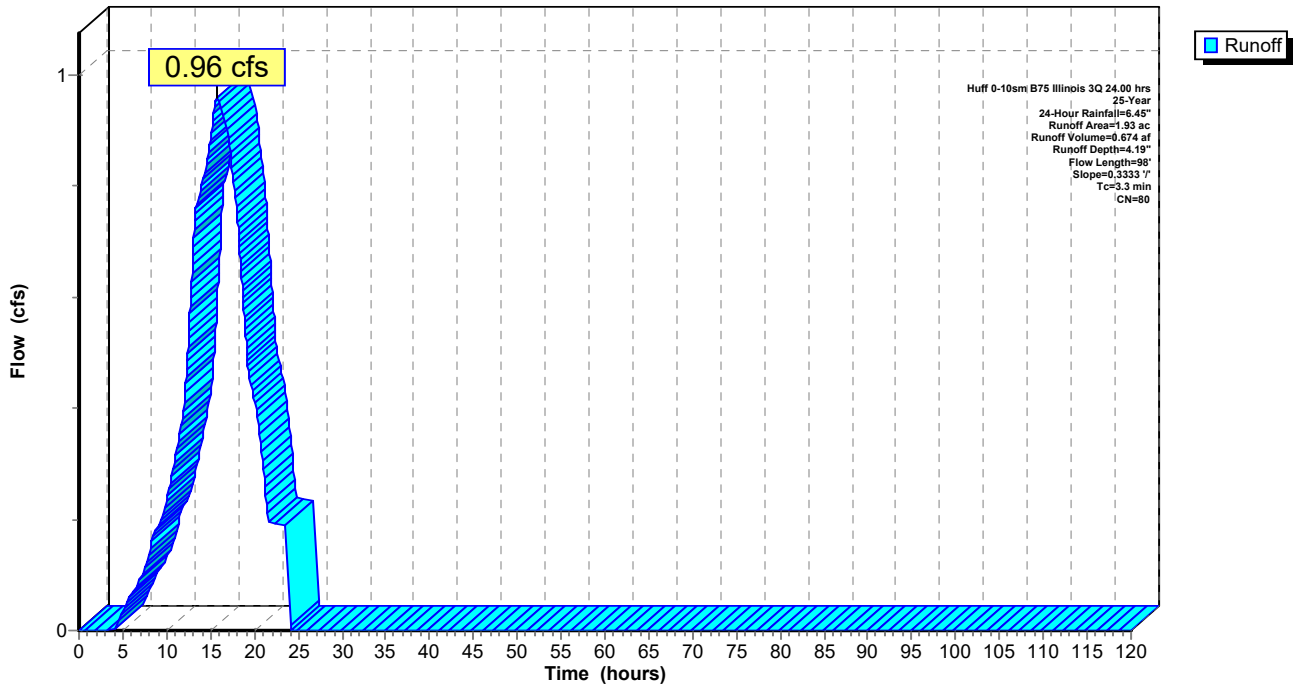
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (ac)	CN	Description
1.93	80	>75% Grass cover, Good, HSG D
1.93		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	98	0.3333	0.49		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B5: Subcat B5**

Hydrograph



**Summary for Subcatchment B6: Subcat B6**

Runoff = 0.59 cfs @ 15.69 hrs, Volume= 0.412 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

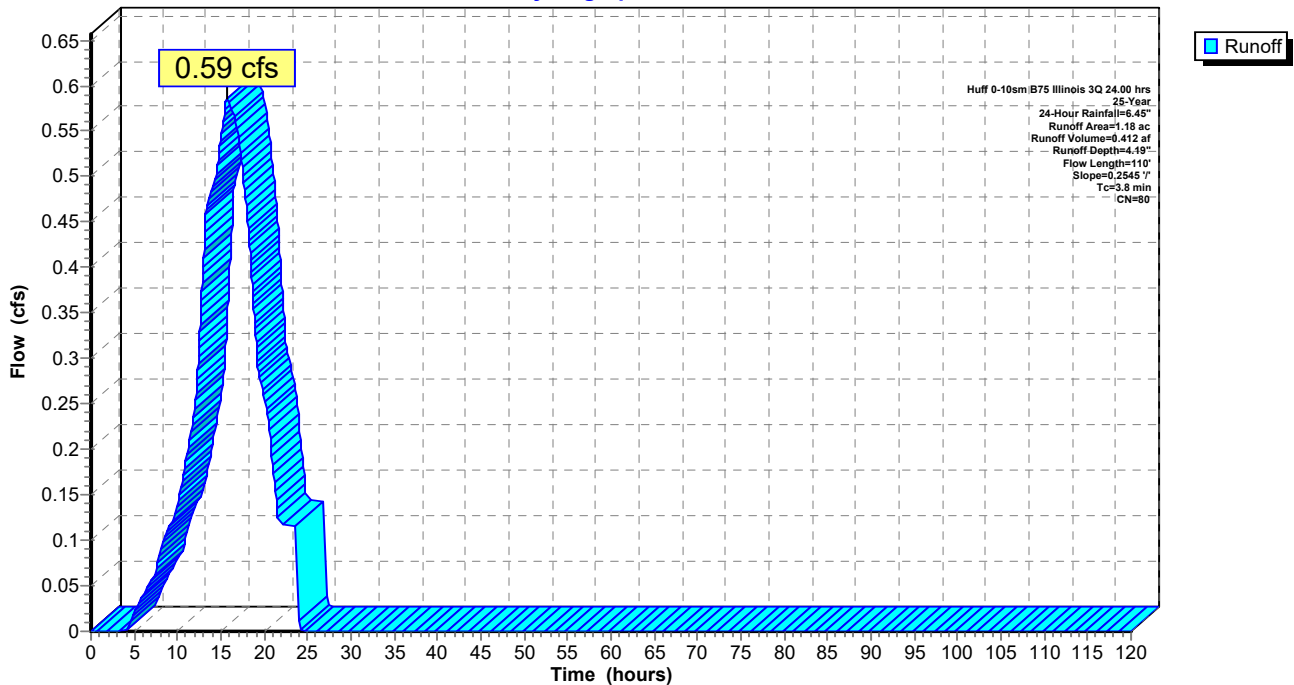
Area (ac)	CN	Description
1.18	80	>75% Grass cover, Good, HSG D
1.18		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2545	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.0	10	0.2545	3.53		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.8	110	Total			

**Subcatchment B6: Subcat B6**

Hydrograph



**Summary for Subcatchment B7: Subcat B7**

Runoff = 1.09 cfs @ 15.67 hrs, Volume= 0.765 af, Depth= 4.19"

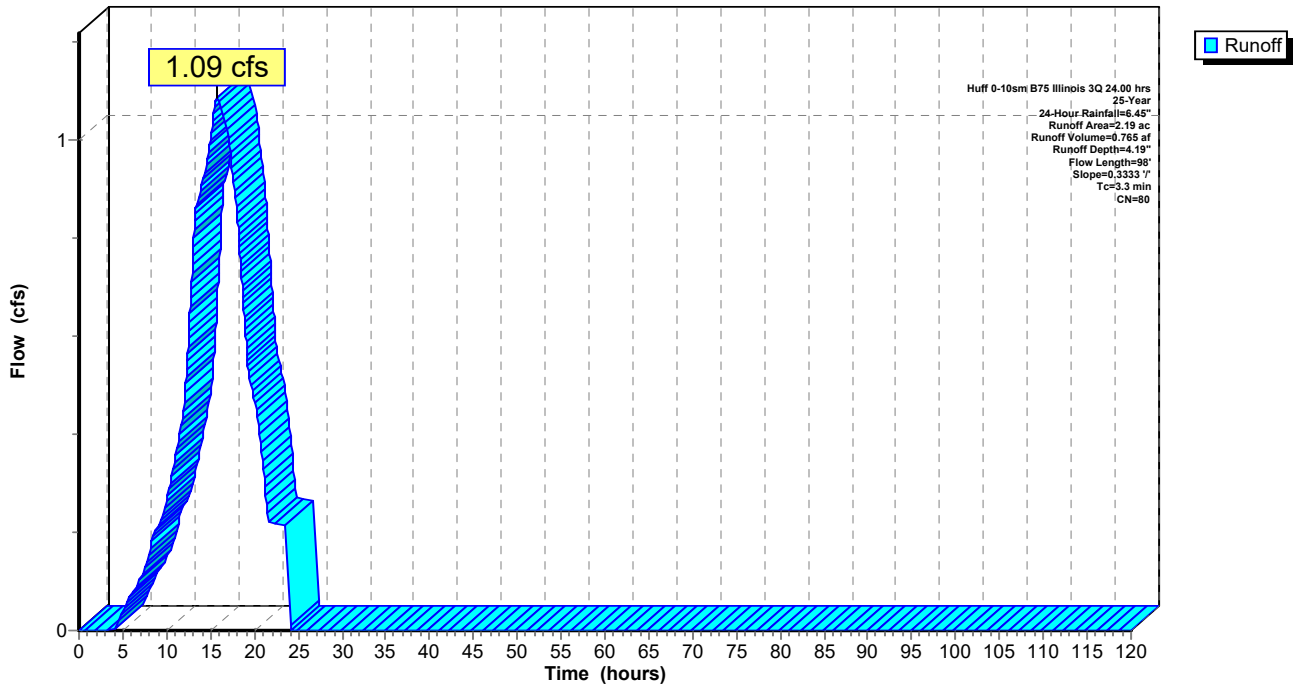
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (ac)	CN	Description
2.19	80	>75% Grass cover, Good, HSG D
2.19		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	98	0.3333	0.49		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B7: Subcat B7**

Hydrograph



**Summary for Subcatchment B8: Subcat B8**

Runoff = 0.58 cfs @ 15.68 hrs, Volume= 0.408 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

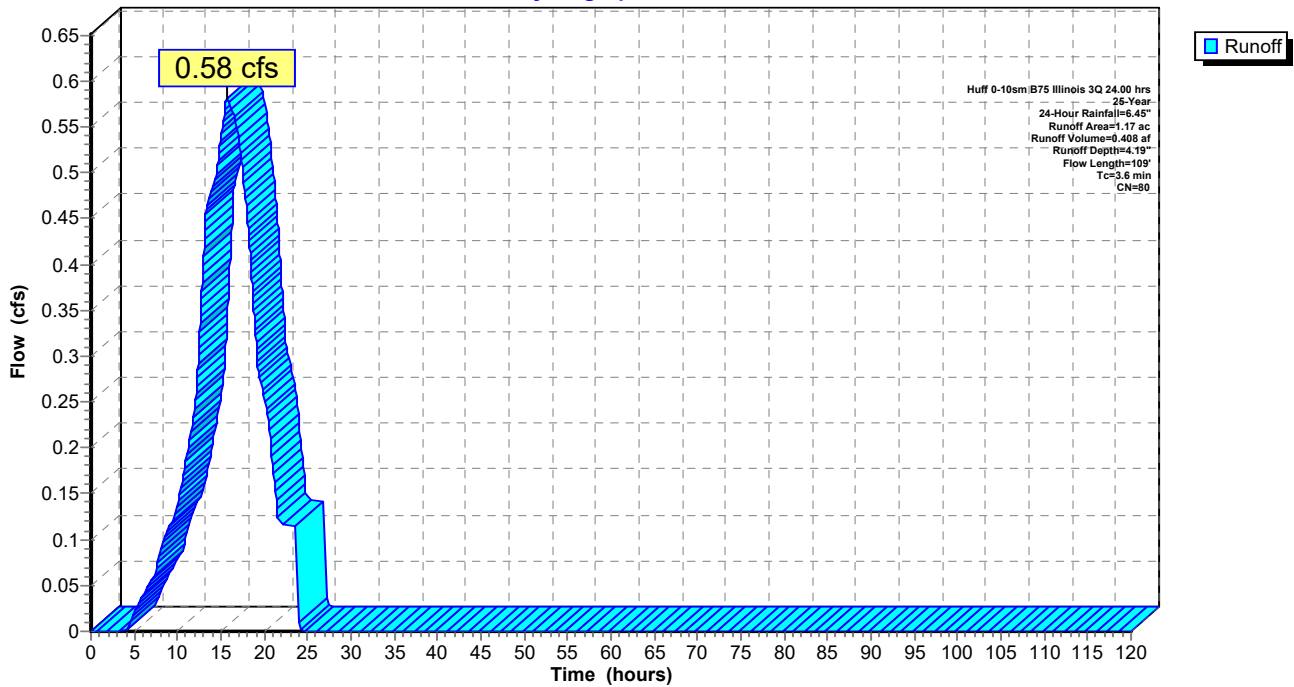
Area (ac)	CN	Description
1.17	80	>75% Grass cover, Good, HSG D
1.17		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	100	0.2873	0.46		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.0	9	0.2574	3.55		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.6	109	Total			

**Subcatchment B8: Subcat B8**

Hydrograph





**Summary for Subcatchment B9A: Subcat B9A**

Runoff = 0.71 cfs @ 15.66 hrs, Volume= 0.501 af, Depth= 4.19"

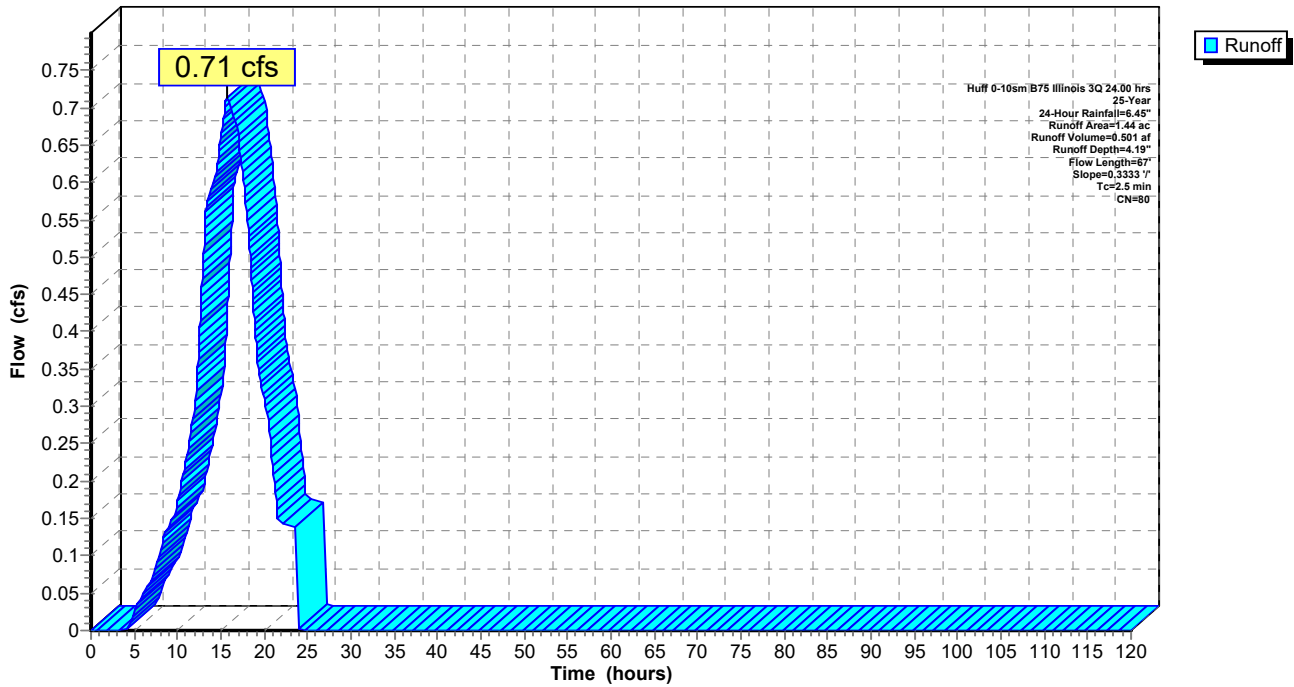
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (ac)	CN	Description
1.44	80	>75% Grass cover, Good, HSG D
1.44		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	67	0.3333	0.45		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B9A: Subcat B9A**

Hydrograph



**Summary for Subcatchment B9B: Subcat B9B**

Runoff = 0.30 cfs @ 15.66 hrs, Volume= 0.213 af, Depth= 4.19"

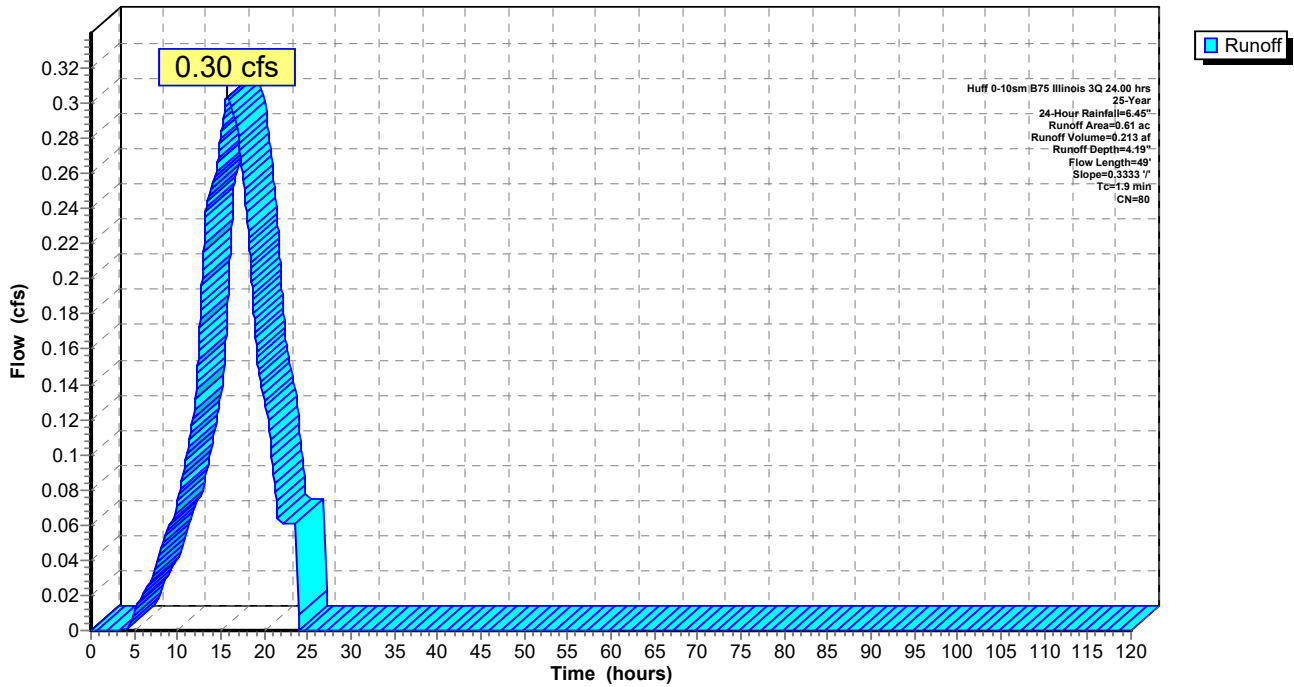
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (ac)	CN	Description
0.61	80	>75% Grass cover, Good, HSG D
0.61		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	49	0.3333	0.43		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B9B: Subcat B9B**

Hydrograph



**Summary for Subcatchment D1: Subcat D1**

Runoff = 0.62 cfs @ 15.74 hrs, Volume= 0.439 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

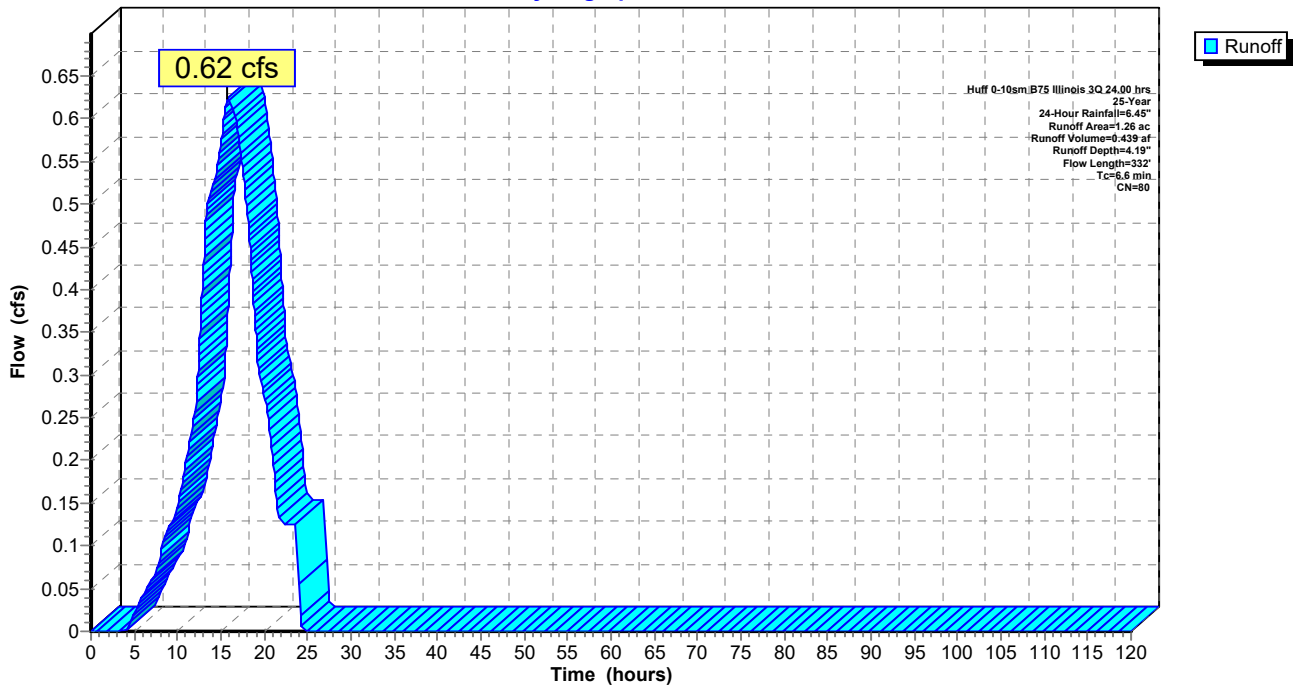
Area (ac)	CN	Description
1.26	80	>75% Grass cover, Good, HSG D
1.26		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.1	232	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.6	332	Total			

**Subcatchment D1: Subcat D1**

Hydrograph



**Summary for Subcatchment D3: Subcat D3**

Runoff = 0.66 cfs @ 15.70 hrs, Volume= 0.465 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

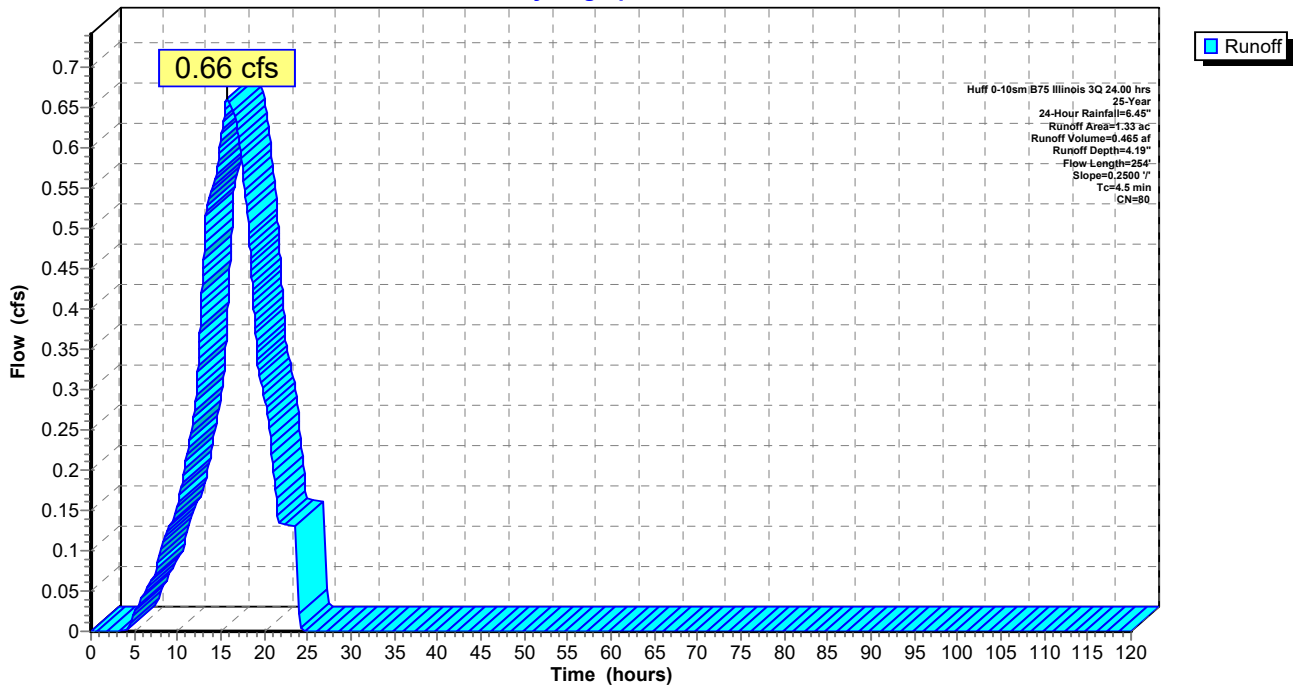
Area (ac)	CN	Description
1.33	80	>75% Grass cover, Good, HSG D
1.33		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.7	154	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.5	254	Total			

**Subcatchment D3: Subcat D3**

Hydrograph



### Summary for Subcatchment D5A: Subcat D5A

Runoff = 0.56 cfs @ 15.70 hrs, Volume= 0.396 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

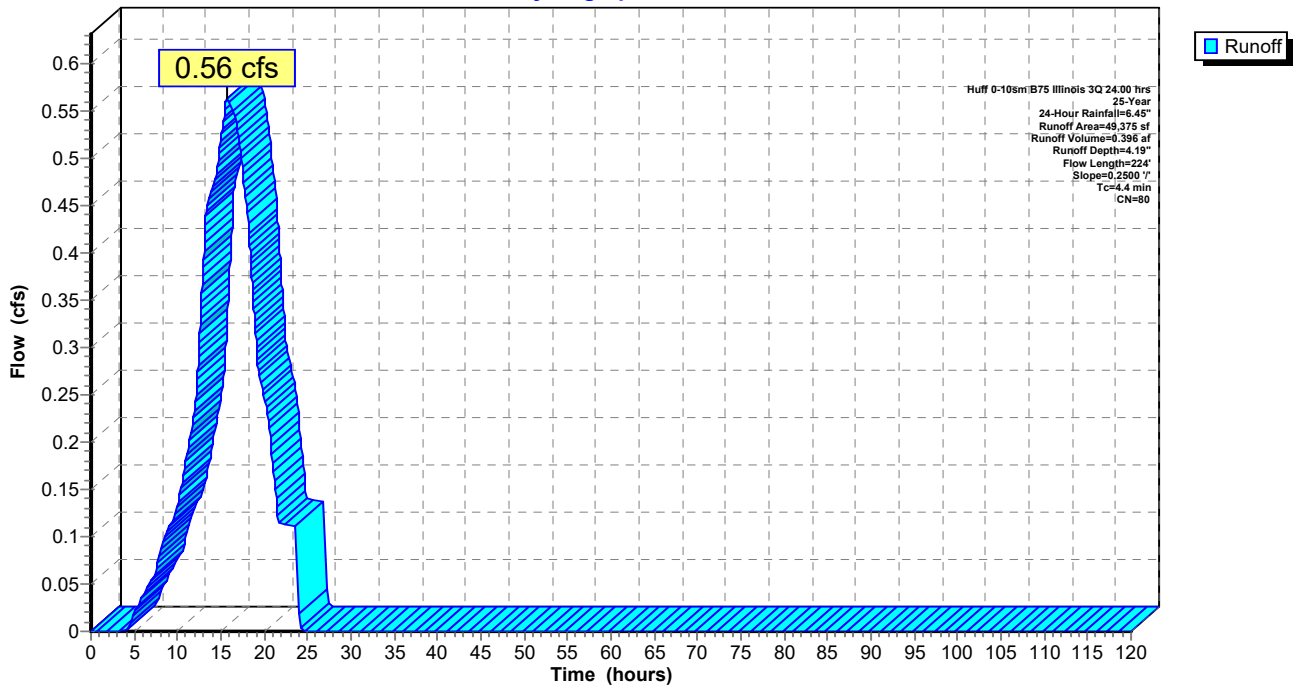
Area (sf)	CN	Description
49,375	80	>75% Grass cover, Good, HSG D
49,375		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	124	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.4	224	Total			

### Subcatchment D5A: Subcat D5A

Hydrograph



### Summary for Subcatchment D5B: Subcat D5B

Runoff = 0.17 cfs @ 15.62 hrs, Volume= 0.125 af, Depth= 4.84"

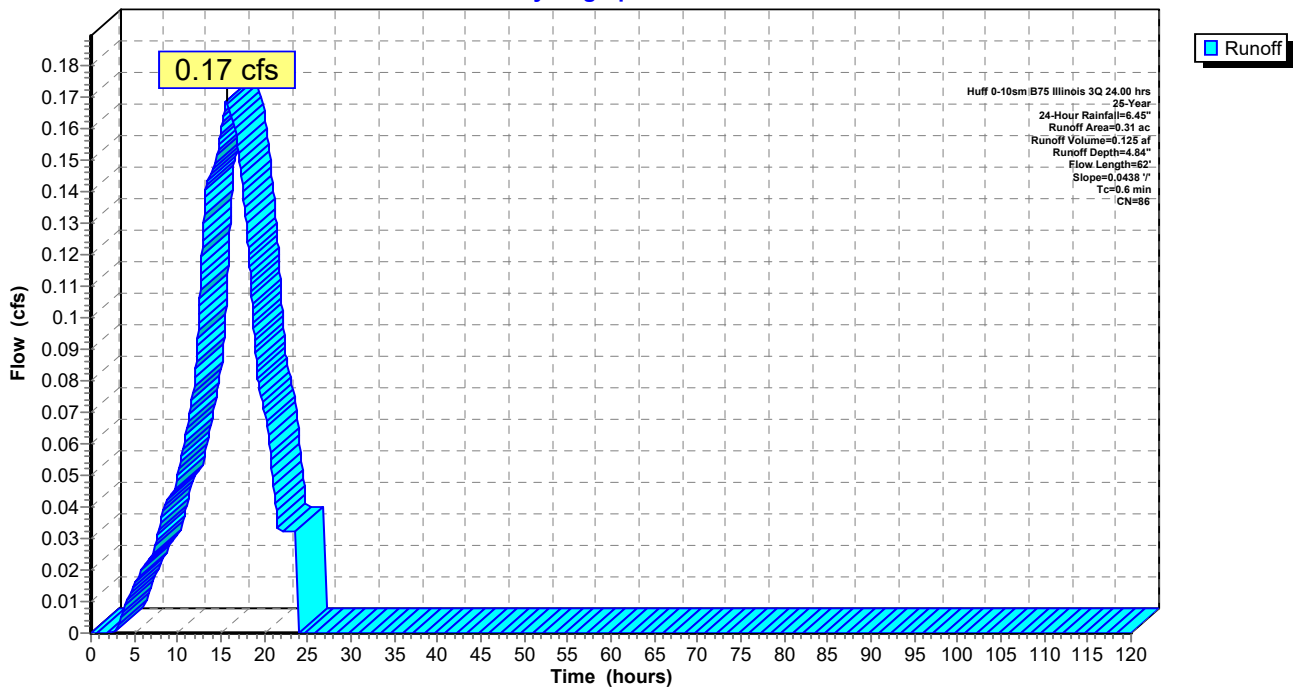
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (ac)	CN	Description
0.16	80	>75% Grass cover, Good, HSG D
0.15	93	Paved roads w/open ditches, 50% imp, HSG D
0.31	86	Weighted Average
0.23		75.32% Pervious Area
0.08		24.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	62	0.0438	1.60		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

### Subcatchment D5B: Subcat D5B

Hydrograph



**Summary for Subcatchment DT: Subcat Drain Tile**

Runoff = 6.16 cfs @ 15.69 hrs, Volume= 4.361 af, Depth= 4.30"

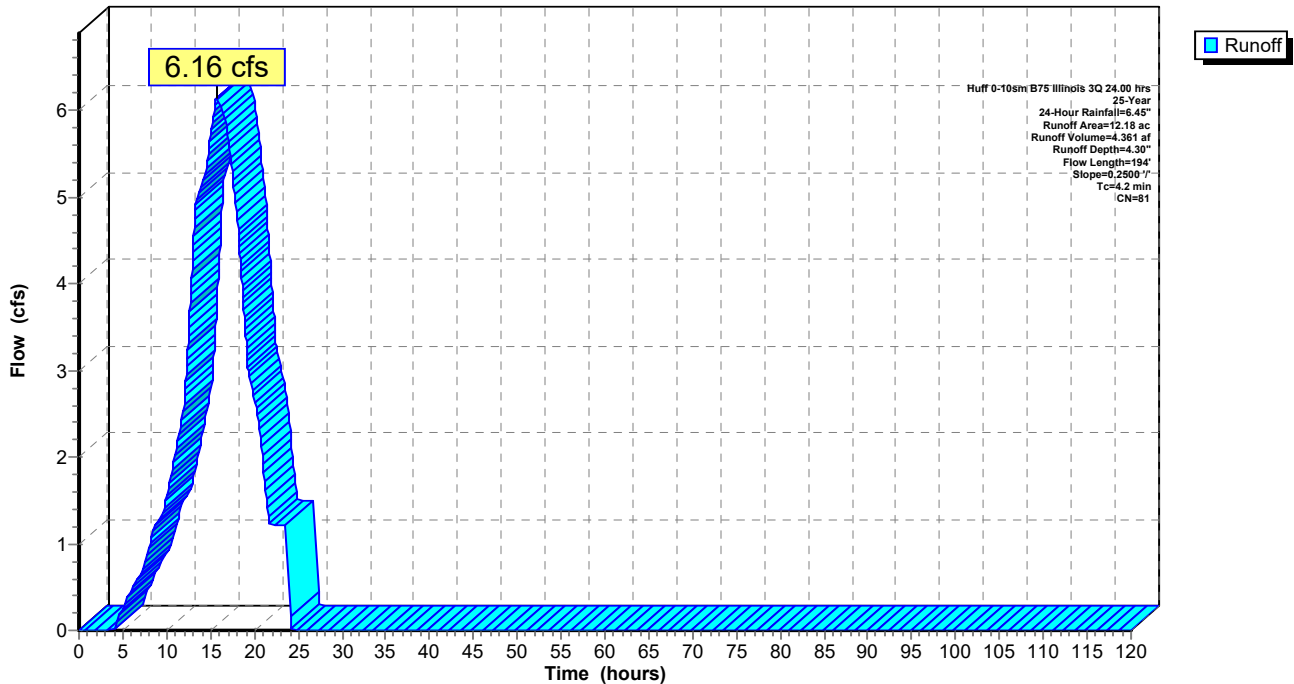
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (ac)	CN	Description
7.38	80	>75% Grass cover, Good, HSG D
4.80	82	Woods/grass comb., Fair, HSG D
12.18	81	Weighted Average
12.18		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.4	94	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.2	194	Total			

**Subcatchment DT: Subcat Drain Tile**

Hydrograph



**Summary for Subcatchment E1: Subcat E1**

Runoff = 0.71 cfs @ 15.74 hrs, Volume= 0.496 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

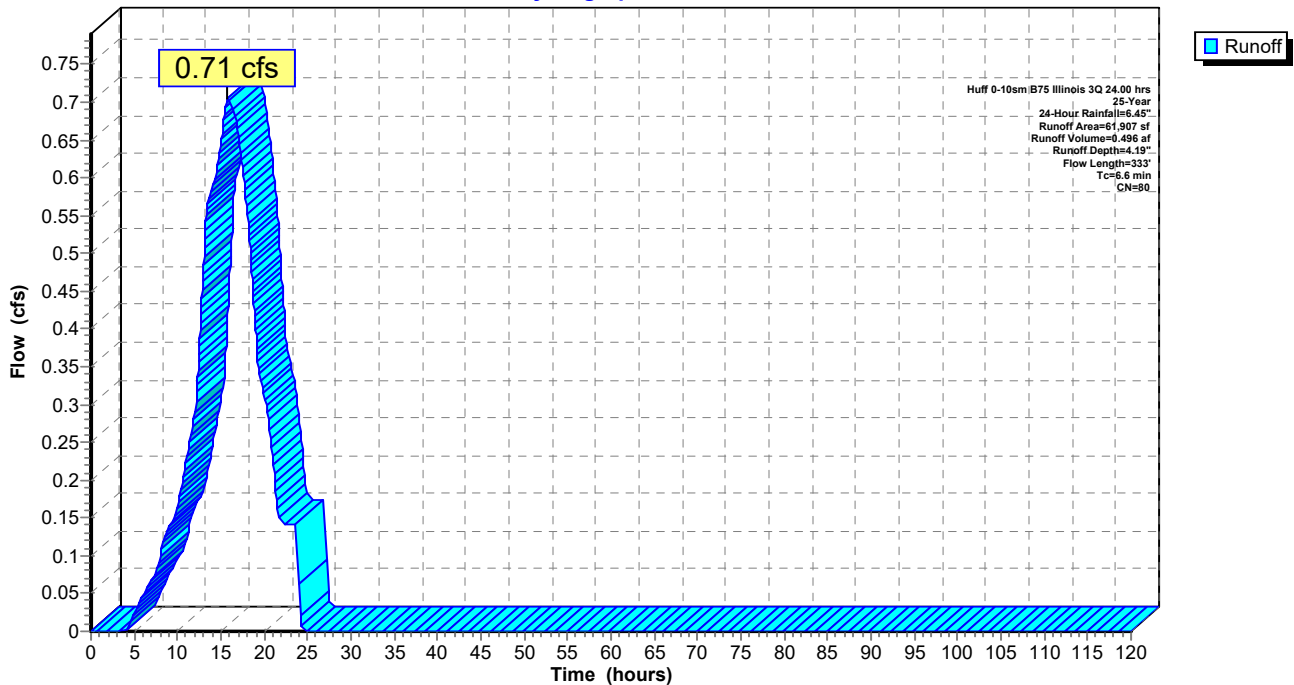
Area (sf)	CN	Description
61,907	80	>75% Grass cover, Good, HSG D
61,907		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.1	233	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.6	333	Total			

**Subcatchment E1: Subcat E1**

Hydrograph





**Summary for Subcatchment E2: Subcat E2**

Runoff = 1.40 cfs @ 15.70 hrs, Volume= 0.984 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

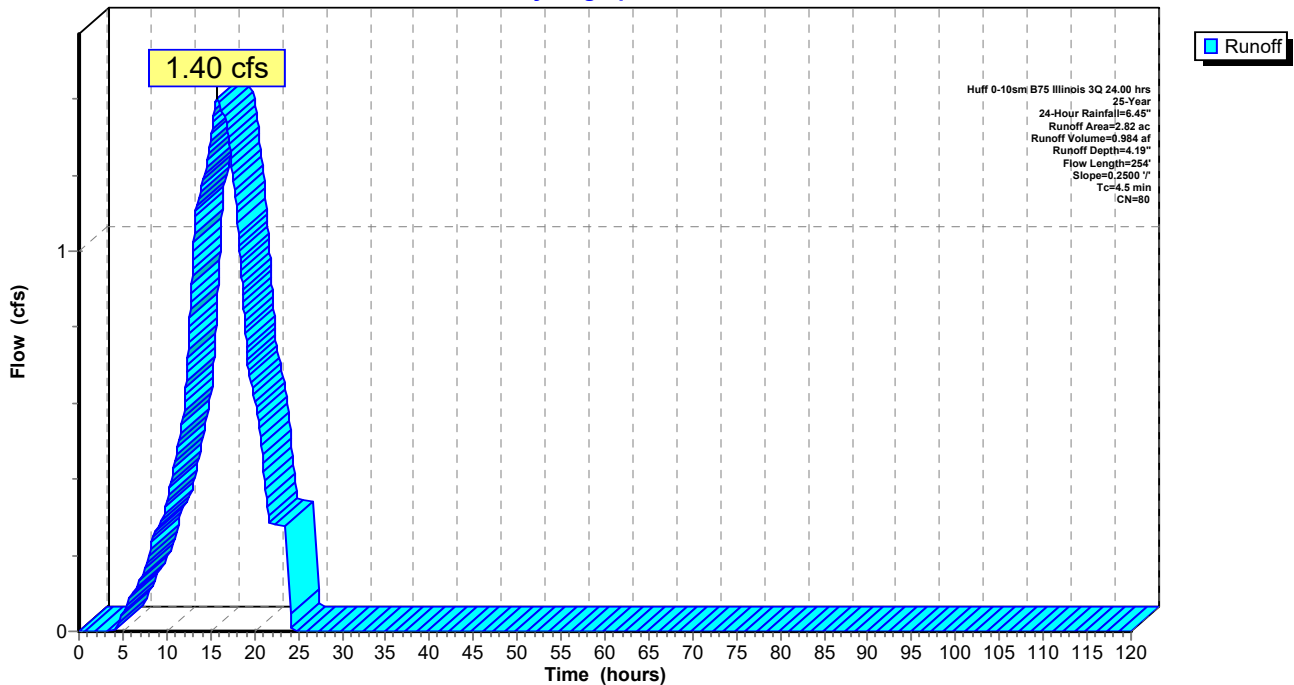
Area (ac)	CN	Description
2.82	80	>75% Grass cover, Good, HSG D
2.82		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.7	154	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.5	254	Total			

**Subcatchment E2: Subcat E2**

Hydrograph



**Summary for Subcatchment E3A: Subcat E3A**

Runoff = 1.63 cfs @ 15.70 hrs, Volume= 1.143 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

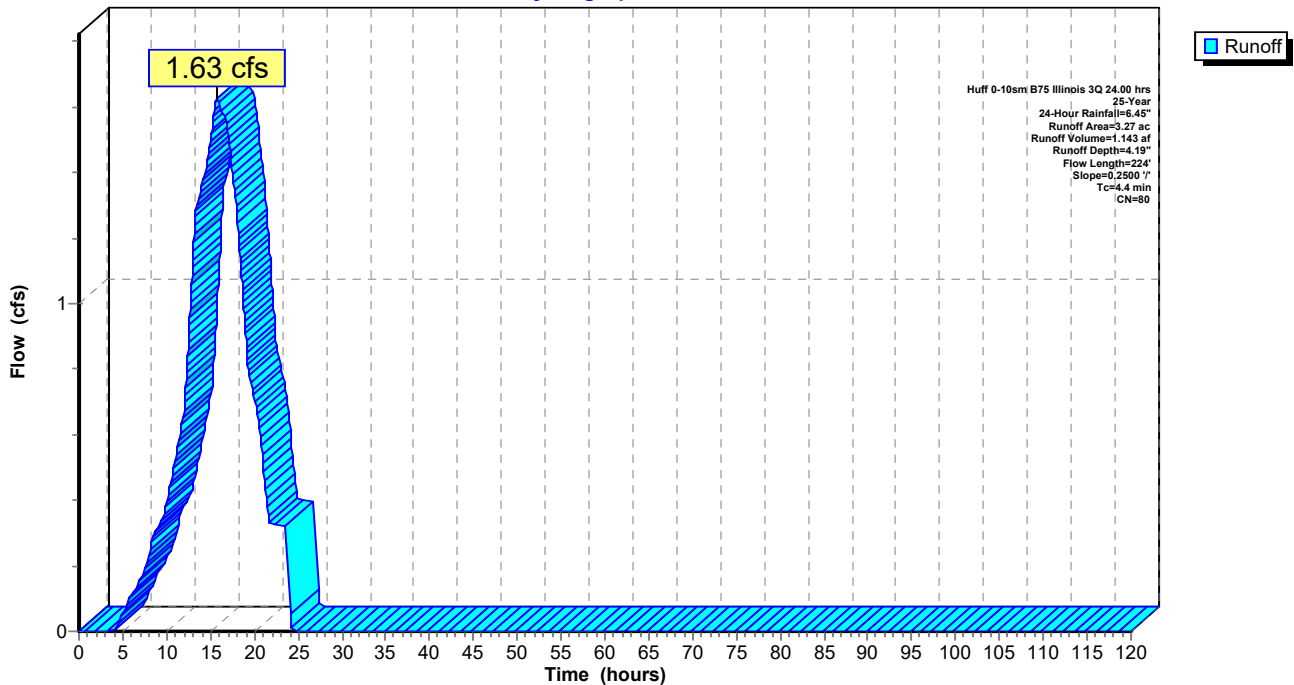
Area (ac)	CN	Description
3.27	80	>75% Grass cover, Good, HSG D
3.27		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	124	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.4	224	Total			

**Subcatchment E3A: Subcat E3A**

Hydrograph



**Summary for Subcatchment E3B: Subcat E3B**

Runoff = 0.59 cfs @ 15.62 hrs, Volume= 0.438 af, Depth= 4.84"

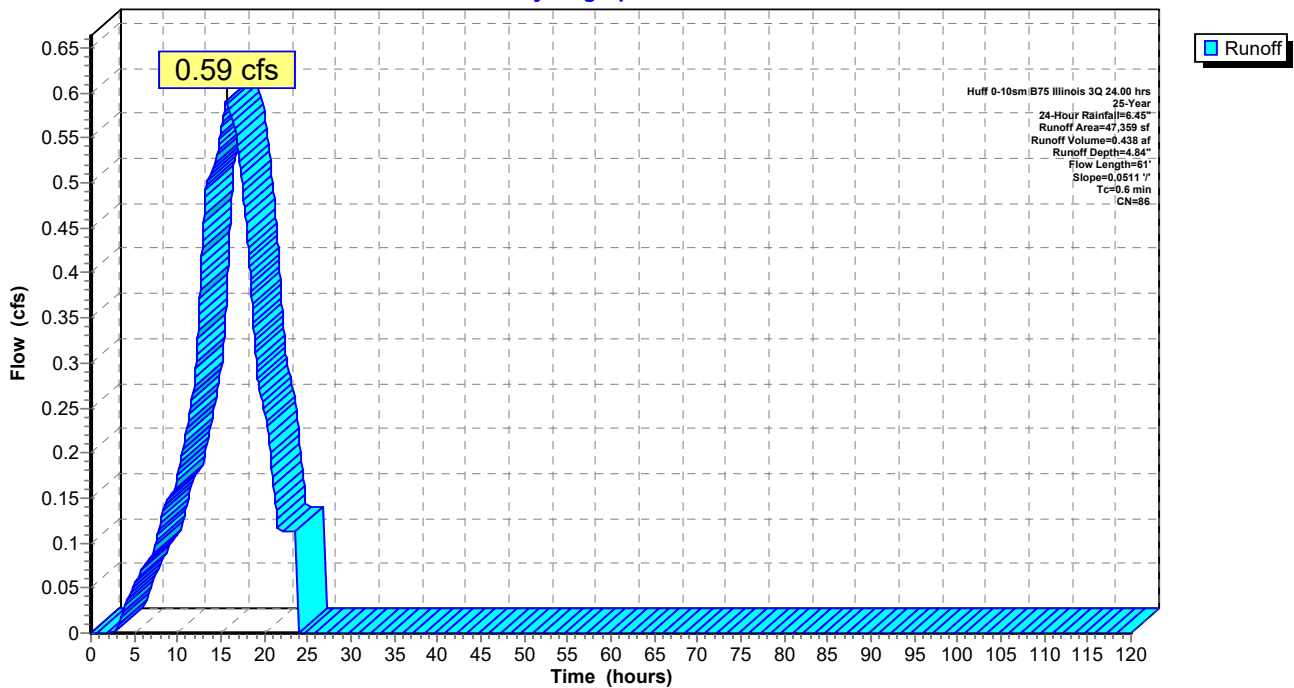
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (sf)	CN	Description
23,741	80	>75% Grass cover, Good, HSG D
23,618	93	Paved roads w/open ditches, 50% imp, HSG D
47,359	86	Weighted Average
35,550		75.06% Pervious Area
11,809		24.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	61	0.0511	1.70		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment E3B: Subcat E3B**

Hydrograph



### Summary for Subcatchment H1: Subcat H1

Runoff = 0.98 cfs @ 15.73 hrs, Volume= 0.691 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

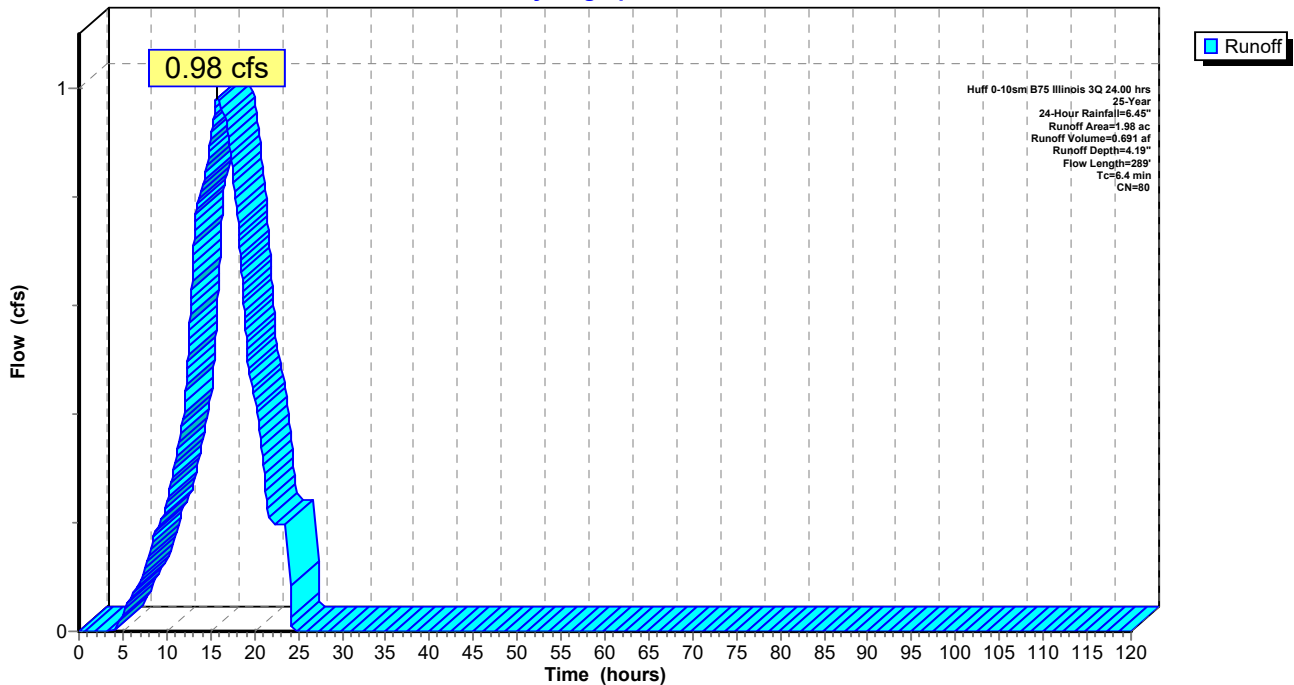
Area (ac)	CN	Description
1.98	80	>75% Grass cover, Good, HSG D
1.98		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.9	189	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.4	289	Total			

### Subcatchment H1: Subcat H1

Hydrograph



**Summary for Subcatchment H2: Subcat H2**

Runoff = 0.93 cfs @ 15.69 hrs, Volume= 0.650 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

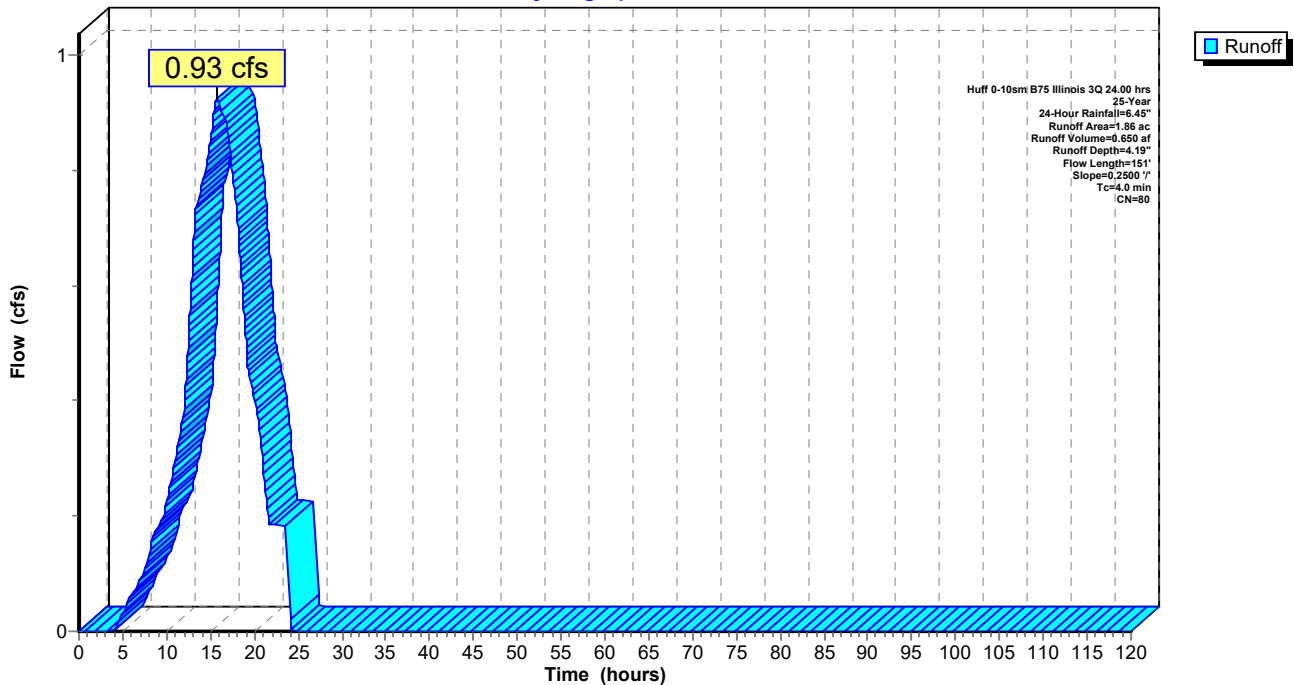
Area (ac)	CN	Description
1.86	80	>75% Grass cover, Good, HSG D
1.86		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	51	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	151	Total			

**Subcatchment H2: Subcat H2**

Hydrograph



### Summary for Subcatchment H3: Subcat H3

Runoff = 1.78 cfs @ 15.70 hrs, Volume= 1.247 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

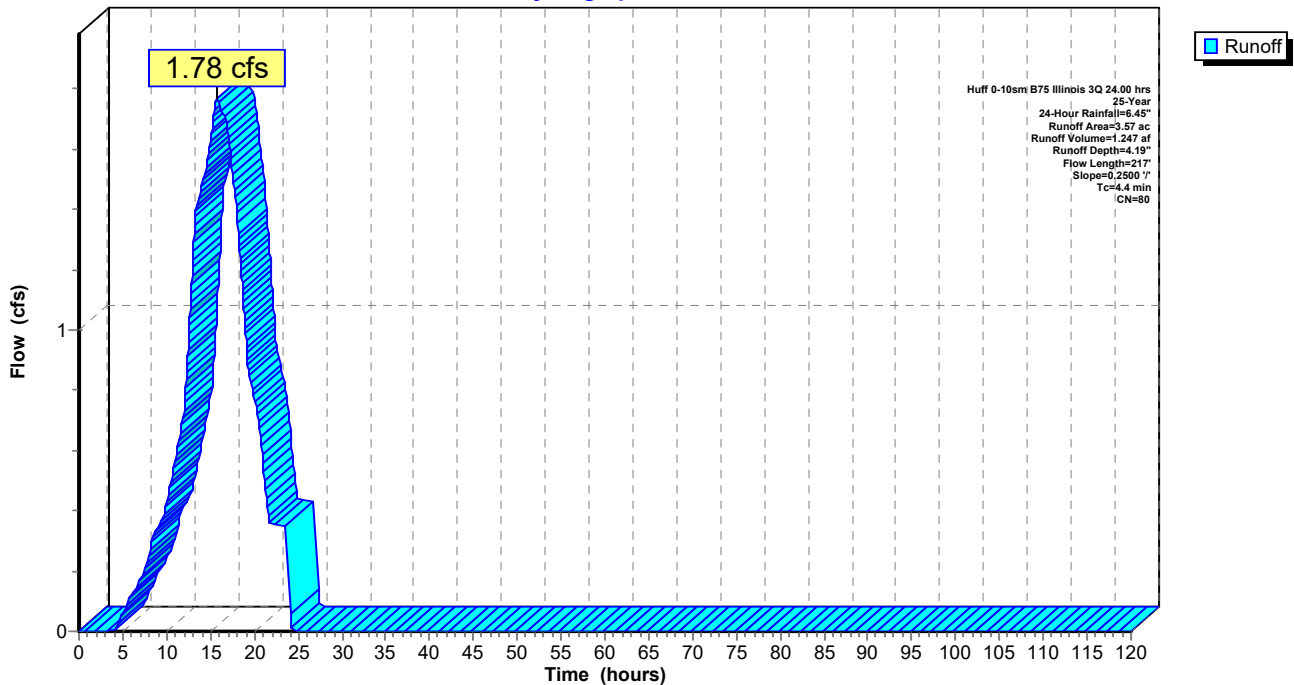
Area (ac)	CN	Description
3.57	80	>75% Grass cover, Good, HSG D
3.57		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	117	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.4	217	Total			

### Subcatchment H3: Subcat H3

Hydrograph



**Summary for Subcatchment N-A1: Subcat N-A1**

Runoff = 1.79 cfs @ 15.73 hrs, Volume= 1.256 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

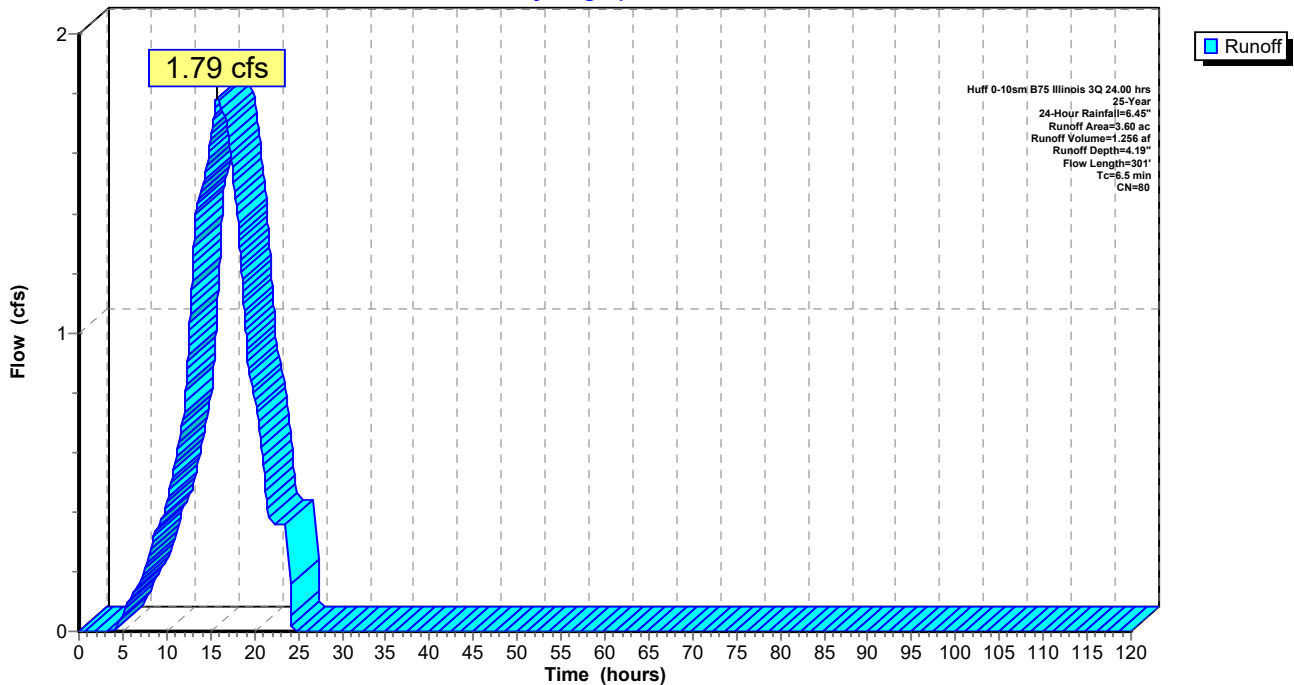
Area (ac)	CN	Description
3.60	80	>75% Grass cover, Good, HSG D
3.60		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.0	201	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.5	301	Total			

**Subcatchment N-A1: Subcat N-A1**

Hydrograph



**Summary for Subcatchment N-A10: Subcat N-A10**

Runoff = 1.88 cfs @ 15.69 hrs, Volume= 1.318 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

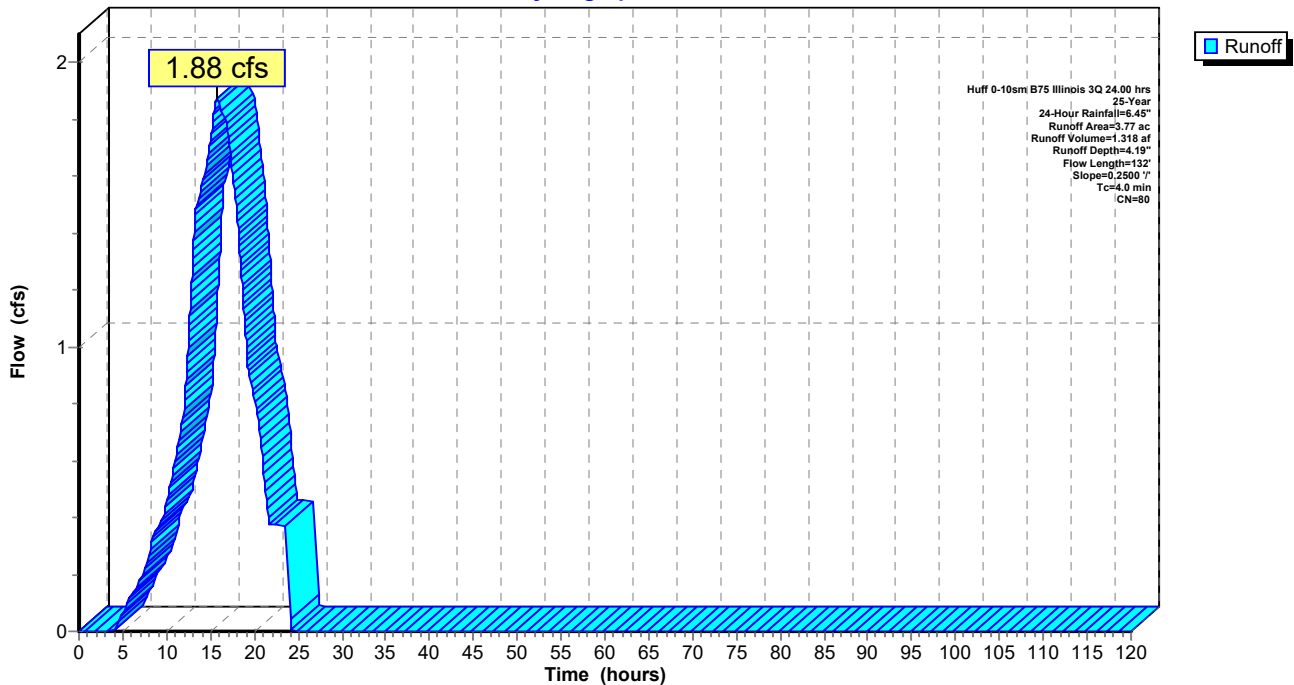
Area (ac)	CN	Description
3.77	80	>75% Grass cover, Good, HSG D
3.77		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	32	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	132	Total			

**Subcatchment N-A10: Subcat N-A10**

Hydrograph





**Summary for Subcatchment N-A11: Subcat N-A11**

Runoff = 0.91 cfs @ 15.69 hrs, Volume= 0.642 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

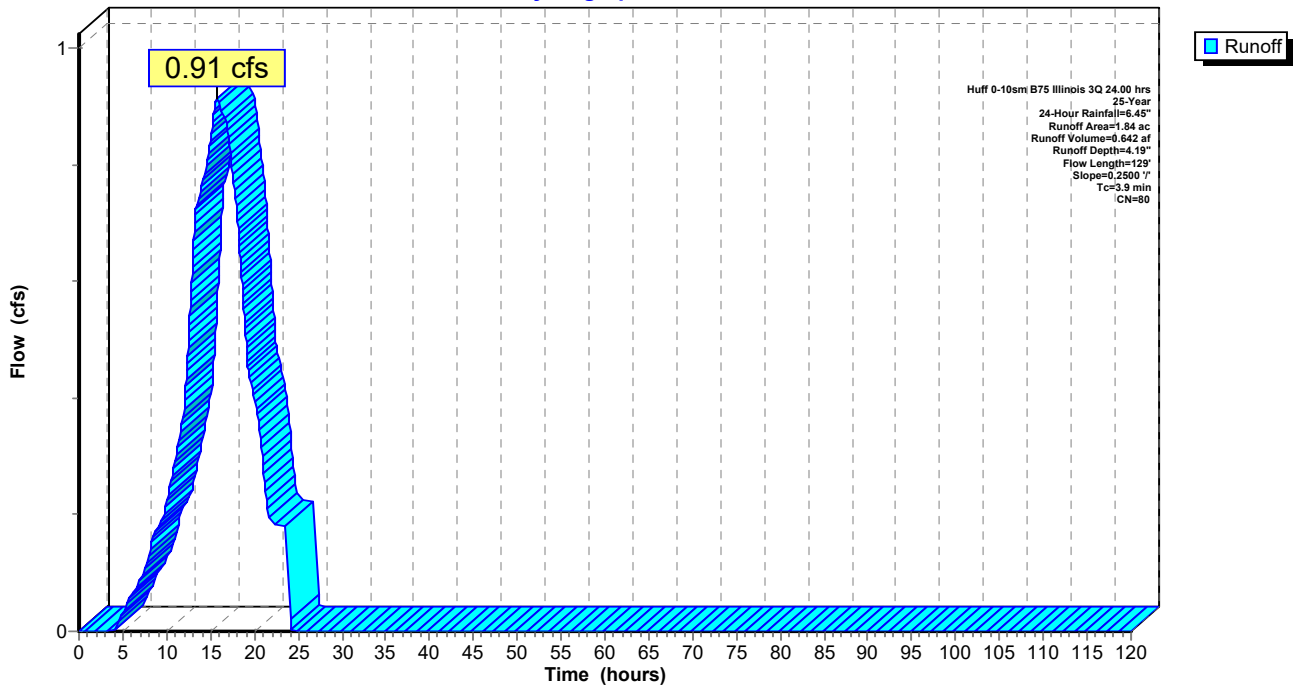
Area (ac)	CN	Description
1.84	80	>75% Grass cover, Good, HSG D
1.84		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	29	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	129	Total			

**Subcatchment N-A11: Subcat N-A11**

Hydrograph



**Summary for Subcatchment N-A12: Subcat N-A12**

Runoff = 1.24 cfs @ 15.69 hrs, Volume= 0.892 af, Depth= 4.51"

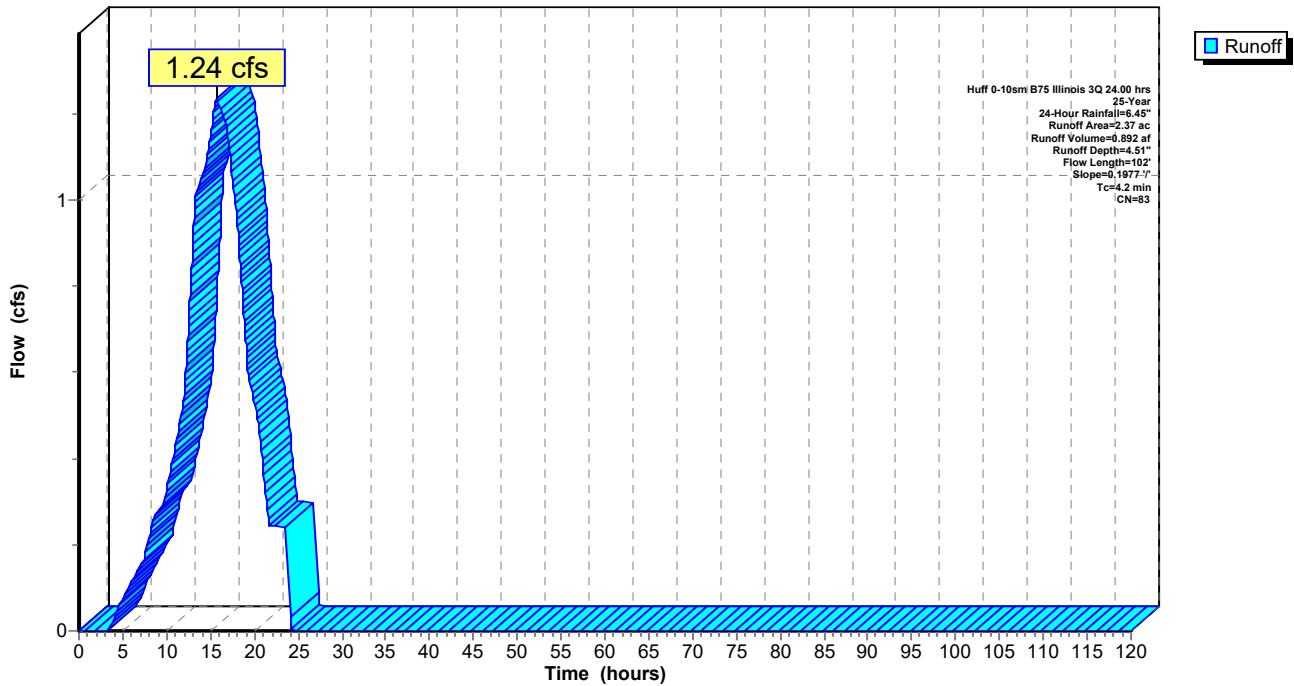
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (ac)	CN	Description
1.74	80	>75% Grass cover, Good, HSG D
0.63	93	Paved roads w/open ditches, 50% imp, HSG D
2.37	83	Weighted Average
2.06		86.69% Pervious Area
0.32		13.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	100	0.1977	0.40		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.0	2	0.1977	3.11		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.2	102	Total			

**Subcatchment N-A12: Subcat N-A12**

Hydrograph



**Summary for Subcatchment N-A13: Subcat N-A13**

Runoff = 0.62 cfs @ 15.69 hrs, Volume= 0.437 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

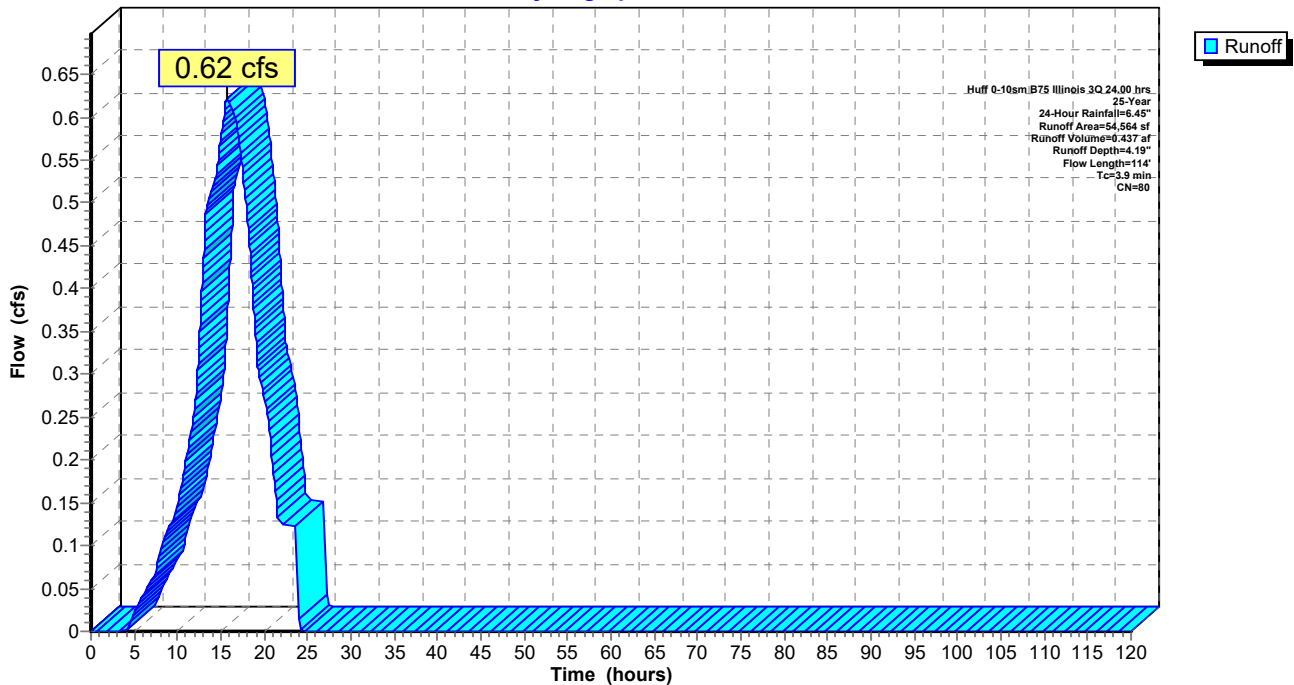
Area (sf)	CN	Description
54,564	80	>75% Grass cover, Good, HSG D
54,564		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	14	0.3210	3.97		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	114	Total			

**Subcatchment N-A13: Subcat N-A13**

Hydrograph



**Summary for Subcatchment N-A14: Subcat N-A14**

Runoff = 0.68 cfs @ 15.68 hrs, Volume= 0.492 af, Depth= 4.51"

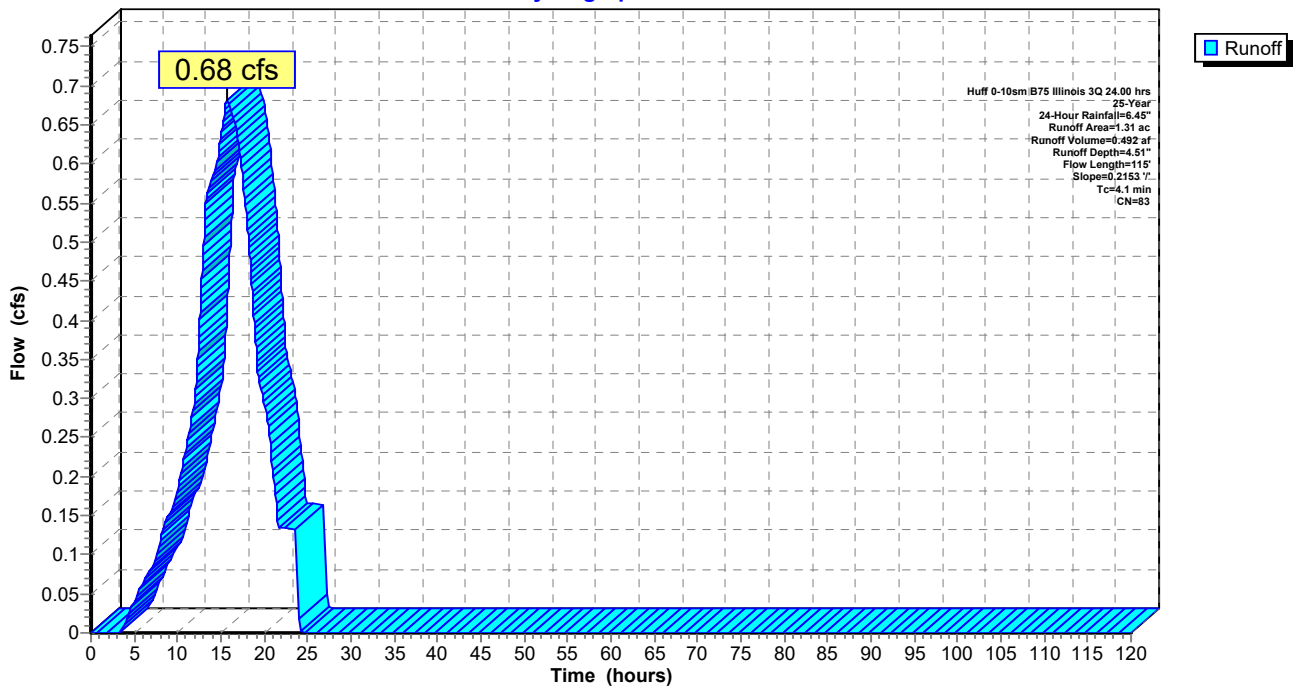
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (ac)	CN	Description
0.97	80	>75% Grass cover, Good, HSG D
0.34	93	Paved roads w/open ditches, 50% imp, HSG D
1.31	83	Weighted Average
1.14		87.12% Pervious Area
0.17		12.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	100	0.2153	0.41		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	15	0.2153	3.25		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	115	Total			

**Subcatchment N-A14: Subcat N-A14**

Hydrograph



### Summary for Subcatchment N-A15: Subcat N-A15

Runoff = 0.51 cfs @ 15.68 hrs, Volume= 0.362 af, Depth= 4.19"

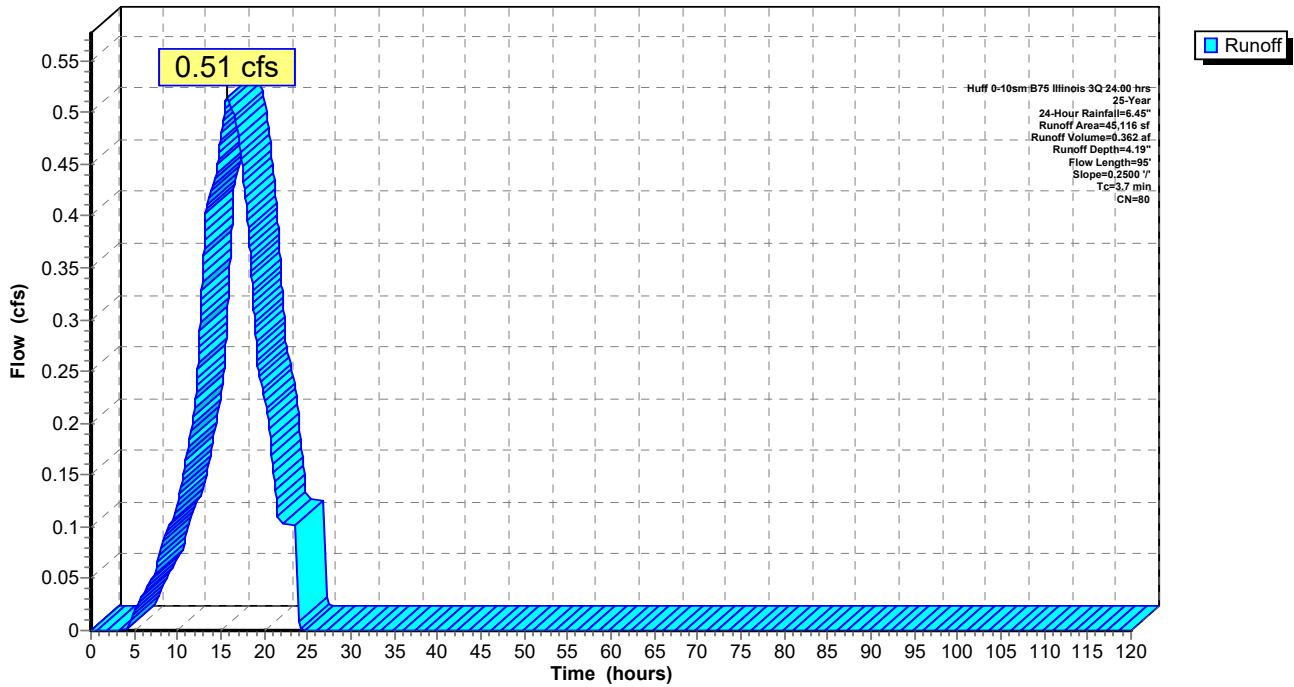
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (sf)	CN	Description
45,116	80	>75% Grass cover, Good, HSG D
45,116		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	95	0.2500	0.43		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

### Subcatchment N-A15: Subcat N-A15

Hydrograph



### Summary for Subcatchment N-A16: Subcat N-A16

Runoff = 1.21 cfs @ 15.63 hrs, Volume= 0.958 af, Depth= 5.51"

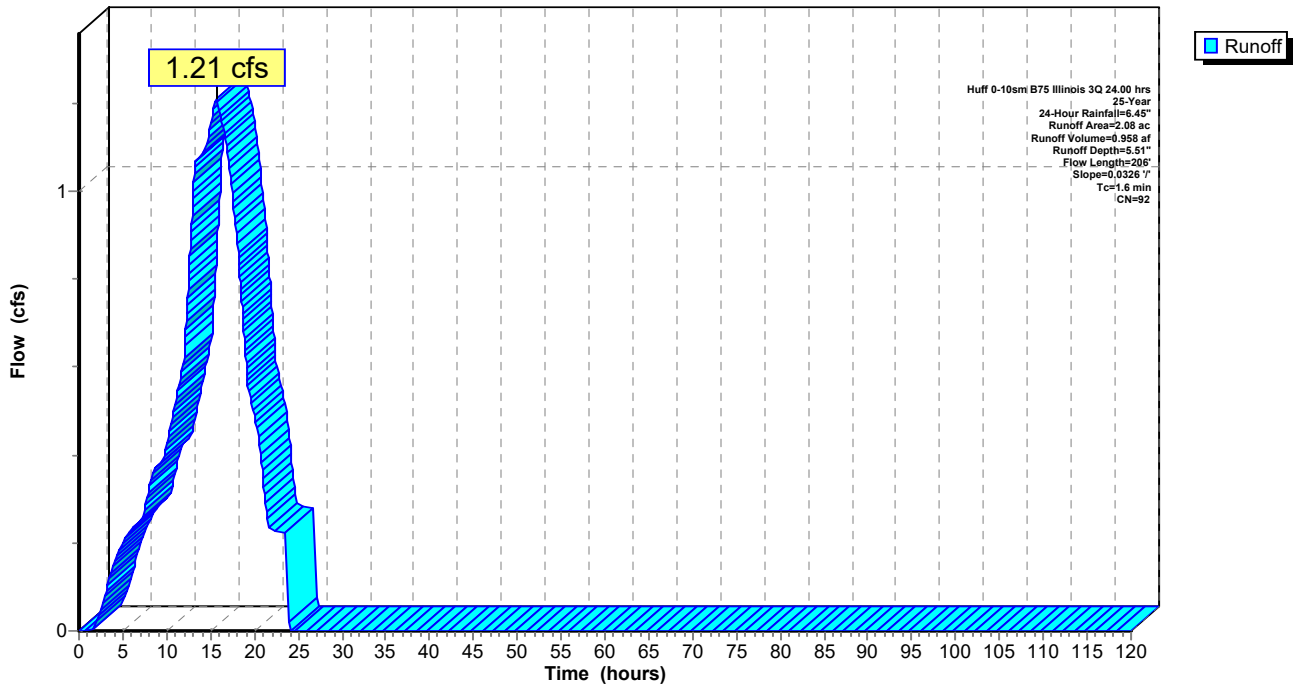
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (ac)	CN	Description
0.08	80	>75% Grass cover, Good, HSG D
2.00	93	Paved roads w/open ditches, 50% imp, HSG D
2.08	92	Weighted Average
1.08		51.99% Pervious Area
1.00		48.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0326	1.56		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 2.80"
0.5	106	0.0326	3.67		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
1.6	206	Total			

### Subcatchment N-A16: Subcat N-A16

Hydrograph



**Summary for Subcatchment N-A2: Subcat N-A2**

Runoff = 1.40 cfs @ 15.72 hrs, Volume= 0.986 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

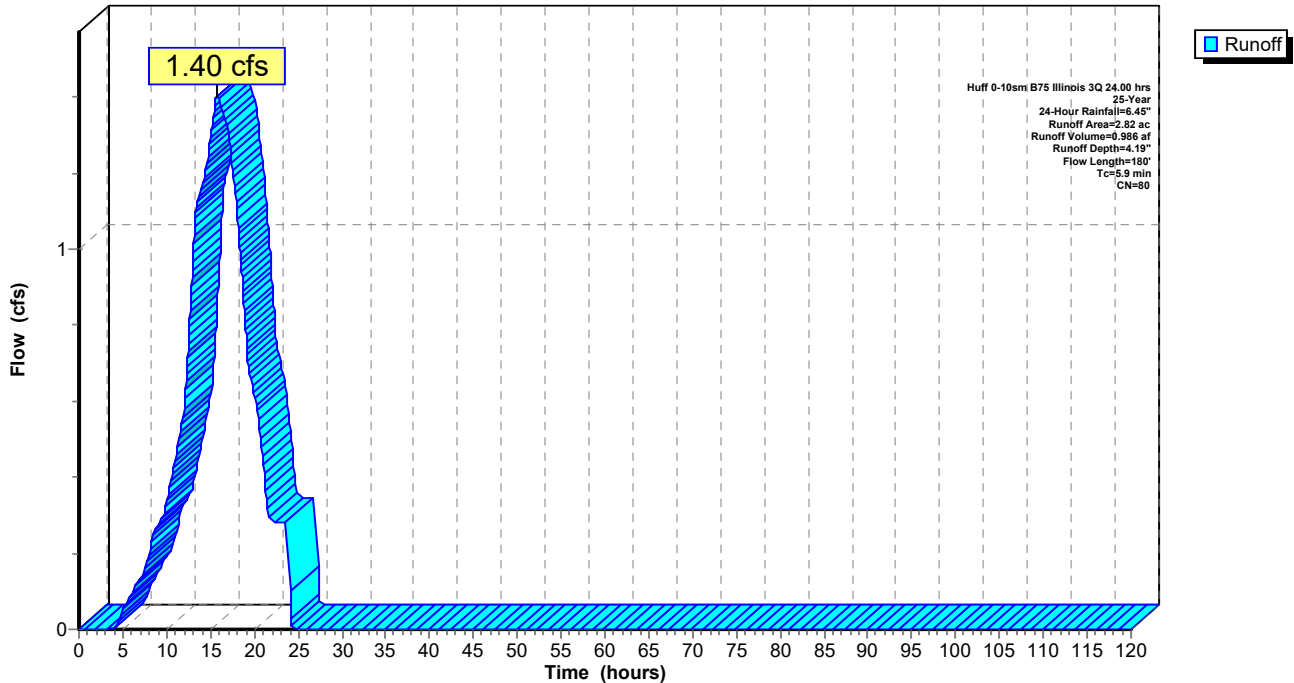
Area (ac)	CN	Description
2.82	80	>75% Grass cover, Good, HSG D
2.82		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.4	80	0.2199	3.28		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
5.9	180	Total			

**Subcatchment N-A2: Subcat N-A2**

Hydrograph



**Summary for Subcatchment N-A3: Subcat N-A3**

Runoff = 0.65 cfs @ 15.69 hrs, Volume= 0.457 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

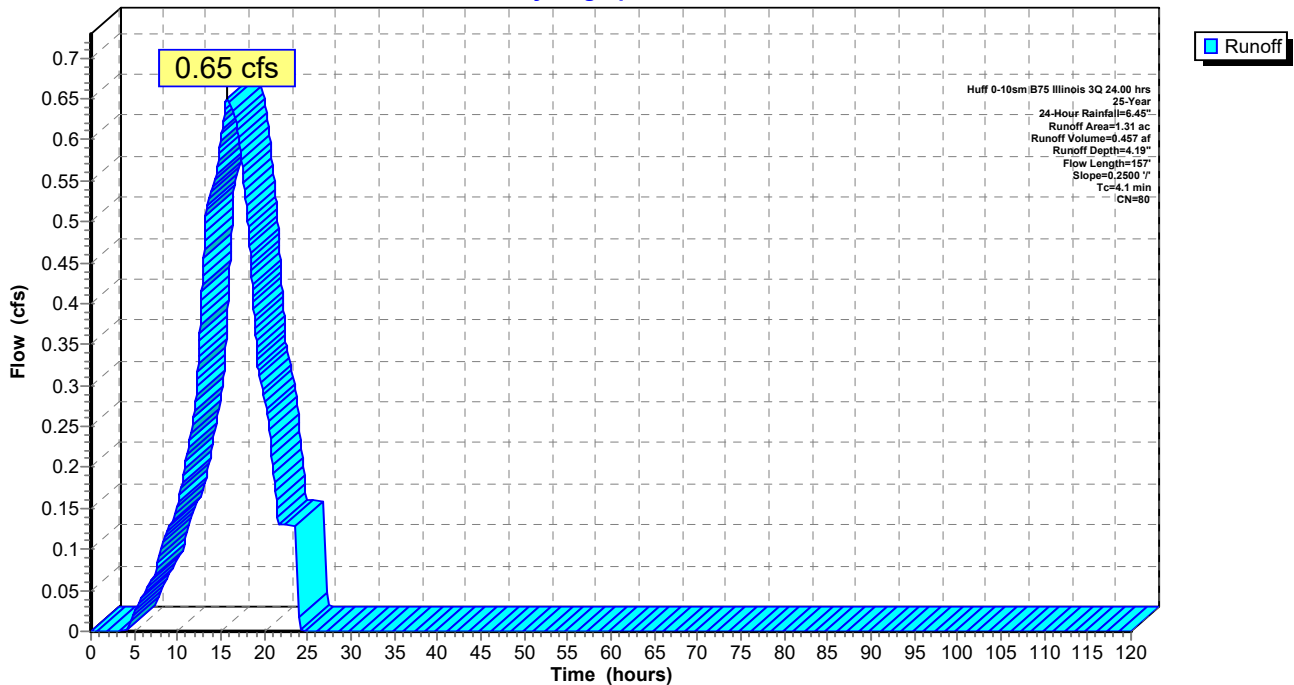
Area (ac)	CN	Description
1.31	80	>75% Grass cover, Good, HSG D
1.31		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.3	57	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	157	Total			

**Subcatchment N-A3: Subcat N-A3**

Hydrograph





**Summary for Subcatchment N-A4: Subcat N-A4**

Runoff = 3.41 cfs @ 15.73 hrs, Volume= 2.401 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

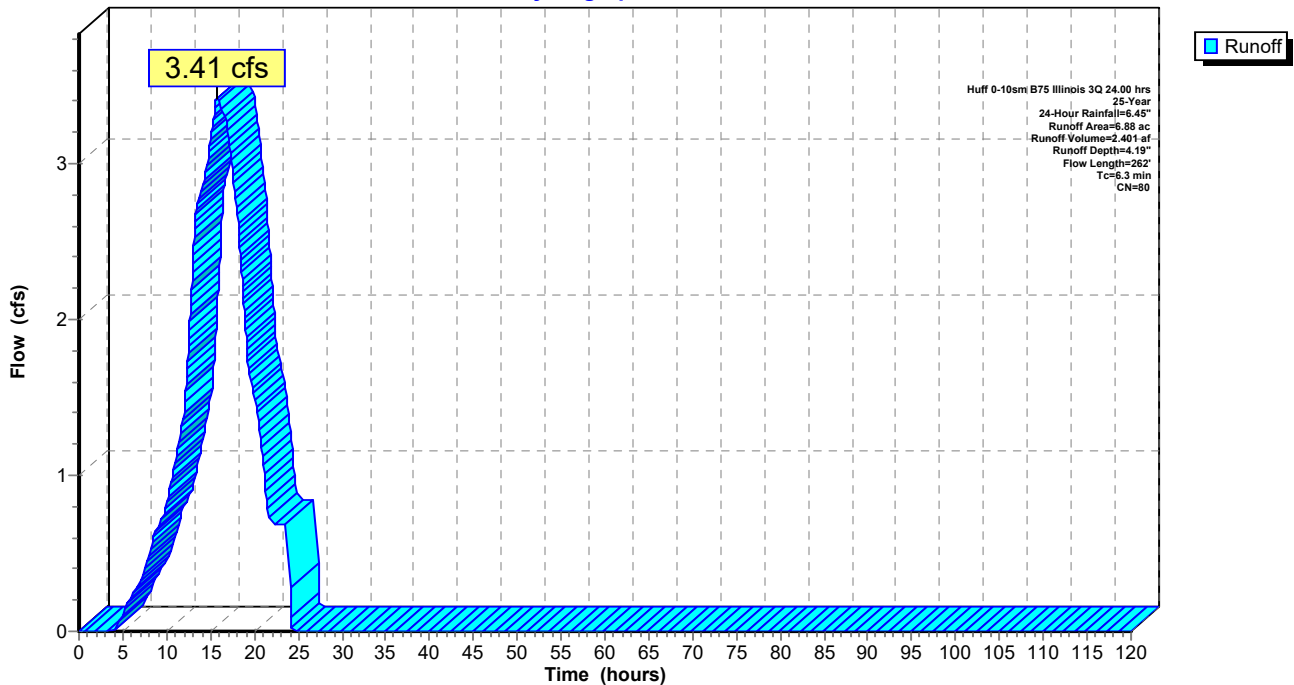
Area (ac)	CN	Description
6.88	80	>75% Grass cover, Good, HSG D
6.88		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.8	162	0.2330	3.38		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.3	262	Total			

**Subcatchment N-A4: Subcat N-A4**

Hydrograph



**Summary for Subcatchment N-A5: Subcat N-A5**

Runoff = 0.36 cfs @ 15.69 hrs, Volume= 0.256 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

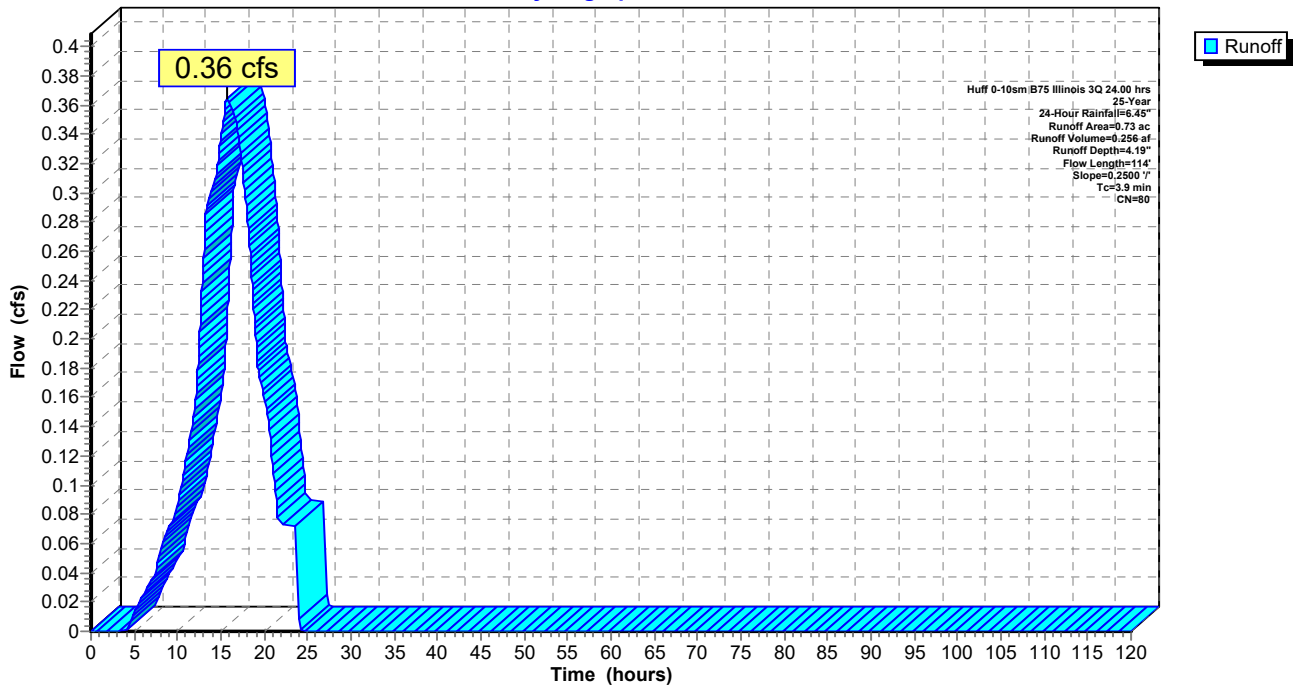
Area (ac)	CN	Description
0.73	80	>75% Grass cover, Good, HSG D
0.73		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	14	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	114	Total			

**Subcatchment N-A5: Subcat N-A5**

Hydrograph



**Summary for Subcatchment N-A6: Subcat N-A6**

Runoff = 2.05 cfs @ 15.69 hrs, Volume= 1.442 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

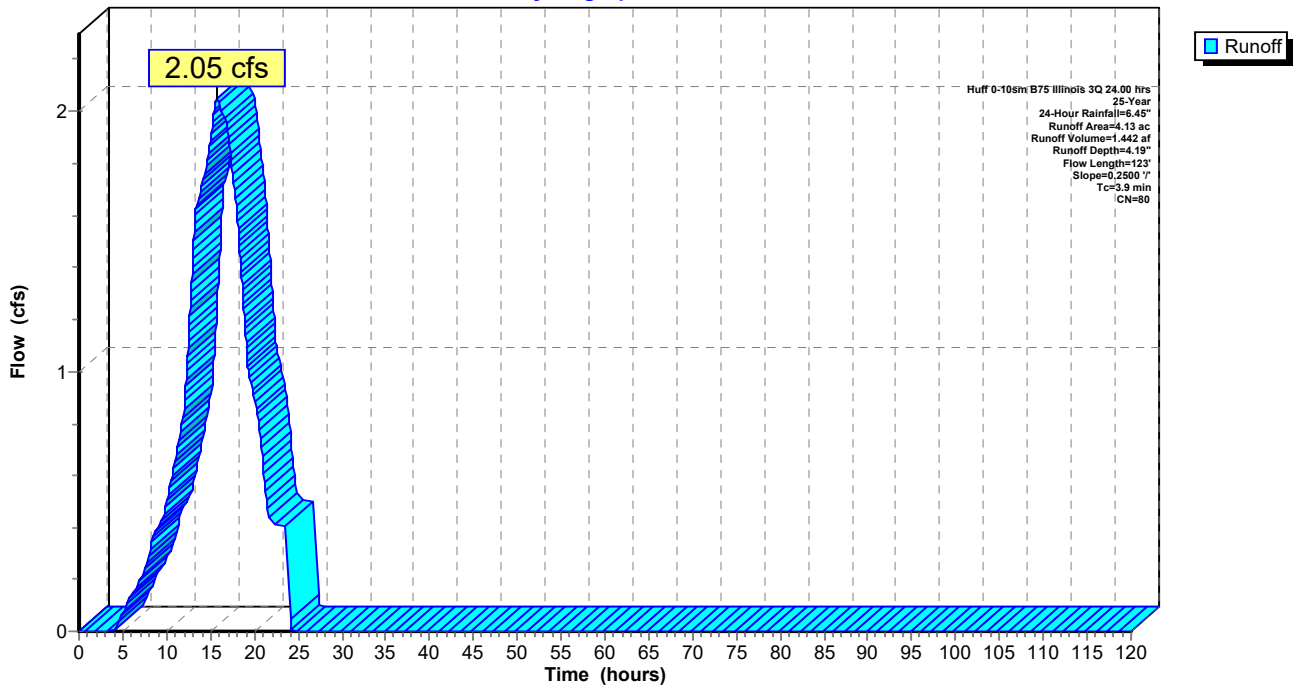
Area (ac)	CN	Description
4.13	80	>75% Grass cover, Good, HSG D
4.13		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	23	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	123	Total			

**Subcatchment N-A6: Subcat N-A6**

Hydrograph



**Summary for Subcatchment N-A7: Subcat N-A7**

Runoff = 0.22 cfs @ 15.70 hrs, Volume= 0.155 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

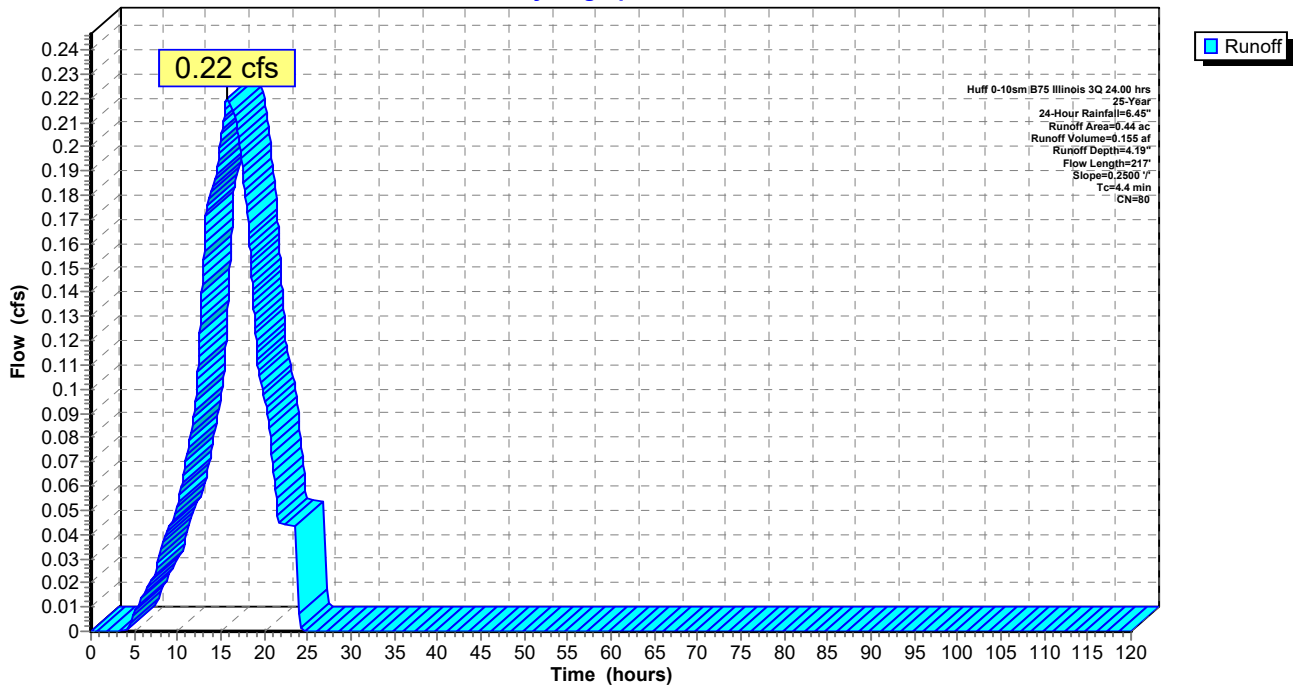
Area (ac)	CN	Description
0.44	80	>75% Grass cover, Good, HSG D
0.44		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	117	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.4	217	Total			

**Subcatchment N-A7: Subcat N-A7**

Hydrograph



**Summary for Subcatchment N-A8: Subcat N-A8**

Runoff = 1.89 cfs @ 15.69 hrs, Volume= 1.327 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

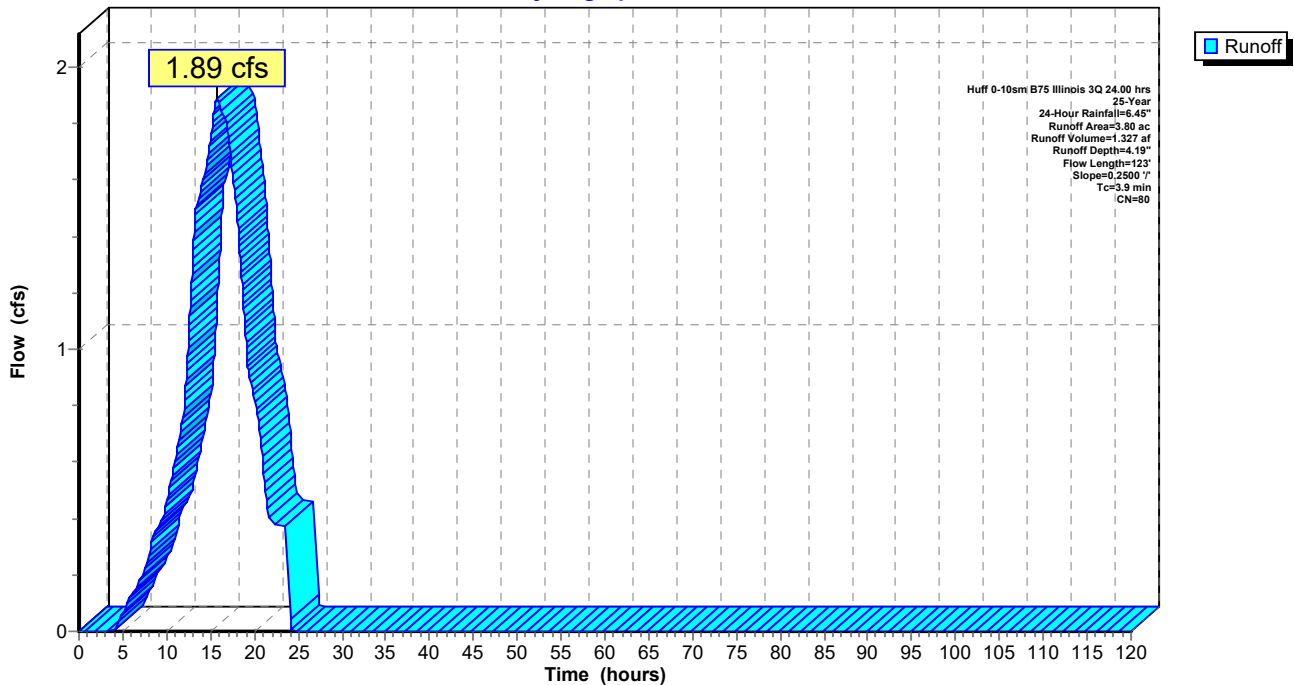
Area (ac)	CN	Description
3.80	80	>75% Grass cover, Good, HSG D
3.80		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	23	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	123	Total			

**Subcatchment N-A8: Subcat N-A8**

Hydrograph



**Summary for Subcatchment N-A9: Subcat N-A9**

Runoff = 0.09 cfs @ 15.70 hrs, Volume= 0.064 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

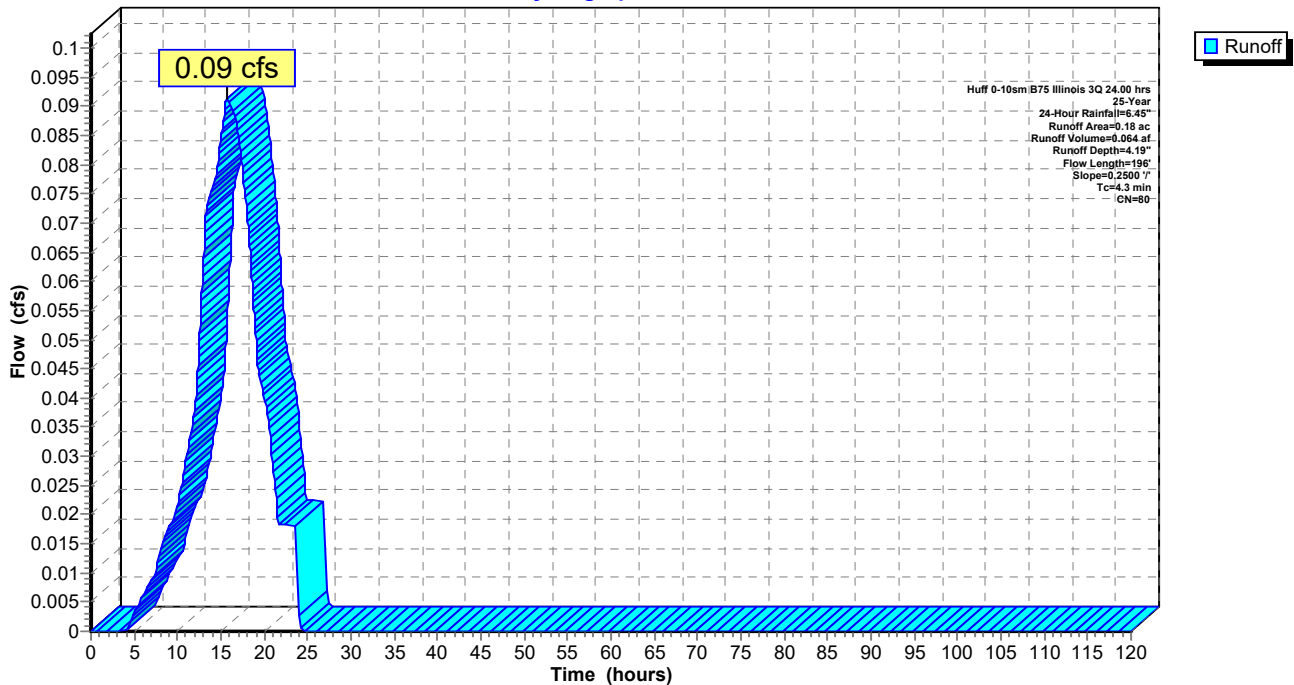
Area (ac)	CN	Description
0.18	80	>75% Grass cover, Good, HSG D
0.18		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.5	96	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.3	196	Total			

**Subcatchment N-A9: Subcat N-A9**

Hydrograph



**Summary for Subcatchment N-B1: Subcat N-B1**

Runoff = 1.57 cfs @ 15.72 hrs, Volume= 1.101 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

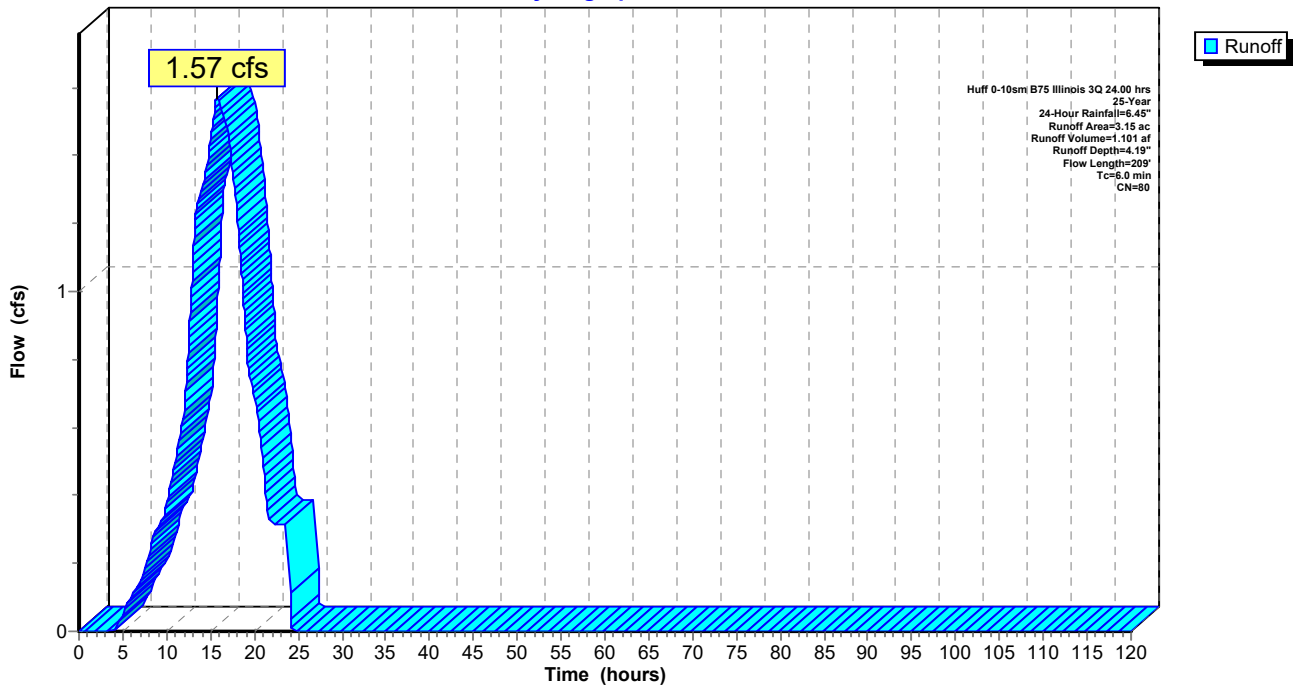
Area (ac)	CN	Description
3.15	80	>75% Grass cover, Good, HSG D
3.15		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.5	109	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.0	209	Total			

**Subcatchment N-B1: Subcat N-B1**

Hydrograph



**Summary for Subcatchment N-B10: Subcat N-B10**

Runoff = 0.83 cfs @ 15.68 hrs, Volume= 0.607 af, Depth= 4.73"

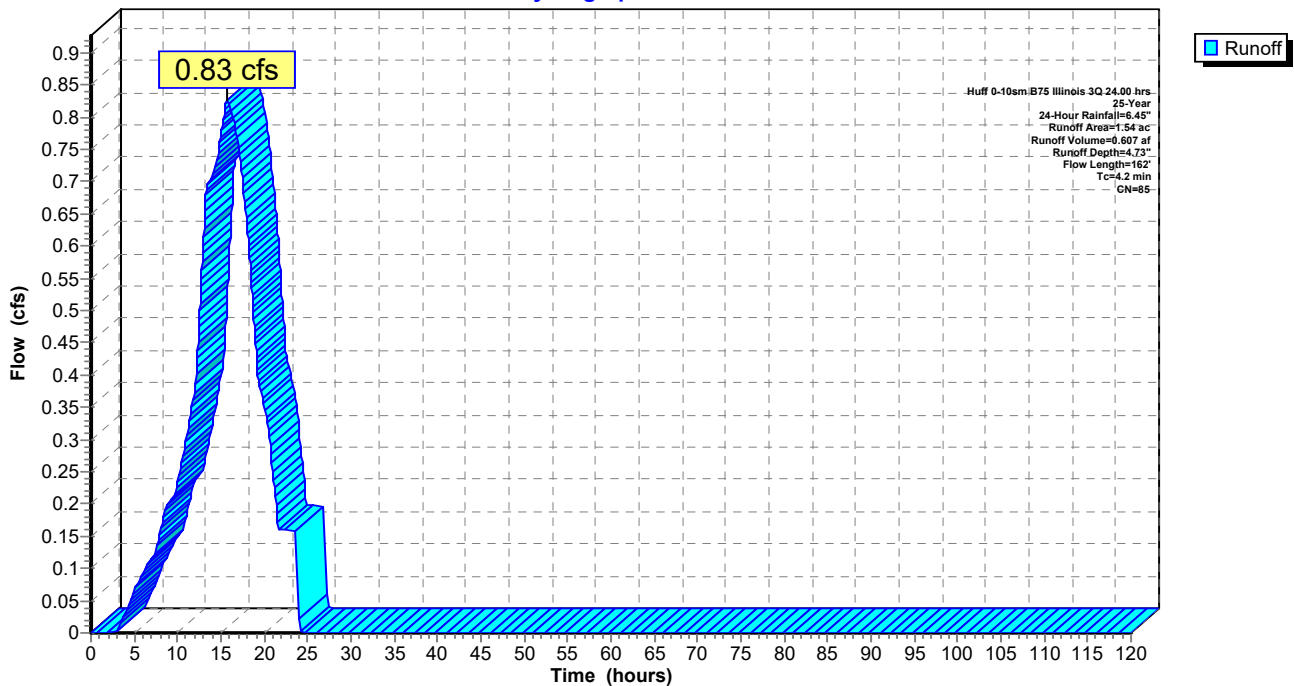
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (ac)	CN	Description
0.91	80	>75% Grass cover, Good, HSG D
0.63	93	Paved roads w/open ditches, 50% imp, HSG D
1.54	85	Weighted Average
1.22		79.55% Pervious Area
0.31		20.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.4	62	0.1195	2.42		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.2	162	Total			

**Subcatchment N-B10: Subcat N-B10**

Hydrograph





**Summary for Subcatchment N-B11: Subcat N-B11**

Runoff = 0.63 cfs @ 15.69 hrs, Volume= 0.443 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

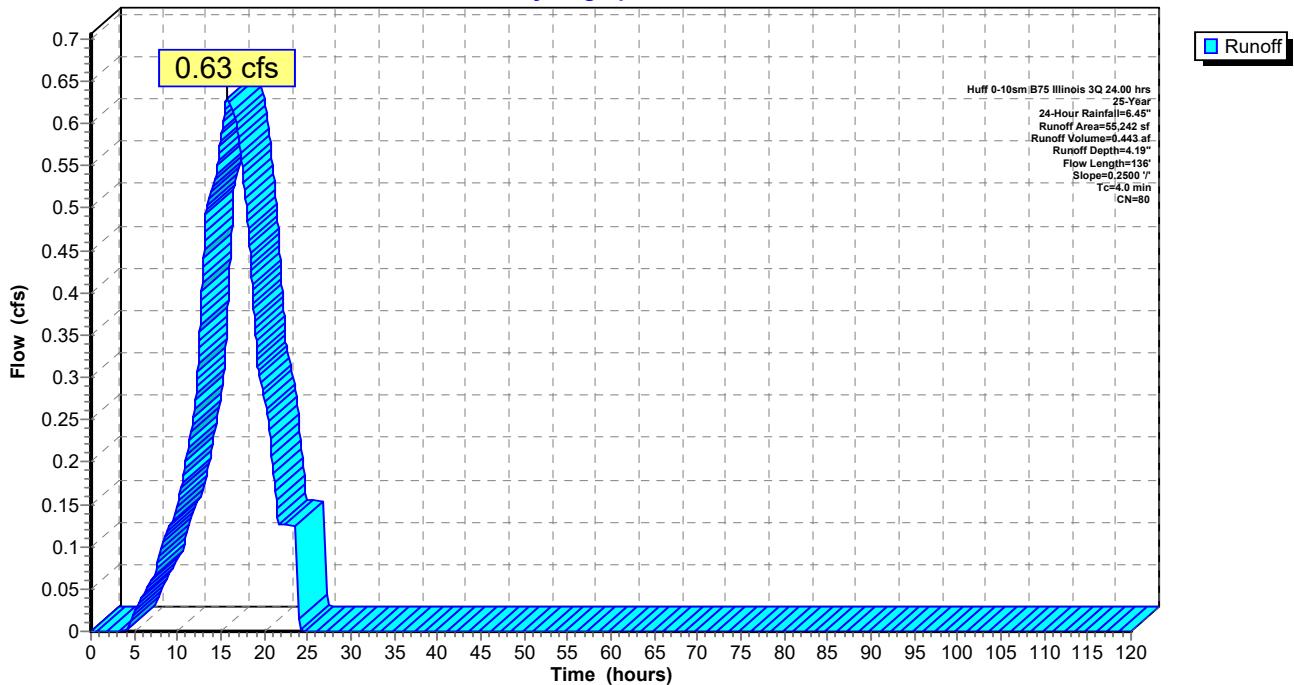
Area (sf)	CN	Description
55,242	80	>75% Grass cover, Good, HSG D
55,242		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	36	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	136	Total			

**Subcatchment N-B11: Subcat N-B11**

Hydrograph



**Summary for Subcatchment N-B12: Subcat N-B12**

Runoff = 0.88 cfs @ 15.71 hrs, Volume= 0.631 af, Depth= 4.40"

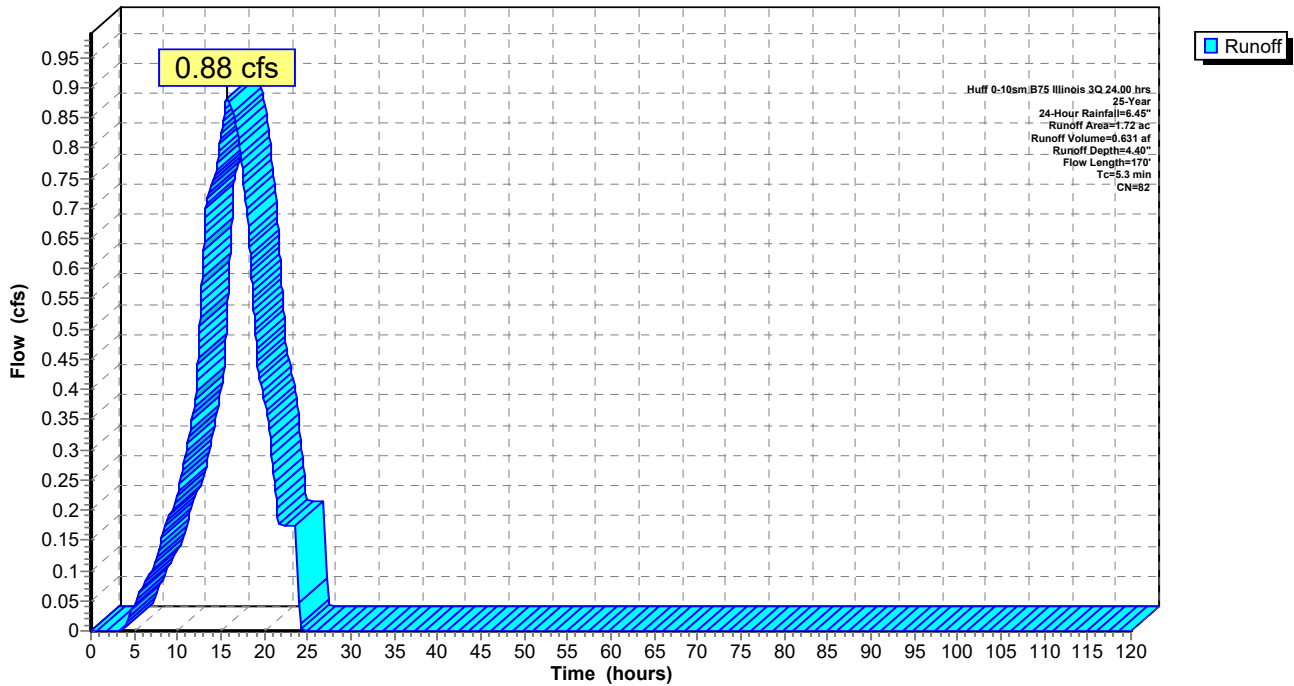
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (ac)	CN	Description
1.45	80	>75% Grass cover, Good, HSG D
0.27	93	Paved roads w/open ditches, 50% imp, HSG D
1.72	82	Weighted Average
1.59		92.15% Pervious Area
0.14		7.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	100	0.1588	0.36		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.7	70	0.0608	1.73		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
5.3	170	Total			

**Subcatchment N-B12: Subcat N-B12**

Hydrograph



### Summary for Subcatchment N-B13: Subcat N-B13

Runoff = 1.00 cfs @ 15.64 hrs, Volume= 0.701 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

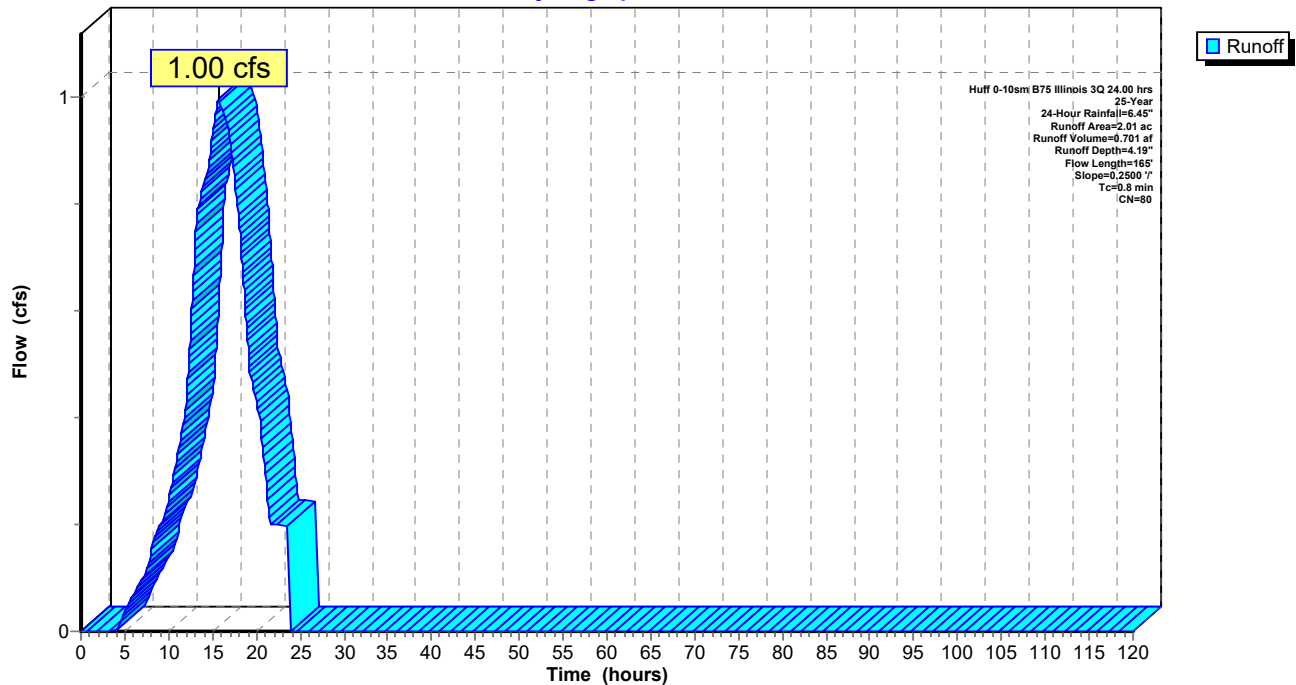
Area (ac)	CN	Description
2.01	80	>75% Grass cover, Good, HSG D
2.01		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.2500	3.53		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 2.80"
0.3	65	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.8	165	Total			

### Subcatchment N-B13: Subcat N-B13

Hydrograph



### Summary for Subcatchment N-B14: Subcat N-B14

Runoff = 0.37 cfs @ 15.61 hrs, Volume= 0.276 af, Depth= 4.95"

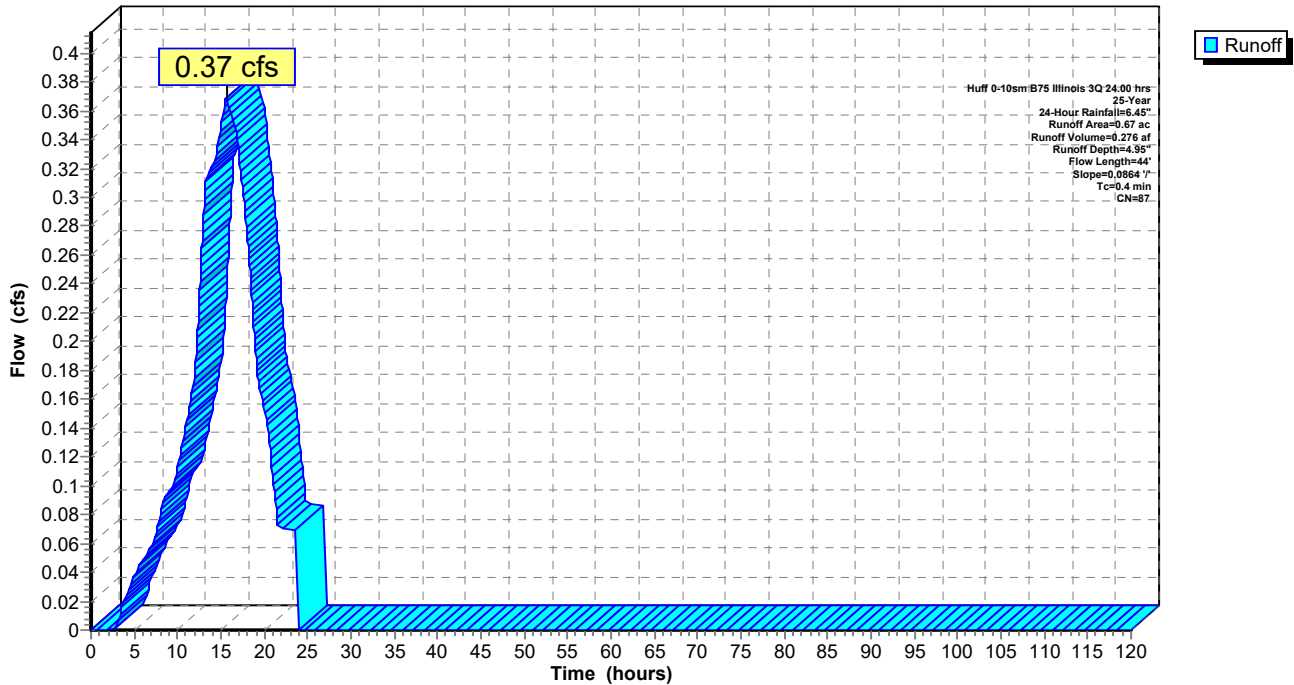
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (ac)	CN	Description
0.29	80	>75% Grass cover, Good, HSG D
0.38	93	Paved roads w/open ditches, 50% imp, HSG D
0.67	87	Weighted Average
0.48		71.64% Pervious Area
0.19		28.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	44	0.0864	1.96		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

### Subcatchment N-B14: Subcat N-B14

Hydrograph



**Summary for Subcatchment N-B15: Subcat N-B15**

Runoff = 0.02 cfs @ 15.64 hrs, Volume= 0.014 af, Depth= 4.19"

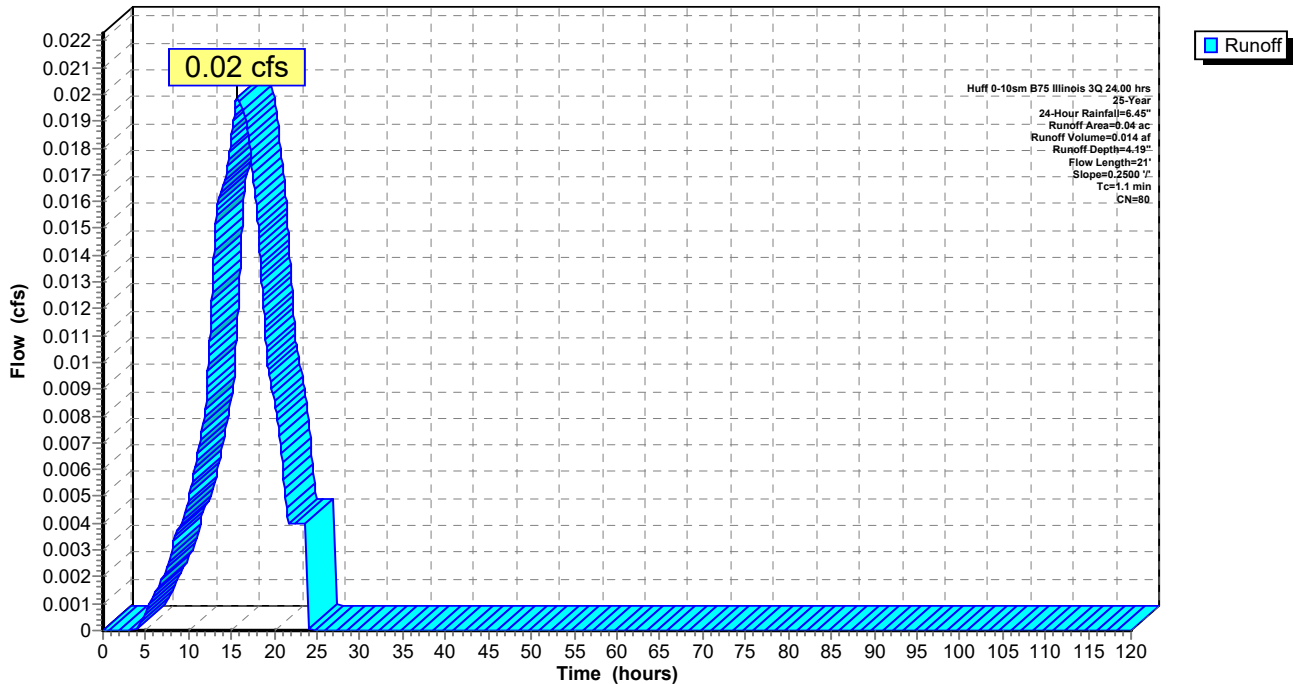
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (ac)	CN	Description
0.04	80	>75% Grass cover, Good, HSG D
0.04		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	21	0.2500	0.32		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-B15: Subcat N-B15**

Hydrograph



**Summary for Subcatchment N-B16: Subcat N-B16**

Runoff = 0.05 cfs @ 15.62 hrs, Volume= 0.039 af, Depth= 4.73"

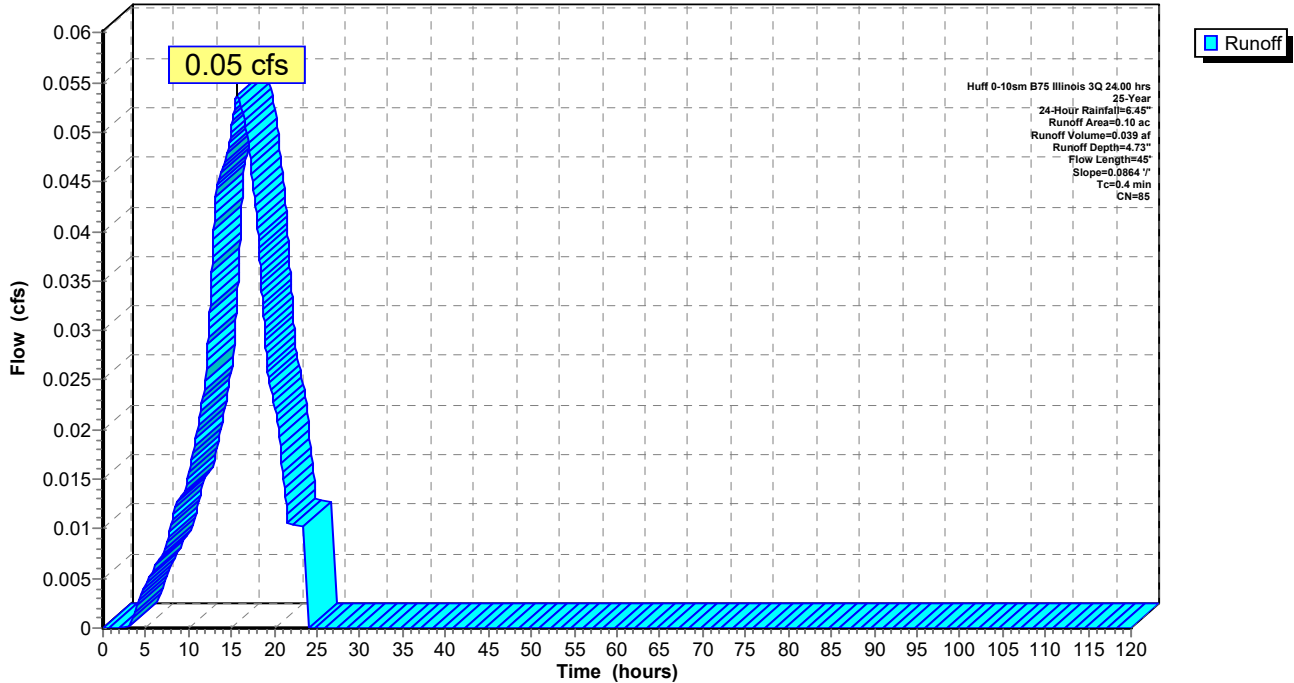
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (ac)	CN	Description
0.06	80	>75% Grass cover, Good, HSG D
0.04	93	Paved roads w/open ditches, 50% imp, HSG D
0.10	85	Weighted Average
0.08		80.00% Pervious Area
0.02		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	45	0.0864	1.97		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment N-B16: Subcat N-B16**

Hydrograph



**Summary for Subcatchment N-B2: Subcat N-B2**

Runoff = 2.23 cfs @ 15.72 hrs, Volume= 1.566 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

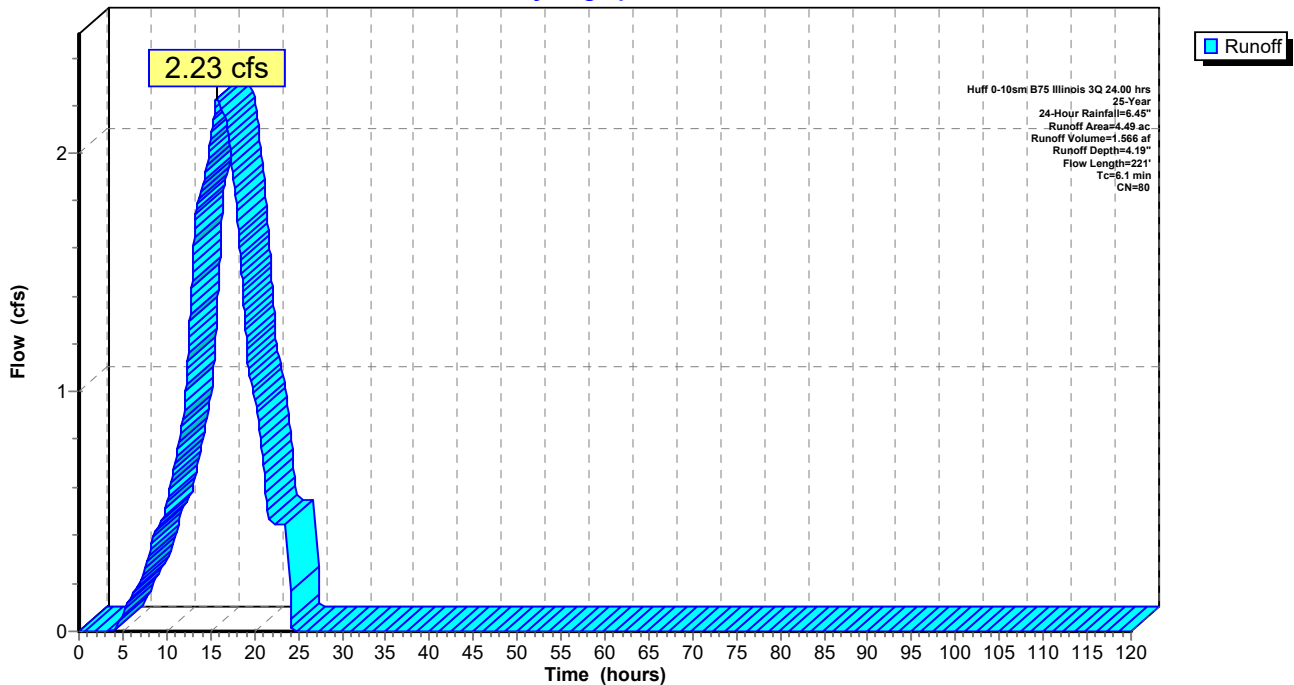
Area (ac)	CN	Description
4.49	80	>75% Grass cover, Good, HSG D
4.49		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	121	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.1	221	Total			

**Subcatchment N-B2: Subcat N-B2**

Hydrograph



**Summary for Subcatchment N-B3: Subcat N-B3**

Runoff = 1.70 cfs @ 15.69 hrs, Volume= 1.197 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

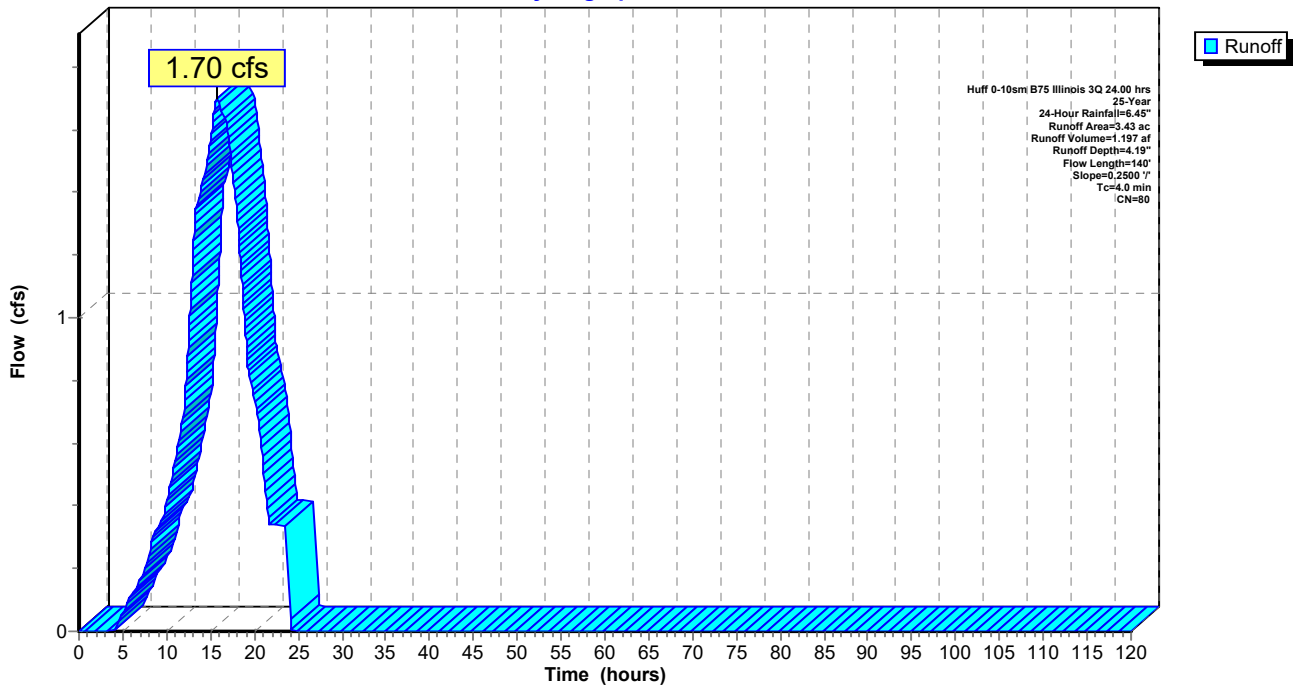
Area (ac)	CN	Description
3.43	80	>75% Grass cover, Good, HSG D
3.43		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	40	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	140	Total			

**Subcatchment N-B3: Subcat N-B3**

Hydrograph





**Summary for Subcatchment N-B4: Subcat N-B4**

Runoff = 1.89 cfs @ 15.69 hrs, Volume= 1.328 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

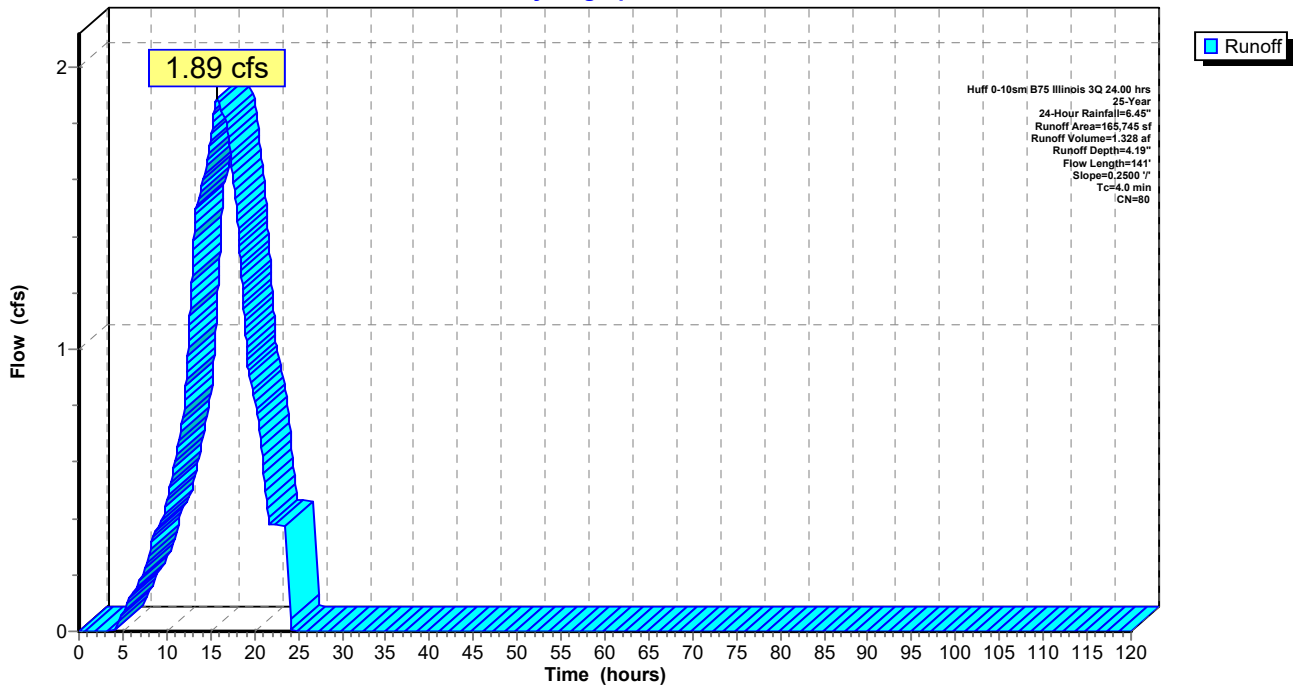
Area (sf)	CN	Description
165,745	80	>75% Grass cover, Good, HSG D
165,745		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	41	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	141	Total			

**Subcatchment N-B4: Subcat N-B4**

Hydrograph



**Summary for Subcatchment N-B5: Subcat N-B5**

Runoff = 2.24 cfs @ 15.69 hrs, Volume= 1.570 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

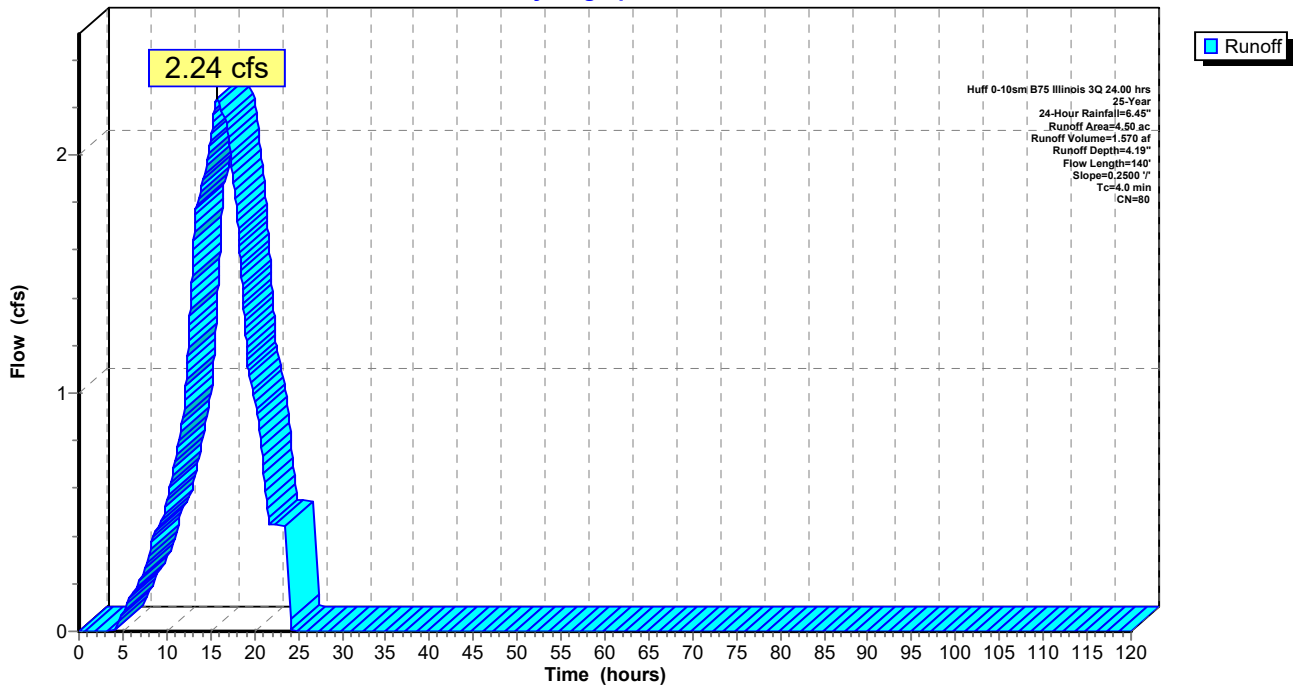
Area (ac)	CN	Description
4.50	80	>75% Grass cover, Good, HSG D
4.50		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	40	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	140	Total			

**Subcatchment N-B5: Subcat N-B5**

Hydrograph



**Summary for Subcatchment N-B6: Subcat N-B6**

Runoff = 2.13 cfs @ 15.69 hrs, Volume= 1.497 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

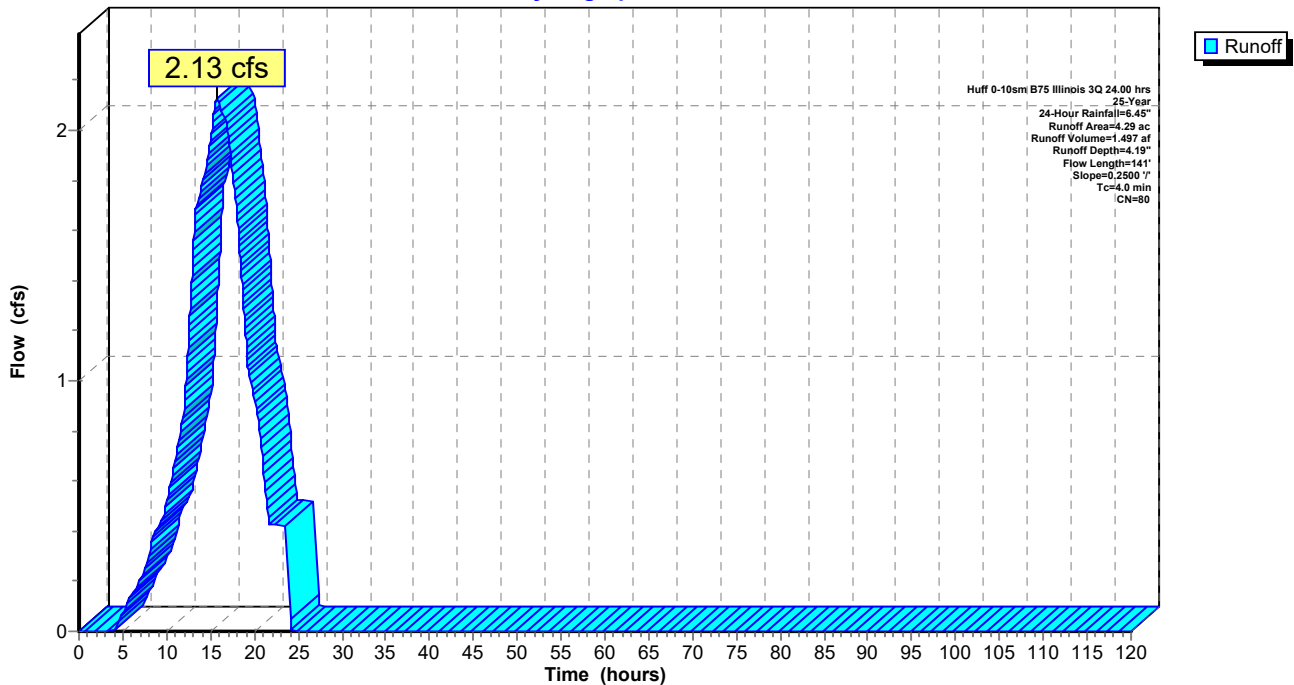
Area (ac)	CN	Description
4.29	80	>75% Grass cover, Good, HSG D
4.29		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	41	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	141	Total			

**Subcatchment N-B6: Subcat N-B6**

Hydrograph



**Summary for Subcatchment N-B7: Subcat N-B7**

Runoff = 1.97 cfs @ 15.69 hrs, Volume= 1.384 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

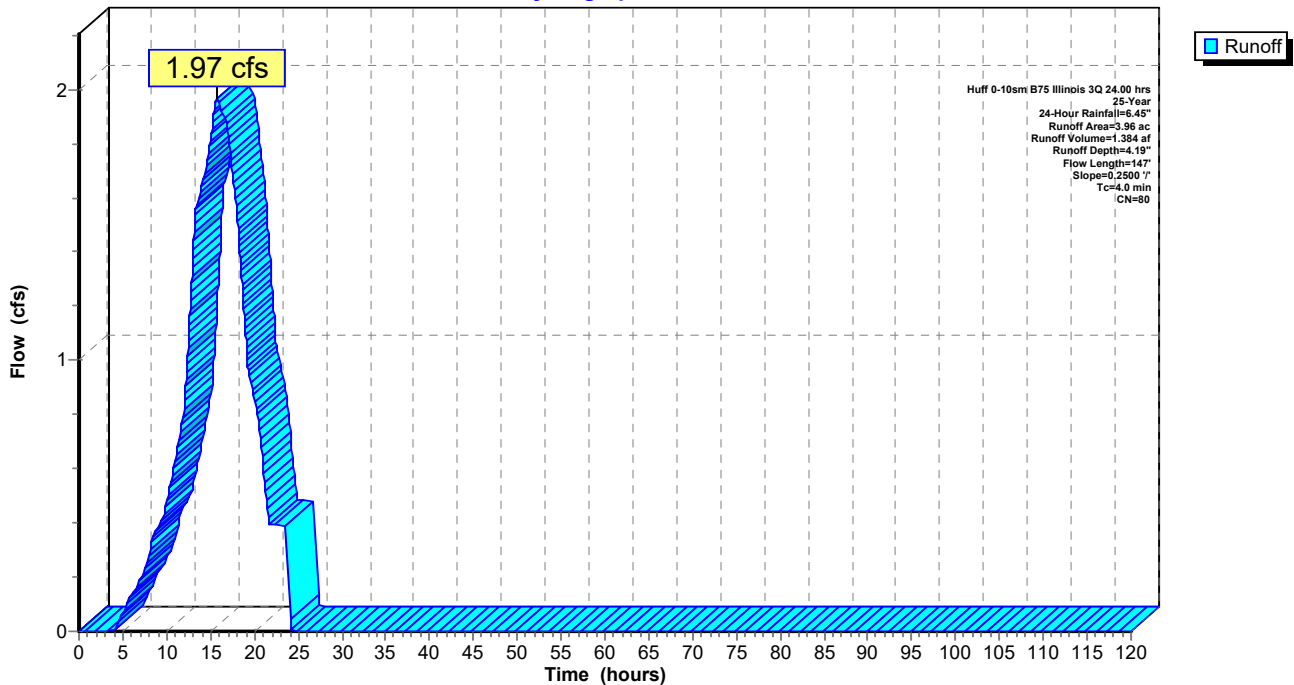
Area (ac)	CN	Description
3.96	80	>75% Grass cover, Good, HSG D
3.96		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	47	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	147	Total			

**Subcatchment N-B7: Subcat N-B7**

Hydrograph



**Summary for Subcatchment N-B8: Subcat N-B8**

Runoff = 1.75 cfs @ 15.69 hrs, Volume= 1.230 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

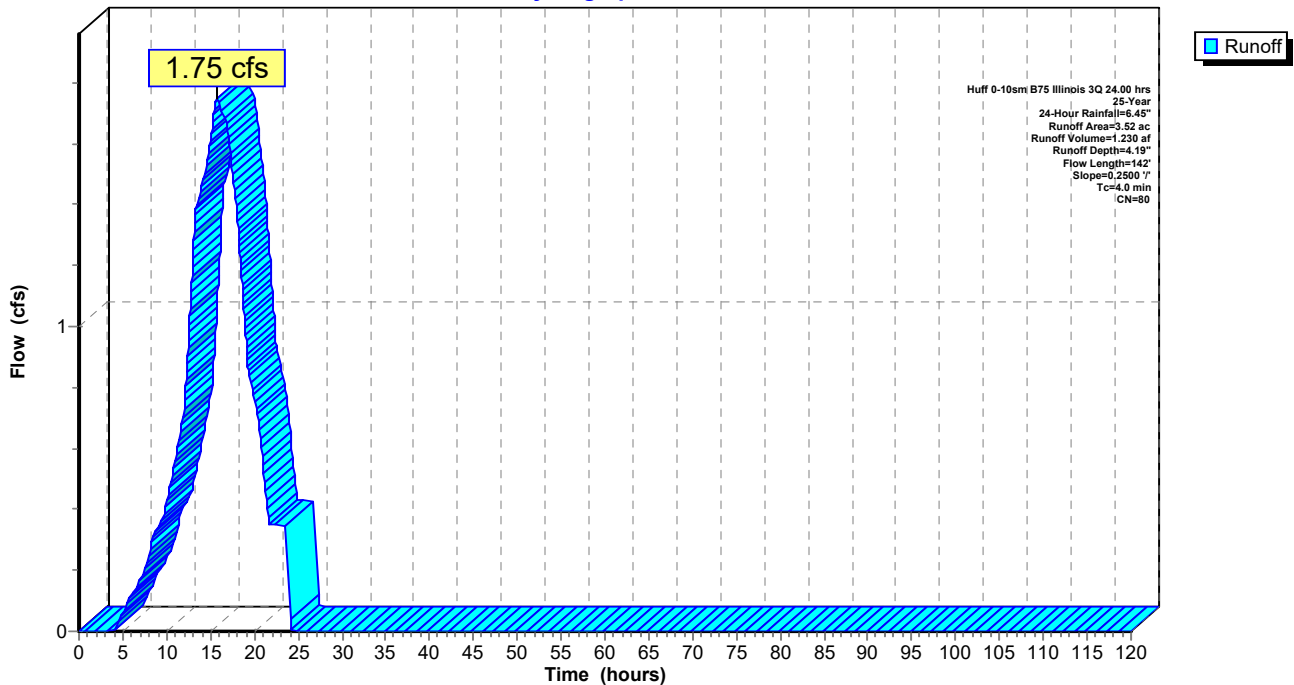
Area (ac)	CN	Description
3.52	80	>75% Grass cover, Good, HSG D
3.52		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	42	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	142	Total			

**Subcatchment N-B8: Subcat N-B8**

Hydrograph



**Summary for Subcatchment N-B9: Subcat N-B9**

Runoff = 0.58 cfs @ 15.67 hrs, Volume= 0.405 af, Depth= 4.19"

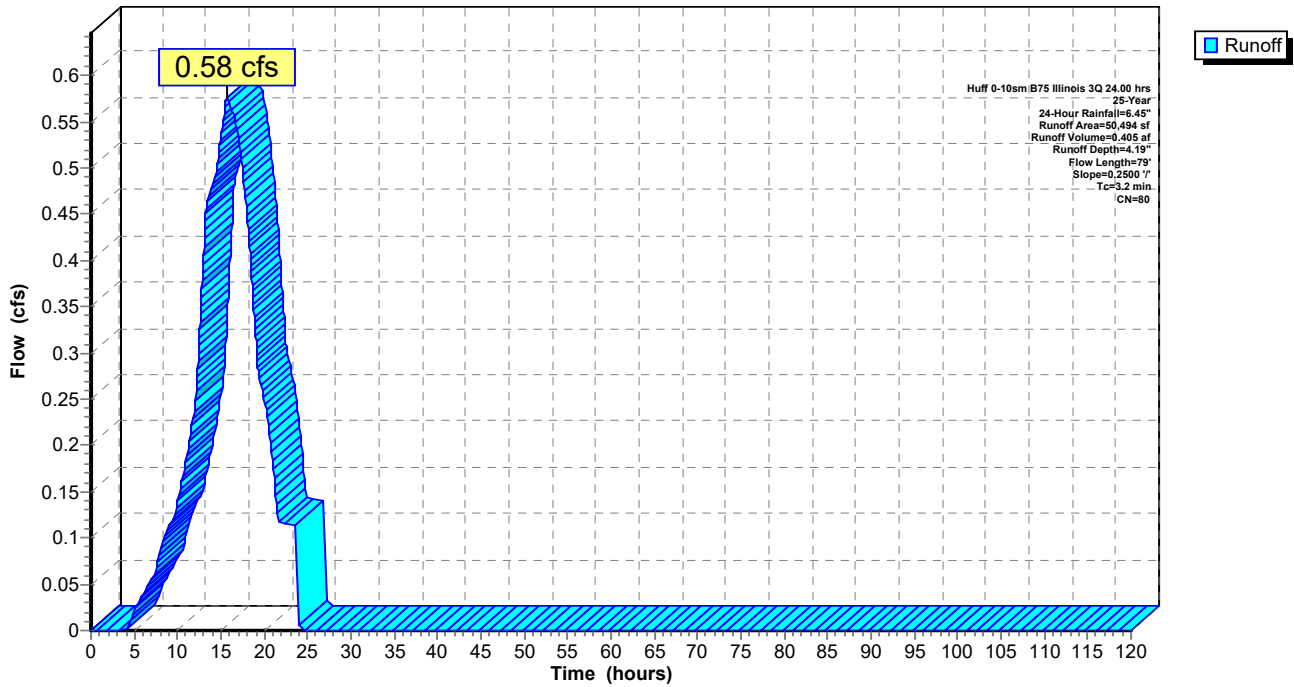
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (sf)	CN	Description
50,494	80	>75% Grass cover, Good, HSG D
50,494		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	79	0.2500	0.42		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-B9: Subcat N-B9**

Hydrograph



**Summary for Subcatchment N-C1: Subcat N-C1**

Runoff = 3.47 cfs @ 15.73 hrs, Volume= 2.438 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

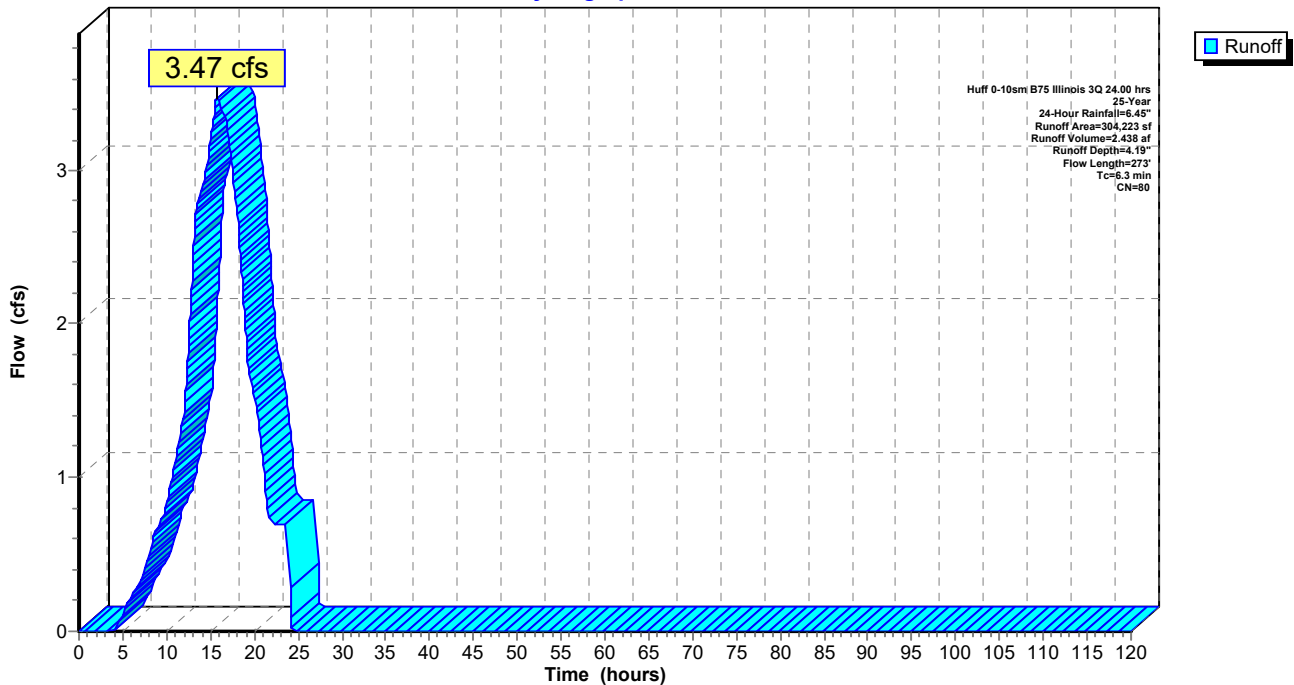
Area (sf)	CN	Description
304,223	80	>75% Grass cover, Good, HSG D
304,223		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.8	173	0.2418	3.44		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.3	273	Total			

**Subcatchment N-C1: Subcat N-C1**

Hydrograph



**Summary for Subcatchment N-C2: Subcat N-C2**

Runoff = 2.09 cfs @ 15.69 hrs, Volume= 1.467 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

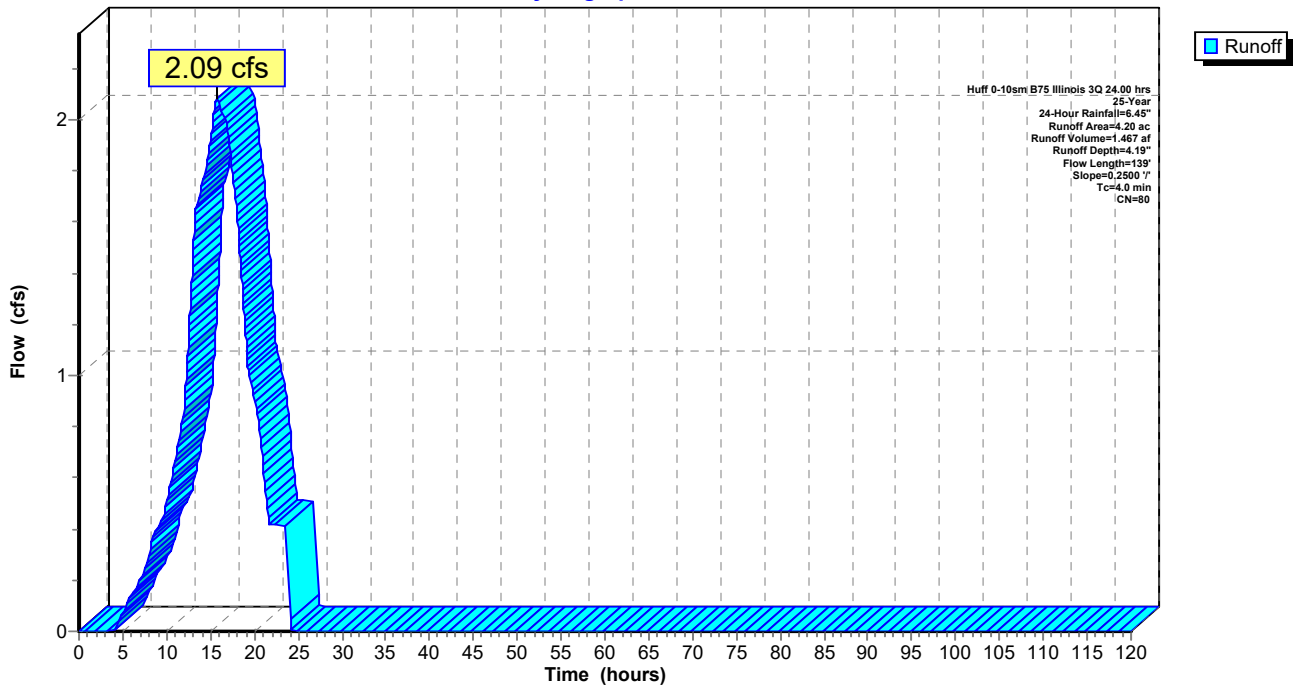
Area (ac)	CN	Description
4.20	80	>75% Grass cover, Good, HSG D
4.20		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	39	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	139	Total			

**Subcatchment N-C2: Subcat N-C2**

Hydrograph





**Summary for Subcatchment N-C3: Subcat N-C3**

Runoff = 2.10 cfs @ 15.69 hrs, Volume= 1.473 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

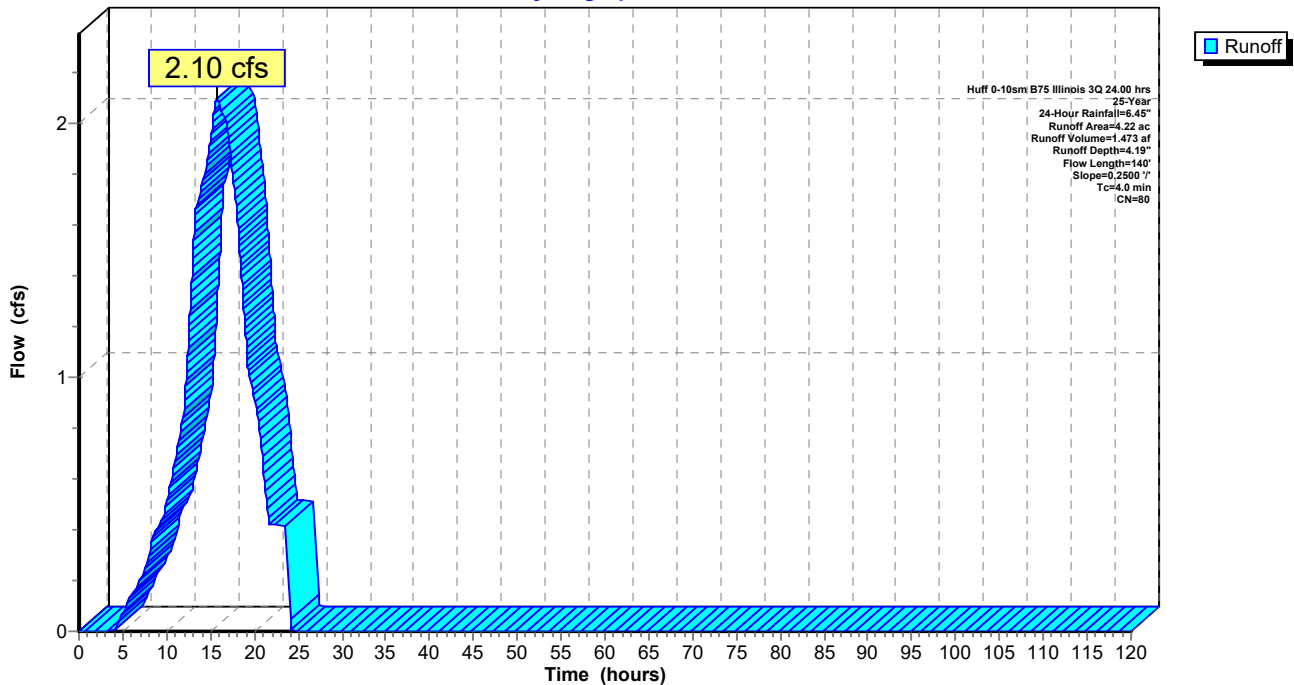
Area (ac)	CN	Description
4.22	80	>75% Grass cover, Good, HSG D
4.22		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	40	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	140	Total			

**Subcatchment N-C3: Subcat N-C3**

Hydrograph



**Summary for Subcatchment N-C4: Subcat N-C4**

Runoff = 1.75 cfs @ 15.69 hrs, Volume= 1.228 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

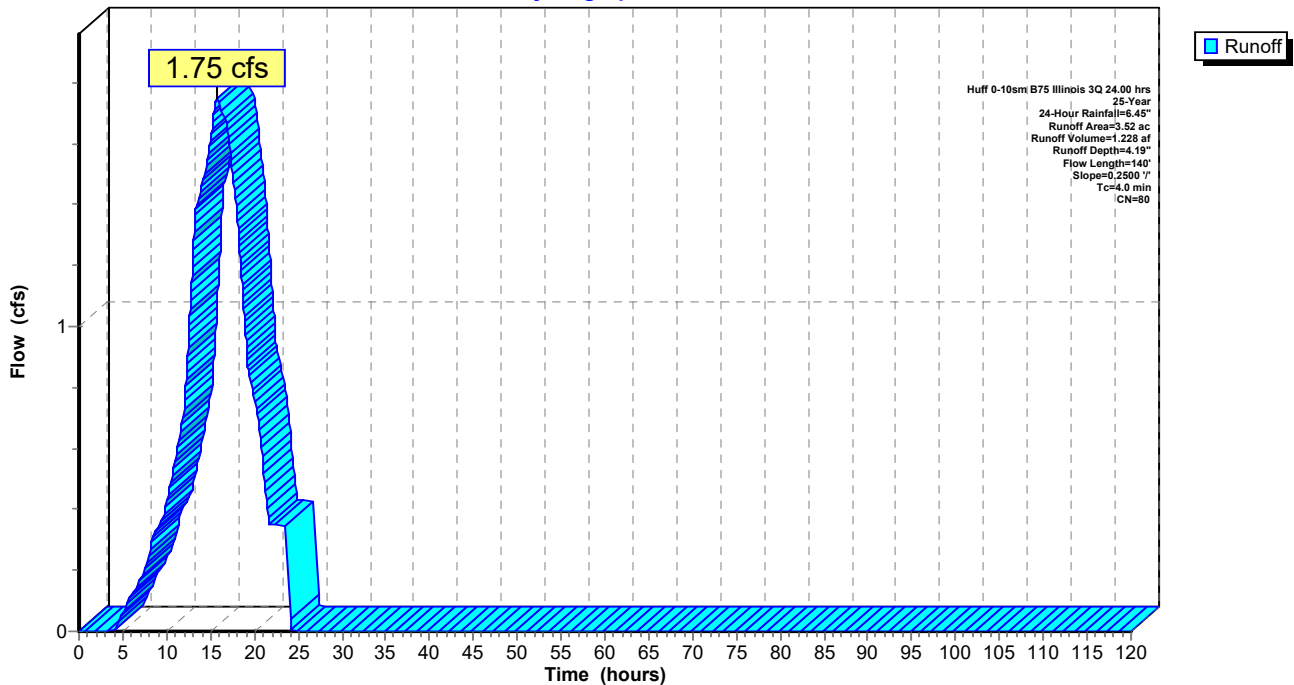
Area (ac)	CN	Description
3.52	80	>75% Grass cover, Good, HSG D
3.52		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	40	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	140	Total			

**Subcatchment N-C4: Subcat N-C4**

Hydrograph



**Summary for Subcatchment N-C5: Subcat N-C5**

Runoff = 0.37 cfs @ 15.69 hrs, Volume= 0.262 af, Depth= 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

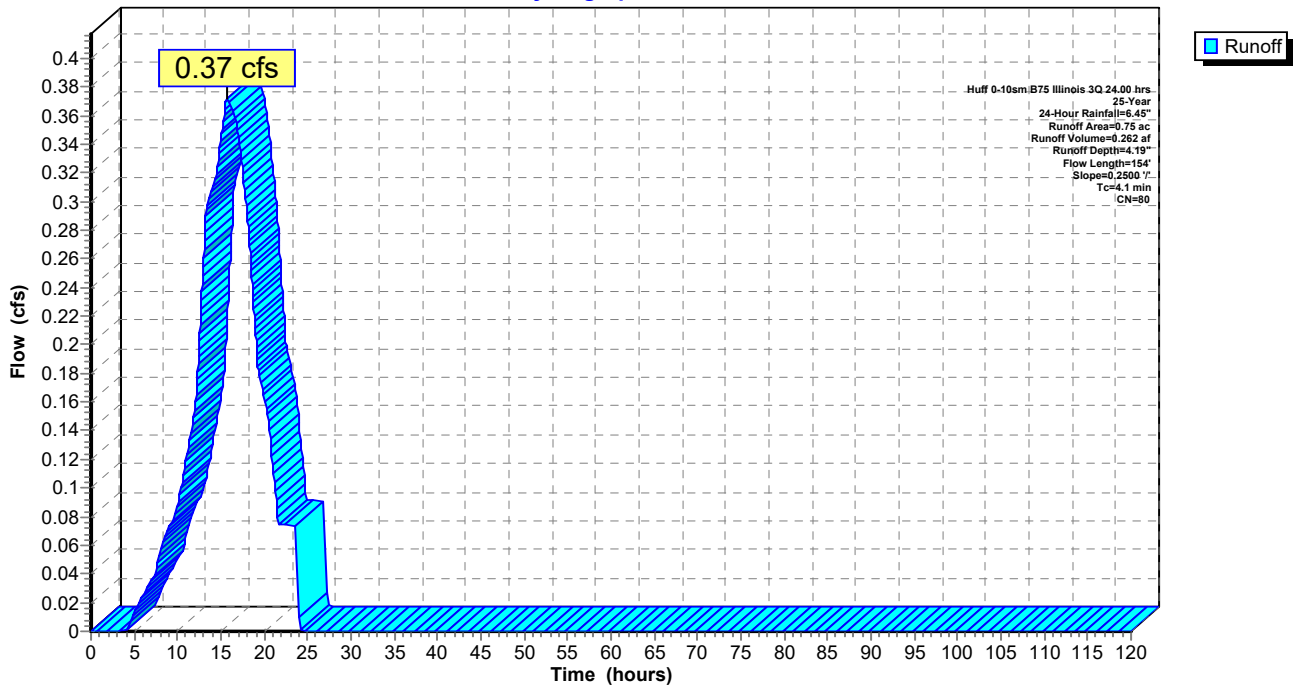
Area (ac)	CN	Description
0.75	80	>75% Grass cover, Good, HSG D
0.75		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.3	54	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	154	Total			

**Subcatchment N-C5: Subcat N-C5**

Hydrograph



**Summary for Subcatchment N-C6: Subcat N-C6**

Runoff = 0.38 cfs @ 16.05 hrs, Volume= 0.277 af, Depth= 4.51"

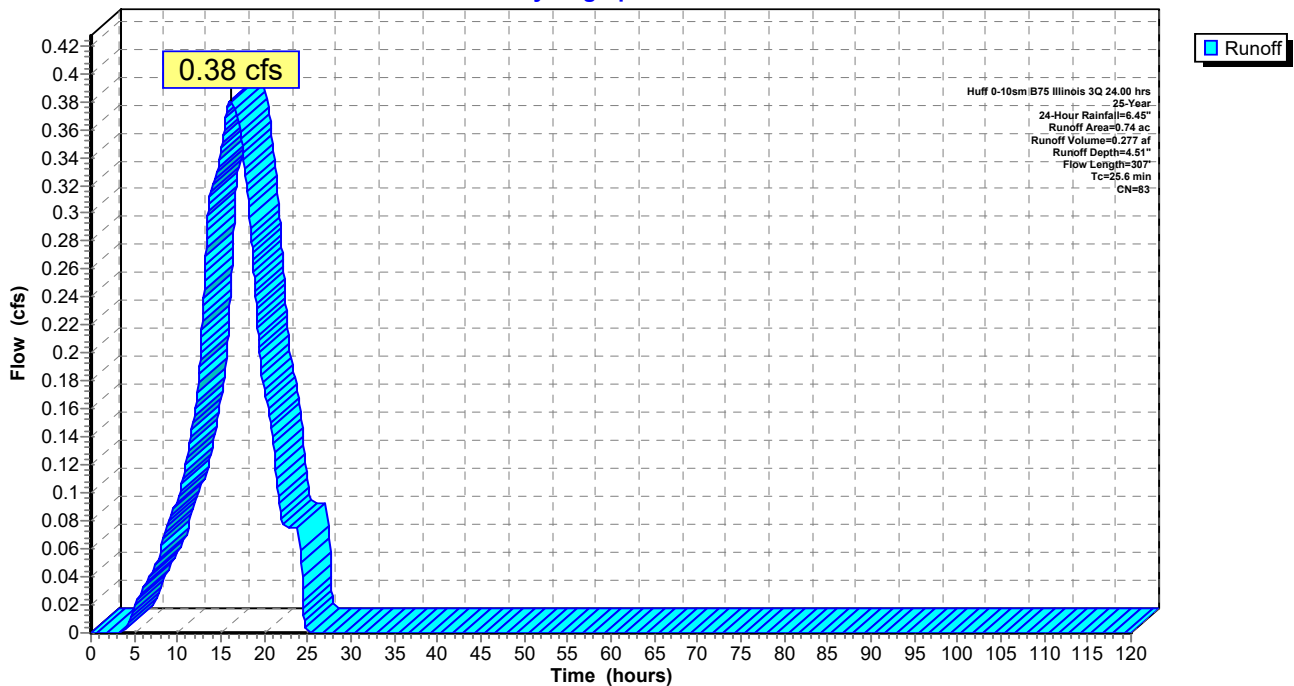
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (ac)	CN	Description
0.59	80	>75% Grass cover, Good, HSG D
0.14	93	Paved roads w/open ditches, 50% imp, HSG D
0.74	83	Weighted Average
0.67		90.37% Pervious Area
0.07		9.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.0	100	0.0200	0.07		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.80"
2.6	207	0.0352	1.31		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
25.6	307	Total			

**Subcatchment N-C6: Subcat N-C6**

Hydrograph



**Summary for Subcatchment N-C7: Subcat N-C7**

Runoff = 0.58 cfs @ 15.67 hrs, Volume= 0.406 af, Depth= 4.19"

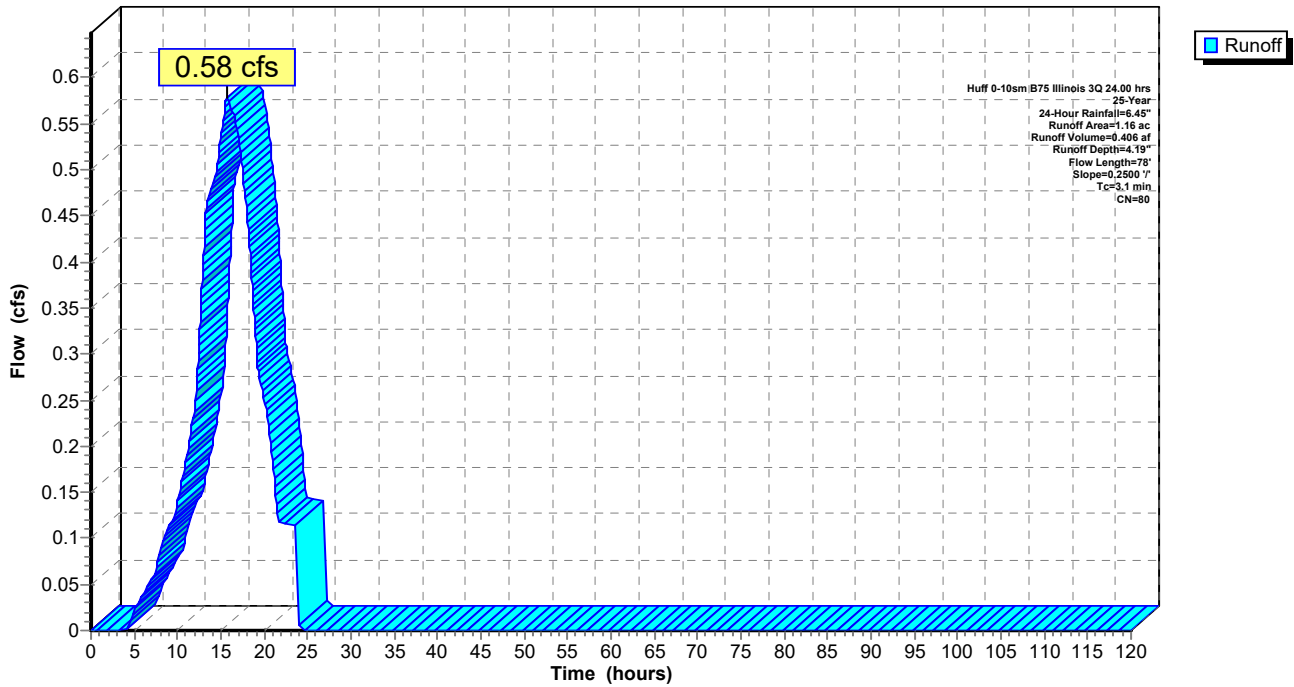
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (ac)	CN	Description
1.16	80	>75% Grass cover, Good, HSG D
1.16		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	78	0.2500	0.42		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-C7: Subcat N-C7**

Hydrograph



**Summary for Subcatchment N-C8: Subcat N-C8**

Runoff = 0.84 cfs @ 16.01 hrs, Volume= 0.620 af, Depth= 4.73"

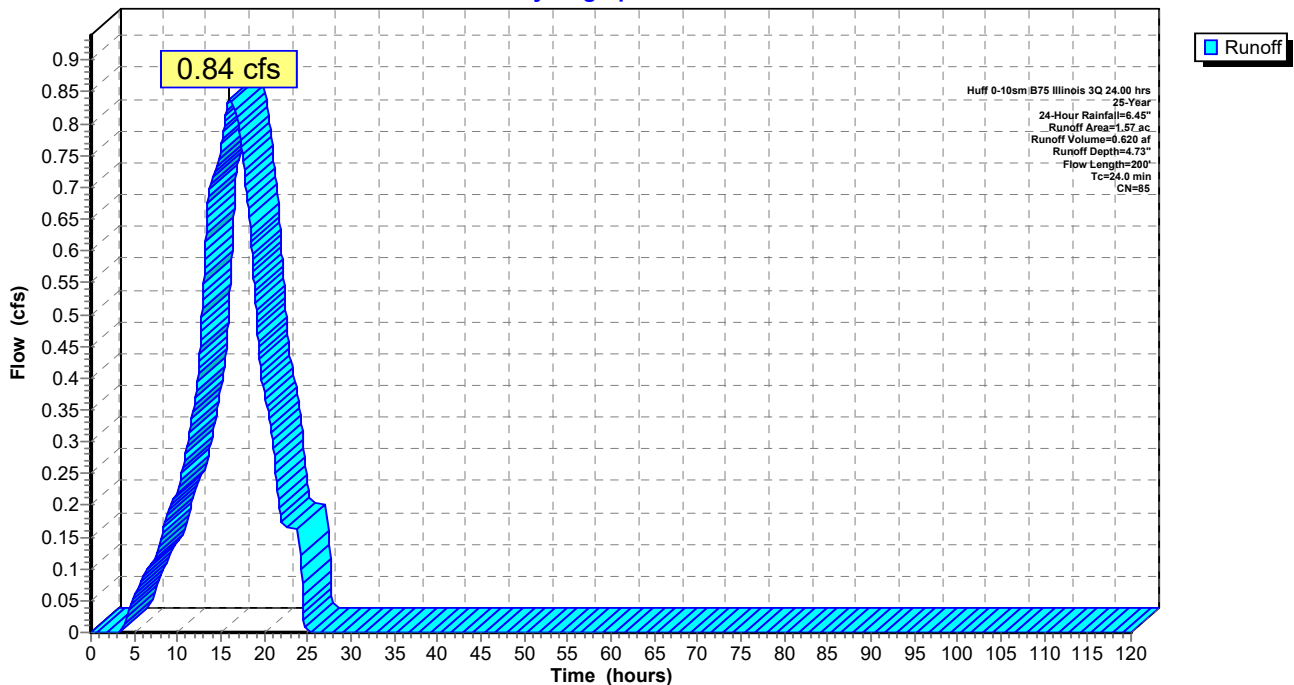
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (ac)	CN	Description
0.65	80	>75% Grass cover, Good, HSG D
0.63	93	Paved roads w/open ditches, 50% imp, HSG D
0.30	79	Woods/grass comb., Good, HSG D
1.57	85	Weighted Average
1.26		80.08% Pervious Area
0.31		19.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.0	100	0.0200	0.07		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.80"
1.0	100	0.0611	1.73		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
24.0	200	Total			

**Subcatchment N-C8: Subcat N-C8**

Hydrograph



**Summary for Subcatchment N-D1: Subcat N-D1**

Runoff = 0.05 cfs @ 15.67 hrs, Volume= 0.038 af, Depth= 4.19"

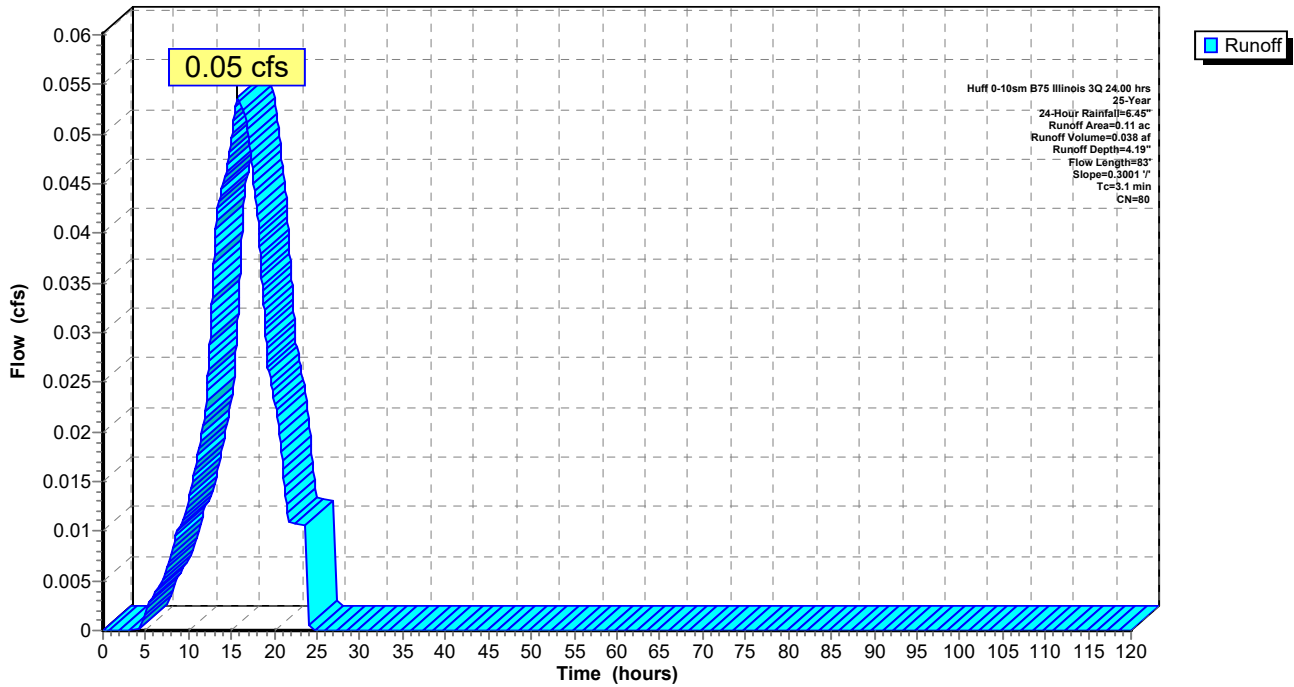
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (ac)	CN	Description
0.11	80	>75% Grass cover, Good, HSG D
0.11		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	83	0.3001	0.45		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-D1: Subcat N-D1**

Hydrograph



**Summary for Subcatchment N-D2: Subcat N-D2**

Runoff = 2.34 cfs @ 15.68 hrs, Volume= 1.643 af, Depth= 4.19"

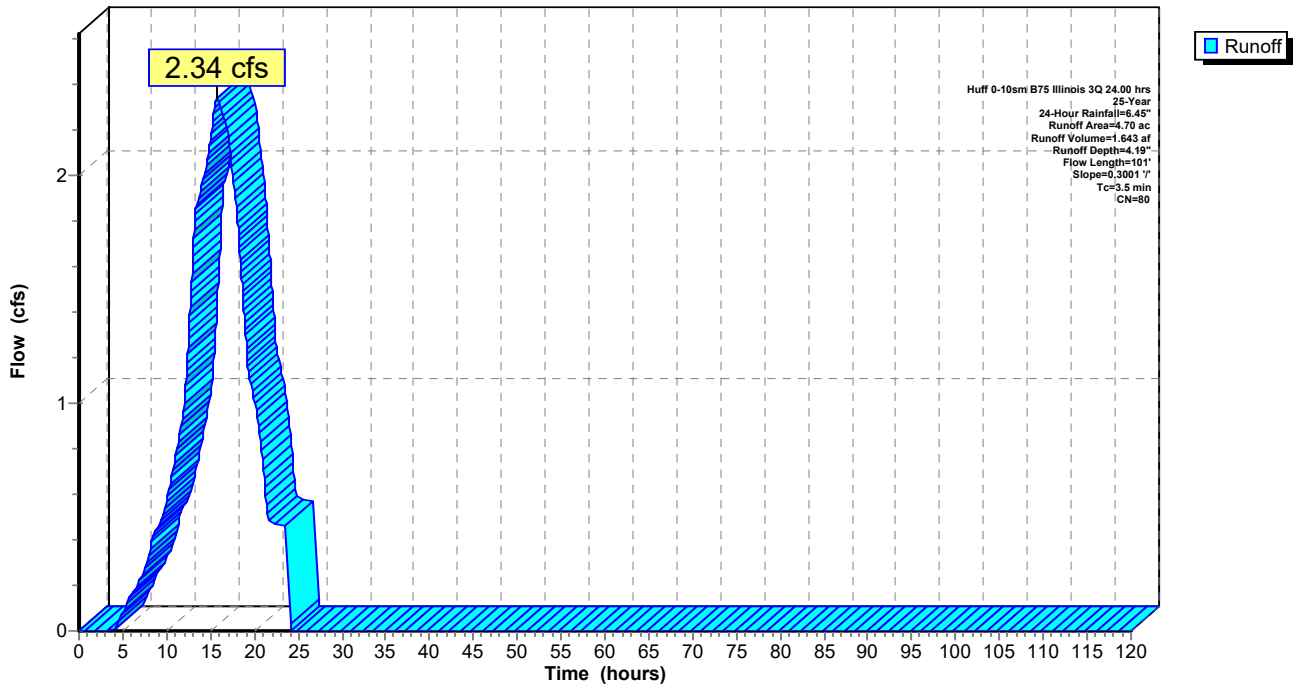
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (ac)	CN	Description
4.54	80	>75% Grass cover, Good, HSG D
0.16	93	Paved roads w/open ditches, 50% imp, HSG D
4.70	80	Weighted Average
4.62		98.26% Pervious Area
0.08		1.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	100	0.3001	0.47		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.0	1	0.3001	3.83		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.5	101	Total			

**Subcatchment N-D2: Subcat N-D2**

Hydrograph





**Summary for Subcatchment N-E1: Subcat N-E1**

Runoff = 4.45 cfs @ 15.66 hrs, Volume= 3.125 af, Depth= 4.19"

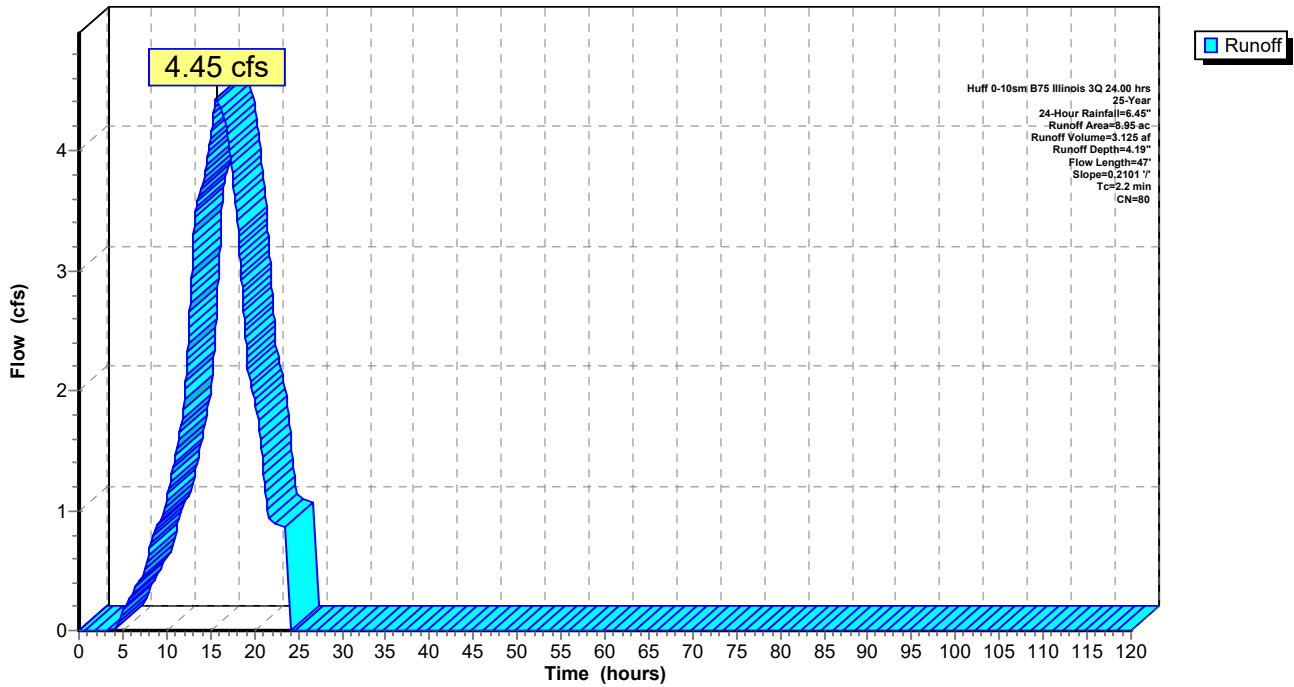
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 25-Year, 24-Hour Rainfall=6.45"

Area (ac)	CN	Description
8.95	80	>75% Grass cover, Good, HSG D
8.95		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	47	0.2101	0.35		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-E1: Subcat N-E1**

Hydrograph



### Summary for Reach Cu-1: Culvert 1

Inflow Area = 90.82 ac, 2.38% Impervious, Inflow Depth = 4.25" for 25-Year, 24-Hour event  
 Inflow = 44.84 cfs @ 16.43 hrs, Volume= 32.151 af  
 Outflow = 44.84 cfs @ 16.44 hrs, Volume= 32.151 af, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 5.13 fps, Min. Travel Time= 0.4 min  
 Avg. Velocity = 2.25 fps, Avg. Travel Time= 0.8 min

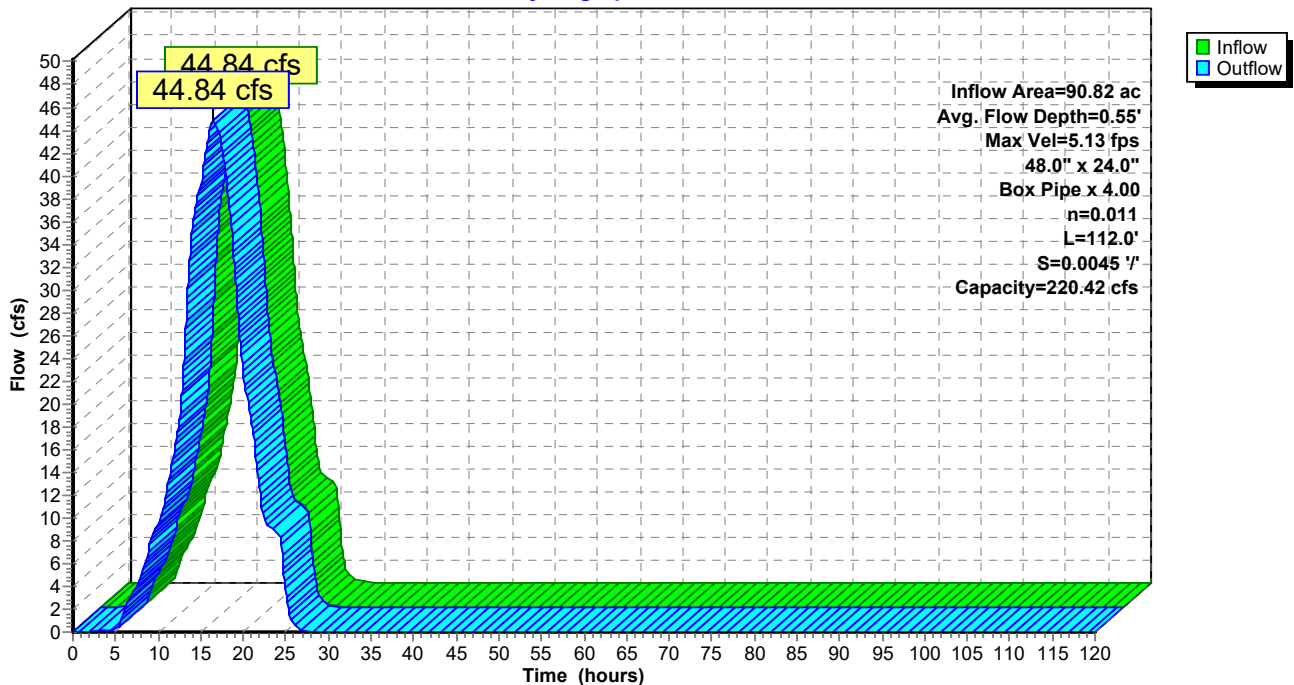
Peak Storage= 978 cf @ 16.44 hrs  
 Average Depth at Peak Storage= 0.55'  
 Bank-Full Depth= 2.00' Flow Area= 32.0 sf, Capacity= 220.42 cfs

A factor of 4.00 has been applied to the storage and discharge capacity  
 48.0" W x 24.0" H Box Pipe  
 n= 0.011 Concrete pipe, straight & clean  
 Length= 112.0' Slope= 0.0045 '/'  
 Inlet Invert= 737.00', Outlet Invert= 736.50'



### Reach Cu-1: Culvert 1

Hydrograph



**Summary for Reach Cu-2: Culvert 2**

Inflow Area = 39.65 ac, 1.66% Impervious, Inflow Depth = 4.23" for 25-Year, 24-Hour event  
 Inflow = 19.69 cfs @ 16.04 hrs, Volume= 13.991 af  
 Outflow = 19.69 cfs @ 16.05 hrs, Volume= 13.991 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 6.26 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity= 3.19 fps, Avg. Travel Time= 0.4 min

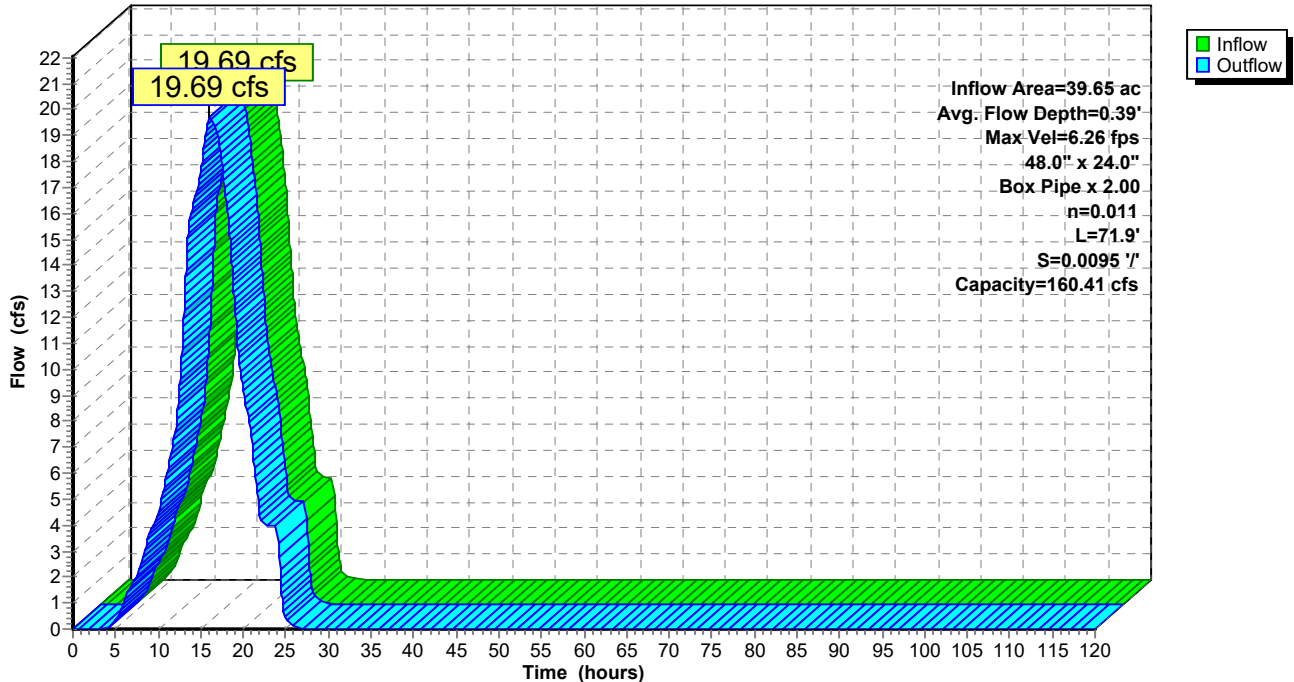
Peak Storage= 226 cf @ 16.04 hrs  
 Average Depth at Peak Storage= 0.39'  
 Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 160.41 cfs

A factor of 2.00 has been applied to the storage and discharge capacity  
 48.0" W x 24.0" H Box Pipe  
 n= 0.011 Concrete pipe, straight & clean  
 Length= 71.9' Slope= 0.0095 '/  
 Inlet Invert= 737.18', Outlet Invert= 736.50'



**Reach Cu-2: Culvert 2**

Hydrograph



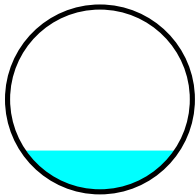
### Summary for Reach Cu-3: Culvert 3

Inflow Area = 43.19 ac, 1.69% Impervious, Inflow Depth = 4.24" for 25-Year, 24-Hour event  
 Inflow = 21.42 cfs @ 16.11 hrs, Volume= 15.246 af  
 Outflow = 21.42 cfs @ 16.12 hrs, Volume= 15.246 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 6.09 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 3.27 fps, Avg. Travel Time= 0.5 min

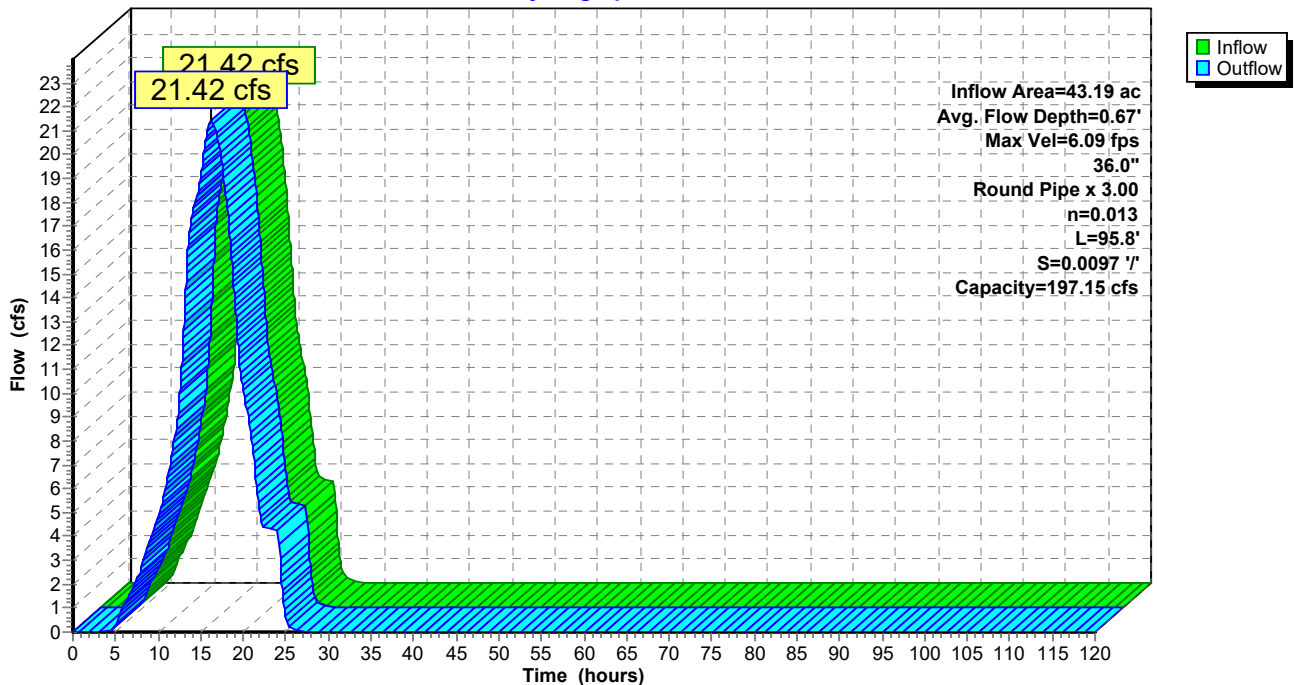
Peak Storage= 337 cf @ 16.12 hrs  
 Average Depth at Peak Storage= 0.67'  
 Bank-Full Depth= 3.00' Flow Area= 21.2 sf, Capacity= 197.15 cfs

A factor of 3.00 has been applied to the storage and discharge capacity  
 36.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 95.8' Slope= 0.0097 '/  
 Inlet Invert= 738.93', Outlet Invert= 738.00'



### Reach Cu-3: Culvert 3

Hydrograph



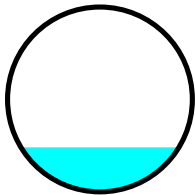
**Summary for Reach Cu-A: Culvert A**

Inflow Area = 33.94 ac, 1.59% Impervious, Inflow Depth = 4.22" for 25-Year, 24-Hour event  
 Inflow = 16.77 cfs @ 16.25 hrs, Volume= 11.932 af  
 Outflow = 16.77 cfs @ 16.26 hrs, Volume= 11.932 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 6.44 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 3.30 fps, Avg. Travel Time= 0.5 min

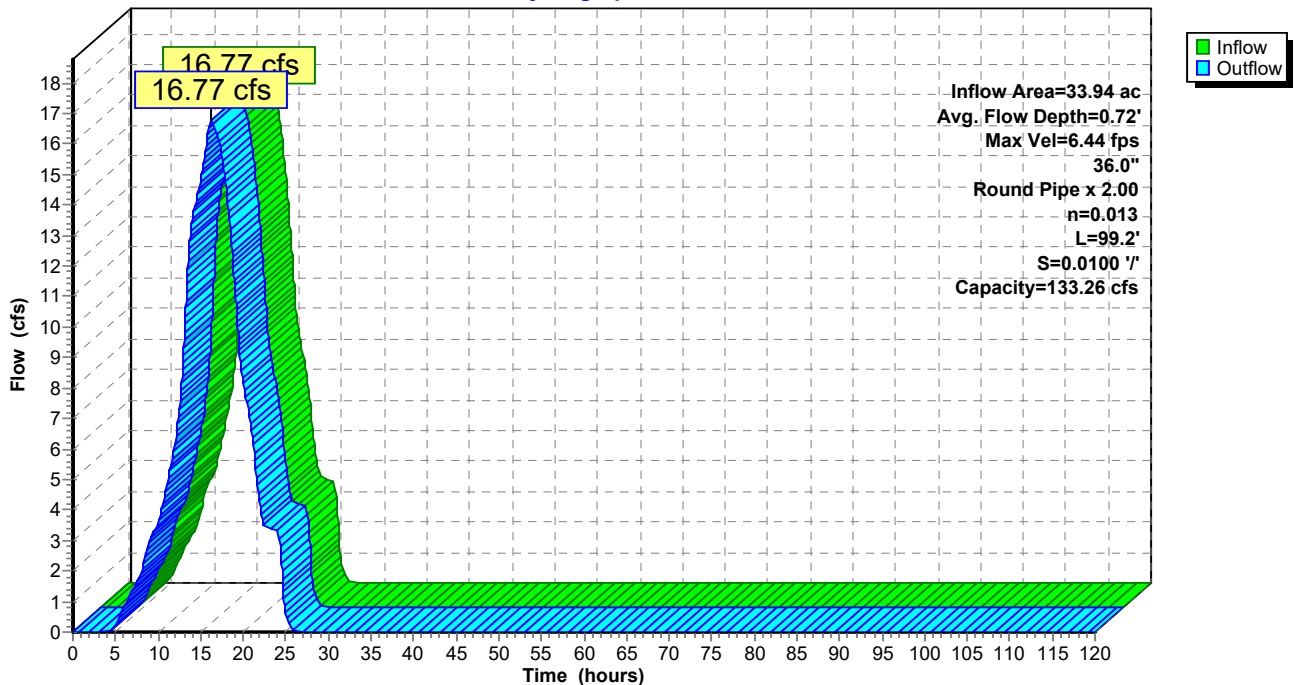
Peak Storage= 258 cf @ 16.26 hrs  
 Average Depth at Peak Storage= 0.72'  
 Bank-Full Depth= 3.00' Flow Area= 14.1 sf, Capacity= 133.26 cfs

A factor of 2.00 has been applied to the storage and discharge capacity  
 36.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 99.2' Slope= 0.0100 '/  
 Inlet Invert= 756.77', Outlet Invert= 755.78'



**Reach Cu-A: Culvert A**

Hydrograph



**Summary for Reach DC-A1A: Downchute A1A**

Inflow Area = 6.74 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 3.33 cfs @ 16.09 hrs, Volume= 2.352 af  
 Outflow = 3.33 cfs @ 16.11 hrs, Volume= 2.352 af, Atten= 0%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.16 fps, Min. Travel Time= 0.7 min  
 Avg. Velocity = 2.12 fps, Avg. Travel Time= 1.1 min

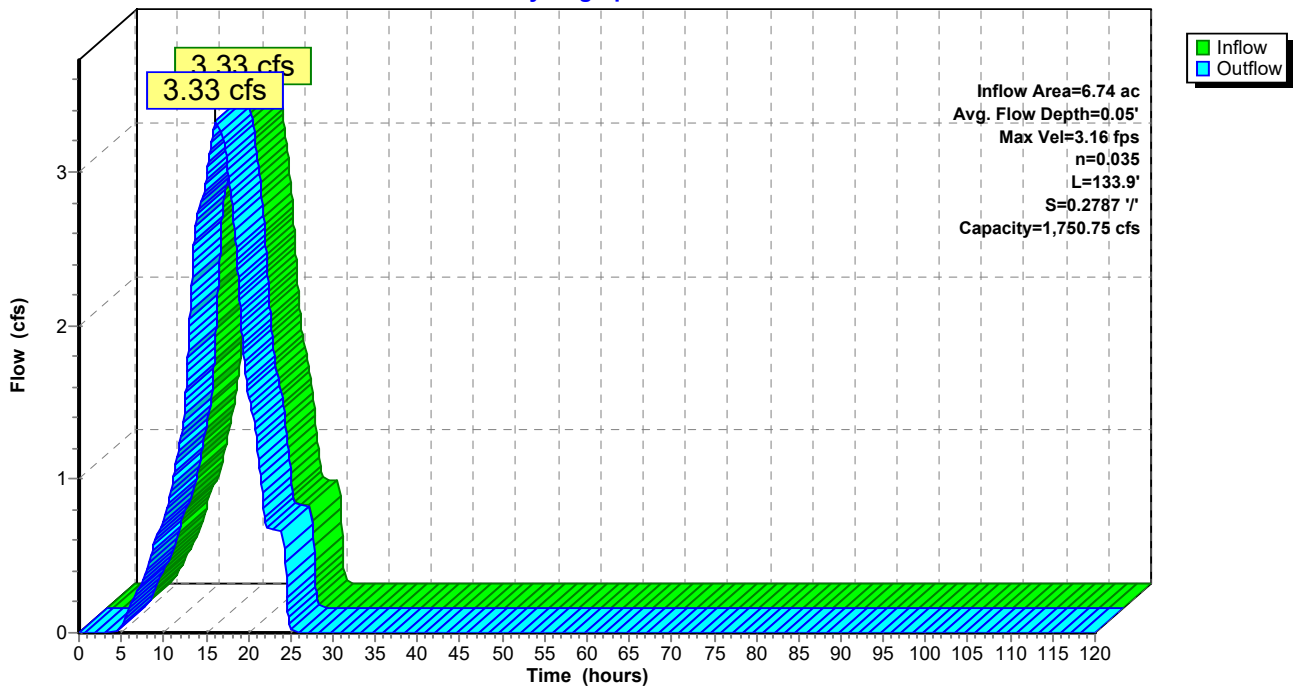
Peak Storage= 141 cf @ 16.10 hrs  
 Average Depth at Peak Storage= 0.05'  
 Bank-Full Depth= 2.00' Flow Area= 60.0 sf, Capacity= 1,750.75 cfs

20.00' x 2.00' deep channel, n= 0.035  
 Side Slope Z-value= 5.0 '/' Top Width= 40.00'  
 Length= 133.9' Slope= 0.2787 '/'  
 Inlet Invert= 821.32', Outlet Invert= 784.00'



**Reach DC-A1A: Downchute A1A**

Hydrograph



**Summary for Reach DC-A1B: Downchute A1B**

Inflow Area = 11.96 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 5.91 cfs @ 16.09 hrs, Volume= 4.177 af  
 Outflow = 5.91 cfs @ 16.10 hrs, Volume= 4.177 af, Atten= 0%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.83 fps, Min. Travel Time= 0.5 min  
 Avg. Velocity = 1.67 fps, Avg. Travel Time= 0.8 min

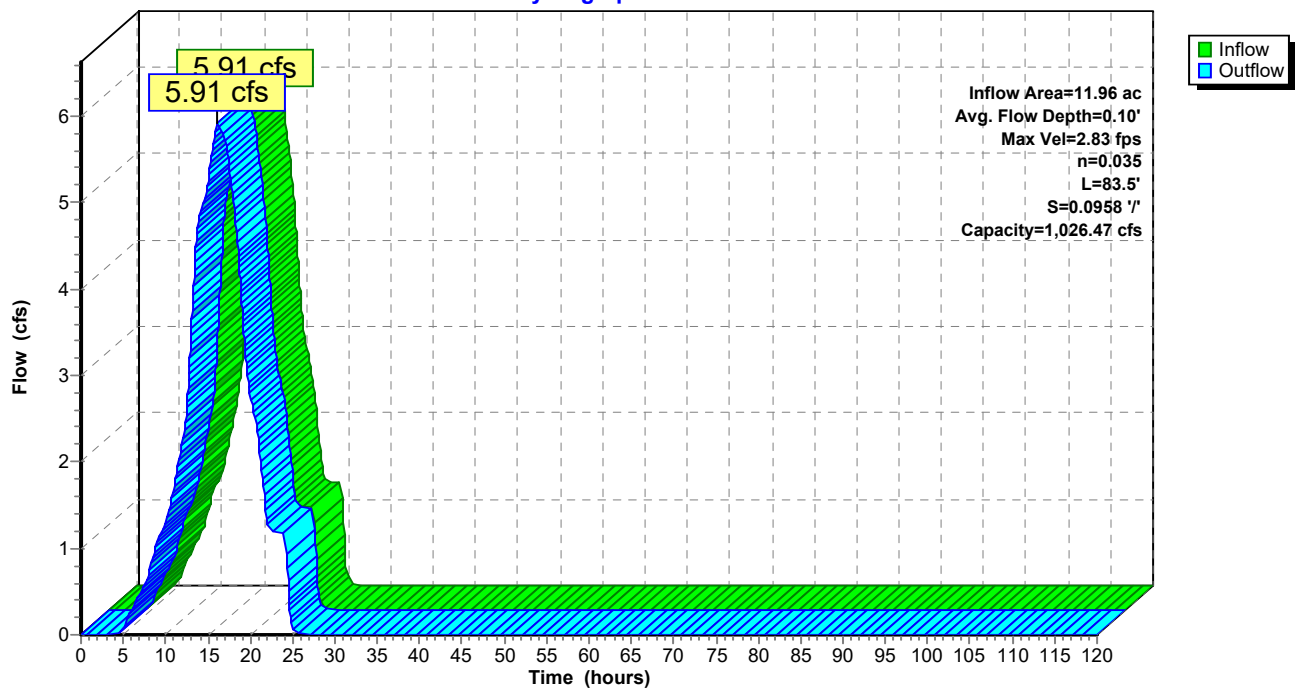
Peak Storage= 175 cf @ 16.09 hrs  
 Average Depth at Peak Storage= 0.10'  
 Bank-Full Depth= 2.00' Flow Area= 60.0 sf, Capacity= 1,026.47 cfs

20.00' x 2.00' deep channel, n= 0.035  
 Side Slope Z-value= 5.0 '/' Top Width= 40.00'  
 Length= 83.5' Slope= 0.0958 '/'  
 Inlet Invert= 784.00', Outlet Invert= 776.00'



**Reach DC-A1B: Downchute A1B**

Hydrograph



**Summary for Reach DC-A1C: Downchute A1C**

Inflow Area = 21.13 ac, 0.64% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 10.41 cfs @ 16.22 hrs, Volume= 7.376 af  
 Outflow = 10.41 cfs @ 16.24 hrs, Volume= 7.376 af, Atten= 0%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.76 fps, Min. Travel Time= 0.7 min  
 Avg. Velocity = 2.14 fps, Avg. Travel Time= 1.2 min

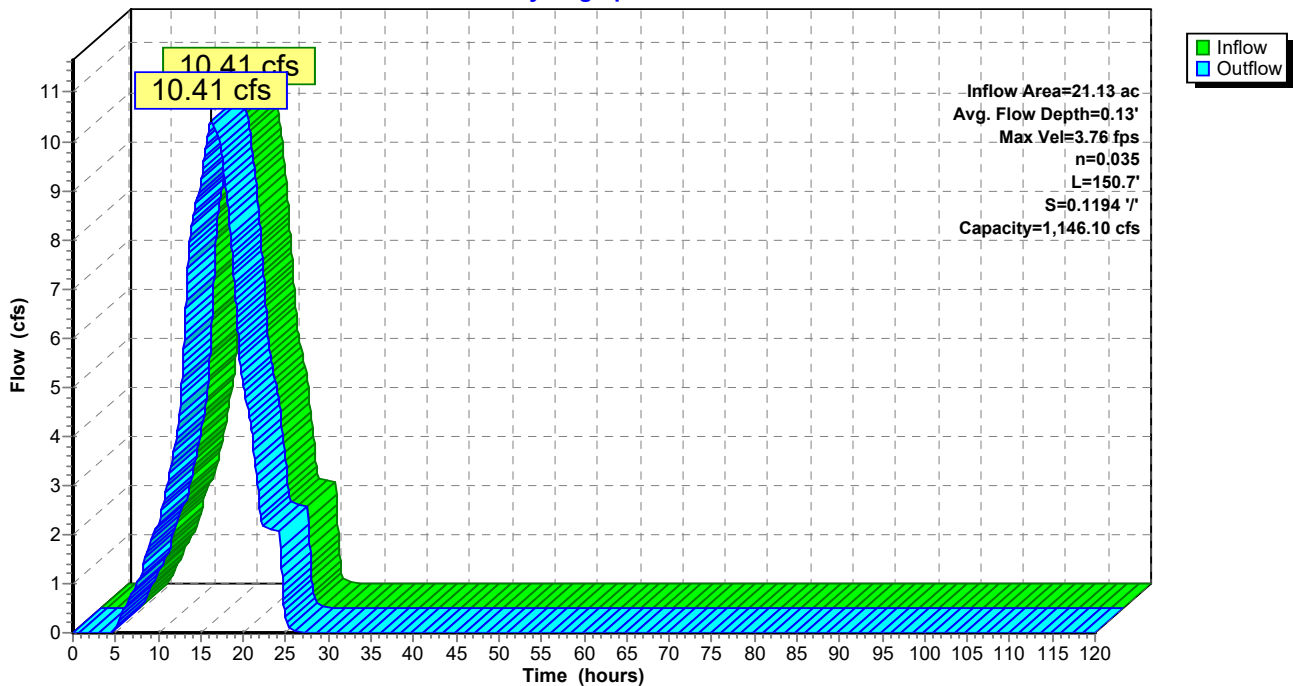
Peak Storage= 417 cf @ 16.22 hrs  
 Average Depth at Peak Storage= 0.13'  
 Bank-Full Depth= 2.00' Flow Area= 60.0 sf, Capacity= 1,146.10 cfs

20.00' x 2.00' deep channel, n= 0.035  
 Side Slope Z-value= 5.0 '/' Top Width= 40.00'  
 Length= 150.7' Slope= 0.1194 '/'  
 Inlet Invert= 776.00', Outlet Invert= 758.00'



**Reach DC-A1C: Downchute A1C**

Hydrograph





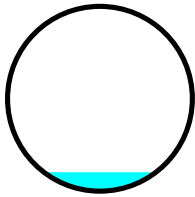
**Summary for Reach LP-B1: Letdown Pipe B1**

Inflow Area = 4.78 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 2.37 cfs @ 15.82 hrs, Volume= 1.669 af  
 Outflow = 2.37 cfs @ 15.83 hrs, Volume= 1.669 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 14.30 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 9.91 fps, Avg. Travel Time= 0.3 min

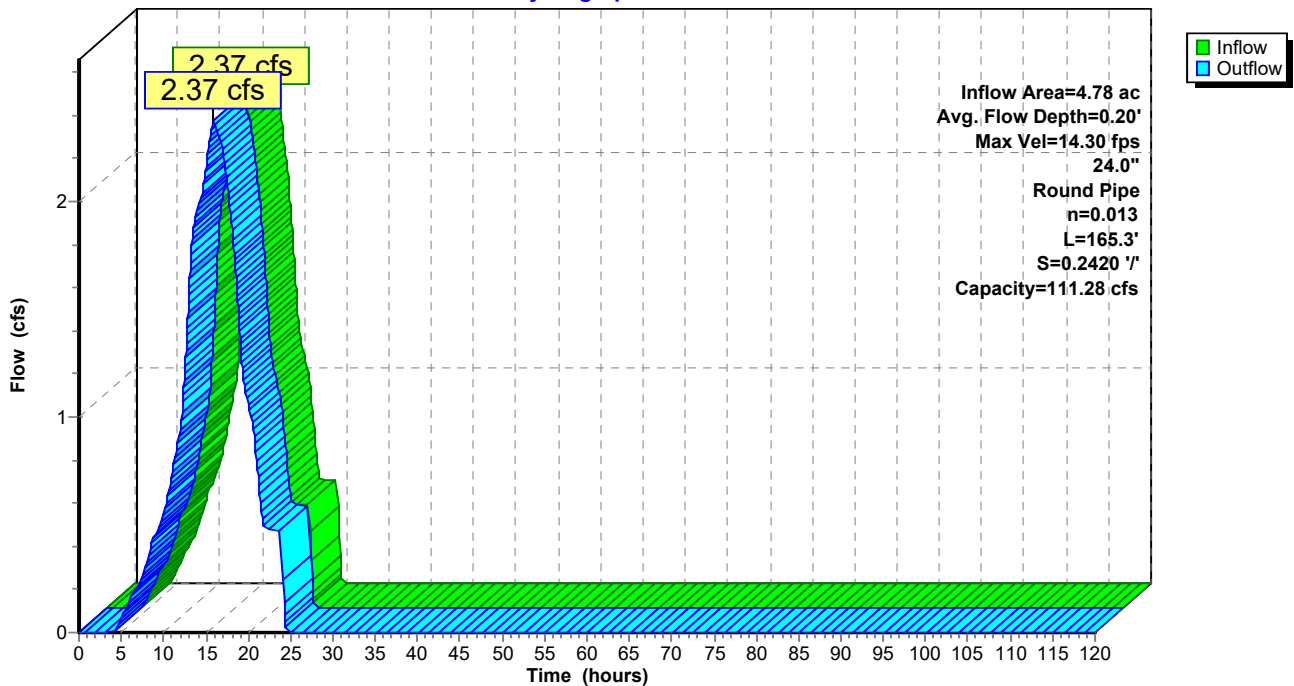
Peak Storage= 27 cf @ 15.83 hrs  
 Average Depth at Peak Storage= 0.20'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 111.28 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 165.3' Slope= 0.2420 '/'  
 Inlet Invert= 877.00', Outlet Invert= 837.00'



**Reach LP-B1: Letdown Pipe B1**

Hydrograph



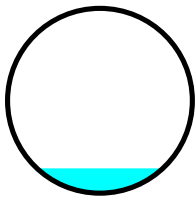
**Summary for Reach LP-B2: Letdown Pipe B2**

Inflow Area = 8.86 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 4.39 cfs @ 15.86 hrs, Volume= 3.093 af  
 Outflow = 4.39 cfs @ 15.86 hrs, Volume= 3.093 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 17.72 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 11.78 fps, Avg. Travel Time= 0.2 min

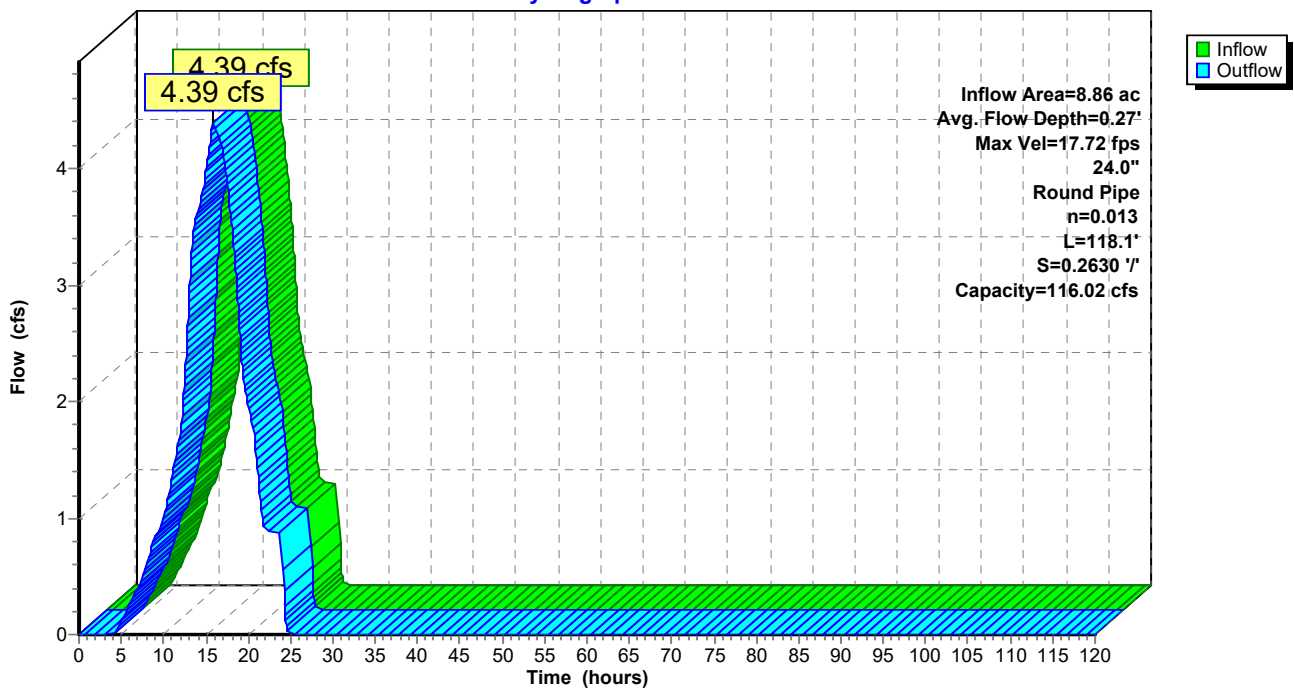
Peak Storage= 29 cf @ 15.86 hrs  
 Average Depth at Peak Storage= 0.27'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 116.02 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 118.1' Slope= 0.2630 '/'  
 Inlet Invert= 837.00', Outlet Invert= 805.94'



**Reach LP-B2: Letdown Pipe B2**

Hydrograph



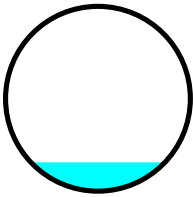
**Summary for Reach LP-B3: Letdown Pipe B3**

Inflow Area = 11.97 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 5.93 cfs @ 15.88 hrs, Volume= 4.179 af  
 Outflow = 5.93 cfs @ 15.89 hrs, Volume= 4.179 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 19.20 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 12.40 fps, Avg. Travel Time= 0.2 min

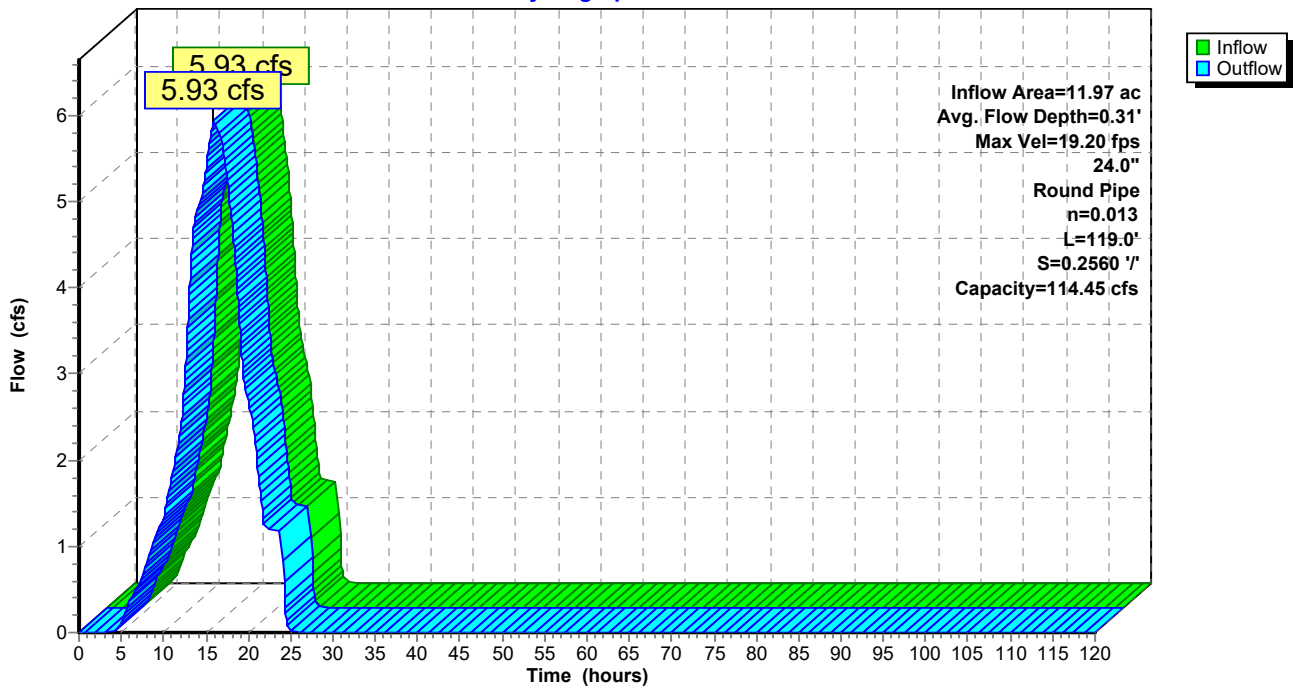
Peak Storage= 37 cf @ 15.89 hrs  
 Average Depth at Peak Storage= 0.31'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 114.45 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 119.0' Slope= 0.2560 '/'  
 Inlet Invert= 805.94', Outlet Invert= 775.48'



**Reach LP-B3: Letdown Pipe B3**

Hydrograph



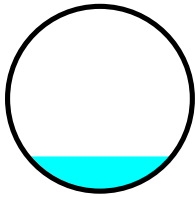
**Summary for Reach LP-B4: Letdown Pipe B4**

Inflow Area = 15.33 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 7.59 cfs @ 15.90 hrs, Volume= 5.352 af  
 Outflow = 7.59 cfs @ 15.91 hrs, Volume= 5.352 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 18.70 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 11.81 fps, Avg. Travel Time= 0.2 min

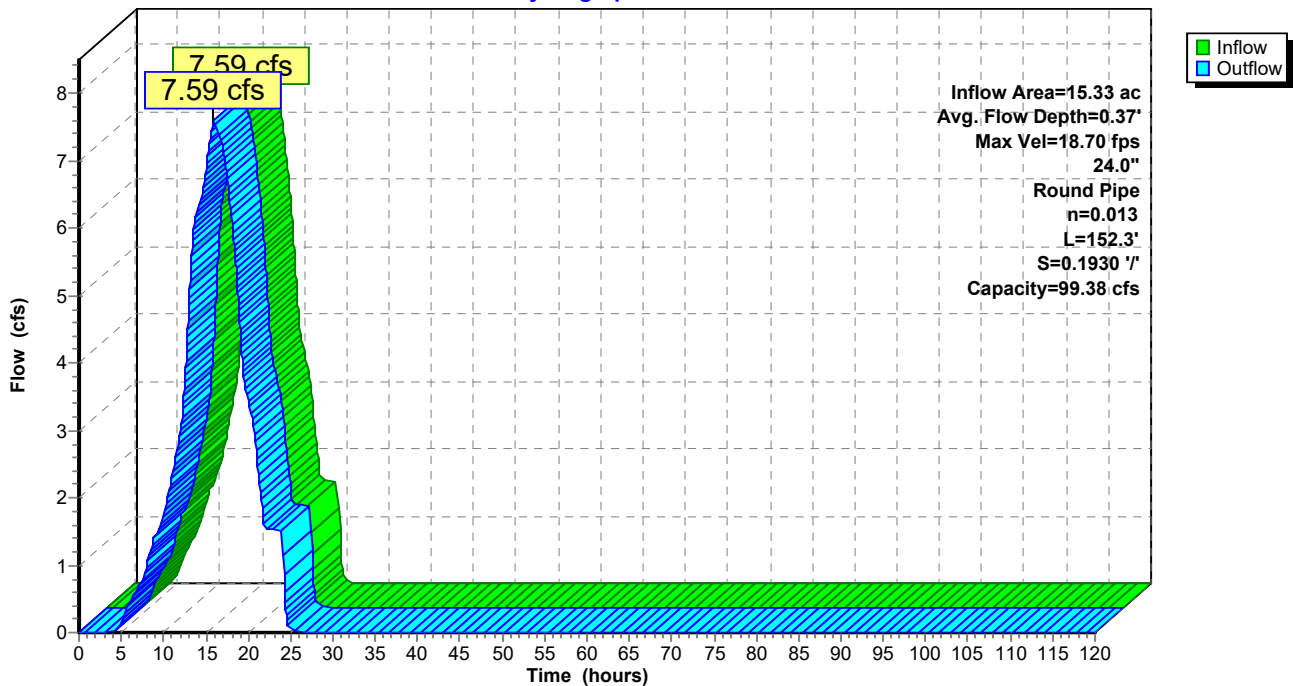
Peak Storage= 62 cf @ 15.90 hrs  
 Average Depth at Peak Storage= 0.37'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 99.38 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 152.3' Slope= 0.1930 '/'  
 Inlet Invert= 775.48', Outlet Invert= 746.09'



**Reach LP-B4: Letdown Pipe B4**

Hydrograph



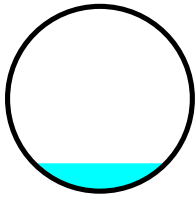
### Summary for Reach LP-B5: Letdown Pipe B5

Inflow Area = 3.47 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 1.72 cfs @ 15.88 hrs, Volume= 1.212 af  
 Outflow = 1.72 cfs @ 15.90 hrs, Volume= 1.212 af, Atten= 0%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 13.10 fps, Min. Travel Time= 0.4 min  
 Avg. Velocity = 8.86 fps, Avg. Travel Time= 0.6 min

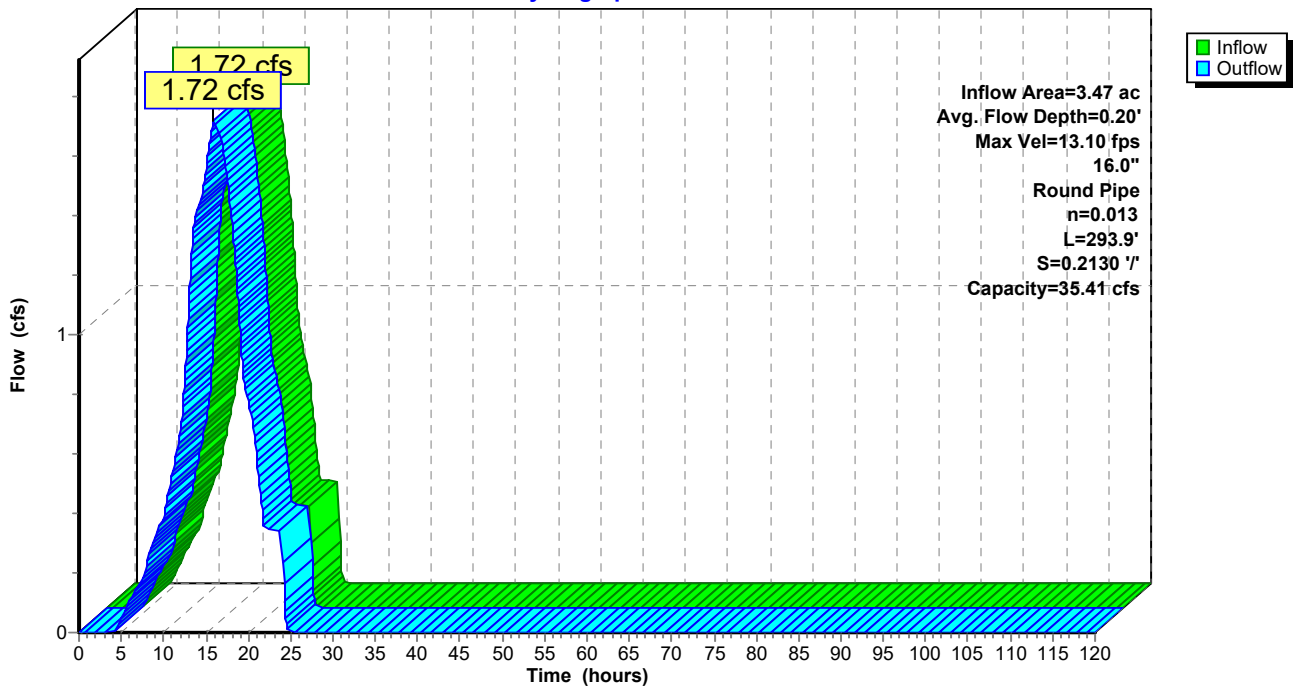
Peak Storage= 39 cf @ 15.89 hrs  
 Average Depth at Peak Storage= 0.20'  
 Bank-Full Depth= 1.33' Flow Area= 1.4 sf, Capacity= 35.41 cfs

16.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 293.9' Slope= 0.2130 '/'  
 Inlet Invert= 820.00', Outlet Invert= 757.40'



### Reach LP-B5: Letdown Pipe B5

Hydrograph



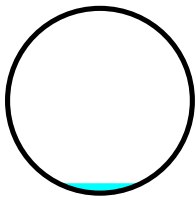
**Summary for Reach LP-D1: Letdown Pipe D1**

Inflow Area = 1.26 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 0.62 cfs @ 15.80 hrs, Volume= 0.439 af  
 Outflow = 0.62 cfs @ 15.81 hrs, Volume= 0.439 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 9.69 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity= 6.92 fps, Avg. Travel Time= 0.1 min

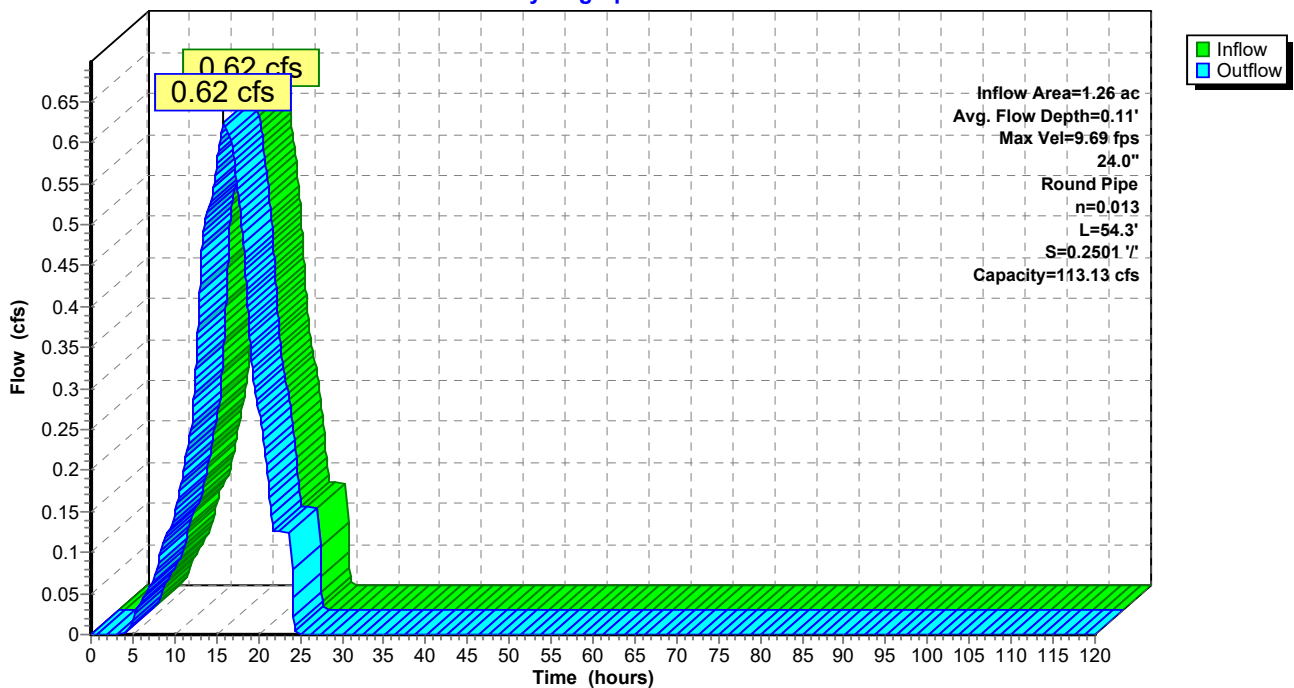
Peak Storage= 3 cf @ 15.80 hrs  
 Average Depth at Peak Storage= 0.11'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 113.13 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 54.3' Slope= 0.2501 '/  
 Inlet Invert= 857.24', Outlet Invert= 843.66'



**Reach LP-D1: Letdown Pipe D1**

Hydrograph



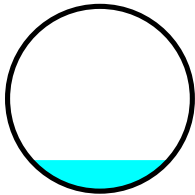
**Summary for Reach LP-D3: Letdown Pipe D3**

Inflow Area = 13.77 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 6.82 cfs @ 15.95 hrs, Volume= 4.809 af  
 Outflow = 6.82 cfs @ 15.95 hrs, Volume= 4.809 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 19.74 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 12.46 fps, Avg. Travel Time= 0.1 min

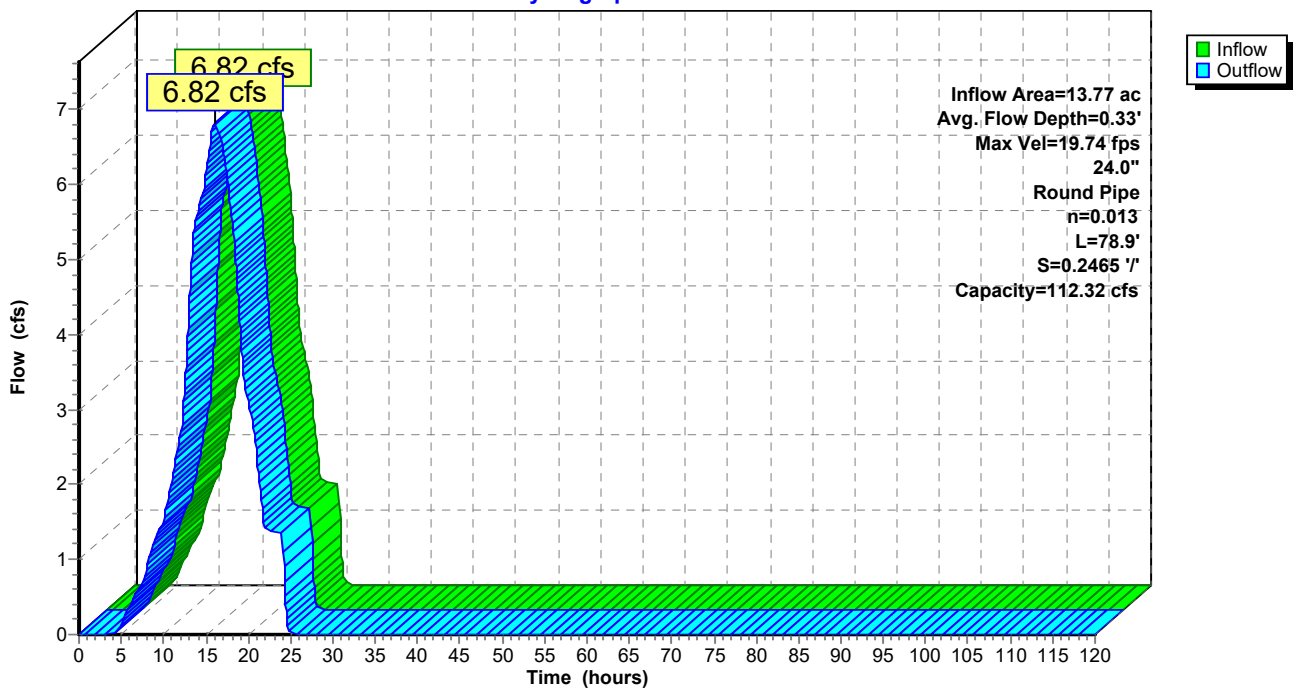
Peak Storage= 27 cf @ 15.95 hrs  
 Average Depth at Peak Storage= 0.33'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 112.32 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 78.9' Slope= 0.2465 '/'  
 Inlet Invert= 793.71', Outlet Invert= 774.26'



**Reach LP-D3: Letdown Pipe D3**

Hydrograph



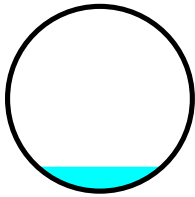
**Summary for Reach LP-E1: Letdown Pipe E1**

Inflow Area = 3.40 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 1.69 cfs @ 15.87 hrs, Volume= 1.187 af  
 Outflow = 1.69 cfs @ 15.88 hrs, Volume= 1.187 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 12.25 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 8.33 fps, Avg. Travel Time= 0.3 min

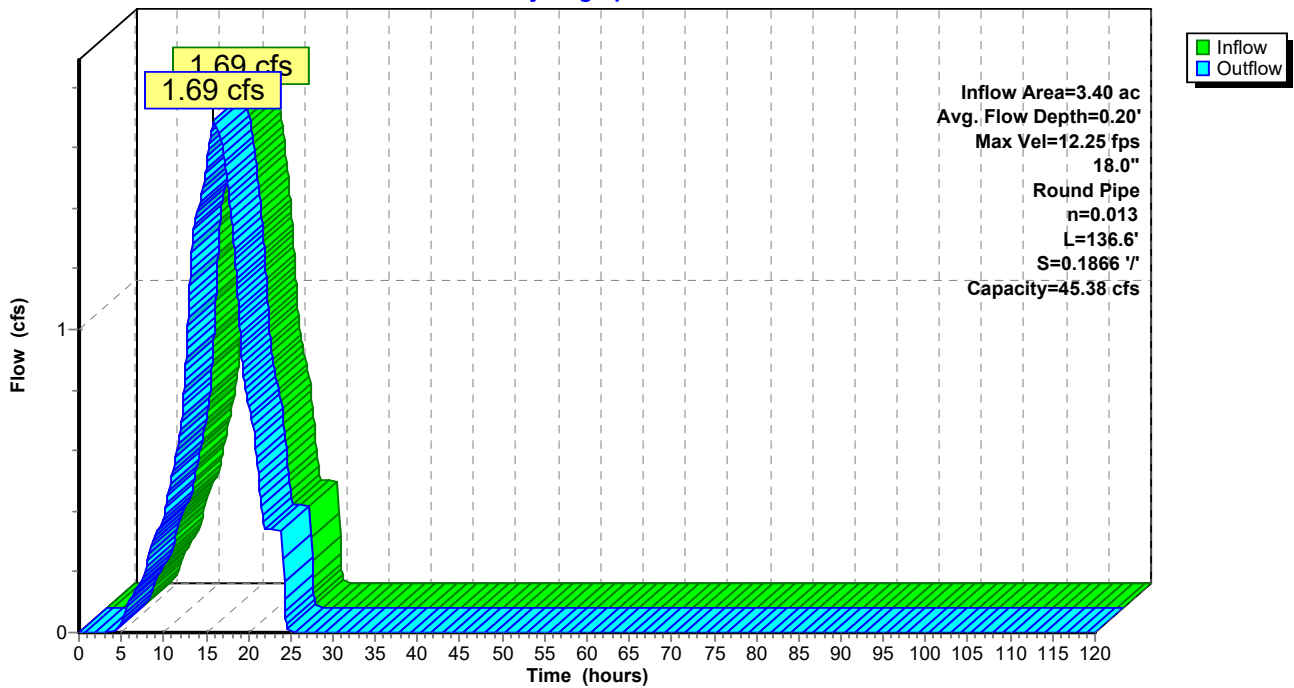
Peak Storage= 19 cf @ 15.87 hrs  
 Average Depth at Peak Storage= 0.20'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 45.38 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 136.6' Slope= 0.1866 '/'  
 Inlet Invert= 856.64', Outlet Invert= 831.15'



**Reach LP-E1: Letdown Pipe E1**

Hydrograph





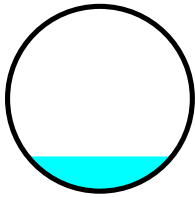
**Summary for Reach LP-E2: Letdown Pipe E2**

Inflow Area = 8.08 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 3.99 cfs @ 15.96 hrs, Volume= 2.821 af  
 Outflow = 3.99 cfs @ 15.96 hrs, Volume= 2.821 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 17.53 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 11.00 fps, Avg. Travel Time= 0.1 min

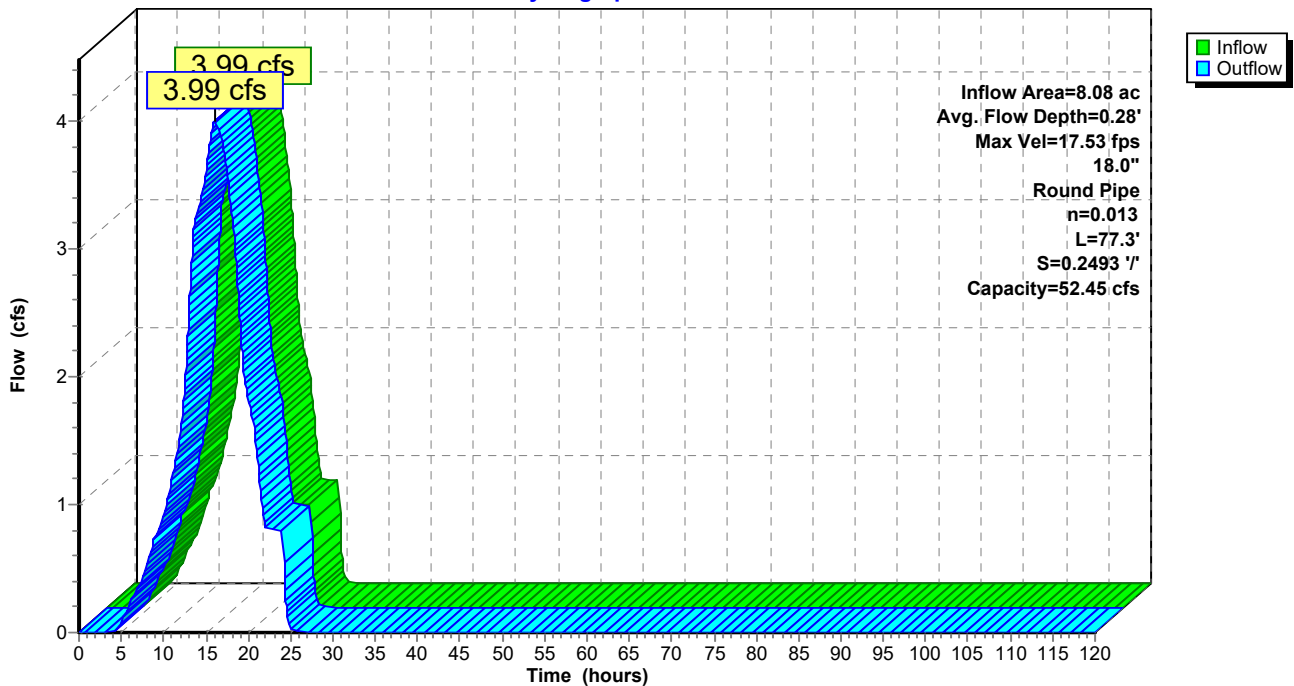
Peak Storage= 18 cf @ 15.96 hrs  
 Average Depth at Peak Storage= 0.28'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 52.45 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 77.3' Slope= 0.2493 '/  
 Inlet Invert= 793.51', Outlet Invert= 774.24'



**Reach LP-E2: Letdown Pipe E2**

Hydrograph



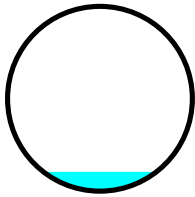
**Summary for Reach LP-H1: Letdown Pipe H1**

Inflow Area = 1.98 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 0.98 cfs @ 15.88 hrs, Volume= 0.691 af  
 Outflow = 0.98 cfs @ 15.88 hrs, Volume= 0.691 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 10.10 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity= 6.94 fps, Avg. Travel Time= 0.2 min

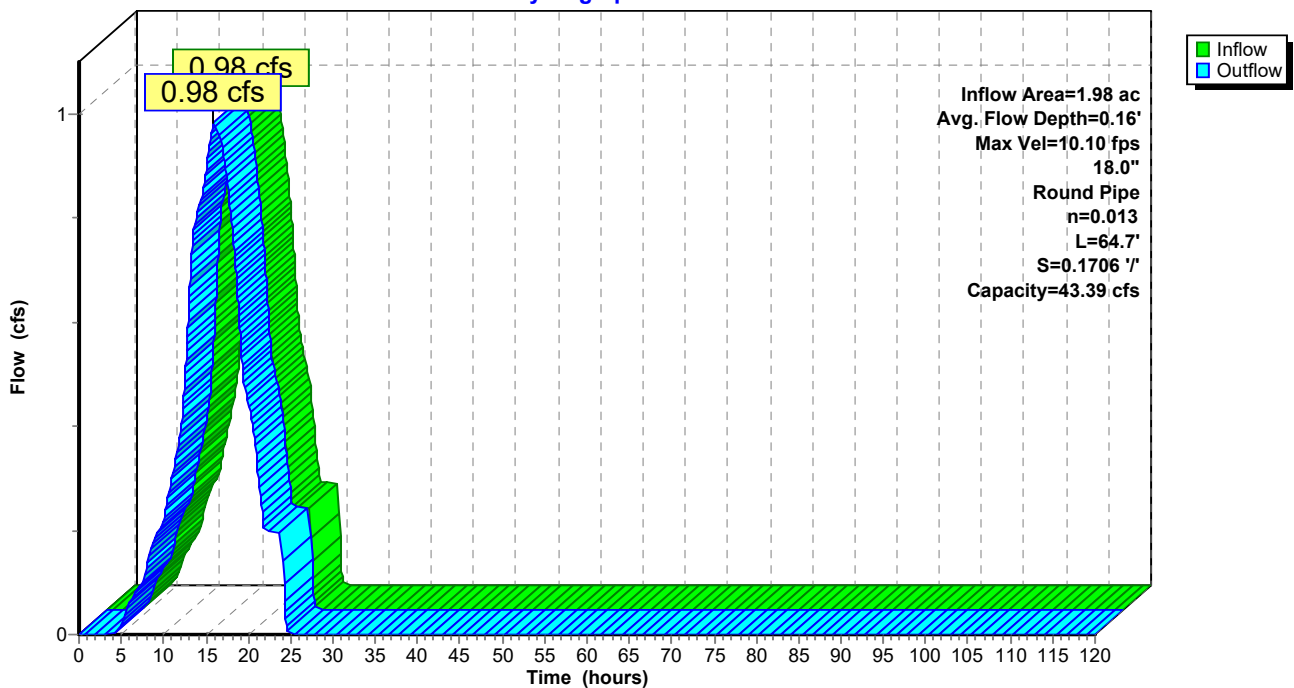
Peak Storage= 6 cf @ 15.88 hrs  
 Average Depth at Peak Storage= 0.16'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 43.39 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 64.7' Slope= 0.1706 '/  
 Inlet Invert= 867.73', Outlet Invert= 856.69'



**Reach LP-H1: Letdown Pipe H1**

Hydrograph



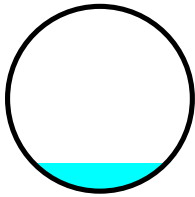
### Summary for Reach LP-H2: Letdown Pipe H2

Inflow Area = 5.26 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 2.61 cfs @ 15.88 hrs, Volume= 1.838 af  
 Outflow = 2.61 cfs @ 15.89 hrs, Volume= 1.838 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 15.45 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 10.32 fps, Avg. Travel Time= 0.2 min

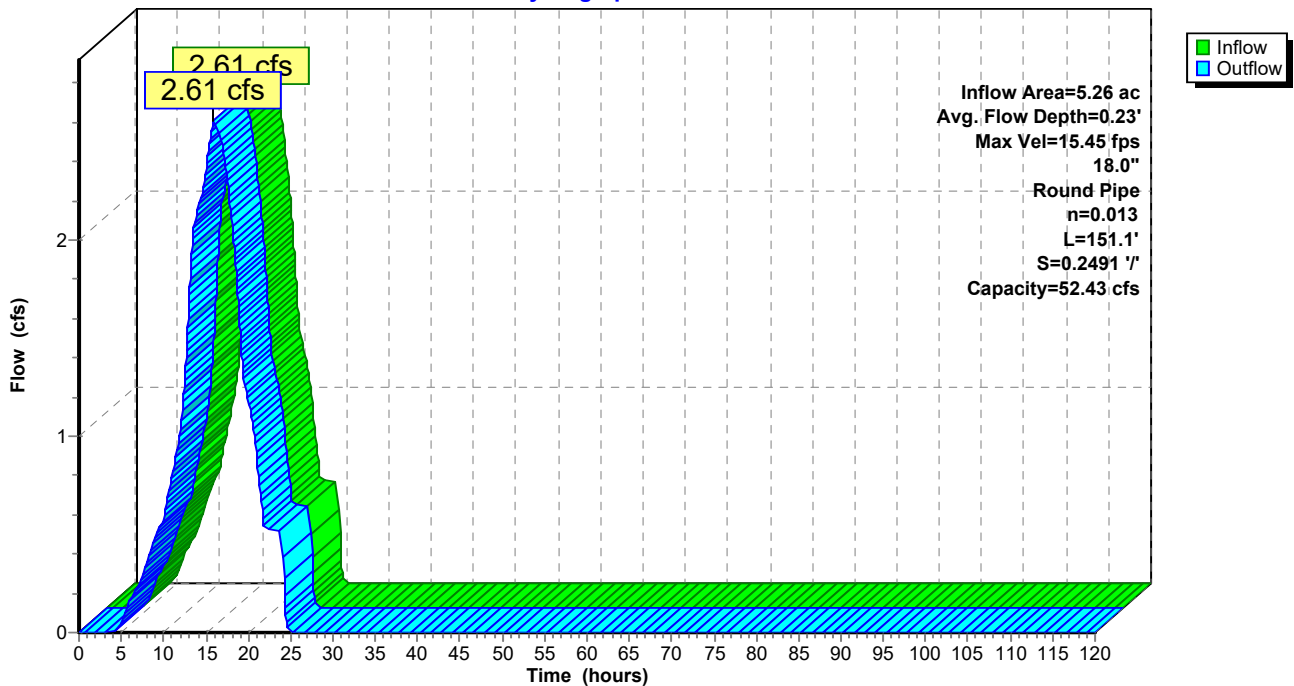
Peak Storage= 26 cf @ 15.88 hrs  
 Average Depth at Peak Storage= 0.23'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 52.43 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 151.1' Slope= 0.2491 1/100'  
 Inlet Invert= 831.15', Outlet Invert= 793.51'



### Reach LP-H2: Letdown Pipe H2

Hydrograph



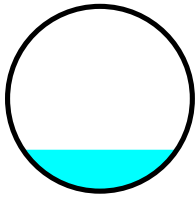
**Summary for Reach LP-H3: Letdown Pipe H3**

Inflow Area = 11.65 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 5.76 cfs @ 15.95 hrs, Volume= 4.068 af  
 Outflow = 5.76 cfs @ 15.95 hrs, Volume= 4.068 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 19.62 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 12.18 fps, Avg. Travel Time= 0.2 min

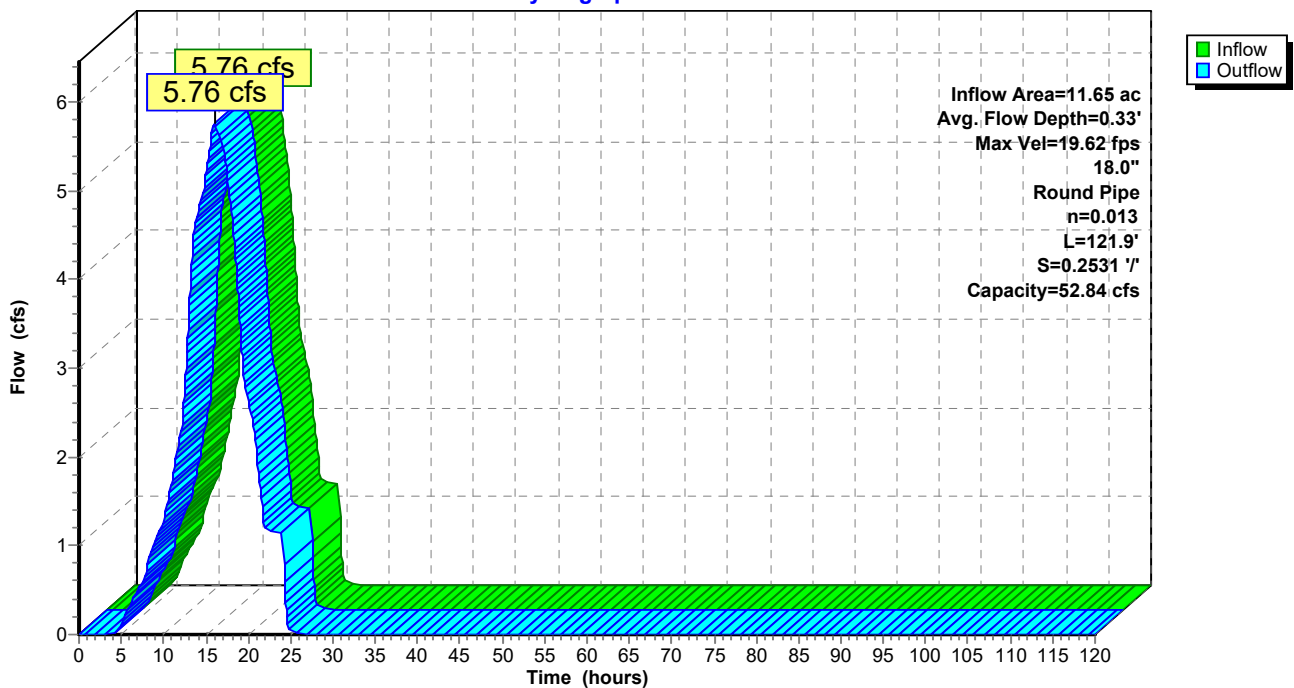
Peak Storage= 36 cf @ 15.95 hrs  
 Average Depth at Peak Storage= 0.33'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 52.84 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 121.9' Slope= 0.2531 1/100'  
 Inlet Invert= 774.24', Outlet Invert= 743.39'



**Reach LP-H3: Letdown Pipe H3**

Hydrograph



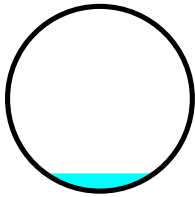
**Summary for Reach LP-N-A1: Letdown Pipe N-A1**

Inflow Area = 3.60 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 1.79 cfs @ 15.82 hrs, Volume= 1.256 af  
 Outflow = 1.79 cfs @ 15.83 hrs, Volume= 1.256 af, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 11.78 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 8.19 fps, Avg. Travel Time= 0.4 min

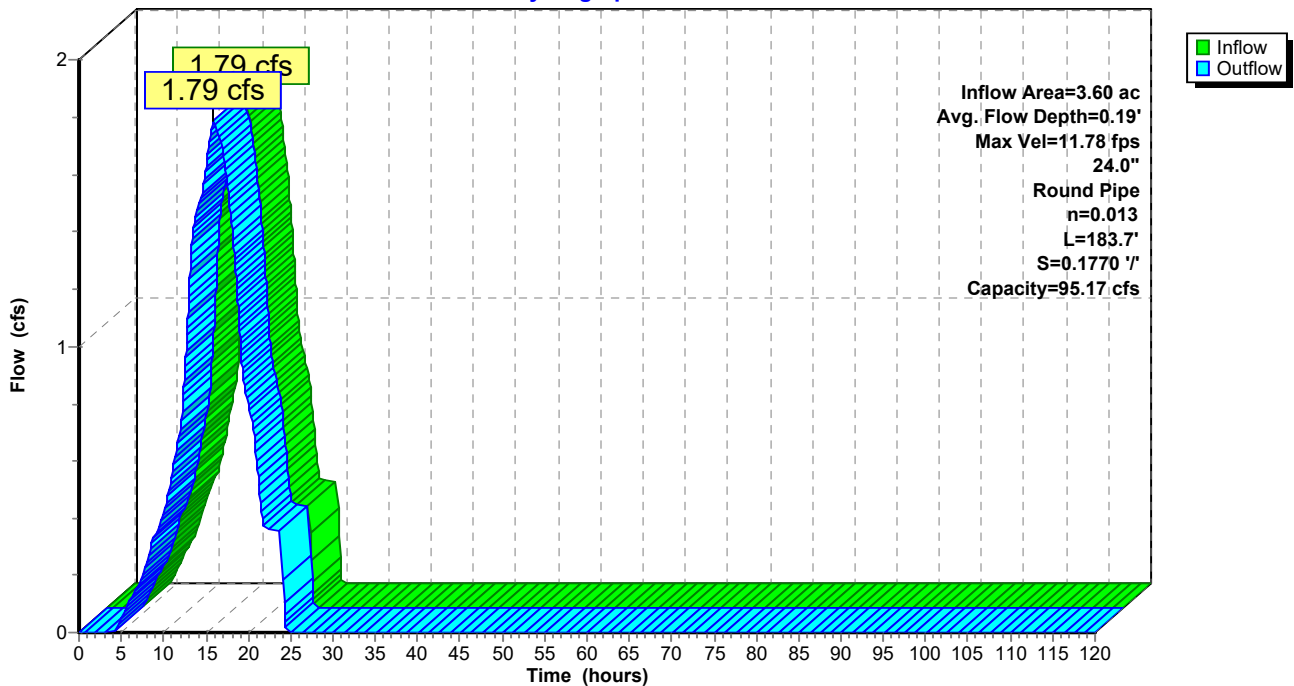
Peak Storage= 28 cf @ 15.82 hrs  
 Average Depth at Peak Storage= 0.19'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 95.17 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 183.7' Slope= 0.1770 '/'  
 Inlet Invert= 869.36', Outlet Invert= 836.85'



**Reach LP-N-A1: Letdown Pipe N-A1**

Hydrograph



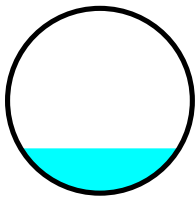
**Summary for Reach LP-N-A10: Letdown Pipe N-A10**

Inflow Area = 21.41 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 10.60 cfs @ 15.97 hrs, Volume= 7.474 af  
 Outflow = 10.60 cfs @ 15.98 hrs, Volume= 7.474 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 11.62 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity= 6.90 fps, Avg. Travel Time= 0.1 min

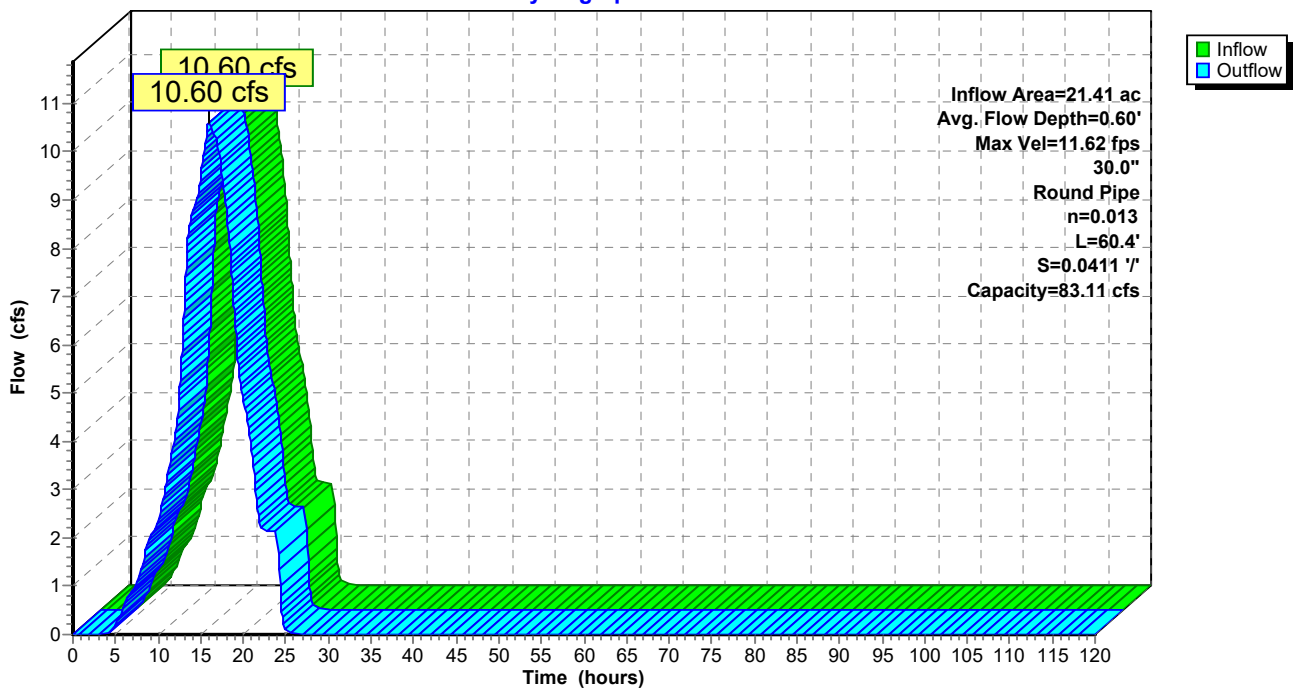
Peak Storage= 55 cf @ 15.98 hrs  
 Average Depth at Peak Storage= 0.60'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 83.11 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 60.4' Slope= 0.0411 '/  
 Inlet Invert= 748.28', Outlet Invert= 745.80'



**Reach LP-N-A10: Letdown Pipe N-A10**

Hydrograph



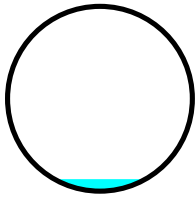
### Summary for Reach LP-N-A2: Letdown Pipe N-A2

Inflow Area = 2.82 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 1.40 cfs @ 15.89 hrs, Volume= 0.986 af  
 Outflow = 1.40 cfs @ 15.90 hrs, Volume= 0.986 af, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 10.62 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 7.31 fps, Avg. Travel Time= 0.4 min

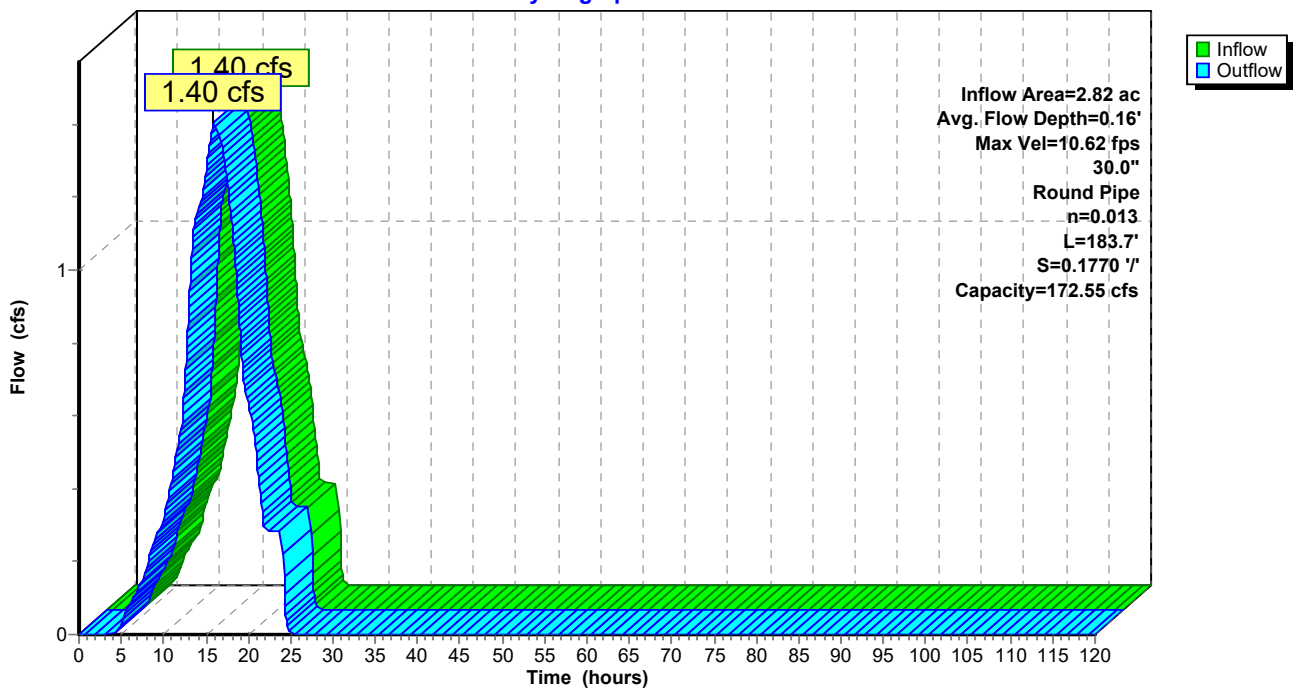
Peak Storage= 24 cf @ 15.89 hrs  
 Average Depth at Peak Storage= 0.16'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 172.55 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 183.7' Slope= 0.1770 '/'  
 Inlet Invert= 869.36', Outlet Invert= 836.85'



### Reach LP-N-A2: Letdown Pipe N-A2

Hydrograph



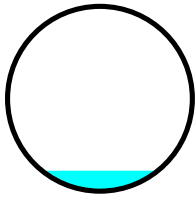
**Summary for Reach LP-N-A3: Letdown Pipe N-A3**

Inflow Area = 4.91 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 2.44 cfs @ 15.82 hrs, Volume= 1.714 af  
 Outflow = 2.44 cfs @ 15.83 hrs, Volume= 1.714 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 12.94 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 8.92 fps, Avg. Travel Time= 0.3 min

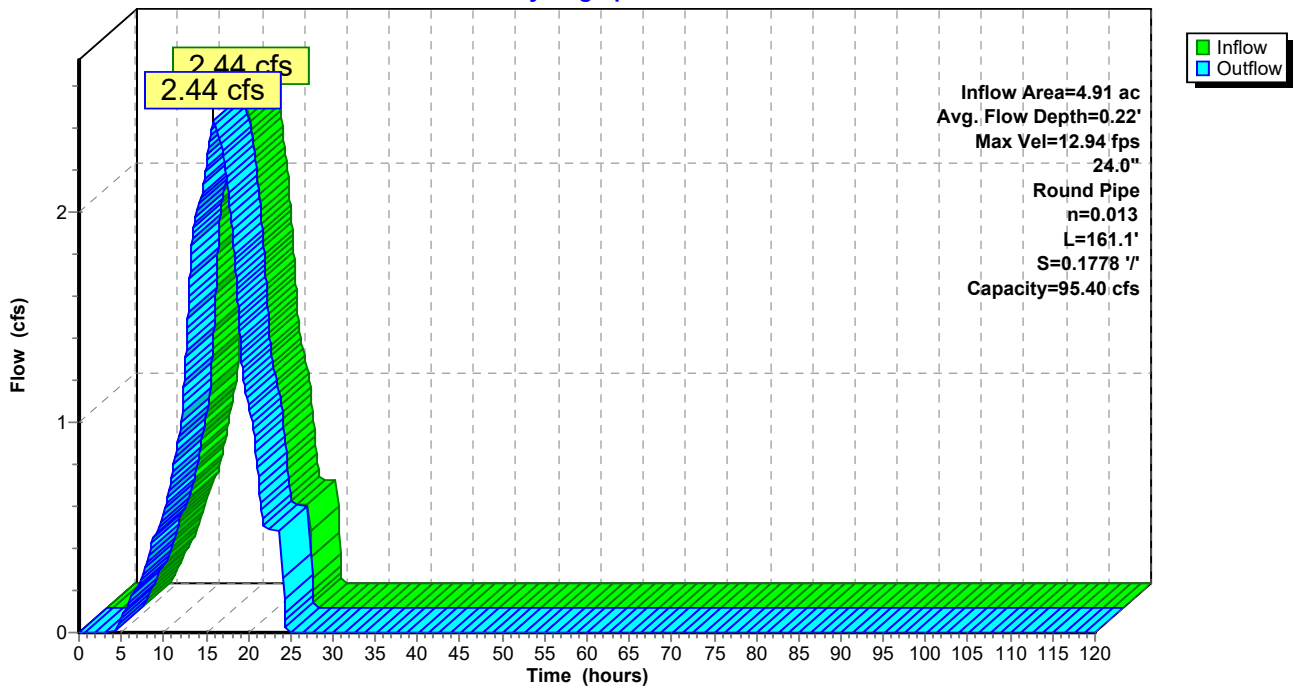
Peak Storage= 30 cf @ 15.83 hrs  
 Average Depth at Peak Storage= 0.22'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 95.40 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 161.1' Slope= 0.1778 '/  
 Inlet Invert= 836.85', Outlet Invert= 808.20'



**Reach LP-N-A3: Letdown Pipe N-A3**

Hydrograph





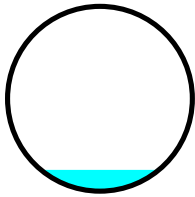
**Summary for Reach LP-N-A4: Letdown Pipe N-A4**

Inflow Area = 9.70 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 4.80 cfs @ 15.97 hrs, Volume= 3.387 af  
 Outflow = 4.80 cfs @ 15.98 hrs, Volume= 3.387 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 15.41 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 9.88 fps, Avg. Travel Time= 0.3 min

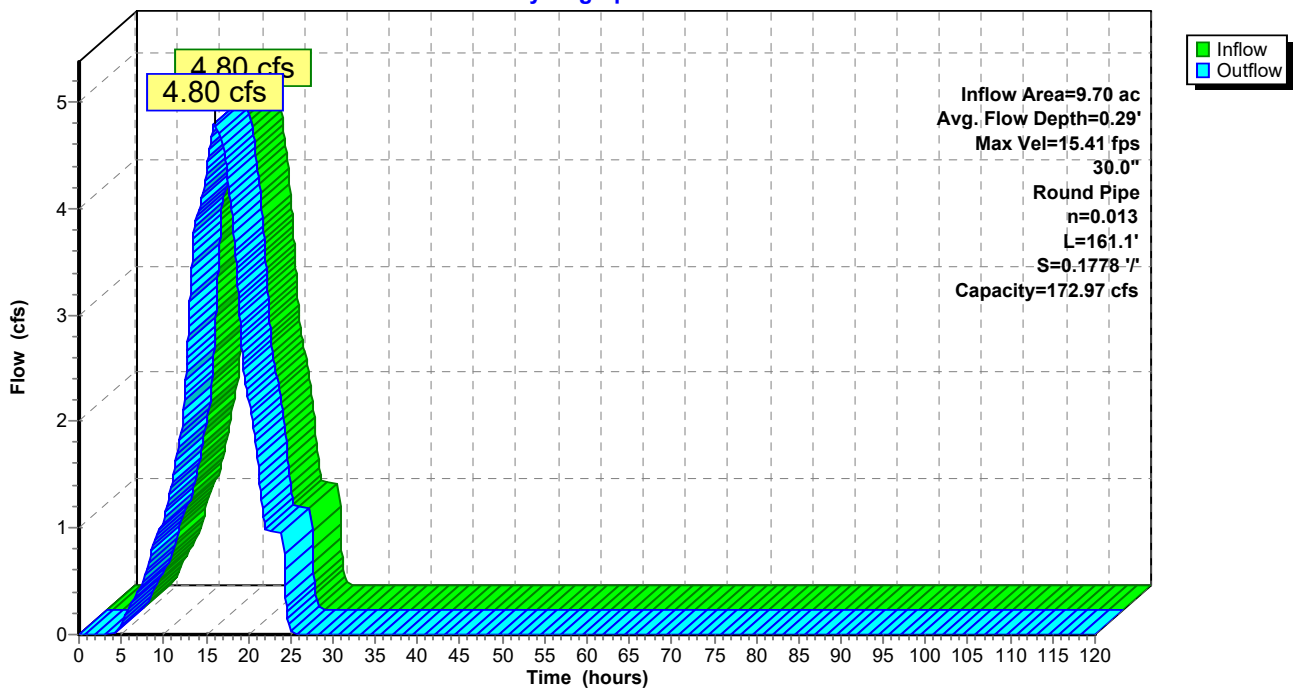
Peak Storage= 50 cf @ 15.98 hrs  
 Average Depth at Peak Storage= 0.29'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 172.97 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 161.1' Slope= 0.1778 '/'  
 Inlet Invert= 836.85', Outlet Invert= 808.20'



**Reach LP-N-A4: Letdown Pipe N-A4**

Hydrograph



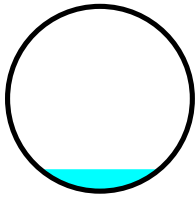
**Summary for Reach LP-N-A5: Letdown Pipe N-A5**

Inflow Area = 5.64 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 2.80 cfs @ 15.82 hrs, Volume= 1.970 af  
 Outflow = 2.80 cfs @ 15.83 hrs, Volume= 1.970 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 13.45 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 9.24 fps, Avg. Travel Time= 0.3 min

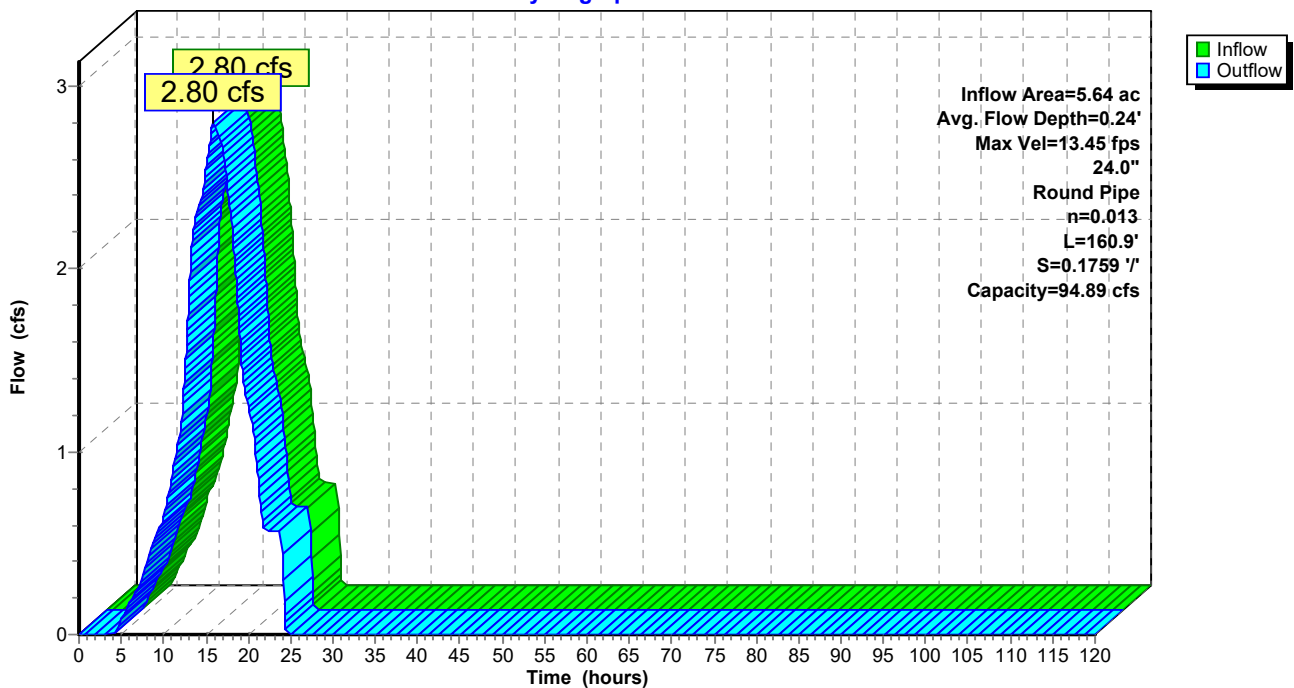
Peak Storage= 33 cf @ 15.83 hrs  
 Average Depth at Peak Storage= 0.24'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 94.89 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 160.9' Slope= 0.1759 '/'  
 Inlet Invert= 808.20', Outlet Invert= 779.89'



**Reach LP-N-A5: Letdown Pipe N-A5**

Hydrograph



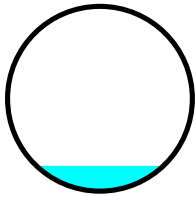
**Summary for Reach LP-N-A6: Letdown Pipe N-A6**

Inflow Area = 13.83 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 6.85 cfs @ 15.98 hrs, Volume= 4.829 af  
 Outflow = 6.85 cfs @ 15.98 hrs, Volume= 4.829 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 17.07 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 10.68 fps, Avg. Travel Time= 0.3 min

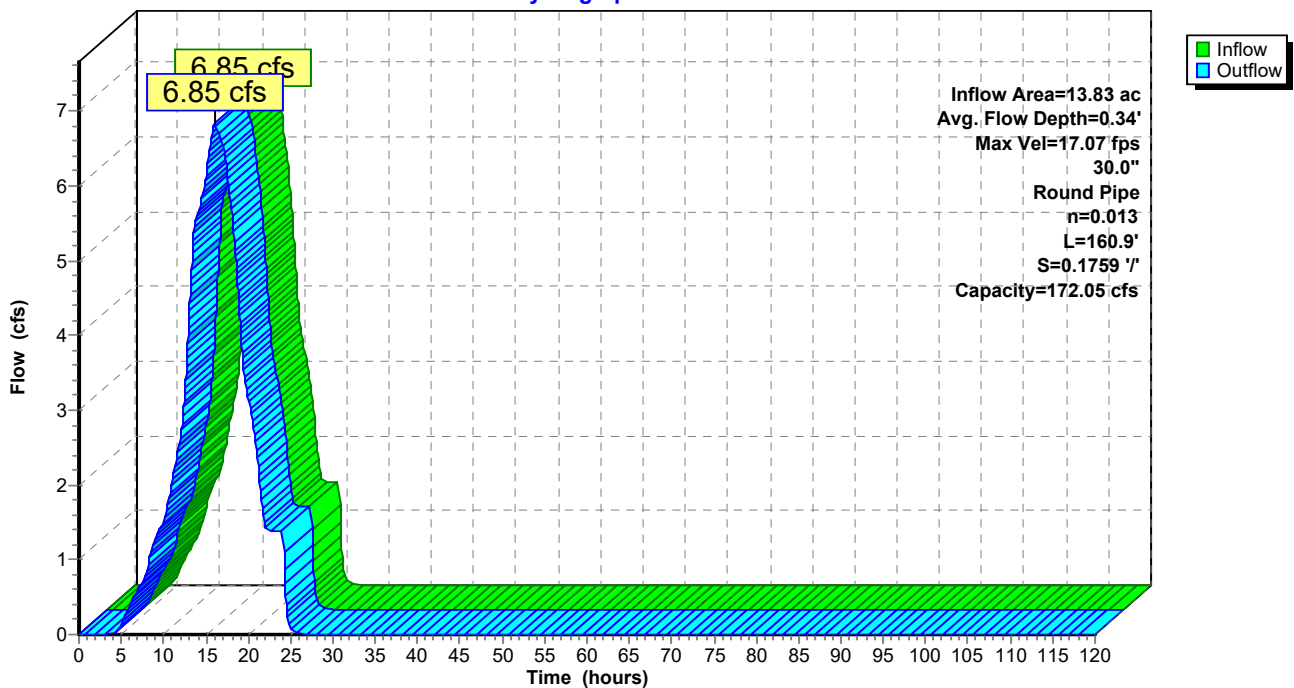
Peak Storage= 65 cf @ 15.98 hrs  
 Average Depth at Peak Storage= 0.34'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 172.05 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 160.9' Slope= 0.1759 '/'  
 Inlet Invert= 808.20', Outlet Invert= 779.89'



**Reach LP-N-A6: Letdown Pipe N-A6**

Hydrograph



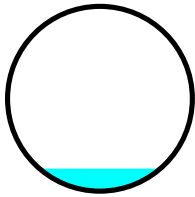
**Summary for Reach LP-N-A7: Letdown Pipe N-A7**

Inflow Area = 6.09 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 3.02 cfs @ 15.83 hrs, Volume= 2.124 af  
 Outflow = 3.02 cfs @ 15.84 hrs, Volume= 2.124 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 13.96 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 9.58 fps, Avg. Travel Time= 0.3 min

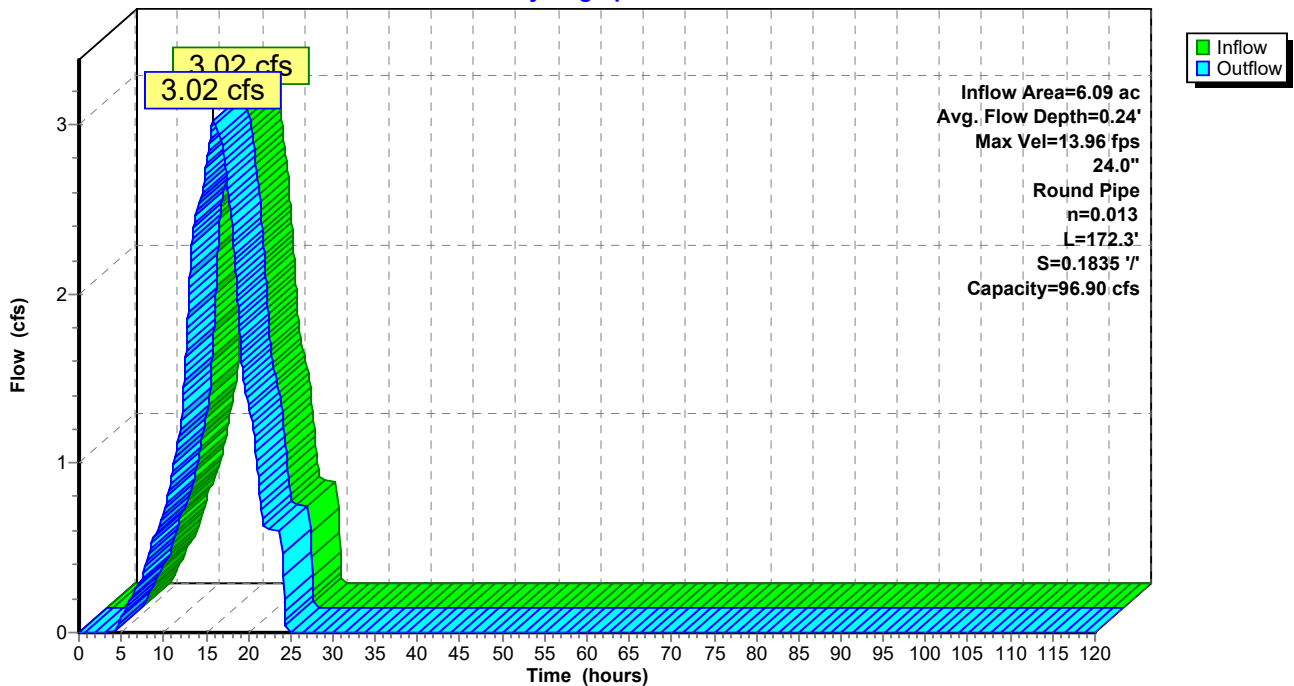
Peak Storage= 37 cf @ 15.83 hrs  
 Average Depth at Peak Storage= 0.24'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 96.90 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 172.3' Slope= 0.1835 '/'  
 Inlet Invert= 779.89', Outlet Invert= 748.28'



**Reach LP-N-A7: Letdown Pipe N-A7**

Hydrograph



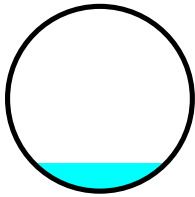
**Summary for Reach LP-N-A8: Letdown Pipe N-A8**

Inflow Area = 17.63 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 8.73 cfs @ 15.98 hrs, Volume= 6.156 af  
 Outflow = 8.73 cfs @ 15.98 hrs, Volume= 6.156 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 18.62 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 11.52 fps, Avg. Travel Time= 0.2 min

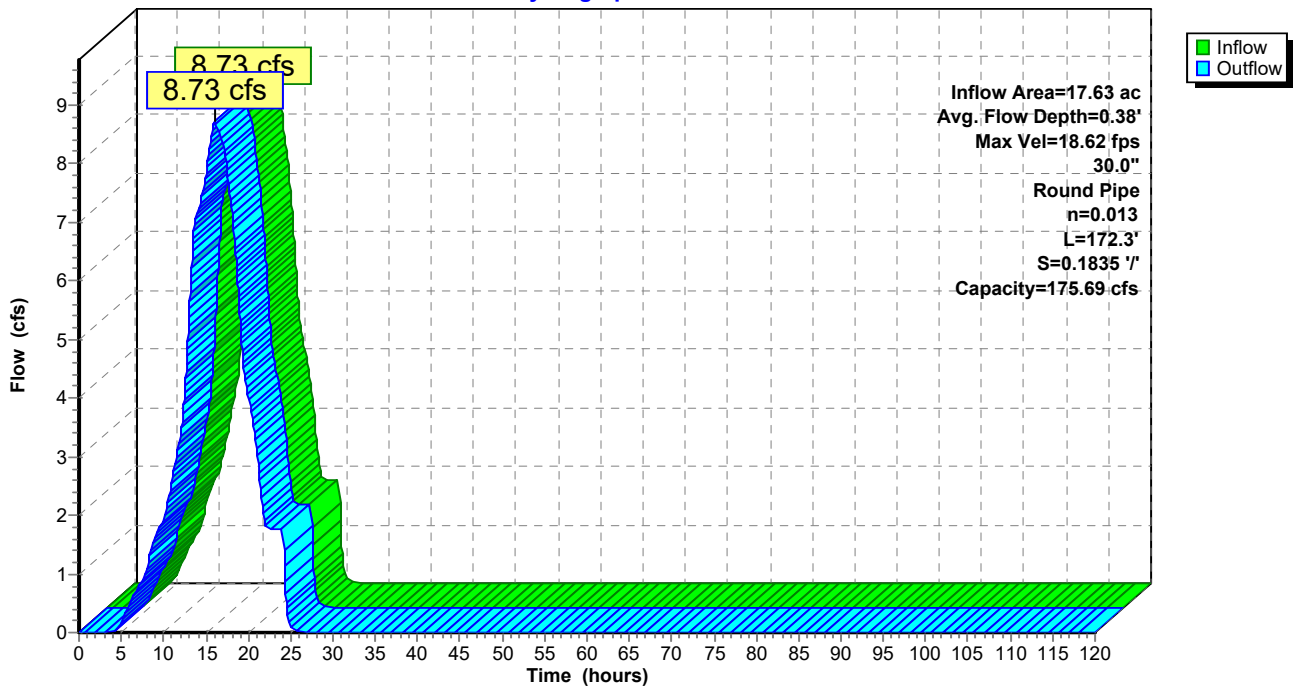
Peak Storage= 81 cf @ 15.98 hrs  
 Average Depth at Peak Storage= 0.38'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 175.69 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 172.3' Slope= 0.1835 '/'  
 Inlet Invert= 779.89', Outlet Invert= 748.28'



**Reach LP-N-A8: Letdown Pipe N-A8**

Hydrograph



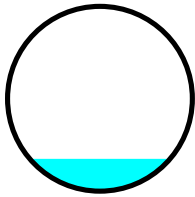
**Summary for Reach LP-N-A9: Letdown Pipe N-A9**

Inflow Area = 6.09 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 3.02 cfs @ 15.84 hrs, Volume= 2.124 af  
 Outflow = 3.02 cfs @ 15.84 hrs, Volume= 2.124 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 8.25 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity= 5.59 fps, Avg. Travel Time= 0.2 min

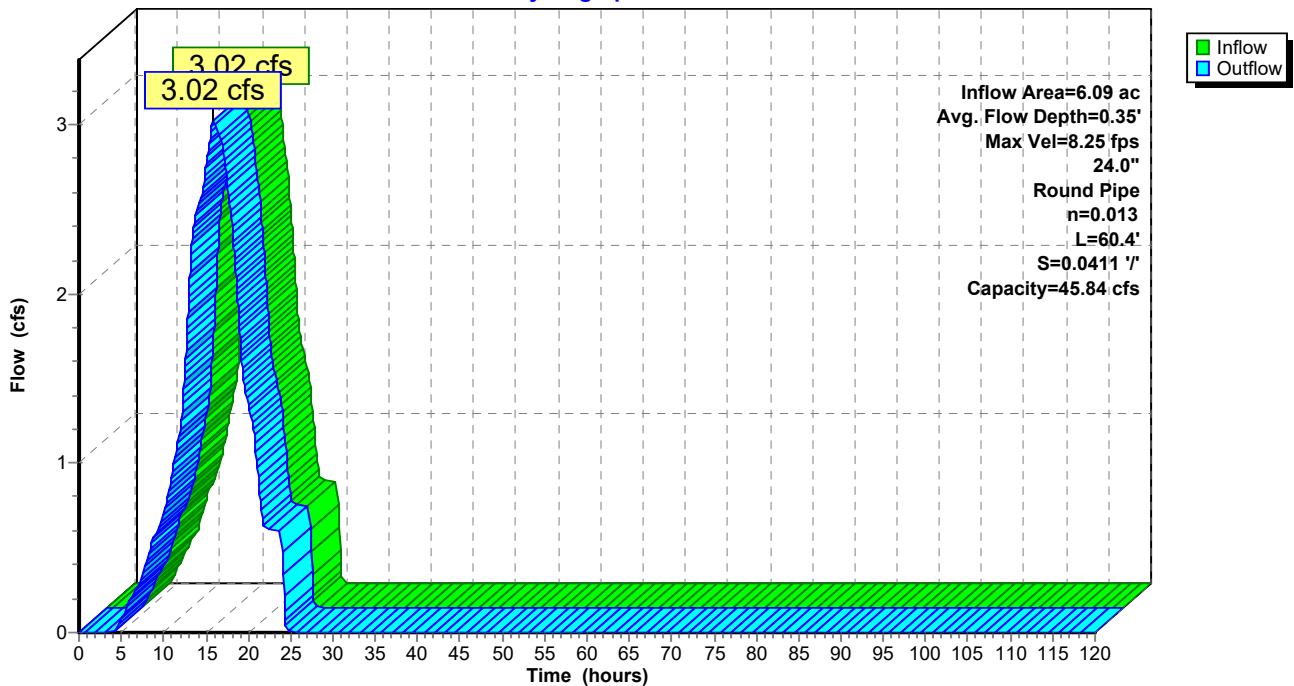
Peak Storage= 22 cf @ 15.84 hrs  
 Average Depth at Peak Storage= 0.35'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 45.84 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 60.4' Slope= 0.0411 '/  
 Inlet Invert= 748.28', Outlet Invert= 745.80'



**Reach LP-N-A9: Letdown Pipe N-A9**

Hydrograph



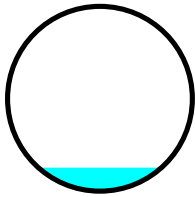
**Summary for Reach LP-N-B1: Letdown Pipe N-B1**

Inflow Area = 3.15 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 1.56 cfs @ 15.94 hrs, Volume= 1.101 af  
 Outflow = 1.56 cfs @ 15.95 hrs, Volume= 1.101 af, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 12.03 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 7.99 fps, Avg. Travel Time= 0.4 min

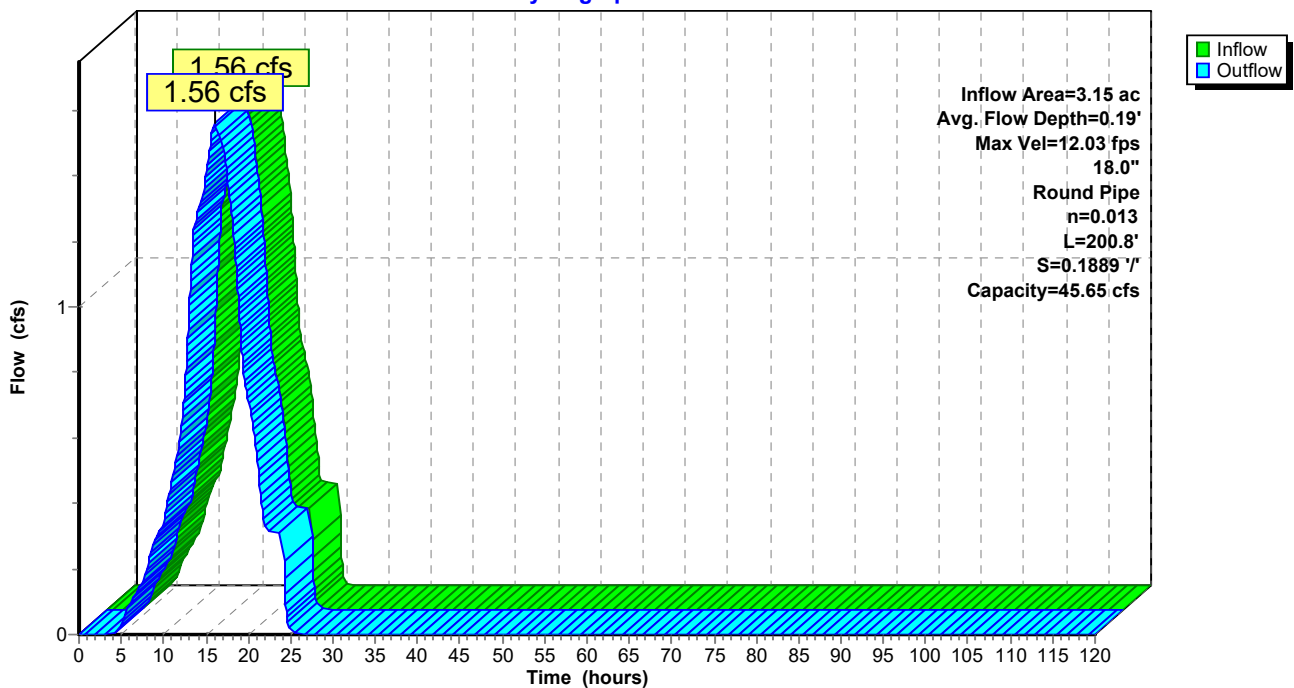
Peak Storage= 26 cf @ 15.94 hrs  
 Average Depth at Peak Storage= 0.19'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 45.65 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 200.8' Slope= 0.1889 '/'  
 Inlet Invert= 847.84', Outlet Invert= 809.91'



**Reach LP-N-B1: Letdown Pipe N-B1**

Hydrograph



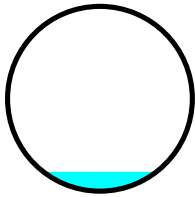
**Summary for Reach LP-N-B2: Letdown Pipe N-B2**

Inflow Area = 4.49 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 2.22 cfs @ 15.95 hrs, Volume= 1.566 af  
 Outflow = 2.22 cfs @ 15.96 hrs, Volume= 1.566 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 12.87 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 8.50 fps, Avg. Travel Time= 0.4 min

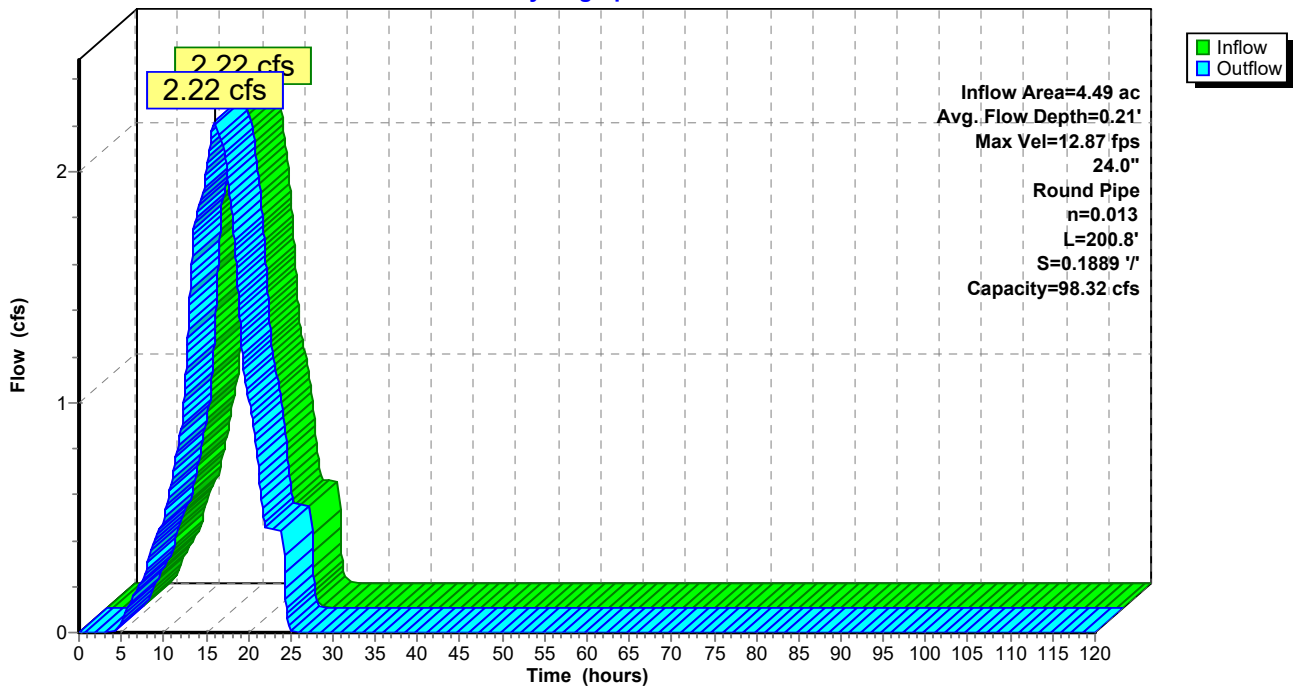
Peak Storage= 35 cf @ 15.96 hrs  
 Average Depth at Peak Storage= 0.21'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 98.32 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 200.8' Slope= 0.1889 '/'  
 Inlet Invert= 847.84', Outlet Invert= 809.91'



**Reach LP-N-B2: Letdown Pipe N-B2**

Hydrograph





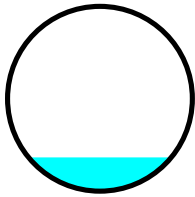
**Summary for Reach LP-N-B3: Letdown Pipe N-B3**

Inflow Area = 6.58 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 3.26 cfs @ 15.96 hrs, Volume= 2.298 af  
 Outflow = 3.26 cfs @ 15.97 hrs, Volume= 2.298 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 14.91 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 9.47 fps, Avg. Travel Time= 0.4 min

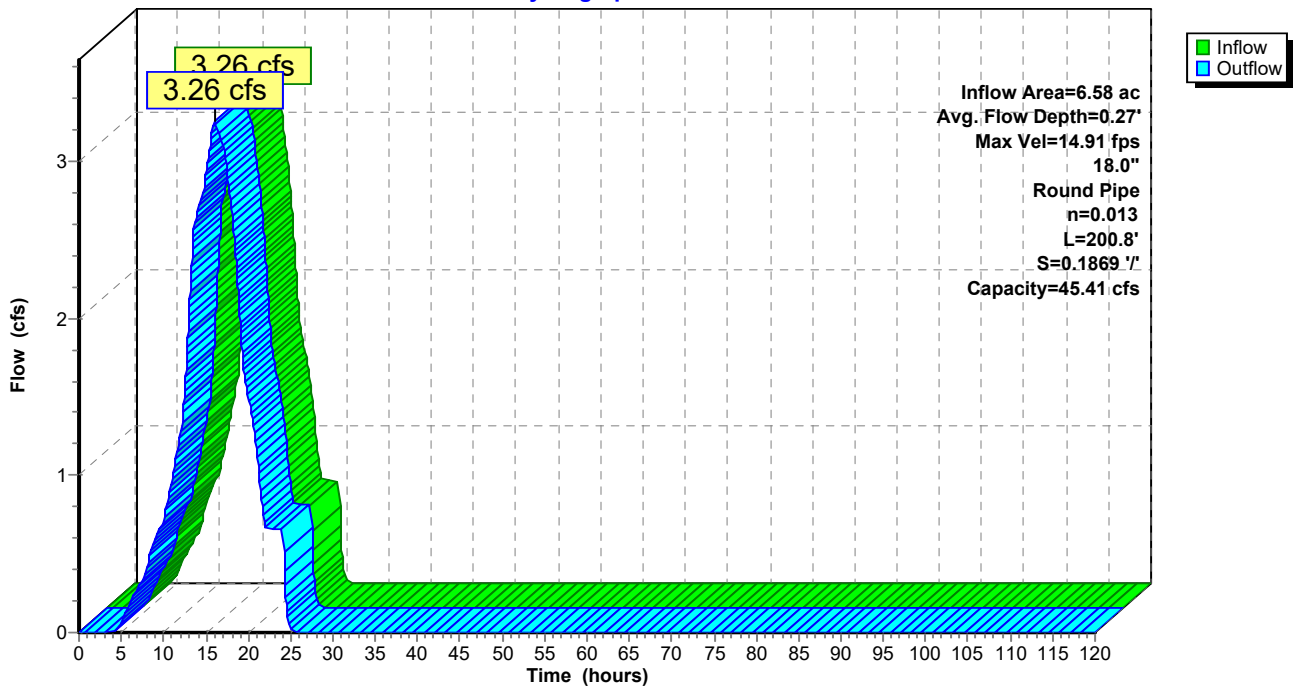
Peak Storage= 44 cf @ 15.96 hrs  
 Average Depth at Peak Storage= 0.27'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 45.41 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 200.8' Slope= 0.1869 '/'  
 Inlet Invert= 809.91', Outlet Invert= 772.39'



**Reach LP-N-B3: Letdown Pipe N-B3**

Hydrograph



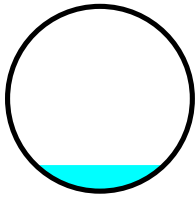
**Summary for Reach LP-N-B4: Letdown Pipe N-B4**

Inflow Area = 8.29 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 4.11 cfs @ 15.96 hrs, Volume= 2.895 af  
 Outflow = 4.11 cfs @ 15.96 hrs, Volume= 2.895 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 15.40 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 9.85 fps, Avg. Travel Time= 0.3 min

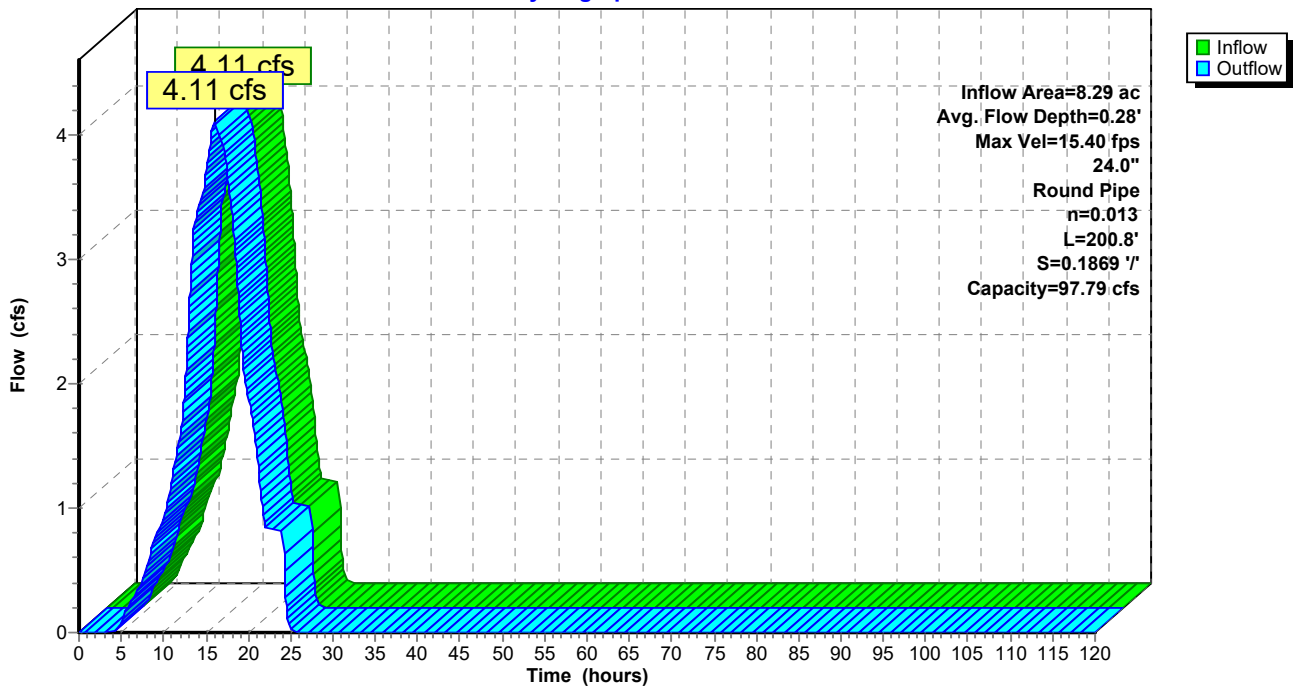
Peak Storage= 54 cf @ 15.96 hrs  
 Average Depth at Peak Storage= 0.28'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 97.79 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 200.8' Slope= 0.1869 '/'  
 Inlet Invert= 809.91', Outlet Invert= 772.39'



**Reach LP-N-B4: Letdown Pipe N-B4**

Hydrograph



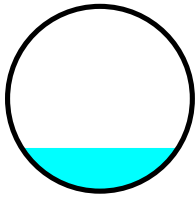
### Summary for Reach LP-N-B5: Letdown Pipe N-B5

Inflow Area = 11.08 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 5.48 cfs @ 15.99 hrs, Volume= 3.868 af  
 Outflow = 5.48 cfs @ 16.00 hrs, Volume= 3.868 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 17.60 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 10.76 fps, Avg. Travel Time= 0.3 min

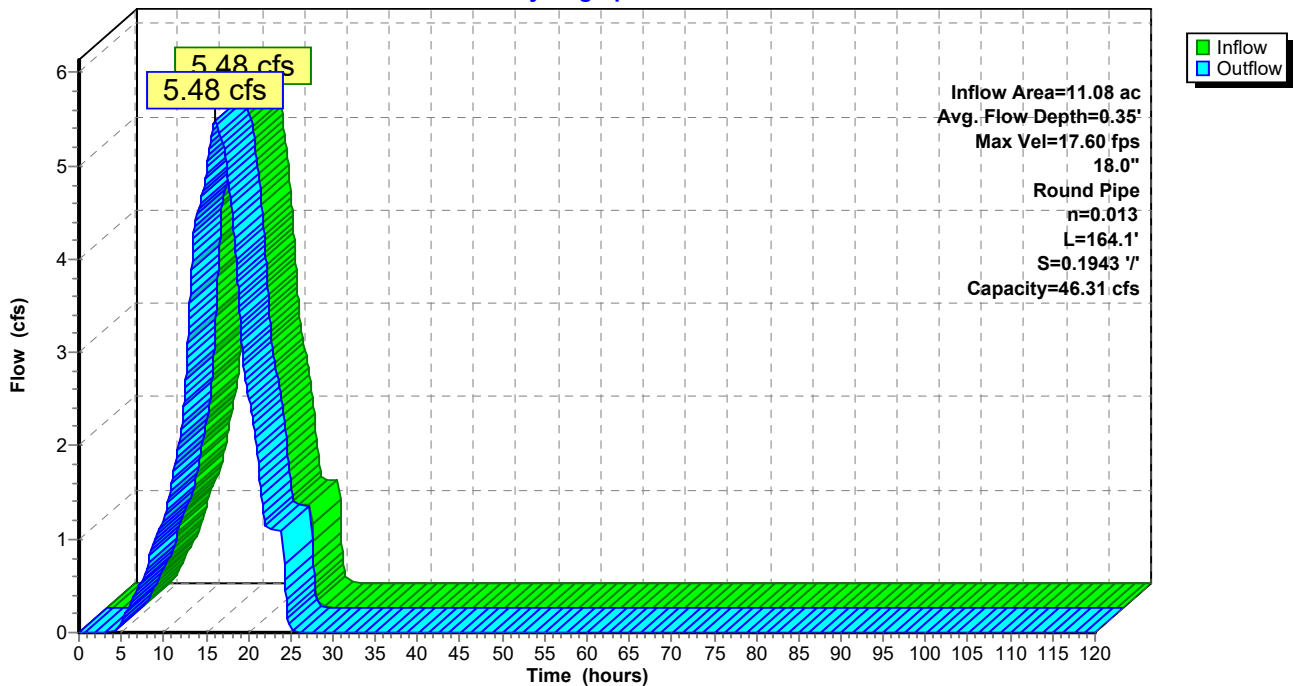
Peak Storage= 51 cf @ 15.99 hrs  
 Average Depth at Peak Storage= 0.35'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 46.31 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 164.1' Slope= 0.1943 '/'  
 Inlet Invert= 772.39', Outlet Invert= 740.50'



### Reach LP-N-B5: Letdown Pipe N-B5

Hydrograph



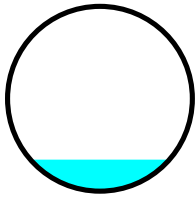
**Summary for Reach LP-N-B6: Letdown Pipe N-B6**

Inflow Area = 12.58 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 6.23 cfs @ 15.97 hrs, Volume= 4.392 af  
 Outflow = 6.23 cfs @ 15.97 hrs, Volume= 4.392 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 17.67 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 11.03 fps, Avg. Travel Time= 0.2 min

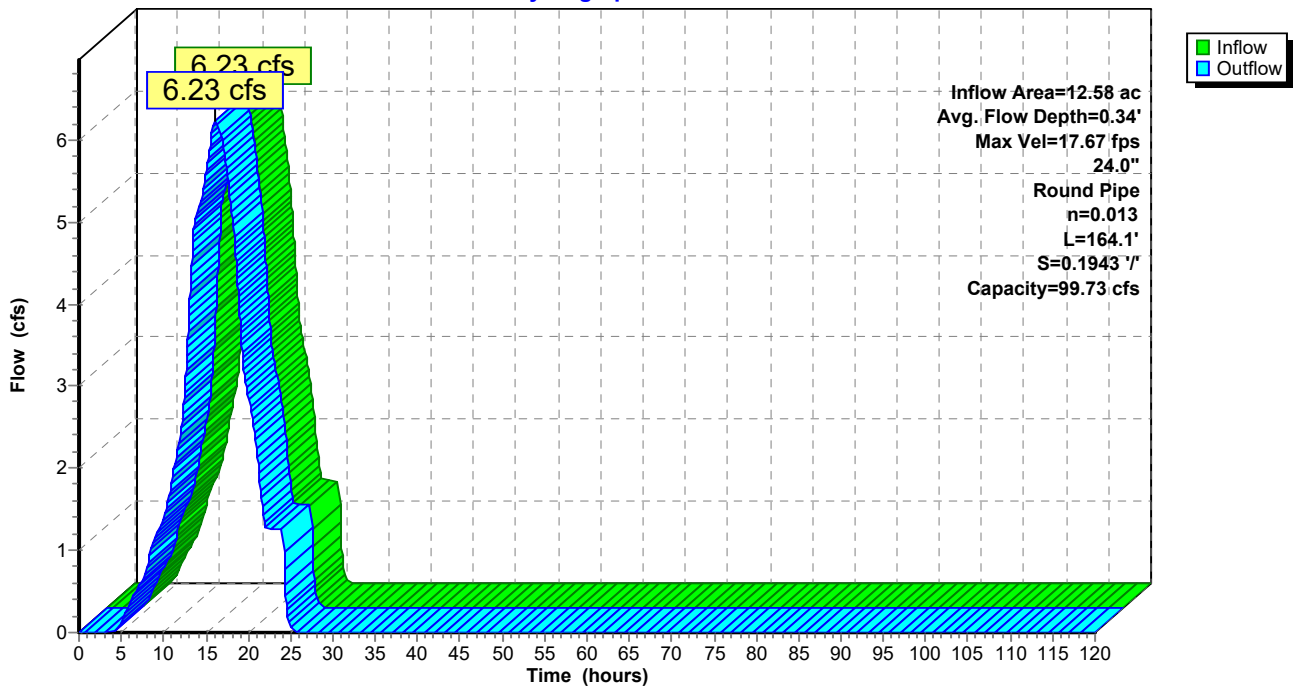
Peak Storage= 58 cf @ 15.97 hrs  
 Average Depth at Peak Storage= 0.34'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 99.73 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 164.1' Slope= 0.1943 '/'  
 Inlet Invert= 772.39', Outlet Invert= 740.50'



**Reach LP-N-B6: Letdown Pipe N-B6**

Hydrograph



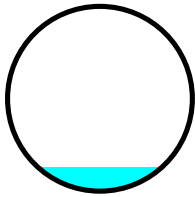
### Summary for Reach LP-N-C1: Letdown Pipe N-C1

Inflow Area = 8.24 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 4.08 cfs @ 15.95 hrs, Volume= 2.877 af  
 Outflow = 4.08 cfs @ 15.96 hrs, Volume= 2.877 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 17.02 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 11.07 fps, Avg. Travel Time= 0.2 min

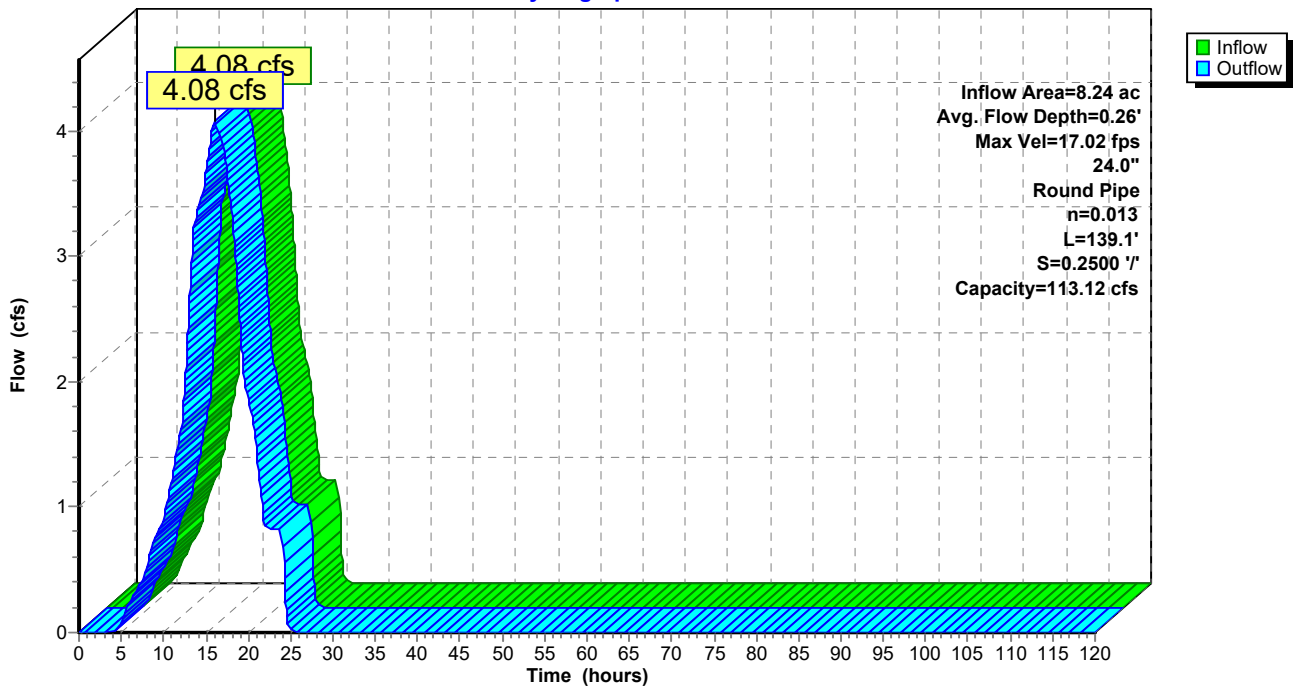
Peak Storage= 33 cf @ 15.95 hrs  
 Average Depth at Peak Storage= 0.26'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 113.12 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 139.1' Slope= 0.2500 '/'  
 Inlet Invert= 843.66', Outlet Invert= 808.88'



### Reach LP-N-C1: Letdown Pipe N-C1

Hydrograph



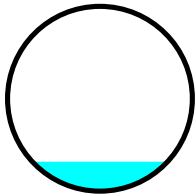
**Summary for Reach LP-N-C2: Letdown Pipe N-C2**

Inflow Area = 12.44 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 6.16 cfs @ 15.96 hrs, Volume= 4.344 af  
 Outflow = 6.16 cfs @ 15.96 hrs, Volume= 4.344 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 19.25 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 12.17 fps, Avg. Travel Time= 0.1 min

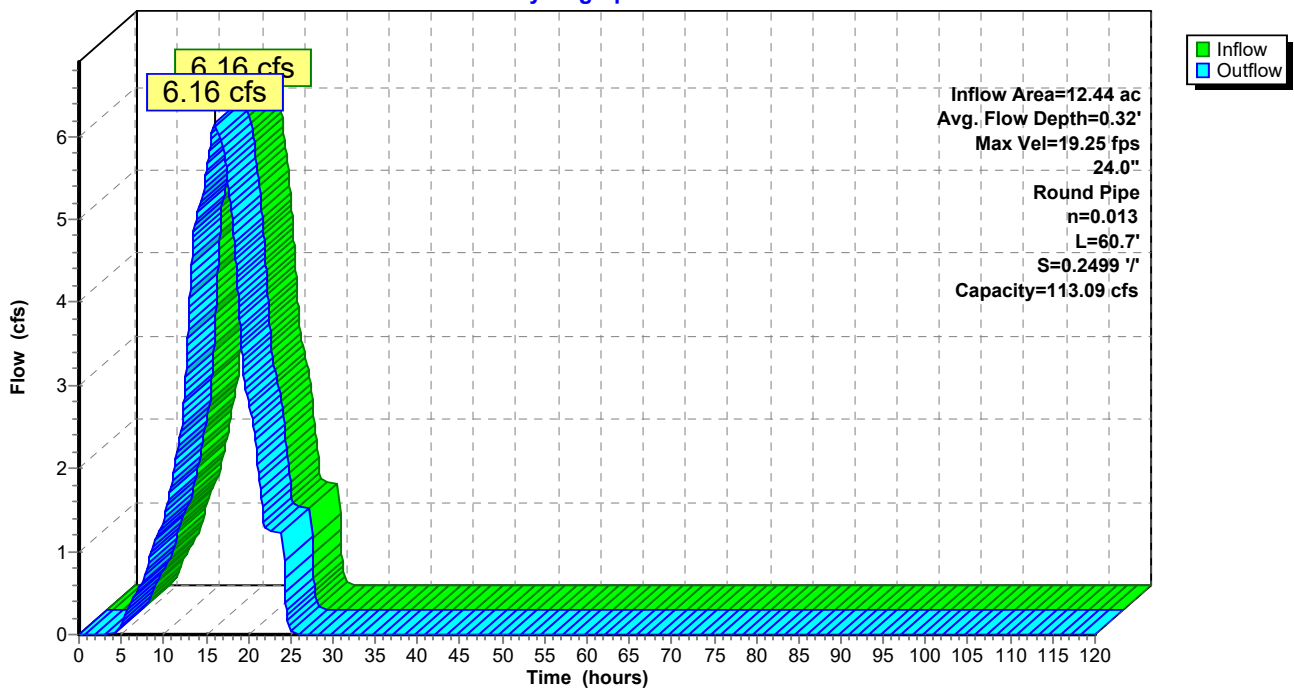
Peak Storage= 19 cf @ 15.96 hrs  
 Average Depth at Peak Storage= 0.32'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 113.09 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 60.7' Slope= 0.2499 '/'  
 Inlet Invert= 808.88', Outlet Invert= 793.71'



**Reach LP-N-C2: Letdown Pipe N-C2**

Hydrograph



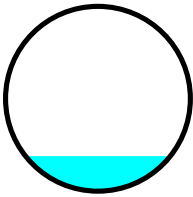
**Summary for Reach LP-N-C3: Letdown Pipe N-C3**

Inflow Area = 17.99 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 8.91 cfs @ 15.95 hrs, Volume= 6.283 af  
 Outflow = 8.91 cfs @ 15.96 hrs, Volume= 6.283 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 21.68 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 13.47 fps, Avg. Travel Time= 0.2 min

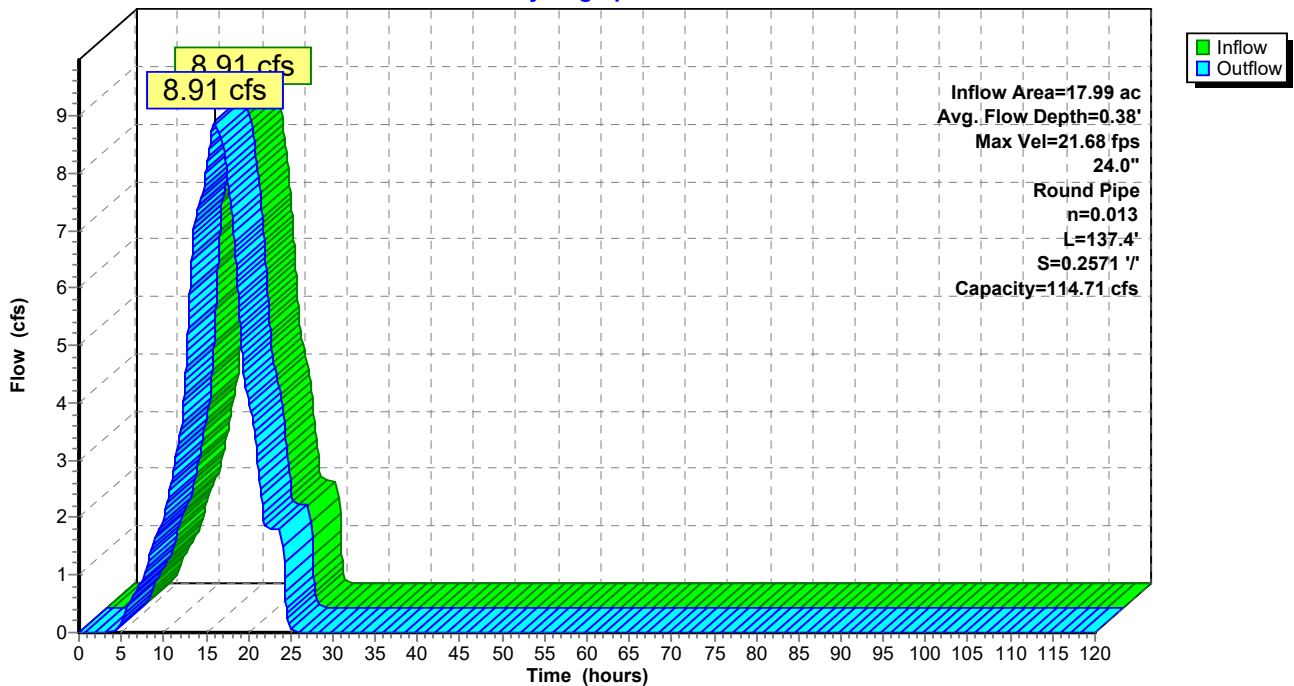
Peak Storage= 56 cf @ 15.95 hrs  
 Average Depth at Peak Storage= 0.38'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 114.71 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 137.4' Slope= 0.2571 1'  
 Inlet Invert= 774.26', Outlet Invert= 738.93'



**Reach LP-N-C3: Letdown Pipe N-C3**

Hydrograph



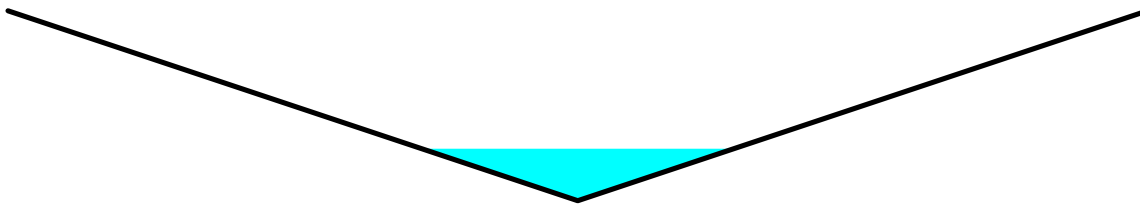
**Summary for Reach PD-1: Perimeter Ditch 1**

Inflow Area = 8.06 ac, 4.48% Impervious, Inflow Depth = 4.30" for 25-Year, 24-Hour event  
 Inflow = 4.06 cfs @ 15.72 hrs, Volume= 2.884 af  
 Outflow = 4.03 cfs @ 16.17 hrs, Volume= 2.884 af, Atten= 1%, Lag= 26.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.99 fps, Min. Travel Time= 14.0 min  
 Avg. Velocity = 1.03 fps, Avg. Travel Time= 27.0 min

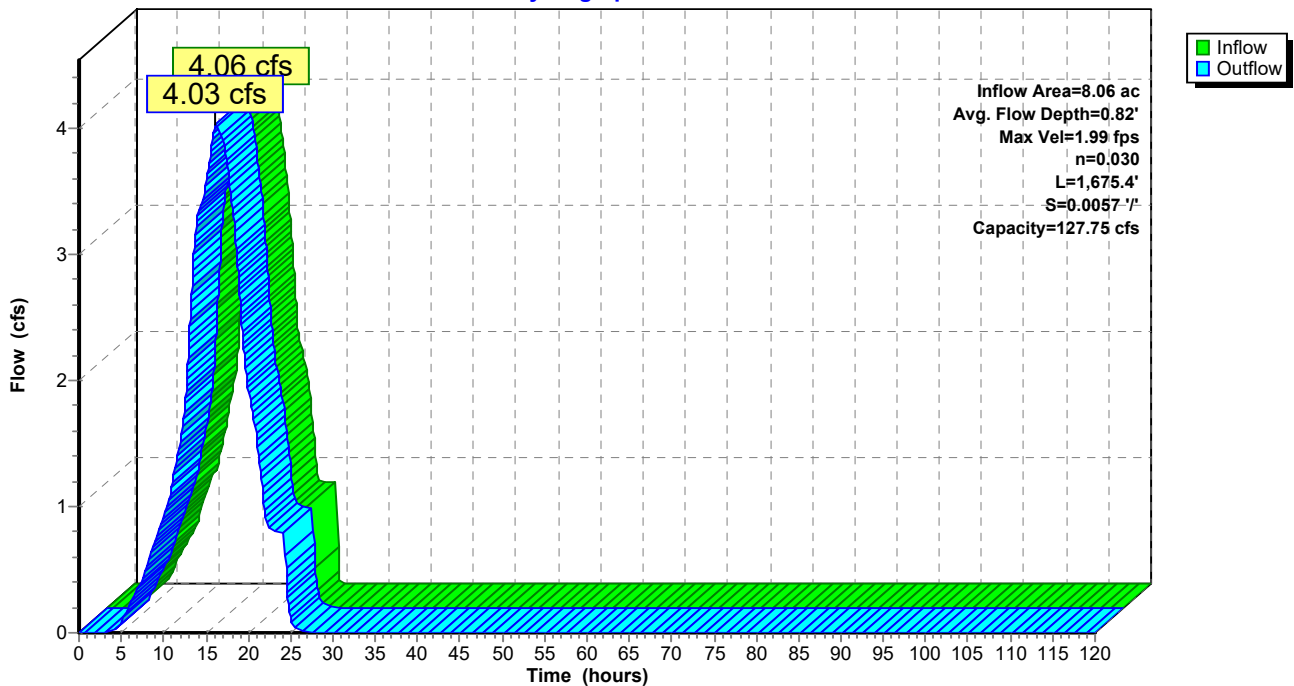
Peak Storage= 3,386 cf @ 15.93 hrs  
 Average Depth at Peak Storage= 0.82'  
 Bank-Full Depth= 3.00' Flow Area= 27.0 sf, Capacity= 127.75 cfs

0.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 ' / ' Top Width= 18.00'  
 Length= 1,675.4' Slope= 0.0057 ' / '  
 Inlet Invert= 768.00', Outlet Invert= 758.45'



**Reach PD-1: Perimeter Ditch 1**

Hydrograph





**Summary for Reach PD-10: Perimeter Ditch 10**

Inflow Area = 9.21 ac, 4.89% Impervious, Inflow Depth = 4.32" for 25-Year, 24-Hour event  
 Inflow = 4.62 cfs @ 16.02 hrs, Volume= 3.316 af  
 Outflow = 4.61 cfs @ 16.16 hrs, Volume= 3.316 af, Atten= 0%, Lag= 8.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.47 fps, Min. Travel Time= 5.0 min  
 Avg. Velocity = 0.79 fps, Avg. Travel Time= 9.3 min

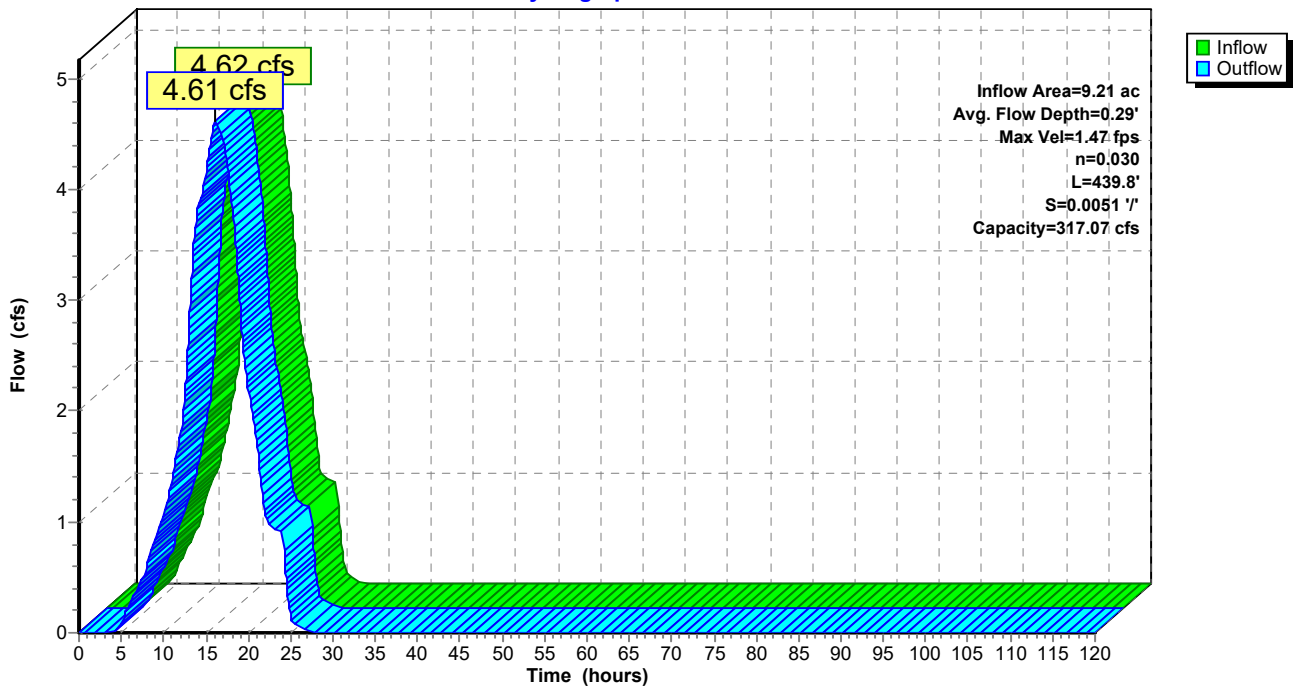
Peak Storage= 1,384 cf @ 16.07 hrs  
 Average Depth at Peak Storage= 0.29'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 317.07 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 ' / ' Top Width= 28.00'  
 Length= 439.8' Slope= 0.0051 ' / '  
 Inlet Invert= 739.43', Outlet Invert= 737.18'



**Reach PD-10: Perimeter Ditch 10**

Hydrograph



**Summary for Reach PD-11: Perimeter Ditch 11**

Inflow Area = 2.70 ac, 11.67% Impervious, Inflow Depth = 4.50" for 25-Year, 24-Hour event  
 Inflow = 1.40 cfs @ 15.67 hrs, Volume= 1.012 af  
 Outflow = 1.39 cfs @ 16.25 hrs, Volume= 1.012 af, Atten= 1%, Lag= 34.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 0.93 fps, Min. Travel Time= 19.8 min  
 Avg. Velocity = 0.55 fps, Avg. Travel Time= 33.7 min

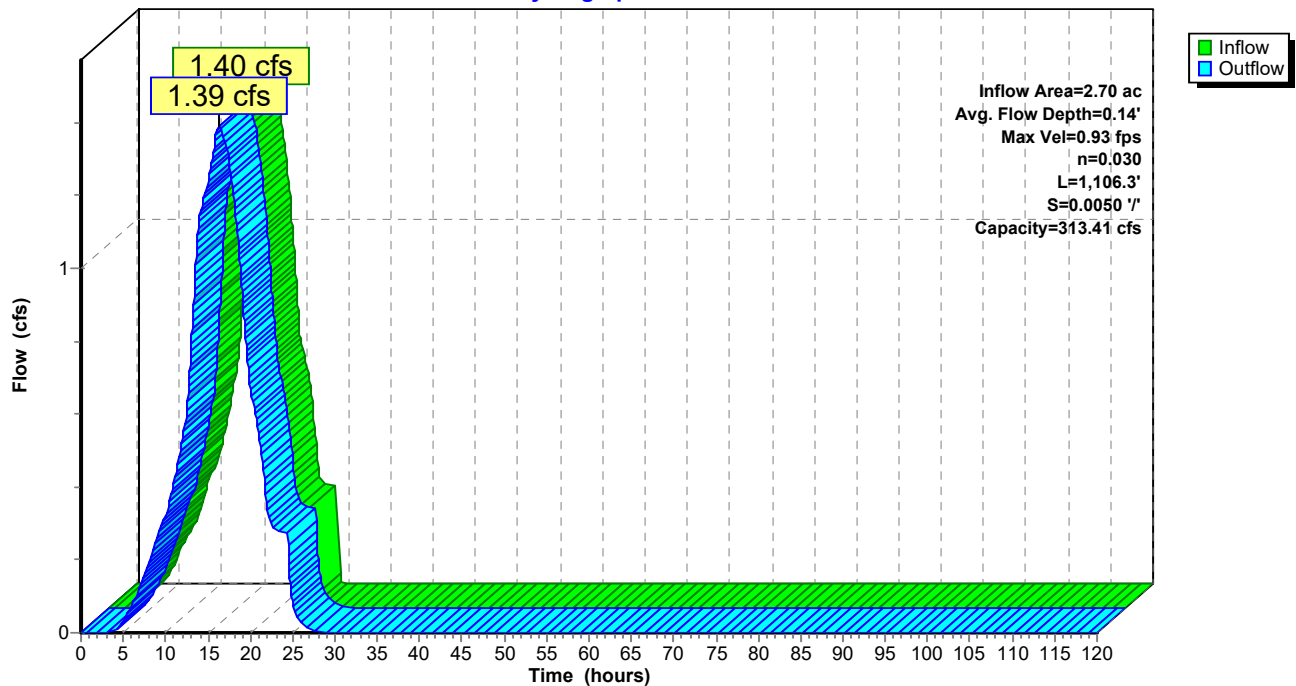
Peak Storage= 1,648 cf @ 15.92 hrs  
 Average Depth at Peak Storage= 0.14'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 313.41 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 1,106.3' Slope= 0.0050 '/'  
 Inlet Invert= 744.96', Outlet Invert= 739.43'



**Reach PD-11: Perimeter Ditch 11**

Hydrograph



**Summary for Reach PD-12: Perimeter Ditch 12**

Inflow Area = 2.74 ac, 11.45% Impervious, Inflow Depth = 4.50" for 25-Year, 24-Hour event  
 Inflow = 1.41 cfs @ 15.93 hrs, Volume= 1.027 af  
 Outflow = 1.40 cfs @ 16.48 hrs, Volume= 1.027 af, Atten= 0%, Lag= 33.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 0.93 fps, Min. Travel Time= 19.5 min  
 Avg. Velocity = 0.55 fps, Avg. Travel Time= 33.3 min

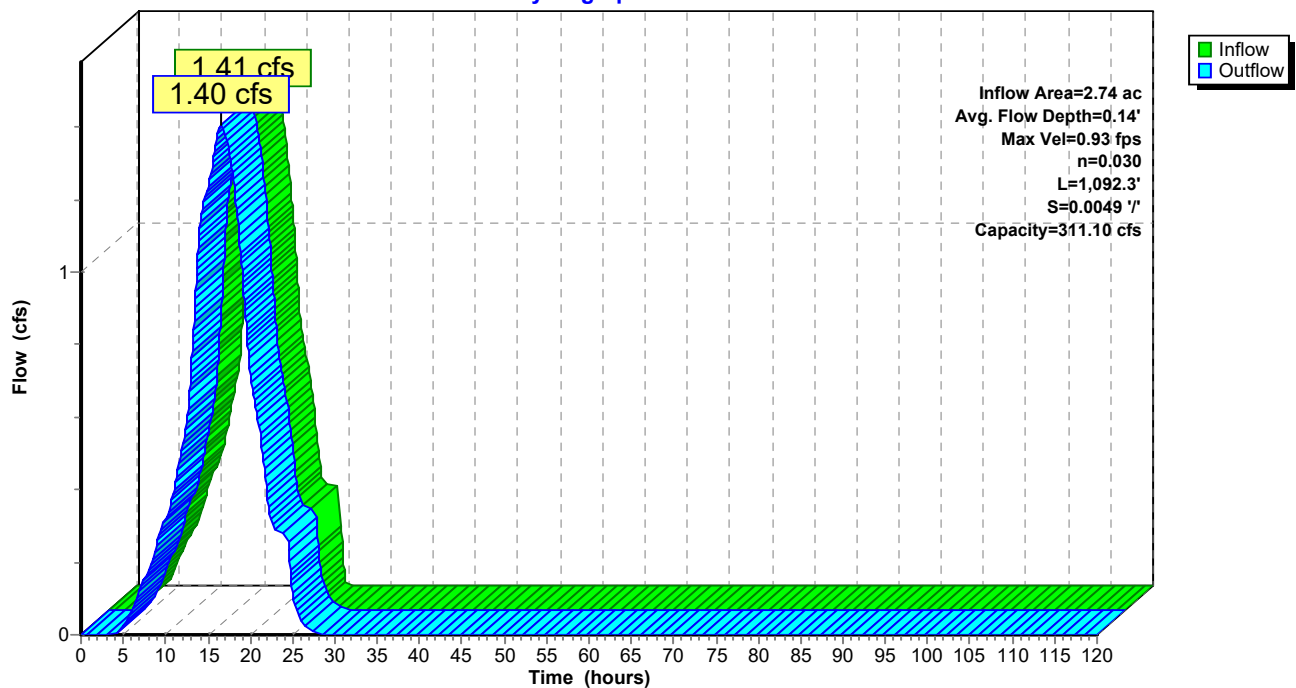
Peak Storage= 1,646 cf @ 16.16 hrs  
 Average Depth at Peak Storage= 0.14'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 311.10 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/ Top Width= 28.00'  
 Length= 1,092.3' Slope= 0.0049 '/  
 Inlet Invert= 744.96', Outlet Invert= 739.58'



**Reach PD-12: Perimeter Ditch 12**

Hydrograph



**Summary for Reach PD-13: Perimeter Ditch 13**

Inflow Area = 25.73 ac, 1.49% Impervious, Inflow Depth = 4.23" for 25-Year, 24-Hour event  
 Inflow = 12.76 cfs @ 15.99 hrs, Volume= 9.075 af  
 Outflow = 12.76 cfs @ 16.05 hrs, Volume= 9.075 af, Atten= 0%, Lag= 3.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.74 fps, Min. Travel Time= 2.1 min  
 Avg. Velocity = 0.88 fps, Avg. Travel Time= 4.2 min

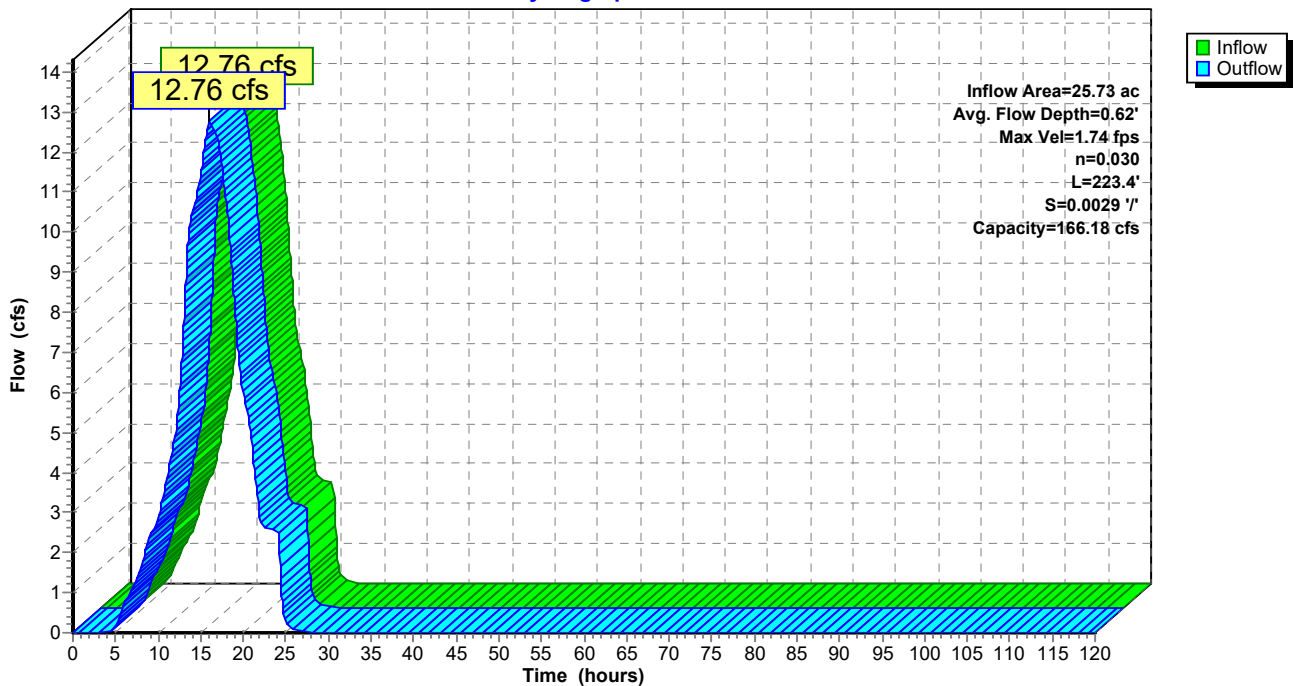
Peak Storage= 1,636 cf @ 16.02 hrs  
 Average Depth at Peak Storage= 0.62'  
 Bank-Full Depth= 2.50' Flow Area= 43.8 sf, Capacity= 166.18 cfs

10.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 ' / ' Top Width= 25.00'  
 Length= 223.4' Slope= 0.0029 ' / '  
 Inlet Invert= 739.58', Outlet Invert= 738.93'



**Reach PD-13: Perimeter Ditch 13**

Hydrograph



**Summary for Reach PD-14: Perimeter Ditch 14**

Inflow Area = 17.46 ac, 1.99% Impervious, Inflow Depth = 4.24" for 25-Year, 24-Hour event  
 Inflow = 8.67 cfs @ 16.11 hrs, Volume= 6.171 af  
 Outflow = 8.67 cfs @ 16.17 hrs, Volume= 6.171 af, Atten= 0%, Lag= 3.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.76 fps, Min. Travel Time= 2.1 min  
 Avg. Velocity = 0.88 fps, Avg. Travel Time= 4.2 min

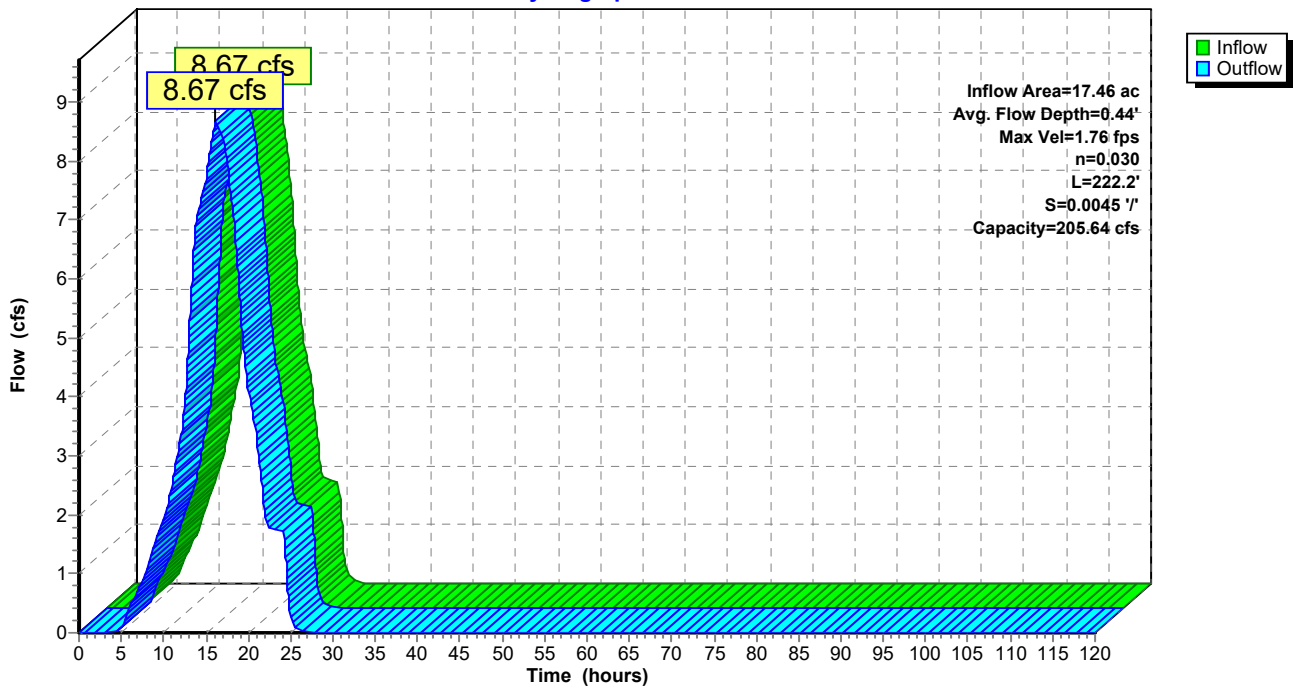
Peak Storage= 1,097 cf @ 16.14 hrs  
 Average Depth at Peak Storage= 0.44'  
 Bank-Full Depth= 2.50' Flow Area= 43.8 sf, Capacity= 205.64 cfs

10.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 ' / ' Top Width= 25.00'  
 Length= 222.2' Slope= 0.0045 ' / '  
 Inlet Invert= 739.92', Outlet Invert= 738.93'



**Reach PD-14: Perimeter Ditch 14**

Hydrograph



**Summary for Reach PD-15: Perimeter Ditch 15**

Inflow Area = 16.01 ac, 1.69% Impervious, Inflow Depth = 4.23" for 25-Year, 24-Hour event  
 Inflow = 7.96 cfs @ 15.91 hrs, Volume= 5.650 af  
 Outflow = 7.95 cfs @ 16.13 hrs, Volume= 5.650 af, Atten= 0%, Lag= 13.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.70 fps, Min. Travel Time= 7.4 min  
 Avg. Velocity = 0.86 fps, Avg. Travel Time= 14.7 min

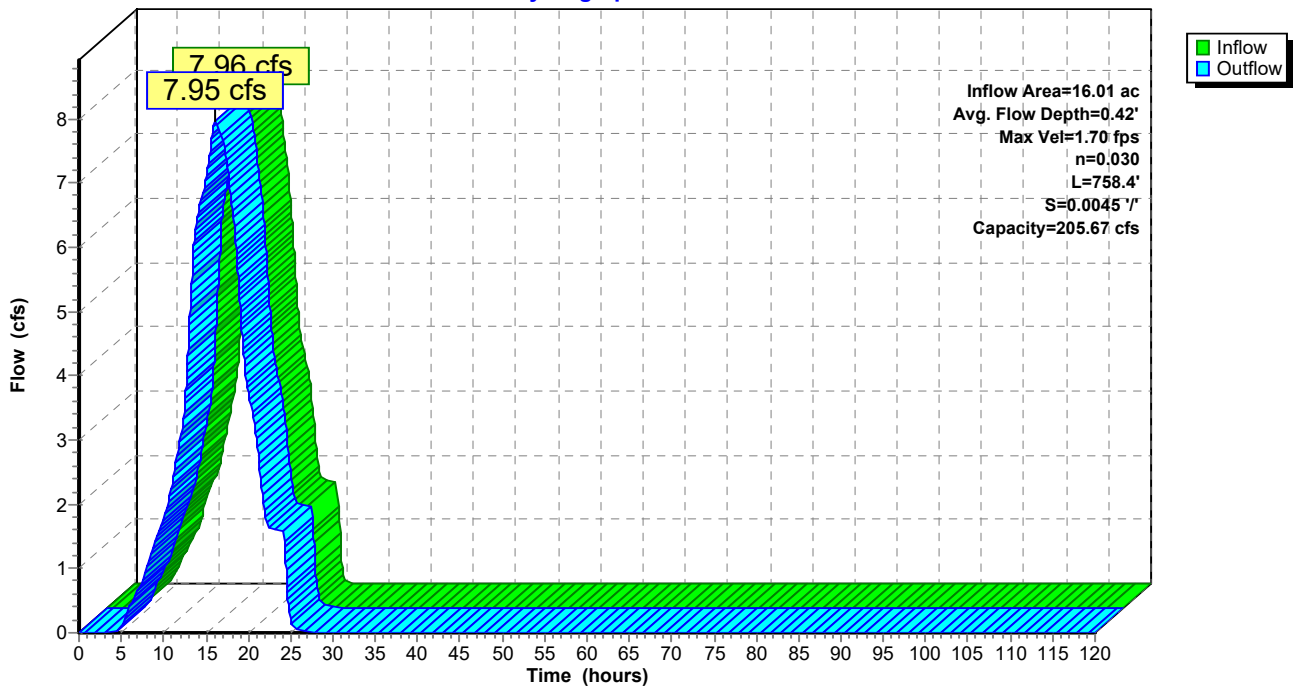
Peak Storage= 3,540 cf @ 16.00 hrs  
 Average Depth at Peak Storage= 0.42'  
 Bank-Full Depth= 2.50' Flow Area= 43.8 sf, Capacity= 205.67 cfs

10.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 25.00'  
 Length= 758.4' Slope= 0.0045 '/'  
 Inlet Invert= 743.30', Outlet Invert= 739.92'



**Reach PD-15: Perimeter Ditch 15**

Hydrograph



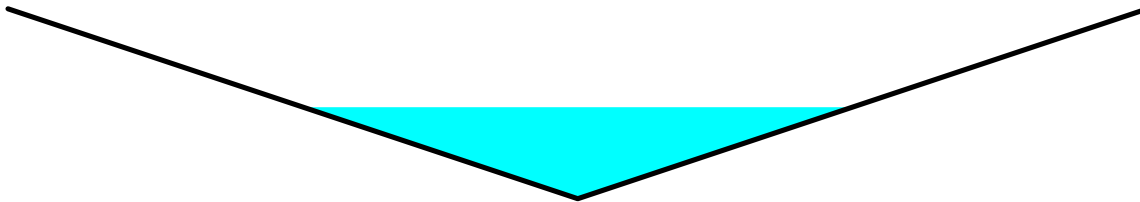
**Summary for Reach PD-2: Perimeter Ditch 2**

Inflow Area = 30.47 ac, 1.77% Impervious, Inflow Depth = 4.22" for 25-Year, 24-Hour event  
 Inflow = 15.07 cfs @ 16.21 hrs, Volume= 10.720 af  
 Outflow = 15.07 cfs @ 16.27 hrs, Volume= 10.720 af, Atten= 0%, Lag= 3.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.40 fps, Min. Travel Time= 2.2 min  
 Avg. Velocity = 1.18 fps, Avg. Travel Time= 4.5 min

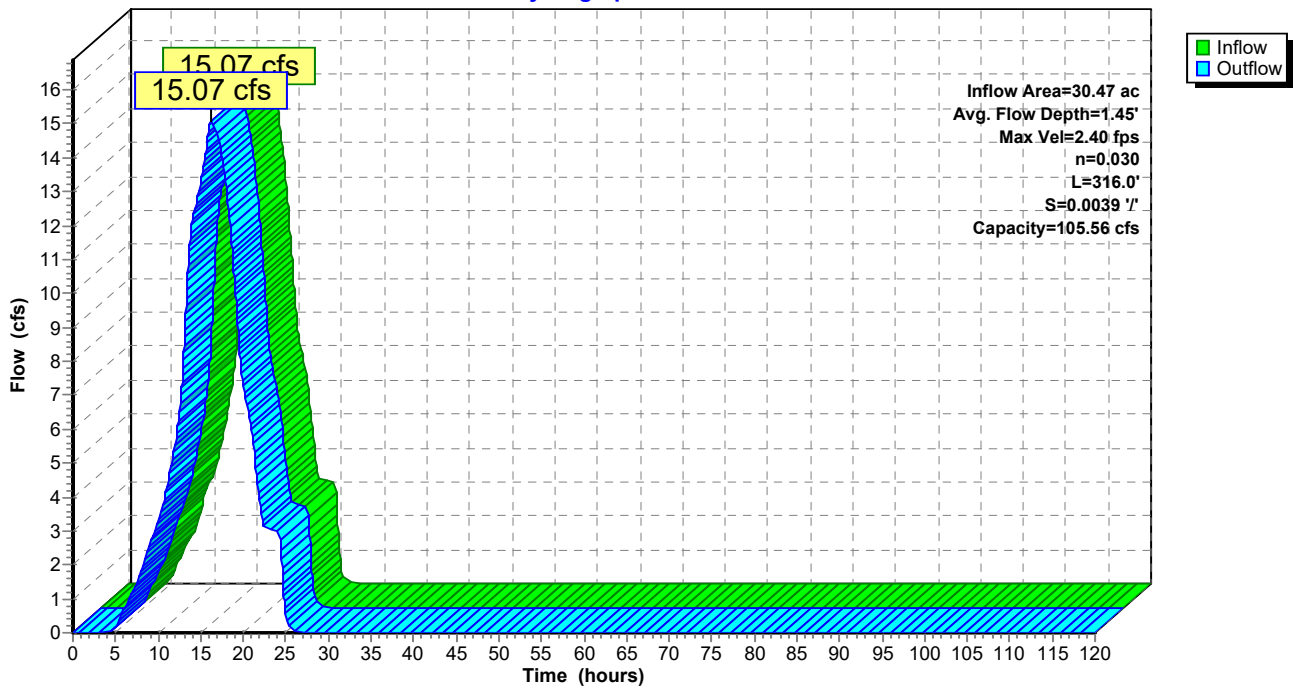
Peak Storage= 1,982 cf @ 16.24 hrs  
 Average Depth at Peak Storage= 1.45'  
 Bank-Full Depth= 3.00' Flow Area= 27.0 sf, Capacity= 105.56 cfs

0.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 18.00'  
 Length= 316.0' Slope= 0.0039 '/'  
 Inlet Invert= 758.00', Outlet Invert= 756.77'



**Reach PD-2: Perimeter Ditch 2**

Hydrograph



**Summary for Reach PD-3: Perimeter Ditch 3**

Inflow Area = 50.20 ac, 1.23% Impervious, Inflow Depth = 4.21" for 25-Year, 24-Hour event  
 Inflow = 24.76 cfs @ 16.19 hrs, Volume= 17.627 af  
 Outflow = 24.76 cfs @ 16.26 hrs, Volume= 17.627 af, Atten= 0%, Lag= 4.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.04 fps, Min. Travel Time= 2.7 min  
 Avg. Velocity = 1.43 fps, Avg. Travel Time= 5.7 min

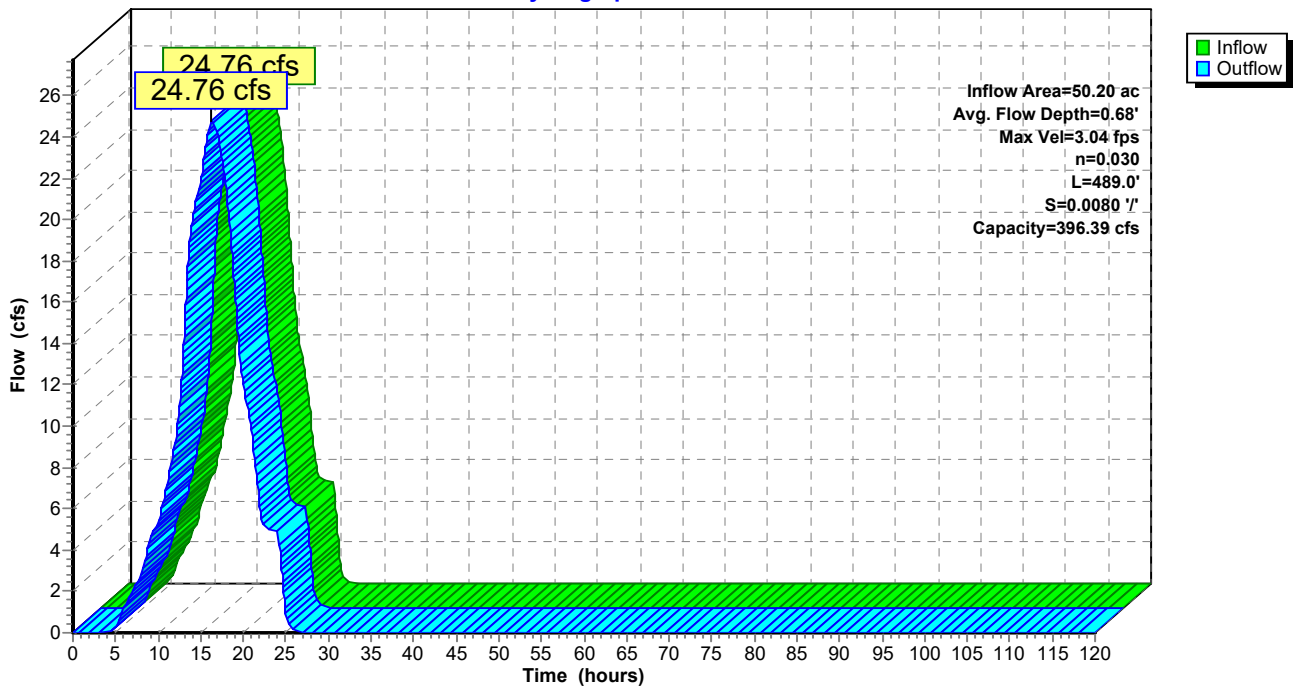
Peak Storage= 3,977 cf @ 16.22 hrs  
 Average Depth at Peak Storage= 0.68'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 396.39 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 489.0' Slope= 0.0080 '/'  
 Inlet Invert= 755.78', Outlet Invert= 751.87'



**Reach PD-3: Perimeter Ditch 3**

Hydrograph





**Summary for Reach PD-4: Perimeter Ditch 4**

Inflow Area = 53.25 ac, 1.28% Impervious, Inflow Depth = 4.22" for 25-Year, 24-Hour event  
 Inflow = 26.26 cfs @ 16.25 hrs, Volume= 18.705 af  
 Outflow = 26.26 cfs @ 16.30 hrs, Volume= 18.705 af, Atten= 0%, Lag= 2.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.94 fps, Min. Travel Time= 1.6 min  
 Avg. Velocity = 1.85 fps, Avg. Travel Time= 3.3 min

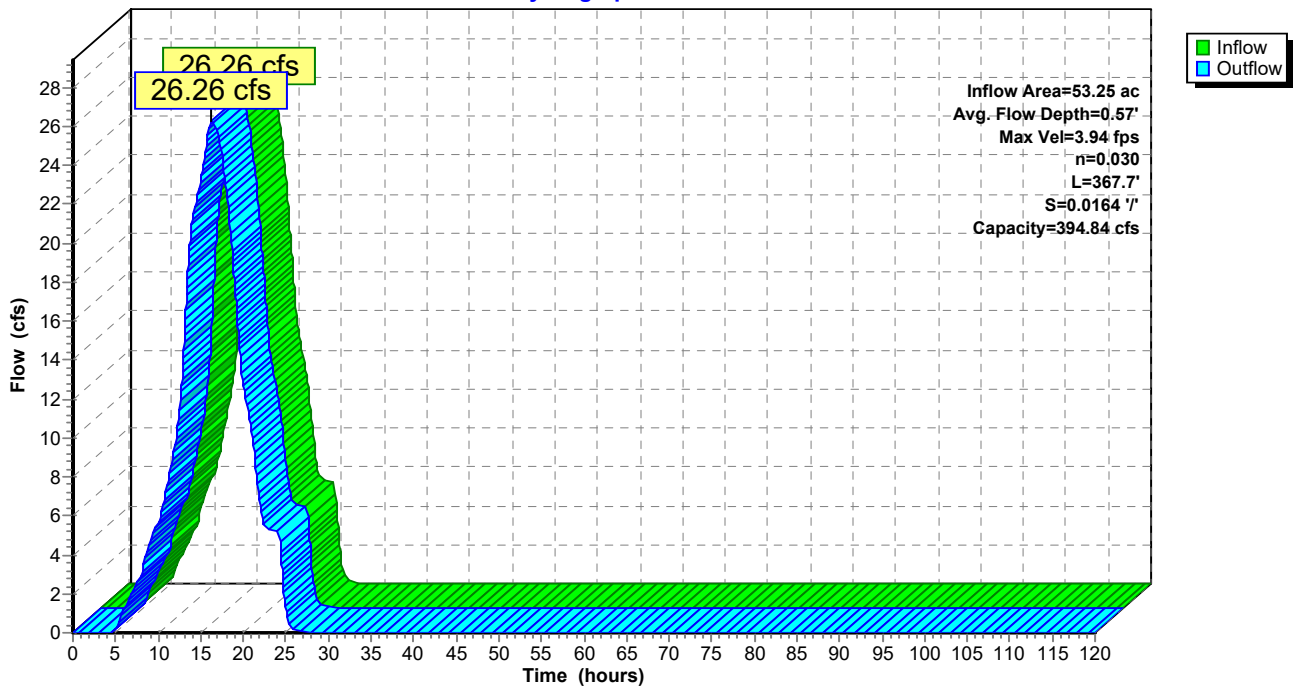
Peak Storage= 2,448 cf @ 16.27 hrs  
 Average Depth at Peak Storage= 0.57'  
 Bank-Full Depth= 2.50' Flow Area= 43.8 sf, Capacity= 394.84 cfs

10.00' x 2.50' deep channel, n= 0.030  
 Side Slope Z-value= 3.0 '/' Top Width= 25.00'  
 Length= 367.7' Slope= 0.0164 '/'  
 Inlet Invert= 751.87', Outlet Invert= 745.83'



**Reach PD-4: Perimeter Ditch 4**

Hydrograph



**Summary for Reach PD-5: Perimeter Ditch 5**

Inflow Area = 85.14 ac, 1.17% Impervious, Inflow Depth = 4.21" for 25-Year, 24-Hour event  
 Inflow = 41.95 cfs @ 16.20 hrs, Volume= 29.903 af  
 Outflow = 41.93 cfs @ 16.37 hrs, Volume= 29.903 af, Atten= 0%, Lag= 10.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.12 fps, Min. Travel Time= 6.0 min  
 Avg. Velocity = 1.40 fps, Avg. Travel Time= 13.5 min

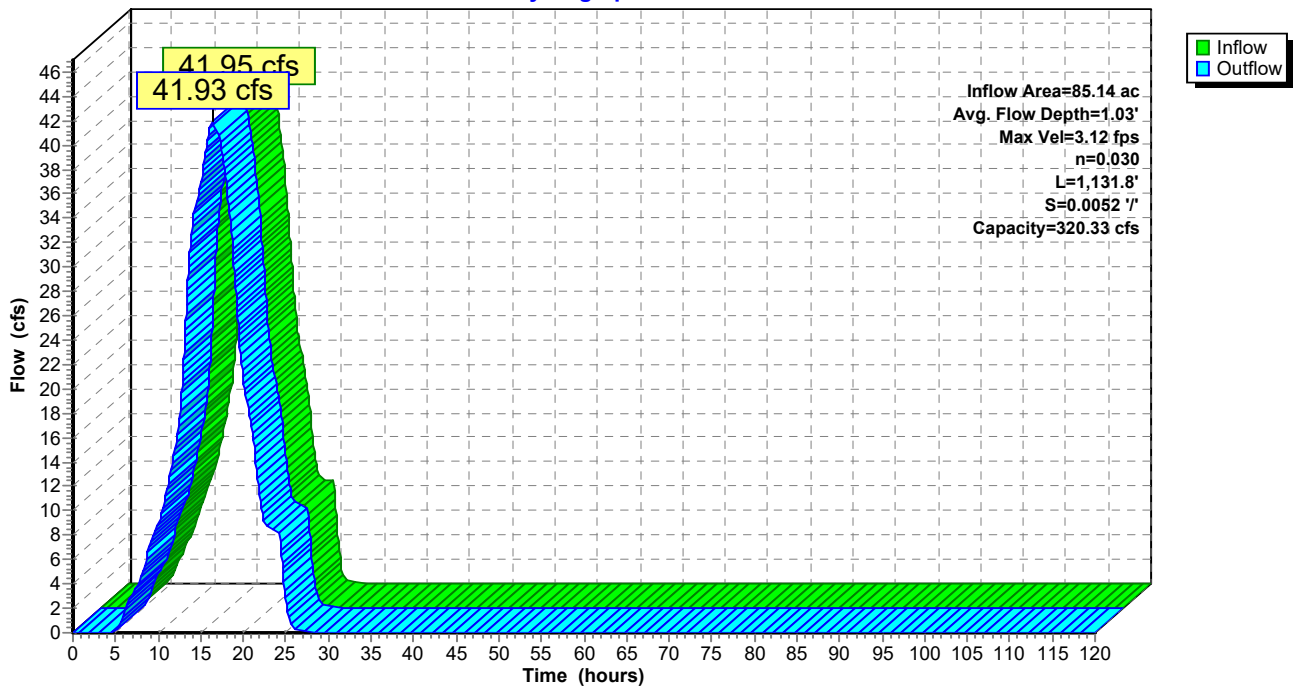
Peak Storage= 15,204 cf @ 16.27 hrs  
 Average Depth at Peak Storage= 1.03'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 320.33 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 1,131.8' Slope= 0.0052 '/'  
 Inlet Invert= 745.80', Outlet Invert= 739.89'



**Reach PD-5: Perimeter Ditch 5**

Hydrograph



**Summary for Reach PD-6: Perimeter Ditch 6**

Inflow Area = 87.70 ac, 1.33% Impervious, Inflow Depth = 4.22" for 25-Year, 24-Hour event  
 Inflow = 43.20 cfs @ 16.36 hrs, Volume= 30.832 af  
 Outflow = 43.20 cfs @ 16.45 hrs, Volume= 30.832 af, Atten= 0%, Lag= 5.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.10 fps, Min. Travel Time= 3.1 min  
 Avg. Velocity = 1.38 fps, Avg. Travel Time= 7.0 min

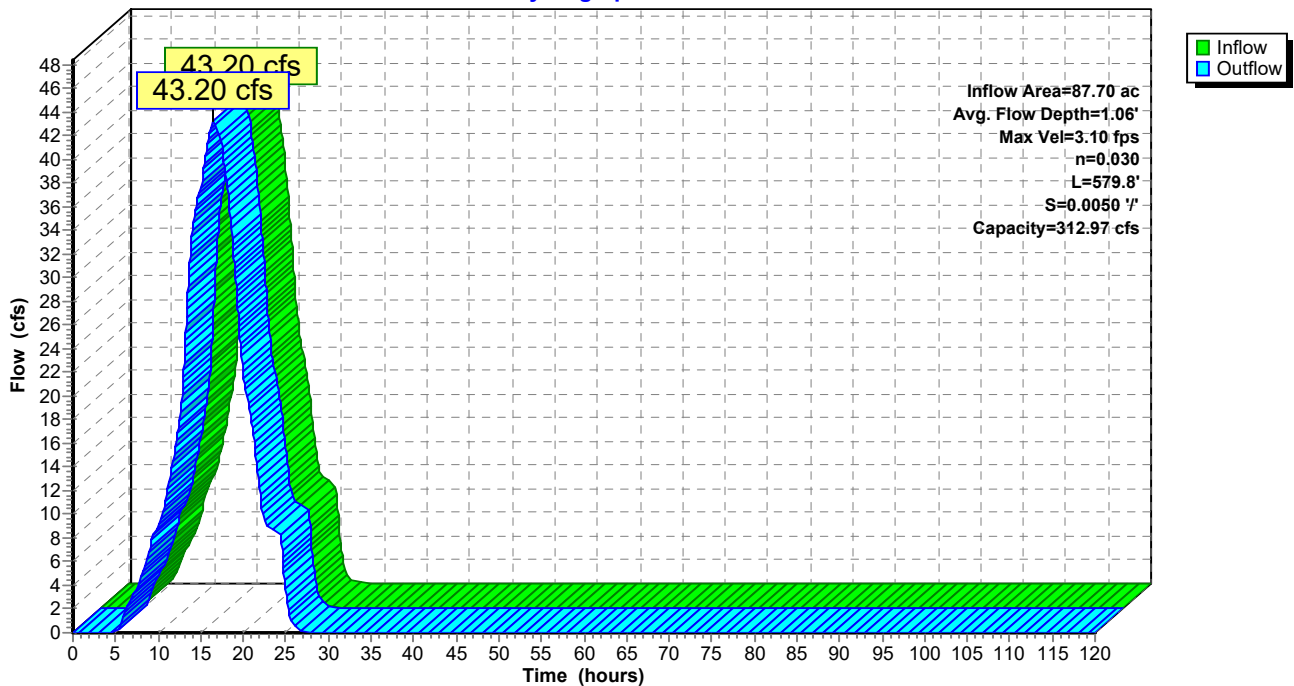
Peak Storage= 8,077 cf @ 16.39 hrs  
 Average Depth at Peak Storage= 1.06'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 312.97 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 579.8' Slope= 0.0050 '/'  
 Inlet Invert= 739.89', Outlet Invert= 737.00'



**Reach PD-6: Perimeter Ditch 6**

Hydrograph



**Summary for Reach PD-7: Perimeter Ditch 7**

Inflow Area = 3.12 ac, 32.08% Impervious, Inflow Depth = 5.07" for 25-Year, 24-Hour event  
 Inflow = 1.73 cfs @ 15.65 hrs, Volume= 1.319 af  
 Outflow = 1.72 cfs @ 15.69 hrs, Volume= 1.319 af, Atten= 0%, Lag= 2.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.01 fps, Min. Travel Time= 1.5 min  
 Avg. Velocity = 0.67 fps, Avg. Travel Time= 2.2 min

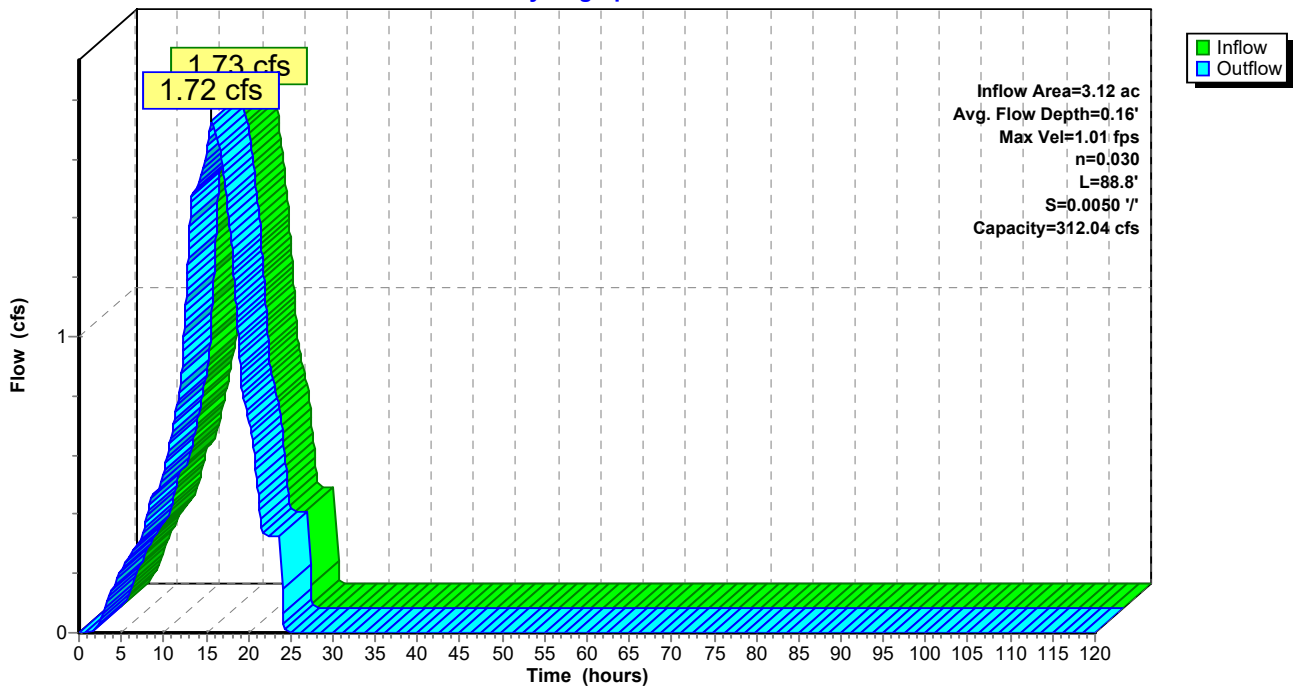
Peak Storage= 152 cf @ 15.66 hrs  
 Average Depth at Peak Storage= 0.16'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 312.04 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 88.8' Slope= 0.0050 '/'  
 Inlet Invert= 741.25', Outlet Invert= 740.81'



**Reach PD-7: Perimeter Ditch 7**

Hydrograph



**Summary for Reach PD-8: Perimeter Ditch 8**

Inflow Area = 0.14 ac, 14.29% Impervious, Inflow Depth = 4.57" for 25-Year, 24-Hour event  
 Inflow = 0.07 cfs @ 15.62 hrs, Volume= 0.053 af  
 Outflow = 0.07 cfs @ 15.78 hrs, Volume= 0.053 af, Atten= 0%, Lag= 9.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 0.33 fps, Min. Travel Time= 4.4 min  
 Avg. Velocity = 0.33 fps, Avg. Travel Time= 4.4 min

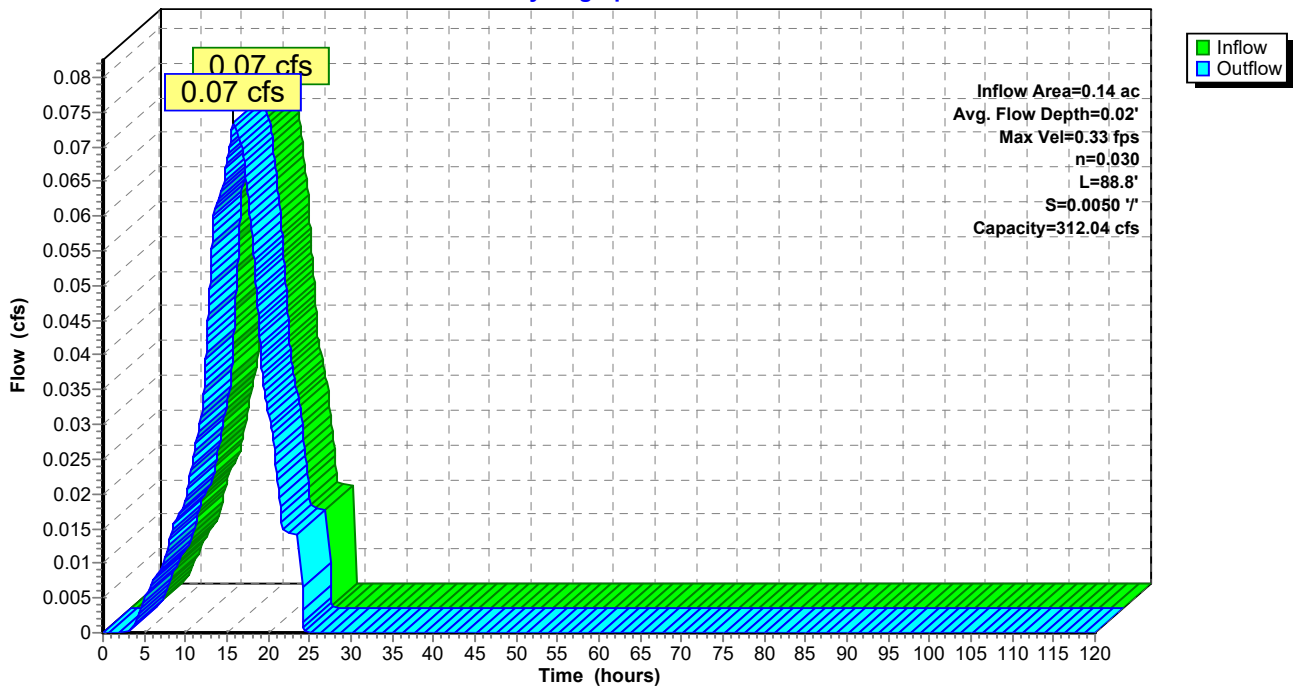
Peak Storage= 20 cf @ 15.71 hrs  
 Average Depth at Peak Storage= 0.02'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 312.04 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 ' / ' Top Width= 28.00'  
 Length= 88.8' Slope= 0.0050 ' / '  
 Inlet Invert= 741.25', Outlet Invert= 740.81'



**Reach PD-8: Perimeter Ditch 8**

Hydrograph



**Summary for Reach PD-9: Perimeter Ditch 9**

Inflow Area = 6.78 ac, 3.10% Impervious, Inflow Depth = 4.27" for 25-Year, 24-Hour event  
 Inflow = 3.39 cfs @ 15.90 hrs, Volume= 2.415 af  
 Outflow = 3.38 cfs @ 16.13 hrs, Volume= 2.415 af, Atten= 0%, Lag= 13.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.35 fps, Min. Travel Time= 7.9 min  
 Avg. Velocity = 0.75 fps, Avg. Travel Time= 14.2 min

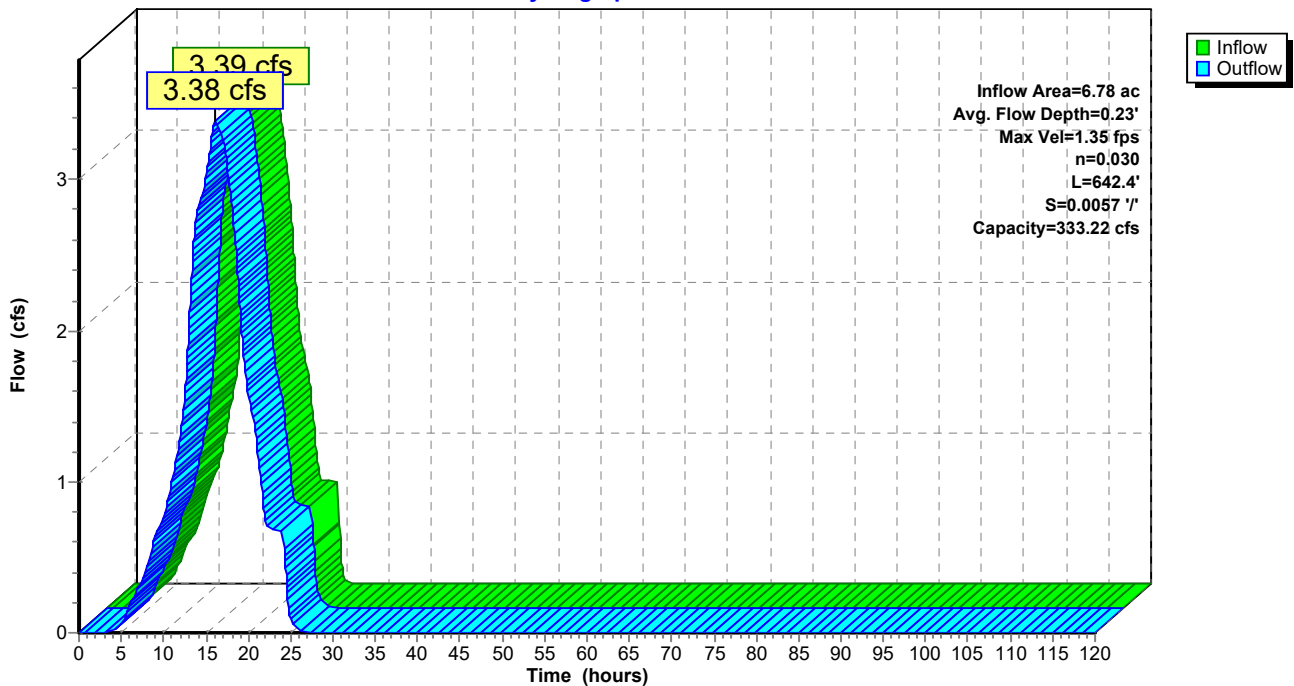
Peak Storage= 1,608 cf @ 15.99 hrs  
 Average Depth at Peak Storage= 0.23'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 333.22 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 ' / ' Top Width= 28.00'  
 Length= 642.4' Slope= 0.0057 ' / '  
 Inlet Invert= 740.81', Outlet Invert= 737.18'



**Reach PD-9: Perimeter Ditch 9**

Hydrograph



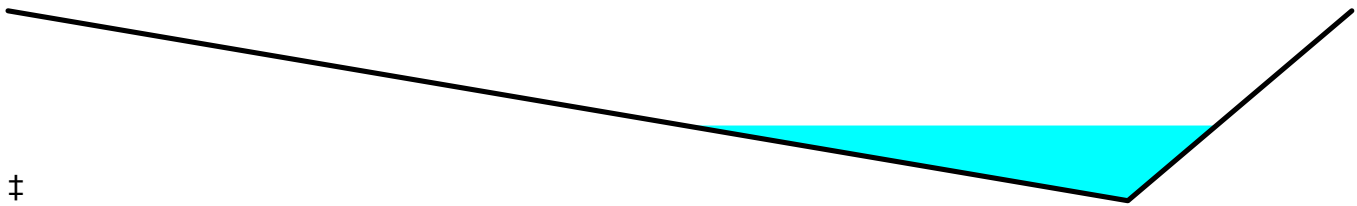
**Summary for Reach TB-A1A: Terrace Berm A1A**

Inflow Area = 6.74 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 3.34 cfs @ 15.86 hrs, Volume= 2.352 af  
 Outflow = 3.33 cfs @ 16.09 hrs, Volume= 2.352 af, Atten= 0%, Lag= 13.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.36 fps, Min. Travel Time= 7.3 min  
 Avg. Velocity = 1.41 fps, Avg. Travel Time= 12.2 min

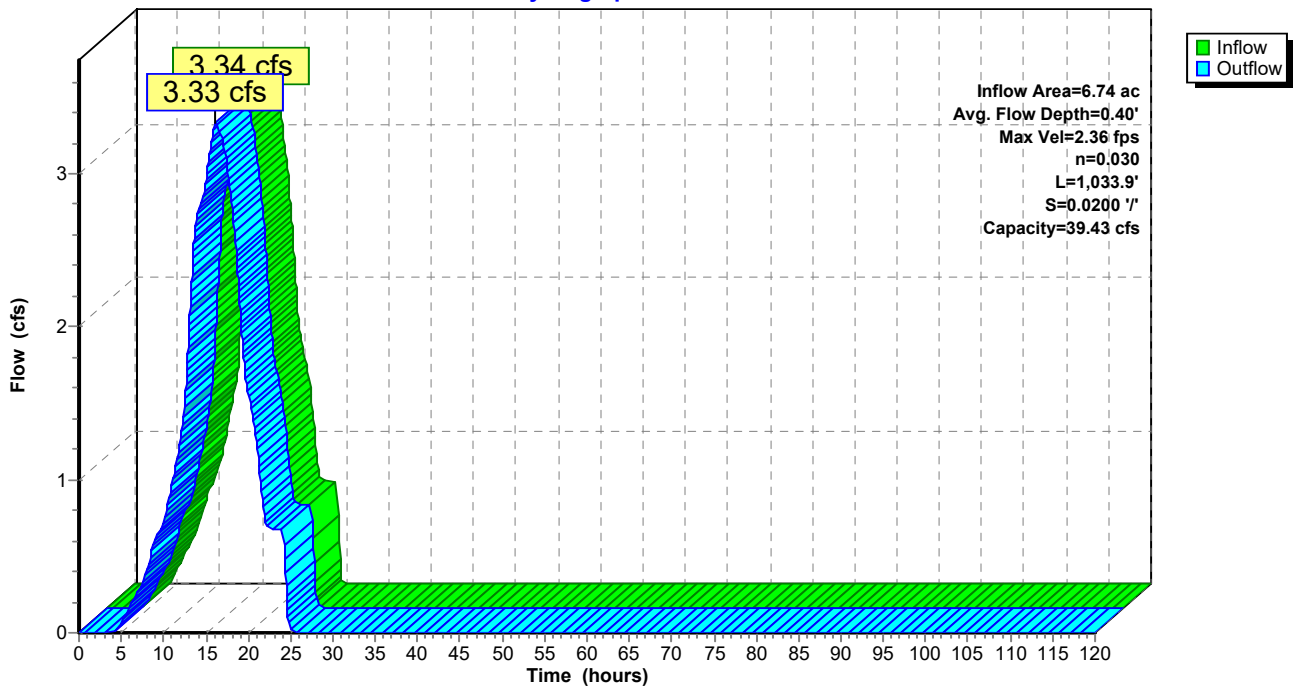
Peak Storage= 1,458 cf @ 15.97 hrs  
 Average Depth at Peak Storage= 0.40'  
 Bank-Full Depth= 1.00' Flow Area= 9.0 sf, Capacity= 39.43 cfs

0.00' x 1.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 15.0 3.0 '/' Top Width= 18.00'  
 Length= 1,033.9' Slope= 0.0200 '/'  
 Inlet Invert= 842.00', Outlet Invert= 821.32'



**Reach TB-A1A: Terrace Berm A1A**

Hydrograph



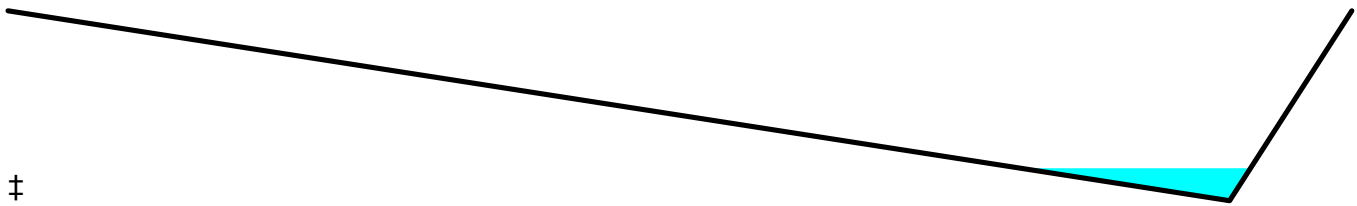
**Summary for Reach TB-A1B: Terrace Berm A1B**

Inflow Area = 5.23 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 2.60 cfs @ 15.69 hrs, Volume= 1.825 af  
 Outflow = 2.58 cfs @ 16.05 hrs, Volume= 1.825 af, Atten= 1%, Lag= 21.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.78 fps, Min. Travel Time= 10.9 min  
 Avg. Velocity = 1.07 fps, Avg. Travel Time= 18.1 min

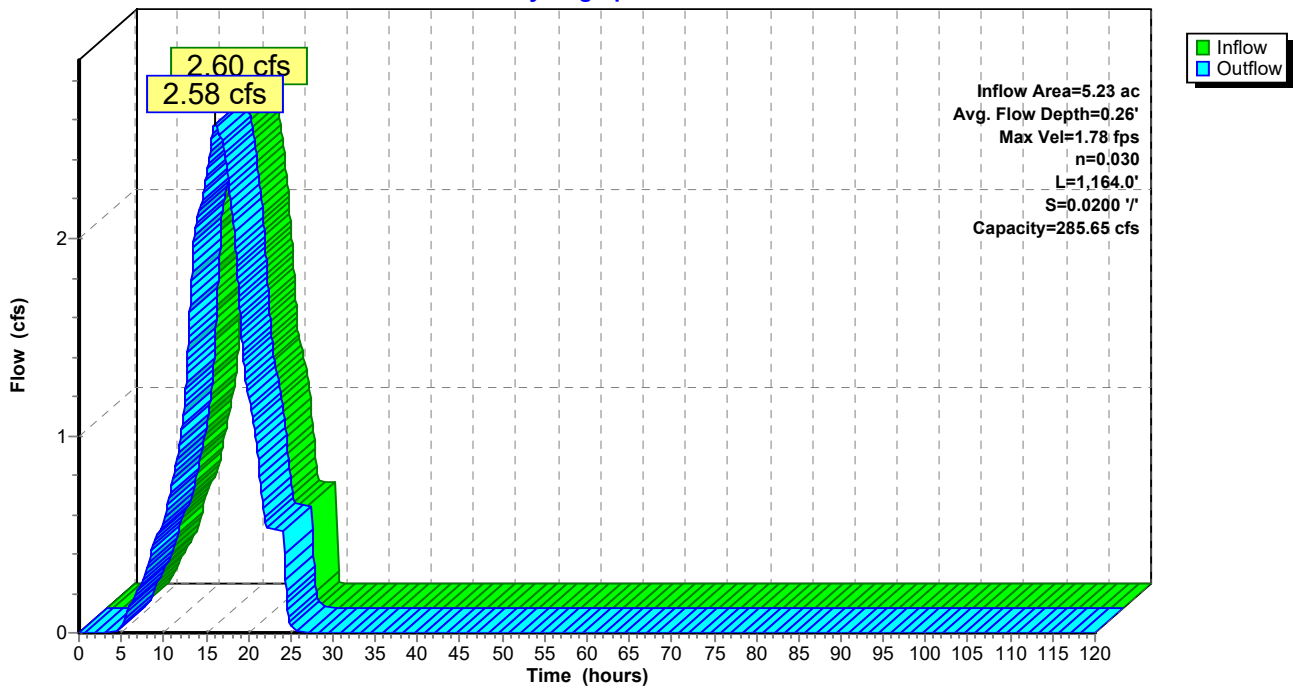
Peak Storage= 1,690 cf @ 15.86 hrs  
 Average Depth at Peak Storage= 0.26'  
 Bank-Full Depth= 1.50' Flow Area= 49.5 sf, Capacity= 285.65 cfs

0.00' x 1.50' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 40.0 4.0 '/' Top Width= 66.00'  
 Length= 1,164.0' Slope= 0.0200 '/'  
 Inlet Invert= 806.00', Outlet Invert= 782.72'



**Reach TB-A1B: Terrace Berm A1B**

Hydrograph





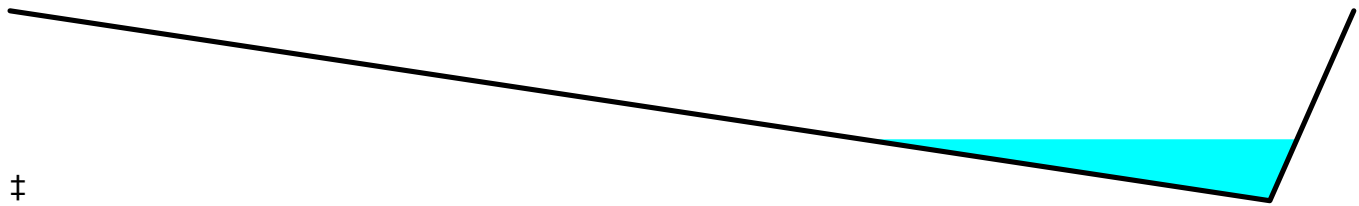
**Summary for Reach TB-A1C: Terrace Berm A1C**

Inflow Area = 9.16 ac, 1.48% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 4.52 cfs @ 16.05 hrs, Volume= 3.199 af  
 Outflow = 4.51 cfs @ 16.34 hrs, Volume= 3.199 af, Atten= 0%, Lag= 17.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.80 fps, Min. Travel Time= 9.0 min  
 Avg. Velocity = 1.02 fps, Avg. Travel Time= 15.8 min

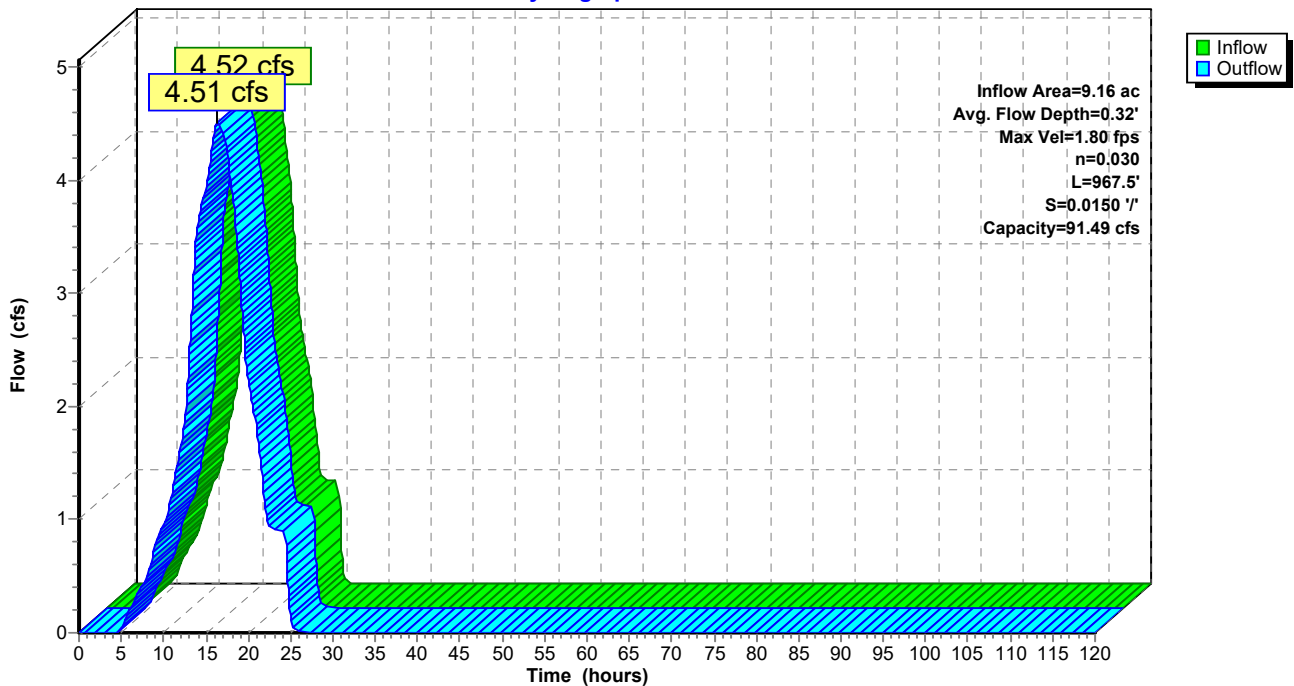
Peak Storage= 2,430 cf @ 16.19 hrs  
 Average Depth at Peak Storage= 0.32'  
 Bank-Full Depth= 1.00' Flow Area= 24.0 sf, Capacity= 91.49 cfs

0.00' x 1.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 45.0 3.0 '/' Top Width= 48.00'  
 Length= 967.5' Slope= 0.0150 '/'  
 Inlet Invert= 792.00', Outlet Invert= 777.49'



**Reach TB-A1C: Terrace Berm A1C**

Hydrograph



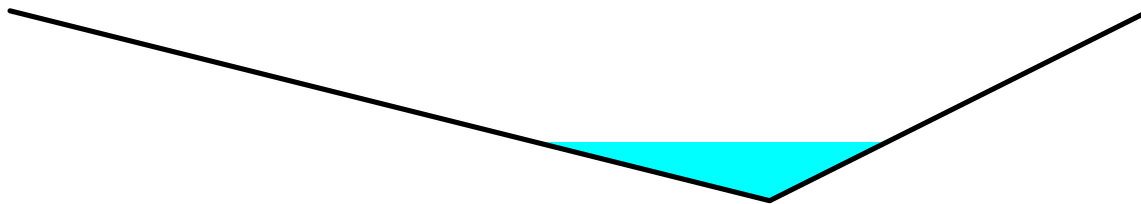
**Summary for Reach TB-B1: Terrace Berm B1**

Inflow Area = 2.04 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 1.01 cfs @ 15.73 hrs, Volume= 0.712 af  
 Outflow = 1.01 cfs @ 15.82 hrs, Volume= 0.712 af, Atten= 0%, Lag= 5.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.25 fps, Min. Travel Time= 2.5 min  
 Avg. Velocity = 1.60 fps, Avg. Travel Time= 3.6 min

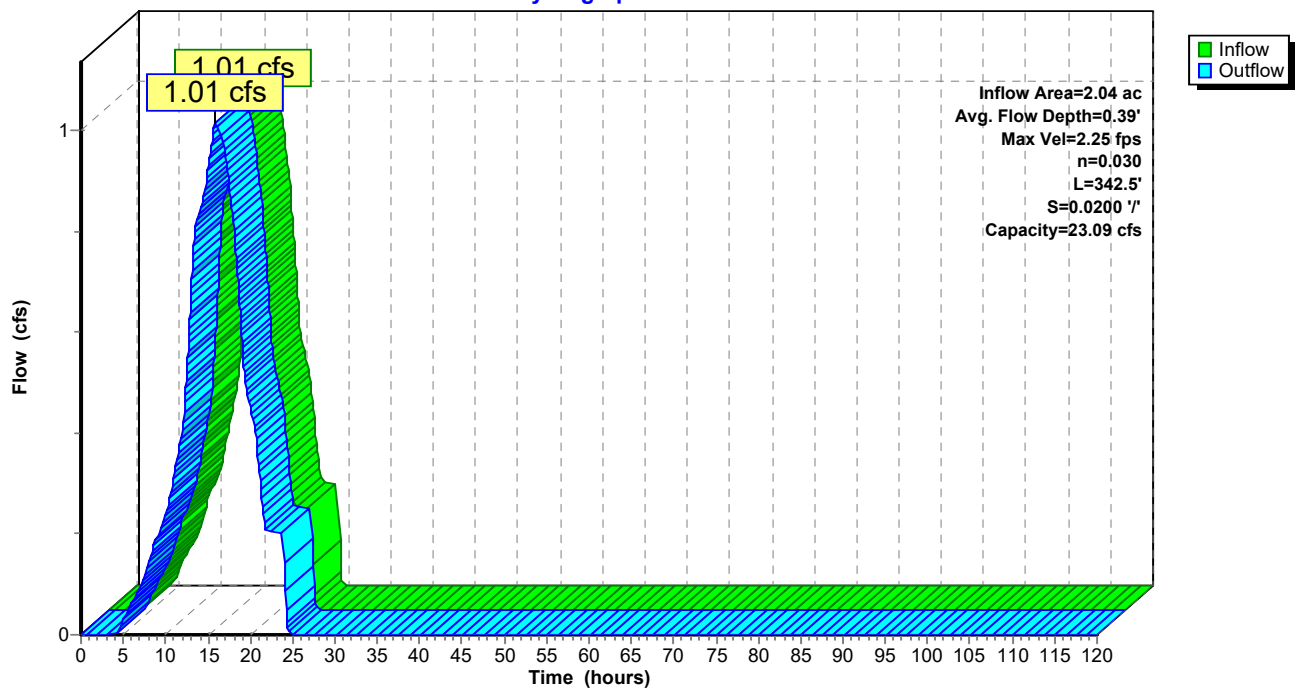
Peak Storage= 154 cf @ 15.77 hrs  
 Average Depth at Peak Storage= 0.39'  
 Bank-Full Depth= 1.25' Flow Area= 4.7 sf, Capacity= 23.09 cfs

0.00' x 1.25' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/ Top Width= 7.50'  
 Length= 342.5' Slope= 0.0200 '/  
 Inlet Invert= 880.00', Outlet Invert= 873.15'



**Reach TB-B1: Terrace Berm B1**

Hydrograph



**Summary for Reach TB-B10: Terrace Bench B10**

Inflow Area = 2.25 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 1.11 cfs @ 15.97 hrs, Volume= 0.785 af  
 Outflow = 1.11 cfs @ 16.16 hrs, Volume= 0.785 af, Atten= 0%, Lag= 11.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 0.92 fps, Min. Travel Time= 6.6 min  
 Avg. Velocity = 0.57 fps, Avg. Travel Time= 10.6 min

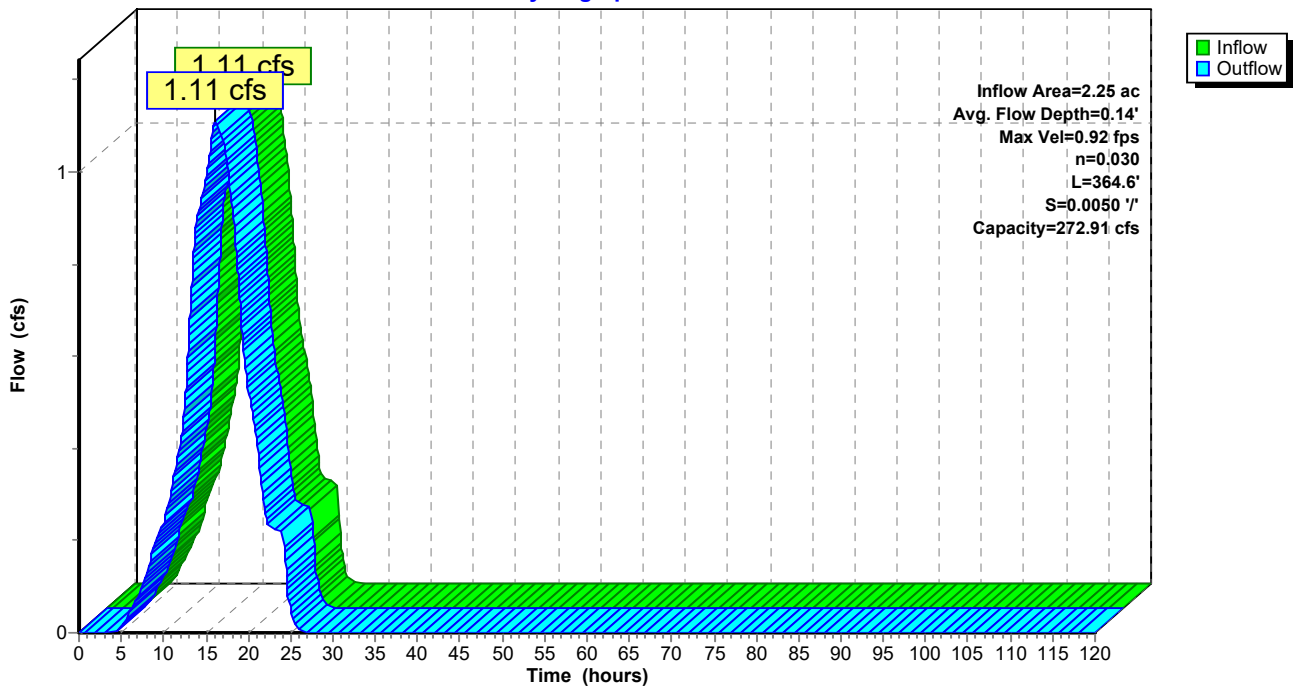
Peak Storage= 437 cf @ 16.05 hrs  
 Average Depth at Peak Storage= 0.14'  
 Bank-Full Depth= 3.00' Flow Area= 51.0 sf, Capacity= 272.91 cfs

8.00' x 3.00' deep channel, n= 0.030  
 Side Slope Z-value= 3.0 '/' Top Width= 26.00'  
 Length= 364.6' Slope= 0.0050 '/'  
 Inlet Invert= 759.18', Outlet Invert= 757.36'



**Reach TB-B10: Terrace Bench B10**

Hydrograph



### Summary for Reach TB-B10A: Terrace Bench B10A

Inflow Area = 2.25 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 1.11 cfs @ 16.16 hrs, Volume= 0.785 af  
 Outflow = 1.11 cfs @ 16.17 hrs, Volume= 0.785 af, Atten= 0%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.69 fps, Min. Travel Time= 0.5 min  
 Avg. Velocity = 2.04 fps, Avg. Travel Time= 0.6 min

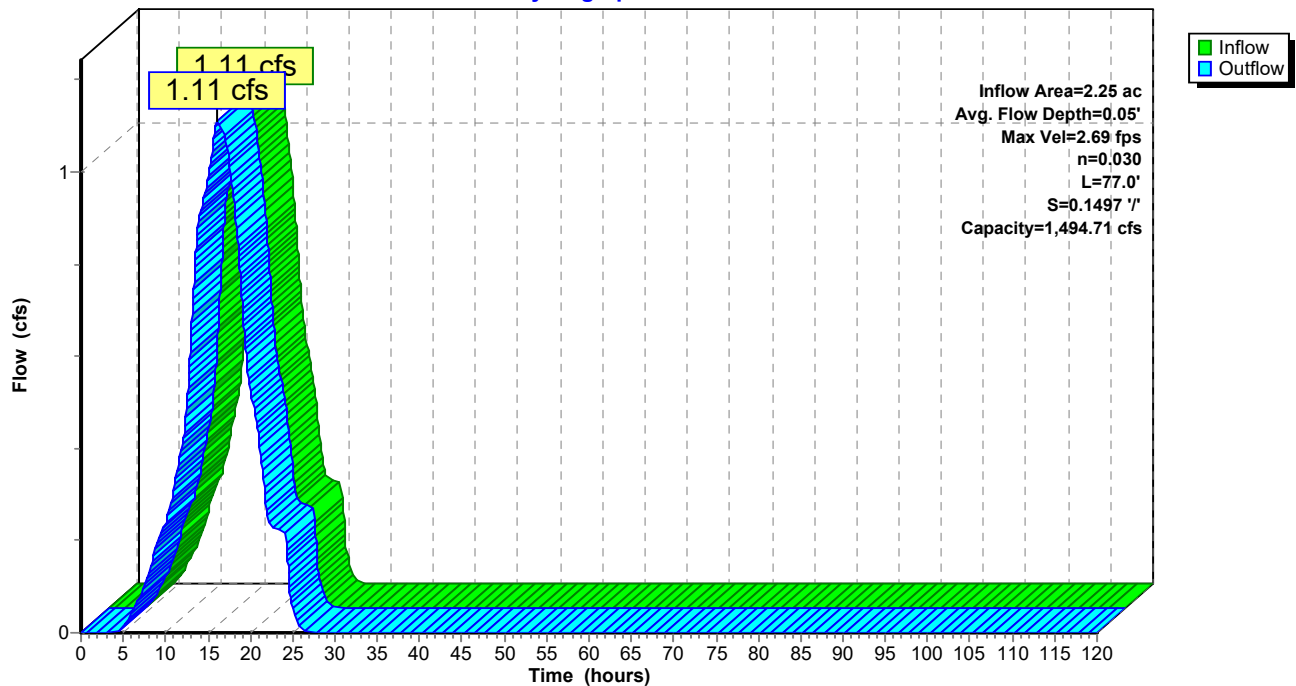
Peak Storage= 32 cf @ 16.16 hrs  
 Average Depth at Peak Storage= 0.05'  
 Bank-Full Depth= 3.00' Flow Area= 51.0 sf, Capacity= 1,494.71 cfs

8.00' x 3.00' deep channel, n= 0.030  
 Side Slope Z-value= 3.0 ' / ' Top Width= 26.00'  
 Length= 77.0' Slope= 0.1497 ' / '  
 Inlet Invert= 757.36', Outlet Invert= 745.83'



### Reach TB-B10A: Terrace Bench B10A

Hydrograph



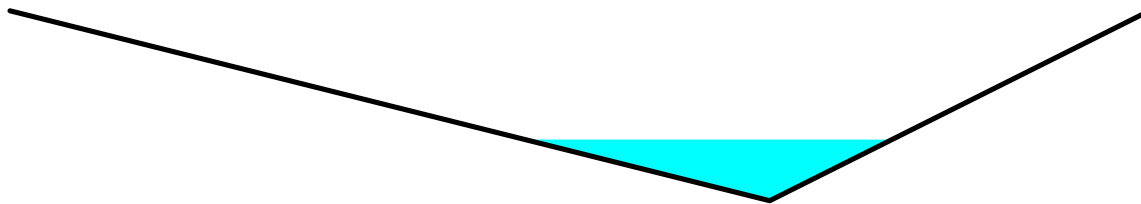
**Summary for Reach TB-B11: Terrace Berm B11**

Inflow Area = 2.27 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 1.12 cfs @ 15.85 hrs, Volume= 0.793 af  
 Outflow = 1.12 cfs @ 15.87 hrs, Volume= 0.793 af, Atten= 0%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.31 fps, Min. Travel Time= 0.8 min  
 Avg. Velocity = 1.69 fps, Avg. Travel Time= 1.0 min

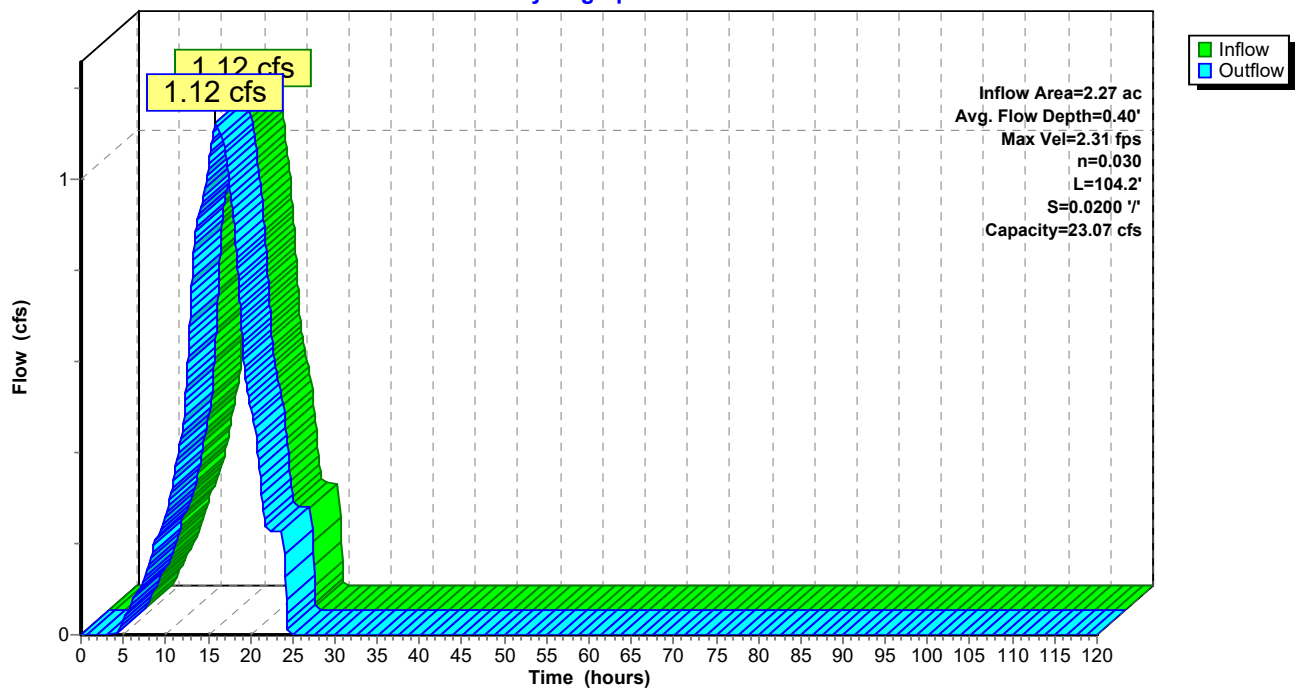
Peak Storage= 51 cf @ 15.86 hrs  
 Average Depth at Peak Storage= 0.40'  
 Bank-Full Depth= 1.25' Flow Area= 4.7 sf, Capacity= 23.07 cfs

0.00' x 1.25' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 7.50'  
 Length= 104.2' Slope= 0.0200 '/'  
 Inlet Invert= 821.00', Outlet Invert= 818.92'



**Reach TB-B11: Terrace Berm B11**

Hydrograph



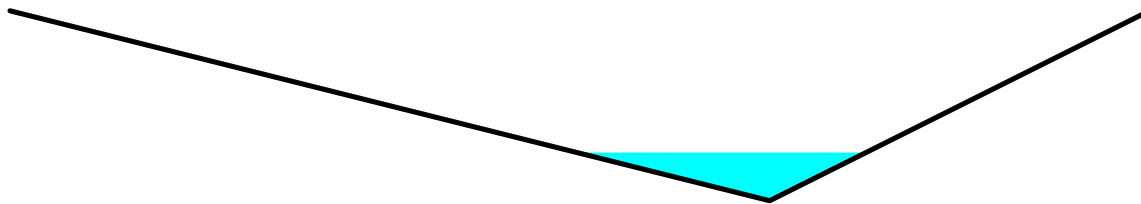
**Summary for Reach TB-B12: Terrace Berm B12**

Inflow Area = 1.20 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 0.60 cfs @ 15.69 hrs, Volume= 0.419 af  
 Outflow = 0.60 cfs @ 15.89 hrs, Volume= 0.419 af, Atten= 0%, Lag= 12.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.97 fps, Min. Travel Time= 6.2 min  
 Avg. Velocity = 1.32 fps, Avg. Travel Time= 9.3 min

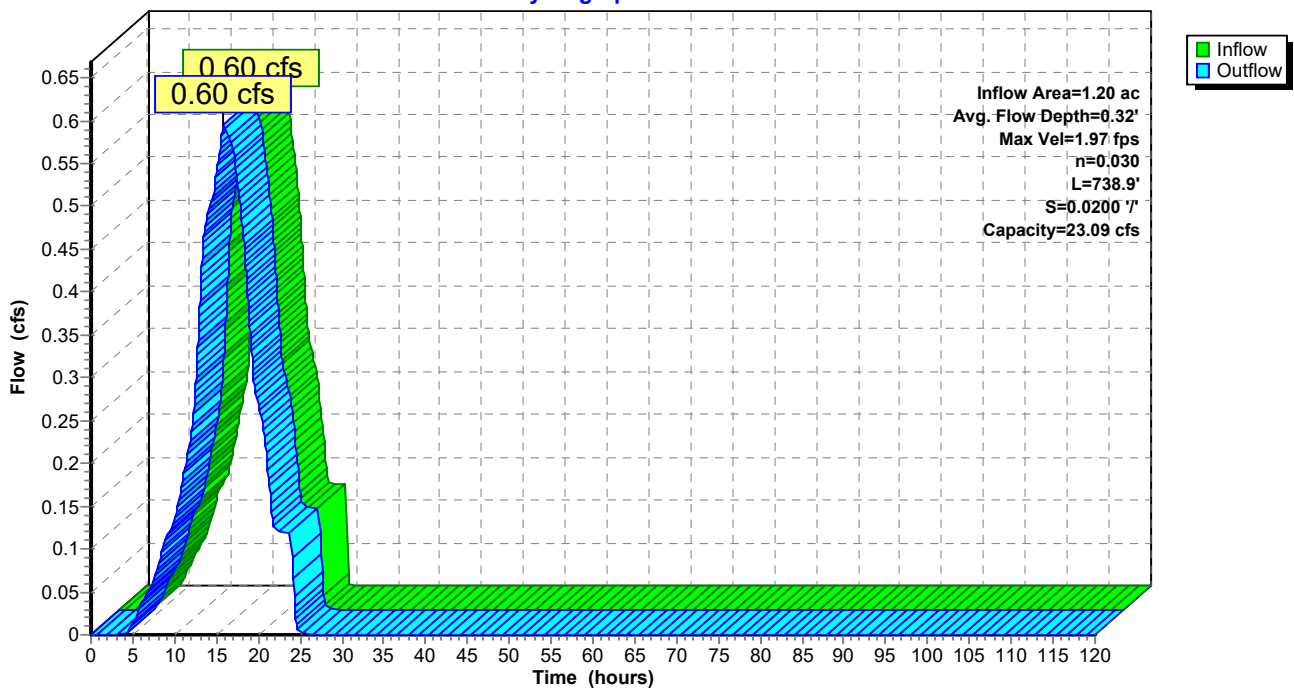
Peak Storage= 223 cf @ 15.79 hrs  
 Average Depth at Peak Storage= 0.32'  
 Bank-Full Depth= 1.25' Flow Area= 4.7 sf, Capacity= 23.09 cfs

0.00' x 1.25' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 7.50'  
 Length= 738.9' Slope= 0.0200 '/'  
 Inlet Invert= 864.00', Outlet Invert= 849.22'



**Reach TB-B12: Terrace Berm B12**

Hydrograph



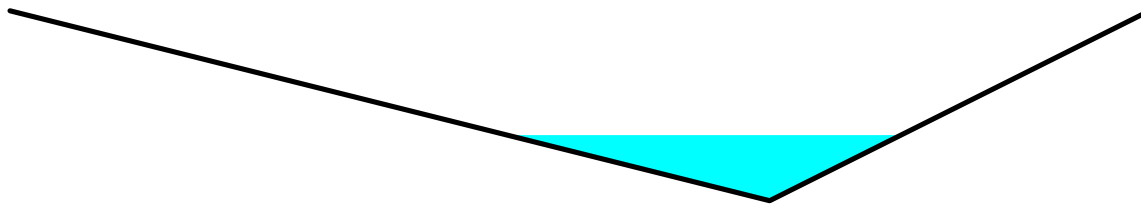
### Summary for Reach TB-B2: Terrace Berm B2

Inflow Area = 2.74 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 1.36 cfs @ 15.73 hrs, Volume= 0.957 af  
 Outflow = 1.36 cfs @ 15.83 hrs, Volume= 0.957 af, Atten= 0%, Lag= 6.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.43 fps, Min. Travel Time= 3.1 min  
 Avg. Velocity = 1.68 fps, Avg. Travel Time= 4.5 min

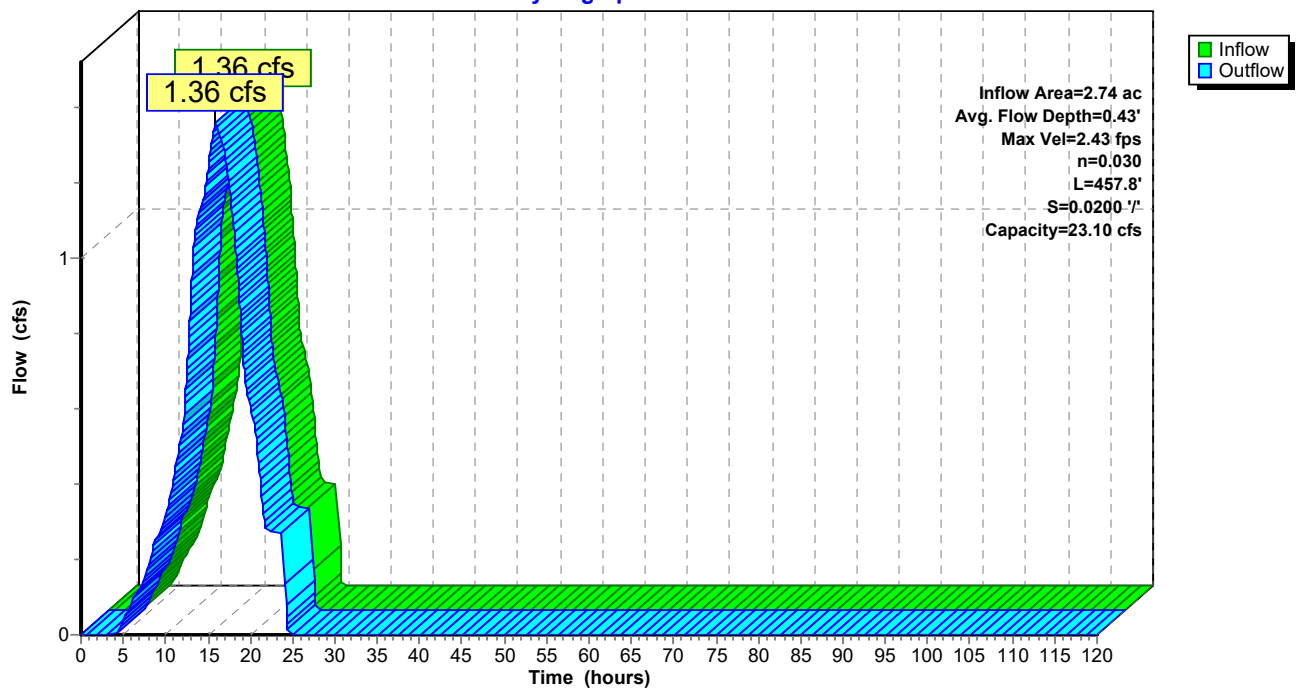
Peak Storage= 256 cf @ 15.78 hrs  
 Average Depth at Peak Storage= 0.43'  
 Bank-Full Depth= 1.25' Flow Area= 4.7 sf, Capacity= 23.10 cfs

0.00' x 1.25' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 7.50'  
 Length= 457.8' Slope= 0.0200 '/'  
 Inlet Invert= 880.00', Outlet Invert= 870.84'



### Reach TB-B2: Terrace Berm B2

Hydrograph



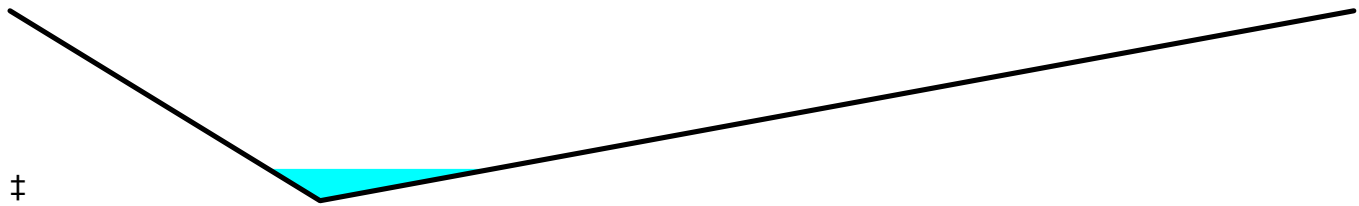
**Summary for Reach TB-B3: Terrace Bench B3**

Inflow Area = 2.21 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 1.10 cfs @ 15.69 hrs, Volume= 0.772 af  
 Outflow = 1.10 cfs @ 15.92 hrs, Volume= 0.772 af, Atten= 0%, Lag= 13.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.49 fps, Min. Travel Time= 6.9 min  
 Avg. Velocity = 0.98 fps, Avg. Travel Time= 10.5 min

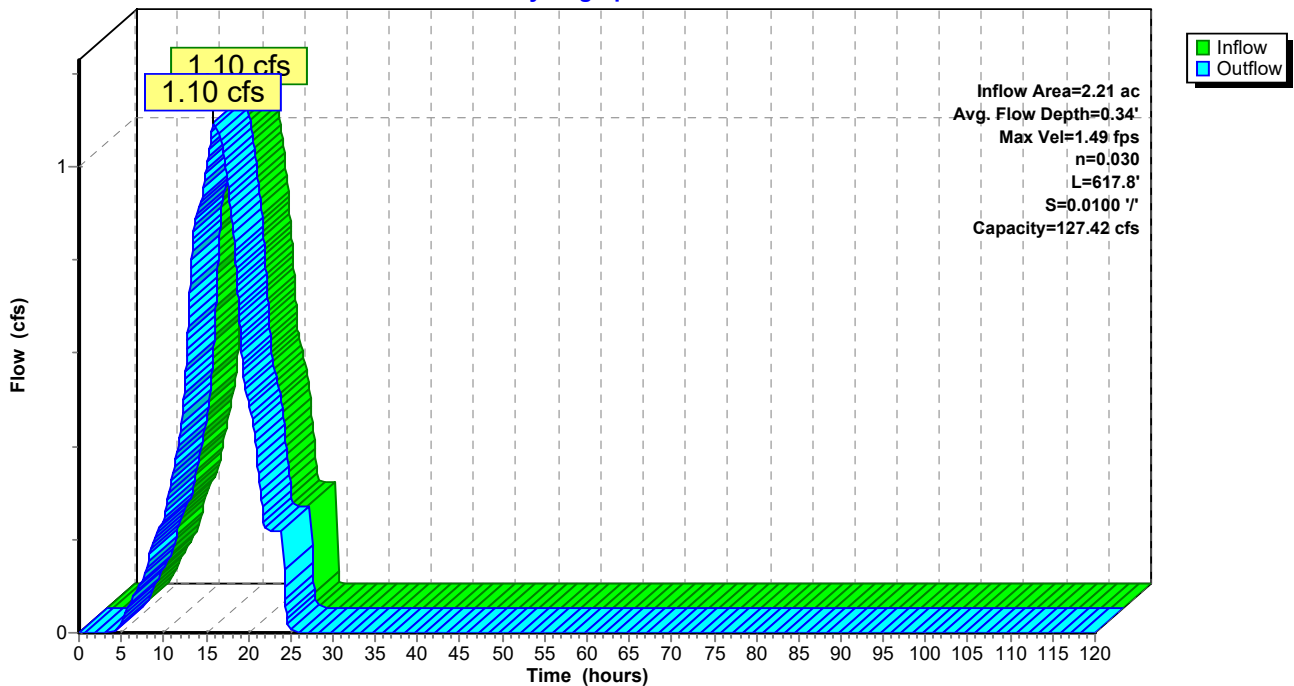
Peak Storage= 453 cf @ 15.80 hrs  
 Average Depth at Peak Storage= 0.34'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.42 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/ Top Width= 26.00'  
 Length= 617.8' Slope= 0.0100 '/  
 Inlet Invert= 880.00', Outlet Invert= 873.82'



**Reach TB-B3: Terrace Bench B3**

Hydrograph





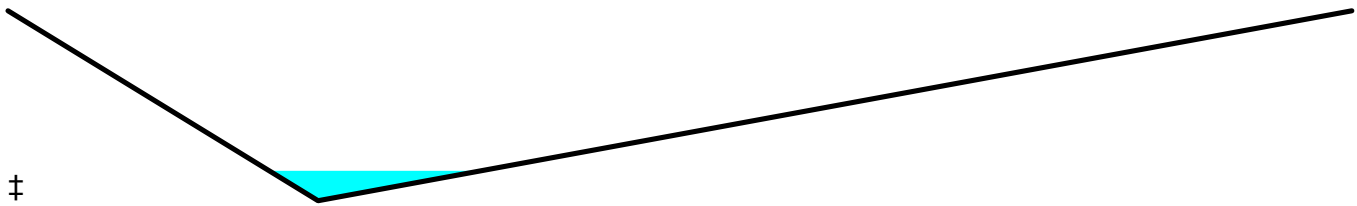
**Summary for Reach TB-B4: Terrace Bench B4**

Inflow Area = 1.87 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 0.93 cfs @ 15.69 hrs, Volume= 0.653 af  
 Outflow = 0.93 cfs @ 15.86 hrs, Volume= 0.653 af, Atten= 0%, Lag= 10.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.43 fps, Min. Travel Time= 5.1 min  
 Avg. Velocity = 0.98 fps, Avg. Travel Time= 7.4 min

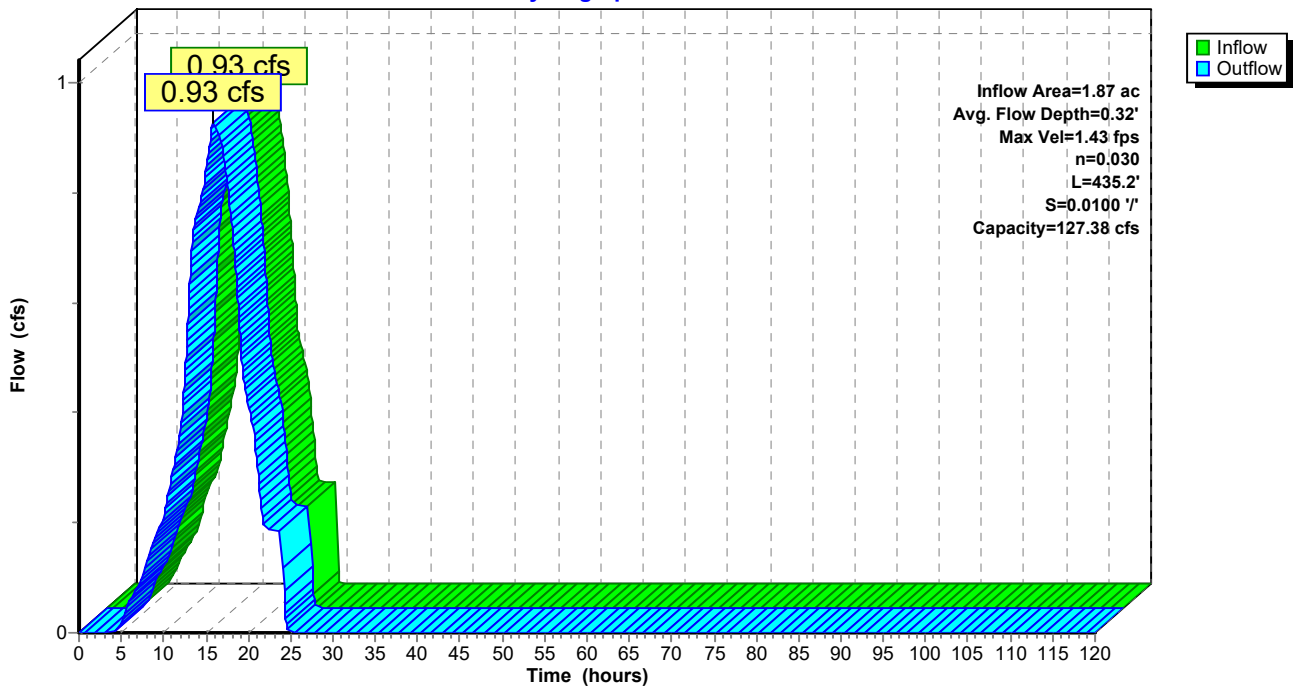
Peak Storage= 282 cf @ 15.77 hrs  
 Average Depth at Peak Storage= 0.32'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.38 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/ Top Width= 26.00'  
 Length= 435.2' Slope= 0.0100 '/  
 Inlet Invert= 840.00', Outlet Invert= 835.65'



**Reach TB-B4: Terrace Bench B4**

Hydrograph



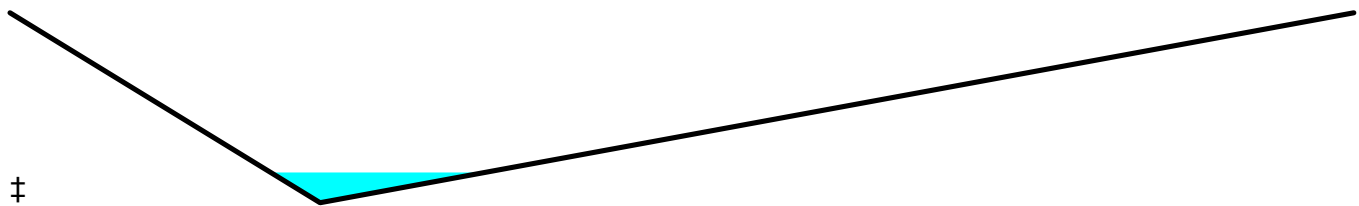
**Summary for Reach TB-B5: Terrace Bench B5**

Inflow Area = 1.93 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 0.96 cfs @ 15.67 hrs, Volume= 0.674 af  
 Outflow = 0.95 cfs @ 15.99 hrs, Volume= 0.674 af, Atten= 1%, Lag= 18.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.44 fps, Min. Travel Time= 9.3 min  
 Avg. Velocity = 0.92 fps, Avg. Travel Time= 14.6 min

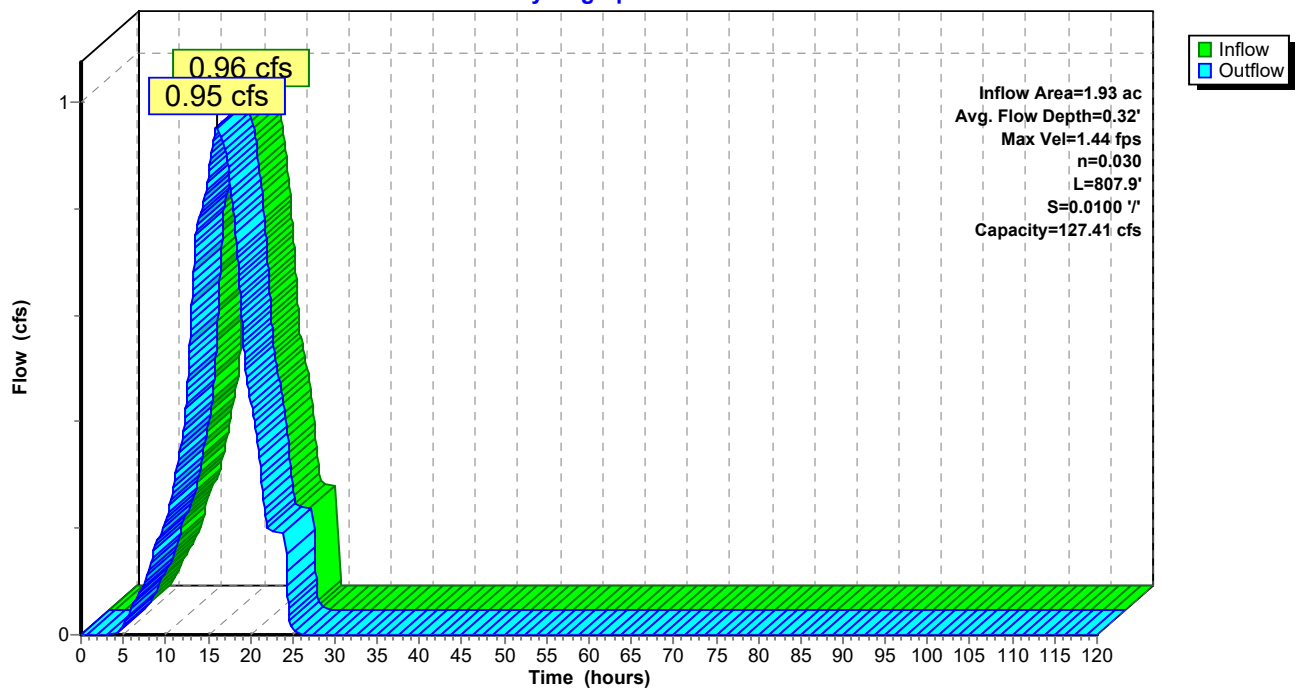
Peak Storage= 535 cf @ 15.83 hrs  
 Average Depth at Peak Storage= 0.32'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.41 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/ Top Width= 26.00'  
 Length= 807.9' Slope= 0.0100 '/  
 Inlet Invert= 814.00', Outlet Invert= 805.92'



**Reach TB-B5: Terrace Bench B5**

Hydrograph



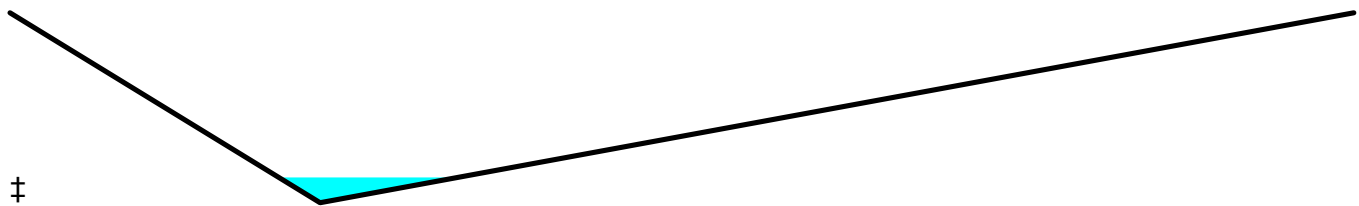
**Summary for Reach TB-B6: Terrace Bench B6**

Inflow Area = 1.18 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 0.59 cfs @ 15.69 hrs, Volume= 0.412 af  
 Outflow = 0.59 cfs @ 15.87 hrs, Volume= 0.412 af, Atten= 0%, Lag= 10.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.28 fps, Min. Travel Time= 5.6 min  
 Avg. Velocity = 0.88 fps, Avg. Travel Time= 8.1 min

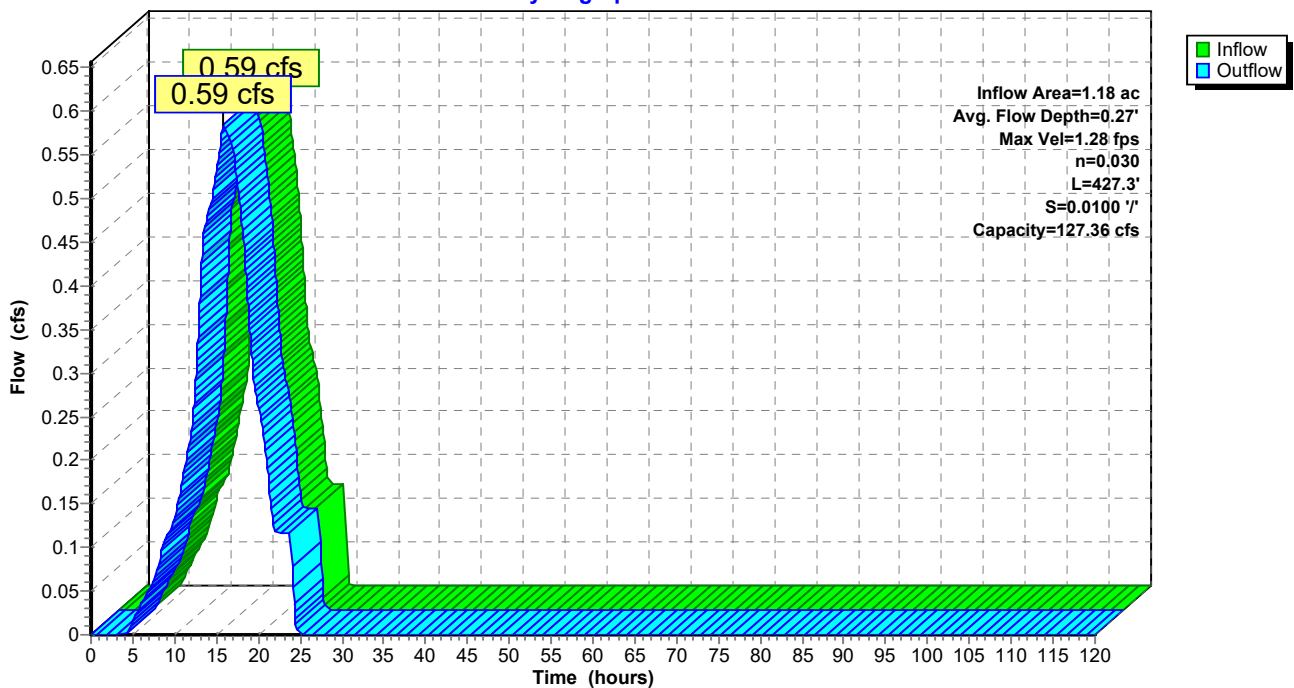
Peak Storage= 196 cf @ 15.77 hrs  
 Average Depth at Peak Storage= 0.27'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.36 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/ Top Width= 26.00'  
 Length= 427.3' Slope= 0.0100 '/  
 Inlet Invert= 812.00', Outlet Invert= 807.73'



**Reach TB-B6: Terrace Bench B6**

Hydrograph



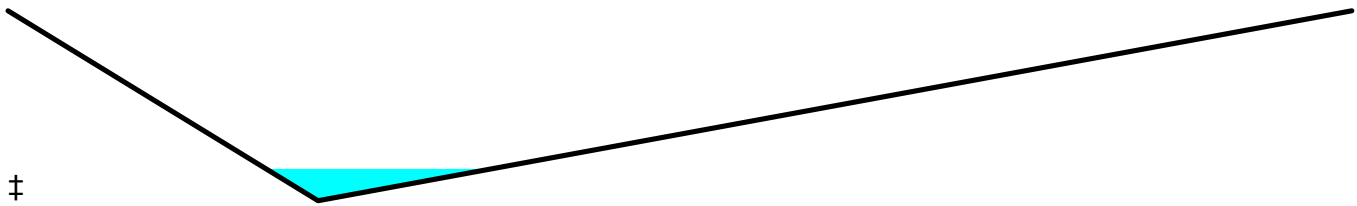
**Summary for Reach TB-B7: Terrace Bench B7**

Inflow Area = 2.19 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 1.09 cfs @ 15.67 hrs, Volume= 0.765 af  
 Outflow = 1.08 cfs @ 15.97 hrs, Volume= 0.765 af, Atten= 0%, Lag= 18.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.49 fps, Min. Travel Time= 9.1 min  
 Avg. Velocity = 0.95 fps, Avg. Travel Time= 14.3 min

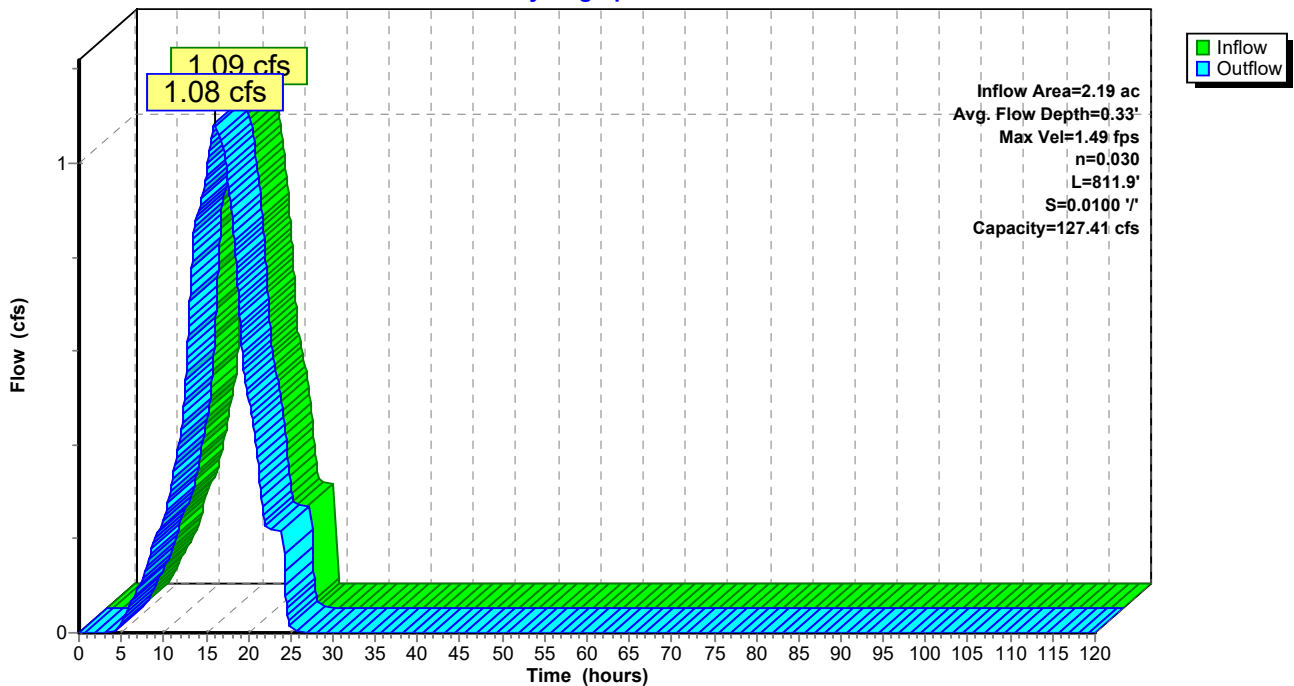
Peak Storage= 591 cf @ 15.82 hrs  
 Average Depth at Peak Storage= 0.33'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.41 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/ Top Width= 26.00'  
 Length= 811.9' Slope= 0.0100 '/  
 Inlet Invert= 784.00', Outlet Invert= 775.88'



**Reach TB-B7: Terrace Bench B7**

Hydrograph



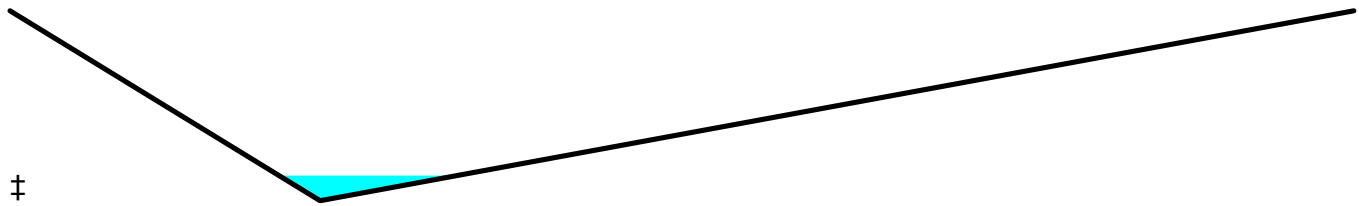
**Summary for Reach TB-B8: Terrace Bench B8**

Inflow Area = 1.17 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 0.58 cfs @ 15.68 hrs, Volume= 0.408 af  
 Outflow = 0.58 cfs @ 15.86 hrs, Volume= 0.408 af, Atten= 0%, Lag= 11.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.27 fps, Min. Travel Time= 5.6 min  
 Avg. Velocity = 0.88 fps, Avg. Travel Time= 8.1 min

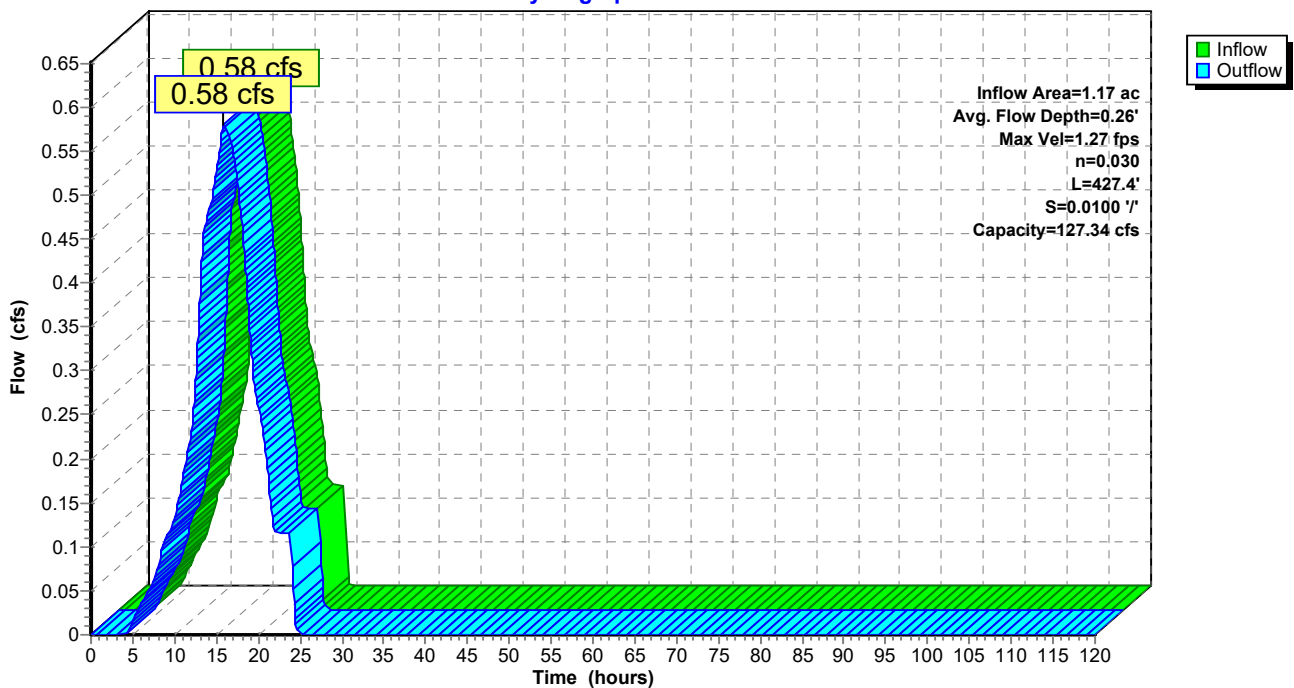
Peak Storage= 195 cf @ 15.77 hrs  
 Average Depth at Peak Storage= 0.26'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.34 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/ Top Width= 26.00'  
 Length= 427.4' Slope= 0.0100 '/  
 Inlet Invert= 782.00', Outlet Invert= 777.73'



**Reach TB-B8: Terrace Bench B8**

Hydrograph



**Summary for Reach TB-B9: Terrace Bench B9**

Inflow Area = 1.44 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 0.71 cfs @ 15.66 hrs, Volume= 0.501 af  
 Outflow = 0.71 cfs @ 16.03 hrs, Volume= 0.501 af, Atten= 1%, Lag= 21.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 0.78 fps, Min. Travel Time= 12.0 min  
 Avg. Velocity = 0.51 fps, Avg. Travel Time= 18.6 min

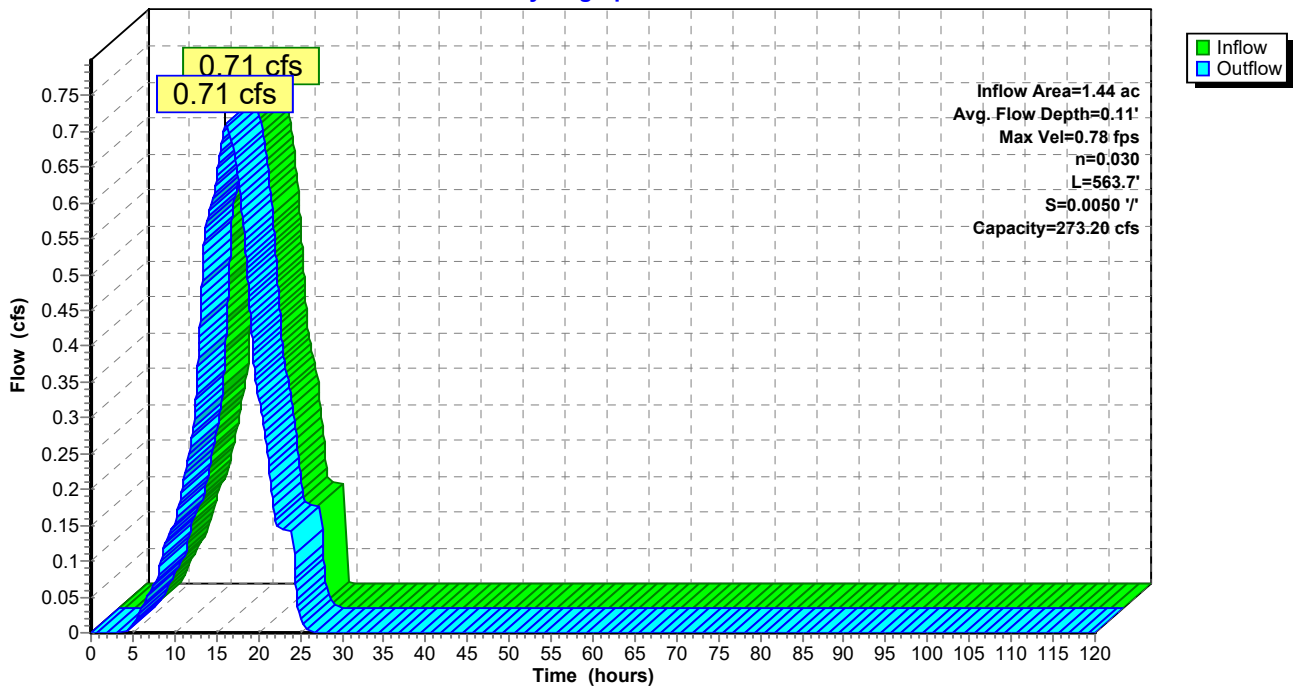
Peak Storage= 511 cf @ 15.83 hrs  
 Average Depth at Peak Storage= 0.11'  
 Bank-Full Depth= 3.00' Flow Area= 51.0 sf, Capacity= 273.20 cfs

8.00' x 3.00' deep channel, n= 0.030  
 Side Slope Z-value= 3.0 '/ Top Width= 26.00'  
 Length= 563.7' Slope= 0.0050 '/  
 Inlet Invert= 762.00', Outlet Invert= 759.18'



**Reach TB-B9: Terrace Bench B9**

Hydrograph



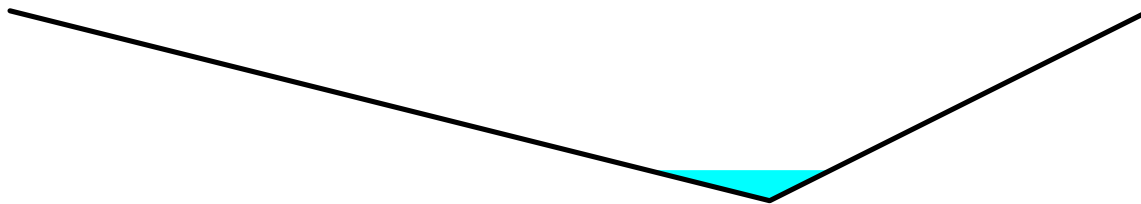
**Summary for Reach TB-D1: Terrace Berm D1**

Inflow Area = 1.26 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 0.62 cfs @ 15.74 hrs, Volume= 0.439 af  
 Outflow = 0.62 cfs @ 15.80 hrs, Volume= 0.439 af, Atten= 0%, Lag= 3.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.00 fps, Min. Travel Time= 1.9 min  
 Avg. Velocity = 1.46 fps, Avg. Travel Time= 2.6 min

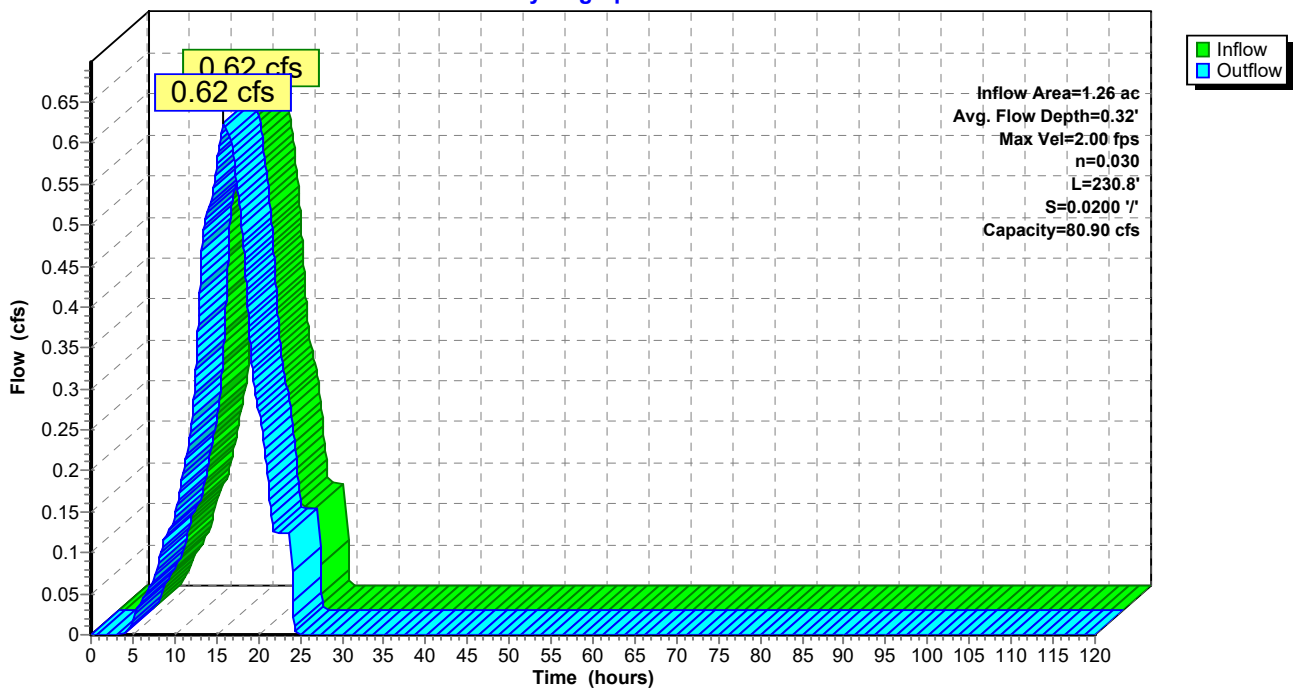
Peak Storage= 72 cf @ 15.77 hrs  
 Average Depth at Peak Storage= 0.32'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.90 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 230.8' Slope= 0.0200 '/'  
 Inlet Invert= 861.86', Outlet Invert= 857.24'



**Reach TB-D1: Terrace Berm D1**

Hydrograph



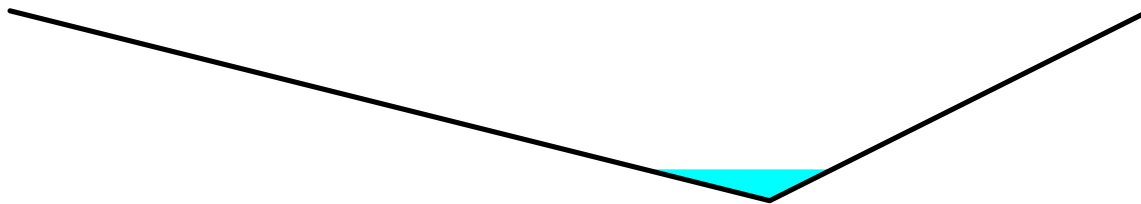
**Summary for Reach TB-D3: Terrace Berm D3**

Inflow Area = 1.33 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 0.66 cfs @ 15.70 hrs, Volume= 0.465 af  
 Outflow = 0.66 cfs @ 15.76 hrs, Volume= 0.465 af, Atten= 0%, Lag= 3.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.03 fps, Min. Travel Time= 1.9 min  
 Avg. Velocity = 1.48 fps, Avg. Travel Time= 2.6 min

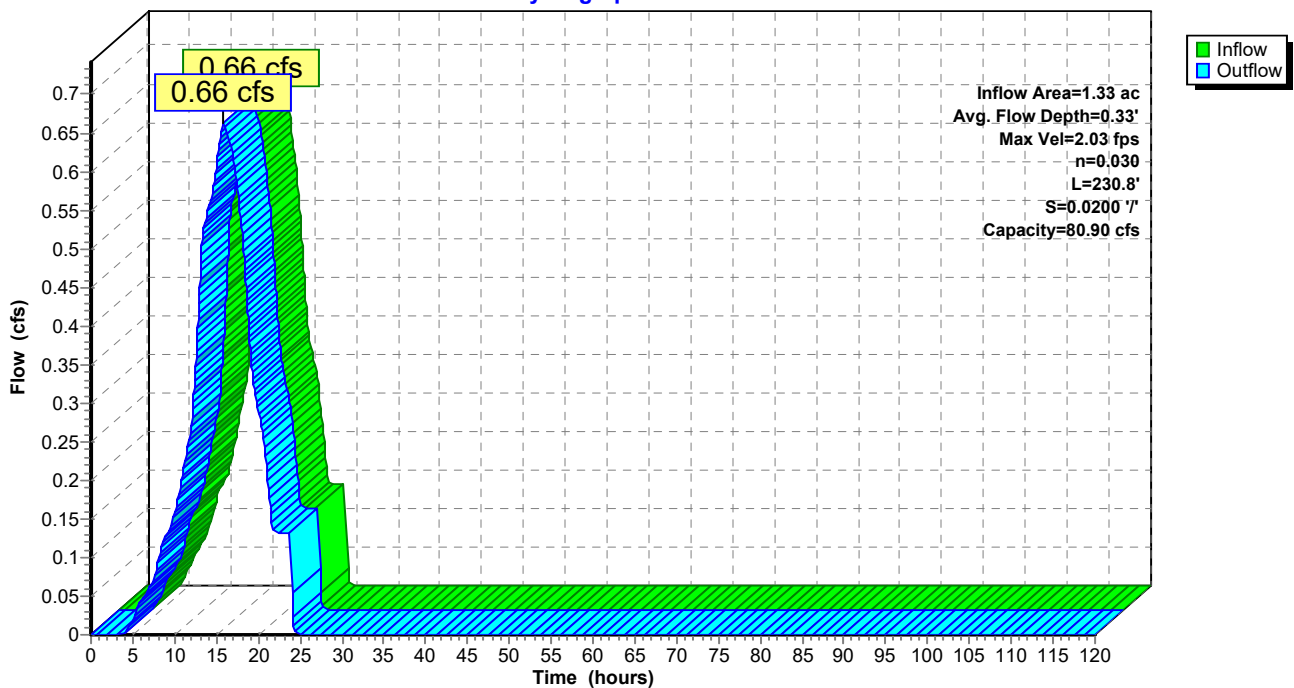
Peak Storage= 75 cf @ 15.72 hrs  
 Average Depth at Peak Storage= 0.33'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.90 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 230.8' Slope= 0.0200 '/'  
 Inlet Invert= 798.33', Outlet Invert= 793.71'



**Reach TB-D3: Terrace Berm D3**

Hydrograph





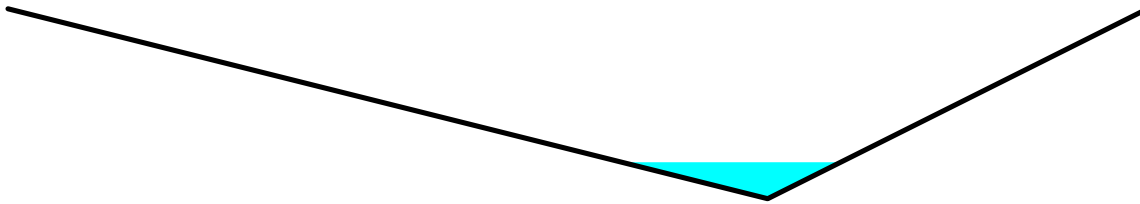
**Summary for Reach TB-E1: Terrace Berm E1**

Inflow Area = 1.42 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 0.71 cfs @ 15.74 hrs, Volume= 0.496 af  
 Outflow = 0.71 cfs @ 15.86 hrs, Volume= 0.496 af, Atten= 0%, Lag= 7.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.59 fps, Min. Travel Time= 3.8 min  
 Avg. Velocity = 1.11 fps, Avg. Travel Time= 5.4 min

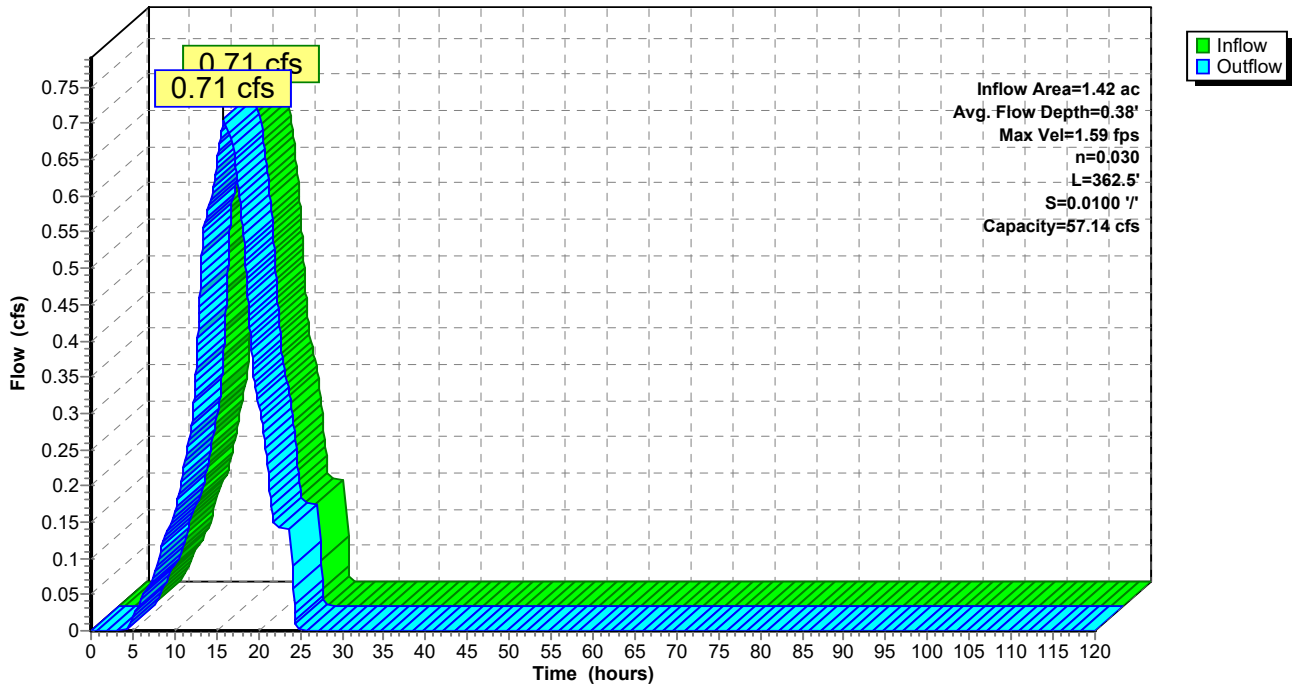
Peak Storage= 161 cf @ 15.80 hrs  
 Average Depth at Peak Storage= 0.38'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.14 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 362.5' Slope= 0.0100 '/'  
 Inlet Invert= 860.26', Outlet Invert= 856.64'



**Reach TB-E1: Terrace Berm E1**

Hydrograph



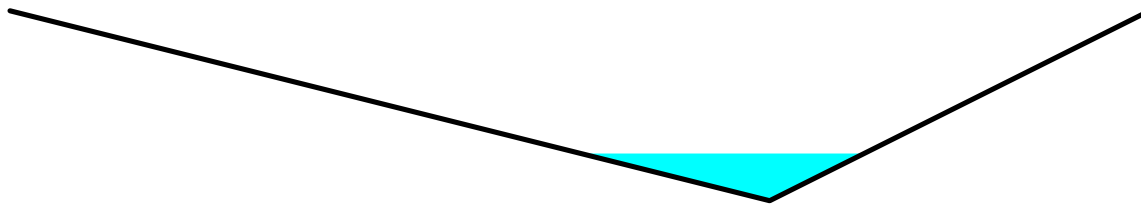
**Summary for Reach TB-E2: TB-E2**

Inflow Area = 2.82 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 1.40 cfs @ 15.70 hrs, Volume= 0.984 af  
 Outflow = 1.39 cfs @ 16.08 hrs, Volume= 0.984 af, Atten= 1%, Lag= 22.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.88 fps, Min. Travel Time= 11.7 min  
 Avg. Velocity = 1.10 fps, Avg. Travel Time= 19.9 min

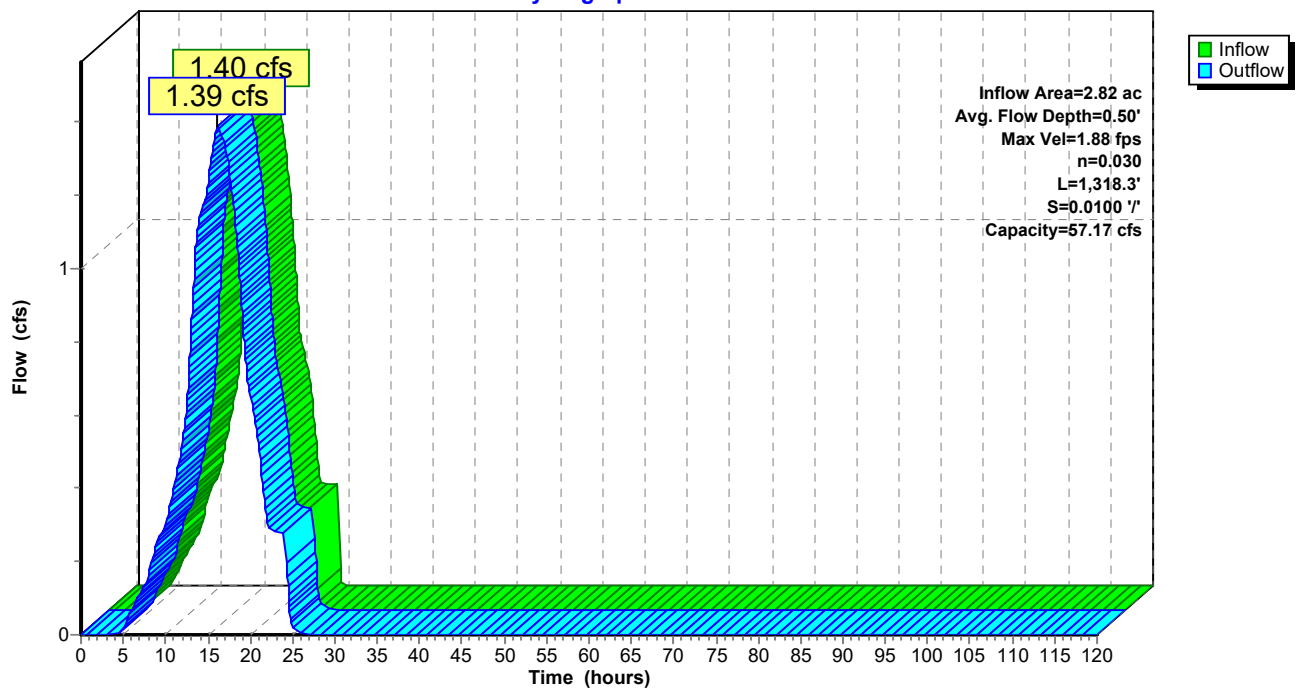
Peak Storage= 975 cf @ 15.89 hrs  
 Average Depth at Peak Storage= 0.50'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.17 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,318.3' Slope= 0.0100 '/'  
 Inlet Invert= 806.69', Outlet Invert= 793.51'



**Reach TB-E2: TB-E2**

Hydrograph



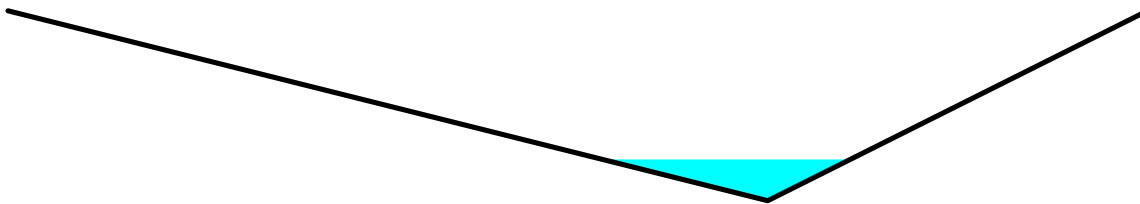
**Summary for Reach TB-H1: Terrace Berm H1**

Inflow Area = 1.98 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 0.98 cfs @ 15.73 hrs, Volume= 0.691 af  
 Outflow = 0.98 cfs @ 15.88 hrs, Volume= 0.691 af, Atten= 0%, Lag= 9.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.72 fps, Min. Travel Time= 4.4 min  
 Avg. Velocity = 1.18 fps, Avg. Travel Time= 6.4 min

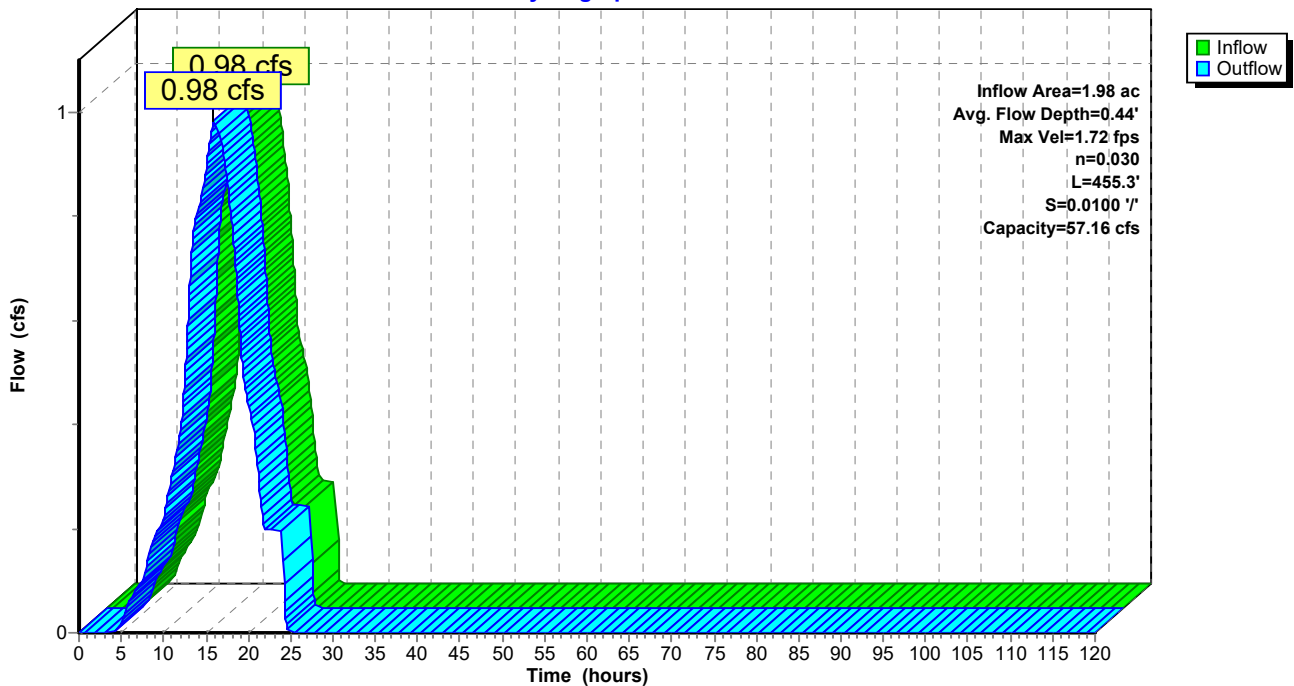
Peak Storage= 259 cf @ 15.80 hrs  
 Average Depth at Peak Storage= 0.44'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.16 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 455.3' Slope= 0.0100 '/'  
 Inlet Invert= 872.24', Outlet Invert= 867.69'



**Reach TB-H1: Terrace Berm H1**

Hydrograph



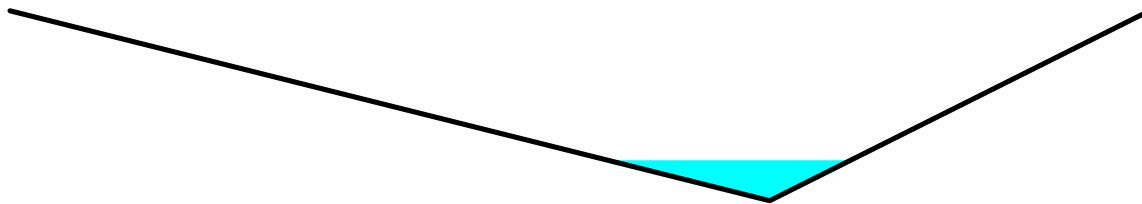
**Summary for Reach TB-H2: Terrace Berm H2**

Inflow Area = 1.86 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 0.93 cfs @ 15.69 hrs, Volume= 0.650 af  
 Outflow = 0.92 cfs @ 15.88 hrs, Volume= 0.650 af, Atten= 0%, Lag= 11.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.70 fps, Min. Travel Time= 6.0 min  
 Avg. Velocity = 1.13 fps, Avg. Travel Time= 9.0 min

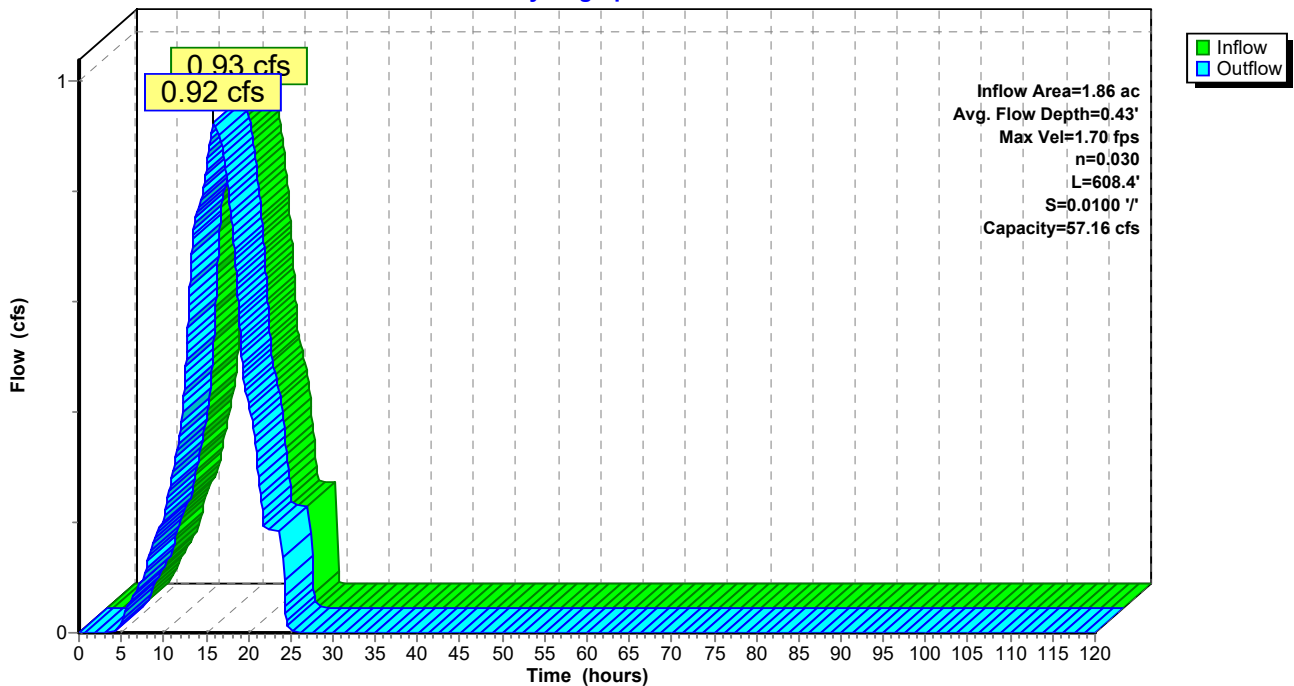
Peak Storage= 331 cf @ 15.78 hrs  
 Average Depth at Peak Storage= 0.43'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.16 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 608.4' Slope= 0.0100 '/'  
 Inlet Invert= 837.23', Outlet Invert= 831.15'



**Reach TB-H2: Terrace Berm H2**

Hydrograph



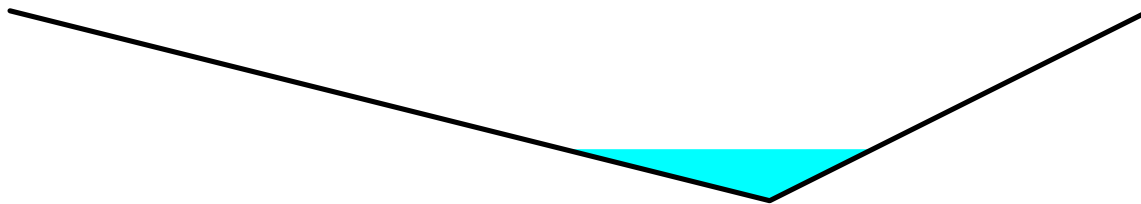
**Summary for Reach TB-H3: Terrace Berm H3**

Inflow Area = 3.57 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 1.78 cfs @ 15.70 hrs, Volume= 1.247 af  
 Outflow = 1.77 cfs @ 15.92 hrs, Volume= 1.247 af, Atten= 0%, Lag= 12.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.00 fps, Min. Travel Time= 6.7 min  
 Avg. Velocity = 1.27 fps, Avg. Travel Time= 10.5 min

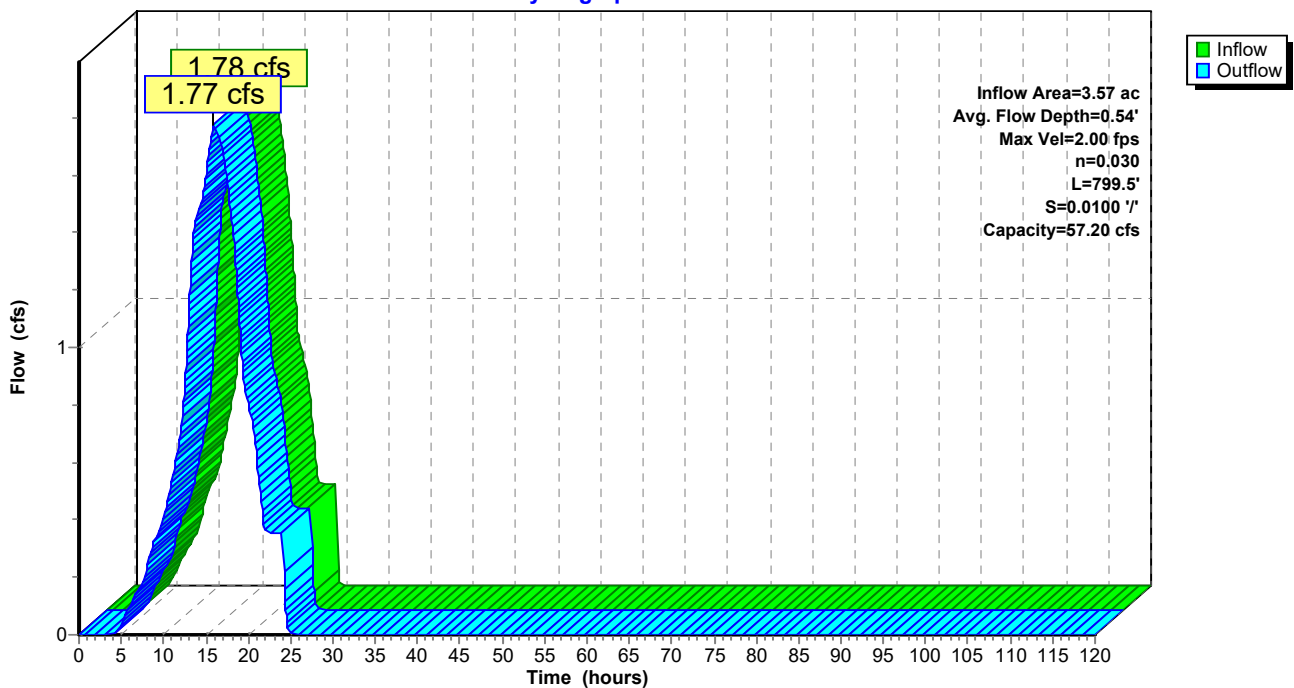
Peak Storage= 708 cf @ 15.80 hrs  
 Average Depth at Peak Storage= 0.54'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.20 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 799.5' Slope= 0.0100 '/'  
 Inlet Invert= 782.24', Outlet Invert= 774.24'



**Reach TB-H3: Terrace Berm H3**

Hydrograph



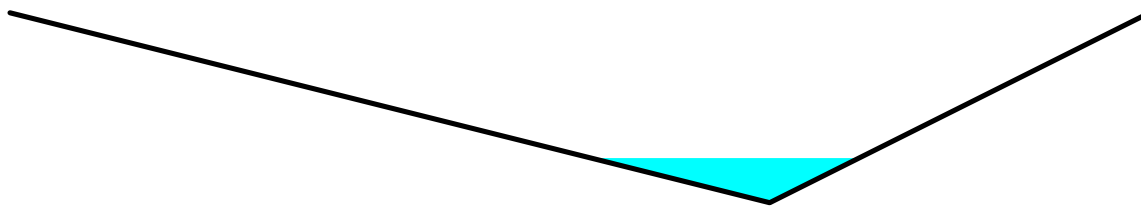
### Summary for Reach TB-N-A1: Terrace Berm N-A1

Inflow Area = 3.60 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 1.79 cfs @ 15.73 hrs, Volume= 1.256 af  
 Outflow = 1.79 cfs @ 15.82 hrs, Volume= 1.256 af, Atten= 0%, Lag= 5.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.70 fps, Min. Travel Time= 2.7 min  
 Avg. Velocity = 1.90 fps, Avg. Travel Time= 3.9 min

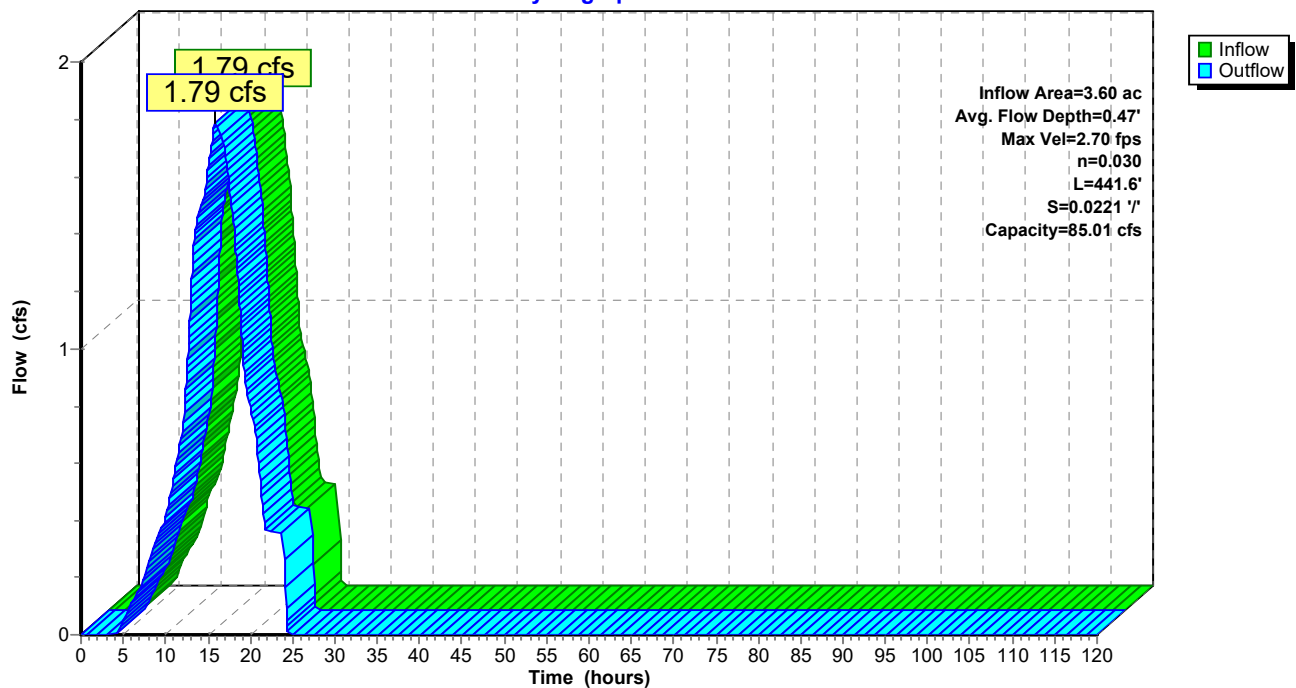
Peak Storage= 292 cf @ 15.77 hrs  
 Average Depth at Peak Storage= 0.47'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 85.01 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 441.6' Slope= 0.0221 '/'  
 Inlet Invert= 879.12', Outlet Invert= 869.36'



### Reach TB-N-A1: Terrace Berm N-A1

Hydrograph



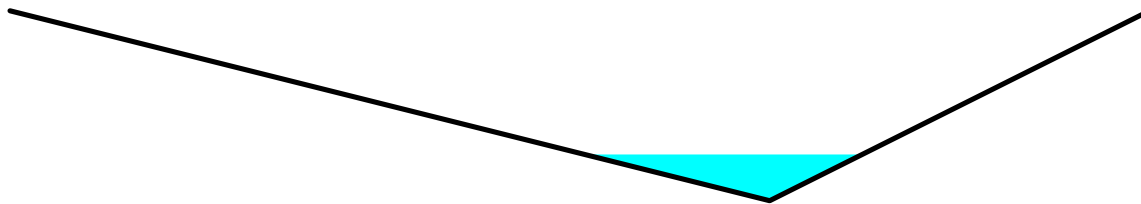
**Summary for Reach TB-N-A10: Terrace Berm N-A10**

Inflow Area = 3.77 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 1.88 cfs @ 15.69 hrs, Volume= 1.318 af  
 Outflow = 1.87 cfs @ 15.93 hrs, Volume= 1.318 af, Atten= 0%, Lag= 14.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.63 fps, Min. Travel Time= 7.4 min  
 Avg. Velocity = 1.67 fps, Avg. Travel Time= 11.7 min

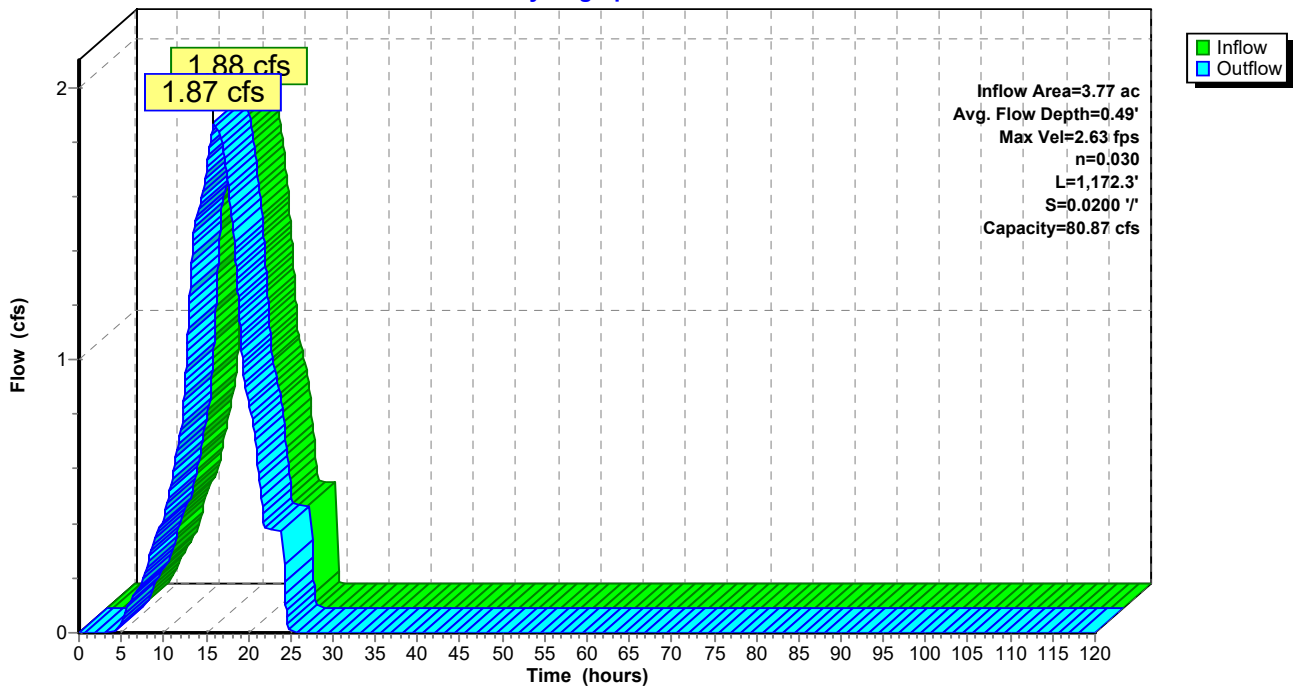
Peak Storage= 834 cf @ 15.81 hrs  
 Average Depth at Peak Storage= 0.49'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,172.3' Slope= 0.0200 '/'  
 Inlet Invert= 771.72', Outlet Invert= 748.27'



**Reach TB-N-A10: Terrace Berm N-A10**

Hydrograph



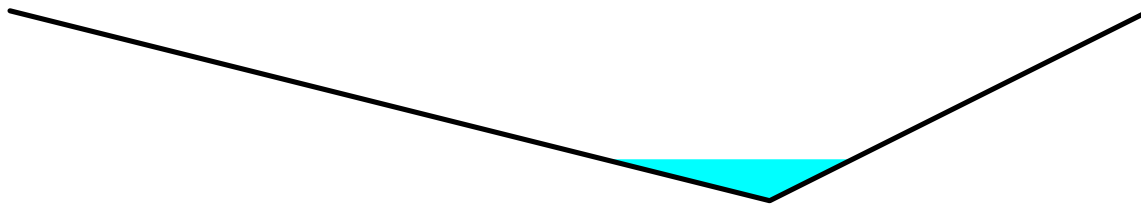
**Summary for Reach TB-N-A2: Terrace Berm N-A2**

Inflow Area = 2.82 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 1.40 cfs @ 15.72 hrs, Volume= 0.986 af  
 Outflow = 1.40 cfs @ 15.89 hrs, Volume= 0.986 af, Atten= 0%, Lag= 10.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.44 fps, Min. Travel Time= 5.0 min  
 Avg. Velocity = 1.65 fps, Avg. Travel Time= 7.4 min

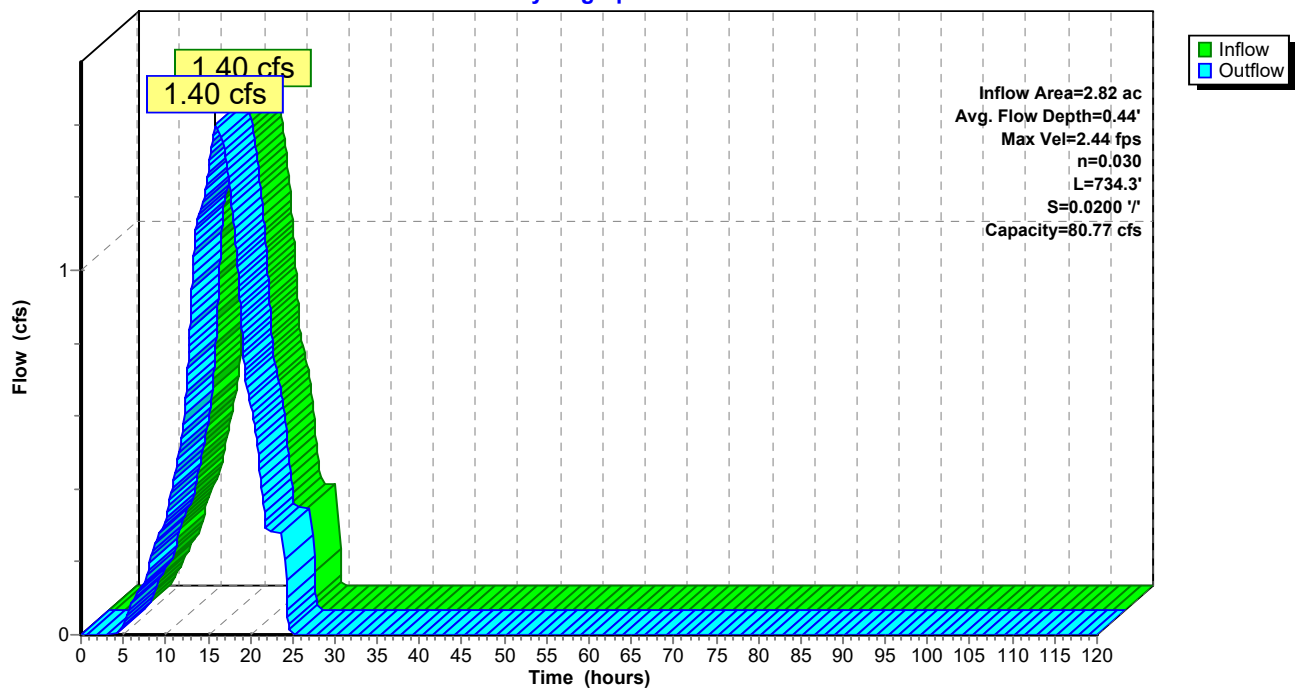
Peak Storage= 421 cf @ 15.81 hrs  
 Average Depth at Peak Storage= 0.44'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.77 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 734.3' Slope= 0.0200 '/'  
 Inlet Invert= 884.01', Outlet Invert= 869.36'



**Reach TB-N-A2: Terrace Berm N-A2**

Hydrograph





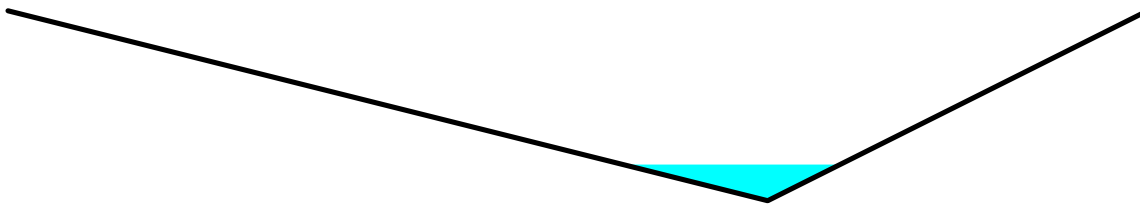
**Summary for Reach TB-N-A3: Terrace Berm N-A3**

Inflow Area = 1.31 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 0.65 cfs @ 15.69 hrs, Volume= 0.457 af  
 Outflow = 0.65 cfs @ 15.81 hrs, Volume= 0.457 af, Atten= 0%, Lag= 7.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.49 fps, Min. Travel Time= 3.7 min  
 Avg. Velocity = 1.05 fps, Avg. Travel Time= 5.2 min

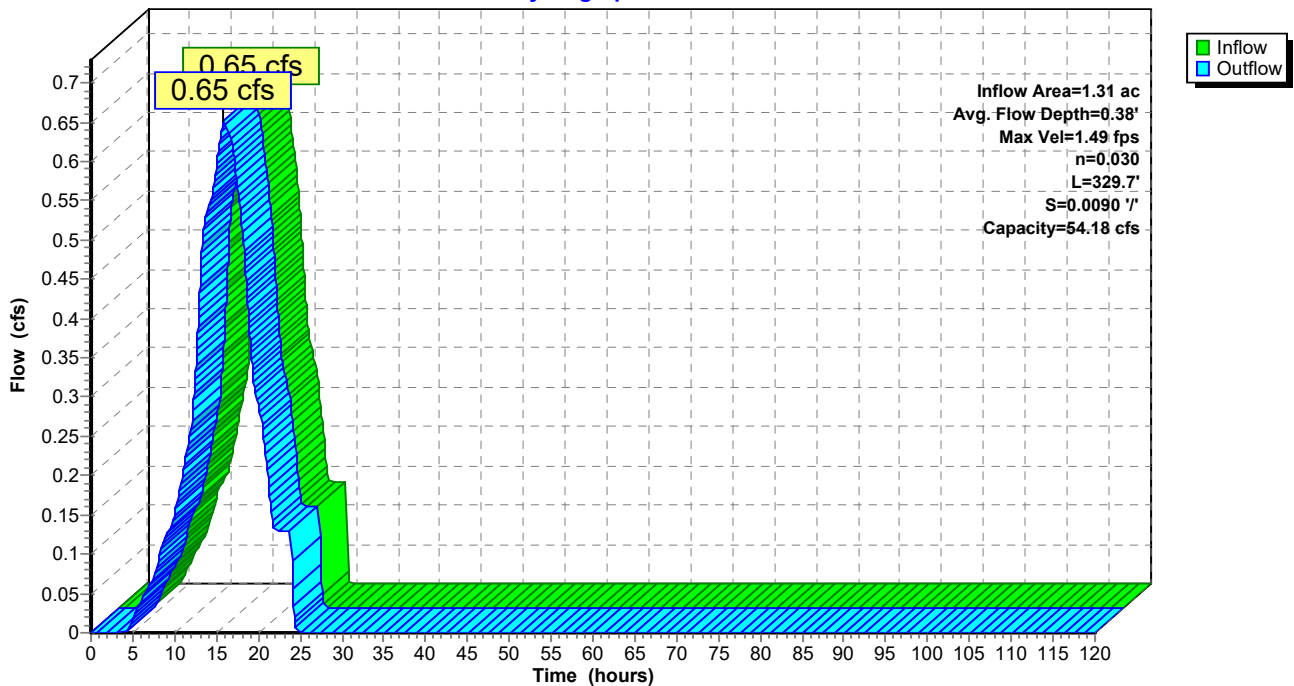
Peak Storage= 143 cf @ 15.75 hrs  
 Average Depth at Peak Storage= 0.38'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 54.18 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 329.7' Slope= 0.0090 '/'  
 Inlet Invert= 839.81', Outlet Invert= 836.85'



**Reach TB-N-A3: Terrace Berm N-A3**

Hydrograph



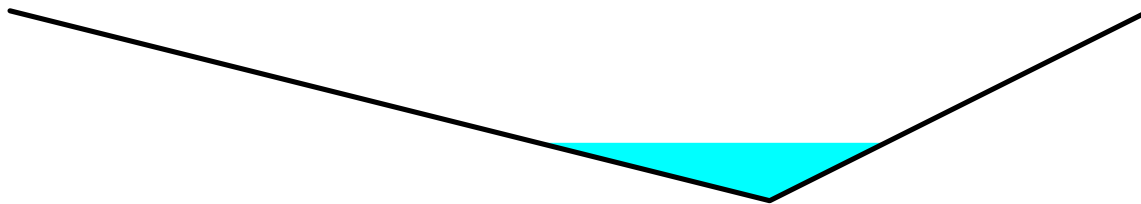
**Summary for Reach TB-N-A4: Terrace Berm N-A4**

Inflow Area = 6.88 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 3.41 cfs @ 15.73 hrs, Volume= 2.401 af  
 Outflow = 3.40 cfs @ 16.00 hrs, Volume= 2.401 af, Atten= 0%, Lag= 16.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.05 fps, Min. Travel Time= 8.3 min  
 Avg. Velocity = 1.84 fps, Avg. Travel Time= 13.8 min

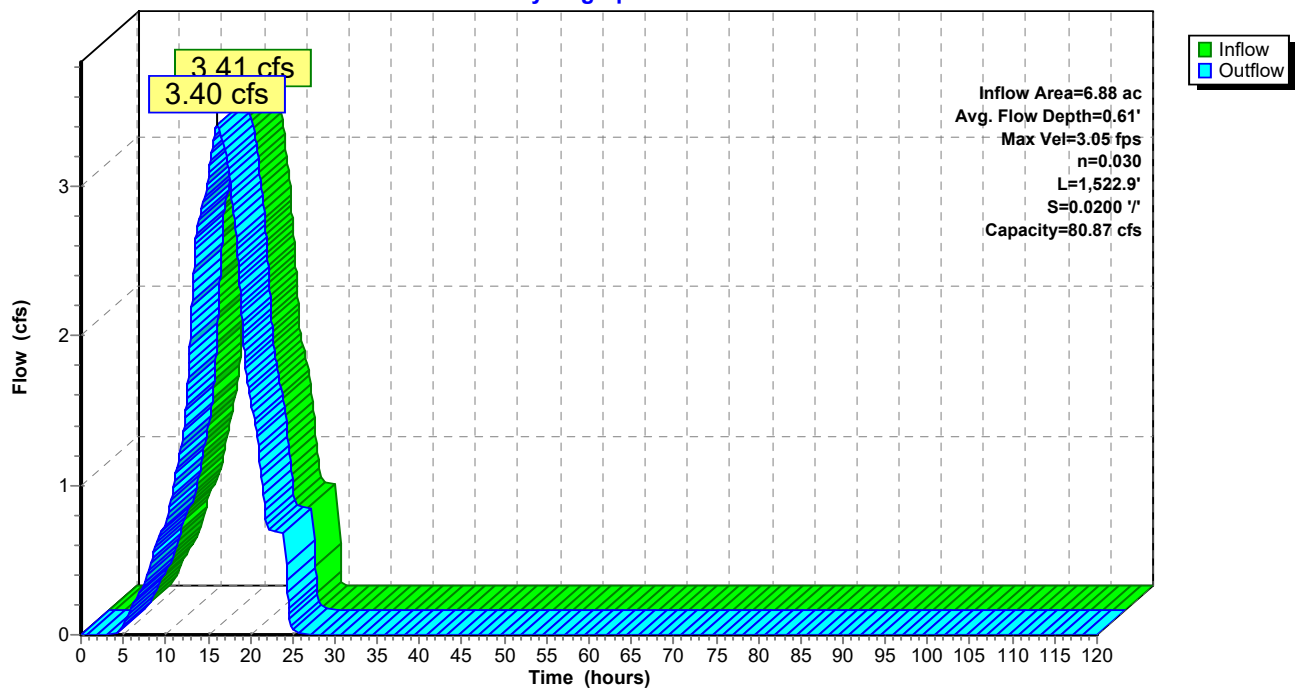
Peak Storage= 1,698 cf @ 15.86 hrs  
 Average Depth at Peak Storage= 0.61'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,522.9' Slope= 0.0200 '/'  
 Inlet Invert= 867.35', Outlet Invert= 836.89'



**Reach TB-N-A4: Terrace Berm N-A4**

Hydrograph



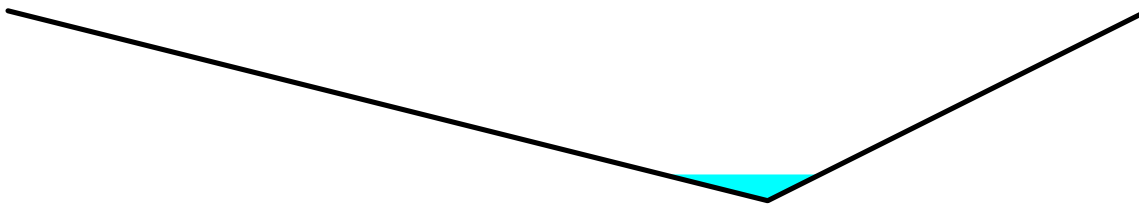
**Summary for Reach TB-N-A5: Terrace Berm N-A5**

Inflow Area = 0.73 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 0.36 cfs @ 15.69 hrs, Volume= 0.256 af  
 Outflow = 0.36 cfs @ 15.77 hrs, Volume= 0.256 af, Atten= 0%, Lag= 4.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.58 fps, Min. Travel Time= 2.3 min  
 Avg. Velocity = 1.15 fps, Avg. Travel Time= 3.1 min

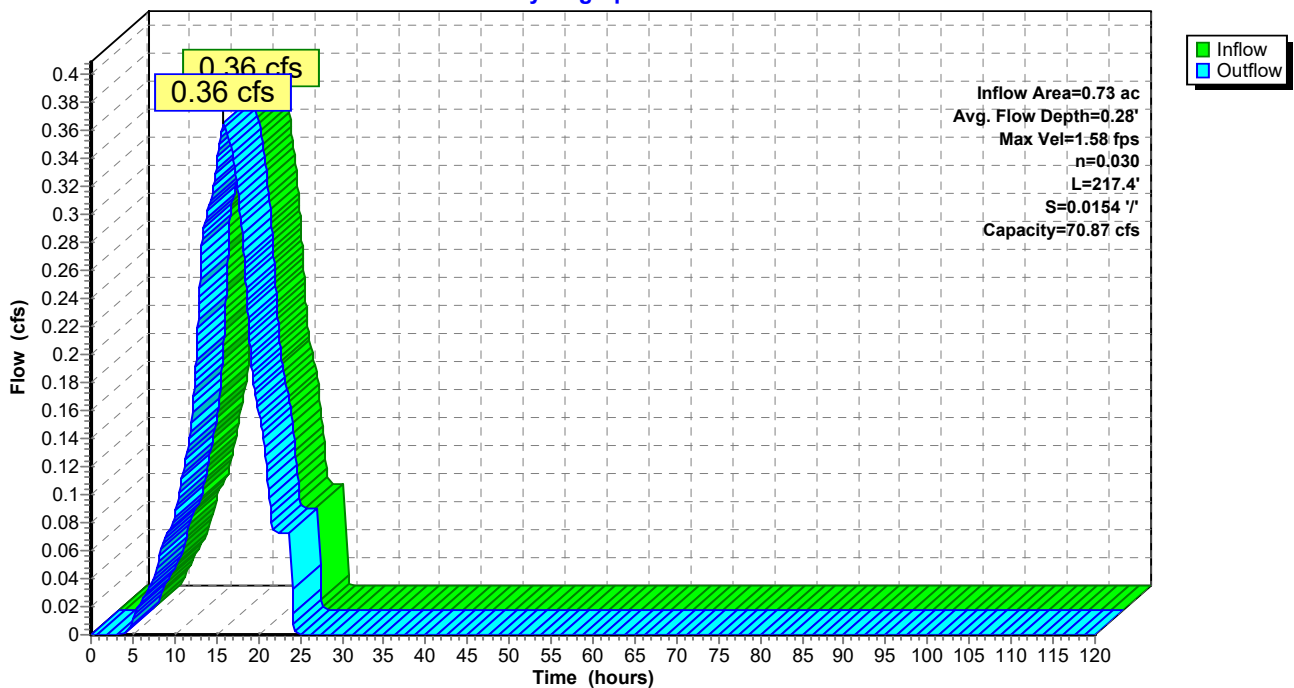
Peak Storage= 50 cf @ 15.72 hrs  
 Average Depth at Peak Storage= 0.28'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 70.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 217.4' Slope= 0.0154 '/'  
 Inlet Invert= 811.36', Outlet Invert= 808.02'



**Reach TB-N-A5: Terrace Berm N-A5**

Hydrograph



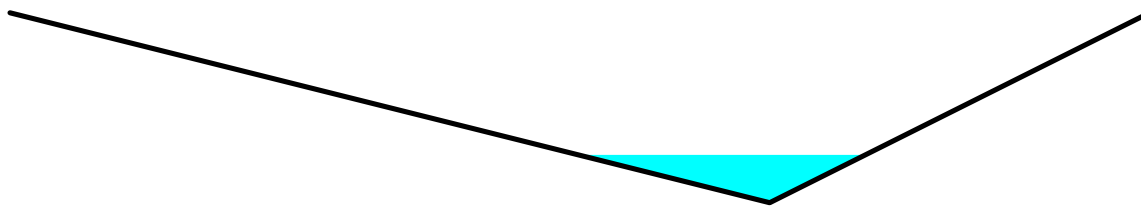
**Summary for Reach TB-N-A6: Terrace Berm N-A6**

Inflow Area = 4.13 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 2.05 cfs @ 15.69 hrs, Volume= 1.442 af  
 Outflow = 2.04 cfs @ 15.97 hrs, Volume= 1.442 af, Atten= 0%, Lag= 17.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.69 fps, Min. Travel Time= 8.7 min  
 Avg. Velocity = 1.66 fps, Avg. Travel Time= 14.2 min

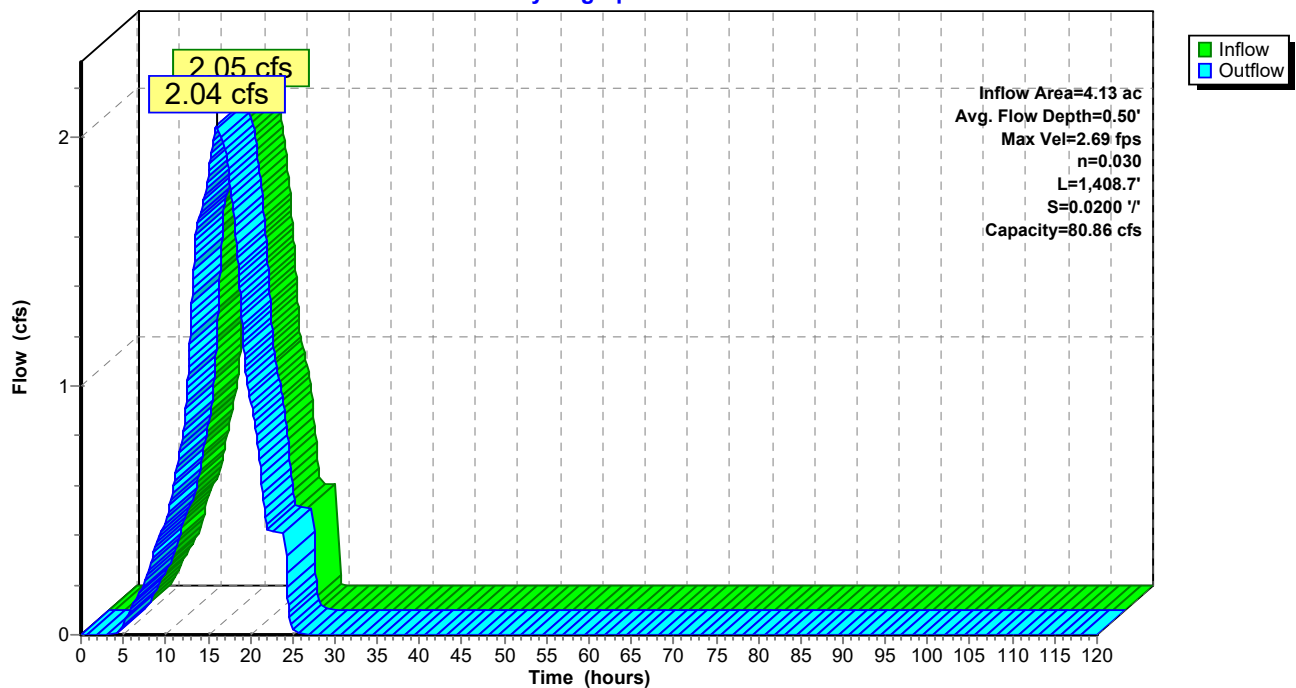
Peak Storage= 1,072 cf @ 15.83 hrs  
 Average Depth at Peak Storage= 0.50'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,408.7' Slope= 0.0200 '/'  
 Inlet Invert= 836.37', Outlet Invert= 808.20'



**Reach TB-N-A6: Terrace Berm N-A6**

Hydrograph



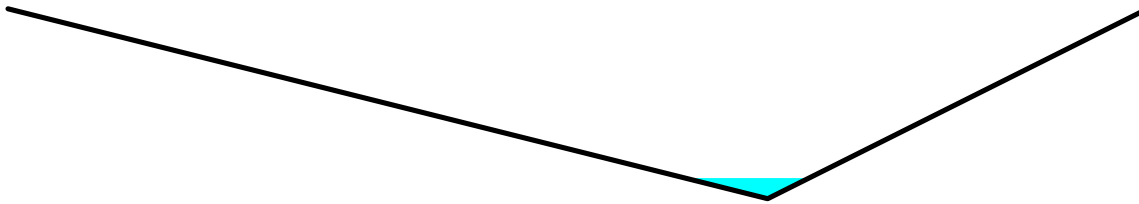
**Summary for Reach TB-N-A7: Terrace Berm N-A7**

Inflow Area = 0.44 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 0.22 cfs @ 15.70 hrs, Volume= 0.155 af  
 Outflow = 0.22 cfs @ 15.74 hrs, Volume= 0.155 af, Atten= 0%, Lag= 2.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.55 fps, Min. Travel Time= 1.1 min  
 Avg. Velocity = 1.15 fps, Avg. Travel Time= 1.5 min

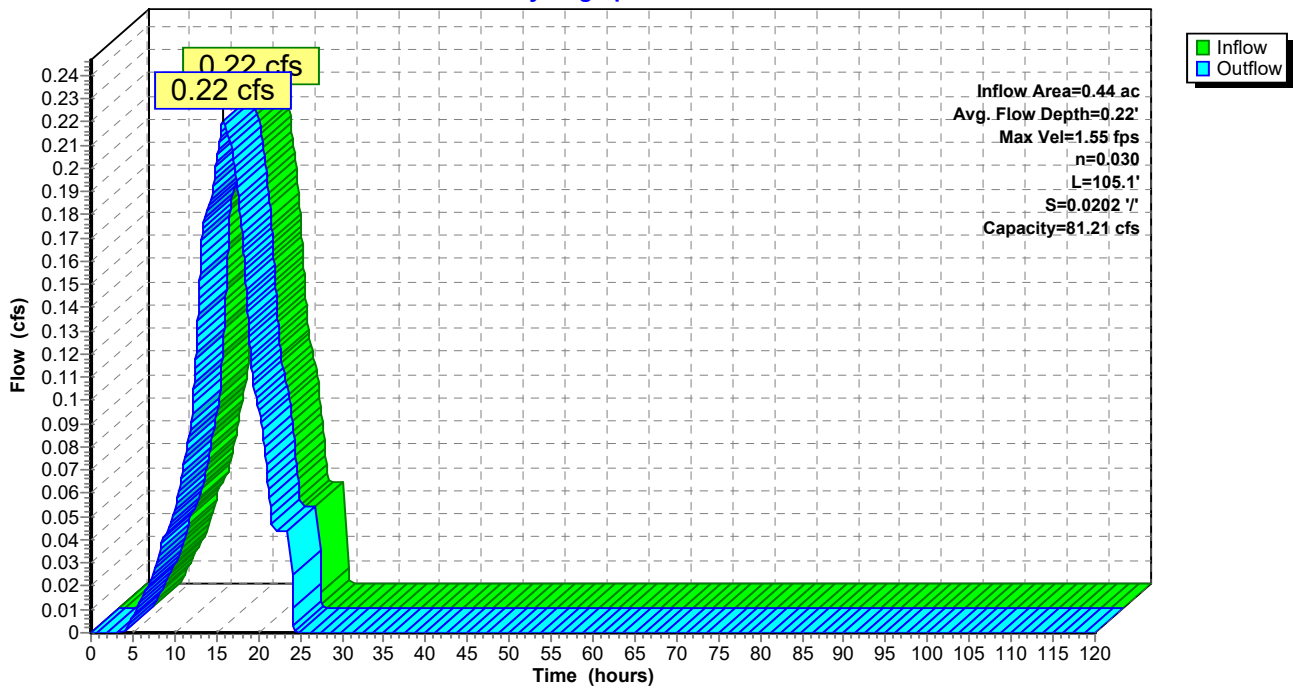
Peak Storage= 15 cf @ 15.71 hrs  
 Average Depth at Peak Storage= 0.22'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 81.21 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 105.1' Slope= 0.0202 '/'  
 Inlet Invert= 782.01', Outlet Invert= 779.89'



**Reach TB-N-A7: Terrace Berm N-A7**

Hydrograph



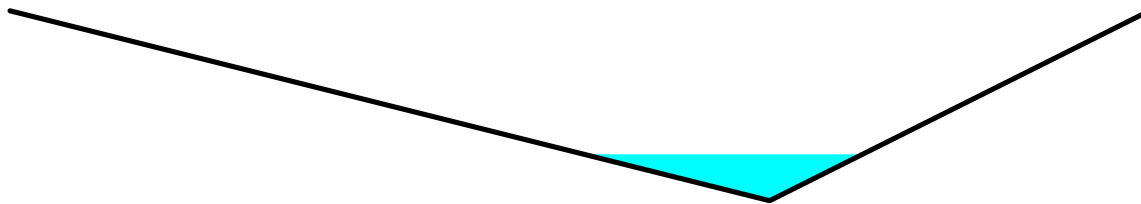
**Summary for Reach TB-N-A8: Terrace Berm N-A8**

Inflow Area = 3.80 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 1.89 cfs @ 15.69 hrs, Volume= 1.327 af  
 Outflow = 1.88 cfs @ 15.96 hrs, Volume= 1.327 af, Atten= 0%, Lag= 16.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.63 fps, Min. Travel Time= 8.2 min  
 Avg. Velocity = 1.65 fps, Avg. Travel Time= 13.1 min

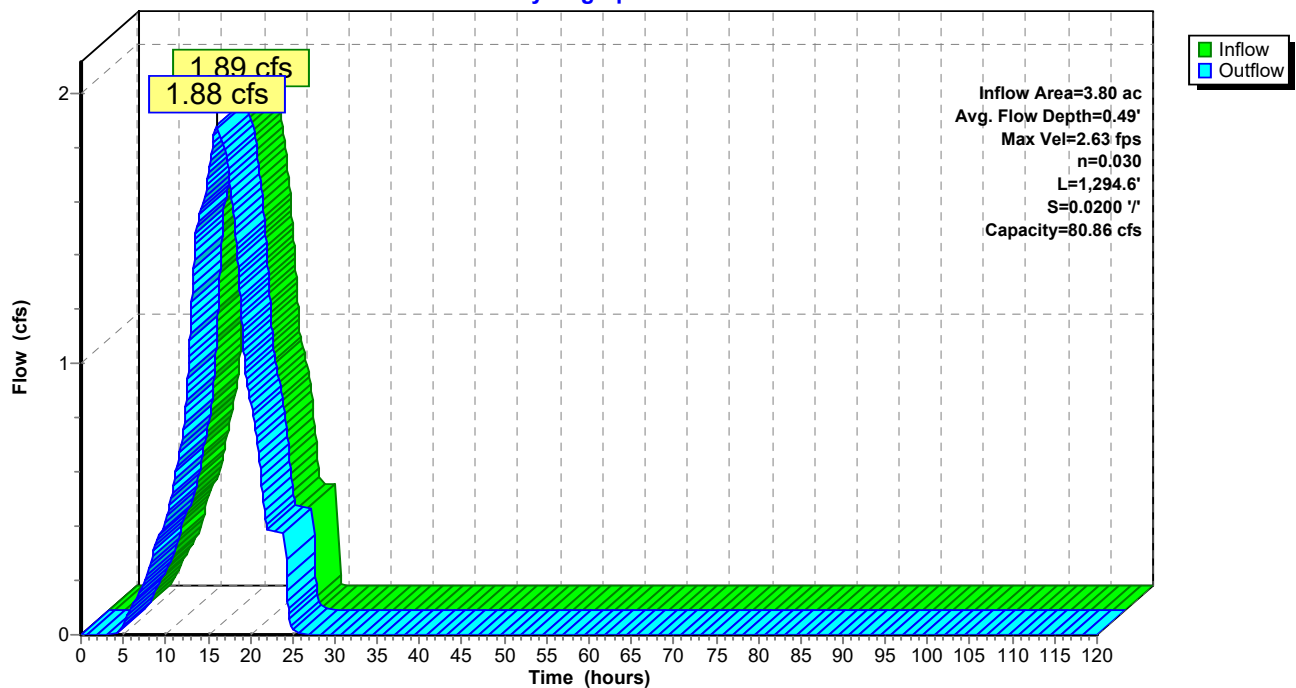
Peak Storage= 926 cf @ 15.82 hrs  
 Average Depth at Peak Storage= 0.49'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,294.6' Slope= 0.0200 '/'  
 Inlet Invert= 805.78', Outlet Invert= 779.89'



**Reach TB-N-A8: Terrace Berm N-A8**

Hydrograph



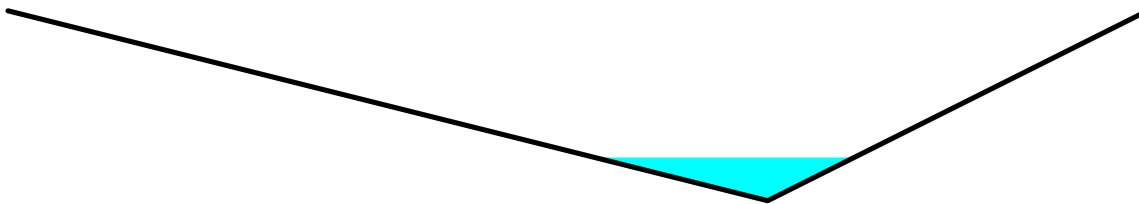
**Summary for Reach TB-N-B1: Terrace Berm N-B1**

Inflow Area = 3.15 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 1.57 cfs @ 15.72 hrs, Volume= 1.101 af  
 Outflow = 1.56 cfs @ 15.94 hrs, Volume= 1.101 af, Atten= 0%, Lag= 12.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.51 fps, Min. Travel Time= 6.5 min  
 Avg. Velocity = 1.64 fps, Avg. Travel Time= 9.9 min

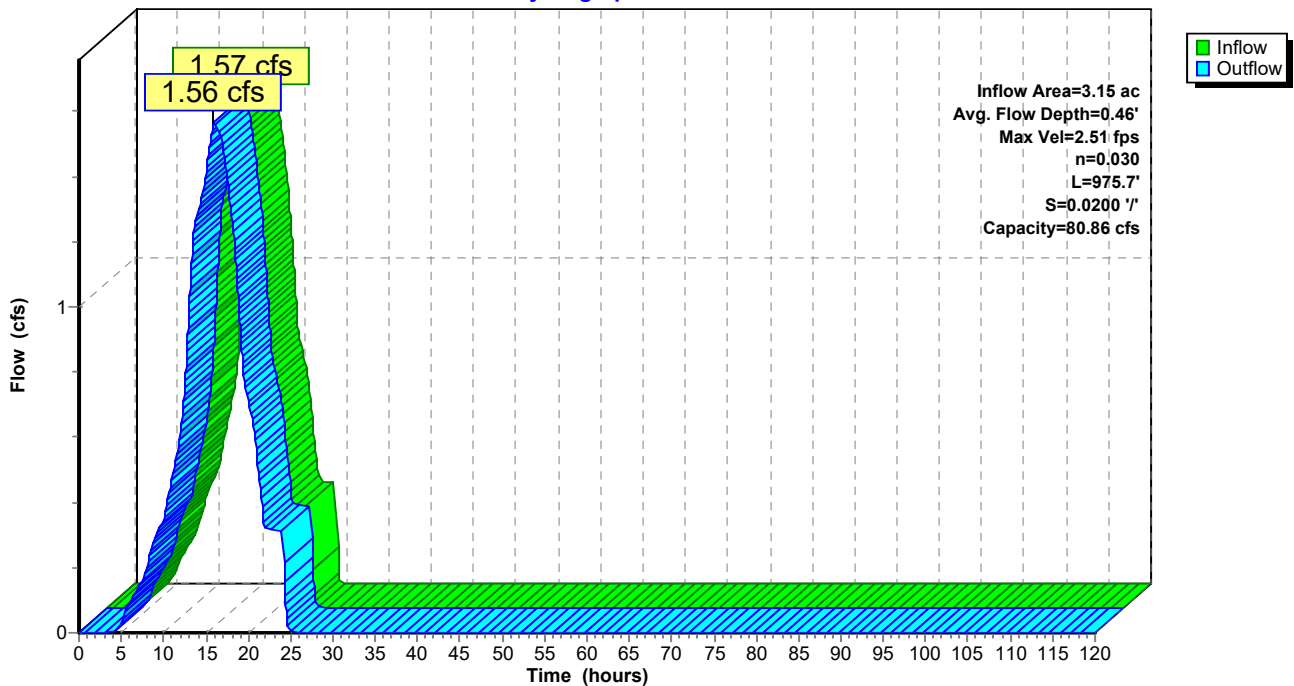
Peak Storage= 607 cf @ 15.83 hrs  
 Average Depth at Peak Storage= 0.46'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 975.7' Slope= 0.0200 '/'  
 Inlet Invert= 867.35', Outlet Invert= 847.84'



**Reach TB-N-B1: Terrace Berm N-B1**

Hydrograph



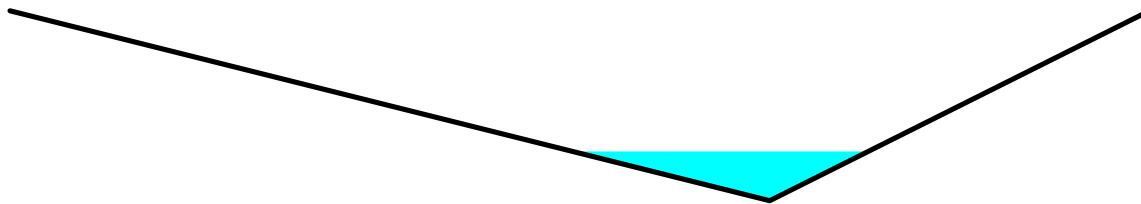
**Summary for Reach TB-N-B2: Terrace Berm N-B2**

Inflow Area = 4.49 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 2.23 cfs @ 15.72 hrs, Volume= 1.566 af  
 Outflow = 2.22 cfs @ 15.95 hrs, Volume= 1.566 af, Atten= 0%, Lag= 13.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.74 fps, Min. Travel Time= 6.8 min  
 Avg. Velocity = 1.76 fps, Avg. Travel Time= 10.6 min

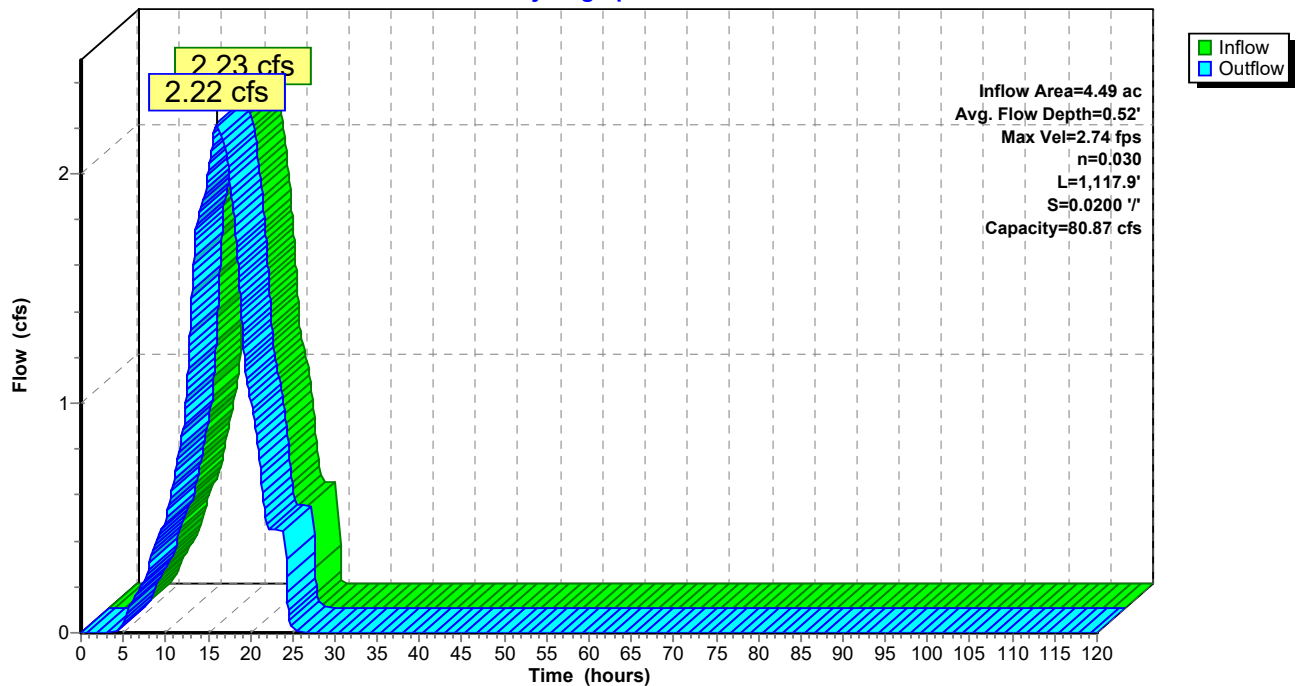
Peak Storage= 905 cf @ 15.84 hrs  
 Average Depth at Peak Storage= 0.52'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,117.9' Slope= 0.0200 '/'  
 Inlet Invert= 870.20', Outlet Invert= 847.84'



**Reach TB-N-B2: Terrace Berm N-B2**

Hydrograph





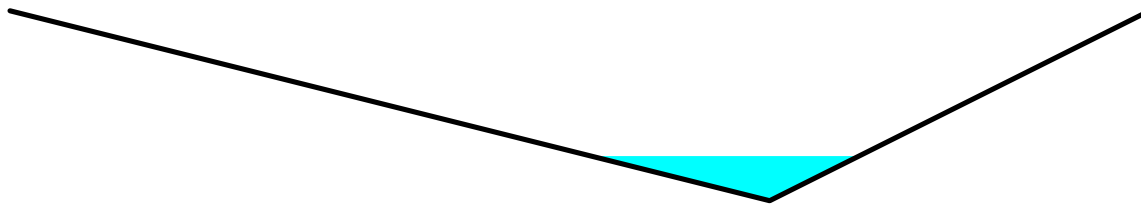
**Summary for Reach TB-N-B3: Terrace Berm N-B3**

Inflow Area = 3.43 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 1.70 cfs @ 15.69 hrs, Volume= 1.197 af  
 Outflow = 1.70 cfs @ 15.97 hrs, Volume= 1.197 af, Atten= 0%, Lag= 16.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.57 fps, Min. Travel Time= 8.6 min  
 Avg. Velocity = 1.60 fps, Avg. Travel Time= 13.8 min

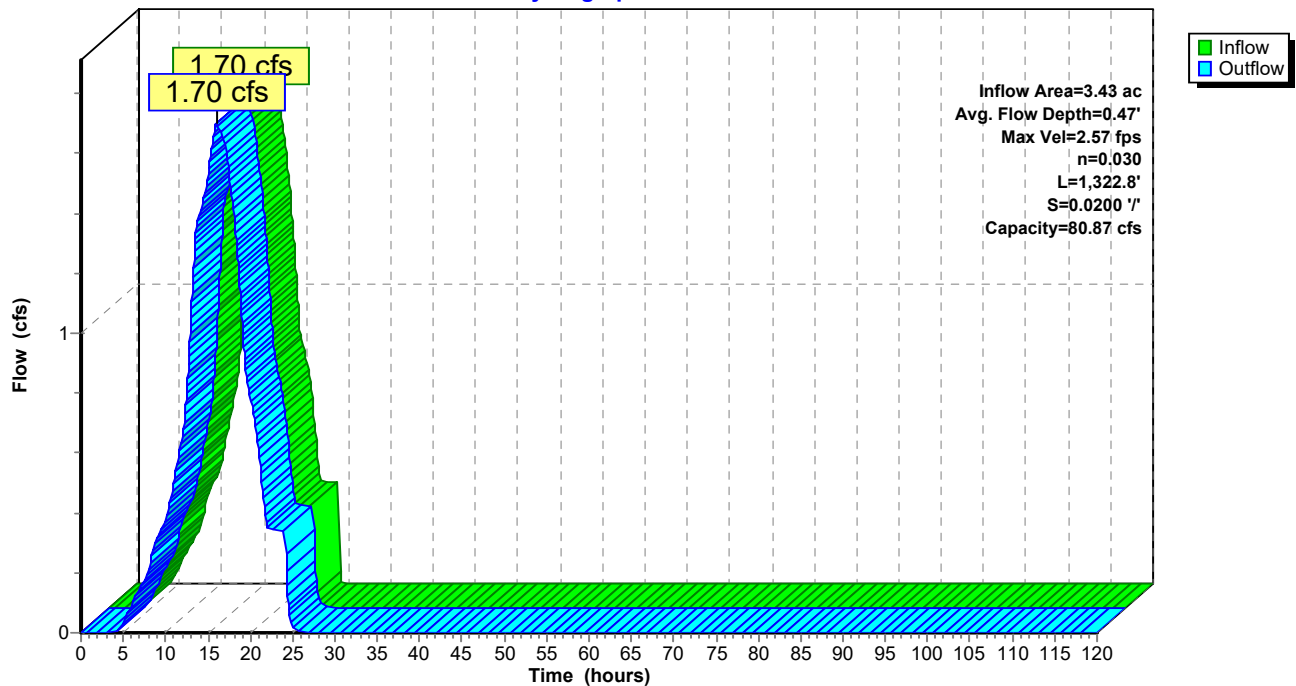
Peak Storage= 875 cf @ 15.82 hrs  
 Average Depth at Peak Storage= 0.47'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,322.8' Slope= 0.0200 '/'  
 Inlet Invert= 836.37', Outlet Invert= 809.91'



**Reach TB-N-B3: Terrace Berm N-B3**

Hydrograph



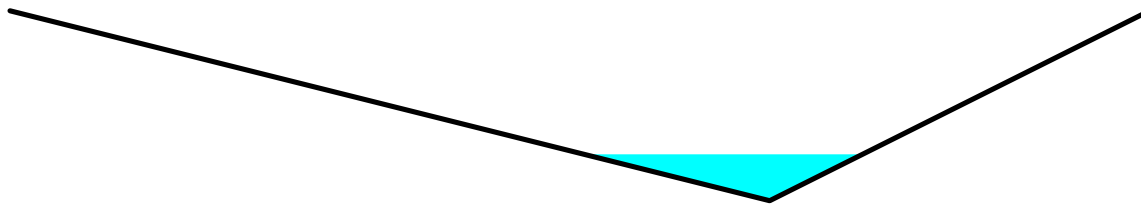
**Summary for Reach TB-N-B4: Terrace Berm N-B4**

Inflow Area = 3.80 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 1.89 cfs @ 15.69 hrs, Volume= 1.328 af  
 Outflow = 1.88 cfs @ 15.95 hrs, Volume= 1.328 af, Atten= 0%, Lag= 15.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.63 fps, Min. Travel Time= 8.0 min  
 Avg. Velocity = 1.66 fps, Avg. Travel Time= 12.7 min

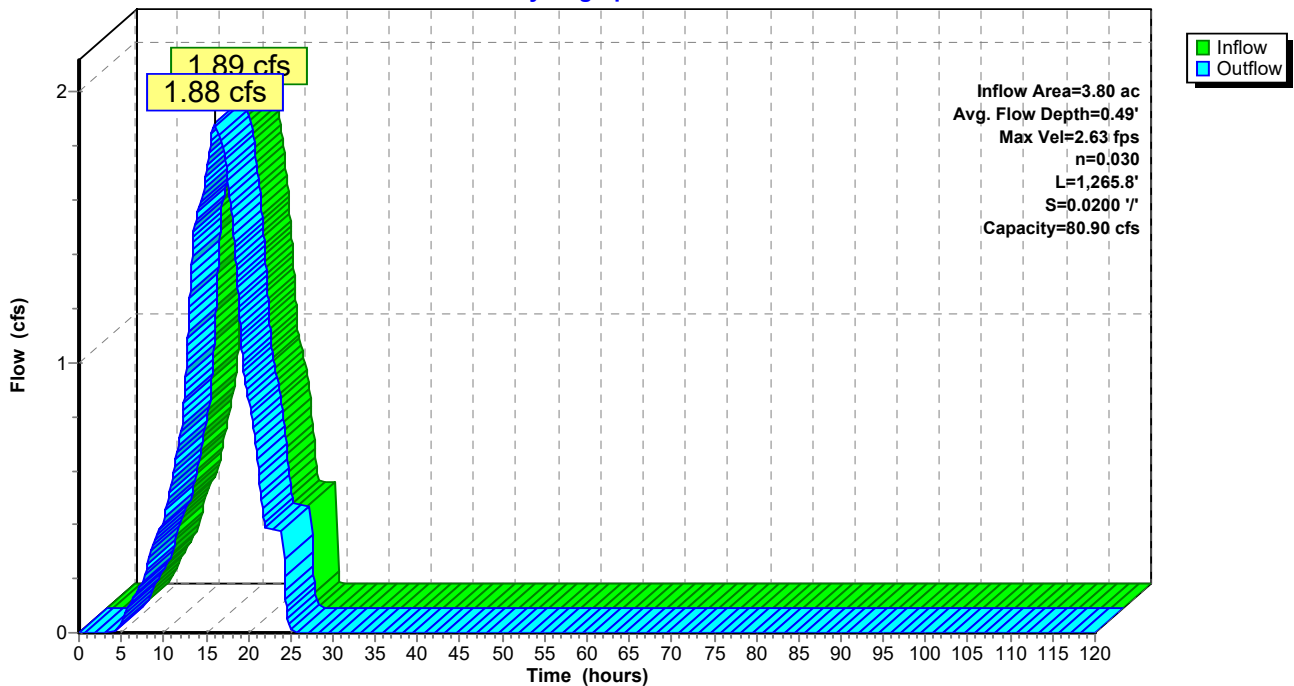
Peak Storage= 905 cf @ 15.82 hrs  
 Average Depth at Peak Storage= 0.49'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.90 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,265.8' Slope= 0.0200 '/'  
 Inlet Invert= 835.25', Outlet Invert= 809.91'



**Reach TB-N-B4: Terrace Berm N-B4**

Hydrograph



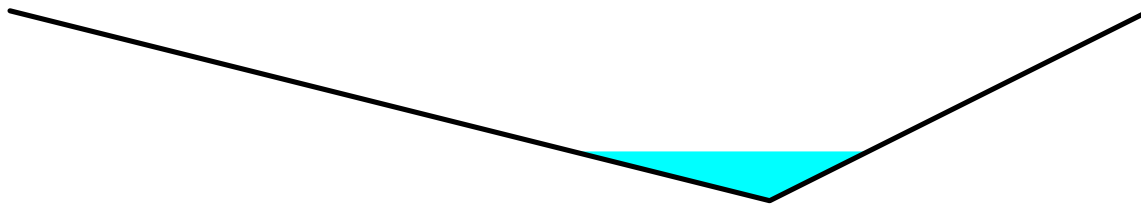
**Summary for Reach TB-N-B5: Terrace Berm N-B5**

Inflow Area = 4.50 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 2.24 cfs @ 15.69 hrs, Volume= 1.570 af  
 Outflow = 2.22 cfs @ 16.02 hrs, Volume= 1.570 af, Atten= 1%, Lag= 19.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.74 fps, Min. Travel Time= 10.1 min  
 Avg. Velocity = 1.64 fps, Avg. Travel Time= 17.0 min

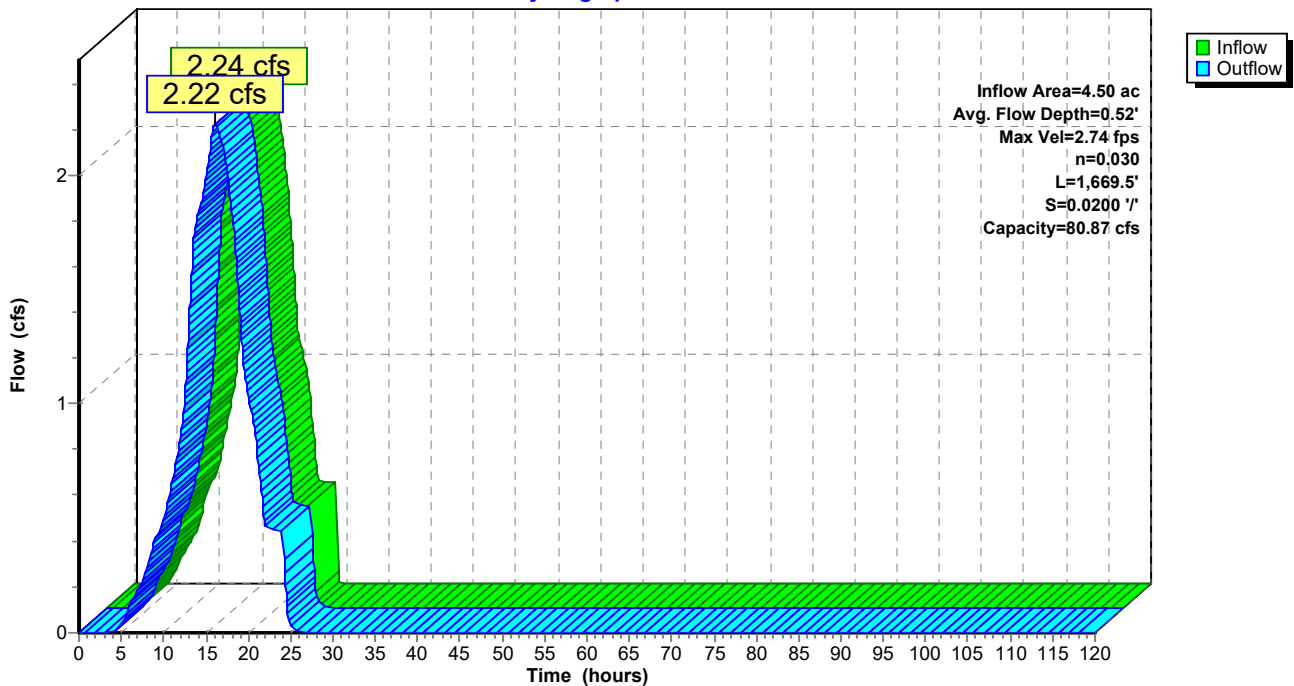
Peak Storage= 1,353 cf @ 15.86 hrs  
 Average Depth at Peak Storage= 0.52'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,669.5' Slope= 0.0200 '/'  
 Inlet Invert= 805.78', Outlet Invert= 772.39'



**Reach TB-N-B5: Terrace Berm N-B5**

Hydrograph



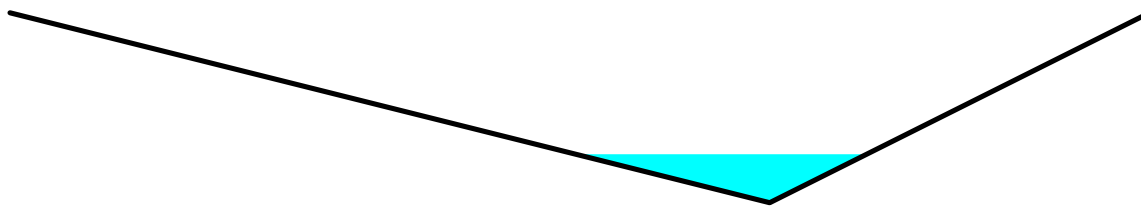
**Summary for Reach TB-N-B6: Terrace Berm N-B6**

Inflow Area = 4.29 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 2.13 cfs @ 15.69 hrs, Volume= 1.497 af  
 Outflow = 2.12 cfs @ 15.97 hrs, Volume= 1.497 af, Atten= 0%, Lag= 16.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.71 fps, Min. Travel Time= 8.7 min  
 Avg. Velocity = 1.67 fps, Avg. Travel Time= 14.1 min

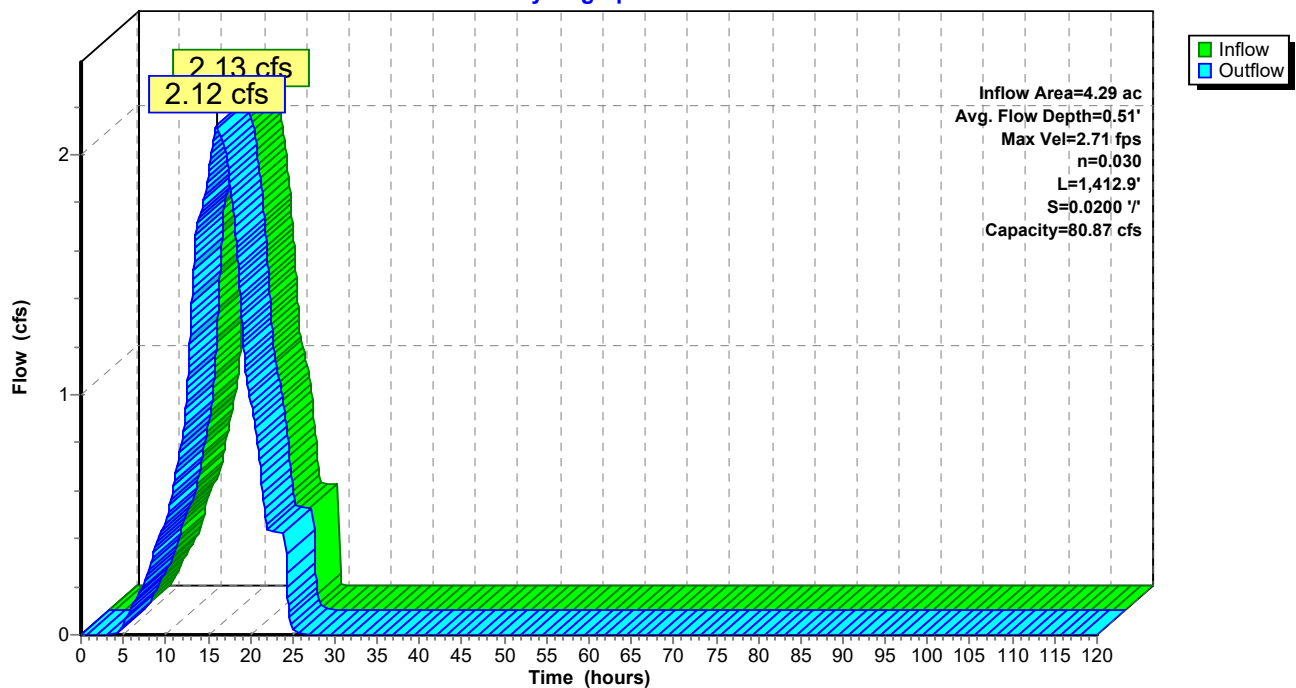
Peak Storage= 1,106 cf @ 15.83 hrs  
 Average Depth at Peak Storage= 0.51'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,412.9' Slope= 0.0200 '/'  
 Inlet Invert= 800.65', Outlet Invert= 772.39'



**Reach TB-N-B6: Terrace Berm N-B6**

Hydrograph



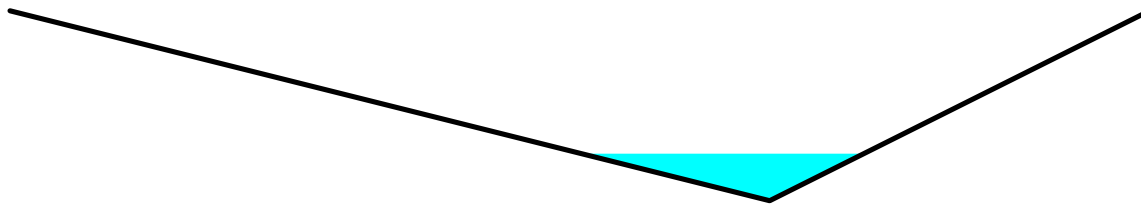
**Summary for Reach TB-N-B7: Terrace Berm N-B7**

Inflow Area = 3.96 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 1.97 cfs @ 15.69 hrs, Volume= 1.384 af  
 Outflow = 1.96 cfs @ 15.97 hrs, Volume= 1.384 af, Atten= 0%, Lag= 16.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.66 fps, Min. Travel Time= 8.6 min  
 Avg. Velocity = 1.65 fps, Avg. Travel Time= 13.9 min

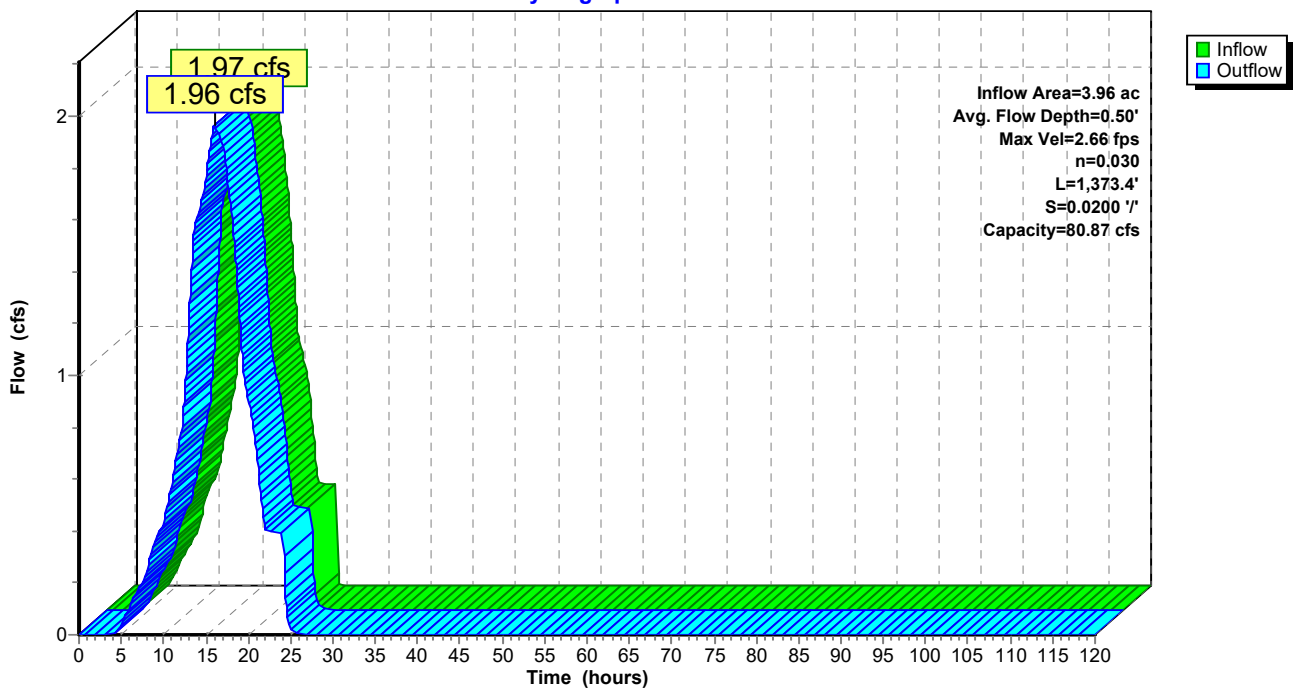
Peak Storage= 1,013 cf @ 15.83 hrs  
 Average Depth at Peak Storage= 0.50'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,373.4' Slope= 0.0200 '/'  
 Inlet Invert= 771.72', Outlet Invert= 744.25'



**Reach TB-N-B7: Terrace Berm N-B7**

Hydrograph



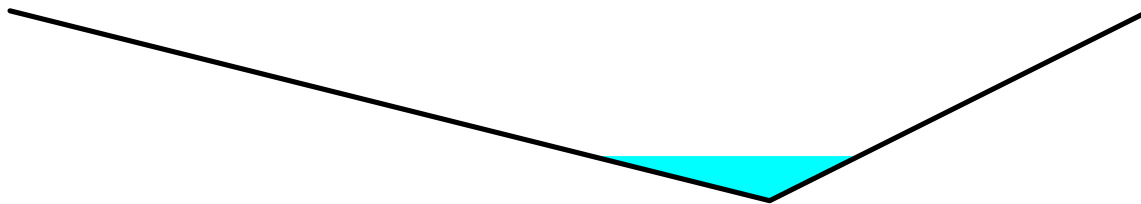
**Summary for Reach TB-N-B8: Terrace Berm N-B8**

Inflow Area = 3.52 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 1.75 cfs @ 15.69 hrs, Volume= 1.230 af  
 Outflow = 1.75 cfs @ 15.90 hrs, Volume= 1.230 af, Atten= 0%, Lag= 12.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.63 fps, Min. Travel Time= 6.5 min  
 Avg. Velocity = 1.71 fps, Avg. Travel Time= 9.9 min

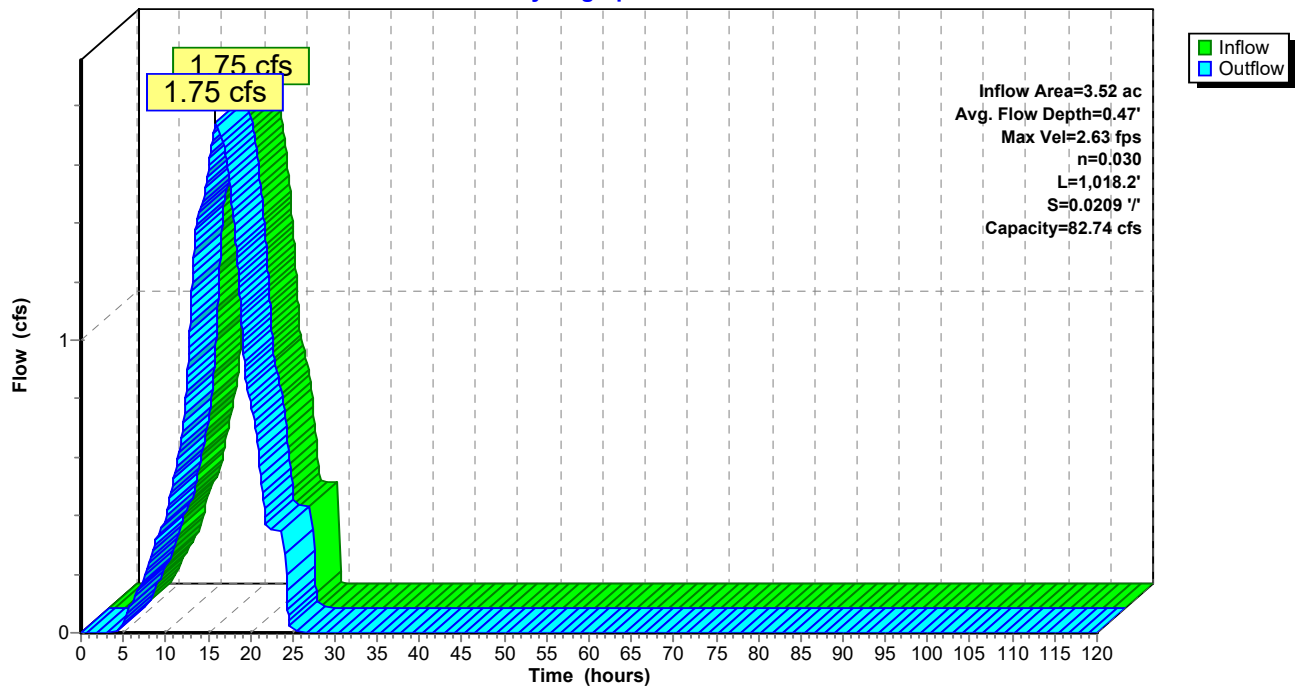
Peak Storage= 677 cf @ 15.79 hrs  
 Average Depth at Peak Storage= 0.47'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 82.74 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,018.2' Slope= 0.0209 '/'  
 Inlet Invert= 765.32', Outlet Invert= 744.00'



**Reach TB-N-B8: Terrace Berm N-B8**

Hydrograph



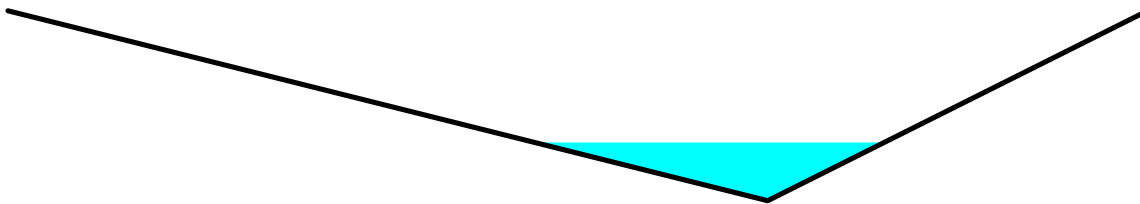
**Summary for Reach TB-N-C1: Terrace Berm N-C1**

Inflow Area = 6.98 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 3.47 cfs @ 15.73 hrs, Volume= 2.438 af  
 Outflow = 3.46 cfs @ 15.97 hrs, Volume= 2.438 af, Atten= 0%, Lag= 14.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.06 fps, Min. Travel Time= 7.2 min  
 Avg. Velocity = 1.90 fps, Avg. Travel Time= 11.6 min

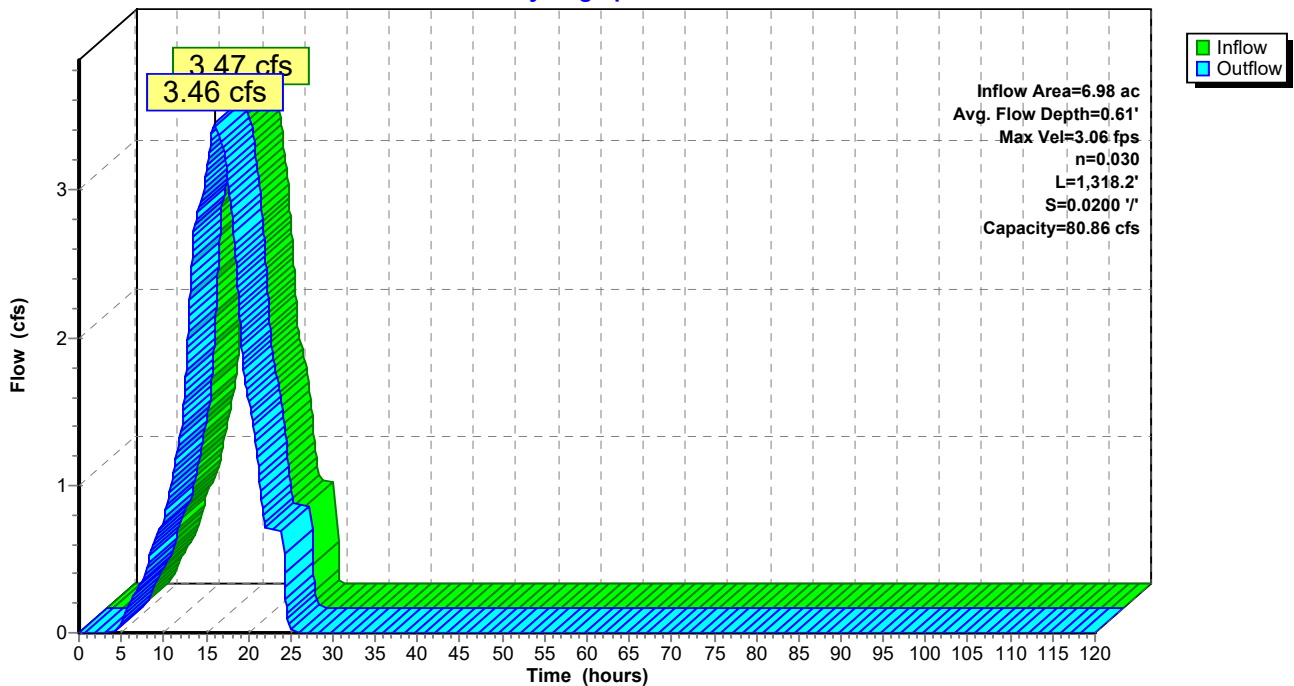
Peak Storage= 1,488 cf @ 15.85 hrs  
 Average Depth at Peak Storage= 0.61'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,318.2' Slope= 0.0200 '/'  
 Inlet Invert= 870.02', Outlet Invert= 843.66'



**Reach TB-N-C1: Terrace Berm N-C1**

Hydrograph



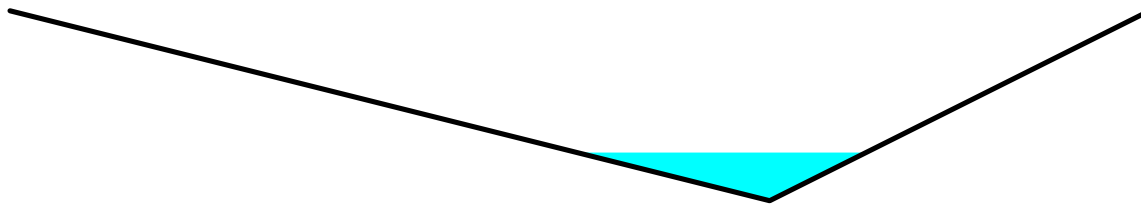
**Summary for Reach TB-N-C2: Terrace Berm N-C2**

Inflow Area = 4.20 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 2.09 cfs @ 15.69 hrs, Volume= 1.467 af  
 Outflow = 2.08 cfs @ 15.96 hrs, Volume= 1.467 af, Atten= 0%, Lag= 15.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.70 fps, Min. Travel Time= 8.1 min  
 Avg. Velocity = 1.68 fps, Avg. Travel Time= 13.1 min

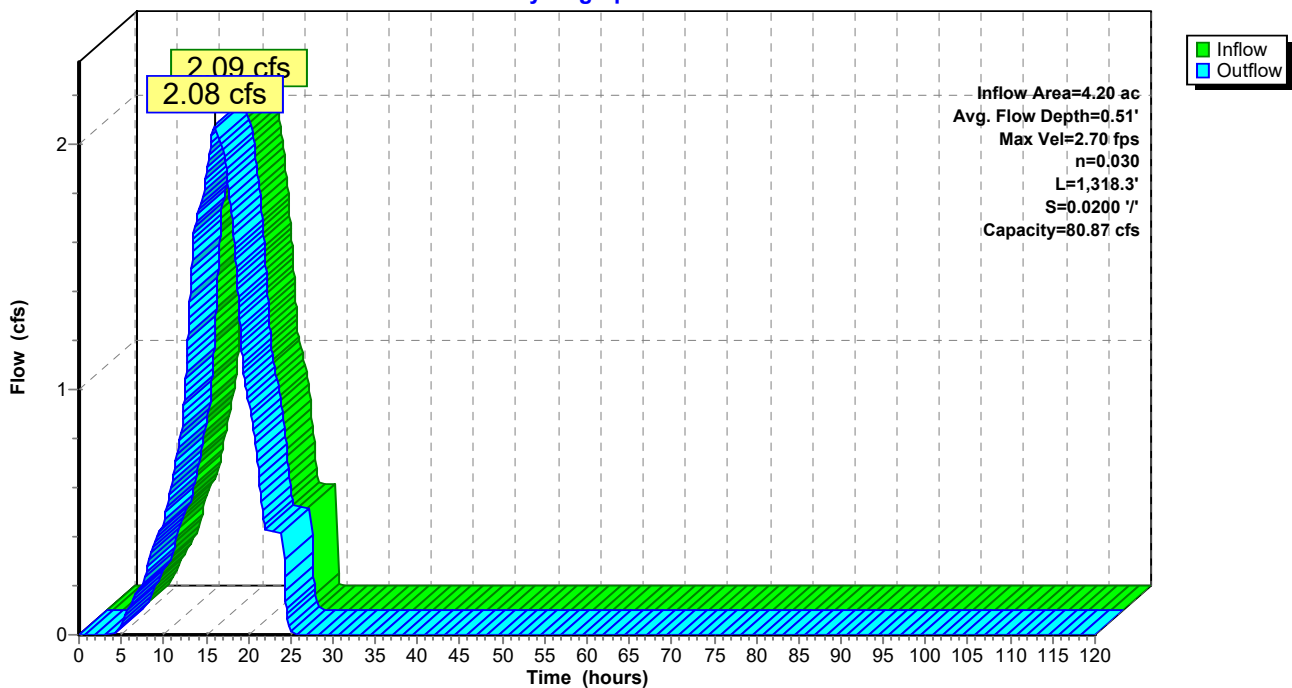
Peak Storage= 1,016 cf @ 15.82 hrs  
 Average Depth at Peak Storage= 0.51'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,318.3' Slope= 0.0200 '/'  
 Inlet Invert= 835.25', Outlet Invert= 808.88'



**Reach TB-N-C2: Terrace Berm N-C2**

Hydrograph





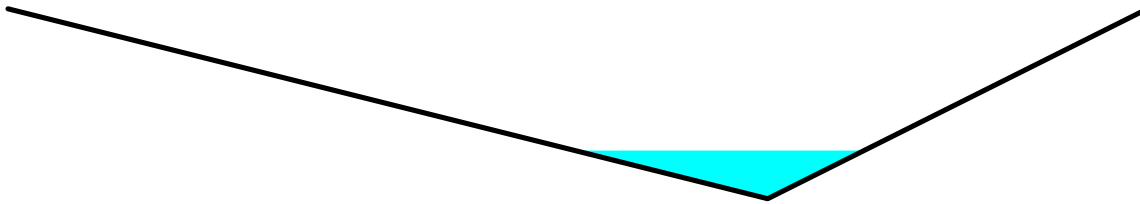
**Summary for Reach TB-N-C3: Terrace Berm N-C3**

Inflow Area = 4.22 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 2.10 cfs @ 15.69 hrs, Volume= 1.473 af  
 Outflow = 2.09 cfs @ 15.96 hrs, Volume= 1.473 af, Atten= 0%, Lag= 15.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.70 fps, Min. Travel Time= 8.1 min  
 Avg. Velocity = 1.69 fps, Avg. Travel Time= 13.1 min

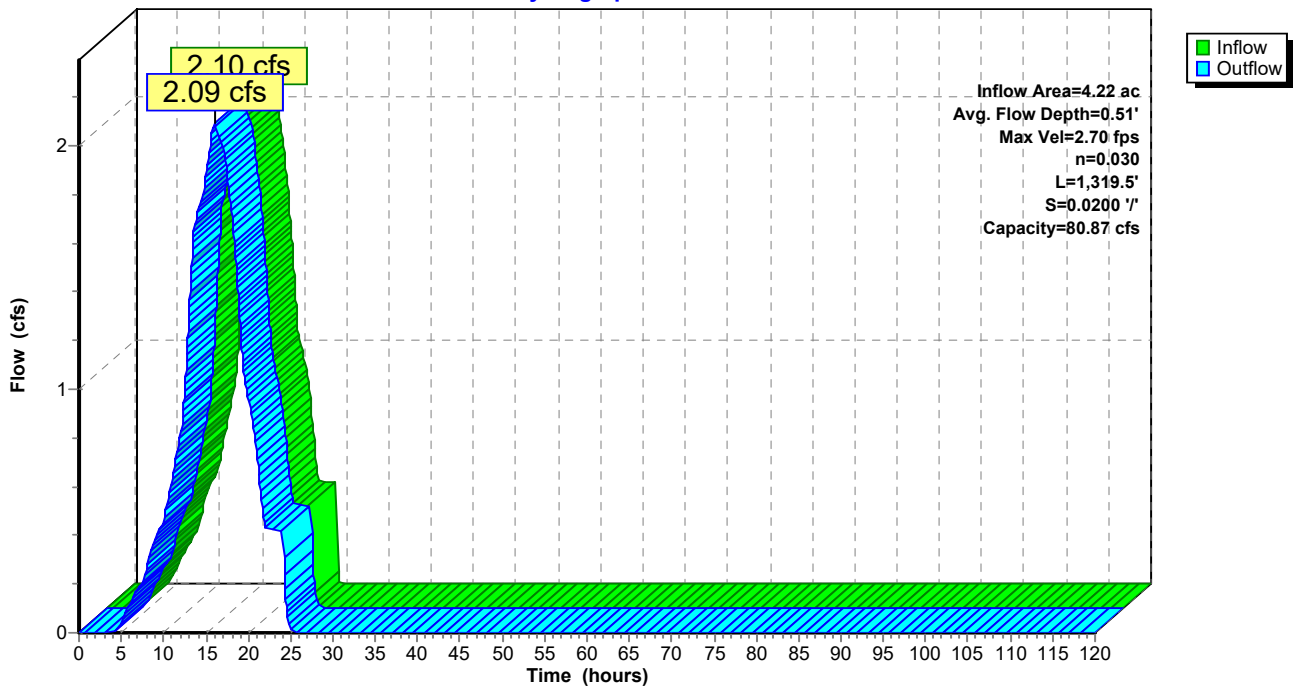
Peak Storage= 1,020 cf @ 15.82 hrs  
 Average Depth at Peak Storage= 0.51'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,319.5' Slope= 0.0200 '/'  
 Inlet Invert= 800.65', Outlet Invert= 774.26'



**Reach TB-N-C3: Terrace Berm N-C3**

Hydrograph



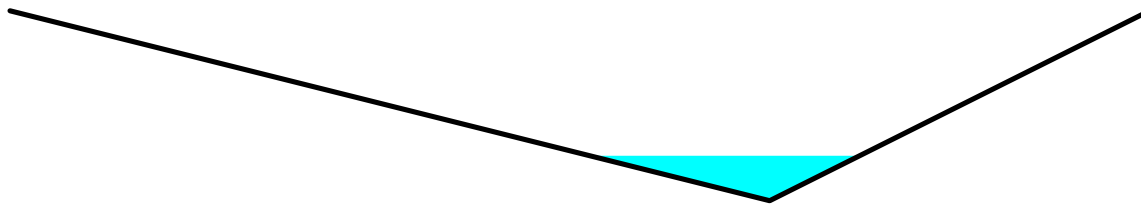
**Summary for Reach TB-N-C4: Terrace Berm N-C4**

Inflow Area = 3.52 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
 Inflow = 1.75 cfs @ 15.69 hrs, Volume= 1.228 af  
 Outflow = 1.74 cfs @ 15.92 hrs, Volume= 1.228 af, Atten= 0%, Lag= 13.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.58 fps, Min. Travel Time= 7.1 min  
 Avg. Velocity = 1.66 fps, Avg. Travel Time= 11.0 min

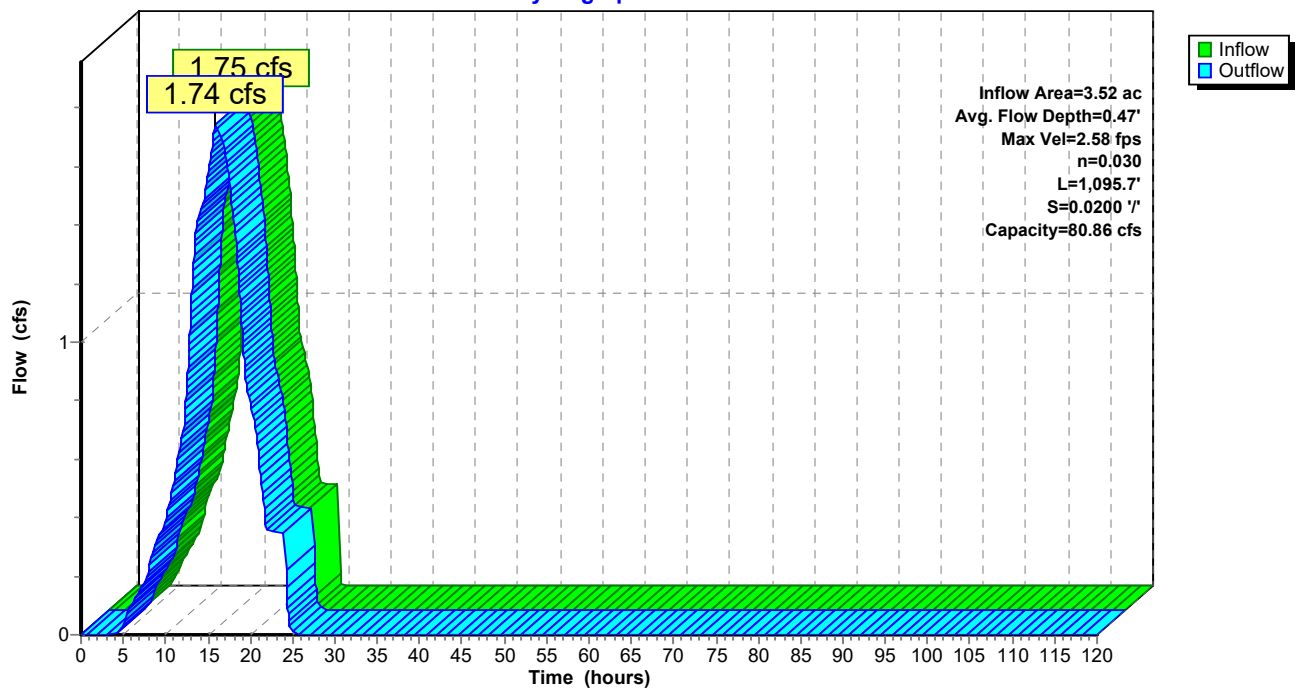
Peak Storage= 739 cf @ 15.80 hrs  
 Average Depth at Peak Storage= 0.47'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,095.7' Slope= 0.0200 '/'  
 Inlet Invert= 765.32', Outlet Invert= 743.41'



**Reach TB-N-C4: Terrace Berm N-C4**

Hydrograph



**Summary for Pond Basin 5R: Stormwater Basin 5R**

Inflow Area = 53.03 ac, 15.95% Impervious, Inflow Depth = 4.52" for 25-Year, 24-Hour event  
 Inflow = 26.92 cfs @ 16.05 hrs, Volume= 19.980 af  
 Outflow = 2.72 cfs @ 24.40 hrs, Volume= 16.686 af, Atten= 90%, Lag= 500.9 min  
 Primary = 2.72 cfs @ 24.40 hrs, Volume= 16.686 af  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Starting Elev= 733.50' Surf.Area= 318,821 sf Storage= 1,528,329 cf  
 Peak Elev= 736.28' @ 24.40 hrs Surf.Area= 291,002 sf Storage= 2,293,838 cf (765,509 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= 2,513.7 min ( 3,449.1 - 935.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	726.00'	4,158,336 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
726.00	132,640	0	0
728.00	155,297	287,937	287,937
730.00	179,100	334,397	622,334
731.00	118,479	148,790	771,124
732.00	367,080	242,780	1,013,903
733.50	318,821	514,426	1,528,329
734.00	253,912	143,183	1,671,512
735.00	270,451	262,182	1,933,694
736.00	287,631	279,041	2,212,735
738.00	311,683	599,314	2,812,049
740.00	336,524	648,207	3,460,256
742.00	361,556	698,080	4,158,336

Device	Routing	Invert	Outlet Devices
#1	Primary	733.50'	<b>30.0" Round Culvert</b> L= 100.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 733.50' / 733.20' S= 0.0030 1/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf
#2	Device 1	733.50'	<b>4.0" Vert. Lower Orifice X 4.00</b> C= 0.600
#3	Device 1	737.50'	<b>4.0" Vert. Middle Orifice X 4.00</b> C= 0.600
#4	Device 1	738.50'	<b>4.0" Vert. Upper Orifice X 4.00</b> C= 0.600
#5	Device 1	739.00'	<b>30.0" Horiz. Orifice/Grate</b> C= 0.600
#6	Secondary	740.00'	<b>Secondary Spillway, C= 3.27</b> Offset (feet) 0.00 6.00 26.00 32.00 Height (feet) 2.00 0.00 0.00 2.00

Primary OutFlow Max=2.72 cfs @ 24.40 hrs HW=736.28' (Free Discharge)

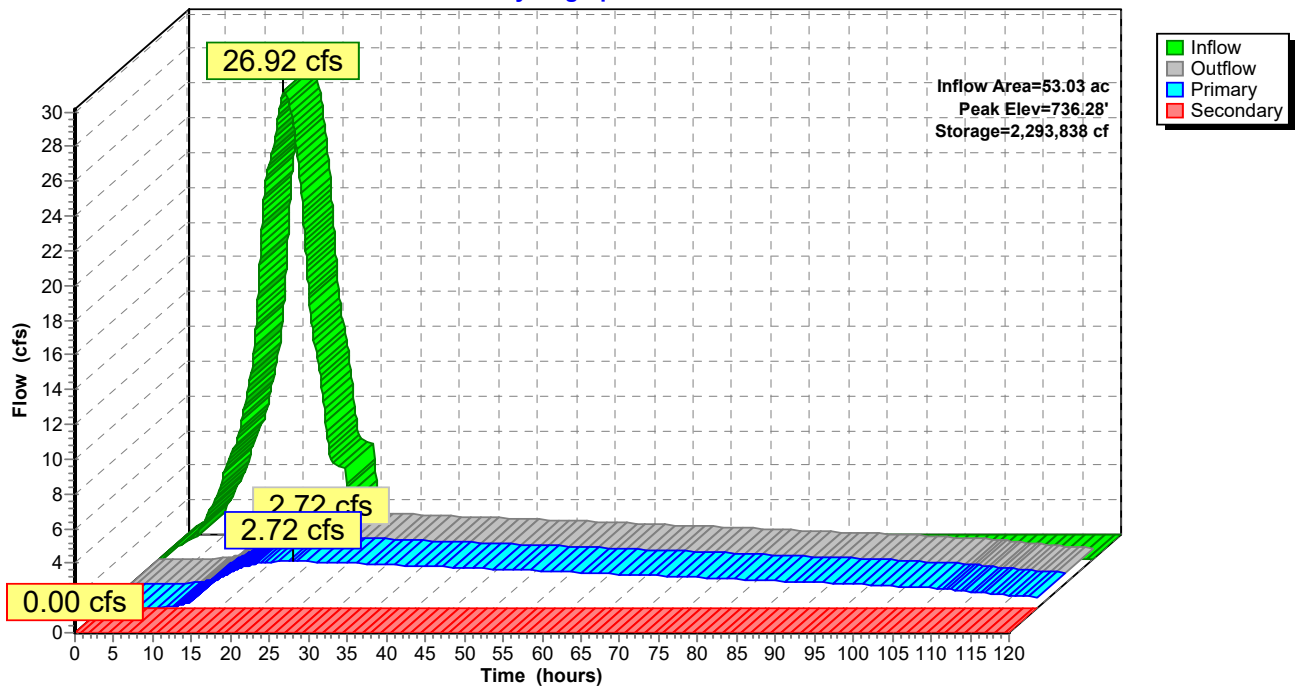
- 1=Culvert (Passes 2.72 cfs of 17.22 cfs potential flow)
- 2=Lower Orifice (Orifice Controls 2.72 cfs @ 7.78 fps)
- 3=Middle Orifice ( Controls 0.00 cfs)
- 4=Upper Orifice ( Controls 0.00 cfs)
- 5=Orifice/Grate ( Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=733.50' (Free Discharge)

- 6=Secondary Spillway ( Controls 0.00 cfs)

### Pond Basin 5R: Stormwater Basin 5R

Hydrograph



**Summary for Pond Basin 8: Stormwater Basin 8**

Inflow Area = 148.01 ac, 11.19% Impervious, Inflow Depth = 4.43" for 25-Year, 24-Hour event  
 Inflow = 74.05 cfs @ 16.28 hrs, Volume= 54.604 af  
 Outflow = 14.80 cfs @ 23.95 hrs, Volume= 53.143 af, Atten= 80%, Lag= 460.1 min  
 Primary = 14.80 cfs @ 23.95 hrs, Volume= 53.143 af

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Starting Elev= 730.50' Surf.Area= 410,884 sf Storage= 1,593,798 cf  
 Peak Elev= 734.51' @ 23.95 hrs Surf.Area= 510,581 sf Storage= 3,442,311 cf (1,848,513 cf above start)

Plug-Flow detention time= 4,030.5 min calculated for 16.555 af (30% of inflow)  
 Center-of-Mass det. time= 1,815.4 min ( 2,769.9 - 954.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	726.00'	5,355,472 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

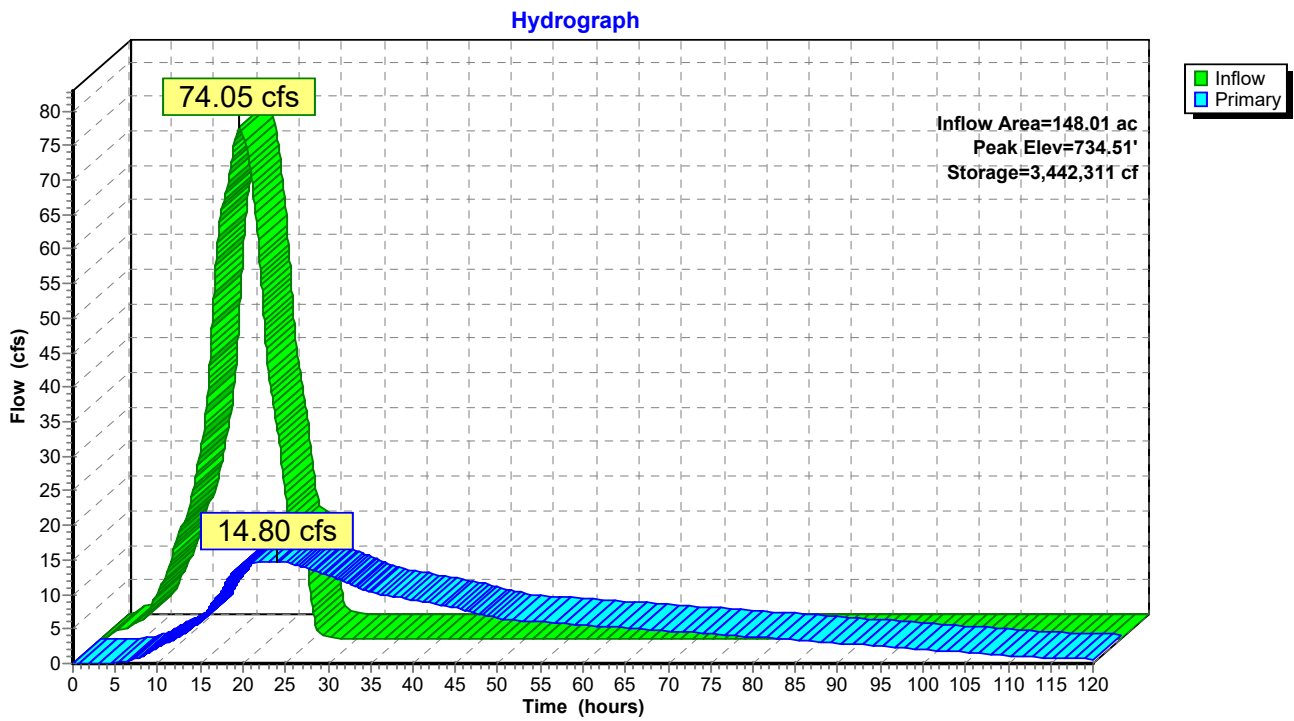
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
726.00	283,562	0	0
727.50	340,318	467,910	467,910
728.00	351,709	173,007	640,917
730.00	398,761	750,470	1,391,387
730.50	410,884	202,411	1,593,798
732.00	448,114	644,249	2,238,047
733.00	473,655	460,885	2,698,931
734.00	499,775	486,715	3,185,646
736.00	542,314	1,042,089	4,227,735
736.50	553,047	273,840	4,501,575
738.00	585,482	853,897	5,355,472

Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	<b>36.0" Round Culvert</b> L= 140.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 727.00' / 725.10' S= 0.0136 1/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Device 1	730.50'	<b>4.0" Vert. 2-yr Orifice X 11.00</b> C= 0.600
#3	Device 1	732.50'	<b>4.0" Vert. 100-yr Orifice X 6.00</b> C= 0.600
#4	Device 1	733.50'	<b>4.0" Vert. 100-yr Orifice X 6.00</b> C= 0.600
#5	Device 1	734.50'	<b>4.0" Vert. 100-yr Orifice X 6.00</b> C= 0.600
#6	Device 1	736.50'	<b>36.0" Horiz. Primary Spillway</b> C= 0.600

**Primary OutFlow** Max=14.79 cfs @ 23.95 hrs HW=734.51' (Free Discharge)

- 1=Culvert (Passes 14.79 cfs of 73.61 cfs potential flow)
- 2=2-yr Orifice (Orifice Controls 9.06 cfs @ 9.44 fps)
- 3=100-yr Orifice (Orifice Controls 3.42 cfs @ 6.53 fps)
- 4=100-yr Orifice (Orifice Controls 2.31 cfs @ 4.42 fps)
- 5=100-yr Orifice (Orifice Controls 0.00 cfs @ 0.31 fps)
- 6=Primary Spillway ( Controls 0.00 cfs)

### Pond Basin 8: Stormwater Basin 8



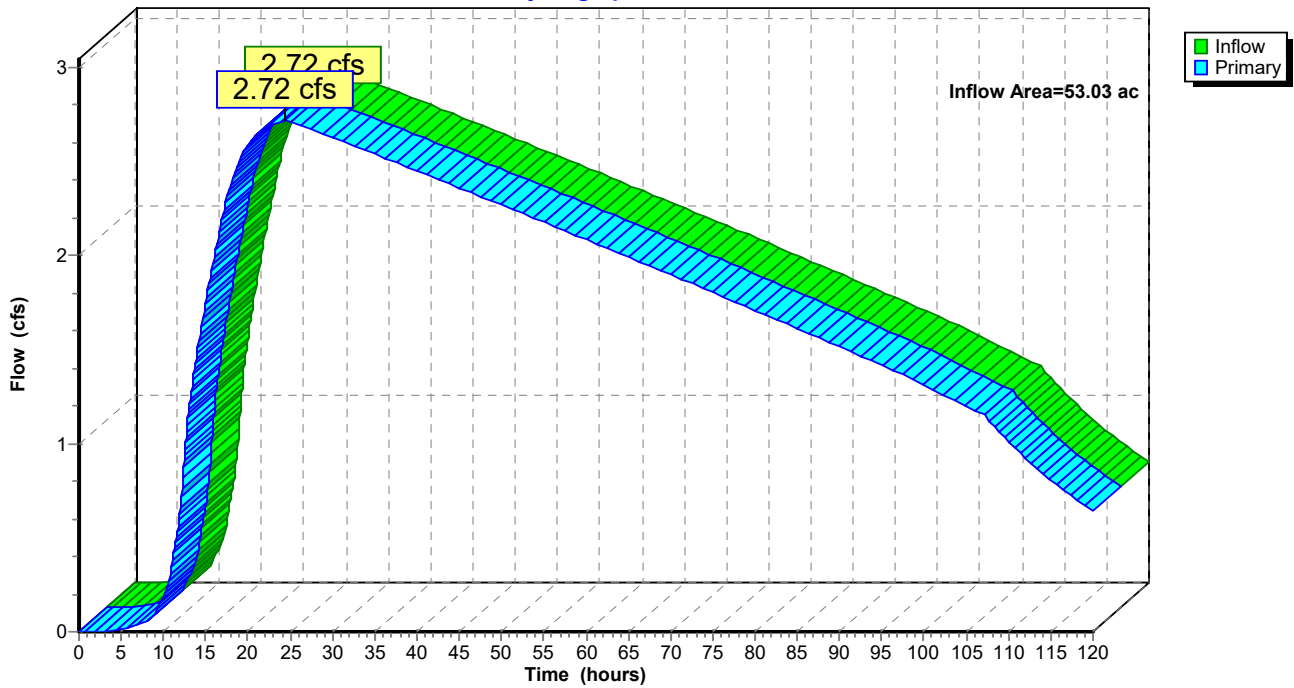
### Summary for Link BS: Bioswale

Inflow Area = 53.03 ac, 15.95% Impervious, Inflow Depth > 3.78" for 25-Year, 24-Hour event  
Inflow = 2.72 cfs @ 24.40 hrs, Volume= 16.686 af  
Primary = 2.72 cfs @ 24.40 hrs, Volume= 16.686 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link BS: Bioswale

Hydrograph

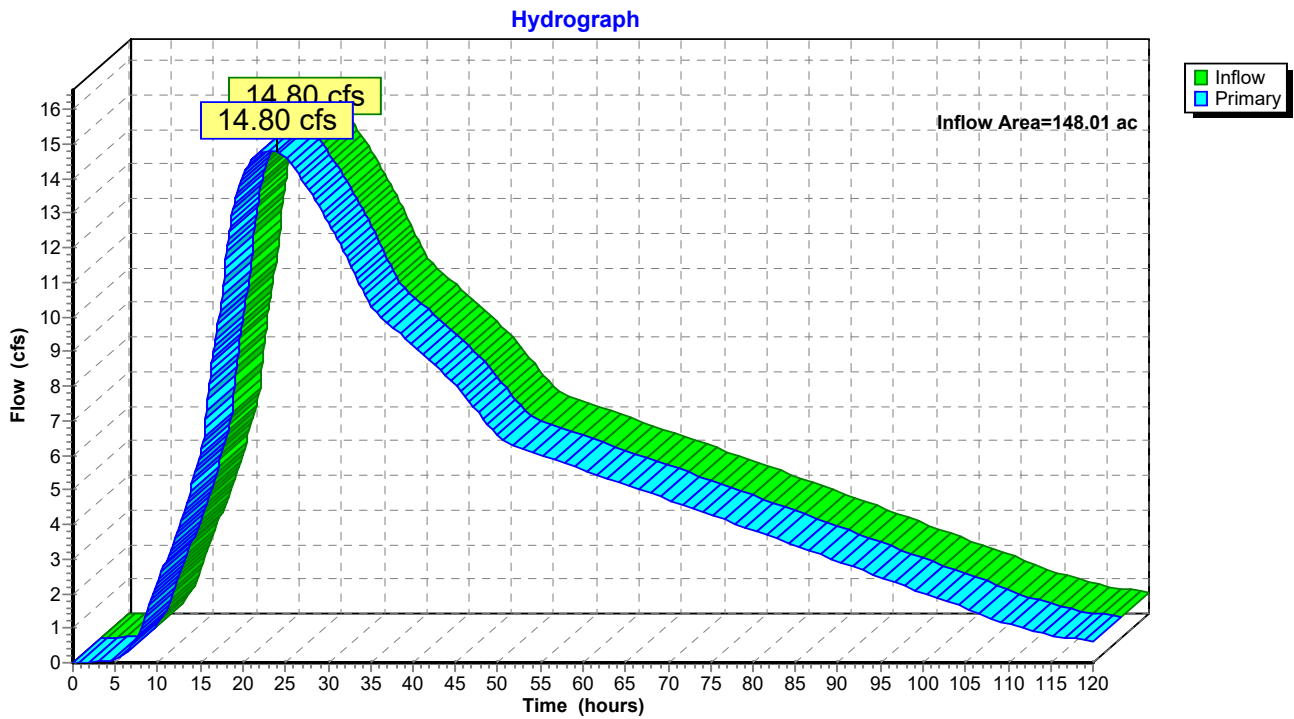


### Summary for Link DD: Offsite to Drainage Ditch

Inflow Area = 148.01 ac, 11.19% Impervious, Inflow Depth > 4.31" for 25-Year, 24-Hour event  
Inflow = 14.80 cfs @ 23.95 hrs, Volume= 53.143 af  
Primary = 14.80 cfs @ 23.95 hrs, Volume= 53.143 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link DD: Offsite to Drainage Ditch





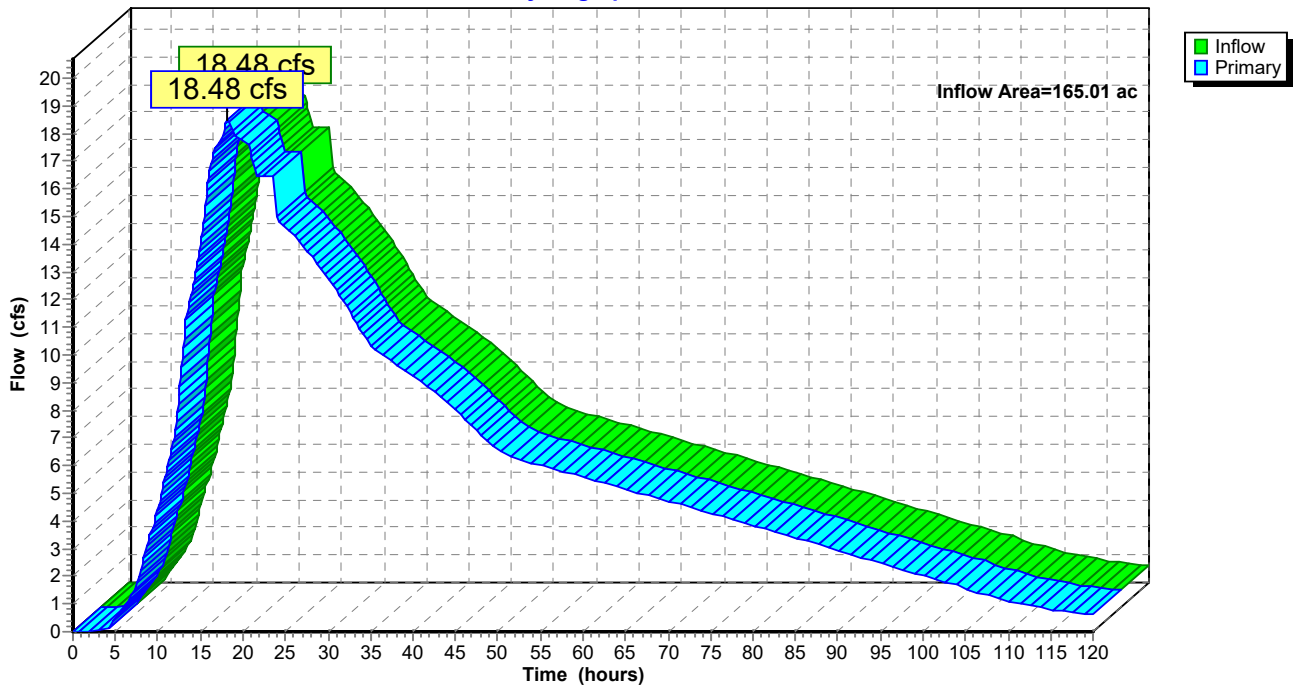
### Summary for Link DPRW: Des Plaines River Watershed

Inflow Area = 165.01 ac, 10.09% Impervious, Inflow Depth > 4.30" for 25-Year, 24-Hour event  
Inflow = 18.48 cfs @ 18.12 hrs, Volume= 59.185 af  
Primary = 18.48 cfs @ 18.12 hrs, Volume= 59.185 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link DPRW: Des Plaines River Watershed

Hydrograph

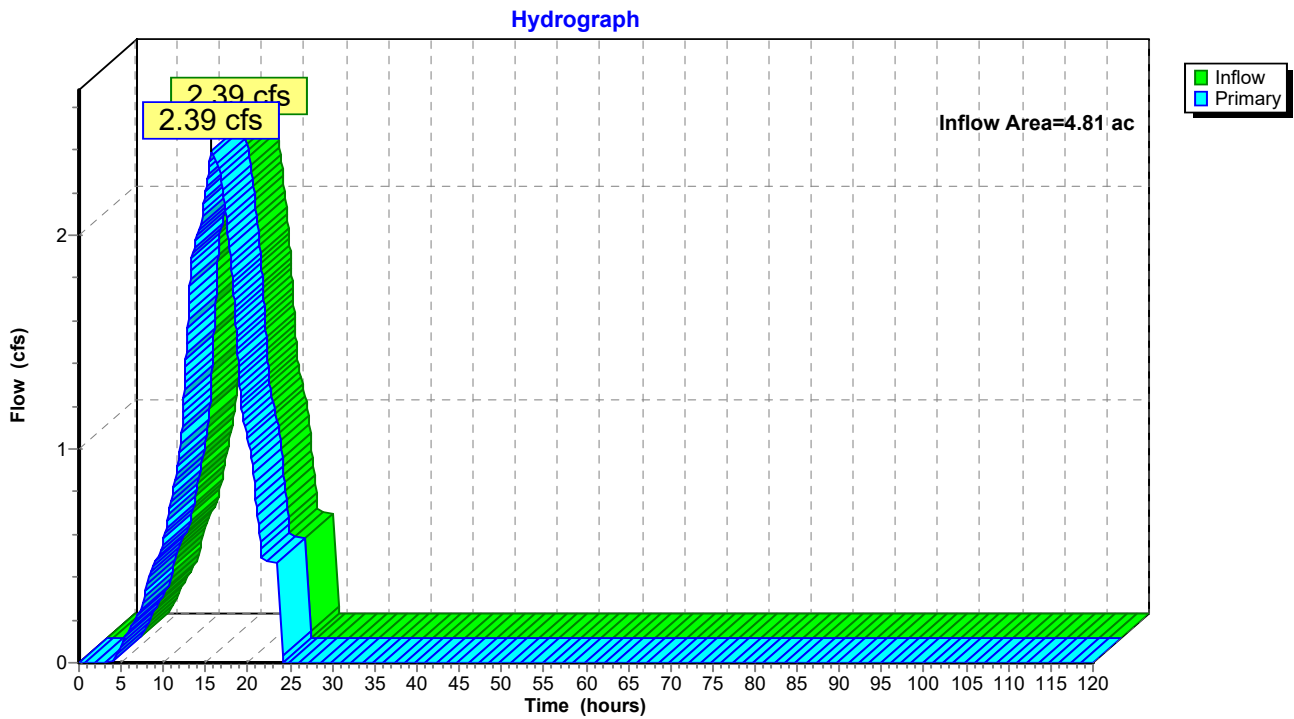


### Summary for Link DPRW-PB: Des Plaines River Watershed - Perimeter Berm

Inflow Area = 4.81 ac, 1.70% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
Inflow = 2.39 cfs @ 15.68 hrs, Volume= 1.680 af  
Primary = 2.39 cfs @ 15.68 hrs, Volume= 1.680 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link DPRW-PB: Des Plaines River Watershed - Perimeter Berm



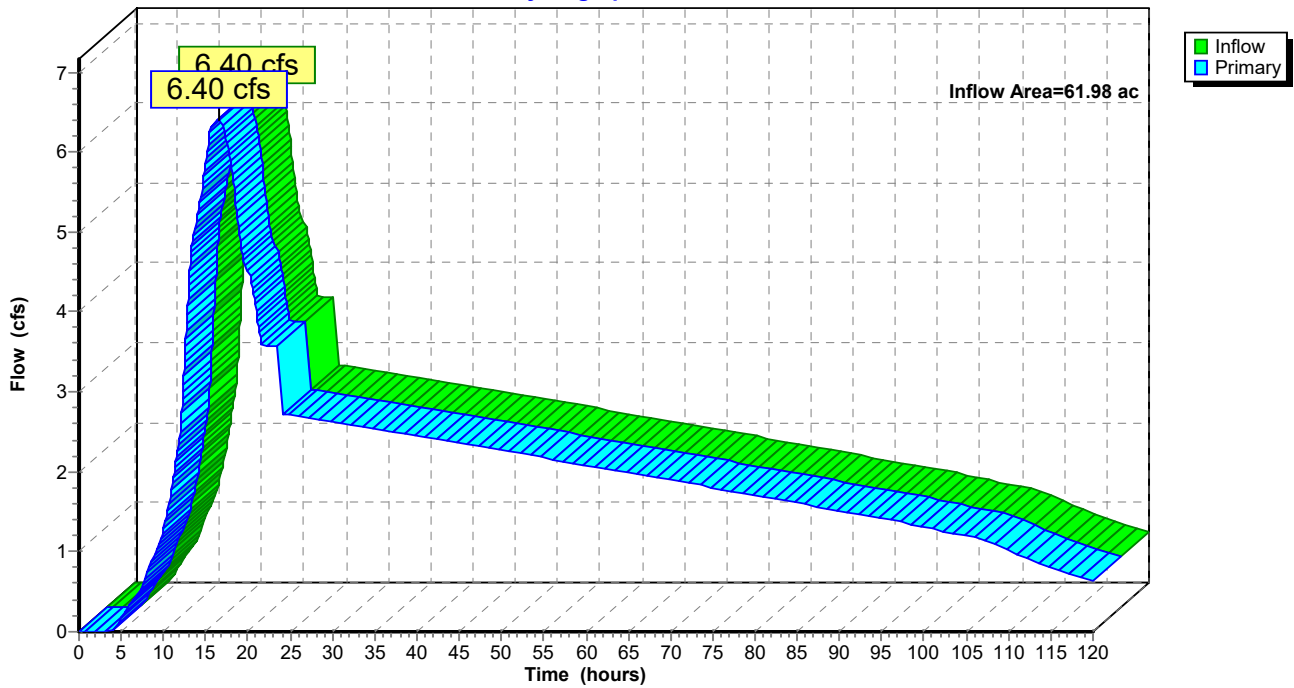
### Summary for Link LMW: Lake Michigan Watershed

Inflow Area = 61.98 ac, 13.64% Impervious, Inflow Depth > 3.84" for 25-Year, 24-Hour event  
Inflow = 6.40 cfs @ 16.45 hrs, Volume= 19.812 af  
Primary = 6.40 cfs @ 16.45 hrs, Volume= 19.812 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link LMW: Lake Michigan Watershed

Hydrograph

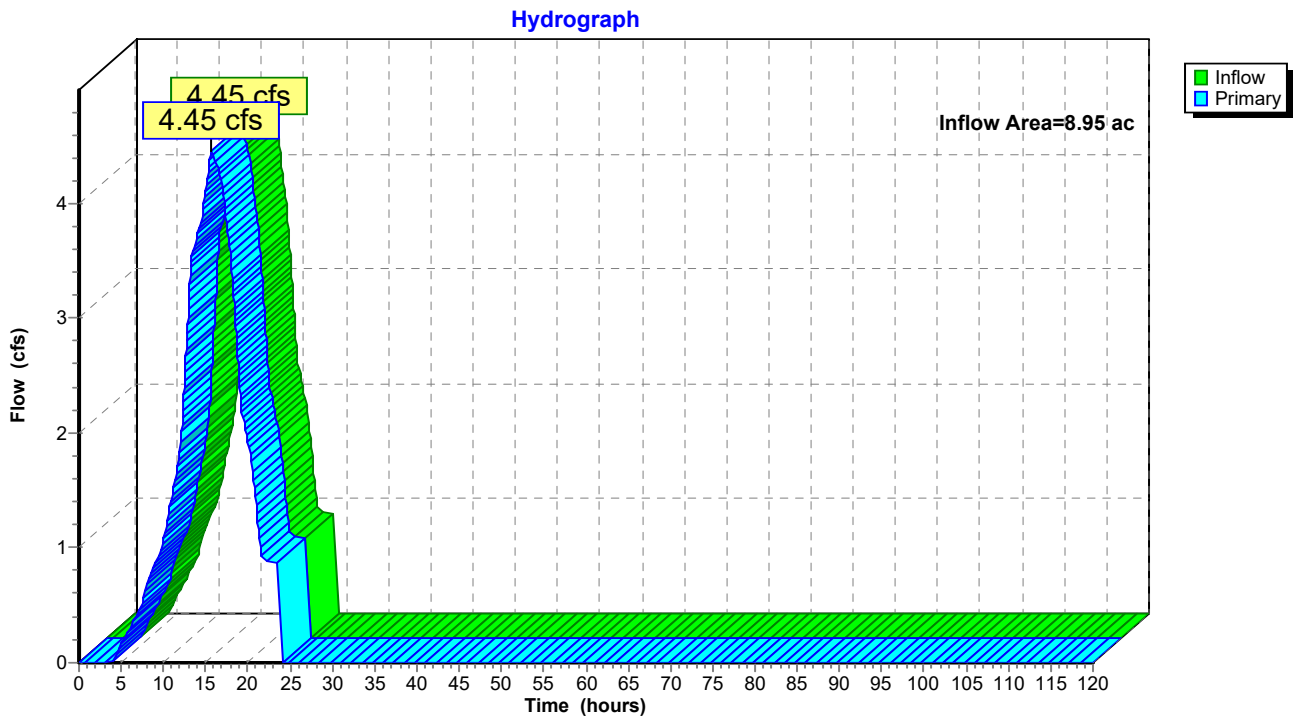


### Summary for Link LMW-PB: Lake Michigan Watershed - Perimeter Berm

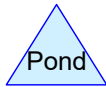
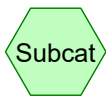
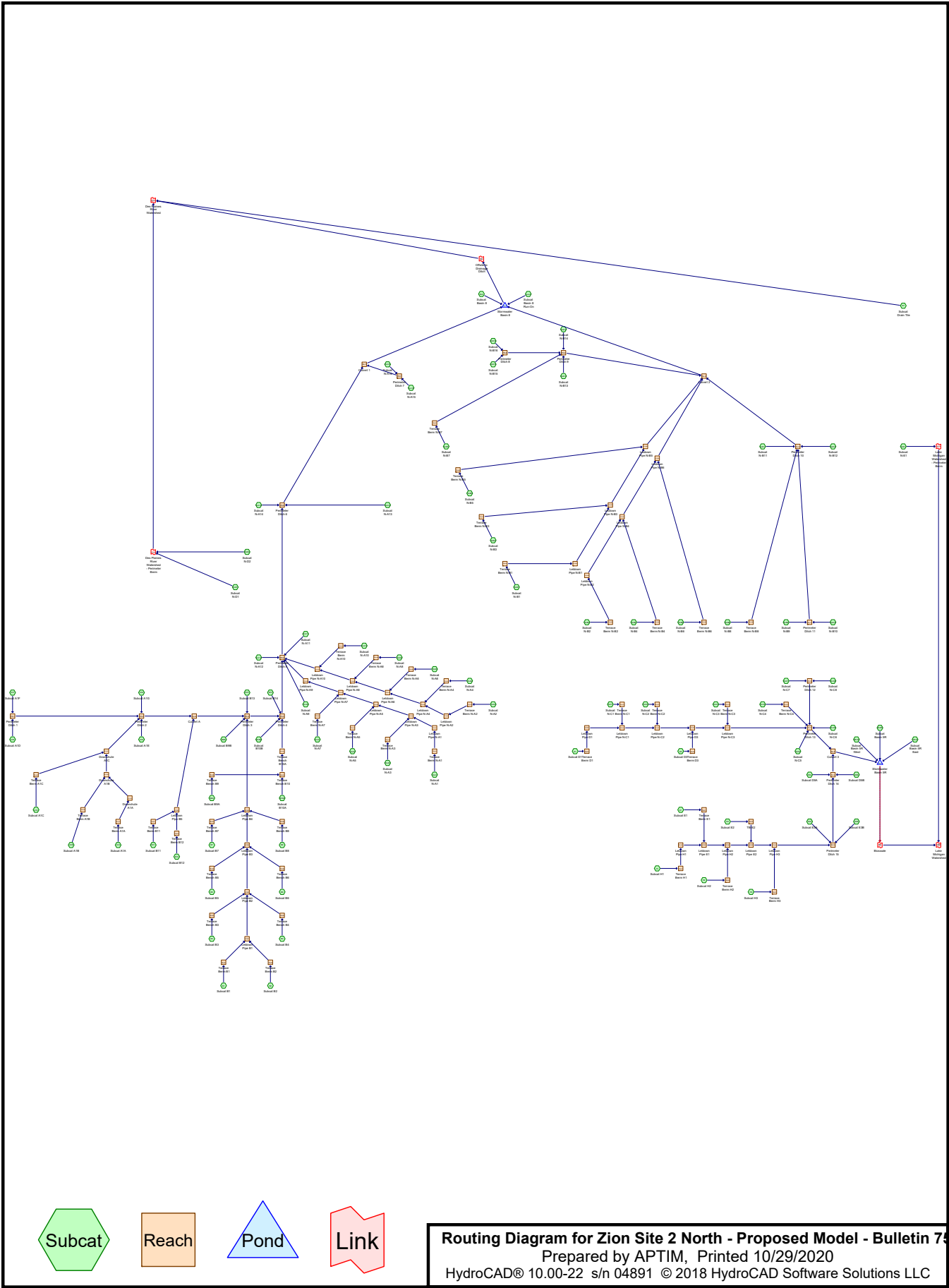
Inflow Area = 8.95 ac, 0.00% Impervious, Inflow Depth = 4.19" for 25-Year, 24-Hour event  
Inflow = 4.45 cfs @ 15.66 hrs, Volume= 3.125 af  
Primary = 4.45 cfs @ 15.66 hrs, Volume= 3.125 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link LMW-PB: Lake Michigan Watershed - Perimeter Berm



HydroCAD Output Files  
**Proposed Conditions – 100-year, 1-hour**



**Routing Diagram for Zion Site 2 North - Proposed Model - Bulletin 75**

Prepared by APTIM, Printed 10/29/2020

HydroCAD® 10.00-22 s/n 04891 © 2018 HydroCAD Software Solutions LLC

**Summary for Subcatchment 5R-E: Subcat Basin 5R East**

Runoff = 7.56 cfs @ 0.24 hrs, Volume= 0.260 af, Depth= 2.07"

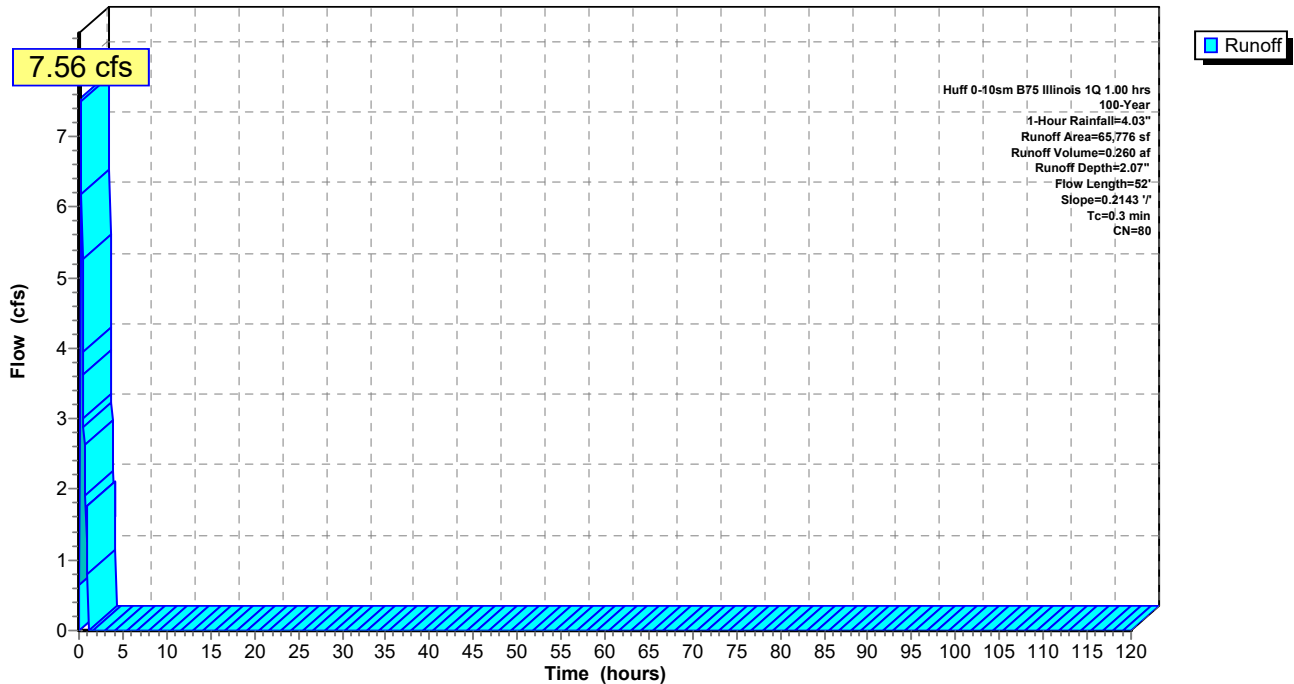
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

Area (sf)	CN	Description
65,776	80	>75% Grass cover, Good, HSG D
65,776		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	52	0.2143	2.92		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment 5R-E: Subcat Basin 5R East**

Hydrograph



**Summary for Subcatchment 5R-W: Subcat Basin 5R West**

Runoff = 2.99 cfs @ 0.23 hrs, Volume= 0.103 af, Depth= 2.07"

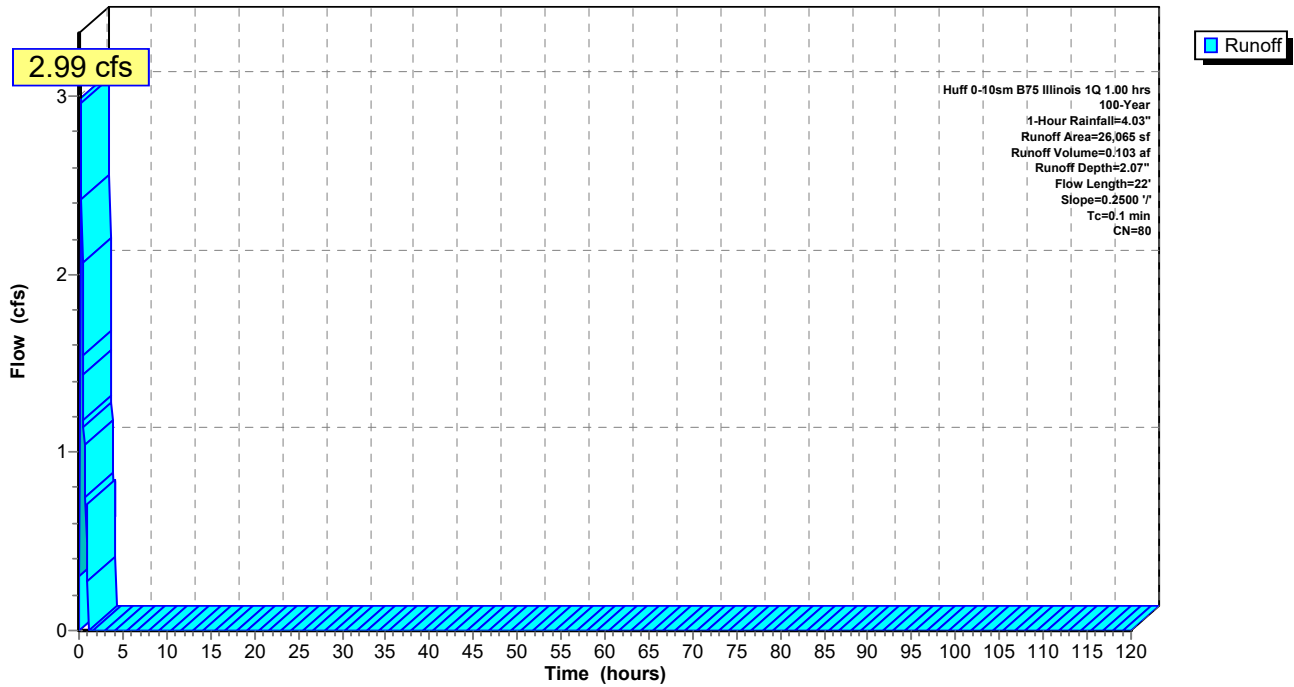
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

Area (sf)	CN	Description
26,065	80	>75% Grass cover, Good, HSG D
26,065		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	22	0.2500	2.61		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment 5R-W: Subcat Basin 5R West**

Hydrograph





**Summary for Subcatchment A1A: Subcat A1A**

Runoff = 25.84 cfs @ 0.43 hrs, Volume= 1.160 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

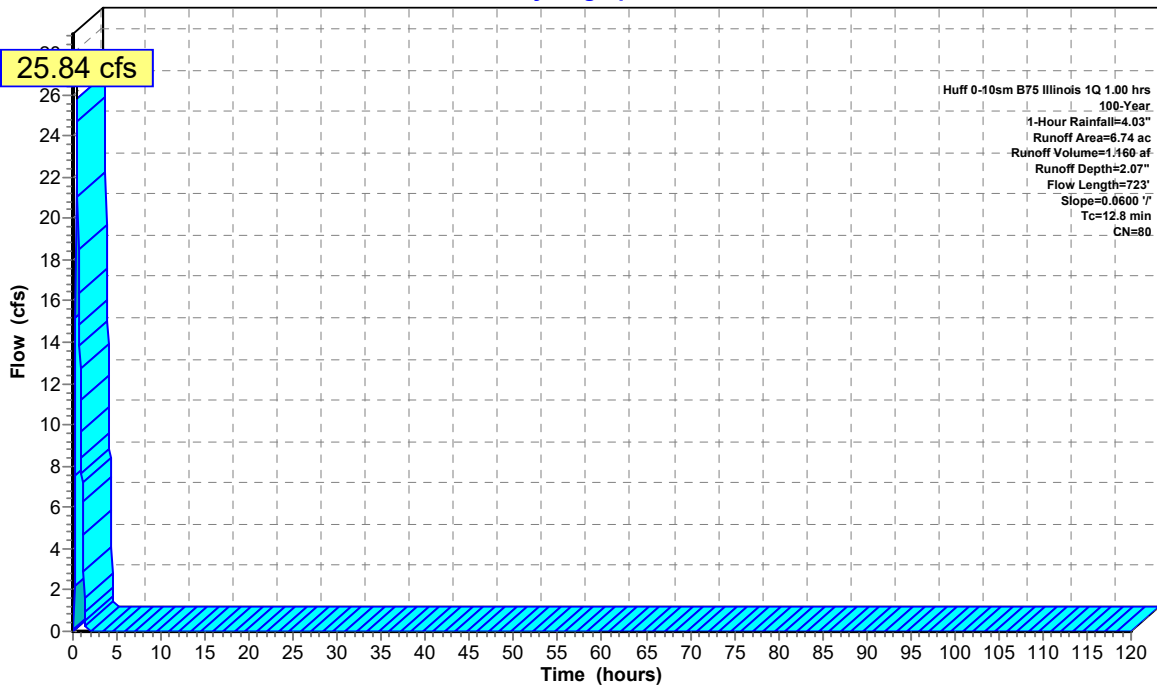
Area (ac)	CN	Description
6.74	80	>75% Grass cover, Good, HSG D
6.74		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	100	0.0600	0.25		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
6.1	623	0.0600	1.71		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
12.8	723	Total			

**Subcatchment A1A: Subcat A1A**

Hydrograph



Huff 0-10sm B75 Illinois 1Q 1.00 hrs  
 100-Year  
 1-Hour Rainfall=4.03"  
 Runoff Area=6.74 ac  
 Runoff Volume=1.160 af  
 Runoff Depth=2.07"  
 Flow Length=723'  
 Slope=0.0600 /'  
 Tc=12.8 min  
 CN=80

**Summary for Subcatchment A1B: Subcat A1B**

Runoff = 25.09 cfs @ 0.29 hrs, Volume= 0.900 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

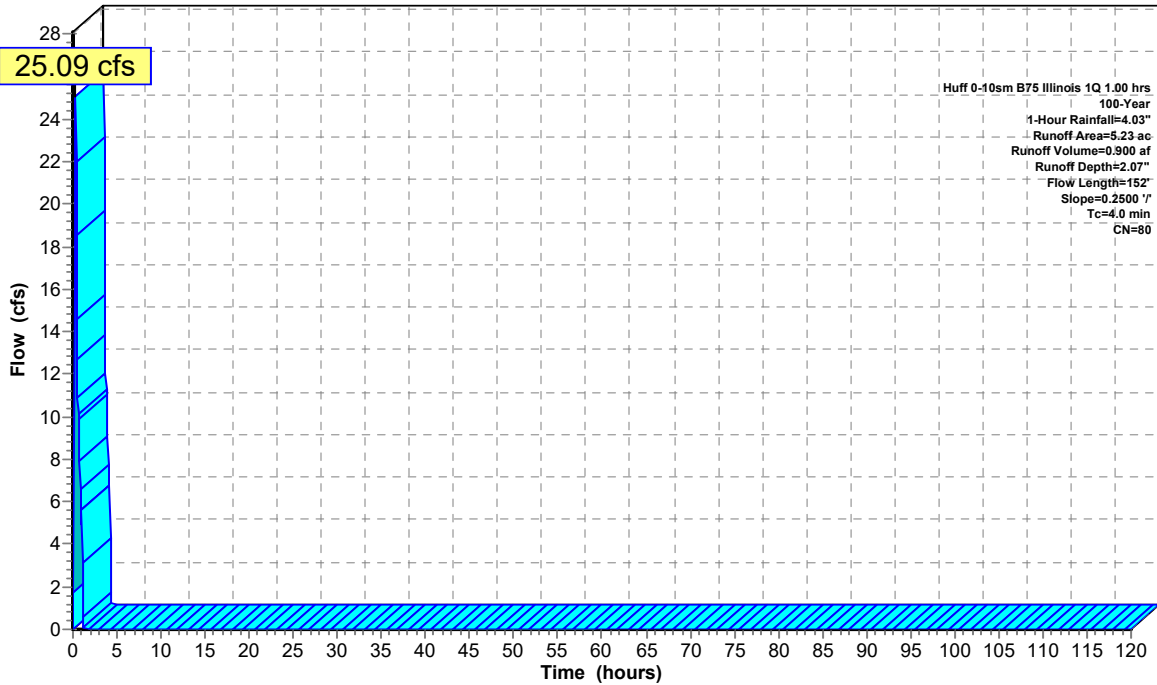
Area (ac)	CN	Description
5.23	80	>75% Grass cover, Good, HSG D
5.23		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	52	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	152	Total			

**Subcatchment A1B: Subcat A1B**

Hydrograph



Runoff

**Summary for Subcatchment A1C: Subcat A1C**

Runoff = 27.84 cfs @ 0.59 hrs, Volume= 1.578 af, Depth= 2.07"

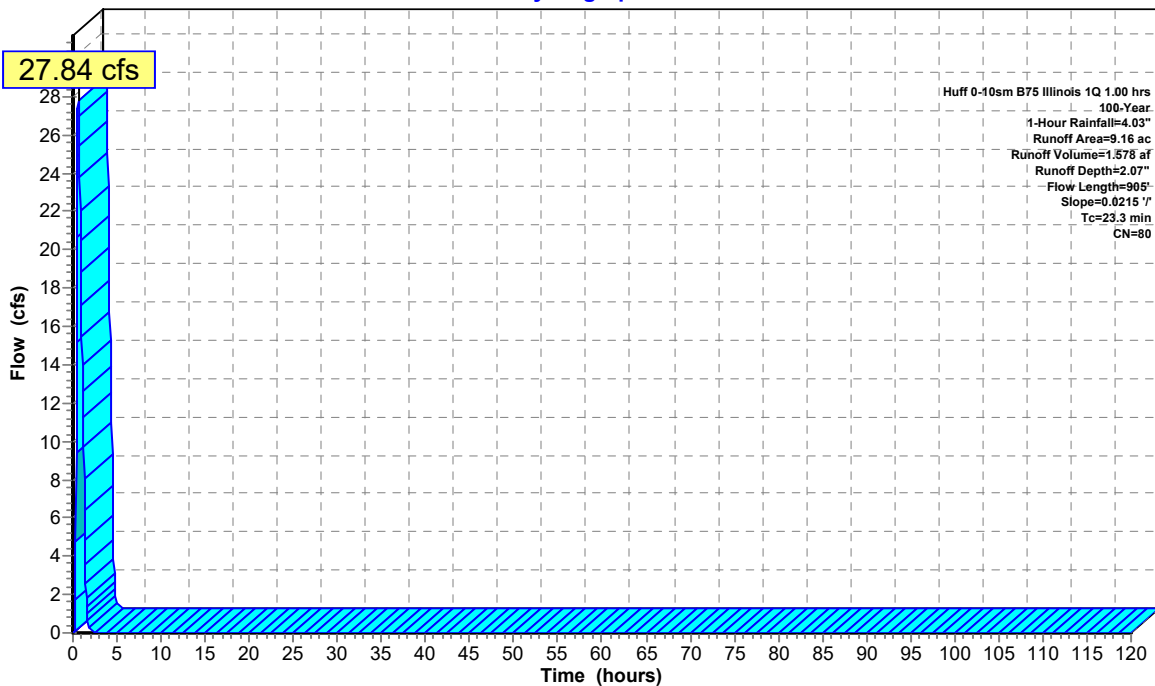
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

Area (ac)	CN	Description
8.89	80	>75% Grass cover, Good, HSG D
0.27	93	Paved roads w/open ditches, 50% imp, HSG D
9.16	80	Weighted Average
9.03		98.52% Pervious Area
0.14		1.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.0215	0.16		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
13.1	805	0.0215	1.03		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
23.3	905	Total			

**Subcatchment A1C: Subcat A1C**

Hydrograph



Runoff

Huff 0-10sm B75 Illinois 1Q 1.00 hrs  
 100-Year  
 1-Hour Rainfall=4.03"  
 Runoff Area=9.16 ac  
 Runoff Volume=1.578 af  
 Runoff Depth=2.07"  
 Flow Length=905'  
 Slope=0.0215 /'  
 Tc=23.3 min  
 CN=80

**Summary for Subcatchment A1D: Subcat A1D**

Runoff = 31.91 cfs @ 0.33 hrs, Volume= 1.217 af, Depth= 2.07"

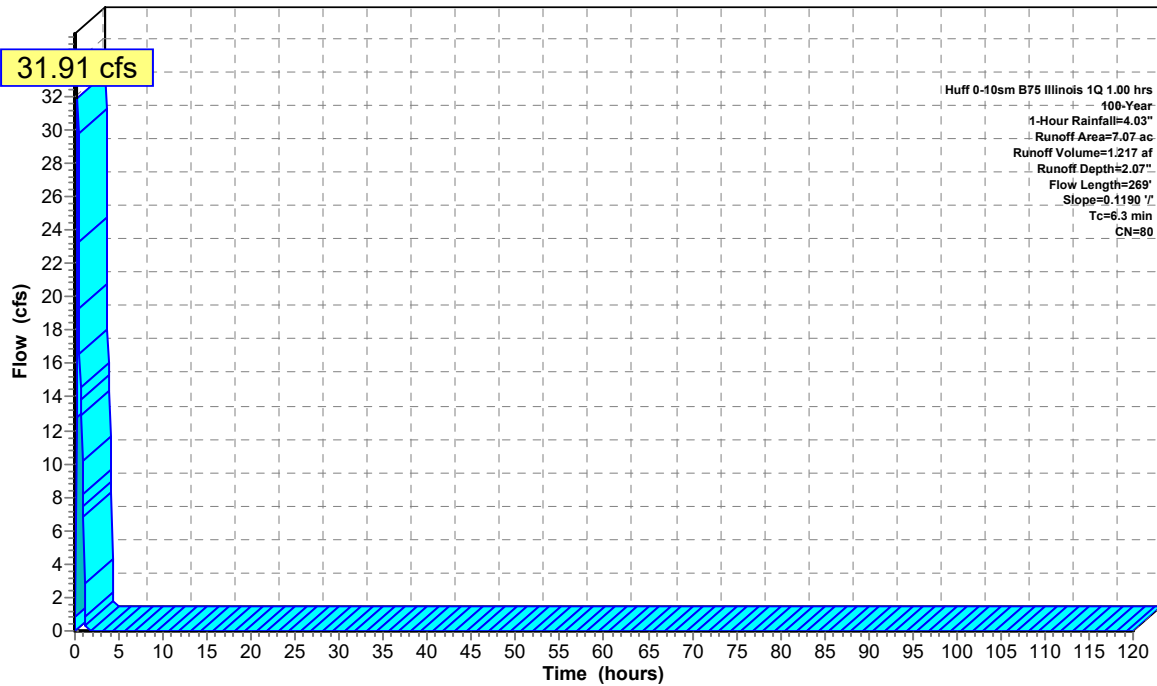
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

Area (ac)	CN	Description
6.97	80	>75% Grass cover, Good, HSG D
0.10	93	Paved roads w/open ditches, 50% imp, HSG D
7.07	80	Weighted Average
7.02		99.31% Pervious Area
0.05		0.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	100	0.1190	0.32		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.2	169	0.1190	2.41		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.3	269	Total			

**Subcatchment A1D: Subcat A1D**

Hydrograph



Runoff

### Summary for Subcatchment A1E: Subcat A1E

Runoff = 5.17 cfs @ 0.31 hrs, Volume= 0.189 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

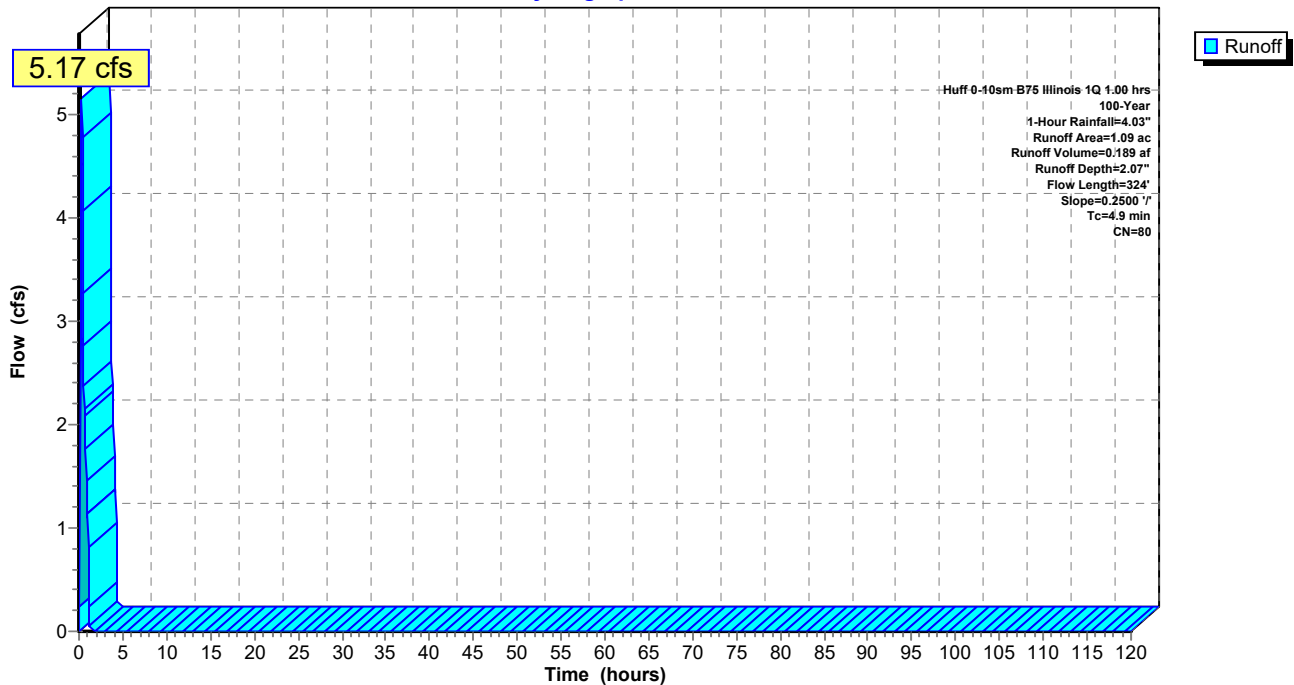
Area (ac)	CN	Description
1.09	80	>75% Grass cover, Good, HSG D
1.09		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.1	224	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.9	324	Total			

### Subcatchment A1E: Subcat A1E

Hydrograph



**Summary for Subcatchment A1F: Subcat A1F**

Runoff = 6.81 cfs @ 0.22 hrs, Volume= 0.227 af, Depth= 2.76"

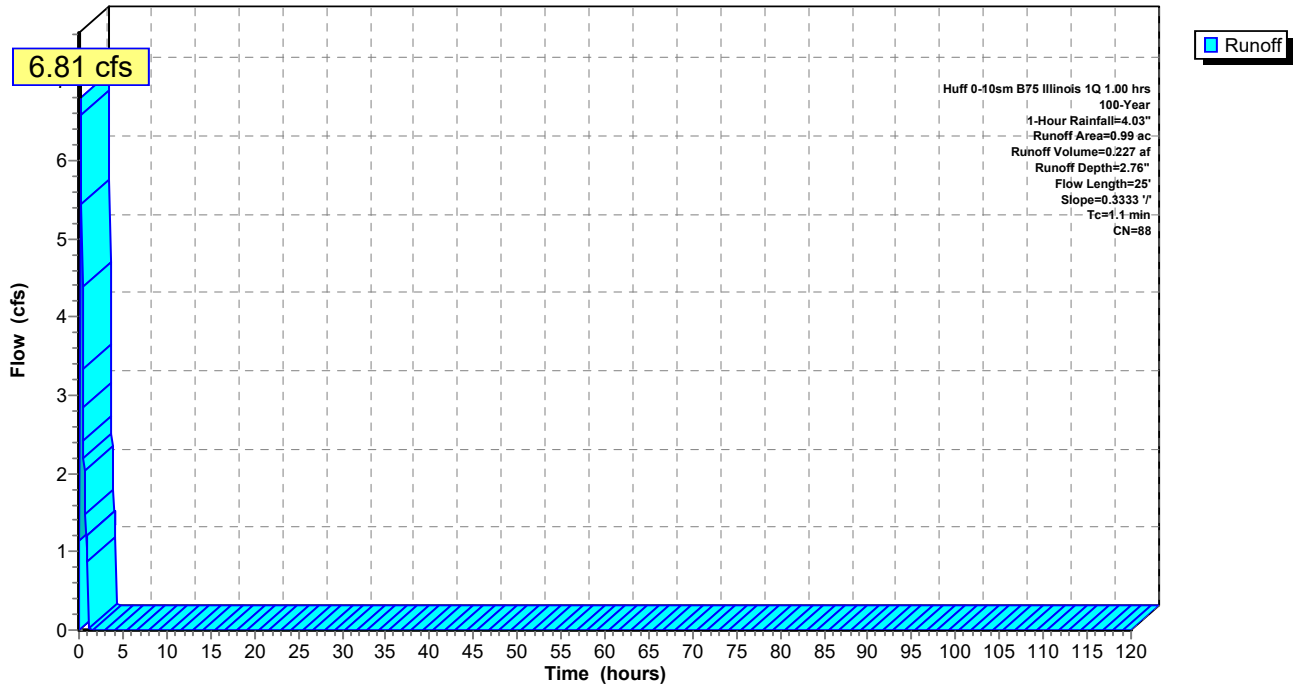
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

Area (ac)	CN	Description
0.36	80	>75% Grass cover, Good, HSG D
0.62	93	Paved roads w/open ditches, 50% imp, HSG D
0.99	88	Weighted Average
0.67		68.34% Pervious Area
0.31		31.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	25	0.3333	0.37		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment A1F: Subcat A1F**

Hydrograph



**Summary for Subcatchment A1G: Subcat A1G**

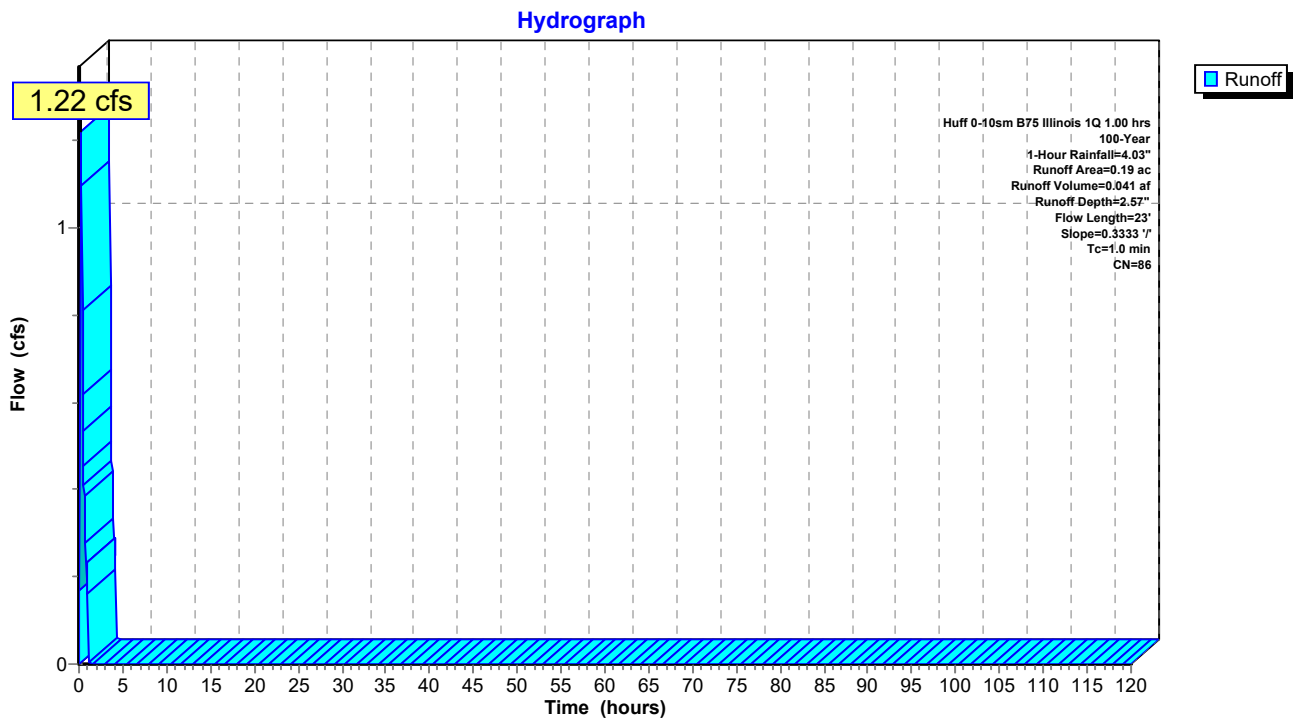
Runoff = 1.22 cfs @ 0.23 hrs, Volume= 0.041 af, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

Area (ac)	CN	Description
0.11	80	>75% Grass cover, Good, HSG D
0.09	93	Paved roads w/open ditches, 50% imp, HSG D
0.19	86	Weighted Average
0.15		77.34% Pervious Area
0.04		22.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	23	0.3333	0.37		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment A1G: Subcat A1G**



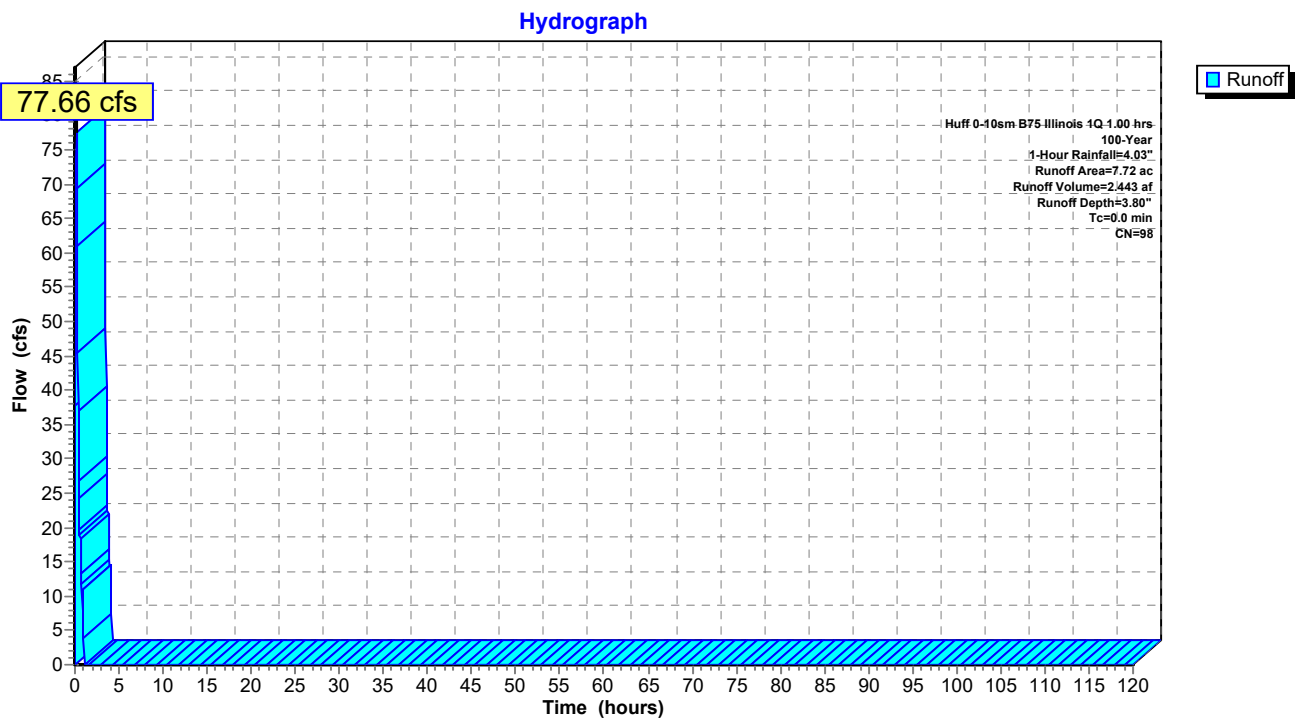
**Summary for Subcatchment B-5R: Subcat Basin 5R**

Runoff = 77.66 cfs @ 0.15 hrs, Volume= 2.443 af, Depth= 3.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

Area (ac)	CN	Description
7.72	98	Water Surface, HSG D
7.72		100.00% Impervious Area

**Subcatchment B-5R: Subcat Basin 5R**





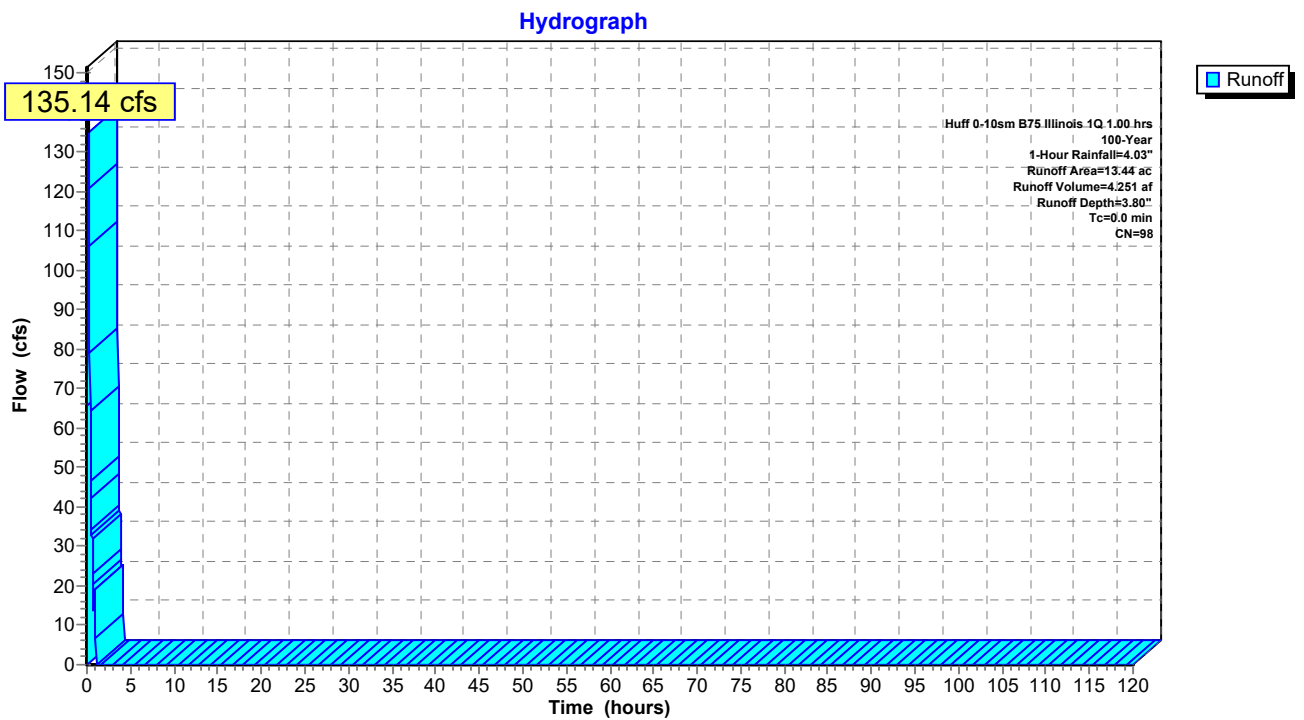
### Summary for Subcatchment B-8: Subcat Basin 8

Runoff = 135.14 cfs @ 0.15 hrs, Volume= 4.251 af, Depth= 3.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

Area (ac)	CN	Description
13.44	98	Water Surface, HSG D
13.44		100.00% Impervious Area

### Subcatchment B-8: Subcat Basin 8



**Summary for Subcatchment B-8-RO: Subcat Basin 8 Run-On**

Runoff = 21.46 cfs @ 0.29 hrs, Volume= 0.761 af, Depth= 2.23"

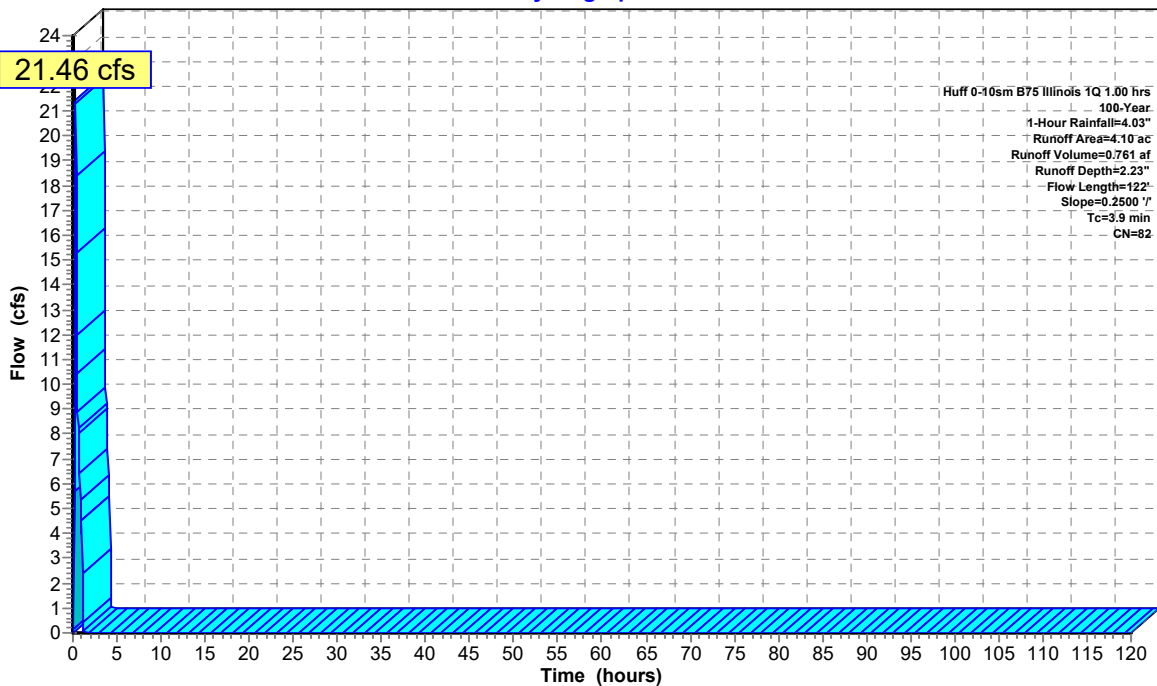
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

Area (ac)	CN	Description
3.50	80	>75% Grass cover, Good, HSG D
0.60	93	Paved roads w/open ditches, 50% imp, HSG D
4.10	82	Weighted Average
3.80		92.68% Pervious Area
0.30		7.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	22	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	122	Total			

**Subcatchment B-8-RO: Subcat Basin 8 Run-On**

Hydrograph



Runoff

**Summary for Subcatchment B1: Subcat B1**

Runoff = 9.17 cfs @ 0.33 hrs, Volume= 0.351 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

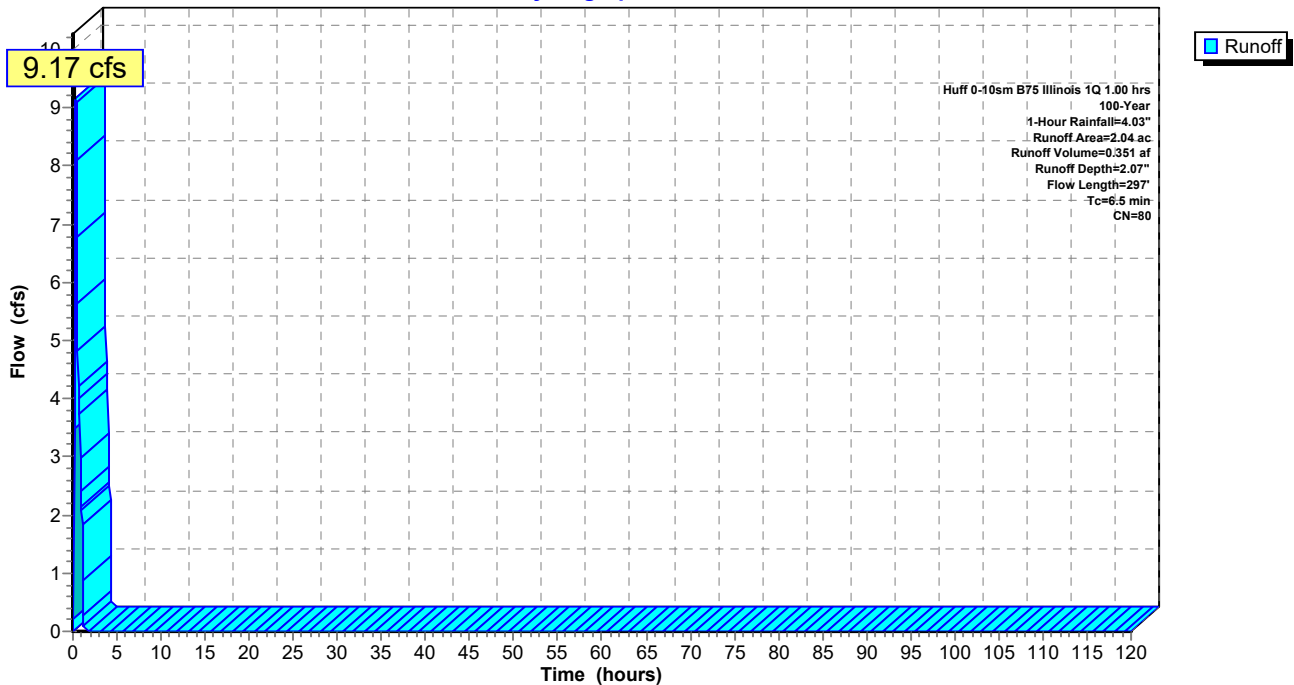
Area (ac)	CN	Description
2.04	80	>75% Grass cover, Good, HSG D
2.04		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.0	197	0.2132	3.23		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.5	297	Total			

**Subcatchment B1: Subcat B1**

Hydrograph



**Summary for Subcatchment B10A: Subcat B10A**

Runoff = 3.93 cfs @ 0.28 hrs, Volume= 0.140 af, Depth= 2.07"

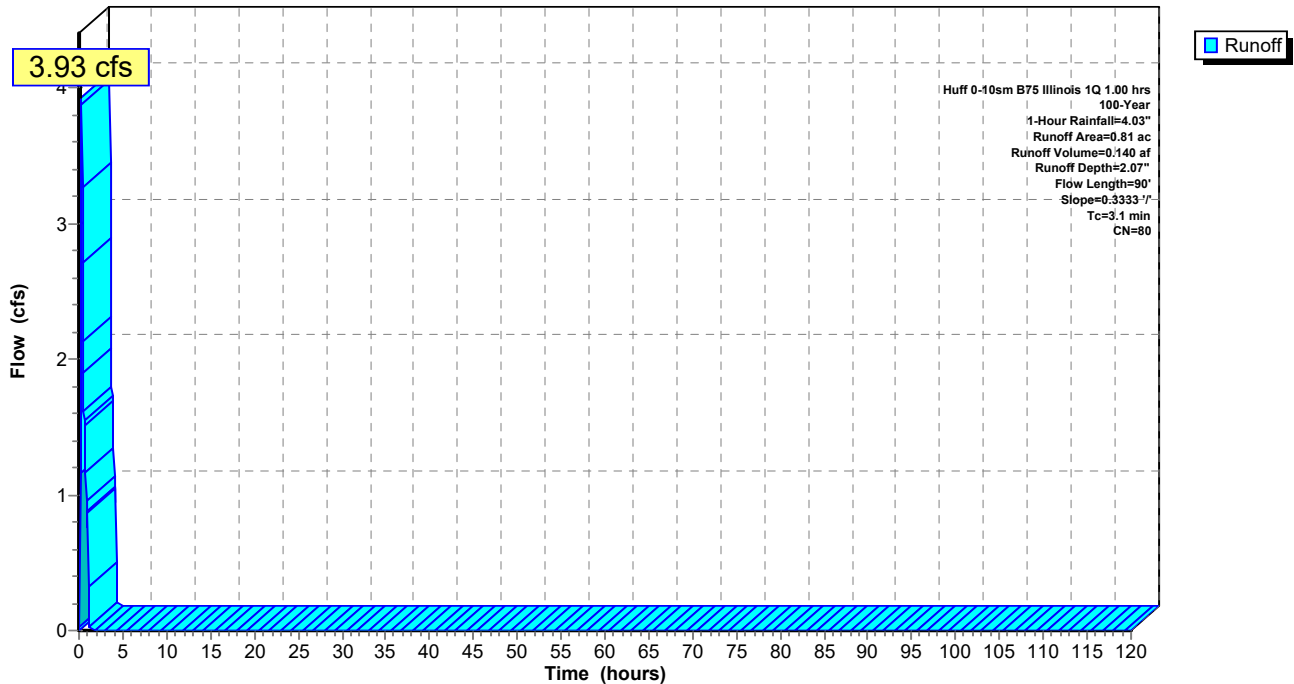
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

Area (ac)	CN	Description
0.81	80	>75% Grass cover, Good, HSG D
0.81		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	90	0.3333	0.48		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B10A: Subcat B10A**

Hydrograph



**Summary for Subcatchment B10B: Subcat B10B**

Runoff = 2.60 cfs @ 0.26 hrs, Volume= 0.091 af, Depth= 2.07"

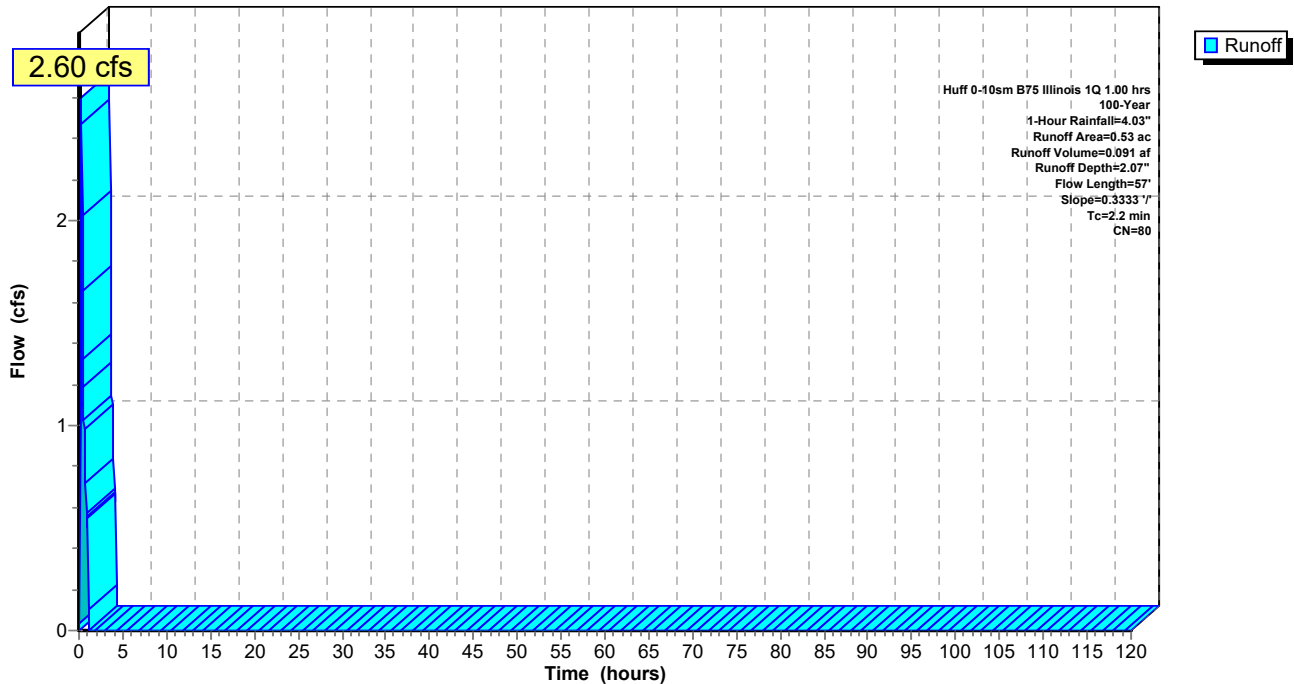
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

Area (ac)	CN	Description
0.53	80	>75% Grass cover, Good, HSG D
0.53		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	57	0.3333	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B10B: Subcat B10B**

Hydrograph



**Summary for Subcatchment B11: Subcat B11**

Runoff = 8.68 cfs @ 0.43 hrs, Volume= 0.391 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

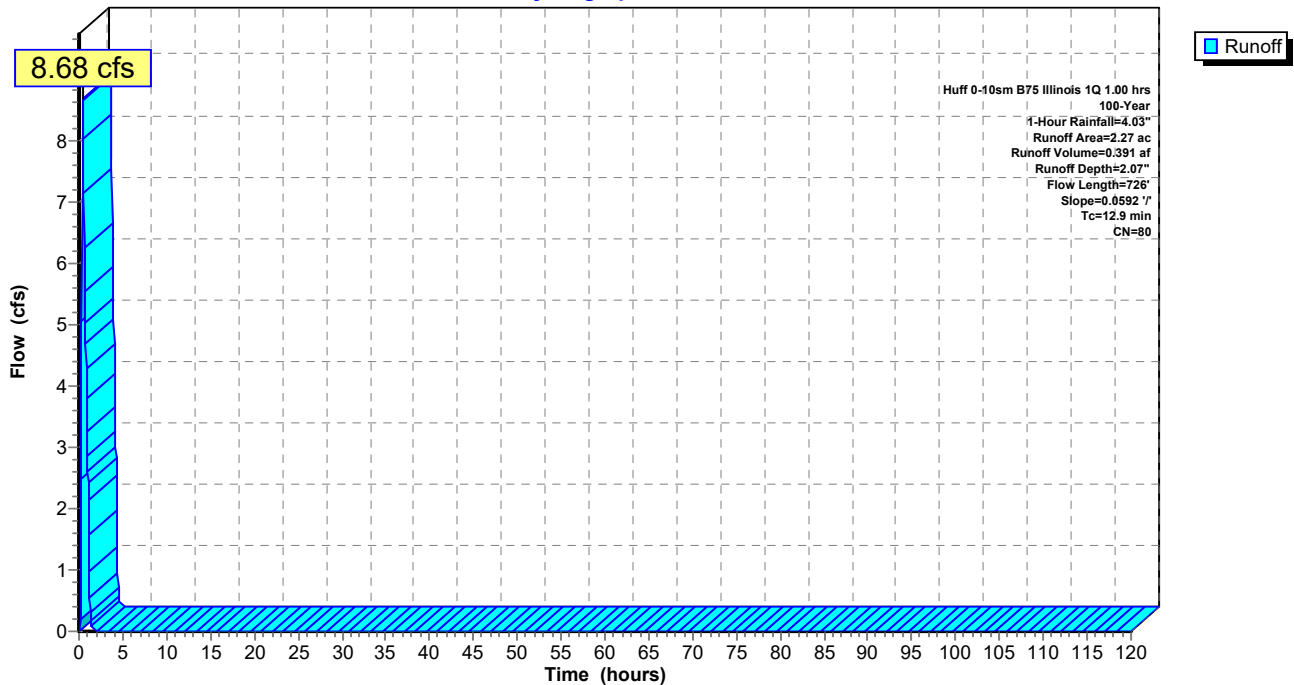
Area (ac)	CN	Description
2.27	80	>75% Grass cover, Good, HSG D
2.27		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	100	0.0592	0.25		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
6.1	626	0.0592	1.70		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
12.9	726	Total			

**Subcatchment B11: Subcat B11**

Hydrograph



**Summary for Subcatchment B12: Subcat B12**

Runoff = 5.76 cfs @ 0.29 hrs, Volume= 0.207 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

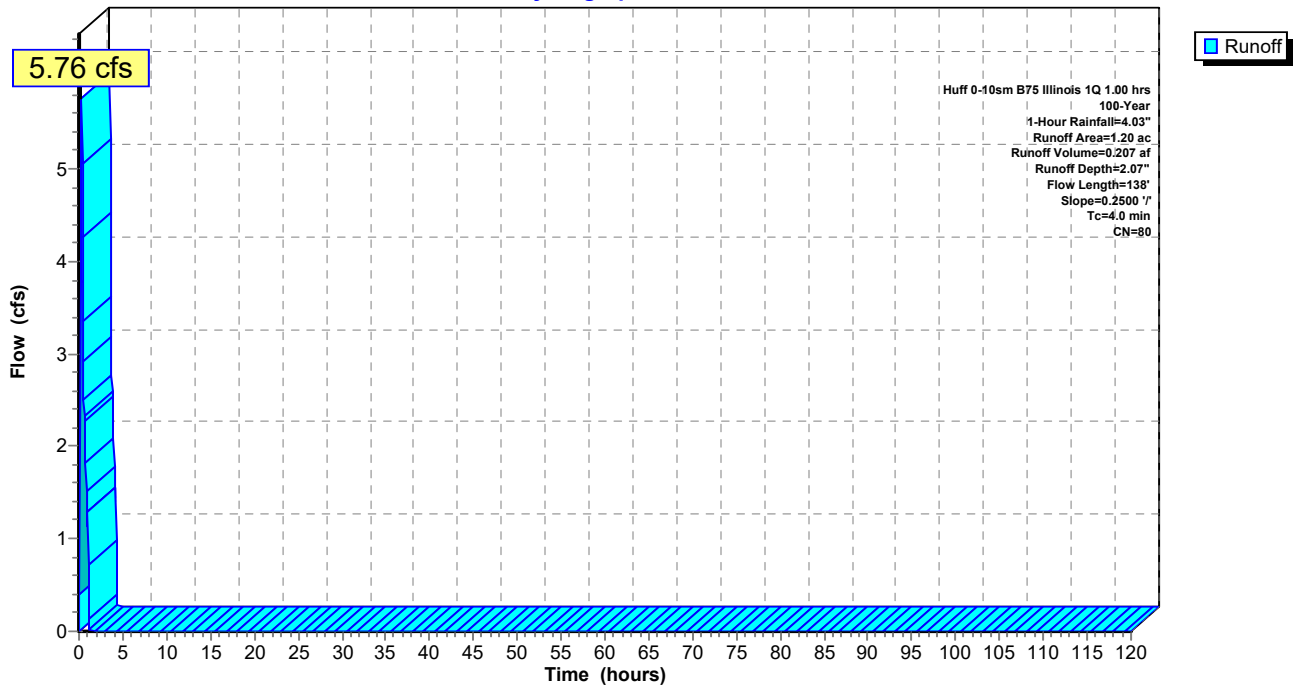
Area (ac)	CN	Description
1.20	80	>75% Grass cover, Good, HSG D
1.20		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	38	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	138	Total			

**Subcatchment B12: Subcat B12**

Hydrograph



**Summary for Subcatchment B13: Subcat B13**

Runoff = 2.05 cfs @ 0.23 hrs, Volume= 0.069 af, Depth= 2.57"

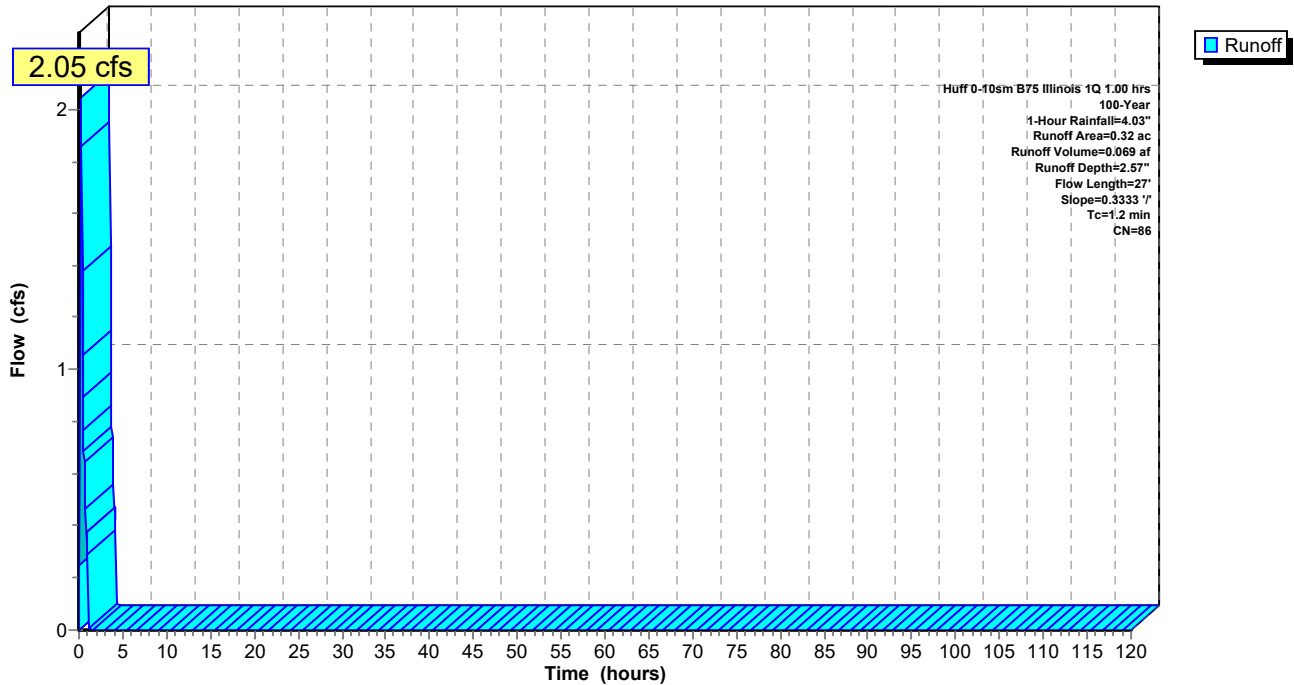
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

Area (ac)	CN	Description
0.17	80	>75% Grass cover, Good, HSG D
* 0.15	93	Paved roads w/open ditches, 50% imp, HSG D
0.32	86	Weighted Average
0.24		75.93% Pervious Area
0.08		24.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	27	0.3333	0.38		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B13: Subcat B13**

Hydrograph





**Summary for Subcatchment B14: Subcat B14**

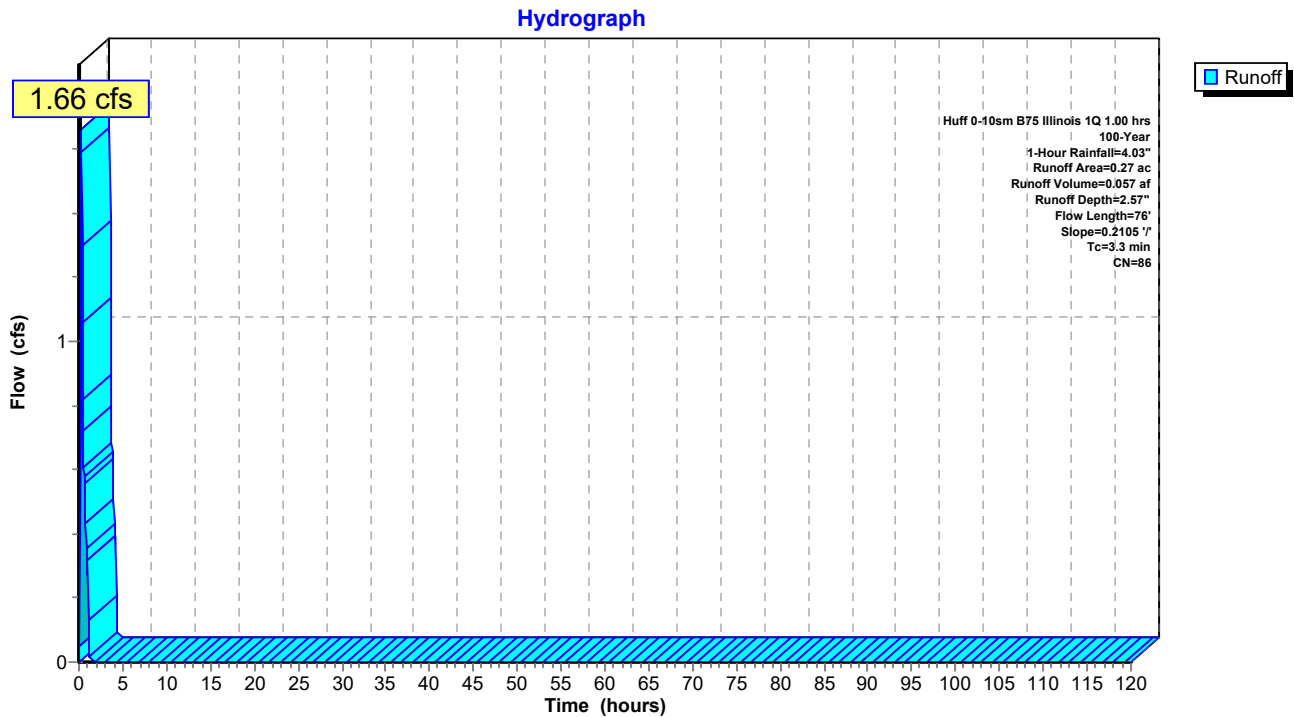
Runoff = 1.66 cfs @ 0.26 hrs, Volume= 0.057 af, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

Area (ac)	CN	Description
0.14	80	>75% Grass cover, Good, HSG D
0.13	93	Paved roads w/open ditches, 50% imp, HSG D
0.27	86	Weighted Average
0.21		76.49% Pervious Area
0.06		23.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	76	0.2105	0.39		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B14: Subcat B14**



**Summary for Subcatchment B2: Subcat B2**

Runoff = 12.39 cfs @ 0.33 hrs, Volume= 0.472 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

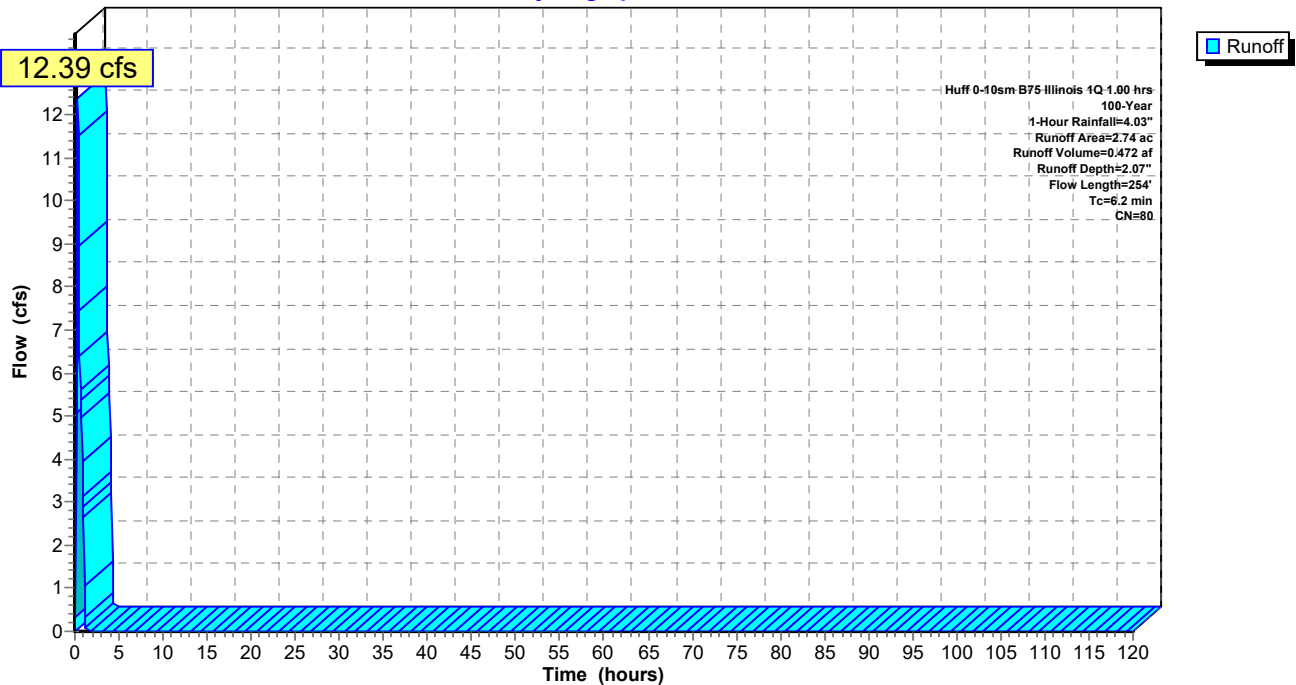
Area (ac)	CN	Description
2.74	80	>75% Grass cover, Good, HSG D
2.74		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.7	154	0.2403	3.43		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.2	254	Total			

**Subcatchment B2: Subcat B2**

Hydrograph



**Summary for Subcatchment B3: Subcat B3**

Runoff = 10.59 cfs @ 0.29 hrs, Volume= 0.381 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

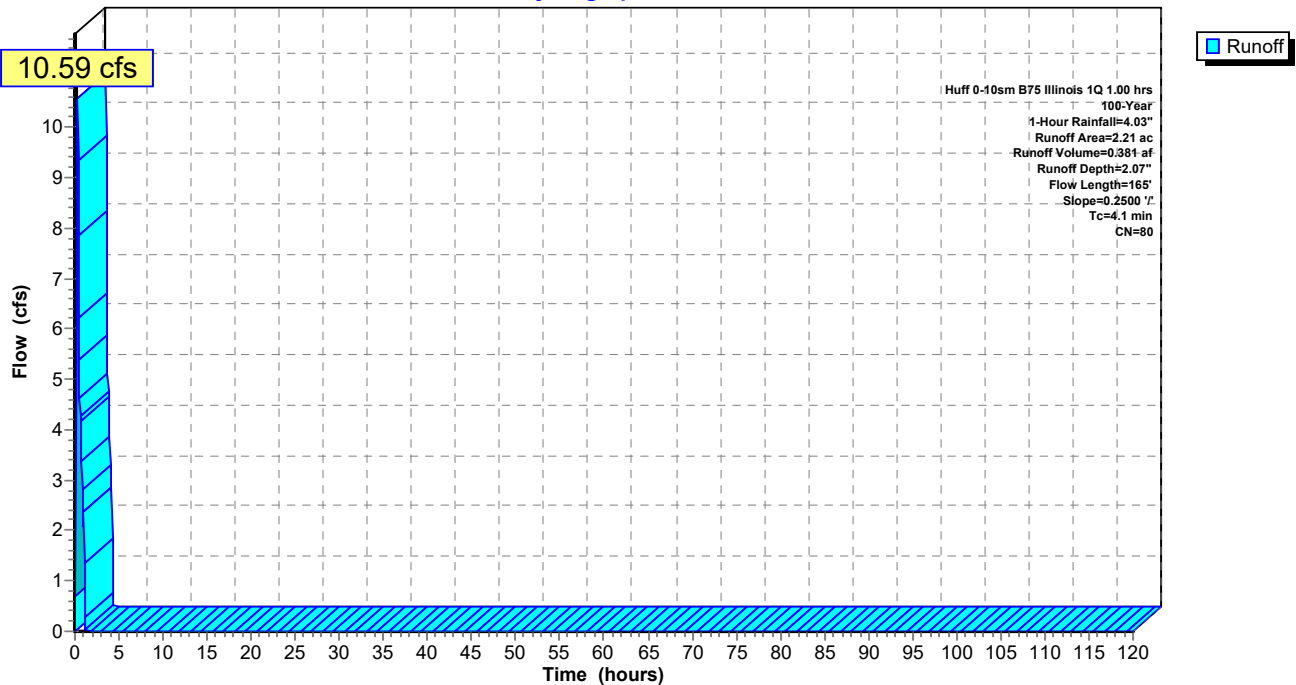
Area (ac)	CN	Description
2.21	80	>75% Grass cover, Good, HSG D
2.21		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.3	65	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	165	Total			

**Subcatchment B3: Subcat B3**

Hydrograph



**Summary for Subcatchment B4: Subcat B4**

Runoff = 8.96 cfs @ 0.29 hrs, Volume= 0.322 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

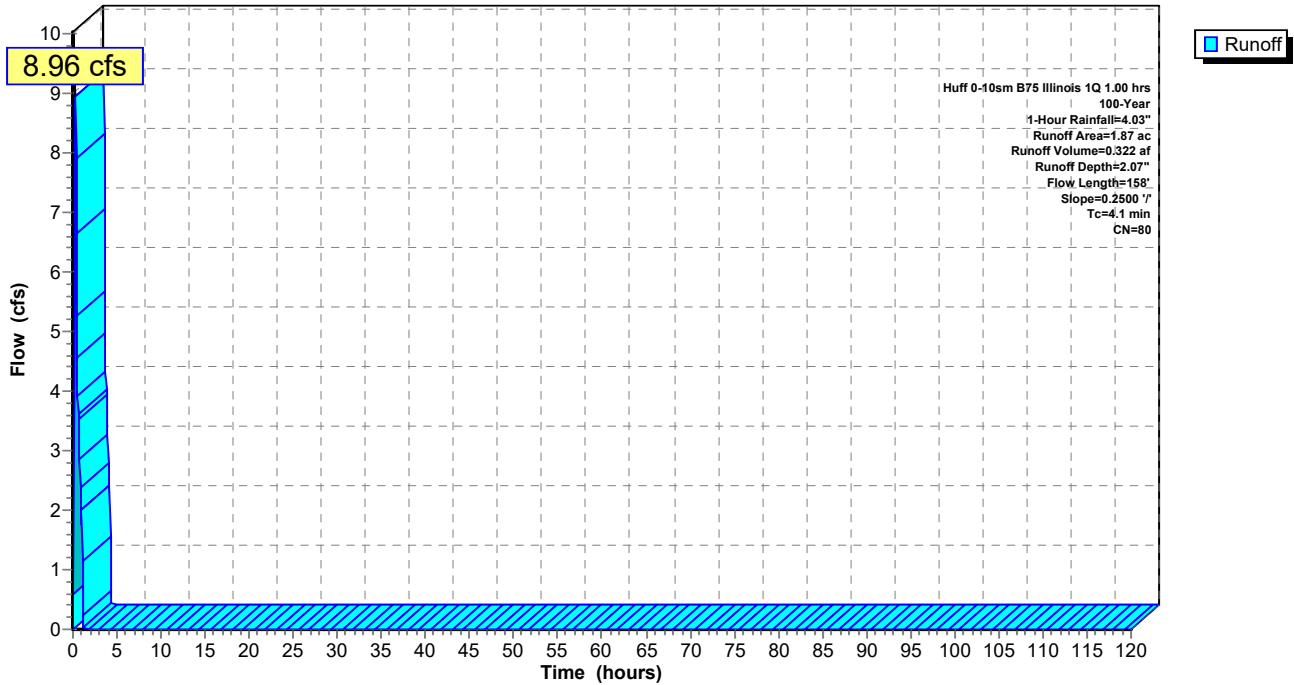
Area (ac)	CN	Description
1.87	80	>75% Grass cover, Good, HSG D
1.87		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.3	58	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	158	Total			

**Subcatchment B4: Subcat B4**

Hydrograph



**Summary for Subcatchment B5: Subcat B5**

Runoff = 9.34 cfs @ 0.28 hrs, Volume= 0.332 af, Depth= 2.07"

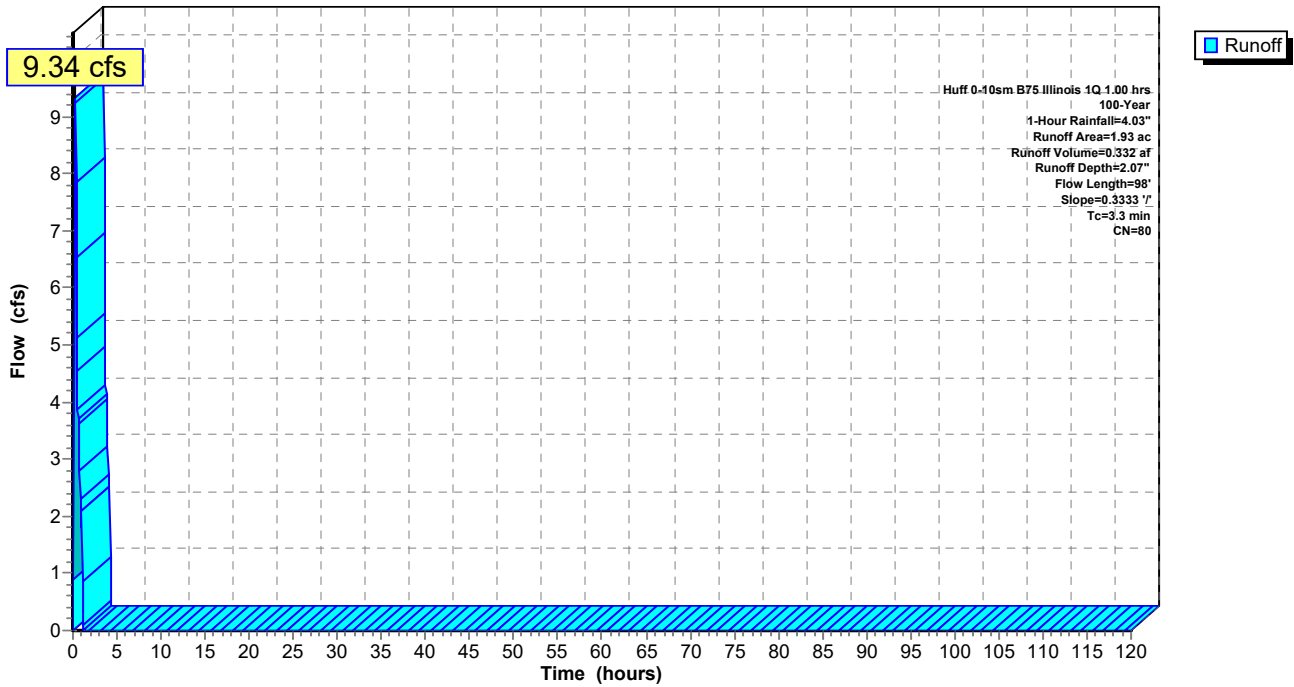
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

Area (ac)	CN	Description
1.93	80	>75% Grass cover, Good, HSG D
1.93		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	98	0.3333	0.49		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B5: Subcat B5**

Hydrograph



**Summary for Subcatchment B6: Subcat B6**

Runoff = 5.68 cfs @ 0.29 hrs, Volume= 0.203 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

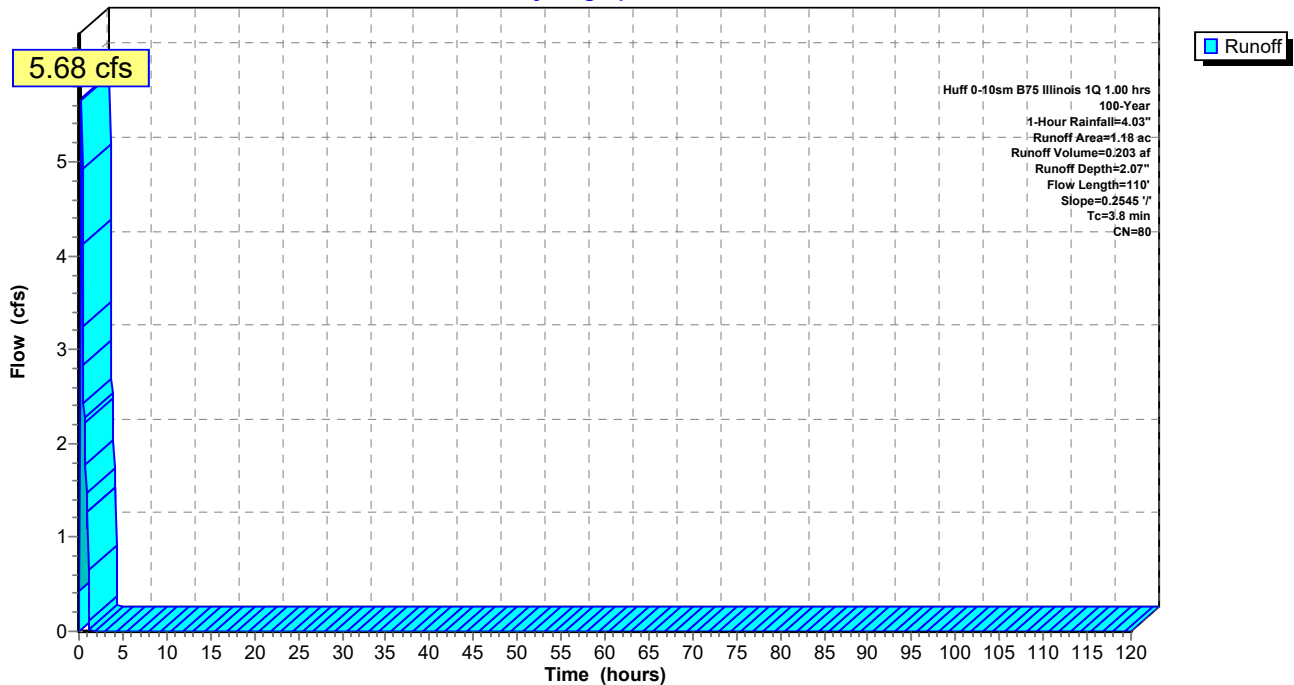
Area (ac)	CN	Description
1.18	80	>75% Grass cover, Good, HSG D
1.18		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2545	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.0	10	0.2545	3.53		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.8	110	Total			

**Subcatchment B6: Subcat B6**

Hydrograph



**Summary for Subcatchment B7: Subcat B7**

Runoff = 10.59 cfs @ 0.28 hrs, Volume= 0.377 af, Depth= 2.07"

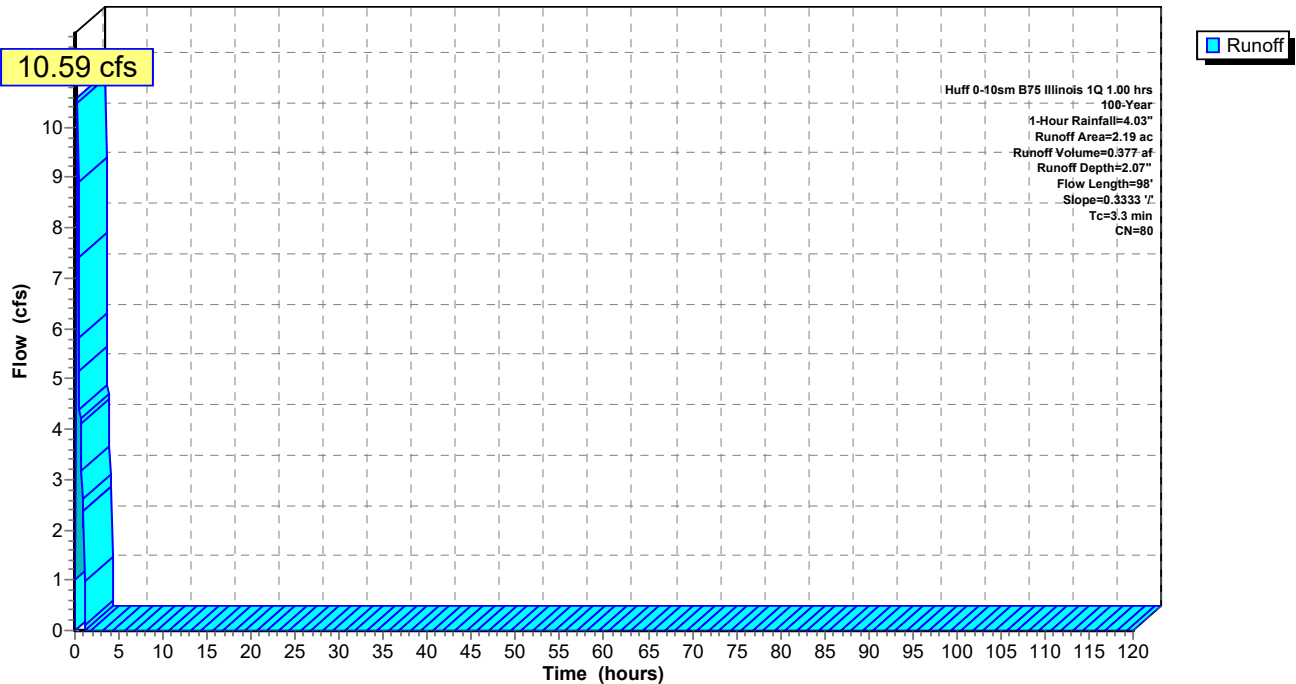
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

Area (ac)	CN	Description
2.19	80	>75% Grass cover, Good, HSG D
2.19		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	98	0.3333	0.49		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B7: Subcat B7**

Hydrograph



**Summary for Subcatchment B8: Subcat B8**

Runoff = 5.64 cfs @ 0.29 hrs, Volume= 0.201 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

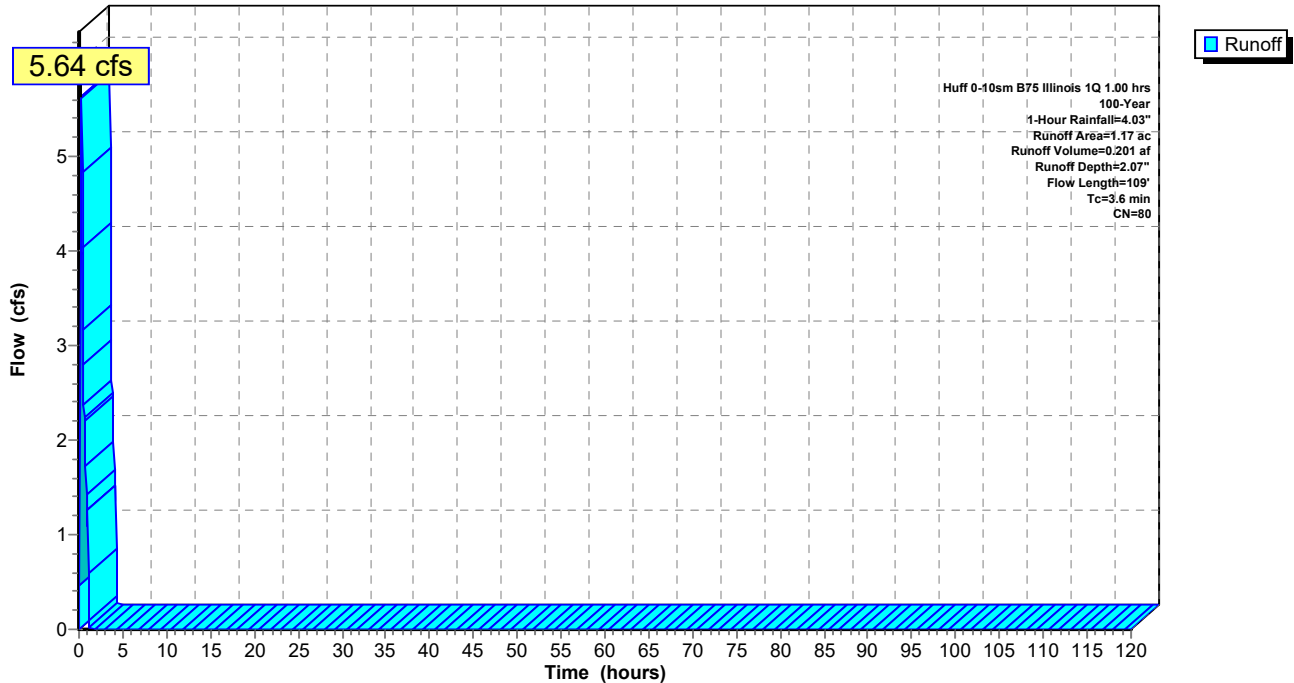
Area (ac)	CN	Description
1.17	80	>75% Grass cover, Good, HSG D
1.17		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	100	0.2873	0.46		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.0	9	0.2574	3.55		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.6	109	Total			

**Subcatchment B8: Subcat B8**

Hydrograph





**Summary for Subcatchment B9A: Subcat B9A**

Runoff = 7.01 cfs @ 0.27 hrs, Volume= 0.247 af, Depth= 2.07"

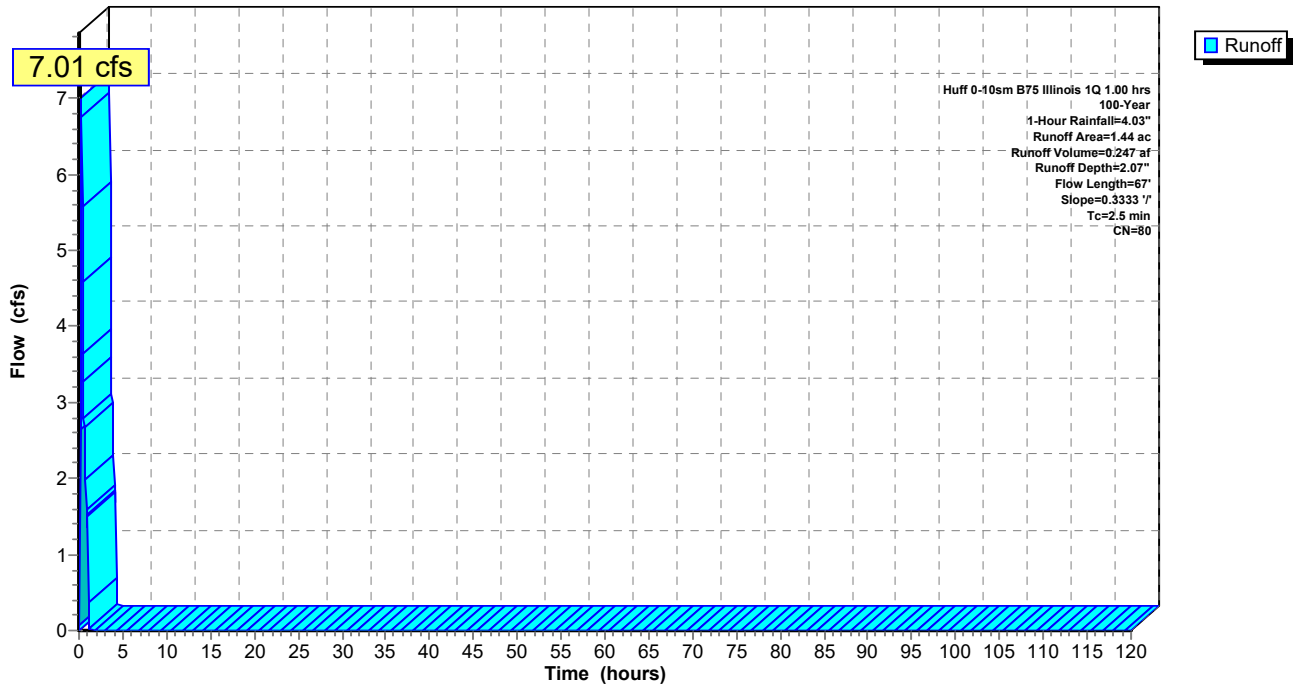
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

Area (ac)	CN	Description
1.44	80	>75% Grass cover, Good, HSG D
1.44		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	67	0.3333	0.45		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B9A: Subcat B9A**

Hydrograph



**Summary for Subcatchment B9B: Subcat B9B**

Runoff = 3.00 cfs @ 0.26 hrs, Volume= 0.105 af, Depth= 2.07"

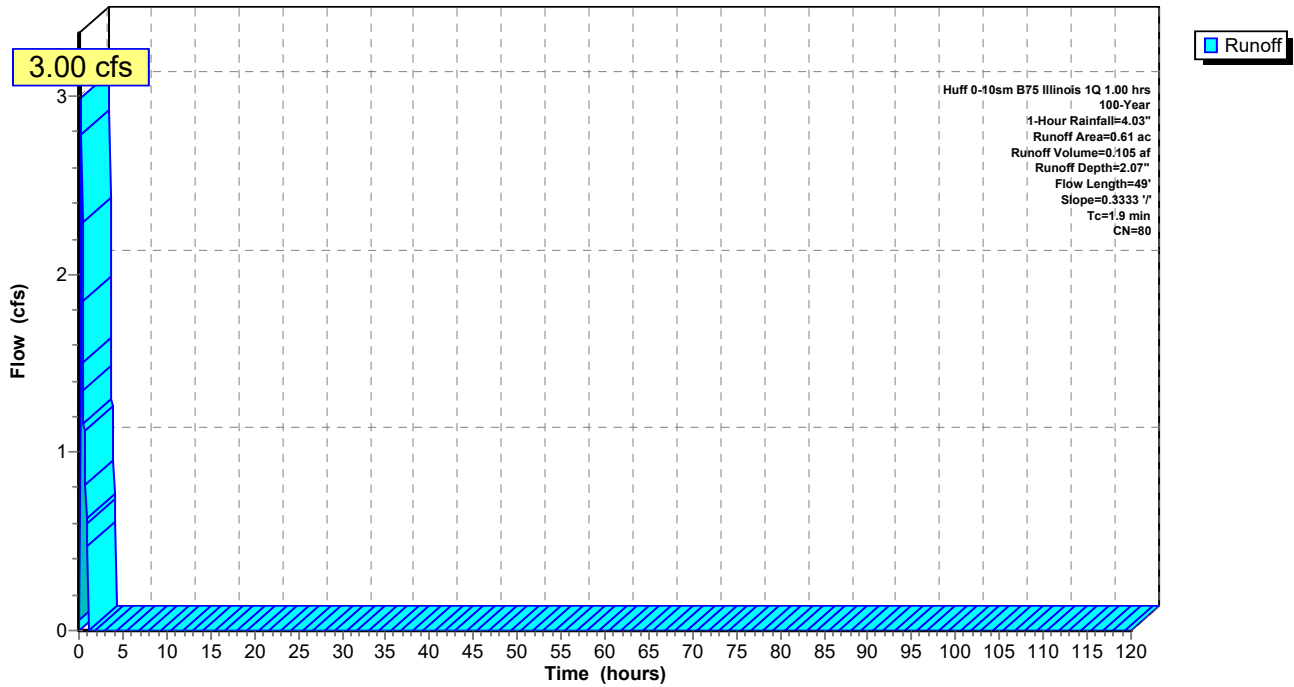
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

Area (ac)	CN	Description
0.61	80	>75% Grass cover, Good, HSG D
0.61		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	49	0.3333	0.43		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B9B: Subcat B9B**

Hydrograph



**Summary for Subcatchment D1: Subcat D1**

Runoff = 5.64 cfs @ 0.33 hrs, Volume= 0.216 af, Depth= 2.07"

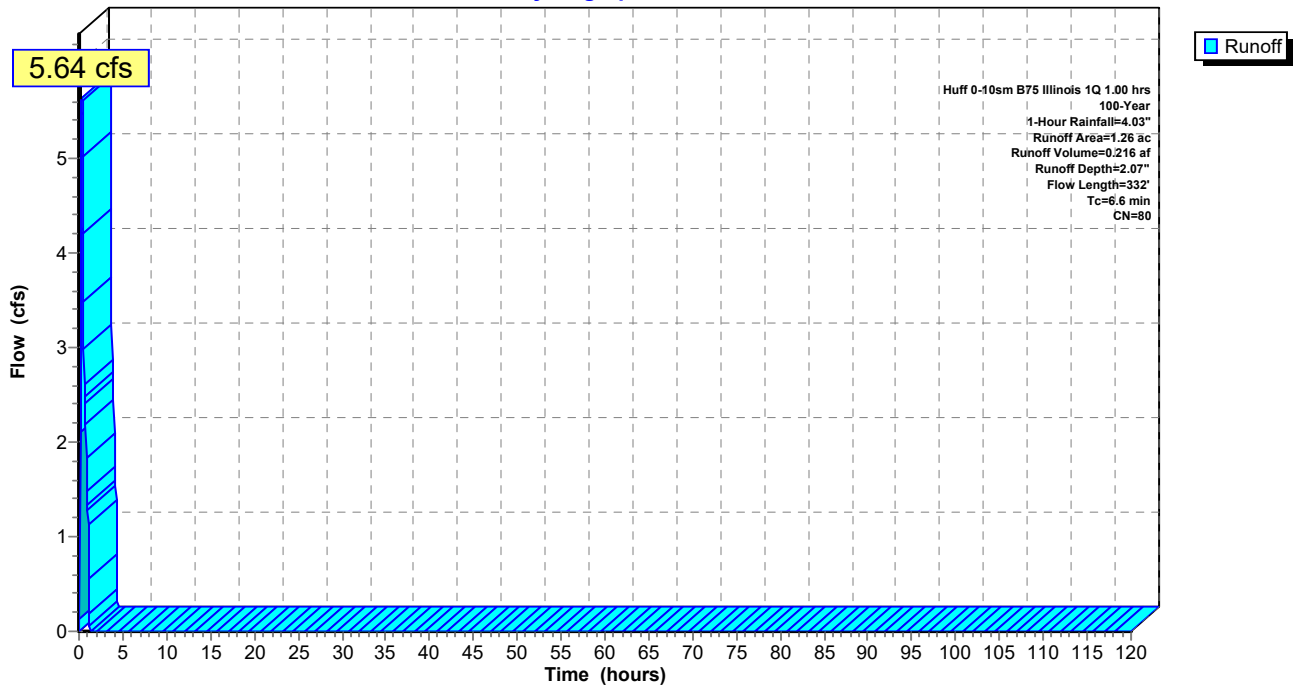
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

Area (ac)	CN	Description
1.26	80	>75% Grass cover, Good, HSG D
1.26		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.1	232	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.6	332	Total			

**Subcatchment D1: Subcat D1**

Hydrograph



**Summary for Subcatchment D3: Subcat D3**

Runoff = 6.34 cfs @ 0.30 hrs, Volume= 0.230 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

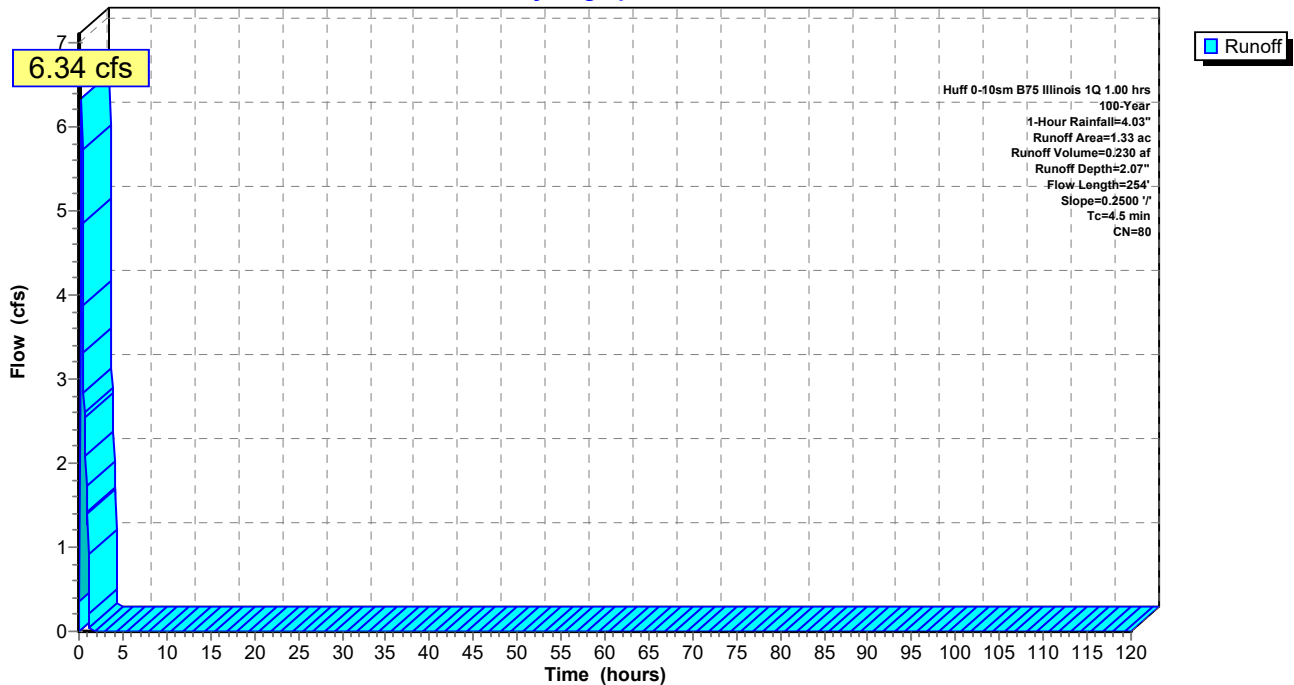
Area (ac)	CN	Description
1.33	80	>75% Grass cover, Good, HSG D
1.33		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.7	154	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.5	254	Total			

**Subcatchment D3: Subcat D3**

Hydrograph



**Summary for Subcatchment D5A: Subcat D5A**

Runoff = 5.40 cfs @ 0.30 hrs, Volume= 0.195 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

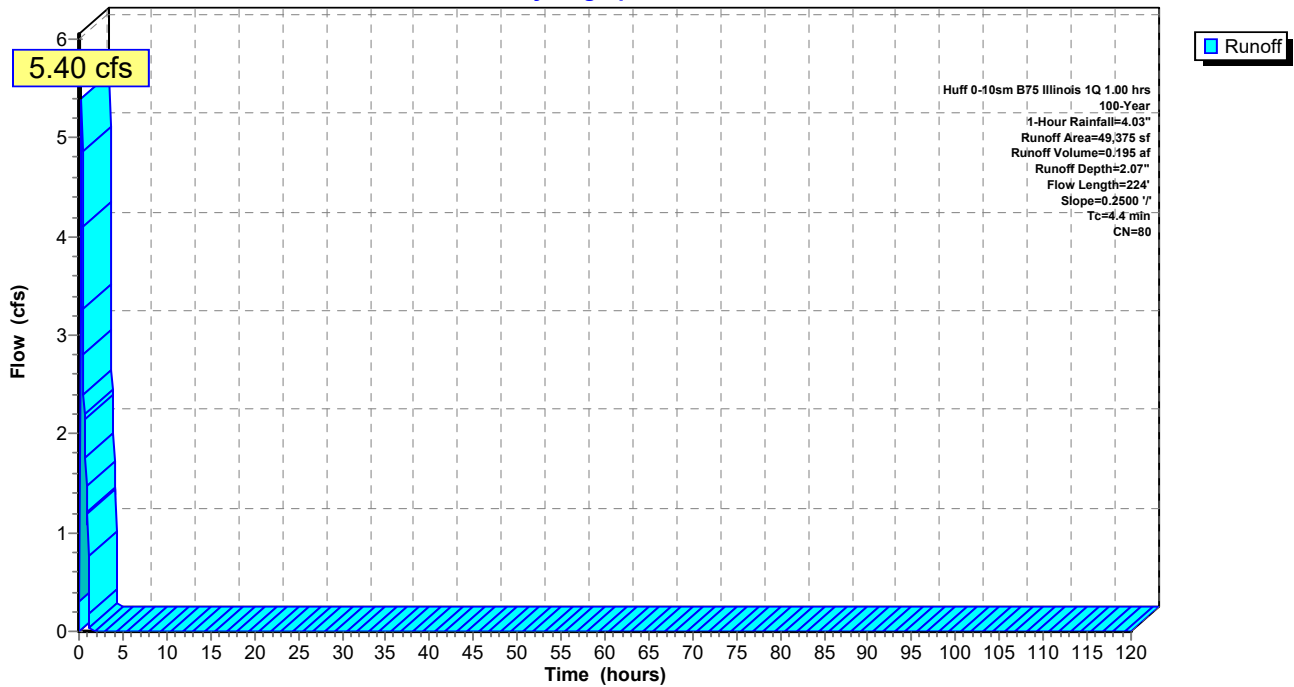
Area (sf)	CN	Description
49,375	80	>75% Grass cover, Good, HSG D
49,375		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	124	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.4	224	Total			

**Subcatchment D5A: Subcat D5A**

Hydrograph



### Summary for Subcatchment D5B: Subcat D5B

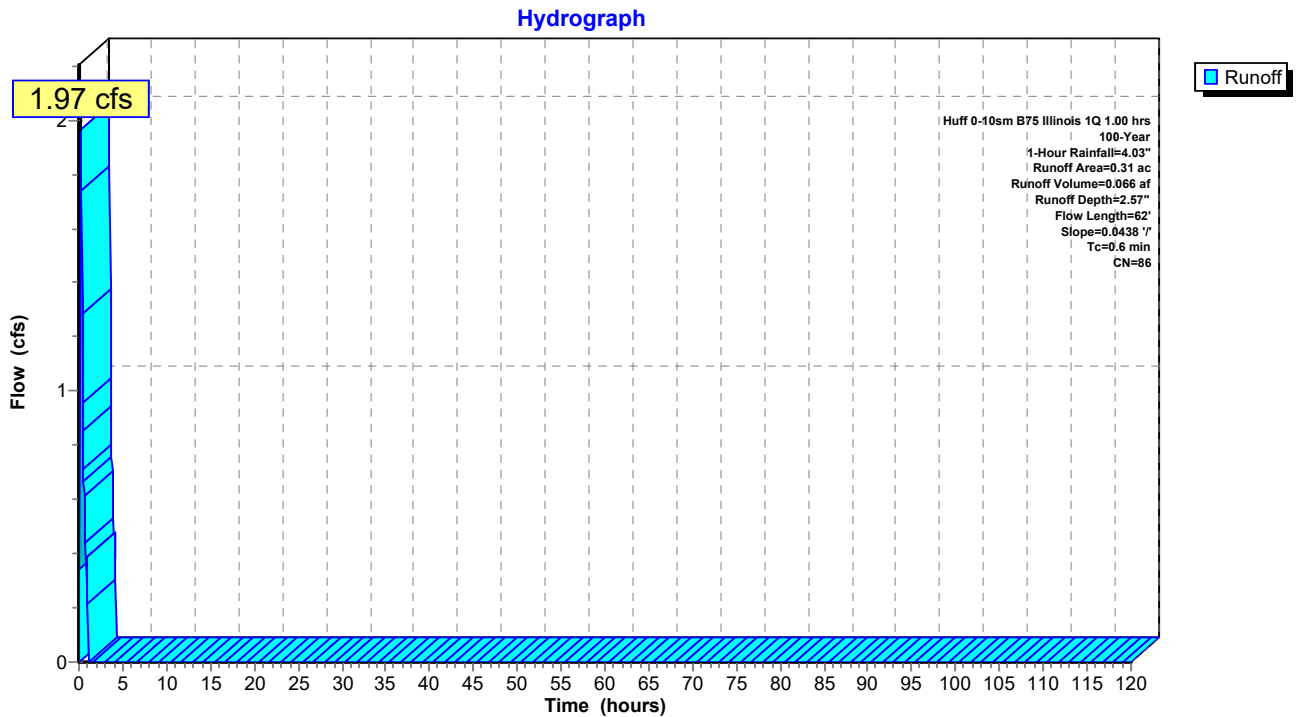
Runoff = 1.97 cfs @ 0.22 hrs, Volume= 0.066 af, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

Area (ac)	CN	Description
0.16	80	>75% Grass cover, Good, HSG D
0.15	93	Paved roads w/open ditches, 50% imp, HSG D
0.31	86	Weighted Average
0.23		75.32% Pervious Area
0.08		24.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	62	0.0438	1.60		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

### Subcatchment D5B: Subcat D5B



**Summary for Subcatchment DT: Subcat Drain Tile**

Runoff = 60.84 cfs @ 0.29 hrs, Volume= 2.179 af, Depth= 2.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

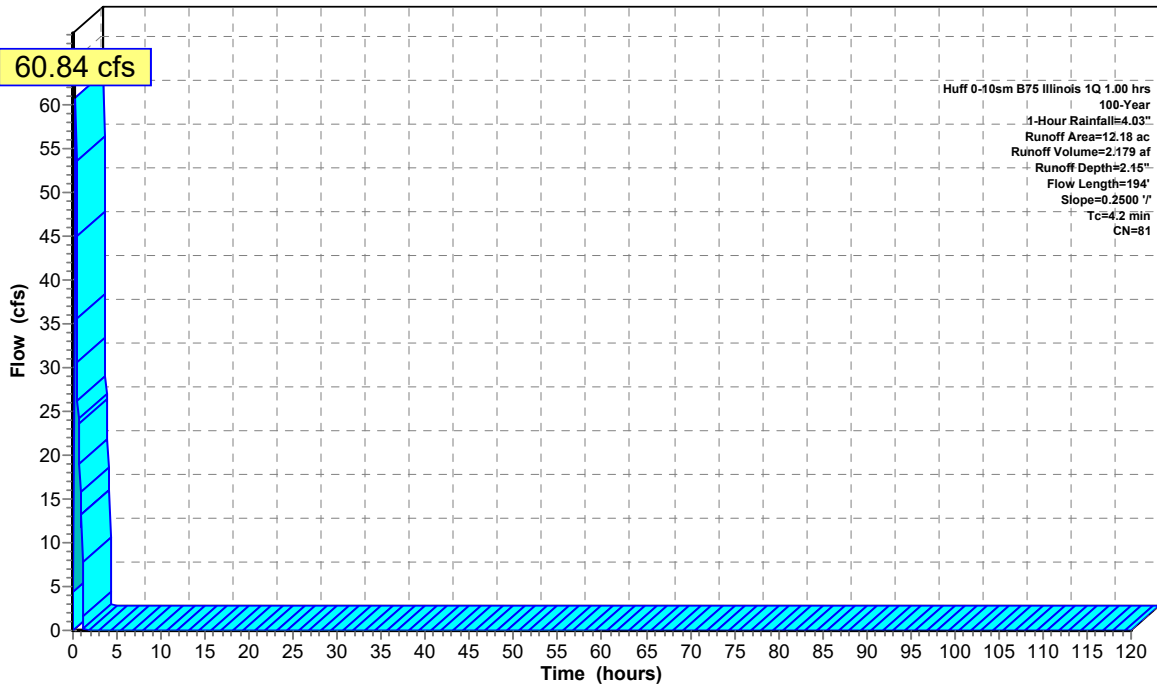
Area (ac)	CN	Description
7.38	80	>75% Grass cover, Good, HSG D
4.80	82	Woods/grass comb., Fair, HSG D
12.18	81	Weighted Average
12.18		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.4	94	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.2	194	Total			

**Subcatchment DT: Subcat Drain Tile**

Hydrograph



**Summary for Subcatchment E1: Subcat E1**

Runoff = 6.38 cfs @ 0.33 hrs, Volume= 0.245 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

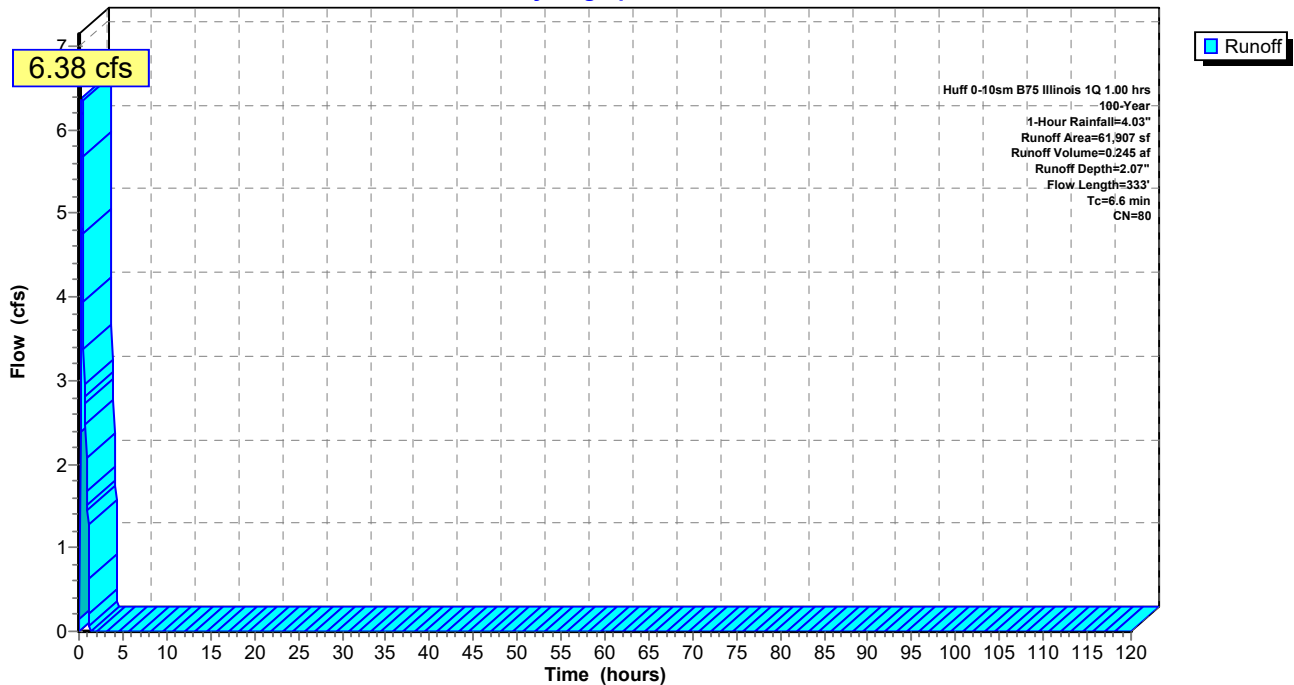
Area (sf)	CN	Description
61,907	80	>75% Grass cover, Good, HSG D
61,907		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.1	233	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.6	333	Total			

**Subcatchment E1: Subcat E1**

Hydrograph





**Summary for Subcatchment E2: Subcat E2**

Runoff = 13.40 cfs @ 0.30 hrs, Volume= 0.485 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

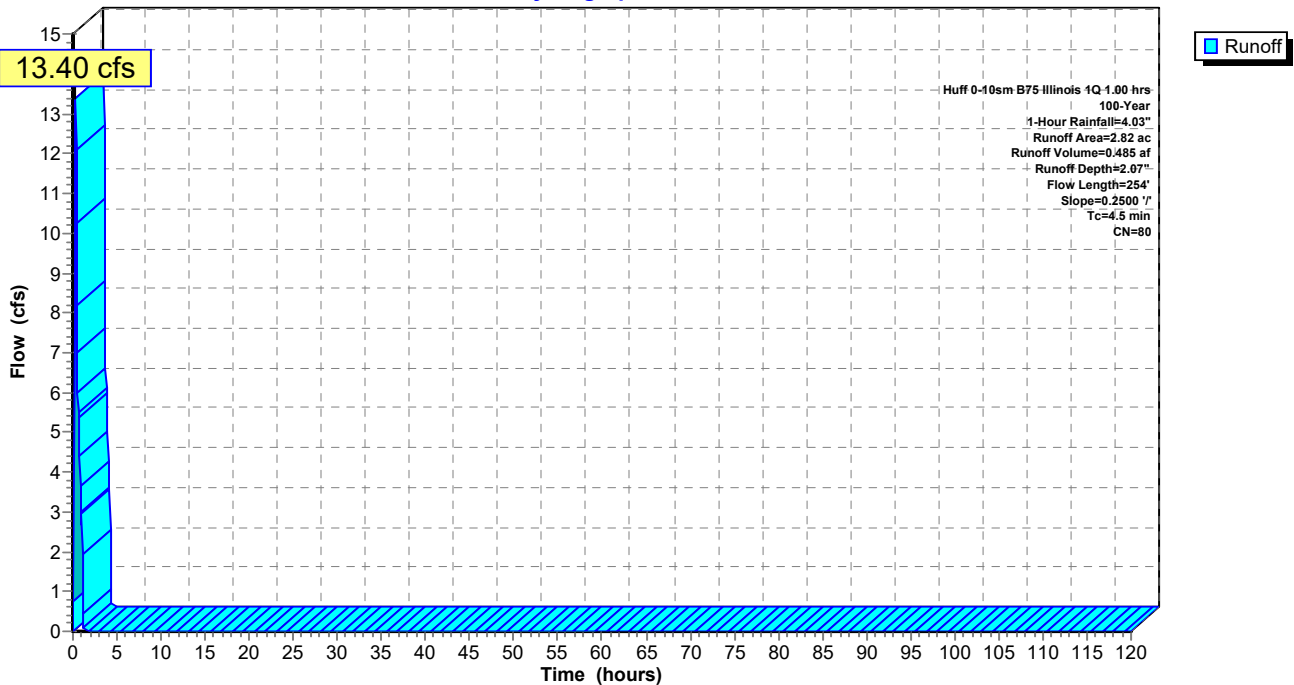
Area (ac)	CN	Description
2.82	80	>75% Grass cover, Good, HSG D
2.82		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.7	154	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.5	254	Total			

**Subcatchment E2: Subcat E2**

Hydrograph



**Summary for Subcatchment E3A: Subcat E3A**

Runoff = 15.61 cfs @ 0.30 hrs, Volume= 0.564 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

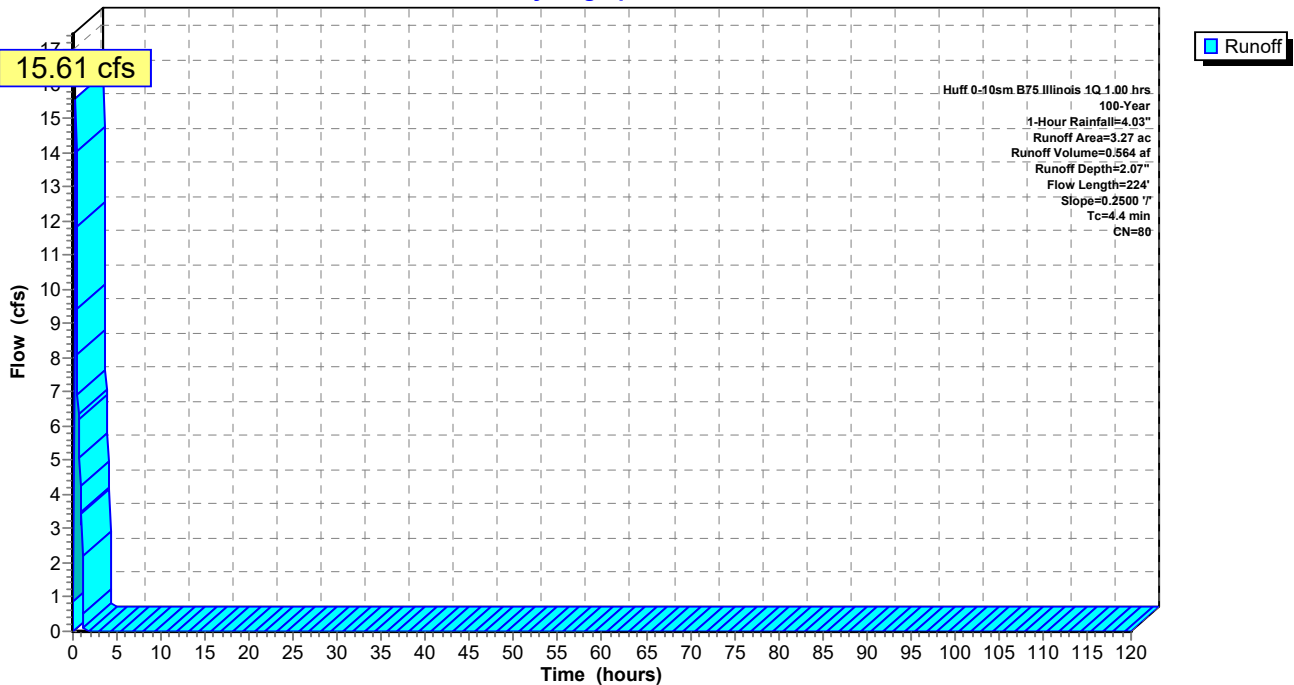
Area (ac)	CN	Description
3.27	80	>75% Grass cover, Good, HSG D
3.27		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	124	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.4	224	Total			

**Subcatchment E3A: Subcat E3A**

Hydrograph



**Summary for Subcatchment E3B: Subcat E3B**

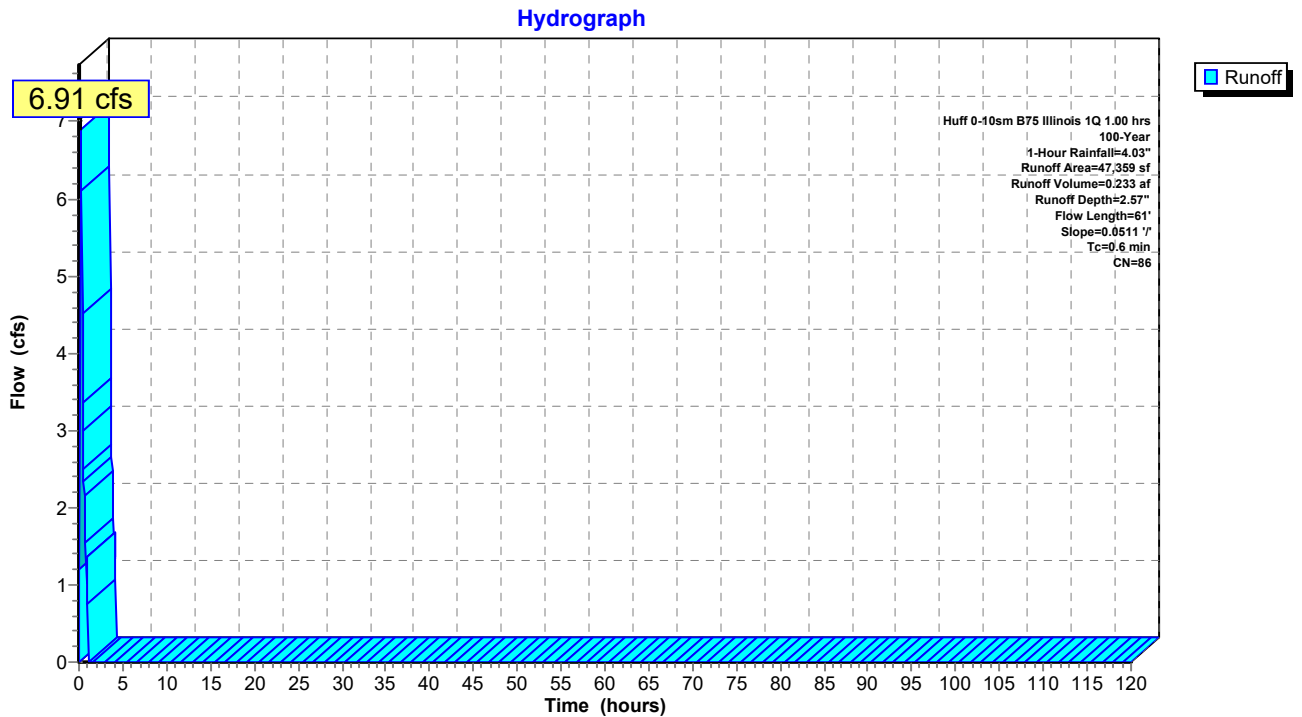
Runoff = 6.91 cfs @ 0.22 hrs, Volume= 0.233 af, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

Area (sf)	CN	Description
23,741	80	>75% Grass cover, Good, HSG D
23,618	93	Paved roads w/open ditches, 50% imp, HSG D
47,359	86	Weighted Average
35,550		75.06% Pervious Area
11,809		24.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	61	0.0511	1.70		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment E3B: Subcat E3B**



**Summary for Subcatchment H1: Subcat H1**

Runoff = 8.92 cfs @ 0.33 hrs, Volume= 0.341 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

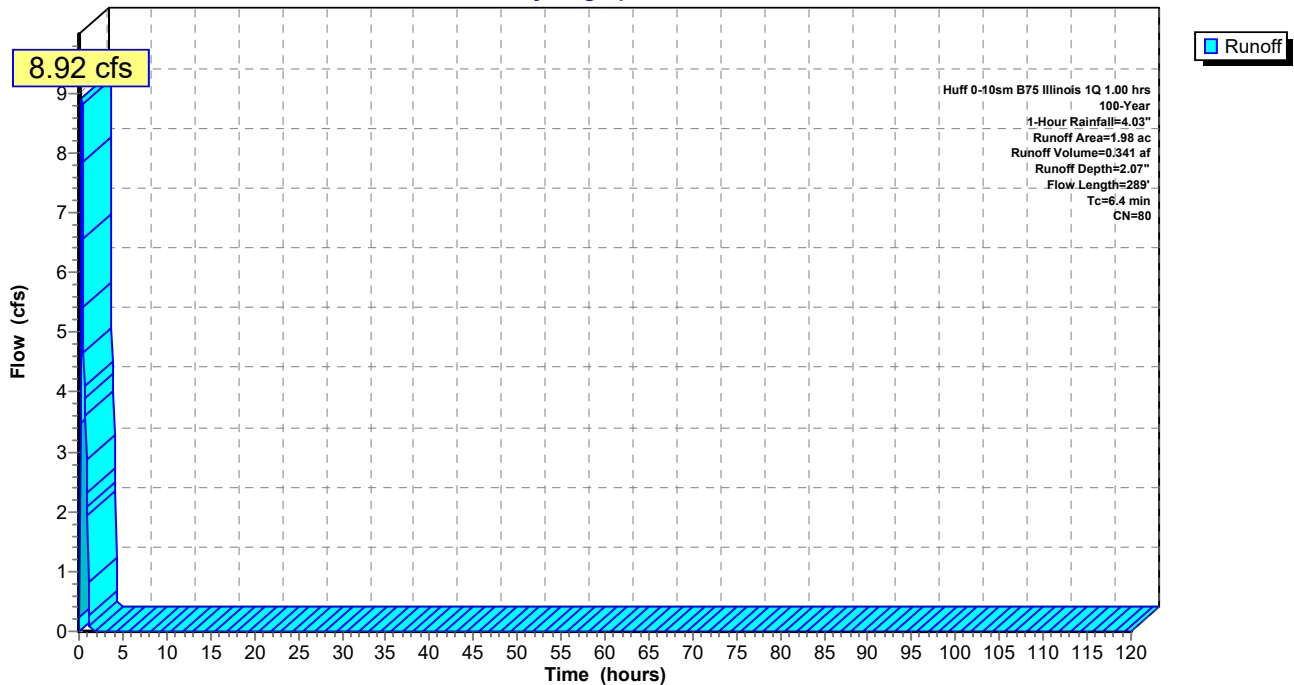
Area (ac)	CN	Description
1.98	80	>75% Grass cover, Good, HSG D
1.98		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.9	189	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.4	289	Total			

**Subcatchment H1: Subcat H1**

Hydrograph



**Summary for Subcatchment H2: Subcat H2**

Runoff = 8.94 cfs @ 0.29 hrs, Volume= 0.321 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

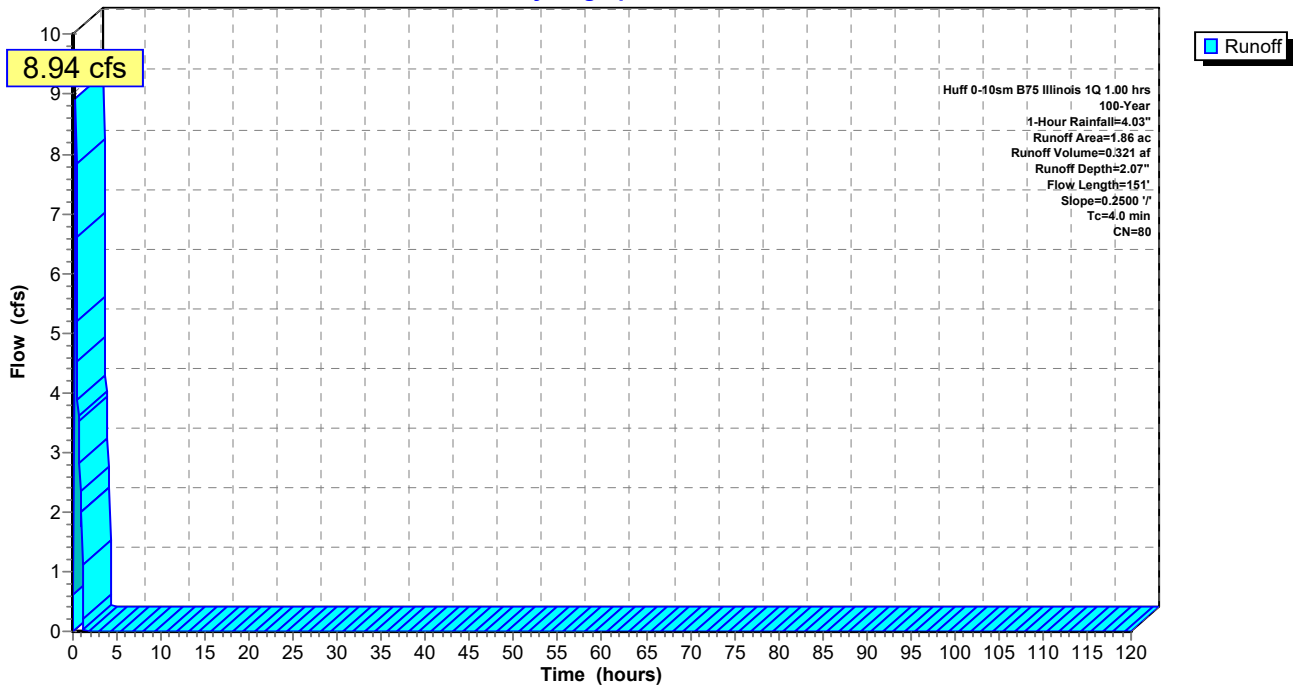
Area (ac)	CN	Description
1.86	80	>75% Grass cover, Good, HSG D
1.86		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	51	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	151	Total			

**Subcatchment H2: Subcat H2**

Hydrograph



**Summary for Subcatchment H3: Subcat H3**

Runoff = 17.02 cfs @ 0.30 hrs, Volume= 0.615 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

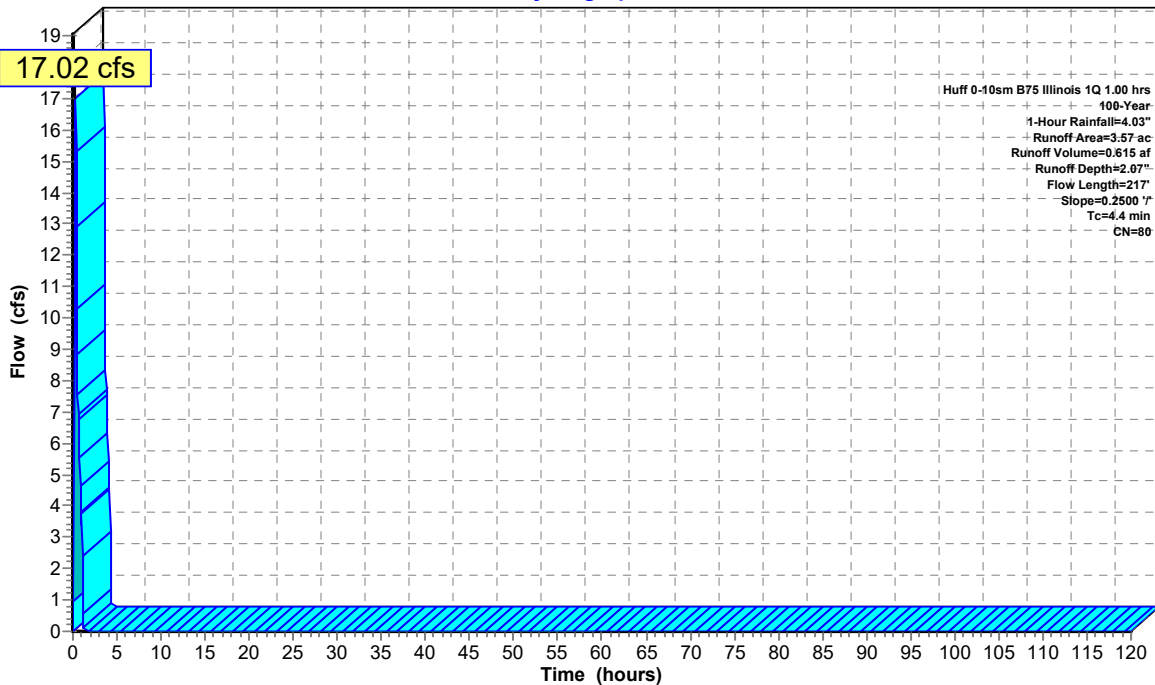
Area (ac)	CN	Description
3.57	80	>75% Grass cover, Good, HSG D
3.57		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	117	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.4	217	Total			

**Subcatchment H3: Subcat H3**

Hydrograph



Huff 0-10sm B75 Illinois 1Q 1.00 hrs  
 100-Year  
 1-Hour Rainfall=4.03"  
 Runoff Area=3.57 ac  
 Runoff Volume=0.615 af  
 Runoff Depth=2.07"  
 Flow Length=217'  
 Slope=0.2500 f'  
 Tc=4.4 min  
 CN=80

**Summary for Subcatchment N-A1: Subcat N-A1**

Runoff = 16.18 cfs @ 0.33 hrs, Volume= 0.620 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

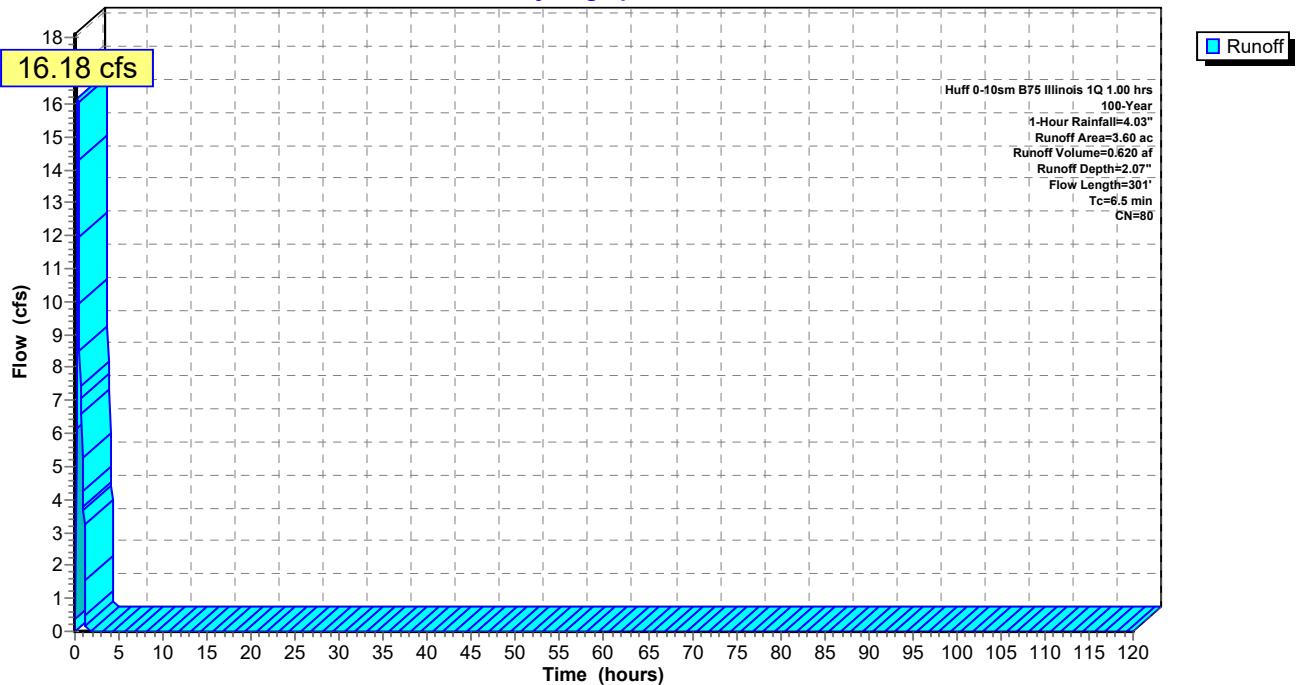
Area (ac)	CN	Description
3.60	80	>75% Grass cover, Good, HSG D
3.60		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.0	201	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.5	301	Total			

**Subcatchment N-A1: Subcat N-A1**

Hydrograph



**Summary for Subcatchment N-A10: Subcat N-A10**

Runoff = 18.11 cfs @ 0.29 hrs, Volume= 0.650 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

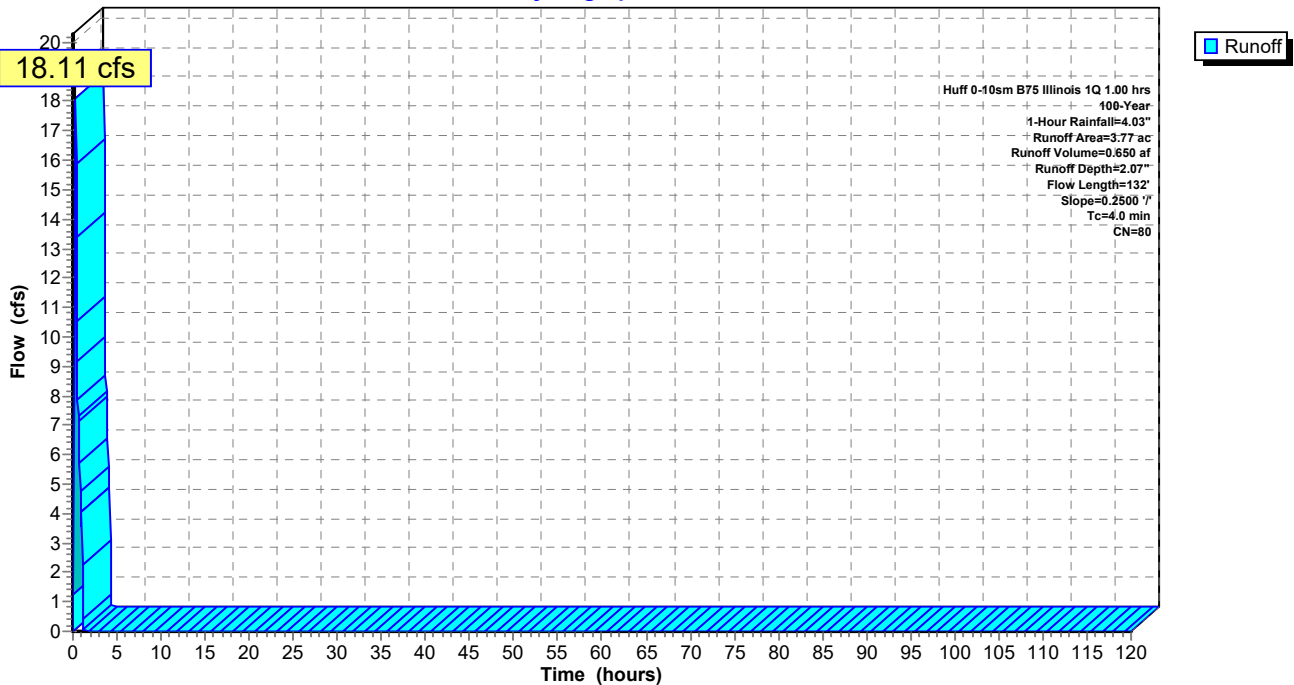
Area (ac)	CN	Description
3.77	80	>75% Grass cover, Good, HSG D
3.77		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	32	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	132	Total			

**Subcatchment N-A10: Subcat N-A10**

Hydrograph





**Summary for Subcatchment N-A11: Subcat N-A11**

Runoff = 8.84 cfs @ 0.29 hrs, Volume= 0.317 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

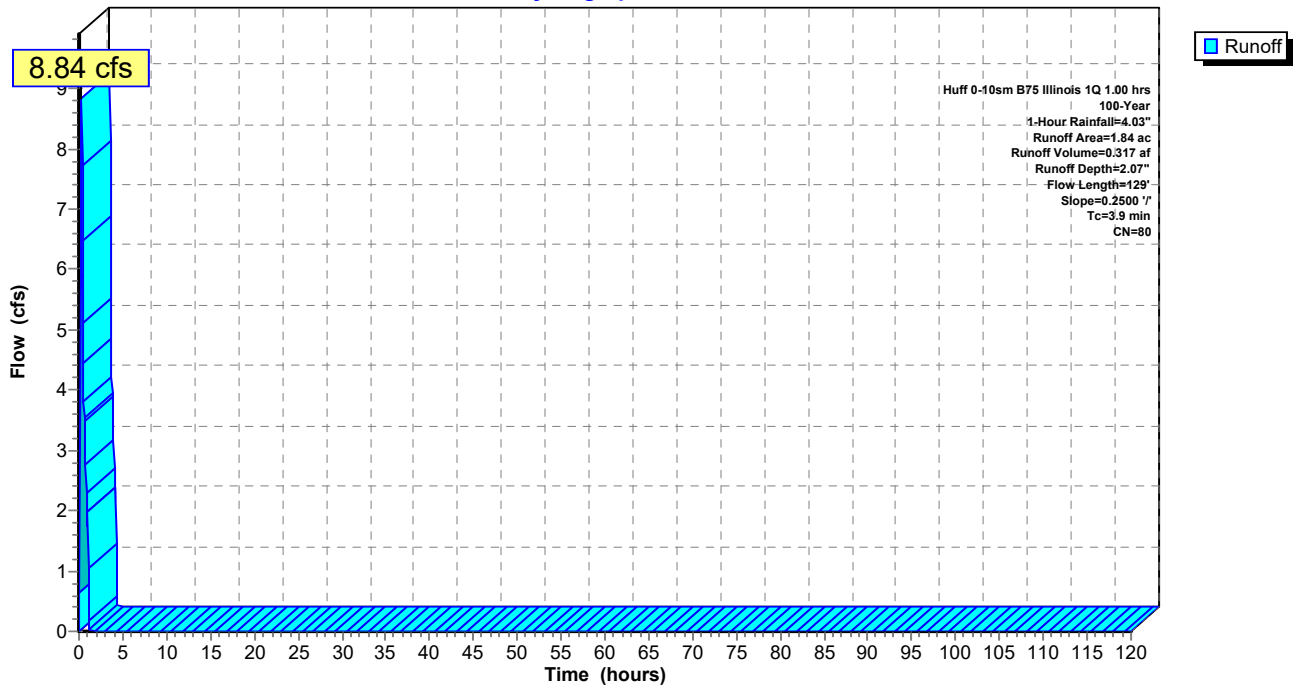
Area (ac)	CN	Description
1.84	80	>75% Grass cover, Good, HSG D
1.84		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	29	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	129	Total			

**Subcatchment N-A11: Subcat N-A11**

Hydrograph



**Summary for Subcatchment N-A12: Subcat N-A12**

Runoff = 12.90 cfs @ 0.29 hrs, Volume= 0.457 af, Depth= 2.31"

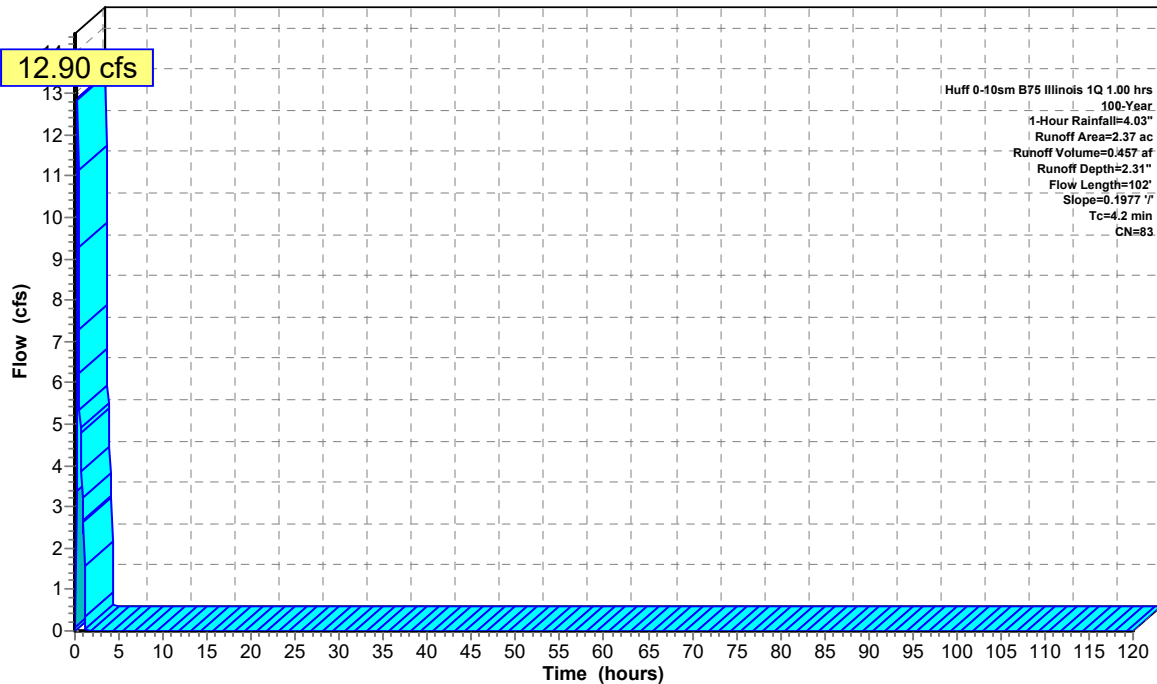
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

Area (ac)	CN	Description
1.74	80	>75% Grass cover, Good, HSG D
0.63	93	Paved roads w/open ditches, 50% imp, HSG D
2.37	83	Weighted Average
2.06		86.69% Pervious Area
0.32		13.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	100	0.1977	0.40		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.0	2	0.1977	3.11		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.2	102	Total			

**Subcatchment N-A12: Subcat N-A12**

Hydrograph



**Summary for Subcatchment N-A13: Subcat N-A13**

Runoff = 6.02 cfs @ 0.29 hrs, Volume= 0.216 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

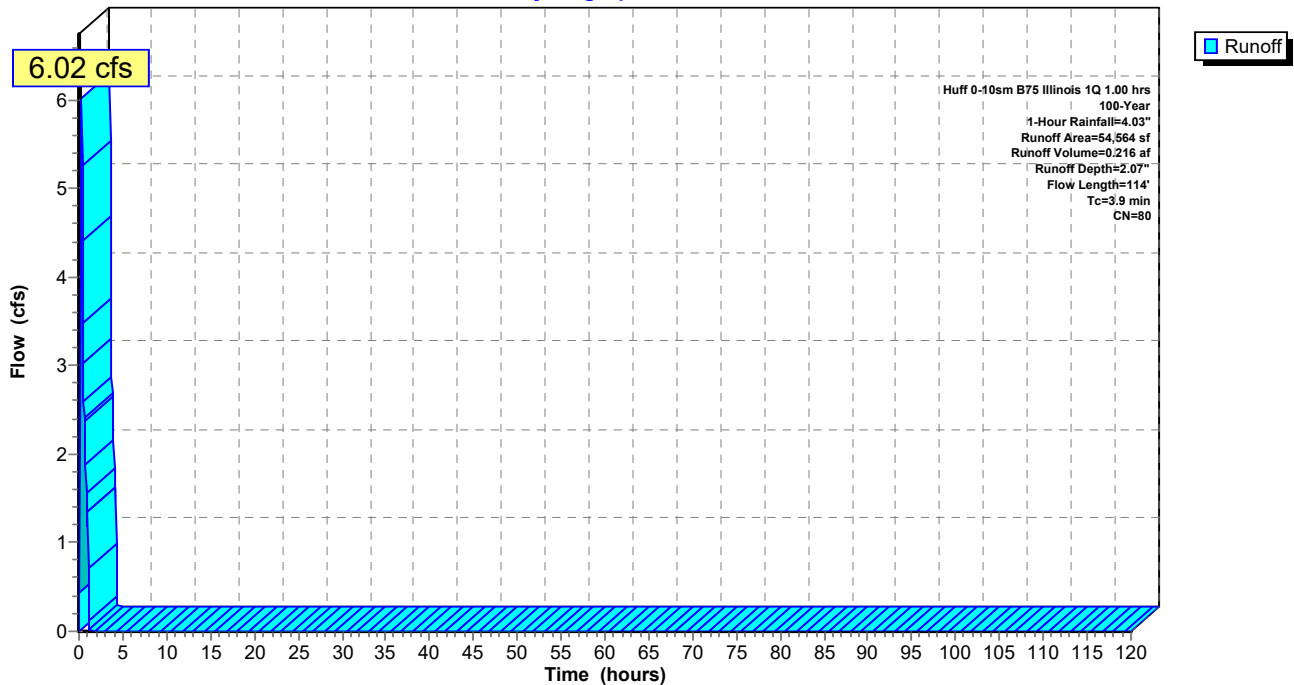
Area (sf)	CN	Description
54,564	80	>75% Grass cover, Good, HSG D
54,564		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	14	0.3210	3.97		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	114	Total			

**Subcatchment N-A13: Subcat N-A13**

Hydrograph



**Summary for Subcatchment N-A14: Subcat N-A14**

Runoff = 7.12 cfs @ 0.29 hrs, Volume= 0.252 af, Depth= 2.31"

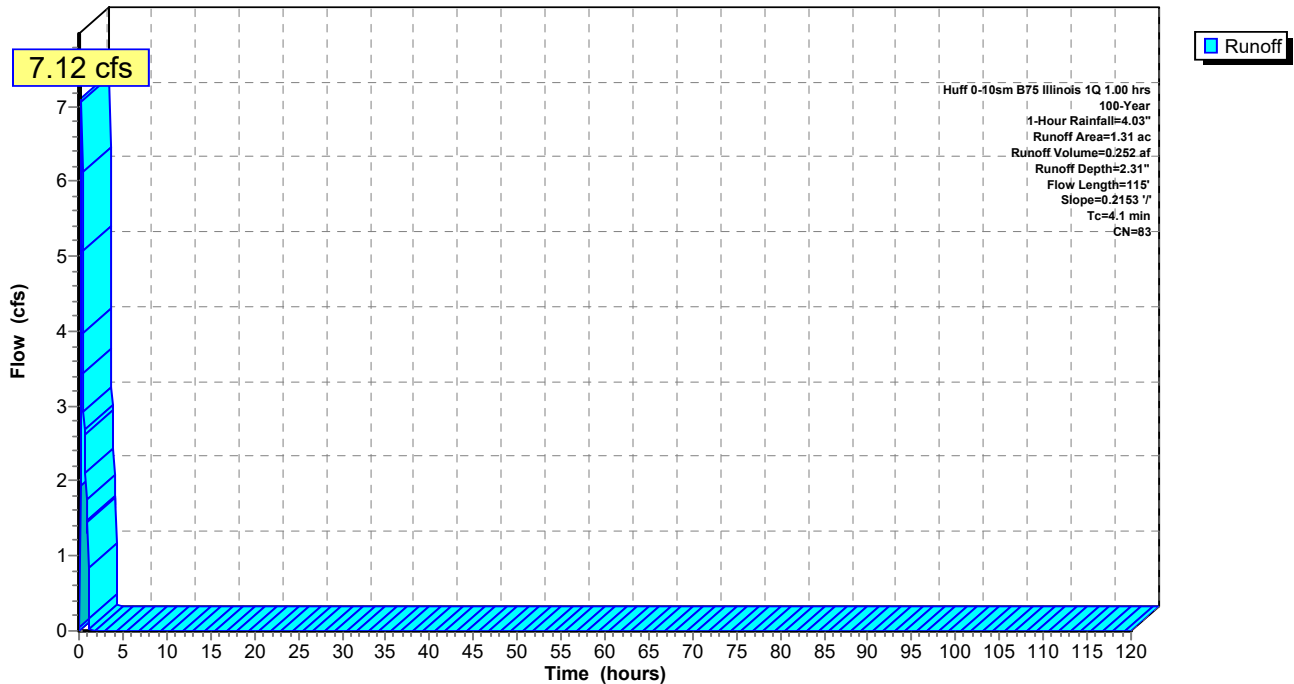
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

Area (ac)	CN	Description
0.97	80	>75% Grass cover, Good, HSG D
0.34	93	Paved roads w/open ditches, 50% imp, HSG D
1.31	83	Weighted Average
1.14		87.12% Pervious Area
0.17		12.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	100	0.2153	0.41		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	15	0.2153	3.25		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	115	Total			

**Subcatchment N-A14: Subcat N-A14**

Hydrograph



**Summary for Subcatchment N-A15: Subcat N-A15**

Runoff = 4.99 cfs @ 0.29 hrs, Volume= 0.178 af, Depth= 2.07"

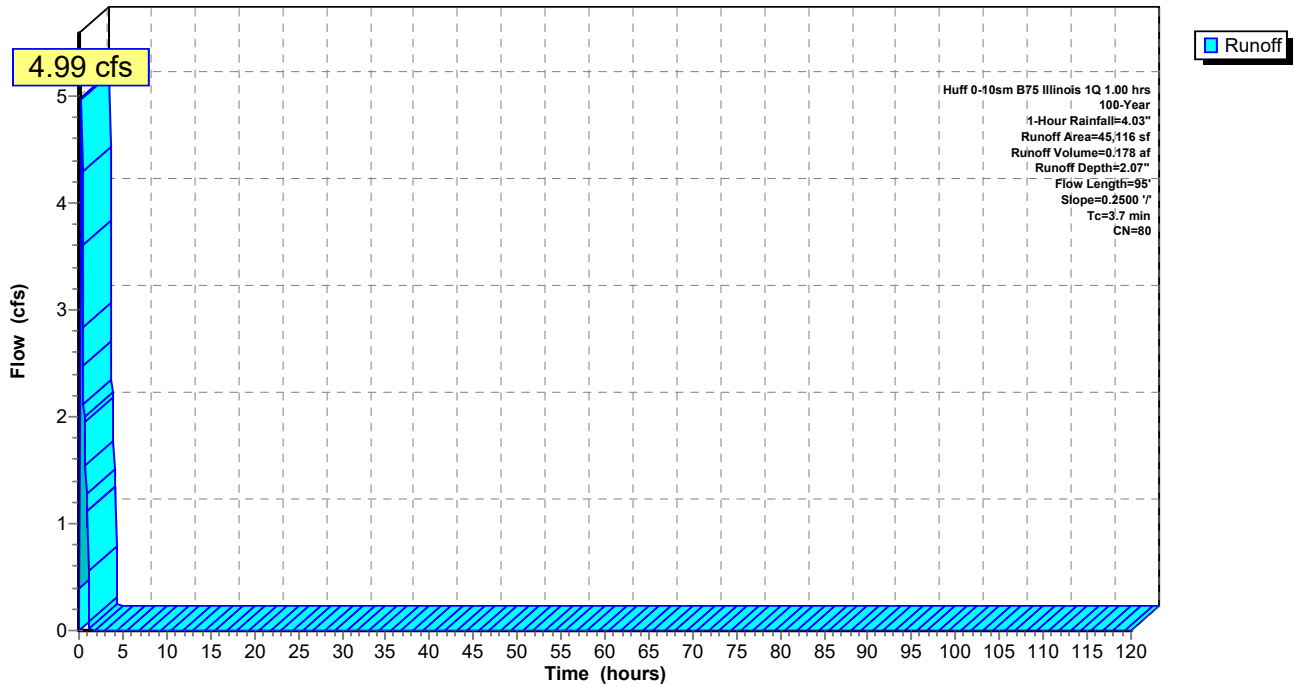
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

Area (sf)	CN	Description
45,116	80	>75% Grass cover, Good, HSG D
45,116		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	95	0.2500	0.43		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-A15: Subcat N-A15**

Hydrograph



**Summary for Subcatchment N-A16: Subcat N-A16**

Runoff = 16.79 cfs @ 0.21 hrs, Volume= 0.547 af, Depth= 3.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

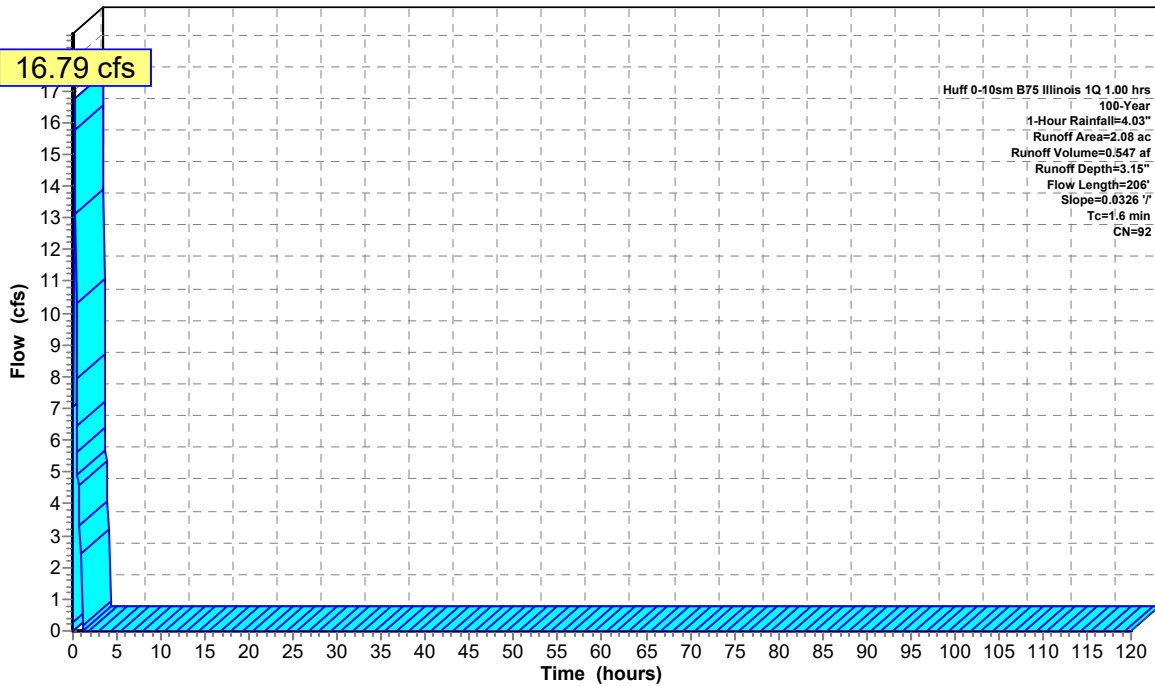
Area (ac)	CN	Description
0.08	80	>75% Grass cover, Good, HSG D
2.00	93	Paved roads w/open ditches, 50% imp, HSG D
2.08	92	Weighted Average
1.08		51.99% Pervious Area
1.00		48.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0326	1.56		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 2.80"
0.5	106	0.0326	3.67		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
1.6	206	Total			

**Subcatchment N-A16: Subcat N-A16**

Hydrograph



**Summary for Subcatchment N-A2: Subcat N-A2**

Runoff = 13.01 cfs @ 0.32 hrs, Volume= 0.486 af, Depth= 2.07"

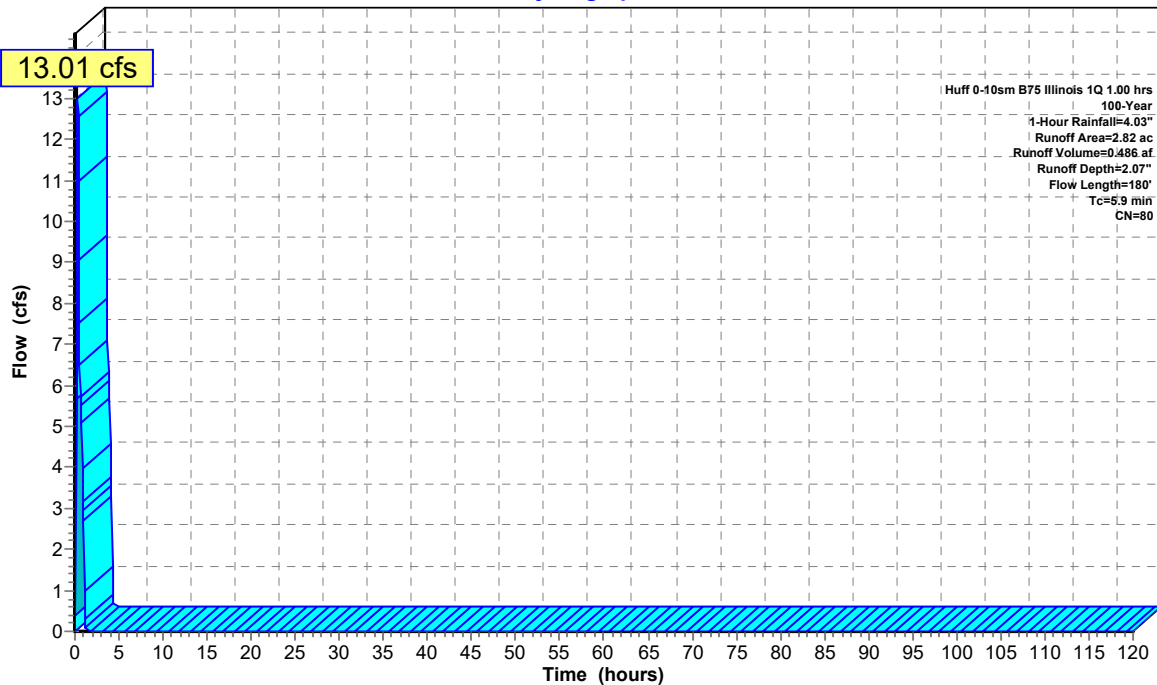
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

Area (ac)	CN	Description
2.82	80	>75% Grass cover, Good, HSG D
2.82		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.4	80	0.2199	3.28		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
5.9	180	Total			

**Subcatchment N-A2: Subcat N-A2**

Hydrograph



Runoff

Huff 0-10sm B75 Illinois 1Q 1.00 hrs  
 100-Year  
 1-Hour Rainfall=4.03"  
 Runoff Area=2.82 ac  
 Runoff Volume=0.486 af  
 Runoff Depth=2.07"  
 Flow Length=180'  
 Tc=5.9 min  
 CN=80

**Summary for Subcatchment N-A3: Subcat N-A3**

Runoff = 6.28 cfs @ 0.29 hrs, Volume= 0.226 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

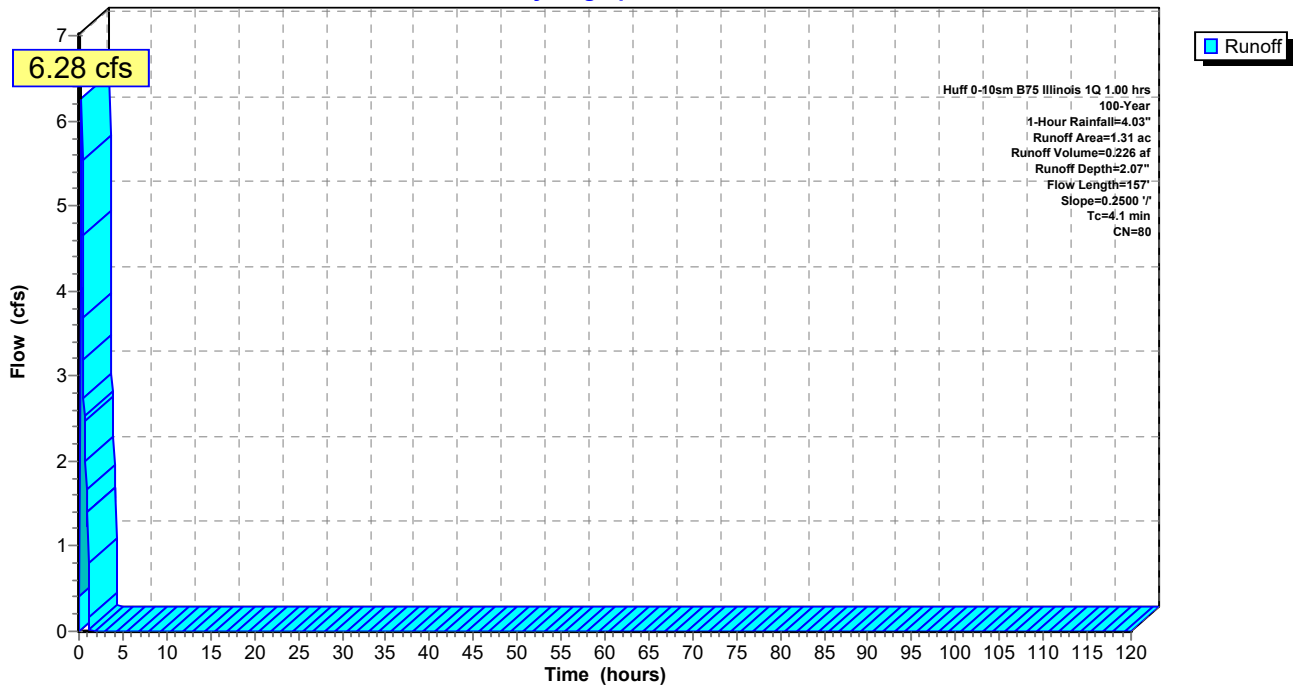
Area (ac)	CN	Description
1.31	80	>75% Grass cover, Good, HSG D
1.31		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.3	57	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	157	Total			

**Subcatchment N-A3: Subcat N-A3**

Hydrograph





### Summary for Subcatchment N-A4: Subcat N-A4

Runoff = 31.04 cfs @ 0.33 hrs, Volume= 1.184 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

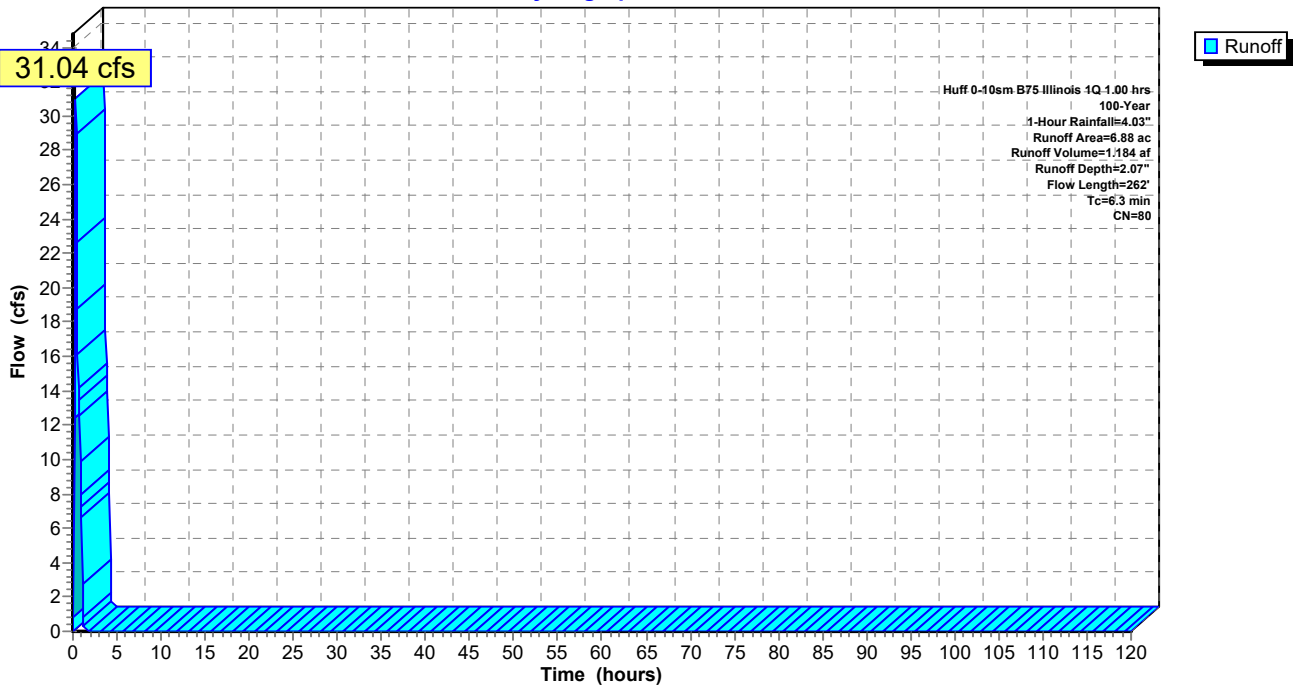
Area (ac)	CN	Description
6.88	80	>75% Grass cover, Good, HSG D
6.88		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.8	162	0.2330	3.38		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.3	262	Total			

### Subcatchment N-A4: Subcat N-A4

Hydrograph



**Summary for Subcatchment N-A5: Subcat N-A5**

Runoff = 3.53 cfs @ 0.29 hrs, Volume= 0.126 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

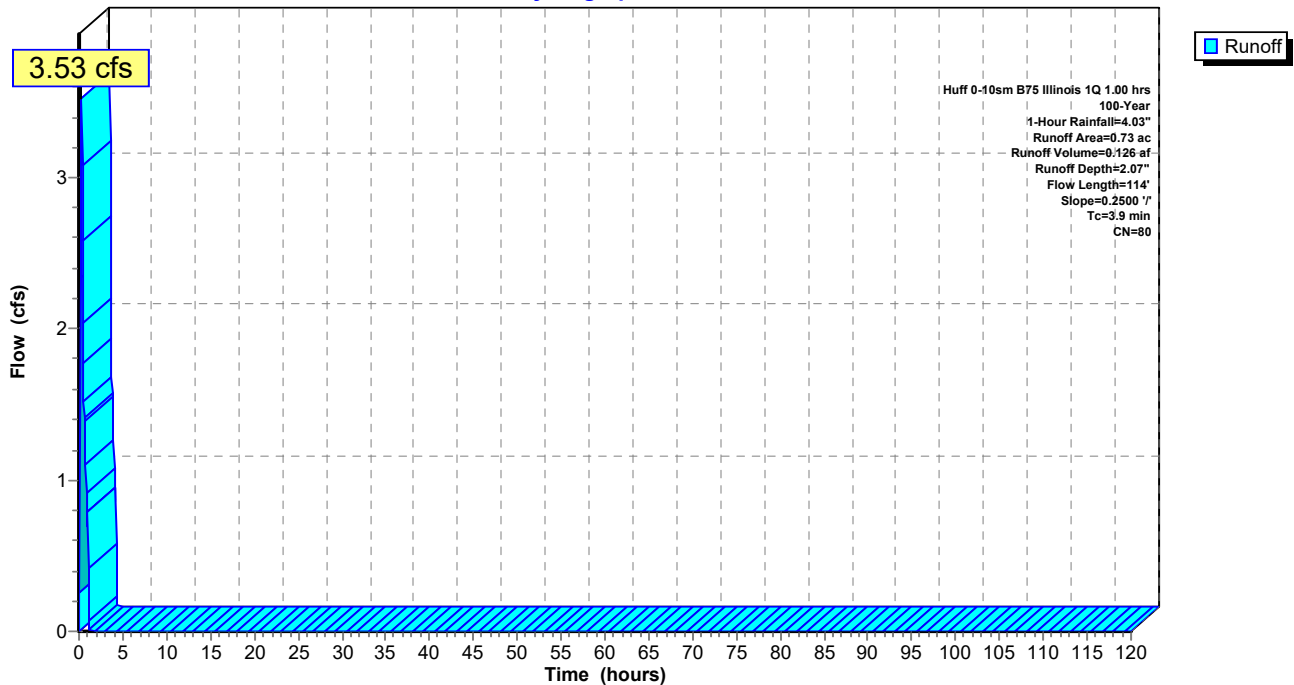
Area (ac)	CN	Description
0.73	80	>75% Grass cover, Good, HSG D
0.73		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	14	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	114	Total			

**Subcatchment N-A5: Subcat N-A5**

Hydrograph



**Summary for Subcatchment N-A6: Subcat N-A6**

Runoff = 19.85 cfs @ 0.29 hrs, Volume= 0.711 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

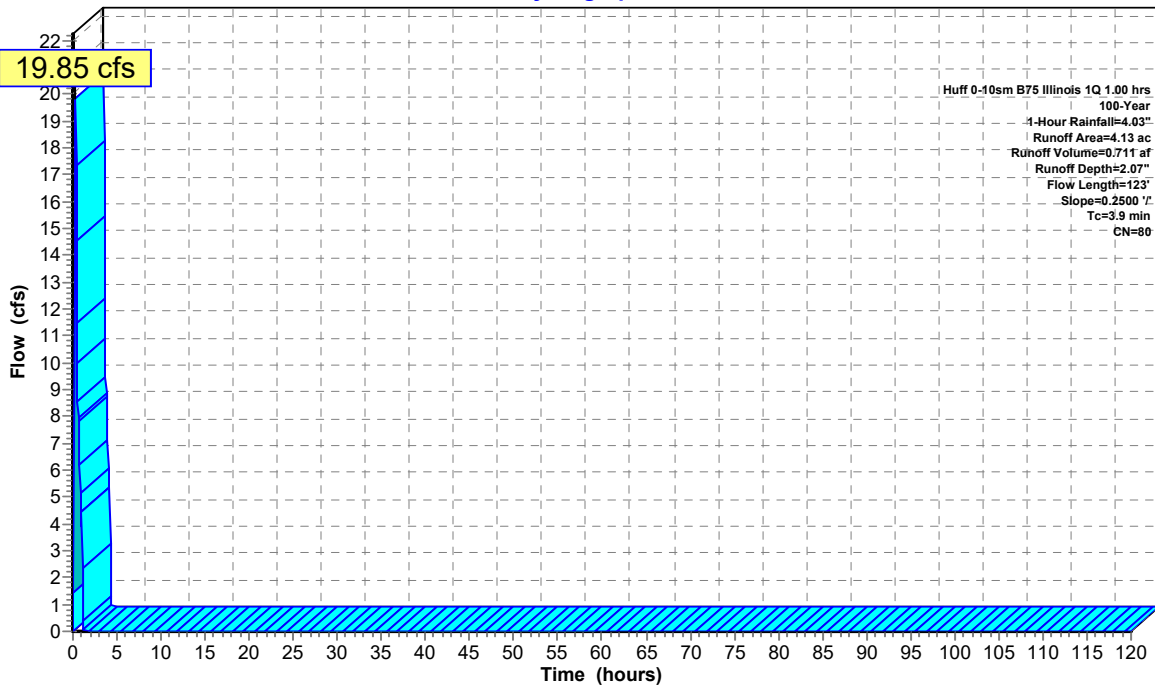
Area (ac)	CN	Description
4.13	80	>75% Grass cover, Good, HSG D
4.13		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	23	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	123	Total			

**Subcatchment N-A6: Subcat N-A6**

Hydrograph



Runoff

Huff 0-10sm B75 Illinois 1Q 1.00 hrs  
 100-Year  
 1-Hour Rainfall=4.03"  
 Runoff Area=4.13 ac  
 Runoff Volume=0.711 af  
 Runoff Depth=2.07"  
 Flow Length=123'  
 Slope=0.2500 ft/ft  
 Tc=3.9 min  
 CN=80

**Summary for Subcatchment N-A7: Subcat N-A7**

Runoff = 2.11 cfs @ 0.30 hrs, Volume= 0.076 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

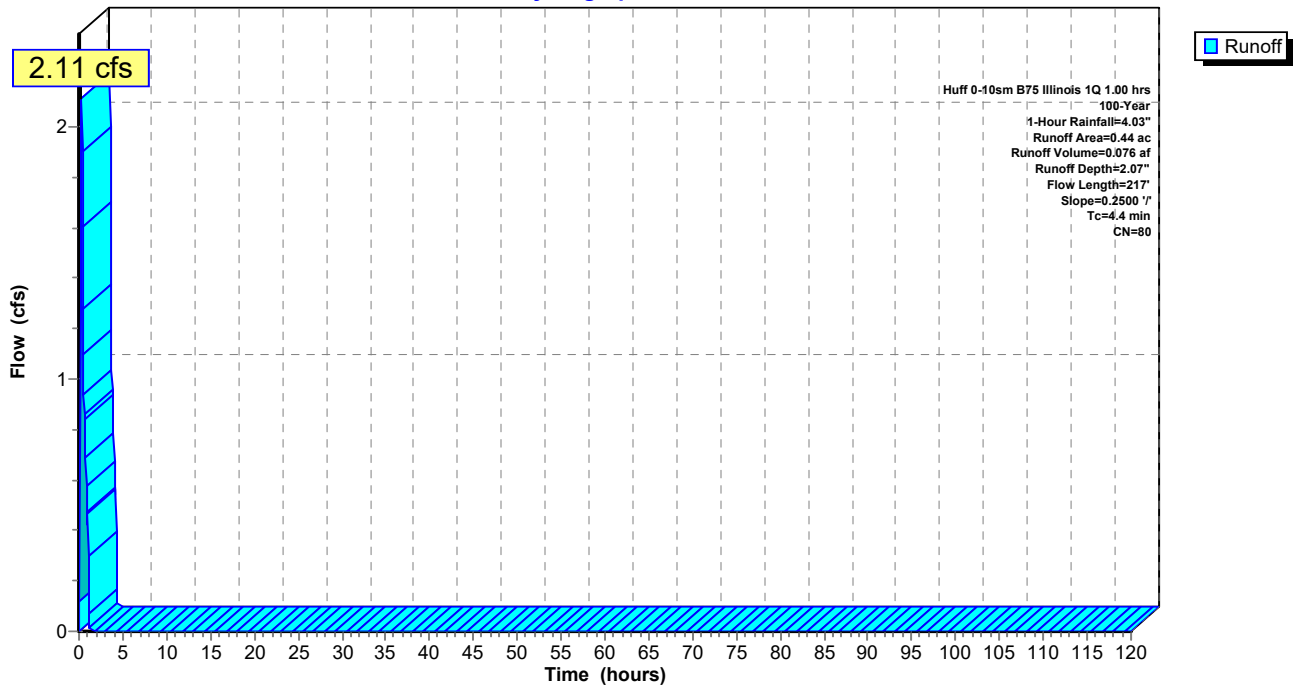
Area (ac)	CN	Description
0.44	80	>75% Grass cover, Good, HSG D
0.44		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	117	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.4	217	Total			

**Subcatchment N-A7: Subcat N-A7**

Hydrograph



**Summary for Subcatchment N-A8: Subcat N-A8**

Runoff = 18.27 cfs @ 0.29 hrs, Volume= 0.655 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

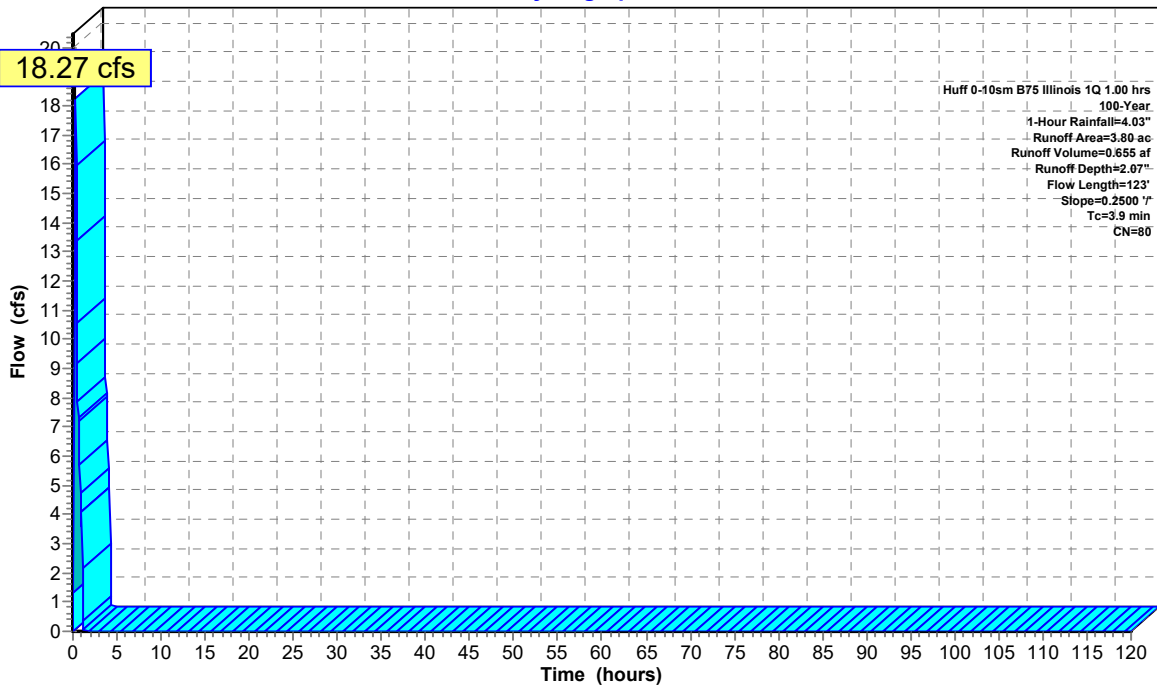
Area (ac)	CN	Description
3.80	80	>75% Grass cover, Good, HSG D
3.80		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	23	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	123	Total			

**Subcatchment N-A8: Subcat N-A8**

Hydrograph



Runoff

**Summary for Subcatchment N-A9: Subcat N-A9**

Runoff = 0.88 cfs @ 0.30 hrs, Volume= 0.032 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

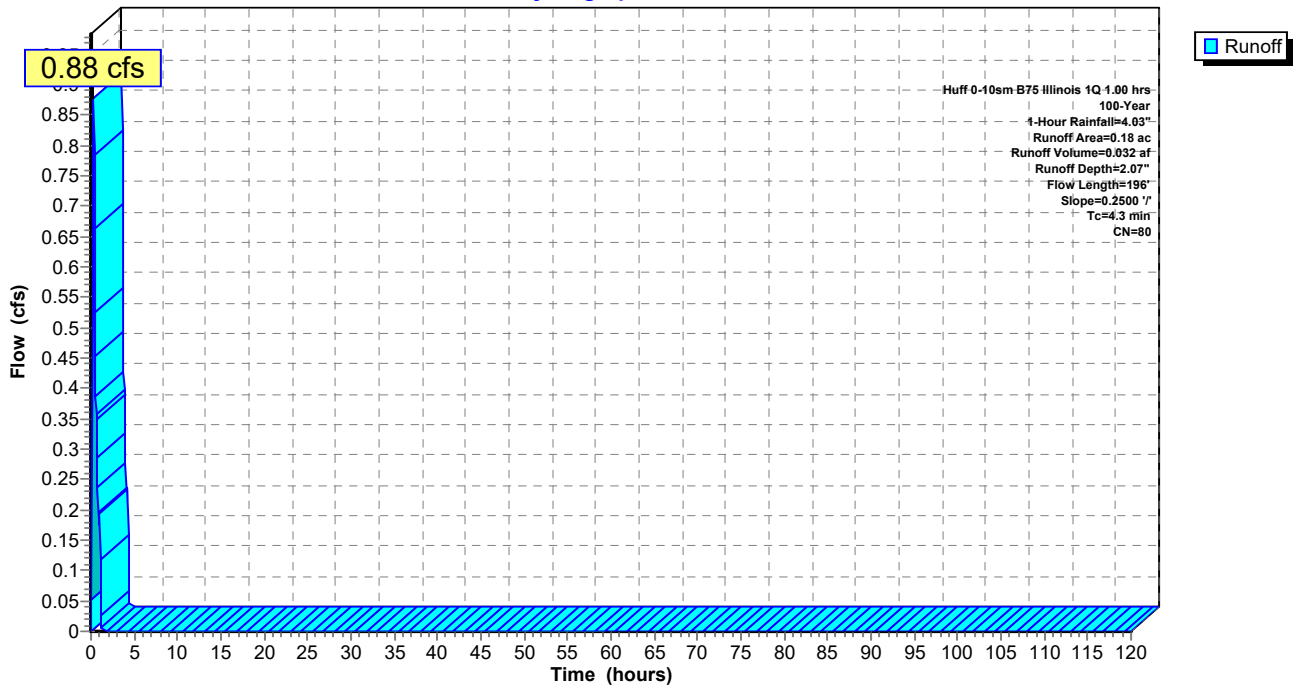
Area (ac)	CN	Description
0.18	80	>75% Grass cover, Good, HSG D
0.18		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.5	96	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.3	196	Total			

**Subcatchment N-A9: Subcat N-A9**

Hydrograph



**Summary for Subcatchment N-B1: Subcat N-B1**

Runoff = 14.49 cfs @ 0.32 hrs, Volume= 0.543 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

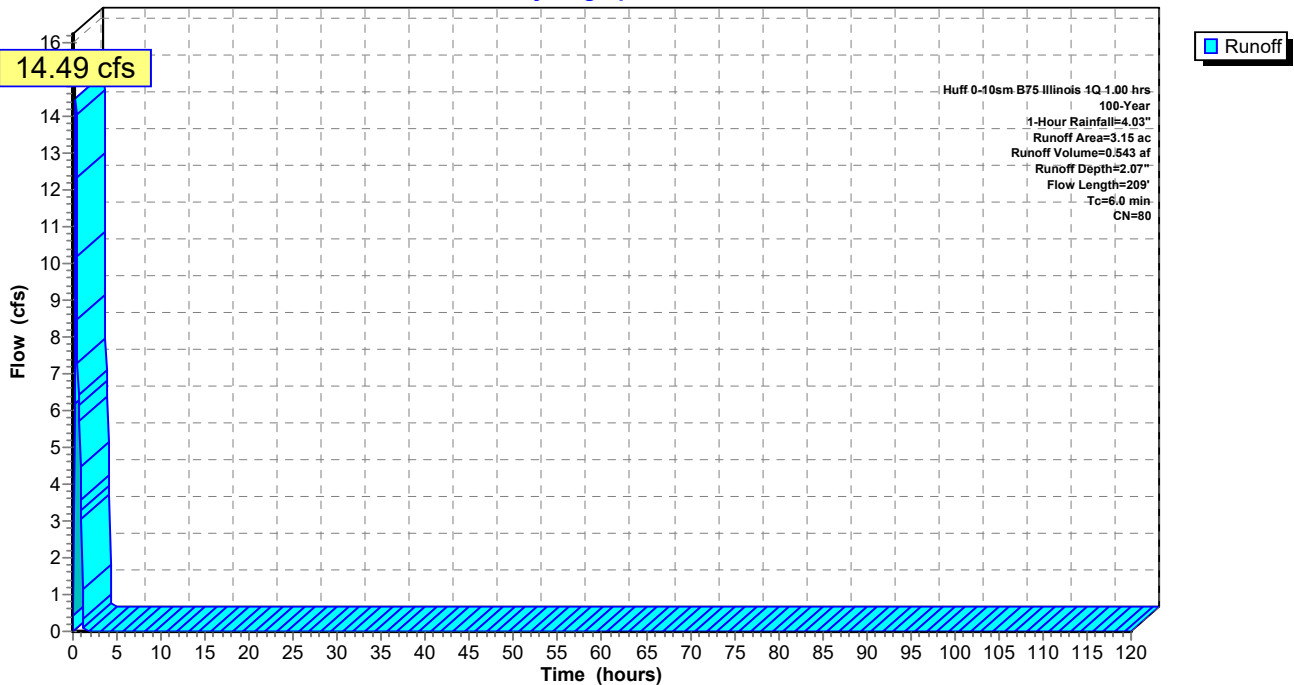
Area (ac)	CN	Description
3.15	80	>75% Grass cover, Good, HSG D
3.15		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.5	109	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.0	209	Total			

**Subcatchment N-B1: Subcat N-B1**

Hydrograph



**Summary for Subcatchment N-B10: Subcat N-B10**

Runoff = 9.08 cfs @ 0.28 hrs, Volume= 0.319 af, Depth= 2.48"

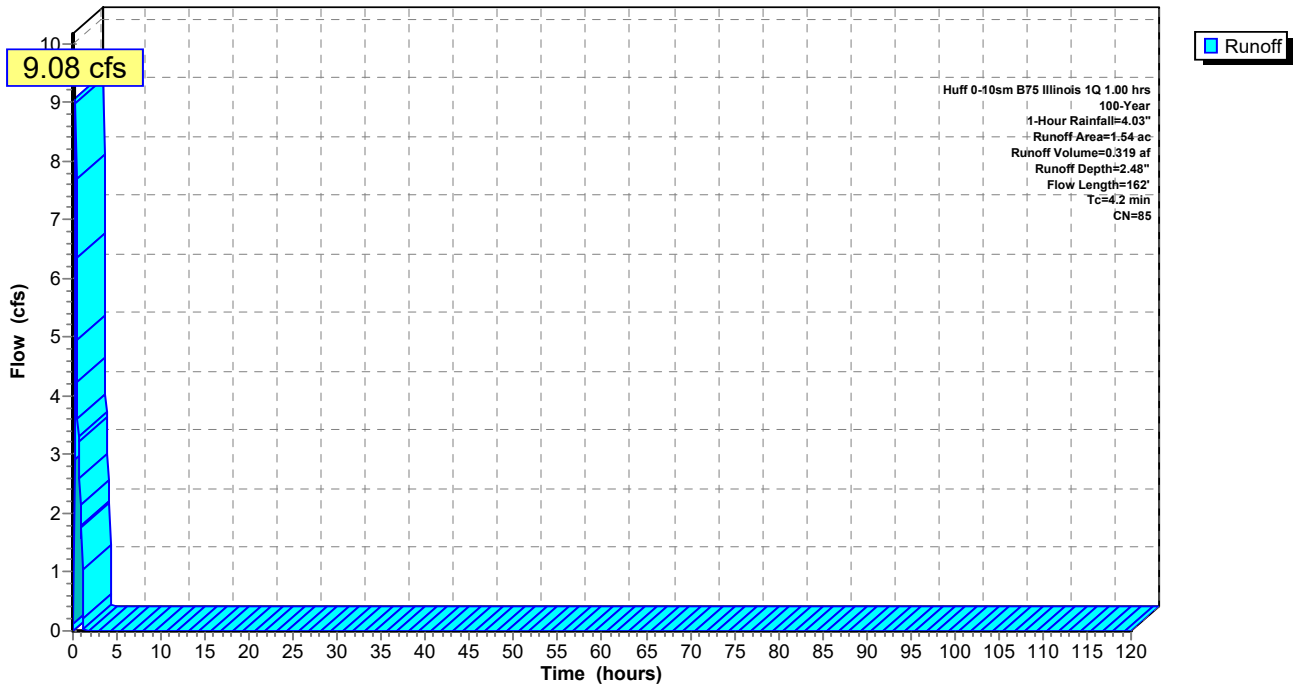
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

Area (ac)	CN	Description
0.91	80	>75% Grass cover, Good, HSG D
0.63	93	Paved roads w/open ditches, 50% imp, HSG D
1.54	85	Weighted Average
1.22		79.55% Pervious Area
0.31		20.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.4	62	0.1195	2.42		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.2	162	Total			

**Subcatchment N-B10: Subcat N-B10**

Hydrograph





**Summary for Subcatchment N-B11: Subcat N-B11**

Runoff = 6.09 cfs @ 0.29 hrs, Volume= 0.218 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

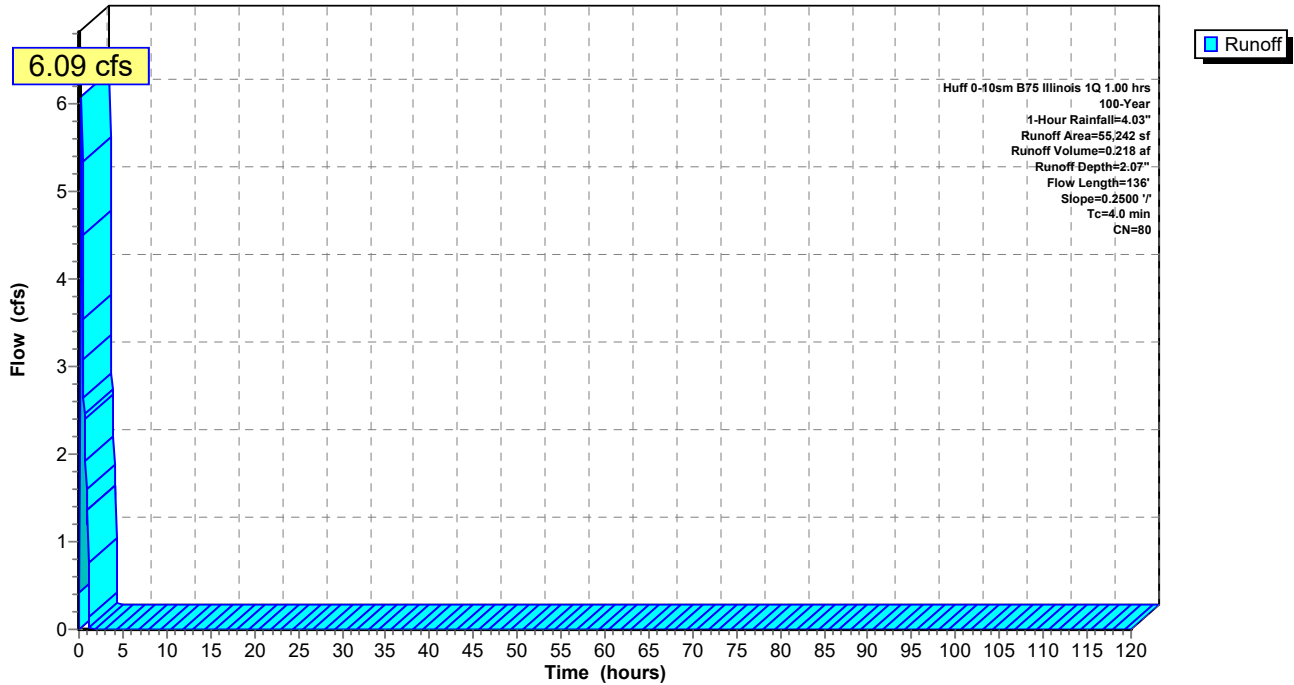
Area (sf)	CN	Description
55,242	80	>75% Grass cover, Good, HSG D
55,242		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	36	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	136	Total			

**Subcatchment N-B11: Subcat N-B11**

Hydrograph



**Summary for Subcatchment N-B12: Subcat N-B12**

Runoff = 8.77 cfs @ 0.31 hrs, Volume= 0.319 af, Depth= 2.23"

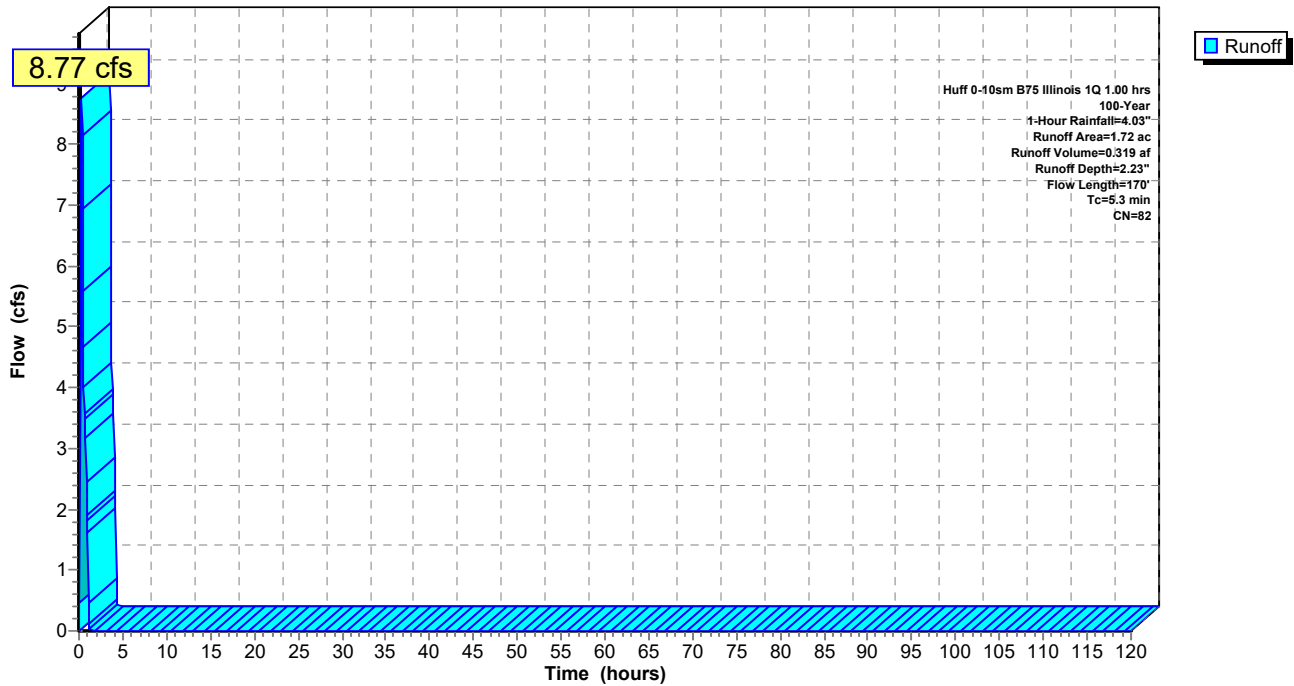
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

Area (ac)	CN	Description
1.45	80	>75% Grass cover, Good, HSG D
0.27	93	Paved roads w/open ditches, 50% imp, HSG D
1.72	82	Weighted Average
1.59		92.15% Pervious Area
0.14		7.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	100	0.1588	0.36		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.7	70	0.0608	1.73		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
5.3	170	Total			

**Subcatchment N-B12: Subcat N-B12**

Hydrograph



**Summary for Subcatchment N-B13: Subcat N-B13**

Runoff = 10.04 cfs @ 0.24 hrs, Volume= 0.346 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

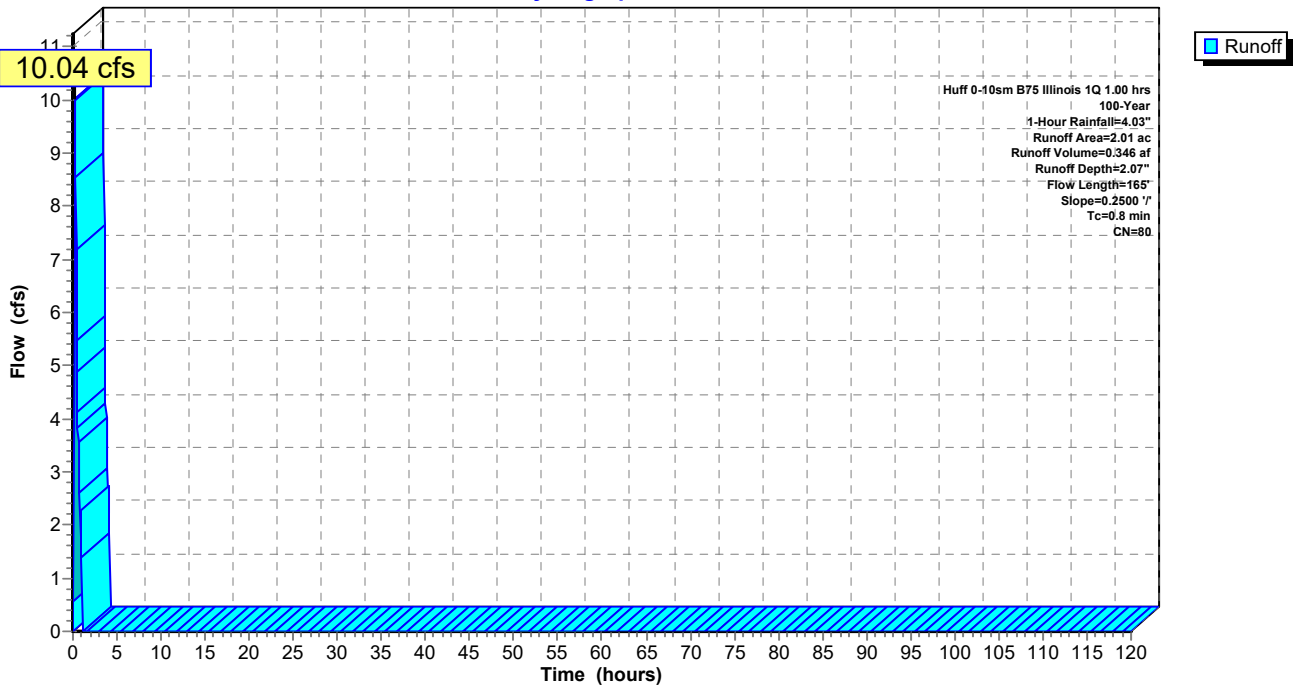
Area (ac)	CN	Description
2.01	80	>75% Grass cover, Good, HSG D
2.01		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.2500	3.53		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 2.80"
0.3	65	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.8	165	Total			

**Subcatchment N-B13: Subcat N-B13**

Hydrograph



**Summary for Subcatchment N-B14: Subcat N-B14**

Runoff = 4.41 cfs @ 0.21 hrs, Volume= 0.149 af, Depth= 2.66"

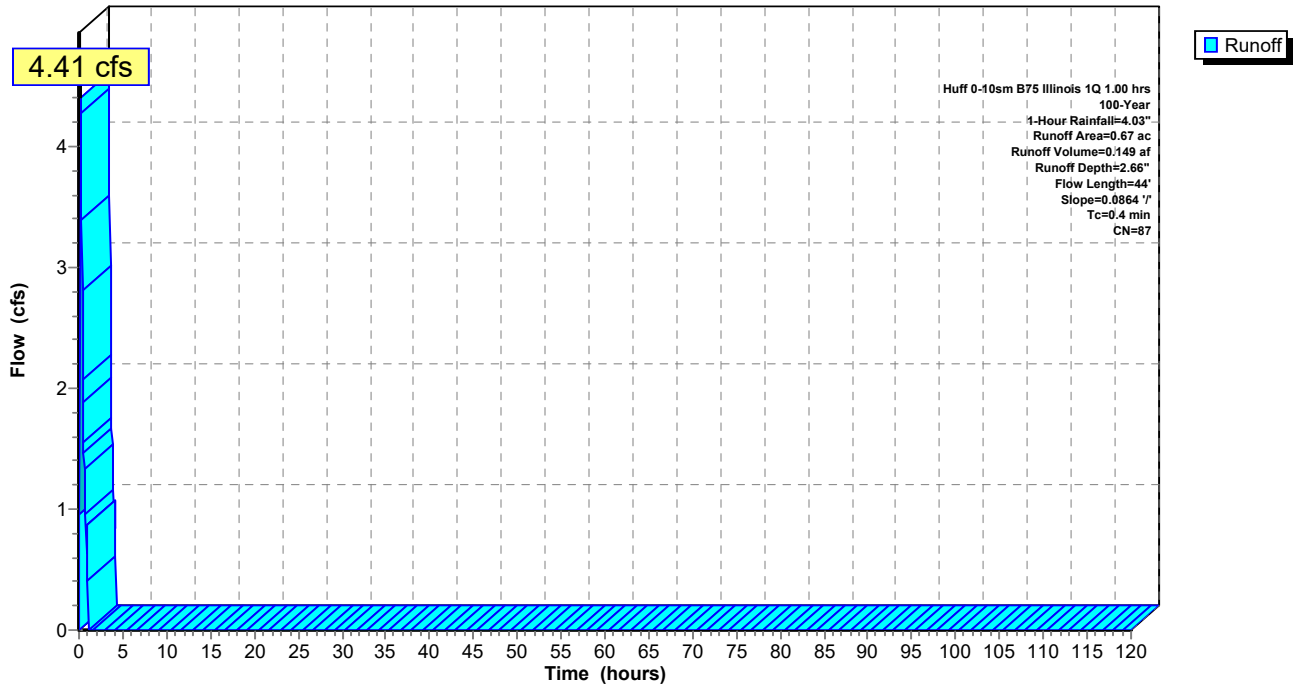
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

Area (ac)	CN	Description
0.29	80	>75% Grass cover, Good, HSG D
0.38	93	Paved roads w/open ditches, 50% imp, HSG D
0.67	87	Weighted Average
0.48		71.64% Pervious Area
0.19		28.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	44	0.0864	1.96		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment N-B14: Subcat N-B14**

Hydrograph



**Summary for Subcatchment N-B15: Subcat N-B15**

Runoff = 0.20 cfs @ 0.24 hrs, Volume= 0.007 af, Depth= 2.07"

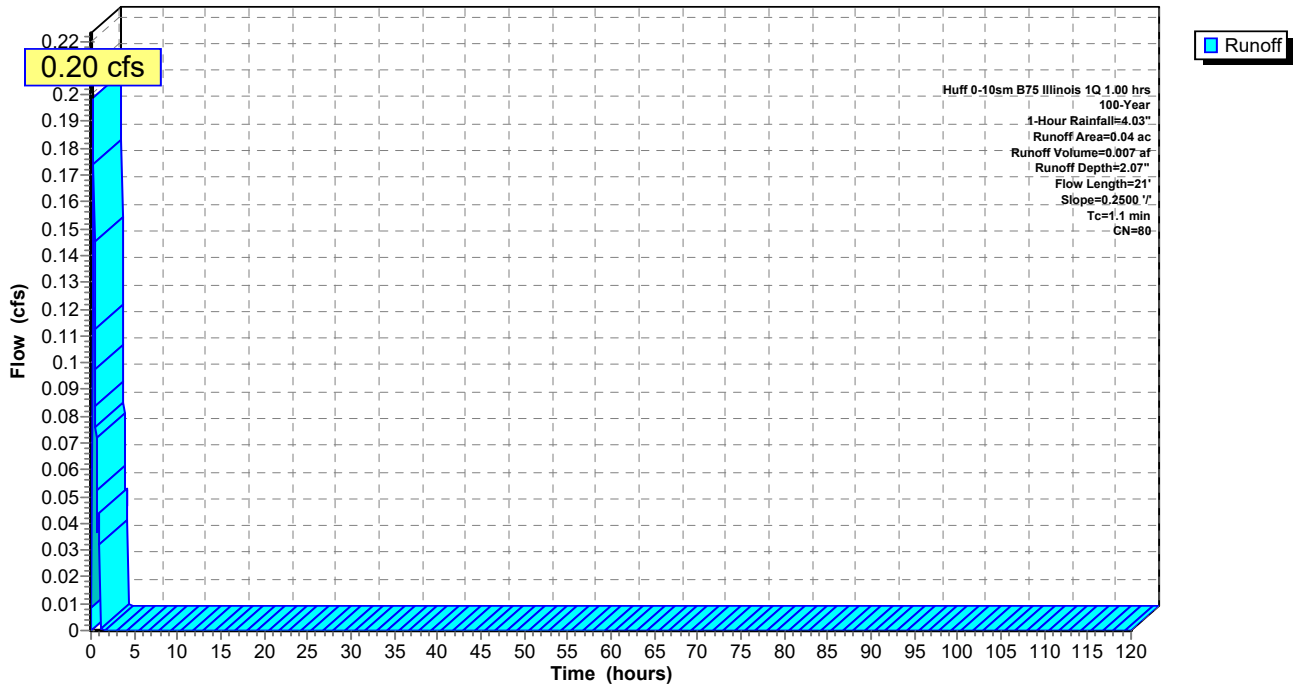
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

Area (ac)	CN	Description
0.04	80	>75% Grass cover, Good, HSG D
0.04		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	21	0.2500	0.32		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-B15: Subcat N-B15**

Hydrograph



**Summary for Subcatchment N-B16: Subcat N-B16**

Runoff = 0.61 cfs @ 0.22 hrs, Volume= 0.021 af, Depth= 2.48"

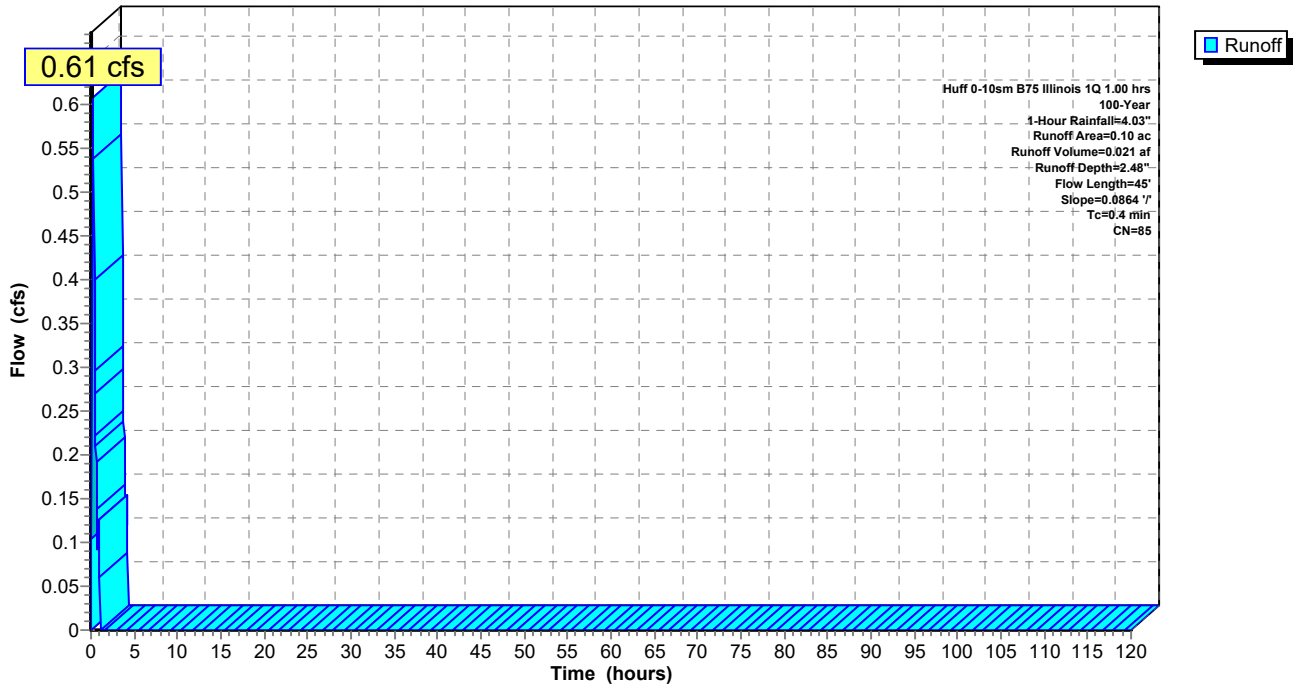
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

Area (ac)	CN	Description
0.06	80	>75% Grass cover, Good, HSG D
0.04	93	Paved roads w/open ditches, 50% imp, HSG D
0.10	85	Weighted Average
0.08		80.00% Pervious Area
0.02		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	45	0.0864	1.97		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment N-B16: Subcat N-B16**

Hydrograph



**Summary for Subcatchment N-B2: Subcat N-B2**

Runoff = 20.56 cfs @ 0.32 hrs, Volume= 0.773 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

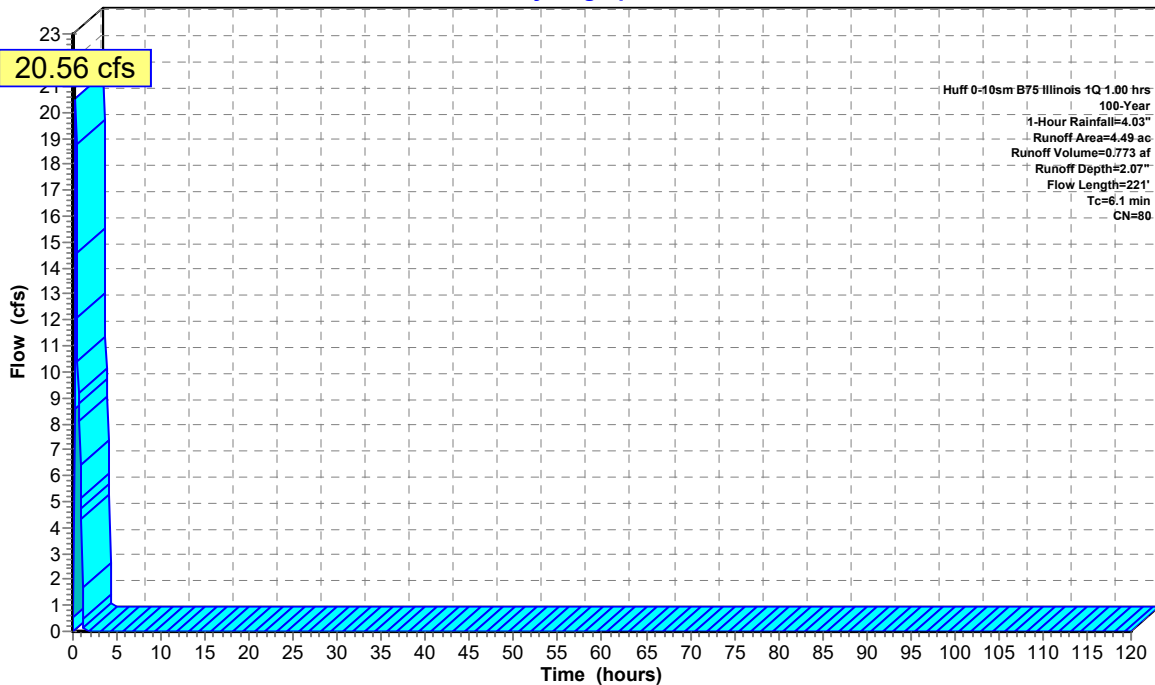
Area (ac)	CN	Description
4.49	80	>75% Grass cover, Good, HSG D
4.49		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	121	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.1	221	Total			

**Subcatchment N-B2: Subcat N-B2**

Hydrograph



**Summary for Subcatchment N-B3: Subcat N-B3**

Runoff = 16.45 cfs @ 0.29 hrs, Volume= 0.590 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

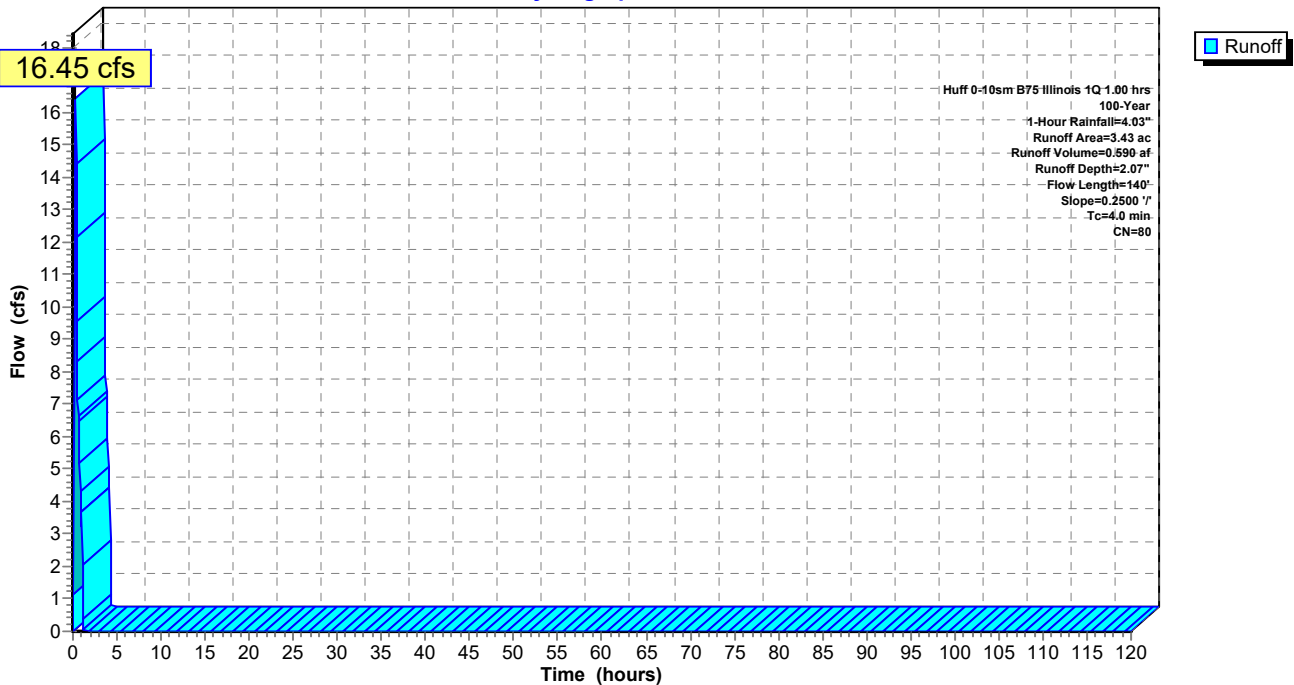
Area (ac)	CN	Description
3.43	80	>75% Grass cover, Good, HSG D
3.43		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	40	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	140	Total			

**Subcatchment N-B3: Subcat N-B3**

Hydrograph





**Summary for Subcatchment N-B4: Subcat N-B4**

Runoff = 18.26 cfs @ 0.29 hrs, Volume= 0.655 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

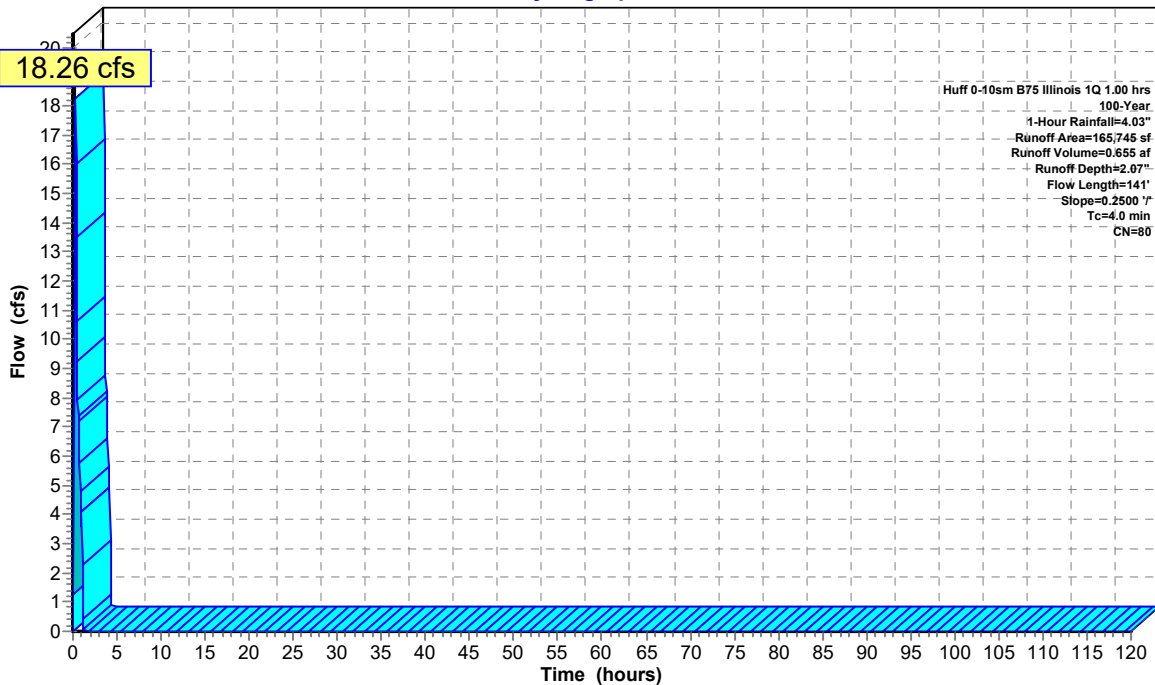
Area (sf)	CN	Description
165,745	80	>75% Grass cover, Good, HSG D
165,745		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	41	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	141	Total			

**Subcatchment N-B4: Subcat N-B4**

Hydrograph



Runoff

Huff 0-10sm B75 Illinois 1Q 1.00 hrs  
 100-Year  
 1-Hour Rainfall=4.03"  
 Runoff Area=165,745 sf  
 Runoff Volume=0.655 af  
 Runoff Depth=2.07"  
 Flow Length=141'  
 Slope=0.2500 f'  
 Tc=4.0 min  
 CN=80

**Summary for Subcatchment N-B5: Subcat N-B5**

Runoff = 21.58 cfs @ 0.29 hrs, Volume= 0.775 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

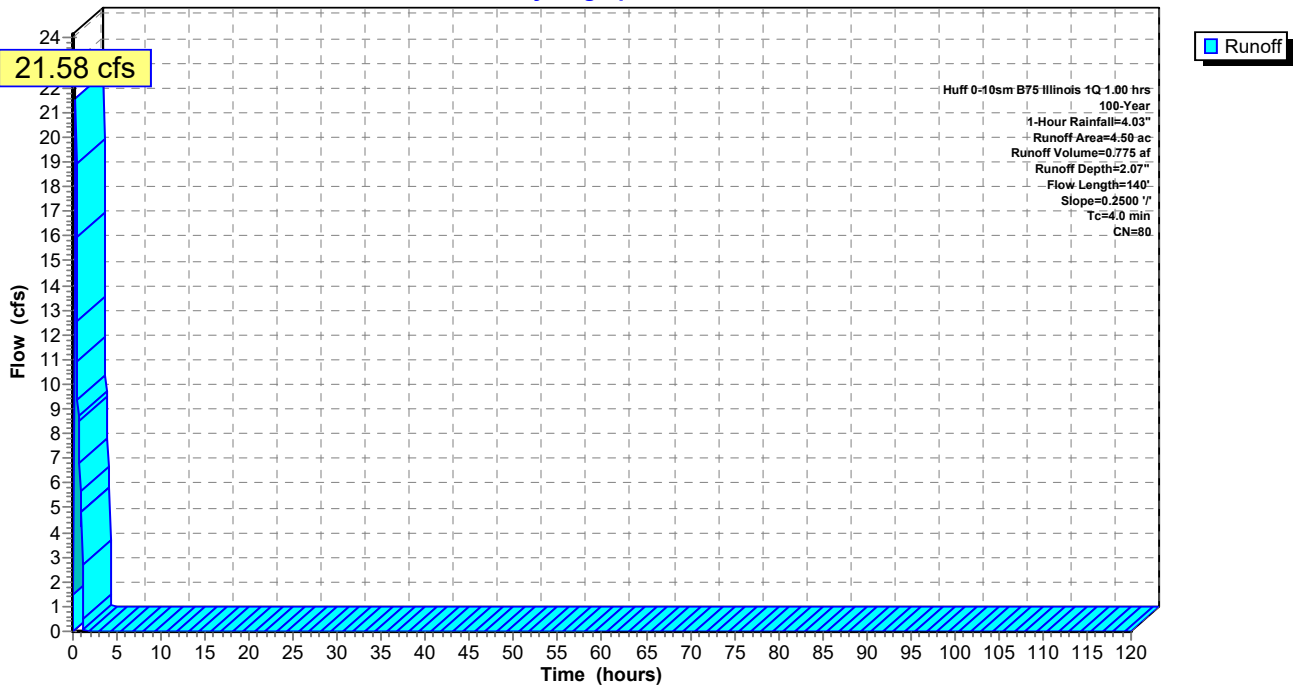
Area (ac)	CN	Description
4.50	80	>75% Grass cover, Good, HSG D
4.50		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	40	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	140	Total			

**Subcatchment N-B5: Subcat N-B5**

Hydrograph



**Summary for Subcatchment N-B6: Subcat N-B6**

Runoff = 20.58 cfs @ 0.29 hrs, Volume= 0.739 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

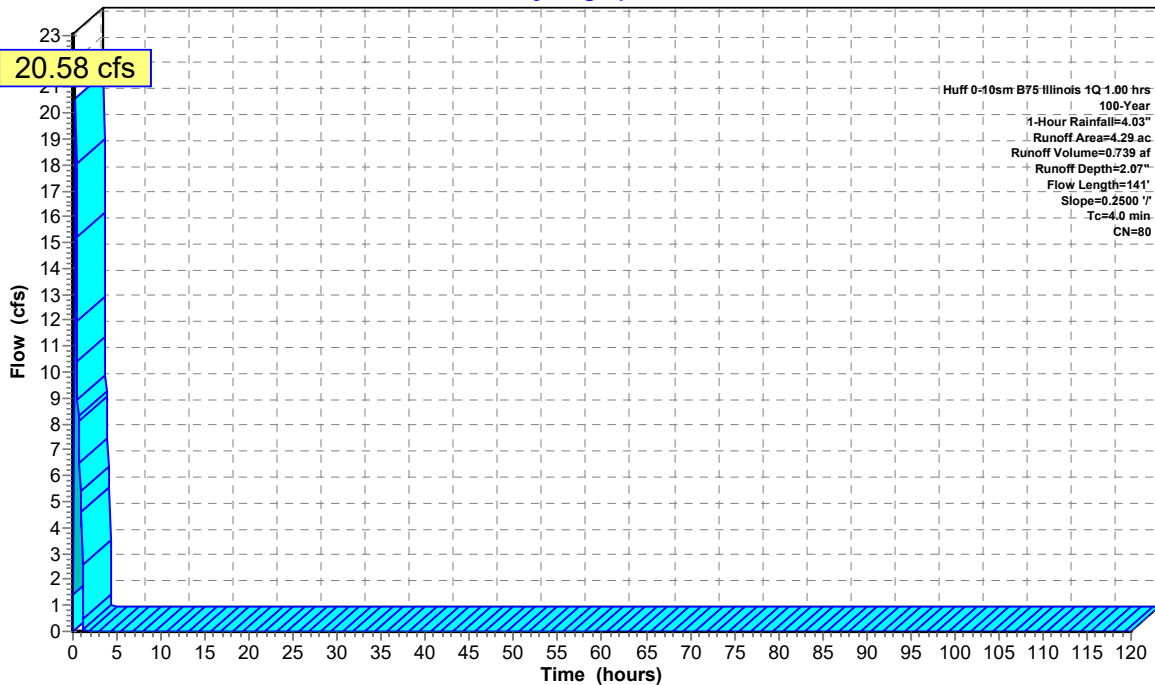
Area (ac)	CN	Description
4.29	80	>75% Grass cover, Good, HSG D
4.29		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	41	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	141	Total			

**Subcatchment N-B6: Subcat N-B6**

Hydrograph



Runoff

**Summary for Subcatchment N-B7: Subcat N-B7**

Runoff = 19.02 cfs @ 0.29 hrs, Volume= 0.682 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

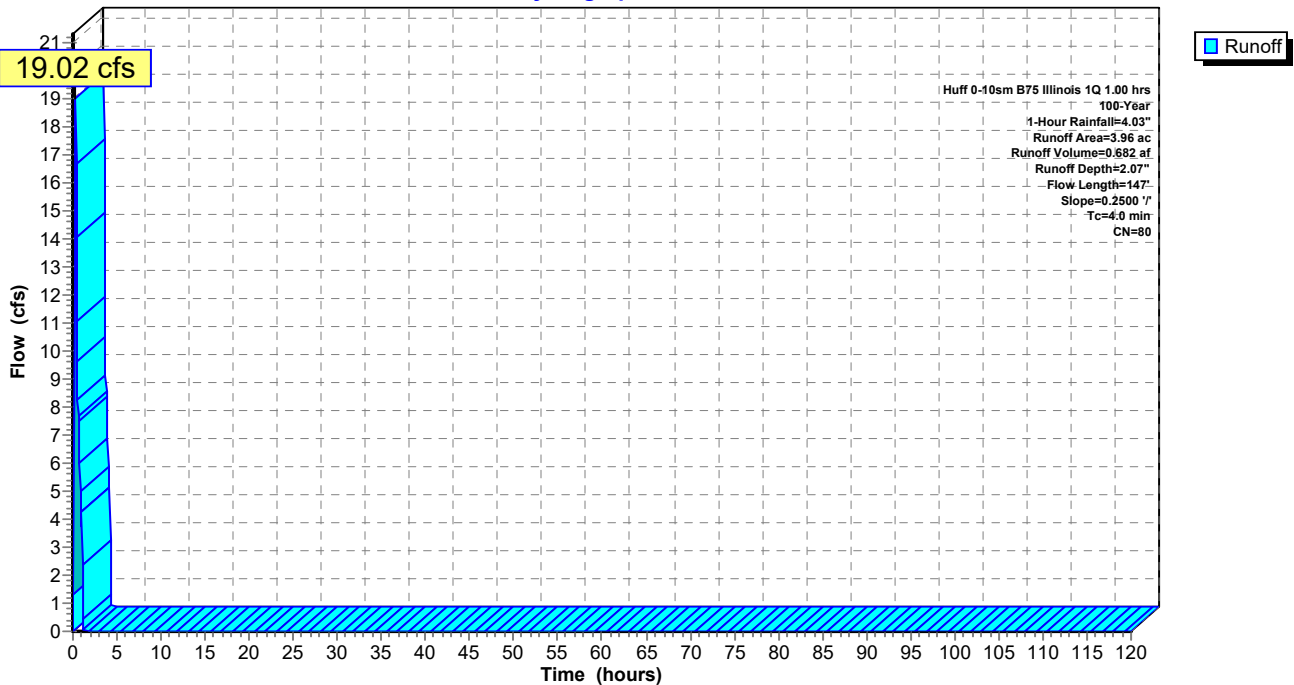
Area (ac)	CN	Description
3.96	80	>75% Grass cover, Good, HSG D
3.96		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	47	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	147	Total			

**Subcatchment N-B7: Subcat N-B7**

Hydrograph



**Summary for Subcatchment N-B8: Subcat N-B8**

Runoff = 16.91 cfs @ 0.29 hrs, Volume= 0.607 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

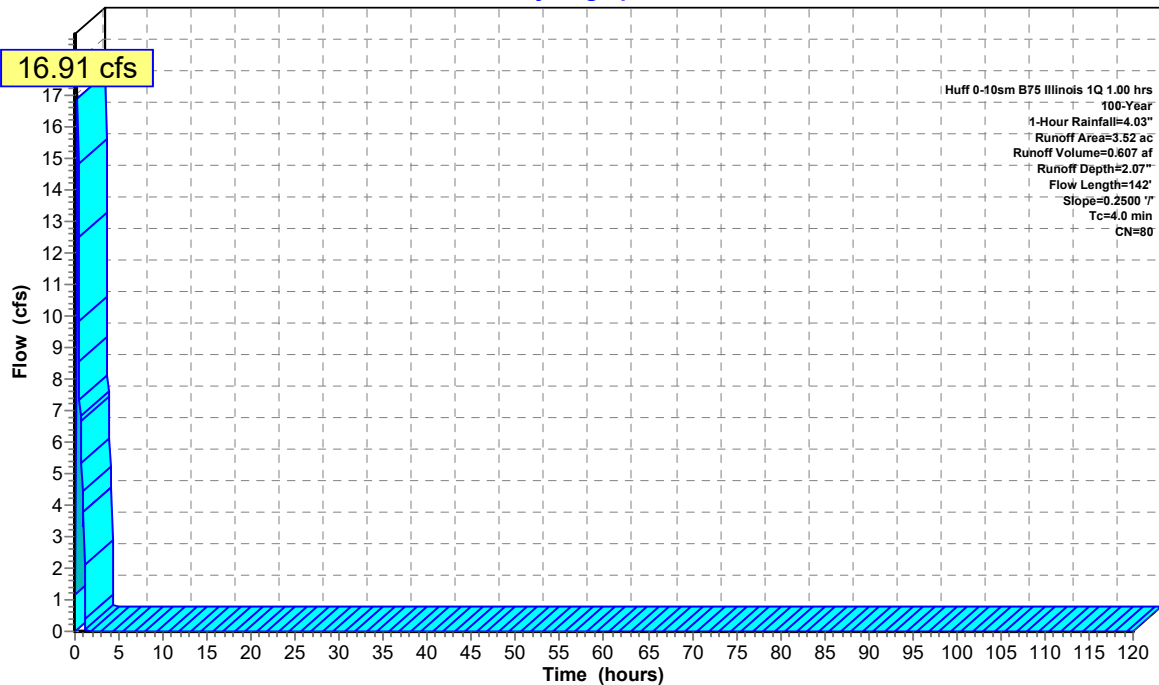
Area (ac)	CN	Description
3.52	80	>75% Grass cover, Good, HSG D
3.52		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	42	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	142	Total			

**Subcatchment N-B8: Subcat N-B8**

Hydrograph



**Summary for Subcatchment N-B9: Subcat N-B9**

Runoff = 5.61 cfs @ 0.28 hrs, Volume= 0.200 af, Depth= 2.07"

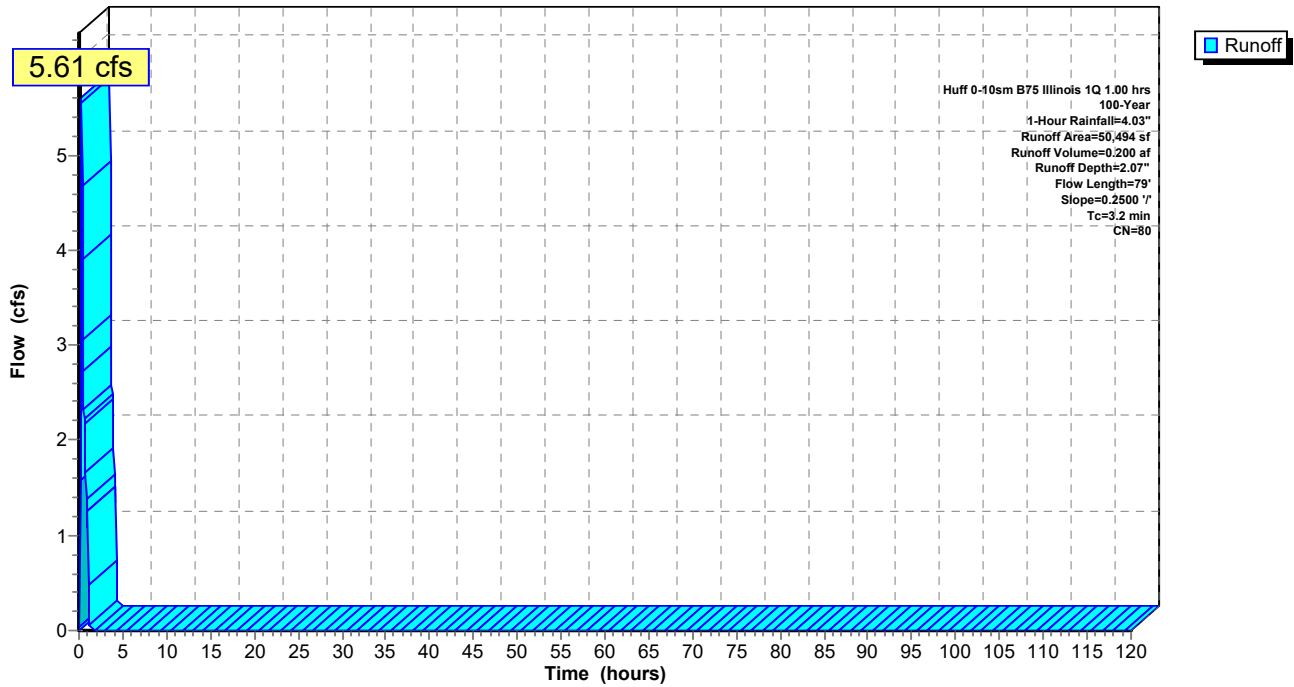
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

Area (sf)	CN	Description
50,494	80	>75% Grass cover, Good, HSG D
50,494		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	79	0.2500	0.42		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-B9: Subcat N-B9**

Hydrograph



**Summary for Subcatchment N-C1: Subcat N-C1**

Runoff = 31.53 cfs @ 0.33 hrs, Volume= 1.203 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

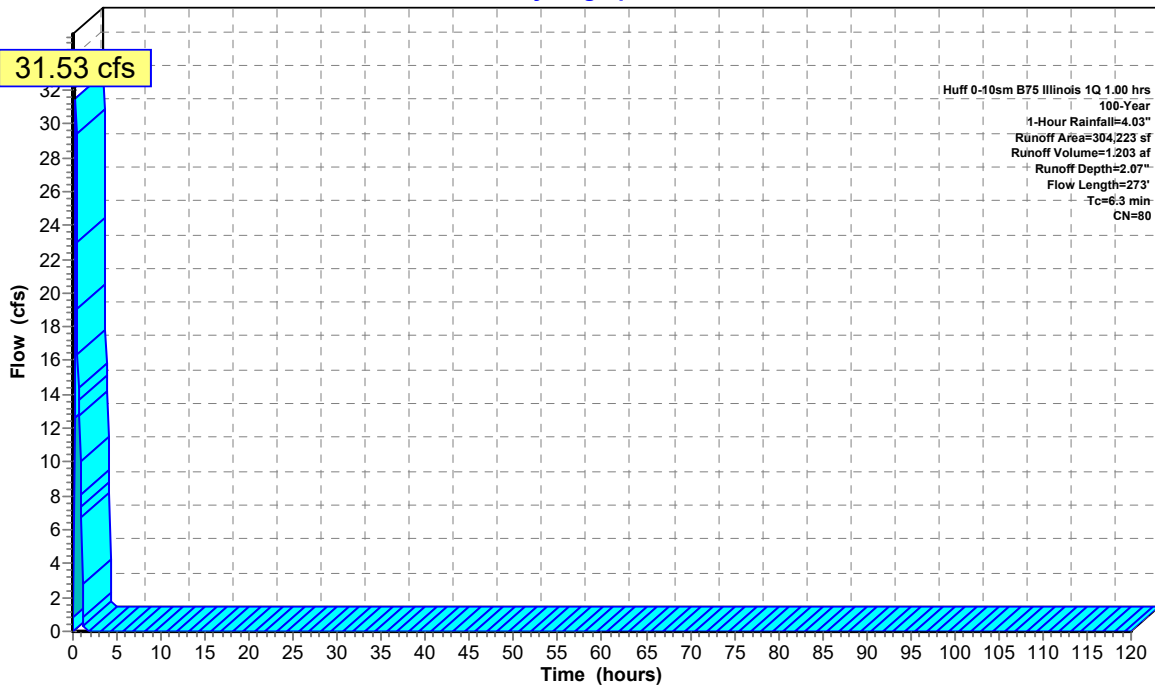
Area (sf)	CN	Description
304,223	80	>75% Grass cover, Good, HSG D
304,223		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.8	173	0.2418	3.44		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.3	273	Total			

**Subcatchment N-C1: Subcat N-C1**

Hydrograph



Runoff

Huff 0-10sm B75 Illinois 1Q 1.00 hrs  
 100-Year  
 1-Hour Rainfall=4.03"  
 Runoff Area=304,223 sf  
 Runoff Volume=1.203 af  
 Runoff Depth=2.07"  
 Flow Length=273'  
 Tc=6.3 min  
 CN=80

**Summary for Subcatchment N-C2: Subcat N-C2**

Runoff = 20.16 cfs @ 0.29 hrs, Volume= 0.723 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

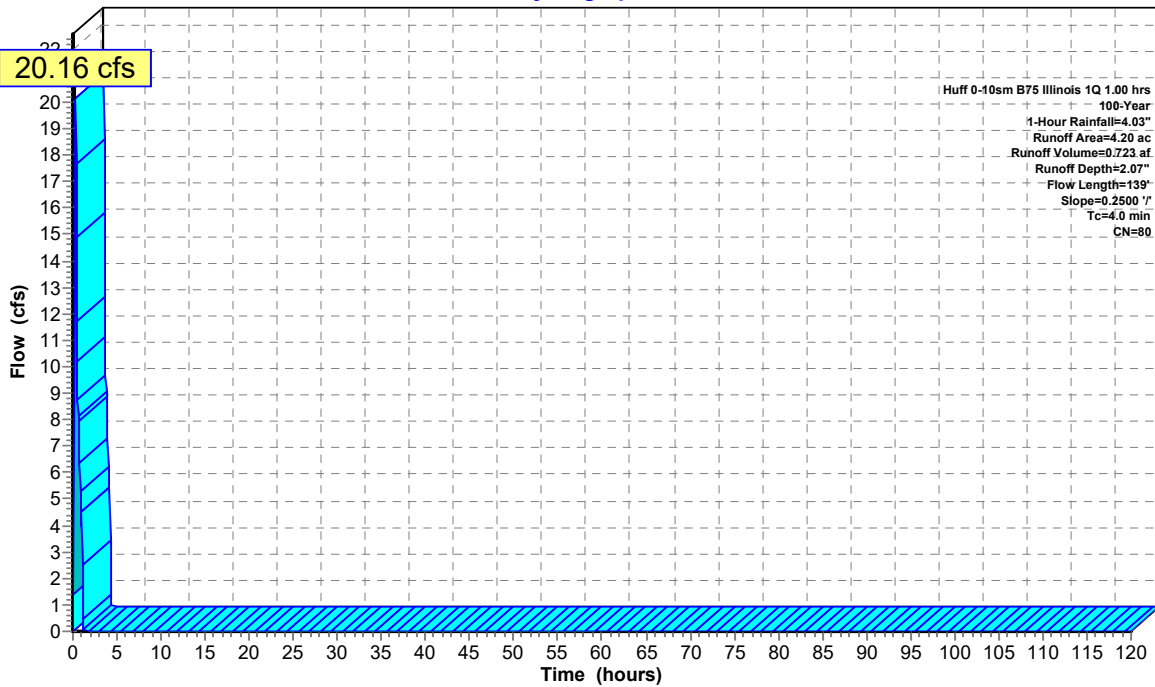
Area (ac)	CN	Description
4.20	80	>75% Grass cover, Good, HSG D
4.20		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	39	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	139	Total			

**Subcatchment N-C2: Subcat N-C2**

Hydrograph



Runoff

Huff 0-10sm B75 Illinois 1Q 1.00 hrs  
 100-Year  
 1-Hour Rainfall=4.03"  
 Runoff Area=4.20 ac  
 Runoff Volume=0.723 af  
 Runoff Depth=2.07"  
 Flow Length=139'  
 Slope=0.2500 f'  
 Tc=4.0 min  
 CN=80



**Summary for Subcatchment N-C3: Subcat N-C3**

Runoff = 20.25 cfs @ 0.29 hrs, Volume= 0.727 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

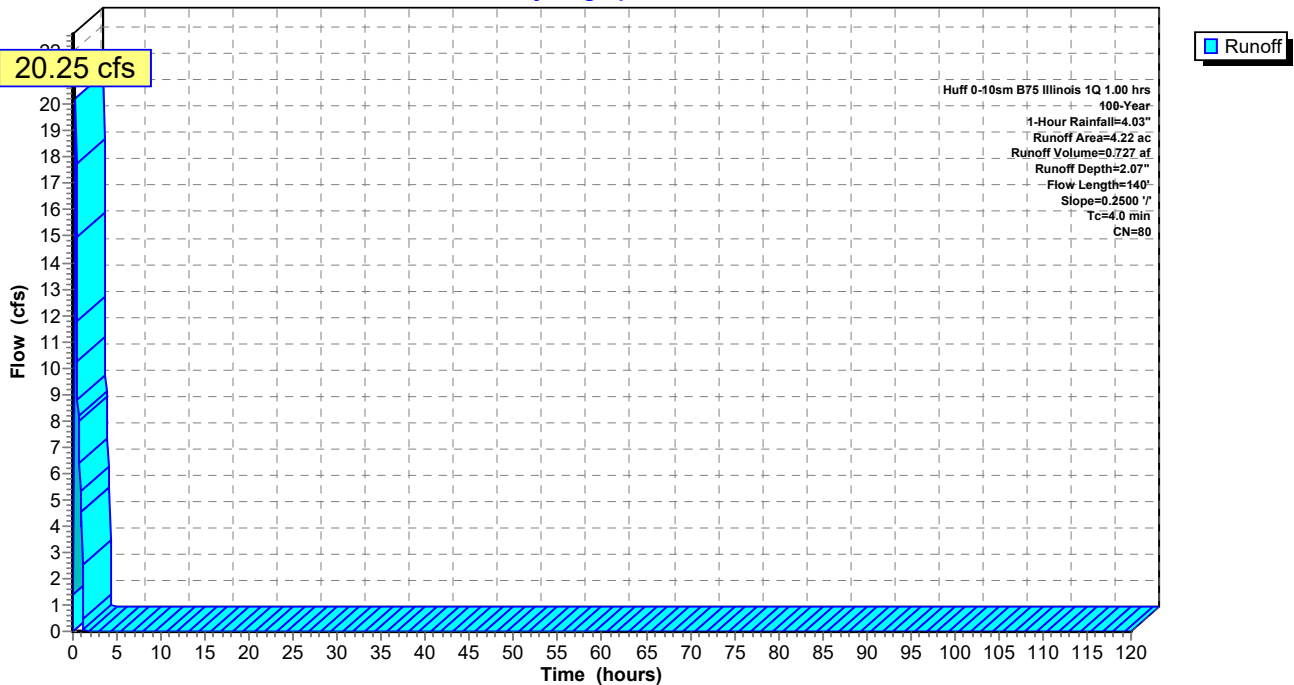
Area (ac)	CN	Description
4.22	80	>75% Grass cover, Good, HSG D
4.22		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	40	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	140	Total			

**Subcatchment N-C3: Subcat N-C3**

Hydrograph



**Summary for Subcatchment N-C4: Subcat N-C4**

Runoff = 16.87 cfs @ 0.29 hrs, Volume= 0.605 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

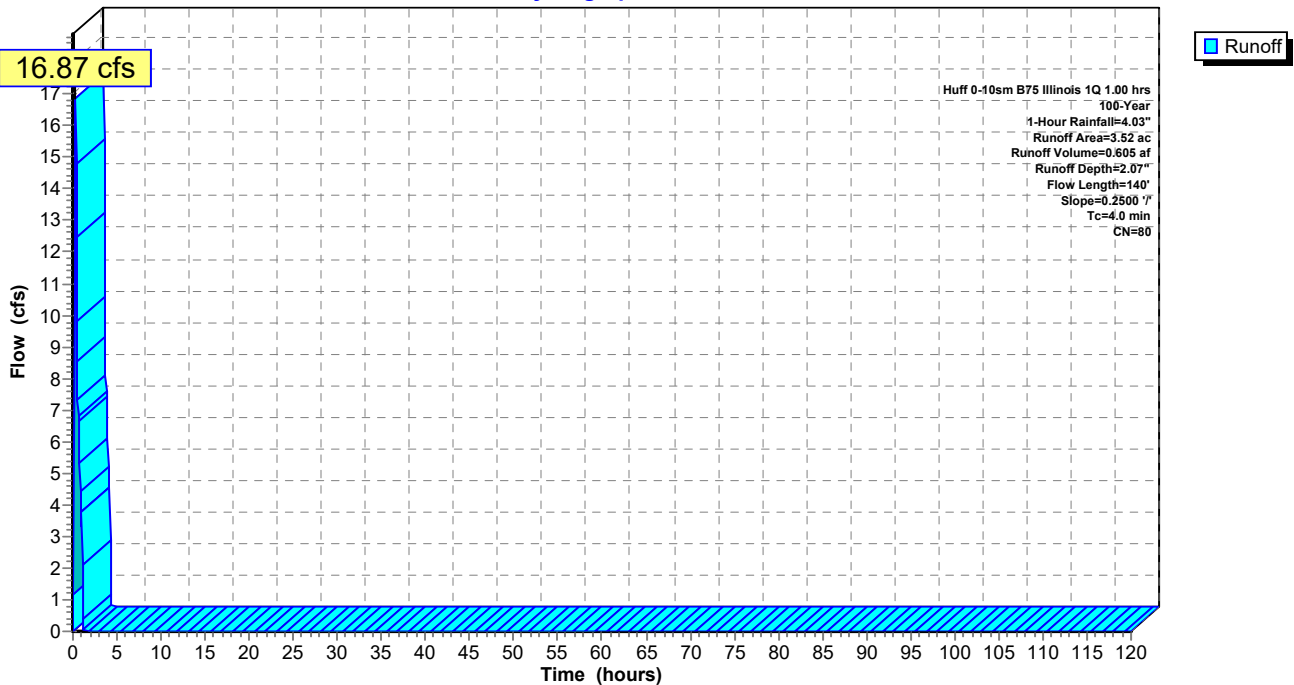
Area (ac)	CN	Description
3.52	80	>75% Grass cover, Good, HSG D
3.52		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	40	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	140	Total			

**Subcatchment N-C4: Subcat N-C4**

Hydrograph



**Summary for Subcatchment N-C5: Subcat N-C5**

Runoff = 3.59 cfs @ 0.29 hrs, Volume= 0.129 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

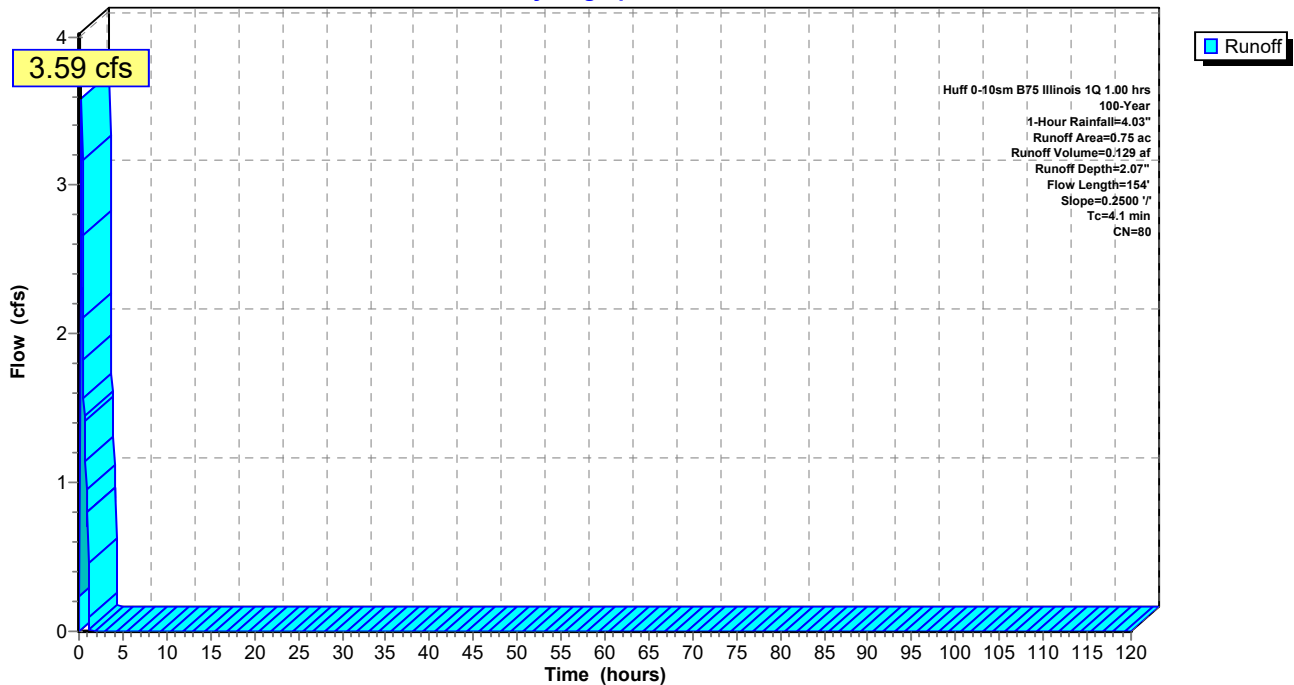
Area (ac)	CN	Description
0.75	80	>75% Grass cover, Good, HSG D
0.75		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.3	54	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	154	Total			

**Subcatchment N-C5: Subcat N-C5**

Hydrograph



**Summary for Subcatchment N-C6: Subcat N-C6**

Runoff = 2.44 cfs @ 0.62 hrs, Volume= 0.142 af, Depth= 2.31"

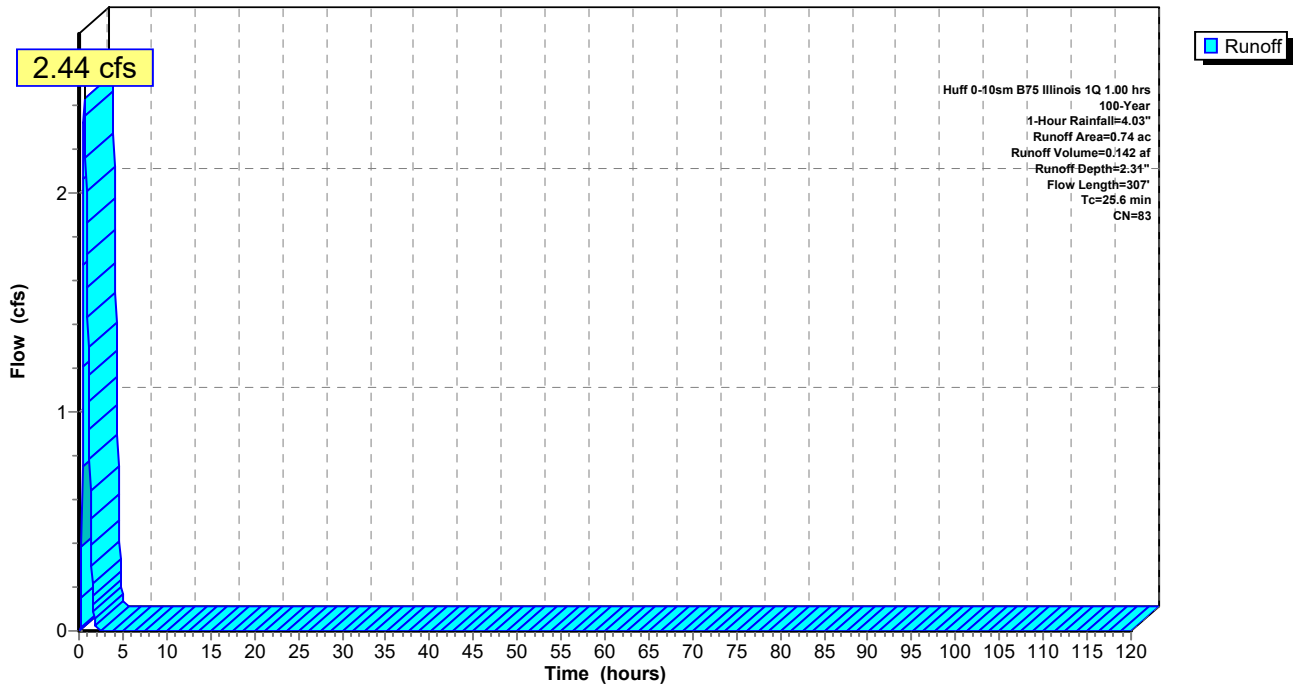
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

Area (ac)	CN	Description
0.59	80	>75% Grass cover, Good, HSG D
0.14	93	Paved roads w/open ditches, 50% imp, HSG D
0.74	83	Weighted Average
0.67		90.37% Pervious Area
0.07		9.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.0	100	0.0200	0.07		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.80"
2.6	207	0.0352	1.31		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
25.6	307	Total			

**Subcatchment N-C6: Subcat N-C6**

Hydrograph



**Summary for Subcatchment N-C7: Subcat N-C7**

Runoff = 5.64 cfs @ 0.28 hrs, Volume= 0.200 af, Depth= 2.07"

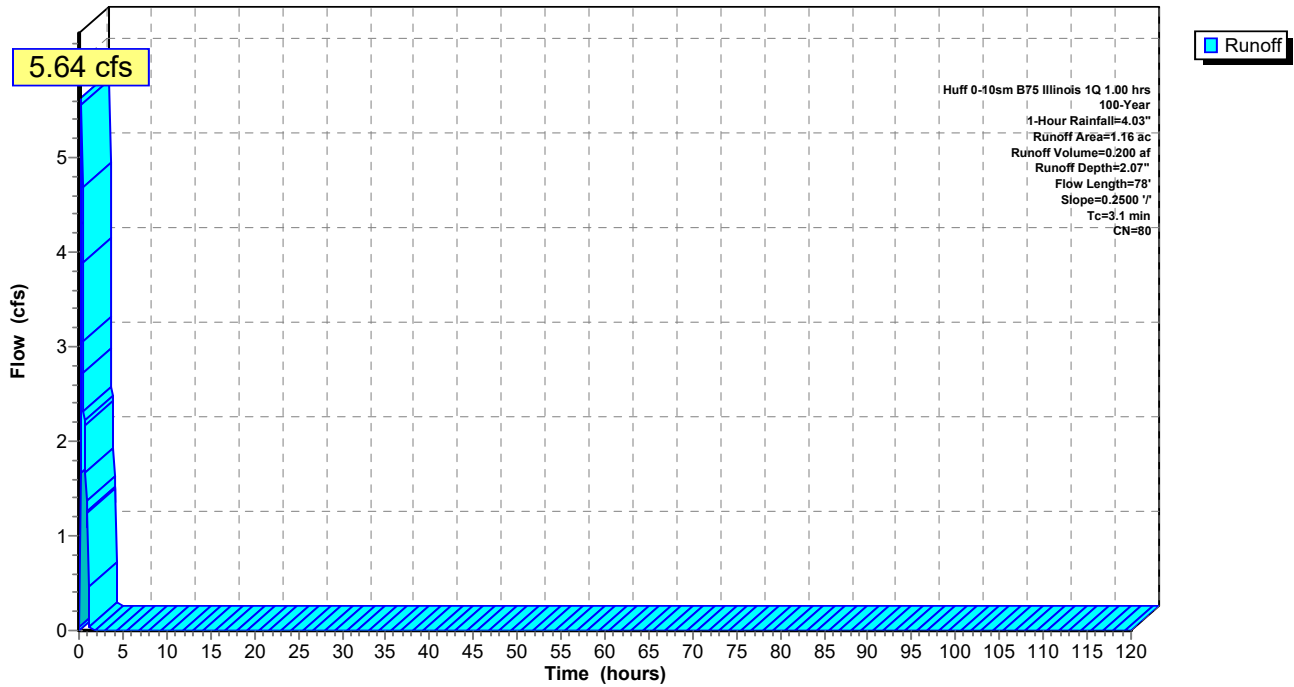
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

Area (ac)	CN	Description
1.16	80	>75% Grass cover, Good, HSG D
1.16		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	78	0.2500	0.42		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-C7: Subcat N-C7**

Hydrograph



**Summary for Subcatchment N-C8: Subcat N-C8**

Runoff = 5.81 cfs @ 0.58 hrs, Volume= 0.326 af, Depth= 2.48"

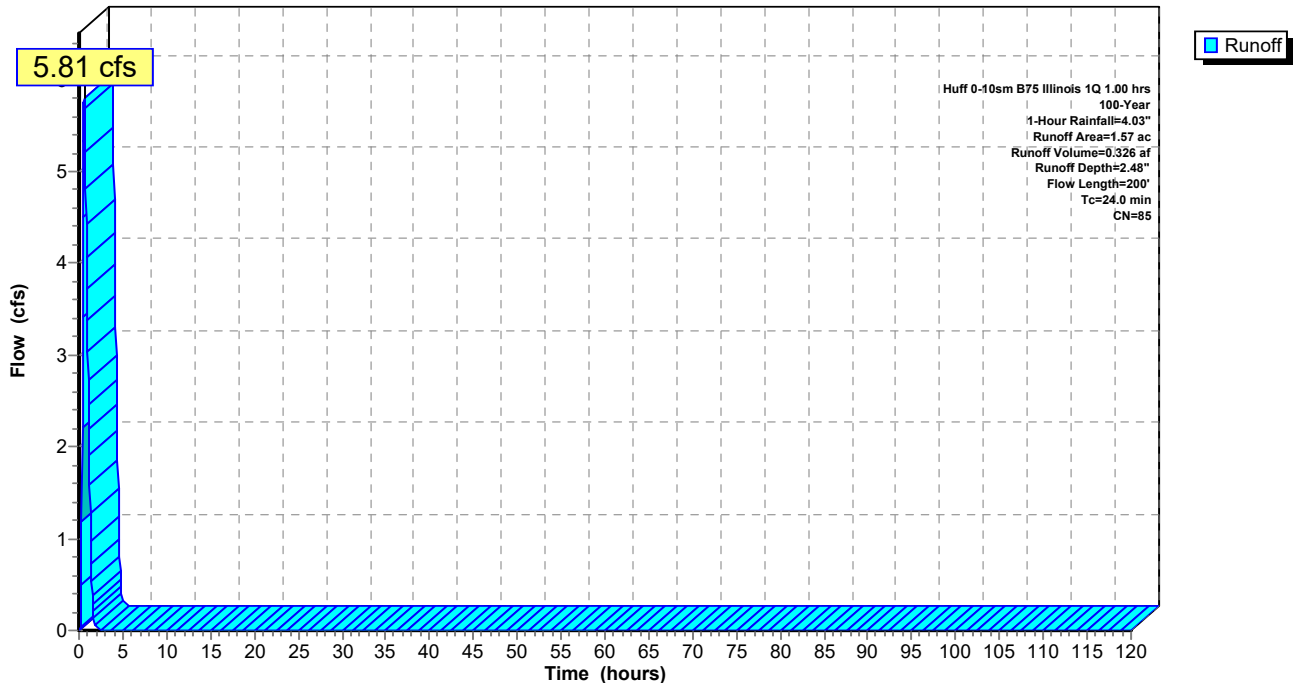
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

Area (ac)	CN	Description
0.65	80	>75% Grass cover, Good, HSG D
0.63	93	Paved roads w/open ditches, 50% imp, HSG D
0.30	79	Woods/grass comb., Good, HSG D
1.57	85	Weighted Average
1.26		80.08% Pervious Area
0.31		19.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.0	100	0.0200	0.07		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.80"
1.0	100	0.0611	1.73		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
24.0	200	Total			

**Subcatchment N-C8: Subcat N-C8**

Hydrograph



**Summary for Subcatchment N-D1: Subcat N-D1**

Runoff = 0.52 cfs @ 0.28 hrs, Volume= 0.019 af, Depth= 2.07"

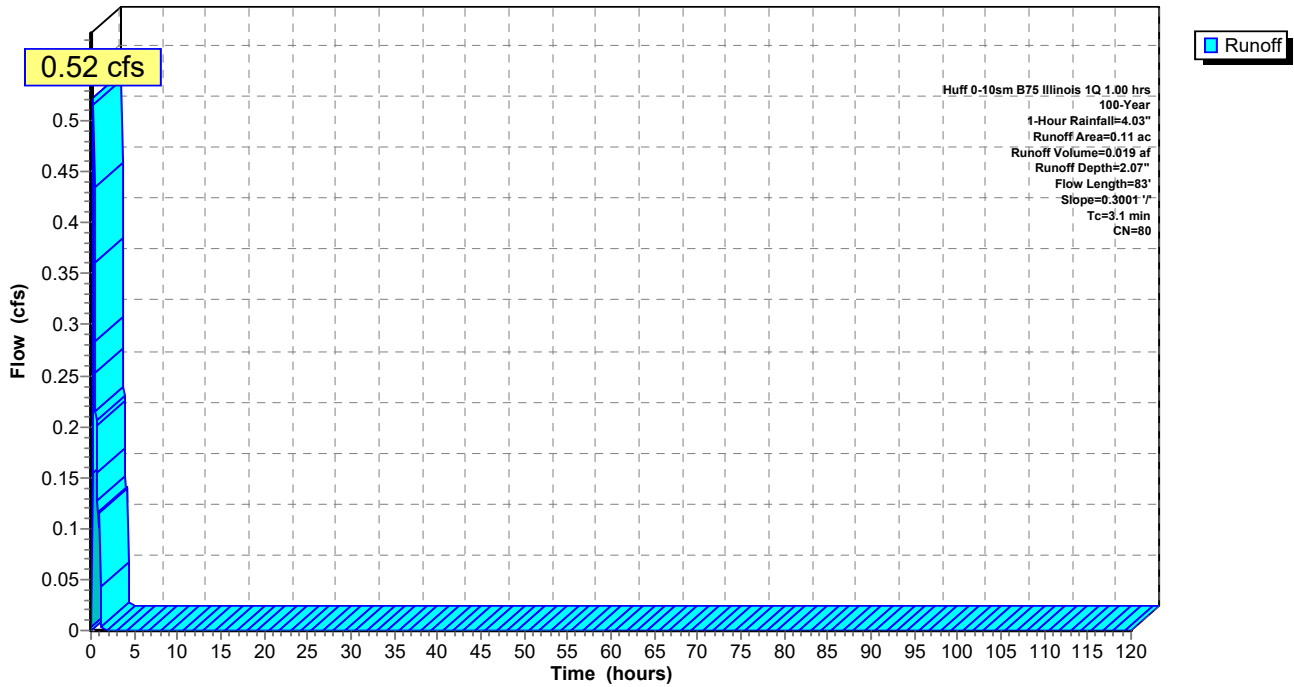
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

Area (ac)	CN	Description
0.11	80	>75% Grass cover, Good, HSG D
0.11		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	83	0.3001	0.45		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-D1: Subcat N-D1**

Hydrograph



**Summary for Subcatchment N-D2: Subcat N-D2**

Runoff = 22.72 cfs @ 0.29 hrs, Volume= 0.810 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

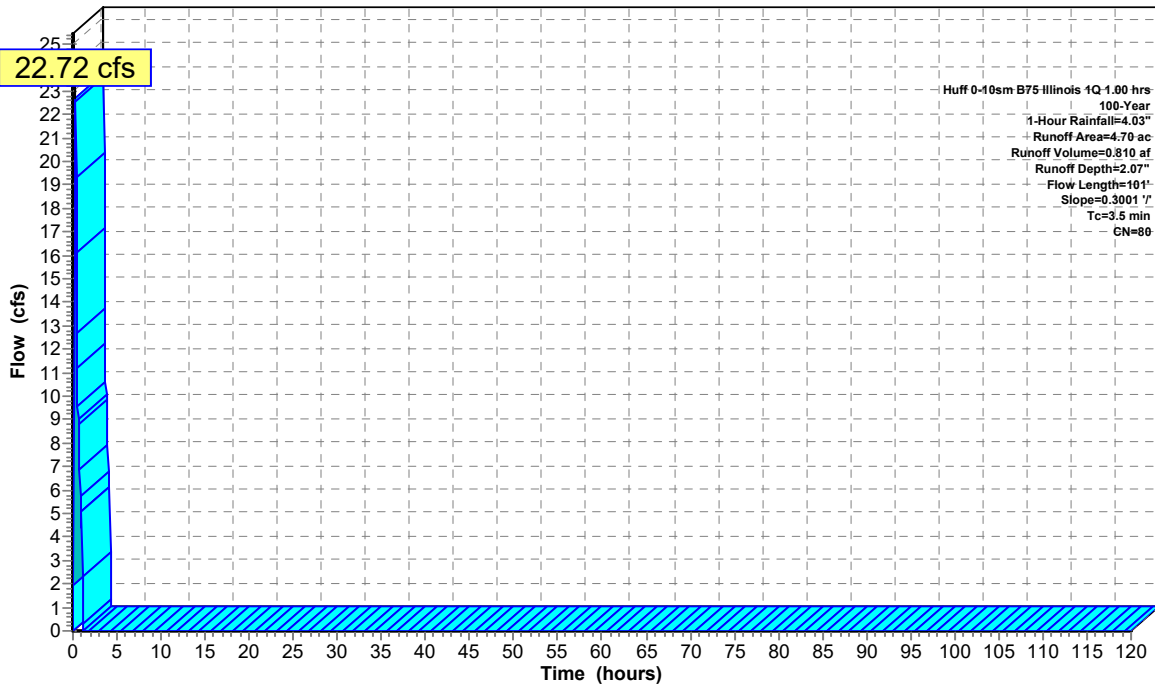
Area (ac)	CN	Description
4.54	80	>75% Grass cover, Good, HSG D
0.16	93	Paved roads w/open ditches, 50% imp, HSG D
4.70	80	Weighted Average
4.62		98.26% Pervious Area
0.08		1.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	100	0.3001	0.47		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.0	1	0.3001	3.83		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.5	101	Total			

**Subcatchment N-D2: Subcat N-D2**

Hydrograph





**Summary for Subcatchment N-E1: Subcat N-E1**

Runoff = 43.85 cfs @ 0.26 hrs, Volume= 1.542 af, Depth= 2.07"

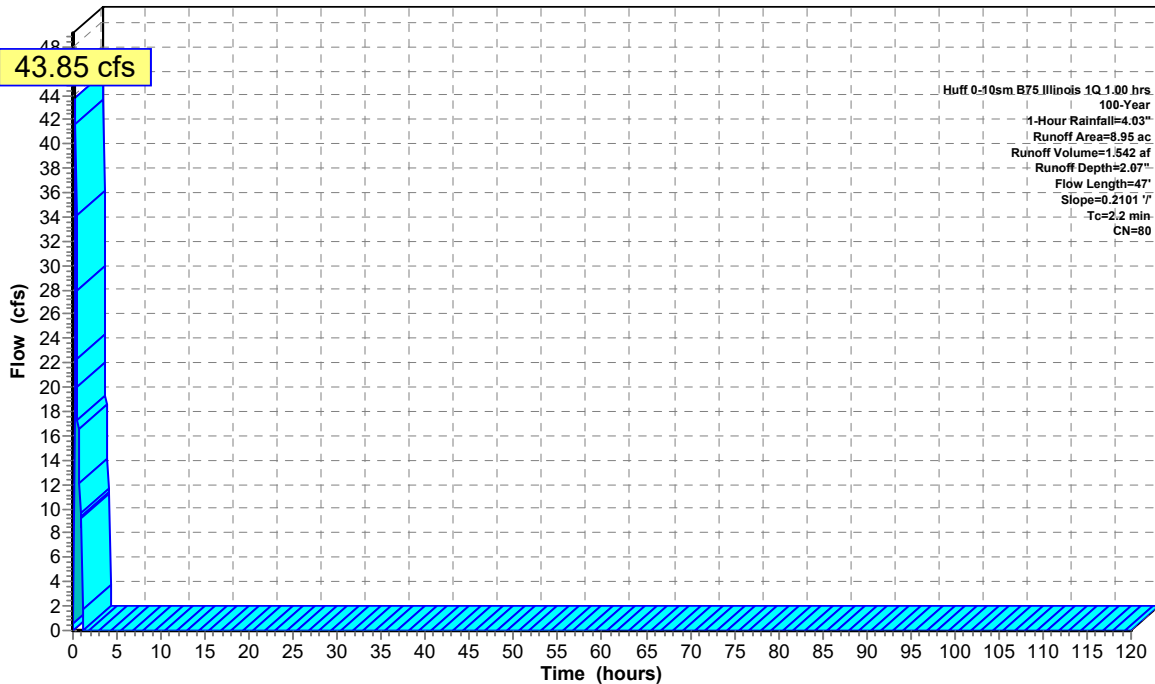
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 1Q 1.00 hrs 100-Year, 1-Hour Rainfall=4.03"

Area (ac)	CN	Description
8.95	80	>75% Grass cover, Good, HSG D
8.95		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	47	0.2101	0.35		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-E1: Subcat N-E1**

Hydrograph



Runoff

Huff 0-10sm B75 Illinois 1Q 1.00 hrs  
 100-Year  
 1-Hour Rainfall=4.03"  
 Runoff Area=8.95 ac  
 Runoff Volume=1.542 af  
 Runoff Depth=2.07"  
 Flow Length=47'  
 Slope=0.2101 1/1  
 Tc=2.2 min  
 CN=80

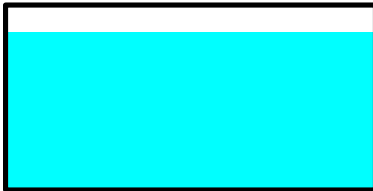
### Summary for Reach Cu-1: Culvert 1

Inflow Area = 90.82 ac, 2.38% Impervious, Inflow Depth = 2.11" for 100-Year, 1-Hour event  
 Inflow = 233.30 cfs @ 0.71 hrs, Volume= 15.993 af  
 Outflow = 233.11 cfs @ 0.72 hrs, Volume= 15.993 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 8.54 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 1.42 fps, Avg. Travel Time= 1.3 min

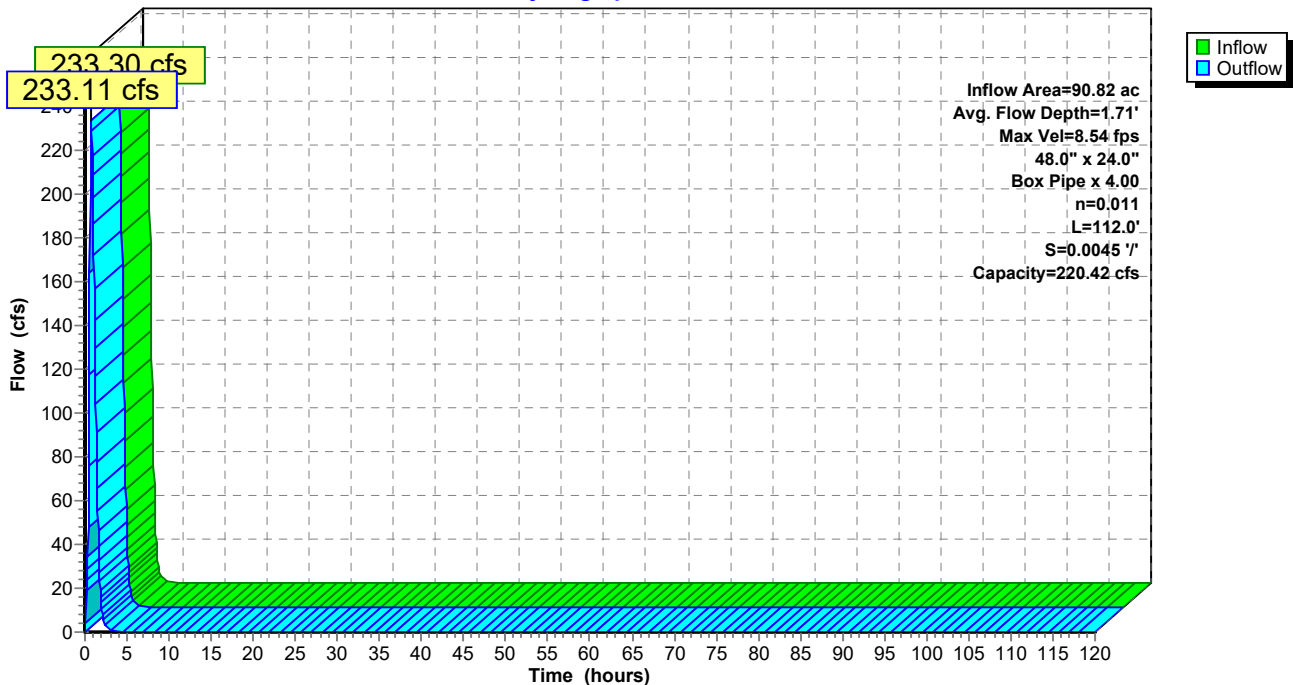
Peak Storage= 3,059 cf @ 0.72 hrs  
 Average Depth at Peak Storage= 1.71'  
 Bank-Full Depth= 2.00' Flow Area= 32.0 sf, Capacity= 220.42 cfs

A factor of 4.00 has been applied to the storage and discharge capacity  
 48.0" W x 24.0" H Box Pipe  
 n= 0.011 Concrete pipe, straight & clean  
 Length= 112.0' Slope= 0.0045 '/'  
 Inlet Invert= 737.00', Outlet Invert= 736.50'



### Reach Cu-1: Culvert 1

Hydrograph



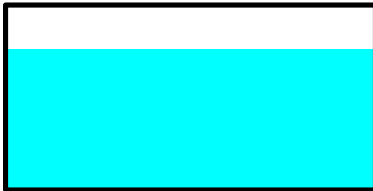
### Summary for Reach Cu-2: Culvert 2

Inflow Area = 39.65 ac, 1.66% Impervious, Inflow Depth = 2.10" for 100-Year, 1-Hour event  
 Inflow = 144.34 cfs @ 0.48 hrs, Volume= 6.942 af  
 Outflow = 144.14 cfs @ 0.48 hrs, Volume= 6.942 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 11.89 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 2.10 fps, Avg. Travel Time= 0.6 min

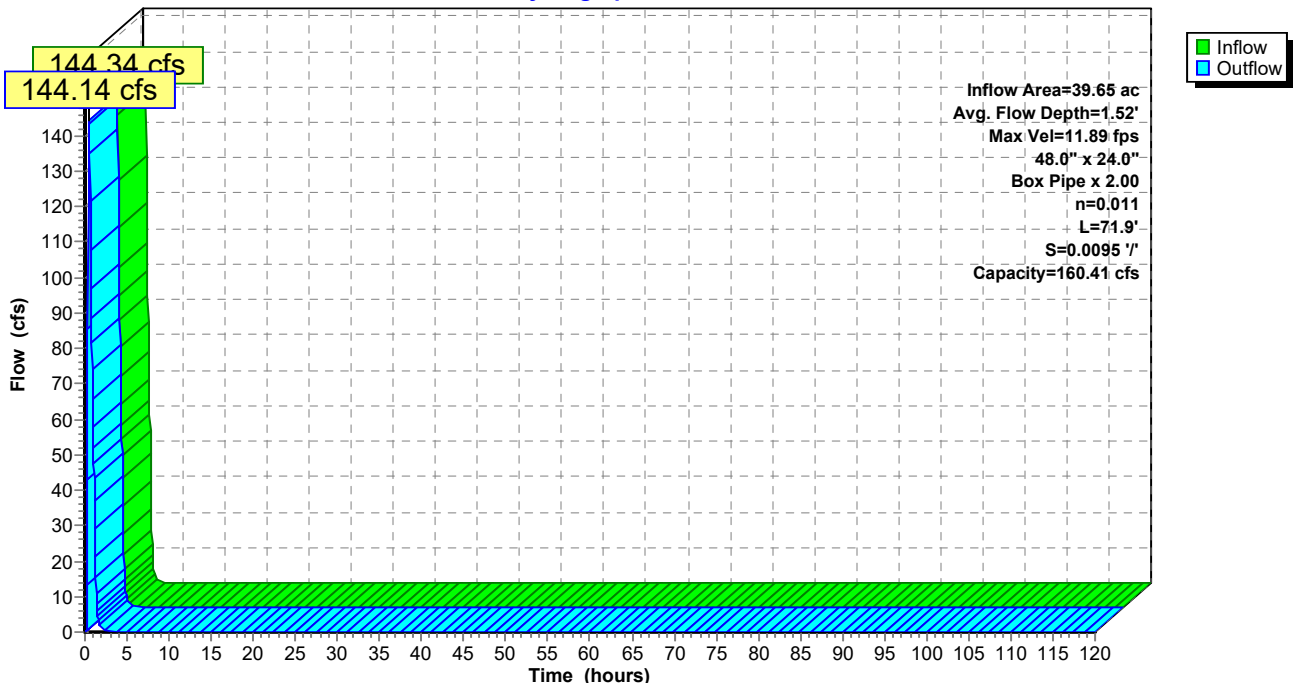
Peak Storage= 872 cf @ 0.48 hrs  
 Average Depth at Peak Storage= 1.52'  
 Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 160.41 cfs

A factor of 2.00 has been applied to the storage and discharge capacity  
 48.0" W x 24.0" H Box Pipe  
 n= 0.011 Concrete pipe, straight & clean  
 Length= 71.9' Slope= 0.0095 '/  
 Inlet Invert= 737.18', Outlet Invert= 736.50'



### Reach Cu-2: Culvert 2

Hydrograph



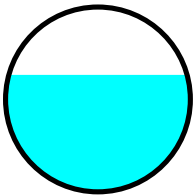
**Summary for Reach Cu-3: Culvert 3**

Inflow Area = 43.19 ac, 1.69% Impervious, Inflow Depth = 2.10" for 100-Year, 1-Hour event  
 Inflow = 143.85 cfs @ 0.52 hrs, Volume= 7.567 af  
 Outflow = 142.96 cfs @ 0.53 hrs, Volume= 7.567 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 10.12 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 2.01 fps, Avg. Travel Time= 0.8 min

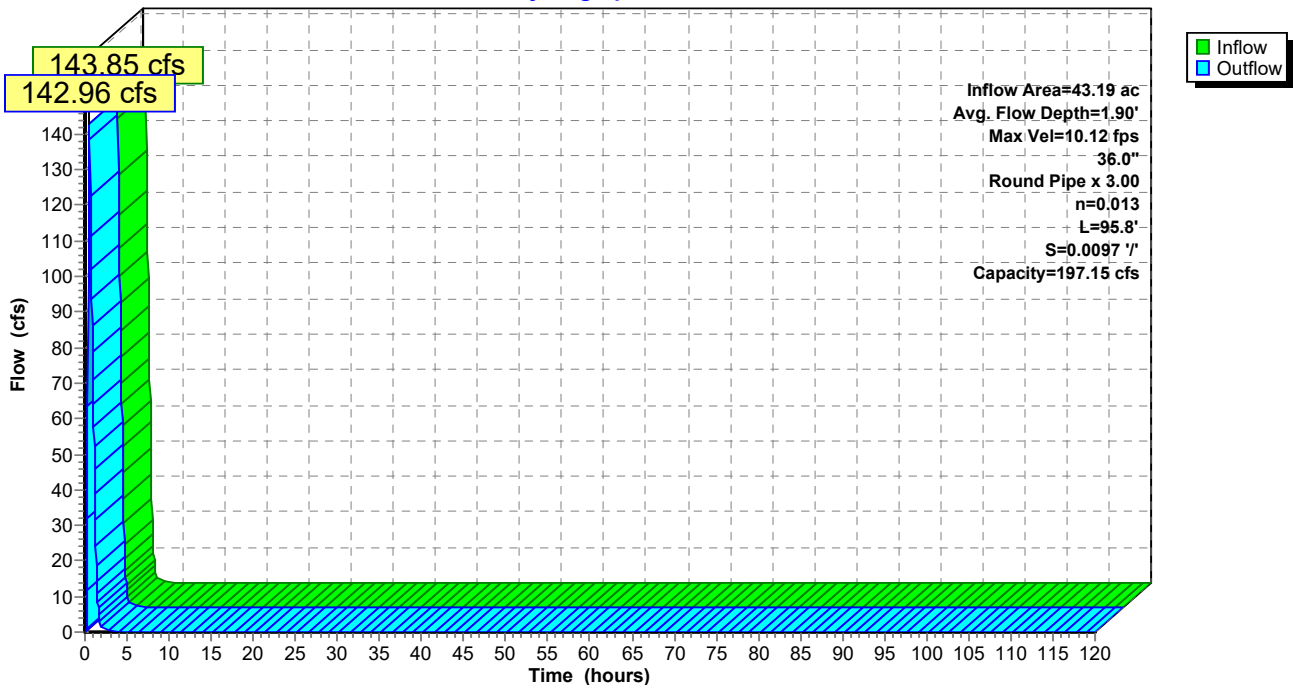
Peak Storage= 1,354 cf @ 0.53 hrs  
 Average Depth at Peak Storage= 1.90'  
 Bank-Full Depth= 3.00' Flow Area= 21.2 sf, Capacity= 197.15 cfs

A factor of 3.00 has been applied to the storage and discharge capacity  
 36.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 95.8' Slope= 0.0097 '/  
 Inlet Invert= 738.93', Outlet Invert= 738.00'



**Reach Cu-3: Culvert 3**

Hydrograph



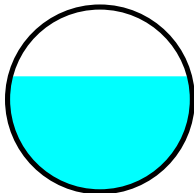
**Summary for Reach Cu-A: Culvert A**

Inflow Area = 33.94 ac, 1.59% Impervious, Inflow Depth = 2.09" for 100-Year, 1-Hour event  
 Inflow = 95.04 cfs @ 0.66 hrs, Volume= 5.910 af  
 Outflow = 94.97 cfs @ 0.67 hrs, Volume= 5.910 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 10.23 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 1.95 fps, Avg. Travel Time= 0.8 min

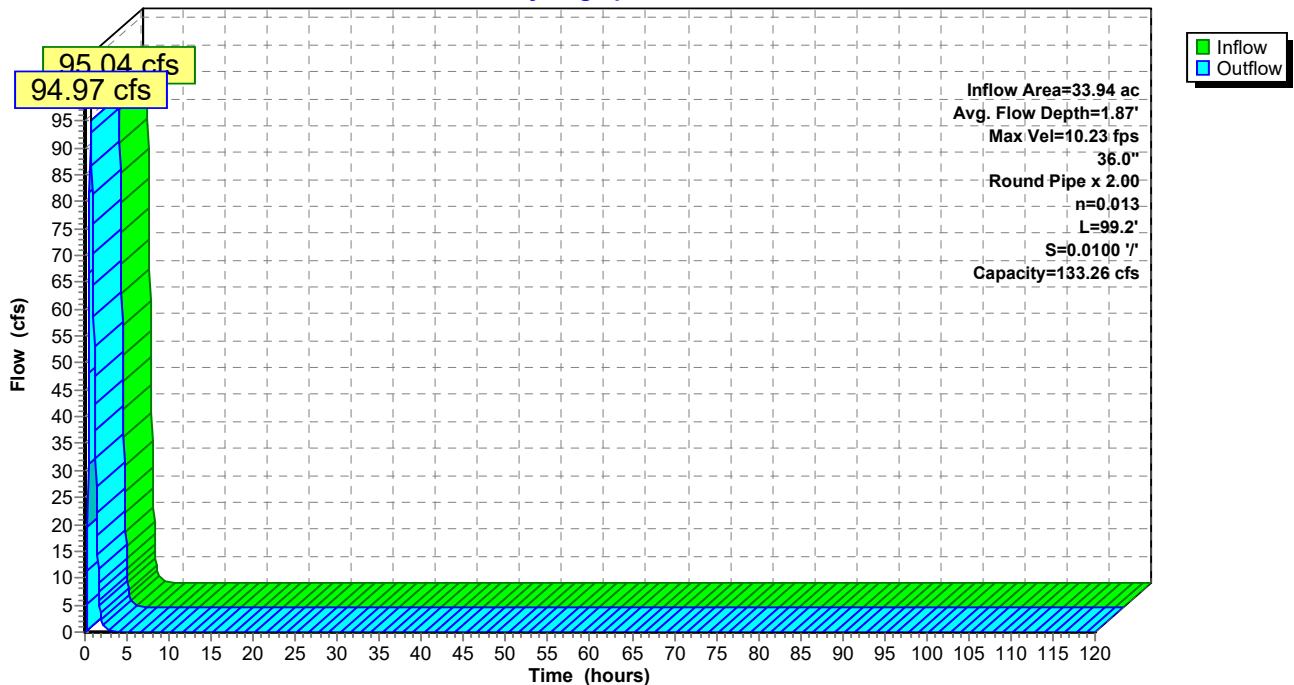
Peak Storage= 921 cf @ 0.67 hrs  
 Average Depth at Peak Storage= 1.87'  
 Bank-Full Depth= 3.00' Flow Area= 14.1 sf, Capacity= 133.26 cfs

A factor of 2.00 has been applied to the storage and discharge capacity  
 36.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 99.2' Slope= 0.0100 '/'  
 Inlet Invert= 756.77', Outlet Invert= 755.78'



**Reach Cu-A: Culvert A**

Hydrograph



**Summary for Reach DC-A1A: Downchute A1A**

Inflow Area = 6.74 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 23.70 cfs @ 0.58 hrs, Volume= 1.160 af  
 Outflow = 23.61 cfs @ 0.59 hrs, Volume= 1.160 af, Atten= 0%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 6.68 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 2.38 fps, Avg. Travel Time= 0.9 min

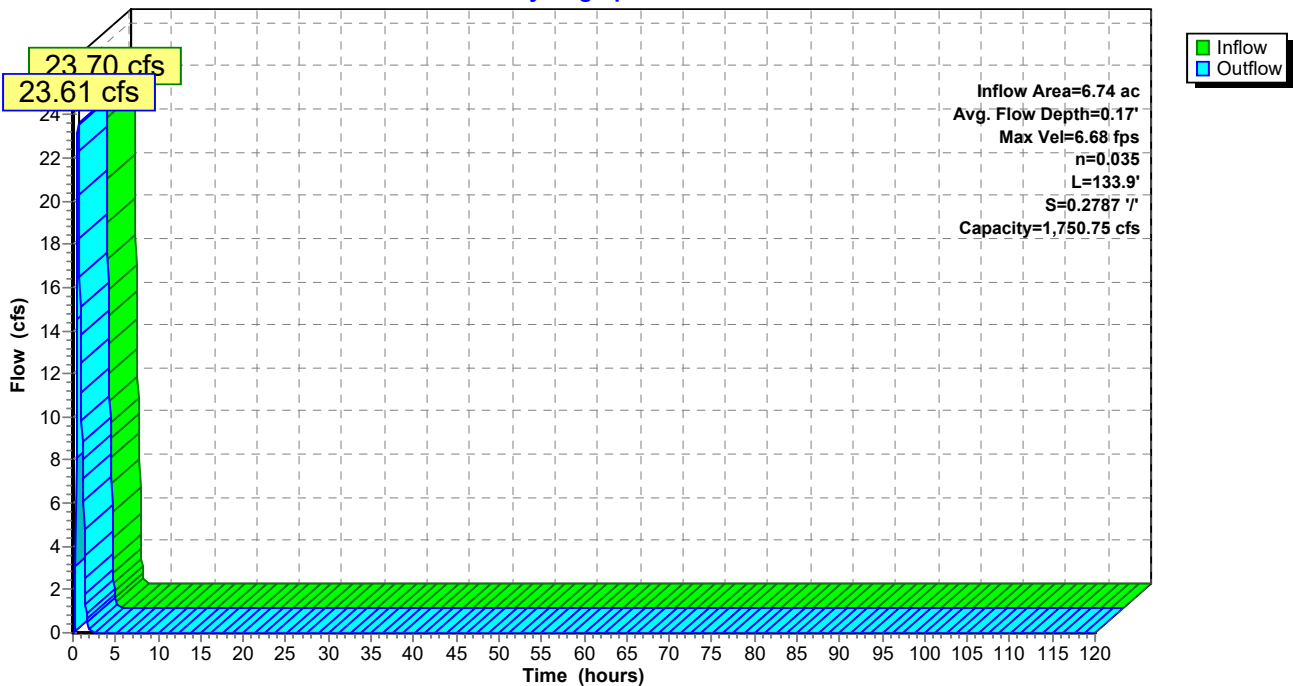
Peak Storage= 474 cf @ 0.58 hrs  
 Average Depth at Peak Storage= 0.17'  
 Bank-Full Depth= 2.00' Flow Area= 60.0 sf, Capacity= 1,750.75 cfs

20.00' x 2.00' deep channel, n= 0.035  
 Side Slope Z-value= 5.0 '/' Top Width= 40.00'  
 Length= 133.9' Slope= 0.2787 '/'  
 Inlet Invert= 821.32', Outlet Invert= 784.00'



**Reach DC-A1A: Downchute A1A**

Hydrograph



**Summary for Reach DC-A1B: Downchute A1B**

Inflow Area = 11.96 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 41.67 cfs @ 0.55 hrs, Volume= 2.060 af  
 Outflow = 41.56 cfs @ 0.56 hrs, Volume= 2.060 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 5.92 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 1.50 fps, Avg. Travel Time= 0.9 min

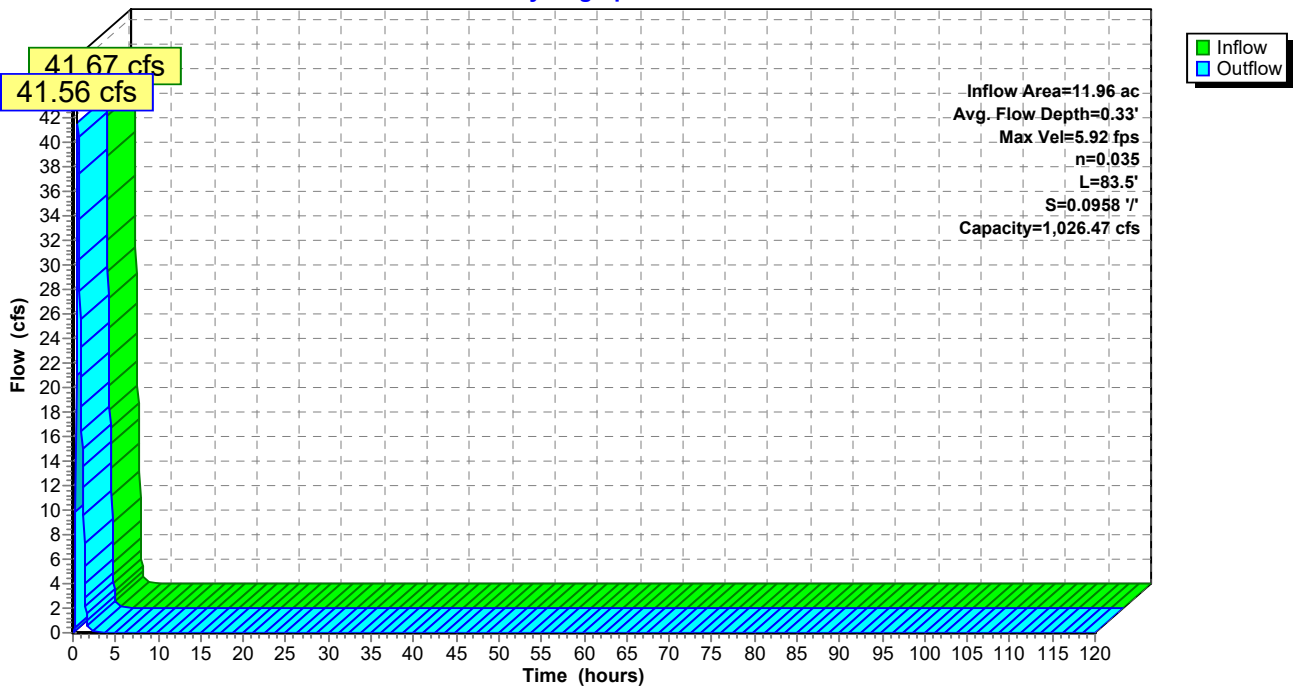
Peak Storage= 588 cf @ 0.56 hrs  
 Average Depth at Peak Storage= 0.33'  
 Bank-Full Depth= 2.00' Flow Area= 60.0 sf, Capacity= 1,026.47 cfs

20.00' x 2.00' deep channel, n= 0.035  
 Side Slope Z-value= 5.0 '/' Top Width= 40.00'  
 Length= 83.5' Slope= 0.0958 '/'  
 Inlet Invert= 784.00', Outlet Invert= 776.00'



**Reach DC-A1B: Downchute A1B**

Hydrograph



**Summary for Reach DC-A1C: Downchute A1C**

Inflow Area = 21.13 ac, 0.64% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 58.68 cfs @ 0.66 hrs, Volume= 3.638 af  
 Outflow = 58.57 cfs @ 0.67 hrs, Volume= 3.638 af, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 7.18 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 1.81 fps, Avg. Travel Time= 1.4 min

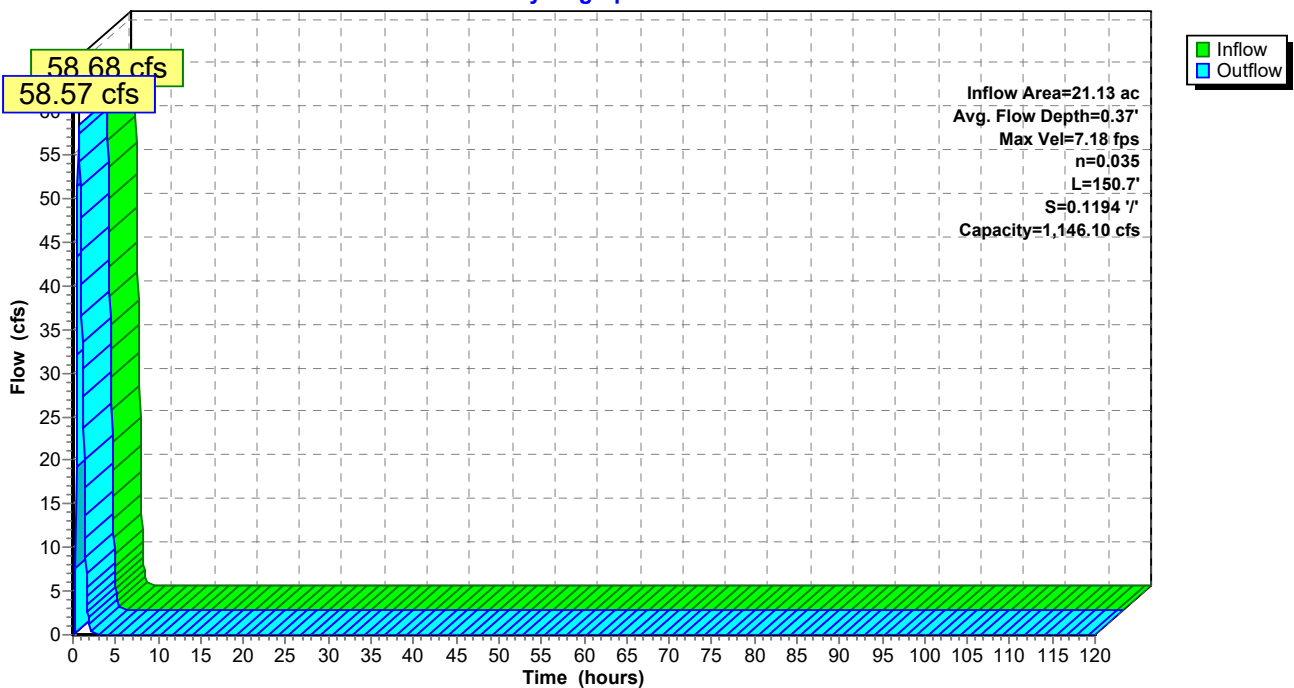
Peak Storage= 1,230 cf @ 0.67 hrs  
 Average Depth at Peak Storage= 0.37'  
 Bank-Full Depth= 2.00' Flow Area= 60.0 sf, Capacity= 1,146.10 cfs

20.00' x 2.00' deep channel, n= 0.035  
 Side Slope Z-value= 5.0 '/' Top Width= 40.00'  
 Length= 150.7' Slope= 0.1194 '/'  
 Inlet Invert= 776.00', Outlet Invert= 758.00'



**Reach DC-A1C: Downchute A1C**

Hydrograph





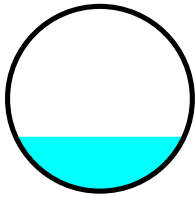
**Summary for Reach LP-B1: Letdown Pipe B1**

Inflow Area = 4.78 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 20.88 cfs @ 0.39 hrs, Volume= 0.823 af  
 Outflow = 20.84 cfs @ 0.39 hrs, Volume= 0.823 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 27.13 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 11.37 fps, Avg. Travel Time= 0.2 min

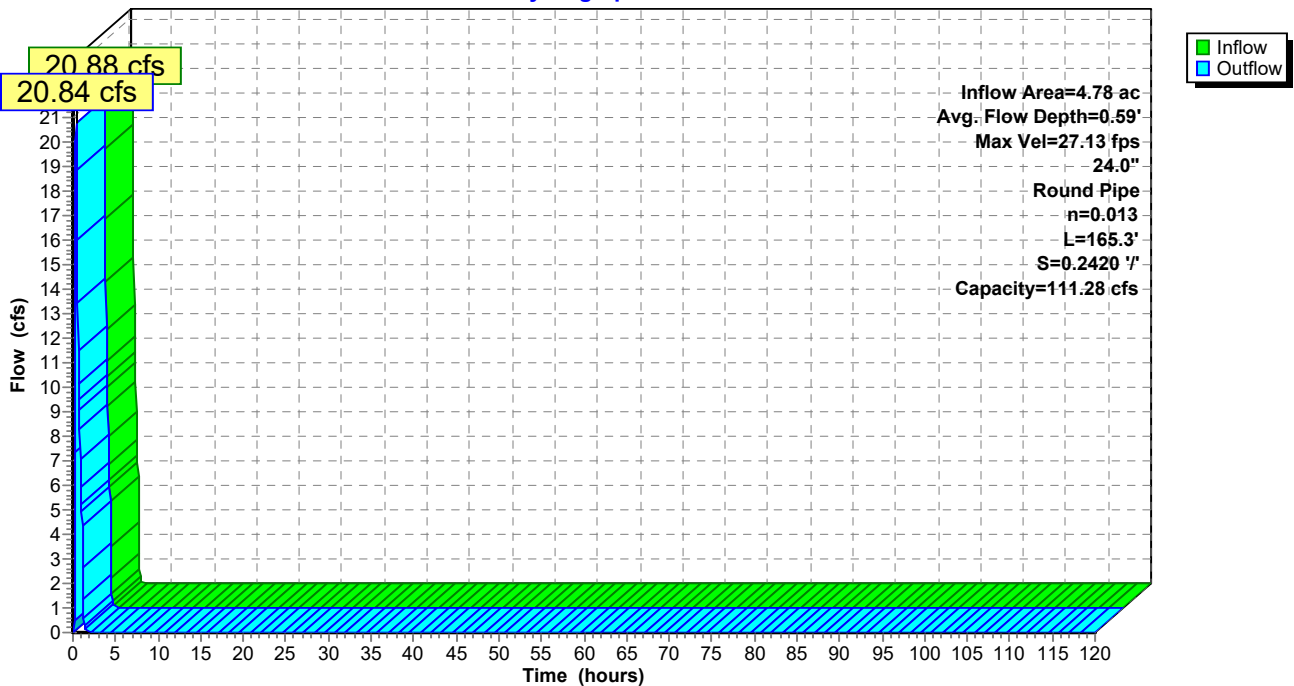
Peak Storage= 127 cf @ 0.39 hrs  
 Average Depth at Peak Storage= 0.59'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 111.28 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 165.3' Slope= 0.2420 '/'  
 Inlet Invert= 877.00', Outlet Invert= 837.00'



**Reach LP-B1: Letdown Pipe B1**

Hydrograph



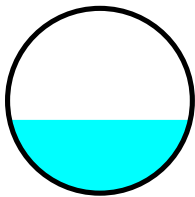
**Summary for Reach LP-B2: Letdown Pipe B2**

Inflow Area = 8.86 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 38.22 cfs @ 0.40 hrs, Volume= 1.526 af  
 Outflow = 38.18 cfs @ 0.40 hrs, Volume= 1.526 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 33.12 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 10.37 fps, Avg. Travel Time= 0.2 min

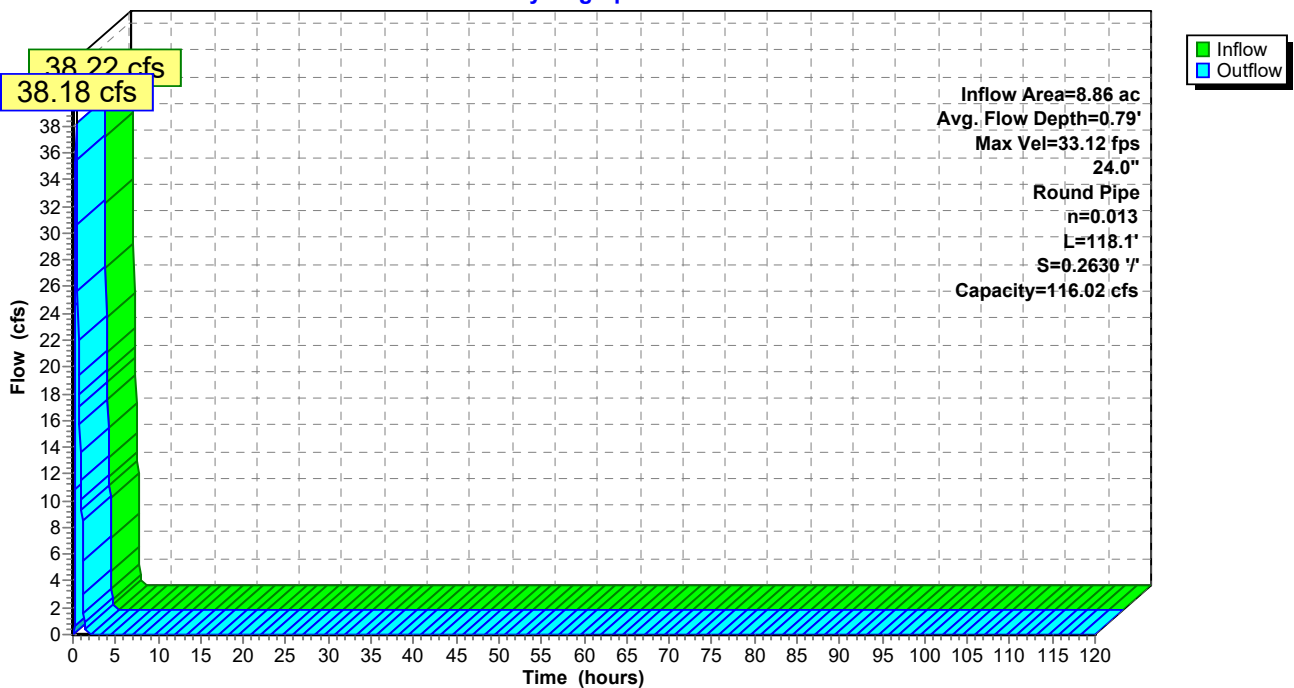
Peak Storage= 136 cf @ 0.40 hrs  
 Average Depth at Peak Storage= 0.79'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 116.02 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 118.1' Slope= 0.2630 '/'  
 Inlet Invert= 837.00', Outlet Invert= 805.94'



**Reach LP-B2: Letdown Pipe B2**

Hydrograph



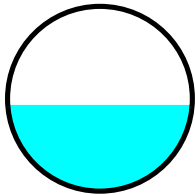
**Summary for Reach LP-B3: Letdown Pipe B3**

Inflow Area = 11.97 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 50.50 cfs @ 0.41 hrs, Volume= 2.061 af  
 Outflow = 50.45 cfs @ 0.41 hrs, Volume= 2.061 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 35.27 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 9.67 fps, Avg. Travel Time= 0.2 min

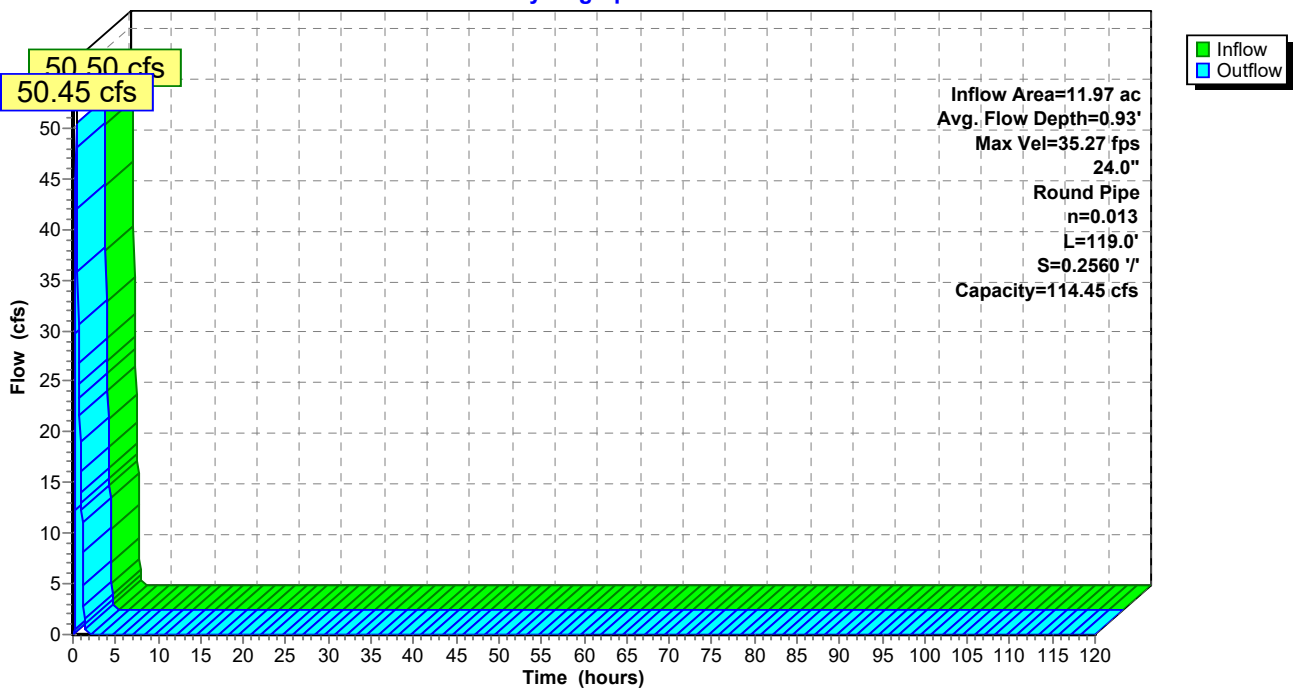
Peak Storage= 170 cf @ 0.41 hrs  
 Average Depth at Peak Storage= 0.93'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 114.45 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 119.0' Slope= 0.2560 '/'  
 Inlet Invert= 805.94', Outlet Invert= 775.48'



**Reach LP-B3: Letdown Pipe B3**

Hydrograph



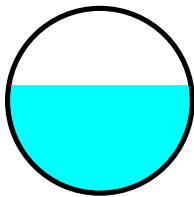
**Summary for Reach LP-B4: Letdown Pipe B4**

Inflow Area = 15.33 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 63.96 cfs @ 0.42 hrs, Volume= 2.640 af  
 Outflow = 63.85 cfs @ 0.42 hrs, Volume= 2.640 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 33.54 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 8.53 fps, Avg. Travel Time= 0.3 min

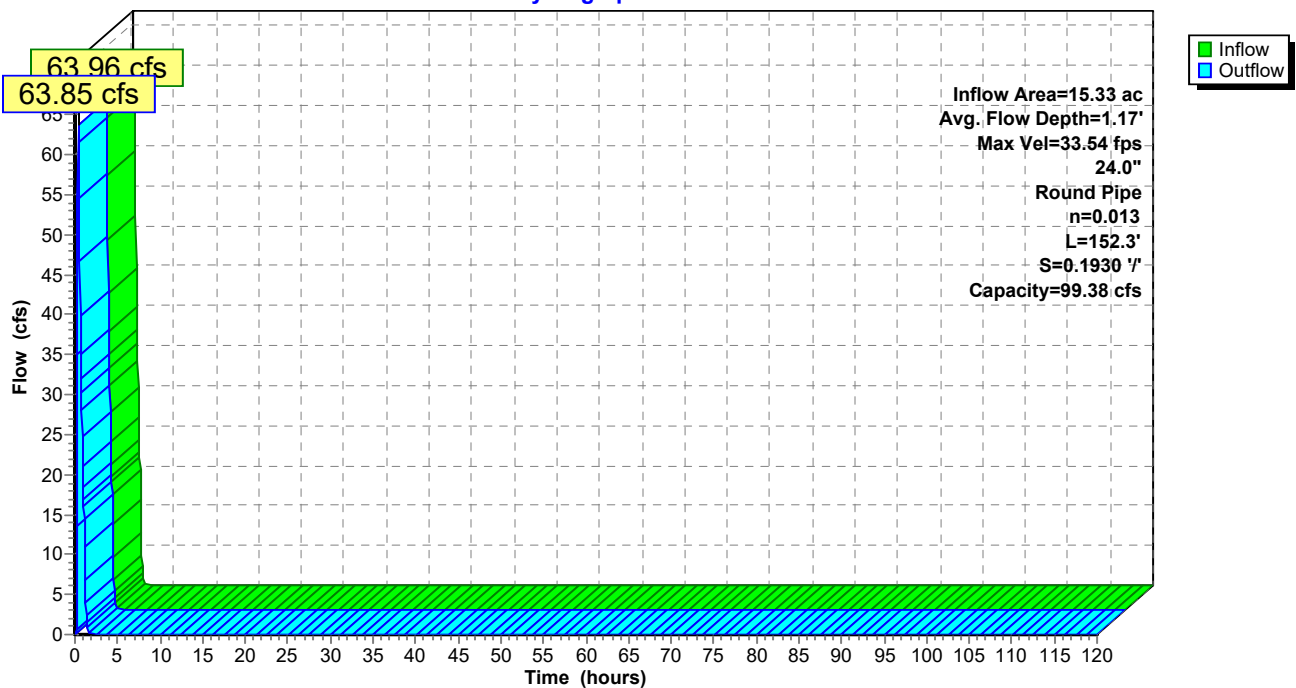
Peak Storage= 290 cf @ 0.42 hrs  
 Average Depth at Peak Storage= 1.17'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 99.38 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 152.3' Slope= 0.1930 '/'  
 Inlet Invert= 775.48', Outlet Invert= 746.09'



**Reach LP-B4: Letdown Pipe B4**

Hydrograph



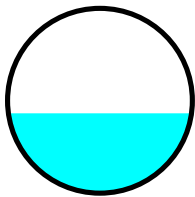
**Summary for Reach LP-B5: Letdown Pipe B5**

Inflow Area = 3.47 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 13.64 cfs @ 0.43 hrs, Volume= 0.598 af  
 Outflow = 13.60 cfs @ 0.44 hrs, Volume= 0.598 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 23.68 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 8.72 fps, Avg. Travel Time= 0.6 min

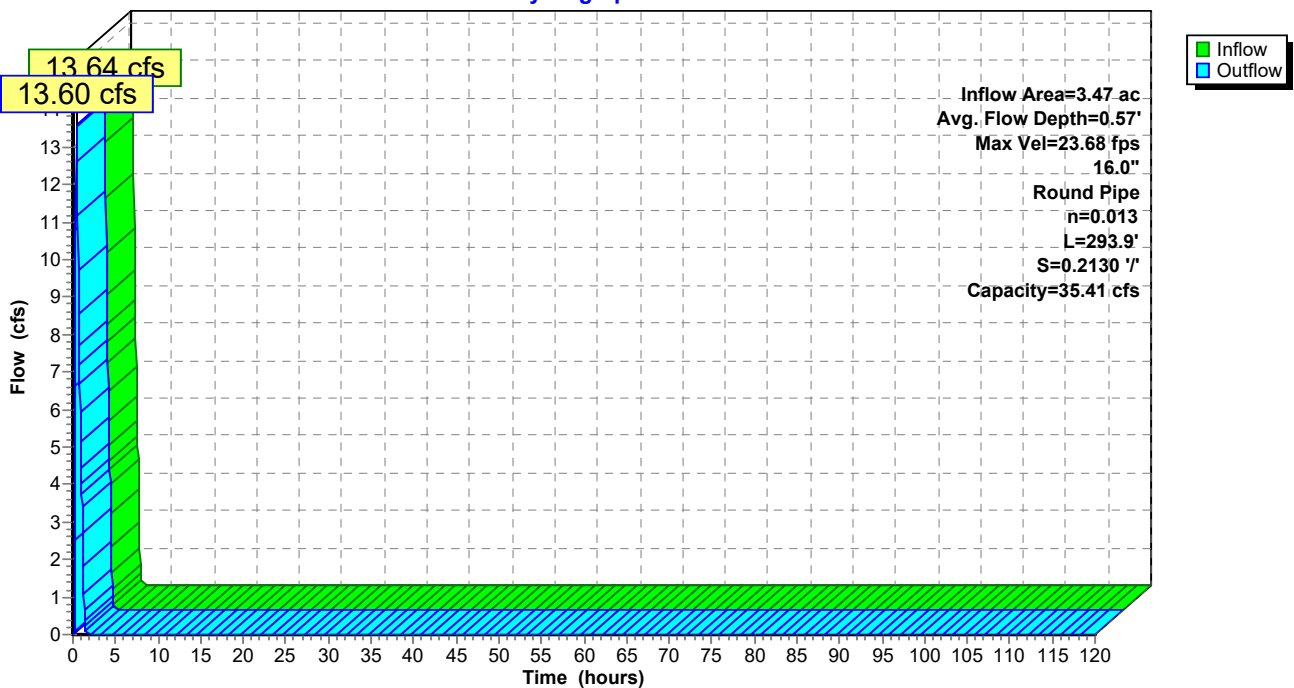
Peak Storage= 169 cf @ 0.43 hrs  
 Average Depth at Peak Storage= 0.57'  
 Bank-Full Depth= 1.33' Flow Area= 1.4 sf, Capacity= 35.41 cfs

16.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 293.9' Slope= 0.2130 '/'  
 Inlet Invert= 820.00', Outlet Invert= 757.40'



**Reach LP-B5: Letdown Pipe B5**

Hydrograph



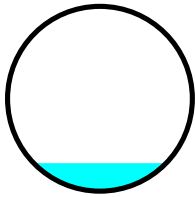
**Summary for Reach LP-D1: Letdown Pipe D1**

Inflow Area = 1.26 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 5.55 cfs @ 0.37 hrs, Volume= 0.216 af  
 Outflow = 5.55 cfs @ 0.37 hrs, Volume= 0.216 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 18.58 fps, Min. Travel Time= 0.0 min  
 Avg. Velocity = 10.23 fps, Avg. Travel Time= 0.1 min

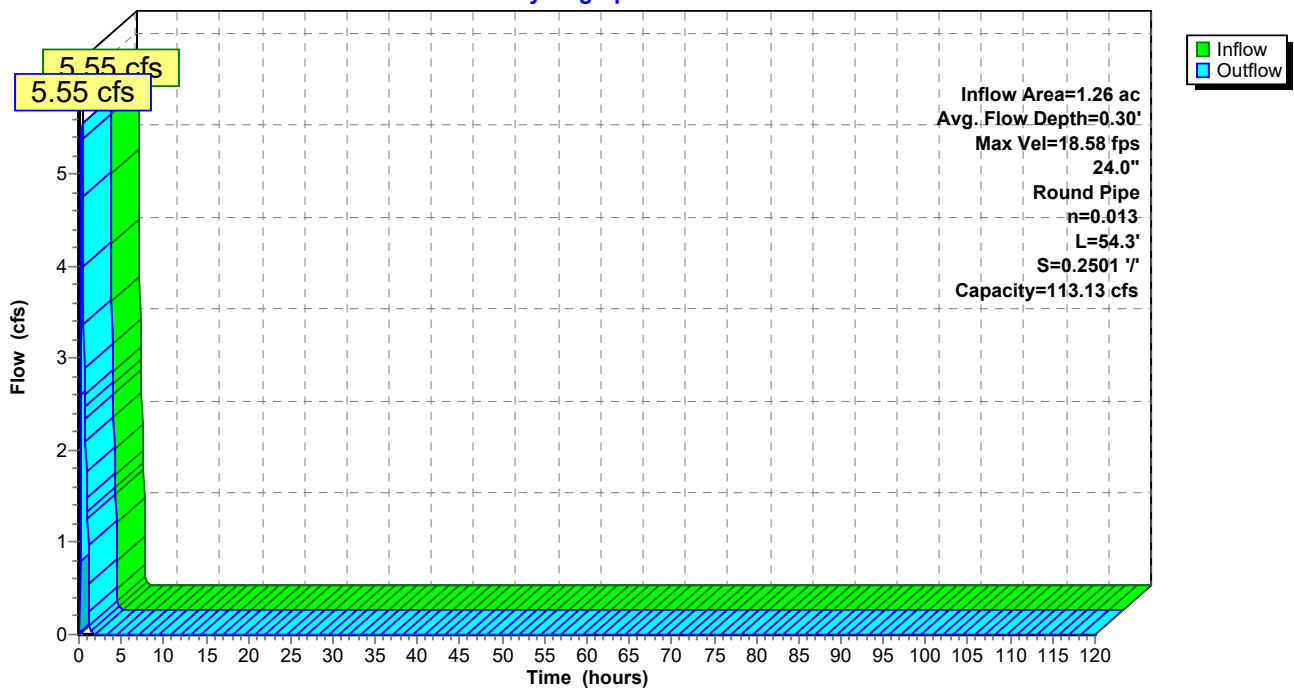
Peak Storage= 16 cf @ 0.37 hrs  
 Average Depth at Peak Storage= 0.30'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 113.13 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 54.3' Slope= 0.2501 '/  
 Inlet Invert= 857.24', Outlet Invert= 843.66'



**Reach LP-D1: Letdown Pipe D1**

Hydrograph



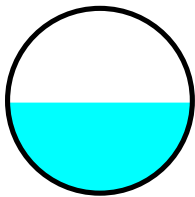
**Summary for Reach LP-D3: Letdown Pipe D3**

Inflow Area = 13.77 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 54.11 cfs @ 0.45 hrs, Volume= 2.372 af  
 Outflow = 54.07 cfs @ 0.45 hrs, Volume= 2.372 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 35.42 fps, Min. Travel Time= 0.0 min  
 Avg. Velocity = 9.24 fps, Avg. Travel Time= 0.1 min

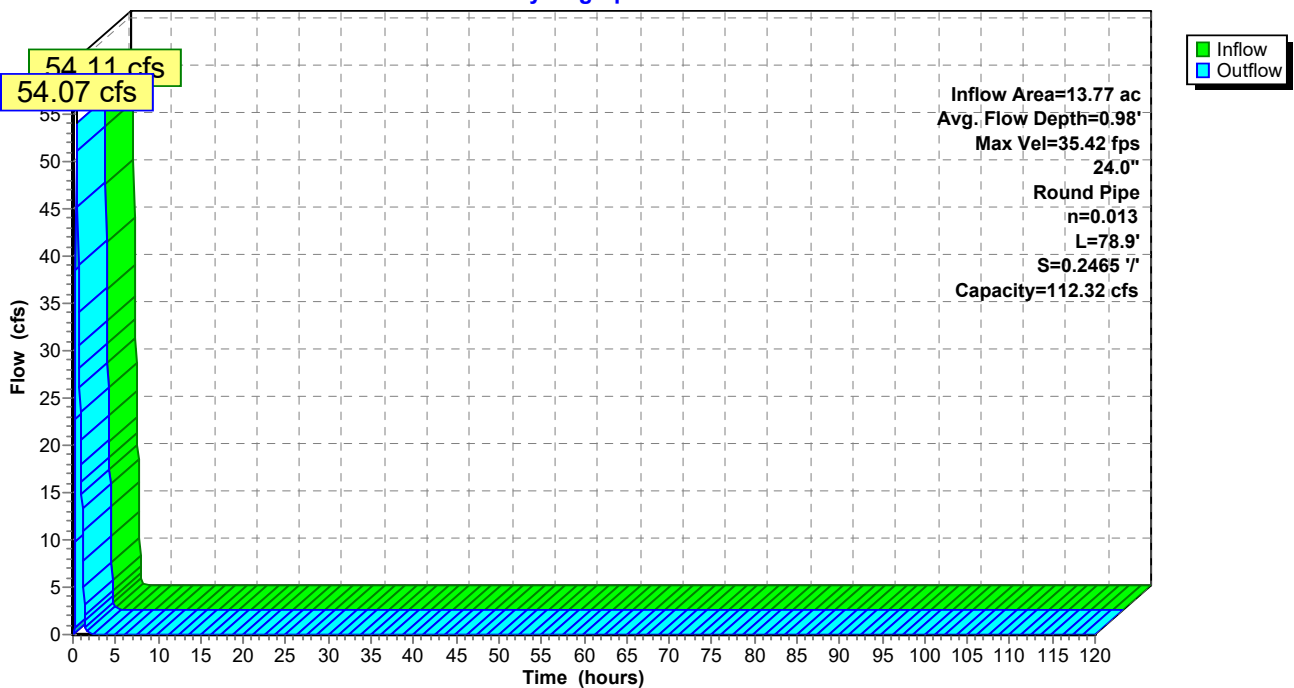
Peak Storage= 121 cf @ 0.45 hrs  
 Average Depth at Peak Storage= 0.98'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 112.32 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 78.9' Slope= 0.2465 '/'  
 Inlet Invert= 793.71', Outlet Invert= 774.26'



**Reach LP-D3: Letdown Pipe D3**

Hydrograph



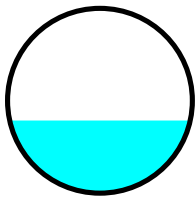
**Summary for Reach LP-E1: Letdown Pipe E1**

Inflow Area = 3.40 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 14.74 cfs @ 0.41 hrs, Volume= 0.586 af  
 Outflow = 14.70 cfs @ 0.42 hrs, Volume= 0.586 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 22.90 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 8.43 fps, Avg. Travel Time= 0.3 min

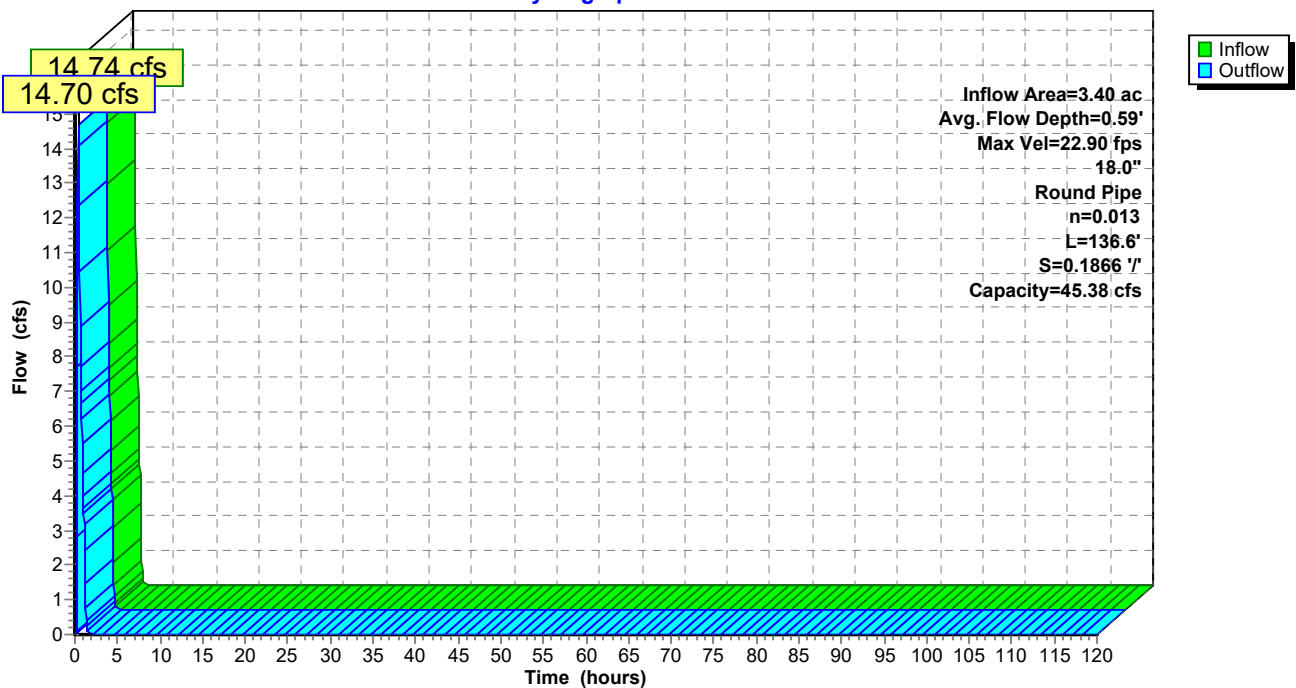
Peak Storage= 88 cf @ 0.41 hrs  
 Average Depth at Peak Storage= 0.59'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 45.38 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 136.6' Slope= 0.1866 '/'  
 Inlet Invert= 856.64', Outlet Invert= 831.15'



**Reach LP-E1: Letdown Pipe E1**

Hydrograph





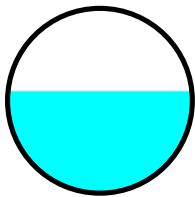
**Summary for Reach LP-E2: Letdown Pipe E2**

Inflow Area = 8.08 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 30.79 cfs @ 0.45 hrs, Volume= 1.391 af  
 Outflow = 30.77 cfs @ 0.45 hrs, Volume= 1.391 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 30.86 fps, Min. Travel Time= 0.0 min  
 Avg. Velocity = 7.92 fps, Avg. Travel Time= 0.2 min

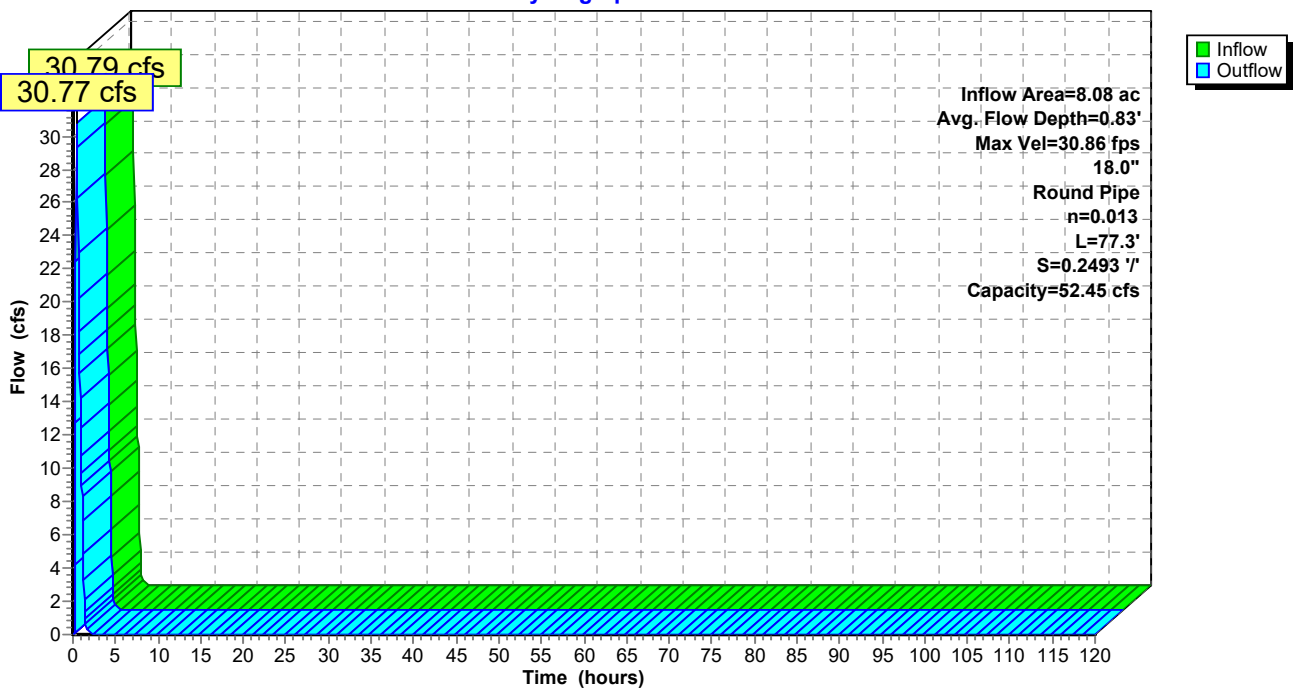
Peak Storage= 77 cf @ 0.45 hrs  
 Average Depth at Peak Storage= 0.83'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 52.45 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 77.3' Slope= 0.2493 '/'  
 Inlet Invert= 793.51', Outlet Invert= 774.24'



**Reach LP-E2: Letdown Pipe E2**

Hydrograph



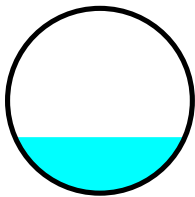
**Summary for Reach LP-H1: Letdown Pipe H1**

Inflow Area = 1.98 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 8.59 cfs @ 0.41 hrs, Volume= 0.341 af  
 Outflow = 8.58 cfs @ 0.42 hrs, Volume= 0.341 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 19.07 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 7.48 fps, Avg. Travel Time= 0.1 min

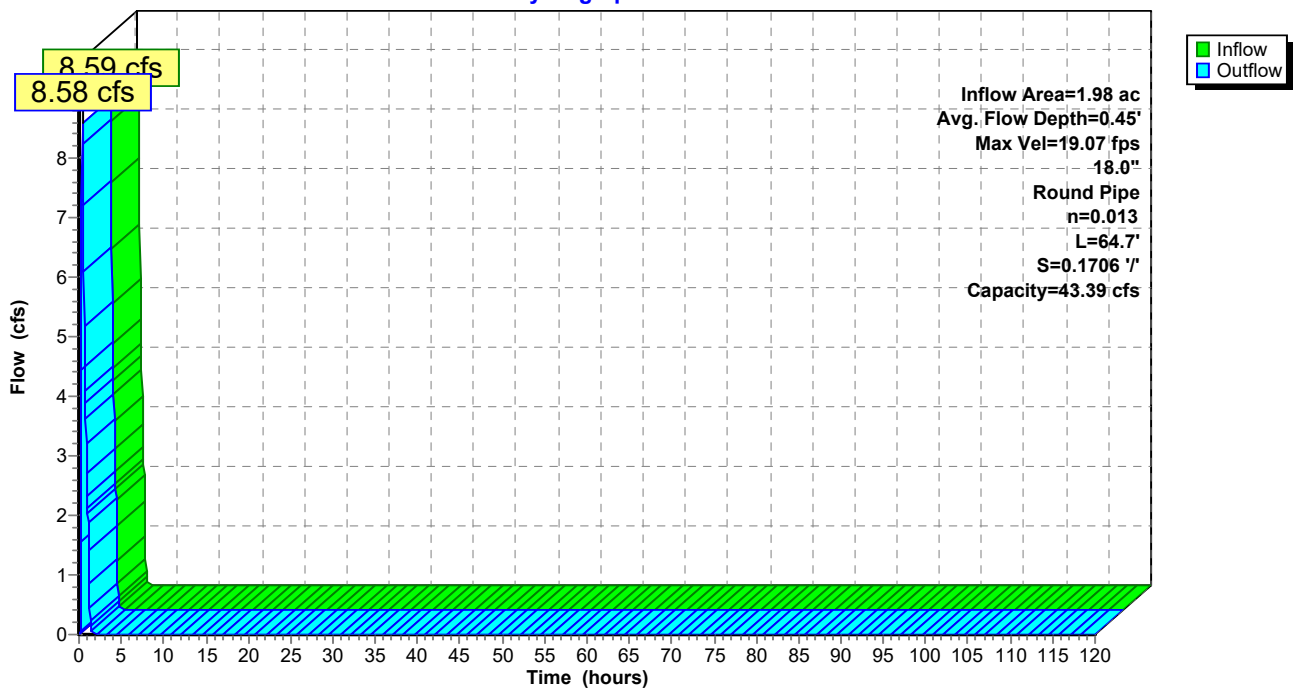
Peak Storage= 29 cf @ 0.42 hrs  
 Average Depth at Peak Storage= 0.45'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 43.39 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 64.7' Slope= 0.1706 '/  
 Inlet Invert= 867.73', Outlet Invert= 856.69'



**Reach LP-H1: Letdown Pipe H1**

Hydrograph



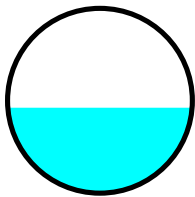
**Summary for Reach LP-H2: Letdown Pipe H2**

Inflow Area = 5.26 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 22.79 cfs @ 0.41 hrs, Volume= 0.906 af  
 Outflow = 22.74 cfs @ 0.41 hrs, Volume= 0.906 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 28.59 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 9.39 fps, Avg. Travel Time= 0.3 min

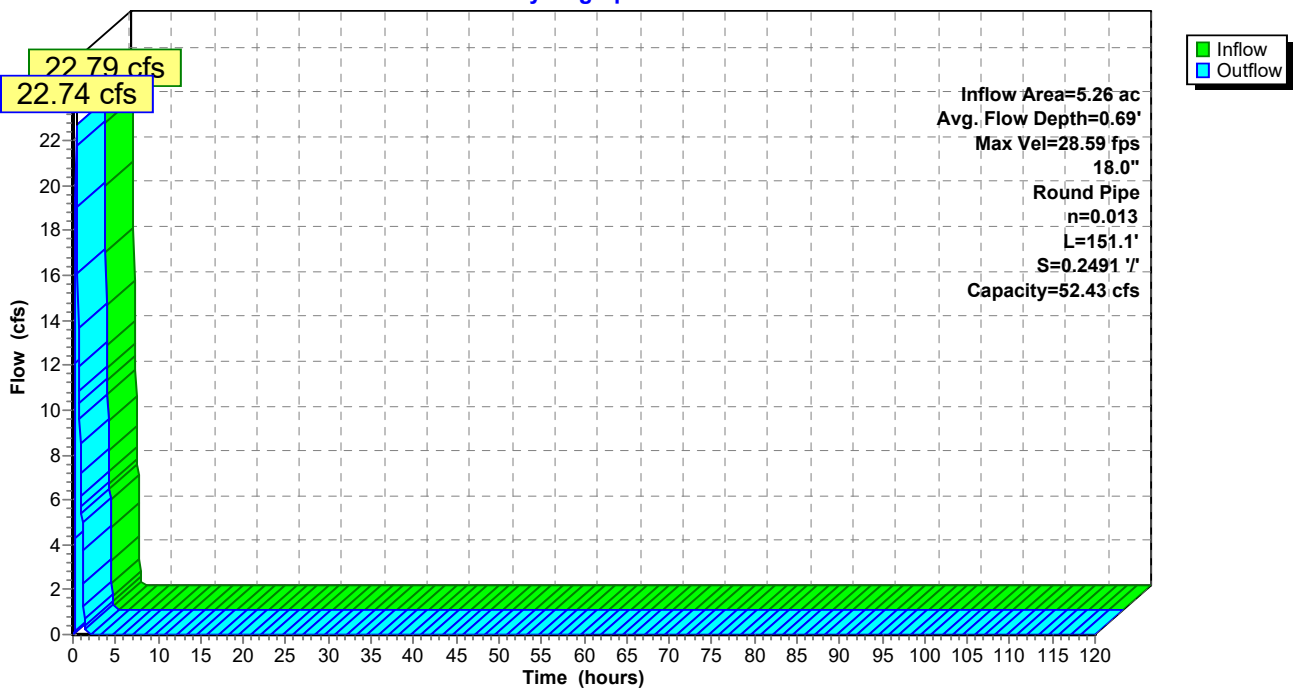
Peak Storage= 120 cf @ 0.41 hrs  
 Average Depth at Peak Storage= 0.69'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 52.43 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 151.1' Slope= 0.2491 '/'  
 Inlet Invert= 831.15', Outlet Invert= 793.51'



**Reach LP-H2: Letdown Pipe H2**

Hydrograph



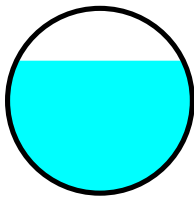
**Summary for Reach LP-H3: Letdown Pipe H3**

Inflow Area = 11.65 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 45.55 cfs @ 0.44 hrs, Volume= 2.007 af  
 Outflow = 45.51 cfs @ 0.45 hrs, Volume= 2.007 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 33.64 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 8.35 fps, Avg. Travel Time= 0.2 min

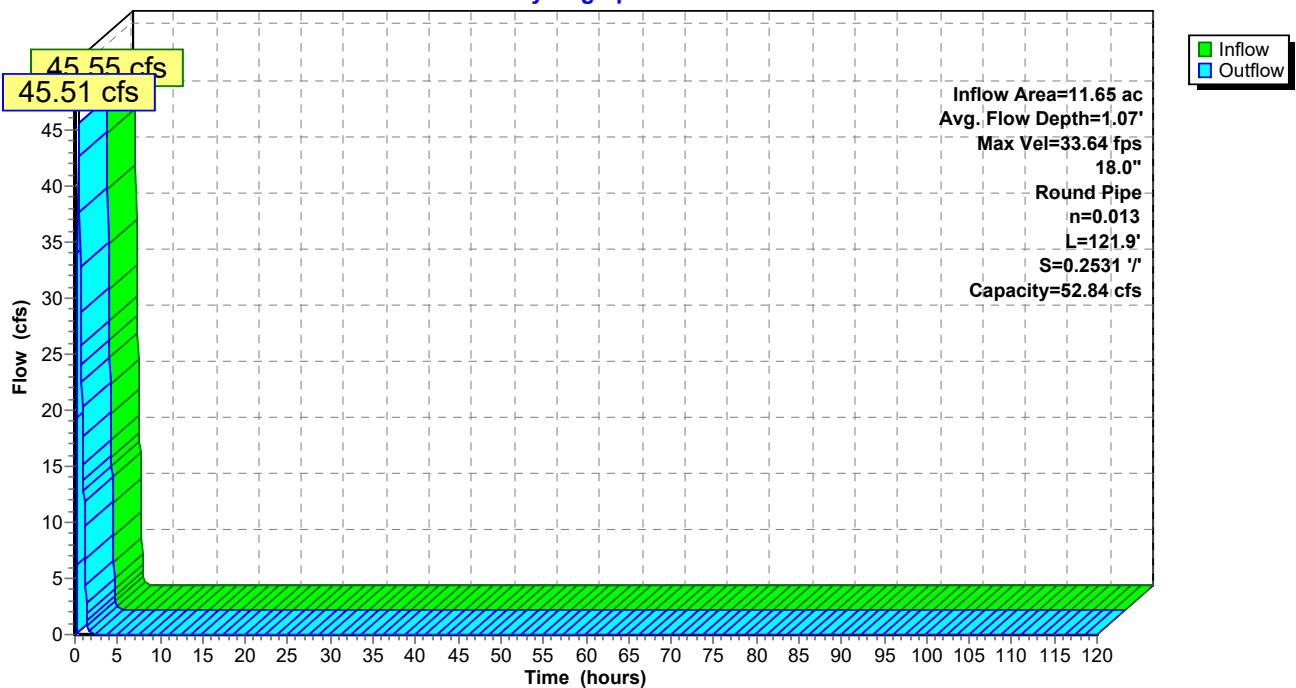
Peak Storage= 165 cf @ 0.44 hrs  
 Average Depth at Peak Storage= 1.07'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 52.84 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 121.9' Slope= 0.2531 '/'  
 Inlet Invert= 774.24', Outlet Invert= 743.39'



**Reach LP-H3: Letdown Pipe H3**

Hydrograph



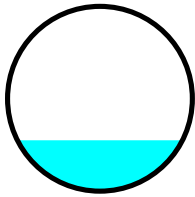
**Summary for Reach LP-N-A1: Letdown Pipe N-A1**

Inflow Area = 3.60 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 15.68 cfs @ 0.39 hrs, Volume= 0.620 af  
 Outflow = 15.64 cfs @ 0.39 hrs, Volume= 0.620 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 22.36 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 9.86 fps, Avg. Travel Time= 0.3 min

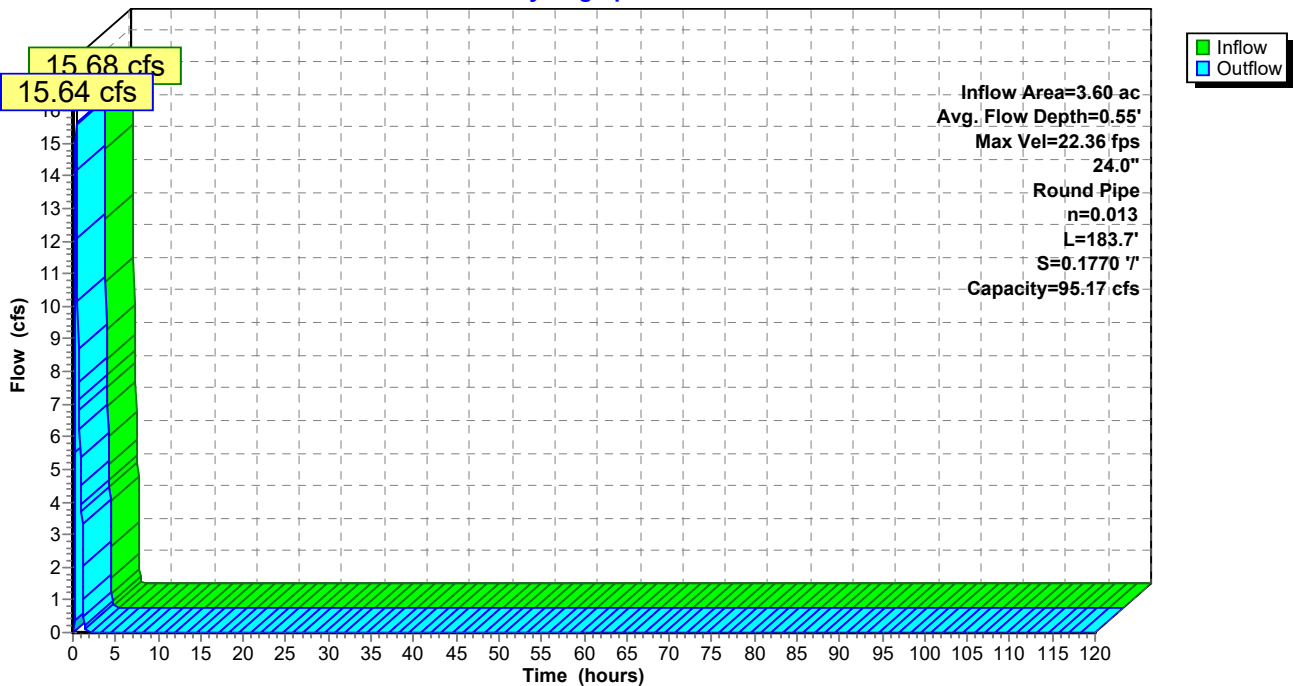
Peak Storage= 129 cf @ 0.39 hrs  
 Average Depth at Peak Storage= 0.55'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 95.17 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 183.7' Slope= 0.1770 '/'  
 Inlet Invert= 869.36', Outlet Invert= 836.85'



**Reach LP-N-A1: Letdown Pipe N-A1**

Hydrograph



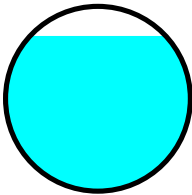
**Summary for Reach LP-N-A10: Letdown Pipe N-A10**

Inflow Area = 21.41 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 84.91 cfs @ 0.46 hrs, Volume= 3.686 af  
 Outflow = 84.81 cfs @ 0.47 hrs, Volume= 3.686 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 19.30 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 4.23 fps, Avg. Travel Time= 0.2 min

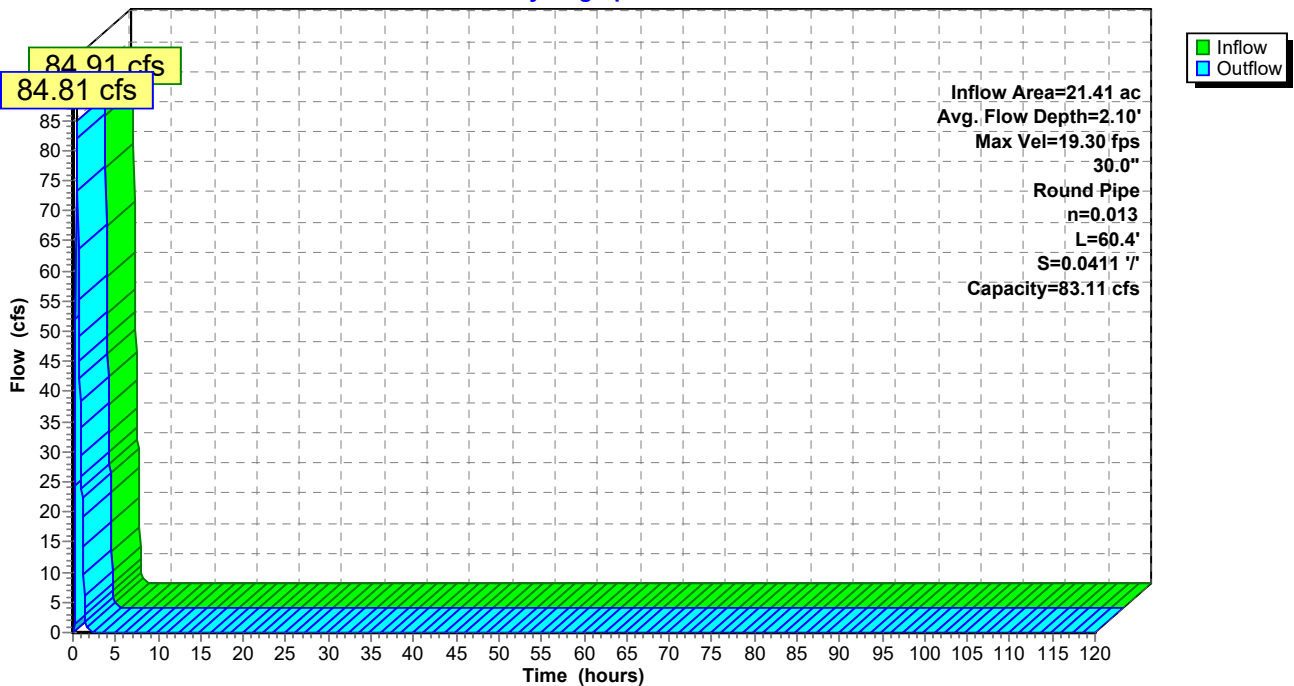
Peak Storage= 266 cf @ 0.46 hrs  
 Average Depth at Peak Storage= 2.10'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 83.11 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 60.4' Slope= 0.0411 '/  
 Inlet Invert= 748.28', Outlet Invert= 745.80'



**Reach LP-N-A10: Letdown Pipe N-A10**

Hydrograph



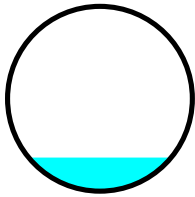
**Summary for Reach LP-N-A2: Letdown Pipe N-A2**

Inflow Area = 2.82 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 12.33 cfs @ 0.42 hrs, Volume= 0.486 af  
 Outflow = 12.28 cfs @ 0.42 hrs, Volume= 0.486 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 20.29 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 7.90 fps, Avg. Travel Time= 0.4 min

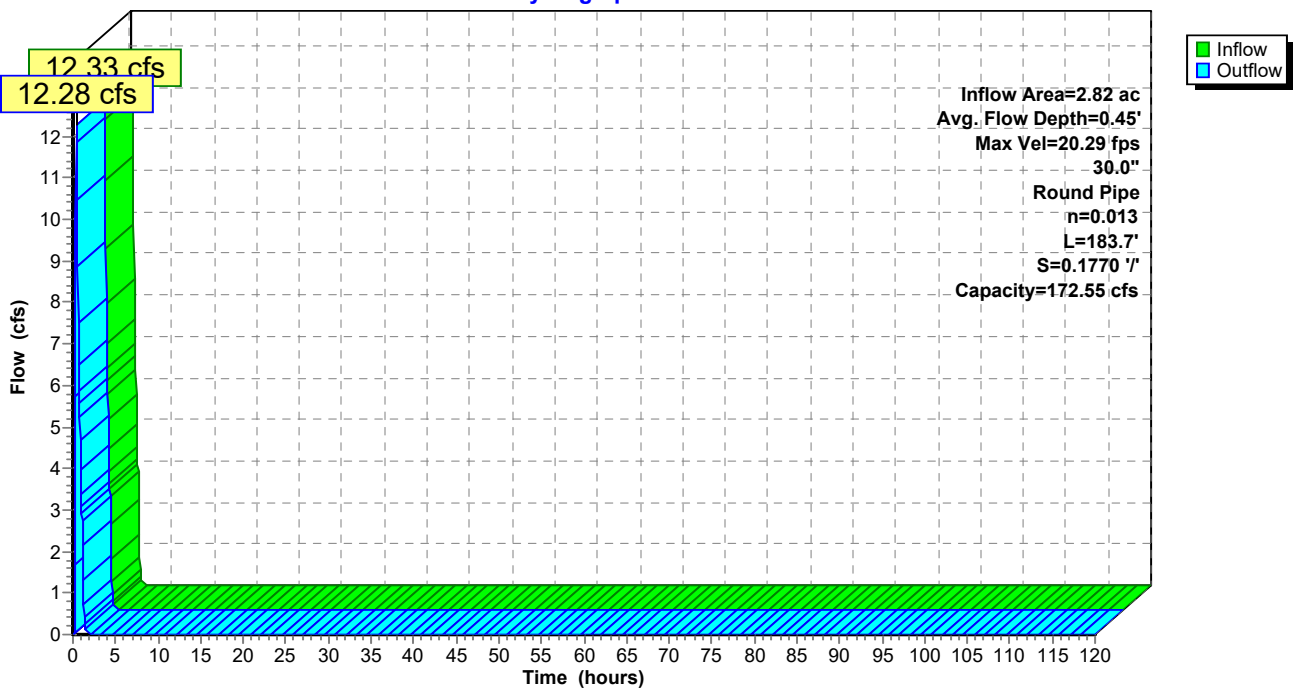
Peak Storage= 111 cf @ 0.42 hrs  
 Average Depth at Peak Storage= 0.45'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 172.55 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 183.7' Slope= 0.1770 '/'  
 Inlet Invert= 869.36', Outlet Invert= 836.85'



**Reach LP-N-A2: Letdown Pipe N-A2**

Hydrograph



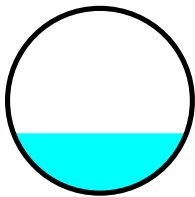
**Summary for Reach LP-N-A3: Letdown Pipe N-A3**

Inflow Area = 4.91 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 21.45 cfs @ 0.38 hrs, Volume= 0.845 af  
 Outflow = 21.40 cfs @ 0.39 hrs, Volume= 0.845 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 24.46 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 9.92 fps, Avg. Travel Time= 0.3 min

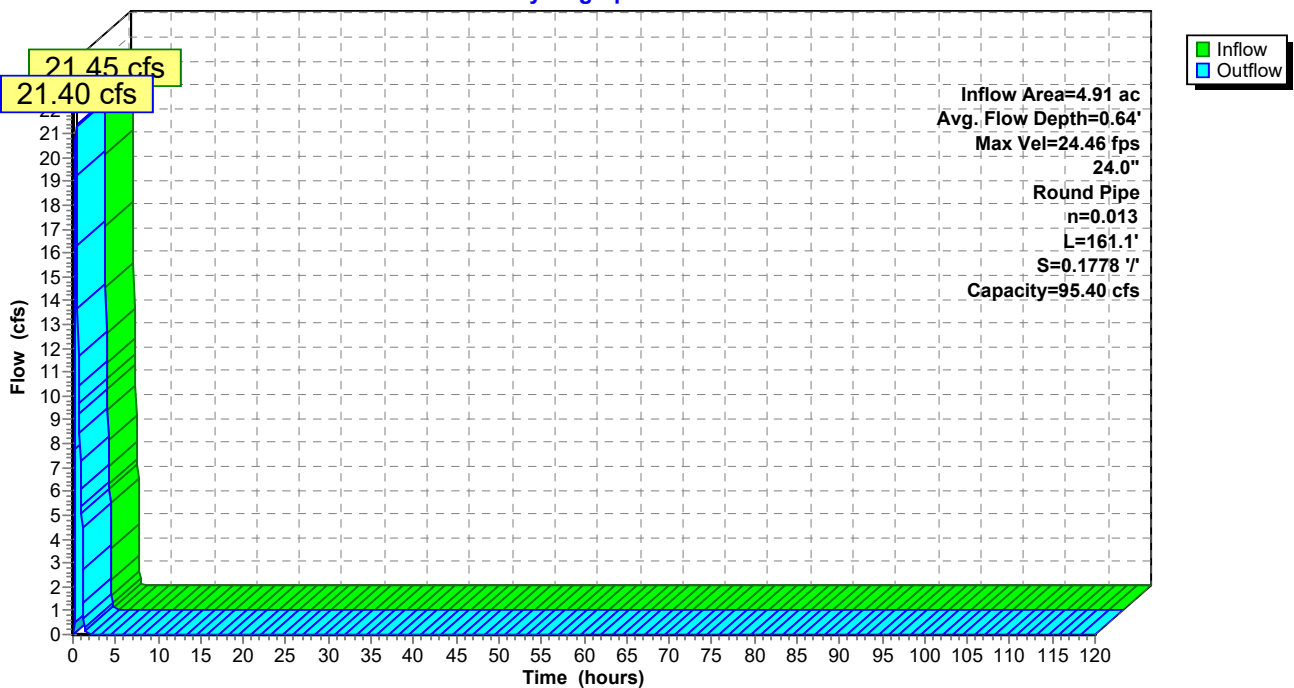
Peak Storage= 141 cf @ 0.38 hrs  
 Average Depth at Peak Storage= 0.64'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 95.40 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 161.1' Slope= 0.1778 '/'  
 Inlet Invert= 836.85', Outlet Invert= 808.20'



**Reach LP-N-A3: Letdown Pipe N-A3**

Hydrograph





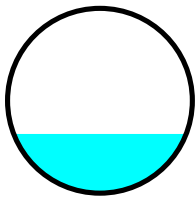
**Summary for Reach LP-N-A4: Letdown Pipe N-A4**

Inflow Area = 9.70 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 38.21 cfs @ 0.47 hrs, Volume= 1.671 af  
 Outflow = 38.14 cfs @ 0.47 hrs, Volume= 1.671 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 28.19 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 7.86 fps, Avg. Travel Time= 0.3 min

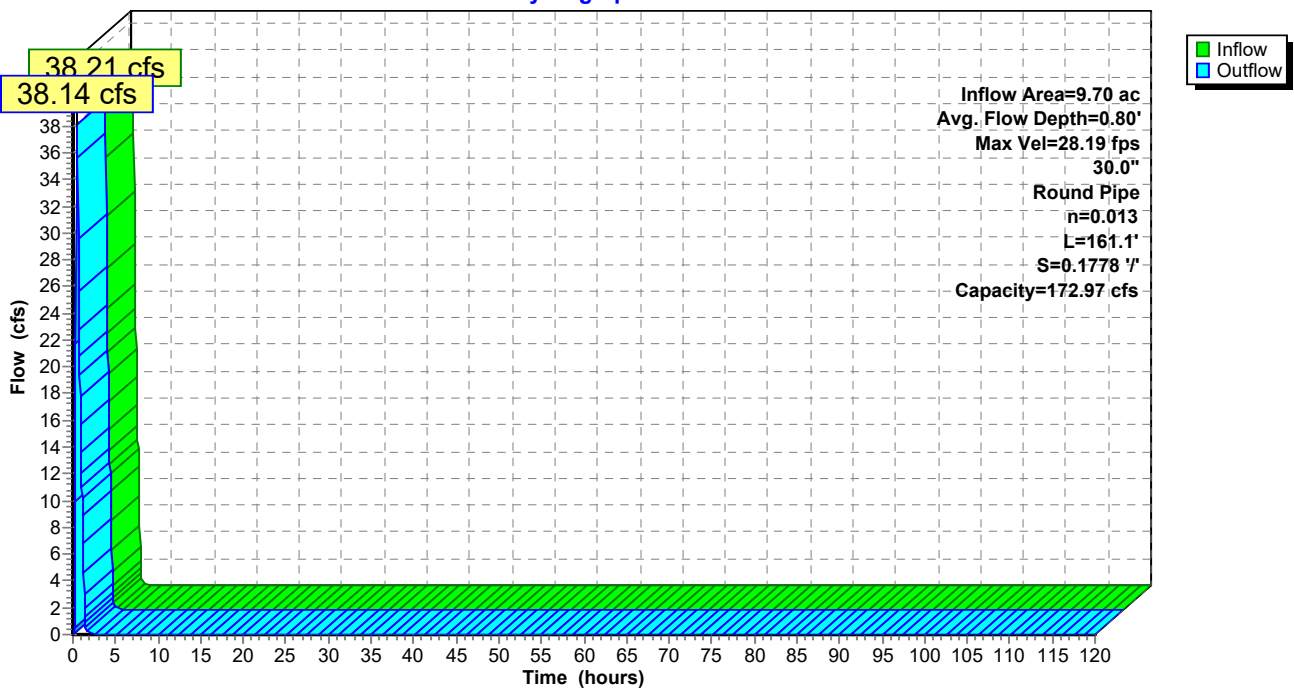
Peak Storage= 218 cf @ 0.47 hrs  
 Average Depth at Peak Storage= 0.80'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 172.97 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 161.1' Slope= 0.1778 '/'  
 Inlet Invert= 836.85', Outlet Invert= 808.20'



**Reach LP-N-A4: Letdown Pipe N-A4**

Hydrograph



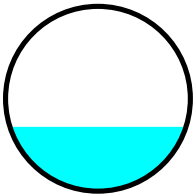
**Summary for Reach LP-N-A5: Letdown Pipe N-A5**

Inflow Area = 5.64 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 24.52 cfs @ 0.38 hrs, Volume= 0.972 af  
 Outflow = 24.46 cfs @ 0.38 hrs, Volume= 0.972 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 25.28 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 10.12 fps, Avg. Travel Time= 0.3 min

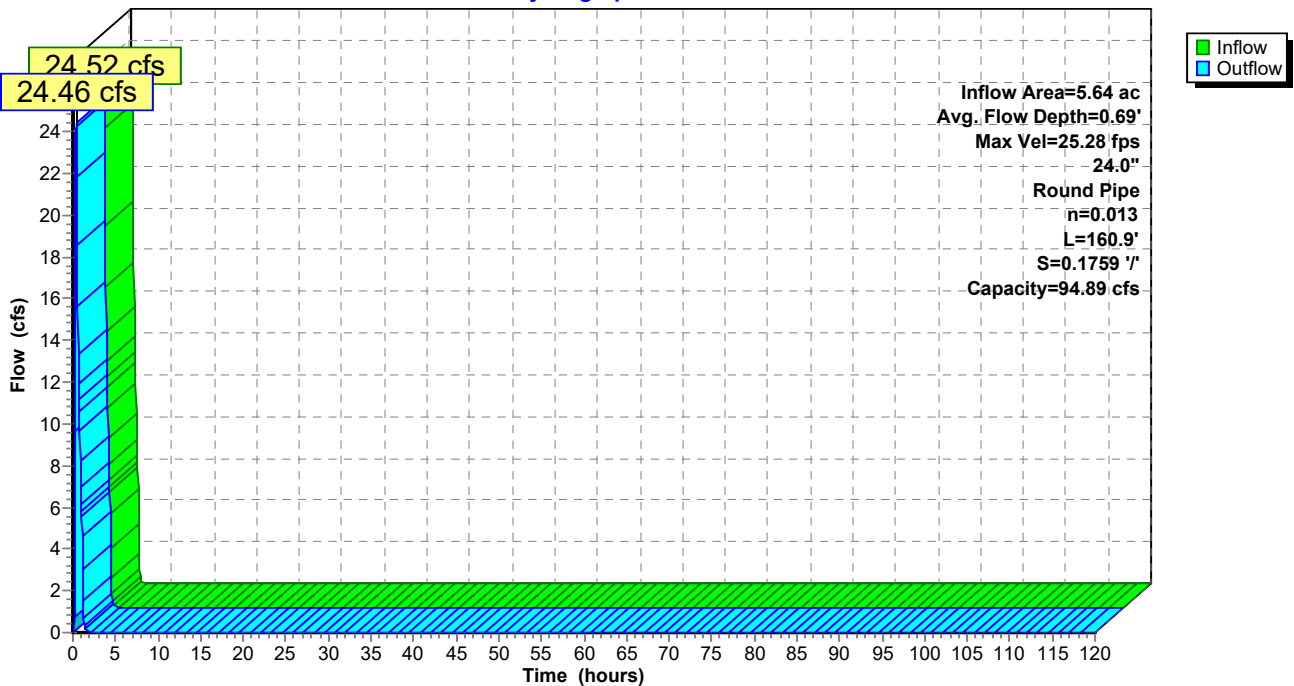
Peak Storage= 156 cf @ 0.38 hrs  
 Average Depth at Peak Storage= 0.69'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 94.89 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 160.9' Slope= 0.1759 '/'  
 Inlet Invert= 808.20', Outlet Invert= 779.89'



**Reach LP-N-A5: Letdown Pipe N-A5**

Hydrograph



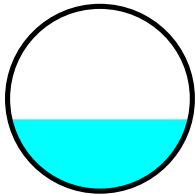
**Summary for Reach LP-N-A6: Letdown Pipe N-A6**

Inflow Area = 13.83 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 54.65 cfs @ 0.47 hrs, Volume= 2.382 af  
 Outflow = 54.55 cfs @ 0.47 hrs, Volume= 2.382 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 31.03 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 7.85 fps, Avg. Travel Time= 0.3 min

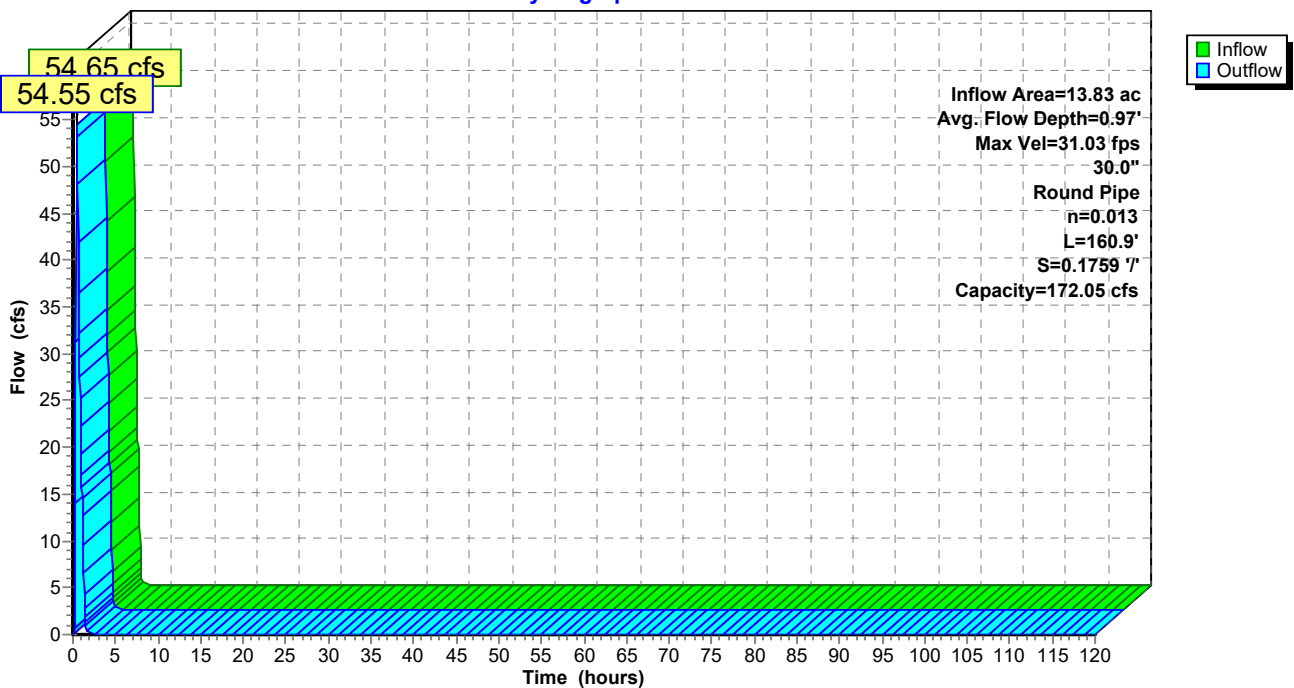
Peak Storage= 283 cf @ 0.47 hrs  
 Average Depth at Peak Storage= 0.97'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 172.05 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 160.9' Slope= 0.1759 '/'  
 Inlet Invert= 808.20', Outlet Invert= 779.89'



**Reach LP-N-A6: Letdown Pipe N-A6**

Hydrograph



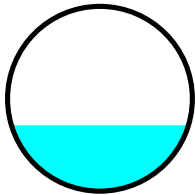
**Summary for Reach LP-N-A7: Letdown Pipe N-A7**

Inflow Area = 6.09 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 26.28 cfs @ 0.38 hrs, Volume= 1.048 af  
 Outflow = 26.22 cfs @ 0.38 hrs, Volume= 1.048 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 26.17 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 10.50 fps, Avg. Travel Time= 0.3 min

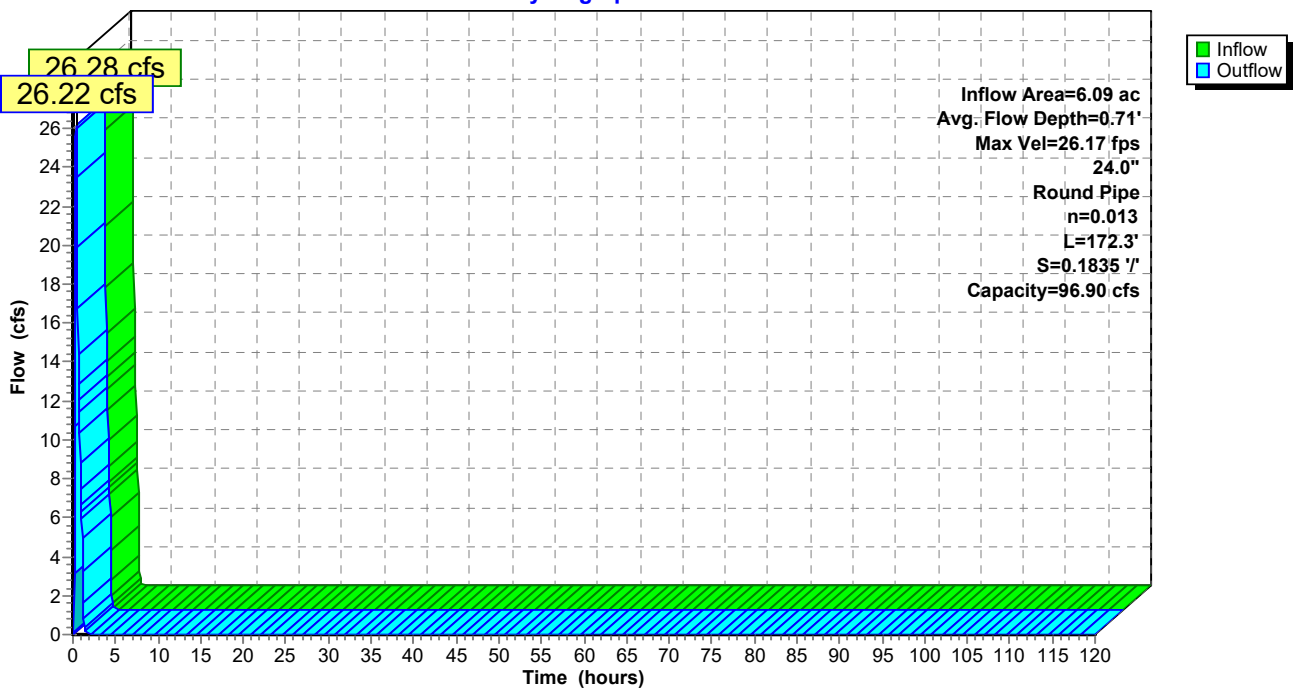
Peak Storage= 173 cf @ 0.38 hrs  
 Average Depth at Peak Storage= 0.71'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 96.90 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 172.3' Slope= 0.1835 '/'  
 Inlet Invert= 779.89', Outlet Invert= 748.28'



**Reach LP-N-A7: Letdown Pipe N-A7**

Hydrograph



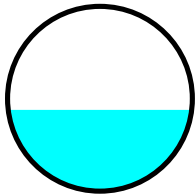
**Summary for Reach LP-N-A8: Letdown Pipe N-A8**

Inflow Area = 17.63 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 69.82 cfs @ 0.47 hrs, Volume= 3.036 af  
 Outflow = 69.70 cfs @ 0.47 hrs, Volume= 3.036 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 33.67 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 8.12 fps, Avg. Travel Time= 0.4 min

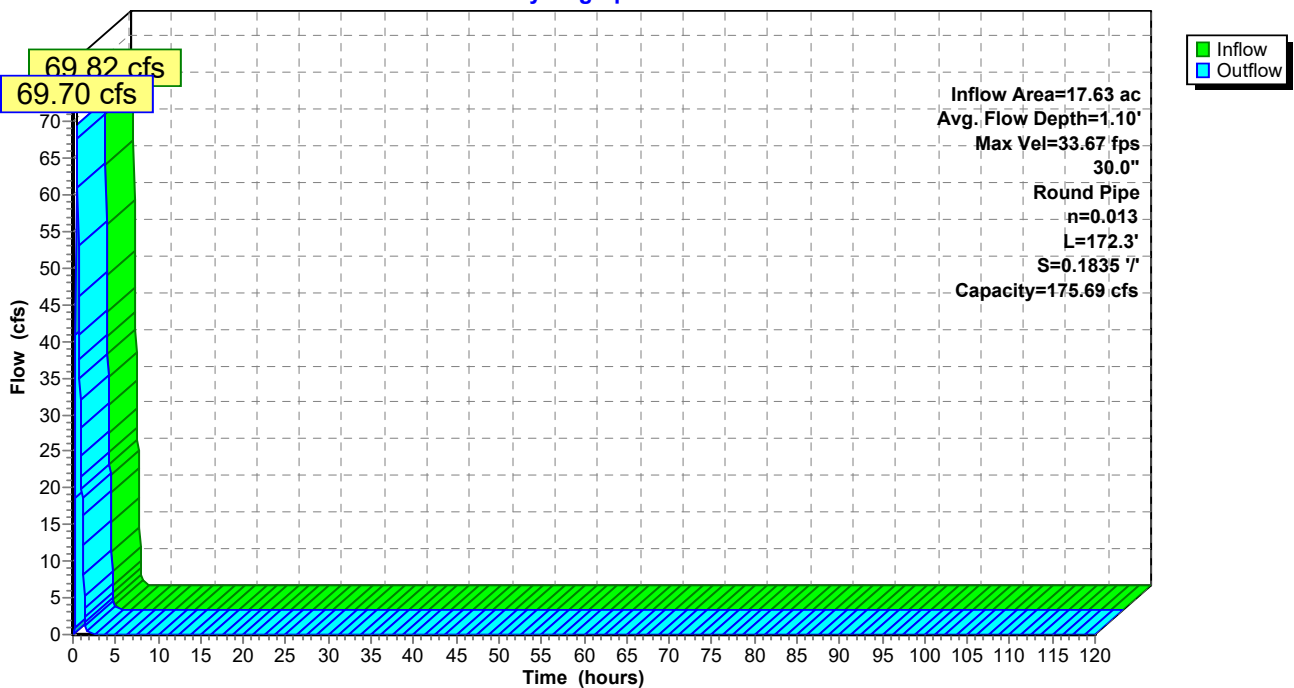
Peak Storage= 357 cf @ 0.47 hrs  
 Average Depth at Peak Storage= 1.10'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 175.69 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 172.3' Slope= 0.1835 '/'  
 Inlet Invert= 779.89', Outlet Invert= 748.28'



**Reach LP-N-A8: Letdown Pipe N-A8**

Hydrograph



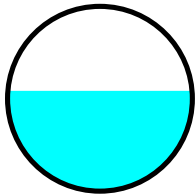
**Summary for Reach LP-N-A9: Letdown Pipe N-A9**

Inflow Area = 6.09 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 26.22 cfs @ 0.38 hrs, Volume= 1.048 af  
 Outflow = 26.19 cfs @ 0.39 hrs, Volume= 1.048 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 15.06 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 5.53 fps, Avg. Travel Time= 0.2 min

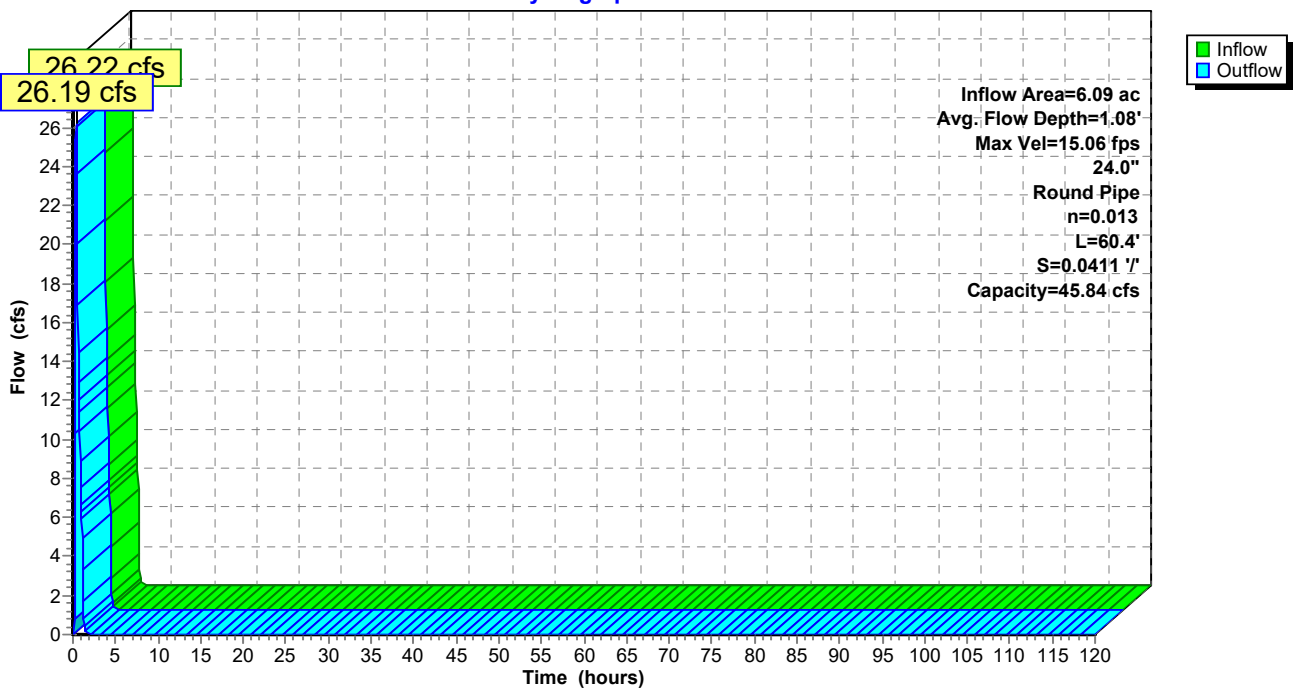
Peak Storage= 105 cf @ 0.38 hrs  
 Average Depth at Peak Storage= 1.08'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 45.84 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 60.4' Slope= 0.0411 '/'  
 Inlet Invert= 748.28', Outlet Invert= 745.80'



**Reach LP-N-A9: Letdown Pipe N-A9**

Hydrograph



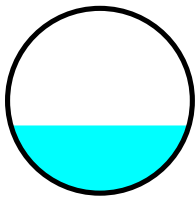
**Summary for Reach LP-N-B1: Letdown Pipe N-B1**

Inflow Area = 3.15 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 13.01 cfs @ 0.45 hrs, Volume= 0.543 af  
 Outflow = 12.98 cfs @ 0.46 hrs, Volume= 0.543 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 22.27 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 7.08 fps, Avg. Travel Time= 0.5 min

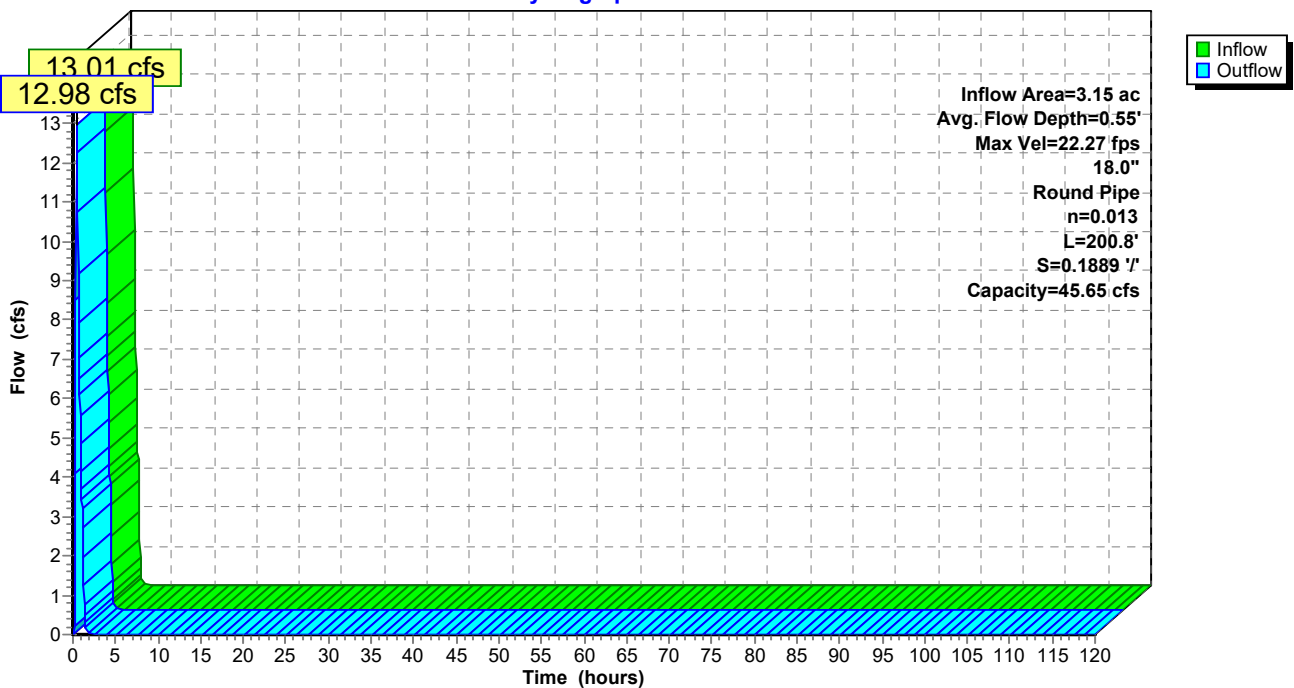
Peak Storage= 117 cf @ 0.45 hrs  
 Average Depth at Peak Storage= 0.55'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 45.65 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 200.8' Slope= 0.1889 '/'  
 Inlet Invert= 847.84', Outlet Invert= 809.91'



**Reach LP-N-B1: Letdown Pipe N-B1**

Hydrograph



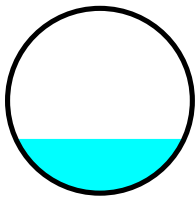
**Summary for Reach LP-N-B2: Letdown Pipe N-B2**

Inflow Area = 4.49 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 18.33 cfs @ 0.46 hrs, Volume= 0.773 af  
 Outflow = 18.28 cfs @ 0.46 hrs, Volume= 0.773 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 23.94 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 7.54 fps, Avg. Travel Time= 0.4 min

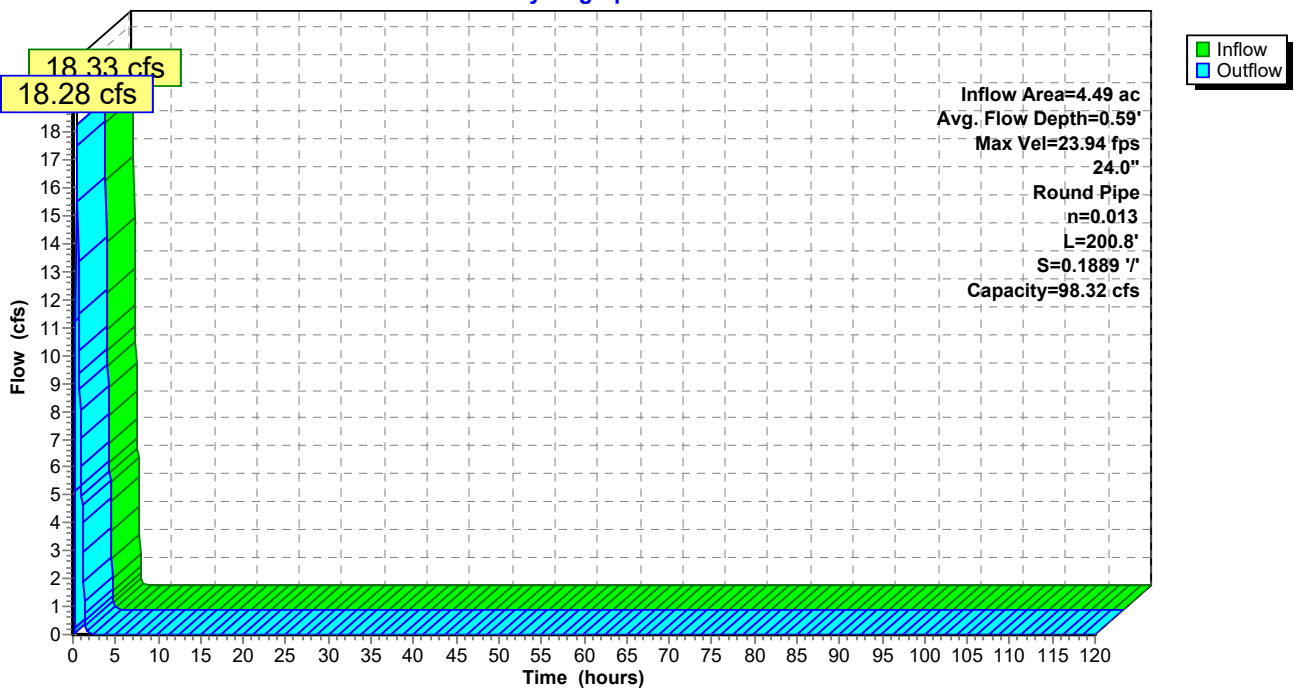
Peak Storage= 154 cf @ 0.46 hrs  
 Average Depth at Peak Storage= 0.59'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 98.32 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 200.8' Slope= 0.1889 '/'  
 Inlet Invert= 847.84', Outlet Invert= 809.91'



**Reach LP-N-B2: Letdown Pipe N-B2**

Hydrograph





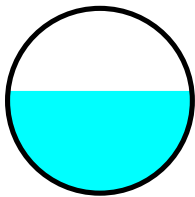
**Summary for Reach LP-N-B3: Letdown Pipe N-B3**

Inflow Area = 6.58 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 26.77 cfs @ 0.46 hrs, Volume= 1.133 af  
 Outflow = 26.72 cfs @ 0.46 hrs, Volume= 1.133 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 26.74 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 7.06 fps, Avg. Travel Time= 0.5 min

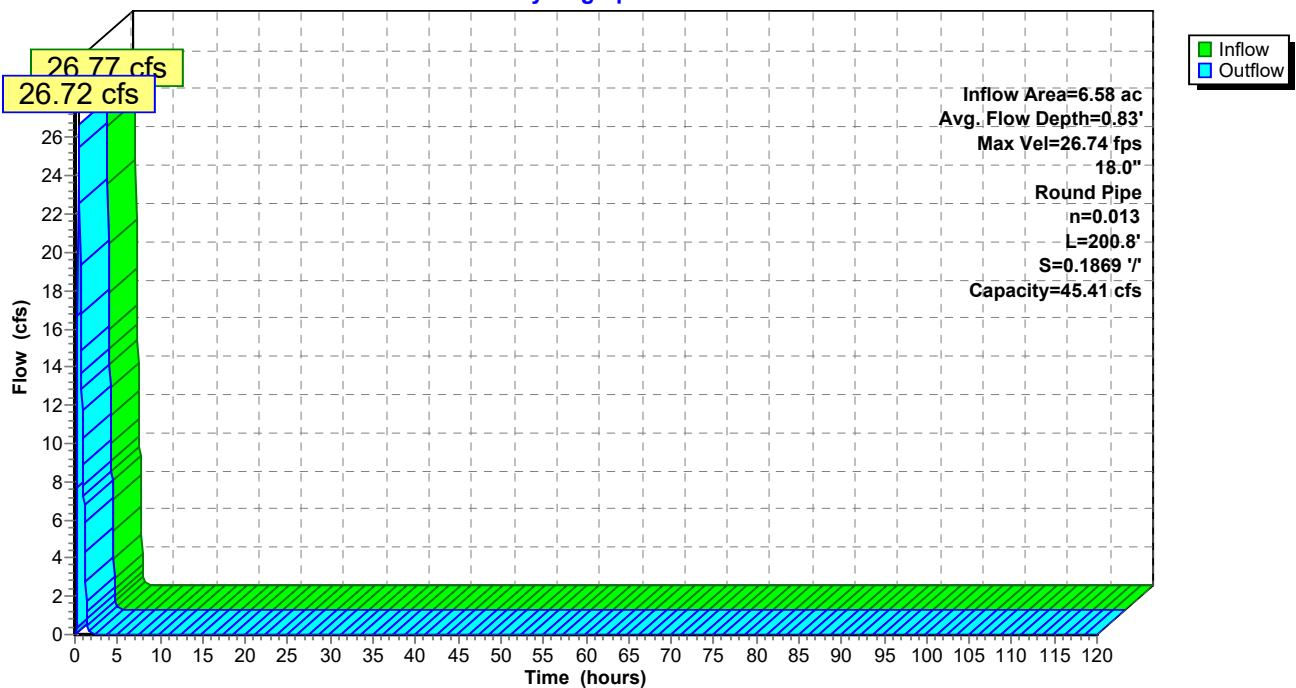
Peak Storage= 201 cf @ 0.46 hrs  
 Average Depth at Peak Storage= 0.83'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 45.41 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 200.8' Slope= 0.1869 '/'  
 Inlet Invert= 809.91', Outlet Invert= 772.39'



**Reach LP-N-B3: Letdown Pipe N-B3**

Hydrograph



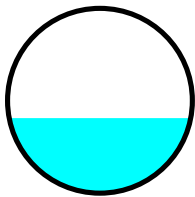
**Summary for Reach LP-N-B4: Letdown Pipe N-B4**

Inflow Area = 8.29 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 33.72 cfs @ 0.46 hrs, Volume= 1.428 af  
 Outflow = 33.64 cfs @ 0.46 hrs, Volume= 1.428 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 28.25 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 7.62 fps, Avg. Travel Time= 0.4 min

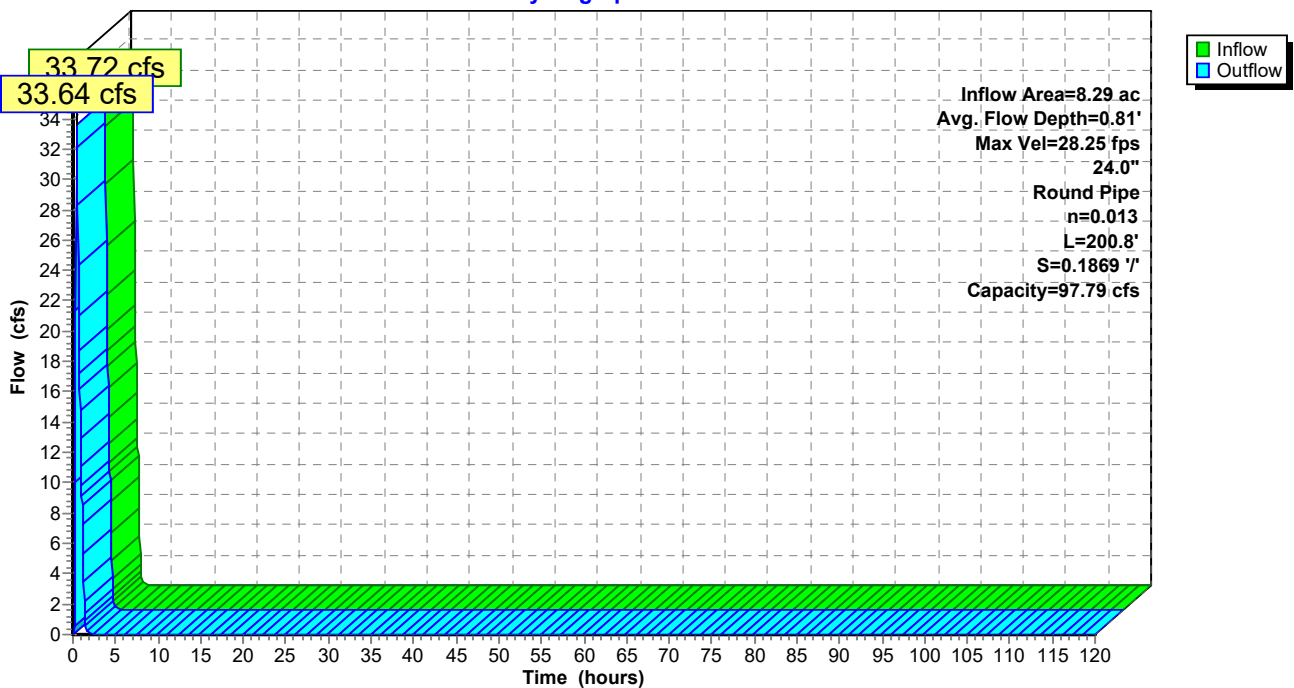
Peak Storage= 240 cf @ 0.46 hrs  
 Average Depth at Peak Storage= 0.81'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 97.79 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 200.8' Slope= 0.1869 '/'  
 Inlet Invert= 809.91', Outlet Invert= 772.39'



**Reach LP-N-B4: Letdown Pipe N-B4**

Hydrograph



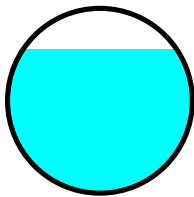
**Summary for Reach LP-N-B5: Letdown Pipe N-B5**

Inflow Area = 11.08 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 44.13 cfs @ 0.47 hrs, Volume= 1.908 af  
 Outflow = 44.03 cfs @ 0.47 hrs, Volume= 1.908 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 29.80 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 7.07 fps, Avg. Travel Time= 0.4 min

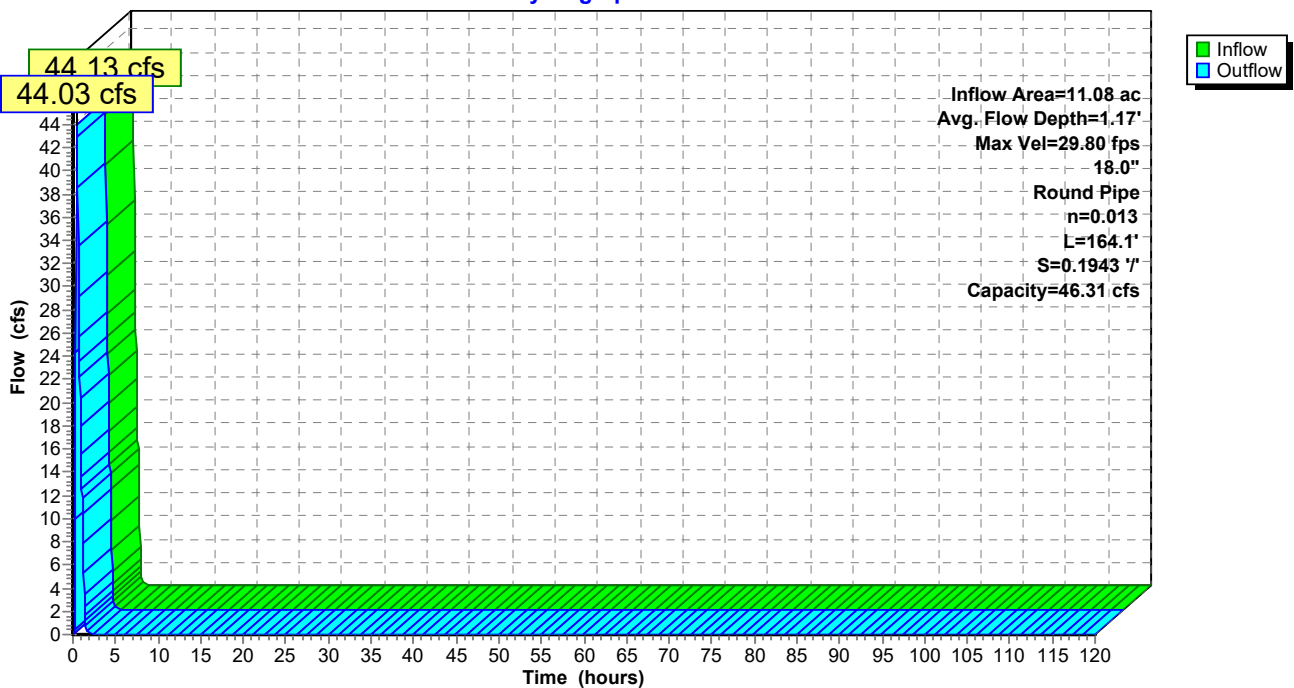
Peak Storage= 243 cf @ 0.47 hrs  
 Average Depth at Peak Storage= 1.17'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 46.31 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 164.1' Slope= 0.1943 '/'  
 Inlet Invert= 772.39', Outlet Invert= 740.50'



**Reach LP-N-B5: Letdown Pipe N-B5**

Hydrograph



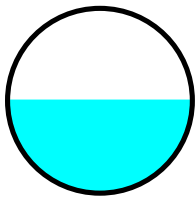
**Summary for Reach LP-N-B6: Letdown Pipe N-B6**

Inflow Area = 12.58 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 50.88 cfs @ 0.46 hrs, Volume= 2.166 af  
 Outflow = 50.80 cfs @ 0.46 hrs, Volume= 2.166 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 31.88 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 7.87 fps, Avg. Travel Time= 0.3 min

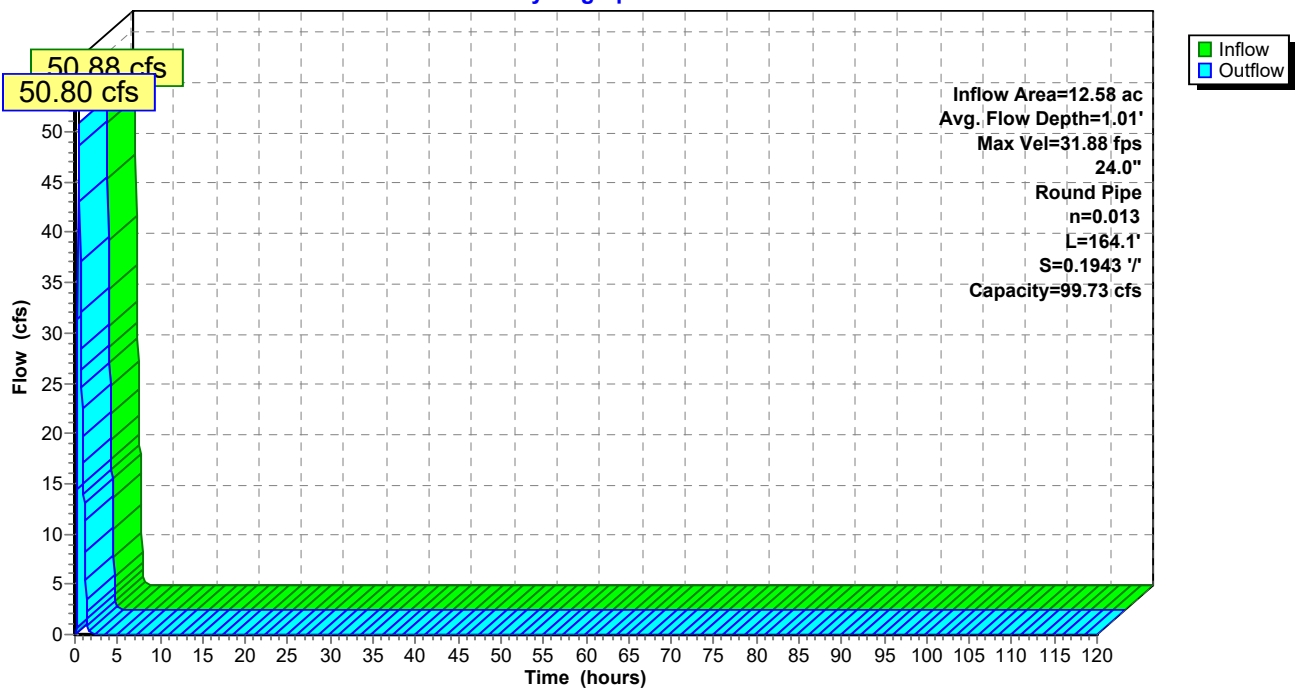
Peak Storage= 262 cf @ 0.46 hrs  
 Average Depth at Peak Storage= 1.01'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 99.73 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 164.1' Slope= 0.1943 '/'  
 Inlet Invert= 772.39', Outlet Invert= 740.50'



**Reach LP-N-B6: Letdown Pipe N-B6**

Hydrograph



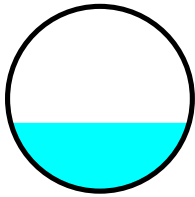
**Summary for Reach LP-N-C1: Letdown Pipe N-C1**

Inflow Area = 8.24 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 32.74 cfs @ 0.46 hrs, Volume= 1.419 af  
 Outflow = 32.70 cfs @ 0.46 hrs, Volume= 1.419 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 31.15 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 9.20 fps, Avg. Travel Time= 0.3 min

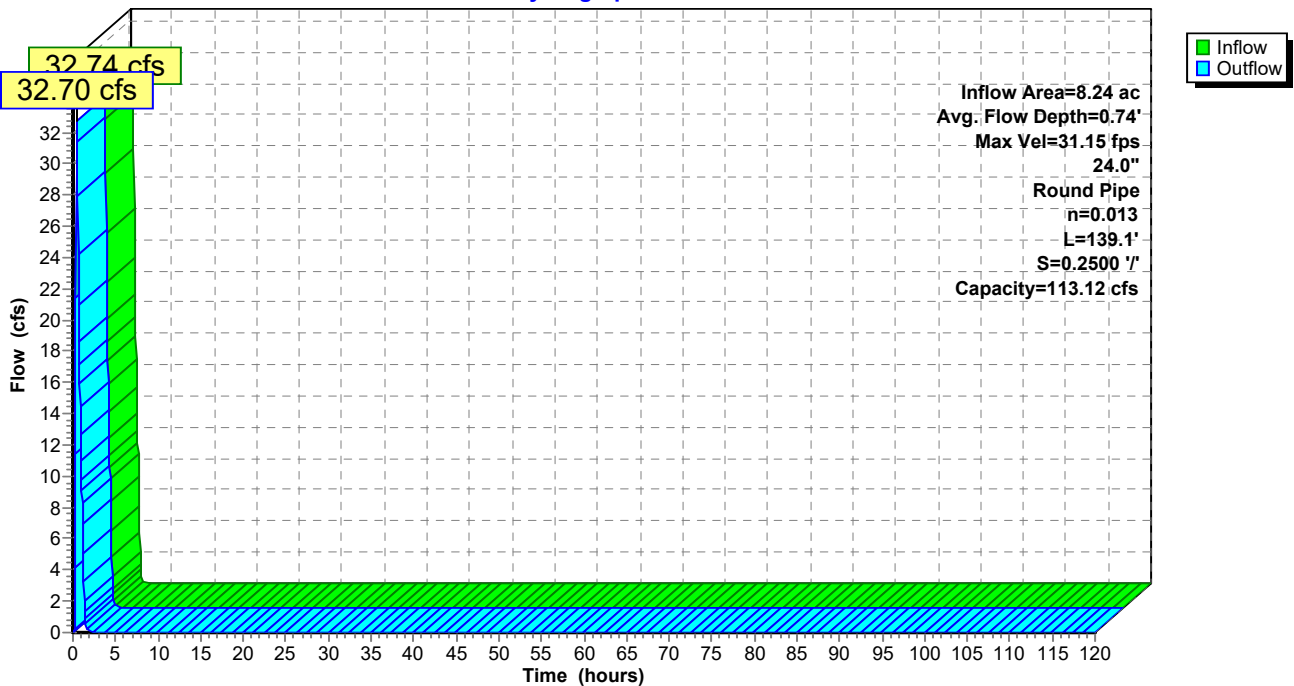
Peak Storage= 146 cf @ 0.46 hrs  
 Average Depth at Peak Storage= 0.74'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 113.12 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 139.1' Slope= 0.2500 '/'  
 Inlet Invert= 843.66', Outlet Invert= 808.88'



**Reach LP-N-C1: Letdown Pipe N-C1**

Hydrograph



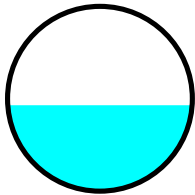
**Summary for Reach LP-N-C2: Letdown Pipe N-C2**

Inflow Area = 12.44 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 49.71 cfs @ 0.46 hrs, Volume= 2.143 af  
 Outflow = 49.69 cfs @ 0.46 hrs, Volume= 2.143 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 34.83 fps, Min. Travel Time= 0.0 min  
 Avg. Velocity = 9.11 fps, Avg. Travel Time= 0.1 min

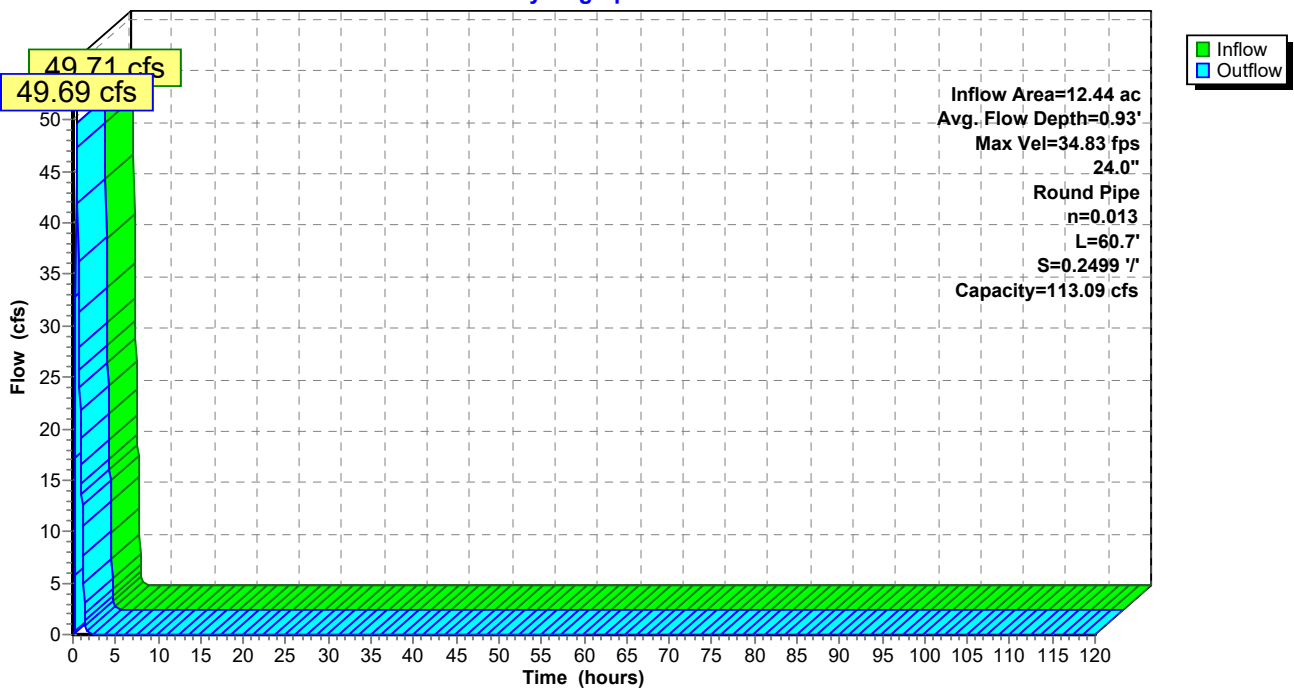
Peak Storage= 87 cf @ 0.46 hrs  
 Average Depth at Peak Storage= 0.93'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 113.09 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 60.7' Slope= 0.2499 '/  
 Inlet Invert= 808.88', Outlet Invert= 793.71'



**Reach LP-N-C2: Letdown Pipe N-C2**

Hydrograph



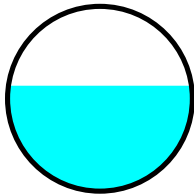
**Summary for Reach LP-N-C3: Letdown Pipe N-C3**

Inflow Area = 17.99 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 71.20 cfs @ 0.45 hrs, Volume= 3.099 af  
 Outflow = 71.14 cfs @ 0.45 hrs, Volume= 3.099 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 38.47 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 9.47 fps, Avg. Travel Time= 0.2 min

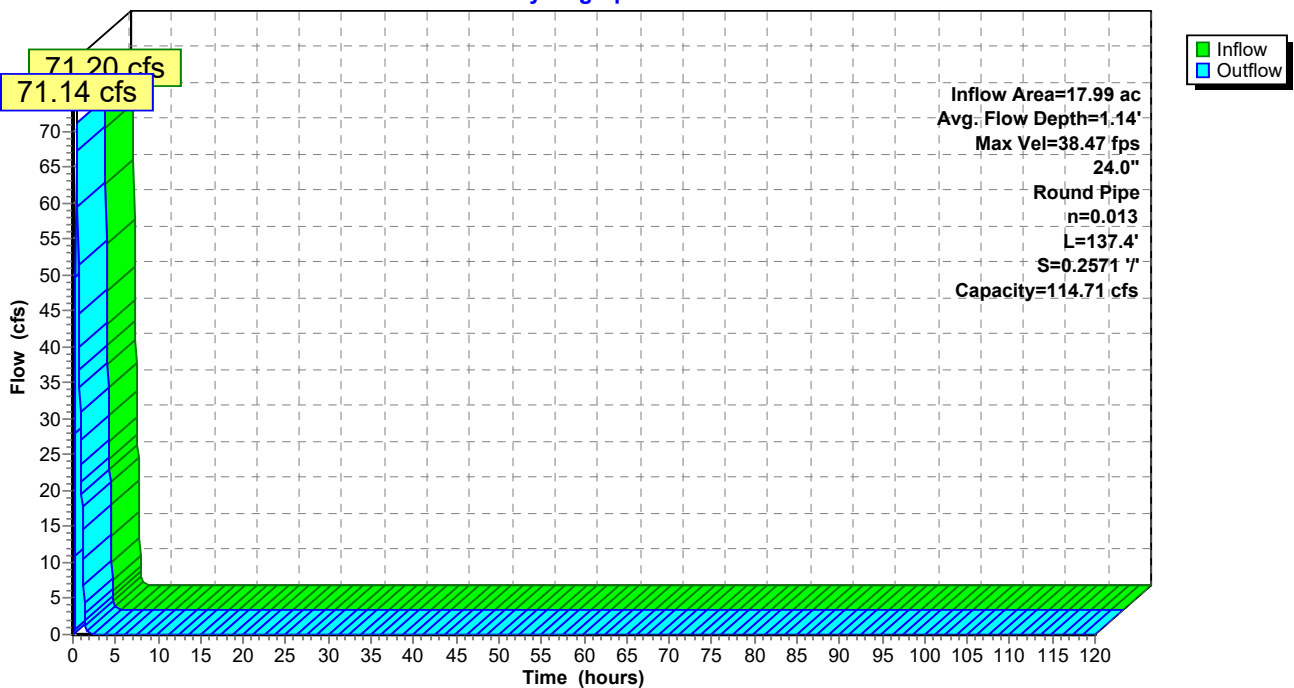
Peak Storage= 254 cf @ 0.45 hrs  
 Average Depth at Peak Storage= 1.14'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 114.71 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 137.4' Slope= 0.2571 1/100'  
 Inlet Invert= 774.26', Outlet Invert= 738.93'



**Reach LP-N-C3: Letdown Pipe N-C3**

Hydrograph



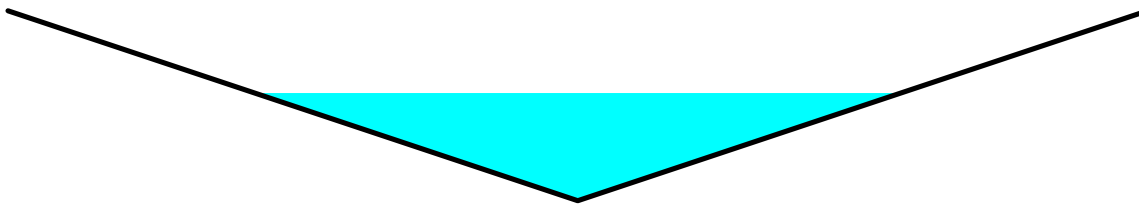
**Summary for Reach PD-1: Perimeter Ditch 1**

Inflow Area = 8.06 ac, 4.48% Impervious, Inflow Depth = 2.15" for 100-Year, 1-Hour event  
 Inflow = 37.17 cfs @ 0.32 hrs, Volume= 1.444 af  
 Outflow = 28.03 cfs @ 0.58 hrs, Volume= 1.444 af, Atten= 25%, Lag= 15.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.24 fps, Min. Travel Time= 8.6 min  
 Avg. Velocity = 0.56 fps, Avg. Travel Time= 50.2 min

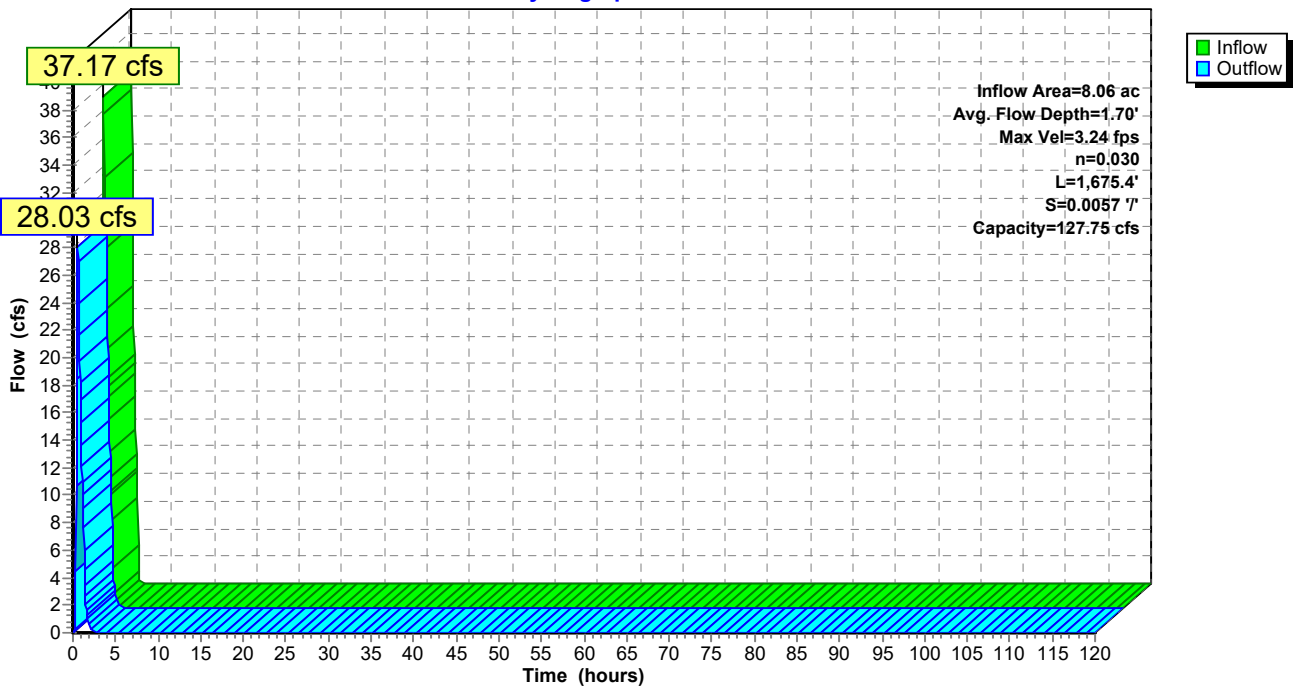
Peak Storage= 14,550 cf @ 0.43 hrs  
 Average Depth at Peak Storage= 1.70'  
 Bank-Full Depth= 3.00' Flow Area= 27.0 sf, Capacity= 127.75 cfs

0.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 ' / ' Top Width= 18.00'  
 Length= 1,675.4' Slope= 0.0057 ' / '  
 Inlet Invert= 768.00', Outlet Invert= 758.45'



**Reach PD-1: Perimeter Ditch 1**

Hydrograph





**Summary for Reach PD-10: Perimeter Ditch 10**

Inflow Area = 9.21 ac, 4.89% Impervious, Inflow Depth = 2.17" for 100-Year, 1-Hour event  
 Inflow = 30.91 cfs @ 0.44 hrs, Volume= 1.663 af  
 Outflow = 30.60 cfs @ 0.52 hrs, Volume= 1.663 af, Atten= 1%, Lag= 4.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.80 fps, Min. Travel Time= 2.6 min  
 Avg. Velocity = 0.59 fps, Avg. Travel Time= 12.4 min

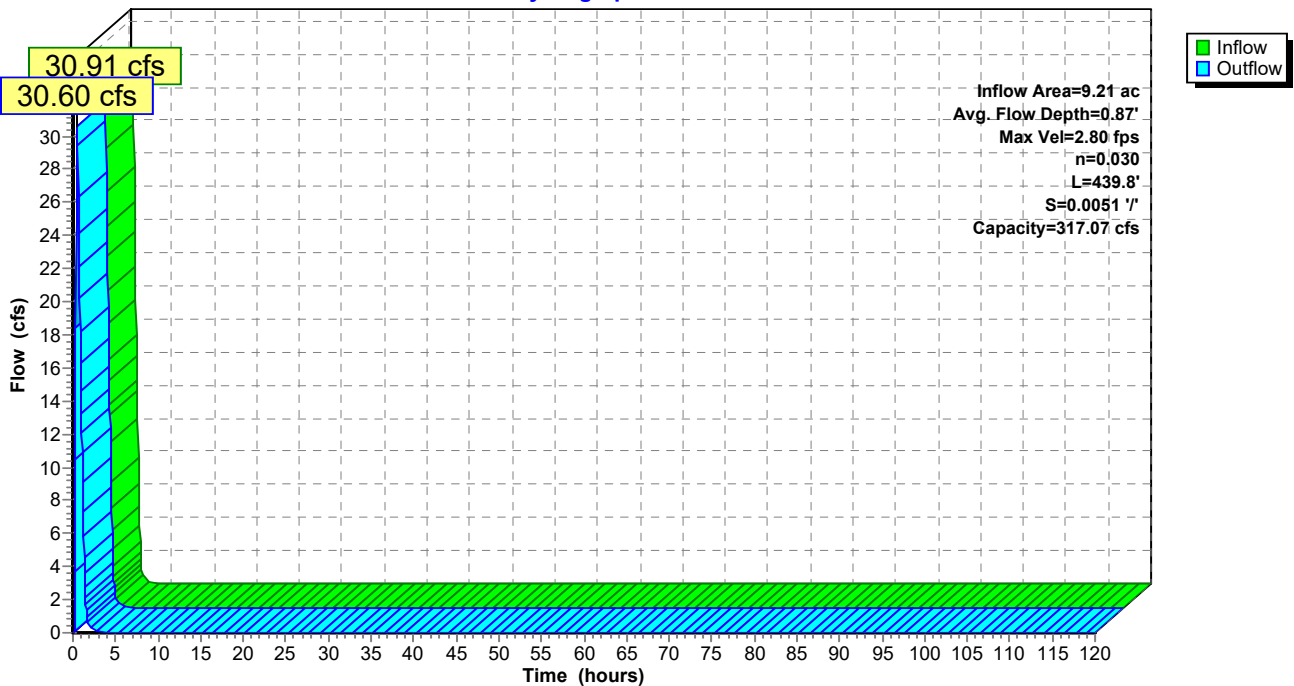
Peak Storage= 4,807 cf @ 0.47 hrs  
 Average Depth at Peak Storage= 0.87'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 317.07 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 439.8' Slope= 0.0051 '/'  
 Inlet Invert= 739.43', Outlet Invert= 737.18'



**Reach PD-10: Perimeter Ditch 10**

Hydrograph



**Summary for Reach PD-11: Perimeter Ditch 11**

Inflow Area = 2.70 ac, 11.67% Impervious, Inflow Depth = 2.31" for 100-Year, 1-Hour event  
 Inflow = 14.69 cfs @ 0.28 hrs, Volume= 0.518 af  
 Outflow = 10.40 cfs @ 0.56 hrs, Volume= 0.518 af, Atten= 29%, Lag= 16.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.95 fps, Min. Travel Time= 9.5 min  
 Avg. Velocity = 0.49 fps, Avg. Travel Time= 37.9 min

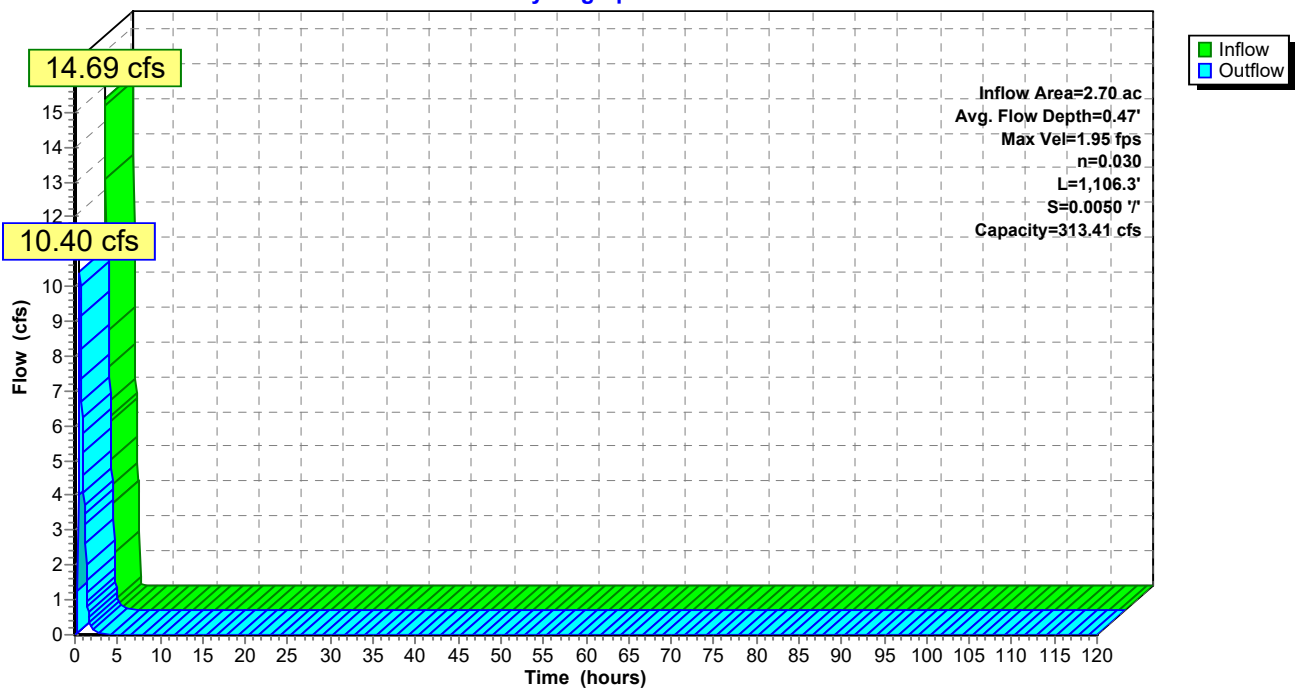
Peak Storage= 5,945 cf @ 0.40 hrs  
 Average Depth at Peak Storage= 0.47'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 313.41 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 1,106.3' Slope= 0.0050 '/'  
 Inlet Invert= 744.96', Outlet Invert= 739.43'



**Reach PD-11: Perimeter Ditch 11**

Hydrograph



**Summary for Reach PD-12: Perimeter Ditch 12**

Inflow Area = 2.74 ac, 11.45% Impervious, Inflow Depth = 2.31" for 100-Year, 1-Hour event  
 Inflow = 8.07 cfs @ 0.54 hrs, Volume= 0.526 af  
 Outflow = 7.54 cfs @ 0.85 hrs, Volume= 0.526 af, Atten= 7%, Lag= 18.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.73 fps, Min. Travel Time= 10.5 min  
 Avg. Velocity = 0.50 fps, Avg. Travel Time= 36.6 min

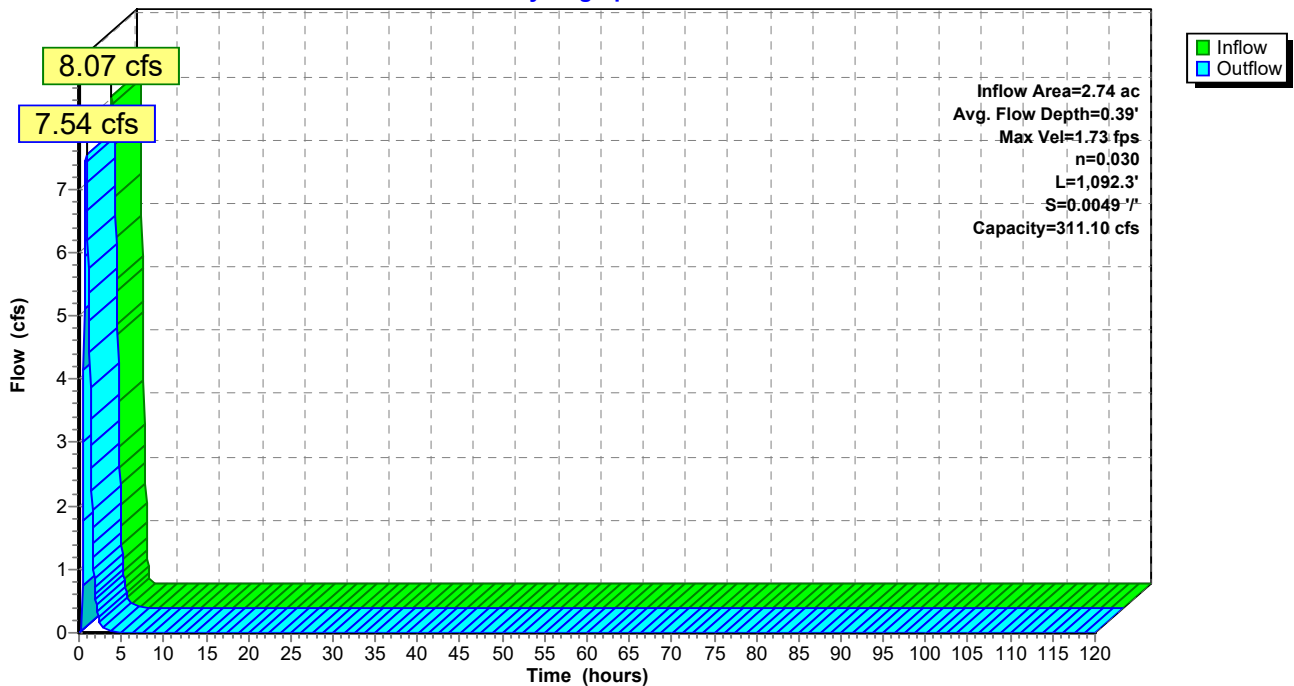
Peak Storage= 4,783 cf @ 0.68 hrs  
 Average Depth at Peak Storage= 0.39'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 311.10 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 1,092.3' Slope= 0.0049 '/'  
 Inlet Invert= 744.96', Outlet Invert= 739.58'



**Reach PD-12: Perimeter Ditch 12**

Hydrograph



**Summary for Reach PD-13: Perimeter Ditch 13**

Inflow Area = 25.73 ac, 1.49% Impervious, Inflow Depth = 2.10" for 100-Year, 1-Hour event  
 Inflow = 91.17 cfs @ 0.46 hrs, Volume= 4.502 af  
 Outflow = 89.44 cfs @ 0.49 hrs, Volume= 4.502 af, Atten= 2%, Lag= 2.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.20 fps, Min. Travel Time= 1.2 min  
 Avg. Velocity = 0.53 fps, Avg. Travel Time= 7.0 min

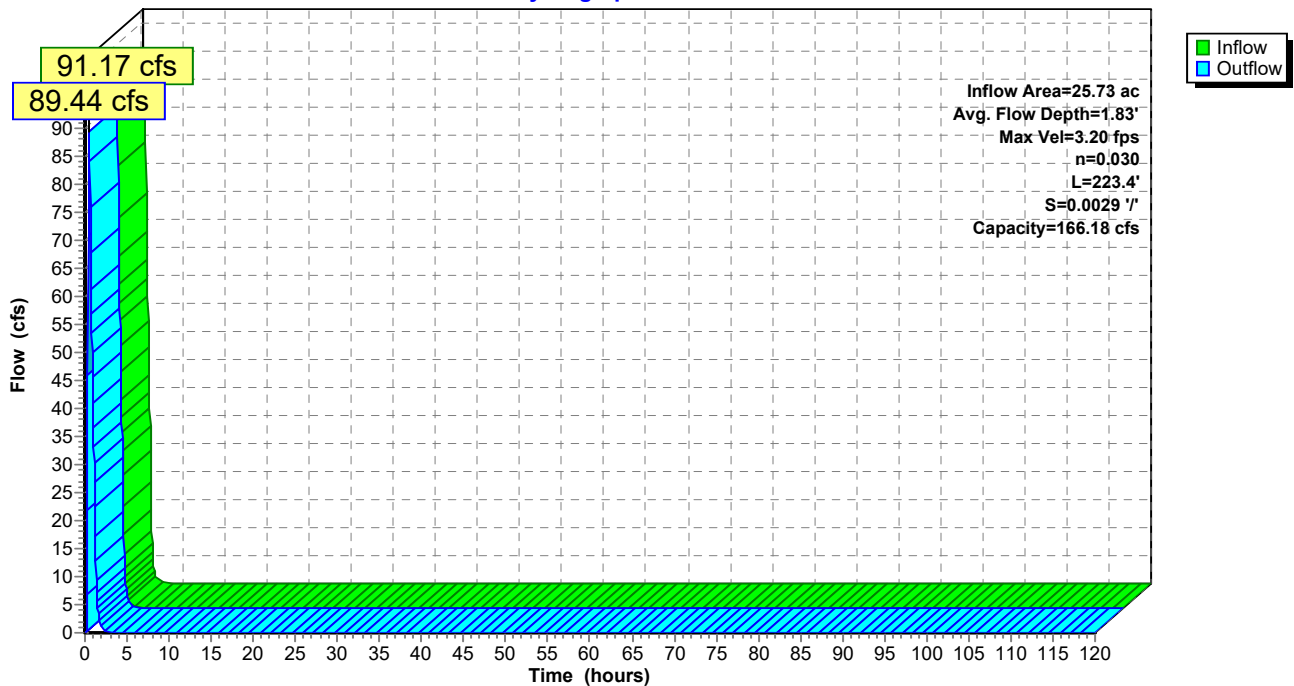
Peak Storage= 6,346 cf @ 0.47 hrs  
 Average Depth at Peak Storage= 1.83'  
 Bank-Full Depth= 2.50' Flow Area= 43.8 sf, Capacity= 166.18 cfs

10.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 25.00'  
 Length= 223.4' Slope= 0.0029 '/'  
 Inlet Invert= 739.58', Outlet Invert= 738.93'



**Reach PD-13: Perimeter Ditch 13**

Hydrograph



**Summary for Reach PD-14: Perimeter Ditch 14**

Inflow Area = 17.46 ac, 1.99% Impervious, Inflow Depth = 2.11" for 100-Year, 1-Hour event  
 Inflow = 58.89 cfs @ 0.54 hrs, Volume= 3.065 af  
 Outflow = 58.35 cfs @ 0.57 hrs, Volume= 3.065 af, Atten= 1%, Lag= 2.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.28 fps, Min. Travel Time= 1.1 min  
 Avg. Velocity = 0.58 fps, Avg. Travel Time= 6.4 min

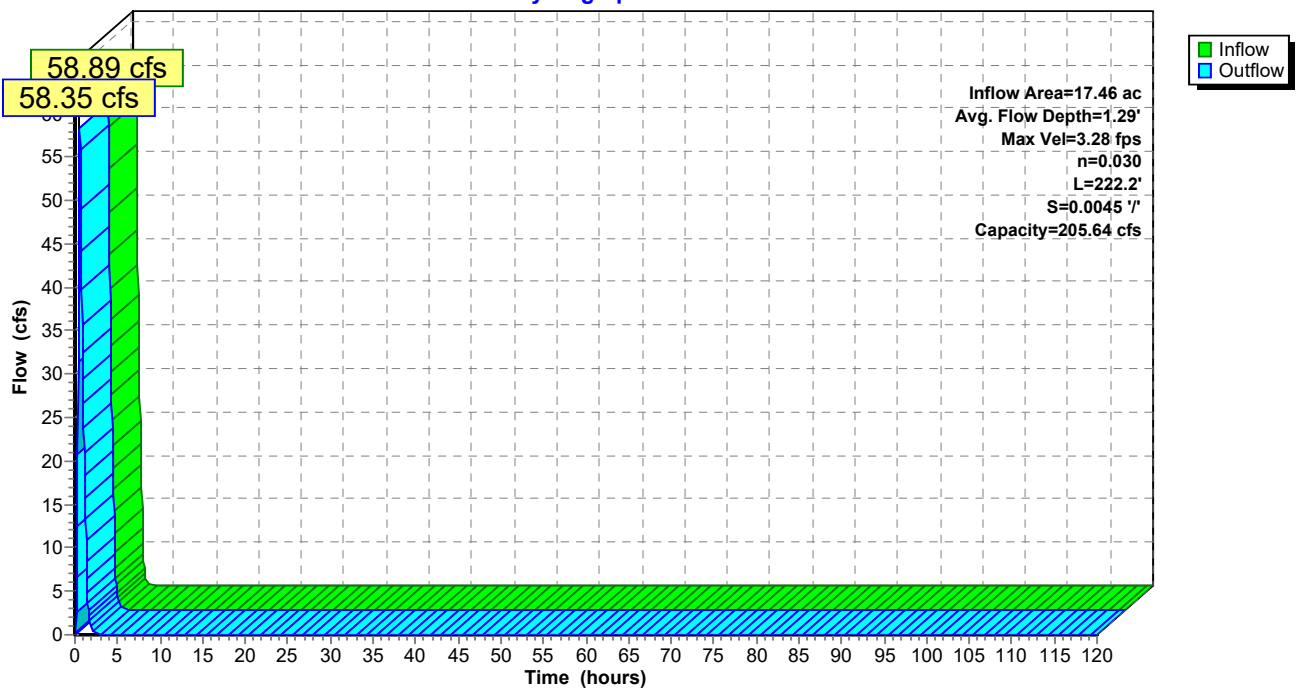
Peak Storage= 3,989 cf @ 0.55 hrs  
 Average Depth at Peak Storage= 1.29'  
 Bank-Full Depth= 2.50' Flow Area= 43.8 sf, Capacity= 205.64 cfs

10.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 25.00'  
 Length= 222.2' Slope= 0.0045 '/'  
 Inlet Invert= 739.92', Outlet Invert= 738.93'



**Reach PD-14: Perimeter Ditch 14**

Hydrograph



**Summary for Reach PD-15: Perimeter Ditch 15**

Inflow Area = 16.01 ac, 1.69% Impervious, Inflow Depth = 2.10" for 100-Year, 1-Hour event  
 Inflow = 59.13 cfs @ 0.42 hrs, Volume= 2.804 af  
 Outflow = 55.76 cfs @ 0.54 hrs, Volume= 2.804 af, Atten= 6%, Lag= 7.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.23 fps, Min. Travel Time= 3.9 min  
 Avg. Velocity = 0.57 fps, Avg. Travel Time= 22.2 min

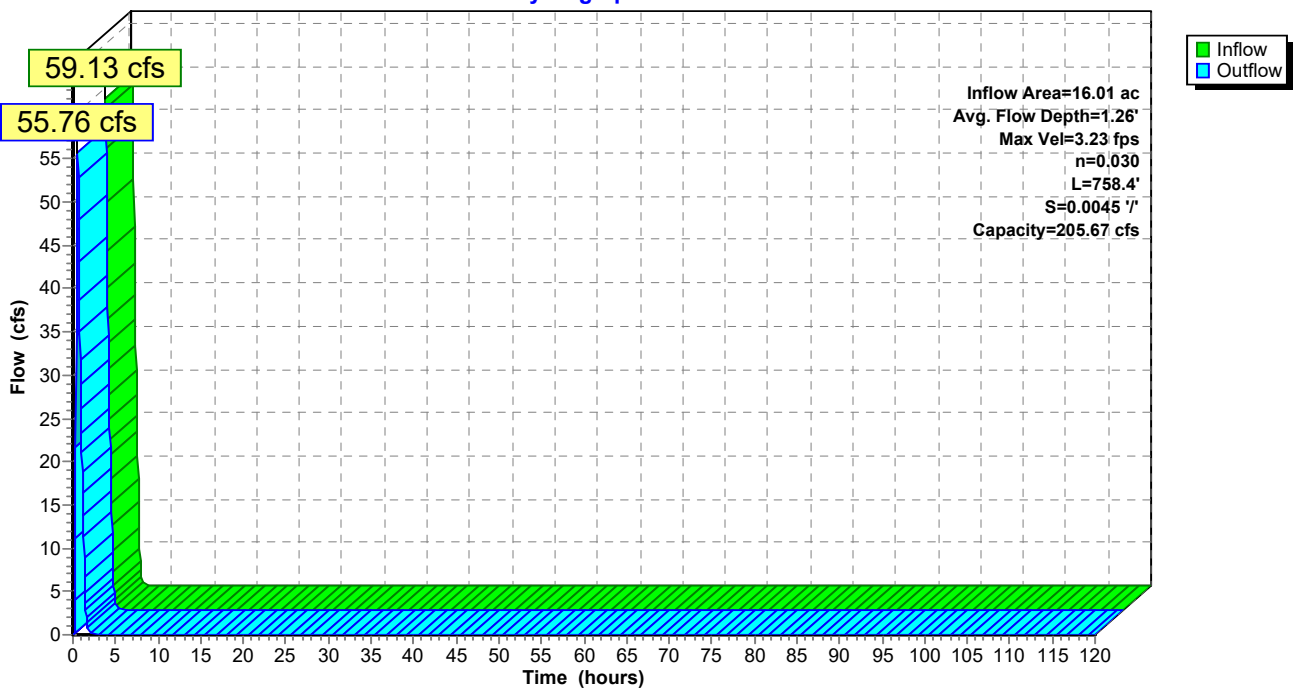
Peak Storage= 13,233 cf @ 0.47 hrs  
 Average Depth at Peak Storage= 1.26'  
 Bank-Full Depth= 2.50' Flow Area= 43.8 sf, Capacity= 205.67 cfs

10.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 25.00'  
 Length= 758.4' Slope= 0.0045 '/'  
 Inlet Invert= 743.30', Outlet Invert= 739.92'



**Reach PD-15: Perimeter Ditch 15**

Hydrograph



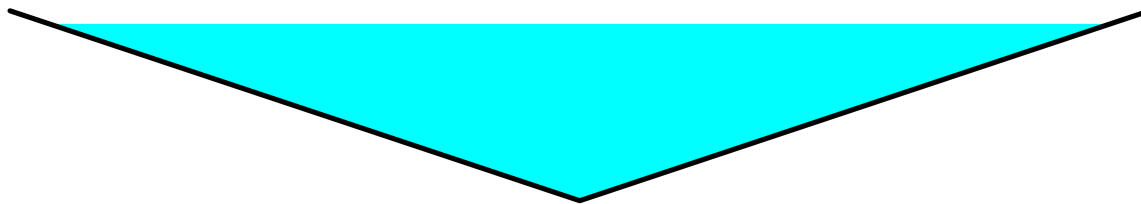
**Summary for Reach PD-2: Perimeter Ditch 2**

Inflow Area = 30.47 ac, 1.77% Impervious, Inflow Depth = 2.09" for 100-Year, 1-Hour event  
 Inflow = 87.31 cfs @ 0.63 hrs, Volume= 5.312 af  
 Outflow = 86.87 cfs @ 0.67 hrs, Volume= 5.312 af, Atten= 1%, Lag= 2.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.73 fps, Min. Travel Time= 1.4 min  
 Avg. Velocity = 0.59 fps, Avg. Travel Time= 8.9 min

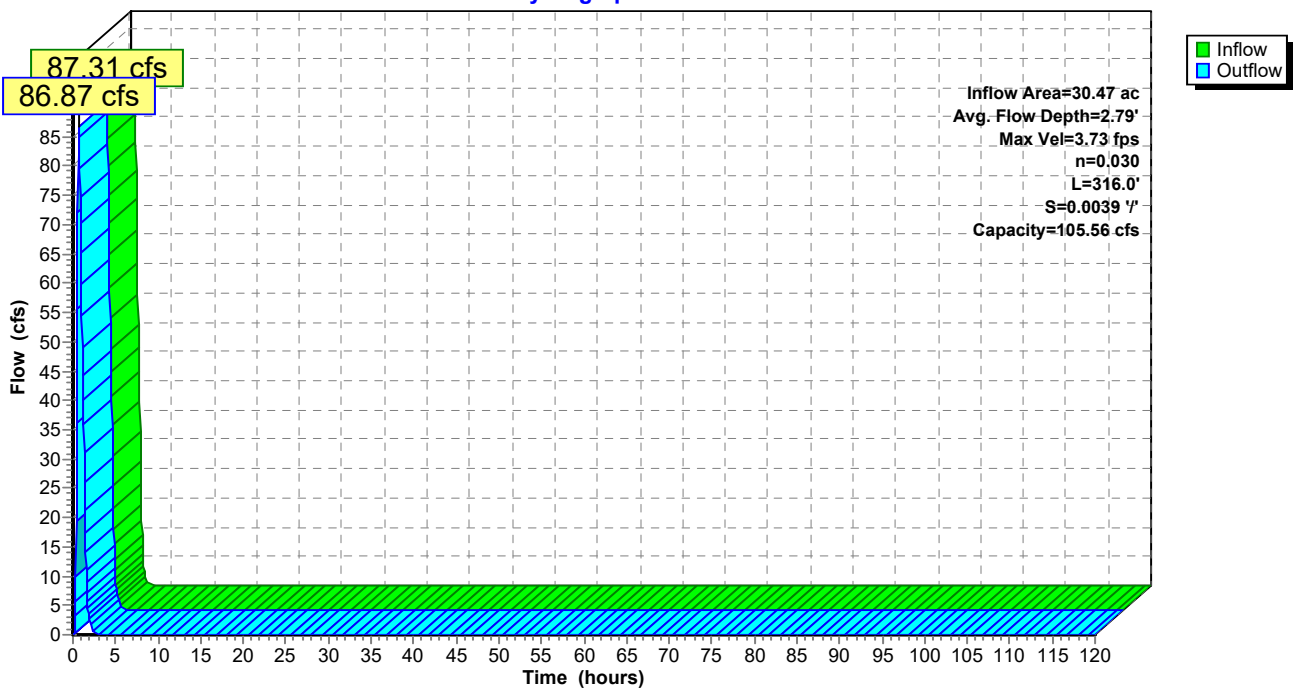
Peak Storage= 7,393 cf @ 0.65 hrs  
 Average Depth at Peak Storage= 2.79'  
 Bank-Full Depth= 3.00' Flow Area= 27.0 sf, Capacity= 105.56 cfs

0.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 ' / ' Top Width= 18.00'  
 Length= 316.0' Slope= 0.0039 ' / '  
 Inlet Invert= 758.00', Outlet Invert= 756.77'



**Reach PD-2: Perimeter Ditch 2**

Hydrograph



**Summary for Reach PD-3: Perimeter Ditch 3**

Inflow Area = 50.20 ac, 1.23% Impervious, Inflow Depth = 2.09" for 100-Year, 1-Hour event  
 Inflow = 133.00 cfs @ 0.61 hrs, Volume= 8.724 af  
 Outflow = 132.26 cfs @ 0.66 hrs, Volume= 8.724 af, Atten= 1%, Lag= 2.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 5.12 fps, Min. Travel Time= 1.6 min  
 Avg. Velocity = 0.87 fps, Avg. Travel Time= 9.4 min

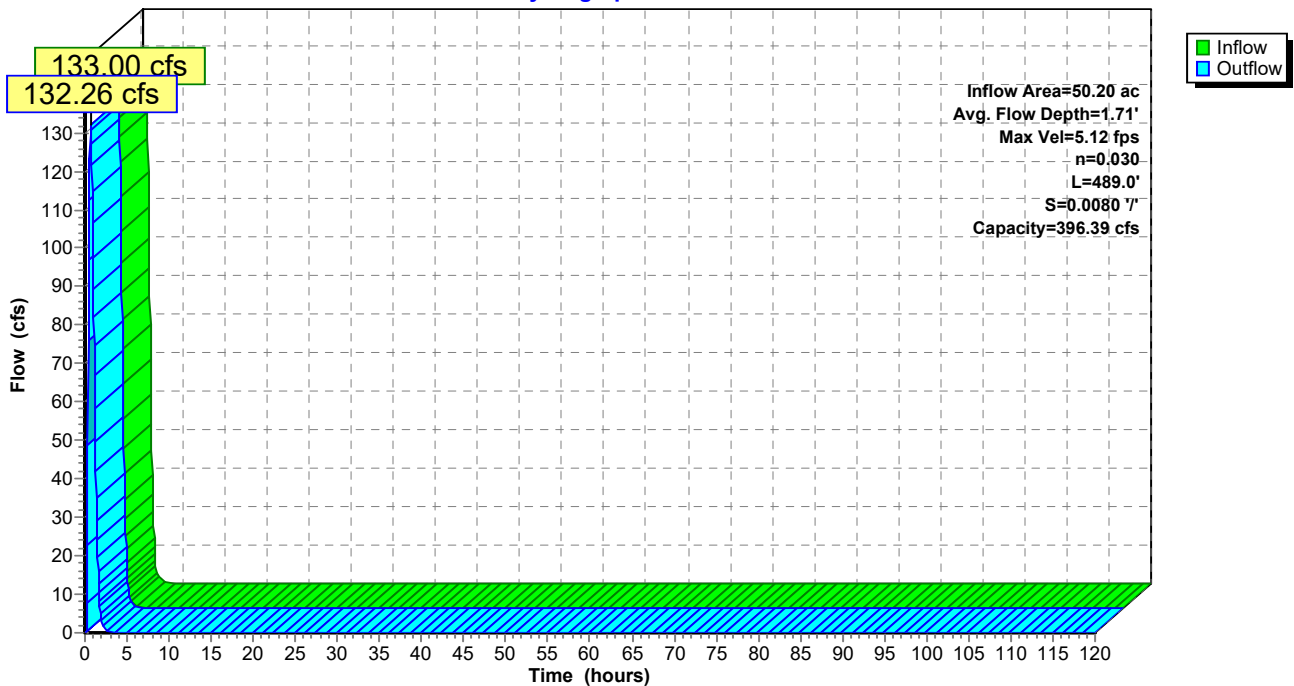
Peak Storage= 12,661 cf @ 0.63 hrs  
 Average Depth at Peak Storage= 1.71'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 396.39 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 489.0' Slope= 0.0080 '/'  
 Inlet Invert= 755.78', Outlet Invert= 751.87'



**Reach PD-3: Perimeter Ditch 3**

Hydrograph





**Summary for Reach PD-4: Perimeter Ditch 4**

Inflow Area = 53.25 ac, 1.28% Impervious, Inflow Depth = 2.09" for 100-Year, 1-Hour event  
 Inflow = 140.08 cfs @ 0.65 hrs, Volume= 9.260 af  
 Outflow = 139.65 cfs @ 0.67 hrs, Volume= 9.260 af, Atten= 0%, Lag= 1.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 6.71 fps, Min. Travel Time= 0.9 min  
 Avg. Velocity = 1.14 fps, Avg. Travel Time= 5.4 min

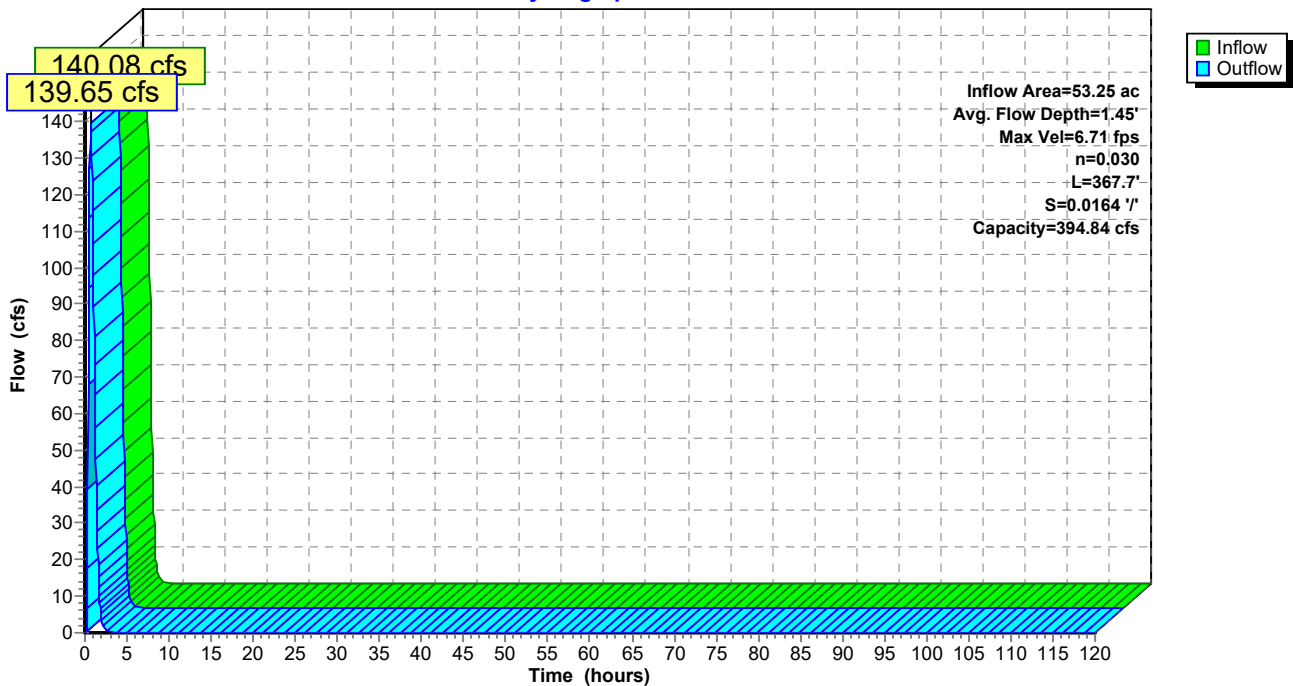
Peak Storage= 7,672 cf @ 0.66 hrs  
 Average Depth at Peak Storage= 1.45'  
 Bank-Full Depth= 2.50' Flow Area= 43.8 sf, Capacity= 394.84 cfs

10.00' x 2.50' deep channel, n= 0.030  
 Side Slope Z-value= 3.0 '/' Top Width= 25.00'  
 Length= 367.7' Slope= 0.0164 '/'  
 Inlet Invert= 751.87', Outlet Invert= 745.83'



**Reach PD-4: Perimeter Ditch 4**

Hydrograph



**Summary for Reach PD-5: Perimeter Ditch 5**

Inflow Area = 85.14 ac, 1.17% Impervious, Inflow Depth = 2.09" for 100-Year, 1-Hour event  
 Inflow = 228.43 cfs @ 0.52 hrs, Volume= 14.800 af  
 Outflow = 223.40 cfs @ 0.66 hrs, Volume= 14.800 af, Atten= 2%, Lag= 8.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 5.10 fps, Min. Travel Time= 3.7 min  
 Avg. Velocity = 0.77 fps, Avg. Travel Time= 24.4 min

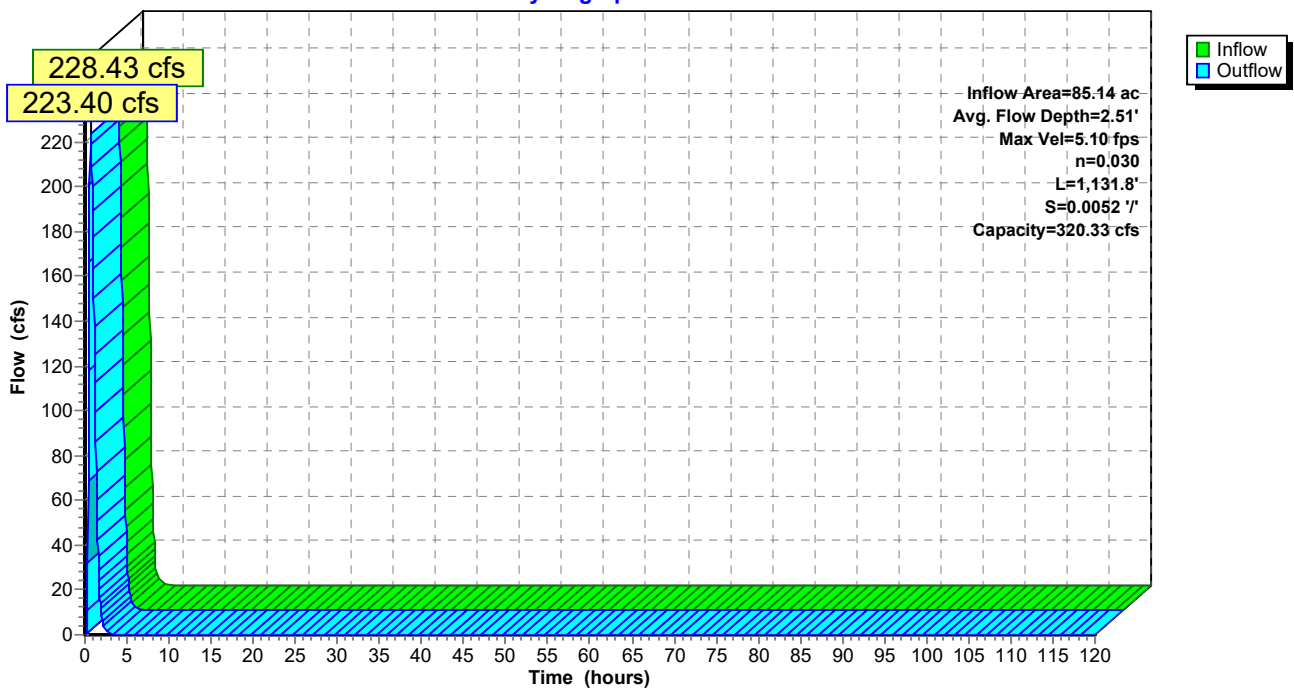
Peak Storage= 49,703 cf @ 0.60 hrs  
 Average Depth at Peak Storage= 2.51'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 320.33 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 ' / ' Top Width= 28.00'  
 Length= 1,131.8' Slope= 0.0052 ' / '  
 Inlet Invert= 745.80', Outlet Invert= 739.89'



**Reach PD-5: Perimeter Ditch 5**

Hydrograph



**Summary for Reach PD-6: Perimeter Ditch 6**

Inflow Area = 87.70 ac, 1.33% Impervious, Inflow Depth = 2.09" for 100-Year, 1-Hour event  
 Inflow = 228.46 cfs @ 0.66 hrs, Volume= 15.268 af  
 Outflow = 227.26 cfs @ 0.72 hrs, Volume= 15.268 af, Atten= 1%, Lag= 3.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 5.03 fps, Min. Travel Time= 1.9 min  
 Avg. Velocity = 0.77 fps, Avg. Travel Time= 12.6 min

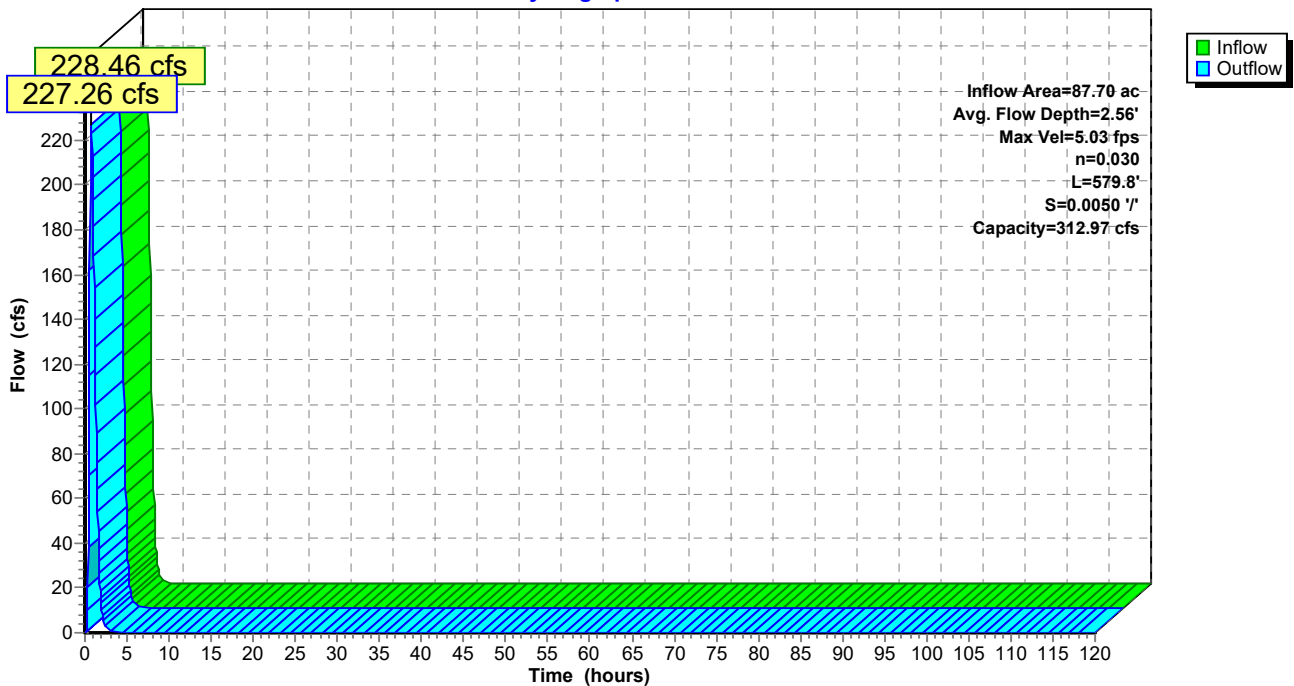
Peak Storage= 26,210 cf @ 0.69 hrs  
 Average Depth at Peak Storage= 2.56'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 312.97 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 579.8' Slope= 0.0050 '/'  
 Inlet Invert= 739.89', Outlet Invert= 737.00'



**Reach PD-6: Perimeter Ditch 6**

Hydrograph



**Summary for Reach PD-7: Perimeter Ditch 7**

Inflow Area = 3.12 ac, 32.08% Impervious, Inflow Depth = 2.79" for 100-Year, 1-Hour event  
 Inflow = 20.67 cfs @ 0.23 hrs, Volume= 0.725 af  
 Outflow = 20.47 cfs @ 0.25 hrs, Volume= 0.725 af, Atten= 1%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.44 fps, Min. Travel Time= 0.6 min  
 Avg. Velocity = 1.16 fps, Avg. Travel Time= 1.3 min

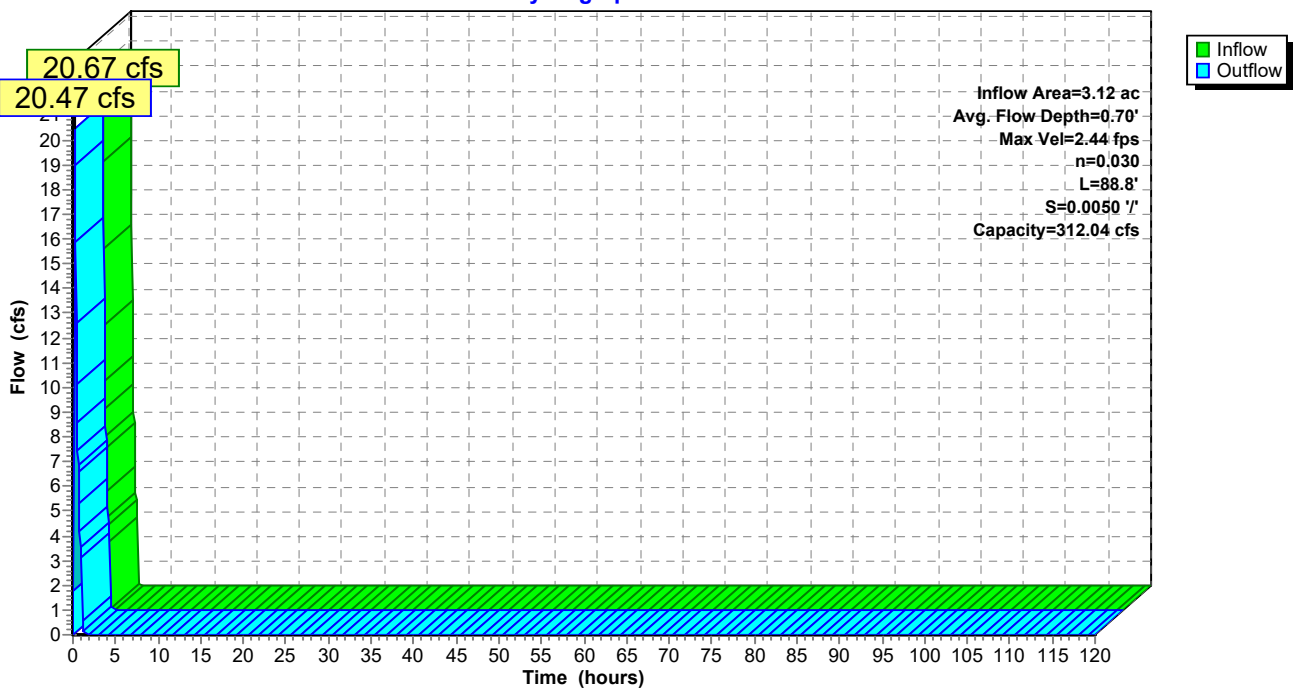
Peak Storage= 752 cf @ 0.24 hrs  
 Average Depth at Peak Storage= 0.70'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 312.04 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 88.8' Slope= 0.0050 '/'  
 Inlet Invert= 741.25', Outlet Invert= 740.81'



**Reach PD-7: Perimeter Ditch 7**

Hydrograph



**Summary for Reach PD-8: Perimeter Ditch 8**

Inflow Area = 0.14 ac, 14.29% Impervious, Inflow Depth = 2.37" for 100-Year, 1-Hour event  
 Inflow = 0.81 cfs @ 0.23 hrs, Volume= 0.028 af  
 Outflow = 0.77 cfs @ 0.28 hrs, Volume= 0.028 af, Atten= 4%, Lag= 3.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 0.76 fps, Min. Travel Time= 2.0 min  
 Avg. Velocity = 0.45 fps, Avg. Travel Time= 3.3 min

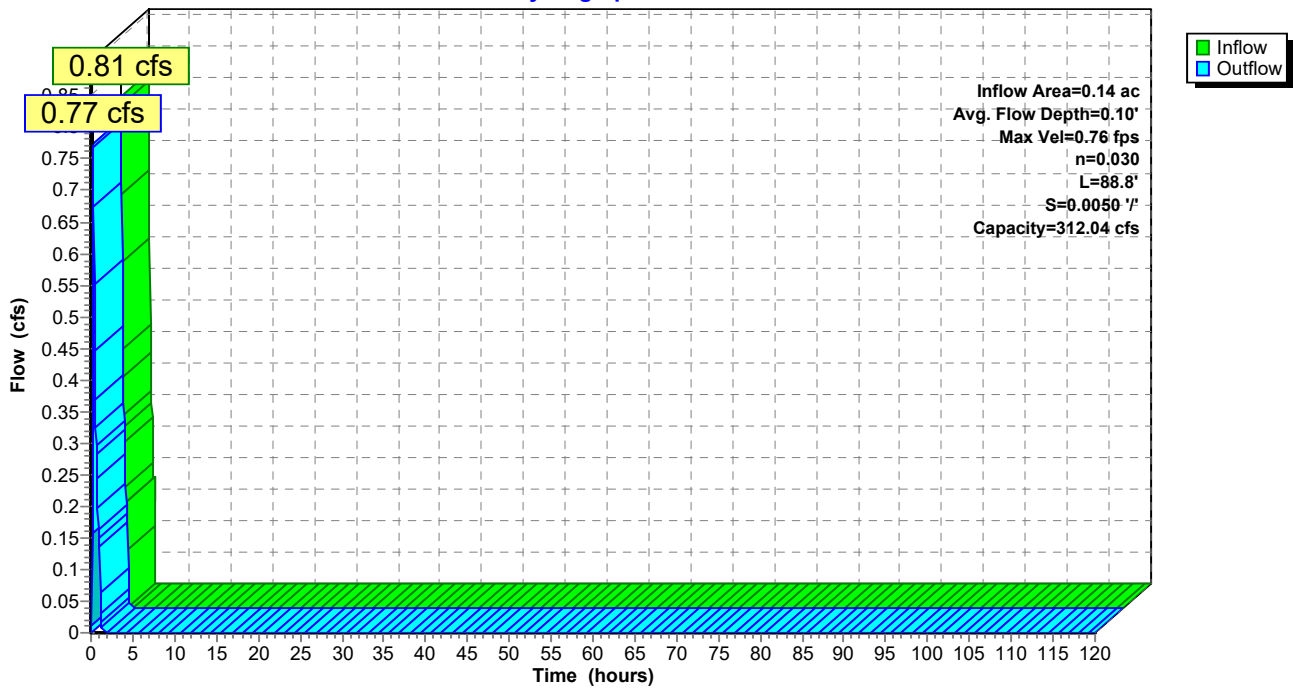
Peak Storage= 94 cf @ 0.25 hrs  
 Average Depth at Peak Storage= 0.10'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 312.04 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 88.8' Slope= 0.0050 '/'  
 Inlet Invert= 741.25', Outlet Invert= 740.81'



**Reach PD-8: Perimeter Ditch 8**

Hydrograph



**Summary for Reach PD-9: Perimeter Ditch 9**

Inflow Area = 6.78 ac, 3.10% Impervious, Inflow Depth = 2.13" for 100-Year, 1-Hour event  
 Inflow = 23.22 cfs @ 0.44 hrs, Volume= 1.205 af  
 Outflow = 22.16 cfs @ 0.54 hrs, Volume= 1.205 af, Atten= 5%, Lag= 6.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.61 fps, Min. Travel Time= 4.1 min  
 Avg. Velocity = 0.64 fps, Avg. Travel Time= 16.8 min

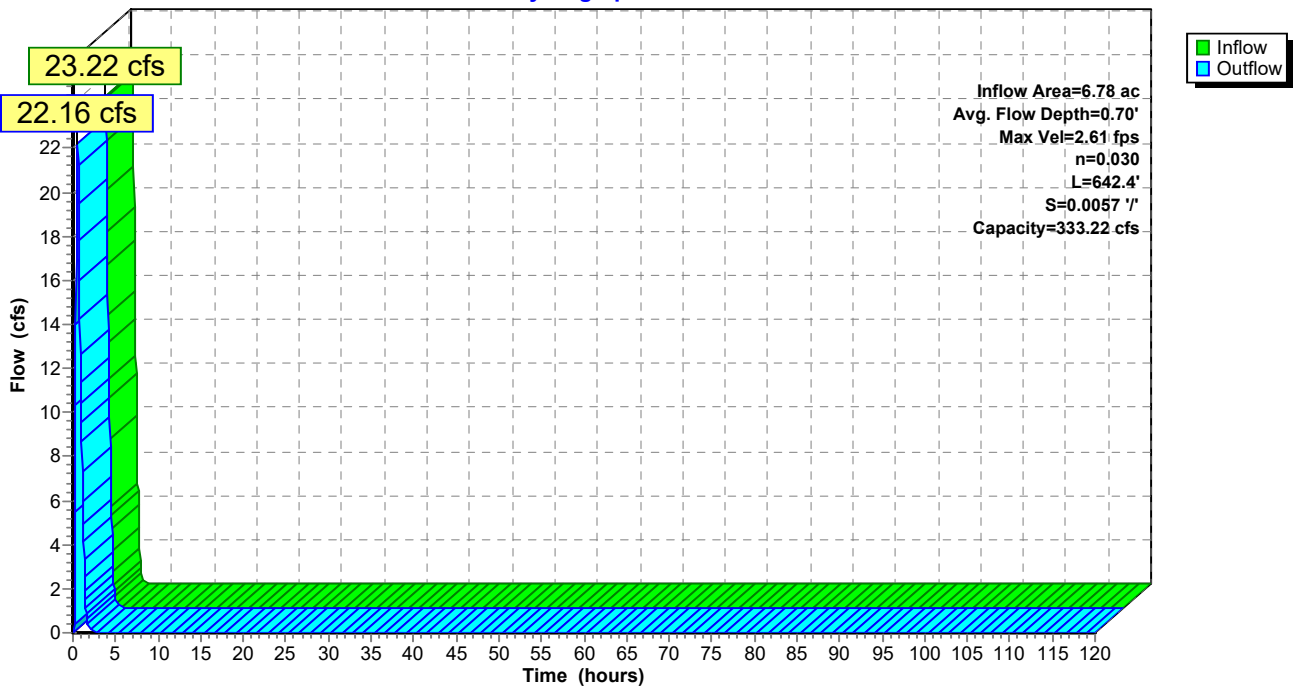
Peak Storage= 5,481 cf @ 0.47 hrs  
 Average Depth at Peak Storage= 0.70'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 333.22 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 642.4' Slope= 0.0057 '/'  
 Inlet Invert= 740.81', Outlet Invert= 737.18'



**Reach PD-9: Perimeter Ditch 9**

Hydrograph



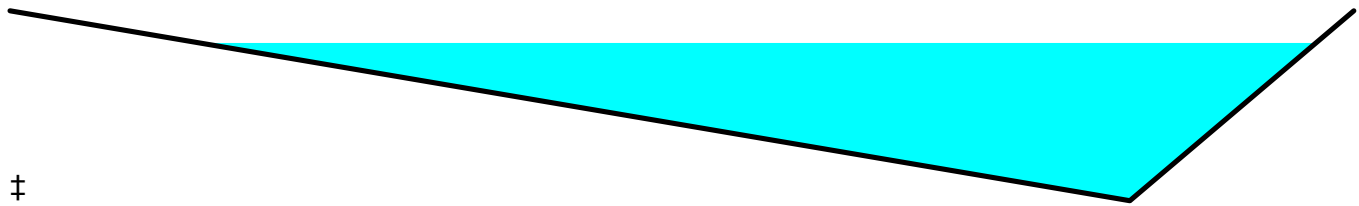
**Summary for Reach TB-A1A: Terrace Berm A1A**

Inflow Area = 6.74 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 25.84 cfs @ 0.43 hrs, Volume= 1.160 af  
 Outflow = 23.70 cfs @ 0.58 hrs, Volume= 1.160 af, Atten= 8%, Lag= 8.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.87 fps, Min. Travel Time= 4.5 min  
 Avg. Velocity = 0.78 fps, Avg. Travel Time= 22.1 min

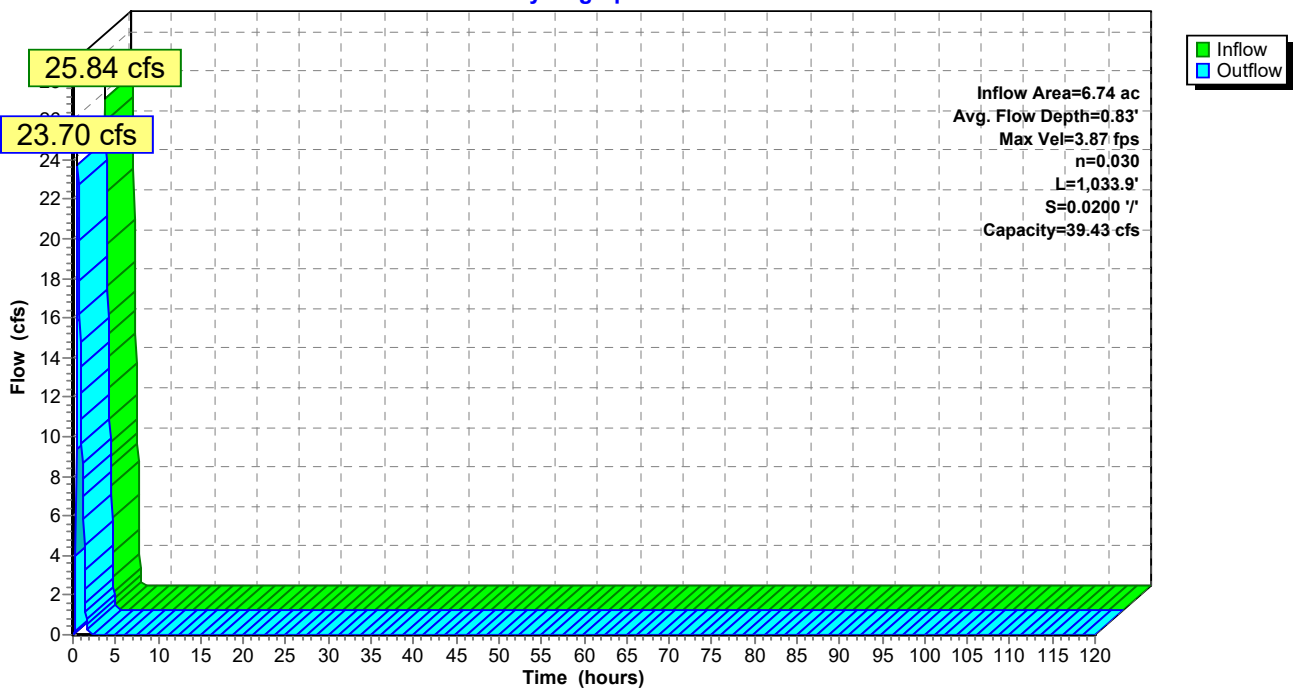
Peak Storage= 6,419 cf @ 0.50 hrs  
 Average Depth at Peak Storage= 0.83'  
 Bank-Full Depth= 1.00' Flow Area= 9.0 sf, Capacity= 39.43 cfs

0.00' x 1.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 15.0 3.0 '/' Top Width= 18.00'  
 Length= 1,033.9' Slope= 0.0200 '/'  
 Inlet Invert= 842.00', Outlet Invert= 821.32'



**Reach TB-A1A: Terrace Berm A1A**

Hydrograph



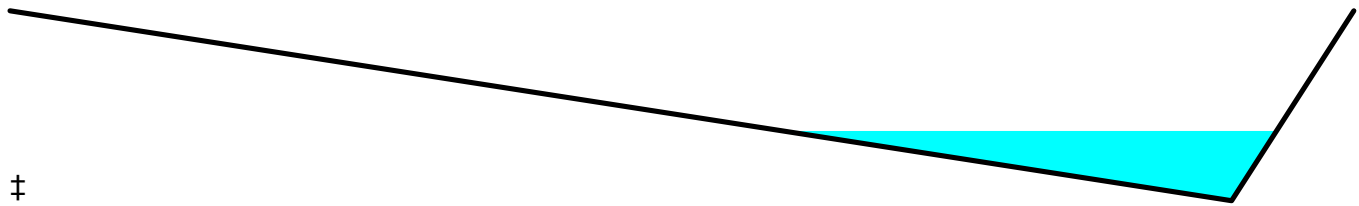
**Summary for Reach TB-A1B: Terrace Berm A1B**

Inflow Area = 5.23 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 25.09 cfs @ 0.29 hrs, Volume= 0.900 af  
 Outflow = 19.66 cfs @ 0.50 hrs, Volume= 0.900 af, Atten= 22%, Lag= 12.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.96 fps, Min. Travel Time= 6.6 min  
 Avg. Velocity = 0.64 fps, Avg. Travel Time= 30.3 min

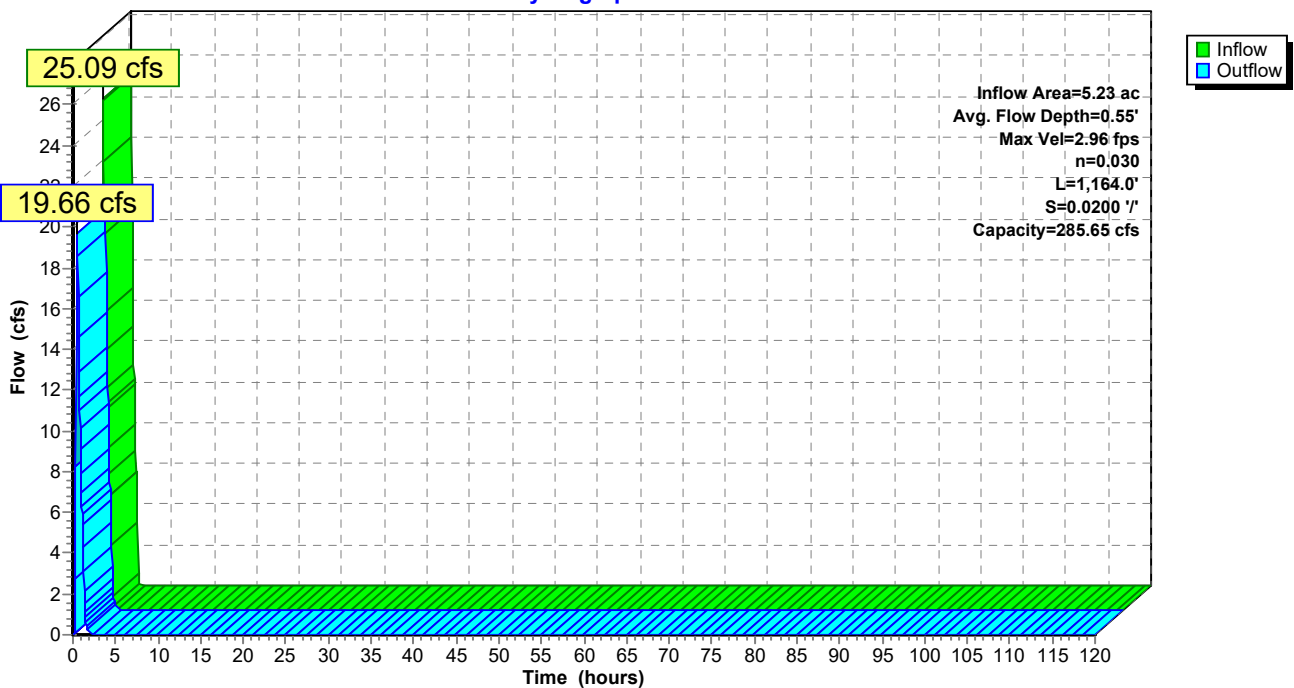
Peak Storage= 7,785 cf @ 0.39 hrs  
 Average Depth at Peak Storage= 0.55'  
 Bank-Full Depth= 1.50' Flow Area= 49.5 sf, Capacity= 285.65 cfs

0.00' x 1.50' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 40.0 4.0 '/' Top Width= 66.00'  
 Length= 1,164.0' Slope= 0.0200 '/'  
 Inlet Invert= 806.00', Outlet Invert= 782.72'



**Reach TB-A1B: Terrace Berm A1B**

Hydrograph





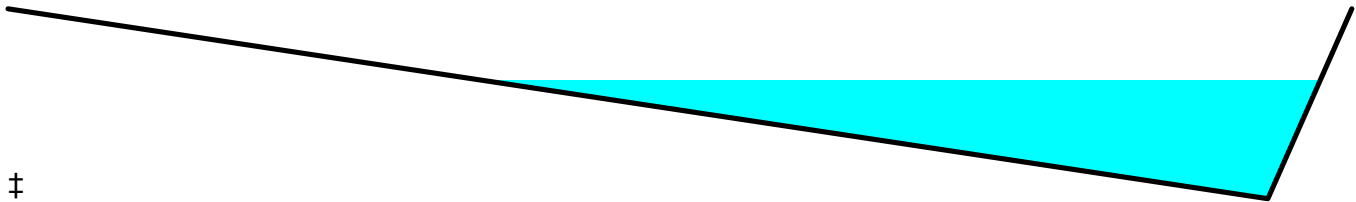
**Summary for Reach TB-A1C: Terrace Berm A1C**

Inflow Area = 9.16 ac, 1.48% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 27.84 cfs @ 0.59 hrs, Volume= 1.578 af  
 Outflow = 26.07 cfs @ 0.78 hrs, Volume= 1.578 af, Atten= 6%, Lag= 11.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.79 fps, Min. Travel Time= 5.8 min  
 Avg. Velocity = 0.57 fps, Avg. Travel Time= 28.5 min

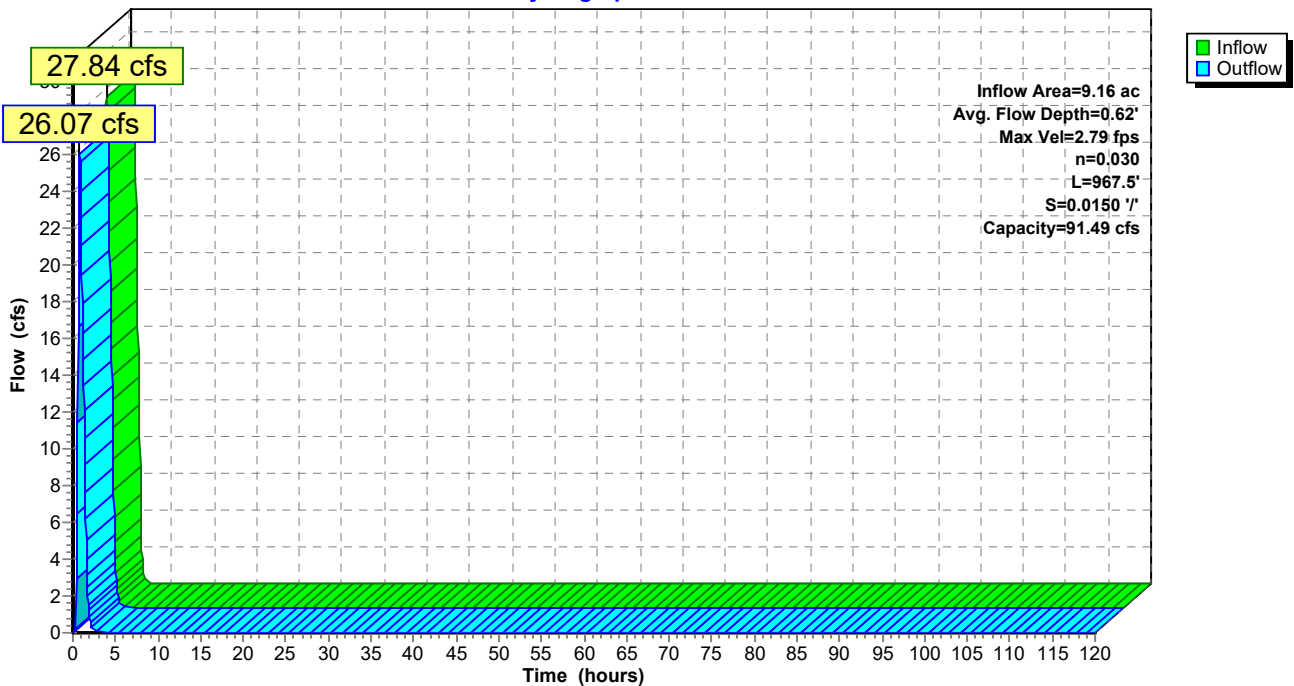
Peak Storage= 9,065 cf @ 0.68 hrs  
 Average Depth at Peak Storage= 0.62'  
 Bank-Full Depth= 1.00' Flow Area= 24.0 sf, Capacity= 91.49 cfs

0.00' x 1.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 45.0 3.0 '/' Top Width= 48.00'  
 Length= 967.5' Slope= 0.0150 '/'  
 Inlet Invert= 792.00', Outlet Invert= 777.49'



**Reach TB-A1C: Terrace Berm A1C**

Hydrograph



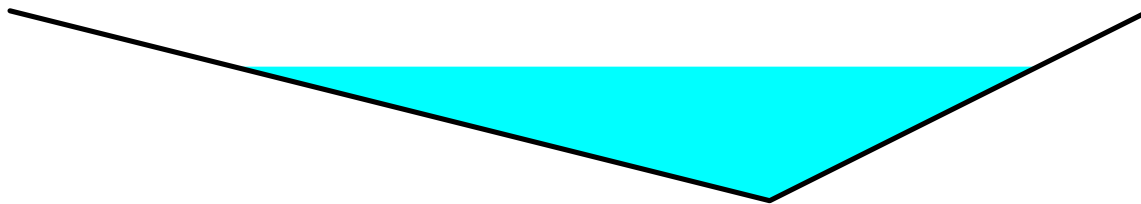
**Summary for Reach TB-B1: Terrace Berm B1**

Inflow Area = 2.04 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 9.17 cfs @ 0.33 hrs, Volume= 0.351 af  
 Outflow = 8.90 cfs @ 0.38 hrs, Volume= 0.351 af, Atten= 3%, Lag= 2.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.91 fps, Min. Travel Time= 1.5 min  
 Avg. Velocity = 1.42 fps, Avg. Travel Time= 4.0 min

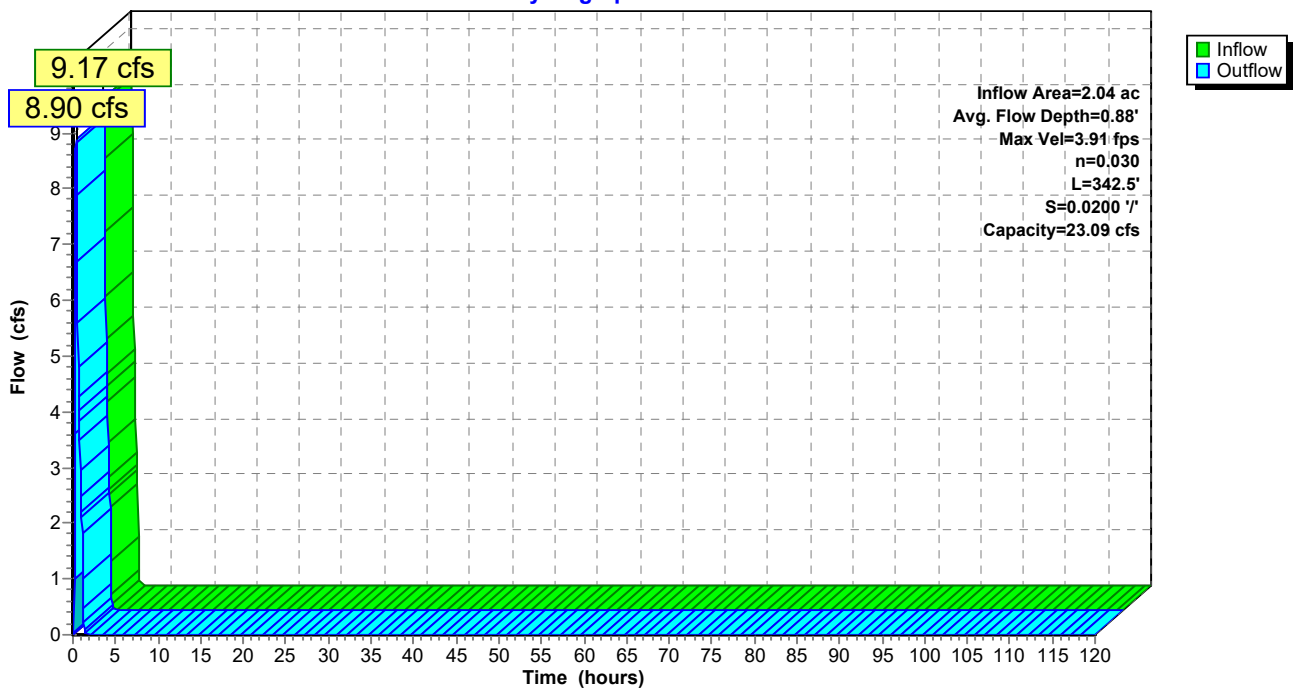
Peak Storage= 801 cf @ 0.35 hrs  
 Average Depth at Peak Storage= 0.88'  
 Bank-Full Depth= 1.25' Flow Area= 4.7 sf, Capacity= 23.09 cfs

0.00' x 1.25' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 7.50'  
 Length= 342.5' Slope= 0.0200 '/'  
 Inlet Invert= 880.00', Outlet Invert= 873.15'



**Reach TB-B1: Terrace Berm B1**

Hydrograph



**Summary for Reach TB-B10: Terrace Bench B10**

Inflow Area = 2.25 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 8.32 cfs @ 0.41 hrs, Volume= 0.387 af  
 Outflow = 7.97 cfs @ 0.51 hrs, Volume= 0.387 af, Atten= 4%, Lag= 5.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.88 fps, Min. Travel Time= 3.2 min  
 Avg. Velocity = 0.57 fps, Avg. Travel Time= 10.7 min

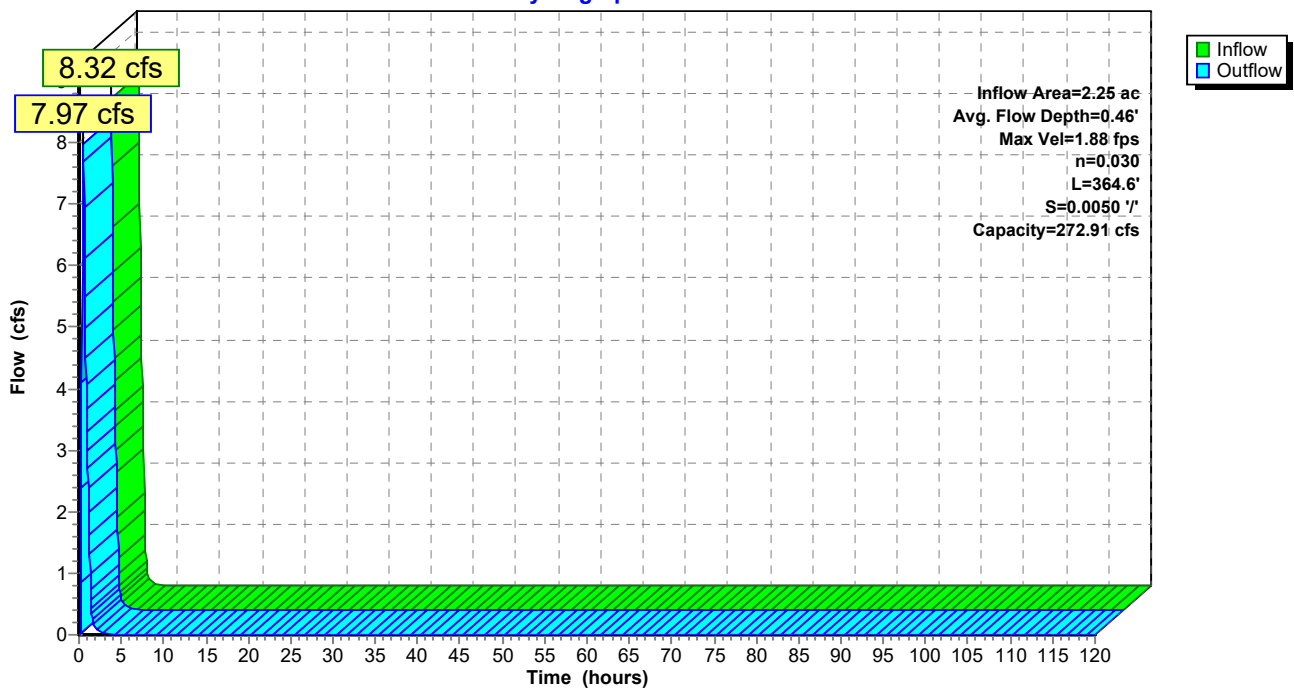
Peak Storage= 1,556 cf @ 0.46 hrs  
 Average Depth at Peak Storage= 0.46'  
 Bank-Full Depth= 3.00' Flow Area= 51.0 sf, Capacity= 272.91 cfs

8.00' x 3.00' deep channel, n= 0.030  
 Side Slope Z-value= 3.0 '/ Top Width= 26.00'  
 Length= 364.6' Slope= 0.0050 '/  
 Inlet Invert= 759.18', Outlet Invert= 757.36'



**Reach TB-B10: Terrace Bench B10**

Hydrograph



**Summary for Reach TB-B10A: Terrace Bench B10A**

Inflow Area = 2.25 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 7.97 cfs @ 0.51 hrs, Volume= 0.387 af  
 Outflow = 7.95 cfs @ 0.52 hrs, Volume= 0.387 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 5.60 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 2.37 fps, Avg. Travel Time= 0.5 min

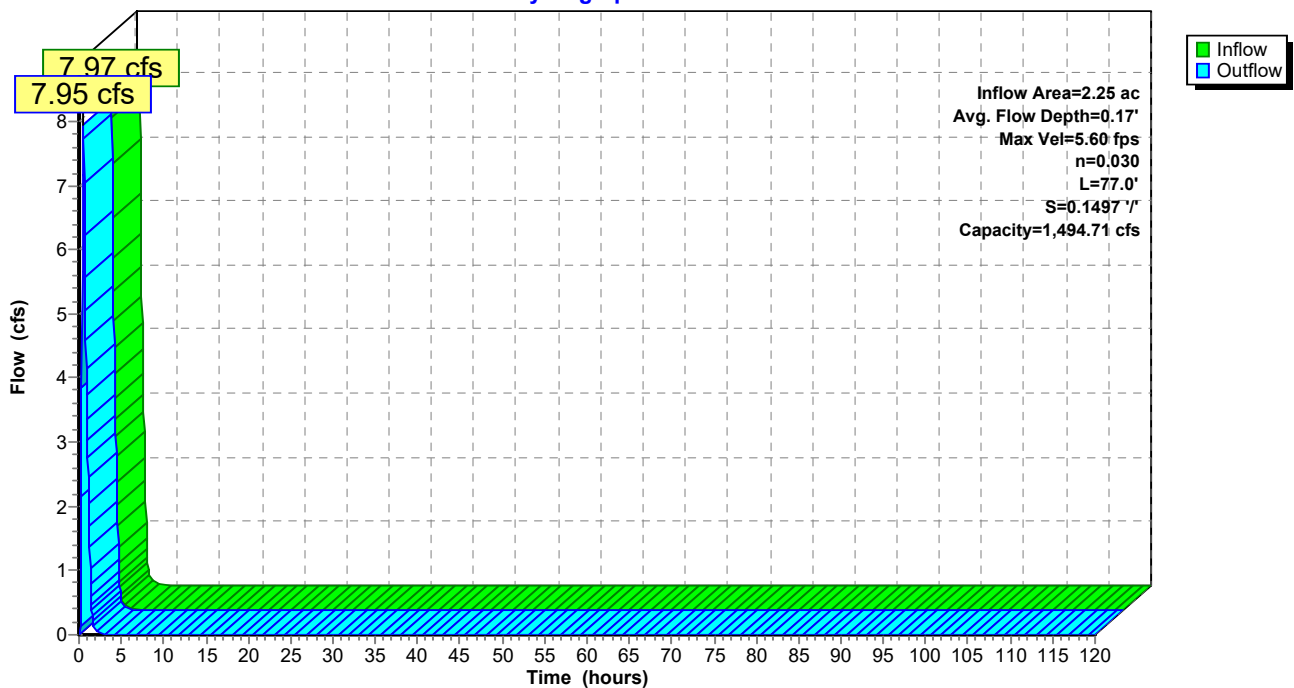
Peak Storage= 110 cf @ 0.51 hrs  
 Average Depth at Peak Storage= 0.17'  
 Bank-Full Depth= 3.00' Flow Area= 51.0 sf, Capacity= 1,494.71 cfs

8.00' x 3.00' deep channel, n= 0.030  
 Side Slope Z-value= 3.0 '/' Top Width= 26.00'  
 Length= 77.0' Slope= 0.1497 '/'  
 Inlet Invert= 757.36', Outlet Invert= 745.83'



**Reach TB-B10A: Terrace Bench B10A**

Hydrograph



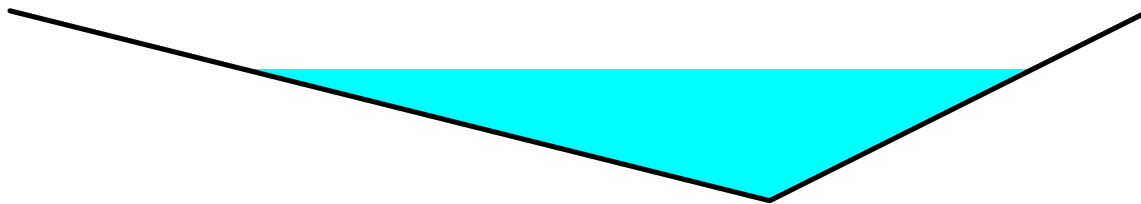
**Summary for Reach TB-B11: Terrace Berm B11**

Inflow Area = 2.27 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 8.68 cfs @ 0.43 hrs, Volume= 0.391 af  
 Outflow = 8.64 cfs @ 0.45 hrs, Volume= 0.391 af, Atten= 1%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.85 fps, Min. Travel Time= 0.5 min  
 Avg. Velocity = 2.02 fps, Avg. Travel Time= 0.9 min

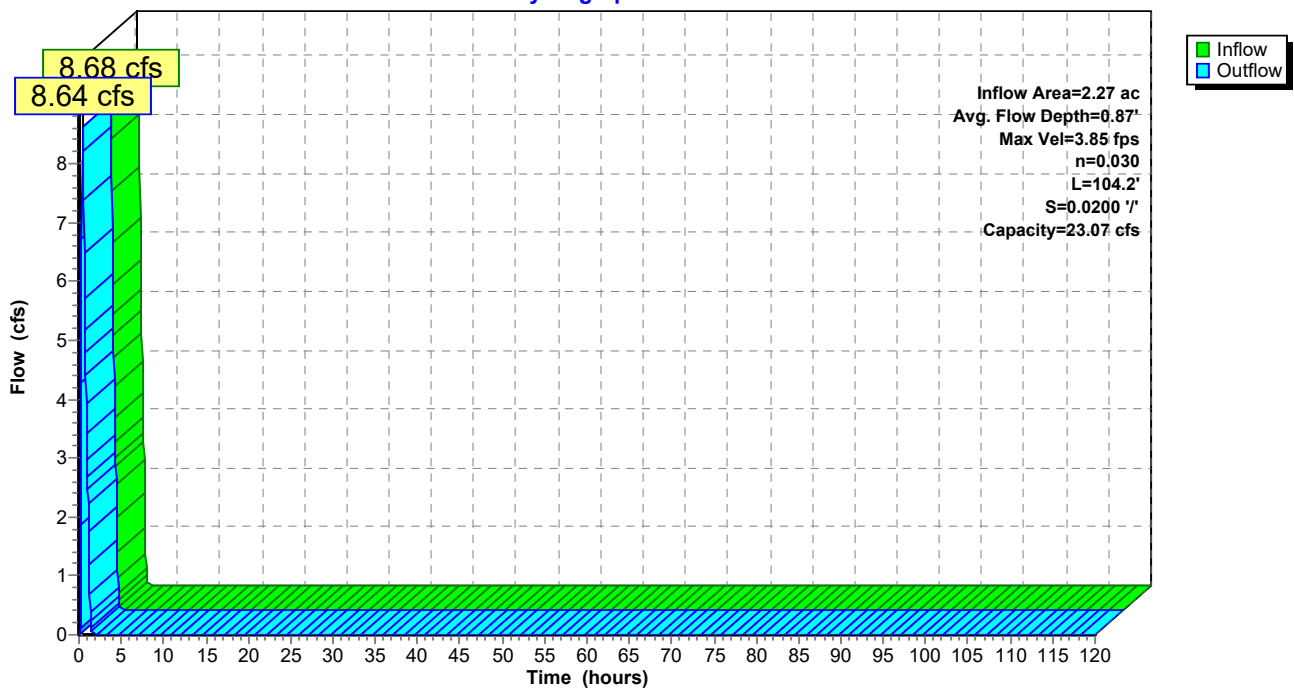
Peak Storage= 235 cf @ 0.44 hrs  
 Average Depth at Peak Storage= 0.87'  
 Bank-Full Depth= 1.25' Flow Area= 4.7 sf, Capacity= 23.07 cfs

0.00' x 1.25' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 7.50'  
 Length= 104.2' Slope= 0.0200 '/'  
 Inlet Invert= 821.00', Outlet Invert= 818.92'



**Reach TB-B11: Terrace Berm B11**

Hydrograph



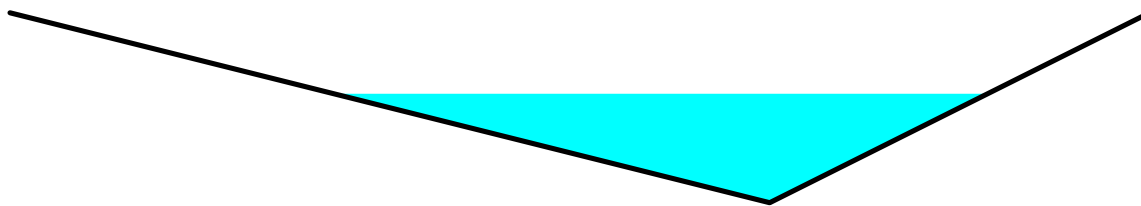
**Summary for Reach TB-B12: Terrace Berm B12**

Inflow Area = 1.20 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 5.76 cfs @ 0.29 hrs, Volume= 0.207 af  
 Outflow = 5.18 cfs @ 0.41 hrs, Volume= 0.207 af, Atten= 10%, Lag= 7.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.40 fps, Min. Travel Time= 3.6 min  
 Avg. Velocity = 0.93 fps, Avg. Travel Time= 13.3 min

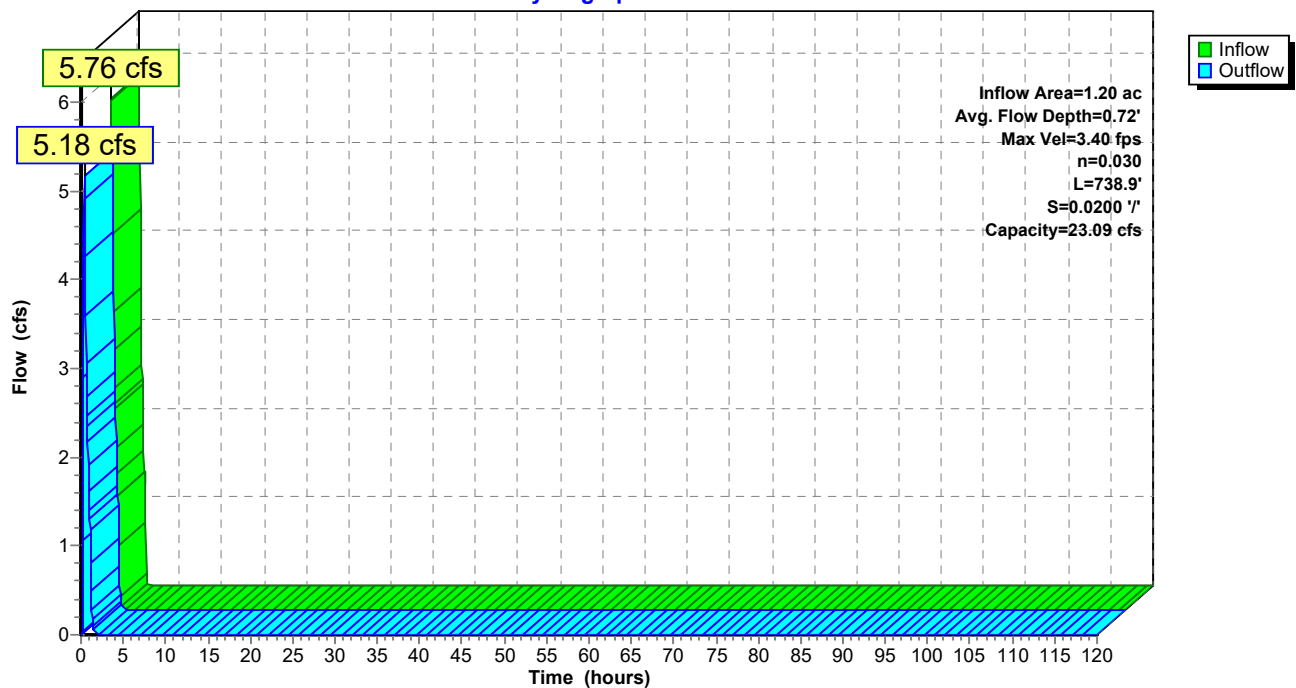
Peak Storage= 1,139 cf @ 0.35 hrs  
 Average Depth at Peak Storage= 0.72'  
 Bank-Full Depth= 1.25' Flow Area= 4.7 sf, Capacity= 23.09 cfs

0.00' x 1.25' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 7.50'  
 Length= 738.9' Slope= 0.0200 '/'  
 Inlet Invert= 864.00', Outlet Invert= 849.22'



**Reach TB-B12: Terrace Berm B12**

Hydrograph



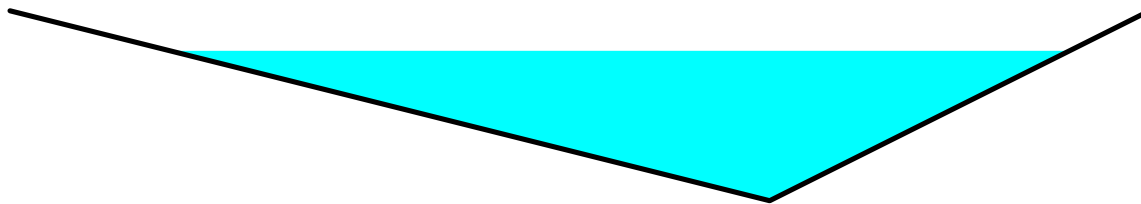
**Summary for Reach TB-B2: Terrace Berm B2**

Inflow Area = 2.74 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 12.39 cfs @ 0.33 hrs, Volume= 0.472 af  
 Outflow = 11.99 cfs @ 0.39 hrs, Volume= 0.472 af, Atten= 3%, Lag= 3.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.21 fps, Min. Travel Time= 1.8 min  
 Avg. Velocity = 1.32 fps, Avg. Travel Time= 5.8 min

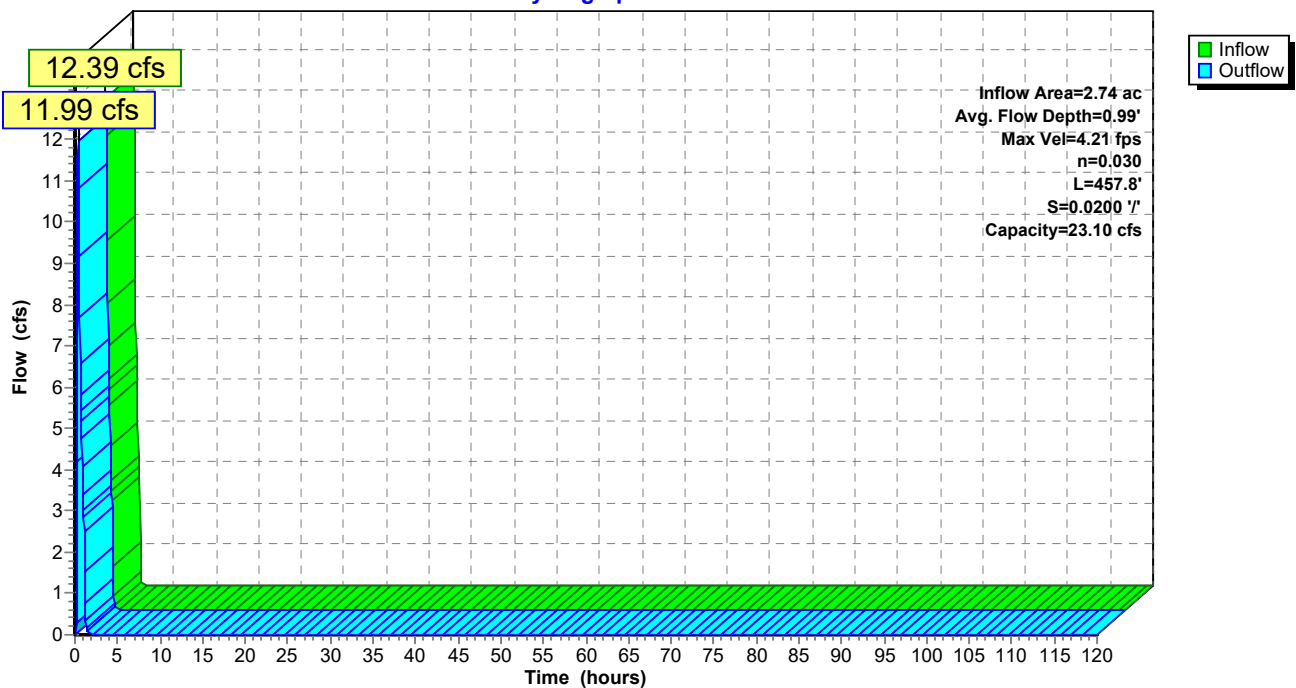
Peak Storage= 1,336 cf @ 0.36 hrs  
 Average Depth at Peak Storage= 0.99'  
 Bank-Full Depth= 1.25' Flow Area= 4.7 sf, Capacity= 23.10 cfs

0.00' x 1.25' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 7.50'  
 Length= 457.8' Slope= 0.0200 '/'  
 Inlet Invert= 880.00', Outlet Invert= 870.84'



**Reach TB-B2: Terrace Berm B2**

Hydrograph



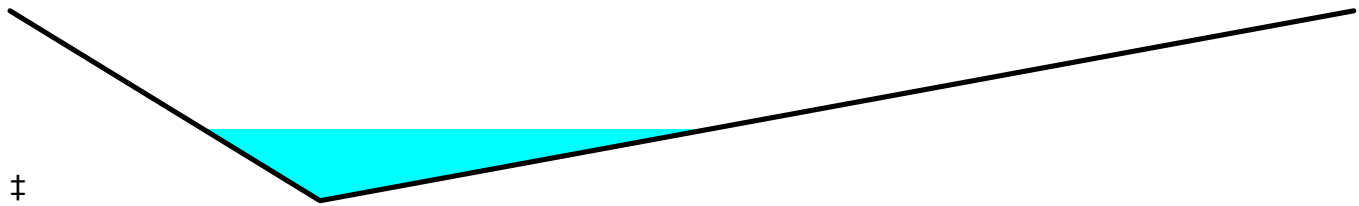
**Summary for Reach TB-B3: Terrace Bench B3**

Inflow Area = 2.21 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 10.59 cfs @ 0.29 hrs, Volume= 0.381 af  
 Outflow = 9.31 cfs @ 0.42 hrs, Volume= 0.381 af, Atten= 12%, Lag= 7.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.56 fps, Min. Travel Time= 4.0 min  
 Avg. Velocity = 0.67 fps, Avg. Travel Time= 15.4 min

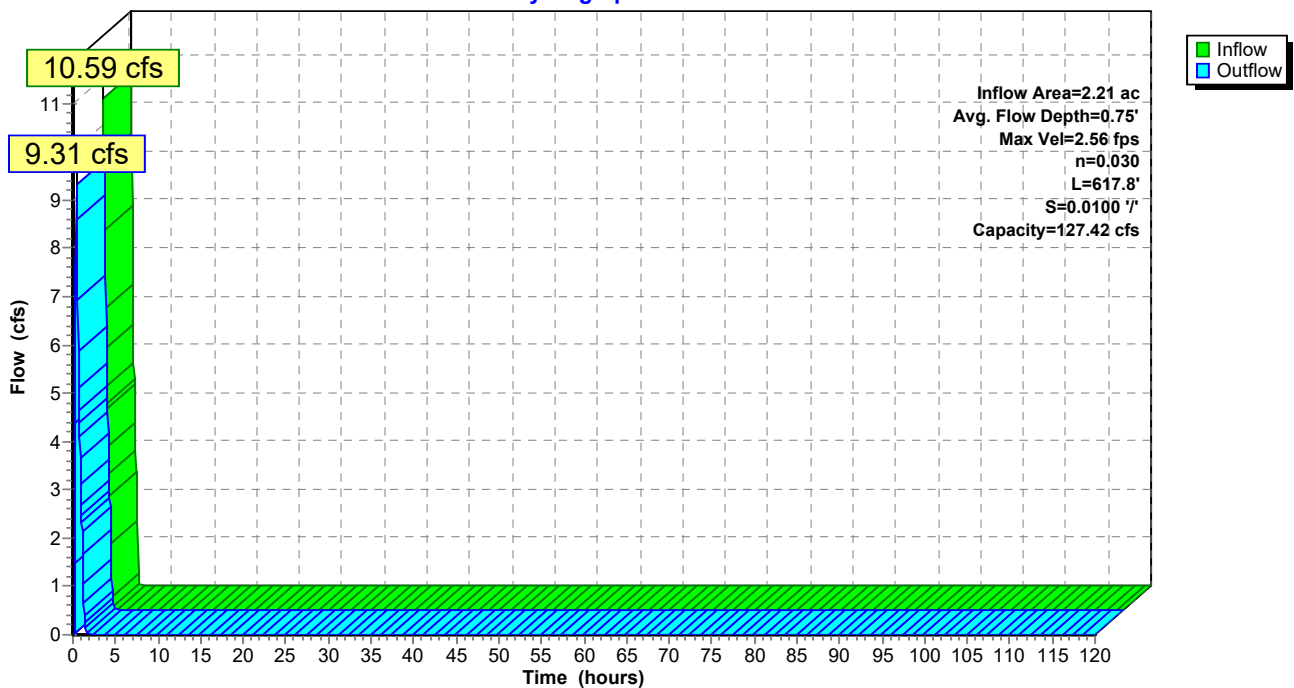
Peak Storage= 2,286 cf @ 0.36 hrs  
 Average Depth at Peak Storage= 0.75'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.42 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'  
 Length= 617.8' Slope= 0.0100 '/'  
 Inlet Invert= 880.00', Outlet Invert= 873.82'



**Reach TB-B3: Terrace Bench B3**

Hydrograph





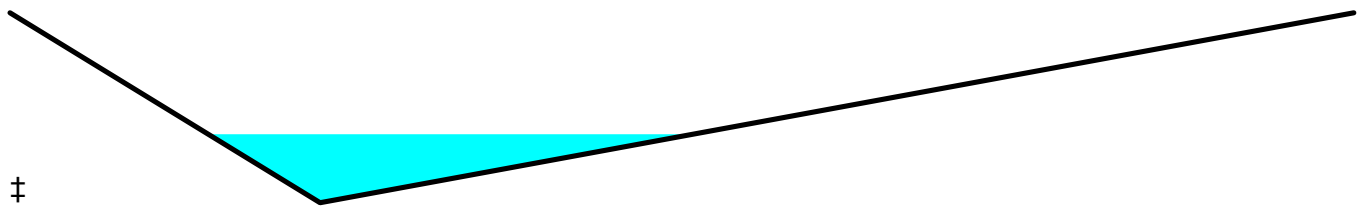
**Summary for Reach TB-B4: Terrace Bench B4**

Inflow Area = 1.87 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 8.96 cfs @ 0.29 hrs, Volume= 0.322 af  
 Outflow = 8.36 cfs @ 0.39 hrs, Volume= 0.322 af, Atten= 7%, Lag= 5.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.48 fps, Min. Travel Time= 2.9 min  
 Avg. Velocity = 0.75 fps, Avg. Travel Time= 9.7 min

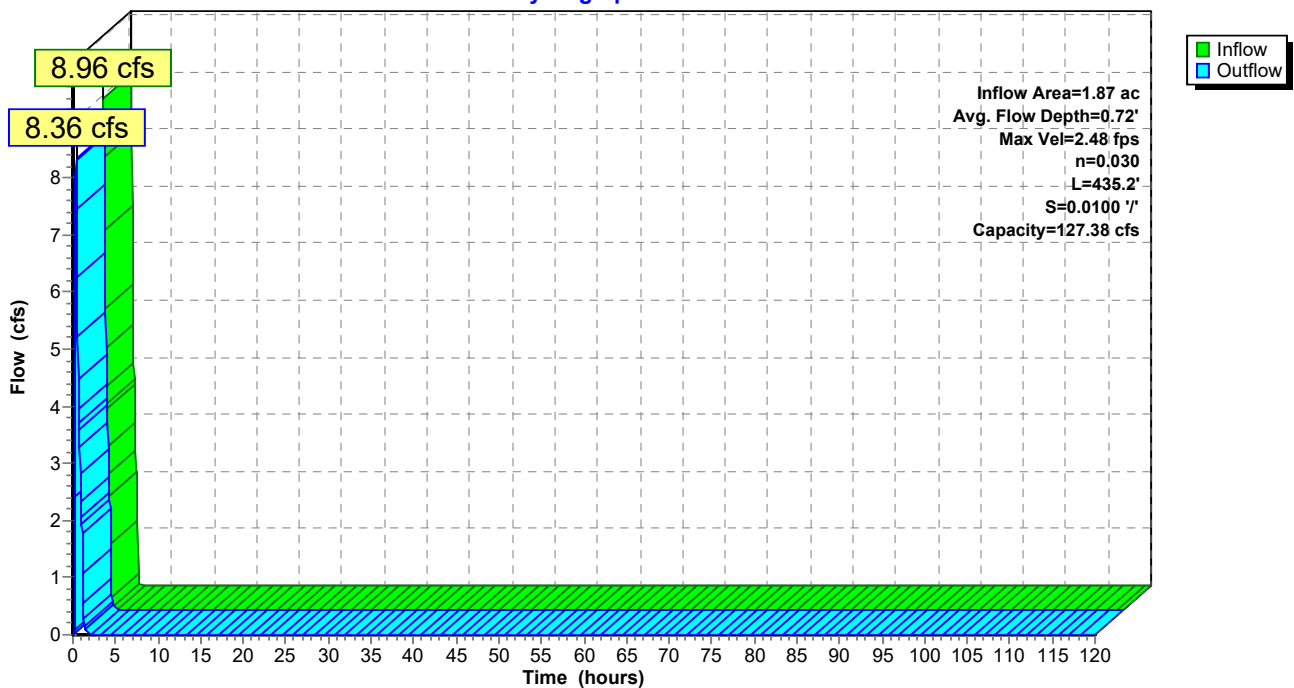
Peak Storage= 1,469 cf @ 0.34 hrs  
 Average Depth at Peak Storage= 0.72'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.38 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'  
 Length= 435.2' Slope= 0.0100 '/'  
 Inlet Invert= 840.00', Outlet Invert= 835.65'



**Reach TB-B4: Terrace Bench B4**

Hydrograph



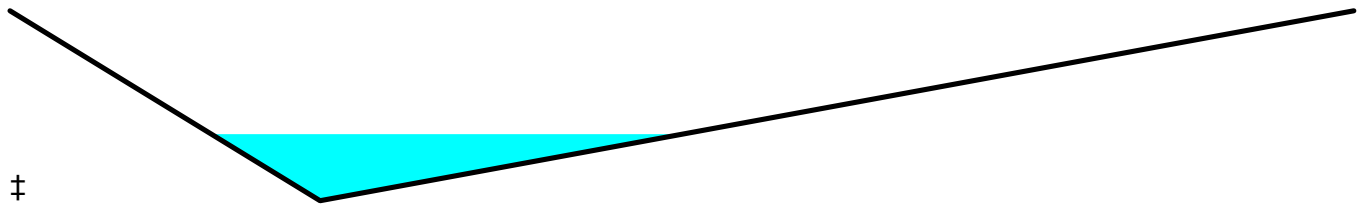
**Summary for Reach TB-B5: Terrace Bench B5**

Inflow Area = 1.93 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 9.34 cfs @ 0.28 hrs, Volume= 0.332 af  
 Outflow = 7.70 cfs @ 0.46 hrs, Volume= 0.332 af, Atten= 18%, Lag= 10.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.43 fps, Min. Travel Time= 5.5 min  
 Avg. Velocity = 0.60 fps, Avg. Travel Time= 22.5 min

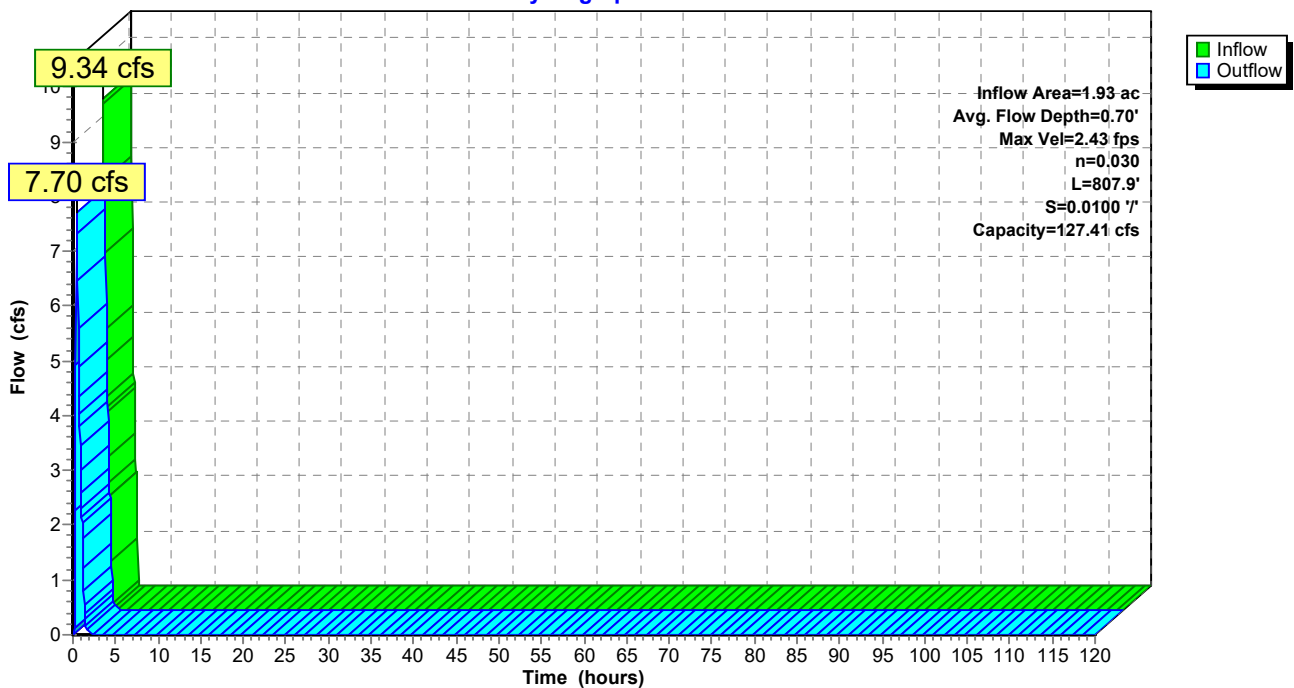
Peak Storage= 2,578 cf @ 0.36 hrs  
 Average Depth at Peak Storage= 0.70'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.41 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'  
 Length= 807.9' Slope= 0.0100 '/'  
 Inlet Invert= 814.00', Outlet Invert= 805.92'



**Reach TB-B5: Terrace Bench B5**

Hydrograph



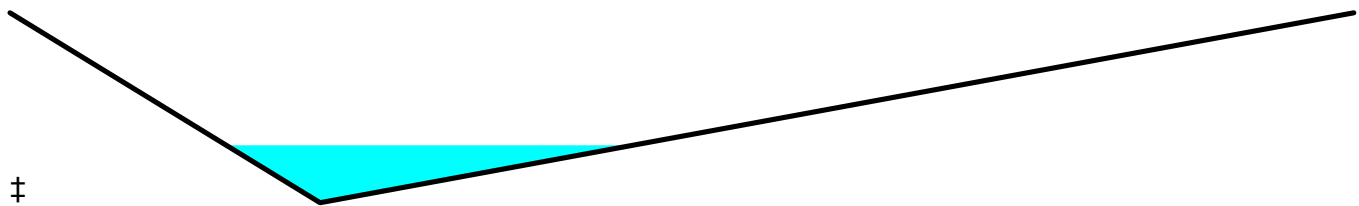
**Summary for Reach TB-B6: Terrace Bench B6**

Inflow Area = 1.18 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 5.68 cfs @ 0.29 hrs, Volume= 0.203 af  
 Outflow = 5.21 cfs @ 0.39 hrs, Volume= 0.203 af, Atten= 8%, Lag= 6.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.20 fps, Min. Travel Time= 3.2 min  
 Avg. Velocity = 0.69 fps, Avg. Travel Time= 10.3 min

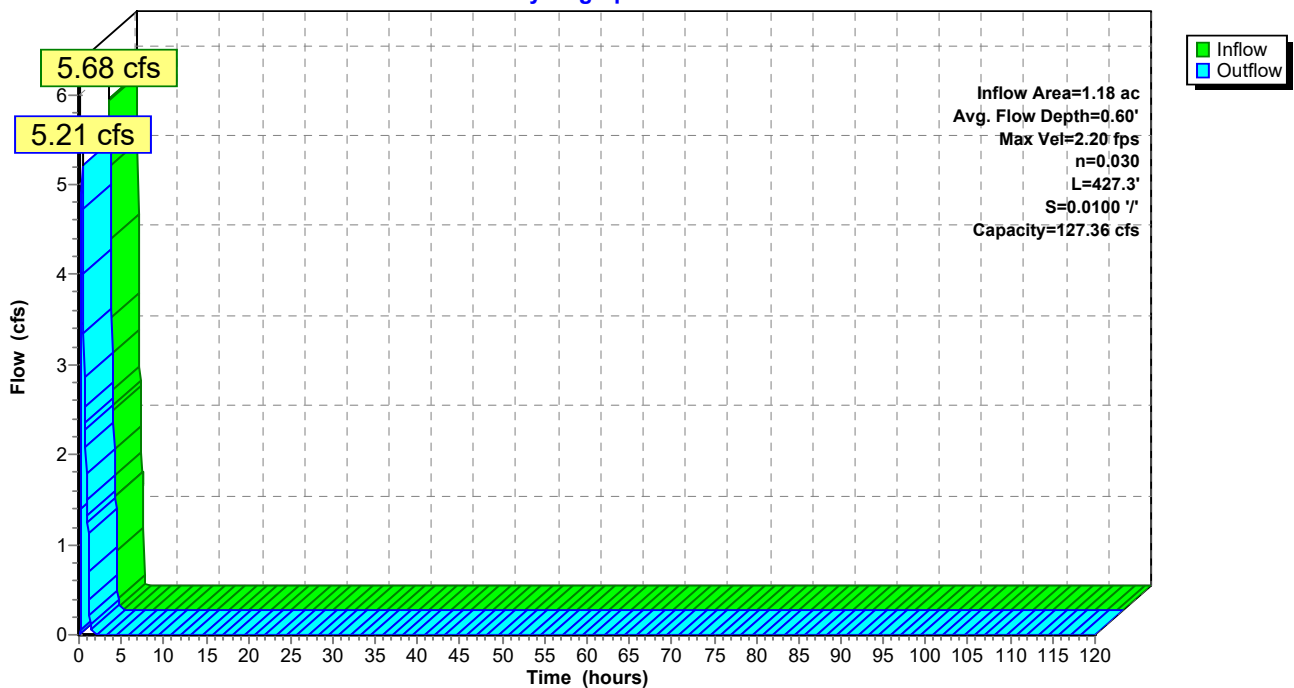
Peak Storage= 1,015 cf @ 0.34 hrs  
 Average Depth at Peak Storage= 0.60'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.36 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'  
 Length= 427.3' Slope= 0.0100 '/'  
 Inlet Invert= 812.00', Outlet Invert= 807.73'



**Reach TB-B6: Terrace Bench B6**

Hydrograph



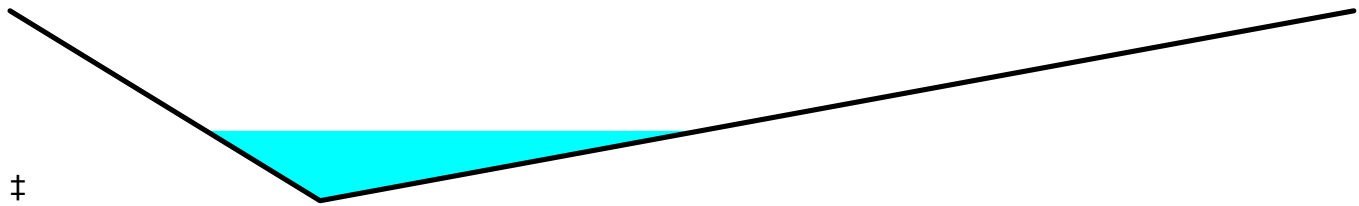
**Summary for Reach TB-B7: Terrace Bench B7**

Inflow Area = 2.19 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 10.59 cfs @ 0.28 hrs, Volume= 0.377 af  
 Outflow = 8.77 cfs @ 0.45 hrs, Volume= 0.377 af, Atten= 17%, Lag= 10.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.52 fps, Min. Travel Time= 5.4 min  
 Avg. Velocity = 0.61 fps, Avg. Travel Time= 22.3 min

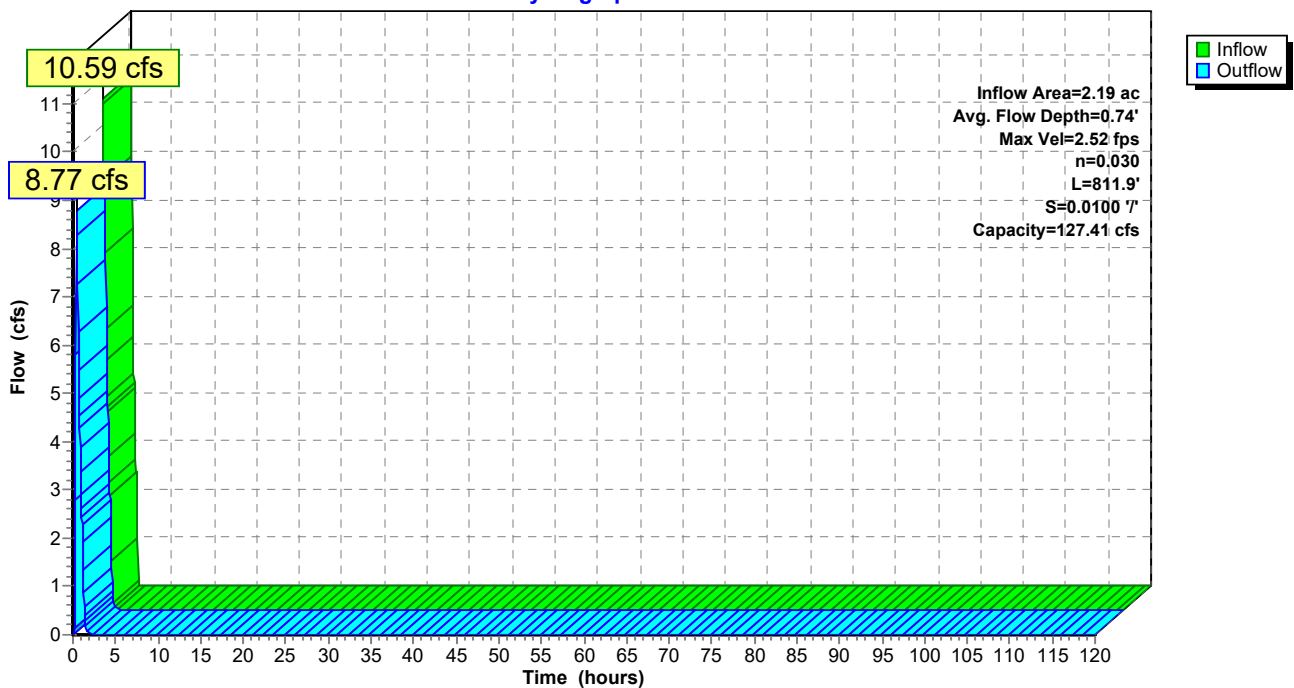
Peak Storage= 2,864 cf @ 0.36 hrs  
 Average Depth at Peak Storage= 0.74'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.41 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'  
 Length= 811.9' Slope= 0.0100 '/'  
 Inlet Invert= 784.00', Outlet Invert= 775.88'



**Reach TB-B7: Terrace Bench B7**

Hydrograph



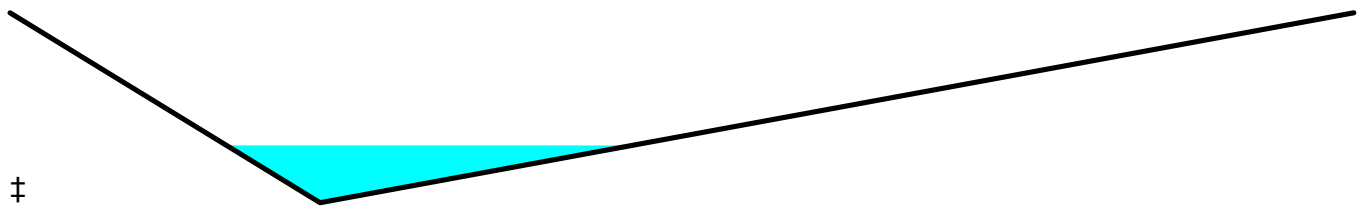
**Summary for Reach TB-B8: Terrace Bench B8**

Inflow Area = 1.17 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 5.64 cfs @ 0.29 hrs, Volume= 0.201 af  
 Outflow = 5.17 cfs @ 0.39 hrs, Volume= 0.201 af, Atten= 8%, Lag= 6.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.20 fps, Min. Travel Time= 3.2 min  
 Avg. Velocity = 0.69 fps, Avg. Travel Time= 10.3 min

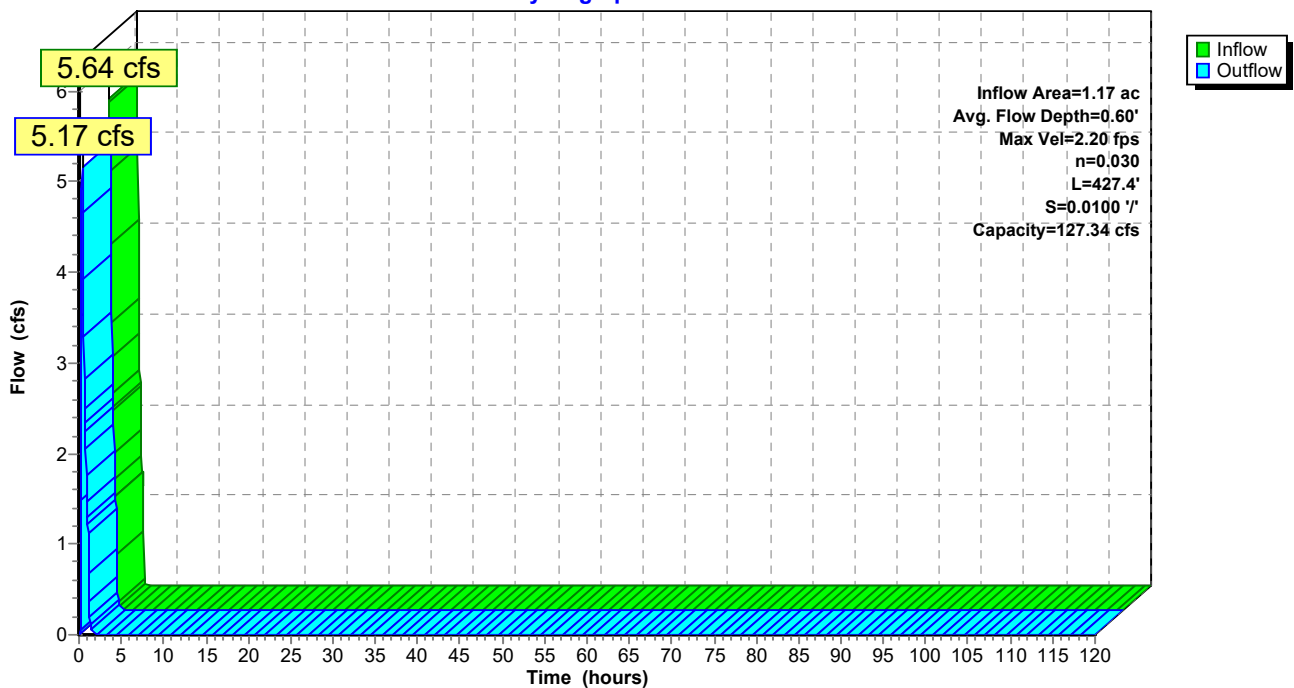
Peak Storage= 1,010 cf @ 0.34 hrs  
 Average Depth at Peak Storage= 0.60'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.34 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'  
 Length= 427.4' Slope= 0.0100 '/'  
 Inlet Invert= 782.00', Outlet Invert= 777.73'



**Reach TB-B8: Terrace Bench B8**

Hydrograph



**Summary for Reach TB-B9: Terrace Bench B9**

Inflow Area = 1.44 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 7.01 cfs @ 0.27 hrs, Volume= 0.247 af  
 Outflow = 5.83 cfs @ 0.44 hrs, Volume= 0.247 af, Atten= 17%, Lag= 10.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.69 fps, Min. Travel Time= 5.6 min  
 Avg. Velocity = 0.53 fps, Avg. Travel Time= 17.8 min

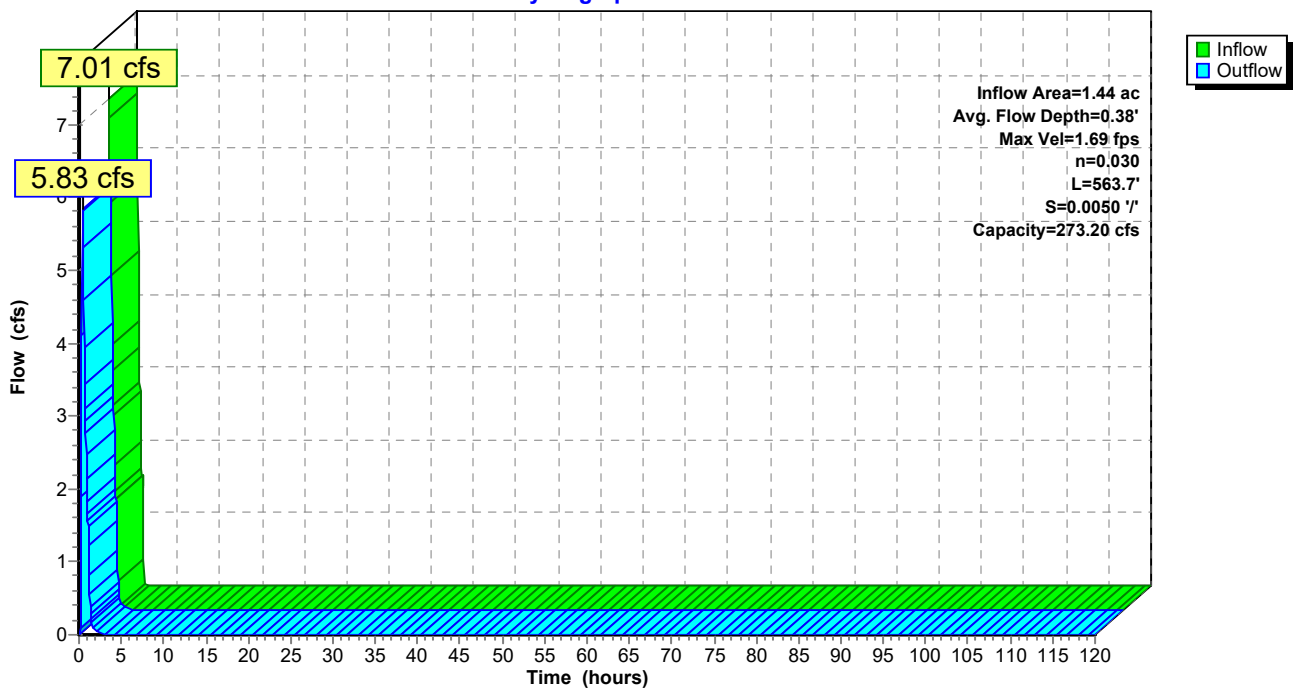
Peak Storage= 1,965 cf @ 0.35 hrs  
 Average Depth at Peak Storage= 0.38'  
 Bank-Full Depth= 3.00' Flow Area= 51.0 sf, Capacity= 273.20 cfs

8.00' x 3.00' deep channel, n= 0.030  
 Side Slope Z-value= 3.0 '/' Top Width= 26.00'  
 Length= 563.7' Slope= 0.0050 '/'  
 Inlet Invert= 762.00', Outlet Invert= 759.18'



**Reach TB-B9: Terrace Bench B9**

Hydrograph



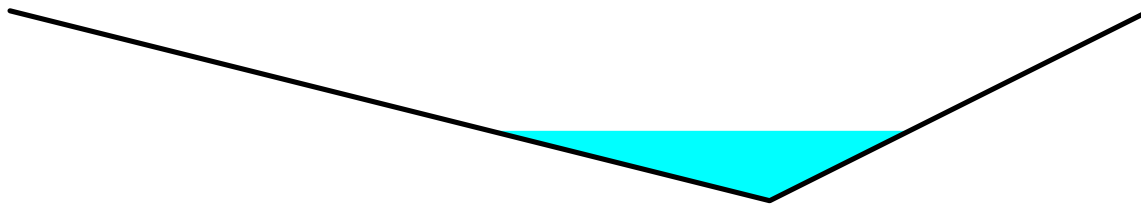
**Summary for Reach TB-D1: Terrace Berm D1**

Inflow Area = 1.26 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 5.64 cfs @ 0.33 hrs, Volume= 0.216 af  
 Outflow = 5.55 cfs @ 0.37 hrs, Volume= 0.216 af, Atten= 2%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.46 fps, Min. Travel Time= 1.1 min  
 Avg. Velocity = 1.60 fps, Avg. Travel Time= 2.4 min

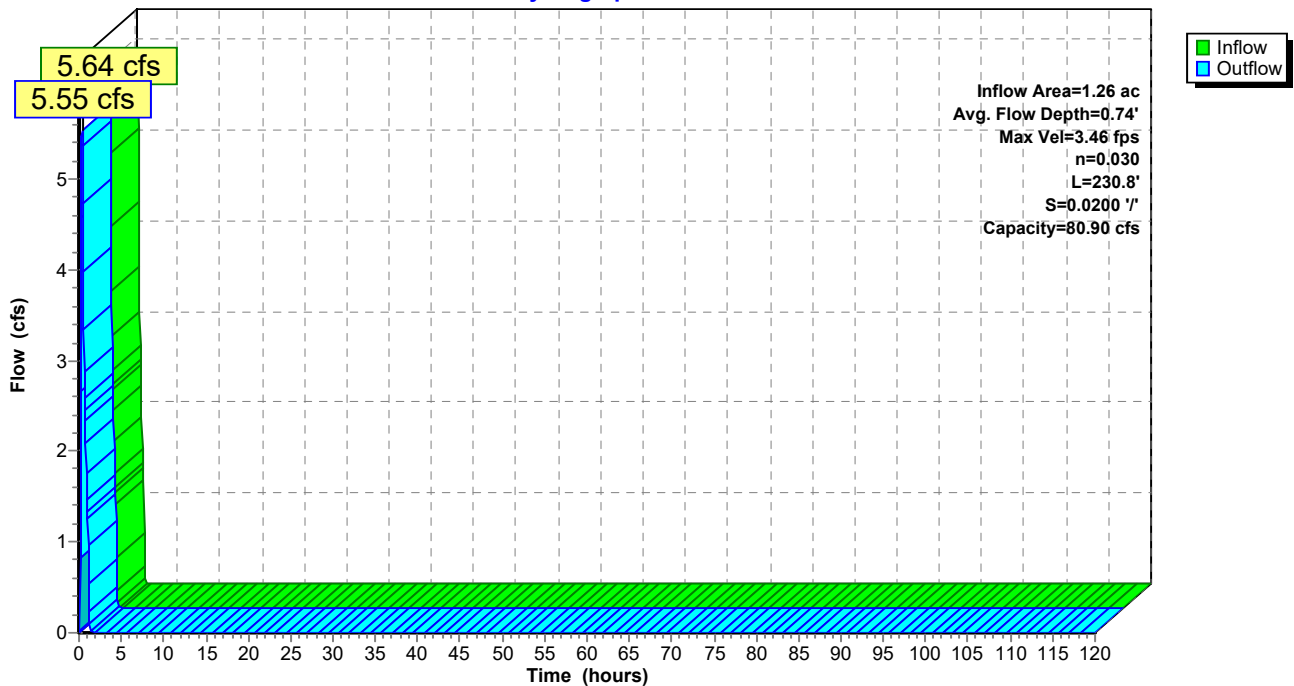
Peak Storage= 375 cf @ 0.35 hrs  
 Average Depth at Peak Storage= 0.74'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.90 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 230.8' Slope= 0.0200 '/'  
 Inlet Invert= 861.86', Outlet Invert= 857.24'



**Reach TB-D1: Terrace Berm D1**

Hydrograph



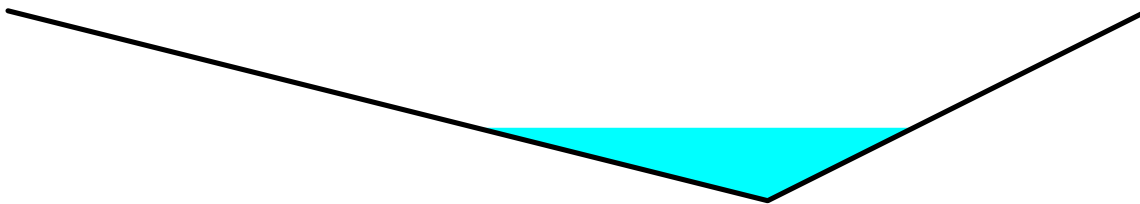
**Summary for Reach TB-D3: Terrace Berm D3**

Inflow Area = 1.33 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 6.34 cfs @ 0.30 hrs, Volume= 0.230 af  
 Outflow = 6.11 cfs @ 0.34 hrs, Volume= 0.230 af, Atten= 4%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.55 fps, Min. Travel Time= 1.1 min  
 Avg. Velocity = 1.61 fps, Avg. Travel Time= 2.4 min

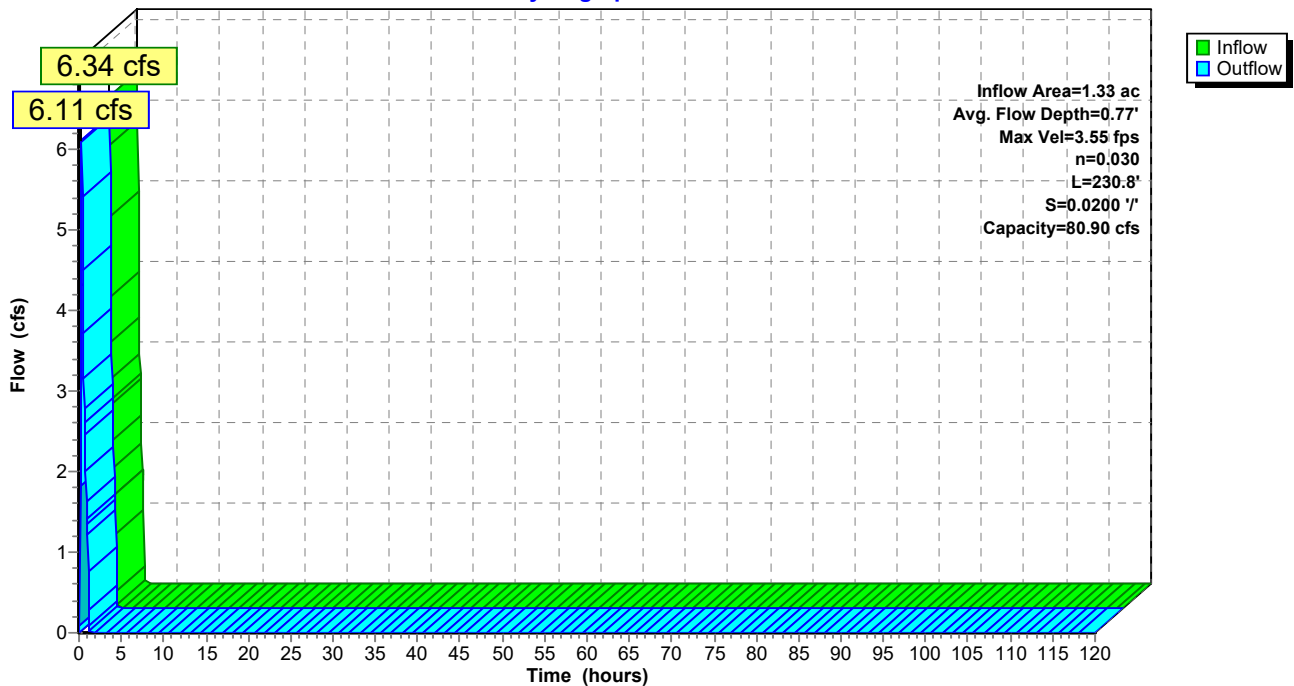
Peak Storage= 408 cf @ 0.31 hrs  
 Average Depth at Peak Storage= 0.77'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.90 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 230.8' Slope= 0.0200 '/'  
 Inlet Invert= 798.33', Outlet Invert= 793.71'



**Reach TB-D3: Terrace Berm D3**

Hydrograph





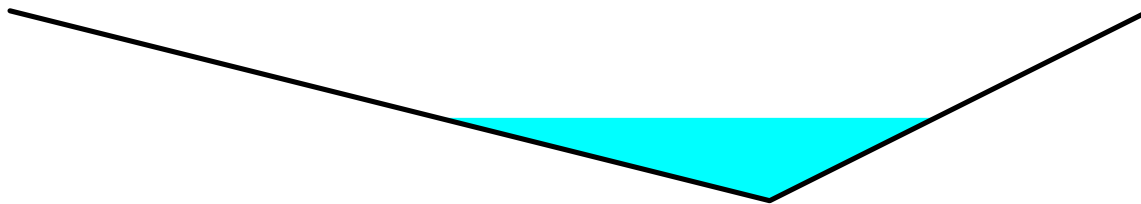
**Summary for Reach TB-E1: Terrace Berm E1**

Inflow Area = 1.42 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 6.38 cfs @ 0.33 hrs, Volume= 0.245 af  
 Outflow = 6.16 cfs @ 0.41 hrs, Volume= 0.245 af, Atten= 3%, Lag= 4.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.73 fps, Min. Travel Time= 2.2 min  
 Avg. Velocity = 0.92 fps, Avg. Travel Time= 6.6 min

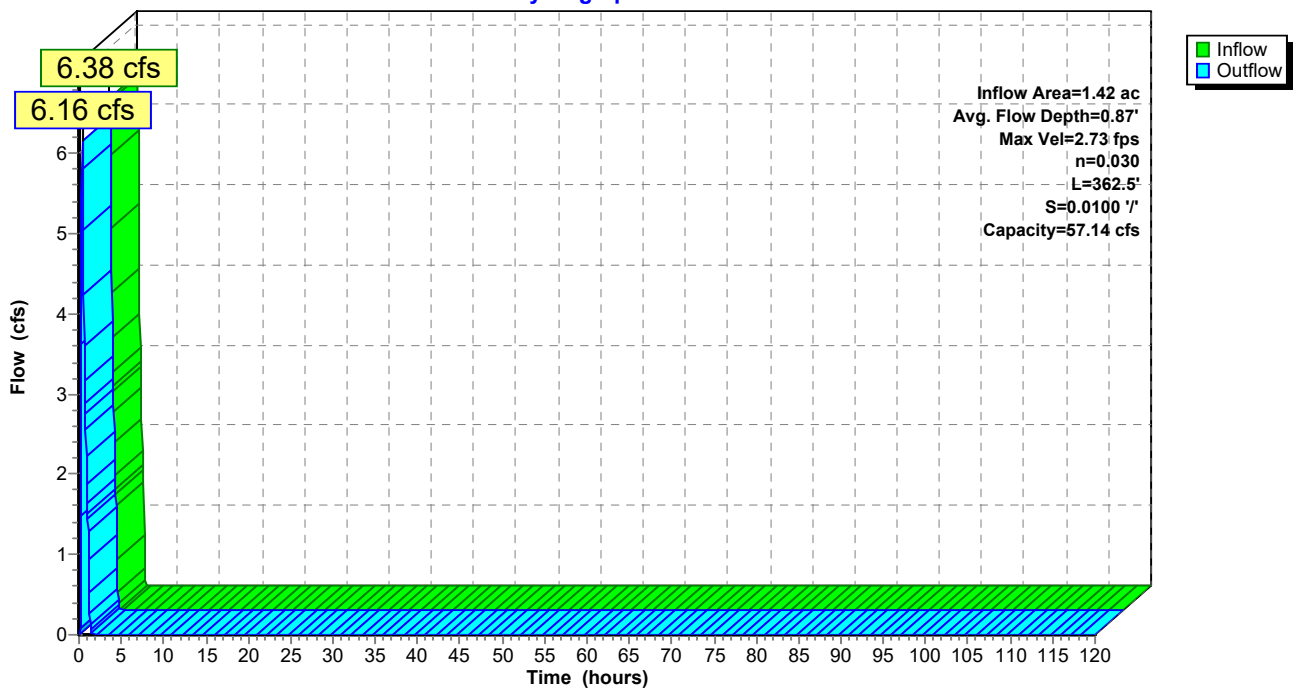
Peak Storage= 829 cf @ 0.37 hrs  
 Average Depth at Peak Storage= 0.87'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.14 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 362.5' Slope= 0.0100 '/'  
 Inlet Invert= 860.26', Outlet Invert= 856.64'



**Reach TB-E1: Terrace Berm E1**

Hydrograph



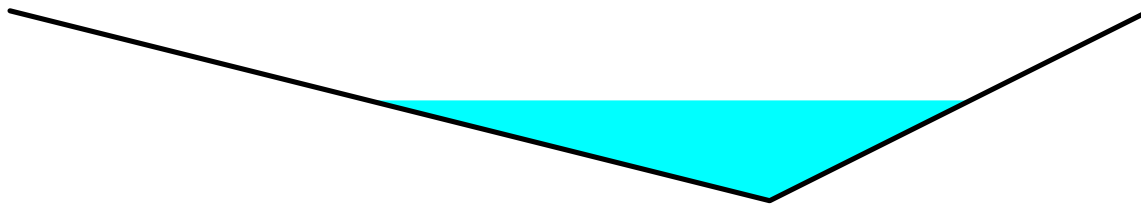
**Summary for Reach TB-E2: TB-E2**

Inflow Area = 2.82 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 13.40 cfs @ 0.30 hrs, Volume= 0.485 af  
 Outflow = 10.30 cfs @ 0.52 hrs, Volume= 0.485 af, Atten= 23%, Lag= 13.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.11 fps, Min. Travel Time= 7.1 min  
 Avg. Velocity = 0.63 fps, Avg. Travel Time= 35.0 min

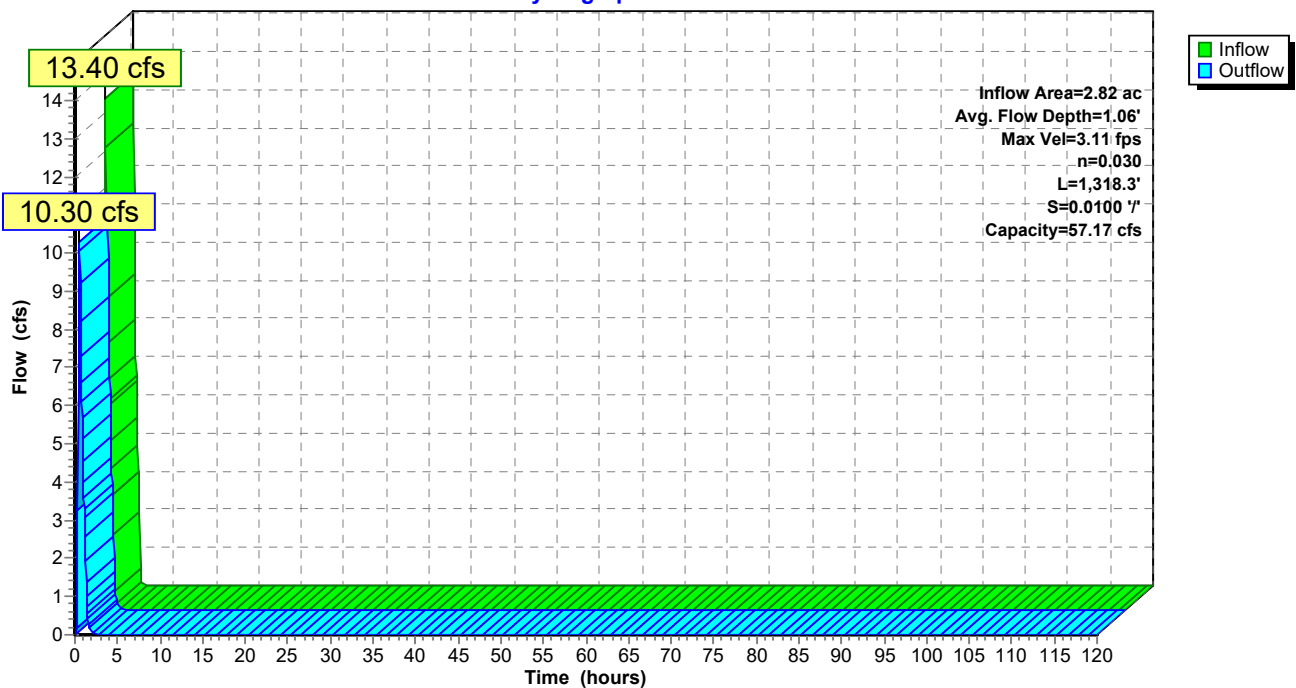
Peak Storage= 4,409 cf @ 0.40 hrs  
 Average Depth at Peak Storage= 1.06'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.17 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,318.3' Slope= 0.0100 '/'  
 Inlet Invert= 806.69', Outlet Invert= 793.51'



**Reach TB-E2: TB-E2**

Hydrograph



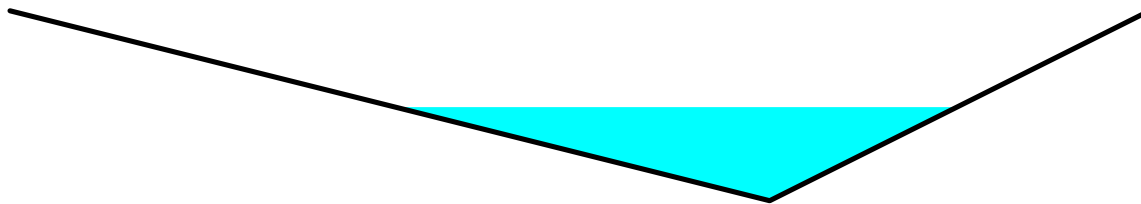
**Summary for Reach TB-H1: Terrace Berm H1**

Inflow Area = 1.98 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 8.92 cfs @ 0.33 hrs, Volume= 0.341 af  
 Outflow = 8.59 cfs @ 0.41 hrs, Volume= 0.341 af, Atten= 4%, Lag= 5.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.96 fps, Min. Travel Time= 2.6 min  
 Avg. Velocity = 0.89 fps, Avg. Travel Time= 8.5 min

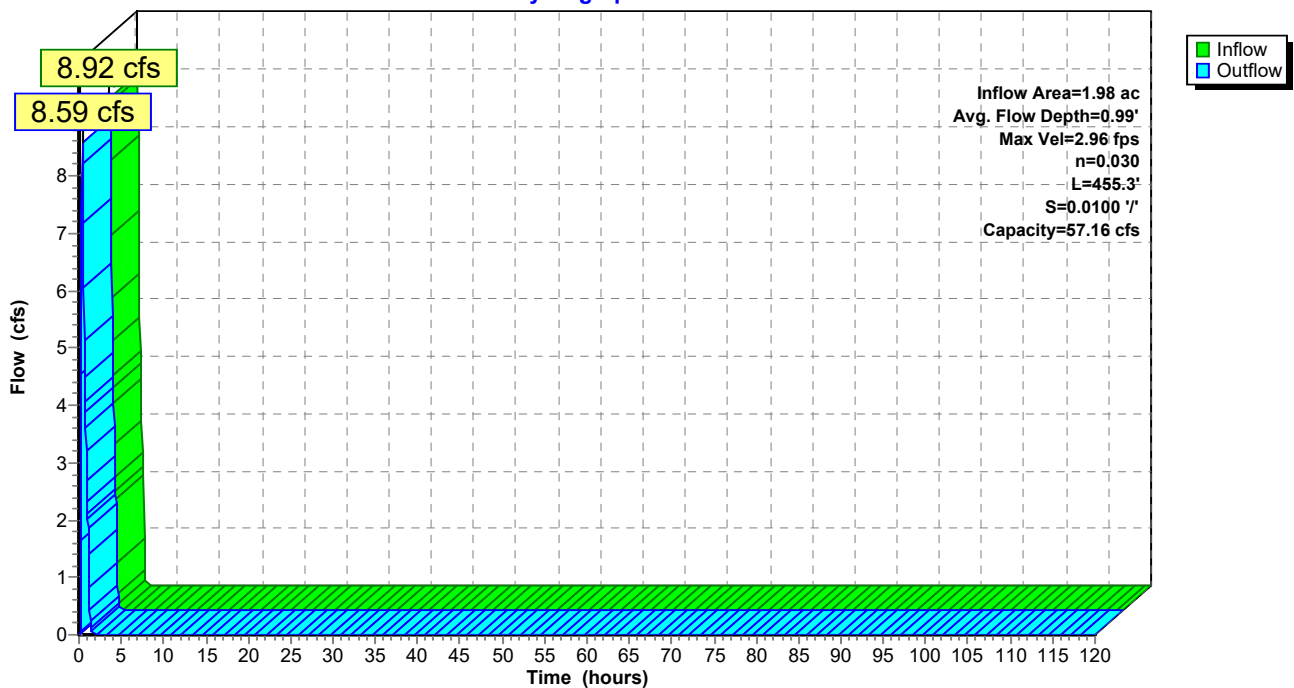
Peak Storage= 1,329 cf @ 0.37 hrs  
 Average Depth at Peak Storage= 0.99'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.16 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 455.3' Slope= 0.0100 '/'  
 Inlet Invert= 872.24', Outlet Invert= 867.69'



**Reach TB-H1: Terrace Berm H1**

Hydrograph



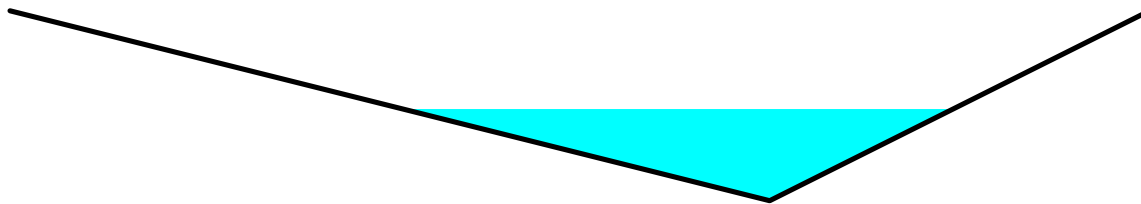
**Summary for Reach TB-H2: Terrace Berm H2**

Inflow Area = 1.86 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 8.94 cfs @ 0.29 hrs, Volume= 0.321 af  
 Outflow = 8.10 cfs @ 0.41 hrs, Volume= 0.321 af, Atten= 9%, Lag= 6.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.93 fps, Min. Travel Time= 3.5 min  
 Avg. Velocity = 0.78 fps, Avg. Travel Time= 13.0 min

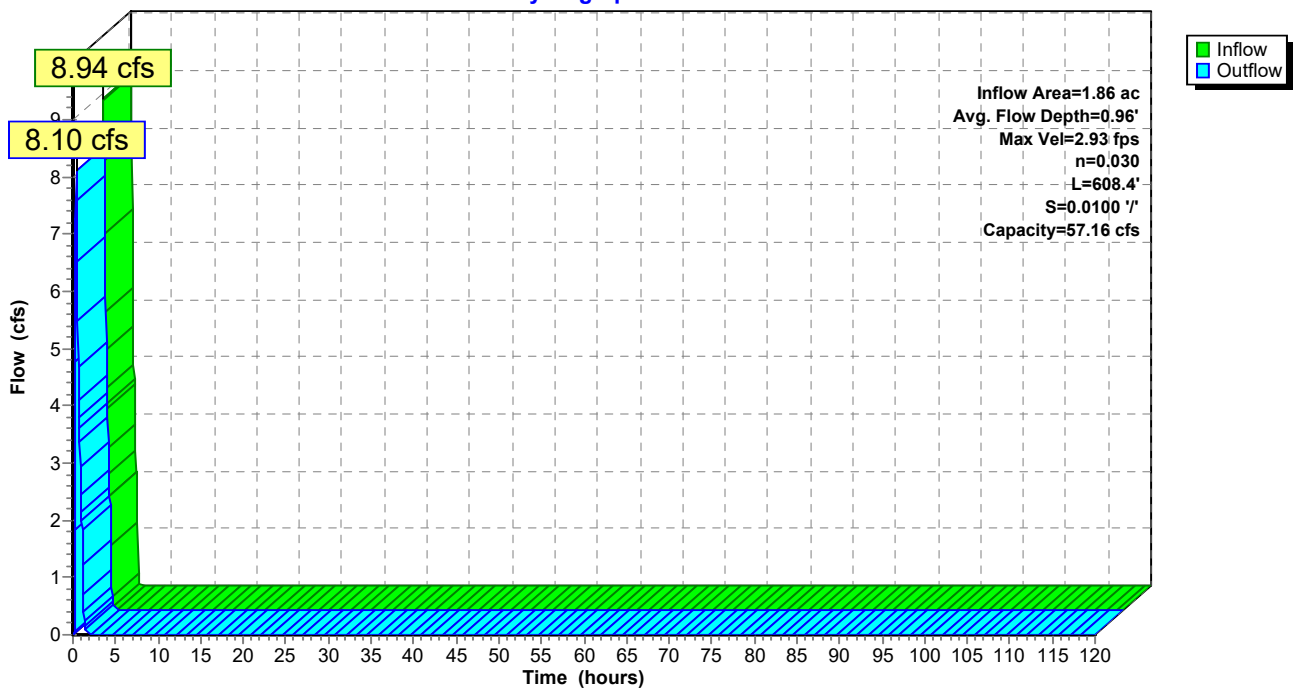
Peak Storage= 1,699 cf @ 0.35 hrs  
 Average Depth at Peak Storage= 0.96'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.16 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 608.4' Slope= 0.0100 '/'  
 Inlet Invert= 837.23', Outlet Invert= 831.15'



**Reach TB-H2: Terrace Berm H2**

Hydrograph



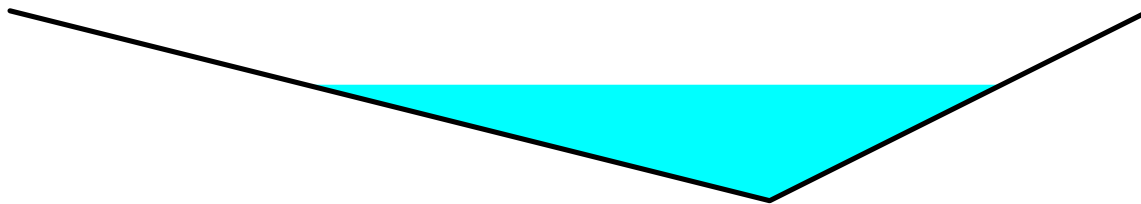
**Summary for Reach TB-H3: Terrace Berm H3**

Inflow Area = 3.57 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 17.02 cfs @ 0.30 hrs, Volume= 0.615 af  
 Outflow = 15.10 cfs @ 0.42 hrs, Volume= 0.615 af, Atten= 11%, Lag= 7.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.43 fps, Min. Travel Time= 3.9 min  
 Avg. Velocity = 0.78 fps, Avg. Travel Time= 17.1 min

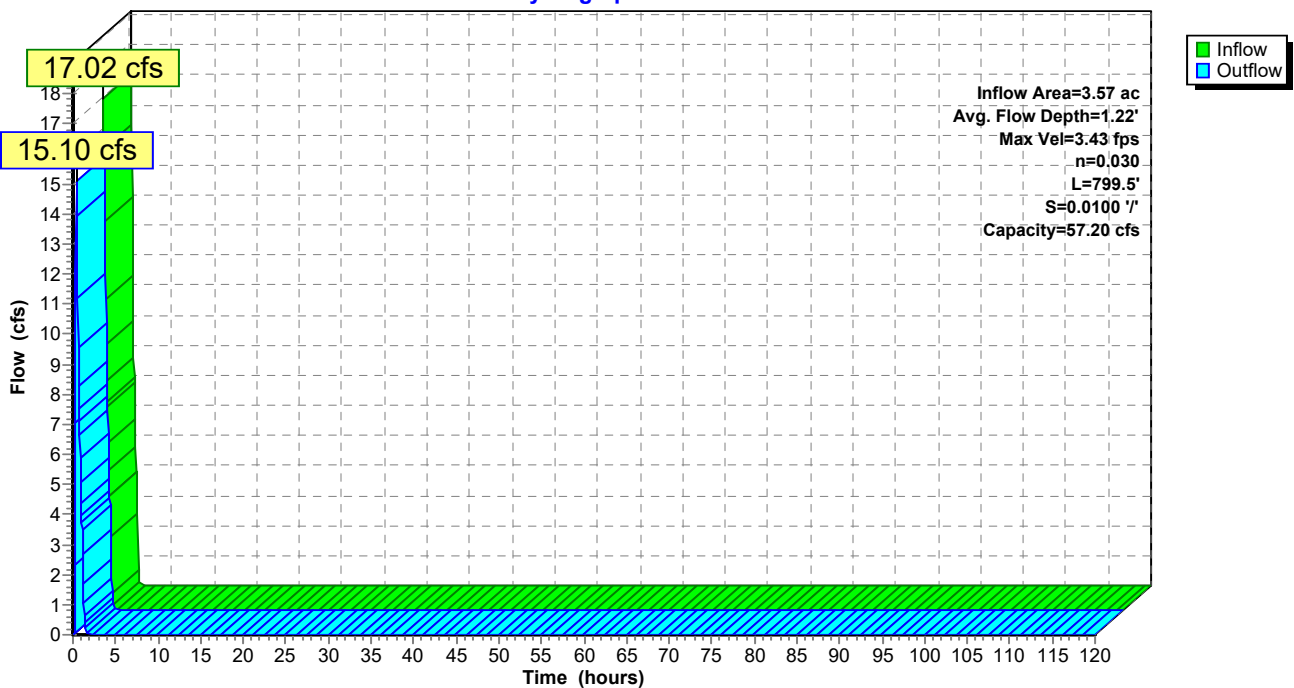
Peak Storage= 3,578 cf @ 0.36 hrs  
 Average Depth at Peak Storage= 1.22'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.20 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 799.5' Slope= 0.0100 '/'  
 Inlet Invert= 782.24', Outlet Invert= 774.24'



**Reach TB-H3: Terrace Berm H3**

Hydrograph



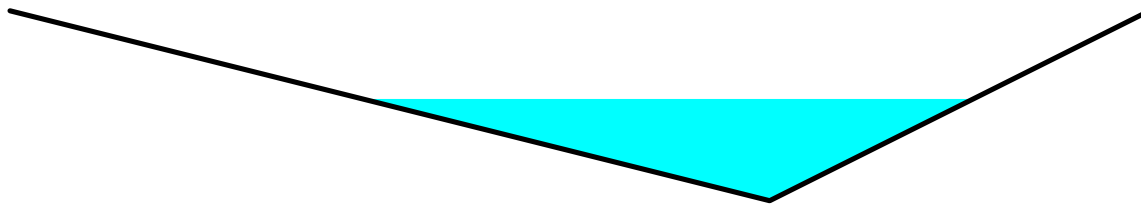
**Summary for Reach TB-N-A1: Terrace Berm N-A1**

Inflow Area = 3.60 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 16.18 cfs @ 0.33 hrs, Volume= 0.620 af  
 Outflow = 15.68 cfs @ 0.39 hrs, Volume= 0.620 af, Atten= 3%, Lag= 3.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.67 fps, Min. Travel Time= 1.6 min  
 Avg. Velocity = 1.65 fps, Avg. Travel Time= 4.5 min

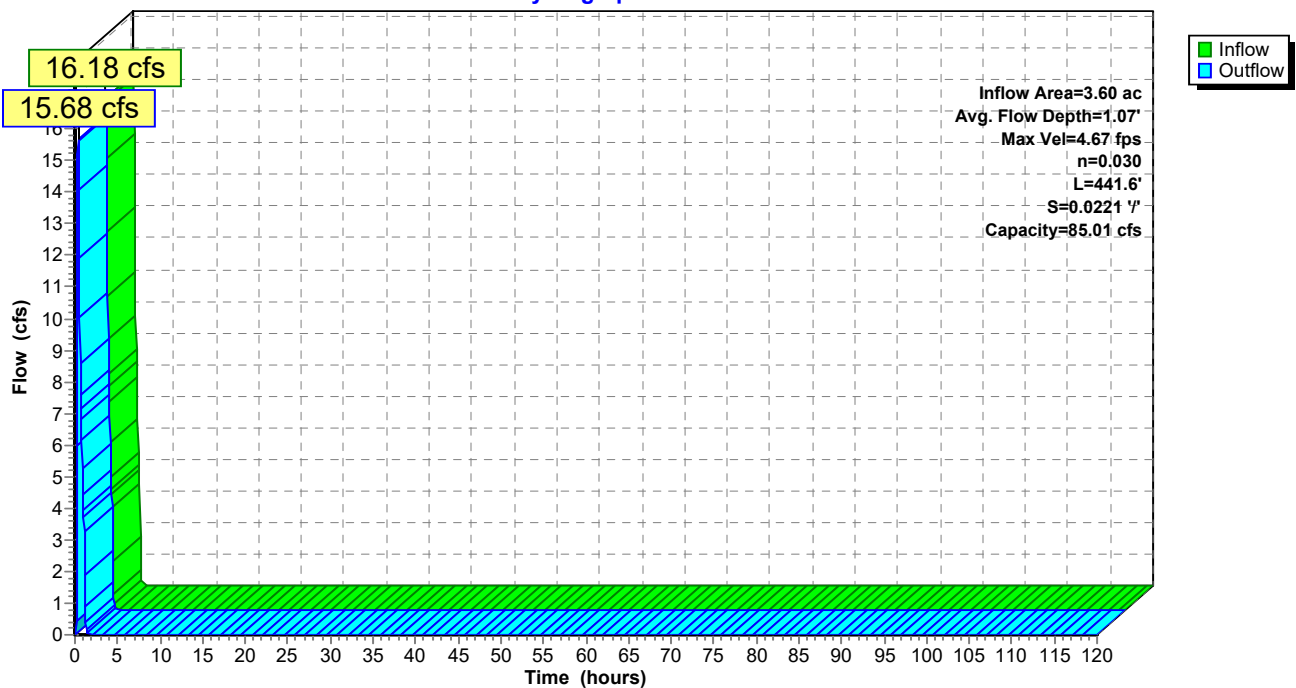
Peak Storage= 1,521 cf @ 0.36 hrs  
 Average Depth at Peak Storage= 1.07'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 85.01 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 441.6' Slope= 0.0221 '/'  
 Inlet Invert= 879.12', Outlet Invert= 869.36'



**Reach TB-N-A1: Terrace Berm N-A1**

Hydrograph



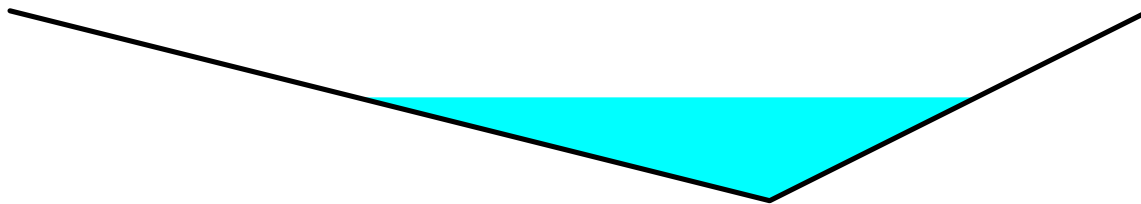
**Summary for Reach TB-N-A10: Terrace Berm N-A10**

Inflow Area = 3.77 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 18.11 cfs @ 0.29 hrs, Volume= 0.650 af  
 Outflow = 15.55 cfs @ 0.44 hrs, Volume= 0.650 af, Atten= 14%, Lag= 8.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.49 fps, Min. Travel Time= 4.4 min  
 Avg. Velocity = 1.03 fps, Avg. Travel Time= 18.9 min

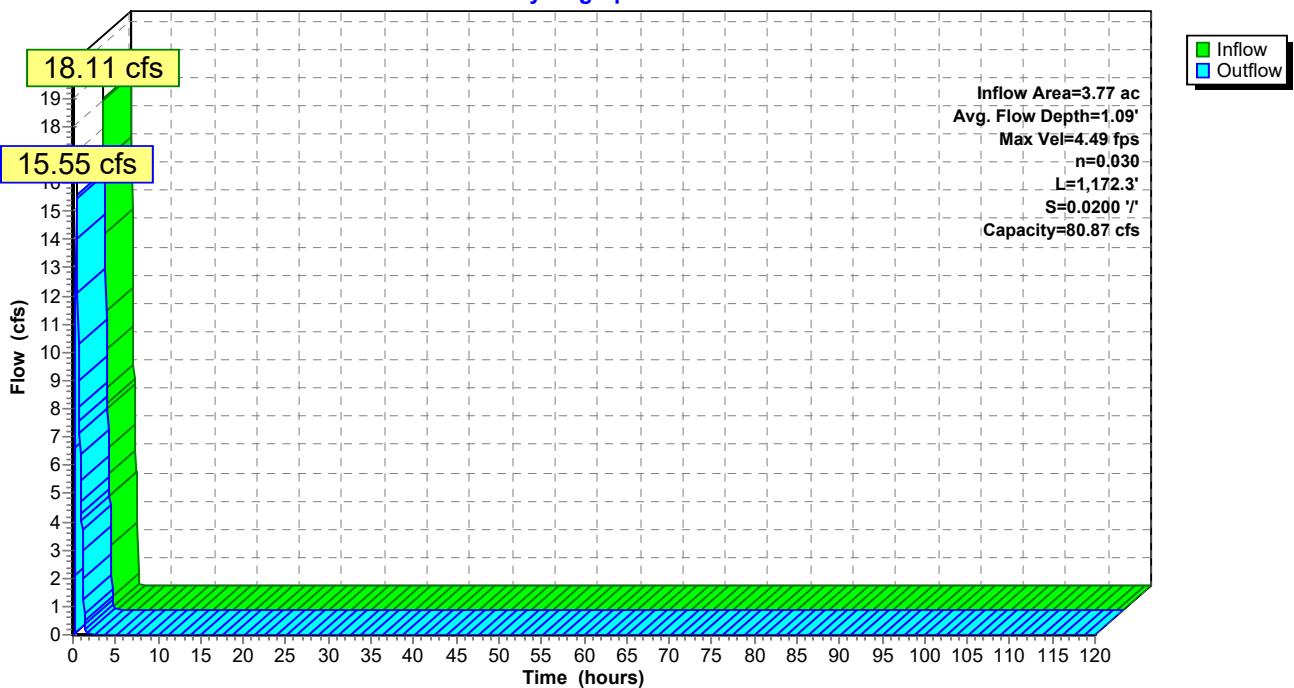
Peak Storage= 4,166 cf @ 0.36 hrs  
 Average Depth at Peak Storage= 1.09'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,172.3' Slope= 0.0200 '/'  
 Inlet Invert= 771.72', Outlet Invert= 748.27'



**Reach TB-N-A10: Terrace Berm N-A10**

Hydrograph



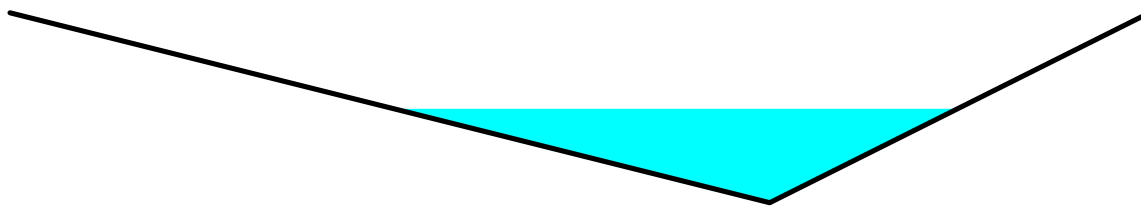
**Summary for Reach TB-N-A2: Terrace Berm N-A2**

Inflow Area = 2.82 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 13.01 cfs @ 0.32 hrs, Volume= 0.486 af  
 Outflow = 12.33 cfs @ 0.42 hrs, Volume= 0.486 af, Atten= 5%, Lag= 5.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.20 fps, Min. Travel Time= 2.9 min  
 Avg. Velocity = 1.19 fps, Avg. Travel Time= 10.3 min

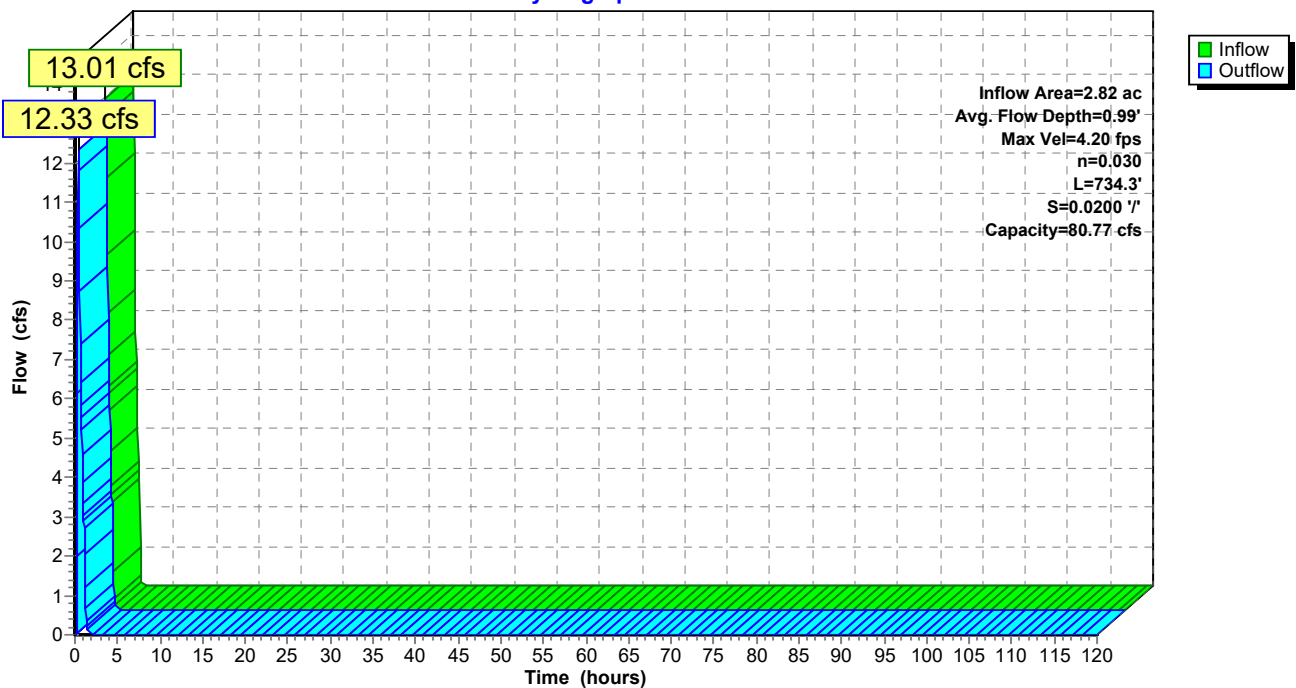
Peak Storage= 2,155 cf @ 0.37 hrs  
 Average Depth at Peak Storage= 0.99'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.77 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 734.3' Slope= 0.0200 '/'  
 Inlet Invert= 884.01', Outlet Invert= 869.36'



**Reach TB-N-A2: Terrace Berm N-A2**

Hydrograph





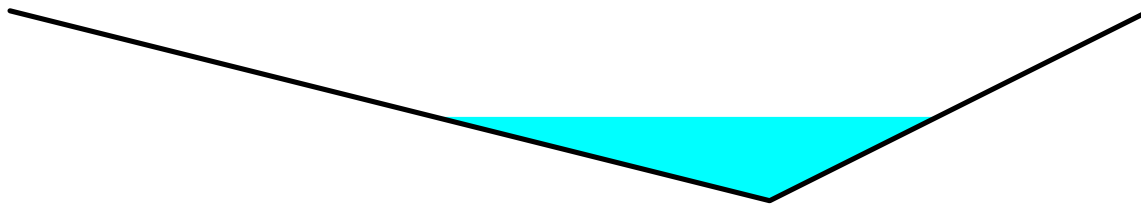
**Summary for Reach TB-N-A3: Terrace Berm N-A3**

Inflow Area = 1.31 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 6.28 cfs @ 0.29 hrs, Volume= 0.226 af  
 Outflow = 6.00 cfs @ 0.36 hrs, Volume= 0.226 af, Atten= 4%, Lag= 4.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.60 fps, Min. Travel Time= 2.1 min  
 Avg. Velocity = 0.88 fps, Avg. Travel Time= 6.3 min

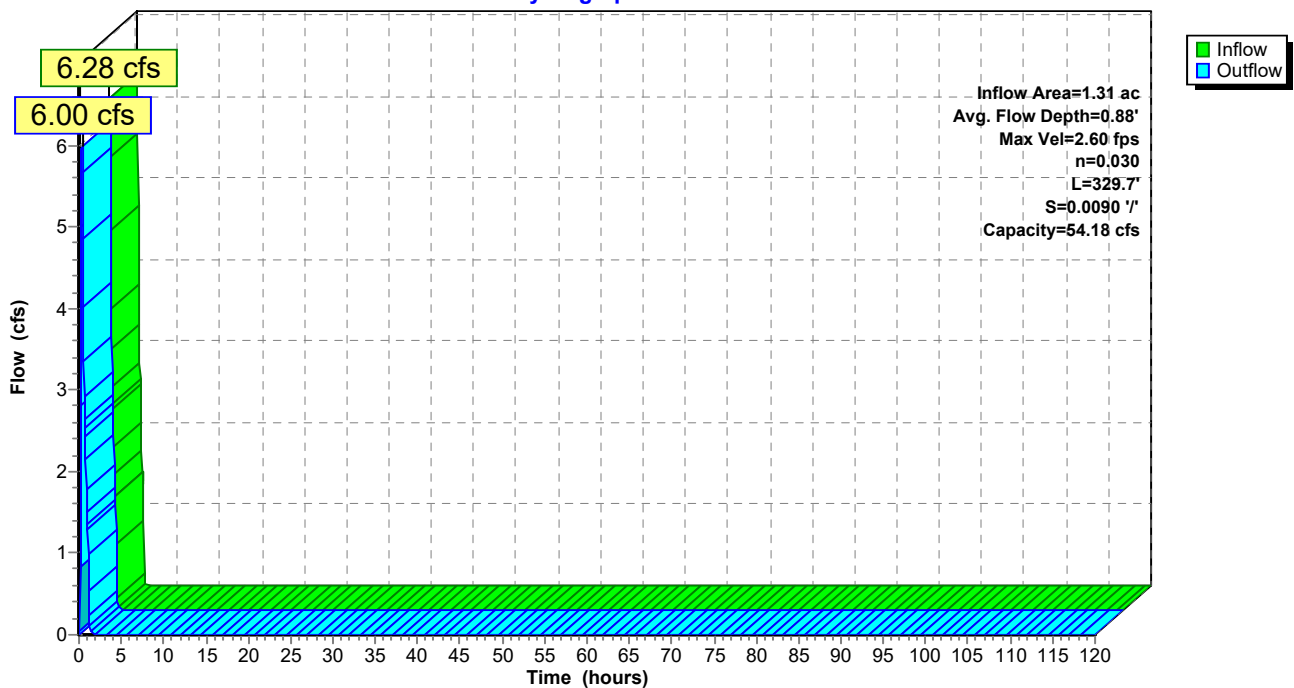
Peak Storage= 771 cf @ 0.32 hrs  
 Average Depth at Peak Storage= 0.88'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 54.18 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 329.7' Slope= 0.0090 '/'  
 Inlet Invert= 839.81', Outlet Invert= 836.85'



**Reach TB-N-A3: Terrace Berm N-A3**

Hydrograph



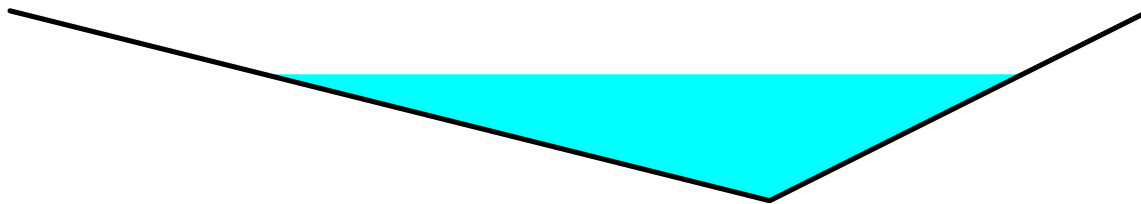
**Summary for Reach TB-N-A4: Terrace Berm N-A4**

Inflow Area = 6.88 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 31.04 cfs @ 0.33 hrs, Volume= 1.184 af  
 Outflow = 26.84 cfs @ 0.49 hrs, Volume= 1.184 af, Atten= 14%, Lag= 9.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 5.14 fps, Min. Travel Time= 4.9 min  
 Avg. Velocity = 1.03 fps, Avg. Travel Time= 24.6 min

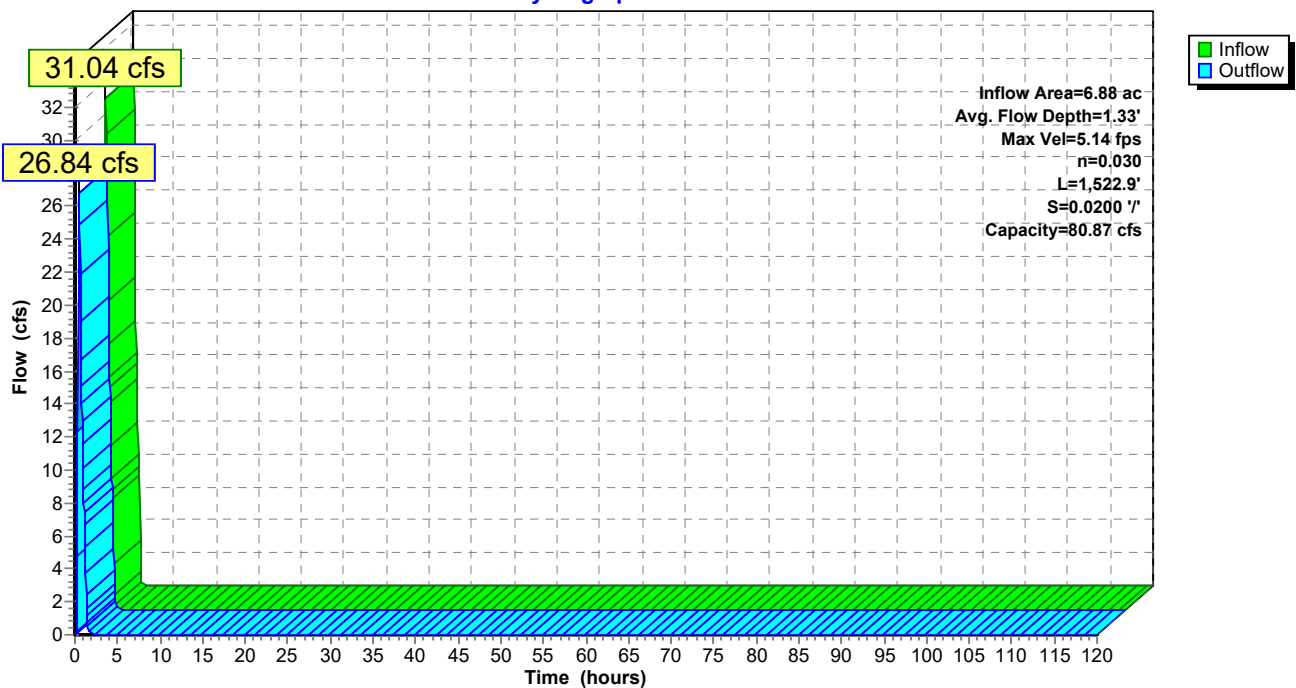
Peak Storage= 8,095 cf @ 0.41 hrs  
 Average Depth at Peak Storage= 1.33'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,522.9' Slope= 0.0200 '/'  
 Inlet Invert= 867.35', Outlet Invert= 836.89'



**Reach TB-N-A4: Terrace Berm N-A4**

Hydrograph



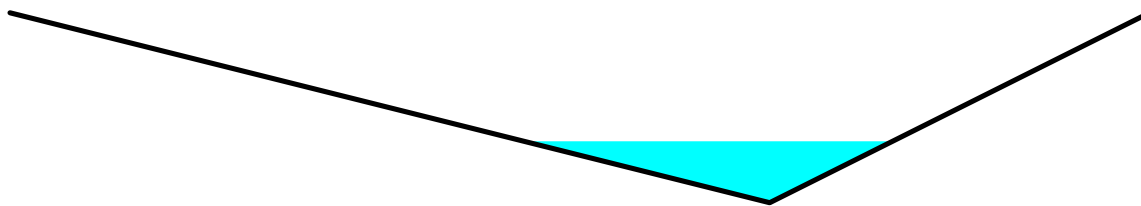
**Summary for Reach TB-N-A5: Terrace Berm N-A5**

Inflow Area = 0.73 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 3.53 cfs @ 0.29 hrs, Volume= 0.126 af  
 Outflow = 3.38 cfs @ 0.33 hrs, Volume= 0.126 af, Atten= 4%, Lag= 2.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.78 fps, Min. Travel Time= 1.3 min  
 Avg. Velocity = 1.25 fps, Avg. Travel Time= 2.9 min

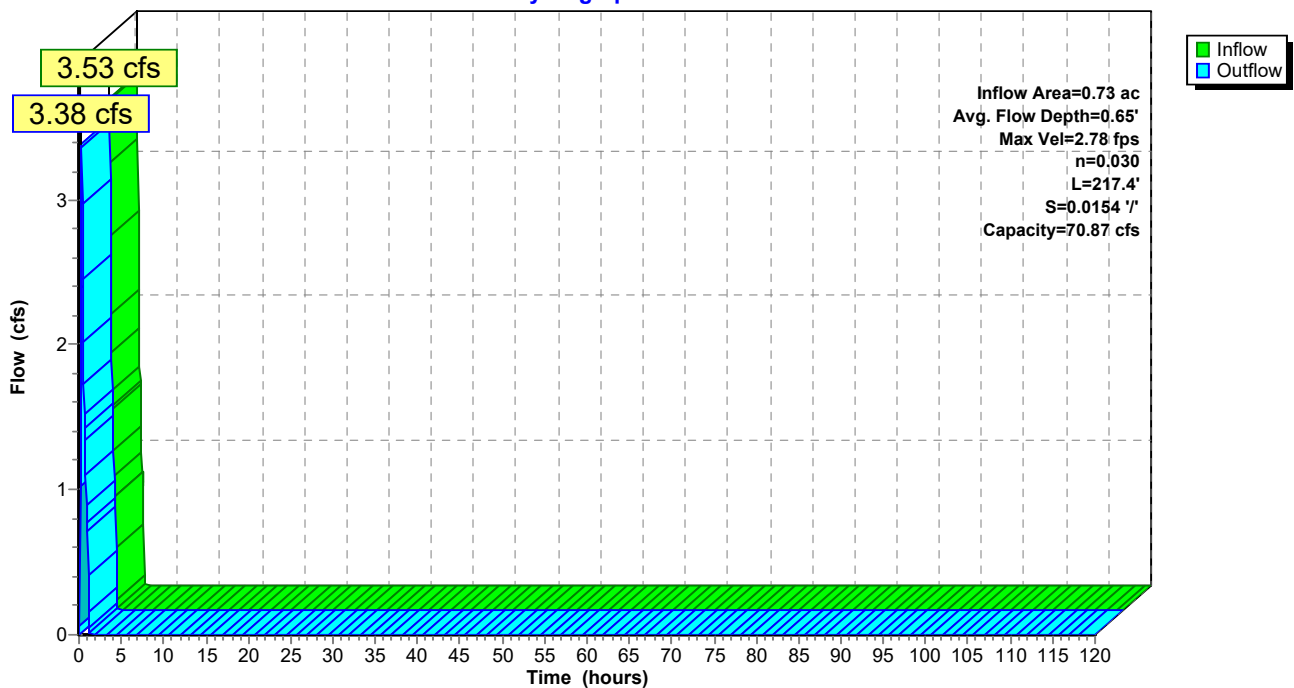
Peak Storage= 273 cf @ 0.31 hrs  
 Average Depth at Peak Storage= 0.65'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 70.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 217.4' Slope= 0.0154 '/'  
 Inlet Invert= 811.36', Outlet Invert= 808.02'



**Reach TB-N-A5: Terrace Berm N-A5**

Hydrograph



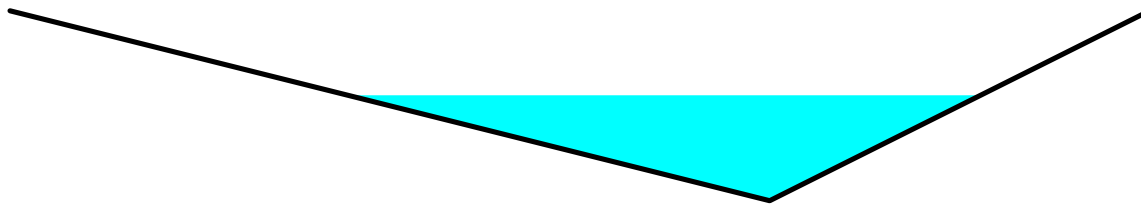
**Summary for Reach TB-N-A6: Terrace Berm N-A6**

Inflow Area = 4.13 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 19.85 cfs @ 0.29 hrs, Volume= 0.711 af  
 Outflow = 16.59 cfs @ 0.46 hrs, Volume= 0.711 af, Atten= 16%, Lag= 10.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.54 fps, Min. Travel Time= 5.2 min  
 Avg. Velocity = 0.98 fps, Avg. Travel Time= 23.9 min

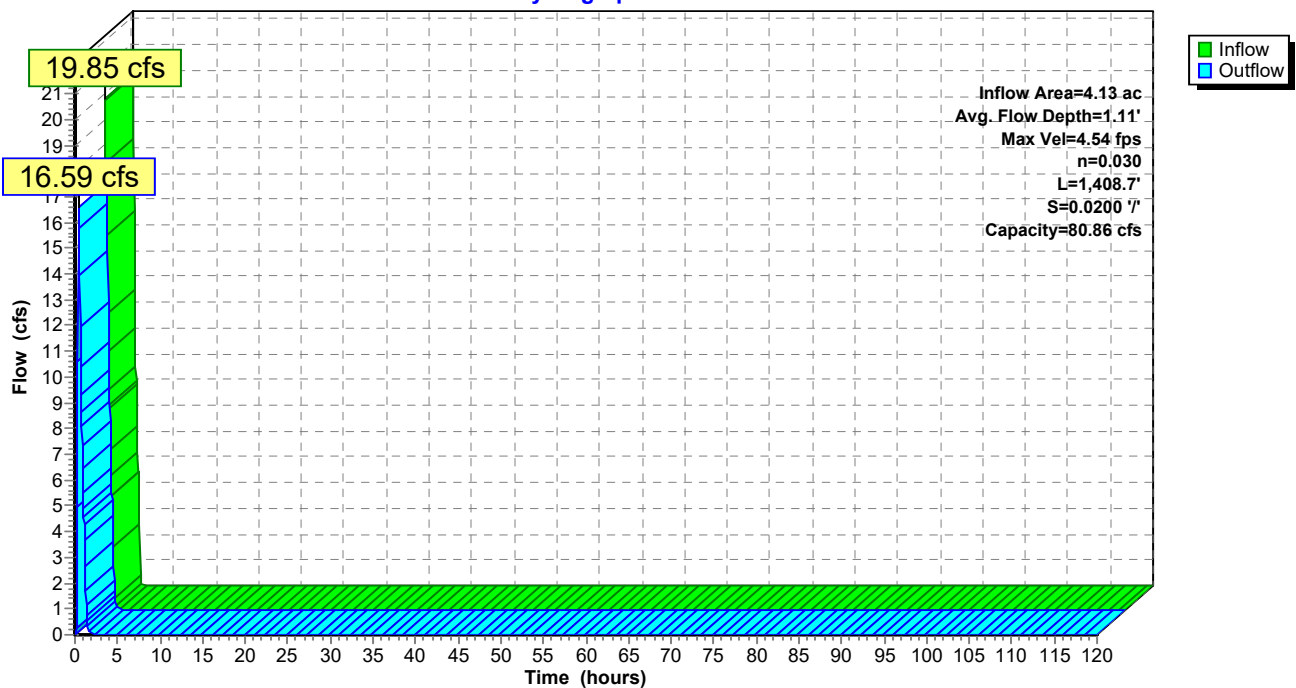
Peak Storage= 5,212 cf @ 0.37 hrs  
 Average Depth at Peak Storage= 1.11'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,408.7' Slope= 0.0200 '/'  
 Inlet Invert= 836.37', Outlet Invert= 808.20'



**Reach TB-N-A6: Terrace Berm N-A6**

Hydrograph



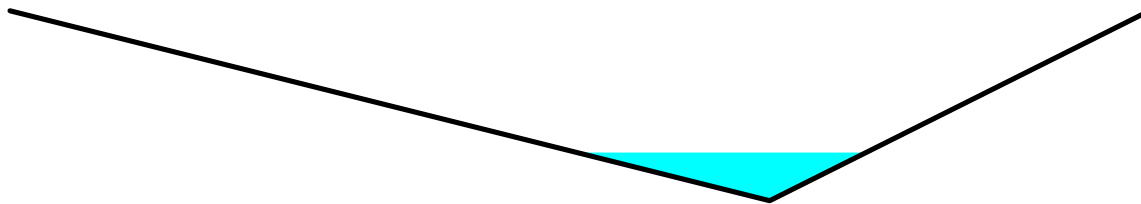
**Summary for Reach TB-N-A7: Terrace Berm N-A7**

Inflow Area = 0.44 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 2.11 cfs @ 0.30 hrs, Volume= 0.076 af  
 Outflow = 2.07 cfs @ 0.32 hrs, Volume= 0.076 af, Atten= 2%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.71 fps, Min. Travel Time= 0.6 min  
 Avg. Velocity = 1.57 fps, Avg. Travel Time= 1.1 min

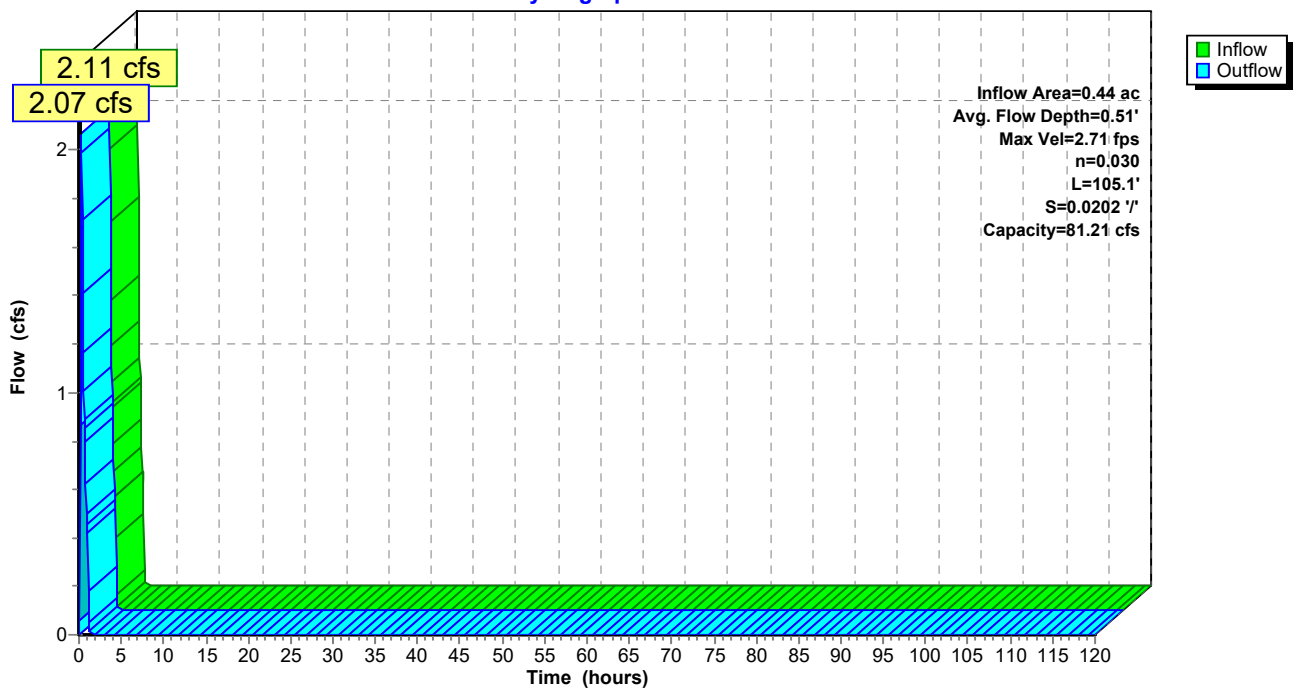
Peak Storage= 81 cf @ 0.31 hrs  
 Average Depth at Peak Storage= 0.51'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 81.21 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 105.1' Slope= 0.0202 '/'  
 Inlet Invert= 782.01', Outlet Invert= 779.89'



**Reach TB-N-A7: Terrace Berm N-A7**

Hydrograph



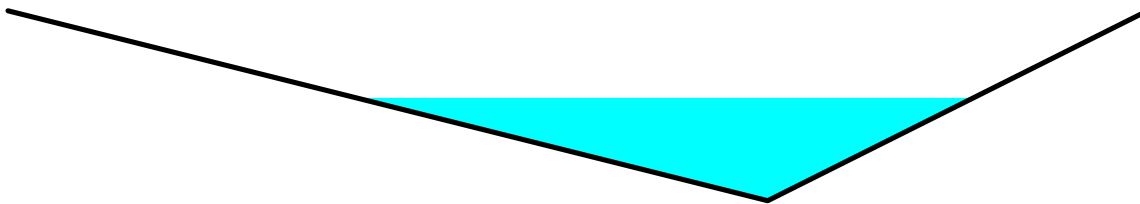
**Summary for Reach TB-N-A8: Terrace Berm N-A8**

Inflow Area = 3.80 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 18.27 cfs @ 0.29 hrs, Volume= 0.655 af  
 Outflow = 15.42 cfs @ 0.45 hrs, Volume= 0.655 af, Atten= 16%, Lag= 9.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.47 fps, Min. Travel Time= 4.8 min  
 Avg. Velocity = 1.00 fps, Avg. Travel Time= 21.6 min

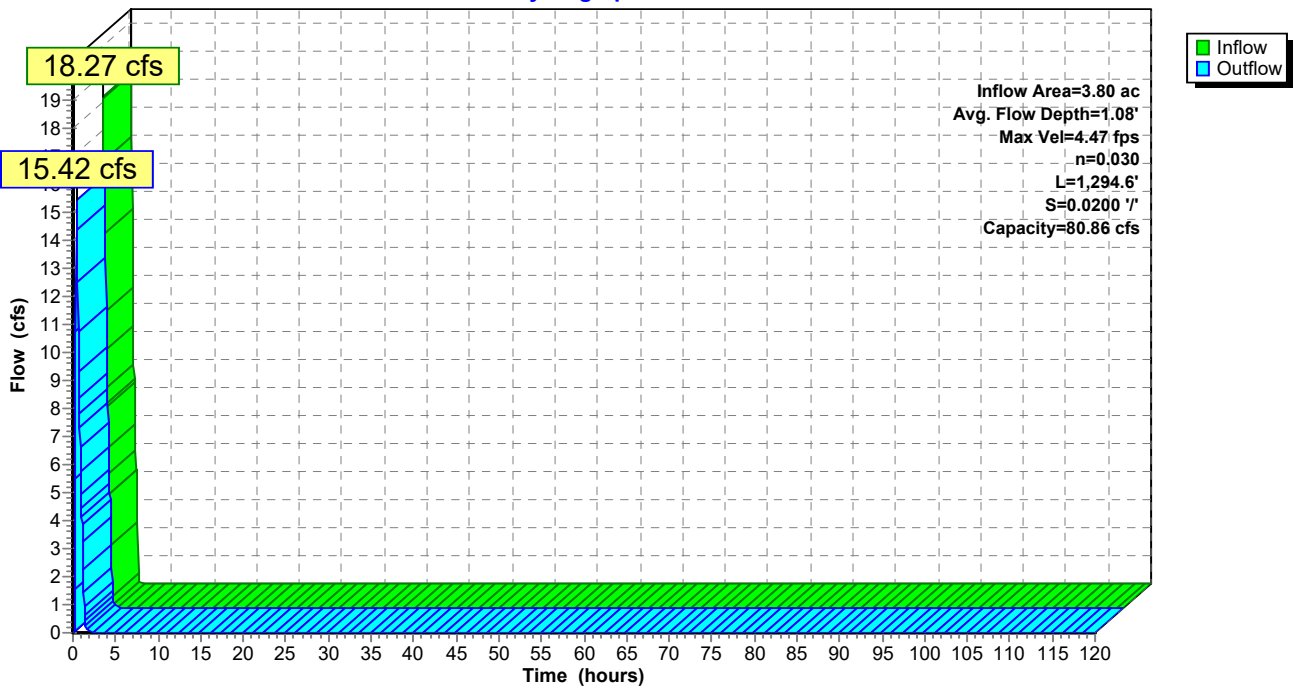
Peak Storage= 4,554 cf @ 0.36 hrs  
 Average Depth at Peak Storage= 1.08'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,294.6' Slope= 0.0200 '/'  
 Inlet Invert= 805.78', Outlet Invert= 779.89'



**Reach TB-N-A8: Terrace Berm N-A8**

Hydrograph



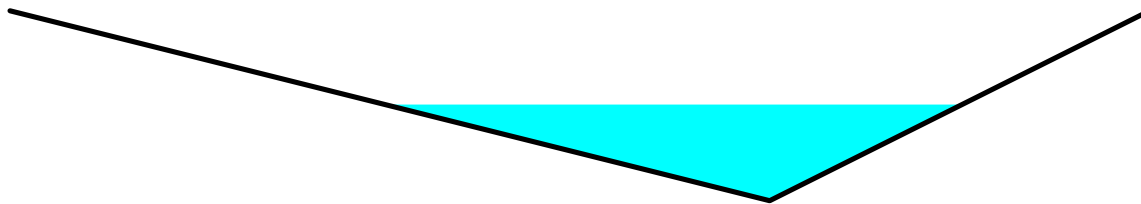
**Summary for Reach TB-N-B1: Terrace Berm N-B1**

Inflow Area = 3.15 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 14.49 cfs @ 0.32 hrs, Volume= 0.543 af  
 Outflow = 13.01 cfs @ 0.45 hrs, Volume= 0.543 af, Atten= 10%, Lag= 7.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.27 fps, Min. Travel Time= 3.8 min  
 Avg. Velocity = 1.08 fps, Avg. Travel Time= 15.0 min

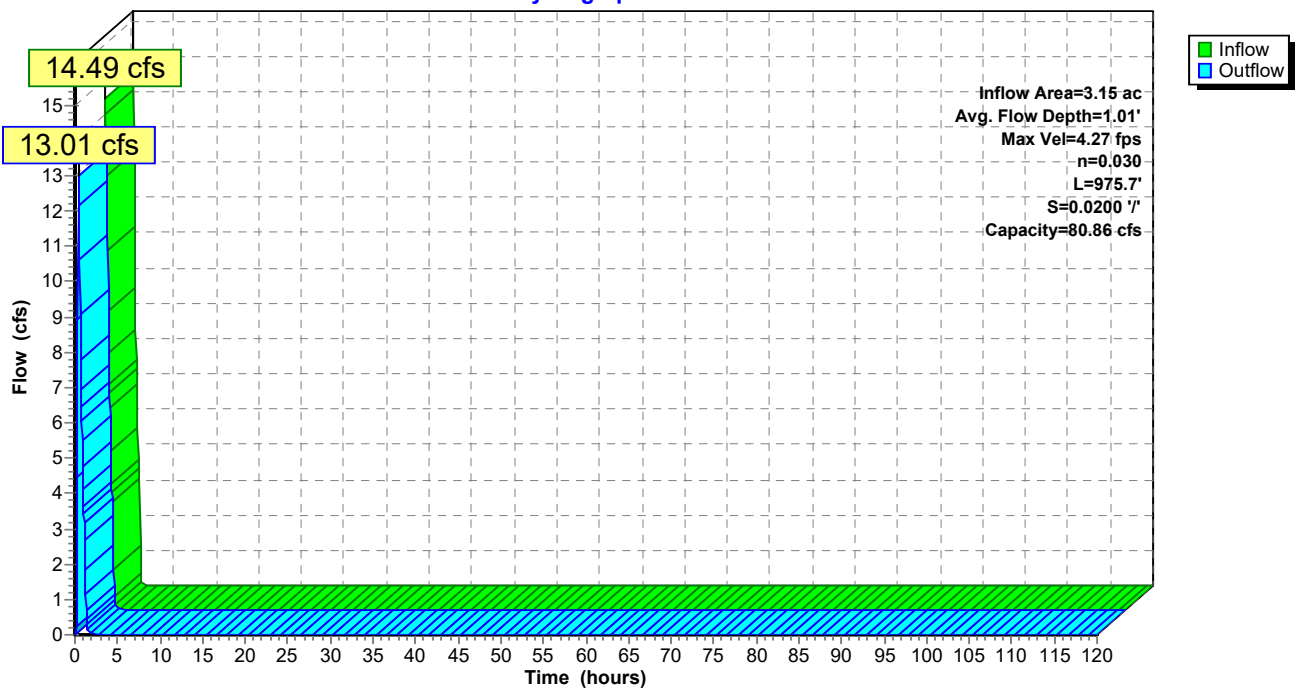
Peak Storage= 3,000 cf @ 0.38 hrs  
 Average Depth at Peak Storage= 1.01'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 975.7' Slope= 0.0200 '/'  
 Inlet Invert= 867.35', Outlet Invert= 847.84'



**Reach TB-N-B1: Terrace Berm N-B1**

Hydrograph



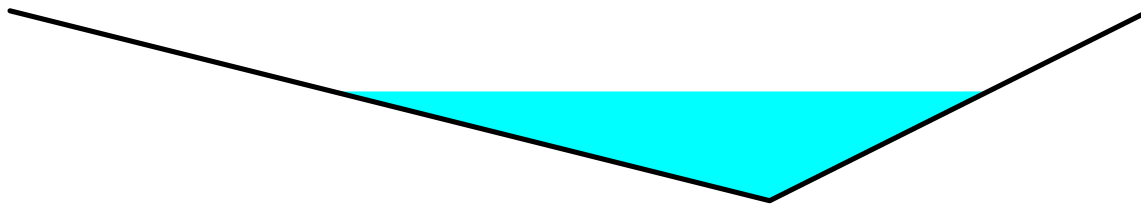
**Summary for Reach TB-N-B2: Terrace Berm N-B2**

Inflow Area = 4.49 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 20.56 cfs @ 0.32 hrs, Volume= 0.773 af  
 Outflow = 18.33 cfs @ 0.46 hrs, Volume= 0.773 af, Atten= 11%, Lag= 8.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.66 fps, Min. Travel Time= 4.0 min  
 Avg. Velocity = 1.09 fps, Avg. Travel Time= 17.1 min

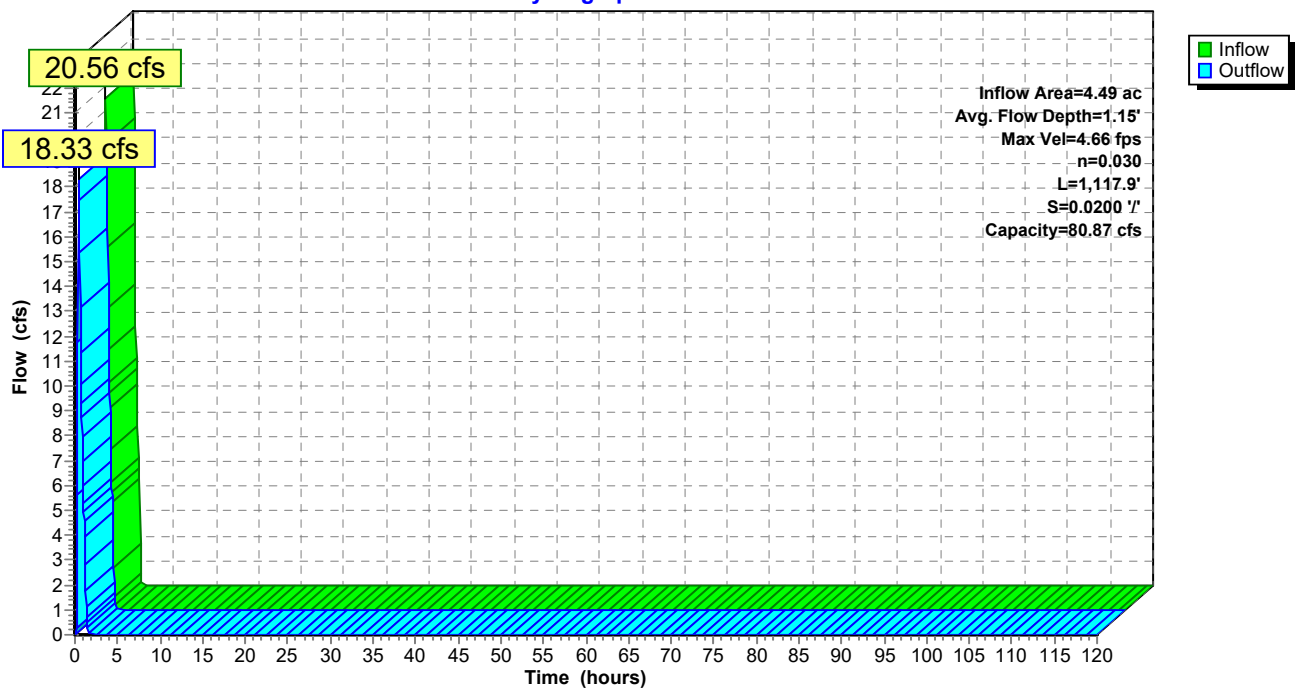
Peak Storage= 4,446 cf @ 0.39 hrs  
 Average Depth at Peak Storage= 1.15'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,117.9' Slope= 0.0200 '/'  
 Inlet Invert= 870.20', Outlet Invert= 847.84'



**Reach TB-N-B2: Terrace Berm N-B2**

Hydrograph





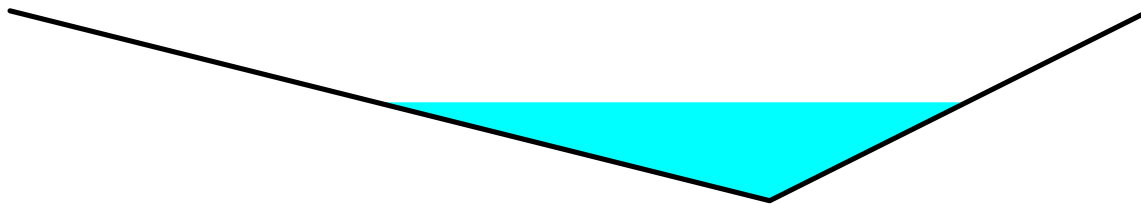
**Summary for Reach TB-N-B3: Terrace Berm N-B3**

Inflow Area = 3.43 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 16.45 cfs @ 0.29 hrs, Volume= 0.590 af  
 Outflow = 13.80 cfs @ 0.46 hrs, Volume= 0.590 af, Atten= 16%, Lag= 9.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.34 fps, Min. Travel Time= 5.1 min  
 Avg. Velocity = 0.98 fps, Avg. Travel Time= 22.6 min

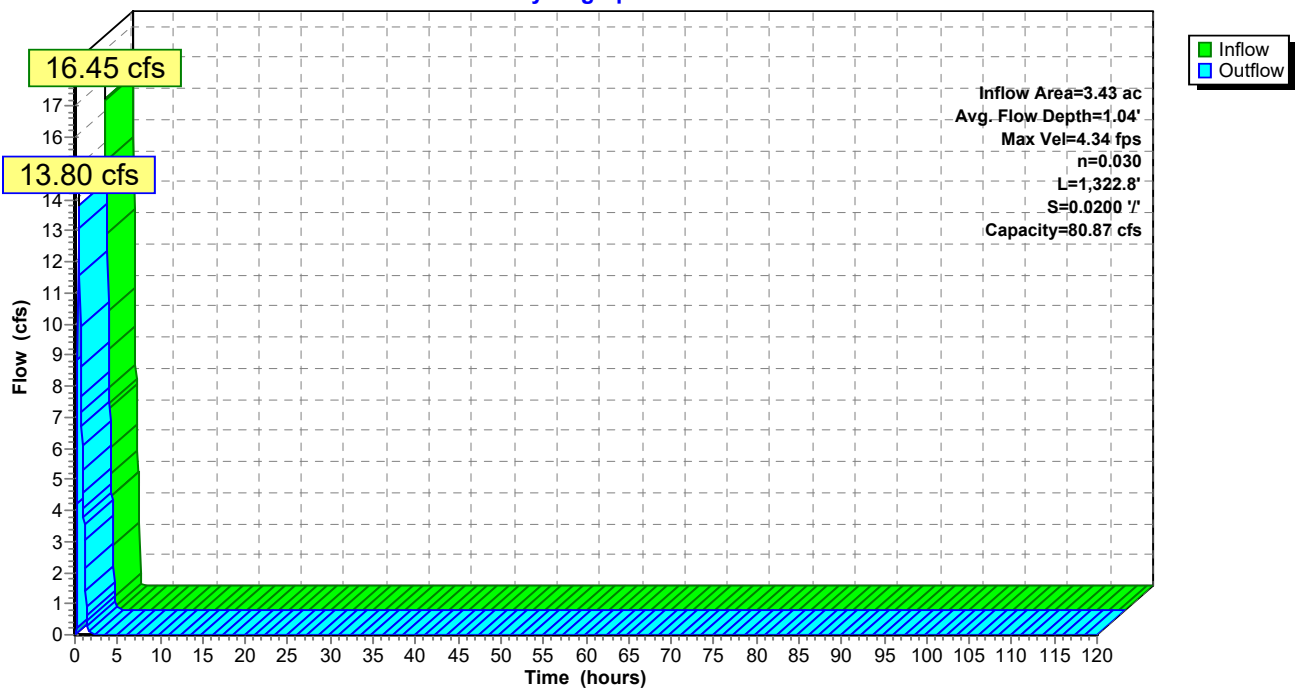
Peak Storage= 4,266 cf @ 0.37 hrs  
 Average Depth at Peak Storage= 1.04'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,322.8' Slope= 0.0200 '/'  
 Inlet Invert= 836.37', Outlet Invert= 809.91'



**Reach TB-N-B3: Terrace Berm N-B3**

Hydrograph



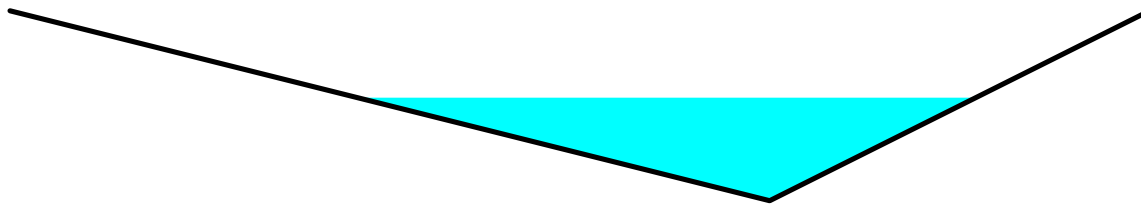
**Summary for Reach TB-N-B4: Terrace Berm N-B4**

Inflow Area = 3.80 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 18.26 cfs @ 0.29 hrs, Volume= 0.655 af  
 Outflow = 15.49 cfs @ 0.45 hrs, Volume= 0.655 af, Atten= 15%, Lag= 9.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.48 fps, Min. Travel Time= 4.7 min  
 Avg. Velocity = 1.01 fps, Avg. Travel Time= 20.9 min

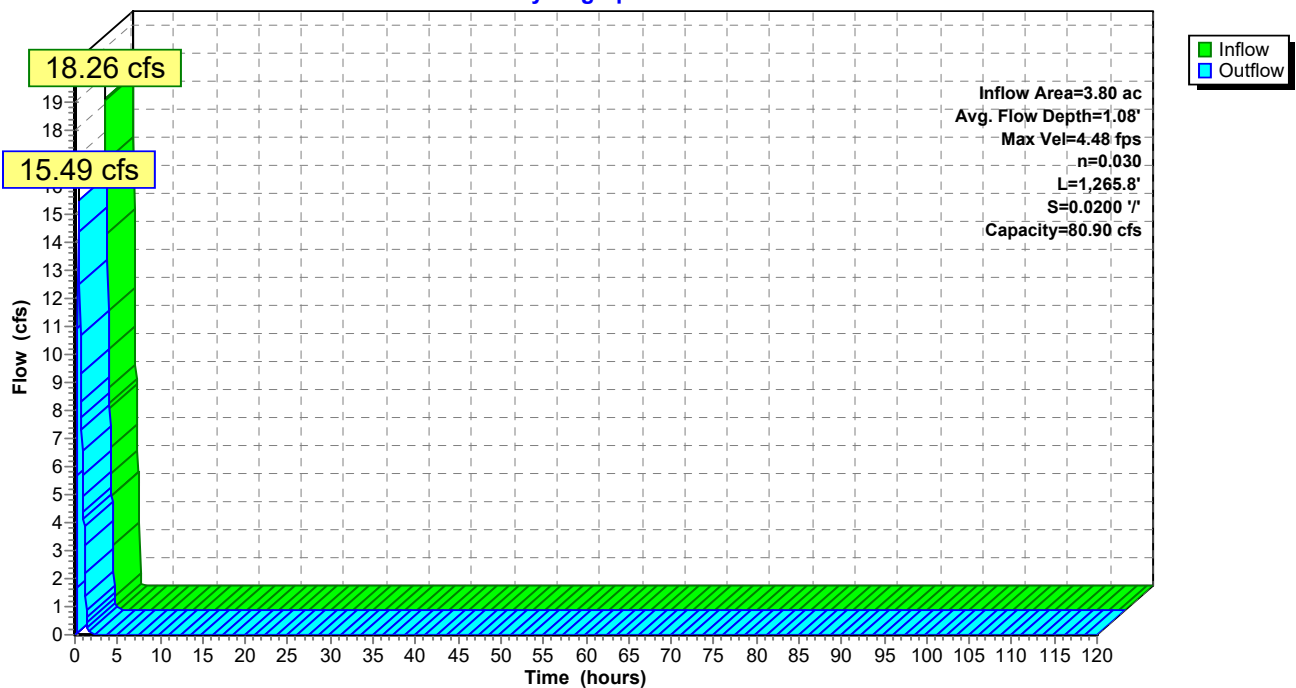
Peak Storage= 4,469 cf @ 0.36 hrs  
 Average Depth at Peak Storage= 1.08'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.90 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,265.8' Slope= 0.0200 '/'  
 Inlet Invert= 835.25', Outlet Invert= 809.91'



**Reach TB-N-B4: Terrace Berm N-B4**

Hydrograph



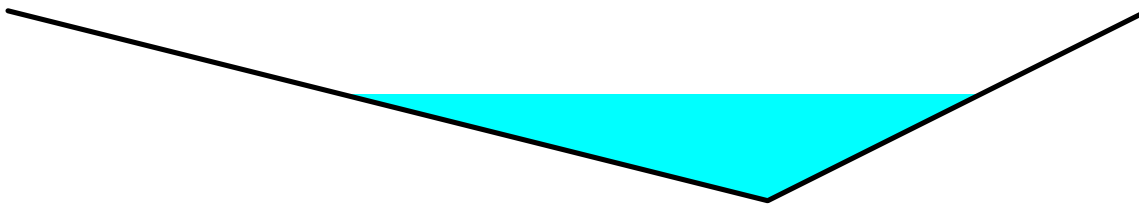
**Summary for Reach TB-N-B5: Terrace Berm N-B5**

Inflow Area = 4.50 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 21.58 cfs @ 0.29 hrs, Volume= 0.775 af  
 Outflow = 17.39 cfs @ 0.48 hrs, Volume= 0.775 af, Atten= 19%, Lag= 11.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.58 fps, Min. Travel Time= 6.1 min  
 Avg. Velocity = 0.94 fps, Avg. Travel Time= 29.7 min

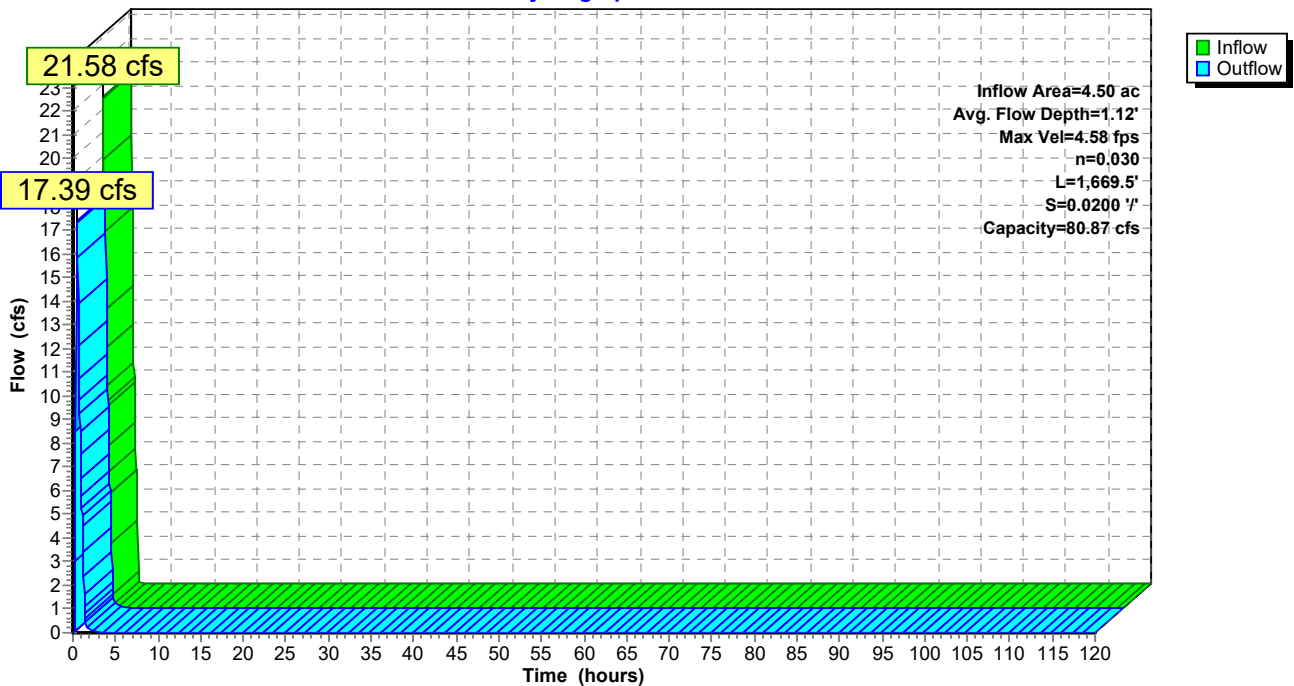
Peak Storage= 6,334 cf @ 0.38 hrs  
 Average Depth at Peak Storage= 1.12'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,669.5' Slope= 0.0200 '/'  
 Inlet Invert= 805.78', Outlet Invert= 772.39'



**Reach TB-N-B5: Terrace Berm N-B5**

Hydrograph



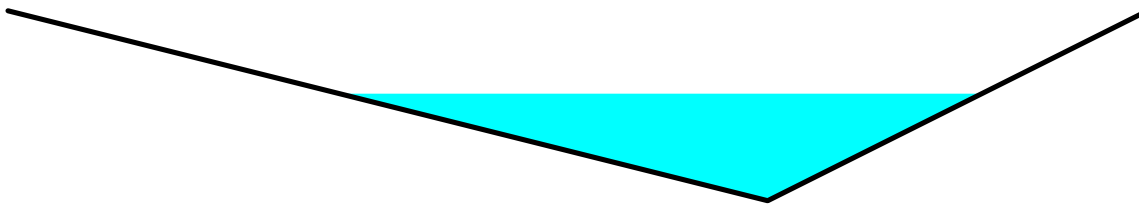
**Summary for Reach TB-N-B6: Terrace Berm N-B6**

Inflow Area = 4.29 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 20.58 cfs @ 0.29 hrs, Volume= 0.739 af  
 Outflow = 17.23 cfs @ 0.46 hrs, Volume= 0.739 af, Atten= 16%, Lag= 9.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.58 fps, Min. Travel Time= 5.1 min  
 Avg. Velocity = 0.99 fps, Avg. Travel Time= 23.9 min

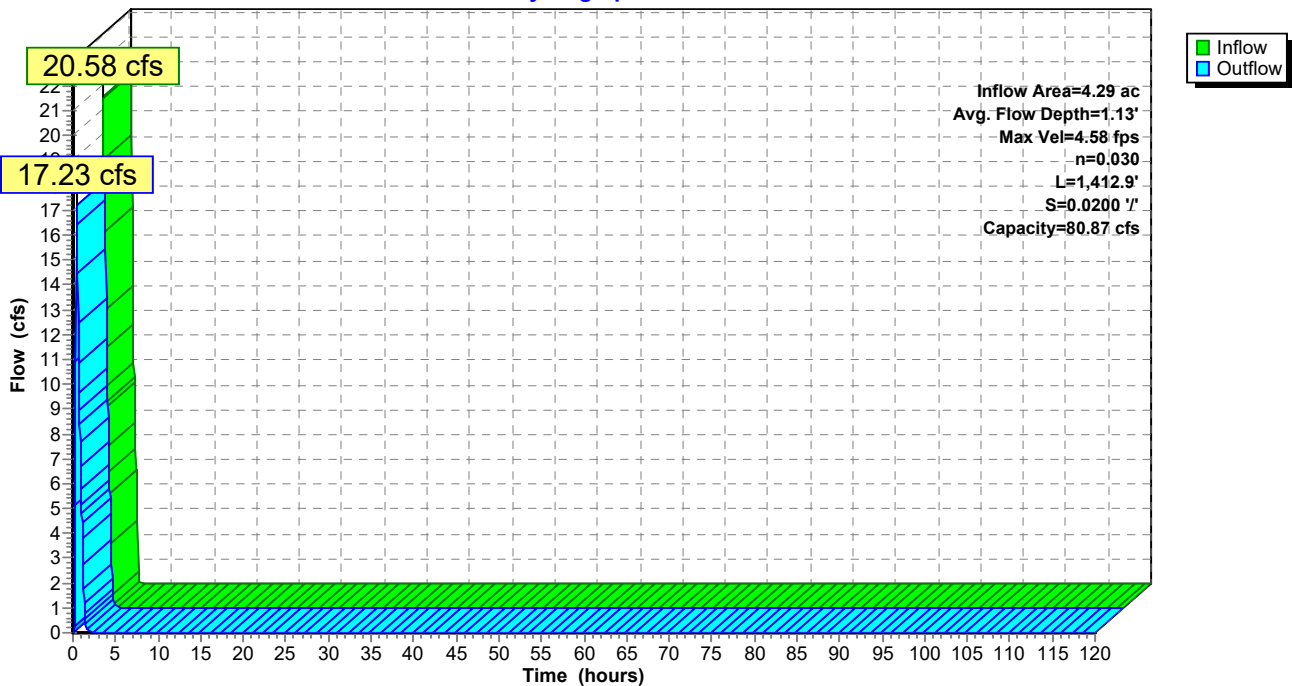
Peak Storage= 5,380 cf @ 0.37 hrs  
 Average Depth at Peak Storage= 1.13'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,412.9' Slope= 0.0200 '/'  
 Inlet Invert= 800.65', Outlet Invert= 772.39'



**Reach TB-N-B6: Terrace Berm N-B6**

Hydrograph



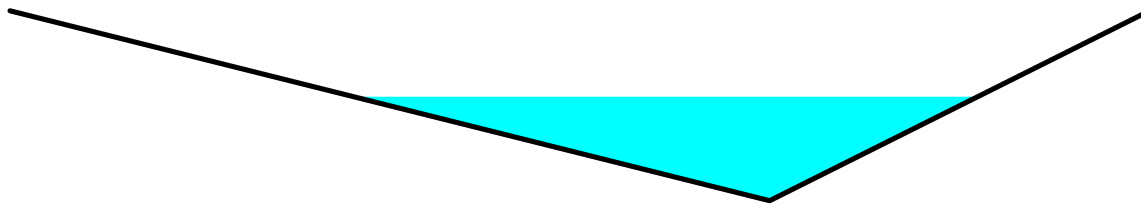
**Summary for Reach TB-N-B7: Terrace Berm N-B7**

Inflow Area = 3.96 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 19.02 cfs @ 0.29 hrs, Volume= 0.682 af  
 Outflow = 15.95 cfs @ 0.46 hrs, Volume= 0.682 af, Atten= 16%, Lag= 9.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.50 fps, Min. Travel Time= 5.1 min  
 Avg. Velocity = 0.98 fps, Avg. Travel Time= 23.2 min

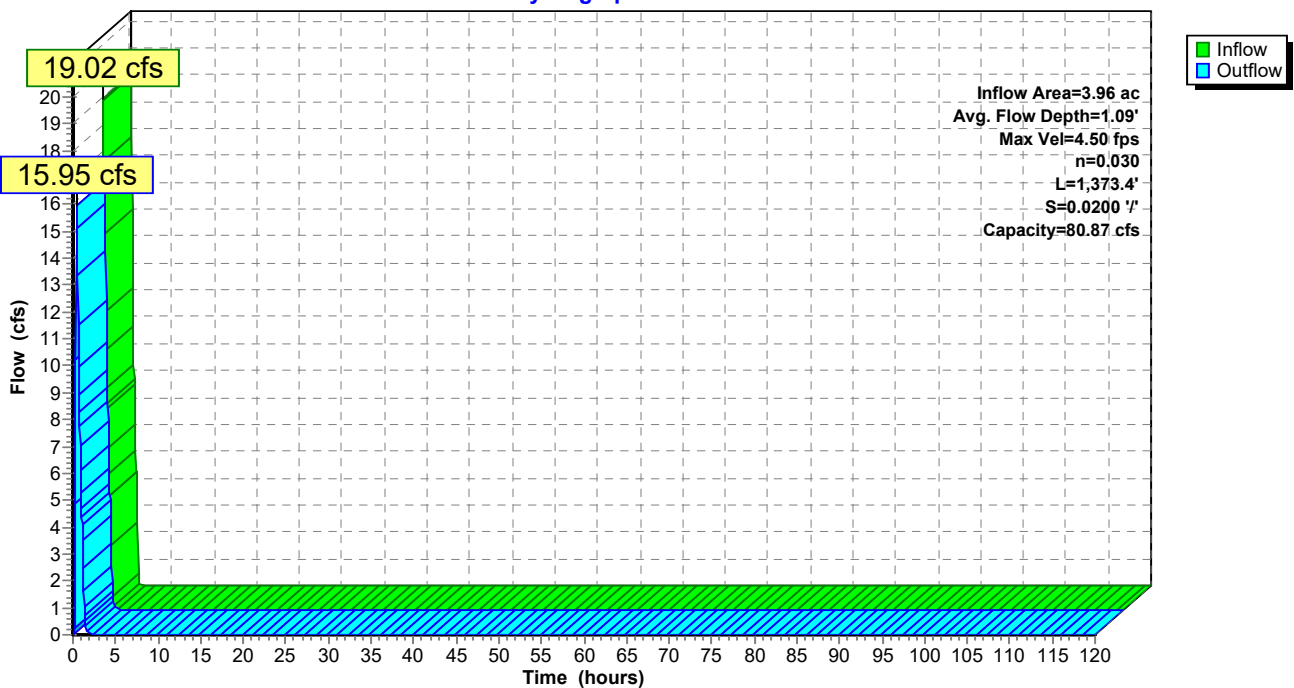
Peak Storage= 4,937 cf @ 0.37 hrs  
 Average Depth at Peak Storage= 1.09'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,373.4' Slope= 0.0200 '/'  
 Inlet Invert= 771.72', Outlet Invert= 744.25'



**Reach TB-N-B7: Terrace Berm N-B7**

Hydrograph



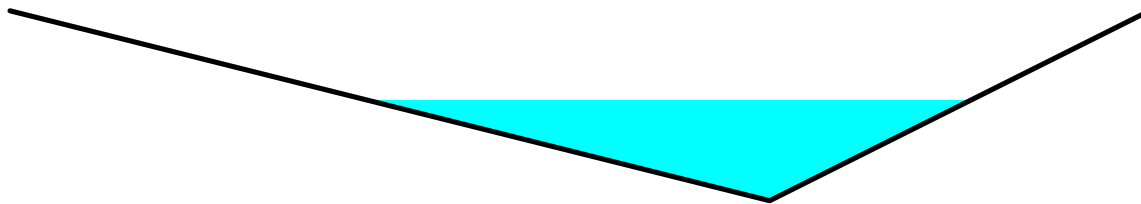
**Summary for Reach TB-N-B8: Terrace Berm N-B8**

Inflow Area = 3.52 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 16.91 cfs @ 0.29 hrs, Volume= 0.607 af  
 Outflow = 15.09 cfs @ 0.42 hrs, Volume= 0.607 af, Atten= 11%, Lag= 7.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.52 fps, Min. Travel Time= 3.8 min  
 Avg. Velocity = 1.11 fps, Avg. Travel Time= 15.3 min

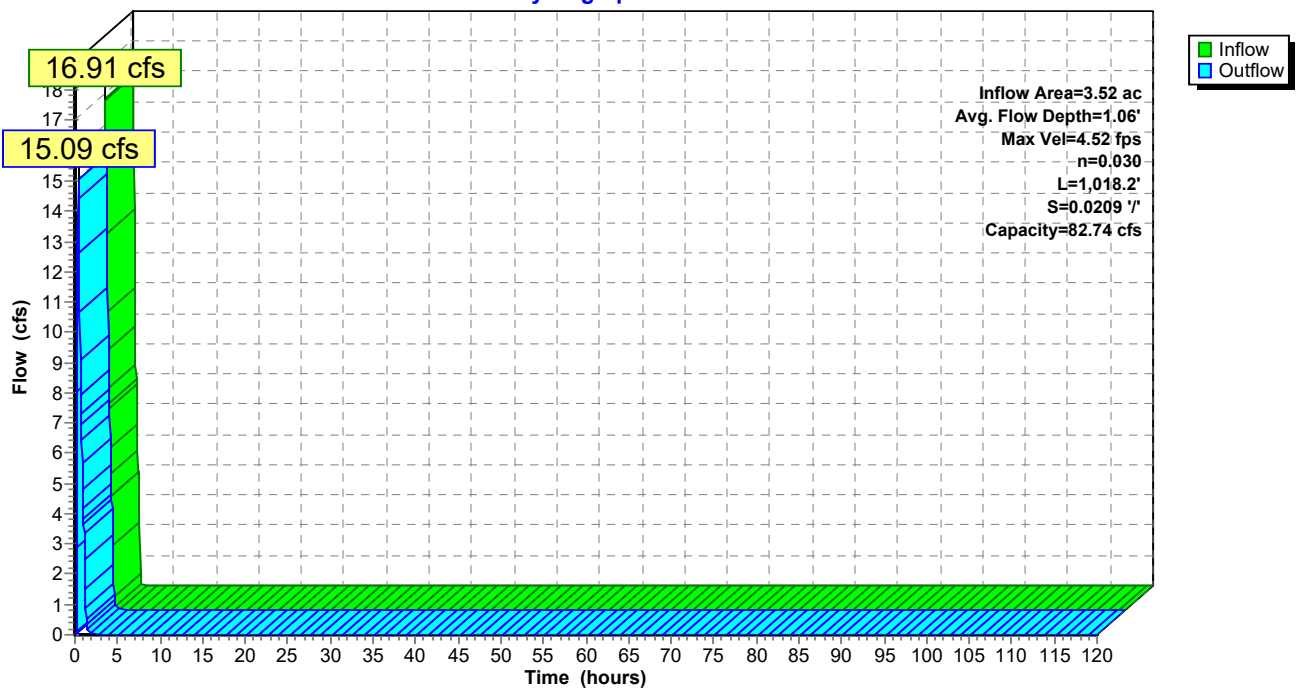
Peak Storage= 3,444 cf @ 0.35 hrs  
 Average Depth at Peak Storage= 1.06'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 82.74 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,018.2' Slope= 0.0209 '/'  
 Inlet Invert= 765.32', Outlet Invert= 744.00'



**Reach TB-N-B8: Terrace Berm N-B8**

Hydrograph



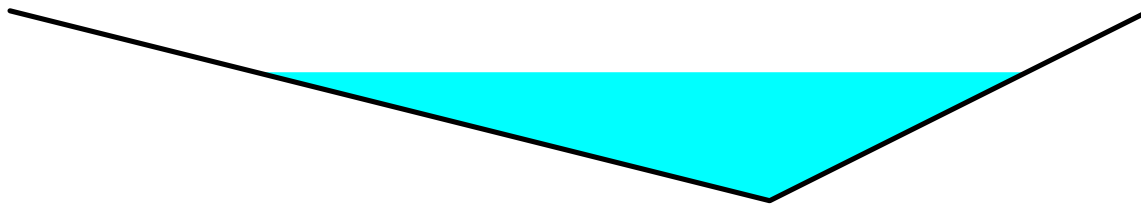
**Summary for Reach TB-N-C1: Terrace Berm N-C1**

Inflow Area = 6.98 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 31.53 cfs @ 0.33 hrs, Volume= 1.203 af  
 Outflow = 28.18 cfs @ 0.47 hrs, Volume= 1.203 af, Atten= 11%, Lag= 8.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 5.19 fps, Min. Travel Time= 4.2 min  
 Avg. Velocity = 1.10 fps, Avg. Travel Time= 20.0 min

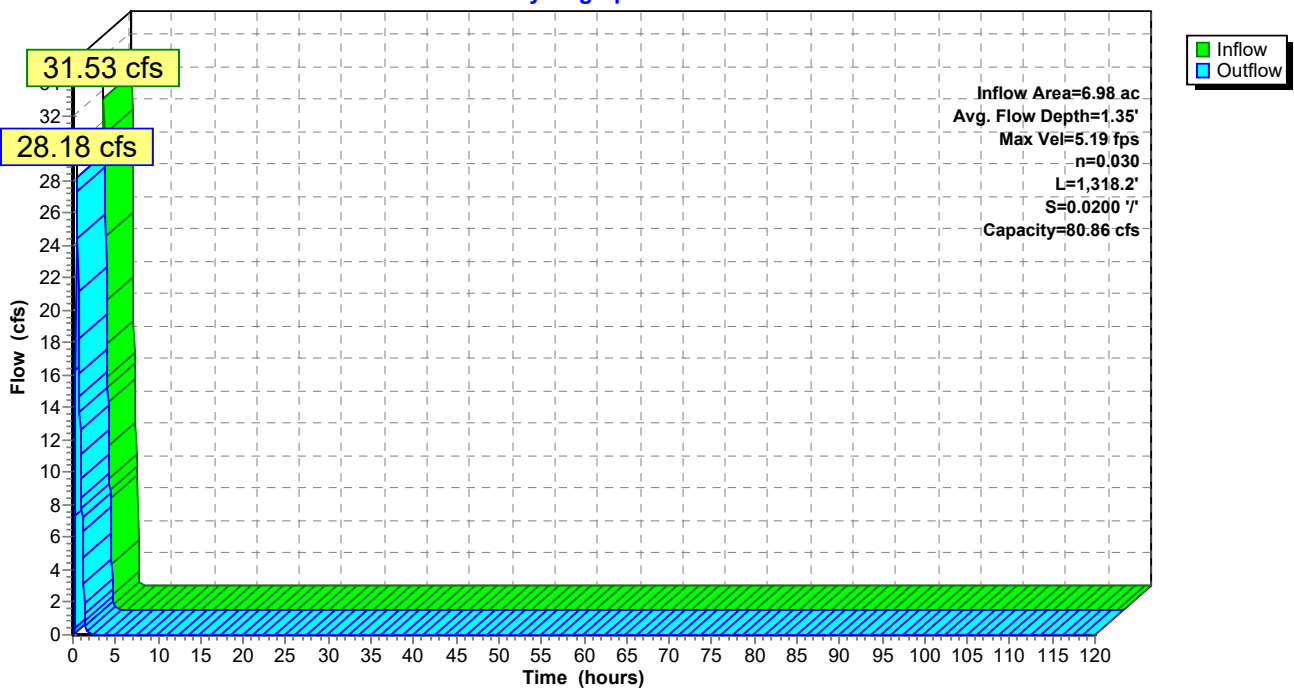
Peak Storage= 7,243 cf @ 0.40 hrs  
 Average Depth at Peak Storage= 1.35'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,318.2' Slope= 0.0200 '/'  
 Inlet Invert= 870.02', Outlet Invert= 843.66'



**Reach TB-N-C1: Terrace Berm N-C1**

Hydrograph



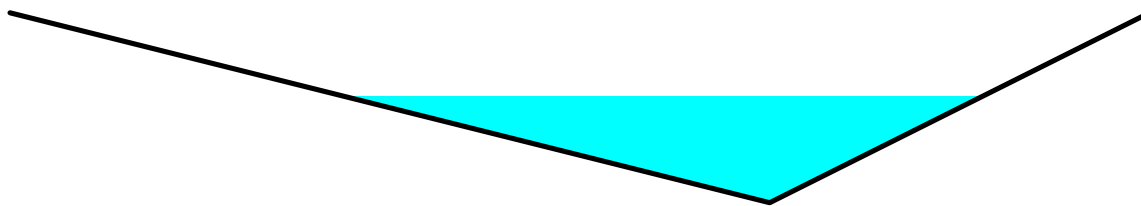
**Summary for Reach TB-N-C2: Terrace Berm N-C2**

Inflow Area = 4.20 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 20.16 cfs @ 0.29 hrs, Volume= 0.723 af  
 Outflow = 17.05 cfs @ 0.45 hrs, Volume= 0.723 af, Atten= 15%, Lag= 9.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.58 fps, Min. Travel Time= 4.8 min  
 Avg. Velocity = 1.01 fps, Avg. Travel Time= 21.8 min

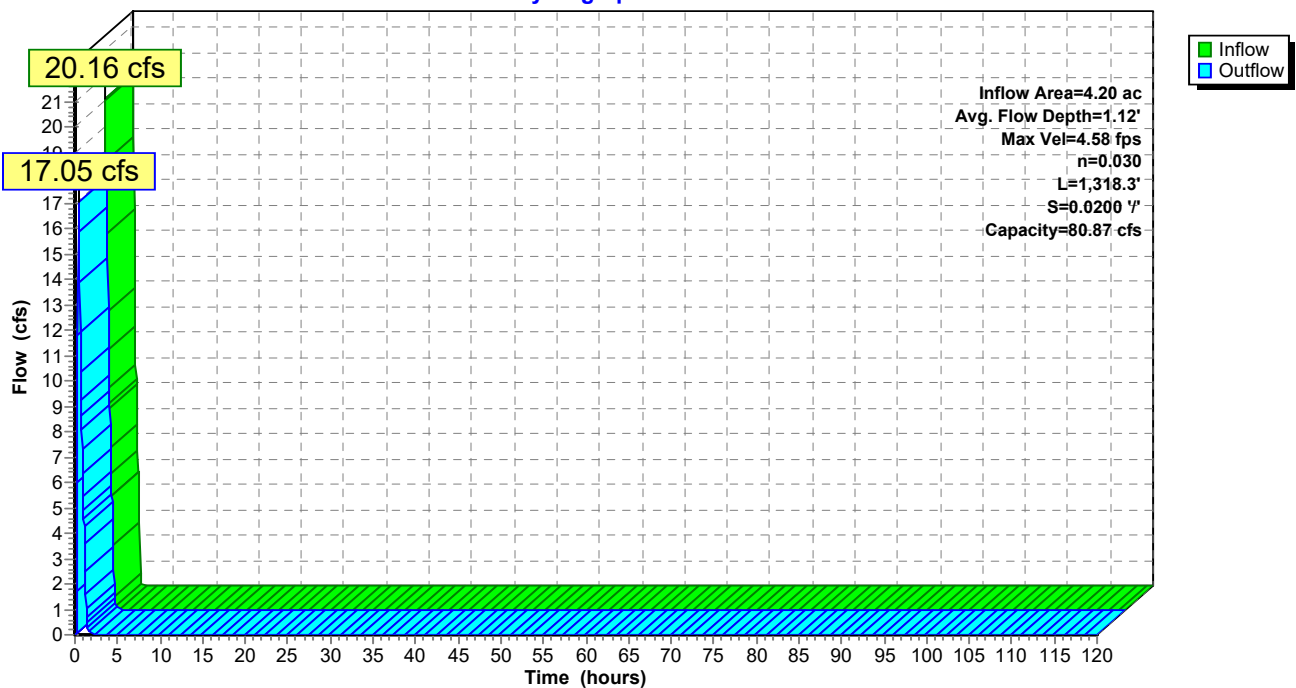
Peak Storage= 5,001 cf @ 0.36 hrs  
 Average Depth at Peak Storage= 1.12'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,318.3' Slope= 0.0200 '/'  
 Inlet Invert= 835.25', Outlet Invert= 808.88'



**Reach TB-N-C2: Terrace Berm N-C2**

Hydrograph





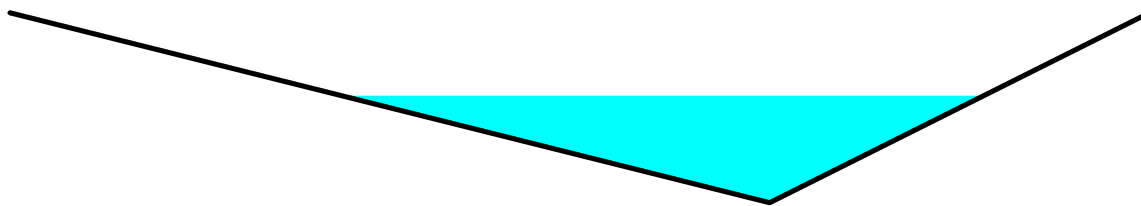
**Summary for Reach TB-N-C3: Terrace Berm N-C3**

Inflow Area = 4.22 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 20.25 cfs @ 0.29 hrs, Volume= 0.727 af  
 Outflow = 17.13 cfs @ 0.45 hrs, Volume= 0.727 af, Atten= 15%, Lag= 9.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.59 fps, Min. Travel Time= 4.8 min  
 Avg. Velocity = 1.01 fps, Avg. Travel Time= 21.8 min

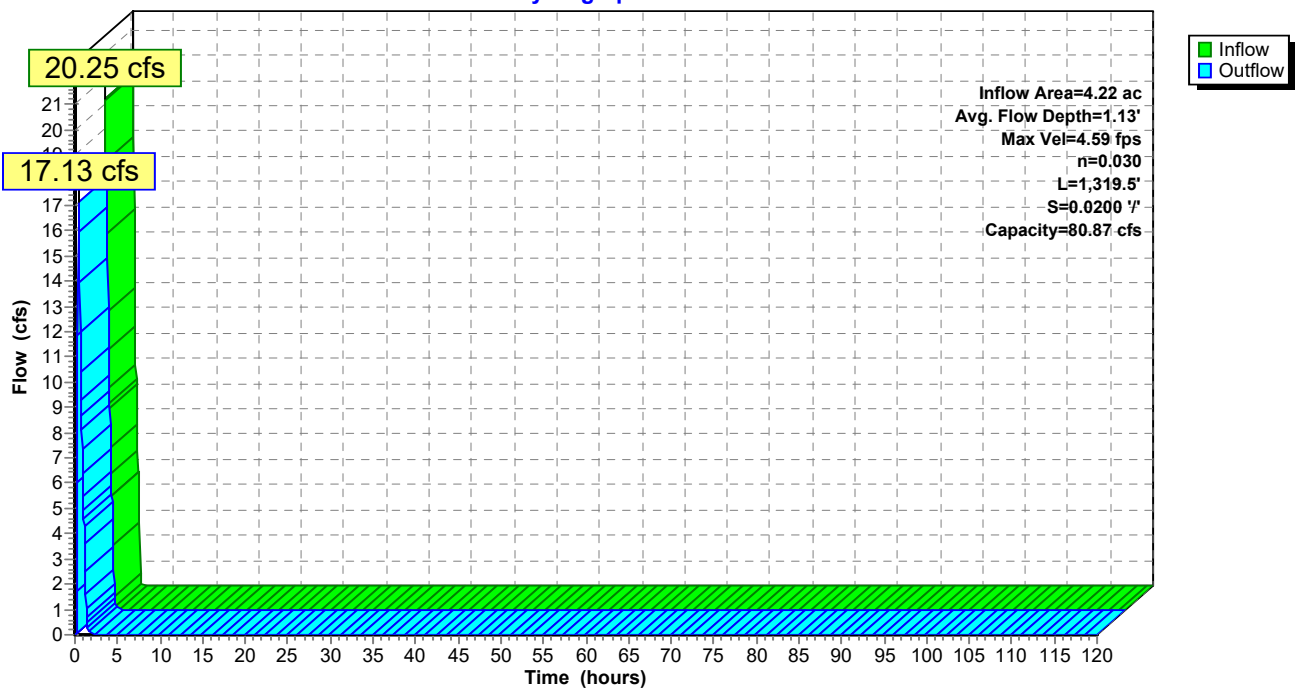
Peak Storage= 5,023 cf @ 0.36 hrs  
 Average Depth at Peak Storage= 1.13'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,319.5' Slope= 0.0200 '/'  
 Inlet Invert= 800.65', Outlet Invert= 774.26'



**Reach TB-N-C3: Terrace Berm N-C3**

Hydrograph



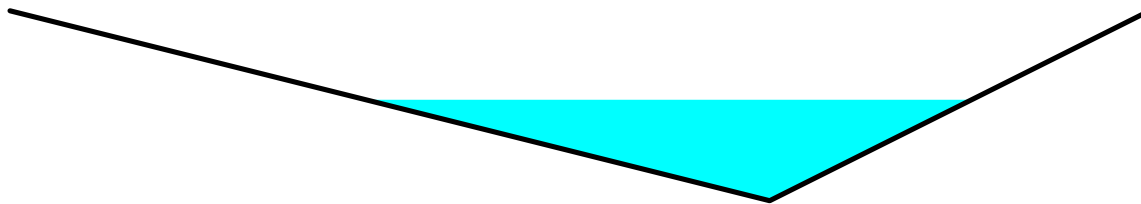
**Summary for Reach TB-N-C4: Terrace Berm N-C4**

Inflow Area = 3.52 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 16.87 cfs @ 0.29 hrs, Volume= 0.605 af  
 Outflow = 14.62 cfs @ 0.43 hrs, Volume= 0.605 af, Atten= 13%, Lag= 7.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.42 fps, Min. Travel Time= 4.1 min  
 Avg. Velocity = 1.05 fps, Avg. Travel Time= 17.4 min

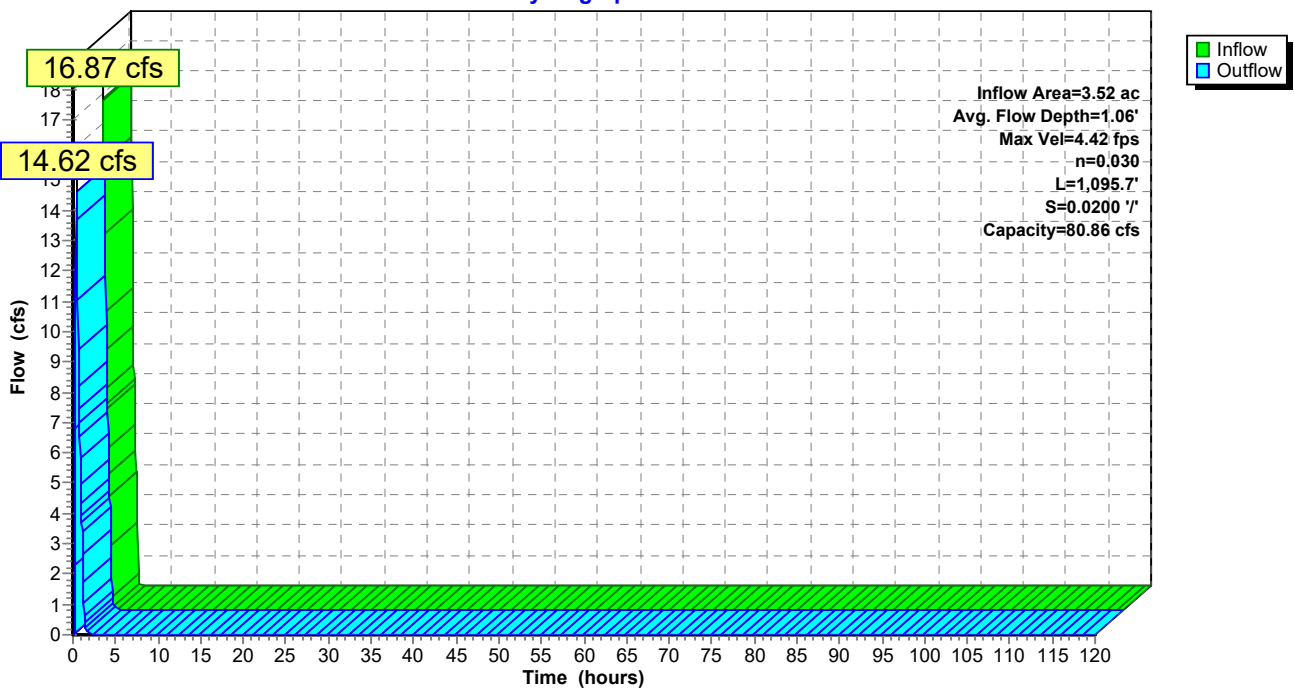
Peak Storage= 3,719 cf @ 0.36 hrs  
 Average Depth at Peak Storage= 1.06'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,095.7' Slope= 0.0200 '/'  
 Inlet Invert= 765.32', Outlet Invert= 743.41'



**Reach TB-N-C4: Terrace Berm N-C4**

Hydrograph



**Summary for Pond Basin 5R: Stormwater Basin 5R**

Inflow Area = 53.03 ac, 15.95% Impervious, Inflow Depth = 2.35" for 100-Year, 1-Hour event  
 Inflow = 166.28 cfs @ 0.52 hrs, Volume= 10.373 af  
 Outflow = 2.03 cfs @ 1.86 hrs, Volume= 8.647 af, Atten= 99%, Lag= 80.1 min  
 Primary = 2.03 cfs @ 1.86 hrs, Volume= 8.647 af  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Starting Elev= 733.50' Surf.Area= 318,821 sf Storage= 1,528,329 cf  
 Peak Elev= 735.13' @ 1.86 hrs Surf.Area= 272,607 sf Storage= 1,967,765 cf (439,436 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= 2,112.3 min ( 2,151.2 - 38.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	726.00'	4,158,336 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
726.00	132,640	0	0
728.00	155,297	287,937	287,937
730.00	179,100	334,397	622,334
731.00	118,479	148,790	771,124
732.00	367,080	242,780	1,013,903
733.50	318,821	514,426	1,528,329
734.00	253,912	143,183	1,671,512
735.00	270,451	262,182	1,933,694
736.00	287,631	279,041	2,212,735
738.00	311,683	599,314	2,812,049
740.00	336,524	648,207	3,460,256
742.00	361,556	698,080	4,158,336

Device	Routing	Invert	Outlet Devices
#1	Primary	733.50'	<b>30.0" Round Culvert</b> L= 100.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 733.50' / 733.20' S= 0.0030 1/1' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf
#2	Device 1	733.50'	<b>4.0" Vert. Lower Orifice X 4.00</b> C= 0.600
#3	Device 1	737.50'	<b>4.0" Vert. Middle Orifice X 4.00</b> C= 0.600
#4	Device 1	738.50'	<b>4.0" Vert. Upper Orifice X 4.00</b> C= 0.600
#5	Device 1	739.00'	<b>30.0" Horiz. Orifice/Grate</b> C= 0.600
#6	Secondary	740.00'	<b>Secondary Spillway, C= 3.27</b> Offset (feet) 0.00 6.00 26.00 32.00 Height (feet) 2.00 0.00 0.00 2.00

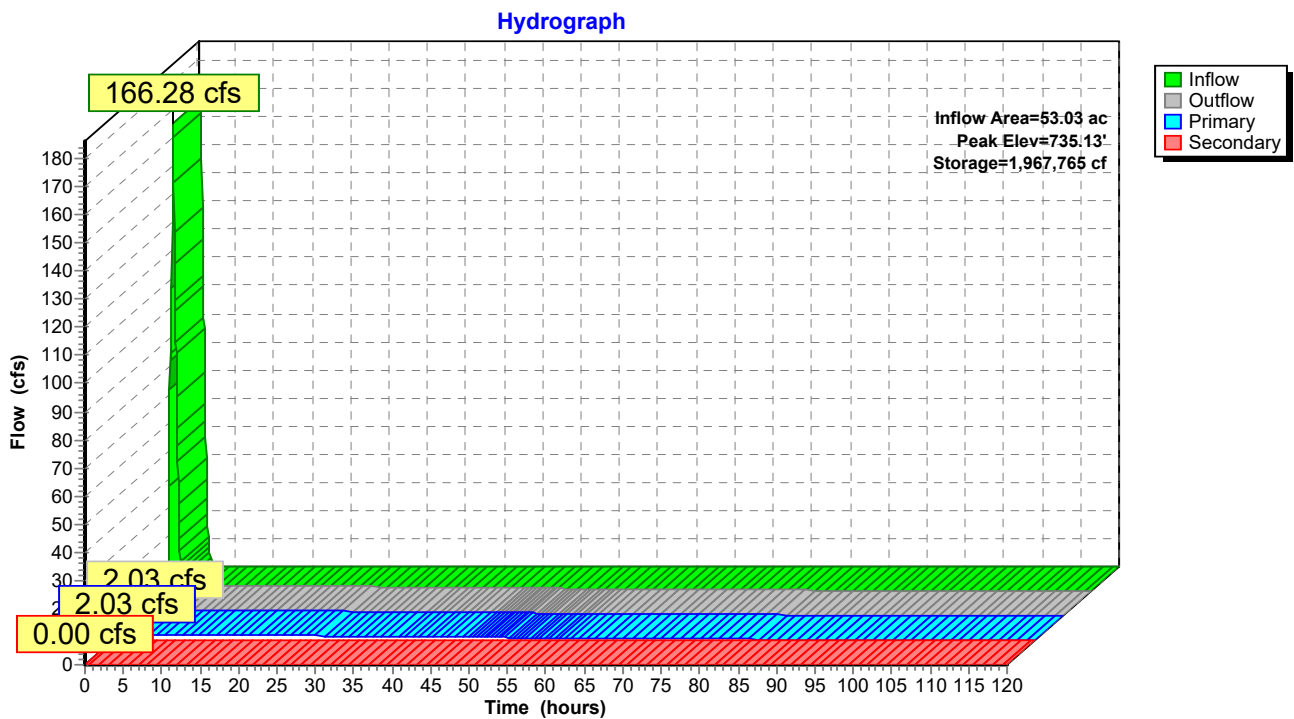
**Primary OutFlow** Max=2.03 cfs @ 1.86 hrs HW=735.13' (Free Discharge)

- 1=Culvert (Passes 2.03 cfs of 7.17 cfs potential flow)
- 2=Lower Orifice (Orifice Controls 2.03 cfs @ 5.82 fps)
- 3=Middle Orifice ( Controls 0.00 cfs)
- 4=Upper Orifice ( Controls 0.00 cfs)
- 5=Orifice/Grate ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=733.50' (Free Discharge)

- 6=Secondary Spillway ( Controls 0.00 cfs)

### Pond Basin 5R: Stormwater Basin 5R



**Summary for Pond Basin 8: Stormwater Basin 8**

Inflow Area = 148.01 ac, 11.19% Impervious, Inflow Depth = 2.27" for 100-Year, 1-Hour event  
 Inflow = 371.64 cfs @ 0.65 hrs, Volume= 27.947 af  
 Outflow = 8.92 cfs @ 2.05 hrs, Volume= 27.385 af, Atten= 98%, Lag= 84.4 min  
 Primary = 8.92 cfs @ 2.05 hrs, Volume= 27.385 af

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Starting Elev= 730.50' Surf.Area= 410,884 sf Storage= 1,593,798 cf  
 Peak Elev= 733.12' @ 2.05 hrs Surf.Area= 476,693 sf Storage= 2,754,201 cf (1,160,403 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= 1,752.4 min ( 1,799.8 - 47.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	726.00'	5,355,472 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
726.00	283,562	0	0
727.50	340,318	467,910	467,910
728.00	351,709	173,007	640,917
730.00	398,761	750,470	1,391,387
730.50	410,884	202,411	1,593,798
732.00	448,114	644,249	2,238,047
733.00	473,655	460,885	2,698,931
734.00	499,775	486,715	3,185,646
736.00	542,314	1,042,089	4,227,735
736.50	553,047	273,840	4,501,575
738.00	585,482	853,897	5,355,472

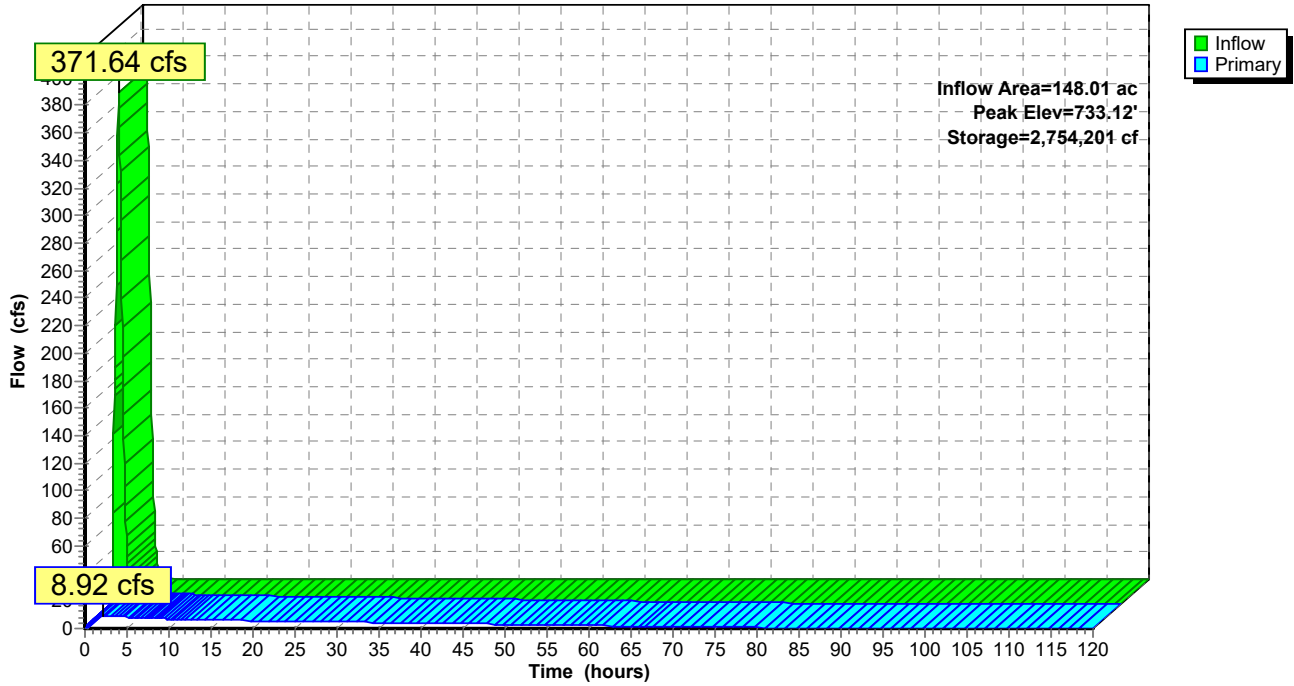
Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	<b>36.0" Round Culvert</b> L= 140.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 727.00' / 725.10' S= 0.0136 1' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Device 1	730.50'	<b>4.0" Vert. 2-yr Orifice X 11.00</b> C= 0.600
#3	Device 1	732.50'	<b>4.0" Vert. 100-yr Orifice X 6.00</b> C= 0.600
#4	Device 1	733.50'	<b>4.0" Vert. 100-yr Orifice X 6.00</b> C= 0.600
#5	Device 1	734.50'	<b>4.0" Vert. 100-yr Orifice X 6.00</b> C= 0.600
#6	Device 1	736.50'	<b>36.0" Horiz. Primary Spillway</b> C= 0.600

**Primary OutFlow** Max=8.92 cfs @ 2.05 hrs HW=733.12' (Free Discharge)

- 1=Culvert (Passes 8.92 cfs of 64.52 cfs potential flow)
- 2=2-yr Orifice (Orifice Controls 7.23 cfs @ 7.54 fps)
- 3=100-yr Orifice (Orifice Controls 1.69 cfs @ 3.23 fps)
- 4=100-yr Orifice ( Controls 0.00 cfs)
- 5=100-yr Orifice ( Controls 0.00 cfs)
- 6=Primary Spillway ( Controls 0.00 cfs)

### Pond Basin 8: Stormwater Basin 8

Hydrograph



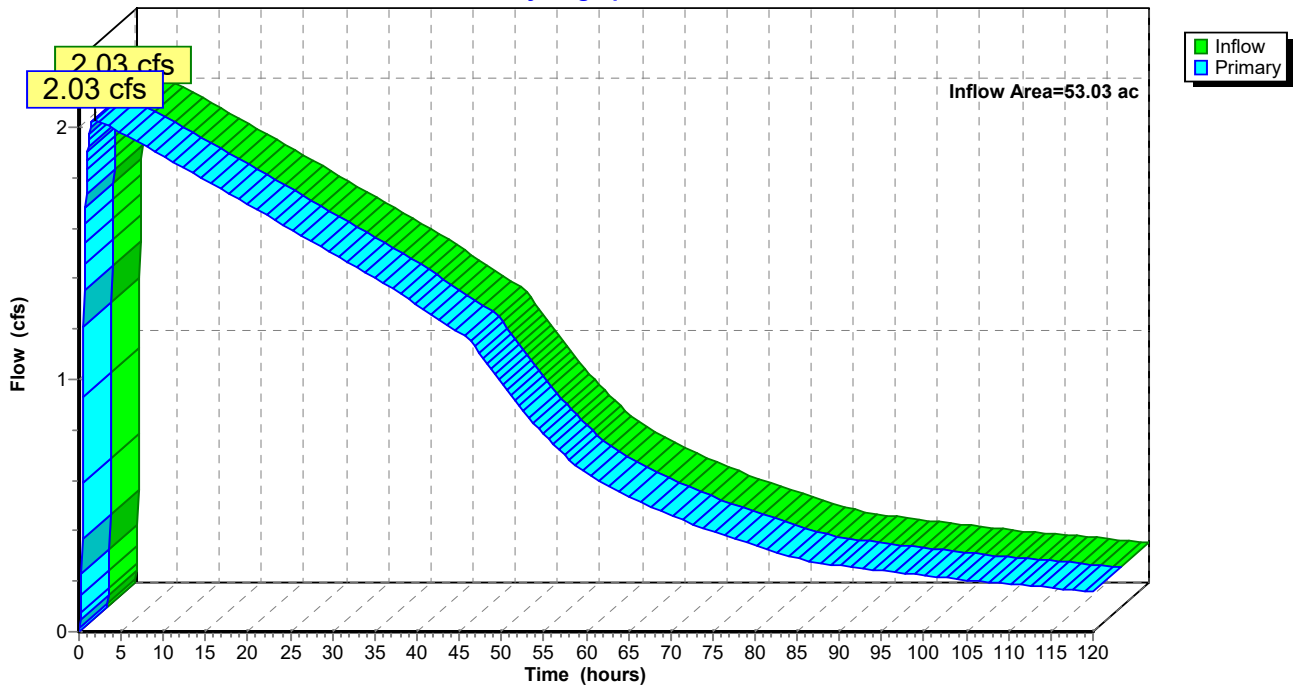
### Summary for Link BS: Bioswale

Inflow Area = 53.03 ac, 15.95% Impervious, Inflow Depth > 1.96" for 100-Year, 1-Hour event  
Inflow = 2.03 cfs @ 1.86 hrs, Volume= 8.647 af  
Primary = 2.03 cfs @ 1.86 hrs, Volume= 8.647 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link BS: Bioswale

Hydrograph

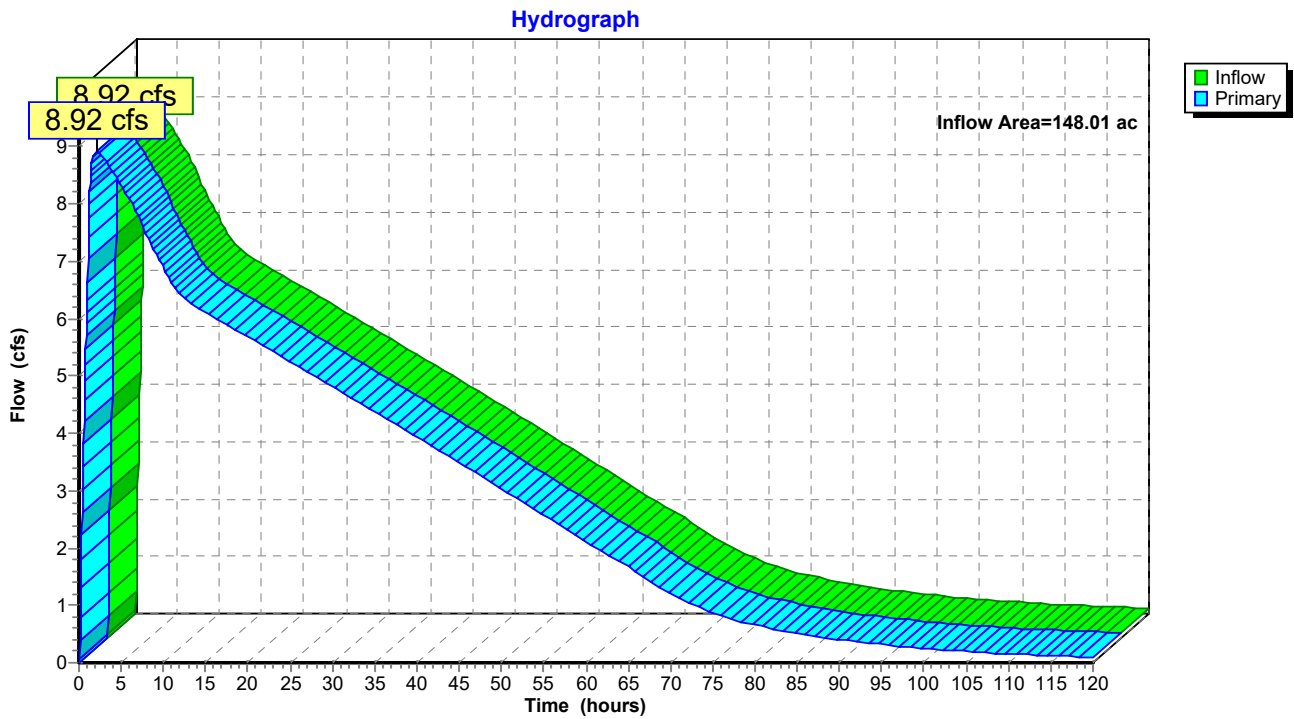


### Summary for Link DD: Offsite to Drainage Ditch

Inflow Area = 148.01 ac, 11.19% Impervious, Inflow Depth > 2.22" for 100-Year, 1-Hour event  
Inflow = 8.92 cfs @ 2.05 hrs, Volume= 27.385 af  
Primary = 8.92 cfs @ 2.05 hrs, Volume= 27.385 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link DD: Offsite to Drainage Ditch



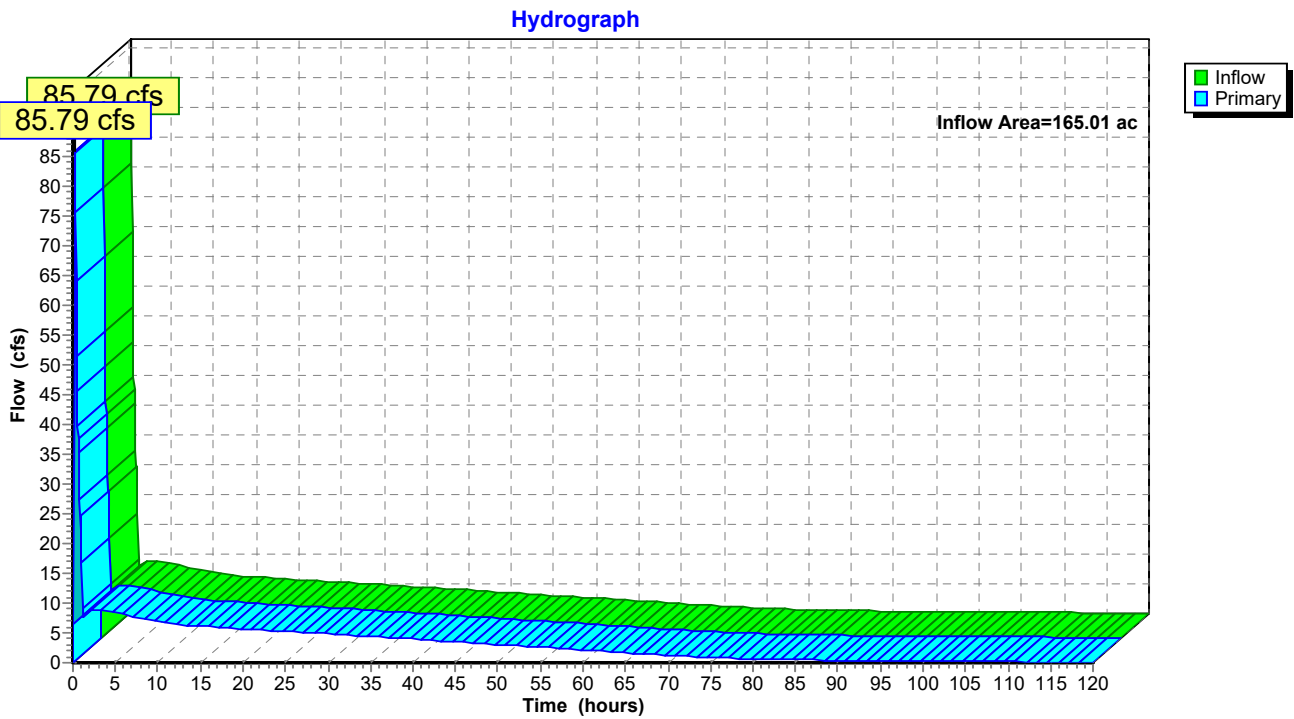


### Summary for Link DPRW: Des Plaines River Watershed

Inflow Area = 165.01 ac, 10.09% Impervious, Inflow Depth > 2.21" for 100-Year, 1-Hour event  
Inflow = 85.79 cfs @ 0.29 hrs, Volume= 30.394 af  
Primary = 85.79 cfs @ 0.29 hrs, Volume= 30.394 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link DPRW: Des Plaines River Watershed

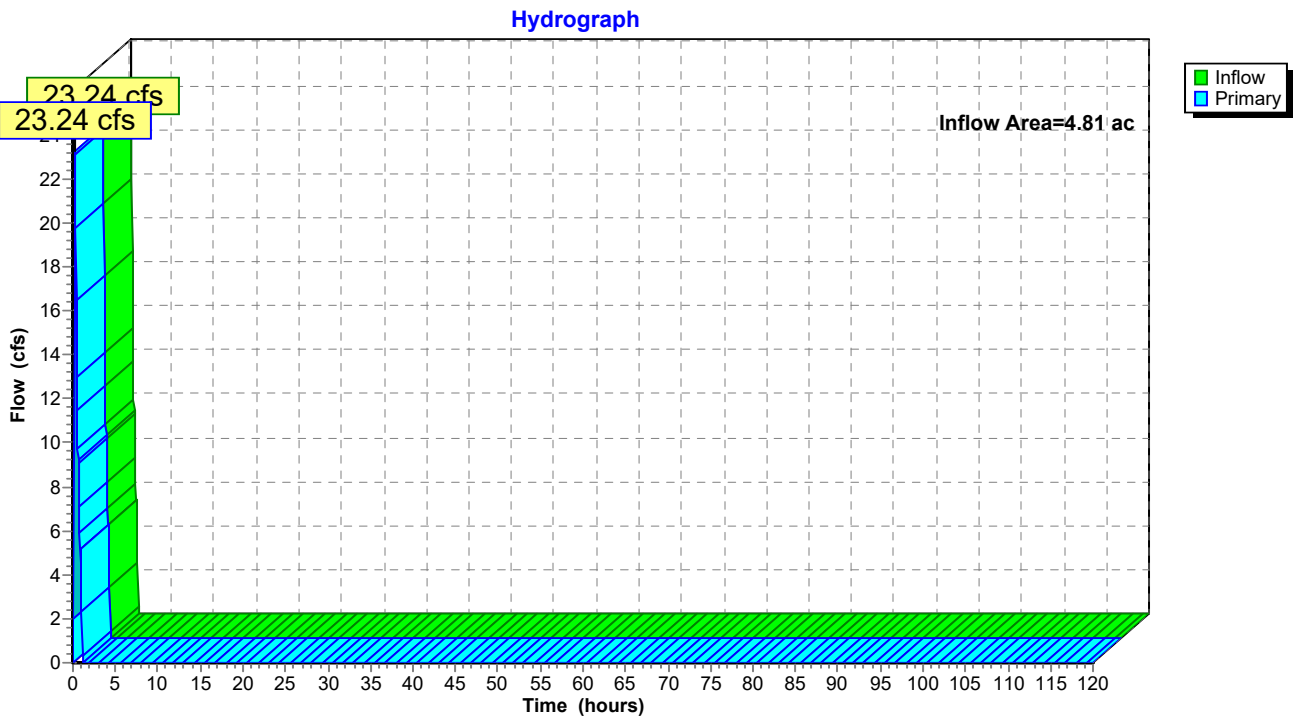


### Summary for Link DPRW-PB: Des Plaines River Watershed - Perimeter Berm

Inflow Area = 4.81 ac, 1.70% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
Inflow = 23.24 cfs @ 0.29 hrs, Volume= 0.829 af  
Primary = 23.24 cfs @ 0.29 hrs, Volume= 0.829 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link DPRW-PB: Des Plaines River Watershed - Perimeter Berm

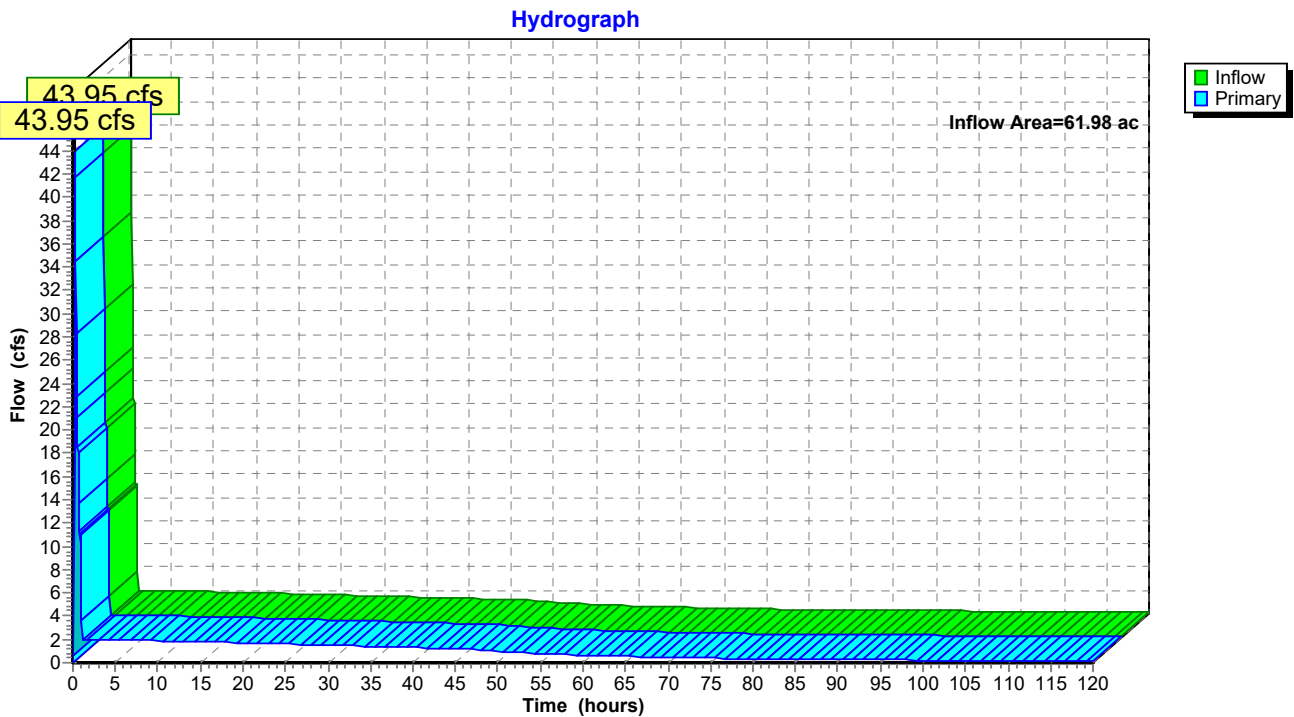


### Summary for Link LMW: Lake Michigan Watershed

Inflow Area = 61.98 ac, 13.64% Impervious, Inflow Depth > 1.97" for 100-Year, 1-Hour event  
Inflow = 43.95 cfs @ 0.26 hrs, Volume= 10.188 af  
Primary = 43.95 cfs @ 0.26 hrs, Volume= 10.188 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link LMW: Lake Michigan Watershed

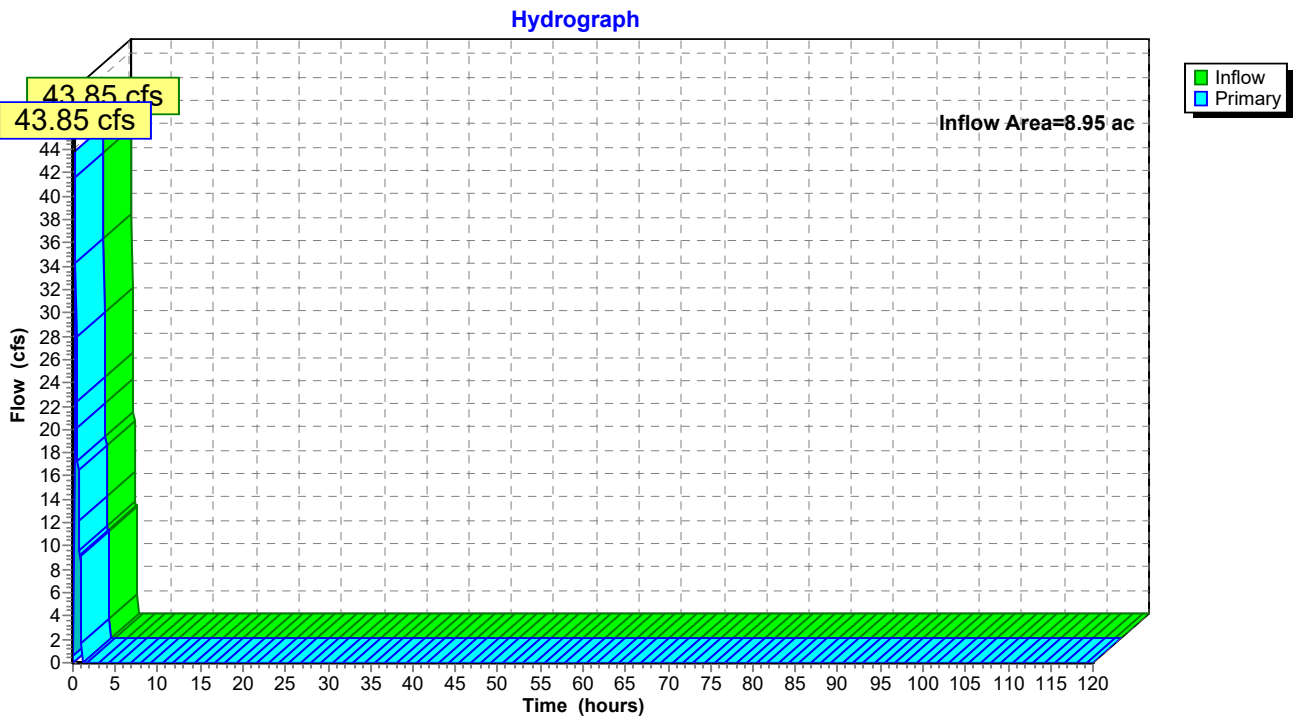


**Summary for Link LMW-PB: Lake Michigan Watershed - Perimeter Berm**

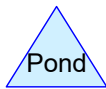
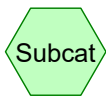
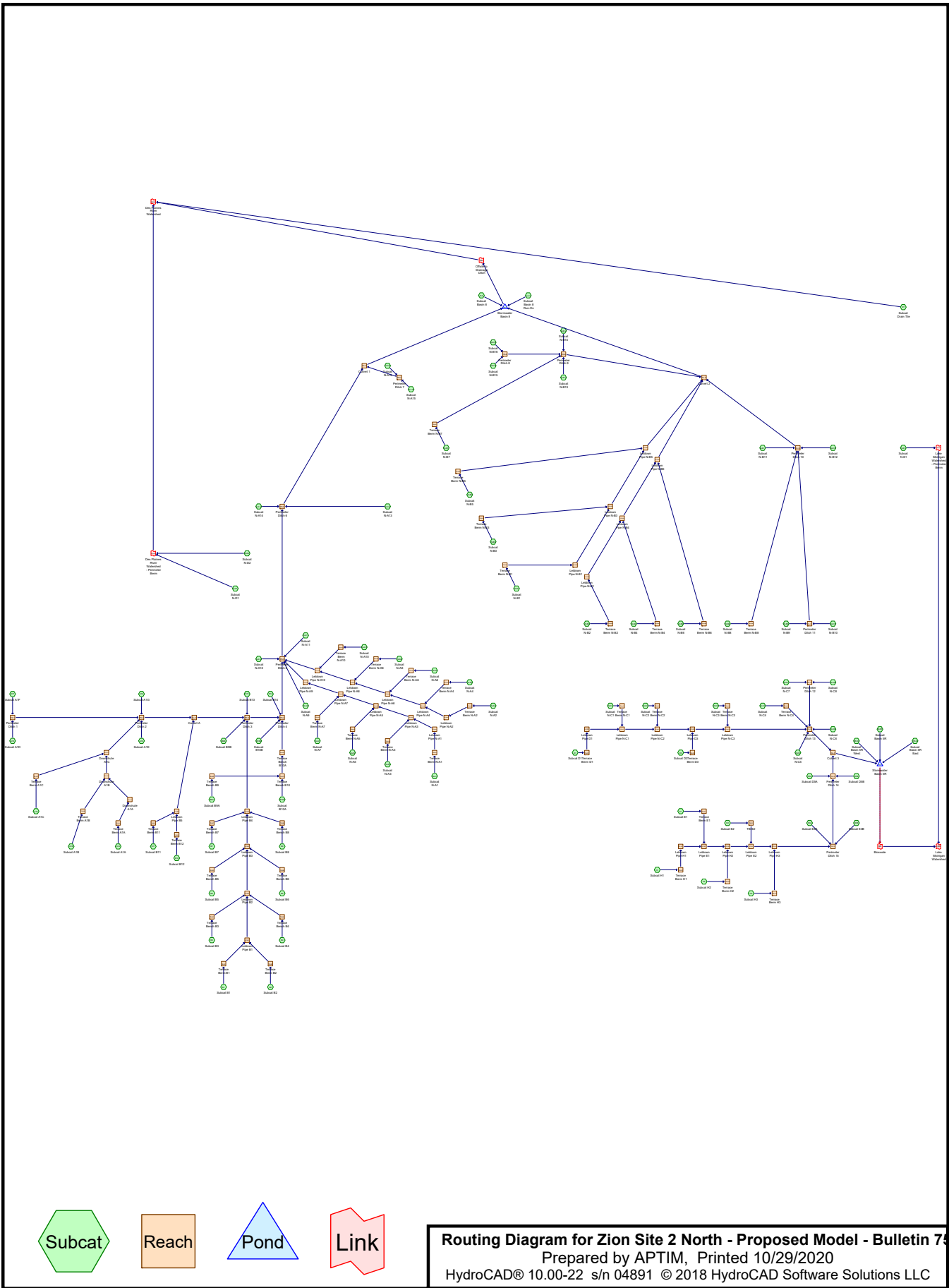
Inflow Area = 8.95 ac, 0.00% Impervious, Inflow Depth = 2.07" for 100-Year, 1-Hour event  
 Inflow = 43.85 cfs @ 0.26 hrs, Volume= 1.542 af  
 Primary = 43.85 cfs @ 0.26 hrs, Volume= 1.542 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

**Link LMW-PB: Lake Michigan Watershed - Perimeter Berm**



HydroCAD Output Files  
**Proposed Conditions – 100-year, 24-hour**



**Routing Diagram for Zion Site 2 North - Proposed Model - Bulletin 75**

Prepared by APTIM, Printed 10/29/2020

HydroCAD® 10.00-22 s/n 04891 © 2018 HydroCAD Software Solutions LLC

**Summary for Subcatchment 5R-E: Subcat Basin 5R East**

Runoff = 1.07 cfs @ 15.62 hrs, Volume= 0.775 af, Depth= 6.16"

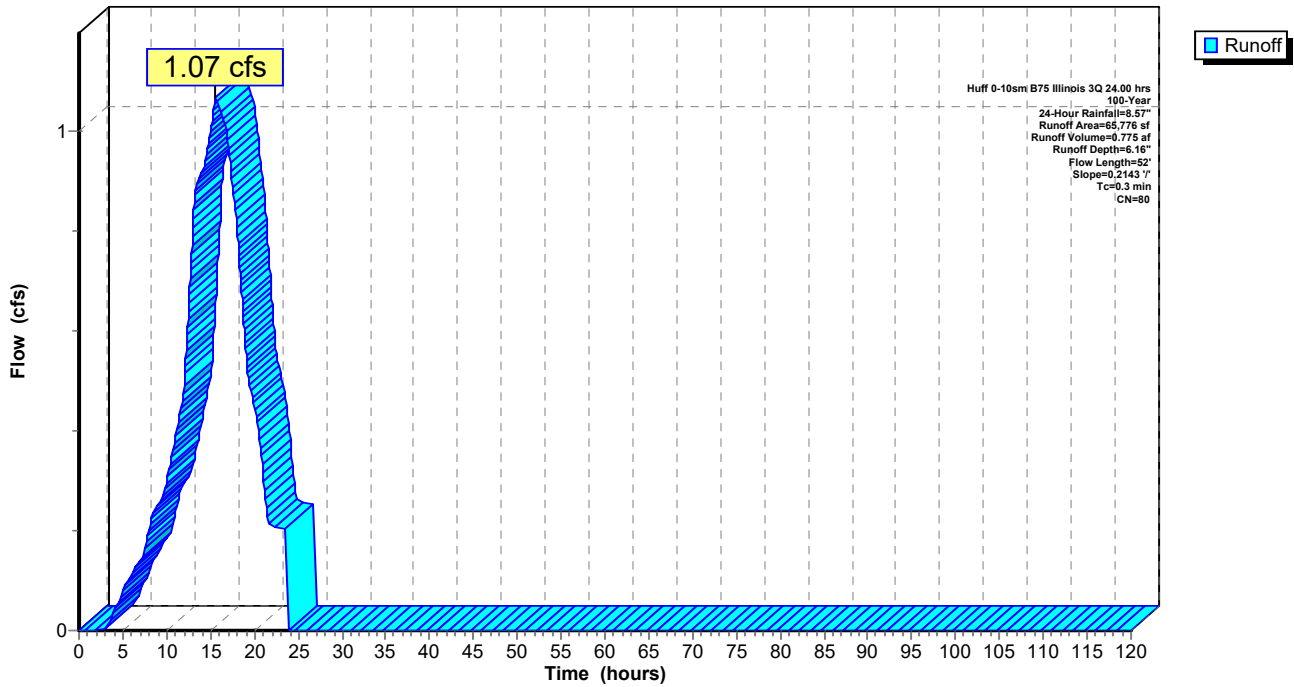
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

Area (sf)	CN	Description
65,776	80	>75% Grass cover, Good, HSG D
65,776		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	52	0.2143	2.92		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment 5R-E: Subcat Basin 5R East**

Hydrograph



**Summary for Subcatchment 5R-W: Subcat Basin 5R West**

Runoff = 0.42 cfs @ 15.61 hrs, Volume= 0.307 af, Depth= 6.16"

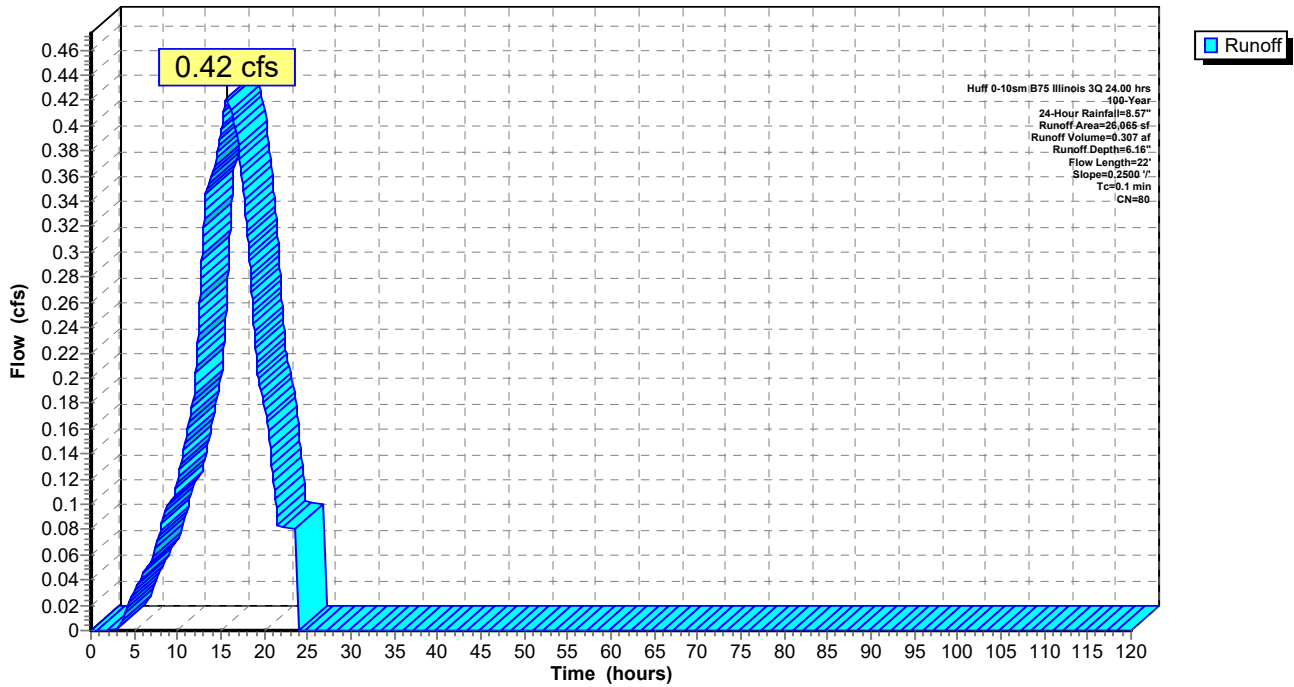
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

Area (sf)	CN	Description
26,065	80	>75% Grass cover, Good, HSG D
26,065		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	22	0.2500	2.61		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment 5R-W: Subcat Basin 5R West**

Hydrograph





**Summary for Subcatchment A1A: Subcat A1A**

Runoff = 4.74 cfs @ 15.83 hrs, Volume= 3.459 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

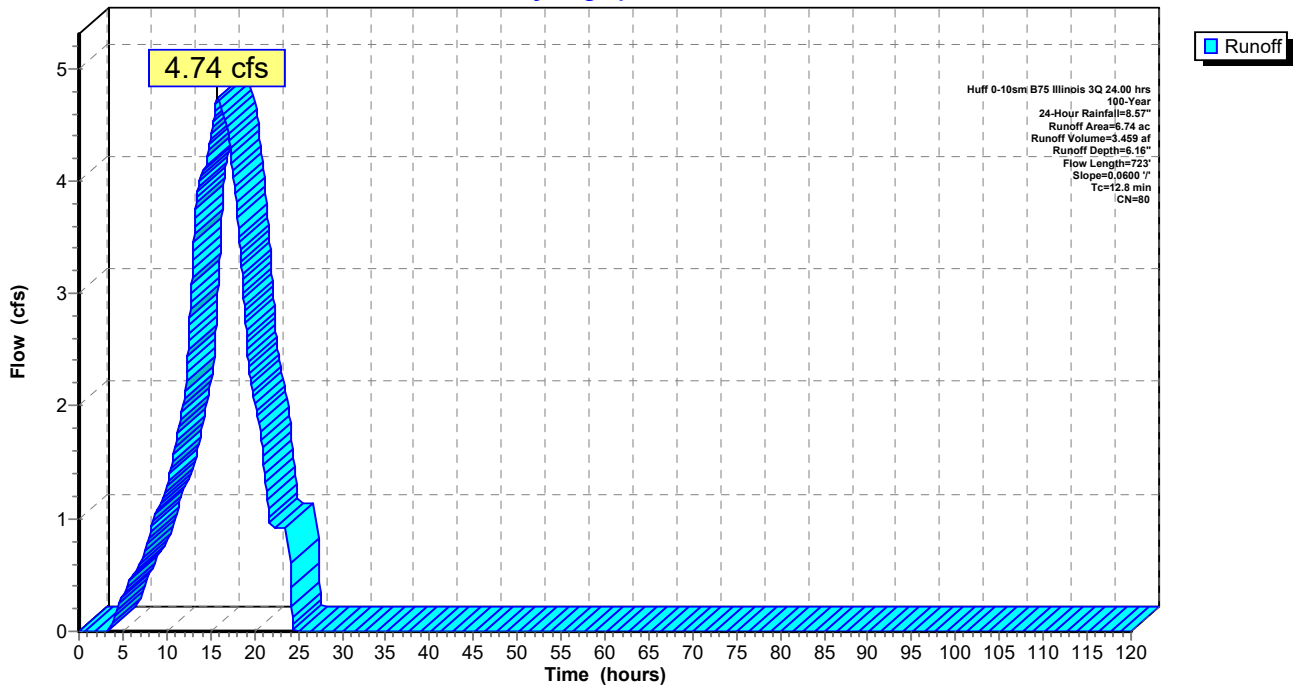
Area (ac)	CN	Description
6.74	80	>75% Grass cover, Good, HSG D
6.74		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	100	0.0600	0.25		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
6.1	623	0.0600	1.71		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
12.8	723	Total			

**Subcatchment A1A: Subcat A1A**

Hydrograph



**Summary for Subcatchment A1B: Subcat A1B**

Runoff = 3.69 cfs @ 15.68 hrs, Volume= 2.684 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

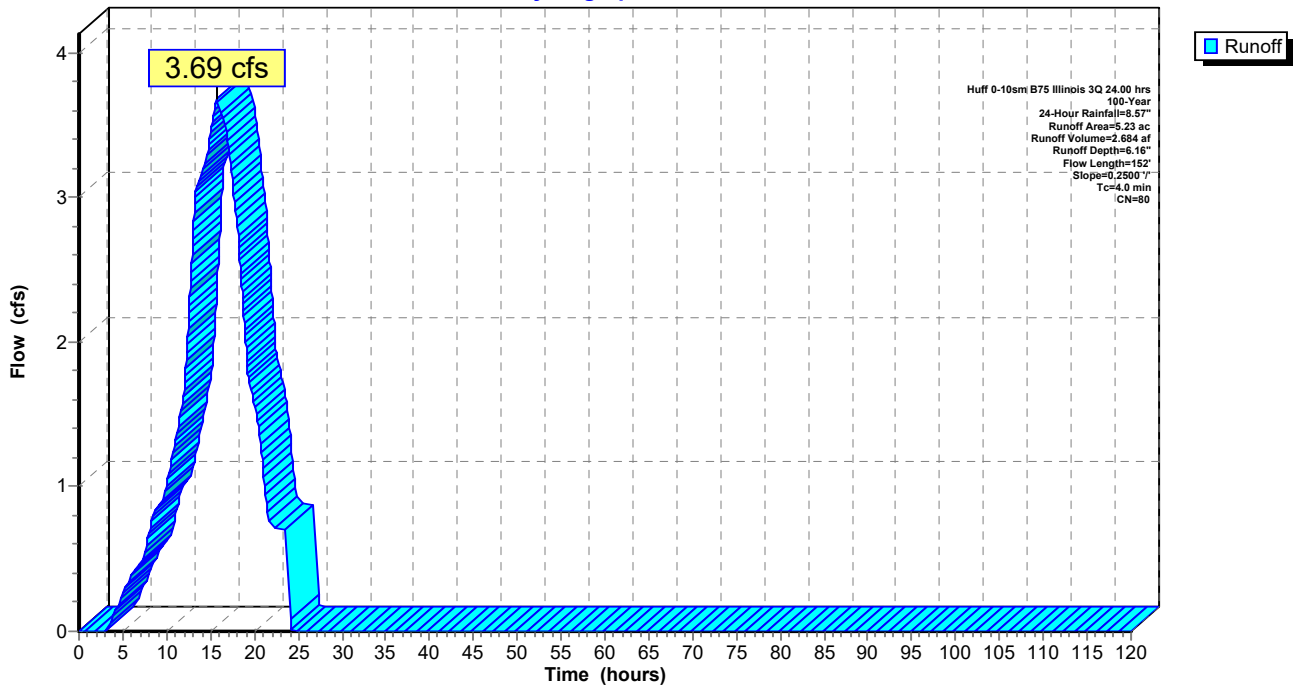
Area (ac)	CN	Description
5.23	80	>75% Grass cover, Good, HSG D
5.23		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	52	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	152	Total			

**Subcatchment A1B: Subcat A1B**

Hydrograph



**Summary for Subcatchment A1C: Subcat A1C**

Runoff = 6.41 cfs @ 16.01 hrs, Volume= 4.704 af, Depth= 6.16"

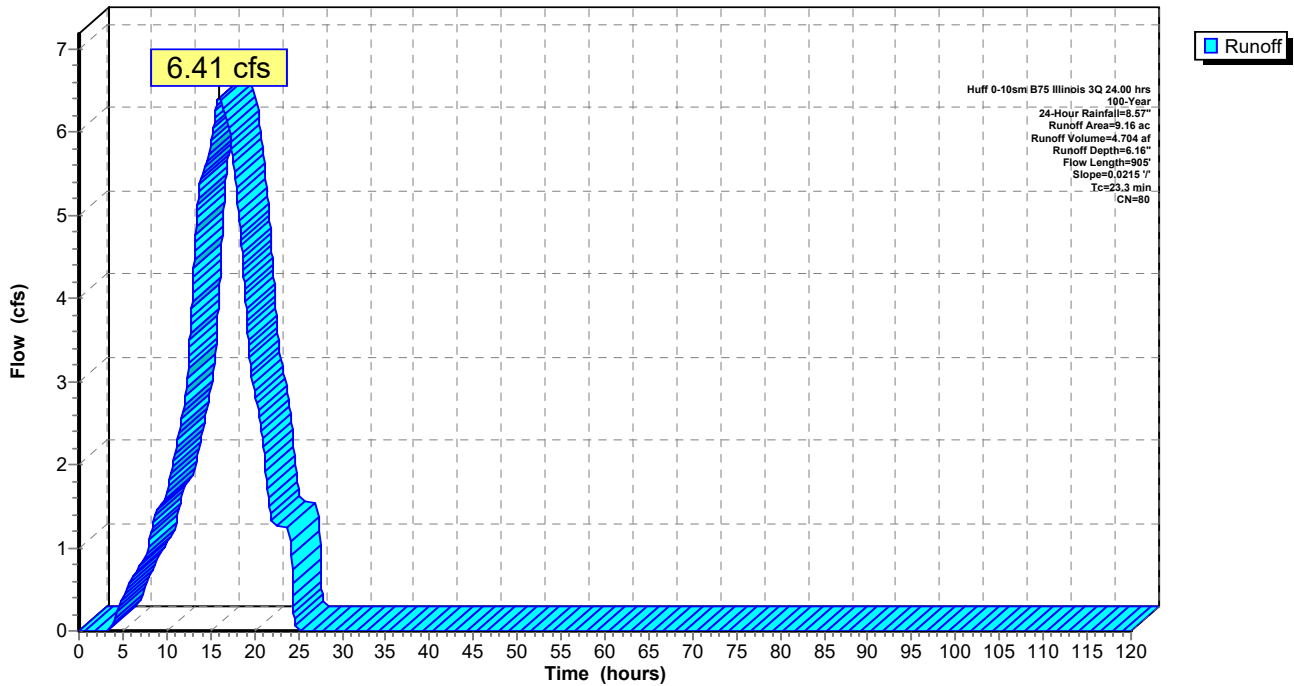
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

Area (ac)	CN	Description
8.89	80	>75% Grass cover, Good, HSG D
0.27	93	Paved roads w/open ditches, 50% imp, HSG D
9.16	80	Weighted Average
9.03		98.52% Pervious Area
0.14		1.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.0215	0.16		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
13.1	805	0.0215	1.03		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
23.3	905	Total			

**Subcatchment A1C: Subcat A1C**

Hydrograph



### Summary for Subcatchment A1D: Subcat A1D

Runoff = 4.98 cfs @ 15.72 hrs, Volume= 3.629 af, Depth= 6.16"

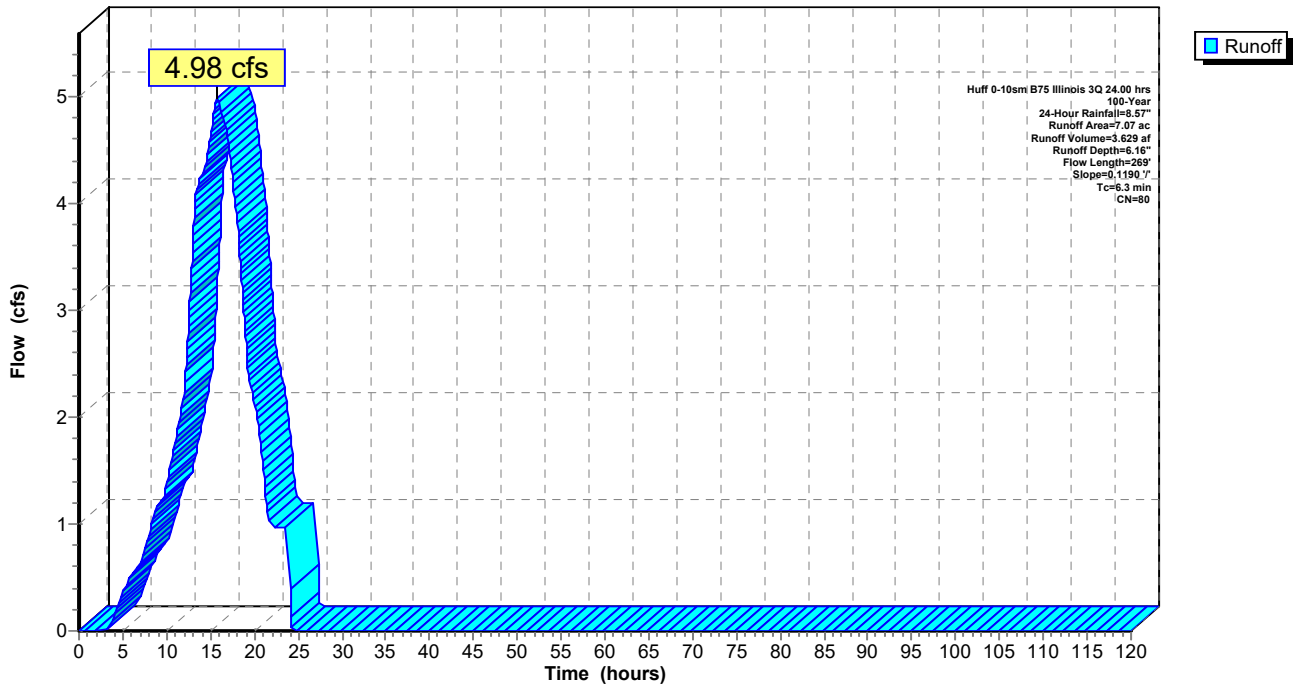
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

Area (ac)	CN	Description
6.97	80	>75% Grass cover, Good, HSG D
0.10	93	Paved roads w/open ditches, 50% imp, HSG D
7.07	80	Weighted Average
7.02		99.31% Pervious Area
0.05		0.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	100	0.1190	0.32		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.2	169	0.1190	2.41		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.3	269	Total			

### Subcatchment A1D: Subcat A1D

Hydrograph



### Summary for Subcatchment A1E: Subcat A1E

Runoff = 0.77 cfs @ 15.70 hrs, Volume= 0.562 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

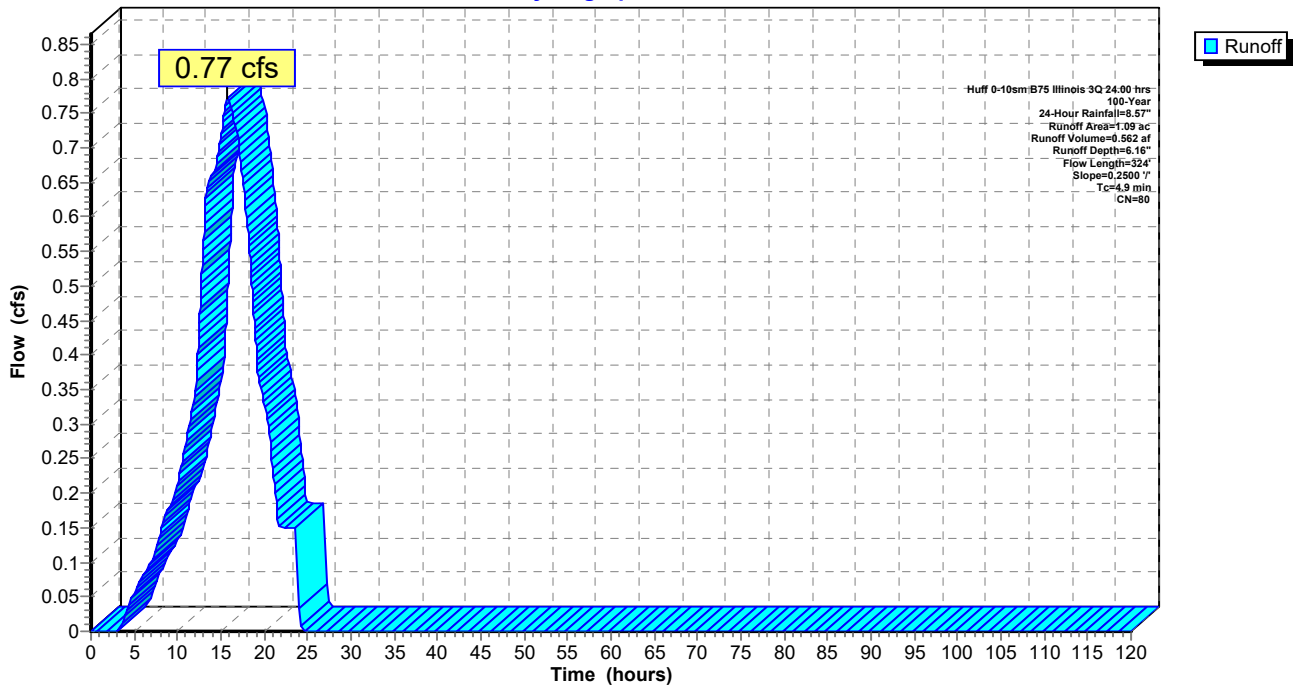
Area (ac)	CN	Description
1.09	80	>75% Grass cover, Good, HSG D
1.09		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.1	224	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.9	324	Total			

### Subcatchment A1E: Subcat A1E

Hydrograph



**Summary for Subcatchment A1F: Subcat A1F**

Runoff = 0.75 cfs @ 15.62 hrs, Volume= 0.586 af, Depth= 7.13"

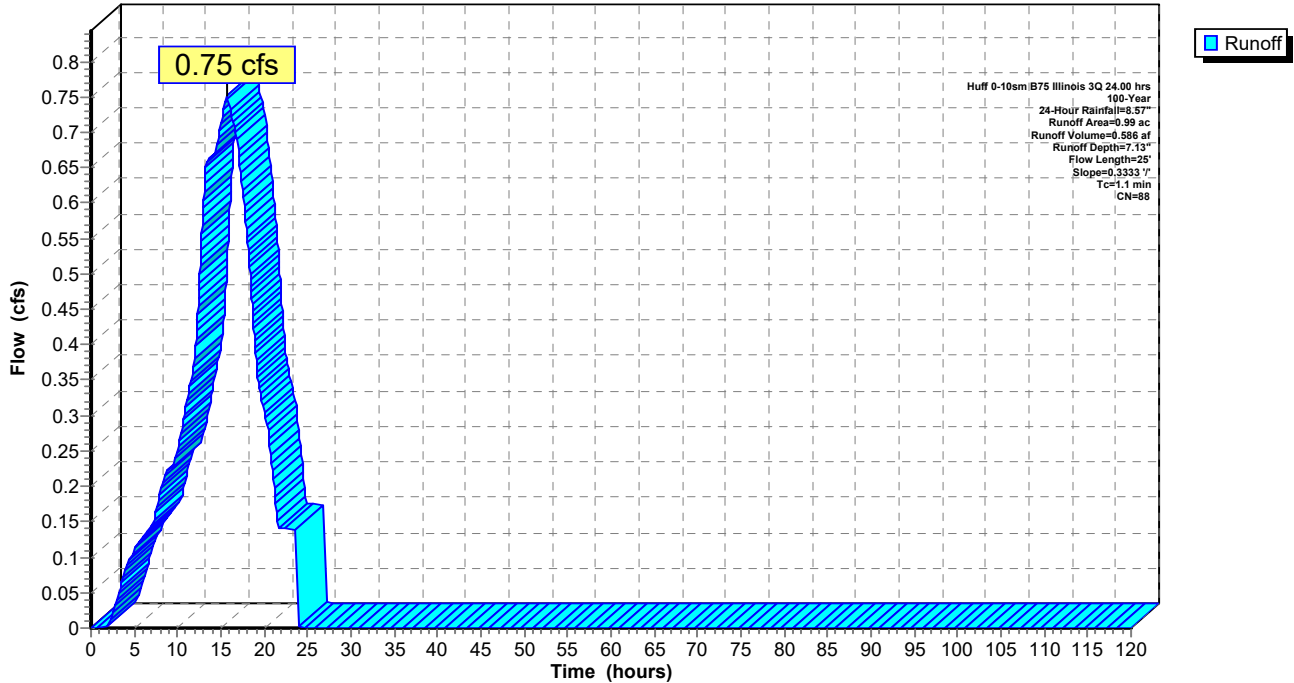
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

Area (ac)	CN	Description
0.36	80	>75% Grass cover, Good, HSG D
0.62	93	Paved roads w/open ditches, 50% imp, HSG D
0.99	88	Weighted Average
0.67		68.34% Pervious Area
0.31		31.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	25	0.3333	0.37		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment A1F: Subcat A1F**

Hydrograph



### Summary for Subcatchment A1G: Subcat A1G

Runoff = 0.14 cfs @ 15.62 hrs, Volume= 0.110 af, Depth= 6.88"

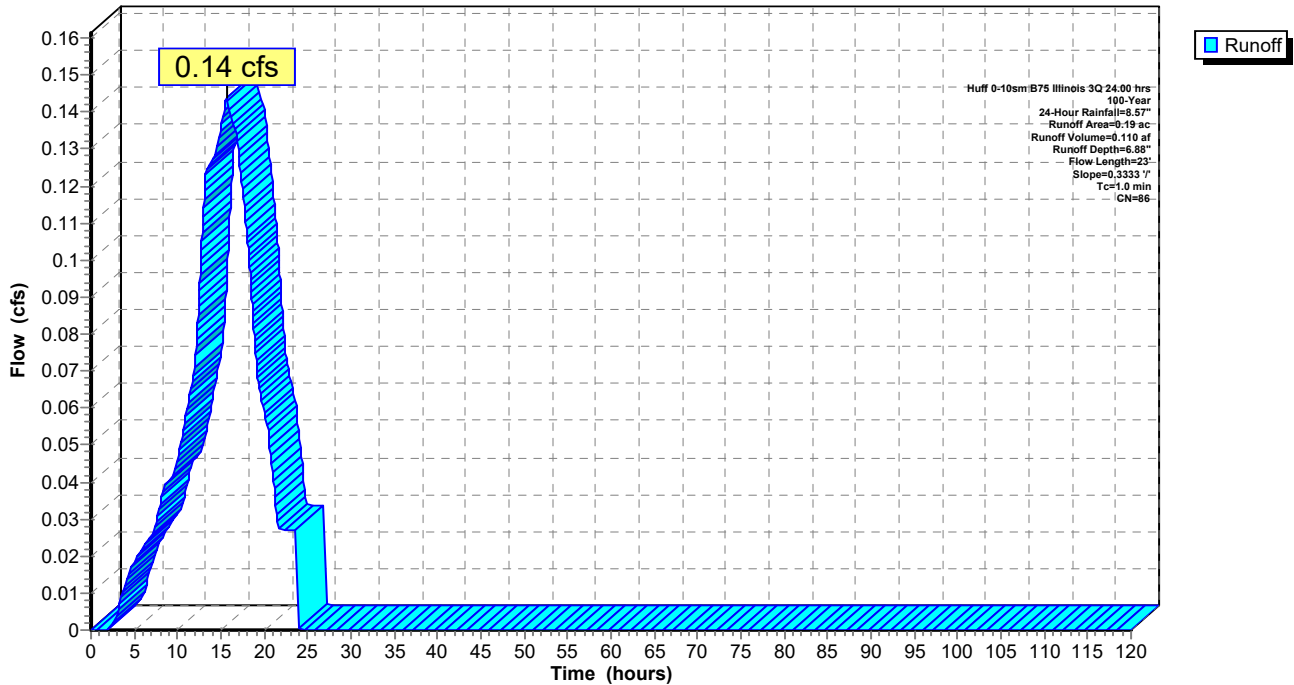
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

Area (ac)	CN	Description
0.11	80	>75% Grass cover, Good, HSG D
0.09	93	Paved roads w/open ditches, 50% imp, HSG D
0.19	86	Weighted Average
0.15		77.34% Pervious Area
0.04		22.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	23	0.3333	0.37		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

### Subcatchment A1G: Subcat A1G

Hydrograph



### Summary for Subcatchment B-5R: Subcat Basin 5R

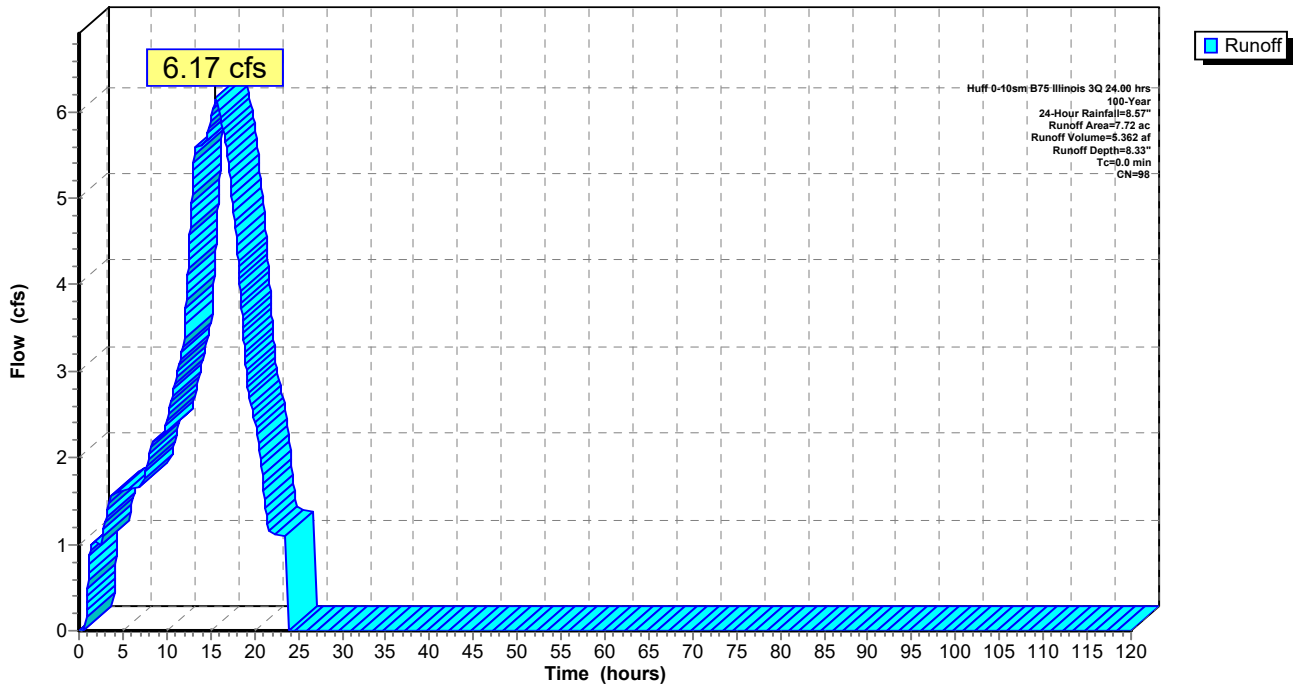
Runoff = 6.17 cfs @ 15.60 hrs, Volume= 5.362 af, Depth= 8.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

Area (ac)	CN	Description
7.72	98	Water Surface, HSG D
7.72		100.00% Impervious Area

### Subcatchment B-5R: Subcat Basin 5R

Hydrograph





### Summary for Subcatchment B-8: Subcat Basin 8

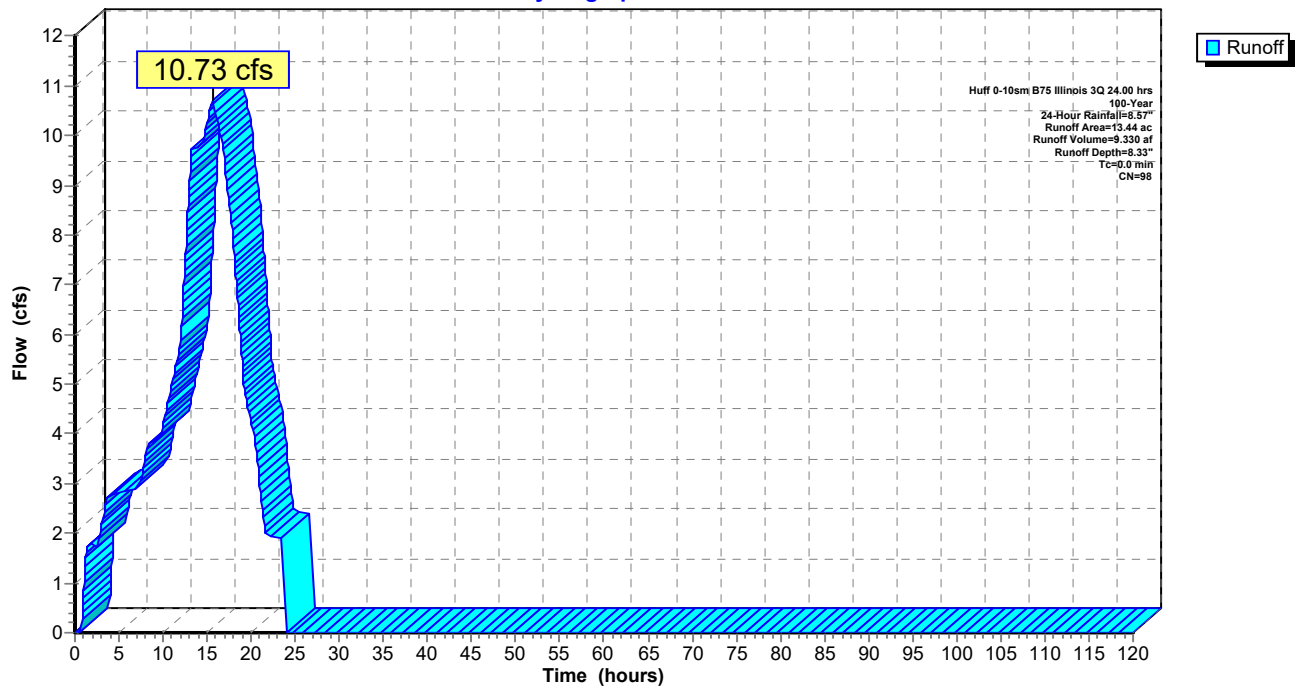
Runoff = 10.73 cfs @ 15.60 hrs, Volume= 9.330 af, Depth= 8.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

Area (ac)	CN	Description
13.44	98	Water Surface, HSG D
13.44		100.00% Impervious Area

### Subcatchment B-8: Subcat Basin 8

Hydrograph



**Summary for Subcatchment B-8-RO: Subcat Basin 8 Run-On**

Runoff = 2.96 cfs @ 15.67 hrs, Volume= 2.188 af, Depth= 6.40"

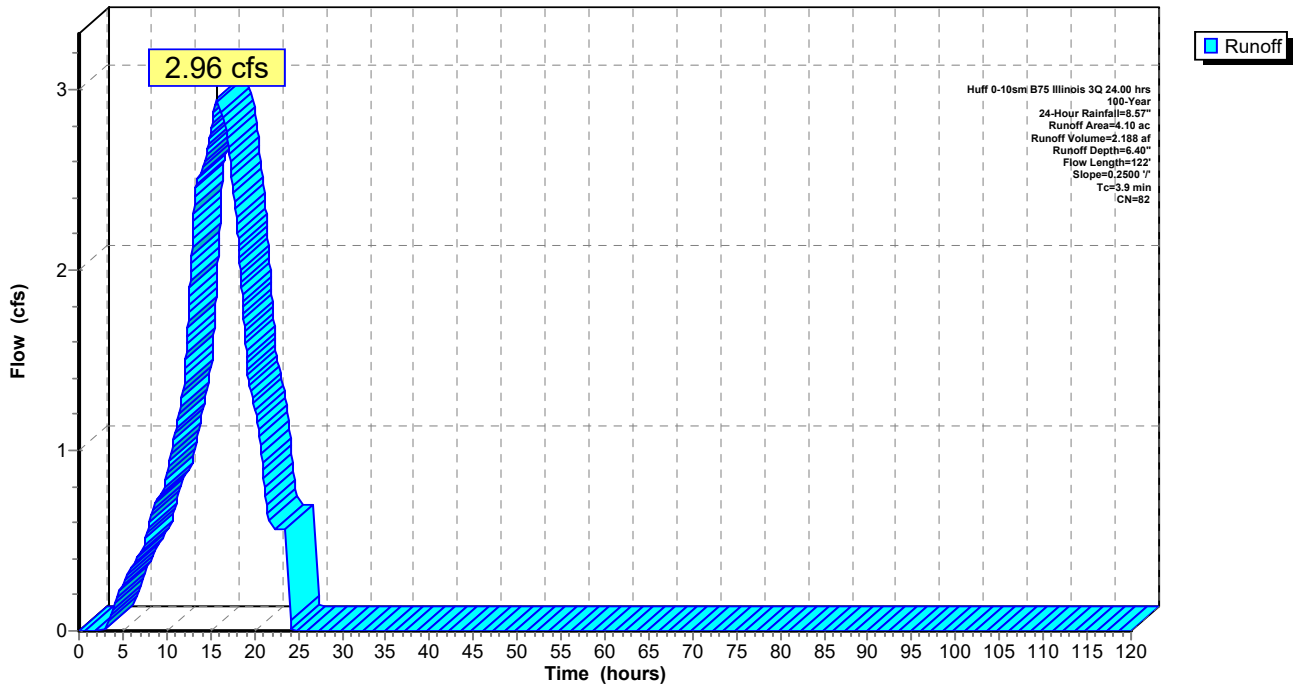
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

Area (ac)	CN	Description
3.50	80	>75% Grass cover, Good, HSG D
0.60	93	Paved roads w/open ditches, 50% imp, HSG D
4.10	82	Weighted Average
3.80		92.68% Pervious Area
0.30		7.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	22	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	122	Total			

**Subcatchment B-8-RO: Subcat Basin 8 Run-On**

Hydrograph



**Summary for Subcatchment B1: Subcat B1**

Runoff = 1.44 cfs @ 15.72 hrs, Volume= 1.047 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

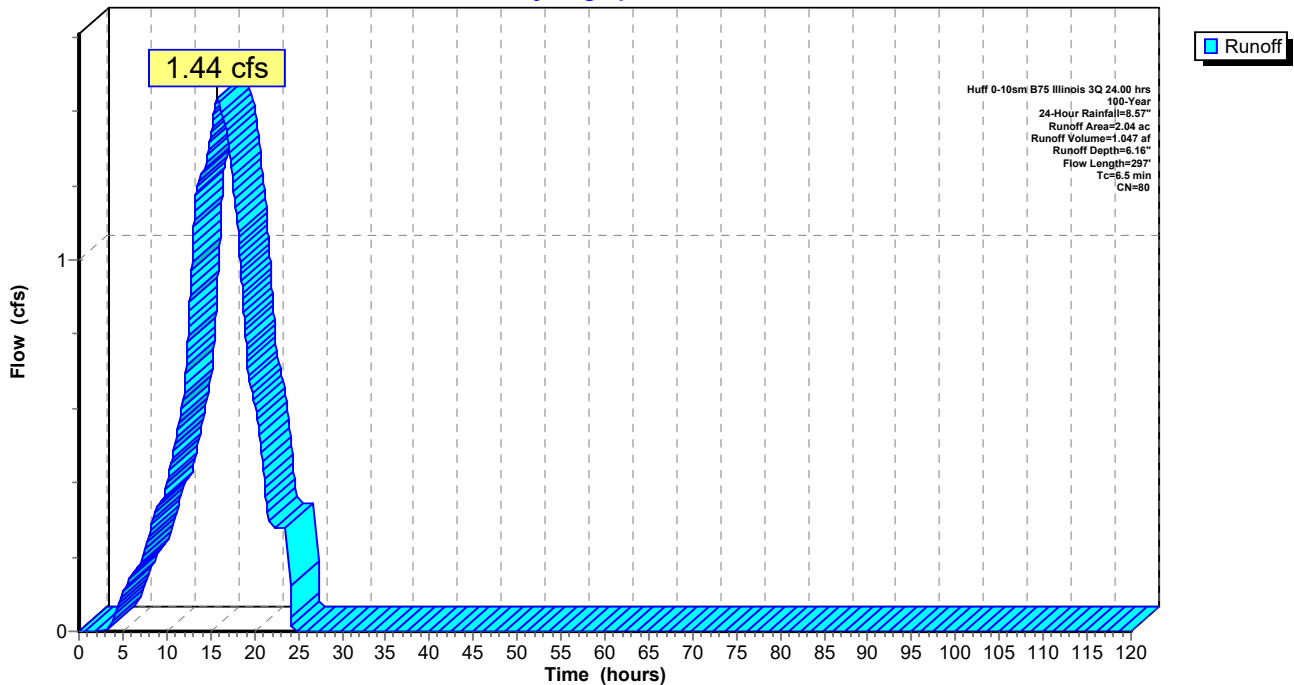
Area (ac)	CN	Description
2.04	80	>75% Grass cover, Good, HSG D
2.04		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.0	197	0.2132	3.23		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.5	297	Total			

**Subcatchment B1: Subcat B1**

Hydrograph



**Summary for Subcatchment B10A: Subcat B10A**

Runoff = 0.57 cfs @ 15.66 hrs, Volume= 0.417 af, Depth= 6.16"

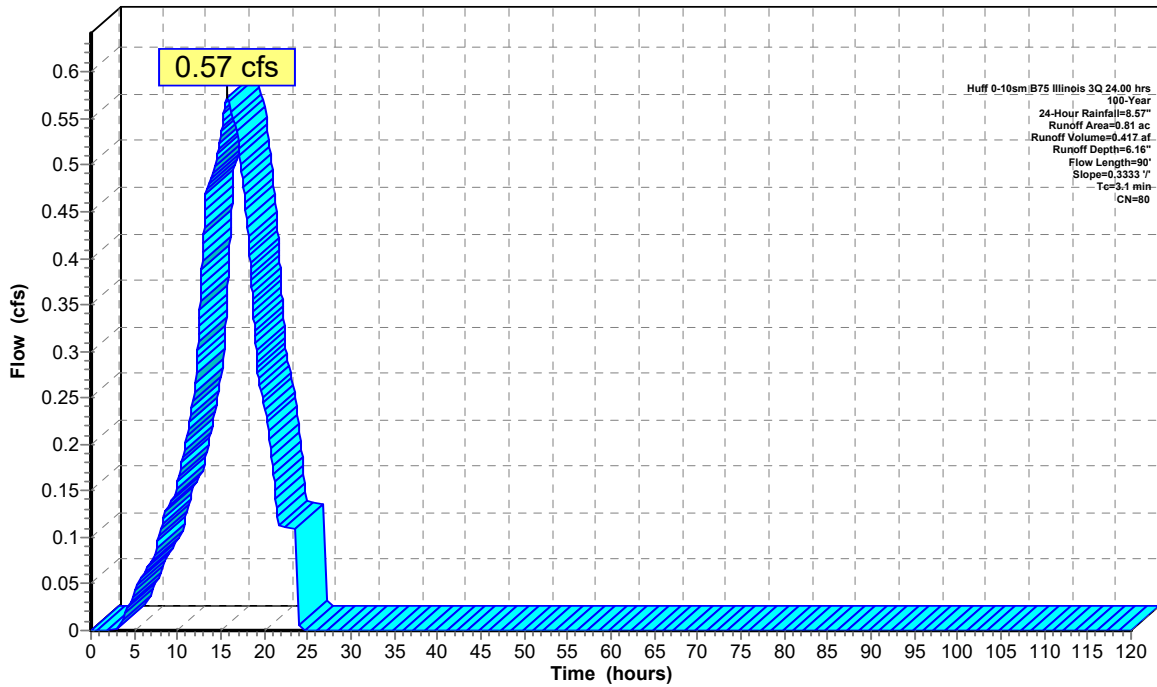
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

Area (ac)	CN	Description
0.81	80	>75% Grass cover, Good, HSG D
0.81		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	90	0.3333	0.48		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B10A: Subcat B10A**

Hydrograph



**Summary for Subcatchment B10B: Subcat B10B**

Runoff = 0.37 cfs @ 15.65 hrs, Volume= 0.273 af, Depth= 6.16"

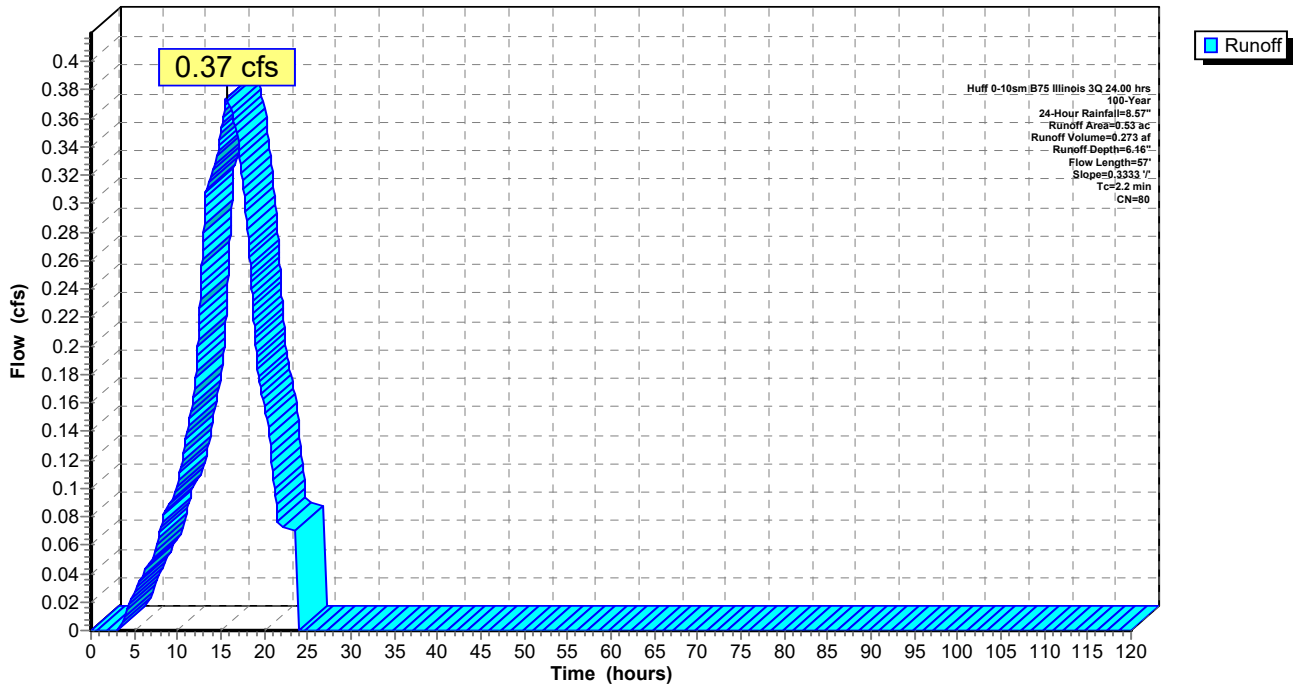
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

Area (ac)	CN	Description
0.53	80	>75% Grass cover, Good, HSG D
0.53		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	57	0.3333	0.44		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B10B: Subcat B10B**

Hydrograph



**Summary for Subcatchment B11: Subcat B11**

Runoff = 1.60 cfs @ 15.83 hrs, Volume= 1.166 af, Depth= 6.16"

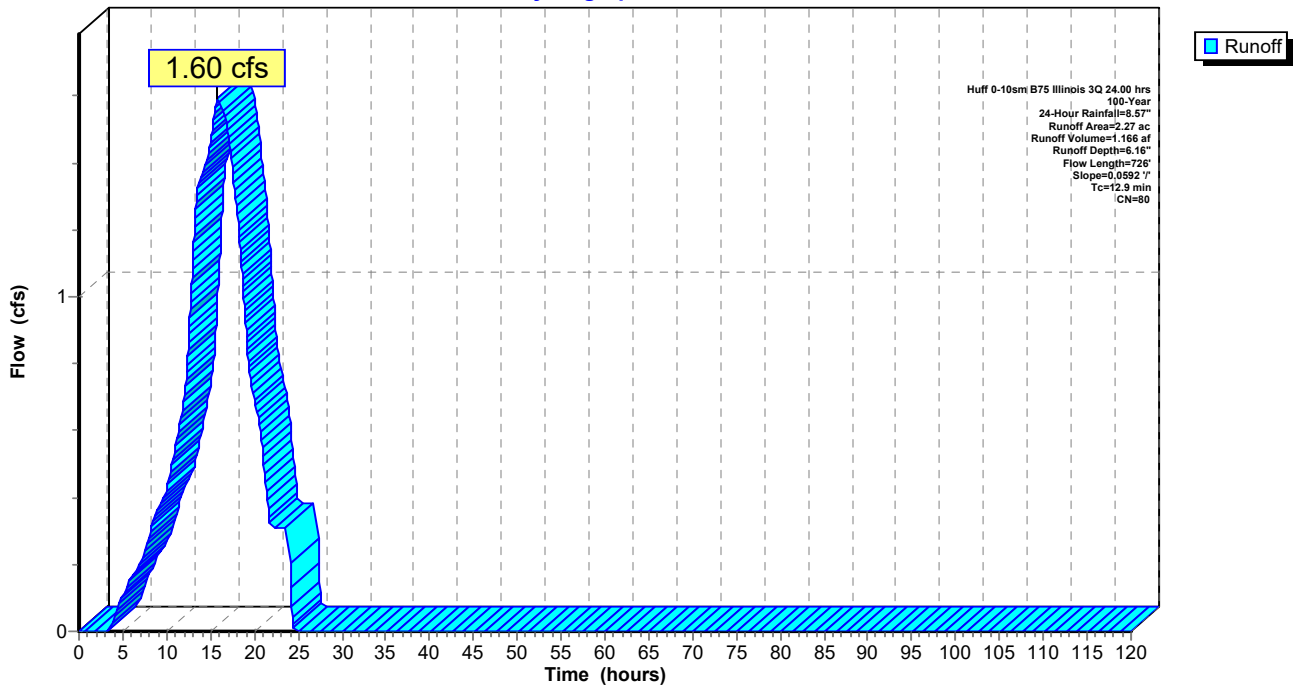
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

Area (ac)	CN	Description
2.27	80	>75% Grass cover, Good, HSG D
2.27		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	100	0.0592	0.25		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
6.1	626	0.0592	1.70		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
12.9	726	Total			

**Subcatchment B11: Subcat B11**

Hydrograph



**Summary for Subcatchment B12: Subcat B12**

Runoff = 0.85 cfs @ 15.68 hrs, Volume= 0.617 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

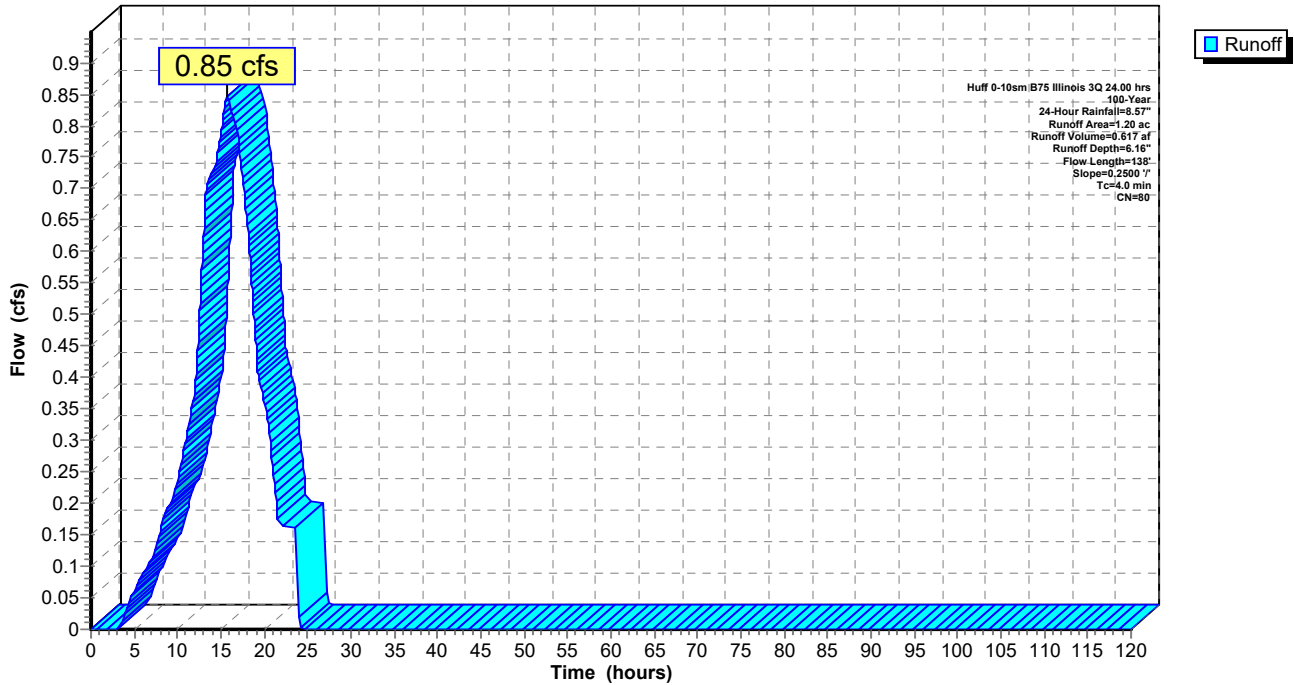
Area (ac)	CN	Description
1.20	80	>75% Grass cover, Good, HSG D
1.20		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	38	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	138	Total			

**Subcatchment B12: Subcat B12**

Hydrograph



### Summary for Subcatchment B13: Subcat B13

Runoff = 0.24 cfs @ 15.62 hrs, Volume= 0.185 af, Depth= 6.88"

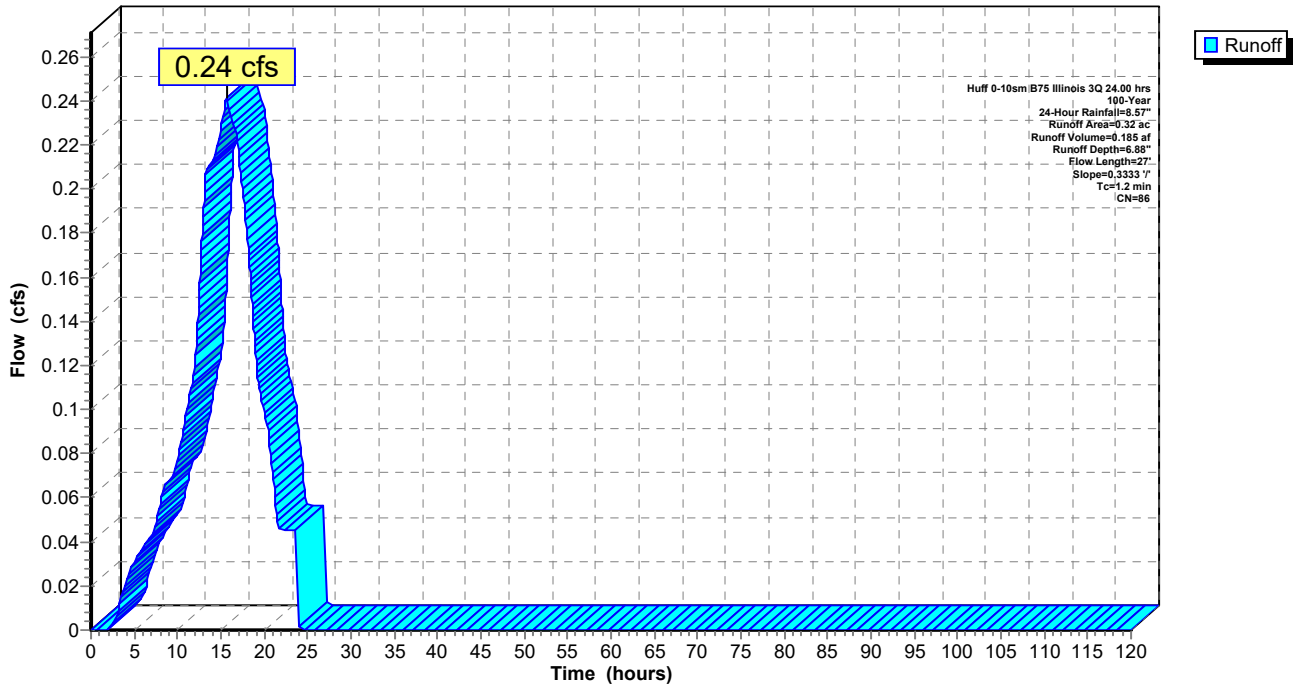
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

Area (ac)	CN	Description
0.17	80	>75% Grass cover, Good, HSG D
* 0.15	93	Paved roads w/open ditches, 50% imp, HSG D
0.32	86	Weighted Average
0.24		75.93% Pervious Area
0.08		24.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	27	0.3333	0.38		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

### Subcatchment B13: Subcat B13

Hydrograph





### Summary for Subcatchment B14: Subcat B14

Runoff = 0.20 cfs @ 15.66 hrs, Volume= 0.154 af, Depth= 6.88"

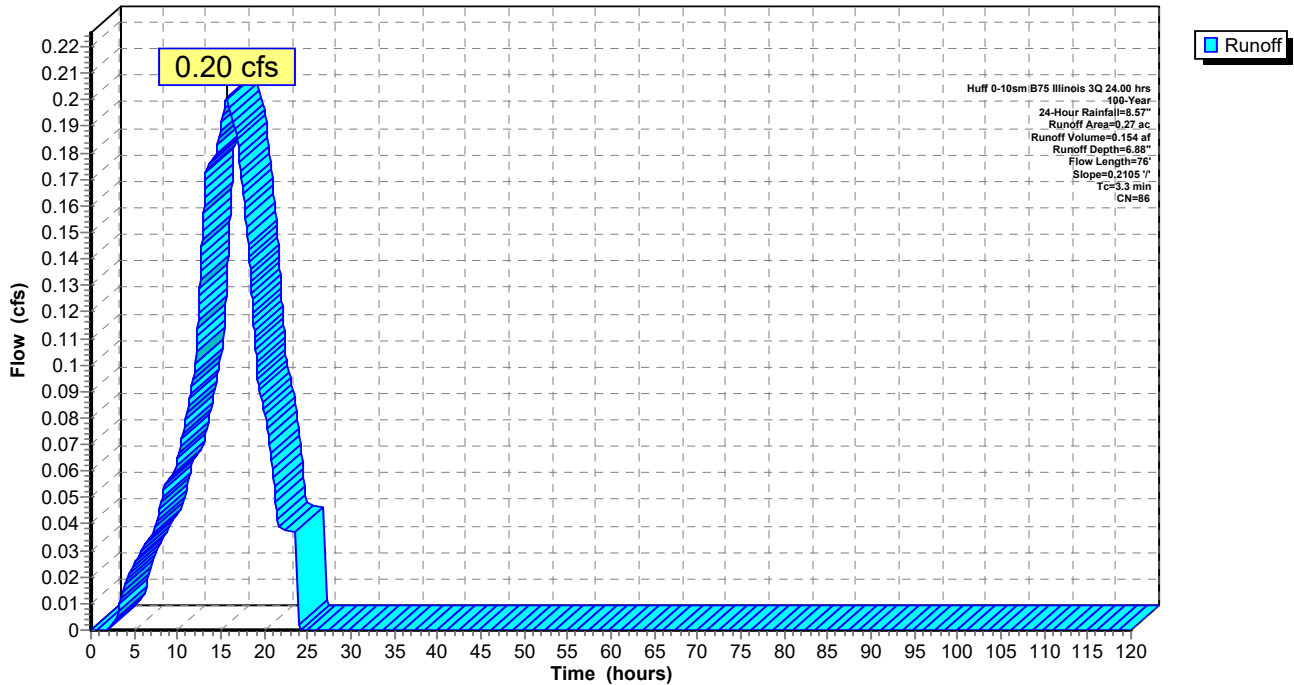
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

Area (ac)	CN	Description
0.14	80	>75% Grass cover, Good, HSG D
0.13	93	Paved roads w/open ditches, 50% imp, HSG D
0.27	86	Weighted Average
0.21		76.49% Pervious Area
0.06		23.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	76	0.2105	0.39		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

### Subcatchment B14: Subcat B14

Hydrograph



**Summary for Subcatchment B2: Subcat B2**

Runoff = 1.93 cfs @ 15.72 hrs, Volume= 1.407 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

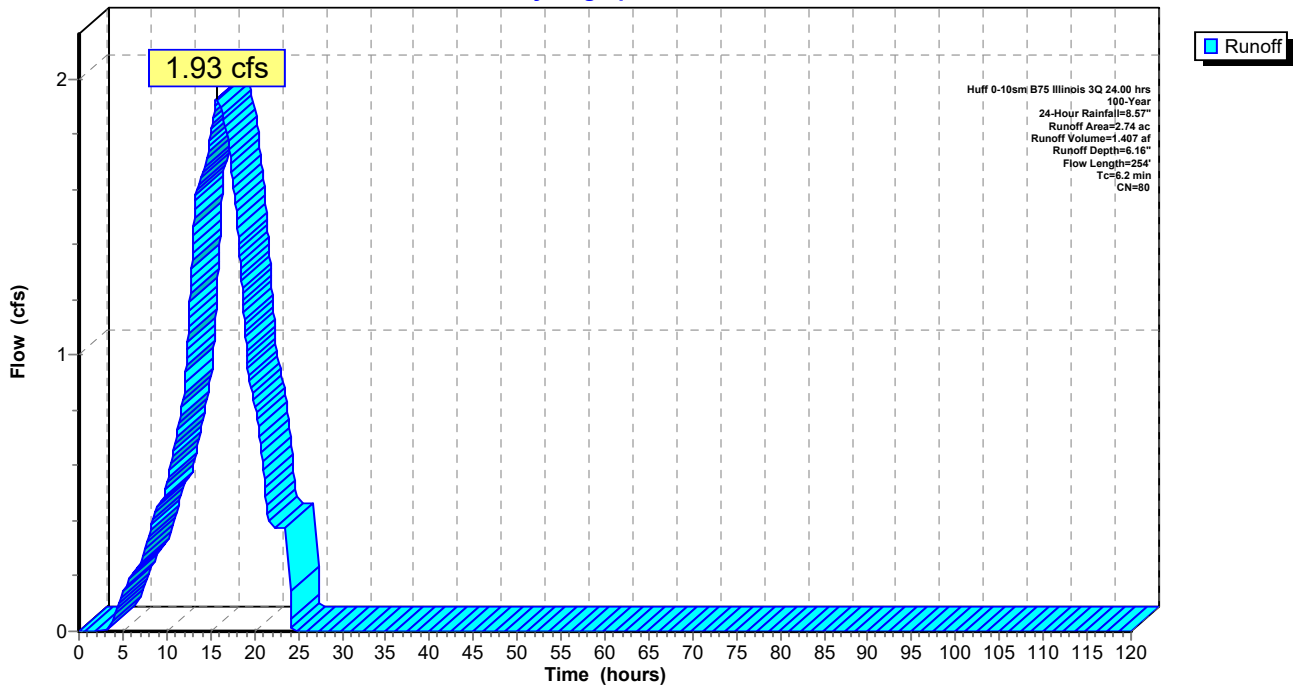
Area (ac)	CN	Description
2.74	80	>75% Grass cover, Good, HSG D
2.74		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.7	154	0.2403	3.43		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.2	254	Total			

**Subcatchment B2: Subcat B2**

Hydrograph



### Summary for Subcatchment B3: Subcat B3

Runoff = 1.56 cfs @ 15.68 hrs, Volume= 1.135 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

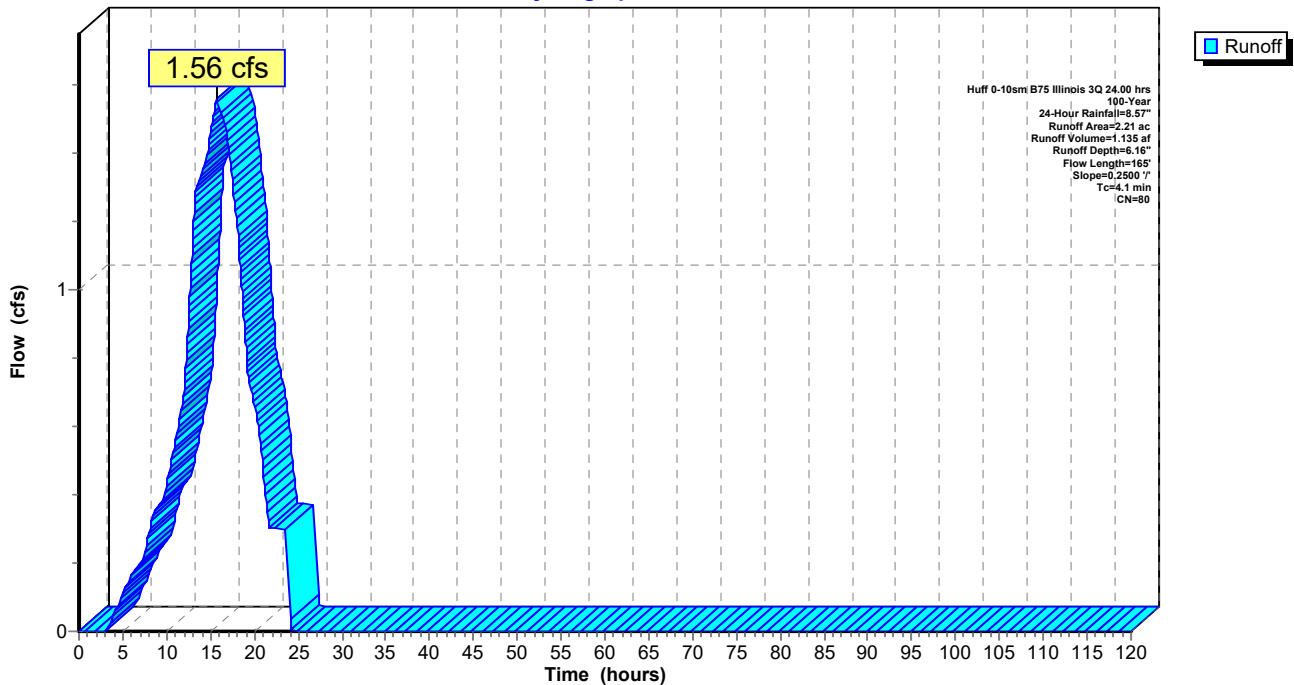
Area (ac)	CN	Description
2.21	80	>75% Grass cover, Good, HSG D
2.21		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.3	65	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	165	Total			

### Subcatchment B3: Subcat B3

Hydrograph



**Summary for Subcatchment B4: Subcat B4**

Runoff = 1.32 cfs @ 15.68 hrs, Volume= 0.960 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

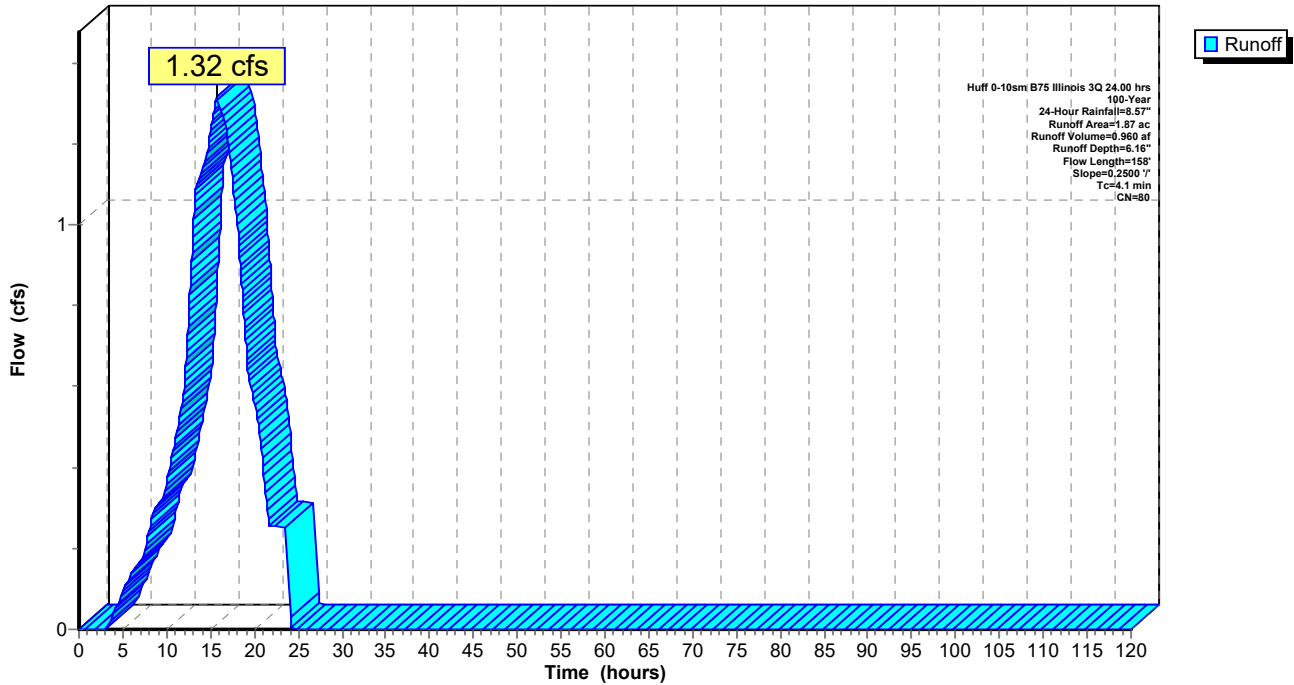
Area (ac)	CN	Description
1.87	80	>75% Grass cover, Good, HSG D
1.87		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.3	58	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	158	Total			

**Subcatchment B4: Subcat B4**

Hydrograph



### Summary for Subcatchment B5: Subcat B5

Runoff = 1.36 cfs @ 15.67 hrs, Volume= 0.991 af, Depth= 6.16"

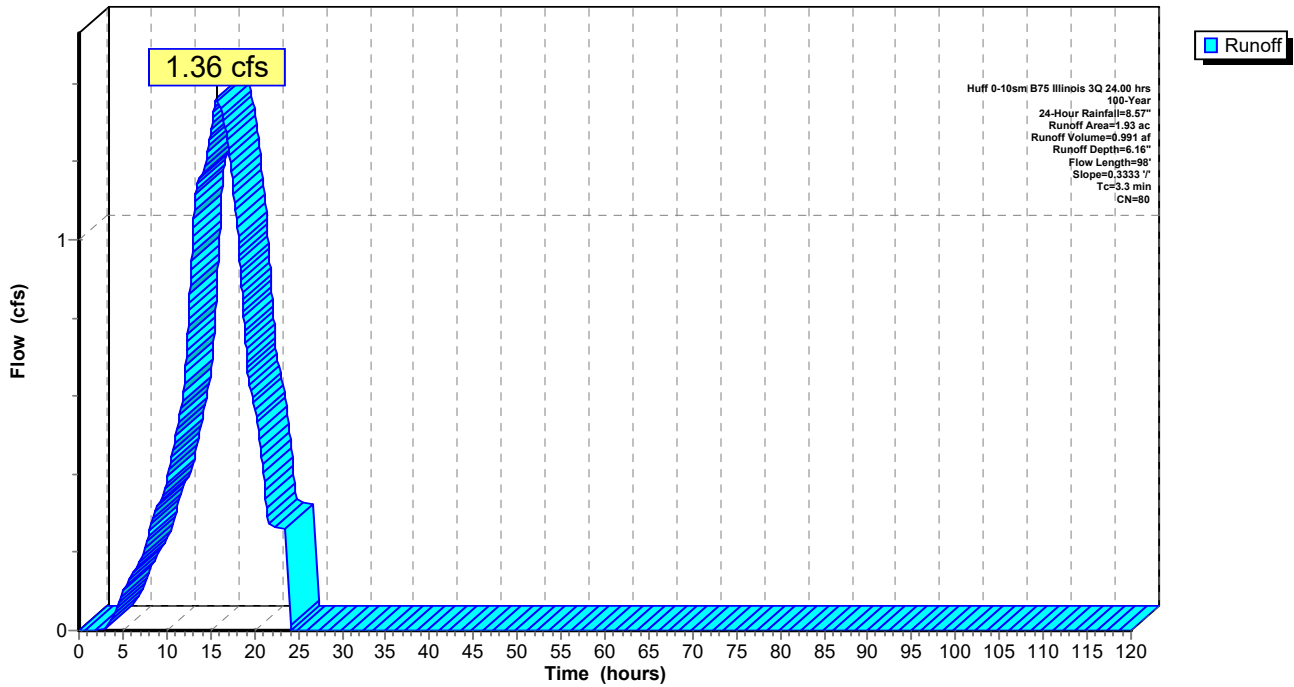
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

Area (ac)	CN	Description
1.93	80	>75% Grass cover, Good, HSG D
1.93		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	98	0.3333	0.49		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

### Subcatchment B5: Subcat B5

Hydrograph



### Summary for Subcatchment B6: Subcat B6

Runoff = 0.83 cfs @ 15.67 hrs, Volume= 0.606 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

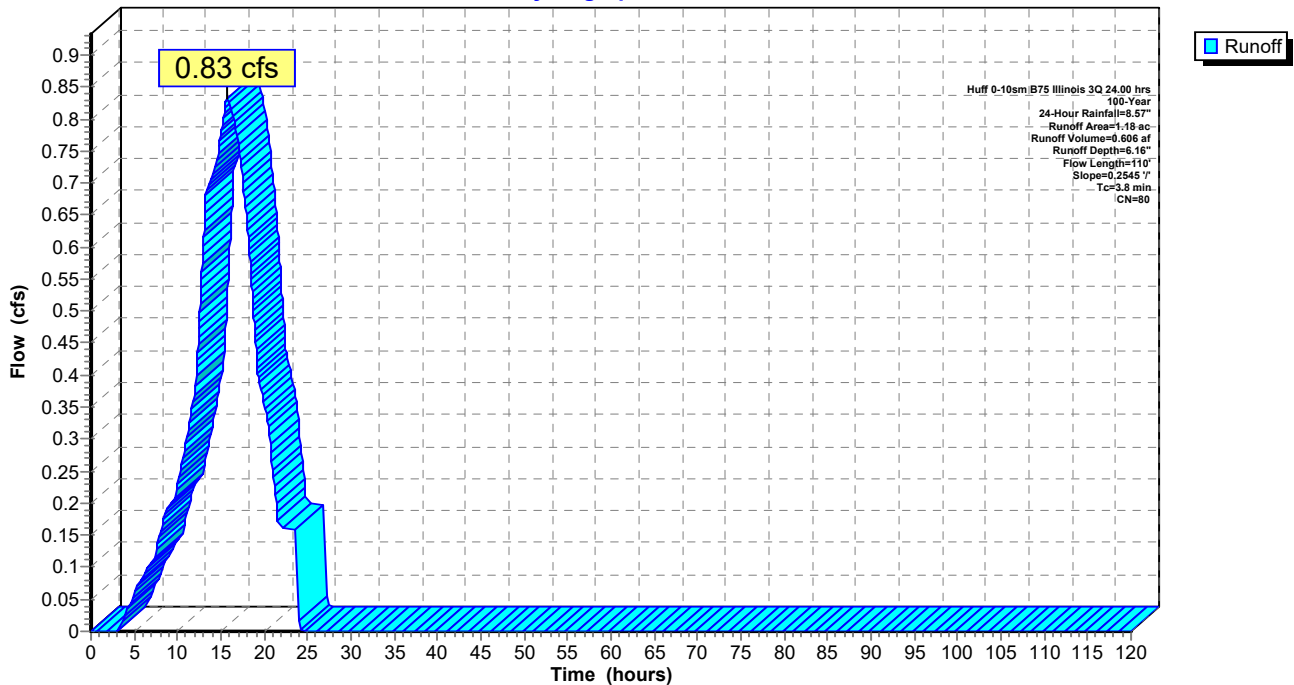
Area (ac)	CN	Description
1.18	80	>75% Grass cover, Good, HSG D
1.18		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2545	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.0	10	0.2545	3.53		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.8	110	Total			

### Subcatchment B6: Subcat B6

Hydrograph



**Summary for Subcatchment B7: Subcat B7**

Runoff = 1.55 cfs @ 15.67 hrs, Volume= 1.124 af, Depth= 6.16"

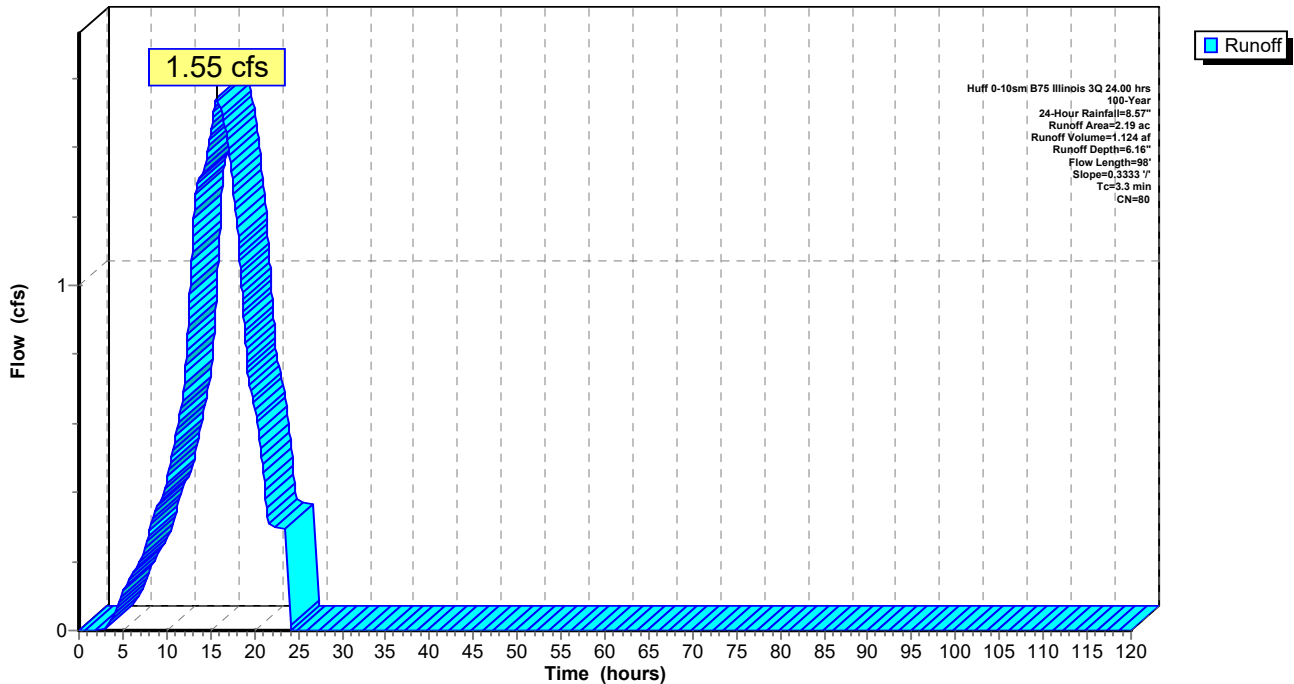
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

Area (ac)	CN	Description
2.19	80	>75% Grass cover, Good, HSG D
2.19		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	98	0.3333	0.49		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B7: Subcat B7**

Hydrograph



### Summary for Subcatchment B8: Subcat B8

Runoff = 0.83 cfs @ 15.67 hrs, Volume= 0.601 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

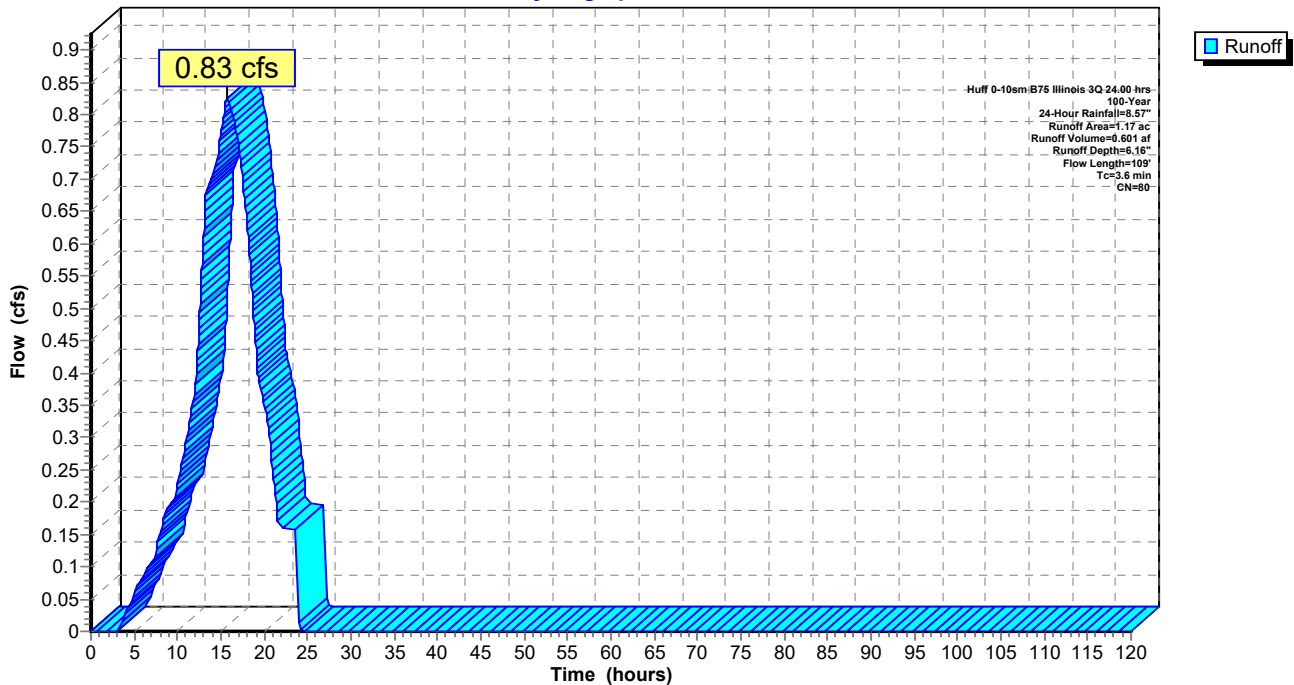
Area (ac)	CN	Description
1.17	80	>75% Grass cover, Good, HSG D
1.17		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	100	0.2873	0.46		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.0	9	0.2574	3.55		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.6	109	Total			

### Subcatchment B8: Subcat B8

Hydrograph





**Summary for Subcatchment B9A: Subcat B9A**

Runoff = 1.01 cfs @ 15.66 hrs, Volume= 0.737 af, Depth= 6.16"

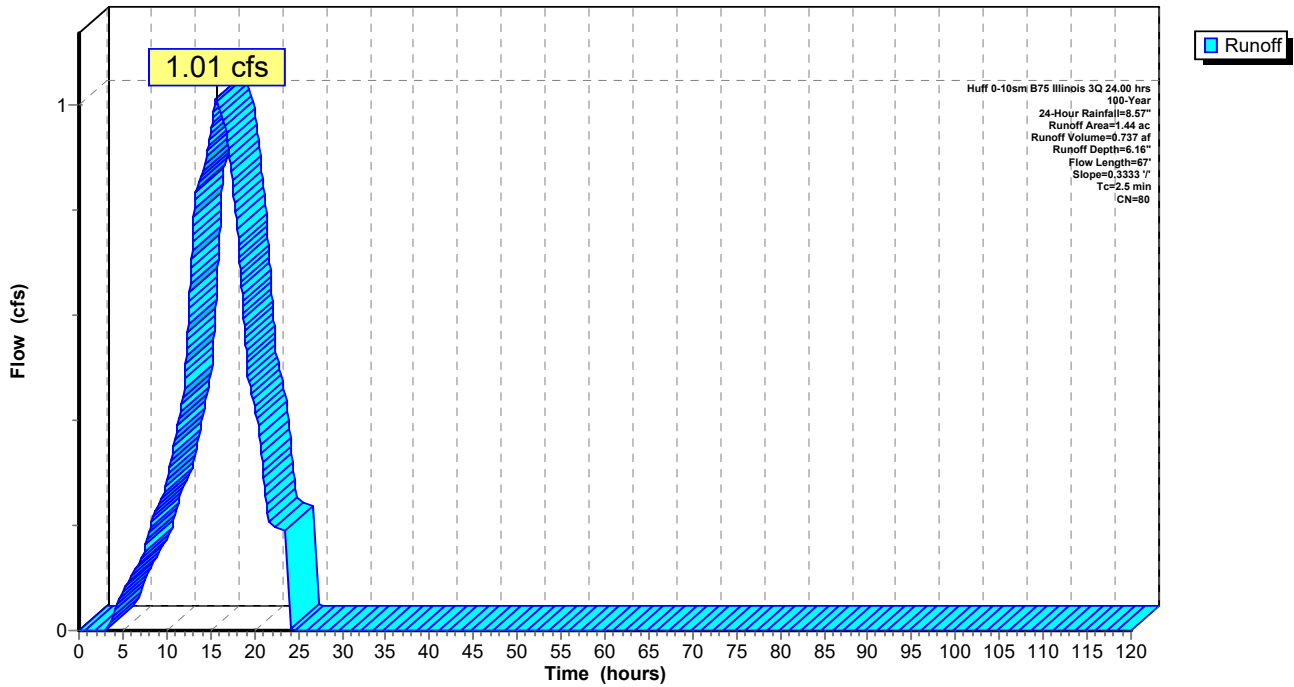
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

Area (ac)	CN	Description
1.44	80	>75% Grass cover, Good, HSG D
1.44		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.5	67	0.3333	0.45		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B9A: Subcat B9A**

Hydrograph



**Summary for Subcatchment B9B: Subcat B9B**

Runoff = 0.43 cfs @ 15.65 hrs, Volume= 0.313 af, Depth= 6.16"

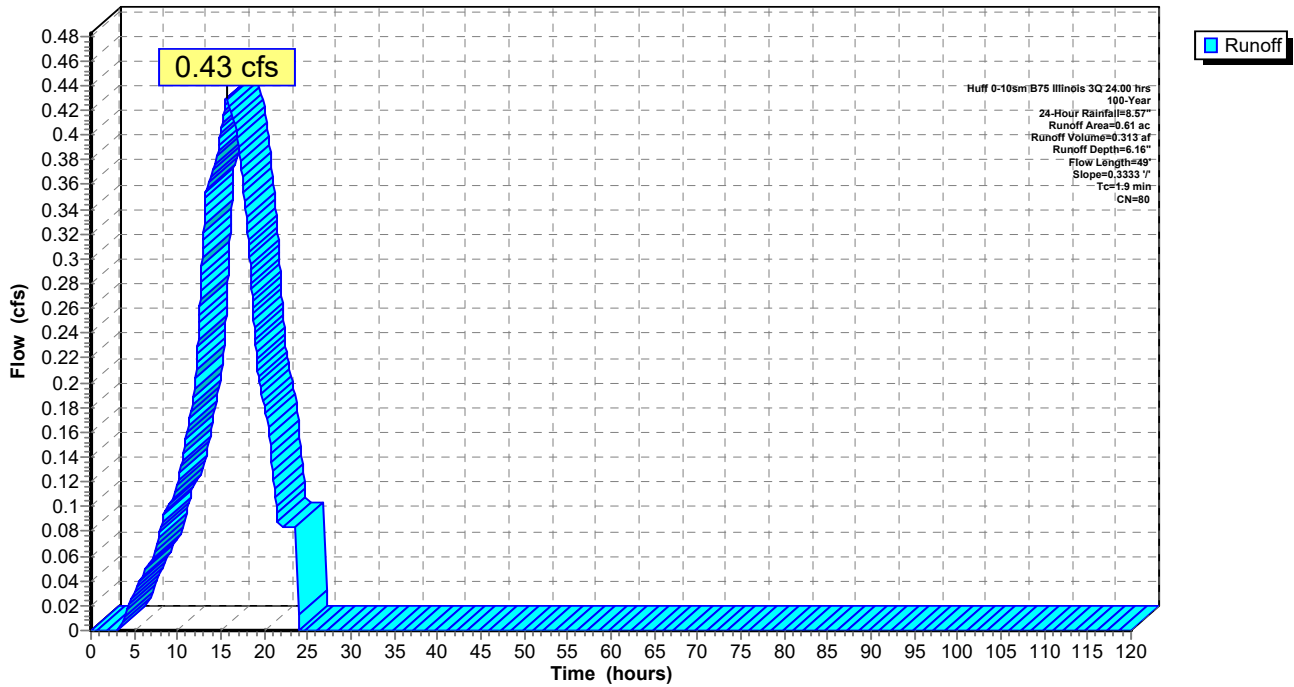
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

Area (ac)	CN	Description
0.61	80	>75% Grass cover, Good, HSG D
0.61		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	49	0.3333	0.43		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment B9B: Subcat B9B**

Hydrograph



### Summary for Subcatchment D1: Subcat D1

Runoff = 0.89 cfs @ 15.72 hrs, Volume= 0.645 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

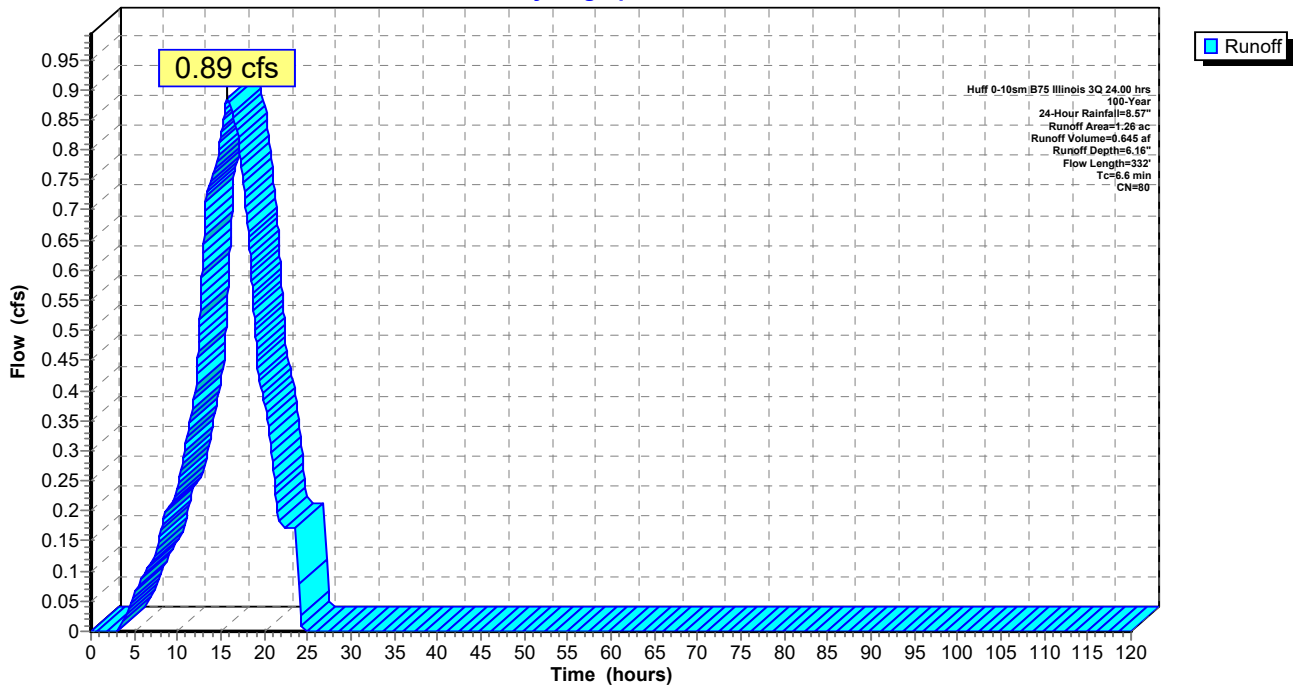
Area (ac)	CN	Description
1.26	80	>75% Grass cover, Good, HSG D
1.26		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"
1.1	232	0.2500	3.50		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
6.6	332	Total			

### Subcatchment D1: Subcat D1

Hydrograph



### Summary for Subcatchment D3: Subcat D3

Runoff = 0.94 cfs @ 15.69 hrs, Volume= 0.684 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

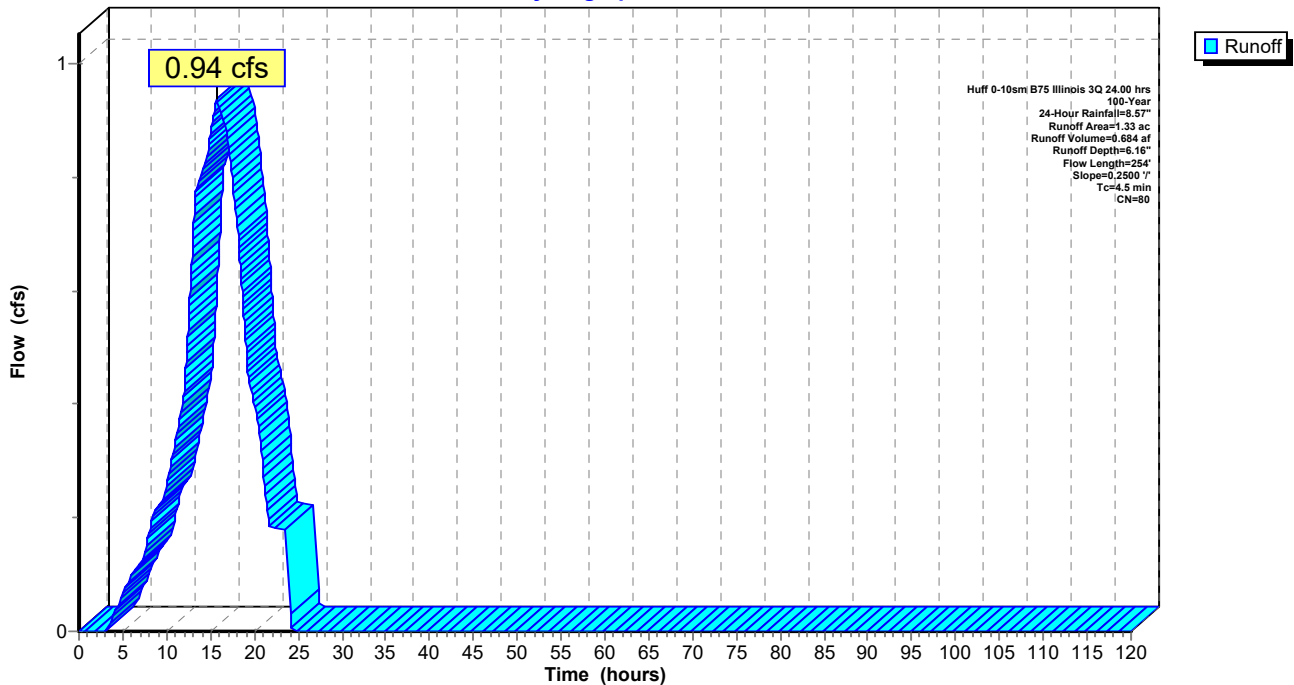
Area (ac)	CN	Description
1.33	80	>75% Grass cover, Good, HSG D
1.33		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.7	154	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.5	254	Total			

### Subcatchment D3: Subcat D3

Hydrograph



### Summary for Subcatchment D5A: Subcat D5A

Runoff = 0.80 cfs @ 15.69 hrs, Volume= 0.582 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

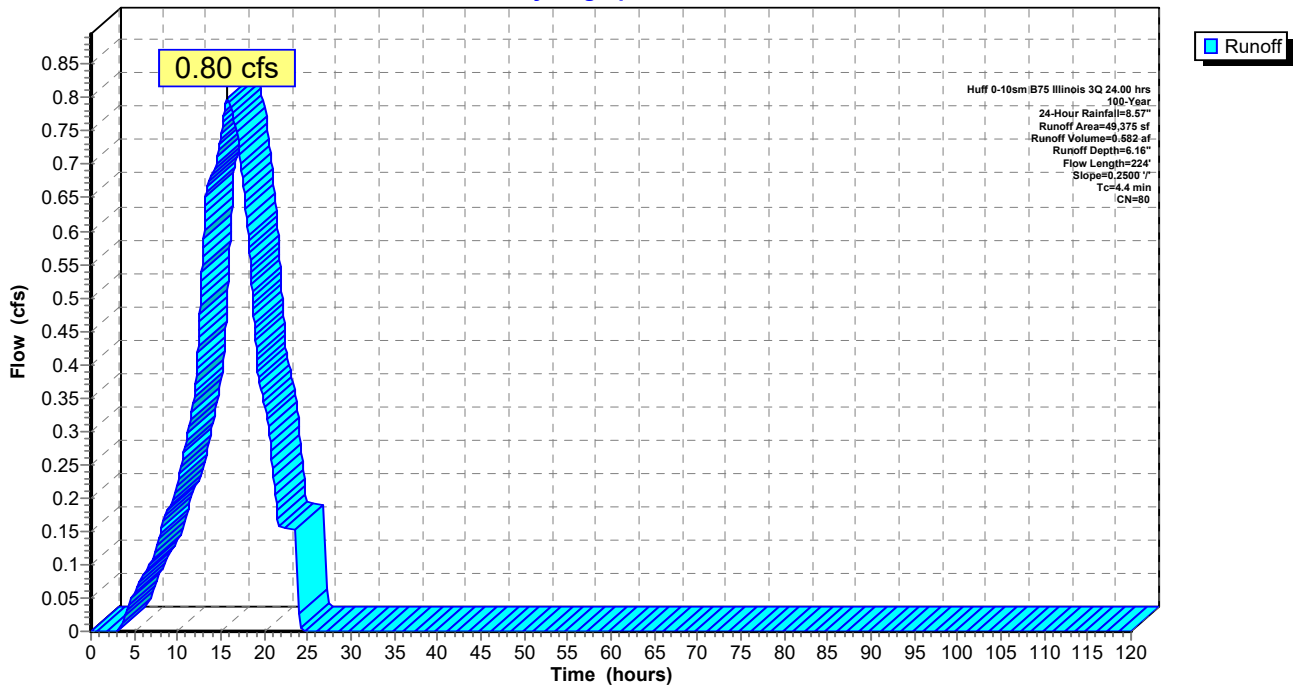
Area (sf)	CN	Description
49,375	80	>75% Grass cover, Good, HSG D
49,375		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	124	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.4	224	Total			

### Subcatchment D5A: Subcat D5A

Hydrograph



**Summary for Subcatchment D5B: Subcat D5B**

Runoff = 0.23 cfs @ 15.61 hrs, Volume= 0.178 af, Depth= 6.88"

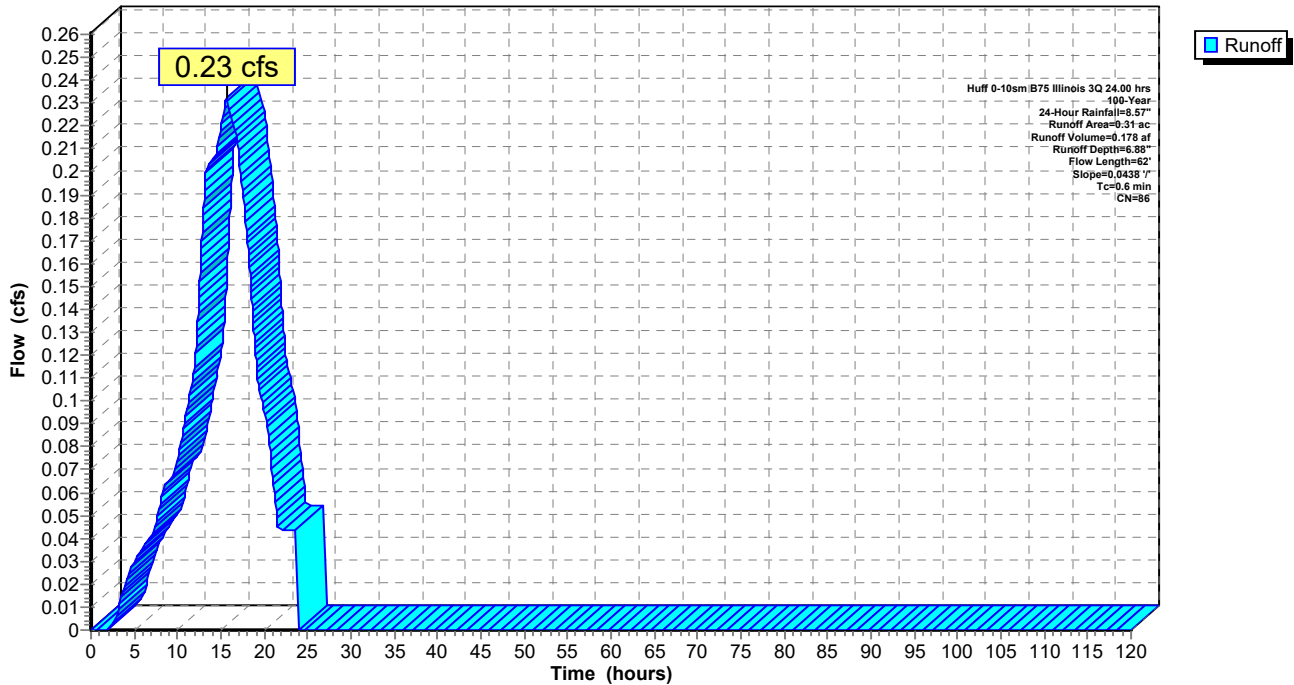
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

Area (ac)	CN	Description
0.16	80	>75% Grass cover, Good, HSG D
0.15	93	Paved roads w/open ditches, 50% imp, HSG D
0.31	86	Weighted Average
0.23		75.32% Pervious Area
0.08		24.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	62	0.0438	1.60		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment D5B: Subcat D5B**

Hydrograph



**Summary for Subcatchment DT: Subcat Drain Tile**

Runoff = 8.69 cfs @ 15.68 hrs, Volume= 6.377 af, Depth= 6.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

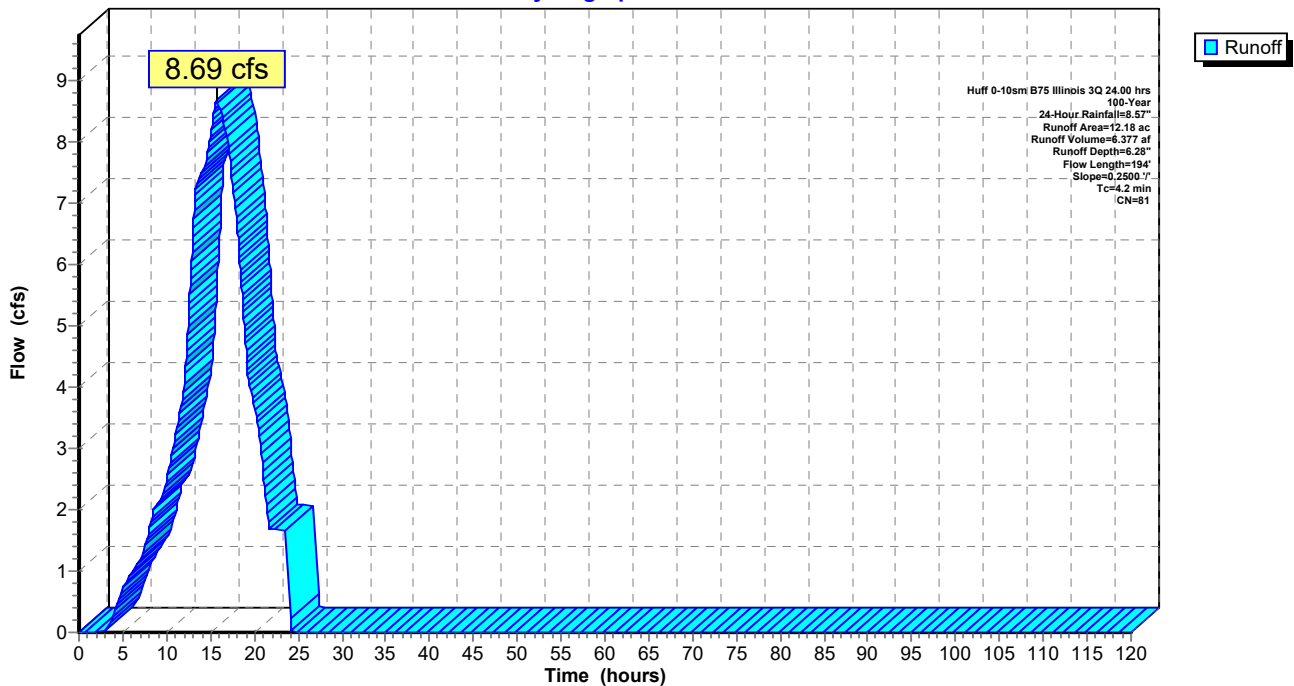
Area (ac)	CN	Description
7.38	80	>75% Grass cover, Good, HSG D
4.80	82	Woods/grass comb., Fair, HSG D
12.18	81	Weighted Average
12.18		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.4	94	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.2	194	Total			

**Subcatchment DT: Subcat Drain Tile**

Hydrograph



### Summary for Subcatchment E1: Subcat E1

Runoff = 1.00 cfs @ 15.72 hrs, Volume= 0.730 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

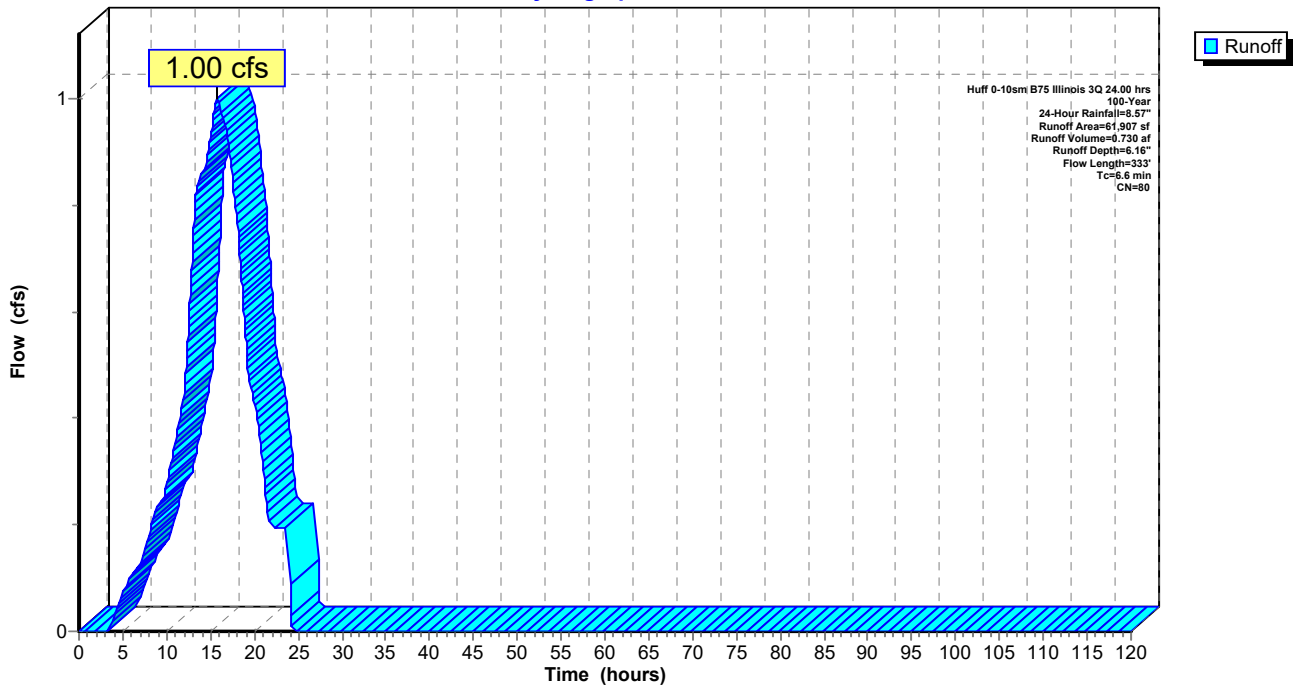
Area (sf)	CN	Description
61,907	80	>75% Grass cover, Good, HSG D
61,907		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.1	233	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.6	333	Total			

### Subcatchment E1: Subcat E1

Hydrograph





### Summary for Subcatchment E2: Subcat E2

Runoff = 1.99 cfs @ 15.69 hrs, Volume= 1.446 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

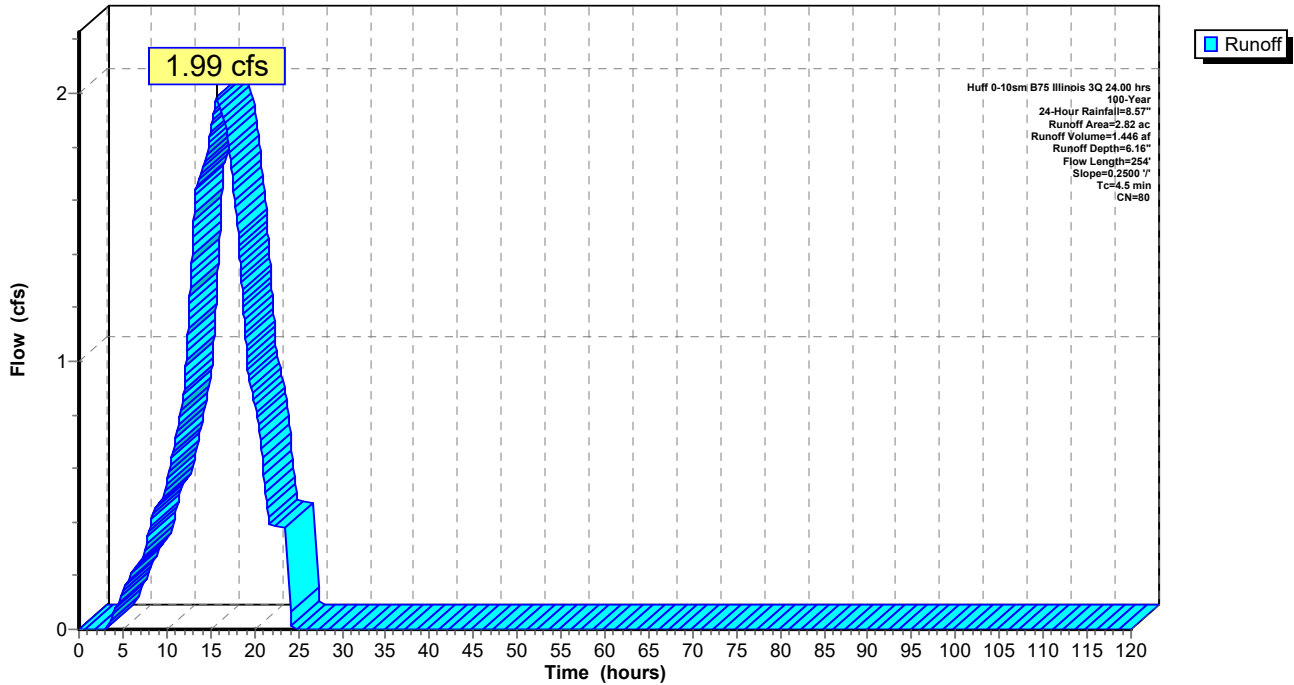
Area (ac)	CN	Description
2.82	80	>75% Grass cover, Good, HSG D
2.82		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.7	154	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.5	254	Total			

### Subcatchment E2: Subcat E2

Hydrograph



### Summary for Subcatchment E3A: Subcat E3A

Runoff = 2.31 cfs @ 15.69 hrs, Volume= 1.682 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

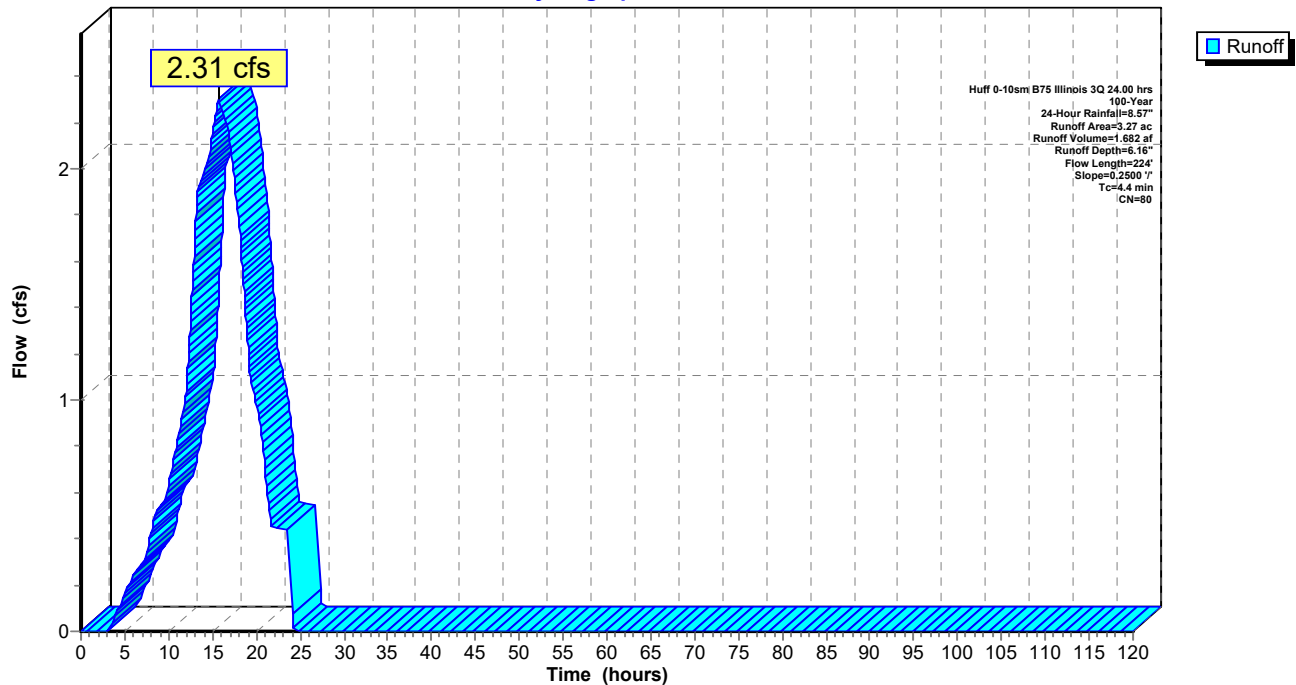
Area (ac)	CN	Description
3.27	80	>75% Grass cover, Good, HSG D
3.27		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	124	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.4	224	Total			

### Subcatchment E3A: Subcat E3A

Hydrograph



**Summary for Subcatchment E3B: Subcat E3B**

Runoff = 0.82 cfs @ 15.61 hrs, Volume= 0.624 af, Depth= 6.88"

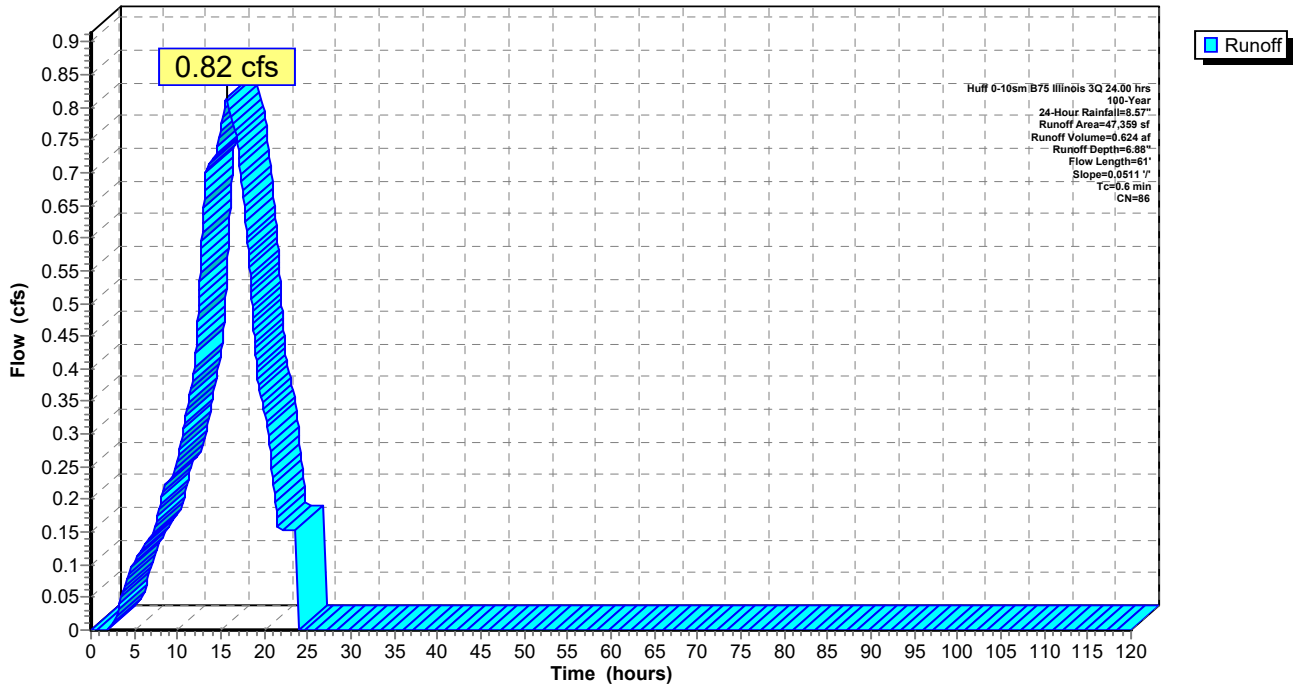
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

Area (sf)	CN	Description
23,741	80	>75% Grass cover, Good, HSG D
23,618	93	Paved roads w/open ditches, 50% imp, HSG D
47,359	86	Weighted Average
35,550		75.06% Pervious Area
11,809		24.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	61	0.0511	1.70		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment E3B: Subcat E3B**

Hydrograph



**Summary for Subcatchment H1: Subcat H1**

Runoff = 1.40 cfs @ 15.72 hrs, Volume= 1.016 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

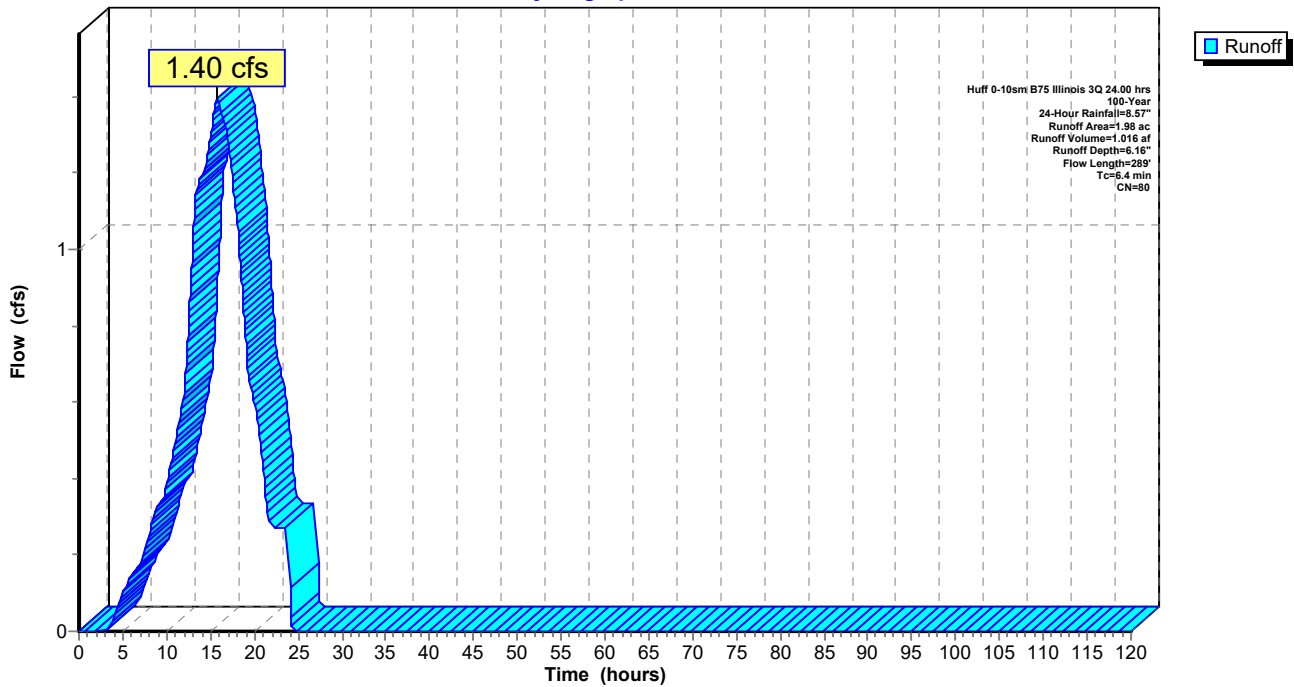
Area (ac)	CN	Description
1.98	80	>75% Grass cover, Good, HSG D
1.98		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.9	189	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.4	289	Total			

**Subcatchment H1: Subcat H1**

Hydrograph



### Summary for Subcatchment H2: Subcat H2

Runoff = 1.31 cfs @ 15.68 hrs, Volume= 0.957 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

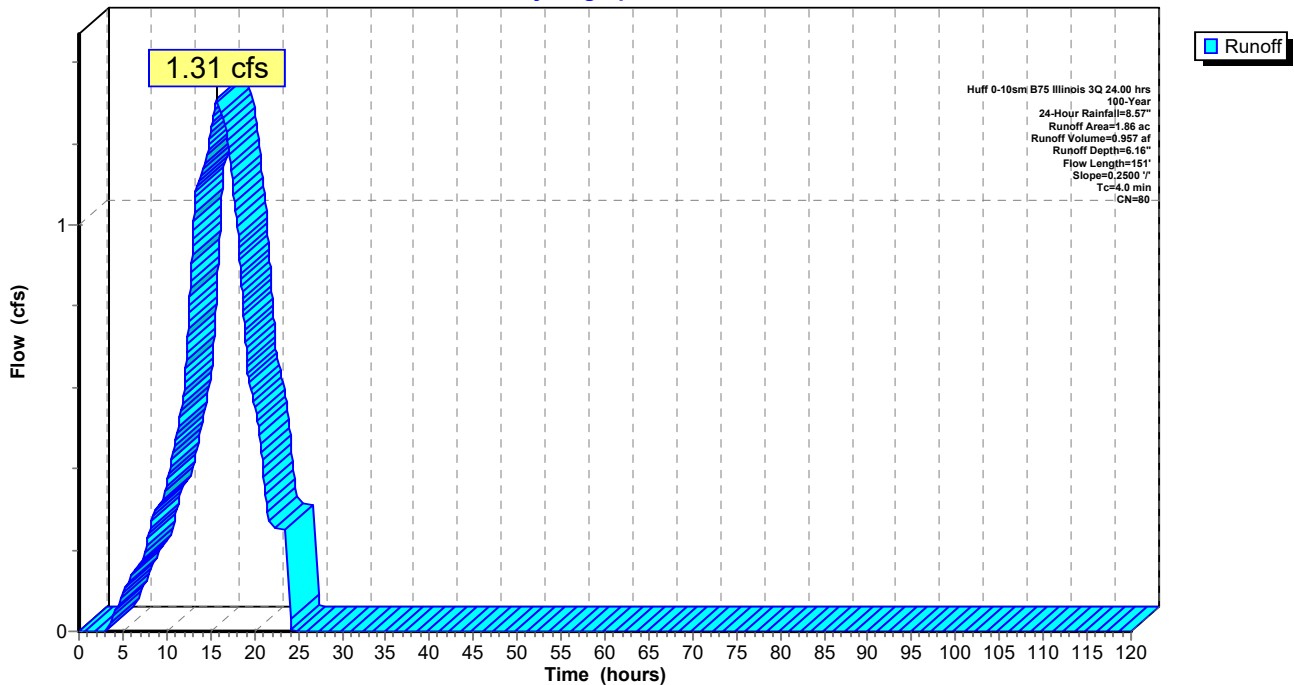
Area (ac)	CN	Description
1.86	80	>75% Grass cover, Good, HSG D
1.86		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	51	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	151	Total			

### Subcatchment H2: Subcat H2

Hydrograph



**Summary for Subcatchment H3: Subcat H3**

Runoff = 2.52 cfs @ 15.69 hrs, Volume= 1.834 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

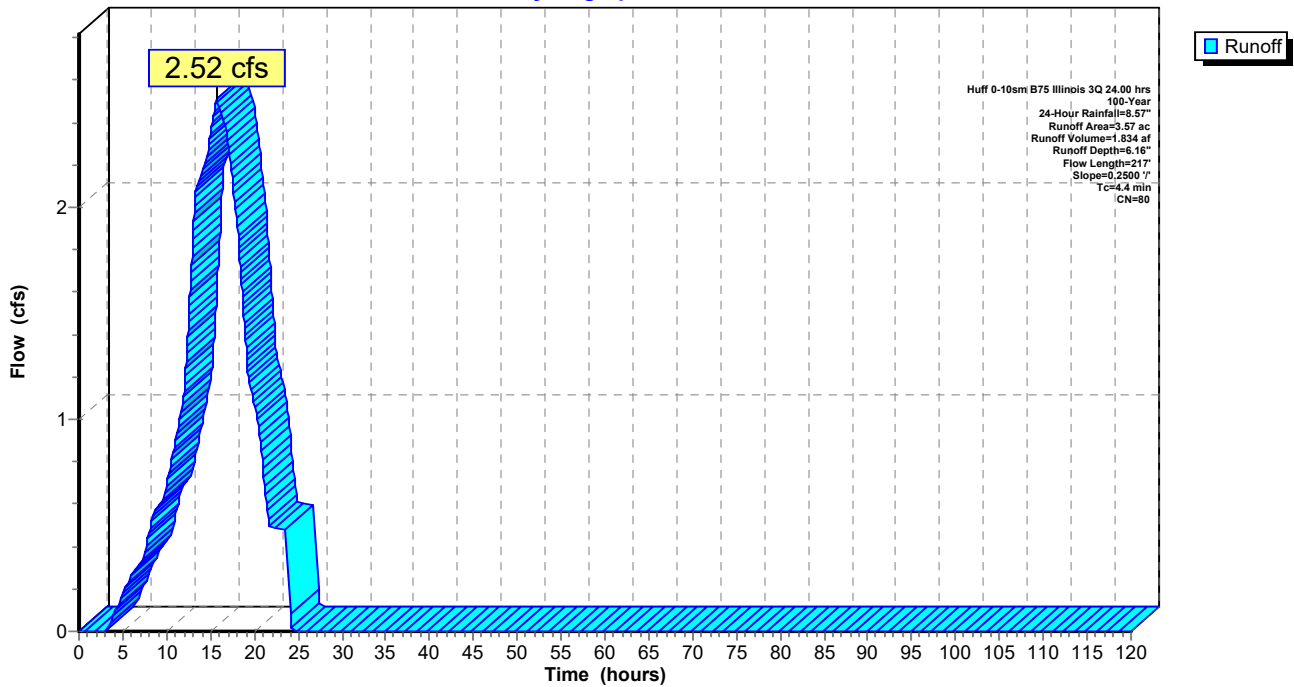
Area (ac)	CN	Description
3.57	80	>75% Grass cover, Good, HSG D
3.57		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	117	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.4	217	Total			

**Subcatchment H3: Subcat H3**

Hydrograph



### Summary for Subcatchment N-A1: Subcat N-A1

Runoff = 2.54 cfs @ 15.72 hrs, Volume= 1.847 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

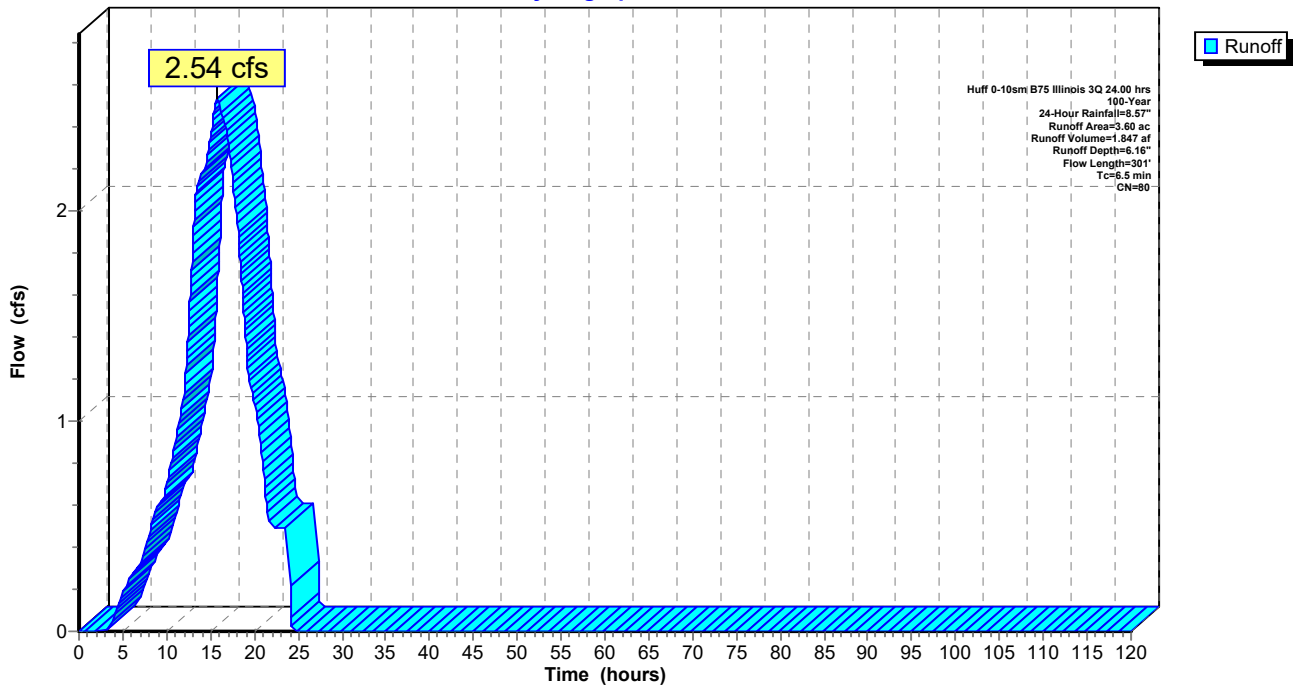
Area (ac)	CN	Description
3.60	80	>75% Grass cover, Good, HSG D
3.60		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
1.0	201	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.5	301	Total			

### Subcatchment N-A1: Subcat N-A1

Hydrograph



### Summary for Subcatchment N-A10: Subcat N-A10

Runoff = 2.66 cfs @ 15.68 hrs, Volume= 1.938 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

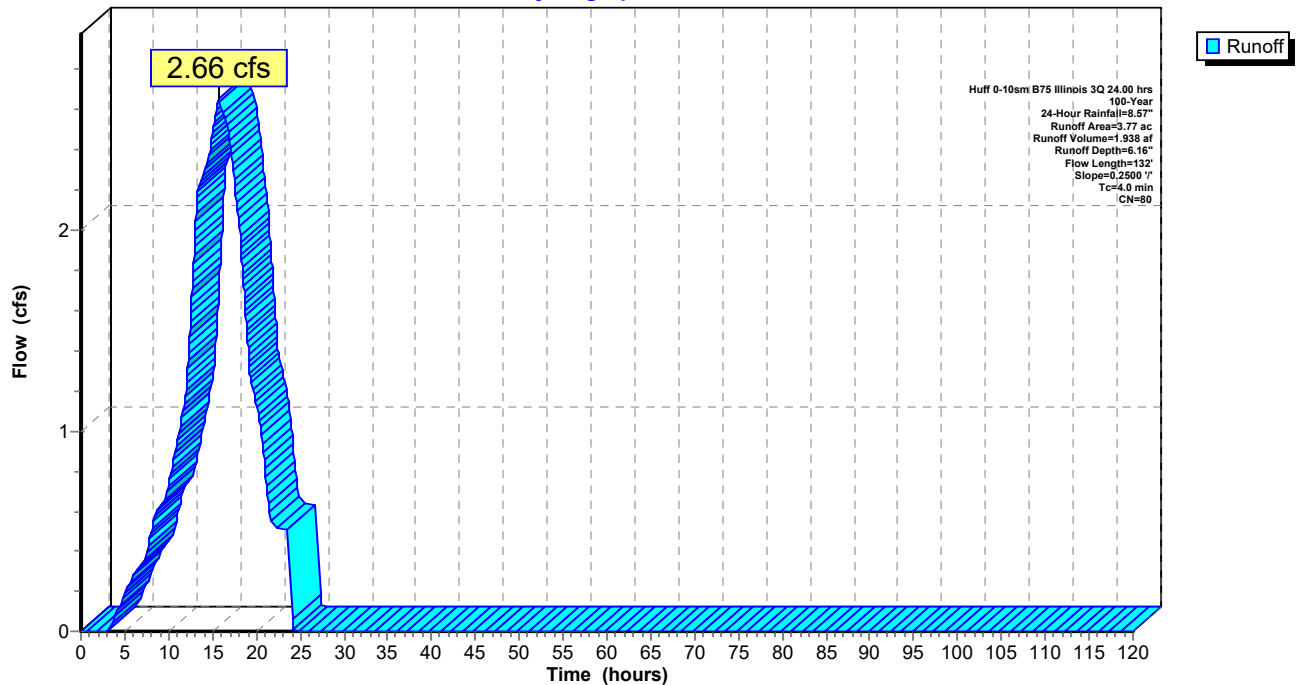
Area (ac)	CN	Description
3.77	80	>75% Grass cover, Good, HSG D
3.77		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	32	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	132	Total			

### Subcatchment N-A10: Subcat N-A10

Hydrograph





### Summary for Subcatchment N-A11: Subcat N-A11

Runoff = 1.30 cfs @ 15.67 hrs, Volume= 0.945 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

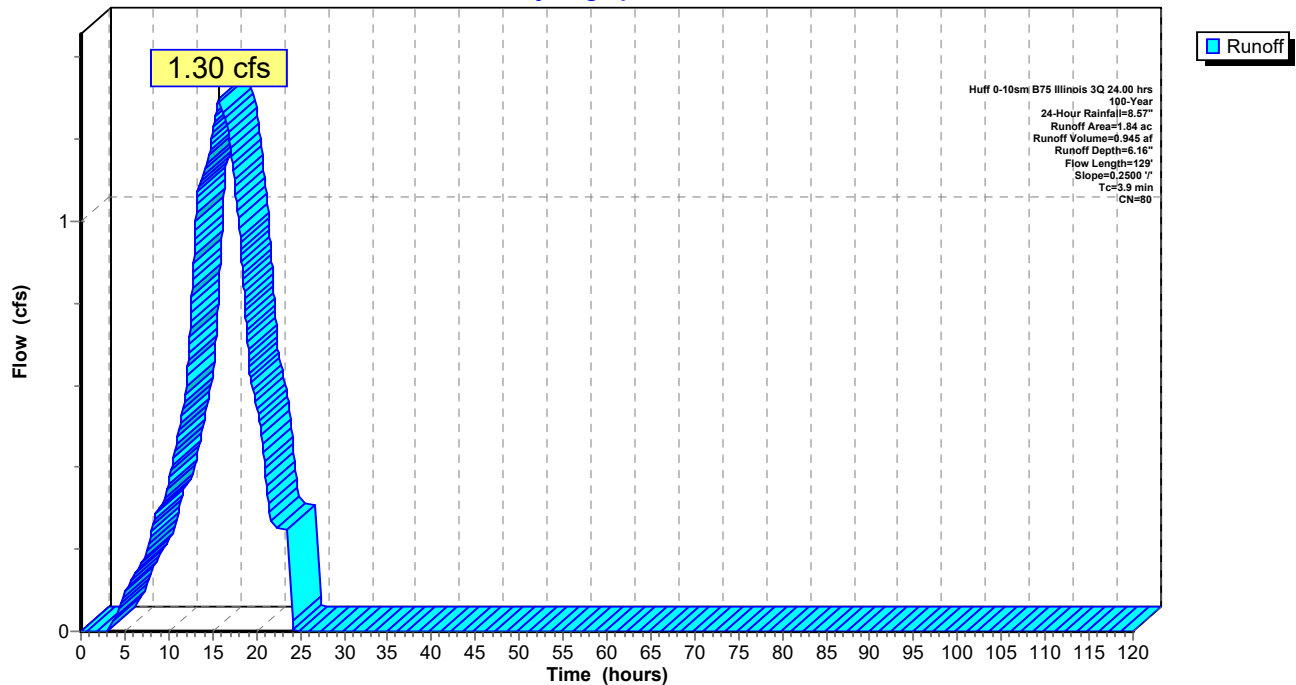
Area (ac)	CN	Description
1.84	80	>75% Grass cover, Good, HSG D
1.84		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	29	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	129	Total			

### Subcatchment N-A11: Subcat N-A11

Hydrograph



### Summary for Subcatchment N-A12: Subcat N-A12

Runoff = 1.73 cfs @ 15.67 hrs, Volume= 1.290 af, Depth= 6.52"

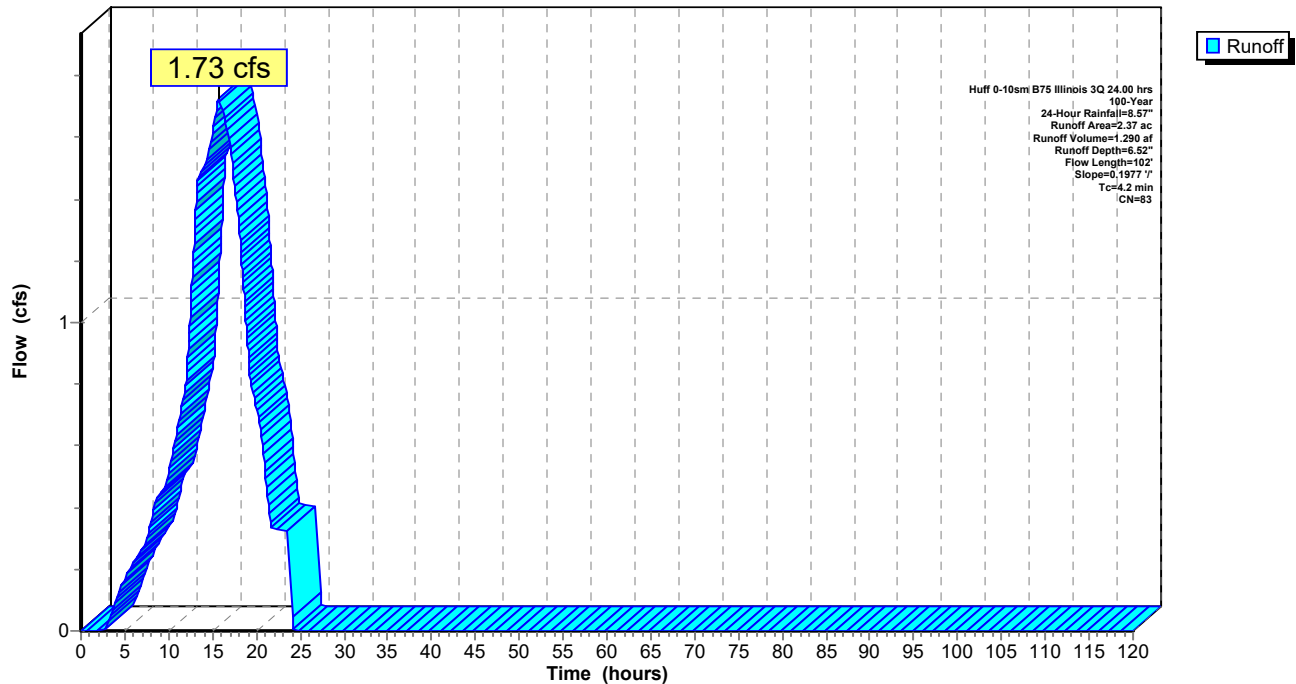
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

Area (ac)	CN	Description
1.74	80	>75% Grass cover, Good, HSG D
0.63	93	Paved roads w/open ditches, 50% imp, HSG D
2.37	83	Weighted Average
2.06		86.69% Pervious Area
0.32		13.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	100	0.1977	0.40		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.0	2	0.1977	3.11		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.2	102	Total			

### Subcatchment N-A12: Subcat N-A12

Hydrograph



### Summary for Subcatchment N-A13: Subcat N-A13

Runoff = 0.88 cfs @ 15.67 hrs, Volume= 0.643 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

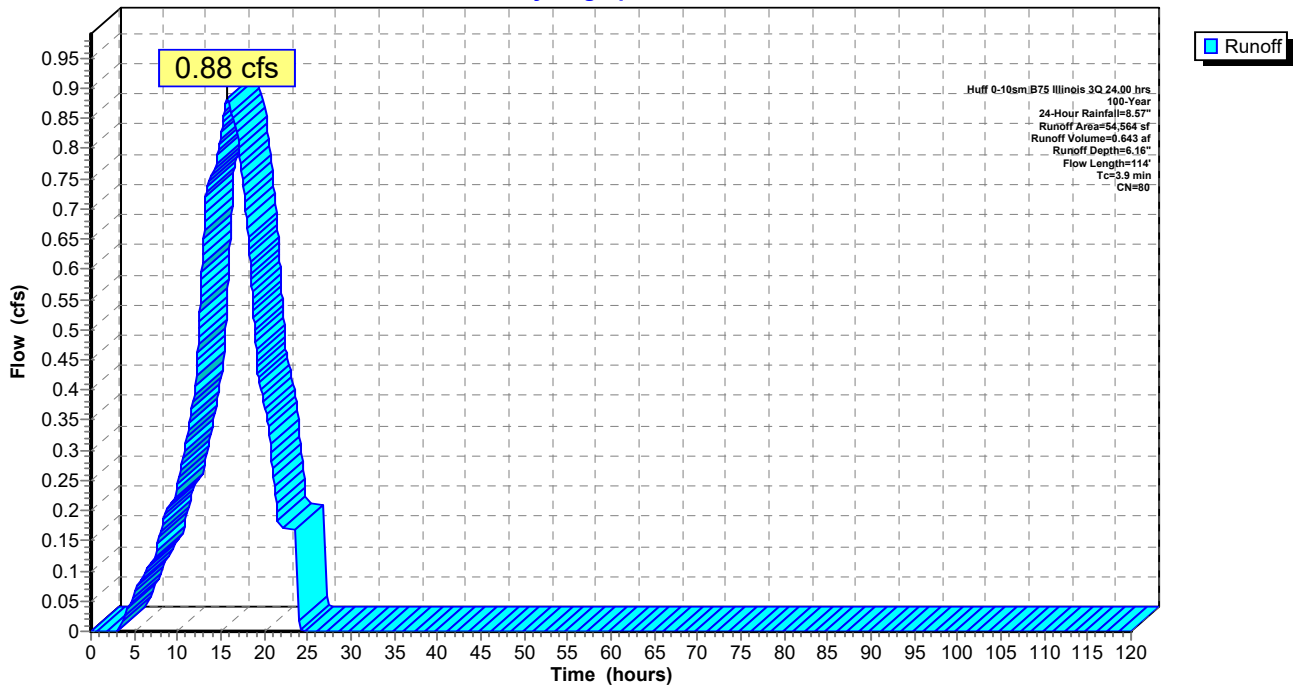
Area (sf)	CN	Description
54,564	80	>75% Grass cover, Good, HSG D
54,564		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	14	0.3210	3.97		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	114	Total			

### Subcatchment N-A13: Subcat N-A13

Hydrograph



### Summary for Subcatchment N-A14: Subcat N-A14

Runoff = 0.95 cfs @ 15.67 hrs, Volume= 0.711 af, Depth= 6.52"

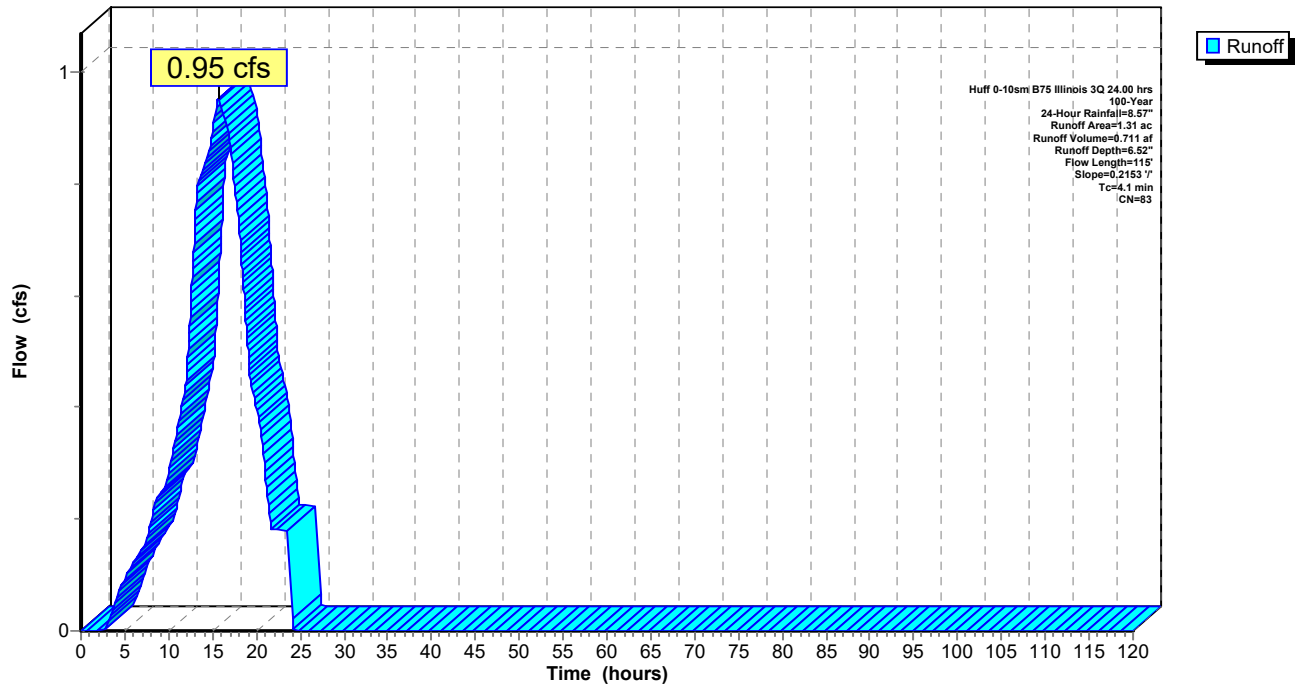
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

Area (ac)	CN	Description
0.97	80	>75% Grass cover, Good, HSG D
0.34	93	Paved roads w/open ditches, 50% imp, HSG D
1.31	83	Weighted Average
1.14		87.12% Pervious Area
0.17		12.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	100	0.2153	0.41		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	15	0.2153	3.25		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	115	Total			

### Subcatchment N-A14: Subcat N-A14

Hydrograph



**Summary for Subcatchment N-A15: Subcat N-A15**

Runoff = 0.73 cfs @ 15.67 hrs, Volume= 0.532 af, Depth= 6.16"

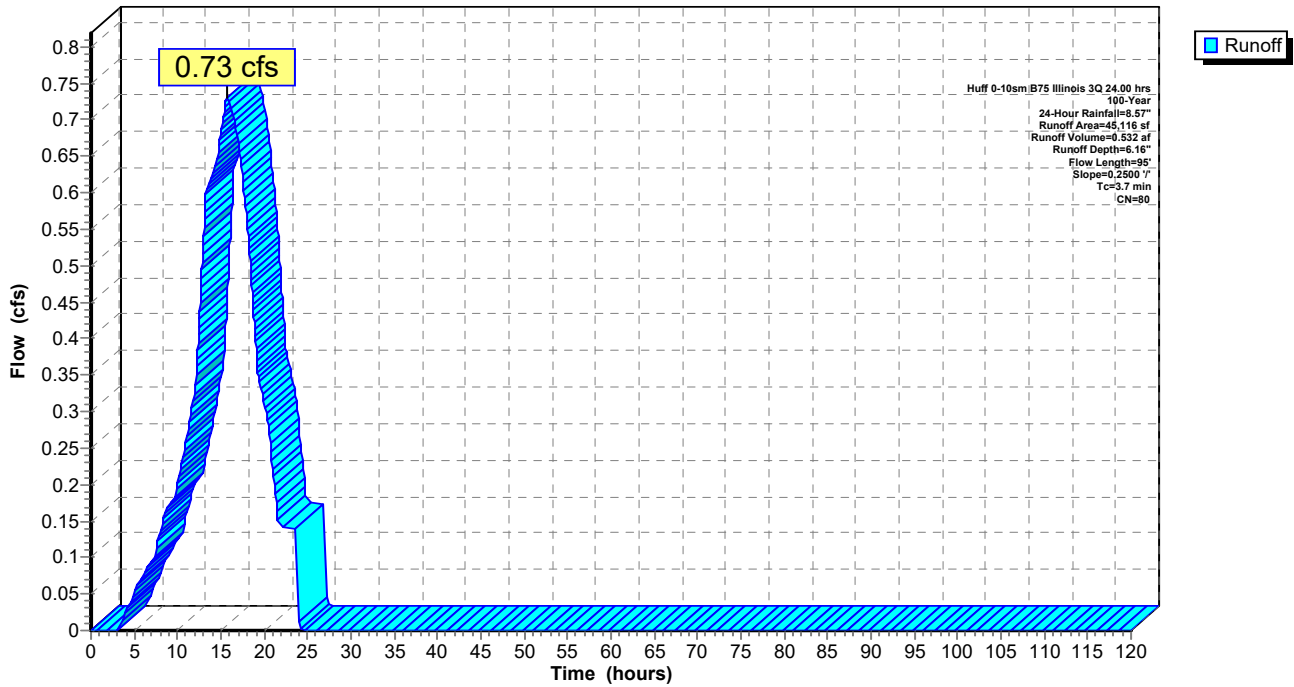
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

Area (sf)	CN	Description
45,116	80	>75% Grass cover, Good, HSG D
45,116		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	95	0.2500	0.43		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-A15: Subcat N-A15**

Hydrograph



### Summary for Subcatchment N-A16: Subcat N-A16

Runoff = 1.63 cfs @ 15.63 hrs, Volume= 1.322 af, Depth= 7.61"

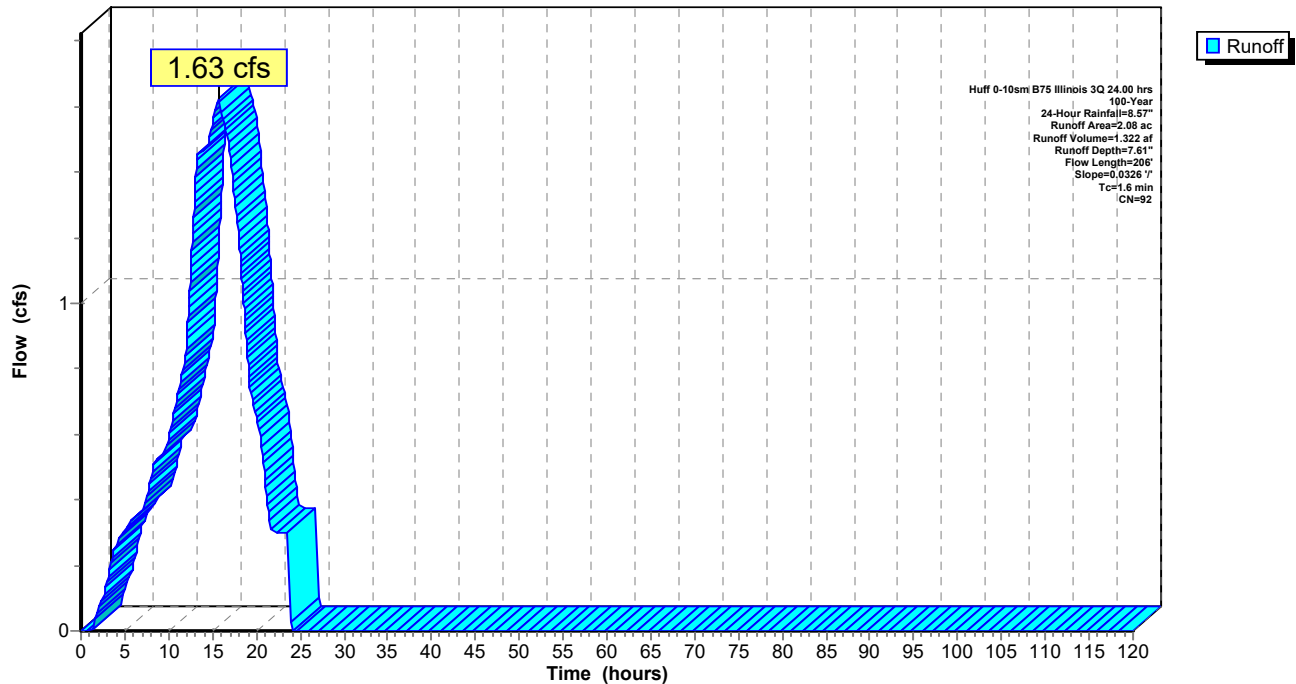
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

Area (ac)	CN	Description
0.08	80	>75% Grass cover, Good, HSG D
2.00	93	Paved roads w/open ditches, 50% imp, HSG D
2.08	92	Weighted Average
1.08		51.99% Pervious Area
1.00		48.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0326	1.56		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 2.80"
0.5	106	0.0326	3.67		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
1.6	206	Total			

### Subcatchment N-A16: Subcat N-A16

Hydrograph



**Summary for Subcatchment N-A2: Subcat N-A2**

Runoff = 1.99 cfs @ 15.71 hrs, Volume= 1.450 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

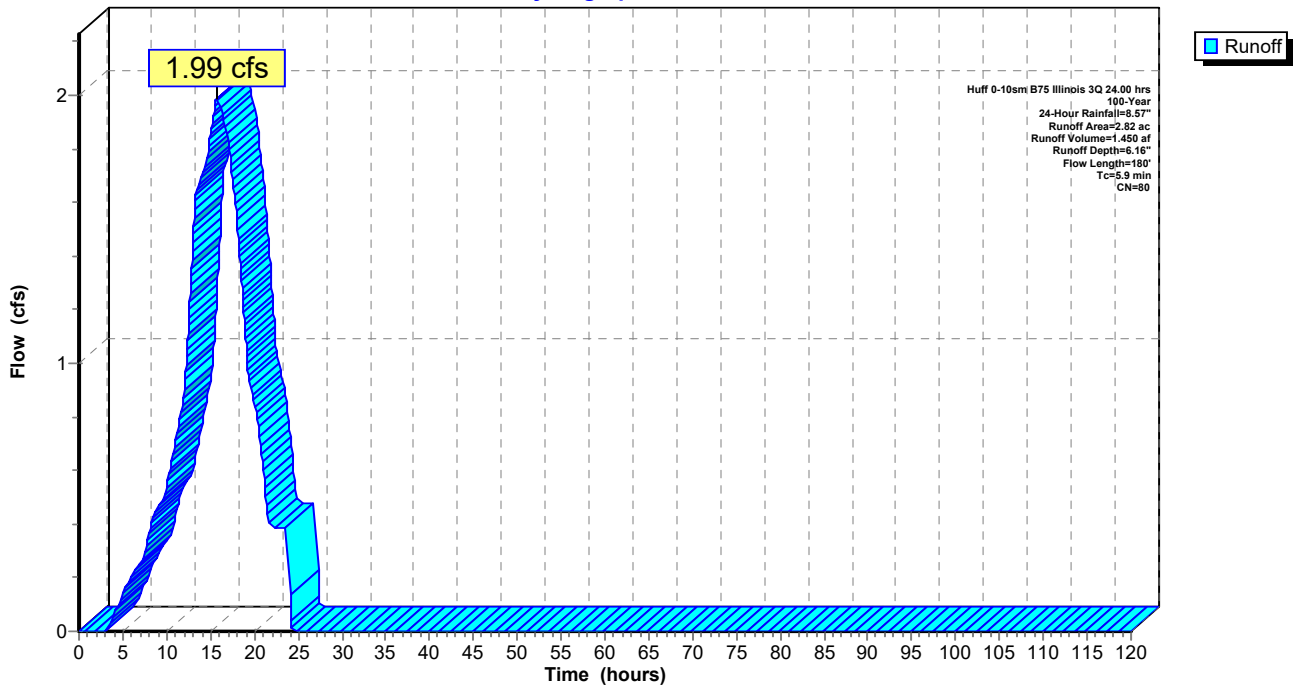
Area (ac)	CN	Description
2.82	80	>75% Grass cover, Good, HSG D
2.82		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.4	80	0.2199	3.28		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
5.9	180	Total			

**Subcatchment N-A2: Subcat N-A2**

Hydrograph



**Summary for Subcatchment N-A3: Subcat N-A3**

Runoff = 0.92 cfs @ 15.68 hrs, Volume= 0.673 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

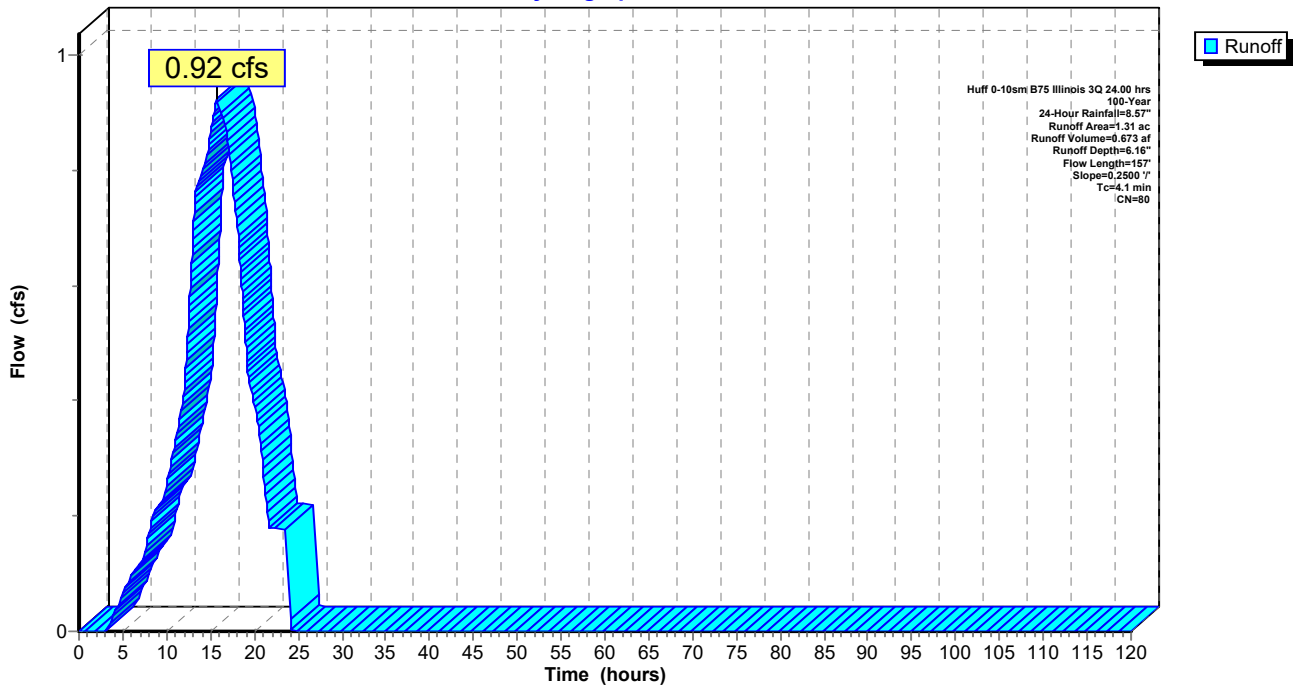
Area (ac)	CN	Description
1.31	80	>75% Grass cover, Good, HSG D
1.31		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.3	57	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	157	Total			

**Subcatchment N-A3: Subcat N-A3**

Hydrograph





**Summary for Subcatchment N-A4: Subcat N-A4**

Runoff = 4.85 cfs @ 15.72 hrs, Volume= 3.530 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

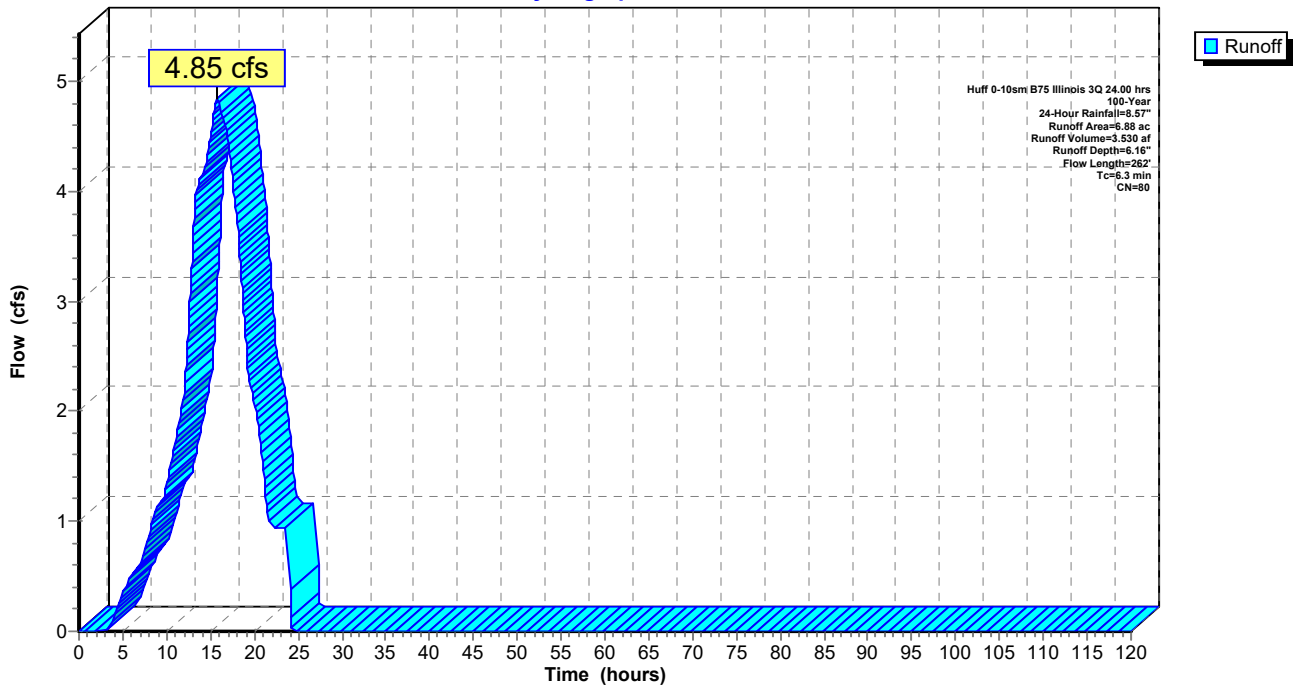
Area (ac)	CN	Description
6.88	80	>75% Grass cover, Good, HSG D
6.88		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.8	162	0.2330	3.38		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.3	262	Total			

**Subcatchment N-A4: Subcat N-A4**

Hydrograph



**Summary for Subcatchment N-A5: Subcat N-A5**

Runoff = 0.52 cfs @ 15.67 hrs, Volume= 0.377 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

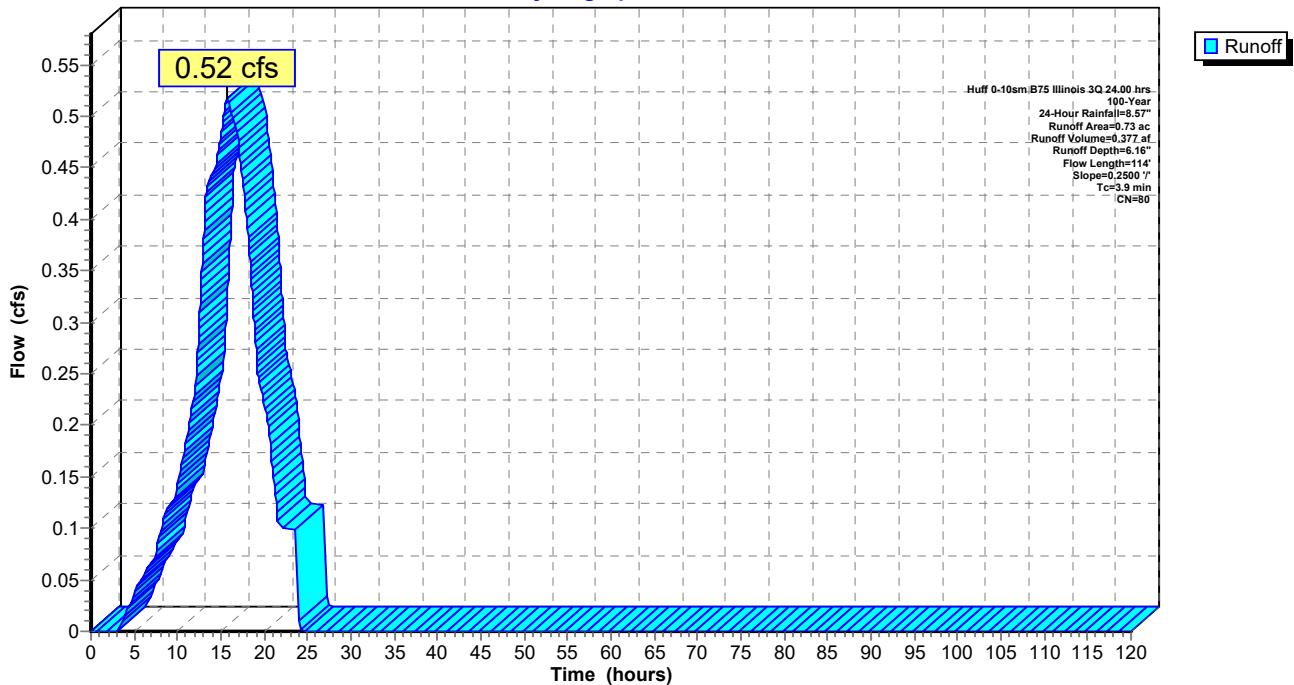
Area (ac)	CN	Description
0.73	80	>75% Grass cover, Good, HSG D
0.73		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	14	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	114	Total			

**Subcatchment N-A5: Subcat N-A5**

Hydrograph



**Summary for Subcatchment N-A6: Subcat N-A6**

Runoff = 2.91 cfs @ 15.67 hrs, Volume= 2.121 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

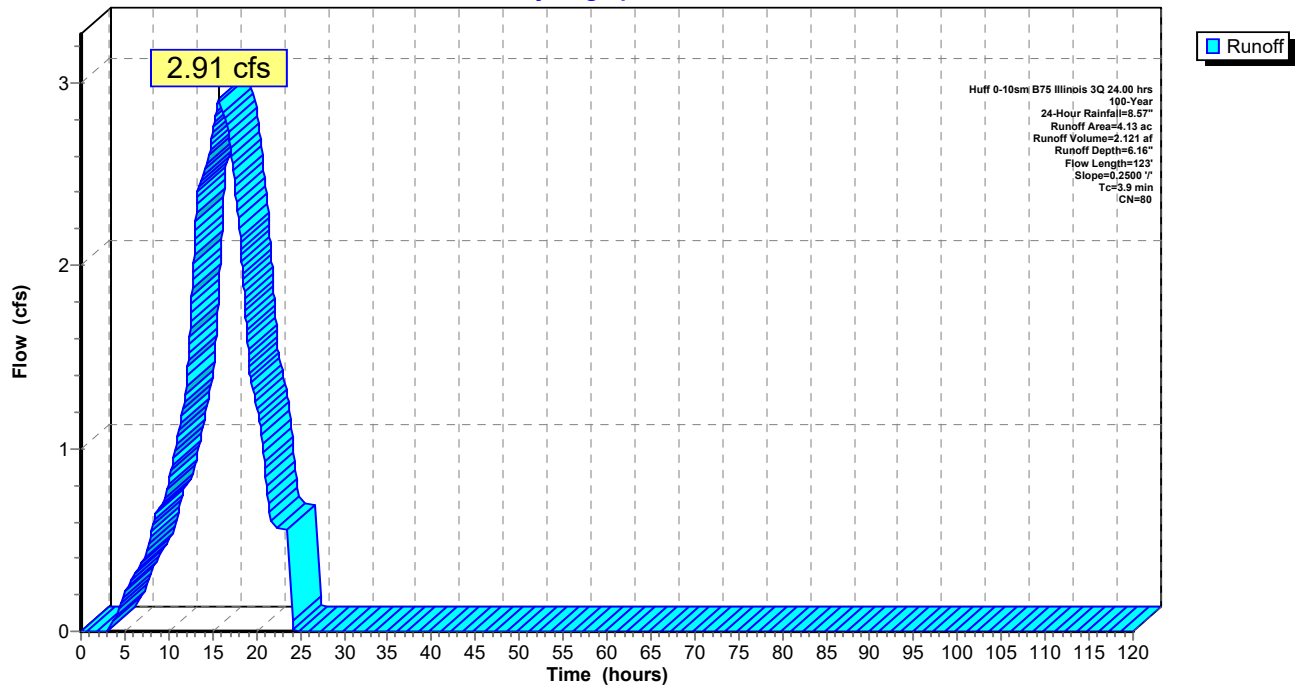
Area (ac)	CN	Description
4.13	80	>75% Grass cover, Good, HSG D
4.13		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	23	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	123	Total			

**Subcatchment N-A6: Subcat N-A6**

Hydrograph



### Summary for Subcatchment N-A7: Subcat N-A7

Runoff = 0.31 cfs @ 15.69 hrs, Volume= 0.227 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

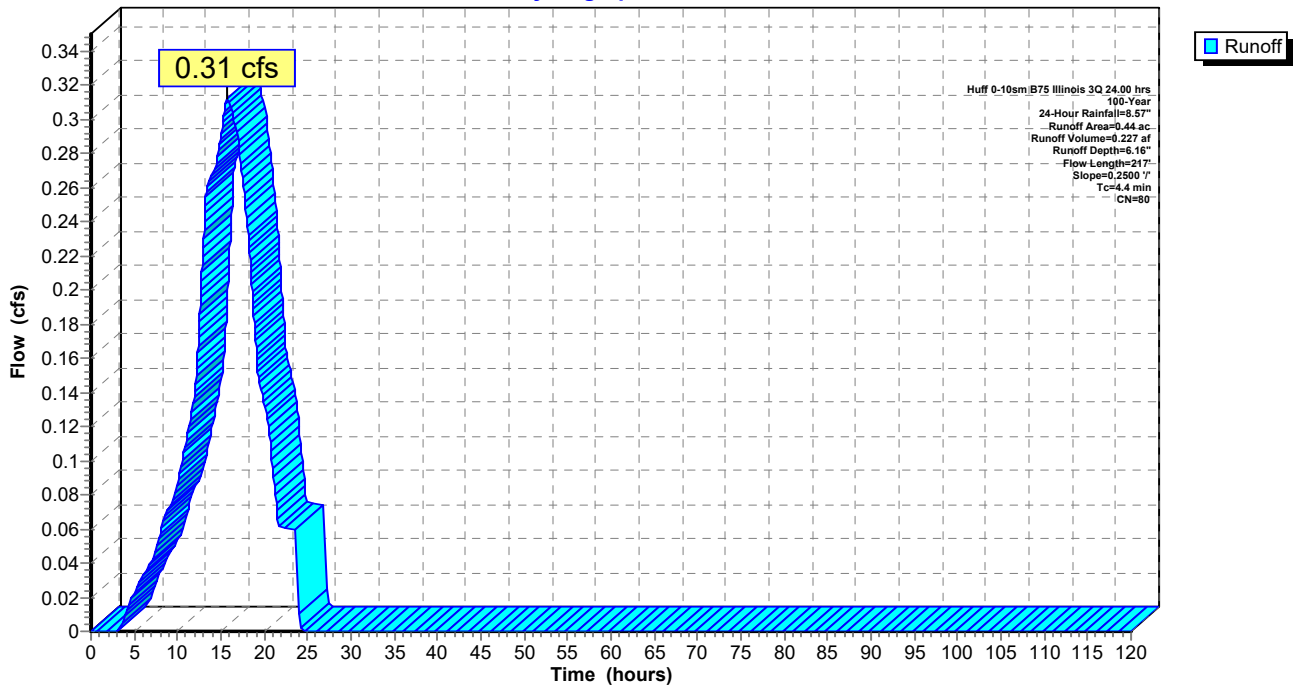
Area (ac)	CN	Description
0.44	80	>75% Grass cover, Good, HSG D
0.44		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	117	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.4	217	Total			

### Subcatchment N-A7: Subcat N-A7

Hydrograph



**Summary for Subcatchment N-A8: Subcat N-A8**

Runoff = 2.68 cfs @ 15.67 hrs, Volume= 1.952 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

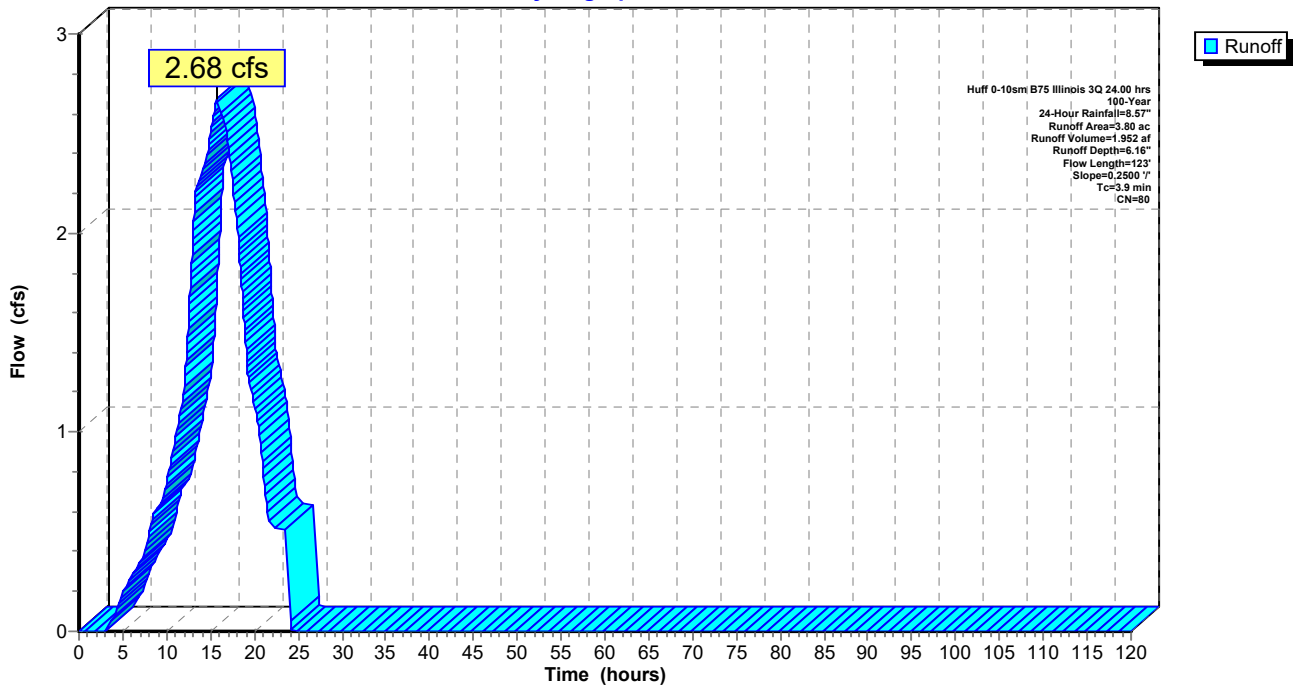
Area (ac)	CN	Description
3.80	80	>75% Grass cover, Good, HSG D
3.80		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.1	23	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.9	123	Total			

**Subcatchment N-A8: Subcat N-A8**

Hydrograph



**Summary for Subcatchment N-A9: Subcat N-A9**

Runoff = 0.13 cfs @ 15.68 hrs, Volume= 0.094 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

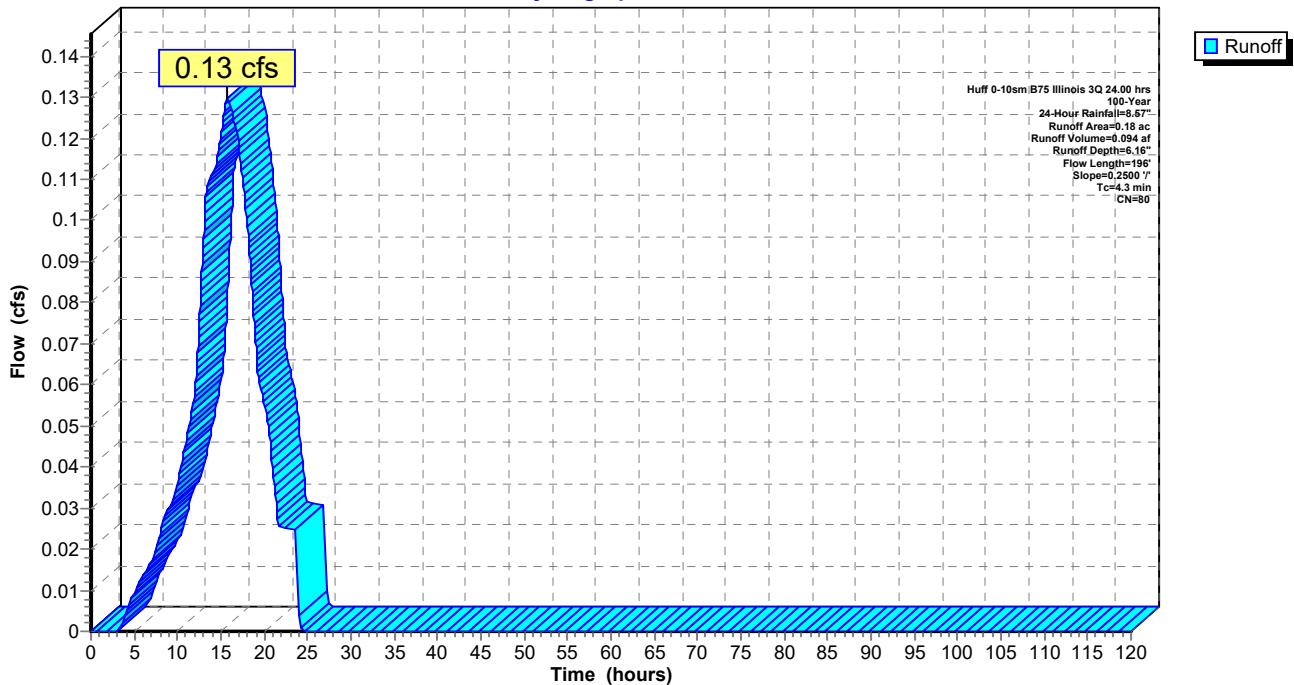
Area (ac)	CN	Description
0.18	80	>75% Grass cover, Good, HSG D
0.18		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.5	96	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.3	196	Total			

**Subcatchment N-A9: Subcat N-A9**

Hydrograph



### Summary for Subcatchment N-B1: Subcat N-B1

Runoff = 2.22 cfs @ 15.71 hrs, Volume= 1.619 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

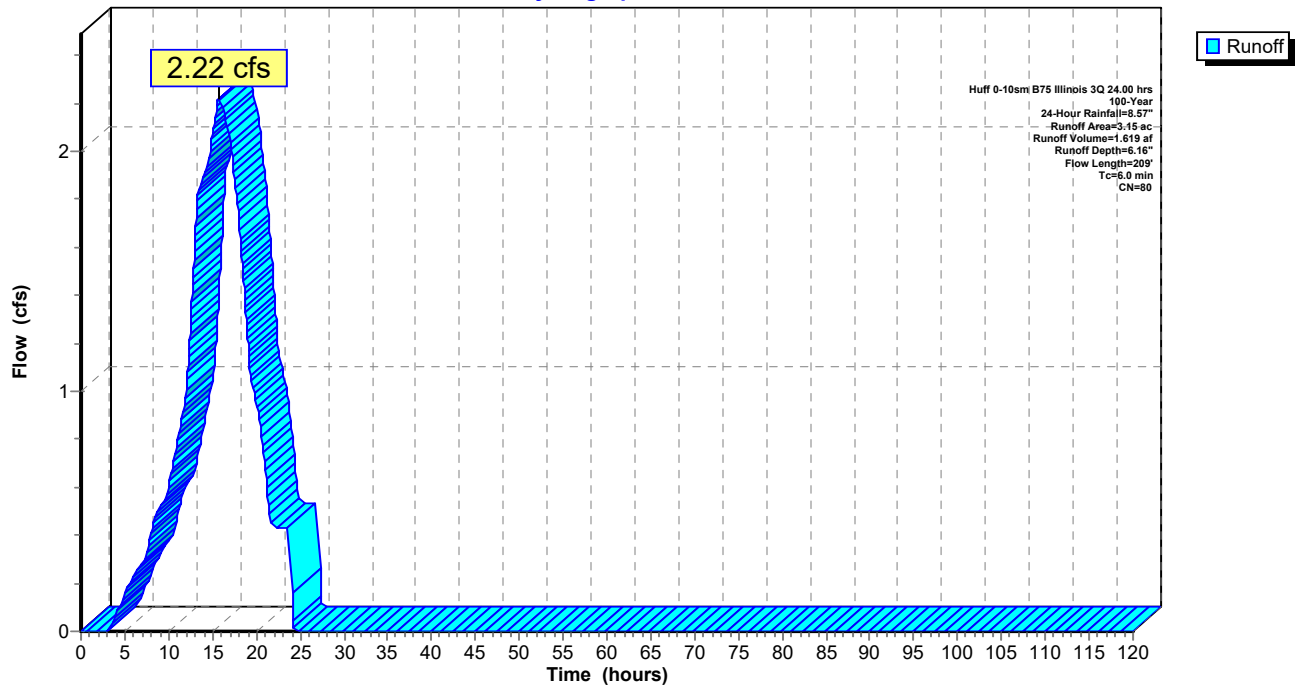
Area (ac)	CN	Description
3.15	80	>75% Grass cover, Good, HSG D
3.15		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.5	109	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.0	209	Total			

### Subcatchment N-B1: Subcat N-B1

Hydrograph



**Summary for Subcatchment N-B10: Subcat N-B10**

Runoff = 1.15 cfs @ 15.67 hrs, Volume= 0.868 af, Depth= 6.76"

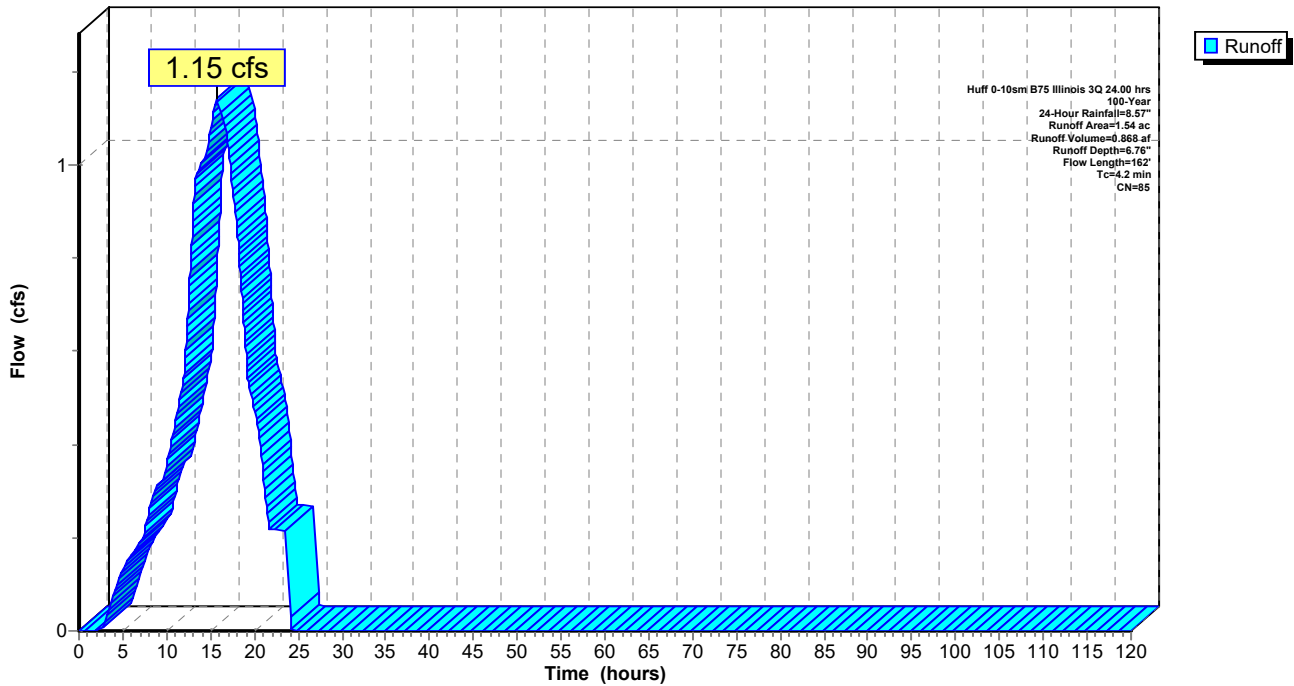
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

Area (ac)	CN	Description
0.91	80	>75% Grass cover, Good, HSG D
0.63	93	Paved roads w/open ditches, 50% imp, HSG D
1.54	85	Weighted Average
1.22		79.55% Pervious Area
0.31		20.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.4	62	0.1195	2.42		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.2	162	Total			

**Subcatchment N-B10: Subcat N-B10**

Hydrograph





**Summary for Subcatchment N-B11: Subcat N-B11**

Runoff = 0.89 cfs @ 15.68 hrs, Volume= 0.651 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

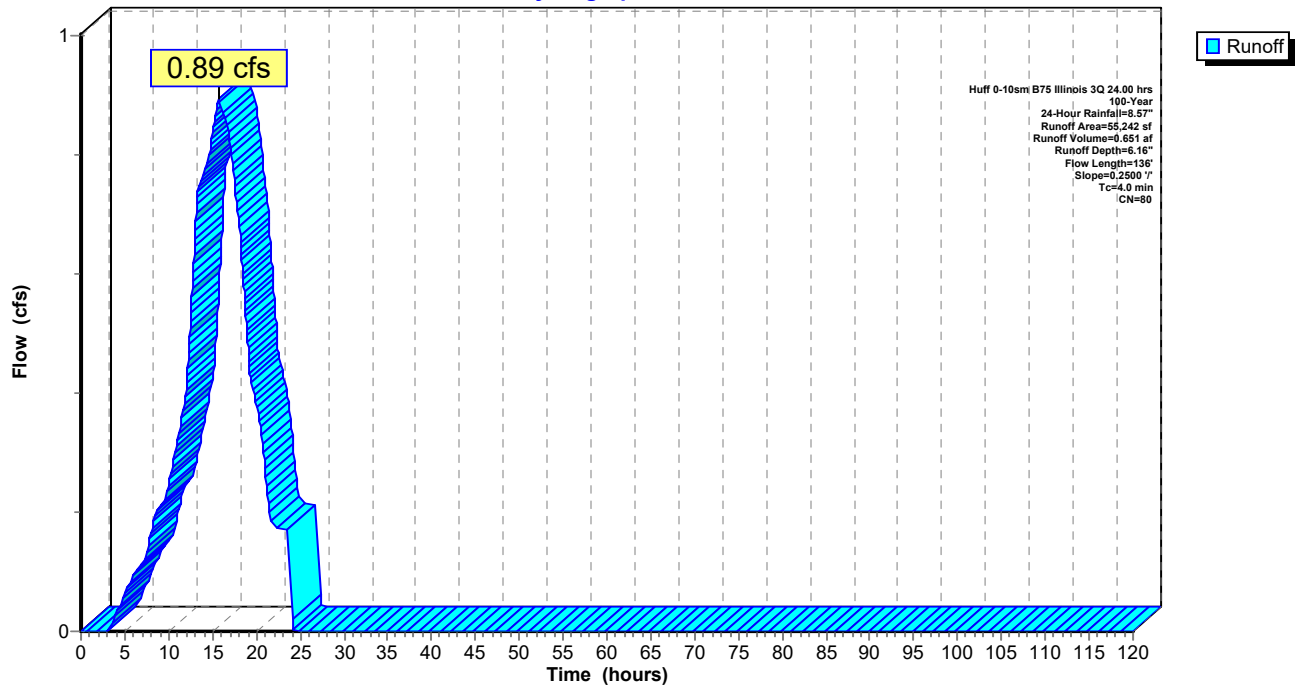
Area (sf)	CN	Description
55,242	80	>75% Grass cover, Good, HSG D
55,242		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	36	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	136	Total			

**Subcatchment N-B11: Subcat N-B11**

Hydrograph



**Summary for Subcatchment N-B12: Subcat N-B12**

Runoff = 1.24 cfs @ 15.70 hrs, Volume= 0.918 af, Depth= 6.40"

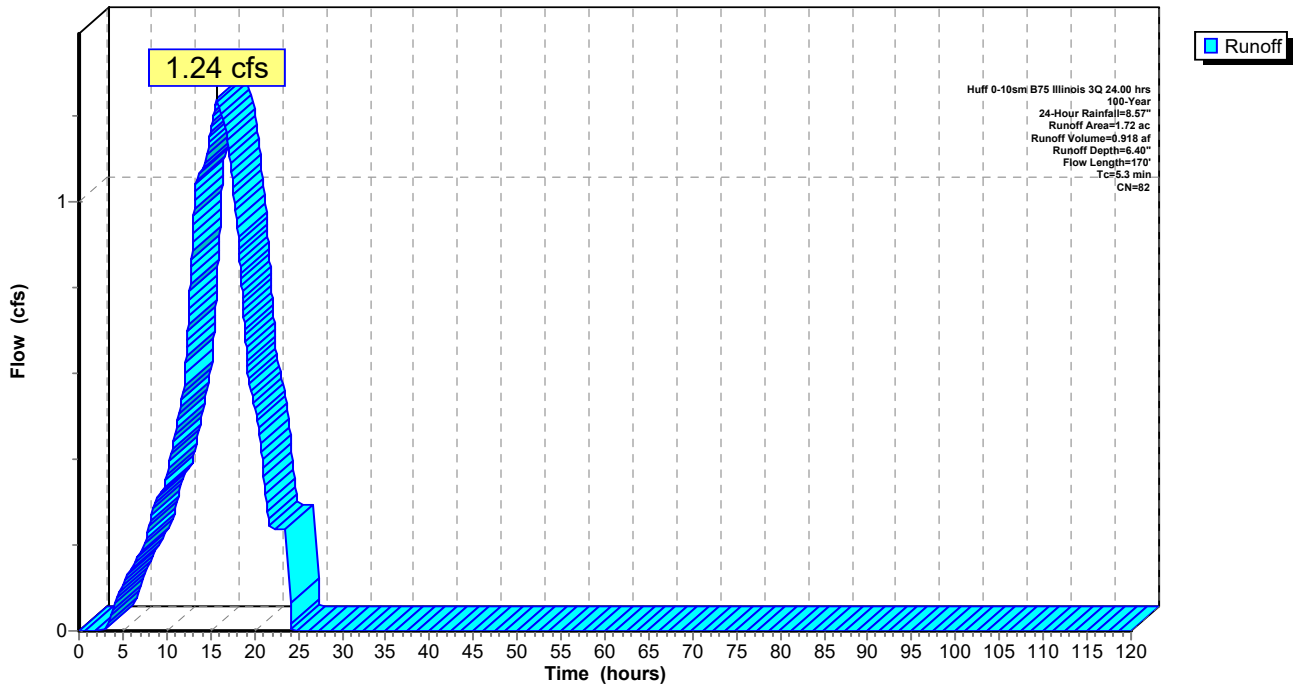
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

Area (ac)	CN	Description
1.45	80	>75% Grass cover, Good, HSG D
0.27	93	Paved roads w/open ditches, 50% imp, HSG D
1.72	82	Weighted Average
1.59		92.15% Pervious Area
0.14		7.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	100	0.1588	0.36		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.7	70	0.0608	1.73		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
5.3	170	Total			

**Subcatchment N-B12: Subcat N-B12**

Hydrograph



**Summary for Subcatchment N-B13: Subcat N-B13**

Runoff = 1.42 cfs @ 15.62 hrs, Volume= 1.032 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

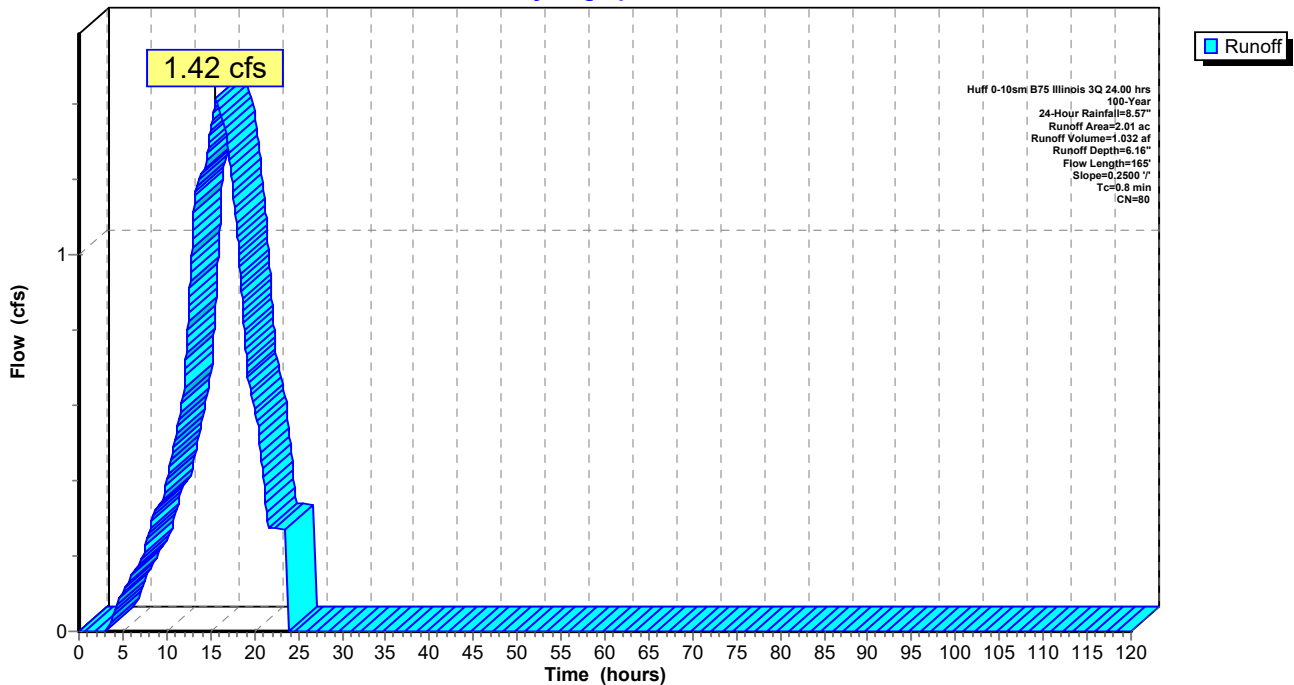
Area (ac)	CN	Description
2.01	80	>75% Grass cover, Good, HSG D
2.01		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	100	0.2500	3.53		<b>Sheet Flow,</b> Smooth surfaces n= 0.011 P2= 2.80"
0.3	65	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
0.8	165	Total			

**Subcatchment N-B13: Subcat N-B13**

Hydrograph



**Summary for Subcatchment N-B14: Subcat N-B14**

Runoff = 0.51 cfs @ 15.61 hrs, Volume= 0.391 af, Depth= 7.01"

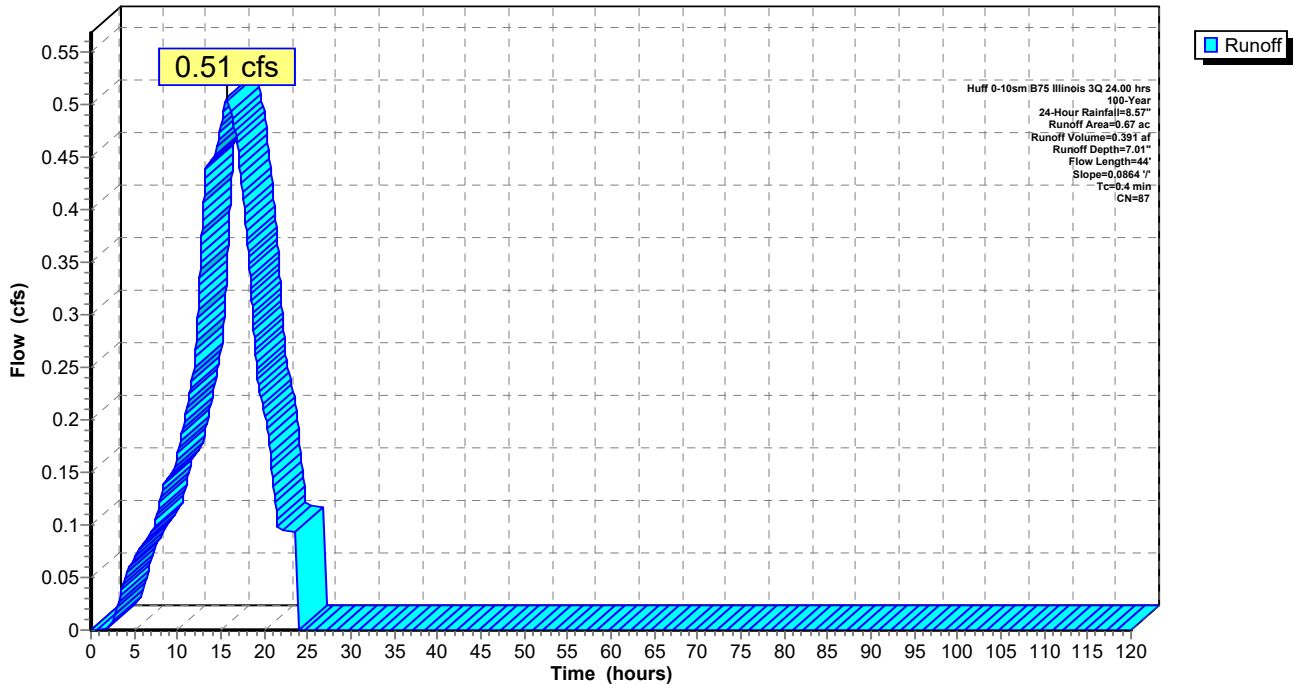
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

Area (ac)	CN	Description
0.29	80	>75% Grass cover, Good, HSG D
0.38	93	Paved roads w/open ditches, 50% imp, HSG D
0.67	87	Weighted Average
0.48		71.64% Pervious Area
0.19		28.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	44	0.0864	1.96		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

**Subcatchment N-B14: Subcat N-B14**

Hydrograph



**Summary for Subcatchment N-B15: Subcat N-B15**

Runoff = 0.03 cfs @ 15.63 hrs, Volume= 0.021 af, Depth= 6.16"

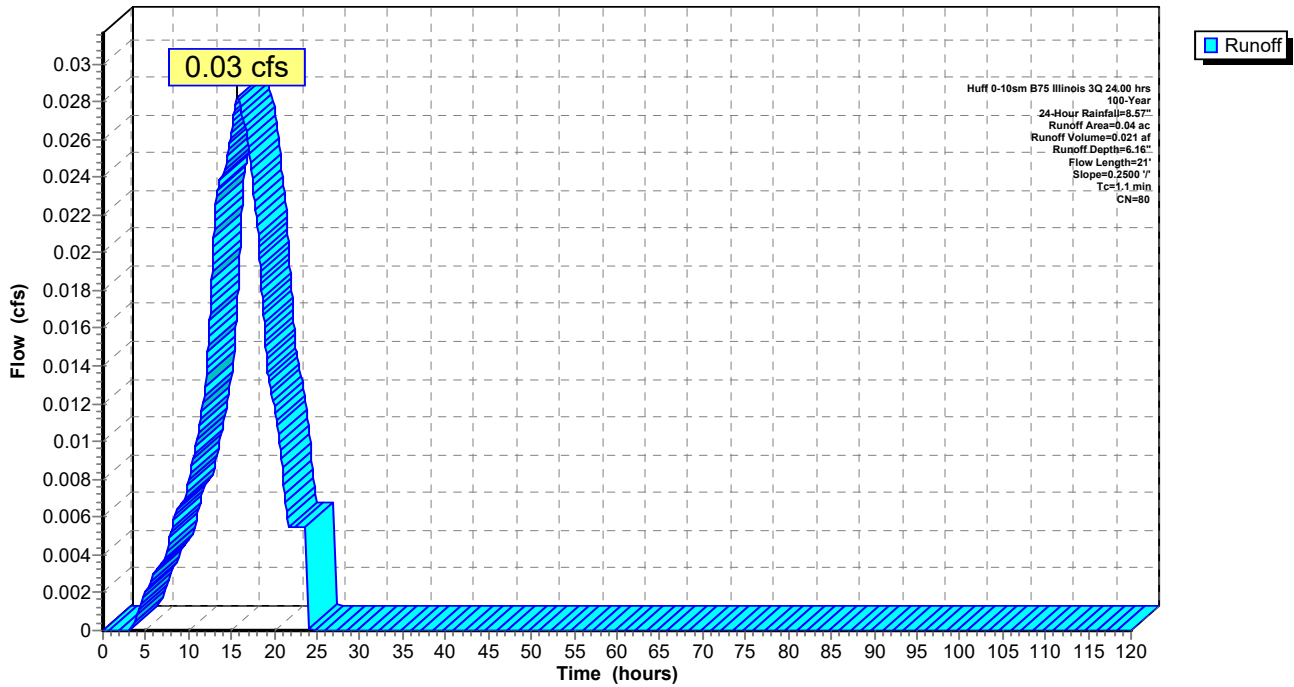
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

Area (ac)	CN	Description
0.04	80	>75% Grass cover, Good, HSG D
0.04		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	21	0.2500	0.32		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-B15: Subcat N-B15**

Hydrograph



### Summary for Subcatchment N-B16: Subcat N-B16

Runoff = 0.07 cfs @ 15.61 hrs, Volume= 0.056 af, Depth= 6.76"

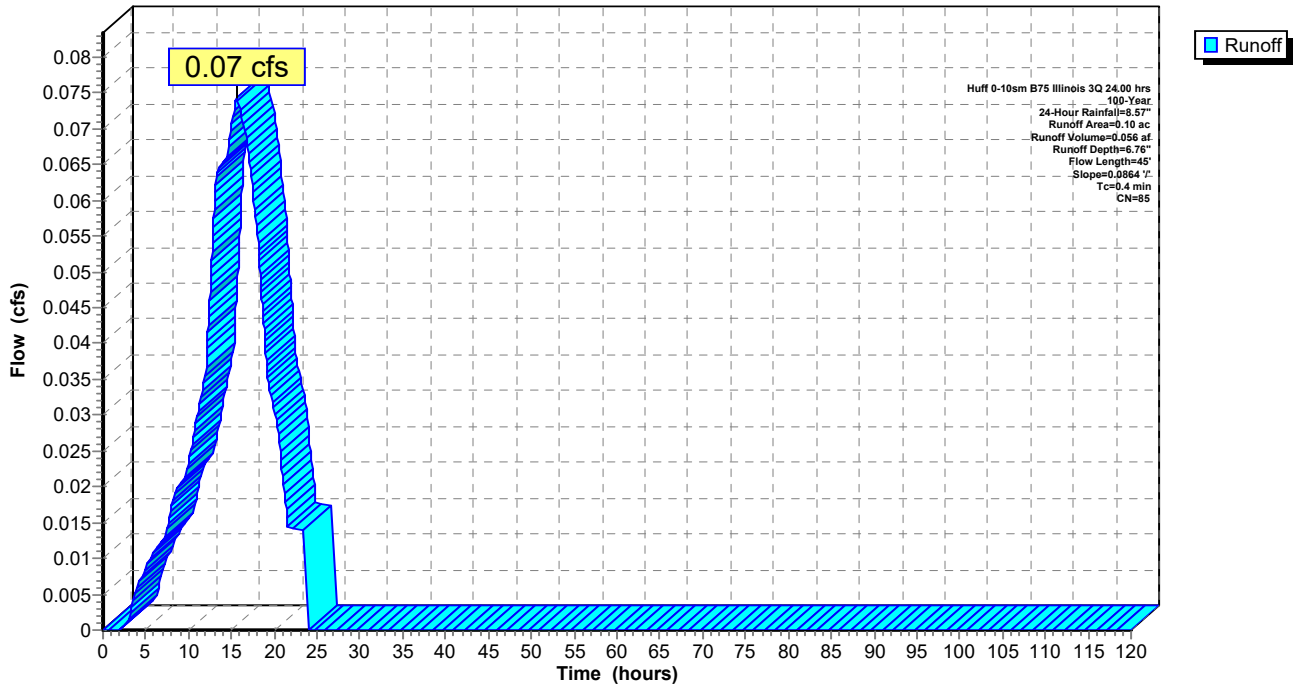
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

Area (ac)	CN	Description
0.06	80	>75% Grass cover, Good, HSG D
0.04	93	Paved roads w/open ditches, 50% imp, HSG D
0.10	85	Weighted Average
0.08		80.00% Pervious Area
0.02		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	45	0.0864	1.97		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.80"

### Subcatchment N-B16: Subcat N-B16

Hydrograph



**Summary for Subcatchment N-B2: Subcat N-B2**

Runoff = 3.16 cfs @ 15.71 hrs, Volume= 2.303 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

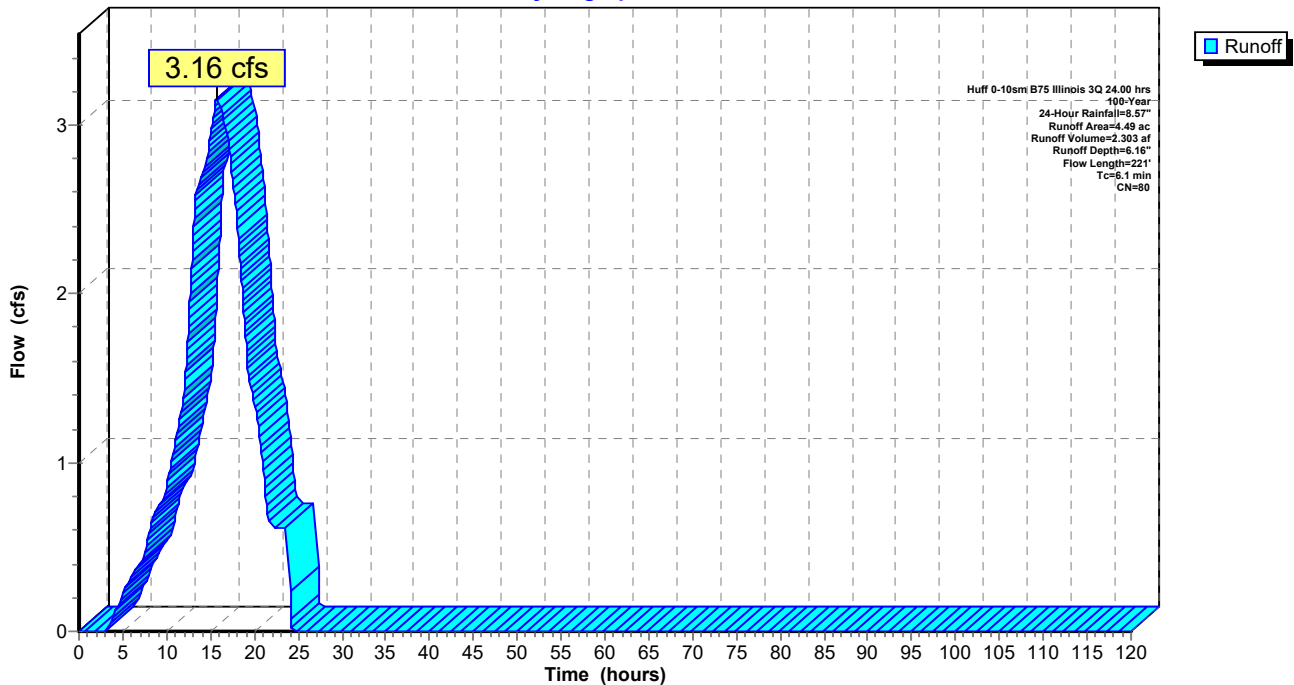
Area (ac)	CN	Description
4.49	80	>75% Grass cover, Good, HSG D
4.49		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.6	121	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.1	221	Total			

**Subcatchment N-B2: Subcat N-B2**

Hydrograph



### Summary for Subcatchment N-B3: Subcat N-B3

Runoff = 2.42 cfs @ 15.68 hrs, Volume= 1.760 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

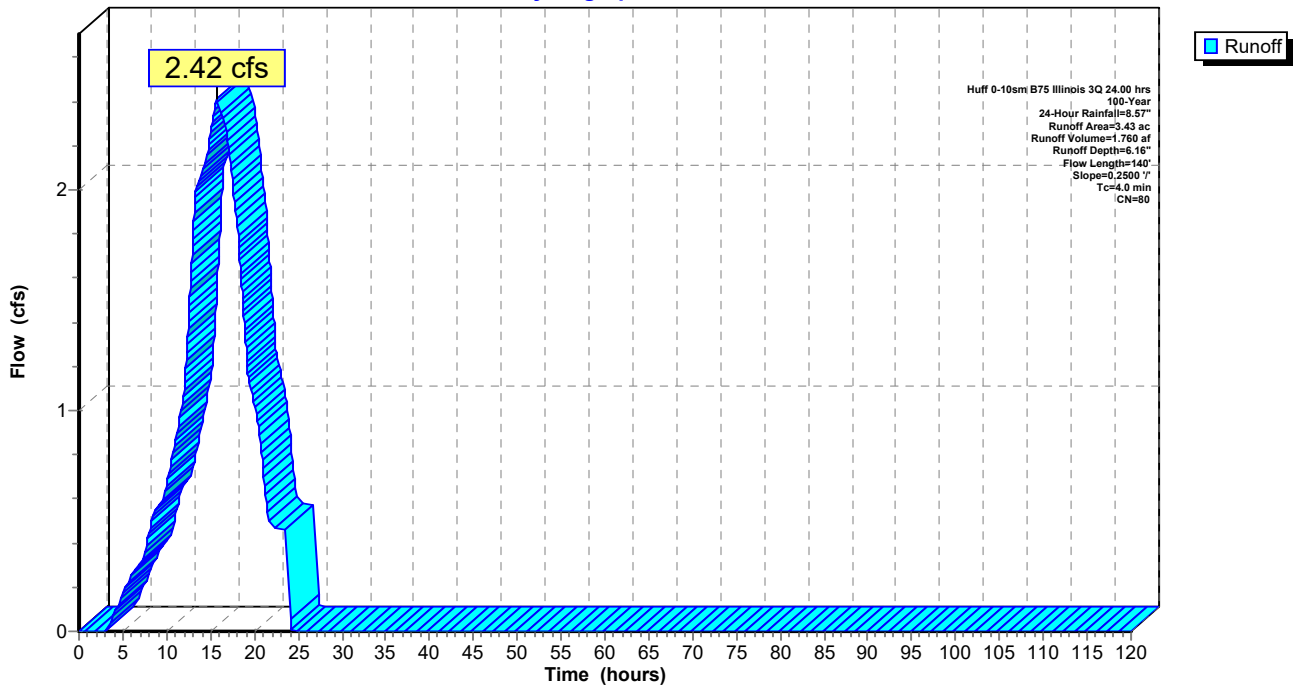
Area (ac)	CN	Description
3.43	80	>75% Grass cover, Good, HSG D
3.43		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	40	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	140	Total			

### Subcatchment N-B3: Subcat N-B3

Hydrograph





### Summary for Subcatchment N-B4: Subcat N-B4

Runoff = 2.68 cfs @ 15.68 hrs, Volume= 1.954 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

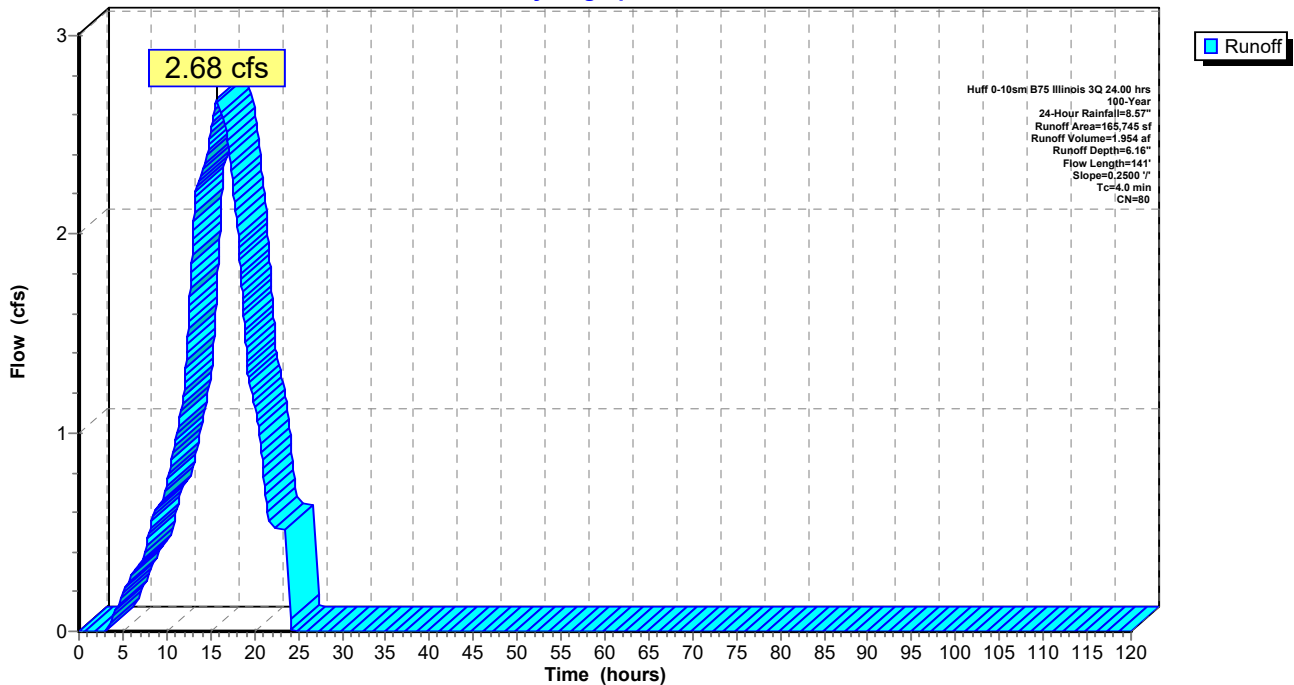
Area (sf)	CN	Description
165,745	80	>75% Grass cover, Good, HSG D
165,745		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	41	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	141	Total			

### Subcatchment N-B4: Subcat N-B4

Hydrograph



**Summary for Subcatchment N-B5: Subcat N-B5**

Runoff = 3.17 cfs @ 15.68 hrs, Volume= 2.309 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

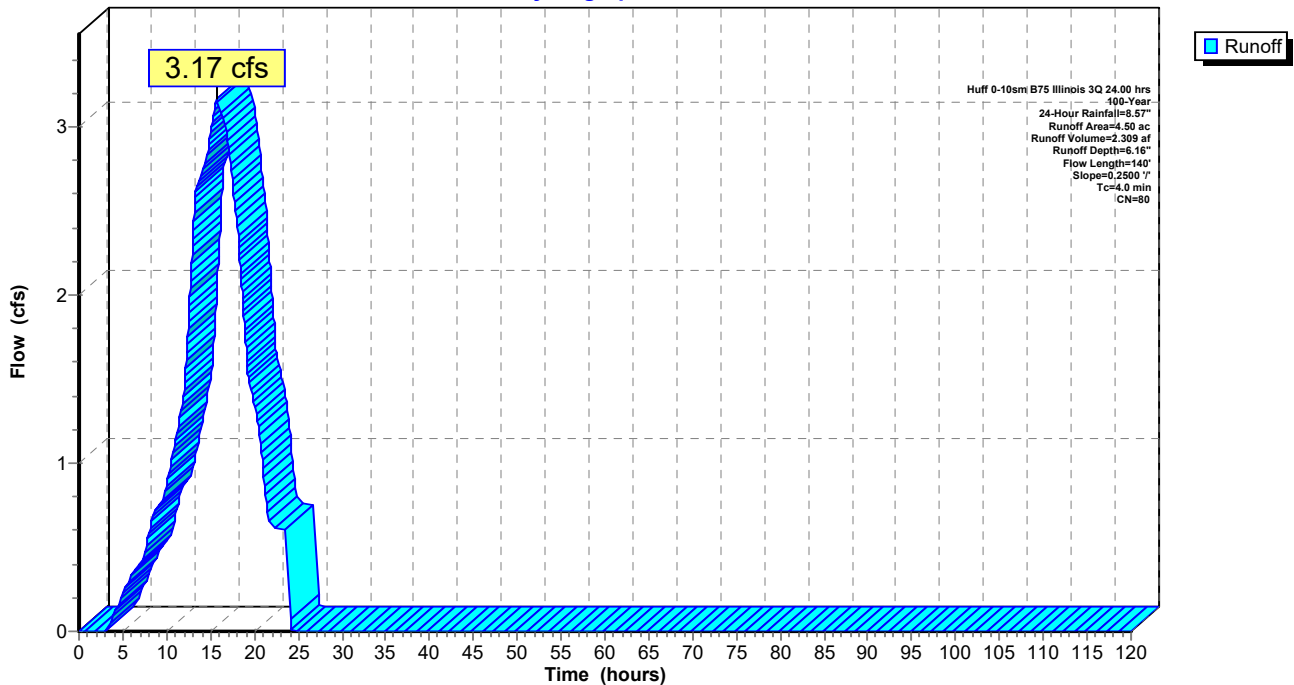
Area (ac)	CN	Description
4.50	80	>75% Grass cover, Good, HSG D
4.50		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	40	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	140	Total			

**Subcatchment N-B5: Subcat N-B5**

Hydrograph



**Summary for Subcatchment N-B6: Subcat N-B6**

Runoff = 3.03 cfs @ 15.68 hrs, Volume= 2.202 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

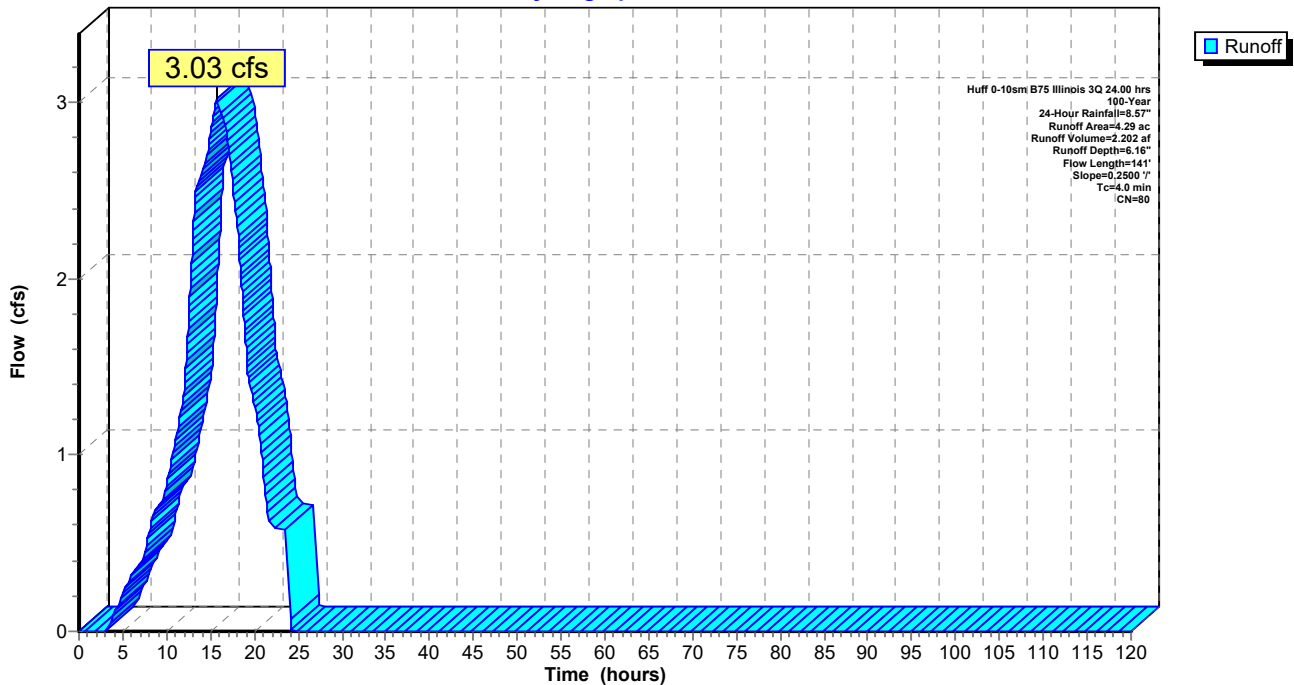
Area (ac)	CN	Description
4.29	80	>75% Grass cover, Good, HSG D
4.29		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	41	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	141	Total			

**Subcatchment N-B6: Subcat N-B6**

Hydrograph



**Summary for Subcatchment N-B7: Subcat N-B7**

Runoff = 2.80 cfs @ 15.68 hrs, Volume= 2.035 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

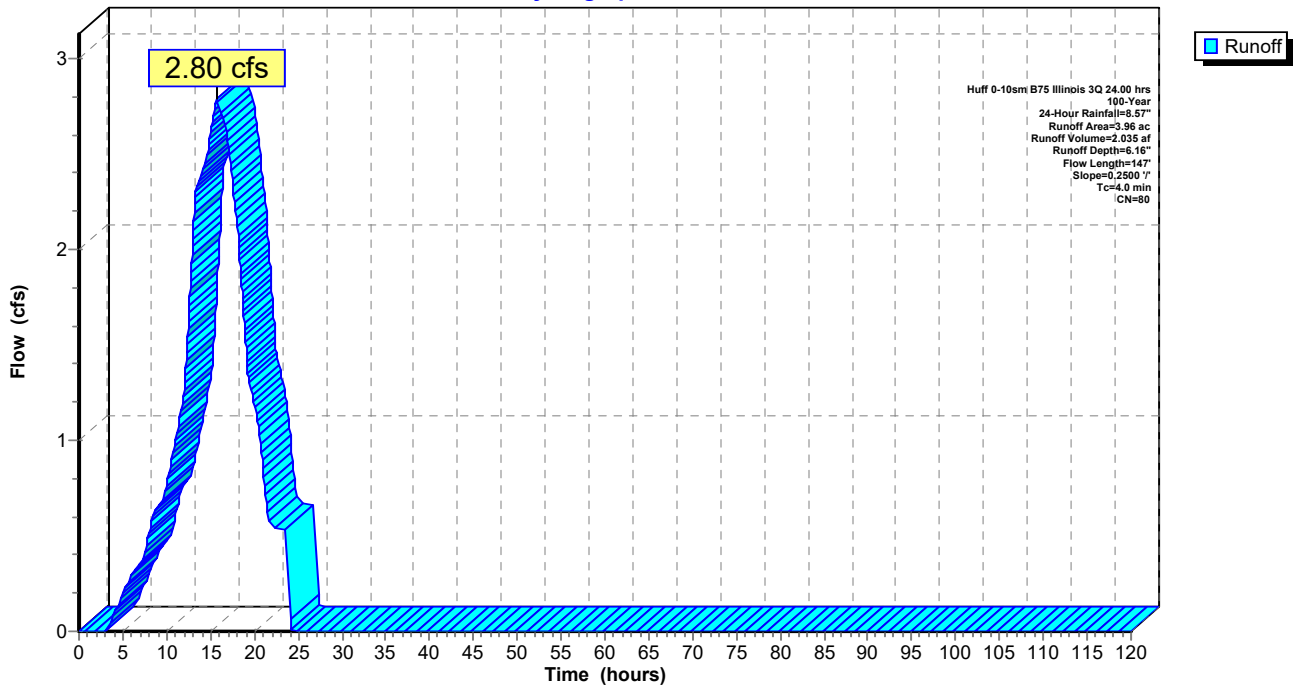
Area (ac)	CN	Description
3.96	80	>75% Grass cover, Good, HSG D
3.96		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	47	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	147	Total			

**Subcatchment N-B7: Subcat N-B7**

Hydrograph



**Summary for Subcatchment N-B8: Subcat N-B8**

Runoff = 2.49 cfs @ 15.68 hrs, Volume= 1.809 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

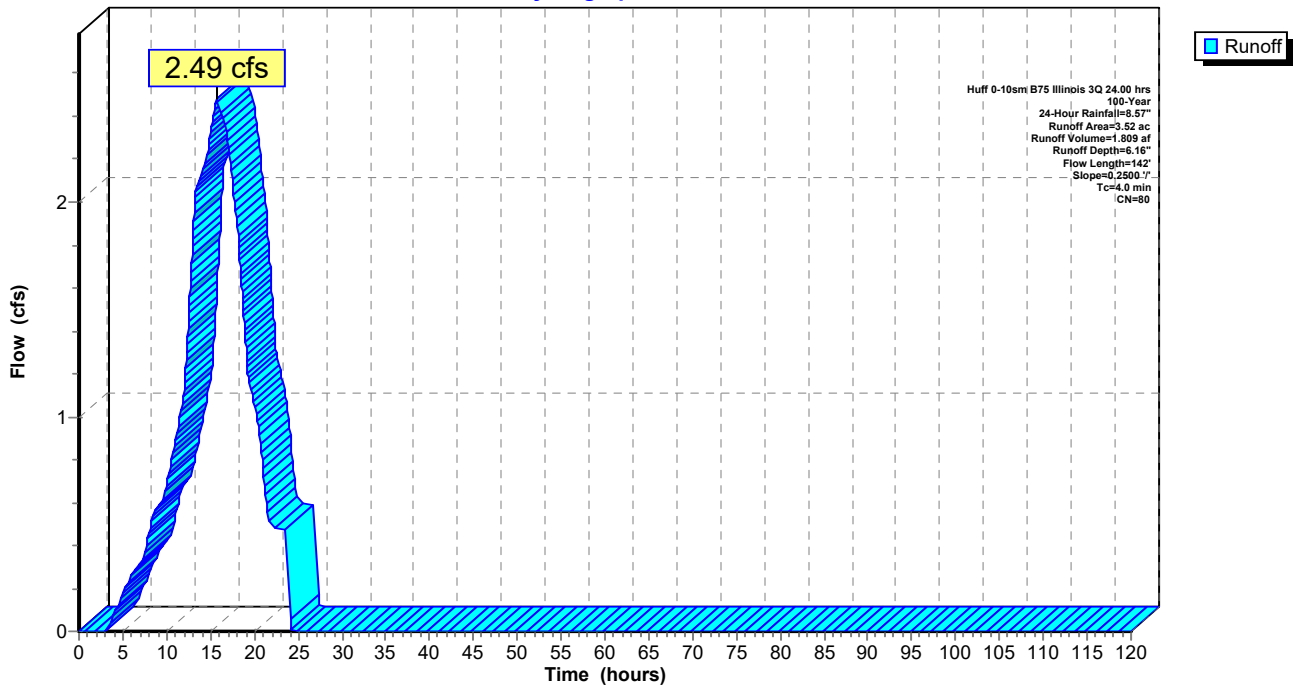
Area (ac)	CN	Description
3.52	80	>75% Grass cover, Good, HSG D
3.52		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	42	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	142	Total			

**Subcatchment N-B8: Subcat N-B8**

Hydrograph



**Summary for Subcatchment N-B9: Subcat N-B9**

Runoff = 0.82 cfs @ 15.66 hrs, Volume= 0.595 af, Depth= 6.16"

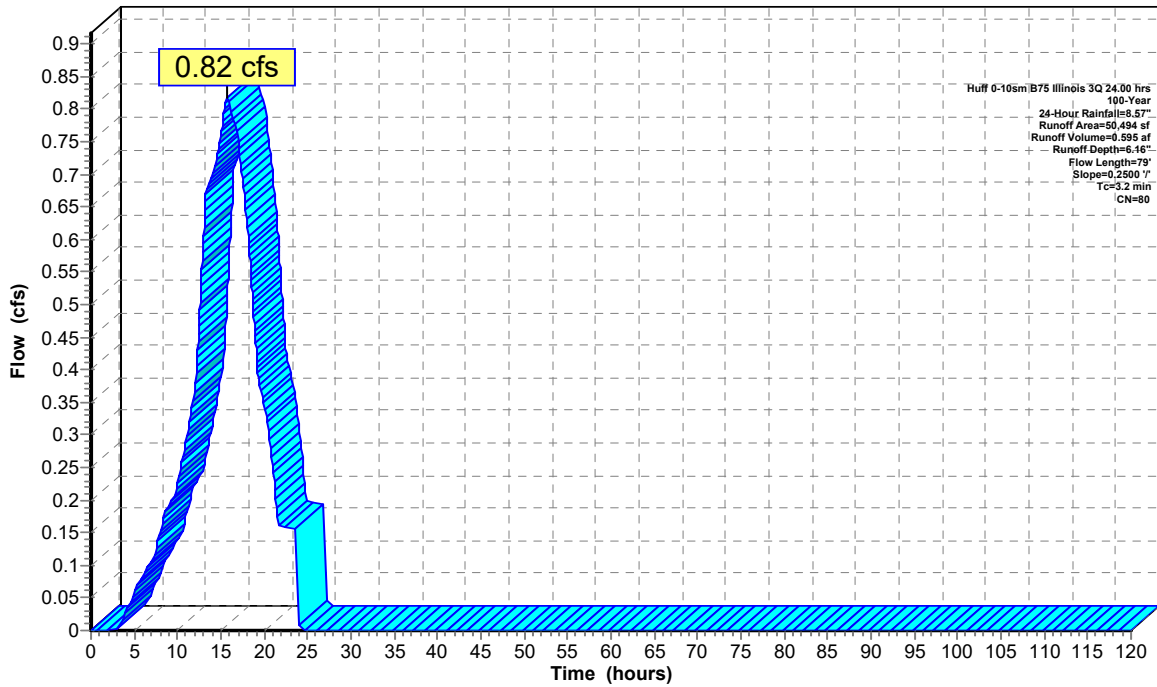
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

Area (sf)	CN	Description
50,494	80	>75% Grass cover, Good, HSG D
50,494		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.2	79	0.2500	0.42		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-B9: Subcat N-B9**

Hydrograph



Runoff

**Summary for Subcatchment N-C1: Subcat N-C1**

Runoff = 4.92 cfs @ 15.72 hrs, Volume= 3.586 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

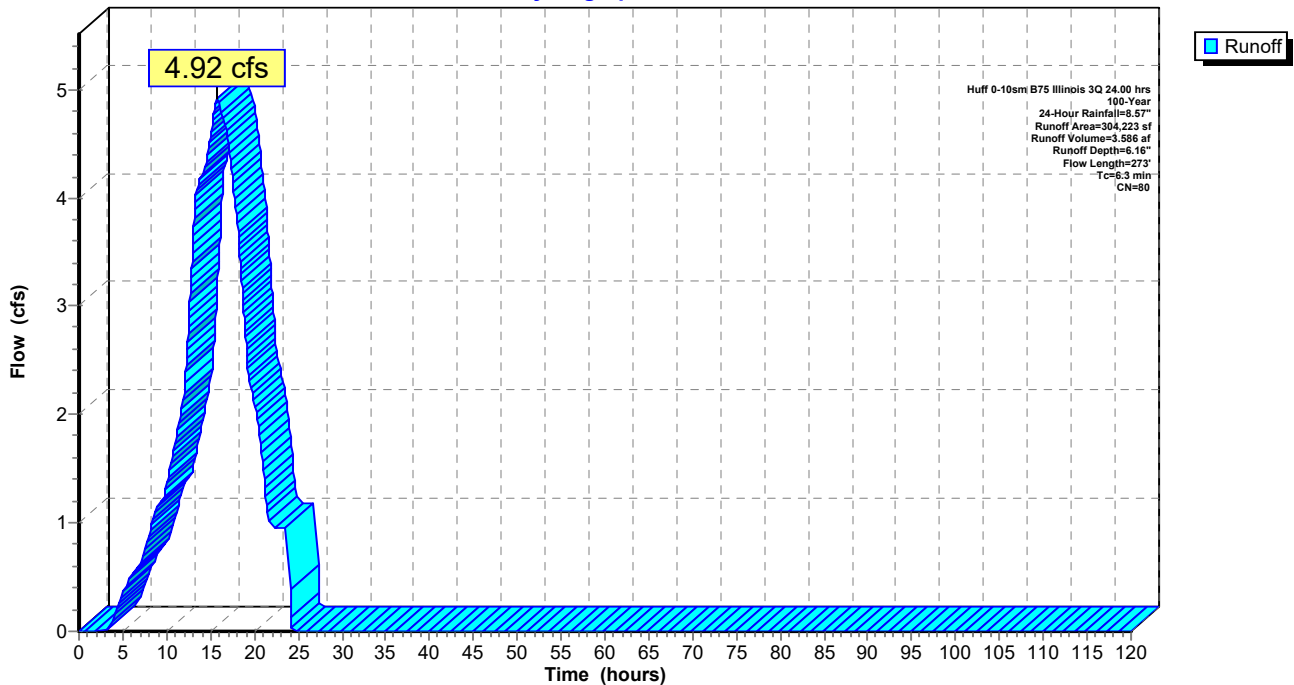
Area (sf)	CN	Description
304,223	80	>75% Grass cover, Good, HSG D
304,223		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.1000	0.30		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.8	173	0.2418	3.44		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
6.3	273	Total			

**Subcatchment N-C1: Subcat N-C1**

Hydrograph



**Summary for Subcatchment N-C2: Subcat N-C2**

Runoff = 2.96 cfs @ 15.68 hrs, Volume= 2.157 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

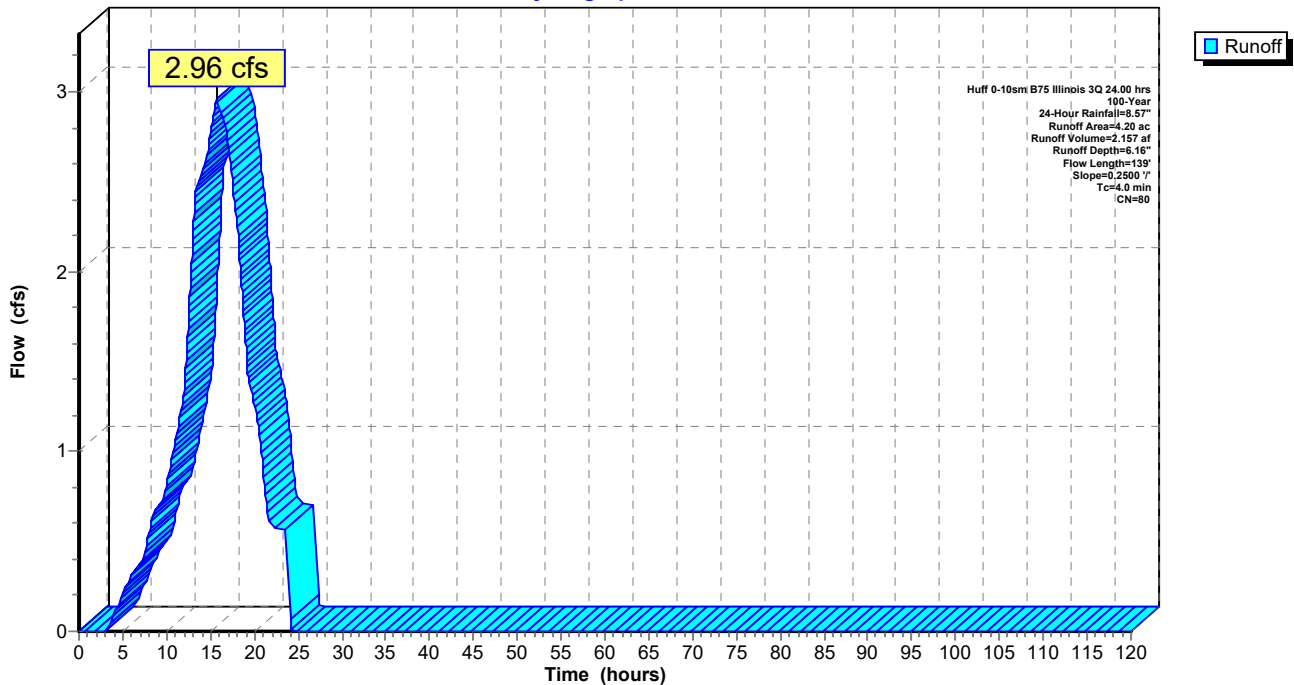
Area (ac)	CN	Description
4.20	80	>75% Grass cover, Good, HSG D
4.20		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	39	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	139	Total			

**Subcatchment N-C2: Subcat N-C2**

Hydrograph





**Summary for Subcatchment N-C3: Subcat N-C3**

Runoff = 2.98 cfs @ 15.68 hrs, Volume= 2.167 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

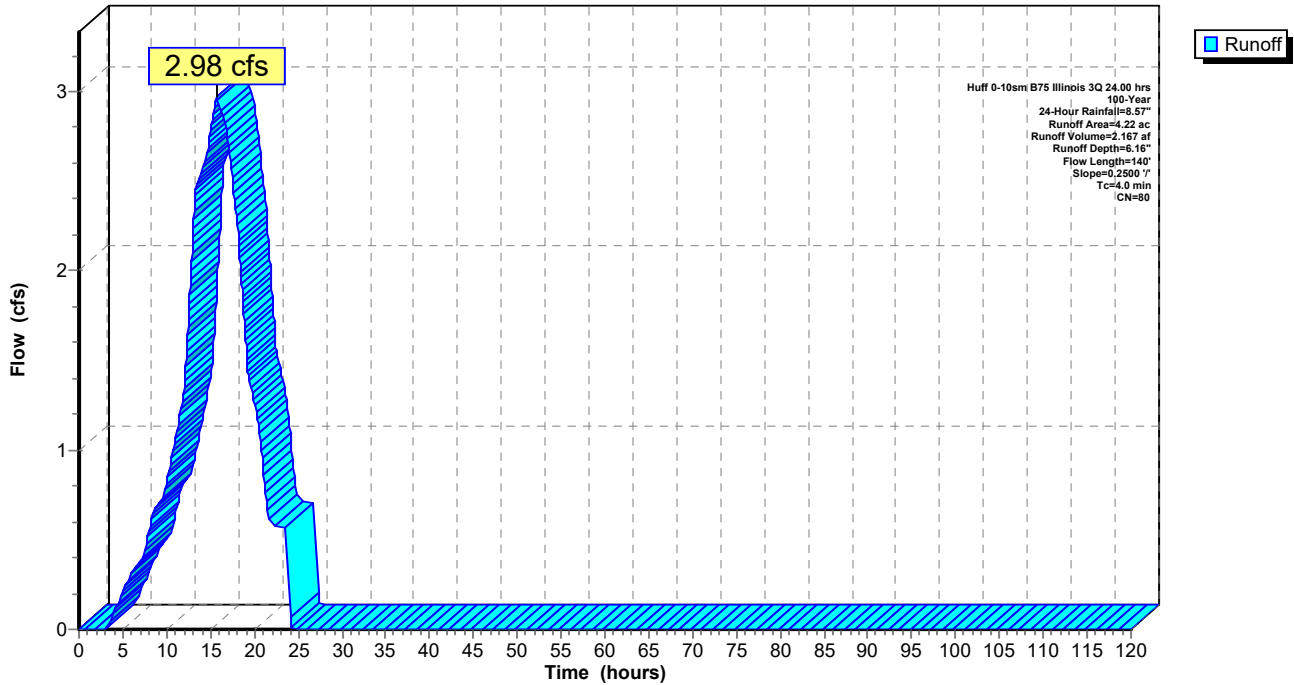
Area (ac)	CN	Description
4.22	80	>75% Grass cover, Good, HSG D
4.22		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	40	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	140	Total			

**Subcatchment N-C3: Subcat N-C3**

Hydrograph



**Summary for Subcatchment N-C4: Subcat N-C4**

Runoff = 2.48 cfs @ 15.68 hrs, Volume= 1.805 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

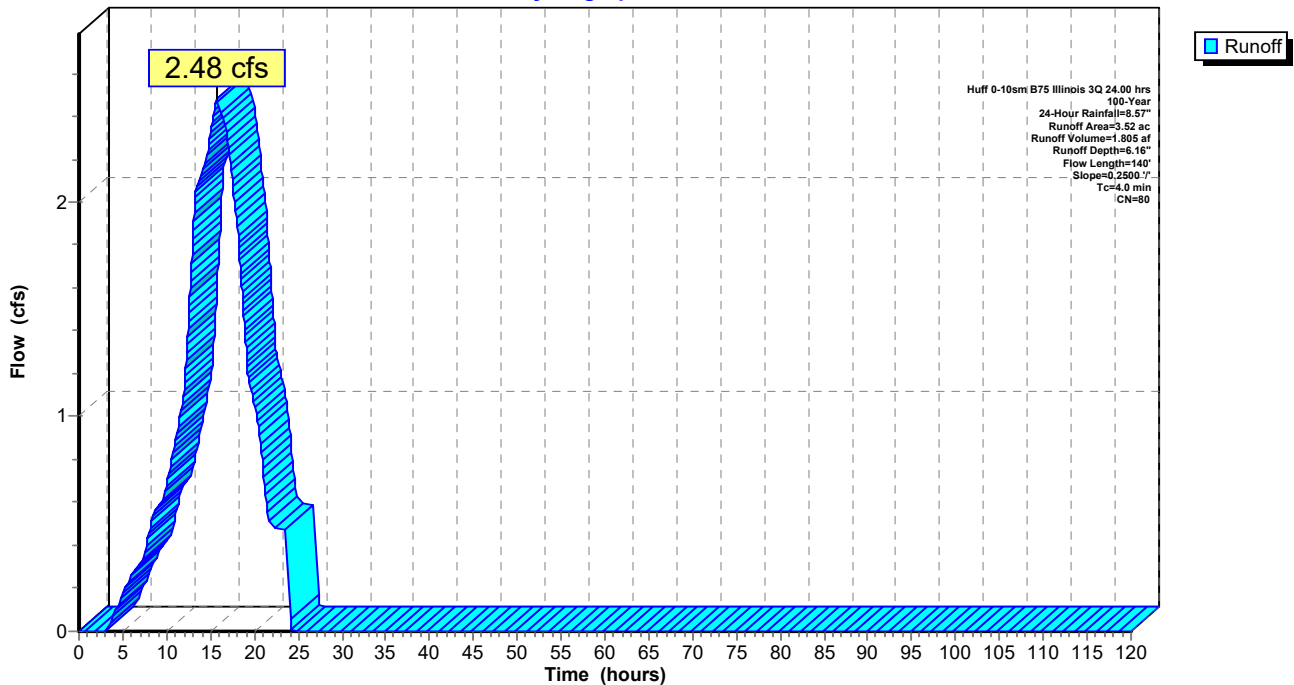
Area (ac)	CN	Description
3.52	80	>75% Grass cover, Good, HSG D
3.52		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.2	40	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.0	140	Total			

**Subcatchment N-C4: Subcat N-C4**

Hydrograph



**Summary for Subcatchment N-C5: Subcat N-C5**

Runoff = 0.53 cfs @ 15.68 hrs, Volume= 0.385 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

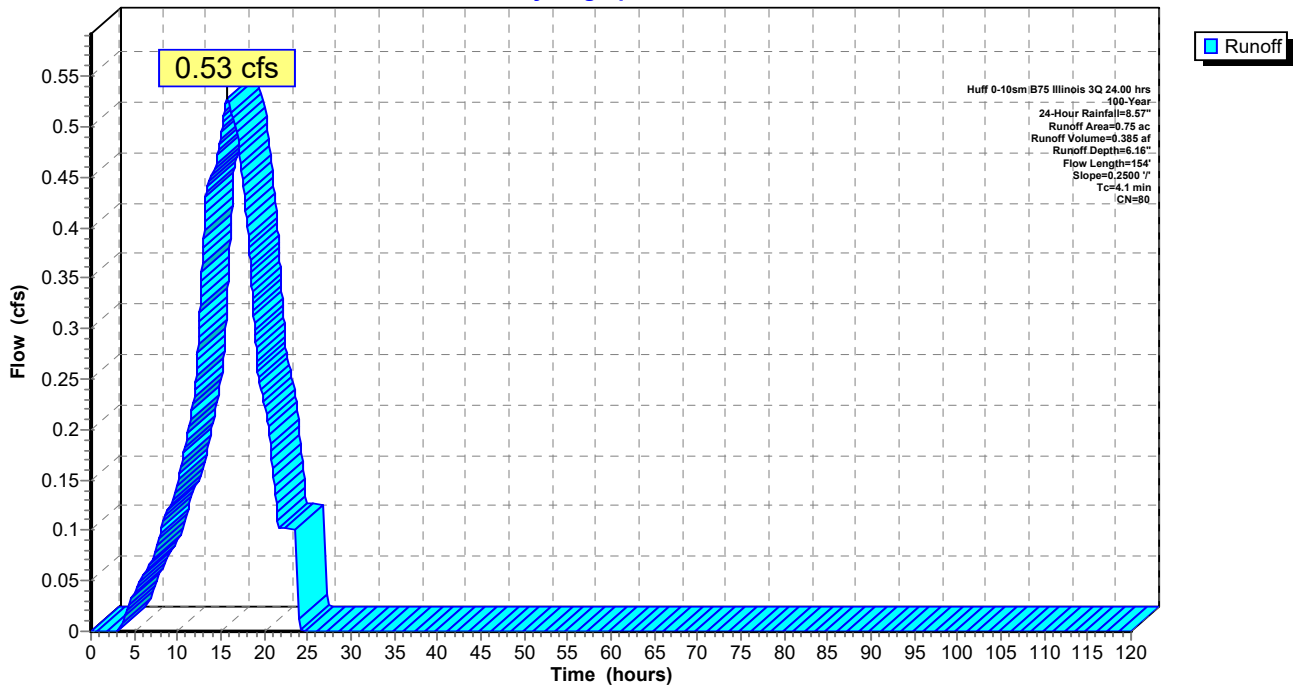
Area (ac)	CN	Description
0.75	80	>75% Grass cover, Good, HSG D
0.75		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	100	0.2500	0.44		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.3	54	0.2500	3.50		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
4.1	154	Total			

**Subcatchment N-C5: Subcat N-C5**

Hydrograph



### Summary for Subcatchment N-C6: Subcat N-C6

Runoff = 0.53 cfs @ 16.02 hrs, Volume= 0.401 af, Depth= 6.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

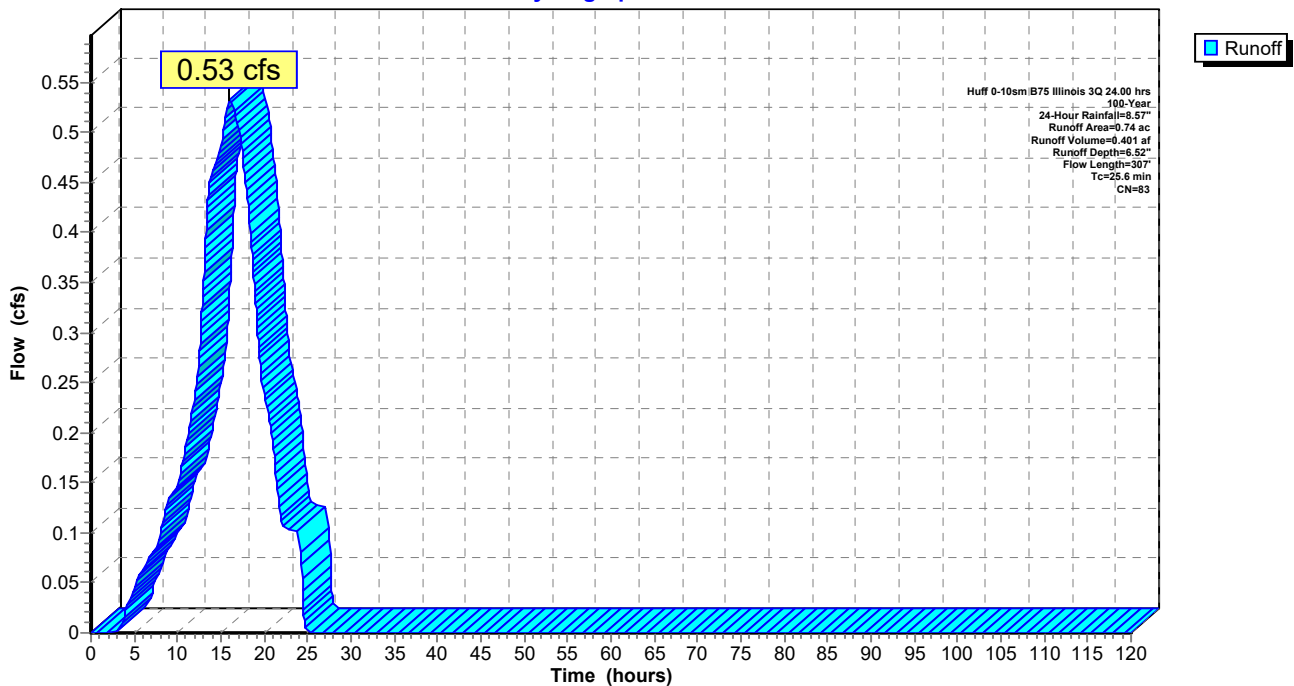
Area (ac)	CN	Description
0.59	80	>75% Grass cover, Good, HSG D
0.14	93	Paved roads w/open ditches, 50% imp, HSG D
0.74	83	Weighted Average
0.67		90.37% Pervious Area
0.07		9.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.0	100	0.0200	0.07		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.80"
2.6	207	0.0352	1.31		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
25.6	307	Total			

### Subcatchment N-C6: Subcat N-C6

Hydrograph



**Summary for Subcatchment N-C7: Subcat N-C7**

Runoff = 0.82 cfs @ 15.66 hrs, Volume= 0.598 af, Depth= 6.16"

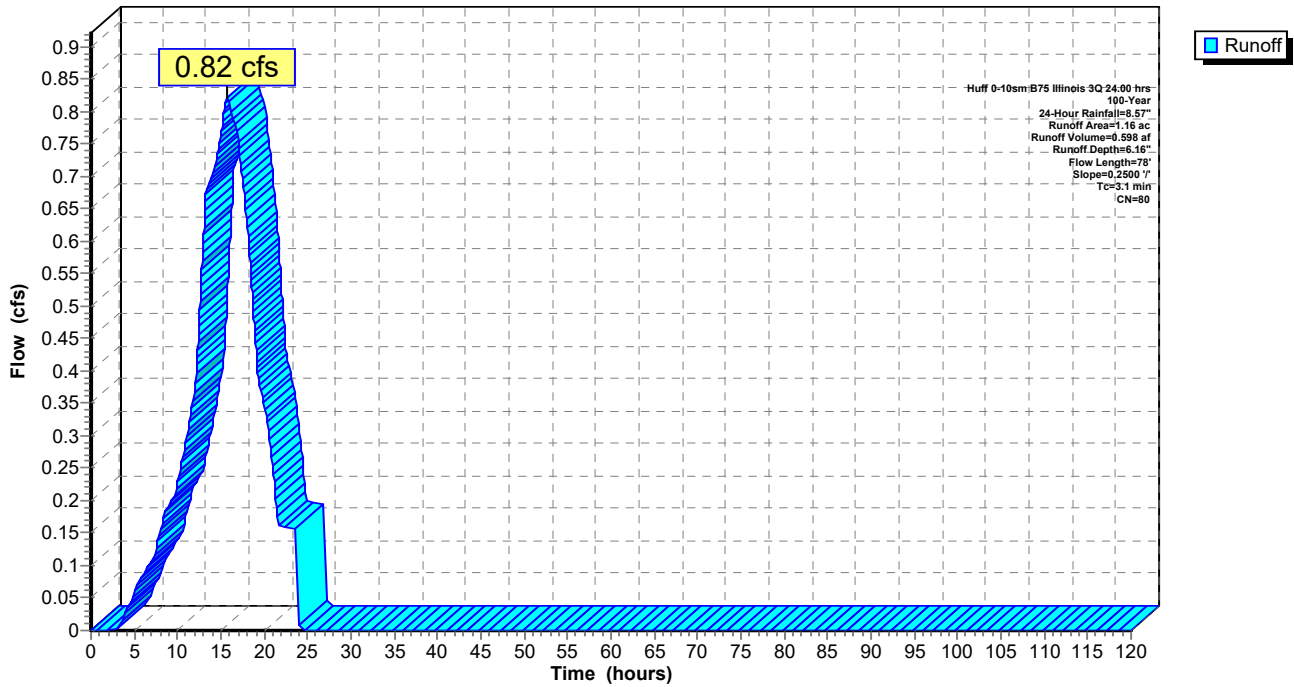
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

Area (ac)	CN	Description
1.16	80	>75% Grass cover, Good, HSG D
1.16		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	78	0.2500	0.42		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-C7: Subcat N-C7**

Hydrograph



**Summary for Subcatchment N-C8: Subcat N-C8**

Runoff = 1.16 cfs @ 15.98 hrs, Volume= 0.887 af, Depth= 6.76"

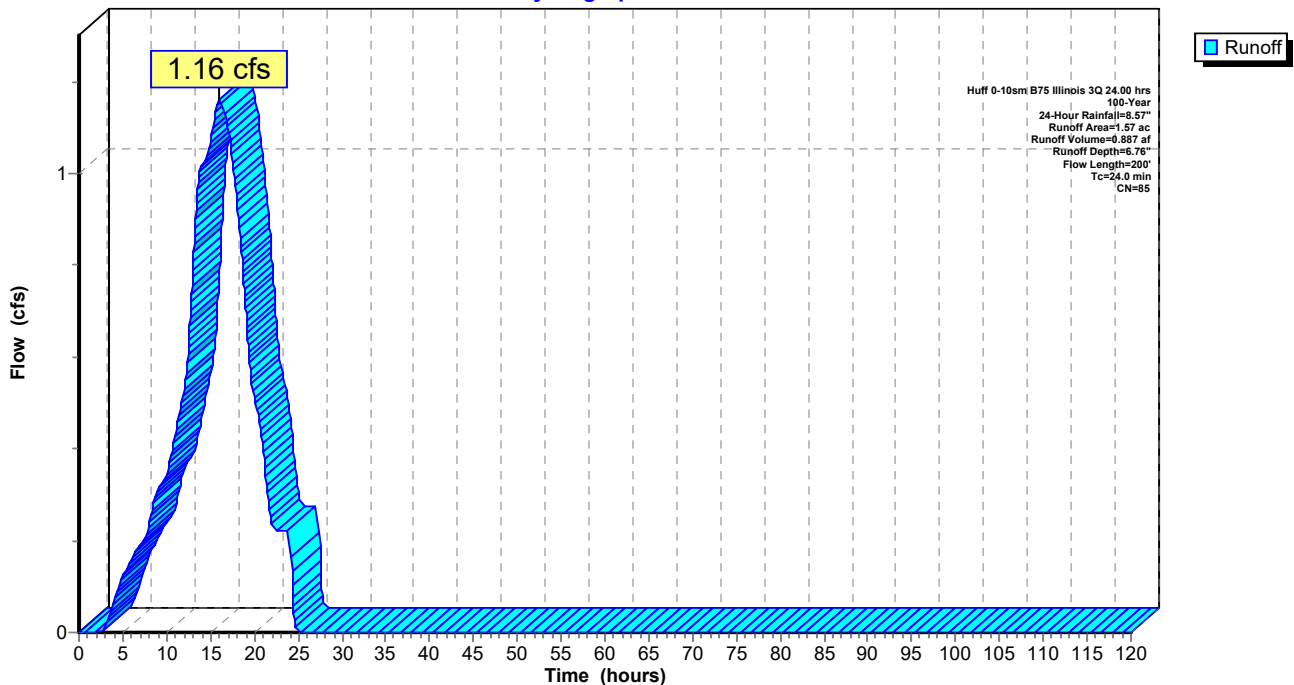
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

Area (ac)	CN	Description
0.65	80	>75% Grass cover, Good, HSG D
0.63	93	Paved roads w/open ditches, 50% imp, HSG D
0.30	79	Woods/grass comb., Good, HSG D
1.57	85	Weighted Average
1.26		80.08% Pervious Area
0.31		19.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.0	100	0.0200	0.07		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 2.80"
1.0	100	0.0611	1.73		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
24.0	200	Total			

**Subcatchment N-C8: Subcat N-C8**

Hydrograph



**Summary for Subcatchment N-D1: Subcat N-D1**

Runoff = 0.08 cfs @ 15.66 hrs, Volume= 0.055 af, Depth= 6.16"

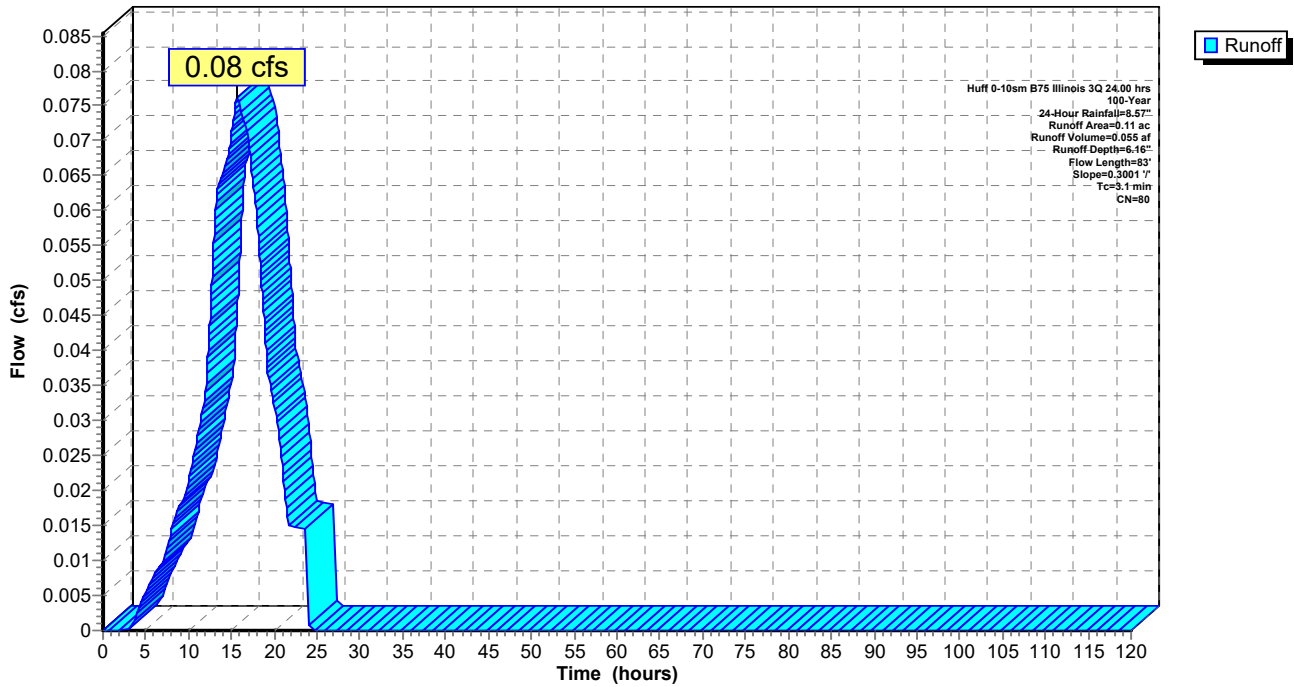
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

Area (ac)	CN	Description
0.11	80	>75% Grass cover, Good, HSG D
0.11		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.1	83	0.3001	0.45		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

**Subcatchment N-D1: Subcat N-D1**

Hydrograph



**Summary for Subcatchment N-D2: Subcat N-D2**

Runoff = 3.32 cfs @ 15.67 hrs, Volume= 2.416 af, Depth= 6.16"

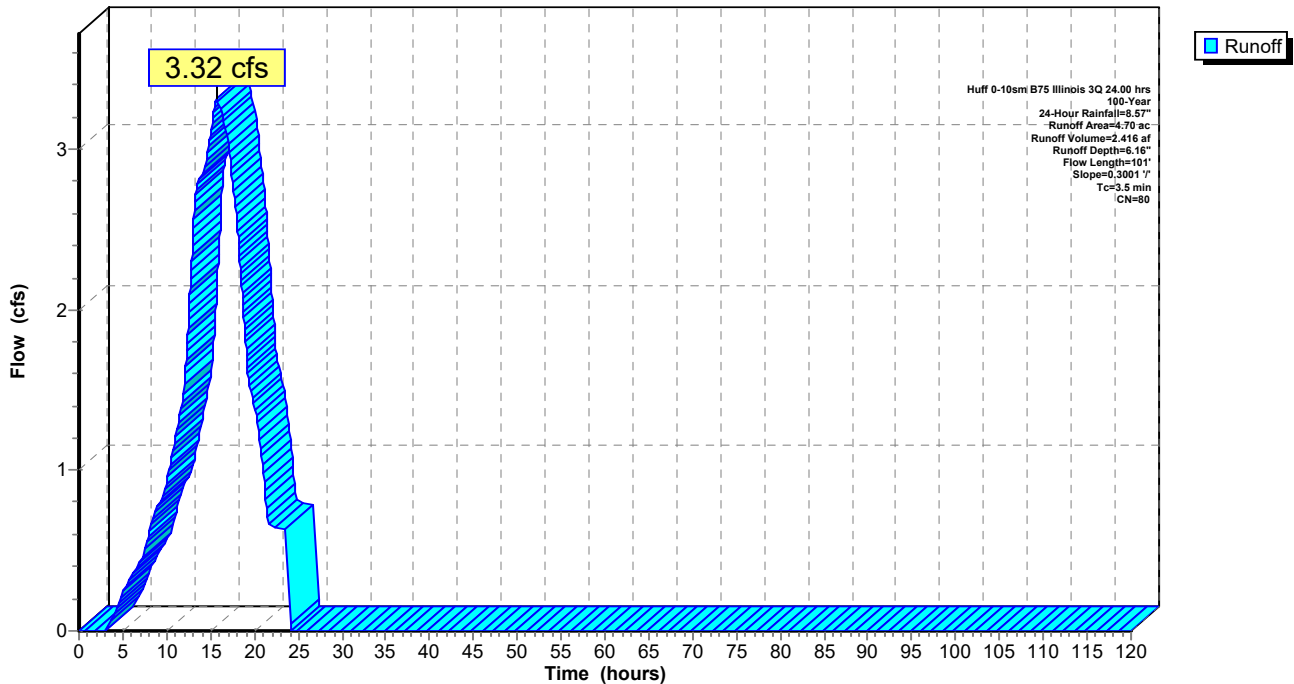
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

Area (ac)	CN	Description
4.54	80	>75% Grass cover, Good, HSG D
0.16	93	Paved roads w/open ditches, 50% imp, HSG D
4.70	80	Weighted Average
4.62		98.26% Pervious Area
0.08		1.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	100	0.3001	0.47		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 2.80"
0.0	1	0.3001	3.83		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
3.5	101	Total			

**Subcatchment N-D2: Subcat N-D2**

Hydrograph





### Summary for Subcatchment N-E1: Subcat N-E1

Runoff = 6.32 cfs @ 15.65 hrs, Volume= 4.596 af, Depth= 6.16"

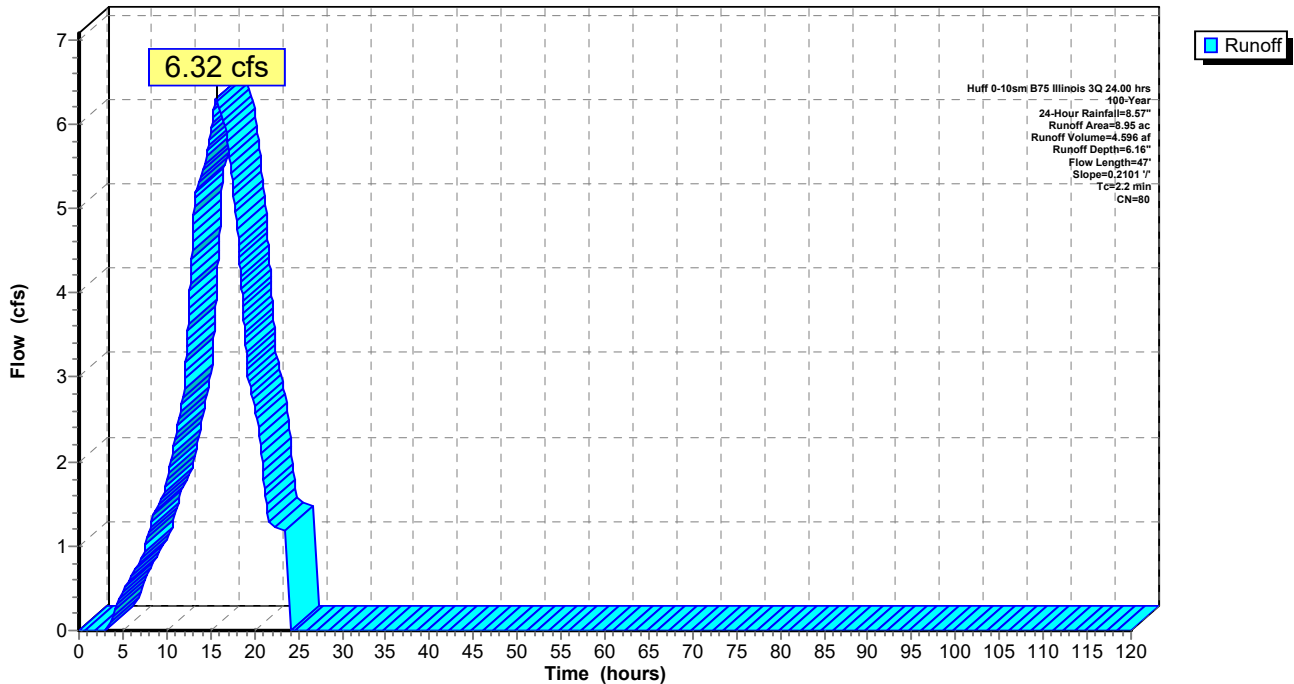
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm B75 Illinois 3Q 24.00 hrs 100-Year, 24-Hour Rainfall=8.57"

Area (ac)	CN	Description
8.95	80	>75% Grass cover, Good, HSG D
8.95		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	47	0.2101	0.35		Sheet Flow, Grass: Short n= 0.150 P2= 2.80"

### Subcatchment N-E1: Subcat N-E1

Hydrograph



### Summary for Reach Cu-1: Culvert 1

Inflow Area = 90.82 ac, 2.38% Impervious, Inflow Depth = 6.23" for 100-Year, 24-Hour event  
 Inflow = 63.49 cfs @ 16.30 hrs, Volume= 47.120 af  
 Outflow = 63.48 cfs @ 16.31 hrs, Volume= 47.120 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 5.77 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 2.57 fps, Avg. Travel Time= 0.7 min

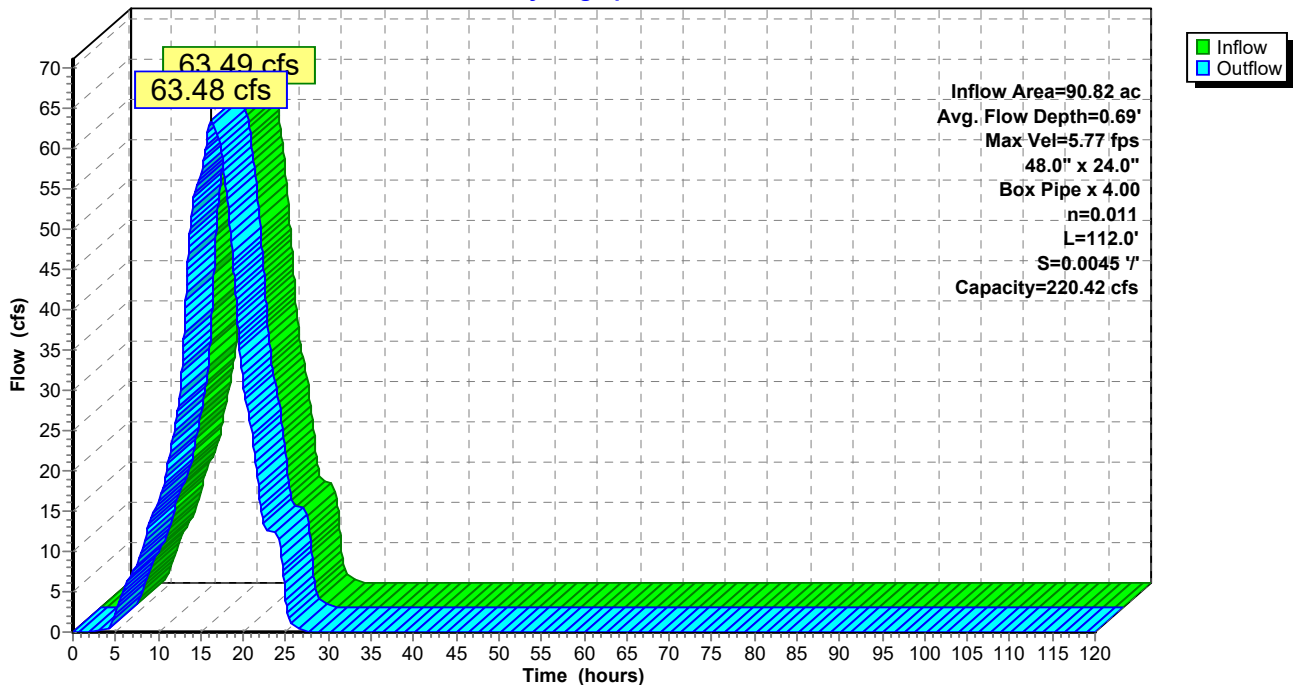
Peak Storage= 1,232 cf @ 16.30 hrs  
 Average Depth at Peak Storage= 0.69'  
 Bank-Full Depth= 2.00' Flow Area= 32.0 sf, Capacity= 220.42 cfs

A factor of 4.00 has been applied to the storage and discharge capacity  
 48.0" W x 24.0" H Box Pipe  
 n= 0.011 Concrete pipe, straight & clean  
 Length= 112.0' Slope= 0.0045 1/100  
 Inlet Invert= 737.00', Outlet Invert= 736.50'



### Reach Cu-1: Culvert 1

Hydrograph



**Summary for Reach Cu-2: Culvert 2**

Inflow Area = 39.65 ac, 1.66% Impervious, Inflow Depth = 6.21" for 100-Year, 24-Hour event  
 Inflow = 27.91 cfs @ 15.96 hrs, Volume= 20.524 af  
 Outflow = 27.91 cfs @ 15.97 hrs, Volume= 20.524 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 7.08 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity= 3.63 fps, Avg. Travel Time= 0.3 min

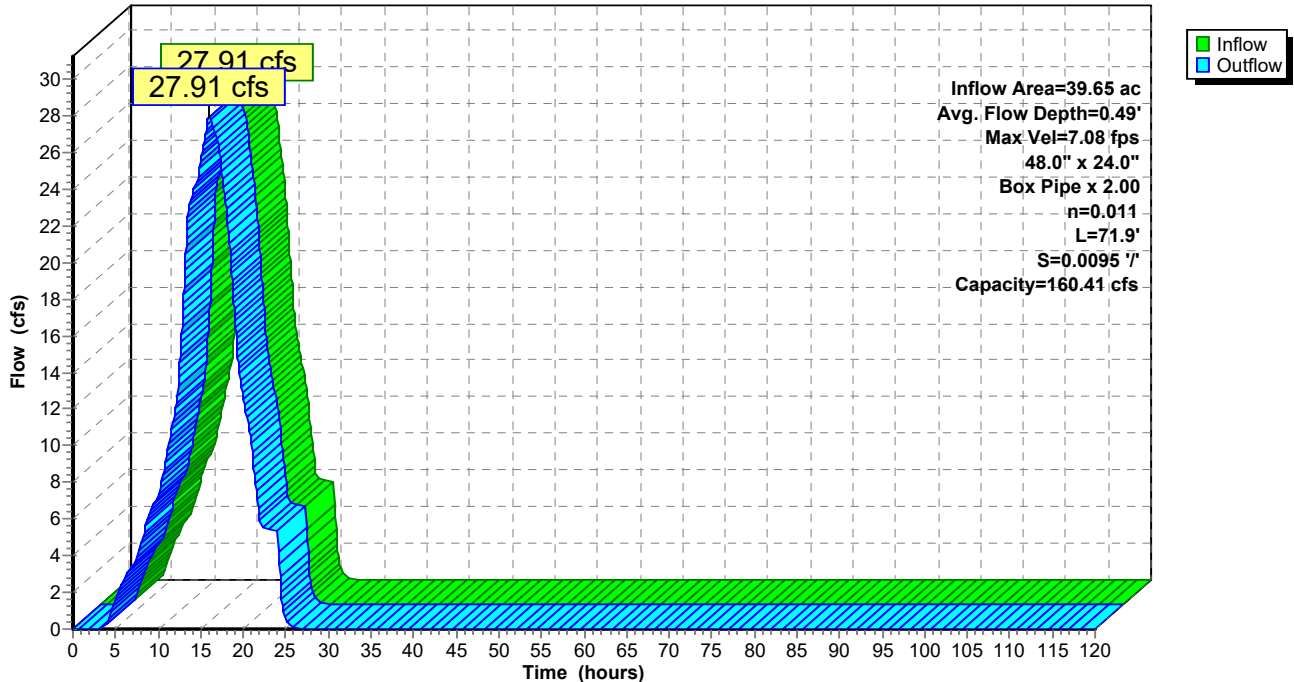
Peak Storage= 283 cf @ 15.97 hrs  
 Average Depth at Peak Storage= 0.49'  
 Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 160.41 cfs

A factor of 2.00 has been applied to the storage and discharge capacity  
 48.0" W x 24.0" H Box Pipe  
 n= 0.011 Concrete pipe, straight & clean  
 Length= 71.9' Slope= 0.0095 '/  
 Inlet Invert= 737.18', Outlet Invert= 736.50'



**Reach Cu-2: Culvert 2**

Hydrograph



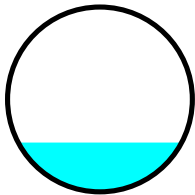
### Summary for Reach Cu-3: Culvert 3

Inflow Area = 43.19 ac, 1.69% Impervious, Inflow Depth = 6.21" for 100-Year, 24-Hour event  
 Inflow = 30.35 cfs @ 16.03 hrs, Volume= 22.363 af  
 Outflow = 30.35 cfs @ 16.04 hrs, Volume= 22.363 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 6.74 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity= 3.64 fps, Avg. Travel Time= 0.4 min

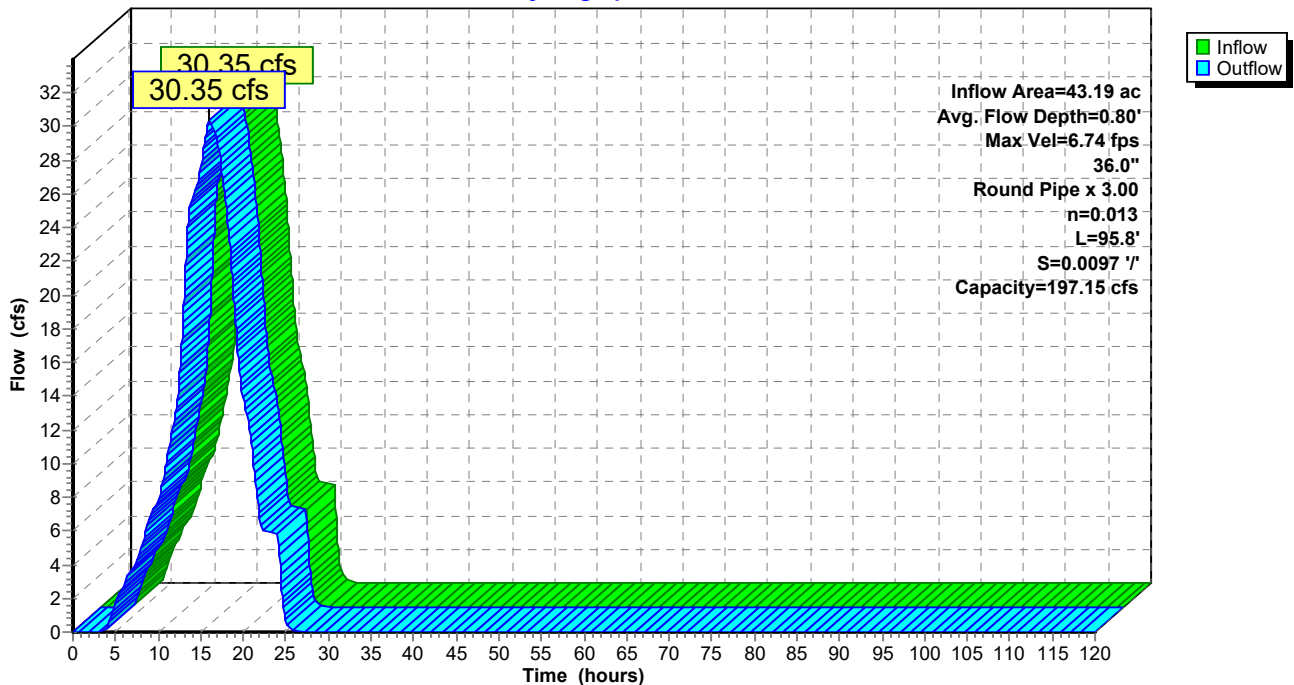
Peak Storage= 432 cf @ 16.03 hrs  
 Average Depth at Peak Storage= 0.80'  
 Bank-Full Depth= 3.00' Flow Area= 21.2 sf, Capacity= 197.15 cfs

A factor of 3.00 has been applied to the storage and discharge capacity  
 36.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 95.8' Slope= 0.0097 '/  
 Inlet Invert= 738.93', Outlet Invert= 738.00'



### Reach Cu-3: Culvert 3

Hydrograph



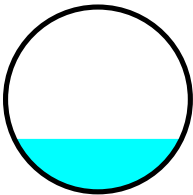
**Summary for Reach Cu-A: Culvert A**

Inflow Area = 33.94 ac, 1.59% Impervious, Inflow Depth = 6.19" for 100-Year, 24-Hour event  
 Inflow = 23.76 cfs @ 16.17 hrs, Volume= 17.517 af  
 Outflow = 23.76 cfs @ 16.18 hrs, Volume= 17.517 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 7.12 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity= 3.68 fps, Avg. Travel Time= 0.4 min

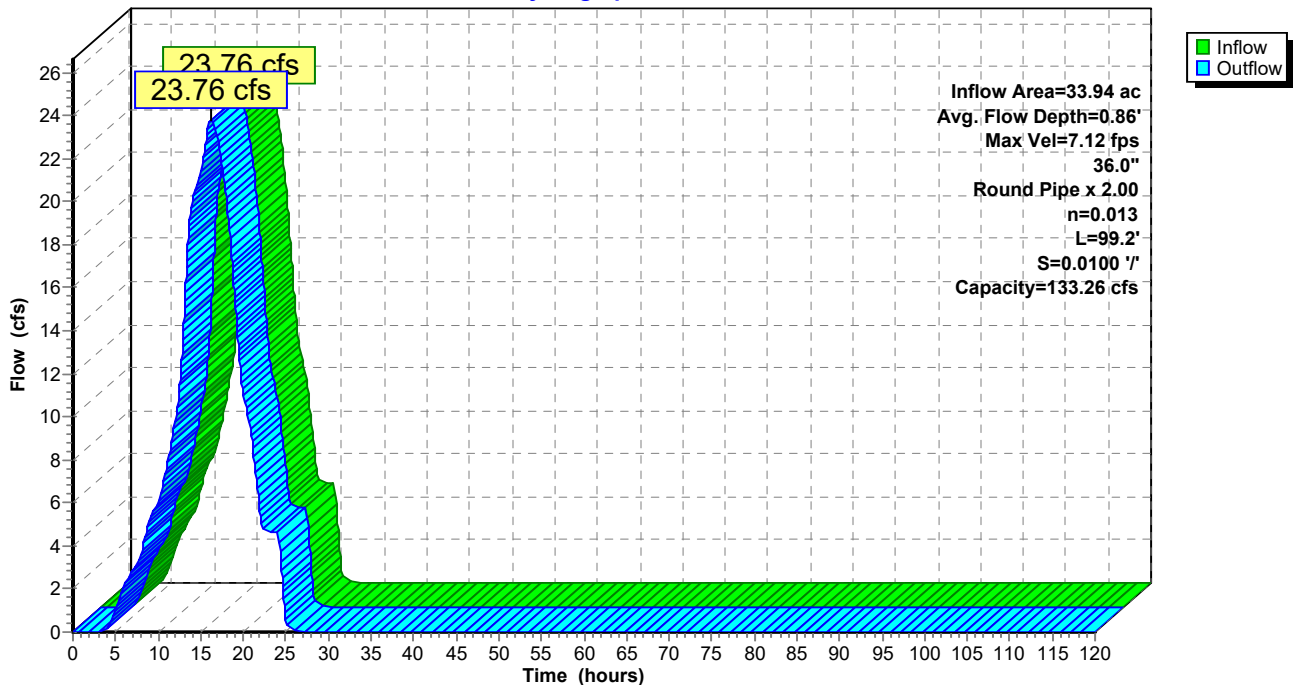
Peak Storage= 331 cf @ 16.17 hrs  
 Average Depth at Peak Storage= 0.86'  
 Bank-Full Depth= 3.00' Flow Area= 14.1 sf, Capacity= 133.26 cfs

A factor of 2.00 has been applied to the storage and discharge capacity  
 36.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 99.2' Slope= 0.0100 '/  
 Inlet Invert= 756.77', Outlet Invert= 755.78'



**Reach Cu-A: Culvert A**

Hydrograph



**Summary for Reach DC-A1A: Downchute A1A**

Inflow Area = 6.74 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 4.73 cfs @ 16.03 hrs, Volume= 3.459 af  
 Outflow = 4.73 cfs @ 16.05 hrs, Volume= 3.459 af, Atten= 0%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.60 fps, Min. Travel Time= 0.6 min  
 Avg. Velocity = 2.34 fps, Avg. Travel Time= 1.0 min

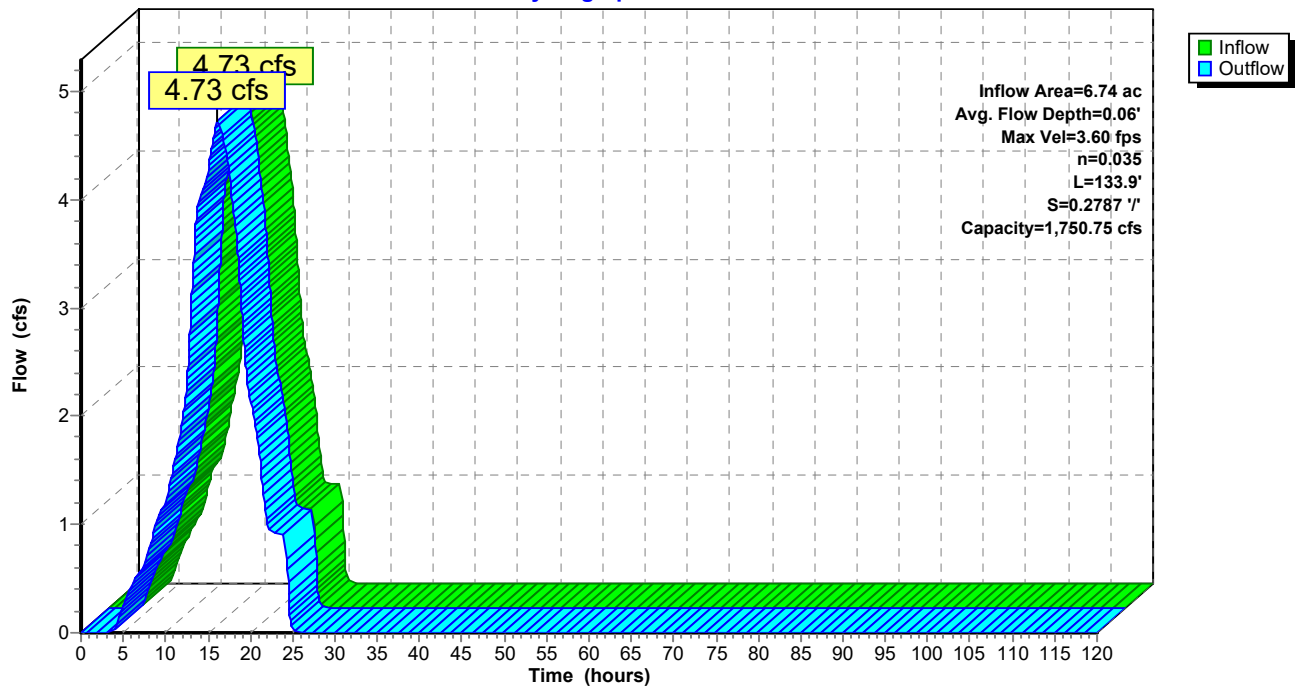
Peak Storage= 176 cf @ 16.04 hrs  
 Average Depth at Peak Storage= 0.06'  
 Bank-Full Depth= 2.00' Flow Area= 60.0 sf, Capacity= 1,750.75 cfs

20.00' x 2.00' deep channel, n= 0.035  
 Side Slope Z-value= 5.0 ' / ' Top Width= 40.00'  
 Length= 133.9' Slope= 0.2787 ' / '  
 Inlet Invert= 821.32', Outlet Invert= 784.00'



**Reach DC-A1A: Downchute A1A**

Hydrograph



**Summary for Reach DC-A1B: Downchute A1B**

Inflow Area = 11.96 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 8.39 cfs @ 16.02 hrs, Volume= 6.143 af  
 Outflow = 8.39 cfs @ 16.04 hrs, Volume= 6.143 af, Atten= 0%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.24 fps, Min. Travel Time= 0.4 min  
 Avg. Velocity = 1.89 fps, Avg. Travel Time= 0.7 min

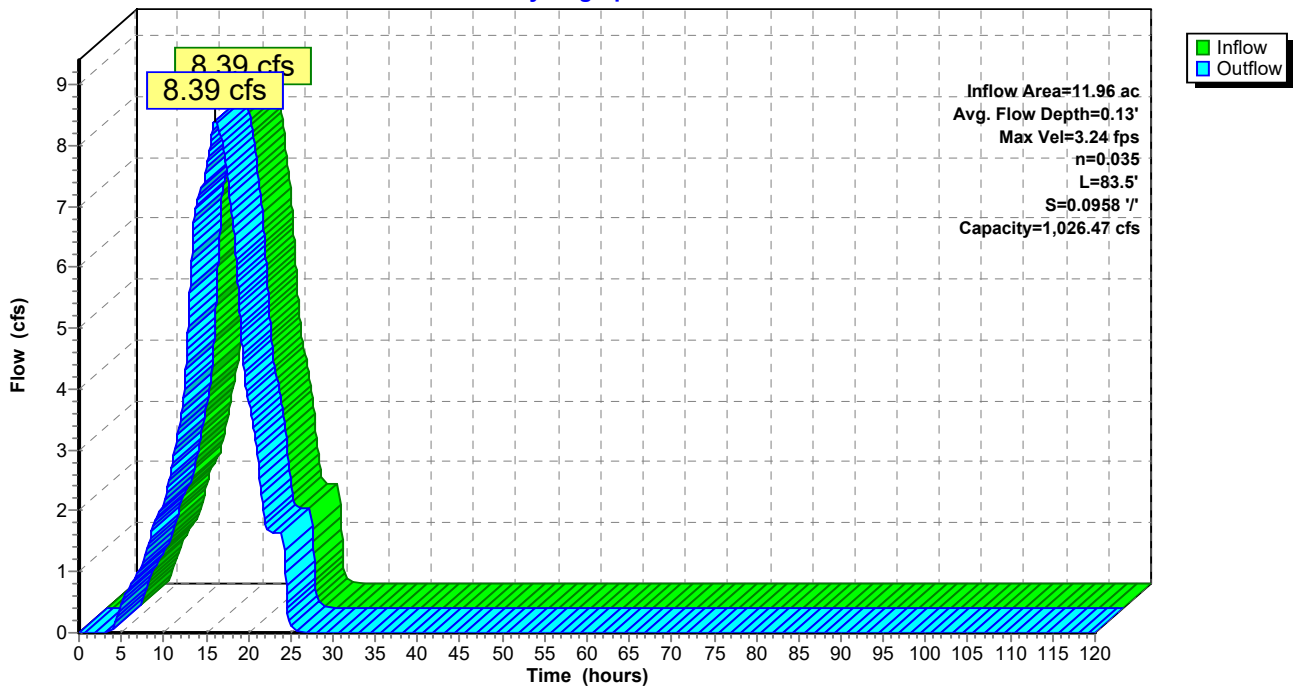
Peak Storage= 216 cf @ 16.03 hrs  
 Average Depth at Peak Storage= 0.13'  
 Bank-Full Depth= 2.00' Flow Area= 60.0 sf, Capacity= 1,026.47 cfs

20.00' x 2.00' deep channel, n= 0.035  
 Side Slope Z-value= 5.0 '/' Top Width= 40.00'  
 Length= 83.5' Slope= 0.0958 '/'  
 Inlet Invert= 784.00', Outlet Invert= 776.00'



**Reach DC-A1B: Downchute A1B**

Hydrograph



**Summary for Reach DC-A1C: Downchute A1C**

Inflow Area = 21.13 ac, 0.64% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 14.77 cfs @ 16.14 hrs, Volume= 10.847 af  
 Outflow = 14.77 cfs @ 16.16 hrs, Volume= 10.847 af, Atten= 0%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.30 fps, Min. Travel Time= 0.6 min  
 Avg. Velocity = 2.42 fps, Avg. Travel Time= 1.0 min

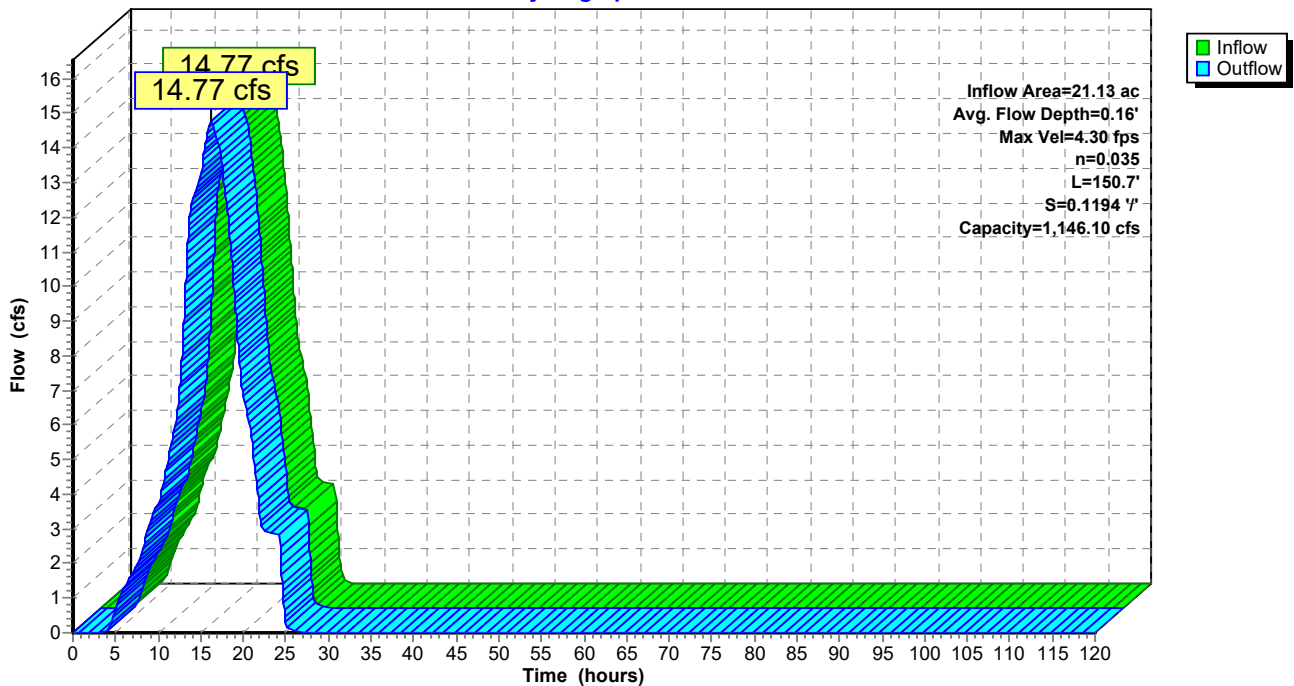
Peak Storage= 517 cf @ 16.15 hrs  
 Average Depth at Peak Storage= 0.16'  
 Bank-Full Depth= 2.00' Flow Area= 60.0 sf, Capacity= 1,146.10 cfs

20.00' x 2.00' deep channel, n= 0.035  
 Side Slope Z-value= 5.0 '/' Top Width= 40.00'  
 Length= 150.7' Slope= 0.1194 '/'  
 Inlet Invert= 776.00', Outlet Invert= 758.00'



**Reach DC-A1C: Downchute A1C**

Hydrograph





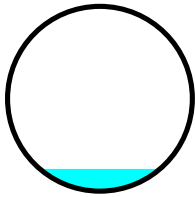
**Summary for Reach LP-B1: Letdown Pipe B1**

Inflow Area = 4.78 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 3.37 cfs @ 15.80 hrs, Volume= 2.454 af  
 Outflow = 3.37 cfs @ 15.81 hrs, Volume= 2.454 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 15.89 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 11.04 fps, Avg. Travel Time= 0.2 min

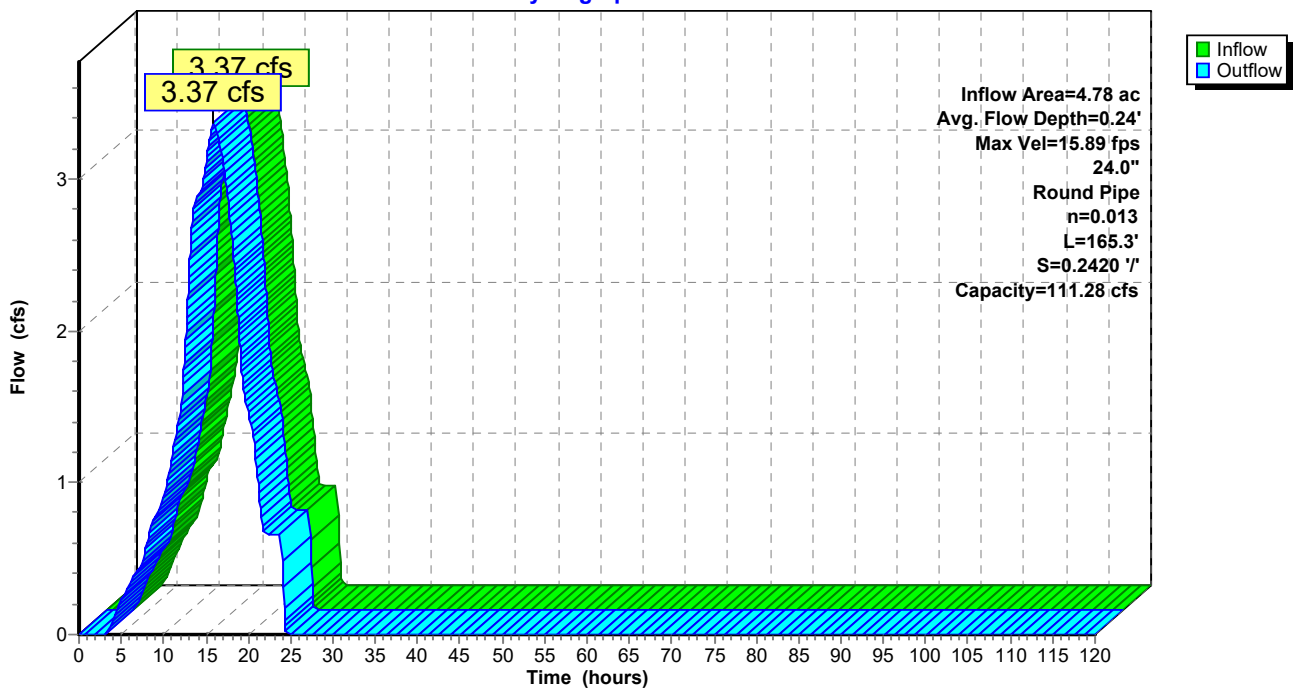
Peak Storage= 35 cf @ 15.80 hrs  
 Average Depth at Peak Storage= 0.24'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 111.28 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 165.3' Slope= 0.2420 '/'  
 Inlet Invert= 877.00', Outlet Invert= 837.00'



**Reach LP-B1: Letdown Pipe B1**

Hydrograph



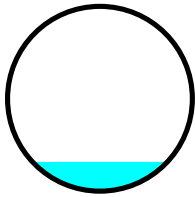
**Summary for Reach LP-B2: Letdown Pipe B2**

Inflow Area = 8.86 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 6.24 cfs @ 15.83 hrs, Volume= 4.549 af  
 Outflow = 6.24 cfs @ 15.83 hrs, Volume= 4.549 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 19.67 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 13.10 fps, Avg. Travel Time= 0.2 min

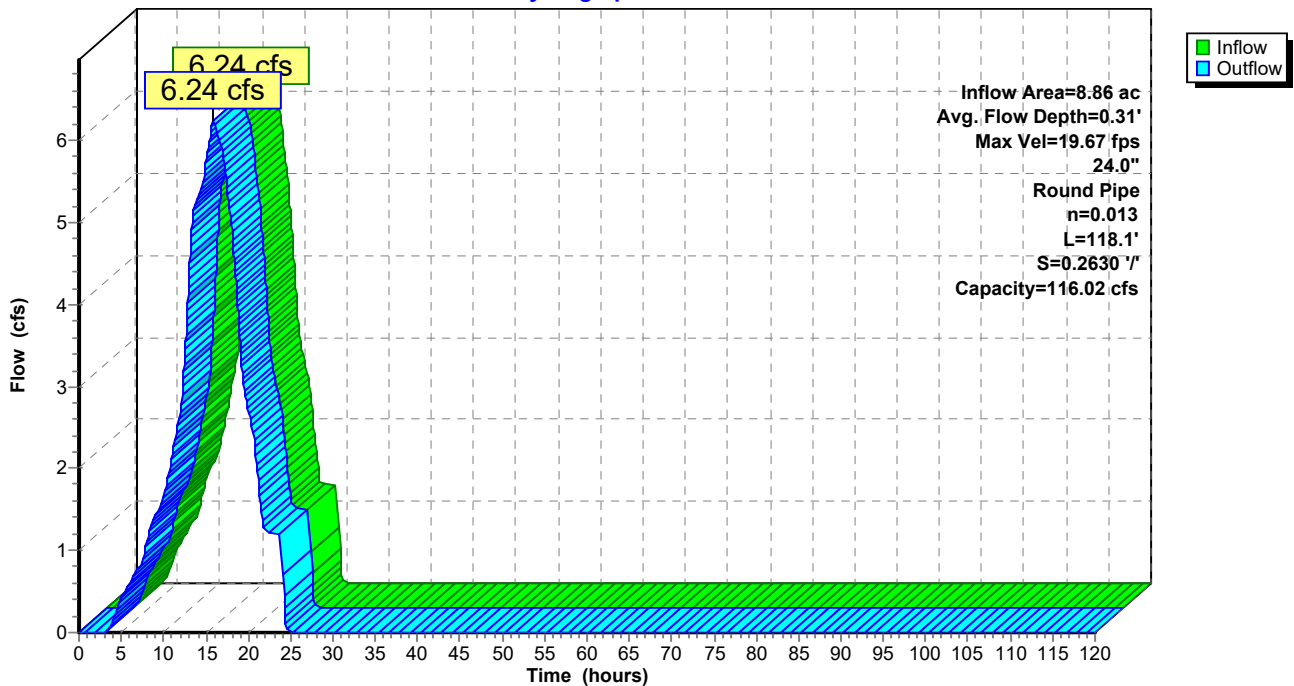
Peak Storage= 37 cf @ 15.83 hrs  
 Average Depth at Peak Storage= 0.31'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 116.02 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 118.1' Slope= 0.2630 '/'  
 Inlet Invert= 837.00', Outlet Invert= 805.94'



**Reach LP-B2: Letdown Pipe B2**

Hydrograph



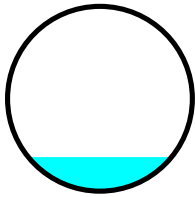
**Summary for Reach LP-B3: Letdown Pipe B3**

Inflow Area = 11.97 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 8.42 cfs @ 15.85 hrs, Volume= 6.146 af  
 Outflow = 8.42 cfs @ 15.85 hrs, Volume= 6.146 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 21.29 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 13.79 fps, Avg. Travel Time= 0.1 min

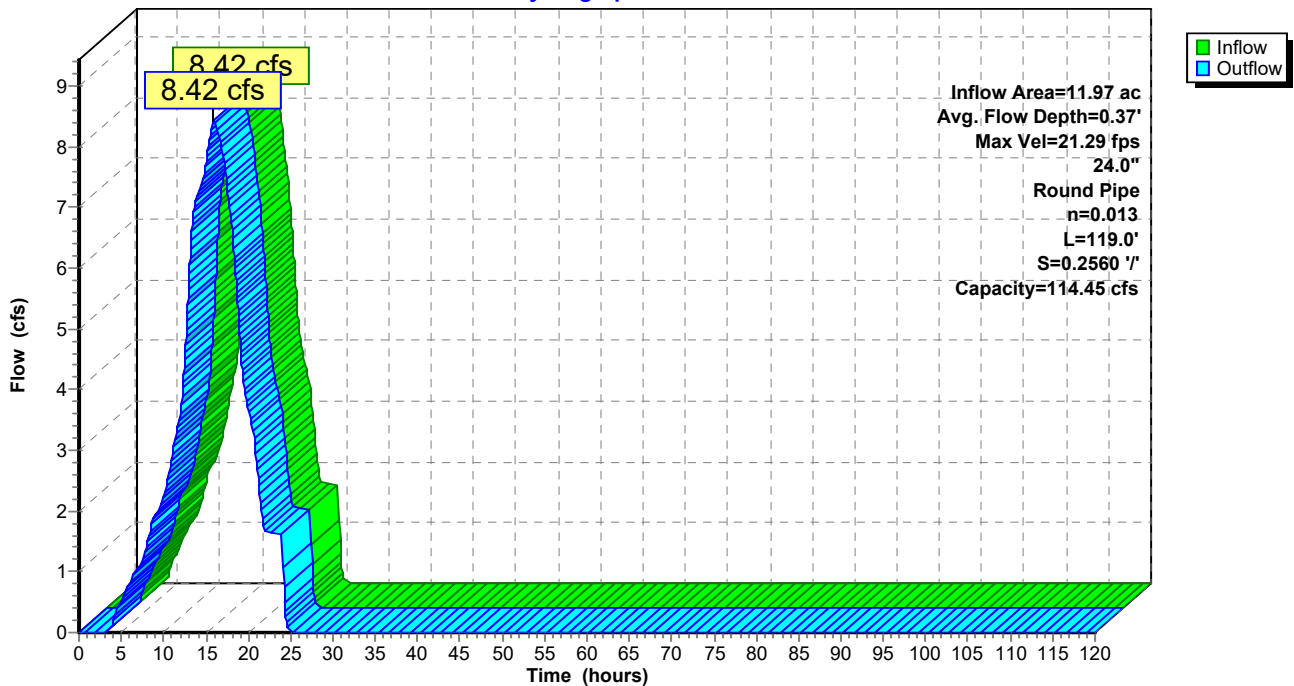
Peak Storage= 47 cf @ 15.85 hrs  
 Average Depth at Peak Storage= 0.37'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 114.45 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 119.0' Slope= 0.2560 '/'  
 Inlet Invert= 805.94', Outlet Invert= 775.48'



**Reach LP-B3: Letdown Pipe B3**

Hydrograph



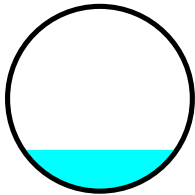
### Summary for Reach LP-B4: Letdown Pipe B4

Inflow Area = 15.33 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 10.78 cfs @ 15.86 hrs, Volume= 7.871 af  
 Outflow = 10.78 cfs @ 15.86 hrs, Volume= 7.871 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 20.72 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 13.14 fps, Avg. Travel Time= 0.2 min

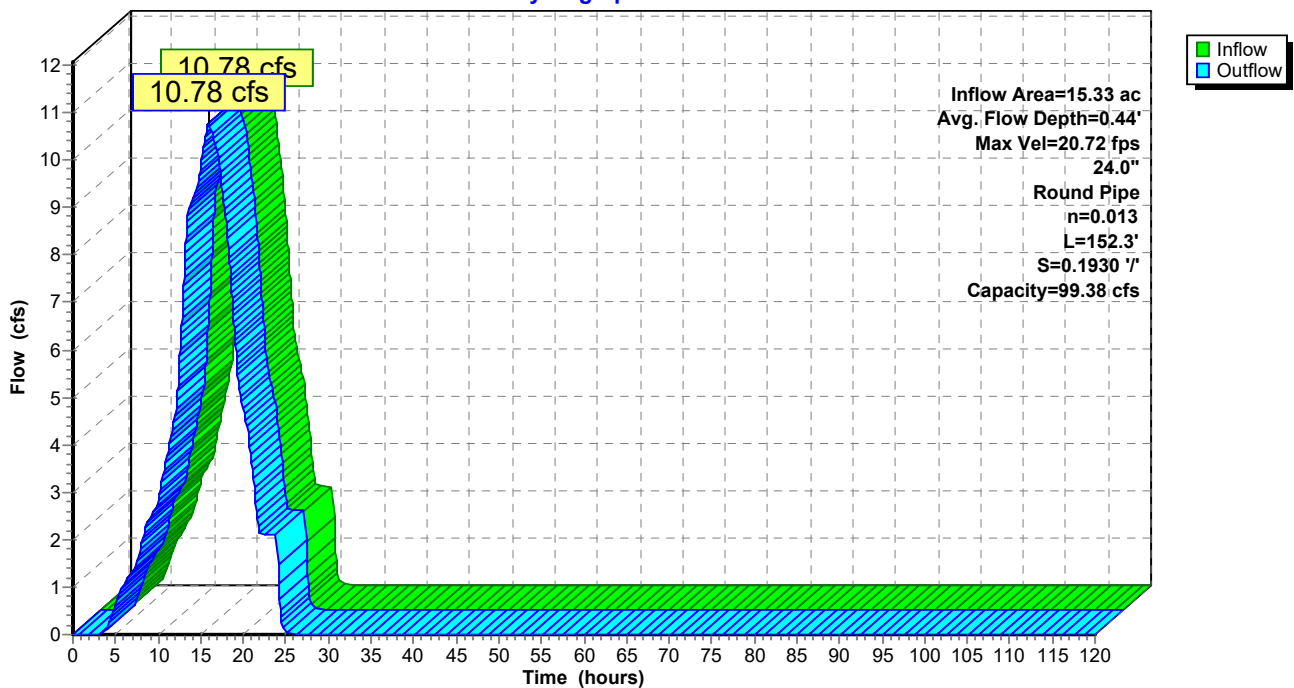
Peak Storage= 79 cf @ 15.86 hrs  
 Average Depth at Peak Storage= 0.44'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 99.38 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 152.3' Slope= 0.1930 '/'  
 Inlet Invert= 775.48', Outlet Invert= 746.09'



### Reach LP-B4: Letdown Pipe B4

Hydrograph



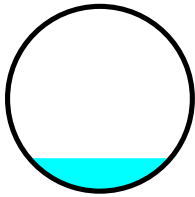
### Summary for Reach LP-B5: Letdown Pipe B5

Inflow Area = 3.47 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 2.44 cfs @ 15.85 hrs, Volume= 1.782 af  
 Outflow = 2.44 cfs @ 15.86 hrs, Volume= 1.782 af, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 14.54 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 9.86 fps, Avg. Travel Time= 0.5 min

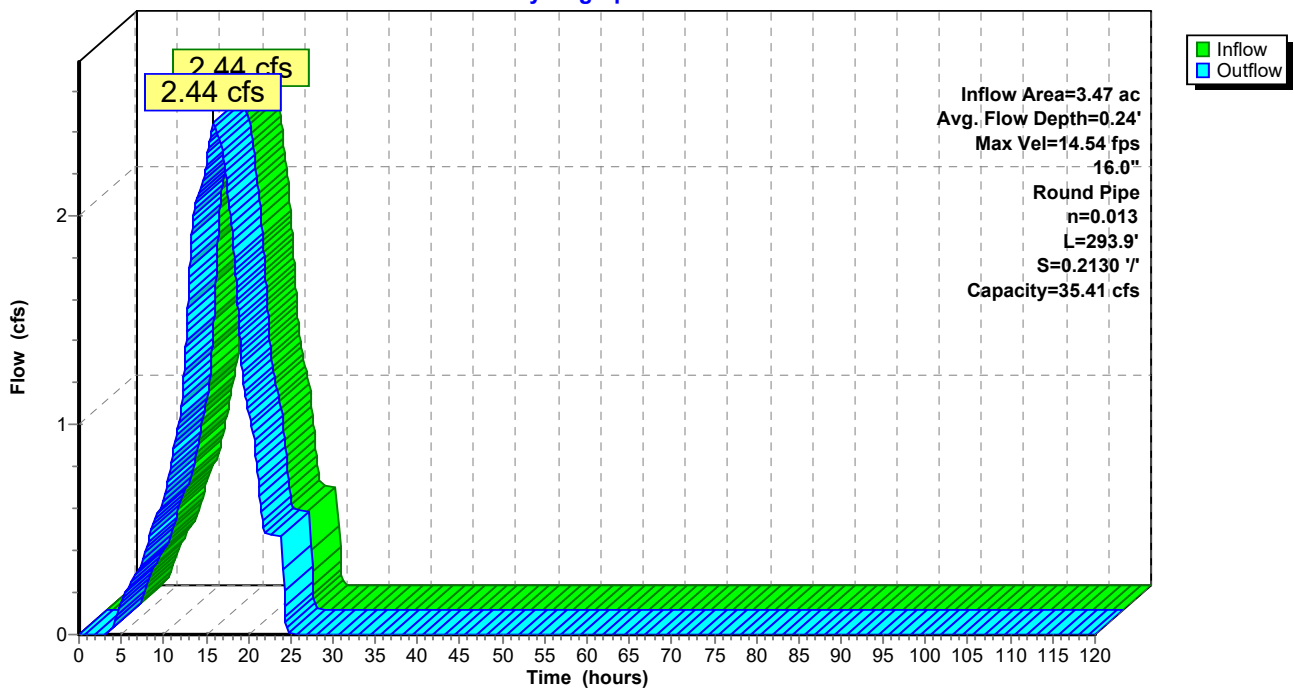
Peak Storage= 49 cf @ 15.86 hrs  
 Average Depth at Peak Storage= 0.24'  
 Bank-Full Depth= 1.33' Flow Area= 1.4 sf, Capacity= 35.41 cfs

16.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 293.9' Slope= 0.2130 '/'  
 Inlet Invert= 820.00', Outlet Invert= 757.40'



### Reach LP-B5: Letdown Pipe B5

Hydrograph



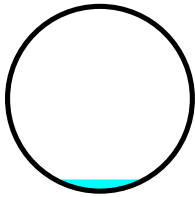
### Summary for Reach LP-D1: Letdown Pipe D1

Inflow Area = 1.26 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 0.89 cfs @ 15.78 hrs, Volume= 0.645 af  
 Outflow = 0.89 cfs @ 15.78 hrs, Volume= 0.645 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 10.76 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity= 7.66 fps, Avg. Travel Time= 0.1 min

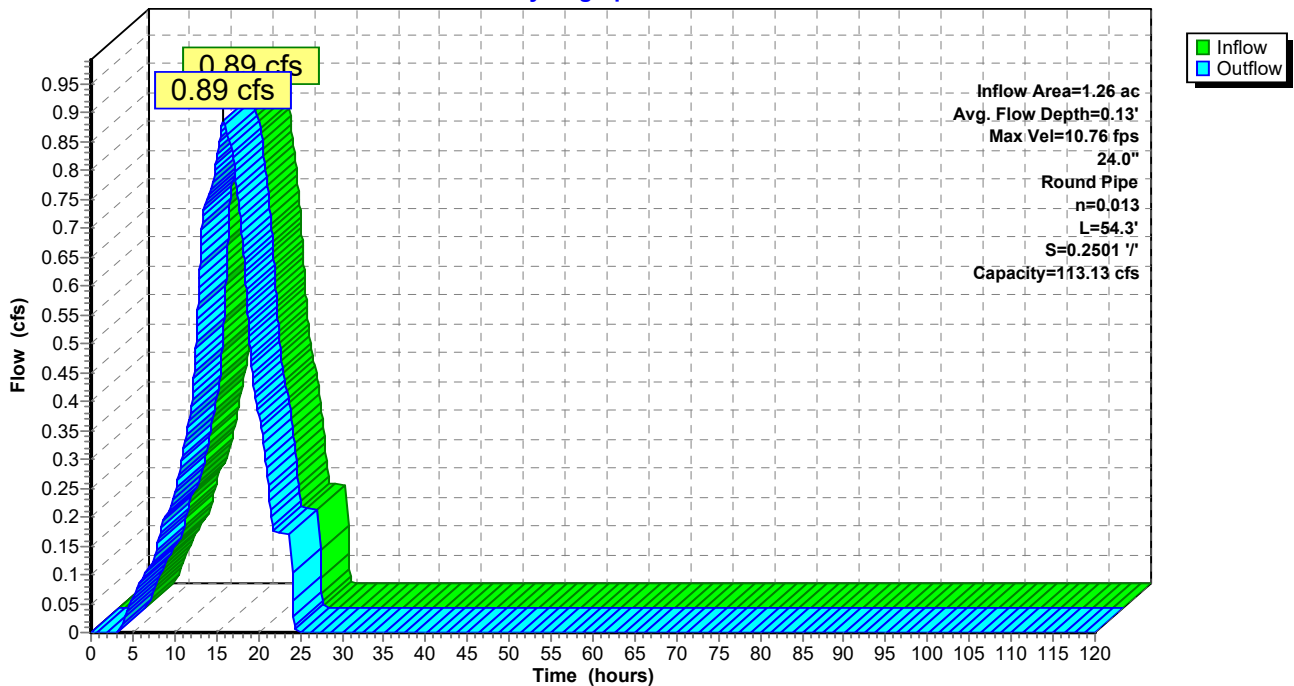
Peak Storage= 4 cf @ 15.78 hrs  
 Average Depth at Peak Storage= 0.13'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 113.13 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 54.3' Slope= 0.2501 '/'  
 Inlet Invert= 857.24', Outlet Invert= 843.66'



### Reach LP-D1: Letdown Pipe D1

Hydrograph



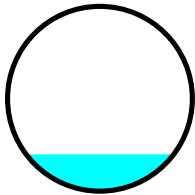
**Summary for Reach LP-D3: Letdown Pipe D3**

Inflow Area = 13.77 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 9.68 cfs @ 15.90 hrs, Volume= 7.073 af  
 Outflow = 9.68 cfs @ 15.90 hrs, Volume= 7.073 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 21.89 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 13.86 fps, Avg. Travel Time= 0.1 min

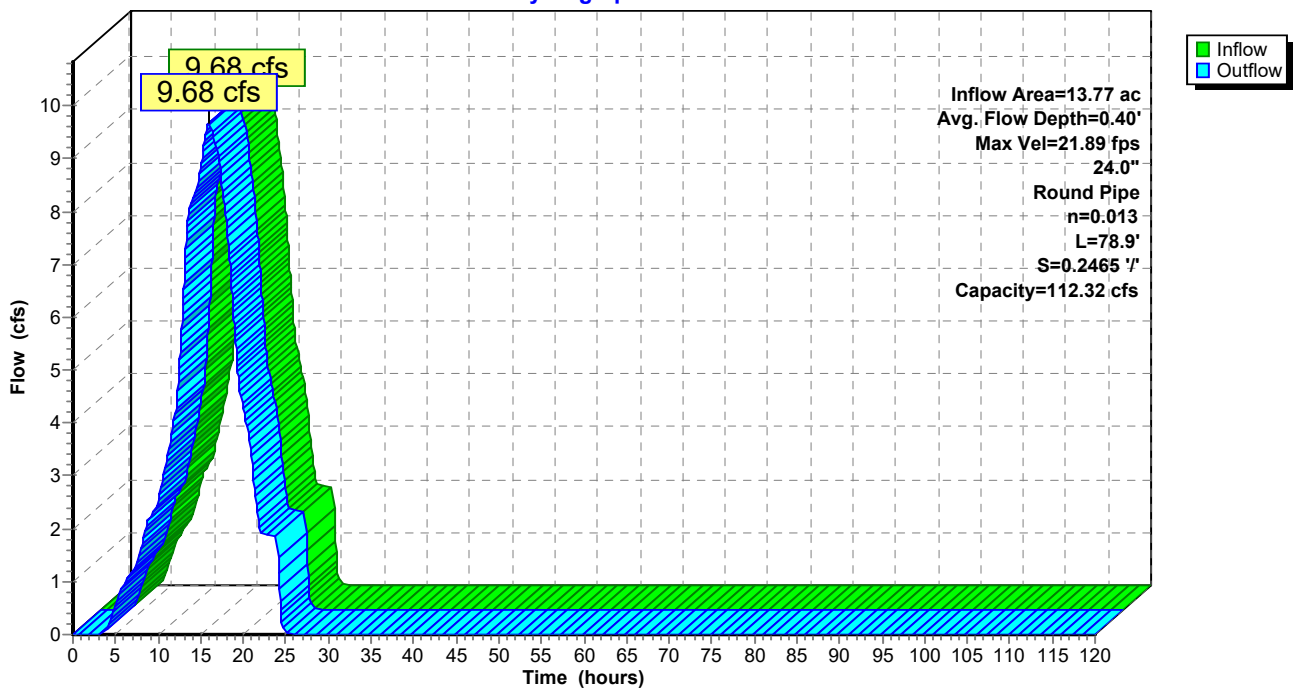
Peak Storage= 35 cf @ 15.90 hrs  
 Average Depth at Peak Storage= 0.40'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 112.32 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 78.9' Slope= 0.2465 '/'  
 Inlet Invert= 793.71', Outlet Invert= 774.26'



**Reach LP-D3: Letdown Pipe D3**

Hydrograph



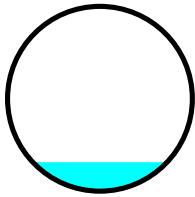
**Summary for Reach LP-E1: Letdown Pipe E1**

Inflow Area = 3.40 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 2.39 cfs @ 15.84 hrs, Volume= 1.746 af  
 Outflow = 2.39 cfs @ 15.85 hrs, Volume= 1.746 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 13.60 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 9.27 fps, Avg. Travel Time= 0.2 min

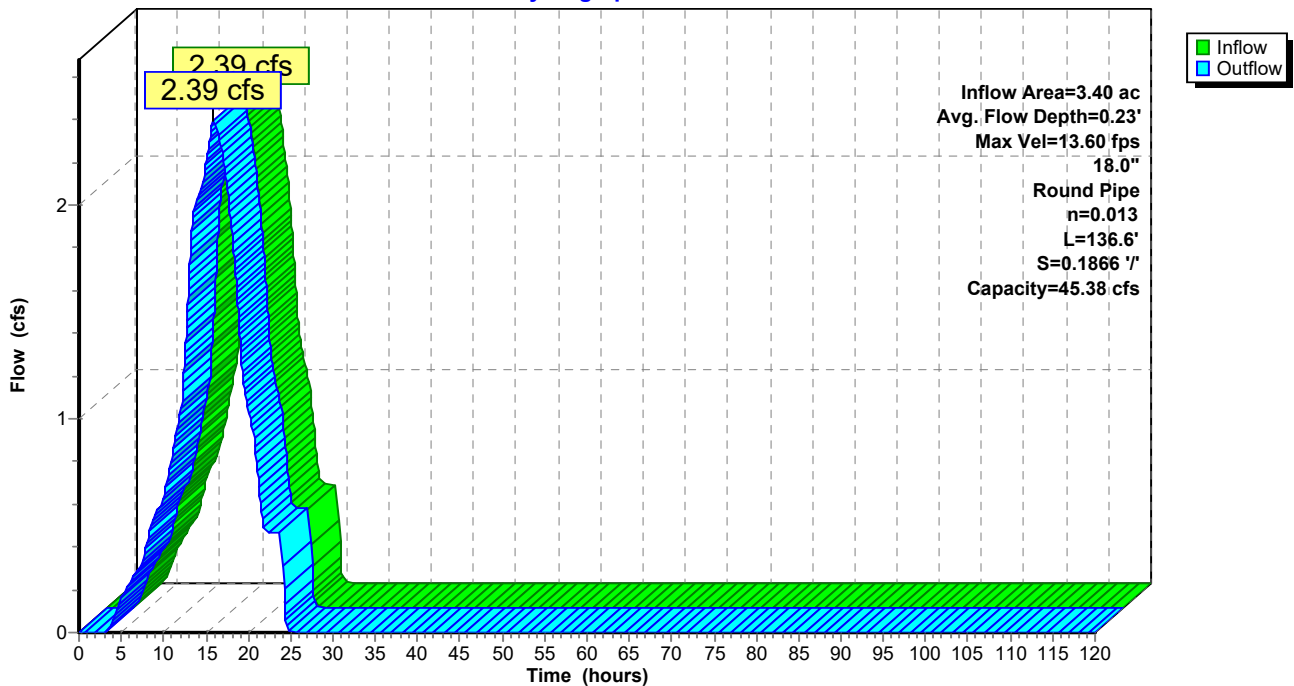
Peak Storage= 24 cf @ 15.85 hrs  
 Average Depth at Peak Storage= 0.23'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 45.38 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 136.6' Slope= 0.1866 '/'  
 Inlet Invert= 856.64', Outlet Invert= 831.15'



**Reach LP-E1: Letdown Pipe E1**

Hydrograph





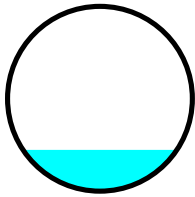
### Summary for Reach LP-E2: Letdown Pipe E2

Inflow Area = 8.08 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 5.67 cfs @ 15.91 hrs, Volume= 4.149 af  
 Outflow = 5.67 cfs @ 15.91 hrs, Volume= 4.149 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 19.42 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 12.24 fps, Avg. Travel Time= 0.1 min

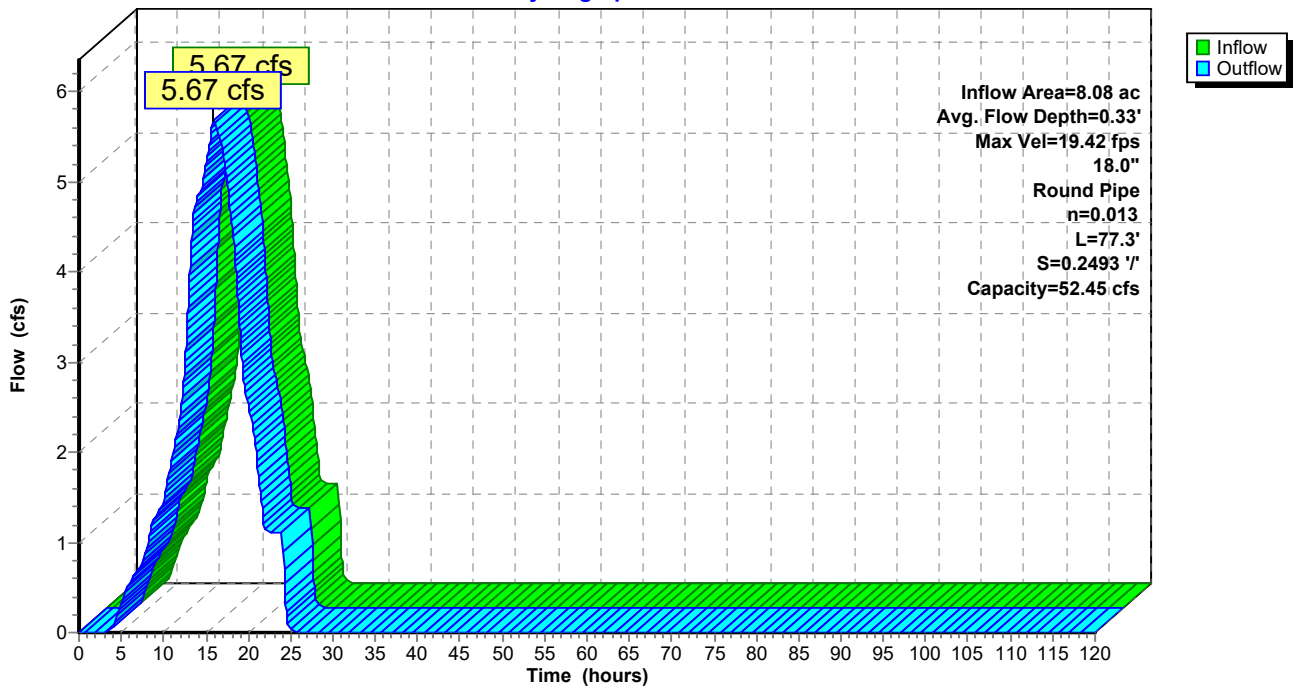
Peak Storage= 23 cf @ 15.91 hrs  
 Average Depth at Peak Storage= 0.33'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 52.45 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 77.3' Slope= 0.2493 '/'  
 Inlet Invert= 793.51', Outlet Invert= 774.24'



### Reach LP-E2: Letdown Pipe E2

Hydrograph



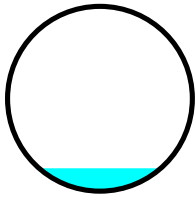
**Summary for Reach LP-H1: Letdown Pipe H1**

Inflow Area = 1.98 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 1.39 cfs @ 15.85 hrs, Volume= 1.016 af  
 Outflow = 1.39 cfs @ 15.85 hrs, Volume= 1.016 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 11.22 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 7.72 fps, Avg. Travel Time= 0.1 min

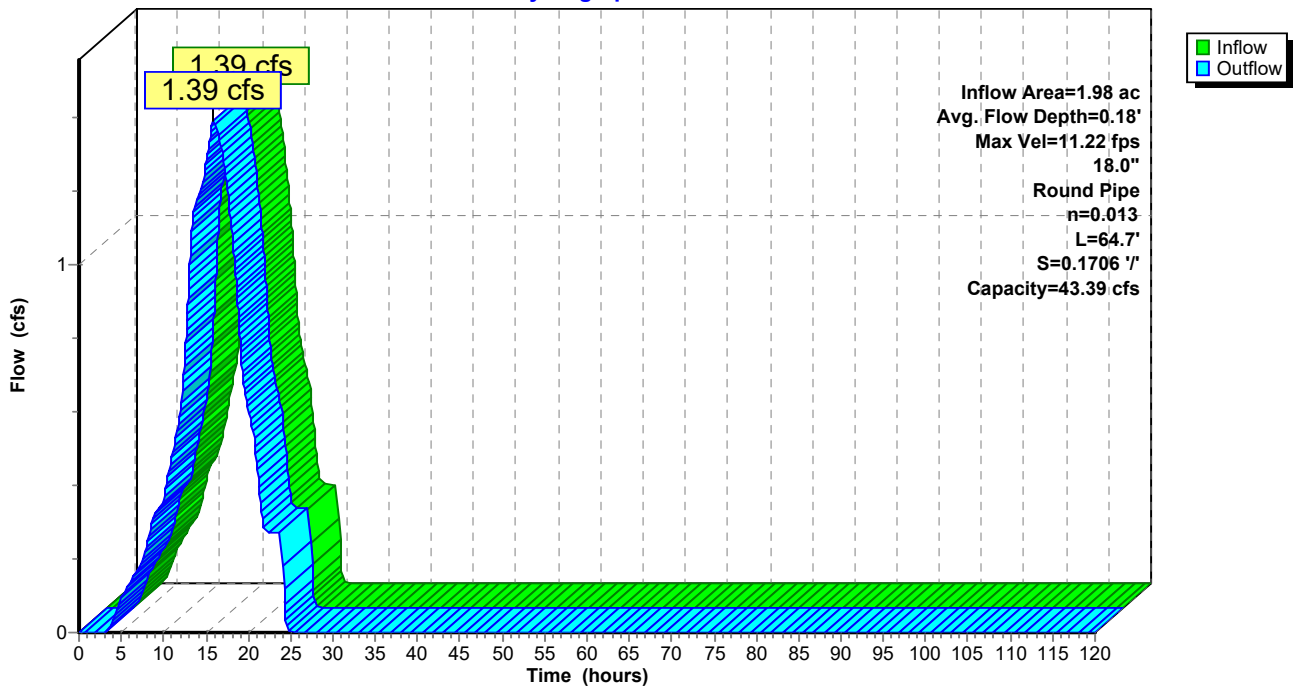
Peak Storage= 8 cf @ 15.85 hrs  
 Average Depth at Peak Storage= 0.18'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 43.39 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 64.7' Slope= 0.1706 '/  
 Inlet Invert= 867.73', Outlet Invert= 856.69'



**Reach LP-H1: Letdown Pipe H1**

Hydrograph



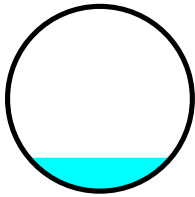
**Summary for Reach LP-H2: Letdown Pipe H2**

Inflow Area = 5.26 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 3.70 cfs @ 15.85 hrs, Volume= 2.702 af  
 Outflow = 3.70 cfs @ 15.85 hrs, Volume= 2.702 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 17.13 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 11.50 fps, Avg. Travel Time= 0.2 min

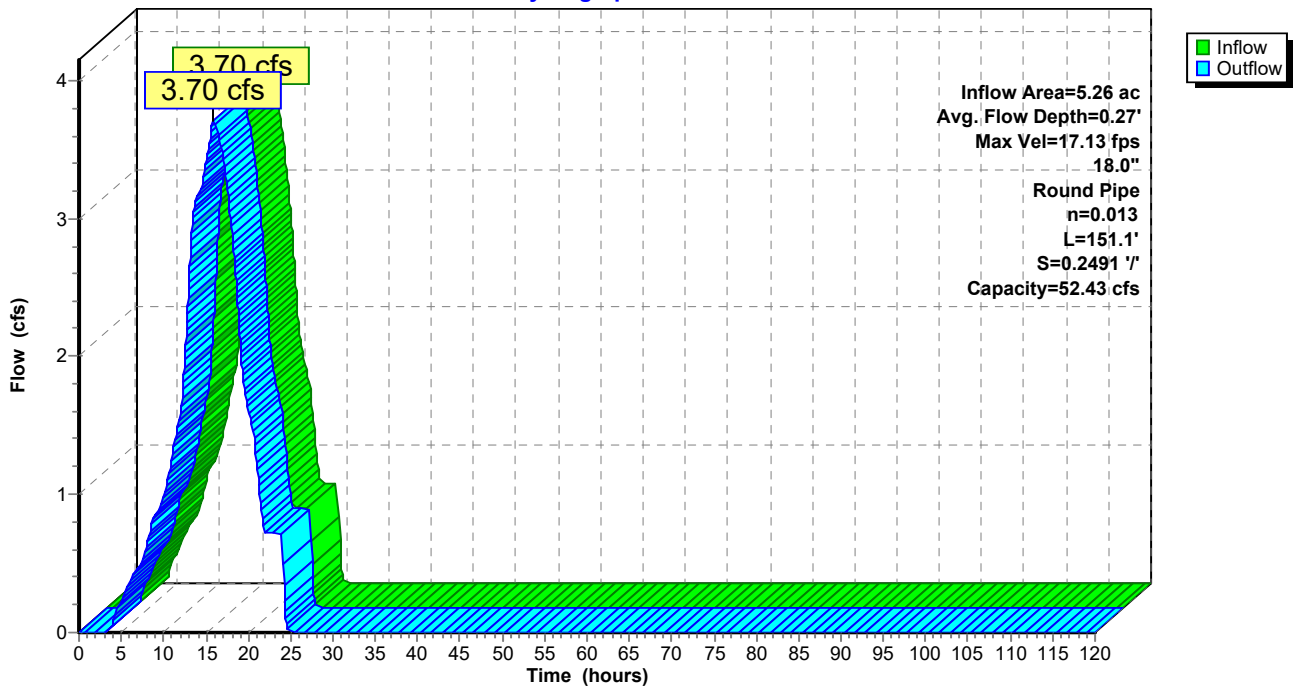
Peak Storage= 33 cf @ 15.85 hrs  
 Average Depth at Peak Storage= 0.27'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 52.43 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 151.1' Slope= 0.2491 '/'  
 Inlet Invert= 831.15', Outlet Invert= 793.51'



**Reach LP-H2: Letdown Pipe H2**

Hydrograph



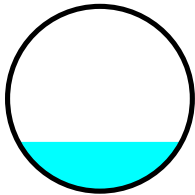
### Summary for Reach LP-H3: Letdown Pipe H3

Inflow Area = 11.65 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 8.18 cfs @ 15.90 hrs, Volume= 5.983 af  
 Outflow = 8.18 cfs @ 15.90 hrs, Volume= 5.983 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 21.71 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 13.55 fps, Avg. Travel Time= 0.1 min

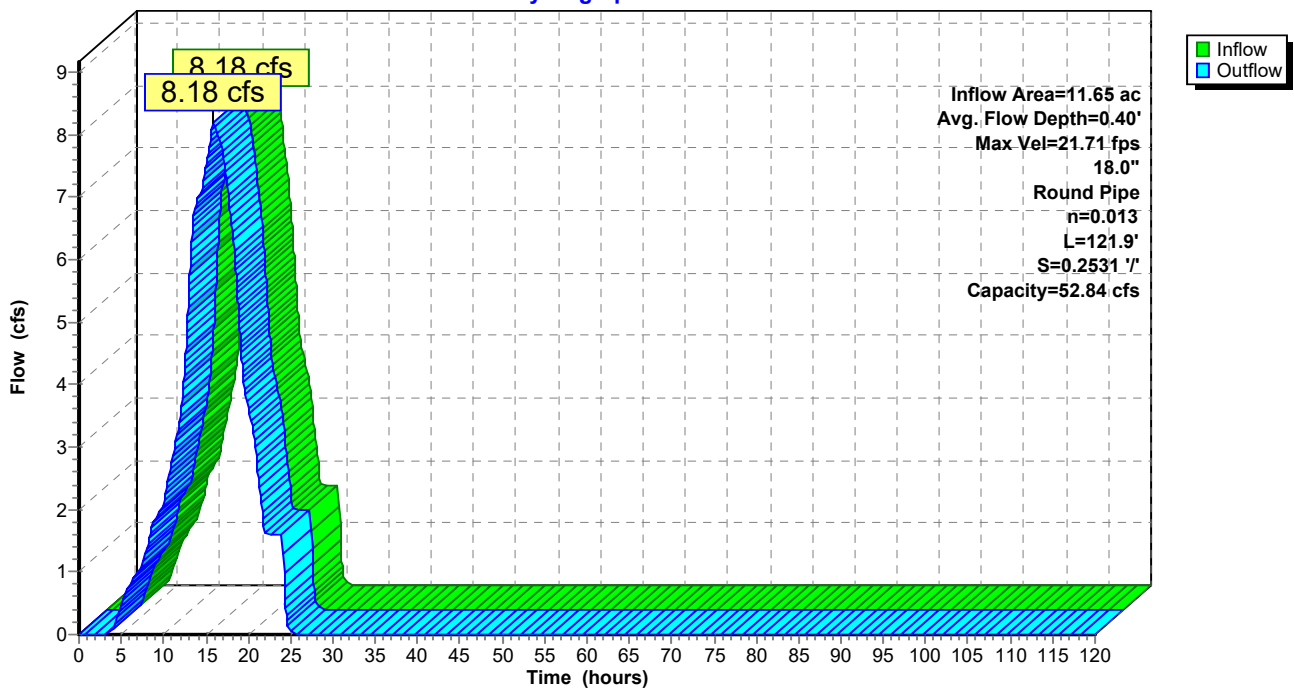
Peak Storage= 46 cf @ 15.90 hrs  
 Average Depth at Peak Storage= 0.40'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 52.84 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 121.9' Slope= 0.2531 1/100'  
 Inlet Invert= 774.24', Outlet Invert= 743.39'



### Reach LP-H3: Letdown Pipe H3

Hydrograph



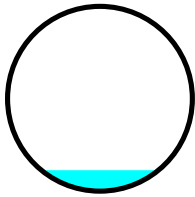
### Summary for Reach LP-N-A1: Letdown Pipe N-A1

Inflow Area = 3.60 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 2.53 cfs @ 15.80 hrs, Volume= 1.847 af  
 Outflow = 2.53 cfs @ 15.81 hrs, Volume= 1.847 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 13.08 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 9.12 fps, Avg. Travel Time= 0.3 min

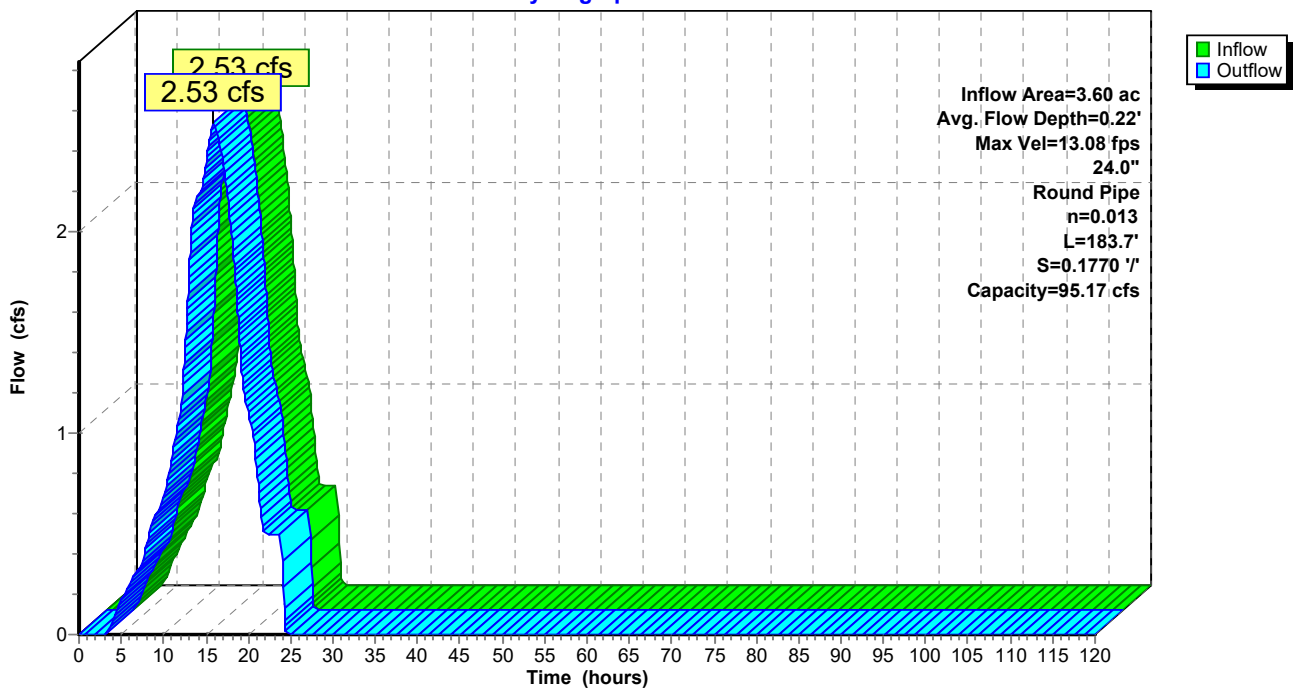
Peak Storage= 36 cf @ 15.80 hrs  
 Average Depth at Peak Storage= 0.22'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 95.17 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 183.7' Slope= 0.1770 '/'  
 Inlet Invert= 869.36', Outlet Invert= 836.85'



### Reach LP-N-A1: Letdown Pipe N-A1

Hydrograph



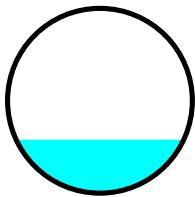
**Summary for Reach LP-N-A10: Letdown Pipe N-A10**

Inflow Area = 21.41 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 15.04 cfs @ 15.92 hrs, Volume= 10.991 af  
 Outflow = 15.04 cfs @ 15.93 hrs, Volume= 10.991 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 12.85 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 7.67 fps, Avg. Travel Time= 0.1 min

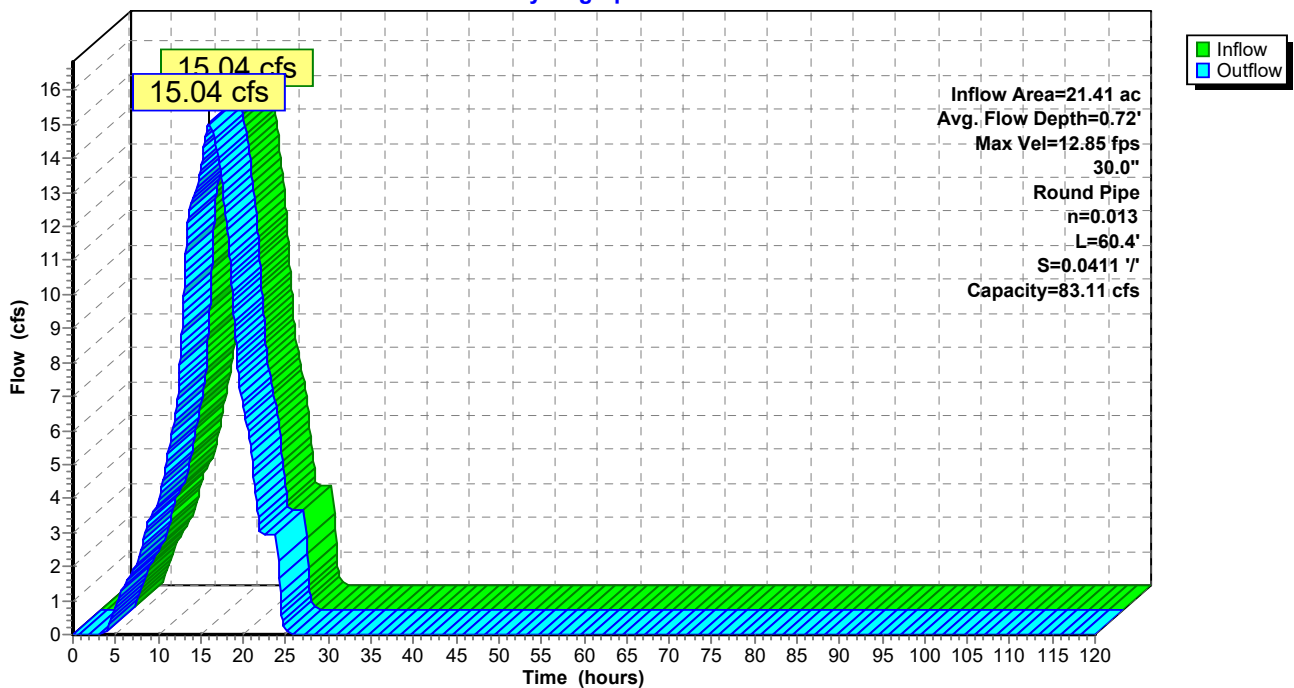
Peak Storage= 71 cf @ 15.92 hrs  
 Average Depth at Peak Storage= 0.72'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 83.11 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 60.4' Slope= 0.0411 '/  
 Inlet Invert= 748.28', Outlet Invert= 745.80'



**Reach LP-N-A10: Letdown Pipe N-A10**

Hydrograph



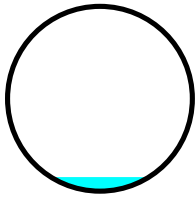
**Summary for Reach LP-N-A2: Letdown Pipe N-A2**

Inflow Area = 2.82 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 1.99 cfs @ 15.86 hrs, Volume= 1.450 af  
 Outflow = 1.99 cfs @ 15.86 hrs, Volume= 1.450 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 11.81 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 8.12 fps, Avg. Travel Time= 0.4 min

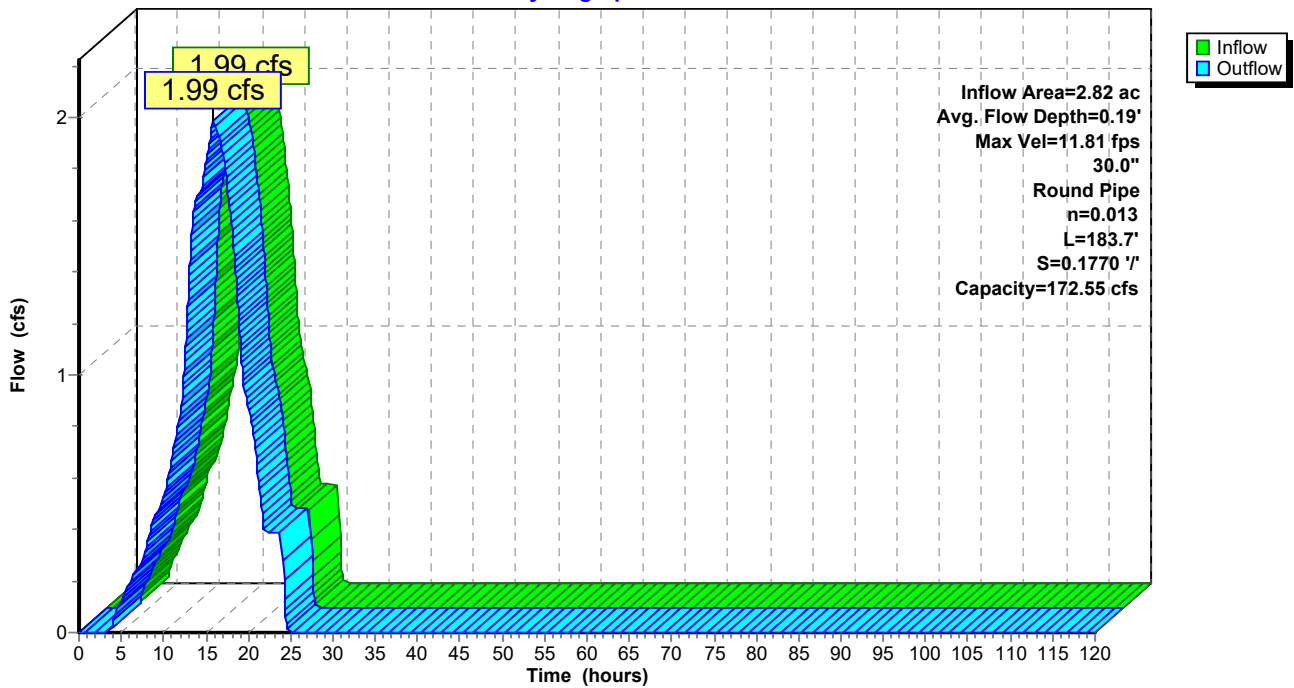
Peak Storage= 31 cf @ 15.86 hrs  
 Average Depth at Peak Storage= 0.19'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 172.55 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 183.7' Slope= 0.1770 '/'  
 Inlet Invert= 869.36', Outlet Invert= 836.85'



**Reach LP-N-A2: Letdown Pipe N-A2**

Hydrograph



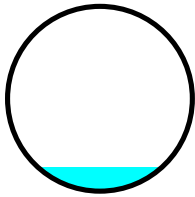
**Summary for Reach LP-N-A3: Letdown Pipe N-A3**

Inflow Area = 4.91 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 3.46 cfs @ 15.80 hrs, Volume= 2.520 af  
 Outflow = 3.46 cfs @ 15.81 hrs, Volume= 2.520 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 14.38 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 9.93 fps, Avg. Travel Time= 0.3 min

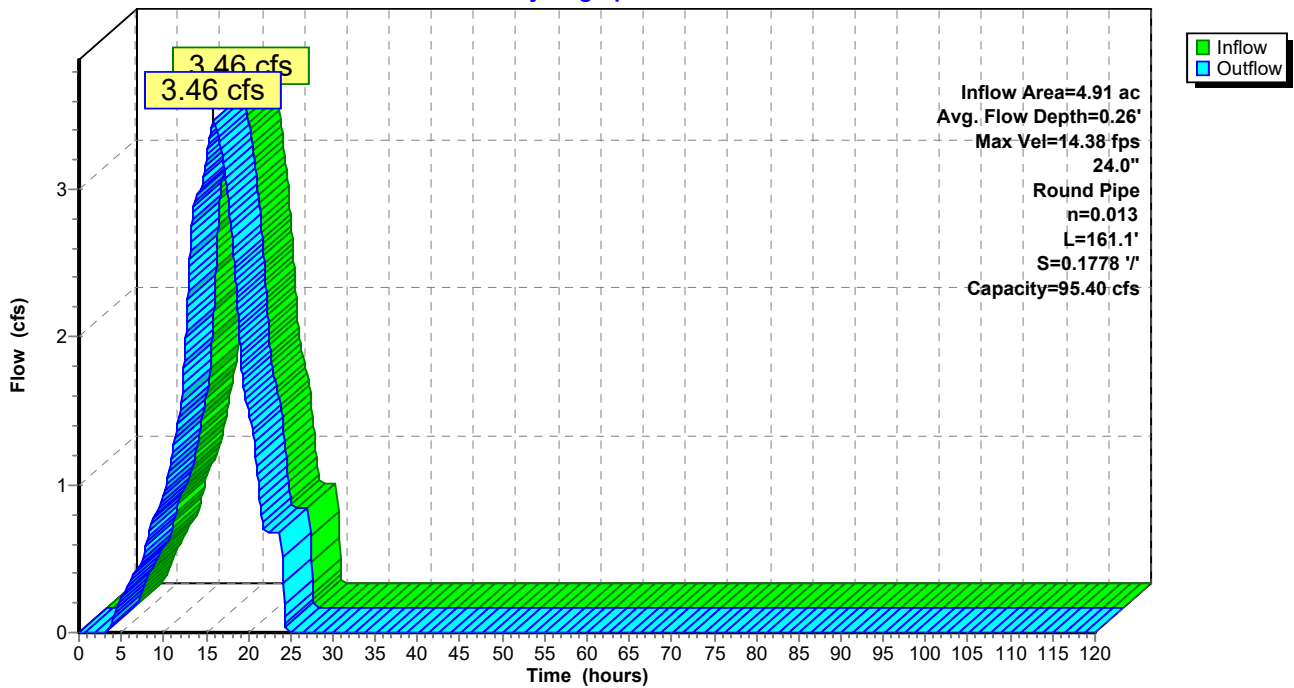
Peak Storage= 39 cf @ 15.81 hrs  
 Average Depth at Peak Storage= 0.26'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 95.40 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 161.1' Slope= 0.1778 '/'  
 Inlet Invert= 836.85', Outlet Invert= 808.20'



**Reach LP-N-A3: Letdown Pipe N-A3**

Hydrograph





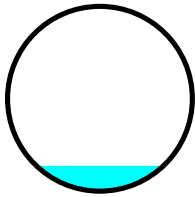
**Summary for Reach LP-N-A4: Letdown Pipe N-A4**

Inflow Area = 9.70 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 6.82 cfs @ 15.93 hrs, Volume= 4.981 af  
 Outflow = 6.82 cfs @ 15.93 hrs, Volume= 4.981 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 17.11 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 10.99 fps, Avg. Travel Time= 0.2 min

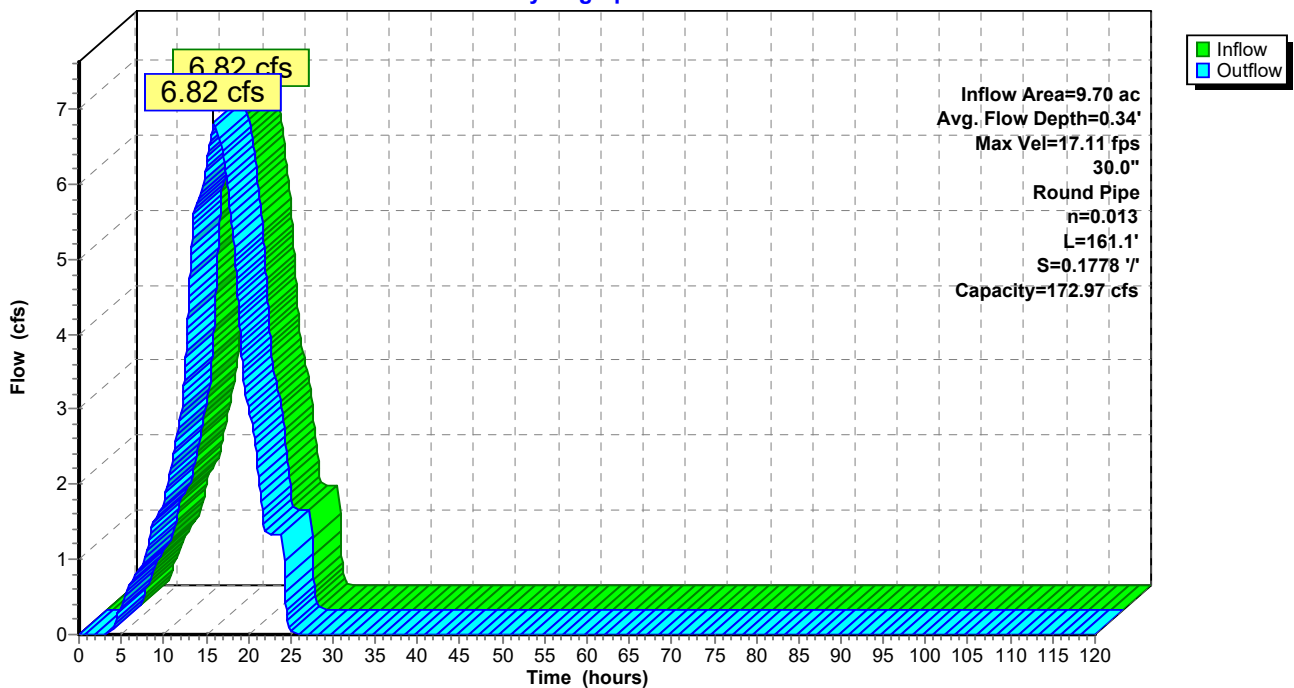
Peak Storage= 64 cf @ 15.93 hrs  
 Average Depth at Peak Storage= 0.34'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 172.97 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 161.1' Slope= 0.1778 '/'  
 Inlet Invert= 836.85', Outlet Invert= 808.20'



**Reach LP-N-A4: Letdown Pipe N-A4**

Hydrograph



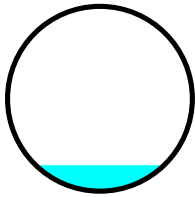
### Summary for Reach LP-N-A5: Letdown Pipe N-A5

Inflow Area = 5.64 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 3.97 cfs @ 15.80 hrs, Volume= 2.897 af  
 Outflow = 3.97 cfs @ 15.81 hrs, Volume= 2.897 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 14.93 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 10.28 fps, Avg. Travel Time= 0.3 min

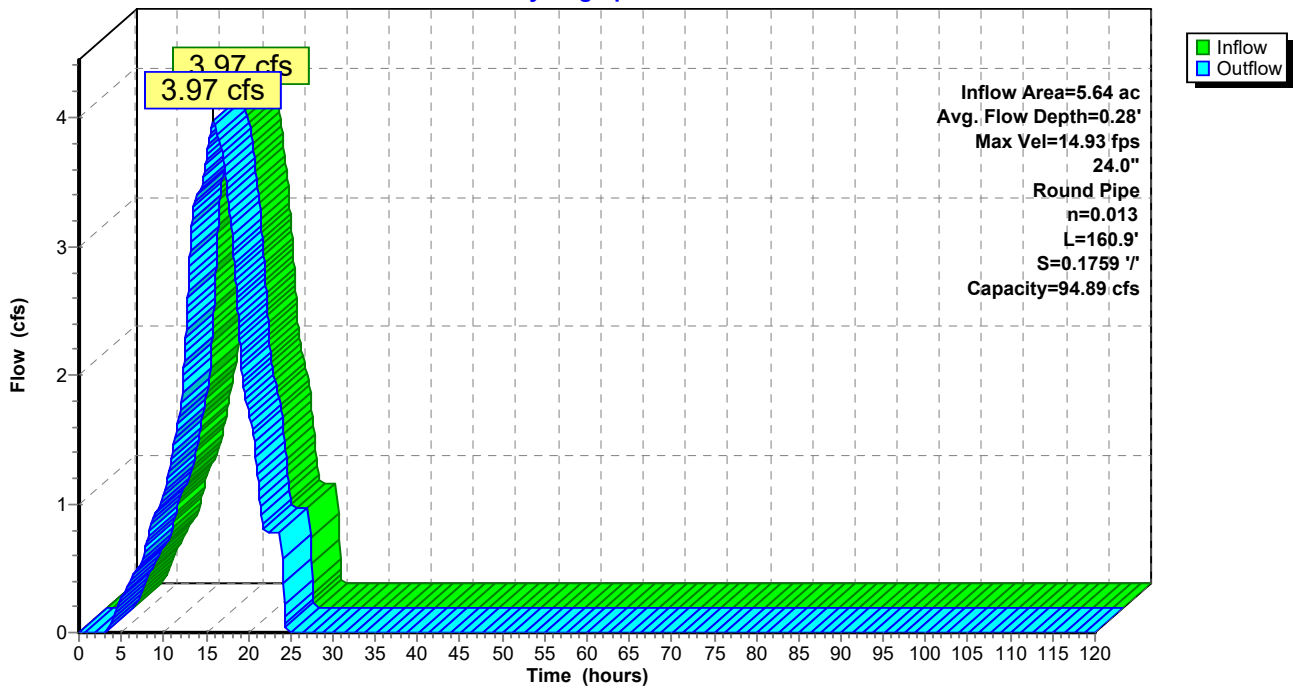
Peak Storage= 43 cf @ 15.80 hrs  
 Average Depth at Peak Storage= 0.28'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 94.89 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 160.9' Slope= 0.1759 '/'  
 Inlet Invert= 808.20', Outlet Invert= 779.89'



### Reach LP-N-A5: Letdown Pipe N-A5

Hydrograph



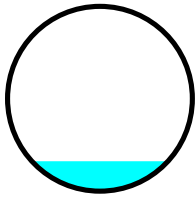
**Summary for Reach LP-N-A6: Letdown Pipe N-A6**

Inflow Area = 13.83 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 9.72 cfs @ 15.93 hrs, Volume= 7.101 af  
 Outflow = 9.72 cfs @ 15.93 hrs, Volume= 7.101 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 18.94 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 11.88 fps, Avg. Travel Time= 0.2 min

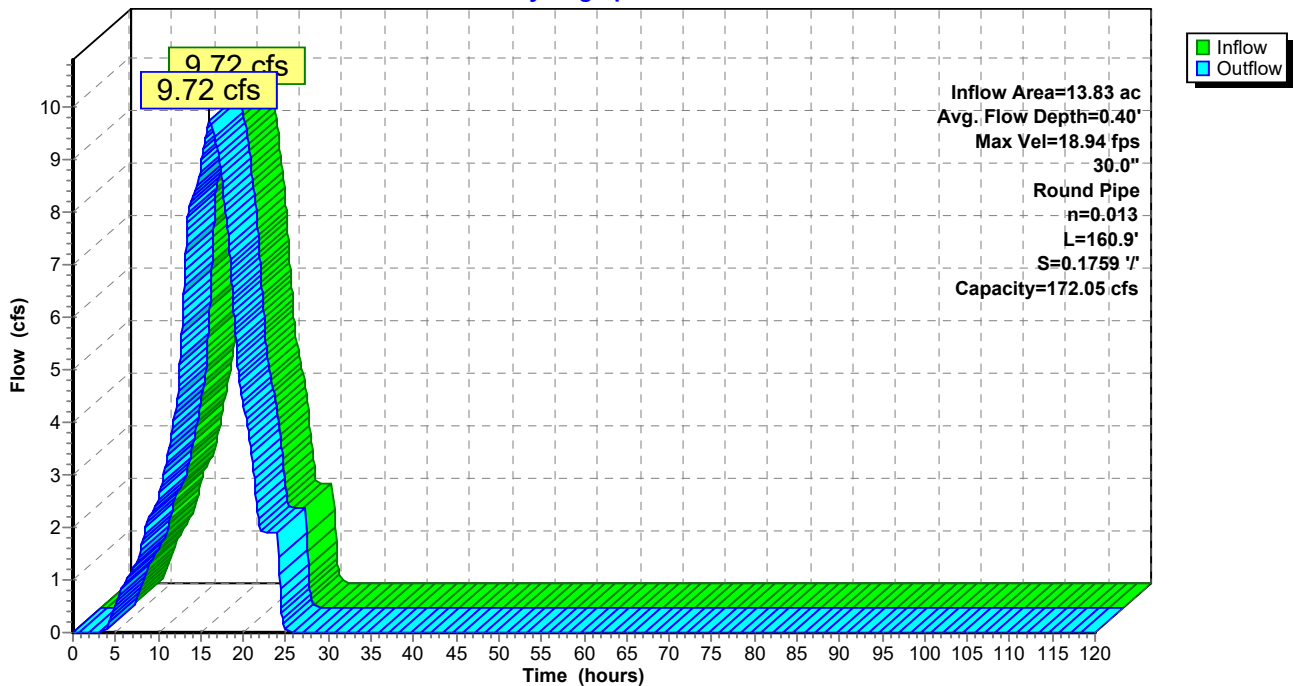
Peak Storage= 83 cf @ 15.93 hrs  
 Average Depth at Peak Storage= 0.40'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 172.05 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 160.9' Slope= 0.1759 '/'  
 Inlet Invert= 808.20', Outlet Invert= 779.89'



**Reach LP-N-A6: Letdown Pipe N-A6**

Hydrograph



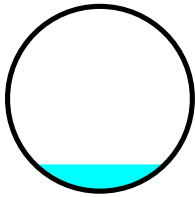
### Summary for Reach LP-N-A7: Letdown Pipe N-A7

Inflow Area = 6.09 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 4.29 cfs @ 15.80 hrs, Volume= 3.124 af  
 Outflow = 4.29 cfs @ 15.81 hrs, Volume= 3.124 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 15.50 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 10.67 fps, Avg. Travel Time= 0.3 min

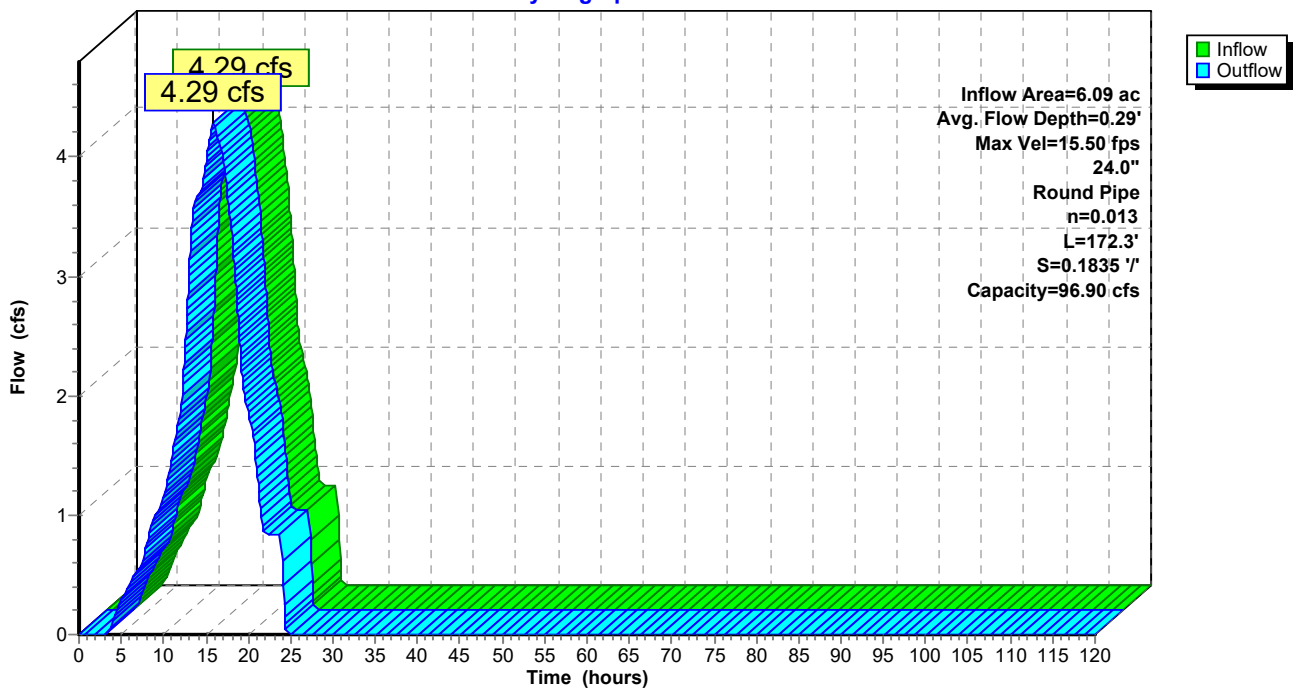
Peak Storage= 48 cf @ 15.81 hrs  
 Average Depth at Peak Storage= 0.29'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 96.90 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 172.3' Slope= 0.1835 '/'  
 Inlet Invert= 779.89', Outlet Invert= 748.28'



### Reach LP-N-A7: Letdown Pipe N-A7

Hydrograph



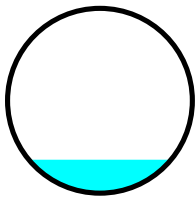
**Summary for Reach LP-N-A8: Letdown Pipe N-A8**

Inflow Area = 17.63 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 12.39 cfs @ 15.93 hrs, Volume= 9.053 af  
 Outflow = 12.39 cfs @ 15.93 hrs, Volume= 9.053 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 20.65 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 12.82 fps, Avg. Travel Time= 0.2 min

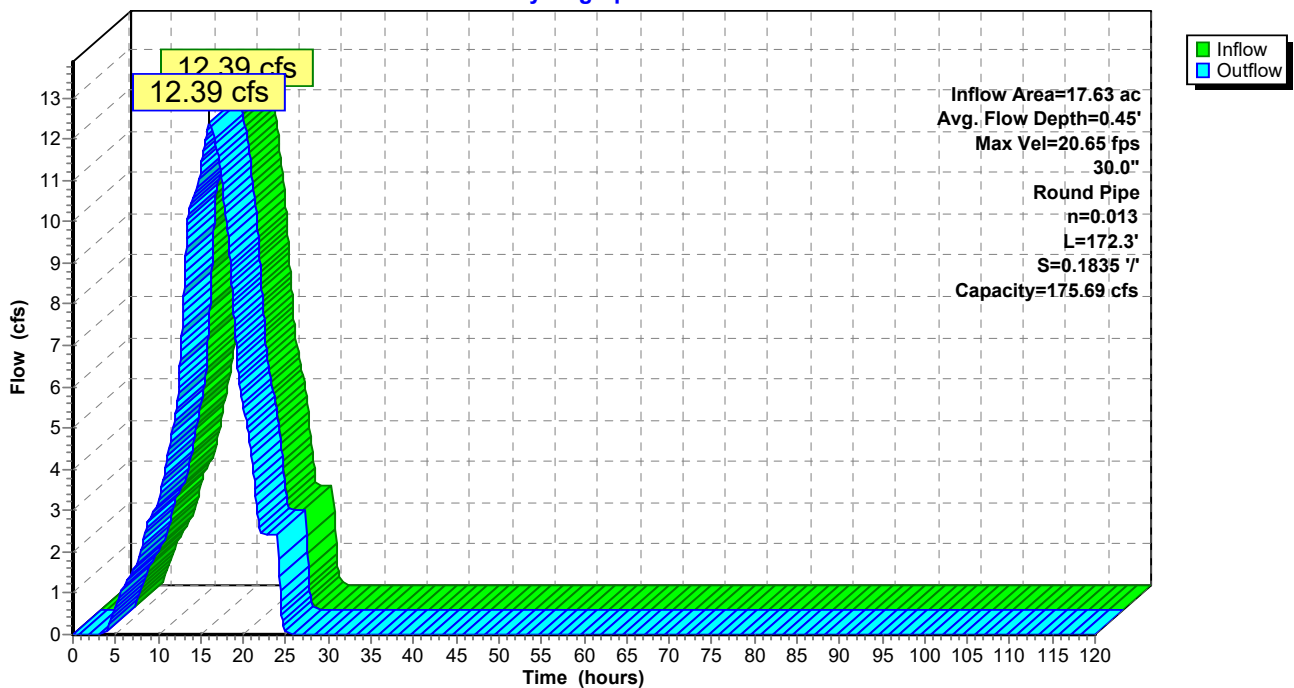
Peak Storage= 103 cf @ 15.93 hrs  
 Average Depth at Peak Storage= 0.45'  
 Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 175.69 cfs

30.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 172.3' Slope= 0.1835 1'  
 Inlet Invert= 779.89', Outlet Invert= 748.28'



**Reach LP-N-A8: Letdown Pipe N-A8**

Hydrograph



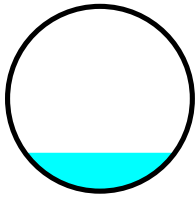
### Summary for Reach LP-N-A9: Letdown Pipe N-A9

Inflow Area = 6.09 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 4.29 cfs @ 15.81 hrs, Volume= 3.124 af  
 Outflow = 4.29 cfs @ 15.81 hrs, Volume= 3.124 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 9.15 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity= 6.23 fps, Avg. Travel Time= 0.2 min

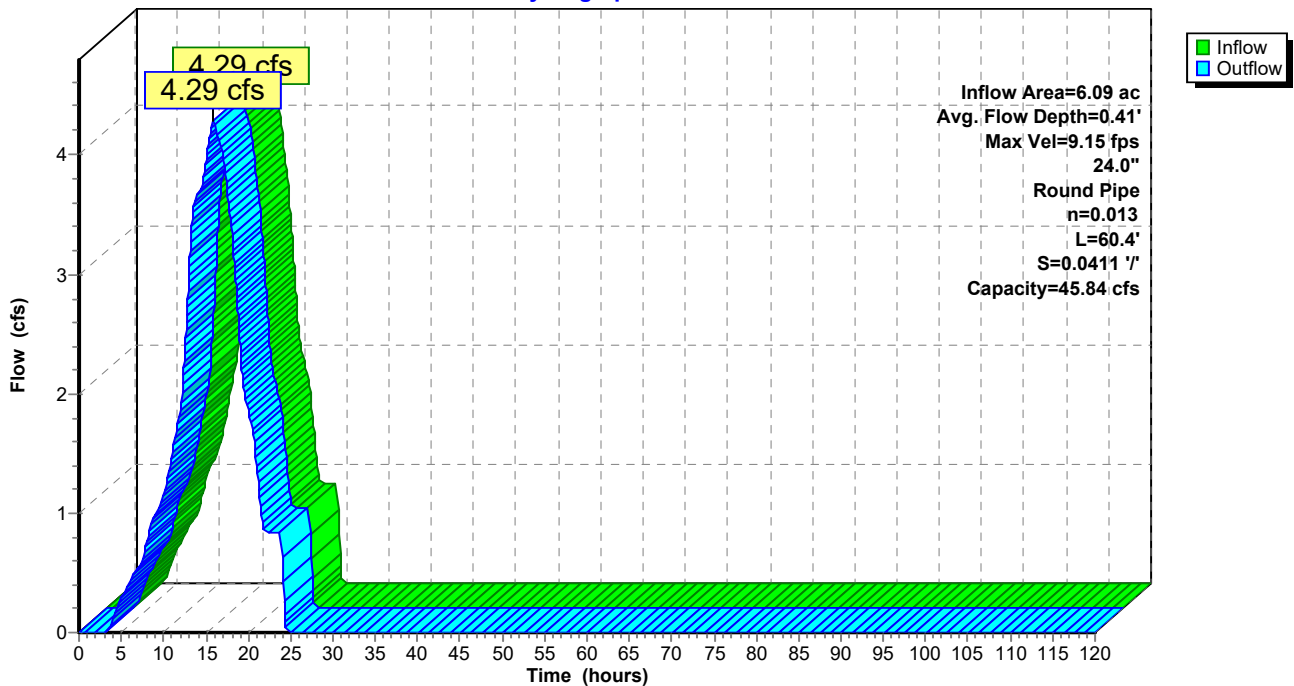
Peak Storage= 28 cf @ 15.81 hrs  
 Average Depth at Peak Storage= 0.41'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 45.84 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 60.4' Slope= 0.0411 '/  
 Inlet Invert= 748.28', Outlet Invert= 745.80'



### Reach LP-N-A9: Letdown Pipe N-A9

Hydrograph



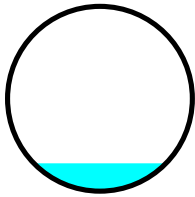
**Summary for Reach LP-N-B1: Letdown Pipe N-B1**

Inflow Area = 3.15 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 2.22 cfs @ 15.90 hrs, Volume= 1.619 af  
 Outflow = 2.22 cfs @ 15.90 hrs, Volume= 1.619 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 13.35 fps, Min. Travel Time= 0.3 min  
 Avg. Velocity = 8.89 fps, Avg. Travel Time= 0.4 min

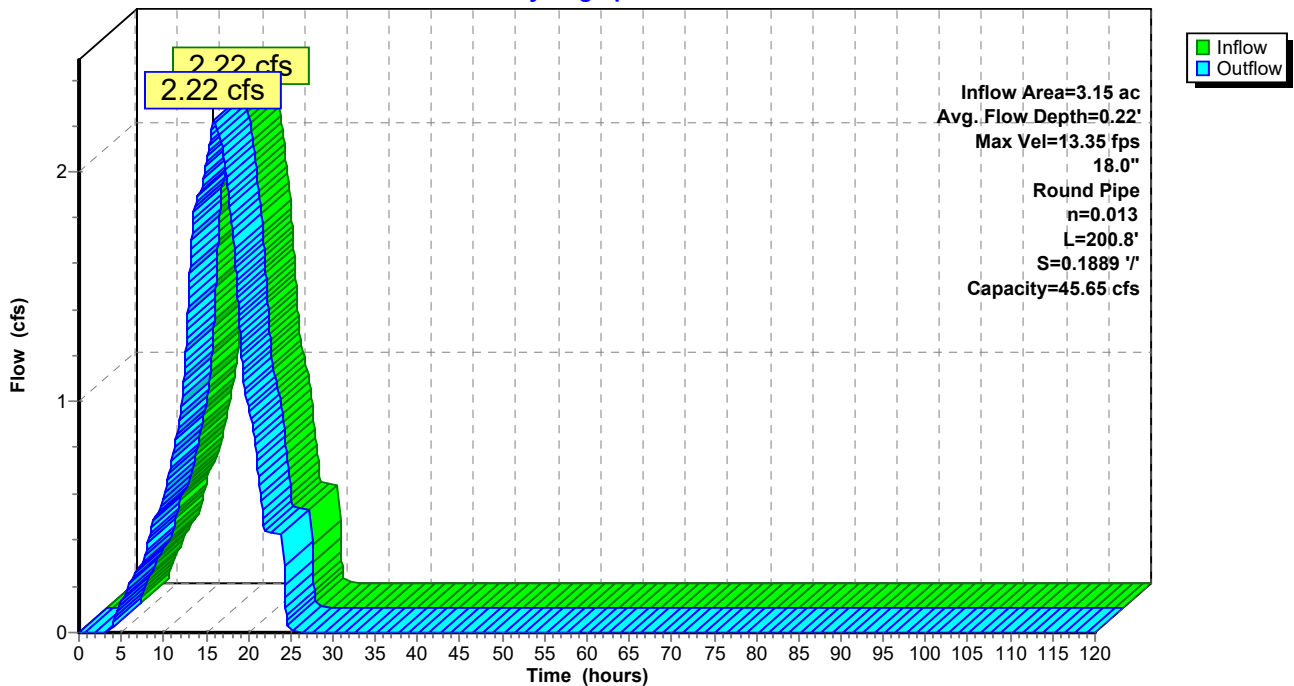
Peak Storage= 33 cf @ 15.90 hrs  
 Average Depth at Peak Storage= 0.22'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 45.65 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 200.8' Slope= 0.1889 '/'  
 Inlet Invert= 847.84', Outlet Invert= 809.91'



**Reach LP-N-B1: Letdown Pipe N-B1**

Hydrograph



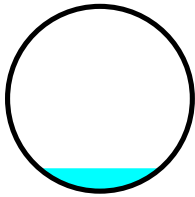
**Summary for Reach LP-N-B2: Letdown Pipe N-B2**

Inflow Area = 4.49 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 3.15 cfs @ 15.91 hrs, Volume= 2.303 af  
 Outflow = 3.15 cfs @ 15.91 hrs, Volume= 2.303 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 14.29 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 9.48 fps, Avg. Travel Time= 0.4 min

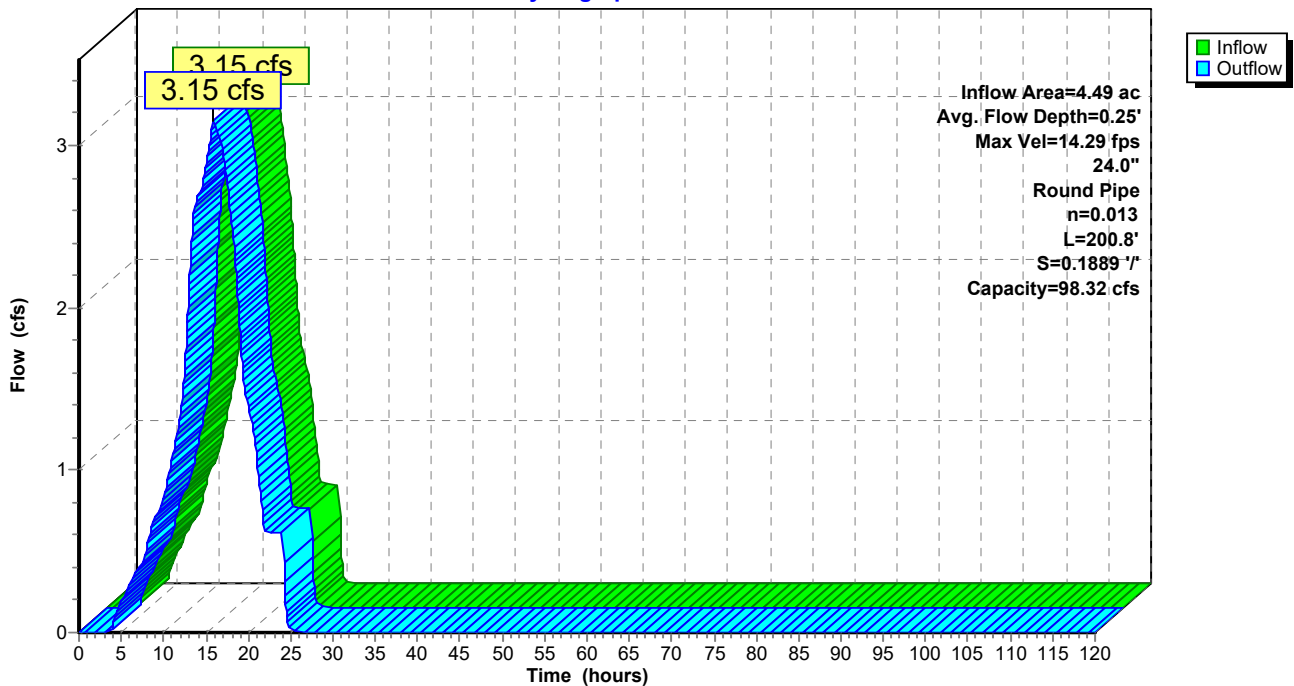
Peak Storage= 44 cf @ 15.91 hrs  
 Average Depth at Peak Storage= 0.25'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 98.32 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 200.8' Slope= 0.1889 '/'  
 Inlet Invert= 847.84', Outlet Invert= 809.91'



**Reach LP-N-B2: Letdown Pipe N-B2**

Hydrograph





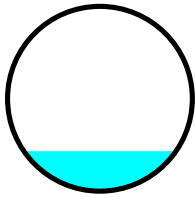
### Summary for Reach LP-N-B3: Letdown Pipe N-B3

Inflow Area = 6.58 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 4.63 cfs @ 15.91 hrs, Volume= 3.379 af  
 Outflow = 4.63 cfs @ 15.92 hrs, Volume= 3.379 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 16.52 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 10.54 fps, Avg. Travel Time= 0.3 min

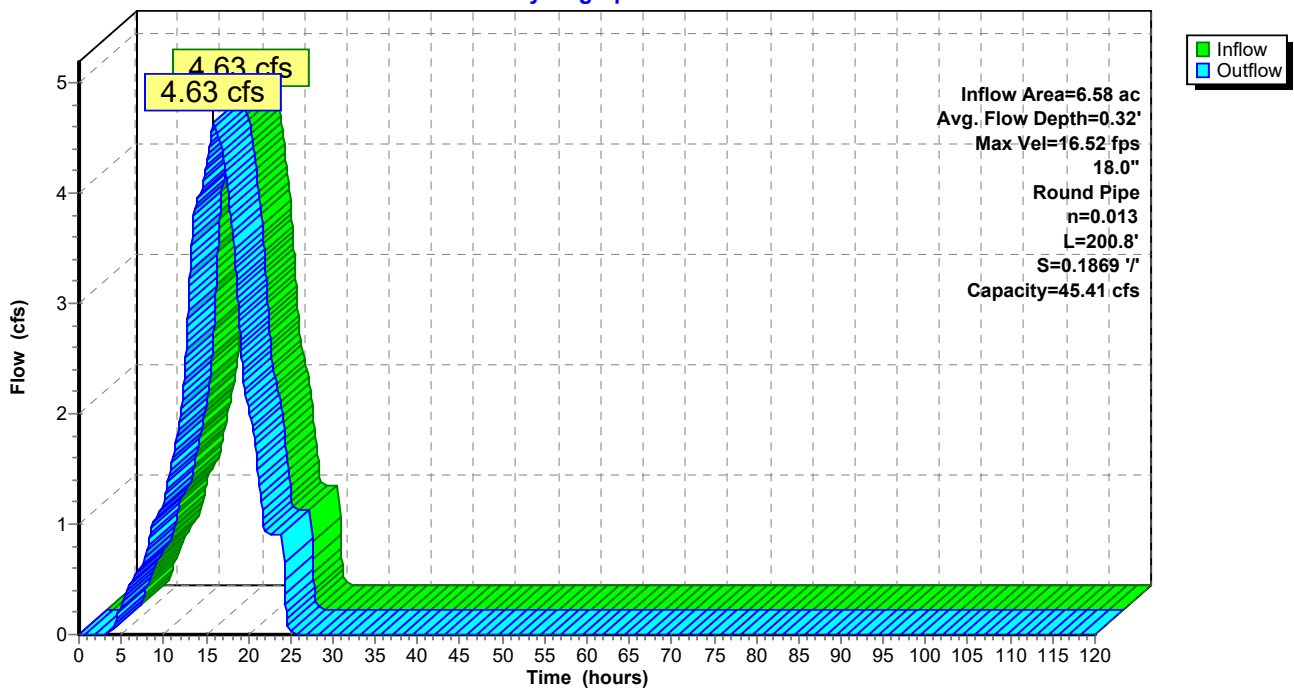
Peak Storage= 56 cf @ 15.91 hrs  
 Average Depth at Peak Storage= 0.32'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 45.41 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 200.8' Slope= 0.1869 '/'  
 Inlet Invert= 809.91', Outlet Invert= 772.39'



### Reach LP-N-B3: Letdown Pipe N-B3

Hydrograph



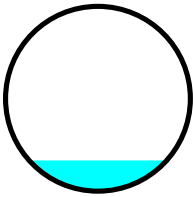
**Summary for Reach LP-N-B4: Letdown Pipe N-B4**

Inflow Area = 8.29 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 5.83 cfs @ 15.91 hrs, Volume= 4.257 af  
 Outflow = 5.83 cfs @ 15.91 hrs, Volume= 4.257 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 17.10 fps, Min. Travel Time= 0.2 min  
 Avg. Velocity = 10.96 fps, Avg. Travel Time= 0.3 min

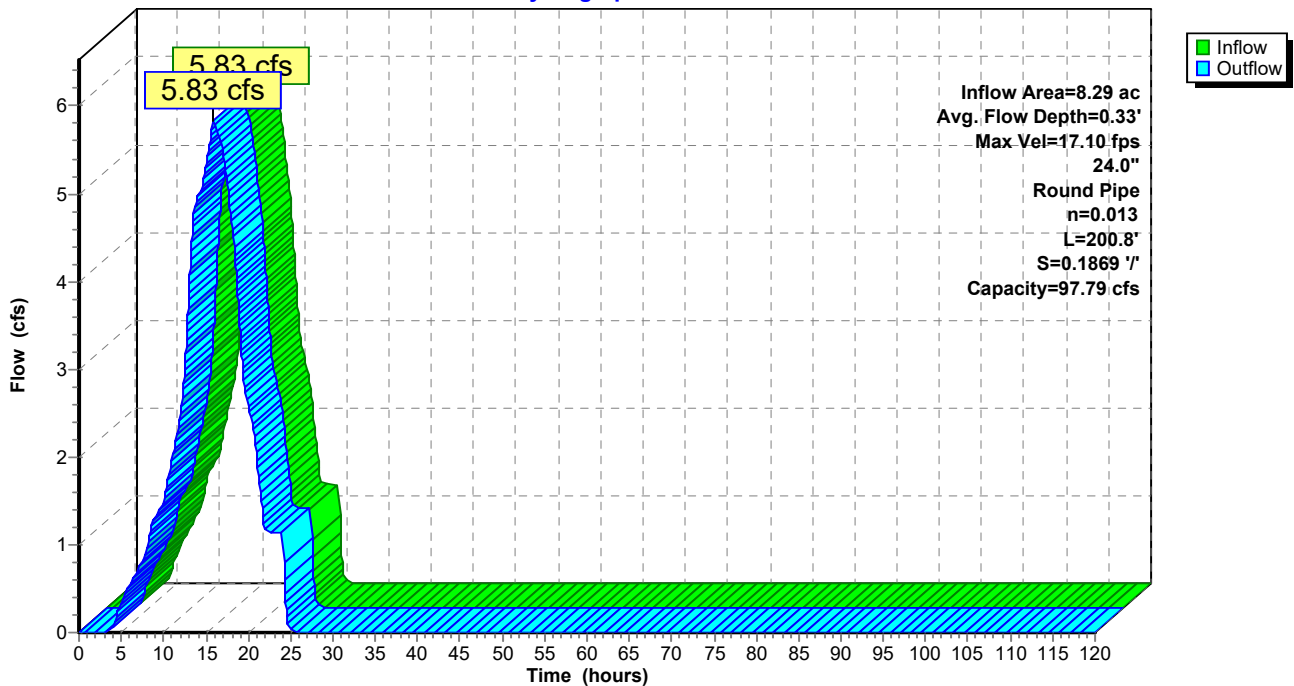
Peak Storage= 68 cf @ 15.91 hrs  
 Average Depth at Peak Storage= 0.33'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 97.79 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 200.8' Slope= 0.1869 '/'  
 Inlet Invert= 809.91', Outlet Invert= 772.39'



**Reach LP-N-B4: Letdown Pipe N-B4**

Hydrograph



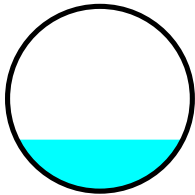
**Summary for Reach LP-N-B5: Letdown Pipe N-B5**

Inflow Area = 11.08 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 7.78 cfs @ 15.93 hrs, Volume= 5.689 af  
 Outflow = 7.78 cfs @ 15.94 hrs, Volume= 5.689 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 19.47 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 11.97 fps, Avg. Travel Time= 0.2 min

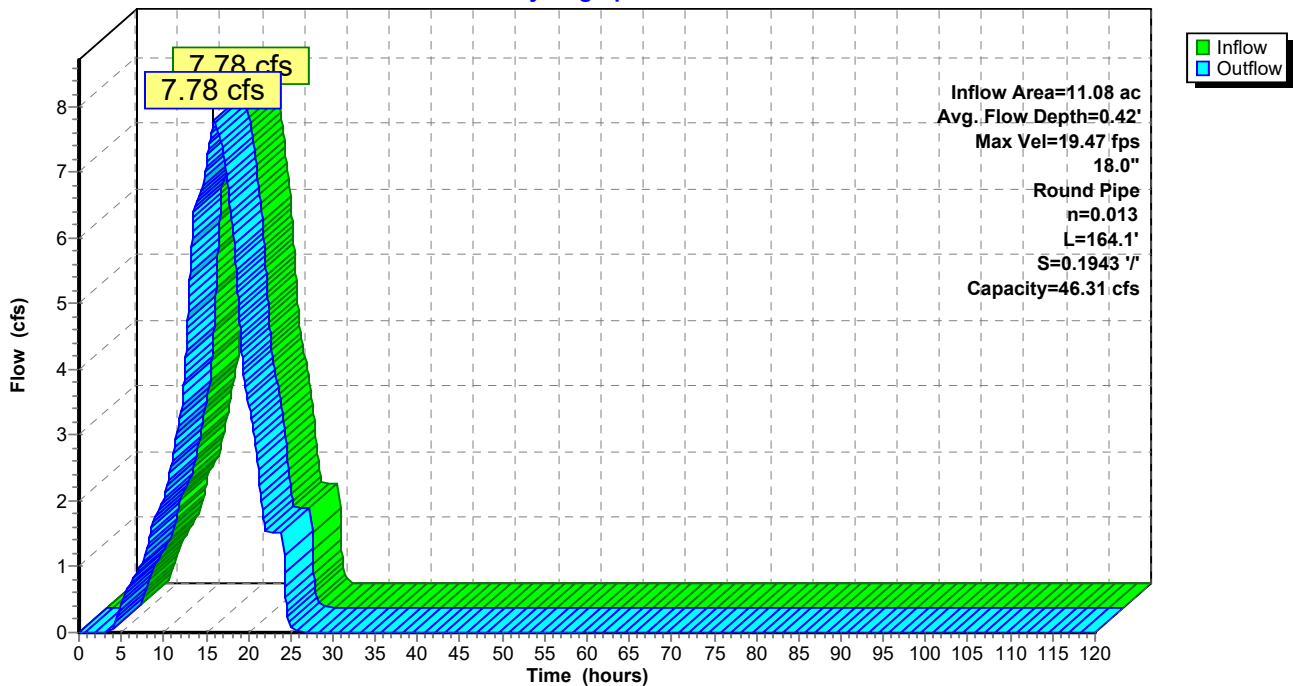
Peak Storage= 66 cf @ 15.94 hrs  
 Average Depth at Peak Storage= 0.42'  
 Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 46.31 cfs

18.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 164.1' Slope= 0.1943 '/  
 Inlet Invert= 772.39', Outlet Invert= 740.50'



**Reach LP-N-B5: Letdown Pipe N-B5**

Hydrograph



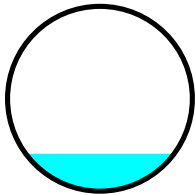
### Summary for Reach LP-N-B6: Letdown Pipe N-B6

Inflow Area = 12.58 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 8.84 cfs @ 15.92 hrs, Volume= 6.459 af  
 Outflow = 8.84 cfs @ 15.92 hrs, Volume= 6.459 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 19.60 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 12.29 fps, Avg. Travel Time= 0.2 min

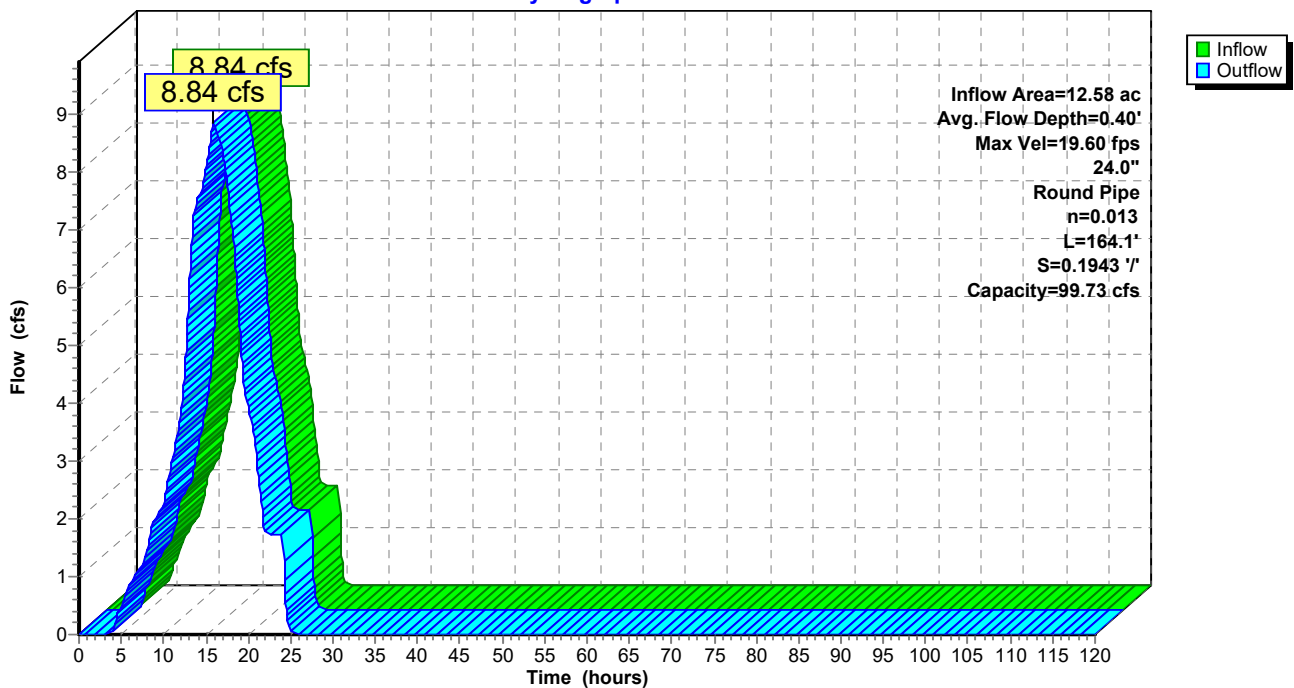
Peak Storage= 74 cf @ 15.92 hrs  
 Average Depth at Peak Storage= 0.40'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 99.73 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 164.1' Slope= 0.1943 '/'  
 Inlet Invert= 772.39', Outlet Invert= 740.50'



### Reach LP-N-B6: Letdown Pipe N-B6

Hydrograph



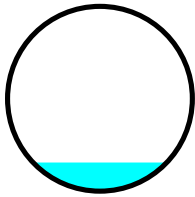
### Summary for Reach LP-N-C1: Letdown Pipe N-C1

Inflow Area = 8.24 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 5.79 cfs @ 15.91 hrs, Volume= 4.231 af  
 Outflow = 5.79 cfs @ 15.91 hrs, Volume= 4.231 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 18.91 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 12.31 fps, Avg. Travel Time= 0.2 min

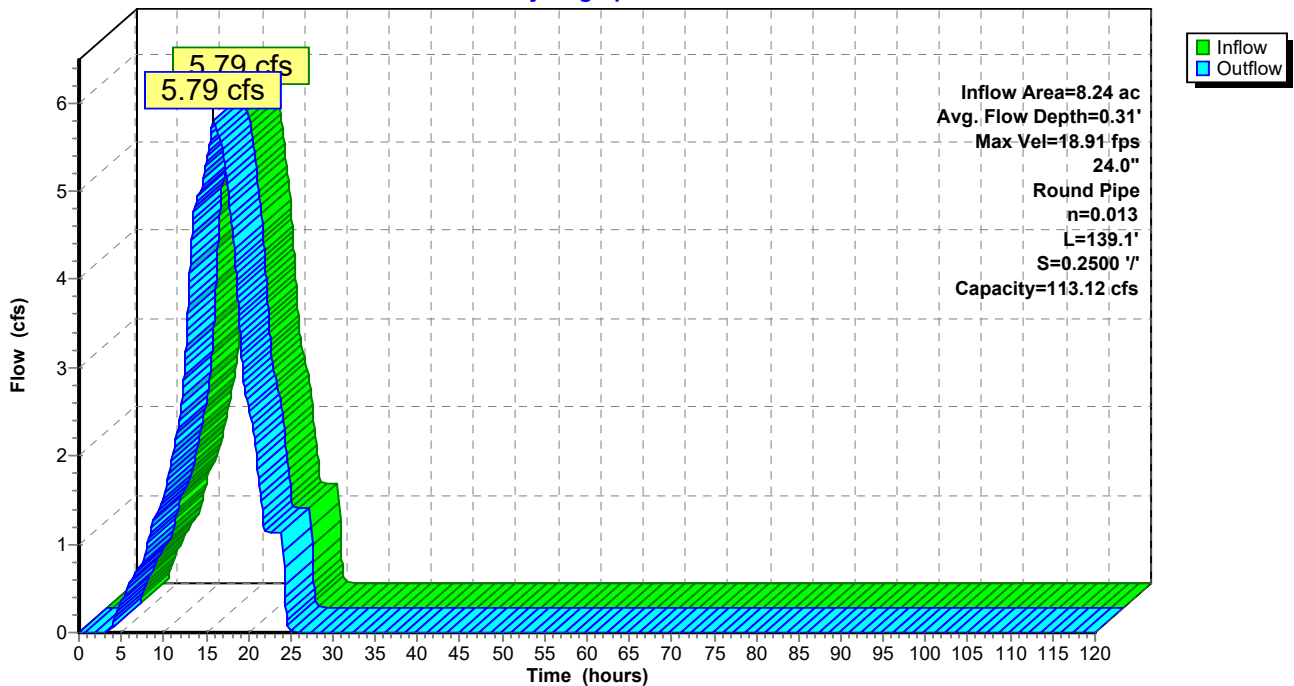
Peak Storage= 43 cf @ 15.91 hrs  
 Average Depth at Peak Storage= 0.31'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 113.12 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 139.1' Slope= 0.2500 '/  
 Inlet Invert= 843.66', Outlet Invert= 808.88'



### Reach LP-N-C1: Letdown Pipe N-C1

Hydrograph



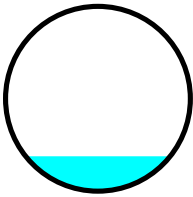
**Summary for Reach LP-N-C2: Letdown Pipe N-C2**

Inflow Area = 12.44 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 8.74 cfs @ 15.91 hrs, Volume= 6.388 af  
 Outflow = 8.74 cfs @ 15.91 hrs, Volume= 6.388 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 21.35 fps, Min. Travel Time= 0.0 min  
 Avg. Velocity = 13.56 fps, Avg. Travel Time= 0.1 min

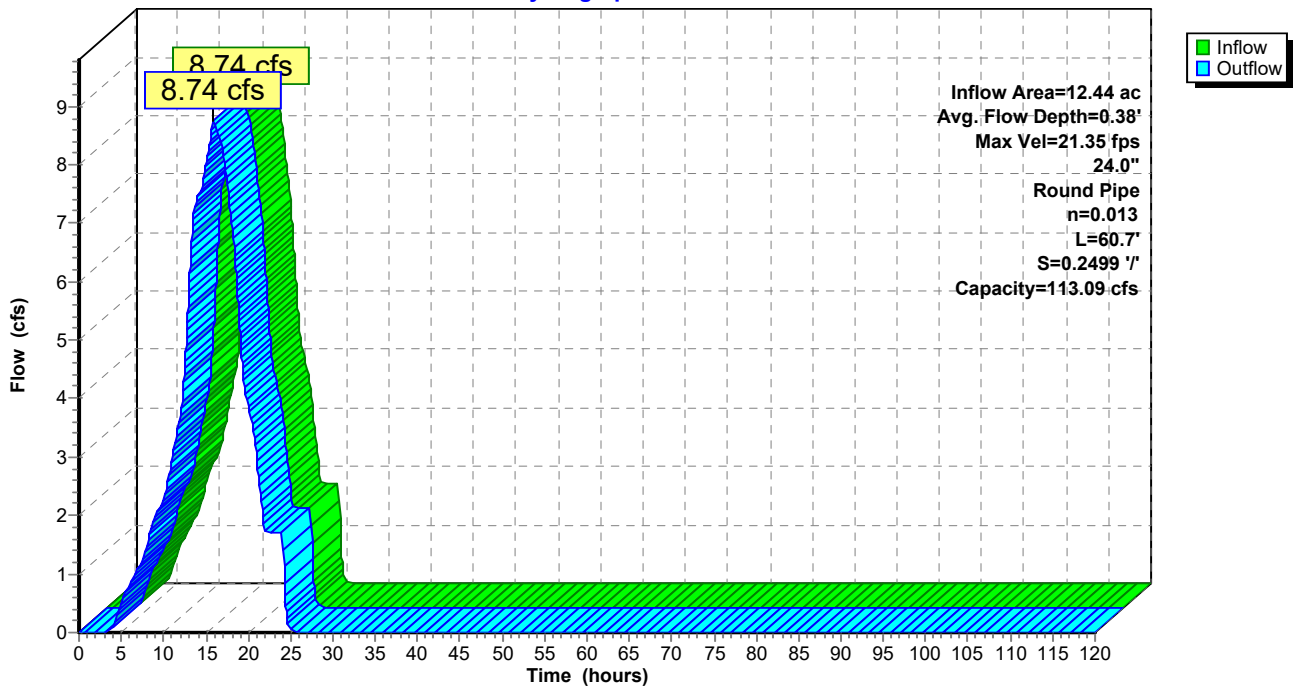
Peak Storage= 25 cf @ 15.91 hrs  
 Average Depth at Peak Storage= 0.38'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 113.09 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 60.7' Slope= 0.2499 '/  
 Inlet Invert= 808.88', Outlet Invert= 793.71'



**Reach LP-N-C2: Letdown Pipe N-C2**

Hydrograph



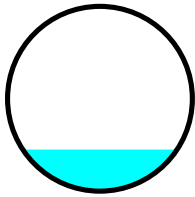
**Summary for Reach LP-N-C3: Letdown Pipe N-C3**

Inflow Area = 17.99 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 12.64 cfs @ 15.90 hrs, Volume= 9.239 af  
 Outflow = 12.64 cfs @ 15.91 hrs, Volume= 9.239 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 24.03 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 15.01 fps, Avg. Travel Time= 0.2 min

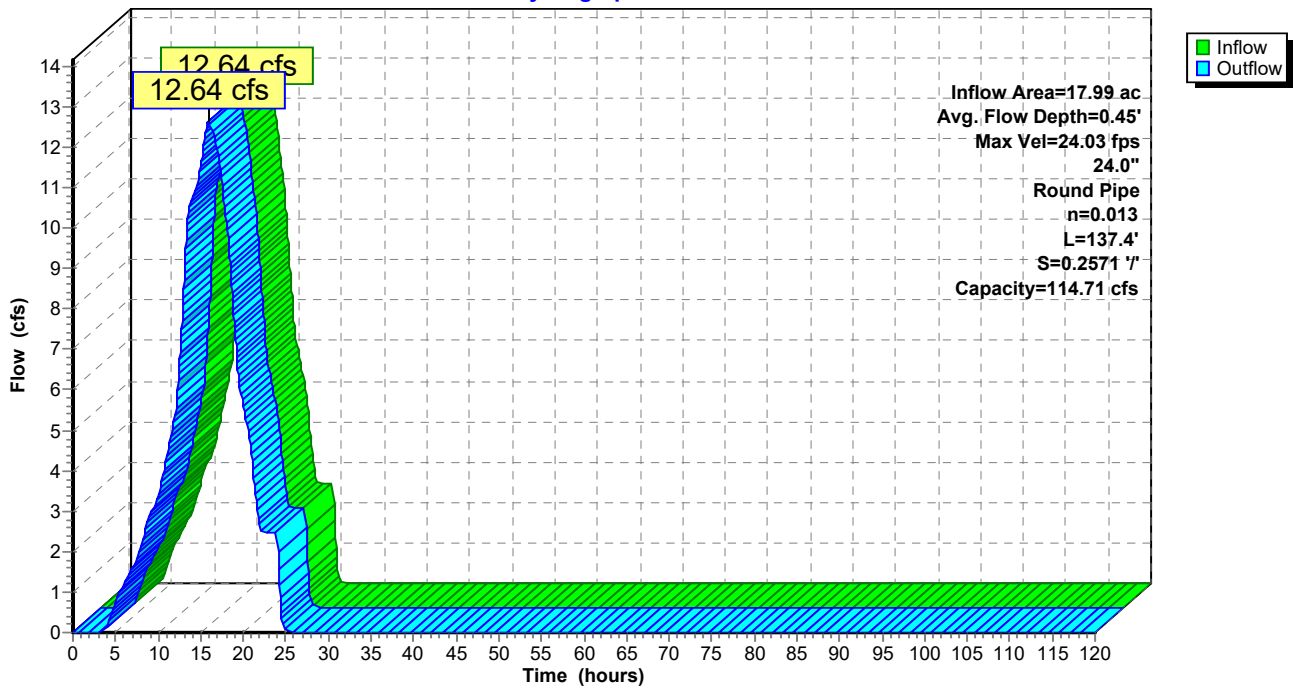
Peak Storage= 72 cf @ 15.91 hrs  
 Average Depth at Peak Storage= 0.45'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 114.71 cfs

24.0" Round Pipe  
 n= 0.013 Corrugated PE, smooth interior  
 Length= 137.4' Slope= 0.2571 1'  
 Inlet Invert= 774.26', Outlet Invert= 738.93'



**Reach LP-N-C3: Letdown Pipe N-C3**

Hydrograph



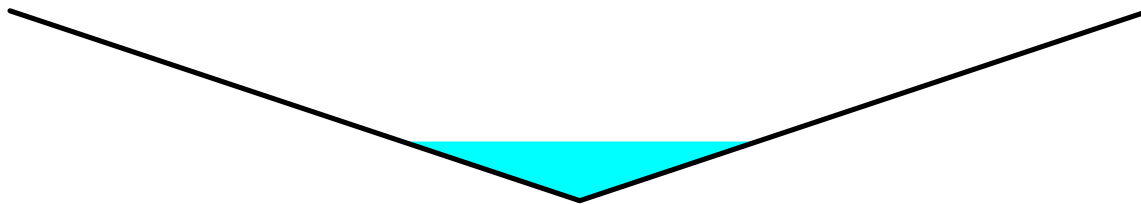
### Summary for Reach PD-1: Perimeter Ditch 1

Inflow Area = 8.06 ac, 4.48% Impervious, Inflow Depth = 6.28" for 100-Year, 24-Hour event  
 Inflow = 5.73 cfs @ 15.71 hrs, Volume= 4.215 af  
 Outflow = 5.69 cfs @ 16.09 hrs, Volume= 4.215 af, Atten= 1%, Lag= 23.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.17 fps, Min. Travel Time= 12.8 min  
 Avg. Velocity = 1.13 fps, Avg. Travel Time= 24.6 min

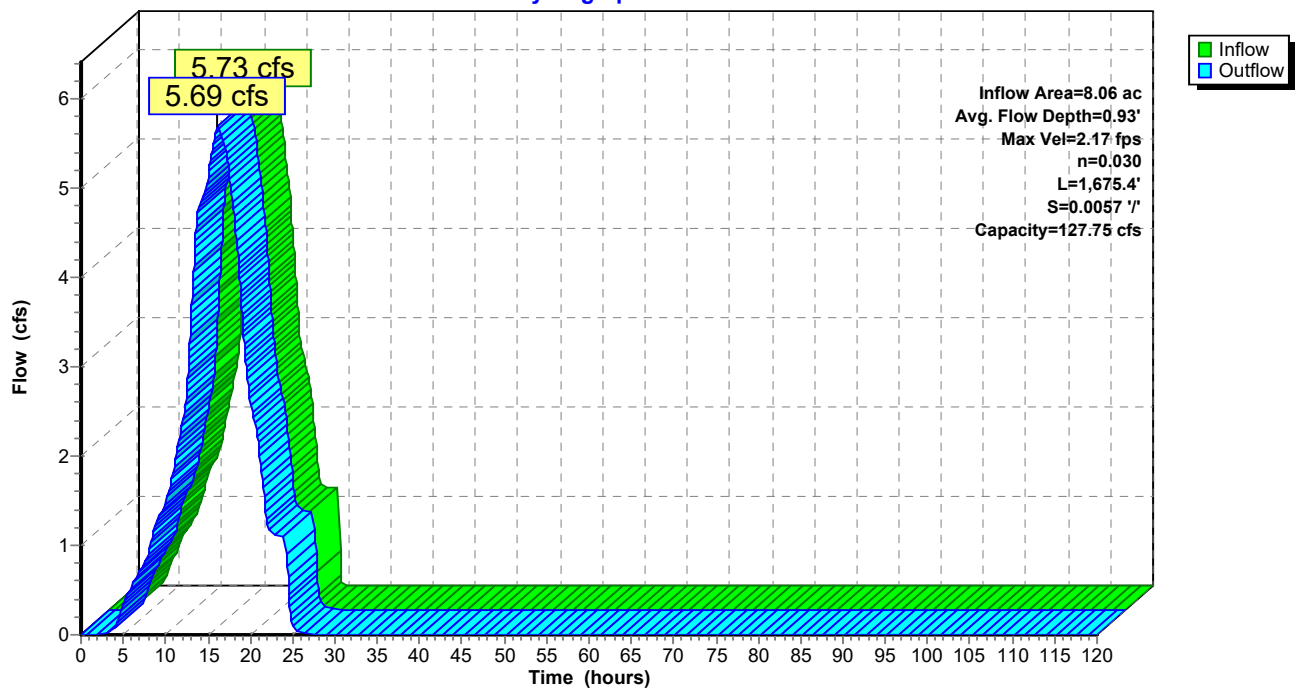
Peak Storage= 4,388 cf @ 15.88 hrs  
 Average Depth at Peak Storage= 0.93'  
 Bank-Full Depth= 3.00' Flow Area= 27.0 sf, Capacity= 127.75 cfs

0.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 ' / ' Top Width= 18.00'  
 Length= 1,675.4' Slope= 0.0057 ' / '  
 Inlet Invert= 768.00', Outlet Invert= 758.45'



### Reach PD-1: Perimeter Ditch 1

Hydrograph





**Summary for Reach PD-10: Perimeter Ditch 10**

Inflow Area = 9.21 ac, 4.89% Impervious, Inflow Depth = 6.31" for 100-Year, 24-Hour event  
 Inflow = 6.52 cfs @ 15.92 hrs, Volume= 4.841 af  
 Outflow = 6.51 cfs @ 16.05 hrs, Volume= 4.841 af, Atten= 0%, Lag= 7.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.66 fps, Min. Travel Time= 4.4 min  
 Avg. Velocity = 0.89 fps, Avg. Travel Time= 8.2 min

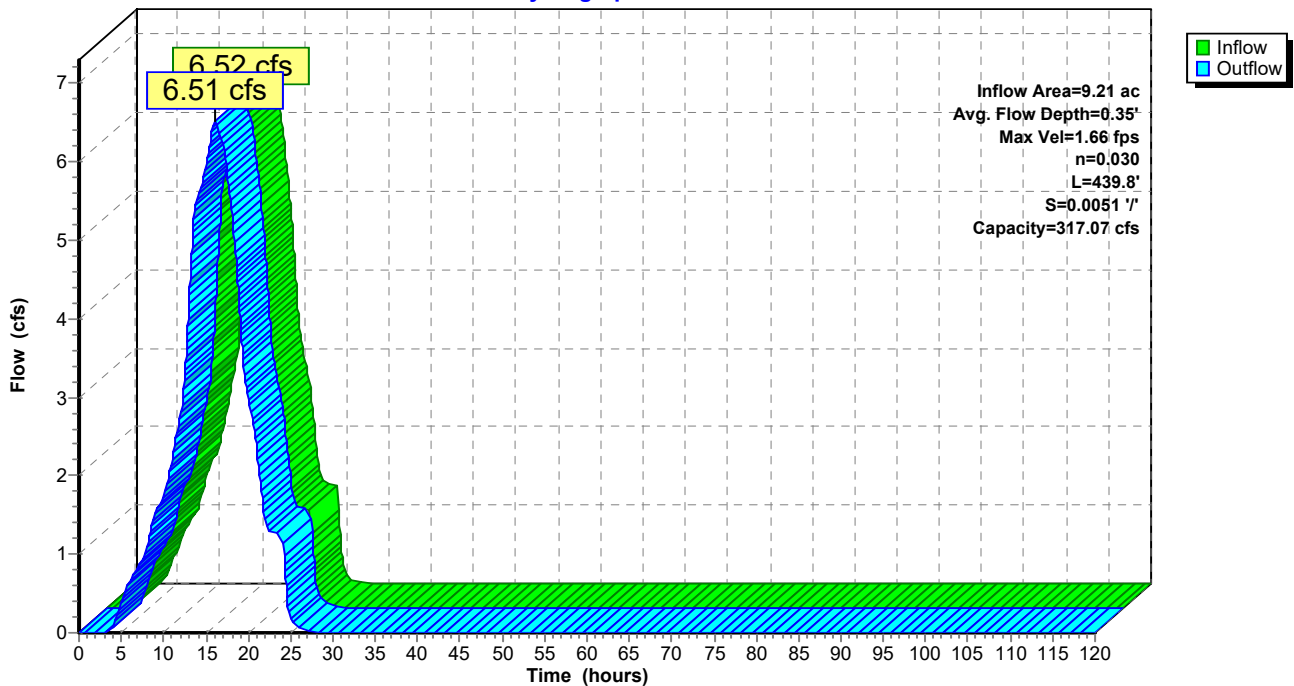
Peak Storage= 1,726 cf @ 15.97 hrs  
 Average Depth at Peak Storage= 0.35'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 317.07 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 ' / ' Top Width= 28.00'  
 Length= 439.8' Slope= 0.0051 ' / '  
 Inlet Invert= 739.43', Outlet Invert= 737.18'



**Reach PD-10: Perimeter Ditch 10**

Hydrograph



**Summary for Reach PD-11: Perimeter Ditch 11**

Inflow Area = 2.70 ac, 11.67% Impervious, Inflow Depth = 6.51" for 100-Year, 24-Hour event  
 Inflow = 1.96 cfs @ 15.67 hrs, Volume= 1.463 af  
 Outflow = 1.95 cfs @ 16.15 hrs, Volume= 1.463 af, Atten= 1%, Lag= 28.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.06 fps, Min. Travel Time= 17.4 min  
 Avg. Velocity = 0.61 fps, Avg. Travel Time= 30.2 min

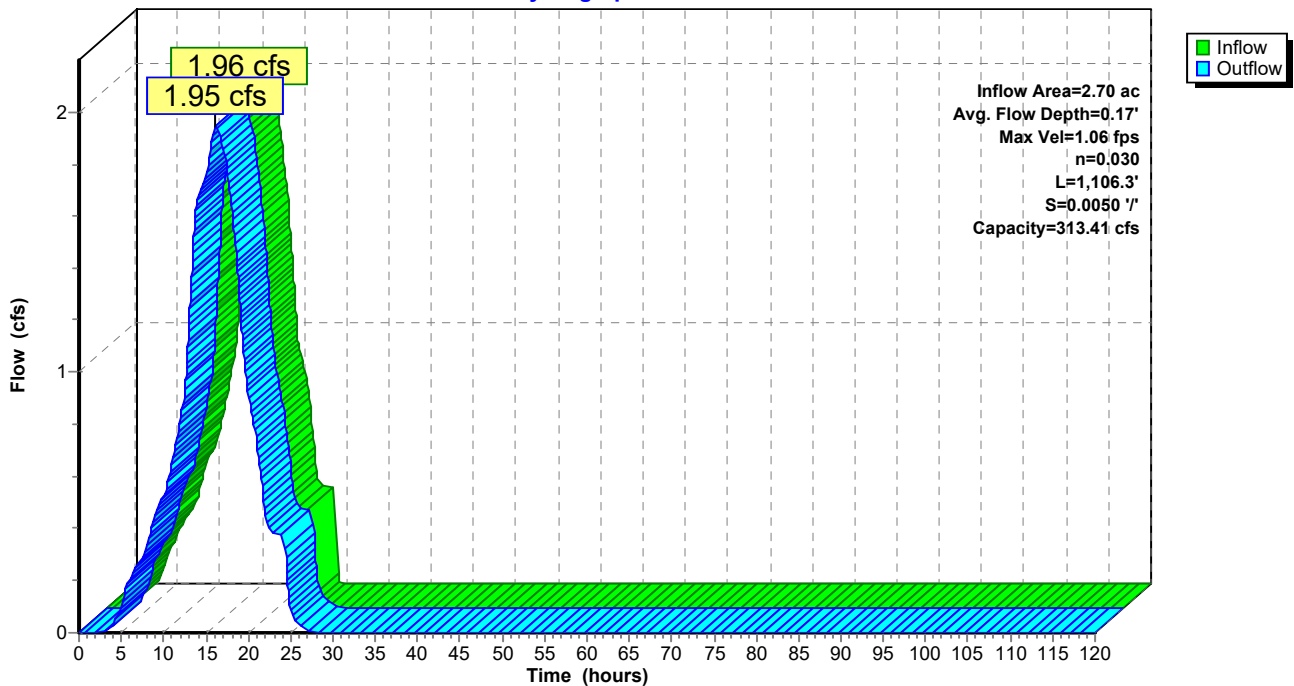
Peak Storage= 2,034 cf @ 15.86 hrs  
 Average Depth at Peak Storage= 0.17'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 313.41 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 1,106.3' Slope= 0.0050 '/'  
 Inlet Invert= 744.96', Outlet Invert= 739.43'



**Reach PD-11: Perimeter Ditch 11**

Hydrograph



**Summary for Reach PD-12: Perimeter Ditch 12**

Inflow Area = 2.74 ac, 11.45% Impervious, Inflow Depth = 6.51" for 100-Year, 24-Hour event  
 Inflow = 1.97 cfs @ 15.89 hrs, Volume= 1.485 af  
 Outflow = 1.96 cfs @ 16.37 hrs, Volume= 1.485 af, Atten= 0%, Lag= 28.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.06 fps, Min. Travel Time= 17.2 min  
 Avg. Velocity = 0.61 fps, Avg. Travel Time= 29.9 min

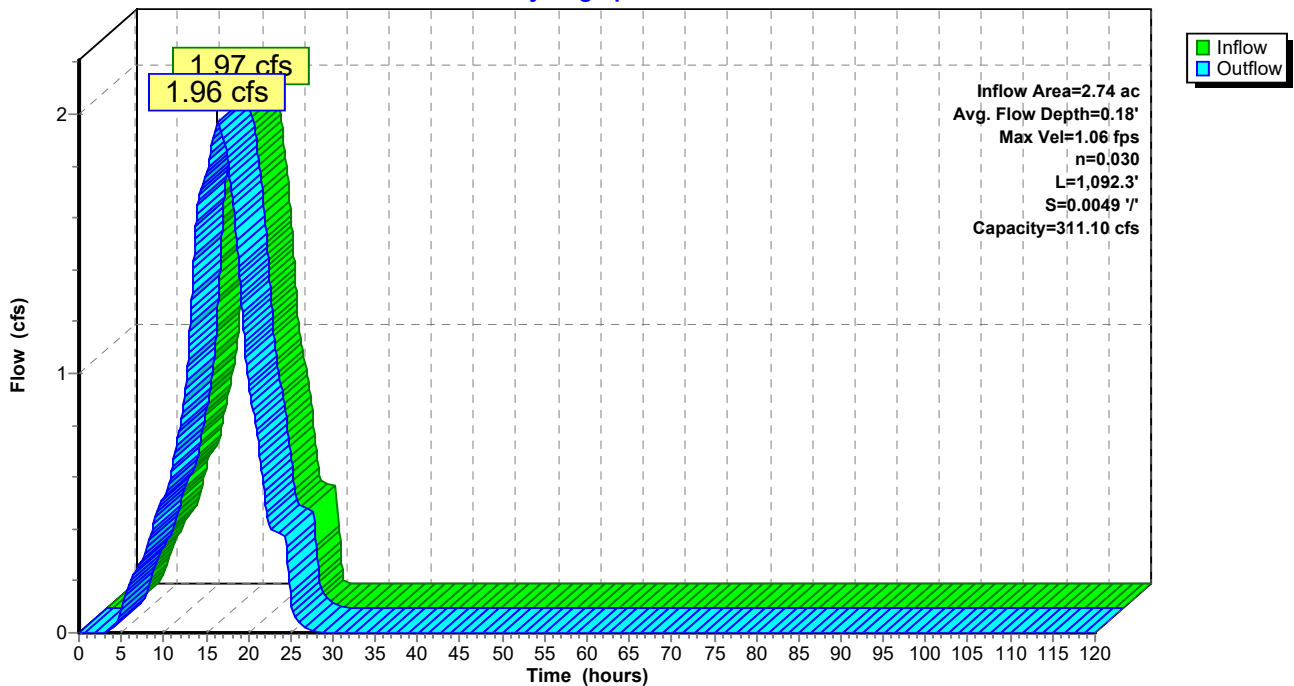
Peak Storage= 2,030 cf @ 16.08 hrs  
 Average Depth at Peak Storage= 0.18'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 311.10 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 1,092.3' Slope= 0.0049 '/'  
 Inlet Invert= 744.96', Outlet Invert= 739.58'



**Reach PD-12: Perimeter Ditch 12**

Hydrograph



**Summary for Reach PD-13: Perimeter Ditch 13**

Inflow Area = 25.73 ac, 1.49% Impervious, Inflow Depth = 6.21" for 100-Year, 24-Hour event  
 Inflow = 18.09 cfs @ 15.93 hrs, Volume= 13.315 af  
 Outflow = 18.09 cfs @ 15.98 hrs, Volume= 13.315 af, Atten= 0%, Lag= 3.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.96 fps, Min. Travel Time= 1.9 min  
 Avg. Velocity = 1.00 fps, Avg. Travel Time= 3.7 min

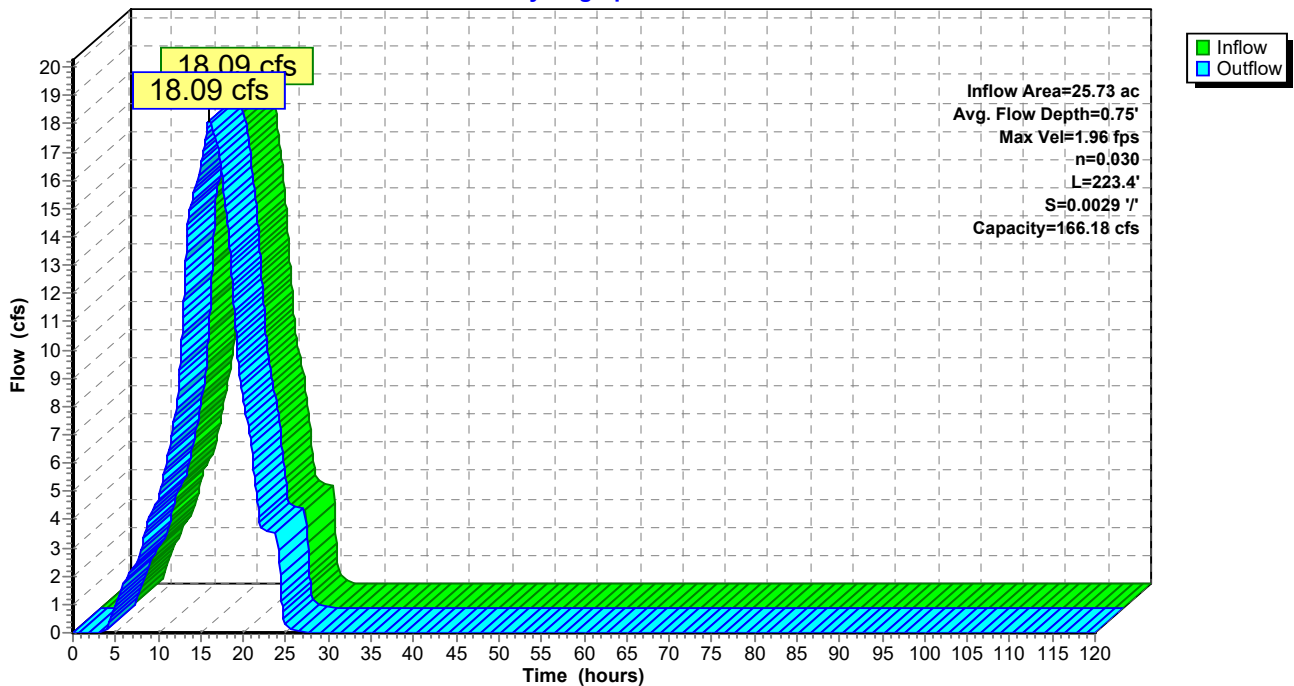
Peak Storage= 2,066 cf @ 15.95 hrs  
 Average Depth at Peak Storage= 0.75'  
 Bank-Full Depth= 2.50' Flow Area= 43.8 sf, Capacity= 166.18 cfs

10.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 25.00'  
 Length= 223.4' Slope= 0.0029 '/'  
 Inlet Invert= 739.58', Outlet Invert= 738.93'



**Reach PD-13: Perimeter Ditch 13**

Hydrograph



**Summary for Reach PD-14: Perimeter Ditch 14**

Inflow Area = 17.46 ac, 1.99% Impervious, Inflow Depth = 6.22" for 100-Year, 24-Hour event  
 Inflow = 12.28 cfs @ 16.04 hrs, Volume= 9.048 af  
 Outflow = 12.28 cfs @ 16.09 hrs, Volume= 9.048 af, Atten= 0%, Lag= 3.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.98 fps, Min. Travel Time= 1.9 min  
 Avg. Velocity = 1.00 fps, Avg. Travel Time= 3.7 min

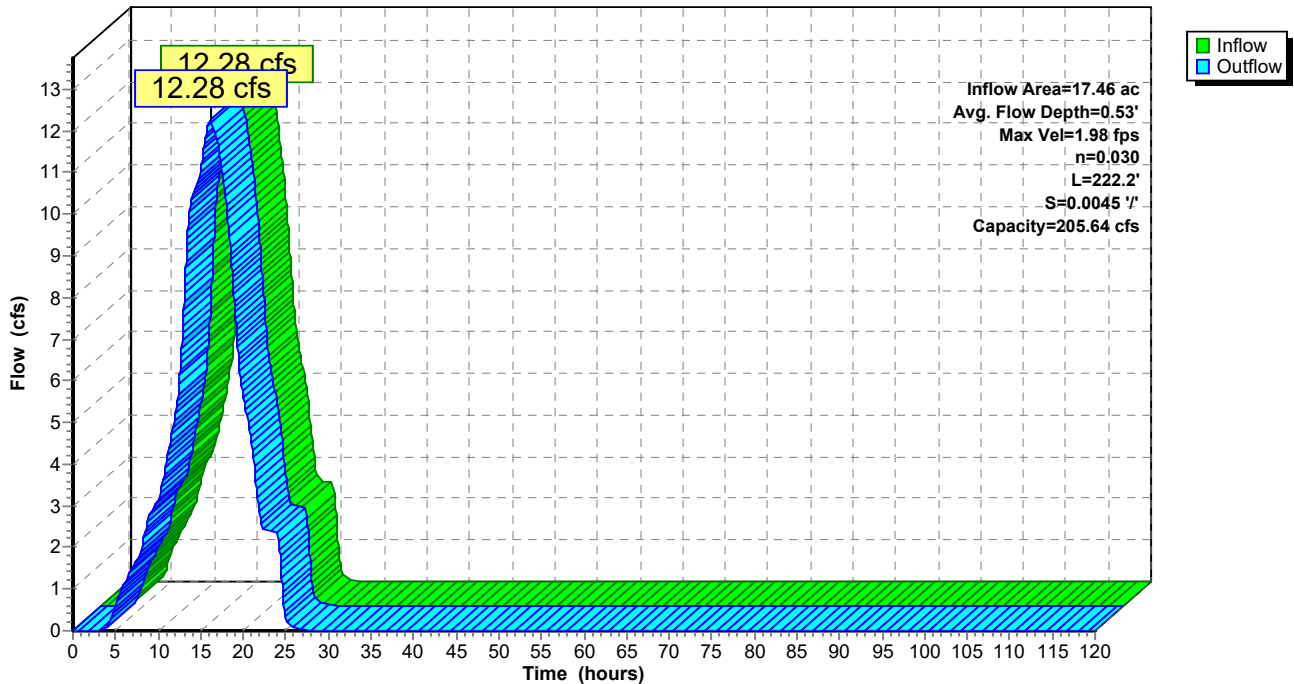
Peak Storage= 1,378 cf @ 16.06 hrs  
 Average Depth at Peak Storage= 0.53'  
 Bank-Full Depth= 2.50' Flow Area= 43.8 sf, Capacity= 205.64 cfs

10.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 25.00'  
 Length= 222.2' Slope= 0.0045 '/'  
 Inlet Invert= 739.92', Outlet Invert= 738.93'



**Reach PD-14: Perimeter Ditch 14**

Hydrograph



**Summary for Reach PD-15: Perimeter Ditch 15**

Inflow Area = 16.01 ac, 1.69% Impervious, Inflow Depth = 6.21" for 100-Year, 24-Hour event  
 Inflow = 11.28 cfs @ 15.86 hrs, Volume= 8.288 af  
 Outflow = 11.27 cfs @ 16.05 hrs, Volume= 8.288 af, Atten= 0%, Lag= 11.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.92 fps, Min. Travel Time= 6.6 min  
 Avg. Velocity = 0.98 fps, Avg. Travel Time= 12.9 min

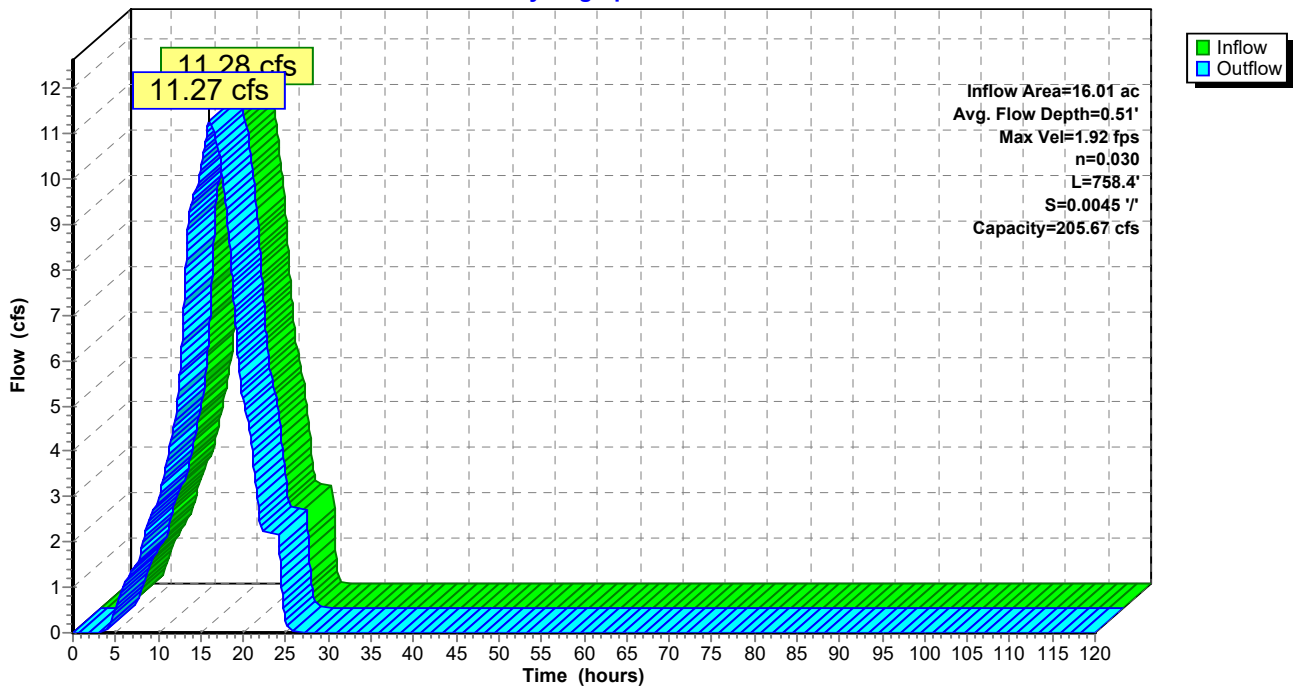
Peak Storage= 4,443 cf @ 15.94 hrs  
 Average Depth at Peak Storage= 0.51'  
 Bank-Full Depth= 2.50' Flow Area= 43.8 sf, Capacity= 205.67 cfs

10.00' x 2.50' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 25.00'  
 Length= 758.4' Slope= 0.0045 '/'  
 Inlet Invert= 743.30', Outlet Invert= 739.92'



**Reach PD-15: Perimeter Ditch 15**

Hydrograph



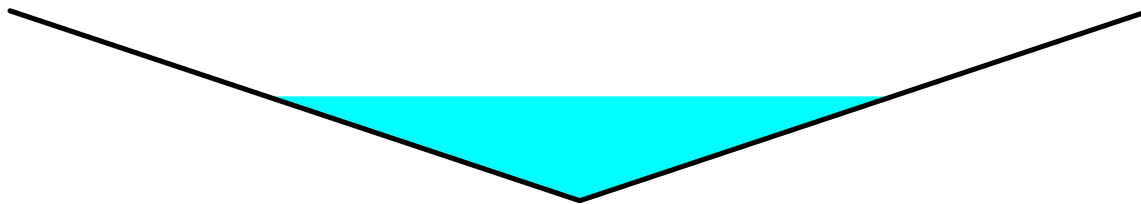
### Summary for Reach PD-2: Perimeter Ditch 2

Inflow Area = 30.47 ac, 1.77% Impervious, Inflow Depth = 6.20" for 100-Year, 24-Hour event  
 Inflow = 21.35 cfs @ 16.13 hrs, Volume= 15.735 af  
 Outflow = 21.35 cfs @ 16.19 hrs, Volume= 15.735 af, Atten= 0%, Lag= 3.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.62 fps, Min. Travel Time= 2.0 min  
 Avg. Velocity = 1.30 fps, Avg. Travel Time= 4.1 min

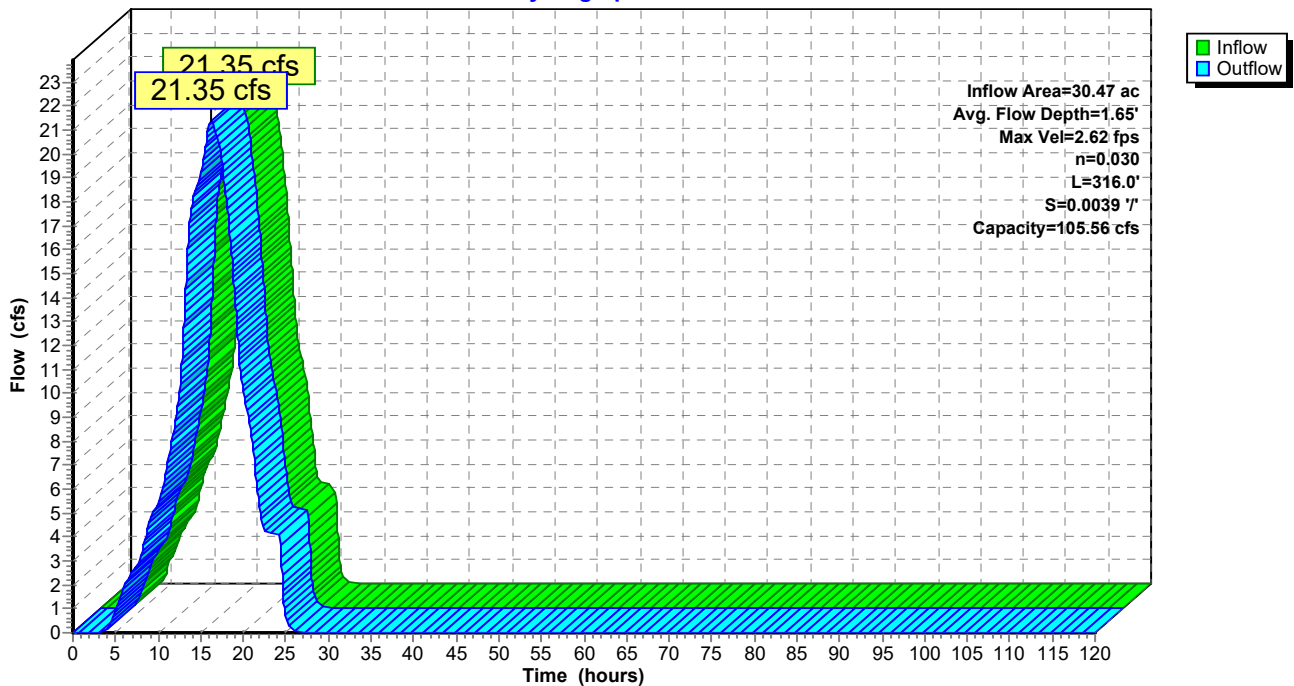
Peak Storage= 2,573 cf @ 16.16 hrs  
 Average Depth at Peak Storage= 1.65'  
 Bank-Full Depth= 3.00' Flow Area= 27.0 sf, Capacity= 105.56 cfs

0.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 18.00'  
 Length= 316.0' Slope= 0.0039 '/'  
 Inlet Invert= 758.00', Outlet Invert= 756.77'



### Reach PD-2: Perimeter Ditch 2

Hydrograph



### Summary for Reach PD-3: Perimeter Ditch 3

Inflow Area = 50.20 ac, 1.23% Impervious, Inflow Depth = 6.19" for 100-Year, 24-Hour event  
 Inflow = 35.09 cfs @ 16.10 hrs, Volume= 25.886 af  
 Outflow = 35.08 cfs @ 16.17 hrs, Volume= 25.886 af, Atten= 0%, Lag= 4.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.41 fps, Min. Travel Time= 2.4 min  
 Avg. Velocity = 1.62 fps, Avg. Travel Time= 5.0 min

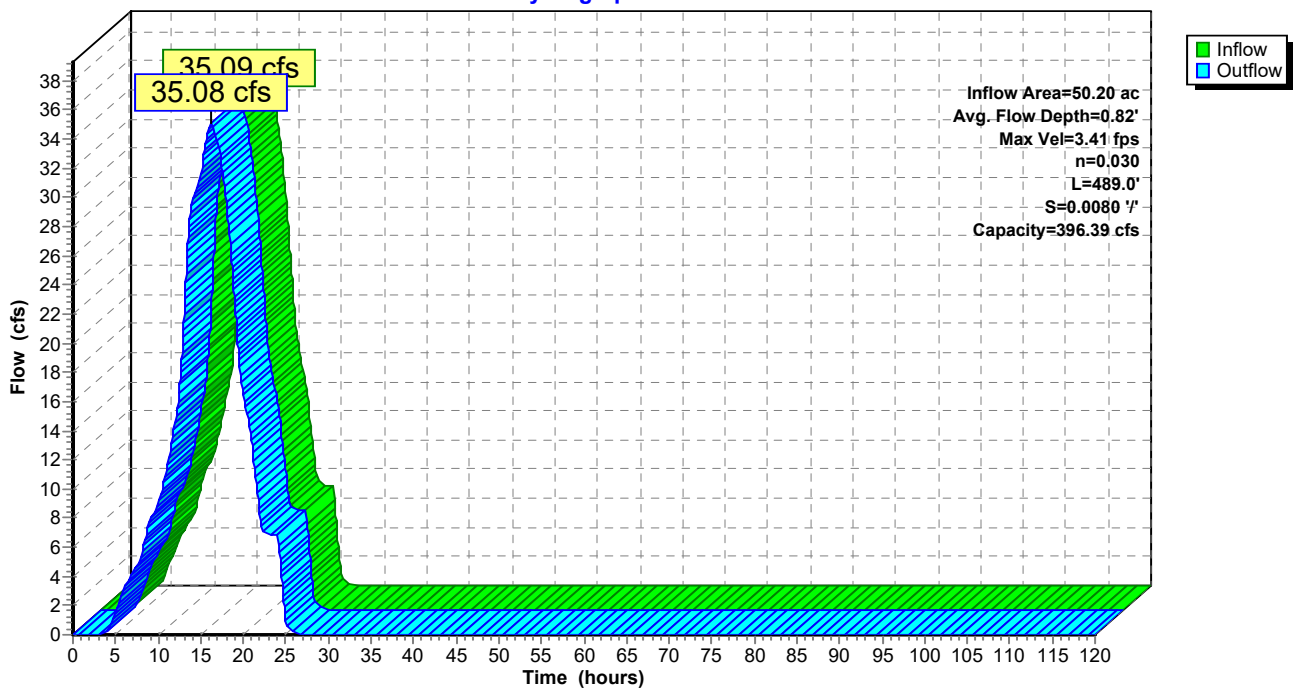
Peak Storage= 5,029 cf @ 16.12 hrs  
 Average Depth at Peak Storage= 0.82'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 396.39 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 ' / ' Top Width= 28.00'  
 Length= 489.0' Slope= 0.0080 ' / '  
 Inlet Invert= 755.78', Outlet Invert= 751.87'



### Reach PD-3: Perimeter Ditch 3

Hydrograph





**Summary for Reach PD-4: Perimeter Ditch 4**

Inflow Area = 53.25 ac, 1.28% Impervious, Inflow Depth = 6.19" for 100-Year, 24-Hour event  
 Inflow = 37.22 cfs @ 16.16 hrs, Volume= 27.467 af  
 Outflow = 37.21 cfs @ 16.20 hrs, Volume= 27.467 af, Atten= 0%, Lag= 2.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 4.43 fps, Min. Travel Time= 1.4 min  
 Avg. Velocity = 2.10 fps, Avg. Travel Time= 2.9 min

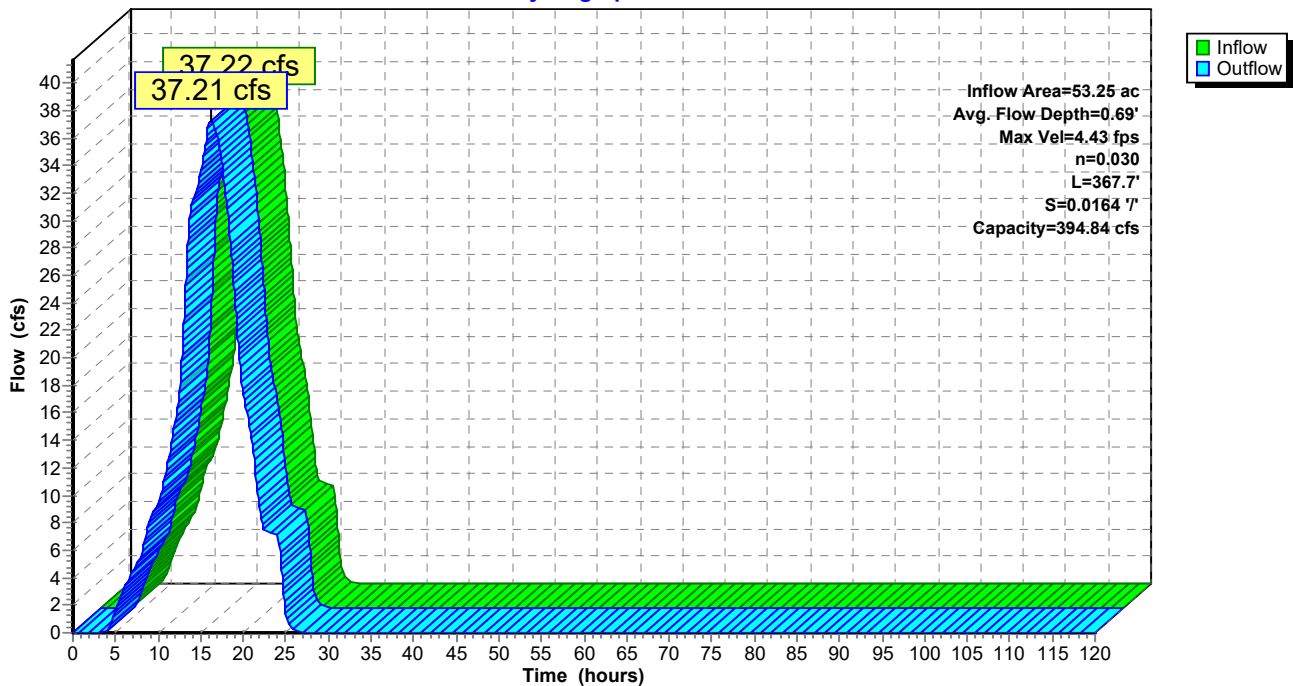
Peak Storage= 3,087 cf @ 16.17 hrs  
 Average Depth at Peak Storage= 0.69'  
 Bank-Full Depth= 2.50' Flow Area= 43.8 sf, Capacity= 394.84 cfs

10.00' x 2.50' deep channel, n= 0.030  
 Side Slope Z-value= 3.0 '/' Top Width= 25.00'  
 Length= 367.7' Slope= 0.0164 '/'  
 Inlet Invert= 751.87', Outlet Invert= 745.83'



**Reach PD-4: Perimeter Ditch 4**

Hydrograph



**Summary for Reach PD-5: Perimeter Ditch 5**

Inflow Area = 85.14 ac, 1.17% Impervious, Inflow Depth = 6.19" for 100-Year, 24-Hour event  
 Inflow = 59.47 cfs @ 16.09 hrs, Volume= 43.912 af  
 Outflow = 59.44 cfs @ 16.24 hrs, Volume= 43.912 af, Atten= 0%, Lag= 9.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.48 fps, Min. Travel Time= 5.4 min  
 Avg. Velocity = 1.58 fps, Avg. Travel Time= 11.9 min

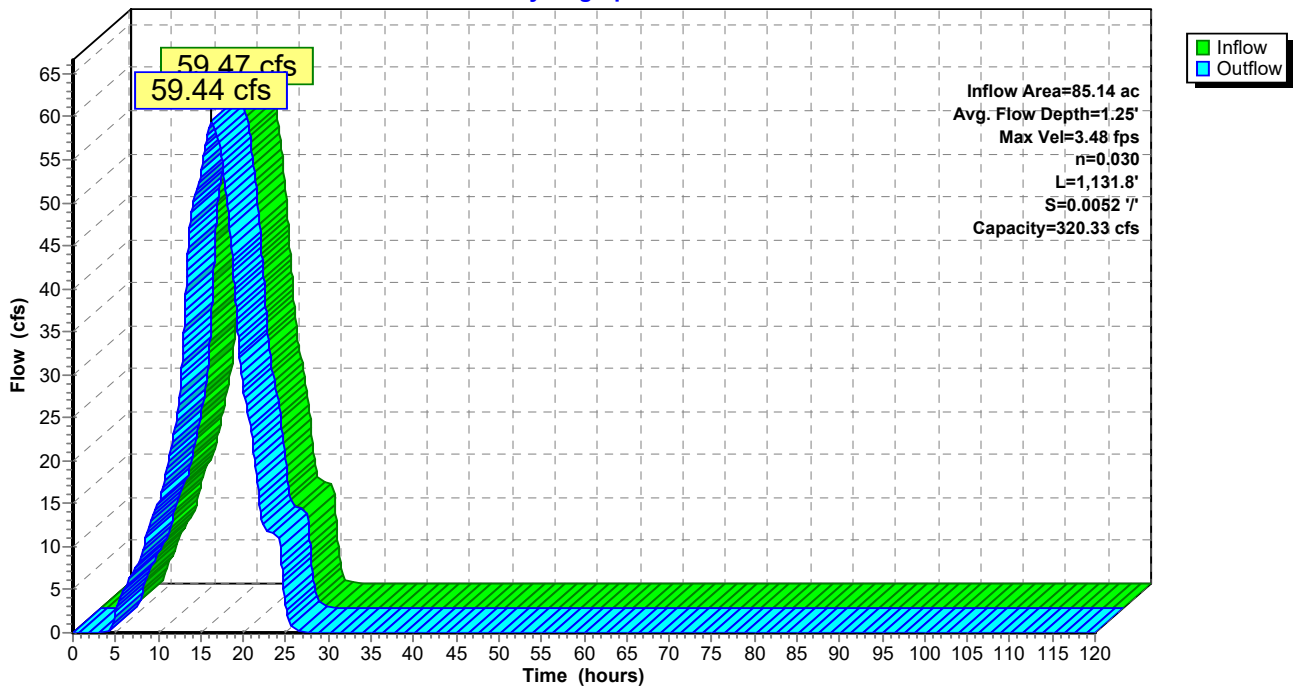
Peak Storage= 19,357 cf @ 16.15 hrs  
 Average Depth at Peak Storage= 1.25'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 320.33 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 1,131.8' Slope= 0.0052 '/'  
 Inlet Invert= 745.80', Outlet Invert= 739.89'



**Reach PD-5: Perimeter Ditch 5**

Hydrograph



**Summary for Reach PD-6: Perimeter Ditch 6**

Inflow Area = 87.70 ac, 1.33% Impervious, Inflow Depth = 6.19" for 100-Year, 24-Hour event  
 Inflow = 61.23 cfs @ 16.23 hrs, Volume= 45.266 af  
 Outflow = 61.22 cfs @ 16.31 hrs, Volume= 45.266 af, Atten= 0%, Lag= 4.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.45 fps, Min. Travel Time= 2.8 min  
 Avg. Velocity = 1.56 fps, Avg. Travel Time= 6.2 min

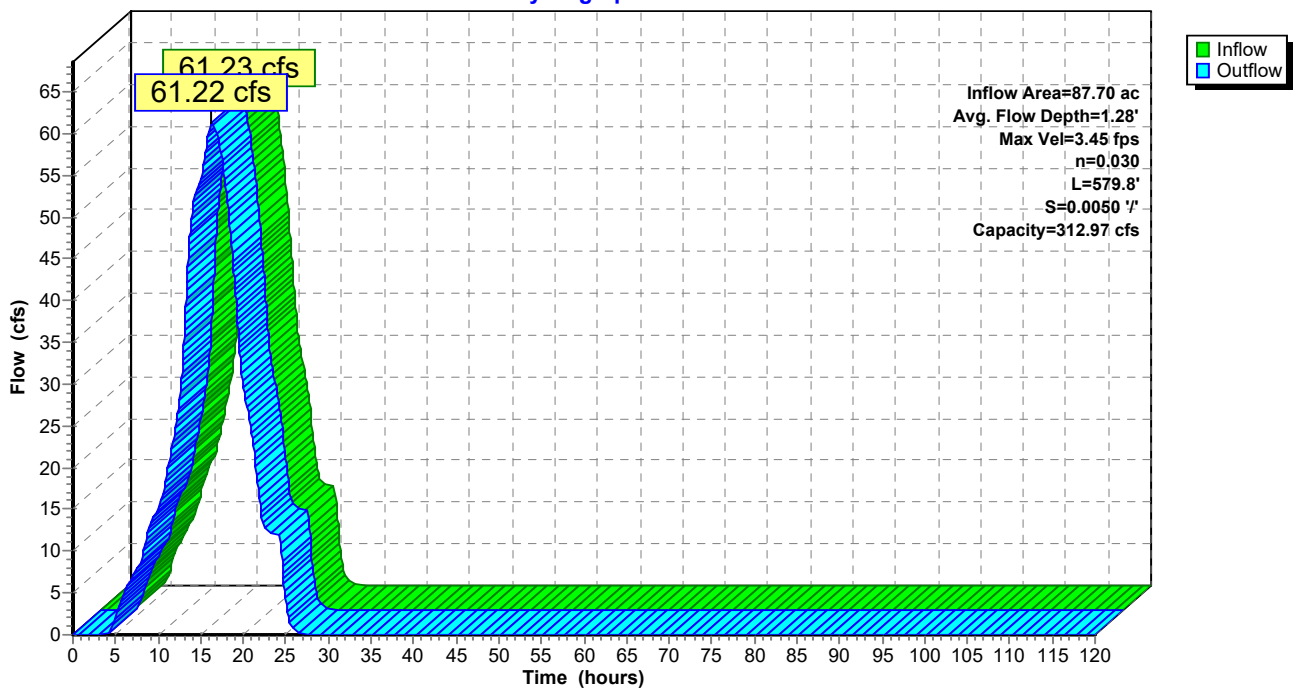
Peak Storage= 10,287 cf @ 16.27 hrs  
 Average Depth at Peak Storage= 1.28'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 312.97 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 ' / ' Top Width= 28.00'  
 Length= 579.8' Slope= 0.0050 ' / '  
 Inlet Invert= 739.89', Outlet Invert= 737.00'



**Reach PD-6: Perimeter Ditch 6**

Hydrograph



**Summary for Reach PD-7: Perimeter Ditch 7**

Inflow Area = 3.12 ac, 32.08% Impervious, Inflow Depth = 7.13" for 100-Year, 24-Hour event  
 Inflow = 2.36 cfs @ 15.64 hrs, Volume= 1.854 af  
 Outflow = 2.36 cfs @ 15.68 hrs, Volume= 1.854 af, Atten= 0%, Lag= 2.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.14 fps, Min. Travel Time= 1.3 min  
 Avg. Velocity = 0.75 fps, Avg. Travel Time= 2.0 min

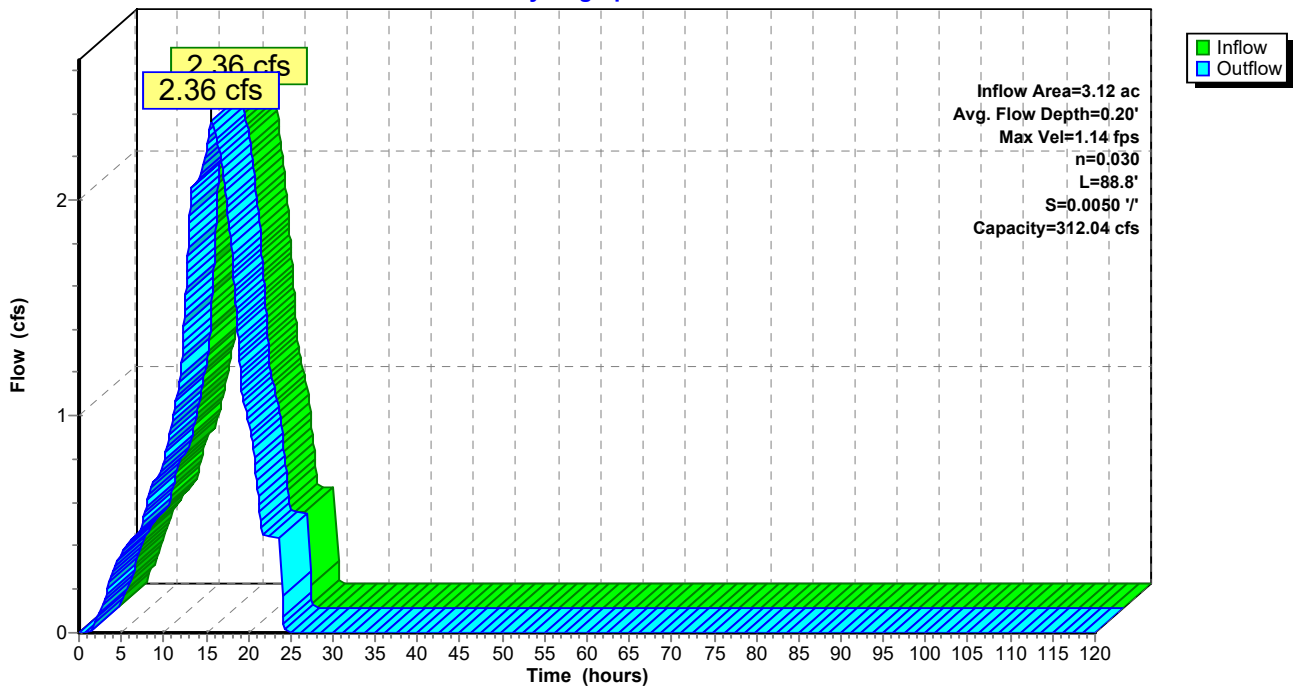
Peak Storage= 185 cf @ 15.66 hrs  
 Average Depth at Peak Storage= 0.20'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 312.04 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 88.8' Slope= 0.0050 '/'  
 Inlet Invert= 741.25', Outlet Invert= 740.81'



**Reach PD-7: Perimeter Ditch 7**

Hydrograph



**Summary for Reach PD-8: Perimeter Ditch 8**

Inflow Area = 0.14 ac, 14.29% Impervious, Inflow Depth = 6.59" for 100-Year, 24-Hour event  
 Inflow = 0.10 cfs @ 15.62 hrs, Volume= 0.077 af  
 Outflow = 0.10 cfs @ 15.74 hrs, Volume= 0.077 af, Atten= 0%, Lag= 7.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 0.34 fps, Min. Travel Time= 4.4 min  
 Avg. Velocity = 0.33 fps, Avg. Travel Time= 4.4 min

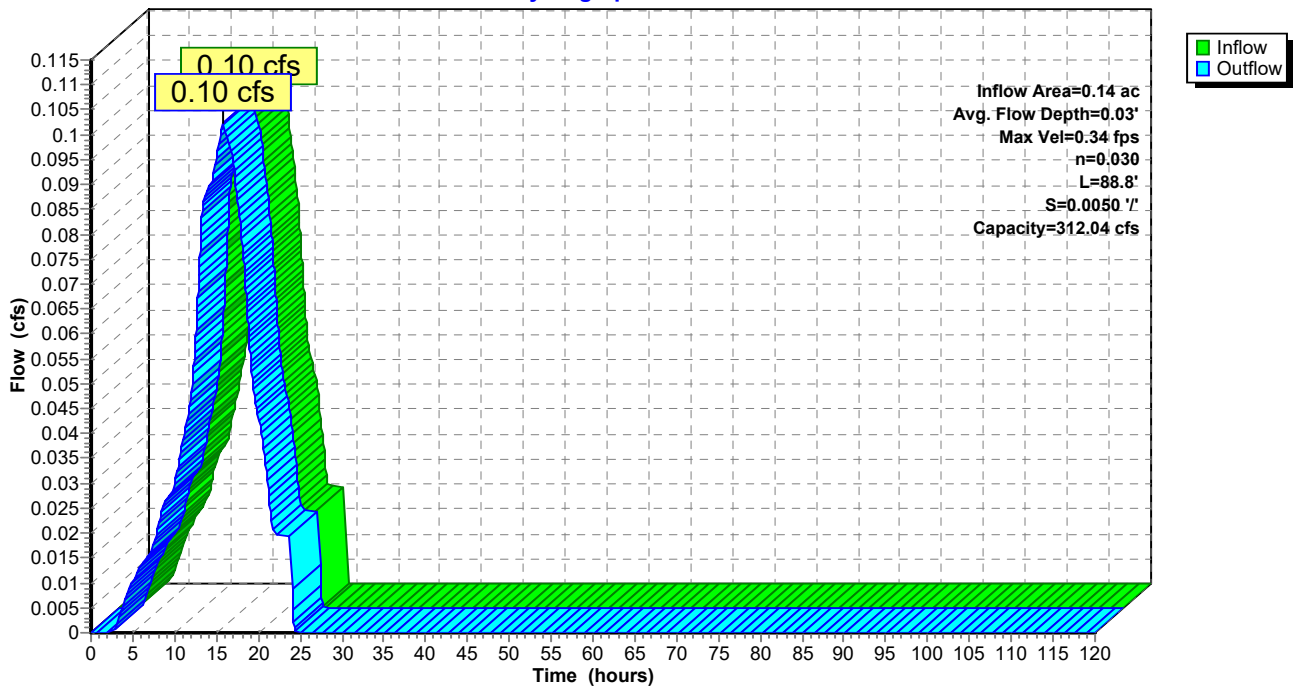
Peak Storage= 27 cf @ 15.66 hrs  
 Average Depth at Peak Storage= 0.03'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 312.04 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 88.8' Slope= 0.0050 '/'  
 Inlet Invert= 741.25', Outlet Invert= 740.81'



**Reach PD-8: Perimeter Ditch 8**

Hydrograph



**Summary for Reach PD-9: Perimeter Ditch 9**

Inflow Area = 6.78 ac, 3.10% Impervious, Inflow Depth = 6.25" for 100-Year, 24-Hour event  
 Inflow = 4.79 cfs @ 15.86 hrs, Volume= 3.534 af  
 Outflow = 4.78 cfs @ 16.04 hrs, Volume= 3.534 af, Atten= 0%, Lag= 11.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.53 fps, Min. Travel Time= 7.0 min  
 Avg. Velocity = 0.85 fps, Avg. Travel Time= 12.5 min

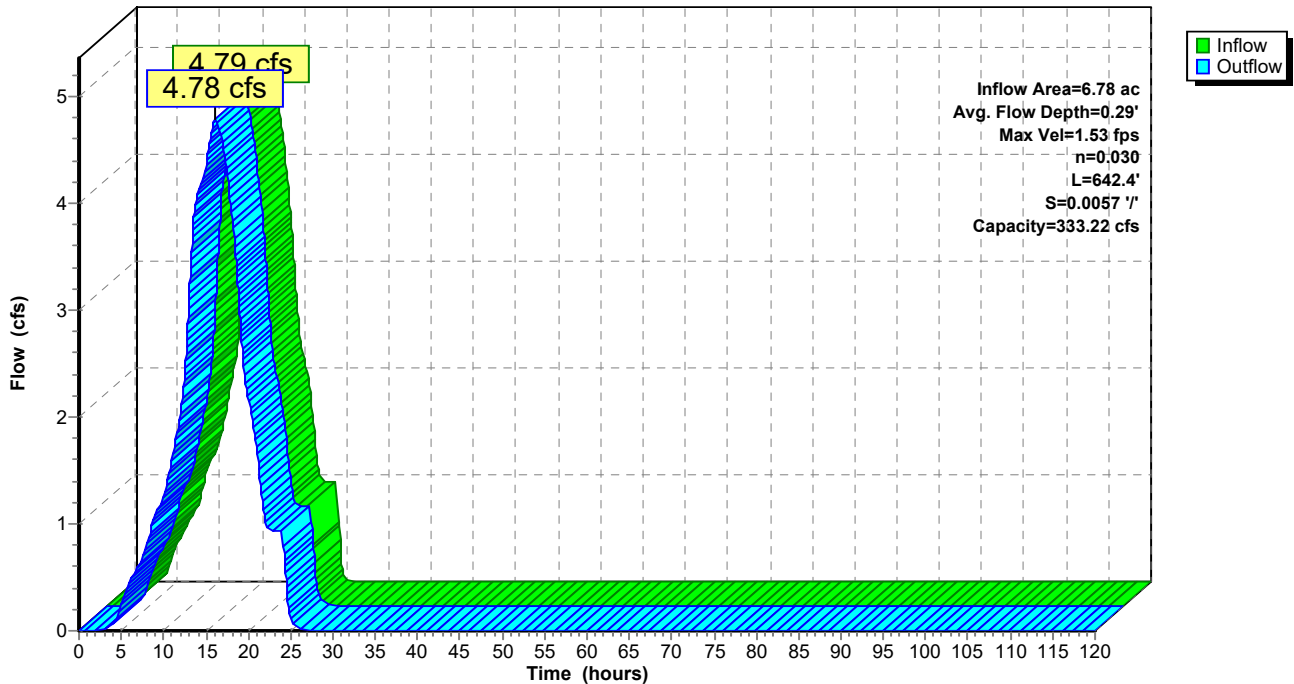
Peak Storage= 2,003 cf @ 15.93 hrs  
 Average Depth at Peak Storage= 0.29'  
 Bank-Full Depth= 3.00' Flow Area= 57.0 sf, Capacity= 333.22 cfs

10.00' x 3.00' deep channel, n= 0.030 Earth, grassed & winding  
 Side Slope Z-value= 3.0 '/' Top Width= 28.00'  
 Length= 642.4' Slope= 0.0057 '/'  
 Inlet Invert= 740.81', Outlet Invert= 737.18'



**Reach PD-9: Perimeter Ditch 9**

Hydrograph



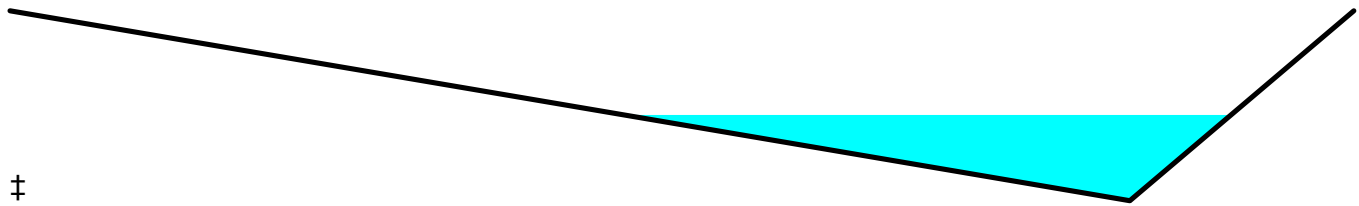
**Summary for Reach TB-A1A: Terrace Berm A1A**

Inflow Area = 6.74 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 4.74 cfs @ 15.83 hrs, Volume= 3.459 af  
 Outflow = 4.73 cfs @ 16.03 hrs, Volume= 3.459 af, Atten= 0%, Lag= 12.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.58 fps, Min. Travel Time= 6.7 min  
 Avg. Velocity = 1.56 fps, Avg. Travel Time= 11.1 min

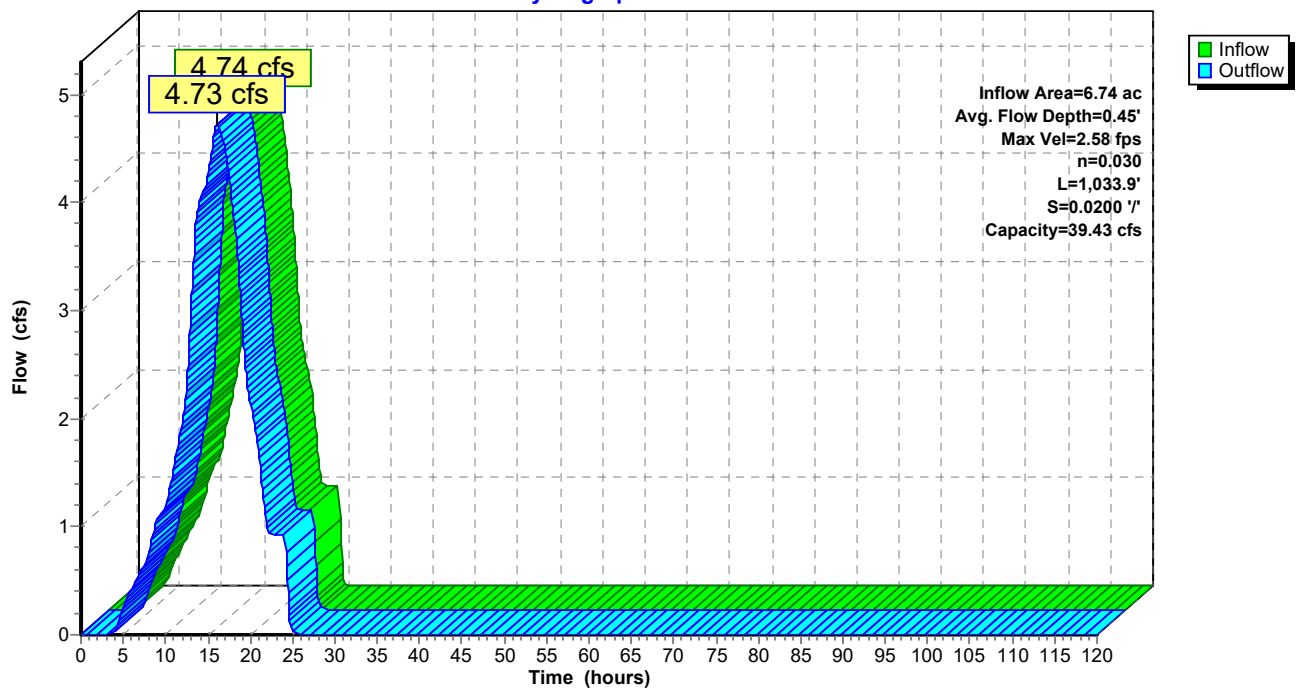
Peak Storage= 1,896 cf @ 15.92 hrs  
 Average Depth at Peak Storage= 0.45'  
 Bank-Full Depth= 1.00' Flow Area= 9.0 sf, Capacity= 39.43 cfs

0.00' x 1.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 15.0 3.0 '/' Top Width= 18.00'  
 Length= 1,033.9' Slope= 0.0200 '/'  
 Inlet Invert= 842.00', Outlet Invert= 821.32'



**Reach TB-A1A: Terrace Berm A1A**

Hydrograph



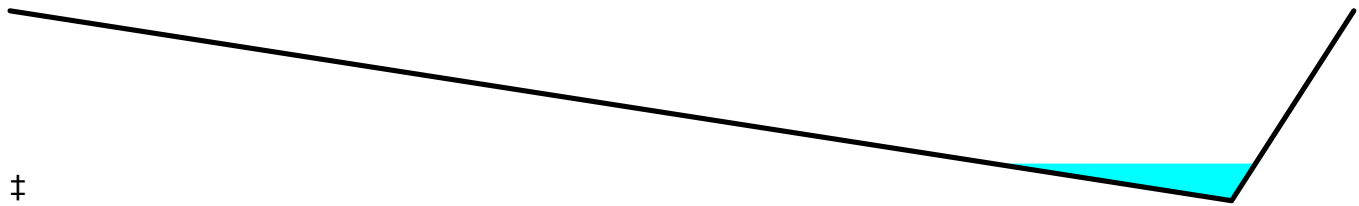
**Summary for Reach TB-A1B: Terrace Berm A1B**

Inflow Area = 5.23 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 3.69 cfs @ 15.68 hrs, Volume= 2.684 af  
 Outflow = 3.67 cfs @ 15.98 hrs, Volume= 2.684 af, Atten= 1%, Lag= 18.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.94 fps, Min. Travel Time= 10.0 min  
 Avg. Velocity = 1.17 fps, Avg. Travel Time= 16.5 min

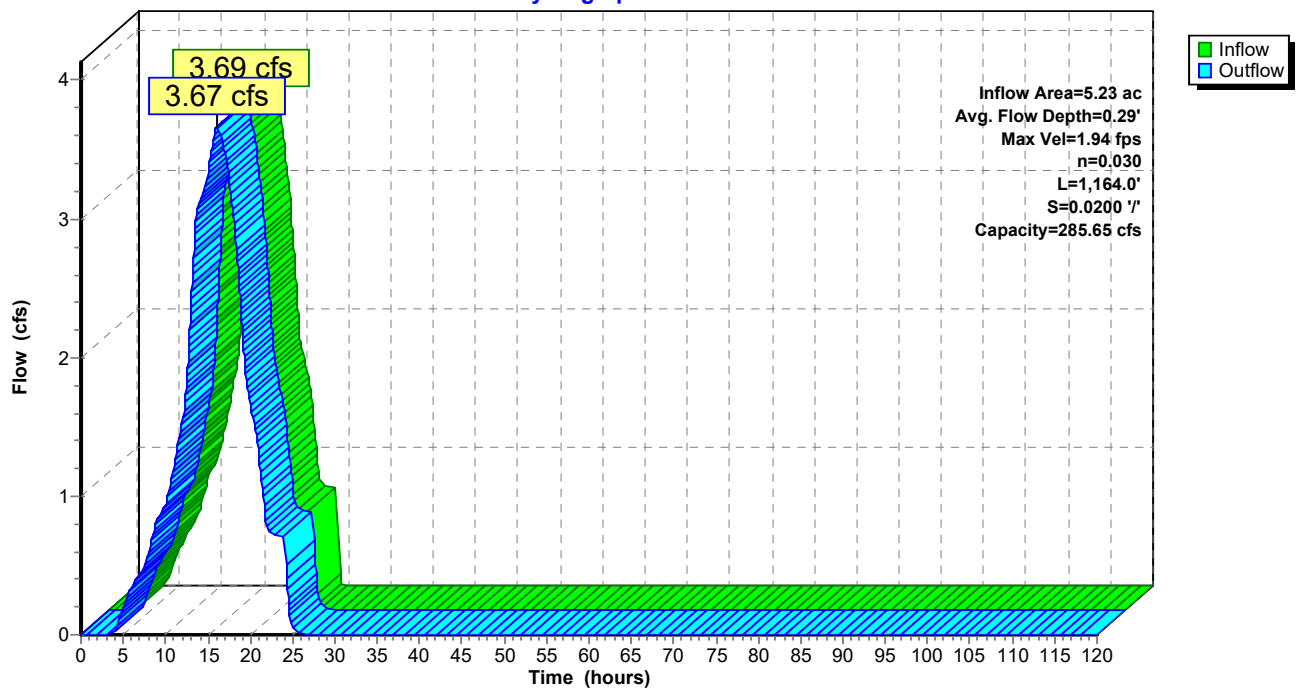
Peak Storage= 2,197 cf @ 15.81 hrs  
 Average Depth at Peak Storage= 0.29'  
 Bank-Full Depth= 1.50' Flow Area= 49.5 sf, Capacity= 285.65 cfs

0.00' x 1.50' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 40.0 4.0 '/' Top Width= 66.00'  
 Length= 1,164.0' Slope= 0.0200 '/'  
 Inlet Invert= 806.00', Outlet Invert= 782.72'



**Reach TB-A1B: Terrace Berm A1B**

Hydrograph





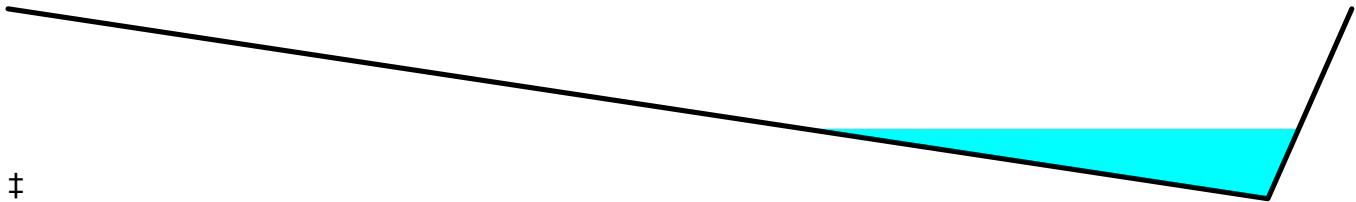
**Summary for Reach TB-A1C: Terrace Berm A1C**

Inflow Area = 9.16 ac, 1.48% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 6.41 cfs @ 16.01 hrs, Volume= 4.704 af  
 Outflow = 6.40 cfs @ 16.26 hrs, Volume= 4.704 af, Atten= 0%, Lag= 15.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.96 fps, Min. Travel Time= 8.2 min  
 Avg. Velocity = 1.12 fps, Avg. Travel Time= 14.4 min

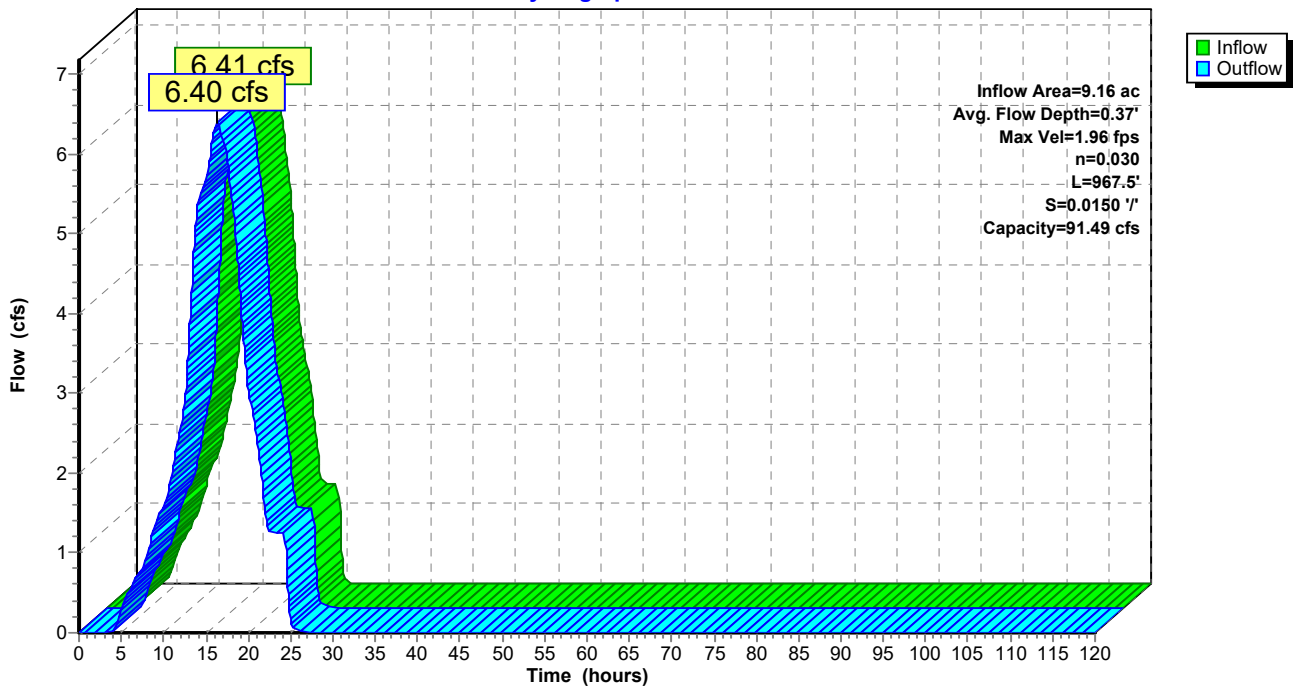
Peak Storage= 3,159 cf @ 16.12 hrs  
 Average Depth at Peak Storage= 0.37'  
 Bank-Full Depth= 1.00' Flow Area= 24.0 sf, Capacity= 91.49 cfs

0.00' x 1.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 45.0 3.0 '/' Top Width= 48.00'  
 Length= 967.5' Slope= 0.0150 '/'  
 Inlet Invert= 792.00', Outlet Invert= 777.49'



**Reach TB-A1C: Terrace Berm A1C**

Hydrograph



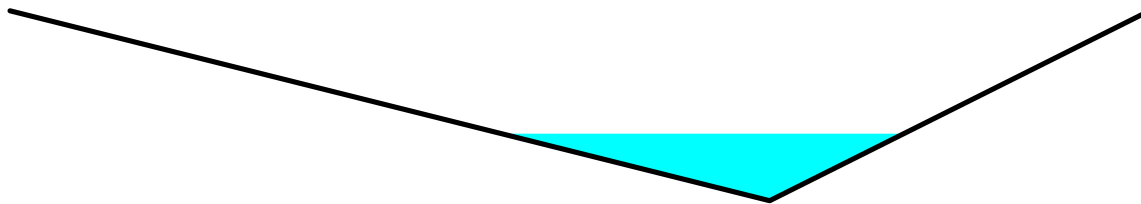
**Summary for Reach TB-B1: Terrace Berm B1**

Inflow Area = 2.04 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 1.44 cfs @ 15.72 hrs, Volume= 1.047 af  
 Outflow = 1.44 cfs @ 15.80 hrs, Volume= 1.047 af, Atten= 0%, Lag= 4.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.46 fps, Min. Travel Time= 2.3 min  
 Avg. Velocity = 1.75 fps, Avg. Travel Time= 3.3 min

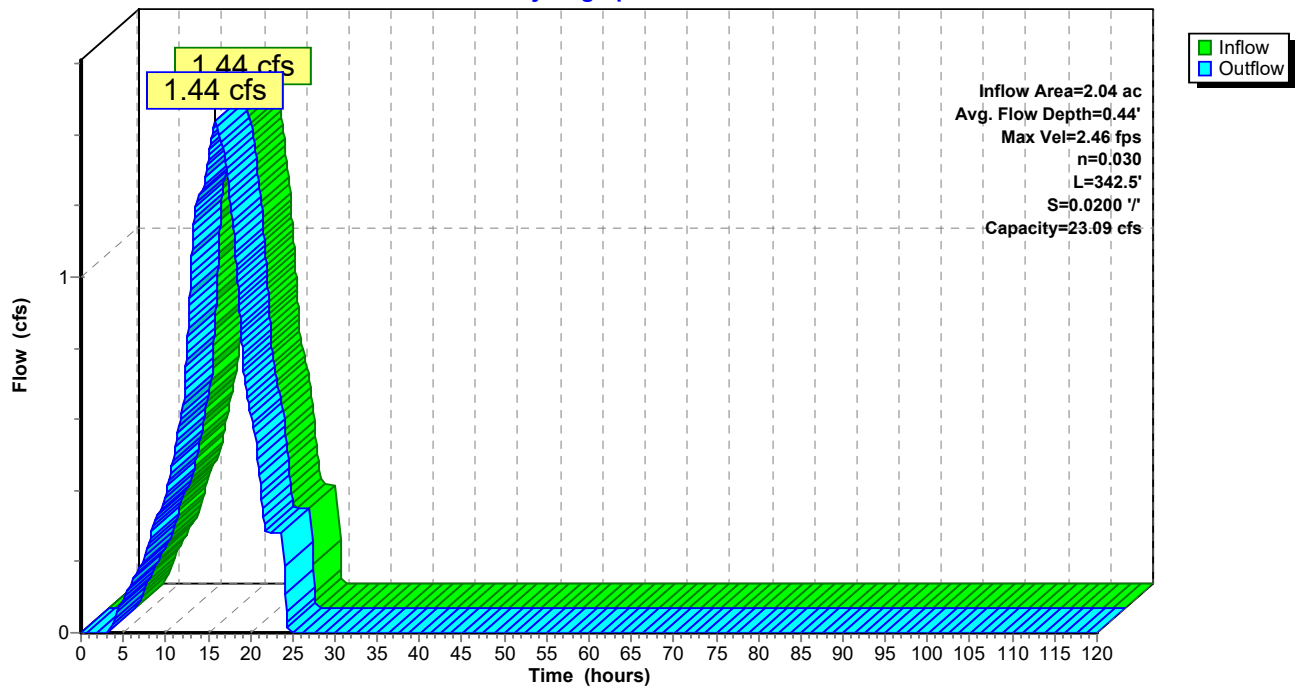
Peak Storage= 200 cf @ 15.75 hrs  
 Average Depth at Peak Storage= 0.44'  
 Bank-Full Depth= 1.25' Flow Area= 4.7 sf, Capacity= 23.09 cfs

0.00' x 1.25' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 7.50'  
 Length= 342.5' Slope= 0.0200 '/'  
 Inlet Invert= 880.00', Outlet Invert= 873.15'



**Reach TB-B1: Terrace Berm B1**

Hydrograph



**Summary for Reach TB-B10: Terrace Bench B10**

Inflow Area = 2.25 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 1.57 cfs @ 15.90 hrs, Volume= 1.154 af  
 Outflow = 1.57 cfs @ 16.06 hrs, Volume= 1.154 af, Atten= 0%, Lag= 9.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.05 fps, Min. Travel Time= 5.8 min  
 Avg. Velocity = 0.65 fps, Avg. Travel Time= 9.4 min

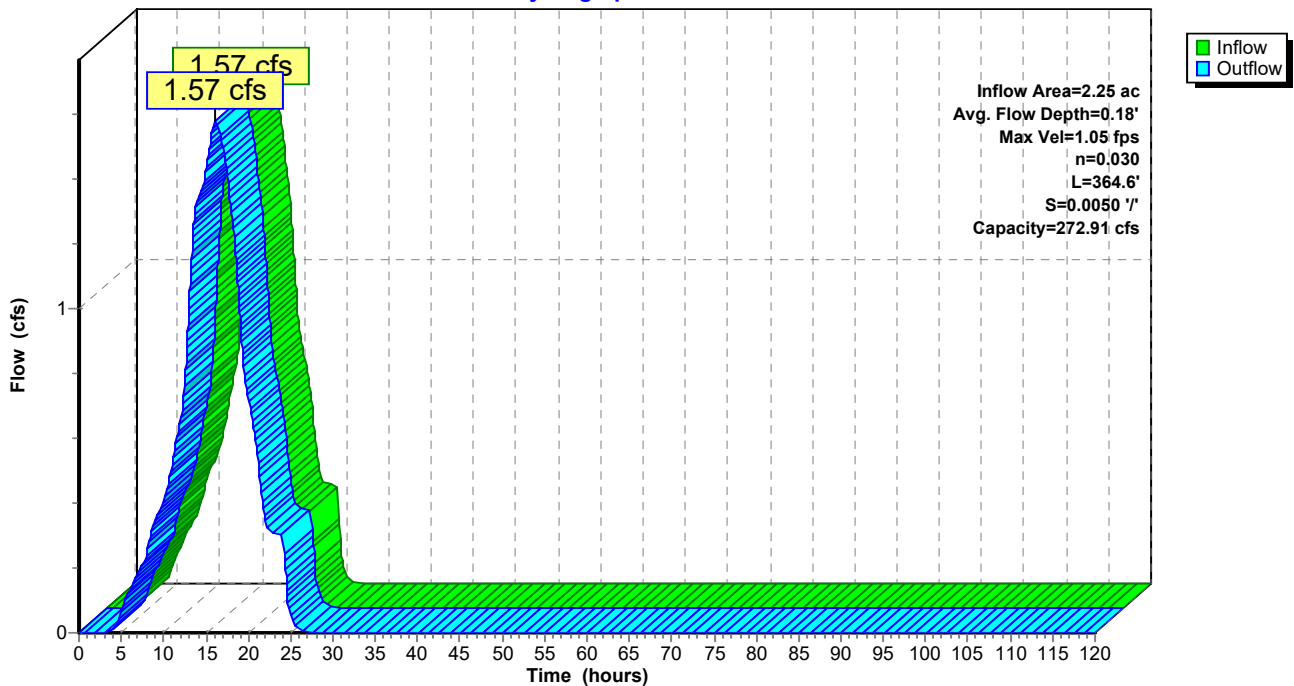
Peak Storage= 546 cf @ 15.96 hrs  
 Average Depth at Peak Storage= 0.18'  
 Bank-Full Depth= 3.00' Flow Area= 51.0 sf, Capacity= 272.91 cfs

8.00' x 3.00' deep channel, n= 0.030  
 Side Slope Z-value= 3.0 '/' Top Width= 26.00'  
 Length= 364.6' Slope= 0.0050 '/'  
 Inlet Invert= 759.18', Outlet Invert= 757.36'



**Reach TB-B10: Terrace Bench B10**

Hydrograph



**Summary for Reach TB-B10A: Terrace Bench B10A**

Inflow Area = 2.25 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 1.57 cfs @ 16.06 hrs, Volume= 1.154 af  
 Outflow = 1.57 cfs @ 16.07 hrs, Volume= 1.154 af, Atten= 0%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.03 fps, Min. Travel Time= 0.4 min  
 Avg. Velocity = 2.17 fps, Avg. Travel Time= 0.6 min

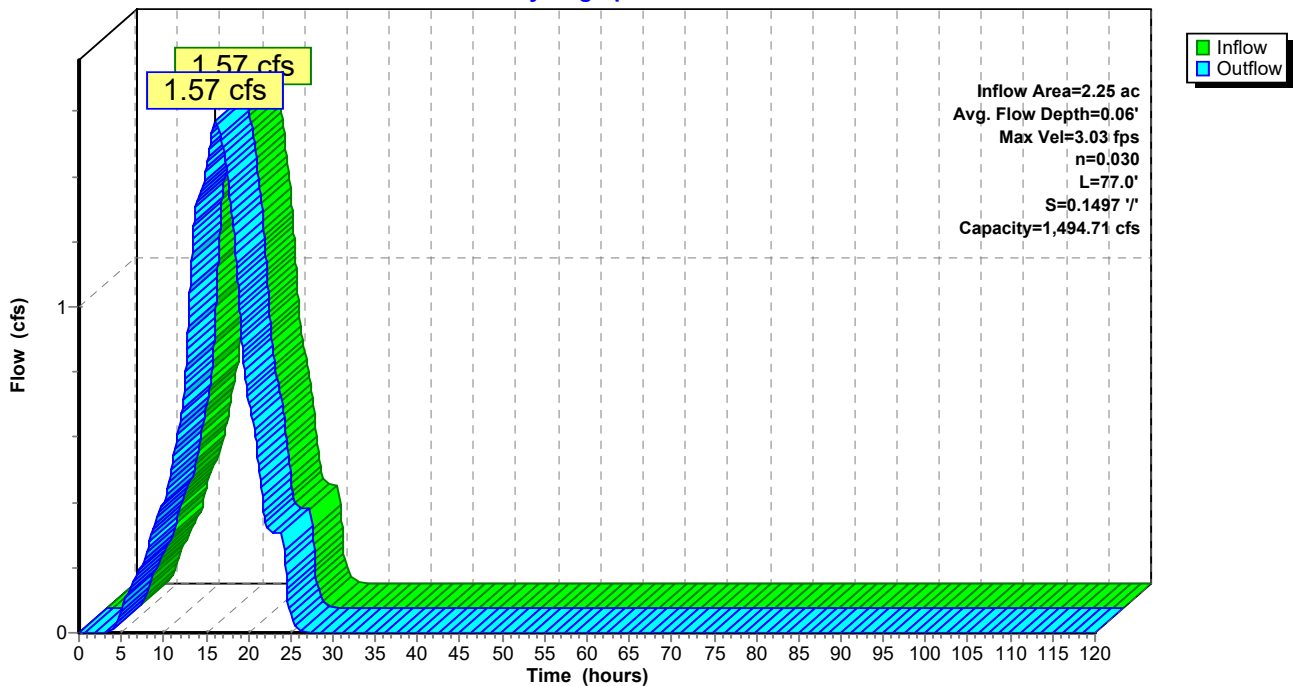
Peak Storage= 40 cf @ 16.06 hrs  
 Average Depth at Peak Storage= 0.06'  
 Bank-Full Depth= 3.00' Flow Area= 51.0 sf, Capacity= 1,494.71 cfs

8.00' x 3.00' deep channel, n= 0.030  
 Side Slope Z-value= 3.0 '/' Top Width= 26.00'  
 Length= 77.0' Slope= 0.1497 '/'  
 Inlet Invert= 757.36', Outlet Invert= 745.83'



**Reach TB-B10A: Terrace Bench B10A**

Hydrograph



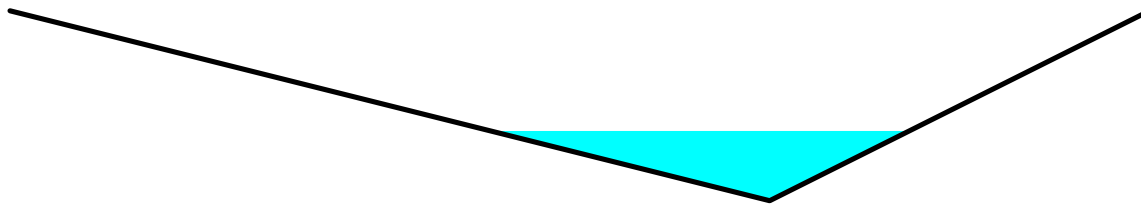
### Summary for Reach TB-B11: Terrace Berm B11

Inflow Area = 2.27 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 1.60 cfs @ 15.83 hrs, Volume= 1.166 af  
 Outflow = 1.60 cfs @ 15.85 hrs, Volume= 1.166 af, Atten= 0%, Lag= 1.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.52 fps, Min. Travel Time= 0.7 min  
 Avg. Velocity = 1.85 fps, Avg. Travel Time= 0.9 min

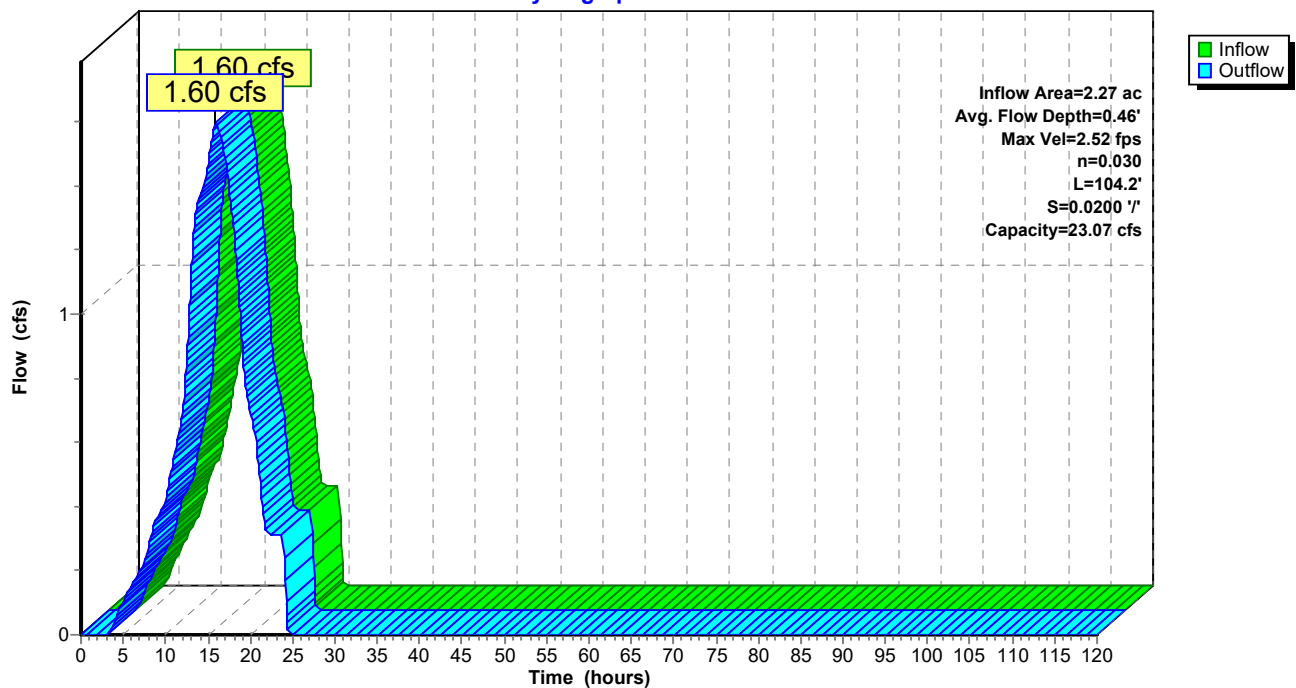
Peak Storage= 66 cf @ 15.84 hrs  
 Average Depth at Peak Storage= 0.46'  
 Bank-Full Depth= 1.25' Flow Area= 4.7 sf, Capacity= 23.07 cfs

0.00' x 1.25' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 7.50'  
 Length= 104.2' Slope= 0.0200 '/'  
 Inlet Invert= 821.00', Outlet Invert= 818.92'



### Reach TB-B11: Terrace Berm B11

Hydrograph



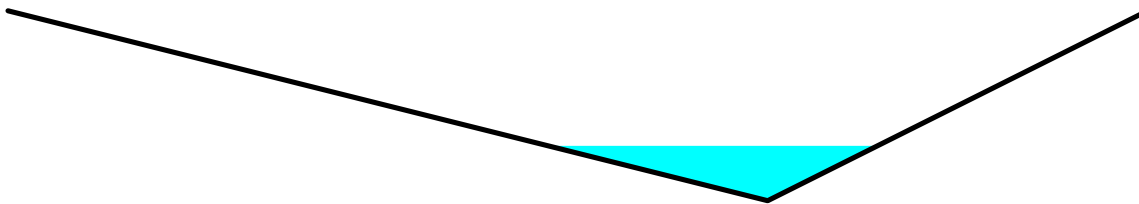
**Summary for Reach TB-B12: Terrace Berm B12**

Inflow Area = 1.20 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 0.85 cfs @ 15.68 hrs, Volume= 0.617 af  
 Outflow = 0.85 cfs @ 15.86 hrs, Volume= 0.617 af, Atten= 0%, Lag= 10.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.15 fps, Min. Travel Time= 5.7 min  
 Avg. Velocity = 1.45 fps, Avg. Travel Time= 8.5 min

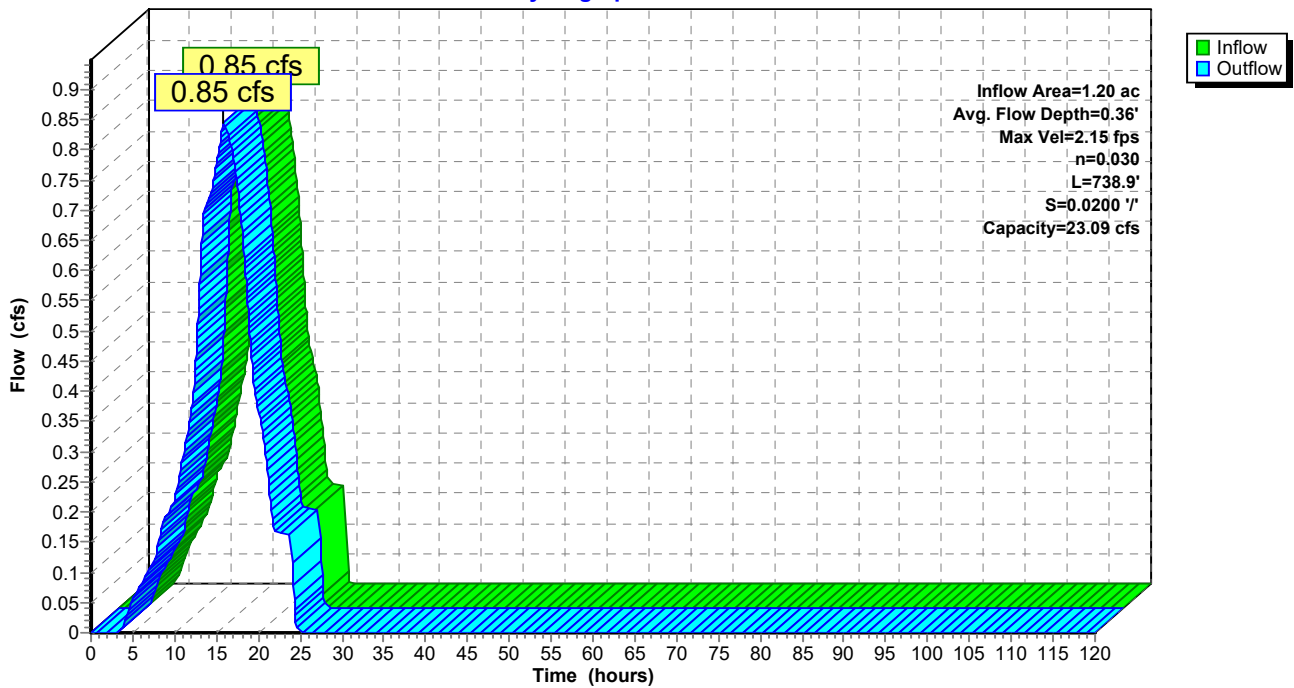
Peak Storage= 290 cf @ 15.76 hrs  
 Average Depth at Peak Storage= 0.36'  
 Bank-Full Depth= 1.25' Flow Area= 4.7 sf, Capacity= 23.09 cfs

0.00' x 1.25' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 7.50'  
 Length= 738.9' Slope= 0.0200 '/'  
 Inlet Invert= 864.00', Outlet Invert= 849.22'



**Reach TB-B12: Terrace Berm B12**

Hydrograph



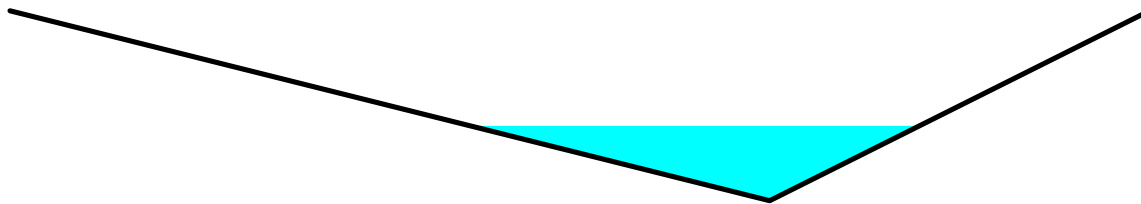
### Summary for Reach TB-B2: Terrace Berm B2

Inflow Area = 2.74 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 1.93 cfs @ 15.72 hrs, Volume= 1.407 af  
 Outflow = 1.93 cfs @ 15.81 hrs, Volume= 1.407 af, Atten= 0%, Lag= 5.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.65 fps, Min. Travel Time= 2.9 min  
 Avg. Velocity = 1.85 fps, Avg. Travel Time= 4.1 min

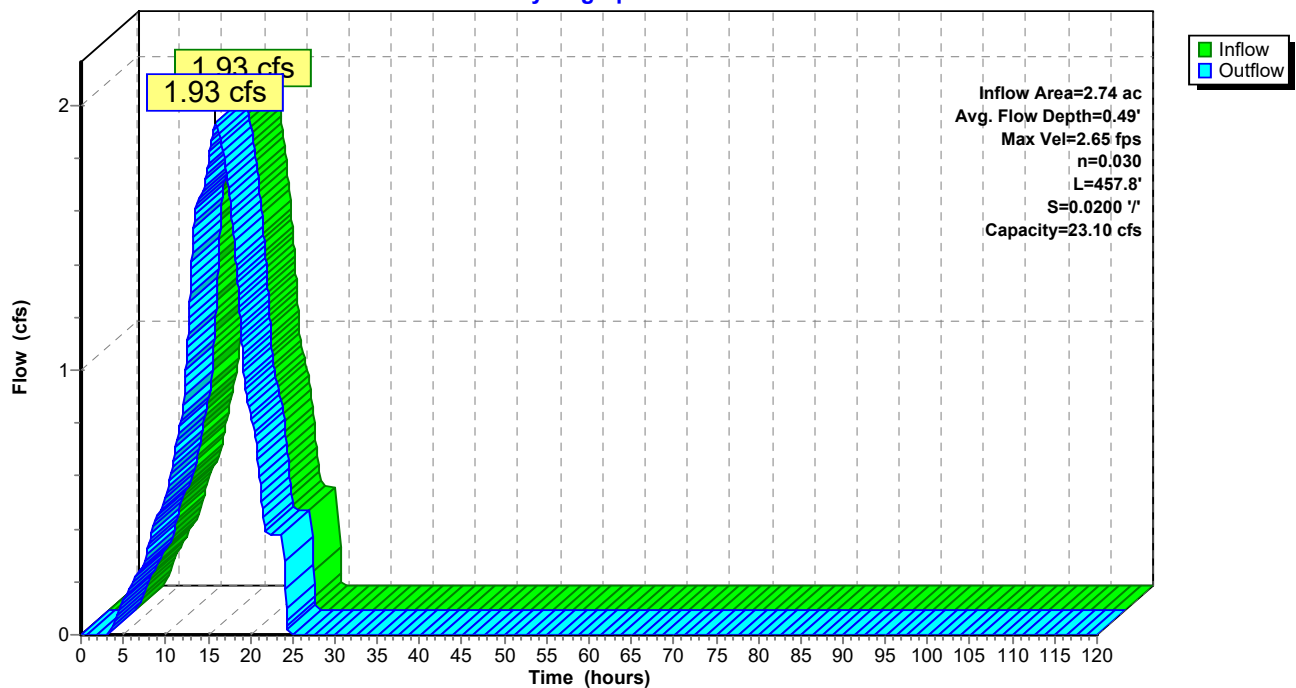
Peak Storage= 334 cf @ 15.76 hrs  
 Average Depth at Peak Storage= 0.49'  
 Bank-Full Depth= 1.25' Flow Area= 4.7 sf, Capacity= 23.10 cfs

0.00' x 1.25' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 7.50'  
 Length= 457.8' Slope= 0.0200 '/'  
 Inlet Invert= 880.00', Outlet Invert= 870.84'



### Reach TB-B2: Terrace Berm B2

Hydrograph



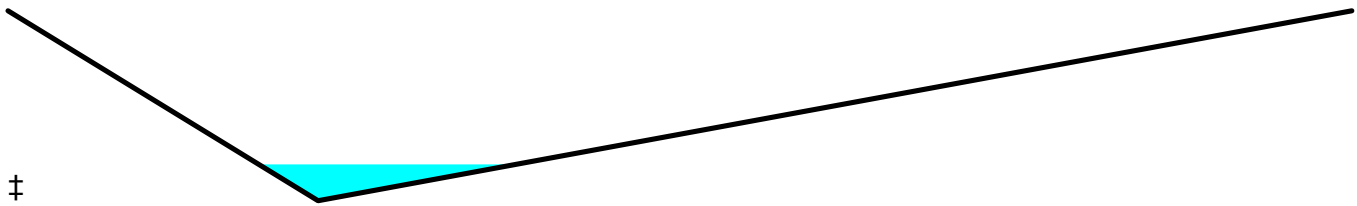
**Summary for Reach TB-B3: Terrace Bench B3**

Inflow Area = 2.21 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 1.56 cfs @ 15.68 hrs, Volume= 1.135 af  
 Outflow = 1.55 cfs @ 15.87 hrs, Volume= 1.135 af, Atten= 0%, Lag= 11.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.63 fps, Min. Travel Time= 6.3 min  
 Avg. Velocity = 1.08 fps, Avg. Travel Time= 9.5 min

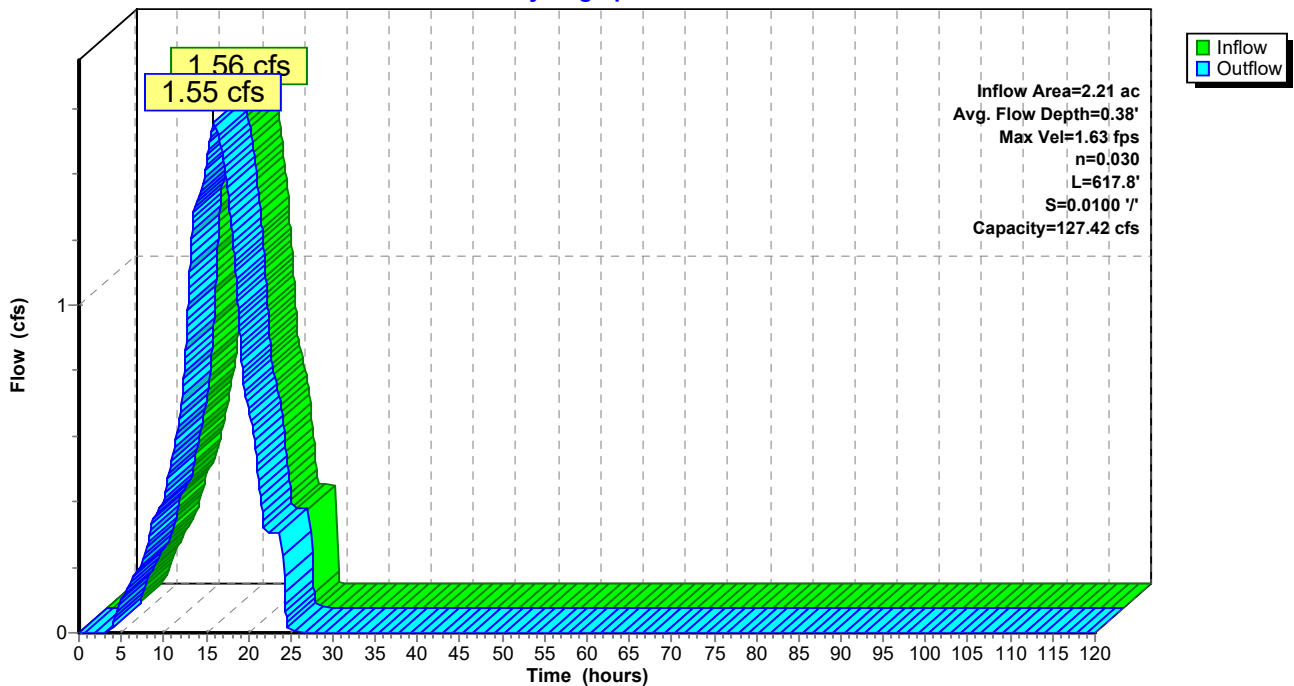
Peak Storage= 590 cf @ 15.77 hrs  
 Average Depth at Peak Storage= 0.38'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.42 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'  
 Length= 617.8' Slope= 0.0100 '/'  
 Inlet Invert= 880.00', Outlet Invert= 873.82'



**Reach TB-B3: Terrace Bench B3**

Hydrograph





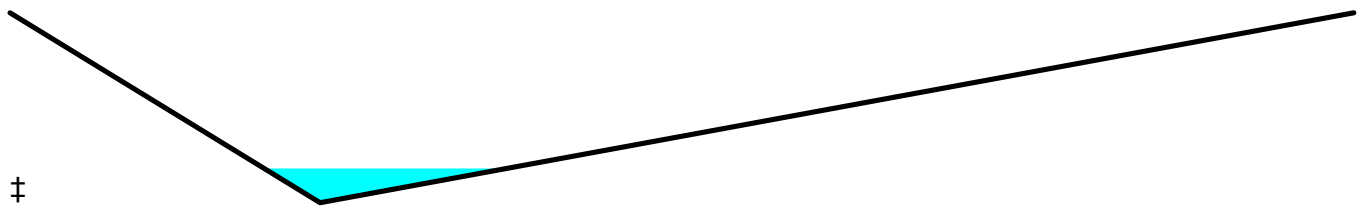
### Summary for Reach TB-B4: Terrace Bench B4

Inflow Area = 1.87 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 1.32 cfs @ 15.68 hrs, Volume= 0.960 af  
 Outflow = 1.32 cfs @ 15.82 hrs, Volume= 0.960 af, Atten= 0%, Lag= 8.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.56 fps, Min. Travel Time= 4.6 min  
 Avg. Velocity = 1.07 fps, Avg. Travel Time= 6.7 min

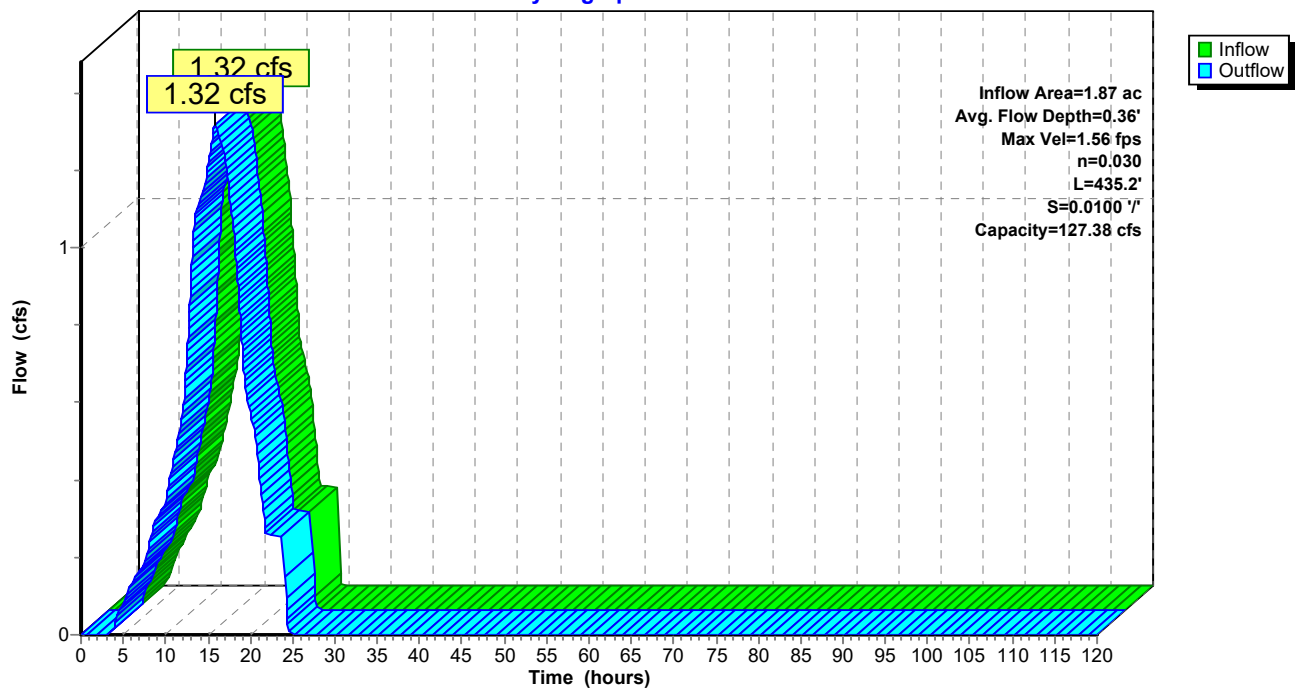
Peak Storage= 367 cf @ 15.75 hrs  
 Average Depth at Peak Storage= 0.36'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.38 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'  
 Length= 435.2' Slope= 0.0100 '/'  
 Inlet Invert= 840.00', Outlet Invert= 835.65'



### Reach TB-B4: Terrace Bench B4

Hydrograph



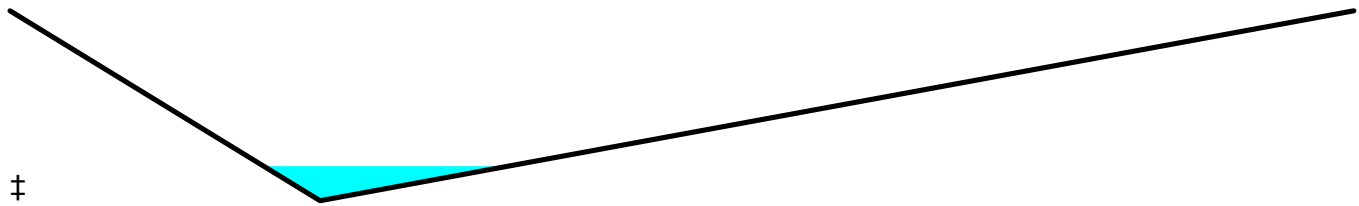
**Summary for Reach TB-B5: Terrace Bench B5**

Inflow Area = 1.93 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 1.36 cfs @ 15.67 hrs, Volume= 0.991 af  
 Outflow = 1.36 cfs @ 15.92 hrs, Volume= 0.991 af, Atten= 0%, Lag= 15.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.57 fps, Min. Travel Time= 8.6 min  
 Avg. Velocity = 1.01 fps, Avg. Travel Time= 13.4 min

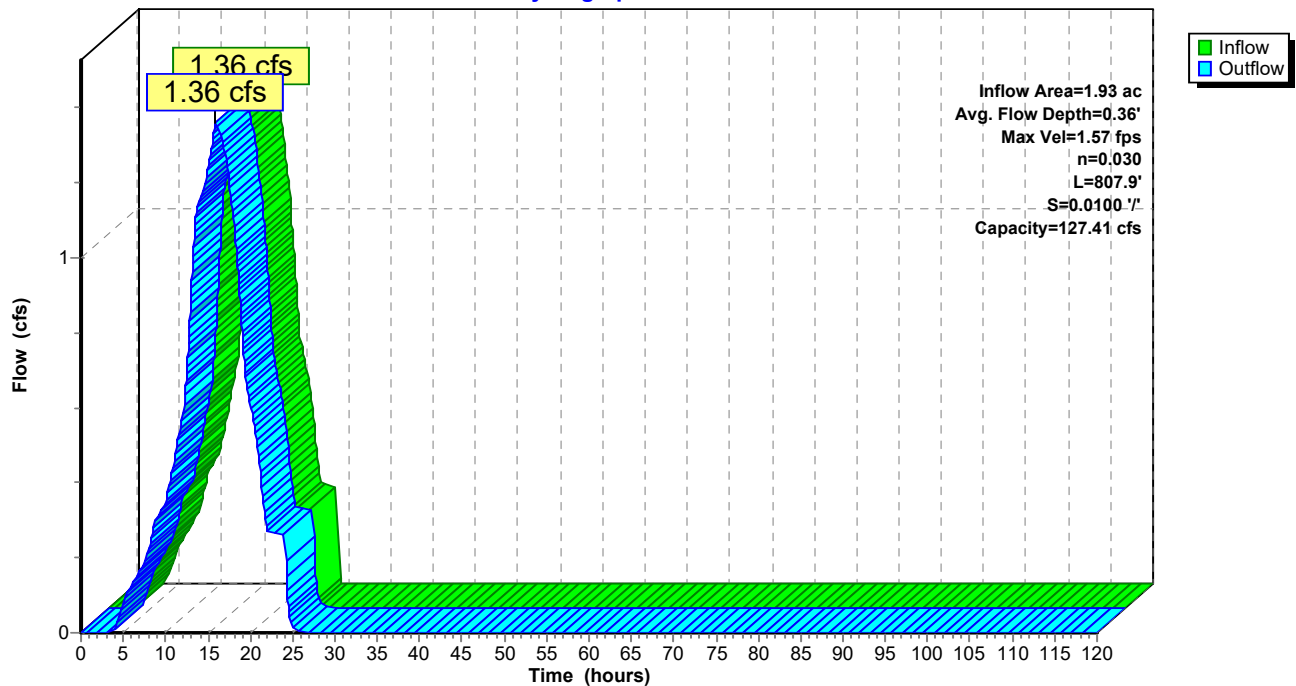
Peak Storage= 696 cf @ 15.78 hrs  
 Average Depth at Peak Storage= 0.36'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.41 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/ Top Width= 26.00'  
 Length= 807.9' Slope= 0.0100 '/  
 Inlet Invert= 814.00', Outlet Invert= 805.92'



**Reach TB-B5: Terrace Bench B5**

Hydrograph



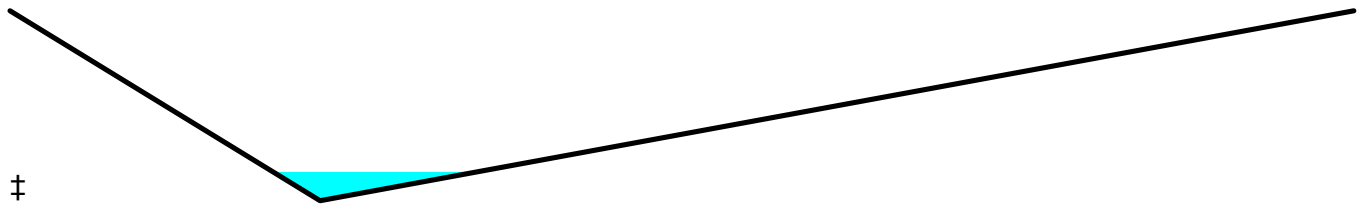
### Summary for Reach TB-B6: Terrace Bench B6

Inflow Area = 1.18 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 0.83 cfs @ 15.67 hrs, Volume= 0.606 af  
 Outflow = 0.83 cfs @ 15.83 hrs, Volume= 0.606 af, Atten= 0%, Lag= 9.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.39 fps, Min. Travel Time= 5.1 min  
 Avg. Velocity = 0.96 fps, Avg. Travel Time= 7.4 min

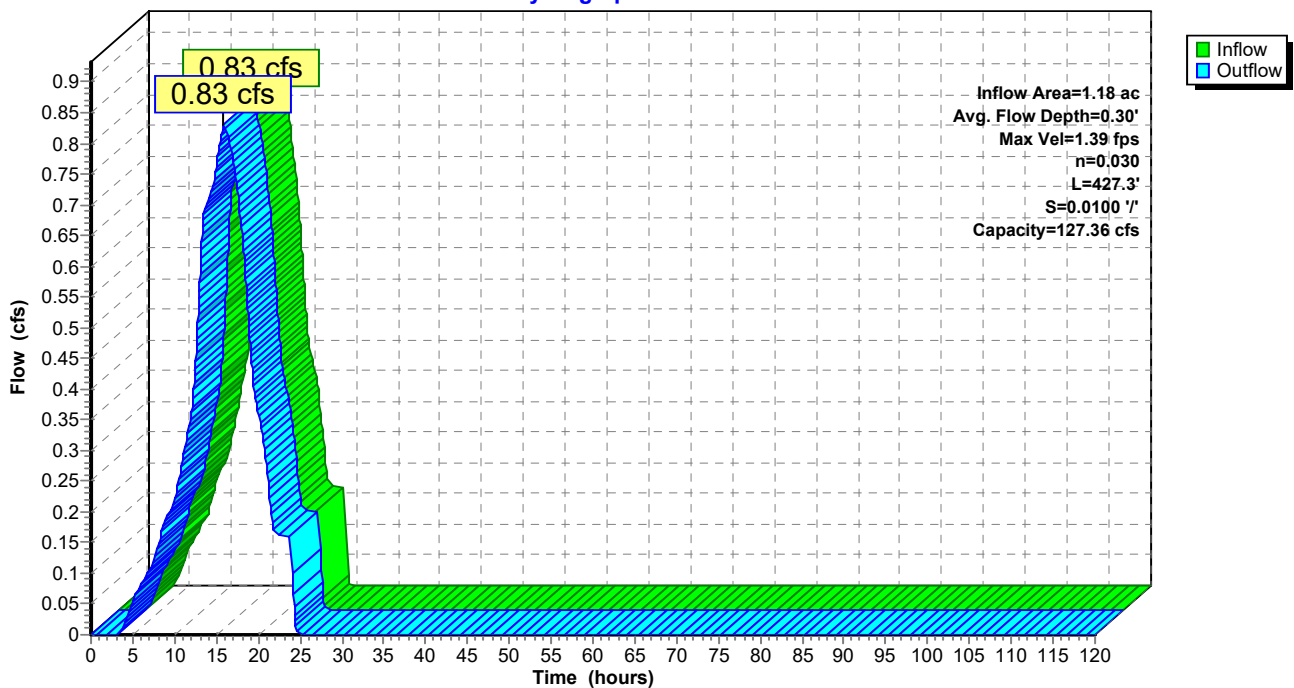
Peak Storage= 255 cf @ 15.75 hrs  
 Average Depth at Peak Storage= 0.30'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.36 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'  
 Length= 427.3' Slope= 0.0100 '/'  
 Inlet Invert= 812.00', Outlet Invert= 807.73'



### Reach TB-B6: Terrace Bench B6

Hydrograph



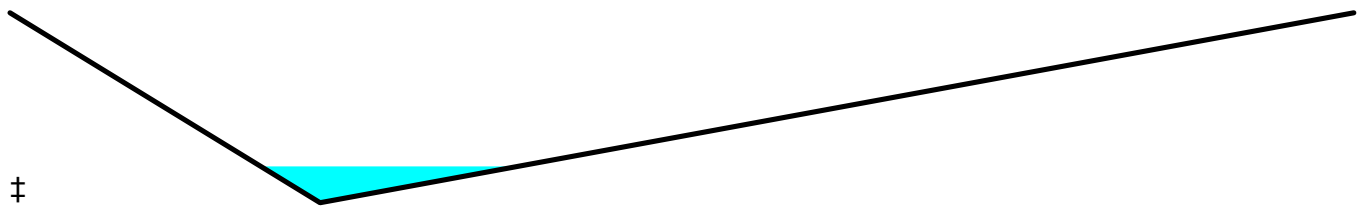
**Summary for Reach TB-B7: Terrace Bench B7**

Inflow Area = 2.19 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 1.55 cfs @ 15.67 hrs, Volume= 1.124 af  
 Outflow = 1.54 cfs @ 15.92 hrs, Volume= 1.124 af, Atten= 0%, Lag= 15.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.62 fps, Min. Travel Time= 8.3 min  
 Avg. Velocity = 1.04 fps, Avg. Travel Time= 13.0 min

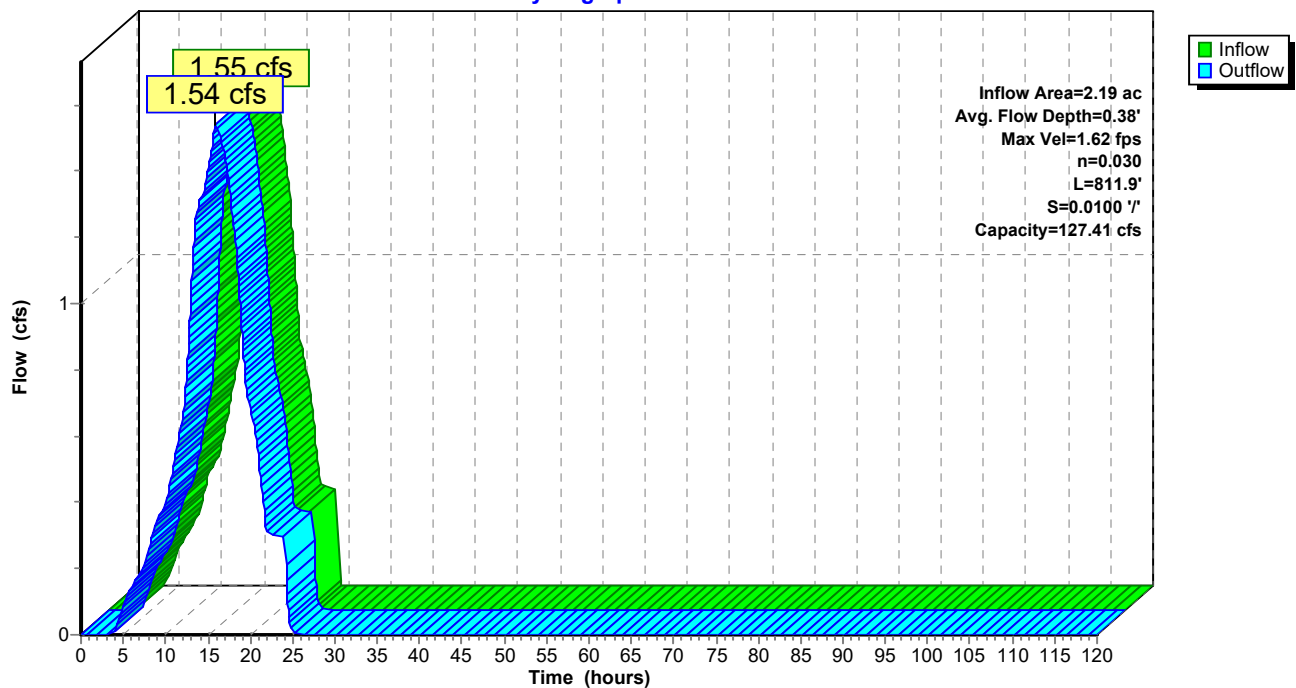
Peak Storage= 769 cf @ 15.78 hrs  
 Average Depth at Peak Storage= 0.38'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.41 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'  
 Length= 811.9' Slope= 0.0100 '/'  
 Inlet Invert= 784.00', Outlet Invert= 775.88'



**Reach TB-B7: Terrace Bench B7**

Hydrograph



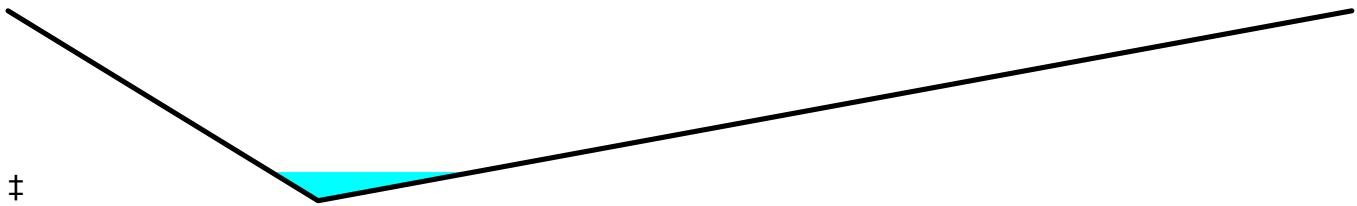
**Summary for Reach TB-B8: Terrace Bench B8**

Inflow Area = 1.17 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 0.83 cfs @ 15.67 hrs, Volume= 0.601 af  
 Outflow = 0.82 cfs @ 15.83 hrs, Volume= 0.601 af, Atten= 0%, Lag= 9.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.39 fps, Min. Travel Time= 5.1 min  
 Avg. Velocity = 0.96 fps, Avg. Travel Time= 7.4 min

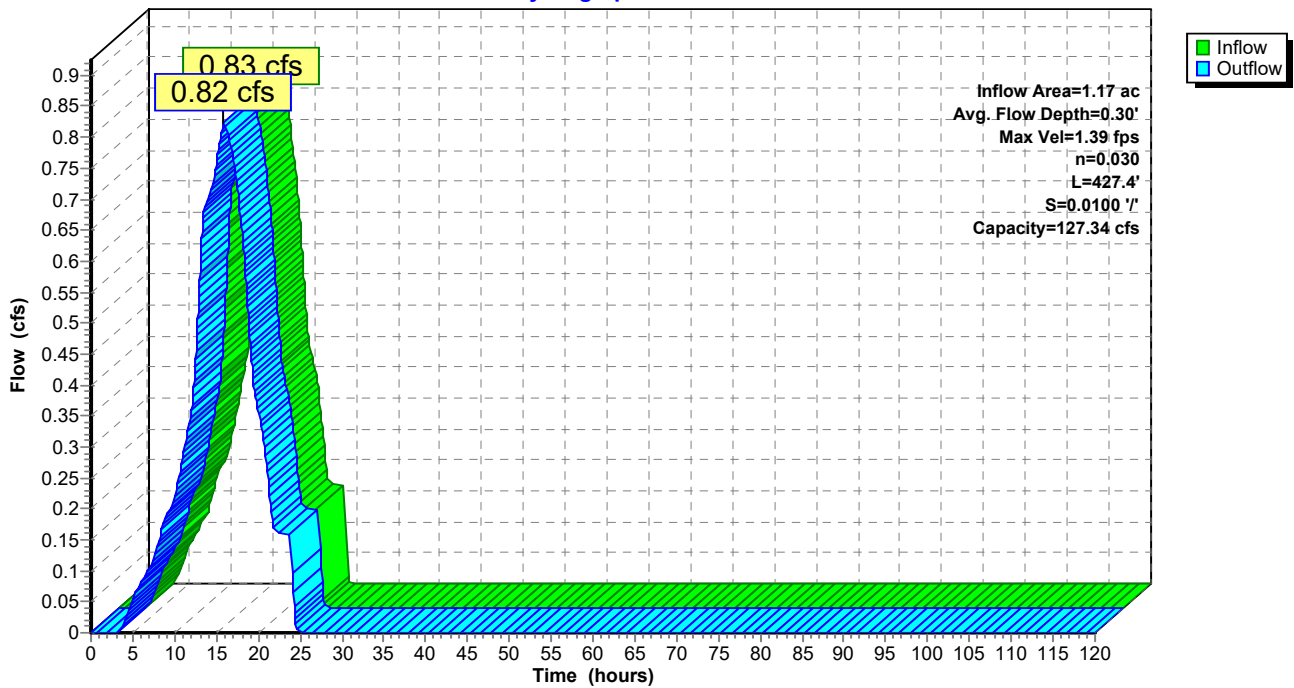
Peak Storage= 253 cf @ 15.74 hrs  
 Average Depth at Peak Storage= 0.30'  
 Bank-Full Depth= 2.00' Flow Area= 26.0 sf, Capacity= 127.34 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 3.0 10.0 '/' Top Width= 26.00'  
 Length= 427.4' Slope= 0.0100 '/'  
 Inlet Invert= 782.00', Outlet Invert= 777.73'



**Reach TB-B8: Terrace Bench B8**

Hydrograph



**Summary for Reach TB-B9: Terrace Bench B9**

Inflow Area = 1.44 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 1.01 cfs @ 15.66 hrs, Volume= 0.737 af  
 Outflow = 1.01 cfs @ 15.95 hrs, Volume= 0.737 af, Atten= 1%, Lag= 17.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 0.89 fps, Min. Travel Time= 10.5 min  
 Avg. Velocity = 0.56 fps, Avg. Travel Time= 16.6 min

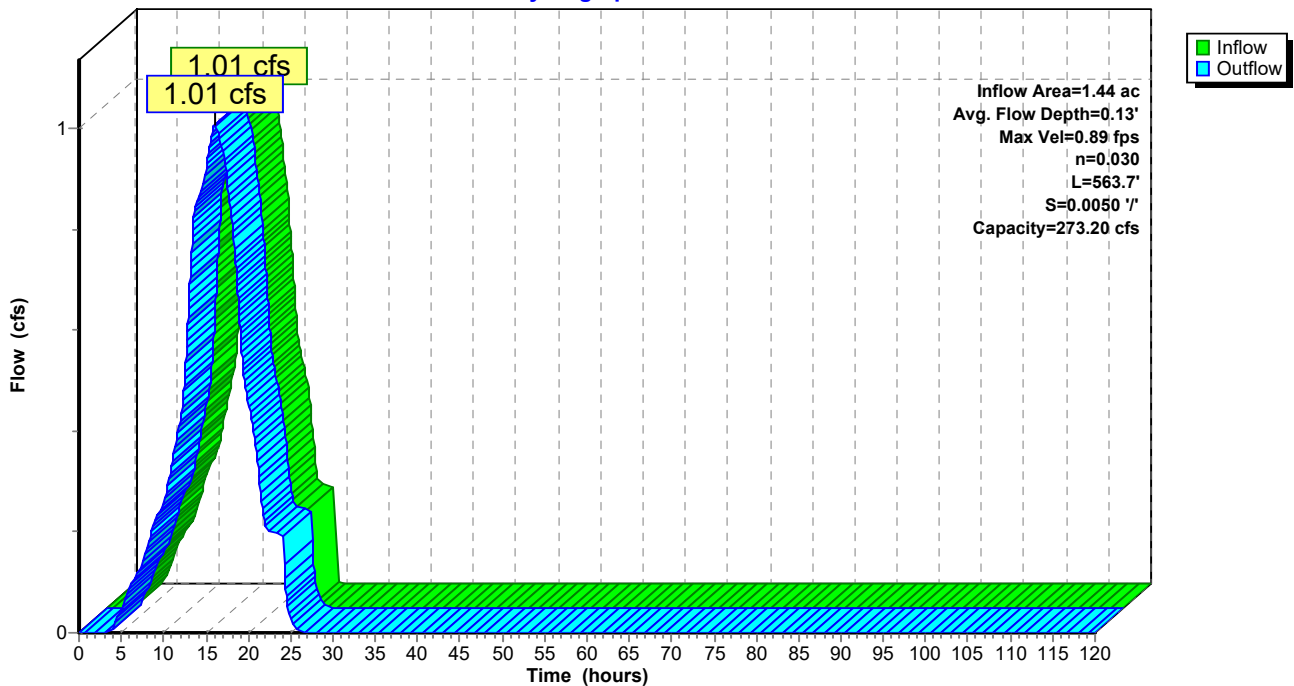
Peak Storage= 636 cf @ 15.77 hrs  
 Average Depth at Peak Storage= 0.13'  
 Bank-Full Depth= 3.00' Flow Area= 51.0 sf, Capacity= 273.20 cfs

8.00' x 3.00' deep channel, n= 0.030  
 Side Slope Z-value= 3.0 '/' Top Width= 26.00'  
 Length= 563.7' Slope= 0.0050 '/'  
 Inlet Invert= 762.00', Outlet Invert= 759.18'



**Reach TB-B9: Terrace Bench B9**

Hydrograph



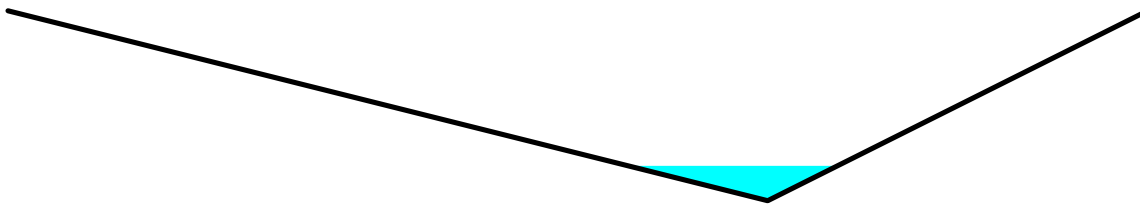
**Summary for Reach TB-D1: Terrace Berm D1**

Inflow Area = 1.26 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 0.89 cfs @ 15.72 hrs, Volume= 0.645 af  
 Outflow = 0.89 cfs @ 15.78 hrs, Volume= 0.645 af, Atten= 0%, Lag= 3.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.18 fps, Min. Travel Time= 1.8 min  
 Avg. Velocity = 1.59 fps, Avg. Travel Time= 2.4 min

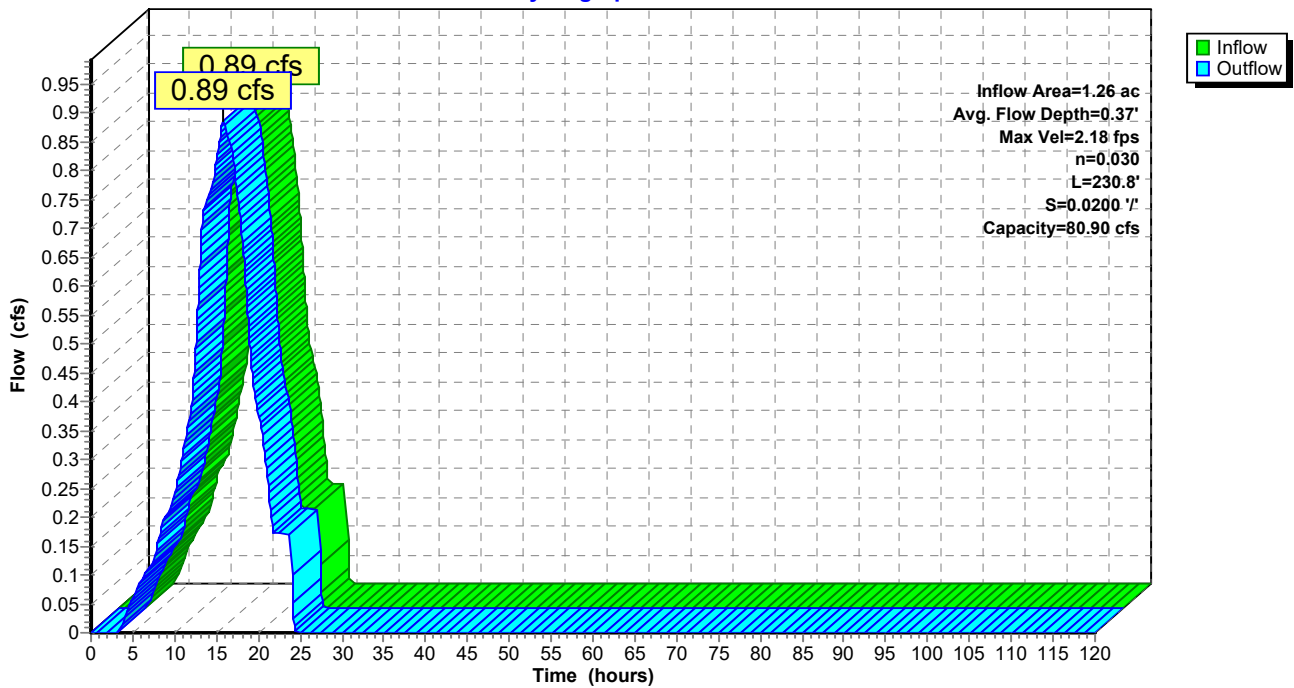
Peak Storage= 94 cf @ 15.75 hrs  
 Average Depth at Peak Storage= 0.37'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.90 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 230.8' Slope= 0.0200 '/'  
 Inlet Invert= 861.86', Outlet Invert= 857.24'



**Reach TB-D1: Terrace Berm D1**

Hydrograph



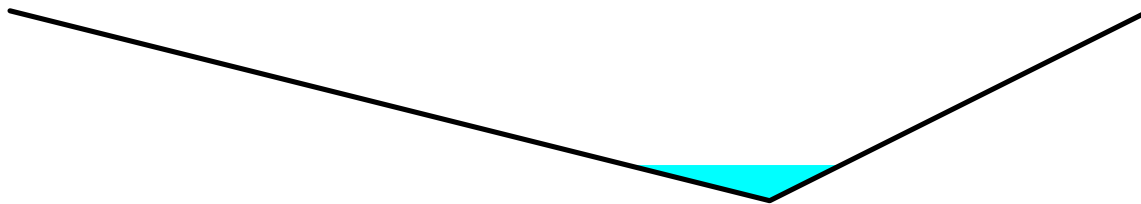
**Summary for Reach TB-D3: Terrace Berm D3**

Inflow Area = 1.33 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 0.94 cfs @ 15.69 hrs, Volume= 0.684 af  
 Outflow = 0.94 cfs @ 15.75 hrs, Volume= 0.684 af, Atten= 0%, Lag= 3.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.21 fps, Min. Travel Time= 1.7 min  
 Avg. Velocity = 1.62 fps, Avg. Travel Time= 2.4 min

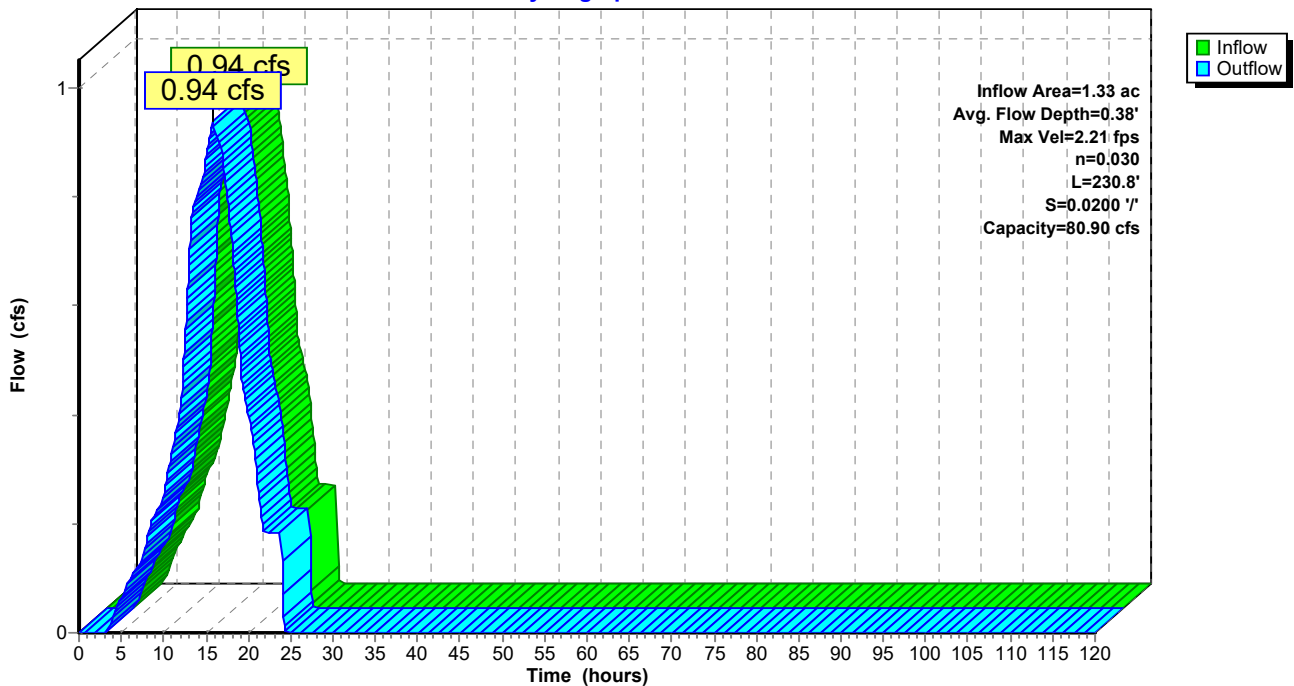
Peak Storage= 98 cf @ 15.71 hrs  
 Average Depth at Peak Storage= 0.38'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.90 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 230.8' Slope= 0.0200 '/'  
 Inlet Invert= 798.33', Outlet Invert= 793.71'



**Reach TB-D3: Terrace Berm D3**

Hydrograph





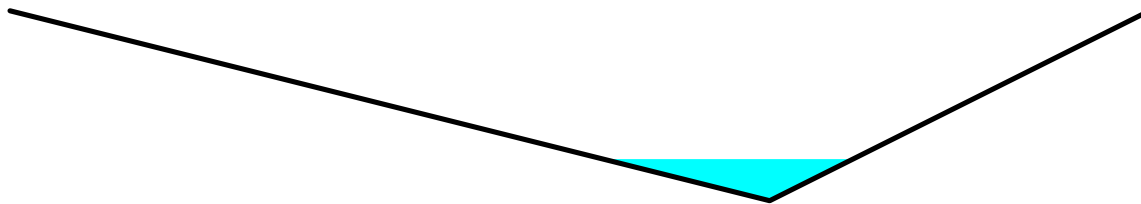
**Summary for Reach TB-E1: Terrace Berm E1**

Inflow Area = 1.42 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 1.00 cfs @ 15.72 hrs, Volume= 0.730 af  
 Outflow = 1.00 cfs @ 15.83 hrs, Volume= 0.730 af, Atten= 0%, Lag= 6.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.73 fps, Min. Travel Time= 3.5 min  
 Avg. Velocity = 1.21 fps, Avg. Travel Time= 5.0 min

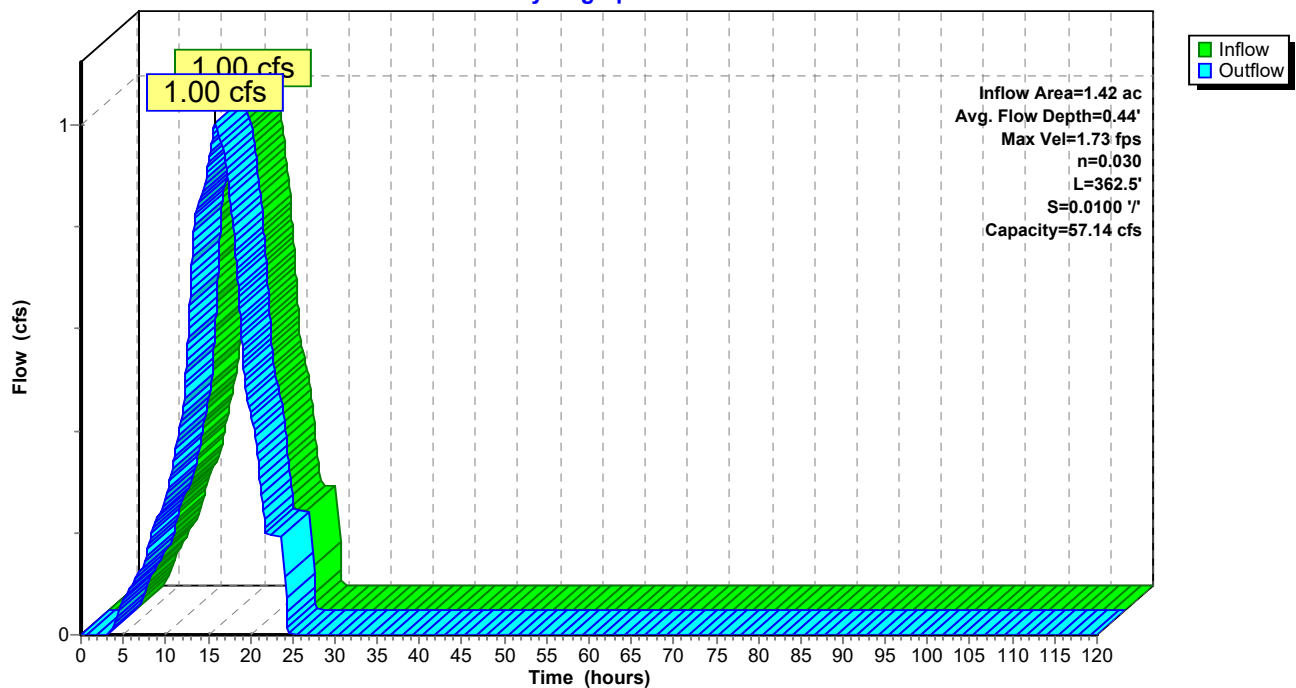
Peak Storage= 209 cf @ 15.77 hrs  
 Average Depth at Peak Storage= 0.44'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.14 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 362.5' Slope= 0.0100 '/'  
 Inlet Invert= 860.26', Outlet Invert= 856.64'



**Reach TB-E1: Terrace Berm E1**

Hydrograph



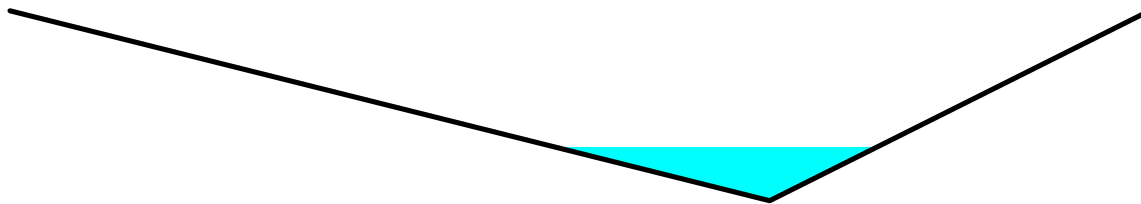
**Summary for Reach TB-E2: TB-E2**

Inflow Area = 2.82 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 1.99 cfs @ 15.69 hrs, Volume= 1.446 af  
 Outflow = 1.98 cfs @ 16.01 hrs, Volume= 1.446 af, Atten= 1%, Lag= 19.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.05 fps, Min. Travel Time= 10.7 min  
 Avg. Velocity = 1.21 fps, Avg. Travel Time= 18.1 min

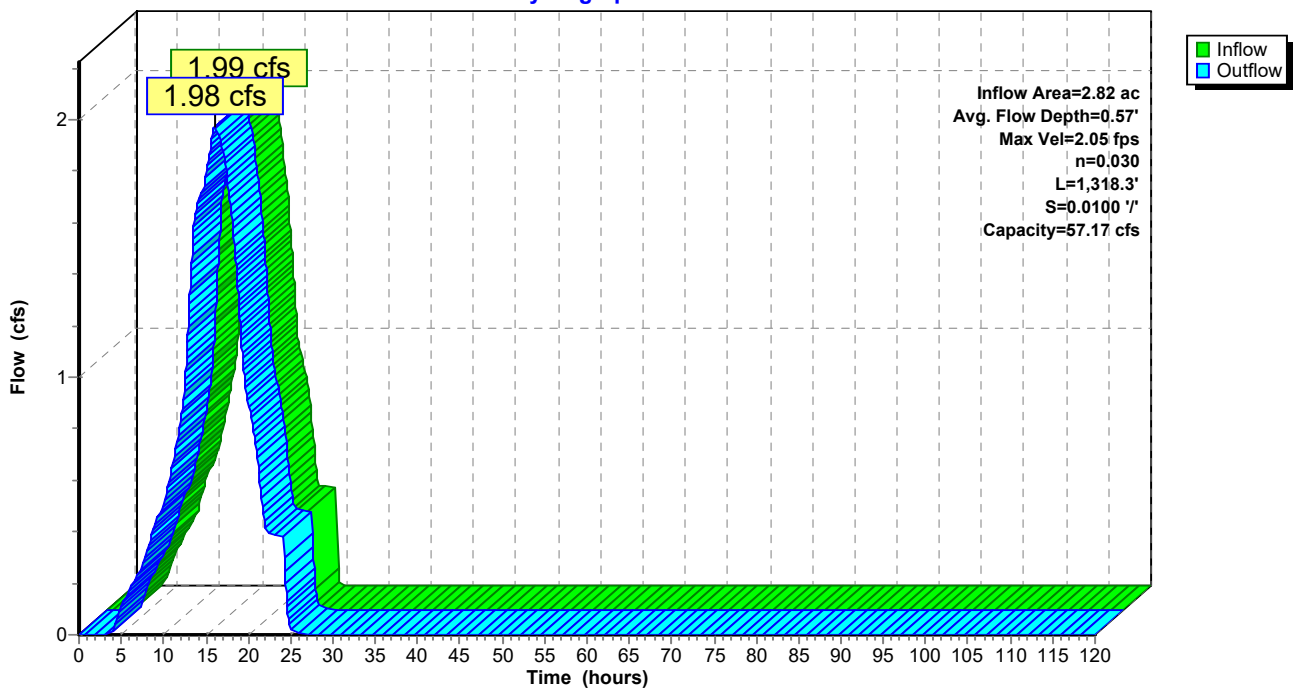
Peak Storage= 1,268 cf @ 15.83 hrs  
 Average Depth at Peak Storage= 0.57'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.17 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,318.3' Slope= 0.0100 '/'  
 Inlet Invert= 806.69', Outlet Invert= 793.51'



**Reach TB-E2: TB-E2**

Hydrograph



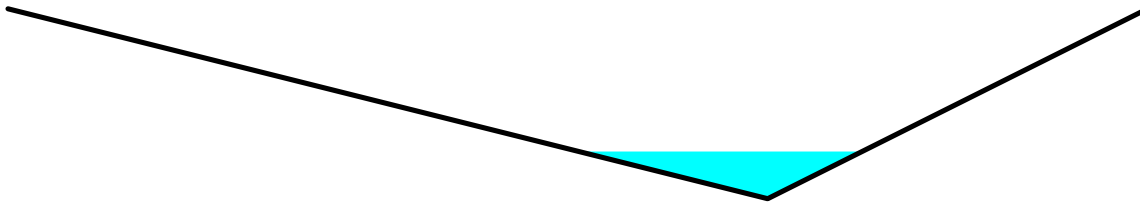
**Summary for Reach TB-H1: Terrace Berm H1**

Inflow Area = 1.98 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 1.40 cfs @ 15.72 hrs, Volume= 1.016 af  
 Outflow = 1.39 cfs @ 15.85 hrs, Volume= 1.016 af, Atten= 0%, Lag= 7.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.88 fps, Min. Travel Time= 4.0 min  
 Avg. Velocity = 1.29 fps, Avg. Travel Time= 5.9 min

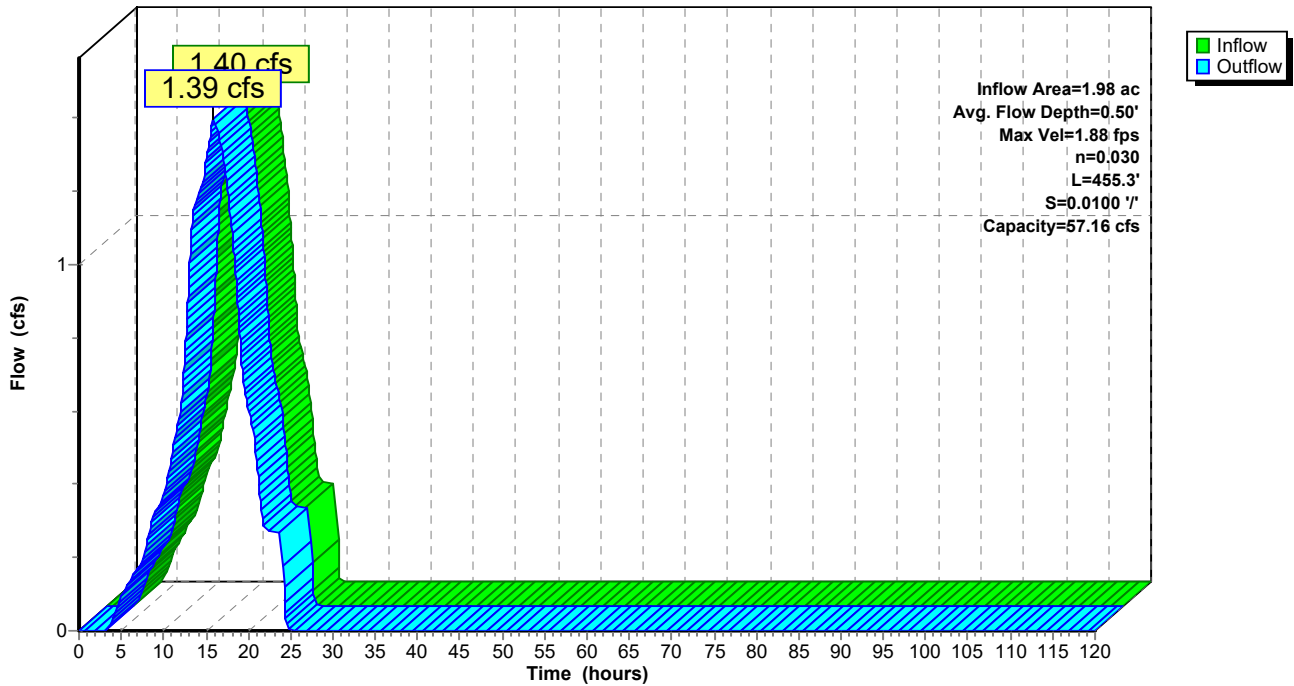
Peak Storage= 337 cf @ 15.77 hrs  
 Average Depth at Peak Storage= 0.50'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.16 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 455.3' Slope= 0.0100 '/'  
 Inlet Invert= 872.24', Outlet Invert= 867.69'



**Reach TB-H1: Terrace Berm H1**

Hydrograph



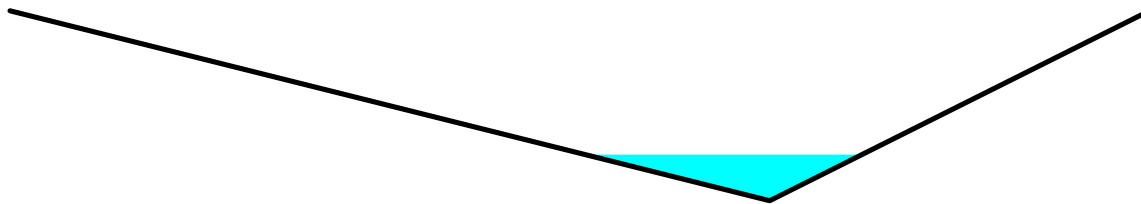
**Summary for Reach TB-H2: Terrace Berm H2**

Inflow Area = 1.86 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 1.31 cfs @ 15.68 hrs, Volume= 0.957 af  
 Outflow = 1.31 cfs @ 15.85 hrs, Volume= 0.957 af, Atten= 0%, Lag= 10.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.85 fps, Min. Travel Time= 5.5 min  
 Avg. Velocity = 1.24 fps, Avg. Travel Time= 8.2 min

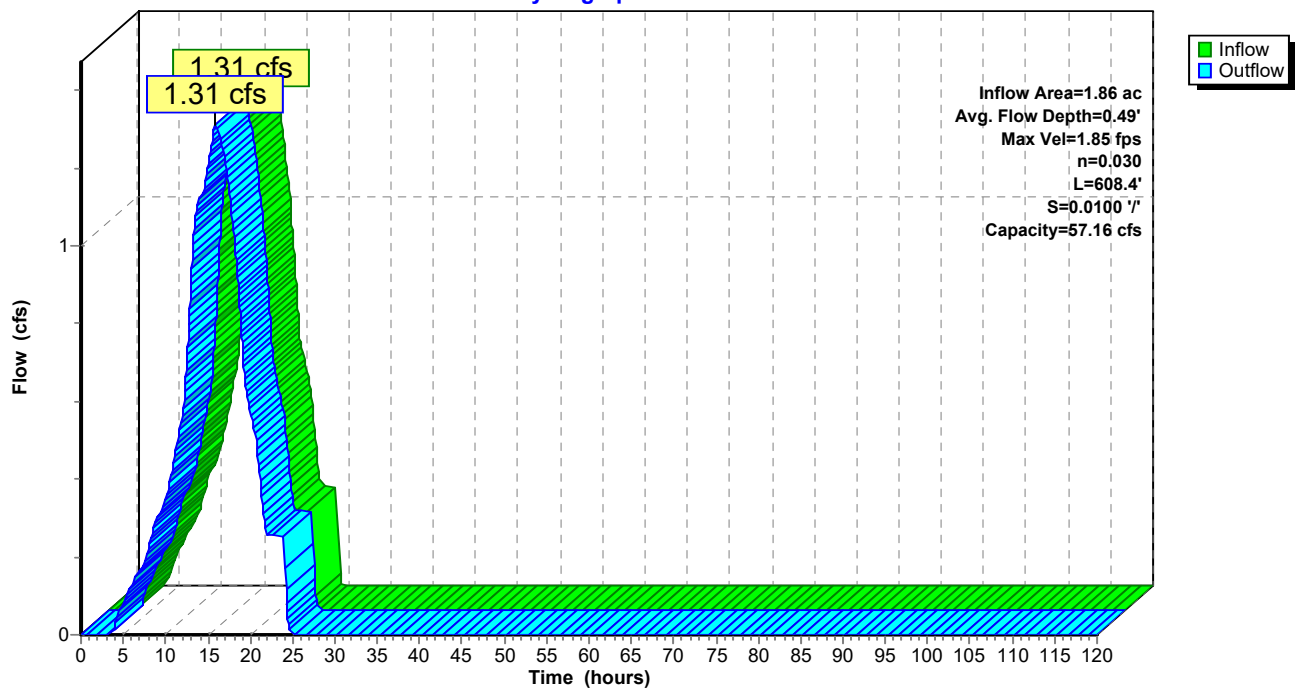
Peak Storage= 430 cf @ 15.75 hrs  
 Average Depth at Peak Storage= 0.49'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.16 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 608.4' Slope= 0.0100 '/'  
 Inlet Invert= 837.23', Outlet Invert= 831.15'



**Reach TB-H2: Terrace Berm H2**

Hydrograph



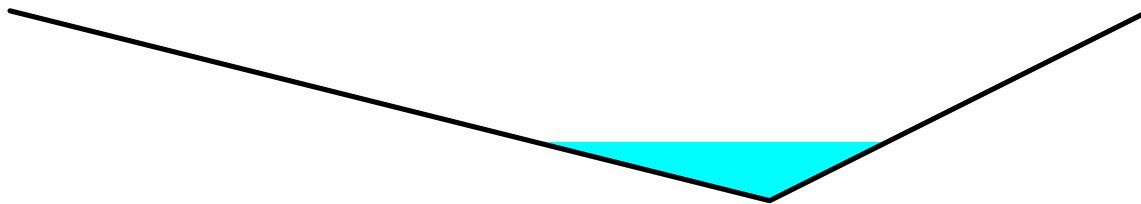
**Summary for Reach TB-H3: Terrace Berm H3**

Inflow Area = 3.57 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 2.52 cfs @ 15.69 hrs, Volume= 1.834 af  
 Outflow = 2.51 cfs @ 15.87 hrs, Volume= 1.834 af, Atten= 0%, Lag= 11.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.18 fps, Min. Travel Time= 6.1 min  
 Avg. Velocity = 1.40 fps, Avg. Travel Time= 9.5 min

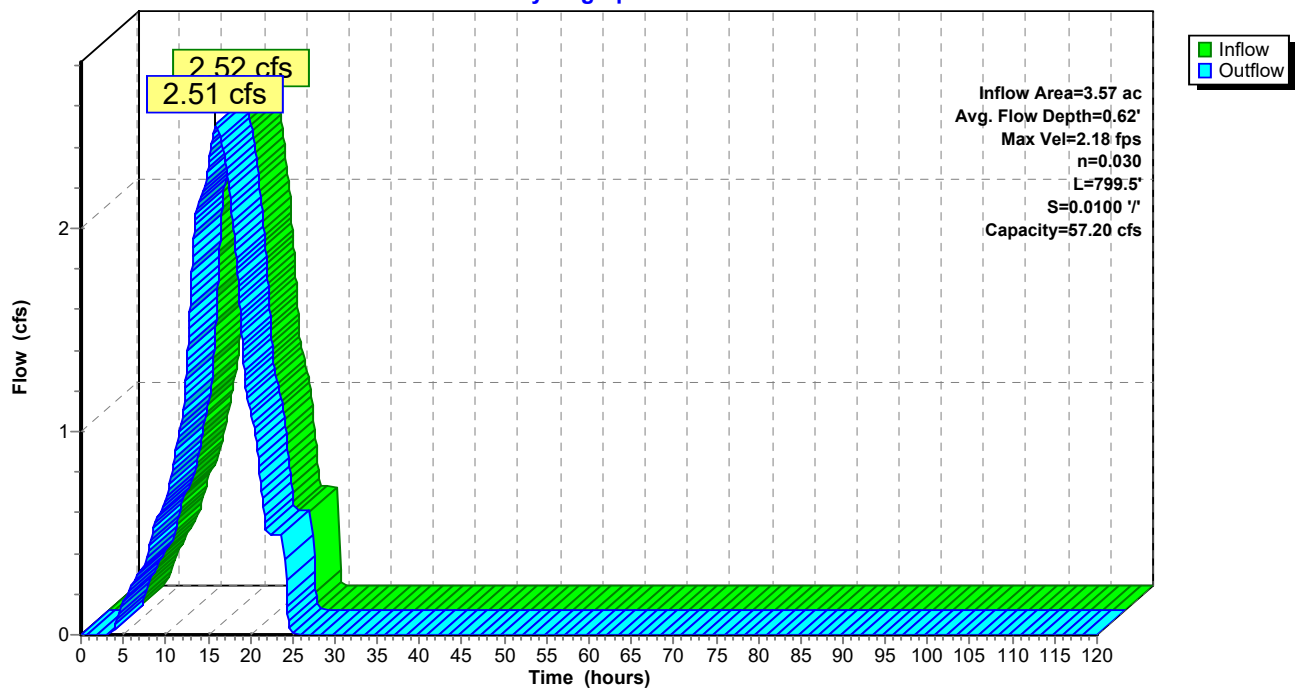
Peak Storage= 921 cf @ 15.77 hrs  
 Average Depth at Peak Storage= 0.62'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 57.20 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 799.5' Slope= 0.0100 '/'  
 Inlet Invert= 782.24', Outlet Invert= 774.24'



**Reach TB-H3: Terrace Berm H3**

Hydrograph



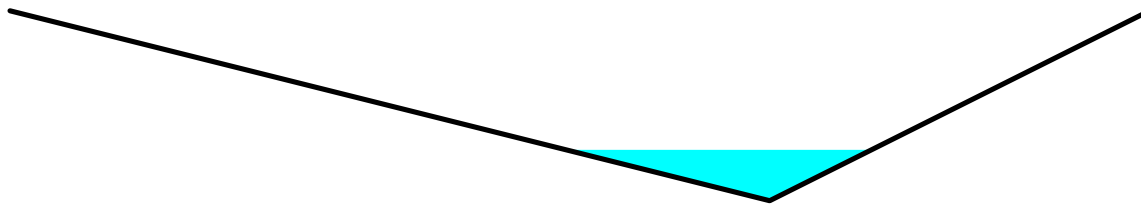
**Summary for Reach TB-N-A1: Terrace Berm N-A1**

Inflow Area = 3.60 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 2.54 cfs @ 15.72 hrs, Volume= 1.847 af  
 Outflow = 2.53 cfs @ 15.80 hrs, Volume= 1.847 af, Atten= 0%, Lag= 5.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.94 fps, Min. Travel Time= 2.5 min  
 Avg. Velocity = 2.09 fps, Avg. Travel Time= 3.5 min

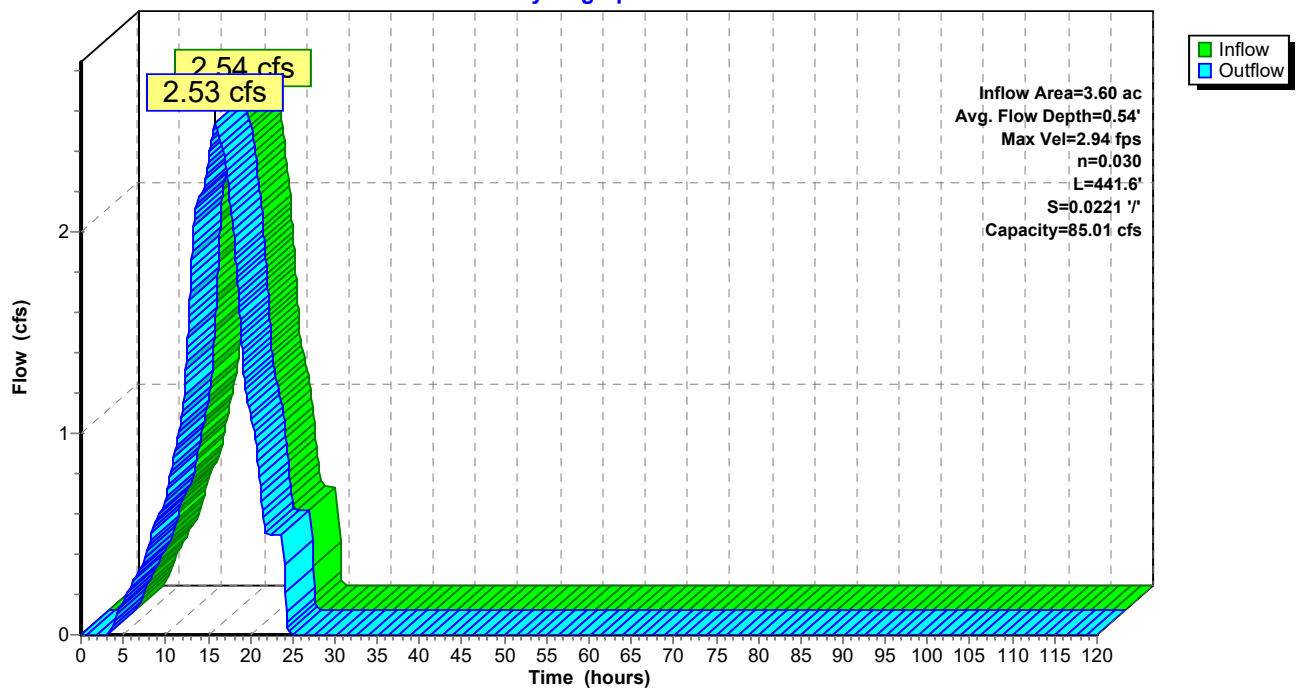
Peak Storage= 380 cf @ 15.76 hrs  
 Average Depth at Peak Storage= 0.54'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 85.01 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 441.6' Slope= 0.0221 '/'  
 Inlet Invert= 879.12', Outlet Invert= 869.36'



**Reach TB-N-A1: Terrace Berm N-A1**

Hydrograph



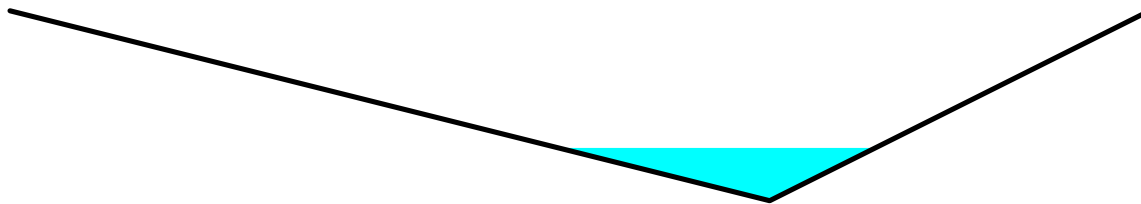
### Summary for Reach TB-N-A10: Terrace Berm N-A10

Inflow Area = 3.77 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 2.66 cfs @ 15.68 hrs, Volume= 1.938 af  
 Outflow = 2.65 cfs @ 15.89 hrs, Volume= 1.938 af, Atten= 0%, Lag= 12.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.87 fps, Min. Travel Time= 6.8 min  
 Avg. Velocity = 1.83 fps, Avg. Travel Time= 10.7 min

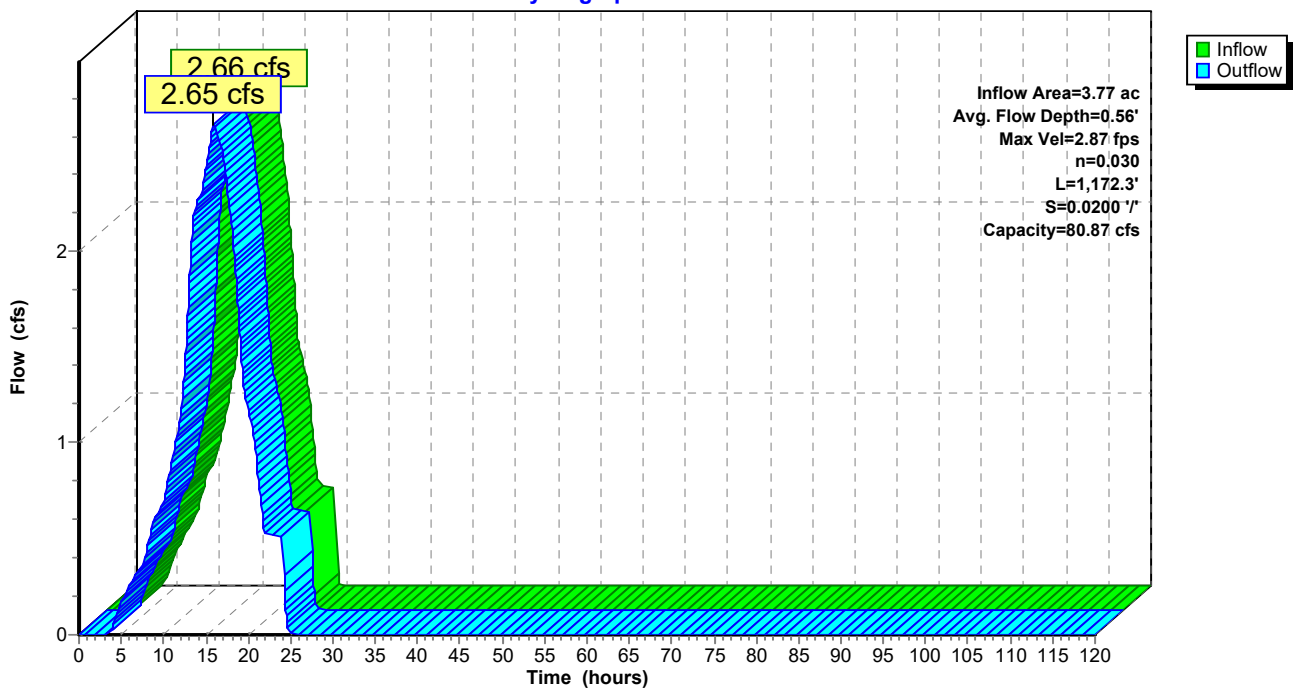
Peak Storage= 1,085 cf @ 15.77 hrs  
 Average Depth at Peak Storage= 0.56'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,172.3' Slope= 0.0200 '/'  
 Inlet Invert= 771.72', Outlet Invert= 748.27'



### Reach TB-N-A10: Terrace Berm N-A10

Hydrograph



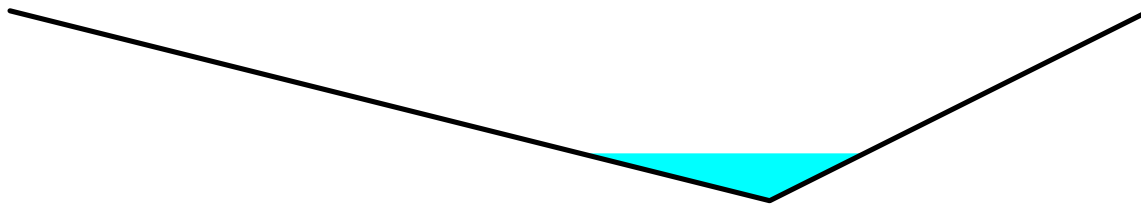
**Summary for Reach TB-N-A2: Terrace Berm N-A2**

Inflow Area = 2.82 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 1.99 cfs @ 15.71 hrs, Volume= 1.450 af  
 Outflow = 1.99 cfs @ 15.86 hrs, Volume= 1.450 af, Atten= 0%, Lag= 8.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.67 fps, Min. Travel Time= 4.6 min  
 Avg. Velocity = 1.81 fps, Avg. Travel Time= 6.8 min

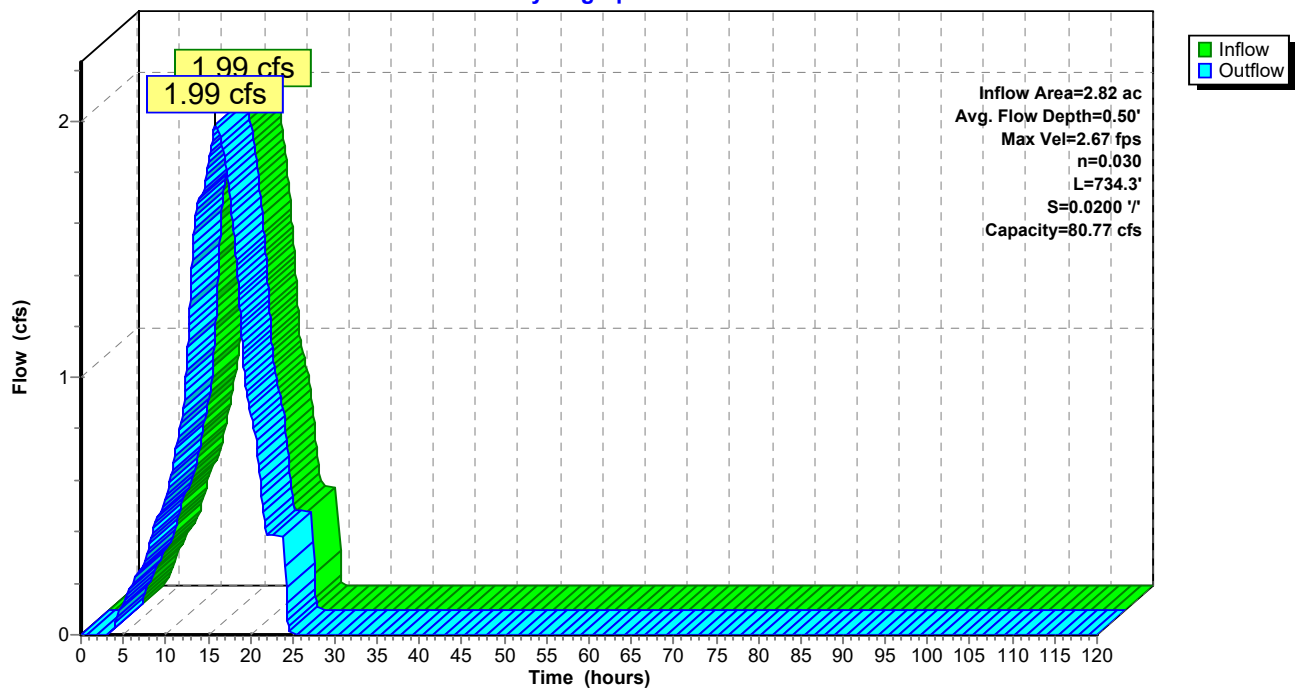
Peak Storage= 548 cf @ 15.77 hrs  
 Average Depth at Peak Storage= 0.50'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.77 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 734.3' Slope= 0.0200 '/'  
 Inlet Invert= 884.01', Outlet Invert= 869.36'



**Reach TB-N-A2: Terrace Berm N-A2**

Hydrograph





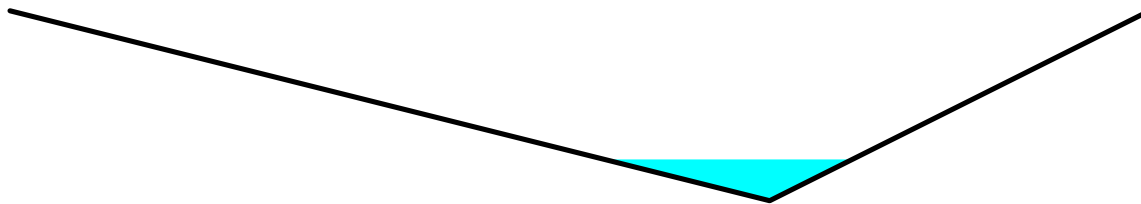
**Summary for Reach TB-N-A3: Terrace Berm N-A3**

Inflow Area = 1.31 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 0.92 cfs @ 15.68 hrs, Volume= 0.673 af  
 Outflow = 0.92 cfs @ 15.79 hrs, Volume= 0.673 af, Atten= 0%, Lag= 6.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.63 fps, Min. Travel Time= 3.4 min  
 Avg. Velocity = 1.15 fps, Avg. Travel Time= 4.8 min

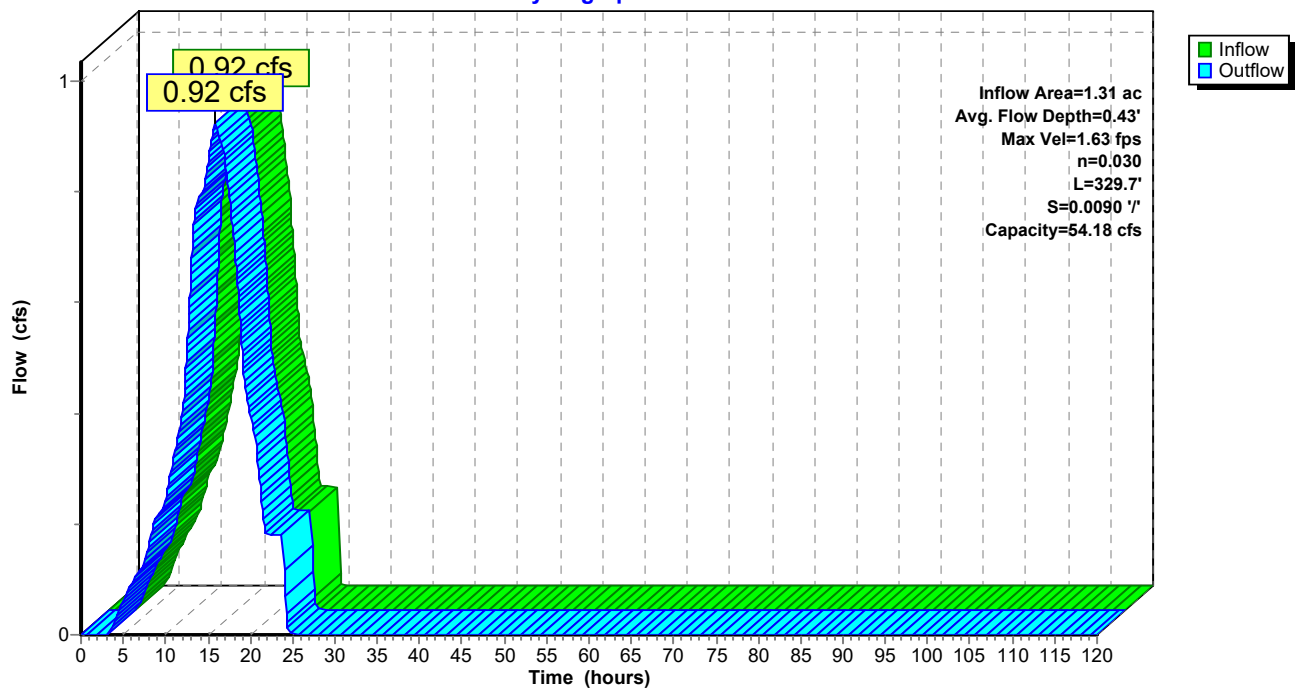
Peak Storage= 187 cf @ 15.73 hrs  
 Average Depth at Peak Storage= 0.43'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 54.18 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 329.7' Slope= 0.0090 '/'  
 Inlet Invert= 839.81', Outlet Invert= 836.85'



**Reach TB-N-A3: Terrace Berm N-A3**

Hydrograph



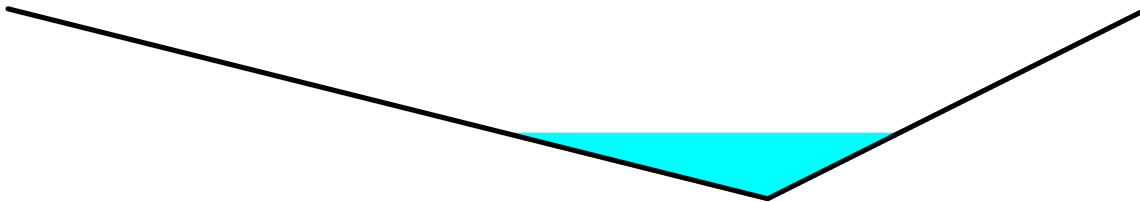
**Summary for Reach TB-N-A4: Terrace Berm N-A4**

Inflow Area = 6.88 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 4.85 cfs @ 15.72 hrs, Volume= 3.530 af  
 Outflow = 4.83 cfs @ 15.95 hrs, Volume= 3.530 af, Atten= 0%, Lag= 14.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.33 fps, Min. Travel Time= 7.6 min  
 Avg. Velocity = 2.02 fps, Avg. Travel Time= 12.6 min

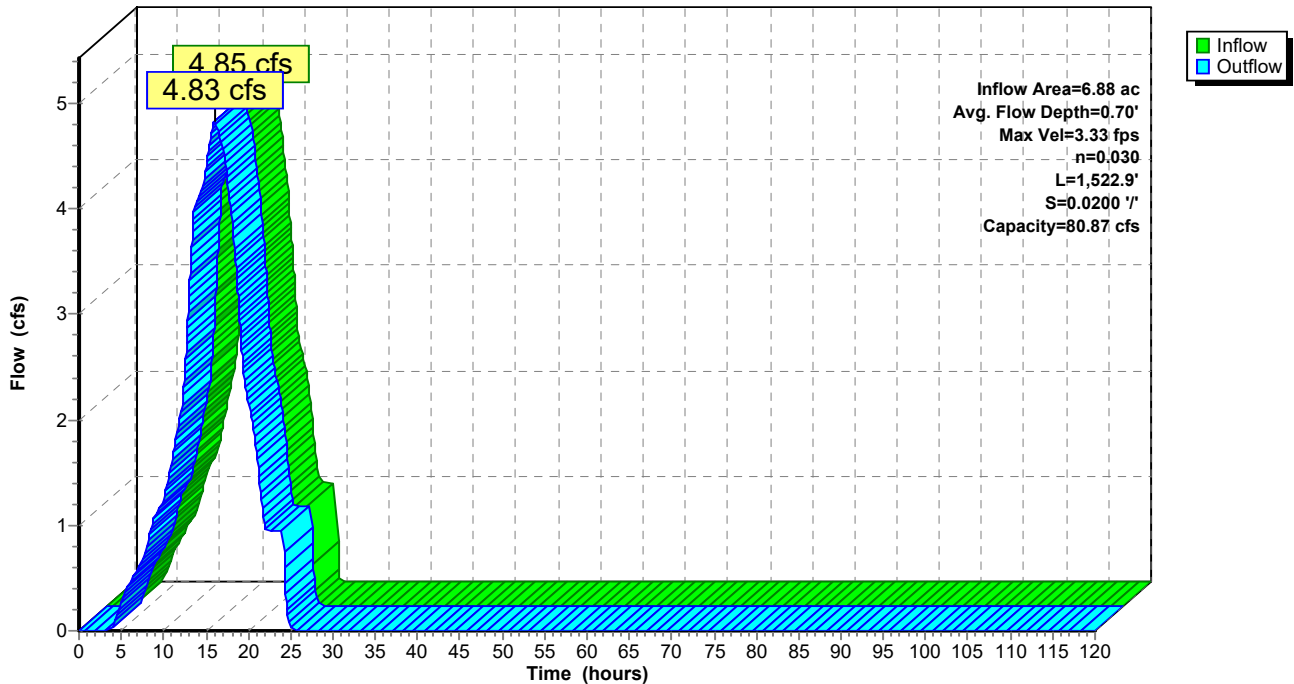
Peak Storage= 2,208 cf @ 15.82 hrs  
 Average Depth at Peak Storage= 0.70'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,522.9' Slope= 0.0200 '/'  
 Inlet Invert= 867.35', Outlet Invert= 836.89'



**Reach TB-N-A4: Terrace Berm N-A4**

Hydrograph



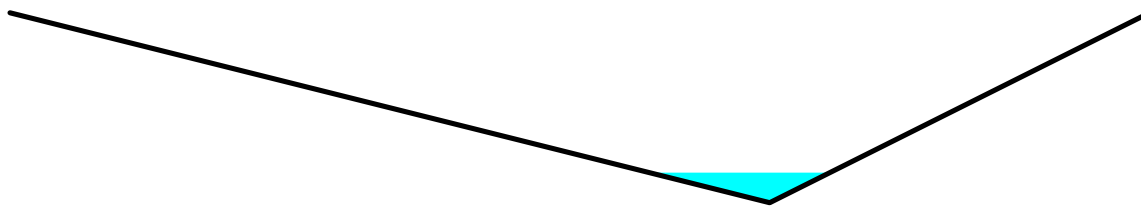
### Summary for Reach TB-N-A5: Terrace Berm N-A5

Inflow Area = 0.73 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 0.52 cfs @ 15.67 hrs, Volume= 0.377 af  
 Outflow = 0.52 cfs @ 15.75 hrs, Volume= 0.377 af, Atten= 0%, Lag= 4.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.73 fps, Min. Travel Time= 2.1 min  
 Avg. Velocity = 1.27 fps, Avg. Travel Time= 2.9 min

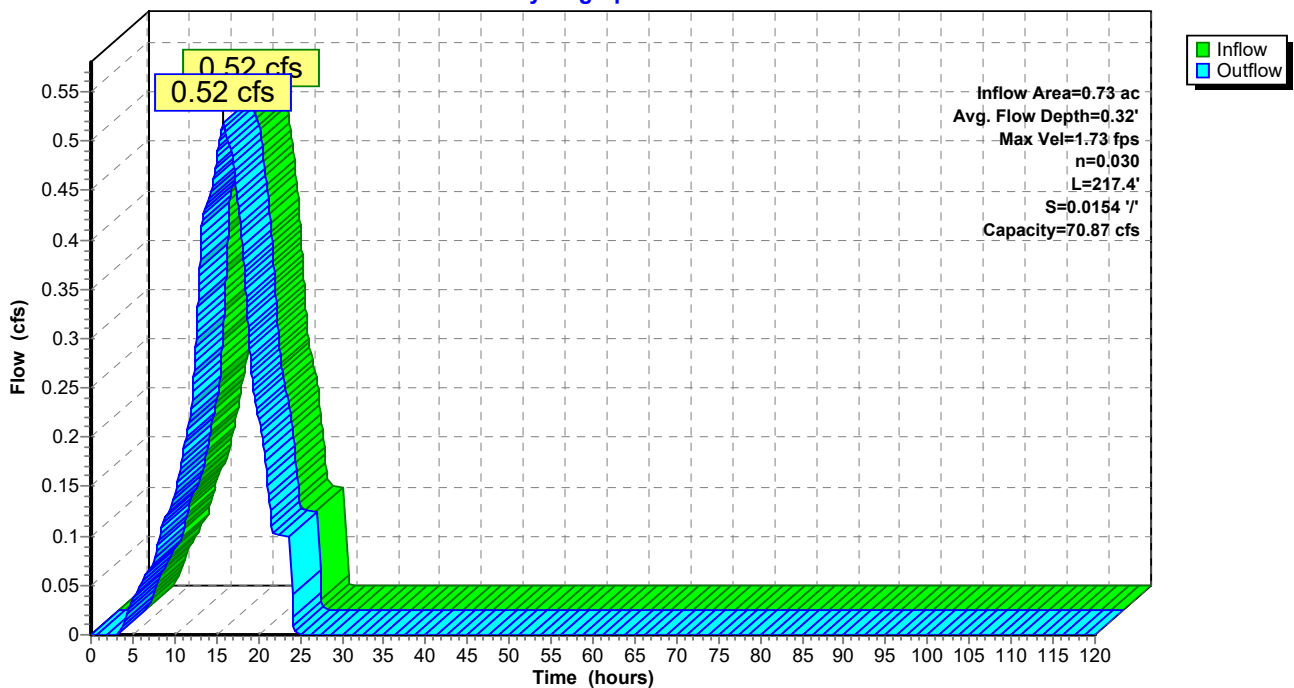
Peak Storage= 65 cf @ 15.71 hrs  
 Average Depth at Peak Storage= 0.32'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 70.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 217.4' Slope= 0.0154 '/'  
 Inlet Invert= 811.36', Outlet Invert= 808.02'



### Reach TB-N-A5: Terrace Berm N-A5

Hydrograph



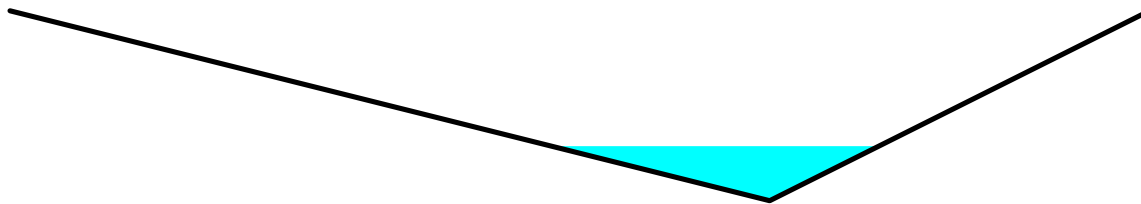
**Summary for Reach TB-N-A6: Terrace Berm N-A6**

Inflow Area = 4.13 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 2.91 cfs @ 15.67 hrs, Volume= 2.121 af  
 Outflow = 2.90 cfs @ 15.92 hrs, Volume= 2.121 af, Atten= 0%, Lag= 14.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.93 fps, Min. Travel Time= 8.0 min  
 Avg. Velocity = 1.82 fps, Avg. Travel Time= 12.9 min

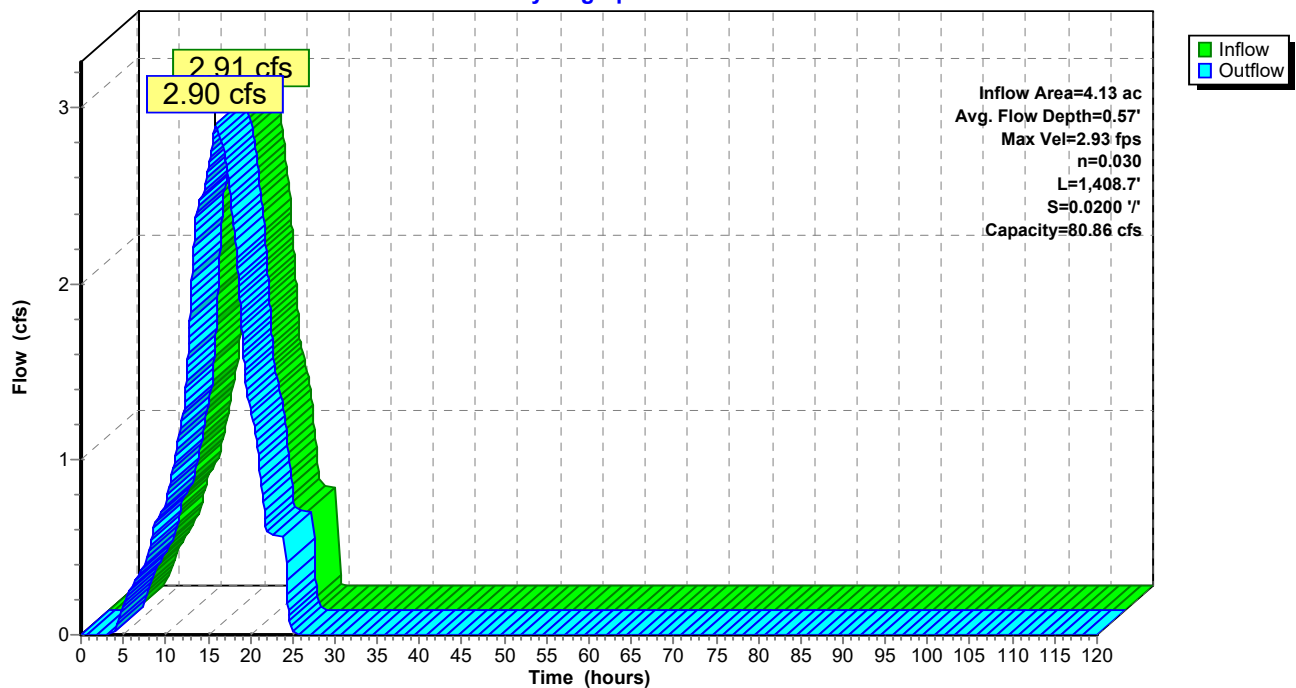
Peak Storage= 1,394 cf @ 15.79 hrs  
 Average Depth at Peak Storage= 0.57'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,408.7' Slope= 0.0200 '/'  
 Inlet Invert= 836.37', Outlet Invert= 808.20'



**Reach TB-N-A6: Terrace Berm N-A6**

Hydrograph



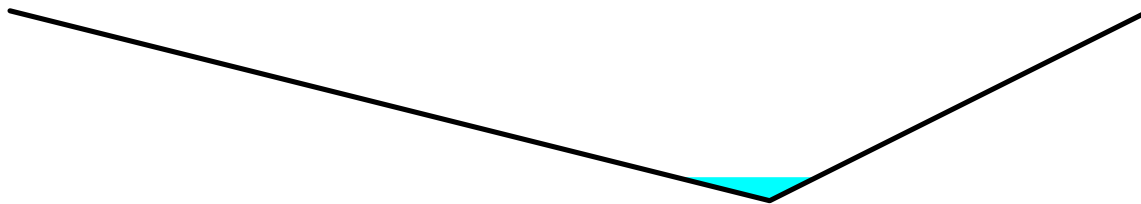
**Summary for Reach TB-N-A7: Terrace Berm N-A7**

Inflow Area = 0.44 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 0.31 cfs @ 15.69 hrs, Volume= 0.227 af  
 Outflow = 0.31 cfs @ 15.72 hrs, Volume= 0.227 af, Atten= 0%, Lag= 2.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.69 fps, Min. Travel Time= 1.0 min  
 Avg. Velocity = 1.26 fps, Avg. Travel Time= 1.4 min

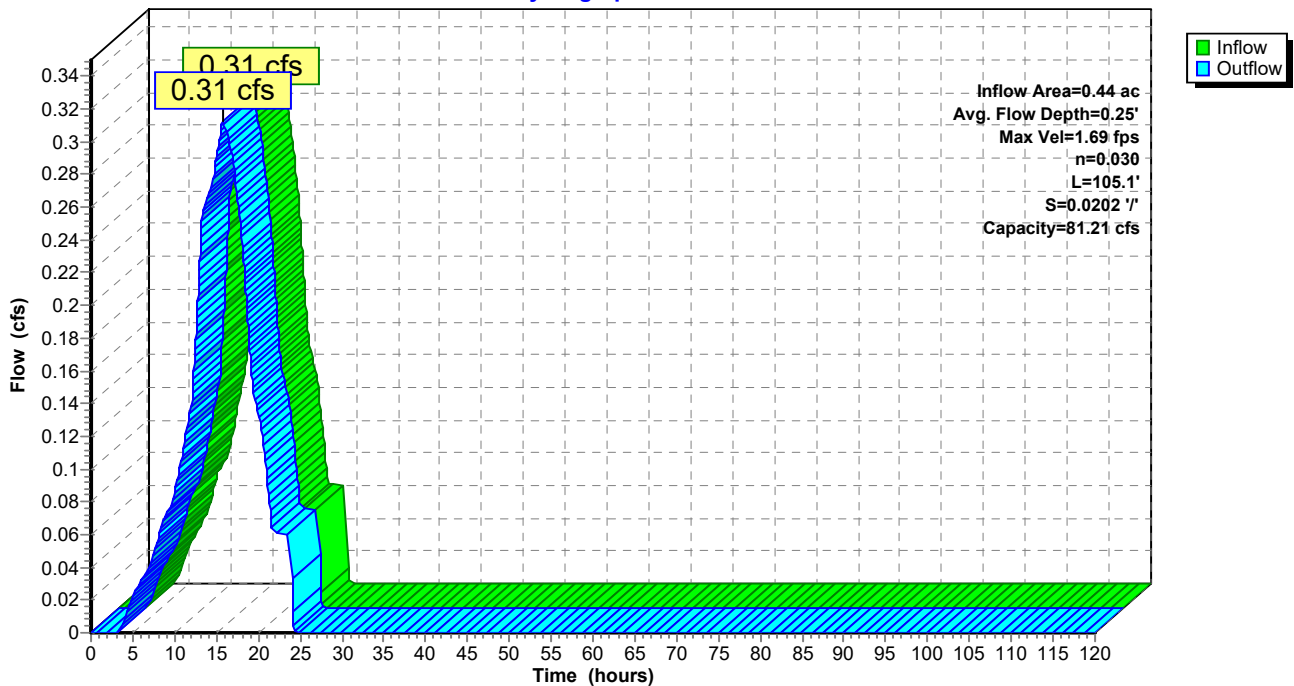
Peak Storage= 19 cf @ 15.70 hrs  
 Average Depth at Peak Storage= 0.25'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 81.21 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 105.1' Slope= 0.0202 '/'  
 Inlet Invert= 782.01', Outlet Invert= 779.89'



**Reach TB-N-A7: Terrace Berm N-A7**

Hydrograph



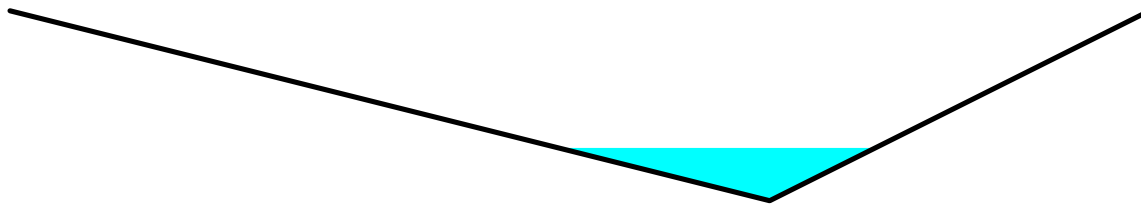
### Summary for Reach TB-N-A8: Terrace Berm N-A8

Inflow Area = 3.80 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 2.68 cfs @ 15.67 hrs, Volume= 1.952 af  
 Outflow = 2.67 cfs @ 15.91 hrs, Volume= 1.952 af, Atten= 0%, Lag= 14.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.87 fps, Min. Travel Time= 7.5 min  
 Avg. Velocity = 1.81 fps, Avg. Travel Time= 11.9 min

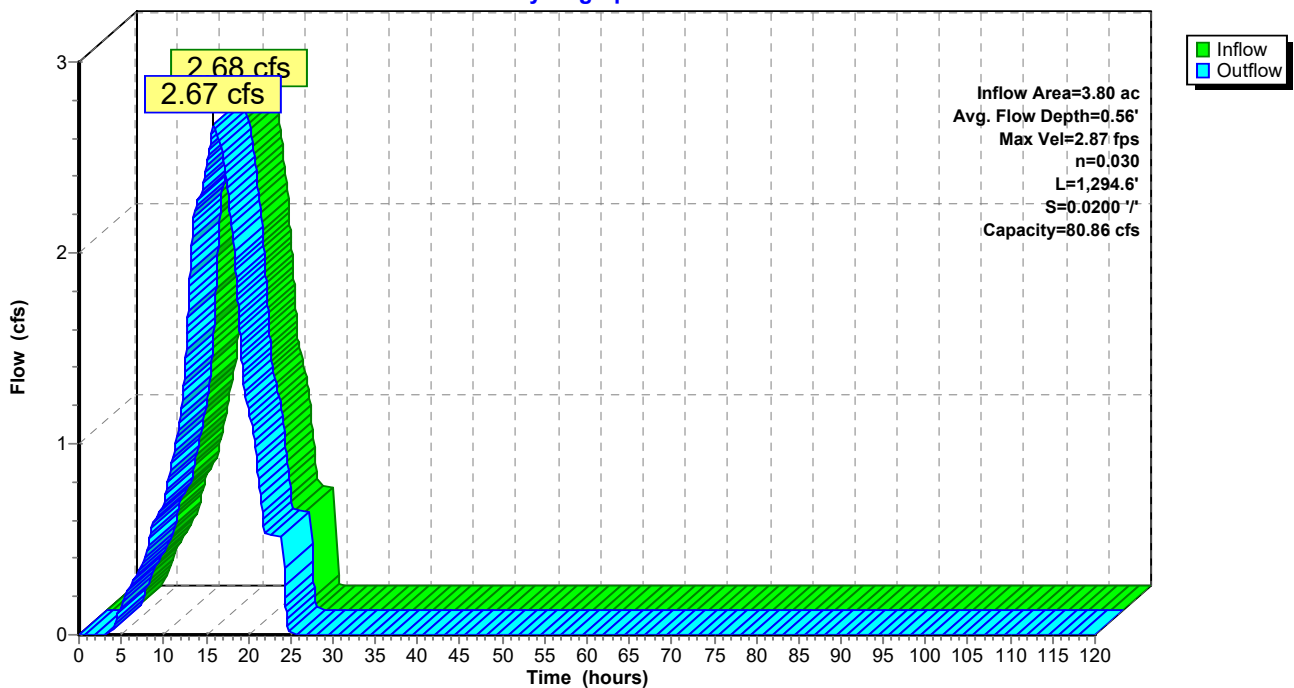
Peak Storage= 1,204 cf @ 15.78 hrs  
 Average Depth at Peak Storage= 0.56'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,294.6' Slope= 0.0200 '/'  
 Inlet Invert= 805.78', Outlet Invert= 779.89'



### Reach TB-N-A8: Terrace Berm N-A8

Hydrograph



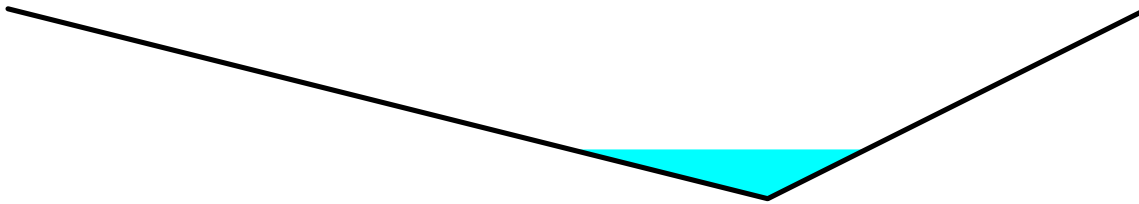
**Summary for Reach TB-N-B1: Terrace Berm N-B1**

Inflow Area = 3.15 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 2.22 cfs @ 15.71 hrs, Volume= 1.619 af  
 Outflow = 2.22 cfs @ 15.90 hrs, Volume= 1.619 af, Atten= 0%, Lag= 11.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.74 fps, Min. Travel Time= 5.9 min  
 Avg. Velocity = 1.80 fps, Avg. Travel Time= 9.0 min

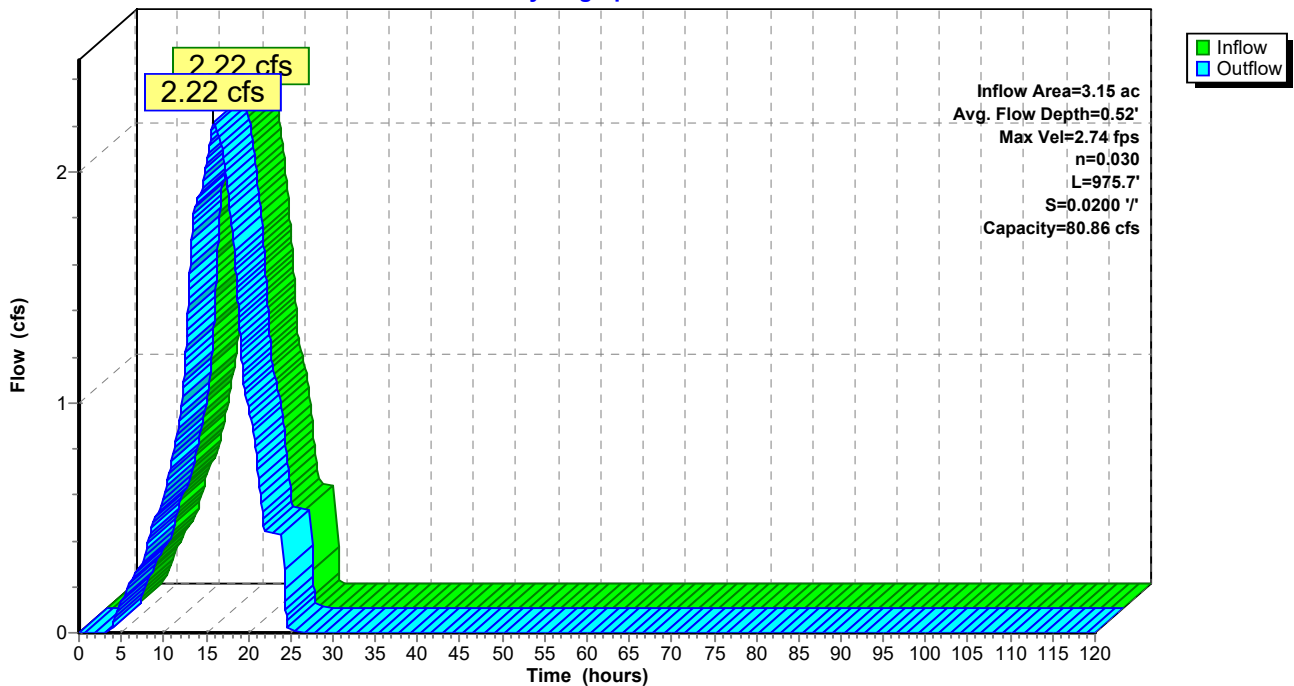
Peak Storage= 789 cf @ 15.80 hrs  
 Average Depth at Peak Storage= 0.52'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 975.7' Slope= 0.0200 '/'  
 Inlet Invert= 867.35', Outlet Invert= 847.84'



**Reach TB-N-B1: Terrace Berm N-B1**

Hydrograph



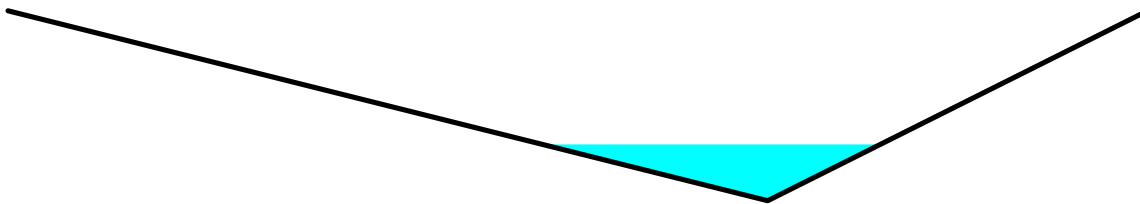
**Summary for Reach TB-N-B2: Terrace Berm N-B2**

Inflow Area = 4.49 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 3.16 cfs @ 15.71 hrs, Volume= 2.303 af  
 Outflow = 3.15 cfs @ 15.91 hrs, Volume= 2.303 af, Atten= 0%, Lag= 11.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.00 fps, Min. Travel Time= 6.2 min  
 Avg. Velocity = 1.92 fps, Avg. Travel Time= 9.7 min

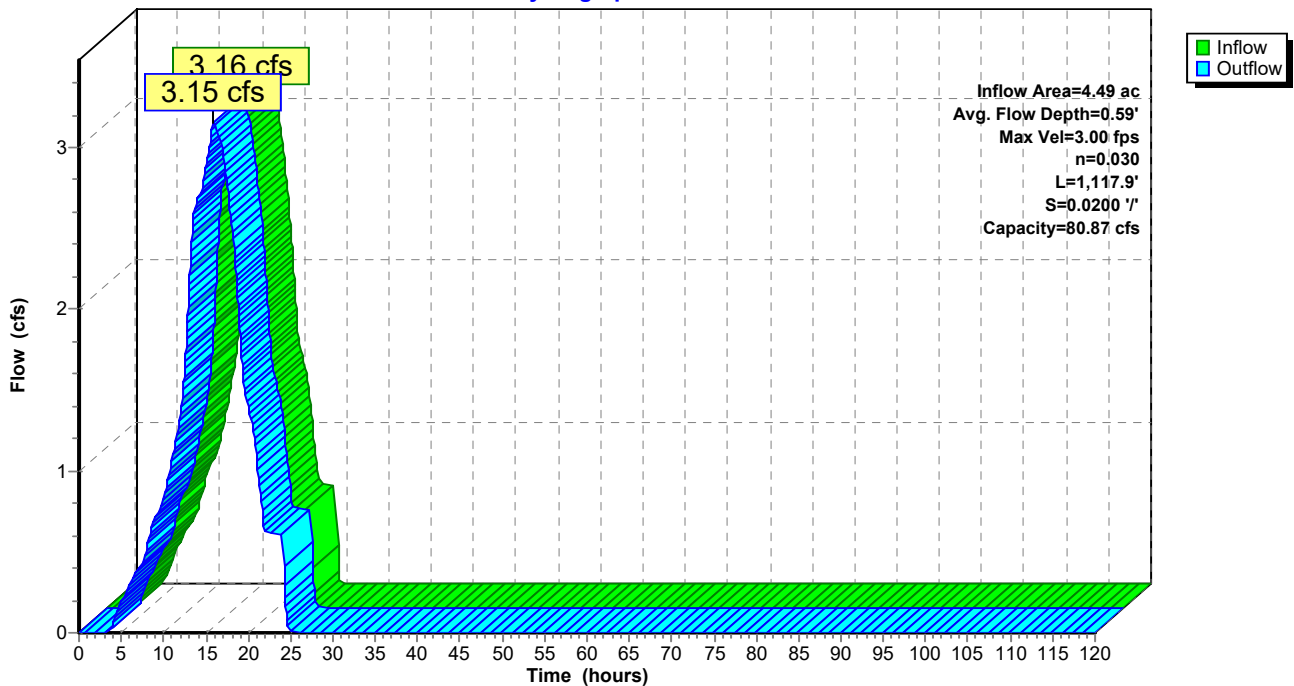
Peak Storage= 1,177 cf @ 15.80 hrs  
 Average Depth at Peak Storage= 0.59'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,117.9' Slope= 0.0200 '/'  
 Inlet Invert= 870.20', Outlet Invert= 847.84'



**Reach TB-N-B2: Terrace Berm N-B2**

Hydrograph





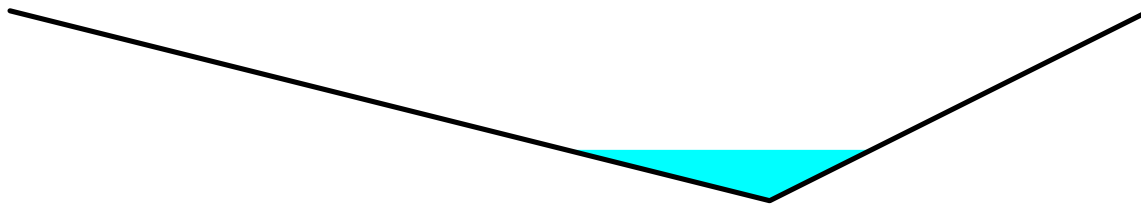
**Summary for Reach TB-N-B3: Terrace Berm N-B3**

Inflow Area = 3.43 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 2.42 cfs @ 15.68 hrs, Volume= 1.760 af  
 Outflow = 2.41 cfs @ 15.92 hrs, Volume= 1.760 af, Atten= 0%, Lag= 14.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.80 fps, Min. Travel Time= 7.9 min  
 Avg. Velocity = 1.76 fps, Avg. Travel Time= 12.5 min

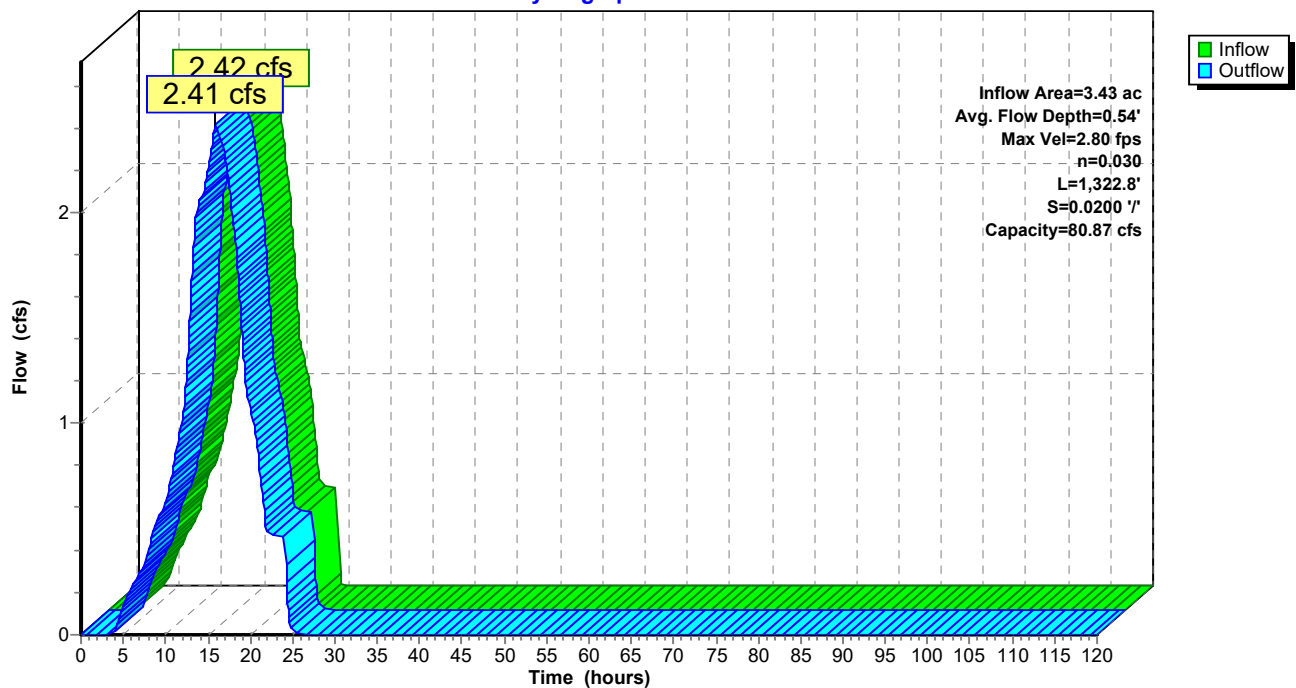
Peak Storage= 1,138 cf @ 15.79 hrs  
 Average Depth at Peak Storage= 0.54'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,322.8' Slope= 0.0200 '/'  
 Inlet Invert= 836.37', Outlet Invert= 809.91'



**Reach TB-N-B3: Terrace Berm N-B3**

Hydrograph



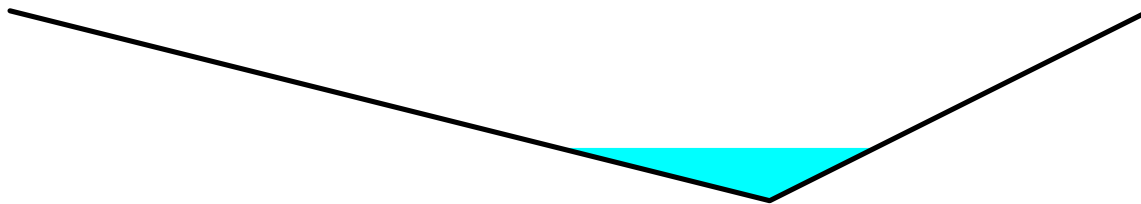
**Summary for Reach TB-N-B4: Terrace Berm N-B4**

Inflow Area = 3.80 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 2.68 cfs @ 15.68 hrs, Volume= 1.954 af  
 Outflow = 2.67 cfs @ 15.91 hrs, Volume= 1.954 af, Atten= 0%, Lag= 13.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.88 fps, Min. Travel Time= 7.3 min  
 Avg. Velocity = 1.82 fps, Avg. Travel Time= 11.6 min

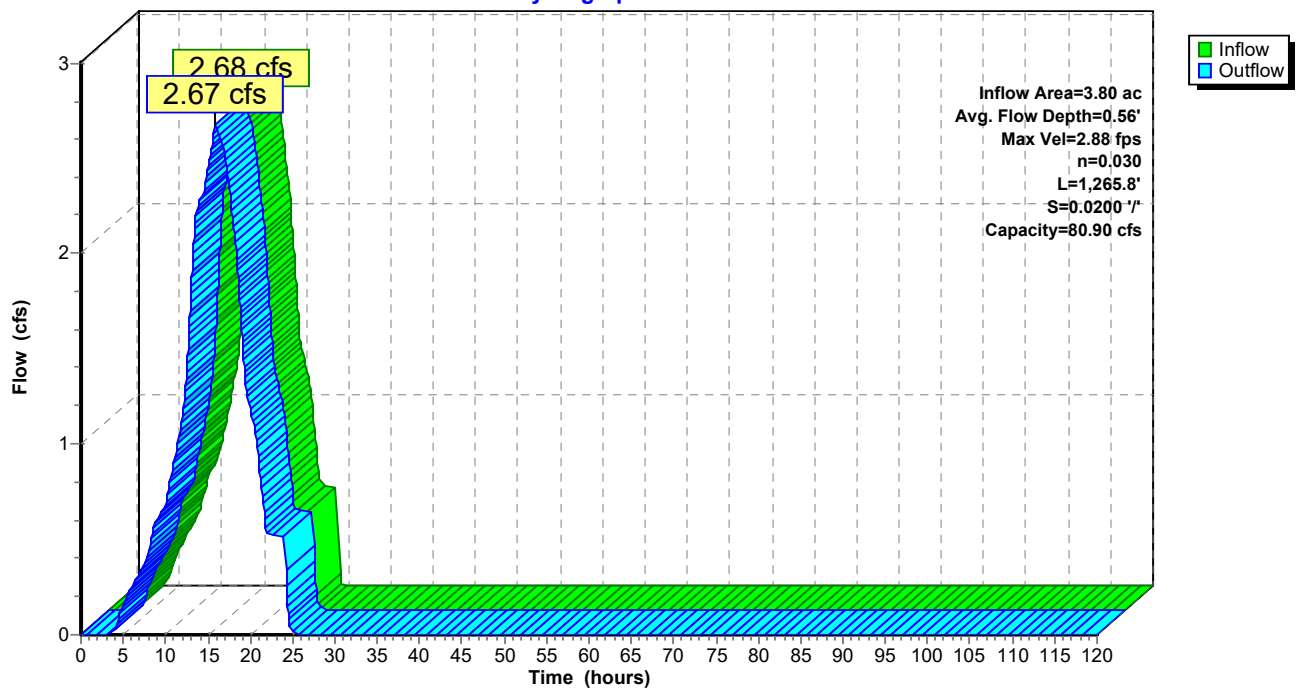
Peak Storage= 1,178 cf @ 15.78 hrs  
 Average Depth at Peak Storage= 0.56'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.90 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,265.8' Slope= 0.0200 '/'  
 Inlet Invert= 835.25', Outlet Invert= 809.91'



**Reach TB-N-B4: Terrace Berm N-B4**

Hydrograph



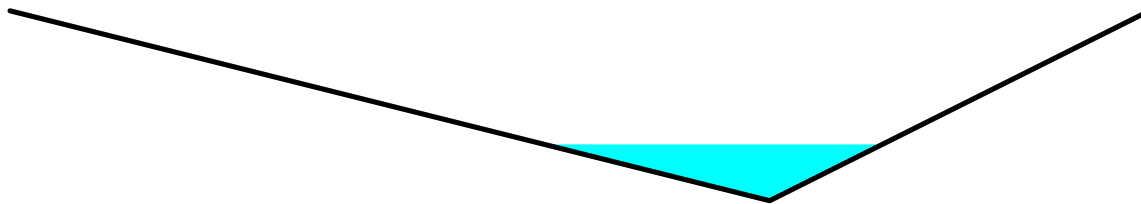
### Summary for Reach TB-N-B5: Terrace Berm N-B5

Inflow Area = 4.50 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 3.17 cfs @ 15.68 hrs, Volume= 2.309 af  
 Outflow = 3.16 cfs @ 15.96 hrs, Volume= 2.309 af, Atten= 0%, Lag= 17.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.00 fps, Min. Travel Time= 9.3 min  
 Avg. Velocity = 1.80 fps, Avg. Travel Time= 15.5 min

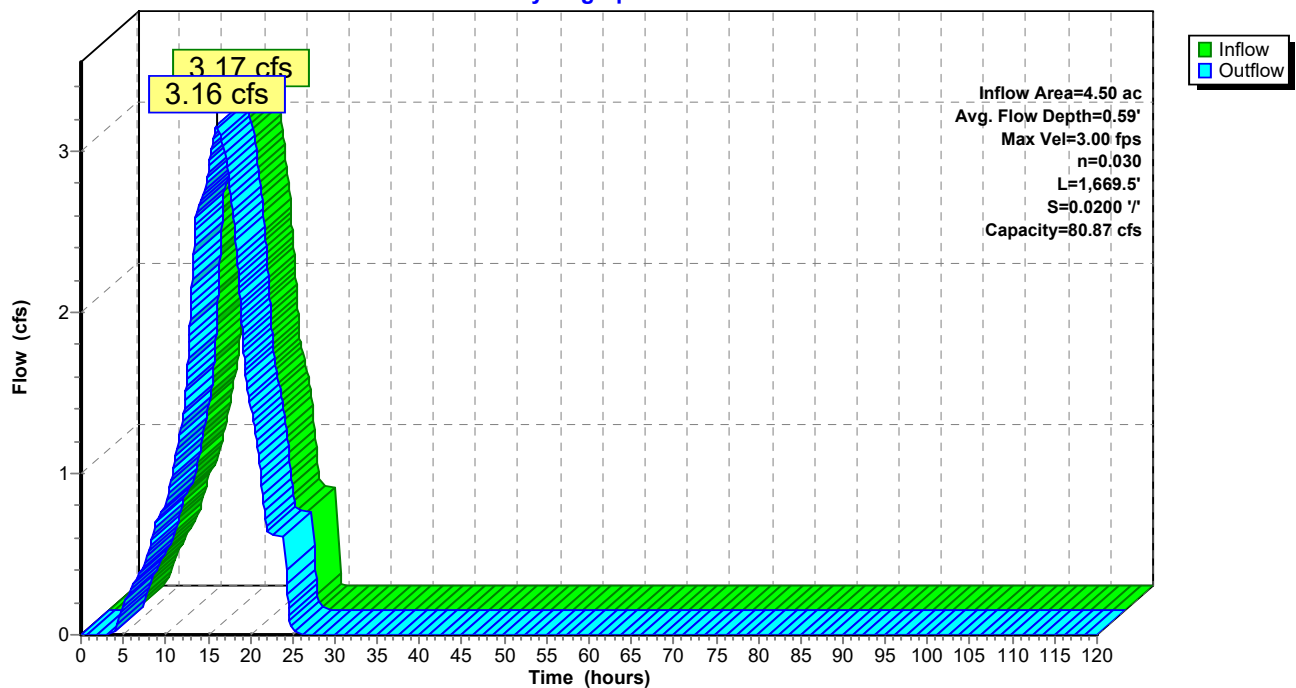
Peak Storage= 1,760 cf @ 15.81 hrs  
 Average Depth at Peak Storage= 0.59'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,669.5' Slope= 0.0200 '/'  
 Inlet Invert= 805.78', Outlet Invert= 772.39'



### Reach TB-N-B5: Terrace Berm N-B5

Hydrograph



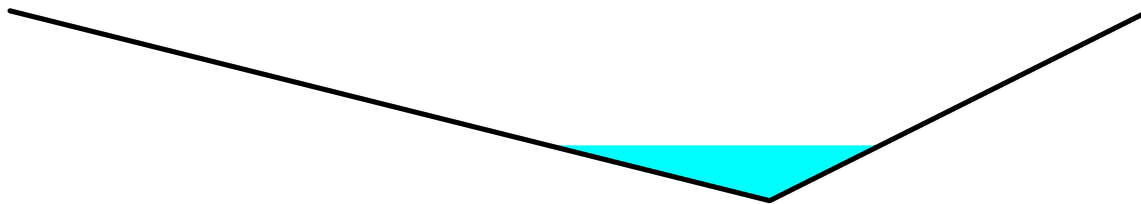
**Summary for Reach TB-N-B6: Terrace Berm N-B6**

Inflow Area = 4.29 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 3.03 cfs @ 15.68 hrs, Volume= 2.202 af  
 Outflow = 3.01 cfs @ 15.92 hrs, Volume= 2.202 af, Atten= 0%, Lag= 14.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.96 fps, Min. Travel Time= 8.0 min  
 Avg. Velocity = 1.84 fps, Avg. Travel Time= 12.8 min

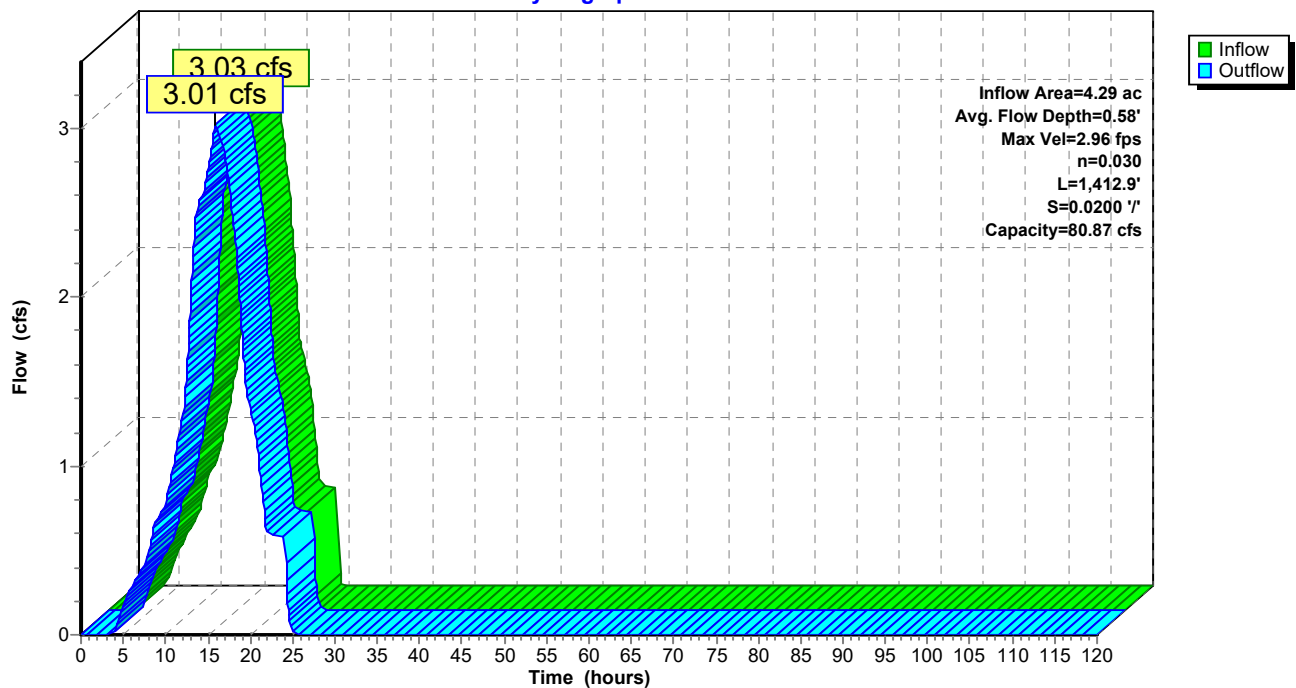
Peak Storage= 1,438 cf @ 15.79 hrs  
 Average Depth at Peak Storage= 0.58'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,412.9' Slope= 0.0200 '/'  
 Inlet Invert= 800.65', Outlet Invert= 772.39'



**Reach TB-N-B6: Terrace Berm N-B6**

Hydrograph



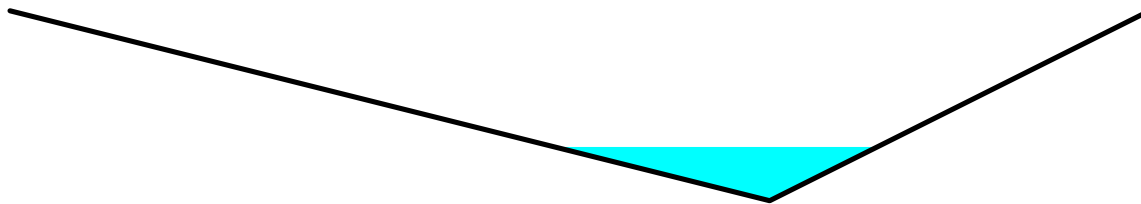
**Summary for Reach TB-N-B7: Terrace Berm N-B7**

Inflow Area = 3.96 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 2.80 cfs @ 15.68 hrs, Volume= 2.035 af  
 Outflow = 2.79 cfs @ 15.92 hrs, Volume= 2.035 af, Atten= 0%, Lag= 14.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.90 fps, Min. Travel Time= 7.9 min  
 Avg. Velocity = 1.81 fps, Avg. Travel Time= 12.6 min

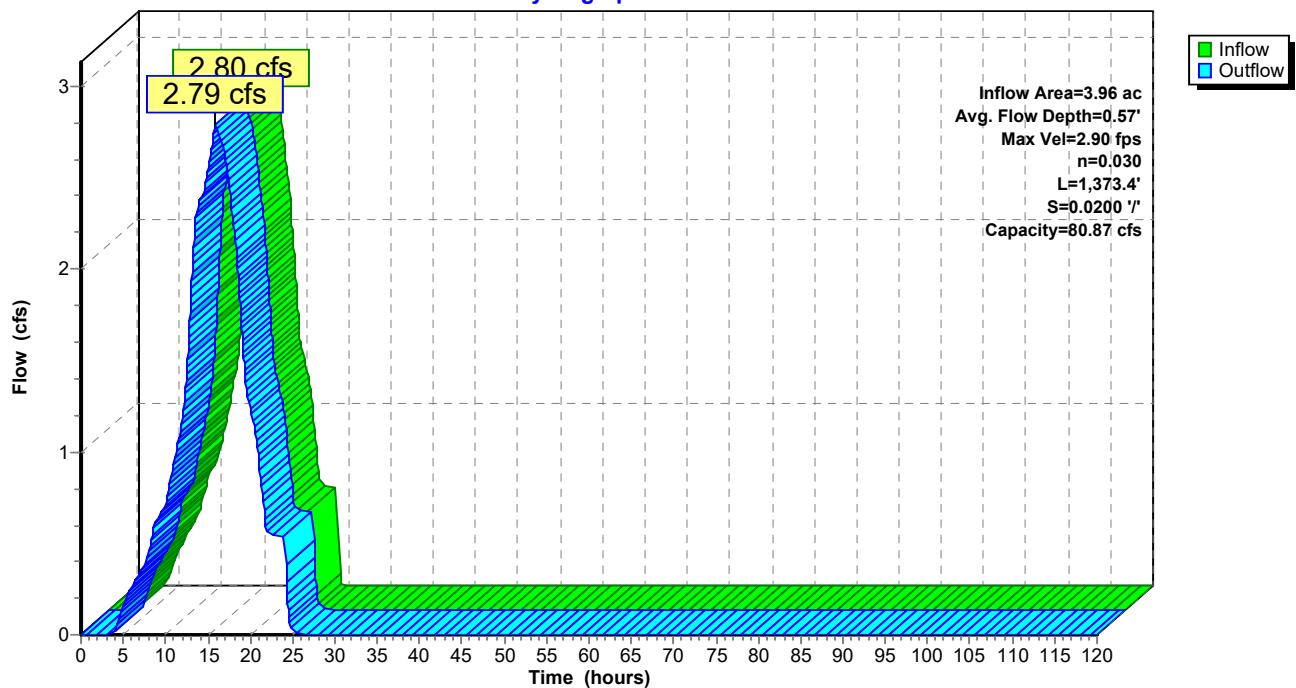
Peak Storage= 1,317 cf @ 15.79 hrs  
 Average Depth at Peak Storage= 0.57'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 ' / ' Top Width= 12.00'  
 Length= 1,373.4' Slope= 0.0200 ' / '  
 Inlet Invert= 771.72', Outlet Invert= 744.25'



**Reach TB-N-B7: Terrace Berm N-B7**

Hydrograph



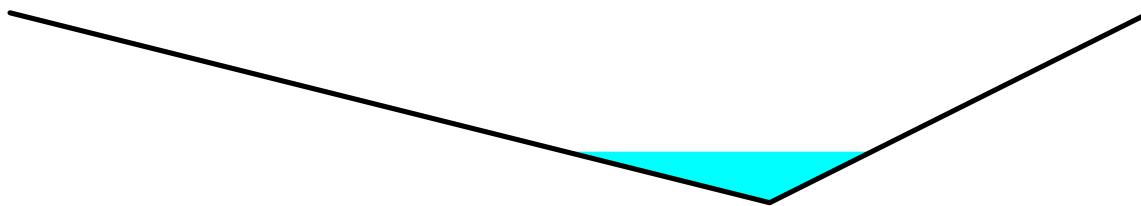
**Summary for Reach TB-N-B8: Terrace Berm N-B8**

Inflow Area = 3.52 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 2.49 cfs @ 15.68 hrs, Volume= 1.809 af  
 Outflow = 2.48 cfs @ 15.86 hrs, Volume= 1.809 af, Atten= 0%, Lag= 11.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.87 fps, Min. Travel Time= 5.9 min  
 Avg. Velocity = 1.88 fps, Avg. Travel Time= 9.0 min

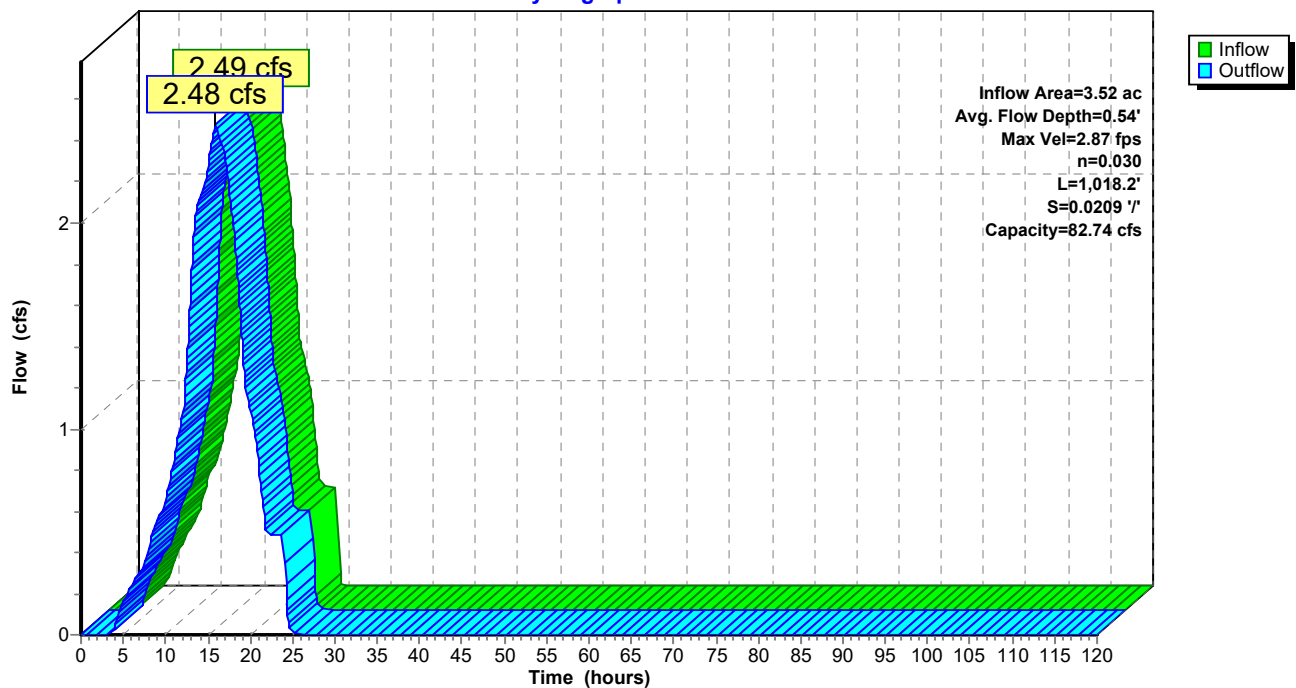
Peak Storage= 880 cf @ 15.76 hrs  
 Average Depth at Peak Storage= 0.54'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 82.74 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,018.2' Slope= 0.0209 '/'  
 Inlet Invert= 765.32', Outlet Invert= 744.00'



**Reach TB-N-B8: Terrace Berm N-B8**

Hydrograph



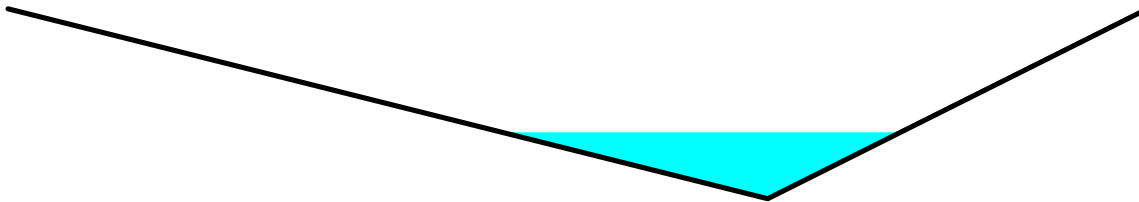
**Summary for Reach TB-N-C1: Terrace Berm N-C1**

Inflow Area = 6.98 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 4.92 cfs @ 15.72 hrs, Volume= 3.586 af  
 Outflow = 4.91 cfs @ 15.92 hrs, Volume= 3.586 af, Atten= 0%, Lag= 12.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.35 fps, Min. Travel Time= 6.6 min  
 Avg. Velocity = 2.08 fps, Avg. Travel Time= 10.6 min

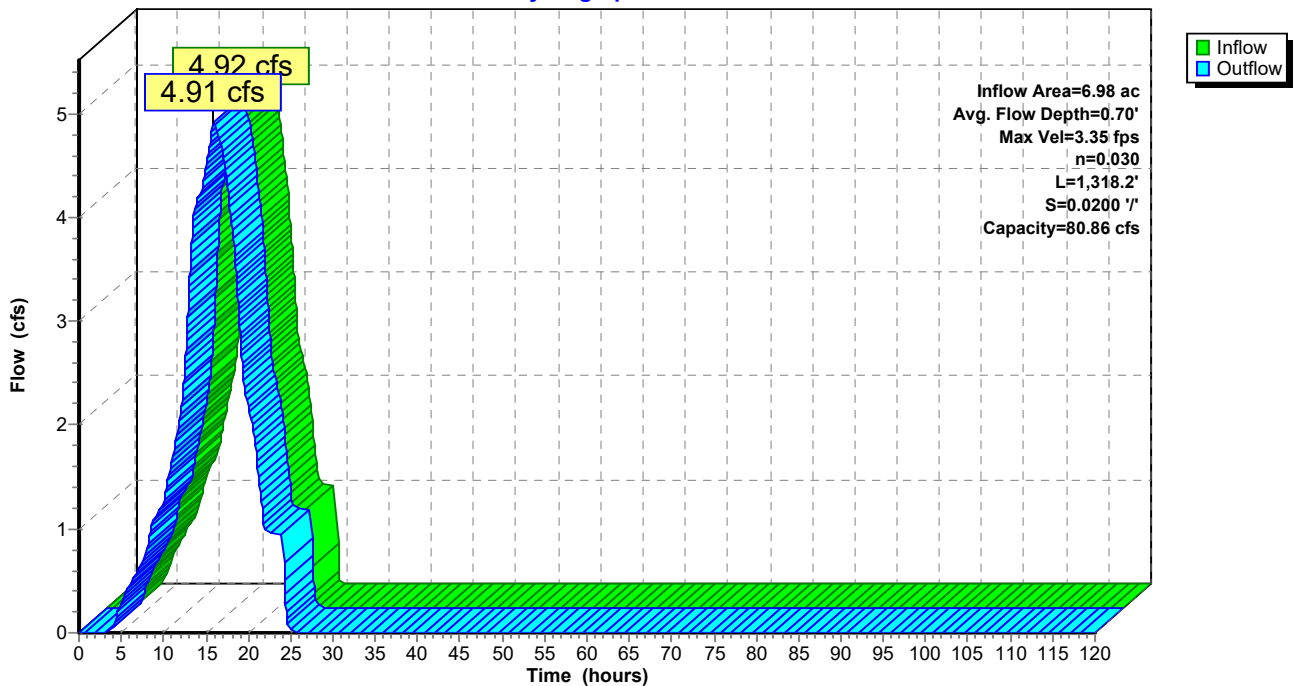
Peak Storage= 1,935 cf @ 15.81 hrs  
 Average Depth at Peak Storage= 0.70'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,318.2' Slope= 0.0200 '/'  
 Inlet Invert= 870.02', Outlet Invert= 843.66'



**Reach TB-N-C1: Terrace Berm N-C1**

Hydrograph



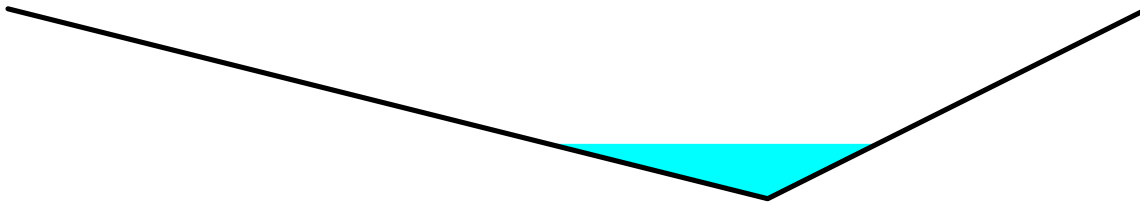
**Summary for Reach TB-N-C2: Terrace Berm N-C2**

Inflow Area = 4.20 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 2.96 cfs @ 15.68 hrs, Volume= 2.157 af  
 Outflow = 2.95 cfs @ 15.91 hrs, Volume= 2.157 af, Atten= 0%, Lag= 14.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.95 fps, Min. Travel Time= 7.5 min  
 Avg. Velocity = 1.85 fps, Avg. Travel Time= 11.9 min

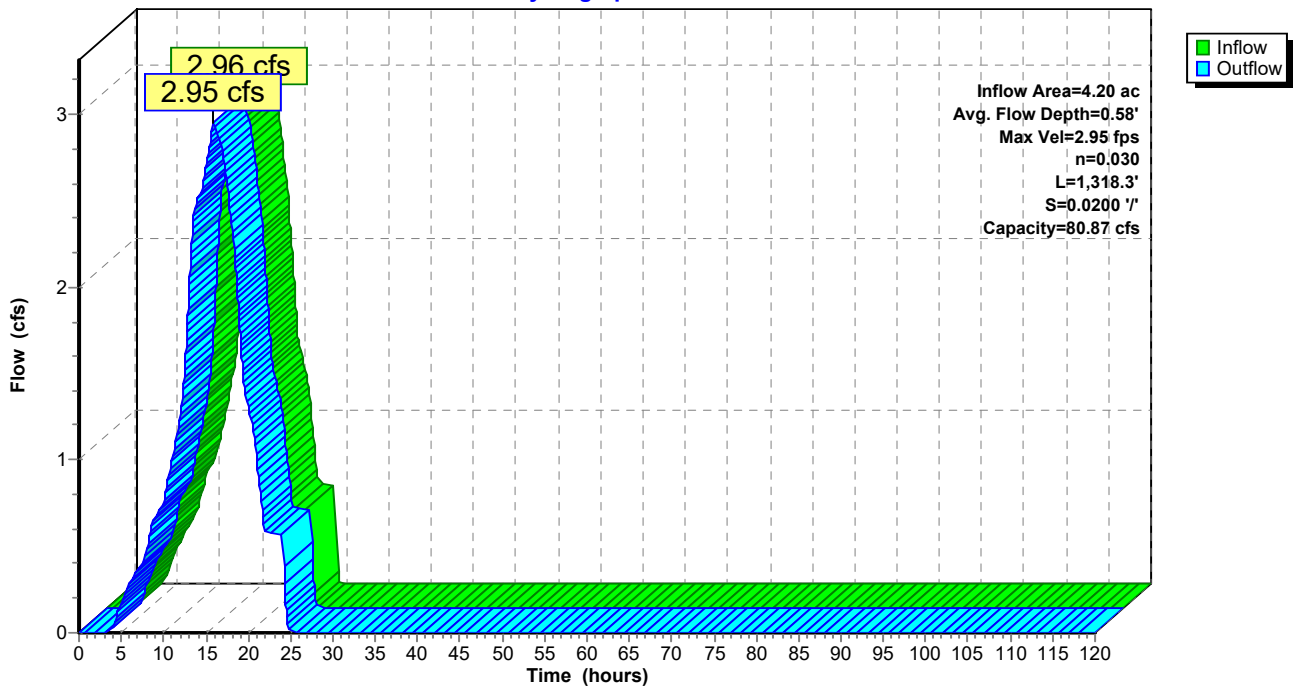
Peak Storage= 1,321 cf @ 15.78 hrs  
 Average Depth at Peak Storage= 0.58'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,318.3' Slope= 0.0200 '/'  
 Inlet Invert= 835.25', Outlet Invert= 808.88'



**Reach TB-N-C2: Terrace Berm N-C2**

Hydrograph





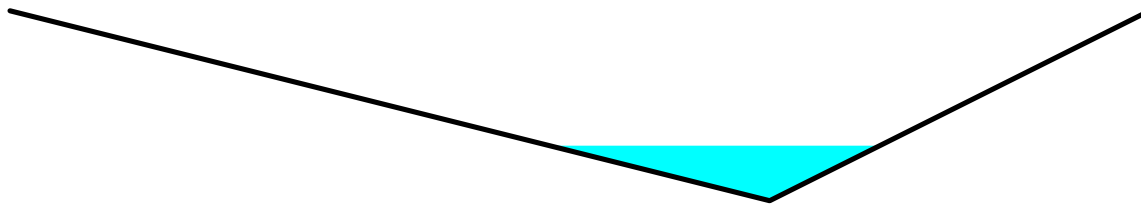
**Summary for Reach TB-N-C3: Terrace Berm N-C3**

Inflow Area = 4.22 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 2.98 cfs @ 15.68 hrs, Volume= 2.167 af  
 Outflow = 2.97 cfs @ 15.91 hrs, Volume= 2.167 af, Atten= 0%, Lag= 14.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.95 fps, Min. Travel Time= 7.5 min  
 Avg. Velocity = 1.85 fps, Avg. Travel Time= 11.9 min

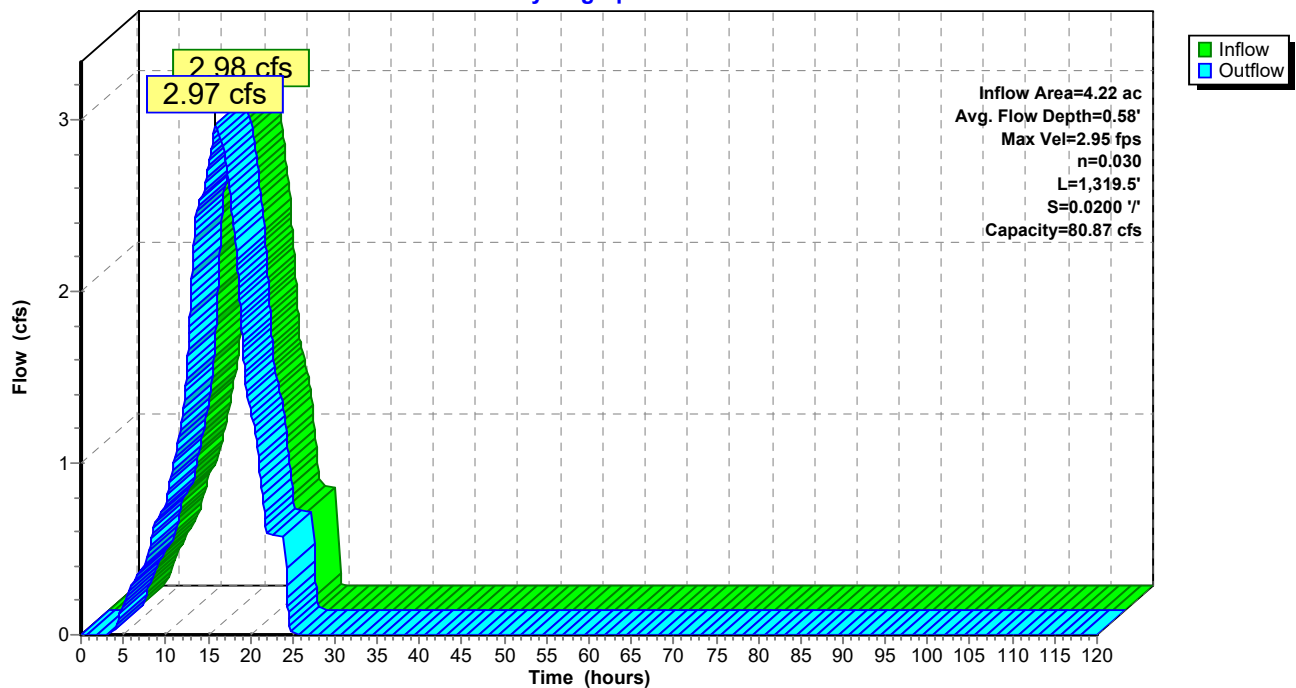
Peak Storage= 1,327 cf @ 15.78 hrs  
 Average Depth at Peak Storage= 0.58'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.87 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,319.5' Slope= 0.0200 '/'  
 Inlet Invert= 800.65', Outlet Invert= 774.26'



**Reach TB-N-C3: Terrace Berm N-C3**

Hydrograph



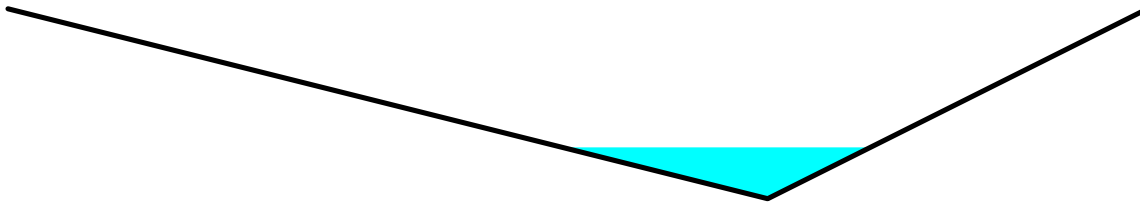
**Summary for Reach TB-N-C4: Terrace Berm N-C4**

Inflow Area = 3.52 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
 Inflow = 2.48 cfs @ 15.68 hrs, Volume= 1.805 af  
 Outflow = 2.47 cfs @ 15.88 hrs, Volume= 1.805 af, Atten= 0%, Lag= 11.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 2.82 fps, Min. Travel Time= 6.5 min  
 Avg. Velocity = 1.82 fps, Avg. Travel Time= 10.0 min

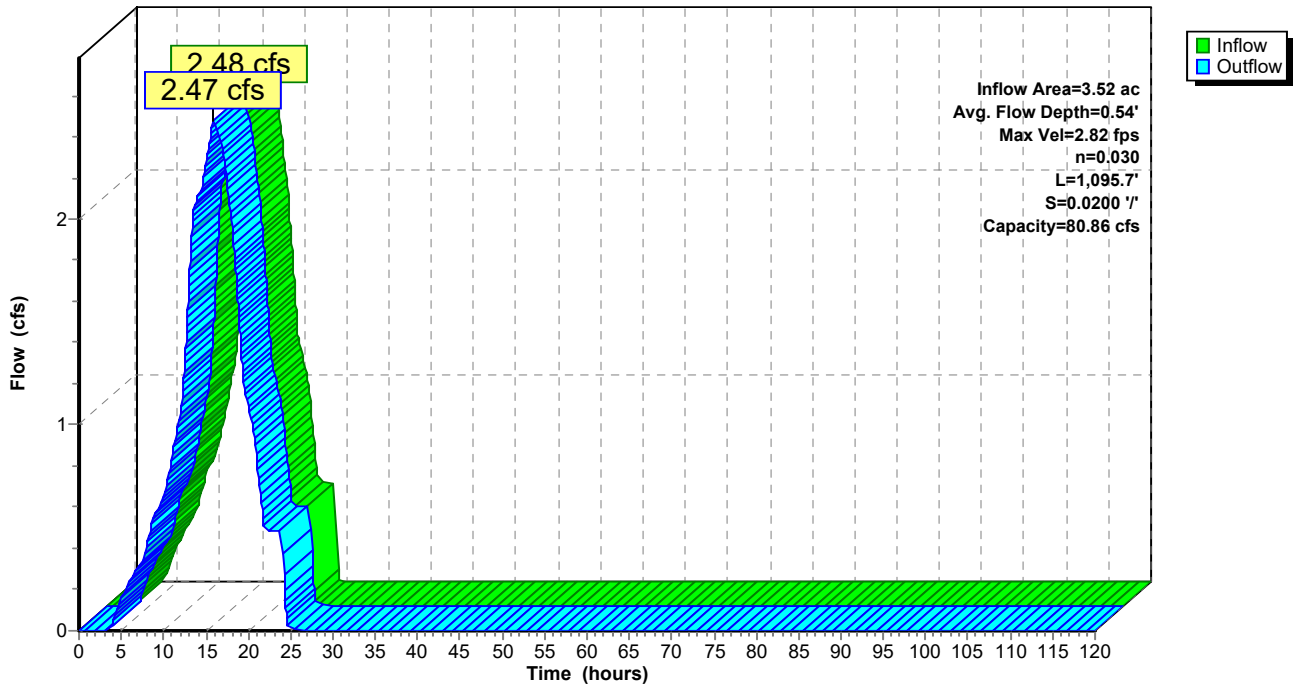
Peak Storage= 962 cf @ 15.77 hrs  
 Average Depth at Peak Storage= 0.54'  
 Bank-Full Depth= 2.00' Flow Area= 12.0 sf, Capacity= 80.86 cfs

0.00' x 2.00' deep channel, n= 0.030 Earth, clean & straight  
 Side Slope Z-value= 4.0 2.0 '/' Top Width= 12.00'  
 Length= 1,095.7' Slope= 0.0200 '/'  
 Inlet Invert= 765.32', Outlet Invert= 743.41'



**Reach TB-N-C4: Terrace Berm N-C4**

Hydrograph



**Summary for Pond Basin 5R: Stormwater Basin 5R**

Inflow Area = 53.03 ac, 15.95% Impervious, Inflow Depth = 6.52" for 100-Year, 24-Hour event  
 Inflow = 37.79 cfs @ 15.98 hrs, Volume= 28.807 af  
 Outflow = 3.28 cfs @ 24.41 hrs, Volume= 22.342 af, Atten= 91%, Lag= 505.7 min  
 Primary = 3.28 cfs @ 24.41 hrs, Volume= 22.342 af  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Starting Elev= 733.50' Surf.Area= 318,821 sf Storage= 1,528,329 cf  
 Peak Elev= 737.47' @ 24.41 hrs Surf.Area= 305,264 sf Storage= 2,647,410 cf (1,119,082 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= 2,687.8 min ( 3,606.4 - 918.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	726.00'	4,158,336 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
726.00	132,640	0	0
728.00	155,297	287,937	287,937
730.00	179,100	334,397	622,334
731.00	118,479	148,790	771,124
732.00	367,080	242,780	1,013,903
733.50	318,821	514,426	1,528,329
734.00	253,912	143,183	1,671,512
735.00	270,451	262,182	1,933,694
736.00	287,631	279,041	2,212,735
738.00	311,683	599,314	2,812,049
740.00	336,524	648,207	3,460,256
742.00	361,556	698,080	4,158,336

Device	Routing	Invert	Outlet Devices
#1	Primary	733.50'	<b>30.0" Round Culvert</b> L= 100.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 733.50' / 733.20' S= 0.0030 1/1' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 4.91 sf
#2	Device 1	733.50'	<b>4.0" Vert. Lower Orifice X 4.00</b> C= 0.600
#3	Device 1	737.50'	<b>4.0" Vert. Middle Orifice X 4.00</b> C= 0.600
#4	Device 1	738.50'	<b>4.0" Vert. Upper Orifice X 4.00</b> C= 0.600
#5	Device 1	739.00'	<b>30.0" Horiz. Orifice/Grate</b> C= 0.600
#6	Secondary	740.00'	<b>Secondary Spillway, C= 3.27</b> Offset (feet) 0.00 6.00 26.00 32.00 Height (feet) 2.00 0.00 0.00 2.00

**Primary OutFlow** Max=3.28 cfs @ 24.41 hrs HW=737.47' (Free Discharge)

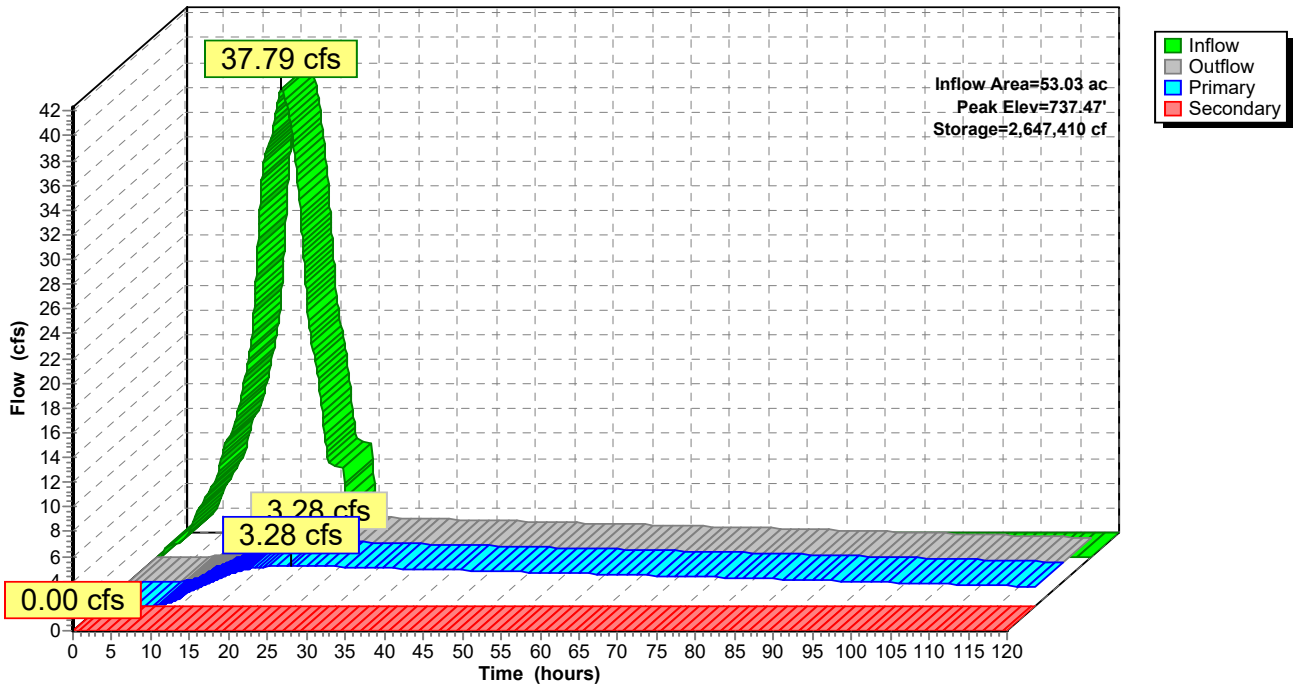
- 1=Culvert (Passes 3.28 cfs of 23.59 cfs potential flow)
- 2=Lower Orifice (Orifice Controls 3.28 cfs @ 9.39 fps)
- 3=Middle Orifice ( Controls 0.00 cfs)
- 4=Upper Orifice ( Controls 0.00 cfs)
- 5=Orifice/Grate ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=733.50' (Free Discharge)

- 6=Secondary Spillway ( Controls 0.00 cfs)

**Pond Basin 5R: Stormwater Basin 5R**

Hydrograph



**Summary for Pond Basin 8: Stormwater Basin 8**

Inflow Area = 148.01 ac, 11.19% Impervious, Inflow Depth = 6.42" for 100-Year, 24-Hour event  
 Inflow = 104.29 cfs @ 16.16 hrs, Volume= 79.161 af  
 Outflow = 22.17 cfs @ 22.26 hrs, Volume= 76.850 af, Atten= 79%, Lag= 365.7 min  
 Primary = 22.17 cfs @ 22.26 hrs, Volume= 76.850 af

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs  
 Starting Elev= 730.50' Surf.Area= 410,884 sf Storage= 1,593,798 cf  
 Peak Elev= 736.04' @ 22.26 hrs Surf.Area= 543,080 sf Storage= 4,247,091 cf (2,653,293 cf above start)

Plug-Flow detention time= 3,131.0 min calculated for 40.244 af (51% of inflow)  
 Center-of-Mass det. time= 1,793.0 min ( 2,728.5 - 935.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	726.00'	5,355,472 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
726.00	283,562	0	0
727.50	340,318	467,910	467,910
728.00	351,709	173,007	640,917
730.00	398,761	750,470	1,391,387
730.50	410,884	202,411	1,593,798
732.00	448,114	644,249	2,238,047
733.00	473,655	460,885	2,698,931
734.00	499,775	486,715	3,185,646
736.00	542,314	1,042,089	4,227,735
736.50	553,047	273,840	4,501,575
738.00	585,482	853,897	5,355,472

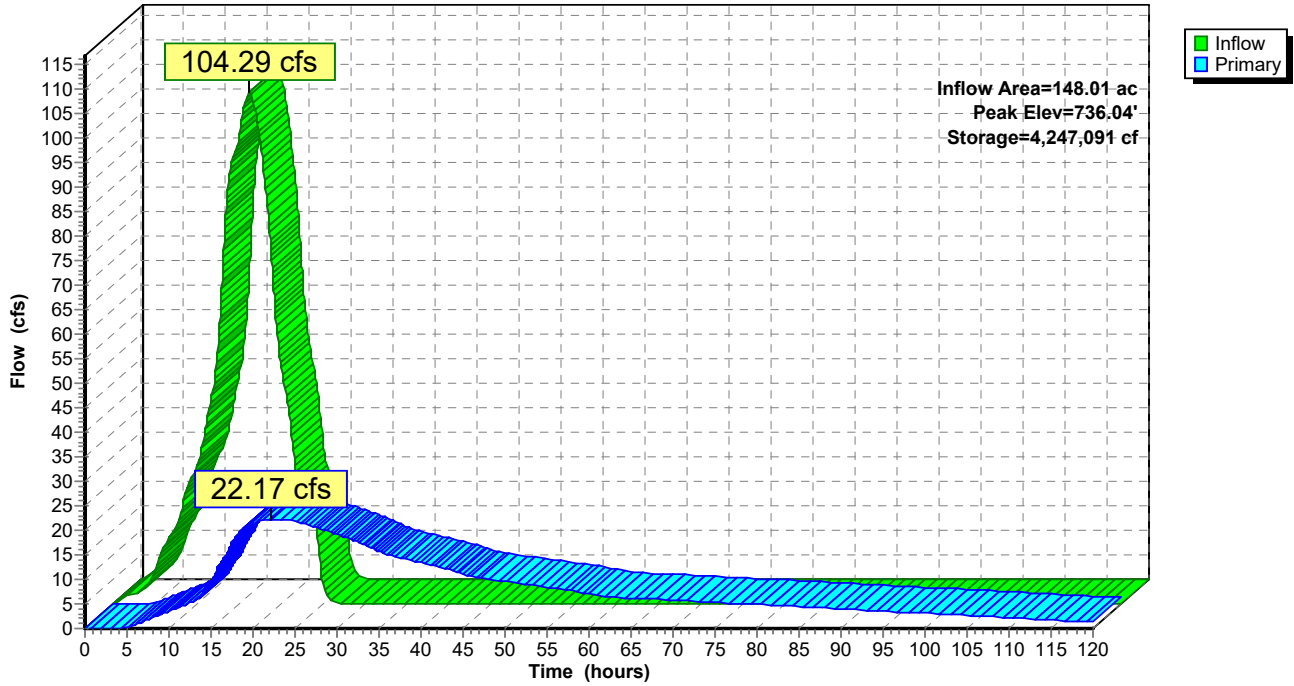
Device	Routing	Invert	Outlet Devices
#1	Primary	727.00'	<b>36.0" Round Culvert</b> L= 140.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 727.00' / 725.10' S= 0.0136 1/1' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Device 1	730.50'	<b>4.0" Vert. 2-yr Orifice X 11.00</b> C= 0.600
#3	Device 1	732.50'	<b>4.0" Vert. 100-yr Orifice X 6.00</b> C= 0.600
#4	Device 1	733.50'	<b>4.0" Vert. 100-yr Orifice X 6.00</b> C= 0.600
#5	Device 1	734.50'	<b>4.0" Vert. 100-yr Orifice X 6.00</b> C= 0.600
#6	Device 1	736.50'	<b>36.0" Horiz. Primary Spillway</b> C= 0.600

**Primary OutFlow** Max=22.17 cfs @ 22.26 hrs HW=736.04' (Free Discharge)

- 1=Culvert (Passes 22.17 cfs of 82.44 cfs potential flow)
- 2=2-yr Orifice (Orifice Controls 10.71 cfs @ 11.16 fps)
- 3=100-yr Orifice (Orifice Controls 4.63 cfs @ 8.84 fps)
- 4=100-yr Orifice (Orifice Controls 3.88 cfs @ 7.41 fps)
- 5=100-yr Orifice (Orifice Controls 2.95 cfs @ 5.63 fps)
- 6=Primary Spillway ( Controls 0.00 cfs)

### Pond Basin 8: Stormwater Basin 8

Hydrograph



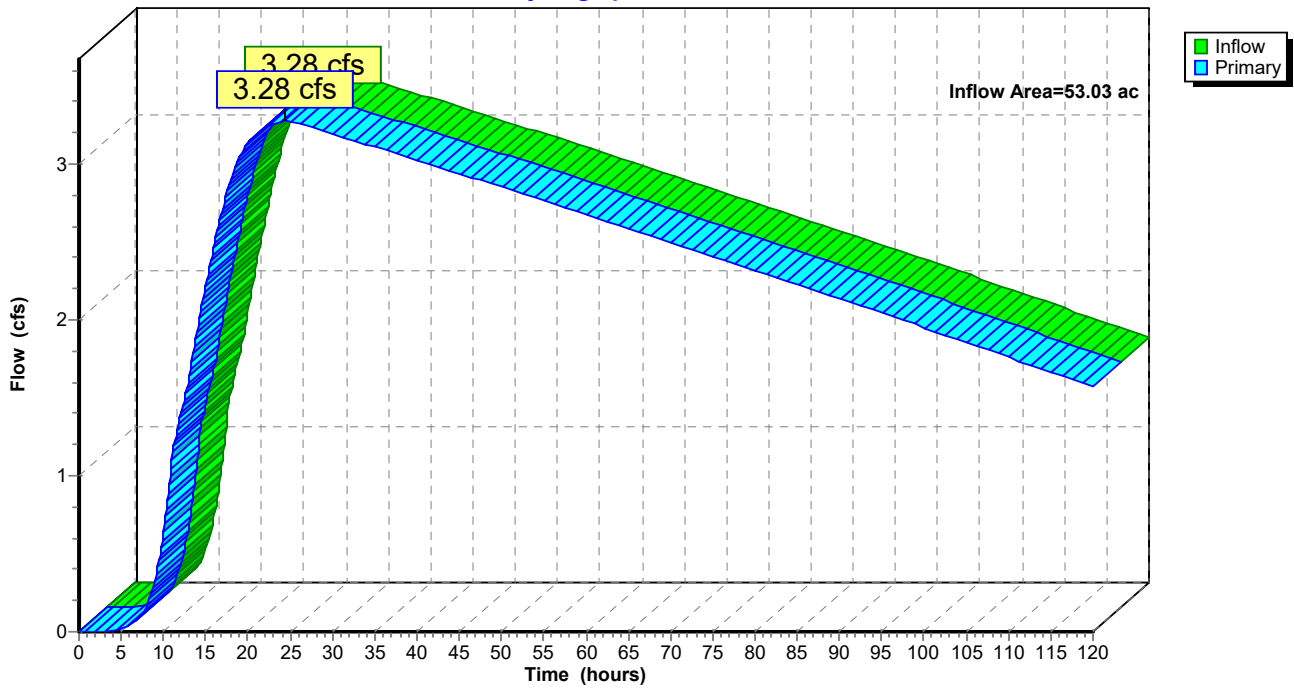
### Summary for Link BS: Bioswale

Inflow Area = 53.03 ac, 15.95% Impervious, Inflow Depth > 5.06" for 100-Year, 24-Hour event  
Inflow = 3.28 cfs @ 24.41 hrs, Volume= 22.342 af  
Primary = 3.28 cfs @ 24.41 hrs, Volume= 22.342 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link BS: Bioswale

Hydrograph



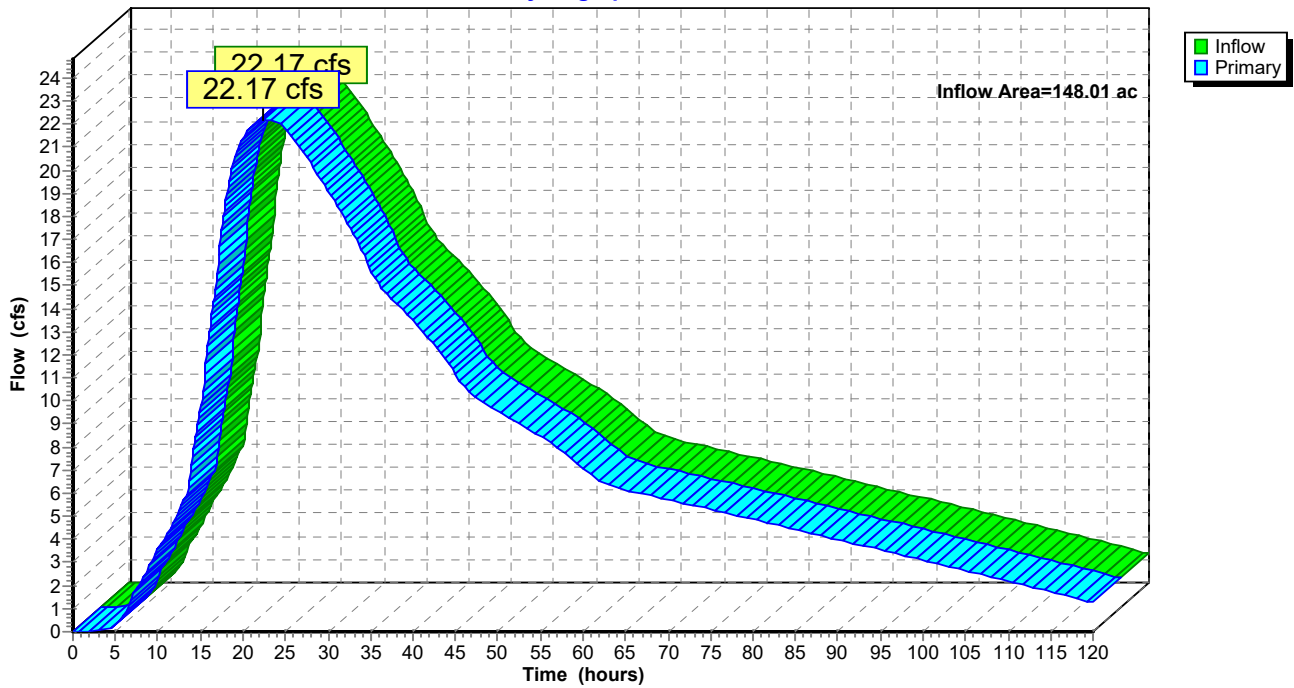
### Summary for Link DD: Offsite to Drainage Ditch

Inflow Area = 148.01 ac, 11.19% Impervious, Inflow Depth > 6.23" for 100-Year, 24-Hour event  
Inflow = 22.17 cfs @ 22.26 hrs, Volume= 76.850 af  
Primary = 22.17 cfs @ 22.26 hrs, Volume= 76.850 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link DD: Offsite to Drainage Ditch

Hydrograph



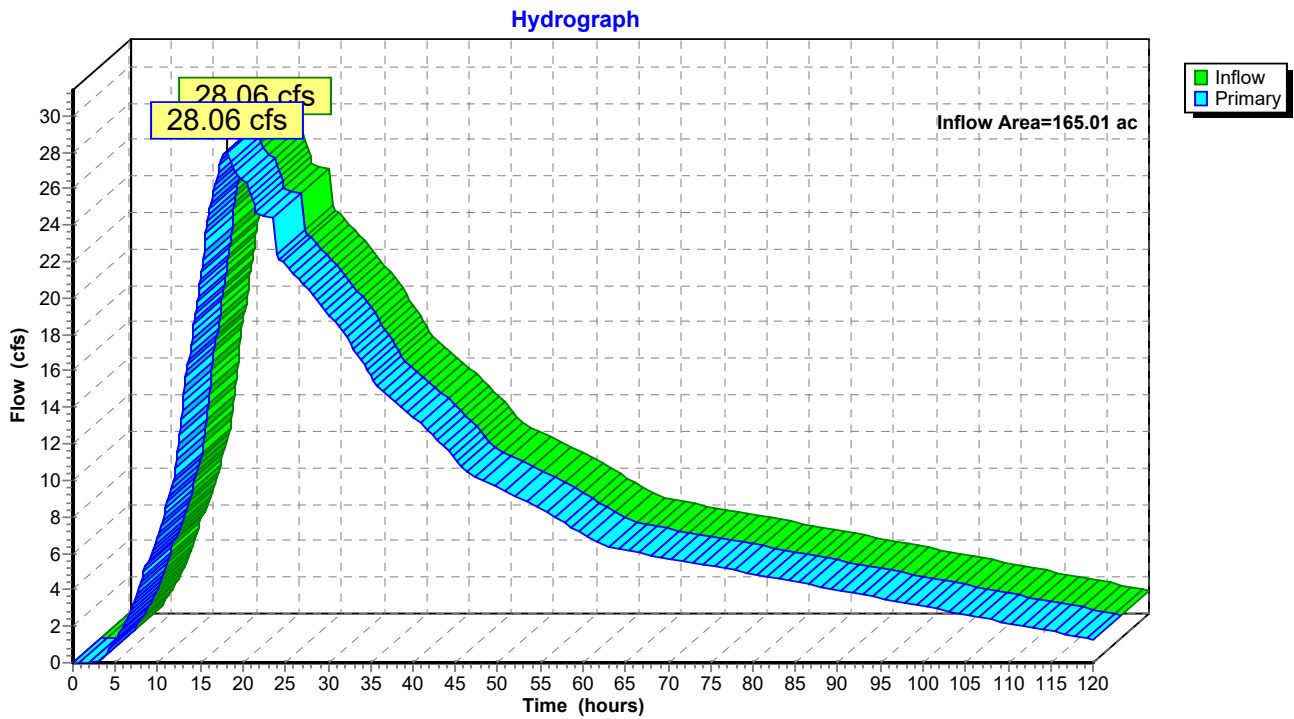


### Summary for Link DPRW: Des Plaines River Watershed

Inflow Area = 165.01 ac, 10.09% Impervious, Inflow Depth > 6.23" for 100-Year, 24-Hour event  
Inflow = 28.06 cfs @ 18.05 hrs, Volume= 85.698 af  
Primary = 28.06 cfs @ 18.05 hrs, Volume= 85.698 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link DPRW: Des Plaines River Watershed

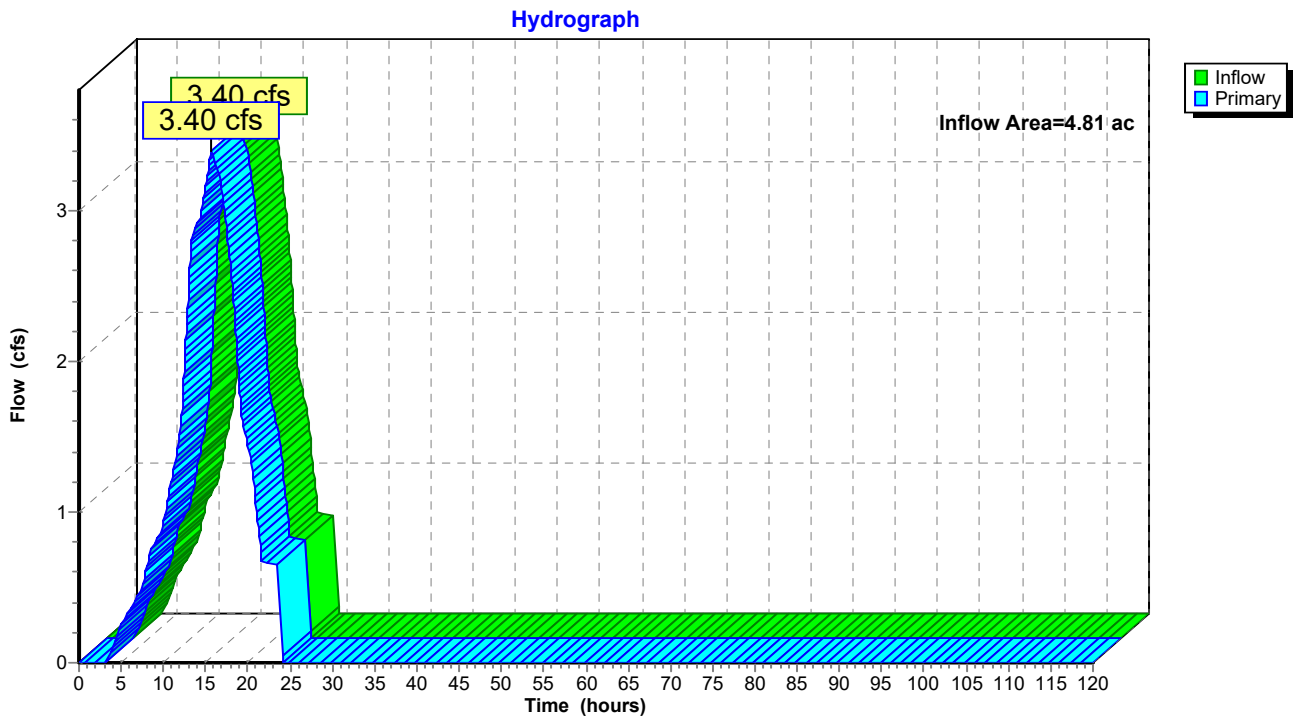


### Summary for Link DPRW-PB: Des Plaines River Watershed - Perimeter Berm

Inflow Area = 4.81 ac, 1.70% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
Inflow = 3.40 cfs @ 15.67 hrs, Volume= 2.471 af  
Primary = 3.40 cfs @ 15.67 hrs, Volume= 2.471 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link DPRW-PB: Des Plaines River Watershed - Perimeter Berm



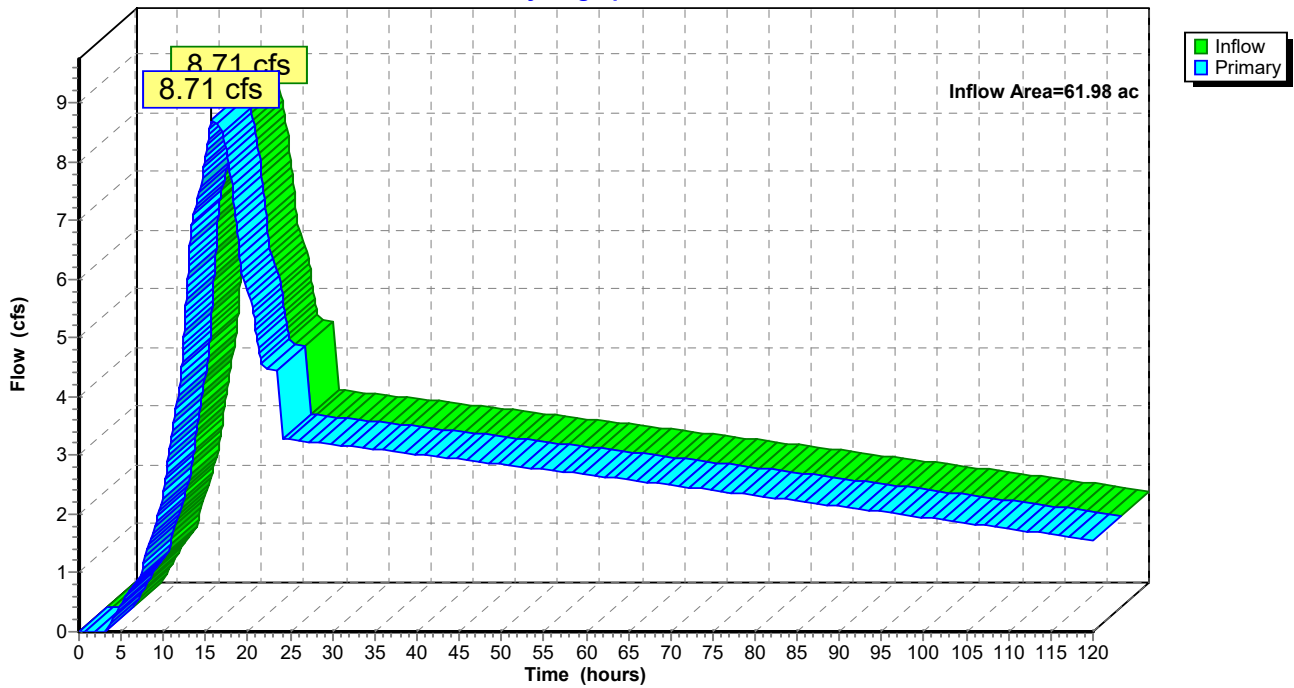
### Summary for Link LMW: Lake Michigan Watershed

Inflow Area = 61.98 ac, 13.64% Impervious, Inflow Depth > 5.22" for 100-Year, 24-Hour event  
Inflow = 8.71 cfs @ 15.69 hrs, Volume= 26.939 af  
Primary = 8.71 cfs @ 15.69 hrs, Volume= 26.939 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link LMW: Lake Michigan Watershed

Hydrograph

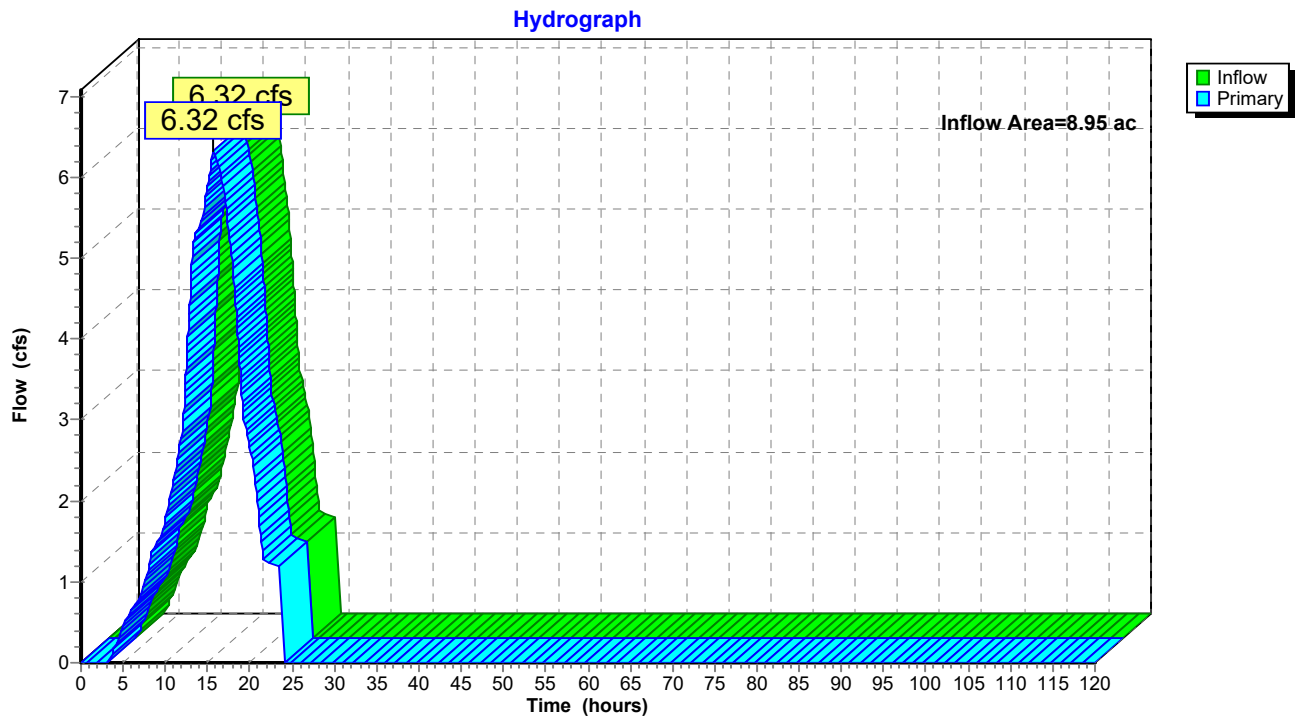


### Summary for Link LMW-PB: Lake Michigan Watershed - Perimeter Berm

Inflow Area = 8.95 ac, 0.00% Impervious, Inflow Depth = 6.16" for 100-Year, 24-Hour event  
Inflow = 6.32 cfs @ 15.65 hrs, Volume= 4.596 af  
Primary = 6.32 cfs @ 15.65 hrs, Volume= 4.596 af, Atten= 0%, Lag= 0.0 min

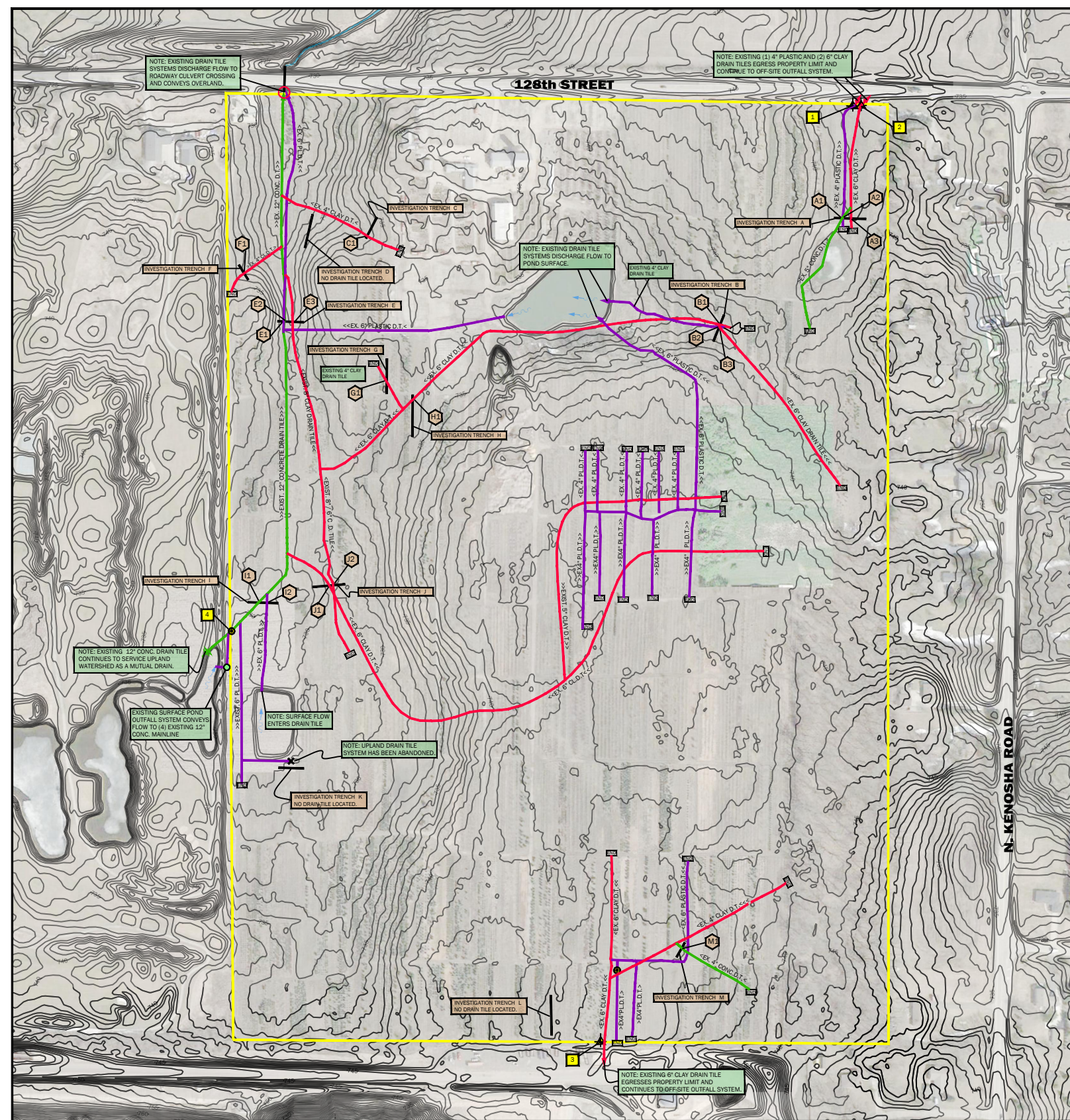
Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

### Link LMW-PB: Lake Michigan Watershed - Perimeter Berm



# M.9 - Drain Tile Survey

T:\AutoCAD\Projects\AdvancedDisposal\Zion\Stormwater\Figures\9 - 1.dwg



## EXISTING SUBSURFACE AGRICULTURAL DRAIN TILE INVESTIGATION REPORT

### ADVANCED DISPOSAL PARCELS ADVANCED DISPOSAL

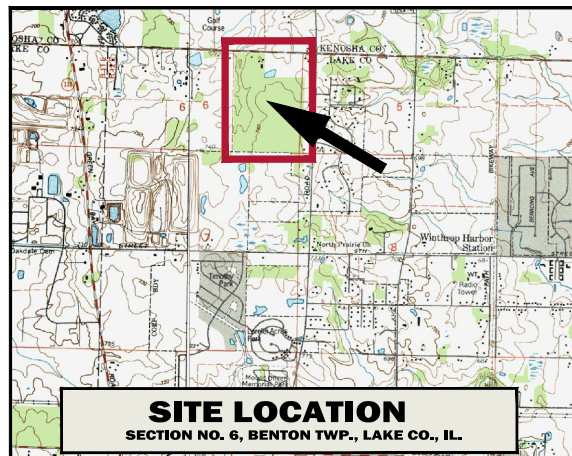
ADVANCED DISPOSAL PARCELS / ADVANCED DISPOSAL FIELD FILE NO. 10-3-6, DATE: 9/21/14,  
IN ACCORDANCE WITH LAKE COUNTY STORM WATER COMMISSION DRAIN TILE INVESTIGATION STANDARDS  
COPYRIGHT © 2014, BY HUDDLESTON MCBRIDE LAND DRAINAGE COMPANY

DESCRIPTION CHART NO. 1A : INVESTIGATION SLIT TRENCH LOCATIONS

ID NO.	SZ.	TYPE / QUALITY	FLOW %	SILT %	DEPTH GRD/INV	FIELD NOTES:
A1	4"	POLY / GOOD	FLOODED	SLIGHT	63"	RESTRICTED FLOW AND SURCHARGED
A2	6"	CONC / GOOD	FLOODED	60%	56"	RESTRICTED FLOW AND SURCHARGED
A3	6"	CLAY / GOOD	FLOODED	80%	51"	RESTRICTED FLOW AND SURCHARGED
B1	6"	CLAY / GOOD	SLIGHT	SLIGHT	40"	ACTIVE FLOW RATE AND CAPACITY
B2	4"	POLY / GOOD	SLIGHT	SLIGHT	25"	ACTIVE FLOW RATE AND CAPACITY
B3	6"	CLAY / GOOD	SLIGHT	30%	42"	ACTIVE FLOW RATE AND CAPACITY
C1	4"	CLAY / GOOD	SLIGHT	20%	41"	ACTIVE FLOW RATE AND CAPACITY
D	-	NO DRAIN TILES	-	-	-	-
E1	6"	POLY / GOOD	10%	CLEAN	46"	ACTIVE FLOW RATE AND CAPACITY
E2	12"	CONC / GOOD	20%	CLEAN	85"	ACTIVE FLOW RATE AND CAPACITY
E3	6"	CLAY / GOOD	20%	SLIGHT	51"	ACTIVE FLOW RATE AND CAPACITY
F1	4"	CLAY / GOOD	FLOODED	30%	26"	RESTRICTED FLOW AND SURCHARGED
G1	4"	CLAY / GOOD	SLIGHT	SLIGHT	43"	ACTIVE FLOW RATE AND CAPACITY
H1	6"	CLAY / GOOD	SLIGHT	20%	46"	ACTIVE FLOW RATE AND CAPACITY
I1	12"	CONC / GOOD	25%	CLEAN	63"	ACTIVE FLOW RATE AND CAPACITY
I2	6"	POLY / GOOD	50%	5%	63"	ACTIVE FLOW RATE AND CAPACITY
J	6"	CLAY / GOOD	30%	CLEAN	44"	ACTIVE FLOW RATE AND CAPACITY
K	-	NO DRAIN TILES	-	-	32"	SILT RESTRICTED / PARTIAL CAPACITY
L	-	NO DRAIN TILES	-	-	-	NO DRAIN TILE LOCATED
M1	4"	CONC / GOOD	SLIGHT	20%	42"	ACTIVE FLOW RATE AND CAPACITY

DESCRIPTION CHART NO. 1B : SURVEY DATA POINT LOCATIONS

DATA POINT	SZ.	TYPE / QUALITY	FLOW %	SILT %	DEPTH HUB/INV	FIELD NOTES:
1	4"	POLY / GOOD	FLOODED	CLEAN	42"	LATERAL AT PROPERTY EGRESS
2	6"	CLAY / GOOD	FLOODED	30%	41"	MAINLINE AT PROPERTY EGRESS
3	6"	CLAY / GOOD	SLIGHT	30%	41"	MAINLINE AT PROPERTY EGRESS
4	12"	CONC / GOOD	25%	CLEAN	DIRECT	MAINLINE AT PROPERTY INGRESS



**MAP LEGEND :**

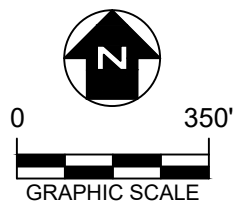
- <<-FLOW<<< EXISTING DRAIN TILE FLOW DIRECTION
- EX POLYETHYLENE MAINLINE OR SYSTEM PART
- EX CLAY DRAIN TILE MAINLINE OR SYSTEM PARTS
- EX CONCRETE DRAIN TILE MAINLINE OR SYSTEM PART
- EXISTING DRAIN TILE CONTINUES TO UPLAND WATERSHED
- EXISTING DRAIN TILE OUTLETS TO SURFACE
- EXIST. DRAIN TILE (1) INSPECTION STRUCTURE / (2) CATCH BASIN
- EXIST. DRAIN TILE (1) LOCATED END / (2) ASSUMED END
- EXISTING DRAIN TILE CONTINUES TO OFF-SITE OUTLET SYSTEM
- EXISTING DRAIN TILE FAILURE / FLOW SURCHARGE TO SURFACE
- EXISTING DRAIN TILE MAPPED BY SPECULATION AND ASSUMPTION
- EXISTING DRAIN TILE ABANDONED (NOT FUNCTIONAL)
- EXISTING DRAIN TILE "BLOWOUT" OR FAILURE
- HAND PROBE OR ELECTRONIC SCAN FOR DRAIN TILE LOCATION
- INVESTIGATION SLIT TRENCH FOR INVESTIGATION
- SPECIFIC PIT EXCAVATION FOR INVESTIGATION
- SURVEY DATA POINTS
- REPORT IDENTIFICATION NUMBER

**REPORT LEGEND :**

ID NO. .... POINT OF EXCAVATION FOR SPECIFIC DRAIN TILE INVESTIGATION.  
 SZ. (SIZE)..... DRAIN TILE INTERNAL DIAMETER IN INCHES.  
 MATERIAL / QUALITY..... TYPE OF TILE MATERIALS, PIPE QUALITY - GOOD, FAIR & POOR.  
 FLOW % ..... PERCENTAGE OF TILE DIAMETER OCCUPIED BY ACTIVE FLOW.  
 (R) ..... RESTRICTED OR BACKED UP FLOW, SURCHARGED CONDITION  
 (S) ..... PERCENTAGE OF TILE DIAMETER OCCUPIED BY RESTRICTIVE SILT.  
 (A) ..... ABANDONED, FILLED WITH SILT BLOCKAGE, NO FLOW POTENTIAL  
 (D) ..... MEASUREMENT FROM EXISTING GROUND LEVEL TO PIPE INVERT.

(GENERAL NOTES)  
 MAINLINE TILE ..... TRUNK LINE OR MUTUAL DRAIN, COLLECTOR OF SUB-SYSTEMS.  
 SUB-MAIN TILE ..... SECONDARY TRUNK LINE OR RANDOM SYSTEM COLLECTOR.  
 LATERAL TILE ..... FEEDER LINE, SERVICE TILE OR SYSTEM SPUR.  
 "BLOWOUT" ..... EXISTING SYSTEM PIPE FAILURE OR RESTRICTION.  
 DRAIN TILE ENDS ..... MAINLINE, SUB-MAIN OR LATERAL PLANNED TERMINATION.  
 SLIT TRENCH ..... INVESTIGATION TRENCH, TYPICAL 2'-0" WIDE X 6'-0" DEPTH.

- SPECIAL NOTES :**
- ALL EXISTING AGRICULTURAL DRAIN TILES LOCATED DURING THIS INVESTIGATION SURVEY HAVE BEEN IDENTIFIED ON THIS PLAN AND FIELD STAKED AT < 50' INTERVALS. IN SOME OCCASIONS CERTAIN EXISTING LOCAL DRAIN TILE SECTIONS MAY BE SPECULATED AND CONSIDERED AS AN ASSUMED ROUTE WHICH SHALL BE DELINEATED ON THIS PLAN.
  - ALL EXISTING DRAIN TILES DAMAGED DURING THE INVESTIGATION PROCESS SHALL BE REPAIRED TO THEIR ORIGINAL STATE IN ACCORDANCE WITH NATURAL RESOURCE CONSERVATION SERVICE STANDARDS FOR DRAIN TILE INSTALLATION AND REPAIR. (HUDDLESTON DRAINAGE (624) TYPICAL STANDARD #4)
  - ALL EXISTING DRAIN TILE LOCATION DIMENSIONS HAVE BEEN SURVEYED BY AGRICULTURAL GRADE GPS SURVEY SYSTEMS AND INCLUDE SUB METER ACCURACY, ALL LOCATIONS PERTINENT TO FINAL DESIGN SHALL BE VERIFIED BY THE PROJECT SURVEYOR.
  - THIS DRAIN TILE INVESTIGATION REPORT IS INTENDED TO IDENTIFY EXISTING DRAIN TILE MAINLINE SYSTEMS ONLY WITH ADDITIONAL PRIORITY ON DRAIN TILES WHICH MAY SERVICE THE UPLAND PROPERTY OF OTHERS OR WITH MUTUAL DRAINAGE STATUS.
  - THIS DRAIN TILE INVESTIGATION REPORT SHALL BE FILED WITH HUDDLESTON DRAINAGE LAND DRAINAGE CO., AND WILL BE REPRODUCED AND DISBURSED ONLY BY PERMISSION OF THE CONTRACT PRINCIPALS.
- TOM HUDDLESTON, HUDDLESTON-MCBRIDE DRAINAGE CO.



THESE SYMBOLS REPRESENT SURVEY DATA POINTS WHICH HAVE BEEN STAKED IN THE FIELD FOR THE SPECIFIC PURPOSE OF ELECTRONIC LOCATION AND ELEVATION DETERMINATION BY THE PROJECT SURVEYOR. THESE DATA POINTS CONSIST OF A 2" X 2" GROUND HUB AND A 3'-0" ON-LINE LOCATION STAKE WHICH INCLUDES DATA POINT IDENTIFICATION NUMBER, SEPARATION MEASUREMENT FROM HUB TO PIPE INVERT, AND PIPE SIZE. ALL EXISTING DRAIN TILE ROUTES HAVE BEEN FIELD STAKED WITH EXISTING DRAIN TILE "PIN FLAGS AT 50' INTERVALS AND DOUBLE FLAGS AT INTERSECTIONS.

**NOTE**

DRAWING ADAPTED FROM HUDDLESTON MCBRIDE PROFESSIONAL LAND DRAINAGE SERVICES FIGURE FOR ADVANCED DISPOSAL TITLED "EXISTING DRAIN TILE INVESTIGATION PLAN" (DATED 9/21/14).

REV. NO.	DATE	DESCRIPTION
REV. 1	OCT. 2020	REVISION BASED ON UPDATE TO WDO



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## ZION LANDFILL SITE 2 NORTH EXPANSION LAKE COUNTY, ILLINOIS

### M.9-1 DRAIN TILE SURVEY

DRAWN BY:	SWJ	APPROVED BY:	DAM	PROJ. NO.:	631020105	DATE:	AUGUST 2021
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# M.10 - NPDES Permit



# ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-3397

JB PRITZKER, GOVERNOR

JOHN J. KIM, DIRECTOR

217/782-0610

September 29, 2020

Advanced Disposal Services Zion Landfill, Inc.  
701 Green Bay Road  
Zion, Illinois 60099

Re: Advanced Disposal Services Zion Landfill, Inc.  
NPDES Permit No. IL0067725  
Bureau ID# W0978020009  
Final Permit

Gentlemen:

Attached is the final NPDES Permit for your discharge. The Permit as issued covers discharge limitations, monitoring, and reporting requirements. Failure to meet any portion of the Permit could result in civil and/or criminal penalties. The Illinois Environmental Protection Agency is ready and willing to assist you in interpreting any of the conditions of the Permit as they relate specifically to your discharge.

Pursuant to the Final NPDES Electronic Reporting Rule, all permittees must report DMRs electronically unless a waiver has been granted by the Agency. The Agency utilizes NetDMR, a web based application, which allows the submittal of electronic Discharge Monitoring Reports instead of paper Discharge Monitoring Reports (DMRs). More information regarding NetDMR can be found on the Agency website, <https://www2.illinois.gov/epa/topics/water-quality/surface-water/netdmr/Pages/quick-answer-guide.aspx>. If your facility has received a waiver from the NetDMR program, a supply of preprinted paper DMR Forms will be sent to your facility. Additional information and instructions will accompany the preprinted DMRs. Please see the attachment regarding the electronic reporting rule.

The attached Permit is effective as of the date indicated on the first page of the Permit. Until the effective date of any re-issued Permit, the limitations and conditions of the previously-issued Permit remain in full effect. You have the right to appeal any condition of the Permit to the Illinois Pollution Control Board within a 35 day period following the issuance date.

Should you have questions concerning the Permit, please contact Shu-Mei Tsai at 217/782-0610.

Sincerely,

Darin E. LeCrone, P.E.  
Manager, Industrial Unit, Permit Section  
Division of Water Pollution Control

DEL:SMT:20040901.smt

Attachment: Final Permit

cc: Records Unit  
Compliance Assurance Section  
Des Plaines Region  
Fiscal Services  
Environmental Information Logistics, LLC  
CMAP

IEPA  
Division of Records Management  
Releasable

JUN 09 2021

Reviewer: MDB

4302 N. Main Street, Rockford, IL 61103 (815) 987-7760  
595 S. State Street, Elgin, IL 60123 (847) 608-3131  
2125 S. First Street, Champaign, IL 61820 (217) 278-5800  
2009 Mall Street Collinsville, IL 62234 (618) 346-5120

9511 Harrison Street, Des Plaines, IL 60016 (847) 294-4000  
412 SW Washington Street, Suite D, Peoria, IL 61602 (309) 671-3022  
2309 W. Main Street, Suite 116, Marion, IL 62959 (618) 993-7200  
100 W. Randolph Street, Suite 4-500, Chicago, IL 60601



NPDES Permit No. IL0067725  
Illinois Environmental Protection Agency  
Division of Water Pollution Control  
1021 North Grand Avenue East  
Post Office Box 19276  
Springfield, Illinois 62794-9276

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM  
Reissued (NPDES) Permit

Expiration Date: September 30, 2025

Issue Date: September 29, 2020  
Effective Date: October 1, 2020

Name and Address of Permittee:

Advanced Disposal Services Zion Landfill, Inc.  
701 Green Bay Road  
Zion, Illinois 60099

Facility Name and Address:

Advanced Disposal Services Zion Landfill, Inc.  
701 Green Bay Road  
Zion, Illinois 60099  
(Lake County)

Discharge Number and Name:

001 Stormwater  
002 Stormwater  
003 Stormwater  
005 Stormwater  
006 Stormwater  
007 Stormwater

Receiving Waters:

Unnamed Tributary to Des Plaines River  
Unnamed Tributary to Des Plaines River  
Unnamed Tributary to Des Plaines River  
Unnamed Tributary to Kellog Ravine  
Unnamed Tributary to Kellog Ravine  
Unnamed Tributary to Des Plaines River

In compliance with the provisions of the Illinois Environmental Protection Act, Title 35 of Ill. Adm. Code, Subtitle C and/or Subtitle D, Chapter 1, and the Clean Water Act (CWA), the above-named permittee is hereby authorized to discharge at the above location to the above-named receiving stream in accordance with the standard conditions and attachments herein.

Permittee is not authorized to discharge after the above expiration date. In order to receive authorization to discharge beyond the expiration date, the permittee shall submit the proper application as required by the Illinois Environmental Protection Agency (IEPA) not later than 180 days prior to the expiration date.



Darin E. LeCrone, P.E.  
Manager, Industrial Unit, Permit Section  
Division of Water Pollution Control

NPDES Permit No. IL0067725

Effluent Limitations and Monitoring

From the effective date of this permit until the expiration date, the effluent of the following discharges shall be monitored and limited at all times as follows:

Outfall: 001 Stormwater (Intermittent Discharge)

PARAMETER	LOAD LIMITS lbs/day <u>DAF (DMF)</u>		CONCENTRATION <u>LIMITS mg/L</u>		SAMPLE FREQUENCY	SAMPLE TYPE
	30 DAY AVERAGE	DAILY MAXIMUM	30 DAY AVERAGE	DAILY MAXIMUM		
Flow (MGD)	See Special Condition 1				Daily	Single reading
Stormwater Pollution Prevention Plan	See Special Condition 2					

NPDES Permit No. IL0067725

Effluent Limitations and Monitoring

From the effective date of this permit until the expiration date, the effluent of the following discharges shall be monitored and limited at all times as follows:

Outfall: 002 Stormwater (Intermittent Discharge)

PARAMETER	LOAD LIMITS lbs/day DAF (DMF)		CONCENTRATION LIMITS mg/L		SAMPLE FREQUENCY	SAMPLE TYPE
	30 DAY AVERAGE	DAILY MAXIMUM	30 DAY AVERAGE	DAILY MAXIMUM		
Flow (MGD)	See Special Condition 1				Daily	Single reading
Phenols				0.1	1/Month	Grab
Zinc (Total)				0.2967	1/Month	Grab
Sulfate				1729	1/Month	Grab
Stormwater Pollution Prevention Plan	See Special Condition 2					

NPDES Permit No. IL0067725

Effluent Limitations and Monitoring

From the effective date of this permit until the expiration date, the effluent of the following discharges shall be monitored and limited at all times as follows:

Outfall: .003 Stormwater (Intermittent Discharge)

PARAMETER	LOAD LIMITS lbs/day <u>DAF (DMF)</u>		CONCENTRATION <u>LIMITS mg/L</u>		SAMPLE FREQUENCY	SAMPLE TYPE
	30 DAY AVERAGE	DAILY MAXIMUM	30 DAY AVERAGE	DAILY MAXIMUM		
Flow (MGD)	See Special Condition 1				Daily	Single reading
Stormwater Pollution Prevention Plan	See Special Condition 2					

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Effluent Limitations and Monitoring

From the effective date of this permit until the expiration date, the effluent of the following discharges shall be monitored and limited at all times as follows:

Outfall: 005 Stormwater (Intermittent Discharge)

PARAMETER	LOAD LIMITS lbs/day <u>DAF (DMF)</u>		CONCENTRATION <u>LIMITS mg/L</u>		SAMPLE FREQUENCY	SAMPLE TYPE
	30 DAY AVERAGE	DAILY MAXIMUM	30 DAY AVERAGE	DAILY MAXIMUM		
Flow (MGD)	See Special Condition 1				Daily	Single reading
Zinc (Total)				0.159	1/Month	Grab
Sulfate				500	1/Month	Grab
Stormwater Pollution Prevention Plan	See Special Condition 2					

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Effluent Limitations and Monitoring

From the effective date of this permit until the expiration date, the effluent of the following discharges shall be monitored and limited at all times as follows:

Outfall: 006 Stormwater (Intermittent Discharge)

PARAMETER	LOAD LIMITS lbs/day <u>DAF (DMF)</u>		CONCENTRATION <u>LIMITS mg/L</u>		SAMPLE FREQUENCY	SAMPLE TYPE
	30 DAY AVERAGE	DAILY MAXIMUM	30 DAY AVERAGE	DAILY MAXIMUM		
Flow (MGD)	See Special Condition 1				Daily	Single reading
Phenols				0.1	1/Month	Grab
Chloride				500	1/Month	Grab
Sulfate				500	1/Month	Grab
Stormwater Pollution Prevention Plan	See Special Condition 2					

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Effluent Limitations and Monitoring

From the effective date of this permit until the expiration date, the effluent of the following discharges shall be monitored and limited at all times as follows:

Outfall: 007 Stormwater (Intermittent Discharge)

PARAMETER	LOAD LIMITS lbs/day <u>DAF (DMF)</u>		CONCENTRATION <u>LIMITS mg/L</u>		SAMPLE FREQUENCY	SAMPLE TYPE
	30 DAY AVERAGE	DAILY MAXIMUM	30 DAY AVERAGE	DAILY MAXIMUM		
Flow (MGD)	See Special Condition 1				Daily	Single reading
Zinc (Total)				0.2967	1/Month	Grab
Stormwater Pollution Prevention Plan	See Special Condition 2					

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**SPECIAL CONDITION 1.** Flow shall be measured in units of Million Gallons per Day (MGD) and reported as a monthly average and a daily maximum on the Discharge Monitoring Report. The monthly average shall consist of the summation of the daily flows divided by the number of days the facility discharged during that month.

**SPECIAL CONDITION 2.**

**A. STORM WATER POLLUTION PREVENTION PLAN (SWPPP)**

1. General storm water pollution prevention plan requirements applicable to both landfill activities and landfill construction activities are as follows:
  - a. The stormwater pollution prevention plan (SWPPP) developed for previous permits shall be maintained and if necessary amended by the permittee.
  - b. The owner or operator of a landfill with storm water discharges covered by this permit shall make a copy of the plan available to the Agency at any reasonable time upon request. A copy of the plan shall be maintained at the landfill for which storm water discharges are covered by this permit.
  - c. The permittee may be notified in writing by the Agency, at any time, that the plan does not meet the requirements of this permit. After such notification, the permittee shall make changes to the plan and shall submit a written certification that the requested changes have been made. Unless otherwise provided, the permittee shall have 30 days after such notification to make the changes.
  - d. The discharger shall amend the plan whenever there is a change in construction, operation, or maintenance which affects the discharge quantity of pollutants to waters of the State or if a facility inspection required by paragraph A.1.f. of this Special Condition indicates that an amendment is needed. The plan should also be amended if the discharger is in violation of any conditions of this permit, or has not achieved the general objectives of controlling pollutants in storm water discharges. Amendments to the plan shall be made within the shortest reasonable period of time, and shall be provided to the Agency for review upon request.

In addition to the above requirements, the plan shall be amended if sludge or bioremediated soils are utilized as daily, intermediate or final cover, if spray-on erosion or dust control/daily cover products are utilized, if pond water is utilized for dust control or other means or if additives are utilized to enhance effluent quality. Stormwater runoff from areas where sludge or bioremediated soils are utilized or stockpiled shall be diverted to detention basins when ever possible. Daily cover or approved alternate daily cover shall be utilized on sludge or bioremediated soils to prevent excessive wash out of the solids. Pond water utilized for dust suppression or other means shall be restricted in quantities, locations and time periods to prevent runoff, wash off due to precipitation or tracking on tires due to mud formation. Spray on products or effluent enhancing additives shall be reviewed and approved prior to use. Information that should be provided with a request for approval of effluent enhancing additives shall include but not be limited to the following:

1. MSDS sheets
2. List of active and inactive ingredients
3. Expected dosage rate
4. Expected concentration in the discharge

Information to be provided with a request for approval of spray on products shall include but not be limited to the following;

1. MSDS sheets if available
2. List of compounds comprising the product, especially biocides, and amounts of each compound
3. Area utilized, drainage area tributary outfall and method of application
4. Information, if available, regarding degradation rates
5. Expect stormwater runoff quality

- e. Non-Storm Water Discharges - The plan shall include a certification that the discharge has been tested or evaluated for the presence of non-storm water discharges. The certification shall include a description of any tests for the presence of non-storm water discharges, the methods used, the dates of the testing, and any on-site drainage points that were observed during the testing. Any facility that is unable to provide this certification must describe the procedure of any test conducted for the presence of non-storm water discharges, the test results, potential sources of non-storm water discharges to the storm sewer, and why adequate tests for such storm sewers were not feasible. Non-stormwater discharges shall include but not be limited to those discharges identified as categorical discharges under 40 CFR 445 Landfills Point Source Category.
- f. The permittee shall conduct facility inspections to verify that all elements of the plan, including the site map, potential pollutant sources, and structural and non-structural controls to reduce pollutants in landfill storm water discharges are accurate.



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Inspections shall be conducted quarterly during or shortly after a significant rain event, but no less than annually if no such significant rain event occurs. Observations that require a response and the appropriate response to the observation shall be retained as part of the plan. Records documenting observations made during the site inspection shall be submitted to the Agency in accordance with the reporting requirements of this permit.

- g. The plan should briefly describe the appropriate elements of other program requirements, including Spill Prevention Control and Countermeasures (SPCC) plans required under Section 311 of the CWA and the regulations promulgated thereunder, and Best Management Programs under 40 CFR 125.100.
  - h. The plan is considered a report that shall be available to the public under Section 308(b) of the CWA. The permittee may claim portions of the plan as confidential business information, including any portion describing facility security measures.
  - i. The plan shall include the signature and title of the person responsible for preparation of the plan and include the date of initial preparation and each amendment thereto.
2. The storm water pollution prevention plan for landfill construction activities shall include the following items:
- a. **Site Description.** Each plan shall, provide a description of the following:
    - i. A description of the nature of the construction activity;
    - ii. A description of the intended sequence of major activities which disturb soils for major portions of the site (e.g. grubbing, excavation, grading);
    - iii. Estimates of the total area of the site and the total area of the site that is expected to be disturbed by excavation, grading, or other activities;
    - iv. An estimate of the runoff coefficient of the site after construction activities are completed and existing data describing the soil or the quality of any discharge from the site;
    - v. A site map indicating drainage patterns and approximate slopes anticipated before and after major grading activities, area of soil disturbance, the location of major structural and non-structural controls identified in the plan, the location of areas where stabilization practices are expected to occur, surface waters (including wetlands), and locations where storm water is discharged to a surface water; and
    - vi. The name of the receiving water(s) and the ultimate receiving water(s), and aerial extent of wetland acreage at the site.
  - b. **Controls.** Each plan shall include a description of appropriate controls that will be implemented at the construction site. The plan will clearly describe for each major activity identified, appropriate controls and the timing during the construction process that the controls will be implemented. (For example, perimeter controls for one portion of the site will be installed after the clearing and grubbing necessary for installation of the measure, but before the clearing and grubbing for the remaining portions of the site. Perimeter controls will be actively maintained until final stabilization of those portions of the site upward of the perimeter control. Temporary perimeter controls will be removed after final stabilization). The description of controls shall address as appropriate the following minimum components:
    - i. **Erosion and Sediment Controls.**
      - (A). **Stabilization Practices.** A description of interim and permanent stabilization practices, including site-specific scheduling of the implementation of the practices. Site plans should ensure that existing vegetation is preserved where attainable and that disturbed portions of the site are stabilized. Stabilization practices may include: temporary seeding, permanent seeding, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of trees, preservation of mature vegetation, and other appropriate measures that might be found in the current "Illinois Urban Manual". A record of the dates when major grading activities occur, when construction activities temporarily or permanently cease on a portion of the site, and when stabilization measures are initiated shall be included in the plan. Except as provided in paragraphs A.2.b.i.(A).(1) and A.2.b.ii., stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased.
        - (1). Where the initiation of stabilization measures by the 14th day after construction activity temporary or permanently cease is precluded by snow cover, stabilization measures shall be initiated as soon as practicable.
        - (2). Where construction activity will resume on a portion of the site within 21 days from when activities ceased, (e.g. the total time period that construction activity is temporarily ceased is less than 21 days) then stabilization measures do not have to be initiated on that portion of site by the 14th day after construction activity temporarily

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ceased.

- (B). **Structural Practices.** A description of structural practices to the degree attainable, to divert flows from exposed soils, store flows or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Such practices may include silt fences, earth dikes, drainage swales, sediment traps, check dams, subsurface drains, pipe slope drains, level spreaders, storm drain inlet protection, rock outlet protection, reinforced soil retaining systems, gabions, and temporary or permanent sediment basins. Structural practices should be placed on upland soils to the degree attainable. The installation of these devices may be subject to Section 404 of the CWA.
- ii. **Storm Water Management.** A description of measures that will be installed during the construction process to control pollutants in storm water discharges that will occur after construction operations have been completed. Structural measures should be placed on upland soils to the degree attainable. The installation of these devices may be subject to Section 404 of the CWA. This permit only addresses the installation of storm water management measures, and not the ultimate operation and maintenance of such structures after the construction activities have been completed and the site has undergone final stabilization. Permittees are responsible for only the installation and maintenance of storm water management measures prior to final stabilization of the site, and are not responsible for maintenance after storm water discharges associated with landfill construction have been eliminated from the site.
- (A). Such practices may include: storm water detention structures (including wet ponds); storm water retention structures; flow attenuation by use of open vegetated swales and natural depressions; infiltration of runoff on-site; and sequential systems (which combine several practices). The pollution prevention plan shall include an explanation of the technical basis used to select the practices to control pollution where flows exceed predevelopment levels.
- (B). Velocity dissipation devices shall be placed at discharge locations and along the length of any outfall channel as necessary to provide a non-erosive velocity flow from the structure to a water course so that the natural physical and biological characteristics and functions are maintained and protected (e.g. maintenance of hydrologic conditions, such as the hydroperiod and hydrodynamics present prior to the initiation of construction activities).
- iii. **Other Controls.**
- (A). **Waste Disposal.** No solid materials, including building materials, shall be discharged to Waters of the State, except as authorized by a Section 404 permit.
- (B). The plan shall ensure and demonstrate compliance with applicable State and/or local waste disposal, sanitary sewer or septic system regulations.
- iv. **Approved State or Local Plans.** The management practices, controls and other provisions contained in the storm water pollution prevention plan must be at least as protective as the requirements contained in the current "Illinois Urban Manual". Facilities which discharge storm water associated with construction site activities must include in their storm water pollution prevention plan any applicable local requirements. Storm water management requirements approved by local officials that are applicable to protecting surface water resources are incorporated by reference and are enforceable under this permit even if they are not specifically included in a storm water pollution prevention plan required under this permit. This provision does not apply to provisions of master plans, comprehensive plans, non-enforceable guidelines or technical guidance documents that are not identified in a specific plan or permit that is issued for the construction site.
- c. **Maintenance.** A description of procedures to maintain in good and effective operating conditions vegetation, erosion and sediment control measures and other protective measures identified in the site plan.
3. The storm water pollution prevention plan for new and existing storm water discharges associated with active or inactive landfill or open dumps and any on-site ancillary activities that receive or have received any industrial wastes shall include the following items:
- a. The plan shall provide a description of potential sources which may be expected to add significant quantities of pollutants to storm water discharges, or which may result in non-storm water discharges from the facility. The plan shall include, at a minimum, the following items:
- i. A topographic map extending one-quarter mile beyond the property boundaries of the facility, showing: the facility, surface water bodies, wells (including injection wells), seepage pits, infiltration ponds, and the discharge points where the facility's storm water discharges to surface waters. The requirements listed in this paragraph may be included on the site map if appropriate.
- ii. A site map showing:
- (A). The storm water conveyance and discharge structures;

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- (B). An outline of the storm water drainage areas for each storm water discharge point;
  - (C). Paved areas and buildings;
  - (D). Areas used for outdoor storage, or disposal of significant materials, including activities that generate significant quantities of dust or particulates;
  - (E). Location of existing storm water structural control measures (dikes, coverings, detention facilities, etc.);
  - (F). Surface water locations;
  - (G). Areas of existing and potential soil erosion;
  - (H). Vehicle service and traffic areas;
  - (I). Material loading, unloading, and access areas;
  - (J). Areas that have daily cover, intermediate final cover and final vegetative cover of the landfill;
  - (K). Areas that are considered ancillary operations of a landfill.
- iii. A narrative description of the following:
- (A). The nature of the landfill activities conducted at the site, including a description of significant materials that are treated, stored or disposed of in a manner to allow exposure to storm water;
  - (B). Materials, equipment, and vehicle management practices employed to minimize contact of significant materials with storm water discharges;
  - (C). Existing structural and non-structural control measures to reduce pollutants in storm water discharges;
  - (D). Landfill storm water discharge treatment facilities;
  - (E). Methods of on-site storage and disposal of significant materials.
- iv. A list of the types of pollutants found present by required testing, either by this permit or application requirements.
- v. An estimate of the size of the facility in acres or square feet, and the percent of the facility that has impervious areas such as pavement or buildings.
- vi. A summary of existing sampling data describing pollutants in storm water discharges from the landfill or ancillary activities.
- b. The plan shall describe the storm water management controls which will be implemented by the facility. The appropriate controls shall reflect identified existing and potential sources of pollutants at the facility. The description of the storm water management controls shall include:
- i. Storm Water Pollution Prevention Personnel - Identification by job titles of the individuals who are responsible for developing, implementing, and revising the plan.
  - ii. Preventive Maintenance - Procedures for inspection and maintenance of storm water conveyance system and devices such as oil/water separators, catch basins, etc., and inspection and testing of plant equipment and systems that could fail and result in discharges of pollutants to storm water.
  - iii. Good Housekeeping - Good housekeeping requires the maintenance of clean, orderly facility areas that discharge storm water. Material or handling areas shall be inspected and cleaned to reduce the potential for pollutants to enter the storm water conveyance system.
  - iv. Spill Prevention and Response - Identification of areas where significant materials can spill into or otherwise enter the storm water conveyance systems and their accompanying drainage points. Specific material handling procedures, storage requirements, spill clean up equipment and procedures should be identified, as appropriate. Internal notification procedures for spills of significant materials should be established.
  - v. Storm Water Management Practices - Storm water management practices are practices other than those which control the

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source of pollutants. They include measures such as installing oil and grit separators, diverting storm water into retention basins, etc. Based on assessment of the potential of various sources to contribute pollutants, measures to remove pollutants from storm water discharge shall be implemented. In developing the plan, the following management practices shall be considered:

- (A). Containment - Storage within berms or other secondary containment devices to prevent leaks and spills from entering storm water runoff;
  - (B). Oil & Grease Separation - Oil/water separators, booms, skimmers or other methods to minimize oil contaminated storm water discharges;
  - (C). Debris & Sediment Control - Screens, booms, sediment ponds or other methods to reduce debris and sediment in storm water discharges;
  - (D). Waste Chemical Disposal - Waste chemicals such as antifreeze, degreasers and used oils shall be recycled or disposed of in an approved manner and in a way which prevents them from entering storm water discharges;
  - (E). Storm Water Diversion - Storm water diversion away from storage and other areas of potential storm water contamination;
  - (F). Covered Storage - Covered fueling operations and storage areas to prevent contact with storm water.
- vi. Sediment and Erosion Prevention - The plan shall identify areas which due to topography, activities, or other factors, have a high potential for significant soil erosion and describe measures to limit erosion.
  - vii. Employee Training - Employee training programs shall inform personnel at all levels of responsibility of the components and goals of the storm water pollution control plan. Training should address topics such as spill response, good housekeeping and material management practices. The plan shall identify periodic dates for such training.
  - viii. Inspection Procedures - Qualified plant personnel shall be identified and inspect designated equipment and landfill areas. A tracking or follow-up procedure shall be used to ensure appropriate response has been taken in response to an inspection. Inspections and maintenance activities shall be documented and recorded with copies of the records maintained at the site of the permitted landfill.

B. CONSTRUCTION AUTHORIZATION

Authorization is hereby granted to construct treatment works and related equipment that may be required by the Storm Water Pollution Prevention Plan developed pursuant to this permit.

This Authorization is issued subject to the following condition(s).

- 1. If any statement or representation is found to be incorrect, this authorization may be revoked and the permittee thereupon waives all rights thereunder.
- 2. The issuance of this authorization (a) does not release the permittee from any liability for damage to persons or property caused by or resulting from the installation, maintenance or operation of the proposed facilities; (b) does not take into consideration the structural stability of any units or part of this project; and (c) does not release the permittee from compliance with other applicable statutes of the State of Illinois, or other applicable local law, regulations or ordinances.
- 3. Plans and specifications of all treatment equipment being included as a part of the storm water management practice shall be included in the SWPPP.
- 4. Any modification of or deviation from the plans and specifications included in the site's current SWPPP requires amendment of the SWPPP.

C. REPORTING

- 1. The facility shall submit a quarterly inspection report to the Illinois Environmental Protection Agency. The report shall include results of the facility inspections which are required by A.1.f. of this permit. The reports shall also include documentation of any event (spill, treatment unit malfunction, etc.) which would require an inspection, results of the inspection, and any subsequent corrective maintenance activity. The report shall be completed and signed by the authorized facility employee(s) who conducted the inspection(s).
- 2. All reports shall contain information gathered during the previous quarter beginning with the effective date of this permit and shall be

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submitted no later than 30 days after each quarter with each subsequent report containing the previous quarter's information.

3. Quarterly inspection reports shall be submitted to one of the following address:

a. Electronic Annual Reports should be submitted to:

[epa.indannualinsp@illinois.gov](mailto:epa.indannualinsp@illinois.gov)

b. If electronic submittal is unavailable, reports should be mailed to:

Illinois Environmental Protection Agency  
Division of Water Pollution Control  
Compliance Assurance Section, Mail Code #19  
1021 North Grand Avenue East  
Quarterly Inspection Report  
Post Office Box 19276  
Springfield, Illinois 62794-9276

4. If the facility performs inspections more frequently than required by this permit, the results shall be included as additional information in the quarterly report.

D. DEFINITIONS

1. Coal pile runoff means the rainfall runoff from or through any coal storage pile.
2. Land application unit means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for treatment or disposal.
3. Landfill means an area of land or an excavation in which wastes are placed for permanent disposal, and which is not a land application unit, surface impoundment, injection well or waste pile.
4. Section 313 water priority chemical means a chemical or chemical categories which: 1) Are listed at 40 CFR 372.65 pursuant to Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) (also known as Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1987); 2) are present at or above threshold levels at a facility subject to EPCRA Section 313 reporting requirements; and 3) that meet at least one of the following criteria: (i) Are listed in Appendix D of 40 CFR 122 on either Table II (organic priority pollutants), Table III (certain metals, cyanides, and phenols) or Table V (certain toxic pollutants and hazardous substances); (ii) are listed as a hazardous substance pursuant to Section 311(b)(2)(A) of the CWA at 40 CFR 116.4; or (iii) are pollutants for which EPA has published acute or chronic water quality criteria.
5. Significant materials includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under Section 101(14) of CERCLA; any chemical the facility is required to report pursuant to EPCRA Section 313; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with storm water discharges.
6. Significant spills includes, but is not limited to: releases of oil or hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act (see 40 CFR 110.10 and CFR 117.21) or Section 102 of CERCLA (see 40 CFR 302.4).
7. Leachate means liquid containing materials removed from solid waste. For the purpose of this permit, storm water which falls onto areas of the landfill which have exposed waste or seeps shall be considered leachate.
8. Solid waste means a waste that is defined in this Section as an inert waste, as a putrescible waste, as a chemical waste or as a special waste, and which is not also defined as a hazardous waste pursuant to 35 Ill. Adm. Code 721.
9. Chemical waste means a non-putrescible solid whose characteristics are such that any contaminated leachate is expected to be formed through chemical or physical processes, rather than biological processes, and no gas is expected to be formed as a result.
10. Inert waste means any solid waste that will not decompose biologically, burn, serve as food for vectors, form a gas, cause an odor, or form a contaminated leachate, as determined in accordance with Section 811.202(b). Such inert wastes shall include only non-biodegradable and non-putrescible solid wastes. Inert wastes may include, but are not limited to, bricks, masonry and concrete (cured for 60 days or more).
11. Putrescible waste means a solid waste that contains organic matter capable of being decomposed by microorganisms so as to cause a malodor, gases, or other offensive conditions, or which is capable of providing food for birds and other vectors. Putrescible wastes

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may form a contaminated leachate from microbiological degradation, chemical processes, and physical processes. Putrescible waste includes, but is not limited to, garbage, offal, dead animals, general household waste, and commercial waste. All solid wastes which do not meet the definitions of inert or chemical wastes shall be considered putrescible wastes.

12. Special waste means any industrial process waste, pollution control waste or hazardous waste, except as determined pursuant to Section 22.9 of the Act and 35 Ill. Adm. Code 808.
13. Daily cover described in 35 Ill. Adm. Code 811.106.
14. Intermediate cover described in 35 Ill. Adm. Code 811.313.
15. Final cover described in 35 Ill. Adm. Code 811.314 or other approved cover systems.
16. Ancillary activities means any equipment, structures and other devices that are necessary for proper operation of the landfill in accordance with the requirements of the Environmental Protection Act (current edition).
17. Industrial wastes means waste that is received from any of the facilities described in 40 CFR 122.26(b)(14).
18. Significant rain event means any rainfall event or equivalent snowfall which is 0.1 inches or greater and occurs, at a minimum, 72 hours from the previously measurable (greater than 0.1 inch rainfall or equivalent snow melt) storm event.

Note that additional definitions are included in the permit Standard Conditions, Attachment H.

E. SAMPLE REQUIREMENTS

The permittee shall initiate a quarterly monitoring program of stormwater or snowmelt discharges associated with active or inactive landfills and any on-site ancillary activities. Samples shall be collected from the discharge resulting from a rainfall event that is greater than 0.1 inches in magnitude or equivalent snow melt and occurs at least 72 hours from the previously measurable (greater than 0.1 inch rainfall or equivalent snow melt) storm event. Storm water discharges resulting from strictly landfill construction activities, areas of the landfill under construction that have not received waste, shall not be required to perform monitoring.

For discharges from holding ponds or other impoundments with a retention period greater than 24 hours, a minimum of one grab sample may be taken and analyzed. For all other discharges, a grab sample shall be taken during the first thirty minutes of the discharge and a minimum of three sample aliquots taken in each hour of the discharge for the entire discharge or the first three hours of the discharge, with each aliquot being separated by a minimum period of fifteen minutes. The grab sample taken during the initial thirty minutes of discharge shall be analyzed separately and the remaining sample aliquots may be combined to form a single sample for analysis.

The Permittee shall record monitoring results on Discharge Monitoring Report (DMR) electronic forms using one such form for each outfall each month.

In the event that an outfall does not discharge during a monthly reporting period, the DMR Form shall be submitted with no discharge indicated.

The Permittee is required to submit electronic DMRs (NetDMRs) instead of mailing paper DMRs to the IEPA unless a waiver has been granted by the Agency. More information, including registration information for the NetDMR program, can be obtained on the IEPA website, <https://www2.illinois.gov/epa/topics/water-quality/surface-water/netdmr/Pages/quick-answer-guide.aspx>

The completed Discharge Monitoring Report forms shall be submitted to IEPA no later than the 25<sup>th</sup> day of the following month, unless otherwise specified by the permitting authority.

Permittees that have been granted a waiver shall mail Discharge Monitoring Reports with an original signature to the IEPA at the following address:

Illinois Environmental Protection Agency  
Division of Water Pollution Control  
Attention: Compliance Assurance Section, Mail Code # 19  
1021 North Grand Avenue East  
Post Office Box 19276  
Springfield, Illinois 62794-9276

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The permittee shall sample stormwater discharges for the following:

Ammonia (as N)	Lead
Arsenic	Manganese
Barium	Mercury
BOD <sub>5</sub>	Nickel
Boron	pH
Cadmium	Phenols
Chloride	Sulfate
Chromium (Hexavalent)	Iron (Total)
Chromium (Trivalent)	Total Dissolved Solids
Copper	Temperature
Fluoride	TOC
Oil & Grease	TSS
Hardness	Zinc
Iron (dissolved)	Flow
Benzene	Ethylbenzene
Toluene	Xylene (total)
Naphthalene	
Selenium	

If the parameter listed above is limited at the outfall quarterly sampling is not required for the specific parameter.

In Monitoring requirements for oil and grease, pH and temperature shall only be performed on the initial grab sample.

In addition to the sample requirements, the permittee shall make a reasonable attempt to measure the flow of the stormwater discharge from each outfall and the storm duration and total precipitation quantity causing the stormwater discharge on a daily basis and report results as a monthly average and daily maximum value in units of Million Gallons per Day (MGD) on the monthly DMR forms. The flow may be computed empirically however, the associated calculations must be submitted as an attachment to the DMR.

Unless otherwise indicated, concentrations refer to the total amount of the constituent present in all phases, whether solid, suspended or dissolved, elemental or combined, including all oxidation states. Where constituents are commonly measured as other than total, the word "total" is inserted for clarity.

The analyses for the above parameters shall meet the detection limits as established for accepted test procedures listed in 40 CFR 136.

Mercury shall be monitored using USEPA Method 1631. Prior to analysis, digest the sample using the option in 1631E of heating samples at 50° C for 6 hours in a bromine chloride (BrCl) solution in closed vessels.

The permittee may submit a request to modify the sampling frequency and/or the number of parameters to be sampled after a statistically valid number of samples has been submitted to the Agency. In most cases 10 samples will need to be obtained. The Agency will review the data and conduct a reasonable potential analysis when considering such a request.

Quarterly sample results shall be submitted with the January, April, July and October DMR's.

**SPECIAL CONDITION 3.** Samples taken in compliance with the effluent monitoring requirements shall be taken at a point representative of the discharge, but prior to entry into the receiving stream.

**SPECIAL CONDITION 4.** If an applicable effluent standard or limitation is promulgated under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the Clean Water Act and that effluent standard or limitation is more stringent than any effluent limitation in the permit or controls a pollutant not limited in the NPDES Permit, the Agency shall revise or modify the permit in accordance with the more stringent standard or prohibition and shall so notify the permittee.

**SPECIAL CONDITION 5.** For the purpose of this permit outfalls 001, 002, 003, 005, 006, and 007 are limited to stormwater only, free from leachate and other wastewater discharges.

**SPECIAL CONDITION 6.** The issuance of this permit, construction authorizations or other approvals, does not relieve the permittee of the responsibilities of complying with the provisions required by the Bureau of Land.

**SPECIAL CONDITION 7.** The use of copper sulfate as an algicide is approved provided its use is in accordance with label requirements and it is applied by a licensed applicator.

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Special Conditions

Special Condition 8. The effluent, alone or in combination with other sources, shall not cause a violation of any applicable water quality standard outlined in 35 Ill. Adm. Code 302.

SPECIAL CONDITION 9. The permittee shall request modification of this permit in accordance with attachment H prior to utilizing biosolids or bioremediated soils as final protective cover, final cover, intermediate cover or daily cover.



**Attachment H**  
**Standard Conditions**

**Definitions**

**Act** means the Illinois Environmental Protection Act, 415 ILCS 5 as Amended.

**Agency** means the Illinois Environmental Protection Agency.

**Board** means the Illinois Pollution Control Board.

**Clean Water Act** (formerly referred to as the Federal Water Pollution Control Act) means Pub. L 92-500, as amended. 33 U.S.C. 1251 et seq.

**NPDES** (National Pollutant Discharge Elimination System) means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318, and 405 of the Clean Water Act.

**USEPA** means the United States Environmental Protection Agency.

**Daily Discharge** means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurements, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

**Maximum Daily Discharge Limitation** (daily maximum) means the highest allowable daily discharge.

**Average Monthly Discharge Limitation** (30 day average) means the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

**Average Weekly Discharge Limitation** (7 day average) means the highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.

**Best Management Practices** (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the State. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

**Aliquot** means a sample of specified volume used to make up a total composite sample.

**Grab Sample** means an individual sample of at least 100 milliliters collected at a randomly-selected time over a period not exceeding 15 minutes.

**24-Hour Composite Sample** means a combination of at least 8 sample aliquots of at least 100 milliliters, collected at periodic intervals during the operating hours of a facility over a 24-hour period.

**8-Hour Composite Sample** means a combination of at least 3 sample aliquots of at least 100 milliliters, collected at periodic intervals during the operating hours of a facility over an 8-hour period.

**Flow Proportional Composite Sample** means a combination of sample aliquots of at least 100 milliliters collected at periodic intervals such that either the time interval between each aliquot or the volume of each aliquot is proportional to either the stream flow at the time of sampling or the total stream flow since the collection of the previous aliquot.

- (1) **Duty to comply.** The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action, permit termination, revocation and reissuance, modification, or for denial of a permit renewal application. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirements.
- (2) **Duty to reapply.** If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. If the permittee submits a proper application as required by the Agency no later than 180 days prior to the expiration date, this permit shall continue in full force and effect until the final Agency decision on the application has been made.
- (3) **Need to halt or reduce activity not a defense.** It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
- (4) **Duty to mitigate.** The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.
- (5) **Proper operation and maintenance.** The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up, or auxiliary facilities, or similar systems only when necessary to achieve compliance with the conditions of the permit.
- (6) **Permit actions.** This permit may be modified, revoked and reissued, or terminated for cause by the Agency pursuant to 40 CFR 122.62 and 40 CFR 122.63. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.
- (7) **Property rights.** This permit does not convey any property rights of any sort, or any exclusive privilege.
- (8) **Duty to provide information.** The permittee shall furnish to the Agency within a reasonable time, any information which the Agency may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with the permit. The permittee shall also furnish to the Agency upon request, copies of records required to be kept by this permit.
- (9) **Inspection and entry.** The permittee shall allow an authorized representative of the Agency or USEPA (including an authorized contractor acting as a representative of the Agency or USEPA), upon the presentation of credentials and other documents as may be required by law, to:
  - (a) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records

- must be kept under the conditions of this permit;
- (b) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
  - (c) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
  - (d) Sample or monitor at reasonable times, for the purpose of assuring permit compliance, or as otherwise authorized by the Act, any substances or parameters at any location.
- (10) **Monitoring and records.**
- (a) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
  - (b) The permittee shall retain records of all monitoring information, including all calibration and maintenance records, and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of this permit, measurement, report or application. Records related to the permittee's sewage sludge use and disposal activities shall be retained for a period of at least five years (or longer as required by 40 CFR Part 503). This period may be extended by request of the Agency or USEPA at any time.
  - (c) Records of monitoring information shall include:
    - (1) The date, exact place, and time of sampling or measurements;
    - (2) The individual(s) who performed the sampling or measurements;
    - (3) The date(s) analyses were performed;
    - (4) The individual(s) who performed the analyses;
    - (5) The analytical techniques or methods used; and
    - (6) The results of such analyses.
  - (d) Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit. Where no test procedure under 40 CFR Part 136 has been approved, the permittee must submit to the Agency a test method for approval. The permittee shall calibrate and perform maintenance procedures on all monitoring and analytical instrumentation at intervals to ensure accuracy of measurements.
- (11) **Signatory requirement.** All applications, reports or information submitted to the Agency shall be signed and certified.
- (a) **Application.** All permit applications shall be signed as follows:
    - (1) For a corporation: by a principal executive officer of at least the level of vice president or a person or position having overall responsibility for environmental matters for the corporation;
    - (2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or
    - (3) For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official.
  - (b) **Reports.** All reports required by permits, or other information requested by the Agency shall be signed by a person described in paragraph (a) or by a duly authorized representative of that person. A person is a duly authorized representative only if:
    - (1) The authorization is made in writing by a person described in paragraph (a); and
    - (2) The authorization specifies either an individual or a position responsible for the overall operation of the facility, from which the discharge originates, such as a plant manager, superintendent or person of equivalent responsibility; and
    - (3) The written authorization is submitted to the Agency.
  - (c) **Changes of Authorization.** If an authorization under (b)
- is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of (b) must be submitted to the Agency prior to or together with any reports, information, or applications to be signed by an authorized representative.
- (d) **Certification.** Any person signing a document under paragraph (a) or (b) of this section shall make the following certification:
 

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.
- (12) **Reporting requirements.**
- (a) **Planned changes.** The permittee shall give notice to the Agency as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required when:
    - (1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source pursuant to 40 CFR 122.29 (b); or
    - (2) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements pursuant to 40 CFR 122.42 (a)(1).
    - (3) The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.
  - (b) **Anticipated noncompliance.** The permittee shall give advance notice to the Agency of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.
  - (c) **Transfers.** This permit is not transferable to any person except after notice to the Agency.
  - (d) **Compliance schedules.** Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.
  - (e) **Monitoring reports.** Monitoring results shall be reported at the intervals specified elsewhere in this permit.
    - (1) Monitoring results must be reported on a Discharge Monitoring Report (DMR).
    - (2) If the permittee monitors any pollutant more frequently than required by the permit, using test procedures approved under 40 CFR 136 or as specified in the permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR.
    - (3) Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Agency in the permit.

- (f) **Twenty-four hour reporting.** The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24-hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and time; and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. The following shall be included as information which must be reported within 24-hours:

- (1) Any unanticipated bypass which exceeds any effluent limitation in the permit.
- (2) Any upset which exceeds any effluent limitation in the permit.
- (3) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Agency in the permit or any pollutant which may endanger health or the environment.

The Agency may waive the written report on a case-by-case basis if the oral report has been received within 24-hours.

- (g) **Other noncompliance.** The permittee shall report all instances of noncompliance not reported under paragraphs (12) (d), (e), or (f), at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph (12) (f).
- (h) **Other information.** Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application, or in any report to the Agency, it shall promptly submit such facts or information.

(13) **Bypass.**

(a) **Definitions.**

- (1) Bypass means the intentional diversion of waste streams from any portion of a treatment facility.
- (2) Severe property damage means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

- (b) Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs (13)(c) and (13)(d).

(c) **Notice.**

- (1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass.
- (2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in paragraph (12)(f) (24-hour notice).

(d) **Prohibition of bypass.**

- (1) Bypass is prohibited, and the Agency may take enforcement action against a permittee for bypass, unless:

- (i) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
- (ii) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

- (iii) The permittee submitted notices as required under paragraph (13)(c).

- (2) The Agency may approve an anticipated bypass, after considering its adverse effects, if the Agency determines that it will meet the three conditions listed above in paragraph (13)(d)(1).

(14) **Upset.**

- (a) **Definition.** Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

- (b) **Effect of an upset.** An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph (14)(c) are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

- (c) **Conditions necessary for a demonstration of upset.** A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

- (1) An upset occurred and that the permittee can identify the cause(s) of the upset;
- (2) The permitted facility was at the time being properly operated; and
- (3) The permittee submitted notice of the upset as required in paragraph (12)(f)(2) (24-hour notice).

- (4) The permittee complied with any remedial measures required under paragraph (4).

- (d) **Burden of proof.** In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

(15) **Transfer of permits.** Permits may be transferred by modification or automatic transfer as described below:

- (a) **Transfers by modification.** Except as provided in paragraph (b), a permit may be transferred by the permittee to a new owner or operator only if the permit has been modified or revoked and reissued pursuant to 40 CFR 122.62 (b) (2), or a minor modification made pursuant to 40 CFR 122.63 (d), to identify the new permittee and incorporate such other requirements as may be necessary under the Clean Water Act.

- (b) Automatic transfers. As an alternative to transfers under paragraph (a), any NPDES permit may be automatically transferred to a new permittee if:
- (1) The current permittee notifies the Agency at least 30 days in advance of the proposed transfer date;
  - (2) The notice includes a written agreement between the existing and new permittees containing a specified date for transfer of permit responsibility, coverage and liability between the existing and new permittees; and
  - (3) The Agency does not notify the existing permittee and the proposed new permittee of its intent to modify or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement.
- (16) All manufacturing, commercial, mining, and silvicultural dischargers must notify the Agency as soon as they know or have reason to believe:
- (a) That any activity has occurred or will occur which would result in the discharge of any toxic pollutant identified under Section 307 of the Clean Water Act which is not limited in the permit, if that discharge will exceed the highest of the following notification levels:
    - (1) One hundred micrograms per liter (100 ug/l);
    - (2) Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2,4-dinitrophenol and for 2-methyl-4,6 dinitrophenol; and one milligram per liter (1 mg/l) for antimony.
    - (3) Five (5) times the maximum concentration value reported for that pollutant in the NPDES permit application; or
    - (4) The level established by the Agency in this permit.
  - (b) That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the NPDES permit application.
- (17) All Publicly Owned Treatment Works (POTWs) must provide adequate notice to the Agency of the following:
- (a) Any new introduction of pollutants into that POTW from an indirect discharge which would be subject to Sections 301 or 306 of the Clean Water Act if it were directly discharging those pollutants; and
  - (b) Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
  - (c) For purposes of this paragraph, adequate notice shall include information on (i) the quality and quantity of effluent introduced into the POTW, and (ii) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.
- (18) If the permit is issued to a publicly owned or publicly regulated treatment works, the permittee shall require any industrial user of such treatment works to comply with federal requirements concerning:
- (a) User charges pursuant to Section 204 (b) of the Clean Water Act, and applicable regulations appearing in 40 CFR 35;
  - (b) Toxic pollutant effluent standards and pretreatment standards pursuant to Section 307 of the Clean Water Act; and
  - (c) Inspection, monitoring and entry pursuant to Section 308 of the Clean Water Act.
- (19) If an applicable standard or limitation is promulgated under Section 301(b)(2)(C) and (D), 304(b)(2), or 307(a)(2) and that effluent standard or limitation is more stringent than any effluent limitation in the permit, or controls a pollutant not limited in the permit, the permit shall be promptly modified or revoked, and reissued to conform to that effluent standard or limitation.
- (20) Any authorization to construct issued to the permittee pursuant to 35 Ill. Adm. Code 309.154 is hereby incorporated by reference as a condition of this permit.
- (21) The permittee shall not make any false statement, representation or certification in any application, record, report, plan or other document submitted to the Agency or the USEPA, or required to be maintained under this permit.
- (22) The Clean Water Act provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Clean Water Act is subject to a civil penalty not to exceed \$25,000 per day of such violation. Any person who willfully or negligently violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318 or 405 of the Clean Water Act is subject to a fine of not less than \$2,500 nor more than \$25,000 per day of violation, or by imprisonment for not more than one year, or both. Additional penalties for violating these sections of the Clean Water Act are identified in 40 CFR 122.41 (a)(2) and (3).
- (23) The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than \$20,000 per day of violation, or by imprisonment of not more than 4 years, or both.
- (24) The Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.
- (25) Collected screening, slurries, sludges, and other solids shall be disposed of in such a manner as to prevent entry of those wastes (or runoff from the wastes) into waters of the State. The proper authorization for such disposal shall be obtained from the Agency and is incorporated as part hereof by reference.
- (26) In case of conflict between these standard conditions and any other condition(s) included in this permit, the other condition(s) shall govern.
- (27) The permittee shall comply with, in addition to the requirements of the permit, all applicable provisions of 35 Ill. Adm. Code, Subtitle C, Subtitle D, Subtitle E, and all applicable orders of the Board or any court with jurisdiction.
- (28) The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit is held invalid, the remaining provisions of this permit shall continue in full force and effect.