HIGHPOINT

December 10, 2024

Zoning Board of Appeals
c/o Mr. Zachary McBride, Chair
19 Washington Street, Sherborn, MA 01770

Re: 41 North Main Street | Limited Stormwater Report

Dear Members of the Zoning Board of Appeals,

On behalf of Barsky Estate Realty Trust, Highpoint Engineering Inc. submits this executive summary to update the Board on the stormwater management efforts for the proposed multifamily residential development at 41 North Main Street. Following a site visit and soil testing, we have prepared the attached report summarizing our findings and stormwater design.

The attached "Limited Stormwater Report" is intended to address DEP stormwater regulations regarding functionality and compliance. We believe the information provided is sufficient for your peer reviewer to evaluate the viability of the project's stormwater management design intent and strategy. Additional design and analysis will be completed and submitted prior to final approval.

Project Overview

The project includes five duplex homes and six triplex homes, with associated utilities, landscaping, and stormwater improvements. The stormwater design ensures compliance with state and local standards while addressing both environmental and community needs.

Stormwater Management Highlights

1. **Site Evaluation and Soil Testing**: On-site soil testing confirmed that the proposed infiltration systems are located in areas with suitable soil conditions, maintaining a minimum separation of four feet above seasonal high groundwater, ensuring effective recharge and groundwater protection.
2. **Peak Runoff Control**: Designed measures, including detention basins and infiltration systems, ensure post-development runoff rates remain below pre-development levels, protecting downstream areas.
3. **Water Quality Protection**: The system uses advanced treatment units to remove at least 80% of Total Suspended Solids (TSS), ensuring clean water discharge.
4. **Compliance**: The design meets or exceeds the Massachusetts Department of Environmental Protection's Stormwater Standards.

Key Benefits

- Reduced runoff impacts.
- Improved water quality.
- Compliance with local and state regulations.

The attached technical memo outlines these points in more detail and confirms that the project aligns with DEP's stormwater best practices and responsible site development. The work completed demonstrates our commitment to meeting regulatory requirements and supporting sustainable development in Sherborn. Please contact us at 781-770-0970 with any questions.

Respectfully,
HIGHPOINT

M. Fabbiano

Michael Fabbiano
Vice President

Cc. Paul Haverty Esq,
Lynne Sweet
Gary Barsky

Project Address:	41 North Main Street Sherborn, MA 01770
Date Prepared:	December 6, 2024
Project Number:	23048
Prepared for:	Barsky Estate Realty Trust 23 Hunting Lane Sherborn, MA 01770
Prepared by:	**Highpoint Engineering Inc.** Dedham Executive Center 980 Washington Street, Suite 216 Dedham, MA 02026 www.highpointeng.com

INTRODUCTION

This analysis summarizes pre- and post-development stormwater impacts associated with the construction of a new multi-family residential development (the Project) located at 41 North Main Street and 6 Powderhouse Lane (the Subject Property) in Sherborn, Massachusetts. The Subject Property is shown on the Town of Sherborn Assessors' Map 11 as Parcel 0-41 and Map 11 as Parcel 0-43.

The land area of the Subject Property is approximately 7.24± acres. The Subject Property is located within Residence A (RA) and Business G (BG) Zoning Districts. The Subject Property is bounded by Hunting Lane to the north, North Main Street to the east, and abutting residential properties to the south and west. The Subject Property is currently accessed via four curb cuts, two off North Main Street, one off Hunting Lane, and one off Powderhouse Lane.

The Subject Property currently supports two dwellings, a barn, and a garage with a small parking lot and associated utilities.

Runoff from ground surfaces of the developed portion of the Subject Property flows in a predominantly westerly direction over land off property to an existing culvert that runs underneath Hunting Lane. Stormwater also flows in an east direction towards North Main Street where it enters the municipal drainage system. There are Bordering Vegetative Wetland areas located to the west of the site (offsite).

Work associated with the Project includes:

- Construction of (5) five duplex homes and (6) six triplex homes.
- Construction of landscape and hardscape improvements.
- Construction of stormwater management improvements, including catch basins, drain manholes, water quality units, surface infiltration basin, surface detention basin, rain garden and an underground detention system.
- Construction of utility infrastructure improvements, including new domestic water, new fire service, sewer, electrical/telecommunications to all proposed dwellings.

Disclaimer: This is a limited design and analysis intended solely to address state stormwater regulations related to functionality and compliance. The information provided is sufficient to evaluate the viability of the project's stormwater management design intent and strategy. We acknowledge that additional design and analysis will be required before final approval.

Massachusetts Stormwater Standards

STANDARD 1:

No New Untreated Discharges

All existing discharge points are maintained, and mitigation is proposed to treat discharge impacts at existing points as feasible.

STANDARD 2:

Peak Rate Attenuation

The increase in impervious areas due to the new development is mitigated via the implementation of a subsurface detention system, a surface detention basin, and a surface infiltration basin. Supplemental data can be seen below explaining how this is accomplished. The hydrologic model, analysis, and proposed mitigation measures have been developed using, Hydrologic modeling techniques and methods established in NRCS - Technical Releases No. 20 and No. 55 (TR-20 and TR-55) using proprietary HydroCAD stormwater modeling software and Massachusetts Department of Environmental Protection – Stormwater Handbook Volumes #1, #2, and #3 (as amended).

Rainfall Data

Peak stormwater discharge discharges rates have been determined for total rainfall estimated for the 2, 10, 25, and 100-year storm event recurrence intervals. For this analysis, the values used for the 24-year rainfall calculations were taken from the latest NOAA Atlas 14, Volume 10, Version 3 data for the subject property, and are outlined in Table 1 below.

Table 1. – Summary of Rainfall Data

Reference	Rainfall Recurrence Interval	24 Hour Rainfall Depth
NOAA Atlas 14 Volume 10 Version 3	2-Year Storm	3.35 inches
	10-Year Storm	5.24 inches
	25-Year Storm	6.42 inches
	100-Year Storm	8.23 inches

Table 2. – Summary of USDA Soil Classification

Soil Classification	Hydrologic Soil Group (HSG)
103D – Charlton-Hollis-Rock Outcrop Complex, 15 to 25 percent slopes	HSG A/D (Assumed B)
307B – Paxton Fine Sandy Loam, 0 to 8 percent slopes	HSG C
260B – Sudbury Fine Sandy Loam, 3 to 8 percent slopes	HSG B
626B – Merrimac-Urban Land Complex, 0 to 8 percent slopes	HSG A/D (Assumed A)
254A – Merrimac Fine Sandy Loam, 0 to 3 percent slopes	HSG A

Subsurface investigations comprising of 6 test pits were conducted within the proposed subsurface and both surface infiltration/detention basins by Highpoint Engineering, Inc. on November 20th, 2024. An infiltration rate of 1.02 is used based on test pit results.

Groundwater was only observed in 4 of the 6 test pits that were conducted. Groundwater depth ranges from 6.67' to 9' below existing grade. The proposed stormwater management systems intended for infiltration are designed with bottom depths at least 4 feet above the seasonal high groundwater (SHGW).

Table 3. – Summary of Pre- and Post-Development Peak Rates of Runoff

Design Storm	**POA 1: Hunting Lane**		
	Pre-Dev	**Post-Dev**	**Change**
2 Year	2.60 cfs	1.27 cfs	-1.33 cfs
10 Year	7.86 cfs	5.92 cfs	-1.94 cfs
25 Year	11.72 cfs	8.41 cfs	-3.31cfs
100 Year	18.09 cfs	17.73 cfs	-0.36 cfs
Design Storm	**POA 2: North Main Street**		
	Pre-Dev	**Post-Dev**	**Change**
2 Year	1.22 cfs	0.75 cfs	-0.47 cfs
10 Year	3.23 cfs	1.79 cfs	-1.44 cfs
25 Year	4.64 cfs	2.50 cfs	-2.14 cfs
100 Year	6.92 cfs	3.63 cfs	-3.29 cfs
Design Storm	**POA 3: 33 North Main Steet**		
	Pre-Dev	**Post-Dev**	**Change**
2 Year	0.25 cfs	0.03 cfs	-0.22 cfs
10 Year	0.97 cfs	0.37 cfs	-0.60 cfs
25 Year	1.50 cfs	0.71 cfs	-0.79 cfs
100 Year	2.41 cfs	1.32 cfs	-1.09 cfs

STANDARD 3:

Recharge

The required recharge volume for "B" soils is provided within the detention/infiltration basin below the lowest outlet invert elevation. Recharge volume calculations can be seen below.

The surface infiltration/detention system is proposed to completely drain within 72 hours. These calculations can be seen below.

Groundwater Recharge Calculations:

Review of the United States Department of Agricultural (USDA) Natural Resources Conservation Service (NRCS) indicates that the parent soils within the limit of Watersheds comprise of Hydrologic Soil Group A, B & C.

The Massachusetts Stormwater Handbook determines the required recharge volume using a calculation of 0.60 inches of runoff for "A" soils, 0.35 inches of runoff for "B" soils, and 0.25 inches of runoff for "C" soils multiplied by the total contributing impervious cover of the watersheds. Watershed PR WS-1A comprises of landscape/lawn areas, rooftop and pavement. Runoff from the watersheds flow to the surface infiltration/detention basin (IB-1) prior to discharging off-site.

A design infiltration rate of 1.02 inches per hour was conservatively used for the analysis based on the results of on-site soil testing performed on November 20th, 2024.

Mass DEP Requirement

Required Recharge Volume = 0.60 inches x Total Impervious Area for "A" soils
= 0.60 inches x 13,516ft² x (1/12 in/ft) = 676 ft³

Required Recharge Volume = 0.35 inches x Total Impervious Area for "B" soils
= 0.35 inches x 70,935 ft² x (1/12 in/ft) = 2,069 ft³

Required Recharge Volume = 0.25 inches x Total Impervious Area for "C" soils
= 0.25 inches x 3,300 ft² x (1/12 in/ft) = 69 ft³

Total Required Recharge Volume for Overall Project = 2,814 ft³

Recharge to Groundwater Provided

Volume Provided in IB-1 (Below elevation 173.00 ft) =9,794 ft³

The total recharge volume provided exceeds the minimum recharge requirement for all soils.

Total Recharge Volume Provided **9,794 ft³ > 2,814 ft³**

Drawdown Calculations:

Drawdown Time:		T	= V / (K*A)
	where	T	= drawdown time (hours)
		V	= volume below lowest outlet (ft^3)
		K	= hydraulic conductivity (ft/hr)
			= ([1.02 in/hr) * (1 ft/12 in)
			= 0.085 ft/hr
		A	= bottom area of infiltration system (ft^2)
[Surface Infiltration Basin -1]:		V	= 9,794 ft^3
		K	= 0.085 ft/hr
		A	= 1,749 ft^2
		T	= (9,794 ft^3) / (0.201 ft/hr) (1,749 ft^2)
			= 65.9 **hours** < 72 hours

STANDARD 4:

Water Quality

No Long-Term Pollution Prevention Plan is attached or submitted with these documents, but they will be submitted once a site plan review application is submitted.

Contech CDS proprietary hydrodynamic separator and infiltration BMP treatment trains have been sized to treat the full water quality and are designed to achieve 80% overall TSS removal. The 0.5" water quality volume is being used. Water quality calculations below can be seen below.

Water Quality Volume Calculations:

This analysis is to evaluate water quality volume criteria according to "Volume 1 Chapter 1: Stormwater Management Standards." The Project comprises of a surface infiltration basin to provide water quality for the new development.

Water Quality Volume Required:

(Watershed 1A)

Paved Impervious Area	= 59,117 ft^2
Water Quality Volume Requirement	= 0.5 inch over total impervious area
	= 59,117 ft^2 x ([0.5]/12)
	= **[2,463]** ft^3

(Watershed 1B)

Paved Impervious Area	= 10,733 ft^2
Water Quality Volume Requirement	= 0.5 inch over total impervious area
	= 10,733 ft^2 x ([0.5]/12)
	= **[447]** ft^3

(Watershed 1C)

Paved Impervious Area	= 2,798 ft^2
Water Quality Volume Requirement	= 0.5 inch over total impervious area
	= 2,798ft^2 x ([0.5]/12)
	= **[116]** ft^3

(Watershed 1D)

Paved Impervious Area	= 30,589 ft^2
Water Quality Volume Requirement	= 0.5 inch over total impervious area
	= 30,589 ft^2 x ([0.5]/12)
	= **[1,274]** ft^3

(Watershed 1E)

Paved Impervious Area	= 12,887 ft^2
Water Quality Volume Requirement	= 0.5 inch over total impervious area
	= 12,887 ft^2 x ([0.5]/12)
	= **[537]** ft^3

Water Quality Volume Provided in Infiltration BMPs:
(Watershed 1A, 1B, 1C, 1D, 1E)

[IB-1]: [Surface Infiltration Basin]

= Volume below elevation [173.00]'
= [9,794] ft^3 [FROM HYDROCAD]

Total Volume Provided = [9,794] ft^3

= **[9,794] ft^3 > [4,837] ft^3**

TSS Removal:

Treatment Train 1

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Sediment Forebay	0.25	1.00	0.25	0.75
Rain Garden	0.90	0.75	0.68	0.08
	0.00	0.08	0.00	0.08
	0.00	0.08	0.00	0.08
	0.00	0.08	0.00	0.08

Total TSS Removal = 93%

Separate Form Needs to be Completed for Each Outlet or BMP Train

Treatment Train 2

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Deep Sump and Hooded Catch Basin	0.25	1.00	0.25	0.75
Proprietary Treatment Practice	0.50	0.75	0.38	0.38
Infiltration Basin	0.80	0.38	0.30	0.08
	0.00	0.08	0.00	0.08
	0.00	0.08	0.00	0.08

Total TSS Removal = 93%

Separate Form Needs to be Completed for Each Outlet or BMP Train

Treatment Train 3

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Deep Sump and Hooded Catch Basin	0.25	1.00	0.25	0.75
Extended Dry Detention Basin	0.50	0.75	0.38	0.38
Proprietary Treatment Practice	0.50	0.38	0.19	0.19
	0.00	0.19	0.00	0.19
	0.00	0.19	0.00	0.19

Total TSS Removal = 81%

Separate Form Needs to be Completed for Each Outlet or BMP Train

STANDARD 5:

Land Uses with Higher Potential Pollutant Loads (LUHPPLs)

The proposed project is not a listed activity associated with a LUHPPL defined in the Handbook.

STANDARD 6:

Critical Areas

The site does not discharge to a Critical Area.

STANDARD 7:

Redevelopments and Other Projects Subject to the Standards only to the Maximum Extent Practicable

The proposed project is considered a new development. Stormwater management facilities and BMP designs are completed in full compliance with the Massachusetts Stormwater Management Standards in accordance with DEP guidance.

STANDARD 8:

Construction Period Pollution Prevention and Erosion and Sedimentation Control

This project will be covered by a NPDES Construction General Permit and a SWPPP, but will be submitted with the final stormwater report and a hard copy shall be left on site throughout the duration of construction.

STANDARD 9:

Operation and Maintenance Plan

No Post Construction Operation and Maintenance Plan is attached or submitted with these documents, but they will be provided with the final stormwater report.

STANDARD 10:

Prohibition of Illicit Discharges

No illicit discharge compliance state is attached or submitted with these documents, but they will be submitted prior to the discharge of any stormwater to post-construction BMPs.

CONCLUSION

The proposed residential development meets the minimum standards outlined in MassDEP stormwater requirements. Post-construction stormwater flows have been strategically designed to ensure that offsite discharge flow rates do not exceed preconstruction flow rates. The proposed stormwater management system addresses water quality, stormwater recharge, and flow attenuation through the implementation of infiltration/detention infrastructure and proprietary water quality units. These systems are designed to treat all impervious areas while reducing the overall volume of uncontrolled stormwater discharged offsite.

APPENDIX B – TEST PITS MAP

DEEP OBSERVATION HOLE LOG

DEEP OBSERVATION HOLE NUMBER: TP-1 — GROUND ELEVATION: 171.50±

Depth (in)	Horizon/ Layer	Matrix: Color-Moist	Redoximorphic Features			Texture (USDA)	Coarse Fragments (Percent by Volume)		Structure	Consistence (Moist)	Other
			Depth (in)	Color	Percent		Gravel	Cobbles & Stones			
0-15	Ap	10YR 3/2	N/A	N/A	N/A	SANDY LOAM	0	10-15	MASSIVE	FRIABLE	(1)
15-40	Bw	10YR 4/6	N/A	N/A	N/A	FINE SANE	0	0	SINGLE GRAIN	LOOSE	N/A
40-98	C	10YR 5/4	98	5YR 5/8 MAX	>25	SANDY LOAM	20-30	20-30	MASSIVE	FRIABLE	(2)

NOTES:
1. LARGE ROCKS EMBEDDED AT SURFACE.
2. REDOX FEATURES OBSERVED AT BOTTOM OF EXCAVATION. EL.= 163.3±.
3. SOIL EVALUATED BY JOSEPH PECCIA (SE14774) ON NOVEMBER 21, 2024

DEEP OBSERVATION HOLE LOG

DEEP OBSERVATION HOLE NUMBER: TP-2 — GROUND ELEVATION: 171.50±

Depth (in)	Horizon/ Layer	Matrix: Color-Moist	Redoximorphic Features			Texture (USDA)	Coarse Fragments (Percent by Volume)		Structure	Consistence (Moist)	Other
			Depth (in)	Color	Percent		Gravel	Cobbles & Stones			
0-24	Ap	10YR 3/2	N/A	N/A	N/A	SANDY LOAM	0	0-5	MASSIVE	FRIABLE	(1)
24-53	Bw	FILL	N/A	N/A	N/A	FILL	N/A	N/A	FILL	FILL	(2)
53-80	C	10 YR 4/6	80	5YR 5/8 MAX	>25	SANDY LOAM	0-5	0-5	MASSIVE	FRIABLE	(3)

NOTES:
1. ROOTS FOUND WITHIN SURFACE.
2. FILL MATERIAL INCLUDED GLASS PIECES, BRICKS ETC.
3. REDOX FEATURES OBSERVED AT BOTTOM OF EXCAVATION. EL.= 164.8±.
4. SOIL EVALUATED BY JOSEPH PECCIA (SE14774) ON NOVEMBER 21, 2024

DEEP OBSERVATION HOLE LOG

DEEP OBSERVATION HOLE NUMBER: TP-3 — GROUND ELEVATION: 173.00±

Depth (in)	Horizon/ Layer	Matrix: Color-Moist	Redoximorphic Features			Texture (USDA)	Coarse Fragments (Percent by Volume)		Structure	Consistence (Moist)	Other
			Depth (in)	Color	Percent		Gravel	Cobbles & Stones			
0-24	FILL	FILL	N/A	N/A	N/A	FILL	N/A	N/A	FILL	FILL	(1)
24-44	B	10YR 4/4	N/A	N/A	N/A	SANDY LOAM	5-10	10-20	MASSIVE	FRIABLE	N/A
44-108	C	10YR 4/3	108	5YR 5/8 MAX	>25	SANDY LOAM	5-10	10-20	MASSIVE	FRIABLE	(2)

NOTES:
1. COMPACTED FILL MATERIAL USED FOR VEHICLE ACCESS.
2. REDOX FEATURES OBSERVED AT BOTTOM OF EXCAVATION. EL.= 164.0±.
3. SOIL EVALUATED BY JOSEPH PECCIA (SE14774) ON NOVEMBER 21, 2024

DEEP OBSERVATION HOLE LOG

DEEP OBSERVATION HOLE NUMBER: TP-4 — GROUND ELEVATION: 171.50±

Depth (in)	Horizon/ Layer	Matrix: Color-Moist	Redoximorphic Features			Texture (USDA)	Coarse Fragments (Percent by Volume)		Structure	Consistence (Moist)	Other
			Depth (in)	Color	Percent		Gravel	Cobbles & Stones			
0-26	FILL	FILL	N/A	N/A	N/A	FILL	N/A	N/A	FILL	FILL	(1)
26-45	B	10YR 4/3	N/A	N/A	N/A	SANDY LOAM	10-30	10-15	MASSIVE	FRIABLE	(2)
45-84	C	10 YR 5/3	84	5YR 4/6	>25	SANDY LOAM	5-10	10-20	MASSIVE	FRIABLE	(3)

NOTES:
1. COMPACTED FILL MATERIAL USED FOR VEHICLE ACCESS.
2. LARGE ROCKS WITHIN LAYER (5%).
3. GREY MATERIAL AT BOTTOM OF EXCAVATION MOIST UPON TOUCH INDICATING REDOX. EL. = 164.5±
4. SOIL EVALUATED BY JOSEPH PECCIA (SE14774) ON NOVEMBER 21, 2024

DEEP OBSERVATION HOLE LOG

DEEP OBSERVATION HOLE NUMBER: TP-5 — GROUND ELEVATION: 179.00±

Depth (in)	Horizon/ Layer	Matrix: Color-Moist	Redoximorphic Features			Texture (USDA)	Coarse Fragments (Percent by Volume)		Structure	Consistence (Moist)	Other
			Depth (in)	Color	Percent		Gravel	Cobbles & Stones			
0-10	Ap	10YR 3/2	N/A	N/A	N/A	SANDY LOAM	10-20	10-20	MASSIVE	FRIABLE	(1)
10-44	Bw	10YR 4/4	N/A	N/A	N/A	SANDY LOAM	10-20	30-40	MASSIVE	FRIABLE	(2)
44-78	C	10YR 5/3	N/A	N/A	N/A	SANDY LOAM	5-10	10-20	MASSIVE	FRIABLE	(3)

NOTES:
1. ROOTS AND BOULDERS EMBEDDED IN SURFACE.
2. LAYER EXTREMELY ROCKY.
3. REFUSAL DUE TO LARGE BOULDERS WITHIN EXCAVATION (20-30%). EL.=173.5±.
4. SOIL EVALUATED BY JOSEPH PECCIA (SE14774) ON NOVEMBER 21, 2024

DEEP OBSERVATION HOLE LOG

DEEP OBSERVATION HOLE NUMBER: TP-6 — GROUND ELEVATION: 180.00±

Depth (in)	Horizon/ Layer	Matrix: Color-Moist	Redoximorphic Features			Texture (USDA)	Coarse Fragments (Percent by Volume)		Structure	Consistence (Moist)	Other
			Depth (in)	Color	Percent		Gravel	Cobbles & Stones			
0-12	Ap	10YR 3/2	N/A	N/A	N/A	SANDY LOAM	10-20	10-20	MASSIVE	FRIABLE	(1)
12-44	Bw	10YR 4/4	N/A	N/A	N/A	SANDY LOAM	10-20	30-40	MASSIVE	FRIABLE	(2)
44-82	C	10YR 5/3	N/A	N/A	N/A	SANDY LOAM	5-10	10-20	MASSIVE	FRIABLE	(3)

NOTES:
1. ROOTS AND BOULDERS EMBEDDED IN SURFACE.
2. LAYER EXTREMELY ROCKY.
3. REFUSAL DUE TO LARGE BOULDERS WITHIN EXCAVATION (20-30%). EL.=173.2±.
4. SOIL EVALUATED BY JOSEPH PECCIA (SE14774) ON NOVEMBER 21, 2024

HIGHPOINT ENGINEERING, INC.
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CLIENT:
BARKSY ESTATE REALTY TRUST
23 HUNTING LANE
SHERBORN, MA 01770
C/O GARY LYBARSKY

CONSULTANT:

SEAL

PROPOSED MULTI-FAMILY RESIDENTIAL DEVELOPMENT

41 NORTH MAIN STREET
SHERBORN, MA. 01770

OWNER/APPLICANT: BARKSY ESTATE REALTY TRUST

REV	DATE	DESCRIPTION
1	12/06/2024	PER ZBA COMMENTS

ISSUE TYPE:
ISSUED TO ZBA

ISSUE DATE:
09/27/2024

PROJECT NUMBER:
23048

DRAWN BY: DTB/MJH

CHECKED BY: DTB

SHEET TITLE:
TEST PIT PLAN

SHEET NUMBER:
TEST PIT

ISSUED FOR: **ZBA**

WATERSHED MAPS

POINT OF ANALYSIS SUMMARY

- POA 1 — POA-1 HUNTING LANE (OFF-SITE)
- POA 2 — POA-2 NORTH MAIN STRET (OFF-SITE)
- POA 3 — POA-3 33 NORTH MAIN STREET (OFF-SITE)

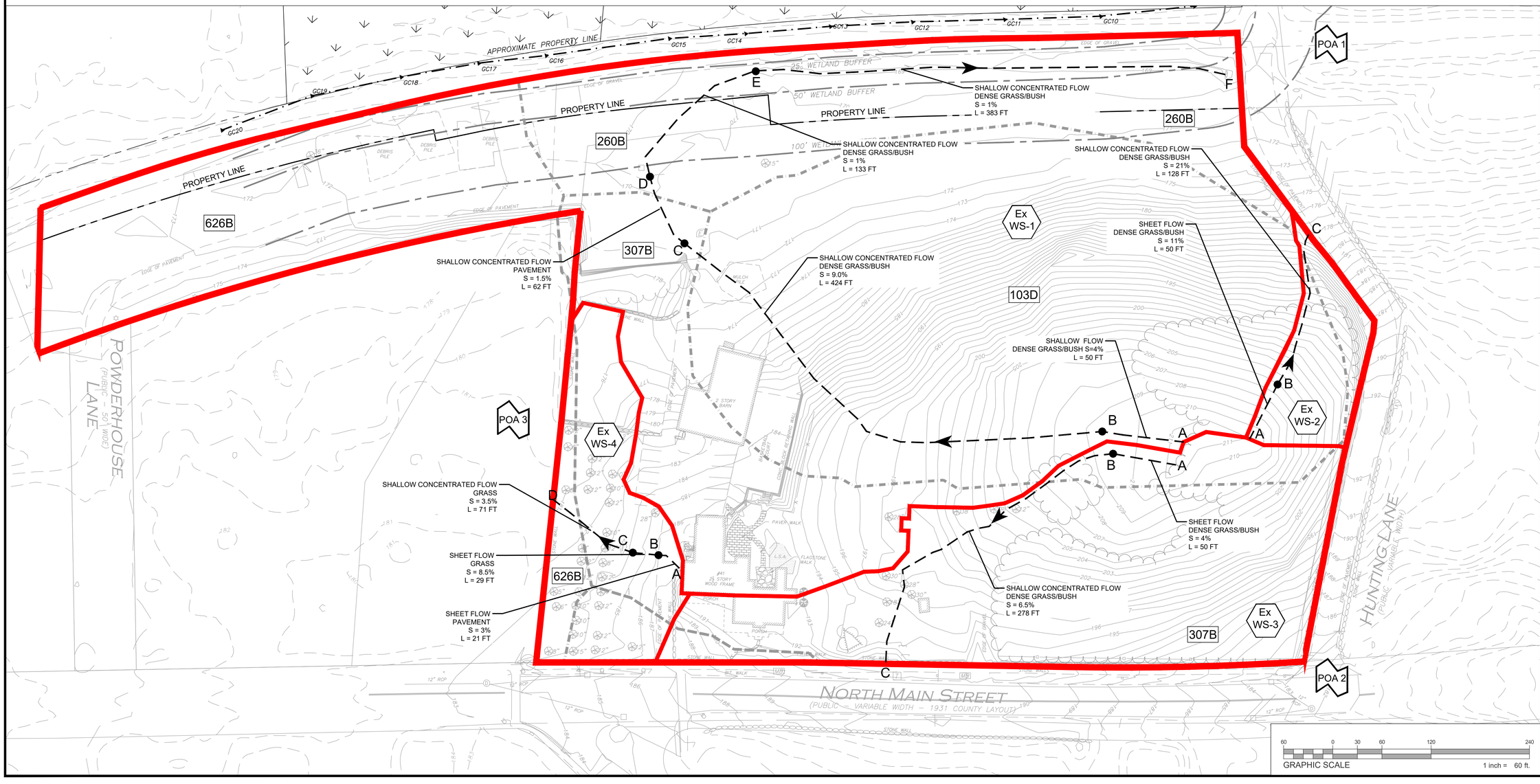
SOIL SUMMARY

- 103D CHARLTON-HOLLIS-ROCK OUTCROP COMPLEX, 15 TO 25 PERCENT SLOPES (HSG A/D, ASSUMED "B")
- 307B PAXTON FINE SANDY LOAM , 0 TO 8 PERCENT SLOPES, EXTREMELY STONY (HSG C)
- 260B SUDBURY FINE SANDY LOAM , 3 TO 8 PERCENT SLOPES (HSG B)
- 626B MERRIMAC-URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES (HSG A/D, ASSUMED "A")
- 254A MERRIMAC FINE SANDY LOAM, 0 TO 3 PERCENT SLOPES (HSG A)

SYMBOL LEGEND

	OVERALL WATERSHED BOUNDARY
	TIME OF CONCENTRATION
	TIME OF CONCENTRATION FLOW PATH
POA 1	POINT OF ANALYSIS DESIGNATION
Ex WS-1	WATERSHED DESIGNATION
Ex DEP	POND DESIGNATION
	SOIL BOUNDARY
	SUB WATERSHED BOUNDARY

* CONTOURS OUTSIDE OF THE LOT BOUNDARIES WERE OBTAINED FROM NOAA ELEVATION/LIDAR DATA



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CLIENT:
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C/O GARY LYBARSKY

CONSULTANT:

SEAL

PROPOSED MULTI-FAMILY RESIDENTIAL DEVELOPMENT

41 NORTH MAIN STREET
SHERBORN, MA, 01770

OWNER/APPLICANT: BARKSY ESTATE REALTY TRUST

REV	DATE	DESCRIPTION
1	12/06/2024	PER ZBA COMMENTS

ISSUE TYPE: ISSUED TO ZBA
ISSUE DATE: 09/27/2024
PROJECT NUMBER: 23048
DRAWN BY: DTB
CHECKED BY: DTB

SHEET TITLE: PRE-DEVELOPMENT WATERSHED MAP

SHEET NUMBER: PRE

ISSUED FOR: **ZBA**

POINT OF ANALYSIS SUMMARY

POA 1 — POA-1
HUNTING LANE (OFF-SITE)

POA 2 — POA-2
NORTH MAIN STRET (OFF-SITE)

POA 3 — POA-3
33 NORTH MAIN STREET (OFF-SITE)

SOIL SUMMARY

103D CHARLTON-HOLLIS-ROCK OUTCROP COMPLEX, 15 TO 25 PERCENT SLOPES (HSG A/D, ASSUMED "B")

307B PAXTON FINE SANDY LOAM , 0 TO 8 PERCENT SLOPES, EXTREMELY STONY (HSG C)

260B SUDBURY FINE SANDY LOAM , 3 TO 8 PERCENT SLOPES (HSG B)

626B MERRIMAC-URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES (HSG A/D, ASSUMED "A")

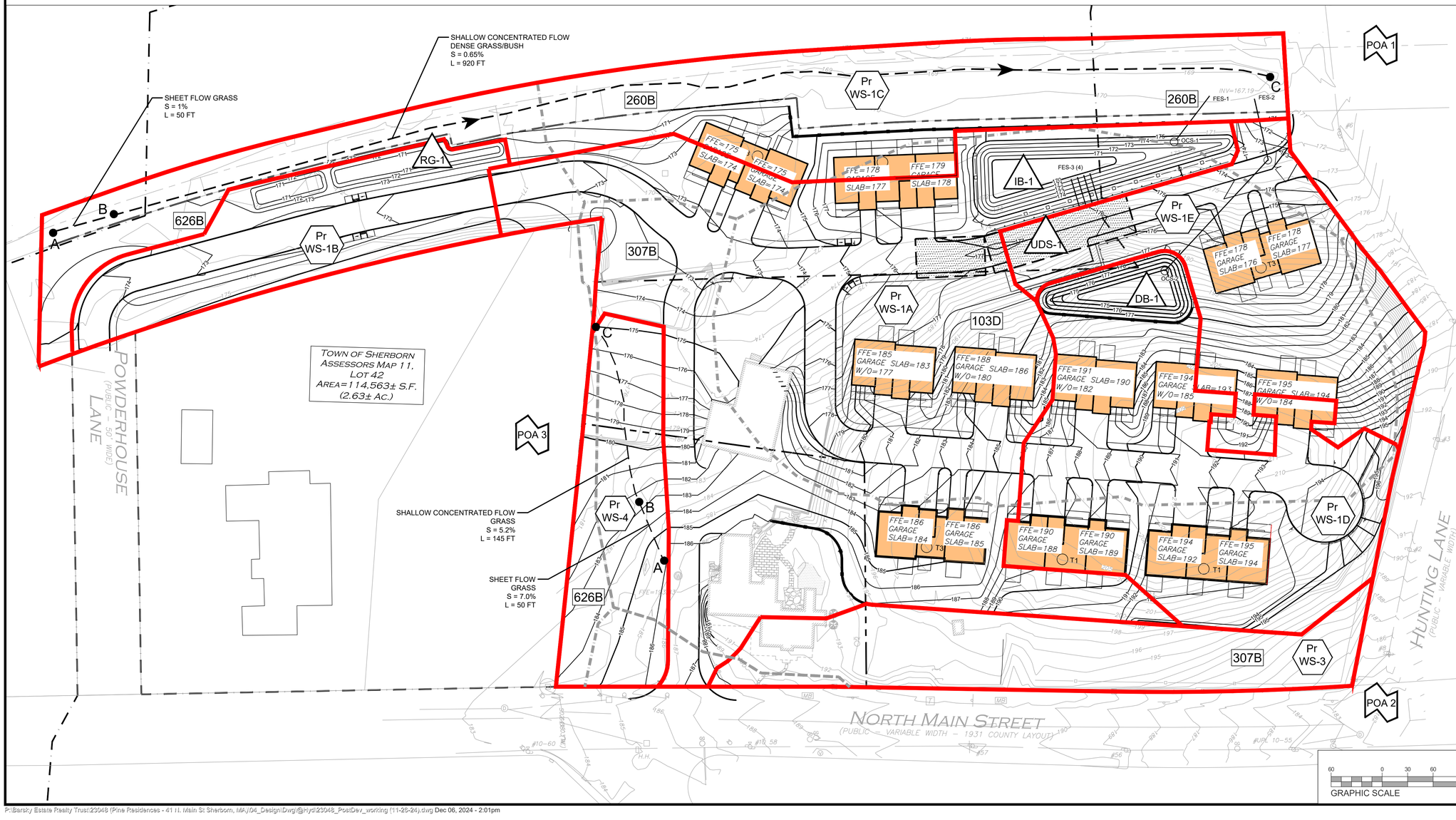
254A MERRIMAC FINE SANDY LOAM, 0 TO 3 PERCENT SLOPES (HSG A)

SYMBOL LEGEND

	OVERALL WATERSHED BOUNDARY
	TIME OF CONCENTRATION
	TIME OF CONCENTRATION FLOW PATH
POA 1	POINT OF ANALYSIS DESIGNATION
Pr WS-1	WATERSHED DESIGNATION
IB-1	POND DESIGNATION
	SOIL BOUNDARY
	SUB WATERSHED BOUNDARY

* NOTE: ALL TC LINES THAT ARE NOT SHOWN ARE ASSUMED TO BE 6 MIN.

* CONTOURS OUTSIDE OF THE LOT BOUNDARIES WERE OBTAINED FROM NOAA ELEVATION/LIDAR DATA



HIGHPOINT ENGINEERING, INC.
LAND PLANNING
PERMIT EXPEDITING
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180 WASHINGTON STREET
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CLIENT:
BARKSY ESTATE REALTY TRUST
23 HUNTING LANE
SHERBORN, MA 01770
C/O GARY LYBARSKY

CONSULTANT:

SEAL

PROPOSED MULTI-FAMILY RESIDENTIAL DEVELOPMENT

41 NORTH MAIN STREET
SHERBORN, MA, 01770

OWNER/APPLICANT: BARKSY ESTATE REALTY TRUST

REV	DATE	DESCRIPTION
1	12/06/2024	PER ZBA COMMENTS

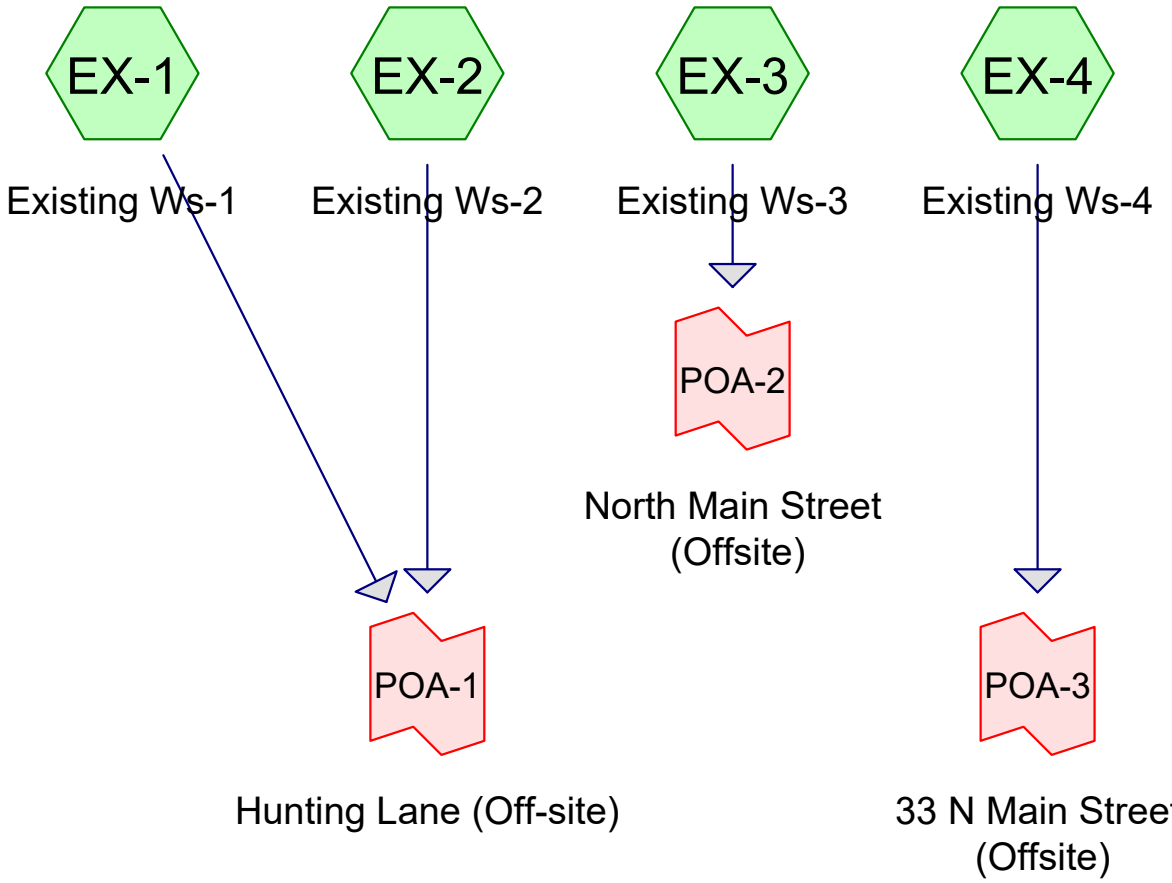
ISSUE TYPE: ISSUED TO ZBA
ISSUE DATE: 09/27/2024
PROJECT NUMBER: 23048

DRAWN BY: MJH/DTB
CHECKED BY: DTB/DJH

SHEET TITLE:
POST-DEVELOPMENT WATERSHED MAP

SHEET NUMBER:
POST

ISSUED FOR: **ZBA**



Subcat Reach Pond Link

Routing Diagram for 23048_Pre-Dev
Prepared by Highpoint Engineering, Inc, Printed 12/6/2024

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
48,181	39	>75% Grass cover, Good, HSG A (EX-1, EX-3, EX-4)
61,350	61	>75% Grass cover, Good, HSG B (EX-1)
37,439	74	>75% Grass cover, Good, HSG C (EX-1, EX-3, EX-4)
15,249	82	Dirt roads, HSG B (EX-1)
2,900	85	Gravel roads, HSG B (EX-1)
46,663	79	Pasture/grassland/range, Poor, HSG B (EX-1)
1,534	98	Paved parking, HSG B (EX-4)
13,335	98	Paved parking, HSG C (EX-1, EX-3)
11,229	98	Roofs, HSG C (EX-1, EX-3)
19,411	55	Woods, Good, HSG B (EX-1, EX-2, EX-3)
32,724	70	Woods, Good, HSG C (EX-2, EX-3)
45,490	58	Woods/grass comb., Good, HSG B (EX-1, EX-3)
22,420	72	Woods/grass comb., Good, HSG C (EX-3)
357,925	**66**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
48,181	HSG A	EX-1, EX-3, EX-4
192,597	HSG B	EX-1, EX-2, EX-3, EX-4
117,147	HSG C	EX-1, EX-2, EX-3, EX-4
0	HSG D	
0	Other	
357,925		**TOTAL AREA**

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

Subcatchment EX-1: Existing Ws-1 Runoff Area=258,222 sf 8.34% Impervious Runoff Depth>0.64"
Flow Length=1,052' Tc=25.4 min CN=66 Runoff=2.55 cfs 13,723 cf

Subcatchment EX-2: Existing Ws-2 Runoff Area=10,044 sf 0.00% Impervious Runoff Depth>0.41"
Flow Length=178' Tc=6.9 min CN=60 Runoff=0.08 cfs 343 cf

Subcatchment EX-3: Existing Ws-3 Runoff Area=67,363 sf 4.50% Impervious Runoff Depth>0.83"
Flow Length=328' Tc=11.9 min CN=70 Runoff=1.22 cfs 4,645 cf

Subcatchment EX-4: Existing Ws-4 Runoff Area=22,296 sf 6.88% Impervious Runoff Depth>0.48"
Flow Length=121' Tc=3.2 min CN=62 Runoff=0.25 cfs 898 cf

Link POA-1: Hunting Lane (Off-site) Inflow=2.60 cfs 14,065 cf
Primary=2.60 cfs 14,065 cf

Link POA-2: North Main Street (Offsite) Inflow=1.22 cfs 4,645 cf
Primary=1.22 cfs 4,645 cf

Link POA-3: 33 N Main Street (Offsite) Inflow=0.25 cfs 898 cf
Primary=0.25 cfs 898 cf

Total Runoff Area = 357,925 sf Runoff Volume = 19,608 cf Average Runoff Depth = 0.66"
92.71% Pervious = 331,827 sf 7.29% Impervious = 26,098 sf

Summary for Subcatchment EX-1: Existing Ws-1

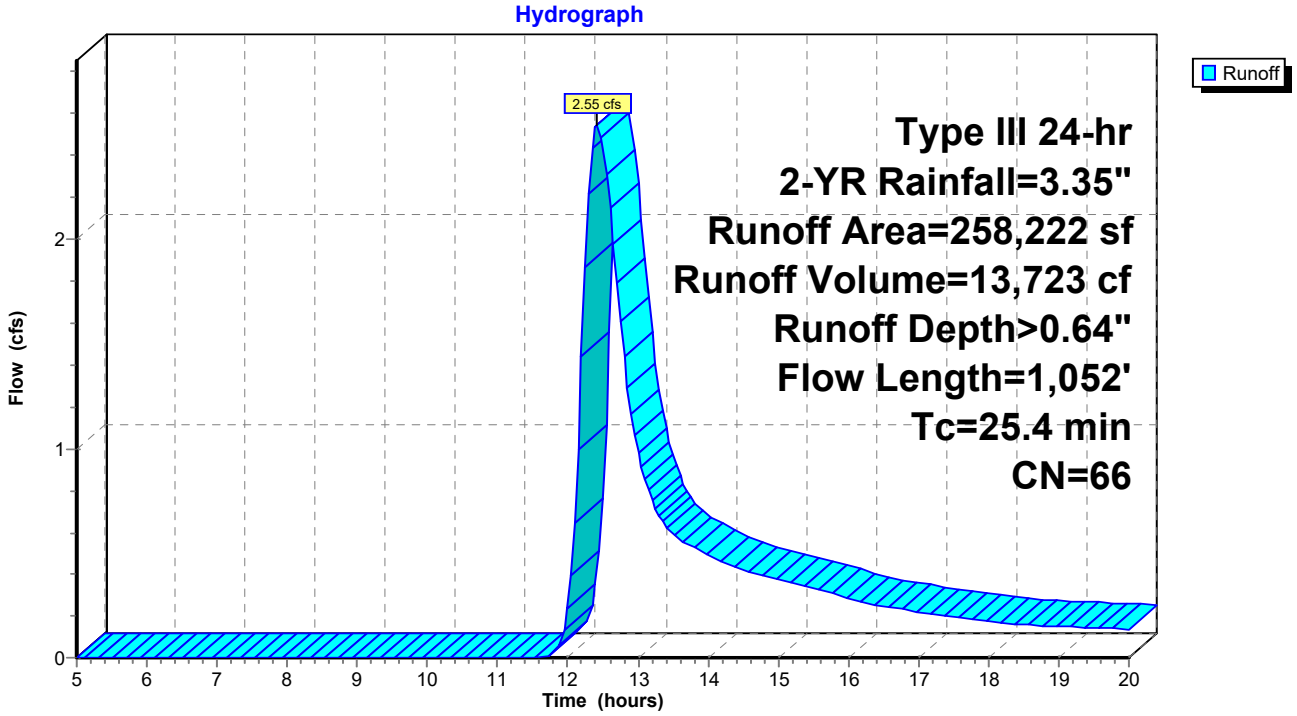
Runoff = 2.55 cfs @ 12.42 hrs, Volume= 13,723 cf, Depth> 0.64"
Routed to Link POA-1 : Hunting Lane (Off-site)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.35"

Area (sf)	CN	Description
37,653	39	>75% Grass cover, Good, HSG A
61,350	61	>75% Grass cover, Good, HSG B
21,649	74	>75% Grass cover, Good, HSG C
43,026	58	Woods/grass comb., Good, HSG B
8,196	55	Woods, Good, HSG B
15,249	82	Dirt roads, HSG B
46,663	79	Pasture/grassland/range, Poor, HSG B
2,900	85	Gravel roads, HSG B
8,520	98	Roofs, HSG C
13,016	98	Paved parking, HSG C
258,222	66	Weighted Average
236,686		91.66% Pervious Area
21,536		8.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow, A-B** Grass: Bermuda n= 0.410 P2= 3.35"
3.4	424	0.0900	2.10		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.4	62	0.0150	2.49		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
3.2	133	0.0100	0.70		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
9.1	383	0.0100	0.70		**Shallow Concentrated Flow, E-F** Short Grass Pasture Kv= 7.0 fps
25.4	1,052	Total			

Subcatchment EX-1: Existing Ws-1



Summary for Subcatchment EX-2: Existing Ws-2

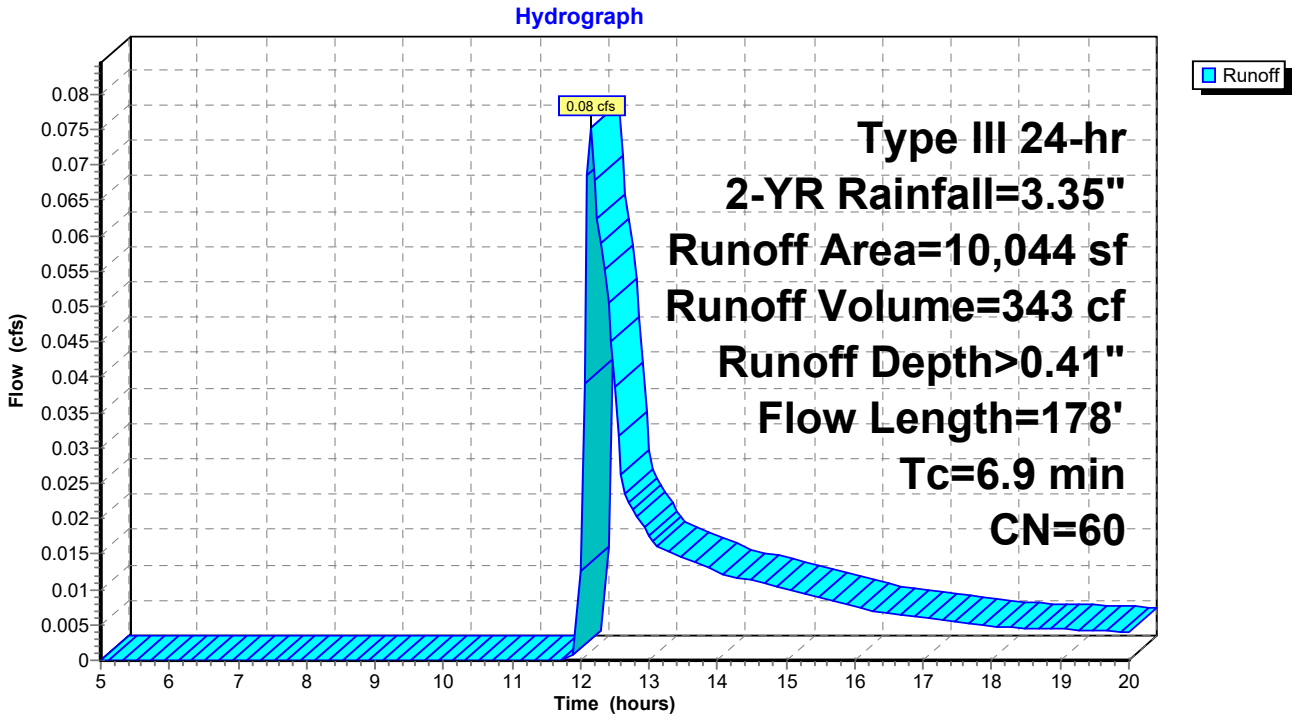
Runoff = 0.08 cfs @ 12.15 hrs, Volume= 343 cf, Depth> 0.41"
Routed to Link POA-1 : Hunting Lane (Off-site)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.35"

Area (sf)	CN	Description
6,768	55	Woods, Good, HSG B
3,276	70	Woods, Good, HSG C
10,044	60	Weighted Average
10,044		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.1100	0.13		**Sheet Flow, A-B** Grass: Bermuda n= 0.410 P2= 3.35"
0.7	128	0.2100	3.21		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
6.9	178	Total			

Subcatchment EX-2: Existing Ws-2



Summary for Subcatchment EX-3: Existing Ws-3

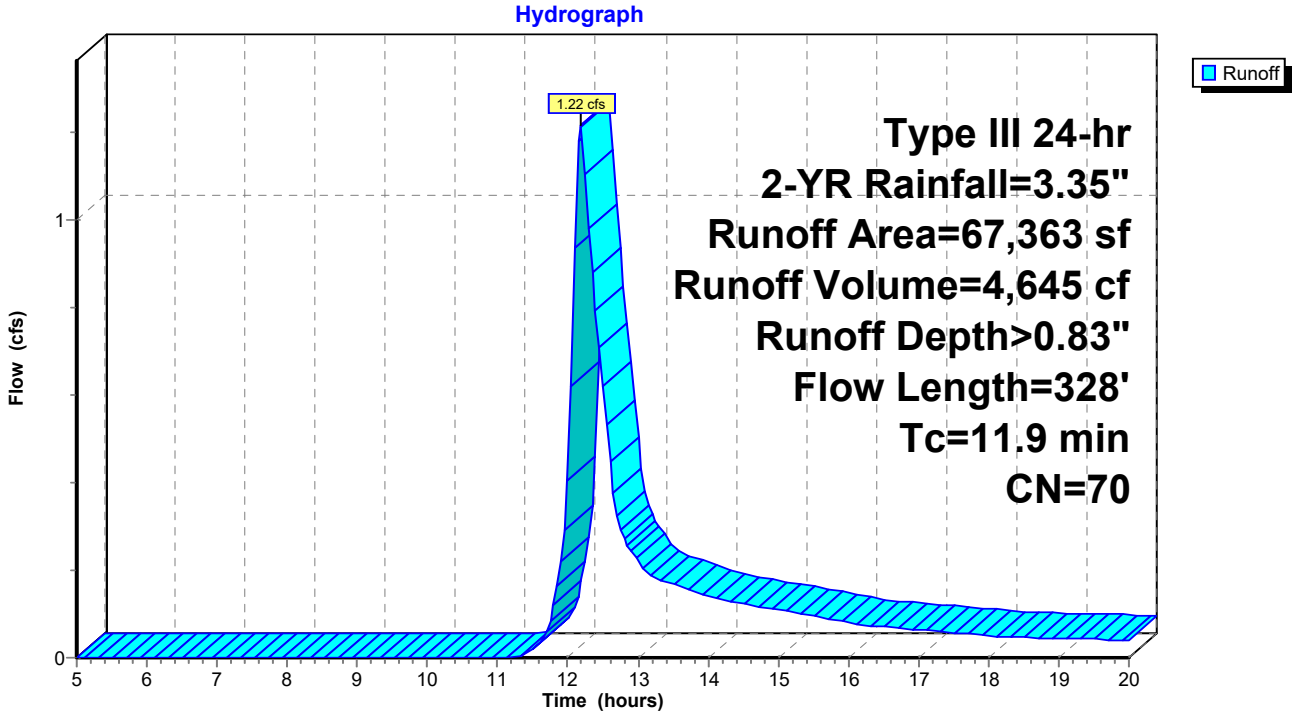
Runoff = 1.22 cfs @ 12.19 hrs, Volume= 4,645 cf, Depth> 0.83"
Routed to Link POA-2 : North Main Street (Offsite)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.35"

Area (sf)	CN	Description
1,623	39	>75% Grass cover, Good, HSG A
3,933	74	>75% Grass cover, Good, HSG C
2,464	58	Woods/grass comb., Good, HSG B
22,420	72	Woods/grass comb., Good, HSG C
4,447	55	Woods, Good, HSG B
29,448	70	Woods, Good, HSG C
2,709	98	Roofs, HSG C
319	98	Paved parking, HSG C
67,363	70	Weighted Average
64,335		95.50% Pervious Area
3,028		4.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow, A-B** Grass: Bermuda n= 0.410 P2= 3.35"
2.6	278	0.0650	1.78		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
11.9	328	Total			

Subcatchment EX-3: Existing Ws-3



Summary for Subcatchment EX-4: Existing Ws-4

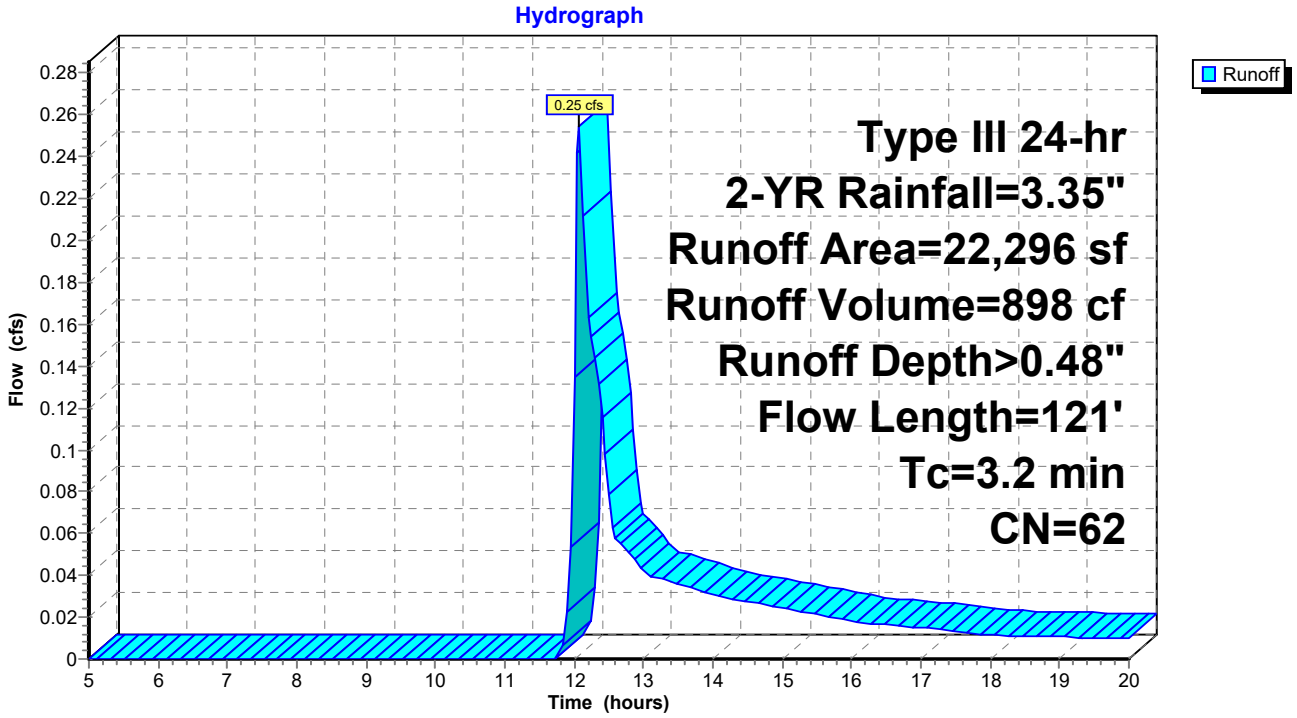
Runoff = 0.25 cfs @ 12.07 hrs, Volume= 898 cf, Depth> 0.48"
Routed to Link POA-3 : 33 N Main Street (Offsite)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.35"

Area (sf)	CN	Description
8,905	39	>75% Grass cover, Good, HSG A
11,857	74	>75% Grass cover, Good, HSG C
1,534	98	Paved parking, HSG B
22,296	62	Weighted Average
20,762		93.12% Pervious Area
1,534		6.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	21	0.0300	1.21		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.35"
2.0	29	0.0850	0.24		**Sheet Flow, B-C** Grass: Short n= 0.150 P2= 3.35"
0.9	71	0.0350	1.31		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
3.2	121	Total			

Subcatchment EX-4: Existing Ws-4

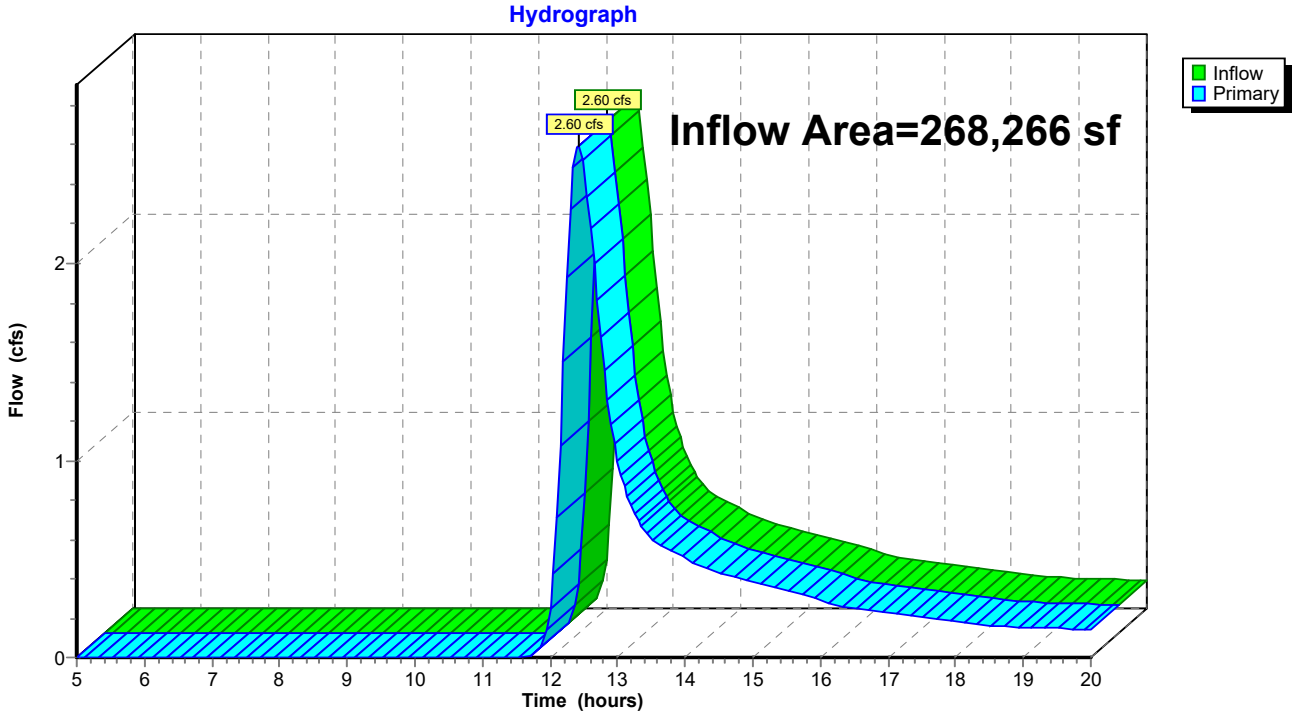


Summary for Link POA-1: Hunting Lane (Off-site)

Inflow Area = 268,266 sf, 8.03% Impervious, Inflow Depth > 0.63" for 2-YR event
Inflow = 2.60 cfs @ 12.42 hrs, Volume= 14,065 cf
Primary = 2.60 cfs @ 12.42 hrs, Volume= 14,065 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link POA-1: Hunting Lane (Off-site)

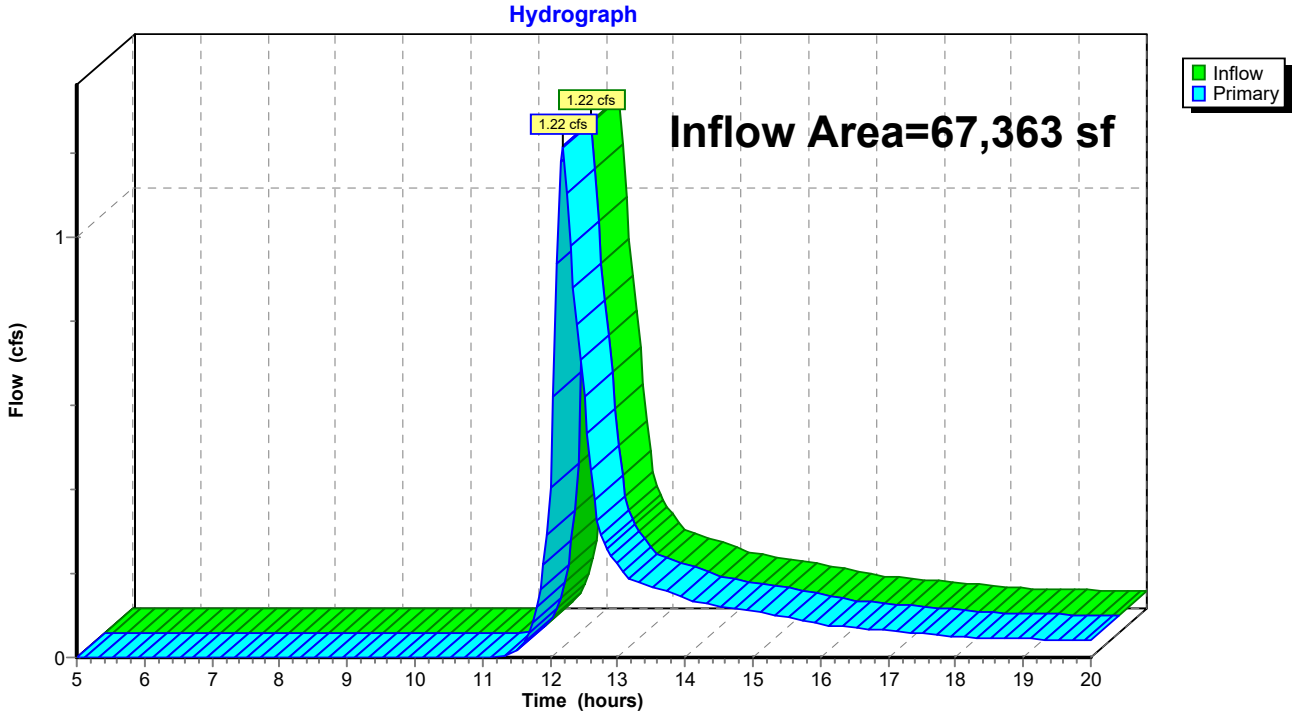


Summary for Link POA-2: North Main Street (Offsite)

Inflow Area = 67,363 sf, 4.50% Impervious, Inflow Depth > 0.83" for 2-YR event
Inflow = 1.22 cfs @ 12.19 hrs, Volume= 4,645 cf
Primary = 1.22 cfs @ 12.19 hrs, Volume= 4,645 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link POA-2: North Main Street (Offsite)

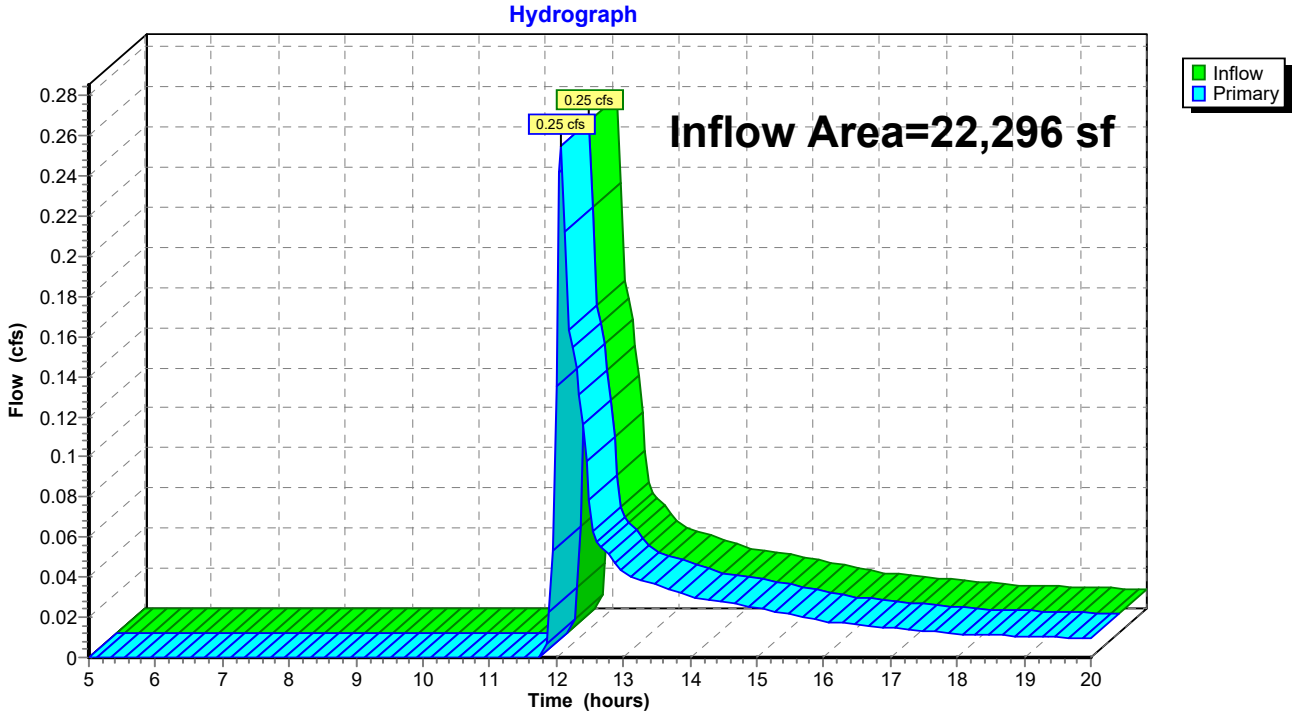


Summary for Link POA-3: 33 N Main Street (Offsite)

Inflow Area = 22,296 sf, 6.88% Impervious, Inflow Depth > 0.48" for 2-YR event
Inflow = 0.25 cfs @ 12.07 hrs, Volume= 898 cf
Primary = 0.25 cfs @ 12.07 hrs, Volume= 898 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link POA-3: 33 N Main Street (Offsite)



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

Subcatchment EX-1: Existing Ws-1 Runoff Area=258,222 sf 8.34% Impervious Runoff Depth>1.72"
Flow Length=1,052' Tc=25.4 min CN=66 Runoff=7.69 cfs 37,016 cf

Subcatchment EX-2: Existing Ws-2 Runoff Area=10,044 sf 0.00% Impervious Runoff Depth>1.31"
Flow Length=178' Tc=6.9 min CN=60 Runoff=0.34 cfs 1,093 cf

Subcatchment EX-3: Existing Ws-3 Runoff Area=67,363 sf 4.50% Impervious Runoff Depth>2.04"
Flow Length=328' Tc=11.9 min CN=70 Runoff=3.23 cfs 11,447 cf

Subcatchment EX-4: Existing Ws-4 Runoff Area=22,296 sf 6.88% Impervious Runoff Depth>1.45"
Flow Length=121' Tc=3.2 min CN=62 Runoff=0.97 cfs 2,687 cf

Link POA-1: Hunting Lane (Off-site) Inflow=7.86 cfs 38,109 cf
Primary=7.86 cfs 38,109 cf

Link POA-2: North Main Street (Offsite) Inflow=3.23 cfs 11,447 cf
Primary=3.23 cfs 11,447 cf

Link POA-3: 33 N Main Street (Offsite) Inflow=0.97 cfs 2,687 cf
Primary=0.97 cfs 2,687 cf

Total Runoff Area = 357,925 sf Runoff Volume = 52,243 cf Average Runoff Depth = 1.75"
92.71% Pervious = 331,827 sf 7.29% Impervious = 26,098 sf

Summary for Subcatchment EX-1: Existing Ws-1

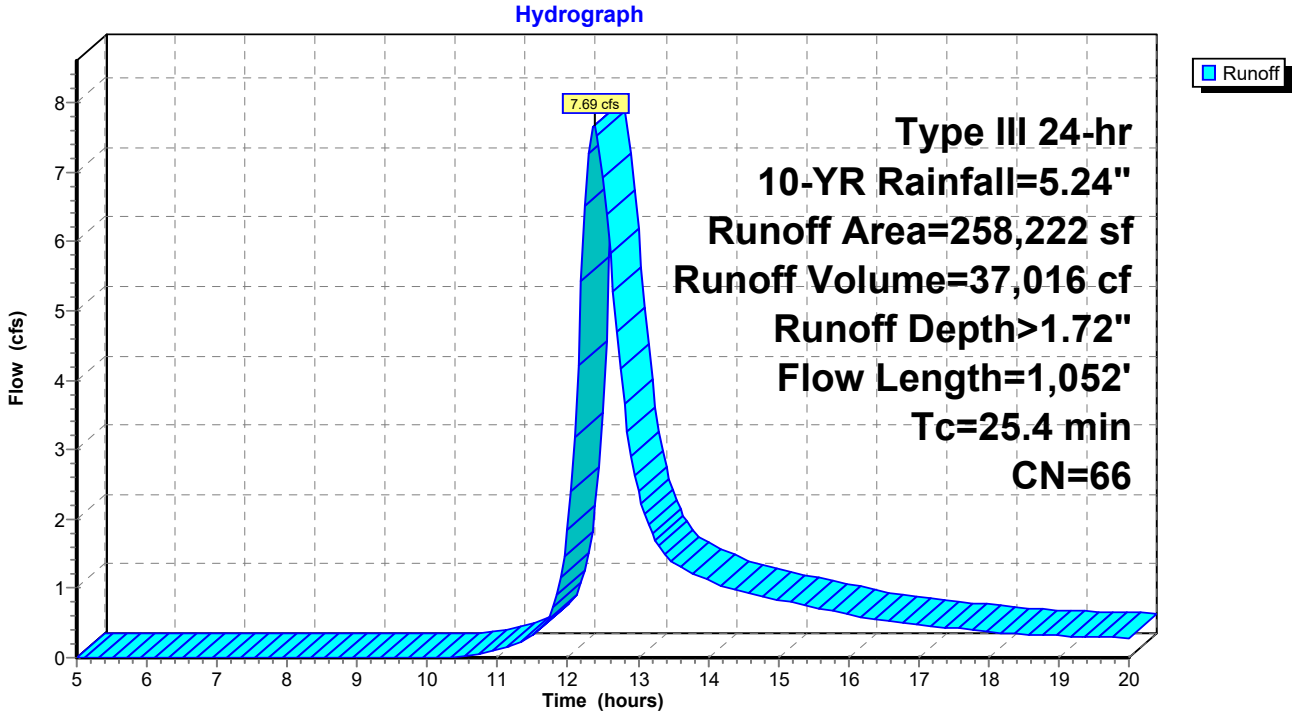
Runoff = 7.69 cfs @ 12.38 hrs, Volume= 37,016 cf, Depth> 1.72"
Routed to Link POA-1 : Hunting Lane (Off-site)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

Area (sf)	CN	Description
37,653	39	>75% Grass cover, Good, HSG A
61,350	61	>75% Grass cover, Good, HSG B
21,649	74	>75% Grass cover, Good, HSG C
43,026	58	Woods/grass comb., Good, HSG B
8,196	55	Woods, Good, HSG B
15,249	82	Dirt roads, HSG B
46,663	79	Pasture/grassland/range, Poor, HSG B
2,900	85	Gravel roads, HSG B
8,520	98	Roofs, HSG C
13,016	98	Paved parking, HSG C
258,222	66	Weighted Average
236,686		91.66% Pervious Area
21,536		8.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow, A-B** Grass: Bermuda n= 0.410 P2= 3.35"
3.4	424	0.0900	2.10		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.4	62	0.0150	2.49		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
3.2	133	0.0100	0.70		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
9.1	383	0.0100	0.70		**Shallow Concentrated Flow, E-F** Short Grass Pasture Kv= 7.0 fps
25.4	1,052	Total			

Subcatchment EX-1: Existing Ws-1



Summary for Subcatchment EX-2: Existing Ws-2

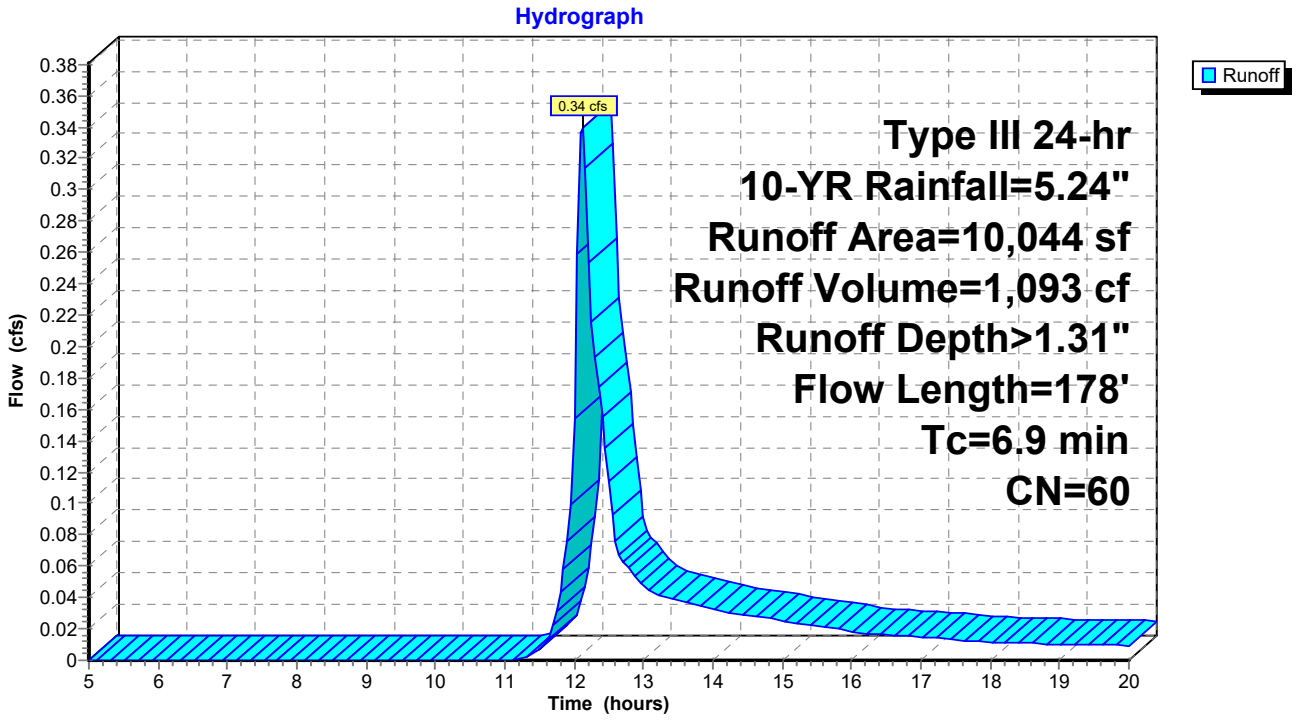
Runoff = 0.34 cfs @ 12.11 hrs, Volume= 1,093 cf, Depth> 1.31"
Routed to Link POA-1 : Hunting Lane (Off-site)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

Area (sf)	CN	Description
6,768	55	Woods, Good, HSG B
3,276	70	Woods, Good, HSG C
10,044	60	Weighted Average
10,044		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.1100	0.13		**Sheet Flow, A-B** Grass: Bermuda n= 0.410 P2= 3.35"
0.7	128	0.2100	3.21		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
6.9	178	Total			

Subcatchment EX-2: Existing Ws-2



Summary for Subcatchment EX-3: Existing Ws-3

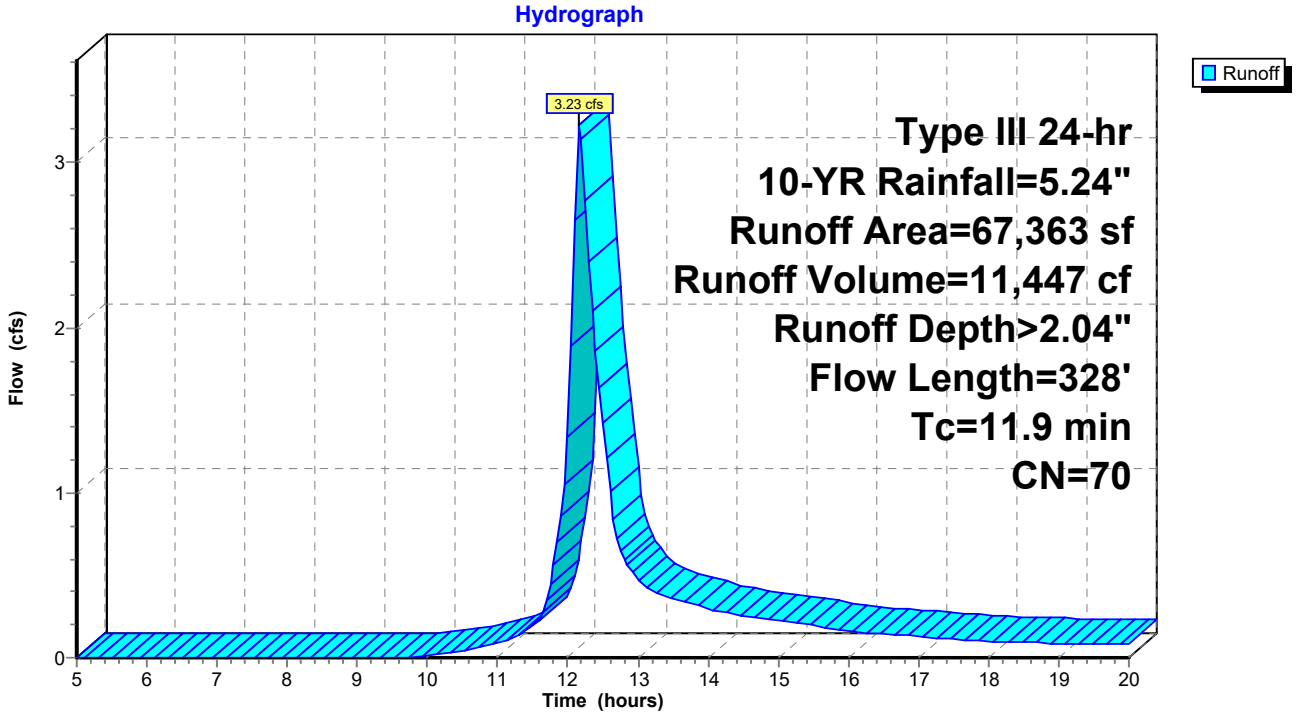
Runoff = 3.23 cfs @ 12.17 hrs, Volume= 11,447 cf, Depth> 2.04"
Routed to Link POA-2 : North Main Street (Offsite)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

Area (sf)	CN	Description
1,623	39	>75% Grass cover, Good, HSG A
3,933	74	>75% Grass cover, Good, HSG C
2,464	58	Woods/grass comb., Good, HSG B
22,420	72	Woods/grass comb., Good, HSG C
4,447	55	Woods, Good, HSG B
29,448	70	Woods, Good, HSG C
2,709	98	Roofs, HSG C
319	98	Paved parking, HSG C
67,363	70	Weighted Average
64,335		95.50% Pervious Area
3,028		4.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow, A-B** Grass: Bermuda n= 0.410 P2= 3.35"
2.6	278	0.0650	1.78		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
11.9	328	Total			

Subcatchment EX-3: Existing Ws-3



Summary for Subcatchment EX-4: Existing Ws-4

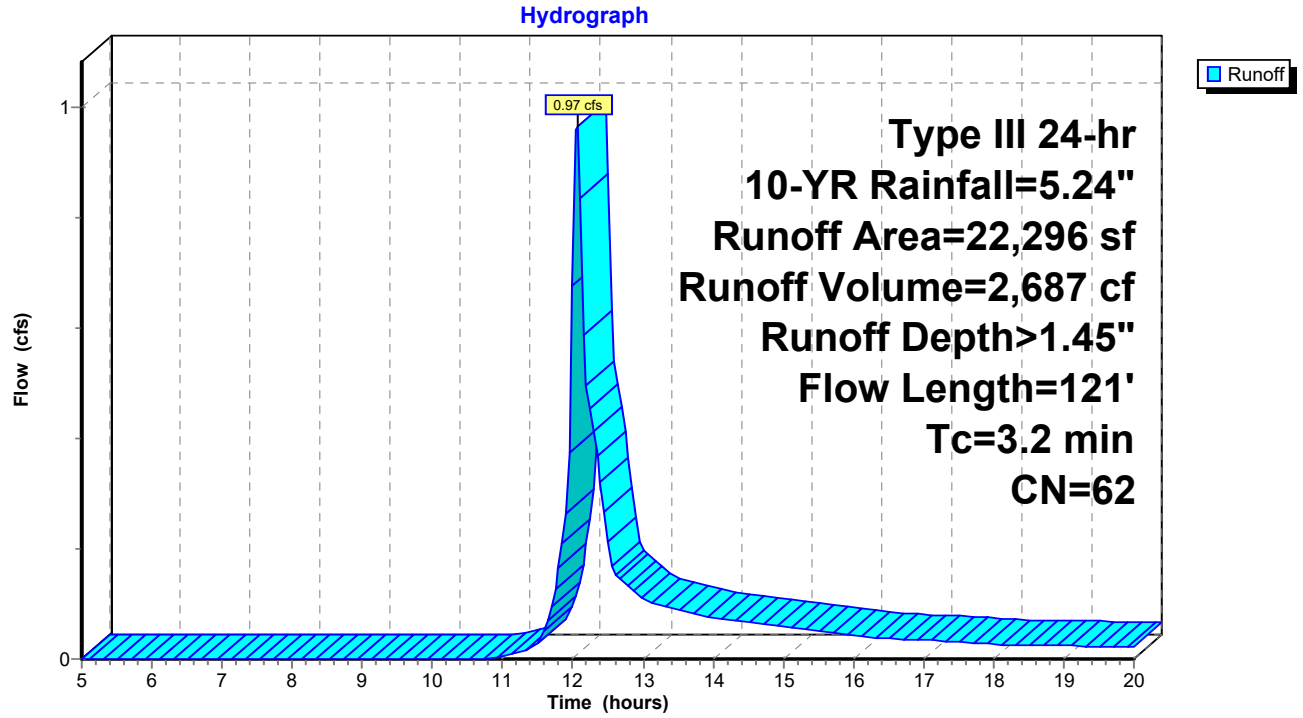
Runoff = 0.97 cfs @ 12.06 hrs, Volume= 2,687 cf, Depth> 1.45"
Routed to Link POA-3 : 33 N Main Street (Offsite)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

Area (sf)	CN	Description
8,905	39	>75% Grass cover, Good, HSG A
11,857	74	>75% Grass cover, Good, HSG C
1,534	98	Paved parking, HSG B
22,296	62	Weighted Average
20,762		93.12% Pervious Area
1,534		6.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	21	0.0300	1.21		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.35"
2.0	29	0.0850	0.24		**Sheet Flow, B-C** Grass: Short n= 0.150 P2= 3.35"
0.9	71	0.0350	1.31		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
3.2	121	Total			

Subcatchment EX-4: Existing Ws-4

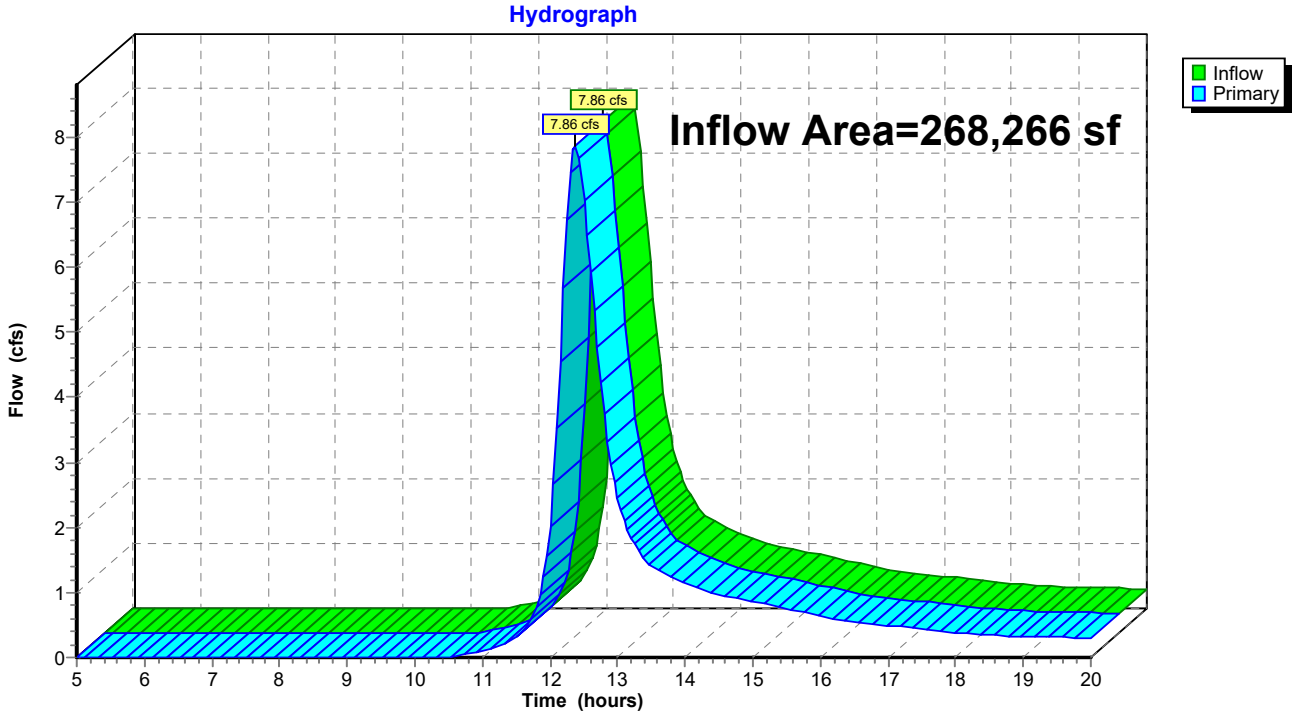


Summary for Link POA-1: Hunting Lane (Off-site)

Inflow Area = 268,266 sf, 8.03% Impervious, Inflow Depth > 1.70" for 10-YR event
Inflow = 7.86 cfs @ 12.37 hrs, Volume= 38,109 cf
Primary = 7.86 cfs @ 12.37 hrs, Volume= 38,109 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link POA-1: Hunting Lane (Off-site)

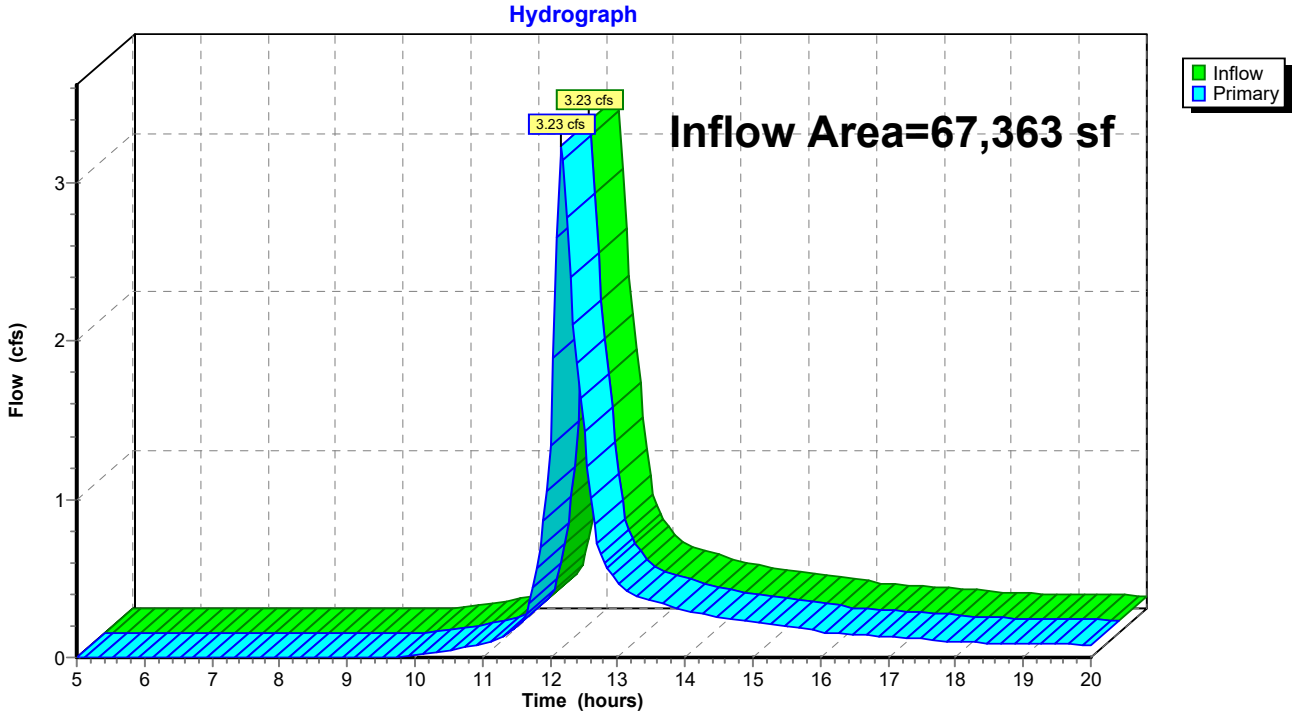


Summary for Link POA-2: North Main Street (Offsite)

Inflow Area = 67,363 sf, 4.50% Impervious, Inflow Depth > 2.04" for 10-YR event
Inflow = 3.23 cfs @ 12.17 hrs, Volume= 11,447 cf
Primary = 3.23 cfs @ 12.17 hrs, Volume= 11,447 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link POA-2: North Main Street (Offsite)

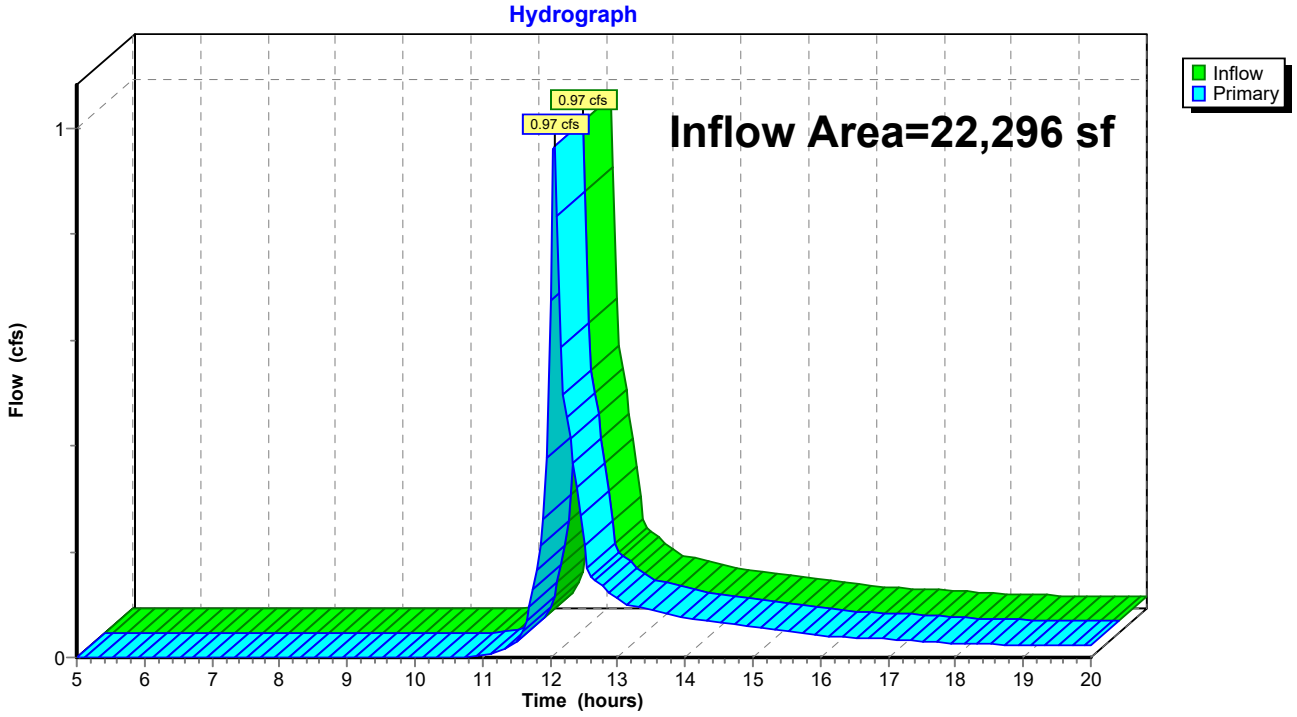


Summary for Link POA-3: 33 N Main Street (Offsite)

Inflow Area = 22,296 sf, 6.88% Impervious, Inflow Depth > 1.45" for 10-YR event
Inflow = 0.97 cfs @ 12.06 hrs, Volume= 2,687 cf
Primary = 0.97 cfs @ 12.06 hrs, Volume= 2,687 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link POA-3: 33 N Main Street (Offsite)



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

Subcatchment EX-1: Existing Ws-1 Runoff Area=258,222 sf 8.34% Impervious Runoff Depth>2.52"
Flow Length=1,052' Tc=25.4 min CN=66 Runoff=11.47 cfs 54,309 cf

Subcatchment EX-2: Existing Ws-2 Runoff Area=10,044 sf 0.00% Impervious Runoff Depth>2.01"
Flow Length=178' Tc=6.9 min CN=60 Runoff=0.55 cfs 1,684 cf

Subcatchment EX-3: Existing Ws-3 Runoff Area=67,363 sf 4.50% Impervious Runoff Depth>2.91"
Flow Length=328' Tc=11.9 min CN=70 Runoff=4.64 cfs 16,331 cf

Subcatchment EX-4: Existing Ws-4 Runoff Area=22,296 sf 6.88% Impervious Runoff Depth>2.19"
Flow Length=121' Tc=3.2 min CN=62 Runoff=1.50 cfs 4,066 cf

Link POA-1: Hunting Lane (Off-site) Inflow=11.72 cfs 55,993 cf
Primary=11.72 cfs 55,993 cf

Link POA-2: North Main Street (Offsite) Inflow=4.64 cfs 16,331 cf
Primary=4.64 cfs 16,331 cf

Link POA-3: 33 N Main Street (Offsite) Inflow=1.50 cfs 4,066 cf
Primary=1.50 cfs 4,066 cf

Total Runoff Area = 357,925 sf Runoff Volume = 76,389 cf Average Runoff Depth = 2.56"
92.71% Pervious = 331,827 sf 7.29% Impervious = 26,098 sf

Summary for Subcatchment EX-1: Existing Ws-1

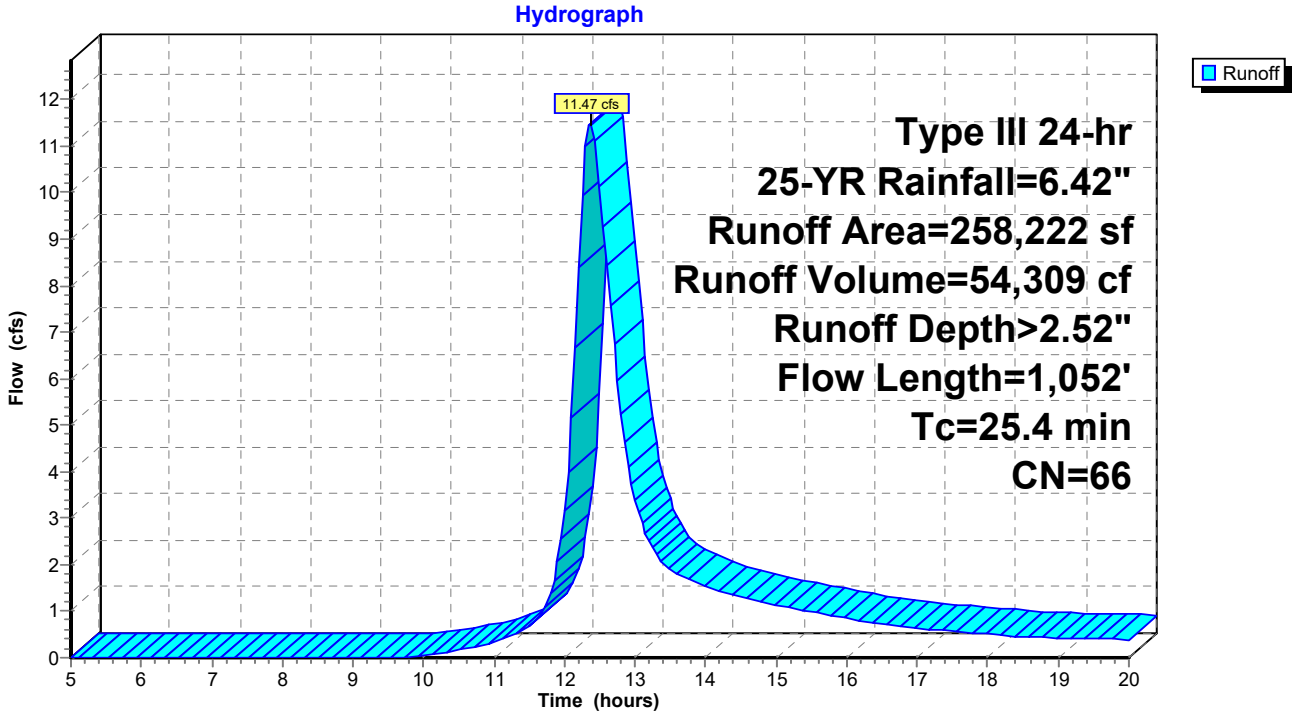
Runoff = 11.47 cfs @ 12.37 hrs, Volume= 54,309 cf, Depth> 2.52"
Routed to Link POA-1 : Hunting Lane (Off-site)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.42"

Area (sf)	CN	Description
37,653	39	>75% Grass cover, Good, HSG A
61,350	61	>75% Grass cover, Good, HSG B
21,649	74	>75% Grass cover, Good, HSG C
43,026	58	Woods/grass comb., Good, HSG B
8,196	55	Woods, Good, HSG B
15,249	82	Dirt roads, HSG B
46,663	79	Pasture/grassland/range, Poor, HSG B
2,900	85	Gravel roads, HSG B
8,520	98	Roofs, HSG C
13,016	98	Paved parking, HSG C
258,222	66	Weighted Average
236,686		91.66% Pervious Area
21,536		8.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow, A-B** Grass: Bermuda n= 0.410 P2= 3.35"
3.4	424	0.0900	2.10		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.4	62	0.0150	2.49		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
3.2	133	0.0100	0.70		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
9.1	383	0.0100	0.70		**Shallow Concentrated Flow, E-F** Short Grass Pasture Kv= 7.0 fps
25.4	1,052	Total			

Subcatchment EX-1: Existing Ws-1



Summary for Subcatchment EX-2: Existing Ws-2

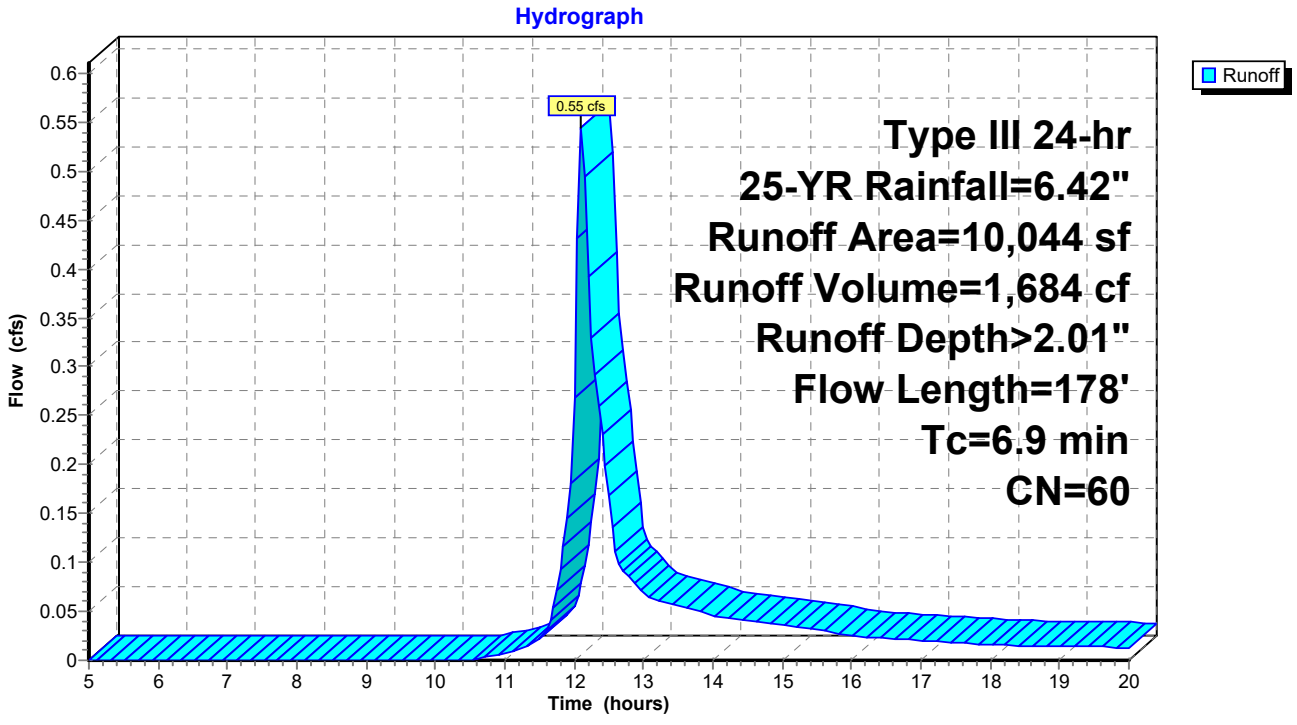
Runoff = 0.55 cfs @ 12.11 hrs, Volume= 1,684 cf, Depth> 2.01"
Routed to Link POA-1 : Hunting Lane (Off-site)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.42"

Area (sf)	CN	Description
6,768	55	Woods, Good, HSG B
3,276	70	Woods, Good, HSG C
10,044	60	Weighted Average
10,044		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.1100	0.13		**Sheet Flow, A-B** Grass: Bermuda n= 0.410 P2= 3.35"
0.7	128	0.2100	3.21		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
6.9	178	Total			

Subcatchment EX-2: Existing Ws-2



Summary for Subcatchment EX-3: Existing Ws-3

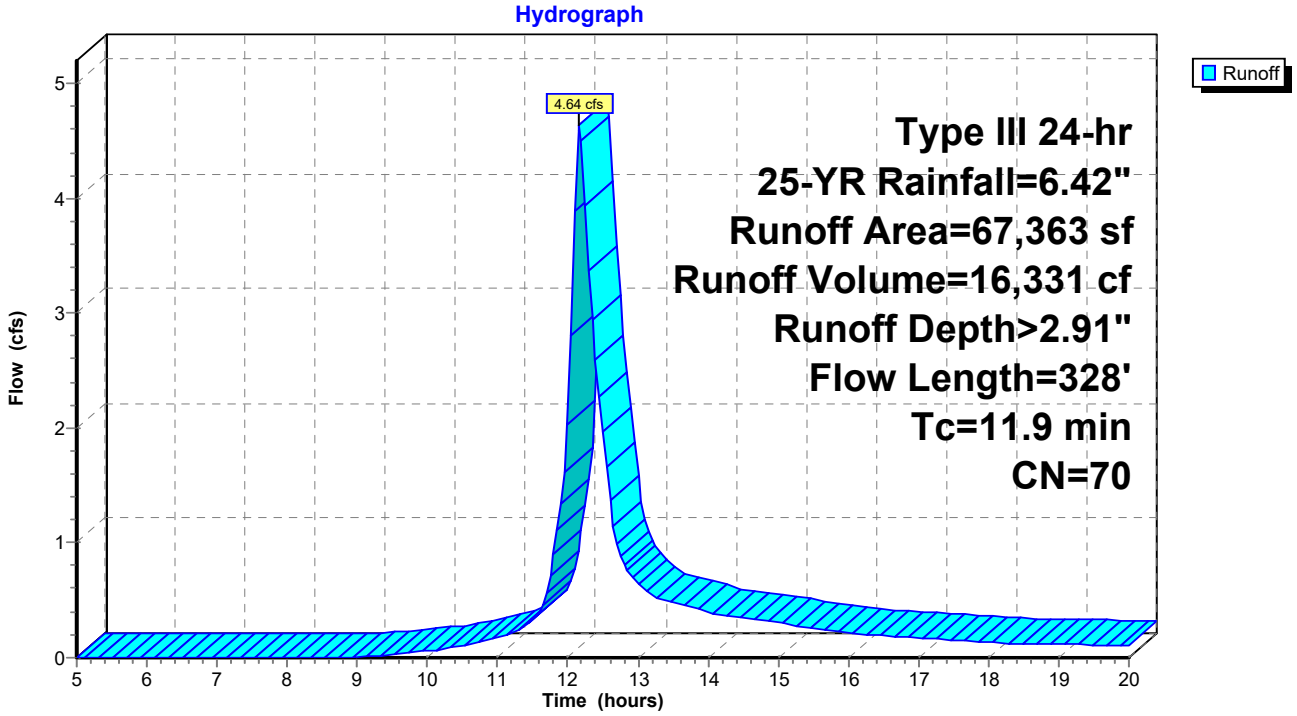
Runoff = 4.64 cfs @ 12.17 hrs, Volume= 16,331 cf, Depth> 2.91"
Routed to Link POA-2 : North Main Street (Offsite)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.42"

Area (sf)	CN	Description
1,623	39	>75% Grass cover, Good, HSG A
3,933	74	>75% Grass cover, Good, HSG C
2,464	58	Woods/grass comb., Good, HSG B
22,420	72	Woods/grass comb., Good, HSG C
4,447	55	Woods, Good, HSG B
29,448	70	Woods, Good, HSG C
2,709	98	Roofs, HSG C
319	98	Paved parking, HSG C
67,363	70	Weighted Average
64,335		95.50% Pervious Area
3,028		4.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow, A-B** Grass: Bermuda n= 0.410 P2= 3.35"
2.6	278	0.0650	1.78		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
11.9	328	Total			

Subcatchment EX-3: Existing Ws-3



Summary for Subcatchment EX-4: Existing Ws-4

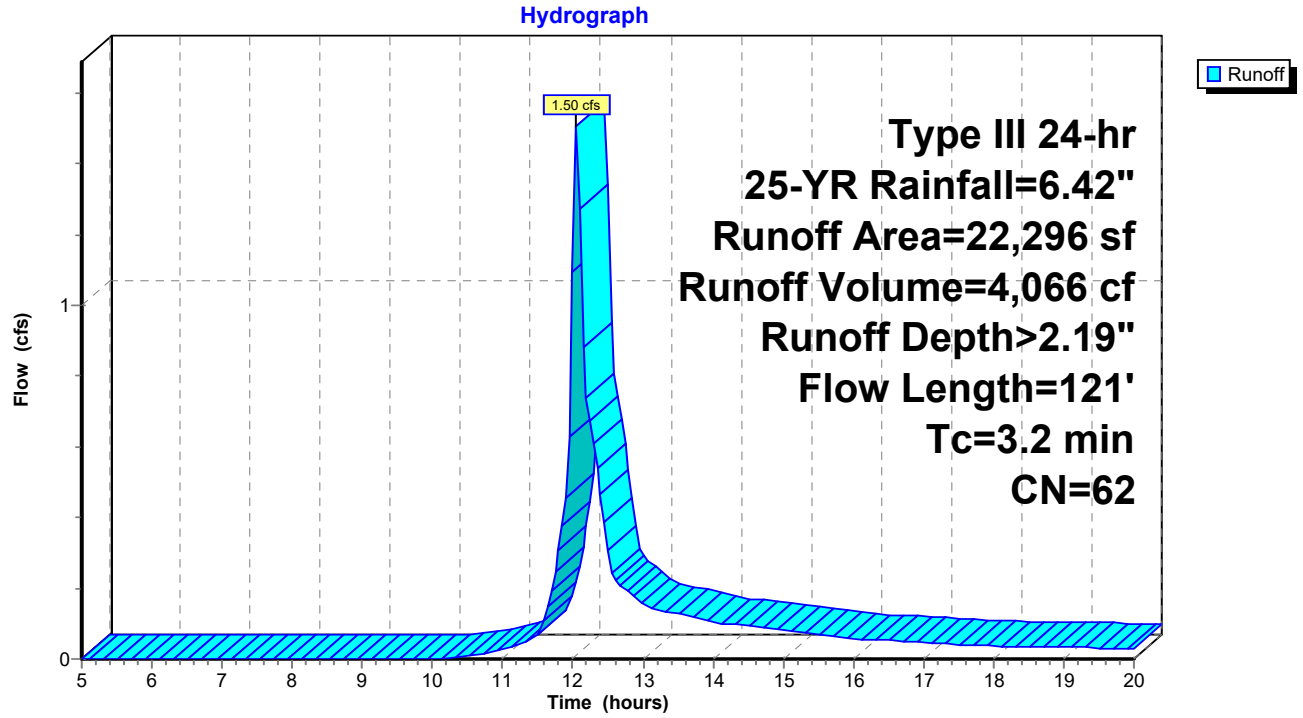
Runoff = 1.50 cfs @ 12.06 hrs, Volume= 4,066 cf, Depth> 2.19"
Routed to Link POA-3 : 33 N Main Street (Offsite)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.42"

Area (sf)	CN	Description
8,905	39	>75% Grass cover, Good, HSG A
11,857	74	>75% Grass cover, Good, HSG C
1,534	98	Paved parking, HSG B
22,296	62	Weighted Average
20,762		93.12% Pervious Area
1,534		6.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	21	0.0300	1.21		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.35"
2.0	29	0.0850	0.24		**Sheet Flow, B-C** Grass: Short n= 0.150 P2= 3.35"
0.9	71	0.0350	1.31		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
3.2	121	Total			

Subcatchment EX-4: Existing Ws-4

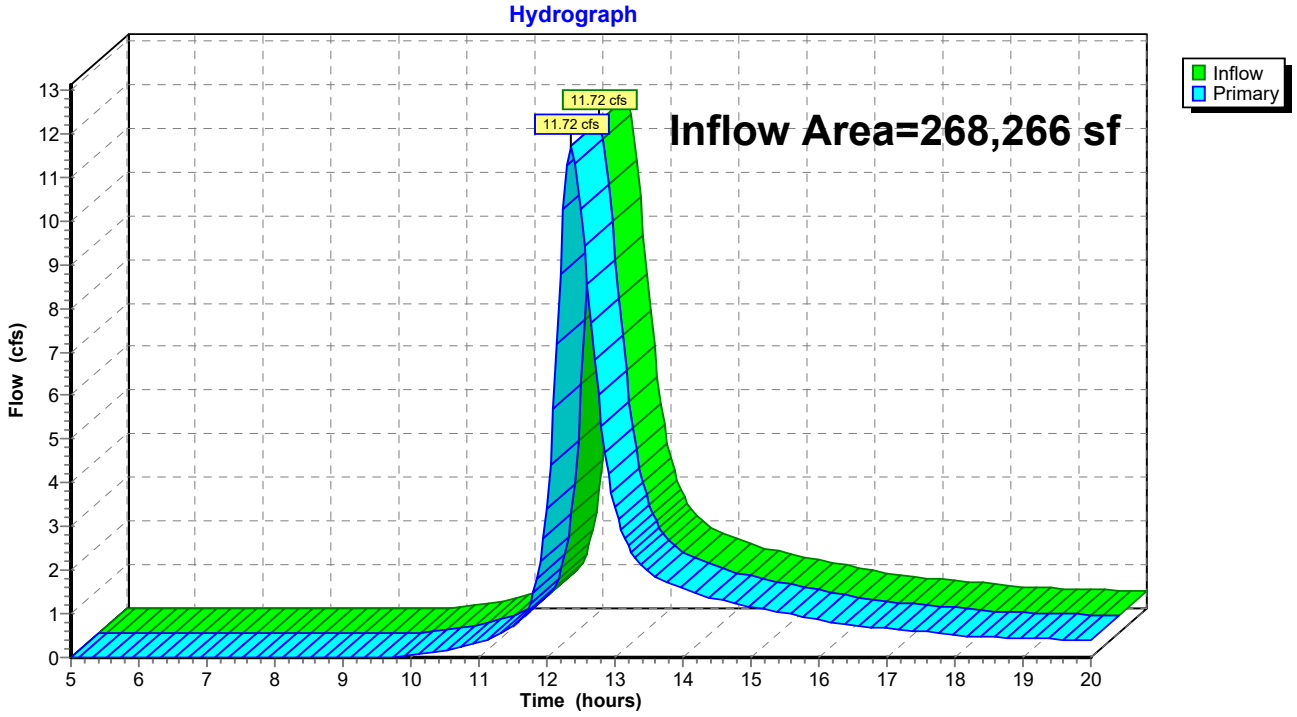


Summary for Link POA-1: Hunting Lane (Off-site)

Inflow Area = 268,266 sf, 8.03% Impervious, Inflow Depth > 2.50" for 25-YR event
Inflow = 11.72 cfs @ 12.36 hrs, Volume= 55,993 cf
Primary = 11.72 cfs @ 12.36 hrs, Volume= 55,993 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link POA-1: Hunting Lane (Off-site)

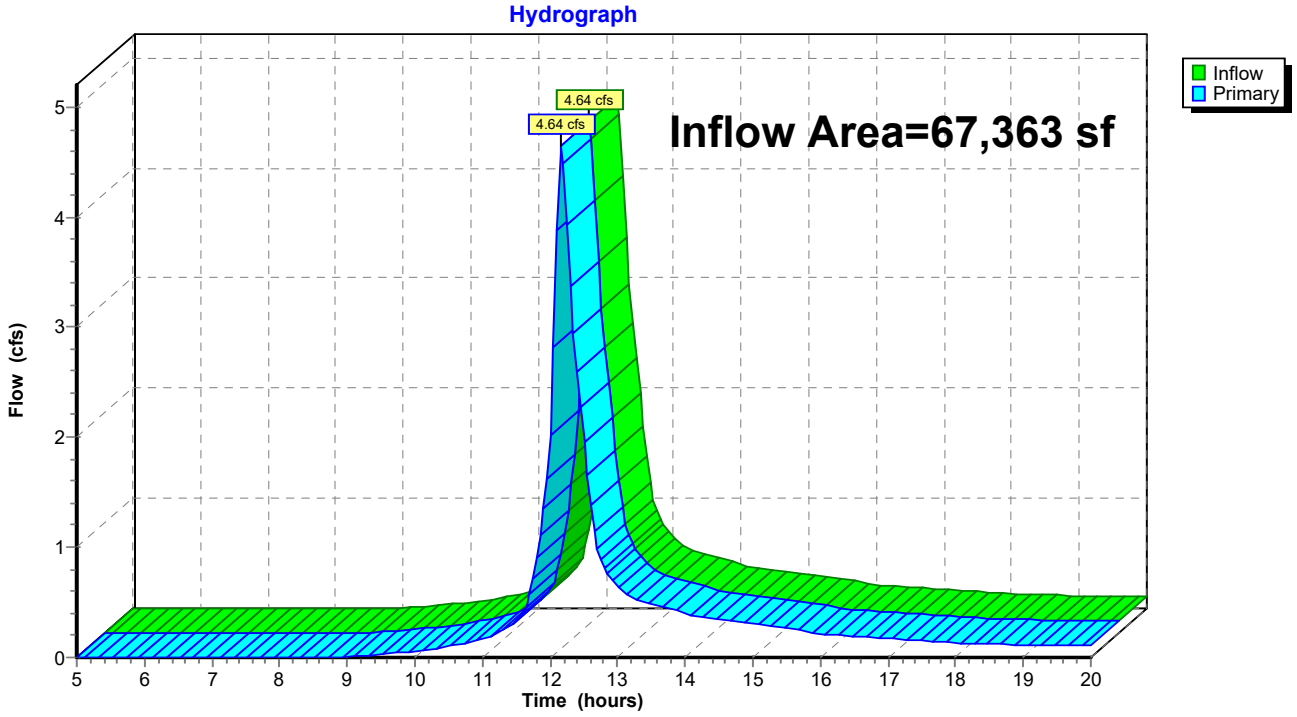


Summary for Link POA-2: North Main Street (Offsite)

Inflow Area = 67,363 sf, 4.50% Impervious, Inflow Depth > 2.91" for 25-YR event
Inflow = 4.64 cfs @ 12.17 hrs, Volume= 16,331 cf
Primary = 4.64 cfs @ 12.17 hrs, Volume= 16,331 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link POA-2: North Main Street (Offsite)

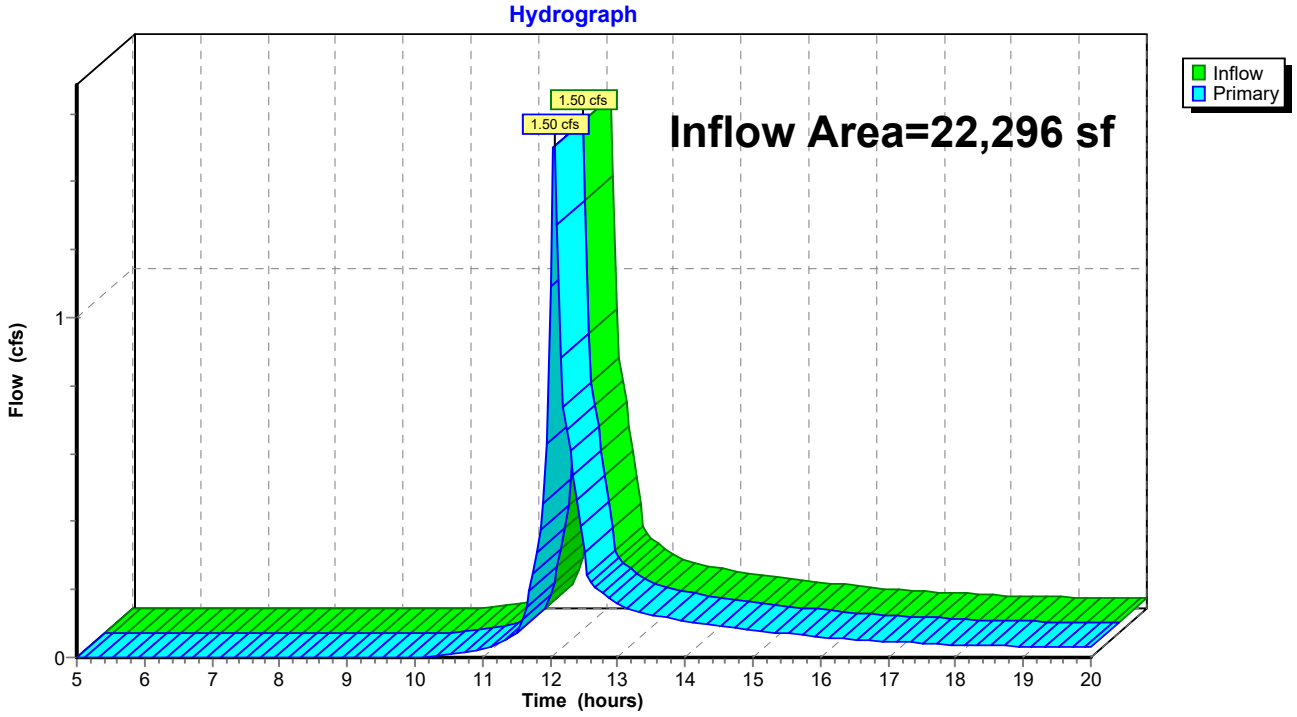


Summary for Link POA-3: 33 N Main Street (Offsite)

Inflow Area = 22,296 sf, 6.88% Impervious, Inflow Depth > 2.19" for 25-YR event
Inflow = 1.50 cfs @ 12.06 hrs, Volume= 4,066 cf
Primary = 1.50 cfs @ 12.06 hrs, Volume= 4,066 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link POA-3: 33 N Main Street (Offsite)



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

Subcatchment EX-1: Existing Ws-1 Runoff Area=258,222 sf 8.34% Impervious Runoff Depth>3.87"
Flow Length=1,052' Tc=25.4 min CN=66 Runoff=17.69 cfs 83,350 cf

Subcatchment EX-2: Existing Ws-2 Runoff Area=10,044 sf 0.00% Impervious Runoff Depth>3.23"
Flow Length=178' Tc=6.9 min CN=60 Runoff=0.90 cfs 2,707 cf

Subcatchment EX-3: Existing Ws-3 Runoff Area=67,363 sf 4.50% Impervious Runoff Depth>4.34"
Flow Length=328' Tc=11.9 min CN=70 Runoff=6.92 cfs 24,381 cf

Subcatchment EX-4: Existing Ws-4 Runoff Area=22,296 sf 6.88% Impervious Runoff Depth>3.46"
Flow Length=121' Tc=3.2 min CN=62 Runoff=2.41 cfs 6,426 cf

Link POA-1: Hunting Lane (Off-site) Inflow=18.09 cfs 86,057 cf
Primary=18.09 cfs 86,057 cf

Link POA-2: North Main Street (Offsite) Inflow=6.92 cfs 24,381 cf
Primary=6.92 cfs 24,381 cf

Link POA-3: 33 N Main Street (Offsite) Inflow=2.41 cfs 6,426 cf
Primary=2.41 cfs 6,426 cf

Total Runoff Area = 357,925 sf Runoff Volume = 116,864 cf Average Runoff Depth = 3.92"
92.71% Pervious = 331,827 sf 7.29% Impervious = 26,098 sf

Summary for Subcatchment EX-1: Existing Ws-1

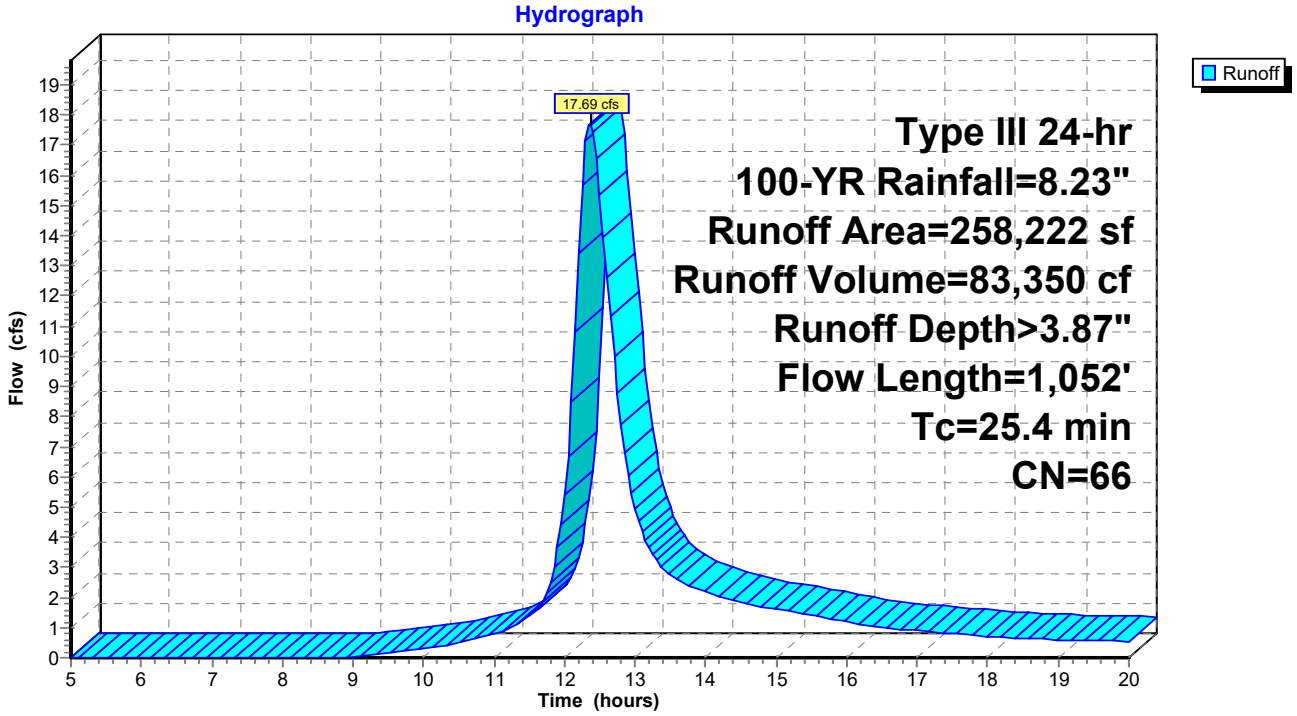
Runoff = 17.69 cfs @ 12.36 hrs, Volume= 83,350 cf, Depth> 3.87"
Routed to Link POA-1 : Hunting Lane (Off-site)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.23"

Area (sf)	CN	Description
37,653	39	>75% Grass cover, Good, HSG A
61,350	61	>75% Grass cover, Good, HSG B
21,649	74	>75% Grass cover, Good, HSG C
43,026	58	Woods/grass comb., Good, HSG B
8,196	55	Woods, Good, HSG B
15,249	82	Dirt roads, HSG B
46,663	79	Pasture/grassland/range, Poor, HSG B
2,900	85	Gravel roads, HSG B
8,520	98	Roofs, HSG C
13,016	98	Paved parking, HSG C
258,222	66	Weighted Average
236,686		91.66% Pervious Area
21,536		8.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow, A-B** Grass: Bermuda n= 0.410 P2= 3.35"
3.4	424	0.0900	2.10		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.4	62	0.0150	2.49		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
3.2	133	0.0100	0.70		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
9.1	383	0.0100	0.70		**Shallow Concentrated Flow, E-F** Short Grass Pasture Kv= 7.0 fps
25.4	1,052	Total			

Subcatchment EX-1: Existing Ws-1



Summary for Subcatchment EX-2: Existing Ws-2

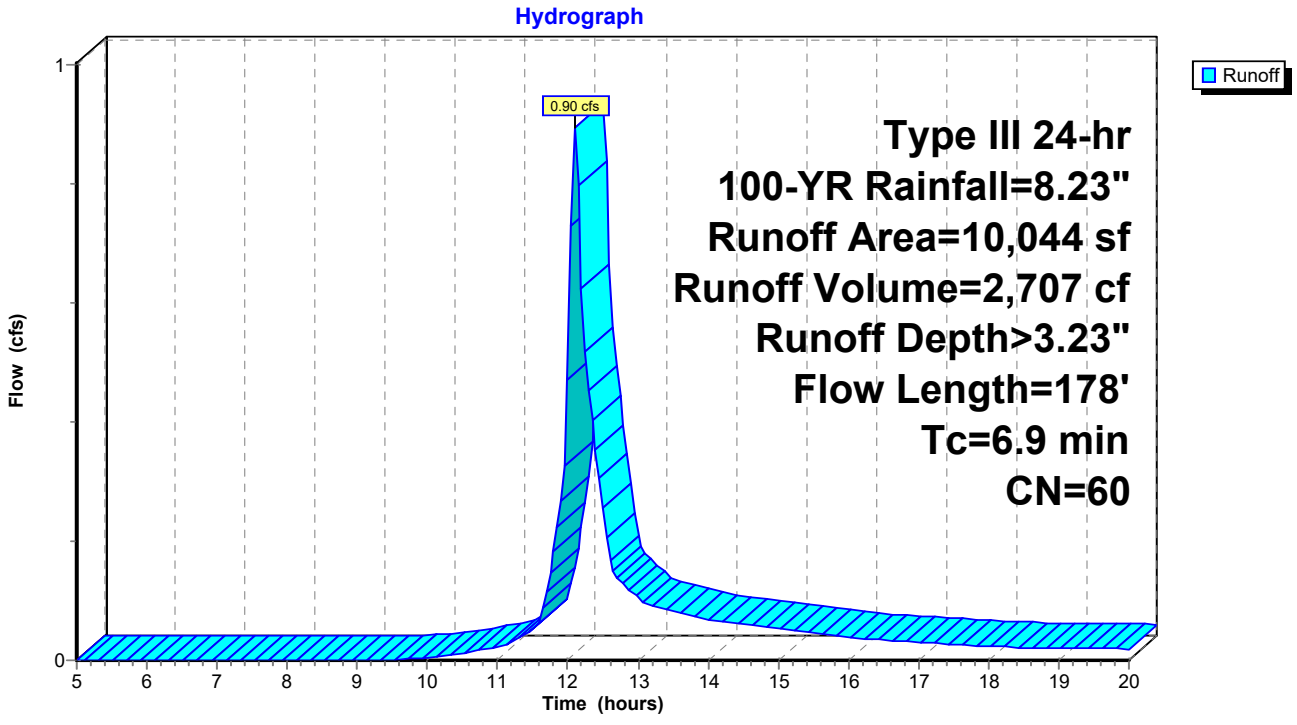
Runoff = 0.90 cfs @ 12.11 hrs, Volume= 2,707 cf, Depth> 3.23"
Routed to Link POA-1 : Hunting Lane (Off-site)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.23"

Area (sf)	CN	Description
6,768	55	Woods, Good, HSG B
3,276	70	Woods, Good, HSG C
10,044	60	Weighted Average
10,044		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.1100	0.13		**Sheet Flow, A-B** Grass: Bermuda n= 0.410 P2= 3.35"
0.7	128	0.2100	3.21		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
6.9	178	Total			

Subcatchment EX-2: Existing Ws-2



Summary for Subcatchment EX-3: Existing Ws-3

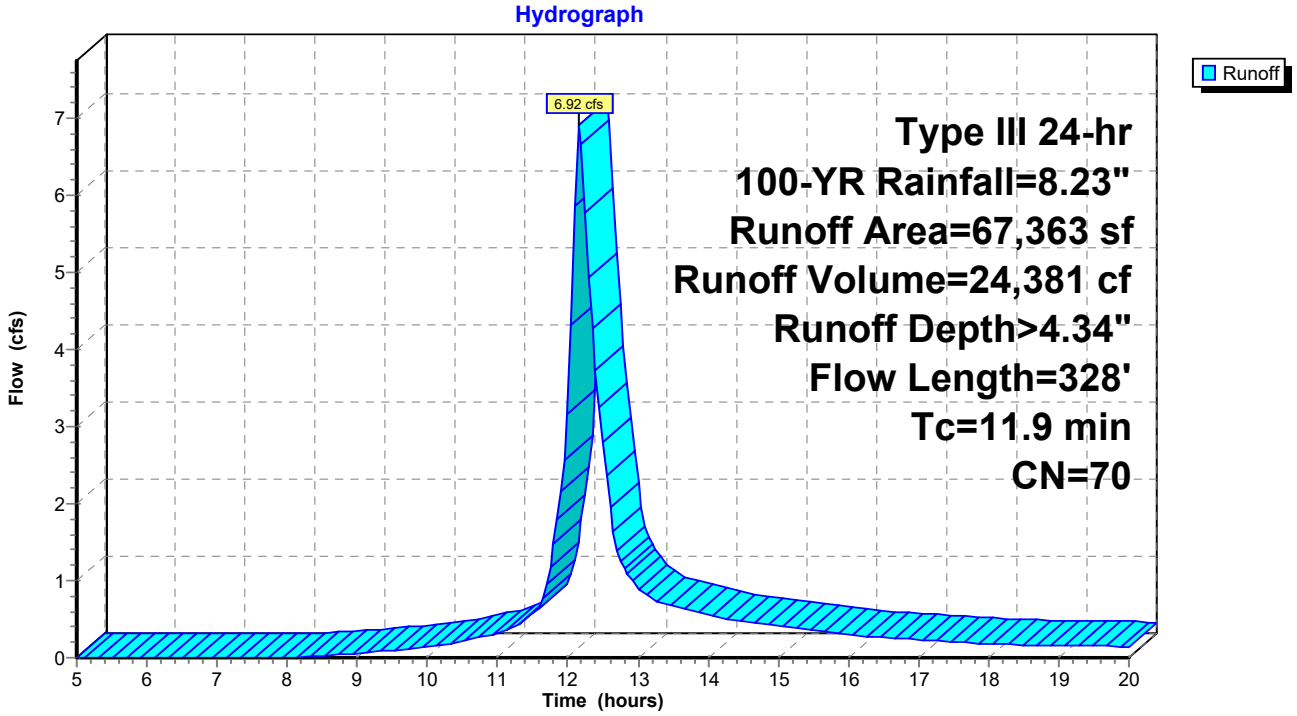
Runoff = 6.92 cfs @ 12.17 hrs, Volume= 24,381 cf, Depth> 4.34"
Routed to Link POA-2 : North Main Street (Offsite)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.23"

Area (sf)	CN	Description
1,623	39	>75% Grass cover, Good, HSG A
3,933	74	>75% Grass cover, Good, HSG C
2,464	58	Woods/grass comb., Good, HSG B
22,420	72	Woods/grass comb., Good, HSG C
4,447	55	Woods, Good, HSG B
29,448	70	Woods, Good, HSG C
2,709	98	Roofs, HSG C
319	98	Paved parking, HSG C
67,363	70	Weighted Average
64,335		95.50% Pervious Area
3,028		4.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow, A-B** Grass: Bermuda n= 0.410 P2= 3.35"
2.6	278	0.0650	1.78		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
11.9	328	Total			

Subcatchment EX-3: Existing Ws-3



Summary for Subcatchment EX-4: Existing Ws-4

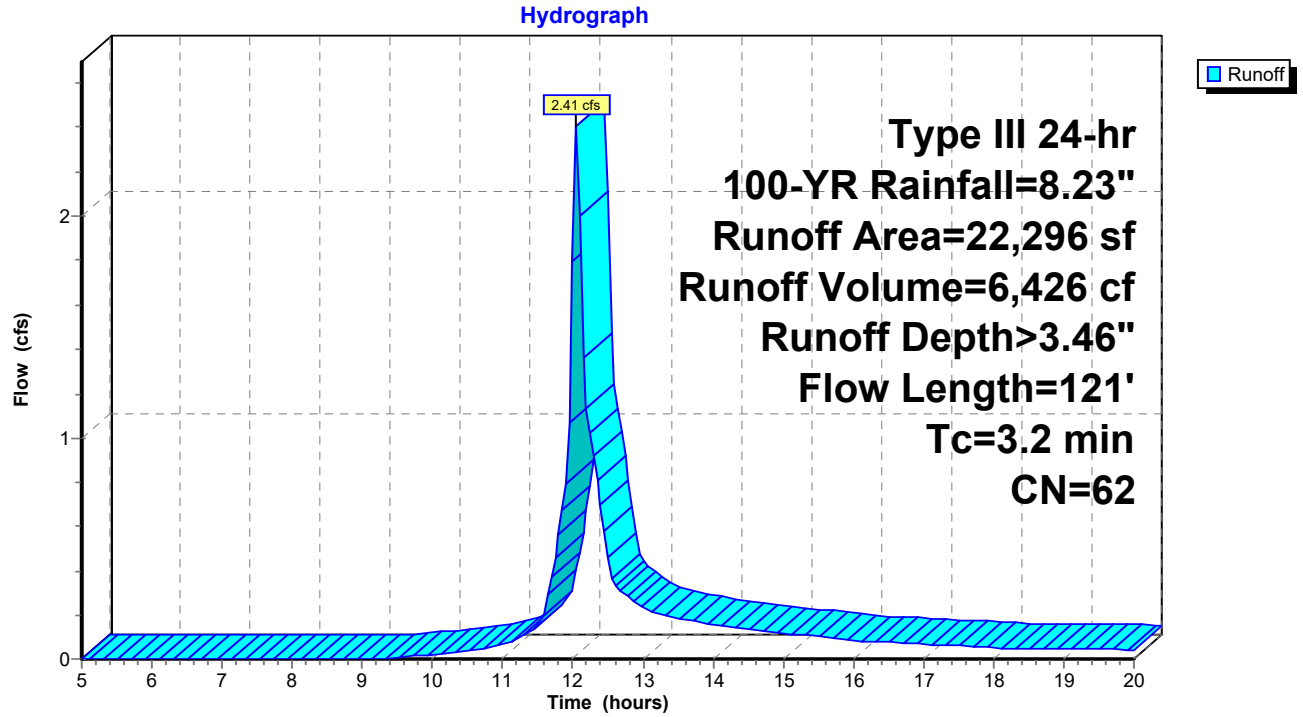
Runoff = 2.41 cfs @ 12.05 hrs, Volume= 6,426 cf, Depth> 3.46"
Routed to Link POA-3 : 33 N Main Street (Offsite)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.23"

Area (sf)	CN	Description
8,905	39	>75% Grass cover, Good, HSG A
11,857	74	>75% Grass cover, Good, HSG C
1,534	98	Paved parking, HSG B
22,296	62	Weighted Average
20,762		93.12% Pervious Area
1,534		6.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	21	0.0300	1.21		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.35"
2.0	29	0.0850	0.24		**Sheet Flow, B-C** Grass: Short n= 0.150 P2= 3.35"
0.9	71	0.0350	1.31		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
3.2	121	Total			

Subcatchment EX-4: Existing Ws-4

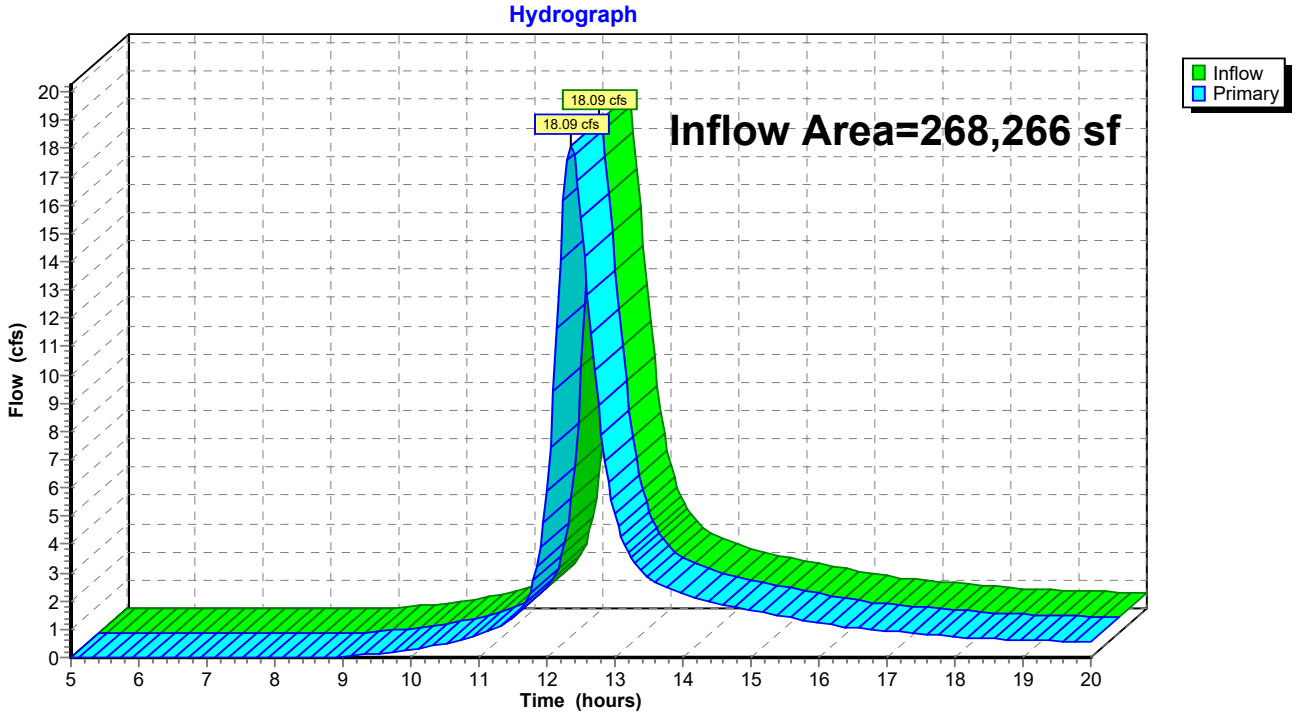


Summary for Link POA-1: Hunting Lane (Off-site)

Inflow Area = 268,266 sf, 8.03% Impervious, Inflow Depth > 3.85" for 100-YR event
Inflow = 18.09 cfs @ 12.36 hrs, Volume= 86,057 cf
Primary = 18.09 cfs @ 12.36 hrs, Volume= 86,057 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link POA-1: Hunting Lane (Off-site)

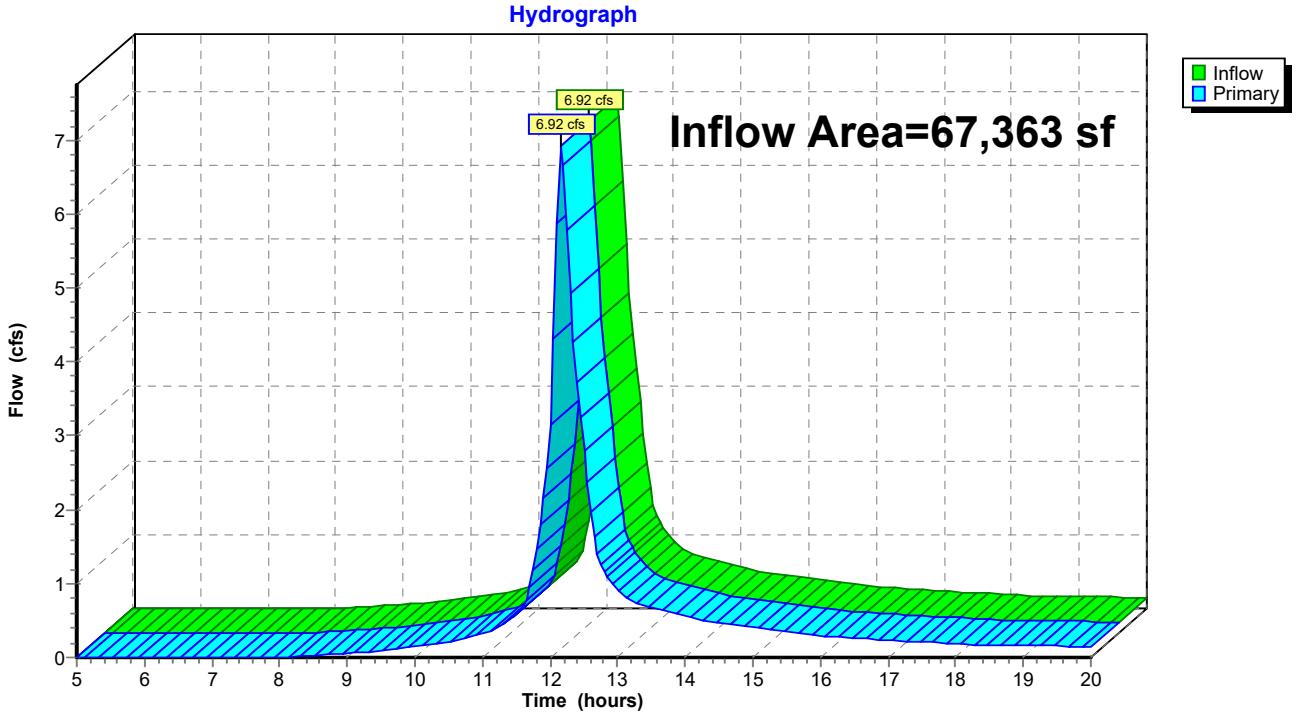


Summary for Link POA-2: North Main Street (Offsite)

Inflow Area = 67,363 sf, 4.50% Impervious, Inflow Depth > 4.34" for 100-YR event
Inflow = 6.92 cfs @ 12.17 hrs, Volume= 24,381 cf
Primary = 6.92 cfs @ 12.17 hrs, Volume= 24,381 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link POA-2: North Main Street (Offsite)

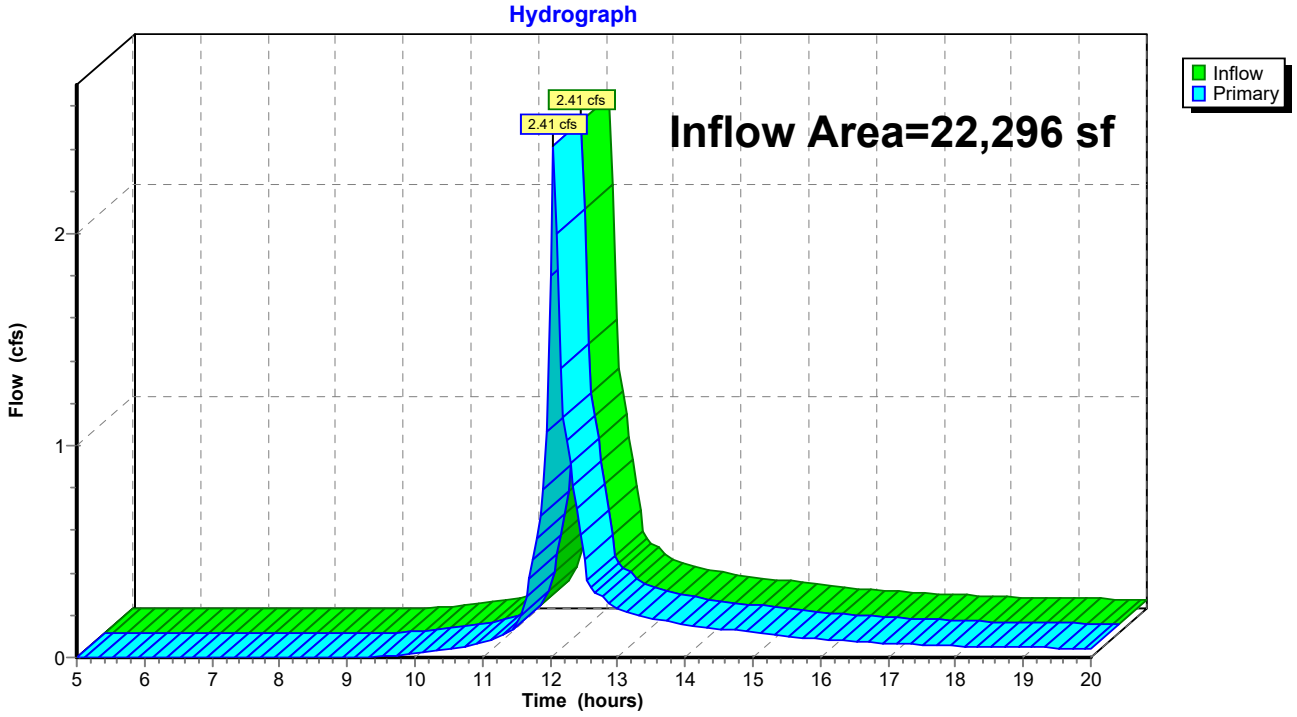


Summary for Link POA-3: 33 N Main Street (Offsite)

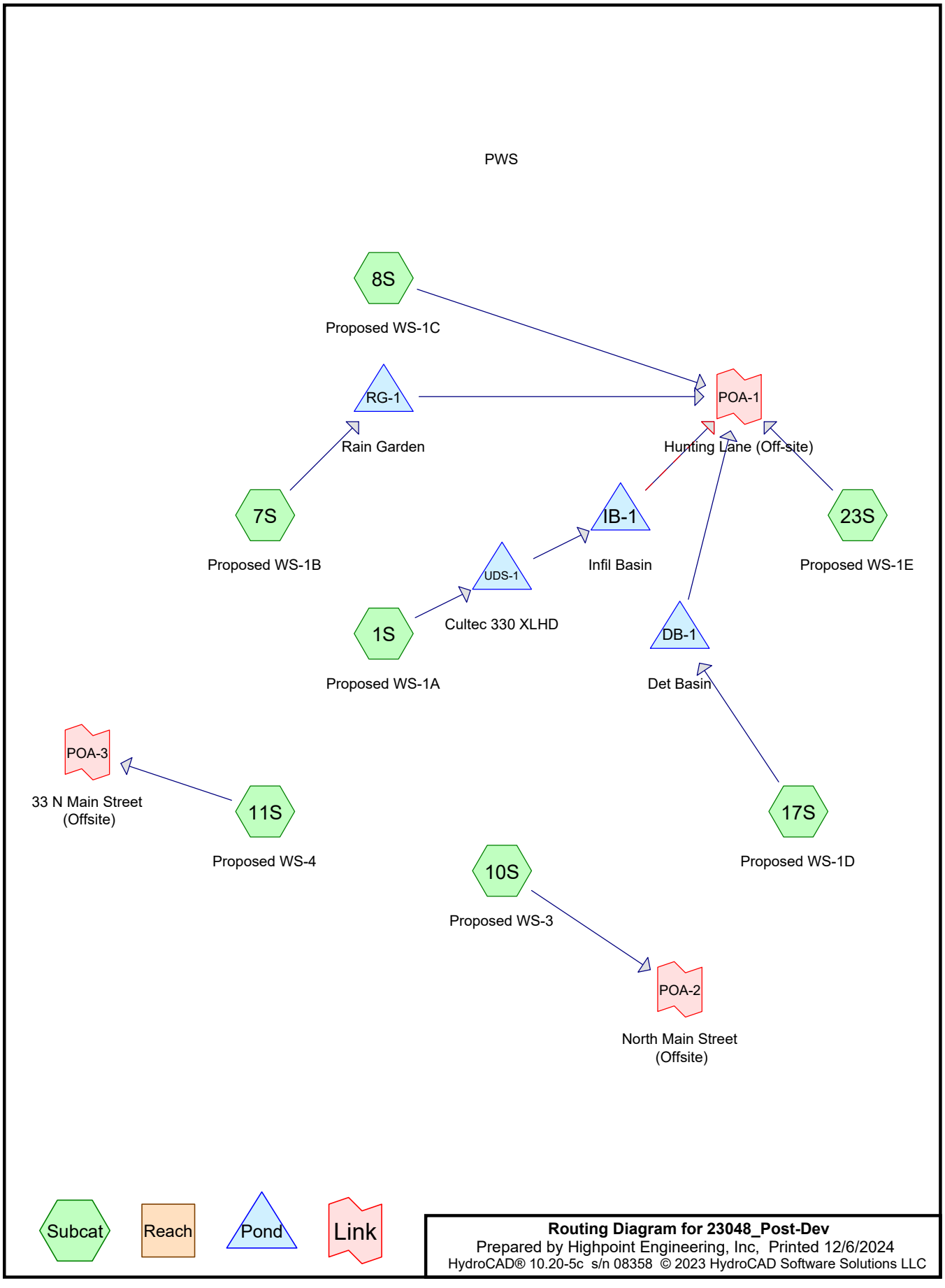
Inflow Area = 22,296 sf, 6.88% Impervious, Inflow Depth > 3.46" for 100-YR event
Inflow = 2.41 cfs @ 12.05 hrs, Volume= 6,426 cf
Primary = 2.41 cfs @ 12.05 hrs, Volume= 6,426 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link POA-3: 33 N Main Street (Offsite)



APPENDIX A – PRE AND POST HYDROLOGIC CALCULATIONS



Routing Diagram for 23048_Post-Dev
Prepared by Highpoint Engineering, Inc, Printed 12/6/2024

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
44,552	39	>75% Grass cover, Good, HSG A (1S, 7S, 8S, 10S, 11S)
129,567	61	>75% Grass cover, Good, HSG B (1S, 8S, 11S, 17S, 23S)
66,042	74	>75% Grass cover, Good, HSG C (1S, 10S, 17S, 23S)
13,516	98	Unconnected pavement, HSG A (1S, 7S, 10S)
70,935	98	Unconnected pavement, HSG B (1S, 8S, 10S, 17S, 23S)
33,300	98	Unconnected pavement, HSG C (1S, 17S)
357,912	**73**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
58,068	HSG A	1S, 7S, 8S, 10S, 11S
200,502	HSG B	1S, 8S, 10S, 11S, 17S, 23S
99,342	HSG C	1S, 10S, 17S, 23S
0	HSG D	
0	Other	
357,912		**TOTAL AREA**

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

Subcatchment1S: Proposed WS-1A Runoff Area=127,763 sf 45.93% Impervious Runoff Depth>1.40"
Tc=6.0 min CN=80 Runoff=5.09 cfs 14,951 cf

Subcatchment7S: Proposed WS-1B Runoff Area=25,142 sf 42.69% Impervious Runoff Depth>0.56"
Tc=6.0 min CN=64 Runoff=0.33 cfs 1,174 cf

Subcatchment8S: Proposed WS-1C Runoff Area=62,999 sf 5.13% Impervious Runoff Depth>0.25"
Flow Length=970' Tc=37.8 min UI Adjusted CN=55 Runoff=0.13 cfs 1,287 cf

Subcatchment10S: Proposed WS-3 Runoff Area=27,552 sf 5.91% Impervious Runoff Depth>0.98"
Tc=6.0 min UI Adjusted CN=73 Runoff=0.75 cfs 2,261 cf

Subcatchment11S: Proposed WS-4 Runoff Area=20,492 sf 0.00% Impervious Runoff Depth>0.17"
Flow Length=195' Tc=6.4 min CN=52 Runoff=0.03 cfs 297 cf

Subcatchment17S: Proposed WS-1D Runoff Area=54,797 sf 52.55% Impervious Runoff Depth>1.61"
Tc=6.0 min CN=83 Runoff=2.51 cfs 7,359 cf

Subcatchment23S: Proposed WS-1E Runoff Area=39,167 sf 37.48% Impervious Runoff Depth>1.15"
Tc=6.0 min CN=76 Runoff=1.27 cfs 3,767 cf

Pond DB-1: Det Basin Peak Elev=176.69' Storage=4,261 cf Inflow=2.51 cfs 7,359 cf
Outflow=0.30 cfs 3,456 cf

Pond IB-1: Infil Basin Peak Elev=172.18' Storage=6,124 cf Inflow=3.30 cfs 8,872 cf
Discarded=0.09 cfs 2,757 cf Primary=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf Outflow=0.09 cfs 2,757 cf

Pond RG-1: Rain Garden Peak Elev=171.53' Storage=1,173 cf Inflow=0.33 cfs 1,174 cf
Outflow=0.00 cfs 0 cf

Pond UDS-1: Cultec 330 XLHD Peak Elev=172.18' Storage=0.140 af Inflow=5.09 cfs 14,951 cf
15.0" Round Culvert x 4.00 n=0.012 L=15.0' S=0.0000 '/' Outflow=3.30 cfs 8,872 cf

Link POA-1: Hunting Lane (Off-site) Inflow=1.27 cfs 8,510 cf
Primary=1.27 cfs 8,510 cf

Link POA-2: North Main Street (Offsite) Inflow=0.75 cfs 2,261 cf
Primary=0.75 cfs 2,261 cf

Link POA-3: 33 N Main Street (Offsite) Inflow=0.03 cfs 297 cf
Primary=0.03 cfs 297 cf

Total Runoff Area = 357,912 sf Runoff Volume = 31,096 cf Average Runoff Depth = 1.04"
67.10% Pervious = 240,161 sf 32.90% Impervious = 117,751 sf

Summary for Subcatchment 1S: Proposed WS-1A

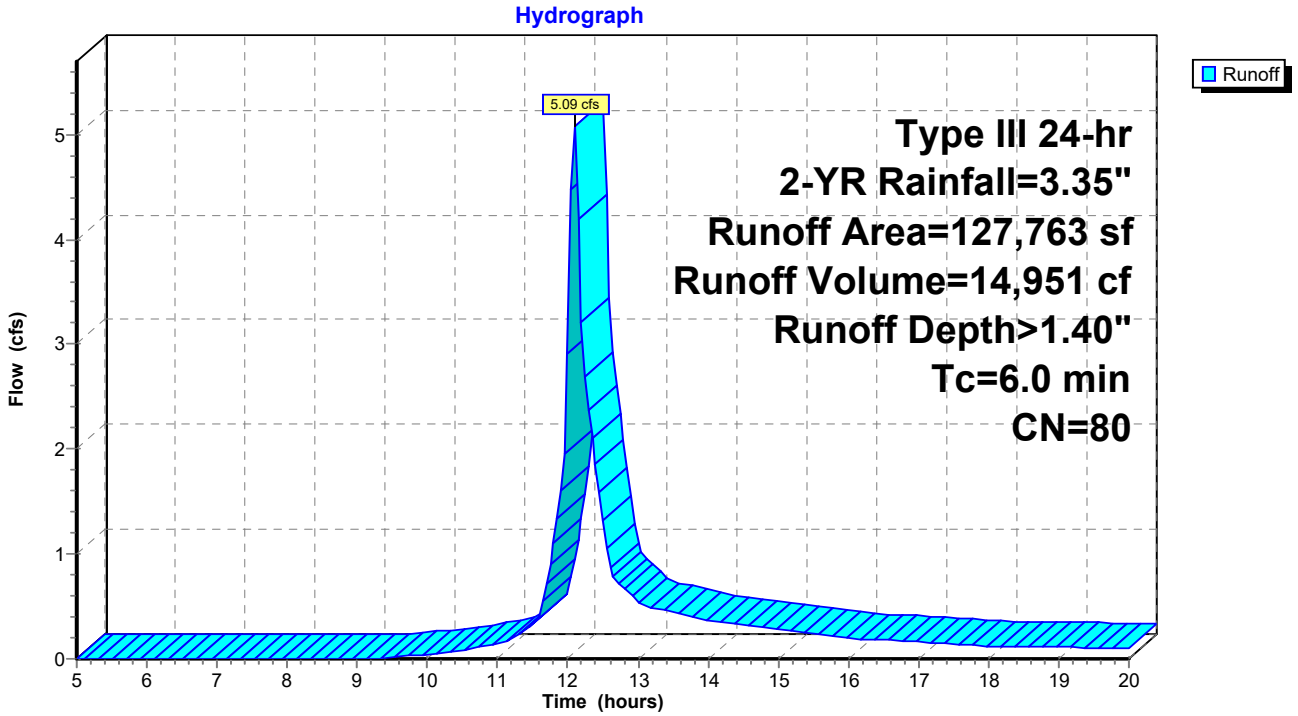
Runoff = 5.09 cfs @ 12.10 hrs, Volume= 14,951 cf, Depth> 1.40"
Routed to Pond UDS-1 : Cultec 330 XLHD

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.35"

Area (sf)	CN	Description
2,745	98	Unconnected pavement, HSG A
33,953	98	Unconnected pavement, HSG B
21,986	98	Unconnected pavement, HSG C
1,946	39	>75% Grass cover, Good, HSG A
41,046	61	>75% Grass cover, Good, HSG B
26,087	74	>75% Grass cover, Good, HSG C
127,763	80	Weighted Average
69,079		54.07% Pervious Area
58,684		45.93% Impervious Area
58,684		100.00% Unconnected

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

Subcatchment 1S: Proposed WS-1A



Summary for Subcatchment 7S: Proposed WS-1B

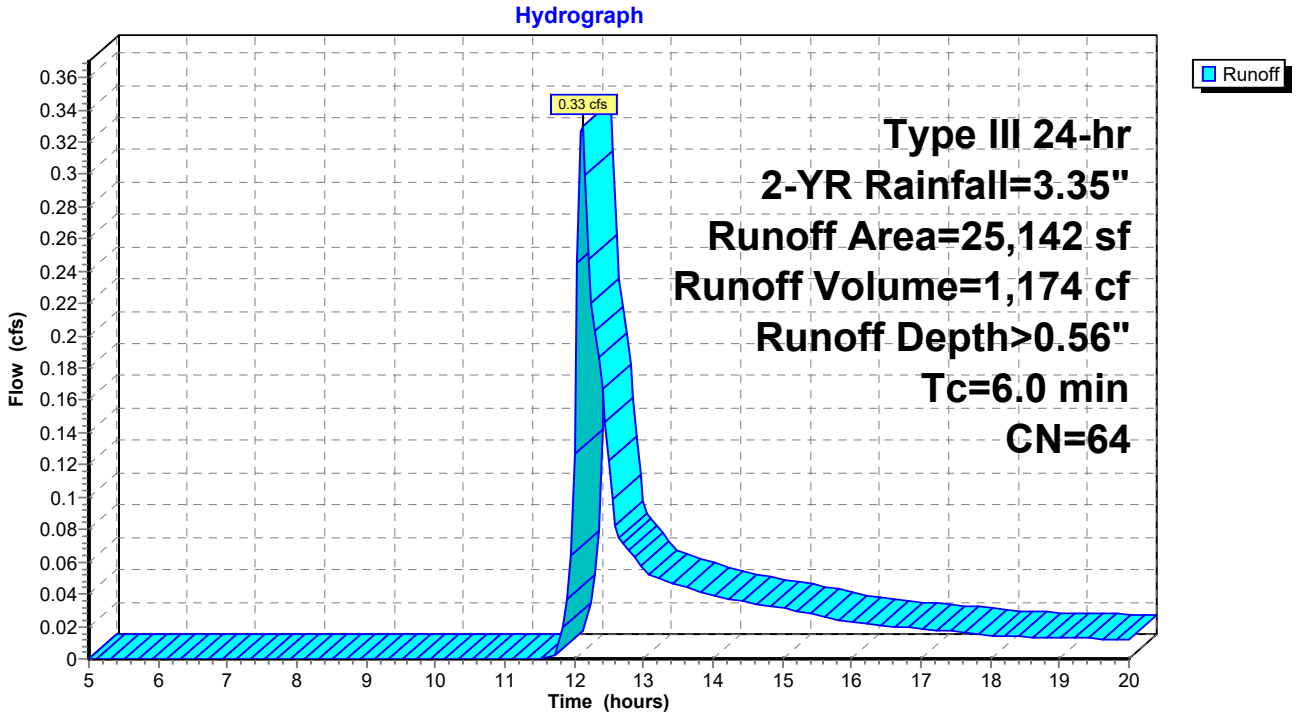
Runoff = 0.33 cfs @ 12.11 hrs, Volume= 1,174 cf, Depth> 0.56"
Routed to Pond RG-1 : Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.35"

Area (sf)	CN	Description
10,733	98	Unconnected pavement, HSG A
0	98	Unconnected pavement, HSG B
0	98	Unconnected pavement, HSG C
14,409	39	>75% Grass cover, Good, HSG A
0	61	>75% Grass cover, Good, HSG B
0	74	>75% Grass cover, Good, HSG C
25,142	64	Weighted Average
14,409		57.31% Pervious Area
10,733		42.69% Impervious Area
10,733		100.00% Unconnected

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

Subcatchment 7S: Proposed WS-1B



Summary for Subcatchment 8S: Proposed WS-1C

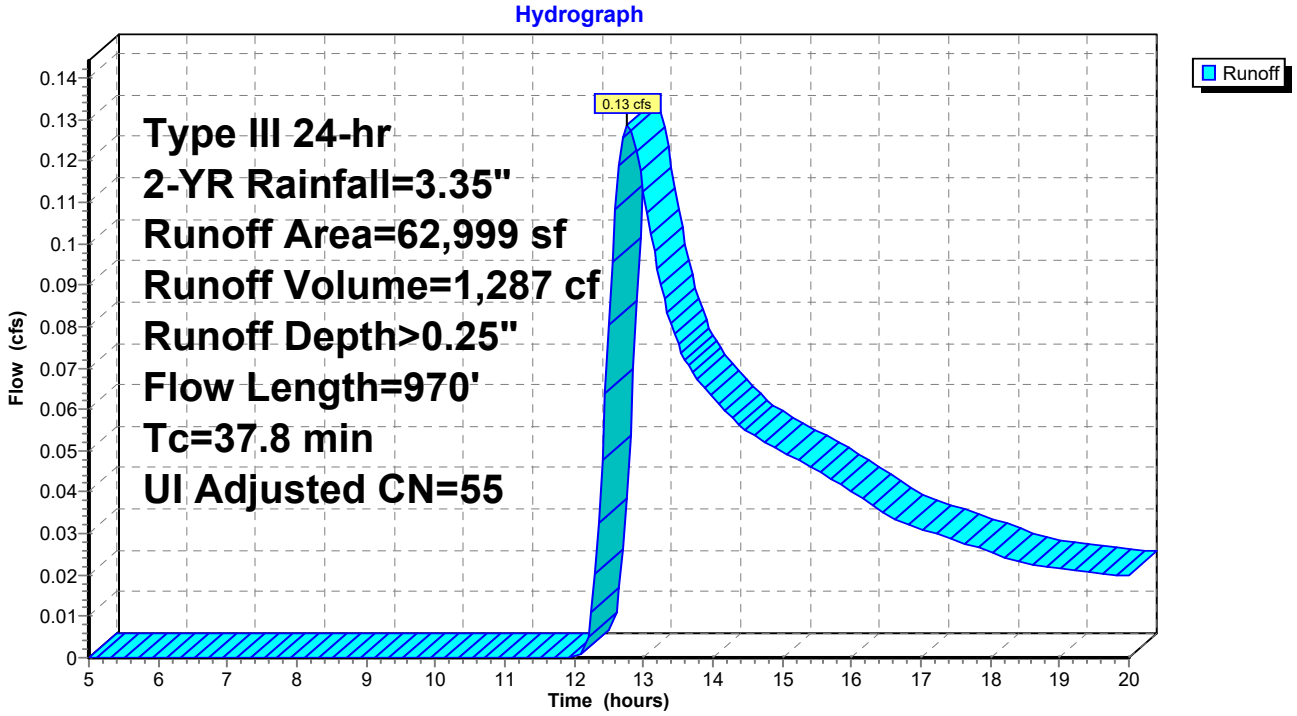
Runoff = 0.13 cfs @ 12.77 hrs, Volume= 1,287 cf, Depth> 0.25"
Routed to Link POA-1 : Hunting Lane (Off-site)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.35"

Area (sf)	CN	Adj	Description
0	98		Unconnected pavement, HSG A
3,231	98		Unconnected pavement, HSG B
0	98		Unconnected pavement, HSG C
18,478	39		>75% Grass cover, Good, HSG A
41,290	61		>75% Grass cover, Good, HSG B
0	74		>75% Grass cover, Good, HSG C
62,999	56	55	Weighted Average, UI Adjusted
59,768			94.87% Pervious Area
3,231			5.13% Impervious Area
3,231			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	50	0.0100	0.08		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.35"
27.2	920	0.0065	0.56		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
37.8	970	Total			

Subcatchment 8S: Proposed WS-1C



Summary for Subcatchment 10S: Proposed WS-3

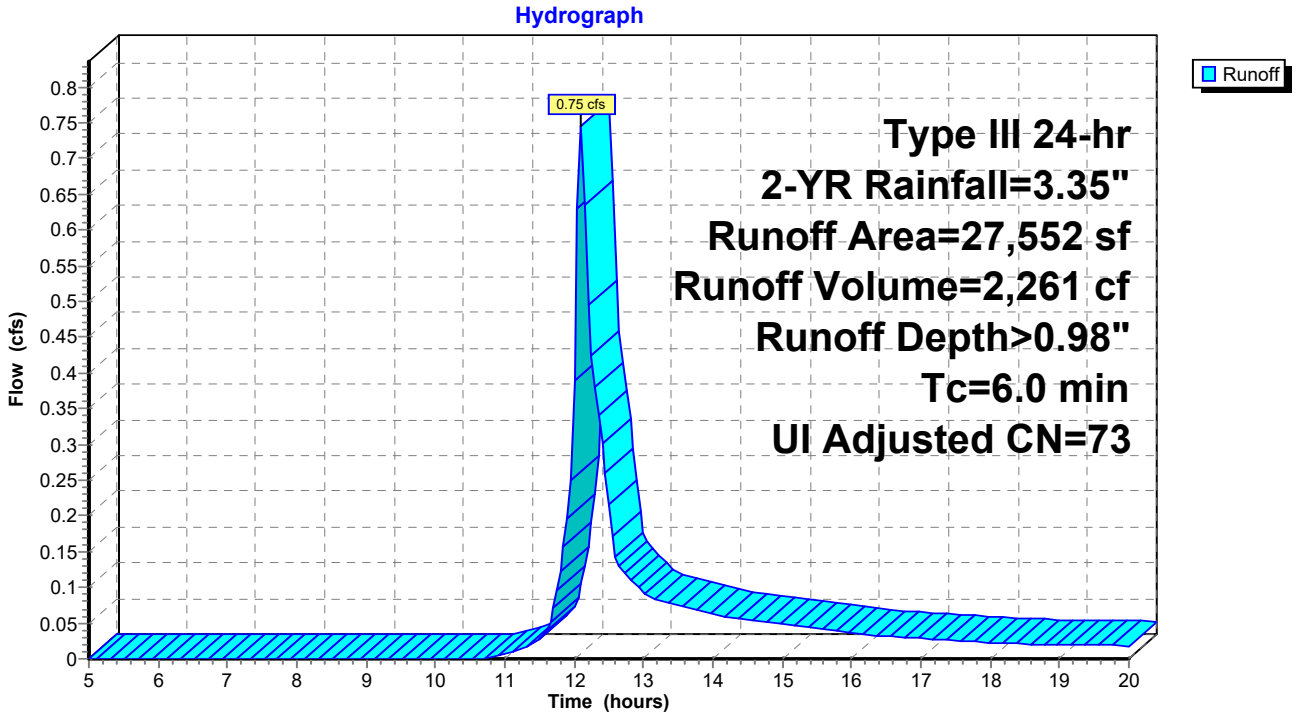
Runoff = 0.75 cfs @ 12.10 hrs, Volume= 2,261 cf, Depth> 0.98"
Routed to Link POA-2 : North Main Street (Offsite)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.35"

Area (sf)	CN	Adj	Description
38	98		Unconnected pavement, HSG A
1,589	98		Unconnected pavement, HSG B
0	98		Unconnected pavement, HSG C
1,223	39		>75% Grass cover, Good, HSG A
0	61		>75% Grass cover, Good, HSG B
24,702	74		>75% Grass cover, Good, HSG C
27,552	74	73	Weighted Average, UI Adjusted
25,925			94.09% Pervious Area
1,627			5.91% Impervious Area
1,627			100.00% Unconnected

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

Subcatchment 10S: Proposed WS-3



Summary for Subcatchment 11S: Proposed WS-4

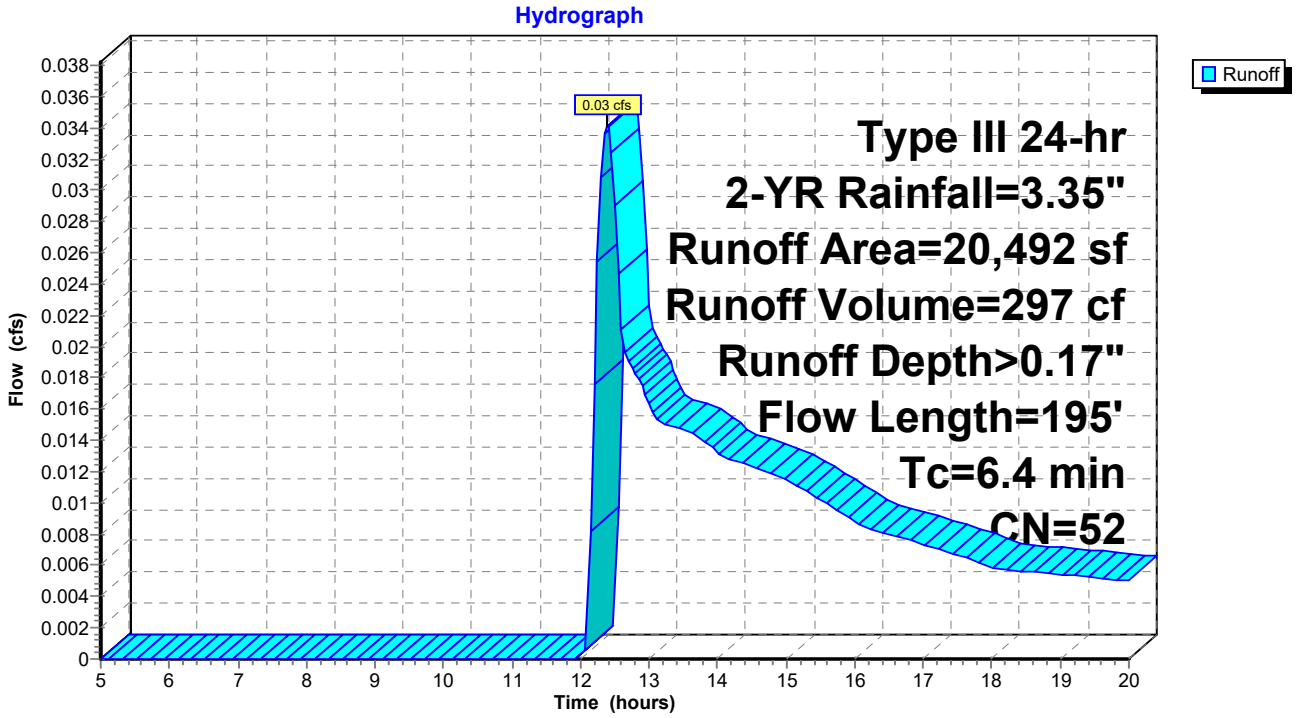
Runoff = 0.03 cfs @ 12.39 hrs, Volume= 297 cf, Depth> 0.17"
Routed to Link POA-3 : 33 N Main Street (Offsite)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.35"

Area (sf)	CN	Description
0	98	Unconnected pavement, HSG A
0	98	Unconnected pavement, HSG B
0	98	Unconnected pavement, HSG C
8,496	39	>75% Grass cover, Good, HSG A
11,996	61	>75% Grass cover, Good, HSG B
0	74	>75% Grass cover, Good, HSG C
20,492	52	Weighted Average
20,492		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	50	0.0700	0.17		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.35"
1.5	145	0.0520	1.60		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.4	195	Total			

Subcatchment 11S: Proposed WS-4



Summary for Subcatchment 17S: Proposed WS-1D

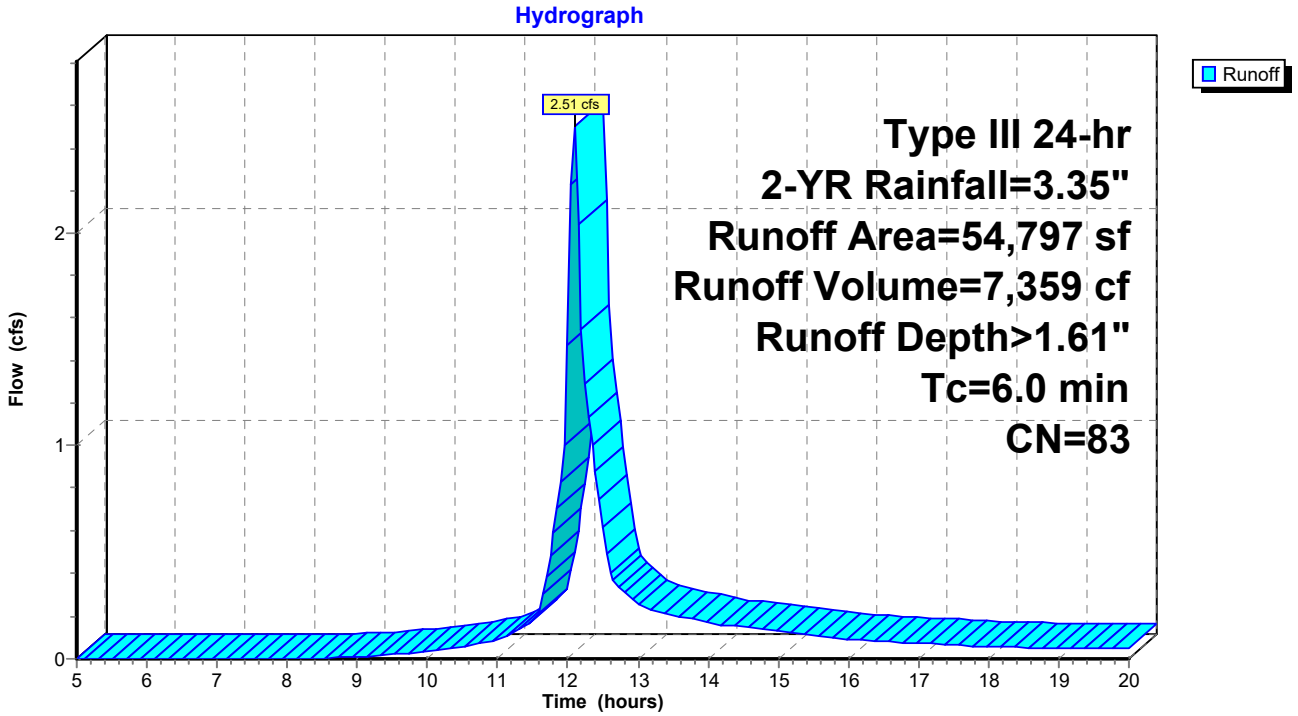
Runoff = 2.51 cfs @ 12.09 hrs, Volume= 7,359 cf, Depth> 1.61"
Routed to Pond DB-1 : Det Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.35"

Area (sf)	CN	Description
0	98	Unconnected pavement, HSG A
17,482	98	Unconnected pavement, HSG B
11,314	98	Unconnected pavement, HSG C
0	39	>75% Grass cover, Good, HSG A
13,949	61	>75% Grass cover, Good, HSG B
12,052	74	>75% Grass cover, Good, HSG C
54,797	83	Weighted Average
26,001		47.45% Pervious Area
28,796		52.55% Impervious Area
28,796		100.00% Unconnected

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

Subcatchment 17S: Proposed WS-1D



Summary for Subcatchment 23S: Proposed WS-1E

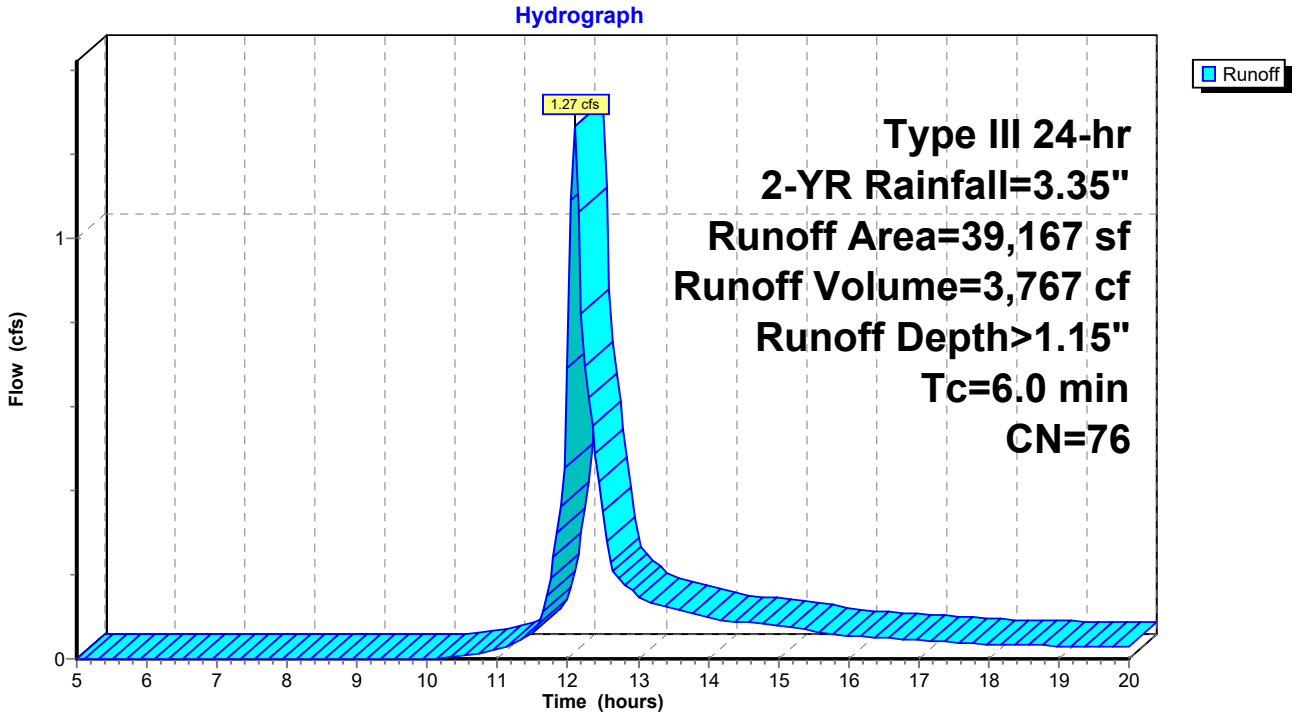
Runoff = 1.27 cfs @ 12.10 hrs, Volume= 3,767 cf, Depth> 1.15"
Routed to Link POA-1 : Hunting Lane (Off-site)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.35"

Area (sf)	CN	Description
0	98	Unconnected pavement, HSG A
14,680	98	Unconnected pavement, HSG B
0	98	Unconnected pavement, HSG C
0	39	>75% Grass cover, Good, HSG A
21,286	61	>75% Grass cover, Good, HSG B
3,201	74	>75% Grass cover, Good, HSG C
39,167	76	Weighted Average
24,487		62.52% Pervious Area
14,680		37.48% Impervious Area
14,680		100.00% Unconnected

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

Subcatchment 23S: Proposed WS-1E



Summary for Pond DB-1: Det Basin

Inflow Area = 54,797 sf, 52.55% Impervious, Inflow Depth > 1.61" for 2-YR event
Inflow = 2.51 cfs @ 12.09 hrs, Volume= 7,359 cf
Outflow = 0.30 cfs @ 12.87 hrs, Volume= 3,456 cf, Atten= 88%, Lag= 46.6 min
Primary = 0.30 cfs @ 12.87 hrs, Volume= 3,456 cf
Routed to Link POA-1 : Hunting Lane (Off-site)

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 176.69' @ 12.87 hrs Surf.Area= 3,169 sf Storage= 4,261 cf
Flood Elev= 178.00' Surf.Area= 4,254 sf Storage= 9,123 cf

Plug-Flow detention time= 192.6 min calculated for 3,445 cf (47% of inflow)
Center-of-Mass det. time= 108.9 min (903.2 - 794.3)

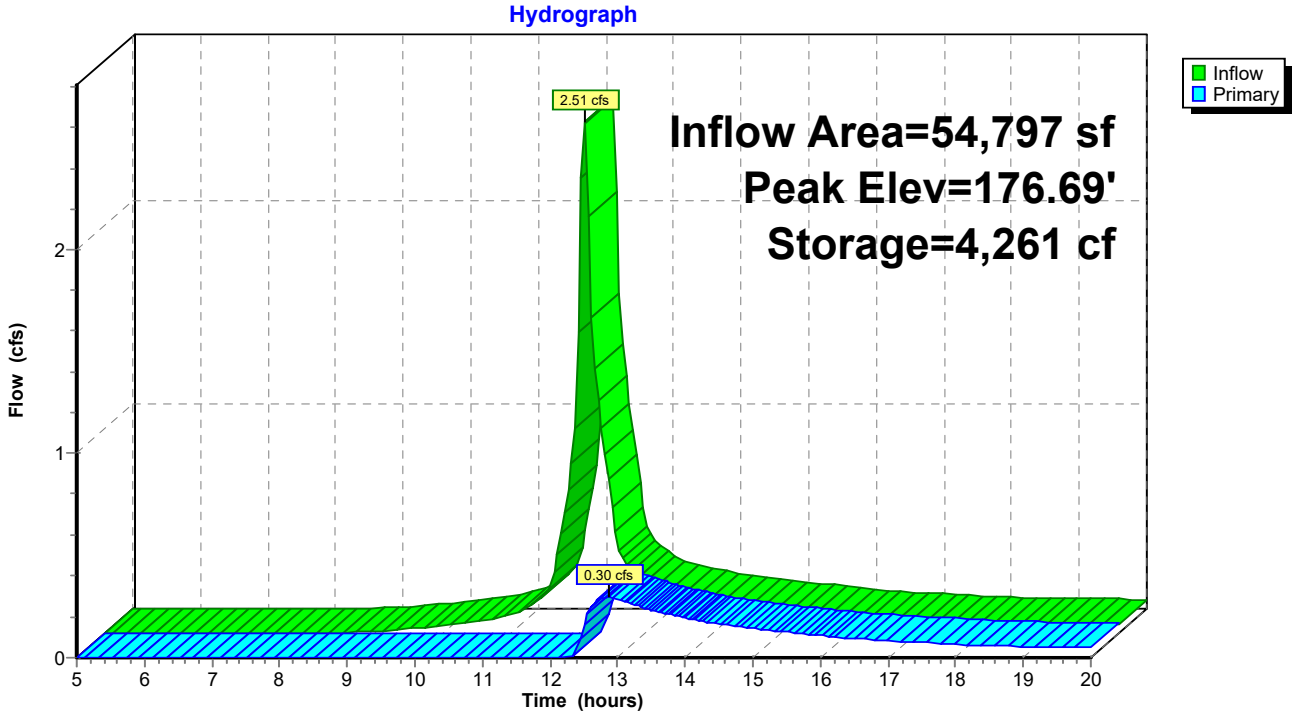
Volume	Invert	Avail.Storage	Storage Description
#1	175.00'	9,123 cf	**Basin A (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
175.00	1,904	0	0
176.00	2,630	2,267	2,267
177.00	3,414	3,022	5,289
178.00	4,254	3,834	9,123

Device	Routing	Invert	Outlet Devices
#1	Device 3	177.00'	**2.0" x 2.0" Horiz. 12" x 24" grate X 10.00 columns** X 5 rows C= 0.600 in 24.0" x 12.0" Grate (69% open area)
#2	Device 3	176.50'	**6.0" Vert. Orifice/Grate X 3.00** C= 0.600 Limited to weir flow at low heads
#3	Primary	174.65'	**12.0" Round HDPE Culvert** L= 118.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 174.65' / 171.11' S= 0.0300 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.30 cfs @ 12.87 hrs HW=176.69' TW=0.00' (Dynamic Tailwater)
└─**3=HDPE Culvert** (Passes 0.30 cfs of 3.70 cfs potential flow)
  ├─**1=12" x 24" grate** (Controls 0.00 cfs)
  └─**2=Orifice/Grate** (Orifice Controls 0.30 cfs @ 1.47 fps)

Pond DB-1: Det Basin



Summary for Pond IB-1: Infil Basin

Inflow Area = 127,763 sf, 45.93% Impervious, Inflow Depth > 0.83" for 2-YR event
Inflow = 3.30 cfs @ 12.21 hrs, Volume= 8,872 cf
Outflow = 0.09 cfs @ 20.00 hrs, Volume= 2,757 cf, Atten= 97%, Lag= 467.6 min
Discarded = 0.09 cfs @ 20.00 hrs, Volume= 2,757 cf
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0 cf
Routed to Link POA-1 : Hunting Lane (Off-site)
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0 cf
Routed to Link POA-1 : Hunting Lane (Off-site)

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 172.18' @ 20.00 hrs Surf.Area= 3,997 sf Storage= 6,124 cf
Flood Elev= 175.00' Surf.Area= 7,711 sf Storage= 22,476 cf

Plug-Flow detention time= 229.6 min calculated for 2,748 cf (31% of inflow)
Center-of-Mass det. time= 126.3 min (951.5 - 825.2)

Volume	Invert	Avail.Storage	Storage Description
#1	170.00'	22,476 cf	**Basin A (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
170.00	1,749	0	0
171.00	2,649	2,199	2,199
172.00	3,770	3,210	5,409
173.00	5,000	4,385	9,794
174.00	6,327	5,664	15,457
175.00	7,711	7,019	22,476

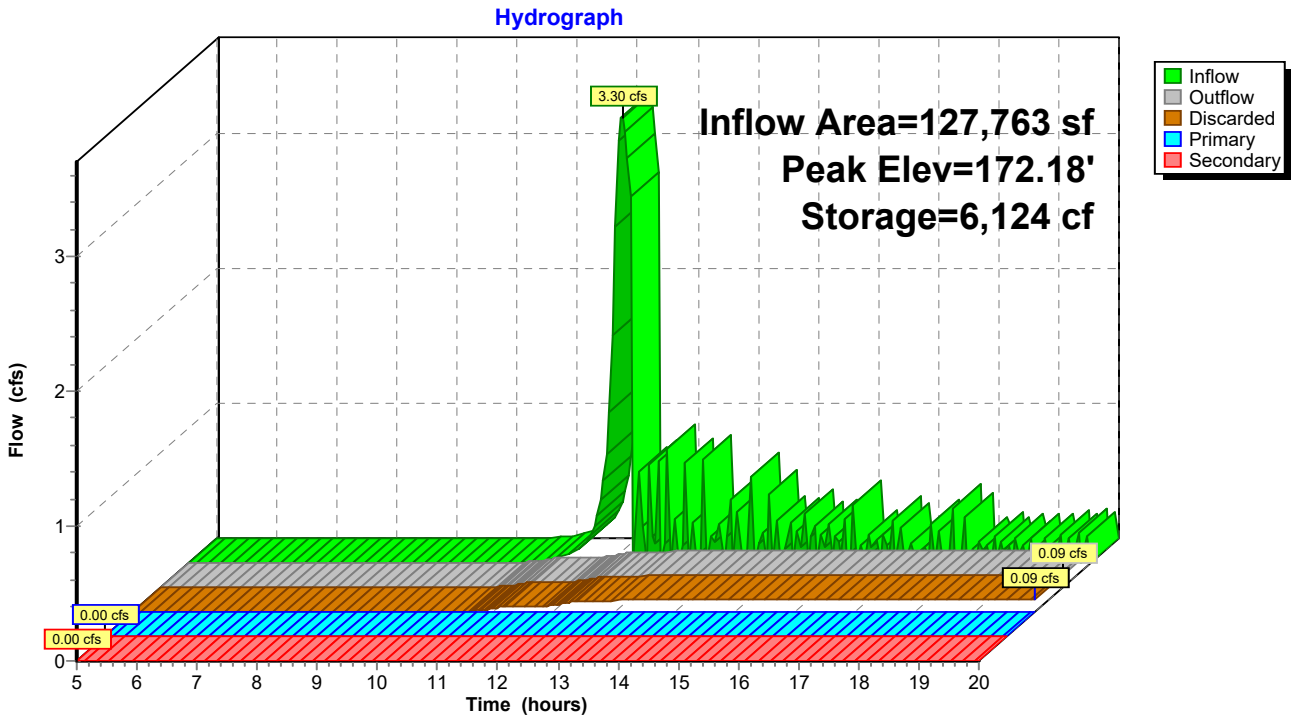
Device	Routing	Invert	Outlet Devices
#1	Discarded	170.00'	**1.020 in/hr Exfiltration over Surface area**
#2	Primary	170.00'	**18.0" Round Culvert** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 170.00' / 169.10' S= 0.0200 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#3	Device 2	173.75'	**2.0" x 2.0" Horiz. Orifice/Grate X 20.00 columns** X 10 rows C= 0.600 in 48.0" x 24.0" Grate (69% open area)
#4	Device 2	173.00'	**48.0" W x 9.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	174.00'	**10.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Discarded OutFlow Max=0.09 cfs @ 20.00 hrs HW=172.18' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=170.00' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Controls 0.00 cfs)
  └**3=Orifice/Grate** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=170.00' TW=0.00' (Dynamic Tailwater)
└**5=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond IB-1: Infil Basin



Summary for Pond RG-1: Rain Garden

Inflow Area = 25,142 sf, 42.69% Impervious, Inflow Depth > 0.56" for 2-YR event
Inflow = 0.33 cfs @ 12.11 hrs, Volume= 1,174 cf
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0 cf
Routed to Link POA-1 : Hunting Lane (Off-site)

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 171.53' @ 20.00 hrs Surf.Area= 2,541 sf Storage= 1,173 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

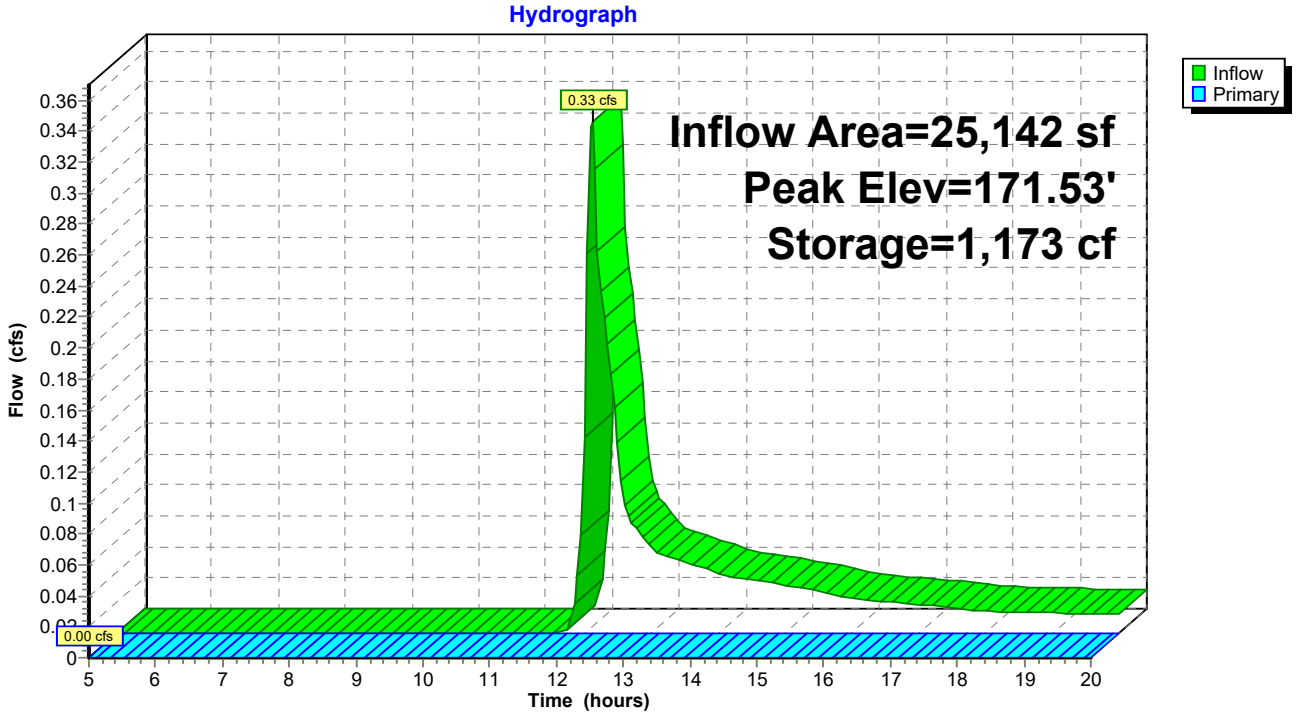
Volume	Invert	Avail.Storage	Storage Description
#1	171.00'	4,257 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
171.00	1,856	0	0
172.00	3,140	2,498	2,498
172.50	3,897	1,759	4,257

Device	Routing	Invert	Outlet Devices
#1	Primary	172.25'	**30.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=171.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond RG-1: Rain Garden



Summary for Pond UDS-1: Cultec 330 XLHD

Inflow Area = 127,763 sf, 45.93% Impervious, Inflow Depth > 1.40" for 2-YR event
Inflow = 5.09 cfs @ 12.10 hrs, Volume= 14,951 cf
Outflow = 3.30 cfs @ 12.21 hrs, Volume= 8,872 cf, Atten= 35%, Lag= 6.6 min
Primary = 3.30 cfs @ 12.21 hrs, Volume= 8,872 cf
Routed to Pond IB-1 : Infil Basin

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 172.18' @ 19.90 hrs Surf.Area= 0.142 ac Storage= 0.140 af
Flood Elev= 174.00' Surf.Area= 0.142 ac Storage= 0.293 af

Plug-Flow detention time= 102.2 min calculated for 8,872 cf (59% of inflow)
Center-of-Mass det. time= 23.3 min (825.2 - 801.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	171.00'	0.060 af	**35.33'W x 115.50'L x 3.04'H Field A** 0.285 af Overall - 0.136 af Embedded = 0.149 af x 40.0% Voids
#2A	171.00'	0.136 af	**Cultec R-330XLHD** x 112 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 7 rows
#3B	171.00'	0.031 af	**35.33'W x 59.50'L x 3.04'H Field B** 0.147 af Overall - 0.069 af Embedded = 0.078 af x 40.0% Voids
#4B	171.00'	0.069 af	**Cultec R-330XLHD** x 56 Inside #3 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 7 rows
		0.296 af	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	171.00'	**15.0" Round Culvert X 4.00** L= 15.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 171.00' / 171.00' S= 0.0000 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.28 cfs @ 12.21 hrs HW=171.60' TW=171.06' (Dynamic Tailwater)
1=Culvert (Barrel Controls 3.28 cfs @ 2.05 fps)

Pond UDS-1: Cultec 330 XLHD - Chamber Wizard Field A

Chamber Model = Cultec R-330XLHD (Discontinued, not for new designs)
Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf
Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
Row Length Adjustment= +1.50' x 7.45 sf x 7 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

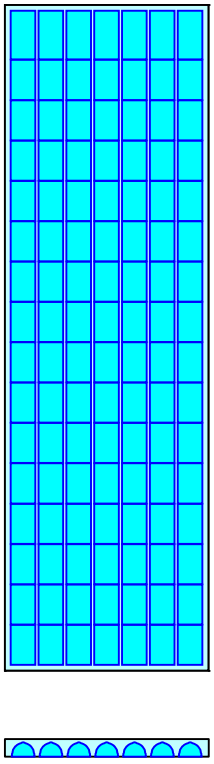
16 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 113.50' Row Length +12.0" End Stone x 2 = 115.50' Base Length
7 Rows x 52.0" Wide + 6.0" Spacing x 6 + 12.0" Side Stone x 2 = 35.33' Base Width
30.5" Chamber Height + 6.0" Stone Cover = 3.04' Field Height

112 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 7 Rows = 5,919.8 cf Chamber Storage

12,413.0 cf Field - 5,919.8 cf Chambers = 6,493.2 cf Stone x 40.0% Voids = 2,597.3 cf Stone Storage

Chamber Storage + Stone Storage = 8,517.1 cf = 0.196 af
Overall Storage Efficiency = 68.6%
Overall System Size = 115.50' x 35.33' x 3.04'

112 Chambers
459.7 cy Field
240.5 cy Stone



Pond UDS-1: Cultec 330 XLHD - Chamber Wizard Field B

Chamber Model = Cultec R-330XLHD (Discontinued, not for new designs)
Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf
Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
Row Length Adjustment= +1.50' x 7.45 sf x 7 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

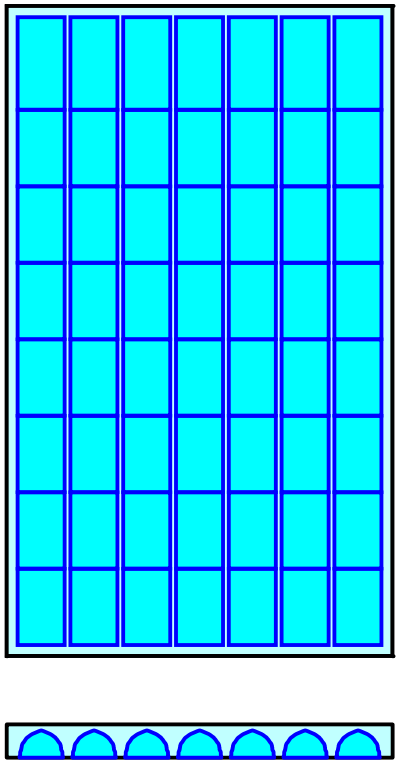
8 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 57.50' Row Length +12.0" End Stone x 2 = 59.50' Base Length
7 Rows x 52.0" Wide + 6.0" Spacing x 6 + 12.0" Side Stone x 2 = 35.33' Base Width
30.5" Chamber Height + 6.0" Stone Cover = 3.04' Field Height

56 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 7 Rows = 2,999.0 cf Chamber Storage

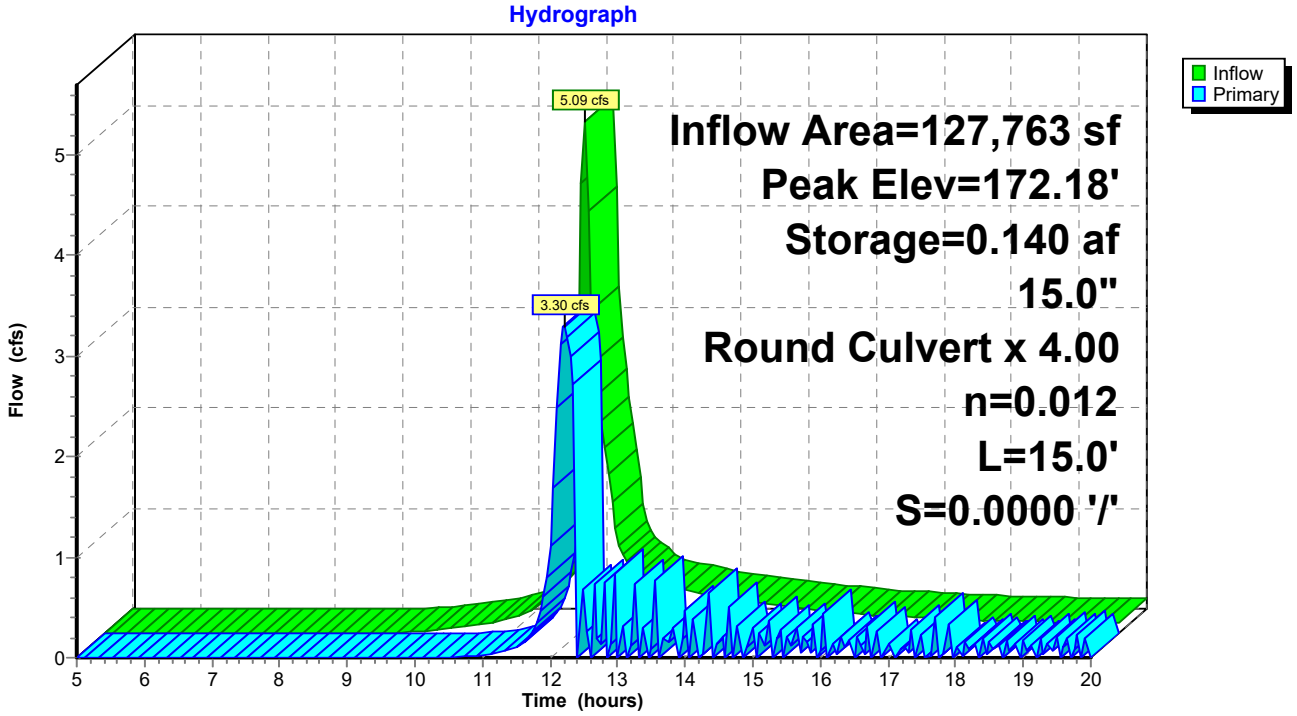
6,394.6 cf Field - 2,999.0 cf Chambers = 3,395.6 cf Stone x 40.0% Voids = 1,358.2 cf Stone Storage

Chamber Storage + Stone Storage = 4,357.3 cf = 0.100 af
Overall Storage Efficiency = 68.1%
Overall System Size = 59.50' x 35.33' x 3.04'

56 Chambers
236.8 cy Field
125.8 cy Stone



Pond UDS-1: Cultec 330 XLHD

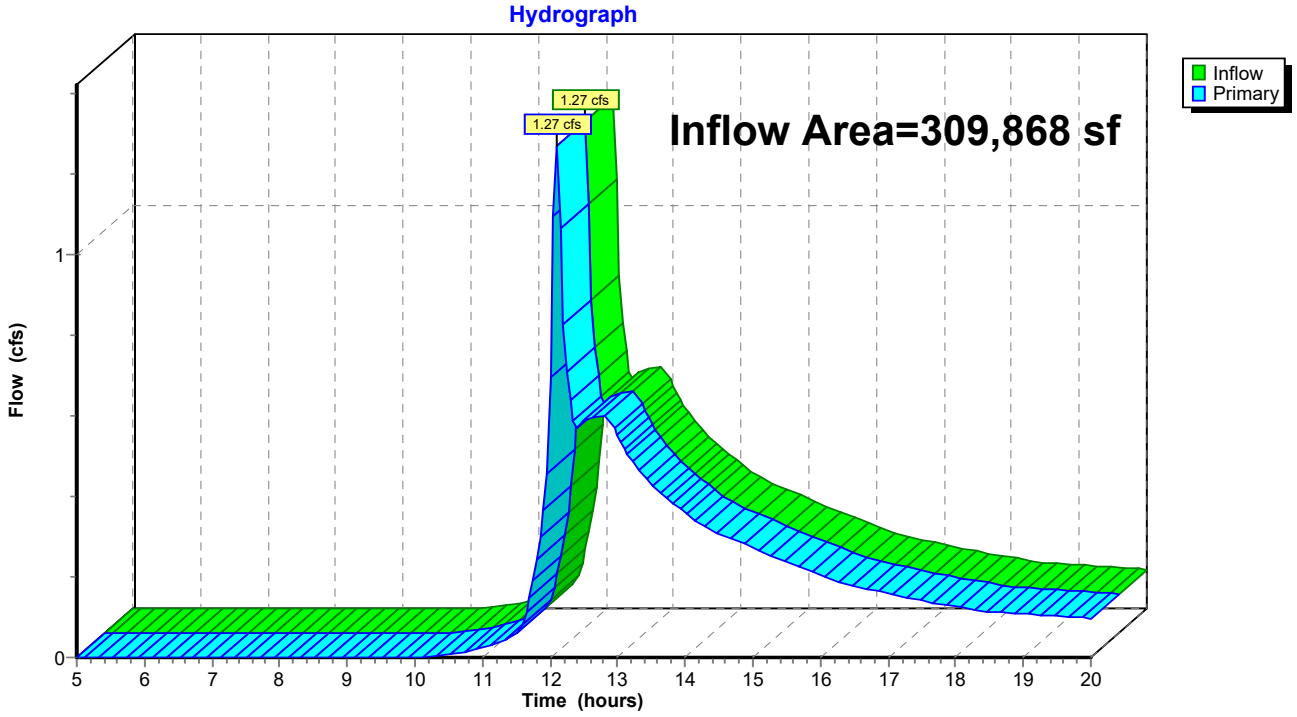


Summary for Link POA-1: Hunting Lane (Off-site)

Inflow Area = 309,868 sf, 37.48% Impervious, Inflow Depth > 0.33" for 2-YR event
Inflow = 1.27 cfs @ 12.10 hrs, Volume= 8,510 cf
Primary = 1.27 cfs @ 12.10 hrs, Volume= 8,510 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link POA-1: Hunting Lane (Off-site)

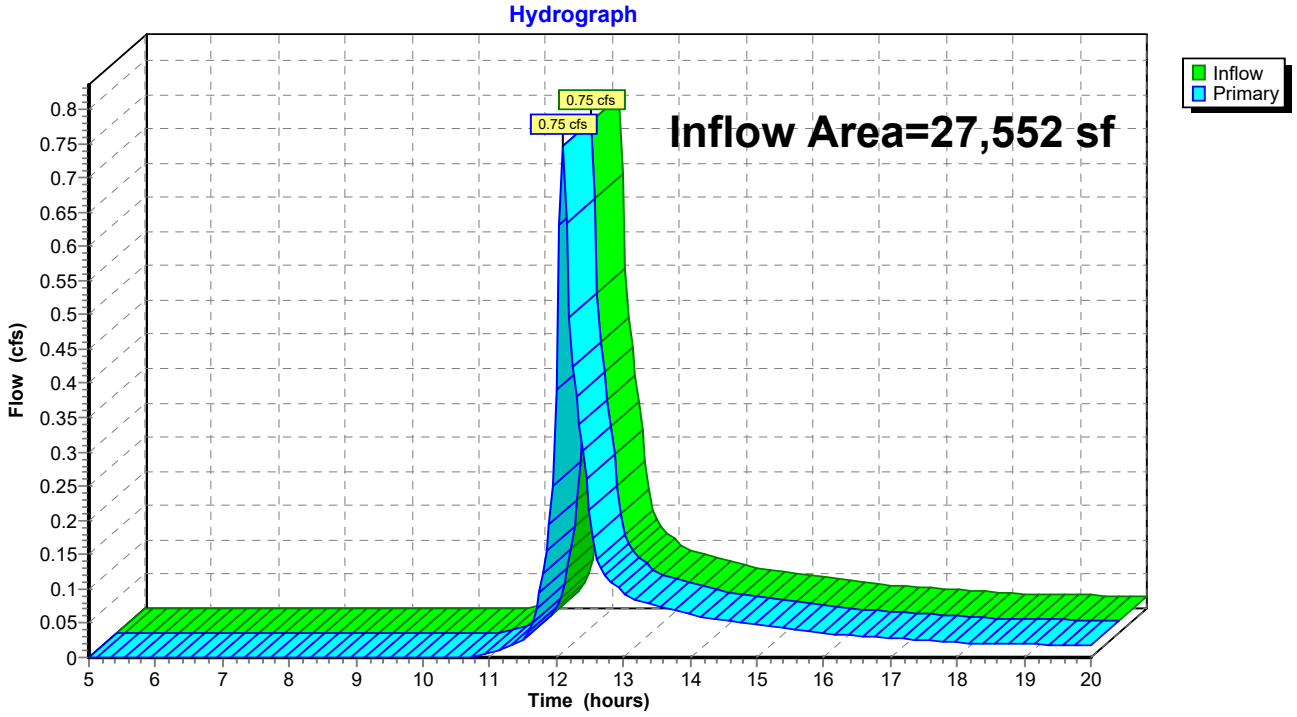


Summary for Link POA-2: North Main Street (Offsite)

Inflow Area = 27,552 sf, 5.91% Impervious, Inflow Depth > 0.98" for 2-YR event
Inflow = 0.75 cfs @ 12.10 hrs, Volume= 2,261 cf
Primary = 0.75 cfs @ 12.10 hrs, Volume= 2,261 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link POA-2: North Main Street (Offsite)

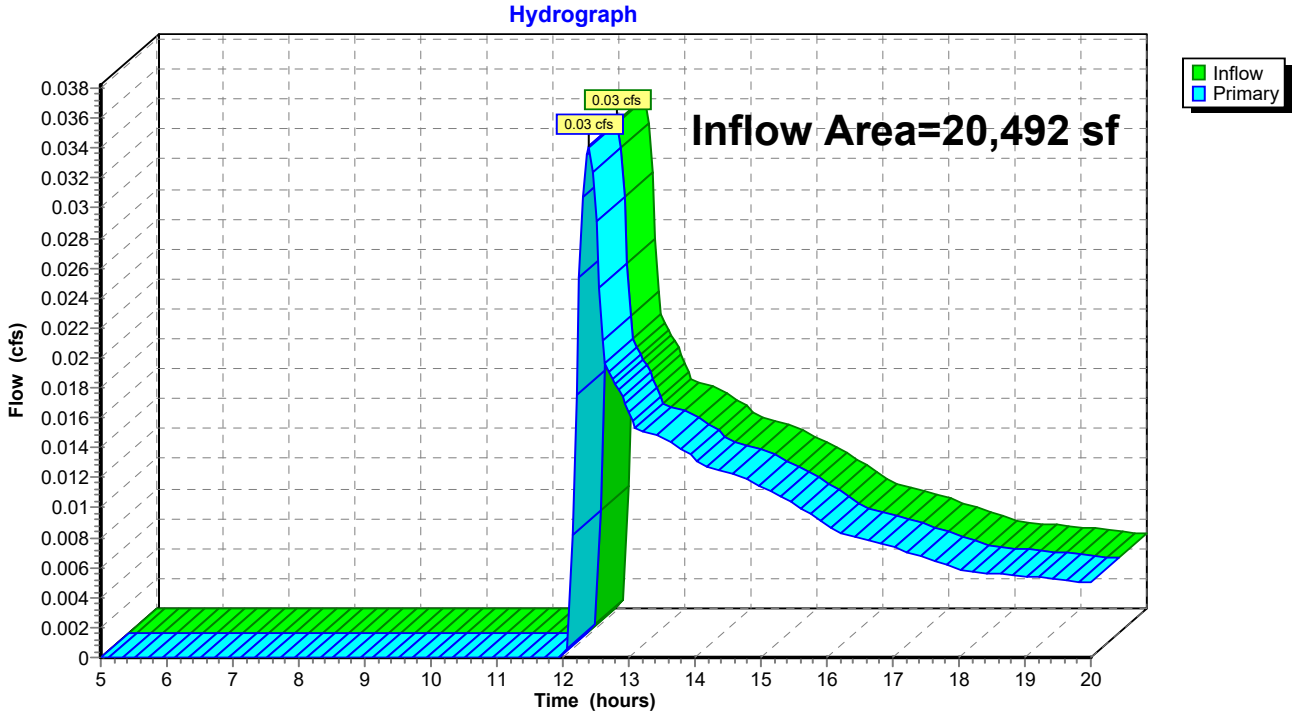


Summary for Link POA-3: 33 N Main Street (Offsite)

Inflow Area = 20,492 sf, 0.00% Impervious, Inflow Depth > 0.17" for 2-YR event
Inflow = 0.03 cfs @ 12.39 hrs, Volume= 297 cf
Primary = 0.03 cfs @ 12.39 hrs, Volume= 297 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link POA-3: 33 N Main Street (Offsite)



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

Subcatchment1S: Proposed WS-1A Runoff Area=127,763 sf 45.93% Impervious Runoff Depth>2.90"
Tc=6.0 min CN=80 Runoff=10.44 cfs 30,893 cf

Subcatchment7S: Proposed WS-1B Runoff Area=25,142 sf 42.69% Impervious Runoff Depth>1.59"
Tc=6.0 min CN=64 Runoff=1.10 cfs 3,325 cf

Subcatchment8S: Proposed WS-1C Runoff Area=62,999 sf 5.13% Impervious Runoff Depth>0.97"
Flow Length=970' Tc=37.8 min UI Adjusted CN=55 Runoff=0.79 cfs 5,080 cf

Subcatchment10S: Proposed WS-3 Runoff Area=27,552 sf 5.91% Impervious Runoff Depth>2.29"
Tc=6.0 min UI Adjusted CN=73 Runoff=1.79 cfs 5,254 cf

Subcatchment11S: Proposed WS-4 Runoff Area=20,492 sf 0.00% Impervious Runoff Depth>0.81"
Flow Length=195' Tc=6.4 min CN=52 Runoff=0.37 cfs 1,379 cf

Subcatchment17S: Proposed WS-1D Runoff Area=54,797 sf 52.55% Impervious Runoff Depth>3.18"
Tc=6.0 min CN=83 Runoff=4.87 cfs 14,536 cf

Subcatchment23S: Proposed WS-1E Runoff Area=39,167 sf 37.48% Impervious Runoff Depth>2.54"
Tc=6.0 min CN=76 Runoff=2.83 cfs 8,303 cf

Pond DB-1: Det Basin Peak Elev=177.08' Storage=5,549 cf Inflow=4.87 cfs 14,536 cf
Outflow=3.46 cfs 10,562 cf

Pond IB-1: Infil Basin Peak Elev=173.13' Storage=10,440 cf Inflow=5.75 cfs 20,895 cf
Discarded=0.12 cfs 3,911 cf Primary=0.58 cfs 7,030 cf Secondary=0.00 cfs 0 cf Outflow=0.70 cfs 10,942 cf

Pond RG-1: Rain Garden Peak Elev=172.25' Storage=3,323 cf Inflow=1.10 cfs 3,325 cf
Outflow=0.00 cfs 0 cf

Pond UDS-1: Cultec 330 XLHD Peak Elev=173.13' Storage=0.238 af Inflow=10.44 cfs 30,893 cf
15.0" Round Culvert x 4.00 n=0.012 L=15.0' S=0.0000 '/' Outflow=5.75 cfs 20,895 cf

Link POA-1: Hunting Lane (Off-site) Inflow=5.92 cfs 30,975 cf
Primary=5.92 cfs 30,975 cf

Link POA-2: North Main Street (Offsite) Inflow=1.79 cfs 5,254 cf
Primary=1.79 cfs 5,254 cf

Link POA-3: 33 N Main Street (Offsite) Inflow=0.37 cfs 1,379 cf
Primary=0.37 cfs 1,379 cf

Total Runoff Area = 357,912 sf Runoff Volume = 68,770 cf Average Runoff Depth = 2.31"
67.10% Pervious = 240,161 sf 32.90% Impervious = 117,751 sf

Summary for Subcatchment 1S: Proposed WS-1A

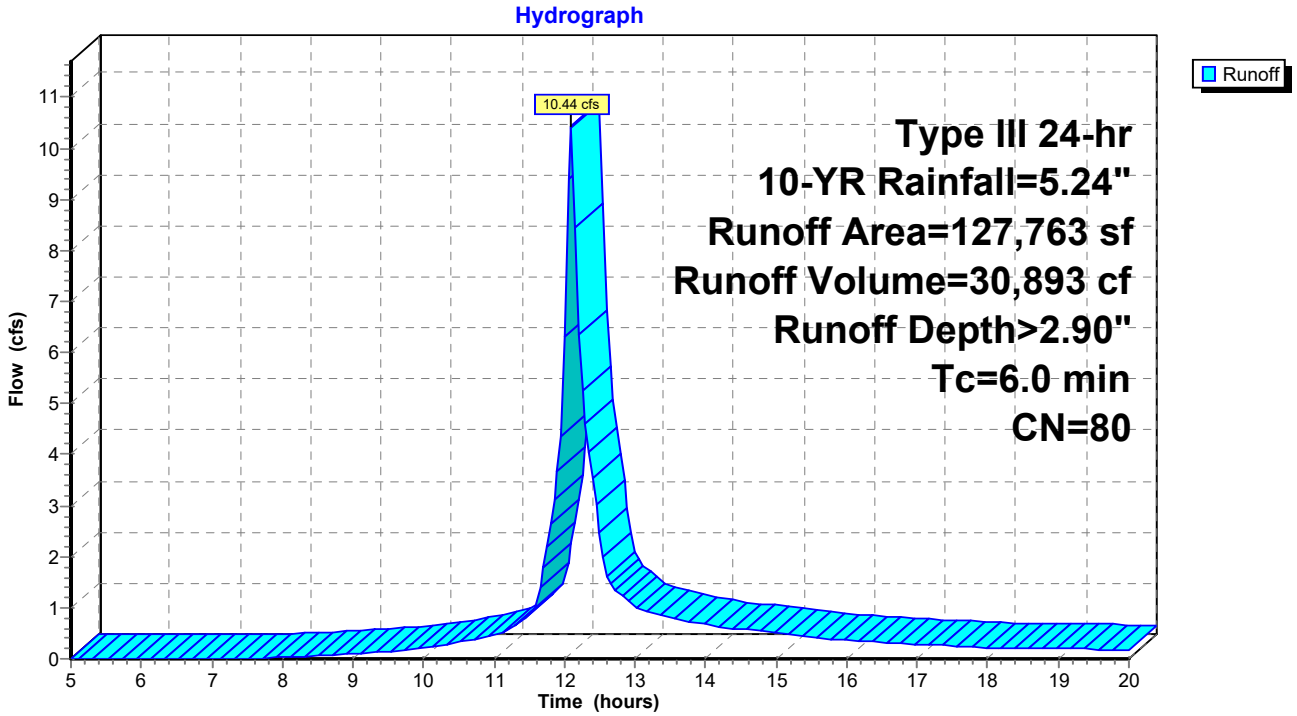
Runoff = 10.44 cfs @ 12.09 hrs, Volume= 30,893 cf, Depth> 2.90"
Routed to Pond UDS-1 : Cultec 330 XLHD

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

Area (sf)	CN	Description
2,745	98	Unconnected pavement, HSG A
33,953	98	Unconnected pavement, HSG B
21,986	98	Unconnected pavement, HSG C
1,946	39	>75% Grass cover, Good, HSG A
41,046	61	>75% Grass cover, Good, HSG B
26,087	74	>75% Grass cover, Good, HSG C
127,763	80	Weighted Average
69,079		54.07% Pervious Area
58,684		45.93% Impervious Area
58,684		100.00% Unconnected

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

Subcatchment 1S: Proposed WS-1A



Summary for Subcatchment 7S: Proposed WS-1B

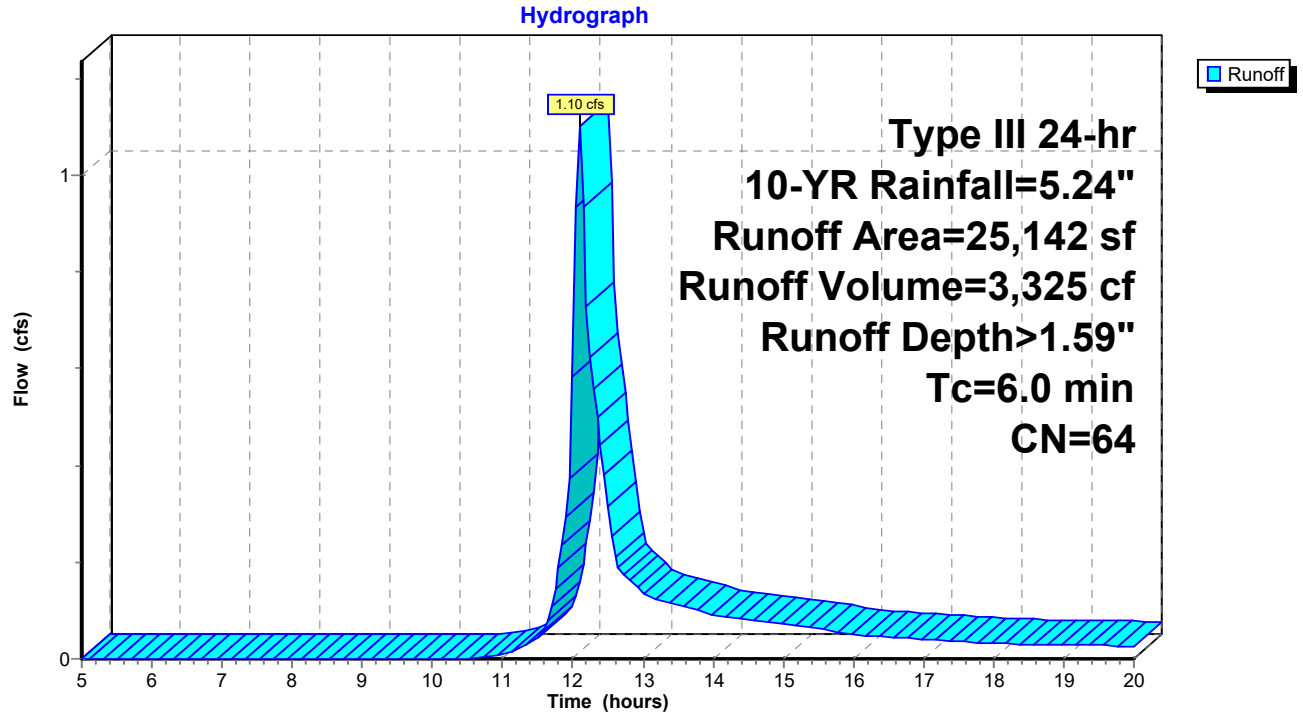
Runoff = 1.10 cfs @ 12.10 hrs, Volume= 3,325 cf, Depth> 1.59"
Routed to Pond RG-1 : Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

Area (sf)	CN	Description
10,733	98	Unconnected pavement, HSG A
0	98	Unconnected pavement, HSG B
0	98	Unconnected pavement, HSG C
14,409	39	>75% Grass cover, Good, HSG A
0	61	>75% Grass cover, Good, HSG B
0	74	>75% Grass cover, Good, HSG C
25,142	64	Weighted Average
14,409		57.31% Pervious Area
10,733		42.69% Impervious Area
10,733		100.00% Unconnected

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

Subcatchment 7S: Proposed WS-1B



Summary for Subcatchment 8S: Proposed WS-1C

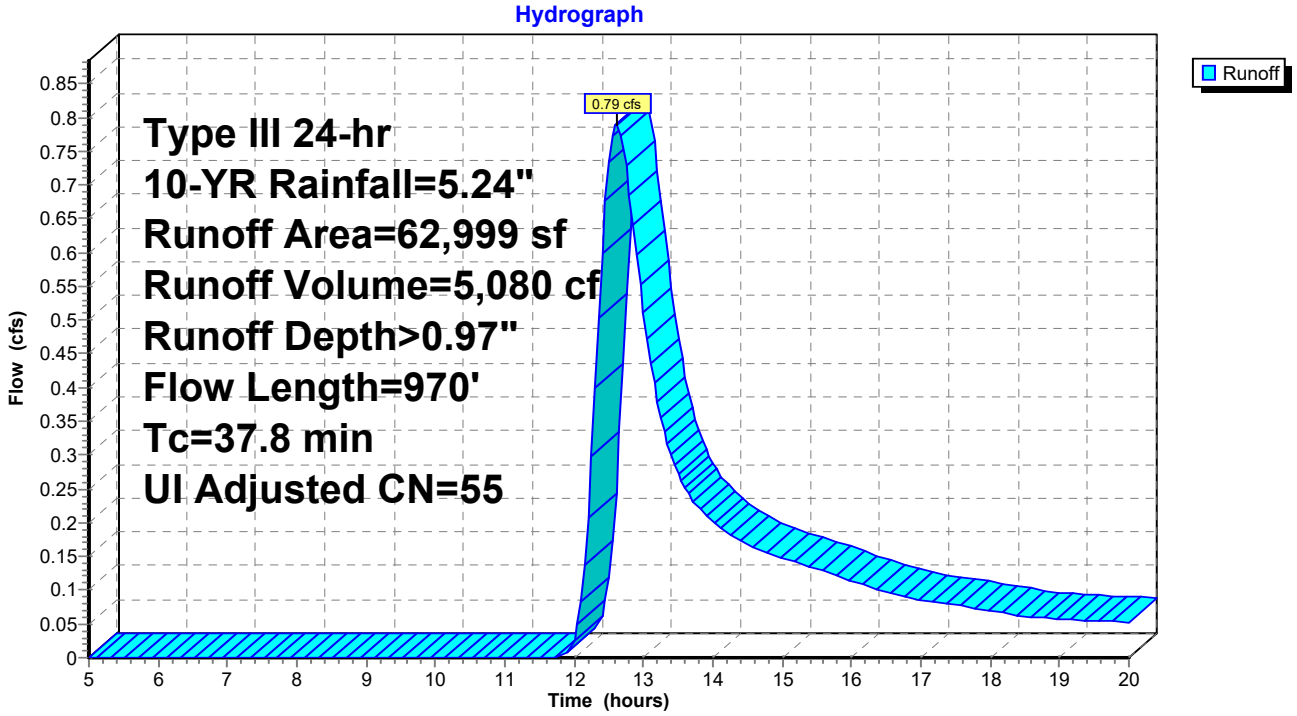
Runoff = 0.79 cfs @ 12.62 hrs, Volume= 5,080 cf, Depth> 0.97"
Routed to Link POA-1 : Hunting Lane (Off-site)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

Area (sf)	CN	Adj	Description
0	98		Unconnected pavement, HSG A
3,231	98		Unconnected pavement, HSG B
0	98		Unconnected pavement, HSG C
18,478	39		>75% Grass cover, Good, HSG A
41,290	61		>75% Grass cover, Good, HSG B
0	74		>75% Grass cover, Good, HSG C
62,999	56	55	Weighted Average, UI Adjusted
59,768			94.87% Pervious Area
3,231			5.13% Impervious Area
3,231			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	50	0.0100	0.08		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.35"
27.2	920	0.0065	0.56		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
37.8	970	Total			

Subcatchment 8S: Proposed WS-1C



Summary for Subcatchment 10S: Proposed WS-3

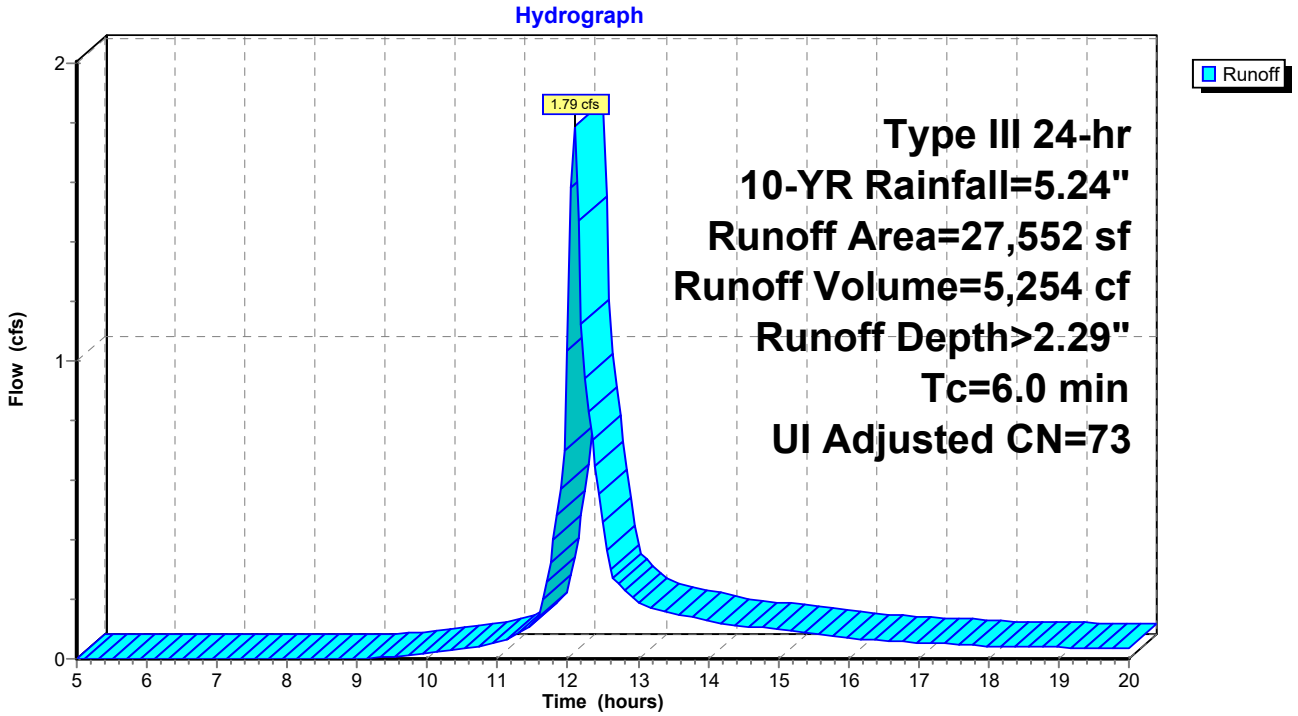
Runoff = 1.79 cfs @ 12.09 hrs, Volume= 5,254 cf, Depth> 2.29"
Routed to Link POA-2 : North Main Street (Offsite)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

Area (sf)	CN	Adj	Description
38	98		Unconnected pavement, HSG A
1,589	98		Unconnected pavement, HSG B
0	98		Unconnected pavement, HSG C
1,223	39		>75% Grass cover, Good, HSG A
0	61		>75% Grass cover, Good, HSG B
24,702	74		>75% Grass cover, Good, HSG C
27,552	74	73	Weighted Average, UI Adjusted
25,925			94.09% Pervious Area
1,627			5.91% Impervious Area
1,627			100.00% Unconnected

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

Subcatchment 10S: Proposed WS-3



Summary for Subcatchment 11S: Proposed WS-4

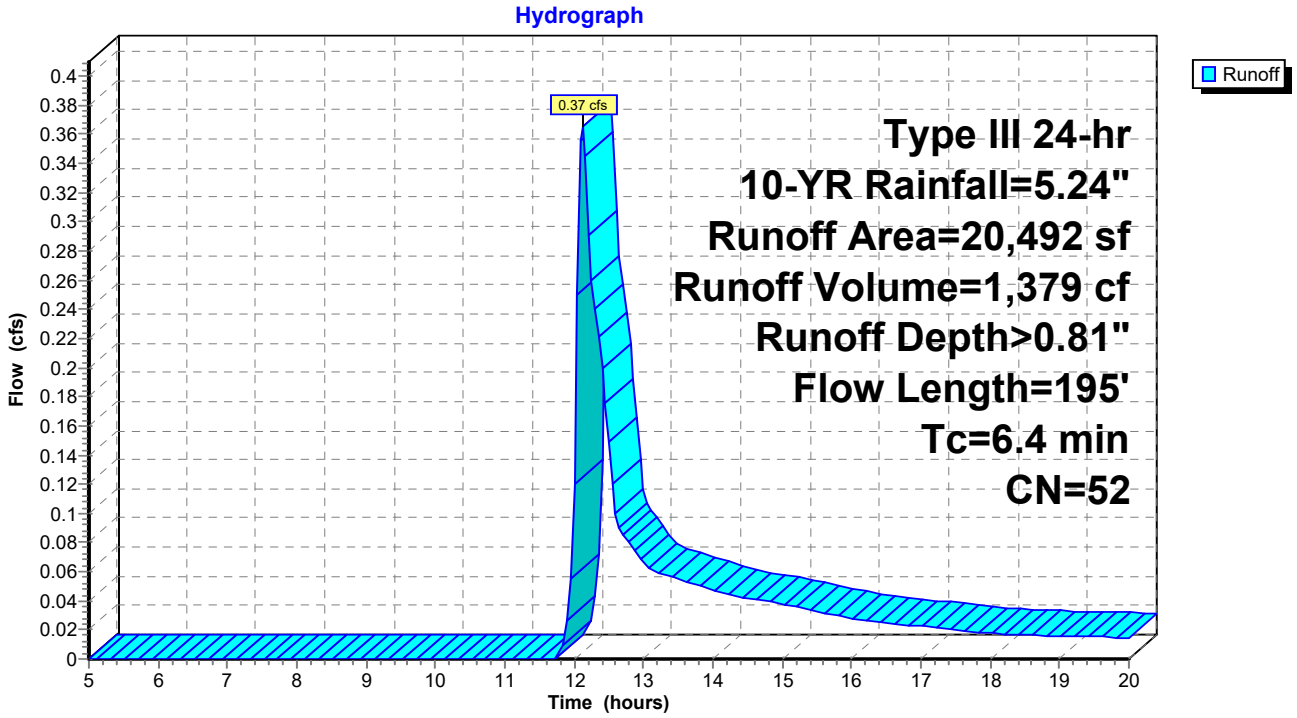
Runoff = 0.37 cfs @ 12.12 hrs, Volume= 1,379 cf, Depth> 0.81"
Routed to Link POA-3 : 33 N Main Street (Offsite)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

Area (sf)	CN	Description
0	98	Unconnected pavement, HSG A
0	98	Unconnected pavement, HSG B
0	98	Unconnected pavement, HSG C
8,496	39	>75% Grass cover, Good, HSG A
11,996	61	>75% Grass cover, Good, HSG B
0	74	>75% Grass cover, Good, HSG C
20,492	52	Weighted Average
20,492		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	50	0.0700	0.17		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.35"
1.5	145	0.0520	1.60		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.4	195	Total			

Subcatchment 11S: Proposed WS-4



Summary for Subcatchment 17S: Proposed WS-1D

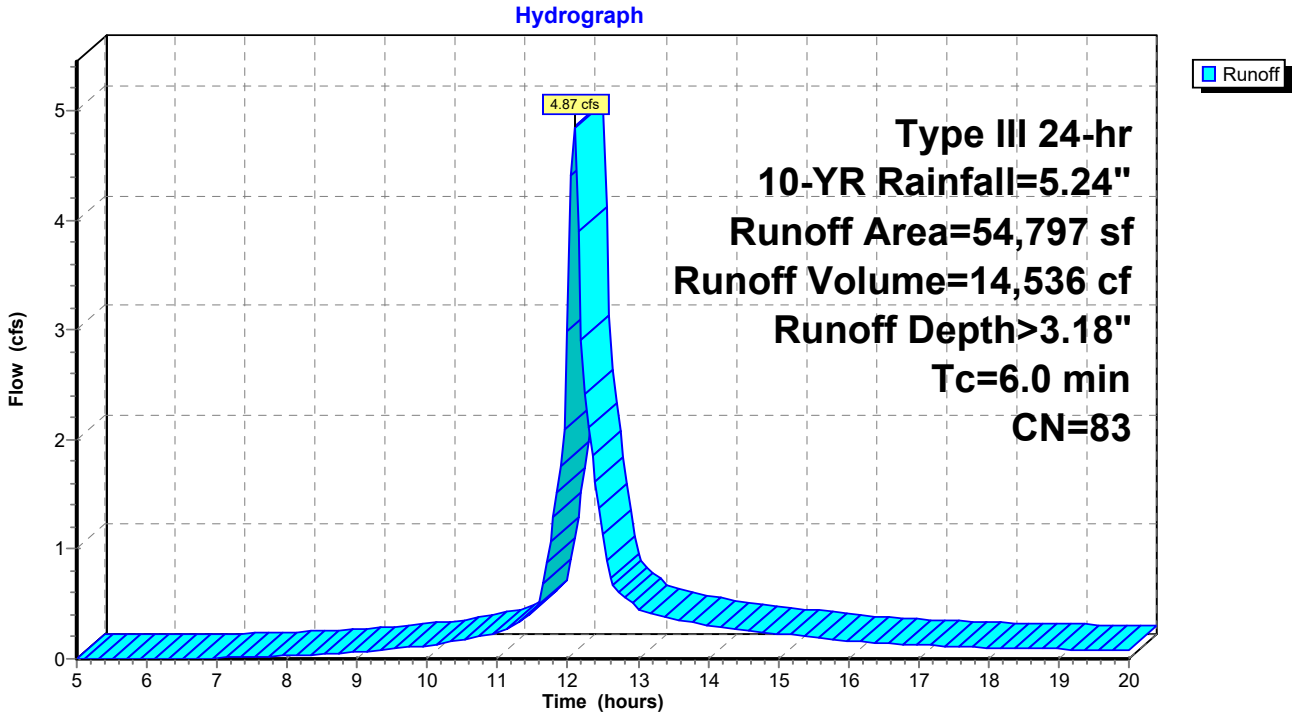
Runoff = 4.87 cfs @ 12.09 hrs, Volume= 14,536 cf, Depth> 3.18"
Routed to Pond DB-1 : Det Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

Area (sf)	CN	Description
0	98	Unconnected pavement, HSG A
17,482	98	Unconnected pavement, HSG B
11,314	98	Unconnected pavement, HSG C
0	39	>75% Grass cover, Good, HSG A
13,949	61	>75% Grass cover, Good, HSG B
12,052	74	>75% Grass cover, Good, HSG C
54,797	83	Weighted Average
26,001		47.45% Pervious Area
28,796		52.55% Impervious Area
28,796		100.00% Unconnected

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

Subcatchment 17S: Proposed WS-1D



Summary for Subcatchment 23S: Proposed WS-1E

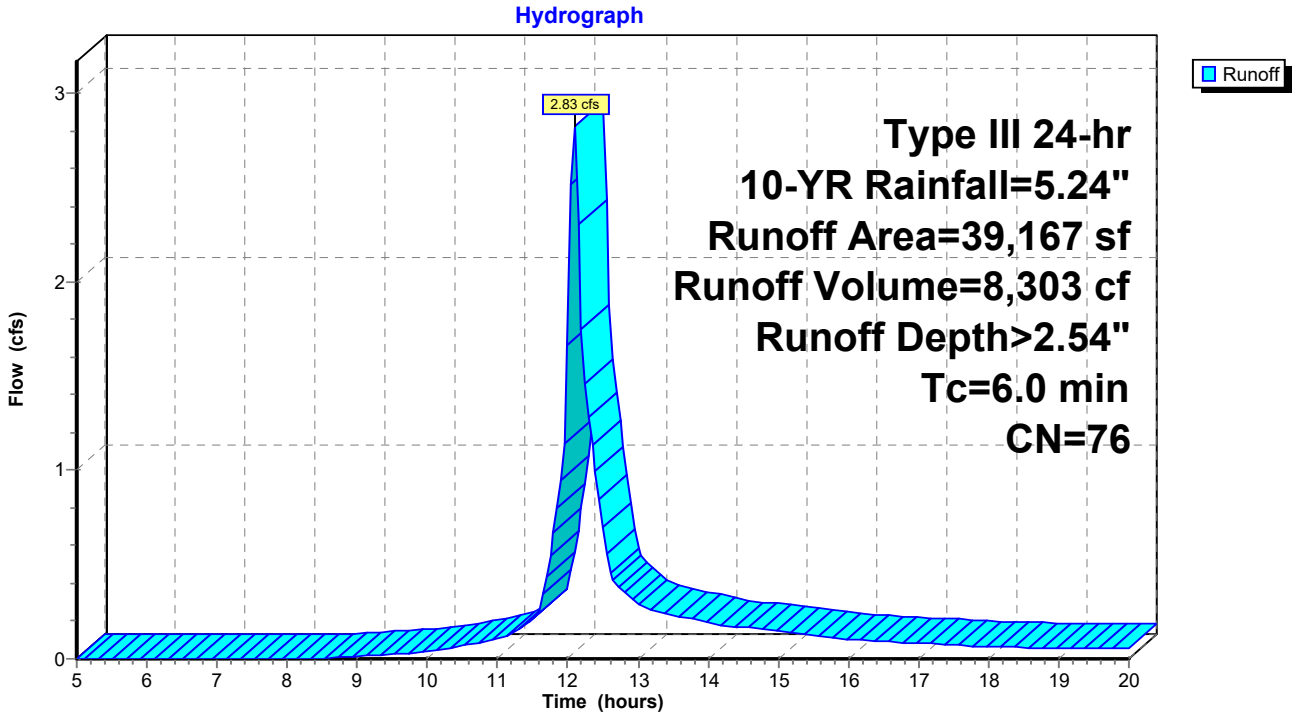
Runoff = 2.83 cfs @ 12.09 hrs, Volume= 8,303 cf, Depth> 2.54"
Routed to Link POA-1 : Hunting Lane (Off-site)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=5.24"

Area (sf)	CN	Description
0	98	Unconnected pavement, HSG A
14,680	98	Unconnected pavement, HSG B
0	98	Unconnected pavement, HSG C
0	39	>75% Grass cover, Good, HSG A
21,286	61	>75% Grass cover, Good, HSG B
3,201	74	>75% Grass cover, Good, HSG C
39,167	76	Weighted Average
24,487		62.52% Pervious Area
14,680		37.48% Impervious Area
14,680		100.00% Unconnected

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

Subcatchment 23S: Proposed WS-1E



Summary for Pond DB-1: Det Basin

Inflow Area = 54,797 sf, 52.55% Impervious, Inflow Depth > 3.18" for 10-YR event
Inflow = 4.87 cfs @ 12.09 hrs, Volume= 14,536 cf
Outflow = 3.46 cfs @ 12.18 hrs, Volume= 10,562 cf, Atten= 29%, Lag= 5.1 min
Primary = 3.46 cfs @ 12.18 hrs, Volume= 10,562 cf
Routed to Link POA-1 : Hunting Lane (Off-site)

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 177.08' @ 12.18 hrs Surf.Area= 3,477 sf Storage= 5,549 cf
Flood Elev= 178.00' Surf.Area= 4,254 sf Storage= 9,123 cf

Plug-Flow detention time= 115.4 min calculated for 10,527 cf (72% of inflow)
Center-of-Mass det. time= 53.4 min (831.9 - 778.5)

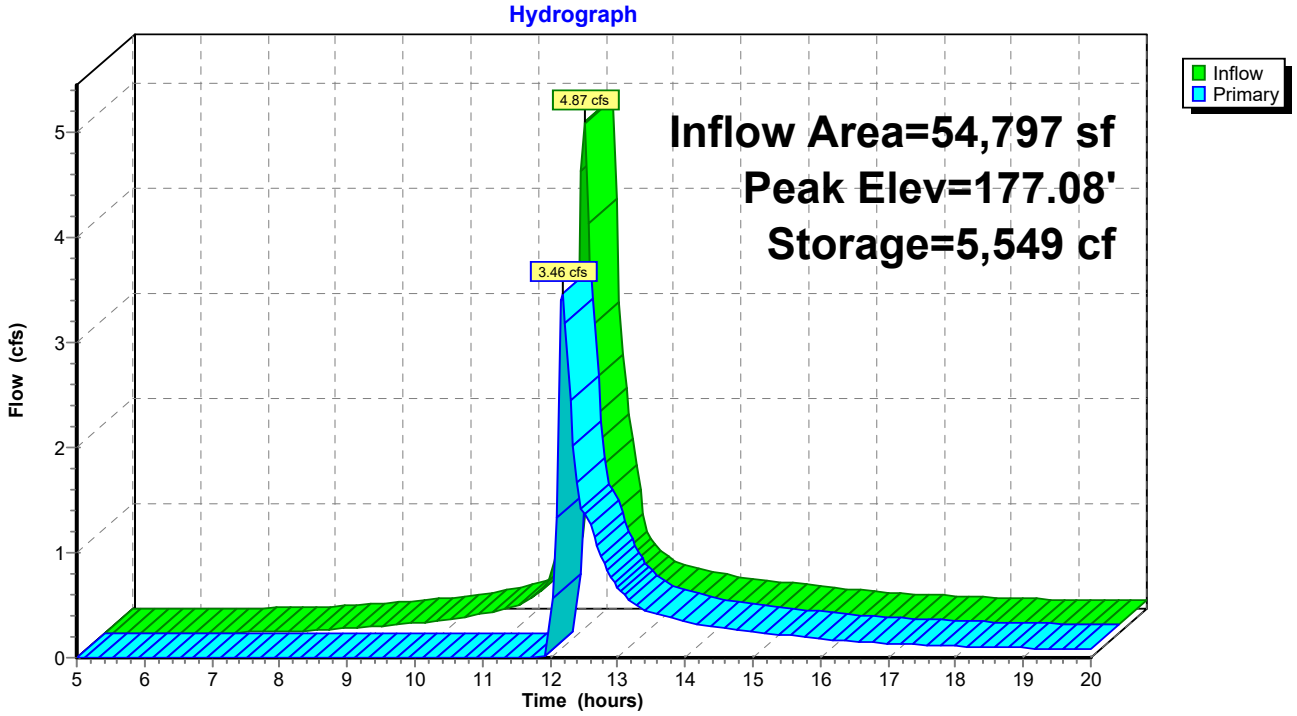
Volume	Invert	Avail.Storage	Storage Description
#1	175.00'	9,123 cf	**Basin A (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
175.00	1,904	0	0
176.00	2,630	2,267	2,267
177.00	3,414	3,022	5,289
178.00	4,254	3,834	9,123

Device	Routing	Invert	Outlet Devices
#1	Device 3	177.00'	**2.0" x 2.0" Horiz. 12" x 24" grate X 10.00 columns** X 5 rows C= 0.600 in 24.0" x 12.0" Grate (69% open area)
#2	Device 3	176.50'	**6.0" Vert. Orifice/Grate X 3.00** C= 0.600 Limited to weir flow at low heads
#3	Primary	174.65'	**12.0" Round HDPE Culvert** L= 118.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 174.65' / 171.11' S= 0.0300 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.41 cfs @ 12.18 hrs HW=177.07' TW=0.00' (Dynamic Tailwater)
└─**3=HDPE Culvert** (Passes 3.41 cfs of 4.14 cfs potential flow)
  ├─**1=12" x 24" grate** (Orifice Controls 1.80 cfs @ 1.29 fps)
  └─**2=Orifice/Grate** (Orifice Controls 1.61 cfs @ 2.73 fps)

Pond DB-1: Det Basin



Summary for Pond IB-1: Infil Basin

Inflow Area = 127,763 sf, 45.93% Impervious, Inflow Depth > 1.96" for 10-YR event
Inflow = 5.75 cfs @ 12.09 hrs, Volume= 20,895 cf
Outflow = 0.70 cfs @ 13.86 hrs, Volume= 10,942 cf, Atten= 88%, Lag= 105.9 min
Discarded = 0.12 cfs @ 13.86 hrs, Volume= 3,911 cf
Primary = 0.58 cfs @ 13.86 hrs, Volume= 7,030 cf
Routed to Link POA-1 : Hunting Lane (Off-site)
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0 cf
Routed to Link POA-1 : Hunting Lane (Off-site)

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 173.13' @ 13.86 hrs Surf.Area= 5,169 sf Storage= 10,440 cf
Flood Elev= 175.00' Surf.Area= 7,711 sf Storage= 22,476 cf

Plug-Flow detention time= 206.0 min calculated for 10,905 cf (52% of inflow)
Center-of-Mass det. time= 102.1 min (925.0 - 823.0)

Volume	Invert	Avail.Storage	Storage Description
#1	170.00'	22,476 cf	**Basin A (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
170.00	1,749	0	0
171.00	2,649	2,199	2,199
172.00	3,770	3,210	5,409
173.00	5,000	4,385	9,794
174.00	6,327	5,664	15,457
175.00	7,711	7,019	22,476

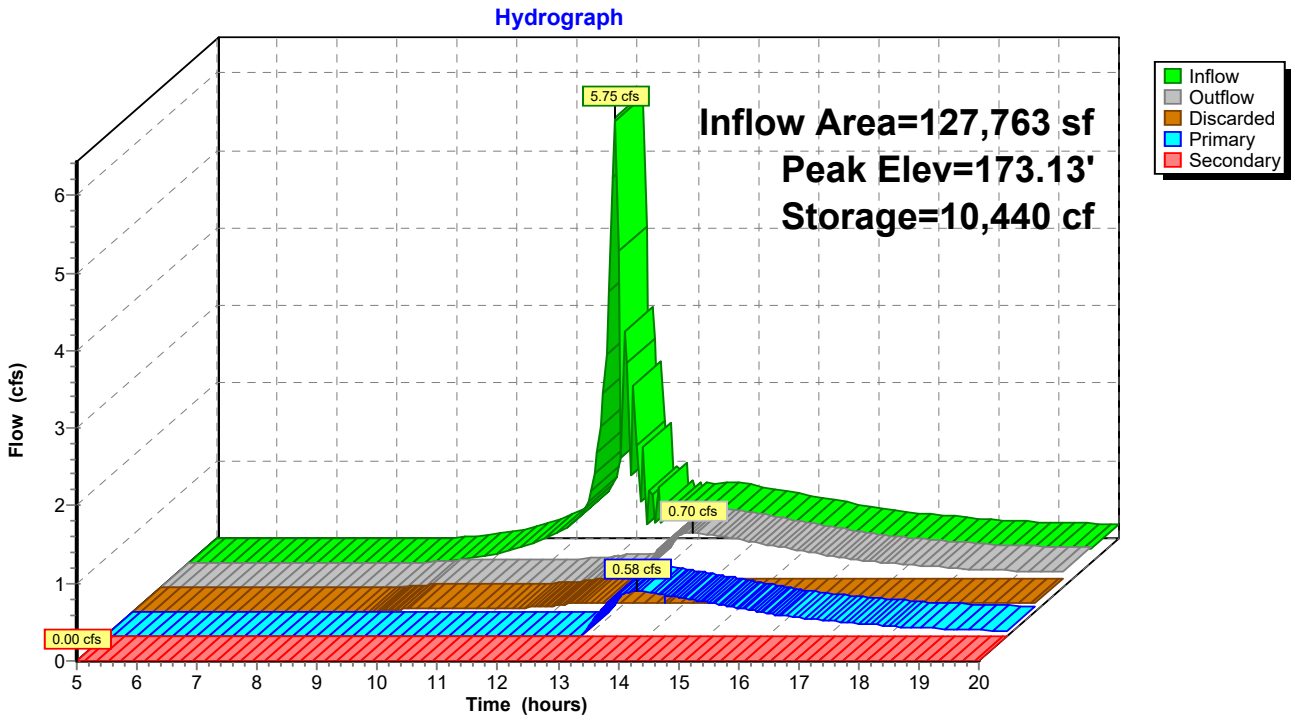
Device	Routing	Invert	Outlet Devices
#1	Discarded	170.00'	**1.020 in/hr Exfiltration over Surface area**
#2	Primary	170.00'	**18.0" Round Culvert** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 170.00' / 169.10' S= 0.0200 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#3	Device 2	173.75'	**2.0" x 2.0" Horiz. Orifice/Grate X 20.00 columns** X 10 rows C= 0.600 in 48.0" x 24.0" Grate (69% open area)
#4	Device 2	173.00'	**48.0" W x 9.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	174.00'	**10.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Discarded OutFlow Max=0.12 cfs @ 13.86 hrs HW=173.13' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.12 cfs)

Primary OutFlow Max=0.58 cfs @ 13.86 hrs HW=173.13' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Passes 0.58 cfs of 10.36 cfs potential flow)
  └**3=Orifice/Grate** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Orifice Controls 0.58 cfs @ 1.14 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=170.00' TW=0.00' (Dynamic Tailwater)
└**5=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond IB-1: Infil Basin



Summary for Pond RG-1: Rain Garden

Inflow Area = 25,142 sf, 42.69% Impervious, Inflow Depth > 1.59" for 10-YR event
Inflow = 1.10 cfs @ 12.10 hrs, Volume= 3,325 cf
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0 cf
Routed to Link POA-1 : Hunting Lane (Off-site)

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 172.25' @ 20.00 hrs Surf.Area= 3,515 sf Storage= 3,323 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

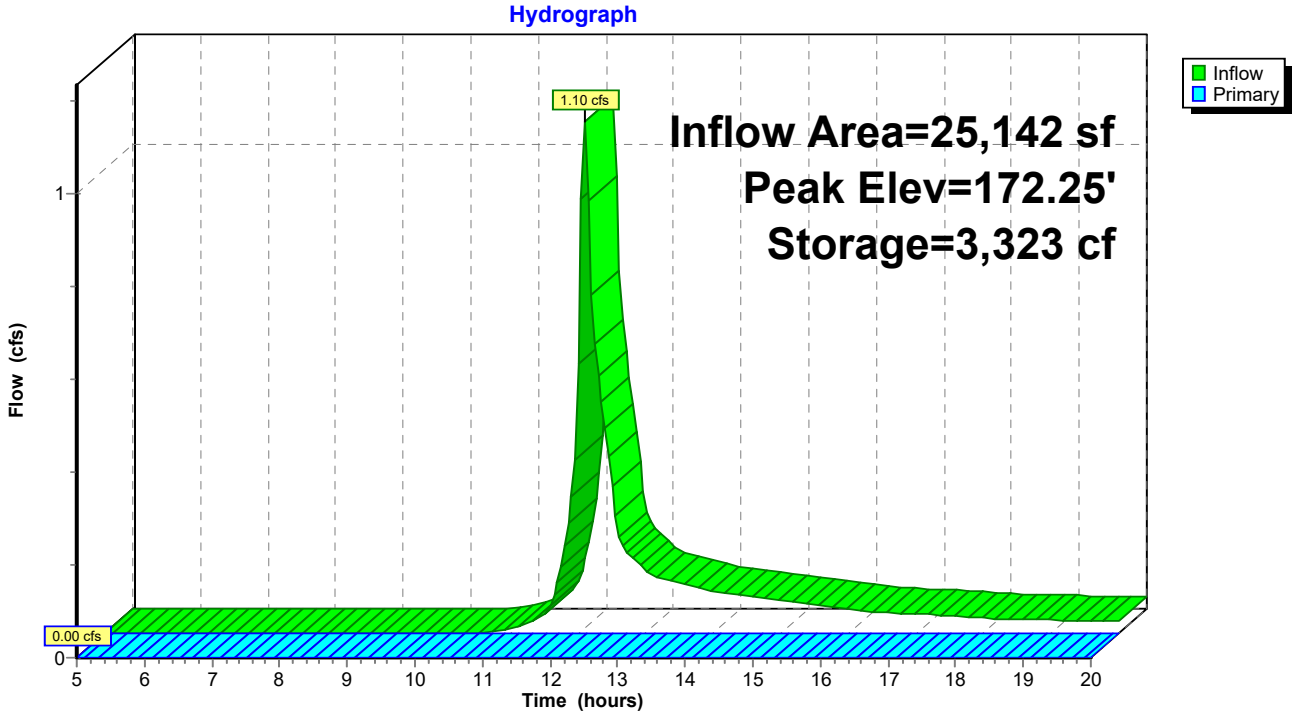
Volume	Invert	Avail.Storage	Storage Description
#1	171.00'	4,257 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
171.00	1,856	0	0
172.00	3,140	2,498	2,498
172.50	3,897	1,759	4,257

Device	Routing	Invert	Outlet Devices
#1	Primary	172.25'	**30.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=171.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond RG-1: Rain Garden



Summary for Pond UDS-1: Cultec 330 XLHD

Inflow Area = 127,763 sf, 45.93% Impervious, Inflow Depth > 2.90" for 10-YR event
Inflow = 10.44 cfs @ 12.09 hrs, Volume= 30,893 cf
Outflow = 5.75 cfs @ 12.09 hrs, Volume= 20,895 cf, Atten= 45%, Lag= 0.0 min
Primary = 5.75 cfs @ 12.09 hrs, Volume= 20,895 cf
Routed to Pond IB-1 : Infil Basin

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 173.13' @ 13.90 hrs Surf.Area= 0.142 ac Storage= 0.238 af
Flood Elev= 174.00' Surf.Area= 0.142 ac Storage= 0.293 af

Plug-Flow detention time= 105.8 min calculated for 20,826 cf (67% of inflow)
Center-of-Mass det. time= 37.6 min (823.0 - 785.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	171.00'	0.060 af	**35.33'W x 115.50'L x 3.04'H Field A** 0.285 af Overall - 0.136 af Embedded = 0.149 af x 40.0% Voids
#2A	171.00'	0.136 af	**Cultec R-330XLHD** x 112 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 7 rows
#3B	171.00'	0.031 af	**35.33'W x 59.50'L x 3.04'H Field B** 0.147 af Overall - 0.069 af Embedded = 0.078 af x 40.0% Voids
#4B	171.00'	0.069 af	**Cultec R-330XLHD** x 56 Inside #3 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 7 rows
		0.296 af	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	171.00'	**15.0" Round Culvert X 4.00** L= 15.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 171.00' / 171.00' S= 0.0000 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=171.88' TW=171.97' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Pond UDS-1: Cultec 330 XLHD - Chamber Wizard Field A

Chamber Model = Cultec R-330XLHD (Discontinued, not for new designs)
Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf
Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
Row Length Adjustment= +1.50' x 7.45 sf x 7 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

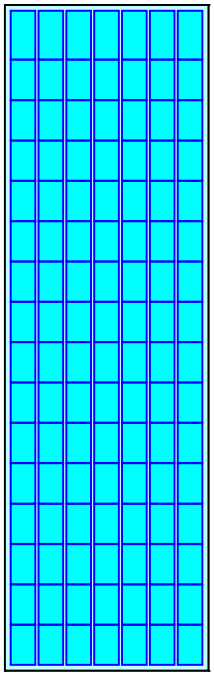
16 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 113.50' Row Length +12.0" End Stone x 2 = 115.50' Base Length
7 Rows x 52.0" Wide + 6.0" Spacing x 6 + 12.0" Side Stone x 2 = 35.33' Base Width
30.5" Chamber Height + 6.0" Stone Cover = 3.04' Field Height

112 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 7 Rows = 5,919.8 cf Chamber Storage

12,413.0 cf Field - 5,919.8 cf Chambers = 6,493.2 cf Stone x 40.0% Voids = 2,597.3 cf Stone Storage

Chamber Storage + Stone Storage = 8,517.1 cf = 0.196 af
Overall Storage Efficiency = 68.6%
Overall System Size = 115.50' x 35.33' x 3.04'

112 Chambers
459.7 cy Field
240.5 cy Stone



Pond UDS-1: Cultec 330 XLHD - Chamber Wizard Field B

Chamber Model = Cultec R-330XLHD (Discontinued, not for new designs)
Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf
Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
Row Length Adjustment= +1.50' x 7.45 sf x 7 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

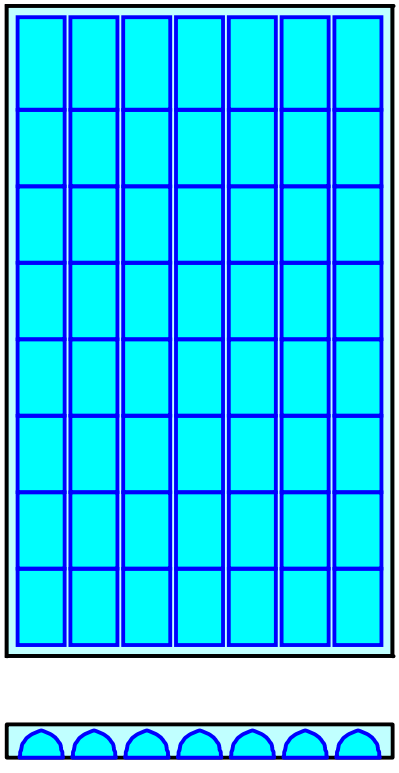
8 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 57.50' Row Length +12.0" End Stone x 2 = 59.50' Base Length
7 Rows x 52.0" Wide + 6.0" Spacing x 6 + 12.0" Side Stone x 2 = 35.33' Base Width
30.5" Chamber Height + 6.0" Stone Cover = 3.04' Field Height

56 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 7 Rows = 2,999.0 cf Chamber Storage

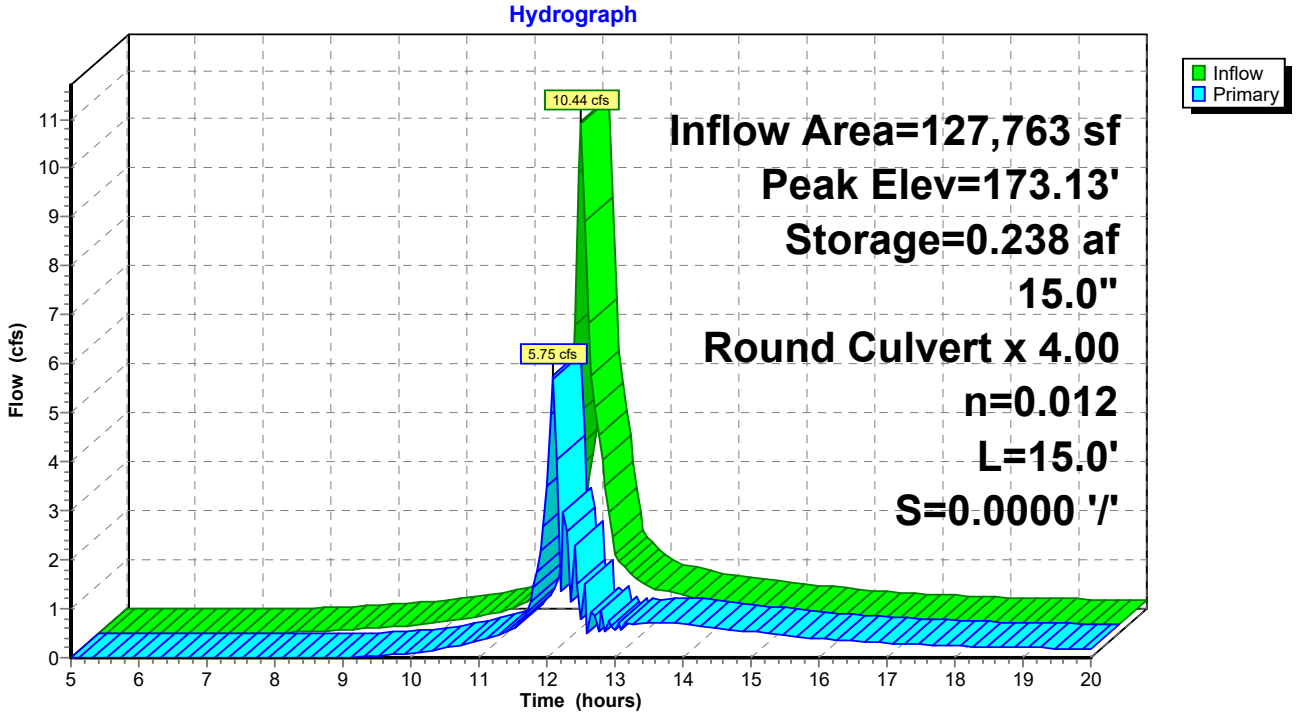
6,394.6 cf Field - 2,999.0 cf Chambers = 3,395.6 cf Stone x 40.0% Voids = 1,358.2 cf Stone Storage

Chamber Storage + Stone Storage = 4,357.3 cf = 0.100 af
Overall Storage Efficiency = 68.1%
Overall System Size = 59.50' x 35.33' x 3.04'

56 Chambers
236.8 cy Field
125.8 cy Stone



Pond UDS-1: Cultec 330 XLHD

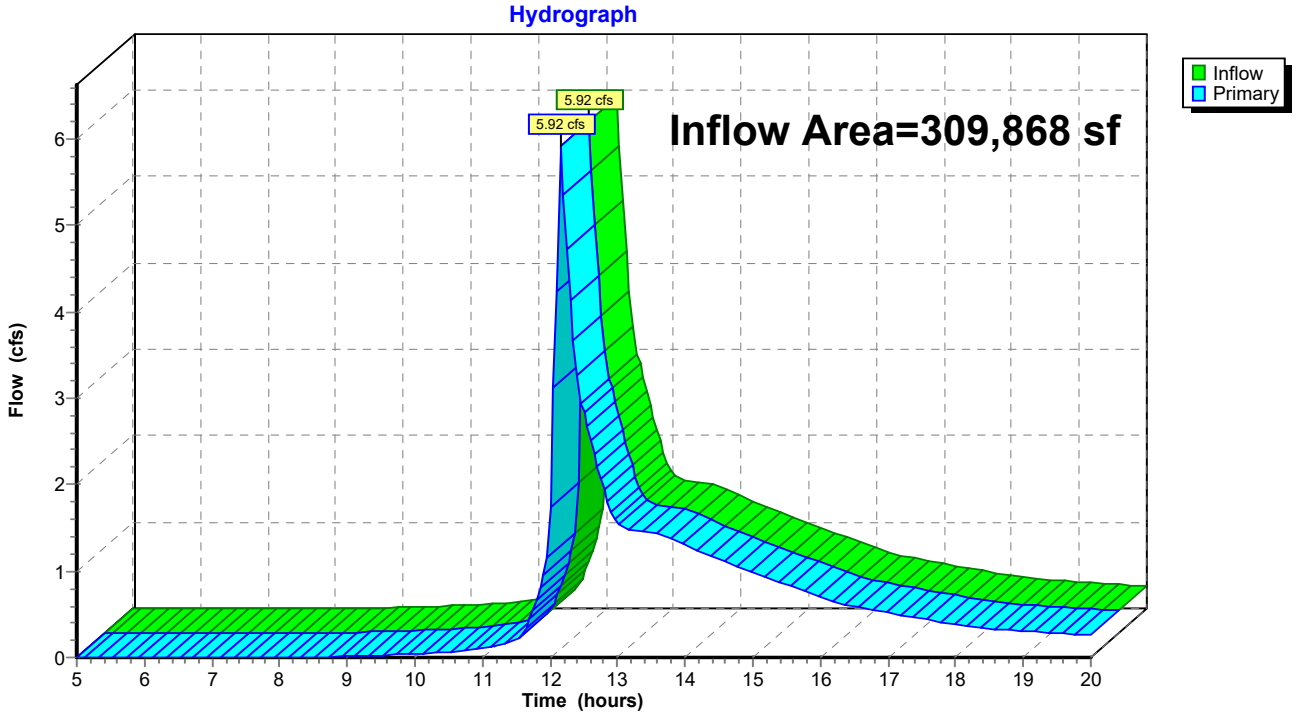


Summary for Link POA-1: Hunting Lane (Off-site)

Inflow Area = 309,868 sf, 37.48% Impervious, Inflow Depth > 1.20" for 10-YR event
Inflow = 5.92 cfs @ 12.16 hrs, Volume= 30,975 cf
Primary = 5.92 cfs @ 12.16 hrs, Volume= 30,975 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link POA-1: Hunting Lane (Off-site)

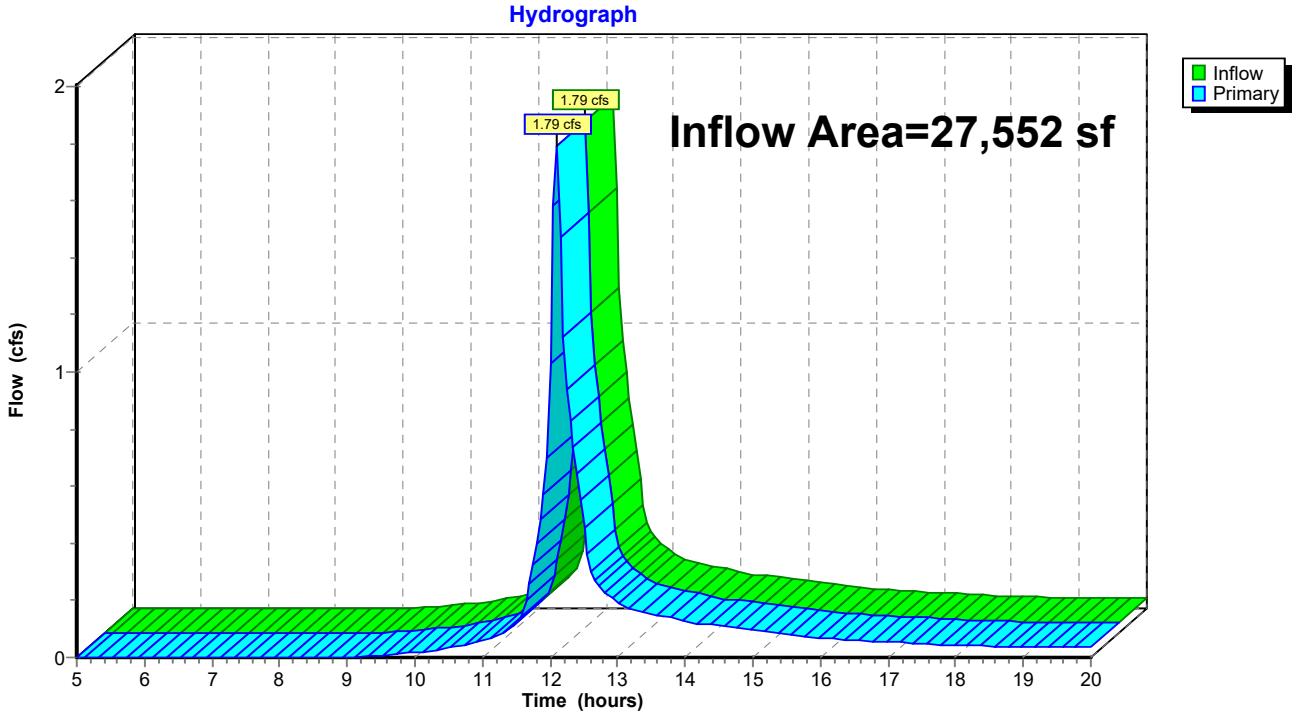


Summary for Link POA-2: North Main Street (Offsite)

Inflow Area = 27,552 sf, 5.91% Impervious, Inflow Depth > 2.29" for 10-YR event
Inflow = 1.79 cfs @ 12.09 hrs, Volume= 5,254 cf
Primary = 1.79 cfs @ 12.09 hrs, Volume= 5,254 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link POA-2: North Main Street (Offsite)

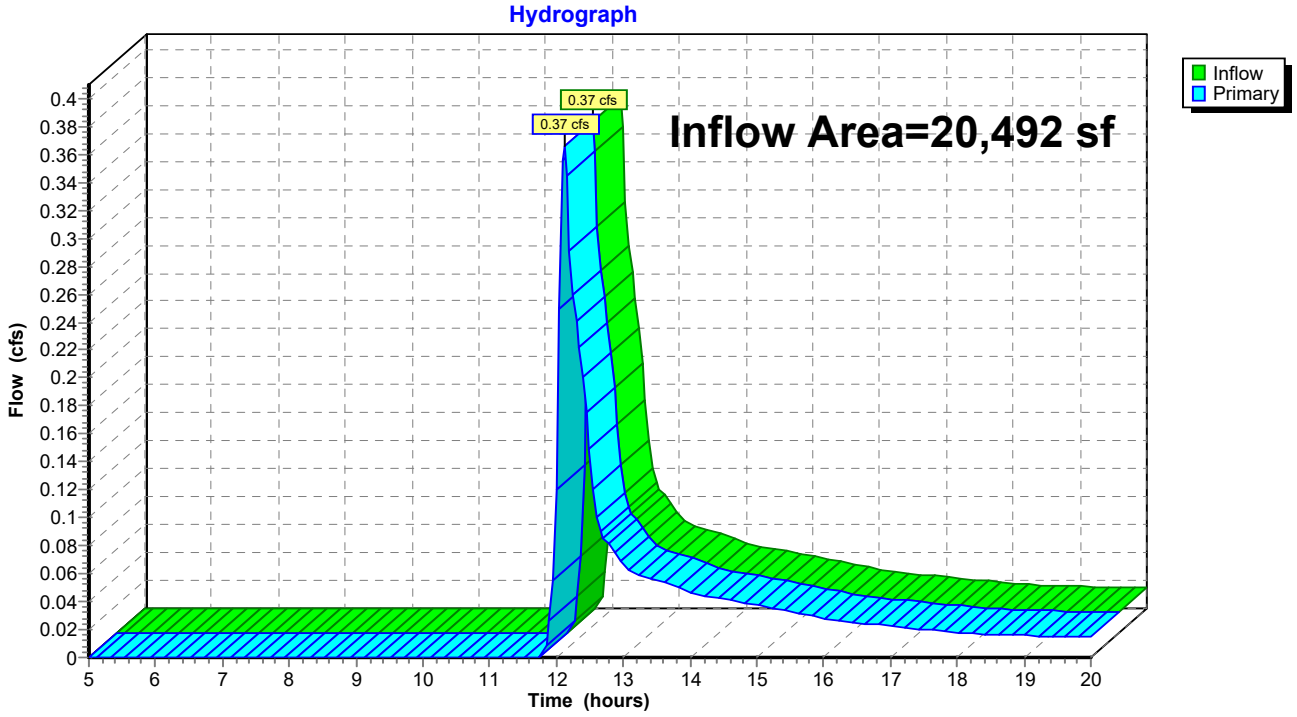


Summary for Link POA-3: 33 N Main Street (Offsite)

Inflow Area = 20,492 sf, 0.00% Impervious, Inflow Depth > 0.81" for 10-YR event
Inflow = 0.37 cfs @ 12.12 hrs, Volume= 1,379 cf
Primary = 0.37 cfs @ 12.12 hrs, Volume= 1,379 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link POA-3: 33 N Main Street (Offsite)



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

Subcatchment1S: Proposed WS-1A Runoff Area=127,763 sf 45.93% Impervious Runoff Depth>3.91"
Tc=6.0 min CN=80 Runoff=13.92 cfs 41,589 cf

Subcatchment7S: Proposed WS-1B Runoff Area=25,142 sf 42.69% Impervious Runoff Depth>2.36"
Tc=6.0 min CN=64 Runoff=1.67 cfs 4,950 cf

Subcatchment8S: Proposed WS-1C Runoff Area=62,999 sf 5.13% Impervious Runoff Depth>1.57"
Flow Length=970' Tc=37.8 min UI Adjusted CN=55 Runoff=1.38 cfs 8,258 cf

Subcatchment10S: Proposed WS-3 Runoff Area=27,552 sf 5.91% Impervious Runoff Depth>3.20"
Tc=6.0 min UI Adjusted CN=73 Runoff=2.50 cfs 7,356 cf

Subcatchment11S: Proposed WS-4 Runoff Area=20,492 sf 0.00% Impervious Runoff Depth>1.36"
Flow Length=195' Tc=6.4 min CN=52 Runoff=0.71 cfs 2,326 cf

Subcatchment17S: Proposed WS-1D Runoff Area=54,797 sf 52.55% Impervious Runoff Depth>4.22"
Tc=6.0 min CN=83 Runoff=6.37 cfs 19,270 cf

Subcatchment23S: Proposed WS-1E Runoff Area=39,167 sf 37.48% Impervious Runoff Depth>3.50"
Tc=6.0 min CN=76 Runoff=3.87 cfs 11,423 cf

Pond DB-1: Det Basin Peak Elev=177.28' Storage=6,276 cf Inflow=6.37 cfs 19,270 cf
Outflow=4.36 cfs 15,259 cf

Pond IB-1: Infil Basin Peak Elev=173.36' Storage=11,654 cf Inflow=6.95 cfs 31,540 cf
Discarded=0.13 cfs 4,181 cf Primary=2.72 cfs 17,340 cf Secondary=0.00 cfs 0 cf Outflow=2.85 cfs 21,521 cf

Pond RG-1: Rain Garden Peak Elev=172.27' Storage=3,383 cf Inflow=1.67 cfs 4,950 cf
Outflow=0.13 cfs 1,598 cf

Pond UDS-1: Cultec 330 XLHD Peak Elev=173.37' Storage=0.257 af Inflow=13.92 cfs 41,589 cf
15.0" Round Culvert x 4.00 n=0.012 L=15.0' S=0.0000 '/' Outflow=6.95 cfs 31,540 cf

Link POA-1: Hunting Lane (Off-site) Inflow=8.41 cfs 53,877 cf
Primary=8.41 cfs 53,877 cf

Link POA-2: North Main Street (Offsite) Inflow=2.50 cfs 7,356 cf
Primary=2.50 cfs 7,356 cf

Link POA-3: 33 N Main Street (Offsite) Inflow=0.71 cfs 2,326 cf
Primary=0.71 cfs 2,326 cf

Total Runoff Area = 357,912 sf Runoff Volume = 95,171 cf Average Runoff Depth = 3.19"
67.10% Pervious = 240,161 sf 32.90% Impervious = 117,751 sf

Summary for Subcatchment 1S: Proposed WS-1A

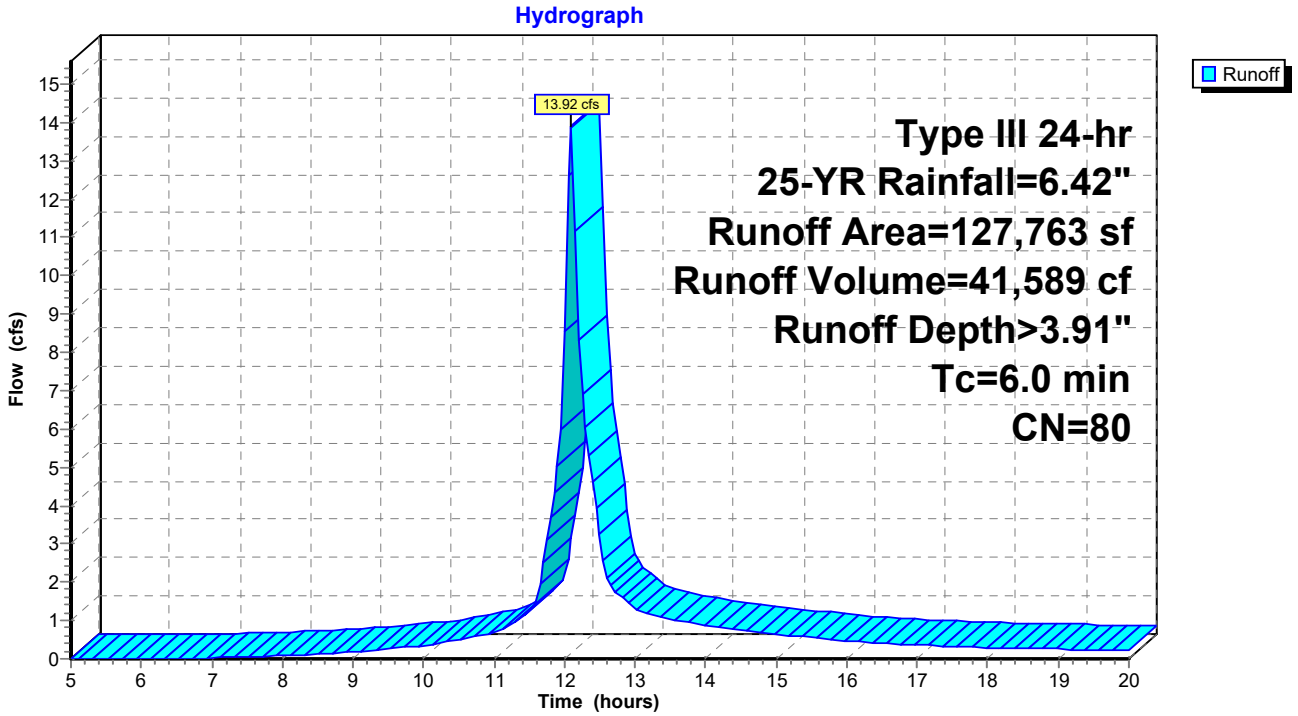
Runoff = 13.92 cfs @ 12.09 hrs, Volume= 41,589 cf, Depth> 3.91"
Routed to Pond UDS-1 : Cultec 330 XLHD

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.42"

Area (sf)	CN	Description
2,745	98	Unconnected pavement, HSG A
33,953	98	Unconnected pavement, HSG B
21,986	98	Unconnected pavement, HSG C
1,946	39	>75% Grass cover, Good, HSG A
41,046	61	>75% Grass cover, Good, HSG B
26,087	74	>75% Grass cover, Good, HSG C
127,763	80	Weighted Average
69,079		54.07% Pervious Area
58,684		45.93% Impervious Area
58,684		100.00% Unconnected

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

Subcatchment 1S: Proposed WS-1A



Summary for Subcatchment 7S: Proposed WS-1B

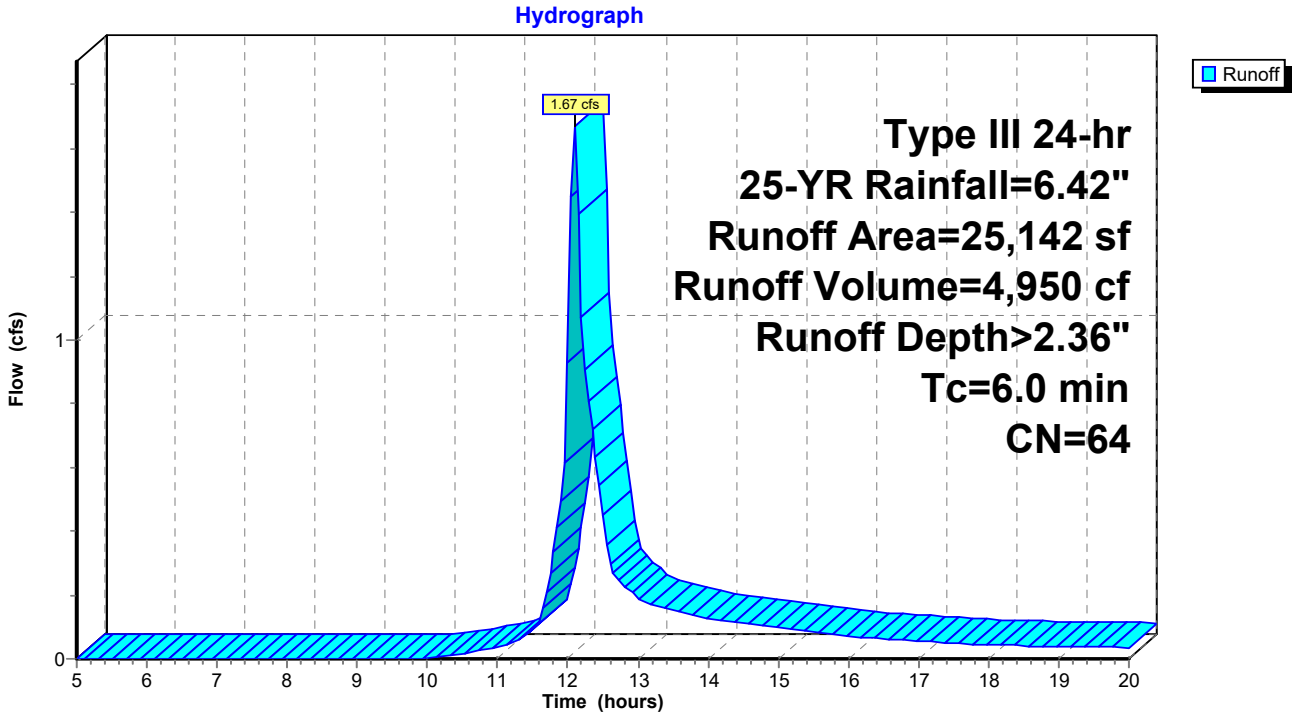
Runoff = 1.67 cfs @ 12.10 hrs, Volume= 4,950 cf, Depth> 2.36"
Routed to Pond RG-1 : Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.42"

Area (sf)	CN	Description
10,733	98	Unconnected pavement, HSG A
0	98	Unconnected pavement, HSG B
0	98	Unconnected pavement, HSG C
14,409	39	>75% Grass cover, Good, HSG A
0	61	>75% Grass cover, Good, HSG B
0	74	>75% Grass cover, Good, HSG C
25,142	64	Weighted Average
14,409		57.31% Pervious Area
10,733		42.69% Impervious Area
10,733		100.00% Unconnected

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

Subcatchment 7S: Proposed WS-1B



Summary for Subcatchment 8S: Proposed WS-1C

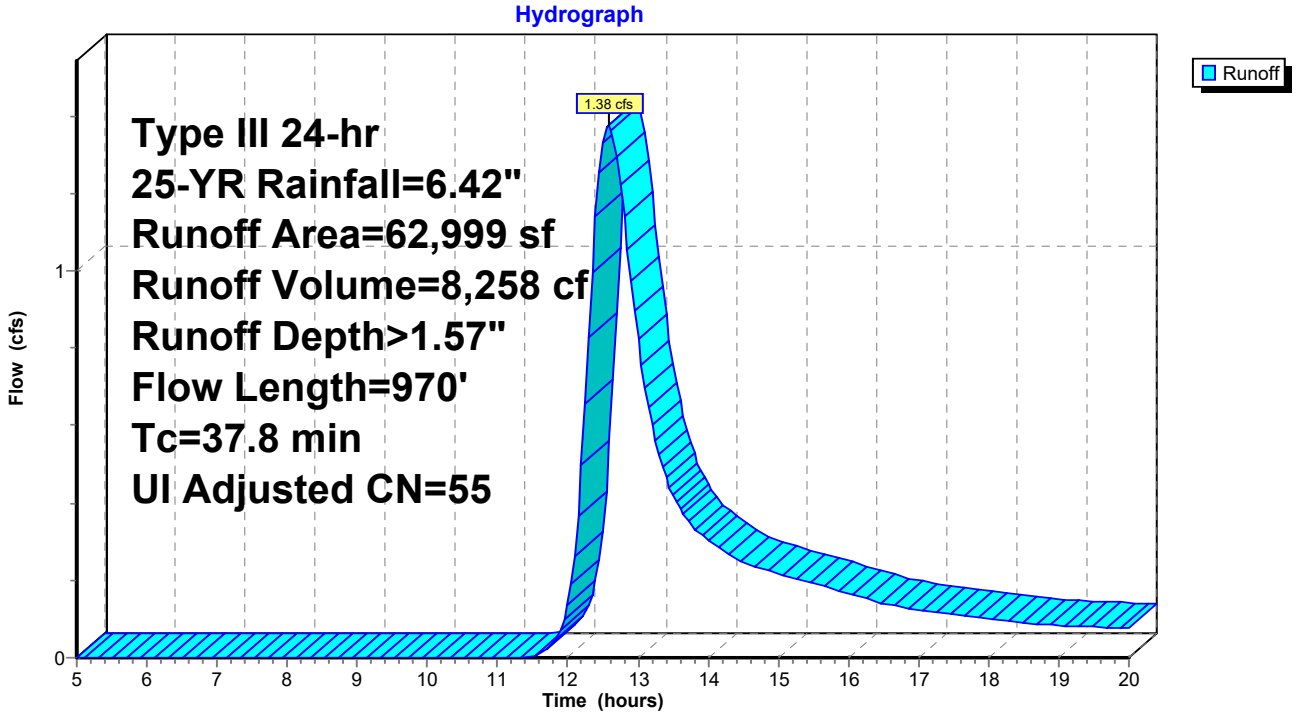
Runoff = 1.38 cfs @ 12.58 hrs, Volume= 8,258 cf, Depth> 1.57"
Routed to Link POA-1 : Hunting Lane (Off-site)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.42"

Area (sf)	CN	Adj	Description
0	98		Unconnected pavement, HSG A
3,231	98		Unconnected pavement, HSG B
0	98		Unconnected pavement, HSG C
18,478	39		>75% Grass cover, Good, HSG A
41,290	61		>75% Grass cover, Good, HSG B
0	74		>75% Grass cover, Good, HSG C
62,999	56	55	Weighted Average, UI Adjusted
59,768			94.87% Pervious Area
3,231			5.13% Impervious Area
3,231			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	50	0.0100	0.08		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.35"
27.2	920	0.0065	0.56		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
37.8	970	Total			

Subcatchment 8S: Proposed WS-1C



Summary for Subcatchment 10S: Proposed WS-3

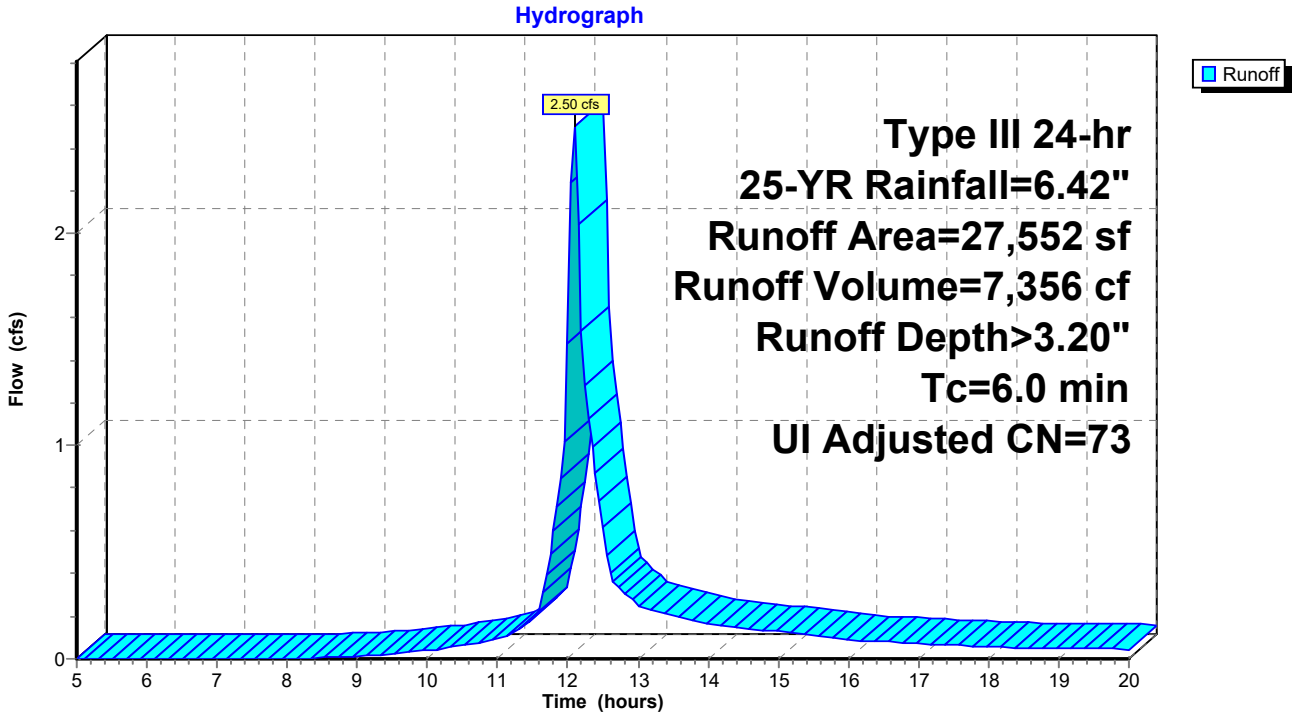
Runoff = 2.50 cfs @ 12.09 hrs, Volume= 7,356 cf, Depth> 3.20"
Routed to Link POA-2 : North Main Street (Offsite)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.42"

Area (sf)	CN	Adj	Description
38	98		Unconnected pavement, HSG A
1,589	98		Unconnected pavement, HSG B
0	98		Unconnected pavement, HSG C
1,223	39		>75% Grass cover, Good, HSG A
0	61		>75% Grass cover, Good, HSG B
24,702	74		>75% Grass cover, Good, HSG C
27,552	74	73	Weighted Average, UI Adjusted
25,925			94.09% Pervious Area
1,627			5.91% Impervious Area
1,627			100.00% Unconnected

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

Subcatchment 10S: Proposed WS-3



Summary for Subcatchment 11S: Proposed WS-4

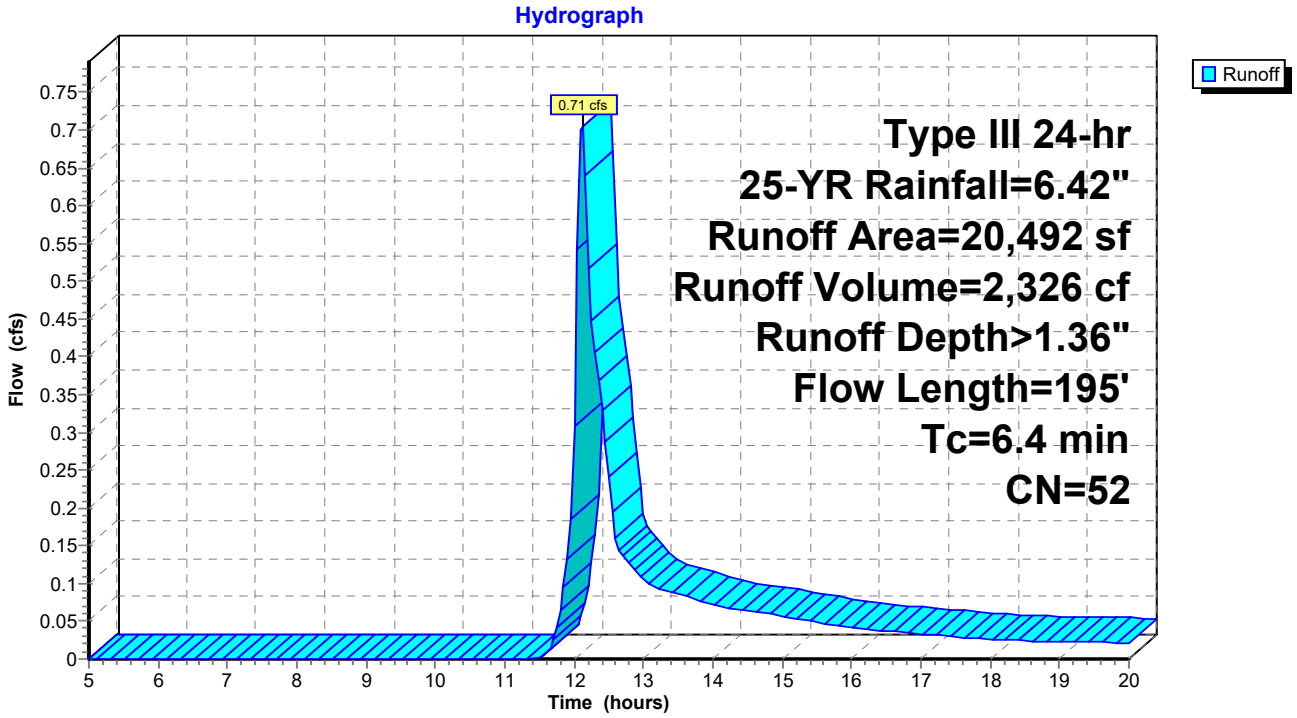
Runoff = 0.71 cfs @ 12.11 hrs, Volume= 2,326 cf, Depth> 1.36"
Routed to Link POA-3 : 33 N Main Street (Offsite)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.42"

Area (sf)	CN	Description
0	98	Unconnected pavement, HSG A
0	98	Unconnected pavement, HSG B
0	98	Unconnected pavement, HSG C
8,496	39	>75% Grass cover, Good, HSG A
11,996	61	>75% Grass cover, Good, HSG B
0	74	>75% Grass cover, Good, HSG C
20,492	52	Weighted Average
20,492		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	50	0.0700	0.17		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.35"
1.5	145	0.0520	1.60		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.4	195	Total			

Subcatchment 11S: Proposed WS-4



Summary for Subcatchment 17S: Proposed WS-1D

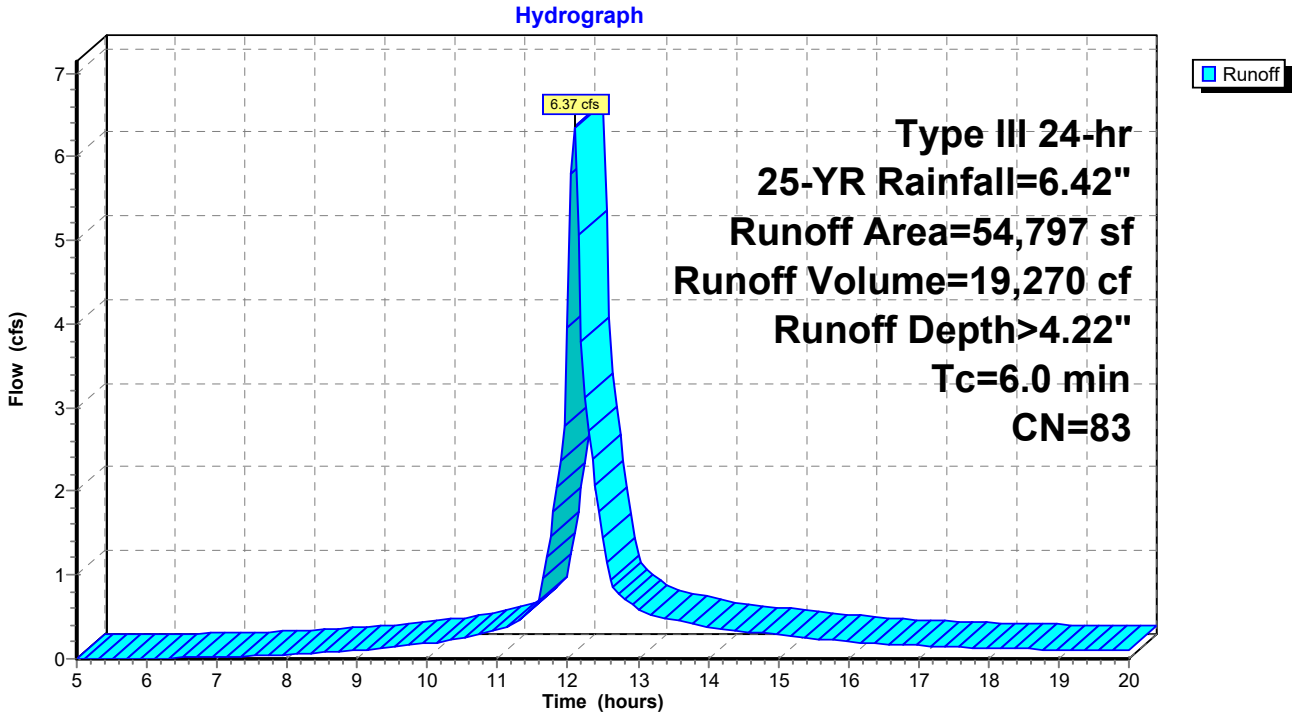
Runoff = 6.37 cfs @ 12.09 hrs, Volume= 19,270 cf, Depth> 4.22"
Routed to Pond DB-1 : Det Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.42"

Area (sf)	CN	Description
0	98	Unconnected pavement, HSG A
17,482	98	Unconnected pavement, HSG B
11,314	98	Unconnected pavement, HSG C
0	39	>75% Grass cover, Good, HSG A
13,949	61	>75% Grass cover, Good, HSG B
12,052	74	>75% Grass cover, Good, HSG C
54,797	83	Weighted Average
26,001		47.45% Pervious Area
28,796		52.55% Impervious Area
28,796		100.00% Unconnected

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

Subcatchment 17S: Proposed WS-1D



Summary for Subcatchment 23S: Proposed WS-1E

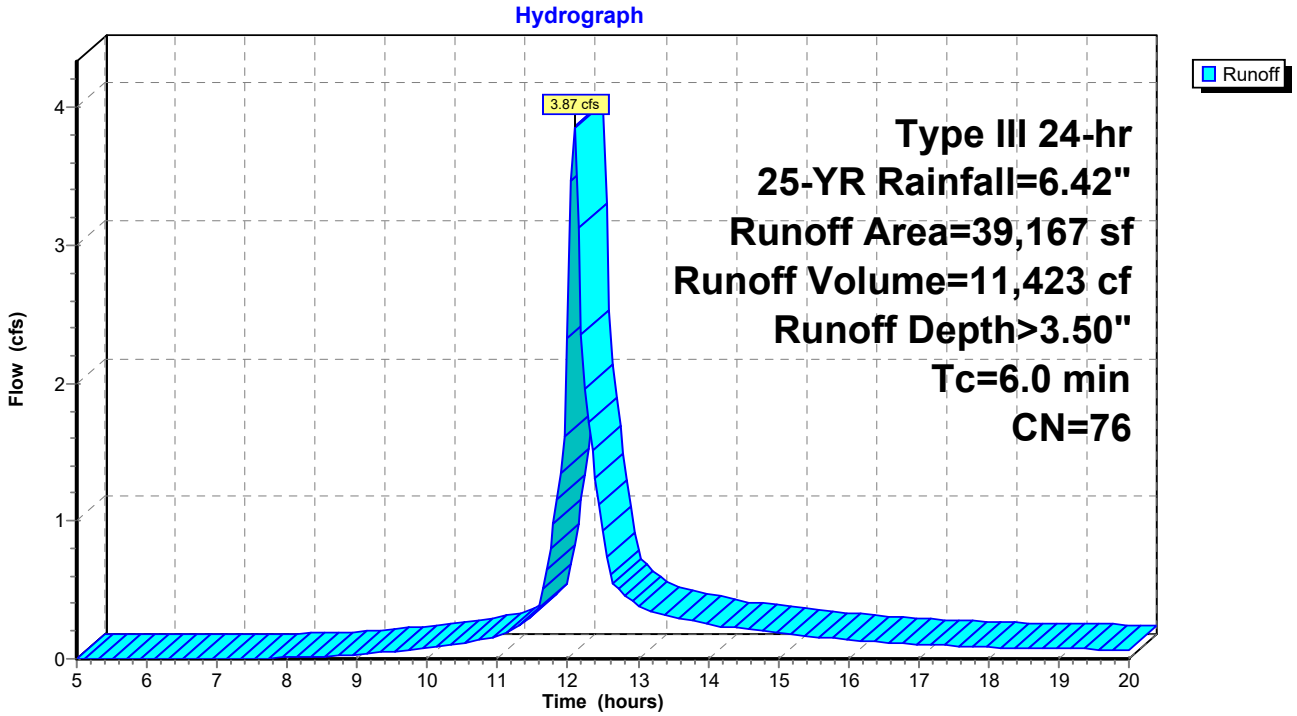
Runoff = 3.87 cfs @ 12.09 hrs, Volume= 11,423 cf, Depth> 3.50"
Routed to Link POA-1 : Hunting Lane (Off-site)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=6.42"

Area (sf)	CN	Description
0	98	Unconnected pavement, HSG A
14,680	98	Unconnected pavement, HSG B
0	98	Unconnected pavement, HSG C
0	39	>75% Grass cover, Good, HSG A
21,286	61	>75% Grass cover, Good, HSG B
3,201	74	>75% Grass cover, Good, HSG C
39,167	76	Weighted Average
24,487		62.52% Pervious Area
14,680		37.48% Impervious Area
14,680		100.00% Unconnected

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

Subcatchment 23S: Proposed WS-1E



Summary for Pond DB-1: Det Basin

Inflow Area = 54,797 sf, 52.55% Impervious, Inflow Depth > 4.22" for 25-YR event
Inflow = 6.37 cfs @ 12.09 hrs, Volume= 19,270 cf
Outflow = 4.36 cfs @ 12.18 hrs, Volume= 15,259 cf, Atten= 32%, Lag= 5.3 min
Primary = 4.36 cfs @ 12.18 hrs, Volume= 15,259 cf
Routed to Link POA-1 : Hunting Lane (Off-site)

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 177.28' @ 12.18 hrs Surf.Area= 3,649 sf Storage= 6,276 cf
Flood Elev= 178.00' Surf.Area= 4,254 sf Storage= 9,123 cf

Plug-Flow detention time= 98.7 min calculated for 15,208 cf (79% of inflow)
Center-of-Mass det. time= 45.7 min (817.5 - 771.8)

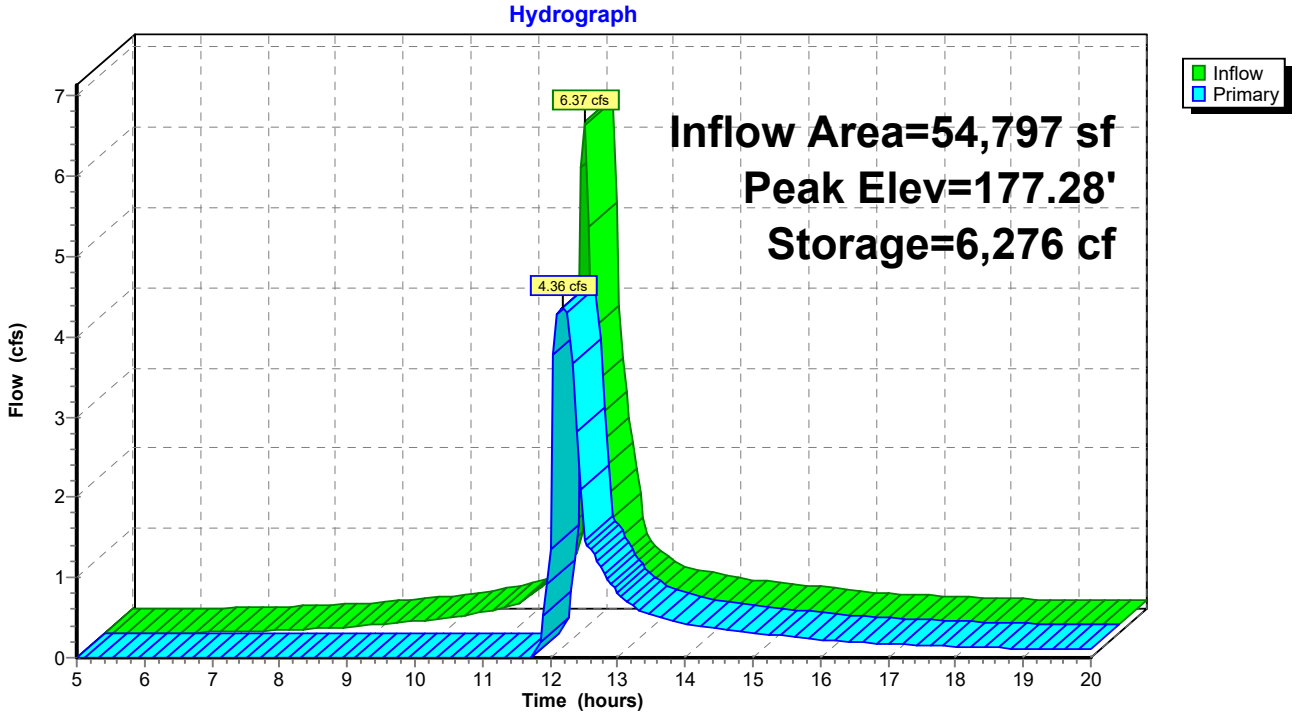
Volume	Invert	Avail.Storage	Storage Description
#1	175.00'	9,123 cf	**Basin A (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
175.00	1,904	0	0
176.00	2,630	2,267	2,267
177.00	3,414	3,022	5,289
178.00	4,254	3,834	9,123

Device	Routing	Invert	Outlet Devices
#1	Device 3	177.00'	**2.0" x 2.0" Horiz. 12" x 24" grate X 10.00 columns** X 5 rows C= 0.600 in 24.0" x 12.0" Grate (69% open area)
#2	Device 3	176.50'	**6.0" Vert. Orifice/Grate X 3.00** C= 0.600 Limited to weir flow at low heads
#3	Primary	174.65'	**12.0" Round HDPE Culvert** L= 118.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 174.65' / 171.11' S= 0.0300 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=4.35 cfs @ 12.18 hrs HW=177.27' TW=0.00' (Dynamic Tailwater)
└─**3=HDPE Culvert** (Inlet Controls 4.35 cfs @ 5.54 fps)
  ├─**1=12" x 24" grate** (Passes < 3.50 cfs potential flow)
  └─**2=Orifice/Grate** (Passes < 2.05 cfs potential flow)

Pond DB-1: Det Basin



Summary for Pond IB-1: Infil Basin

Inflow Area = 127,763 sf, 45.93% Impervious, Inflow Depth > 2.96" for 25-YR event
Inflow = 6.95 cfs @ 12.10 hrs, Volume= 31,540 cf
Outflow = 2.85 cfs @ 12.52 hrs, Volume= 21,521 cf, Atten= 59%, Lag= 25.2 min
Discarded = 0.13 cfs @ 12.52 hrs, Volume= 4,181 cf
Primary = 2.72 cfs @ 12.52 hrs, Volume= 17,340 cf
Routed to Link POA-1 : Hunting Lane (Off-site)
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0 cf
Routed to Link POA-1 : Hunting Lane (Off-site)

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 173.36' @ 12.52 hrs Surf.Area= 5,472 sf Storage= 11,654 cf
Flood Elev= 175.00' Surf.Area= 7,711 sf Storage= 22,476 cf

Plug-Flow detention time= 135.7 min calculated for 21,521 cf (68% of inflow)
Center-of-Mass det. time= 59.7 min (868.4 - 808.7)

Volume	Invert	Avail.Storage	Storage Description
#1	170.00'	22,476 cf	**Basin A (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
170.00	1,749	0	0
171.00	2,649	2,199	2,199
172.00	3,770	3,210	5,409
173.00	5,000	4,385	9,794
174.00	6,327	5,664	15,457
175.00	7,711	7,019	22,476

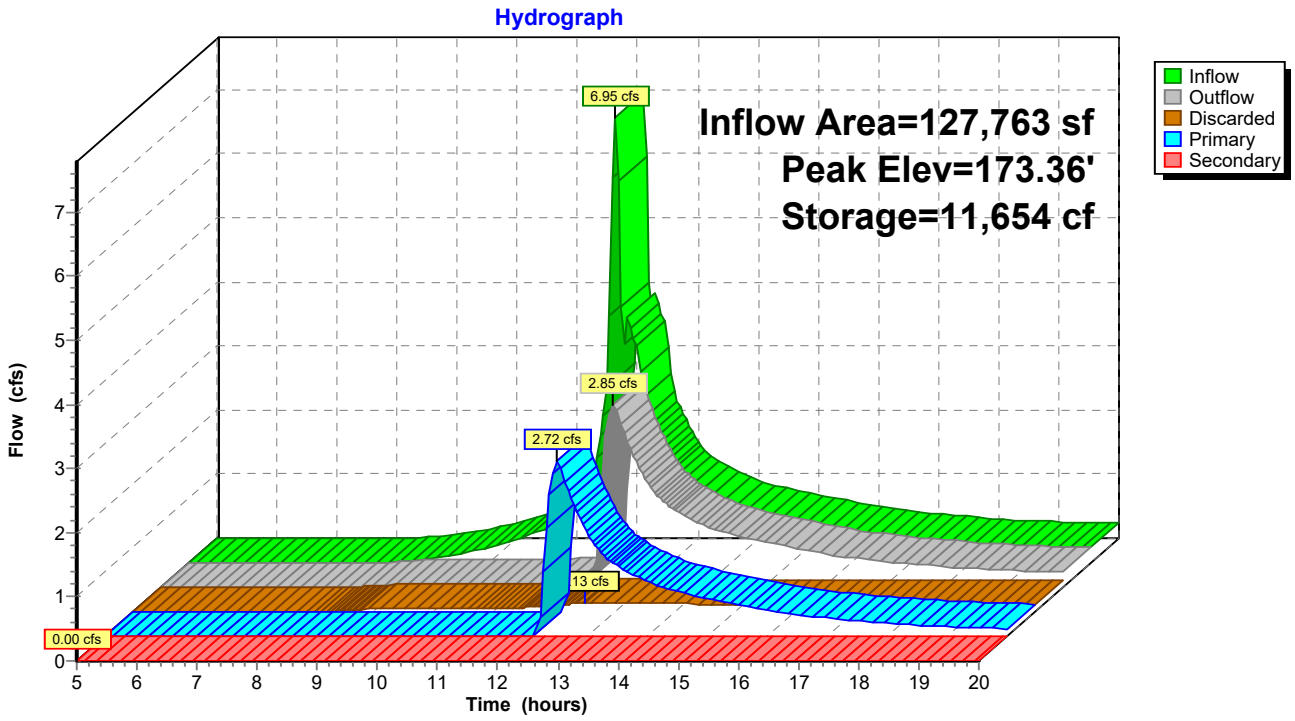
Device	Routing	Invert	Outlet Devices
#1	Discarded	170.00'	**1.020 in/hr Exfiltration over Surface area**
#2	Primary	170.00'	**18.0" Round Culvert** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 170.00' / 169.10' S= 0.0200 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#3	Device 2	173.75'	**2.0" x 2.0" Horiz. Orifice/Grate X 20.00 columns** X 10 rows C= 0.600 in 48.0" x 24.0" Grate (69% open area)
#4	Device 2	173.00'	**48.0" W x 9.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	174.00'	**10.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Discarded OutFlow Max=0.13 cfs @ 12.52 hrs HW=173.35' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.13 cfs)

Primary OutFlow Max=2.70 cfs @ 12.52 hrs HW=173.35' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Passes 2.70 cfs of 10.84 cfs potential flow)
  └**3=Orifice/Grate** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Orifice Controls 2.70 cfs @ 1.91 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=170.00' TW=0.00' (Dynamic Tailwater)
└**5=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond IB-1: Infil Basin



Summary for Pond RG-1: Rain Garden

Inflow Area = 25,142 sf, 42.69% Impervious, Inflow Depth > 2.36" for 25-YR event
Inflow = 1.67 cfs @ 12.10 hrs, Volume= 4,950 cf
Outflow = 0.13 cfs @ 13.86 hrs, Volume= 1,598 cf, Atten= 92%, Lag= 106.0 min
Primary = 0.13 cfs @ 13.86 hrs, Volume= 1,598 cf
Routed to Link POA-1 : Hunting Lane (Off-site)

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 172.27' @ 13.86 hrs Surf.Area= 3,541 sf Storage= 3,383 cf

Plug-Flow detention time= 248.9 min calculated for 1,592 cf (32% of inflow)
Center-of-Mass det. time= 154.7 min (963.1 - 808.4)

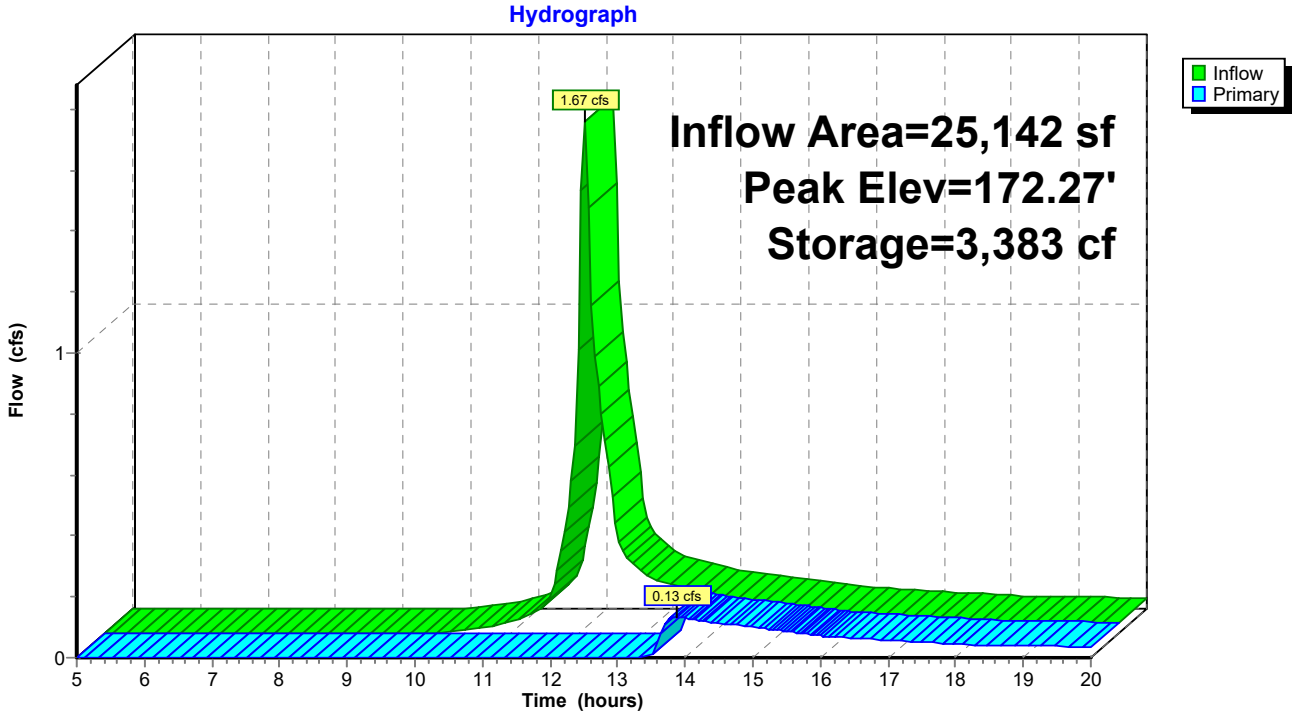
Volume	Invert	Avail.Storage	Storage Description
#1	171.00'	4,257 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
171.00	1,856	0	0
172.00	3,140	2,498	2,498
172.50	3,897	1,759	4,257

Device	Routing	Invert	Outlet Devices
#1	Primary	172.25'	**30.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=0.13 cfs @ 13.86 hrs HW=172.26' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 0.13 cfs @ 0.30 fps)

Pond RG-1: Rain Garden



Summary for Pond UDS-1: Cultec 330 XLHD

Inflow Area = 127,763 sf, 45.93% Impervious, Inflow Depth > 3.91" for 25-YR event
Inflow = 13.92 cfs @ 12.09 hrs, Volume= 41,589 cf
Outflow = 6.95 cfs @ 12.10 hrs, Volume= 31,540 cf, Atten= 50%, Lag= 0.5 min
Primary = 6.95 cfs @ 12.10 hrs, Volume= 31,540 cf
Routed to Pond IB-1 : Infil Basin

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 173.37' @ 12.55 hrs Surf.Area= 0.142 ac Storage= 0.257 af
Flood Elev= 174.00' Surf.Area= 0.142 ac Storage= 0.293 af

Plug-Flow detention time= 88.6 min calculated for 31,435 cf (76% of inflow)
Center-of-Mass det. time= 30.3 min (808.7 - 778.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	171.00'	0.060 af	**35.33'W x 115.50'L x 3.04'H Field A** 0.285 af Overall - 0.136 af Embedded = 0.149 af x 40.0% Voids
#2A	171.00'	0.136 af	**Cultec R-330XLHD** x 112 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 7 rows
#3B	171.00'	0.031 af	**35.33'W x 59.50'L x 3.04'H Field B** 0.147 af Overall - 0.069 af Embedded = 0.078 af x 40.0% Voids
#4B	171.00'	0.069 af	**Cultec R-330XLHD** x 56 Inside #3 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 7 rows
		0.296 af	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	171.00'	**15.0" Round Culvert X 4.00** L= 15.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 171.00' / 171.00' S= 0.0000 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.00 cfs @ 12.10 hrs HW=172.40' TW=172.53' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Pond UDS-1: Cultec 330 XLHD - Chamber Wizard Field A

Chamber Model = Cultec R-330XLHD (Discontinued, not for new designs)
Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf
Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
Row Length Adjustment= +1.50' x 7.45 sf x 7 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

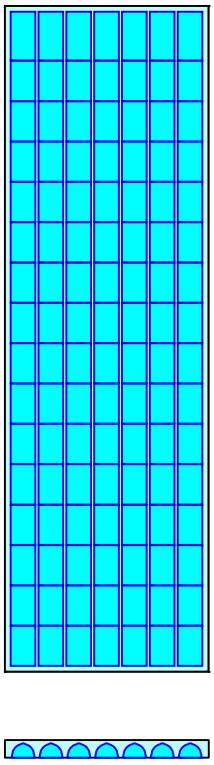
16 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 113.50' Row Length +12.0" End Stone x 2 = 115.50' Base Length
7 Rows x 52.0" Wide + 6.0" Spacing x 6 + 12.0" Side Stone x 2 = 35.33' Base Width
30.5" Chamber Height + 6.0" Stone Cover = 3.04' Field Height

112 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 7 Rows = 5,919.8 cf Chamber Storage

12,413.0 cf Field - 5,919.8 cf Chambers = 6,493.2 cf Stone x 40.0% Voids = 2,597.3 cf Stone Storage

Chamber Storage + Stone Storage = 8,517.1 cf = 0.196 af
Overall Storage Efficiency = 68.6%
Overall System Size = 115.50' x 35.33' x 3.04'

112 Chambers
459.7 cy Field
240.5 cy Stone



Pond UDS-1: Cultec 330 XLHD - Chamber Wizard Field B

Chamber Model = Cultec R-330XLHD (Discontinued, not for new designs)
Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf
Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
Row Length Adjustment= +1.50' x 7.45 sf x 7 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

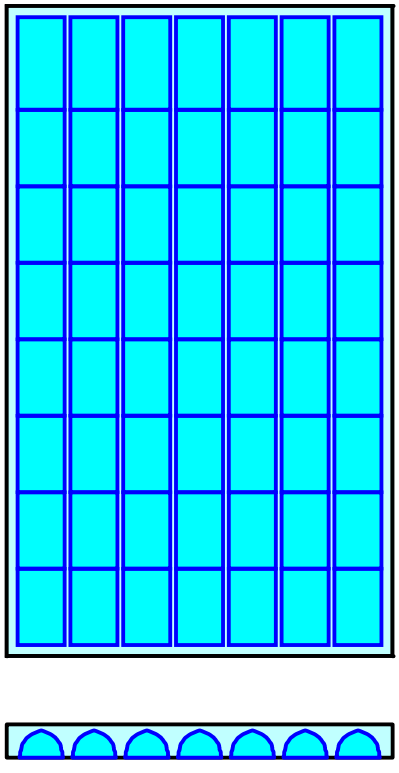
8 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 57.50' Row Length +12.0" End Stone x 2 = 59.50' Base Length
7 Rows x 52.0" Wide + 6.0" Spacing x 6 + 12.0" Side Stone x 2 = 35.33' Base Width
30.5" Chamber Height + 6.0" Stone Cover = 3.04' Field Height

56 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 7 Rows = 2,999.0 cf Chamber Storage

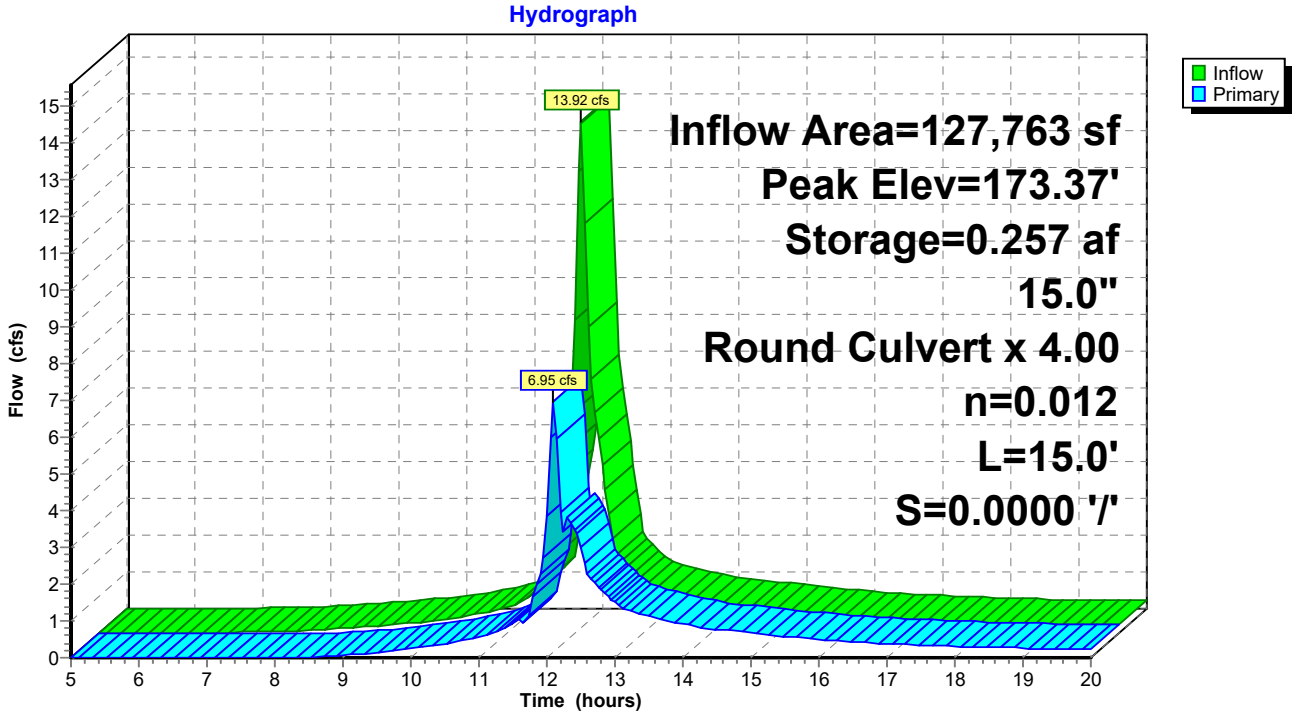
6,394.6 cf Field - 2,999.0 cf Chambers = 3,395.6 cf Stone x 40.0% Voids = 1,358.2 cf Stone Storage

Chamber Storage + Stone Storage = 4,357.3 cf = 0.100 af
Overall Storage Efficiency = 68.1%
Overall System Size = 59.50' x 35.33' x 3.04'

56 Chambers
236.8 cy Field
125.8 cy Stone



Pond UDS-1: Cultec 330 XLHD

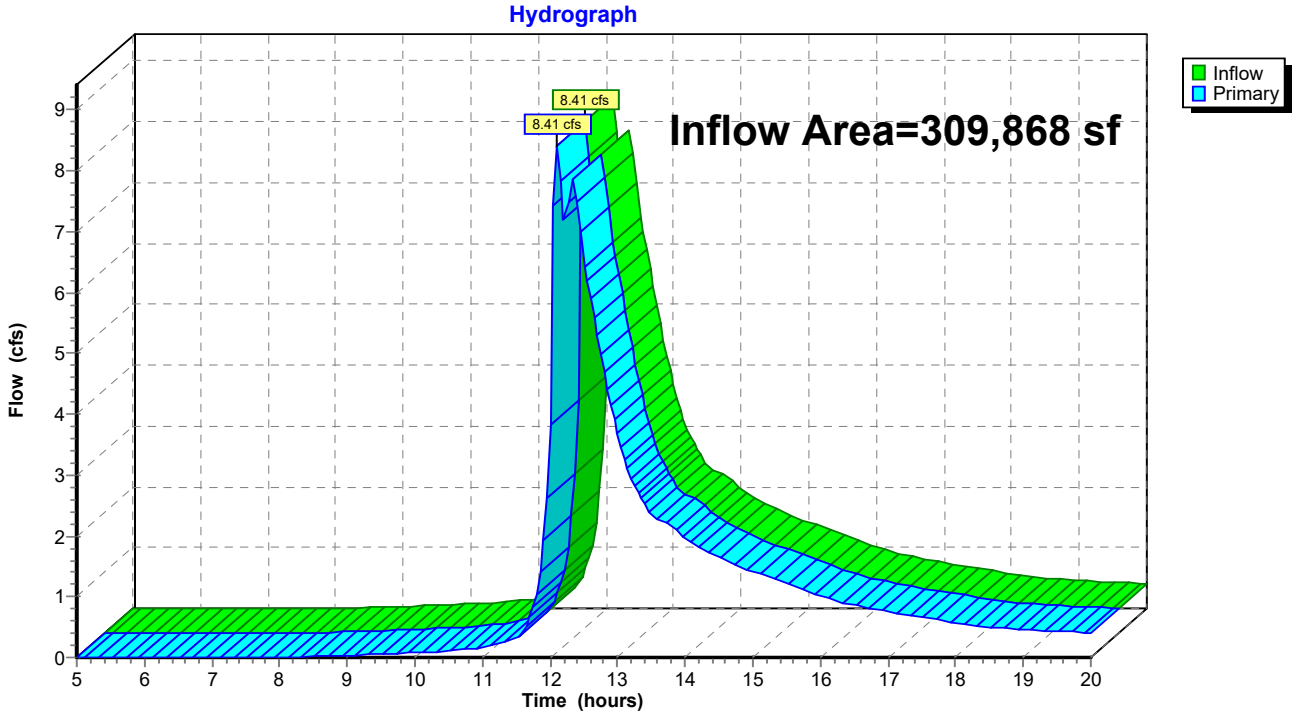


Summary for Link POA-1: Hunting Lane (Off-site)

Inflow Area = 309,868 sf, 37.48% Impervious, Inflow Depth > 2.09" for 25-YR event
Inflow = 8.41 cfs @ 12.11 hrs, Volume= 53,877 cf
Primary = 8.41 cfs @ 12.11 hrs, Volume= 53,877 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link POA-1: Hunting Lane (Off-site)

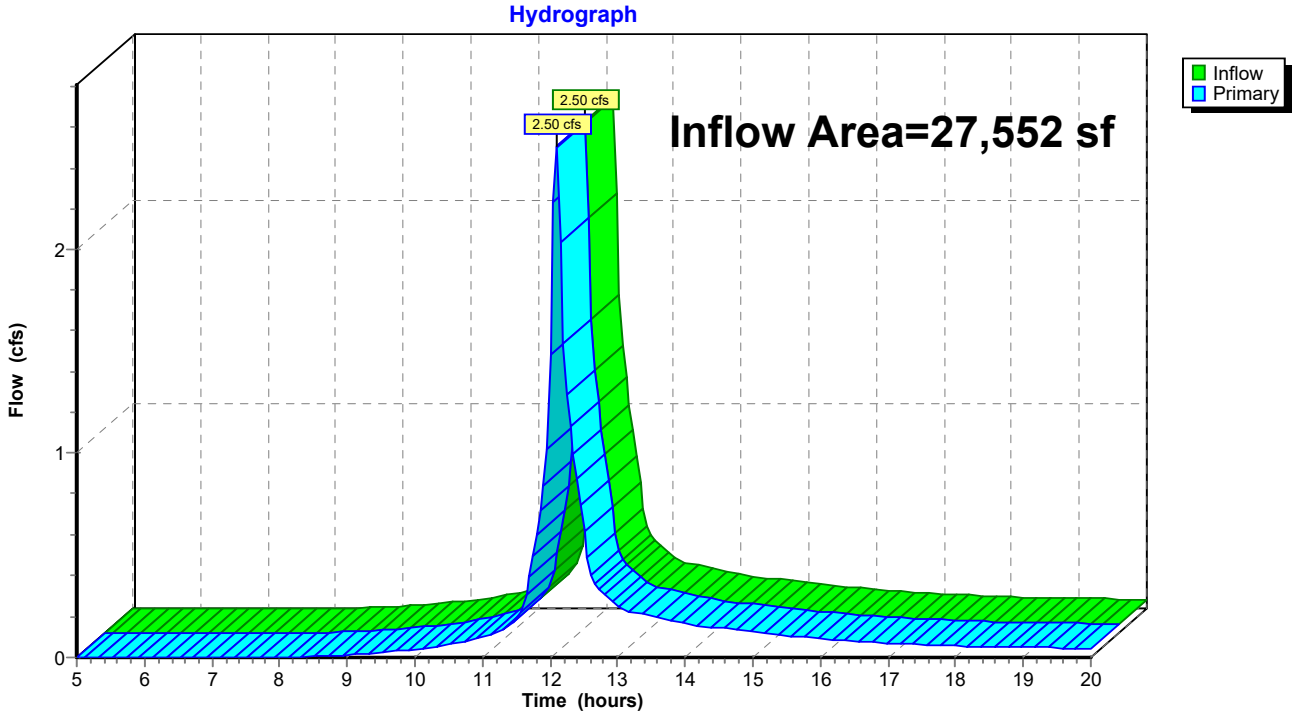


Summary for Link POA-2: North Main Street (Offsite)

Inflow Area = 27,552 sf, 5.91% Impervious, Inflow Depth > 3.20" for 25-YR event
Inflow = 2.50 cfs @ 12.09 hrs, Volume= 7,356 cf
Primary = 2.50 cfs @ 12.09 hrs, Volume= 7,356 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link POA-2: North Main Street (Offsite)

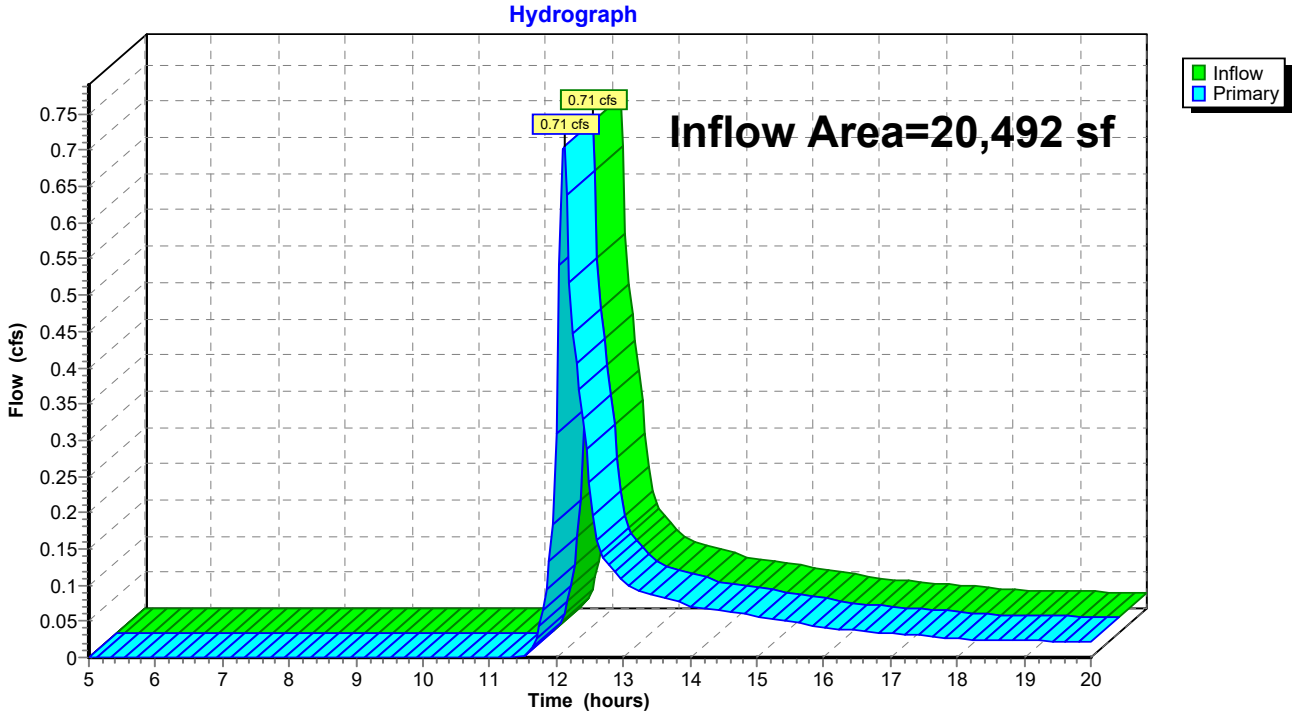


Summary for Link POA-3: 33 N Main Street (Offsite)

Inflow Area = 20,492 sf, 0.00% Impervious, Inflow Depth > 1.36" for 25-YR event
Inflow = 0.71 cfs @ 12.11 hrs, Volume= 2,326 cf
Primary = 0.71 cfs @ 12.11 hrs, Volume= 2,326 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link POA-3: 33 N Main Street (Offsite)



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

Subcatchment1S: Proposed WS-1A Runoff Area=127,763 sf 45.93% Impervious Runoff Depth>5.50"
Tc=6.0 min CN=80 Runoff=19.31 cfs 58,581 cf

Subcatchment7S: Proposed WS-1B Runoff Area=25,142 sf 42.69% Impervious Runoff Depth>3.68"
Tc=6.0 min CN=64 Runoff=2.62 cfs 7,704 cf

Subcatchment8S: Proposed WS-1C Runoff Area=62,999 sf 5.13% Impervious Runoff Depth>2.66"
Flow Length=970' Tc=37.8 min UI Adjusted CN=55 Runoff=2.43 cfs 13,952 cf

Subcatchment10S: Proposed WS-3 Runoff Area=27,552 sf 5.91% Impervious Runoff Depth>4.69"
Tc=6.0 min UI Adjusted CN=73 Runoff=3.63 cfs 10,777 cf

Subcatchment11S: Proposed WS-4 Runoff Area=20,492 sf 0.00% Impervious Runoff Depth>2.38"
Flow Length=195' Tc=6.4 min CN=52 Runoff=1.32 cfs 4,060 cf

Subcatchment17S: Proposed WS-1D Runoff Area=54,797 sf 52.55% Impervious Runoff Depth>5.85"
Tc=6.0 min CN=83 Runoff=8.68 cfs 26,720 cf

Subcatchment23S: Proposed WS-1E Runoff Area=39,167 sf 37.48% Impervious Runoff Depth>5.04"
Tc=6.0 min CN=76 Runoff=5.50 cfs 16,446 cf

Pond DB-1: Det Basin Peak Elev=177.65' Storage=7,680 cf Inflow=8.68 cfs 26,720 cf
Outflow=4.72 cfs 22,659 cf

Pond IB-1: Infil Basin Peak Elev=173.75' Storage=13,887 cf Inflow=12.26 cfs 48,465 cf
Discarded=0.14 cfs 4,532 cf Primary=8.26 cfs 33,828 cf Secondary=0.00 cfs 0 cf Outflow=8.40 cfs 38,361 cf

Pond RG-1: Rain Garden Peak Elev=172.31' Storage=3,544 cf Inflow=2.62 cfs 7,704 cf
Outflow=1.07 cfs 4,346 cf

Pond UDS-1: Cultec 330 XLHD Peak Elev=173.93' Storage=0.289 af Inflow=19.31 cfs 58,581 cf
15.0" Round Culvert x 4.00 n=0.012 L=15.0' S=0.0000 '/' Outflow=12.26 cfs 48,465 cf

Link POA-1: Hunting Lane (Off-site) Inflow=17.73 cfs 91,231 cf
Primary=17.73 cfs 91,231 cf

Link POA-2: North Main Street (Offsite) Inflow=3.63 cfs 10,777 cf
Primary=3.63 cfs 10,777 cf

Link POA-3: 33 N Main Street (Offsite) Inflow=1.32 cfs 4,060 cf
Primary=1.32 cfs 4,060 cf

Total Runoff Area = 357,912 sf Runoff Volume = 138,239 cf Average Runoff Depth = 4.63"
67.10% Pervious = 240,161 sf 32.90% Impervious = 117,751 sf

Summary for Subcatchment 1S: Proposed WS-1A

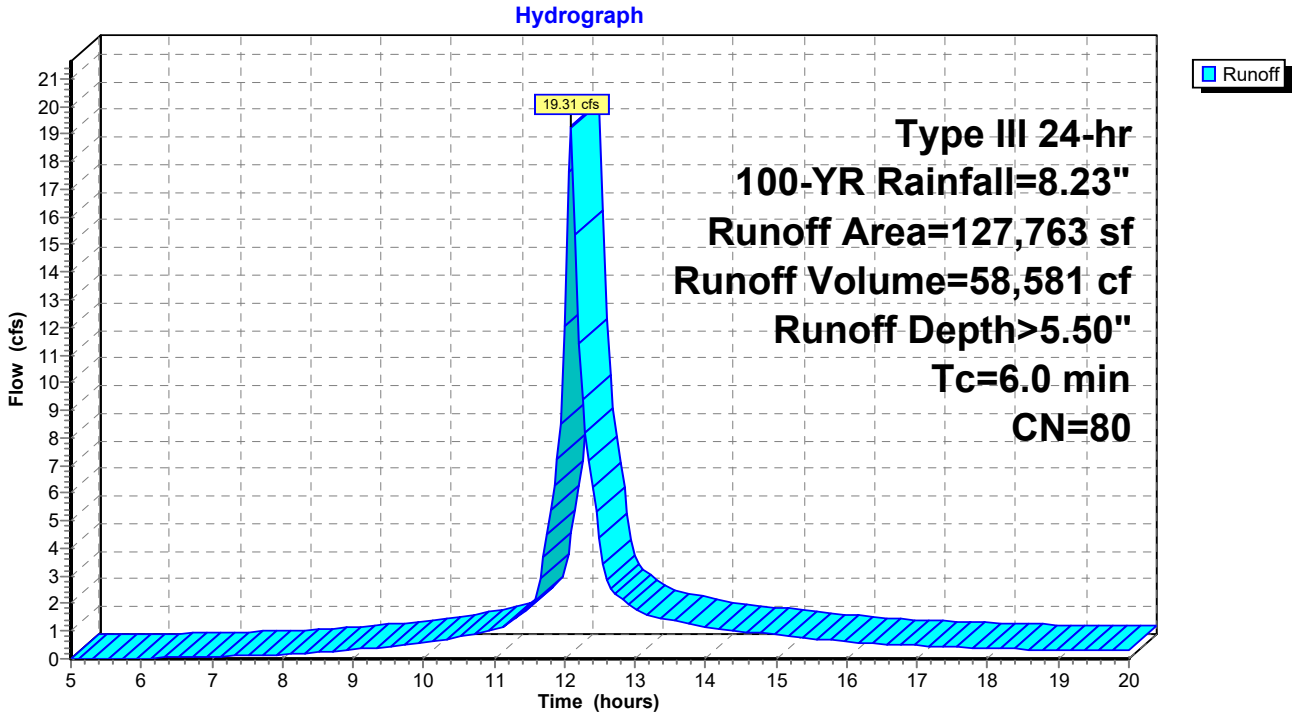
Runoff = 19.31 cfs @ 12.09 hrs, Volume= 58,581 cf, Depth> 5.50"
Routed to Pond UDS-1 : Cultec 330 XLHD

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.23"

Area (sf)	CN	Description
2,745	98	Unconnected pavement, HSG A
33,953	98	Unconnected pavement, HSG B
21,986	98	Unconnected pavement, HSG C
1,946	39	>75% Grass cover, Good, HSG A
41,046	61	>75% Grass cover, Good, HSG B
26,087	74	>75% Grass cover, Good, HSG C
127,763	80	Weighted Average
69,079		54.07% Pervious Area
58,684		45.93% Impervious Area
58,684		100.00% Unconnected

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

Subcatchment 1S: Proposed WS-1A



Summary for Subcatchment 7S: Proposed WS-1B

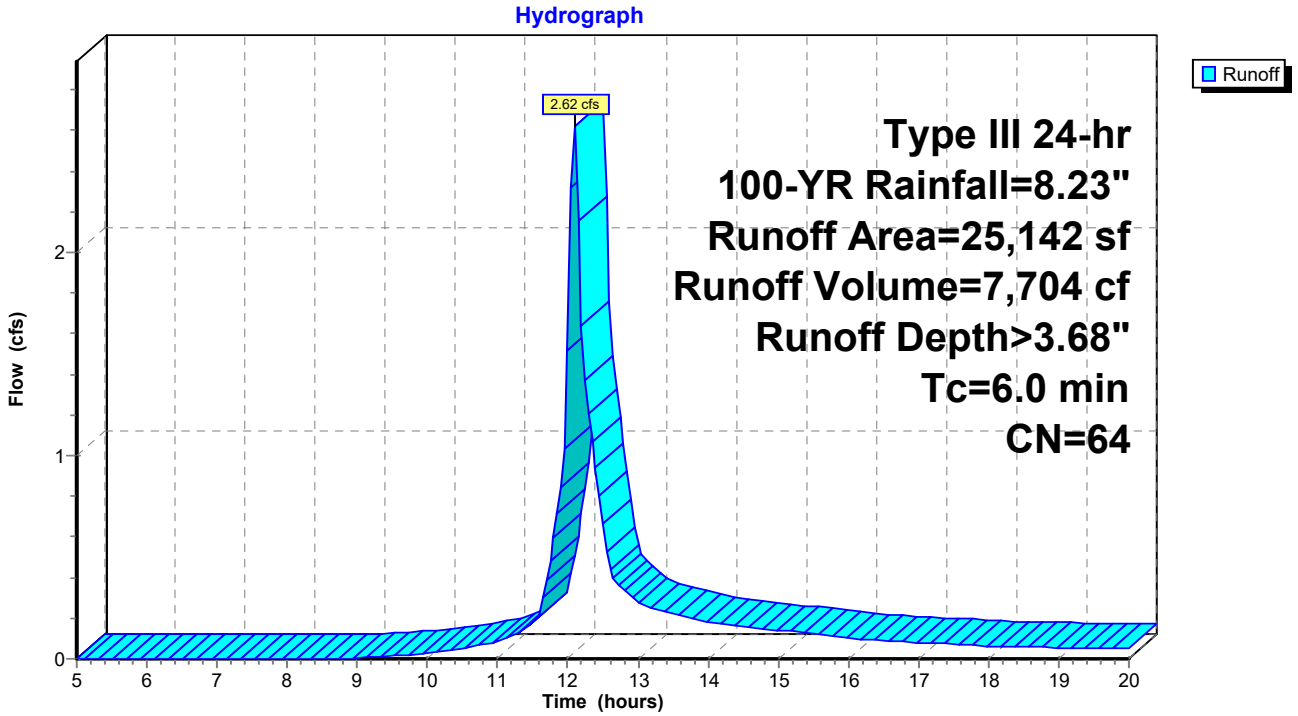
Runoff = 2.62 cfs @ 12.09 hrs, Volume= 7,704 cf, Depth> 3.68"
Routed to Pond RG-1 : Rain Garden

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.23"

Area (sf)	CN	Description
10,733	98	Unconnected pavement, HSG A
0	98	Unconnected pavement, HSG B
0	98	Unconnected pavement, HSG C
14,409	39	>75% Grass cover, Good, HSG A
0	61	>75% Grass cover, Good, HSG B
0	74	>75% Grass cover, Good, HSG C
25,142	64	Weighted Average
14,409		57.31% Pervious Area
10,733		42.69% Impervious Area
10,733		100.00% Unconnected

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

Subcatchment 7S: Proposed WS-1B



Summary for Subcatchment 8S: Proposed WS-1C

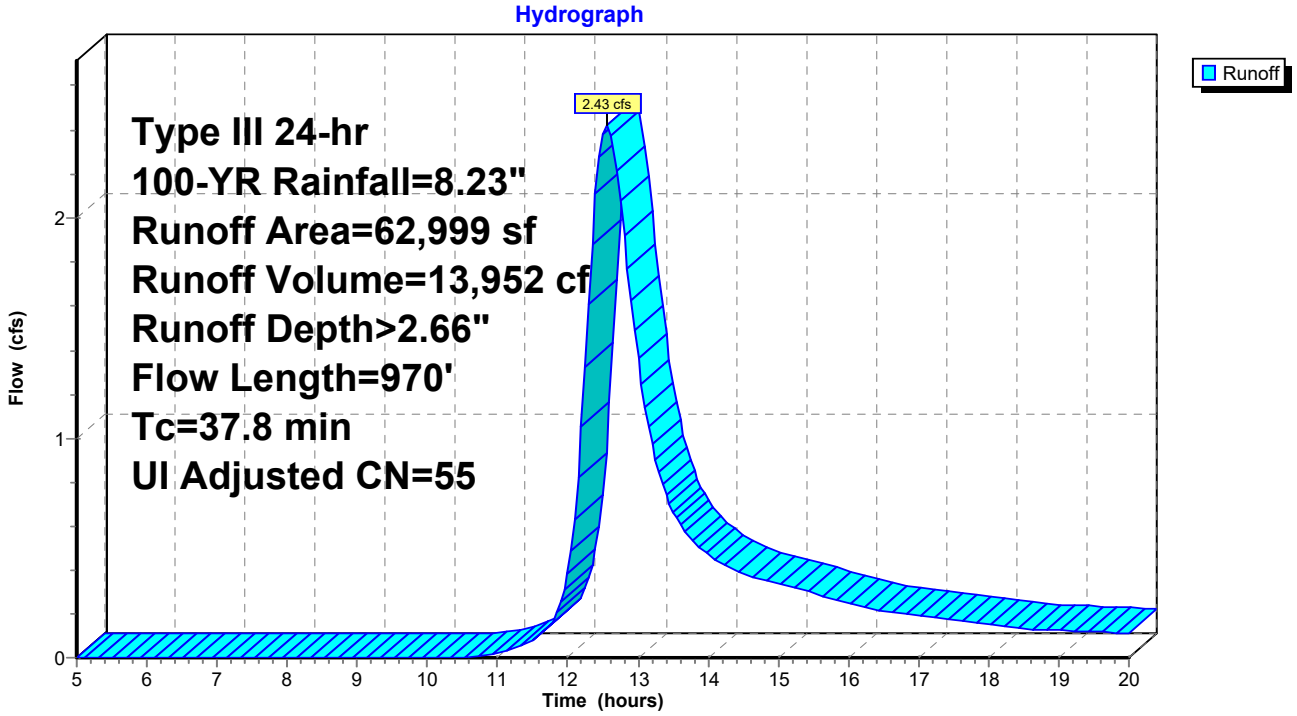
Runoff = 2.43 cfs @ 12.56 hrs, Volume= 13,952 cf, Depth> 2.66"
Routed to Link POA-1 : Hunting Lane (Off-site)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.23"

Area (sf)	CN	Adj	Description
0	98		Unconnected pavement, HSG A
3,231	98		Unconnected pavement, HSG B
0	98		Unconnected pavement, HSG C
18,478	39		>75% Grass cover, Good, HSG A
41,290	61		>75% Grass cover, Good, HSG B
0	74		>75% Grass cover, Good, HSG C
62,999	56	55	Weighted Average, UI Adjusted
59,768			94.87% Pervious Area
3,231			5.13% Impervious Area
3,231			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	50	0.0100	0.08		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.35"
27.2	920	0.0065	0.56		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
37.8	970	Total			

Subcatchment 8S: Proposed WS-1C



Summary for Subcatchment 10S: Proposed WS-3

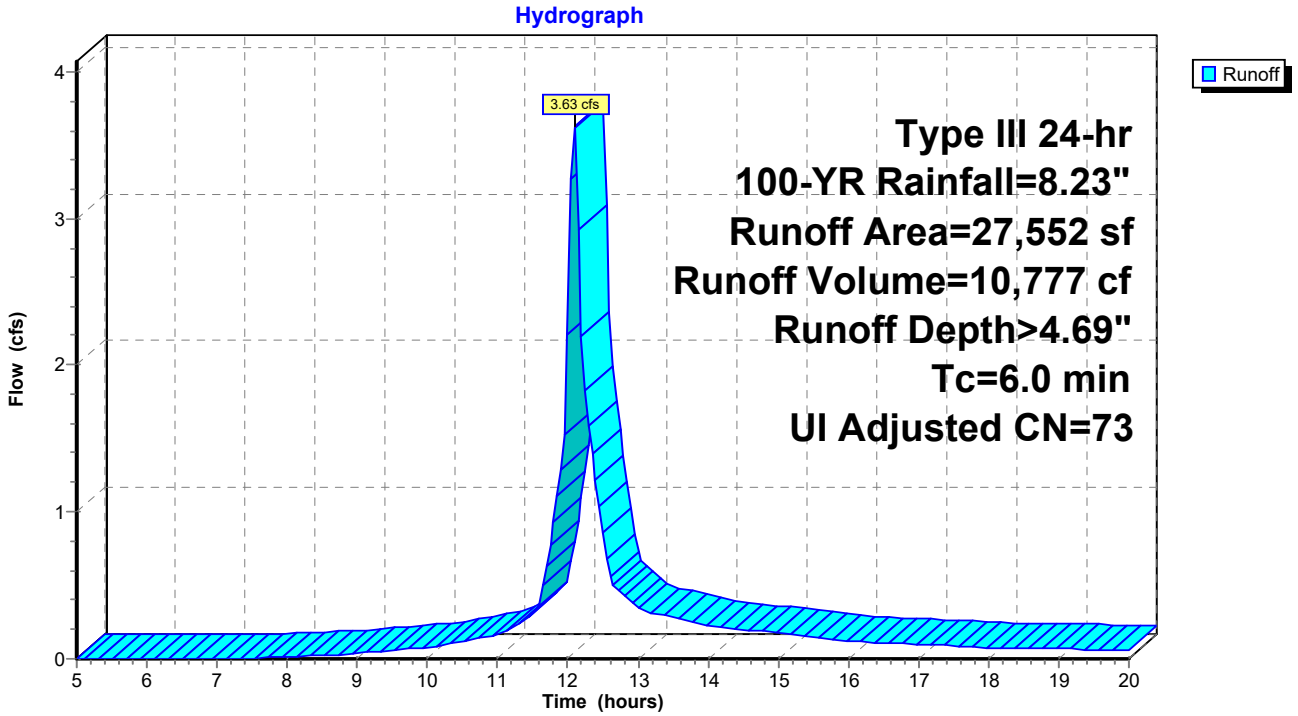
Runoff = 3.63 cfs @ 12.09 hrs, Volume= 10,777 cf, Depth> 4.69"
Routed to Link POA-2 : North Main Street (Offsite)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.23"

Area (sf)	CN	Adj	Description
38	98		Unconnected pavement, HSG A
1,589	98		Unconnected pavement, HSG B
0	98		Unconnected pavement, HSG C
1,223	39		>75% Grass cover, Good, HSG A
0	61		>75% Grass cover, Good, HSG B
24,702	74		>75% Grass cover, Good, HSG C
27,552	74	73	Weighted Average, UI Adjusted
25,925			94.09% Pervious Area
1,627			5.91% Impervious Area
1,627			100.00% Unconnected

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

Subcatchment 10S: Proposed WS-3



Summary for Subcatchment 11S: Proposed WS-4

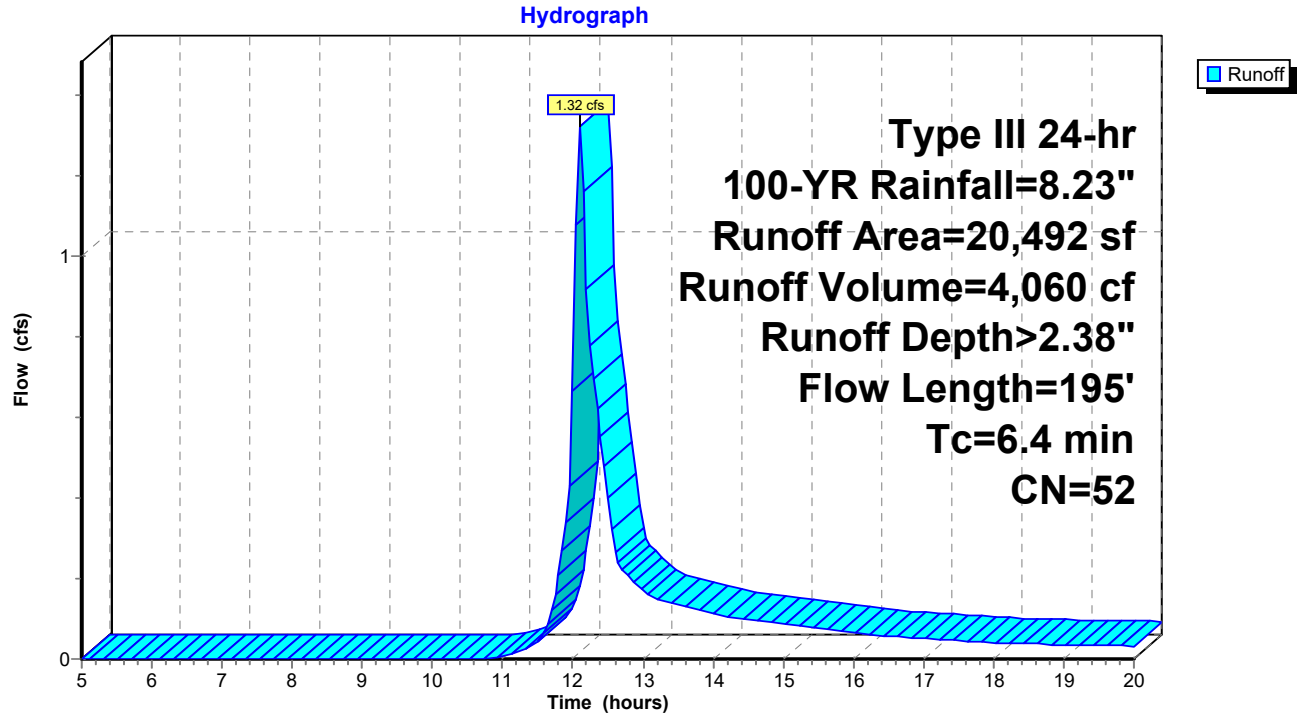
Runoff = 1.32 cfs @ 12.11 hrs, Volume= 4,060 cf, Depth> 2.38"
Routed to Link POA-3 : 33 N Main Street (Offsite)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.23"

Area (sf)	CN	Description
0	98	Unconnected pavement, HSG A
0	98	Unconnected pavement, HSG B
0	98	Unconnected pavement, HSG C
8,496	39	>75% Grass cover, Good, HSG A
11,996	61	>75% Grass cover, Good, HSG B
0	74	>75% Grass cover, Good, HSG C
20,492	52	Weighted Average
20,492		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	50	0.0700	0.17		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.35"
1.5	145	0.0520	1.60		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.4	195	Total			

Subcatchment 11S: Proposed WS-4



Summary for Subcatchment 17S: Proposed WS-1D

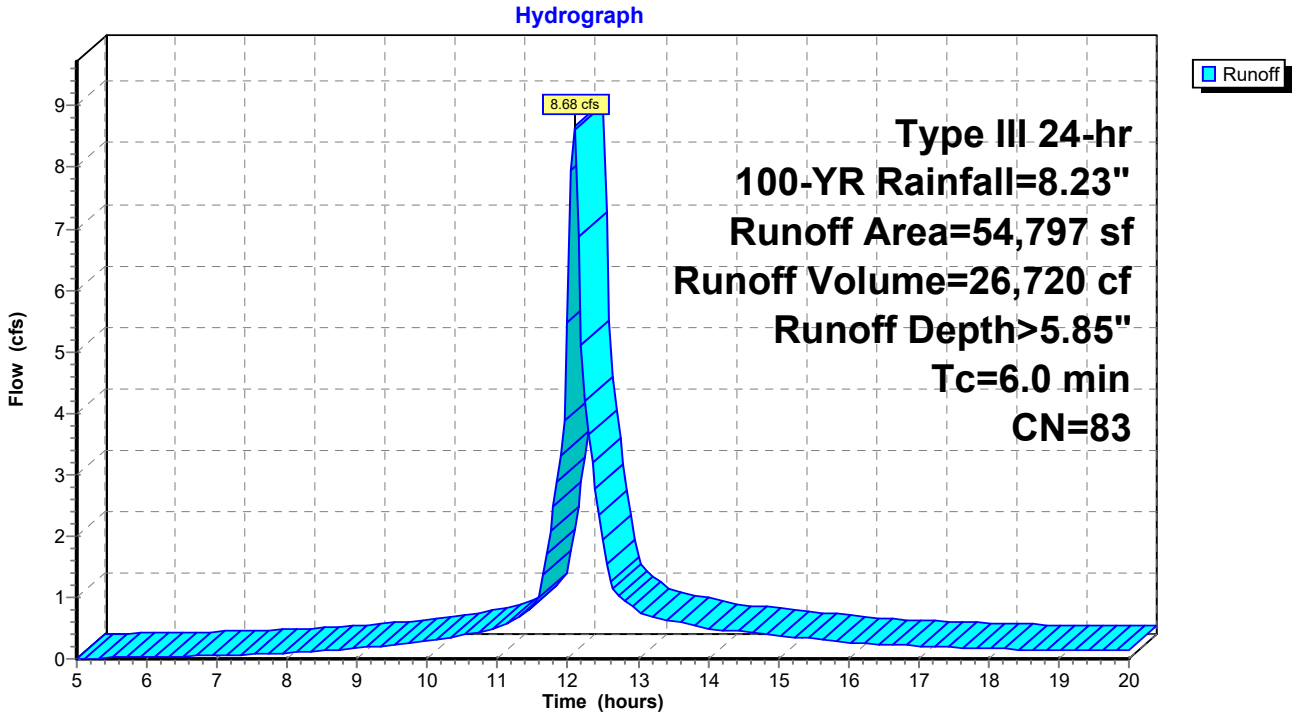
Runoff = 8.68 cfs @ 12.09 hrs, Volume= 26,720 cf, Depth> 5.85"
Routed to Pond DB-1 : Det Basin

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.23"

Area (sf)	CN	Description
0	98	Unconnected pavement, HSG A
17,482	98	Unconnected pavement, HSG B
11,314	98	Unconnected pavement, HSG C
0	39	>75% Grass cover, Good, HSG A
13,949	61	>75% Grass cover, Good, HSG B
12,052	74	>75% Grass cover, Good, HSG C
54,797	83	Weighted Average
26,001		47.45% Pervious Area
28,796		52.55% Impervious Area
28,796		100.00% Unconnected

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

Subcatchment 17S: Proposed WS-1D



Summary for Subcatchment 23S: Proposed WS-1E

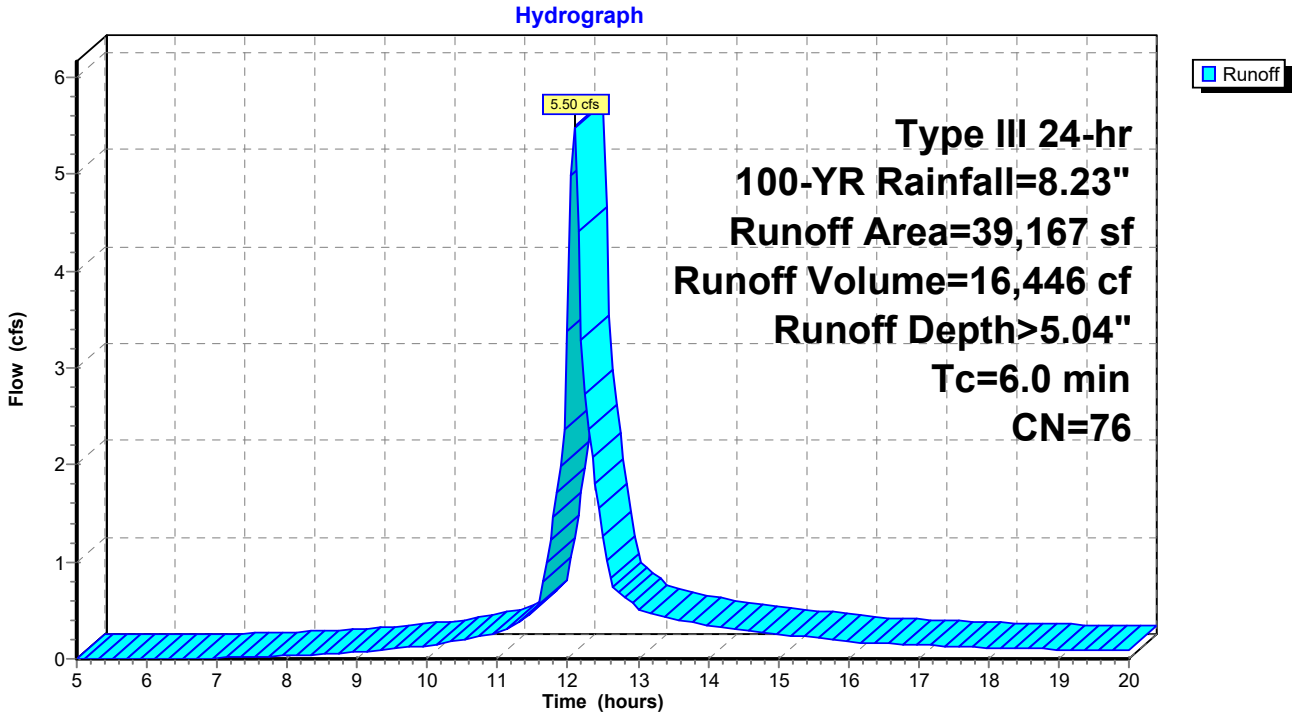
Runoff = 5.50 cfs @ 12.09 hrs, Volume= 16,446 cf, Depth> 5.04"
Routed to Link POA-1 : Hunting Lane (Off-site)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=8.23"

Area (sf)	CN	Description
0	98	Unconnected pavement, HSG A
14,680	98	Unconnected pavement, HSG B
0	98	Unconnected pavement, HSG C
0	39	>75% Grass cover, Good, HSG A
21,286	61	>75% Grass cover, Good, HSG B
3,201	74	>75% Grass cover, Good, HSG C
39,167	76	Weighted Average
24,487		62.52% Pervious Area
14,680		37.48% Impervious Area
14,680		100.00% Unconnected

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

Subcatchment 23S: Proposed WS-1E



Summary for Pond DB-1: Det Basin

Inflow Area = 54,797 sf, 52.55% Impervious, Inflow Depth > 5.85" for 100-YR event
Inflow = 8.68 cfs @ 12.09 hrs, Volume= 26,720 cf
Outflow = 4.72 cfs @ 12.22 hrs, Volume= 22,659 cf, Atten= 46%, Lag= 8.0 min
Primary = 4.72 cfs @ 12.22 hrs, Volume= 22,659 cf
Routed to Link POA-1 : Hunting Lane (Off-site)

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 177.65' @ 12.22 hrs Surf.Area= 3,959 sf Storage= 7,680 cf
Flood Elev= 178.00' Surf.Area= 4,254 sf Storage= 9,123 cf

Plug-Flow detention time= 85.7 min calculated for 22,583 cf (85% of inflow)
Center-of-Mass det. time= 41.7 min (805.7 - 764.0)

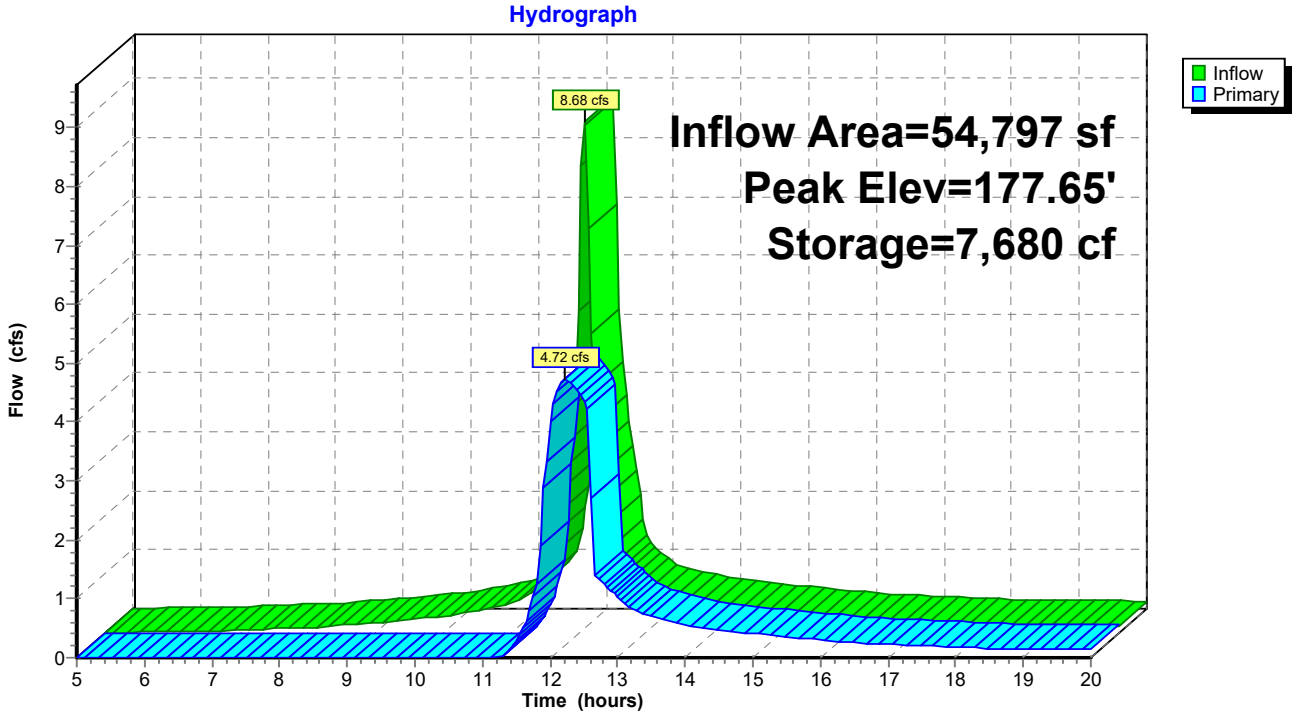
Volume	Invert	Avail.Storage	Storage Description
#1	175.00'	9,123 cf	**Basin A (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
175.00	1,904	0	0
176.00	2,630	2,267	2,267
177.00	3,414	3,022	5,289
178.00	4,254	3,834	9,123

Device	Routing	Invert	Outlet Devices
#1	Device 3	177.00'	**2.0" x 2.0" Horiz. 12" x 24" grate X 10.00 columns** X 5 rows C= 0.600 in 24.0" x 12.0" Grate (69% open area)
#2	Device 3	176.50'	**6.0" Vert. Orifice/Grate X 3.00** C= 0.600 Limited to weir flow at low heads
#3	Primary	174.65'	**12.0" Round HDPE Culvert** L= 118.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 174.65' / 171.11' S= 0.0300 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=4.71 cfs @ 12.22 hrs HW=177.64' TW=0.00' (Dynamic Tailwater)
└─**3=HDPE Culvert** (Inlet Controls 4.71 cfs @ 6.00 fps)
  ├─**1=12" x 24" grate** (Passes < 5.35 cfs potential flow)
  └─**2=Orifice/Grate** (Passes < 2.68 cfs potential flow)

Pond DB-1: Det Basin



Summary for Pond IB-1: Infil Basin

Inflow Area = 127,763 sf, 45.93% Impervious, Inflow Depth > 4.55" for 100-YR event
Inflow = 12.26 cfs @ 12.14 hrs, Volume= 48,465 cf
Outflow = 8.40 cfs @ 12.29 hrs, Volume= 38,361 cf, Atten= 31%, Lag= 8.5 min
Discarded = 0.14 cfs @ 12.29 hrs, Volume= 4,532 cf
Primary = 8.26 cfs @ 12.29 hrs, Volume= 33,828 cf
Routed to Link POA-1 : Hunting Lane (Off-site)
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0 cf
Routed to Link POA-1 : Hunting Lane (Off-site)

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 173.75' @ 12.29 hrs Surf.Area= 5,989 sf Storage= 13,887 cf
Flood Elev= 175.00' Surf.Area= 7,711 sf Storage= 22,476 cf

Plug-Flow detention time= 95.2 min calculated for 38,233 cf (79% of inflow)
Center-of-Mass det. time= 39.7 min (834.2 - 794.5)

Volume	Invert	Avail.Storage	Storage Description
#1	170.00'	22,476 cf	**Basin A (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
170.00	1,749	0	0
171.00	2,649	2,199	2,199
172.00	3,770	3,210	5,409
173.00	5,000	4,385	9,794
174.00	6,327	5,664	15,457
175.00	7,711	7,019	22,476

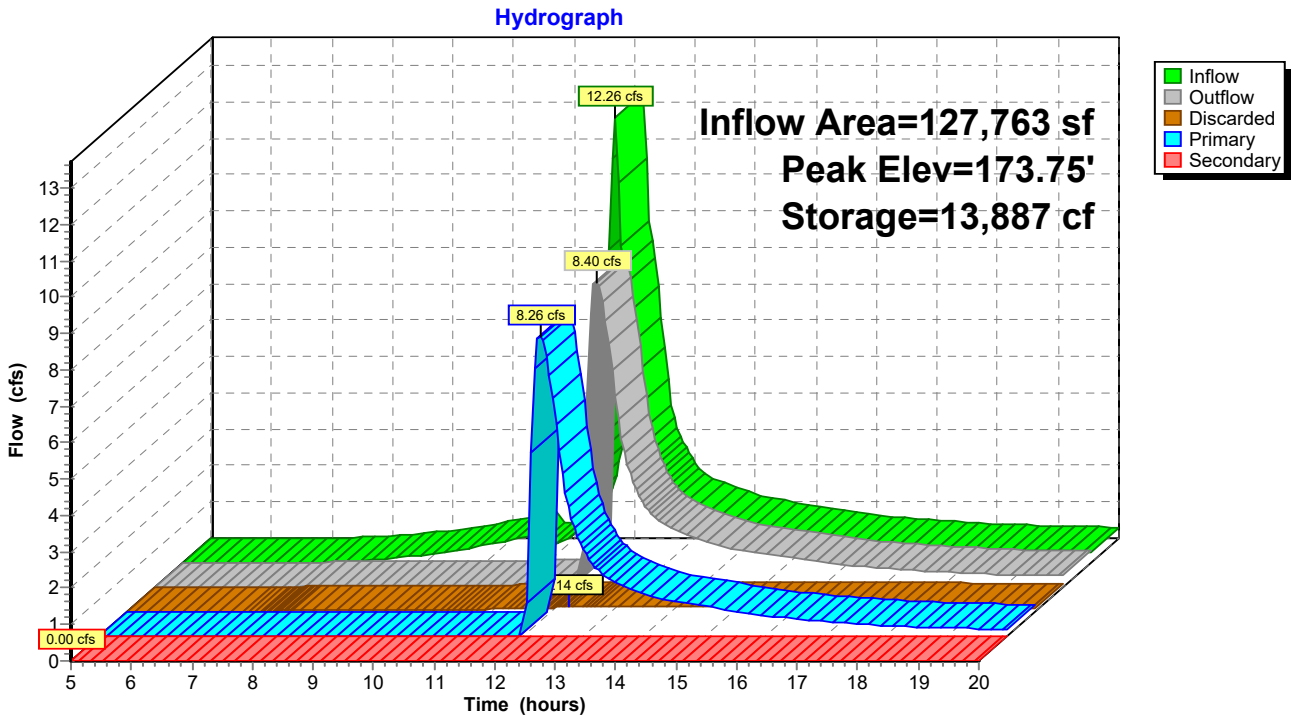
Device	Routing	Invert	Outlet Devices
#1	Discarded	170.00'	**1.020 in/hr Exfiltration over Surface area**
#2	Primary	170.00'	**18.0" Round Culvert** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 170.00' / 169.10' S= 0.0200 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#3	Device 2	173.75'	**2.0" x 2.0" Horiz. Orifice/Grate X 20.00 columns** X 10 rows C= 0.600 in 48.0" x 24.0" Grate (69% open area)
#4	Device 2	173.00'	**48.0" W x 9.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	174.00'	**10.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Discarded OutFlow Max=0.14 cfs @ 12.29 hrs HW=173.74' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Primary OutFlow Max=8.24 cfs @ 12.29 hrs HW=173.74' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Passes 8.24 cfs of 11.62 cfs potential flow)
  └**3=Orifice/Grate** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Orifice Controls 8.24 cfs @ 2.77 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=170.00' TW=0.00' (Dynamic Tailwater)
└**5=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Pond IB-1: Infil Basin



Summary for Pond RG-1: Rain Garden

Inflow Area = 25,142 sf, 42.69% Impervious, Inflow Depth > 3.68" for 100-YR event
Inflow = 2.62 cfs @ 12.09 hrs, Volume= 7,704 cf
Outflow = 1.07 cfs @ 12.37 hrs, Volume= 4,346 cf, Atten= 59%, Lag= 16.7 min
Primary = 1.07 cfs @ 12.37 hrs, Volume= 4,346 cf
Routed to Link POA-1 : Hunting Lane (Off-site)

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 172.31' @ 12.37 hrs Surf.Area= 3,609 sf Storage= 3,544 cf

Plug-Flow detention time= 150.3 min calculated for 4,346 cf (56% of inflow)
Center-of-Mass det. time= 70.4 min (868.9 - 798.5)

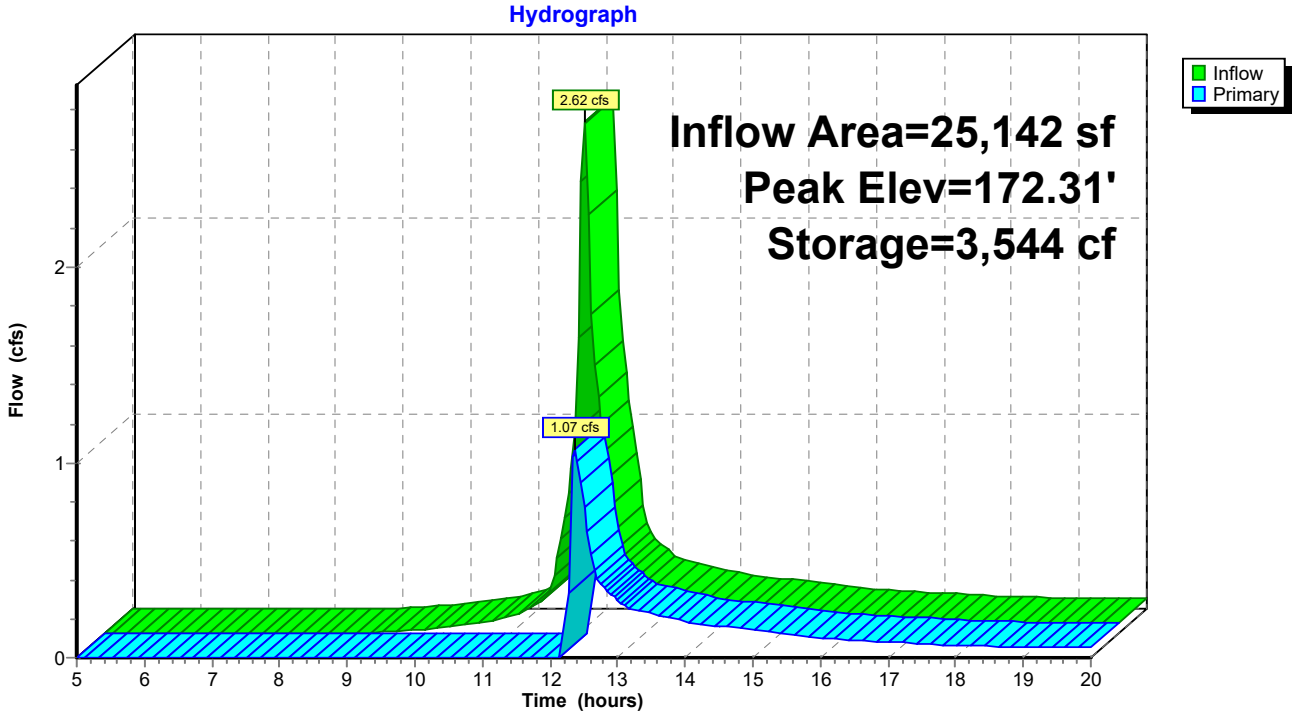
Volume	Invert	Avail.Storage	Storage Description
#1	171.00'	4,257 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
171.00	1,856	0	0
172.00	3,140	2,498	2,498
172.50	3,897	1,759	4,257

Device	Routing	Invert	Outlet Devices
#1	Primary	172.25'	**30.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=1.02 cfs @ 12.37 hrs HW=172.31' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 1.02 cfs @ 0.59 fps)

Pond RG-1: Rain Garden



Summary for Pond UDS-1: Cultec 330 XLHD

Inflow Area = 127,763 sf, 45.93% Impervious, Inflow Depth > 5.50" for 100-YR event
Inflow = 19.31 cfs @ 12.09 hrs, Volume= 58,581 cf
Outflow = 12.26 cfs @ 12.14 hrs, Volume= 48,465 cf, Atten= 37%, Lag= 3.3 min
Primary = 12.26 cfs @ 12.14 hrs, Volume= 48,465 cf
Routed to Pond IB-1 : Infil Basin

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 173.93' @ 12.30 hrs Surf.Area= 0.142 ac Storage= 0.289 af
Flood Elev= 174.00' Surf.Area= 0.142 ac Storage= 0.293 af

Plug-Flow detention time= 71.7 min calculated for 48,304 cf (82% of inflow)
Center-of-Mass det. time= 24.2 min (794.5 - 770.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	171.00'	0.060 af	**35.33'W x 115.50'L x 3.04'H Field A** 0.285 af Overall - 0.136 af Embedded = 0.149 af x 40.0% Voids
#2A	171.00'	0.136 af	**Cultec R-330XLHD** x 112 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 7 rows
#3B	171.00'	0.031 af	**35.33'W x 59.50'L x 3.04'H Field B** 0.147 af Overall - 0.069 af Embedded = 0.078 af x 40.0% Voids
#4B	171.00'	0.069 af	**Cultec R-330XLHD** x 56 Inside #3 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 7 rows
		0.296 af	Total Available Storage

Storage Group A created with Chamber Wizard
Storage Group B created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	171.00'	**15.0" Round Culvert X 4.00** L= 15.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 171.00' / 171.00' S= 0.0000 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=7.27 cfs @ 12.14 hrs HW=173.66' TW=173.51' (Dynamic Tailwater)
1=Culvert (Inlet Controls 7.27 cfs @ 1.48 fps)

Pond UDS-1: Cultec 330 XLHD - Chamber Wizard Field A

Chamber Model = Cultec R-330XLHD (Discontinued, not for new designs)
Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf
Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
Row Length Adjustment= +1.50' x 7.45 sf x 7 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

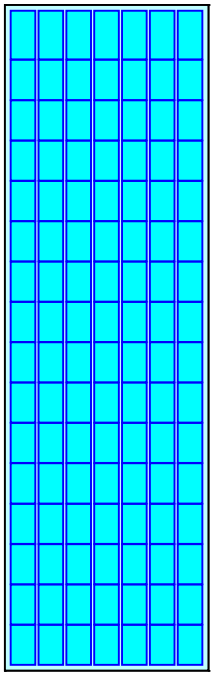
16 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 113.50' Row Length +12.0" End Stone x 2 = 115.50' Base Length
7 Rows x 52.0" Wide + 6.0" Spacing x 6 + 12.0" Side Stone x 2 = 35.33' Base Width
30.5" Chamber Height + 6.0" Stone Cover = 3.04' Field Height

112 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 7 Rows = 5,919.8 cf Chamber Storage

12,413.0 cf Field - 5,919.8 cf Chambers = 6,493.2 cf Stone x 40.0% Voids = 2,597.3 cf Stone Storage

Chamber Storage + Stone Storage = 8,517.1 cf = 0.196 af
Overall Storage Efficiency = 68.6%
Overall System Size = 115.50' x 35.33' x 3.04'

112 Chambers
459.7 cy Field
240.5 cy Stone



Pond UDS-1: Cultec 330 XLHD - Chamber Wizard Field B

Chamber Model = Cultec R-330XLHD (Discontinued, not for new designs)
Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf
Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
Row Length Adjustment= +1.50' x 7.45 sf x 7 rows

52.0" Wide + 6.0" Spacing = 58.0" C-C Row Spacing

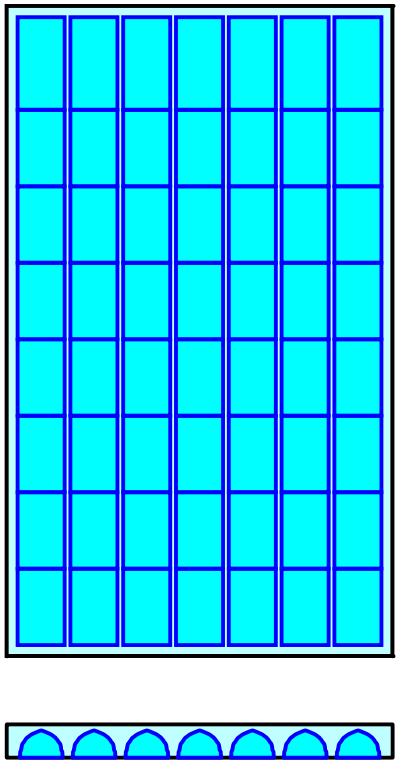
8 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 57.50' Row Length +12.0" End Stone x 2 = 59.50' Base Length
7 Rows x 52.0" Wide + 6.0" Spacing x 6 + 12.0" Side Stone x 2 = 35.33' Base Width
30.5" Chamber Height + 6.0" Stone Cover = 3.04' Field Height

56 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 7 Rows = 2,999.0 cf Chamber Storage

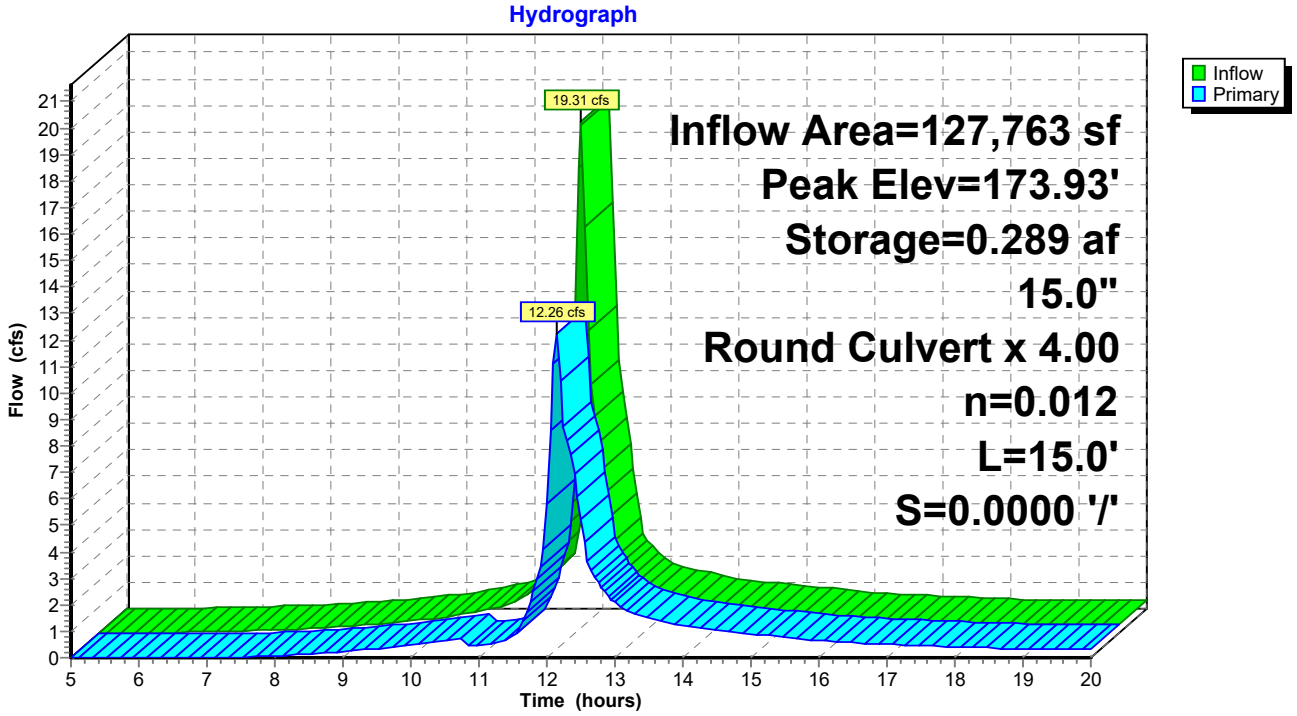
6,394.6 cf Field - 2,999.0 cf Chambers = 3,395.6 cf Stone x 40.0% Voids = 1,358.2 cf Stone Storage

Chamber Storage + Stone Storage = 4,357.3 cf = 0.100 af
Overall Storage Efficiency = 68.1%
Overall System Size = 59.50' x 35.33' x 3.04'

56 Chambers
236.8 cy Field
125.8 cy Stone



Pond UDS-1: Cultec 330 XLHD

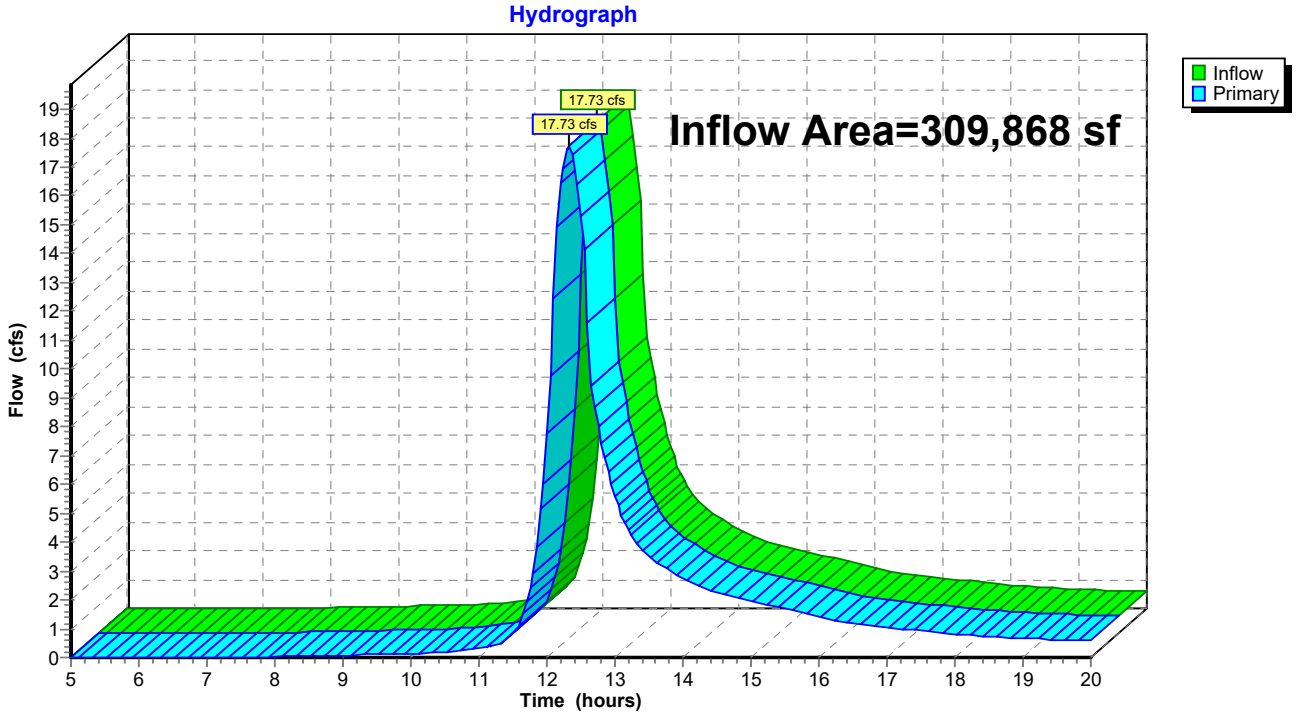


Summary for Link POA-1: Hunting Lane (Off-site)

Inflow Area = 309,868 sf, 37.48% Impervious, Inflow Depth > 3.53" for 100-YR event
Inflow = 17.73 cfs @ 12.33 hrs, Volume= 91,231 cf
Primary = 17.73 cfs @ 12.33 hrs, Volume= 91,231 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link POA-1: Hunting Lane (Off-site)

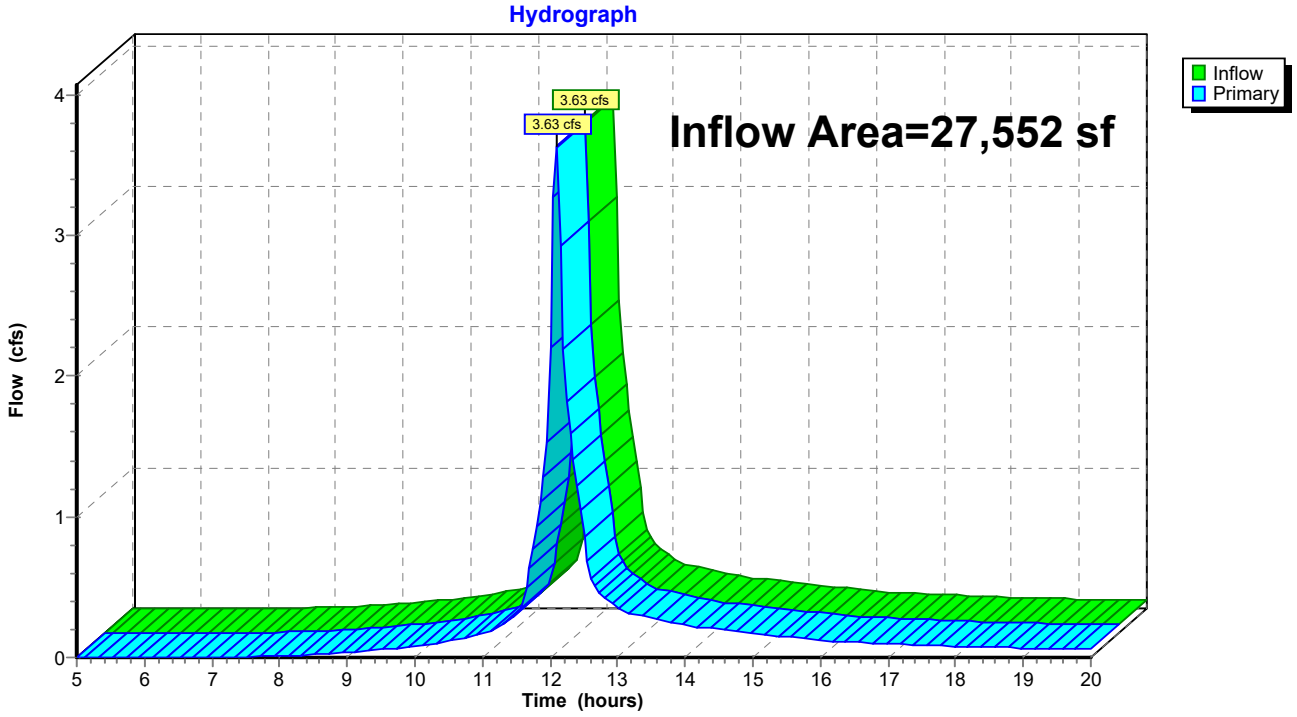


Summary for Link POA-2: North Main Street (Offsite)

Inflow Area = 27,552 sf, 5.91% Impervious, Inflow Depth > 4.69" for 100-YR event
Inflow = 3.63 cfs @ 12.09 hrs, Volume= 10,777 cf
Primary = 3.63 cfs @ 12.09 hrs, Volume= 10,777 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link POA-2: North Main Street (Offsite)

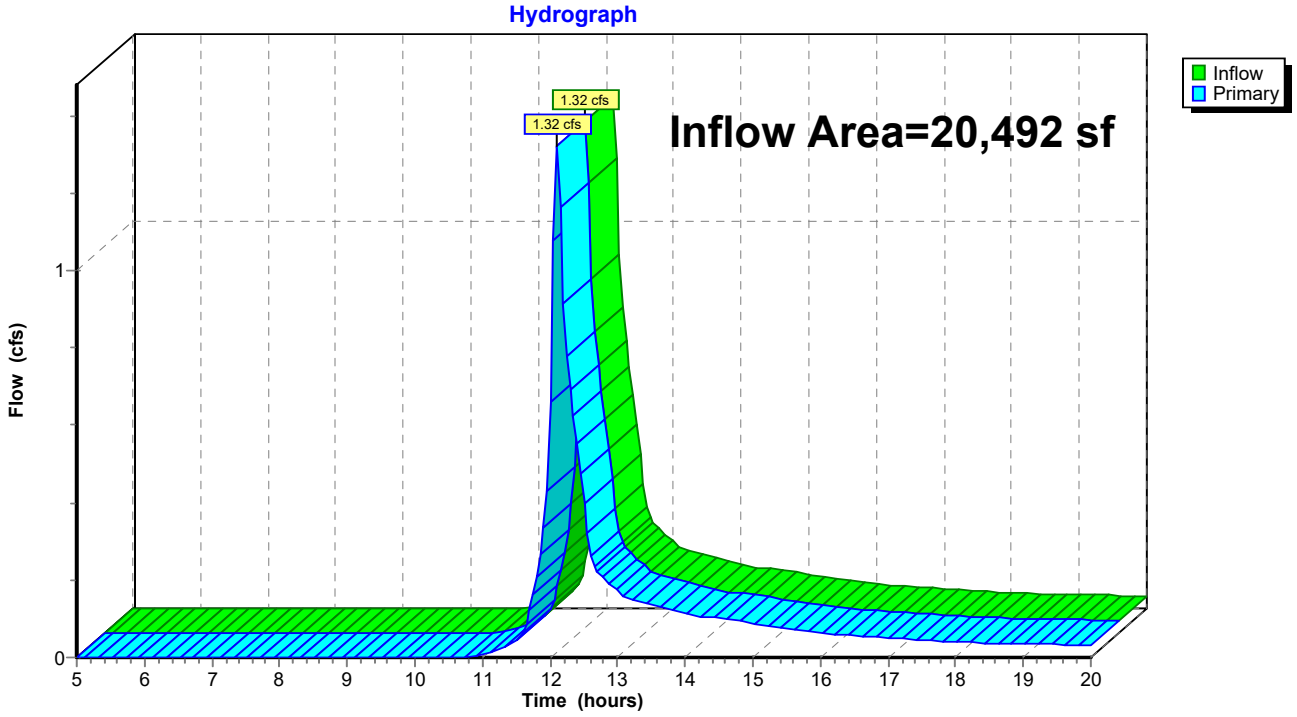


Summary for Link POA-3: 33 N Main Street (Offsite)

Inflow Area = 20,492 sf, 0.00% Impervious, Inflow Depth > 2.38" for 100-YR event
Inflow = 1.32 cfs @ 12.11 hrs, Volume= 4,060 cf
Primary = 1.32 cfs @ 12.11 hrs, Volume= 4,060 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link POA-3: 33 N Main Street (Offsite)

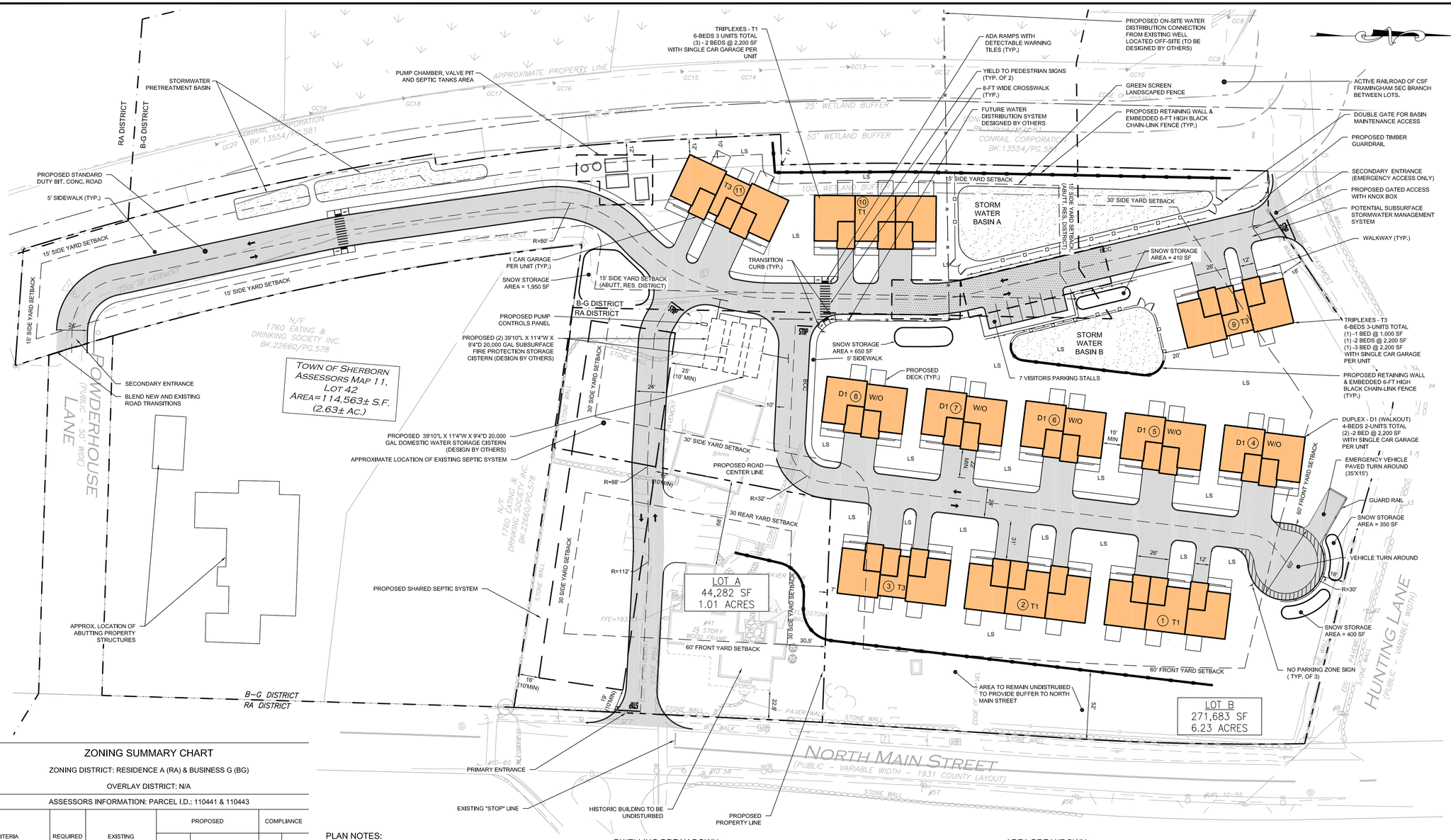


Stage-Area-Storage for Pond IB-1: Infil Basin

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
170.00	1,749	0
170.05	1,794	89
170.10	1,839	179
170.15	1,884	272
170.20	1,929	368
170.25	1,974	465
170.30	2,019	565
170.35	2,064	667
170.40	2,109	772
170.45	2,154	878
170.50	2,199	987
170.55	2,244	1,098
170.60	2,289	1,211
170.65	2,334	1,327
170.70	2,379	1,445
170.75	2,424	1,565
170.80	2,469	1,687
170.85	2,514	1,812
170.90	2,559	1,939
170.95	2,604	2,068
171.00	2,649	2,199
171.05	2,705	2,333
171.10	2,761	2,470
171.15	2,817	2,609
171.20	2,873	2,751
171.25	2,929	2,896
171.30	2,985	3,044
171.35	3,041	3,195
171.40	3,097	3,348
171.45	3,153	3,505
171.50	3,210	3,664
171.55	3,266	3,826
171.60	3,322	3,990
171.65	3,378	4,158
171.70	3,434	4,328
171.75	3,490	4,501
171.80	3,546	4,677
171.85	3,602	4,856
171.90	3,658	5,037
171.95	3,714	5,221
172.00	3,770	5,409
172.05	3,832	5,599
172.10	3,893	5,792
172.15	3,955	5,988
172.20	4,016	6,187
172.25	4,078	6,389
172.30	4,139	6,595
172.35	4,200	6,803
172.40	4,262	7,015
172.45	4,323	7,230
172.50	4,385	7,447
172.55	4,447	7,668
172.60	4,508	7,892
172.65	4,570	8,119
172.70	4,631	8,349
172.75	4,693	8,582
172.80	4,754	8,818
172.85	4,815	9,057
172.90	4,877	9,300
172.95	4,938	9,545
173.00	5,000	9,794
173.05	5,066	10,045
173.10	5,133	10,300
173.15	5,199	10,558
173.20	5,265	10,820
173.25	5,332	11,085
173.30	5,398	11,353
173.35	5,464	11,625
173.40	5,531	11,900
173.45	5,597	12,178
173.50	5,664	12,459
173.55	5,730	12,744
173.60	5,796	13,032
173.65	5,863	13,324
173.70	5,929	13,619
173.75	5,995	13,917
173.80	6,062	14,218
173.85	6,128	14,523
173.90	6,194	14,831
173.95	6,261	15,142
174.00	6,327	15,457
174.05	6,396	15,775
174.10	6,465	16,097
174.15	6,535	16,422
174.20	6,604	16,750
174.25	6,673	17,082
174.30	6,742	17,417
174.35	6,811	17,756
174.40	6,881	18,099
174.45	6,950	18,444
174.50	7,019	18,794
174.55	7,088	19,146
174.60	7,157	19,502
174.65	7,227	19,862
174.70	7,296	20,225
174.75	7,365	20,592
174.80	7,434	20,961
174.85	7,503	21,335
174.90	7,573	21,712
174.95	7,642	22,092
175.00	**7,711**	**22,476**

lowest orifice

APPENDIX C – SUPPORTING INFORMATION



ZONING SUMMARY CHART

ZONING DISTRICT: RESIDENCE A (RA) & BUSINESS G (BG)

OVERLAY DISTRICT: N/A

ASSESSORS INFORMATION: PARCEL I.D.: 110441 & 110443

CRITERIA	REQUIRED	EXISTING	PROPOSED		COMPLIANCE	
			LOT A	LOT B	LOT A	LOT B
LOT AREA (MIN)	1 AC.	6.28 AC. (MAP 41) 0.96 AC. (MAP 43)	1.01 AC.	6.23 AC.	YES	YES
LOT WIDTH (MIN)	150 FT	200 FT	236 FT	392 FT	YES	YES
LOT DEPTH	N/A	N/A	N/A	N/A	N/A	N/A
FRONTAGE (MIN)	150 FT	624 FT± (N MAIN ST) 491 FT± (HUNTING LN)	242± FT	383 FT± (N MAIN ST) 491 FT± (HUNTING LN)	YES	YES
FRONT YARD (MIN)	60 FT	22.8 FT	22.8 FT	52 FT± (N MAIN ST) 18 FT± (HUNTING LN)	NO(2)	NO(1)
SIDE YARD (MIN)	30 FT (RA)	93.6 FT	30.5 FT	7 FT	YES	NO(1)
REAR YARD (MIN)	30 FT	42.4 FT	68 FT	-	YES	-
BUILDING COVERAGE (MAX)	N/A	N/A	N/A	N/A	N/A	N/A
BUILDING STORIES (MAX)	2.5	2.5	2.5	2.5	YES	YES
BUILDING HEIGHT (MAX)	35 FT	<35 FT	<35 FT	<35 FT	YES	YES
FLOOR AREA RATIO (MAX) (FAR)	N/A	N/A	N/A	N/A	N/A	N/A
LOT COVERAGE	N/A	N/A	N/A	N/A	N/A	N/A
GREENSPACE (MIN)	N/A	N/A	N/A	N/A	N/A	N/A

PLAN NOTES:

A. THE PROJECT SITE IS LOCATED IN THE TOWN OF SHERBORN MA. ASSESSORS MAP 11 LOT 41 & 43.

B. THE SITE IS APPROXIMATELY 7.24 ACRES

C. THE OWNER OF THE PARCEL IS BARSKY ESTATE REALTY TRUST.

D. EXISTING CONDITIONS INFORMATION TAKEN FROM SURVEY PERFORMED BY ALLEN & MAJOR ASSOCIATES, INC. JULY 23, 2018.

E. CONCEPT PLAN DEPICTS A CREATION OF TWO SEPARATE LOTS.

F. LOT CREATION REQUIRES ACCESS & UTILITY EASEMENT FOR BOTH PROPERTIES TO BE APPROVED BY ZBA AS PART OF A COMPREHENSIVE PERMIT.

G. W/O REFERS TO POTENTIAL WALK OUT BASEMENT.

LIST OF WAIVERS:

1. TO BE WAIVED AS PART OF COMPREHENSIVE PERMIT.
2. EXISTING NON-CONFORMING.

DEFINITIONS:

LOT WIDTH: A LINE WHICH IS THE SHORTEST DISTANCE FROM ONE SIDE LINE OF A LOT TO ANY OTHER SIDE LINE OF SUCH LOT, PROVIDED THAT THE EXTENSION OF SUCH LINE DIVERGES LESS THAN 45 DEGREES FROM A LINE, OR EXTENSION THEREOF, WHICH CONNECTS THE END POINTS OF THE SIDE LOT LINES WHERE SUCH LINES INTERSECT THE STREET RIGHT-OF-WAY

MEASURED BOTH AT FRONT SETBACK LINE AND AT BUILDING LINE. AT NO POINT BETWEEN THE REQUIRED FRONTAGE AND THE BUILDING LINE SHALL LOT WIDTH BE REDUCED TO LESS THAN 50 FEET, WITHOUT AN EXCEPTION FROM THE PLANNING BOARD.

SETBACK: THE SHORTEST DISTANCE FROM THE CORRESPONDING LOT LINE TO ANY PART OF A BUILDING OR STRUCTURE, INCLUDING OVERHANG BUT NOT INCLUDING UNCOVERED STEPS NOR FENCES OR WALLS LESS THAN 6 FEET IN HEIGHT.

(FRONT SETBACK ALONG N. MAIN STREET FOR LOT B IS FROM 6' TALL SECTION OF THE PROPOSED RETAINING WALL.)

DWELLING BREAK DOWN:

BREAKDOWN SUMMARY CHART

TYPE	BEDROOM	UNIT	BLDG COUNT
D1	20	10	5
T1	18	9	3
T3	18	9	3
TOTAL	56	28	11

SYMBOL LEGEND

	DWELLING
	ROAD & DRIVEWAY
	SNOW STORAGE
	STORMWATER BASIN
	SUBSURFACE STORMWATER SYSTEM
	SHARED SEPTIC SYSTEM
	BUILDING SETBACK
LS	LANDSCAPE AREA
	RETAINING WALL & FENCE
	TRAFFIC SIGN
STOP	STOP BAR
	FENCE
	TIMBER GUARD RAIL

AREA BREAKDOWN:

AREA BREAKDOWN CHART

TYPE	PREVIOUSLY SUBMITTED AREA*	PROPOSED AREA	PERCENT CHANGE
IMPERVIOUS	114,271 SF	117,699 SF	+3.0%
PERVIOUS	201,507 SF	192,183 SF	-2.9%
TOTAL	315,778 SF	315,778 SF	

*PREVIOUSLY SUBMITTED PLANS, "SITE DEVELOPMENT PLANS FOR THE PINES RESIDENGES" BY ALLEN & MAJOR ASSOCIATES, INC DATED APRIL 9, 2021.

40 0 20 40 80 160

GRAPHIC SCALE 1 inch = 40 ft.

HIGHPOINT ENGINEERING, INC.
LAND PLANNING
PERMIT EXPEDITING
CIVIL ENGINEERING
CONSULTING
580 WASHINGTON STREET
SUITE 216
DEDHAM, MA 02026
www.HighpointEng.com

CLIENT:
BARKSY ESTATE REALTY TRUST
23 HUNTING LANE
SHERBORN, MA 01770
C/O GARY LYBARSKY

CONSULTANT:

SEAL

PROPOSED MULTI-FAMILY RESIDENTIAL DEVELOPMENT

41 NORTH MAIN STREET
SHERBORN, MA, 01770

OWNER/APPLICANT: BARSKY ESTATE REALTY TRUST

REV	DATE	DESCRIPTION
1	12/06/2024	PER ZBA COMMENTS

ISSUE TYPE: ISSUED TO ZBA

ISSUE DATE: 09/27/2024

PROJECT NUMBER: 23048

DRAWN BY: DTB/MJH

CHECKED BY: DTB

SHEET TITLE: PROPOSED SITE PLAN

SHEET NUMBER: EXHIBIT 1

ISSUED FOR: **ZBA**

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ISSUE TYPE:
ISSUED TO ZBA

ISSUE DATE:
09/27/2024

PROJECT NUMBER:
23048

DRAWN BY: DTB/MJH

CHECKED BY: DTB

SHEET TITLE:
DRAFT GRADING PLAN

SHEET NUMBER:
EXHIBIT 2

ISSUED FOR: **ZBA**